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INDEX OF ARMY AERONAUTICAL EQUIPMENT WITH NAVY AND BRITISH EQUIVALENTS



Volume 5

ARMAMENT



**Compiled and published
by authority of**

**The Commanding General
Army Air Forces Materiel Command
Wright Field, Dayton, Ohio**

Accepted by

**The Air Council of
The United Kingdom**

Air Publication 2599E

Book Number:

10433

A COMPLETE
INDEX OF ARMY AERONAUTICAL EQUIPMENT
WITH NAVY AND BRITISH EQUIVALENTS

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For cable or teletype transmission use the code
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Compiled and Published

By

ARMY AIR FORCES
MATERIEL COMMAND
WRIGHT FIELD, DAYTON, OHIO

All Technical Reference to the Above Publications
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COMMANDING GENERAL
ARMY AIR FORCES MATERIEL COMMAND
WRIGHT FIELD, DAYTON, OHIO

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ARMY AIR FORCES
MATERIEL COMMAND
AERONAUTICAL EQUIPMENT
BRANCH
WRIGHT FIELD, DAYTON, OHIO

Distributed in Original Form to All
Materiel Command Activities and
Block Distribution to Bureau of Aero-
nautics.

ARMY AIR FORCES
AIR SERVICE COMMAND
HEADQUARTERS
MAINTENANCE DATA SECTION
MAINTENANCE DIVISION
PATTERSON FIELD, OHIO

Reproduced as Technical Order
00-25-10 and Distributed to United
Nations and All AAF Activities
Except Materiel Command.

BUREAU OF AERONAUTICS
PUBLICATIONS SECTION
WASHINGTON, D. C.
Distribution to All Navy Activities.



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Note* Army designation also used as commercial identification.



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24742	" "	Release—bomb rack right hand.	A-3	280
24743	" "	Solenoid—gun	E-6	102
24746	" "	" — "	G-11	117
24748	" "	Shackle—bomb	D-7	288
24749	" "	" — "	AN-B-9	283
24750	" "	Box—ammunition	L-7	22
24752	" "	Adapter—gun mount	E-12	18
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24754	" "	Solenoid—gun	G-13	118
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24759	" "	" — " " ring.	B-13	81
24763	" "	Adapter—gun mount	E-5A	11
24764	" "	Solenoid—gun	G-15	119
24768	" "	" — "	E-8	103
24769	" "	" — "	G-16	105
24771	" "	Container—signal flare	A-5	35
24772	" "	" — " " "	A-6	36
24773	" "	" — " " "	A-7	37
24778	" "	Charger, manual, M2.		38
24780	" "	Mount—ball and socket gun.	K-3	65
24781	" "	Sling—bomb hoist	A-2	290
24808	" "	Trigger—electric AN-M1		120
24809	" "	Mount—bombsight	B-7	263
24814	" "	" — ball and socket gun.	K-4	66
24815	" "	Adapter—gun mount	C-19	10
24817	" "	Sight—fixed gun.	N-3B	86
24820	" "	Holder—pyrotechnic pistol.	A-2	49
24823	" "	Trigger—manual	A-1	127
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24830	" "	Mount—bomb arming control.	A-1	262
24832	" "	Shackle—bomb	AN-B-10	284
24838	" "	Mount—swivel gun.	K-5	67
24840	" "	" — grenade	A-1	261
24841	" "	Control—pilot director indicator.	A-1	243
24843	" "	Receptacle—bomb release.	A-1	277
24850	" "	Chute—flexible feed.	B.	25
24875	" "	Adapter—gun end.	L-1	26
24876	" "	" — box end.	L-2	27
30000	Mfr's Dwg.	Turret—lower gun	A-2	157
30000	" "	" — retractable lower gun.	A-13	159
32968	" "	Chute—flexible feed.	A.	28
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32968-650	" "	" — " " "	A.	28
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50050	Mfr's Dwg.	Socket—5 way bomb.	A.	291
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76861	Mfr's Dwg.	Valve—hydraulic gun charging	A-1	128
76862	" "	Charger—.50 caliber hydraulic gun	D-2	41
78001	" "	Turret—upper gun	A-4	149
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78001A	Mfr's Spec.	" — " "	A-4	149
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78002	Mfr's Dwg.	Charger—.30 caliber hydraulic gun	D-1	40
78003	" "	" —20-mm. hydraulic gun	D-3	39
79800	" "	Turret—lower gun	A-5	161
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80701	" "	" —upper gun	A-4	149
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99028	" "	Solenoid—gun	G-8	115
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076023*	Army & Mfr's Dwg.	Motor—trigger	E-3	99
076023*	" " " "	" — " "	E-3A	100
076031*	" " " "	Ends—impulse unit	E-3	98
108611	Bu. Ord. Dwg.	Handle—bomb release	Mk 4 Mod. 2	254
114081-N-1	" Aer. Dwg.	Generator—gun synchronizer impulse	E-8	97
155316	" Ord. Dwg.	Box—ammunition	L-4	21
155316	" " " "	" — " "	L-7	22
155981	" " " "	Handle—bomb release	A-3	250
155982	" " " "	" — " "	A-3	250
163658	" " " "	Ends—impulse unit	E-3	98
167348	" " " "	Bolt and bracket—gun trunnion	A-3	20
169516	" " " "	Shackle—bomb	B-7	282
169790	" " " "	Slide, operating, group assembly	D28200	310
178456**	" " & Mfr's Dg.	Box—ammunition	L-4	21
178456	" " Dwg.	" — " "	L-7	22
178468**	" " & Mfr's Dg.	Adapter—gun mount	C-12	6
178474**	" " " "	Motor—trigger	E-3 Mk 1	99
178489**	" " " "	Handle—gun charging	A-2	46
179000**	" " " "	" —bomb release	Mk 4 Mod. 2	254
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189812**	" " " "	" —right hand gun	C-4B	109
189812**	" " " "	" —right hand gun	C-4C	113
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204675	" " " "	" " " " " aircraft, fixed		306
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210860J	" "	" —upper gun	A-1	133
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227622	" "	Motor—trigger	E-3	99
227622**	Bu.Ord.& Mfr's Dg.	" — " "	E-3A	100
238544	" " Dwg.	Sight—illuminated	Mk 8	83
247642	" " " "	Pistol, pyrotechnic, AN-M8 w/mount		330
265673	" " " -modif.	Indicator—pilot director	Mk 15 Mod. 3	267
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275122	" " " "	Director—torpedo	Mk 28 Mod. 2	248
278292	" " " "	Adapter—gun mount	E-11	17

*Army designation also used as commercial identification.

**Navy designation also used as commercial identification.



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**Navy designation also used as commercial identification.



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646636-A	" " "	" " " " " "	K-3	92
646636-A	" " "	" " " " " "	K-4	93
0153322	Army Dwg.	Switch—control stick gun.	B-1A	124
0159268*	Army & Mfr's Dwg.	Handle—bomb and flare release.	A-3A	251
0159268*	" " " "	" " " " " " release	A-3B	252
0159268	Mfr's Dwg.	Handle—bomb and flare release.	A-3	250
0169221*	Army & Mfr's Dwg.	Switch—control stick gun.	B-1A	124
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1590752	Mfr's Dwg.	Director—torpedo	Mk 28, Mod. 2	248
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8621274	" Part	Station—left blister sighting.	2CSR3B2	192
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8621274	" " "	" " " " " " " "	2CSR3B1	194
8621274	" " "	" " " " " " " "	2CSR3B3	195
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42578201K4	A.S.C. Stock	Switch—single pole toggle.	AN3022-2	126
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4200613500	" " "	Rheostat—variable resistance	D-1	123
4200894750	" " "	Switch—single pole toggle.	AN3022-2	126
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4500216600	" " "	Container—signal flare	A-1	34
4500230375	" " "	" " " " " " " "	A-5	35
4500230400	" " "	" " " " " " " "	A-6	36
4500230450	" " "	" " " " " " " "	A-7	37
4500494500	" " "	Holder—pyrotechnic pistol	A-1	48
4500494600	" " "	" " " " " " " "	A-2	49
5200001775	" " "	Adapter—gun end.	L-1	26
5200001785	" " "	" " " " " " " "	L-2	27
5200002365	" " "	" " " " " " " "		5
5200004500	" " "	" " " " " " " "	C-12	6
5200004850	" " "	" " " " " " " "	C-16	7
5200004870	" " "	" " " " " " " "	C-17	8
5200004870	" " "	" " " " " " " "	C-18	9
5200004900	" " "	" " " " " " " "	C-17	8
5200004900	" " "	" " " " " " " "	C-18	9
5200004950	" " "	" " " " " " " "	C-19	10
5200005450	" " "	" " " " " " " "	E-5	13
5200005450	" " "	" " " " " " " "	E-8	14
5200005450	" " "	" " " " " " " "	E-11	17
5200005450	" " "	" " " " " " " "	E-12	18
5200005460	" " "	" " " " " " " "	E-5A	11
5200005525	" " "	" " " " " " " "	E-5	13
5200005525	" " "	" " " " " " " "	E-8	14
5200005525	" " "	" " " " " " " "	E-11	17
5200005525	" " "	" " " " " " " "	E-12	18
5200005545	" " "	" " " " " " " "	E-10	15
5200005560	" " "	" " " " " " " "	E-5	13
5200005560	" " "	" " " " " " " "	E-8	14
5200005560	" " "	" " " " " " " "	E-11	17
5200005560	" " "	" " " " " " " "	E-12	18
5200005575	" " "	" " " " " " " "	E-5	13
5200005575	" " "	" " " " " " " "	E-8	14
5200005575	" " "	" " " " " " " "	E-11	17
5200005575	" " "	" " " " " " " "	E-12	18
5200043000	" " "	Barrel—gun charging turnbuckle.		19
5200075000	" " "	Bolt and bracket—gun trunnion.	A-3	20
5200090300	" " "	Box—ammunition	L-4	21
5200090300	" " "	" " " " " " " "	L-7	22
5200090500	" " "	" " " " " " " "	L-4	21
5200090500	" " "	" " " " " " " "	L-7	22
5200090900	" " "	" " " " " " " "	O-1	23
5200174506-5	" " "	Chute—flexible feed	A	28
5200174506-8	" " "	" " " " " " " "	A	28
5200174506-55	" " "	" " " " " " " "	A	28

*Army designation also used as commercial identification.



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5200174506-86	" "	" " "	A	28
5200174506-555	" "	" " "	A	28
5200174506-884	" "	" " "	A	28
5200174506-888	" "	" " "	A	28
5200177125	" "	" " "	B	25
5200211900	" "	Container—ejected case	A-4	29
5200211900	" "	" " "	A-5	30
5200211920	" "	" " "	A-4	29
5200211920	" "	" " "	A-5	30
5200213400	" "	" " link	A-3	31
5200213400	" "	" " "	A-4	32
5200213400	" "	" " "	A-5	33
5200213700	" "	" " "	A-3	31
5200213700	" "	" " "	A-4	32
5200213700	" "	" " "	A-5	33
5200213740	" "	" " "	A-3	31
5200213740	" "	" " "	A-4	32
5200213740	" "	" " "	A-5	33
5200239040	" "	Motor—trigger	E-3	99
5200239040	" "	" " "	E-3A	100
5200250600	" "	Ends—impulse unit	E-3	98
5200265250	" "	Feed—lower continuous	CF-5	45
5200265400	" "	" —left hand upper continuous	CF-3L	43
5200265420	" "	" —right hand upper continuous	CF-3R	44
5200291050	" "	Generator—gun synchronizer impulse	E-8	97
5200315800	" "	Handle—gun charging	A-2	46
5200328900	" "	Holder—ammunition box	A-1	47
5200465600	" "	Motor—trigger	E-3	99
5200465600	" "	" " "	E-3A	100
5200466980	" "	Mount—ammunition box	A-3	53
5200467000	" "	" —left hand ammunition box	C-2	54
5200467000	" "	" " " " " "	C-3	56
5200467050	" "	" —right hand ammunition box	C-2	55
5200467050	" "	" " " " " "	C-3	57
5200467350	" "	" —left hand ammunition box	C-2	54
5200467350	" "	" " " " " "	C-3	56
5200467360	" "	" —right hand ammunition box	C-2	55
5200467360	" "	" " " " " "	C-3	57
5200468540	" "	" —ball and socket gun	K-4	66
5200471000	" "	" —flexible gun sight	C-4	58
5200473200	" "	" —swivel gun	K-5	67
5200473300	" "	" —gun	G-1A	59
5200473300	" "	" " " " " "	G-5	60
5200473325	" "	" " " " " "	G-1A	59
5200473325	" "	" " " " " "	G-5	60
5200473335	" "	" " " " " "	H-1	61
5200473350	" "	" —ball and socket gun	K-2	63
5200473350	" "	" " " " " "	K-2A	64
5200473350	" "	" " " " " "	K-3	65
5200473350	" "	assembly—ball and socket gun	K-1	62
5200473370	" "	" —ball and socket gun	K-2	63
5200473370	" "	" " " " " "	K-2A	64
5200473370	" "	" " " " " "	K-3	65
5200473370	" "	assembly—ball and socket gun	K-1	62
5200473380	" "	" —ball and socket gun	K-2	63
5200473380	" "	" " " " " "	K-2A	64
5200473380	" "	" " " " " "	K-3	65
5200473380	" "	assembly—ball and socket gun	K-1	62
5200473385	" "	" —ball and socket gun	K-2	63
5200473385	" "	" " " " " "	K-2A	64
5200473385	" "	" " " " " "	K-3	65
5200473385	" "	assembly—ball and socket gun	K-1	62
5200473500	" "	" —gun	M-1	69
5200473550	" "	" " " " " "	M-5	72



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5200726630	" "	Sight—fixed gun	N-3A	85
5200726630	" "	" " "	N-3B	86
5200726635	" "	" " "	N-3A	85
5200726635	" "	" " "	N-3B	86
5200726690	" "	" —flexible gun	N-6	87
5200726690	" "	" " "	N-6A	89
5200726690	" "	" " "	N-8	91
5200727200	" "	" " " post	A-4	76
5200727500	" "	" " " "	A-5	77
5200727575	" "	" " " "	A-11	78
5200728700	" "	" " " ring	B-10	79
5200729000	" "	" " " "	B-11	80
5200729115	" "	" " " "	B-13	81
5200729700	" "	" —telescopic gun	E-5	82
5200730700	" "	" —flexible gun	N-6	87
5200730700	" "	" " "	N-6A	89
5200730700	" "	" " "	N-8	91
5200730750	" "	" —illuminated	Mk 8	83
5200730760	" "	" " "	Mk 9	90
5200731575	" "	" —flexible gun	N-6	87
5200731575	" "	" " "	N-6A	89
5200731575	" "	" " "	N-8	91
5200750000	" "	Solenoid—gun	G-16	105
5200751600	" "	" —left hand gun	C-4B	107
5200751600	" "	" " " "	C-4C	111
5200751600	" "	" —right hand gun	C-4B	109
5200751600	" "	" " " "	C-4C	113
5200751900	" "	" —left hand gun	C-4B	107
5200751900	" "	" " " "	C-4C	111
5200751900	" "	" —right hand gun	C-4B	109
5200751900	" "	" " " "	C-4C	113
5200751950	" "	" —left hand gun	C-4B	107
5200751950	" "	" " " "	C-4C	111
5200751950	" "	" —right hand gun	C-4B	109
5200751950	" "	" " " "	C-4C	113
5200751960	" "	" —left hand gun	C-4B	107
5200751960	" "	" " " "	C-4C	111
5200751960	" "	" —right hand gun	C-4B	109
5200751960	" "	" " " "	C-4C	113
5200752550	" "	" —gun	E-4	101
5200752550	" "	" " "	E-6	102
5200752600	" "	" " "	E-4	101
5200752600	" "	" " "	E-6	102
5200752625	" "	Solenoid—gun	E-8	103
5200752755	" "	" " "	G-4A	114
5200752825	" "	" " "	G-4A	114
5200752825	" "	" " "	G-9	116
5200752845	" "	" " "	G-8	115
5200752845	" "	Trigger—electric AN-M1	G-17	120
5200752855	" "	Solenoid—gun	G-4A	114
5200752855	" "	" " "	G-9	116
5200752865	" "	" " "	G-10	104
5200752867	" "	" " "	G-11	117
5200752870	" "	" " "	G-13	118
5200752870	" "	" " "	G-15	119
5200752890	" "	" " "	G-13	118
5200752890	" "	" " "	G-15	119
5200858150	" "	Support—gun sight image reflector	41D3024	122
5200858150	" "	" " " " " "	41D4892	121
5200858170	" "	" " " " " "	41D3024	122
5200858170	" "	" " " " " "	41D4892	121
5200875350	" "	Switch—control stick gun	B-1A	124
5200875350	" "	" " " " " "	B-5	125
5200875500	" "	" " " " " "	B-1A	124



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5200965700	" "	Valve—hydraulic gun charging.....	A-1	128
5200992900	" "	Yoke—gun mount adapter.....	41D6865.....	129
5400009212	" "	Motor generator—amplidyne local control.....	5AM31NJ18	50
5400239000	" "	Charger—20-mm. hydraulic gun.....	D-3	39
5400239040	" "	" —30 caliber hydraulic gun.....	D-1	40
5400239050	" "	" —50 caliber hydraulic gun.....	D-2	41
5400465615	" "	Motor—azimuth turret drive.....	5BA50LJ1.....	51
5400465630	" "	" —elevation turret drive.....	5BA50GJ1.....	52
5400963033	" "	Turret—tail gun	A-6	165
5400963035	" "	" —upper gun	A-4	149
5400963035	" "	" — " "	A-9	151
5400963035	" "	" — " "	A-9A	153
5400963064	" "	" —nose gun	A-16	168
5400963064	" "	" —upper gun	A-9	151
5400963065	" "	" —lower gun	A-2	157
5400963065	" "	" —retractable lower gun.....	A-13	159
5400963070	" "	" —lower gun	A-5	161
5400963070	" "	" — " "	A-10	163
5400963080	" "	" — " "	A-5	161
5400963080	" "	" — " "	A-10	163
5400963090	" "	" — " "	A-2	157
5400963090	" "	" —retractable lower gun.....	A-13	159
5400963103	" "	" —nose gun	A-15	167
5400963110	" "	" —lower gun	A-2	157
5400963110	" "	" —retractable lower gun.....	A-13	159
5400963140	" "	" —upper gun.....	A-4	149
5400963140	" "	" — " "	A-9	151
5400963140	" "	" — " "	A-9A	153
5400963141	" "	" — " "	A-3	137
5400963141	" "	" — " "	A-3A	139
5400963141	" "	" — " "	A-3B	141
5400963141	" "	" — " "	A-3C	143
5400963141	" "	" — " "	A-11	145
5400963141	" "	" — " "	A-14	147
5400963141-3	" "	" — " "	A-3	137
5400963141-3	" "	" — " "	A-3A	139
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‡British designation also used as commercial identification.



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*Army designation also used as commercial identification.

**Navy designation also used as commercial identification.



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*Army designation also used as commercial identification.



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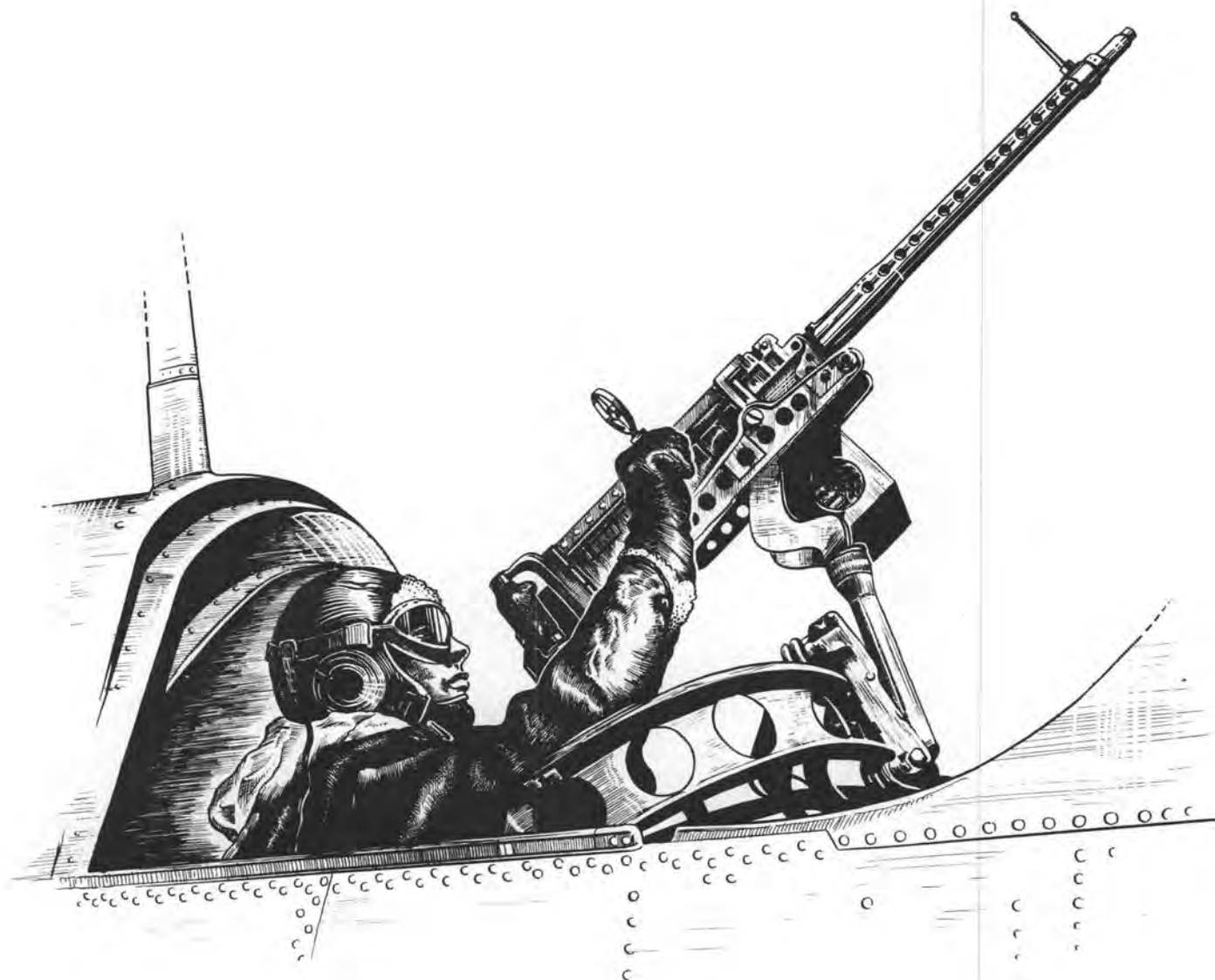


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ARMAMENT

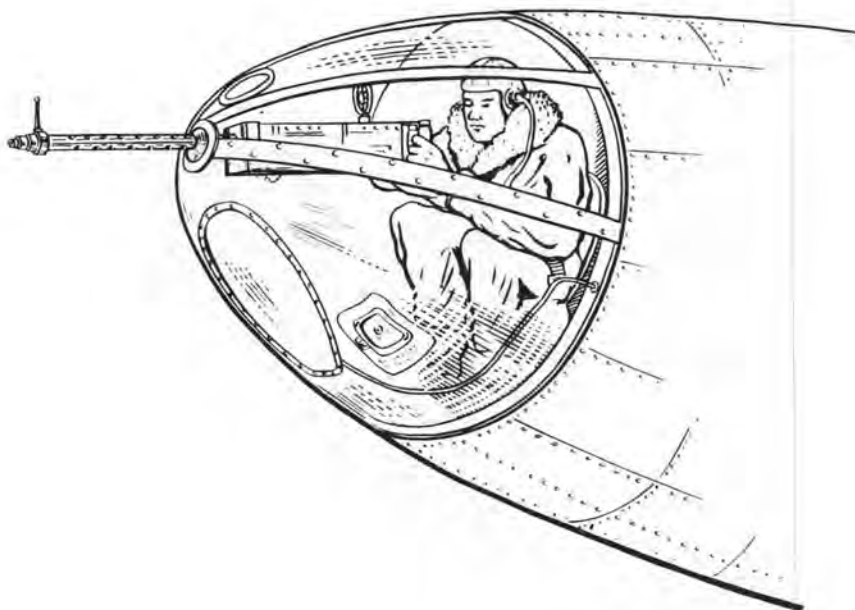


GUNNERY EQUIPMENT

(RESTRICTED)



ARMAMENT—GUNNERY



GUN MOUNTS AND GUN MOUNT ADAPTERS

A machine gun is attached to an airplane by means of a gun mount and a gun mount adapter. The type of mounting device employed depends on the type of gun and the purpose for which it is intended. Mounts and adapters are classified primarily for use with .30 caliber or .50 caliber machine guns. For each size of gun, the mounts are further classified according to their function, i.e., fixed, flexible, or turret installation.

Fixed gun mounts are used on fighter aircraft. Since these airplanes are highly maneuverable, the guns may be aimed by pointing the airplane at the target. Fixed guns are installed in the wings or in the fuselage nose. If installed in the fuselage of a single engine airplane the gun fire must be synchronized with the engine to prevent the bullets from striking the propeller.

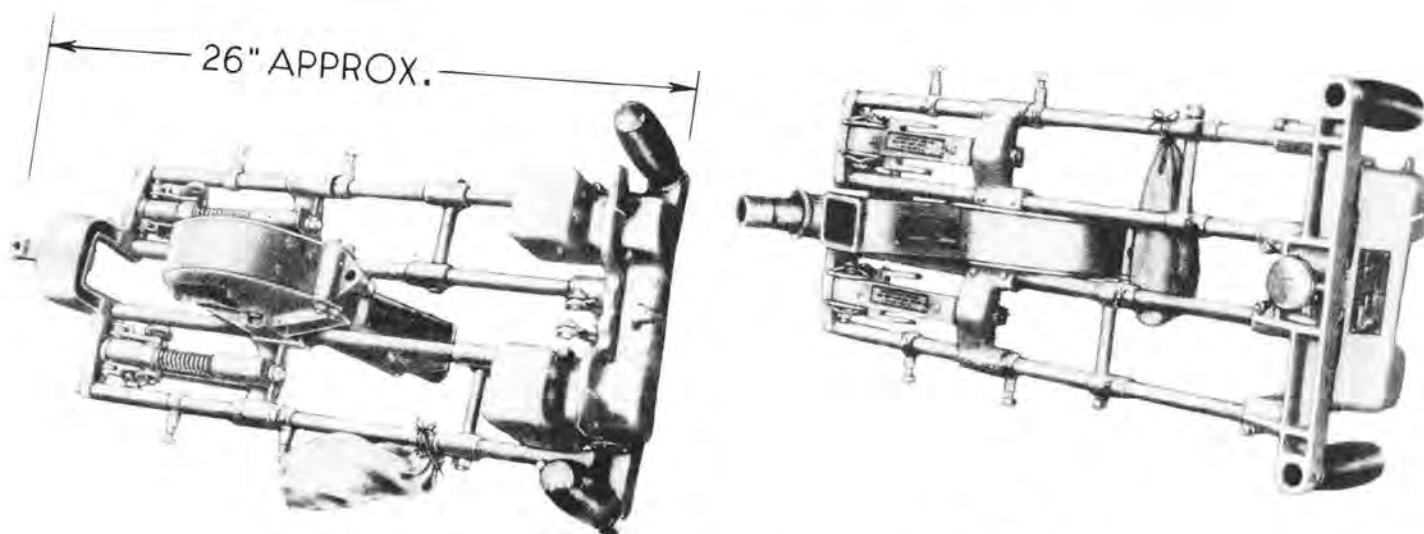
Flexible gun installations are employed on attack or bombardment airplanes as a defense against enemy attack from any direction. The flexible gun mount and adapter allows movement of the gun in any position, independent of the line of flight of the airplane.

Gun turrets, installed on bombardment airplanes, perform a function similar to flexible gun mounts and adapters. The turrets, however, have a much larger fire coverage, range of vision, and better stability, thereby increasing the efficiency of the gunner.

The forces involved in the rapid firing of .30 and .50 caliber guns must be reduced to a minimum for efficient use on airplanes, this is the primary purpose of gun mount adapters. Most gun mount adapters are provided with mechanical, pneumatic, or hydraulic means for absorbing the recoil force of the gun. However, many .30 caliber adapters and a few .50 caliber types are not equipped in this manner and recoil force must be dissipated through the mount to the airplane structure.



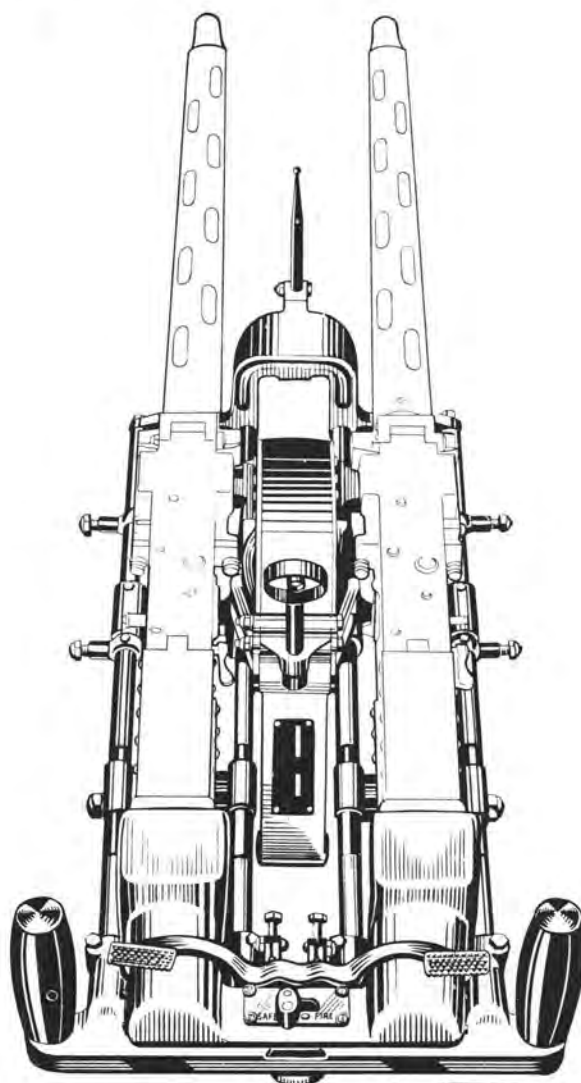
GUN MOUNT ADAPTERS ARMAMENT—GUNNERY



ADAPTER—GUN MOUNT

BELL AIRCRAFT MODEL 19G

NAMES: Gun mount adapter
Adapter—gun mount BAM—.30 M2, flexible, twin (Navy)
Adapter—machine gun (British)
Twin gun mount adapter
.30 caliber twin adapter



(Continued on page 5)



ADAPTER—GUN MOUNT

(Continued from page 4)

DESCRIPTION: This gun mount adapter absorbs the recoil shock of twin, right and left hand, .30 caliber, M2 machine guns. It consists of a frame made of four parallel bars attached to front and rear supports, and a centrally-located ejection chute, which serves both guns. Pneumatic shock absorbers are fastened to the front support and suspended from the bars. The rear support carries the hand grips and mounts the removable backplate which contains the trigger and trigger safety mechanism. The guns are fired, and the safety control operated, by the thumb of either hand.

This adapter is furnished with ring and bead sight. Ammunition box holders were also supplied with adapters of early manufacture.

CHARACTERISTICS:

Dimensions.....approximately 11 by 5½ by 2¾ inches
Weight.....approximately 17 pounds

RELATIONSHIP OF PARTS: Used with:

Twin .30 caliber M2 machine guns.....A. E. Reference Number 93-1440

ARMY

A. E. REFERENCE NUMBER: 52-400

TYPE DESIGNATION: None. Procured as manufacturer's model 19-G.

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

Information listed below pertains only to Navy adapter Mark 11, Modification 2, which is the Navy equivalent and is interchangeable with Bell Aircraft Corporation model 19-G, with modifications as noted on interchangeability chart.

BU. ORD. DRAWING NUMBER: Installation 329516, Assembly 329925

AVIATION ORDNANCE STOCK LIST NUMBER: 1-A-67-75

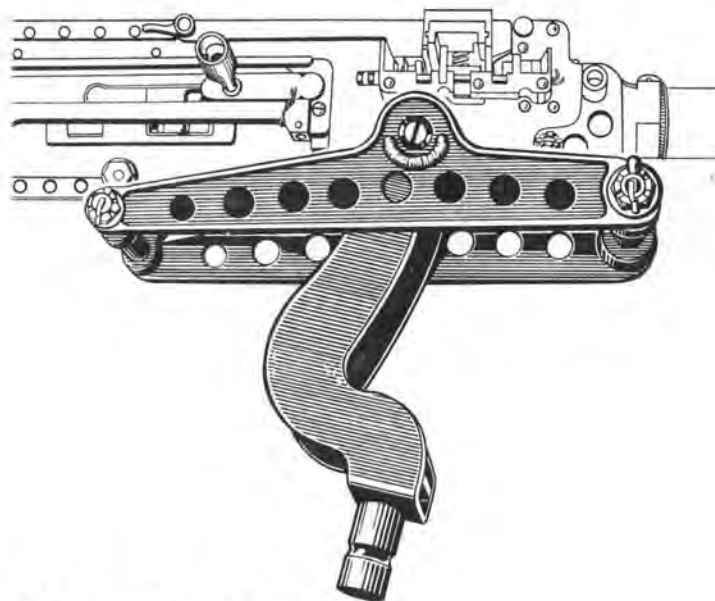
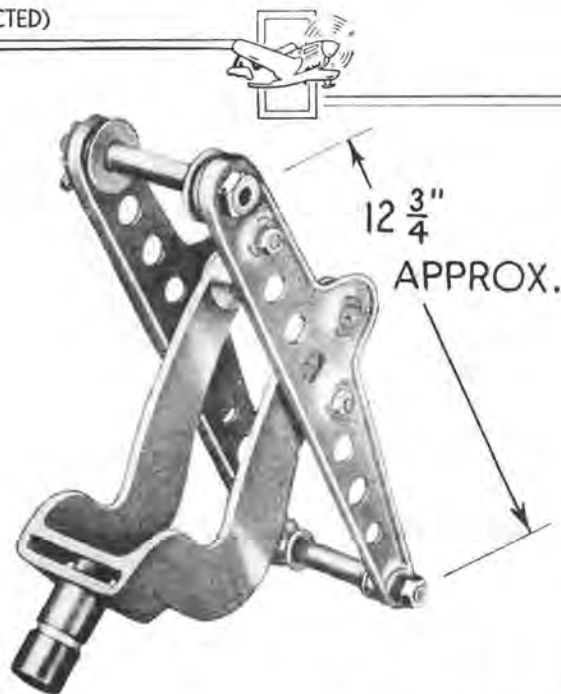
ORDNANCE PAMPHLET NUMBER: 865

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Bell Aircraft Corporation	19-G	GM-749-615	A-B	5200002365	11-10-10	150J/6	
	GM-59	03-059-001	N				Navy Mark 11 modification 2. May be made interchangeable by modifying armor plate brackets, sight mount, and yoke.

GUN MOUNT ADAPTERS ARMAMENT—GUNNERY



ADAPTER—GUN MOUNT

ARMY TYPE C-12 NAVY—SEE BELOW

NAMES: Gun mount adapter

Adapter—gun mount, BAM—.30 M2, flexible, single (Navy)

Adapter—machine gun (British)

Single gun mount adapter

DESCRIPTION: The Army type C-12 gun mount adapter accommodates a single .30 caliber M2 machine gun. It consists of two side plates, bolted to the gun at the front trunnion and rear mounting attachments. These plates bolt to a curved yoke, the lower end of which is grooved to engage the locking balls of standard gun mount sockets.

This adapter, which is not recoil absorbing, has an Army type H-1 ammunition box holder attached to studs on the left side plate.

CHARACTERISTICS:

Dimensions

approximately 12 $\frac{3}{4}$ by 10 $\frac{1}{8}$ by 4 $\frac{3}{8}$ inches

Weight

approximately 5 $\frac{1}{2}$ pounds

RELATIONSHIP OF PARTS: Used with:

A single .30 caliber M2 machine gun.

A. E. Reference Number 93-1520

ARMY

A. E. REFERENCE NUMBER: 52-500

SPECIFICATIONS:

Detail

93-24643

Superseded

24643

A. A. F. DRAWING NUMBER: 37G4926

TYPE DESIGNATION: C-12

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

Superseded by Army type C-16 gun mount adapter, A. E. Reference Number 52-600.

SHIPPING DATA: Shipped as a complete unit.

NAVY

Information listed below pertains only to Navy Mark 1 adapter, which is the Navy equivalent. It is interchangeable with the Army type C-12, with the modifications noted on the chart.

BU. ORD. DRAWING NUMBER: 178468

AVIATION ORDNANCE STOCK LIST NUMBER: 1-A-65

ORDNANCE PAMPHLET NUMBER: 865

PROCUREMENT STATUS: Not under procurement for initial installation.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Ohmer Fare Register Company	*C-12	**37G4926	A-B	5200004500	11-10-9	150J/16	
Groetchen Tool and Manufacturing Company	*C-12 †Mark 1	**37G4926 ††178468	A-B N	5200004500	11-10-9	150J/16	The Navy Mark 1 may be made interchangeable by substitution of yoke, Army part number 37D4929.

Note: *AAF type; **AAF drawing; †Navy type; ††Navy drawing.

**ADAPTER—GUN MOUNT****ARMY TYPE C-16 NAVY—SEE BELOW**

NAMES: Gun mount adapter .30 caliber adapter
 Adapter—gun mount, BAM—.30 M2, flexible, single (Navy)
 Adapter—machine gun (British) Single gun mount adapter

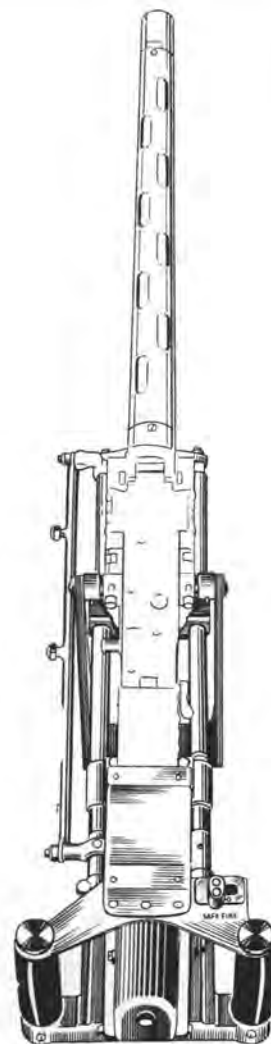
DESCRIPTION: The Army type C-16 gun mount adapter absorbs recoil shock for a single .30 caliber M2 machine gun. It consists of a frame, which includes a single pneumatic shock absorber, slide blocks for the rear mount of the gun, and a removable backplate containing the trigger and trigger safety mechanism. The single trigger is operated by the forefinger, and the safety control by the thumb. This safety control is located near the top of the right hand-grip support. When in a forward position, the yoke of the mount allows an upward swing of 90 degrees and a downward swing of 35 degrees. By reversing the yoke, upward swing is 35 degrees and downward swing is 90 degrees.

CHARACTERISTICS:

Dimensions..... approximately 22 1/4 by 11 by 7 1/4 inches
 Weight..... approximately 8 pounds 10 ounces

RELATIONSHIP OF PARTS: Used with:

A single .30 caliber M2 machine gun..... A. E. Reference Number 93-1440

**ARMY**

A. E. REFERENCE NUMBER: 52-600

SPECIFICATIONS:

Detail..... 93-24639
 Superseded..... 24639

A. A. F. DRAWING NUMBER: 40K3852 (Superseded by manufacturer's drawing number GM-749-658)

TYPE DESIGNATION: C-16

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION DATA: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

Information listed below pertains only to Navy Mark 12 adapter, which is the Navy equivalent. It is interchangeable with the Army type C-16, with the modifications noted on the chart.

BU. ORD. DRAWING NUMBER: Assembly 320160, Installation 328551

AVIATION ORDNANCE STOCK LIST NUMBER: 1-A-67-15

ORDNANCE PAMPHLET NUMBER: 865

PROCUREMENT STATUS: Under procurement.

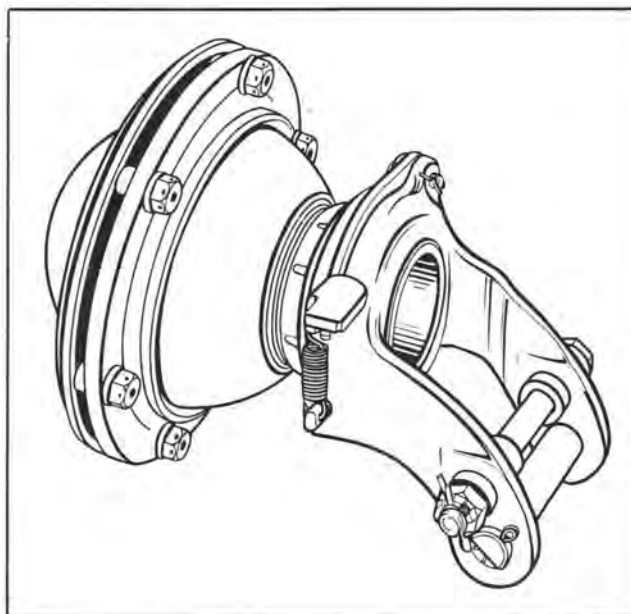
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Type	Remarks
Bell Aircraft Corporation	GM-11G	GM-749-658	A-B	5200004850	11-10-14	150J/30	Army C-16	
	GM-11G	GM-749-658	N				Navy Mark 12	*

*The Navy Mark 12 includes a telescopic sight bracket and ammunition box holder. It may be made interchangeable with Army type C-16 by substitution of yoke, Bell part number GM-749-692, and removal of the telescopic sight bracket and ammunition box holder.



GUN MOUNT ADAPTERS ARMAMENT—GUNNERY



ADAPTER—GUN MOUNT

ARMY TYPE C-17

NAMES: Gun mount adapter

Adapter—machine gun (British)

DESCRIPTION: The Army type C-17 gun mount adapter attaches a single .30 caliber, M2 machine gun to a ball and socket type mount, and has provisions for a gun camera. The adapter consists of a frame with a pair of lugs and a circular spring latch. The lugs are attached to the gun by a bolt, and the latch locks the gun to the mount.

The adapter, which is not recoil absorbing, is quickly detachable from the ball and socket mount.

CHARACTERISTICS:

Dimensions approximately 4 $\frac{3}{8}$ by 4 $\frac{5}{16}$ by 3 $\frac{3}{8}$ inches
Weight approximately 2 pounds

RELATIONSHIP OF PARTS: Used with:

A single .30 caliber M2 machine gun, A. E. Reference Number 93-1520, and Army types K-2, K-2A, or K-3 ball and socket gun mounts, A. E. Reference Number 52-3850, 52-3900, and 52-3950.

ARMY

A. E. REFERENCE NUMBER: 52-700

SPECIFICATIONS:

Detail 93-24696
Superseded 24696

A. A. F. DRAWING NUMBER: 41D5642 (Supersedes Army drawing number 40G6567)

TYPE DESIGNATION: C-17

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

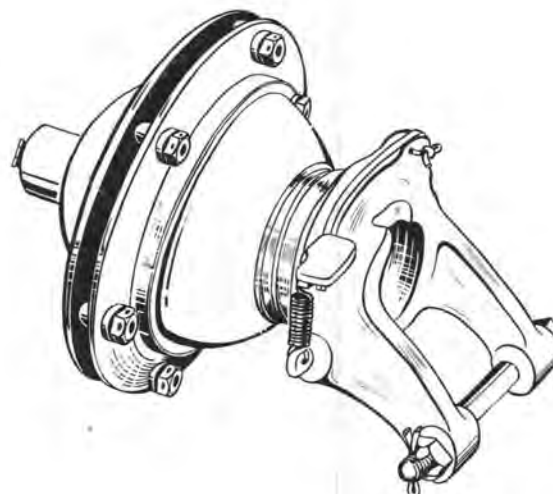
MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Iron Fireman Manufacturing Company	*C-17	**41D5642	A-B	5200004870	11-10-9	150J/17	
Warner Industries	*C-18	**41D11020	A-B	5200004900	11-10-9	150J/28	The Army type C-18 does not contain a mounting bolt for gun camera installation.
Crosley Corporation	*C-18	**41D11020	A-B	5200004900	11-10-9	150J/28	

Note: *AAF type; **AAF drawing.



ADAPTER—GUN MOUNT

ARMY TYPE C-18

NAMES: Gun mount adapter
Adapter—machine gun (British)

DESCRIPTION: The Army type C-18 gun mount adapter attaches a single .30 caliber, M2 machine gun to a ball and socket type mount. The adapter consists of a frame with a pair of lugs, and a circular spring latch. The lugs are attached to the gun by a bolt, and the latch locks the gun to the mount. The adapter, which is not recoil absorbing, is quickly detachable from the ball and socket mount.

CHARACTERISTICS:

Dimensions.....approximately 4 by 3 $\frac{3}{8}$ by 3 inches
Weight.....approximately 1 pound 13 ounces

RELATIONSHIP OF PARTS: Used with:

A single .30 caliber M2 machine gun, A. E. Reference Number 93-1520, and Army types K-2, K-2A, or K-3 ball and socket gun mounts, A. E. Reference Number 52-3850, 52-3900, and 52-3950.

ARMY

A. E. REFERENCE NUMBER: 52-800

SPECIFICATIONS:

Detail.....93-24720
Superseded.....24720

A. A. F. DRAWING NUMBER: 41D11020

TYPE DESIGNATION: C-18

A. S. C. STOCK NUMBER: Refer to chart

TECHNICAL ORDER NUMBER: Refer to chart

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

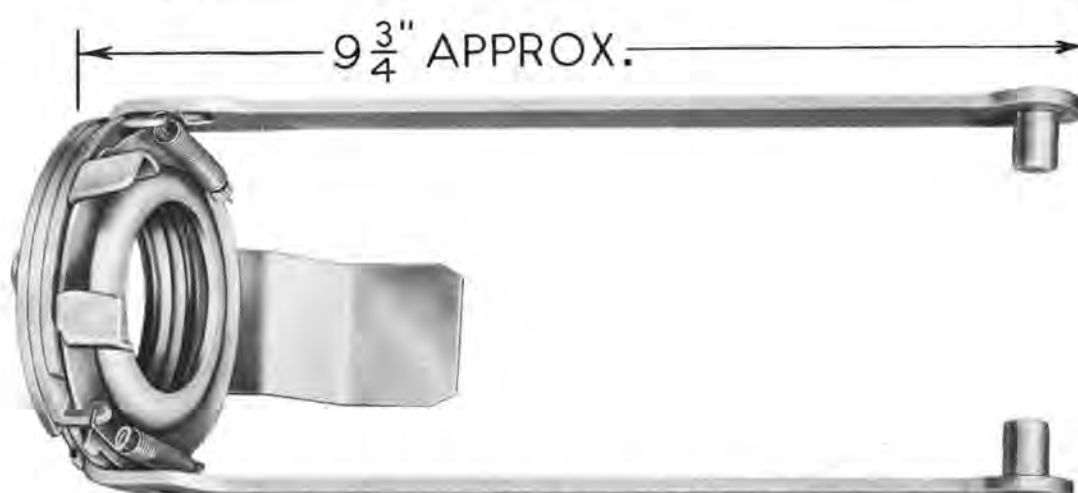
There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Warner Industries	*C-18	**41D11020	A-B	5200004900	11-10-9	150J/28	
Crosley Corporation	*C-18	**41D11020	A-B	5200004900	11-10-9	150J/28	
Iron Fireman Manufacturing Company	*C-17	**41D5642	A-B	5200004870	11-10-9	150J/17	The Army type C-17 contains an extra mounting bolt for a gun camera.

Note: *AAF type; **AAF drawing.

GUN MOUNT ADAPTERS **ARMAMENT—GUNNERY**



ADAPTER—GUN MOUNT **ARMY TYPE C-19**

NAMES: Gun mount adapter
Adapter—machine gun (British)

DESCRIPTION: The Army type C-19 gun mount adapter is used to attach a single .50 caliber, M2, machine gun to a ball and socket mount. This mount is supported by a metal spider since plexiglass alone is not strong enough to absorb recoil shock. A recoil-absorbing Army type E-11 adapter must be used in addition.
The type C-19 adapter locks the machine gun to an Army type K-4 ball and socket mount by means of a ring latch.

CHARACTERISTICS:

Dimensions approximately 9 $\frac{5}{8}$ by 4 $\frac{5}{8}$ by 4 $\frac{1}{4}$ inches
Weight approximately 2 pounds

RELATIONSHIP OF PARTS: Used with:

A single .50 caliber M2 machine gun, A. E. Reference Number 93-1560, and an Army type E-11 gun mount adapter, A. E. Reference Number 52-1300, mounted in an Army type K-4 ball and socket gun mount, A. E. Reference Number 52-3960.

ARMY

A. E. REFERENCE NUMBER: 52-850

SPECIFICATIONS:

Detail 24815

MANUFACTURER: Ainsworth Manufacturing Corporation.
MANUFACTURER'S DRAWING NUMBER: AG-400

A. A. F. DRAWING NUMBER: 42D19090

TYPE DESIGNATION: C-19

A. S. C. STOCK NUMBER: 5200004950

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

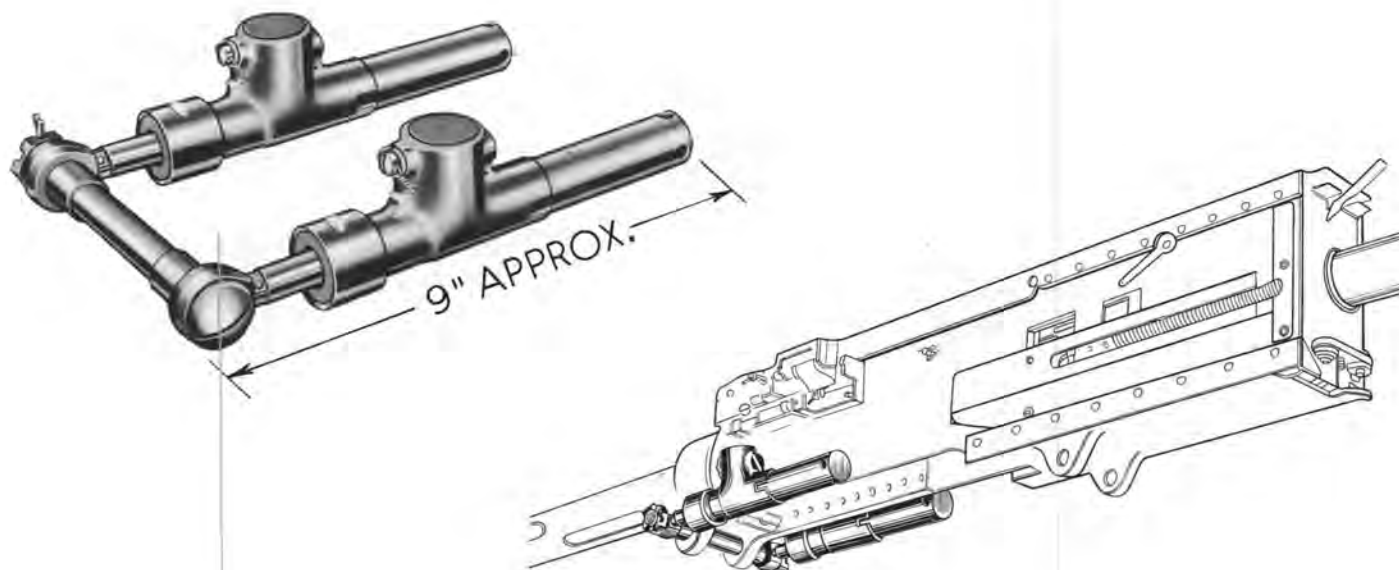
There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 150J/47



GUN MOUNT ADAPTERS ARMAMENT—GUNNERY



ADAPTER—GUN MOUNT

ARMY TYPE E-5A NAVY—SEE BELOW

NAMES: Gun mount adapter
Adapter—gun mount BAM—.50, M2, turret type (Navy)
Adapter—machine gun (British)
.50 caliber M2 machine gun adapter

DESCRIPTION: The Army type E-5A gun mount adapter absorbs the recoil shock of twin .50 caliber M2 machine guns. It consists of two separate units, each containing two hydraulic shock absorbers, trunnion bolts, and spacers. The absorbers dampen recoil shock by the action of a piston and a recoil spring.

This adapter is designed for gun turret installation, or for mounting fixed guns. The guns are fired electrically by remote control.

CHARACTERISTICS:

Dimensions..... approximately 3 $\frac{3}{8}$ by 8 $\frac{3}{4}$ by 1 $\frac{7}{8}$ inches
Weight..... approximately 3 pounds 3 ounces

RELATIONSHIP OF PARTS: Used with:

Twin .50 caliber M2 machine guns..... A. E. Reference Number 93-1560

ARMY

A. E. REFERENCE NUMBER: 52-1000

SPECIFICATIONS:

Detail..... 93-24763
Superseded..... 24763

MANUFACTURER: Bell Aircraft Corporation

MANUFACTURER'S DRAWING NUMBER: GM-749-782

MANUFACTURER'S MODEL: GM-41

TYPE DESIGNATION: E-5A

A. S. C. STOCK NUMBER: 5200005460

TECHNICAL ORDER NUMBER: 11-10-6

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as two completely identical units, packed in a single container.

NAVY

TYPE DESIGNATION: Army type E-5A

BU. ORD. DRAWING NUMBER: Assembly 372704; Installation 375033

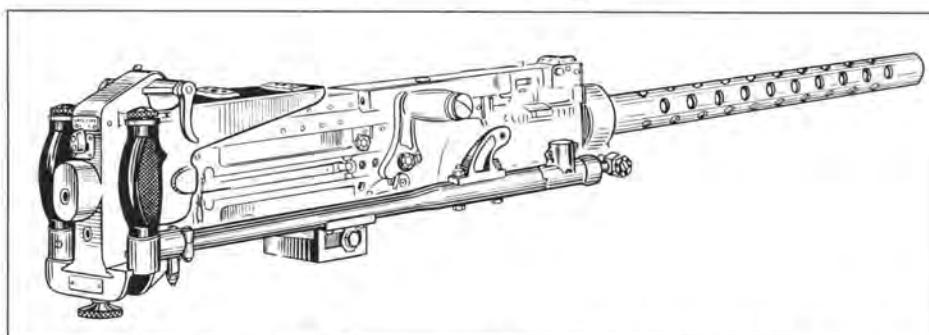
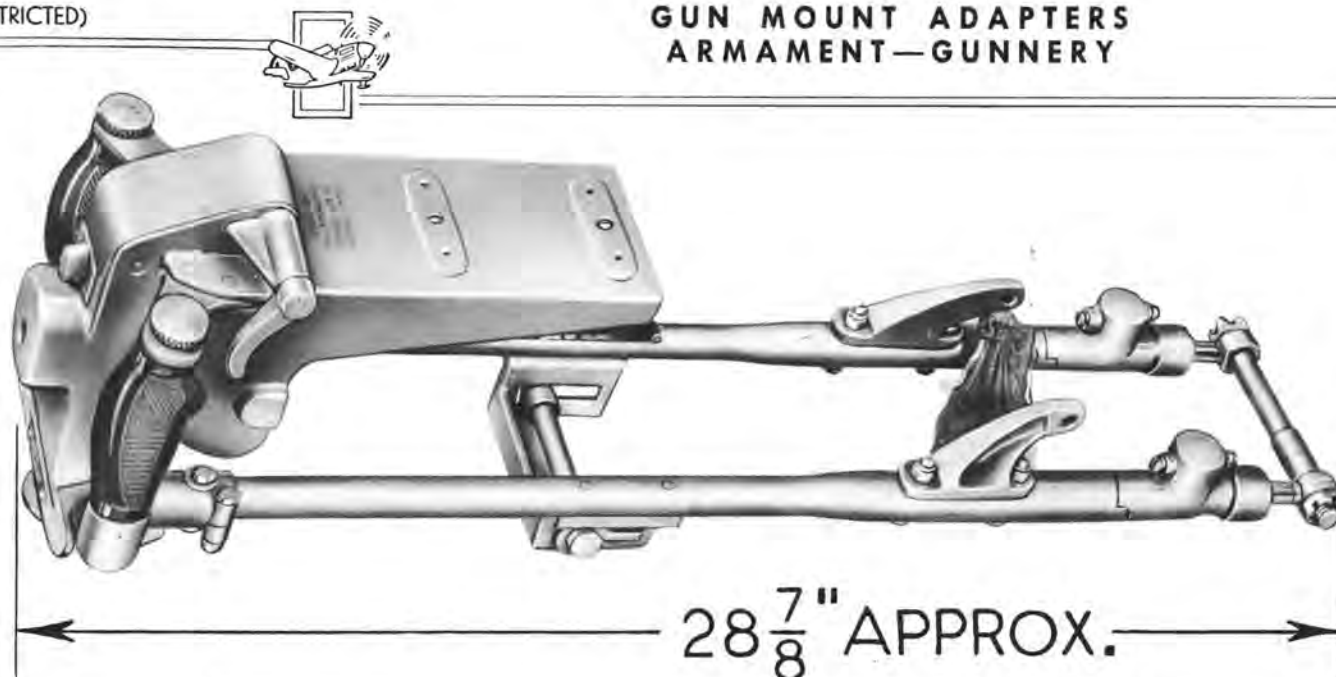
AVIATION ORDNANCE STOCK LIST NUMBER: 1-A-68-95

PROCUREMENT STATUS: Under procurement.

BRITISH

REFERENCE NUMBER: 150J/559

GUN MOUNT ADAPTERS ARMAMENT—GUNNERY



ADAPTER—GUN MOUNT **ARMY TYPE E-5 NAVY MARK 6 MODIFICATION 3**

NAMES: Gun mount adapter .50 caliber M2 machine gun adapter
 Adapter—.50 caliber machine gun—spade grip
 Adapter—gun mount, BAM—.50, M2, flexible, single (Navy)
 Adapter—machine gun (British)

DESCRIPTION: The Army type E-5 gun mount adapter absorbs the recoil shock of a single .50 caliber, M2 machine gun. It consists of a frame, which includes two hydraulic shock absorbers, slide blocks for the rear mount of the gun, a hand-grip assembly, and a removable backplate, which contains the trigger and trigger safety mechanism. The single trigger is operated by the forefinger, and the safety control by the thumb. This safety control is located between the hand-grip supports. Provisions are made for the use of telescopic sights.

CHARACTERISTICS:

Dimensions.....approximately 28 $\frac{7}{8}$ by 5 $\frac{3}{4}$ by 7 $\frac{1}{16}$ inches
 Weight.....approximately 11 pounds 10 ounces

RELATIONSHIP OF PARTS: Used with:

A single .50 caliber M2 machine gun.....A. E. Reference Number 93-1560

ARMY

A. E. REFERENCE NUMBER: 52-875

SPECIFICATIONS:

Detail.....93-24638
 Superseded.....24638

A. A. F. DRAWING NUMBER: 39G5016

TYPE DESIGNATION: E-5

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type E-11 adapter, A. E. Reference Number 52-1300.

SHIPPING DATA: Shipped as a complete unit.

(Continued on page 13)



ADAPTER—GUN MOUNT

(Continued from page 12)

NAVY

TYPE DESIGNATION: Mark 6 Modification 3

BU. ORD. DRAWING NUMBER: 278926

AVIATION ORDNANCE STOCK LIST NUMBER: 1-A-68-13

PUBLICATIONS: O. P. 865; O. H. I. V5-43

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE

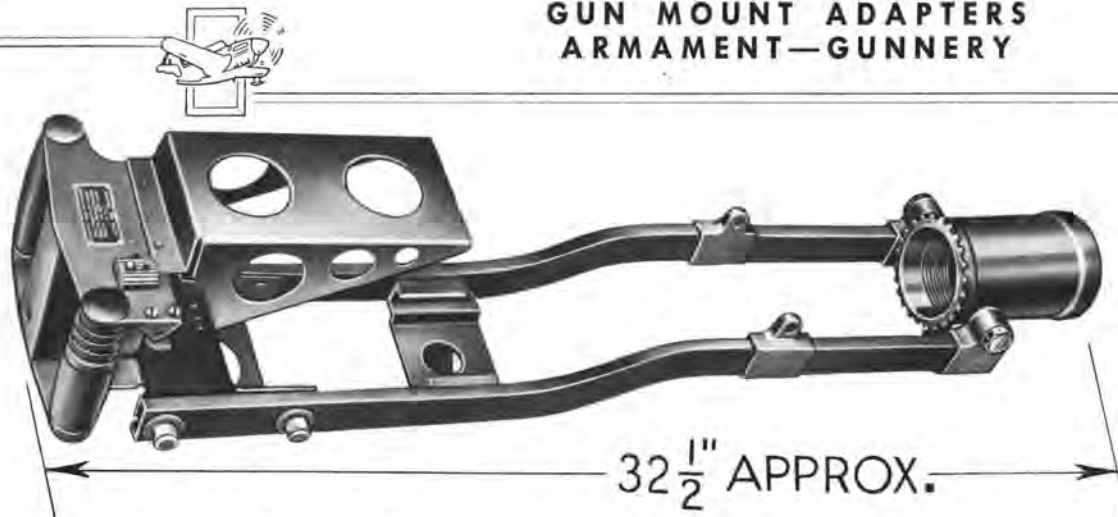
Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Type	Remarks
Bell Aircraft Corporation	GM-32	GM-749-601	A-B	5200005450	11-10-7	150J/11	Army E-5	
	GM-43	GM-749-602	N		11-10-8		Navy Mark 6 Modification 3	The Navy Mark 6 Modification 3 includes a telescopic sight bracket and ammunition box holder.
The John C. Turner Corporation	GM-32A	03-043-012	A-B	5200005560	11-10-7	150J/26	Army E-11	Has two firing triggers.
	*E-11	03-043-012	A-B	5200005560	11-10-7	150J/26	Army E-11	Has two firing triggers.
Edgewater Steel Company	*E-8	DS-6300	A-B	5200005525	11-10-9	150J/21	Army E-8	Interchangeable with Army type E-5 in all applications except ball and socket gun mounts.
	*E-12	DS-6670	A-B	5200005575	11-10-9	150J/24	Army E-12	Has two triggers. Interchangeable with Army type E-5 in all applications except ball and socket gun mounts.
Brunhoff Manufacturing Company	*E-8	DS-6300	A-B	5200005525	11-10-9	150J/21	Army E-8	Interchangeable with Army type E-5 in all applications except ball and socket gun mounts.
	*E-12	DS-6670	A-B	5200005575	11-10-9	150J/24	Army E-12	Has two triggers. Interchangeable with Army type E-5 in all applications except ball and socket gun mounts.

Note: *AAF type.

GUN MOUNT ADAPTERS ARMAMENT—GUNNERY



ADAPTER—GUN MOUNT

ARMY TYPE E-8

NAMES: Gun mount adapter

Adapter—machine gun (British)

.50 caliber M2 machine gun adapter

DESCRIPTION: The Army type E-8 gun mount adapter absorbs the recoil shock of a single .50 caliber, M2 machine gun. It consists of two rectangular tubes bolted to the sides of a type E-10 recoil absorbing gun mount adapter. This adapter eliminates the need for a front trunnion block. The rear support of the gun fastens to a member attached near the rear of the side tubes. The gun and adapter are supported from the airplane structure by a yoke, which is not furnished with the adapter. Above the gun, and fixed to the rear of the tubes, is a gun sight platform, upon which a type C-4 gun sight mount may be installed. The base of the platform carries dual hand grips, a single trigger, and the safety mechanism. A type C-3 ammunition box mount supports a type C-1 ammunition box at the side of the adapter.

CHARACTERISTICS:

Dimensions.....approximately 33 by 7 by 6 $\frac{3}{4}$ inches
Weight.....approximately 16 pounds

RELATIONSHIP OF PARTS: Used with:

A single .50 caliber M2 machine gun.....A. E. Reference Number 93-1560

ARMY

A. E. REFERENCE NUMBER: 52-1100

SPECIFICATIONS:

Detail.....93-24689

Superseded.....24689

A. A. F. DRAWING NUMBER: 41K3650

TYPE DESIGNATION: E-8

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type E-12,

A. E. Reference Number 52-1325.

SHIPPING DATA: Shipped as a complete unit, including the Army type E-10 gun mount adapter.

NAVY

There is no Navy equivalent for the Army item.

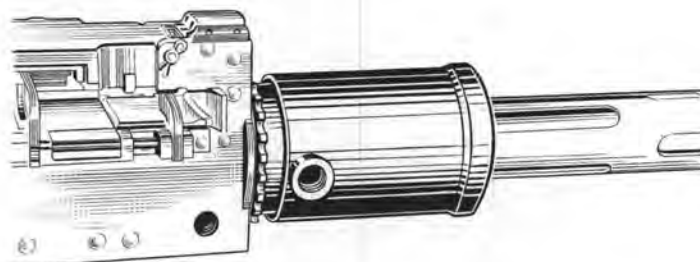
MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Type	Remarks
Brunhoff Manufacturing Company	*E-8	DS-6300	A-B	5200005525	11-10-9	150J/21		
	*E-12	DS-6670	A-B	5200005575	11-10-9	150J/24	Army type E-12	Has two firing triggers.
Edgewater Steel Company	*E-8	DS-6300	A-B	5200005525	11-10-9	150J/21		
	*E-12	DS 6670	A-B	5200005575	11-10-9	150J/24	Army type E-12	Has two firing triggers.
Bell Aircraft Corporation	GM-32	GM749-601	A-B	5200005450	11-10-7	150J/11	Army type E-5	
	GM-43	GM749-602	N		11-10-8		Navy Mark 6	Has telescopic sight bracket and ammunition box holder.
	GM-32A	03-043-012	A-B	5200005560	11-10-7	150J/26	Army type E-11	Has two firing triggers.
The John C. Turner Corporation	*E-11	03-043-012	A-B	5200005560	11-10-7	150J/26	Army type E-11	Has two firing triggers.

Note: *AAF type.



GUN MOUNT ADAPTERS ARMAMENT—GUNNERY



ADAPTER—GUN MOUNT

ARMY TYPE E-10 NAVY MARK 15

NAMES: Gun mount adapter

Adapter—gun mount, BAM—.50 M2, turret type (Navy)

Adapter—machine gun (British)

DESCRIPTION: This gun mount adapter absorbs the recoil shock of a single .50 caliber M2 machine gun. It consists of a housing inclosing a series of ring springs that fit concentrically around an inner sliding shell. This shell is fastened to, and moves with, the gun barrel. After each shot the gun recoil causes the rings to telescope into each other, thus absorbing the energy of recoil and preventing transmission of shocks to the airplane structure.

Two threaded holes on opposite sides of the housing permit attachment of the adapter to a mount or turret gun carriage.

CHARACTERISTICS:

Dimensions.....approximately 5 $\frac{3}{8}$ by 3 $\frac{1}{2}$ by 3 $\frac{1}{2}$ inches
Weight.....approximately 5 $\frac{1}{2}$ pounds

RELATIONSHIP OF PARTS: Used with:

A single .50 caliber M2 machine gun, A. E. Reference Number 93-1560. It is also used as a part of the Army types E-8 and E-12 gun mount adapters, A. E. Reference Numbers 52-1100 and 52-1325.

ARMY

A. E. REFERENCE NUMBER: 52-1200

SPECIFICATIONS:

Detail.....93-24703
Superseded.....24703

A. A. F. DRAWING NUMBER: 41B2679

TYPE DESIGNATION: E-10

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: E-10 (Also known as Mark 15)

BU. ORD. DRAWING NUMBER: Assembly 300200, Installation 328862.

AVIATION ORDNANCE STOCK LIST NUMBER: 1-A-69-35

PUBLICATIONS: O. P. 865; O. T. I. V18-43.

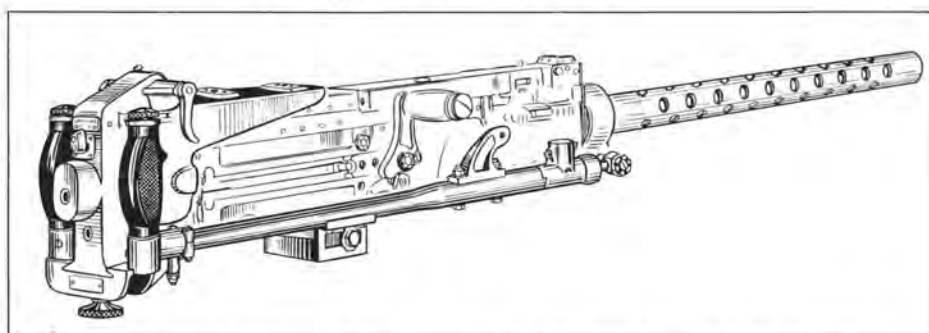
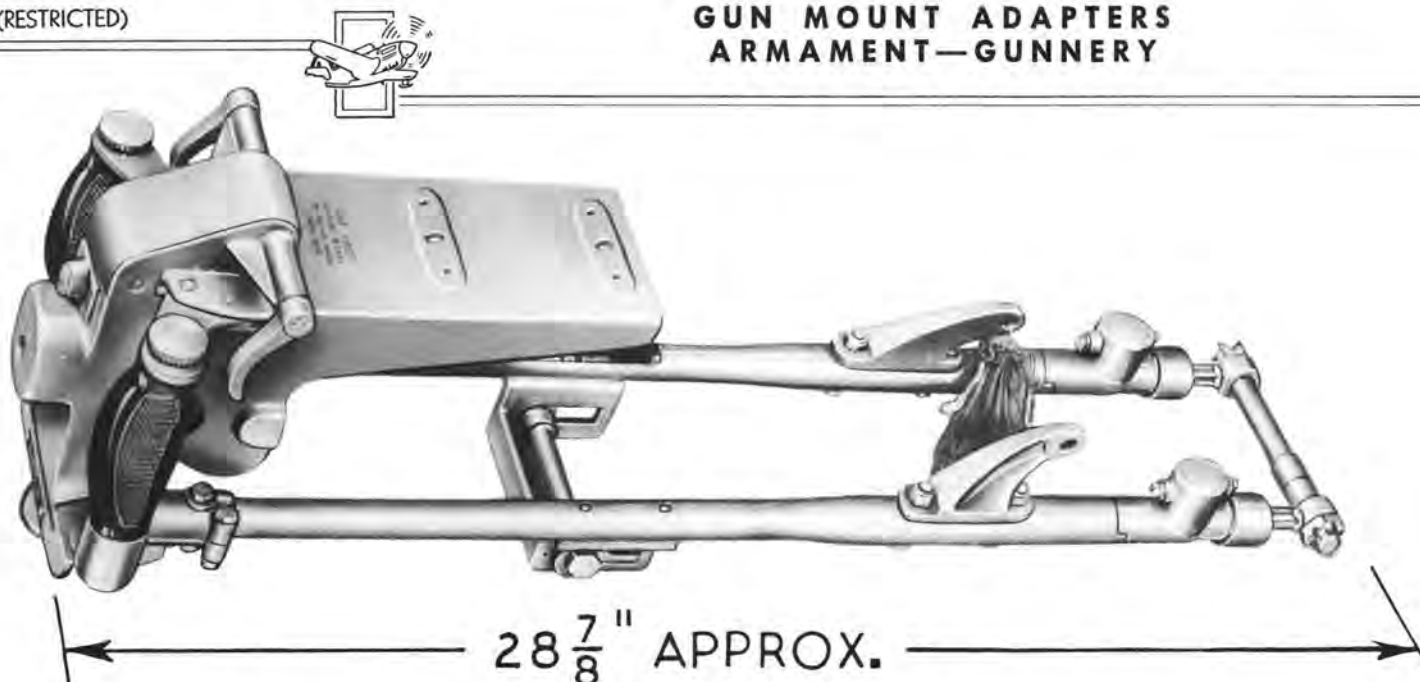
PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Crosley Corporation	*E-10	**41B2679	A-N-B	5200005545	11-10-5	150J/22
Edgewater Steel Company	*E-10	DS-6382	A-N-B	5200005545	11-10-5	150J/22
Metal Specialties Manufacturing Company	*E-10	DS-6382	A-N-B	5200005545	11-10-5	150J/22

Note: *AAF type; **AAF drawing.

GUN MOUNT ADAPTERS ARMAMENT—GUNNERY



ADAPTER—GUN MOUNT **ARMY TYPE E-11 NAVY MARK 6 MODIFICATION 3**

NAMES: Gun mount adapter .50 caliber M2 machine gun adapter
Adapter—gun mount, BAM—.50, M2, flexible, single (Navy)
Adapter—gun mount trigger backplate
Adapter—machine gun (British)

DESCRIPTION: This gun mount adapter absorbs the recoil shock of a single .50 caliber, M2 machine gun. It consists of a frame, which includes two hydraulic shock absorbers, slide blocks for the rear mount of the gun, a hand-grip assembly, and a removable backplate. The backplate contains two triggers and the trigger safety mechanism. The triggers are operated by the forefingers of both hands, or of either hand. The safety control is located between the hand-grip supports, and can be actuated by either thumb.

CHARACTERISTICS:

Dimensions..... approximately 28 $\frac{1}{8}$ by 6 $\frac{7}{8}$ by 6 $\frac{3}{8}$ inches
Weight..... approximately 11 pounds 10 ounces

RELATIONSHIP OF PARTS: Used with:

A single .50 caliber M2 machine gun..... A. E. Reference Number 93-1560

ARMY

A. E. REFERENCE NUMBER: 52-1300

SPECIFICATIONS:

Detail..... 93-24730
Superseded..... 24730

A. A. F. DRAWING NUMBER: S42D5223

TYPE DESIGNATION: E-11

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

(Continued on page 17)



ADAPTER—GUN MOUNT

(Continued from page 16)

NAVY

TYPE DESIGNATION: Mark 6 Modification 3

BU. ORD. DRAWING NUMBER: 278292

AVIATION ORDNANCE STOCK LIST NUMBER: 1-A-68-13

PUBLICATIONS: O. P. 865; O. H. I. V5-43.

PROCUREMENT STATUS: Under procurement.

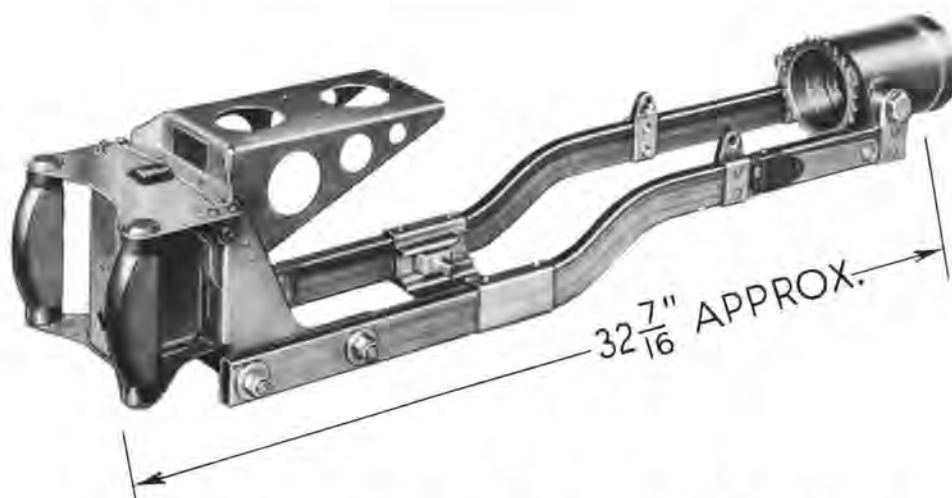
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Type	Remarks
Bell Aircraft Corporation	GM-32A	03-043-012	A-B	5200005560	11-10-7	150J/26	Army E-11	
	GM-43	GM749-602	N		11-10-8		Navy Mark 6 Modification 3	Has a telescopic sight bracket and ammunition box holder.
	GM-32	GM749-601	A-B	5200005450	11-10-7	150J/11	Army E-5	Has one firing trigger.
The John C. Turner Corporation	*E-11	03-043-012	A-B	5200005560	11-10-7	150J/26	Army E-11	
Brunhoff Manufacturing Company	*E-8	DS-6300	A-B	5200005525	11-10-9	150J/21	Army E-8	Has one firing trigger.
	*E-12	DS-6670	A-B	5200005575	11-10-9	150J/24	Army E-12	
Edgewater Steel Company	*E-8	DS-6300	A-B	5200005525	11-10-9	150J/21	Army E-8	Has one firing trigger.
	*E-12	DS-6670	A-B	5200005575	11-10-9	150J/24	Army E-12	

Note: *AAF type.



GUN MOUNT ADAPTERS ARMAMENT—GUNNERY



ADAPTER—GUN MOUNT ARMY TYPE E-12

NAMES: Gun mount adapter
Adapter—machine gun (British)

DESCRIPTION: The Army type E-12 gun mount adapter absorbs the recoil shock of a single .50 caliber, M2 machine gun. It consists of two rectangular tubes bolted to the sides of a type E-10 recoil absorbing gun mount adapter. This adapter eliminates the need for a front trunnion block. The rear support of the gun fastens to a member attached near the rear of the side tubes. The gun and adapter are supported from the airplane structure by a yoke, which is not furnished with the adapter. Above the gun, and fixed to the rear of the tubes, is a gun sight platform, upon which a type C-4 gun sight mount may be installed. The base of the platform carries dual hand grips, dual triggers, and the safety mechanism. A type C-3 ammunition box mount supports a type C-1 ammunition box at the side of the adapter.

CHARACTERISTICS:

Dimensions.....approximately 33 by 7 by 6 $\frac{3}{4}$ inches
Weight.....approximately 16 pounds

RELATIONSHIP OF PARTS: Used with;

A single .50 caliber M2 machine gun.....A. E. Reference Number 93-1560

ARMY

A. E. REFERENCE NUMBER: 52-1325

SPECIFICATIONS:

Detail.....93-24752
Superseded.....24752

A. A. F. DRAWING NUMBER: 42K6978.

TYPE DESIGNATION: E-12

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, including the Army type E-10 gun mount adapter.

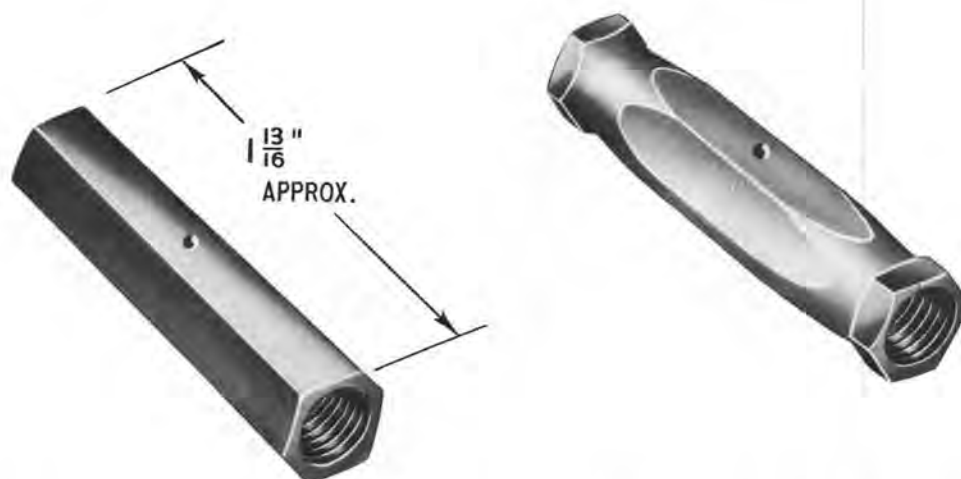
NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Type	Remarks
Edgewater Steel Company	*E-12	DS-6670	A-B	5200005575	11-10-9	150J/24		
	*E-8	DS-6300	A-B	5200005525	11-10-9	150J/21	Army type E-8	Has one firing trigger.
Brunhoff Manufacturing Company	*E-12	DS-6670	A-B	5200005575	11-10-9	150J/24		
	*E-8	DS-6300	A-B	5200005525	11-10-9	150J/21	Army type E-8	Has one firing trigger.
Bell Aircraft Corporation	GM-32	GM749-601	A-B	5200005450	11-10-7	150J/11	Army type E-5	Has one firing trigger.
	GM-32A	03-043-012	A-B	5200005560	11-10-7	150J/26	Army type E-11	
	GM-43	GM749-602	N-B		11-10-8	150J/11	Navy Mark 6, Modification 3	Has a telescopic sight bracket and ammunition box holder.
The John C. Turner Corporation	E-11	03-043-012	A-B	5200005560	11-10-7	150J/26		

Note: *AAF type.



BARREL—GUN CHARGING TURNBUCKLE

NAMES: Gun charging turnbuckle barrel
 Barrel—gun charging control turnbuckle
 Turnbuckle barrel

DESCRIPTION: This steel turnbuckle barrel is used to adjust the tension of the charging cable for a remotely placed .30 caliber M2 machine gun. It has a right and a left hand thread in opposite ends of the barrel. The rod that fits into the charging slide of a type B-5 charging handle is screwed into the right hand thread, and a clevis, carrying the charging cable, screws into the other end.

CHARACTERISTICS:

Dimensions.....	approximately $1\frac{13}{16}$ by $\frac{7}{16}$ by $\frac{7}{16}$ inches
Weight.....	approximately 3 ounces
Right hand thread.....	$\frac{5}{16}$ —24 NF—3
Left hand thread.....	$\frac{1}{4}$ —28 NF—3

RELATIONSHIP OF PARTS: Used with:
 Army type B-5 gun charging handle.

ARMY

A. E. REFERENCE NUMBER: 52-1400
 MANUFACTURER: Gray Laboratory Manufacturing Company.
 A. A. F. DRAWING NUMBER: 31-808
 A. S. C. STOCK NUMBER: 5200043000
 PRODUCTION STATUS: Not under procurement for initial installation.
 SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



BOLT AND BRACKET—GUN TRUNNION

ARMY TYPE A-3 NAVY—SEE BELOW

NAMES: Gun trunnion bolt and bracket

Bolt and bracket assembly—gun trunnion

Bolt, trunnion, BAM—.30 and .50 caliber M2 (Navy)

DESCRIPTION: The Army type A-3 gun trunnion bolt and bracket is used with either a .30 or .50 caliber M2 machine gun. It consists of a U-shaped bracket and bolt for connecting the forward mounting trunnion of the gun to the mounting post in the airplane. The entire unit can be removed from the mounting post by turning a knurled collar on the bracket.

CHARACTERISTICS:

Dimensions.....approximately 4 by 2½ by 2½ inches

Weight.....approximately 1 pound 3 ounces

RELATIONSHIP OF PARTS: Used with:

Single .30 or .50 caliber M2 machine gun.....A. E. Reference Numbers 93-1420 or 93-1560

ARMY

A. E. REFERENCE NUMBER: 52-1450

SPECIFICATIONS:

Detail.....93-24596

A. A. F. DRAWING NUMBER: 32B1644 (Supersedes Army drawing number H32D3819)

TYPE DESIGNATION: A-3

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: A-3

BU. ORD. DRAWING NUMBER: 167348

AVIATION ORDNANCE STOCK LIST NUMBER: 1-B-4536

ORDNANCE PAMPHLET: 865

PROCUREMENT STATUS: Under procurement.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Crosley Corporation	*A-3	**32B1644	A-N-B	5200075000	150J/596
Aerial Machine and Tool Company	*A-3	**32B1644	A-N-B	5200075000	150J/596
Taco Heater Corporation	Mark 1		N		
Appliance Manufacturing Company	Mark 1		N		

Note: *AAF type; **AAF drawing.



AMMUNITION BOXES ARMAMENT—GUNNERY

BOX—AMMUNITION

ARMY TYPE L-4 NAVY TYPE L-4

NAMES: Ammunition box
Magazine (Navy)
.30 caliber ammunition box

DESCRIPTION: The type L-4 ammunition box is a rectangular metal box, with a capacity of 100 rounds of .30 caliber ammunition in a metallic link belt. It is secured to the gun mount adapter by a type A-1 ammunition box holder. The edge of the box has a curved lip, which prevents the ammunition belt from catching during firing.

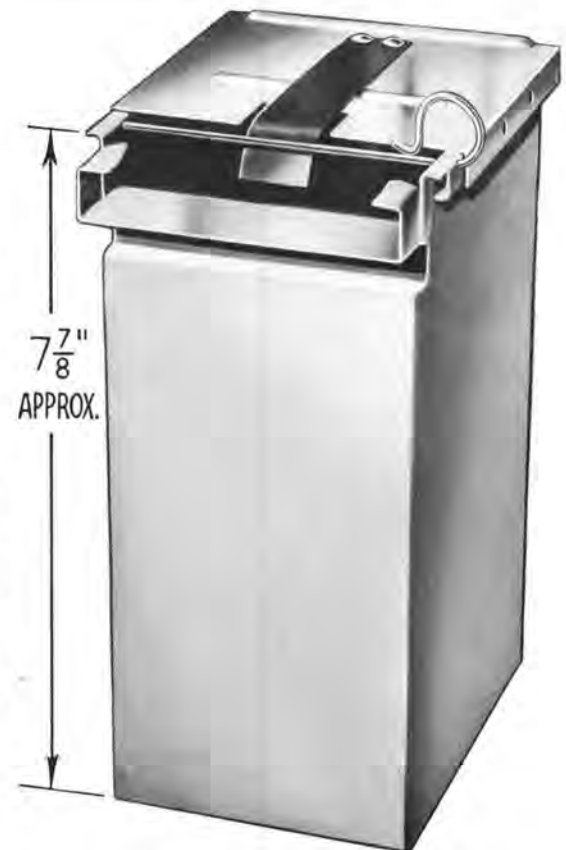
Initial feeding of the ammunition belt into the gun is accomplished by sliding the box cover toward the gun.

CHARACTERISTICS:

Dimensions: approximately 8½ by 4½ by 5 inches
Weight: approximately 1½ pounds

RELATIONSHIP OF PARTS: Used with:

Army type A-1 ammunition box holder A. E. Reference Number 52-2800



ARMY

A. E. REFERENCE NUMBER: 52-1500

SPECIFICATIONS:

Detail 93-24653
Superseded 24653

A. A. F. DRAWING NUMBER: 30-616

TYPE DESIGNATION: L-4

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type L-7, ammunition box, A. E. Reference Number 52-1550.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION:	Mark 1	Mark 7	L-4
BU. ORD. DRAWING NUMBERS:	Assembly 178456	Installation 300526	Assembly 294272
AVIATION ORDNANCE STOCK LIST NUMBER:	1-M-176	865	1-M-176-20
ORDNANCE PAMPHLET NUMBER:	Not Under Procurement	Under Procurement	None
PROCUREMENT STATUS:	Not Under Procurement	Under Procurement	None
NOTE:	Navy Mark 1 and L-4 are Identical.		

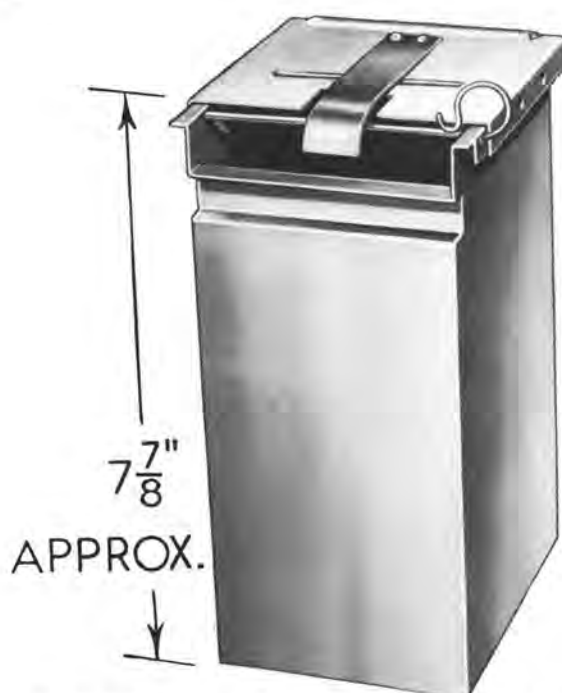
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Geuder, Paeschke and Frey, Company	*L-4	**36-6108	A-N-B	5200090300	150J/575	Has ⅝ inch feed lip.
Pittsburgh-Dubois Company	*L-4	**30-616	A-N-B	5200090300	150J/575	Has ⅝ inch feed lip.
	‡Mark 1	‡‡178456	N			Has ⅝ inch feed lip.
	‡Mark 7	‡‡294272	N			*
Brunhoff Manufacturing Company	*L-7	**42D6859	A-B	5200090500	150J/597	

Note: *AAF type; **AAF drawing; ‡Bu. Ord. type; ‡‡Bu. Ord. drawing.



AMMUNITION BOXES ARMAMENT—GUNNERY



BOX—AMMUNITION
ARMY TYPE L-7

NAMES: Ammunition box
.30 caliber ammunition box
Magazine

DESCRIPTION: The Army type L-7 ammunition box is a rectangular metal box, with a capacity of 100 rounds of .30 caliber ammunition in a metallic link belt. It is identical with the type L-4 ammunition box, except that the type L-7 has a rolled edge instead of a bent lip. The top of the box is removable for loading the ammunition.

This box fits into an ammunition box holder secured to the gun mount adapter.

CHARACTERISTICS:

Dimensions.....approximately 8 $\frac{3}{8}$ by 4 $\frac{1}{2}$ by 4 $\frac{3}{8}$ inches
Weight.....approximately 1 $\frac{1}{2}$ pounds

RELATIONSHIP OF PARTS: Used with:

Army type A-1 ammunition box holder.....A. E. Reference Number 52-2800

ARMY

A. E. REFERENCE NUMBER: 52-1550

SPECIFICATIONS:

Detail.....93-24750
Superseded.....24750

A. A. F. DRAWING NUMBER: 42D6859

TYPE DESIGNATION: L-7

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Brunhoff Manufacturing Company	*L-7	**42D6859	A-B	5200090500	150J/597	
Geuder, Paeschke, and Frey, Inc.	*L-4	**36-6108	A-B	5200090300	150J/575	Has $\frac{5}{8}$ inch feed lip
Pittsburgh-Dubois Company	*L-4	**30-616	A-B	5200090300	150J/575	Has $\frac{5}{8}$ inch feed lip
	*L-4	††155316	N			Has $\frac{5}{8}$ inch feed lip
	†Mark 1	††178456	N			Has $\frac{5}{8}$ inch feed lip
	†Mark 7	††294272	N			

Note: *AAF type; **AAF drawing; †Bu. Ord. type; ††Bu. Ord. drawing.



BOX—AMMUNITION ARMY TYPE O-1

NAMES: Ammunition box
Box—ammunition .50 caliber

DESCRIPTION: The Army type O-1 ammunition box is a rectangular metal box, with a capacity of 30 rounds of .50 caliber ammunition in a metallic link belt. It is secured to the gun mount adapter by an ammunition box mount. The edge of the box has a curved lip, to insure smooth feed and to prevent the ammunition belt from catching during firing. The top is removable for loading. While the gun is firing, a flat spring on one side of the box engages the rear of each shell before it enters the gun. This prevents the ammunition from getting out of line, due to vibration, and from slipping back into the box. A tubular grip attached to the cover assists in handling the box during initial feeding of the belt into the gun.



CHARACTERISTICS:

Dimensions.....approximately 10 by 6 by 4 $\frac{5}{8}$ inches
Weight.....approximately 2 $\frac{1}{2}$ pounds

RELATIONSHIP OF PARTS: Used with:

Army type C-3 ammunition box mount, A. E. Reference Numbers 52-3350 or 52-3360. When installed on Army type E-8 gun mount adapter, A. E. Reference Number 52-1100.
Army type C-2 ammunition box mount, A. E. Reference Numbers 52-3200 or 52-3300. When installed on Army type E-11 gun mount adapter, A. E. Reference Number 52-1300.

ARMY

A. E. REFERENCE NUMBER: 52-1600

SPECIFICATIONS:

Detail.....93-24673
Superseded.....24673

MANUFACTURER: Brunhoff Manufacturing Company.

A. A. F. DRAWING NUMBER: 35D3891

TYPE DESIGNATION: O-1

A. S. C. STOCK NUMBER: 5200090900

PRODUCTION STATUS: Under procurement.

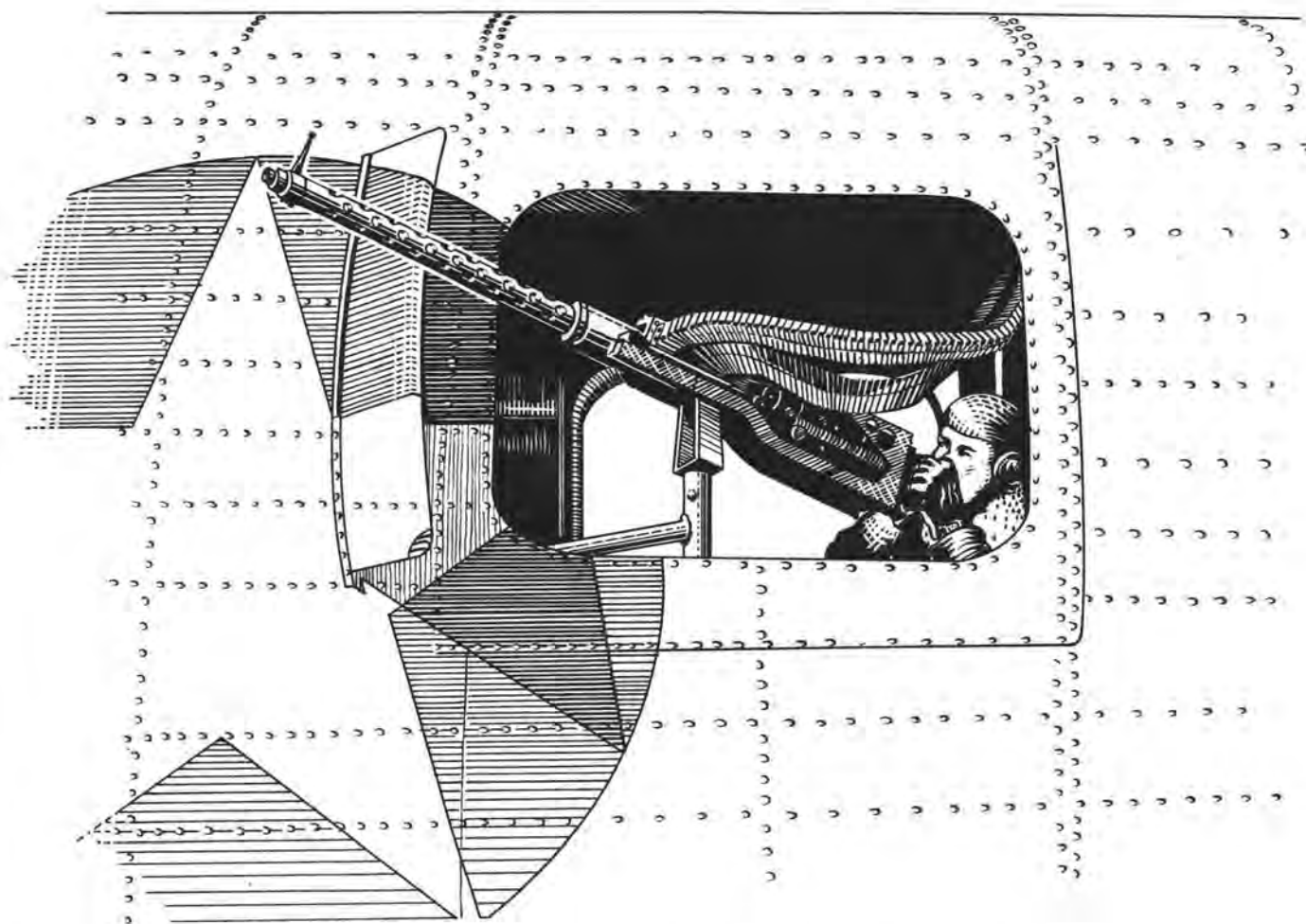
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 150J/578



FLEXIBLE FEED CHUTES

Flexible feed chutes are used to keep the cartridge belt from catching as it travels from the ammunition box to the gun, and to prevent cartridges from twisting and causing a jam. Chutes enable ammunition boxes of large carrying capacity to be located at some distance from the machine guns. This allows placement of guns in positions on the airplane where limited space prevents normal installation.

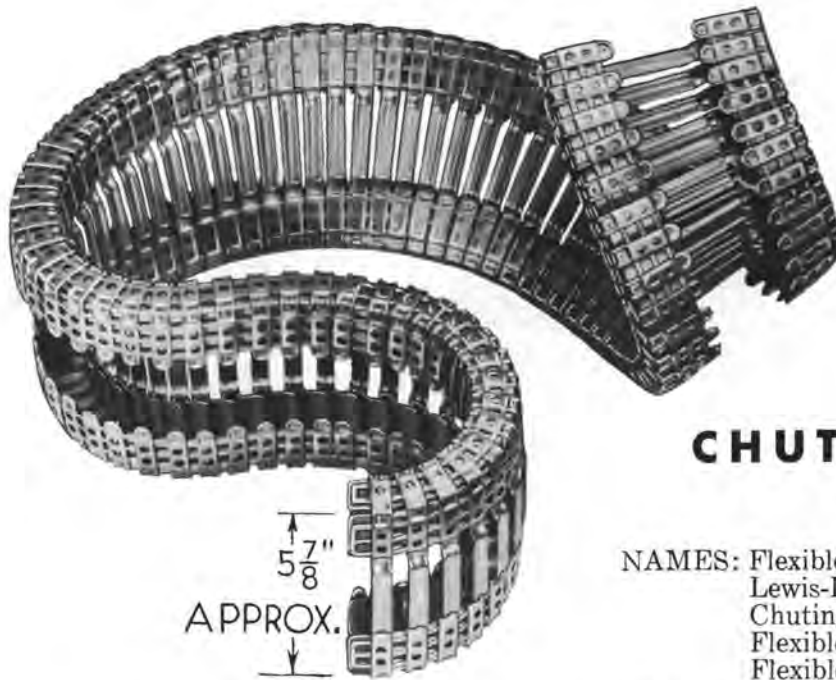
Interlocked metal stampings, shaped to support and direct the cartridge belt, comprise the chute. At both ends of the chute are adapters, one for the gun, the other for the ammunition box.

The length of flexible chuting, when compressed, is about forty per cent less than when extended; length of chuting is measured when extended.

Flexible feed chutes have been supplied in two general types, separable and permanent. The permanent type chute is composed of a series of links which are spot-welded together to form a permanent flexible chute. The separable type chute is composed of links which are held together by spring action and may be separated by a special tool which releases the spring tension. The separable type chute has superseded the permanent type chute for all initial installations.



FLEXIBLE FEED CHUTES ARMAMENT—GUNNERY



CHUTE—FLEXIBLE FEED LEWIS-LARSON TYPE B

NAMES: Flexible feed chute
Lewis-Larson flexible chuting
Chuting assembly—flexible ammunition .50 cal.
Flexible ammunition chute
Flexible feed chuting

DESCRIPTION: The Lewis-Larson type B flexible feed chute is a separable feed chute, for use with M2 .50 caliber machine guns. This type is supplied in various lengths as ordered, but must be equipped with a box end and gun end adapter before it is ready for use.

CHARACTERISTICS: Dimensions (less adapters):

Width.....	approximately 5 ⁷ / ₈ inches
Height.....	approximately 1 ¹ / ₄ inches
Length.....	must be specified when ordering
Weight.....	approximately ³ / ₄ pound per foot of length

RELATIONSHIP OF PARTS: Used with:

Army type L-1 (Lewis-Larson type G-1) gun end adapter, A. E. Reference Number 52-1723, and
Army type L-2 (Lewis-Larson type M-3) Box end adapter, A. E. Reference Number 52-1724.

ARMY

A. E. REFERENCE NUMBER: 52-1722

SPECIFICATIONS:

Detail.....24850

A. A. F. DRAWING NUMBER: 43A20364

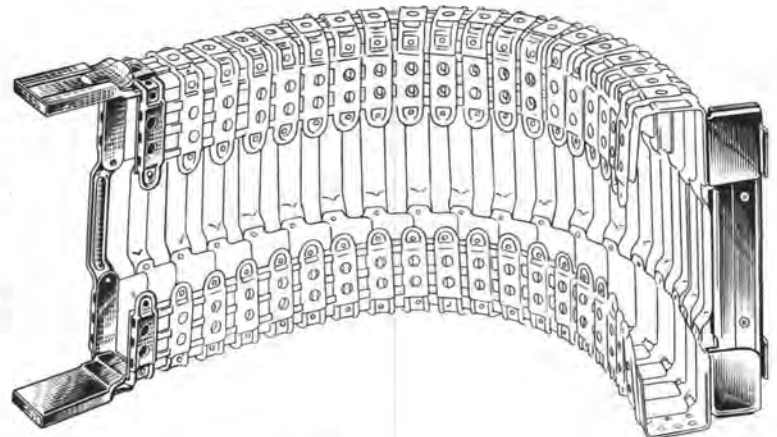
TYPE DESIGNATION: None (Procured as manufacturer's type B).

A. S. C. STOCK NUMBER: Refer to chart.
PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit in 15, 25, or 50 foot lengths as ordered.

NAVY

The Navy is presently procuring this item from the Army.



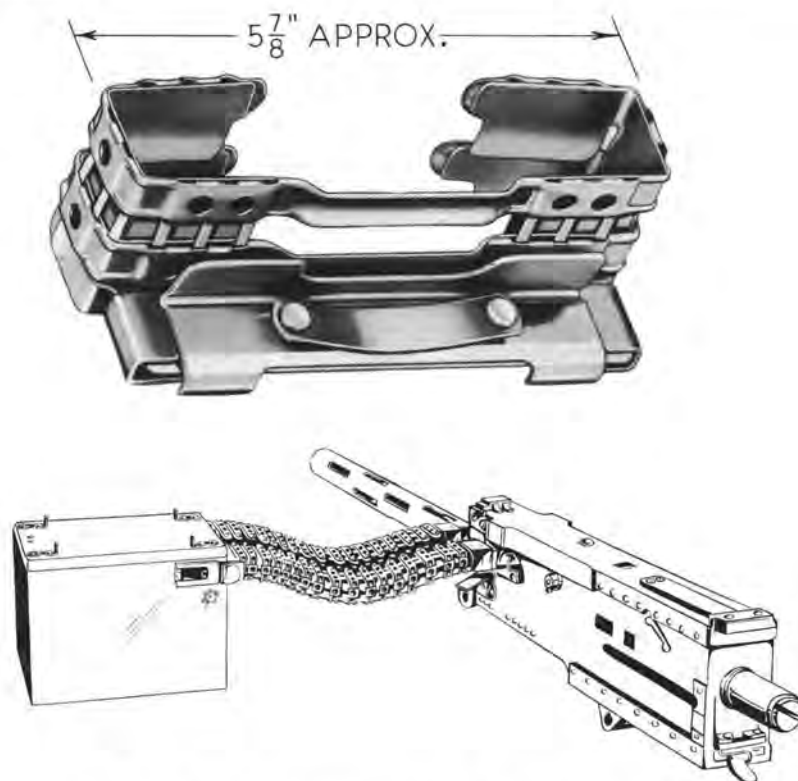
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Brunhoff Manufacturing Company	LLB50	105A40	A-N-B	5200177125	150J/776
Smoot-Holman Company	LLB50	105A40	A-N-B	5200177125	150J/776

NOTE: The Lewis-Larson model LLB50 supersedes, and is interchangeable with, flexible ammunition chuting assemblies A. E. Reference Numbers 52-1730, 52-1750, 52-1760, 52-1770, 52-1790, 52-1800, and 52-1810. When replacing any of these assemblies, one gun end adapter, A. E. Reference Number 52-1723, and one box end adapter, A. E. Reference Number 52-1724, must be supplied for each installation.



FLEXIBLE FEED CHUTES ARMAMENT—GUNNERY



ADAPTER—GUN END ARMY TYPE L-1

NAMES: Gun End Adapter
Gun Feedway Adapter
Flexible Feed Chute Adapter

DESCRIPTION: The Army type L-1 gun end adapter is used to connect the flexible feed chute to the gun in such a manner that the function of the chute is not impaired. It is attached to the M2, .50 caliber machine gun by means of the Army type C-2 or C-3 ammunition box mount, and may be quickly attached or removed from this mount by releasing a spring-held latch which forms a part of the adapter.

CHARACTERISTICS:

Weight.....approximately $\frac{1}{4}$ pound.
Dimension.....approximately $2\frac{7}{16}$ by $5\frac{7}{8}$ by $1\frac{1}{2}$ inches.

RELATIONSHIP OF PARTS: Used with:

Army type L-2 box end adapter, A. E. Reference Number 52-1724, and Lewis-Larson type B flexible feed chute, A. E. Reference Number 52-1722.

ARMY

A. E. REFERENCE NUMBER: 52-1723

SPECIFICATIONS:

Detail.....24875

AN OR A. A. F. DRAWING NUMBER: 43A20362

TYPE DESIGNATION: L-1

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

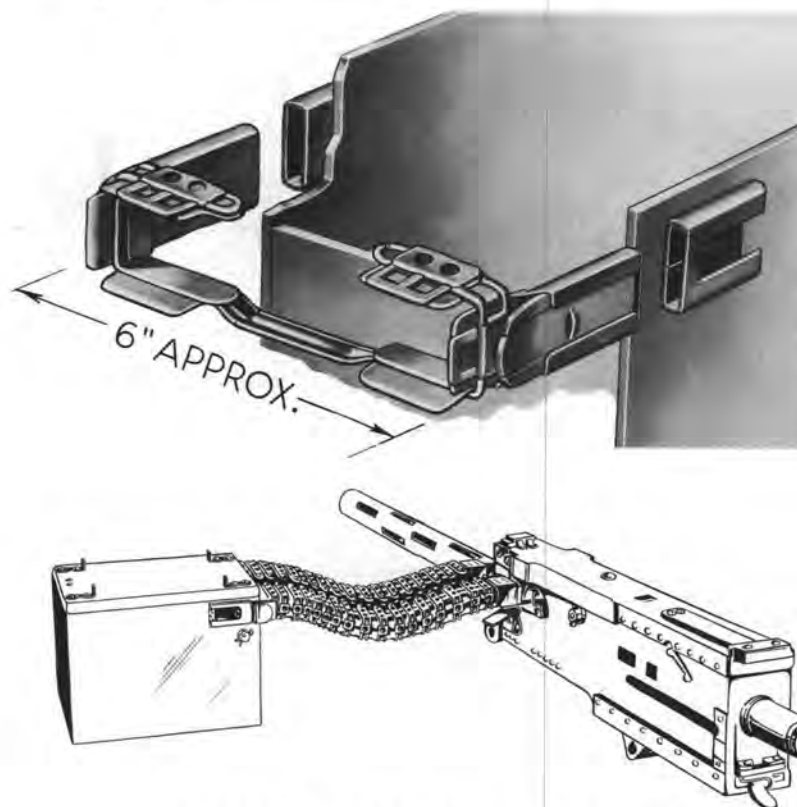
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Smoot-Holman Company	G-1	105A12	A-B	5200001775	150J/782
Brunhoff Mfg. Company	G-1	105A12	A-B	5200001775	150J/782



ADAPTER—BOX END **ARMY TYPE L-2**

NAMES: Box end adapter
Box feedway adapter
Flexible feed chute adapter

DESCRIPTION: The Army type L-2 box end adapter is used to provide a quickly detachable means of connecting the flexible feed chute to a .50 caliber ammunition box. This adapter is supplied in three parts: one reinforced chute link with a bayonet connector at each end, and two channel connectors. The chute link is attached to, and becomes a part of, the flexible feed chute, and the two channel connectors are welded to the ammunition box.

CHARACTERISTICS:

Dimensions.....approximately 1¼ by 6 by 3 inches.
Weight.....approximately ¼ pound.

RELATIONSHIP OF PARTS: Used with:

Army type L-1 gun end adapter, A. E. Reference Number 52-1723, and Lewis-Larson type B flexible feed chute, A. E. Reference Number 52-1722.

ARMY

A. E. REFERENCE NUMBER: 52-1724

SPECIFICATIONS:

Detail.....24876

A. A. F. DRAWING NUMBER: 43A20361

TYPE DESIGNATION: L-2

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

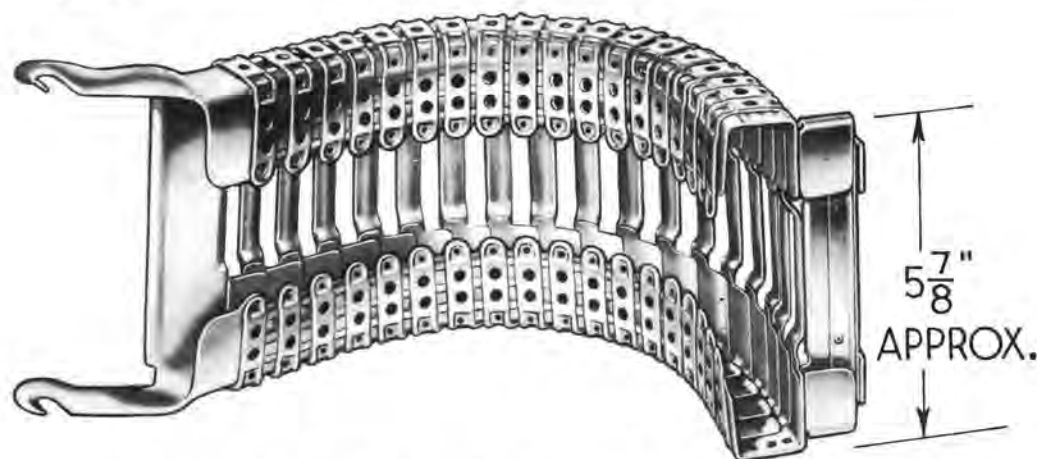
NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Smoot-Holman Company	M-3	105A24	A-B	5200001785	150J/783
Brunhoff Mfg. Company	M-3	105A24	A-B	5200001785	150J/783

FLEXIBLE FEED CHUTES ARMAMENT—GUNNERY



CHUTE—FLEXIBLE FEED

LEWIS-LARSON TYPE A HUGHES AIRCRAFT PART NO. 32968

NAMES: Flexible feed chute

Chuting assembly—flexible ammunition .50 cal.

Flexible ammunition chute

Flexible feed chuting

DESCRIPTION: This flexible feed chute is a permanent type feed chute for use with .50 caliber M2 machine guns. This type was supplied in definite lengths, and was equipped with a gun end and box end adapter. Chutes of different manufacture are interchangeable for a definite length, provided the adapters are identical.

CHARACTERISTICS:

Height.....approximately 5⁷/₈ inches.

Width.....approximately 1¹/₂ inches.

Weight (less adapters).....approximately ³/₄ pound per foot of length.

Weight of adapters.....approximately ¹/₄ pound each.

RELATIONSHIP OF PARTS: Used with:

Army type C-2 ammunition box mount, A. E. Reference Numbers 52-3200 and 52-3300; or Army type C-3 ammunition box mount, A. E. Reference Numbers 52-3350 and 52-3360.

ARMY

A. E. REFERENCE NUMBER: Refer to chart.

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Lewis-Larson type B, A. E. Reference Number 52-1722.

SHIPPING DATA: Shipped as a complete unit, including gun end and box end adapters.

NAVY

The Navy uses this item on airplanes procured from the Army.

The following chart is a list of permanent type flexible feed chutes, formerly procured by the Army. All models listed below have been superseded by separable chute type B, A. E. Reference Number 52-1722, for initial installation.

A-Army, N-Navy, B-British

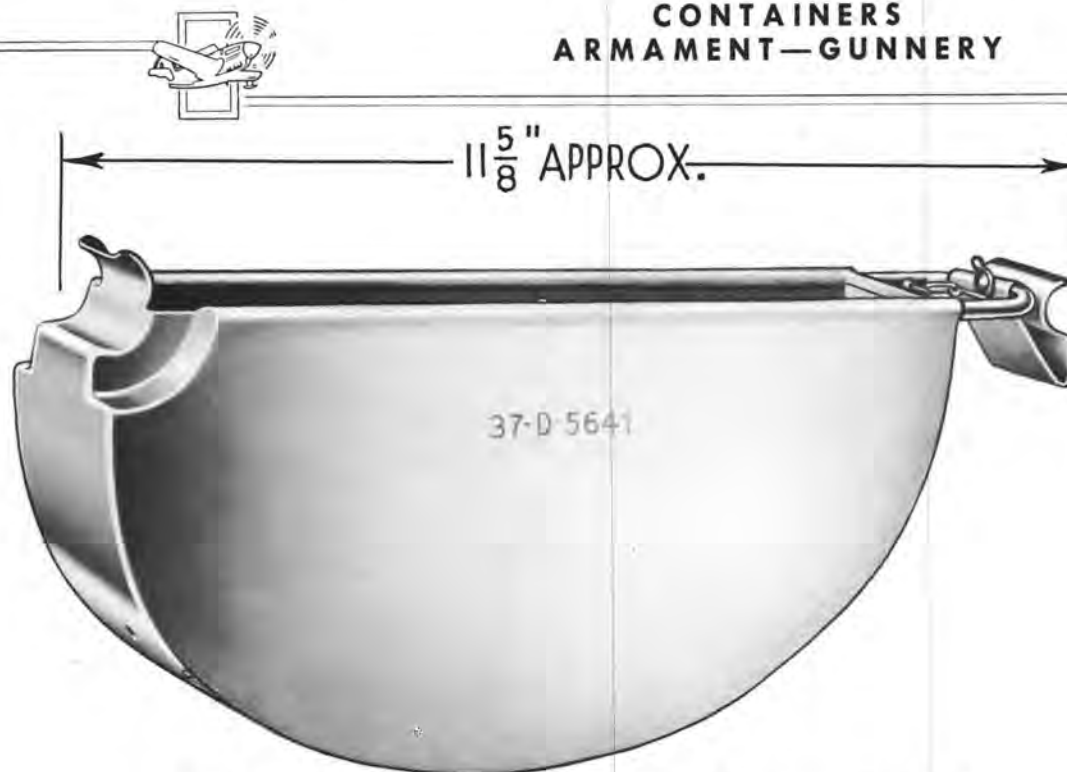
Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Length In Inches	A. E. Reference Number	British Reference Number
Smoot-Holman Company and Brunhoff Manufacturing Company	LLA50-M1-G1-15	105B1	A-B	5200174506-8	15	52-1730	150J 756
	LLA50-M1-G1-29	105B1	A-B	5200174506-82	29	52-1750	150J 757
	LLA50-M1-G1-36	105B1	A-B	5200174506-84	36	52-1760	150J 758
	LLA50-M1-G1-48	105B1	A-B	5200174506-86	48	52-1770	150J 759
	LLA50-M1-G1-66	105B1	A-B	5200174506-884	66	52-1790	150J 760
	LLA50-M1-G1-85	105B1	A		85	52-1800	None
	LLA50-M1-G1-103	105B1	A-B	5200174506-888	103	52-1810	150J 761
Hughes Aircraft Company	32968-150	32968	A-B	5200174506-5	15	52-1730	150J 756
	32968-360	32968	A-B	5200174506-55	36	52-1760	150J 758
	32968-650	32968	A-B	5200174506-555	65 or 66	52-1790	150J 760

NOTE: Smoot-Holman Company and Brunhoff Manufacturing Company manufacture their chutes in accordance with Lewis-Larson Company drawings and model designation. The model identification serves as a code to the chute required.

EXAMPLE: LLA50-M1-G1-15 specifies Lewis-Larson—type A (permanent)—.50 caliber—M1-box end adapter—G1 gun end adapter—15 inch length.

Hughes Aircraft Company manufacture their chutes in accordance with Hughes drawing number 32968, and their model designation was represented by the drawing number, a dash and the length in inches, with the last digit signifying the fraction of inches in eighths, if any. The adapters for this chute were specified on Army Air Forces Contracts when ordered.

EXAMPLE: 32968-150 signifies drawing number—15 inches, and 0 eights of an inch in length.



CONTAINER—EJECTED CASE

ARMY TYPE A-4

NAMES: Ejected case container
Container, ejected case, BAM—.30, M2
Container—case ejection
Case ejection container

DESCRIPTION: The Army type A-4 ejected case container is used with a single .30 caliber, M2 machine gun installed on an Army type C-12 gun mount adapter. After being fired, the empty cartridge cases are ejected from the gun into the container. The container is of sheet metal, semi-circular in shape, and has a capacity of about 100 ejected cartridge cases. It is removable for emptying.

CHARACTERISTICS:

Dimensions.....approximately 11 $\frac{5}{8}$ by 5 $\frac{1}{2}$ by 2 $\frac{3}{8}$ inches.
Weight.....approximately 1 pound 6 ounces.
Capacity.....approximately one hundred .30 caliber cartridge cases.

RELATIONSHIP OF PARTS: Used with:

A single .30 caliber M2 machine gun A. E. Reference Number 93-1520 mounted on an Army type C-12 adapter, A. E. Reference Number 52-500.

ARMY

A. E. REFERENCE NUMBER: 52-1950

SPECIFICATIONS:

Detail.....93-24604
Superseded.....24604

A. A. F. DRAWING NUMBER: 37D5641 (Supersedes H38D6421)

TYPE DESIGNATION: A-4

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-5 ejected case container, A. E. Reference Number 52-2000.

NAVY

There is no Navy equivalent for the Army item.

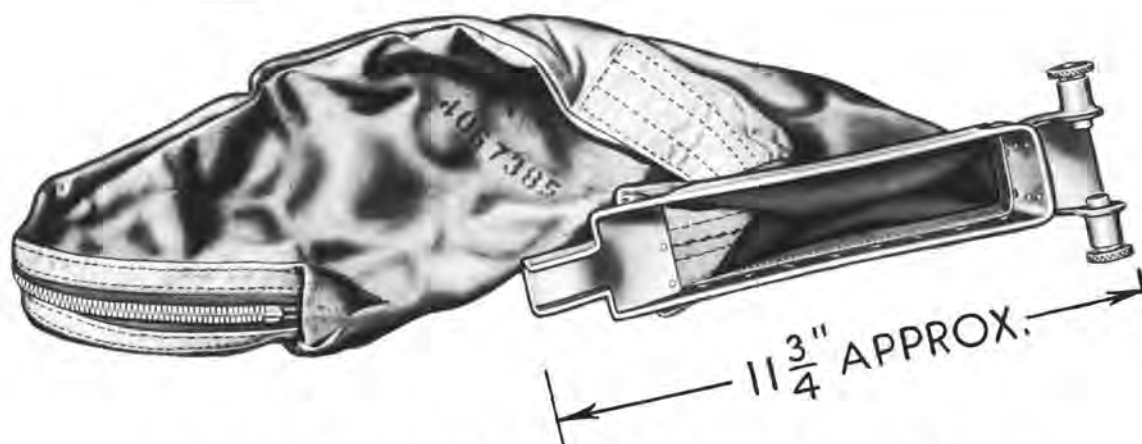
MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Dayton Manufacturing Company	*A-4	**37D5641	A-B	5200211900	150J/579	
	*A-5	**40G7385	A-B	5200211920	150J/751	Has canvas holder for 400 .30 caliber ejected cartridge cases.

Note: *AAF type; **AAF drawing.

CONTAINERS ARMAMENT—GUNNERY



CONTAINER—EJECTED CASE ARMY TYPE A-5

NAMES: Ejected case container
Case ejection container
Container—ejection case

DESCRIPTION: The Army type A-5 ejected case container is used with any single .30 caliber, M2 machine gun. It has a metal top, equipped with ends which are designed for quick attachment to the underside of the gun by means of two studs. After being fired, the empty cartridge cases are ejected from the gun into the container. The actual container is a canvas sack suspended from the metal top, and is emptied by means of a slide fastener at the bottom.

CHARACTERISTICS:

Dimensions approximately 26½ by 11¾ by 3⅝ inches.
Weight approximately 1⅛ pounds.
Capacity approximately four hundred .30 caliber cartridge cases.

RELATIONSHIP OF PARTS: Used with:
Any single .30 caliber M2 machine gun.

ARMY

A. E. REFERENCE NUMBER: 52-2000

SPECIFICATIONS:

Detail 93-24686
Superseded 24686

A. A. F. DRAWING NUMBER: 40G7385

TYPE DESIGNATION: A-5

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

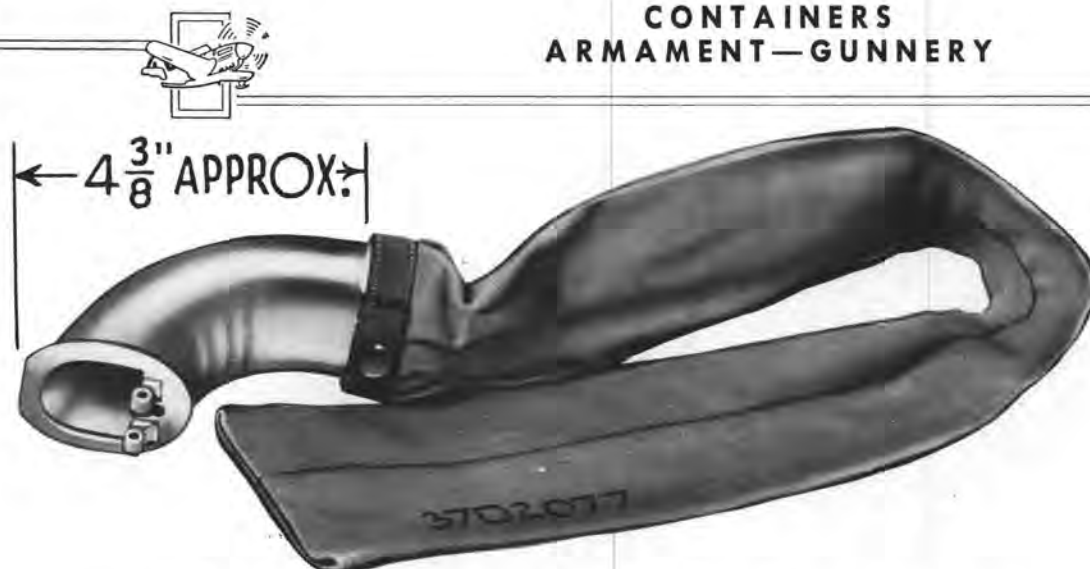
NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Dayton Manufacturing Company	*A-5	**40G7385	A-B	5200211920	150J/751	
	*A-4	**37D5641	A-B	5200211900	150J/579	Capacity limited to 100 cases. Interchangeable when gun is used with type C-12 adapter only.

Note: *AAF type; **AAF drawing.

**CONTAINER—EJECTED LINK****ARMY TYPE A-3**

NAMES: Ejected link container
Link ejection container
Container—link ejection

DESCRIPTION: The Army type A-3 ejected link container is used with a single .30 caliber M2 machine gun. After being stripped from the cartridges by the gun, the links are ejected from the gun into the container. The container consists of a metal tube, the upper end of which is attached to either the right or left hand side of the gun by means of the belt retaining pawl pin. A canvas container is suspended from the lower end of the tube, where it is held by means of a snap fastener. This container may be emptied quickly by unsnapping the fastener.

CHARACTERISTICS:

Dimensions.....approximately 28 $\frac{3}{8}$ by 3 $\frac{3}{4}$ by 3 $\frac{5}{8}$ inches.
Weight.....approximately $\frac{3}{4}$ pound.
Capacity.....approximately two hundred .30 caliber ammunition belt links.

RELATIONSHIP OF PARTS: Used with:
Any .30 caliber M2 machine gun.

ARMY

A. E. REFERENCE NUMBER: 52-2100

SPECIFICATIONS:

Detail.....93-24674
Superseded.....24674

A. A. F. DRAWING NUMBER: 37D2077

TYPE DESIGNATION: A-3

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-5 ejected link container, A. E. Reference Number 52-2200.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE

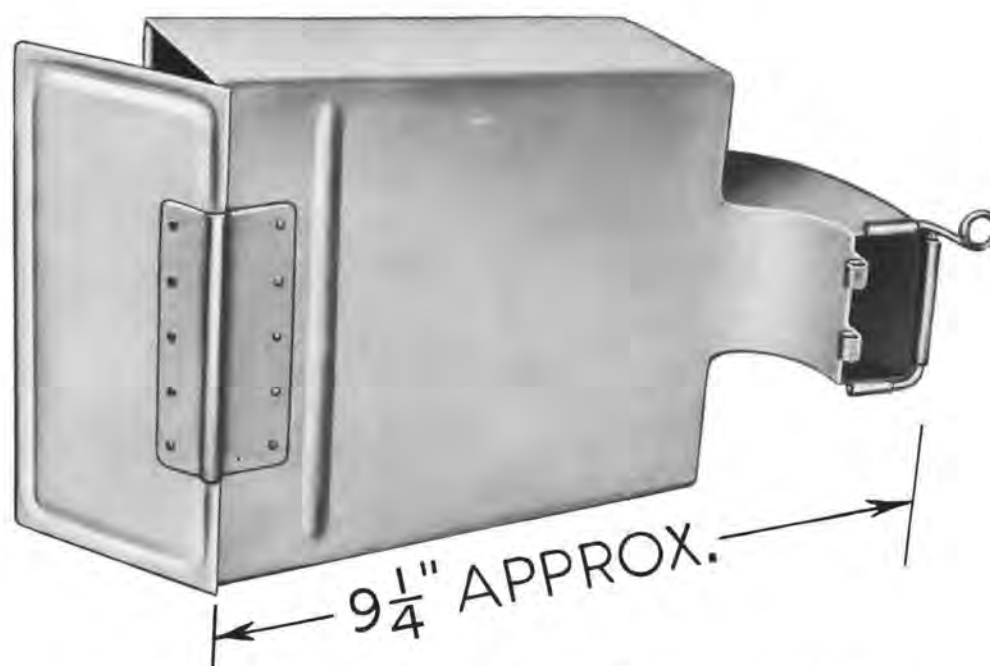
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Dayton Manufacturing Company	*A-3	**37D2077	A-B	5200213400	150J/752	
	*A-4	**37D5642	A-B	5200213700	150J/763	Metallic box.
	*A-5	**41D11038	A-B	5200213740	150J/580	Metallic box.

Note: *AAF type; **AAF drawing.



CONTAINERS ARMAMENT—GUNNERY



CONTAINER—EJECTED LINK ARMY TYPE A-4

NAMES: Ejected link container
Link ejection container
Container—link ejection

DESCRIPTION: The Army type A-4 ejected link container is used with a .30 caliber, M2 machine gun. After being stripped from the cartridges by the gun, the links are ejected from the gun into the container. The container consists of a rectangular metal box with a tapering elbow neck which can be attached to the right or left side of the gun. At the bottom of the box is a metal flap which is kept closed with a snap latch. Links are emptied from the container by opening the flap.

CHARACTERISTICS:

Dimensions approximately 9 $\frac{1}{8}$ by 5 $\frac{3}{4}$ by 3 $\frac{7}{8}$ inches.
Weight approximately 1 $\frac{1}{4}$ pounds.
Capacity approximately two hundred .30 caliber links.

RELATIONSHIP OF PARTS: Used with:
Any .30 caliber M2 machine gun.

ARMY

A. E. REFERENCE NUMBER: 52-2150

SPECIFICATIONS:

Detail 93-24605
Superseded 24605

A. A. F. DRAWING NUMBER: 37D5642 (supersedes Army drawing number H39D5353)

TYPE DESIGNATION: A-4

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-5, ejected link container, A. E. Reference Number 52-2200.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

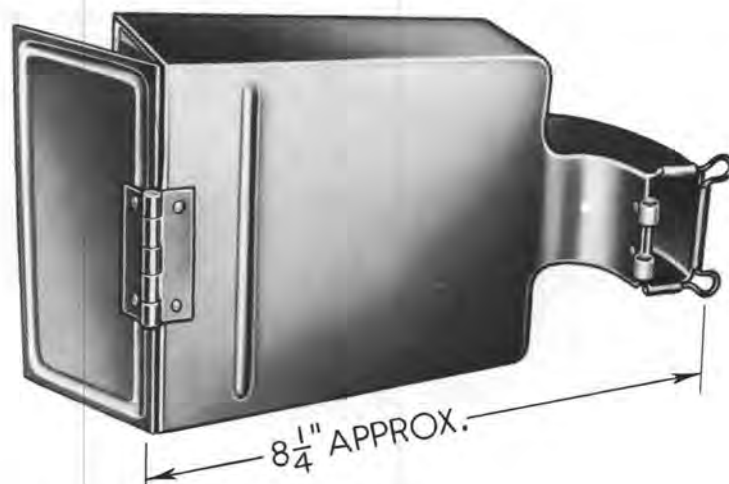
MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Dayton Manufacturing Company	*A-4	**37D5642	A-B	5200213700	150J/763	
	*A-3	**37D2077	A-B	5200213400	150J/752	Has canvas holder.
	*A-5	**41D11038	A-B	5200213740	150J/580	

Note: *AAF type; **AAF drawing.



CONTAINERS ARMAMENT—GUNNERY



CONTAINER—EJECTED LINK ARMY TYPE A-5

NAMES: Ejected link container
Link ejection container

DESCRIPTION: The Army type A-5 link ejection container is used with a single .30 caliber, M2 machine gun. After being stripped from the cartridges by the gun, the links are ejected from the gun into the container. The container consists of a rectangular metal box with a tapering elbow neck, which can be attached to either the right or left side of the gun by means of the belt holding pawl pin. At the bottom of the box is a metal flap, which is kept closed with a snap latch. Links are emptied from the container by opening the flap.

CHARACTERISTICS:

Dimensions.....approximately 8 $\frac{1}{4}$ by 5 $\frac{5}{8}$ by 3 $\frac{1}{2}$ inches.
Weight.....approximately 1 $\frac{1}{4}$ pounds.
Capacity.....approximately two hundred .30 caliber ejected links.

RELATIONSHIP OF PARTS: Used with:
Any .30 caliber M2 machine gun.

ARMY

A. E. REFERENCE NUMBER: 52-2200

SPECIFICATIONS:

Detail.....93-24721
Superseded.....24721

A. A. F. DRAWING NUMBER: 41D11038

TYPE DESIGNATION: A-5

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

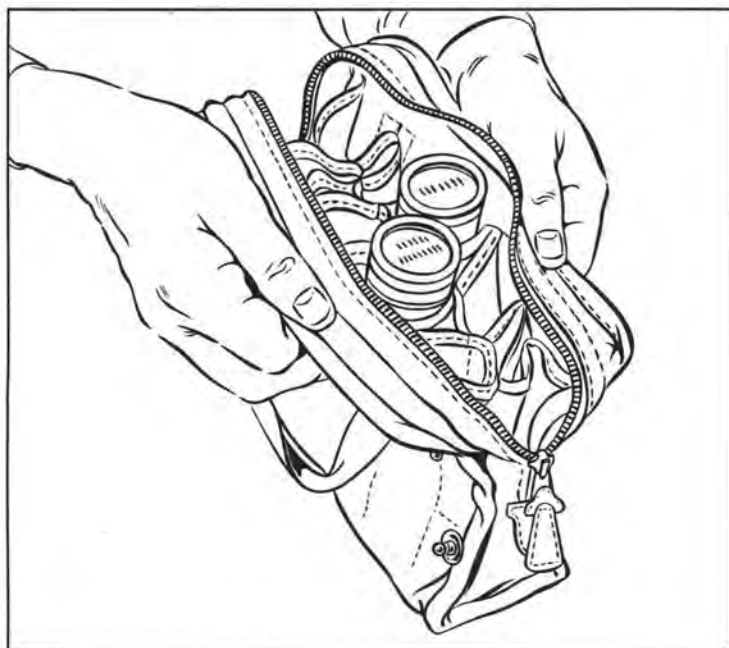
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Dayton Manufacturing Company	*A-5	**41D11038	A-B	5200213740	150J/580	
	*A-3	**37D2077	A-B	5200213400	150J/752	Has canvas holder.
	*A-4	**37D5642	A-B	5200213700	150J/763	

Note: *AAF type; **AAF drawing.



CONTAINERS ARMAMENT—GUNNERY



CONTAINER—SIGNAL FLARE ARMY TYPE A-1

NAME: Signal flare container

DESCRIPTION: The Army type A-1 signal flare container is a portable carrier for aircraft signal flares. It is made of canvas, has a plywood bottom support, and cotton webbing strap handles for carrying. A full length zipper enables the entire top to be opened.

The container is divided into two parallel compartments, one able to hold four and the other five M-10, M-11, M-14, M-15, or M-16 signal flares. Snap fasteners attach the container to the pistol holder inside the airplane.

CHARACTERISTICS:

Dimensions.....	approximately 8½ by 9¼ by 3⅛ inches.
Weight.....	approximately ¾ pound.
Capacity.....	9 flares.

ARMY

A. E. REFERENCE NUMBER: 52-2250

SPECIFICATIONS:

Detail.....	93-24713
Superseded.....	24713

MANUFACTURER: Troy Sunshade Company.

A. A. F. DRAWING NUMBER: 41G9233

TYPE DESIGNATION: A-1

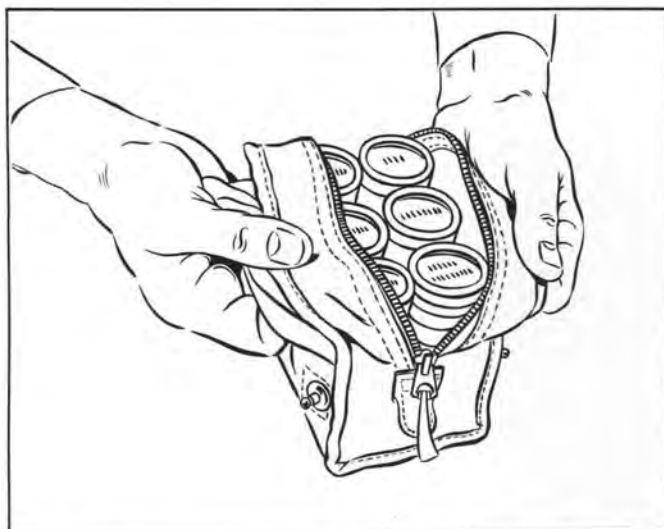
A. S. C. STOCK NUMBER: 4500216600

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-7 signal flare container A. E. Reference Number 52-2256.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



CONTAINER—SIGNAL FLARE

ARMY TYPE A-5

NAME: Signal flare container

DESCRIPTION: The Army type A-5 signal flare container is a carrier for aircraft signal flares. It is made of canvas, with a plywood bottom and cotton webbing strap handles for carrying.

The container has two parallel compartments, each able to hold three flares of types AN-M37 to AN-M45 inclusive. A full length zipper enables the entire top to be opened. Snap fasteners attach the container to the pistol holder inside the airplane.

CHARACTERISTICS:

Dimensions.....approximately $4\frac{3}{4}$ by $5\frac{3}{4}$ by $4\frac{1}{2}$ inches.
 Weight.....approximately $\frac{1}{2}$ pound.
 Capacity.....6 flares.

RELATIONSHIP OF PARTS: Used with:

Army type A-2 pyrotechnic pistol holder, A. E. Reference Number 52-2826.

ARMY

A. E. REFERENCE NUMBER: 52-2254

SPECIFICATIONS:

Detail.....93-24771
 Superseded.....24771

MANUFACTURER: Troy Sunshade Company.

A. A. F. DRAWING NUMBER: 42G11966

TYPE DESIGNATION: A-5

A. S. C. STOCK NUMBER: 4500230375

TECHNICAL ORDER NUMBER: 11-15-8

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



CONTAINERS ARMAMENT—GUNNERY



CONTAINER—SIGNAL FLARE ARMY TYPE A-6

NAME: Signal flare container

DESCRIPTION: The Army type A-6 signal flare container is a carrier for aircraft signal flares. It is made of canvas with a plywood bottom, and cotton webbing strap handles for carrying. The container has two parallel compartments, each able to hold six flares of types AN-M37 to AN-M45 inclusive. A full length zipper enables the entire top to be opened. Snap fasteners attach the container to the pistol holder inside the airplane.

CHARACTERISTICS:

Dimensions.....	approximately $4\frac{3}{4}$ by $11\frac{1}{4}$ by $4\frac{1}{2}$ inches.
Weight.....	approximately $\frac{1}{2}$ pound.
Capacity.....	12 flares.

RELATIONSHIP OF PARTS: Used with:

Army type A-2 pyrotechnic pistol holder, A. E. Reference Number 52-2826.

ARMY

A. E. REFERENCE NUMBER: 52-2255

SPECIFICATIONS:

Detail.....	93-24772
Superseded.....	24772

MANUFACTURER: Troy Sunshade Company.

A. A. F. DRAWING NUMBER: 42G11967

TYPE DESIGNATION: A-6

A. S. C. STOCK NUMBER: 4500230400

TECHNICAL ORDER NUMBER: 11-15-8

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



CONTAINER—SIGNAL FLARE ARMY TYPE A-7

NAME: Signal flare container

DESCRIPTION: The Army type A-7 signal flare container is a carrier for aircraft signal flares. It is made of canvas with a plywood bottom, and cotton webbing strap handles for carrying.

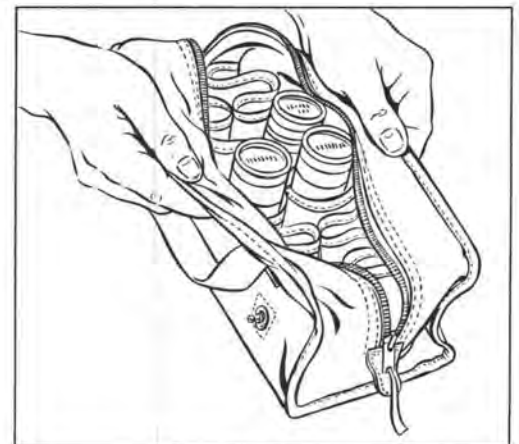
The container has three parallel compartments, each able to hold six flares of types AN-M37 to AN-M45 inclusive. A full length zipper enables the entire top to be opened. Snap fasteners attach the container to the pistol holder inside the airplane.

CHARACTERISTICS:

Dimensions . . . approximately $4\frac{3}{4}$ by $12\frac{1}{8}$ by $5\frac{3}{4}$ inches.
Weight approximately $\frac{1}{2}$ pound.
Capacity 18 flares.

RELATIONSHIP OF PARTS: Used with:

Army type A-2 pyrotechnic pistol holder, A. E. Reference Number 52-2826.



ARMY

A. E. REFERENCE NUMBER: 52-2256

SPECIFICATIONS:

Detail 93-24773

Superseded 24773

MANUFACTURER: Troy Sunshade Company.

A. A. F. DRAWING NUMBER: 42H11968

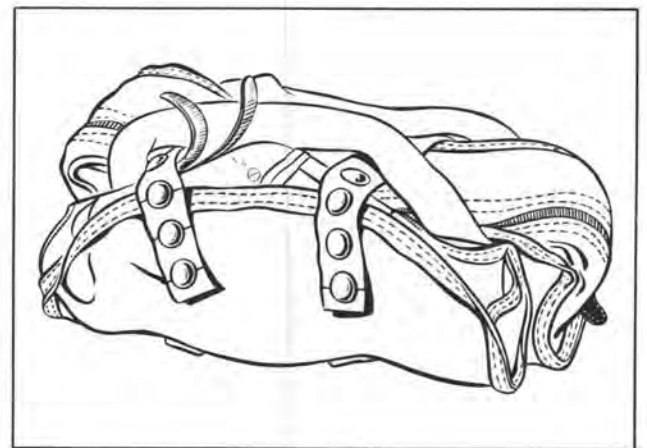
TYPE DESIGNATION: A-7

A. S. C. STOCK NUMBER: 4500230450

TECHNICAL ORDER NUMBER: 11-15-8

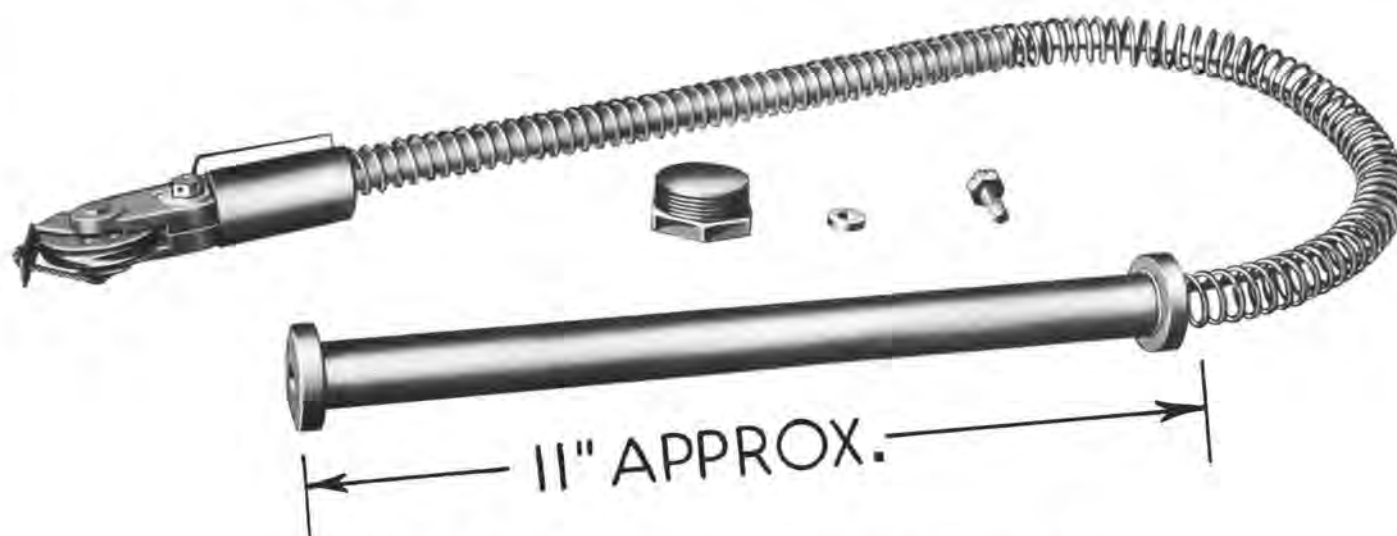
PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.



NAVY

There is no Navy equivalent for the Army item.



CHARGER, MANUAL, M2
FORMER ARMY TYPE B-6

NAMES: Manual charger
Gun charger control
Manual charger 20-mm cannon
Control—gun charger

DESCRIPTION: The M2 manual gun charger is the internal mechanism for manually charging a 20-mm automatic gun. It consists of a cable which passes through a spring and fastens to a piston backed against the spring.

The entire unit is inserted into a cylinder which is mounted on the side, and is a part of the gun. The cable passes around a pulley on the outside of the cylinder, and is attached to a handle accessible to the pilot. When the cable is pulled, the piston, which is secured to the gun bolt, moves backward, compressing the spring against the rear of the cylinder and charging the gun. When the cable is released, the spring restores the piston to its original position and allows the gun bolt to operate independently of the charger.

This unit was formerly known as the AAF type B-6 gun charger control assembly. It is now supplied by Ordnance Office, War Department.

CHARACTERISTICS:

Dimensions..... approximately 25 $\frac{5}{8}$ by 2 $\frac{1}{8}$ by 1 $\frac{3}{4}$ inches.
Weight..... approximately 1 $\frac{3}{4}$ pounds.

RELATIONSHIP OF PARTS: Used with:

M1 or AN-M2, 20-mm automatic guns.

ARMY

A. E. REFERENCE NUMBER: 52-2275

SPECIFICATIONS:

Detail..... 93-24778
Superseded..... 24778

ORDNANCE DRAWING NUMBER: D69343

FORMER A. A. F. DRAWING NUMBER: 42C10439 and H43D6383

TYPE DESIGNATION: M2

FORMER TYPE DESIGNATION: B-6

PRODUCTION STATUS: Under procurement. Now supplied by Ordnance Office, War Department.

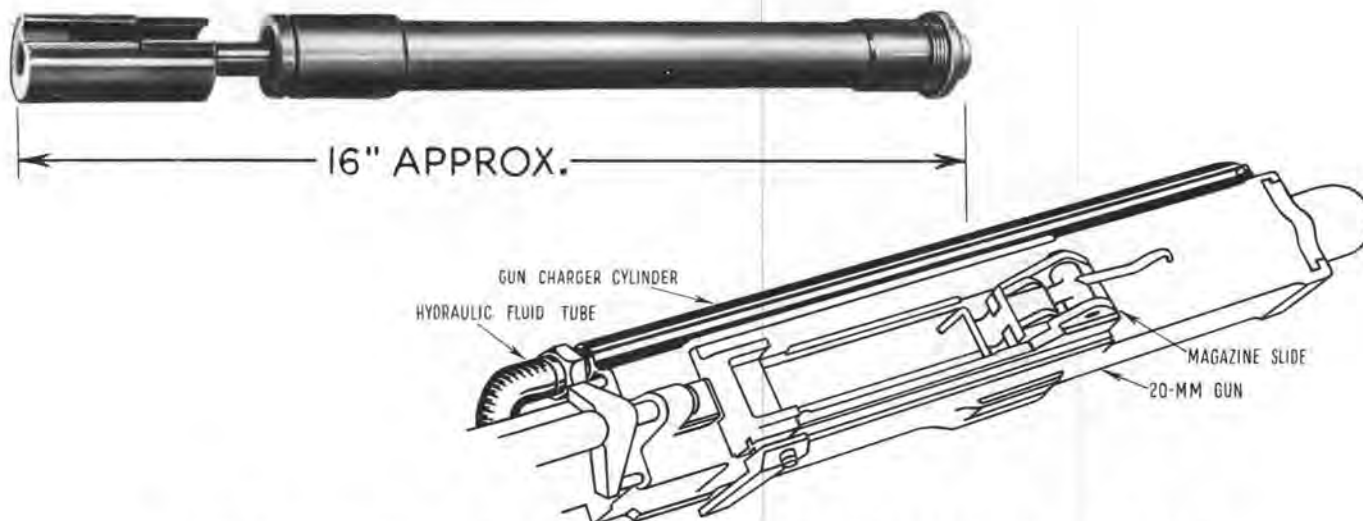
SHIPPING DATA: This item is usually supplied as a component part of the 20-mm gun.

NAVY

The Navy does not use this item, generally, since their equivalent would be the hydraulic 20-mm gun charger, which is procured as a component part of the AN-M2, 20-mm gun, type E, Aviation Ordnance Stock List Number 1-G-5599.

BRITISH

REFERENCE NUMBER: 108A/159



CHARGER—20mm HYDRAULIC GUN

ARMY TYPE D-3 NAVY—SEE BELOW

NAMES: 20-mm Hydraulic Gun charger
Hydraulic gun charger cylinder

Cylinder—hydraulic gun charger—20-mm cannon
Charger—gun, hydraulic BAM .50, M2 (Navy)

DESCRIPTION: This hydraulic gun charger, Army type D-3, provides a means for charging a 20-mm aircraft cannon located in a position remote from the gunner. The charger consists of a piston in a hydraulic cylinder, and is operated by a remote control valve. The charging cylinder is mounted in a tubular housing on the right hand side of the gun. The piston is forced against the gun bolt stud under hydraulic pressure and carries the bolt back to the recoil position. The gun control valve can be set either to hold the bolt in the safety position or to complete the charging cycle and prepare the gun for firing.

Hydraulic pressure to operate the charger is supplied by the airplane's hydraulic system.

CHARACTERISTICS:

Dimensions.....	approximately 11 by 1¼ by 1¼ inches.
Weight.....	approximately 2 pounds 4 ounces.
Piston diameter.....	7/8 inch.
Charging stroke.....	10 inches.
Minimum hydraulic pressure.....	800 pounds per square inch.
Maximum hydraulic pressure.....	1500 pounds per square inch.

RELATIONSHIP OF PARTS: Used with:

Army type A-1 hydraulic gun charging valve, A. E. Reference Number 52-8450.

ARMY

A. E. REFERENCE NUMBER: 52-2300

MANUFACTURER: Bendix Products Division of Bendix Aviation Corporation.

MANUFACTURER'S DRAWING NUMBER: 78003

MANUFACTURER'S MODEL: F

A. A. F. DRAWING NUMBER: H41G5289

TYPE DESIGNATION: D-3

A. S. C. STOCK NUMBER: 5400239000

TECHNICAL ORDER NUMBER: 11-1-21

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type B-6 gun charger, A. E. Reference Number 52-2275.

SHIPPING DATA: This item shipped as a component part of AN-M2, 20-mm gun, Type E, A. E. Reference Number 93-1355.

NAVY

BUORD. DRAWING NUMBER: 332358

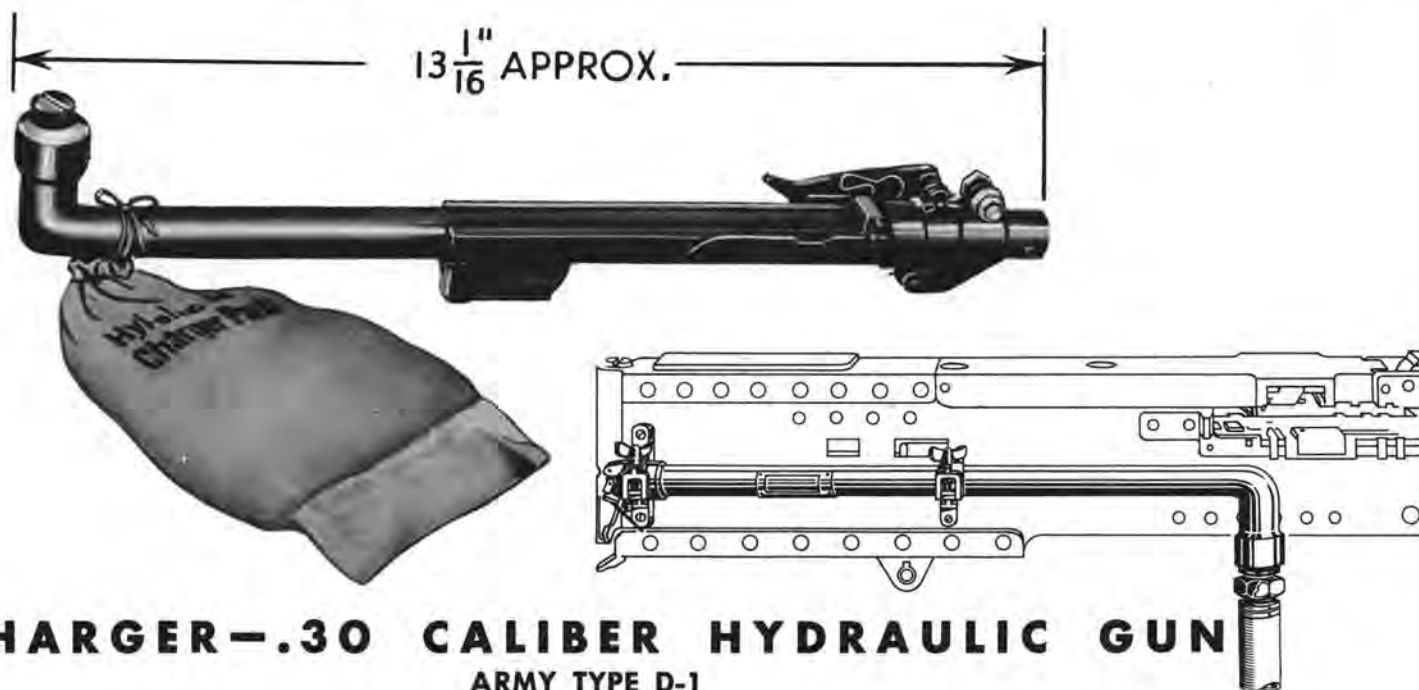
AVIATION ORDNANCE STOCK LIST NUMBER: 1-C-3412-50 (supersedes 1-C-7680).

ORDNANCE PAMPHLET NUMBER: 865

PROCUREMENT STATUS: Under procurement. Supplied with AN-M2, 20-mm gun, Type E, Aviation Ordnance Stock List Number 1-G-5599.

BRITISH

REFERENCE NUMBER: 108A/21



CHARGER—.30 CALIBER HYDRAULIC GUN

ARMY TYPE D-1

NAMES: .30 caliber hydraulic gun charger
Hydraulic gun charger cylinder
.30 caliber hydraulic charger
Cylinder—hydraulic gun charger .30 caliber

DESCRIPTION: This Army type D-1 hydraulic gun charger provides a means of charging a .30 caliber M2 machine gun located in a position remote from the gunner. The charger, which consists of a piston in a hydraulic cylinder, can be mounted on either side of the gun and operated by a remote control valve.

Hydraulic pressure, from the airplane's hydraulic system, is applied through the control valve to the cylinder, forcing the piston against the gun bolt stud. This action carries the bolt back to the recoil position. A latch mechanism holds the bolt in this position until the pressure is released from the cylinder, permitting the bolt to return. The control valve can be set either to hold the bolt in the safety position or to complete the charging cycle and prepare the gun for firing.

CHARACTERISTICS:

Dimensions.....	approximately 17 $\frac{7}{8}$ by $\frac{7}{8}$ by $\frac{7}{8}$ inches.
Weight.....	approximately 2 $\frac{1}{4}$ pounds.
Piston diameter.....	$\frac{1}{2}$ inch.
Charging stroke.....	4 $\frac{21}{32}$ inches.
Minimum hydraulic pressure.....	800 pounds per square inch.
Maximum hydraulic pressure.....	1500 pounds per square inch.

RELATIONSHIP OF PARTS: Used with:

Any single .30 caliber M2 machine gun, and an Army type A-1 hydraulic gun charger. A. E. Reference Number 52-8450.

ARMY

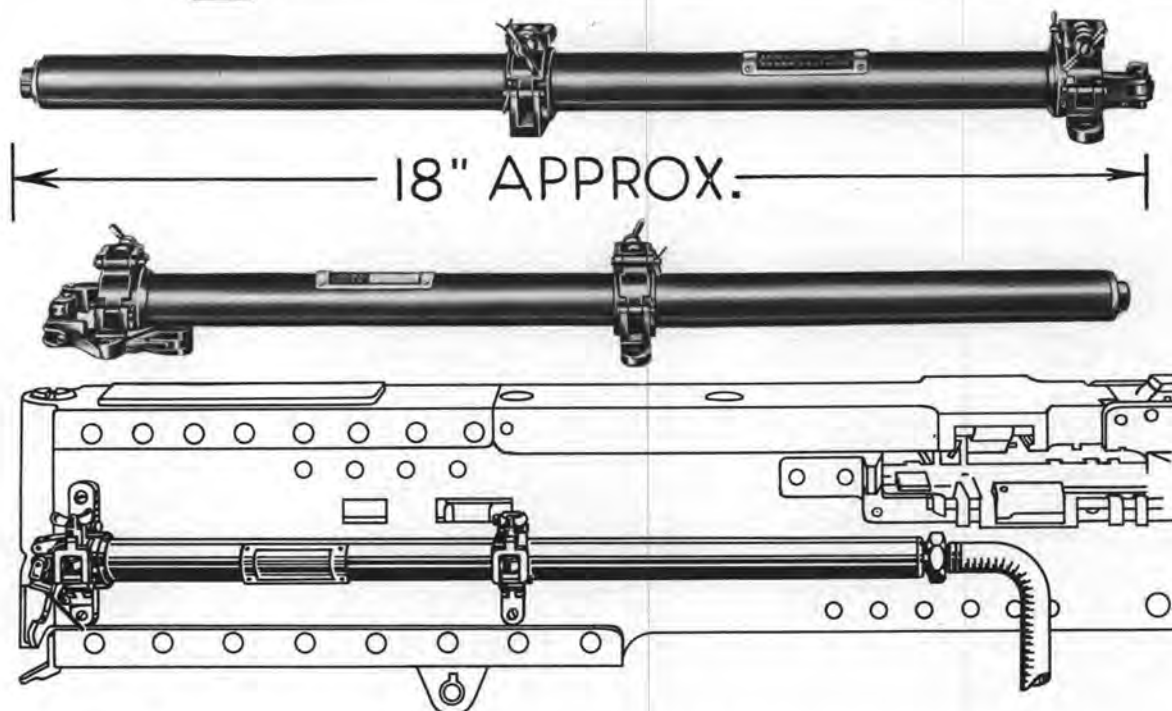
A. E. REFERENCE NUMBER: 52-2400
MANUFACTURER: Bendix Products Division of Bendix Aviation Corporation.
MANUFACTURER'S DRAWING NUMBER: 78002
MANUFACTURER'S MODEL: H
A. A. F. DRAWING NUMBER: H41G5287
TYPE DESIGNATION: D-1
A. S. C. STOCK NUMBER: 5400239040
TECHNICAL ORDER NUMBER: None.
PRODUCTION STATUS: Not under procurement for initial installation.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 108A/171.



CHARGER—.50 CALIBER HYDRAULIC GUN

ARMY TYPE D-2 NAVY—SEE BELOW

NAMES: .50 caliber hydraulic gun charger
Hydraulic gun charger cylinder

Cylinder—hydraulic gun charger .50 caliber
Charger—gun, hydraulic BAM .50, M2 (Navy)

DESCRIPTION: This Army type D-2 hydraulic gun charger provides a means of charging a .50 caliber M2 machine gun located in a position remote from the gunner. The charger, which consists of a piston in a hydraulic cylinder, can be mounted on either side of the gun and is operated by a remote control valve.

Hydraulic pressure, from the airplane's hydraulic system, is applied through the control valve to the charging cylinder, and forces the piston against the gun bolt stud. This action carries the bolt back to the recoil position. A latch mechanism holds the bolt in this position until the pressure is released from the cylinder, permitting the bolt to return. The control valve can be set either to hold the bolt in safety position or to complete the charging cycle and prepare the gun for firing.

CHARACTERISTICS:

Dimensions.....	approximately 18 $\frac{1}{8}$ by 1 $\frac{1}{2}$ by 3 inches.
Weight.....	approximately 2 $\frac{1}{4}$ pounds.
Piston diameter.....	$\frac{11}{16}$ inch.
Charging stroke.....	$7\frac{3}{16}$ inches.
Minimum hydraulic pressure.....	800 pounds per square inch.
Maximum hydraulic pressure.....	1500 pounds per square inch.

RELATIONSHIP OF PARTS: Used with:

A single .50 caliber M2 machine gun, and Army type A-1 hydraulic gun charging valve, A. E. Reference Number 52-8450.

ARMY

A. E. REFERENCE NUMBER: 52-2500

MANUFACTURER: Bendix Products Division of Bendix Aviation Corporation.

MANUFACTURER'S DRAWING NUMBER: 76862

MANUFACTURER'S MODEL: C

A. A. F. DRAWING NUMBER: H41G5288

TYPE DESIGNATION: D-2

A. S. C. STOCK NUMBER: 5400239050

TECHNICAL ORDER NUMBER: None.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by manual type, contractor furnished equipment.

SHIPPING DATA: Shipped as a complete unit.

NAVY

BUORD. DRAWING NUMBER: 332358

AVIATION ORDNANCE STOCK LIST NUMBER: 1-C-3512-95 (supersedes 1-C-7685).

ORDNANCE PAMPHLET NUMBER: 865;828

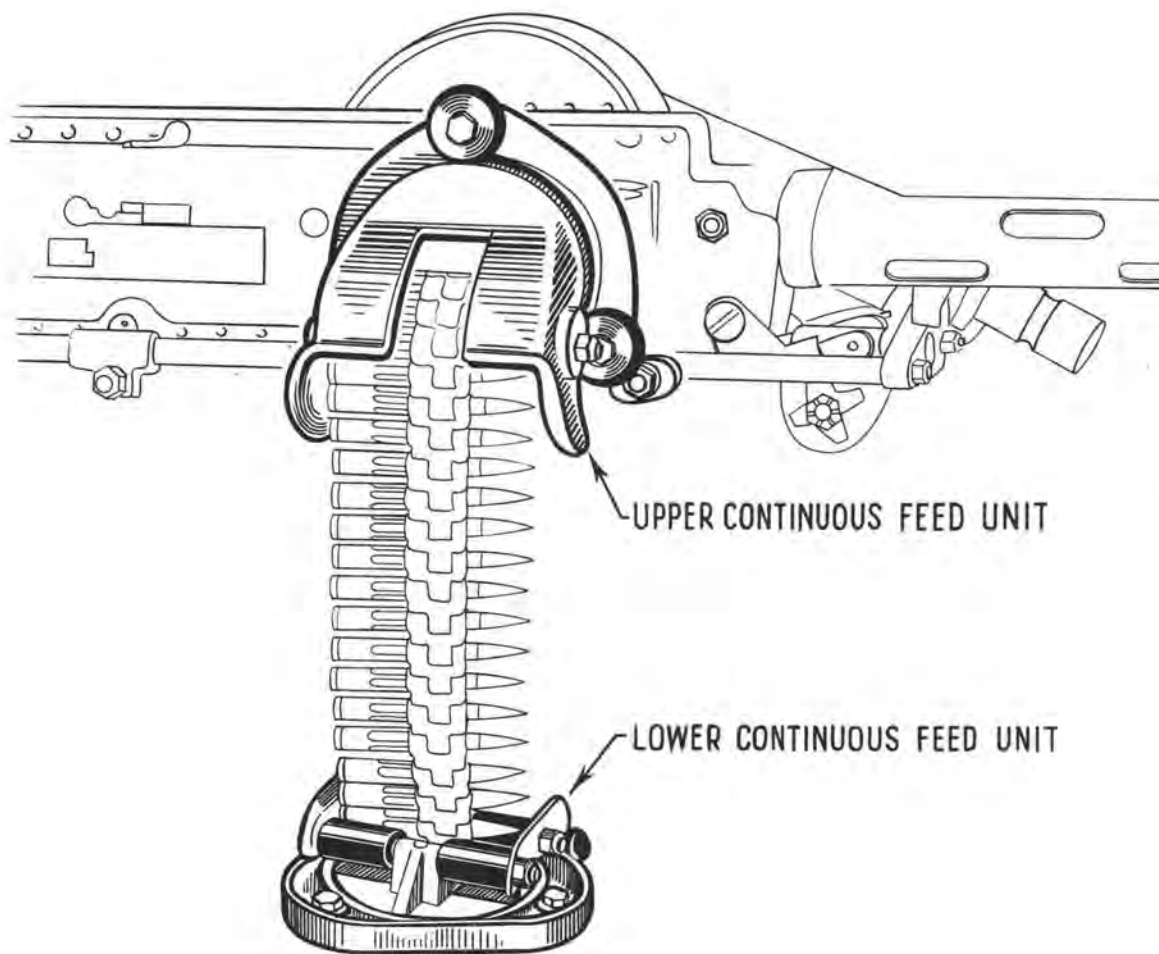
PROCUREMENT STATUS: Not under procurement for initial installation.

BRITISH

REFERENCE NUMBER: 108A/66



FEED UNITS ARMAMENT—GUNNERY

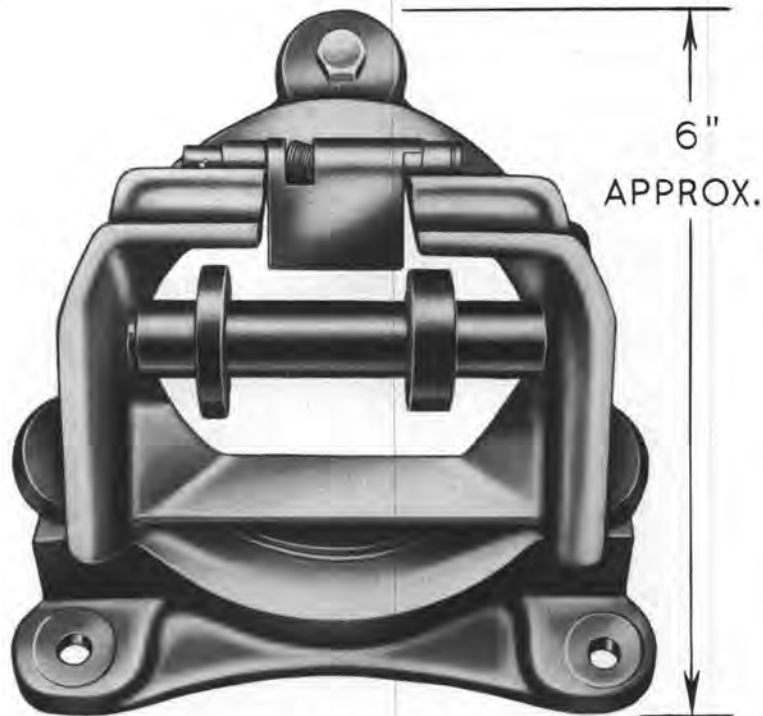


CONTINUOUS FEED UNITS

Continuous feed units enable a .30 caliber ammunition belt to be guided into a machine gun while the gun is swiveled, elevated, or depressed. These units are used with remote gun installations where ammunition must be guided for a distance. The upper unit is mounted directly on the adapter of the gun and the lower unit is placed on the ammunition box.

The units decrease belt bending but permit an increase in turning radius as the belt enters the gun.

Both units, each consisting of a guide, roller and chute, are able to turn through a complete circle. The guides and chute lead the ammunition belt, and the roller provides an even flow of cartridges.



FEED—LEFT HAND UPPER CONTINUOUS
BELL AIRCRAFT CORP. MODEL CF-3L NAVY—SEE BELOW

NAMES: Left hand upper continuous feed
 .30 caliber upper continuous feed—left hand

DESCRIPTION: The upper continuous feed unit, designed for attachment to the left hand side of the gun adapter, is used to guide and feed .30 caliber ammunition to a machine gun from a remote source. It consists of a chute, guide and rollers, through which the ammunition belt passes. This unit can be rotated through 360 degrees, and provides for adjustment of alignment between the chute and guide so that the ammunition belt can feed properly.

CHARACTERISTICS:

Dimensions.....approximately 6 by 5¼ by 3¼ inches.
 Weight.....approximately 1⅝ pounds.

RELATIONSHIP OF PARTS: Used with:

Lower continuous feed, Bell model CF-5, A. E. Reference Number 52-2682, and on a single .30 caliber M2 machine gun, A. E. Reference Number 93-1440 or 93-1520.

ARMY

A. E. REFERENCE NUMBER: 52-2680

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

NAVY

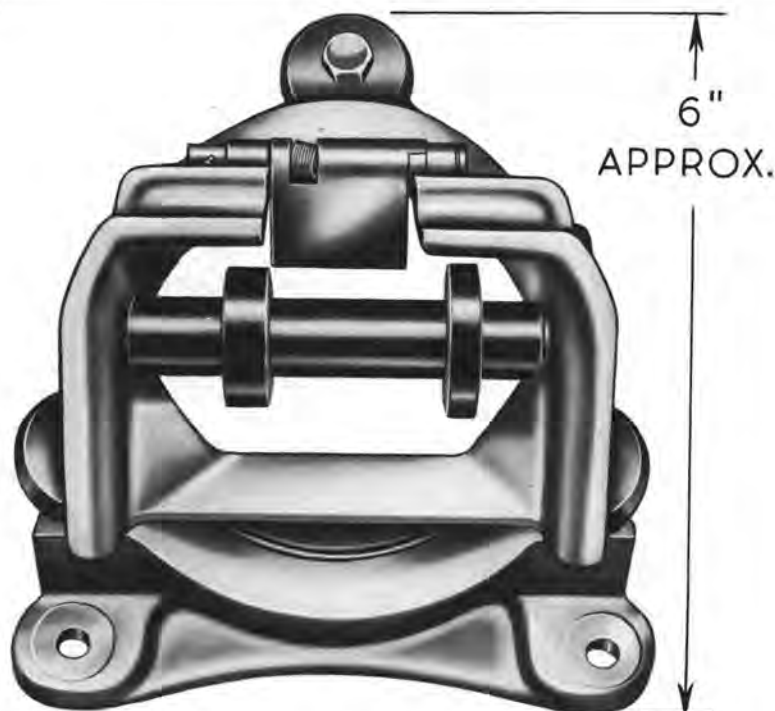
This item is identified by the Navy under the manufacturer's designation.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Bell Aircraft Corp.	CF-3L	03-042-197L	A-B	5200265400	11-1-41	150J/754	
	03-059-051	03-059-051	N				Identical with the Bell model CF-3L, except includes a ratchet which can be removed if necessary.



FEED UNITS ARMAMENT—GUNNERY



FEED—RIGHT HAND UPPER CONTINUOUS

BELL AIRCRAFT CORP. MODEL CF-3R NAVY—SEE BELOW

NAME: Right hand upper continuous feed

DESCRIPTION: The upper continuous feed unit, designed for attachment to the right hand side of the gun adapter, is used to guide and feed .30 caliber ammunition to a machine gun from a remote source. It consists of a chute, guide and rollers, between which the ammunition belt passes. This unit can be rotated through 360 degrees, and provides for adjustment of alignment between the chute and guide so that the ammunition belt can feed properly.

CHARACTERISTICS:

Dimensions..... approximately 6 by 5¼ by 3¼ inches.
Weight..... approximately 1⅝ pounds.

RELATIONSHIP OF PARTS: Used with:

Lower continuous feed, Bell model CF-5, A. E. Reference Number 52-2682, and a single .30 caliber M2 machine gun, A. E. Reference Numbers 93-1440 or 93-1520.

ARMY

A. E. REFERENCE NUMBER: 52-2681

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

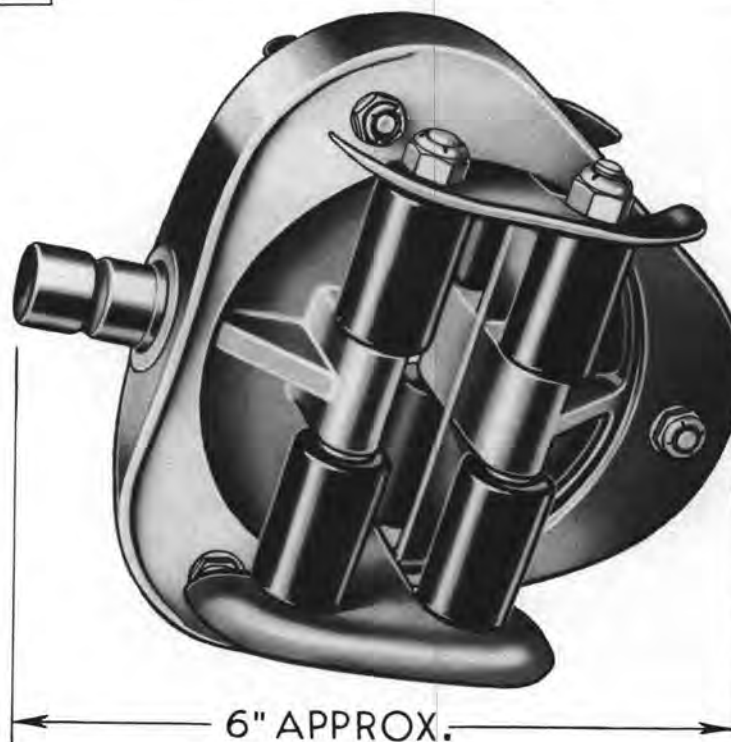
SHIPPING DATA: Shipped as a complete unit.

NAVY

This item is identified by the Navy under the manufacturer's designation.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Bell Aircraft Corporation	CF-3R	03-042-197R	A-B	5200265420	11-1-41	150J/755	
	03-059-052	03-059-052	N				Identical with Bell model CF-3R except includes a ratchet which can be removed if necessary.



FEED—LOWER CONTINUOUS

BELL AIRCRAFT CORP. MODEL CF-5

NAVY—SEE BELOW

NAMES: Lower continuous feed
Feed—.30 caliber lower continuous

DESCRIPTION: The lower continuous feed unit, mounted above the ammunition box, is used to guide and feed .30 caliber ammunition to a machine gun.

It consists of a guide housing, guide, guide deflectors, and rollers between which the ammunition belt passes.

One of the rollers is held in place by an eccentric bolt. This bolt is used for adjustment and alignment to insure proper ammunition feed.

The unit can be rotated 360 degrees, either horizontally or vertically, following the movement of the gun.

CHARACTERISTICS:

Dimensions..... approximately 6 by 5¼ by 3¼ inches.
Weight..... approximately 1 pound 7 ounces.

RELATIONSHIP OF PARTS: Used with:

Upper continuous feed, A. E. Reference Numbers 52-2680 or 52-2681.

ARMY

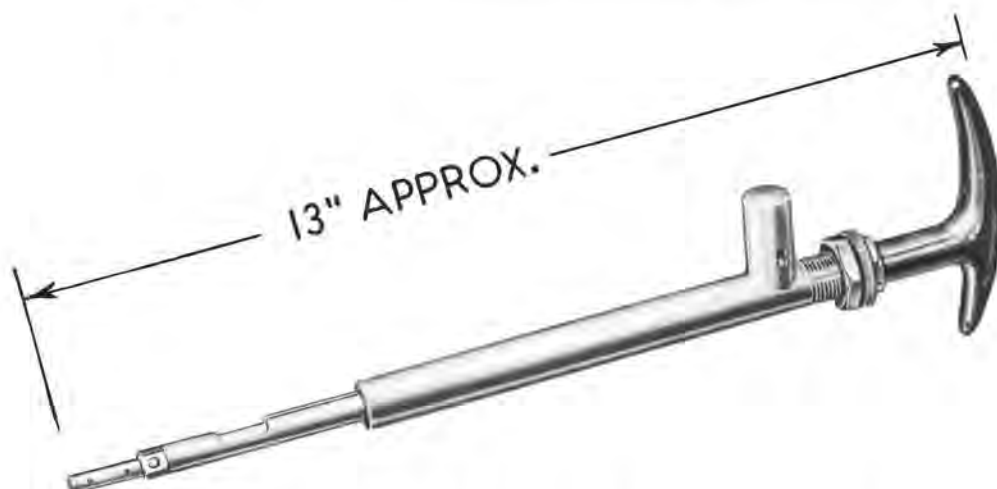
A. E. REFERENCE NUMBER: 52-2682
MANUFACTURER: Bell Aircraft Corporation.
MANUFACTURER'S MODEL NUMBER: CF-5
MANUFACTURER'S DRAWING NUMBER: GM-749-663
A. S. C. STOCK NUMBER: 5200265250
TECHNICAL ORDER NUMBER: 11-1-41
PRODUCTION STATUS: Not under procurement for initial installation.
SHIPPING DATA: Shipped as a complete unit.

NAVY

This item is identified by the Navy under the manufacturer's designation.

BRITISH

REFERENCE NUMBER: 150J/587



HANDLE—GUN CHARGING

ARMY TYPE A-2 NAVY MARK 1 MOD. 1

NAME: Gun charging handle

DESCRIPTION: This gun charging handle is used for manually charging fixed M2 remotely located machine guns. A cable connects the handle to the charging slide on the gun.

The unit consists of a tubular member, threaded at one end for mounting to the airplane structure. A grooved rod with a handle on the end passes through the tube; the cable from the gun charging device is fastened to the other end. The rod is notched so that the handle may be turned, locking the charging device in a safety position, or it may be pulled out and locked in a full recoil position. If the handle is pulled out all the way and released without turning, the full charging cycle will be completed.

CHARACTERISTICS:

Dimensions.....approximately 12 $\frac{3}{4}$ by 3 $\frac{5}{8}$ by $\frac{3}{4}$ inches.
Weight.....approximately $\frac{5}{8}$ pound.

RELATIONSHIP OF PARTS: Used with:

Fixed .30 and .50 caliber M2 machine guns, A. E. Reference Numbers, 93-1420 and 93-1560, or with Army M2 manual charger, A. E. Reference Number 52-2275 mounted on M1 or AN-M2 20-mm automatic guns.

ARMY

A. E. REFERENCE NUMBER: 52-2750

SPECIFICATIONS:

Detail.....93-24663

MANUFACTURER: General Aviation Equipment Company.

A. A. F. DRAWING NUMBER: 31B1184 (Supersedes Army drawing 02-A-28)

TYPE DESIGNATION: A-2

A. S. C. STOCK NUMBER: 5200315800

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: Mark 1, Modification 1

BU. ORD. DRAWING NUMBER: 178489

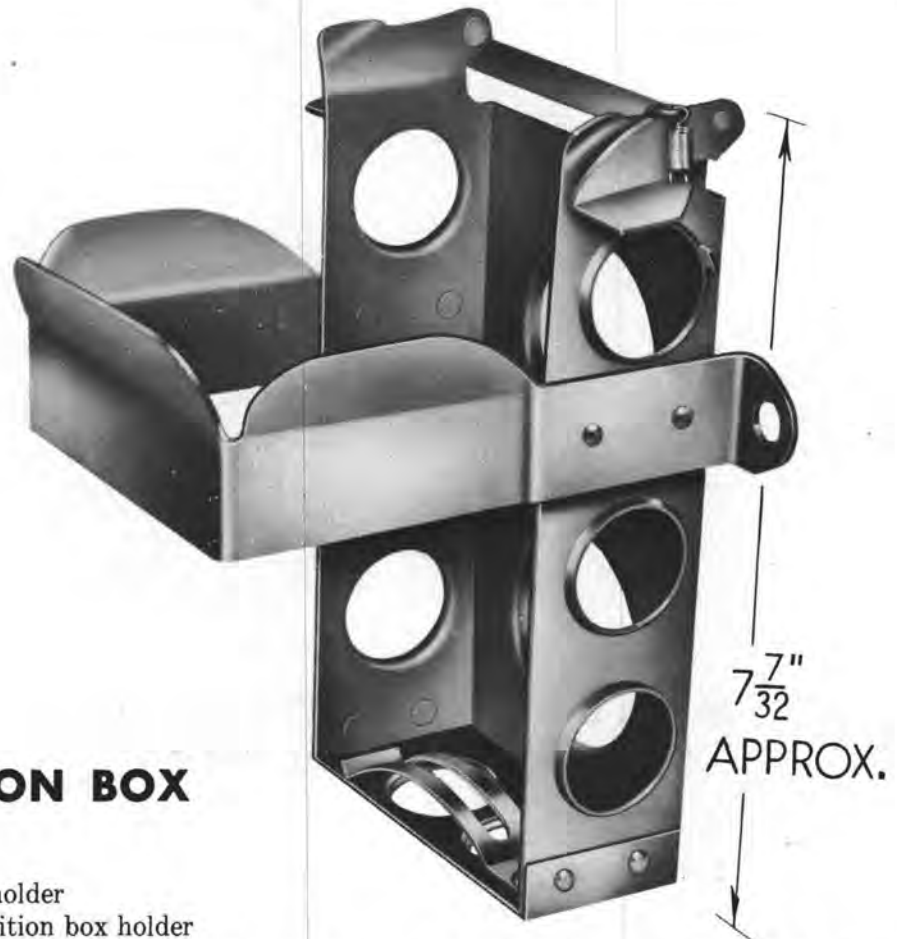
AVIATION ORDNANCE STOCK LIST NUMBER: 1-H-475

ORDNANCE PAMPHLET NUMBER: 865

PROCUREMENT STATUS: Under procurement.

BRITISH

REFERENCE NUMBER: 108A/160



HOLDER—AMMUNITION BOX

ARMY TYPE A-1

NAMES: Ammunition box holder
.30 caliber ammunition box holder

DESCRIPTION: The Army type A-1 ammunition box holder is fastened to the gun mount adapter, and is used to hold an ammunition box for a .30 caliber gun. This holder consists of a perforated metal retainer with a horizontal metal strip which secures the ammunition box when it is inserted. The holder is constructed so that empty ammunition boxes may be removed and replaced with full boxes.

CHARACTERISTICS:

Dimensions..... approximately 7 $\frac{1}{4}$ by 5 $\frac{1}{2}$ by 5 inches.
Weight..... approximately 1-1/10 pounds.

RELATIONSHIP OF PARTS: Used with:

Army type L-4 ammunition box, A. E. Reference Number 52-1500 and Army type L-7 ammunition box, A. E. Reference Number 52-1550.

ARMY

A. E. REFERENCE NUMBER: 52-2800

SPECIFICATIONS:

Detail..... 93-24660
Superseded..... 24660

MANUFACTURER: Warner Industries.

A. A. F. DRAWING NUMBER: 40G7402

TYPE DESIGNATION: A-1

A. S. C. STOCK NUMBER: 5200328900

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 150J/577



HOLDER—PYROTECHNIC PISTOL
ARMY TYPE A-1

NAMES: Pyrotechnic pistol holder
Pistol holder

DESCRIPTION: The Army type A-1 pyrotechnic pistol holder, constructed of canvas duck, is used for carrying the Army type M2 pyrotechnic pistol. It has a zipper opening for the pistol, and four snap fasteners for attachment to a signal flare container.

CHARACTERISTICS:

Dimensions.....approximately 8¼ by 7 by 2¼ inches.
Weight.....approximately ¼ pound.

RELATIONSHIP OF PARTS: Used with:

Army type A-1 signal flare container, A. E. Reference Number 52-2250 and M2 pyrotechnic pistol,
A. E. Reference Number 93-6000.

ARMY

A. E. REFERENCE NUMBER: 52-2825

SPECIFICATIONS:

Detail.....93-24718
Superseded.....24718

MANUFACTURER: Lite Manufacturing Company.

A. A. F. DRAWING NUMBER: 41G8920 (Supersedes drawing H41D10378).

TYPE DESIGNATION: A-1

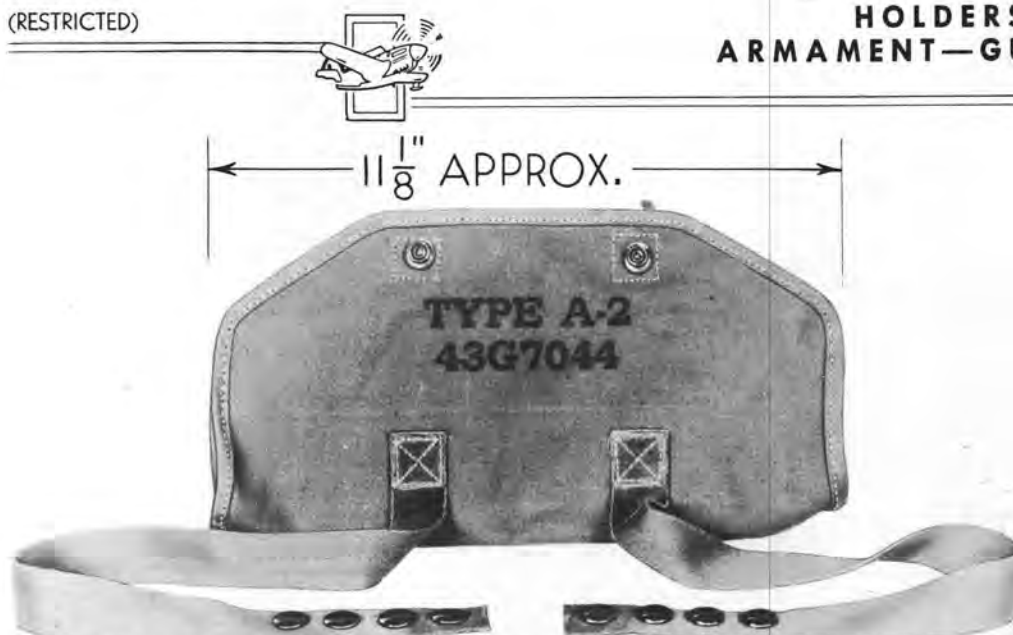
A. S. C. STOCK NUMBER: 4500494500

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



HOLDER—PYROTECHNIC PISTOL

ARMY TYPE A-2

NAMES: Pyrotechnic pistol holder
Pistol holder

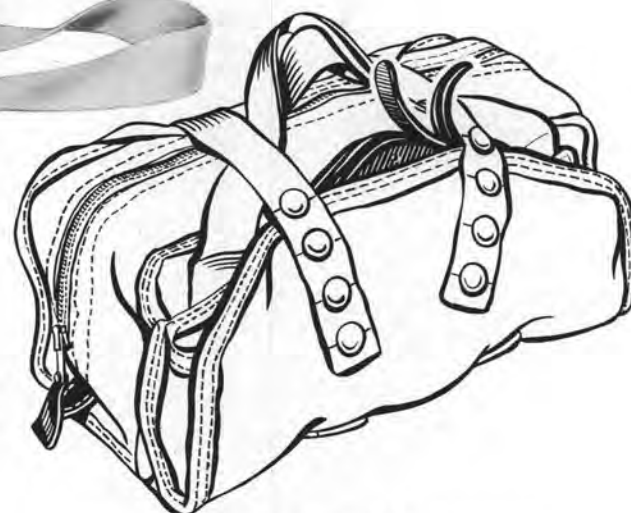
DESCRIPTION: The Army type A-2 pyrotechnic pistol holder, constructed of canvas duck, is used for carrying the Army type M8 pyrotechnic pistol. It is attached to a signal flare container by means of canvas straps and snap fasteners.

CHARACTERISTICS:

Dimensions.....approximately 11¼ by 3 by 2 inches.
Weight.....approximately ½ pound.

RELATIONSHIP OF PARTS: Used with:

Army type A-5, signal flare container, A. E. Reference Number 52-2254, Army type A-6 signal flare container, A. E. Reference Number 52-2255 or Army type A-7 signal flare container, A. E. Reference Number 52-2256, and AN-M8 pyrotechnic pistol, A. E. Reference Number 93-6100.



ARMY

A. E. REFERENCE NUMBER: 52-2826

SPECIFICATIONS:

Detail.....93-24820
Superseded.....24820

A. A. F. DRAWING NUMBER: 43G7044

TYPE DESIGNATION: A-2

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number
Lite Manufacturing Company	*A-2	**43G7044	A	4500494600	11-15-8
Crawford Manufacturing Company	*A-2	**43G7044	A	4500494600	11-15-8
Troy Sunshade Company	*A-2	**43G7044	A	4500494600	11-15-8

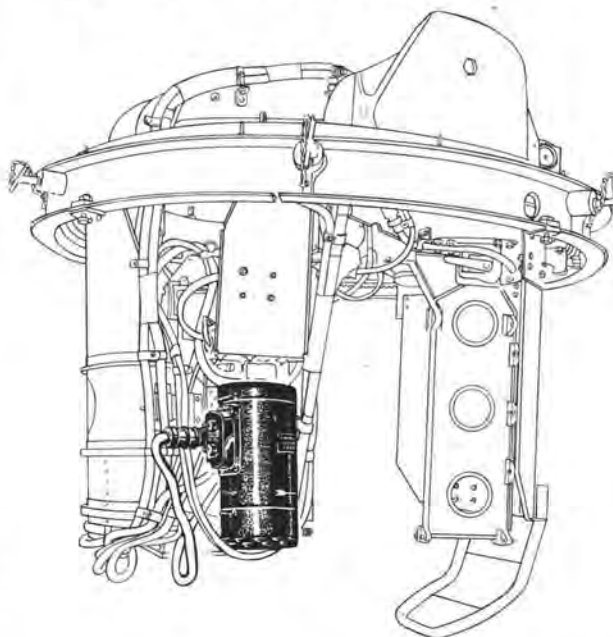
Note: *AAF type; **AAF drawing.



MOTORS—GENERATORS ARMAMENT—GUNNERY

MOTOR — GENERATOR AMPLIDYNE LOCAL CONTROL GENERAL ELECTRIC MODEL 5AM31NJ18

NAMES: Amplidyne local control motor generator
Amplidyne Motor generator



DESCRIPTION: This type of amplidyne motor-generator, used to supply current for the operation of locally-controlled machine gun turrets, consists essentially of a direct current electric motor and a direct current output generator mounted on the same shaft. In spite of the fact that the motor operates constantly to turn the shaft, there is no output from the generator unless the generator field is excited. This field requires but a small current to produce full generator output voltage. Minute variation in the field current instantaneously produces large variations in the generator's output. This field current is controlled by two variable resistors in the turret control handles. The further the handles are moved from the center position by the gunner, the greater is the output from the amplidyne generator and the faster the turret motors move the turret and gun carriage. Two amplidyne motor generators and two turret drive motors are required for each turret; one of each for movement of the guns in elevation and depression, the others for rotation of the turret.

CHARACTERISTICS:

Dimensions.....approximately 12 by 8½ by 6⅛ inches
Weight.....approximately 29 pounds
Revolutions per minute.....8300

Motor input:
Volts.....27
Amperes.....44
Generator output:
Volts.....60
Amperes.....8.8
Watts.....530

RELATIONSHIP OF PARTS: Used in:

Turrets	A. E. Reference Number
Army type A-3	52-7400
Army type A-3A	52-7425
Army type A-3B	52-7450
Army type A-3C	52-7475
Army type A-15	52-7790
Army type A-16	52-7350
Army type A-9	52-7900
Army type A-9A	52-7910
Army type A-10	52-7950

Turret Drive Motor
G. E. model 5BA50LJ1
G. E. model 5BA50GJ1

A. E. Reference Number
52-3060
52-3070

ARMY

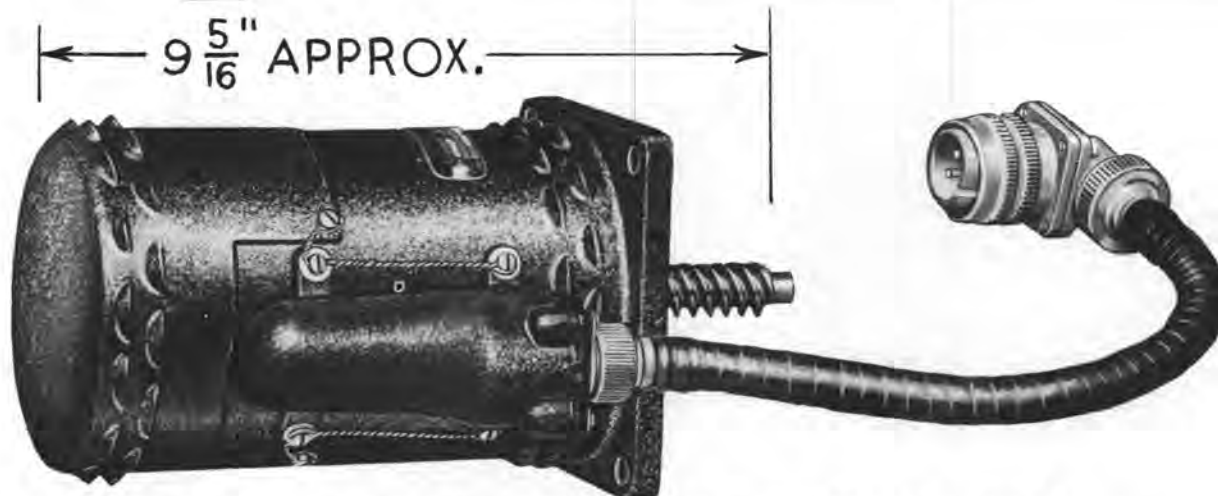
A. E. REFERENCE NUMBER: 52-3030
A. S. C. STOCK NUMBER: Refer to chart.
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Manufacturer's Specification	British Reference Number
General Electric Company	5AM31NJ18	P-8111282 outline TT-5818190 assembly	A	5400009212	OST-1B	150B/1506
Thomas A. Edison, Incorporated	5AM31NJ18	P-8111282 outline TT-5818190 assembly	A	5400009212	OST-1B	150B/1506
Emerson Electric Manufacturing Company	5AM31NJ18	P-8111282 outline TT-5818190 assembly	A	5400009212	OST-1B	150B/1506



MOTOR—AZIMUTH TURRET DRIVE

GENERAL ELECTRIC COMPANY MODEL 5BA50LJ1

NAMES: Azimuth turret drive motor
Drive motor
Turret drive motor

DESCRIPTION: This $\frac{1}{2}$ horsepower azimuth turret drive motor is used to horizontally rotate a gun turret. It is of the four-pole two-brush type, with a separately excited field. The motor is bolted to the turret in a vertical position, so that the armature shaft is down. This shaft carries the drive pinion of a 500 to 1 reduction gear train. The motor is equipped with sealed type ball bearings containing enough low temperature lubricant to last throughout its normal operational life. One amplidyne motor-generator is required to furnish power for operation of each drive motor.

CHARACTERISTICS:

Dimensions.....	approximately $9\frac{5}{16}$ by $5\frac{7}{8}$ by $4\frac{1}{4}$ inches
Weight.....	approximately 8 pounds
Type.....	$\frac{1}{2}$ horsepower direct current
Full load revolutions per minute.....	3000
Field current.....	2.3 amperes
Field voltage.....	24 volts
Field resistance.....	9.4 ohms

RELATIONSHIP OF PARTS: Used with:

Amplidyne motor-generator G. E. model 5AM31NJ18, A. E. Reference Number 52-3030 in the following turrets: Army type A-3, A. E. Reference Number 52-7400; Army type A-3A, A. E. Reference Number 52-7425; Army type A-3B, A. E. Reference Number 52-7450; Army type A-3C, A. E. Reference Number, 52-7475; Army type A-15, A. E. Reference Number 52-7790; Army type A-9, A. E. Reference Number 52-7900; Army type A-9A, A. E. Reference Number 52-7910; Army type A-10, A. E. Reference Number 52-7950 and Army type A-11, A. E. Reference Number 52-8000.

ARMY

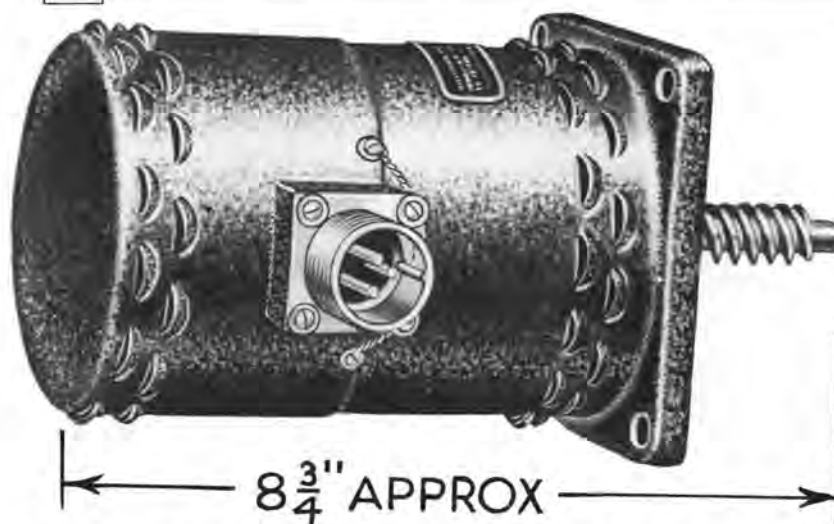
A. E. REFERENCE NUMBER: 52-3060
A. S. C. STOCK NUMBER: Refer to chart.
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Manufacturer's Specification Number	British Reference Number
General Electric Company	5BA50LJ1	TT-5818151	A	5400465615	OST-1B	150B/1019
Emerson Electric Manufacturing Company	5BA50LJ1	TT-5818151	A	5400465615	OST-1B	150B/1019
American Generator and Armature Company	5BA50LJ1	TT-5818151	A	5400465615	OST-1B	150B/1019



MOTOR—ELEVATION TURRET DRIVE
GENERAL ELECTRIC COMPANY MODEL 5BA50GJ1

NAMES: Elevation turret drive motor
Drive motor

Turret drive motor

DESCRIPTION: This $\frac{1}{3}$ horsepower elevation turret drive motor is used to elevate and depress a two-gun turret gun carriage. It is of the four-pole, two-brush type, with a separately excited field. The motor is bolted to the turret in a vertical position, so that the armature shaft is up. This shaft carries the drive pinion of an 800 to 1 reduction gear train. The motor is equipped with sealed type ball bearings containing enough low temperature lubricant to last throughout normal operational life. One amplidyne motor-generator is required to furnish power for the operation of each drive motor.

CHARACTERISTICS:

Dimensions	approximately $8\frac{3}{4}$ by $5 \times \frac{1}{4}$ $4\frac{1}{4}$ inches
Weight	approximately 7 pounds
Type	$\frac{1}{3}$ horsepower direct current
Full load revolutions per minute	3000
Field current	1.8 amperes
Field voltage	24 volts
Field resistance	11.6 ohms

RELATIONSHIP OF PARTS: Used with:

Amplidyne motor-generator, G. E. model 5AM31NJ18, A. E. Reference Number 52-3030 in the following turrets: Army type A-3, A. E. Reference Number 52-7400; Army type A-3A, A. E. Reference Number 52-7425; Army type A-3B, A. E. Reference Number 52-7450; Army type A-3C, A. E. Reference Number 52-7475; Army type A-15, A. E. Reference Number 52-7790; Army type A-9, A. E. Reference Number 52-7900; Army type A-9A, A. E. Reference Number 52-7910; Army type A-10, A. E. Reference Number 52-7950 and Army type A-11, A. E. Reference Number 52-8000.

ARMY

A. E. REFERENCE NUMBER: 52-3070

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

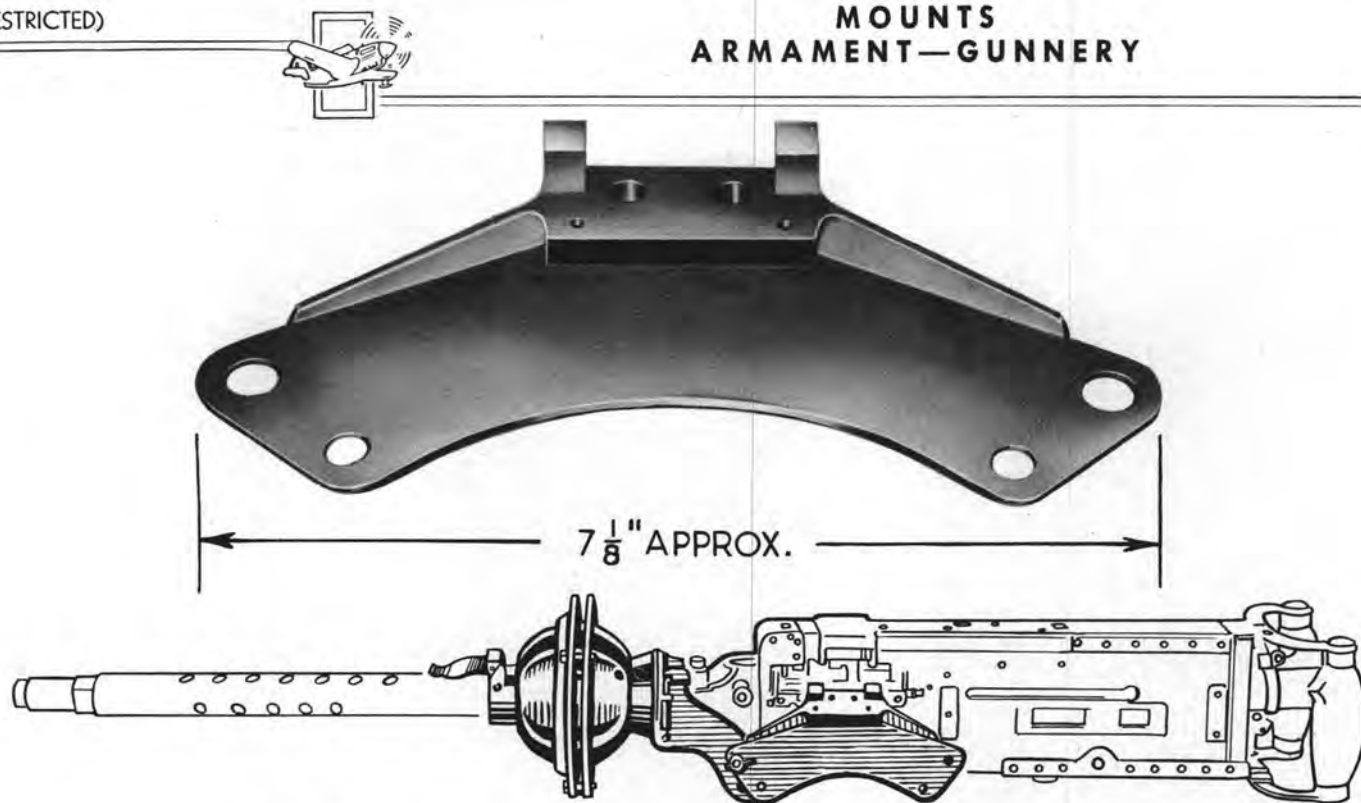
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Manufacturer's Specification Number	British Reference Number
General Electric Company	5BA50GJ1	TT-5818150	A	5400465630	OST-1B	150B/1027
Emerson Electric Manufacturing Company	5BA50GJ1	TT-5818150	A	5400465630	OST-1B	150B/1027



MOUNT—AMMUNITION BOX

ARMY TYPE A-3

NAMES: Ammunition box mount

DESCRIPTION: The Army type A-3 ammunition box mount is used for attaching a type A-1 ammunition box holder to a .30 caliber M2 machine gun. The mount is a welded metal bracket that is held to the gun by the belt retaining pawl pin and the gun trunnion bolt.

CHARACTERISTICS:

Dimensions..... approximately 7 1/8 by 3 by 7/8 inches.
Weight..... approximately 1 1/2 pounds.

RELATIONSHIP OF PARTS: Used with:

Army type A-1 ammunition box holder, A. E. Reference Number 52-2800 and .30 caliber M2 machine guns, A. E. Reference Numbers 93-1440 or 93-1520.

ARMY

A. E. REFERENCE NUMBER: 52-3100

SPECIFICATIONS:

Detail..... 93-24661
Superseded..... 24661

A. A. F. DRAWING NUMBER: 40D5858

TYPE DESIGNATION: A-3

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
St. Louis Aircraft Corporation	*A-3	**40D5858	A-B	5200466980	150J/584	
Dahlstrom Metallic Door Company	*A-3	**40D5858	A-B	5200466980	150J/584	

Note: *AAF type; **AAF drawing.



MOUNTS ARMAMENT—GUNNERY



MOUNT—LEFT HAND AMMUNITION BOX ARMY TYPE C-2

NAMES: Left hand ammunition box mount
.50 caliber flexible gun ammunition box mount
Ammunition box mount

DESCRIPTION: The Army type C-2 left hand ammunition box mount is used to secure a type O-1 ammunition box, or boxes of similar design, to the left side of a .50 caliber M2 machine gun. The mount is a machined metal plate with a pair of lugs which are attached to the gun by the belt retaining pawl pin. The ammunition box is slid on the plate and spring-loaded plungers, located on the mounting bracket, prevent the box from becoming dislodged by vibration.

CHARACTERISTICS:

Dimensions approximately $5\frac{11}{32}$ by 1 by 1 inches.
Weight approximately $6\frac{1}{2}$ ounces.

RELATIONSHIP OF PARTS: Used with:

Army type O-1 ammunition box, A. E. Reference Number 52-1600 and .50 caliber M2 machine guns, A. E. Reference Numbers 93-1560 and 93-1590.

ARMY

A. E. REFERENCE NUMBER: 52-3200

SPECIFICATIONS:

Detail 93-24640A
Superseded 93-24640

A. A. F. DRAWING NUMBER: 37B2675

TYPE DESIGNATION: C-2

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type C-3 mount, A. E. Reference Number 52-3350.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Dayton Tool & Engineering Company	*C-2	**37B2675	A-B	5200467000	150J/576
	*C-3	**39B3905-L	A-B	5200467350	150J/702

Note: *AAF type; **AAF drawing.



MOUNT—RIGHT HAND AMMUNITION BOX ARMY TYPE C-2

NAMES: Right hand ammunition box mount
.50 caliber flexible gun ammunition box mount
Ammunition box mount

DESCRIPTION: The Army type C-2 right hand ammunition box mount is used to secure a type O-1 ammunition box, or boxes of similar design, to the right side of a .50 caliber M2 machine gun. The mount is a machined metal plate with a pair of lugs which are attached to the gun by the belt retaining pawl pin. The ammunition box is slid on the plate and spring-loaded plungers, located on the mounting bracket, preventing the box from becoming dislodged due to vibration.

CHARACTERISTICS:

Dimensions.....approximately 5 $\frac{11}{32}$ by 1 by 1 inches.
Weight.....approximately 6 $\frac{1}{2}$ ounces.

RELATIONSHIP OF PARTS: Used with:

Army type O-1 ammunition box, A. E. Reference Number 52-1600 and .50 caliber M2 machine guns,
A. E. Reference Numbers 93-1560 and 93-1590.

ARMY

A. E. REFERENCE NUMBER: 52-3300

SPECIFICATIONS:

Detail.....93-24640A
Superseded.....93-24640

A. A. F. DRAWING NUMBER: 37B2675

A. A. F. PART NUMBER: 37B2675-1

TYPE DESIGNATION: C-2

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type C-3 mount, A. E. Reference Number 52-3350.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Dayton Tool & Engineering Company	*C-2	**37B2675-1	A-B	5200467050	150J/585
	*C-3	**39B3905-R	A-B	5200467360	150J/703

Note: *AAF type; **AAF drawing.



MOUNTS ARMAMENT—GUNNERY



MOUNT—LEFT HAND AMMUNITION BOX ARMY TYPE C-3

NAMES: Left hand ammunition box mount
.50 caliber flexible gun ammunition box mount
Ammunition box mount

DESCRIPTION: The Army type C-3 left hand ammunition box mount is used to secure a type O-1 ammunition box, or boxes of similar design, to the left side of a .50 caliber M2 machine gun. The mount is a machined metal plate with a pair of lugs which are attached to the gun by the belt retaining pawl pin. The ammunition box is slid on the plate and spring-loaded plungers, located on the mounting bracket, prevent the box from becoming dislodged due to vibration.

This mount is similar to the Army type C-2, except that the bracket position is located $\frac{5}{16}$ inch further out from the side of the gun. This increased dimension permits the use of the type O-1 ammunition box with Army types E-8 and E-12 gun mount adapters.

CHARACTERISTICS:

Dimensions.....approximately $5\frac{11}{32}$ by $1\frac{3}{8}$ by 1 inches.
Weight.....approximately 6 $\frac{1}{2}$ ounces.

RELATIONSHIP OF PARTS: Used with:

Army type O-1 ammunition box, A. E. Reference Number 52-1600 on .50 caliber M2 machine guns,
A. E. Reference Numbers 93-1560 and 93-1590.

ARMY

A. E. REFERENCE NUMBER: 52-3350

SPECIFICATIONS:

Detail.....93-24690A
Superseded.....93-24690

A. A. F. DRAWING NUMBER: 39B3905

TYPE DESIGNATION: C-3

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Dayton Tool and Engineering Company	*C-3	**39B3905-L	A-B	5200467350	150J/702	
	*C-2	**37B2675	A-B	5200467000	150J/576	Cannot be used with Army types E-8 and E-12 gun mount adapters.

Note: *AAF type; **AAF drawing.



MOUNT—RIGHT HAND AMMUNITION BOX ARMY TYPE C-3

NAMES: Right hand ammunition box mount
.50 caliber flexible gun ammunition box mount
Ammunition box mount

DESCRIPTION: The Army type C-3 ammunition box mount is used to secure a type O-1 ammunition box, or boxes of similar design, to the right side of a .50 caliber M2 machine gun. The mount is a machined metal plate with a pair of lugs which attach to the gun by the belt retaining pawl pin. The ammunition box is slid on the plate and spring-loaded plungers, located on the mounting bracket, prevent the box from becoming dislodged due to vibration. This mount is similar to the Army type C-2, except that the bracket position is located $\frac{5}{16}$ inch further out from the side of the gun. This increased dimension permits the use of the type O-1 ammunition box with Army types E-8 and E-12 gun mount adapters.

CHARACTERISTICS:

Dimensions.....approximately $5\frac{11}{32}$ by $1\frac{3}{8}$ by 1 inches.
Weight.....approximately $6\frac{1}{2}$ ounces.

RELATIONSHIP OF PARTS: Used with:

Army type O-1 ammunition box, A. E. Reference Number 52-1600 on .50 caliber M2 machine guns,
A. E. Reference Numbers 93-1560 and 93-1590.

ARMY

A. E. REFERENCE NUMBER: 52-3360

SPECIFICATIONS:

Detail.....93-24690A
Superseded.....93-24690

A. A. F. DRAWING NUMBER: 39B3905

TYPE DESIGNATION: C-3

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

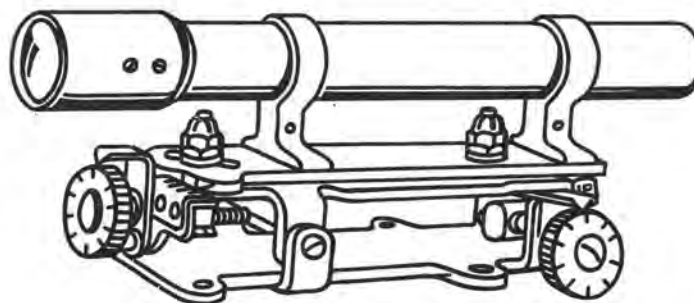
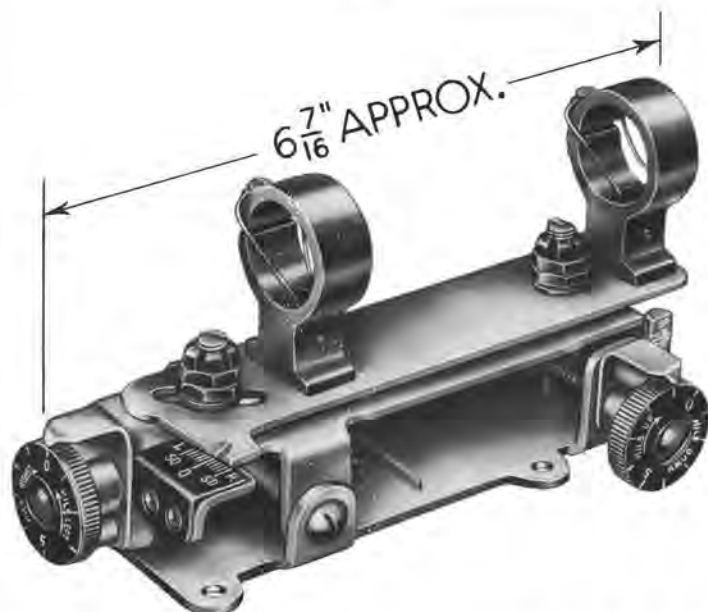
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Dayton Tool and Engineering Company	*C-3	**39B3905-R	A-B	5200467360	150J/703	
	*C-2	**37B2675-1	A-B	5200467050	150J/585	Cannot be used with Army type E-8 and E-12 gun mount adapters.

Note: *AAF type; **AAF drawing.



MOUNTS ARMAMENT—GUNNERY



MOUNT—FLEXIBLE GUN SIGHT ARMY TYPE C-4

NAMES: Flexible gun sight mount
Telescopic sight mount

DESCRIPTION: The Army type C-4 flexible gun sight mount is used to attach types E-4 and E-5 telescopic sights to Army types E-5 and E-8 gun mount adapters. It consists of two ring clamps which hold the sight, a vernier for aligning the sight to the gun, and a baseplate bracket for bolting the entire mount to the adapter.

CHARACTERISTICS:

Dimensions	approximately $6\frac{7}{16}$ by $3\frac{1}{2}$ by $2\frac{1}{2}$ inches.
Weight	approximately 1 pound 2 ounces.

RELATIONSHIP OF PARTS: Used with:

Army type E-4 or E-5 telescopic sights, A. E. Reference Numbers 52-5300 and 52-5350, on Army type E-5 or E-8 adapters, A. E. Reference Numbers 52-875 and 52-1100.

ARMY

A. E. REFERENCE NUMBER: 52-3400

SPECIFICATIONS:

Detail	93-24669
Superseded	24669

MANUFACTURER: American Thermometer Company.

A. A. F. DRAWING NUMBER: 40D6090

TYPE DESIGNATION: C-4

A. S. C. STOCK NUMBER: 5200471000

PRODUCTION STATUS: Not under procurement for initial installation.

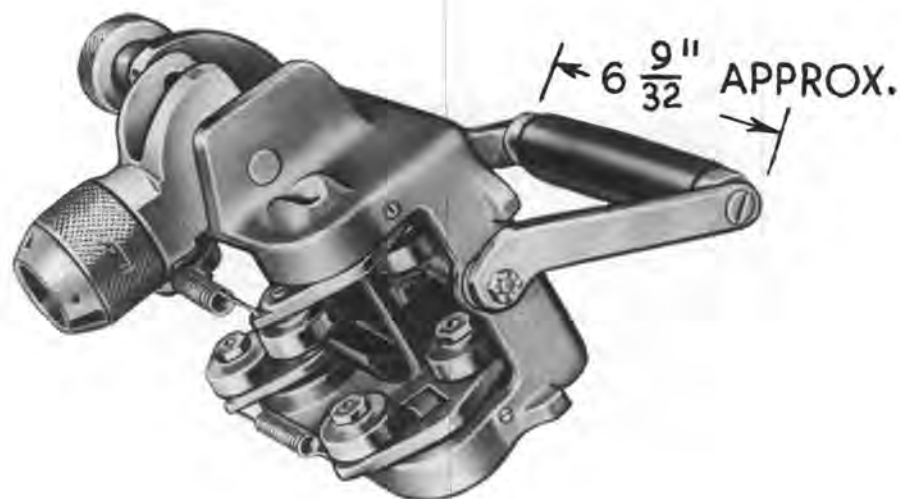
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 108B/80



MOUNT—GUN ARMY TYPE G-1A

NAMES: Gun mount
Flexible gun mount

DESCRIPTION: The Army type G-1A gun mount provides means for moving a .30 caliber M2 machine gun along a stationary track or rail conforming to the shape of a fuselage opening. The mount consists of a steel housing surrounding a movable truck which engages the rail, a brake mechanism, and a socket with a locking device to hold and lock the gun in the desired position. It also aids in stowing the gun horizontally, when not in use.

CHARACTERISTICS:

Dimensions.....approximately 7 by 11 by 4½ inches
Weight.....approximately 8 pounds 6 ounces

RELATIONSHIP OF PARTS: Used with:

A single .30 caliber M2 machine gun mounted on an
Army type C-16 gun mount adapter.....A. E. Reference Number 52-600

ARMY

A. E. REFERENCE NUMBER: 52-3500

SPECIFICATIONS:

Detail.....93-24561A
Superseded.....93-24561

A. A. F. DRAWING NUMBER: 37G6581 (Supersedes Army Drawing Number H39G5346)

TYPE DESIGNATION: G-1A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type G-5 mount, A. E. Reference Number 52-3600.

SHIPPING DATA: Shipped as a complete unit without rail which is not furnished by the government.

NAVY

There is no Navy equivalent for the Army item.

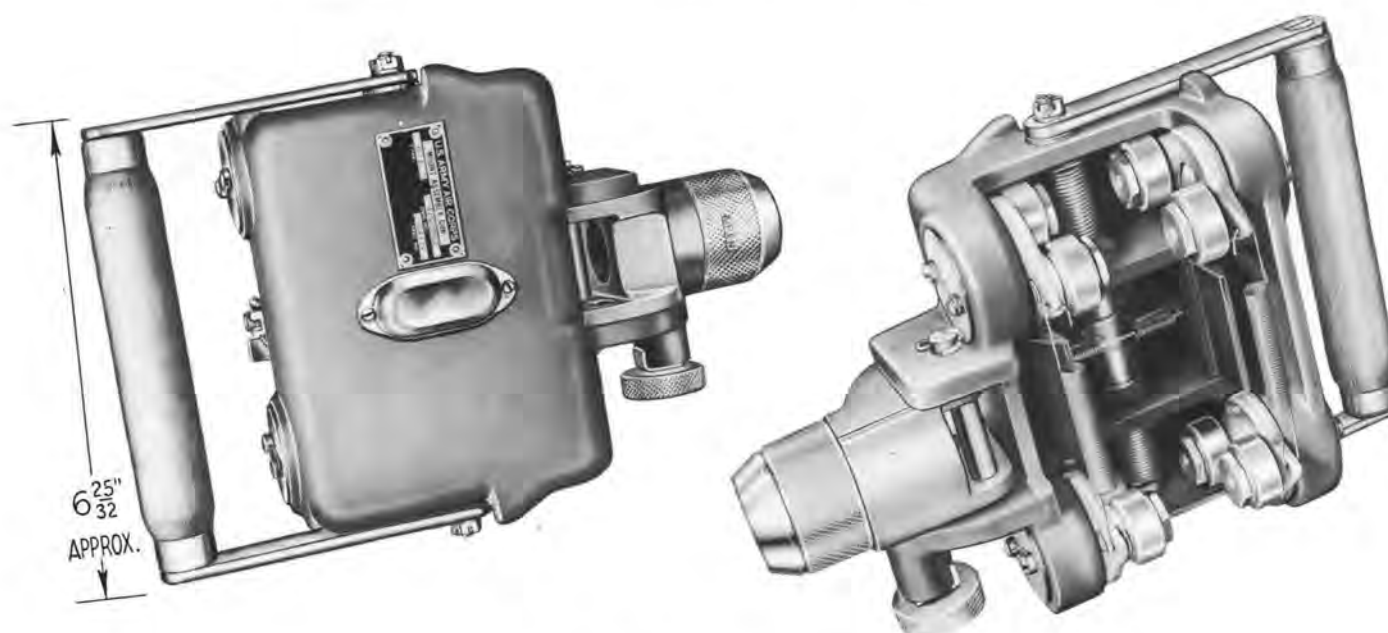
MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
The Duro Company	*G-1A	**37G6581	A-B	5200473300		150J/48	
	*G-5	**41G10752	A-B	5200473325	11-10-13	150J/574	Aluminum housing.

Note: *AAF type; **AAF drawing.



MOUNTS ARMAMENT—GUNNERY



MOUNT—GUN ARMY TYPE G-5

NAMES: Gun mount
Flexible gun mount

DESCRIPTION: The Army type G-5 gun mount provides means for moving a .30 caliber M2 machine gun along a stationary track or rail, conforming to the shape of a fuselage opening. The mount consists of an aluminum housing surrounding a movable truck which engages the rail, a brake mechanism, and a socket with a locking device to hold and lock the gun in the desired position. It also aids in stowing the gun horizontally, when not in use.

CHARACTERISTICS:

Dimensions.....approximately 7½ by 11⅛ by 4½ inches
Weight.....approximately 8 pounds 6 ounces

RELATIONSHIP OF PARTS: Used with:

A single .30 caliber M2 machine gun mounted on an
Army type C-16 gun mount adapter.....A. E. Reference Number 52-600

ARMY

A. E. REFERENCE NUMBER: 52-3600

SPECIFICATIONS:

Detail.....93-24719
Superseded.....24719

A. A. F. DRAWING NUMBER: 41G10752

TYPE DESIGNATION: G-5

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, without rail which is not furnished by the government.

NAVY

There is no Navy equivalent for the Army item.

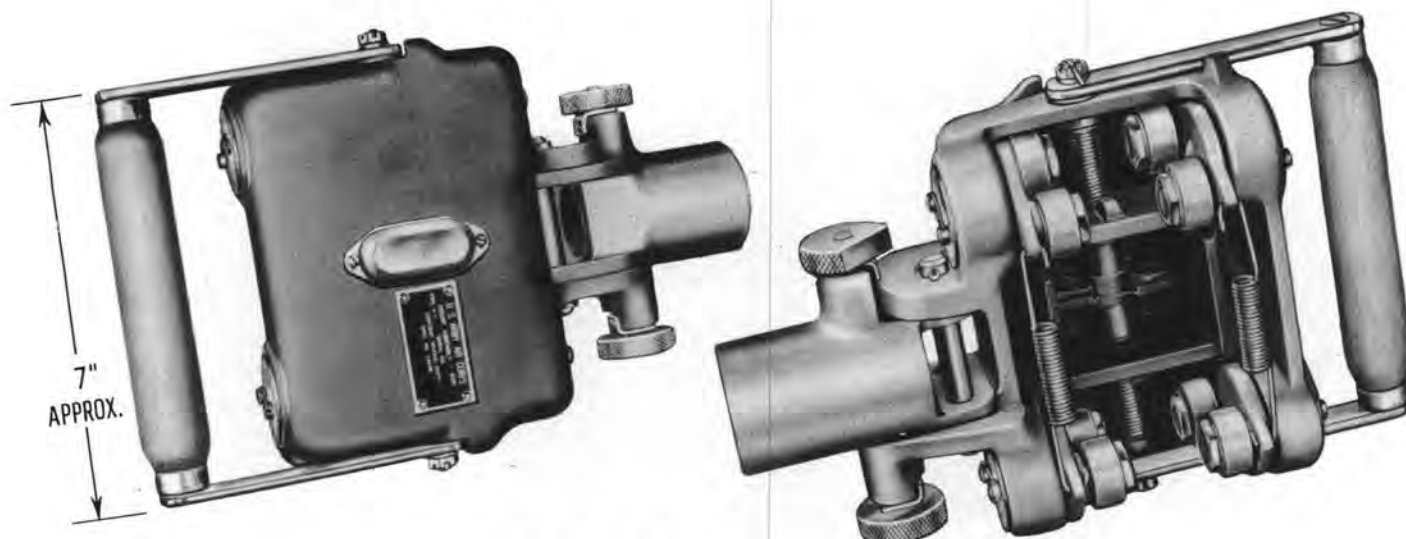
MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
The Duro Company	*G-5	**41G10752	A-B	5200473325	11-10-13	150J/574	
	*G-1A	**37G6581	A-B	5200473300		150J/48	Steel housing

Note: *AAF type; **AAF drawing.



MOUNTS ARMAMENT—GUNNERY



MOUNT—GUN ARMY TYPE H-1

NAMES: Gun mount
Flexible gun mount

DESCRIPTION: The Army type H-1 gun mount provides means for moving one .50 caliber M2 machine gun or twin, .30 caliber M2 machine guns along a stationary track or rail conforming to the shape of a fuselage opening. The mount consists of a steel housing surrounding a movable truck which engages the rail, a brake mechanism, and a socket with a locking device to hold and lock the gun, or guns, in the desired position.

CHARACTERISTICS:

Dimensions.....approximately 11 by 7 by 4½ inches
Weight.....approximately 16 pounds 8 ounces

RELATIONSHIP OF PARTS: Used with:

A single .50 caliber M2 machine gun mounted on an Army type E-11 or E-12 adapter, A. E. Reference Number 52-1300 or 52-1325; or two .30 caliber M2 machine guns mounted on a Bell model 19-G gun mount adapter, A. E. Reference Number 52-400.

ARMY

A. E. REFERENCE NUMBER: 52-3700

SPECIFICATIONS:

Detail.....93-24698
Superseded.....24698

A. A. F. DRAWING NUMBER: 41G6410 (Supersedes Army Drawing S41D6785).

TYPE DESIGNATION: H-1

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, without rail which is not furnished by the government.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
The Duro Company	*H-1	**41G6410	A-B	5200473335	150J/50
Aerial Machine and Tool Company	*H-1	**41G6410	A-B	5200473335	150J/50

Note: *AAF type; **AAF drawing.



MOUNTS ARMAMENT—GUNNERY

MOUNT ASSEMBLY— BALL AND SOCKET GUN ARMY TYPE K-1

NAMES: Ball and socket gun mount assembly
Ball and socket mount
Gun mount

DESCRIPTION: The Army type K-1 ball and socket gun mount, consisting of a type K-2 ball and a type C-17 adapter, accommodates a single .30 caliber M2 machine gun. The adapter is fastened to the front trunnion of the gun and clips to the rear of the ball. The socket halves, which surround the ball, attach to both sides of a plexiglass enclosure or window, where they are held by two retaining flanges. A removable sleeve in the ball may be withdrawn to permit use of a gun camera in this mount.

CHARACTERISTICS:

Dimensions approximately 5¾ by 5¾ by 7½ inches.
Weight approximately 4¼ pounds.

RELATIONSHIP OF PARTS: Used with:

A .30 caliber M2 flexible machine gun, A. E. Reference Number 93-1520.

ARMY

A. E. REFERENCE NUMBER: 52-3800

SPECIFICATIONS:

Detail 93-24655
Superseded 24655

A. A. F. DRAWING NUMBER: 40G6567

TYPE DESIGNATION K-1

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type K-3 ball and socket gun mount, A. E. Reference Number 52-3950.

SHIPPING DATA: Shipped as a complete unit.

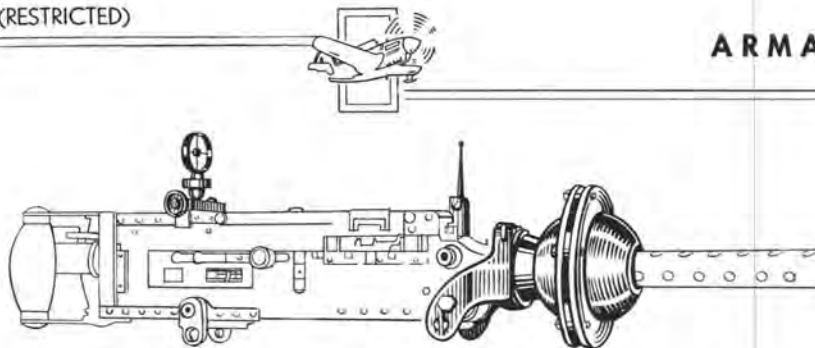
NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Moore-Eastwood and Company	*K-1	**40G6567	A-B	5200473350	150J/18	
	*K-2	**41B5641	A-B	5200473370	150J/27	Ball mount only. Requires adapter.
Iron Fireman Manufacturing Company	*K-1	**40G6567	A-B	5200473350	150J/18	
	*K-2	**41B5641	A-B	5200473370	150J/27	Ball mount only. Requires adapter.
	*K-2A	**41B10360	A-B	5200473380	150J/19	Ball mount only. Requires adapter. Non-removable sleeve.
Anetsberger Brothers Incorporated	*K-2A	**41B10360	A-B	5200473380	150J/19	Ball mount only. Requires adapter. Non-removable sleeve.
Ainsworth Manufacturing Company	*K-3	AG-150	A-B	5200473385	150J/51	Ball mount only. Requires adapter. Non-removable sleeve.

Note: *AAF type; **AAF drawing.



MOUNT — BALL AND SOCKET GUN

ARMY TYPE K-2

NAMES: Ball and socket gun mount
Ball and socket mount
Gun mount

DESCRIPTION: The Army type K-2 ball and socket gun mount, used with a single .30 caliber M2 machine gun, is a subassembly of the K-1 mount and is procured as such.

A sleeve inside the ball fits over the air jacket of the gun and is locked in place by set screws.

The sleeve is removable, to permit use of a gun camera in this mount. Six bolts mount this unit through a plexiglass panel, either in the nose or waist of the airplane.

CHARACTERISTICS:

Dimensions of socket approximately $5\frac{3}{4}$ inches in diameter.
Dimensions of ball approximately 4 by 4 by 5 inches.
Weight approximately $4\frac{1}{4}$ pounds.

RELATIONSHIP OF PARTS: Used with:

Army type C-17 gun mount adapter, A. E. Reference Number 52-700 to form the type K-1 gun mount which is used on .30 caliber M2 machine guns, A. E. Reference Number 93-1520.

ARMY

A. E. REFERENCE NUMBER: 52-3850

SPECIFICATIONS:

Detail 93-24697
Superseded 24697

A. A. F. DRAWING NUMBER: 41B5641 (Supersedes Army Drawing Number 40G6567).

TYPE DESIGNATION: K-2

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type K-3 gun mount adapter, A. E. Reference Number 52-3950.

SHIPPING DATA: Shipped as a sub-assembly of Army type K-1, A. E. Reference Number 52-3800.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Moore-Eastwood and Company	*K-2	**41B5641	A-B	5200473370	150J/27	
	*K-1	**40G6567	A-B	5200473350	150J/18	Includes Army type C-17 gun mount adapter.
Iron Fireman Manufacturing Company	*K-2	**41B5641	A-B	5200473370	150J/27	
	*K-1	**40G6567	A-B	5200473350	150J/18	Includes Army type C-17 gun mount adapter.
	*K-2A	**41B10360	A-B	5200473380	150J/19	Non-removable sleeve.
Ainsworth Manufacturing Company	*K-3	AG-150	A-B	5200473385	150J/51	Non-removable sleeve.
Anetsberger Brothers, Incorporated	*K-2A	**41B10360	A-B	5200473380	150J/19	Non-removable sleeve.

Note: *AAF type; **AAF drawing.



MOUNTS ARMAMENT—GUNNERY



MOUNT—BALL AND SOCKET GUN ARMY TYPE K-2A

NAMES: Ball and socket gun mount
Ball and socket mount

DESCRIPTION: The Army type K-2A ball and socket gun mount is used with a single .30 caliber M2 machine gun. This mount is a complete assembly, cast in one hollow piece with an integral sleeve. Nine bolts mount this unit through a plexiglass panel, either in the nose or waist of an airplane. A spring cap fits over the end of the ball exposed to the slipstream.

CHARACTERISTICS:

Dimensions of socket approximately 5 $\frac{3}{4}$ inches in diameter.
Dimensions of ball approximately 4 by 4 by 5 inches.
Weight approximately 4 $\frac{1}{2}$ pounds.

RELATIONSHIP OF PARTS: Used with:

Army type C-17 gun mount adapter, A. E. Reference Number 52-700, or Army type C-18 gun mount adapter and .30 caliber M2 machine gun, A. E. Reference Number 93-1520.

ARMY

A. E. REFERENCE NUMBER: 52-3900

SPECIFICATIONS:

Detail 93-24697
Superseded 24697

A. A. F. DRAWING NUMBER: 41B10360

TYPE DESIGNATION: K-2A

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by the Army type K-3 mount, A. E. Reference Number 52-3950.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Anetsberger Brothers, Incorporated	*K-2A	**41B10360	A-B	5200473380	150J/19	
Iron Fireman Manufacturing Company	*K-2A	**41B10360	A-B	5200473380	150J/19	
	*K-2	**41B5641	A-B	5200473370	150J/27	
	*K-1	**40G6567	A-B	5200473350	150J/18	Includes Army type C-17 gun mount adapter.
Moore-Eastwood and Company	*K-2	**41B5641	A-B	5200473370	150J/27	
	*K-1	**40G6567	A-B	5200473350	150J/18	Includes Army type C-17 gun mount adapter.
Ainsworth Manufacturing Company	*K-3	AG-150	A-B	5200473385	150J/51	

Note: *AAF type; **AAF drawing.



MOUNTS ARMAMENT—GUNNERY



MOUNT—BALL AND SOCKET GUN ARMY TYPE K-3

NAMES: Ball and socket gun mount
Ball and socket mount

DESCRIPTION: The Army type K-3 ball and socket gun mount is used with a single .30 caliber M2 machine gun. It is composed of ball halves, stamped out and tightly butt-jointed, with a non-removable sleeve extending the entire length of the ball. Six bolts mount this unit through the plexiglass in either the nose or waist of an airplane. A spring cap fits over the end of the ball exposed to the slipstream.

CHARACTERISTICS:

Dimensions of socket.....approximately $5\frac{7}{8}$ inches in diameter.
Dimensions of ball.....approximately $4\frac{1}{16}$ by $4\frac{1}{16}$ by $5\frac{5}{8}$ inches.
Weight.....approximately $4\frac{1}{2}$ pounds.

RELATIONSHIP OF PARTS: Used with:

Army type C-17 or C-18 gun mount adapters, A. E. Reference Numbers 52-700 and 52-800, and .30 caliber M2 machine gun, A. E. Reference Number 93-1520.

ARMY

A. E. REFERENCE NUMBER: 52-3950

SPECIFICATIONS:

Detail.....93-24780
Superseded.....24780

A. A. F. DRAWING NUMBER: 42B12323

TYPE DESIGNATION: K-3

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Ainsworth Manufacturing Company	*K-3	AG-150	A-B	5200473385	150J/51	
Anetsberger Brothers, Incorporated	*K-2A	**41B10360	A-B	5200473380	150J/19	
Iron Fireman Manufacturing Company	*K-2A	**41B10360	A-B	5200473380	150J/19	
	*K-2	**41B5641	A-B	5200473370	150J/27	
	*K-1	**40G6567	A-B	5200473350	150J/18	Includes Army type C-17 gun mount adapter.
Moore-Eastwood and Company	*K-2	**41B5641	A-B	5200473370	150J/27	
	*K-1	**40G6567	A-B	5200473350	150J/18	Includes Army type C-17 gun mount adapter.

Note: *AAF type; **AAF drawing.



MOUNT—BALL AND SOCKET GUN

ARMY TYPE K-4

NAMES: Ball and socket gun mount
Ball and socket mount

DESCRIPTION The Army type K-4 ball and socket gun mount is used with a single .50 caliber M2 machine gun. The ball halves are stamped out and tightly butt-jointed, with a non-removable sleeve extending the entire length of the ball. Six bolts mount this unit to a spider through a plexiglas panel in either the nose or waist of an airplane.

CHARACTERISTICS:

Dimensions of socket.....	approximately $5\frac{7}{8}$ inches in diameter
Dimensions of ball.....	approximately $4\frac{1}{8}$ by $4\frac{1}{8}$ by $5\frac{3}{8}$ inches
Weight.....	approximately $3\frac{1}{2}$ pounds

RELATIONSHIP OF PARTS: Used with:

A .50 caliber M2 machine gun, A. E. Reference Number 93-1560 with Army type C-19 gun mount adapter, A. E. Reference Number 52-850; and Army type E-11 gun mount adapter, A. E. Reference Number 52-1300.

ARMY

A. E. REFERENCE NUMBER: 52-3960

SPECIFICATIONS:

Detail.....	93-24814
Superseded.....	24814

MANUFACTURER: Ainsworth Manufacturing Company

MANUFACTURER'S DRAWING NUMBER: AG-360

A. A. F. DRAWING NUMBER: 42B19084

TYPE DESIGNATION: K-4

A. S. C. STOCK NUMBER: 5200468540

PRODUCTION STATUS: Under procurement.

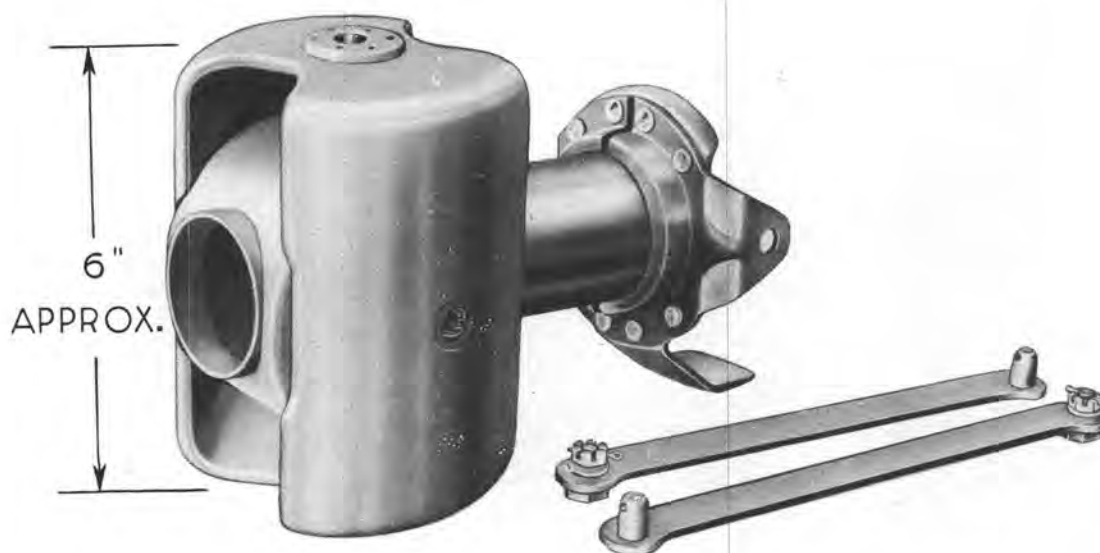
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 150J/52



MOUNT—SWIVEL GUN

ARMY TYPE K-5

NAMES: Swivel gun mount
Ball and socket mount
Ball and socket gun mount

DESCRIPTION: The Army type K-5 swivel gun mount is used with a single .50 caliber M2 machine gun. The mount comprises a universal joint in the form of a welded stamping, consisting of two cylinders, one rotating within the other. Their axis of rotation are at right angles to each other. A tube, which fits around the gun barrel, extends through the inner cylinder, and carries the necessary parts for attaching the mount to the gun.

CHARACTERISTICS:

Dimensions.....approximately 15½ by 6 by 4⅜ inches.
Weight.....approximately 5 pounds.

RELATIONSHIP OF PARTS: Used with:

A .50 caliber M2 machine gun, A. E. Reference Number 93-1560, and Army type E-11 gun mount adapter, A. E. Reference Number 52-1300.

ARMY

A. E. REFERENCE NUMBER: 52-3965

SPECIFICATIONS:

Detail.....24838

MANUFACTURER: Ainsworth Manufacturing Co.

MANUFACTURER'S DRAWING NUMBER: AG-800

A. A. F. DRAWING NUMBER: 43G10872

TYPE DESIGNATION: K-5

A. S. C. STOCK NUMBER: 5200473200

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

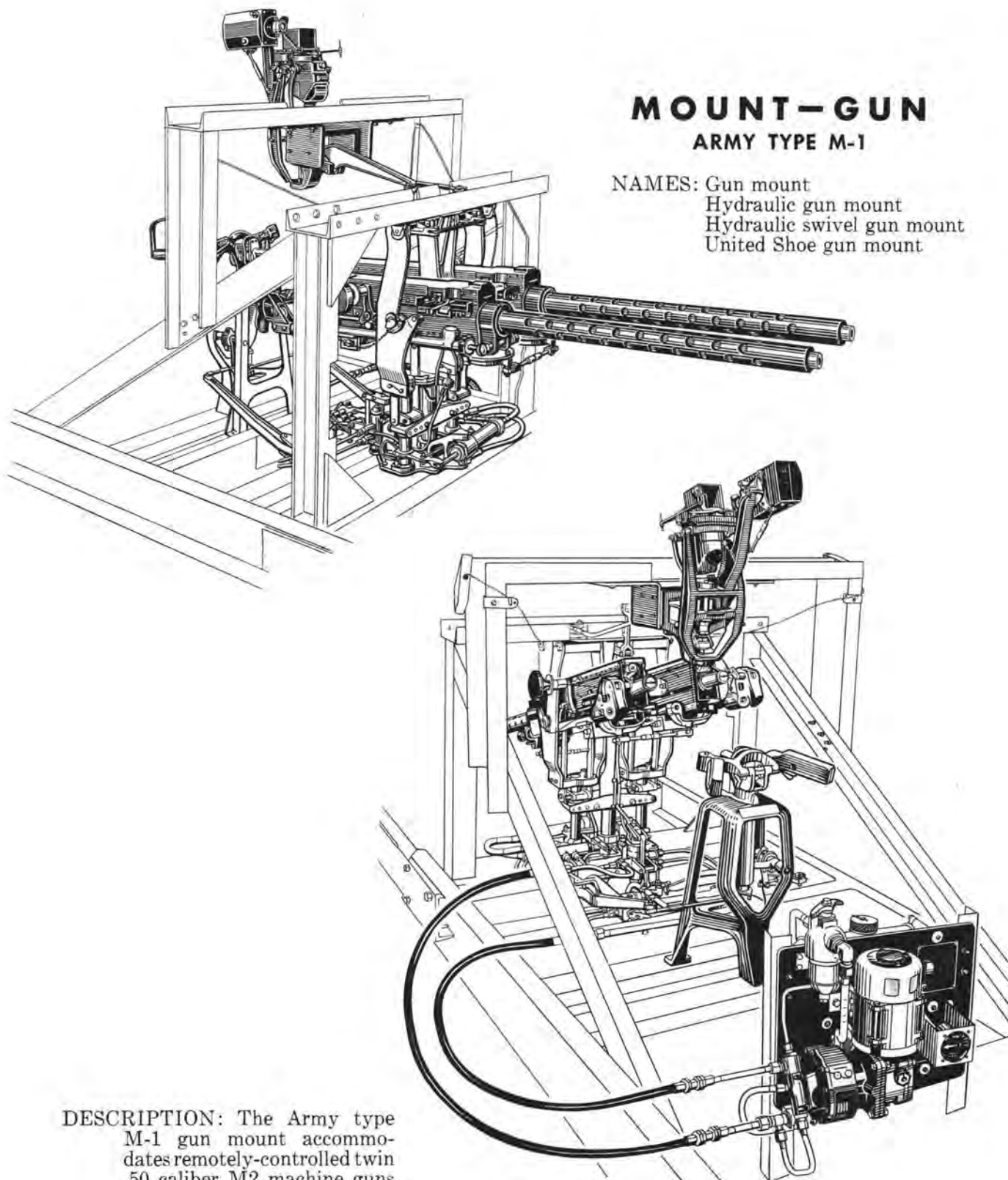
REFERENCE NUMBER: 150J/53

MOUNTS ARMAMENT—GUNNERY

MOUNT—GUN

ARMY TYPE M-1

NAMES: Gun mount
Hydraulic gun mount
Hydraulic swivel gun mount
United Shoe gun mount



DESCRIPTION: The Army type M-1 gun mount accommodates remotely-controlled twin .50 caliber M2 machine guns in the tail of an airplane. It consists of a separate hydraulic unit, an N-6 flexible gun sight and camera bracket, a mount to support the guns, and a tracking device to establish rate control. The quantity of oil supplied from the hydraulic unit to the pistons and cylinders is controlled by metering valves. The gunner, situated behind armor plate, operates control handles that regulate these valves and cause the guns to move. The system can be manually operated in case of power failure by opening a dump valve and releasing trapped oil. The sight, located approximately 17 inches above the mount, is coordinated with the guns by means of mechanical linkage.

(Continued on page 69)

**MOUNT—GUN***(Continued from page 68)***CHARACTERISTICS:**

Dimensions.....	approximately 45 by 24 by 19 inches
Weight.....	approximately 145 pounds
Cone of fire.....	60 degrees
Speed in any direction.....	30 degrees per second
Electric motor:	
Horsepower.....	3/5
Voltage.....	24 volts direct current
Revolutions per minute.....	1000

RELATIONSHIP OF PARTS: Used with:

Army type N-6 flexible gun sight, A. E. Reference Number 52-4500, and twin .50 caliber M2 machine guns, A. E. Reference Number 93-1560.

ARMY

A. E. REFERENCE NUMBER: 52-3975

MANUFACTURER: United Shoe Machinery Corp.

MANUFACTURER'S DRAWING NUMBERS: V1-17; V1-152, and V1-153

TYPE DESIGNATION: M-1

A. S. C. STOCK NUMBER: 5200473500

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped unassembled in three units.

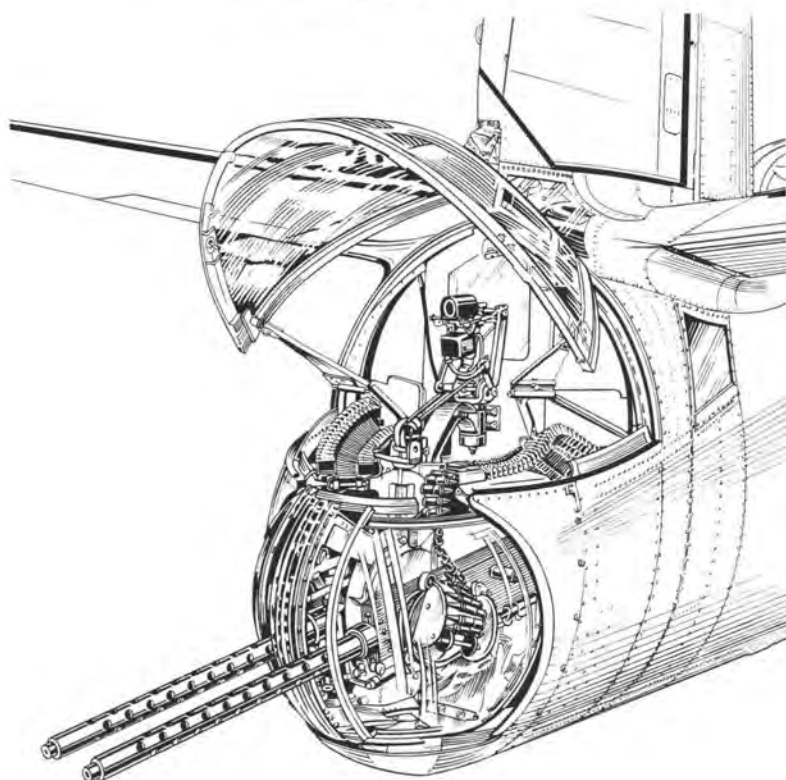
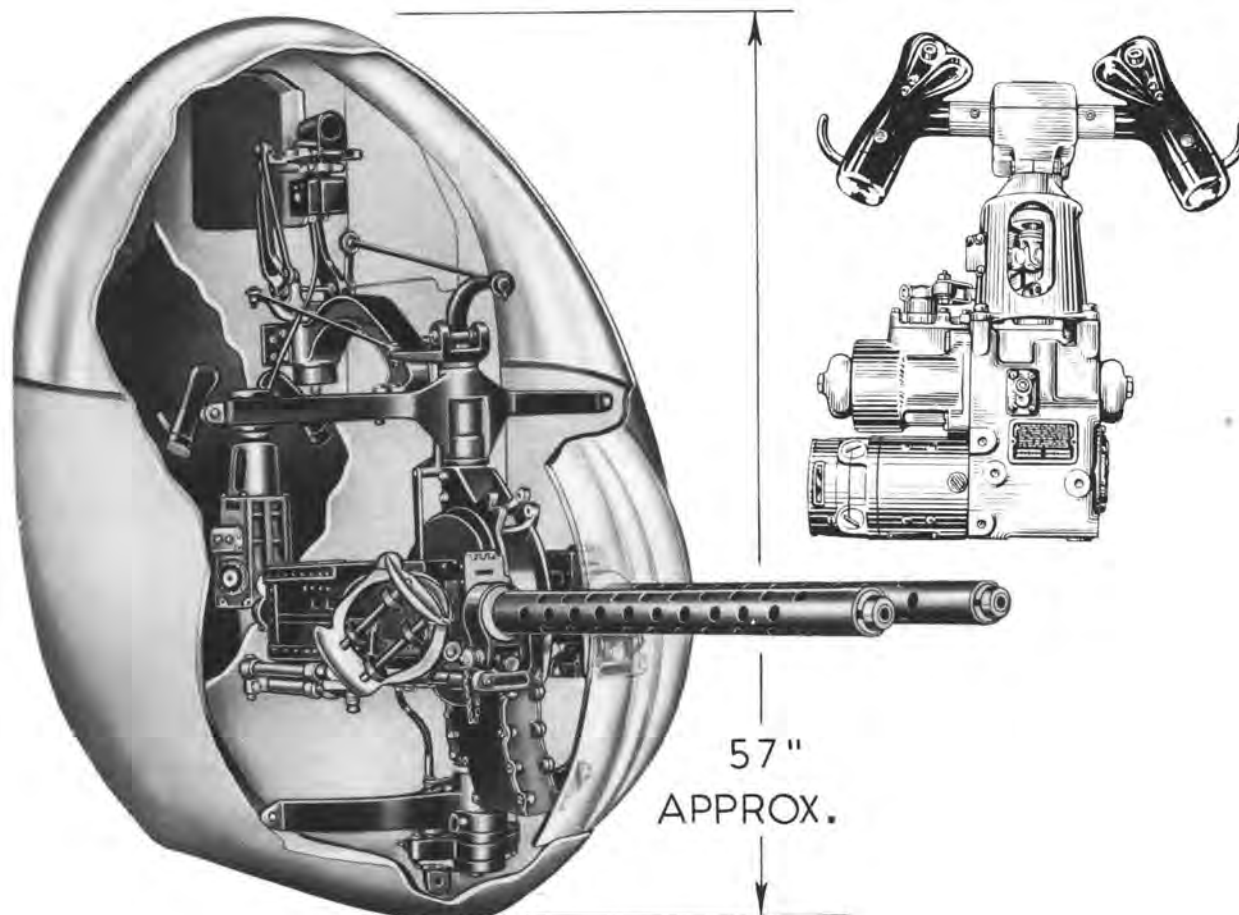
NAVY

There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 150J/54

MOUNTS ARMAMENT—GUNNERY



MOUNT—GUN ARMY TYPE M-6

NAMES: Gun mount

Bell turret

Hydraulic gun mount

Hydraulic swivel gun mount

(Continued on page 71)



MOUNT—GUN

(Continued from page 70)

DESCRIPTION: The Army type M-6 gun mount accommodates remotely-controlled twin .50 caliber M2 machine guns in the tail of an airplane. It consists of an hydraulic unit, a bracket for an Army type N-8 gun sight, a mount to support the guns, and an ammunition feed adapter. The mount is hydraulically-operated and is controlled by two variable displacement pumps. These pumps provide pressure for operation of the quadrant or vane type hydraulic motors; one controls movement in elevation, the other, in rotation. By varying the displacement of the proper pump, the position of the mount is changed. The sight is coordinated with the guns by means of linkage and is located approximately 17½ inches above the mount. The gunner operates the control handles, which are mounted above the hydraulic unit, from behind armor plate.

CHARACTERISTICS:

Dimensions.....	approximately 27½ by 28½ by 27 inches.
Weight.....	approximately 125 pounds.
Cone of fire.....	90 degrees.
Speed in any direction.....	35 degrees per second.
Electric Motor:	
Horsepower.....	1½
Voltage.....	24 volts direct current
Revolutions per minute.....	6000

RELATIONSHIP OF PARTS: Used with:

Army type N-8 flexible gun sight, A. E. Reference Number 52-4550 and twin .50 caliber M2 machine guns, A. E. Reference Number 93-1560. Early models of this mount were equipped with Navy Mark 9 illuminated sight, A. E. Reference Number 52-5375.

ARMY

A. E. REFERENCE NUMBER: 52-3980
 MANUFACTURER: Bell Aircraft Corp.
 MANUFACTURER'S SPECIFICATION NUMBER: 03-038-701
 MANUFACTURER'S DRAWING NUMBER: 03-038-700
 TYPE DESIGNATION: M-6
 A. S. C. STOCK NUMBER: 5200473555
 TECHNICAL ORDER NUMBER: 11-10-1
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit.

NAVY

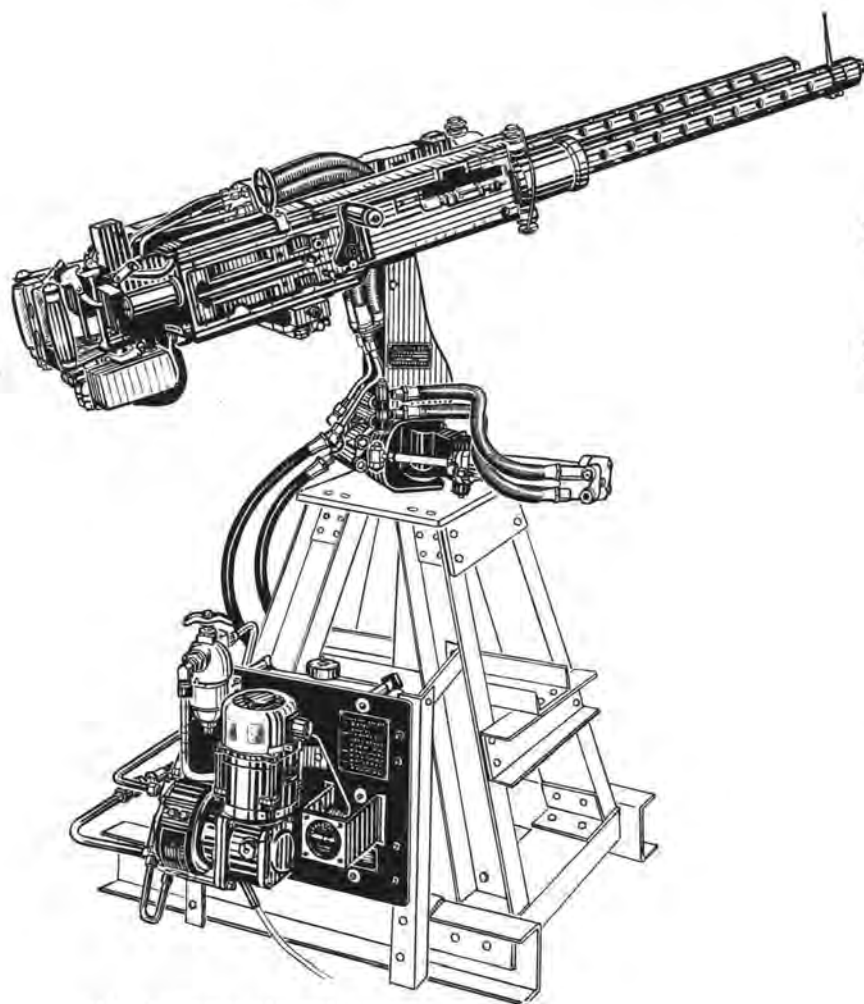
There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 150J/33



MOUNTS ARMAMENT—GUNNERY



MOUNT—GUN ARMY TYPE M-5

NAMES: Gun mount
Hydraulic gun mount
Hydraulic swivel gun mount

DESCRIPTION: The Army type M-5 gun mount is used for local control of twin .50 caliber M2 machine guns for side window waist installations. It is hydraulically operated from a separate power unit located near the installation. This unit is capable of supplying sufficient hydraulic power for two mounts. Each mount, however, has a dumping valve whereby the gunner may release trapped oil and free the gun for manual operation in case of power failure. Two control grips are located at the rear of the mount. The left hand grip operates a metering valve which regulates the flow of oil to pistons and cylinders thus controlling the direction and rate of gun movement. A trigger which fires both guns is located in front of the right hand grip. A ring and bead sight is used with this mount.

CHARACTERISTICS:

Dimensions.....	approximately 33 by 24 by 15 inches.
Weight.....	approximately 90 pounds.
Cone of fire.....	106 degrees.
Speed in any direction.....	30 degrees per second.
Electric Motor:	
Horsepower.....	2½.
Voltage.....	24 volts direct current.
Revolutions per minute.....	2150.

RELATIONSHIP OF PARTS: Used with:

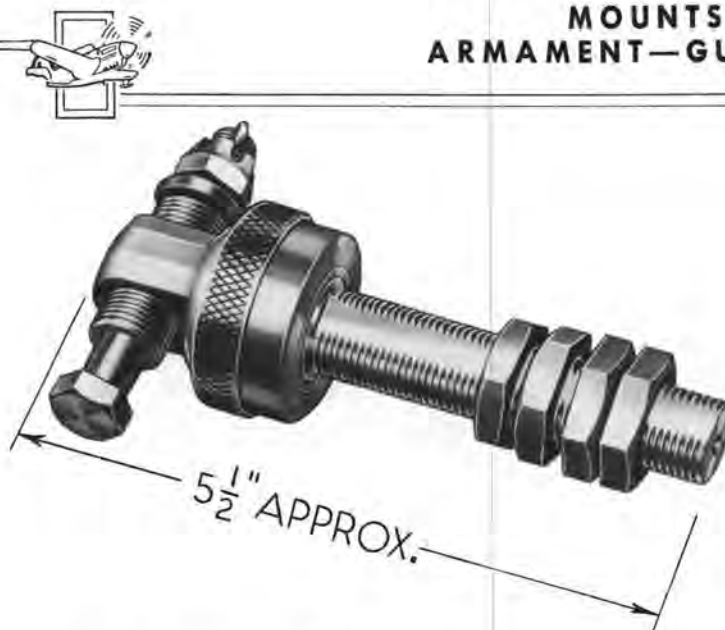
Army type A-5 gun post sight, A. E. Reference Number 52-4700 and an Army type B-11 gun ring sight, A. E. Reference Number 52-5000 on twin .50 caliber M2 flexible machine guns, A. E. Reference Number 93-1560.

ARMY

A. E. REFERENCE NUMBER: 52-3978
MANUFACTURER: United Shoe Machinery Corporation.
MANUFACTURER'S DRAWING NUMBER: V2-26
TYPE DESIGNATION: M-5
A. S. C. STOCK NUMBER: 5200473550
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped unassembled.

NAVY

There is no Navy equivalent for the Army item.

**POST—GUN MOUNTING****ARMY TYPE A-4 NAVY—SEE BELOW**

NAMES: Gun mounting post Gun mount post Rear mounting post (Navy)

DESCRIPTION: This gun mounting post is used with fixed .30 and .50 caliber M2 machine guns. It consists of a quickly detachable post connecting the rear mounting lugs of the gun to a mounting plate installed in the airplane. Adjustment from side to side is accomplished by means of a threaded bushing at the top of the post; a set screw holds the bushing in place after adjustment. Vertical adjustment is effected by changing the position of two locking nuts on the lower, threaded, portion of the post. The upper part of the mount, which is attached to the gun, may be removed from the vertical mounting post by turning the knurled collar.

CHARACTERISTICS:

Dimensions.....approximately 5½ by 3¼ by 1¾ inches
 Weight.....approximately 1½ pounds
 Threaded length of post.....3⅞ inches

RELATIONSHIP OF PARTS: Used with:

Gun trunnion bolt and bracket, A. E. Reference Number 52-1450 to mount one .30 caliber M2 fixed machine gun, A. E. Reference Number 93-1420, or one .50 caliber M2 fixed machine gun, A. E. Reference Number 93-1560.

ARMY

A. E. REFERENCE NUMBER: 52-4100

SPECIFICATIONS:

Detail.....93-24608
 Superseded.....24608

A. A. F. DRAWING NUMBER: 38B1942 (Supersedes Army Drawing H38D5278)

TYPE DESIGNATION: A-4

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION.....	A-4	Mark 1
BU. ORD. DRAWING NUMBER.....	None	179007
AVIATION ORDNANCE STOCK LIST NUMBER.....	1-P-10840	1-P-10828
ORDNANCE PAMPHLET NUMBER.....	None	865
PROCUREMENT STATUS.....	Under procurement.	Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Crosley Corporation	*A-4	**38B1942	A-N-B	5200567100	150J/573	
Aerial Machine and Tool Company	*A-4	**38B1942	A-N-B	5200567100	150J/573	
Moore-Eastwood and Company	*A-4	**38B1942	A-N-B	5200567100	150J/573	
H. M. Thermal Control Company	*A-4	**38B1942	A-N-B	5200567100	150J/573	
Taco Heaters, Incorporated	‡Mark 1	‡‡179007	N			Has height graduations on post.
	‡Mark 3	‡‡329518	N			Issued to Douglas Aircraft only.
Appliance Manufacturing Company	‡Mark 1	‡‡179007	N			Has height graduations on post.
	‡Mark 3	‡‡329518	N			Issued to Douglas Aircraft only.

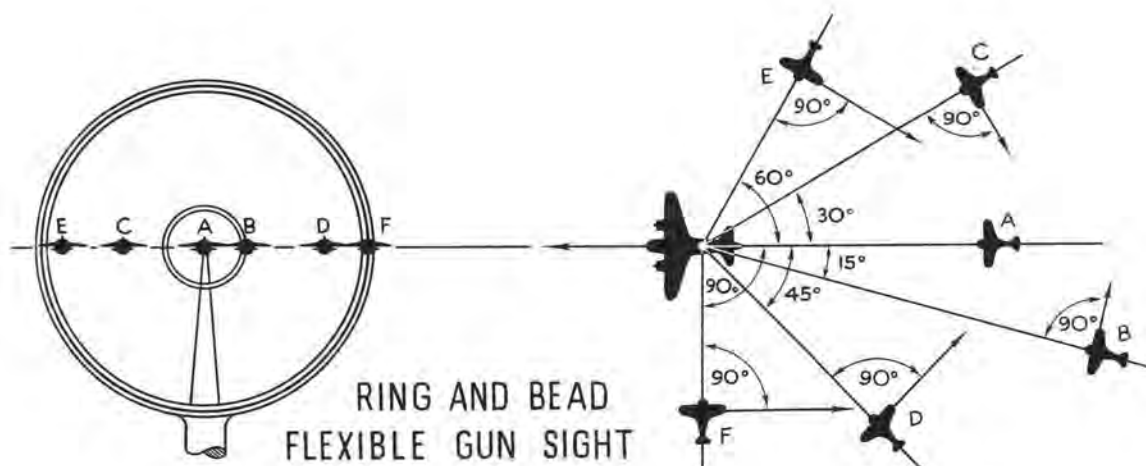
Note: *AAF type; **AAF drawing; ‡Navy type; ‡‡Navy drawing.



GUN SIGHTS

Machine gun sights enable a gunner to aim more accurately at a target and thus score a greater number of hits.

The simplest types in use are the telescopic and the ring and bead sights. Telescopic sights, now relatively obsolete, consist of a simple telescope which magnifies the target, and a set of cross hairs incorporated in the eyepiece. The bead part of the ring and bead combination is mounted on top of a post which is attached to the gun adapter or the gun barrel. The ring sight is made up of concentric rings, usually two or three in number, and is mounted to the gun in alignment with the bead. The radius of the outer ring is such that, with the operator's eye located a definite distance (usually eight inches) from the ring, the angle at the gunner's eye, between the edge and center of the ring, is equal to a definite lead angle. This angle is expressed in terms of miles per hour of relative speed perpendicular to the line of sight, i.e., a 150 mile per hour ring establishes the proper lead angle at the gunner's eye when a target is traveling at a relative speed of 150 miles per hour perpendicular to the line of sight. This is true for one range only, usually 400 yards. However, with the relative speed perpendicular to the line of sight, the lead angle changes only slightly with a change in range. The inner ring is used to estimate the range. It is so designed that it will circumscribe a definite wing span at a given distance, making it possible for the gunner, after he identifies the target, to approximate the yardage to it.



(Continued on page 75)

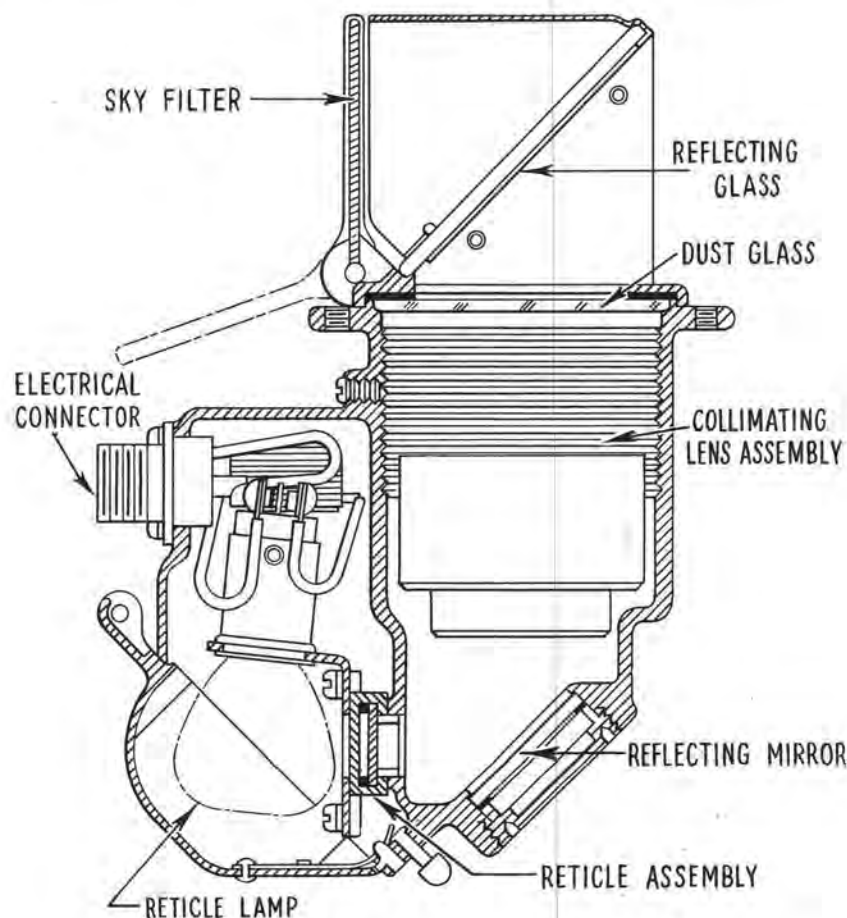


GUN SIGHTS

(Continued from page 74)

When firing, the gunner estimates the distance of the target and its flight path, aligns the bead, ring, and target, and allows a correction for the factors involved, based on his experience.

While using the ring and bead sight, errors may be incurred by a change in the relative position of the gunner's head. To correct for this, the optical, or illuminated reflector type sight, was designed. In the reflector type sight, light rays are passed through a small screen on which a circle and dot are etched. These rays then reflect the image of the circle and dot from a mirror, pass it through lenses, and cast it on a transparent reflector screen in front of the gunner. When peering through this screen at the target, the effect is the same as seeing the target and reflected image of the circle and dot in the same visual plane.



OPTICAL GUN SIGHT

To obtain still greater accuracy, gun sight development has been toward an automatic compensating or computing sight. Sights of this nature take into consideration additional variable factors, such as change in speed and direction of the target, drift of the fired bullet, speed of the airplane in which the gun is mounted, and wind effects on the bullet itself.



GUN SIGHTS ARMAMENT—GUNNERY

SIGHT—FLEXIBLE GUN POST ARMY TYPE A-4

NAMES: Flexible gun post sight Bead sight
Gun post sight Sight, open, fore post (Navy)
Post sight

DESCRIPTION: The type A-4 flexible gun post sight is used on flexibly mounted .30 caliber M2 machine guns. It is usually employed with the Army type B-10 flexible gun ring sight.

The gun post sight is made of rust-proof steel which is given a dull finish to prevent reflection. The post is tapered, and has a red enameled bead at the small end. The other end is inserted into a split collar which is used to secure the assembly to the gun. Inside the collar is a two-piece aluminum bushing. The split collar and bushing are secured near the front of the gun barrel jacket by two bolts.

CHARACTERISTICS:

Dimensions.....approximately $5\frac{1}{4}$ by $1\frac{3}{4}$ by $1\frac{1}{8}$ inches.

Weight.....approximately $\frac{1}{4}$ pound.

Height of post (from center of gun bore to center of bead)..... $3\frac{45}{64}$ inches.

RELATIONSHIP OF PARTS: Used with:

Army type B-10 flexible gun ring sight, A. E. Reference Number 52-4900 on .30 caliber M2 machine guns, A. E. Reference Number 93-1520.



ARMY

A. E. REFERENCE NUMBER: 52-4600

SPECIFICATIONS:

Detail.....93-24585

A. A. F. DRAWING NUMBER: 37B3578

TYPE DESIGNATION: A-4

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: A-4

BU. ORD. DRAWING NUMBER: 297102

AVIATION ORDNANCE STOCK LIST NUMBER: 2-S-3090

ORDNANCE PAMPHLET NUMBER: 263 and 865

PROCUREMENT STATUS: Under procurement.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Pausin Manufacturing Company	*A-4	**37B3578	A-N-B	5200727200	108B/15
Moore-Eastwood and Company	*A-4	**37B3578	A-N-B	5200727200	108B/15
International Register Company	*A-4	**37B3578	A-N-B	5200727200	108B/15

Note: *AAF type; **AAF drawing.



SIGHT—FLEXIBLE GUN POST

ARMY TYPE A-5 NAVY—SEE BELOW

NAMES: Flexible gun post sight Bead sight
 Gun post sight Sight, open, fore post (Navy)
 Post sight .50 caliber gun post sight

DESCRIPTION: The type A-5 flexible gun post sight is used on a single .50 caliber M2 machine gun. It is usually employed with a type B-11 flexible gun ring sight.

The gun post sight is made of rust-proof steel which is given a dull finish to prevent reflection. The post is tapered and has a red enameled bead at the small end. The other end is inserted into a split collar which is used to secure the assembly to the gun barrel jacket.

CHARACTERISTICS:

Dimensions approximately $5\frac{3}{8}$ by 1 by 2 inches
 Weight approximately $\frac{1}{4}$ pound
 Height of post (center of gun bore to center of bead) . . . $4\frac{11}{32}$ inches

RELATIONSHIP OF PARTS: Used with:

Army type B-11 flexible gun ring sight, A. E. Reference Number 52-5000 on .50 caliber M2 machine guns, A. E. Reference Number 93-1590.



ARMY

A. E. REFERENCE NUMBER: 52-4700

SPECIFICATIONS:

Detail 93-24586

A. A. F. DRAWING NUMBER: 37A5810

TYPE DESIGNATION: A-5

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: A-5

BU. ORD. DRAWING NUMBER: 297059

AVIATION ORDNANCE STOCK LIST NUMBER: 2-S-3091

ORDNANCE PAMPHLET NUMBER: 263 and 865

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
International Register Company	*A-5	**37A5810	A-N-B	5200727500	108B/3
American Signal Corporation	*A-5	**37A5810	A-N-B	5200727500	108B/3

Note: *AAF type; **AAF drawing.



GUN SIGHTS ARMAMENT—GUNNERY

SIGHT—FLEXIBLE GUN POST ARMY TYPE A-11

NAMES: Flexible gun post sight
Gun post sight
Post sight
.50 caliber gun post sight

Bead sight

DESCRIPTION: The Army type A-11 flexible gun post sight is used on a single .50 caliber M2 machine gun. It is usually employed with a type B-13 flexible gun ring sight.

This gun post sight is made of rust-proof steel which is given a dull finish to prevent reflection. The post is tapered and has a red enameled bead at the small end. The other end is inserted into a split collar which is used to secure the assembly to the gun barrel.

CHARACTERISTICS:

Dimensions approximately $6\frac{5}{8}$ by 2 by 1 inches
Weight approximately 2 ounces
Height of post (center of gun bore to center of bead) . . . $5\frac{1}{8}$ inches

RELATIONSHIP OF PARTS: Used with:

Army type B-13 flexible gun ring sight, A. E. Reference Number 52-5050, on a .50 caliber M2 machine gun, A. E. Reference Number 93-1590, mounted in an Army type E-8 adapter, A. E. Reference Number 52-1100.



ARMY

A. E. REFERENCE NUMBER: 52-4850

SPECIFICATIONS:

Detail 93-24758
Superseded 24758

MANUFACTURER: Ohio Art Company.

A. A. F. DRAWING NUMBER: 42A8317

TYPE DESIGNATION: A-11

A. S. C. STOCK NUMBER: 5200727575

TECHNICAL ORDER NUMBER: 11-35-13

PRODUCTION STATUS: Under procurement.

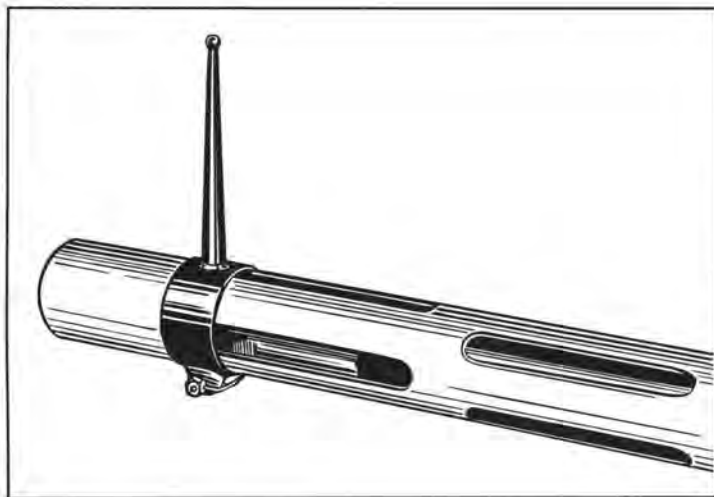
SHIPPING DATA: Shipped as a complete unit.

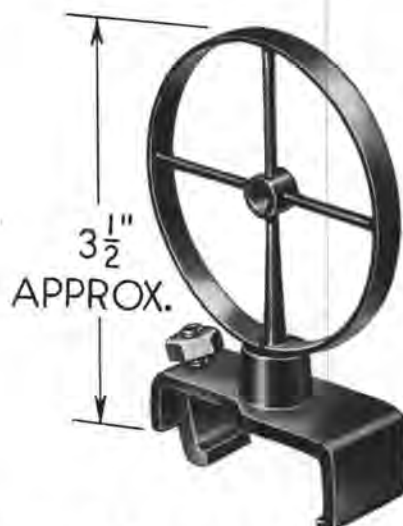
NAVY

There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 108B/74





SIGHT—FLEXIBLE GUN RING

ARMY TYPE B-10 NAVY—SEE BELOW

NAMES: Flexible gun ring sight
Gun ring sight
Ring sight
.30 caliber gun ring sight

DESCRIPTION: The type B-10 flexible gun ring sight is used on flexibly mounted .30 caliber M2 machine guns. It is usually employed with an A-4 flexible gun post sight.

The gun ring sight is made of rust-proof steel which is given a dull finish to prevent reflection. It consists of two concentric rings and an adjustable clamp. The larger ring is connected to a metal post mounted on the clamp. The smaller ring, or center peep, is supported from the larger ring, and contains two cross hairs which are used to align the bead on the post sight with the target. The clamp, consisting of a horizontal bar with two hooked lugs, secures the sight to the cover plate of the machine gun. When in position, the ring sight will be approximately eight inches from the gunner's eye.

CHARACTERISTICS:

Dimensions..... approximately 3 1/2 by 2 3/8 by 7/8 inches
Weight..... approximately 1/4 pound
Large ring (inside diameter)..... approximately 2 1/4 inches
Small ring (inside diameter)..... approximately 1/32 inch

RELATIONSHIP OF PARTS: Used with:

Army type A-4 flexible gun post sight, A. E. Reference Number 52-4600 on a .30 caliber M2 machine gun, A. E. Reference Number 93-1520.

ARMY

A. E. REFERENCE NUMBER: 52-4900

SPECIFICATIONS:

Detail..... 93-24587

A. A. F. DRAWING NUMBER: 37B3574

TYPE DESIGNATION: B-10

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: B-10

BU. ORD. DRAWING NUMBER: 297061

AVIATION ORDNANCE STOCK LIST NUMBER: 2-S-3106

ORDNANCE PAMPHLET NUMBER: 263 and 865

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Pausin Manufacturing Company	*B-10	**37B3574	A-N-B	5200728700	108B/18
International Register Company	*B-10	**37B3574	A-N-B	5200728700	108B/18

Note: *AAF type; **AAF drawing.



GUN SIGHTS ARMAMENT—GUNNERY

SIGHT—FLEXIBLE GUN RING

ARMY TYPE B-11 NAVY—SEE BELOW

NAMES: Flexible gun ring sight
Gun ring sight
Ring sight
.50 caliber gun ring sight
Sight, open, rear ring (Navy)

DESCRIPTION: The type B-11 flexible gun ring sight is used on flexibly mounted .50 caliber M2 machine guns. It is usually employed with an A-5 flexible gun post sight.

The gun ring sight is made of rust-proof steel which is given a dull finish to prevent reflection. It consists of two concentric rings and an adjustable clamp. The larger ring is welded to a metal post mounted on the clamp. The smaller ring, or center peep, is supported from the larger ring, and contains two cross hairs which are used to align the bead of the post sight with the target. The clamp, consisting of a horizontal bar with two hooked lugs, secures the sight to the cover plate of the machine gun. When in position, the sight will be approximately eight inches from the gunner's eye.

CHARACTERISTICS:

Dimensions.....approximately $3\frac{1}{4}$ by $2\frac{5}{16}$ by $3\frac{3}{4}$ inches
Weight.....approximately $\frac{1}{4}$ pound
Large ring (inside diameter).....approximately $2\frac{3}{16}$ inches
Small ring (inside diameter).....approximately $\frac{7}{32}$ inch

RELATIONSHIP OF PARTS: Used with:

Army type A-5 flexible gun post sight, A. E. Reference Number 52-4700 on a .50 caliber M2 machine gun, A. E. Reference Number 93-1590.



ARMY

A. E. REFERENCE NUMBER: 52-5000

SPECIFICATIONS:

Detail.....93-24588

A. A. F. DRAWING NUMBER: 37A5811

TYPE DESIGNATION: B-11

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type B-15 ring sight, A. E. Reference Number 52-5110

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: B-11

BU. ORD. DRAWING NUMBER: 297057

AVIATION ORDNANCE STOCK LIST NUMBER: 2-S-3107

ORDNANCE PAMPHLET NUMBERS: 263 and 865

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
International Register Company	*B-11	**37A5811	A-N-B	5200729000	108B/4
American Signal Corporation	*B-11	**37A5811	A-N-B	5200729000	108B/4

Note: *AAF type; **AAF drawing.



SIGHT-FLEXIBLE GUN RING

ARMY TYPE B-13

NAMES: Flexible gun ring sight
Gun ring sight
Ring sight
.50 caliber gun ring sight

DESCRIPTION: The Army type B-13 flexible gun ring sight is used on flexibly mounted .50 caliber M2 machine guns. It is usually employed with an A-11 flexible gun post sight.

The gun ring sight is made of rust-proof steel, which is given a dull finish to prevent reflection. It consists of two concentric rings mounted on a bracket which is bolted directly to the rear of the gun mount assembly, approximately eight inches from the gunner's eye.

CHARACTERISTICS:

Dimensions.....	approximately 3 by $2\frac{3}{8}$ by $\frac{5}{8}$ inches
Weight.....	approximately 1 ounce
Large ring (inside diameter).....	approximately $1\frac{3}{4}$ inches
Small ring (inside diameter).....	approximately $\frac{1}{4}$ inch

RELATIONSHIP OF PARTS: Used with:

Army type A-11 flexible gun post, A. E. Reference Number 52-4850 on a .50 caliber M2 machine gun,
A. E. Reference Number 93-1590, mounted on an Army type E-8 gun mount adapter, A. E. Reference
Number 52-1100.

ARMY

A. E. REFERENCE NUMBER: 52-5050

SPECIFICATIONS:

Detail.....	93-24759
Superseded.....	24759

MANUFACTURER: Ohio Art Company.

A. A. DRAWING NUMBER: 42B8318

TYPE DESIGNATION: B-13

A. S. C. STOCK NUMBER: 5200729115

TECHNICAL ORDER NUMBER: 11-35-13

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 108B/75



GUN SIGHTS ARMAMENT—GUNNERY



SIGHT—TELESCOPIC GUN ARMY TYPE E-5

NAMES: Telescopic gun sight

DESCRIPTION: The Army type E-5 telescopic gun sight is used with .30 and .50 caliber M2 machine guns. The sight is a telescope of approximately one power, incorporating a set of removable cross hairs. It is non-compensating, but when used with a type C-4 adjustable mount, it has limited adjusting facilities for aligning the line of sight to the bore axis of the gun.

Dust caps, connected by a leather strap, are provided to keep the lenses from being scratched.

CHARACTERISTICS

Dimensions..... approximately 9½ by 1¼ by 1¼ inches
Weight..... approximately ¾ pound

RELATIONSHIP OF PARTS: Used with:

Army type C-4 flexible gun sight mount, A. E. Reference Number 52-3400, on .30 or .50 caliber M2 machine guns.

ARMY

A. E. REFERENCE NUMBER: 52-5350

SPECIFICATIONS:

Detail..... 93-24667
Superseded:..... 24667

MANUFACTURER: International Register Company.

A. A. F. DRAWING NUMBER: 40B7830

TYPE DESIGNATION: E-5

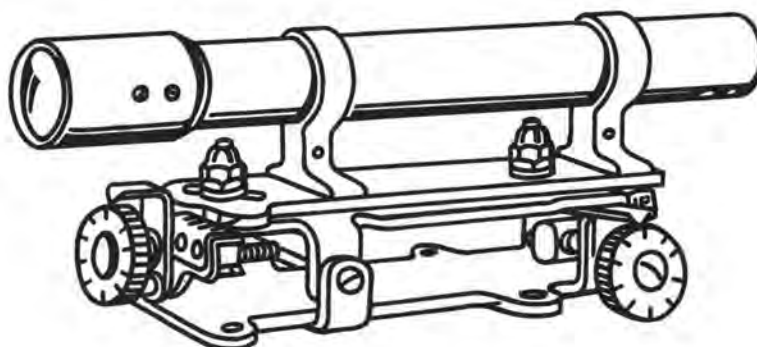
A. S. C. STOCK NUMBER: 5200729700

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.





SIGHT—ILLUMINATED

ARMY—SEE BELOW NAVY MARK 8

NAMES: Illuminated sight
Illuminated gun sight
Fixed gun sight
Optical sight

DESCRIPTION: The Navy Mark 8 illuminated optical sight is a device used to bring fixed guns to bear on a target. The sight is secured to the cowling of an airplane so that a reflecting plate is in line with the pilot's line of vision. A lamp in the base of the sight transmits a reticle image onto the reflecting plate, at the base of which is a spirit-level bank indicator. A sponge rubber cushion on the outer rim of the lens housing protects the pilot from injury in case of accident.

This sight uses a double filament lamp. The connector is a three-pin contact type.

CHARACTERISTICS:

Dimensions approximately 10½ by 6½ by 4⅛ inches
Weight approximately 3½ pounds
Voltage 12 volts direct current

RELATIONSHIP OF PARTS: Used with:

Lamp Trade Number 1652 IF, S-8 IF, 21/21 candlepower, 13 volts.

ARMY

A. E. REFERENCE NUMBER: 52-5370

TYPE DESIGNATION: Navy Mark 8

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Used only on aircraft procured for or from the Navy Department by the Army.

SHIPPING DATA: Shipped as a complete unit including lamp.

NAVY

TYPE DESIGNATION: Mark 8

ORDNANCE SPECIFICATION: 2349

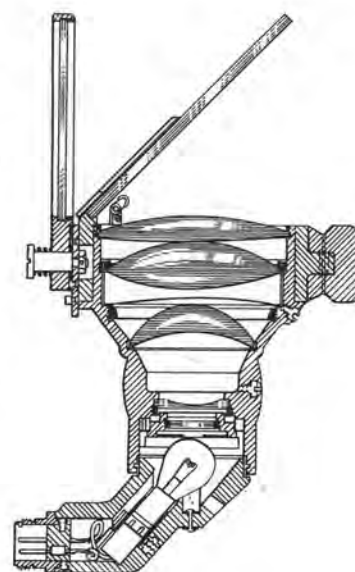
BU. ORD. DRAWING NUMBER: 238544

AVIATION ORDNANCE STOCK LIST NUMBER: 2-S-3114

ORDNANCE PAMPHLET NUMBER: 263, 803 and 865

ORDNANCE CIRCULAR LETTER: V19-42

PROCUREMENT STATUS: Not under procurement for initial installation.



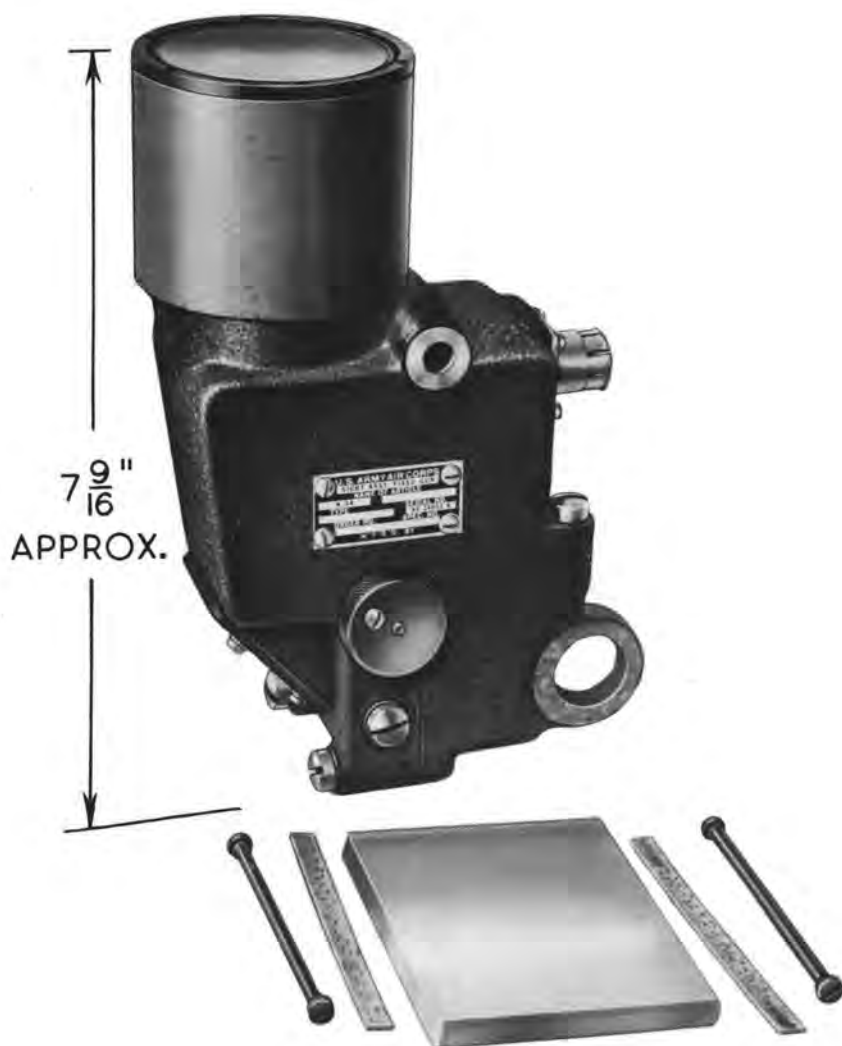
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Bausch and Lomb Optical Company	*Mark 8	**N-238544	A-N-B	5200730750	108B/20
Bell and Howell Company	*Mark 8	**N-238544	A-N-B	5200730750	108B/20

Note: *Navy type; **Bu. Ord. drawing.

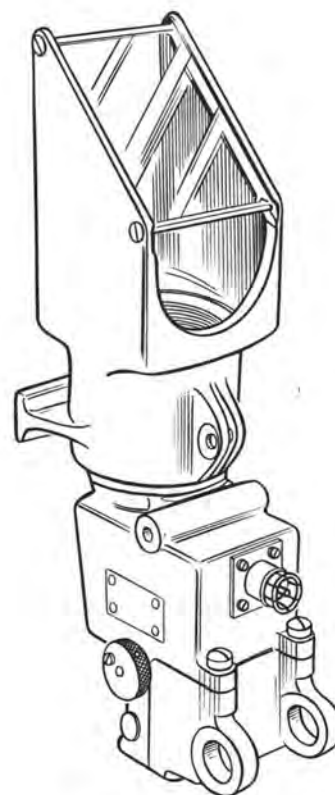


GUN SIGHTS ARMAMENT—GUNNERY



SIGHT— FIXED GUN

ARMY TYPE N-3A
NAVY—SEE BELOW



NAMES: Fixed gun sight
Illuminated sight
Illuminated gun sight
Optical sight

DESCRIPTION: The type N-3A fixed gun sight, usually mounted in the pilot's cockpit, is of the single wire grounded type. The sight consists of a main housing containing a lamp and lamp socket, a circle and center dot reticle, a mirror, a lens, and a toggle switch. This sight projects an image of the reticle on to a reflector screen held in a reflector support. This support is a separate item used in conjunction with the sight.

The lamp used contains two filaments; if one filament does not light, the gunner reverses the toggle switch and brings the other filament into use.

(Continued on page 85)



SIGHT— FIXED GUN

(Continued from page 84)

CHARACTERISTICS:

Dimensions.....	approximately 7 $\frac{9}{16}$ by 3 $\frac{1}{2}$ by 5 $\frac{1}{2}$ inches
Weight.....	approximately 3 $\frac{1}{2}$ pounds
Voltage.....	12 to 28 volts direct current
Electrical receptacle.....	Army part number 39A2389
Contact pin.....	Army part number 38A1782

RELATIONSHIP OF PARTS: Used with:

Lamp Trade Number 1052 I. F., A. E. Reference Number 88-8300 and gun sight image reflector support, A. E. Reference Number 52-6400, or Army type A-1 or A-2 pilot's bombsight head, A. E. Reference Number 64-2000 or 64-2005.

ARMY

A. E. REFERENCE NUMBER: 52-4400

SPECIFICATIONS:

Detail.....	93-24659B
Superseded.....	93-24659A

A. A. F. DRAWING NUMBER: 41G6436

TYPE DESIGNATION: N-3A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type N-3B, A. E. Reference Number 52-4425.

SHIPPING DATA: Shipped as a complete unit less lamp.

Note: Gun sight image reflector and pilot's bombsight head must be ordered separately.

NAVY

TYPE DESIGNATION: N-3A

AVIATION ORDNANCE STOCK LIST NUMBER: 2-S-3117

PROCUREMENT STATUS: Not under procurement for initial installation.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Service Tool and Engineering Company	*N-3A	**41G6436	A-N-B	5200726630	11-35-5	108B/12	Single pin push-on type electrical connector.
	*N-3B	**42G20092	A-B	5200726635	11-35-5	108B/68	Two pin screw-on type electrical connector.

NOTE: These sights may be used in a 12-volt circuit by replacing the lamp with lamp, Trade Number 1120 I.F., A.E. Reference Number 88-3200.
Note: *AAF type; **AAF drawing.



GUN SIGHTS ARMAMENT—GUNNERY



SIGHT—FIXED GUN ARMY TYPE N-3B

NAMES: Fixed gun sight Illuminated sight Illuminated gun sight Optical sight

DESCRIPTION: The Army type N-3B fixed gun sight, usually mounted in the pilot's cockpit, is of the two wire type, to prevent compass deviation. The sight consists of a main housing containing a lamp and lamp socket, a circle and center dot reticle, a mirror, a lens, and a toggle switch. This sight projects an image of the reticle onto a reflector screen held in a reflector support. This support is a separate item used in conjunction with the sight.

The lamp used in this sight contains two filaments; if one filament does not light, the gunner reverses the toggle switch and brings the other filament into use.

CHARACTERISTICS:

Dimensions.....	approximately 7 $\frac{9}{16}$ by 3 $\frac{1}{2}$ by 5 $\frac{1}{2}$ inches
Weight.....	approximately 3 $\frac{1}{2}$ pounds
Voltage.....	12-28 volts direct current
Electrical connector.....	AN3102-12S-3P

RELATIONSHIP OF PARTS: Used with:

Lamp Trade Number 1052 I. F., A. E. Reference Number 88-8300 and gun sight image reflector, A. E. Reference Number 52-6400, or Army types A-1 and A-2 pilot's bombsight head, A. E. Reference Number 64-2000 or 64-2005.

ARMY

A. E. REFERENCE NUMBER: 52-4425

SPECIFICATIONS:

Detail.....	93-24817
Superseded.....	24817

A. A. F. DRAWING NUMBER: 42G20092

TYPE DESIGNATION: N-3B

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit including lamp. Gun sights of early manufacture were shipped less lamp. Gun sight image reflector or pilot's bombsight head must be ordered separately.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Service Tool and Engineering Company	*N-3B	**42G20092	A-B	5200726635	11-35-5	108B/68	Two pin screw-on type electrical connector.
	*N-3A	**41G6436	A-N-B	5200726630	11-35-5	108B/12	Single pin push-on type electrical connector.

NOTE: These sights may be used in a 12-volt circuit by replacing the lamp with lamp, Trade Number 1120 I. F., A. E. Reference Number 88-3200.

*AAF type; **AAF drawing.

**SIGHT—FLEXIBLE GUN****ARMY TYPE N-6**

NAMES: Flexible gun sight
Illuminated sight
Illuminated gun sight
Optical sight

Reticle reflecting sight

DESCRIPTION: The Army type N-6 flexible gun sight, usually mounted in a machine gun turret, is of the single wire grounded type. The sight consists of a main housing and a removable reflector support. The housing contains a lamp and lamp socket, a circle and center dot reticle, a filter, a mirror, a lens, and a toggle switch. The image reflector support attached to the main housing includes a reticle reflector and a daylight filter, or sun screen. This screen may be placed in one of three positions to control the degree of sunlight protection. The reflector support uses cork strips around the glass to prevent breakage due to severe temperature changes.

This sight projects an image of the reticle onto the reflector screen held in the reflector support.

The lamp used in the sight contains two filaments; if one filament does not light, the gunner reverses the toggle switch and brings the other filament into use.

CHARACTERISTICS:

Dimensions . . . approximately
7 $\frac{13}{32}$ by 4 $\frac{31}{32}$
by 3 $\frac{15}{16}$ inches.

Weight approximately
2 $\frac{1}{8}$ pounds.

Voltage 12-28 volts direct
current.

Electrical
connector . . . AN3102-10S-2P.

RELATIONSHIP OF PARTS: Used with:

Lamp Trade Number 1052 I. F., A. E. Reference Number 88-8300, in 24 volt circuits, and Lamp Trade Number 1120 I.F., A.E. Reference Number 88-3200, in 12 volt circuits. Army type A-1 or A-2 pilot's bombsight head, A. E. Reference Number 64-2000 or 64-2005 may be used with this sight by removing the reflector support and installing an adapter.

ARMY

A. E. REFERENCE NUMBER: 52-4500

SPECIFICATIONS:

Detail 24704A

Superseded 24704

A. A. F. DRAWING NUMBER: 41D9625

TYPE DESIGNATION: N-6

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type N-6A, A. E. Reference Number 52-4525.

SHIPPING DATA: Shipped as a complete unit, less lamp.

NAVY

There is no Navy equivalent for the Army item.



ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
S. E. Bowser Company	*N-6	**41D9625	A-B	5200726690	11-35-12	108B/19	
	*N-6A	**42G14292	A-B	5200730700		108B/70	
E. A. Laboratories	*N-6	**41D9625	A-B	5200726690	11-35-12	108B/19	
Bell and Howell Company	*N-8	**163-A	A	5200731575	11-35B-1		†

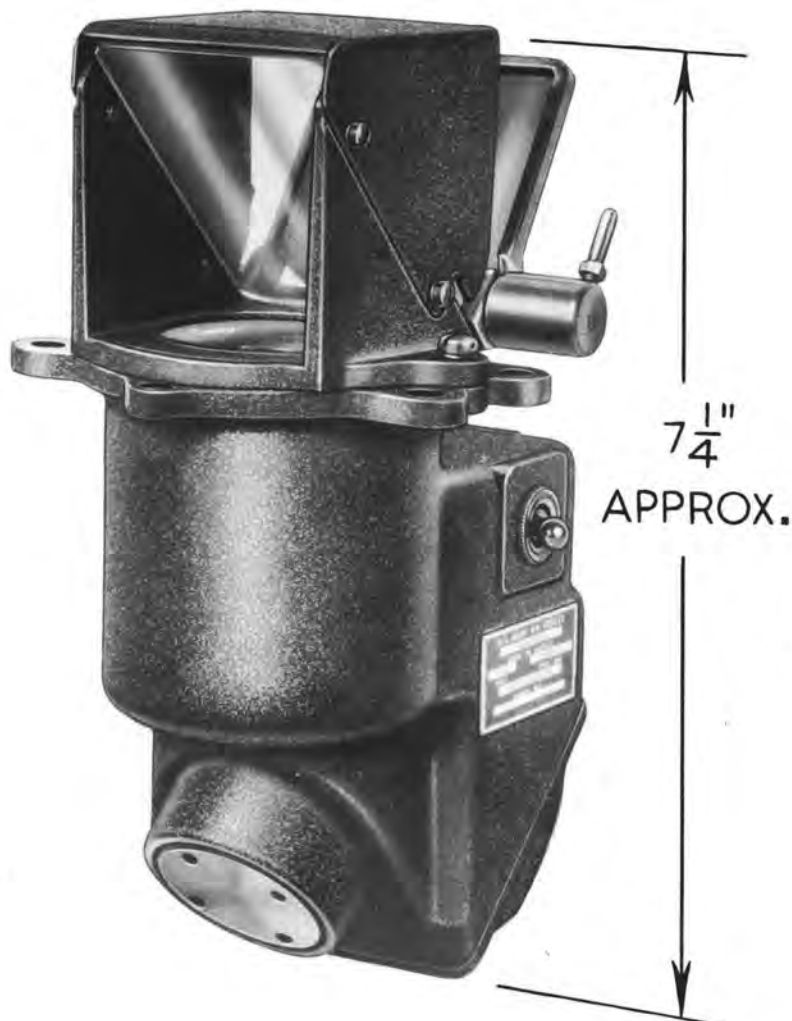
†For 24 volt circuit use lamp, Trade Number 844, A. E. Reference Number 88-8400. Replace with lamp, Trade Number 842, A. E. Reference Number 88-3300 for 12 volt use.

Note: *AAF type; **AAF drawing.



GUN SIGHTS ARMAMENT—GUNNERY

SIGHT— FLEXIBLE GUN ARMY TYPE N-6A



NAMES: Flexible gun sight
Illuminated sight
Illuminated gun sight
Optical sight

DESCRIPTION: The Army type N-6A flexible gun sight, usually mounted in a machine gun turret, is of the single wire grounded type. The sight consists of a main housing and removable reflector support. The housing contains a lamp and lamp socket, a circle and center dot reticle, a filter, a mirror, a lens, and a toggle switch. The image reflector support attached to the main housing includes a reticle reflector and a daylight filter, or sun screen. This screen may be placed in any position and has two adjusting knobs to control the degree of sunlight protection.

This sight projects an image of the reticle on to the reflector screen held in the reflector support.

The lamp used in the sight contains two filaments; if one filament does not light, the gunner reverses the toggle switch and brings the other filament into use.

(Continued on page 89)



SIGHT— FLEXIBLE GUN

(Continued from page 88)

CHARACTERISTICS:

Dimensions.....approximately 7¼ by 5⅜ by 4 inches
 Weight.....approximately 2⅛ pounds
 Voltage.....12-28 volts direct current
 Electrical connector.....AN3102-10S-2P

RELATIONSHIP OF PARTS: Used with:

Lamp Trade Number 1052 I. F., A. E. Reference Number 88-8300, in 24 volt circuits, and Lamp Trade Number 1120 I. F., A. E. Reference Number 88-3200, in 12 volt circuits.

Army type A-1 or A-2 pilot's bombsight head, A. E. Reference Number 64-2000 or 64-2005 may be used with this sight by removing the reflector support and installing an adapter.

ARMY

A. E. REFERENCE NUMBER: 52-4525

SPECIFICATIONS:

Detail: 93-24704

Superseded: 24704A

A. A. F. DRAWING NUMBER: 42G14292

TYPE DESIGNATION: N-6A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, including lamp. Gun sights of early manufacture were shipped less lamp.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
S. E. Bowser Company	*N-6A	**42G14292	A-B	5200730700		108B/70	
	*N-6	**41D9625	A-B	5200726690	11-35-12	108B/19	
E. A. Laboratories	*N-6	**41D9625	A-B	5200726690	11-35-12	108B/19	
Bell and Howell Company	*N-8	163-A	A	5200731575	11-35B-1		†

†For 24 volt circuit use lamp, Trade Number 844, A. E. Reference Number 88-8400. Replace with lamp, Trade Number 842, A. E. Reference Number 88-3300, for 12 volt use.

Note: *AAF type; **AAF drawing.

SIGHT—ILLUMINATED

NAVY MARK 9

NAMES: Illuminated sight
Illuminated gun sight

Flexible gun sight
Optical sight



6 ³/₈"
APPROX.



DESCRIPTION: The Navy Mark 9 illuminated optical sight is mounted on turret gun carriages or flexible gun mounts. The sight consists of a main housing and a reflector support. The housing contains a lamp and lamp socket, a reticle, a lens, and a snap type switch. The image reflector support attaches to the main housing and incorporates the reticle reflector and a daylight filter, or sunscreen. This sight projects an image of the reticle onto the reflector screen held in the reflector support. The snap switch incorporates a rheostat, which can be turned to vary the intensity of illumination of the sight.

Connected to the sight is a two-foot rubber insulated wire with a threaded electrical connection containing two pin-type contacts.

CHARACTERISTICS:

Dimensions.....approximately 6³/₈ by 3¹/₂ by 3¹/₂ inches
Weight.....approximately 1¹/₂ pounds
Voltage.....12 to 28 volts direct current

RELATIONSHIP OF PARTS: Used with:

Lamp, Trade Number 1664 IF, S-8 IF, 21/6 candlepower, 28 volts.

ARMY

A. E. REF. NO.: 52-5375
TYPE DESIGNATION: Navy Mark 9
A. S. C. STOCK NO.: Refer to chart.
PROD. STATUS: Not under procurement for initial installation. Used on aircraft procured for or from the Navy Department. Superseded by Army type N-8 sight, A. E. Reference Number 52-4550.
SHIPPING DATA: Shipped as a complete unit, including lamp.

NAVY

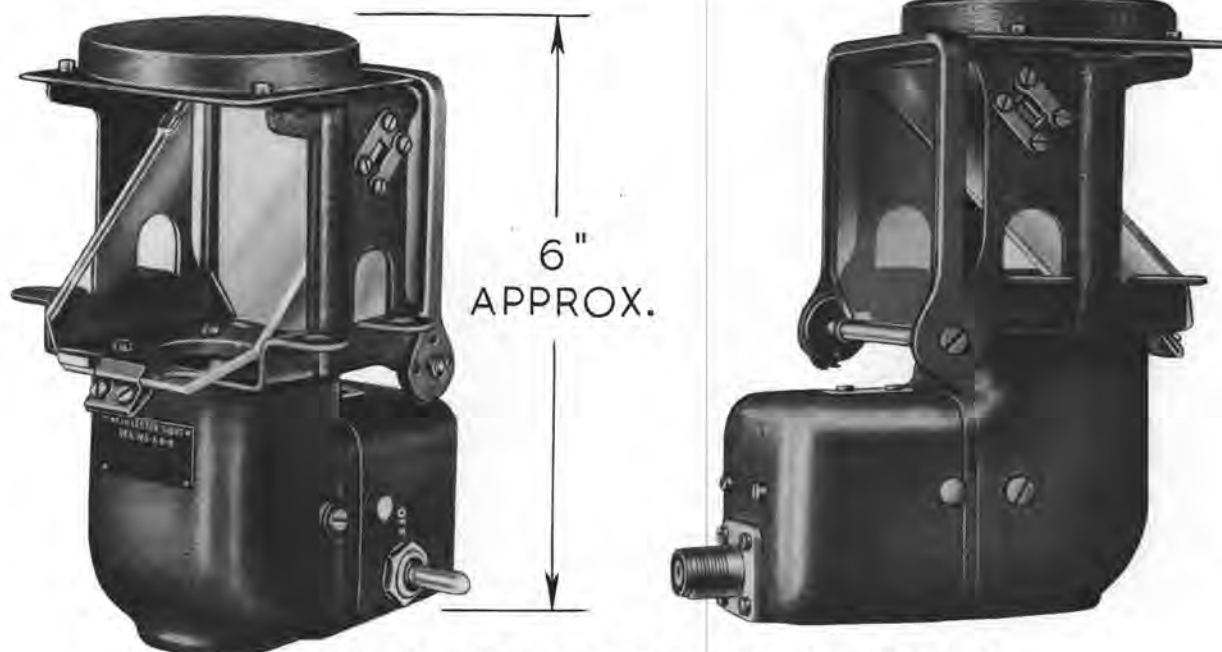
TYPE DESIGNATION: Mark 9
ORD. SPEC.: 2366
BU. ORD. DRAW. NO.: 300481
AVIATION ORDNANCE STOCK LIST
NUMBER: 2-S-3115
ORD. PAMPHLET NO.: 263 and 865
ORDNANCE CIRCULAR LETTER
NUMBER: V19-42
PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
American Cystoscope Makers, Incorporated	*Mark 9	ORD28177	A-N-B	5200730760	108B/21
Wollensak Optical Company	*Mark 9	ORD28177	A-N-B	5200730760	108B/21

NOTE: Navy Mark 9, Mod. 1 sight is identical to the Mark 9 except that Lamp, Trade Number 1684 IF, S8-, IF, 21/6 candlepower, 12-16 volts is used for 12 volt service.

Note: *Navy type.



SIGHT-FLEXIBLE GUN
ARMY TYPE N-8

NAMES: Flexible gun sight
Illuminated sight
Illuminated gun sight
Optical sight

Retiflector sight

DESCRIPTION: The Army type N-8 flexible gun sight, usually mounted in a machine gun turret, is of the single wire grounded type. The sight's main housing consists of a lamp and lamp socket in a removable base, a circle and center dot recticle, a filter or sun screen, and a mirror set up horizontally above a reflector glass.

The recticle consists of a glass with one opaque surface containing the recticle design. This sight projects an image of the recticle onto the reflector screen held in a reflector support.

The lamp used in this sight contains two filaments; if one filament does not light, the gunner reverses the toggle switch and brings the other filament into use. A ring and bead sight is provided in case of power failure.

CHARACTERISTICS:

Dimensions.....approximately 6 $\frac{1}{8}$ by 4 by 5 $\frac{3}{4}$ inches.
Weight.....approximately 1 $\frac{1}{4}$ pounds.
Voltage.....12-28 volts direct current.
Electrical connector.....AN3102-10S-2P.

RELATIONSHIP OF PARTS: Used with:

Lamp, Trade Number 844, A. E. Reference Number 88-8400 in 24-volt circuits, and Lamp, Trade Number 842, A. E. Reference Number 88-3300, in 12-volt circuits.

ARMY

A. E. REFERENCE NUMBER: 52-4550

TYPE DESIGNATION: N-8

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, including lamp.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

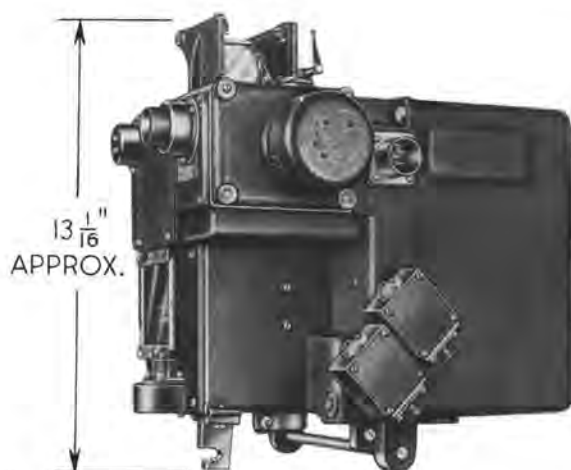
Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Bell and Howell Company	*N-8	163-A	A	5200731575	11-35B-1		
S. E. Bowser Company	*N-6	**41D9625	A-B	5200726690	11-35-12	108B/19	See note
	*N-6A	**42G14292	A-B	5200730700		108B/70	See note
E. A. Laboratories	*N-6	**41D9625	A-B	5200726690	11-35-12	108B/19	See note

NOTE: In 24-volt circuit use Lamp, Trade Number 1052 I.F., A.E. Reference Number 88-8300, and in 12-volt circuit use Lamp, Trade Number 1120 I.F., A. E. Reference Number 88-3200.

Note: *AAF type; **AAF drawing.



GUN SIGHTS ARMAMENT—GUNNERY



SIGHT—AUTOMATIC COMPENSATING GUN

ARMY TYPE K-3

NAMES: Automatic compensating gun sight
Computing sight

Sperry computing sight
Sperry computer

DESCRIPTION: The Army type K-3 automatic compensating gun sight is used in the types A-1 and A-1A upper turrets. The sight is mounted on a cradle that attaches to, and moves with, the guns. This sight consists of an optical system, an automatic computing mechanism and a range finder, combined into a single unit. The optical system is used to locate the target in space. The computing mechanism and range finder solves prediction and ballistic deflections for the projectile and automatically transmits these solutions to the optical system. This causes the line of sight to be offset from the gun bore in proportion to the predicted deflections, thereby insuring a greater proportion of hits. The gunner moves the sight (and the guns) so that the line of sight follows the movement of the target. A ring and bead sight, which is folded when not in use, is provided in case of power supply failure.

CHARACTERISTICS:

Dimensions.....approximately $13\frac{1}{16}$ by $13\frac{1}{32}$ by $10\frac{13}{32}$ inches.
Weight.....approximately 25 pounds.
Operating voltage.....24 volts direct current

RELATIONSHIP OF PARTS: Used with:

Army type A-1 and A-1A upper turrets, A. E. Reference Numbers 52-7600 and 52-7625, and lamp, Trade Number 1327, 12-16 volts, 32 candlepower, RP-11 bulb, single contact prefocused base.

ARMY

A. E. REFERENCE NUMBER: 52-4250

TYPE DESIGNATION: K-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit including lamp.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

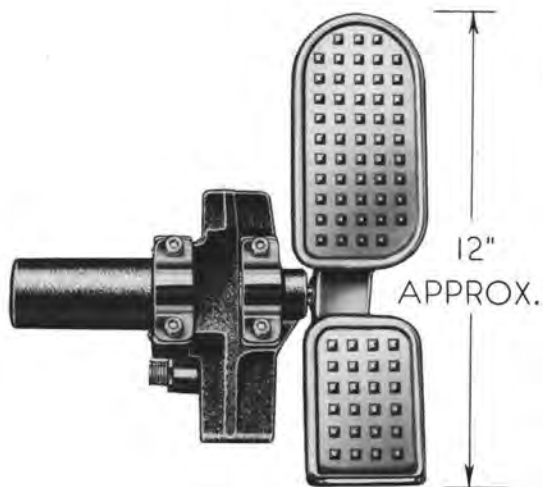
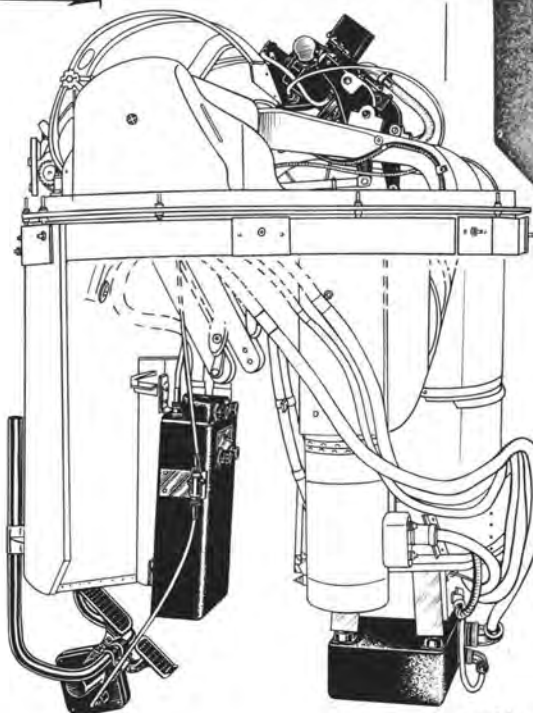
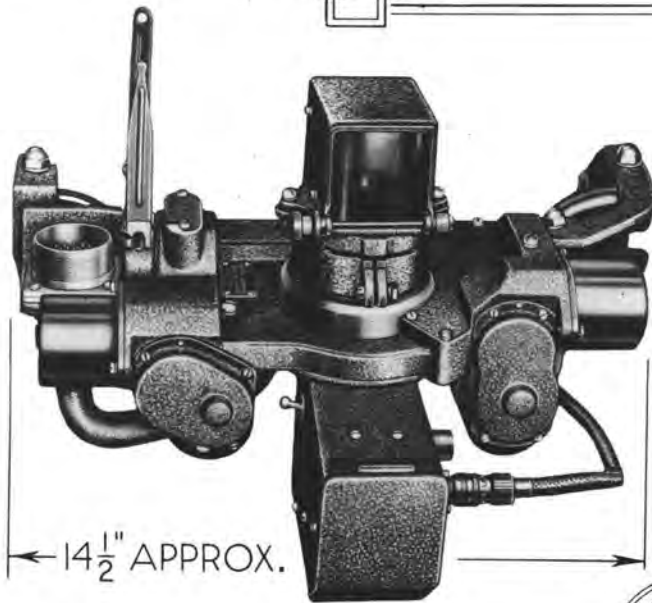
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	Manufacturer's Specification	
Sperry Gyroscope Company	*K-3	646398-A assembly 644853-H outline	A	5900731750	11-35A-1	S-69834	
	*K-4	646636-A assembly 645418-H outline	A	5900719910	11-35A-1	S-69834	See note
National Cash Register Company	*K-3	646398-A assembly 644853-H outline	A	5900731750	11-35A-1		
	*K-4	646636-A assembly 645418-H outline	A	5900719910	11-35A-1		See note

NOTE: The Army type K-3 is identical to Army type K-4, with the exception that the flexible shaft input connection boxes on the K-3 are tilted at an angle and both outlets face the same direction. Some of the lettering on the K-4 is inverted, for use in lower turrets.

Note: *AAF type.

**GUN SIGHTS
ARMAMENT—GUNNERY**



**SIGHT-COMPENSATING
ARMY TYPE K-8**

NAMES: Compensating sight
Computing sight

Fairchild compensating sight
Automatic compensating sight

(Continued on page 95)



SIGHT-COMPENSATING

(Continued from page 94)

DESCRIPTION: The Army type K-8 compensating gun sight is used with .50 caliber M2 machine guns mounted in an upper turret. The sight assembly consists of a control unit, power unit, a sight mount, and a foot control. The sight is driven by flexible shafts from the turret's azimuth and elevation drives and provides compensation for the range, indicated airspeed, altitude of the airplane in which it is mounted, and relative speed of the target with respect to the turret. All corrections are automatically made by the sight after the gunner has set the dials for the altitude, indicated airspeed of his own airplane, and the span of the target.

A ring and bead sight, which can be folded out of the way when not in use, is provided in case the power supply should fail.

CHARACTERISTICS:

Dimensions

Control unit.....approximately 18½ by 10 by 6¼ inches.
Sight unit.....approximately 14½ by 14½ by 10 inches.
Foot control unit.....approximately 12 by 10½ by 7½ inches.
Power unit.....approximately 16 by 9½ by 4¼ inches.

Weight

Control unit.....approximately 23 pounds.
Foot control unit.....approximately 5 pounds.
Sight unit.....approximately 10 pounds.
Power unit.....approximately 30 pounds.

RELATIONSHIP OF PARTS: Used with:

Martin turrets type A-3C, A. E. Reference Number 52-7475.

ARMY

A. E. REFERENCE NUMBER: 52-4270

TYPE DESIGNATION: K-8

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped unassembled in separate units.

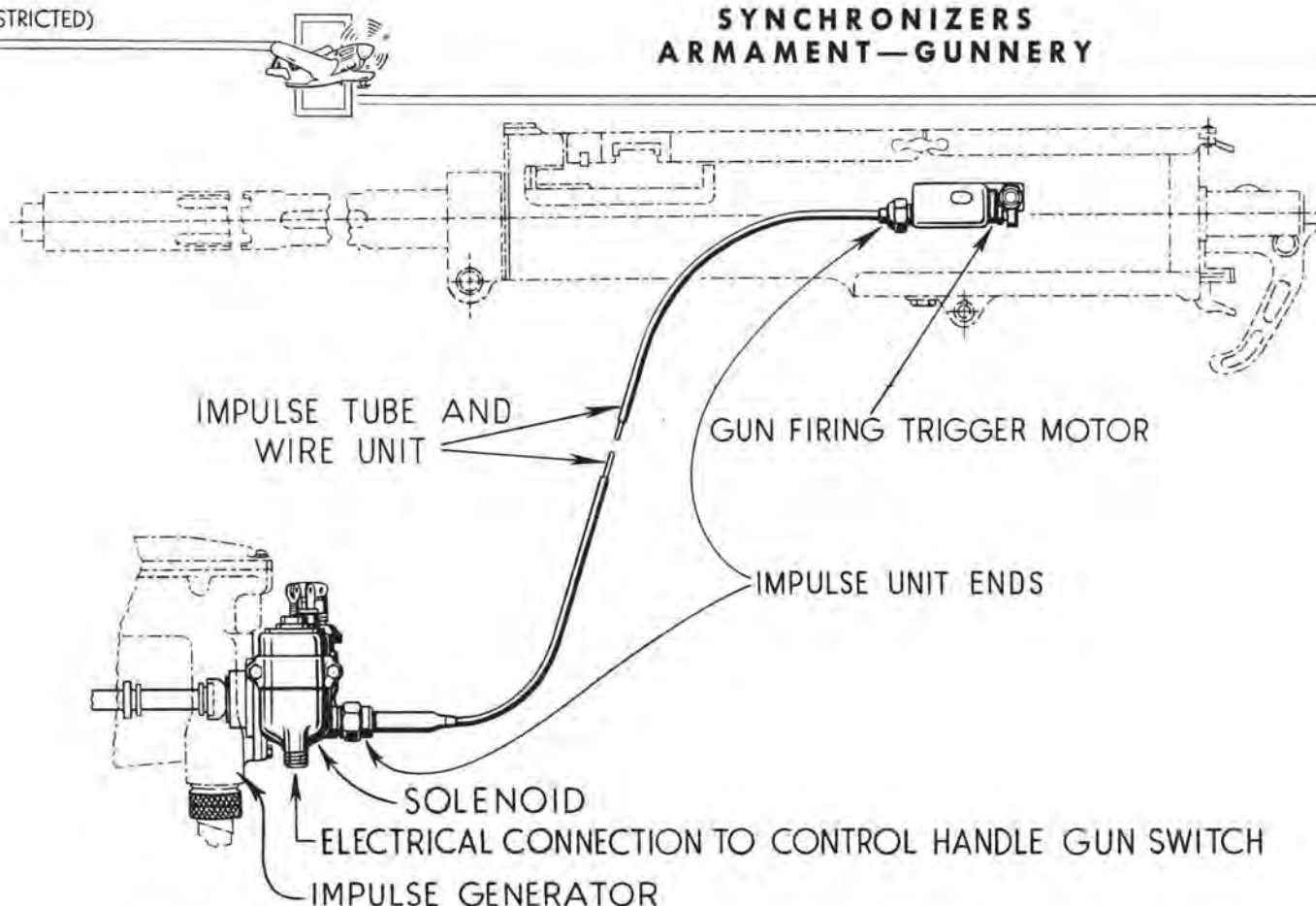
NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Manufacturer's Specification Number
Fairchild Aviation Corporation	F-180	V-361	A	5900721500	F-180
Addressograph Multigraph Corporation	F-180	V-361	A	5900721500	
Thomas B. Gibbs and Company	F-180	V-361	A	5900721500	

SYNCHRONIZERS ARMAMENT—GUNNERY



MACHINE GUN SYNCHRONIZING SYSTEM MACHINE GUN SYNCHRONIZERS

A machine gun synchronizer is a device to control a fixed machine gun so that its projectiles may be fired through the arc of rotation of a propeller. It is arranged so that the projectile is fired after a propeller blade passes the muzzle of the gun.

This synchronizer includes an impulse generator, an impulse tube and wire, a trigger motor and an electrical control.

The impulse generator creates the timed impulses that actuate the trigger motor. It is mounted on the engine's synchronizer mounting pad, and contains a camshaft which is driven by a splined drive from the airplane engine. The cam is rotated at propeller speed, and has a number of lobes, depending on the number of propeller blades. A cam follower generates an impulse when actuated by each lobe.

Impulses are transmitted to the trigger by the impulse tube and wire unit. This unit consists of a wire inside a steel tube with suitable couplings at each end to allow the wire to move freely. One end of the wire is attached to the plunger on the impulse generator, and the other end to the trigger motor.

The trigger motor, mounted on the side of the fixed machine gun, is actuated by the timed impulses which are transmitted along the impulse wire. Each impulse pulls the trigger motor plunger forward against the trigger motor slide, forcing the end of the slide through a slot in the side of the gun and tripping the firing mechanism.

The entire synchronizer system is operated by an electrical control, which consists of a solenoid attached to the head of the impulse generator, a control handle gun switch, and a safety switch. The type of solenoid used depends on the circuit voltage. When the control handle gun switch is depressed, the solenoid is energized and frees the cam follower in the generator. This allows the spring in the trigger motor to pull the cam follower against the cam. Rotation of the cam produces the timed impulses to actuate the trigger motor. When the control switch is released, the solenoid plunger is returned to its original position by a spring and locks the cam follower in a position where no impulses may be generated.



GENERATOR—GUN SYNCHRONIZER IMPULSE

ARMY TYPE E-8 NAVY—SEE BELOW

NAMES: Gun synchronizer impulse generator
Synchronizer—gun impulse generator

DESCRIPTION: The Army type E-8 gun synchronizer impulse generator is part of the synchronizing system which is used to control the firing of .30 and .50 caliber M2 machine guns. This unit generates the timed mechanical impulses which enable the trigger motor to fire the gun.

The major parts of the impulse generator unit are a housing, a cam, an eccentric sleeve and a reciprocating cam follower. The cam is rotated at propeller speed and contains one, two, or three lobes for use with either a two, three, or four bladed propeller. A solenoid, actuated by the control handle gun switch, retracts a plunger from the shoulder of the cam follower and allows the follower to be pulled against the cam. Rotation of the cam then produces a series of mechanical impulses.

CHARACTERISTICS:

Dimensions.....approximately $6\frac{1}{8}$ by $3\frac{1}{2}$ by 3 inches.
Weight.....approximately $2\frac{1}{4}$ pounds.

RELATIONSHIP OF PARTS: Used with:

Army type E-3 impulse unit, A. E. Reference Number 52-2600, Army type E-3A trigger motor, A. E. Reference Number 52-3000, and Army type G-10 gun firing solenoid, A. E. Reference Number 52-6300.

ARMY

A. E. REFERENCE NUMBER: 52-2700

SPECIFICATIONS:

Detail.....93-24609A
Superseded.....93-24609

A. A. F. DRAWING NUMBER: 38D4828

TYPE DESIGNATION: E-8

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: E-8

SPECIFICATIONS:

General.....M-460

BU. AER. DRAWING NUMBER: W. A. C. 114081; 114081-N-1, or Ranger 7588

BU. AER. F. S. S. C. STOCK NUMBER: R-86-G-37010

ORDNANCE PAMPHLET NUMBER: 552

BU. AER. CIRCULAR LETTER NUMBER: Aer-Ma-12431-EG-F41-14

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Metal Specialty Company	*E-8	**38D4828	A-N-B	5200291050	11-20-13	108A 161
Moore-Eastwood and Company	*E-8	**38D4828	A-N-B	5200291050	11-20-13	108A 161

Note: *AAF type; **AAF drawing.



ENDS—IMPULSE UNIT

ARMY TYPE E-3 NAVY MARK 1

NAMES: Impulse unit ends

Cable ends—impulse, BAM, —.30 and .50 caliber (Navy)

Impulse tube and wire ends

DESCRIPTION: These are the end fittings and couplings of the gun synchronizer's impulse tube and wire unit which connects the impulse generator to the trigger motor. The impulse tube and wire unit consists of a steel tube, a single strand of steel wire and the necessary couplings and fittings. The airplane contractor furnishes the wire and tubing. The end fittings and couplings are provided by the Government.

CHARACTERISTICS:

Dimensions:

End for type E-8 impulse generator..... approximately 4½ by 1¼ by 1¼ inches.

End for type E-3A trigger motor..... approximately 1½ by 1¼ by 1¼ inches.

Weight..... approximately 1 pound (together).

RELATIONSHIP OF PARTS: Used with:

Army type E-8 impulse generator, A. E. Reference Number 52-2700, and Army type E-3A trigger motor, A. E. Reference Number 52-3000.

ARMY

A. E. REFERENCE NUMBER: 52-2600

SPECIFICATIONS:

Detail..... 93-24592

Superseded..... 24592

A. A. F. DRAWING NUMBER: 076031 and H35G5394

TYPE DESIGNATION: E-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, consisting of one impulse generator end and one trigger motor end packed together.

NAVY

TYPE DESIGNATION: Mark 1

BU. ORD. DRAWING NUMBER: Assembly, 163658; Installation, 300936

AVIATION ORDNANCE STOCK LIST NUMBER: 1-C-60

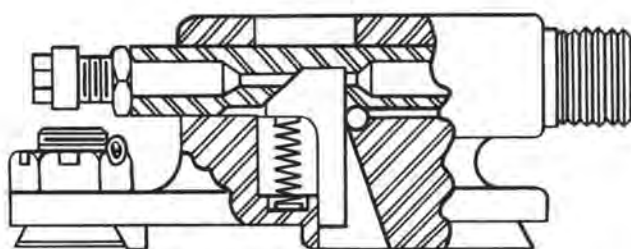
PUBLICATIONS: O. P. 865, O. P. 552, OCL V-54

PROCUREMENT STATUS: Under procurement.

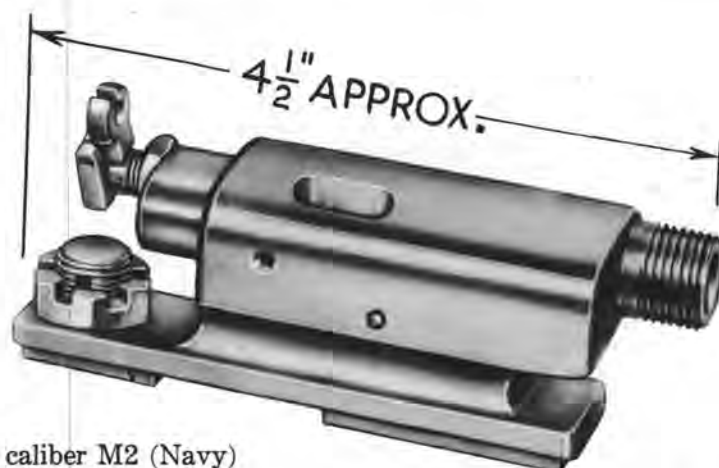
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Tietzman Engineering Company	*E-3	**076031	A-N-B	5200250600	11-20-13	108A/37
Johnson Fare Box Company	*E-3	**076031	A-N-B	5200250600	11-20-13	108A/37

NOTE: Ends listed above are identical to Navy Mark I, except that Navy furnishes ends complete with wire.
Note: *AAF type; **AAF drawing.



MOTOR-TRIGGER ARMY TYPE E-3 NAVY MARK 1



NAMES: Trigger motor

Motor-trigger, BAM—.30 and .50 caliber M2 (Navy)

Synchronizer trigger motor

DESCRIPTION: This trigger motor, mounted on the side of synchronized .30 and .50 caliber M2 fixed machine guns, is actuated by the timed impulses transmitted along the impulse wire from the impulse generator. It consists of a steel housing containing a slide, slide spring, plunger, plunger spring and an adjusting screw. The slide is beveled, and rides on a cam in the plunger. As the plunger is pulled forward, the slide is forced upward and into the gun. This trips the firing mechanism. An adjusting screw is used to vary the distance the slide may project into the gun.

CHARACTERISTICS:

Dimensions.....approximately 4½ by 1½ by 1¼ inches.
Weight.....approximately ⅞ pound.

RELATIONSHIP OF PARTS: Used with:

Type E-8 gun synchronizer impulse generator, A. E. Reference Number 52-2700, and Army type E-3 impulse unit ends, A. E. Reference Number 52-2600.

ARMY

A. E. REFERENCE NUMBER: 52-2900

SPECIFICATIONS:

Detail.....93-24593

A. A. F. DRAWING NUMBER: 076023

TYPE DESIGNATION: E-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type E-3A trigger motor, A. E. Reference Number 52-3000.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: Mark 1

BU. ORD. DRAWING NUMBER: 178474

AVIATION ORDNANCE STOCK LIST NUMBER: 1-M-619

ORDNANCE PAMPHLET NUMBER: 865; 552

PROCUREMENT STATUS: Not under procurement for initial installation.

MODELS BELOW ARE INTERCHANGEABLE

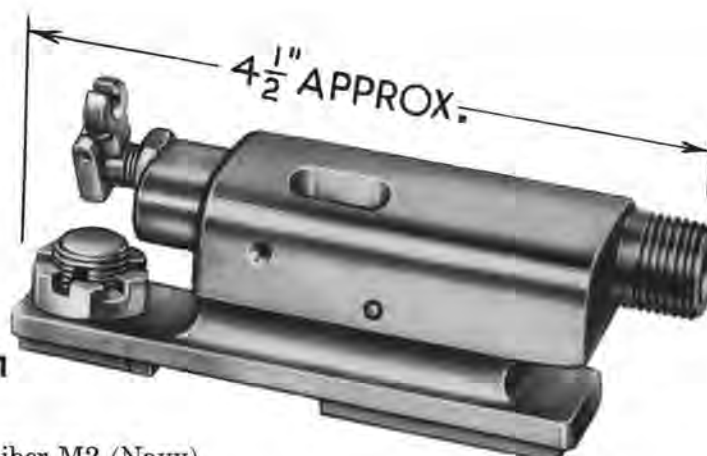
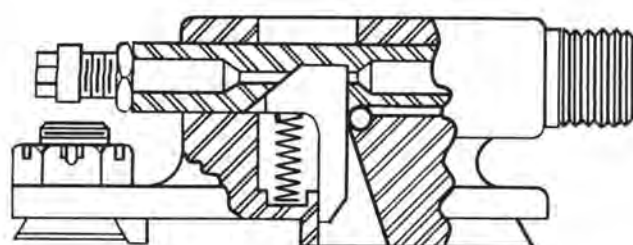
Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
L. A. B. Corporation	*E-3	**076023	A-B	5200465600	11-20-11	108A/1
	*E-3A	**4283980	A-B	5200239040	11-20-15	108A/158
John Oster Manufacturing Company	*E-3	**076023	A-B	5200465600	11-20-11	108A/1
	*E-3A	**4283980	A-B	5200239040	11-20-15	108A/158
Argus Manufacturing Company	†Mark 1	††178474	N			
Crown Cork & Seal Company	†Mark 1, Mod. 1	††227622	N			§

Note: §Same as E-3A, except for 0.0017 inch difference in housing; *AAF type; **AAF drawing; †Navy type; ††Navy drawing.

SYNCHRONIZERS ARMAMENT—GUNNERY



MOTOR—TRIGGER

ARMY TYPE E-3A NAVY MARK 1 MOD. 1

NAMES: Trigger motor
Motor—trigger, BAM—.30 or .50 caliber M2 (Navy)
Synchronizer trigger motor

DESCRIPTION: This trigger motor, mounted on the side of synchronized .30 and .50 caliber M2 fixed machine guns, is actuated by the timed impulses transmitted along the impulse wire from the impulse generator. It consists of a steel housing containing a slide, slide spring, plunger, plunger spring and an adjusting screw. The slide is beveled, and rides on a cam in the plunger. As the plunger is pulled forward, the slide is forced upward and into the gun. This trips the firing mechanism. An adjusting screw is used to vary the distance the slide may project into the gun.

This trigger motor is the same type as the type E-3, except for modification of the plunger and slide. The length of the slide has been shortened 0.010 inch to prevent the gun from firing too close to the propeller blades. A relief has also been added to the top side of the plunger, to limit extent of over-travel.

CHARACTERISTICS:

Dimensions..... approximately 4½ by 1½ by 1¾ inches.
Weight..... approximately ⅞ pound.

RELATIONSHIP OF PARTS: Used with:

Type E-8 gun synchronizer impulse generator, A. E. Reference Number 52-2700, and Army type E-3 impulse unit ends, A. E. Reference Number 52-2600.

ARMY

A. E. REFERENCE NUMBER: 52-3000

SPECIFICATIONS:

Detail..... 93-24593A
Superseded..... 93-24593

A. A. F. DRAWING NUMBER: 42B3980

TYPE DESIGNATION: E-3A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: Mark 1 Mod. 1

BU. ORD. DRAWING NUMBER: 227622

AVIATION ORDNANCE STOCK LIST NUMBER: 1-M-621-200

ORDNANCE PAMPHLET NUMBER: 865; 552

ORDNANCE CIRCULAR LETTER: V-7-43

PROCUREMENT STATUS: Under procurement.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
L. A. B. Corporation	*E-3A	**42B3980	A-B	5200239040	11-20-15	108A/158	
	*E-3	**076023	A-B	5200465600	11-20-11	108A/1	
John Oster Manufacturing Company	*E-3A	**42B3980	A-B	5200239040	11-20-15	108A/158	
	*E-3	**076023	A-B	5200465600	11-20-11	108A/1	
Crown Cork & Seal Company	‡Mark 1, Mod. 1	‡‡227622	N				§
Argus Manufacturing Company	‡Mark 1	‡‡227622	N				

Note: §Same as E-3A except for 0.0017 inch difference in housing; *AAF type; **AAF drawing; ‡Navy type; ‡‡Bu. Ord. drawing.



SOLENOID—GUN

ARMY TYPE E-4

NAMES: Gun solenoid
Gun firing solenoid

Firing solenoid
Solenoid

DESCRIPTION: The Army type E-4 solenoid, used for electrical trigger control of remotely-placed synchronized machine guns, is attached to an impulse generator which is synchronized with the engine's propeller. A movable plunger in the solenoid is inserted in the locking pin of the impulse generator. When the solenoid is energized by pressing the firing switch in the cockpit, magnetic forces in the core of the solenoid coil attract the plunger, permitting timed mechanical impulses to be transmitted by the generator to a trigger motor. Impulses are generated as long as the solenoid is energized.

This solenoid is provided with a single pin push-on type electrical connector.

CHARACTERISTICS:

Dimensions.....	approximately 6 $\frac{3}{32}$ by 2 $\frac{5}{16}$ by 2 $\frac{5}{16}$ inches
Weight.....	approximately 2 $\frac{3}{4}$ pounds
Operating voltage.....	12 volts direct current
Current drain.....	16 amperes
Plunger stroke.....	$\frac{3}{16}$ inch
Electrical receptacle.....	Army part number 39A2389
Contact pin.....	Army part number 35A5243

RELATIONSHIP OF PARTS: Used with:

Army type E-4 impulse generator, which is furnished by the airplane contractor.

ARMY

A. E. REFERENCE NUMBER: 52-5600

SPECIFICATIONS:

Detail.....	94-24610
Superseded.....	24610B

TYPE DESIGNATION: E-4

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type E-6 solenoid. A. E. Reference Number 52-5650.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

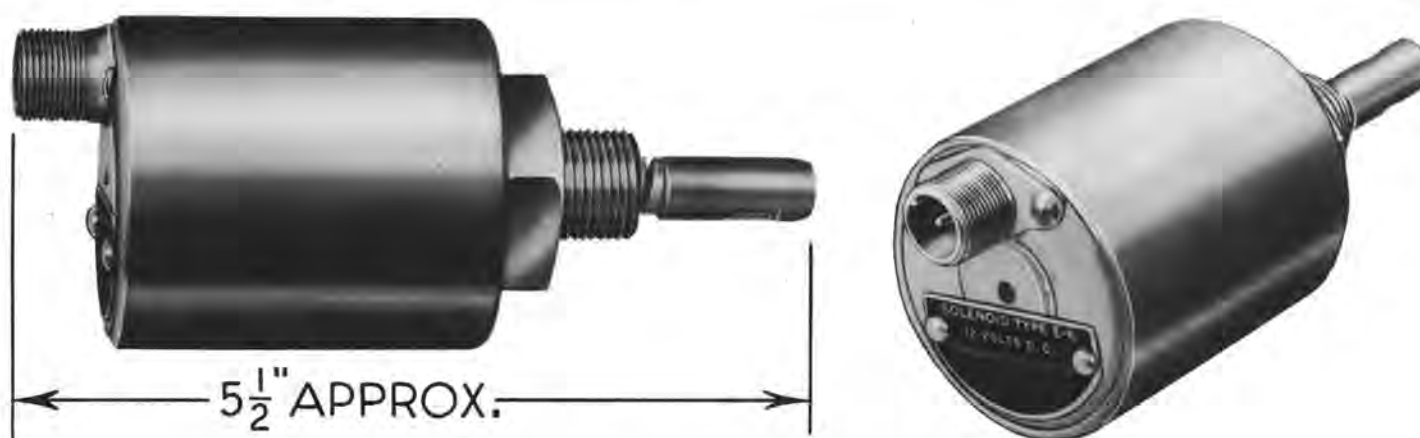
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Star Machine Manufacturers, Incorporated	*E-4	**Detailed specification 94-24610	A-B	5200752550	11-1-30	105D/87	
Pollak Manufacturing Company	*E-4	**Detailed specification 94-24610	A-B	5200752550	11-1-30	105D/87	
Magnavox Company, Incorporated	*E-6	14D3G4	A-N-B	5200752600		105D/92	†

†Has single pin, screw-on type electrical connector. Airplane connector must be replaced.
Note: *AAF type; **AAF drawing.



GUN SOLENOIDS ARMAMENT—GUNNERY



SOLENOID—GUN

ARMY TYPE E-6 NAVY TYPES 12 AND 230-A

NAMES: Gun solenoid
Gun firing solenoid
Firing solenoid

Electric trigger control (Navy)
Solenoid

DESCRIPTION: This solenoid, used for electrical trigger control of remotely-placed synchronized machine guns, is attached to an impulse generator which is synchronized with the engine's propeller. A movable plunger in the solenoid is inserted in the locking pin of the impulse generator. When the solenoid is energized by pressing the firing switch, magnetic forces in the core of the solenoid coil surrounding it attract the plunger, permitting timed mechanical impulses to be transmitted by the generator to a trigger motor. Impulses are generated as long as the solenoid is energized.

This solenoid is provided with a single pin screw-on type electrical connector.

CHARACTERISTICS:

Dimensions.....	approximately 4½ by 2¼ by 2¼ inches
Weight.....	approximately 2¾ pounds
Operating voltage.....	12 volts direct current
Current drain.....	16 amperes
Plunger stroke.....	0.122 inches
Electrical connector.....	AND10066-10S-2P

RELATIONSHIP OF PARTS: Used with:

Army type E-4 impulse generator, which is furnished by the airplane contractor.

ARMY

A. E. REFERENCE NUMBER: 52-5650

SPECIFICATIONS:

Detail.....	93-24743
Superseded.....	24743

TYPE DESIGNATION: E-6

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: 12

A. S. O. STOCK NUMBER: R86-S-60000

BU. AER. CIRCULAR LETTER: Aer-MA-12431-EG-F41-14

PROCUREMENT STATUS: Under procurement.

230-A

R86-S-60040

Aer-MA-12431-EG-F41-14

Under procurement.

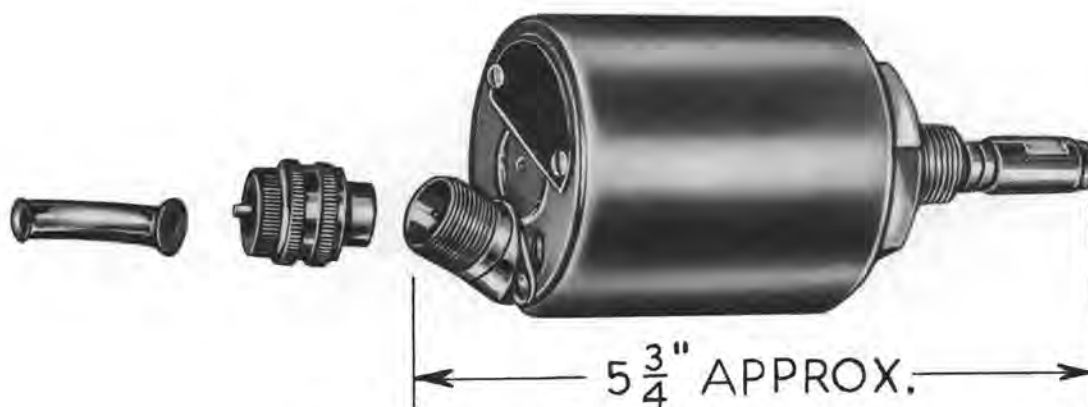
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Magnavox Company, Incorporated	*E-6	14D3G4	A-N-B	5200752600		105D/92	
Star Machine Manufacturers, Incorporated	*E-4	**Detailed specification 94-24610	A-B	5200752550	11-1-30	105D/87	†
Pollak Manufacturing Company	*E-4	**Detail specification 94-24610	A-B	5200752550	11-1-30	105D/87	†

†Has single pin push-on type electrical connector. Airplane connector must be changed.
Note: *AAF type; **AAF drawing.



GUN SOLENOIDS ARMAMENT—GUNNERY



SOLENOID—GUN

ARMY TYPE E-8

NAMES: Gun solenoid
Gun firing solenoid
Firing solenoid
Solenoid

DESCRIPTION: The Army type E-8 solenoid, used for electrical trigger control of remotely-placed synchronized machine guns, is attached to an impulse generator which is synchronized with the engine's propeller. A movable plunger in the solenoid is inserted in the locking pin of the impulse generator. When the solenoid is energized by pressing the firing switch, magnetic forces in the core of the solenoid coil attract the plunger, permitting timed mechanical impulses to be transmitted by the generator to a trigger motor. Impulses are generated as long as the solenoid is energized.

The electrical connector is a single pin screw-on type installed at a 30 degree angle.

CHARACTERISTICS:

Dimensions.....	approximately 5 $\frac{3}{4}$ by 2 $\frac{1}{4}$ by 2 $\frac{1}{4}$ inches
Weight.....	approximately 2 $\frac{3}{4}$ pounds
Operating voltage.....	12 volts direct current
Current drain.....	20 amperes
Plunger stroke.....	0.112 inches
Electrical connector.....	AND10066-10S-2P

RELATIONSHIP OF PARTS: Used with:

Army type E-4 impulse generator which is furnished by the airplane engine contractor.

ARMY

A. E. REFERENCE NUMBER: 52-5670

SPECIFICATIONS:

Detail.....	93-24768
Superseded.....	24768

MFR.: Magnavox Company, Incorporated

MFR. DRAWING NUMBER: 1411G2

TYPE DESIGNATION: E-8

A. S. C. STOCK NUMBER: 5200752625

TECHNICAL ORDER NUMBER: 11-1-30

PRODUCTION STATUS: Under procurement. Supersedes Army type E-2A gun solenoid, A. E. Reference Number 52-5500.

SHIPPING DATA: Shipped as a complete unit including mating electrical connector plug AN3106-10S-2S.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 105D/90



GUN SOLENOIDS ARMAMENT—GUNNERY



SOLENOID—GUN

ARMY TYPE G-10 NAVY TYPES 24 AND 240

NAMES: Gun solenoid
Gun firing solenoid
Firing solenoid
Solenoid

Electric trigger control (Navy)

DESCRIPTION: This solenoid, used for electrical trigger control of remotely placed synchronized machine guns, is attached to an impulse generator synchronized with the engine's propeller. A movable plunger in the solenoid is inserted in the locking pin of the impulse generator. When the solenoid is energized by pressing the firing switch, magnetic forces in the core of the solenoid coil attract the plunger, permitting timed mechanical impulses to be transmitted by the generator to a trigger motor. Impulses are generated as long as the solenoid is energized.

The electrical connector is the single pin screw-on type.

CHARACTERISTICS:

Dimensions.....	approximately 5½ by 2¼ by 2¼ inches
Weight.....	approximately 2¾ pounds
Operating voltage.....	24 volts, direct current
Current drain.....	10 amperes
Plunger stroke.....	0.112 inches

RELATIONSHIP OF PARTS: Used with:

Army type E-8 impulse generator, A. E. Reference Number 52-2700.

ARMY

A. E. REFERENCE NUMBER: 52-6300

SPECIFICATIONS:

Detail.....	93-24740
Superseded.....	24740

TYPE DESIGNATION: G-10

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Supersedes Army Type G-2, A. E. Reference Number 52-5800.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: 24; 240

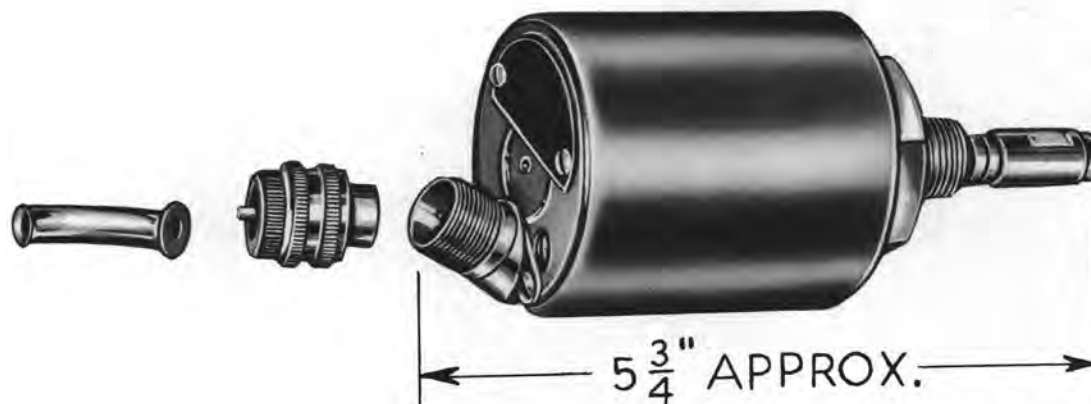
A. S. O. STOCK NUMBER: R-86-S-60010

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Magnavox Company	*G-10	14D3G1	A-N-B	5200752865	11-1-30	105D/51
	†24; 240	14DG1	N-B			105D/51

Note: *AAF type; †Navy type



SOLENOID—GUN
ARMY TYPE G-16

NAMES: Gun solenoid
Gun firing solenoid
Firing solenoid
Solenoid

DESCRIPTION: The Army type G-16 solenoid, used for electrical trigger control of remotely placed synchronized machine guns, is attached to an impulse generator which is synchronized with the engine's propeller. A movable plunger in the solenoid is inserted in the locking pin of the impulse generator. When the solenoid is energized by pressing the firing switch, magnetic forces in the core of the solenoid coil attract the plunger, permitting timed mechanical impulses to be transmitted by the generator to the trigger motor. Impulses are generated as long as the solenoid is energized. The electrical connector is a single pin screw-on type, installed at a 30 degree angle.

CHARACTERISTICS:

Dimensions.....	approximately 5 $\frac{3}{4}$ by 2 $\frac{1}{4}$ by 2 $\frac{1}{4}$ inches
Weight.....	approximately 3 pounds
Operating voltage.....	24 volts direct current
Current drain.....	10 amperes
Plunger stroke.....	0.174 inches

RELATIONSHIP OF PARTS: Used with:

Army type E-4 impulse generator, which is furnished by the aircraft engine contractor.

ARMY

A. E. REFERENCE NUMBER: 52-6375

SPECIFICATIONS:

Detail.....	93-24769
Superseded.....	24769

MFR.: Magnavox Company, Incorporated

MFR. DRAWING NUMBER: 14D11G1

TYPE DESIGNATION: G-16

A. S. C. STOCK NUMBER: 5200750000

TECHNICAL ORDER NUMBER: 11-1-30

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

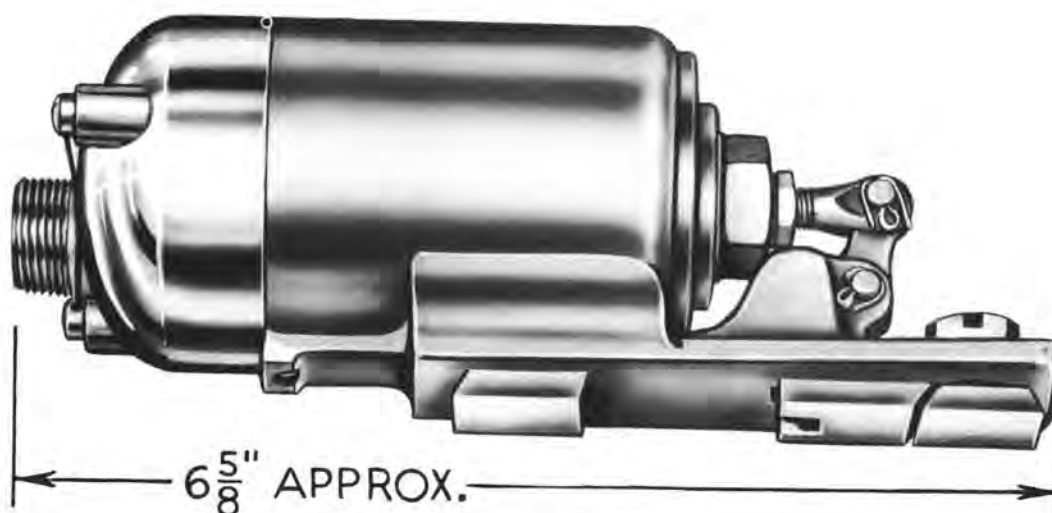
There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 105D/80



GUN SOLENOIDS ARMAMENT—GUNNERY



SOLENOID—LEFT HAND GUN

ARMY TYPE C-4B NAVY MARK 3 MODIFICATION 2

NAMES: Left hand gun solenoid
Gun firing solenoid
Firing solenoid
Solenoid

Electric trigger control (Navy)

DESCRIPTION: This solenoid, used for electrical trigger control of free-firing remotely-placed .30 and .50 caliber M2 machine guns, is mounted on the left hand side of the gun. A movable plunger is connected to the sear of the gun by a lever arm. When the solenoid is energized by pressing the firing switch in the cockpit, magnetic forces in the core of the solenoid coil attract the plunger, release the sear the fire the gun. Release of the firing switch opens the circuit and a spring returns the plunger to its original position, causing the gun to cease firing.

This solenoid is provided with a two pin push-on type connector.

CHARACTERISTICS:

Dimensions.....	approximately 6 $\frac{5}{8}$ by 2 $\frac{1}{4}$ by 2 $\frac{1}{4}$ inches.
Weight.....	approximately 2 $\frac{7}{8}$ pounds.
Operating voltage.....	12 volts direct current.
Current drain.....	18 amperes.
Plunger stroke.....	0.344 inches.

RELATIONSHIP OF PARTS: Used on:

.30 and .50 caliber M2 free firing machine guns, A. E. Reference Numbers 93-1420 and 93-1560.

ARMY

A. E. REFERENCE NUMBER: 52-5390

SPECIFICATIONS:

Detail.....	93-24682A
Superseded.....	93-24682

A. A. F. DRAWING NUMBER: 37B2301 (Supersedes Army Drawing Number 34B6051)

TYPE DESIGNATION: C-4B

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type C-4C Solenoid, A. E. Reference Number 52-5400.

SHIPPING DATA: Shipped as a complete unit.

(Continued on page 107)



SOLENOID—LEFT HAND GUN

(Continued from page 106)

NAVY

TYPE DESIGNATION: Mark 3 Mod. 2
BU. ORD. DRAWING NUMBER: 189812
AVIATION ORDNANCE STOCK LIST NUMBER: 1-C-5461
ORDNANCE PAMPHLET NUMBER: 865
PROCUREMENT STATUS: Not under procurement for initial installation.

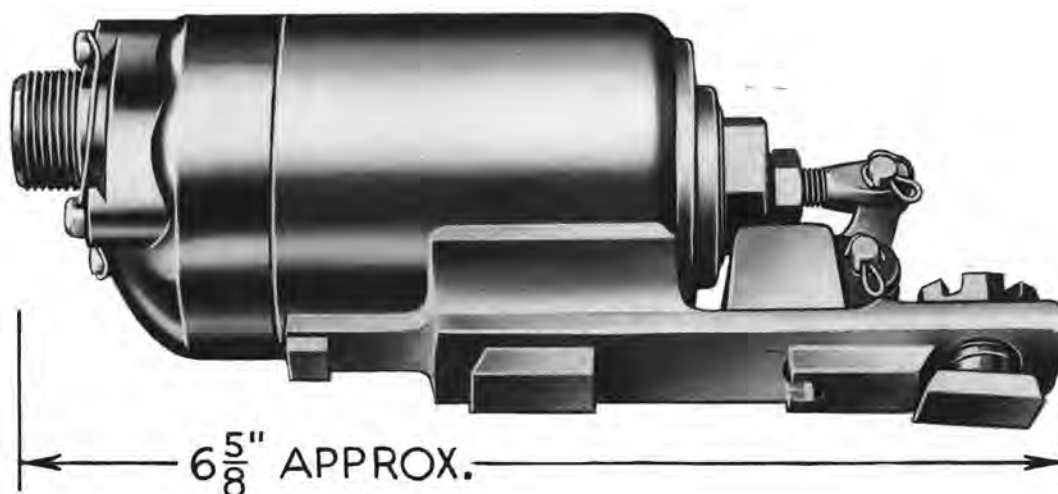
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Electric Auto Lite Company	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector.
	*C-4C	**41B5099R	A-N-B	5200751960	11-1-30	105D/58	Has two pin screw-on type electrical connector. Airplane connector must be changed.
	*C-4C	**41B5099L	A-N-B	5200751950	11-1-30	105D/57	Has two pin screw-on type electrical connector. Airplane connector must be changed.
Pollak Manufacturing Company	*C-4B	**37B2301	A-N-B	5200751600	11-1-03	105D/45	Has two pin push-on type electrical connector.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector.
	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector.
Delco-Remy Division of General Motors Corporation	*C-4C	**41B5099R	A-N-B	5200751960	11-1-30	105D/58	Has two pin screw-on type electrical connector. Airplane connector must be changed.
	*C-4C	**41B5099L	A-N-B	5200751950	11-1-30	105D/57	Has two pin screw-on type electrical connector. Airplane connector must be changed.
	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector.
Star Machine Manufacturers, Incorporated	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector.

NOTE: Type C-4B and C-4C solenoids may be converted from right to left hand, and vice versa, by reversing the terminal positions.
Note: *AAF type; **AAF drawing.



GUN SOLENOIDS ARMAMENT—GUNNERY



SOLENOID—RIGHT HAND GUN

ARMY TYPE C-4B NAVY MARK 3 MOD. 2

NAMES: Right hand gun solenoid
Gun firing solenoid
Firing solenoid
Solenoid

Electric trigger control (Navy)

DESCRIPTION: This solenoid, used for electrical trigger control of free-firing remotely placed .30 and .50 caliber M2 machine guns, is mounted on the right hand side of the gun. A movable plunger is connected to the sear of the gun by a lever arm. When the solenoid is energized by pressing the firing switch in the cockpit, magnetic forces in the core of the solenoid coil attract the plunger, release the sear, and fire the gun. Release of the firing switch opens the circuit and a spring returns the plunger to its original position, causing the gun to cease firing.

This solenoid is provided with a two-pin push-on type connector.

CHARACTERISTICS:

Dimensions.....	approximately 6 $\frac{5}{8}$ by 2 $\frac{1}{4}$ by 2 $\frac{1}{4}$ inches.
Weight.....	approximately 2 pounds 14 ounces.
Operating voltage.....	12 volts direct current.
Current drain.....	18 amperes.
Plunger stroke.....	.0344 inches.

RELATIONSHIP OF PARTS: Used on:

.30 and .50 caliber M2 free-firing machine guns, A. E. Reference Numbers 93-1420 and 93-1560.

ARMY

A. E. REFERENCE NUMBER: 52-5395

SPECIFICATIONS:

Detail.....	93-24682A
Superseded.....	93-24682

A. A. F. DRAWING NUMBER: 37B2301 (Supersedes Army Drawing Number 34B6051)

A. A. F. PART NUMBER: 37B2301-1

TYPE DESIGNATION: C-4B

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type C-4C solenoid, A. E. Reference Number 52-5450.

SHIPPING DATA: Shipped as a complete unit.

(Continued on page 109)



SOLENOID—RIGHT HAND GUN

(Continued from page 108)

NAVY

TYPE DESIGNATION: Mark 3 Mod. 2
 BU. ORD. DRAWING NUMBER: 189812
 AVIATION ORDNANCE STOCK LIST NUMBER: 1-C-5461
 ORDNANCE PAMPHLET NUMBER: 865
 PROCUREMENT STATUS: Not under procurement for initial installation.

ALL MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

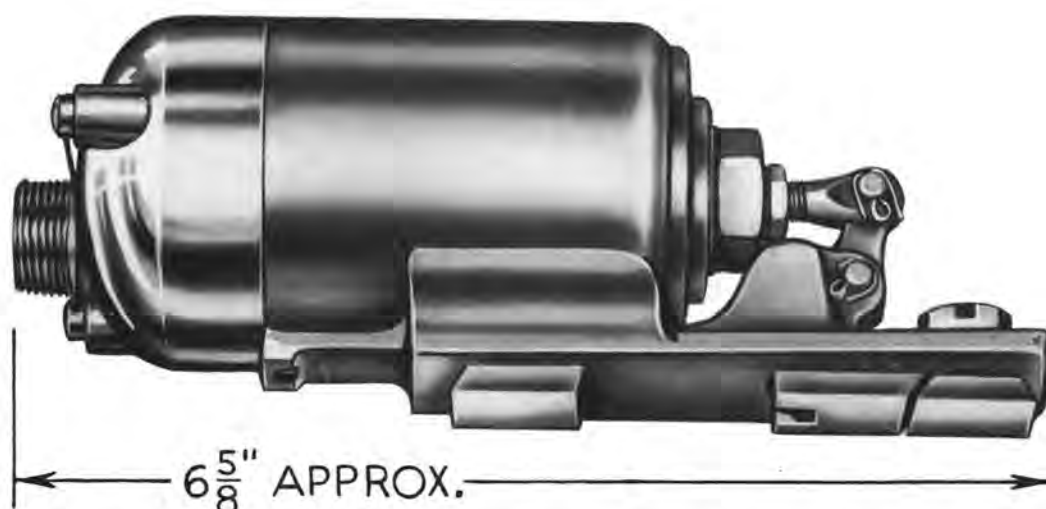
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Electric Auto Lite Company	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector.
	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector.
	*C-4C	**41B5099R	A-N-B	5200751960	11-1-30	105D/58	Has two pin screw-on type electrical connector. Airplane connector must be changed.
	*C-4C	**41B5099L	A-N-B	5200751950	11-1-30	105D/57	Has two pin screw-on type electrical connector. Airplane connector must be changed.
Pollak Manufacturing Company	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector.
	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector.
Delco-Remy Division of General Motors Corporation	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector.
	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector.
	*C-4C	**41B5099R	A-N-B	5200751960	11-1-30	105D/58	Has two pin screw-on type electrical connector. Airplane connector must be changed.
	*C-4C	**41B5099L	A-N-B	5200751950	11-1-30	105D/57	Has two pin screw-on type electrical connector. Airplane connector must be changed.
Star Machine Manufacturers, Incorporated	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector.

NOTE: Type C-4B and C-4C solenoids may be converted from right to left hand or vice versa by reversing the terminal positions.
 Note: *AAF type; **AAF drawing.



GUN SOLENOIDS ARMAMENT—GUNNERY



SOLENOID—LEFT HAND GUN

ARMY TYPE C-4C NAVY MARK 3 MODIFICATION 2

NAMES: Left hand gun solenoid
Gun firing solenoid
Firing solenoid
Solenoid

Electric trigger control (Navy)

DESCRIPTION: This solenoid, used for electrical trigger control of free-firing remotely placed .30 and .50 caliber M2 machine guns, is mounted on the left hand side of the gun. A movable plunger is connected to the sear of the gun by a lever arm. When the solenoid is energized by pressing the firing switch, magnetic forces in the core of the solenoid coil attract the plunger, release the sear and fire the gun. Release of the firing switch opens the circuit and a spring returns the plunger to its original position, causing the gun to cease firing.

This solenoid is provided with a two-pin screw-on type electrical connector.

CHARACTERISTICS:

Dimensions.....	approximately 6 $\frac{5}{8}$ by 2 $\frac{1}{4}$ by 2 $\frac{1}{4}$ inches.
Weight.....	approximately 2 $\frac{7}{8}$ pounds.
Operating voltage.....	12 volts direct current.
Current drain.....	18 amperes.
Plunger stroke.....	0.344 inches.

RELATIONSHIP OF PARTS: Used with:

.30 and .50 caliber M2 free firing machine guns, A. E. Reference Numbers 93-1420 and 93-1560.

ARMY

A. E. REFERENCE NUMBER: 52-5400

SPECIFICATIONS:

Detail.....	93-24682A
Superseded.....	93-24682

A A. F. DRAWING NUMBER: 41B5099L

TYPE DESIGNATION: C-4C

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

(Continued on page 111)



GUN SOLENOIDS ARMAMENT—GUNNERY

SOLENOID—LEFT HAND GUN

(Continued from page 110)

NAVY

TYPE DESIGNATION: Mark 3 Mod. 2
BU. ORD. DRAWING NUMBER: 189812
AVIATION ORDNANCE STOCK LIST NUMBER: 1-C-5461
ORDNANCE PAMPHLET NUMBER: 865
PROCUREMENT STATUS: Not under procurement for initial installation.

ALL MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

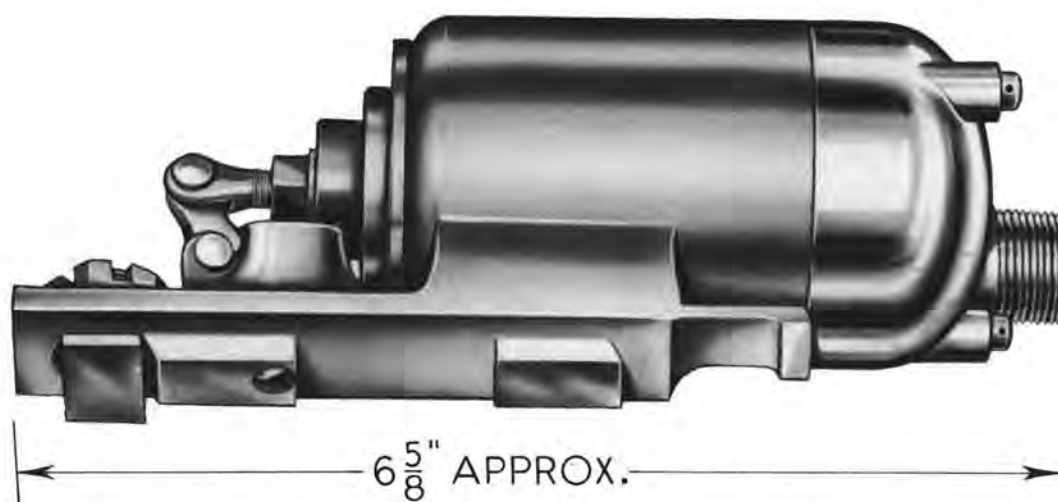
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Electric Auto Lite Company	*C-4C	**41B5099L	A-N-B	5200751950	11-1-30	105D/57	Has two pin screw-on type electrical connector.
	*C-4C	**41B5099R	A-N-B	5200751960	11-1-30	105D/58	Has two pin screw-on type electrical connector.
	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector. Airplane connector must be changed.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector. Airplane connector must be changed.
Delco-Remy Division of General Motors Corporation	*C-4C	**41B5099L	A-N-B	5200751950	11-1-30	105D/57	Has two pin screw-on type electrical connector.
	*C-4C	**41B5099R	A-N-B	5200751960	11-1-30	105D/58	Has two pin screw-on type electrical connector.
	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector. Airplane connector must be changed.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector. Airplane connector must be changed.
Pollak Manufacturing Company	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector. Airplane connector must be changed.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector. Airplane connector must be changed.
Star Machine Manufacturers, Incorporated	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector. Airplane connector must be changed.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Has two pin push-on type electrical connector. Airplane connector must be changed.
	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Has two pin push-on type electrical connector. Airplane connector must be changed.

NOTE: Type C-4C and C-4B solenoids may be converted from right to left hand or vice versa by reversing the terminal positions.
Note: *AAF type. **AAF drawing.



GUN SOLENOIDS ARMAMENT—GUNNERY



SOLENOID—RIGHT HAND GUN

ARMY TYPE C-4C NAVY MARK 3 MODIFICATION 2

NAMES: Right hand gun solenoid
Gun firing solenoid
Firing solenoid
Solenoid

Electric trigger control (Navy)

DESCRIPTION: This solenoid, used for electrical trigger control of free-firing remotely-placed .30 and .50 caliber M2 machine guns, is mounted on the right hand side of the gun. A movable plunger is connected to the sear of the gun, by a lever arm. When the solenoid is energized by pressing the firing switch, magnetic forces in the core of the solenoid coil attract the plunger, release the sear, and fire the gun. Release of the firing switch opens the circuit and a spring returns the plunger to its original position, causing the gun to cease firing.

This solenoid is provided with a two pin screw-on type connector.

CHARACTERISTICS:

Dimensions.....	approximately 6 $\frac{5}{8}$ by 2 $\frac{1}{4}$ by 2 $\frac{1}{4}$ inches.
Weight.....	approximately 2 $\frac{7}{8}$ pounds.
Operating voltage.....	12 volts direct current.
Current drain.....	18 amperes.
Plunger stroke.....	0.344 inches.

RELATIONSHIP OF PARTS: Used with:

.30 and .50 caliber M2 free firing machine guns, A. E. Reference Numbers 93-1420 and 93-1560.

ARMY

A. E. REFERENCE NUMBER: 52-5450

SPECIFICATIONS:

Detail.....	93-24682A
Superseded.....	93-24682

A. A. F. DRAWING NUMBER 41B5099R

TYPE DESIGNATION: C-4C

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

(Continued on page 113)



SOLENOID—RIGHT HAND GUN

(Continued from page 112)

NAVY

TYPE DESIGNATION: Mark 3 Mod. 2
BU. ORD. DRAWING NUMBER: 189812
AVIATION ORDNANCE STOCK LIST NUMBER: 1-C-5461
ORDNANCE PAMPHLET NUMBER: 865
PROCUREMENT STATUS: Not under procurement for initial installation.

ALL MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Electric Auto-Lite Company	*C-4C	**41B5099R	A-N-B	5200751960	11-1-30	105D/58	Two pin screw-on type electrical connector.
	*C-4C	**41B5099L	A-N-B	5200751950	11-1-30	105D/57	Two pin screw-on type electrical connector.
	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Two pin push-on type electrical connector. Airplane connector must be changed.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Two pin push-on type electrical connector. Airplane connector must be changed.
Delco-Remy Division of General Motors Corporation	*C-4C	**41B5099R	A-N-B	5200751960	11-1-30	105D/58	Two pin screw-on type electrical connector.
	*C-4C	**41B5099L	A-N-B	5200751950	11-1-30	105D/57	Two pin screw-on type electrical connector.
	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Two pin push-on type electrical connector. Airplane connector must be changed.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Two pin push-on type electrical connector. Airplane connector must be changed.
Pollak Manufacturing Company	*C-4B	**37B2301	A-N-B	5200751600	11-1-30	105D/45	Two pin push-on type electrical connector. Airplane connector must be changed.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Two pin push-on type electrical connector. Airplane connector must be changed.
Star Machine Manufacturers, Incorporated	*C-4B	**37B2301	A-N-B	5200761600	11-1-30	105D/45	Two pin push-on type electrical connector. Airplane connector must be changed.
	*C-4B	**37B2301-1	A-N-B	5200751900	11-1-30	105D/77	Two pin push-on type electrical connector. Airplane connector must be changed.

NOTE: Type C-4C and C-4B solenoids may be converted from right to left hand or vice versa by reversing the terminal positions.
Note: *AAF type. **AAF drawing.

GUN SOLENOIDS ARMAMENT—GUNNERY



SOLENOID—GUN

ARMY TYPE G-4A NAVY MARK 4 MODIFICATION 1

NAMES: Gun solenoid Solenoid Firing solenoid
Gun firing solenoid Electric trigger control (Navy)

DESCRIPTION: The G-4A solenoid, used for electrical trigger control of free-firing remotely-placed .50 caliber, M2 machine guns, is mounted on the side of the gun. A movable plunger is connected to the sear of the gun by a lever arm. When the solenoid is energized by pressing the firing switch in the cockpit, magnetic forces in the core of the solenoid coil attract the plunger, release the sear and fire the gun. Release of the firing switch opens the circuit and a spring returns the plunger to its original position, causing the gun to cease firing.

The connector is the single pin screw-on type.

CHARACTERISTICS:

Dimensions	approximately 6 by 2 $\frac{3}{4}$ by 2 $\frac{1}{4}$ inches.
Weight	approximately 2 $\frac{3}{4}$ pounds.
Operating voltage	24 volts direct current.
Current drain	8 amperes.
Plunger stroke	$\frac{3}{16}$ inch.
Electrical connector	Army part number 41A9227 (identical to AN3102-10S-2P)

RELATIONSHIP OF PARTS: Used with:

.50 caliber M2 machine guns, A. E. Reference Number 93-1560.

ARMY

A. E. REFERENCE NUMBER: 52-6000

SPECIFICATIONS:

Detail	94-24620
Superseded	24620

A. A. F. DRAWING NUMBER: 41B3718

TYPE DESIGNATION: G-4A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: Mark 4 Mod. 1

BU. ORD. DRAWING NUMBER: 300186

AVIATION ORDNANCE STOCK LIST NUMBER: 1-C-5461-15

PUBLICATIONS: OP. 865, OS. 2359

PROCUREMENT STATUS: Under procurement.

ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Webster Electric Company	*G-4A	**41B3718	A-N-B	5200752825	11-1-30	105D/17
	*G-9	**H41D10358	A-N-B	5200752755	11-1-30 11-20-12	105D/29
Delco-Remy Division of General Motors Corporation	*G-4A	**41B3718	A-N-B	5200752825	11-1-30	105D/17
Electric Auto Lite Company	*G-9	**H41D10358	A-N-B	5200752855	11-20-16 11-1-30 11-20-12	105D/29
Magnavox Company, Incorporated	*G-9	14D1G1	A-N-B	5200752855	11-20-16 11-1-30 11-20-12	105D/29

Note: *AAF type; **AAF drawing.



SOLENOID—GUN

ARMY TYPE G-8

NAMES: Gun solenoid Gun firing solenoid Firing solenoid Solenoid

DESCRIPTION: The Army type G-8 solenoid is used for electrically controlling the fire of a 20 mm cannon. The axis of the solenoid coil is perpendicular to the mounting flange and a movable plunger is connected to the sear of the gun's trigger mechanism by means of a shaft which protrudes through the solenoid mounting bracket. When the solenoid is energized by pressing the firing switch, magnetic forces in the core of the solenoid coil attract the plunger, release the sear, and fire the gun. Release of the firing switch opens the circuit and a spring returns the plunger to its original position, causing the gun to cease firing.

The electrical connector is the single pin screw-on type.

CHARACTERISTICS:

Dimensions.....	approximately 5 $\frac{1}{8}$ by 2 $\frac{5}{8}$ by 3 $\frac{1}{2}$ inches.
Weight.....	approximately 4 $\frac{1}{8}$ pounds.
Operating voltage.....	24 volts direct current.
Current drain.....	10 amperes.
Plunger stroke.....	$\frac{5}{16}$ inch.
Electrical connector.....	AN3102-10S-2P.

RELATIONSHIP OF PARTS: Used with:
M1 or AN-M2 20-mm automatic guns.

ARMY

A. E. REFERENCE NUMBER: 52-6100

SPECIFICATIONS:

Detail.....	93-24702
Superseded.....	24702

A. A. F. DRAWING NUMBER: H41G9104

TYPE DESIGNATION: G-8

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type G-17 solenoid, A. E. Reference Number 52-6380 (now known as Ordnance type AN-M1).

SHIPPING DATA: Shipped as a complete unit.

NAVY

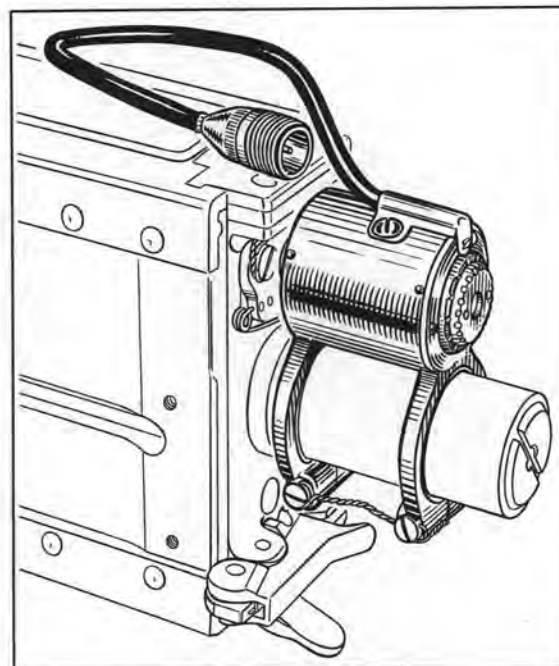
There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	Reference Number	Remarks
Magnavox Company, Inc.	*G-8	14D2G1	A-B	5200752845	11-1-30 11-1-37	105D/36	
	*G-17 (AN-M1)	14D22G3	A-N-B			105D/93	§
	†Mark 6, Mod. 1 (AN-M1)	99028	N-B			105D/93	§
Ordnance Office, War Department	AN-M1	C70766	A-N-B			105D/93	§

§Complete with sear cover plate, Ordnance drawing number C70814.

Note: *AAF type. †Navy type.



SOLENOID—GUN

ARMY TYPE G-11 NAVY MARK 7 MODIFICATION 1

NAMES: Gun solenoid
Gun firing solenoid

Firing solenoid Solenoid
Electric trigger control (Navy)

DESCRIPTION: The G-11 solenoid, used for the electrical trigger control of free firing .50 caliber, model M2 machine guns, is mounted on a bracket attached to the buffer tube of the gun. A movable plunger is connected to the trigger arm. When the solenoid is energized by pressing the firing switch, magnetic forces in the core of the solenoid coil attract the plunger, release the sear and fire the gun. Release of the firing switch opens the circuit and a spring returns the plunger to its original position, causing the gun to cease firing. The coil is connected to the battery system by a long conduit extension with a female connector on the free end. This connector is the single-prong screw-on type.

CHARACTERISTICS:

Dimensions.....	approximately 3¼ by 3¾ by 1⅞ inches.
Weight.....	approximately 1½ pounds.
Operating voltage.....	24 volts, direct current.
Current drain.....	5⅔ amperes.
Plunger stroke.....	0.062 inches.

RELATIONSHIP OF PARTS: Used with:

Army type A-1 manual trigger, A. E. Reference Number 52-7075, on a .50 caliber M2 machine gun,
A. E. Reference Number 93-1560.

ARMY

A. E. REFERENCE NUMBER: 52-6350

SPECIFICATIONS:

Detail.....93-24746
Superseded.....24746

TYPE DESIGNATION: G-11

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: Mark 7 Mod. 1

BU. ORD. SKETCH NUMBER: 99030

AVIATION ORDNANCE STOCK LIST

NUMBER: 1-C-5463

ORDNANCE PAMPHLET NUMBER: 865

PROCUREMENT STATUS: Under procure-
ment.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Webster Electric Company	*G-11	**93-24746 Detail Specification	A-B	5200752867	11-1-30	105D/59
Magnavox Company, Incorporated	*G-11 †Mark 7, Mod. 1	**14D5G3 ††99030	A-B N	5200752867	11-1-30	105D/59

Note: *AAF type; **AAF drawing; †Navy type; ††Navy drawing.



GUN SOLENOIDS ARMAMENT—GUNNERY



SOLENOID—GUN

ARMY TYPE G-13

NAMES: Gun solenoid
Gun firing solenoid
Firing solenoid
Solenoid

DESCRIPTION: The Army type G-13 solenoid, used for electrical trigger control of a remotely placed 37 mm automatic cannon, is mounted on a bracket at the rear of the gun. A movable plunger in the solenoid is linked to the firing mechanism. When the solenoid is energized by pressing a firing switch, magnetic forces in the core of the solenoid coil attract the plunger, release the sear, and fire the gun. Release of the firing switch opens the circuit and a spring returns the plunger to its original position, causing the gun to cease firing.

The electrical connector is the single pin screw-on type.

CHARACTERISTICS:

Dimensions	approximately $5\frac{5}{16}$ by $2\frac{1}{4}$ by $2\frac{1}{4}$ inches.
Weight	approximately $2\frac{1}{2}$ pounds.
Operating voltage	24 volts direct current.
Current drain	10 amperes.
Plunger stroke	0.250 inches.
Electrical connector	Army part number 41A9227 (identical to AN3102-10S-2P).

RELATIONSHIP OF PARTS: Used with:
37 mm M4 automatic gun, A. E. Reference Number 93-1280.

ARMY

A. E. REFERENCE NUMBER: 52-6360

SPECIFICATIONS:

Detail.....24754

A. A. F. DRAWING NUMBER: 42B7343

TYPE DESIGNATION: G-13

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type G-15,
A. E. Reference Number 52-6370.

SHIPPING DATA: Shipped as a complete unit.

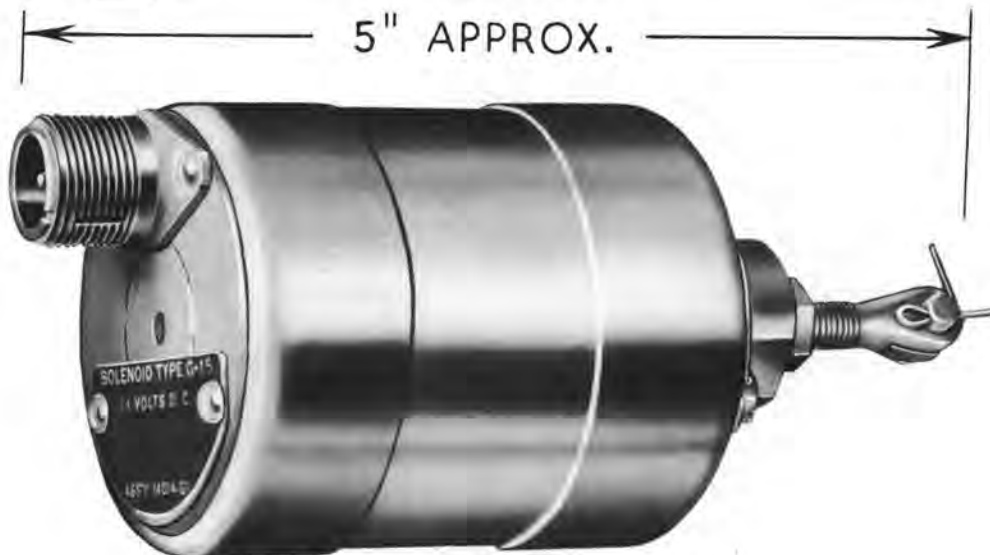
NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Webster Electric Company	*G-13	**42B7343	A-B	5200752870	11-1-30	105D/196
Magnavox Company, Incorporated	*G-15	14D14G1	A-B	5200752890	11-1-30	105D/91

Note: *AAF type; **AAF drawing.



SOLENOID—GUN

ARMY TYPE G-15

NAMES: Gun solenoid
Gun firing solenoid
Firing solenoid
Solenoid

DESCRIPTION: The Army type G-15 solenoid is used for electrical trigger control of a remote 37 mm automatic gun. The solenoid is mounted on a bracket at the rear of the cannon. When the solenoid is energized by depressing a firing switch, magnetic forces in the core of the coil attract a movable plunger, release the sear, and fire the gun. Release of the firing switch opens the solenoid circuit and a spring returns the plunger to its original position, causing the gun to cease firing.

The electrical connector is a single pin screw-on type.

CHARACTERISTICS:

Dimensions.....	approximately 5 by 2¼ by 2¼ inches.
Weight.....	approximately 2½ pounds.
Operating voltage.....	24 volts, direct current.
Current drain.....	10 amperes.
Plunger stroke.....	5/16 inch.
Electrical connector.....	AN3102-10S-2P.

RELATIONSHIP OF PARTS: Used with:

37 mm M4 automatic gun, A. E. Reference Number 93-1280.

ARMY

A. E. REFERENCE NUMBER: 52-6370

SPECIFICATIONS:

Detail.....	93-24764
Superseded.....	24764

A. A. F. DRAWING NUMBER: Detail specification 93-24764

TYPE DESIGNATION: G-15

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Magnavox Company, Incorporated	*G-15	.14D14G1	A-B	5200752890	11-1-30	105D/91
Webster Electric Company	*G-13	**42B7343	A-B	5200752870	11-1-30	105D/196

Note: *AAF type; **AAF drawing.

GUN SOLENOIDS ARMAMENT—GUNNERY



TRIGGER—ELECTRIC AN-M1

FORMER ARMY TYPE G-17 FORMER NAVY MARK 6, MOD. 1

NAMES: Electric trigger Gun solenoid Electric trigger control (Navy)
Solenoid—cannon Gun firing solenoid

DESCRIPTION: The Ordnance AN-M1 electric trigger, used for electrically controlling the fire of a 20-mm cannon, is mounted on a bracket on the bottom of the gun. The solenoid body is mounted perpendicular to a sear cover plate by means of a snap latch. A movable plunger protruding through the cover plate operates the sear of the gun trigger mechanism. When the solenoid is energized by pressing a firing switch, magnetic forces, in the core of the solenoid coil, attract the plunger, release the sear, and fire the gun. Release of the firing switch opens the circuit and a spring returns the plunger to its original position, causing the gun to cease firing.

The sear cover plate assembly and the solenoid body comprise the complete AN-M1 electric trigger, which was formerly known as the Army type G-17 gun firing solenoid, and the Navy Mark 6, Mod. 1 electric trigger control. The electrical connector is the single pin screw-on type.

CHARACTERISTICS:

Dimensions..... approximately 8 $\frac{3}{8}$ by 2 $\frac{3}{4}$ by 2 $\frac{7}{8}$ inches.
Weight..... approximately 5 $\frac{1}{4}$ pounds.
Operating voltage..... 24 volts direct current.
Current drain..... 10 amperes.
Plunger stroke..... $\frac{5}{16}$ inch.
Electrical connector..... AN3102-10S-2P.

RELATIONSHIP OF PARTS: Used with: M1 or AN-M2 20-mm automatic gun.

ARMY

A. E. REFERENCE NUMBER: 52-6380

SPECIFICATIONS:

Detail..... 24808 (type G-17)

A. A. F. DRAWING NUMBER: H43G10990

TYPE DESIGNATION: AN-M1

FORMER ARMY TYPE: G-17

PRODUCTION STATUS: Under procurement by Ordnance Office, War Department.

SHIPPING DATA: Normally shipped as an integral part of 20-mm gun (see A. E. Reference Number 93-1351 to 93-1355). Formerly shipped as a separate unit.

NAVY

TYPE DESIGNATION: AN-M1 (Formerly Mark 6 Mod. 1)

BU. ORD. DRAWING NUMBER: SK 99028

AVIATION ORDNANCE STOCK LIST NUMBER: Refer to chart.

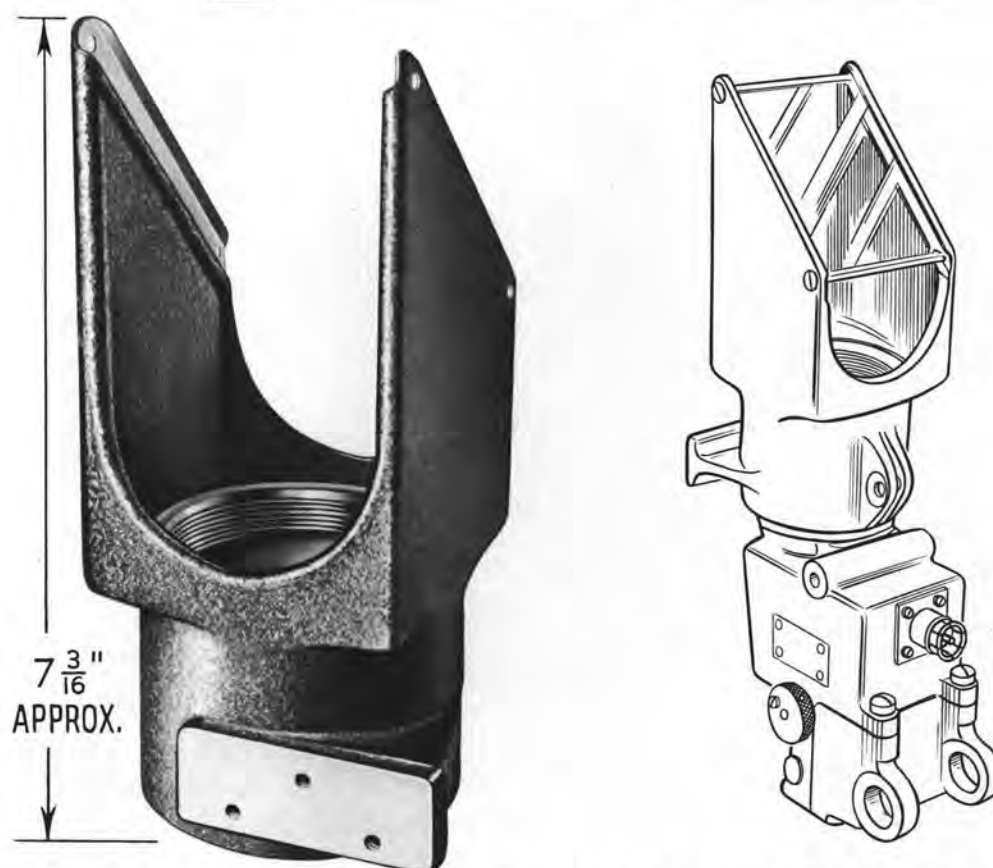
ORDNANCE PAMPHLET NUMBER: 865

PROCUREMENT STATUS: Under procurement.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Aviation Ordnance Stock List Number	Remarks
Ordnance Office War Department	†AN-M1	C70766	A-N-B			105D/13	1-T-2890	
Magnavox Company, Incorporated	*G-17	14D22G3	A-N-B			105D/13	1-C-5460-75	
	*G-8	14D2G1	A-B	5200752845	11-1-30 11-1-37	105D/36		§
	†Mark 6, Mod. 1 (AN-M1)	14D22G3	N				1-C-5460-5	

Note: §Only when height of this solenoid does not interfere with airplane structure; †Army-Navy standard type; *AAF type; ‡Navy type.



SUPPORT—GUN SIGHT IMAGE REFLECTOR

ARMY DRAWING NUMBER 41D4892

NAMES: Gun sight image reflector support
Gun sight reflector support
Reflector support

DESCRIPTION: The gun sight image reflector support, used with the N-3A fixed gun sight, fits directly around the main housing of the sight and is locked to it by two ears which are clamped together by a bolt and nut. This support provides a rigid mount for the gun sight image reflector, and allows replacement of the glass without disassembly of the entire sight. Cork gaskets prevent cracking of the reflector due to extremes of temperature and vibration.

CHARACTERISTICS:

Dimensions.....approximately $7\frac{3}{16}$ by $3\frac{1}{2}$ by $3\frac{5}{8}$ inches.
Weight.....approximately 1 pound.

RELATIONSHIP OF PARTS: Used with:

Army type N-3A fixed gun sight, A. E. Reference Number 52-4400, or Army type N-3B, fixed gun sight, A. E. Reference Number 52-4425.

ARMY

A. E. REFERENCE NUMBER: 52-6400

SPECIFICATIONS:

Detail.....93-24659B
Superseded.....93-24659A

A. A. F. DRAWING NUMBER: 41D4892

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, less reflector glass.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Ohio Pattern Works	*N-3A	**41D4892	A-B	5200858170	11-35-5	108B/63
	*N-5	**41D3024	A-B	5200858150		108B/79

Note: *For Sight AAF type; **AAF drawing.



SUPPORT—GUN SIGHT IMAGE REFLECTOR

ARMY DRAWING NUMBER 41D3024

NAMES: Gun sight image reflector support

DESCRIPTION: This gun sight image reflector support used with the N-3A fixed gun sight, fits directly around the main housing of the sight and is locked to it by two ears which are clamped together by a bolt and nut.

This support provides a rigid mount for the gun sight image reflector and allows replacement of the glass without disassembly of the entire sight. Cork gaskets prevent cracking of the reflector due to extreme temperature or vibration.

This support is the same as Army Drawing Number 41D4892 support used with the N-3A gunsight, except that it is $1\frac{3}{4}$ inches shorter.

CHARACTERISTICS:

Dimensions..... approximately $5\frac{1}{2}$ by $3\frac{5}{8}$ by $3\frac{3}{8}$ inches.
Weight..... approximately $\frac{7}{8}$ pound.

RELATIONSHIP OF PARTS: Used with:

Army type N-3A fixed gun sight, A. E. Reference Number 52-4400, or Army type N-3B fixed gun sight, A. E. Reference Number 52-4425.

ARMY

A. E. REFERENCE NUMBER: 52-6450

SPECIFICATIONS:

Detail..... 93-24687
Superseded..... 24687

A. A. F. DRAWING NUMBER: 41D3024

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Ohio Pattern Works	*N-5	**41D3024	A-B	5200858150		108B/79	
	*N-3A	**41D4892	A-B	5200858170	11-35-5	108B/63	$1\frac{3}{4}$ inches higher than type N-5 support

Note: *For sight AAF type; **AAF drawing.

**RHEOSTAT—VARIABLE RESISTANCE**

ARMY TYPE D-1 NAVY—SEE BELOW

NAMES: Variable resistance rheostat
Control rheostat
Rheostat
Aircraft power rheostat

DESCRIPTION: This rheostat is a coil of resistance wire, so arranged that, when a knob handle is turned, an internal slider moves over the coil and varies the resistance, depending upon the portion still remaining in the circuit. This rheostat offers maximum resistance in the first ON position and gradually decreases the resistance with further movement of the knob.

CHARACTERISTICS:

Dimensions.....approximately $2\frac{3}{8}$ by $2\frac{3}{16}$ by $1\frac{5}{8}$ inches.
Weight.....approximately 5 ounces.
Rating.....25 watts.
Resistance (maximum).....50 ohms.

RELATIONSHIP OF PARTS: Used with:

Army type N-6 and N-6A flexible gun sights, A. E. Reference Numbers 52-4500 and 52-4525.

ARMY

A. E. REFERENCE NUMBER: 52-4150

SPECIFICATIONS:

General.....94-32008A
Detail.....94-32010B
Superseded.....94-32010A

TYPE DESIGNATION: D-1

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Future procurement will be in accord with specification AN-R-14. This covers superseding rheostat AN3155.

SHIPPING DATA: Shipped as a complete unit.

NAVY

N. A. F. DRAWING NUMBER: Refer to chart.

F. S. S. C. NUMBER: R-17-R-7110

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Clarostat Manufacturing Company	*D-1	56-41A	A-B	4200613500	10C/40
Naval Aircraft Factory		††1099-25-50	N		

Note: *AAF type; ††Navy drawing.



SWITCHES ARMAMENT—GUNNERY



SWITCH—CONTROL STICK GUN ARMY TYPE B-1A

NAMES: Control stick gun switch
Gun control switch
Gun control stick switch
Control stick switch

DESCRIPTION: The Army type B-1A gun control switch, mounted on the control stick of an airplane, is used to electrically control the gun-firing solenoids of one or more synchronized or free firing machine guns. The switch consists of a rubber coated pistol grip handle and a trigger operated internal spring switch. When the switch is closed by pressing the trigger, the guns commence firing. When the trigger is released, the spring switch opens the electrical circuit and the guns stop firing.

CHARACTERISTICS:

Dimensions..... approximately 4½ by 2¼ by 3¾ inches.
Weight..... approximately 1 pound.

RELATIONSHIP OF PARTS:

Installed on the pilot's control stick, which is contractor furnished equipment.

ARMY

A. E. REFERENCE NUMBER: 52-6475

SPECIFICATIONS:

Detail..... 93-24591
Superseded..... 24591

A. A. F. DRAWING NUMBER: 0169221 (Supersedes Army Drawing Number 0153322)

TYPE DESIGNATION: B-1A

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type B-5 control stick gun switch, A. E. Reference Number 52-6600.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navý, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Manufacturer's Specification	Remarks
Guardian Electric Manufacturing Company	*B-1A	**0169221	A-B	5200875500	105D/72		
	*B-5	US-220	A-N-B	5200875350	105D/75	G-29990	§
Aerial Machine and Tool Company	*B-1A	**0169221	A-B	5200875500	105D/72		
Air Associates, Incorporated	*B-1A	**0169221	A-B	5200875500	105D/72		
Cutler-Hammer Incorporated		††NAF1173-2	N			8985	§

Note: §Has additional button for bomb release switch; *AAF type; **AAF drawing; ††Navy drawing.



SWITCH—CONTROL STICK GUN

ARMY TYPE B-5 NAVY—SEE BELOW

NAMES: Control stick gun switch Switch, trigger gun firing and
Gun control switch bomb release (Navy)
Control stick switch

DESCRIPTION: This gun control switch, mounted on the control stick of an airplane, is used to electrically control the gun firing solenoids of one or more synchronized or free-firing machine guns, and to release bombs. The control handle is of moulded plastic and has two spring switches inside it,—a trigger switch operated by the forefinger for firing guns, and a push button switch, operated by the thumb, for release of bombs.

CHARACTERISTICS:

Dimensions.....approximately 4 $\frac{3}{4}$ by 2 $\frac{1}{4}$ by 3 $\frac{3}{4}$ inches.
Weight.....approximately $\frac{3}{4}$ pound.

RELATIONSHIP OF PARTS:

Installed on pilot's control stick, which is contractor furnished equipment.

ARMY

A. E. REFERENCE NUMBER: 52-6600

SPECIFICATIONS:

Detail.....93-24708

Superseded.....24708

A. A. F. DRAWING NUMBER: 41B8946

TYPE DESIGNATION: B-5

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

N. A. F. DRAWING NUMBER: 1173-2

F. S. S. C. STOCK NUMBER: R-17-S-35510

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Manufacturer's Specification	Remarks
Guardian Electric Manufacturing Company	*B-5	**41B8946	A-N-B	5200875350	105D/75	G-29990	
	*B-1A	**0169221	A-B	5200875500	105D/72		§
Cutler-Hammer, Incorporated		††NAF 1173-2	N			8895	
Aerial Machine and Tool Company	*B-1A	**0169221	A-B	5200875500	105D/72		§
Air Associates, Incorporated	*B-1A	**0169221	A-B	5200875500	105D/72		§

Note: §Has no bomb release control switch; *AAF type; **AAF drawing; ††Navy drawing.



SWITCHES ARMAMENT—GUNNERY



SWITCH—SINGLE POLE TOGGLE

AN PART NUMBER AN3022-2

NAMES: Single pole toggle switch
Toggle switch
Switch
Switch—three hole mounting single pole toggle

DESCRIPTION: The AN3022-2 single-pole, single-throw toggle switch is used in 12 and 24 volt airplane electrical systems. Positive snap action of a compression spring provides contact pressure when the switch is closed. When pushed to the open or off position, the same spring insures positive opening of the contacts.

This switch is supplied with a luminous tip lever upon special order; this is known as part number AN3022-2B.

CHARACTERISTICS:

Dimensions..... approximately 2 by 2 by $\frac{3}{4}$ inches.
Weight..... approximately 2 ounces.

ARMY

A. E. REFERENCE NUMBER: 52-6650

SPECIFICATIONS:

General..... AN-S-20

AN DRAWING NUMBER: AN3022

AN PART NUMBER: AN3022-2

A. S. C STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

General..... AN-S-20

AN DRAWING NUMBER: AN3022

AN PART NUMBER: AN3022-2

A. S. O. STOCK NUMBER: Refer to chart.

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	A. S. O. Stock Number	Remarks
Cutler-Hammer, Incorporated		**AN3022-2	A-N-B	4200894750	105C/146	R17-S-28266-22	Non-luminous tip. Threaded mounting holes.
	*B-5A	**AN3015	A-N	42578201K4		R17-S-28260	Luminous tip.
Air Associates, Incorporated		**AN3022-2	A-N-B	4200894750	105C/146	R17-S-28266-22	Non-luminous tip. Threaded mounting holes.

Note: *AAF type; **Army-Navy standard drawing.



TRIGGER—MANUAL

ARMY TYPE A-1

NAMES: Manual trigger
Trigger assembly—gun firing

DESCRIPTION: This Army type A-1 trigger fits over the buffer tube of a .50 caliber M2 machine gun mounted in a turret, and is for emergency operation of the gun. In the event of power failure it operates the plunger of a type G-11 solenoid, enabling the gunner to fire the gun manually.

CHARACTERISTICS:

Dimensions..... approximately $2\frac{1}{4}$ by $3\frac{1}{4}$ by $1\frac{7}{8}$ inches.
Weight..... approximately $\frac{3}{4}$ pound.

RELATIONSHIP OF PARTS: Used with:

Army type G-11 solenoid, A. E. Reference Number 52-6350, when used on a .50 caliber M2 machine gun, A. E. Reference Number 93-1560.

ARMY

A. E. REFERENCE NUMBER: 52-7075

SPECIFICATIONS:

Detail..... 24823

MANUFACTURER: Magnavox Company, Incorporated

MANUFACTURER'S DRAWING NUMBER: 14D8

A. A. F. DRAWING NUMBER: 43A15180

TYPE DESIGNATION: A-1

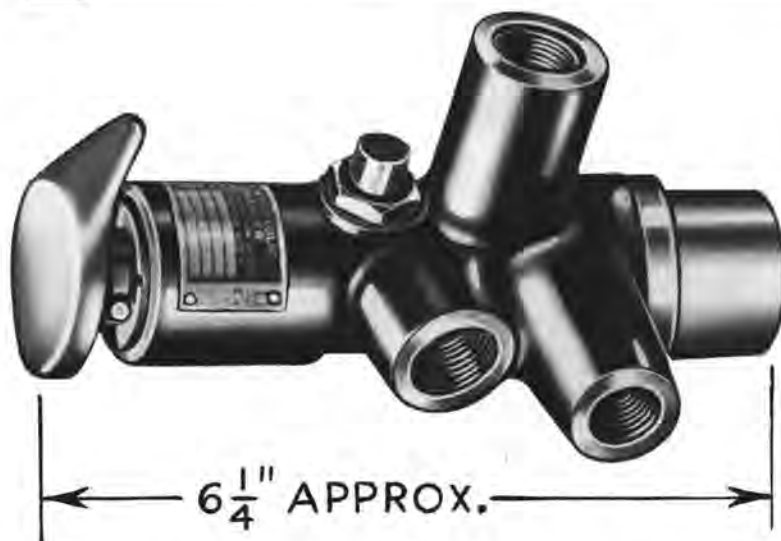
A. S. C. STOCK NUMBER: 5200934150

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



VALVE—HYDRAULIC GUN CHARGING

ARMY TYPE A-1 NAVY—SEE BELOW

NAMES: Hydraulic gun charging valve
Gun charger valve
Charging valve
Valve

DESCRIPTION: The Army type A-1 hydraulic gun charging valve controls that pressure from the airplane hydraulic system which is used to charge machine guns located in a part of the airplane remote from the gunner. The valve can be used with .30 or .50 caliber M2 machine guns, or with the 20-mm M1 or AN-M2 guns. A safety device, incorporated in the valve, makes it impossible to fire the gun should the firing switch be accidentally closed after the gun is charged.

CHARACTERISTICS:

Dimensions.....approximately 6¼ by 4¼ by 3 inches.
Weight.....approximately 1½ pounds.

RELATIONSHIP OF PARTS: Used with:

Bendix model F, 20-mm hydraulic gun charging cylinder, A. E. Reference Number 52-2300; Bendix model H, .30 caliber hydraulic gun charging cylinder, A. E. Reference Number 52-2400 or Bendix model C, .50 caliber hydraulic gun charging cylinder, A. E. Reference Number 52-2500.

ARMY

A. E. REFERENCE NUMBER: 52-8450

SPECIFICATIONS:

Detail.....95-24739
Superseded.....24739

MANUFACTURER: Bendix Products Division of Bendix Aviation Corporation.

MANUFACTURER'S DRAWING AND PART NUMBER: 76861

MANUFACTURER'S MODEL IDENTIFICATION: I

A. A. F. DRAWING NUMBER: H41B5344

TYPE DESIGNATION: A-1

A. S. C. STOCK NUMBER: 5200965700

TECHNICAL ORDER NUMBER: 11-1-14

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

BU. ORD. DRAWING NUMBER: Assembly 332357, Installation 300202

AVIATION ORDNANCE STOCK LIST NUMBER: 1-V-430

ORDNANCE PAMPHLET NUMBER: 827

PROCUREMENT STATUS: Under procurement.

BRITISH

REFERENCE NUMBER: 108A/20



YOKE—GUN MOUNT ADAPTER

ARMY DRAWING NUMBER 41D6865

NAMES: Gun mount adapter yoke

Yoke

Adapter yoke

DESCRIPTION: This yoke provides an universal mounting for an Army type E-8 adapter carrying a .50 caliber, M2 machine gun. It consists of a steel "U" shaped frame welded to a hollow cylindrical stem having a peripheral groove. Two bushings are brazed on either leg of the "U" for receiving the bolt which connects the yoke to the adapter. Locking balls in a socket mounted in the airplane structure engage the groove and prevent the gun from being lifted out of the mount until properly released.

CHARACTERISTICS:

Dimensions.....approximately $10\frac{9}{32}$ by $3\frac{1}{16}$ by $2\frac{1}{2}$ inches.

Weight.....approximately $2\frac{3}{4}$ pounds.

RELATIONSHIP OF PARTS: Used with:

Army type E-8 gun mount adapter, A. E. Reference Number 52-1100.

ARMY

A. E. REFERENCE NUMBER: 52-9000

MANUFACTURER: Miller, Debrul, and Peters, Incorporated.

A. A. F. DRAWING NUMBER: 41D6865

A. S. C. STOCK NUMBER: 5200992900

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



MACHINE GUN TURRETS (LOCAL CONTROL TYPES)

The primary function of a machine gun turret is to provide an automatic means for a gunner to track a target and operate the guns. All turrets consist of an enclosure, a turret control system, and means of mounting, sighting, feeding, and firing the guns.

The locally-controlled turret is a rotatable structure in the form of a ball, dome, or rounded cylinder, in which one or more machine guns are mounted. The guns are sighted, controlled, and fired by a gunner within, above, or below the turret, depending upon its type and location in the airplane.

Turrets are designated according to their installation in the airplane, i.e.: upper turrets (on the upper deck), lower or belly turrets (under the fuselage), tail turrets, and nose turrets.

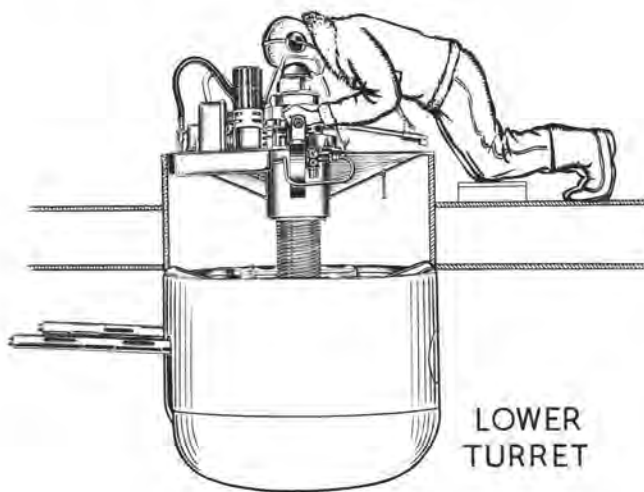
Upper turrets are non-retractable and have dome-like, transparent enclosures of plexiglas and metal under which the gunner sits or stands. The guns may be rotated through 360 degrees horizontally, through 90 degrees in elevation, or any simultaneous combination of the two movements.

Lower, or belly turrets can be either retractable or non-retractable. They may be spherical, with the gunner seated inside; or hemispherical, with the gunner kneeling inside the airplane above the turret. The enclosures are usually of metal and plexiglas. The guns may be rotated through 360 degrees horizontally, through 90 degrees in depression, or any simultaneous combination of the two movements.

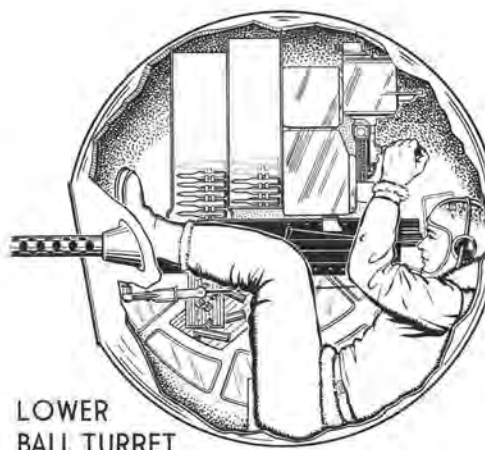
Tail turrets are not retractable. The cylindrically-shaped enclosure includes steel armor plate protection, a cover of transparent plexiglas, and, in some installations, flat panes of bullet-proof glass. The gunner is seated completely inside the structure and controls the turret to move the guns through approximately 180 degrees horizontally, 90 degrees upward, and 90 degrees downward.



UPPER
TURRET



LOWER
TURRET



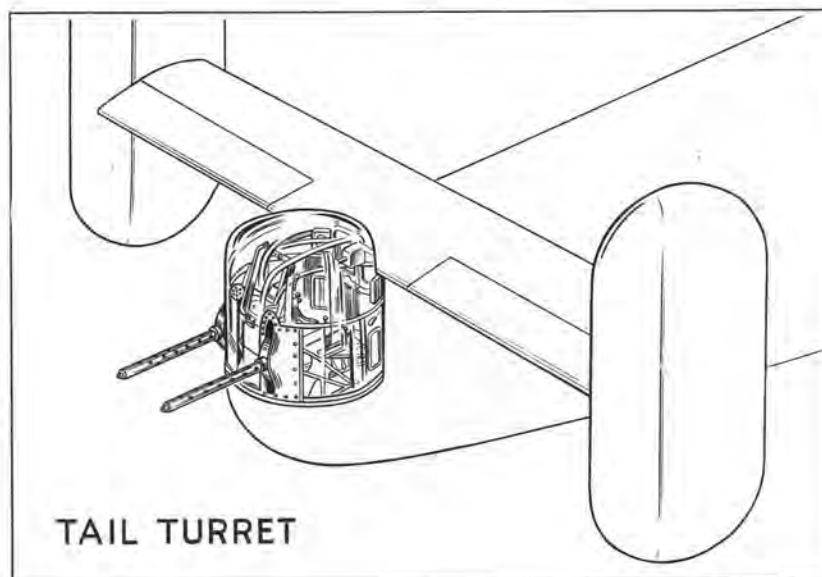
LOWER
BALL TURRET

(Continued on page 131)



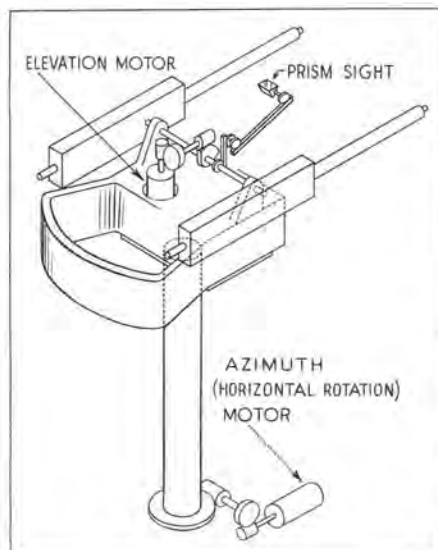
MACHINE GUN TURRETS

(Continued from page 130)



Nose turrets are not retractable; two models have exactly the same design as tail turrets, and a third model resembles the dome-type lower turret. This turret consists of a metal enclosure and is located below the fuselage nose. The gunner, seated above the turret and inside the plexiglas nose of the airplane, can control the guns through 360 degrees horizontally and 90 degrees downward.

Control of turrets may be either electric or hydraulic. Electrical installations operate on either a 12 or 24 volt system. Hydraulically-controlled turrets are operated by hydraulic motors.



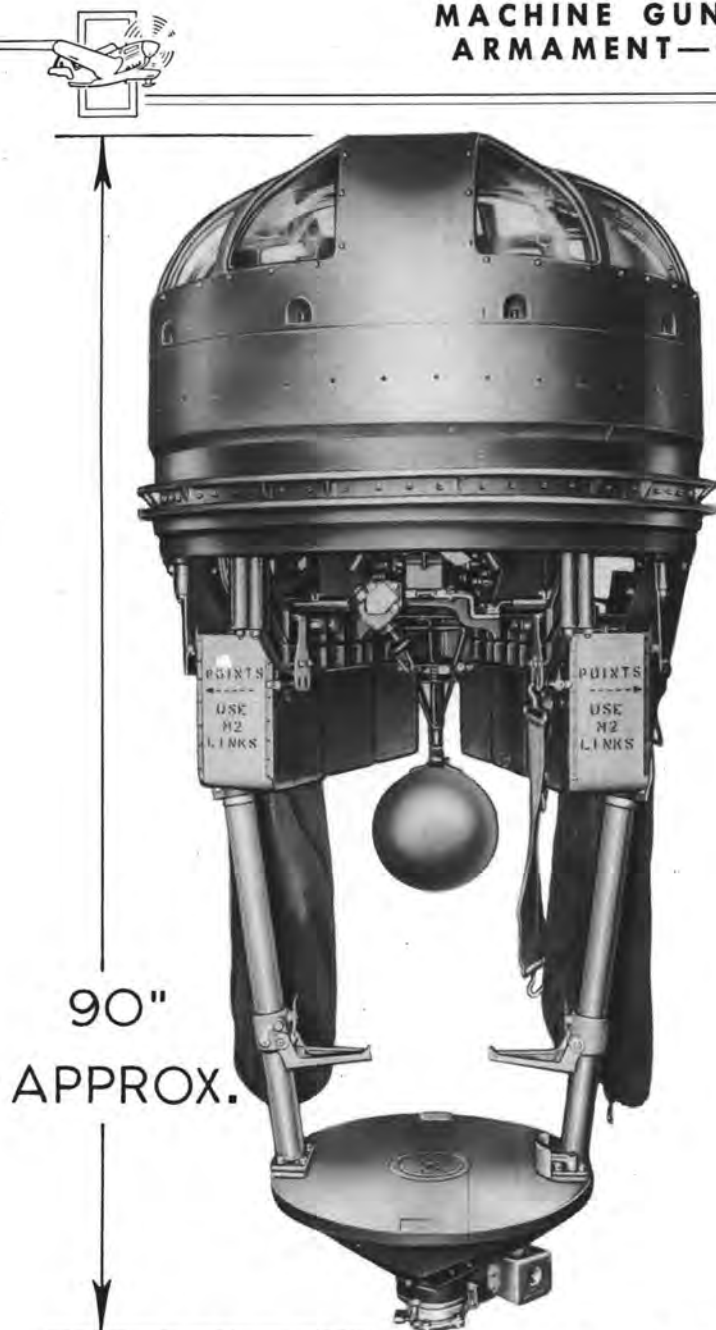
Electrically-operated turrets are rotated horizontally by means of a reversible electric motor and a system of gears. The guns are elevated or depressed by a second reversible electric motor and gear system which move a gun carriage attached to the turret. Both of these actions may take place at the same time. The gun sight moves with the gun. Hand grips control the electric motors and regulate the speed and direction of turret movement. These controls also have an electric button or trigger mechanism to fire the guns.

Hydraulically-operated turrets use a system of control valves or levers which may be opened, closed, or moved by handgrips. In some turrets, the flow of oil from an electrically-driven pump operates two hydraulic motors, each of which moves a gear train. One system of gears rotates the turret in a horizontal plane and the other elevates or depresses the guns, both actions taking place simultaneously.

Ammunition, in link belts, is stored in containers inside the turrets, and is automatically conveyed to the individual guns. After being fired, ejected cartridge cases and links fall to the floor or into a canvas bag attached to an ejector chute.

Automatic fire cut-off mechanisms, used with all turrets to prevent the gunner from shooting away part of his own airplane, interrupt the firing of the guns when they come in range of airplane parts such as tail surfaces, etc.

MACHINE GUN TURRETS ARMAMENT—GUNNERY

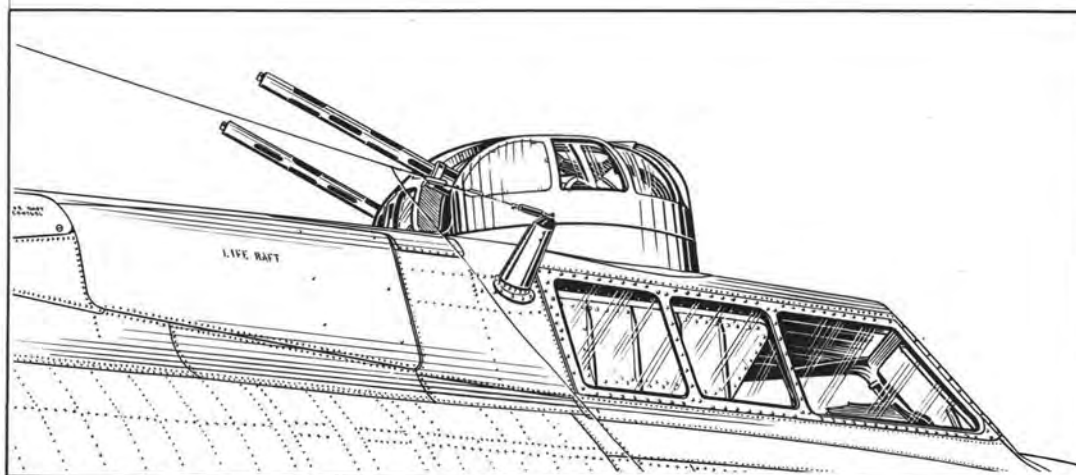


TURRET—UPPER GUN

ARMY TYPE A-1 NAVY—SEE BELOW

NAMES: Upper gun turret
Sperry upper turret
Deck turret—Sperry

Turret—upper local control
Upper gun turret—Sperry



(Continued on page 133)



TURRET—UPPER GUN

(Continued from page 132)

DESCRIPTION: The Army type A-1 turret, which mounts two .50 caliber M2 machine guns, is supported on a pivoted pedestal fastened to the floor of the airplane fuselage. It is operated by a Vickers electro-hydraulic unit which rotates the turret and moves the guns in elevation and depression. In the event of power failure, the turret can be moved manually by the gunner.

The gunner, seated in a canvas sling-type seat, is provided with foot rests which are attached to the turret support. He sights through an automatic compensating sight which is fixed to, and moves with the guns. The range adjustment for the sight is made with the thumbs, by twirling a notched wheel located between the control handles. The guns, charged individually by manual chargers, are fired by pressing a trigger switch on the control handles. One handle also has a safety switch which makes the turret operable.

Slip rings on the pedestal bring electric power into the turret for operation of the Vickers unit, gun-sight, interphone, trouble light, and other equipment. An outlet and controlling rheostat are provided inside the turret for the gunner's electrically heated suit.

CHARACTERISTICS:

Turret diameter..... approximately 40 $\frac{13}{16}$ inches.
 Turret height..... approximately 90 inches.
 Weight..... approximately 650 pounds.
 Rotation in azimuth..... 360 degrees.
 Elevation of guns..... 85 degrees above horizontal.
 Operating voltage..... 27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7600

TYPE DESIGNATION: A-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-1A upper turret, A. E. Reference Number 52-7625.

SHIPPING DATA: Shipped as a complete unit less guns, ammunition, and compensating sight.

NAVY

The Navy uses this turret on airplanes procured from the Army.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4
 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification
Sperry Gyroscope Company	*A-1	644961	A-B	5400963150	11-45C-1	150A/3	S-69809B
Steel Products Engineering Corporation	*A-1	SG1	A-B	5400963165	11-45C-1	150A/3	S-69809B
	*A-1A	SP-2475	A-B	5400963165	11-45C-1	150A/3	SP-S-2475
Emerson Electric Manufacturing Company	*A-1	210860J	A-B	5400963165	11-45C-1	150A/3	S-69809B
	*A-1A	SP-2475	A-B	5400963165	11-45C-1	150A/3	SP-S-2475

Note: *AAF type.



MACHINE GUN TURRETS ARMAMENT—GUNNERY

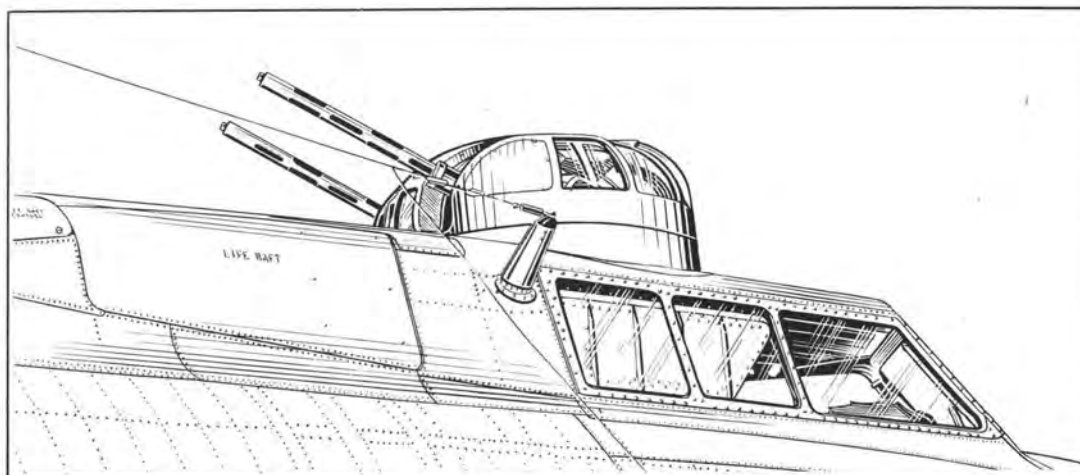


TURRET—UPPER GUN

ARMY TYPE A-1A NAVY—SEE BELOW

NAMES: Upper gun turret
Sperry upper turret
Deck turret—Sperry

Turret—upper local control
Upper gun turret—Sperry



(Continued on page 135)



TURRET—UPPER GUN

(Continued from page 134)

DESCRIPTION: The Army type A-1A turret, which mounts two .50 caliber, M2 machine guns, is supported on a pivoted pedestal fastened to the floor of the airplane fuselage. It is operated by a Vickers electro-hydraulic unit which rotates the turret and moves the guns in elevation and depression. In the event of power failure, the turret can be moved manually by the gunner.

The gunner, seated in a canvas sling type seat with an attached cushion, is provided with adjustable foot rests fixed to the turret support. He sights through an automatic compensating sight which is fixed to, and moves with, the guns. A clear-vision glass sighting panel in the dome reduces visual distortion. The range adjustment for the sight is operated by a motorcycle-type grip located on the right hand control handle. The guns, charged individually by manual chargers, are fired by pressing a trigger switch on the turret control handles. The handles also have a safety switch which makes the turret operable.

Slip rings on the pedestal bring electric power into the turret for operation of the Vickers unit, gun-sight, interphone, trouble light, and other equipment. An outlet and controlling rheostat are provided inside the turret for the gunner's electrically heated flying suit.

CHARACTERISTICS:

Turret diameter.....	approximately 40 $\frac{13}{16}$ inches.
Turret height.....	approximately 90 inches.
Weight.....	approximately 650 pounds.
Rotation in azimuth.....	360 degrees.
Elevation of guns.....	from 5 degrees below to 85 degrees above horizontal.
Operating voltage.....	27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7625

TYPE DESIGNATION: A-1A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, less gun, ammunition, and compensating sight.

NAVY

The Navy uses these turrets on airplanes procured from the Army.

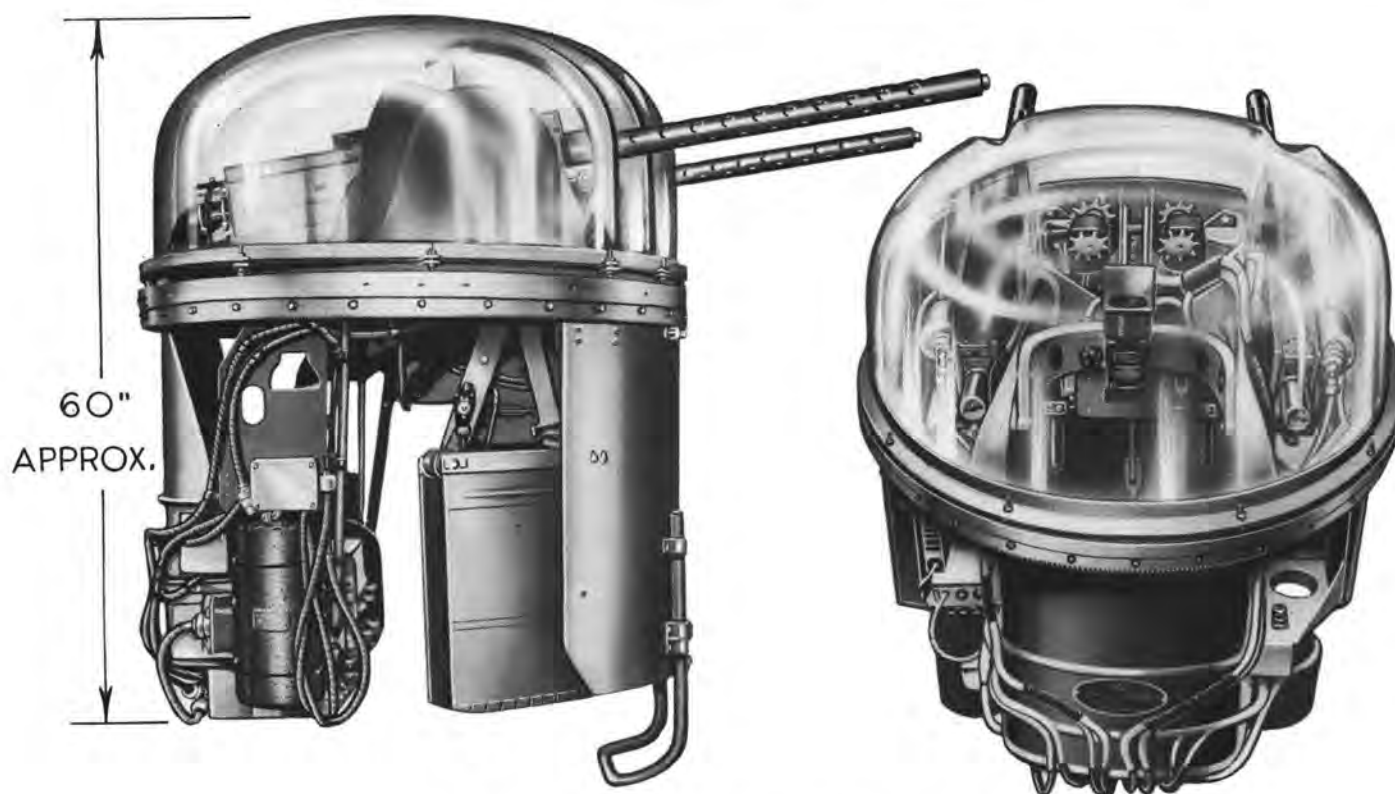
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification
Steel Products Engineering Corporation	*A-1A	SP-2475	A-B	5400963165	11-45C-1	150A/3	SP-S-2475
	*A-1	SG1	A-B	5400963165	11-45C-1	150A/3	S-69809B
Emerson Electric Manufacturing Company	*A-1A	SP-2475	A-B	5400963165	11-45C-1	150A/3	SP-S-2475
	*A-1	210960J	A-B	5400963165	11-45C-1	150A/3	S-69809B
Sperry Gyroscope Company	*A-1	644961	A-B	5400963150	11-45C-1	150A/3	S-69809B

Note: *AAF type.



MACHINE GUN TURRETS ARMAMENT—GUNNERY

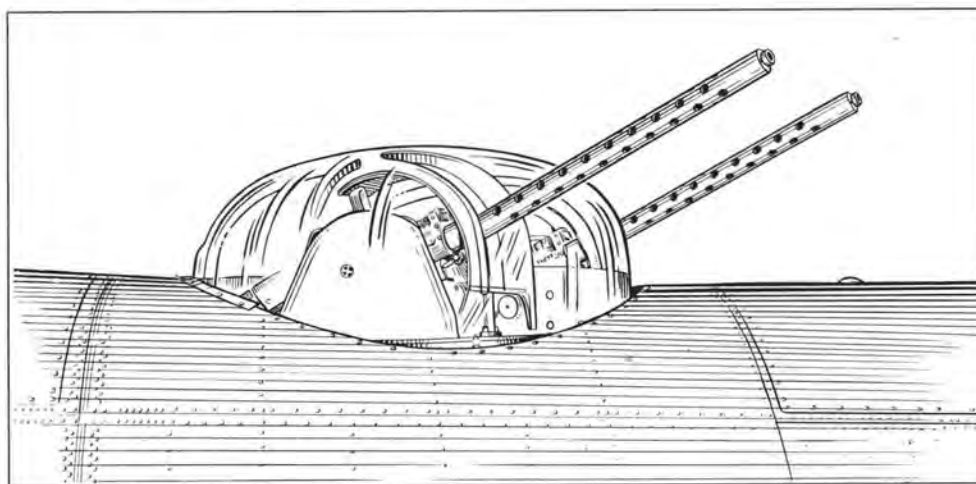


TURRET—UPPER GUN

ARMY TYPE A-3 NAVY—SEE BELOW

NAMES: Upper gun turret
Martin upper gun turret
Deck turret

Turret—upper gun—Martin
Upper gun turret—local control (British)



DESCRIPTION: The Army type A-3 turret, which mounts two .50 caliber M2 machine guns, is supported on a mounting ring rigidly fastened to the airplane. It is electrically operated by two amplydine drives, one for rotation of the turret, the other for movement of the guns in elevation and depression. In the event of power failure, the turret can be moved manually by the gunner.

The gunner, seated in a bucket-type seat with a hinged bottom, is provided with an adjustable foot rest. Armor plate provides for his protection.

The target is sighted through a reflector type sight which moves with the guns. This sight is equipped with a sunshield, or glare eliminator, for sighting against the sun.

The guns, charged individually by manual chargers, are fired by pressing a trigger switch on the turret control handle. A safety switch on the same handle makes the turret electrically operable.

(Continued on page 137)



TURRET—UPPER GUN

(Continued from page 136)

CHARACTERISTICS:

Turret diameter.....approximately 41 inches.
Turret height.....approximately 60 inches.
Weight.....approximately 463 pounds.
Rotation in azimuth.....360 degrees.
Elevation of guns.....85 degrees above horizontal.
Operating voltage.....27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7400

TYPE DESIGNATION: A-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-3C upper turret, A. E. Reference Number 52-7475.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

The Navy uses these turrets on airplanes procured from the Army.

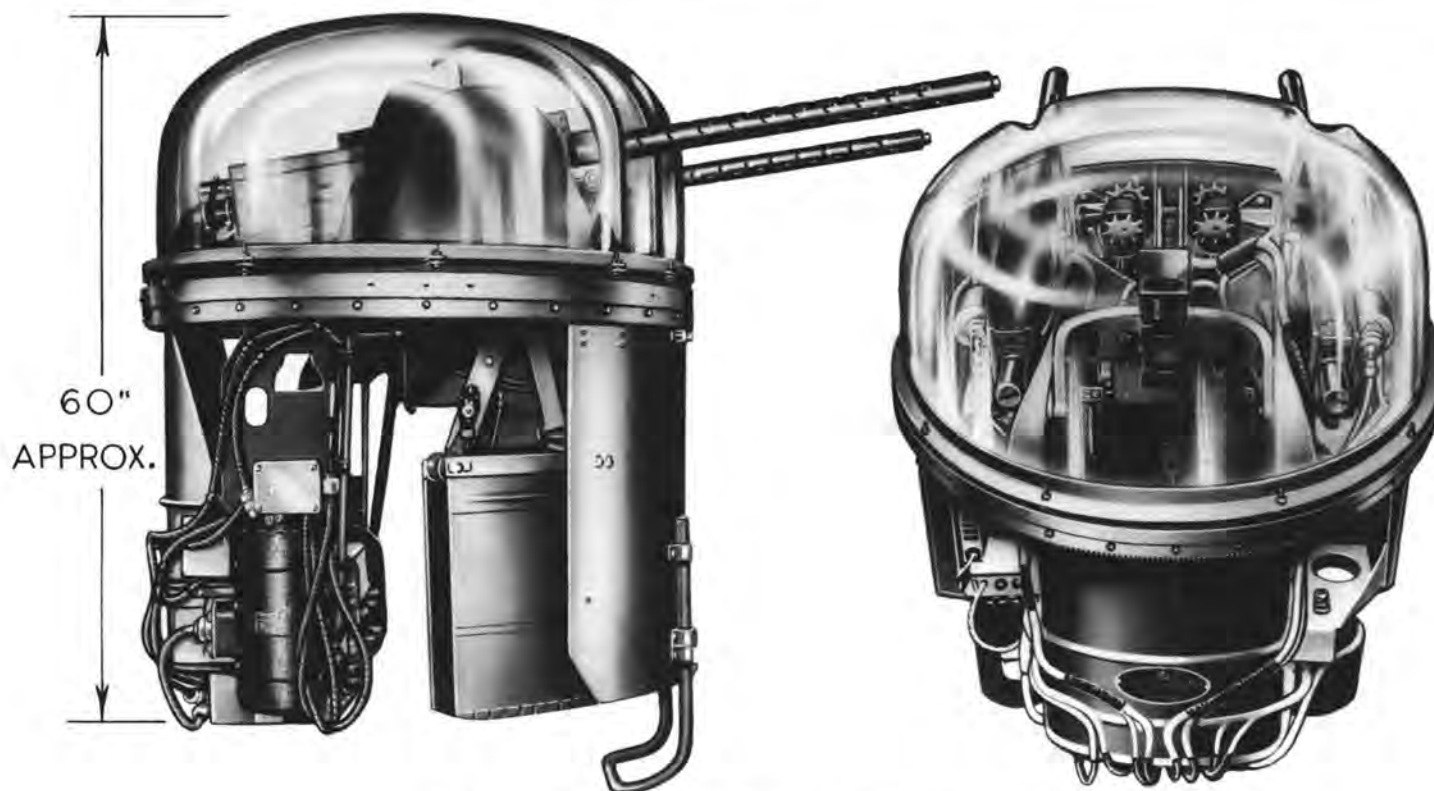
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Used on Airplanes	Army Type	Remarks
The Glenn L. Martin Company	250CE2	R-312285	A-B	5400963142	11-45B-1	150A/1	165	B-26A	A-3	Uses block type fire interrupter.
	250CE3	R-312300	A-B	5400963142	11-45B-1	150A/2	165	B-24	A-3	Uses block type fire interrupter.
	250CE4	250CE40	A-B	5400963141	11-45B-1	150A/22	212	B-26 series	A-3C	Uses profile type fire interrupter.
	250CE5	250CE50	A-B	5400963141-3	11-45B-1	150A/11	212	B-24 series	A-3C	Uses profile type fire interrupter.
	250CE2A	R-314560	A-B	5400963144	11-45B-1	150A/7	165	B-26B	A-3A	*
	250CE6	R-371300	A-B	5400963144	11-45B-1	150A/23	165B	B-26B-1	A-3A	Uses profile type fire interrupter.
	250CE3A	R-312310	A-B	5400963143-3	11-45B-1	150A/9	165B	B-24 series	A-3B	Uses block type fire interrupter.
	250CE7	250CE70	A	5400963149-3	11-45B-1		212	B-34; B-37	A-3C	Uses profile type fire interrupter.
	250CE11	250CE110	A	5400963149-43	11-45B-1		212	B-40	A-3C	Uses profile type fire interrupter.
	250CE8	R-371400	A-B	5400963149-5	11-45B-1	150A/8	258	A-30	A-11	Uses profile type fire interrupter.
	250CE8A	R-371400	A-B	5400963149-5	11-45B-1	150A/24	264	A-30	A-11	Uses block type fire interrupter.
	250CE10	250CE100	A	5400963149-7			281	A-20	A-11	Uses profile type fire interrupter.
	250CE1	R-266800	A-B	5400963145	11-45B-2	150A/32	165A	B-26	A-14	Uses block type fire interrupter.

*Some turrets use block type fire interrupters; others use profile type fire interrupters.



MACHINE GUN TURRETS ARMAMENT—GUNNERY

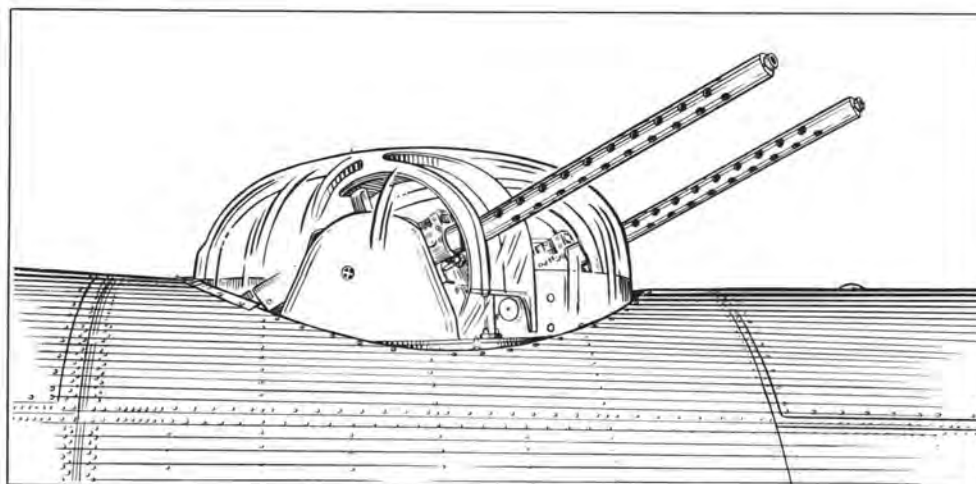


TURRET—UPPER GUN

ARMY TYPE A-3A NAVY—SEE BELOW

NAMES: Upper gun turret
Martin upper gun turret
Deck turret—Martin

Turret—upper gun—Martin
Upper gun turret—local control (British)



DESCRIPTION: The Army type A-3A upper gun turret, which mounts two .50 caliber M2 machine guns, is supported on a mounting ring rigidly fastened to the airplane. It is electrically operated by two amplidyne drives; one for rotation of the turret, the other for movement of the guns in elevation and depression. In the event of power failure, the turret can be moved manually by the gunner.

The gunner, seated in a bucket-type seat with a hinged bottom, is provided with an adjustable foot rest. Armor plate provides for his protection. The target is sighted through a reflector type sight, which moves with the guns. This sight is equipped with a sunshield, or glare eliminator, for sighting against the sun.

The guns, charged individually by manual chargers, are fired by pressing a trigger switch on the turret control handle. A safety switch on the same handle makes the turret electrically operable. A swivel plug below the turret, on the floor of the airplane, is used for oxygen and interphone connections. An outlet and controlling rheostat are provided inside the turret for the gunner's electrically heated suit. A slip ring fastened to the turret mounting ring transmits electric power for operation.

(Continued on page 139)



TURRET—UPPER GUN

(Continued from page 138)

CHARACTERISTICS:

Turret diameter.....approximately 41 inches.
Turret height.....approximately 60 inches.
Weight.....approximately 465 pounds.
Rotation in azimuth.....360 degrees.
Elevation of guns.....85 degrees above horizontal.
Operating voltage.....27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7425

TYPE DESIGNATION: A-3A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-3C upper turret, A. E. Reference Number 52-7475.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

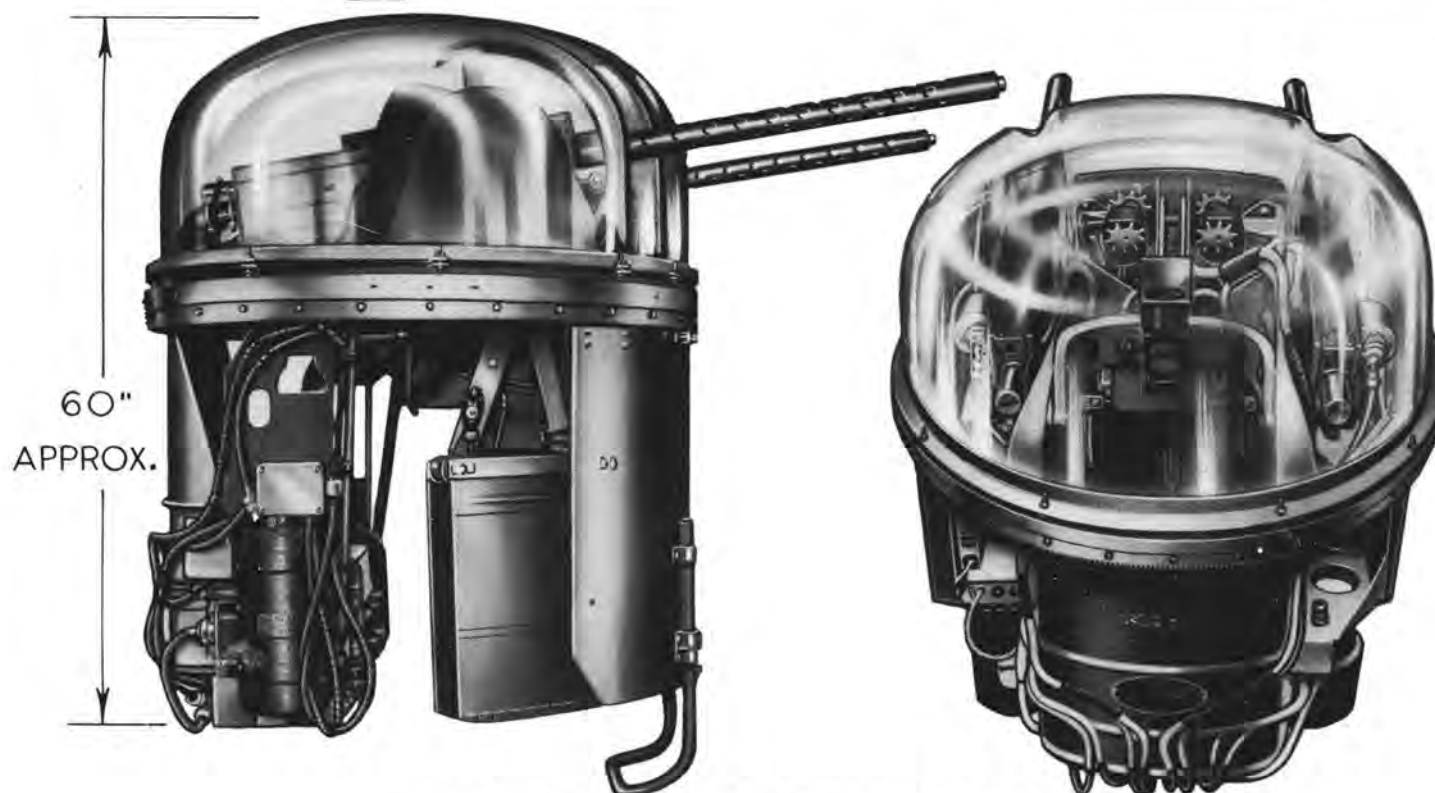
The Navy uses these turrets on airplanes procured from the Army.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

A-Army, N-Navy, B-British

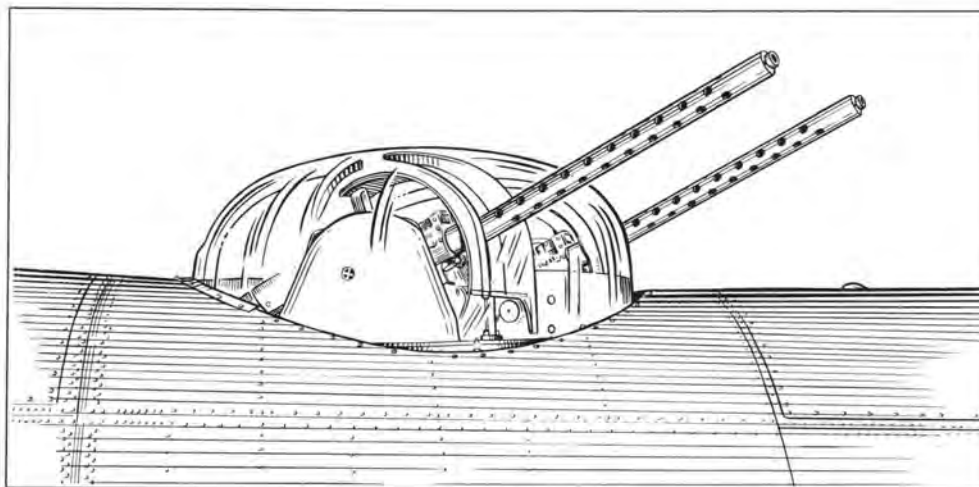
Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Used on Airplanes	Army Type	Remarks
The Glenn L. Martin Company	250CE2A	R-314560	A-B	5400963144	11-45B-1	150A/7	165	B-26B	A-3A	Some turrets use block type fire interrupter; Others use profile.
	250CE6	R-371300	A-B	5400963144	11-45BA-1	150A/23	165B	B-26B-1	A-3A	Uses profile type fire interrupter.
	250CE4	250CE40	A-B	5400963141	11-45BB-1	150A/22	212	B-26 series	A-3C	Uses profile type fire interrupter.
	250CE5	250CE50	A-B	5400963141-3	11-45BB-1	150A/11	212	B-24 series	A-3C	Uses profile type fire interrupter.
	250CE2	R-312285	A-B	5400963142	11-45B-1	150A/1	165	B-26A	A-3	Uses block type fire interrupter
	250CE3	R-312300	A-B	5400963142	11-45B-1	150A/2	165	B-24	A-3	Uses block type fire interrupter
	250CE3A	R-312310	A-B	5400963143-3	11-45B-1	150A/9	165B	B-24 series	A-3B	Uses block type fire interrupter.
	250CE7	250CE70	A	5400963149-3	11-45BB-1		212	B-34; B-37	A-3C	Uses profile type fire interrupter.
	250CE11	250CE110	A	5400963149-43	11-45BB-1		212	B-40	A-3C	Uses profile type fire interrupter.
	250CE8	R-371400	A-B	5400963149-5	11-45BC-1	150A/8	258	A-30	A-11	Uses profile type fire interrupter.
	250CE8A	R-371400	A-B	5400963149-5	11-45BD-1	150A/24	264	A-30	A-11	Uses block type fire interrupter.
	250CE10	250CE100	A	5400963149-7			281	A-20	A-11	Uses profile type fire interrupter.
	250CE1	R-266800	A-B	5400963145	11-45B-2	150A/32	165A	B-26	A-14	Uses block type fire interrupter.

**TURRET—UPPER GUN**

ARMY TYPE A-3B NAVY—SEE BELOW

NAMES: Upper gun turret
Martin upper gun turret
Deck turret—Martin

Turret—upper gun—Martin
Upper gun turret—local control (British)



DESCRIPTION: The Army type A-3B upper gun turret, which mounts two .50 caliber M2 machine guns, is supported on a mounting ring rigidly fastened to the airplane. It is electrically operated by two amplidyne drives, one for rotation of the turret, the other for movement of the guns in elevation and depression. In the event of power failure, the turret can be moved manually by the gunner.

The gunner, seated in a bucket-type seat with a hinged bottom, is provided with an adjustable foot rest. Armor plate provides for his protection.

The target is sighted through a reflector type sight, which moves with the guns. This sight is equipped with a sunshield, or glare eliminator, for sighting against the sun.

The guns, charged individually by manual chargers, are fired by pressing a trigger switch on the turret control handle. A safety switch on the same handle makes the turret electrically operable.

A swivel plug below the turret, on the floor of the airplane, is used for oxygen and interphone connections. An outlet and controlling rheostat are provided inside the turret for the gunner's electrically heated suit. A slip ring fastened to the turret mounting ring transmits electric power for operation.

(Continued on page 141)



TURRET—UPPER GUN

(Continued from page 140)

CHARACTERISTICS:

Turret diameter.....approximately 41 inches.
Turret height.....approximately 60 inches.
Weight.....approximately 466 pounds.
Rotation in azimuth.....360 degrees.
Elevation of guns.....85 degrees above horizontal.
Operating voltage.....27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7450

TYPE DESIGNATION: A-3B

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-3C upper turret, A. E. Reference Number 52-7475.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

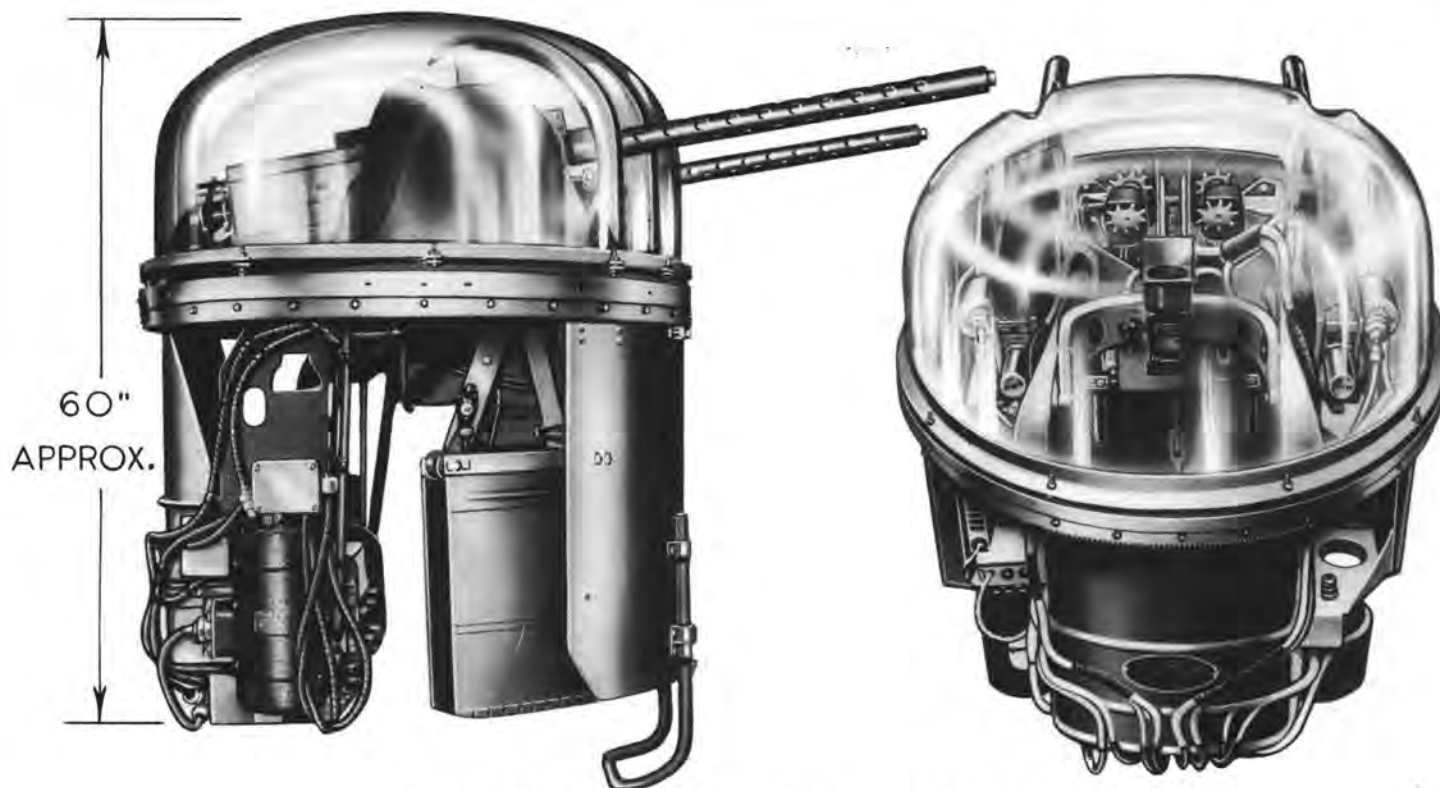
The Navy uses these turrets on airplanes procured from the Army.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Used on Airplanes	Army Type	Remarks
The Glenn L. Martin Company	250CE3A	R-312310	A-B	5400963143-3	11-45B-1	150A/9	165B	B-24 series	A-3B	Uses block type fire interrupter.
	250CE2A	R-314560	A-B	5400963144	11-45B-1	150A/7	165	B-26B	A-3A	Some turrets use block type fire interrupter. Others use profile type.
	250CE6	R-371300	A-B	5400963144	11-45BA-1	150A/23	165B	B-26B-1	A-3A	Uses profile type fire interrupter.
	250CE4	250CE40	A-B	5400963141	11-45BB-1	150A/22	212	B-26 series	A-3C	Uses profile type fire interrupter.
	250CE5	250CE50	A-B	5400963141-3	11-45BB-1	150A/11	212	B-24 series	A-3C	Uses profile type fire interrupter.
	250CE2	R-312285	A-B	5400963142	11-45B-1	150A/1	165	B-26A	A-3	Uses block type fire interrupter.
	250CE3	R-312300	A-B	5400963142	11-45B-1	150A/2	165	B-24	A-3	Uses block type fire interrupter.
	250CE7	250CE70	A	5400963149-3	11-45BB-1		212	B-34; B-37	A-3C	Uses profile type fire interrupter.
	250CE11	250CE110	A	5400963149-43	11-45BB-1		212	B-40	A-3C	Uses profile type fire interrupter.
	250CE8	R-371400	A-B	5400963149-5	11-45BC-1	150A/8	258	A-30	A-11	Uses profile type fire interrupter.
	250CE8A	R-371400	A-B	5400963149-5	11-45BD-1	150A/24	264	A-30	A-11	Uses block type fire interrupter.
	250CE10	250CE100	A	5400963149-7			281	A-20	A-11	Uses profile type fire interrupter.
	250CE1	R-266800	A-B	5400963145	11-45B-2	150A/32	165A	B-26	A-14	Uses block type fire interrupter.



MACHINE GUN TURRETS ARMAMENT—GUNNERY

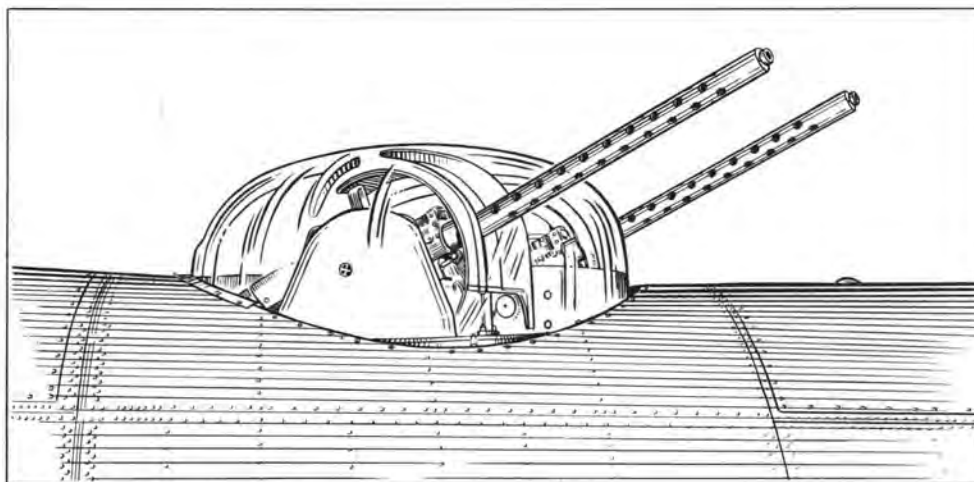


TURRET—UPPER GUN

ARMY TYPE A-3C NAVY—SEE BELOW

NAMES: Upper gun turret
Martin upper gun turret
Deck turret—Martin

Turret—upper gun—Martin
Upper gun turret—local control (British)



DESCRIPTION: The Army type A-3C turret, which mounts two .50 caliber M2 machine guns, is supported on a mounting ring rigidly fastened to the airplane. It is electrically operated by two amplidyne drives, one for rotation of the turret, the other for movement of the guns in elevation and depression. In the event of power failure, the turret can be moved manually by the gunner.

The gunner, seated in a bucket-type seat with a hinged bottom, is provided with an adjustable foot rest. Armor plate provides for his protection. The target is sighted through a reflector type sight, which moves with the guns. This sight is equipped with a sunshield, or glare eliminator, for sighting against the sun.

The guns, charged individually by manual chargers, are fired by pressing a trigger switch on the turret control handle. A safety switch on the same handle makes the turret electrically operable.

A swivel plug below the turret, on the floor of the airplane, is used for oxygen and interphone connections. An outlet and controlling rheostat are provided inside the turret for the gunner's electrically heated suit. A slip ring fastened to the turret mounting ring transmits electric power for operation.

(Continued on page 143)



MACHINE GUN TURRETS ARMAMENT—GUNNERY

TURRET—UPPER GUN

(Continued from page 142)

CHARACTERISTICS:

Turret diameter.....approximately 41 inches.
Turret height.....approximately 60 inches.
Weight.....approximately 564 pounds.
Rotation in azimuth.....360 degrees.
Elevation of guns.....from 3 degrees below to 85 degrees above horizontal.
Operating voltage.....27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7475

TYPE DESIGNATION: A-3C

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

The Navy uses these turrets on airplanes procured from the Army.

MODELS BELOW ARE INTERCHANGEABLE

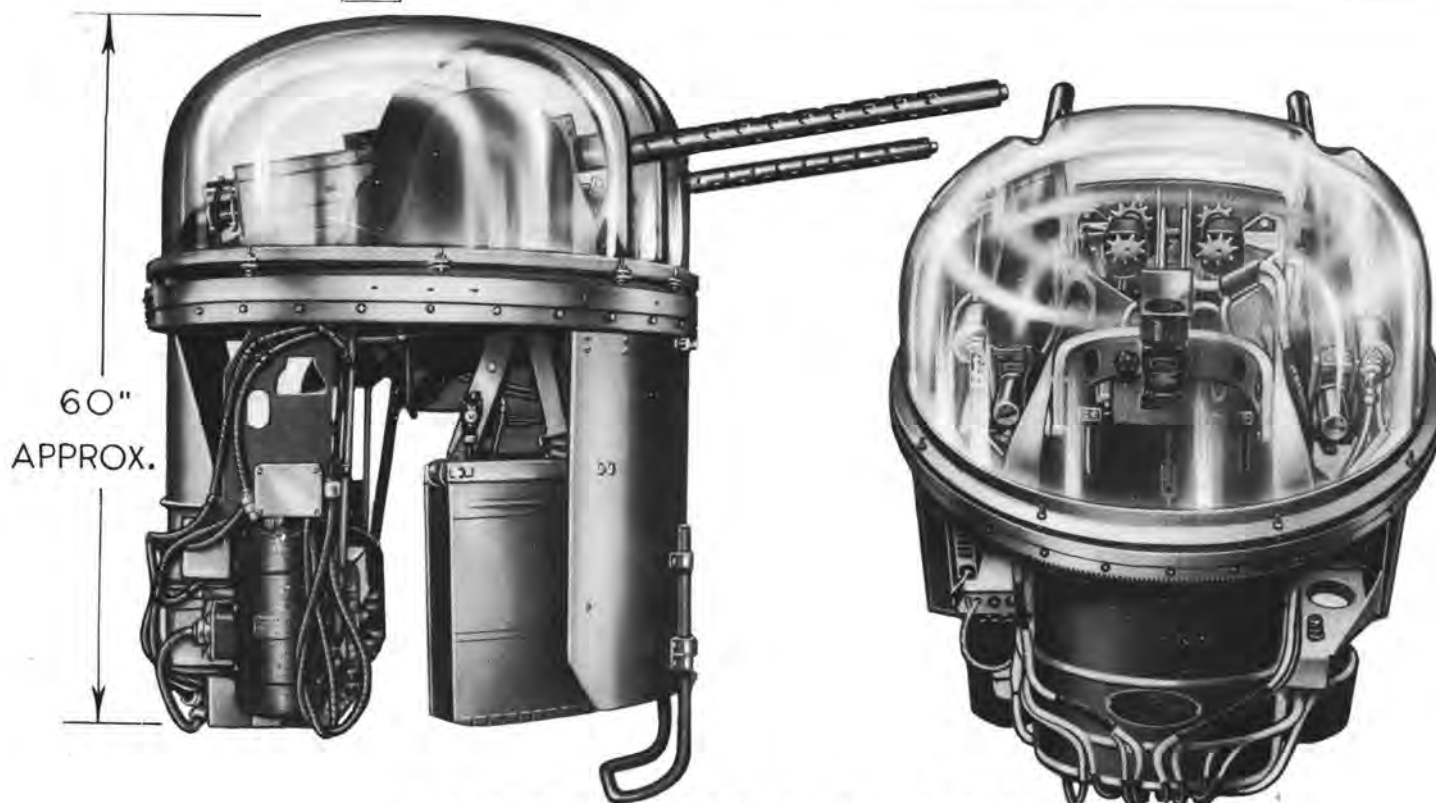
Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Used on Airplanes	Army Type	Remarks
The Glenn L. Martin Company	250CE4	250CE40	A-B	5400963141	11-45BB-1	150A/22	212	B-26 series	A-3C	Uses profile type fire interrupter.
	250CE5	250CE50	A-B	5400963141-3	11-45BB-1	150A/11	212	B-24 series	A-3C	Uses profile type fire interrupter.
	250CE7	250CE70	A	5400963149-3	11-45BB-1		212	B-34; B-37	A-3C	Uses profile type fire interrupter.
	250CE11	250CE110	A	5400963149-43	11-45BB-1		212	B-40	A-3C	Uses profile type fire interrupter.
	250CE2	R-312285	A-B	5400963142	11-45B-1	150A/1	165	B-26A	A-3	Uses block type fire interrupter.
	250CE3	R-312300	A-B	5400963142	11-45B-1	150A/2	165	B-24	A-3	Uses block type fire interrupter.
	250CE2A	R-314560	A-B	5400963144	11-45B-1	150A/7	165	B-26B	A-3A	*
	250CE6	R-371300	A-B	5400963144	11-45BA-1	150A/23	165B	B-26B-1	A-3A	Uses profile type fire interrupter.
	250CE3A	R-312310	A-B	5400963143-3	11-45B-1	150A/9	165B	B-24 series	A-3B	Uses block type fire interrupter.
	250CE8	R-371400	A-B	5400963149-5	11-45BC-1	150A/8	258	A-30	A-11	Uses profile type fire interrupter.
	250CE8A	R-371400	A-B	5400963149-5	11-45BD-1	150A/24	264	A-30	A-11	Uses block type fire interrupter.
	250CE10	250CE100	A	5400963149-7			281	A-20	A-11	Uses profile type fire interrupter.
	250CE1	R-266800	A-B	5400963145	11-45B-2	150A/32	165A	B-26	A-14	Uses block type fire interrupter.

*Some turrets use block type fire interrupters; others use profile type fire interrupters.

MACHINE GUN TURRETS ARMAMENT—GUNNERY

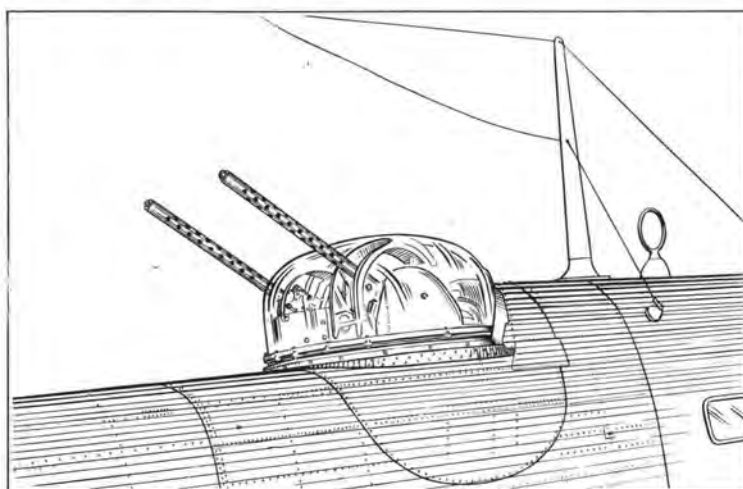


TURRET—UPPER GUN

ARMY TYPE A-11 NAVY—SEE BELOW

NAMES: Upper gun turret
Martin upper gun turret
Deck turret—Martin

Turret—upper gun—Martin
Upper gun turret—local control (British)



DESCRIPTION: The Army type A-11 upper turret, which mounts two .50 caliber M2 machine guns, is supported on a mounting ring fastened to the airplane. It is electrically operated by two amplidyne drives, one for rotation of the turret, the other for movement of the guns in elevation and depression. In the event of power failure, the turret can be manually operated by the gunner.

The gunner, seated in a bucket type seat with a hinged bottom, is provided with an adjustable foot rest. Armor plate provides for his protection. The target is sighted through a reflector sight, which moves with the guns. This sight is equipped with a sunshade, or glare eliminator, for sighting against the sun.

The guns, charged individually by manual chargers, are fired by pressing a trigger switch on the turret control handle. A safety switch on the same handle makes the turret operable.

A swivel plug, below the turret, and on the floor of the airplane, is used for oxygen and interphone connections. An outlet and controlling rheostat are provided inside the turret for the gunner's electrically heated suit. A slip ring fastened to the turret mounting ring transmits electric power for operation.

(Continued on page 145)



TURRET—UPPER GUN

(Continued from page 144)

CHARACTERISTICS:

Turret diameter.....approximately 41 inches.
Turret height.....approximately 60 inches.
Weight.....approximately 630 pounds.
Rotation in azimuth.....360 degrees.
Elevation of guns.....from 5 degrees below to 75 degrees above horizontal.
Operating voltage.....27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-8000

TYPE DESIGNATION: A-11

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

The Navy uses these turrets on airplanes procured from the Army.

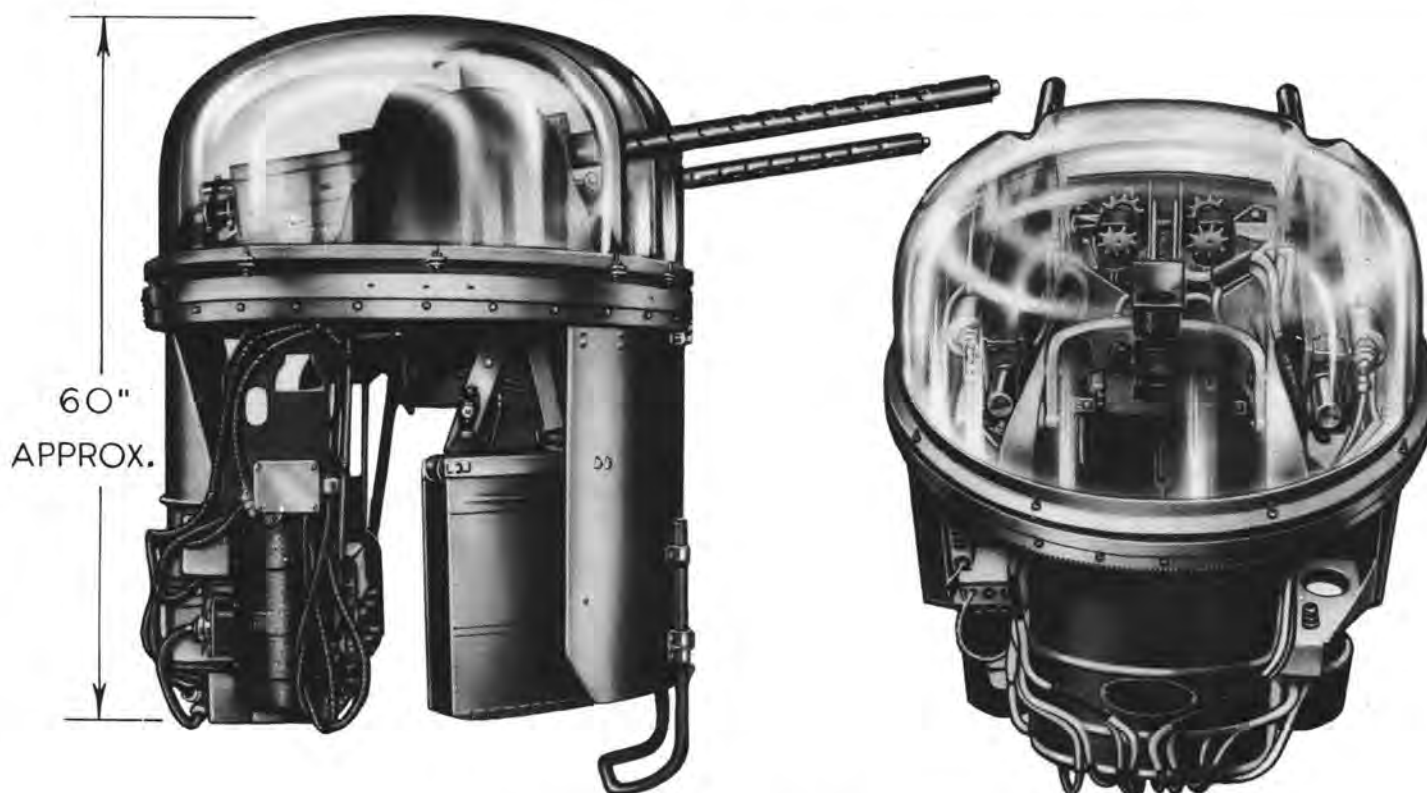
ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Used on Airplanes	Army Type	Remarks
The Glenn L. Martin Company	250CEB	R-371400	A-B	5400963149-5	11-458C-1	150A/8	258	A-30	A-11	Uses profile type fire interrupter.
	250CE8A	R-371400	A-B	5400963149-5	11-458D-1	150A/24	264	A-30	A-11	Uses block type fire interrupter.
	250CE10	250CE100	A	5400963149-7			281	A-20	A-11	Uses profile type fire interrupter.
	250CE2	R-312285	A-B	5400963142	11-45B-1	150A/1	165	B-26A	A-3	Uses block type fire interrupter.
	250CE3	R-312300	A-B	5400963142	11-45B-1	150A/2	165	B-24	A-3	Uses block type fire interrupter.
	250CE4	250CE40	A-B	5400963141	11-45BB-1	150A/22	212	B-26 series	A-3C	Uses profile type fire interrupter.
	250CE5	250CE50	A-B	5400963141-3	11-45BB-1	150A/11	212	B-24	A-3C	Uses profile type fire interrupter.
	250CE7	250CE70	A	5400963149-3	11-45BB-1		212	B-34; B-37	A-3C	Uses profile type fire interrupter.
	250CE2A	R-314560	A-B	5400963144	11-45B-1	150A/7	165B	B-26B	A-3A	*
	250CE6	R-371300	A-B	5400963144	11-45BA-1	150A/23	165B	B-26B-1	A-3A	Uses profile type fire interrupter.
	250CE3A	R-312310	A-B	5400963143-3	11-45B-1	150A/9	165B	B-24 series	A-3B	Uses block type fire interrupter.
	250CE11	250CE110	A	5400963149-43	11-45BB-1		212	B-40	A-3C	Uses profile type fire interrupter.
	250CE1	R-266800	A-B	5400963145	11-45B-2	150A/32	165A	B-26	A-14	Uses block type fire interrupter.

*Some turrets use block type fire interrupters; others use profile type fire interrupters.



MACHINE GUN TURRETS ARMAMENT—GUNNERY

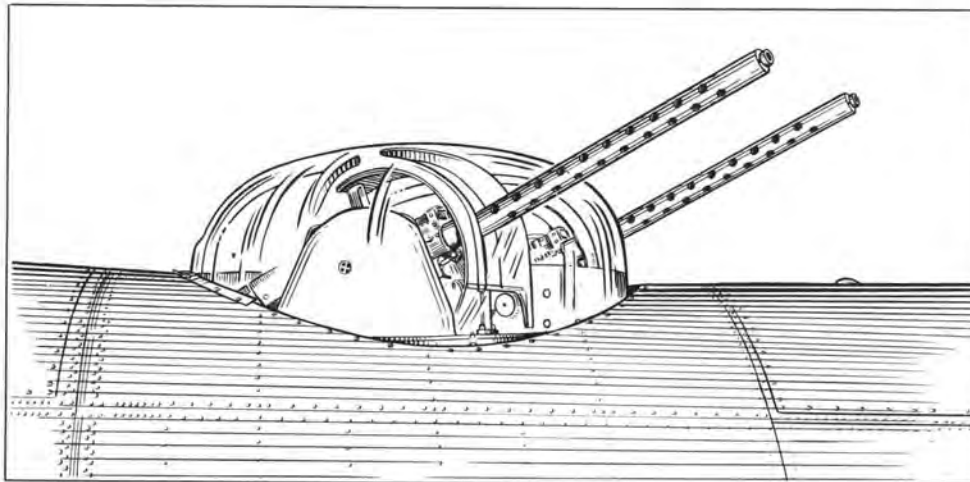


TURRET—UPPER GUN

ARMY TYPE A-14 NAVY—SEE BELOW

NAMES: Upper gun turret
Martin upper gun turret
Deck turret—Martin

Turret—upper gun—Martin
Upper gun turret—local control (British)



DESCRIPTION: The Army type A-14 turret, which mounts two .50 caliber M2 machine guns, is supported on a mounting ring rigidly fastened to the airplane. It is electrically operated by two amplidyne drives; one for rotation of the turret, the other for movement of the guns in elevation and depression. In the event of power failure, the turret can be moved manually by the gunner.

The gunner, seated in a bucket-type seat with a hinged bottom, is provided with an adjustable foot rest. Armor plate provides for his protection. The target is sighted through a reflector type sight which moves with the guns. This sight is equipped with a sunshield, or glare eliminator, for sighting against the sun.

The guns, charged individually by manual chargers, are fired by pressing a trigger switch on the turret control handle. A safety switch on the same handle makes the turret electrically operable.

(Continued on page 147)



TURRET—UPPER GUN

(Continued from page 146)
CHARACTERISTICS:

Turret diameter.....approximately 41 1/4 inches.
 Turret height.....approximately 66 5/8 inches.
 Weight.....approximately 450 pounds.
 Rotation in azimuth.....360 degrees.
 Elevation of guns.....86 degrees above horizontal.
 Operating voltage.....12 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-8100

TYPE DESIGNATION: A-14

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-3C upper turret, A. E. Reference Number 52-7475.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

The Navy uses these turrets on airplanes procured from the Army.

ALL MODELS BELOW ARE INTERCHANGEABLE

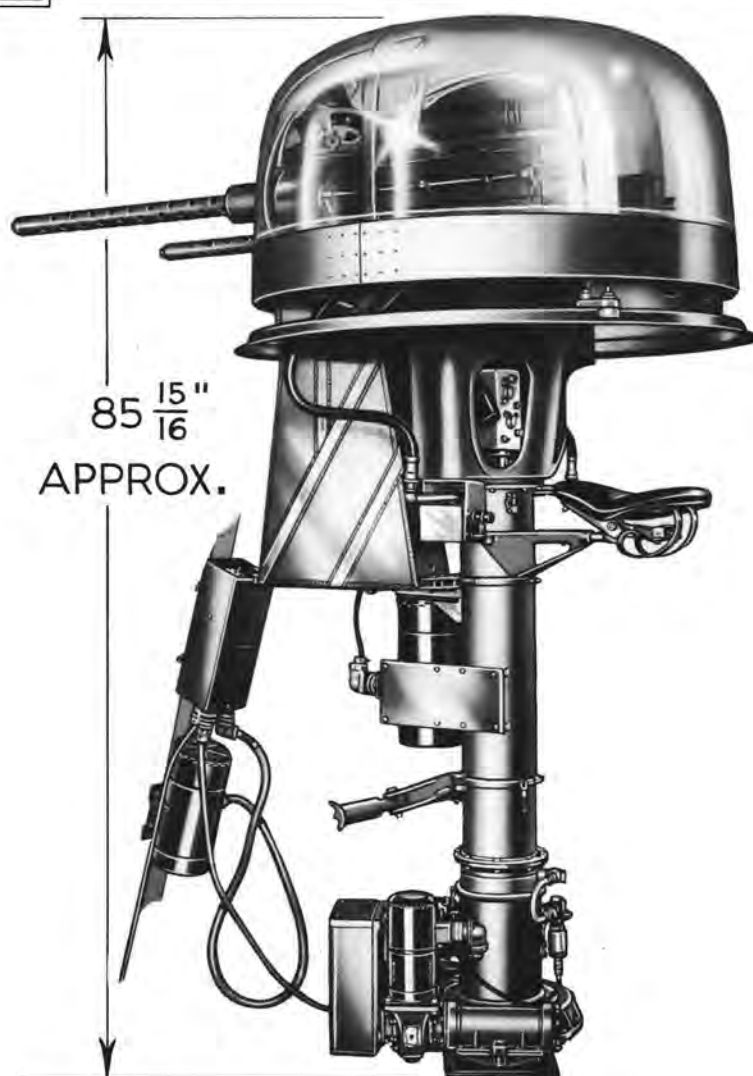
Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Used on Airplanes	Army Type	Remarks
The Glenn L. Martin Company	250CE1	R-266800	A-B	5400963145	11-45B-2	150A/32	165A	B-26	A-14	Uses block type fire interrupter.
	250CE2	R-312285	A-B	5400963142	11-45B-1	150A/1	165	B-26A	A-3	Uses block type fire interrupter.
	250CE3	R-312300	A-B	5400963142	11-45B-1	150A/2	165	B-24	A-3	Uses block type fire interrupter.
	250CE4	250CE40	A-B	5400963141	11-45B-1	150A/22	212	B-26 series	A-3C	Uses profile type fire interrupter.
	250CE5	250CE50	A-B	5400963141-3	11-45B-1	150A/11	212	B-24 series	A-3C	Uses profile type fire interrupter.
	250CE2A	R-314560	A-B	5400963144	11-45B-1	150A/7	165	B-26B	A-3A	*
	250CE6	R-371300	A-B	5400963144	11-45B-1	150A/23	165B	B-26B-1	A-3A	Uses profile type fire interrupter.
	250CE3A	R-312310	A-B	5400963143-3	11-45B-1	150A/9	165B	B-24 series	A-3B	Uses block type fire interrupter.
	250CE7	250CE70	A	5400963149-3	11-45B-1		212	B-34; B-37	A-3C	Uses profile type fire interrupter.
	250CE11	250CE110	A	5400963149-43	11-45B-1		212	B-40	A-3C	Uses profile type fire interrupter.
	250CE8	R-371400	A-B	5400963149-5	11-45B-1	150A/8	258	A-30	A-11	Uses profile type fire interrupter.
	250CE8A	R-371400	A-B	5400963149-5	11-45B-1	150A/24	264	A-30	A-11	Uses block type fire interrupter.
	250CE10	250CE100	A	5400963149-7			281	A-20	A-11	Uses profile type fire interrupter.

*Some turrets use block type fire interrupters; others use profile type fire interrupters.

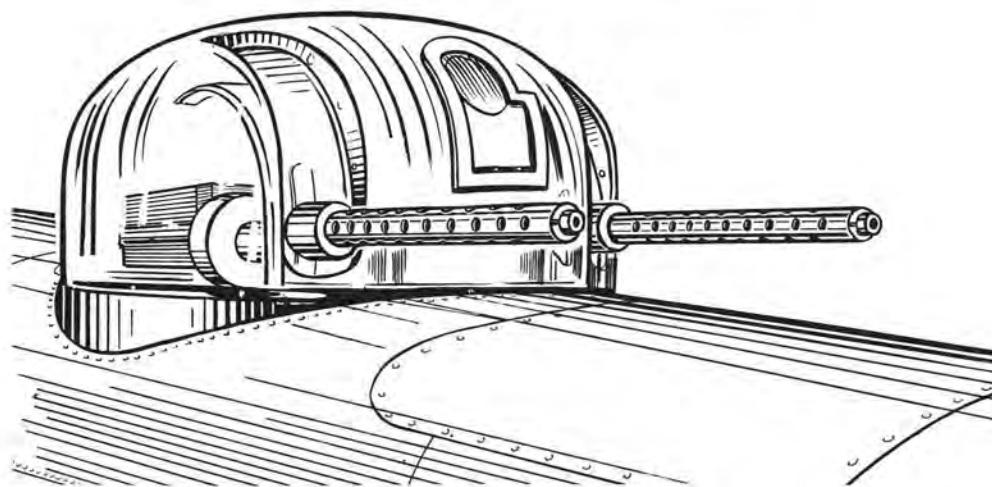
MACHINE GUN TURRETS ARMAMENT—GUNNERY



85 $\frac{15}{16}$ "
APPROX.

TURRET—UPPER GUN

ARMY TYPE A-4 NAVY—SEE BELOW



NAMES: Upper gun turret
Deck turret—Bendix

Bendix upper gun turret
Upper turret—local control (British)

DESCRIPTION: The Army type A-4 upper turret, which mounts two .50 caliber M2 machine guns, is supported on a central column fastened to the floor of the airplane fuselage. It is electrically operated by two drive motors; one for rotation of the turret, the other for movement of the guns in elevation

(Continued on page 149)



TURRET—UPPER GUN

(Continued from page 148)

and depression. The power for the motors is supplied through two sets of relays, which interrupt the current flow and provide slow or fast operation. In the event of electrical failure, the turret can be moved by the gunner with a hand-crank.

The guns, charged simultaneously by individual hydraulic chargers, are fired by pressing a trigger switch on the turret control handle. A safety switch on the same handle makes the turret electrically operable.

The gunner is seated on a bicycle type seat within the turret, and sights the target through a non-fogging periscopic sight. The eyepiece of this sight remains fixed, while the periscope's prism moves with the guns.

Collector rings on the central column provide hydraulic, oxygen, and electrical connections to the turret.

CHARACTERISTICS:

Turret diameter.....approximately 39 $\frac{1}{16}$ inches.
Turret height.....approximately 85 $\frac{5}{16}$ inches.
Weight.....approximately 525 pounds.
Rotation in azimuth.....360 degrees.
Elevation of guns.....87 degrees above horizontal.
Operating voltage.....27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7500

TYPE DESIGNATION: A-4

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-9A, upper turret, A. E. Reference Number 52-7910.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

The Navy uses these turrets on airplanes procured from the Army.

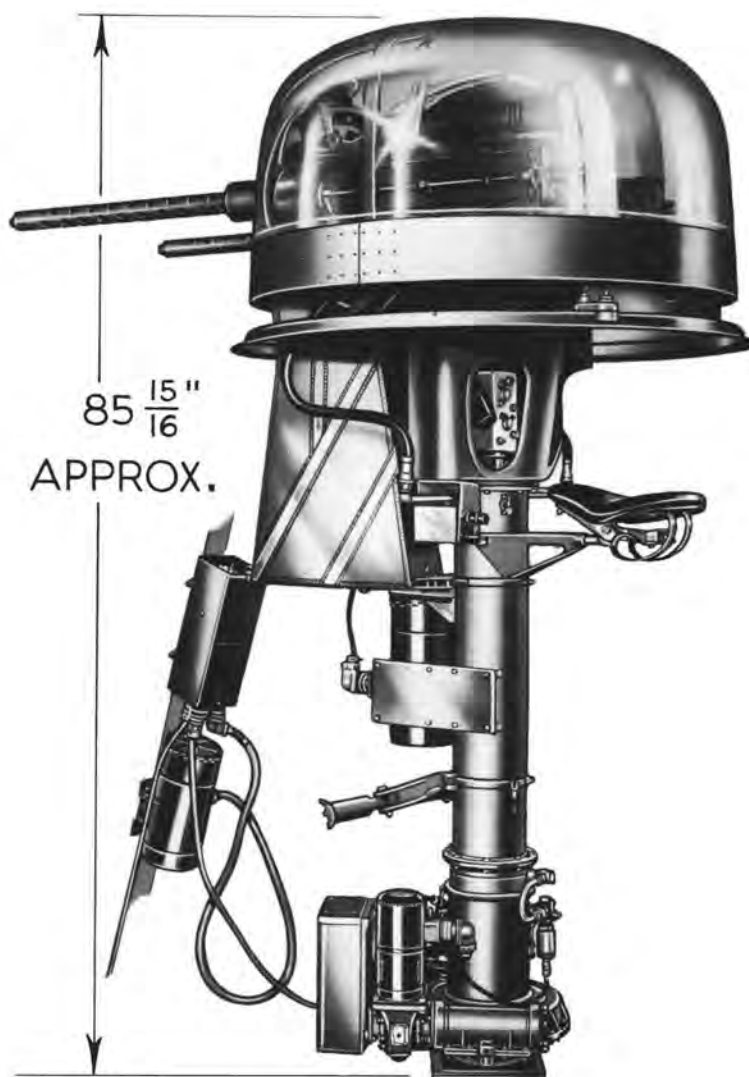
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Army Type	Remarks
Bendix Products Division	L	78001	A-B	5400963140		150A/5	78001A	A-4	
	N	80701	A-B	5400963035	11-45A-3	150A/20	ES0386	A-10	*

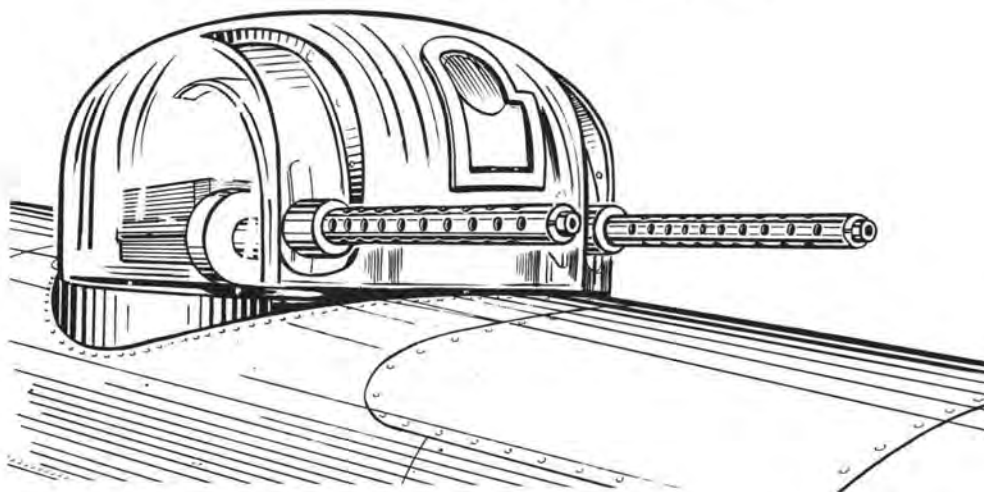
*Operated by amplidynes.



MACHINE GUN TURRETS ARMAMENT—GUNNERY



TURRET—UPPER GUN ARMY TYPE A-9 NAVY—SEE BELOW



NAMES: Upper gun turret
Deck turret—Bendix

Bendix upper gun turret
Upper turret—local control (British)

(Continued on page 151)



TURRET—UPPER GUN

(Continued from page 150)

DESCRIPTION: The Army type A-9 turret, which mounts two .50 caliber M2 machine guns, is supported on a central column fastened to the floor of the airplane fuselage. It is electrically operated by two amplidyne drives, one for rotation of the turret, the other for movement of the guns in elevation and depression. In the event of power failure, the turret can be moved manually by the gunner with a hand-crank.

The guns, charged simultaneously by individual hydraulic chargers, are fired by pressing a trigger switch on the turret control handle. A safety switch on the same handle makes the turret operable.

The gunner is seated on a bicycle-type seat within the turret and views the target through a non-fogging periscopic sight. The eyepiece of this sight remains fixed while the periscope's prism moves with the guns.

Collector rings on the central column provide hydraulic, oxygen, and electrical connections to the turret.

CHARACTERISTICS:

Turret diameter.....	approximately 39 $\frac{1}{16}$ inches.
Turret height.....	approximately 85 $\frac{15}{16}$ inches.
Weight.....	approximately 525 pounds.
Rotation in azimuth.....	360 degrees.
Elevation of guns.....	84 degrees above horizontal.
Operating voltage.....	27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7900

TYPE DESIGNATION: A-9

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-9A, upper turret, A. E. Reference Number 52-7910.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

The Navy uses these turrets on airplanes procured from the Army.

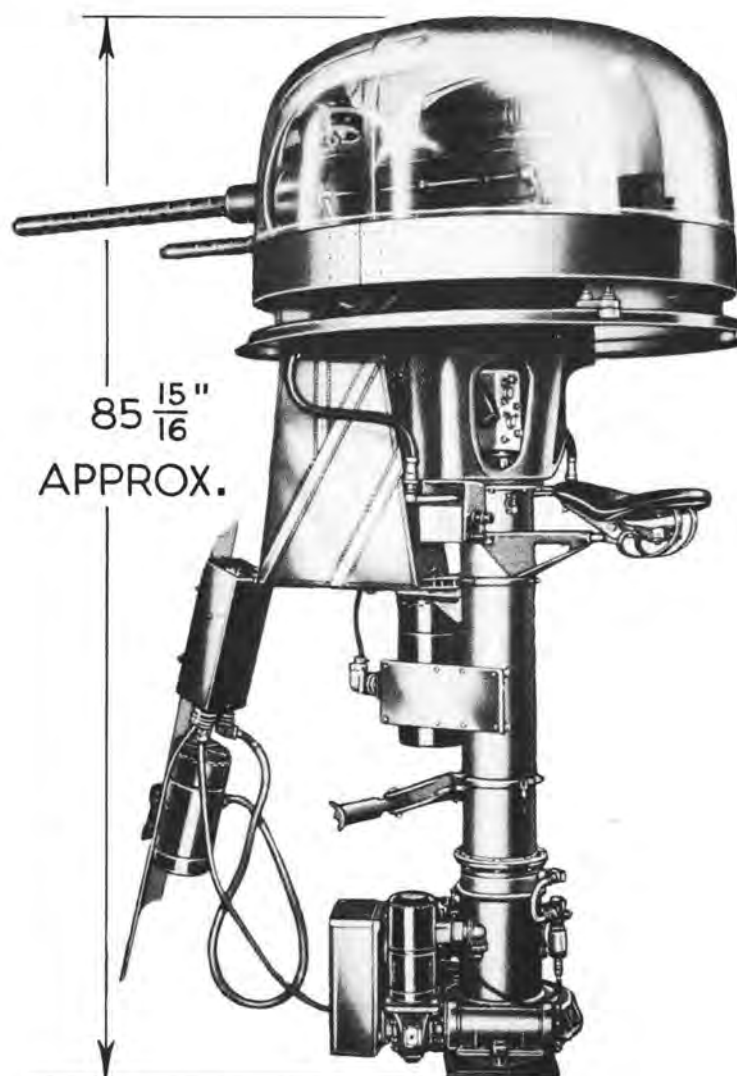
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Army Type	Remarks
Bendix Products Division	N	80701	A-B	5400963035	11-45A-3	150A/20	ES0386	A-9	
	A	82000	A-B	5400963064	11-45A-3	150A/30		A-9A	
	L	78001	A-B	5400963140		150A/5	78001A	A-4	*

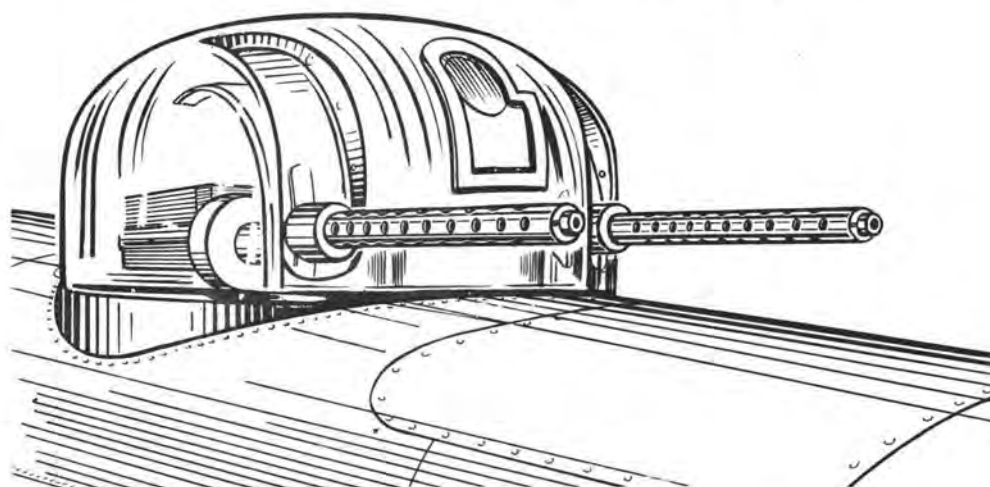
*No amplidynes; uses electric motors.



MACHINE GUN TURRETS ARMAMENT—GUNNERY



TURRET—UPPER GUN
ARMY TYPE A-9A NAVY—SEE BELOW



NAMES: Upper gun turret
Deck turret—Bendix

Bendix upper gun turret
Upper turret—local control (British)

(Continued on page 153)



TURRET—UPPER GUN

(Continued from page 152)

DESCRIPTION—The Army type A-9A upper turret, which mounts two .50 caliber, M2 machine guns, is supported on a central column fastened to the floor of the airplane fuselage. It is electrically operated by two amplidyne drives, one for rotation of the turret, the other for movement of the guns in elevation and depression. In the event of power failure, the turret can be moved manually by the gunner with a hand-crank.

The guns, charged mechanically by individual foot-operated chargers, are fired by pressing a trigger switch on the turret control handle. A safety switch on the same handle makes the turret electrically operable.

The gunner is seated on an adjustable, folding, bicycle-type seat, and views the target through a reflector sight. A clear-vision glass sighting panel in the dome prevents visual distortion.

Collector rings on the central column provide oxygen and electrical connections to the turret.

CHARACTERISTICS:

Turret diameter..... approximately 39 $\frac{1}{16}$ inches.
 Turret height..... approximately 85 $\frac{1}{16}$ inches.
 Weight..... approximately 525 pounds.
 Rotation in azimuth..... 360 degrees.
 Elevation of guns..... 84 degrees above horizontal.
 Operating voltage..... 27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7910

TYPE DESIGNATION: A-9A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

The Navy uses these turrets on airplanes procured from the Army.

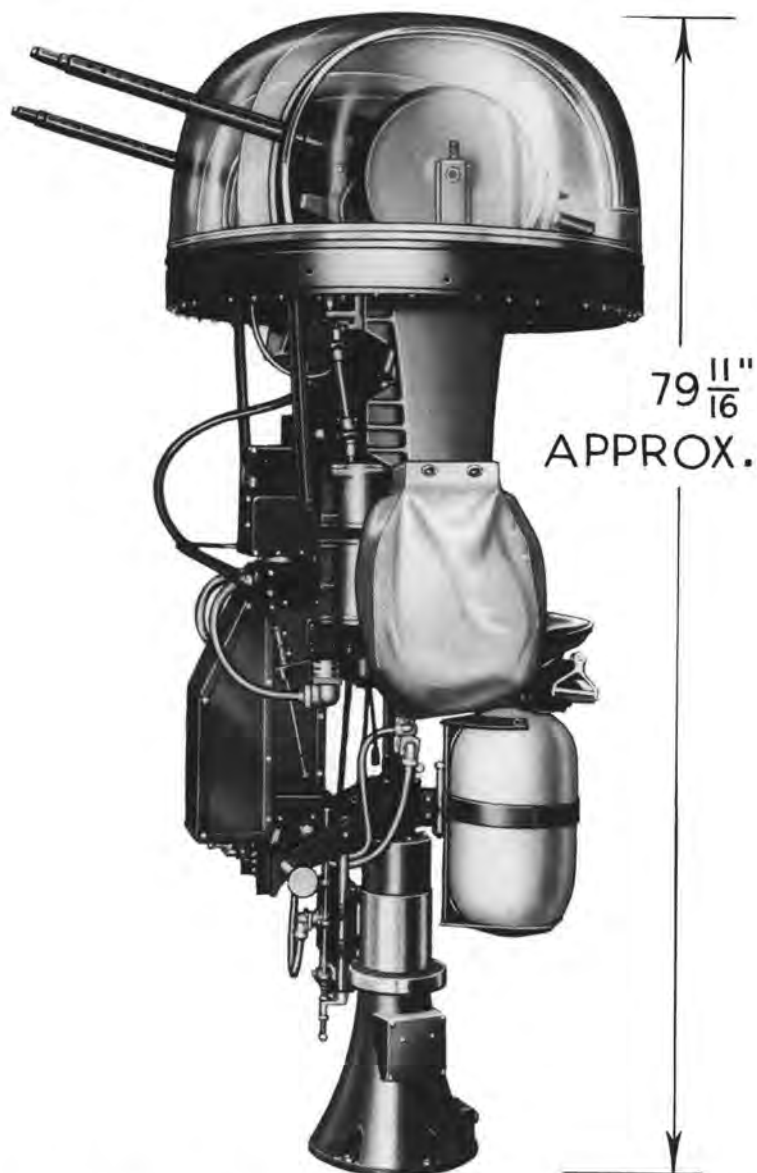
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Army Type	Remarks
Bendix Products Division	A	82000	A-B	5400963175	11-45A-3	150A/30		A-9A	
	L	78001	A-B	5400963140		150A/5	78001A	A-4	*
	N	80701	A-B	5400963035	11-45A-3	150A/20	ES0386	A-9	

*No amplidyne. Electric motor driven.



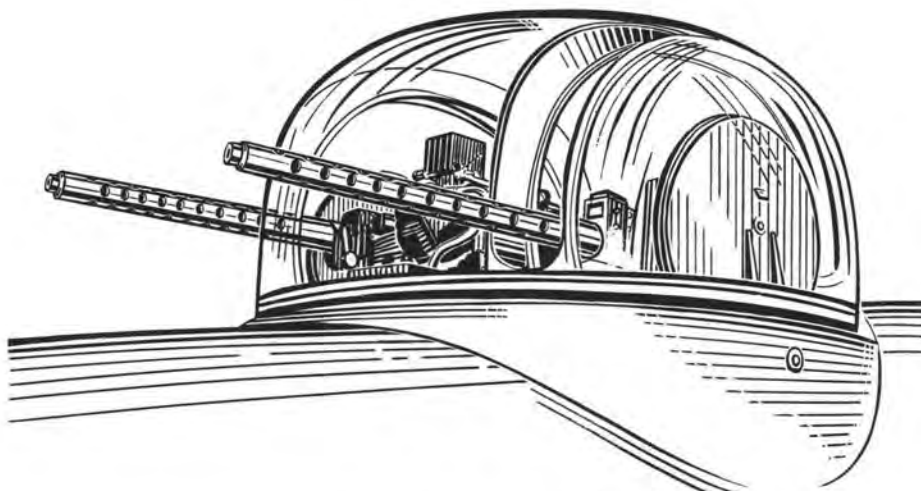
MACHINE GUN TURRETS ARMAMENT—GUNNERY



TURRET—UPPER TRAINING ARMY TYPE A-8

NAMES: Upper training turret
Crocker-Wheeler training turret

Training turret



(Continued on page 155)



TURRET—UPPER TRAINING

(Continued from page 154)

DESCRIPTION: The Army type A-8 turret, which mounts two .30 caliber M2 machine guns, is supported on a "T" structure fastened to the floor of the airplane fuselage. It is electrically operated by two Maxson electric drives, one for rotation of the turret, the other for the movement of the guns in elevation and depression.

The gunner, seated on an adjustable bicycle-type seat, has a fixed foot rest extending from the central column of the "T". He sights through a reflector type sight which is fixed to, and moves with, the guns.

The guns, charged individually by manual chargers, are fired by pressing a trigger switch on the turret control handle. This handle also has a safety switch to make the turret electrically operable.

Slip rings at the base of the "T" bring electric power into the turret for operation of the turret drives, gun sight, interphone, and other equipment. An outlet and controlling rheostat for the gunner's electrically-heated suit are located inside the turret.

This turret is used for training purposes only. When mounted in an airplane, only one gun is used, a camera being installed in the other gun position. The camera, operating from the same trigger as the gun, photographs the target to record the number of hits and the fire pattern.

CHARACTERISTICS:

Turret diameter.....	approximately 35 inches.
Turret height.....	approximately 79 $\frac{1}{16}$ inches.
Weight.....	approximately 335 pounds.
Rotation in azimuth.....	360 degrees.
Elevation of guns.....	90 degrees above horizontal.
Operating voltage.....	27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7700

TYPE DESIGNATION: A-8

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

There is no Navy equivalent for the Army item.

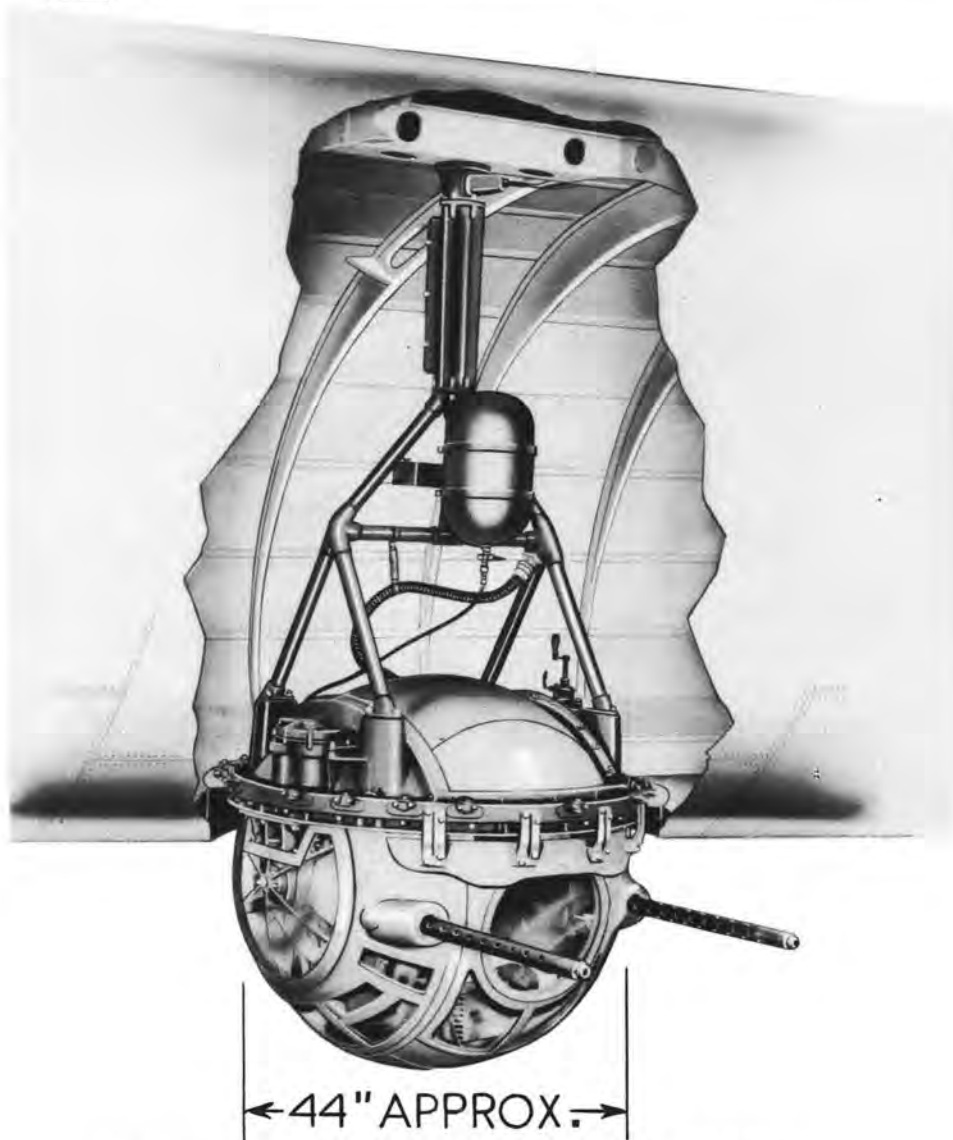
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	Manufacturer's Specification
Crocker-Wheeler Manufacturing Company Division of Joshua Hendy Iron Works	*A-8	T-5500-N	A	5400963200	11-45F-1	EST-1002
National Mineral Company	*A-8	NMT-5500-N	A	5400963200	11-45F-1	EST-1002

Note: *AAF type.



MACHINE GUN TURRETS ARMAMENT—GUNNERY

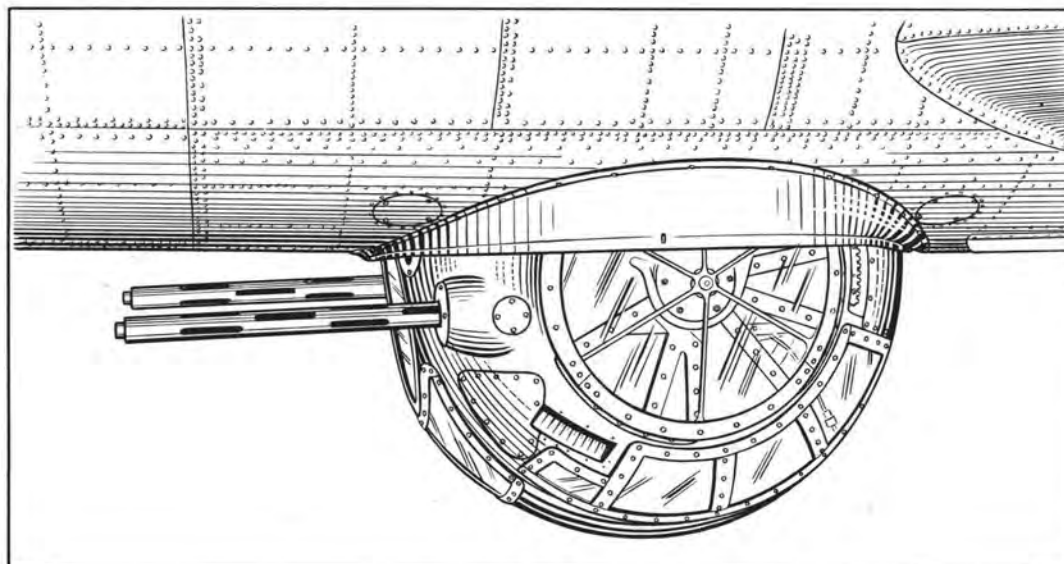


TURRET—LOWER GUN

ARMY TYPE A-2 NAVY—SEE BELOW

NAMES: Lower gun turret
Lower ball turret—local control
Belly turret—ball type

Sperry lower ball turret
Turret—lower local control
Lower gun turret—local control (British)



(Continued on page 157)



TURRET—LOWER GUN

(Continued from page 156)

DESCRIPTION: The Army type A-2 lower gun turret, which mounts two .50 caliber, M2 machine guns, is supported by a framework suspended from a self-aligning bearing fastened inside the top of the fuselage. A Vickers electro-hydraulic unit enables the turret to rotate in any direction. In the event of power failure, the turret can be moved manually by the gunner.

The guns, which are fixed in relation to the turret, are charged individually by manual chargers, and are fired by pressing a button on the control handles.

The gunner is housed inside the spherical structure comprising the turret enclosure, and armor plate provides for his protection. He sights through an automatic compensating sight, and the turret, guns, sight, and gunner move as a unit while tracking the target.

Slip rings in the hangar assembly bring electrical power into the turret for operation of the Vickers unit, gun-sight, interphone, trouble-light, and other equipment. An outlet and controlling rheostat are provided inside the turret for the gunner's electrically heated suit.

CHARACTERISTICS:

Turret ring diameter.....	approximately 46½ inches.
Turret height.....	approximately 101 inches.
Weight.....	approximately 850 pounds.
Rotation in azimuth.....	360 degrees.
Rotation in elevation.....	85 degrees from the vertical.
Operating voltage.....	27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7200

TYPE DESIGNATION: A-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, less guns, ammunition, and compensating sight.

NAVY

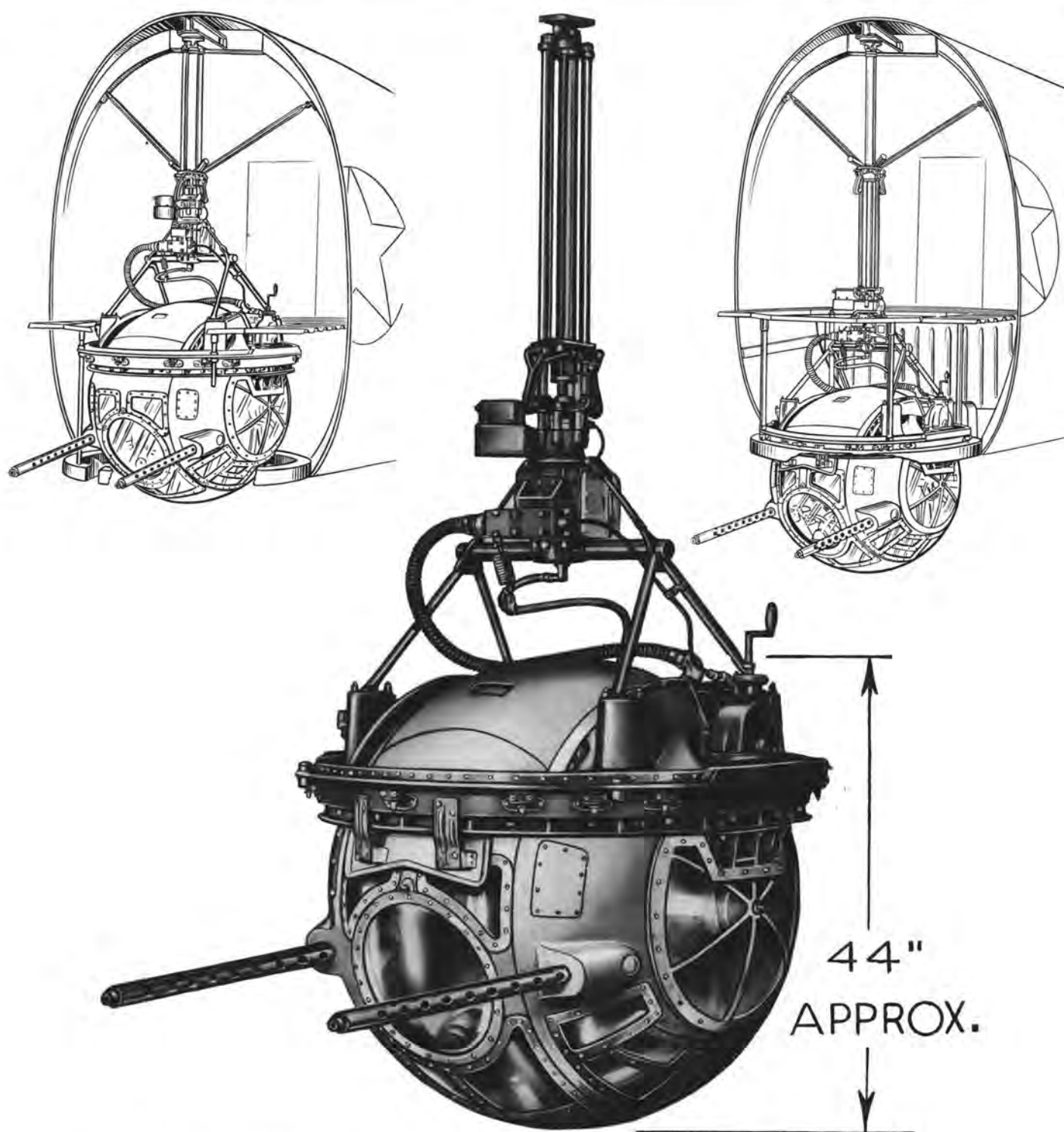
The Navy uses these turrets on airplanes procured from the Army.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Remarks
Sperry Gyroscope Company	*A-2	645796	A-B	5400963090	11-45C-1	150A/4	S-69808	
Emerson Electric Manufacturing Company	*A-2	205955M	A-B	5400963065	11-45C-1	150A/4	S-69808	
Briggs Manufacturing Company	*A-2	1300	A-B	5400963065	11-45C-1	150A/4	S-69808	
	*A-13	30000	A-B	5400963110		150A/31	BR-BT-7R	§

§Retractable turret. The ball of this turret is identical with Army type A-2 ball, but a conversion kit is required to convert the hangar assembly. Uses different fire interrupter.

Note: *AAF type.

**TURRET—RETRACTABLE LOWER GUN**

ARMY TYPE A-13 NAVY—SEE BELOW

NAMES: Retractable lower gun turret
Turret—lower gun—retractable—44 inch ball
Briggs retractable ball turret

Lower gun turret—local control—retractable
(British)
Lower ball local control turret—retractable

DESCRIPTION: The Army type A-13 turret, which mounts two .50 caliber M2 machine guns, is supported by a framework suspended from an hydraulic cylinder inside the top of the fuselage. The cylinder piston moves up and down through a 28-inch stroke to raise or lower the turret. In case of failure of the turret hydraulic system, two pins on the flange of the cylinder guide provide auxiliary means of

(Continued on page 159)



TURRET—RETRACTABLE LOWER GUN

(Continued from page 158)

retraction if fastened to the bomb hoist. A Vickers electro-hydraulic unit enables the turret to rotate in any direction. In the event of power failure, the turret can be moved manually by the gunner.

The guns, which are fixed in relation to the turret, are charged individually by manual chargers, and fired by pressing a button on the turret control handle.

The gunner is housed entirely inside the spherical structure comprising the turret enclosure, and armor plate provides for his protection. He sights through an automatic compensating sight and the turret, guns, sight, and gunner move as a unit while tracking the target.

Slip rings in the hangar assembly bring electrical power into the turret for operation of the Vickers unit, gunsight, interphone, trouble-light, and other equipment. An outlet and controlling rheostat inside the turret are provided for the gunner's electrically heated suit.

CHARACTERISTICS:

Turret ring diameter	approximately 47 1/4 inches.
Turret height	approximately 131 5/8 inches extended; 104 1/8 inches retracted.
Weight	approximately 780 pounds.
Rotation in azimuth	360 degrees.
Rotation in elevation	85 degrees from vertical.
Operating voltage	27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-8050

TYPE DESIGNATION: A-13

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, less guns, ammunition, and compensating sight.

NAVY

The Navy uses this turret on airplanes procured from the Army.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

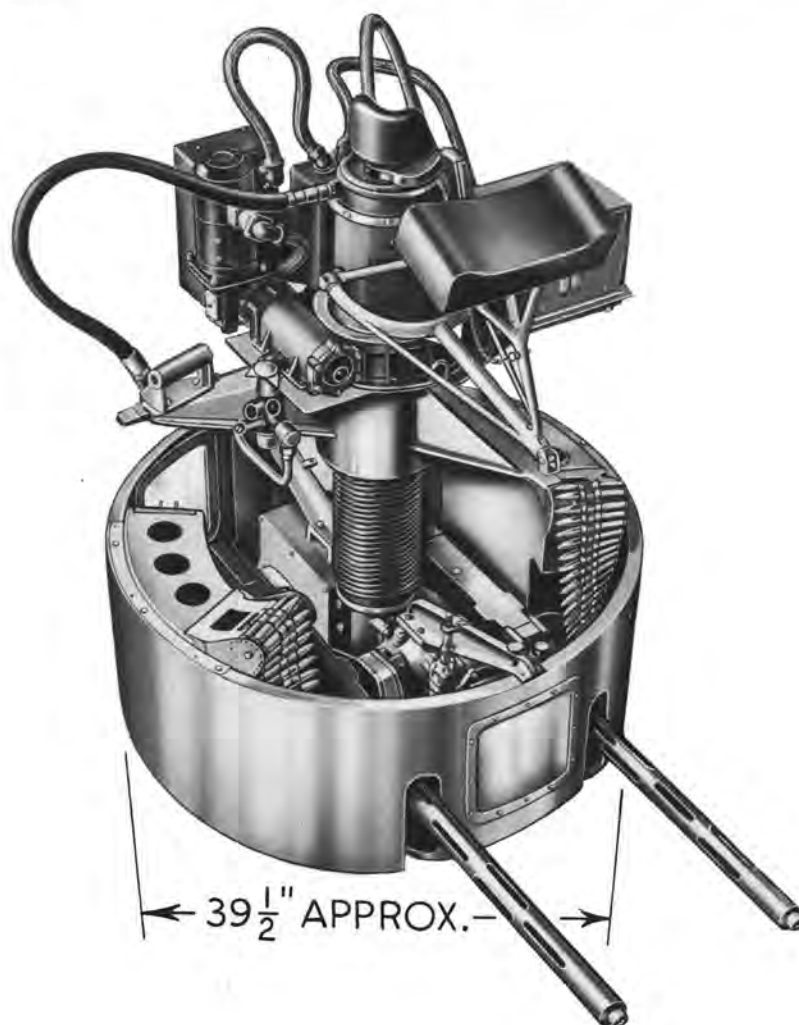
Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Remarks
Briggs Manufacturing Company	A-13	30000	A-B	5400963110		150A/31	BR-BT-7R	
	A-2	1300	A-B	5400963065	11-45C-1	150A/4	S-69808	§
Sperry Gyroscope Company	A-2	645796	A-B	5400963090	11-45C-1	150A/4	S-69808	§
Emerson Electric Manufacturing Company	A-2	205955M	A-B	5400963065	11-45C-1	150A/4	S-69808	§

Note: §The ball of this turret is identical with Army type A-13 but a conversion kit is required to convert the hangar assembly. Uses a different fire interrupter.

Note: *AAF type.

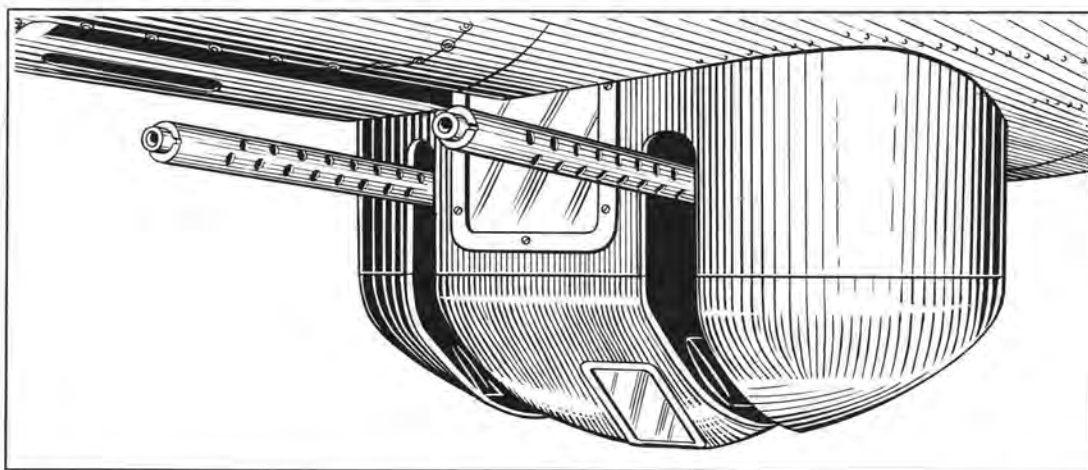


MACHINE GUN TURRETS ARMAMENT—GUNNERY



TURRET—LOWER GUN

ARMY TYPE A-5 NAVY—SEE BELOW



NAMES: Lower gun turret
Retractable lower gun turret—Bendix
Bendix lower gun turret

Power operated lower gun turret
Turret—lower gun—retractable

DESCRIPTION: The Army type A-5 turret, a retractable structure mounting two .50 caliber M2 machine guns, is supported from a central column by four spider arms. This turret is located beneath the belly of the fuselage. It is electrically operated by two drive motors, one for rotation of the turret, the other

(Continued on page 161)



TURRET—LOWER GUN

(Continued from page 160)

for movement of the guns in elevation and depression. The power for the motors is supplied through two sets of interrupter relays, which interrupt the current flow and provide slow or fast operation. Provision is made for manual operation in the event of electrical power failure. The motor drive normally providing power for horizontal movement is used to retract the turret.

The gunner is in a kneeling position while sighting on the target, and his chest is supported by an adjustable pad. He sights through a non-fogging periscopic sight. The eyepiece of the sight remains fixed while the periscope's prism moves with the guns throughout their range of elevation.

The guns, charged simultaneously by individual hydraulic gun chargers, are fired by pressing a trigger switch on the control handle. A safety switch on the same handle makes the turret electrically operable.

Collector rings on the central column provide hydraulic and electrical connections to the turret.

CHARACTERISTICS:

Turret diameter.....	approximately 39½ inches.
Turret height.....	approximately 59¾ inches (with chest pad in lower position and turret extended).
Weight.....	approximately 497 pounds.
Rotation in azimuth.....	360 degrees.
Depression of guns.....	90 degrees below horizontal.
Operating voltage.....	24 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7100

TYPE DESIGNATION: A-5

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-10 lower turret, A. E. Reference Number 52-7950.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

The Navy uses these turrets on airplanes procured from the Army.

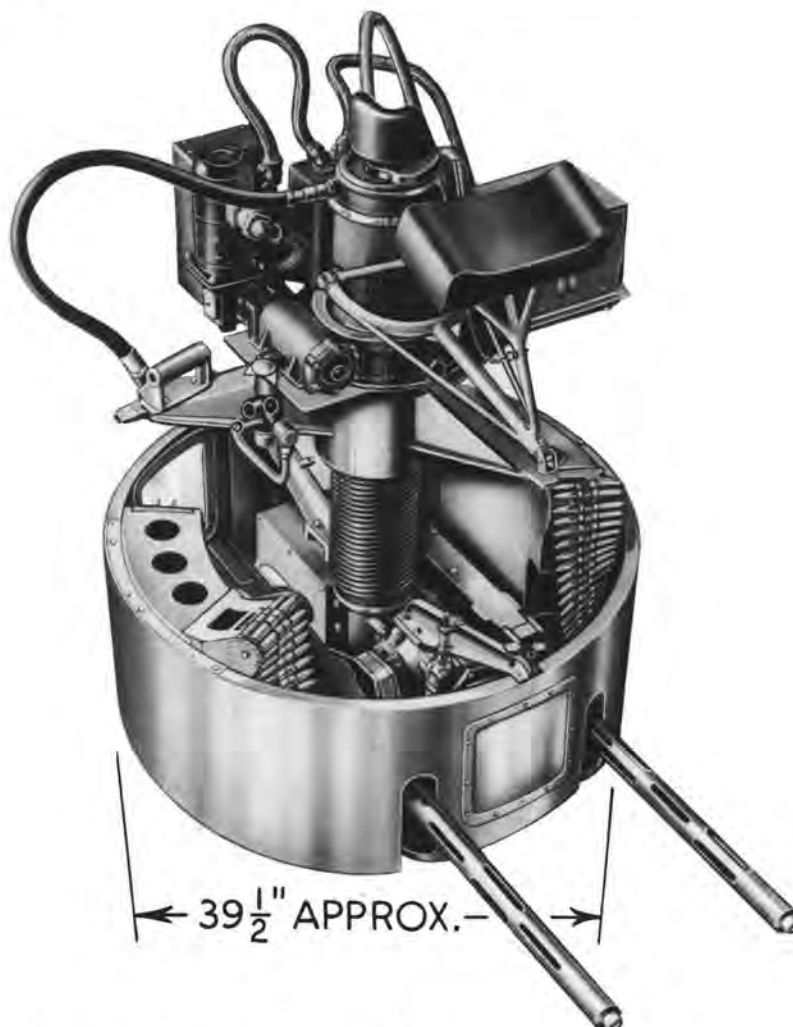
MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Army Type	Remarks
Bendix Products Division	J	76860	A-B	5400963070	11-45A-1	150A/6	76860-A	A-5	
	K	79800	A-B	5400963080	11-45A-1	150A/21	ES0385	A-10	*

*Operated by amplidynes.

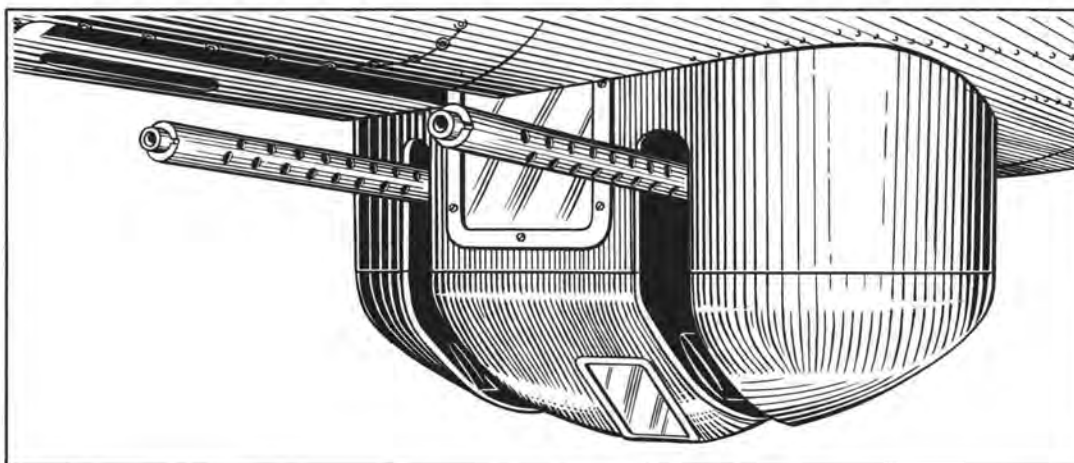


MACHINE GUN TURRETS ARMAMENT—GUNNERY



TURRET—LOWER GUN

ARMY TYPE A-10 NAVY—SEE BELOW



NAMES: Lower gun turret
Lower turret—Bendix
Retractable lower gun turret

Bendix lower gun turret
Power operated lower gun turret
Turret—lower gun—retractable

DESCRIPTION: The Army type A-10 lower turret, a retractable structure mounting two .50 caliber, M2 machine guns, is supported from a central column by four spider arms. The turret is located beneath the belly of the fuselage. It is electrically operated by two amplidyne drives; one for rotation of the

(Continued on page 163)



TURRET—LOWER GUN

(Continued from page 162)

turret, the other for movement of the guns in elevation and depression. The motor drive normally providing power for horizontal movement is used to retract the turret.

The gunner is in a kneeling position while sighting the target, and his chest is supported by an adjustable pad. He aims through a non-fogging periscopic sight. The eyepiece of the sight remains fixed, while the periscope's prism moves with the guns throughout their range of elevation.

The guns, charged simultaneously by individual hydraulic gun chargers, are fired by pressing a trigger switch on the turret control handle. A safety switch on the same handle makes the turret operable.

Collector rings on the central column provide hydraulic and electrical connections to the turret.

CHARACTERISTICS:

Turret diameter.....	approximately 39½ inches.
Turret height.....	approximately 59¾ inches (with chest pad in lower position and turret extended).
Weight.....	approximately 497 pounds.
Rotation in azimuth.....	360 degrees.
Depression of guns.....	88 degrees below horizontal.
Operating voltage.....	27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7950

TYPE DESIGNATION: A-10

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

The Navy uses these turrets on airplanes procured from the Army.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Army Type	Remarks
Bendix Products Division	K	79800	A-B	5400963080	11-45A-1	150A/21	ES0385	A-10	
	J	76860	A-B	5400963070	11-45A-1	150A/6	76860-A	A-5	*

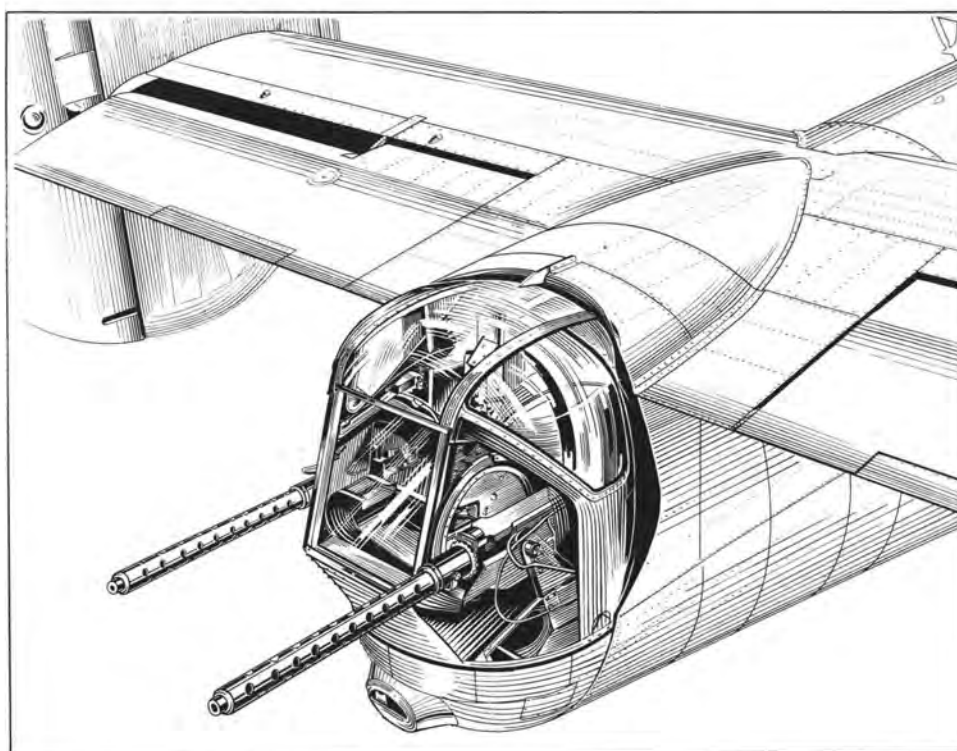
*No amplidyne. Electric motor driven.



MACHINE GUN TURRETS ARMAMENT—GUNNERY



TURRET—TAIL GUN ARMY TYPE A-6 NAVY—SEE BELOW



NAMES: Tail gun turret
Consolidated tail turret

Turret—tail gun—Consolidated
Motor Products turret

(Continued on page 165)



TURRET—TAIL GUN

(Continued from page 164)

DESCRIPTION: The Army type A-6 turret, which mounts two .50 caliber, M2 machine guns, is located at the extreme rear of the fuselage. It rests on a circular track fastened to the airplane structure, and is rotated by two cables from an hydraulic drum in the base of the turret. An hydraulic jack elevates and depresses the guns. A separate electrical system for the turret furnishes power for operation of the hydraulic pump, the gun trigger mechanism, and sight illumination. In the event of power failure, the turret may be moved manually by the gunner.

The gunner, after entering the turret through double doors which open toward the fuselage, sits entirely within the armor plated turret enclosure. Bullet proof glass protects him while he sights the target through a reflector type sight that moves with the guns. These guns, charged individually by manual chargers, are fired by pressing triggers on the turret control handles. A safety switch on one handle makes the turret operable.

All hydraulic hose and electrical connections to the turret are flexible.

CHARACTERISTICS:

Turret diameter.....approximately 40 inches.
Turret height.....approximately 58 inches.
Weight.....approximately 954 pounds.
Rotation in azimuth.....122 degrees.
Elevation of guns.....71 degrees above horizontal.
Depression of guns.....40 degrees below horizontal.
Operating voltage.....24 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7800

TYPE DESIGNATION: A-6

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

The Navy uses this turret on airplanes procured from the Army, and also procures them for installation on certain Navy aircraft. They are identified by the manufacturer's designation.

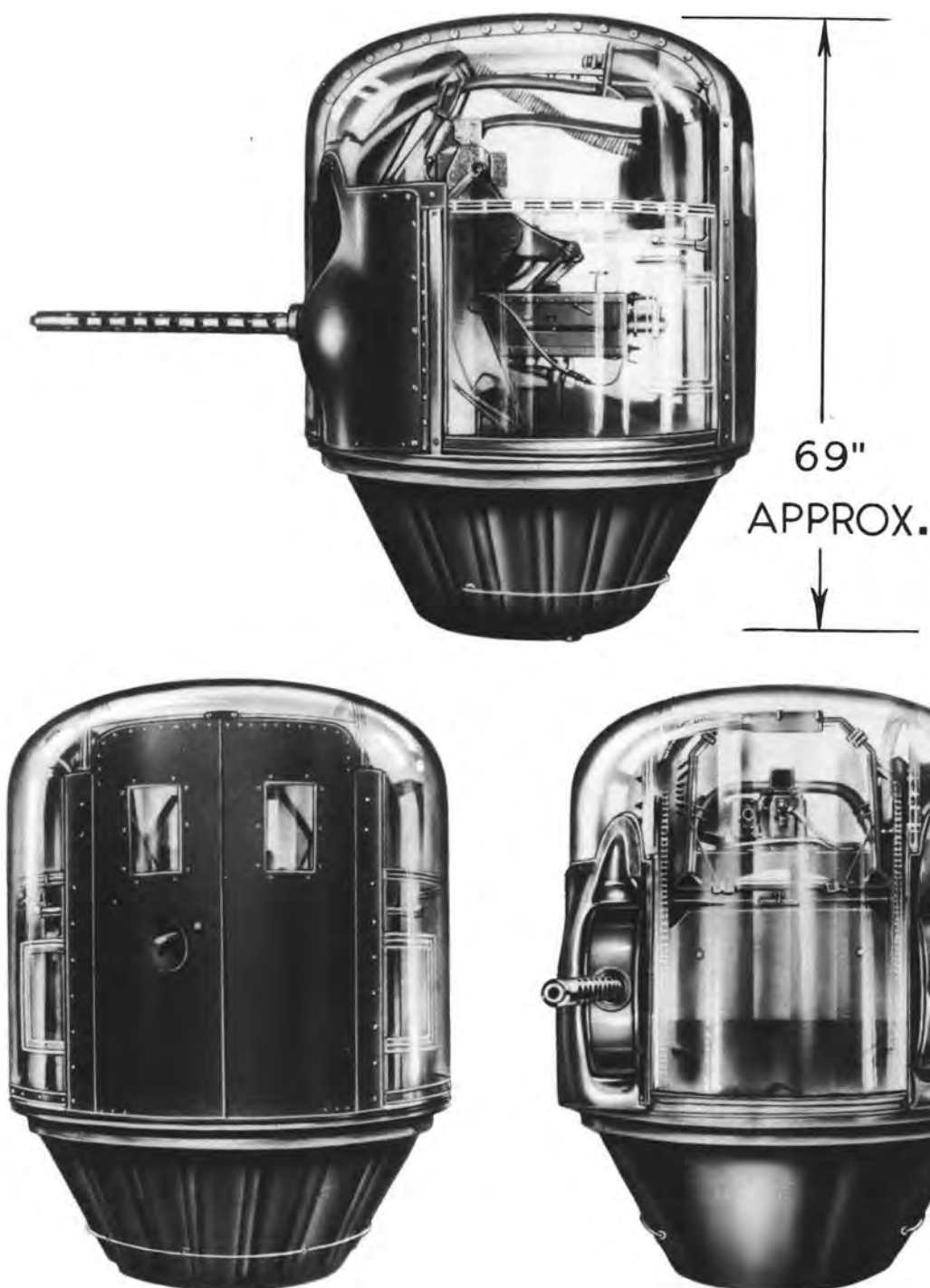
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification
Motor Products Corporation	*A-6	32F5800-3	A-B	5400963033	11-45D-1	150A/10	32F5800
Southern Aircraft Corporation	*A-6	32F5800-3	A-B	5400963033	11-45D-1	150A/10	32F5800
		29F4824	N				

Note: *AAF type.



MACHINE GUN TURRETS ARMAMENT—GUNNERY



TURRET—NOSE GUN ARMY TYPE A-15

NAMES: Nose gun turret
Emerson nose turret
Turret—Emerson

(Continued on page 167)



TURRET—NOSE GUN

(Continued from page 166)

DESCRIPTION: The Army type A-15 turret, which mounts two .50 caliber, M2 machine guns, is located in the nose of the airplane fuselage by means of a ring type mounting at the turret's base. It is electrically operated by two amplidyne drives, one for rotation of the turret, the other for movement of the guns in elevation and depression. Mechanical stops prevent turret rotation or movement of guns beyond predetermined limits.

The gunner, after entering the turret through double doors which open toward the fuselage, sits entirely within the armor plated turret enclosure. Bullet proof glass protects him while he sights the target through a reflector type sight. Both the bullet proof glass and the sight move with the guns. These guns, charged individually by manual chargers, are fired by pressing triggers on the turret control handles. A safety switch on one handle makes the turret electrically operable.

Flexible cables supply power and interphone connections to the turret, and an outlet and controlling rheostat are provided for the gunner's electrically heated suit.

CHARACTERISTICS:

Turret diameter.....	approximately 42 inches.
Turret height.....	approximately 69 inches.
Weight.....	approximately 1006 pounds.
Rotation in azimuth.....	150 degrees.
Elevation of guns.....	60 degrees above horizontal.
Depression of guns.....	50 degrees below horizontal.
Operating voltage.....	27.5 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.

ARMY

A. E. REFERENCE NUMBER: 52-7795
 MANUFACTURER: Emerson Electric Manufacturing Company.
 MANUFACTURER'S DRAWING NUMBER: 30500
 MANUFACTURER'S SPECIFICATION NUMBER: AT-40N-127
 TYPE DESIGNATION: A-15
 A. S. C. STOCK NUMBER: 5400963103
 TECHNICAL ORDER NUMBER: None
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

There is no Navy equivalent for the Army item.



TURRET—NOSE GUN ARMY TYPE A-16

NAMES: Nose gun turret Chin turret
Bendix chin turret
Bendix nose gun turret
Turret—nose

DESCRIPTION: The Army type A-16 turret, a non-retractable structure mounting two .50 caliber, M2 machine guns, is supported from a central column by four spider arms. It is located below the nose of the airplane, and is electrically operated by two amplidyne drives, one for rotation of the turret, the other for movement of the guns in elevation and depression.

The gunner, seated inside the airplane and above the turret, sights the target through a reflector type sight, which moves with the guns. This sight is placed on a rotatable arm which is driven by a flexible shaft from the turret. Movement of this arm corresponds with the movement of the turret and the guns.

The guns are charged simultaneously by individual hydraulic gun chargers, and are fired by pressing trigger switches on the control handle. A safety switch on the same handle makes the turret electrically operable.

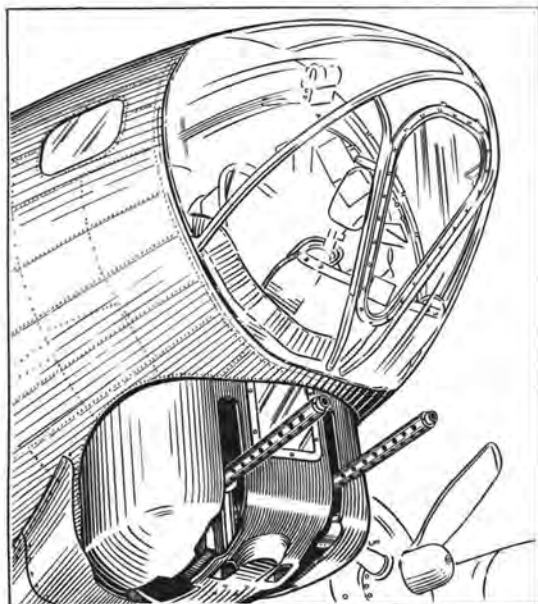
Collector rings on the central column provide hydraulic and electrical connections to the turret.

CHARACTERISTICS:

Turret diameter.....	approximately 39½ inches.
Turret height.....	approximately 36 inches.
Weight.....	approximately 412 pounds.
Rotation in azimuth.....	180 degrees.
Elevation of guns.....	30 degrees above horizontal.
Depression of guns.....	55 degrees below horizontal.
Operating voltage.....	24 volts direct current.

RELATIONSHIP OF PARTS:

A complete list of all turret equipment, whether government or contractor furnished, will be found in the turret manufacturer's model specification.



ARMY

A. E. REFERENCE NUMBER: 52-7350
MANUFACTURER: Bendix Products Division of Bendix Aviation Corporation.
MANUFACTURER'S MODEL IDENTIFICATION: D
MANUFACTURER'S DRAWING NUMBER: 82500
MANUFACTURER'S SPECIFICATION NUMBER: FI106
TYPE DESIGNATION: A-16
A. S. C. STOCK NUMBER: 5400963064
TECHNICAL ORDER NUMBER: 11-45AA-1
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit, less guns and ammunition.

NAVY

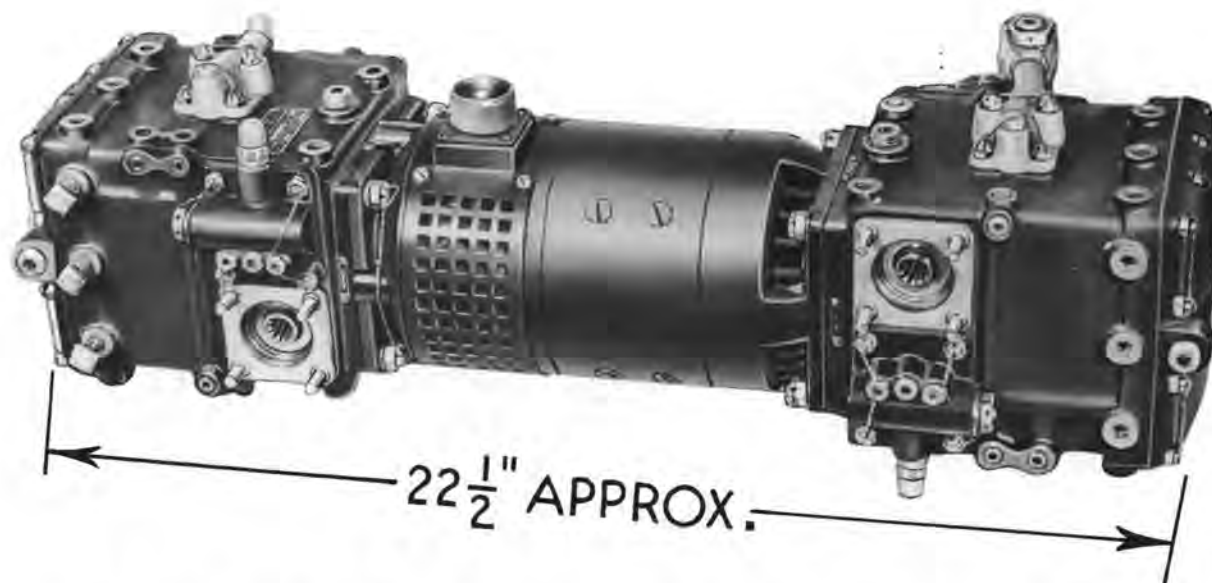
There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 150A/26



MACHINE GUN TURRETS ARMAMENT—GUNNERY



UNIT—DOUBLE POWER HYDRAULIC

VICKERS MODEL AA-16801

NAMES: Double power hydraulic unit
Turret double power unit

Power unit
Vickers unit

DESCRIPTION: This unit supplies motive power to Army types A-1 and A-1A locally controlled upper machine gun turrets. The power is developed hydraulically by an electrically driven piston type pump exerting pressure against the piston of a similar pump; the second pump is known as an hydraulic motor.

The entire unit consists of two transmissions, bolted to opposite ends of an electric drive motor. Each transmission contains one variable pressure pump and one hydraulic motor. Control of the pump's pressure, obtained by changing the angle between the cylinder of the pump and the master piston shaft, varies the speed of the transmission. When no pressure comes from the pump (zero degrees between cylinder and shaft) there is no movement of the hydraulic motor, and consequently no power is transmitted. The electric motor rotates at a constant speed and the transmissions provide smooth variable speed operation of the turret. One transmission is used to provide turret rotation, the other elevation and depression.

CHARACTERISTICS:

Dimensions.....approximately 22½ by 7½ by 8 inches.
Weight.....approximately 53 pounds.
Electric motor:
Voltage.....24 volts direct current.
Current.....90 amperes.
Speed.....4000 revolutions per minute.
Rating.....2 horsepower.

RELATIONSHIP OF PARTS: Used with:

Army type A-1 and A-1A upper gun turrets, A. E. Reference Numbers 52-7600 and 52-7625.

ARMY

A. E. REFERENCE NUMBER: 52-8350
A. S. C. STOCK NUMBER: Refer to chart.
TECHNICAL ORDER NUMBER: Refer to chart.
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

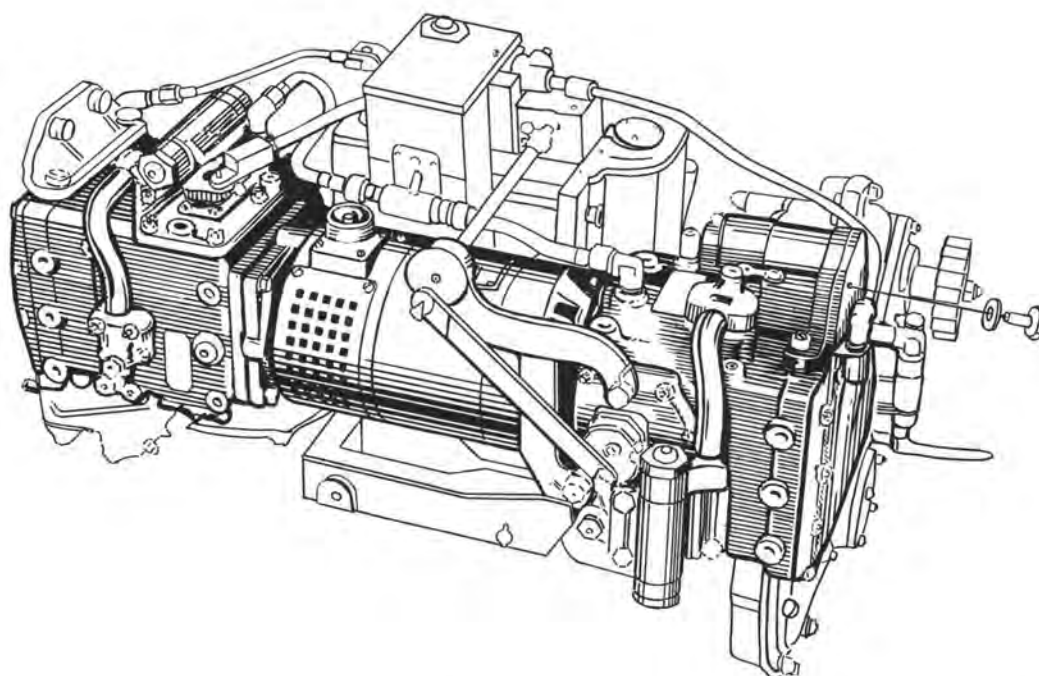
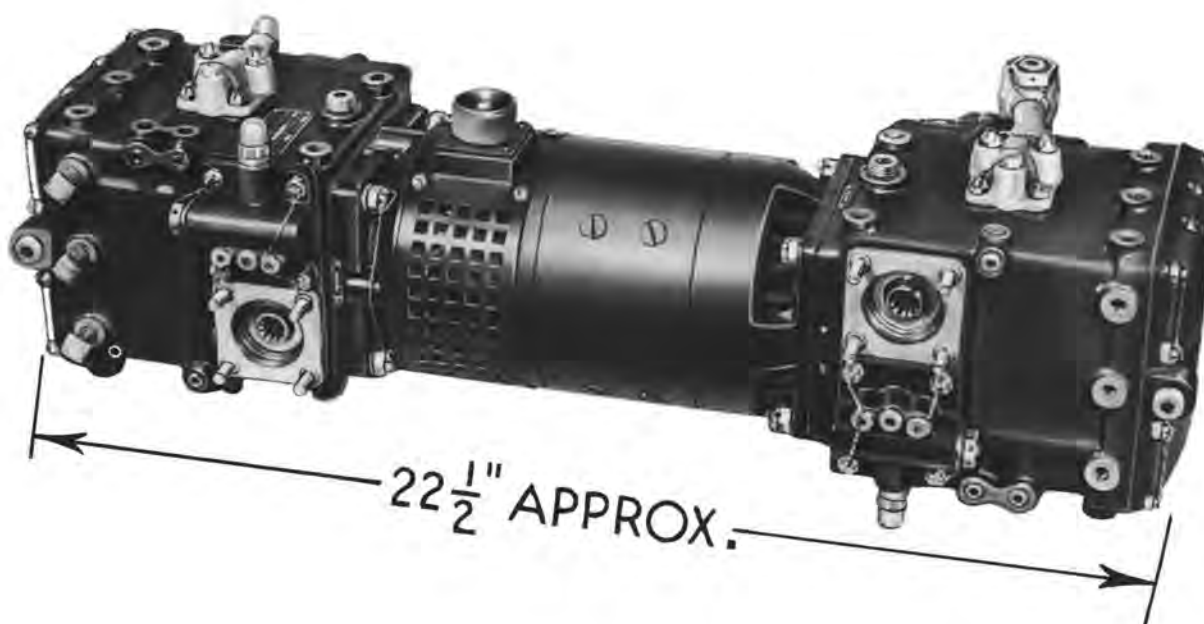
NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Remarks
Vickers, Incorporated	AA-16801	56412	A-B	5400964512	11-45C-1	150C/2492		
	AA-16804	63404	A-B	5400964512	11-45C-1	150C/2353		*
Hobart Manufacturing Company	AA-16801	56412	A-B	5400964512	11-45C-1	150C/2492	4303	
	AA-16804	63404	A-B	5400964512	11-45C-1	150C/2353	4348	*

*Elevation transmission 90 degrees from that on model AA-16801. To effect interchangeability, unbolt and revolve 90 degrees.



UNIT—DOUBLE POWER HYDRAULIC

VICKERS MODEL AA-16804

NAMES: Double power hydraulic unit
Double power unit

Power unit
Vickers unit

DESCRIPTION: This unit supplies motive power to the Army types A-2 and A-13 locally controlled lower machine gun turrets. Power is developed hydraulically by an electrically driven piston type pump exerting pressure against the piston of a similar pump; the second pump is known as an hydraulic motor.

(Continued on page 171)



UNIT—DOUBLE POWER HYDRAULIC

(Continued from page 170)

The entire unit consists of two transmissions, bolted to opposite ends of an electric drive motor. Each transmission contains one variable pressure pump and one hydraulic motor. Control of the pump's pressure, obtained by changing the angle between the cylinder of the pump and the master piston shaft, varies the speed of the transmission. When no pressure comes from the pump (zero degrees between cylinder and shaft) there is no movement of the hydraulic motor, and consequently no power is transmitted. The electric motor rotates at a constant speed and the transmissions provide smooth variable speed operation of the turret. One transmission is used to provide turret rotation, the other elevation and depression.

This unit differs from model AA-16801 by having one transmission 90 degrees from its original position.

CHARACTERISTICS:

Dimensions.....approximately 22½ by 7½ by 8 inches.
 Weight.....approximately 53 pounds.
 Electric motor:
 Voltage.....24 volts direct current.
 Current.....90 amperes.
 Speed.....4000 revolutions per minute.
 Rating.....2 horsepower.

RELATIONSHIP OF PARTS: Used with:

Army types A-2 and A-13 lower ball turrets, A. E. Reference Numbers 52-7200 and 52-8050.

ARMY

A. E. REFERENCE NUMBER: 52:8375
 A. S. C. STOCK NUMBER: Refer to chart.
 TECHNICAL ORDER NUMBER: Refer to chart.
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit.

NAVY

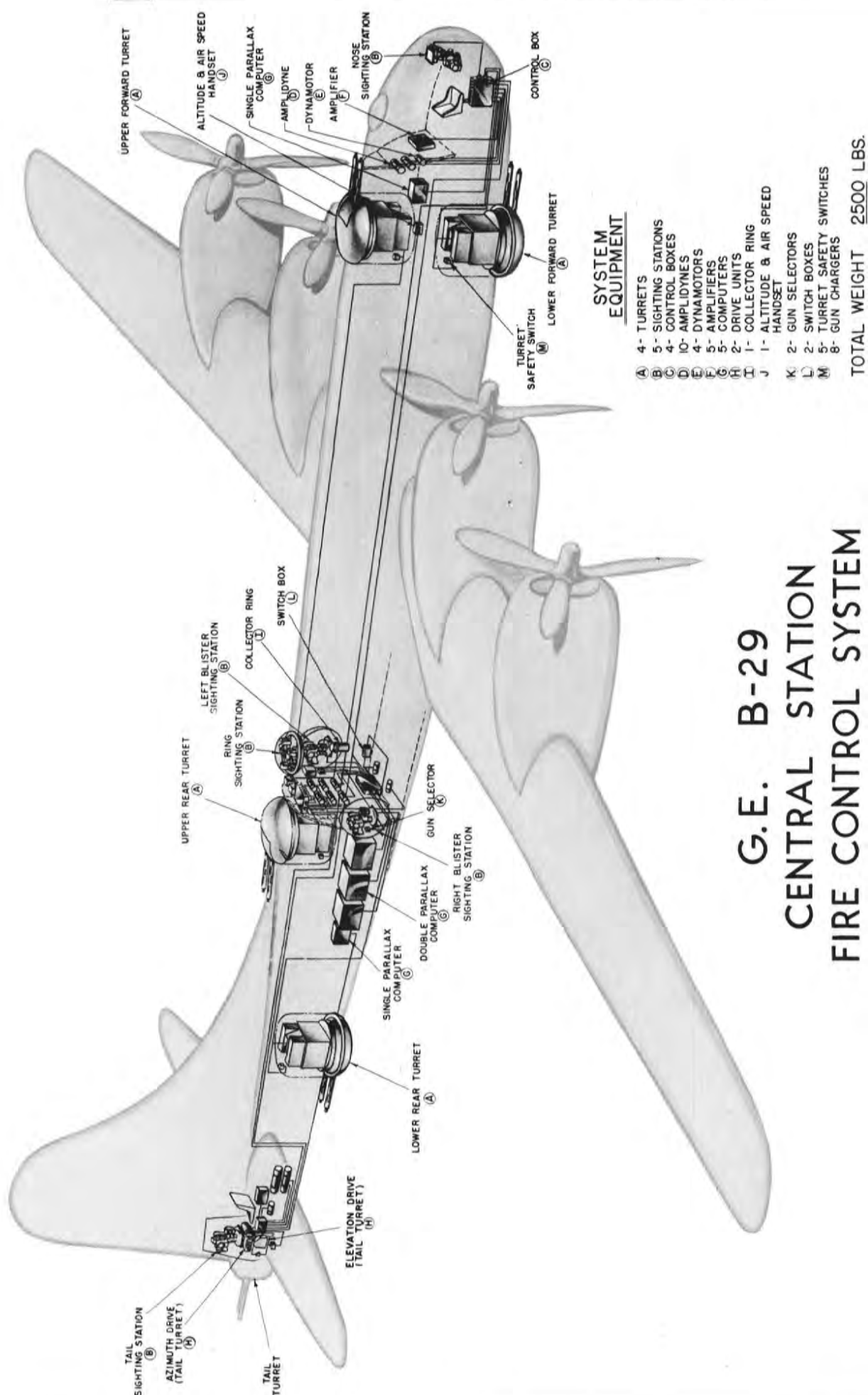
There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Manufacturer's Specification	Remarks
Vickers, Incorporated	AA-16804	63404	A-B	5400964512	11-45C-1	105C/2353		
	AA-16801	56412	A-B	5400964512	11-45C-1	105C/2494		*
Hobart Manufacturing Company	AA-16804	63404	A-B	5400964512	11-45C-1	105C/2353	4348	
	AA-16801	56412	A-B	5400964512	11-45C-1	105C/2494	4303	*

*Elevation transmission 90 degrees from that on model AA-16804. To effect interchangeability, unbolt and revolve 90 degrees.

FIRE CONTROL SYSTEMS ARMAMENT—GUNNERY



G.E. B-29 CENTRAL STATION FIRE CONTROL SYSTEM



B-29 CENTRAL STATION FIRE CONTROL SYSTEM

The G. E. Model 2CFR55A1 central station fire control system is installed in the B-29 airplane. The armament used in this system consists of two upper and two lower turrets, each mounting two .50 caliber machine guns, and a tail mount carrying two .50 caliber machine guns and a 20-mm cannon. Each of these gun positions is controlled from one of five sighting stations. The sighting station located on the upper deck of the fuselage has control over both upper turrets, and the gunner in this station may fire either turret alone, or both at once. The gunner at the nose sighting station has control over the lower forward turret, and the gunner at the tail sighting station has control over the tail mount. There is a sighting station located in either side of the fuselage waist. The gunners at these positions decide between themselves which is to have primary control over the lower aft turret and secondary control over the lower forward turret or the tail mount. This means either gunner may take control over these other gun positions, but only when allowed by the gunner having primary control.

The gunner at any position is able to scan the sky through a plexiglas window, pick out the target, and track it by manually moving his sight. As the sight is moved the guns follow automatically and instantaneously.

The items of government furnished equipment which comprise this system are listed in the following pages:

A. E. Reference Number	Item	A. E. Reference Number	Item
52-6851	Servo-amplifier	52-6863	Altitude and airspeed hand-set
52-6852	Left blister auxiliary control box	52-3040	Amplidyne motor-generator
52-6853	Nose system control box	52-3045	Amplidyne motor-generator
52-6854	Right blister auxiliary control box	52-6864	Upper sight collector ring assembly
52-6855	Side blister system control box	52-6865	Left blister sighting station
52-6856	Side blister selector switch box	52-6866	Nose sighting station
52-6857	Tail system control box	52-6867	Right blister sighting station
52-6858	Upper blister system control box	52-6868	Tail sighting station
52-1720	Gun charger	52-6869	Upper ring sighting station
52-6859	Double parallax computer	52-6650	Tail cannon selector switch
52-6860	Single parallax computer	52-6870	Lower aft gun turret
52-6861	Tail gun mount azimuth drive	52-6871	Lower forward gun turret
52-6862	Tail gun mount elevation drive	52-6872	Upper aft gun turret
52-2580	Dynamotor	52-6873	Upper forward gun turret



← 12 $\frac{3}{8}$ " APPROX. →



SERVO-AMPLIFIER

GENERAL ELECTRIC COMPANY MODEL 2CV1C1

DESCRIPTION: The servo-amplifier, which may be located at any convenient point in the airplane, is a rectangular box containing vacuum tubes, transformers, condensers, and resistors.

This device amplifies a signal voltage from a selsyn receiver, and then rectifies it from alternating current to pulsating direct current, thereby making it suitable for exciting the field of an amplidyne motor generator.

This signal only occurs when there is misalignment between the sight and the guns, resulting in a small voltage passing between transformer and receiver selsyns. The amount of this voltage is proportionate to the amount of the misalignment.

The servo-amplifier is constantly supplied with power from the dynamotor. In this way it is always in readiness to respond to a signal.

CHARACTERISTICS:

Dimensions.....approximately 12 $\frac{3}{8}$ by 12 $\frac{5}{16}$ by 5 $\frac{1}{16}$ inches.

Weight.....approximately 18 pounds.

RELATIONSHIP OF PARTS: Used with:

B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6851

MANUFACTURER: General Electric Company

MANUFACTURER'S MODEL NUMBER: 2CV1C1

MANUFACTURER'S DRAWING NUMBER: T-8254157, Group 1

MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



BOX—LEFT BLISTER AUXILIARY CONTROL

GENERAL ELECTRIC COMPANY DRAWING NUMBER P-8242380, GROUP 2

NAME: Left blister auxiliary control box

DESCRIPTION: This auxiliary control box provides the gunner in the left side blister station with an ON-OFF switch for control over the 20-mm cannon in the tail mount. On the same panel are two indicator lights, to inform the gunner when he has primary control over the lower forward gun turret or the tail gun mount.

CHARACTERISTICS:

Dimensions.....approximately $3\frac{1}{16}$ by $2\frac{3}{8}$ by $2\frac{3}{8}$ inches.
Weight.....approximately 1 pound.

RELATIONSHIP OF PARTS: Used with:
B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6852
MANUFACTURER: General Electric Company.
MANUFACTURER'S DRAWING NUMBER: P-8242380, Group 2
MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



FIRE CONTROL SYSTEMS ARMAMENT—GUNNERY



BOX—NOSE SYSTEM CONTROL GENERAL ELECTRIC COMPANY DRAWING NUMBER W-8258868, GROUP 1

NAME: Nose system control box

DESCRIPTION: This control box is used by the gunner at the nose sighting station of the B-29 central station fire control system. It consists of power breakers and switches, and the camera, computer and gun safety switches.

The power breakers prevent overloading the amplidyne and dynamotor for the lower forward two gun turret.

The power switches are of the single pole double throw ON-OFF type, and control alternating current from the dynamotor and power to the turret.

The computer switches are the same type as the power switches. They control input to the computer.

The gun safety switches, also of the ON-OFF type, provide fire and safe positions for the guns in the lower forward turret.

CHARACTERISTICS:

Dimensions.....approximately 16 $\frac{1}{4}$ by 13 $\frac{13}{16}$ by 4 $\frac{7}{8}$ inches.

Weight.....approximately 30 pounds.

RELATIONSHIP OF PARTS: Used with:
B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6853

MANUFACTURER: General Electric Company.

MANUFACTURER'S DRAWING NUMBER: W-8258868, Group 1.

MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1

A. S. C. STOCK NUMBER: None.

TECHNICAL ORDER NUMBER: None.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



BOX—RIGHT BLISTER AUXILIARY CONTROL

GENERAL ELECTRIC COMPANY DRAWING NUMBER P-8242380, GROUP 1

NAME: Right blister auxiliary control box

DESCRIPTION: This auxiliary control box provides the gunner in the left side blister station with an ON-OFF switch for control over the 20-mm cannon in the tail mount. On the same panel are two indicator lights, to inform the gunner when he has primary control over the lower forward gun turret or the tail gun mount.

CHARACTERISTICS:

Dimensions.....approximately $3\frac{1}{16}$ by $2\frac{3}{8}$ by $2\frac{3}{8}$ inches.
Weight.....approximately 1 pound.

RELATIONSHIP OF PARTS: Used with:
B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6854
MANUFACTURER: General Electric Company.
MANUFACTURER'S DRAWING NUMBER: P-8242380, Group 1
MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

FIRE CONTROL SYSTEMS ARMAMENT—GUNNERY



BOX—SIDE BLISTER SYSTEM CONTROL

GENERAL ELECTRIC COMPANY DRAWING NUMBER W-8258874, GROUP 1

NAME: Side blister system control box

DESCRIPTION: This control box is accessible to either gunner at the side blister sighting stations of the B-29 central station fire control system. It consists of power breakers, switches, and the camera, computer and gun safety switches.

The power breakers prevent overloading the amplidynes and dynamotor for the lower rear turret.

The power switches are of the single pole, double throw, ON-OFF type, and control alternating current from the dynamotor and power to the lower rear turret and tail gun mount.

The computer switches are the same type as the power switches. They control input to the right or left computer.

The gun safety switch, also of the ON-OFF type, provides fire and safe positions for guns in the lower rear turret.

CHARACTERISTICS:

Dimensions.....approximately 23 $\frac{5}{8}$ by 17 $\frac{1}{16}$ by 5 $\frac{1}{4}$ inches.

Weight.....approximately 40 pounds.

RELATIONSHIP OF PARTS: Used with:

B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6855

MANUFACTURER: General Electric Company.

MANUFACTURER'S DRAWING NUMBER: W-8258874, Group 1

MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



BOX—SIDE BLISTER SELECTOR SWITCH

GENERAL ELECTRIC COMPANY DRAWING NUMBER T-8252890, GROUP 1

NAME: Side blister selector switch box

DESCRIPTION: The side blister selector switch box, used in the B-29 central station fire control system, is accessible to the gunners at both side blister sighting stations. This box contains three manual two-position selector switches for determining which side blister sighting station shall have primary control of the lower aft gun turret, secondary control of the lower forward gun turret, and secondary control of the tail gun mount. These switches are all marked LEFT and RIGHT; indicating which side blister has control.

CHARACTERISTICS:

Dimensions.....approximately 13 $\frac{1}{4}$ by 5 $\frac{7}{8}$ by 3 $\frac{7}{8}$ inches.
Weight.....approximately 5 pounds.

RELATIONSHIP OF PARTS: Used with:
B-29 central station fire control system.

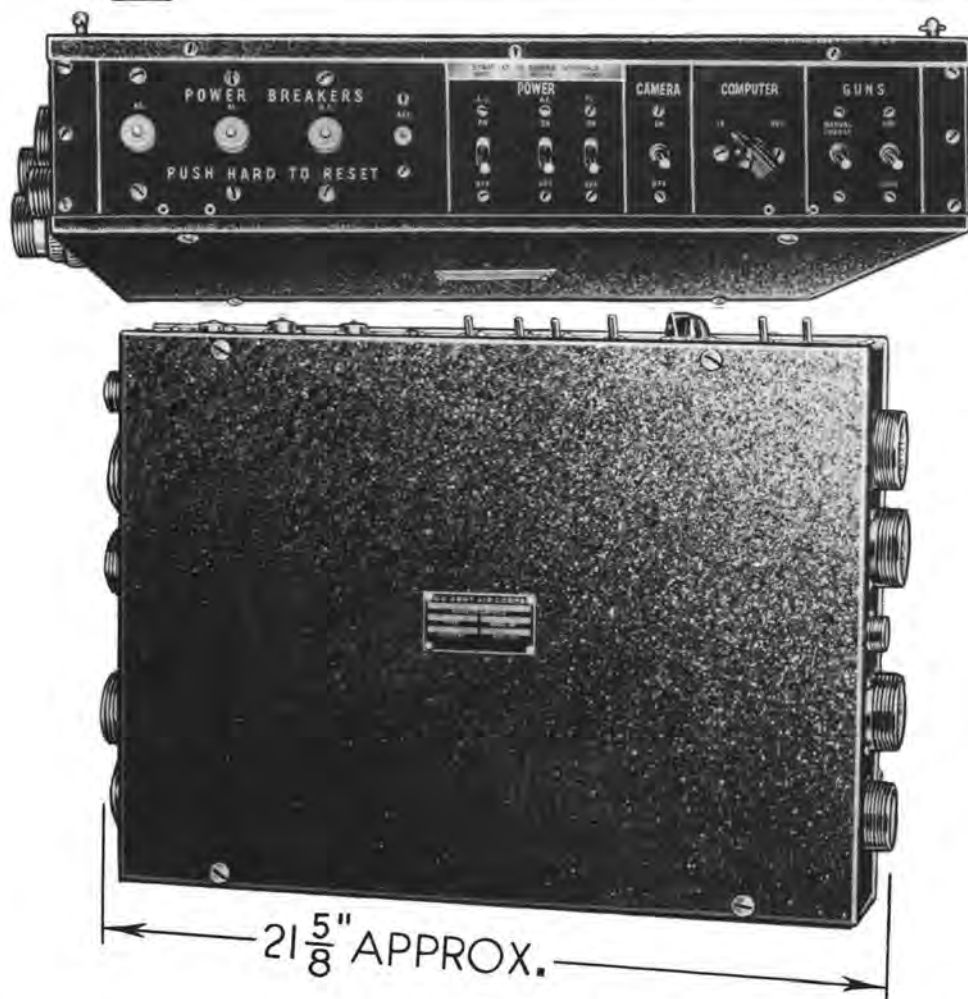
ARMY

A. E. REFERENCE NUMBER: 52-6856
MANUFACTURER: General Electric Company.
MANUFACTURER'S DRAWING NUMBER: T-8252890, Group 1
MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

FIRE CONTROL SYSTEMS ARMAMENT—GUNNERY



BOX—TAIL SYSTEM CONTROL GENERAL ELECTRIC COMPANY DRAWING NUMBER W-8258881, GROUP 1

NAME: Tail system control box

DESCRIPTION: This control box is used by the gunner at the tail sighting station of the B-29 central station fire control system. It consists of power breakers and switches, and the camera, computer, and gun safety switches.

The power breakers prevent overloading the amplidynes and dynamotor for the tail gun mount.

The power switches are of the single pole double throw ON-OFF type, and control alternating current from the dynamotor and power to the tail gun mount.

The computer switches are the same type as the power switches. They control input to the computer.

The gun safety switches, also of the ON-OFF type provide fire, safe and manual charge positions for the guns in the tail gun mount.

CHARACTERISTICS:

Dimensions.....approximately 21 $\frac{5}{8}$ by 15 $\frac{9}{32}$ by 4 $\frac{13}{16}$ inches.
Weight.....approximately 35 pounds.

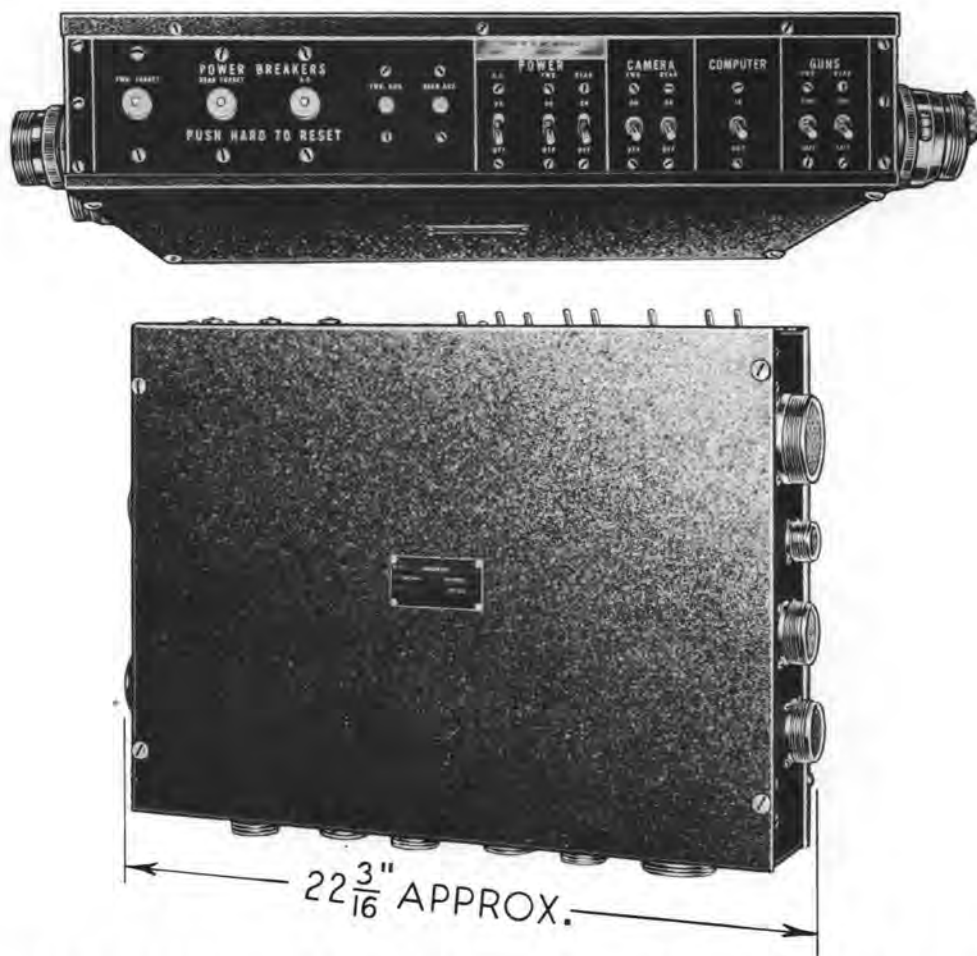
RELATIONSHIP OF PARTS: Used with:
B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6857
MANUFACTURER: General Electric Company.
MANUFACTURER'S DRAWING NUMBER: W-8258881, Group 1
MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



BOX—UPPER BLISTER SYSTEM CONTROL

GENERAL ELECTRIC COMPANY DRAWING NUMBER W-8258865, GROUP 1

NAME: Upper blister system control box

DESCRIPTION: This control box is installed near the gunner at the upper ring sighting station of the B-29 central station fire control system. It contains power breakers and switches, and the camera, computer, and gun safety switches.

The power breakers prevent overloading the amplidynes and dynamotors for the upper forward and rear turrets.

The power switches, of the single pole double throw ON-OFF type, control the alternating current from the dynamotor and the power supply to the upper forward and rear turrets.

The computer switches are the same type as the power switches. They control electrical input to the computer.

The gun safety switches, also of the ON-OFF type, provide FIRE and SAFE positions for the guns in the upper forward and rear turrets.

CHARACTERISTICS:

Dimensions.....approximately 22 $\frac{3}{16}$ by 16 $\frac{9}{16}$ by 4 $\frac{3}{16}$ inches.
Weight.....approximately 35 pounds.

RELATIONSHIP OF PARTS: Used with:
B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6858

MANUFACTURER: General Electric Company.

MANUFACTURER'S DRAWING NUMBER: W-8258865, Group 1

MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1

PRODUCTION STATUS: Under procurement.

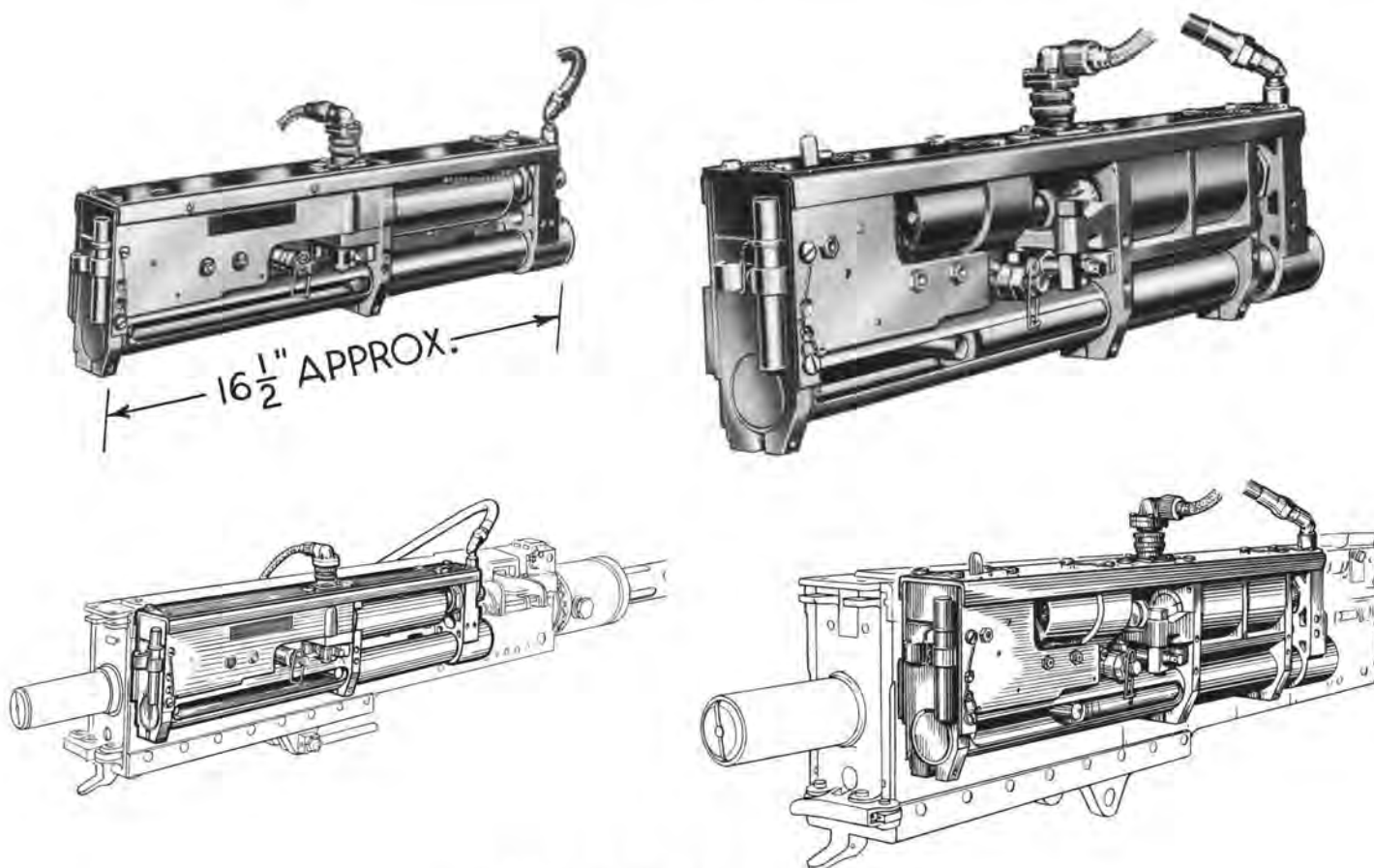
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



FIRE CONTROL SYSTEMS ARMAMENT—GUNNERY



CHARGER—GUN

GENERAL ELECTRIC COMPANY DRAWING NUMBER T-8252878, GROUP 1

NAMES: Gun charger
Compressed air gun charger

CO₂ charger
Carbon Dioxide charger

DESCRIPTION: This gun charger is mounted on the side of a .50 caliber M2 machine gun used in the G. E. central station fire control systems. It is electrically controlled, so that when a firing key is closed, the gun fires. The charger automatically operates to cock or charge the gun in the event of a misfire. Five or six cocking operations are repeated in rapid succession, after which the charger will stop, indicating difficulty due to causes other than defective ammunition.

To actuate the gun bolt, a piston acts against a stud that extends outward from the side of the gun. This stud is carried by the gun bolt, and projects through a guide slot into a cylinder. To operate the cylinder piston, compressed air, or gas, under a pressure of 1000 pounds per square inch, is admitted to the cylinder. The admission of the gas is controlled by a valve mechanism, which in turn is operated by an electromagnet known as the charging solenoid.

CHARACTERISTICS:

Dimensions.....	approximately 16½ by 4¾ by 2¾ inches.
Weight.....	approximately 10½ pounds.

RELATIONSHIP OF PARTS: Used with:

B-29 central station fire control system, P-61 central station fire control system, and A-26 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-1720

MANUFACTURER: General Electric Company.

MANUFACTURER'S DRAWING NUMBER: T-8252878, Group 1

MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1; GO-17400-B; and GO-17397-B.

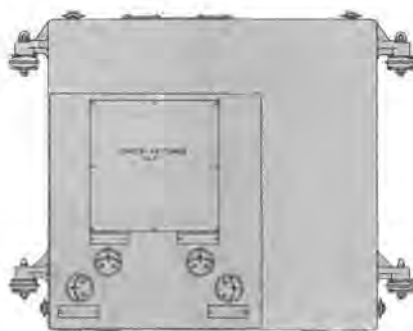
A. S. C. STOCK NUMBER: 5900170000

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



COMPUTER—DOUBLE PARALLAX

GENERAL ELECTRIC COMPANY MODEL NUMBER 2CH1D1

NAME: Double parallax computer

DESCRIPTION: When a single sighting station controls two turrets, an additional parallax unit is required, to compensate for the fact that the two turrets are located at different points in the airplane.

This type of computer is used with each of the sighting stations for secondary control over an additional turret in the B-29 central station fire control system. It corrects for ballistics, parallax and lead, and permits an increase in both accuracy of fire and in the maximum range of accurate fire. This computer, attached to the left front side of a single parallax computer, changes the position of the second turret with respect to the position of the first turret, the first turret having been previously corrected by the single parallax computer with respect to the position of the sight by an angle equal to the correction necessary to cause the projective to hit the target at which it is aimed. These corrections are dependent upon the distance between the airplane and the target, the relative speeds of the two, and the altitude and air speed at which the airplane is flying.

CHARACTERISTICS:

Dimensions.....approximately 23½ by 18½ by 18⅜ inches.
Weight.....approximately 115 pounds.
Operating voltage.....28 volts direct current.

RELATIONSHIP OF PARTS: Used with:

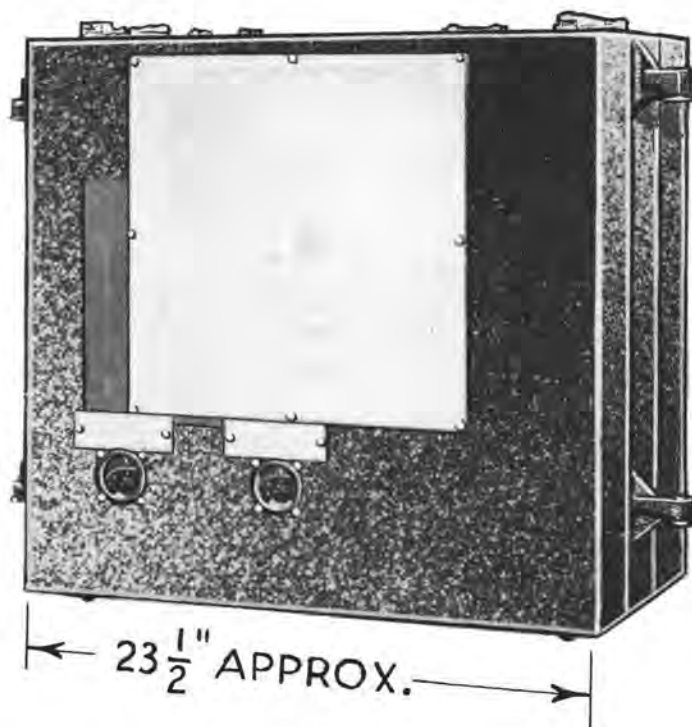
Single parallax computer, A. E. Reference Number 52-6860 in the B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6859
MANUFACTURER: General Electric Company.
MANUFACTURER'S MODEL NUMBER: 2CH1D1
MANUFACTURER'S DRAWING NUMBER: WW-8009120, Group 1
MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



COMPUTER—SINGLE PARALLAX
GENERAL ELECTRIC COMPANY MODEL NUMBER 2CH1C1

NAME: Single parallax computer

DESCRIPTION: This type of computer is used with each of the sighting stations, for controlling one turret in the B-29 central station fire control system. It corrects for ballistics, parallax and lead and permits an increase in both the accuracy of fire and the maximum range of accurate fire. This computer, located at a distance from the sighting station, changes the position of the turret with respect to the sight, by an angle equal to the correction necessary to cause the projectile to hit the target at which it is aimed. This correction is dependent upon the distance between the airplane and target, the relative speeds of the two, and the altitude and air speed of the airplane.

CHARACTERISTICS:

Dimensions.....approximately 23 $\frac{1}{2}$ by 18 $\frac{3}{16}$ by 10 $\frac{3}{8}$ inches.
Weight.....approximately 90 pounds.
Operating voltage.....28 volts direct current.

RELATIONSHIP OF PARTS: Used with:

Altitude and airspeed handset, A. E. Reference Number 52-6863, in the B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6860
MANUFACTURER: General Electric Company.
MANUFACTURER'S MODEL NUMBER: 2CH1C1
MANUFACTURER'S DRAWING NUMBER: WW-8009119, Group 1
MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



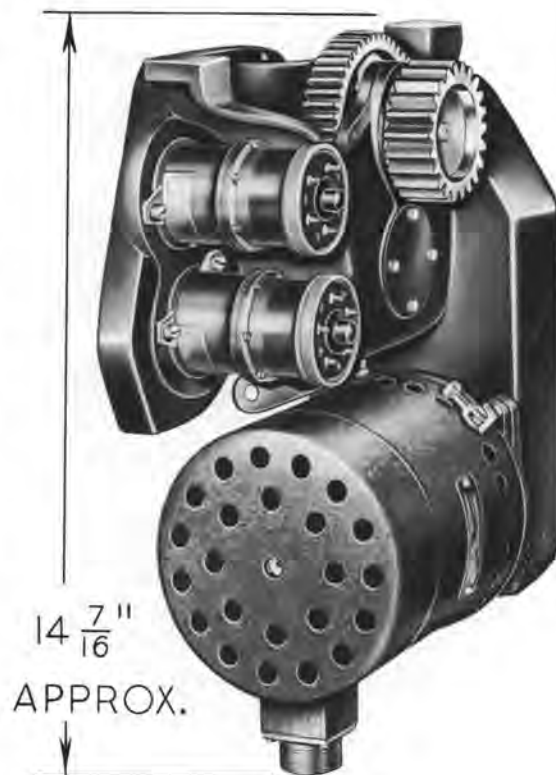
DRIVE—
TAIL GUN MOUNT AZIMUTH
GENERAL ELECTRIC COMPANY
DRAWING NUMBER W-8258810, GROUP 1

NAME: Tail gun mount azimuth drive

DESCRIPTION: In the B-29 central station fire control system, any movement of the tail sighting station is transmitted into a like movement of the tail mount guns.

The drive, used to horizontally move the tail gun mount, consists of a drive motor, two selsyn receivers and the necessary gearing.

Indications of misalignment between the selsyns on the mount and the selsyns on the sight are sent to the servo-amplifier, causing the amplidyne field in the motor generator to become energized. Power is then sent to the drive motor, which turns the gearing and rotates the mount. When the selsyns on the mount and the selsyns on the sight are once again aligned, the signal to the servo amplifier ceases and the amplidyne field is de-energized. This cuts off the power to the drive motor, stopping the mount.



CHARACTERISTICS:

Dimensions.....	approximately 14 $\frac{7}{16}$ by 5 $\frac{3}{16}$ by 12 $\frac{5}{8}$ inches.
Weight.....	approximately 50 pounds.
Motor.....	1.5 horsepower, G.E. model 5BC31NJ65.
Full load revolutions per minute.....	4000.
Field current.....	5.3 amperes.
Field voltage.....	28 volts direct current.
Field resistance.....	4.5 ohms.
Drive gear ratio.....	1250:1.

RELATIONSHIP OF PARTS: Used with:

Amplidyne motor-generator, G. E. model 5AM61NJ1C, A. E. Reference Number 52-3045, and selsyns, G. E. Model 2J1G1, A. E. Reference Number 52-4210, in the B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6861

MANUFACTURER: General Electric Company.

MANUFACTURER'S DRAWING NUMBER: W-8258810, Group 1.

MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1

PRODUCTION STATUS: Under procurement.

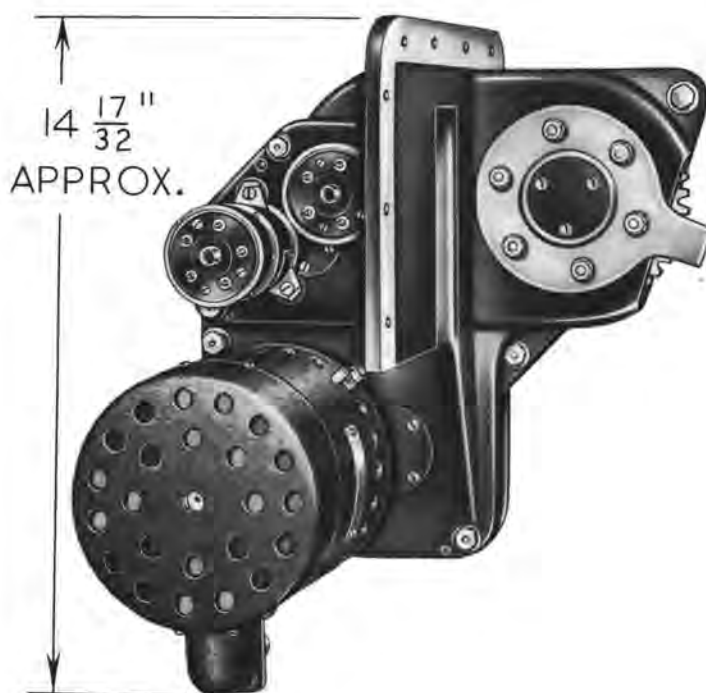
SHIPPING DATA: Shipped as a complete unit, including selsyns.

NAVY

There is no Navy equivalent for the Army item.



FIRE CONTROL SYSTEMS ARMAMENT—GUNNERY



DRIVE—TAIL GUN MOUNT ELEVATION

GENERAL ELECTRIC COMPANY DRAWING NUMBER W-8258807, GROUP 1

NAME: Tail gun mount elevation drive

DESCRIPTION: In the B-29 central station fire control system, any movement of the tail sighting station is transmitted into a like movement of the tail mount guns.

The drive, used to elevate or depress the tail gun mount, consists of a drive motor, two selsyn receivers and the necessary gearing.

Indications of misalignment between the selsyns on the mount and the selsyns on the sight are sent to the servo-amplifier, causing the amplidyne field in the motor-generator to become energized. Power is then sent to the drive motor, which turns the gearing and elevates or depresses the mount. When the selsyns on the mount and the selsyns on the sight are once again aligned, the signal to the servo amplifier ceases, and the amplidyne field is de-energized. This cuts off the power to the drive motor, stopping the mount.

CHARACTERISTICS:

Dimensions.....	approximately 13 $\frac{5}{8}$ by 12 $\frac{3}{16}$ by 14 $\frac{17}{32}$ inches.
Weight.....	approximately 50 pounds.
Motor.....	1.5 horsepower, G.E. model 5BC31NJ65.
Full load revolutions per minute.....	4000.
Field current.....	5.3 amperes.
Field voltage.....	28 volts direct current.
Field resistance.....	4.5 ohms.
Drive gear ratio.....	1163:1.

RELATIONSHIP OF PARTS: Used with:

Amplidyne motor-generator, G. E. model 5AM61NJ1C, A. E. Reference Number 52-3045, and selsyns G. E. model 2J1G1, A. E. Reference Number 52-4210, in the B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6862

MANUFACTURER: General Electric Company.

MANUFACTURER'S DRAWING NUMBER: W-8258807, Group 1

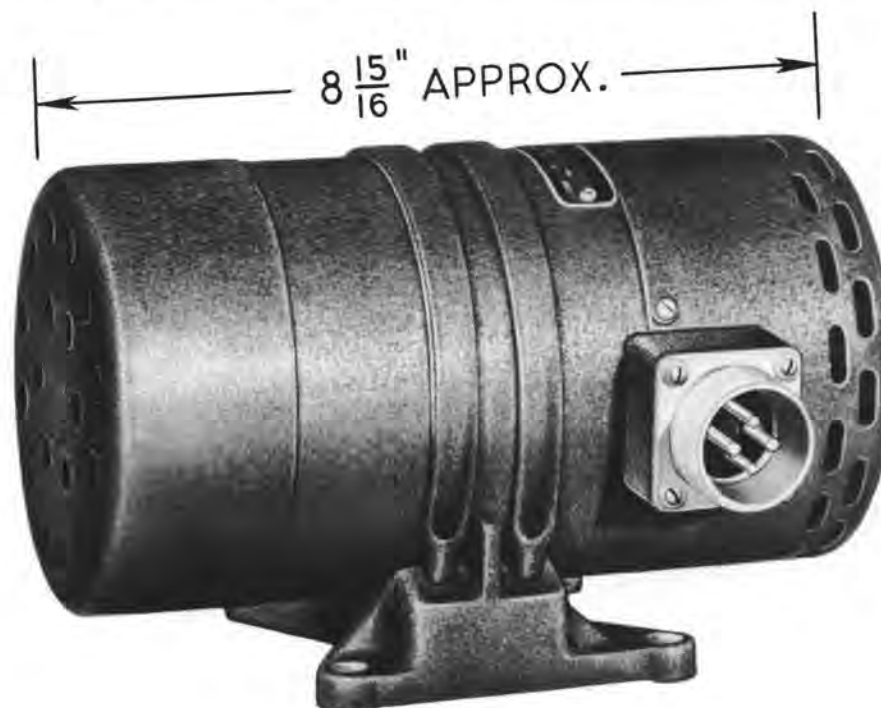
MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, including selsyns.

NAVY

There is no Navy equivalent for the Army item.



DYNAMOTOR
GENERAL ELECTRIC MODEL 5D21NJ3A

NAMES:

DESCRIPTION: This dynamotor, a six pole, 8000 revolution per minute motor-generator, furnishes alternating current at 110 volts and 400 cycles per second, for the servo-amplifier and selsyns used in the B-29 and A-26 central station fire control systems. It consists of a 24 to 28 volt direct current shunt wound motor on a common shaft with a 110 volt single phase generator. The entire assembly is enclosed in a single housing. The motor operates from the airplane's power supply.

CHARACTERISTICS:

Dimensions.....	approximately 8 $\frac{15}{16}$ by 5 $\frac{15}{32}$ by 6 $\frac{9}{32}$ inches.
Weight.....	approximately 14 pounds.
Motor:	
Voltage.....	27 volts direct current.
Current.....	35 amperes.
Speed.....	8000 revolutions per minute.
Generator:	
Voltage.....	110 volts alternating current.
Current.....	4.4 amperes.
Rating.....	400 cycles per second single phase.

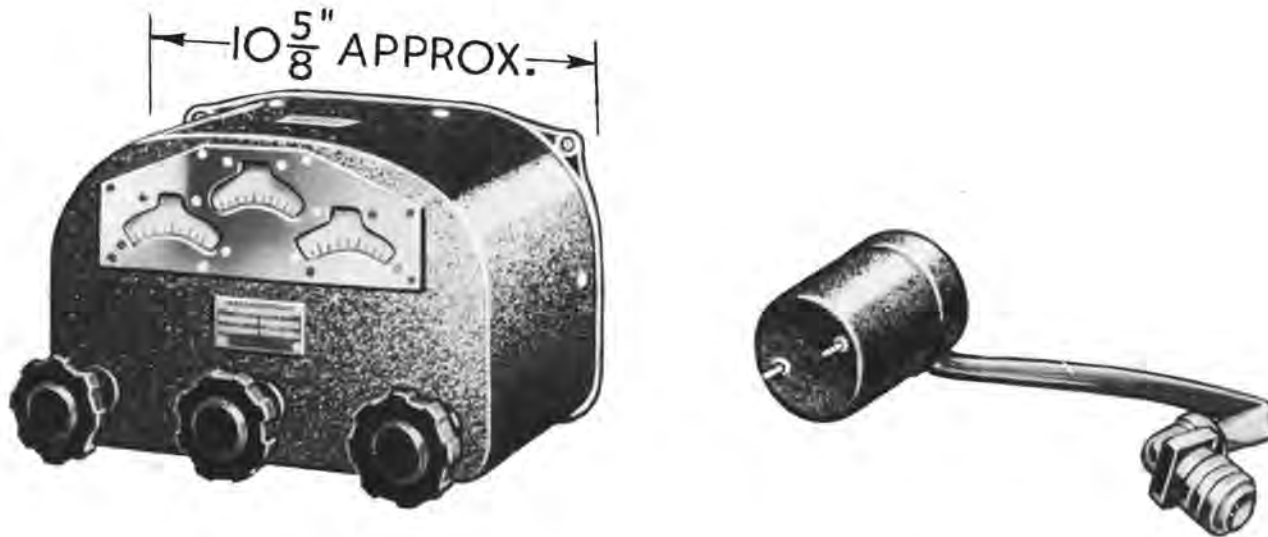
RELATIONSHIP OF PARTS: Used with:
B-29 and A-26 central station fire control systems.

ARMY

A. E. REFERENCE NUMBER: 52-2580
 MANUFACTURER: General Electric Company.
 MANUFACTURER'S MODEL NUMBER: 5D21NJ3A
 MANUFACTURER'S DRAWING NUMBER: TT-8117016, Group 1
 MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1; GO-17397-B
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



HAND SET—ALTITUDE AND AIR SPEED

GENERAL ELECTRIC COMPANY DRAWING NUMBER T-8252908, GROUP 1

NAME: Altitude and air speed hand set

DESCRIPTION: The altitude and air speed hand set used in the B-29 central station fire control system is mounted on the airplane navigator's panel. Three knobs are provided for the navigator to set on separate dials, indicated air speed, altitude, and external air temperature. The dial for altitude is graduated from 0 to 45000 feet, the indicated air speed dial is graduated from 90 to 300 miles per hour, and the external air temperature covers a range from -75 degrees centigrade to $+52$ degrees centigrade.

As these dials are moved, a gear train in the hand set combines density, altitude, and true air speed into a single function. Since this function is proportional to the windage forces acting on a projectile, it is transmitted into an electrical signal and sent to all the computers. The computers in turn automatically compensate the gun sight.

CHARACTERISTICS:

Dimensions.....	approximately $10\frac{5}{8}$ by $7\frac{1}{32}$ by $5\frac{5}{16}$ inches.
Weight.....	approximately 9 pounds.

RELATIONSHIP OF PARTS: Used with:
B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6863
 MANUFACTURER: General Electric Company.
 MANUFACTURER'S DRAWING NUMBER: T-8252908, Group 1.
 MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



MOTOR-GENERATOR—AMPLIDYNE REMOTE CONTROL

GENERAL ELECTRIC COMPANY MODEL 5AM31NJ9

NAMES: Amplidyne remote control motor-generator Amplidyne Motor generator

DESCRIPTION: This type amplidyne motor-generator, used to supply current for the operation of remotely controlled machine gun turrets, consists essentially of a direct current electric motor and a direct current output generator mounted on the same shaft. In spite of the fact that the motor operates constantly to turn the shaft, there is no output from the generator unless the generator field is excited. This field requires only a small current to produce full generator output voltage. Minute variations in the field current instantaneously produce large variations in the generator's output. When the turret's guns and sight are in exact alignment no current is transmitted to the field; thus no output to the turret drive motor takes place even though the generator armature is turning. When the sight and guns are not in alignment, current is transmitted to the field and the generator produces voltage to cause the turret drive motor to align the guns with the sight. Two amplidyne motor-generators and two turret drive motors are required for each turret; one of each for movement of the guns in elevation and depression and the others for rotation of the turret.

CHARACTERISTICS:

Dimensions.....	approximately 12 by 7 $\frac{3}{8}$ by 6 inches.
Weight.....	approximately 29 pounds.
Revolutions per minute.....	8300.
Motor input:	
Voltage.....	27 volts, direct current
Current.....	44 amperes
Winding.....	Compound.
Generator output:	
Voltage.....	60 volts, direct current
Current.....	8.8 amperes
Power.....	530 watts
Winding.....	amplidyne.

RELATIONSHIP OF PARTS: Used in:

B-29 central station fire control system, P-61 central station fire control system and A-26 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-3040

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

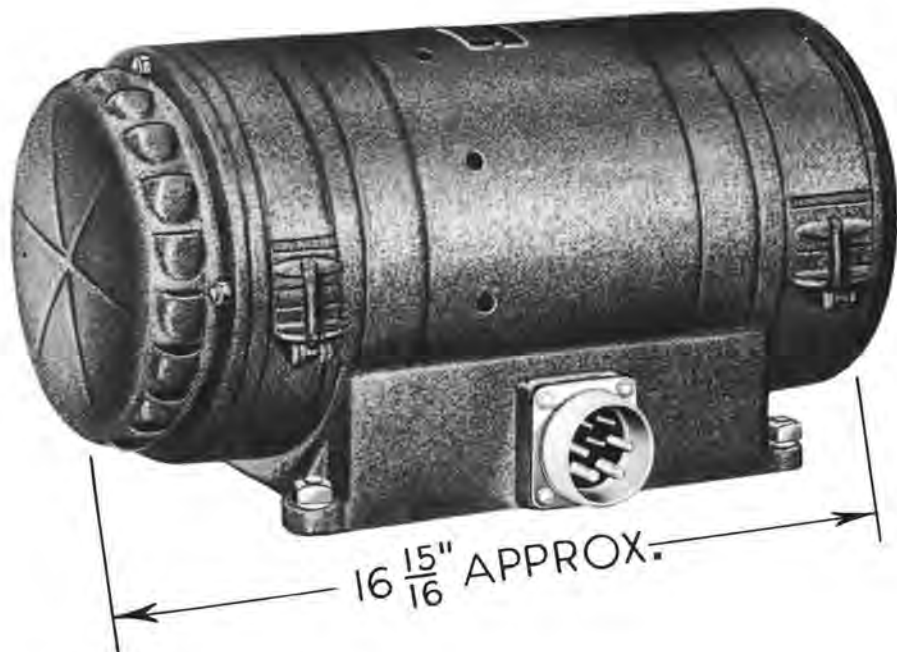
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Manufacturer's Specification
General Electric Company	5AM31NJ9	P-8111135 outline TT-5818156 assembly	A	5900466500	OST-1B
Marathon Electric Manufacturing Corporation	5AM31NJ9	P-8111135 outline TT-5818156 assembly	A	5900466500	OST-1B



MOTOR-GENERATOR—AMPLIDYNE REMOTE CONTROL

GENERAL ELECTRIC COMPANY MODEL 5AM61NJ1C

NAME: Amplidyne remote control motor-generator

DESCRIPTION: This type amplidyne motor-generator, used to supply current for the operation of remotely controlled tail gun mounts, consists essentially of a direct current electric motor and a direct current output generator mounted on the same shaft. In spite of the fact that the motor operates constantly to turn the shaft, there is no output from the generator unless the generator field is excited. This field requires only a small current to produce full generator output voltage. Minute variations in the field current instantaneously produce large variations in the generator's output. When the tail mount guns and sight are in exact alignment, no current is transmitted to the field, thus no output to the tail mount drive motor takes place, even though the generator armature is turning. When the sight and guns are not in alignment, current is transmitted to the field and the generator produces voltage to cause the tail mount drive to align the guns with the sight.

An amplidyne motor generator is required with each of the tail mount drives.

CHARACTERISTICS:

Dimensions.....	approximately 16 $\frac{15}{16}$ by 8 $\frac{5}{16}$ by 8 $\frac{33}{64}$ inches.
Weight.....	approximately 73 pounds.
Revolutions per minute.....	6600.
Motor input:	
Voltage.....	27 volts, direct current
Current.....	105 amperes
Winding.....	stab shunt.
Generator output:	
Voltage.....	60 volts, direct current
Current.....	16.7 amperes
Power.....	1002 watts

RELATIONSHIP OF PARTS: Used with:
B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-3045
MANUFACTURER: General Electric Company.
MANUFACTURER'S MODEL NUMBER: 5AM61NJ1C
MANUFACTURER'S DRAWING NUMBER: TT-5818186, Group 1
MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



RING ASSEMBLY—UPPER SIGHT COLLECTOR

GENERAL ELECTRIC COMPANY DRAWING NUMBER T-8252833, GROUP 1

NAMES: Upper sight collector ring assembly
Collector ring

DESCRIPTION: This collector ring assembly, used in the upper sighting station, is installed below the gunner's chair. It consists of a number of slip rings surrounding a central column. Several of these rings provide electrical leads for the control cables used with the range finder and the computer gyroscope located on the sight. Other rings bring electrical power to azimuth and elevation selsyns on the sight, and also provide a connection from the firing trigger to the machine guns. A microphone pushbutton switch and a switch for the gunner's electrically heated suit also require slip rings.

This assembly permits the lead cables to follow the sight as it rotates. In this way, these cables cannot become fouled or twisted.

CHARACTERISTICS:

Dimensions.....approximately $6\frac{7}{32}$ by $13\frac{13}{32}$ by $7\frac{3}{8}$ inches.
Weight.....approximately 12 pounds.

RELATIONSHIP OF PARTS: Used with:

Upper ring sighting station, A. E. Reference Number 52-6869 in the B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6864
MANUFACTURER: General Electric Company.
MANUFACTURER'S DRAWING NUMBER: T-8252833, Group 1
MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



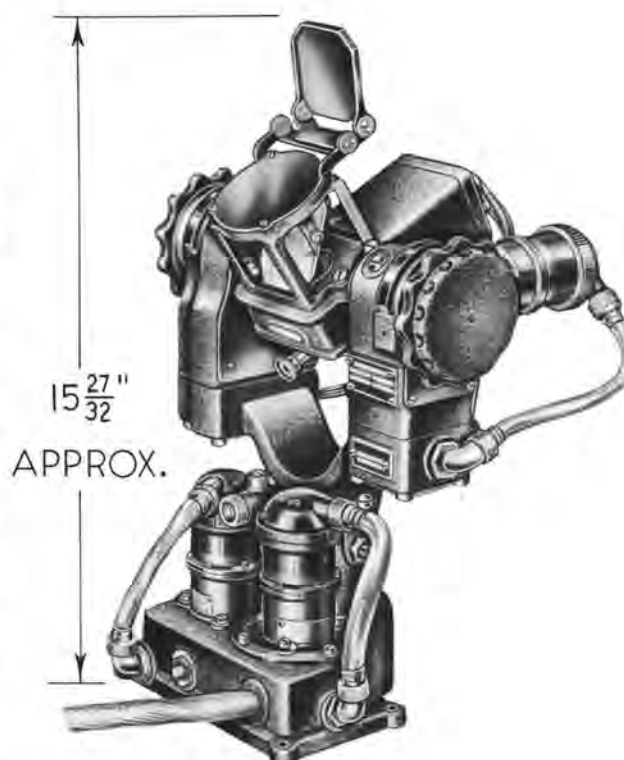
STATION— LEFT BLISTER SIGHTING

**GENERAL ELECTRIC COMPANY
MODEL 2CSR3B2**

NAME: Left blister sighting station.

DESCRIPTION: The gunner at the left blister sighting station in the B-29 airplane can sight on targets in the area at the left side of the airplane.

The base of the sight is a pedestal fixed to the airplane structure. A "Y" shaped support enables the sight, which is of the optical reflector type, to turn horizontally, using the pedestal as a pivot. The sight is moved in this manner when the gunner pushes or pulls against the two large knobs on either arm of the "Y." Elevation and depression are accomplished by turning the knobs. Adjacent to the right hand knob is a smaller knob for range adjustment to the sight. A crescent-shaped firing key, near the inside of both large knobs, can be operated by either thumb. The sight uses two selsyns to indicate movement of the sight horizontally and two to indicate movement up and down. These indications are sent to receiving selsyns on the gun turret, causing the turret movements to conform to movements of the sight. Two selsyns are used for each motion of the sight to insure accuracy.



CHARACTERISTICS:

Dimensions.....	approximately 15¼ by 15¼ by 15 ²⁷ / ₃₂ inches
Weight.....	approximately 31 pounds
Required voltage.....	28 volts direct current for lamp, 110 volts alternating current for selsyns
Range.....	180 degrees in azimuth 30 degrees in elevation 45 degrees in depression
Lamp.....	Type R-12; 28 volts, 50/50 candlepower double contact bayonet base

RELATIONSHIP OF PARTS: Used with:

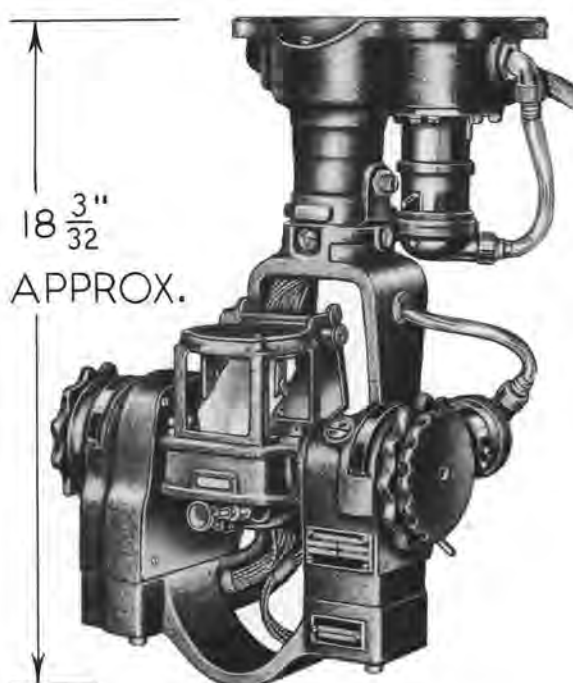
Lamp, Trade Number 1380, G. E. Part Number 8621274, A. E. Reference Number 88-8700; and Selsyns G. E. model 2J1F1. These items are contractor furnished in this airplane.

ARMY

A. E. REFERENCE NUMBER: 52-6865
 MANUFACTURER: General Electric Company
 MANUFACTURER'S DRAWING NUMBER: W-8258849, Group 1
 MANUFACTURER'S MODEL NUMBER: 2CSR3B2
 MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit including lamp and selsyns.

NAVY

There is no Navy equivalent for the Army item.



STATION—NOSE SIGHTING

GENERAL ELECTRIC COMPANY MODEL 2CSR3C1

NAME: Nose sighting station.

DESCRIPTION: The gunner at the nose sighting station in the B-29 airplane can sight on targets in the area about the nose of the airplane.

This sight is similar to the sight at the blister and tail sighting stations, but is inverted.

The base of the sight is a pedestal suspended from the airplane structure. A "Y" shaped support enables the sight, which is of the optical reflector type, to turn horizontally, using the pedestal as a pivot. The sight is moved in this manner when the gunner pushes or pulls against the two large knobs on either arm of the "Y." Elevation and depression is accomplished by turning the knobs. Adjacent to the right hand knob is a smaller knob for range adjustment to the sight. A crescent-shaped firing key, near the inside of both large knobs, can be operated by either thumb.

The sight uses two selsyns to indicate movement of the sight horizontally and two to indicate movement vertically. These indications are sent to receiving selsyns mounted on the gun turret, causing the turret movements to conform to movements of the sight. Two selsyns are used for each motion of the sight, to insure accuracy.

CHARACTERISTICS:

Dimensions.....	approximately 17 $\frac{3}{8}$ by 17 $\frac{3}{8}$ by 18 $\frac{3}{32}$ inches
Weight.....	approximately 33 pounds
Required voltage.....	28 volts direct current for lamp 110 volts alternating current for selsyns
Range.....	180 degrees in azimuth 60 degrees in elevation 45 degrees in depression
Lamp.....	Type R-12; 28 volts, 50/50 candlepower, double contact bayonet base

RELATIONSHIP OF PARTS: Used with:

Lamp, Trade Number 1380; G. E. Part Number 8621274, A. E. Reference Number 88-8700; and Selsyns, G. E. model 2J1F1. These items are contractor furnished in this airplane.

ARMY

A. E. REFERENCE NUMBER: 52-6866

MANUFACTURER: General Electric Company

MANUFACTURER'S DRAWING NUMBER: W-8258870, Group 1

MANUFACTURER'S MODEL NUMBER: 2CSR3C1

MANUFACTURER'S SPECIFICATION NUMBER:

GO-18393-B-1

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit including lamp and selsyns.

NAVY

There is no Navy equivalent for the Army item.



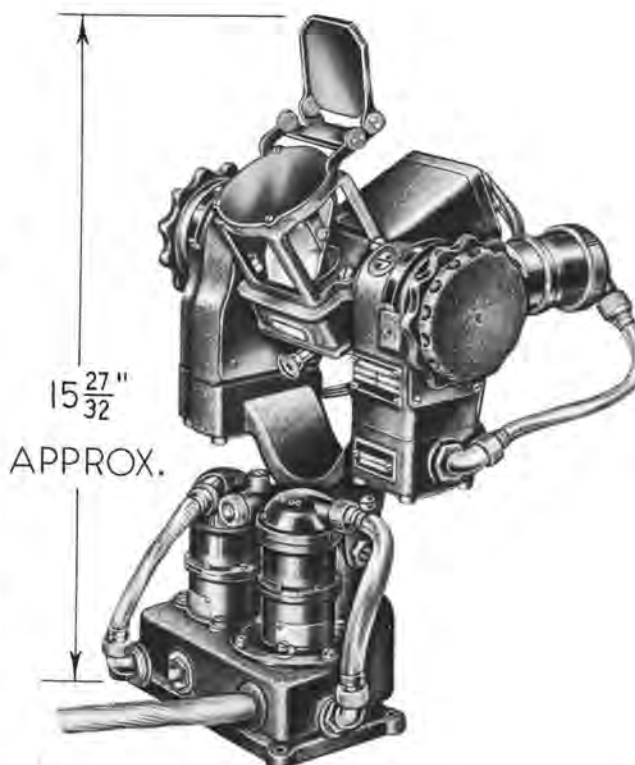
**STATION—
RIGHT BLISTER SIGHTING
GENERAL ELECTRIC COMPANY
MODEL 2CSR3B1**

NAME: Right blister sighting station

DESCRIPTION: The gunner at the right blister sighting station in the B-29 airplane can sight on targets in the area at the right side of the airplane.

The base of the sight is a pedestal fixed to the airplane structure. A "Y" shaped support enables the sight, which is of the optical reflector type, to turn horizontally, using the pedestal as a pivot. The sight is moved in this manner when the gunner pushes or pulls against the two large knobs on either arm of the "Y." Elevation and depression are accomplished by turning the knobs. Adjacent to the right hand knob is a smaller knob for range adjustment to the sight. A crescent-shaped firing key, near the inside of both large knobs, can be operated by either thumb.

The sight uses two selsyns to indicate movement of the sight horizontally, and two to indicate vertical movement. These indications are sent to receiving selsyns on the gun turret, causing the turret movements to conform to the movements of the sight. Two selsyns are used for each motion of the sight to insure accuracy.



CHARACTERISTICS:

Dimensions.....	approximately 15¼ by 15¼ by 15 ²⁷ / ₃₂ inches
Weight.....	approximately 31 pounds
Required voltage.....	28 volts direct current for lamp 110 volts alternating current for selsyns
Range.....	180 degrees in azimuth 30 degrees in elevation 45 degrees in depression
Lamp.....	Type R-12; 28 volts, 50/50 candlepower, double contact base

RELATIONSHIP OF PARTS: Used with:

Lamp, Trade Number 1380, G. E. Part Number 8621274, A. E. Reference Number 88-8700; and Selsyns, G. E. model 2J1F1. These items are contractor furnished in this airplane.

ARMY

A. E. REFERENCE NUMBER: 52-6867
MANUFACTURER: General Electric Company
MANUFACTURER'S MODEL NUMBER: 2CSR3B1
MANUFACTURER'S DRAWING NUMBER: W-8258849, Group 2
MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit including lamp and selsyns.

NAVY

There is no Navy equivalent for the Army item.

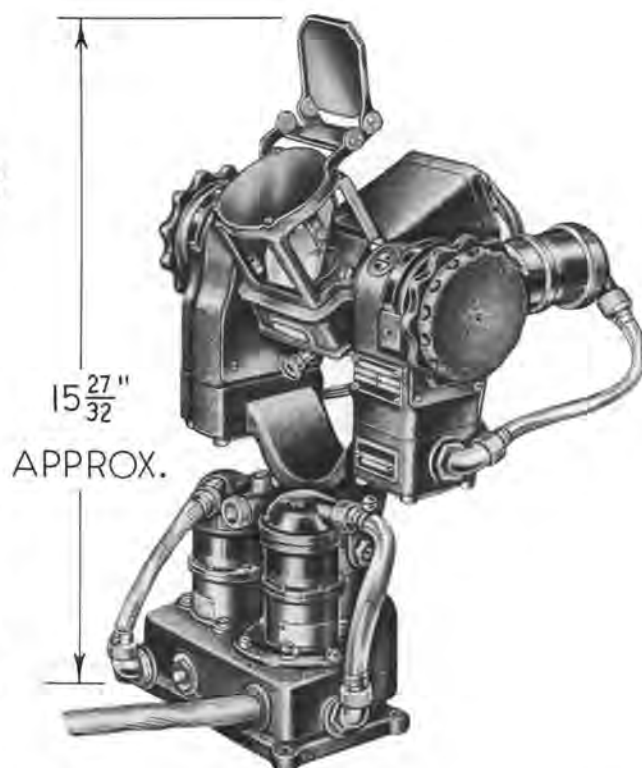
**STATION—TAIL SIGHTING****GENERAL ELECTRIC COMPANY****MODEL 2CSR3B3**

NAME: Tail sighting station.

DESCRIPTION: The gunner at the tail sighting station in the B-29 airplane can sight on targets in the area at the rear of the airplane.

The base of the sight is a pedestal fixed to the airplane structure. A "Y" shaped support enables the sight, which is of the optical reflector type, to turn horizontally, using the pedestal as a pivot. The sight is moved in this manner when the gunner pushes or pulls against the two large knobs on either arm of the "Y." Elevation and depression are accomplished by turning the knobs. Adjacent to the right hand knob is a smaller knob for range adjustment to the sight. A crescent-shaped firing key, near the inside of both large knobs, can be operated by either thumb.

The sight uses two selsyns to indicate movement of the sight horizontally and two to indicate vertical movement. These indications are sent to receiving selsyns on the gun turret, causing the turret movements to conform to the movements of the sight. Two selsyns are used for each motion of the sight to insure accuracy.

**CHARACTERISTICS:**

Dimensions.....	approximately 15¼ by 15¼ by 15 ²⁷ / ₃₂ inches
Weight.....	approximately 31 pounds
Required voltage.....	28 volts direct current for lamp 110 volts alternating current for selsyns
Range.....	190 degrees in azimuth 45 degrees in elevation 45 degrees in depression
Lamp.....	Type R-12, 28 volts, 50/50 candlepower double contact bayonet base

RELATIONSHIP OF PARTS: Used with:

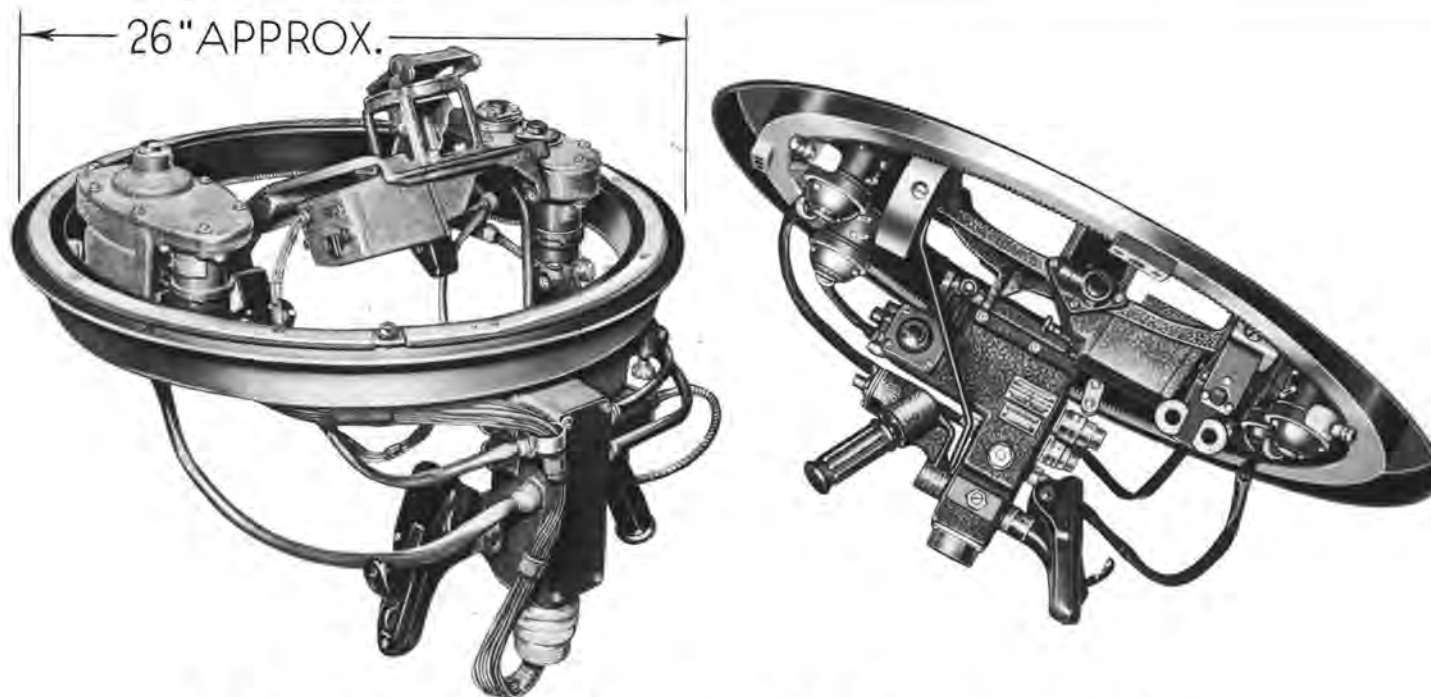
Lamp, Trade Number 1380, G. E. Part Number 8621274, A. E. Reference Number 88-8700; and Selsyns, G. E. model 2J1F1. These items are contractor furnished in this airplane.

ARMY

A. E. REFERENCE NUMBER: 52-6868
 MANUFACTURER: General Electric Company
 MANUFACTURER'S MODEL NUMBER: 2CSR3B3
 MANUFACTURER'S DRAWING NUMBER: W-8248849, Group 3
 MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit including lamp and selsyns.

NAVY

There is no Navy equivalent for the Army item.



STATION—UPPER RING SIGHTING

GENERAL ELECTRIC COMPANY MODEL 2CSR3A1

NAMES: Upper ring sighting station

Ring sighting station

DESCRIPTION: The gunner at the upper sighting station in the B-29 airplane can see targets in the hemisphere of sky above his head. This field of vision is about a vertical axis, enabling the use of a ring type sight.

The gunner is seated in a swivel seat, and can move the sight manually along the sighting ring when he rotates his seat by pushing his feet against the floor. Under the center of the seat is a collector ring assembly through which all electrical connections to the sight are made. This assembly rotates with the seat, and prevents the cable to the sight from twisting.

The sight, which is of the optical reflector type, rides up and down on a crosspiece, or yoke, which has counterbalanced arms. When the gunner pushes forward on the control grips, the yoke and sight swing up. A pull on the handles lowers the sight. A gun firing key is provided in the right hand control grip.

This sight uses two selsyns to indicate movement of the sight horizontally, and two to indicate vertical movement. These indications are sent to receiving selsyns on the gun turret, causing the turret movements to conform to the movements of the sight. Two selsyns are used for each motion of the sight to insure accuracy.

CHARACTERISTICS:

Dimensions.....	approximately 26 by 26 by 15 $\frac{1}{2}$ inches
Weight.....	approximately 42 pounds
Required voltage.....	28 volts direct current for lamp, 110 volts alternating current for selsyns
Range.....	360 degrees in azimuth 90 degrees in elevation
Lamp.....	Type R-12; 28 volts, 50/50 candlepower, double contact bayonet base

RELATIONSHIP OF PARTS: Used with:

Lamp, Trade Number 1380, G. E. Part Number 8621274, A. E. Reference Number 88-8700 and Selsyns, G. E. model 2J1F1.

These items are contractor furnished in this airplane.

ARMY

A. E. REFERENCE NUMBER: 52-6869

MANUFACTURER: General Electric Company

MANUFACTURER'S MODEL NUMBER: 2CSR3A1

MANUFACTURER'S DRAWING NUMBER: W-8258820, Group 1

MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, including lamps and selsyns.

NAVY

There is no Navy equivalent for the Army item.



SWITCH—TAIL CANNON SELECTOR

ARMY TYPE B-5A

NAMES: Tail cannon selector switch
Cannon firing switch

Single pole toggle switch
Toggle switch

DESCRIPTION: This switch controls the firing of the 20-mm cannon in conjunction with the machine guns located in the tail gun mount. It is of the single pole, single throw, ON-OFF type, and is operated at the discretion of the tail gunner.

The case surrounding the switch is furnished by the airplane manufacturer.

CHARACTERISTICS:

Dimensions.....approximately 2 by 2 by $\frac{3}{4}$ inches (including case)
Weight.....approximately 4 ounces (including case)

RELATIONSHIP OF PARTS: Used with:
The B-29 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6650
AN DRAWING NUMBER: AN3015
TYPE DESIGNATION: B-5A
A. S. C. STOCK NUMBER: Refer to chart.
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

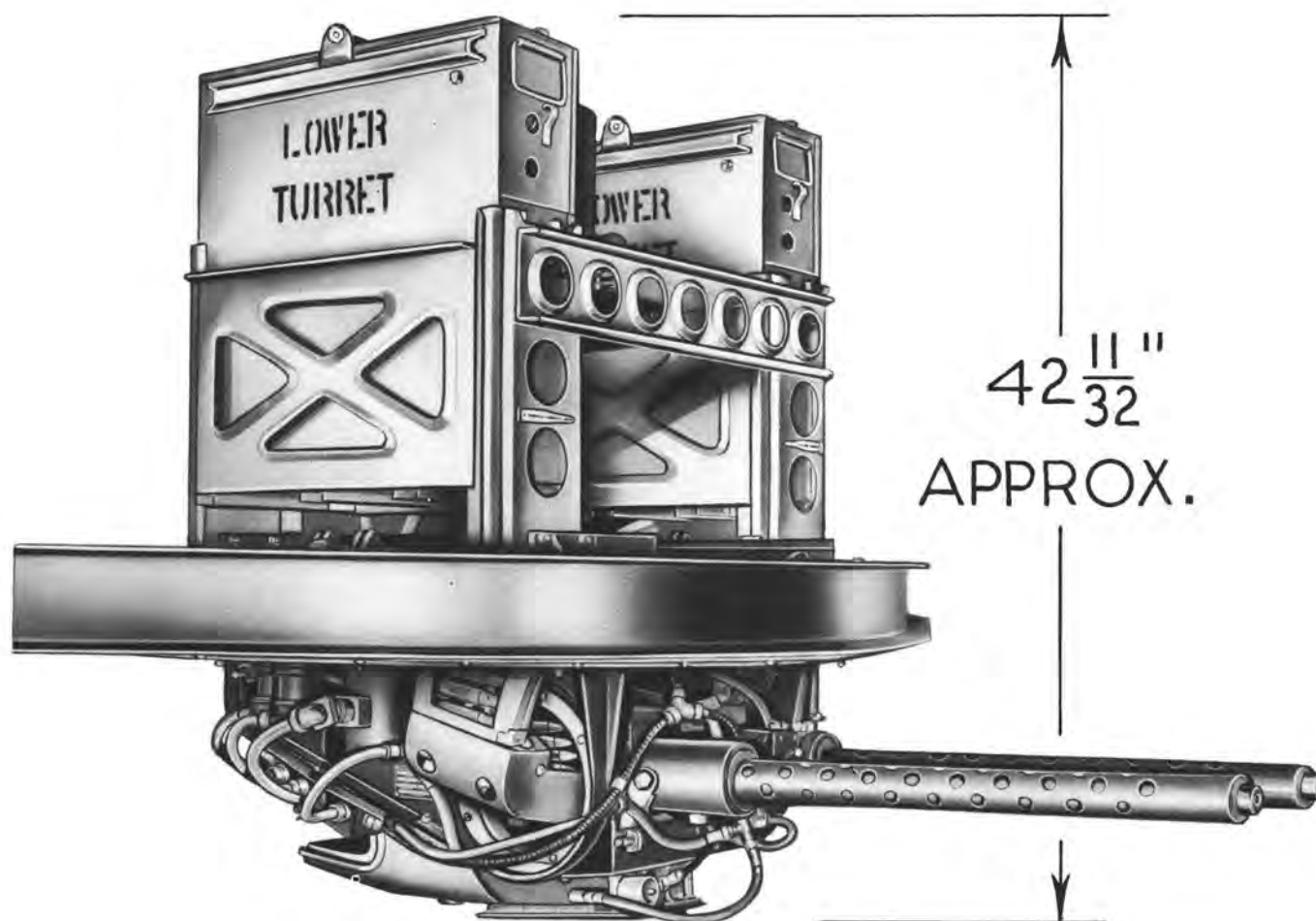
The Navy does not use the B-29 central station fire control system, of which this switch is a part. This switch, however, is procured for other purposes.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	A. S. O. Stock Number	Remarks
Cutler-Hammer, Incorporated	*B-5A	†AN3015	A-N	42578201K4		R17-S-28260	Luminous tip.
		†AN3022-2	A-N-B	4200894750	105C/146	R17-S-28266-22	Non-luminous tip. Threaded mounting holes.
Air Associates, Incorporated		†AN3022-2	A-N-B	4200894750	105C/146	R17-S-28266-22	Non-luminous tip. Threaded mounting holes.

Note: *AAF type.

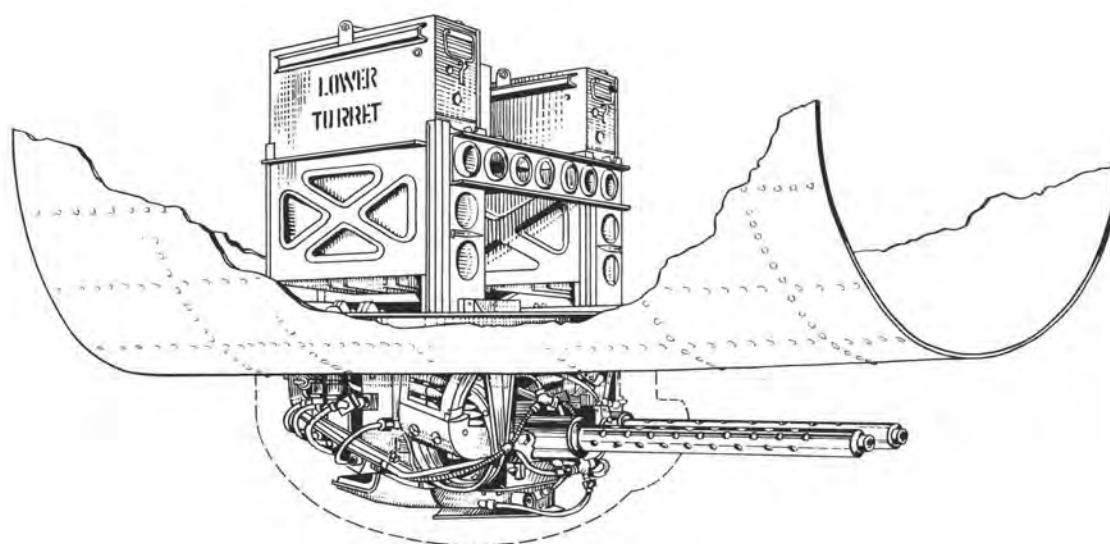
†Army and Navy standard drawing.



TURRET—LOWER AFT GUN
GENERAL ELECTRIC COMPANY MODEL 2CGD50LRC5

NAMES: Lower aft gun turret

Rear lower gun turret



(Continued on page 199)



TURRET—LOWER AFT GUN

(Continued from page 198)

DESCRIPTION: This remotely controlled turret, housing two .50 caliber M2 machine guns, is supported in the B-29 airplane by means of a mounting ring and saddle assembly. It is electrically operated by two drive motors, each powered by an amplidyne motor-generator; one drive motor for horizontal rotation of the turret, the other for movement of the guns in elevation and depression. Two ammunition cases, each with a capacity of approximately 560 rounds of .50 caliber ammunition, are mounted above the gun. A collector unit with twenty-five slip rings is mounted on the axis of rotation of the turret, to furnish electrical power to the various units in it.

When not in use, the turret is turned so the guns are horizontal and pointed aft. It is latched in this position to prevent accidental movement, resulting in an increase in drag.

CHARACTERISTICS:

Dome diameter	approximately 40 $\frac{5}{16}$ inches
Ring diameter	approximately 38 inches
Height to ring	approximately 28 $\frac{21}{32}$ inches
Height overall	approximately 42 $\frac{11}{32}$ inches
Weight	approximately 290 pounds
Rotation in azimuth	360 degrees
Movement in depression	95 degrees

RELATIONSHIP OF PARTS: Used with:

Turret drive motor, A. E. Reference Number 52-3065, and Amplidyne motor-generator, A. E. Reference Number 52-3040; Gun charger, A. E. Reference Number 52-1720, and Selsyns, A. E. Reference Number 52-4210.

ARMY

A. E. REFERENCE NUMBER: 52-6870

PRODUCTION STATUS: Under procurement.

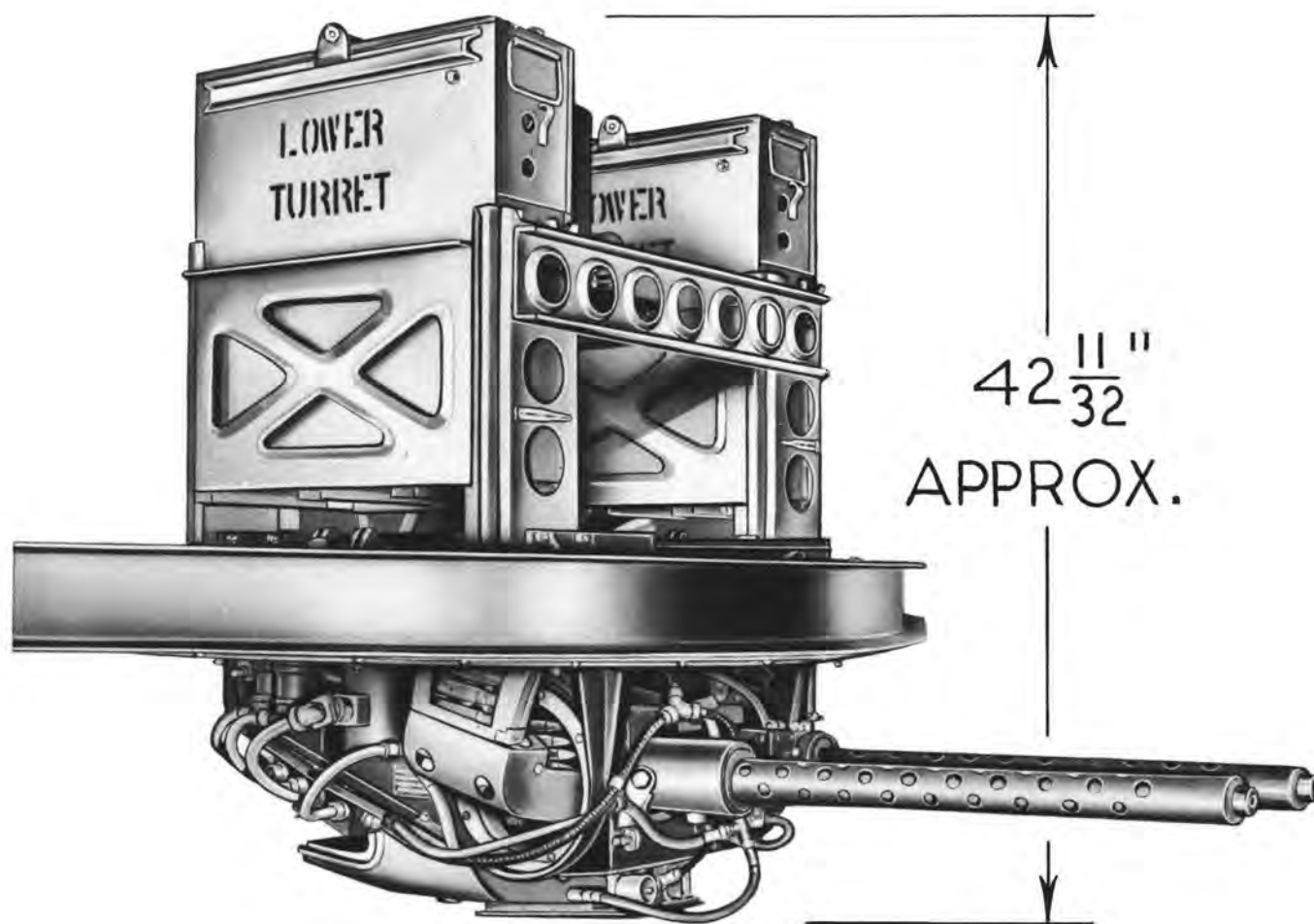
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

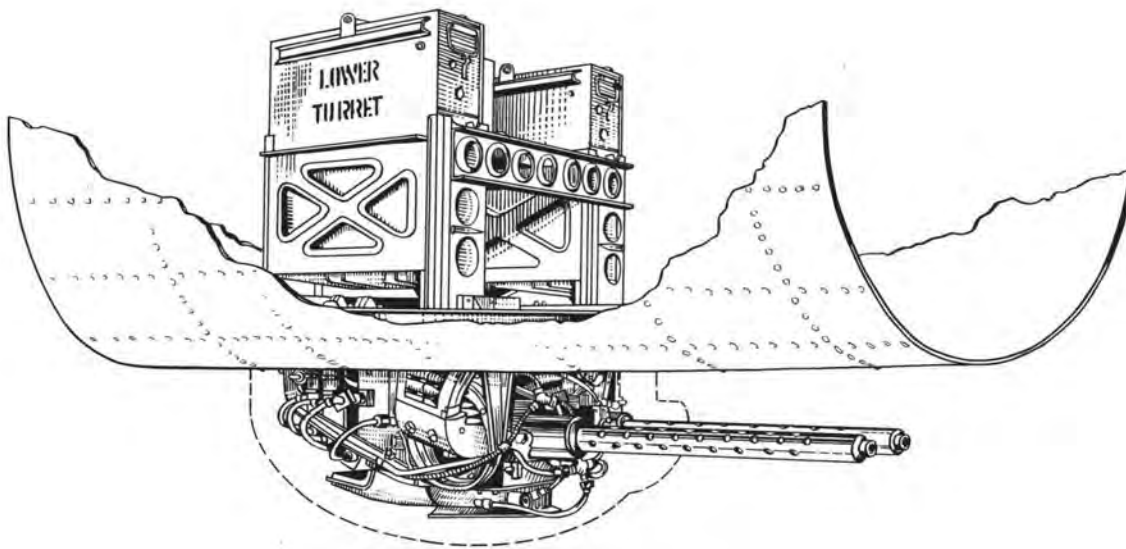
Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Manufacturer's Specification	Used On Airplane	Remarks
General Electric Company	2CGD50LRC5	WW-8009114 Group 1	A	GO-18393-B-1	B-29 aft	
	2CGD50LRC4	WW-8009113 Group 1	A	GO-18393-B-1	B-29 fore	Uses different contour follower and fire interrupter.
	2CGD50LRC1	WW-8019523 Group 1	A	GO-17397-B	A-26	Uses different contour follower and fire interrupter.



TURRET—LOWER FORWARD GUN
GENERAL ELECTRIC COMPANY MODEL 2CGD50LRC4

NAMES: Lower forward gun turret

Fore lower gun turret



(Continued on page 201)



TURRET—LOWER FORWARD GUN

(Continued from page 200)

DESCRIPTION: This remotely controlled turret, housing two .50 caliber M2 machine guns, is supported in the B-29 airplane by means of a mounting ring and saddle assembly. It is electrically operated by two amplidyne motor-generators; one drive motor for horizontal rotation of the turret, and another, for movement of the guns in elevation and depression. Two ammunition cases, each with a capacity of approximately 560 rounds of .50 caliber ammunition, are mounted above the guns. A collector unit with twenty-five slip rings is mounted on the axis of rotation of the turret, to furnish electrical power to the various units in it.

When not in use, the turret is turned so the guns are horizontal and pointed aft. It is latched in this position to prevent accidental movement, resulting in an increase in drag.

CHARACTERISTICS:

Dome diameter.....	approximately 40 $\frac{5}{16}$ inches
Ring diameter.....	approximately 38 inches
Height to ring.....	approximately 28 $\frac{31}{32}$ inches
Height overall.....	approximately 42 $\frac{11}{32}$ inches
Weight.....	approximately 290 pounds
Rotation in azimuth.....	360 degrees
Movement in depression.....	95 degrees

RELATIONSHIP OF PARTS: Used with:

Turret drive motor, A. E. Reference Number 52-3065; Amplidyne motor generator, A. E. Reference Number 52-3040; Gun charger, A. E. Reference Number 52-1720; and Selsyns, A. E. Reference Number 52-4210.

ARMY

A. E. REFERENCE NUMBER: 52-6871

A. S. C. STOCK NUMBER: Refer to chart.

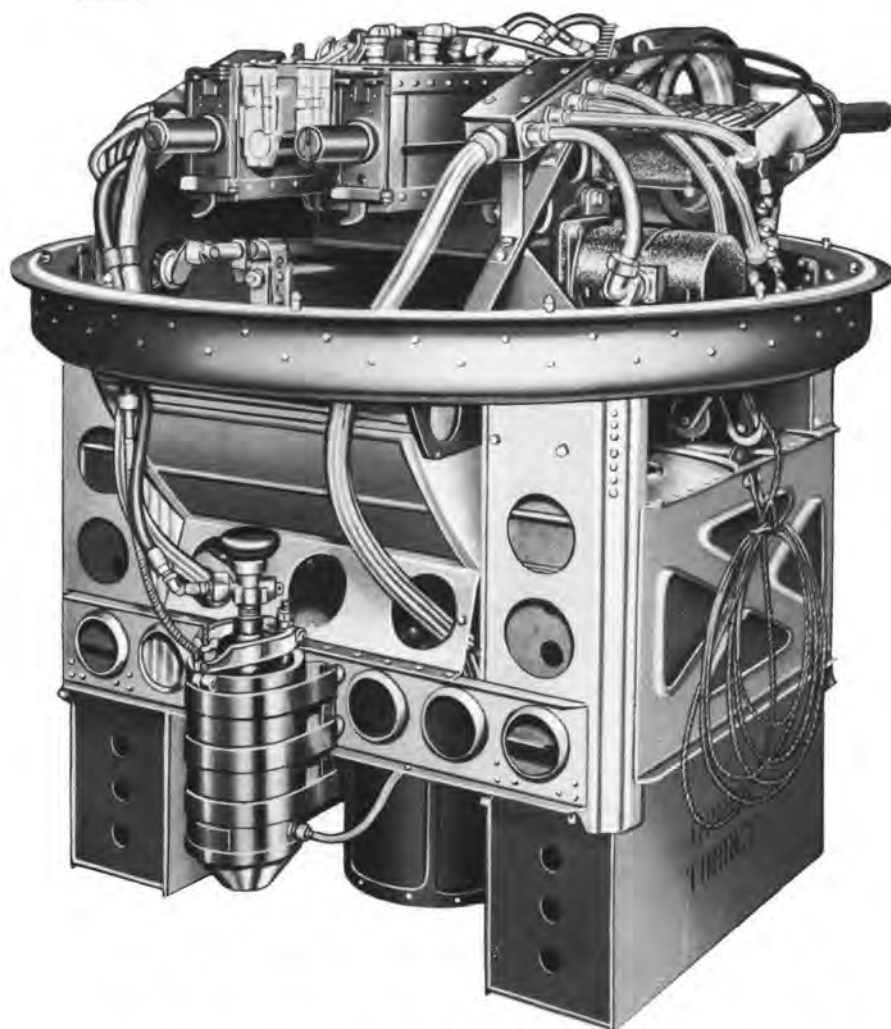
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

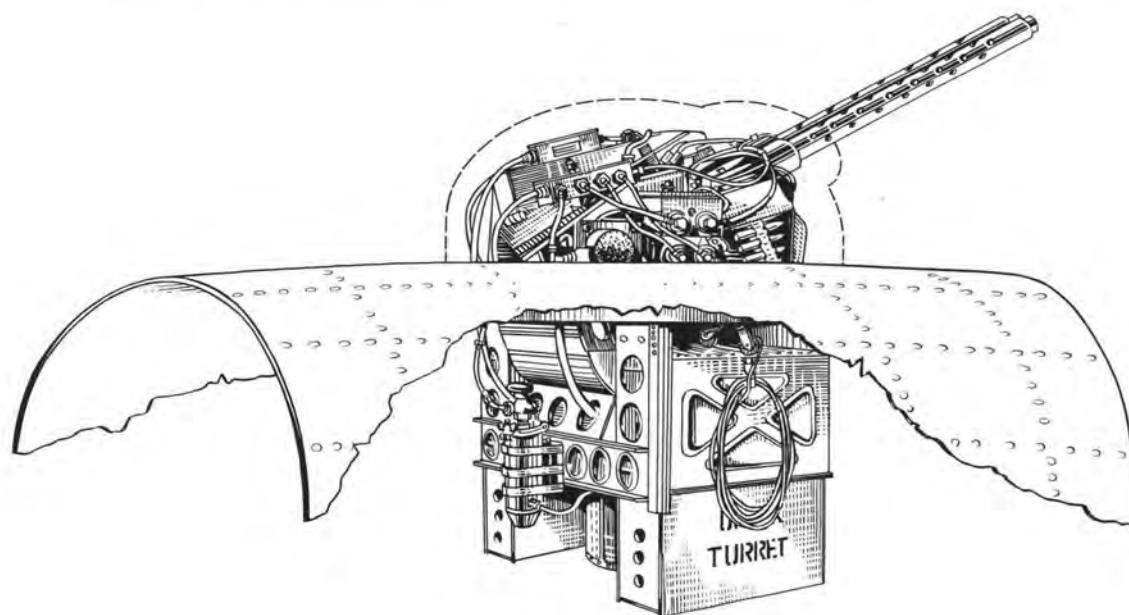
Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Manufacturer's Specification	Used On Airplane	Remarks
General Electric Company	2CGD50LRC4	WW-8009113 Group 1	A	GO-18393-B-1	B-29 fore	
	2CGD50LRC5	WW-8009114 Group 1	A	GO-18393-B-1	B-29 aft	Uses different contour follower and fire interrupter.
	2CGD50LRC1	WW-8019523 Group 1	A	GO-17397-B	A-26	Uses different contour follower and fire interrupter.



TURRET—UPPER AFT GUN
GENERAL ELECTRIC COMPANY MODEL 2CGD5OURC4

NAMES: Upper aft gun turret

Rear upper gun turret



(Continued on page 203)



TURRET—UPPER AFT GUN

(Continued from page 202)

DESCRIPTION: This remotely controlled turret, housing two .50 caliber M2 machine guns, is supported in the B-29 airplane by means of a mounting ring and saddle assembly. It is electrically operated by two drive motors, each powered by an amplidyne motor-generator; one drive motor for horizontal rotation of the turret, the other, for movement of the guns in elevation and depression. Two ammunition cases, each with a capacity of approximately 560 rounds of .50 caliber ammunition, are mounted below the guns. A collector unit with twenty-five slip rings is mounted on the axis of rotation of the turret, to furnish electrical power to the various units in it.

When not in use, the turret is turned so the guns are horizontal and pointed aft. It is latched in this position to prevent accidental movement which might result in an increase in drag.

CHARACTERISTICS:

Dome diameter.....	approximately 40 $\frac{5}{16}$ inches
Ring diameter.....	approximately 38 inches
Height to ring.....	approximately 28 $\frac{13}{32}$ inches
Height overall.....	approximately 41 $\frac{1}{8}$ inches
Weight.....	approximately 290 pounds
Rotation in azimuth.....	360 degrees
Movement in elevation.....	from -5 degrees to +90 degrees

RELATIONSHIP OF PARTS: Used with:

Turret drive motor, A. E. Reference Number 52-3065, Amplidyne motor-generator, A. E. Reference Number 52-3040, Gun charger, A. E. Reference Number 52-1720; and Selsyn, A. E. Reference Number 52-4210.

ARMY

A. E. REFERENCE NUMBER: 52-6872

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

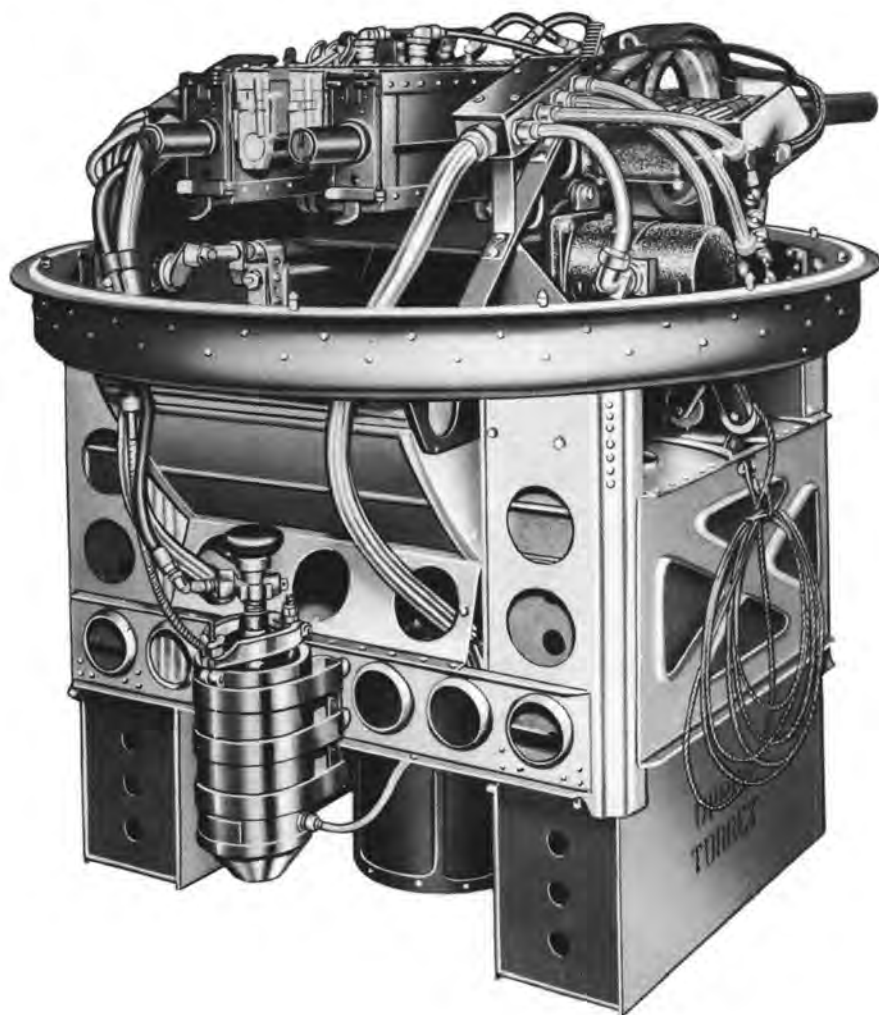
NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Manufacturer's Specification	Used on Airplanes	Remarks
General Electric Company	2CGD50URC4	WW-8009112, Group 1	A	GO-18393-B-1	B-29 aft	
	2CGD50URC3	WW-8009111, Group 1	A	GO-18393-B-1	B-29 fore	*
	2CGD50URC1	WW-8019524, Group 1	A	GO-17397-B	A-26	*

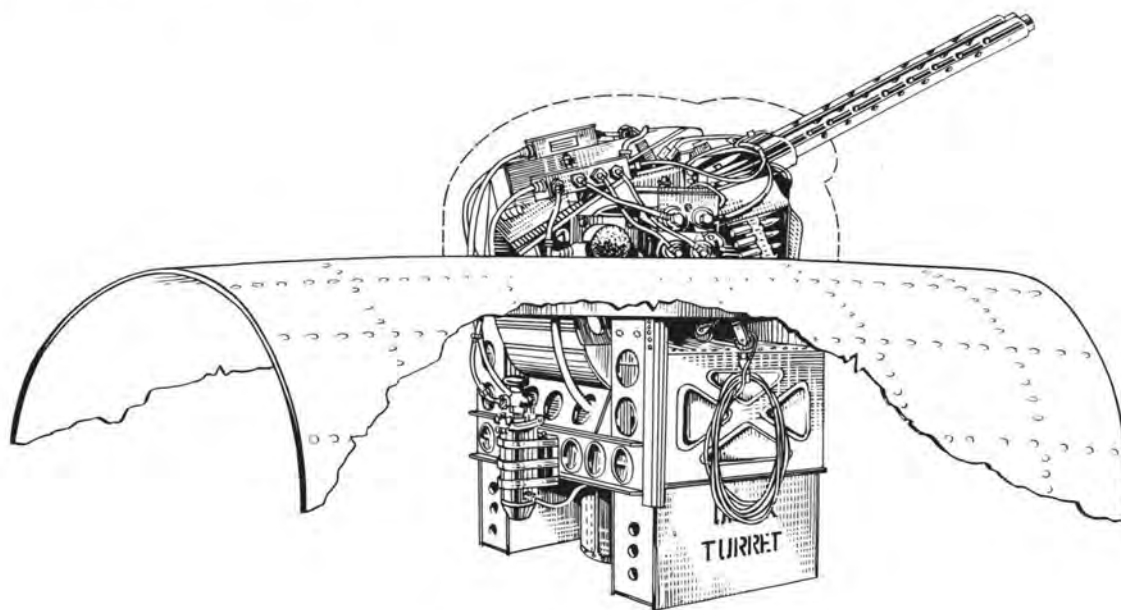
*Uses different contour follower and fire interrupter.



TURRET—UPPER FORWARD
GENERAL ELECTRIC COMPANY MODEL 2CGD5OURC3

NAMES: Upper forward turret

Fore upper turret



(Continued on page 205)



TURRET—UPPER FORWARD

(Continued from page 204)

DESCRIPTION: This remotely controlled turret, housing two .50 caliber M2 machine guns, is supported in the B-29 airplane by means of a mounting ring and saddle assembly. It is electrically operated by two drive motors, each powered by an amplidyne motor-generator; one drive motor for horizontal rotation of the turret, the other, for movement of the guns in elevation and depression. Two ammunition cases, each with a capacity of approximately 560 rounds of .50 caliber ammunition, are mounted below the guns. A collector unit with twenty-five slip rings is mounted on the axis of rotation of the turret to furnish electrical power to the various units in it.

When not in use, the turret is turned so the guns are horizontal and pointed aft. It is latched in this position to prevent accidental movement, which might result in an increase in drag.

CHARACTERISTICS:

Dome diameter	approximately 40 $\frac{5}{16}$ inches
Ring diameter	approximately 38 inches
Height to ring	approximately 28 $\frac{13}{32}$ inches
Height overall	approximately 41 $\frac{1}{8}$ inches
Weight	approximately 290 pounds
Rotation in azimuth	360 degrees
Movement in elevation	92.5 degrees

RELATIONSHIP OF PARTS: Used with:

Turret drive motor, A. E. Reference Number 52-3065; Amplidyne motor-generator, A. E. Reference Number 52-3040; Gun charger, A. E. Reference Number 52-1720; and Selsyn, A. E. Reference Number 52-4210.

ARMY

A. E. REFERENCE NUMBER: 52-6873

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

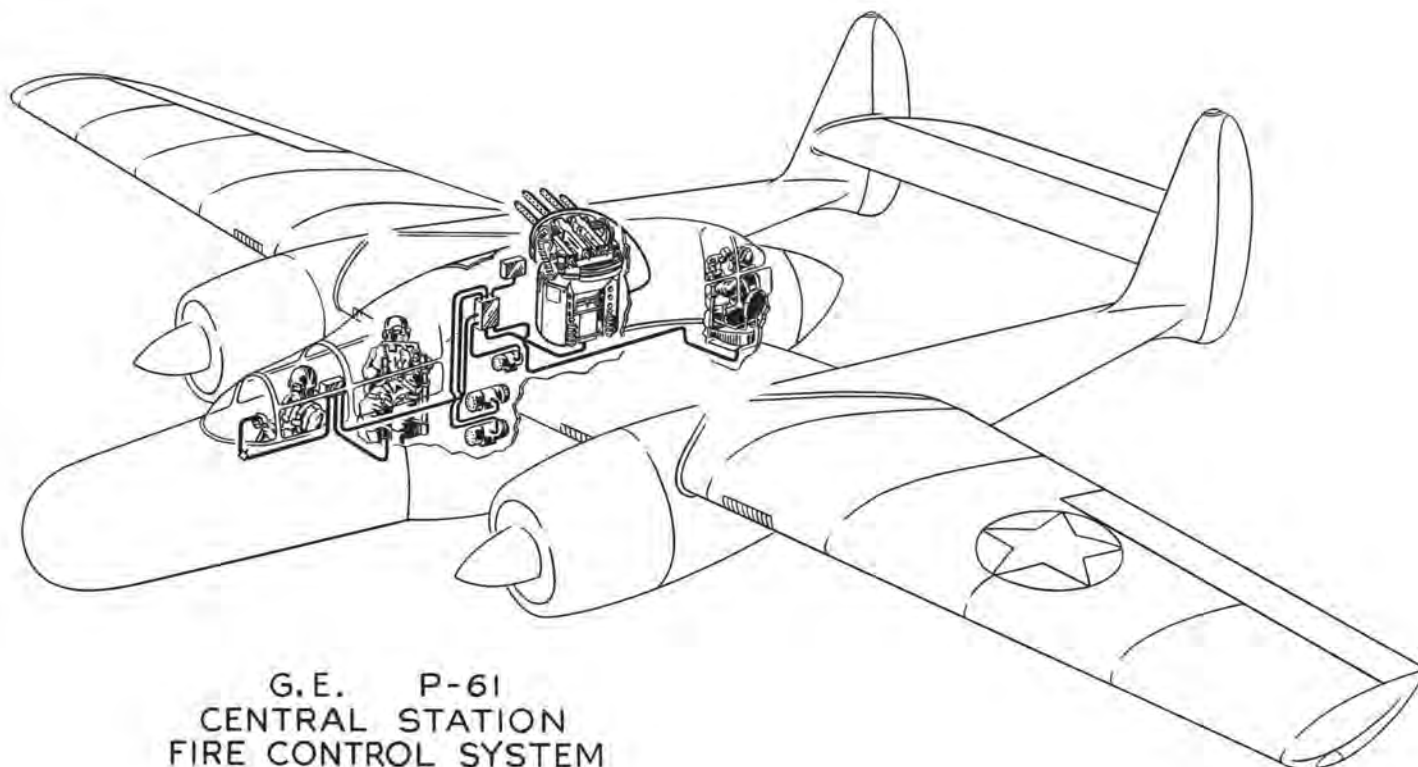
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Manufacturer's Specification	Used on Airplanes	Remarks
General Electric Company	2CGD50URC3	WW-8009111, Group 1	A	GO-18393-B-1	B-29 fore	
	2CGD50URC1	WW-8019524, Group 1	A	GO-17397-B	A-26	*
	2CGD50URC4	WW-8009112, Group 1	A	GO-18393-B-1	B-29 aft	*

*Uses different contour follower and fire interrupter.



G.E. P61 CENTRAL STATION FIRE CONTROL SYSTEM



G.E. P-61
CENTRAL STATION
FIRE CONTROL SYSTEM

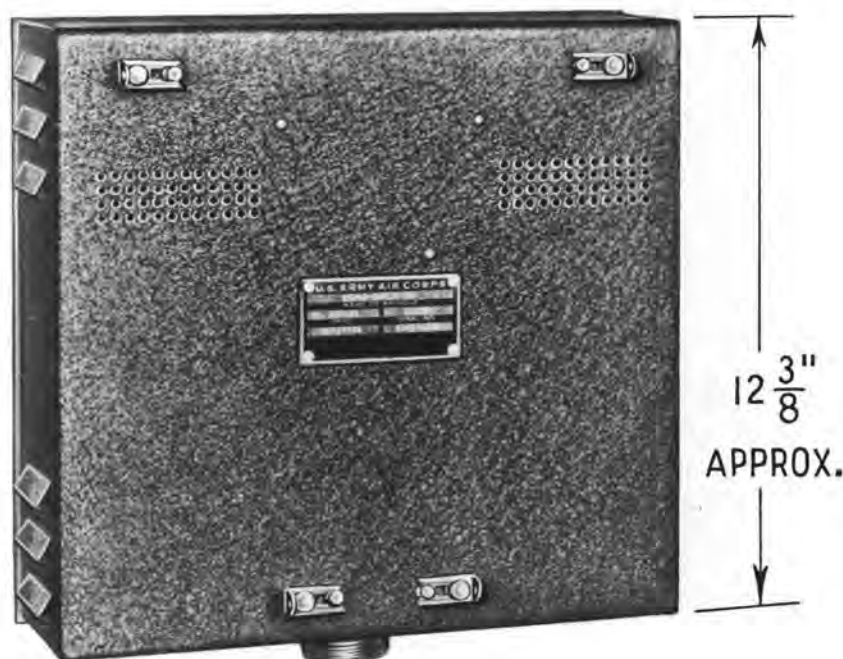
The GE Model 2CFR12A3 (P-61) central station fire control system unites the entire complement of the airplane's machine guns into a single system so that one four gun turret is remotely controlled from two sighting stations. The general arrangement of the system is shown in the accompanying illustration.

The armament consists of a turret located in the upper deck of the airplane, and carrying four .50 caliber M2 machine guns. These guns fire simultaneously, each at the rate of approximately 800 rounds per minute. The turret rotates through 360 degrees horizontally and the guns move 90 degrees in elevation.

The operation of the turret is electrically controlled from either the forward or aft sighting station. The control system enables the gunner to control all movement of the turret automatically, from a remote position, by merely moving a sight. As the sight is moved to new positions, while tracking the target, the guns follow automatically and instantaneously. The gunner in each of the sighting stations and the pilot can control the firing. The forward gunner has full control of the turret at all times, unless he chooses to transfer control to the rear gunner. The front gunner may also transfer firing control to the pilot by bringing the guns directly forward and latching the turret.

The items of government furnished equipment which comprise this system are listed in the following pages:

<i>A. E. Reference Number</i>	<i>Item</i>	<i>A. E. Reference Number</i>	<i>Item</i>
52-6801	Servo-amplifier	52-3040	Amplidyne motor-generator
52-6802	Control box	52-4210	Selsyn
52-6803	Junction box	52-6804	Upper gun turret
52-2575	Dynamotor	52-1720	Gun charger



SERVO-AMPLIFIER

GENERAL ELECTRIC COMPANY MODEL 2CV1B1

DESCRIPTION: The servo-amplifier, which may be located at any convenient point in the airplane, is a rectangular box containing vacuum tubes, transformers, condensers, and resistors.

This device amplifies a signal voltage from a selsyn receiver, and then rectifies it from alternating to direct current, to make it suitable for exciting the field of an amplidyne motor-generator.

This signal occurs only when there is misalignment between the sight and the guns, resulting in a small signal voltage passing between transmitter and receiver selsyns. The amount of this voltage is proportionate to the amount of the misalignment.

The servo-amplifier is constantly supplied with power from the dynamotor. In this way, it is always in readiness to respond to a signal.

CHARACTERISTICS:

Dimensions.....	approximately 12 $\frac{3}{8}$ by 11 $\frac{1}{2}$ by 5 $\frac{1}{16}$ inches
Weight.....	approximately 14 pounds

RELATIONSHIP OF PARTS:

This servo-amplifier may be used as a part of the P-61 central station fire control system or the A-26 central station fire control system.

ARMY

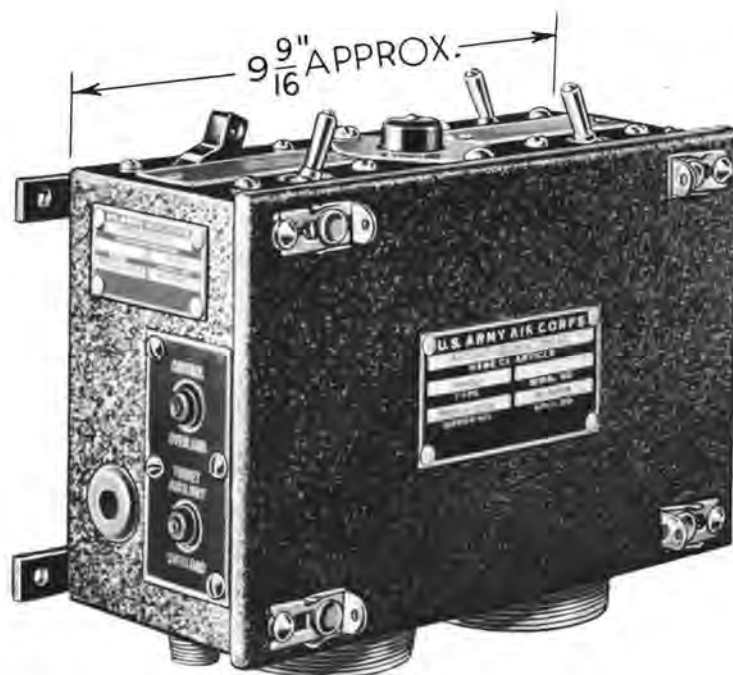
A. E. REFERENCE NUMBER: 52-6801
 MANUFACTURER: General Electric Company
 MANUFACTURER'S MODEL NUMBER: 2CV1B1
 MANUFACTURER'S DRAWING NUMBER: T-8007523, Group 1
 MANUFACTURER'S SPECIFICATION: GO-17400-B; GO-17397-B
 A. S. C. STOCK NUMBER: 5900642550
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent to the Army item.



FIRE CONTROL SYSTEMS ARMAMENT—GUNNERY



BOX—CONTROL

GENERAL ELECTRIC COMPANY DRAWING NUMBER T-8007519, GROUP 1

NAME: Control box

DESCRIPTION: This control box provides the forward gunner in the P-61 airplane with the necessary switches and controls for the proper operation of the fire control system. An **ALTERNATING CURRENT POWER** switch controls a dynamotor, a **TURRET POWER** switch controls the amplidyne motor-generators, and a **FIRE SELECTOR** switch transfers the control of firing from the gunners to the pilot. The box also contains a camera switch and three overload relays.

The alternating current power switch is of the overload circuit-breaker type. It controls the direct current power supply to the dynamotor, and furnishes positive direct current feed for other components of the system.

The turret power switch furnishes current to the contactor which controls starting of the amplidyne motor-generator. It also controls power supplied to the field coils of the two drive motors and to the gun firing solenoids in the turret.

The fire selector switch is of the double-pole, double-throw type, one side of which is in the firing circuit; the other side in the selector circuit. It has three positions, **GUNNER**, **SAFE**, and **PILOT**.

The camera switch is of the single-pole, single throw type and is located on the ground side of the gun camera unit.

CHARACTERISTICS:

Dimensions.....	approximately 9 $\frac{9}{16}$ by 6 $\frac{11}{16}$ by 4 inches
Weight.....	approximately 4 pounds

RELATIONSHIP OF PARTS:

Used in the P-61 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6802
 MANUFACTURER: General Electric Company
 MANUFACTURER'S DRAWING NUMBER: T-8007519, Group 1
 MANUFACTURER'S SPECIFICATION: GO-17400-B
 A. S. C. STOCK NUMBER: 5900092848
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



BOX—JUNCTION

GENERAL ELECTRIC COMPANY DRAWING NUMBER T-8007523, GROUP 1

NAME: Junction box

DESCRIPTION: This junction box, located between the turret and the forward gunner's compartment, contains the connector relays, the amplidyne contactor, firing contactor, and the capacitors used in the P-61 fire control system.

The purpose of the connectors is to provide easily disconnected inlets and outlets for power cable. The relays transfer control of the turret from one sighting station to the other, and open and close the contactors for the amplidynes, gun-firing and camera circuits. The capacitors prevent current fluctuations from affecting the turret amplidynes.

CHARACTERISTICS:

Dimensions	approximately 9 $\frac{5}{8}$ by 13 $\frac{5}{8}$ by 4 $\frac{1}{4}$ inches
Weight	approximately 10 pounds

RELATIONSHIP OF PARTS:

This junction box is part of the P-61 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6803
 MANUFACTURER: General Electric Company
 MANUFACTURER'S DRAWING NUMBER: T-8007523, Group 1
 MANUFACTURER'S SPECIFICATION NUMBER: GO-17400-B
 A. S. C. STOCK NUMBER: 5900092849
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



**DYNAMOTOR
GENERAL ELECTRIC COMPANY MODEL 5D21FJ2A**

DESCRIPTION: This dynamotor, a six-pole, 8000 revolutions per minute motor-generator, furnishes alternating current at 115 volts and 400 cycles per second for the servo-amplifier and selsyns used in the P-61 fire control system. It consists of a 24 to 28 volt direct current shunt-wound motor on a common shaft with a 115 volt, 400 cycle per second generator. The entire assembly is enclosed in a single housing. The motor operates from the airplane's power supply.

CHARACTERISTICS:

Dimensions.....	approximately 7 $\frac{7}{16}$ by 5 $\frac{15}{32}$ by 6 $\frac{9}{32}$ inches
Weight.....	approximately 9 pounds
Motor:	
Voltage.....	27 volts direct current
Current.....	17 amperes
Speed.....	8000 revolutions per minute
Generator:	
Voltage.....	110 volts alternating current
Current.....	3 to 5 amperes
Rating.....	400 cycles per second, single phase

RELATIONSHIP OF PARTS: Used with:
P-61 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-2575
 MANUFACTURER: General Electric Company
 MANUFACTURER'S MODEL NUMBER: 5D21FJ2A
 MANUFACTURER'S DRAWING NUMBER: T-5818166, Group 1
 MANUFACTURER'S SPECIFICATION NUMBER: GO-17400-B
 A. S. C. STOCK NUMBER: 5900264875
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



MOTOR-GENERATOR—AMPLIDYNE REMOTE CONTROL

GENERAL ELECTRIC COMPANY MODEL 5AM31NJ9

NAMES: Amplidyne remote control motor-generator Amplidyne Motor generator

DESCRIPTION: This type amplidyne motor-generator, used to supply current for the operation of remotely controlled machine gun turrets, consists essentially of a direct current electric motor and a direct current output generator mounted on the same shaft. In spite of the fact that the motor operates constantly to turn the shaft, there is no output from the generator unless the generator field is excited. This field requires only a small current to produce full generator output voltage. Minute variations in the field current instantaneously produce large variations in the generator's output. When the turret's guns and sight are in exact alignment no current is transmitted to the field; thus no output to the turret drive motor takes place even though the generator armature is turning. When the sight and guns are not in alignment, current is transmitted to the field and the generator produces voltage to cause the turret drive motor to align the guns with the sight. Two amplidyne motor-generators and two turret drive motors are required for each turret; one of each for movement of the guns in elevation and depression and the others for rotation of the turret.

CHARACTERISTICS:

Dimensions.....	approximately 12 by 7 $\frac{3}{8}$ by 6 inches.
Weight.....	approximately 29 pounds.
Revolutions per minute.....	8300.
Motor input:	
Voltage.....	27 volts, direct current
Current.....	44 amperes
Winding.....	Compound.
Generator output:	
Voltage.....	60 volts, direct current
Current.....	8.8 amperes
Power.....	530 watts
Winding.....	amplidyne.

RELATIONSHIP OF PARTS: Used in:

B-29 central station fire control system, P-61 central station fire control system and A-26 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-3040
A. S. C. STOCK NUMBER: Refer to chart.
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Manufacturer's Specification
General Electric Company	5AM31NJ9	P-8111135 outline TT-5818156 assembly	A	5900466500	OST-1B
Marathon Electric Manufacturing Corporation	5AM31NJ9	P-8111135 outline TT-5818156 assembly	A	5900466500	OST-1B



FIRE CONTROL SYSTEMS ARMAMENT—GUNNERY



SELSYN

GENERAL ELECTRIC COMPANY MODEL 2J1G1

DESCRIPTION: Selsyns provide an electrical means of transmitting azimuth and elevation positions of the sight, relative to the guns, in the central station fire control systems.

Certain selsyns, known as generators, are mounted on the machine gun turret, and have rotors geared to the horizontal ring gear and to the elevation drive gear. Other selsyns, called control transformers, are mounted in the sighting station, and have rotors which follow the movements of the sight in azimuth and in elevation. The electrical connection between the generator and control transformer is such that, when the guns and sight are aligned on the same target, the voltage between the selsyns is zero. When the sight is moved, a voltage generated from the rotor of the control transformer is transmitted to the rotor of the generator, causing the turret to move until it is again aligned with the sight.

The selsyns operate on the output of the dynamotor, which is 115 volts, 400 cycles per second, alternating current. Connection is made through the contact plugs on the brush end of the selsyn.

CHARACTERISTICS:

Dimensions.....	approximately 2¼ by 2¼ by 3½ inches
Weight.....	approximately 1 pound
Rating.....	115 volts, alternating current; 400 cycles per second; 3-5 amperes

RELATIONSHIP OF PARTS: Used with:

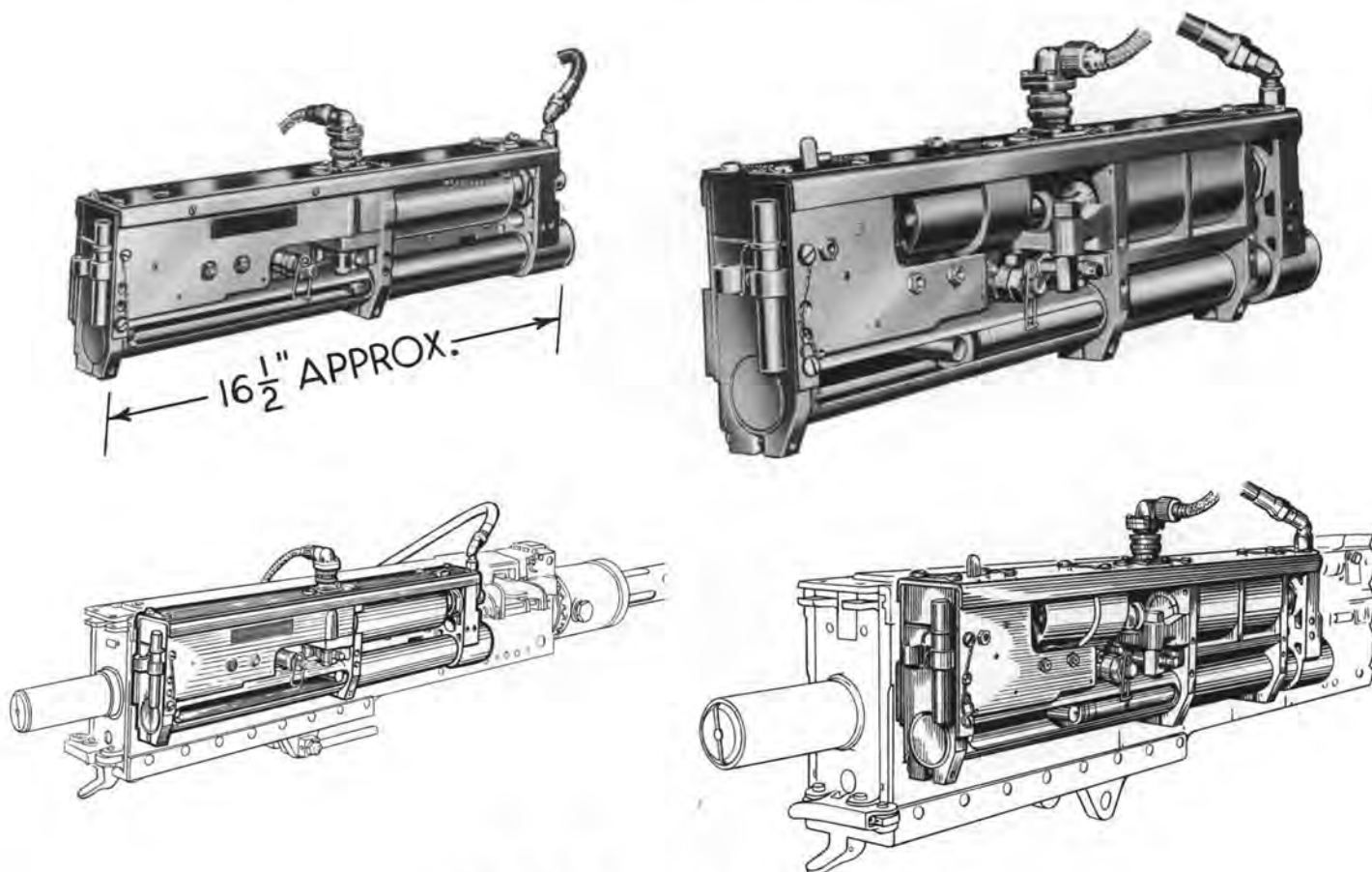
- P-61 Central Station Fire Control System
- B-29 Central Station Fire Control System
- A-26 Central Station Fire Control System

ARMY

A. E. REFERENCE NUMBER: 52-4210
 MANUFACTURER: General Electric Company
 MANUFACTURER'S MODEL: 2J1G1
 MANUFACTURER'S DRAWING NUMBER: P-6997744, Group 2
 MANUFACTURER'S SPECIFICATION NUMBER: GO-17400-B
 A. S. C. STOCK NUMBER: 5900642525
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit, including electrical connector.

NAVY

There is no Navy equivalent for the Army item.



CHARGER—GUN

GENERAL ELECTRIC COMPANY DRAWING NUMBER T-8252878, GROUP 1

NAMES: Gun charger
Compressed air gun charger

CO₂ charger
Carbon Dioxide charger

DESCRIPTION: This gun charger is mounted on the side of a .50 caliber M2 machine gun used in the G. E. central station fire control systems. It is electrically controlled, so that when a firing key is closed, the gun fires. The charger automatically operates to cock or charge the gun in the event of a misfire. Five or six cocking operations are repeated in rapid succession, after which the charger will stop, indicating difficulty due to causes other than defective ammunition.

To actuate the gun bolt, a piston acts against a stud that extends outward from the side of the gun. This stud is carried by the gun bolt, and projects through a guide slot into a cylinder. To operate the cylinder piston, compressed air, or gas, under a pressure of 1000 pounds per square inch, is admitted to the cylinder. The admission of the gas is controlled by a valve mechanism, which in turn is operated by an electromagnet known as the charging solenoid.

CHARACTERISTICS:

Dimensions..... approximately 16½ by 4¾ by 2¾ inches.
Weight..... approximately 10½ pounds.

RELATIONSHIP OF PARTS: Used with:

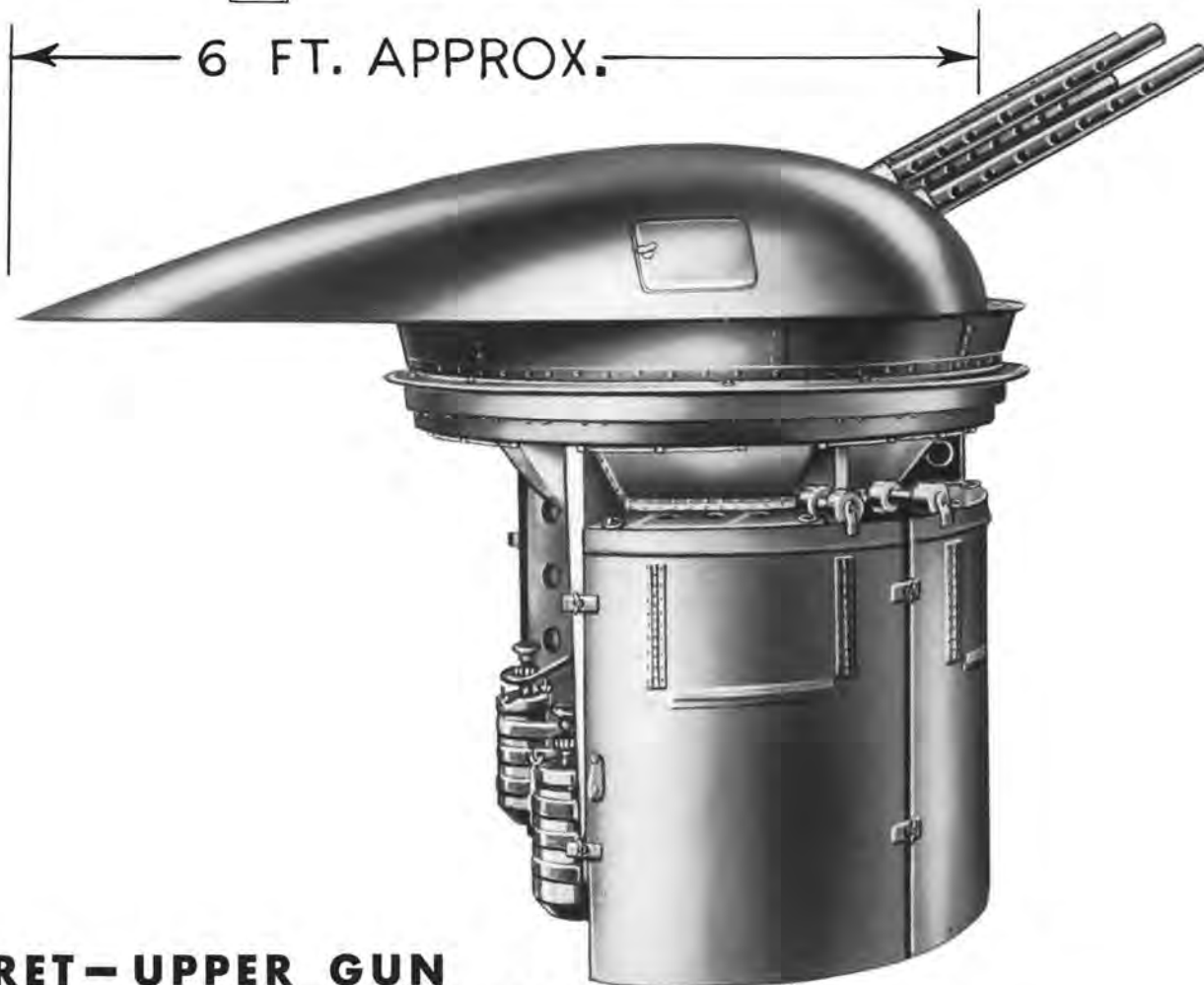
B-29 central station fire control system, P-61 central station fire control system, and A-26 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-1720
MANUFACTURER: General Electric Company.
MANUFACTURER'S DRAWING NUMBER: T-8252878, Group 1
MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1; GO-17400-B; and GO-17397-B.
A. S. C. STOCK NUMBER: 5900170000
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

**TURRET—UPPER GUN****GENERAL ELECTRIC COMPANY MODEL 2CGQ5OURA4**

NAME: Upper gun turret

DESCRIPTION: This remote controlled turret, housing four .50 caliber M2 machine guns, is supported in the P-61 airplane by means of a ring and saddle assembly secured to the fuselage structure. It is electrically operated by two drive motors, each powered by an amplidyne motor-generator. One drive motor is for horizontal rotation of the turret, the other for the elevation and depression of the guns. Four ammunition cases, each with a capacity of approximately 560 rounds of .50 caliber ammunition, are mounted beneath the guns on the frame and chute assembly. A collector unit with twenty-five slip rings is mounted on the axis of rotation of the turret, to furnish power to the various units.

CHARACTERISTICS:

Diameter.....	approximately 43½ inches
Height.....	approximately 55½ inches
Weight.....	approximately 483 pounds
Rotation in azimuth.....	360 degrees
Elevation of guns.....	90 degrees above horizontal
Operating voltage.....	28.5 volts direct current

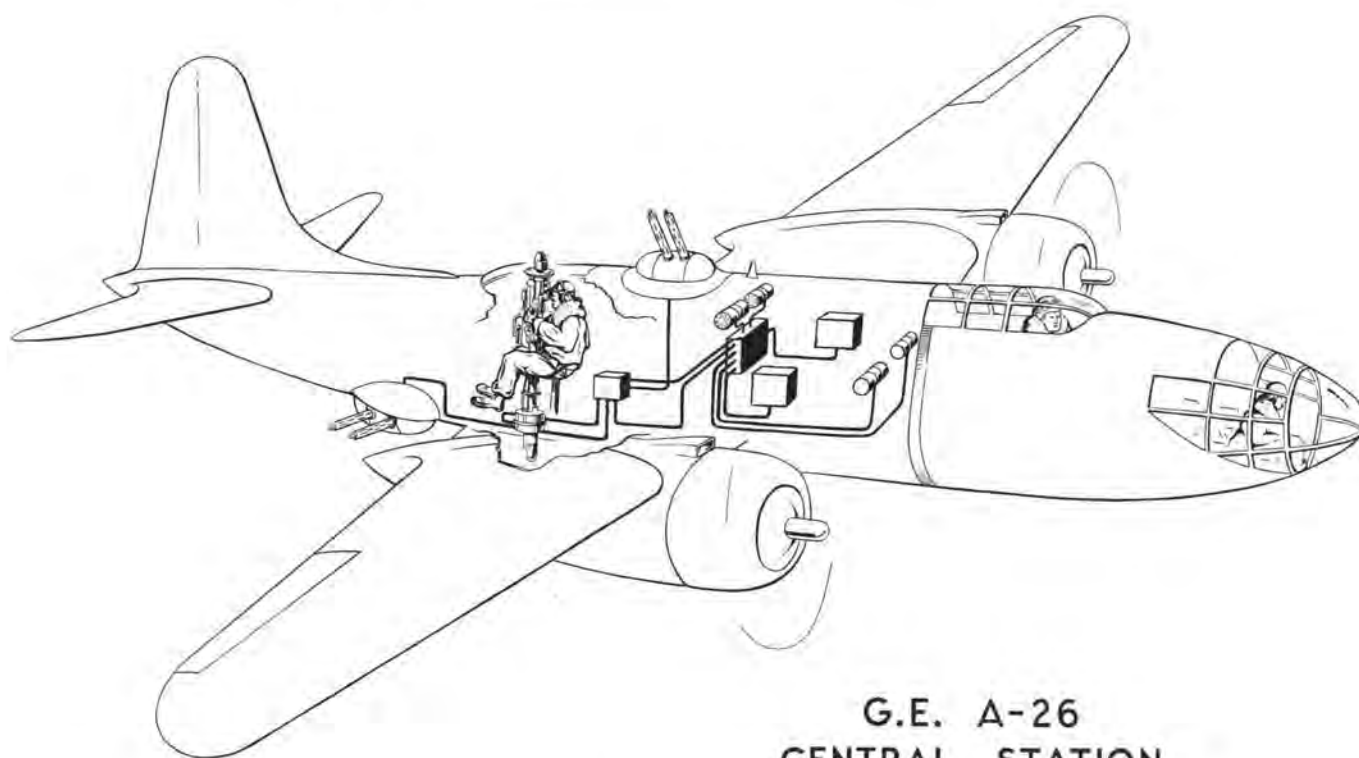
RELATIONSHIP OF PARTS: Used with:
P-61 central station fire control system

ARMY

A. E. REFERENCE NUMBER: 52-6804
 MANUFACTURER: General Electric Company
 MANUFACTURER'S MODEL NUMBER: 2CGQ5OURA4
 MANUFACTURER'S DRAWING NUMBER: WW-8019517, Group 3
 MANUFACTURER'S SPECIFICATION NUMBER: GO-17400-B
 A. S. C. STOCK NUMBER: 5900883000
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



**G.E. A-26
CENTRAL STATION
FIRE CONTROL SYSTEM**

G. E. A-26 CENTRAL STATION FIRE CONTROL SYSTEM

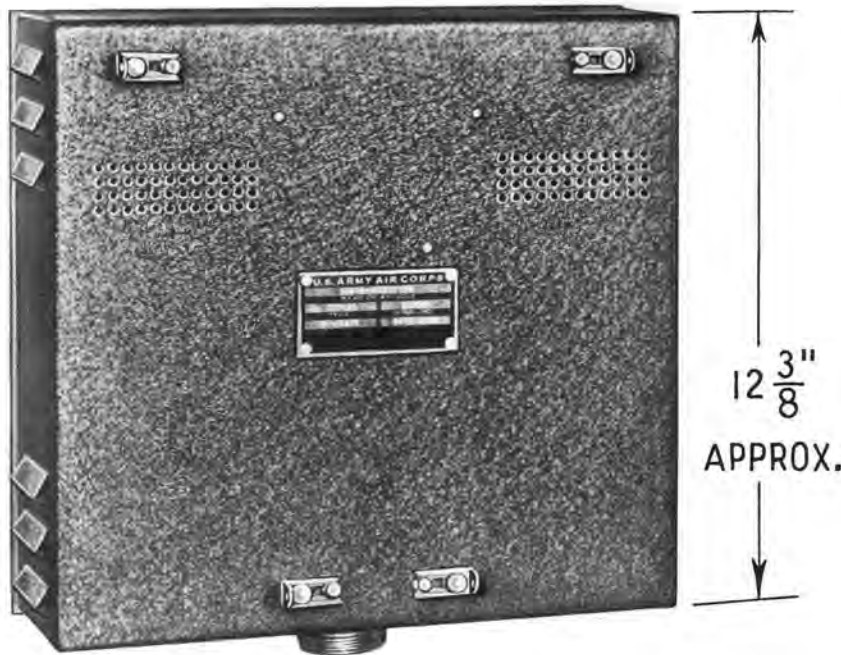
The G. E. Model 2CFR21B3 central station fire control system is installed in the A-26 airplane. The system consists of an upper and a lower turret, each mounting two .50 caliber machine guns, and both controlled from one double end periscopic sighting station. The upper head of the periscope sight can follow a target from straight overhead down to ten degrees below the horizontal, whereupon the line of sight is automatically switched to the lower head. The lower head can then follow the target to a position vertically below the airplane. As the heads are capable of complete rotation, the sight coverage is two complete overlapping hemispheres. The gunner is, therefore, able to scan the sky through a plexiglass window, pick out the target, align the head with it and then track it.

The system is divided into an upper and a lower turret control circuit. The two circuits are similar, except that the pilot can also fire the upper turret. This is possible only when the gunner transfers fire control to him by bringing the guns directly forward and then latching the turret.

The operation of either turret is electrically controlled by the gunner, simply by moving his sight. As the sight is moved in tracking the target, the guns follow, automatically and instantaneously.

The items of government furnished equipment which comprise this system are listed in the following pages:

<i>A. E. Reference Number</i>	<i>Item</i>	<i>A. E. Reference Number</i>	<i>Item</i>
42-6801	Servo-amplifier	52-6703	Sighting station
52-6701	Control box	52-6704	Lower gun turret
52-6702	Junction box	52-6705	Upper gun turret
52-2580	Dynamotor	52-1720	Gun charger
52-3040	Amplidyne, motor-generator		



SERVO-AMPLIFIER

GENERAL ELECTRIC COMPANY MODEL 2CV1B1

DESCRIPTION: The servo-amplifier, which may be located at any convenient point in the airplane, is a rectangular box containing vacuum tubes, transformers, condensers, and resistors.

This device amplifies a signal voltage from a selsyn receiver, and then rectifies it from alternating to direct current, to make it suitable for exciting the field of an amplidyne motor-generator.

This signal occurs only when there is misalignment between the sight and the guns, resulting in a small signal voltage passing between transmitter and receiver selsyns. The amount of this voltage is proportionate to the amount of the misalignment.

The servo-amplifier is constantly supplied with power from the dynamotor. In this way, it is always in readiness to respond to a signal.

CHARACTERISTICS:

Dimensions.....approximately $12\frac{3}{8}$ by $11\frac{1}{2}$ by $5\frac{1}{16}$ inches
Weight.....approximately 14 pounds

RELATIONSHIP OF PARTS:

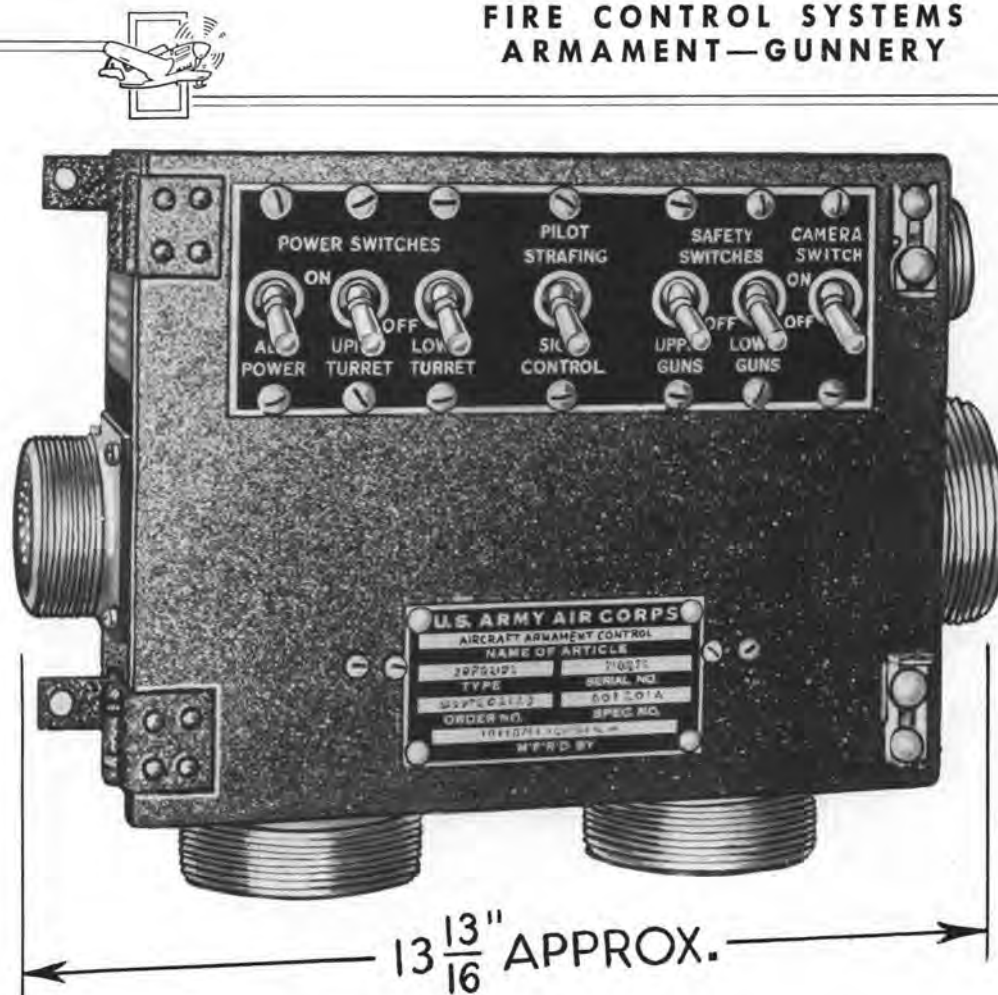
This servo-amplifier may be used as a part of the P-61 central station fire control system or the A-26 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6801
MANUFACTURER: General Electric Company
MANUFACTURER'S MODEL NUMBER: 2CV1B1
MANUFACTURER'S DRAWING NUMBER: T-8007523, Group 1
MANUFACTURER'S SPECIFICATION: GO-17400-B; GO-17397-B
A. S. C. STOCK NUMBER: 5900642550
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent to the Army item.

**BOX—CONTROL****GENERAL ELECTRIC COMPANY DRAWING NUMBER T-8252925, GROUP 1**

NAMES: Control box

Switch box

DESCRIPTION: This control box provides the gunner at the periscopic sight in the A-26 airplane with the necessary switches and controls for the proper operation of the fire control system.

There are two power switches, one for each turret, which control starting of the amplidyne motor generator and power supplied to the field coils of the two drive motors.

The fire selector switch permits firing of the upper turret by the pilot, or firing of either of the turrets by the gunner. When the upper turret is latched in the forward position, it may be used for offensive "strafing."

Two safety switches control the power to the gun firing solenoids in the turrets.

Another power switch controls a tell-tale indicator. This indicator, located on the cockpit dash panel, informs the pilot that his gunner is endeavoring to fire at a target which is obscured by the airplane's tail. The pilot then shifts the ship about to enable the guns to be fired at the target.

CHARACTERISTICS:

Dimensions.....approximately $13\frac{13}{16}$ by $8\frac{15}{16}$ by 5 inches
Weight.....approximately 6 pounds

RELATIONSHIP OF PARTS:

Used in the A-26 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6701

MANUFACTURER: General Electric Company

MANUFACTURER'S DRAWING NUMBER: T-8252925, Group 1

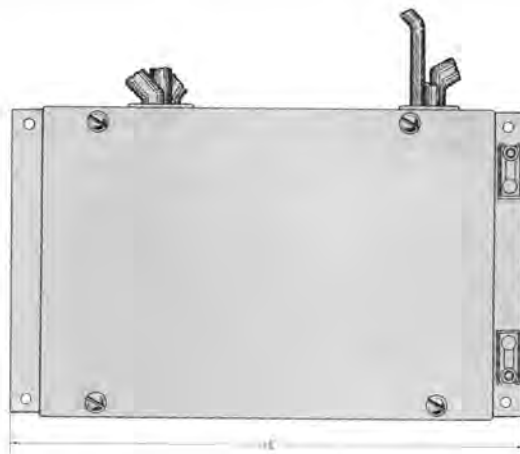
MANUFACTURER'S SPECIFICATION NUMBER: GO-17397-B

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



BOX-JUNCTION

GENERAL ELECTRIC COMPANY DRAWING NUMBER T-8252853, GROUP 1

NAME: Junction box

DESCRIPTION: This junction box contains the connector relays, the amplidyne contactors, fire contactors, and the overload circuit breakers used in the A-26 central station fire control system. The relays permit the gunner to control either the upper or lower turret, and also to open or close the amplidyne contactors and gun firing circuits. The circuit breakers prevent overloading of the amplidyne and dynamotors for the turrets.

CHARACTERISTICS:

Dimensions.....approximately $13\frac{3}{4}$ by $8\frac{3}{16}$ by $5\frac{5}{8}$ inches
Weight.....approximately 10 pounds

RELATIONSHIP OF PARTS:

Used in the A-26 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6702
MANUFACTURER: General Electric Company
MANUFACTURER'S DRAWING NUMBER: T-8252853, Group 1
MANUFACTURER'S SPECIFICATION NUMBER: GO-17397-B
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



DYNAMOTOR
GENERAL ELECTRIC MODEL 5D21NJ3A

NAMES:

DESCRIPTION: This dynamotor, a six pole, 8000 revolution per minute motor-generator, furnishes alternating current at 110 volts and 400 cycles per second, for the servo-amplifier and selsyns used in the B-29 and A-26 central station fire control systems. It consists of a 24 to 28 volt direct current shunt wound motor on a common shaft with a 110 volt single phase generator. The entire assembly is enclosed in a single housing. The motor operates from the airplane's power supply.

CHARACTERISTICS:

Dimensions.....	approximately $8\frac{15}{16}$ by $5\frac{15}{32}$ by $6\frac{3}{32}$ inches.
Weight.....	approximately 14 pounds.
Motor:	
Voltage.....	27 volts direct current.
Current.....	35 amperes.
Speed.....	8000 revolutions per minute.
Generator:	
Voltage.....	110 volts alternating current.
Current.....	4.4 amperes.
Rating.....	400 cycles per second single phase.

RELATIONSHIP OF PARTS: Used with:
B-29 and A-26 central station fire control systems.

ARMY

A. E. REFERENCE NUMBER: 52-2580
MANUFACTURER: General Electric Company.
MANUFACTURER'S MODEL NUMBER: 5D21NJ3A
MANUFACTURER'S DRAWING NUMBER: TT-8117016, Group 1
MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1; GO-17397-B
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



MOTOR-GENERATOR—AMPLIDYNE REMOTE CONTROL

GENERAL ELECTRIC COMPANY MODEL 5AM31NJ9

NAMES: Amplidyne remote control motor-generator Amplidyne Motor generator

DESCRIPTION: This type amplidyne motor-generator, used to supply current for the operation of remotely controlled machine gun turrets, consists essentially of a direct current electric motor and a direct current output generator mounted on the same shaft. In spite of the fact that the motor operates constantly to turn the shaft, there is no output from the generator unless the generator field is excited. This field requires only a small current to produce full generator output voltage. Minute variations in the field current instantaneously produce large variations in the generator's output. When the turret's guns and sight are in exact alignment no current is transmitted to the field; thus no output to the turret drive motor takes place even though the generator armature is turning. When the sight and guns are not in alignment, current is transmitted to the field and the generator produces voltage to cause the turret drive motor to align the guns with the sight. Two amplidyne motor-generators and two turret drive motors are required for each turret; one of each for movement of the guns in elevation and depression and the others for rotation of the turret.

CHARACTERISTICS:

Dimensions.....	approximately 12 by 7 $\frac{3}{8}$ by 6 inches.
Weight.....	approximately 29 pounds.
Revolutions per minute.....	8300.
Motor input:	
Voltage.....	27 volts, direct current
Current.....	44 amperes
Winding.....	Compound.
Generator output:	
Voltage.....	60 volts, direct current
Current.....	8.8 amperes
Power.....	530 watts
Winding.....	amplidyne.

RELATIONSHIP OF PARTS: Used in:

B-29 central station fire control system, P-61 central station fire control system and A-26 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-3040

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Manufacturer's Specification
General Electric Company	5AM31NJ9	P-8111135 outline TT-5818156 assembly	A	5900466500	OST-1B
Marathon Electric Manufacturing Corporation	5AM31NJ9	P-8111135 outline TT-5818156 assembly	A	5900466500	OST-1B



STATION—SIGHTING

GENERAL ELECTRIC COMPANY MODEL 2CSD1C1

NAMES: Sighting station
Periscopic sighting station

DESCRIPTION: The gunner at the periscopic sighting station in the A-26 airplane can see targets above or below the airplane, but he cannot see both at the same time.

The sight itself is a double-end periscope, having a rotating eyepiece located just below the top mounting flange. This eyepiece transfers the line of sight into the tube of the periscope either up or down, depending upon the area to be scanned. The gunner needs only to aim his sight at the target, and the selection of the line of sight is made automatically within the sighting station. A changeover mirror is rotated to change the line of sight from the upper periscope head to the lower head, or vice versa. This mirror is turned by a changeover motor whenever the line of sight intersects the fuselage, thus allowing the gunner to follow his target without pausing to shift the line of sight when the target moves above or below him.

The selsyn transmitters, indicating horizontal motion of the sight, are located near the bottom end of the periscope tube. The selsyns indicating vertical movement are located just behind the gunner's control grips. A firing trigger is incorporated in one of these grips.

A collector ring assembly, located near the base of this sighting station, enables the sight to be rotated 360 degrees without twisting the power cables. This supplies electric power while the sight is rotated.

CHARACTERISTICS:

Dimensions approximately 77 $\frac{1}{8}$ by 17 $\frac{1}{2}$ by 24 inches

Weight approximately 135 pounds

Required voltage . 28 volts direct current for lamp

110 volts alternating current for selsyns

Range 360 degrees in azimuth

90 degrees in elevation

90 degrees in depression

Field of view at
any one time . . . 70 degree cone

Lamp Kollsman 71-A-O

RELATIONSHIP OF PARTS: Used with:
A-26 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-6703

MANUFACTURER: General Electric Company

MANUFACTURER'S MODEL NUMBER: 2CSD1C1

MANUFACTURER'S DRAWING NUMBER: W-8009100, Group 1

MANUFACTURER'S SPECIFICATION NUMBER: GO-17397-B

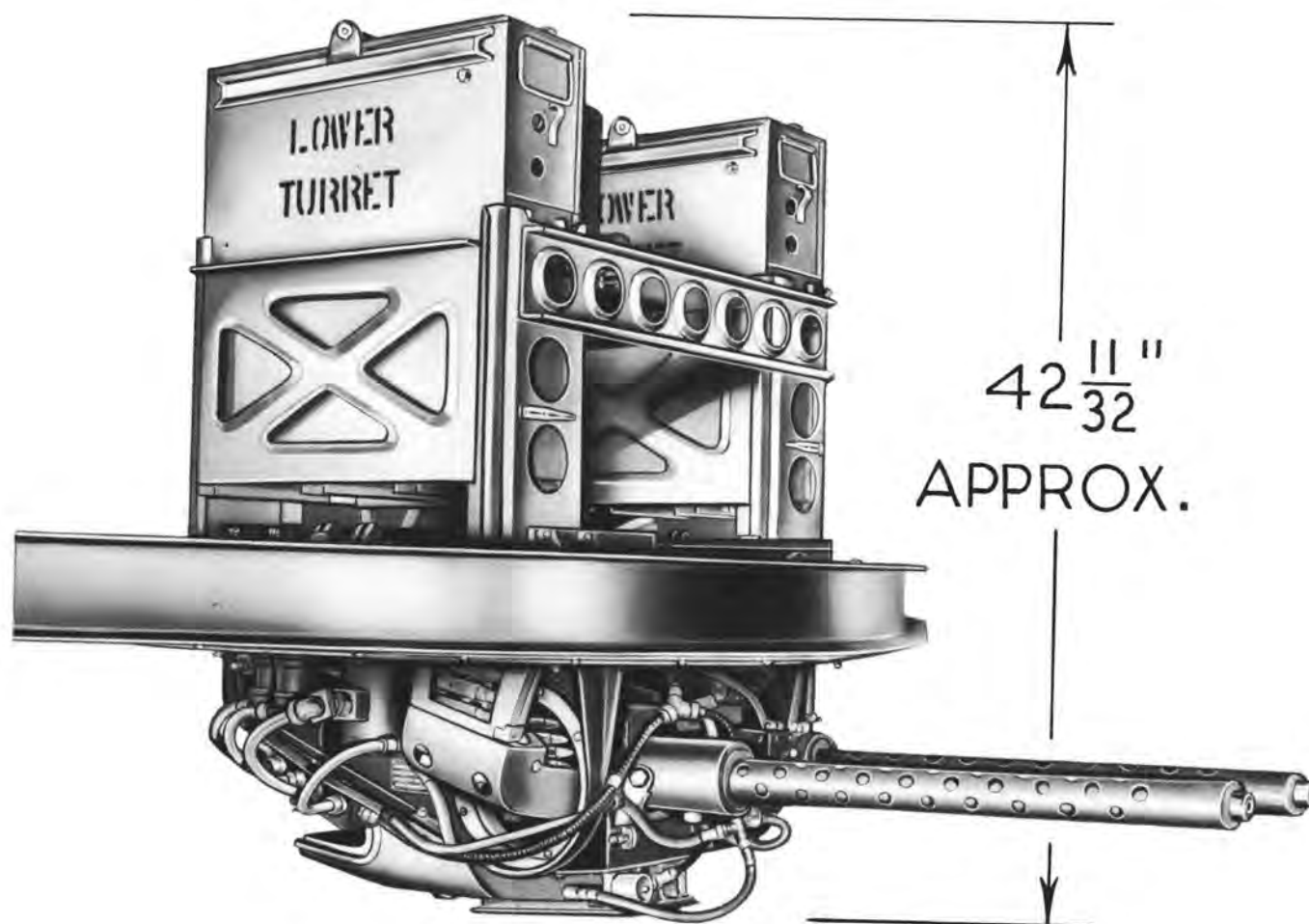
PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, including lamp and selsyns.

NAVY

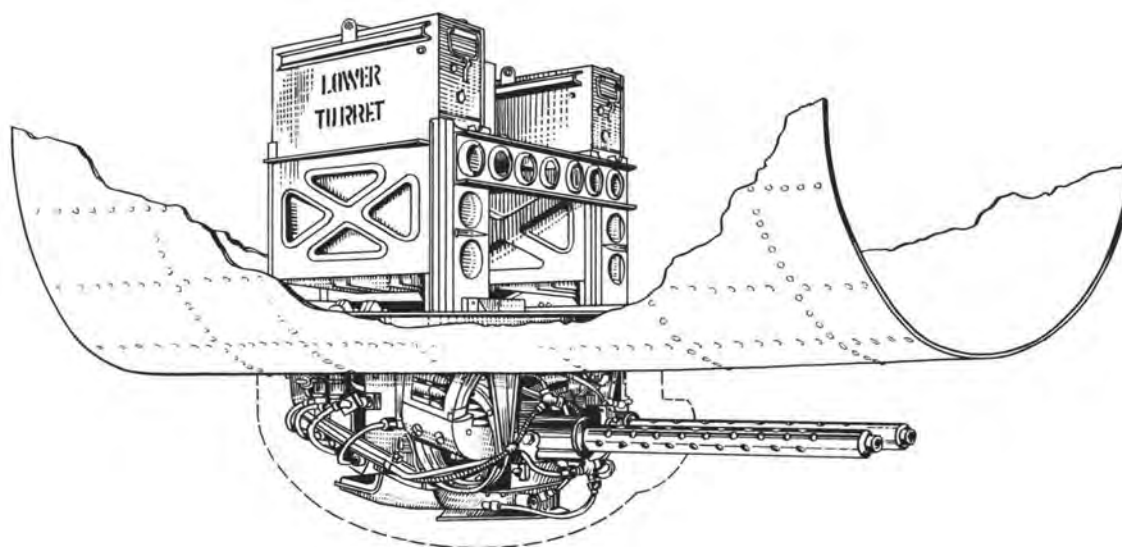
There is no Navy equivalent for the Army item.





TURRET—LOWER GUN
GENERAL ELECTRIC COMPANY MODEL 2CGD50LRC1

NAME: Lower gun turret



(Continued on page 223)



TURRET—LOWER GUN

(Continued from page 222)

DESCRIPTION: This remotely controlled turret, housing two .50 caliber M2 machine guns, is supported, in the A-26 airplane, by a mounting ring and saddle assembly. It is electrically operated by two drive motors, each powered by an amplidyne motor-generator; one drive motor for horizontal rotation of the turret, the other for movement of the guns in elevation and depression. Two ammunition cases, each with a capacity of approximately 560 rounds of .50 caliber ammunition, are mounted above the guns. A collector unit with twenty-five slip rings is mounted on the axis of rotation of the turret to furnish electrical power to the various units in it.

When not in use, the turret is turned so the guns are horizontal and pointed aft. It is latched in this position to prevent accidental movement, which might result in an increase in drag.

CHARACTERISTICS:

Dome diameter.....	approximately 40 $\frac{5}{16}$ inches
Ring diameter.....	approximately 38 inches
Height to ring.....	approximately 28 $\frac{1}{32}$ inches
Height overall.....	approximately 42 $\frac{1}{32}$ inches
Weight.....	approximately 275 pounds
Rotation in azimuth.....	360 degrees
Movement in depression.....	95 degrees

RELATIONSHIP OF PARTS: Used with:

Turret drive motor, A. E. Reference Number 52-3065; Amplidyne motor-generator, A. E. Reference Number 52-3040; Gun charger, A. E. Reference Number 52-1720; and Selsyns, A. E. Reference Number 52-4210.

ARMY

A. E. REFERENCE NUMBER: 52-6704

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

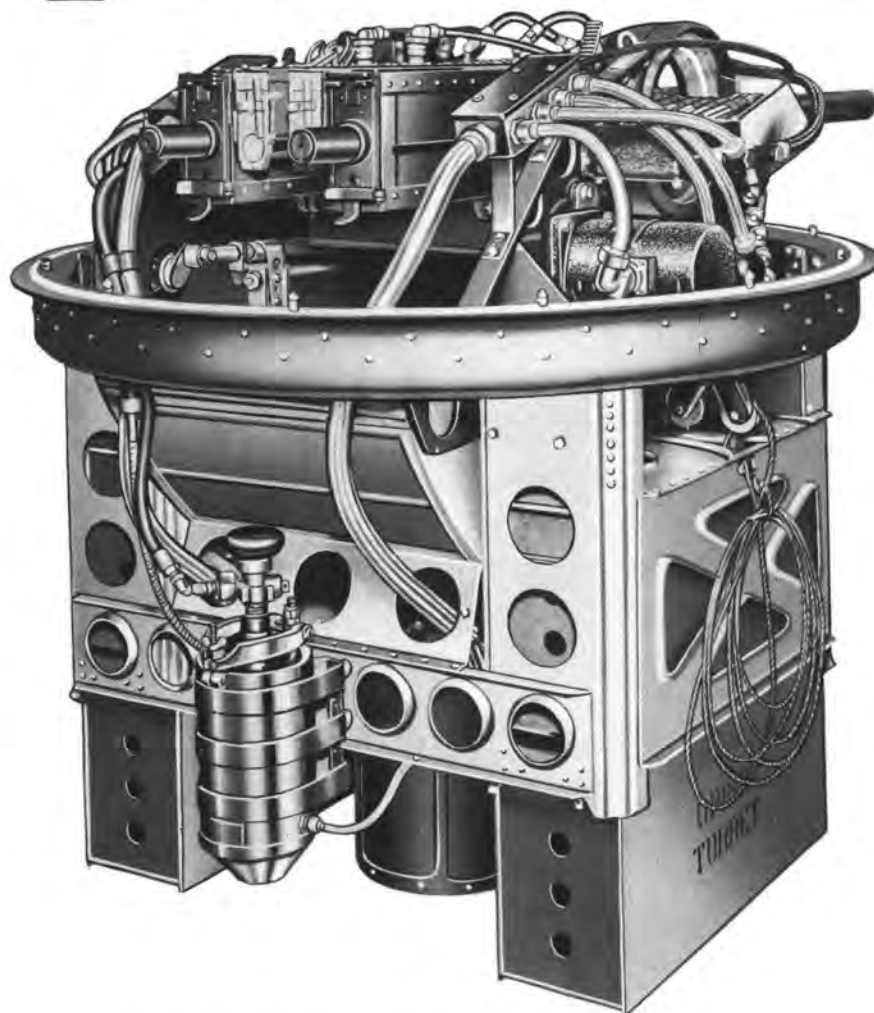
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Manufacturer's Specification	Used on Airplanes	Remarks
General Electric Company	2CGD50LRC1	WW-8019523	A	GO-17397-B	A-26	
	2CGD50LRC5	WW-8009114, Group 1	A	GO-18393-B-1	B-29 aft	*
	2CGD50LRC4	WW-8009113, Group 1	A	GO-18393-B-1	B-29 fore	*

*Uses different contour follower and fire interrupter.

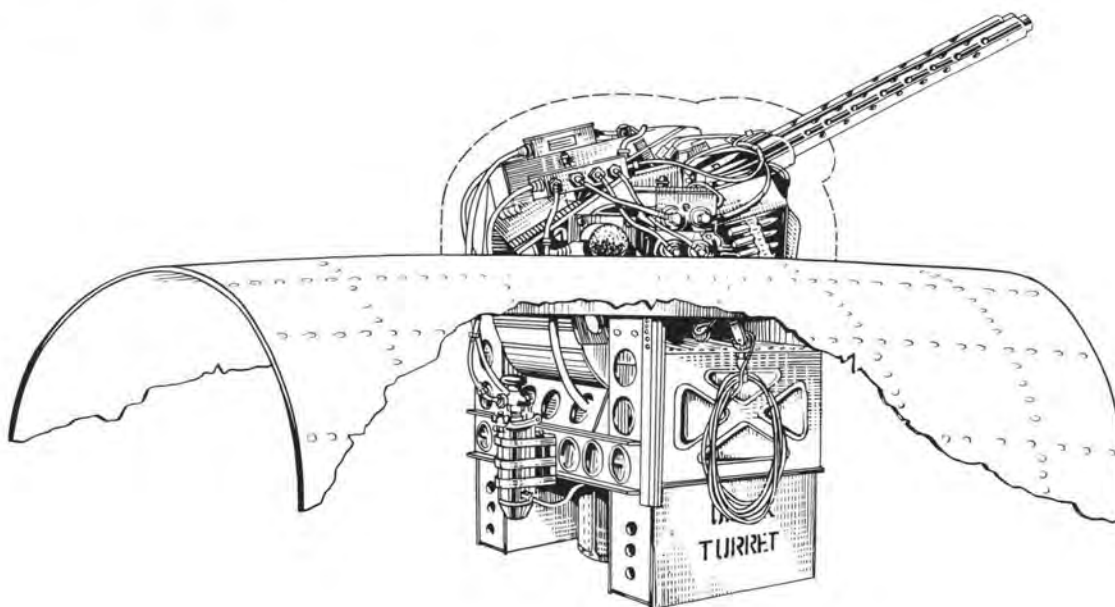


FIRE CONTROL SYSTEMS ARMAMENT—GUNNERY



TURRET—UPPER GUN GENERAL ELECTRIC COMPANY MODEL 2CGD5OURC1

NAME: Upper gun turret



(Continued on page 225)



TURRET—UPPER GUN

(Continued from page 224)

DESCRIPTION: This remotely controlled turret, housing two .50 caliber M2 machine guns, is supported, in the A-26 airplane, by a mounting ring and saddle assembly. It is electrically operated by two drive motors, each powered by an amplidyne motor-generator; one drive motor for horizontal rotation of the turret, the other for movement of the guns in elevation and depression. Two ammunition cases, each with a capacity of approximately 560 rounds of .50 caliber ammunition, are mounted below the guns. A collector unit with twenty-five slip rings is mounted on the axis of rotation of the turret, to furnish electrical power to the various units in it.

When not in use, the turret is turned so the guns are horizontal and pointed forward. It is latched in this position, and may be fired by the pilot when he aims the airplane at a target.

CHARACTERISTICS:

Dome diameter.....	approximately 40 $\frac{5}{16}$ inches
Ring diameter.....	approximately 38 inches
Height to ring.....	approximately 28 $\frac{13}{32}$ inches
Height overall.....	approximately 41 $\frac{1}{8}$ inches
Weight.....	approximately 275 pounds
Rotation in azimuth.....	360 degrees
Movement in elevation.....	—5 degrees to +90 degrees

RELATIONSHIP OF PARTS: Used with:

Turret drive motor, A. E. Reference Number 52-3065; Amplidyne motor-generator, A. E. Reference Number 52-3040; Gun charger, A. E. Reference Number 52-1720; and Selsyn, A. E. Reference Number 52-4210.

ARMY

A. E. REFERENCE NUMBER: 52-6705
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit.

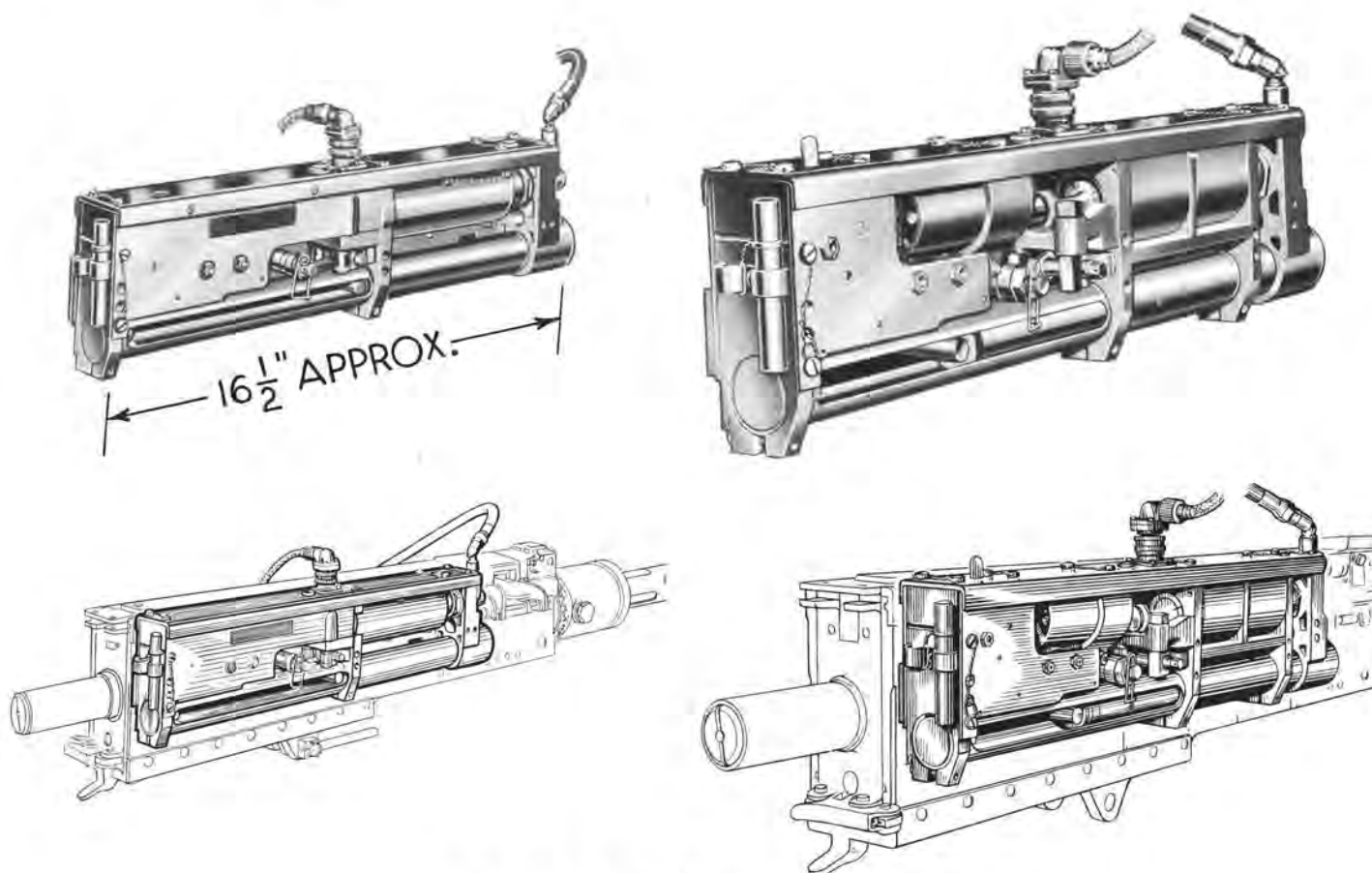
NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Manufacturer's Specification	Used in Airplanes	Remarks
General Electric Company	2CGD50URC1	WW-8019524	A	GO-17397-B	A-26	
	2CGD50URC3	WW-8009111 Group 1	A	GO-18393-B-1	B-29 fore	*
	2CGD50URC4	WW-8009112 Group 1	A	GO-18393-B-1	B-29 aft	*

*Uses different contour follower and fire interrupter.



CHARGER—GUN

GENERAL ELECTRIC COMPANY DRAWING NUMBER T-8252878, GROUP 1

NAMES: Gun charger
Compressed air gun charger

CO₂ charger
Carbon Dioxide charger

DESCRIPTION: This gun charger is mounted on the side of a .50 caliber M2 machine gun used in the G. E. central station fire control systems. It is electrically controlled, so that when a firing key is closed, the gun fires. The charger automatically operates to cock or charge the gun in the event of a misfire. Five or six cocking operations are repeated in rapid succession, after which the charger will stop, indicating difficulty due to causes other than defective ammunition.

To actuate the gun bolt, a piston acts against a stud that extends outward from the side of the gun. This stud is carried by the gun bolt, and projects through a guide slot into a cylinder. To operate the cylinder piston, compressed air, or gas, under a pressure of 1000 pounds per square inch, is admitted to the cylinder. The admission of the gas is controlled by a valve mechanism, which in turn is operated by an electromagnet known as the charging solenoid.

CHARACTERISTICS:

Dimensions.....approximately 16½ by 4¾ by 2⅜ inches.
Weight.....approximately 10½ pounds.

RELATIONSHIP OF PARTS: Used with:

B-29 central station fire control system, P-61 central station fire control system, and A-26 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-1720

MANUFACTURER: General Electric Company.

MANUFACTURER'S DRAWING NUMBER: T-8252878, Group 1

MANUFACTURER'S SPECIFICATION NUMBER: GO-18393-B-1; GO-17400-B; and GO-17397-B.

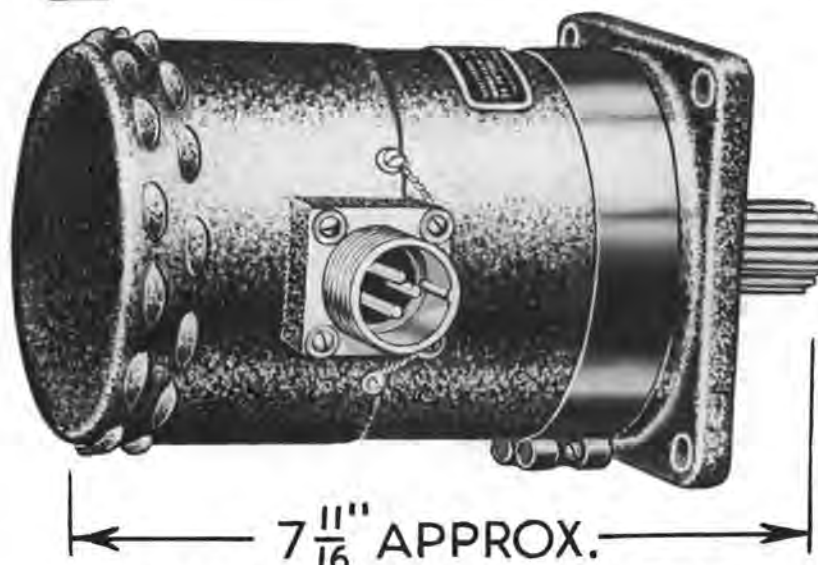
A. S. C. STOCK NUMBER: 5900170000

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



MOTOR—TURRET DRIVE
GENERAL ELECTRIC COMPANY MODEL 5BA5OLJ2A

NAMES: Turret drive motor
Drive motor

Universal turret drive motor

DESCRIPTION: This $\frac{1}{2}$ horsepower universal turret drive motor is of the four-pole, two-brush type, with a separately excited field. When used to rotate a turret (azimuth drive), it is connected to a 533 to 1 reduction gear train. When used to elevate or depress a two gun turret gun carriage, (elevation drive) it is connected to an 800 to 1 reduction gear; for a four gun turret gun carriage, it is connected to a 600 to 1 reduction gear. The motor is bolted to the turret, and the extended armature shaft engages the drive pinion of the gear train used in the reduction mechanism. This motor is equipped with sealed type ball bearings containing enough low temperature lubricant to last throughout normal operational life. One amplidyne motor-generator is required to furnish power for the operation of each turret drive motor.

CHARACTERISTICS:

Dimensions.....	approximately $7\frac{3}{4}$ by $5\frac{5}{8}$ by $4\frac{1}{4}$ inches
Weight.....	approximately 8 pounds
Type.....	$\frac{1}{2}$ horsepower direct current
Full load revolutions per minute.....	4000
Field current.....	2.3 amperes
Field voltage.....	24 volts, direct current
Field resistance.....	9.4 ohms

RELATIONSHIP OF PARTS: Used with:

Amplidyne motor generator G. E. model 5AM31NJ9, A. E. Reference Number 52-3040 in Army type B-29 central station fire control system, Army type P-61 central station fire control system, and Army type A-26 central station fire control system.

ARMY

A. E. REFERENCE NUMBER: 52-3065

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: This unit is normally a component part of the turrets used in the fire control systems but may be shipped as a separate unit when required.

NAVY

There is no Navy equivalent for the Army item.

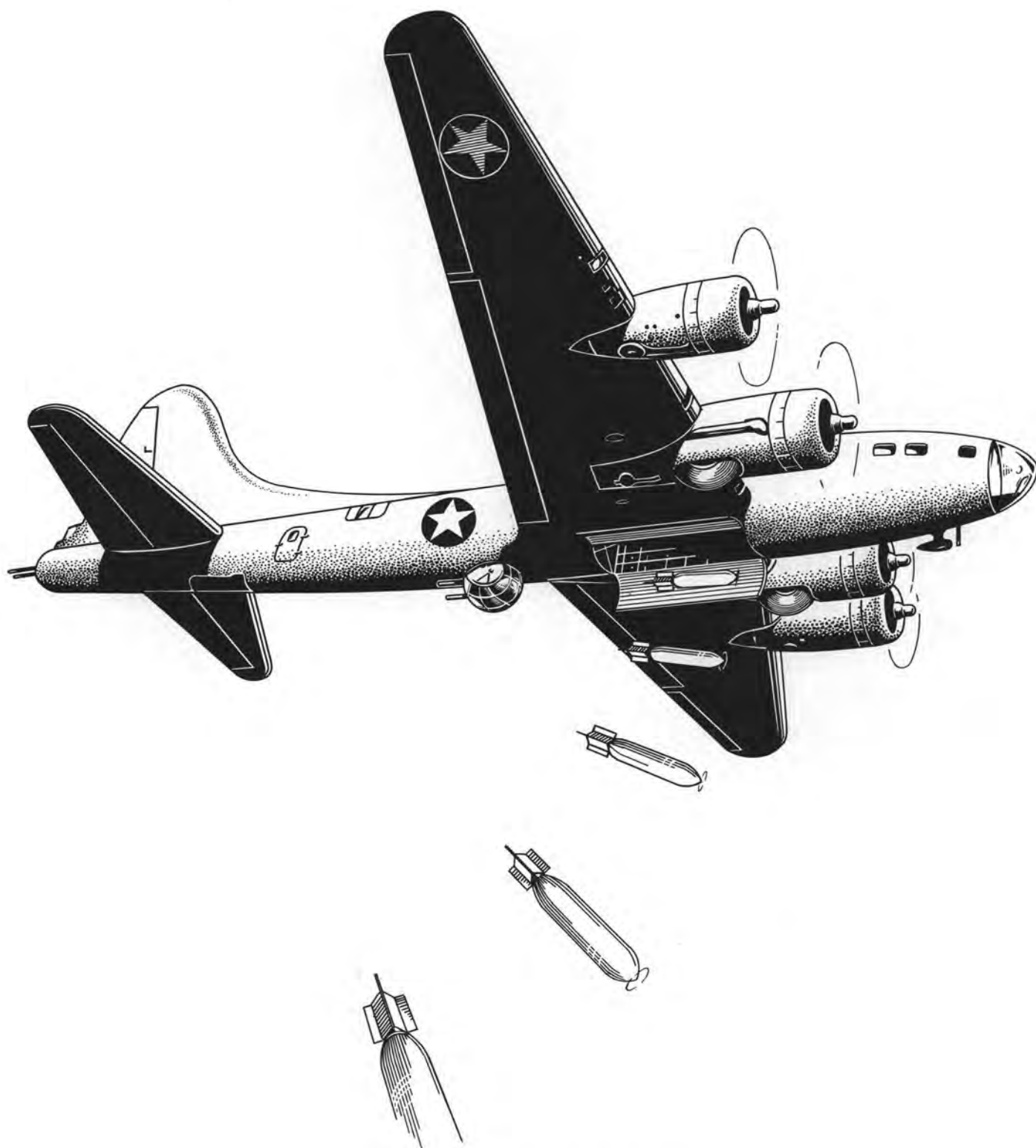
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Manufacturer's Specification	Remarks
General Electric Company	5BA5OLJ2A	TT-8117000	A	OST-1B	GE model 5BA5OLJ2A supersedes and is interchangeable with GE model 5BA5OLJ2.
Electric Vacuum Cleaner Company	5BA5OLJ2A	TT-8117000	A	OST-1B	

(RESTRICTED)



BOMB ARMING CONTROLS ARMAMENT—BOMBING



BOMBING EQUIPMENT



ADAPTER—BOX

BRITISH TYPE A

NAMES: Box adapter
Bomb box adapter

Universal bomb carrier adapter box
Box, adapter and terminal

DESCRIPTION: The British type A box adapter consists of a rectangular shaped junction box with a built-in 5 hole socket, and an extension cable with a 5 pin plug attached. This adapter is used to enable installation of incendiary or small bomb boxes in the universal bomb carrier, and to permit systematic electrical release of these boxes.

CHARACTERISTICS:

Dimensions approximately $5\frac{1}{8}$ by $2\frac{1}{4}$ by $1\frac{7}{8}$ inches (without socket)
Dimensions approximately $1\frac{3}{4}$ by $2\frac{1}{8}$ inches (socket only)

INSTALLATION PECULIARITIES: This adapter is equipped with a built-in socket, British Reference Number 5D/526, and a four foot extension cable with a 5 pin plug, British Reference Number 5D/517. It is inserted between the carrier and the airplane socket.

RELATIONSHIP OF PARTS: Used with:

Universal bomb carrier, A. E. Reference Numbers 64-197, 64-198 and 64-199, and 5-way bomb socket, A. E. Reference Number 64-4195.

ARMY

A. E. REFERENCE NUMBER: 64-110

MANUFACTURER: Guardian Electric Company

MANUFACTURER'S DRAWING NUMBER: 20388

MANUFACTURER'S SPECIFICATION NUMBER: G32693

A. S. C. STOCK NUMBER: 6400008420

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit, including extension cable and plug.

NAVY

There is no Navy equivalent for this item.

BRITISH

REFERENCE NUMBER: 5D/610



ARMAMENT—BOMBING

**PANEL—AUTOPILOT CONTROL**

ARMY TYPE A-6A NAVY—SEE BELOW

NAMES: Autopilot control panel
Control box
Control panel

Pilot's control box
Pilot's control panel
Turn type remote control unit (British)

DESCRIPTION: The autopilot control panel is a part of the automatic pilot, and is mounted in the pilot's compartment. It contains all the controls necessary for the operation of the automatic pilot when used in conjunction with a bombsight or as a navigational aid.

The assembly incorporates a turn control, by means of which coordinated turns can be made, and a turn control transfer switch, which permits operation of a remotely located turn control.

Six toggle switches located below the turn control activate the complete automatic pilot, including the directional stabilizer. The master and the stabilizer servo switch are connected by a bar which moves both ON and OFF together, and prevents the other switches from being used before the automatic pilot is in operation. Movement of the bar to the OFF position operates all switches simultaneously, disconnecting the automatic pilot.

Six tell-tale lights, two for each axis of control, are located at the top of the panel. When a light is illuminated, it indicates a condition of unbalance in an axis of control. During proper operation of the pilot all lights are extinguished.

Adjusting knobs for the centering, sensitivity, ratio and turn compensation for the three axis of control are located on the face of the panel.

CHARACTERISTICS: Dimensions approximately 8 by 8 by $4\frac{1}{16}$ inches
Weight approximately $5\frac{5}{16}$ pounds
Illumination None
Markings Fluorescent—radioactive

RELATIONSHIP OF PARTS: Part of the Army type C-1 automatic pilot, A. E. Reference Number 64-2300

ARMY

A. E. REFERENCE NUMBER: 64-195
SPECIFICATIONS:

General C-24825
Detail C-24861

MANUFACTURER: Minneapolis Honeywell
Regulator Company, part number G1047
outline drawing number DR2155.

TYPE DESIGNATION: A-6A

A. S. C. STOCK NUMBER: 6400092800

TECHNICAL ORDER NUMBER: 11-60-1

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: A part of Mark 2
Modification 1 Stabilized Bombing Ap-
proach Equipment

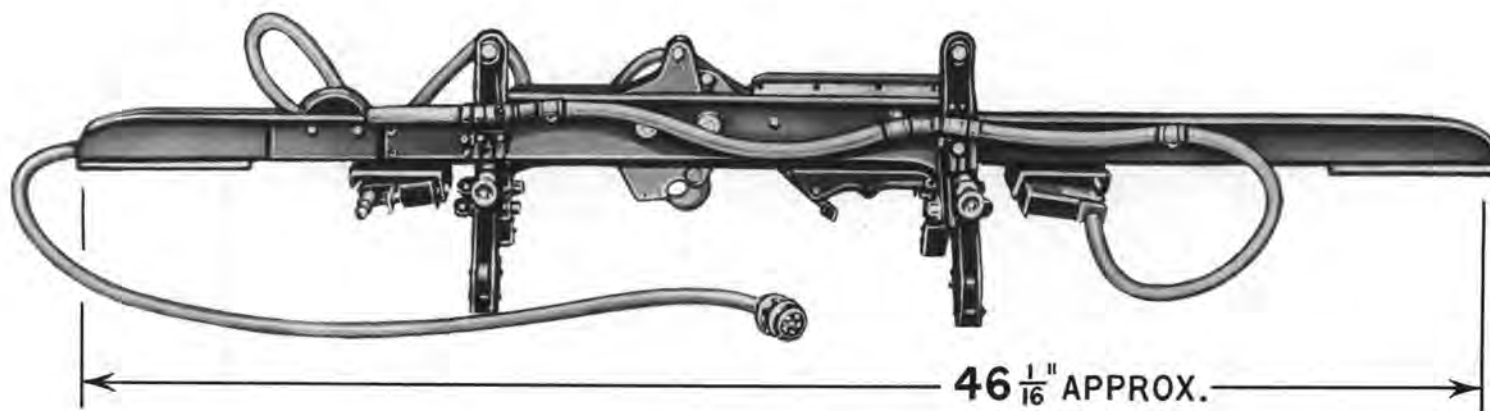
AVIATION ORDNANCE STOCK LIST
NUMBER: 2-S-335

NAVAL ORDNANCE PAMPHLET NUM-
BER: 639

PROCUREMENT STATUS: Under procure-
ment.

BRITISH

REFERENCE NUMBER: 106J/699



CARRIER—UNIVERSAL BOMB
ARMY TYPE NUMBER 1 MARK III BRITISH NUMBER 1 MARK III

NAMES: Universal bomb carrier
 British bomb carrier

DESCRIPTION: The Number 1 Mark III universal bomb carrier is a British designed device for carrying and releasing bombs having one or three suspension lugs. The carrier is electrically controlled, and provides selective arming of the bombs.

Major parts of the bomb carrier are two fusing units, a bomb hook, release unit, crutch assemblies (sway bracing), and a junction box with a male plug.

The fusing units are provided to enable fusing of both, or either, the nose and tail of a bomb.

CHARACTERISTICS:

Weight.....	approximately 17 pounds
Dimensions.....	approximately 46 $\frac{1}{16}$ by 7 $\frac{3}{4}$ by 10 $\frac{1}{4}$ inches
Power supply.....	24 volts, direct current
Capacity.....	1000 pounds

RELATIONSHIP OF PARTS: Used with:

5-way bomb socket, type A, A. E. Reference Number 64-4195, and box adapter, A. E. Reference Number 64-110.

ARMY

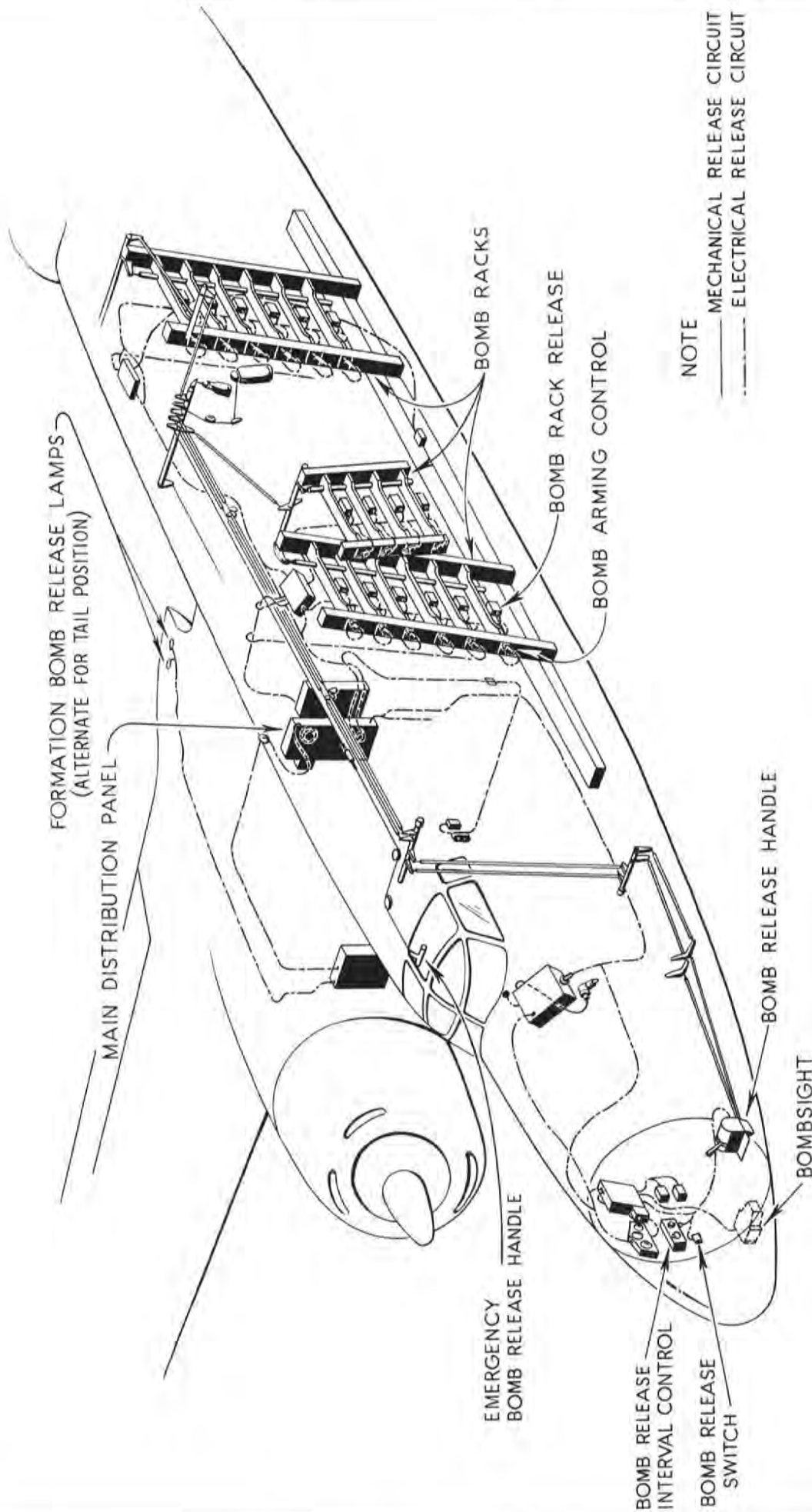
A. E. REFERENCE NUMBER: 64-198
 MANUFACTURER'S DRAWING NUMBER: Mills Novelty Company BR-719-CSP
 TYPE DESIGNATION: Number 1 Mark III
 A. S. C. STOCK NUMBER: 6400162010
 TECHNICAL ORDER NUMBER: 11-5-43
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 111A/41



TYPICAL BOMB RELEASE SYSTEM



BOMB ARMING CONTROLS

Bomb arming controls allow bombs to be dropped either in safe or in armed condition. Bombs are dropped safe when their release over friendly territory is necessary.

The control is operated by the bombardier's fuse switch. When the bombardier places the switch OFF, the bombs are safe and will not normally explode upon impact. When the switch is ON, the bombs are armed and explode upon impact.

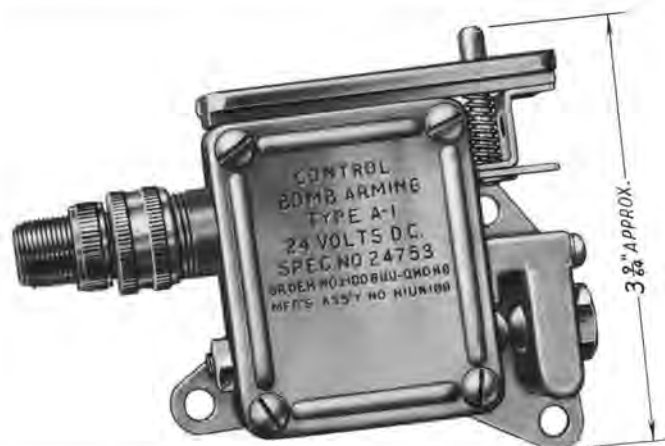
The bomb arming or fusing wire of the bomb is placed between ball ended retainers on the bomb arming control which is installed on the bomb rack. One of these retainers is stationary and the other, under spring tension, is movable.

To release a bomb in an armed condition, the electrical circuit is energized by turning the bombardier's fuse switch ON. As the circuit is energized, a pin moves into a hole in the center of the ball ended retainers, thereby locking the arming wire in place. When the bomb is dropped, the arming wire is pulled from the bomb and allows the bomb to explode upon impact.

To release a bomb in a safe condition, the bombardier places the fuse switch OFF. This de-energizes the electrical circuit, allowing the arming wire to pull out from between the retainers as the bomb falls.



BOMB ARMING CONTROLS ARMAMENT—BOMBING



CONTROL—BOMB ARMING

TYPE AN-A-1 FORMER ARMY TYPE A-1 FORMER NAVY TYPE A-1

NAMES: Bomb arming control
Auxiliary arming mechanism
Bomb arming control box

Fusing unit
Selective fusing control
Bomb fusing control

DESCRIPTION: The type AN-A-1 bomb arming control is a box-shaped control used to arm the bomb as it is released from the shackle or rack. The control operates on a 24 to 28½ volt direct current supply.

CHARACTERISTICS:

Weight.....approximately 5/8 pound
Dimensions.....approximately 1½ by 3 by 4 inches
Electrical connector plug.....AN3106-10S-2S

INSTALLATION PECULIARITIES: A slide mount is supplied as an integral part of the type AN-A-1 bomb arming control. The purpose of this mount is to provide mounting attachment when used with the British universal bomb carrier, or on an airplane equipped with slide mounting rails.

ARMY

A. E. REFERENCE NUMBER: 64-200

SPECIFICATIONS:

Detail.....93-24753
Superseded.....24753

A. A. F. DRAWING NUMBER: H42B6598

TYPE DESIGNATION: AN-A-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped with electrical connector plug AN3106-10S-2S in a single container.

NAVY

TYPE DESIGNATION: AN-A-1

BUREAU OF ORDNANCE DRAWING NUMBER: 328446

AVIATION ORDNANCE STOCK LIST NUMBER: Refer to chart

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

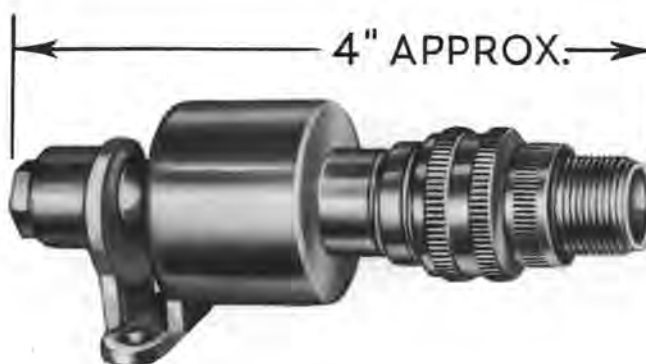
Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	AAF Type and Navy Type	Aviation Ordnance Stock List Number	Remarks
J. P. Seeburg Company	*A-1	BA-106000	A-N-B	6400217000		105D/194	AN-A-1	3-C-1805 (formerly 3-B-1969)	
P. R. Mallory & Company, Incorporated	SF-6	C-134624 B-134163	A-N-B	6400217000	11-5-33	105D/99	AN-A-1	3-C-1805 (formerly 3-B-1969)	
	SF-4	B-134163	N				Navy Type SF-4	3-B-1970	†
Magnavox Corporation	14D26G1	14D26G1	A-N-B	6400217050	11-5-47	105D/195	AN-A-2	3-C-1810	†

†A slide or bomb arming control mount must be used to provide for complete interchangeability.

Note: *AAF and Navy type.



BOMB ARMING CONTROLS ARMAMENT—BOMBING



CONTROL—BOMB ARMING

TYPE AN-A-2 FORMER ARMY TYPE A-2

NAMES: Bomb arming control
Auxiliary arming mechanism
Bomb arming control box

Fusing unit
Selective fusing control
Bomb fusing control

DESCRIPTION: The type AN-A-2 bomb arming control is a cylindrically shaped control used to arm the bomb as it is released from the shackle or rack. The control operates on a 24 to 28½ volt direct current supply.

CHARACTERISTICS:

Weight.....approximately ⅓ pound
Dimensions.....approximately 1⅛ by 1¼ by 4 inches
Electrical connector plug.....AN3106-10S-2S

RELATIONSHIP OF PARTS: When used with British Universal Bomb Carrier or on an airplane equipped with slide mounting rails, this unit must be equipped with a bomb arming control mount, Army type A-1, A. E. Reference Number 64-2270.

ARMY

A. E. REFERENCE NUMBER: 64-220

SPECIFICATIONS:

Detail.....93-24828
Superseded.....24828

A. A. F. DRAWING NUMBER: 43B9887

TYPE DESIGNATION: AN-A-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped complete with electrical connector plug AN3106-10S-2S in a single container.

NAVY

TYPE DESIGNATION: AN-A-2

BUREAU OF ORDNANCE DRAWING NUMBER: 388363

AVIATION ORDNANCE STOCK LIST NUMBER: Refer to column 9 of the chart.

PROCUREMENT STATUS: Under procurement.

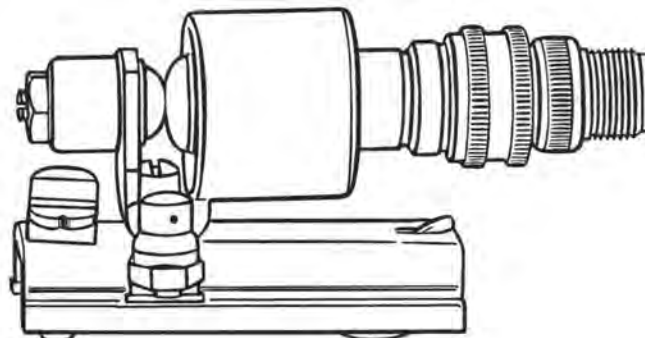
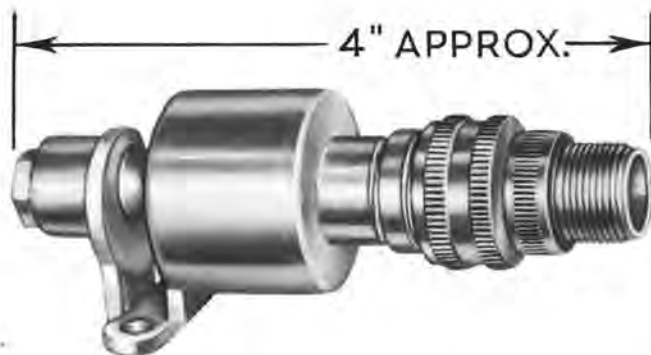
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	AAF Type and Navy Type	Aviation Ordnance Stock List Number	Remarks
Magnavox Corporation	14D26G1	14D26G1	A-N-B	6400217050	11-5-47	105D/195	AN-A-2	3-C-1810	
J. P. Seeburg Company	A-1	BA-106000	A-N-B	6400217000		105D/194	AN-A-1	3-C-1805 (formerly 3-B-1969)	*
P. R. Mallory & Company, Incorporated	SF-6	C-134624 B-134163	A-N-B	6400217000	11-5-33	105D/99	AN-A-1	3-C-1805 (formerly 3-B-1969)	*
	SF-4	B-134163	N				Navy Type SF-4	3-B-1970	

*Contains slide for attaching to mounting rails.



BOMB ARMING CONTROLS ARMAMENT—BOMBING



CONTROL—BOMB ARMING ARMY TYPE B-2

NAMES: Bomb arming control
Auxiliary arming mechanism
Bomb arming control box

Fusing unit
Selective fusing control
Bomb fusing control

DESCRIPTION: The type B-2 bomb arming control is a cylindrically-shaped control, used to arm the bomb as it is released from the shackle or rack. The control operates on a 12 to 14 $\frac{1}{4}$ volt direct current supply.

CHARACTERISTICS:

Weight.....approximately $\frac{1}{8}$ pound
Dimensions.....approximately 1 $\frac{1}{8}$ by 2 by 4 inches
Electrical connector plug.....AN3106-10S-2S

RELATIONSHIP OF PARTS: When used with British universal bomb carrier or on an airplane equipped with slide mounting rails, this unit must be equipped with an Army type A-1 bomb arming control mount, A. E. Reference Number 64-2270.

ARMY

A. E. REFERENCE NUMBER: 64-275

SPECIFICATIONS:

Detail.....93-24829
Superseded.....24829

A. A. F. DRAWING NUMBER: 43B11958

TYPE DESIGNATION: B-2

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped complete with electrical connector plug AN3106-10S-2S in a single container.

NAVY

The Navy does not use this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	AAF Type	Navy Type	Navy Bureau of Ordnance Drawing Number	Aviation Ordnance Stock List Number
Magnavox Corporation	14D26G4	14D26G4	A	6400217100	B-2			
P. R. Mallory & Co., Inc.	SF-10	Outline B-134163	N			SF-10	328446	3-B-1977



BOMB RELEASE INTERVAL CONTROL

Bomb release interval controls permit the release of a uniformly spaced pattern or train of bombs, assuring one or more hits when crossing a target

The bomb release interval control determines the time interval between release of successive bombs to give the desired ground spacing. To accomplish this, the ground speed is determined and set on the ground speed dial to correspond to the desired spacing between bombs.

A select-train switch is provided to allow bombs to be dropped selectively or in train. One bomb is released with each operation of the switch when in the select position, and a uniformly spaced pattern of bombs is released when the switch is in the train position.

The counter, or bombs to be released control, may be set manually, either forward or backward, according to the number of bombs to be released in each train. Resetting of this control may be accomplished at any time, provided at least one minute elapses between the time of resetting and the time of release of bombs.

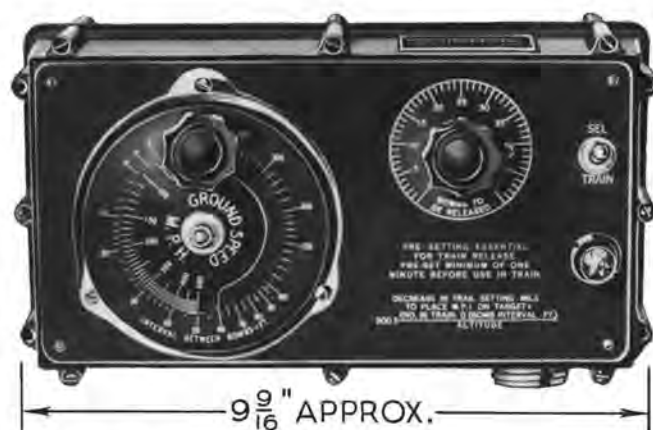
Bomb release interval controls are equipped with a signal light which indicates that the bomb release circuit is ready for operation. The light goes on when the select-train switch is in the select position, and in the train position only when the number of bombs to be released has been determined and the dial set. Bomb release interval controls with fluorescent markings have adjustable housing assemblies so that the signal light may be blacked out under ultra-violet light.

All controls are calibrated directly so that it is not necessary to refer to charts or to make calculations. They are marked in miles per hour or knots, and are available with either fluorescent or standard non-luminous markings.

For installation, refer to diagram on page 234.



BOMB RELEASE INTERVAL CONTROLS ARMAMENT—BOMBING



CONTROL—BOMB RELEASE INTERVAL ARMY TYPE B-2

NAMES: Bomb release interval control
Interval control

Bomb release control
Intervalometer (Navy)

DESCRIPTION: The type B-2 bomb release interval control operates on a 24 to 28½ volt direct current supply. The ground speed of the airplane is determined, and set on the ground speed dial opposite the desired spacing between bomb hits. The control has a fixed intensity amber signal light and dull white non-luminous markings.

CHARACTERISTICS:

Weight	approximately 5½ pounds
Dimensions	approximately 9⅝ by 6 by 4½ inches
Electrical connector	Cannon GK-M5-32S, Bulletin K
Ground speed dial range	100 to 500 miles per hour
Bomb spacing dial range	7 to 400 feet
Bombs to be released dial range	2 to 20 bombs per second

ARMY

A. E. REFERENCE NUMBER: 64-600

SPECIFICATIONS:

Detail 93-24630-A
Superseded 24630

A. A. F. DRAWING NUMBER: 41D1831

TYPE DESIGNATION: B-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHINICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation, superseded by Army type B-2A,

A. E. Reference Number 64-800.

SHIPPING DATA: Shipped as a complete unit.

NAVY

The Navy does not use the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	AAF Type and Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
P. R. Mallory & Co., Inc.	*B-2	Outline C-134558	A-B	6400217520	11-5-29	105D/30	Aluminum case.
	*B-2A	Outline C-134558	A-B	6400217550	11-5-29	105D/84	Aluminum case.
		Outline C-134729					Steel case.
		Assembly C-134584					Aluminum case.
		Assembly C-134643					Steel case.
		Parts list B-134204					Steel case.
J. P. Seeburg Co.	*B-2A	BR-105000	A-B	6400217550	11-5-14 11-1-36	105D/84	

*AAF type.



BOMB RELEASE INTERVAL CONTROLS ARMAMENT—BOMBING



CONTROL—BOMB RELEASE INTERVAL ARMY TYPE B-2A

NAMES: Bomb release interval control
Interval control

Bomb release control
Intervalometer (Navy)

DESCRIPTION: The type B-2A bomb release interval control operates on a 24 to 28½ volt direct current supply. The ground speed of the airplane is determined, and set on the ground speed dial opposite the desired spacing between bomb hits. The control uses a filament lamp with amber lens, and the light intensity is adjusted by rotating the lamp housing. Markings are fluorescent, and are visible under external and ultra-violet light.

CHARACTERISTICS:

Weight approximately 6½ pounds
Dimensions approximately 9⅝ by 6 by 4½ inches
Electrical connector Cannon GK-M5-32S, Bulletin K
Ground speed dial range 100 to 500 miles per hour
Bomb spacing dial range 7 to 750 feet
Bombs to be released dial range 1 to 20 bombs per second.

ARMY

A. E. REFERENCE NUMBER: 64-800

SPECIFICATIONS:

Detail 93-24630-A (amended)
Superseded 93-24630

A. A. F. DRAWING NUMBER: 41D10802

TYPE DESIGNATION: B-2A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by type AN-B-3.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: B-2A

AVIATION ORDNANCE STOCK LIST NUMBER: 3-C-1875

PROCUREMENT STATUS: Not under procurement for initial installation.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	AAF Type and Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
P. R. Mallory & Co., Inc.	*B-2A	Outline C-134558	A-B	6400217550	11-5-29	105D/84	Aluminum case.
		Outline C-134729					Steel case.
		Assembly C-134584					Aluminum case.
		Assembly C-134643					Steel case.
		Parts list B-134204					Steel case.
J. P. Seeburg Co.	*B-2A	BR-105000	A-B	6400217550	11-5-14 11-1-36	105D/84	

Note: *AAF type



BOMB RELEASE INTERVAL CONTROLS ARMAMENT—BOMBING



CONTROL—BOMB RELEASE INTERVAL TYPE AN-B-3 FORMER ARMY TYPE B-3

NAMES: Bomb release interval control
Interval control

Bomb release control
Intervalometer (Navy and British type)

DESCRIPTION: The type AN-B-3 bomb release interval control operates on a 24 to 28½ volt direct current supply. The ground speed of the airplane is determined, and set on the ground speed dial opposite the desired spacing between bomb hits. The control uses a filament lamp with amber lens, and the light intensity is adjusted by rotating the lamp housing. Markings are fluorescent, and are visible under external and ultra-violet light.

CHARACTERISTICS:

Weight	approximately 6 pounds
Dimensions	approximately 9½ by 6 by 4½ inches
Electrical connector	AN3102-14S-7P
Ground speed dial range	100 to 500 miles per hour
Opposite face of ground speed dial range	90 to 460 knots. (Navy use)
Bomb spacing dial range	7 to 750 feet
Bombs to be released dial range	1 to 20 bombs per second

ARMY

A. E. REFERENCE NUMBER: 64-825

SPECIFICATIONS:

Detail	93-24717
Superseded	24717

A. A. F. DRAWING NUMBER: 42D3116

TYPE DESIGNATION NUMBER: AN-B-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHINICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: shipped as a complete unit.

NAVY

TYPE DESIGNATION: AN-B-3

AVIATION ORDNANCE STOCK LIST NUMBER: 3-C-1880 (formerly 3-I-495)

PROCUREMENT STATUS: Not under procurement for initial installation, superseded by Navy type K-2.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	AAF Type	Navy Type	Remarks
P. R. Mallory & Co., Inc.	*AN-B-3	Outline C-134558	A-N-B	6400217700	11-5-29	105D/94	AN-B-3	AN-B-3	Aluminum case.
		Outline C-134729							Steel case.
	‡K-2	Outline C-134558	N-B			105D/31		K-2	Aluminum case.†
		Outline C-134729							Steel case.†
J. P. Seeburg Co.	*AN-B-3	BR-105100	A-N	6400217700			AN-B-3	AN-B-3	

†NOTE: Graduated in knots only. The range of the ground speed dial is 90 to 460 knots for the unit in the steel case and 100 to 450 knots for the one in the aluminum case. The bomb spacing dial range is 7 to 400 feet, and the bombs to be released dial range is 2 to 20 bombs per second. The type K-2 and type AN-B-3 are interchangeable electrically and installationally.

Note: *AAF type; ‡Navy type.



PILOT DIRECTOR INDICATOR CONTROL ARMAMENT—BOMBING



CONTROL—PILOT DIRECTOR INDICATOR ARMY TYPE A-1

NAMES: Pilot director indicator control
P. D. I. control

DESCRIPTION: The Army type A-1 pilot director indicator control provides the bombardier with a means of indicating to the pilot, through the pilot director indicator, changes to be made in the heading or direction of the airplane to complete a bombing run. The control consists of a selector switch, mounted in a cylindrical container, with markings indicating zero, right and left. Movement of the control knob by the bombardier causes the pointer on the pilot director indicator in the pilot's cockpit to move accordingly. When the airplane is on the desired course the bombardier releases the control knob, and it is returned to the zero position by spring action.

CHARACTERISTICS:

Dimensions.....	approximately 3 7/8 by 3 1/4 by 2 1/32 inches
Weight.....	approximately 1/2 pound
Illumination.....	none
Markings.....	white enamel
Voltage.....	24 volts direct current

RELATIONSHIP OF PARTS: Used with:

Pilot director indicator, A. E. Reference Numbers 64-2255, or 64-2257 when the airplane does not have an Army type C-1 automatic pilot.

ARMY

A. E. REFERENCE NUMBER: 64-835

SPECIFICATIONS:

Detail.....24841

MANUFACTURER: P. R. Mallory Company, Incorporated.

MANUFACTURER'S DRAWING NUMBER	Outline	B-134405
	Part	C-134815

TYPE DESIGNATION: A-1

A. S. C. STOCK NUMBER: 6400219325

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



BOMBSIGHT COVERS ARMAMENT—BOMBING

COVER—ELECTRICALLY HEATED BOMBSIGHT

ARMY TYPE A-1 NAVY MARK 1

NAMES: Electrically heated bombsight cover
Bombsight blanket (Navy)
Bombsight cover
Electrically heated bombsight blanket

DESCRIPTION: The Army type A-1 electrically heated bombsight cover is used as a protective coat to retain the heat produced by the bombsight and to supply heat to the bombsight in low temperatures.

The cover is of sufficient size to cover both the bombsight and the stabilizer, and is secured about the stabilizer base with a draw cord and clamp.

The cover is made of woolen batting quilted to cotton fabric. The electrical heating wires are sewed to the inner cotton fabric.

Automatic thermostatic control is provided in the electrical circuit to prevent overheating. The thermostat is encased in a metal tube which is attached to the inner lining of the bombsight cover.

The power supply cable is approximately sixty inches long, and connects to the aircraft electrical circuit by a male plug.



CHARACTERISTICS:

Weight.....	approximately 6 pounds
Navy type electrical connector.....	AN3106-16-11P
Army type electrical connector.....	Twist lock plug, Hubbel part number 7542 or 7545
Maximum external temperature range.....	Minus 60 to plus 170 degrees fahrenheit (Minus 51 to plus 77 degrees centigrade)
Minimum heating requirement.....	Maintains plus 15 degrees fahrenheit (Minus 9.4 degrees centigrade) at external temperature of minus 60 degrees fahrenheit (minus 51 degrees centigrade)

RELATIONSHIP OF PARTS: Used with:

Army type M-series bombsight, and stabilizer
Navy Mark 15, modification 5 and 7 bombsight, and stabilizer

ARMY

A. E. REFERENCE NUMBER: 64-850

MANUFACTURER: General Electric Company

MANUFACTURER'S PART NUMBER: G. E. catalog number PC 15A6

SPECIFICATIONS:

Detail.....40453-A
Superseded.....40453

A. A. F. DRAWING NUMBER: 42M16384

TYPE DESIGNATION: A-1

A. S. C. STOCK NUMBER: 6400225915

TECHNICAL ORDER NUMBER: 11-30-1 and 11-30-9

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

SHIPPING WEIGHT: approximately 7 pounds.

SHIPPING CARTON DIMENSIONS: approximately 22 $\frac{3}{4}$ by 20 by 4 $\frac{5}{8}$ inches.

NAVY

TYPE DESIGNATION: Mark 1

AVIATION ORDNANCE STOCK LIST NUMBER: 2-B-1900

ORDNANCE TECHNICAL INSTRUCTIONS NUMBER: V-4-43

PROCUREMENT STATUS: Under procurement.

INTERCHANGEABILITY: To effect interchangeability between Army and Navy types, the proper electrical connector must be used.



COVER—ELECTRICALLY HEATED BOMBSIGHT

ARMY TYPE A-2

NAMES: Electrically heated bombsight cover
Bombsight blanket
Bombsight cover
Electrically heated bombsight blanket

DESCRIPTION: The Army type A-2 electrically heated bombsight cover is used as a protective coat, to retain the heat produced by the bombsight and to supply heat to the bombsight in low temperatures.

The cover is made of woolen batting quilted to cotton fabric. The electrical heating wires are sewed to the inner cotton fabric.

Automatic thermostatic control is provided in the electrical circuit to prevent overheating. The thermostat is encased in a metal tube which is attached to the inner lining of the bombsight cover.

The cover is secured about the bombsight with snap fasteners.

The power supply cable is approximately sixty inches long, and connects to the aircraft electrical circuit by a male plug.



CHARACTERISTICS:

Weight.....	approximately 7 pounds
Electrical connector.....	twist lock plug, Hubbel part number 7542 or 7545
Maximum external temperature range.....	minus 60 to plus 170 degrees fahrenheit (minus 51 to plus 77 degrees centigrade)
Minimum heating requirements.....	maintains plus 15 degrees fahrenheit (minus 9.4 degrees centigrade) at external temperature of minus 60 degrees fahrenheit (minus 51 degrees centigrade)

RELATIONSHIP OF PARTS: Used with:
Army type S-1 bombsight

ARMY

A. E. REFERENCE NUMBER: 64-852

SPECIFICATIONS:

Detail.....40630

MANUFACTURER: General Electric Company

MANUFACTURER'S PART NUMBER: G. E. catalog number PC 16A1

TYPE DESIGNATION: A-2

A. S. C. STOCK NUMBER: 6400225912

TECHNICAL ORDER NUMBER: 11-30-10

PRODUCTION STATUS: Under procurement

SHIPPING DATA: Shipped as a complete unit

SHIPPING WEIGHT: approximately 9 pounds

SHIPPING CARTON DIMENSIONS: approximately 16 by 16 by 6 inches

NAVY

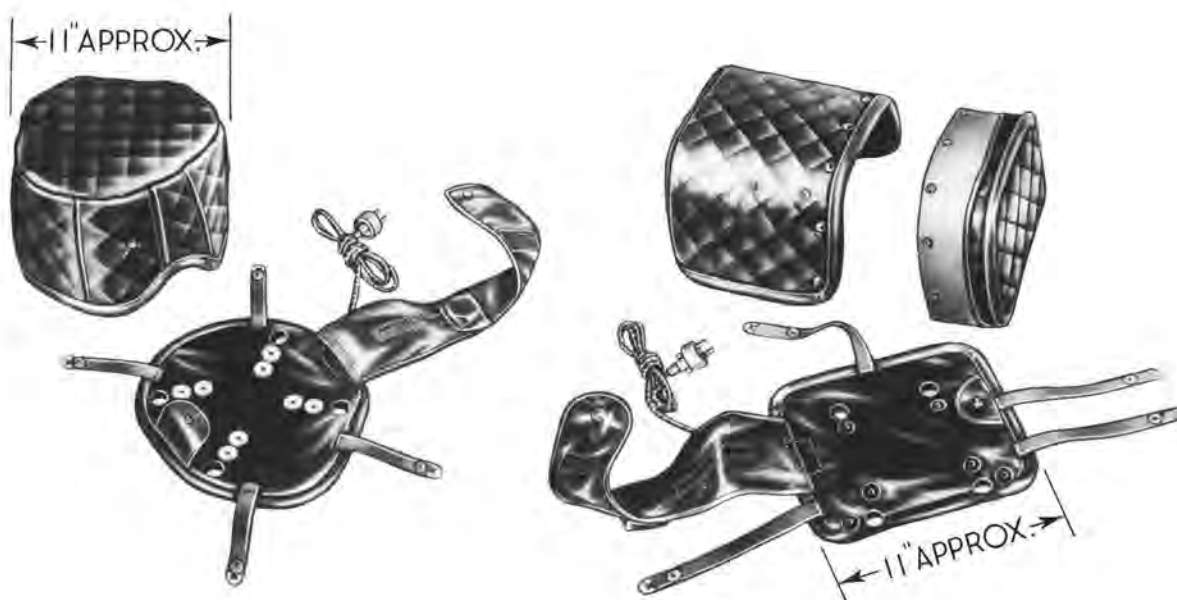
There is no Navy equivalent for the Army item.

BRITISH

REFERENCE NUMBER: 109/43



BOMBSIGHT COVERS ARMAMENT—BOMBING



COVER — ELECTRICALLY HEATED AUTOMATIC PILOT GENERAL ELECTRIC CATALOG NUMBER PK 1A1

NAMES: Electrically heated automatic pilot cover
A. F. C. E. cover

Electrically heated cover
Electrically heated automatic pilot blanket

DESCRIPTION: The electrically heated automatic pilot cover for the Army type C-1 automatic pilot consists of three type A-3 covers for the servo units and one type A-4 cover for the vertical gyro control unit.

The covers provide a protective coat to retain heat produced by the automatic pilot and to supply heat to the automatic pilot units for low temperature operation.

The covers are made of woolen batting quilted to cotton fabric. The electrical heating wires are sewed to the inner cotton fabric.

Automatic thermostatic control is provided in the electrical circuit to prevent overheating. The thermostat is encased in a metal tube which is attached to the inner lining of the cover.

A power supply cable on each cover is connected to the aircraft electrical circuit by a male plug.

CHARACTERISTICS:

Electrical connector	Twist lock plug, Hubbel part number 7542 or 7545
Maximum external temperature range	Minus 60 to plus 170 degrees fahrenheit (minus 51 to plus 77 degrees centigrade)
Minimum heating requirement	Maintains plus 15 degrees fahrenheit (minus 9.4 degrees centigrade) at external temperature of minus 60 degrees fahrenheit (minus 51 degrees centigrade)

RELATIONSHIP OF PARTS: Used with:

Servo unit of Army type C-1 automatic pilot and vertical gyro control unit of Army type C-1 automatic pilot.

ARMY

A. E. REFERENCE NUMBER: 64-855

SPECIFICATIONS:

Detail 40631 for type A-3 servo unit cover, 40633 for type A-4 vertical gyro control cover

MANUFACTURER: General Electric Company

MANUFACTURER'S PART NUMBER: G. E. catalog number PK 1A1

TYPE DESIGNATION: A-3 for servo unit cover, A-4 for vertical gyro control cover

A. S. C. STOCK NUMBER: 6400225911

TECHNICAL ORDER NUMBER: 11-30-11

PRODUCTION STATUS: Under procurement

SHIPPING DATA: Shipped as a complete unit, consisting of 3 electrically heated covers, type A-3 for servo units and 1 electrically heated cover type A-4 for vertical gyro control unit.

SHIPPING WEIGHT: approximately 16 pounds

SHIPPING CARTON DIMENSIONS: approximately 22 by 12 by 17 inches.

NAVY

There is no Navy equivalent for the Army item.



TORPEDO DIRECTORS

The function of the torpedo director is to determine the proper course upon which to set an airplane before launching a torpedo toward the desired target to assure interception of the target. The torpedo itself must be set for a straight run to permit accurate calculation. The factors to be considered in making calculations are the torpedo speed, the target speed, and the approach angle. Of these factors, only the torpedo speed is known, and consequently the target speed and approach angle must be estimated. The factors are then set upon the torpedo director controls and the airplane turned through the approach angle until the target appears in the sight, whereupon the torpedo is launched.

The various types of torpedo directors differ in general appearance and construction since some models employ an optical illuminated sight and other models are equipped with a non-optical sighting bar. All types perform identical functions and utilize similar steps for estimations and calculations.

In order to insure that the calculations performed will be satisfactory to complete the torpedoing mission, predetermined altitude, launching speed and torpedo range must be adhered to.



TORPEDO DIRECTORS
ARMAMENT—BOMBING

DIRECTOR—TORPEDO
MARK 28 MODIFICATION 2

NAMES: Torpedo director
Director assembly—torpedo

DESCRIPTION: The Mark 28 Modification 2 torpedo director is shaped in the form of a drum, and is provided with six scales to permit calculation of sight alignment for six different torpedo speeds. Target speed is estimated over a calibrated range. The sight angle scale is graduated in two sections, each ranging from 0° to 180°. The target direction angle is estimated, and the estimated angle is set on a movable pointer. The resultant angle of these calculations enables the pilot to change the course of the airplane to the proper position for launching a torpedo.



CHARACTERISTICS:
Weight.....approximately 4½ pounds
Outline dimensions.....approximately 8½ by 8½ by 8⅙ inches

INSTALLATION PECULIARITIES: A sun guard must be used with this director, to prevent the plastic pointer from warping. This guard is removed prior to operation of the director.

ARMY

A. E. REFERENCE NUMBER: 64-900
TYPE DESIGNATION: Mark 28 Modification 2.
A. S. C. STOCK NUMBER: Refer to chart.
TECHNICAL ORDER NUMBER: Refer to chart.
PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type B-2, A. E. Reference Number 64-950.
SHIPPING DATA: Shipped as a complete unit, including a mounting bracket.

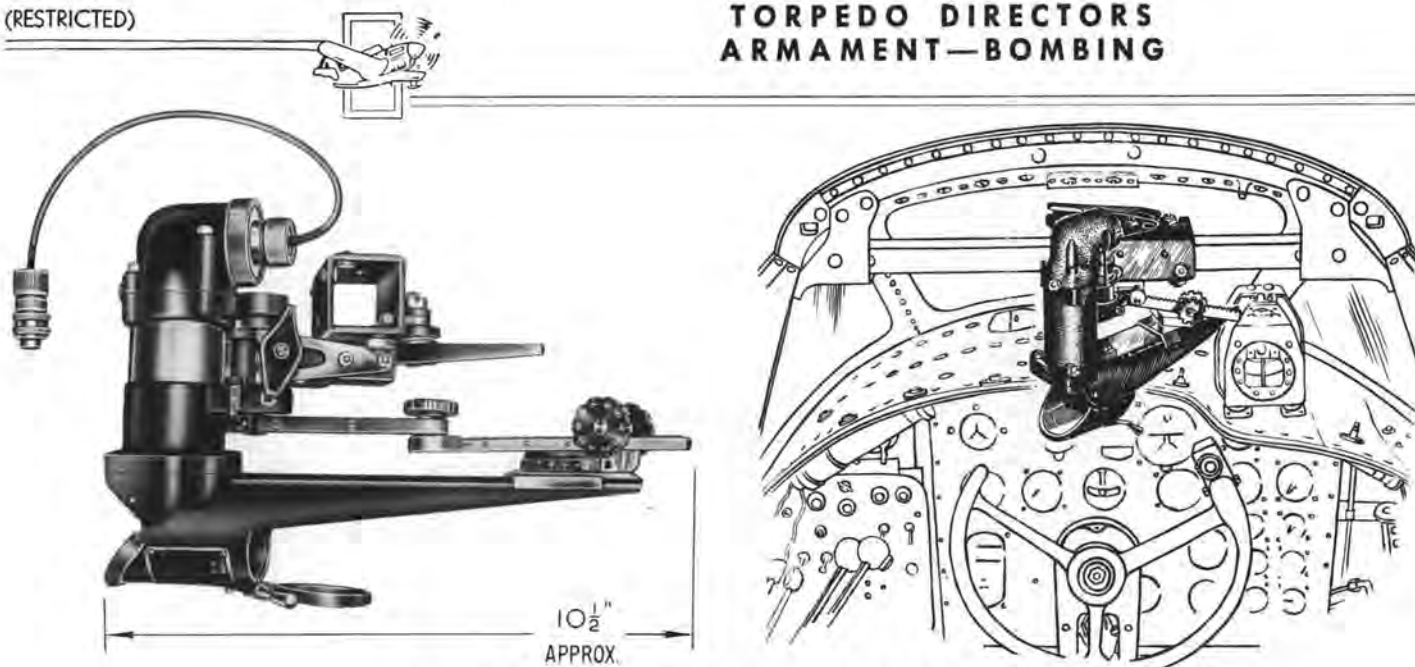
NAVY

TYPE DESIGNATION: Mark 28 Modification 2.
BUREAU OF ORDNANCE DRAWING NUMBER: 275122
AVIATION ORDNANCE STOCK LIST: 2-D-155
ORDNANCE DATA NUMBERS: 3786 and 4410
ORDNANCE PAMPHLET NUMBER: 865
PROCUREMENT STATUS: Under procurement

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
A. C. Spark Plug Division of General Motors	Mark 28 Modification 2	1590752	A-N-B	6400242425	11-50-1 11-50-2	109/40
Douglas Aircraft Corporation	Mark 28 Modification 2	1590752	A-N-B	6400242425	11-50-1 11-50-2	109/40

Above items are completely interchangeable with Mark 28 Torpedo Director. The only difference in the two directors is that the Mark 28 director has three torpedo speed scales, and the Mark 28 Modification 2 director has six torpedo speed scales.



DIRECTOR—TORPEDO

ARMY TYPE B-2

NAMES: Torpedo director

Director assembly—torpedo

DESCRIPTION: The Army type B-2 torpedo director is an optical, illuminated sighting device used on torpedo carrying airplanes. It is mounted on a square bar forward of the pilot's or co-pilot's station, and is adjustable over the length of the mounting bar. Calculations are made by means of vector arms which are adjusted through graduated dials.

In emergencies, this director may be used as an auxiliary gun-sight for the airplane's fixed guns by adjusting the director to a position parallel to the center line of the airplane, and in alignment with the line of fire.

CHARACTERISTICS:

Weight.....	approximately 23 $\frac{3}{4}$ pounds
Dimensions.....	approximately 10 $\frac{1}{2}$ by 7 $\frac{7}{8}$ by 7 $\frac{1}{2}$ inches
Electrical connector.....	AN3102-8S-1P
Electrical cable length.....	approximately 9 inches
Lamp bulb.....	Lamp, trade number 1666, I.F., 28 volts 21-21 C.P. S-8 I.F. bulb D.C. bay. base

ARMY

A. E. REFERENCE NUMBER: 64-950

SPECIFICATIONS:

Detail..... R-24789

A. A. F. DRAWING NUMBER: 43G7095

SUPERSEDED DRAWING NUMBER: 42G16373

TYPE DESIGNATION: B-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit including electrical cable and connector.

NAVY

TYPE DESIGNATION: B-2

AVIATION ORDNANCE STOCK LIST NUMBER: 2-D-176

PROCUREMENT STATUS: Procured from Army.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
J. H. Keeney & Co.	*B-2	**43G7095	A-N-B	6400242430	11-50-3	109/44
Douglas Aircraft Co.	RCL-2	5147380	A-B	6400242430	11-50-3	109/44

The above torpedo directors are interchangeable as complete units, but the optical systems are not interchangeable.
Note: *AAF type; **AAF drawing.

RELEASE HANDLES ARMAMENT—BOMBING



HANDLE—BOMB RELEASE

ARMY TYPE A-3 NAVY TYPE A-3

NAMES: Bomb release handle
Bomb release handle assembly

Tee-grip bomb release handle

DESCRIPTION: The type A-3 bomb release handle is used to release bombs and droppable cargo. Its application is restricted to the mechanical release of one bomb rack or multiple racks in salvo.

The handle is composed of a tee-grip, flexible spring, and a two hole mounting bracket.

Actuation of the bomb rack is accomplished by a flexible cable, one end of which is attached to the release handle and the other end to the bomb release mechanism.

CHARACTERISTICS:

Weight..... approximately $\frac{1}{2}$ pound
Dimensions..... approximately $6\frac{1}{4}$ by $2\frac{1}{8}$ by 3 inches

INSTALLATION PECULIARITIES: A $\frac{1}{16}$ inch cable, specification number 48-22, is attached at the time of installation in the airplane.

ARMY

A. E. REFERENCE NUMBER: 64-1400

SPECIFICATIONS:

Detail..... 93-24542
Superseded..... 24542

A. A. F. DRAWING NUMBER: 0159268

TYPE DESIGNATION: A-3

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation, superseded by Army type A-3A, A. E. Reference Number 64-1600, and Army type A-3B, A. E. Reference Number 64-1610.

SHIPPING DATA: Shipped as a complete unit, disassembled.

NAVY

TYPE DESIGNATION: A-3

BUREAU OF ORDNANCE DRAWING NUMBER: 155892 and 155981

AVIATION ORDNANCE STOCK LIST NUMBER: 3-H-635

NAVY PUBLICATION: Ordnance Pamphlet Number 865

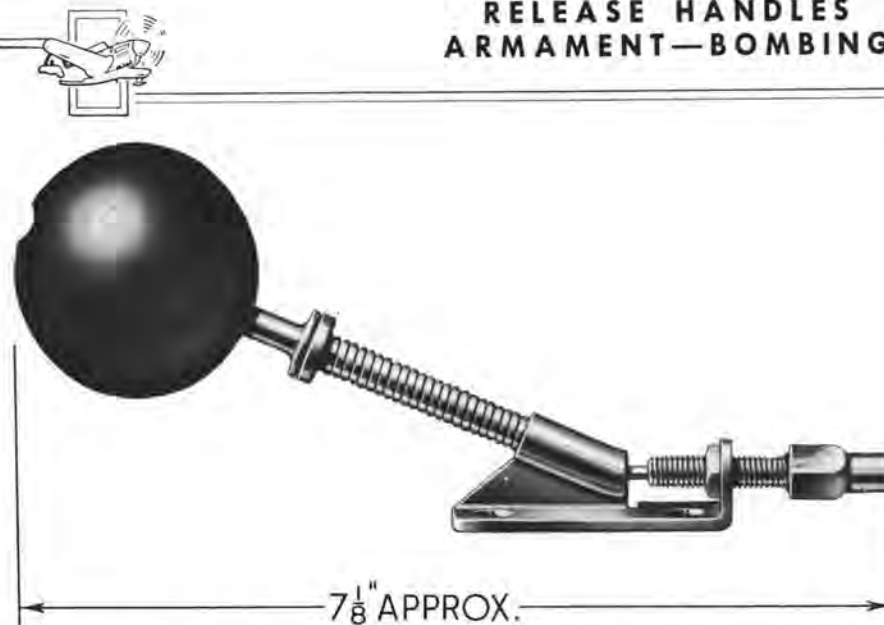
PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Husband Aircraft Specialties, Incorporated	*A-3	**0159268	A-N-B	6400312100	111A/30
National Mineral Company	*A-3	**0159268	A-N-B	6400312100	111A/30
	*A-3A	**41B10395	A-B	6400309950	111A/59
	*A-3B	**43B11390	A-B	6400309975	111A/51
Union Steel Products Company	*A-3	‡155982	N	6400312100	111A/30

Note: *AAF type; **AAF drawing; ‡Bureau of Ordnance Drawing.

RELEASE HANDLES ARMAMENT—BOMBING



HANDLE—BOMB AND FLARE RELEASE ARMY TYPE A-3A

NAMES: Bomb and flare release handle
Bomb and flare release handle assembly
Ball-grip bomb and flare release handle

DESCRIPTION: The Army type A-3A bomb and flare release handle is used to release bombs, flares or droppable cargo. Its application is restricted to the mechanical release of one bomb rack, or multiple racks in salvo.

The release handle is composed of a ball-grip, flexible spring, and a two hole mounting bracket. Actuation of the bomb rack is accomplished by a flexible cable, one end of which is attached to the release handle and the other end to the bomb release mechanism.

CHARACTERISTICS:

Weight approximately 1/2 pound
Dimensions approximately 7 1/8 by 3 1/8 by 2 inches

INSTALLATION PECULIARITIES: A 1/16 inch cable, specification number AN-RR-C-43, is attached at the time of installation in the airplane.

ARMY

A. E. REFERENCE NUMBER: 64-1600

SPECIFICATIONS:

Detail 93-24542-A
Superseded 93-24542

A. A. F. DRAWING NUMBER: 41B10395

TYPE DESIGNATION: A-3A

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation, superseded by Army type A-3B, A. E. Reference Number 64-1610.

SHIPPING DATA: Shipped as a complete unit, disassembled.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
National Mineral Company	*A-3A	**41B10395	A-B	6400309950	111A/59
	*A-3	**0159268	A-N-B	6400312100	111A/30
	*A-3B	**43B11390	A-B	6400309975	111A/51
Husband Aircraft Specialties, Incorporated	*A-3	**0159268	A-N-B	6400312100	111A/30

*AAF type; **AAF drawing.

RELEASE HANDLES ARMAMENT—BOMBING



HANDLE—BOMB AND FLARE RELEASE ARMY TYPE A-3B

NAMES: Bomb and flare release handle
Bomb and flare release handle assembly

Ball-grip bomb and flare release handle

DESCRIPTION: The Army type A-3B bomb and flare release handle is used to release bombs, flares or droppable cargo. Its application is restricted to the mechanical release of one bomb rack or multiple racks in salvo.

The release handle is composed of a ball-grip and a tubular section set at an angle and welded to a two hole mounting bracket.

Actuation of the bomb rack is accomplished by a flexible cable, one end of which is attached to the release handle and the other end to the bomb release mechanism.

CHARACTERISTICS:

Weight approximately $\frac{3}{4}$ pound
Dimensions approximately $7\frac{1}{8}$ by $3\frac{1}{8}$ by 2 inches

INSTALLATION PECULIARITIES: A $\frac{1}{16}$ inch cable, specification number AN-RR-C-43, is attached at the time of installation in the airplane.

ARMY

A. E. REFERENCE NUMBER: 64-1610

SPECIFICATIONS:

Detail 93-24542B
Superseded 93-24542

A. A. F. DRAWING NUMBER: 43B11390

TYPE DESIGNATION: A-3B

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, disassembled.

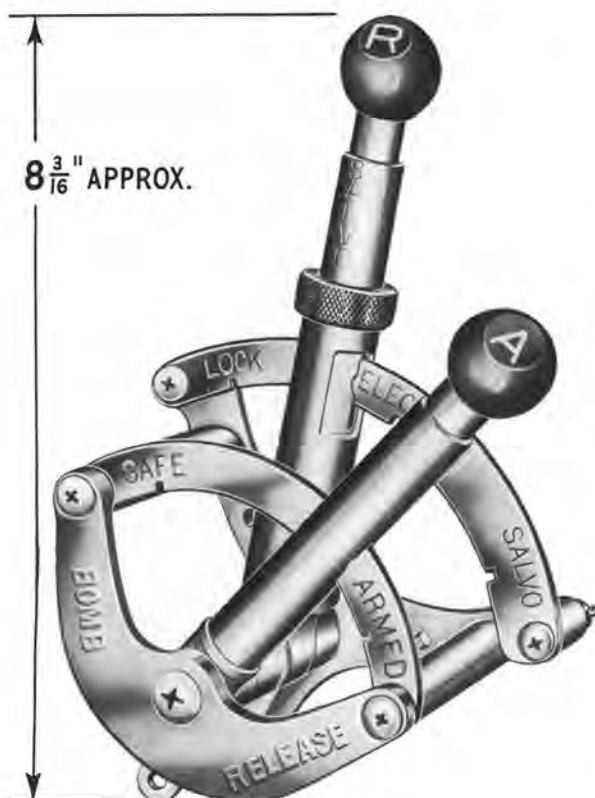
NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
National Mineral Company	*A-3B	**43B11390	A-B	6400309975	111A/51
	*A-3A	**41B10395	A-B	6400309950	111A/59
	*A-3	**0159268	A-N-B	6400312100	111A/30
Husband Aircraft Specialties, Incorporated	*A-3	**0159268	A-N-B	6400312100	111A/30

Note: *AAF type; **AAF drawing.

**HANDLE—BOMB RELEASE**

ARMY TYPE L-21A NAVY TYPE L-21A

NAMES: Bomb release handle
Bomb release handle assembly
Bomb rack handle

DESCRIPTION: The type L-21A bomb release handle is used for the manual release of bombs and flares. Provision is made for release of bombs in either SAFE or ARMED condition.

When the release handle is used in a completely mechanical bomb release circuit, bombs can be released in salvo only. When the release handle is used to control electrical bomb release circuits, the handle must be placed in either the selective or salvo position before the release of bombs is accomplished by the bombardier's electrical release switch.

CHARACTERISTICS:

Dimensions.....approximately 8 $\frac{5}{8}$ by 8 $\frac{3}{16}$ by 3 $\frac{7}{8}$ inches
Weight.....approximately 1 $\frac{1}{3}$ pounds

INSTALLATION PECULIARITIES: The type L-21A bomb release handle is normally used for left hand installation. For right hand installation, the sectors and lever must be reversed as shown on Army drawing number 38B5990.

ARMY

A. E. REFERENCE NUMBER: 64-1800

SPECIFICATIONS:

Detail.....93-24563A
Superseded.....93-24563

A. A. F. DRAWING NUMBER: 38D5989

TYPE DESIGNATION: L-21A

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: L-21A

BUREAU OF ORDNANCE DRAWING NUMBER: 308078

AVIATION ORDNANCE STOCK LIST NUMBER: 3-H-645

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

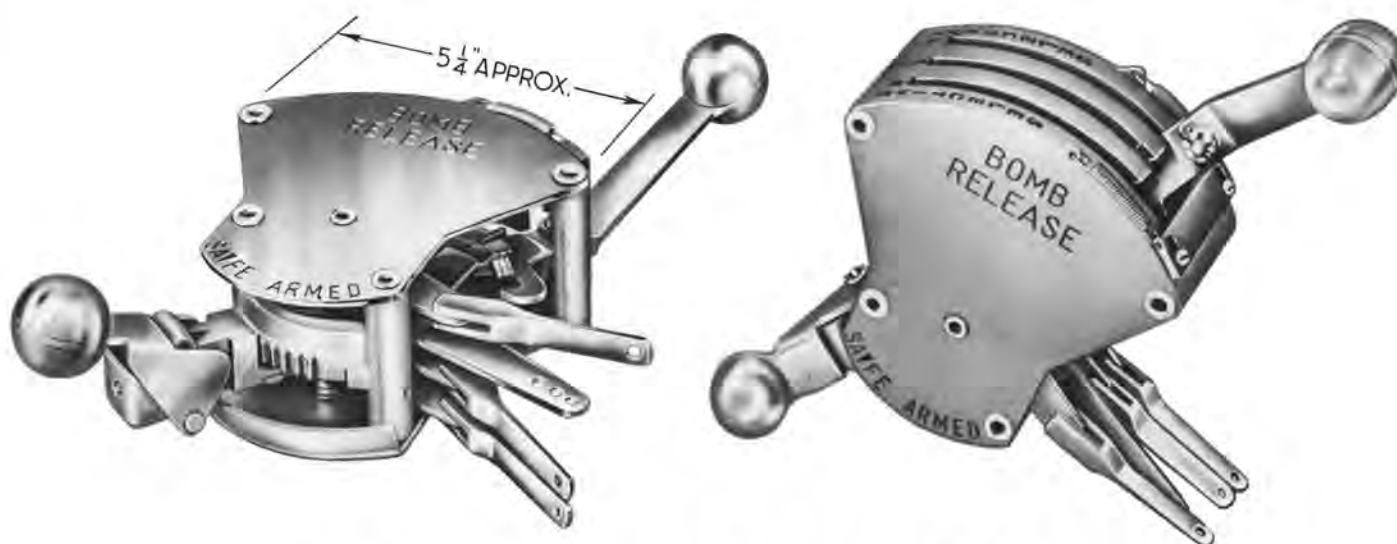
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Arro Tool and Engineering Company	*L-21A	**38D5989	A-N-B	6400313900	111A/35
Guardian Electric Manufacturing Company	*L-21A	20933	A-N-B	6400313900	111A/35
Aero Supply Manufacturing Company, Incorporated	L-21A	308078	N	6400313900	111A/35

Note: *AAF type; **AAF drawing.



RELEASE HANDLES ARMAMENT—BOMBING



HANDLE—BOMB RELEASE MARK 4 MODIFICATION 2

NAMES: Bomb release handle
Bomb rack release handle

Bomb release handle assembly

DESCRIPTION: The Mark 4 Modification 2 bomb release handle provides selective manual release of bombs in a left wing rack, a right wing rack, or salvo of the entire bomb load. A supplementary handle provides for controlling the arming of bombs which can be dropped in either SAFE or ARMED condition.

The bomb release handle consists of a metallic case which has a release handle extending from the top and a separate arming handle located on the lower sector of the case. The handles activate levers to which the bomb rack actuating cables are attached.

The handles, which are attached to the release lever and arming lever, may be reversed for either right or left hand installation.

The handle is installed on the airplane structure within reach of the operator.

CHARACTERISTICS:

Dimensions.....approximately 10½ by 6 by 3½ inches
Weight.....approximately 2¼ pounds

RELATIONSHIP OF PARTS: Used with:

Type AN-Mark 51 Modification 7 bomb racks, A. E. Reference Numbers 64-2349, 64-2350, and 64-2351.

ARMY

A. E. REFERENCE NUMBER: 64-1900

TYPE DESIGNATION: Mark 4 Modification 2

A. S. C. STOCK NUMBER: 6400311700

TECHNICAL ORDER NUMBER: 11-1-44

PRODUCTION STATUS: Under procurement from the Navy Department for Army use.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: Mark 4 Modification 2

BUREAU OF ORDNANCE DRAWING NUMBER: 108611, 375602 and 179000

AVIATION ORDNANCE STOCK LIST NUMBER: 3-H-627

PROCUREMENT STATUS: Under procurement.

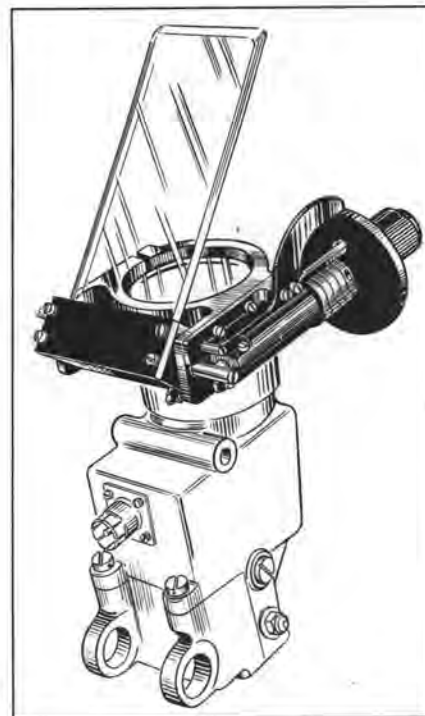
BRITISH

BRITISH REFERENCE NUMBER: 111A/52



HEAD—PILOT'S BOMBSIGHT

ARMY TYPE A-1



NAMES: Pilot's bombsight head Variable bombing reflector
 Low altitude bombsight Variable reflector

DESCRIPTION: The Army type A-1 pilot's bombsight head is used on a fixed gun sight body for directing bombs from extremely low altitudes, and to direct the firing of fixed guns.

The head is mounted on the gun sight directly in front of the pilot, with the center of the reflector at eye level. Adjustment is provided for bombing from various altitudes and speeds by varying the reflector angle. Variation is controlled by a graduated dial which allows a sight range from zero deflection down until the line of sight touches the airplane nose. Provision is made for adjusting the head for personal factors, which are determined by experience for the individual pilot's requirements. The pilot's bombsight head is composed of the following parts, whose functions are as indicated: Adjustable gun lock cam—to stop and lock the head in gunnery position. Adjusting dial—reading in degrees. Adjustable bombing cams—enables quick selection of position of adjusting dial. Latch—to release cams. Reflector frame—carries reflector. Sliding inner dial plate—for personal factor adjustment.

CHARACTERISTICS:

Dimensions.....approximately 6 $\frac{9}{16}$ by 5 by 5 $\frac{7}{16}$ inches
 Weight.....approximately 1 $\frac{1}{2}$ pounds

INSTALLATION PECULIARITIES: When used with Army type N-6 fixed gun sight, A. E. Reference Number 52-4500 or Army type N-6A fixed gun sight, A. E. Reference Number 52-4525, a pilot's bombsight adapter ring, A. E. Reference Number 64-2001, must be supplied.

RELATIONSHIP OF PARTS: Used with:

Army type N-3A fixed gun sight, A. E. Reference Number 52-4400, Army type N-3B fixed gun sight, A. E. Reference Number 52-4425, Army type N-6 fixed gun sight, A. E. Reference Number 52-4500, or Army type N-6A fixed gun sight, A. E. Reference Number 52-4525.

ARMY

A. E. REFERENCE NUMBER: 64-2000
 A. A. F. DRAWING NUMBER: 43D12264
 TYPE DESIGNATION: A-1
 A. S. C. STOCK NUMBER: Refer to chart.
 TECHNICAL ORDER NUMBER: Refer to chart.
 PRODUCTION STATUS: Under procurement.
 SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number
American Gage Company	*A-1	**43D12264	A	6400322880	11-30-12
	*A-2	**43D19996	A		11-30-12
S. F. Bowser & Co., Inc.	*A-1	**43D12264	A	6400322880	11-30-12
	*A-2	**43D19996	A		11-30-12

*AAF type; **AAF drawing.



RING—PILOT'S BOMBSIGHT ADAPTER

ARMY PART NUMBER 43B15328

NAMES: Pilot's bombsight adapter ring
Pilot's bombsight head adapter ring

Adapter ring

DESCRIPTION: The pilot's bombsight adapter ring is used as a bushing to afford stable mounting of the Army type A-1 or A-2 pilot's bombsight head on a fixed gun sight when the outside diameter of the gun sight body is too small to provide a close fit with the inside diameter of the pilot's bombsight head. The adapter ring is cylindrical in shape and has two mounting holes in the flange, one diametrically opposite the other. The flange is notched to prevent interference with the gun sight when installation is made.

CHARACTERISTICS:

Dimensions.....approximately $3\frac{5}{8}$ by $2\frac{7}{8}$ by $1\frac{5}{16}$ inches
Weight.....approximately $\frac{1}{6}$ pound

RELATIONSHIP OF PARTS: Used with:

Army type N-6 fixed gun sight, A. E. Reference Number 52-4500, or Army type N-6A fixed gun sight, A. E. Reference Number 52-4525, and Army type A-1 pilot's bombsight head, A. E. Reference Number 64-2000, or Army type A-2 pilot's bombsight head, A. E. Reference Number 64-2005.

ARMY

A. E. REFERENCE NUMBER: 64-2001

A. A. F. DRAWING NUMBER: 43B15328

TECHNICAL ORDER NUMBER: 11-30-12

PRODUCTION STATUS: Not under procurement for initial installation. This ring will be procured only when necessary to adapt the pilot's bombsight head to Army type N-6 or N-6A gun sight.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



HEAD—PILOT'S BOMBSIGHT

ARMY TYPE A-2

NAMES: Pilot's bombsight head
Low altitude bombsight
Variable bombing reflector
Variable reflector

DESCRIPTION: The Army type A-2 pilot's bombsight head is used on a fixed gun sight body for directing bombs from extremely low altitudes, and to direct the firing of fixed guns.

The head is mounted on the gun sight directly in front of the pilot, with the center of the reflector at eye level. Adjustment is provided for bombing from various altitudes and speeds by varying the reflector angle. Variation is controlled by a graduated dial, which allows a sight range from zero deflection down until the line of sight touches the airplane nose. Provision is made for adjusting the head for personal factors, which are determined by experience for the individual pilot's requirements.

The pilot's bombsight head is composed of the following parts, whose functions are as indicated: Adjustable gun lock cam—to stop and lock the head in gunnery position. Adjusting dial—reading in degrees. Adjustable bombing cams—enables quick selection of position of adjusting dial. Latch—to release cams. Reflector frame—carries reflector. Sliding inner dial plate—for personal factor adjustment. The A-2 pilot's bombsight head employs a different dial and latch, and is more durable and flexible than the A-1 pilot's bombsight head.



CHARACTERISTICS:

Dimensions.....approximately 5½ by 5⅞ by 5 inches
Weight.....approximately 1¼ pounds

INSTALLATION PECULIARITIES: When used with Army type N-6 fixed gun sight, A. E. Reference Number 52-4500 or Army type N-6A fixed gun sight, A. E. Reference Number 52-4525, a pilot's bombsight adapter ring, A. E. Reference Number 64-2001, must be supplied.

RELATIONSHIP OF PARTS: Used with:

Army type N-3A fixed gun sight, A. E. Reference Number 52-4400 and Army type N-3B fixed gun sight, A. E. Reference Number 52-4425.

ARMY

A. E. REFERENCE NUMBER: 64-2005
A. A. F. DRAWING NUMBER: 43D19996
TYPE DESIGNATION: A-2
TECHNICAL ORDER NUMBER: Refer to chart.
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

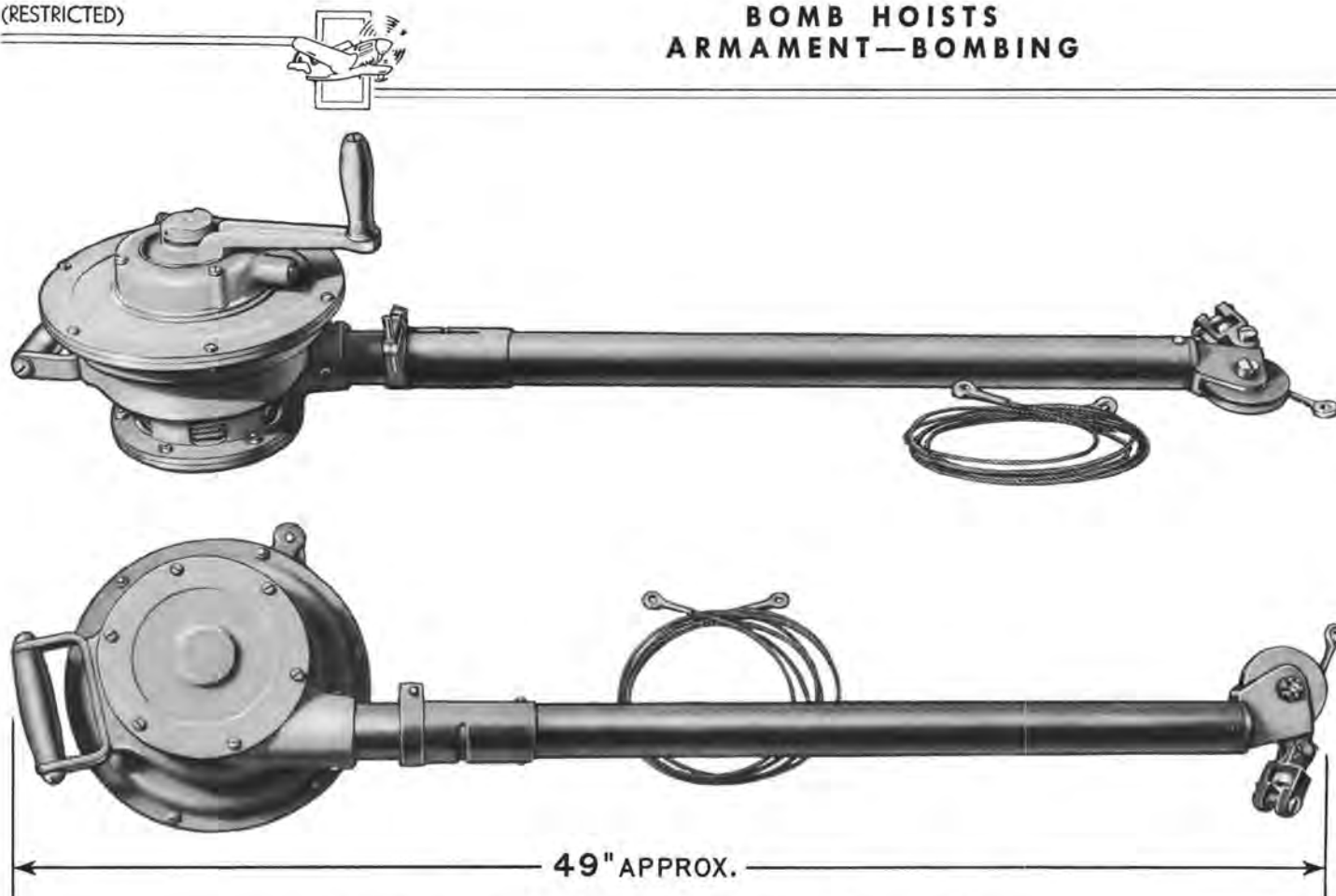
There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number
American Gage Company	*A-2	**43D19996	A		11-30-12
	*A-1	**43D12264	A	6400322880	11-30-12
S. F. Bowser & Co., Inc.	*A-2	**43D19996	A		11-30-12
	*A-1	**43D12264	A	6400322880	11-30-12

Note: *AAF type; **AAF drawing.

BOMB HOISTS ARMAMENT—BOMBING



HOIST—PORTABLE BOMB TYPE AN-MARK 7 MODIFICATION 1

NAMES: Portable bomb hoist
Adjustable bomb hoist

Bomb adjustable hoist
Bomb portable hoist

DESCRIPTION: The AN-Mark 7 Modification 1 portable bomb hoist provides a means for hoisting bombs to their proper bomb racks. This hand-held crank operated bomb hoist is used for loading operations on fighter, attack and light bombardment airplanes, and has a normal lifting capacity of 1000 pounds.

The complete bomb hoist is composed of a cable drum, an extension tube, cable pulley, hoist attachment fitting, hand grip and a gear-operating crank. The hoist attachment fitting is hooked to a hoist bracket on the airplane structure or on the bomb rack, and transmits the load of the bomb to the airplane structure and acts as a pivot for movement of the hoist for convenience of the operator. An internal ratchet prevents the bomb cable from slipping when the handle is released.

Some form of adapter such as trunnion bands or the Army type A-2 bomb hoist sling must be provided for hoisting bombs not equipped with a hoisting lug.

CHARACTERISTICS:

Weight.....	approximately 41 pounds
Dimensions.....	approximately 49 by 13 $\frac{1}{8}$ by 13 $\frac{1}{4}$ inches
Normal lifting capacity.....	1000 pounds
Maximum emergency capacity.....	1600 pounds
Distance of total lift.....	102 inches

RELATIONSHIP OF PARTS: Used with:

Bomb trunnion bands, M1 to M6 inclusive or Army type A-2 bomb hoist sling, A. E. Reference Number 64-4150.

(Continued on page 259)



HOIST—PORTABLE BOMB

(Continued from page 258)

ARMY

A. E. REFERENCE NUMBER: 64-2250

A. A. F. DRAWING NUMBER: H42B16115

TYPE DESIGNATION: AN-Mark 7 Modification 1

A. S. C. STOCK NUMBER: 6400324800

TECHNICAL ORDER NUMBER: 11-5-49

PRODUCTION STATUS: Under procurement from the Navy Department for Army use.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: AN-Mark 7 Modification 1

BUREAU OF ORDNANCE DRAWING NUMBER: Assembly 300173B, Outline 300172

AVIATION ORDNANCE STOCK LIST NUMBER: 3-H-1035

ORDNANCE PAMPHLET NUMBER: 949 and 865

ORDNANCE CIRCULAR LETTER NUMBER: V 14-42

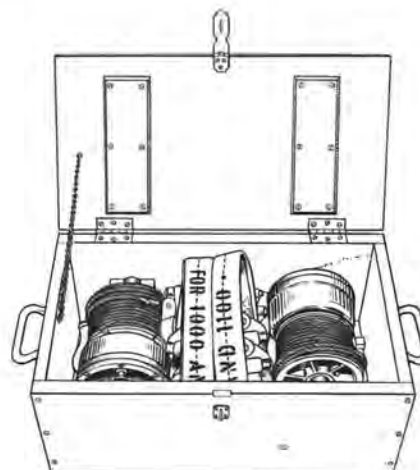
PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
The Manley Manufacturing Division of American Chain & Cable Company, Inc.	‡AN-Mark 7 Modification 1	Assembly 300173B	A-N-B	6400324800	11-5-49	111A/46
		Outline 300172				
Sullivan Machine Company	‡AN-Mark 7 Modification 1	Assembly 300173B	A-N-B	6400324800	11-5-49	111A/46
		Outline 300172				
Food Machinery Corporation	‡AN-Mark 7 Modification 1	Assembly 300173B	A-N-B	6400324800	11-5-49	111A/46
		Outline 300172				

NOTE: The AN-Mark 7, Modification 1 supersedes and is interchangeable with Navy Mark 7 and Mark 2, Modification 1 portable bomb hoists.
‡Army-Navy Type.

BOMB HOISTS ARMAMENT—BOMBING



HOIST—BOMB

ARMY TYPE C-3

NAMES: Bomb hoist

Bomb hoist assembly

DESCRIPTION: The Army type C-3 bomb hoist provides a means for hoisting demolition bombs of all sizes up to and including 2000 pounds to their proper stations on the bomb rack. This hand operated bomb hoist may also be used for hoisting cargo, provided the total weight does not exceed 2000 pounds. The complete hoist is composed of a right hand and a left hand windlass assembly, two bomb hoist handle assemblies and one each of the following size slings: 300 pound; 500 to 600 pound; 1000 to 1100 pound; and 2000 pound. The Army type A-2 bomb hoist sling may be included as a part of this bomb hoist.

Each windlass assembly is equipped with a brake to prevent the bomb cable from slipping when pressure on the handle is relaxed. The handles may be attached to either side of the windlass and are provided with three box sockets to allow for increased leverage as required with increased bomb weights.

CHARACTERISTICS:

Weight.....approximately 68½ pounds
Dimensions.....approximately 21½ by 11¼ by 9⅞ inches.

RELATIONSHIP OF PARTS: Used with:

Army type A-1 bomb hoist sling, A. E. Reference Number 64-4100 or Army type A-2 bomb hoist sling, A. E. Reference Number 64-4150

INSTALLATION PECULIARITIES: Either windlass may be converted to a right or left hand unit by rewinding the hoisting cable about the windlass drum in the opposite direction.

ARMY

A. E. REFERENCE NUMBER: 64-2200

SPECIFICATIONS:

Detail.....93-24583
Superseded.....24583

A. A. F. DRAWING NUMBER: (Hoist Assembly) 36H5311; (Packing Case Assembly) 37K4961

TYPE DESIGNATION: C-3

A. S. C. STOCK NUMBER: Refer to chart

TECHNICAL ORDER NUMBER: Refer to chart

PRODUCTION STATUS: Under procurement

SHIPPING DATA: Shipped as a complete unit.

NAVY

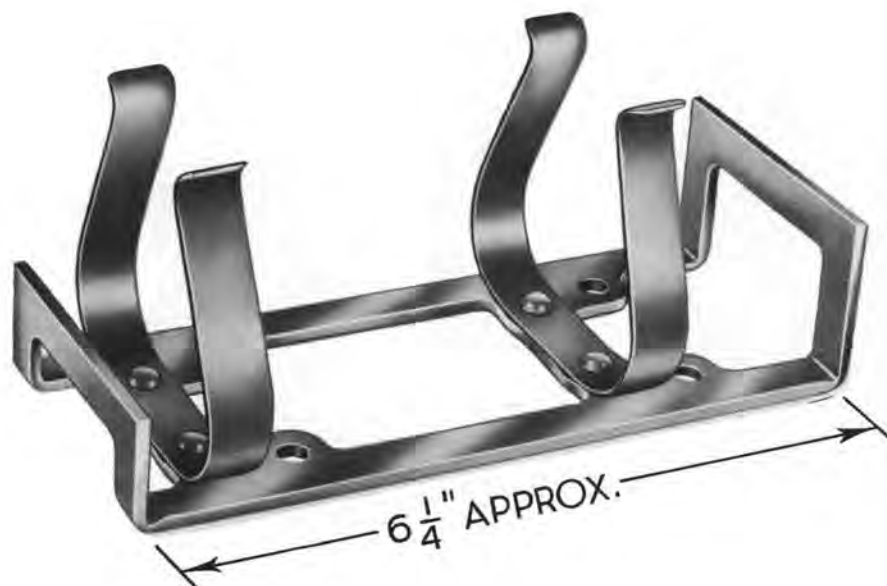
There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
The Taylor Machine Company	*C-3	**36H5311	A-B	6400325200	11-5-26	104G/28	See note.
Sparks-Withington Company	*C-3	A-16759	A-B	6400325200	11-5-26	104G/28	See note.

NOTE: Early models of the Army type C-3 bomb hoist did not contain a brake assembly, Army part number 40A6792.

*AAF type; **AAF drawing.



MOUNT—GRENADE

ARMY TYPE A-1

NAMES: Grenade mount
Grenade mount assembly

Hand grenade mount
Incendiary grenade mount

DESCRIPTION: The Army type A-1 grenade mount is composed of two spring steel clamps riveted to a steel base.
The grenade mount is attached to the airplane structure within reach of the pilot, and is used to carry one incendiary grenade.

CHARACTERISTICS:

Weight.....approximately 4/5 pound
Dimensions.....approximately 6 1/4 by 2 5/8 by 2 5/8 inches

RELATIONSHIP OF PARTS: Used with:
One AN-M14 incendiary grenade.

ARMY

A. E. REFERENCE NUMBER: 64-2265

SPECIFICATIONS:

Detail.....93-24840
Superseded.....24840

MANUFACTURER: Airolite Co.

A. A. F. DRAWING NUMBER: 43D10279

TYPE DESIGNATION: A-1

A. S. C. STOCK NUMBER: 6400469150

PRODUCTION STATUS: Under procurement.

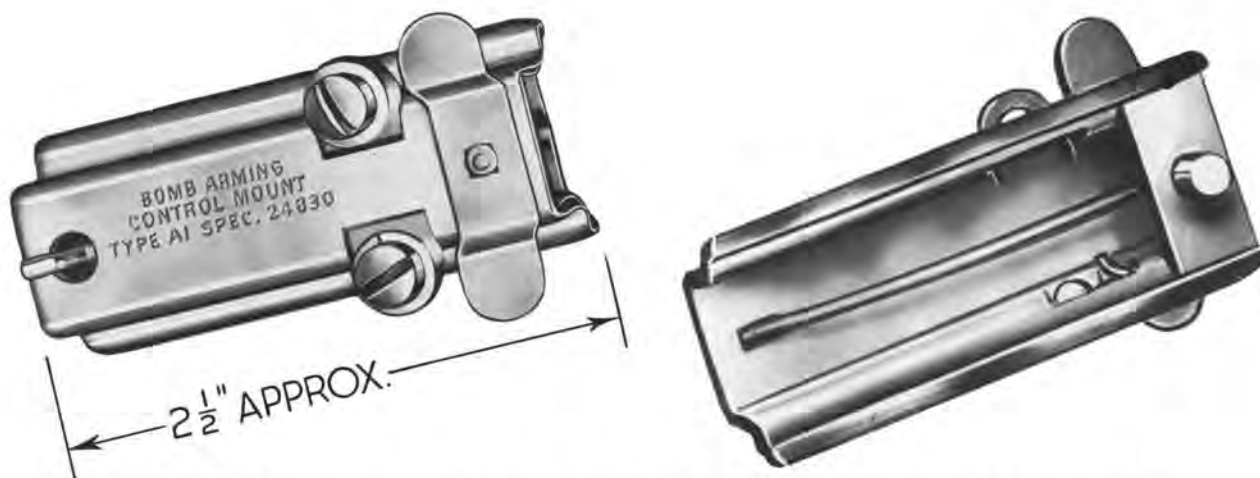
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



MOUNTS ARMAMENT—BOMBING



MOUNT—BOMB ARMING CONTROL ARMY TYPE A-1

NAMES: Bomb arming control mount
Bomb fusing control box slide

Bomb arming control mount assembly

DESCRIPTION: The type A-1 bomb arming control mount is used to attach bomb arming controls to bomb racks equipped with slide mounting rails. The mount is fastened to the control with two screws and a movable bracket which is under spring tension. The assembly is then installed in the mounting rails.

CHARACTERISTICS:

Weight.....approximately $\frac{3}{16}$ pound
Dimensions.....approximately $2\frac{1}{2}$ by $1\frac{3}{8}$ by $\frac{7}{8}$ inches

RELATIONSHIP OF PARTS: Used with:

Type AN-A-2 bomb arming control, A. E. Reference Number 64-220, and Army type B-2 bomb arming control, A. E. Reference Number 64-275, when mounting to slide mounting rails.

ARMY

A. E. REFERENCE NUMBER: 64-2270

SPECIFICATIONS:

Detail.....24830

MANUFACTURER'S DRAWING NUMBER: Magnavox Corporation 14D27G1

A. A. F. DRAWING NUMBER: 43A9886

TYPE DESIGNATION: A-1

A. S. C. STOCK NUMBER: 6400467850

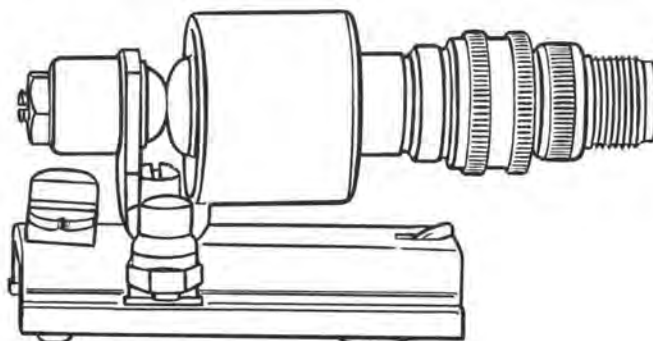
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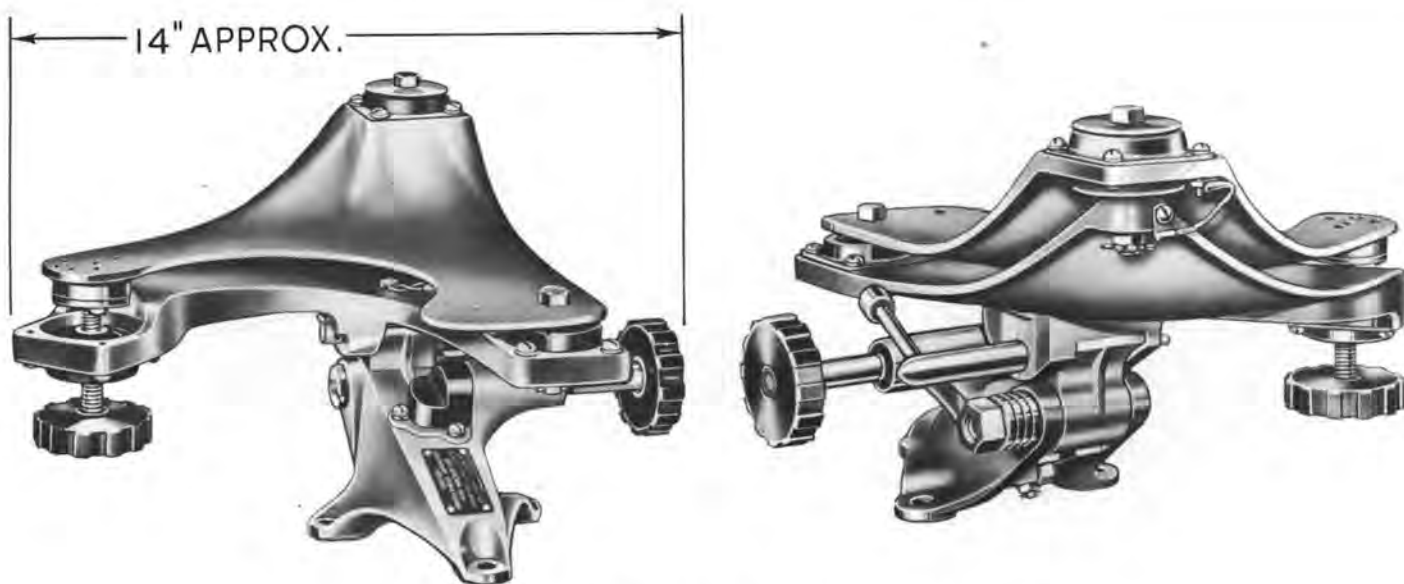
PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.





MOUNT—BOMBSIGHT

ARMY TYPE B-7

NAMES: Bombsight mount
Anti-vibration bombsight mount

Bombsight mount assembly
Bombsight shock mount

DESCRIPTION: The M-series bombsight and stabilizer are retained in their proper location upon the airplane by the Army type B-7 bombsight mount.

This device is so built that two mechanical regulators control leveling of the bombsight both fore and aft and laterally.

The B-7 bombsight mount is attached to a bracket in the bombardier's compartment in the airplane by three bolts, and is equipped with rubber shock absorbers, which protect the bombsight from damage by shock or vibration.

CHARACTERISTICS:

Weight approximately 9 $\frac{3}{4}$ pounds
Dimensions approximately 9 by 12 by 14 inches

RELATIONSHIP OF PARTS: Used with:
Army type M-series bombsights.

ARMY

A. E. REFERENCE NUMBER: 64-2272

SPECIFICATIONS:

Detail 24809

MANUFACTURER'S DRAWING NUMBER: Lovell Manufacturing Company, E11779

A. A. F. DRAWING NUMBER: 42J11779

TYPE DESIGNATION: B-7

A. S. C. STOCK NUMBER: 6400468850

PRODUCTION STATUS: Under procurement

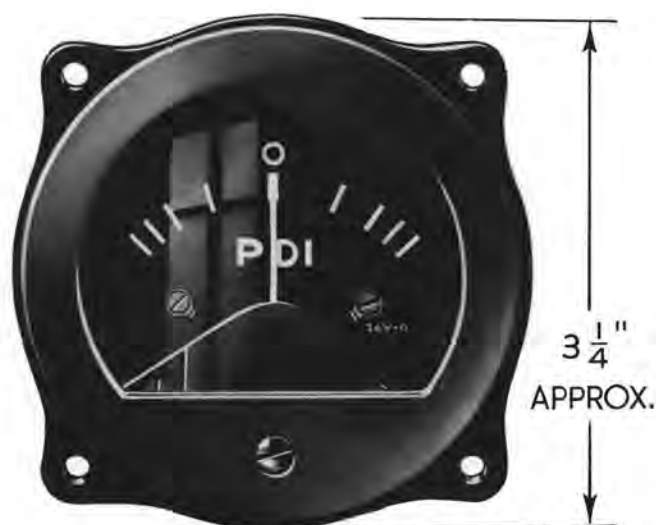
SHIPPING DATA: shipped as a complete unit.

NAVY

The Navy does not use the Army item.



PILOT DIRECTOR INDICATORS ARMAMENT—BOMBING



3 $\frac{1}{4}$ "
APPROX.



2 $\frac{27}{32}$ " APPROX.

INDICATOR—PILOT DIRECTOR

ARMY—SEE BELOW NAVY MARK 15, MOD. 5

NAMES: Pilot director indicator
Bombsight pilot director indicator
P. D. I.

DESCRIPTION: The pilot director indicator is an indicating type meter with 4 graduation marks to the right and left of a center zero, and it is mounted on the pilot's instrument panel.

The pointer fluctuates right or left in response to signals originating in the automatic pilot's directional stabilizer; this indicates to the pilot the course change desired by the bombardier. Movement of the airplane in the desired direction returns the pointer to the zero position.

This indicator operates on a 26 volt electrical circuit, and has a two pin electrical receptacle. A mating electrical plug, AN3106-12S-3S, was supplied with early models of this indicator to facilitate installation in the airplane.

CHARACTERISTICS:

Dimensions.....	approximately 3 $\frac{15}{64}$ by 3 $\frac{15}{64}$ by 3 $\frac{3}{32}$ inches
Weight.....	approximately 1 $\frac{1}{8}$ pounds
Illumination.....	none
Markings.....	fluorescent
Voltage.....	26 volts direct current
Electrical Receptacle.....	AN3102-12S-3P

RELATIONSHIP OF PARTS: Used with:

Army type C-1 automatic pilot, A. E. Reference Number 64-2300. When installed on an airplane not equipped with an Army type C-1 automatic pilot, it is used with Army type A-1 pilot director indicator control, A. E. Reference Number 64-835.

(Continued on page 265)



INDICATOR—PILOT DIRECTOR

(Continued from page 264)

ARMY

A. E. REFERENCE NUMBER: 64-2255

SPECIFICATIONS:

General.....C-24825
Detail.....C-24863

TECHNICAL ORDER NUMBER: 11-60AA-1

PRODUCTION STATUS: Under procurement

SHIPPING DATA: Shipped as a complete unit including electrical connector plug AN3106-12S-3S for early models only.

NAVY

TYPE DESIGNATION: Mark 15, Mod. 5

BUREAU OF ORDNANCE DRAWING NUMBER: 300206 (Installation Drawing)

AVIATION ORDNANCE STOCK LIST NUMBER: 2-I-115

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

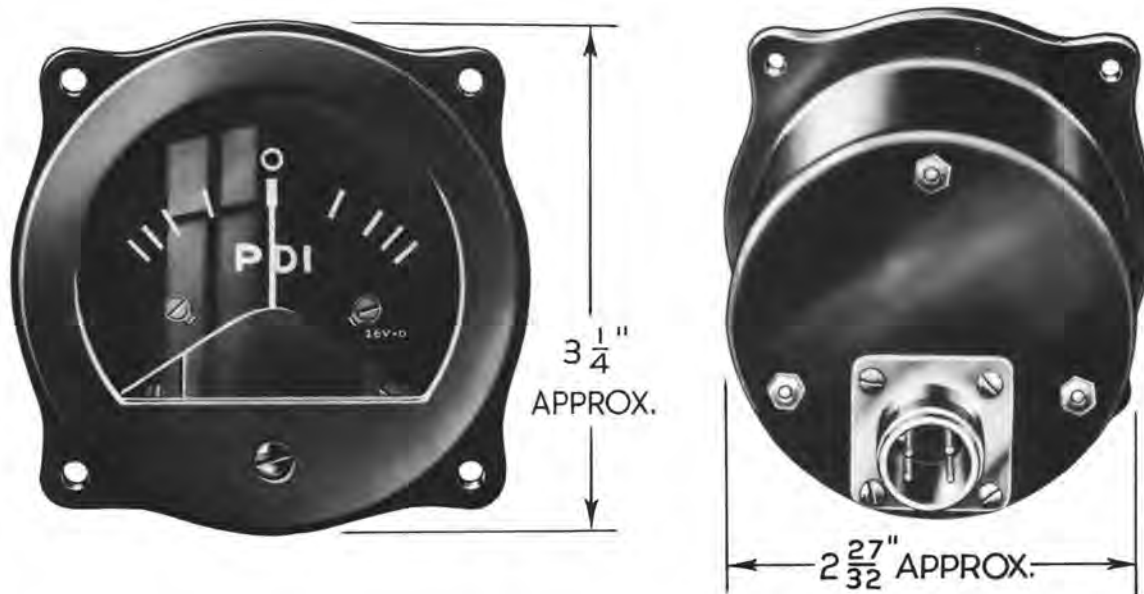
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	A. E. Reference Number	Navy Type	Bureau of Ordnance Drawing Number	Remarks
O. B. McClintock Company	MD3071 (2 pole)	PDI 100 (26 volt)	A-N-B	6400374920	11-60AAA-1	109/45	64-2255	MK 15, Mod. 5	300206	Electrical receptacle: AN3102-12S-3P (2 pin)
	MD3071 (4 pole)	PDI 100 (26 volt)	A-N	6400374900			64-2257	MK 15, Mod. 3	300206	Electrical receptacle: Cannon WK-4-32S (4 pin)
Roller-Smith Company		†265673 (modified)	A-N-B	6400374920	11-60AAA-1	109/45	64-2255	MK 15, Mod. 5	300206	Electrical receptacle: AN3102-12S-3P (2 pin)

NOTE: These models may be made interchangeable by substituting the proper electrical connector. †Bureau of Ordnance Drawing.



PILOT DIRECTOR INDICATORS ARMAMENT—BOMBING



INDICATOR—PILOT DIRECTOR NAVY MARK 15, MOD. 3

NAMES: Pilot director indicator
Bombsight pilot director indicator
P. D. I.

DESCRIPTION: The pilot director indicator is an indicating type meter with 4 graduation marks to the right and left of a center zero, and it is mounted on the pilot's instrument panel. The pointer fluctuates right or left in response to signals originating in the automatic pilot's directional stabilizer. This indicates to the pilot the course change desired by the bombardier. Movement of the airplane in the desired direction returns the pointer to the zero position. This indicator operates on a 26 volt electrical circuit. It has a four pin electrical connector, although only two pins are utilized electrically.

CHARACTERISTICS:

Dimensions.....	approximately $3\frac{15}{64}$ by $3\frac{15}{64}$ by $3\frac{3}{32}$ inches
Weight.....	approximately $1\frac{1}{8}$ pounds
Illumination.....	none.
Markings.....	fluorescent
Voltage.....	26 volts direct current
Receptacle.....	Cannon WK-4-32S

RELATIONSHIP OF PARTS: Used with:

Army type C-1 automatic pilot, A. E. Reference Number 64-2300. When installed on an airplane not equipped with Army type C-1 automatic pilot, it is used with Army type A-1 pilot director indicator control, A. E. Reference Number 64-835.

(Continued on page 267)



PILOT DIRECTOR INDICATORS ARMAMENT—BOMBING

INDICATOR—PILOT DIRECTOR

(Continued from page 266)

ARMY

A. E. REFERENCE NUMBER: 64-2257

SPECIFICATIONS:

General.....C-24825
Detail.....C-24580-D
Superseded.....C-24580-C

A. S. C. STOCK NUMBER: 6400374900

PRODUCTION STATUS: Not under procurement for initial installation.

Superseded by pilot director indicator, A. E.

Reference Number 64-2255

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: Mark 15, Mod. 3

BUREAU OF ORDNANCE DRAWING NUMBER: 300206 (Installation Drawing)

AVIATION ORDNANCE STOCK LIST NUMBER: 2-1-105

PROCUREMENT STATUS: Not under procurement for initial installation. Superseded by Mark 15, Mod. 5.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	A. E. Reference Number	Navy Type	Bureau of Ordnance Drawing Number	Remarks
O. B. McClintock Company	MD3071 (4 pole)	PDI 100 (26 volt)	A-N	6400374900			64-2257	MK 15, Mod. 3	300206	Electrical receptacle: Cannon WK-4-32S (4 pin)
	MD3071 (2 pole)	PDI 100 (26 volt)	A-N-B	6400374920	11-60AA-1	109/45	64-2255	MK 15, Mod. 5	300206	Electrical receptacle: AN3102-12S-3P (2 pin)
Roller-Smith Company		‡265673 (modified)	A-N-B	6400374920	11-60AA-1	109/45	64-2255	MK 15, Mod. 5	300206	Electrical receptacle: AN3102-12S-3P (2 pin)

NOTE: These models may be made interchangeable by substituting the proper electrical connector.

‡Bureau of Ordnance Drawing.

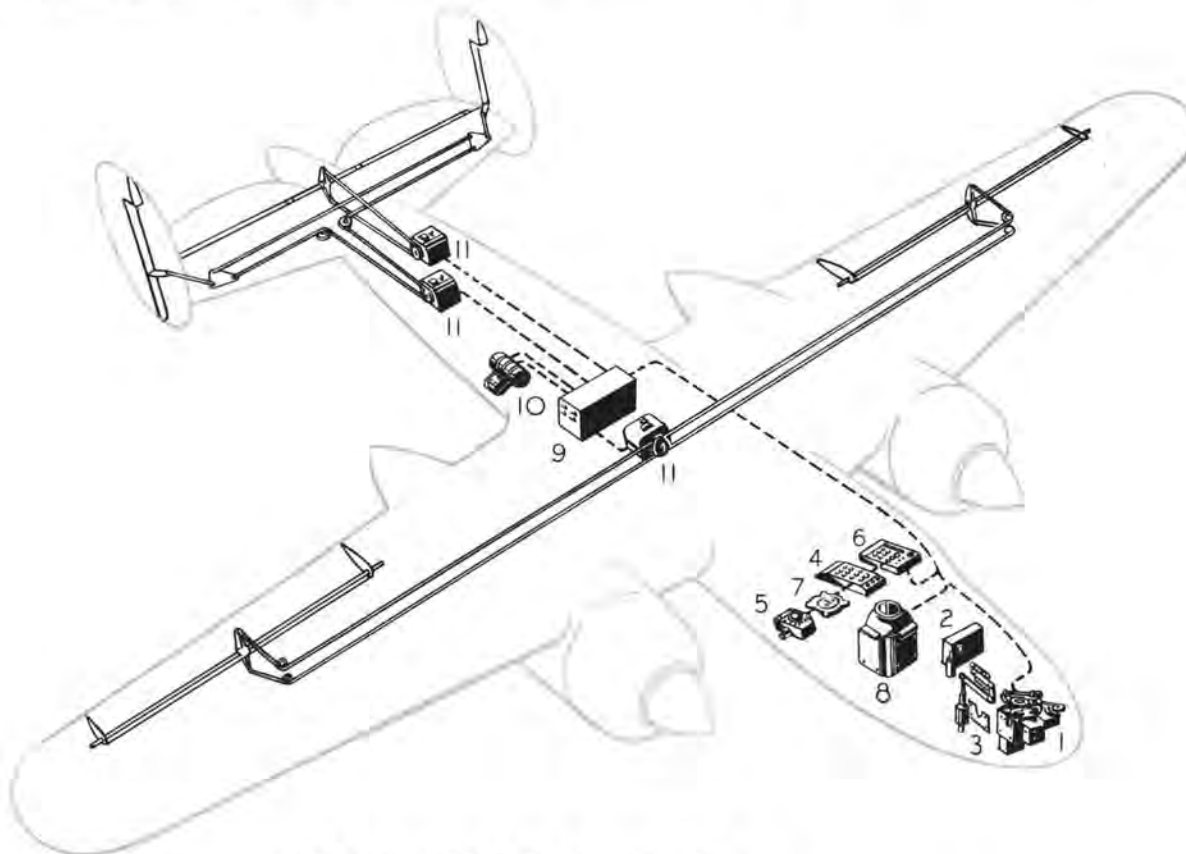


PILOT—AUTOMATIC

ARMY TYPE C-1 NAVY MARK 2, MODIFICATION 1

The automatic pilot is used to automatically control the airplane during normal flight or on bombing runs. The diagram below shows the approximate location of the component units in the airplane.

The pilot's control panel and the turn control are not used with the automatic pilot when an autopilot control panel is specified.



COMPONENT ITEMS

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> 1 Stabilizer-Directional 2 Panel-Directional 3 Lock-Directional arm 4 Panel-Pilot's control 5 Control-Turn 6 Panel-Autopilot control AER No. 64-195 | <ul style="list-style-type: none"> 7 Indicator-Pilot director AER No. 64-2255 8 Control-Vertical gyro 9 Amplifier 10 Inverter-Rotary 11 Motor-Servo |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

ARMY

A. E. REFERENCE NUMBER: (complete pilot) 64-2300
 SPECIFICATION:
 General C-24825
 TECHNICAL ORDER NUMBER: 11-60-1 and 11-60AA-1
 A. S. C. STOCK NUMBER: 6400507995

NAVY

NAME: Stabilized Bombing Approach Equipment (SBAE)
 TYPE DESIGNATION: Mark 2 Modification 1
 AVIATION ORDNANCE STOCK LIST NUMBER: (complete pilot) 2-S-335
 NAVAL ORDNANCE PAMPHLET NUMBER: 639.

BRITISH

REFERENCE NUMBERS: see individual items.

MANUFACTURER

Minneapolis Honeywell Regulator Company.

(Continued on page 269)



PILOT—AUTOMATIC

(Continued from page 268)

DIRECTIONAL STABILIZER

The directional stabilizer contains the stabilizer gyro which controls the movement of the airplane in azimuth and the pilot director indicator potentiometer and brush which operate the pilot director indicator located on the pilot's instrument panel.

The directional arm and the directional arm lock are attached to this unit.

Dimensions, approximately $11\frac{31}{32}$ by $12\frac{15}{16}$ by $12\frac{27}{32}$ inches.
 Weight, approximately $39\frac{1}{8}$ pounds.
 Army Air Force specification C-24827
 A. S. C. stock number 6400963750
 British reference number 106J/758
 Manufacturer's drawing and part number G1048
 Production status: Under procurement.



AUTOPILOT CONTROL PANEL

For detailed description of this item refer to A. E. Reference Number 64-195, page 232 of this index.

PILOT DIRECTOR INDICATOR

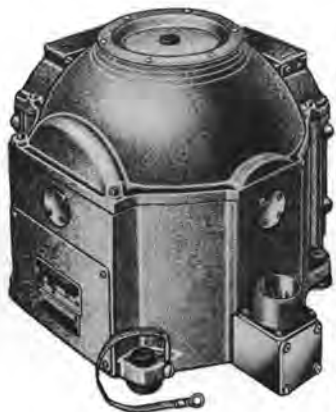
For detailed description of this item refer to A. E. Reference Number 64-2255, page 264 of this index.

VERTICAL GYRO CONTROL

The vertical gyro control unit is the vertical reference of the airplane with respect to the earth's surface. It provides reference for the lateral and longitudinal control of the airplane.

The unit consists of a gyroscope rotor secured to a spindle on which is mounted the armature of a shunt-wound motor. The rotor provides the motivating force for the gyro, operating it at high speed.

Dimensions, approximately $7\frac{5}{8}$ by $10\frac{15}{32}$ by $8\frac{11}{16}$ inches.
 Weight, approximately $18\frac{1}{4}$ pounds.
 Army Air Force specification C-24858
 A. S. C. stock number 6400304650
 British reference number 106J/694
 Manufacturer's drawing and part number G1021A
 Manufacturer's outline drawing number DR2002
 Production status: Under procurement.



AMPLIFIER

The amplifier consists of electronic tubes, relays, chokes, and a transformer for the power supply of the tubes. These units are mounted on a removable rack which slides into its case on two guides.

Dimensions, approximately $7\frac{3}{8}$ by $9\frac{25}{64}$ by $8\frac{1}{4}$ inches.
 Weight, approximately $12\frac{1}{4}$ pounds.
 Army Air Force specification C-24859
 A. S. C. Stock number 6400009400
 British reference number 106J/700
 Manufacturer's drawing and part number G1024A
 Manufacturer's outline drawing number DR2000
 Production status: Under procurement.



(Continued on page 270)



PILOT—AUTOMATIC

(Continued from page 269)

ROTARY INVERTER



The rotary inverter provides the alternating current required to operate the automatic pilot.

This rotary inverter consists of a direct current motor with its armature windings tapped at two opposite points, and connected to two collector rings insulated from the armature. Direct current is supplied to the motor commutator through carbon brushes; the alternating current is drawn from the collector rings by carbon brushes. A choke coil, three condensers, and a connector plug (AN3102-14S-5P) are included in the base. The construction of the base permits the inverter to be turned 180 degrees for connection or mounting convenience.

The inverter receives the 24 to 28 volt direct current provided by the airplane's generator and supplies 19 volt alternating current for operating the pilot. The starting current drawn is 23 amperes and running current is 2.5 amperes.

Dimensions, approximately.....	5 $\frac{5}{8}$ by 5 $\frac{7}{8}$ by 6 $\frac{3}{4}$ inches.
Weight, approximately.....	10 $\frac{1}{4}$ pounds.
Army Air Force specification.....	C-24862
A. S. C. Stock number.....	6400219650
British reference number.....	106J/693
Manufacturer's drawing and part number.....	G1025A
Manufacturer's outline drawing number.....	DR2001

Production status: Under procurement.

SERVO MOTOR

The servo motor consists of an assembly containing a 1/20 horsepower direct current motor. This motor operates a system of gears, brakes, clutches, solenoids, and a limit switch to drive a cable drum. The drum can accommodate 24 to 26 inches of cable travel while driving over a range of four and one half inches.

Three servo motors are used on each aircraft; the motors are connected by cable to control the plane's rudder, elevator and ailerons.

Dimensions, approximately.....	6 $\frac{7}{16}$ by 9 $\frac{21}{32}$ by 10 $\frac{9}{16}$ inches.
Weight, approximately.....	23 $\frac{5}{8}$ pounds.
Army Air Force specification.....	C-24860
A. S. C. stock number.....	6400464500
British reference number.....	106J/696
Manufacturer's drawing and part number.....	G1020
Manufacturer's outline drawing number.....	DR2003

Production status: Under procurement.



DIRECTIONAL PANEL

The directional panel is mounted on the directional stabilizer. It consists of two potentiometers with pick-up contacts or brushes, a flight gyro roller cutout switch, and a dash pot with linkage.

Dimensions, approximately.....	5 $\frac{13}{16}$ by 8 $\frac{1}{4}$ by 3 $\frac{3}{32}$ inches.
Weight, approximately.....	3 $\frac{1}{4}$ pounds.
Army Air Force specification.....	C-24796
A. S. C. Stock number.....	6400496523
British reference number.....	106J/695
Manufacturer's drawing and part number.....	G1005A
Manufacturer's outline drawing number.....	DR2004

Production status: Under procurement.



(Continued on page 271)



PILOT—AUTOMATIC

(Continued from page 270)

DIRECTIONAL ARM LOCK

The directional arm lock consists of a solenoid, drawing approximately 0.4 amperes of current actuated by a series of levers. It is mounted on the directional stabilizer.

Rotation of the turn control knob from the center, or zero, position energizes the solenoid and actuates the levers to lock the gyro secondary clutch in a neutral position. When the control knob is returned to the zero position, the clutch is released and the airplane resumes straight flight on the new course.

Dimensions, approximately..... $7\frac{5}{8}$ by $5\frac{5}{8}$ by $1\frac{15}{32}$ inches.
 Weight, approximately..... $1\frac{1}{4}$ pounds.
 Army Air Force specification.....C-24827
 A. S. C. Stock number.....6400430925
 British reference number.....106J/759
 Manufacturer's drawing and part number.....G1029A2
 Manufacturer's outline drawing number.....DR2033
 Production status: Under procurement.



PILOT'S CONTROL PANEL

The pilot's control panel contains the controls necessary for the operation of the automatic pilot except the pilot's turn control, which is mounted separately, and the limit switches of the servos, which are attached to individual units. It is mounted in the pilot's compartment.

It contains toggle switches at the top of the panel, to control the following units:

- Master (for complete control)
- Pilot director indicator
- Aileron servo, (brake clutch solenoid only)
- Rudder servo, (brake clutch solenoid only)
- Elevator servo, (brake clutch solenoid only)
- Directional stabilizer
- Stabilizer servo

The master and directional stabilizer switches are connected by a bar which moves both switches ON and OFF together, and prevents the other switches from being used before the automatic pilot is in operation. Movement of the bar to the OFF position operates all switches simultaneously, with the exception of the pilot director indicator and the stabilizer servo switches.

Adjusting knobs for the centering, sensitivity, ratio and turn compensation for the three axes of control are also located on the face of the panel.

Dimensions, approximately..... $10\frac{9}{16}$ by 6 by $4\frac{5}{16}$ inches.
 Weight, approximately..... $5\frac{3}{8}$ pounds.
 Army Air Force specification.....C-24861
 A. S. C. stock number.....6400091560
 British reference number.....106J/698
 Manufacturer's drawing and part number.....G1023A
 Production status: Not under procurement for initial installation. Superseded by Autopilot Control Panel.

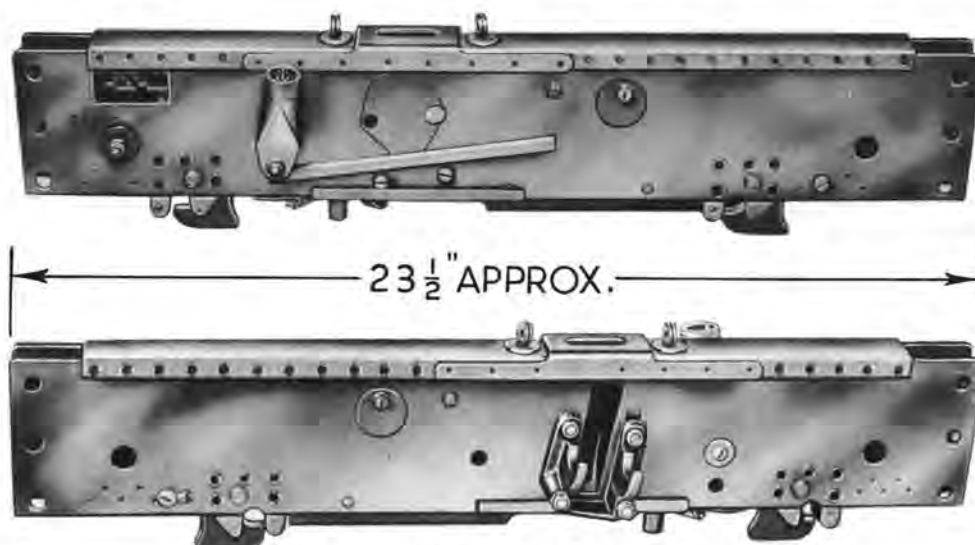
TURN CONTROL

The turn control provides the pilot with a means of turning the airplane at an angle of bank (up to 40 degrees), and returning it to straight flight by means of the automatic pilot. It is mounted in the pilot's compartment.

Dimensions, approximately..... $3\frac{3}{16}$ by $2\frac{9}{32}$ by $4\frac{3}{4}$ inches.
 Weight, approximately.....1 pound
 Army Air Force specification.....C-24864
 A. S. C. stock number.....6400372100
 British reference number.....106J/697
 Manufacturer's drawing and part number.....G1027A
 Manufacturer's outline drawing number.....DR2031
 Production status: Not under procurement for initial installation. Superseded by Autopilot Control Panel.



BOMB RACKS **ARMAMENT—BOMBING**



RACK—BOMB

TYPE AN-MARK 51 MODIFICATION 7

NAMES: Bomb rack

Bomb rack assembly

DESCRIPTION: This type bomb rack is a combination electrical and mechanical unit, designed to be adapted to all types of dive bombers having a 24 volt electrical system. Installation may be made either in the lower wing surface or in the bomb bay compartment.

Arming and releasing controls are actuated by the energizing of solenoids or, in emergency, by mechanical means. Two solenoids, located in the forward part of the bomb rack, actuate the arming of the bomb nose and tail fuses, and a solenoid located toward the rear operates the release mechanism.

CHARACTERISTICS:

Weight.....	approximately 11 $\frac{3}{4}$ pounds
Dimensions.....	approximately 23 $\frac{1}{2}$ by 2 $\frac{3}{8}$ by 5 $\frac{1}{8}$ inches
Maximum capacity.....	1600 pounds
Electrical connector.....	AND10427-14S-5P insert arrangement
Electrical connector mates with.....	AN3108-14S-5S, or AN3106-14S-5S
Distance between suspension lugs.....	14 inches

RELATIONSHIP OF PARTS: Used with:

Navy Mark 4 Modification 2 bomb release handle... A. E. Reference Number 64-1900

INSTALLATION PECULIARITIES: To facilitate installation, the Mark 51 Modification 7 bomb rack may be ordered by designating the required installation position in the airplane. Arrangement of parts for the different positions are as follows:

CENTER—A. E. REFERENCE NUMBER 64-2349

Electrical receptacle assembly on left sideplate
No hoist bracket
Smoke screen tank terminal on left sideplate forward

LEFT—A. E. REFERENCE NUMBER 64-2350

Electrical receptacle assembly on right sideplate
Hoist bracket on left sideplate
Smoke screen tank terminal on left sideplate forward

RIGHT—A. E. REFERENCE NUMBER 64-2351

Electrical receptacle assembly on left sideplate
Hoist bracket on right sideplate
Smoke screen tank terminal on left sideplate forward

ARMY

A. E. REFERENCE NUMBER: 64-2349 (Center), 64-2350 (Left), 64-2351 (Right)

A. A. F. DRAWING NUMBER: 43B7513

TYPE DESIGNATION: AN-Mark 51 Modification 7

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Supersedes and is interchangeable with Mark 51 Modification 5.

SHIPPING DATA: Shipped as a complete unit.

(Continued on page 273)



RACK—BOMB

(Continued from page 272)

NAVY

TYPE DESIGNATION: AN-Mark 51 Modification 7

BUREAU OF ORDNANCE DRAWING NUMBER: 328759

AVIATION ORDNANCE STOCK LIST NUMBER: 3-R-176-70 (Center), 3-R-176-73 (Left), 3-R-176-75 (Right)

ORDNANCE PAMPHLET NUMBER: 865A and 925

ORDNANCE CIRCULAR LETTER NUMBER: V 10-43

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

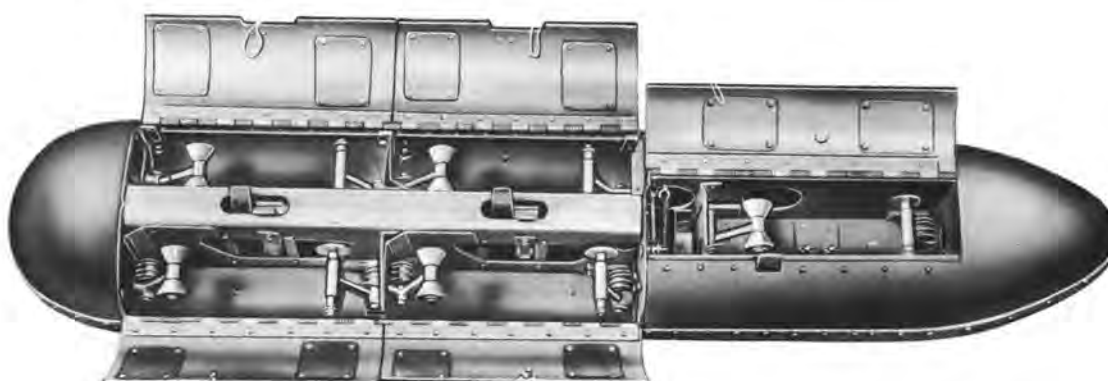
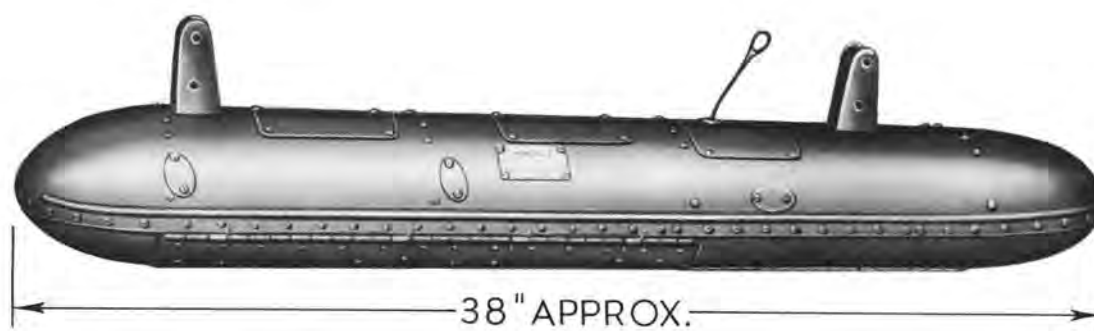
Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
International Register Company	AN-Mark 51 Modification 7	**43B7513	A-N-B	6400624115	11-5-7	111A/53
Pollak Manufacturing Company	AN-Mark 51 Modification 7	410430	A-N-B	6400624115	11-5-7	111A/53

NOTE: Above information is applicable regardless of arrangement of parts.

**AAF drawing.



BOMB RACKS ARMAMENT—BOMBING



RACK—BOMB

ARMY TYPE MARK 43 MODIFICATION 1

NAVY MARK 43 MODIFICATION 1

NAMES: Bomb rack
Miniature bomb rack

Bomb rack assembly

DESCRIPTION: The Mark 43, Modification 1 bomb rack is a light, torpedo-shaped cylinder, with enclosed operating mechanism. The bomb rack has five compartments, each of which will hold one three-pound practice bomb. The doors are closed upon loading. The bombs are held in place by spring loaded ejectors, and are released from the compartments upon opening of the compartment doors by movement of the bomb release handle at the bombardier's station. Bombs used in this bomb rack are always in an armed condition and explode upon impact. This bomb rack was developed especially for practice dive bombing at speed up to 345 miles per hour.

CHARACTERISTICS:

Weight.....	approximately 13 $\frac{3}{5}$ pounds
Dimensions.....	approximately 38 $\frac{13}{64}$ by 7 $\frac{19}{64}$ by 4 $\frac{51}{64}$ inches
Distance between suspension lugs.....	22 $\frac{1}{2}$ inches
Capacity.....	5 miniature practice bombs

RELATIONSHIP OF PARTS: Used with:

Navy, Mark 4 Modification 2 bomb release handle, A. E. Reference Number 64-1900.

ARMY

A. E. REFERENCE NUMBER: 64-2340

TYPE DESIGNATION: Mark 43 Modification 1.

A. S. C. STOCK NUMBER: 6400621515

TECHNICAL ORDER NUMBER: 11-5-18

PRODUCTION STATUS: Under procurement from the Navy Department for Army use.

SHIPPING DATA: Shipped as a complete unit.

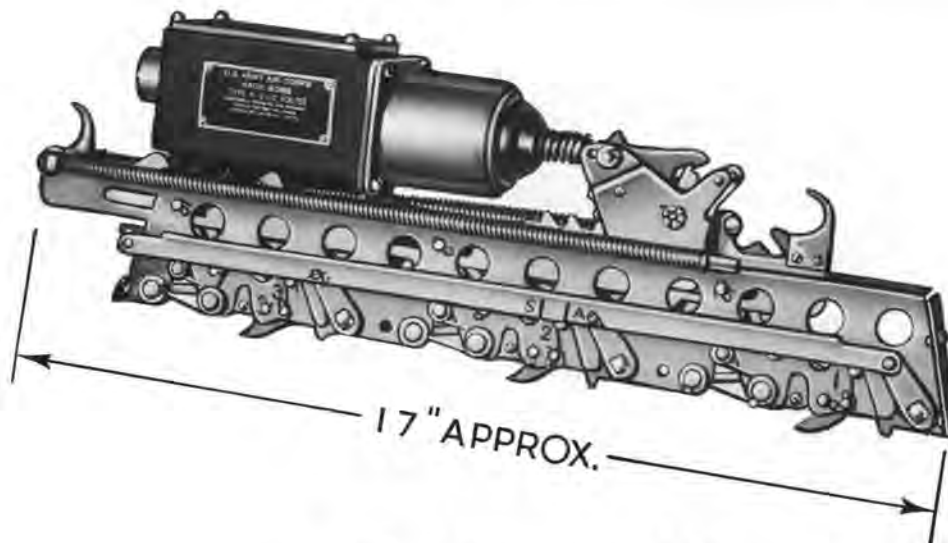
NAVY

TYPE DESIGNATION: Mark 43 Modification 1

BUREAU OF ORDNANCE DRAWING NUMBER: 182990

AVIATION ORDNANCE STOCK LIST NUMBER: 3-R-167

PROCUREMENT STATUS: Under procurement.



RACK—BOMB

ARMY TYPE N-5

NAMES: Bomb rack
Bomb rack assembly

Wing bomb rack
External bomb rack

DESCRIPTION: The type N-5 bomb rack is installed externally, usually in the wing position of light bombardment or fighter airplanes. Each bomb rack will support three thirty-pound fragmentation bombs, or three twenty-pound practice bombs. Bombs may be dropped individually, or in salvo, from this rack.

Front and rear sway bracing must be provided to prevent movement of the bombs during flight.

The bomb rack is activated by a 12 volt solenoid which forms a part of this rack.

CHARACTERISTICS:

Weight.....	approximately 8 pounds
Dimensions.....	approximately 2 $\frac{1}{2}$ by 6 by 17 $\frac{1}{4}$ inches
Maximum capacity.....	three 30 pound bombs
Electrical connector.....	Army drawing number 35A2539

RELATIONSHIP OF PARTS: Used with:

Army type L-21A bomb release handle, A. E. Reference Number 64-1800, for mechanical release, or AN3022-2 toggle switch, A. E. Reference Number 52-6650 and Army type B-5 control stick switch, A. E. Reference Number 52-6600, for electrical release.

ARMY

A. E. REFERENCE NUMBER: 64-2400

SPECIFICATIONS:

Detail.....	93-24626
Superseded.....	24626

MANUFACTURER: Banner Die Tool and Stamping Company

MANUFACTURER'S DRAWING NUMBER: 39G4407

A. A. F. DRAWING NUMBER: 39G4407

TYPE DESIGNATION: N-5

A. S. C. STOCK NUMBER: 6400621600

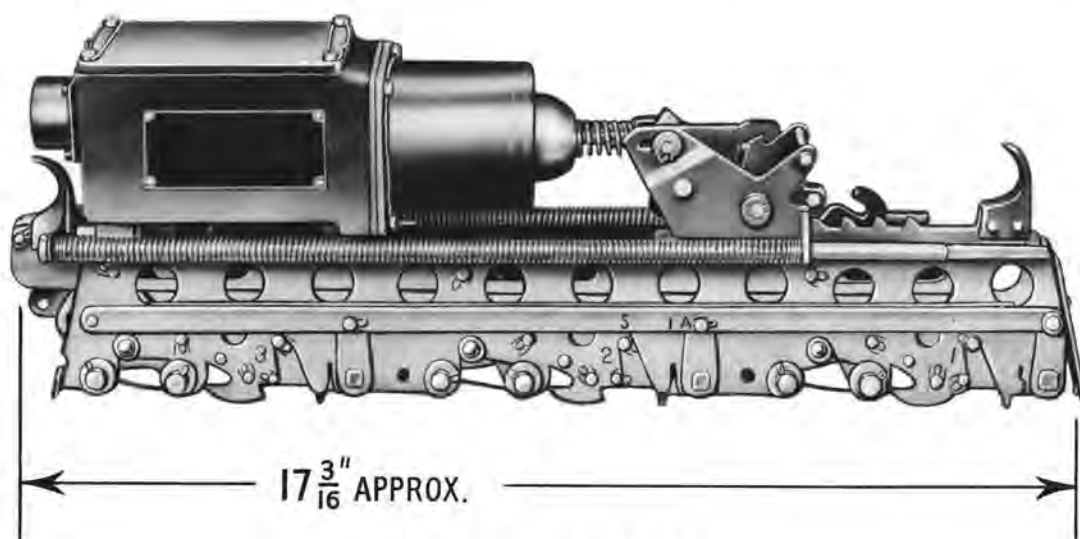
PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type Q-2 bomb rack, A. E. Reference Number 64-2600, since 12 volt systems are no longer used in bombardment or fighter airplanes.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BOMB RACKS ARMAMENT—BOMBING



RACK—BOMB ARMY TYPE Q-2

NAMES: Bomb rack
Bomb rack assembly

External bomb rack
Wing bomb rack

DESCRIPTION: The type Q-2 bomb rack is installed externally, usually in the wing position, of light bombardment or fighter airplanes. Each bomb rack will support three thirty-pound fragmentation bombs, or three twenty-pound practice bombs. Bombs may be dropped individually, or in salvo, from this rack.

Front and rear sway bracing must be provided, to prevent movement of the bombs during flight. The bomb rack is activated by a 24 volt solenoid, which forms a part of this rack.

CHARACTERISTICS:

Weight.....	approximately 7 $\frac{3}{4}$ pounds
Dimensions.....	approximately 19 by 2 $\frac{1}{2}$ by 6 inches
Maximum capacity.....	three 30 pound bombs
Electrical connector.....	Army drawing number 35A2539
Power supply.....	24 volt, direct current

RELATIONSHIP OF PARTS: Used with:

Army type L-21A bomb release handle, A. E. Reference Number 64-1800, for mechanical release, or AN3022-2 toggle switch, A. E. Reference Number 52-6650 and Army type B-5 control stick switch, A. E. Reference Number 52-6600, for electrical release.

ARMY

A. E. REFERENCE NUMBER: 64-2600

SPECIFICATIONS:

Detail.....	93-24628
Superseded.....	24628

MANUFACTURER'S DRAWING NUMBER: Banner Die Tool and Stamping Company: 39G4427

A. A. F. DRAWING NUMBER: 39G4427

TYPE DESIGNATION: Q-2

A. S. C. STOCK NUMBER: 6400621750

PRODUCTION STATUS: Under procurement

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

BRITISH REFERENCE NUMBER: 111A/36.

**RECEPTACLE—BOMB RELEASE****ARMY TYPE A-1 NAVY MARK 1**

NAMES: Bomb release receptacle
Bomb release receptacle assembly

Auxiliary switch box

DESCRIPTION: The Army type A-1 bomb release receptacle is a three contact socket. It is installed in the electrical circuit of the airplane, and mates with the corresponding connector on the bomb rack release.

CHARACTERISTICS:

Power supply.....12 or 24 volts, direct current
Dimensions.....approximately 1 7/8 by 1 3/4 by 1 1/8 inches
Weight.....approximately 1/10 pound

RELATIONSHIP OF PARTS: Used with: Bomb rack release;

A. E. Reference Number	Army Type	
64-3000	A-2	left hand release
64-3200	A-2	right hand release
64-3425	A-3	right hand release
64-3430	A-4	left hand release
64-3431	A-4	right hand release

ARMY

A. E. REFERENCE NUMBER: 64-2900

SPECIFICATIONS:

Detail.....24843

MANUFACTURER'S DRAWING NUMBER: P. R. Mallory and Company, Incorporated B-134375

A. A. F. DRAWING NUMBER: 43B11200

TYPE DESIGNATION: A-1

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit

NAVY

TYPE DESIGNATION: Mark 1

BUREAU OF ORDNANCE DRAWING NUMBER: 388366

AVIATION ORDNANCE STOCK LIST NUMBER: 3-B-1901

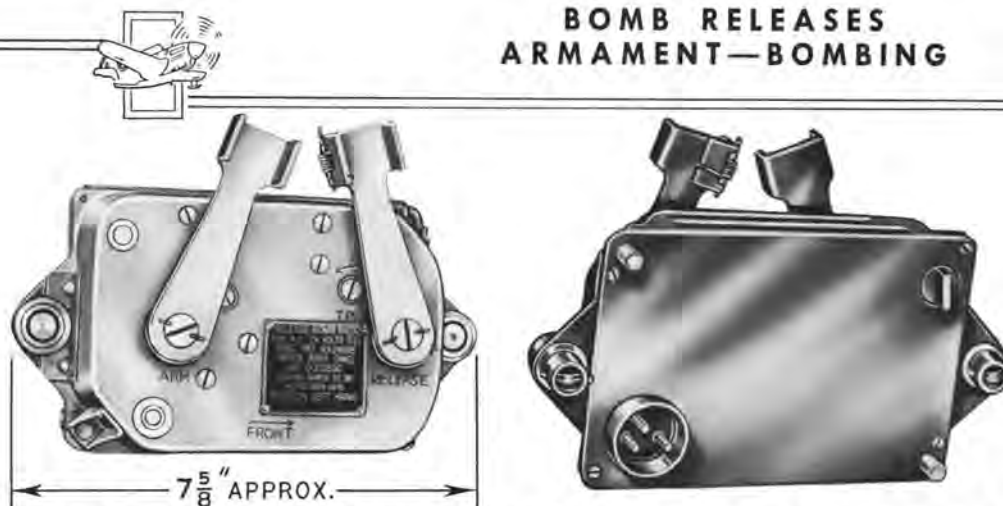
PROCUREMENT STATUS: Under procurement.

INTERCHANGEABILITY: The Navy Mark 1 is identical to the Army type A-1, except that it includes waterproof packing.

BRITISH

BRITISH REFERENCE NUMBER: 105D/95

BOMB RELEASES ARMAMENT—BOMBING



RELEASE—BOMB RACK LEFT HAND ARMY TYPE A-2

NAMES: Bomb rack left hand release
Bomb rack release
Bomb rack release assembly

Bomb shackle release mechanism
Bomb shackle release
Left hand bomb rack release

DESCRIPTION: The type A-2 bomb rack left hand release electrically or mechanically actuates the bomb shackle.

Electrical operation is accomplished by energizing the solenoid within the bomb rack release. When the solenoid is energized, the arming and releasing levers, which are placed in a cocked position under spring tension, are released, thereby actuating the bomb shackle.

If the electrical system is rendered inoperative, mechanical operation may be accomplished by any one of three methods. The release lever may be pried over with a screw driver or similar implement so that the bomb may be released from the shackle. Turning of a slotted screw on the face of the release also releases the bomb in an armed condition. An external coupling known as the salvo coupling may also be used to release the bomb in a safe condition.

Two dowel pins align the release, which is then fastened by two snap fasteners to the bomb rack.

CHARACTERISTICS:

Dimensions.....approximately 7 $\frac{3}{4}$ by 3 $\frac{1}{4}$ by 5 $\frac{1}{2}$ inches
Weight.....approximately 2 $\frac{1}{2}$ pounds
Electrical connector.....three-pin connector in accordance with figure 5, specification 93-24699-A
Power supply.....24 volts direct current

RELATIONSHIP OF PARTS: Used with:

Army type A-1 bomb release receptacle.....A. E. Reference Number 64-2900

ARMY

A. E. REFERENCE NUMBER: 64-3000

SPECIFICATIONS:

Detail.....93-24699-A
Superseded.....93-24699

A. A. F. DRAWING NUMBER: 41G1742

TYPE DESIGNATION: A-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

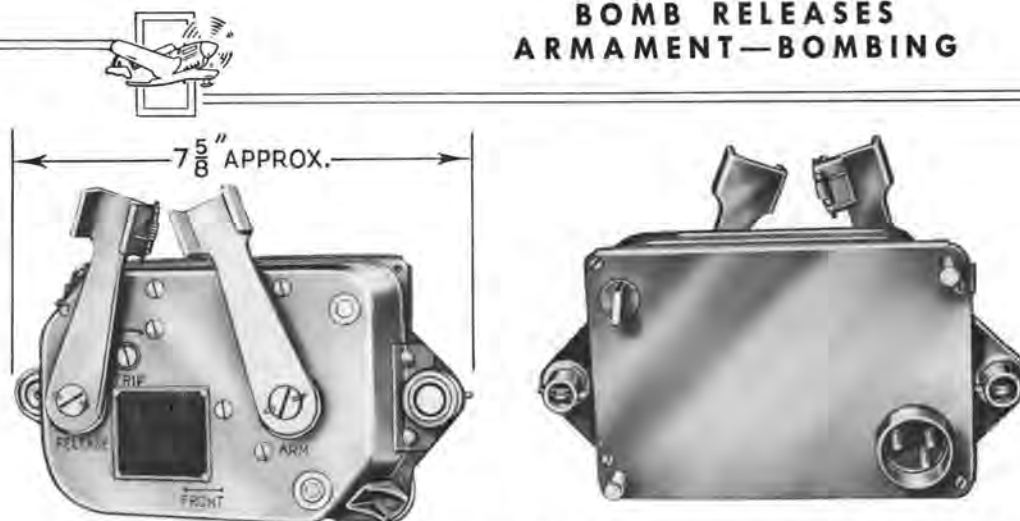
ARMY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Crosley Corporation	WP-70L	D-210530	A-B	6400634700	11-5-28	111A/31	
P. R. Mallory & Company, Incorporated	*A-2	C-134588	A-B	6400634700	11-5-46	111A/31	Aluminum case.
	*A-2	C-134732	A-B	6400634700	11-5-46	111A/31	Steel case.
J. P. Seeburg Company	*A-2	SR105801	A-B	6400634700		111A/31	
Sparks-Withington Company	*A-2	C-57-57	A-B	6400634700	11-5-38	111A/31	

Note: *AAF type.



RELEASE—BOMB RACK RIGHT HAND ARMY TYPE A-2

NAMES: Bomb rack right hand release
Bomb rack release
Bomb rack release assembly

Bomb shackle release mechanism
Bomb shackle release
Right hand bomb rack release

DESCRIPTION: The type A-2 bomb rack right hand release electrically or mechanically actuates the bomb shackle.

Electrical operation is accomplished by energizing the solenoid within the bomb rack release. When the solenoid is energized, the arming and releasing levers, which are placed in a cocked position under spring tension, are released, thereby actuating the bomb shackle.

If the electrical system is rendered inoperative, mechanical operation may be accomplished by any one of three methods. The release lever may be pried over with a screw driver or similar implement so that the bomb may be released from the shackle. Turning of a slotted screw on the face of the release also releases the bomb in an armed condition. An external coupling known as the salvo coupling may also be used to release the bomb in a safe condition.

Two dowel pins align the release, which is then fastened by two snap fasteners to the bomb rack.

CHARACTERISTICS:

Dimensions.....approximately 7 $\frac{3}{4}$ by 3 $\frac{1}{4}$ by 5 $\frac{1}{2}$ inches
Weight.....approximately 2 $\frac{1}{2}$ pounds
Electrical connector.....three-pin connector in accordance with figure 5, specification 93-24699-A
Power supply.....24 volts direct current

RELATIONSHIP OF PARTS: Used with:

Army type A-1 bomb release receptacle.....A. E. Reference Number 64-2900

ARMY

A. E. REFERENCE NUMBER: 64-3200

SPECIFICATIONS:

Detail.....93-24699-A
Superseded.....93-24699

A. A. F. DRAWING NUMBER: 41G1742-1

TYPE DESIGNATION: A-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

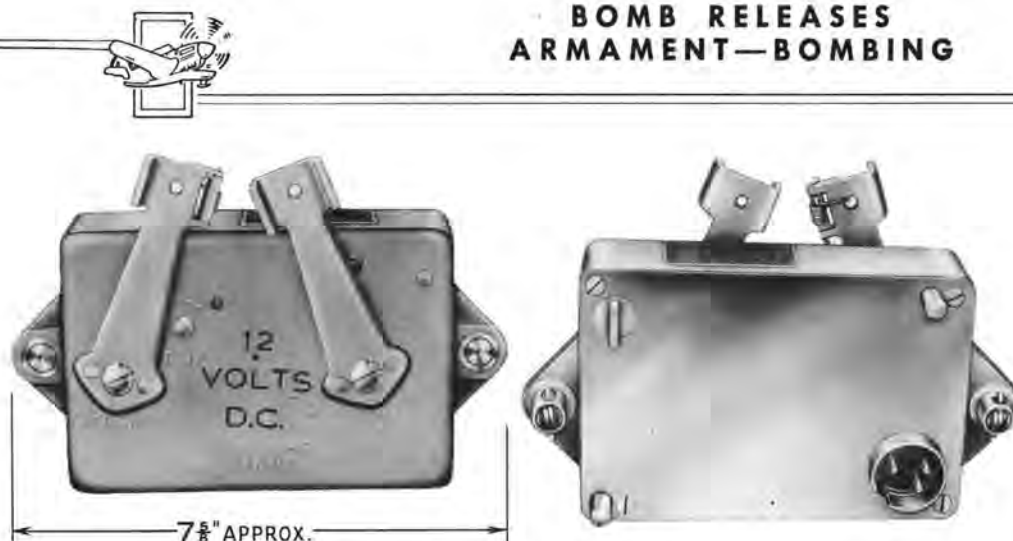
There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Crosley Corporation	WP-70R	D-210607	A-B	6400634720	11-5-28	111A/32	
P. R. Mallory & Company, Incorporated	*A-2	C-134588	A-B	6400634720	11-5-46	111A/32	Aluminum case.
	*A-2	C-134732	A-B	6400634720	11-5-46	111A/32	Steel case.
J. P. Seeburg Company	*A-2	SR105800	A-B	6400634720		111A/32	
Sparks-Withington Company	*A-2	C-57-56	A-B	6400634720	11-5-38	111A/32	

Note: *AAF type.

BOMB RELEASES ARMAMENT—BOMBING



RELEASE—BOMB RACK RIGHT HAND

ARMY TYPE A-3 NAVY TYPE A-3

NAMES: Bomb rack right hand release
Bomb rack release
Bomb rack release assembly

Bomb shackle release mechanism
Right hand bomb rack release
Bomb shackle release

DESCRIPTION: The type A-3 bomb rack right hand release electrically or mechanically actuates the bomb shackle.

Electrical operation is accomplished by energizing the solenoid within the bomb rack release. When the solenoid is energized, the arming and releasing levers, which are placed in a cocked position under spring tension, are released, thereby actuating the bomb shackle.

If the electrical system is rendered inoperative, mechanical operation may be accomplished by any one of three methods. The release lever may be pried over with a screw driver or similar implement so that the bomb may be released from the shackle. Turning of a slotted screw on the face of the release also releases the bomb in an armed condition. An external coupling known as the salvo coupling may also be used to release the bomb in a safe condition.

Two dowel pins align the release, which is then fastened by two snap fasteners to the bomb rack.

CHARACTERISTICS:

Dimensions.....	approximately 7 $\frac{3}{4}$ by 3 $\frac{1}{4}$ by 5 $\frac{1}{2}$ inches
Weight.....	approximately 2 $\frac{1}{2}$ pounds
Electrical connector.....	three-pin connector in accordance with specification 93-24742
Power supply.....	12 volt direct current

RELATIONSHIP OF PARTS: Used with:

Army type A-1 bomb release receptacle..... A. E. Reference Number 64-2900

ARMY

A. E. REFERENCE NUMBER: 64-3425

SPECIFICATIONS:

Detail.....	93-24742
Superseded.....	24742

A. A. F. DRAWING NUMBER: H42G4872

TYPE DESIGNATION: A-3

A. S. C. STOCK NUMBER: 6400634780

TECHNICAL ORDER NUMBER: 11-5-30

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: A-3

AVIATION ORDNANCE STOCK LIST NUMBER: 3-R-519-25

PROCUREMENT STATUS: Not under procurement for initial installation.

BRITISH

REFERENCE NUMBER: 111A/40

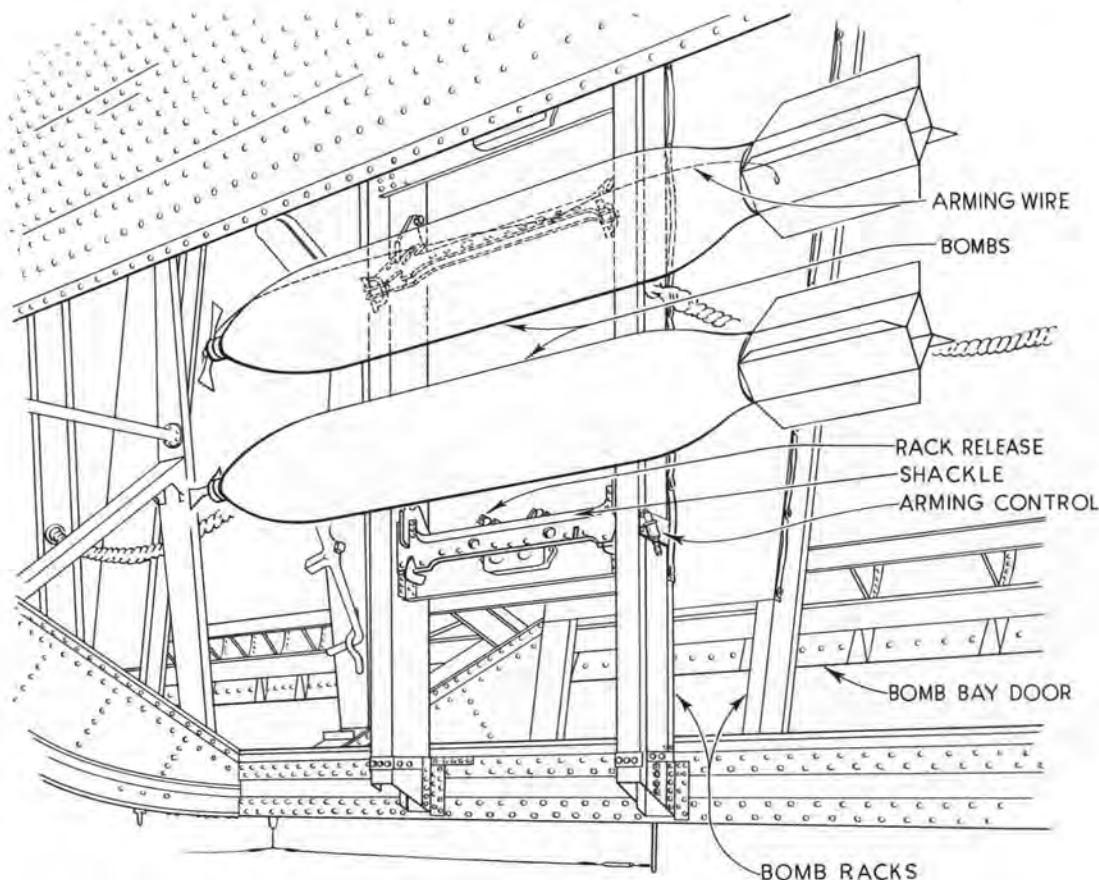
MANUFACTURER: P. R. Mallory & Company, Incorporated

MANUFACTURER'S DRAWING NUMBER: C-134600 (assembly) and C-134727 (outline)



SHACKLE—BOMB

The bomb shackle supports bombs or cargo in the bomb bay compartment of the airplane, or externally in adapters located in the wing section.



TYPICAL BOMB INSTALLATION

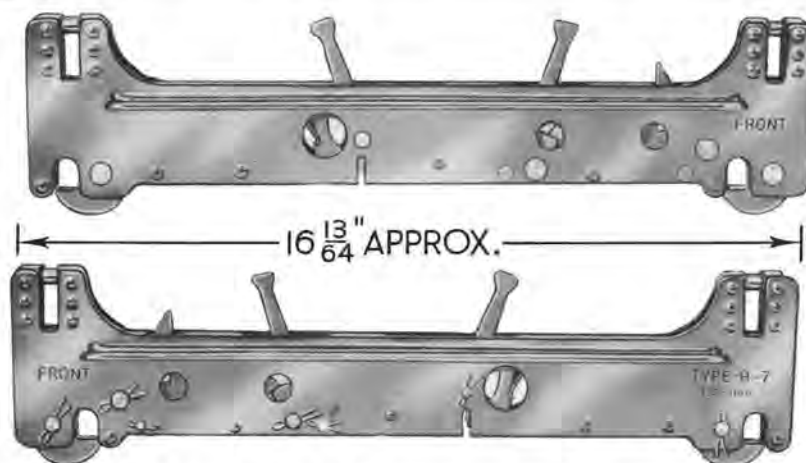
In operation, the shackle is actuated remotely by the bombardier's arming and releasing handle, or the electrical release controls, or by the pilot's emergency release handle.

Sequence of operation in most type shackles is started by an impulse from the bombardier's arming and releasing handle, or the electrical release controls, or the pilot's emergency release handle to the bomb rack release, which in turn actuates the bomb shackle, or the impulse goes direct to the shackles' built-in arming and releasing mechanism for activation.

The shackle release lever has two positions, namely: "lock" and "release." When the release lever is in the "lock" position, a pawl in the releasing mechanism engages a stop in the connecting link, thereby preventing the opening of the carrying hooks. When the release lever is thrown to the release position, the pawl is disengaged, allowing the weight of the bomb to open the carrying hooks.

The arming lever has two positions, namely: "safe" and "armed." When the arming lever is in the safe or normal position the arming wire is retained in a slot by the arming hook which is held across the slot opening by a spring. Upon release of a bomb, the arming hook is withdrawn from the slot and the arming wire loop is free to slip out, permitting the bomb to drop safe. When the arming lever is moved to the armed position, it locks the arming hook so that the arming wire loop cannot be withdrawn from the slot. Thus, upon release of a bomb, the arming wire is pulled from the bomb fuse, arming the bomb.

BOMB SHACKLES ARMAMENT—BOMBING



SHACKLE—BOMB **ARMY TYPE B-7 NAVY TYPE B-7**

NAMES: Bomb shackle Bomb shackle assembly Bomb shackle 1100 pounds
DESCRIPTION: The Army type B-7 bomb shackle is a device normally used for carrying and releasing bombs. It is equipped with two bomb-carrying hooks, one releasing lever, one arming hook, and one arming lever. The shackles are usually installed in vertical tiers in the bomb bay compartment, and are free to swing out of the path of bombs from above; they may be installed in adapters in the wing section. These shackles are also used to carry and release droppable fuel tanks or parachute delivered cargo.

CHARACTERISTICS:

Weight..... approximately 3 pounds
Dimensions..... approximately 16 1/4 by 4 1/8 by 3/4 inches
Distance between suspension lugs..... 14 37/64 inches
Distance between bomb carrying hooks..... 14 inches
Carrying capacity..... 1100 pounds

RELATIONSHIP OF PARTS: Used with bomb rack release:

A. E. Reference Number	Type
64-3000	A-2 left hand release
64-3200	A-2 right hand release
64-3425	A-3 right hand release
64-3430	A-4 left hand release
64-3431	A-4 right hand release

ARMY

A. E. REFERENCE NUMBER: 64-3600

SPECIFICATIONS:

Detail..... 93-24557
Superseded..... 24557

A. A. F. DRAWING NUMBER: 33D5226

TYPE DESIGNATION: B-7

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation, superseded by Army type B-10, A. E. Reference Number 64-3725.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: B-7

BUREAU OF ORDNANCE DRAWING NUMBER: Refer to chart.

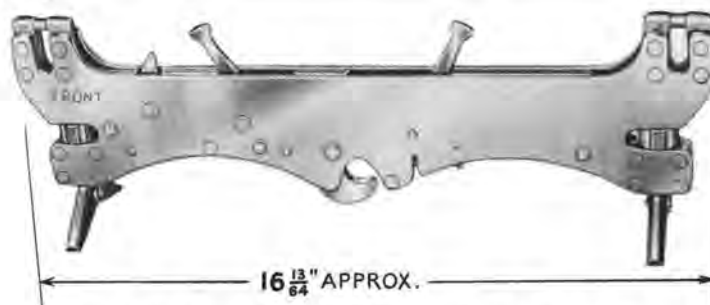
AVIATION ORDNANCE STOCK LIST NUMBER: Refer to chart.

PROCUREMENT STATUS: Not under procurement. Superseded by Navy Mark 5 Mod. 1.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Bureau of Ordnance Drawing Number	Aviation Ordnance Stock List Number
Banner Die Tool and Stamping Company	*B-7	**33D5226	A-N-B	6400694500	11-5-27	111A/1	169516	3-S-1904
Crosley Corporation	WP-80	D210438	A-N-B	6400694500	11-5-27	111A/1	169516	3-S-1904
Spriess Tool and Manufacturing Company	*B-7	**33D5226	A-N-B	6400694500	11-5-27	111A/1	169516	3-S-1904
Gibson Refrigerator Company	*B-7	**33D5226	A-N-B	6400694500	11-5-27	111A/1	169516	3-S-1904

Note: *AAF type; **AAF drawing.



SHACKLE—BOMB

TYPE AN-B-9 FORMER ARMY TYPE B-9

NAMES: Bomb shackle
Bomb shackle assembly

Bomb shackle 1000 pounds

DESCRIPTION: The type AN-B-9 bomb shackle is a device for carrying and releasing bombs. It is equipped with a single bomb-carrying hook, located approximately midway between the ends of the shackle. Located at each end is a sway bracing assembly which contains an adjustable rod, a knurled nut, and two contact clips which are adjusted to fit and steady the bomb. An arming hook is located adjacent to the bomb-carrying hook. The shackle is designed to carry bombs which have one suspension lug located at the center of gravity. It may be used to carry two-lug bombs by using bomb adapter bands.

CHARACTERISTICS:

Weight.....approximately 6 $\frac{1}{4}$ pounds
 Dimensions.....approximately 16 $\frac{13}{64}$ by 6 $\frac{1}{4}$ by 1 $\frac{5}{16}$ inches
 Distance between suspension lugs.....14 $\frac{9}{16}$ inches
 Carrying capacity.....1000 pounds
 Single carrying hook located in the center of the shackle.

RELATIONSHIP OF PARTS: Used with bomb rack release:

A. E. Reference Number	Type
64-3000	A2 left hand release
64-3200	A-2 right hand release
64-3425	A-3 right hand release
64-3430	A-4 left hand release
64-3431	A-4 right hand release

ARMY

A. E. REFERENCE NUMBER: 64-3700

SPECIFICATIONS:

Detail.....93-24749
 Superseded.....24749

A. A. F. DRAWING NUMBER: 42D7307

TYPE DESIGNATION: AN-B-9

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: AN-B-9

BUREAU OF ORDNANCE DRAWING NUMBER: 309888

AVIATION ORDNANCE STOCK LIST NUMBER: 3-S-1905

PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Airtemp, Division of Chrysler Corporation	*AN-B-9	**42D7307	A-N-B	6400694550	11-5-35	111A/34
Ainsworth Manufacturing Corporation	*AN-B-9	**AG-300	A-N-B	6500694550	11-5-35	111A/34
Spriesch Tool and Manufacturing Corporation	*AN-B-9	**42D7307	A-N-B	6400694550	11-5-35	111A/34

Note: *Army-Navy type; **AAF drawing.

BOMB SHACKLES ARMAMENT—BOMBING



SHACKLE—BOMB **TYPE AN-B-10 FORMER ARMY TYPE B-10**

NAMES: Bomb shackle
Bomb shackle assembly

Bomb shackle 1600 pounds

DESCRIPTION: The type AN-B-10 bomb shackle is a device normally used for carrying and releasing bombs. It is equipped with two bomb-carrying hooks, one arming hook, one releasing lever, and one arming lever. The shackles are usually installed in the bomb bay compartment, but may be installed in adapters in the wing section. These shackles are also used to carry and release droppable fuel tanks or parachute delivered cargo.

CHARACTERISTICS:

Dimensions.....	approximately 16 $\frac{13}{64}$ by 4 $\frac{1}{4}$ by $\frac{57}{64}$ inches
Weight.....	approximately 3 pounds
Distance between suspension lugs.....	14 $\frac{37}{64}$ inches
Distance between bomb carrying hooks.....	14 inches
Carrying capacity.....	1600 pounds

RELATIONSHIP OF PARTS: Used with bomb rack release:

A. E. Reference Number

Type

64-3000

A-2 left hand release

64-3200

A-2 right hand release

64-3425

A-3 right hand release

64-3430

A-4 left hand release

64-3431

A-4 right hand release

ARMY

A. E. REFERENCE NUMBER: 64-3725

SPECIFICATIONS:

Detail.....24832

A. A. F. DRAWING NUMBER: 43D10157

TYPE DESIGNATION: AN-B-10

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

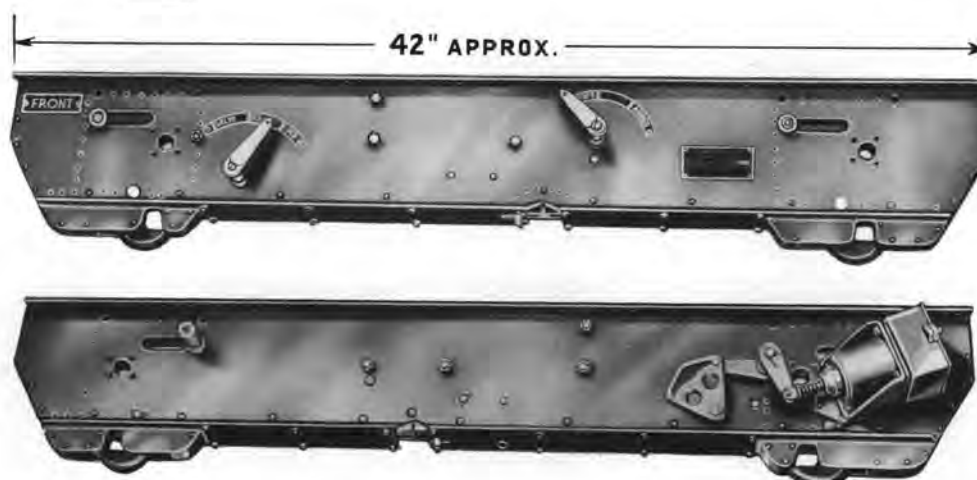
TYPE DESIGNATION: The Navy identifies this type as AN-B-10 and procures it under Army drawings and specifications.

AVIATION ORDNANCE STOCK LIST NUMBER: 3-S-1906

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Airtemp Division of Chrysler Corporation	*AN-B-10	**43D10157	A-N-B	6400695100	111A/44
Ainsworth Manufacturing Corporation	*AN-B-10	AG-500	A-N-B	6400695100	111A/44
Pollak Manufacturing Company	P-6A	411011	A-N-B	6400695100	111A/44
Spriesch Tool and Manufacturing Company	*AN-B-10	**43D10157	A-N-B	6400695100	111A/44
Gibson Refrigerator Company	*AN-B-10	**43D10157	A-N-B	6400695100	111A/44

Note: *Army-Navy type; **AAF drawing.



SHACKLE—BOMB

ARMY TYPE D-3

NAMES: Bomb shackle
Bomb rack

Bomb shackle assembly
Bomb shackle 2000 pounds

DESCRIPTION: The Army type D-3 bomb shackle is a device for carrying and releasing bombs. It incorporates a built-in arming control to enable the release of bombs in either safe or armed condition.

The chief parts of the shackle are the frame assembly, two carrying hooks, releasing mechanism, arming mechanism, and releasing solenoid.

CHARACTERISTICS:

Dimensions approximately 42 by $7\frac{13}{16}$ by $7\frac{1}{2}$ inches
Weight approximately 25 pounds
Distance between carrying hooks 30 inches
Carrying capacity 2000 pounds
Power supply 12 volt, direct current

ARMY

A. E. REFERENCE NUMBER: 64-3750

SPECIFICATIONS:

Detail 93-24555-A
Superseded 93-24555

A. A. F. DRAWING NUMBER: 33K2512

TYPE DESIGNATION: D-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation, superseded by Army type D-5,
A. E. Reference Number 64-3800.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Pollak Manufacturing Company	*D-3	**33K2512	A-B	6400695100	11-5-13	111A/2	
Oneida Limited	*D-5	300	A-B	6400695160	11-5-13	111A/27	See note.
Ainsworth Manufacturing Corporation	*D-5	AG-200	A-B	6400695160	11-5-13	111A/27	See note.
Union Chain Company	*D-5	**39K3828	A-B	6400695160	11-5-13	111A/27	See note.

NOTE: Army type D-5 bomb shackles may be made interchangeable with Army type D-3 bomb shackles by replacing the 24 volt solenoid, Army part number 3983829, with 12 volt solenoid, Army part number 3382523.
Note: *AAF type; **AAF drawing.

BOMB SHACKLES ARMAMENT—BOMBING



SHACKLE—BOMB

ARMY TYPE D-5

NAMES: Bomb shackle
Bomb rack

Bomb shackle assembly
Bomb shackle 2000 pounds

DESCRIPTION: The Army type D-5 bomb shackle is a device for carrying and releasing bombs. It incorporates a built-in arming control, to enable the release of bombs in either safe or armed condition.

The chief parts of the shackle are the frame assembly, two bomb carrying hooks, releasing mechanism, arming mechanism and releasing solenoid.

CHARACTERISTICS:

Dimensions.....	approximately 42 by 7 $\frac{13}{16}$ by 7 $\frac{1}{2}$ inches
Weight.....	approximately 25 pounds
Distance between carrying hooks.....	30 inches
Carrying capacity.....	2000 pounds
Power supply.....	24 volt, direct current

ARMY

A. E. REFERENCE NUMBER: 64-3800

SPECIFICATIONS:

Detail.....	93-24622
Superseded.....	24622

A. A. F. DRAWING NUMBER: 39K3828

TYPE DESIGNATION: D-5

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation, superseded by Army type D-6,
A. E. Reference Number 64-4000

SHIPPING DATA: Shipped as a complete unit.

NAVY

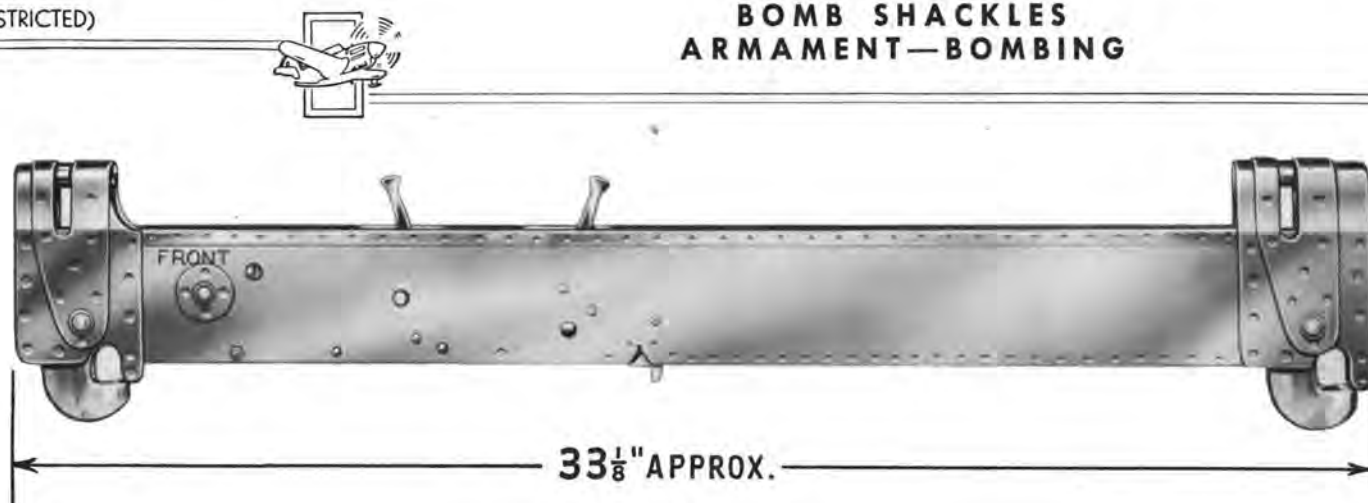
There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Oneida Limited	*D-5	300	A-B	6400695160	11-5-13	111A/27
Ainsworth Manufacturing Corporation	*D-5	AG-200	A-B	6400695160	11-5-13	111A/27
Union Chain Company	*D-5	**39K3828	A-B	6400695160	11-5-13	111A/27
Pollak Manufacturing Company	*D-3	**33K2512	A-B	6400695100	11-5-13	111A/2

The Army type D-3 bomb shackle, and may be made interchangeable by replacing the 12 volt solenoid, Army part number 39B3829.

Note: *AAF type; **AAF drawing.



SHACKLE—BOMB

ARMY TYPE D-6 NAVY TYPE D-6

NAMES: Bomb shackle
Bomb shackle assembly

Bomb shackle 2000 pounds

DESCRIPTION: The type D-6 bomb shackle is a device for carrying and releasing bombs. It is equipped with two bomb-carrying hooks, one releasing lever, one arming lever, and one arming hook.

CHARACTERISTICS:

Dimensions	approximately 33 $\frac{1}{8}$ by 6 $\frac{1}{4}$ by 1 $\frac{3}{16}$ inches
Weight	approximately 9 $\frac{2}{5}$ pounds
Distance between suspension lugs	30 inches
Distance between carrying hooks	30 inches
Carrying capacity	2000 pounds

RELATIONSHIP OF PARTS: Used with bomb rack release:

A. E. Reference Number	Type
64-3000	A-2 left hand release
64-3200	A-2 right hand release
64-3425	A-3 right hand release
64-3430	A-4 left hand release
64-3431	A-4 right hand release

ARMY

A. E. REFERENCE NUMBER: 64-4000

SPECIFICATIONS:

Detail	93-24694
Superseded	24694

A. A. F. DRAWING NUMBER: 41E4555

TYPE DESIGNATION: D-6

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: D-6

BUREAU OF ORDNANCE DRAWING NUMBER: 307276

AVIATION ORDNANCE STOCK LIST NUMBER: 3-S-1908

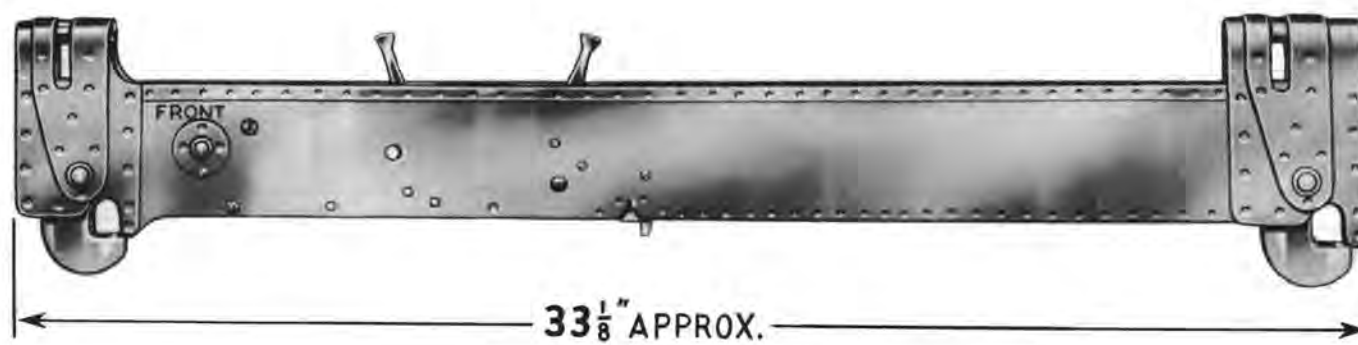
PROCUREMENT STATUS: Under procurement.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pollak Manufacturing Company	*D-6	400429	A-N-B	6400695165	11-5-10	111A/29
	*D-4	**37E5013	A-B	6400695150	11-5-10	111A/33
Ainsworth Manufacturing Corporation	*D-6	AG-100	A-N-B	6400695165	11-5-10	111A/29

Note: *AAF type; **AAF drawing.

BOMB SHACKLES ARMAMENT—BOMBING



SHACKLE—BOMB ARMY TYPE D-7

NAMES: Bomb shackle
Bomb shackle assembly

Bomb shackle 4000 pounds

DESCRIPTION: The Army type D-7 bomb shackle is a device for carrying and releasing bombs. It is equipped with two bomb-carrying hooks, one arming lever, and one releasing lever.

The D-7 shackle was designed principally for installation in the bomb bay compartment, but installation can be made externally by equipping the airplane with especially constructed adapters, which vary with each type of airplane.

CHARACTERISTICS:

Weight.....	approximately 12½ pounds
Dimensions.....	approximately 33⅛ by 7⅛ by 1⅜ inches
Distance between suspension lugs.....	30 inches
Distance between carrying hooks.....	30 inches
Carrying capacity.....	4000 pounds

RELATIONSHIP OF PARTS: Used with bomb rack release:

A. E. Reference Number

64-3000

64-3200

64-3425

64-3430

64-3431

Type

A-2 left hand release

A-2 right hand release

A-3 right hand release

A-4 left hand release

A-4 right hand release

ARMY

A. E. REFERENCE NUMBER: 64-4050

SPECIFICATIONS:

Detail..... 93-24748

Superseded..... 24748

A. A. F. DRAWING NUMBER: 42E7219

TYPE DESIGNATION: D-7

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

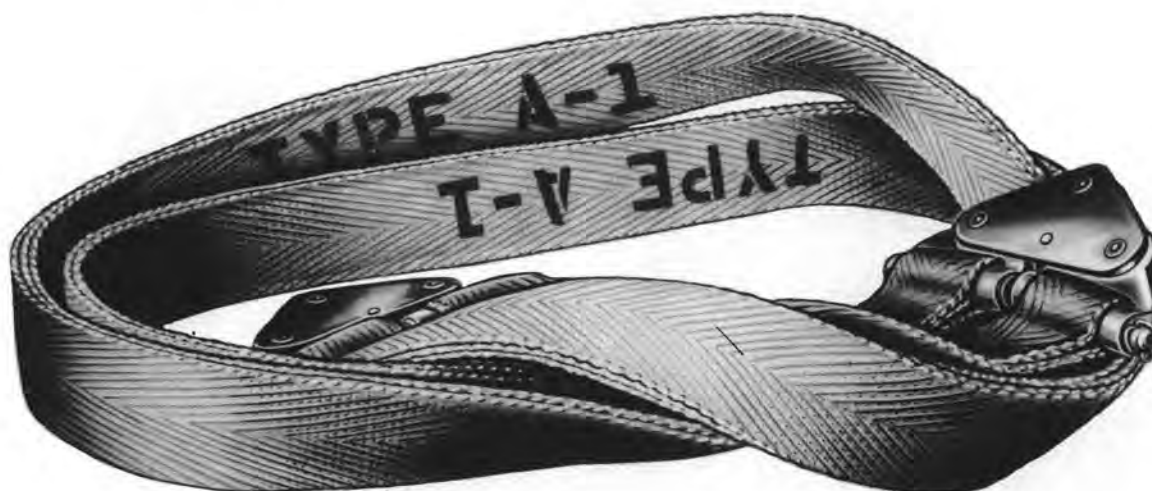
MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pollak Manufacturing Company	P-56	410429	A-B	6400695167	11-5-10	111A/45
Ainsworth Manufacturing Corporation	*D-7	AG-700	A-B	6400695167	11-5-10	111A/45

Note: *AAF type;



OVERALL LENGTH...APPROX. 65"

SLING—BOMB HOIST
ARMY TYPE A-1

NAMES: Bomb hoist sling
Bomb hoist sling assembly

Heavy bomb hoist

DESCRIPTION: The Army type A-1 bomb hoist sling is used with Army type bomb hoists to load bombs on bombardment airplanes. Two slings are required for each bomb.

The sling is made of nylon webbing stitched with nylon thread. Two yoke assemblies, one located at each end of the webbed fabric, are used to attach the sling to the hoist.

CHARACTERISTICS:

Weight.....	approximately 3 $\frac{5}{8}$ pounds
Dimensions.....	approximately 65 by 6 $\frac{7}{16}$ by $\frac{5}{8}$ inches
Lifting capacity (two slings).....	4000 pounds

RELATIONSHIP OF PARTS: Used with:

Army type C-3 bomb hoist assembly.....A. E. Reference Number 64-2200

ARMY

A. E. REFERENCE NUMBER: 64-4100

SPECIFICATIONS:

Detail.....	93-24731
Superseded.....	24731

MANUFACTURER: Taylor Machine Company.

A. A. F. DRAWING NUMBER: 42G2343

ARMY PART NUMBER: 42G2343-5

TYPE DESIGNATION: A-1

A. S. C. STOCK NUMBER: 6400743850

PRODUCTION STATUS: Under procurement.

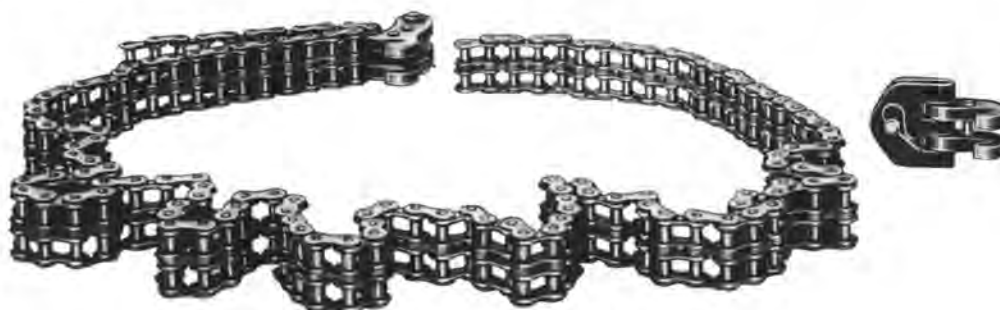
SHIPPING DATA: Shipped as a complete unit, two slings to a carton.

NAVY

There is no Navy equivalent for the Army item.



BOMB HOIST SLINGS ARMAMENT—BOMBING



OVERALL LENGTH...APPROX. 78"

SLING—BOMB HOIST ARMY TYPE A-2

NAMES: Bomb hoist sling
Bomb hoist sling assembly

Bomb sling
Chain-type bomb hoist sling

DESCRIPTION: The Army type A-2 bomb hoist sling is used with Army type bomb hoists to load bombs on bombardment airplanes. The sling is a double strand rollerless chain, and is attached to the hoist by two hook assemblies. The sling is adjustable over a wide range to accommodate various size bombs. Two slings are required to hoist a 4000 pound bomb.

CHARACTERISTICS:

Weight.....approximately 10 pounds
Dimensions.....approximately 78 $\frac{1}{8}$ by 1 $\frac{9}{16}$ by $\frac{35}{64}$ inches
Lifting capacity.....2000 pounds

RELATIONSHIP OF PARTS: Used with:

Army type C-3 bomb hoist.....A. E. Reference Number 64-2200

ARMY

A. E. REFERENCE NUMBER: 64-4150

SPECIFICATIONS:

Detail.....24781

MANUFACTURER: Diamond Chain Company

A. A. F. DRAWING NUMBER: 42D6433

TYPE DESIGNATION: A-2

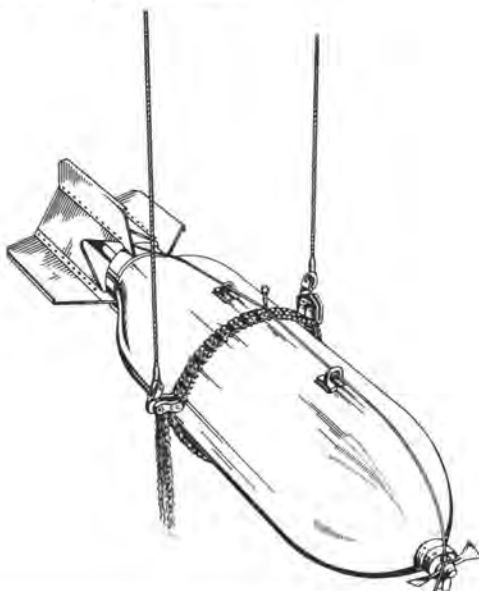
A. S. C. STOCK NUMBER: 6400743875

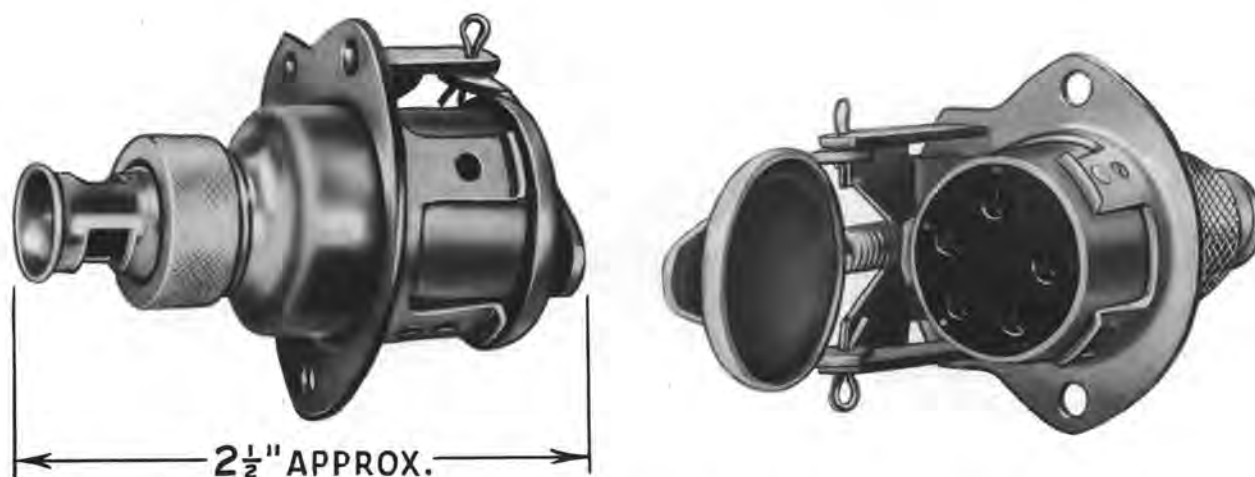
PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, two slings to a carton; or shipped as a component part of the Army type C-3 bomb hoist.

NAVY

There is no Navy equivalent for the Army item.





SOCKET—5-WAY BOMB BRITISH TYPE A

NAMES: 5 way bomb socket
Bomb socket

Bomb carrier receptacle
Plug container assembly

DESCRIPTION: The type A, 5-way bomb socket is a receptacle used for electrical connection between the airplane electrical circuit and British electrical bombing equipment. The socket is protected from the weather by a hinged cover under spring tension, which covers the five contacts when the socket is not in use.

Mounting is accomplished by two screws, which secure the socket to the airplane structure.

CHARACTERISTICS:

Weight.....approximately $\frac{3}{16}$ pound
Dimensions.....approximately $2\frac{7}{16}$ by $1\frac{5}{8}$ by $1\frac{3}{4}$ inches

RELATIONSHIP OF PARTS: Used with:

Number 1 Mark 3 universal bomb carrier.....A. E. Reference Number 64-198

ARMY

A. E. REFERENCE NUMBER: 64-4195

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference		Remarks
					British Stores Reference Number	American Stores Reference Number	
Victor Adding Machine Company	V-34	50050	A-B	6400745150	5D/525	105D/22	
Crouse Hinds Company	A		A-B		5D/525	105D/22	Brass.
	A		A-B		5D/529	105D/16	See note.

NOTE: Light alloy, British Reference Number 5D/529 obsolete and superseded by British Reference Number 105D/22.



TACHOMETERS ARMAMENT—BOMBING

TACHOMETER— BOMBSIGHT DISC SPEED

JAEGER WATCH COMPANY, INC.
PART NUMBERS 4050A AND 4050

NAMES: Bombsight disc speed tachometer
Handheld tachometer
Disc speed indicator
Portable tachometer—1000 R.P.M.
BS. Mk. XV disc speed indicator

DESCRIPTION: The bombsight disc speed tachometer is a hand-held tachometer used by bombardiers, and in bombsight repair shops, to check the bombsight disc speed. This tachometer is furnished in a velvet-lined leather case, complete with one soft rubber convex drive tip, one instruction sheet and one calibration sheet. One tachometer is normally supplied with each bombsight, and may be stowed in a pocket of the electrically heated bombsight cover when not in use.



CHARACTERISTICS:

Weight.....	approximately 1 pound
Dimensions.....	approximately 3 by 4 $\frac{1}{8}$ by 1 $\frac{1}{4}$ inches (in case)
Dial speed range.....	0 to 1000 revolutions per minute
Markings.....	fluorescent paint, inorganic, natural radium color.

RELATIONSHIP OF PARTS: Used with:

Army M-Series bomb sight assembly
Navy Mark 15-Series bomb sight assembly.

ARMY

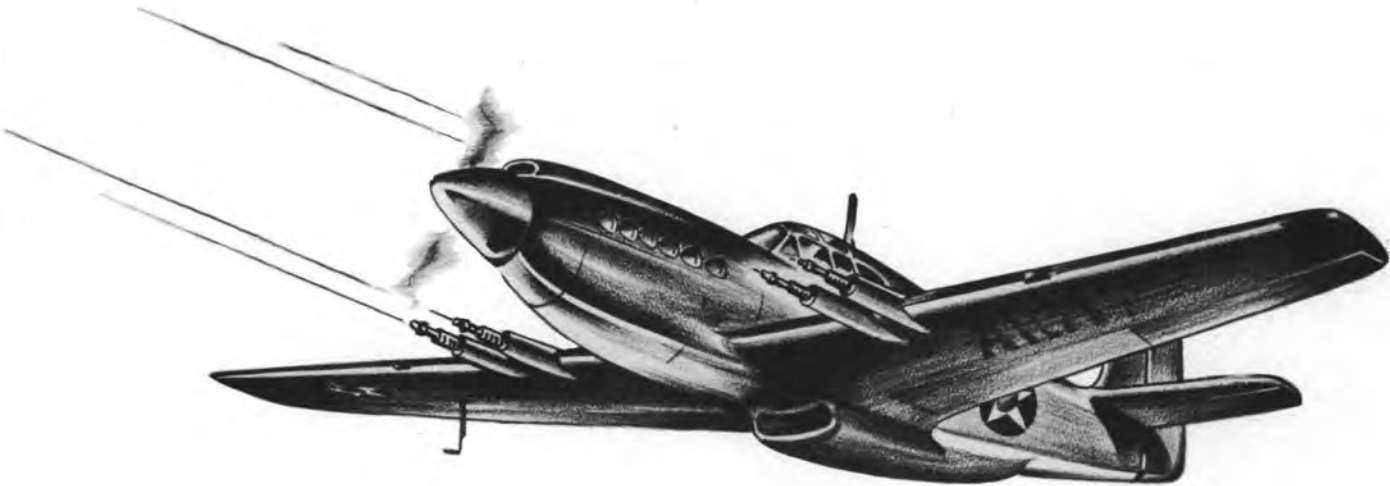
A. E. REFERENCE NUMBER: 64-4400
MANUFACTURER: Jaeger Watch Company, Inc.
MANUFACTURER'S PART NUMBER: 4050A
A. S. C. STOCK NUMBER: 6400908000
TECHNICAL ORDER NUMBER: 17-1-44
PRODUCTION STATUS: Under procurement
SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:
General.....18T22 (Modified)
AVIATION ORDNANCE STOCK LIST NUMBER: 2-T-20
PROCUREMENT STATUS: Under procurement.
MANUFACTURER'S PART NUMBER: 4050



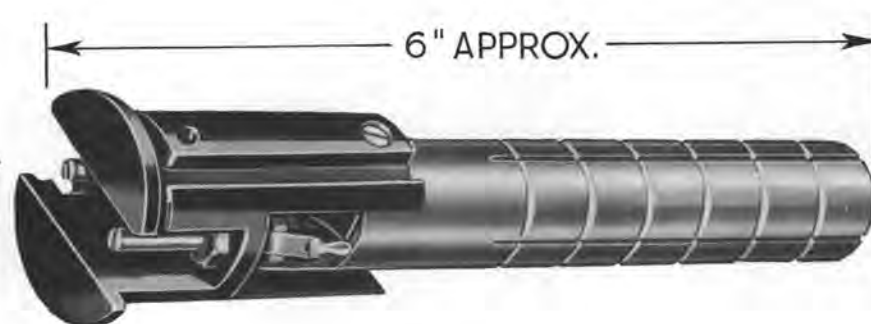
ARMAMENT



ORDNANCE EQUIPMENT



ARMAMENT—ORDNANCE



DESTRUCTOR, AN-M3

FORMER NAVY TYPE M3

NAMES: Detonator
Electrical Detonator

Electrical Destructor

DESCRIPTION: The AN-M3 destructor is used to destroy certain radio equipment in order to prevent its falling into enemy hands. It consists of a cylindrical housing with a two pin electrical socket fastened to one end. The housing contains two electric detonators and a two-gram explosive charge. The electrical circuit is completed by a switch accessible to the pilot, or by an inertia switch which closes in the event of a crash landing. Current passing through the detonator causes the explosive charge to ignite, and the housing to explode. The force of this explosion is sufficient to destroy the internal parts of the equipment in which it is located, but other equipment in the airplane will not be damaged. The destructor is mounted in an adapter, which forms a part of the equipment with which it is to be used.

CHARACTERISTICS:

Weight.....	approximately $\frac{3}{8}$ pound
Dimensions.....	approximately $1\frac{3}{8}$ by $1\frac{3}{8}$ by 6 inches.

RELATIONSHIP OF PARTS: Used in conjunction with aircraft radio equipment.

ARMY

A. E. REFERENCE NUMBER: 93-725
TYPE DESIGNATION: AN-M3
PRODUCTION STATUS: Under procurement
SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: AN-M3
BUREAU OF ORDNANCE DRAWING NUMBER: 344428
PROCUREMENT STATUS: Under procurement.

ORDNANCE

MODEL: AN-M3
STANDARD NOMENCLATURE LIST NUMBER: R-7
WAR DEPARTMENT TECHNICAL MANUAL NUMBER: 9-1900
WAR DEPARTMENT TECHNICAL BULLETIN NUMBER: 1900-12

SUPPLIED BY

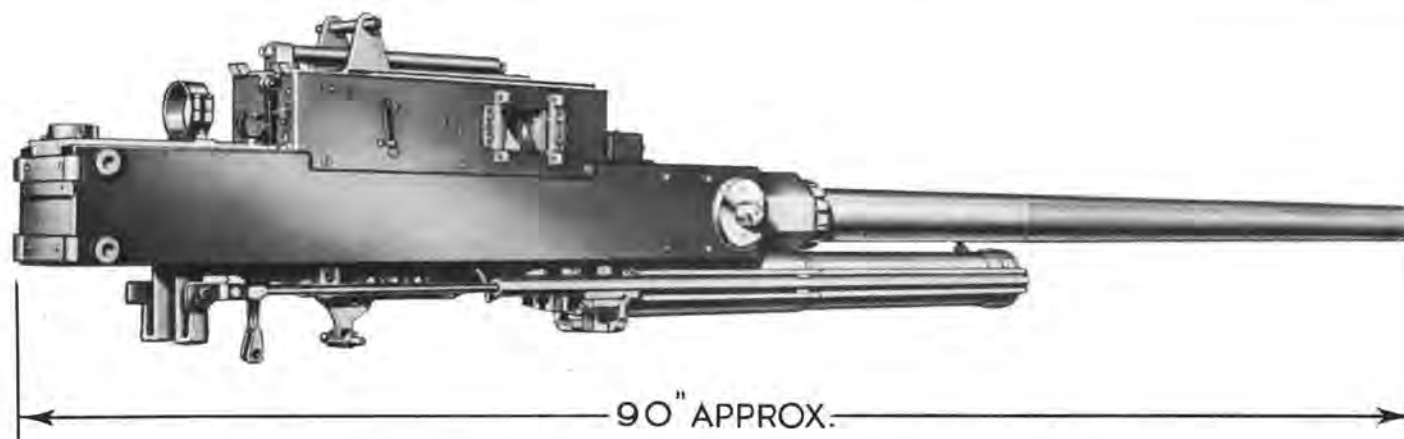
Ordnance Office, War Department.

USED BY

Army and Navy.

BRITISH

REFERENCE NUMBER: 112D/8.



GUN, AUTOMATIC, 37-MM, M4

NAMES: 37-mm automatic gun
Cannon—37-mm

Gun—aircraft 37-mm
Airplane automatic 37-mm gun

DESCRIPTION: The M4, 37-mm automatic gun is an aircraft weapon of the long recoil type. The feed and ejector mechanism are operated by the movement of the recoiling portion of the gun. Recoil and counter-recoil are hydraulically controlled by means of a piston connected to the recoiling parts and a cylinder mounted on the stationary trunnion block assembly.

The gun will fire in any position, since all parts operate independently of gravity. It may be fired manually, or by remote control through a solenoid mounted at the rear of the gun. It is used in both fixed and flexible installations, but it is not designed to be synchronized with the airplane engine. In fixed installations, the gun may be mounted to fire through the propeller shaft, or it may be mounted to fire outside the arc of propeller rotation.

Ammunition may be fed to the gun from a rigid clip holding five cartridges, a fifteen round magazine, or an endless belt magazine. The endless belt magazine contains thirty rounds of ammunition, and is used more frequently than either of the other feed mechanisms.

CHARACTERISTICS:

Weight	approximately 213 pounds
Dimensions	approximately 89 $\frac{5}{8}$ by 13 $\frac{7}{8}$ by 6 $\frac{15}{16}$ inches
Rate of fire	125 to 150 rounds per minute
Muzzle velocity	2000 feet per second, approximately

RELATIONSHIP OF PARTS: Used with:

Type M6, 37-mm endless belt magazine, A. E. Reference Number 93-3100, or Type M7, 37-mm endless belt magazine, A. E. Reference Number 93-3110, or Type M2, 37-mm 15 round magazine, A. E. Reference Number 93-2100.

ARMY

A. E. REFERENCE NUMBER: 93-1280
A. A. F. DRAWING NUMBER: H42G4769
SUPERSEDED DRAWING
NUMBER: H39G5561
TYPE DESIGNATION: M4
TECHNICAL ORDER
NUMBER: 11-1-15, 11-1-17 and 11-1-18
PRODUCTION STATUS: Under
procurement
SHIPPING DATA: Shipped as a complete
unit.

NAVY

There is no Navy equivalent for the Army item.

ORDNANCE

MODEL: M4
ORDNANCE DRAWING NUMBER: 51-92
and D69446 (Mounting Dimensions)
STANDARD NOMENCLATURE LIST
NUMBER: A-46
WAR DEPARTMENT TECHNICAL
MANUAL NUMBER: 9-240
9-1240

BRITISH

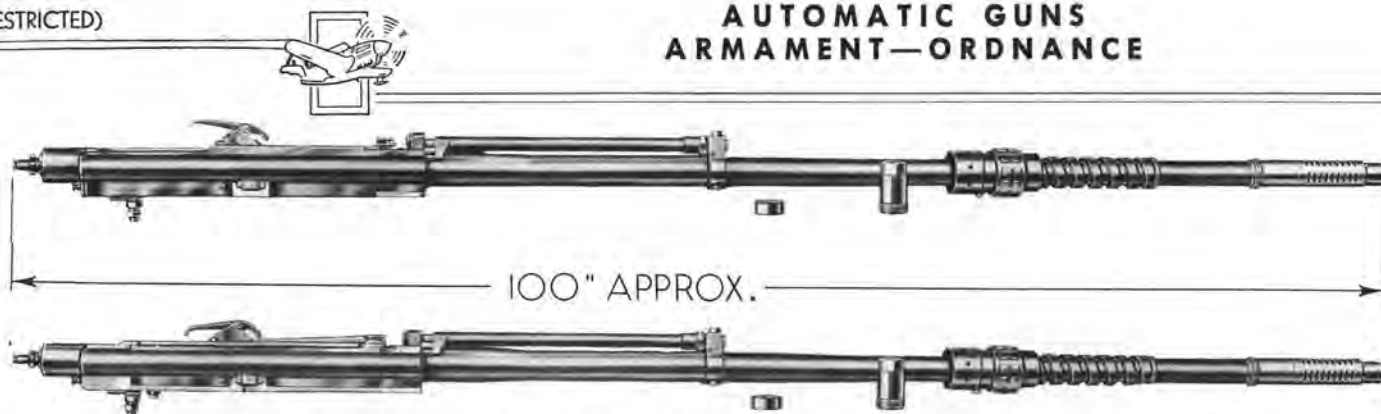
REFERENCE NUMBER: 107M/1

SUPPLIED BY

Ordnance Office, War Department

USED BY

Army and British.



GUN, AIRCRAFT, AUTOMATIC, 20-MM, M1 AND AN-M2 ALL TYPES

NAMES: 20-mm aircraft automatic gun
Aircraft automatic 20-mm cannon
Automatic 20-mm cannon

Hispano-Suiza cannon
20-mm cannon
Gun—automatic 20-mm cannon

DESCRIPTION: The 20-mm aircraft automatic gun is an air-cooled aircraft weapon, the mechanism of which is operated by a combination of gas pressure and recoil. When used as a fixed gun, it can be mounted to fire through the propeller hub, or it may be mounted in the fuselage or wing to fire outside the arc of propeller rotation. When used as a flexible gun, it must be supported in a flexible or turret-type mount. Ammunition is fed from either a drum-type magazine or a continuous feed belt. The gun consists of a one-piece barrel screwed into a receiver at its breech end. The rifling of the barrel begins just ahead of the cartridge chamber, and imparts rotation to the projectile, which causes it to maintain its direction and prevents it from tumbling.

Firing is accomplished, in most cases, by means of an electrical solenoid. However, provision may be made to permit manual firing with a remote control cable, which is attached to the gun by means of a bowden control attachment. The 20-mm automatic gun does not lend itself to a synchronized installation due to the design of its bolt and firing mechanism.

The term "basic gun" used as pertaining to 20-mm guns in this index, describes a 20-mm aircraft automatic gun, M1 or AN-M2, without a gun charger, solenoid, recoil adapter, or muzzle brake. The basic M1 and AN-M2 guns are identical with respect to function and installation. The only difference between the two models is in the dimensions of some of the receiver parts. The AN-M2 receiver is 0.2 inches longer, and the M1 receiver slide has a head flange which overlaps the bottom face and receiver slide bolts, which are locked by locking wire. The shoulders on the bottom faces of the receiver slides serve as further means of identifying the M1 gun.

The M1 automatic 20-mm gun, A. E. Reference Number 93-1300, is a type of aircraft cannon formerly supplied for installation on combat airplanes. It is equipped with an M7 recoil adapter, muzzle brake and accessory mounting parts. The AN-M2 aircraft automatic 20-mm gun, A. E. Reference Number 93-1350, is another type of aircraft cannon formerly supplied for installation on combat airplanes. It is equipped with an M7 recoil adapter, muzzle brake and accessory mounting parts. To facilitate installation in various types of aircraft, the 20-mm aircraft automatic gun is identified by the Army Air Forces according to distribution types, as shown on the accompanying chart.

CHARACTERISTICS:








Dimensions.....	approximately 100 by 5 $\frac{5}{8}$ by 6 inches
Weight:	
M1.....	approximately 108 pounds
AN-M2.....	approximately 112 $\frac{1}{2}$ pounds
Rate of fire.....	600 to 700 rounds per minute
Maximum allowable recoil.....	1.181 inches
Minimum recoil.....	0.787 inches

RELATIONSHIP OF PARTS: When fired electrically, this gun is equipped with an AN-M1 electric trigger (Army type G-17 solenoid), A. E. Reference Number 52-6380. Ammunition is supplied by means of M1 60 round magazine, A. E. Reference Number 93-3050, or M1 20-mm feed mechanism, A. E. Reference Numbers 93-3200 and 93-3205.

(Continued on pages 298 and 299)

DISTRIBUTION TYPES

(Continued from page 297)

A. E. REF. No.	NAME	TYPE	REMARKS	USED BY
		A	Complete with: Adapter.....AN-M1, A. E. Reference No. 93-200 Trigger Mechanism...AN-M1 Electric Trigger, A. E. Reference No. 52-6380. Charger.....M2 (Type B-6) Charger, A. E. Reference No. 52-2275.	A
93-1351	Gun, Automatic, 20-mm, M1 or Gun, Aircraft, Automatic, AN-M2			
		B	Complete with: Adapter.....AN-M6, A. E. Reference No. 93-250. Trigger Mechanism...AN-M1 Electric Trigger, A. E. Reference No. 52-6380. Charger.....M2 (Type B-6) Charger, A. E. Reference No. 52-2275.	A
93-1352	Gun, Automatic, 20-mm, M1 or Gun, Aircraft, Automatic, AN-M2			
		C	Complete with: Adapter.....M7, 20-mm Adapter (including recoil spring). Trigger Mechanism...AN-M1 Electric Trigger, A. E. Reference No. 52-6380. Charger.....M2 (Type B-6) Charger, A. E. Reference No. 52-2275.	A
93-1353	Gun, Automatic, 20-mm, M1 or Gun, Aircraft, Automatic, AN-M2			
		D	Complete with: Adapter.....M7, 20-mm Adapter (including recoil spring). Trigger Mechanism...AN-M1 Electric Trigger, A. E. Reference No. 52-6380. Charger.....M2 (Type B-6) Charger, A. E. Reference No. 52-2275. Muzzle Brake.....M1, Brake, Muzzle, Ord. Dwg. No. C70512.	A
93-1354	Gun, Automatic, 20-mm, M1 or Gun, Aircraft, Automatic, AN-M2			
		E	Complete with: Adapter.....AN-M1, 20-mm Adapter, A. E. Reference No. 93-200. Trigger Mechanism...AN-M1 Electric Trigger, A. E. Reference No. 52-6380. Charger.....Type D-3 Hydraulic charger A. E. Reference No. 52-2300.	A-N
93-1355	Gun, Aircraft, Automatic, 20-mm, AN-M2			
		F	Complete with: Adapter.....M7, 20-mm Adapter, (including recoil spring). Trigger Mechanism...Plate, Sear Cover, Assembly (including Bowden control), Ord. Dwg. C70590.	A-B
93-1356	Gun, Automatic, 20-mm, M1			
		G	Complete with: Adapter.....M7, 20-mm Adapter (including recoil spring). Trigger Mechanism...Plate, Sear Cover, Assembly (including Bowden Control), Ord. Dwg. C70590.	A
93-1357	Gun, Aircraft, Automatic, 20-mm, AN-M2			

(Continued on page 299)



GUN, AIRCRAFT, AUTOMATIC, 20-MM, M1 AND AN-M2

(Continued from page 297)

ARMY

A. A. F. DRAWING NUMBER:

M1.....H41J5074 (general drawing)
AN-M2.....H41J9229 (general drawing)

TECHNICAL ORDER NUMBER: 11-1-16

PRODUCTION STATUS: Types A to G, A. E. Reference Numbers 93-1351 to 93-1357 inclusive, are under procurement. A. E. Reference Numbers 93-1300 and 93-1350, are not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit, in accordance with distribution types shown on the opposite page.

NAVY

BU. ORD. DRAWING NUMBER:

M1.....296508 (general drawing)
AN-M2.....296509 (general drawing)

AVIATION ORDNANCE STOCK LIST NUMBER:

M1.....1-G-5642
AN-M2.....1-G-5544
AN-M2, Type E.....1-G-5599

ORDNANCE PAMPHLET NUMBER: 215, 829 and 865

PROCUREMENT STATUS: Type E, Aviation Ordnance Stock List Number 1-G-5599, is under procurement. Aviation Ordnance Stock List Number 1-G-5642 and 1-G-5544 are not under procurement for initial installation.

ORDNANCE

ORDNANCE DRAWING NUMBER:

M1.....51-105-4 (general drawing)
AN-M2.....51-107-4 (general drawing)

STANDARD NOMENCLATURE LIST NUMBER: A-47

WAR DEPARTMENT TECHNICAL MANUAL NUMBER: 9-227 (General Information)
9-1227 (Maintenance)

BRITISH

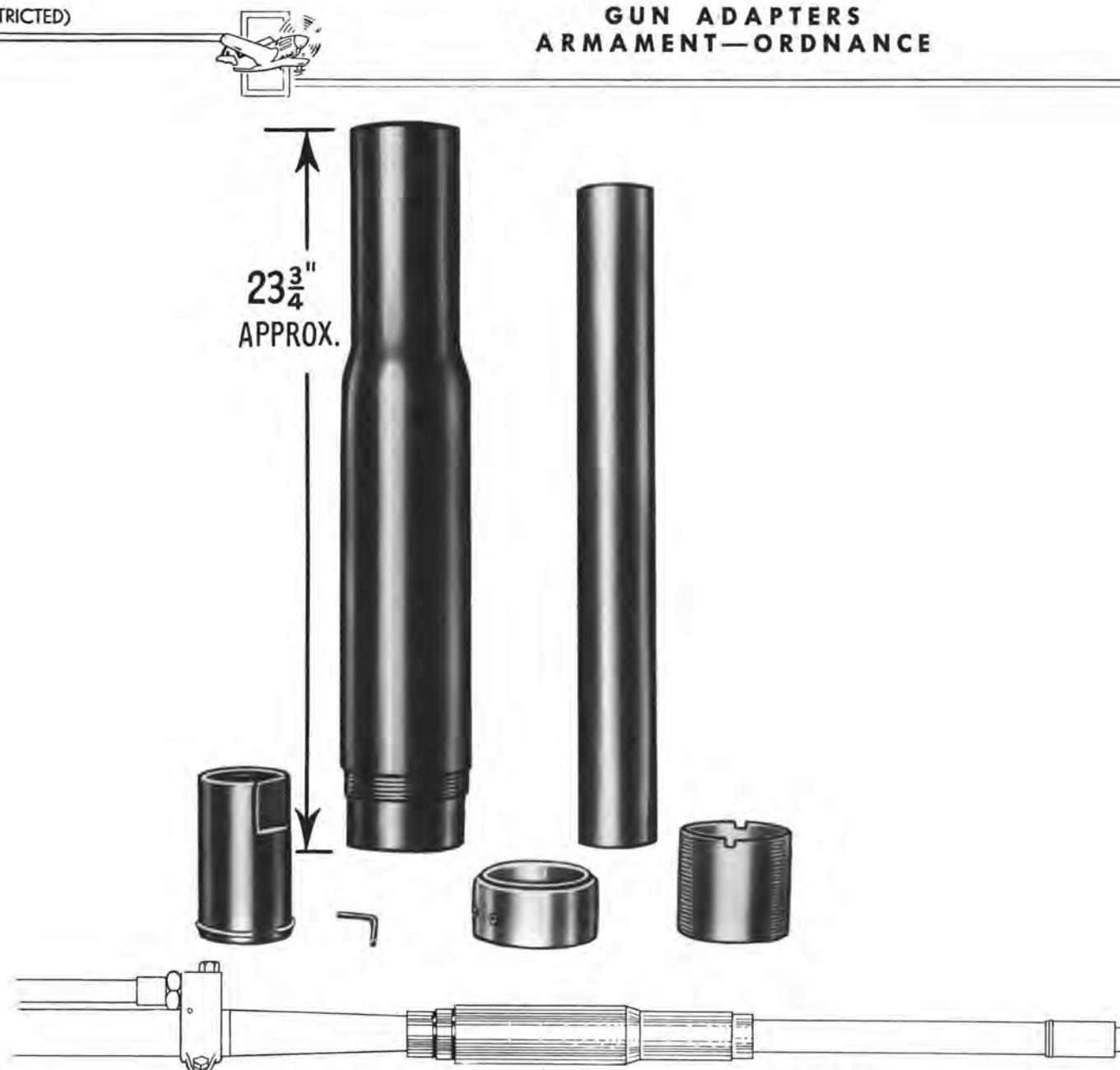
BRITISH REFERENCE NUMBER:

AN-M2.....107G/5
M1, Type F.....107G/279

PROCUREMENT STATUS: Type F, British Reference Number 107G/279 is under procurement. British Reference Number 107G/5 is not under procurement for initial installation.

INTERCHANGEABILITY

All types may be made interchangeable by substituting the required adapter, muzzle brake, trigger mechanism, and charger.

**ADAPTER, 20-MM, AN-M1**

FORMER ARMY TYPE M1

FORMER NAVY TYPE M1

NAMES: 20-mm adapter assembly

Adapter assembly—20-mm recoil absorption

Adapter, gun mount AG 20-mm (M-1 and M-2)

Recoil absorption adapter

Ring spring cartridge—20-mm gun adapter

Edgewater 20-mm recoil adapter

DESCRIPTION: The 20-mm, AN-M1 adapter assembly is used to absorb the recoil force of the 20-mm gun, and to limit the recoil travel. If recoil travel is too long, it will damage the gun, and if too short, it will deprive the feed mechanism of its power.

For proper operation, the adapter must be mounted on the barrel of the gun near the muzzle. An extension and spacer sleeve provide means of attaching the adapter to the gun mounting. Spacer sleeves of several lengths are furnished, to facilitate installation and attachment.

CHARACTERISTICS:

Dimensions.....approximately 33½ by 3 by 3 inches assembled

Weight.....approximately 11¾ pounds

Adapter type.....ring spring cartridge

RELATIONSHIP OF PARTS: Used with:

20-mm automatic gun type M1 or type AN-M2. One end of the adapter is fastened to the barrel of the gun, and the other to the gun mount.

(Continued on page 301)



ADAPTER, 20-MM, AN-M1

(Continued from page 300)

ARMY

A. E. REFERENCE NUMBER: 93-200

A. A. F. DRAWING NUMBER: H41D10198

TYPE DESIGNATION: AN-M1

TECHNICAL ORDER NUMBER: 11-1-16

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: The adapter assembly is shipped as a complete unit which contains the various components necessary for installation.

NAVY

TYPE DESIGNATION: AN-M1

BUREAU OF ORDNANCE DRAWING NUMBER: 328544

AVIATION ORDNANCE STOCK LIST NUMBER: 1-A-56

ORDNANCE DATA NUMBER: 4447

ORDNANCE PAMPHLET NUMBER: 865

PROCUREMENT STATUS: Under procurement.

ORDNANCE

MODEL: AN-M1

ORDNANCE DRAWING NUMBER: D36592

STANDARD NOMENCLATURE LIST NUMBER: A-47

WAR DEPT. TECHNICAL MANUAL NUMBER: 9-227

BRITISH

REFERENCE NUMBER: 150J/56

INTERCHANGEABILITY

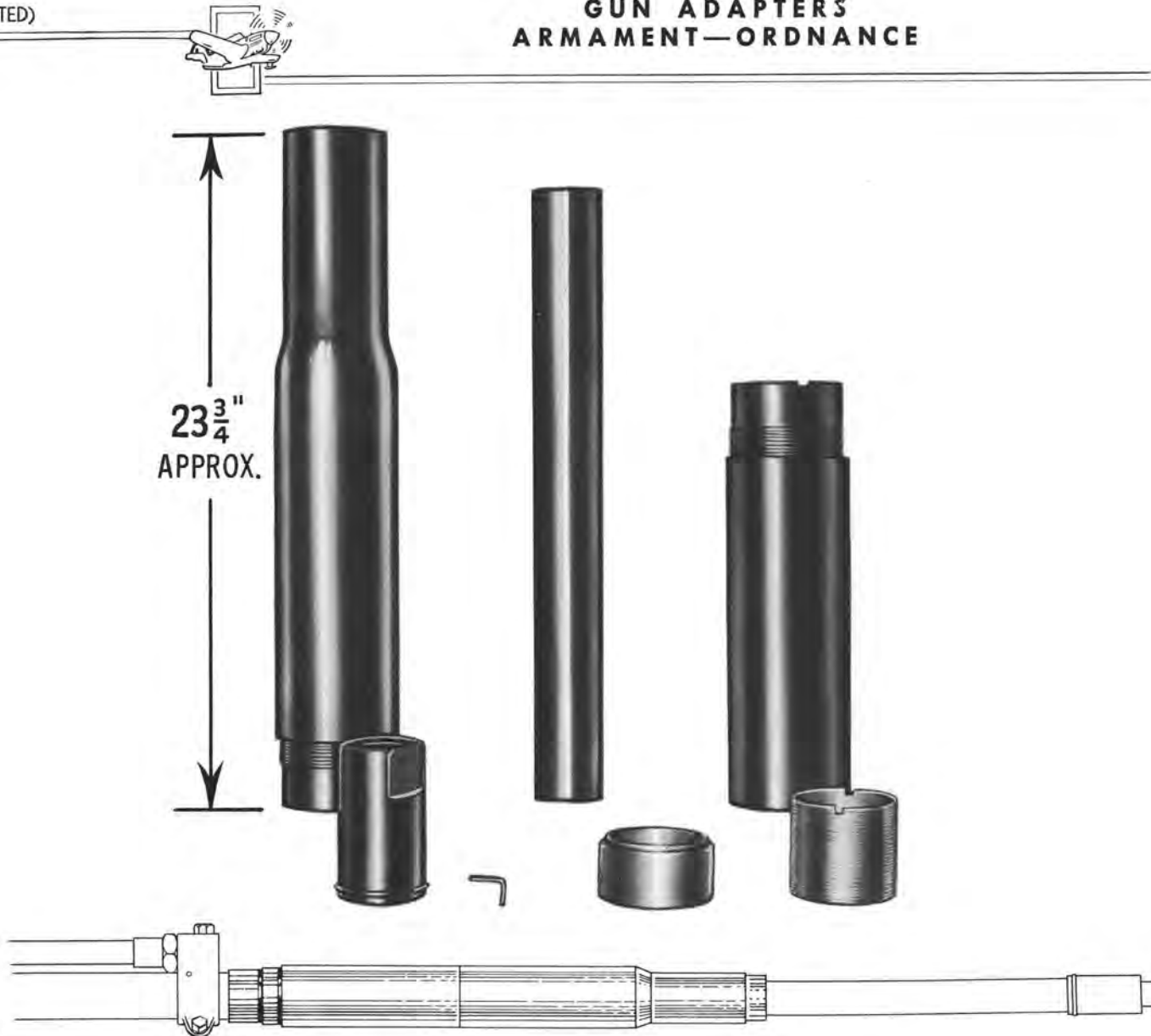
The addition of the rear mounting extension makes the type AN-M1 completely interchangeable with type AN-M6.

SUPPLIED BY: Ordnance office, War Department.

USED BY

Army, Navy, and British.

GUN ADAPTERS ARMAMENT—ORDNANCE



ADAPTER, 20-MM, AN-M6 FORMER ARMY TYPE M6

NAMES: 20-mm adapter

Adapter assembly—20-mm recoil absorption

Adapter, gun mount, AG 20-mm (M-1 and M-2)

Recoil absorption adapter

Ring spring cartridge—20-mm gun adapter

Edgewater 20-mm recoil adapter

DESCRIPTION: The 20-mm, AN-M6 adapter assembly is used to absorb the recoil force of the 20-mm gun, and to limit the recoil travel. If recoil travel is too long, it will damage the gun, and if too short, it will deprive the feed mechanism of its power.

For proper operation, the adapter must be mounted on the barrel of the gun near the muzzle. An extension and spacer sleeve provide means of attaching the adapter to the gun mounting. Spacer sleeves of several lengths are furnished, to facilitate installation and attachment.

The AN-M6 adapter assembly contains a rear mounting extension, which distinguishes it from the AN-M1 adapter assembly. The two assemblies are identical in all other respects.

CHARACTERISTICS:

Dimensions.....approximately 41½ by 3 by 3 inches assembled
Weight.....approximately 14½ pounds
Adapter type.....ring spring cartridge

(Continued on page 303)

**ADAPTER, 20-MM, AN-M6***(Continued from page 302)*

RELATIONSHIP OF PARTS: The type AN-M6 adapter is used with the automatic 20-mm guns, type M1 and AN-M2. One end of the adapter is fastened to the barrel of the gun, and the other to the gun mount.

ARMY

A. E. REFERENCE NUMBER: 93-250

A. A. F. DRAWING NUMBER: H41D10198

TYPE DESIGNATION: AN-M6

TECHNICAL ORDER NUMBER: 11-1-16

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: The adapter assembly is shipped as a complete unit which contains the various components necessary for installation.

NAVY

TYPE DESIGNATION: AN-M1 with rear mounting extension.

BUREAU OF ORDNANCE DRAWING NUMBER: 328544

F. S. S. C. NUMBER: 1-A-56

ORDNANCE DATA NUMBER: 4447

PROCUREMENT STATUS: Under procurement.

ORDNANCE

MODEL: AN-M6

ORDNANCE DRAWING NUMBER: D36593

STANDARD NOMENCLATURE LIST NUMBER: A-47

WAR DEPT. TECHNICAL MANUAL NUMBER: 9-227

INTERCHANGEABILITY

The omission of the rear mounting extension makes the type AN-M6 completely interchangeable with AN-M1.

SUPPLIED BY

Ordnance office, War Department.

USED BY

Army and Navy.



AIRCRAFT MACHINE GUNS

Aircraft machine guns are used offensively or defensively against enemy aircraft or ground objectives, and are fired from fixed, flexible, or turret installations.

The caliber .30 and .50 Browning aircraft machine guns are recoil-operated, belt-fed, and air-cooled. Upon depressing the trigger, the gun operation becomes fully automatic, and it will continue to fire within the limit of the ammunition supply or until the trigger is released. Firing is accomplished manually by depressing the trigger, or electrically by a solenoid which is operated from a gun switch. The recoil of the gun supplies the power necessary to extract ammunition from the belt, feed it into the chamber, cock and fire the gun, eject the empty cartridge case, and move the next round into the feedway. Charging the gun for initial firing, or following stoppages, is performed manually, by retracting the handle of the slide group assembly, or remotely, by operating the control valve of a pneumatic or hydraulic gun charger.

These guns may be fed from the left or right side, and may be converted to either feed by reversing a few minor parts. A disintegrating metallic link belt is normally used to supply ammunition to the guns. The belt separates into individual links upon the removal of the loaded cartridge.

Guns may be mounted in the fuselage or in the wings, and require the use of gun mounts or adapters, depending upon the individual installation. When mounted to fire through the propeller arc, the gun must be equipped with a synchronizer, to prevent damage to the propeller.

(Continued on page 305)



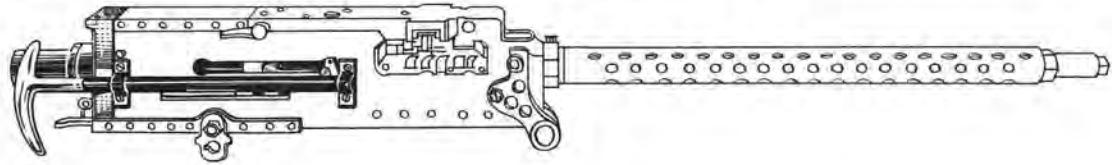
AIRCRAFT MACHINE GUNS

(Continued from page 304)

INSTALLATION TYPES

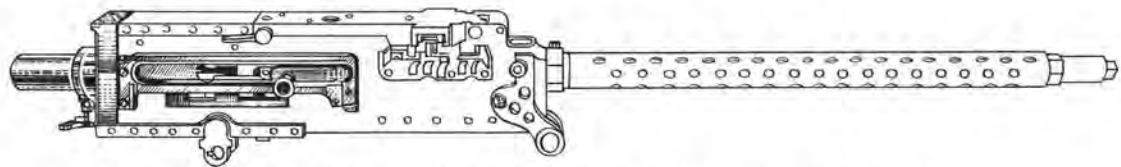
CALIBER .30

BROWNING AIRCRAFT MACHINE GUN



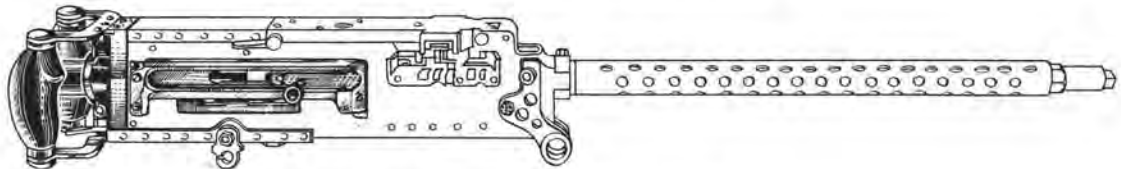
FIXED MACHINE GUN

(Including fixed back plate and operating slide group assembly)



FLEXIBLE, WITH FIXED BACK PLATE, MACHINE GUN

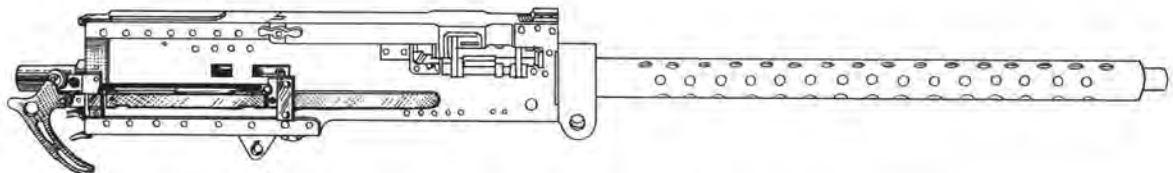
(Including fixed back plate and retracting slide group assembly.) Used in turret installations.



FLEXIBLE MACHINE GUN

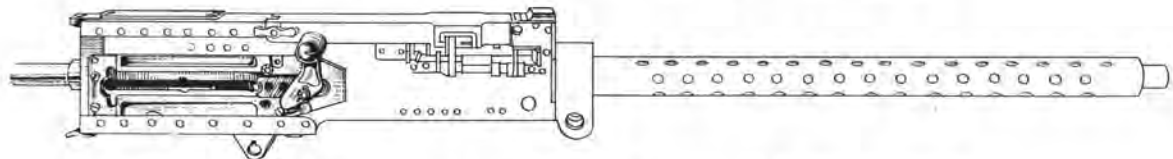
(Including flexible back plate and retracting slide group assembly)

CALIBER .50



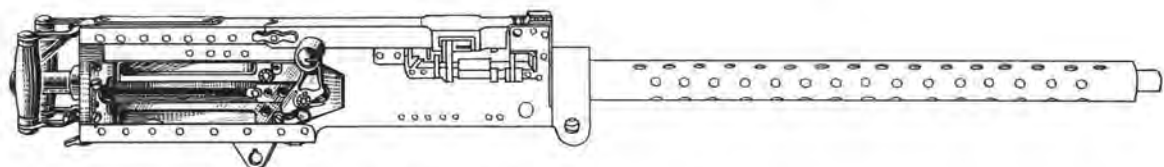
FIXED MACHINE GUN

(Including fixed back plate and operating slide group assembly)



FLEXIBLE, WITH FIXED BACK PLATE, MACHINE GUN

(Including fixed back plate and retracting slide group assembly.) Used in turret installations.



FLEXIBLE MACHINE GUN

(Including flexible back plate and retracting slide group assembly)

NAMES: Browning machine gun, caliber .30, M2, aircraft, fixed
Browning aircraft fixed machine gun, caliber .30
Machine gun, .30 caliber—Browning aircraft—fixed
Gun—machine .30 caliber—Browning aircraft—fixed

This gun is a caliber .30 aircraft machine gun equipped with an operating slide group assembly, which may be mounted to either side of the gun for charging. A cable may be attached to the operating slide group assembly to permit its operation in remote installations. The fixed gun referred to in this description does not contain a trigger bar or trigger bar pin, since firing is accomplished remotely through the use of an electrical solenoid and firing switch.

Weight.....	approximately 21½ pounds
Outline dimensions.....	approximately 39¾ by 5¼ by 3¼ inches
Rate of fire.....	1350 rounds per minute
Muzzle velocity.....	approximately 2700 feet per second

ARMY

A. E. REFERENCE NUMBER: 93-1420
A. A. F. DRAWING NUMBER: H39G5331
TYPE DESIGNATION: M2
TECHNICAL ORDER NUMBER: 11-1-28
PRODUCTION STATUS: Under procurement
SHIPPING DATA: Shipped complete with operating slide group assembly.

TYPE DESIGNATION: M2
BUREAU OF ORDNANCE DRAWING NUMBER: 204675
AVIATION ORDNANCE STOCK LIST NUMBER: 1-G-5606
ORDNANCE PAMPHLET NUMBER: 714, 398, 865
PROCUREMENT STATUS: Under procurement

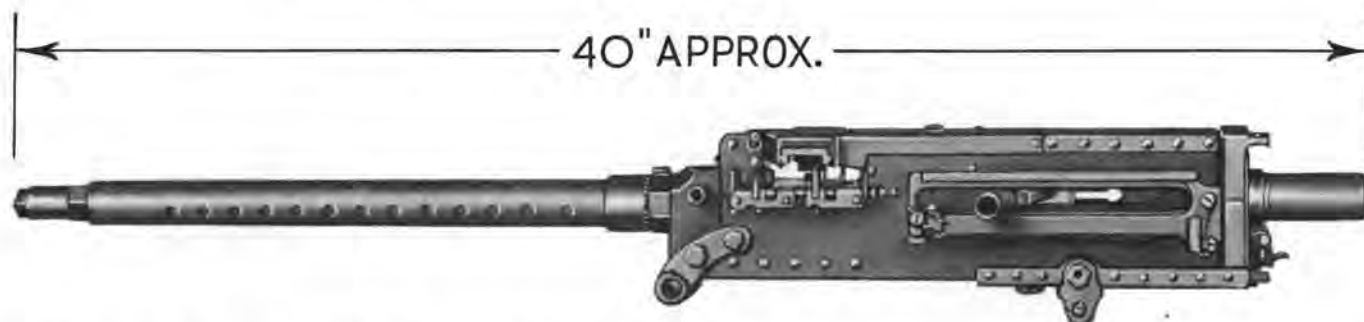
MODEL: M2
ORDNANCE DRAWING NUMBER: 51-57-3
51-57-3A (List of Parts)
STANDARD NOMENCLATURE LIST NUMBER: A-28
WAR DEPARTMENT TECHNICAL MANUAL NUMBER: 9-205
9-1205

REFERENCE NUMBER: 107L/391

May be converted to either a flexible or flexible with fixed back plate machine gun by substituting the proper back plate and slide group assembly.

Ordinance Office, War Department.

Army, Navy, and British.



**GUN, MACHINE, CALIBER .30, BROWNING, M2,
AIRCRAFT, FLEXIBLE WITH FIXED BACK PLATE**

NAMES: Browning machine gun, caliber .30, M2, aircraft, flexible with fixed back plate
Browning aircraft, flexible with fixed back plate machine gun, caliber .30
Gun—machine .30 caliber—Browning aircraft—flexible with fixed back plate

DESCRIPTION: The M2 caliber .30 Browning aircraft flexible machine gun, with fixed back plate, is used in installations which require flexibility of movement but which do not require hand grips on the guns. Such installations are found in power operated gun turrets or in gun mount adapters which are themselves equipped with hand grips.

This gun is a caliber .30 aircraft machine gun which contains a fixed back plate, and is equipped with a retracting slide group assembly which may be mounted to either side of the gun for charging.

CHARACTERISTICS:

Weight.....	approximately 21 $\frac{4}{5}$ pounds
Dimensions.....	approximately 39 $\frac{3}{4}$ by 5 $\frac{1}{2}$ by 5 $\frac{1}{4}$ inches
Rate of fire.....	1350 rounds per minute
Muzzle velocity.....	2700 feet per second

RELATIONSHIP OF PARTS: The gun is attached to the airplane by any flexible .30 caliber gun mount adapter which is provided with hand grips, or is installed in a .30 caliber gun turret.

ARMY

A. E. REFERENCE NUMBER: 93-1440
A. A. F. DRAWING NUMBER: H39G5331
TYPE DESIGNATION: M2
TECHNICAL ORDER NUMBER: 11-1-28
PRODUCTION STATUS: Under procurement
SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: M2
F. S. S. C. NUMBER: 1-G-5612
ORDNANCE PAMPHLET NUMBER: 714 and 398
PROCUREMENT STATUS: Under procurement

ORDNANCE

MODEL: M2
ORDNANCE DRAWING NUMBER: 51-122-1
51-122-1A (List of Drawings)
STANDARD NOMENCLATURE LIST NUMBER: A-28
WAR DEPARTMENT TECHNICAL MANUAL NUMBER: 9-205 and 9-1205

BRITISH

REFERENCE NUMBER: 107L/390

INTERCHANGEABILITY

May be converted to either a fixed or a flexible machine gun by substituting the proper back plate and slide group assembly.

SUPPLIED BY

Ordnance Office, War Department.

USED BY

Army, Navy, and British.

NAMES: Browning aircraft flexible machine gun caliber .30
Gun-machine .30 caliber—Browning aircraft flexible
Gun, caliber .30, BAM-30 (M-2) flexible
Machine Gun, caliber .30, Browning, M2, aircraft, flexible
Flexible machine gun, caliber .30, Browning, M2, aircraft flexible

This gun is a caliber, .30 aircraft machine gun, equipped with a retracting slide group assembly which is mounted to either side of the gun for charging, and it has a flexible back plate. The flexible back plate differs from the fixed back plate by the addition of two spade grips with an external trigger.

Weight	approximately 23 pounds
Dimensions	approximately 39¼ by 5½ by 6⅝ inches
Rate of fire	1350 rounds per minute
Muzzle velocity	approximately 2700 feet per second

A. E. REFERENCE NUMBER: 93-1520
A. A. F. DRAWING NUMBER: H39G5331
TYPE DESIGNATION: M2
TECHNICAL ORDER NUMBER: 11-1-28
PRODUCTION STATUS: Under procurement
SHIPPING DATA: Shipped as a complete unit.

TYPE DESIGNATION: M2
N. A. F. DRAWING NUMBER: 204674
AVIATION ORDNANCE STOCK LIST NUMBER: 1-G-5611
ORDNANCE PAMPHLET NUMBER: 714 and 398
PROCUREMENT STATUS: Under procurement.

MODEL: M2
ORDNANCE DRAWING NUMBER: 51-76-1
51-76-1A (List of Parts)
STANDARD NOMENCLATURE LIST NUMBER: A-28
WAR DEPARTMENT TECHNICAL MANUAL NUMBER: 9-205 and 9-1205.

REFERENCE NUMBER: 107L/392

May be converted to either a fixed or flexible with fixed back plate machine gun by substituting the proper back plate and slide group assembly.

Ordnance Office, War Department.

Army, Navy and British.



GUN, MACHINE, CALIBER .50, BROWNING, M2, AIRCRAFT, BASIC

NAMES: Browning machine gun, caliber .50, M2, aircraft, basic
Gun, machine .50 caliber—Browning aircraft—basic
Gun, caliber .50, BAM—50 (M2) basic

DESCRIPTION: The M2 caliber .50 Browning aircraft basic machine gun is the model from which all installation types are derived. It is a Browning aircraft machine gun without a slide group assembly, but with a fixed back plate, and an internal trigger bar and trigger bar pin assembly.

The basic gun may be converted to a fixed gun by the addition of an operating slide group assembly, and a solenoid to permit remote firing. It may be converted to a flexible gun by substituting a flexible back plate for the fixed back plate and by adding a retracting slide group assembly. When used in turret installations, the basic gun is equipped with a retracting slide group assembly.

CHARACTERISTICS:

Weight.....	approximately 60¾ pounds
Dimensions.....	approximately 56½ by 5½ by 3½ inches
Rate of fire.....	700 to 850 rounds per minute
Muzzle velocity.....	approximately 2800 feet per second

RELATIONSHIP OF PARTS: Used with:

Operating slide group assembly, A. E. Reference Number 93-1100, or retracting slide group assembly, A. E. Reference Number 93-1125.

ARMY

A. E. REFERENCE NUMBER: 93-1560
A. A. F. DRAWING NUMBER: H39G5332
TYPE DESIGNATION: M2
TECHNICAL ORDER NUMBER: 11-1-28 and 11-1-8
PRODUCTION STATUS: Under procurement
SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: M2
BUREAU OF ORDNANCE DRAWING NUMBER: 297034
AVIATION ORDNANCE STOCK LIST NUMBER: 1-G-5636
ORDNANCE PAMPHLET NUMBER: 215, 548 and 716
ORDNANCE CIRCULAR LETTER NUMBER: V-34
PROCUREMENT STATUS: Under procurement.

ORDNANCE

MODEL: M2
ORDNANCE DRAWING NUMBER: 51-82-1
51-82-1A (List of Drawings)
STANDARD NOMENCLATURE LIST NUMBER: A-38
WAR DEPARTMENT TECHNICAL MANUAL NUMBER: 9-225 and 9-1225

BRITISH

REFERENCE NUMBER: 107K/482

INTERCHANGEABILITY

May be mounted in either a fixed, flexible, or turret installation by substituting the proper back plate, and supplying the proper slide group assembly, solenoid, and adapter.

SUPPLIED BY

Ordnance Office, War Department.

USED BY

Army, Navy, and British.



SLIDE, OPERATING GROUP ASSEMBLY

ORDNANCE DRAWING D28200

NAMES: Group assembly—operating slide
Operating slide group assembly

Slide, operating, BAM .50 (M-2), group
assembly

DESCRIPTION: The operating slide group assembly is used for manually charging fixed guns by retracting the breech mechanism. It is also used for unloading the gun, and for correction of stoppages in firing. If the gun is mounted in the wing, or in the fuselage, out of reach of the gunner, a remote control cable may be attached so that the slide can be operated from the cockpit.

This assembly is a lever and slide arrangement equipped with a metal handle and may be mounted on either side of the gun. The slide group assembly engages the bolt stud and retracts it to the rear, to perform initial charging. Upon firing, the bolt stud and breech mechanism operate independently of the slide group assembly.

CHARACTERISTICS:

Dimensions.....approximately 21½ by 6 by 1¾ inches
Weight.....approximately 1½ pounds

RELATIONSHIP OF PARTS: The operating slide group assembly is used on M2 .50 caliber Browning fixed machine guns, and is secured to the side plate of the gun by two guide bearings.

ARMY

A. E. REFERENCE NUMBER: 93-1100

TECHNICAL ORDER NUMBER: 11-1-8

PRODUCTION STATUS: Under procurement

SHIPPING DATA: Shipped complete with bolt stud and mounting attachments.

NAVY

BUREAU OF ORDNANCE DRAWING NUMBER: 169790

AVIATION ORDNANCE STOCK LIST NUMBER: 1-S-9423

ORDNANCE PAMPHLET NUMBER: 716 and 865

PROCUREMENT STATUS: Under procurement.

ORDNANCE

ORDNANCE DRAWING NUMBER: D28200

STANDARD NOMENCLATURE LIST NUMBER: A-38

WAR DEPT. TECHNICAL MANUAL NUMBER: 9-225 and 1-409

BRITISH

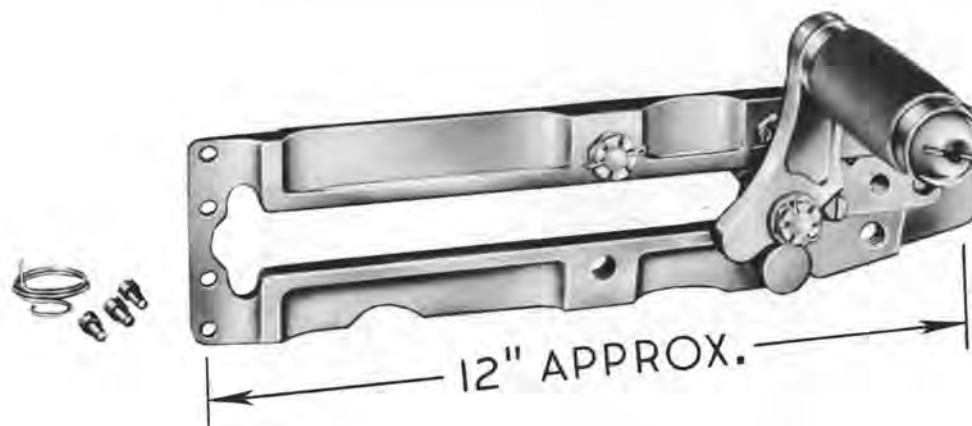
REFERENCE NUMBER: 107K/119

SUPPLIED BY

Ordnance office, War Department.

USED BY

Army, Navy, and British.



SLIDE, RETRACTING, GROUP ASSEMBLY

ORDNANCE DRAWING D28300A

NAMES: Group assembly—retracting slide
Retracting slide group assembly

Slide, retracting, BAM 50 (M-2) group
assembly

DESCRIPTION: The retracting slide group assembly provides a means of charging flexible guns by hand retraction of the breech mechanism. It is also used for loading or unloading the gun, and to clear firing stoppages.

It is a lever and slide arrangement which can be mounted on the left or right hand side of the gun. The force needed to start the charging cycle is furnished through the crank-like wooden hand grip. This grip is connected to the bolt stud in such a way that the bolt stud, and consequently the breech mechanism, operate independently of the handle and the slide group assembly upon firing.

The wooden handle may be removed, and a cable can be attached to the lever, for remote operation.

CHARACTERISTICS:

Dimensions.....approximately 12 by 4½ by 5½ inches
Weight.....approximately 2½ pounds

RELATIONSHIP OF PARTS: The retracting slide group assembly is used on all M2 .50 caliber Browning flexible machine guns.

ARMY

A. E. REFERENCE NUMBER: 93-1125
A. A. F. DRAWING NUMBER: H39B5344
TECHNICAL ORDER NUMBER: 11-1-8
PRODUCTION STATUS: Under procurement
SHIPPING DATA: Shipped complete with bolt stud, and mounting attachments.

NAVY

BUREAU OF ORDNANCE DRAWING NUMBER: 307245
AVIATION ORDNANCE STOCK LIST NUMBER: 1-S-9428
ORDNANCE CIRCULAR LETTER NUMBER: 12-42
ORDNANCE PAMPHLET NUMBER: 716 and 865
PROCUREMENT STATUS: Under procurement.

ORDNANCE

ORDNANCE DRAWING NUMBER: D28300A
STANDARD NOMENCLATURE LIST NUMBER: A-38
WAR DEPT. TECHNICAL MANUAL NUMBER: 9-225 and 1-409

BRITISH

REFERENCE NUMBER: 107K/225

SUPPLIED BY

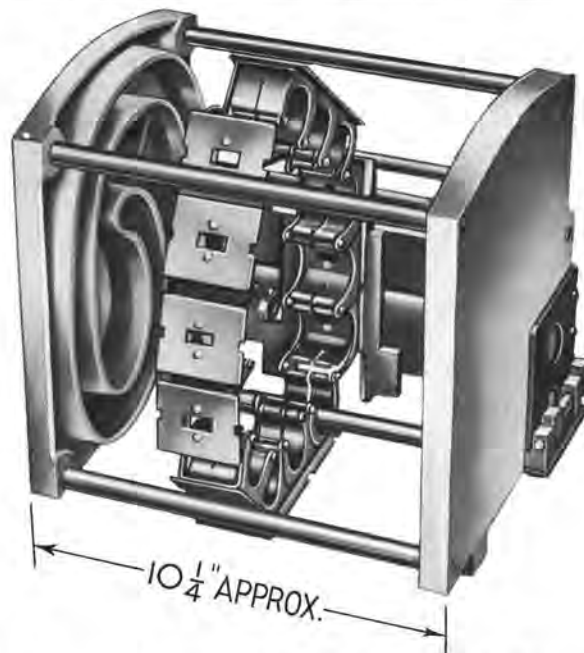
Ordnance office, War Department.

USED BY

Army, Navy, and British.



GUN ACCESSORIES ARMAMENT—ORDNANCE



MAGAZINE, 15 ROUND, 37-MM, M2

NAMES: 37-mm, 15 round magazine M2
15 round articulated link belt magazine

15 round 37-mm ammunition box

DESCRIPTION: The type M215 round 37-mm magazine is used only where limited space for ammunition storage is available. This magazine incorporates a 15 link articulated belt, which passes through the feed box and falls into a suitable container placed near the gun.

CHARACTERISTICS:

Weight.....approximately 12½ pounds
Dimensions.....approximately 11½ by 8⅝ by 10⅞ inches

RELATIONSHIP OF PARTS: The 15 round, 37-mm magazine is held to the left hand side of the feed box of the type M-4, 37-mm aircraft gun (A. E. Reference Number 93-1280) by the action of two spring held latches which are provided with quick release buttons.

ARMY

A. E. REFERENCE NUMBER: 93-2100
A. A. F. DRAWING NUMBER: H39G5584
TYPE DESIGNATION: M2
TECHNICAL ORDER NUMBER: 11-1-15, 11-1-17, 11-1-18
PRODUCTION STATUS: Not under procurement for initial installation.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ORDNANCE

MODEL: M2
ORDNANCE DRAWING NUMBER: D36321
STANDARD NOMENCLATURE LIST NUMBER: A-46
WAR DEPARTMENT TECHNICAL MANUAL NUMBER: 9-240

BRITISH

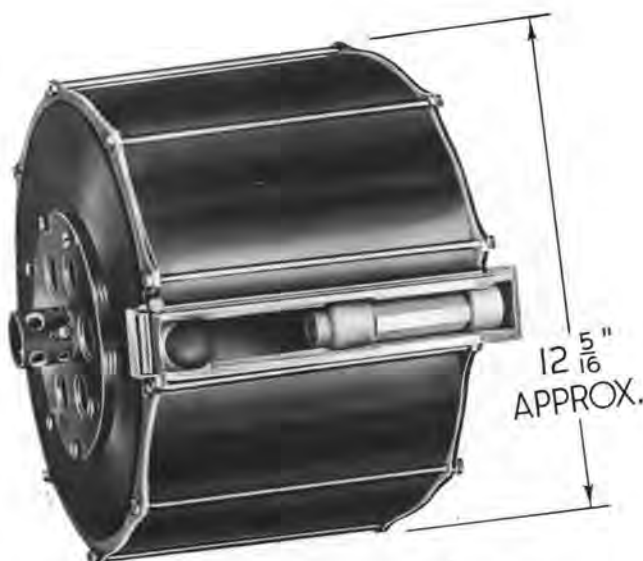
REFERENCE NUMBER: 107M/52

SUPPLIED BY

Ordnance Office, War Department.

USED BY

Army.



MAGAZINE, 60 RD, 20-MM, M1

NAMES: 20-mm 60 rd magazine
60 round magazine

Drum type magazine

DESCRIPTION: The M1, 20-mm 60 round magazine is a drum shaped ammunition box which is quickly attachable to the magazine slides of the 20-mm automatic gun. It consists of a cylindrical casing, which houses a driving spring and feeder assembly. The magazine is operated by spring tension. Initial tension is applied during assembly, and additional tension is added subsequently by the loading operations. The feeder arm acts under the spring tension to move each successive round of ammunition to the proper position for loading into the gun. A series of holes in the rear plate provide visual indication of the rounds of ammunition remaining in the magazine.

CHARACTERISTICS:

Dimensions.....approximately $9\frac{5}{8}$ by $12\frac{5}{16}$ by $12\frac{5}{16}$ inches
Weight.....approximately $20\frac{3}{4}$ pounds

RELATIONSHIP OF PARTS: This magazine is mounted on the magazine slide of the M1 automatic 20-mm gun, or the AN-M2 aircraft automatic 20-mm gun.

ARMY

A. E. REFERENCE NUMBER: 93-3050
A. A. F. DRAWING NUMBER: H42G2391
TYPE DESIGNATION: M1
TECHNICAL ORDER NUMBER: 11-1-16
PRODUCTION STATUS: Under procurement
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ORDNANCE

MODEL: M1
ORDNANCE DRAWING NUMBER: D36339
STANDARD NOMENCLATURE LIST NUMBER: A-47
WAR DEPARTMENT TECHNICAL MANUAL NUMBER: 9-227

SUPPLIED BY

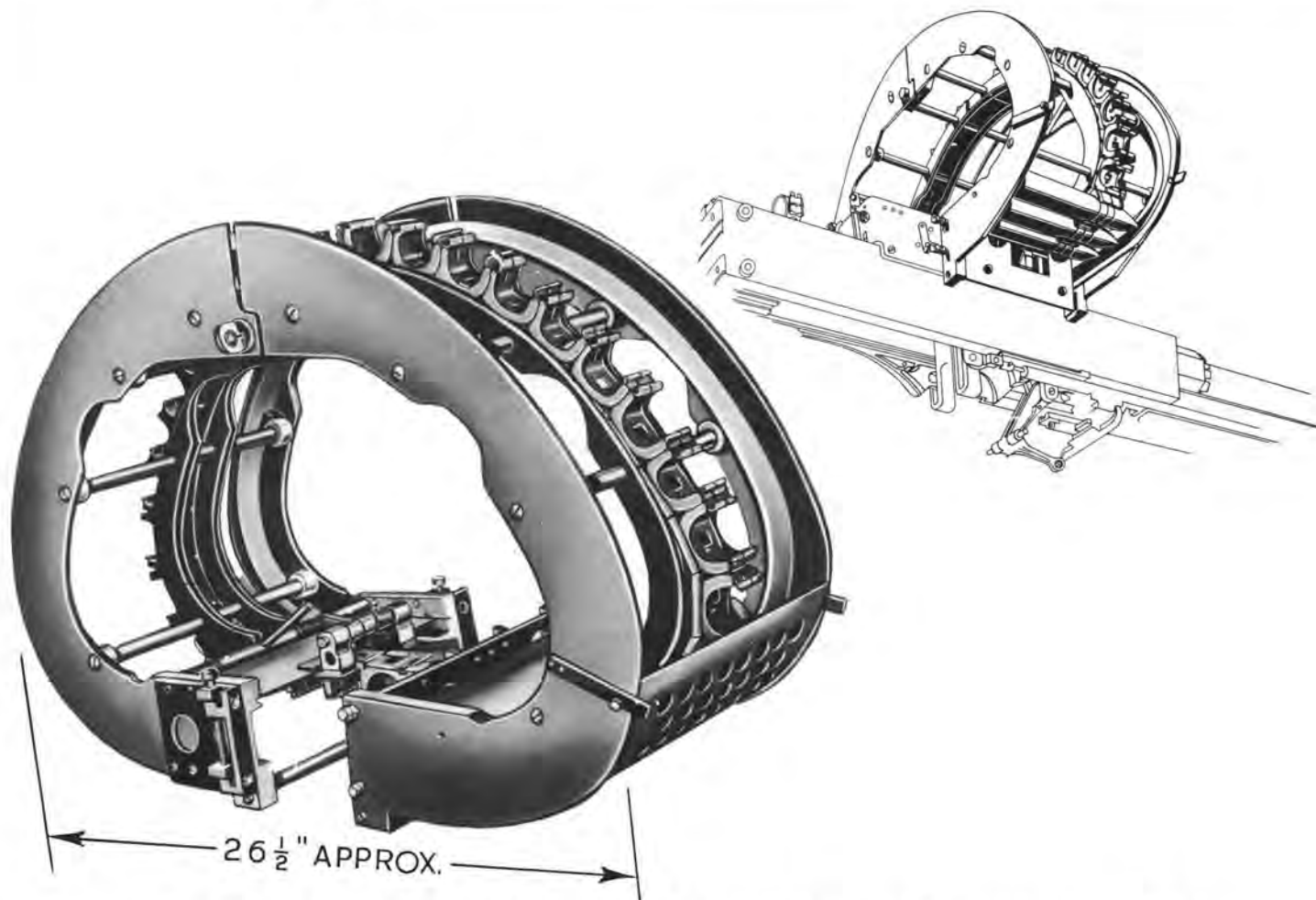
Ordnance Office, War Department.

USED BY

Army.



GUN ACCESSORIES ARMAMENT—ORDNANCE



MAGAZINE, ENDLESS BELT, 37-MM, M6

NAMES: 37-mm endless belt magazine, M6

30 round endless belt magazine

DESCRIPTION: The M-6, 37-mm endless belt magazine is made up of an endless belt of 33 links which hold 30 rounds of ammunition within a horse collar shaped frame. This magazine was designed to fit within the nose contours of the airplane.

The magazine is constructed in two sections to facilitate installation on the cannon. A removable plate provides access to the endless belt for loading operations. The lower ends of the magazine are rigidly fastened to opposite sides of the feed box to provide support for the magazine.

CHARACTERISTICS:

Dimensions.....	approximately 26 $\frac{9}{16}$ by 18 $\frac{3}{16}$ by 10 $\frac{5}{16}$ inches
Weight.....	approximately 35 pounds
Capacity.....	30 rounds of 37-mm ammunition

RELATIONSHIP OF PARTS: Used with:

Type M4 37-mm aircraft gun, A. E. Reference Number 93-1280.

ARMY

A. E. REFERENCE NUMBER: 93-3100
 A. A. F. DRAWING NUMBER: H42G2521
 TYPE DESCRIPTION: M6
 TECHNICAL ORDER
 NUMBER: 11-1-17 and 11-1-18
 PRODUCTION STATUS: Under
 procurement
 SHIPPING DATA: Shipped as a complete
 unit.

NAVY

There is no Navy equivalent for the Army item.

ORDNANCE

MODEL: M6
 ORDNANCE DRAWING
 NUMBER: D36488
 STANDARD NOMENCLATURE
 LIST NUMBER: A-46
 WAR DEPT. TECHNICAL MANUAL
 NUMBER: 9-240

SUPPLIED BY

Ordnance Office, War Department.

USED BY

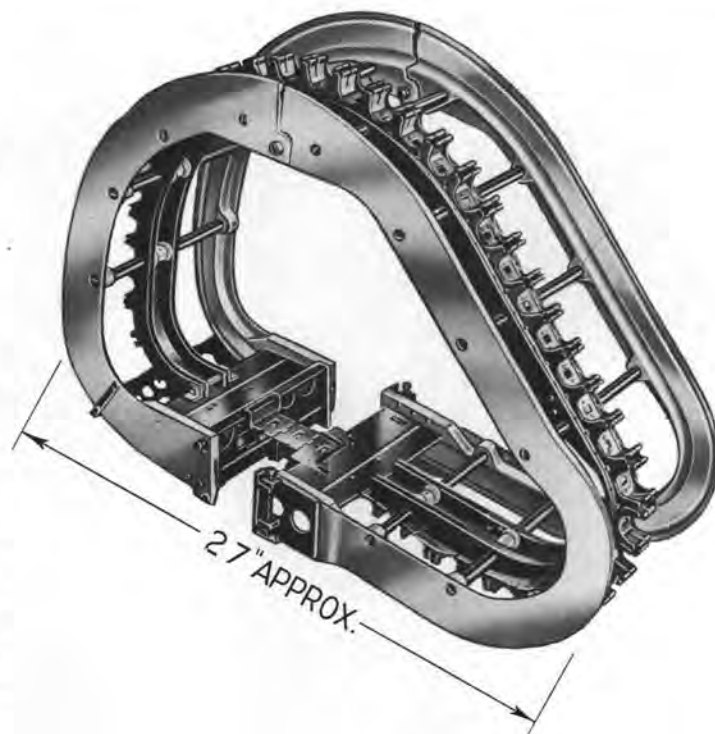
Army.



MAGAZINE, ENDLESS BELT, 37-MM, M7

NAMES: 37-mm endless belt magazine
30 round magazine

DESCRIPTION: The M7 37-mm endless belt magazine is made up of an endless belt of 34 links, which holds 31 rounds of ammunition within a horse collar shaped frame. The frame of the magazine is not symmetrical about the center line of the gun, since the hinged portion of the top is offset nine degrees to permit the gun to be tilted through this angle. This magazine was designed to fit within the nose contours of the airplane, and was formerly known as experimental model T14.



The magazine is constructed in two sections to facilitate installation on the gun. A removable plate provides access to the endless belt for loading. The lower ends of the magazine are rigidly fastened to opposite sides of the gun feed box to provide support for the magazine.

CHARACTERISTICS:

Dimensions.....	approximately 26 $\frac{9}{16}$ by 18 $\frac{3}{16}$ by 10 $\frac{5}{16}$ inches
Weight.....	approximately 35 pounds
Capacity.....	31 rounds (maximum)

RELATIONSHIP OF PARTS: Used with:

Type M4 37-mm automatic gun, A. E. Reference Number 93-1280.

ARMY

A. E. REFERENCE NUMBER: 93-3110

TYPE DESIGNATION: M7

SUPERSEDED TYPE: T14

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ORDNANCE

MODEL: M7

COLT'S PATENT FIREARMS MFG. CO.

DRAWING NUMBER: E. S. A-1738

SUPPLIED BY

Ordnance Office, War Department.

USED BY

Army.



GUN ACCESSORIES ARMAMENT—ORDNANCE

MECHANISM, FEED, LEFT HAND, 20-MM, AN-M1

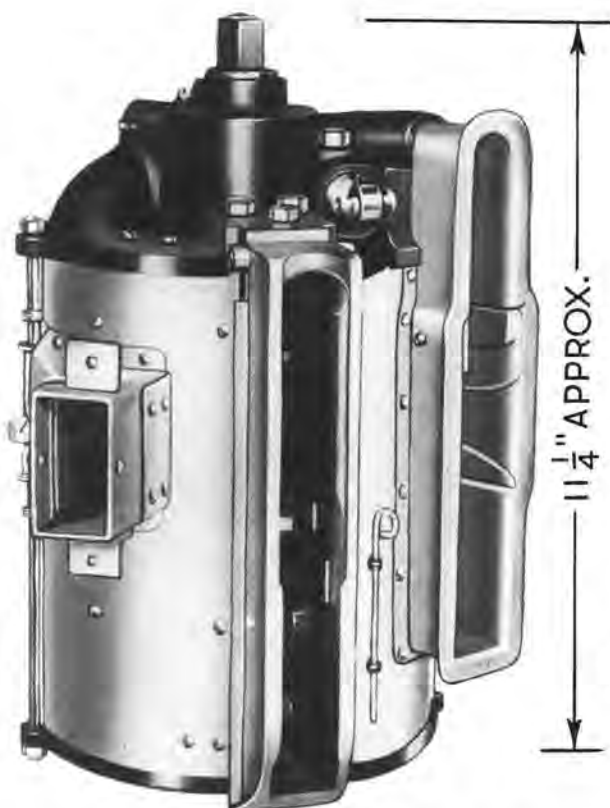
FORMER ARMY TYPE M1 FORMER NAVY TYPE M1

NAMES: 20-mm left hand feed mechanism
Mechanism—feed 20-mm—left hand
20-mm ammunition feeder
20-mm belt feed mechanism
Feed mechanism—20-mm L.H.

DESCRIPTION: The AN-M1 20-mm left hand feed mechanism is designed to pull belted ammunition into the mechanism housing, separate and eject the links, and feed the unbelted rounds of ammunition into the gun.

The feed mechanism derives power for its operation from the recoil of the gun, and from a driving spring which rotates the shaft. This spring is initially wound to a suitable tension and this tension is maintained by the recoil of the gun which actuates a rack and pinion, and ratchet assembly. There is an assembly of sprockets on the shaft, which engages the rounds in the belt and aligns the links.

The front casting is constructed to act as a cam, pushing the rounds to the rear and freeing them of the links.



Parts for the left and right hand feed are of the same shape and dimensions, but differ in that their positions are reversed in the mechanism. Many parts of the two are interchangeable, but the mechanisms as complete units, are not interchangeable.

CHARACTERISTICS:

Dimensions.....	approximately 11 $\frac{1}{4}$ by 7 $\frac{15}{16}$ by 7 $\frac{3}{4}$ inches
Weight.....	approximately 18 $\frac{4}{5}$ pounds
Operates on gun recoil.....	7/10 inch (minimum)
Rate of feeding.....	approximately 600 rounds per minute

RELATIONSHIP OF PARTS: Used with:

Type M1 automatic 20-mm gun or type AN-M2 aircraft automatic 20-mm gun.

ARMY

A. E. REFERENCE NUMBER: 93-3200
A. A. F. DRAWING NUMBER: H41H5144
TYPE DESIGNATION: AN-M1
TECHNICAL ORDER NUMBER: 11-1-16
PRODUCTION STATUS: Under
procurement
SHIPPING DATA: Shipped as a complete unit with guide and bracket, Ordnance drawing numbers A25940 and B163511A, respectively.

NAVY

TYPE DESIGNATION: AN-M1
BUREAU OF ORDNANCE DRAWING
NUMBER: 309302
AVIATION ORDNANCE STOCK LIST
NUMBER: 1-F-121
ORDNANCE PAMPHLET NUMBER: 865
PROCUREMENT STATUS: Under
procurement.

ORDNANCE

MODEL: AN-M1
ORDNANCE DRAWING
NUMBER: D36371
STANDARD NOMENCLATURE LIST
NUMBER: A-47
WAR DEPT. TECHNICAL MANUAL
NUMBER: 9-227

BRITISH

REFERENCE NUMBER: 107G/80

SUPPLIED BY

Ordnance Office, War Department.

USED BY

Army, Navy, and British.



MECHANISM, FEED, RIGHT HAND 20-MM, AN-M1

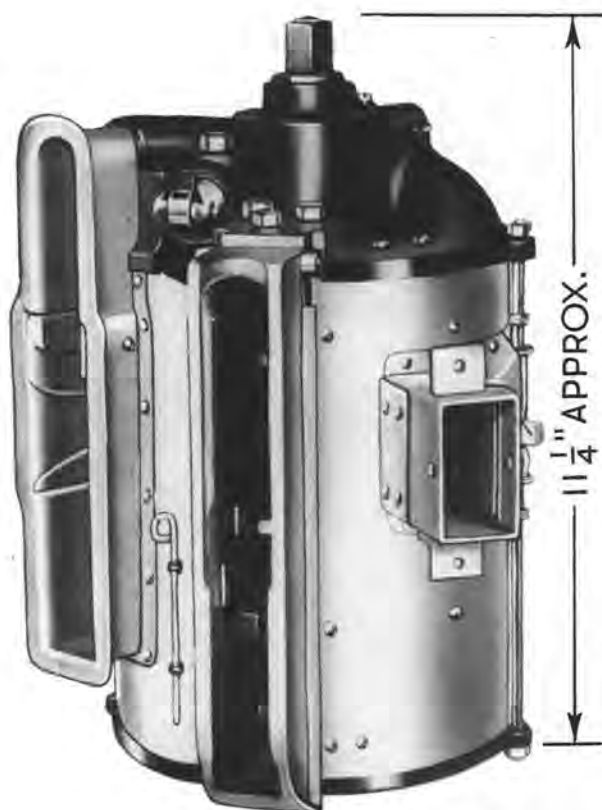
FORMER ARMY TYPE M1 FORMER NAVY TYPE M1

NAMES: 20-mm Right hand feed mechanism
20-mm Ammunition feeder
20-mm belt feed mechanism
Mechanism—feed 20-mm—right hand
Feed mechanism—20-mm, R.H.

DESCRIPTION: The AN-M1 20-mm right hand feed mechanism is designed to pull belted ammunition into the mechanism housing, separate and eject the links and feed the unbelted rounds of ammunition into the gun.

The feed mechanism derives power for its operation from the recoil of the gun, and from a driving spring which rotates the shaft. This spring is initially wound to a suitable tension and this tension is maintained by the recoil of the gun, which actuates a rack and pinion, and ratchet assembly. There is an assembly of sprockets on the shaft which engages the rounds in the belt and aligns the links.

The front casting is constructed to act as a cam, pushing the rounds to the rear and freeing them of the links.



Parts for the left and right hand feed are of the same shape and dimensions, but differ in that their positions are reversed in the mechanism. Many parts of the two are interchangeable, but the mechanisms as complete units, are not interchangeable.

CHARACTERISTICS:

Dimensions..... approximately 11 $\frac{1}{4}$ by 7 $\frac{15}{16}$ by 7 $\frac{3}{4}$ inches
Weight..... approximately 18 $\frac{1}{2}$ pounds
Operates on gun recoil..... 7-10 inch (minimum)
Rate of feeding..... approximately 600 rounds per minute

RELATIONSHIP OF PARTS: Used with:

Type M1 automatic 20-mm gun, or type AN-M2 aircraft automatic 20-mm gun.

ARMY

A. E. REFERENCE NUMBER: 93-3205
A. A. F. DRAWING NUMBER: H41H5144
TYPE DESIGNATION: AN-M1
TECHNICAL ORDER NUMBER: 11-1-16
PRODUCTION STATUS: Under procurement
SHIPPING DATA: Shipped as a complete unit with guide and bracket, ordnance drawing numbers A25940 and B163511A, respectively.

NAVY

TYPE DESIGNATION: AN-M1
BUREAU OF ORDNANCE
DRAWING NUMBER: 309301 and 309294
AVIATION ORDNANCE STOCK
LIST NUMBER: 1-F-122
ORDNANCE PAMPHLET
NUMBER: 865
PROCUREMENT STATUS: Under procurement.

ORDNANCE

MODEL: AN-M1
ORDNANCE DRAWING
NUMBER: D36370
STANDARD NOMENCLATURE
LIST NUMBER: A-47
WAR DEPARTMENT TECHNICAL
MANUAL NUMBER: 9-227

BRITISH

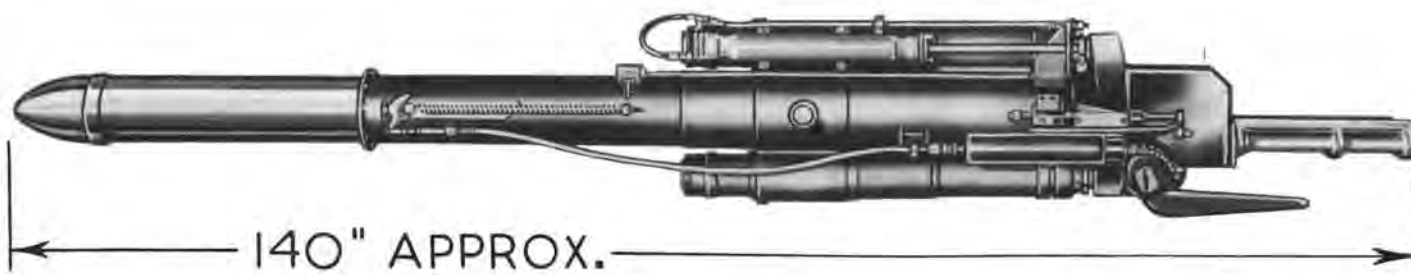
REFERENCE NUMBER: 107G/86

SUPPLIED BY

Ordnance Office, War Department.

USED BY

Army, Navy, and British.



MOUNT, GUN, AIRPLANE, 75-MM, M6

NAMES: 75-mm airplane gun mount
Mount—75-mm gun
Mount assembly—75-mm cannon

Gun mount, 75-mm airplane
75-mm mount

DESCRIPTION: The M6 75-mm gun mount contains the M4 75-mm gun and all attachments required to adapt this gun to aircraft use. The mount is equipped with a combination hydraulic and spring recoil absorbing mechanism and a muzzle cover. This cover opens automatically upon completion of the loading operation. It prevents firing gases from being blown back into the airplane, and facilitates loading the gun during flight. The muzzle cover, however, is not required in all installations.

Firing is accomplished remotely, from the pilot's compartment, by means of a solenoid operated firing mechanism. Ammunition is loaded manually and ejected through an automatic ejector mechanism.

CHARACTERISTICS:

Weight.....	approximately 1297 pounds
Dimensions.....	approximately 140 $\frac{13}{16}$ by 15 $\frac{1}{4}$ by 19 inches
Muzzle velocity.....	1550 to 2050 feet per second

ARMY

A. E. REFERENCE NUMBER: 93-4000

TYPE DESIGNATION: M6

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit consisting of the following major items: 75-mm gun, M4; cradle; recoil mechanism; firing mechanism with solenoid; ejector mechanism; and loading tray. A muzzle cover is supplied when required.

NAVY

There is no Navy equivalent for the Army item.

ORDNANCE

MODEL: M6

ORDNANCE DRAWING NUMBER: 18-9-1 (M6 Mount) and 52-243-1 (M4 Gun)

STANDARD NOMENCLATURE LIST NUMBER: C-47

ROCK ISLAND ARSENAL NOTES NUMBER: R1A-AM-3

SUPPLIED BY

Ordnance Office, War Department

USED BY

Army



STUD-BOLT
ORDNANCE DRAWING NUMBER A13424

NAMES: Bolt stud
Operating slide lever stud

Retracting slide lever stud

DESCRIPTION: The bolt stud used on M2 caliber .50 Browning aircraft machine guns is a small cylindrical stud with an upset diameter at its mid-section. The stud is supplied as a part of the retracting or the operating slide group assemblies, or it may be supplied as a separate piece for use with special gun charger attachments. The stud engages the bolt group and projects through the side plate of the gun to allow attachment of the gun charging mechanism.

CHARACTERISTICS:

Dimensions.....approximately $\frac{1}{2}$ by $1\frac{1}{4}$ inches
Weight.....approximately $\frac{1}{20}$ pound

RELATIONSHIP OF PARTS: Supplied separately or as a part of:

Operating slide group assembly, A. E. Reference Number 93-1100 or retracting slide group assembly,
A. E. Reference Number 93-1125 or Browning machine gun, cal. .50, M2, aircraft, basic, A. E.
Reference Number 93-1560.

ARMY

A. E. REFERENCE NUMBER: 93-7000

TECHNICAL ORDER NUMBER: 11-1-8

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit or as a part of operating slide group assembly or retracting slide group assembly.

NAVY

AVIATION ORDNANCE STOCK LIST NUMBER: 1-S-22240

ORDNANCE PAMPHLET: 215; 548; 716

PROCUREMENT STATUS: Under procurement.

ORDNANCE

MODEL: None

ORDNANCE DRAWING NUMBER: A13424

STANDARD NOMENCLATURE LIST NUMBER: A-38

WAR DEPARTMENT, TECHNICAL MANUAL NUMBER: 9-225

SUPPLIED BY

Ordnance Office, War Department

USED BY

Army, Navy, British

BRITISH

REFERENCE NUMBER: 107K/118



TOOL ROLLS ARMAMENT—ORDNANCE



ROLL, TOOL ARMORER'S W/CONTENTS, COMPLETE

ORDNANCE SNL NUMBER A-28

NAMES: Armorer's tool roll complete w/contents
Armorer's tool kit

Tool roll
.30 caliber tool roll

DESCRIPTION: The caliber .30 armorer's tool roll consists of a canvas container provided with pockets to accommodate the tools making up this complete kit. These tools are for use by the airplane armorer in cleaning, lubricating, and maintaining the caliber .30 aircraft machine guns. The tools are rolled into a compact carrying unit when not in use. The following tools are included with this roll:

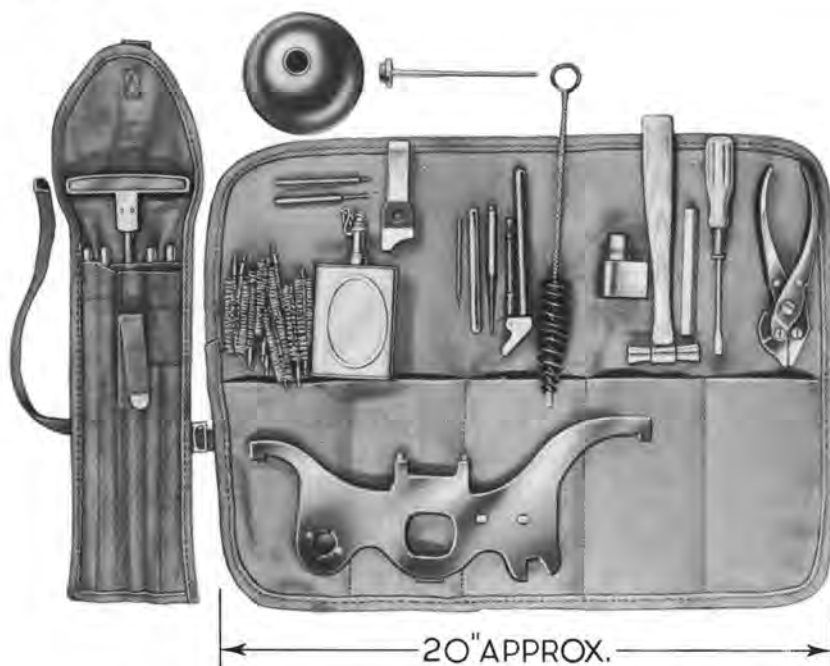
QUANTITY	NAME	ORDNANCE DRAWING OR PIECE MARK NO.
2	Brush, chamber cleaning, M6.....	B108828
10	Brush, cleaning, cal. .30, M2.....	C4035
1	Case, cleaning rod, M1.....	C6573
1	Drift, brass, stght., $\frac{3}{8}$ rd. x 4.....	TCGX2D
1	Extractor, ruptured cartridge, Mk. IV.....	C3854
1	Gage, headspace and timing, cal. .30, BMG.....	A196229
1	Hammer, brass, dble-bell-face., 3 oz.....	TAFX2A
1	Oiler, oval, 3 oz., w/cap and chain.....	C59737
1	Pliers, side-cutting, paral-jaw, 6 in.....	THBX1A
1	Punch, center, 4 in.....	TCDX1A
1	Punch, drive pin, .03 in. pt.....	TCFX2A
1	Punch, drive pin, .05 in. pt.....	TCFX2C
1	Punch, drive pin, .08 in. x $\frac{3}{4}$ pt.....	TCFX2F
1	Reflector, barrel, cal. .30.....	B147001
1	Rod, cleaning, jointed, cal. .30, M1.....	D8237
1	Screw driver, comm., normal duty, 3 in. blade.....	TGAX1A
1	Stone, sharp., unmounted, artificial, fine, tri., 4 x $\frac{1}{16}$	B147160
1	Tool, carbon removing, cal. .30, M4.....	C64302
1	Tool, combination, cal. .30, M2.....	B131314
1	*Tool, release.....	C3856

*Not carried with original issue. Must be ordered separately.

(Continued on page 321)



TOOL ROLLS ARMAMENT—ORDNANCE



ROLL, TOOL, ARMORER'S W/CONTENTS, COMPLETE

ORDNANCE SNL NUMBER A-38

NAMES: Armorer's tool roll complete w/contents
Armorer's tool kit

Tool roll
.50 caliber tool roll

DESCRIPTION: The caliber .50 armorer's tool roll consists of a canvas container provided with pockets to accommodate the tools making up this complete kit. These tools are for use by the airplane armorer in cleaning, lubricating, and maintaining the caliber .50 aircraft machine guns. The tools are rolled into a compact carrying unit when not in use. The following tools are included with this roll:

QUANTITY	NAME	ORDNANCE DRAWING OR PIECE MARK NO.
2	Brush, chamber cleaning, M6.....	B108828
10	Brush, cleaning, cal. .50, M4.....	C4037
1	Case, cleaning rod, cal. .50, M15.....	C64274
1	Drift, brass, stght., $\frac{3}{8}$ rd. x 4.....	TCGX2D
1	Gage, headspace and timing, cal. .50, BMG.....	A196228
1	Hammer, brass, dble-bell-face, 3 oz.....	TAFX2A
1	*Oiler, filling, oil buffer.....	B8514
1	Oiler, oval, 3 oz., w/cap and chain.....	C59737
1	Pliers, side-cutting, paral-jaw., 6 in.....	THBX1A
1	Punch, center, 4 in.....	TCDX1A
1	Punch, drive pin, .03 in. pt.....	TCFX2A
1	Punch, drive pin, .05 in. pt.....	TCFX2C
1	Punch, drive pin, .08 x $\frac{3}{4}$ pt.....	TCFX2F
1	Reflector, barrel, cal. .50.....	C64255
1	Rod, cleaning, jointed, cal. .50, M7.....	D35441
1	Screw driver, comm., normal duty, 3 in. blade.....	TGAX1A
1	Stone, sharp., unmounted, artificial, fine, tri., 4 x $\frac{1}{16}$	B147160
1	*Tool, release.....	C3856
1	*Wrench, combination, cal. .50, M2.....	D28242

*Not included in original issue. Must be ordered separately.

(Continued on page 323)



PYROTECHNIC PROJECTORS AND SIGNALS

The use of pyrotechnic signals permits communication between airplanes in flight, and between airplanes and ground stations. Predetermined signals are arranged prior to each flight or troop movement to maintain radio silence and minimize the possibility of interception of messages by the enemy. They are also used as distress or emergency signals. Signalling with pyrotechnics is accomplished by use of pistols or dischargers.

Pyrotechnic pistols may be hand-fired directly from the airplane, or from a mount fastened to the fuselage. Pistols may be breech loaded or muzzle loaded. After each firing of single-loading pistols, the empty cartridge must be removed by hand and the pistol reloaded. Double-action pistols are cocked and fired by a single movement of the trigger.

Multi-barrel dischargers contain several cartridges, which are fired without reloading until all cartridges are used. This type of discharger is operated remotely by means of a cable which, by a pull on the remote controller handle, revolves the barrel, cocks the discharger, and fires the cartridge.

Signals are of two general types, although they vary in size, shape, and construction. Igniting discharges vary in color, intensity, and pattern. One type has an aluminum case with a groove machined around its head. It is identified by markings on the case and top. The other type has a paper and brass case like a shotgun shell, and is identified by markings on the case and top. The following tables list the characteristics of the most common signals supplied by the Ordnance Department for use in airplane pyrotechnic projectors:

SIGNALS, AIRCRAFT: RIMLESS TYPE

(Parachute)



NAME	MODEL	IDENTIFICATION TOP
Signal, aircraft, white star, parachute.....	M10	WP
Signal, aircraft, red star, parachute.....	M11	RP
Signal, aircraft, red star, cluster.....	M14	RS
Signal, aircraft, white star, blinker, parachute.....	M15	WB
Signal, aircraft, green star, blinker, parachute.....	M16	GB

AAF Drawing H41D10594 Covers
Signals M11, M14, M15, and M16.

(Continued on page 325)

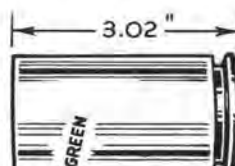


PYROTECHNIC PROJECTORS AND SIGNALS

(Continued from page 324)

SIGNALS, AIRCRAFT: RIMLESS TYPE

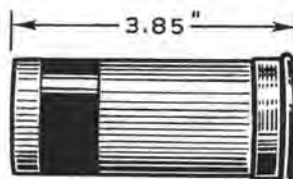
(Single and Double Star)



NAME	MODEL	IDENTIFICATION TOP
Signal, aircraft, double star, red-red	AN-M28	RR
Signal, aircraft, double star, yellow-yellow	AN-M29	YY
Signal, aircraft, double star, green-green	AN-M30	GG
Signal, aircraft, double star, red-yellow	AN-M31	RY
Signal, aircraft, double star, red-green	AN-M32	RG
Signal, aircraft, double star, green-yellow	AN-M33	GY
Signal, aircraft, single star, red	AN-M34	R
Signal, aircraft, single star, yellow	AN-M35	Y
Signal, aircraft, single star, green	AN-M36	G

AAF Drawing H42B10457 Covers
Signals AN-M28 to AN-M36.

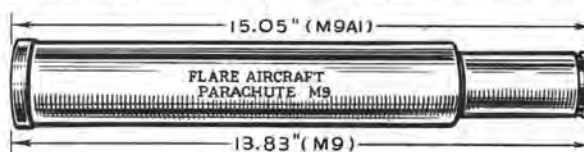
SIGNALS, AIRCRAFT: CARTRIDGE TYPE



NAME	MODEL	IDENTIFICATION TOP
Signal, aircraft, double star, red-red	AN-M37	red-red
Signal, aircraft, double star, yellow-yellow	AN-M38	yellow-yellow
Signal, aircraft, double star, green-green	AN-M39	green-green
Signal, aircraft, double star, red-yellow	AN-M40	red-yellow
Signal, aircraft, double star, red-green	AN-M41	red-green
Signal, aircraft, double star, yellow-green	AN-M42	yellow-green
Signal, aircraft, single star, red	AN-M43	red
Signal, aircraft, single star, yellow	AN-M44	yellow
Signal, aircraft, single star, green	AN-M45	green

AAF Drawing H42B10457 Covers
Signals AN-M37 to AN-M45.

FLARE, AIRCRAFT PARACHUTE: RIMLESS TYPE



NAME	MODEL
Flare, aircraft parachute	M9
Flsre, aircraft parachute	M9A1

AAF Drawing H41D10594 Covers
Flare M9 and M9A1

[illegible]

FORMER ARMY TYPE M5 FORMER NAVY TYPE M5

Pyrotechnic discharger AN-M5 and remote controller M2

Finish.....glossy black



PISTOL, PYROTECHNIC, M2

NAMES: Pyrotechnic pistol
Pyrotechnic signal pistol
Signal pistol

DESCRIPTION: The type M2 pyrotechnic pistol is a double-action single-loading pistol, used to project pyrotechnic signals from an airplane in flight. It is hand-fired from a window or other opening in the fuselage. The signals are rimless barrel types M14, M15, M16, and M28 to M36 inclusive, which permit muzzle-loading. It may also be used to fire M9 and M9A1 parachute flares and M10 and M11 parachute signals.

CHARACTERISTICS:

Dimensions.....approximately $7\frac{5}{16}$ by $5\frac{7}{16}$ by $1\frac{15}{16}$ inches
Weight.....approximately 3-1/10 pounds

RELATIONSHIP OF PARTS:

For stowage in the airplane, the type M2 pyrotechnic pistol is usually inserted in the type A-1 pyrotechnic pistol holder, A. E. Reference Number 52-2825, which is snap-fastened to the airplane structure.



ARMY

A. E. REFERENCE NUMBER: 93-6000
A. A. F. DRAWING NUMBER: H41D10594
TYPE DESIGNATION: M2
TECHNICAL ORDER NUMBER: 11-15-9
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: M2
BUREAU OF ORDNANCE DRAWING NUMBER: 281829
AVIATION ORDNANCE STOCK LIST NUMBER: 2-P-3495
ORDNANCE CIRCULAR LETTER NUMBER: V 11-42
ORDNANCE PAMPHLET NUMBER: 865
AVIATION ORDNANCE PAMPHLET NUMBER: 981-1
TECHNICAL BULLETIN NUMBER: 290-1
PROCUREMENT STATUS: Not under procurement for initial installation. Superseded by type AN-M8 pyrotechnic pistol.

ORDNANCE

MODEL: M2
ORDNANCE DRAWING NUMBER: D10305
STANDARD NOMENCLATURE LIST NUMBER: B-18
WAR DEPARTMENT TECHNICAL MANUAL NUMBER: 9-290

SUPPLIED BY

Ordnance Office, War Department

USED BY

Army and Navy



PISTOL, SIGNAL

BRITISH NUMBER 4, MARK 1

NAMES: Signal pistol
Pyrotechnic pistol

British signal pistol

DESCRIPTION: The Number 4, Mark 1 signal pistol is a British pistol used to project pyrotechnic signals from an aircraft while in flight. It is a double-action, signal-loading pistol, fired from a mounting sleeve fastened to the airplane fuselage. The signals used are British 1½ inch cartridges, A. E. Reference Numbers 93-400 to 93-650 inclusive, or Army Ordnance signals, AN-M37 to AN-M45, inclusive. This pistol differs from the Army type AN-M8 in the length of the barrel and general construction; however, both pistols fire the same signals, and are functionally interchangeable when installed in their own mounting.

CHARACTERISTICS:

Weight.....approximately 4 pounds
Dimensions.....approximately 6 by 6 by 2 inches

RELATIONSHIP OF PARTS:

The Number 4, Mark 1 signal pistol is inserted in the Number 2, Mark 1 mounting sleeve for firing. When not in use, the insert hole in the mounting sleeve is covered with the Number 2, Mark 1 aperture disc.

ARMY

A. E. REFERENCE NUMBER: 93-6500

TYPE DESIGNATION: Number 4, Mark 1

PRODUCTION STATUS: Under procurement for installation on airplanes procured for British use.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

BRITISH

REFERENCE NUMBER: 7B/810

TYPE DESIGNATION: Number 4, Mark 1

DISC, APERTURE

BRITISH NUMBER 2, MARK 1

NAMES: Aperture disc
Cover

Pistol mount cover

(Continued on page 329)



DISC, APERTURE

BRITISH NUMBER 2, MARK 1

(Continued from page 328)

DESCRIPTION: The Number 2, Mark 1 disc aperture is a small circular cover used to seal the opening in the Number 2, Mark 1 mounting sleeve when the signal pistol is removed. The purpose of this disc is to keep out dust and rain, and to seal the fuselage of the airplane against the escape of heat.

CHARACTERISTICS:

Weight.....approximately $\frac{1}{8}$ pound
Dimensions.....approximately $2\frac{1}{2}$ by $2\frac{1}{2}$ by 1 inches

RELATIONSHIP OF PARTS: Used with:

The Number 2, Mark 1 mounting sleeve.....A. E. Reference Number 93-6502

ARMY

A. E. REFERENCE NUMBER: 93-6501

TYPE DESIGNATION: Number 2, Mark 1

PRODUCTION STATUS: Under procurement for installation on airplanes procured for British use.

SHIPPING DATA: Shipped as a complete unit. Usually included in the same carton with the Number 4, Mark 1 signal pistol.

NAVY

There is no Navy equivalent for this item.

BRITISH

REFERENCE NUMBER: 7B/812

TYPE DESIGNATION: Number 2, Mark 1

SLEEVE, MOUNTING

BRITISH NUMBER 2, MARK 1

NAMES: Mounting sleeve
Mount

Pistol mount

DESCRIPTION: The Number 2, Mark 1 mounting sleeve is a cylindrical mount with a slotted insert hole and a four hole mounting flange. This sleeve is installed in the airplane fuselage to provide a mount for holding the Number 4, Mark 1 signal pistol when the latter is being fired.

CHARACTERISTICS:

Weight.....approximately $\frac{1}{4}$ pound
Dimensions.....approximately $3\frac{3}{4}$ by $3\frac{3}{4}$ by 2 inches

RELATIONSHIP OF PARTS: Used with:

The Number 2, Mark 1 disc aperture, A. E. Reference Number 93-6501 and the Number 4, Mark 1 signal pistol, A. E. Reference Number 93-6500.

ARMY

A. E. REFERENCE NUMBER: 93-6502

TYPE DESIGNATION: Number 2, Mark 1

PRODUCTION STATUS: Under procurement for installation on airplanes procured for British use.

SHIPPING DATA: Shipped as a complete unit. Usually included in the same carton with the Number 4, Mark 1 signal pistol.

NAVY

There is no Navy equivalent for this item.

BRITISH

REFERENCE NUMBER: 7B/811

TYPE DESIGNATION: Number 2, Mark 1

**PISTOL, PYROTECHNIC, AN-M8, W/MOUNT****FORMER ARMY TYPE M8 FORMER NAVY TYPE M8**

NAMES: Pyrotechnic pistol
Pyrotechnic signal pistol

Signal pistol
Flare pistol

DESCRIPTION: The type AN-M8 pyrotechnic pistol is a double-action, single-loading pistol, used to project pyrotechnic signals from an airplane in flight. This pistol has a seamless tube barrel hinged to the frame of the handle, which is released by a breech lock to permit breech-loading. The barrel is secured to the type M1 mount by means of a mount latch. The standard signals used are cartridge type, AN-M37 to AN-M45 inclusive, 1½ inch British cartridges, or parachute flares type M9A1. However, provisions is made to permit firing of old style signals M10, M11, M14, M15, M16, and M28 to M36 inclusive. This pistol is normally fired from the type M1 mount, which is fastened to the airplane structure, and acts as a recoil absorbing adapter; however, it may be hand-fired without a mount.

CHARACTERISTICS:

Dimensions.....approximately 10¼ by 8¾ by 3¾ inches
Weight.....approximately 3-2/5 pounds

RELATIONSHIP OF PARTS:

The type AN-M8 pyrotechnic pistol is inserted in the type M1 mount for firing.

ARMY

A. E. REFERENCE NUMBER: 93-6100

A. A. F. DRAWING NUMBER: H42B10666

TYPE DESIGNATION: AN-M8

TECHNICAL ORDER NUMBER: 11-15-1

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Complete shipping unit is composed of type AN-M8 pyrotechnic pistol and type M1 mount with cover.

NAVY

TYPE DESIGNATION: AN-M8

BUREAU OF ORDNANCE DRAWING NUMBER: 247642

AVIATION ORDNANCE STOCK LIST NUMBER: 2-P-3499

ORDNANCE CIRCULAR LETTER NUMBER: V 35-42

ORDNANCE PAMPHLET NUMBER: 865

PROCUREMENT STATUS: Under procurement.

ORDNANCE

MODEL: AN-M8

ORDNANCE DRAWING NUMBER: 42-44

STANDARD NOMENCLATURE LIST NUMBER: B-33

WAR DEPARTMENT TECHNICAL MANUAL NUMBER: 9-290

SUPPLIED BY

Ordnance Office, War Department

USED BY

Army and Navy

(RESTRICTED)



(RESTRICTED)