

INCH-POUND

MIL-DTL-45500/1A
18 December 1996
 SUPERSEDING
 MIL-G-45500/1
 30 July 1974

DETAIL SPECIFICATION SHEET

GUN, AUTOMATIC, 20MM: M61 AND M61A1

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The complete requirements for procuring the gun described herein shall consist of this specification sheet and the issue of MIL-DTL-45500E.

1. SCOPE

1.1 Scope. This specification sheet covers a type of six-barrel, electrically fired, 20 millimeter (mm) automatic guns M61 and M61A1. The gun utilizes an ammunition feeder and is power driven through its cycle of operation by either an electric or hydraulic drive, or ram air turbine for installation in an aircraft armament pod system.

2. APPLICABLE DOCUMENTS

SPECIFICATIONS

DEPARTMENT OF DEFENSE

MIL-DTL-45500 - Gun, Automatic, 20MM: General Specification For

DRAWINGS

U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER

F7268702 - Gun, Automatic, 20MM: M61
 F7791641 - Gun, Automatic, 20MM: M61A1
 A12011590 - Gun, Auto M61A1 w/o Barrels

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PUBLICATIONS

U.S. ARMY WEAPONS COMMAND

IEL7314365 - Index of Inspection Equipment Lists for M61
 IEL11013148- Index of Inspection Equipment Lists for M61A1

3. REQUIREMENTS

3.1 Material, construction and design. Gun and parts shall conform to the material, construction and design requirements specified herein and on applicable drawings.

3.1.1 Clearing solenoid (M61A1 only). The clearing solenoid shall be fastened securely to the housing and the electrical receptacle connector shall be securely fastened to the connector bracket as specified on the applicable drawing.

3.1.2 Chute case assembly (M61 only). The chute case assembly shall be fastened securely to the housing assembly.

3.2 Performance characteristics.

3.2.1 Functioning. Functioning requirements of guns shall be in accordance with Table I, Acceleration Time and Stopping Time are required test parameters and will be maintained by proper test equipment operation (i.e. gun drive controls).

TABLE I. Performance Requirements.

Gun Torque (Max)	Acceleration Time (Max)	Steady State Rate of Fire	Stopping Time (Max)
800 pound-inches at minimum steady state rate of fire.	0.4 seconds (from start of gun rotation to minimum steady state rate of fire).	6,000 to 7,200 rounds per minute.	0.4 seconds (from min. steady state rate of fire to complete stop).

3.2.2 Targeting and accuracy. At a range of 1,000 inches, 80 percent of a 75 round (min.) burst shall be completely within an 8.0 inch diameter circle for accuracy; and the center of the 80 percent group shall be within 2.5 inches elevation or depression and 4.75 inches azimuth right or left of the true boresight point for targeting.

3.2.3 Endurance. Guns shall fire 30,000 rounds for endurance. A series is approximately 1000 rounds using five (5) bursts of 200 ± 10 rounds each.

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TABLE II

SCHEDULE OF REPLACEMENT PARTS. (NOT APPLICABLE)

deleted

4. VERIFICATION

4.1 Conformance inspection.

4.1.1 Examination. Guns shall be visually and manually examined in accordance with the following:

TABLE III. Examination.

Part or assembly	Ref. Para.
Clearing solenoid (M61A1 only)	3.1.1
Chute case assembly (M61 only)	3.1.2

4.1.2 Inspection equipment. The measuring and testing equipment shall be as specified on the Index of Inspection Equipment Lists: IEL 7314365 (M61); IEL 11013148 (M61A1) or shall be contractor supplied, government approved.

4.2 Test methods.

4.2.1 Function firing test procedure. The gun shall be function fired at a cyclical rate of 6,000 to 6,400 rounds per minute using an external power supply with control equipment, and calibrated drive in accordance with MIL-DTL-45500E. To calculate gun torque at minimum cyclic rate of fire, the steady state rate of fire, and the mean differential pressure across the drive shall be calculated using the last 50 percent of the burst excluding stopping time. The calculated rate of fire shall be 6,000 to 6,400 rounds per minute.

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4.2.2 Interchangeability tests. The following groups of nonmating parts shall be utilized in the interchangeability test:

TABLE IV. GROUPS OF NONMATING PARTS.

<u>GROUP I</u>	
Adapter, recoil, assembly	7268312 M61
Barrel	7790801
Block, locking	11691480
Gear, rotor	7268664
Housing Assembly, rear	12007363
Insulator, vertical	11691415
Pin, firing	11691418
Plug	11691414
Track, rotor center	7268703
Track, rotor front	7268711
Track, rotor removable	7268552
<u>GROUP II</u>	
Bar, guide	7269918 M61, 11010130 M61A1
Cam, unlocking, front	11698265
Clamp, center-barrel, assembly	77990177 M61
Clamp, mid-barrel, quick disconnect	7791616 M61A1
Insulator, assembly, horizontal	11691420
Pin, cam	11691417
Pin, cover lock	11010132
Plate, end	7269889 M61, 11698286 M61A1
Recoil Mechanism, automatic gun	12913475
Retainer assembly	7269886 M61
Shaft assembly, bolt	11691421
Spacer, removable track	7268715
Spring, firing pin	11691419
Spring, helical, torsion	7791606
<u>GROUP III</u>	
Body, breech bolt	11691423
Cam, lock	11691677
Cam, unlocking, rear	11698264
Chute, case, assembly	7768769 M61
Clamp assembly, muzzle	7790341 M61, 11010336 M61A1
Clamp, coupling	12011779
Contact assembly, firing	11010399 M61, 11010186 M61A1
Cover, access, clearing	8226785-10
Pin assembly, indexing	7790768
Rotor assembly	remaining parts of 7790673
Sector, clearing cam assy	7268791 M61, 11010219 M61A1

5. PACKAGING

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5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or purchase order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. The 20mm automatic gun is intended for use on fixed and rotary wing aircraft and for use on ground to air anti-aircraft weapon systems.

6.2 Packaging data sheets. Packaging Data Sheets P7268702 (M61) or P7791641 (M61A1) apply, as applicable.

6.3 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:

Army - AR
Navy - NW
Air Force - 84

Preparing activity:

Army - AR

(Project: 1005-0845)

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced documents(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-DTL-45500/1A	2. DOCUMENT DATE (YYMMDD) 18 December 1996
3. DOCUMENT TITLE Gun, Automatic, 20MM: M61 AND M61A1.		
4. NATURE OF CHANGE (<i>Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.</i>)		
5. REASON FOR RECOMMENDATION		
6. SUBMITTER		
a. NAME (<i>Last, First, Middle Initial</i>) 	b. ORGANIZATION	
c. ADDRESS (<i>Include Zip Code</i>)	d. TELEPHONE (<i>Include Area Code</i>) (1) Commercial (2) AUTOVON (<i>if applicable</i>)	7. DATE SUBMITTED (YYMMDD)
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a. NAME U. S. Army ARDEC	b. TELEPHONE (<i>Include Area Code</i>) (1) Commercial: (201) 724-6671 DSN 880-6671	
c. ADDRESS (<i>Include Zip Code</i>) ATTN: AMSTA-AR-EDE-S, B-12 Picatunny Arsenal, NJ 07806-5000	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041- 3466 Telephone (703) 756-2340 DSN 289-2340	