

**MIL-C-19179B****22 MARCH 1963****SUPERSEDING****MIL-C-19179A****2 DECEMBER 1958****MILITARY SPECIFICATION****COUPLING ASSEMBLY, QUICK-DISCONNECT, FUEL**

*This specification has been approved by the Department of Defense and is mandatory for use by the Departments of the Army, the Navy, and the Air Force.*

**1. SCOPE**

**1.1 Scope.** This specification covers the requirements for procurement of quick-disconnect assemblies used in connecting nozzles to hose or hose to hose in aircraft fuel systems.

**1.2 Classification.** Quick-disconnect coupling assemblies shall be of the following classes, as specified (see 6.2):

Class 1 — Intended for use at land installations.

Class 2 — Intended for use in ship installations.

**2. APPLICABLE DOCUMENTS**

**2.1** The following specifications, standards, and publications, of the issue in effect on date of invitation for bids, form a part of this specification to the extent specified herein:

**SPECIFICATIONS****FEDERAL**

- P-S-661 — Solvent, Dry - Cleaning.
- QQ-A-367 — Aluminum - Alloy Forgings, Heat Treated.
- QQ-A-596 — Aluminum - Alloy Permanent and Semipermanent Mold Castings.

QQ-A-601 — Aluminum - Alloy Sand Castings.

QQ-N-281 — Nickel - Copper - Alloy (Monel and R-Monel) Bars, Plates, Rods, Sheets, Strips, Wire, Forgings, and Structural and Special Shaped Sections.

QQ-W-423 — Wire, Steel Corrosion-Resisting.

**MILITARY**

MIL-P-116 — Preservation, Methods of.

MIL-S-3136 — Standard Test Fluids Hydrocarbon and Iso-Octane.

MIL-S-3950 — Switches, Toggle.

MIL-J-5161 — Jet Fuel, Referee.

MIL-P-5315 — Packing, "O" Ring, Hydrocarbon Fuel Resistant.

MIL-B-5423 — Boots, Dust and Water Seal, For Toggle and Push-Button Switches and Rotary-Actuated Parts, General Specifications.

MIL-F-5509 — Fittings; Fluid Connection.

MIL-G-5572 — Gasoline, Aviation: Grades 80/87, 91/96, 100/130, 115/145.

MIL-J-5624 — Jet Fuel, Grades JP-3, JP-4, and JP-5.

**FSC 4730**

**MIL-C-19179B**

MIL-T-5695 — Tubing, Steel, Corrosion-Resistant, (304), Hardened.

MIL-P-6906 — Plates, Information and Identification.

MIL-S-7742 — Screw Threads, Standard, Aeronautical.

MIL-P-7936 — Parts and Equipment, Aeronautical, Preparation for Delivery.

MIL-S-8512 — Support Equipment, Aeronautical, Special, General Specification for the Design of.

MIL-F-8615 — Fuel System Components; General Specification for.

MIL-B-16033 — Bronze, Aluminum, Castings.

MIL-T-16420 — Tube, Copper - Nickel, (70-30 and 90-10), (Seamless and Welded).

MIL-B-16522 — Bronze, Aluminum-Manganese, Castings.

MIL-S-21195 — Switches, Toggle.

MIL-N-25027 — Nut, Self-Locking, 250°F, 550°F, and 800°F.

MIL-D-70327 — Drawings, Engineering and Associated Lists.

**STANDARDS****MILITARY**

MIL-STD-129 — Marking for Shipment and Storage.

MIL-STD-130 — Identification Marking for U. S. Military Property.

MIL-STD-143 — Specifications and Standards; Use of.

MS 20995 — Wire, Lock.

MS 26549 — Nipple, Quick Disconnect, 2½ Inch Pressure Fuel Servicing, Flange Type.

MS 26550 — Coupling, Quick Disconnect, 2½ Inch Pressure Fuel Servicing, Nozzle to Hose.

MS 26551 — Strainer, 2½ Inch Pressure Fuel Servicing.

MS 26552 — Nipple, Quick Disconnect, 2½ Inch Pressure Fuel Servicing Open Flow, Wrench Type.

MS 26553 — Nipple, Quick Disconnect, 2½ Inch Pressure Fuel Servicing, with Check Valve, Wrench Type.

MS 29512 — Gasket, Fuel Resistant Straight Thread Tube Fitting, Boss.

MS 29518 — Packing "O" Ring Hydrocarbon Fuel Resistant.

MS 29520 — Nozzle, Pressure Fuel Servicing Locking, Type D-1.

MS 33540 — Safety Wiring, General Practices for.

MS 33586 — Metals, Definition of Dissimilar.

MS 33588 — Nuts and Plate Nuts, Self-Locking, Functional Limitations of.

**AIR FORCE — NAVY AERONAUTICAL**

AN2555 — Nozzle — Aircraft Fueling.

**PUBLICATIONS****AIR FORCE-NAVY AERONAUTICAL BULLETINS**

No. 438 — Age Controls for Synthetic Rubber Parts.

(Copies of specifications, standards, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

**2.2 Other publications.** The following document forms a part of this specification. Unless otherwise indicated, the issue in effect on date of invitation for bids shall apply.

**NATIONAL AIRCRAFT STANDARDS COMMITTEE**

NAS 669 — Ring — Internal Retainer.

(Copies of NAS drawings may be obtained from the Aircraft Industries Association of America, 610 Shoreham Building, Washington 5, D. C.)

## MIL-C-19179B

## 3. REQUIREMENTS

**3.1 Qualification.** The fuel quick-disconnect coupling assemblies furnished under this specification shall be a product which has been tested and has passed the qualification tests specified herein and has been listed on or approved for listing on the applicable qualified products list.

**3.2 Components.** Assemblies shall be composed of components as specified in table I and as indicated on figure 1.

**3.3 Materials.** Materials and processes used by the manufacturer of quick-disconnect assemblies shall be suitable for the purpose, and shall conform to applicable Government specifications. Materials conforming to contractor's specifications may be used, provided the specifications are released by the procuring activity and contain provisions for adequate tests. The use of contractor's specifications will not constitute waiver of Government inspection.

**3.3.1 Metals.** Metals shall be used as specified in table II. All metals used in the construction of coupling assemblies not of a corrosion-resistant type shall be suitably protected to resist corrosion. The use of dissimilar metals, especially brass, copper, or steel in contact with aluminum or aluminum alloy shall be avoided where practicable. Dissimilar metals are defined by Standard MS 33586. Only nonferrous metals shall be used on the exterior of the couplings. The use of magnesium or any alloy thereof is prohibited.

**3.3.1.1 Castings.** Castings shall be clean, sound and free from blowholes, porosity, cracks, and any other defects.

**3.3.1.2 Bronze nipples.** Bronze nipples shall be hardened to a minimum of 200 BHN in the areas contacting the locking balls and "O" ring seal.

TABLE I. Coupling assemblies and components

	With Switch		Without Switch	
<i>Pressure fueling</i>				
	Class 1	Class 2	Class 1	Class 2
MS26549	-1	-2	-1	-2
MS26552				
MS26553 (a)				
MS26551 (b)	-1	-2	-1	-2
NAS-669 (b)	-225	-225 (c)	-225	-225 (c)
MS26550	-1	-3	-2	-4
<i>Top filling — 1½ nozzle</i>				
	Class 1	Class 2	Class 1	Class 2
MS26549				
MS26552	-2	-4	-2	-4
MS26553 (a)	-2 (a)		-2 (a)	
MS26551 (b)				
NAS-669 (b)				
MS26550	-1	-3	-2	-4
<i>1¼ nozzle</i>				
	Class 1	Class 2	Class 1	Class 2
MS26549				
MS26552	-1	-3	-1	-3
MS26553 (a)	-1 (a)		-1 (a)	
MS26551 (b)				
NAS-669 (b)				
MS26550	-1	-3	-2	-4

(a) Nipples in accordance with Standard MS26553 are used in lieu of nipples conforming to Standard MS26552 where integral check valve is required.

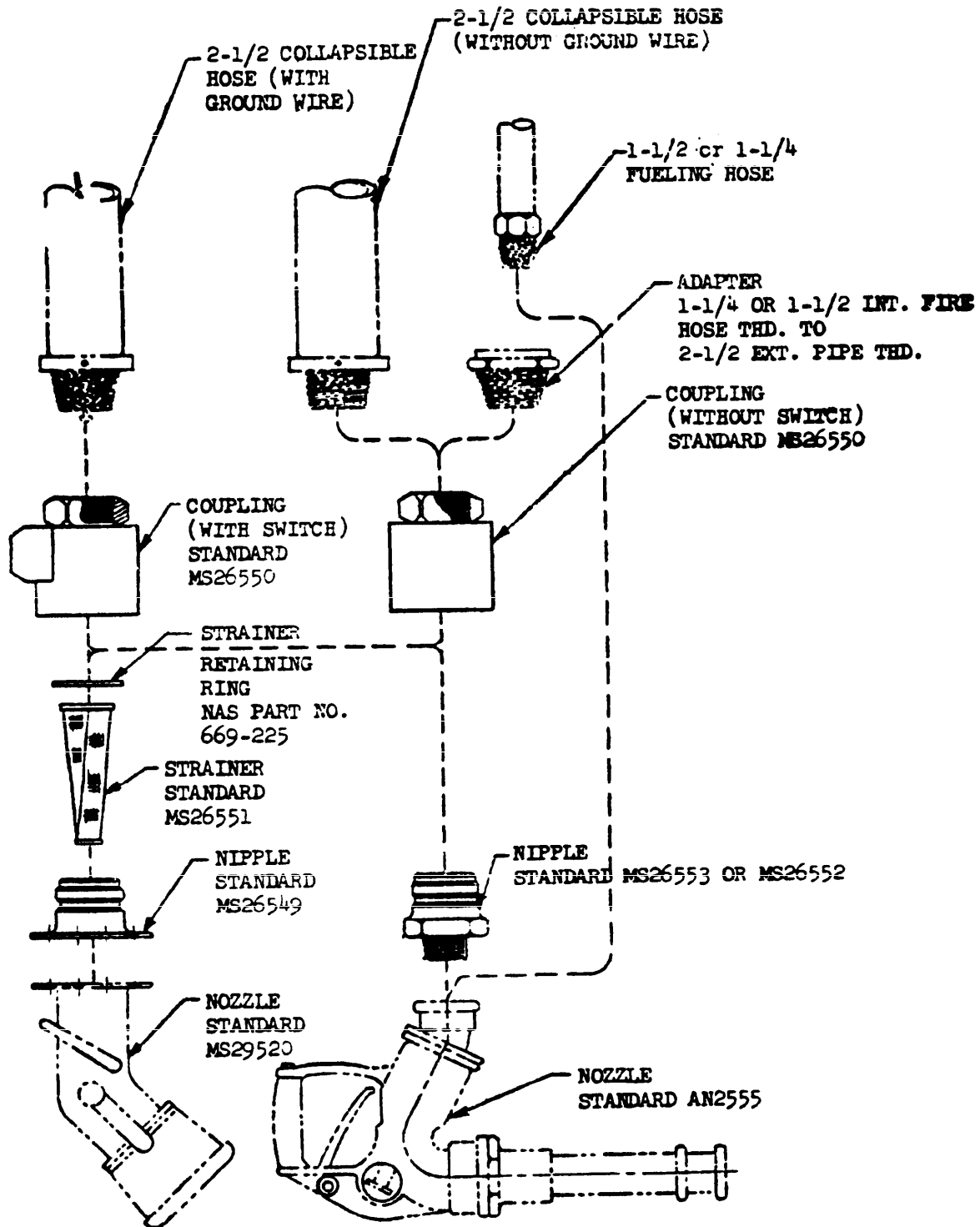
(b) In applications where strainer is not desired, parts conforming to Standards MS26551 and NAS-669 should be omitted.

(c) This part shall conform to Part No. NAS-669-225, except that the material shall be phosphor bronze with no plating required.

**3.3.2 Resistance to fluids.** All materials used in couplings shall be sufficiently resistant to fluids conforming to Specifications MIL-J-5161, MIL-S-3136, MIL-G-5572 and MIL-J-5624, of aromatic content from 0 to 30 percent to assure satisfactory operation as herein defined.

**3.3.3 Selection of materials.** Specifications and standards for all materials, parts, and Government certification and approval of processes and equipment, which are not specifically designated herein and which are necessary for the execution of this specification, shall be selected in accordance with MIL-STD-143.

MIL-C-19179B



DIMENSIONS IN INCHES.

FIGURE 1. Coupling assembly components

MIL-C-19179B

TABLE II. Metal requirements for components

MS Part No.	Name	Material Specification		
			Composition	Temper
MS26549-1	Nipple	QQ-A-601	3	T6
		QQ-A-596	8	T6
		QQ-A-867	11	T6
MS26549-2 MS26550-1	Nipple Coupling body Other metal parts	MIL-B-16033 Cl 3 and MIL-B-16522 Cl 1 Same as for MS26549-1 See 3.3.1		
MS26550-2 MS26550-3	Coupling Coupling body Other metal parts	Same as for MS26550-1 MIL-B-16033 Cl 3 and MIL-B-16522 Cl 1 Bronze or Monel, as approved		
MS26550-4 MS26551-1	Coupling Strainer: Screen Supports	Same as for MS26550-3 100-mesh Monel wire cloth 8-mesh Monel wire cloth MIL-T-5695 rings QQ-W-423 wire		
MS26551-2	Strainer: Screen Supports	100-mesh Monel wire cloth 8-mesh Monel wire cloth MIL-T-16420 rings QQ-N-281 wire		
MS26552-1 MS26552-2 MS26552-3 MS26552-4 MS26553-1	Nipple Nipple Nipple Nipple Nipple	Same as for MS26549-1 Same as for MS26549-1 Same as for MS26549-2 Same as for MS26549-2 Same as for MS26549-1		
MS26553-2	Other metal parts Nipple	See 3.3.1 Same as for MS26553-1		

3.3.3.1 *Standard parts.* Standard parts (AN or MS) shall be used wherever they are suitable for the purpose, and shall be identified on the drawing by their part numbers. Commercial utility parts such as screws, bolts, nuts, cotter pins, etc., may be used, provided they possess suitable properties and are replaceable by the AN or MS parts without alterations, and provided the corresponding standard part numbers are referenced in the parts list and, if practicable, on contractor's drawings. In case there is no suitable corresponding standard part in effect on date of invitation for bids, commercial parts may be used provided they conform to all the requirements of this specification.

3.4 *Design.* Coupling assemblies shall conform to the design and dimensions specified on the applicable drawings. The design shall

be such that the mating parts of the coupling shall satisfactorily engage and seal against any leakage during service use. The coupling shall incorporate a positive lock. The locking device for the rotating collar shall be located conveniently and shall be operable easily by personnel wearing heavy winter gloves. The locking device shall show visibly that a positive lock has been obtained. The retaining balls which contact the locking surface of the nipple shall have a minimum diameter of  $\frac{1}{4}$  inch. Unless otherwise specified, the coupling shall disconnect by one-quarter left-hand turn maximum. One man shall be able to connect or disconnect the coupling using only a standard spanner wrench.

3.4.1 *Special tools.* The design shall be such as to accommodate to the greatest practicable extent, disassembly, reassembly, and

**MIL-C-19179B**

service maintenance by means of commercial standard tools. Commercial standard tools and special tools are defined in Specification MIL-S-8512.

**3.5 Construction.** Coupling assemblies shall be so constructed as to withstand the strains, jars, vibrations, and other conditions incident to shipping, storage, and service usage, particularly dropping on a steel plate from a height of 6 feet without any damage affecting operation.

**3.5.1 Strainer.** The strainer in plugged condition shall withstand 20 psi differential pressure in the fueling direction and a 10 psi differential pressure in the defueling direction without collapse.

**3.6 Screw threads.** All screw threads shall be in accordance with Specification MIL-S-7742.

**3.6.1 Locking of parts.** All threaded parts shall be locked by safety wiring, by self-locking nuts conforming to Specification MIL-N-25027, cotter pins, or other approved methods. Safety wire shall be installed in accordance with Standard MS33540 and shall conform to MS20995. Self-locking nuts shall be used in accordance with Standard MS-33588. Where loosening or disengagement of the self-locking nut could result in the nut or other parts entering the fuel system, approval of the installation shall be obtained from the procuring activity. The use of lock washers or staking is prohibited.

**3.7 Synthetic rubber parts.**

**3.7.1 Age controls.** Age controls shall be in accordance with ANA Bulletin No. 438.

**3.7.2 "O" rings.** All "O" rings shall conform to Specification MIL-P-5315 and the dimensional requirements of Standard MS-29513 or MS29512 as applicable.

**3.7.3 Serviceability.** All synthetic rubber parts shall be readily replaceable with a minimum replacement of attaching parts.

**3.8 Switches.** For couplings containing electrical switches, the switch installation shall be explosion-proof. Switches shall conform to Specifications MIL-S-8950 or MIL-S-21195 and shall be protected from the weather by a molded rubber toggle switch boot. The boot shall be in accordance with Specification MIL-B-5423 and shall completely cover the switch lever. The switch shall be protected by a guard as shown on Standard MS26550.

**3.9 Electrical contacts.** The electrical contact in the inlet side of the coupling shall be spring loaded and centered in a nylon spider (see figure 2) or supported by other suitable means as specifically approved by the procuring activity. The spider assembly shall be secured such that positive electrical contact is insured between the contact buttons in the hose and coupling.

**3.10 Interchangeability.** All parts having the same manufacturer's part number shall be directly and completely interchangeable with each other with respect to installation and performance. Changes in manufacturer's part numbers shall be governed by the drawing number requirements of Specification MIL-D-70327.

**3.11 Performance.** Couplings shall satisfy the applicable performance requirements specified in section 4.

**3.12 Identification of product.** Assemblies and parts shall be marked for identification in accordance with Standard MIL-STD-130.

**3.12.1 Nameplate.** The following information shall be etched, engraved, embossed, or stamped in a suitable location on each coupling and nipple, or legibly filled in on a nameplate conforming to Specification MIL-P-6906:

Coupling (or Nipple, as applicable)  
Quick-disconnect fuel.  
MS Part No.  
Manufacturer's Part No.  
Manufacturer's name or trademark.  
Serial No.

MIL-C-19179B

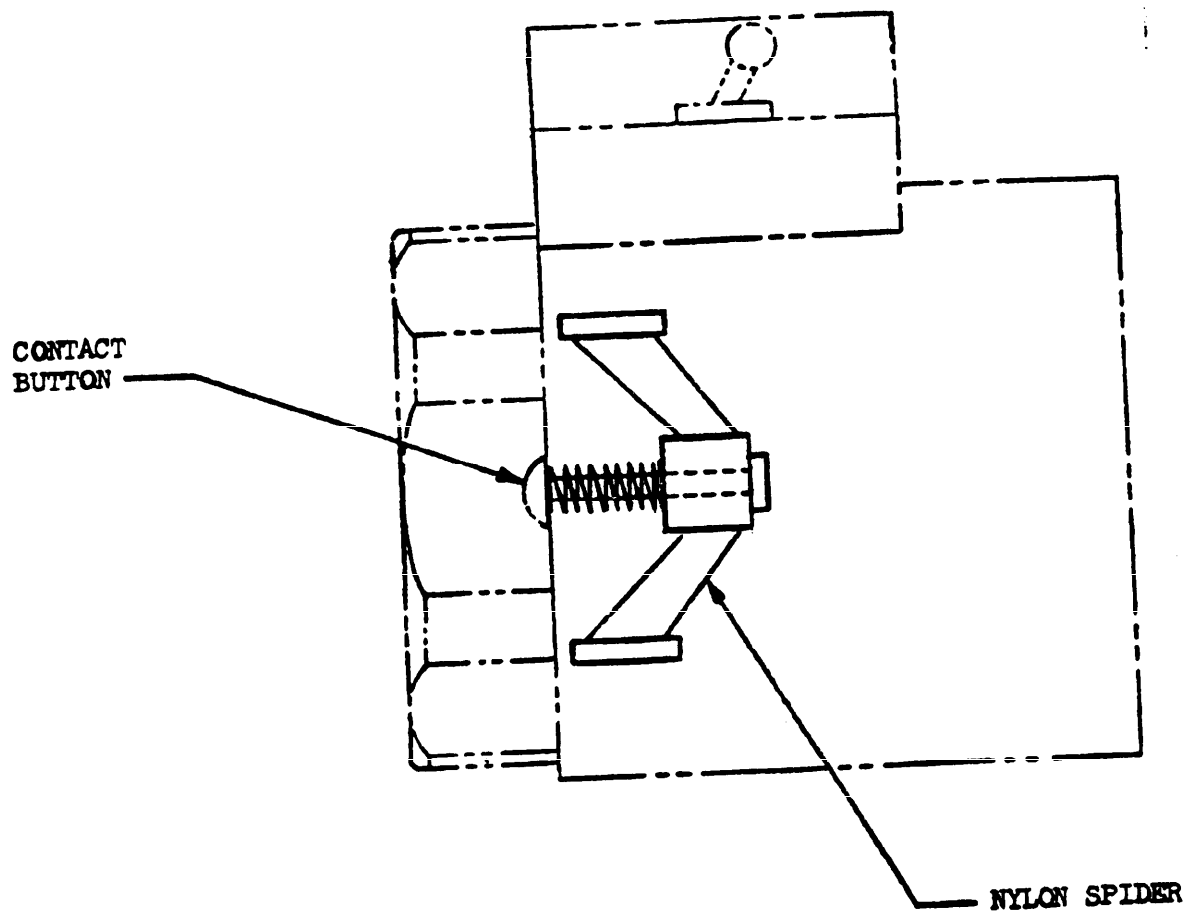


FIGURE 2. Contact assembly



**MIL-C-19179B**

**3.14 Workmanship.** Workmanship shall conform to the workmanship requirements of Specification MIL-F-5509.

**4. QUALITY ASSURANCE PROVISIONS**

**4.1** The supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government. Inspection records of the examination and tests shall be kept complete and available to the Government as specified in the contract or order. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

**4.1.1 Classification of tests.** The inspection and testing of quick-disconnect couplings shall be classified as follows:

- (a) Qualification tests (see 4.2).
- (b) Acceptance tests (see 4.3).

**4.2 Qualification tests.**

**4.2.1 Sampling instructions.** The Qualification Test samples shall consist of six complete assemblies of each manufacturer's part number upon which qualification is desired. Three of these assemblies shall have been tested by the manufacturer in accordance with this specification prior to being forwarded to the testing activity. An opportunity shall be given the cognizant Government Inspector to witness the test, and his signature shall appear on the test report. These assemblies shall be accompanied by one complete set of detail and assembly drawings and a complete test report showing results of the manufacturer's tests. The drawings shall be in accordance with Specification MIL-D-70327. The test report shall indicate conformance to all requirements of this specification, referring specifically to the applicable paragraphs in the specifications. Each Qualification Test sample shall be plainly identified by

securely attached tags clearly and durably marked with the following information, and shall be forwarded to the testing activity designated in the letter of authorization from the activity responsible for qualification (see 6.3).

Sample for Qualification test.

(Submitted by \_\_\_\_\_ (name)  
(date)

for Qualification Tests in accordance with the requirements of Specification MIL-C-19179B (date) under authorization (reference letter authorizing the tests).

Coupling, Assembly, Quick-Disconnect, Fuel

Manufacturer's Part No.

Name of manufacturer.

**4.2.1.1 Manufacturer's drawings.** Manufacturer's drawings shall include a cutaway section showing all parts in their normal assembled position and shall specify part numbers of all parts and of each assembled coupling half. The following data shall be furnished on or together with the assembly drawings.

- (a) All dimensions.
- (b) Materials, treatment and finishes (identify each by specification number).
- (c) Construction.
- (d) Pressure and flow rating.

**4.2.1.2 Manufacturer's test report.** The test reports submitted with the Qualification Test sample shall include the following:

- (a) Report of all tests, graphically presented when practicable, together with a detailed statement indicating conformance to all requirements of this specification, referring specifically to the applicable paragraphs in the specification. Wherever a requirement is considered to be not applicable the report should so state this.



TABLE III. *Qualification test schedule*<sup>1</sup>

No. 1 Assembly		No. 2 Assembly		No. 3 Assembly	
Examination	4.5.1	Examination	4.5.1	Examination	4.5.1
Proof pressure	4.5.2	Proof pressure	4.5.2	Proof pressure	4.5.2
Operating force	4.5.5	Operating force	4.5.5	Operating force	4.5.5
Leakage	4.5.6	Leakage	4.5.6	Leakage	4.5.6
Fuel resistance and extreme temperature	4.5.7	Total pressure loss	4.5.8	Endurance	4.5.12
Disassembly and inspection	4.5.16	Explosion-proof Strength	4.5.9 4.5.10	Electrical resistance	4.5.3
		Angular movement	4.5.11	Insulation breakdown	4.5.4
		Disassembly and inspection	4.5.16	Accelerated corrosion	4.5.18
				Rough handling	4.5.14
				Burst pressure	4.5.15
				Disassembly and inspection	4.5.16

<sup>1</sup> The Qualification Tests may, at the option of the procuring activity, be supplemented with tests under actual or simulated service conditions, to determine conformance with the requirements of this specification.

- (b) Summary of Endurance test (4.5.12).
- (c) Diagrams of all test setups.
- (d) Outline and description of test and test conditions.
- (e) Copies of test log sheets.

4.2.2 *Qualification tests.* The Qualification Tests shall consist of all the tests of this specification, as described under "Test methods," which shall be conducted in the order listed in table III.

4.3 *Acceptance tests.* Each assembly shall be subjected to the following tests, as described under "Test methods."

- (a) Examination of (4.5.1).
- (b) Proof pressure (4.5.2).
- (c) Electrical resistance (all nipples and couplings with switches) (4.5.3).
- (d) Insulation breakdown (couplings with switches) (4.5.4).

In addition, assemblies may be subjected to any of the other tests specified herein which the Government inspector considers necessary to determine conformance with the requirements of this specification.

#### 4.4 Test conditions.

4.4.1 *Cleaning.* Prior to testing the coupling, all internal parts normally in contact with fluid shall be thoroughly cleaned to remove all foreign matter.

4.4.2 *Test fluid.* Unless otherwise specified, fluid in accordance with Specification MIL-G-5572, or MIL-S-8136, type I, shall be used for all tests. Other fluids, such as fluids conforming to Specification P-S-661 may be used only with the specific approval of the procuring activity.

4.4.3 *Temperature.* Unless otherwise specified, all tests shall be conducted with the coupling and test fluid at a temperature between 70° and 90° F.

#### 4.5 Test methods.

4.5.1 *Examination.* Each coupling, nipple, and strainer shall be carefully examined to determine conformance with all requirements of this specification for which there are no specific tests.

4.5.2 *Proof pressure.* The connected nipple and coupling shall be subjected to an internal test fluid pressure of 120 psi for 1 minute. The assembly shall not leak and there shall be no evidence of distortion or failure of any part.

MIL-C-19179B

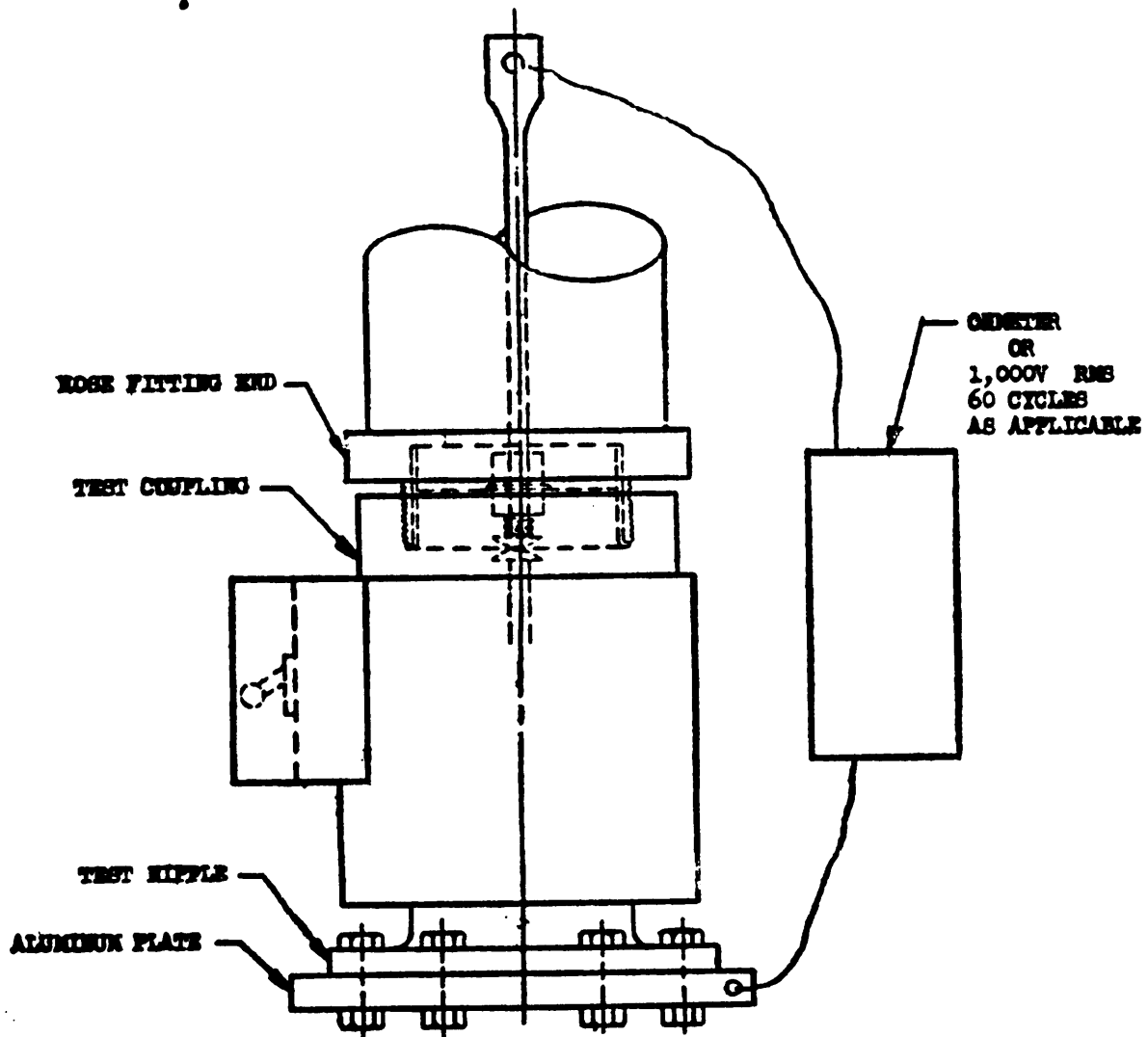


FIGURE 3. *Electrical test setup*

## MIL-C-19179B

4.5.3 *Electrical resistance.* This test is applicable to all nipples and to coupling units which include a switch. The electrical resistance shall be measured from an aluminum plate bolted to the nipple flange through the nipple and coupled coupling to a special fitting screwed into the coupling. The test setup shall be in accordance with figure 3. For couplings containing electrical contacts, the electrical resistance of the hose contact to coupling body shall not exceed 0.010 ohm. The electrical contact resistance of the coupling body to attached nipple shall not exceed 0.010 ohm.

4.5.4 *Insulation breakdown.* This test is applicable only to couplings which incorporate a switch. One thousand volts rms, 60-cycle, shall be applied as indicated in figure 3, with the switch in the open position. There shall be no insulation breakdown either during or as a result of this test.

4.5.5 *Operating force.* With the nipple mounted on a solid support, the coupling shall be engaged and locked. Then the coupling shall be unlocked and disengaged. The engaging or disengaging force shall not exceed 10 pounds. The locking or unlocking torque shall not exceed 400 pound inches under any condition specified herein except during the low temperature period of the fuel resistance and extreme temperature test specified in 4.5.7.

4.5.6 *Leakage.* The connected assembly shall be subjected to internal fluid pressures of - 12 psi to + 4 psi in 2-psi increments and from 10 psi to 60 psi in 10-psi increments. Air shall be used for the fluid pressure in negative pressure tests and test fluid shall be used for positive pressure tests. The pressure shall be maintained at each increment for a period of 1 minute. There shall be no evidence of leakage from the connected coupling and air leakage into the assembly shall not exceed 50cc of free air per minute.

4.5.7. *Fuel resistance and extreme temperature.* Couplings which contain nonmetallic

parts exposed to fuel shall be subjected to the appropriate fuel resistance and extreme temperature test of Specification MIL-F-8615. Couplings which are all metal need only to be subjected to the extreme temperature test.

4.5.8 *Total pressure loss.* The strainer, nipple, and coupling assembly shall be installed in a test setup in accordance with figure 4. The test shall be conducted with flows from 0 to 200 gpm. Sufficient data shall be taken to plot a "Total Pressure Loss vs Flow" curve. The above procedure shall be repeated with the strainer removed from the assembly. The difference in total pressure loss with and without the strainer installed shall not exceed 8 inches Hg with a 200-gpm flow rate of fuel conforming to Specification MIL-G-5572, grade 115/145 (reference absolute viscosity 0.462 centipoise, reference specific gravity 0.696). Since fluid used will probably differ from the above referenced fuel, the results should be corrected using the following formula:

$$P_{1c} = \left( \frac{0.462}{\mu} \right)^{0.25} \left( \frac{0.696}{p} \right)^{0.75} \times P_1$$

where  $\mu$  = absolute viscosity in centipoises of test fluid

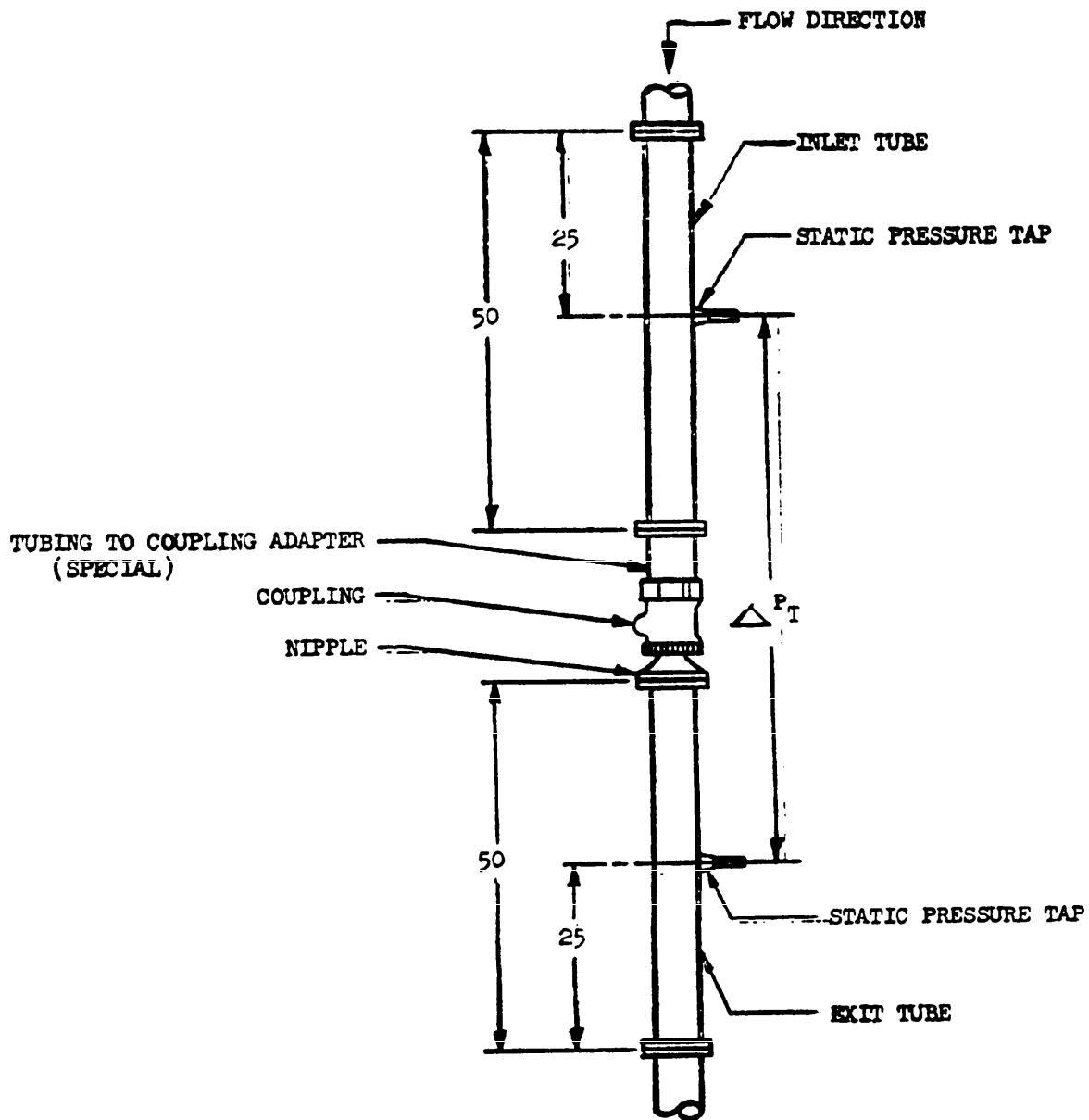
$p$  = specific gravity of test fluid

$P_1$  = total pressure loss obtained with test fluid, in. Hg.

$P_{1c}$  = total pressure loss corrected to reference fuel, in. Hg.

4.5.9 *Explosion-proof.* The explosion-proof test shall be conducted in a test chamber having a transparent window on one side and the opposite side closed by thin nonporous paper to permit instant pressure relief during explosion. The chamber shall be equipped with a suitable means for vaporizing fuel and maintaining a predetermined gasoline vapor-air mixture throughout the test chamber. Three drilled holes in the switch housing shall be tapped for insertion of a spark plug, a vapor line, and a vent line. A pressure gage shall be connected in the vapor line to indicate when explosions occur in the unit housing. The unit and surrounding chamber shall

MIL-C-19179B



$\Delta P_T$  = TOTAL PRESSURE LOSS

FIGURE 4. Total pressure loss test setup

## MIL-C-19179B

be filled with the explosive mixture and the valves in the vapor and vent lines shall be closed. The temperature of the explosive mixture shall not exceed 185° F. The explosive mixture in the switch housing shall be exploded and replaced for three explosions. After the 3 explosions, the mixture in the chamber shall be exploded to determine that an explosive mixture existed in the chamber. A total of four tests as described above shall be conducted at each of the following air-fuel ratios (by weight): 12.6:1, 13.5:1, 14.5:1, and 15.5:1. The switch housing shall confine all sparks and flame. Any explosion within the switch housing shall not ignite the surrounding explosive mixture or cause any damage to the unit.

**4.5.10 Strength.** With a test setup as shown in figure 5, the 90-pound force shall be applied and removed 1,000 times while a test fluid pressure of 60 psi is maintained internally on the nipple coupling assembly. There shall be no leakage during the test or damage which causes malfunctioning of the coupling as a result of this test.

**4.5.11 Angular movement.** With a test setup as shown in figure 6, the nipple-coupling assembly shall be rotated alternately 180 degrees in each direction for 2,500 complete cycles while an internal fuel pressure of 60 psi is applied to the assembly. There shall be no leakage during the test or damage which causes malfunctioning of the coupling as the result of this test. At the conclusion of this test, the assembly shall be subjected to the operating force and leakage tests as specified in 4.5.5 and 4.5.6, respectively.

#### 4.5.12 Endurance.

**4.5.12.1 Wet.** The wet endurance test shall consist of connecting and disconnecting the coupling and nipple in the normal manner 2000 times (complete cycles). Fuel pressure of 60 psi shall be applied internally each time the connection is made. The operating force test shall be conducted after each 200 cycles. At the completion of this test, the leakage test shall be conducted.

**4.5.12.2 Dry.** The dry endurance test shall be conducted in a manner similar to the wet endurance test, except that the duration of the test shall be 500 cycles, the nipple and coupling shall remain dry throughout the test, and no pressure shall be applied to the connected units. The operating force test shall be conducted at the completion of the dry endurance test. Following the operating force test, the leakage test shall be conducted.

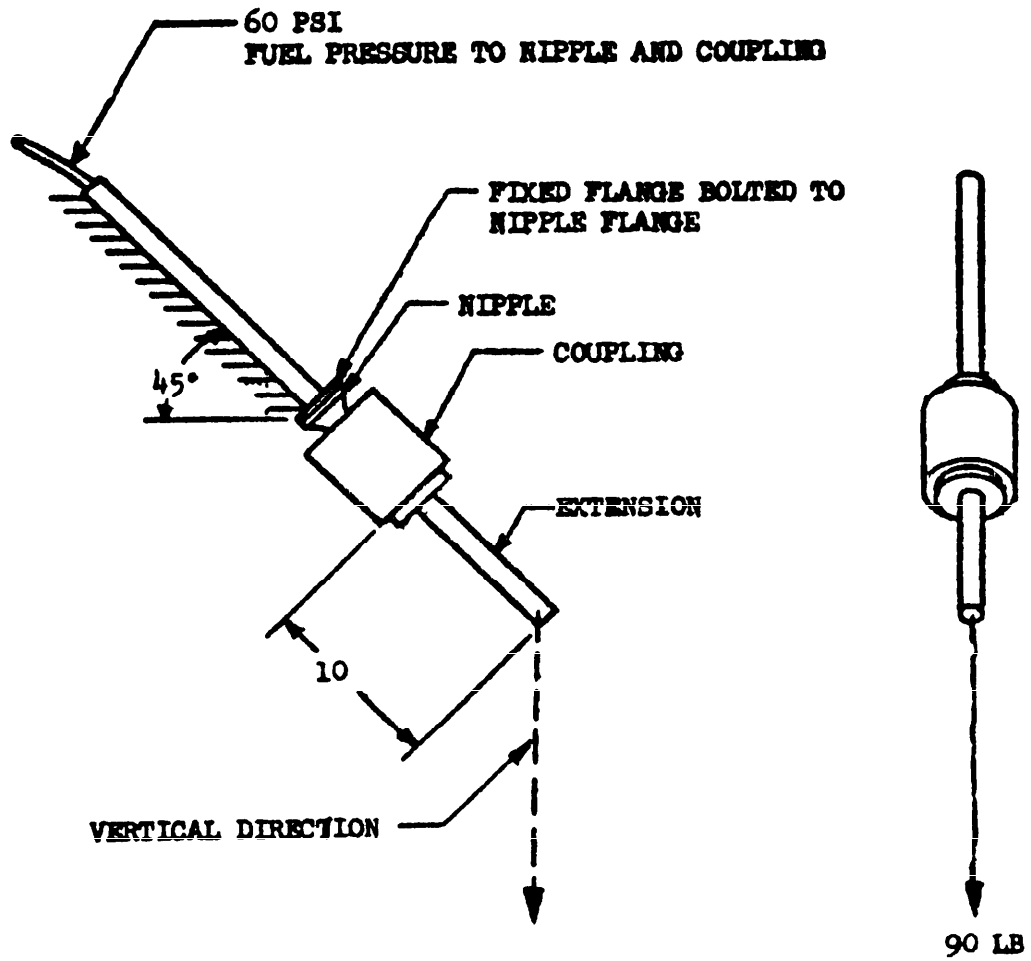
**4.5.13 Accelerated corrosion.** The assembled strainer, nipple, and coupling shall be immersed in a 2½ percent solution by weight of sodium chloride and water. The assembly shall then be dried for a period of 1 hour at a temperature of 180° ± 5° F. The procedure shall be repeated for a total of 50 cycles. Immediately after this test, the assembly shall be washed with warm water to remove all salt accumulations and then dried. There shall be no evidence of deterioration which might adversely affect subsequent operation. The assembly shall then be subjected to the operating force and leakage tests specified in 4.5.5 and 4.5.6, respectively. When the assembly includes an electrical switch, the electrical resistance and insulation breakdown tests specified in 4.5.3 and 4.5.4, respectively, shall also be conducted.

**4.5.14 Rough handling.** The coupling shall be attached to a length (12 feet minimum) of 2½ inch "Collapse-A-Hose" (or equivalent) and dropped a total of 9 times from a height of 6 feet to a ⅝-inch thick steel plate, striking the plate 3 times in each of the following positions:

- (a) Coupling axis horizontal, electrical switch on top.
- (b) Coupling axis horizontal, electrical switch on side.
- (c) Coupling axis horizontal, electrical switch on bottom.

The coupling shall then be connected to a nipple and subjected to the operating force and leakage tests. There shall be no leakage or damage which causes malfunctioning as a result of the rough handling test.

MIL-C-19179B

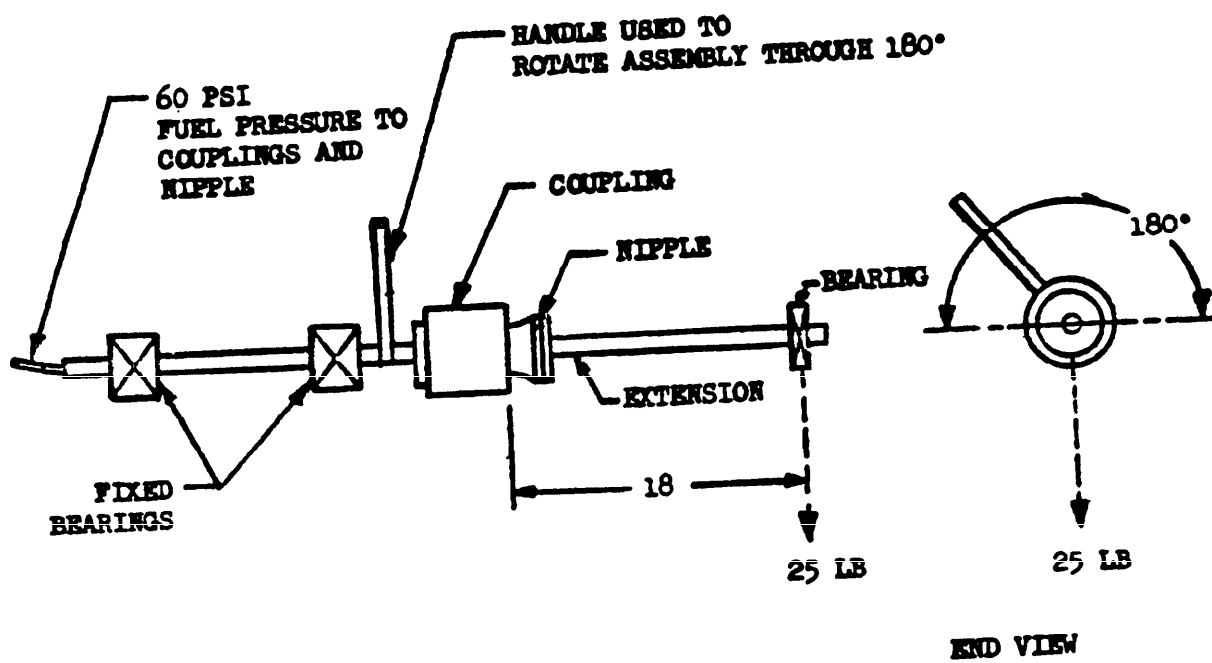


DIMENSIONS IN INCHES.

FIGURE 5. Strength test setup



MIL-C-19179B



DIMENSIONS IN INCHES.

FIGURE 6. Angular movement test setup

**MIL-C-19179B**

**4.5.15 Burst pressure.** The nipple and coupling assembly shall be subjected to an internal test fluid pressure of 180 psi for 1 minute. The pressure shall then be reduced to 60 psi for 1 minute and there shall be no leakage. There shall be no evidence of permanent distortion or failure of any part as a result of this test.

**4.5.16 Disassembly and inspection.** The assembly shall be disassembled and inspected. If corrosion, deterioration, or wear exists to a degree which might adversely affect performance, the unit shall be rejected.

**5. PREPARATION FOR DELIVERY****5.1 Preservation and packaging.**

**5.1.1 Level A.** Couplings shall be preserved and packaged in accordance with the applicable method or submethod of Specification MIL-P-116, utilizing appropriate containers in accordance with Specification MIL-P-7936.

**5.1.2 Level C.** When this level is required, the packaging shall be in accordance with standard commercial practice.

**5.2 Packing.**

**5.2.1 Levels A, B and C.** Couplings shall be packed in accordance with Specification MIL-P-7936.

**5.3 Marking of shipments.** In addition to any special marking required by the contract or order, unit packages, intermediate packages, and shipping containers shall be marked in accordance with MIL-STD-129.

**6. NOTES**

**6.1 Intended use.** The quick-disconnect coupling assemblies covered by this specification are intended for use in connecting fuel nozzles to hydrocarbon fuel hose.

**6.2 Ordering data.** Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Class and part number of each component to be furnished.
- (c) Selection of applicable levels of preservation, packaging and packing (see section 5).

**6.3** For products requiring qualification, award of contract will be made only for those which, prior to the time set for opening of bids, have been tested and approved for inclusion in the applicable Qualified Products List whether or not such products have actually been listed thereon by that date. The attention of the suppliers is called to this requirement, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. The activity responsible for the qualified products list is the Chief, Bureau of Naval Weapons, Department of the Navy, Washington 25, D. C.; however, information pertaining to qualification of products may be obtained from the Director, Aeronautical Engine Laboratory, Naval Air Material Center, Philadelphia 12, Pennsylvania.

**Notice.** When Government drawings, specifications or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

**Custodians:**

Army—MO  
Navy—Wep  
Air Force—AFSC (ASD)

**Preparing activity:**

Navy—Wep  
Project No. 4730-0089