

MIL-C-51073D(EA)
13 November 1980
SUPERSEDING
MIL-C-51073C(MU)
30 November 1967

MILITARY SPECIFICATION

COUPLING HALF, QUICK DISCONNECT

This specification is approved for use by US Army Armament Research and Development Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 This specification covers a coupling half for quick release of an individual's mask from a vehicle filter unit.

2. APPLICABLE DOCUMENTS

2.1 Issues of documents. The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this specification to the extent specified herein:

STANDARDS

FEDERAL

FED-STD-123 - Marking for Shipment (Civil Agencies).

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.

FSC 4730.

: Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Armament Research and Development Command, ATTN: DRDAR-TSC-S, Aberdeen Proving Ground, MD 21010 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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DRAWINGS

US ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND

CHEMICAL SYSTEMS LABORATORY

C5-19-1900 - Coupling Half, Quick Disconnect.
C5-1-272 - Connector.
C136-13-812 - Connector.
C136-14-461 - Dummy Adapter.
C136-14-517 - Dummy Adapter.

(Copies of specifications, standards, drawings, 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.)

3. REQUIREMENTS

3.1 Materials and dimensions. The coupling half shall meet the material and dimensional requirements of Drawing B5-19-1900. The coupling half shall assemble to the connector specified by Drawing C5-1-272.

3.2 Resistance to airflow. When connected to the dummy adapter (Dwg C136-14-461), the resistance to airflow shall be no greater than 1.4 inches of water at an airflow rate of 4.5 cubic feet per minute (CFM) when tested as specified in 4.4.4.1.

3.3 Self-closing. Unless otherwise specified, the coupling half shall be self-closing when disconnected from the dummy adapter and tested as specified in 4.4.4.2 (see 6.2).

3.4 Resistance to separation. The coupling half, when equilibrated to $0^{\circ} \pm 10^{\circ}\text{F}$, $75^{\circ} \pm 10^{\circ}$, and $160^{\circ} \pm 10^{\circ}\text{F}$, shall separate at each temperature condition within 5 seconds from the maximum connector (Ref Dwg No. C136-13-812-1D) under a static load of 21 pounds and shall not separate within 5 seconds from the minimum connector (Ref Dwg No. C136-13-812-2D) under a static load of 9 pounds when tested as specified in 4.4.4.3.

3.5 Dust resistance. After treatment with AC Spark Plug standard fine dust (see 6.3) of the following particle size composition, the coupling half shall meet the separation requirements of 3.4 at $75^{\circ} \pm 10^{\circ}\text{F}$ when tested as specified in 4.4.4.4.

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<u>Particle size</u>	<u>Percent by weight</u>
0 - 5 micrometers	38 + 2
5 - 10 micrometers	18 + 3
10 - 20 micrometers	16 + 3
20 - 40 micrometers	18 + 3
40 - 80 micrometers	9 + 3

3.6 Leakage. The coupling half connected to the dummy adapter (Dwg C136-14-517) shall not leak, around the adapter, in excess of 0.1 cmf, with six inches of water static pressure on the inlet side of the coupling half when tested as specified in 4.4.4.5.

3.7 Reliability. The coupling half shall meet the requirements of 3.4 at $75^{\circ} + 10^{\circ}\text{F}$ after the coupling half connection has been made and broken 500 times as specified in 4.4.4.6.

3.8 Preproduction. Prior to the start of regular production, a preproduction sample of coupling halves shall be produced in accordance with this specification for examination and test (see 4.2).

3.9 Workmanship. The coupling half shall be free from damage such as dents, dracks, burred edges of metal parts and foreign matter such as dirt, oil, or viscous material.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection.

4.1.1 Contractor's responsibility. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. 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.

4.1.2 Objective evidence. The contractor shall provide objective evidence acceptable to the contracting officer that the requirements of 3.1 and section 5 for which specific inspection has not been provided in this specification have been satisfied.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- (a) Preproduction inspection (see 4.3).
- (b) Quality conformance inspection (see 4.4).

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4.3 Preproduction inspection.

4.3.1 Lot. A preproduction lot of 100 coupling halves shall be manufactured with the same methods, materials, equipment and processes which will be used during regular production.

4.3.2 Inspection procedure.

4.3.2.1 For examination. Each coupling half in the preproduction lot shall be examined for the requirements of this specification.

4.3.2.2 For tests. Each of 25 coupling halves taken at random from the preproduction lot shall be tested for the requirements of this specification in accordance with the sequence of tests in 4.4.4.

4.3.3 Acceptance/rejection criteria. To be acceptable, each coupling half of the preproduction lot examined and tested in accordance with 4.3.2 shall comply with the requirements of this specification.

4.4 Quality conformance inspection.

4.4.1 Lotting. A lot shall consist of the coupling halves produced by one manufacturer, at one plant, from the same materials, under essentially the same manufacturing conditions.

4.4.2 Sampling for examination and tests. Sampling shall be conducted in accordance with MIL-STD-105.

4.4.3 Inspection procedures.

4.4.3.1 Examination and tests. Sample coupling halves shall be examined and tested in accordance with the classification of defects and MIL-STD-105.

4.4.3.2 Classification of defects.

(a) Coupling half, quick disconnect (Drawing C5-19-1900).

<u>Categories</u>	<u>Defects</u>	<u>Acceptance standards</u>
<u>Critical:</u>	None defined	
<u>Major:</u>	AQL 0.65 percent defective	
101	Resistance to airflow	4.4.4.1
102	Resistance to separation (75° ± 10°F only)	4.4.4.3(b)
103	Resistance to leakage	4.4.4.5

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AQL 1.0 percent defective

104	Partially open when disengaged	4.4.4.2
105	0.968 diameter incorrect	
106	0.900 diameter incorrect	
107	Workmanship (3.9)	

Minor: AQL 4.0 percent defective

201	2.50 overall length oversize
202	1.06 dimension incorrect
203	0.09 dimension incorrect
204	2.00 diameter oversize

4.4.4 Tests. Tests shall be conducted in the sequence listed.

4.4.4.1 Resistance to airflow. The coupling half shall be connected to a dummy adapter Dwg C136-14-461 and the resistance to airflow determined using a suitable apparatus capable of meeting the requirements stated in 3.2.

4.4.4.2 Self-closing. Upon completion of 4.4.4.1 the coupling half shall be disengaged from the dummy adapter and the coupling half examined to determine contact of the closing element with the body of the coupling half.

4.4.4.3 Resistance to separation. The resistance to separation of the coupling half shall be determined using both the maximum and minimum test connector Dwg C136-13-812 under a static load per the following conditions:

(a) Cold temperature. The test device, which is used to perform the resistance to separation, and the coupling half shall be stabilized at $0^{\circ} \pm 10^{\circ}\text{F}$. The test shall be conducted and timed while the test device and the coupling half are maintained at $0^{\circ} \pm 10^{\circ}\text{F}$.

(b) Room temperature. The test device, which is used to perform the resistance to separation, and the coupling half to be tested shall be stabilized at $75^{\circ} \pm 10^{\circ}\text{F}$. The test shall be conducted and timed while the test device and the coupling half are maintained at $75^{\circ} \pm 10^{\circ}\text{F}$.

(c) Hot temperature. The test device which is used to perform the resistance to separation, and the coupling half to be tested shall be conditioned until stabilized at $160^{\circ} \pm 10^{\circ}\text{F}$; monitored by a thermocouple attached to the connector tube as high as practicable without interfering with the coupling action of the coupling half. Alternate methods of temperature measurement such as infrared may be used instead of a thermocouple. The test device and the coupling half shall be maintained within the specified band, $160^{\circ} \pm 10^{\circ}\text{F}$. The test shall be conducted and timed while the connector and the coupling half are maintained at $160^{\circ} \pm 10^{\circ}\text{F}$.

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4.4.4.4 Dust resistance. The coupling half shall be filled with dust as specified, allowed to rest for one minute and then inverted and tapped sharply three times against a rigid surface to remove the loose and excess dust. The coupling half shall then be tested for resistance to separation at $75^{\circ} \pm 10^{\circ}\text{F}$ (4.4.4.3).

4.4.4.5 Resistance to leakage. The coupling half shall be connected to a dummy adapter Dwg C136-14-517 and the airflow leakage around the dummy adapter determined using a suitable test apparatus to meet the requirements of 3.6 (NOTE: 0.1 cfm = 2 liters per 42 seconds).

4.4.4.6 Reliability. The coupling half, after successful completion of all the examinations and tests of this specification, shall be connected to the maximum connector (Dwg C136-812-1D) and the connection made and broken the specified number of times. The coupling half shall then be tested for resistance to separation at $75^{\circ} \pm 10^{\circ}\text{F}$ as specified in 4.4.4.3(b).

5. PACKAGING

5.1 Interplant shipment (see 6.4). The coupling half shall be packaged and packed to provide adequate protection from physical damage from the supply source to first receiving activity for immediate use or further processing. Shipping containers shall be in compliance with the rules and regulations applicable to the mode of transportation. Marking shall be in conformance with FED-STD-123.

5.2 Repair parts. When this item is procured for storage and issue as a repair part, preservation, packaging, packing and marking shall be as specified on the repair part Packaging Data Sheet which is identified by the National Stock Number for the repair part.

6. NOTES

6.1 Intended use. The quick disconnect coupling half covered by this specification is intended to be used to connect individual canister couplings to the hoses of filter units of various military vehicles.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Whether self-closing feature is required. (When used with the M13 and M13A1 Filter Units, the socket shall not be self-closing when removed from the connector.)
- (c) Preproduction.

(1) Time allowed for contractor submission of samples for Government test and evaluation after award of contract.

(2) Name and address of test facility and shipping instructions when testing is performed by the Government.

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(3) Time required for the Government to notify the contractor whether or not to proceed with production.

6.3 Suggested source for standard fine dust.

A. C. Spark Plug Division
General Motors Corporation
1300 N. Dort Highway
Flint, MI 48506

6.4 Interplant shipment. Packaging for supplies and materials which will not enter the military supply system. Typical interplant shipments are shipments from the vendor to a subcontractor, a prime contractor, or from a subcontractor to a prime contractor, or from a vendor to a military arsenal or plant.

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Preparing activity:

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SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 22-R255
<p>INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.</p>		
SPECIFICATION <i>Ref. C-51072D</i>		
ORGANIZATION		
CITY AND STATE	CONTRACT NUMBER	
MATERIAL PROCURED UNDER A <input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT		
1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? A. GIVE PARAGRAPH NUMBER AND WORDING.		
B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES		
2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID		
3. IS THE SPECIFICATION RESTRICTIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO (If "yes", in what way?)		
4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)		
SUBMITTED BY (Printed or typed name and activity - Optional)		DATE