

MIL-P-18111A(SHIPS)
8 December 1964
SUPERSEDING
MIL-P-18111(SHIPS)
24 September 1954
(See 6.3)

MILITARY SPECIFICATION
PUMP, ROTARY, HAND DRIVEN, AND MOTOR,
HYDRAULIC-REMOTE VALVE OPERATION,
NAVAL SHIPBOARD USE

1. SCOPE

1.1 This specification covers hydraulic, rotary type equipment intended for service limited to the remote operation of valves for shipboard use.

2. APPLICABLE DOCUMENTS

2.1 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.

SPECIFICATIONS

FEDERAL

- PPP-B-566 - Boxes, Folding, Paperboard.
- PPP-B-636 - Box, Fiberboard
- PPP-B-676 - Boxes, Set-Up, Paperboard
- PPP-T-76 - Tape, Pressure-Sensitive Adhesive Paper, (For Carton Sealing)

MILITARY

- MIL-P-116 - Preservation, Methods Of
- MIL-S-901 - Shock Tests, H.I. (High-Impact), Shipboard Machinery Equipment and Systems, Requirements For.
- MIL-P-15024 - Plates, Identification Information and Marking For Identification of Electrical, Electronic and Mechanical Equipment.
- MIL-M-15071 - Manuals, Equipment and Systems.
- MIL-L-17672 - Lubricating Oil, Hydraulic and Light Turbine, Noncorrosive.

DRAWINGS

BUREAU OF SHIPS

- 5000-S4824-1385775 - Connections and Mounting Dimensions for Hydraulic Remote Control of Valves for Pumps and Motors.

(Copies of specifications, standards, drawings, and publications required by suppliers 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 to the extent specified herein Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

OFFICIAL CLASSIFICATION COMMITTEE
Uniform Freight Classification Rules.

(Application for copies should be addressed to the Official Classification Committee, 1 Park Avenue at 33rd Street, New York 16, N.Y.)

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3. REQUIREMENTS

3.1 Materials. - Unless otherwise specified herein the materials of parts shall be of a high grade commercial standard, suitable for the purpose intended, under conditions of temperature and shock specified herein Choice of materials shall be such that the parts will not gall, corrode or stick after periods of inactivity at temperatures specified in 3.8. Cast iron shall not be used.

3.2 Pump. -

3.2.1 Design. - The hydraulic pump shall be a rotary, positive displacement crank operated type for clockwise rotation The pump shall be provided with mounting lugs or brackets for bolting to the ship structure.

3.2.2 Performance. - The hydraulic pump shall be capable of a discharge pressure of 350 and 900 pounds per square inch (p.s.i.), with a crank speed of 60 revolutions per minute (r.p.m.), and crank input torques of 42 and 83 foot-pounds, respectively.

3.3 Motor. -

3.3.1 Design. - The motor shall consist of an assembly with inlet and outlet ports and having the drive shaft projecting or connection to a valve stem or gear unit for driving a valve stem High pressure hydraulic fluid shall enter through the motor inlet causing the drive shaft of the motor to rotate and shall pass out through the motor outlet at a low pressure. Motor reversal shall be accomplished by the use of a four-way selector cock which diverts the fluid to the desired port of the motor and shall be located in the hydraulic system near the pump.

3.3.2 Performance. - With relet pressures at 350 p.s.i. and 900 p.s.i the output torque of the motor drive shaft shall be not less than 30 foot-pounds and 60 foot-pounds respectively with the fluid temperature not less than 50°F.

3.4 Housings. - Pump and motor housings shall be designed for a working pressure of 750 p.s.i. Test pressure shall be 1000 p.s.i

3.5 Fittings. - Hydraulic connections for both pump and motor housings shall conform to Drawing 5000-S4824-1385775.

3.6 Pump crank. - The crank shall be a design having an effective radius of 10 Inches, with an 8-inch handle for applying both hands. The crank shall be easily detached and shall incorporate a hub which latches to the pump drive shaft while in use.

3.7 Seals. - Pump and motor shall be provided with adequate seals around the shaft bearings and at all other joints or openings to prevent leakage of hydraulic fluid out of the unit when subjected to an internal hydraulic pressure of not less than 1000 p.s.i.

3.8 Operating temperatures. - The hydraulic units shall operate satisfactorily for all temperatures of the hydraulic fluid from 50° to 200°F.

3.9 Hydraulic fluid. - The hydraulic fluid used in this equipment shall be in accordance with symbol 2135 T-H of MIL-L-17672.

3.10 Shock resistance. - The pump and motor shall not become inoperative or sustain damage when subjected to the test specified in 4.5.6.

3.11 Marking. - Each unit shall be permanently and legibly marked with an identification plate conforming to type A, B, or C C of MIL-P-15024, with the manufacturer's name or trademark, type or model number and the Federal stock number.

3.12 Manuals. - Manuals shall be type I in accordance with MIL-M-15071 (see 6.2)

3.13 Onboard repair parts. - One set of gaskets, packing and seals shall be supplied as onboard repair parts with each two hydraulic units.

3.14 Workmanship. - The workmanship shall be first class in every respect.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. - Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to 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 requirement.

4.2 Sampling for quality conformance inspection. -

4.2.1 Lot. - All pumps and motors presented at one time shall be considered a lot for purposes of quality conformance inspection.

4.2.2 Sampling for group A inspection. - A random sample of pumps and motors shall be selected from each lot in accordance with table I for the group A inspection specified in 4.3.1.

Table I - Sampling for group A inspection.

Number of pumps and motors in lot	Number of pumps and motors in sample	Acceptance number	Rejection number (defectives)
2 to 8	6	0	1
9 to 15	8	0	1
16 to 25	10	0	1
26 to 40	13	0	1
41 to 65	17	0	1
66 to 110	22	1	2
111 to 180	28	1	2
181 to 300	35	1	2
301 to 500	45	2	3
501 and over	55	3	4

4.2.3 Sampling for group B tests. - A random sample of pumps and motors shall be selected from each lot in accordance with table II and shall be subjected to each of the group B tests specified in 4.3.2.

Table II - Sampling for group B tests

Number of pumps and motors in lot	Number of pumps and motors in sample	Acceptance number	Rejection number (defectives)
2 to 8	3	0	1
9 to 15	4	0	1
16 to 25	5	0	1
26 to 40	6	0	1
41 to 65	8	0	1
66 to 110	10	0	1
111 to 180	13	1	2
181 to 300	17	1	2
301 to 500	22	2	3
501 and over	28	2	3

4.2.4 Sampling for group C tests. - A sample number of pumps and motors in accordance with table III shall be selected from the contract or order production and shall be subjected to the group C tests specified in 4.3.3.

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Table III - Sampling for group C tests.

Number of pumps and motors on the contract or order	Number of pumps and motors to be selected for group C tests
65 and under	1
66 to 300	2
301 to 800	3

4.3 Quality conformance inspection -

4.3.1 Group A- Each of the sample pumps and motors selected in accordance with 4.2.2 shall be subjected to the following examination and tests and the results compared with specification requirements. Failure to conform to the specification requirements for any group A examination and tests shall be counted as a defect and the pump or motor shall not be offered for delivery. If the number of defective pumps or motors in any sample exceeds the acceptance number for that sample, the lot represented by the sample shall not be offered for delivery.

<u>Group A</u>	<u>Reference</u>
Examination	4.4
Hydrostatic pressure test	4.5.1
Pump operation at 900 p.s.i.	4.5.2.1
Motor operation at 900 p.s.i.	4.5.2.2

4.3.2 Group B- Each of the sample pumps and motors selected in accordance with 4.2.3 shall be subjected to each of the following tests, and the results of each test compared with specification requirements. Failure to conform to the specification requirements for any group B test shall be counted as a defect and the pump or motor shall not be offered for delivery. If the number of such defective pumps or motors in any sample exceeds the acceptance number for that sample, the lot represented by the sample shall not be offered for delivery.

<u>Group B</u>	<u>Reference</u>
Operation at varying temperature	4.5.3
Operation at varying pressure	4.5.3

4.3.3 Group C- Each of the sample pumps and motors selected in accordance with 4.2.4 shall be subjected to each of the following tests and the results of each test compared with specification requirements. In the event of any failure to conform to the specification requirements for any group C test the supplier shall correct the cause of failure on future production pumps and motors and repair the deficiency in any pumps and motors not yet shipped.

<u>Group C</u>	<u>Reference</u>
Endurance tests	4.5.4
Check test	4.5.5

4.4 Examination - Each sample unit selected as specified in 4.2.2 shall be examined to verify compliance with the requirements of this specification not involving tests. Any unit containing one or more defects shall not be offered for delivery.

4.5 Tests -

4.5.1 Hydrostatic pressure test - Each sample unit shall be subjected to an internal hydrostatic pressure of 1000 p.s.i. for 15 minutes. Leakage past any joints or seals or other evidence of failure shall be cause for rejection.

4.5.2 Operational tests (at room temperature) -

4.5.2.1 Pumps - Each sample pump shall be operated up to 900 p.s.i. discharge pressure for 10 minutes. This pressure shall be obtained by rotating the crank at a speed of 60 r.p.m.

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4.5.2.2 Motors. - Each sample motor shall operate with 900 p.s.i hydraulic fluid at the inlet port and a drive shaft output torque of 60 foot-pounds for 10 minutes.

4.5.3 Operational tests at varying temperatures and pressure. - Performance characteristics shall be obtained with the temperature of the hydraulic fluid at 50, 100, 150 and 200°F., with the pump input varying up to 83 foot -pounds and with the motor rotation both clockwise and counterclockwise. The discharge pressure of the pump shall not exceed 900 p.s.i.

4.5.4 Endurance tests. - Pumps and motors shall be operated for 40 hours without leakage or other evidence of failure The input to the pump shall be constant at 0.48 horsepower with the hydraulic fluid at room temperature Motor rotation shall be reversed every 8 hours of operation. The unit shall then be check tested in accordance with 4.5.5.

4.5.5 Check test. - A check test shall be made of performance characteristics with the hydraulic fluid at 50°F, and at 200°F.

4.5.6 Shock test. - One pump and motor, when mounted and under 900 p.s.i. hydraulic pressure, shall withstand mechanical shock when subjected to the type A shock test of MIL-S-901 for grade A, class I equipment.

4.5.6.1 Where shock tests as required by this specification have previously been conducted and equipment offered is the same as that previously tested, accepted, and proven satisfactory, a test report of prior approval, will be acceptable in lieu of retesting.

5. PREPARATION FOR DELIVERY

5.1 Domestic shipment and early equipment installation and for storage of onboard repair parts. -

5.1.1 Pumps and motors. -

5.1.1.1 Preservation and packaging. - Preservation and packaging shall be sufficient to afford adequate protection against corrosion, deterioration and physical damage during shipment from the supply source to the using activity and until early installation and may conform to the supplier's commercial practice when such meets these requirements.

5.1.1.2 Packing. - Packing shall be accomplished in a manner which will insure acceptance by common carrier at the lowest rate and will afford protection against physical or mechanical damage during direct shipment from the supply source to the using activity for early installation. The Shipping containers or method of packing shall conform to the Uniform Freight Classification Rules and Regulations or other carrier regulations as applicable to the mode of transportation and may conform to the supplier's commercial practice when such meets these requirements.

5.1.1.3 Marking. - Shipment marking information shall be provided on interior packages and exterior shipping containers in accordance with the supplier's commercial practice. The information shall include nomenclature, Federal stock number or manufacturer's part number, contract or order number, supplier's name and destination.

5.1.2 Onboard repair parts. -

5.1.2.1 Preservation and packaging. - Packings, gaskets and seals shall be preserved and packaged as follows.

- (a) Packing material of like description shall be dusted with soapstone or talcum powder, interleaved over the entire area with Kraft, or equal, paper and rolled. Rolls shall be secured with tape conforming to PPP-T-76.
- (b) Gaskets shall be packaged together without folding. Gaskets shall be dusted with soapstone or talcum powder, Interleaved with Kraft, or equal, paper and unit packaged in boxes conforming to PPP-B-566, PPP-B-676 or PPP-B-636 Box closure shall be as specified in the box specification or appendix thereto.
- (c) Seals shall be individually preserved and packaged in accordance with submethod IA-8 of MIL-P-116.

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5.1.2.2 Packing. - Packing shall be accomplished in such a reamer which will insure acceptance by common carrier, at the lowest rate, and safe delivery to destination. The shipping containers or method of packing shall conform to the Uniform Freight Classification Rules or other carrier regulations as applicable to the mode of transportation and may conform to the supplier's commercial practice when such meets these requirements.

5.1.2.3 Marking. - Shipment marking information shall be provided on interior packages and exterior shipping containers in accordance with the supplier's commercial practice. The information shall include nomenclature Federal stock number or manufacturer's part number, contract or order number, supplier's name and destination.

5.2 Domestic shipment and storage or overseas shipment. - The requirements, and levels of packaging, packing and marking for shipment shall be specified by the procuring activity (see 6.1).

(5.2.1 The following provides various levels for protection during domestic shipment and storage or overseas shipment which may be required when procurement is made.

5.2.1.1 Preservation and packaging. -

5.2.1.1.1 Level A. - Ports and other openings of the pumps and motors shall be sealed with plugs or covers, as applicable. When plywood or wood covers are used, barrier material conforming to grade A of MIL-B-121 shall be inserted between the cover and the port face. Unpainted external surfaces subject to corrosion, including shaft stubs, shall be coated with type P-2 preservative conforming to MIL-P-116 and wrapped with barrier material conforming to grade A of MIL-B-121. The pumps and motors shall be individually packaged in fiberboard boxes conforming to PPP-B-636.

5.2.1.1.2 Level C. - Preservation and packaging shall be sufficient to afford adequate protection against corrosion, deterioration and physical damage during shipment from the supply source to the using activity and may conform to the supplier's commercial practice when such meets these requirements.

5.2.1.2 Packing. -

5.2.1.2.1 Level A. - Pumps and motors packaged as specified shall be packed in containers conforming to any one of the following specifications at the option of the supplier

Specification	Type or class
PPP-B-585	Class 3 use
PPP-B-591	Class II
PPP-B-601	Overseas type
PPP-B-621	Class 2
PPP-B-636	Weather-resistant class

The gross weight of wood type boxes shall not exceed 200 pounds, fiberboard boxes shall not exceed the weight limitations of the box specification. Closures shall be in accordance with the applicable box specification and the appendix thereto. The boxes shall be lined with a sealed waterproof case liner conforming to MIL-L-10547.

5.2.1.2.2 Level B. - Pumps and motors packaged as specified shall be packed in containers conforming to any one of the following specifications at the option of the supplier:

Specification	Type or class
PPP-B-585	Class 1 use
PPP-B-591	Class I
PPP-B-601	Domestic type
PPP-B-621	Class 1
PPP-B-636	Domestic class

The gross weight of wood type boxes shall not exceed 200 pounds, fiberboard boxes shall not exceed the weight limitations of the applicable box specification. Closures shall be in accordance with the applicable specification and the appendix thereto.

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5.2.1.2.3 Level C. - Packing shall be accomplished in a manner which will insure acceptance by common carrier at the lowest rate and will afford protection against physical or mechanical damage during direct shipment from the supply source to the using activity. The shipping container or method of packing shall conform to the Uniform Freight Class Rules and Regulation or other carrier regulations as applicable to the mode of transportation and may conform to the supplier's commercial practice when such meets these requirements.

5.2.1.3 Marking. - In addition to any special marking required in the contract or order, marking of the packages and shipping containers shall be in accordance with MIL-STD-129.)

6. NOTES

6.1 Intended use. - Pumps are intended for but not limited to use in hydraulic valve remote control systems to increase the fluid pressure delivered to the motors, which when mounted on a valve transforms the fluid pressure into rotary motion and transmits a torque to the valve stem.

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

- (d) Title number, and date of this specification.
- (b) Number of manuals required (see 3.12).
- (c) Preservation packaging, packing and marking requirements other than those required by 5.1 (see 5.2).

6.3 CHANGES FROM PREVIOUS ISSUE. THE EXTENT OF CHANGES (DELETIONS, ADDITIONS, ETC) PRECLUDE THE ANNOTATION OF THE INDIVIDUAL CHANGES FROM THE PREVIOUS ISSUE OF THIS DOCUMENT.

Preparing activity:
Navy - SH
(Project 4320-N107SH)

SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 119-R004
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 (as indicated on reverse hereof).		
SPECIFICATION		
ORGANIZATION (of submitter)		CITY AND STATE
CONTRACT NO	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT \$
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)		DATE

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MIL-P-18111A(SHIPS)
AMENDEMENT - 1
12 August 1965

MILITARY SPECIFICATION
PUMP, ROTARY, HAND DRIVEN; AND MOTOR,
HYDRAULIC-REMOTE VALVE OPERATION,
NAVAL SHIPBOARD USE

This amendment forms a part of Military Specification MIL-P-18111A(SHIPS), 8 December 1964.

Page 1, paragraph 2.1: Under "Drawings" delete reference to "3000-84824-1385775 and substitute "810-1385859 - Unions, Bronze, Silver Brazing Alloy for Water, Oil and Gas."

Page 2, paragraph 3.5: Delete and substitute:

"3.5 Fittings. - Hydraulic connections for both pump and motor housings shall conform to Drawing 810-1385859. A straight thread and O-ring seal for the union tail piece shall be used for connection of this union to the pump or motor housing."

Preparing activity:
Navy - SH
(Project 4320-N115SH)

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