

**MIL-STD-17B-2**  
**23 January 1963**  
**SUPERSEDING**  
**(See FOREWORD)**

**MILITARY STANDARD**  
**MECHANICAL SYMBOLS FOR AERONAUTICAL,**  
**AEROSPACECRAFT AND SPACECRAFT USE**

**PART 2**



MIL-STD-17B-2  
23 January 1963

DEPARTMENT OF DEFENSE

WASHINGTON 25, D. C.

Mechanical Symbols for Aeronautical,  
Aerospacecraft and Spacecraft Use

MIL-STD-17B-2

1. This standard has been approved by the Department of Defense and is mandatory for use by the Department of the Army, the Navy, and the Air Force, effective 23 January 1963.

2. Recommended corrections, additions, or deletions should be addressed to Standardization Division, Defense Supply Agency, Alexandria, Virginia.

MIL-STD-17B-2  
23 January 1963

## FOREWORD

MIL-STD-17B-2 contains a listing of graphical mechanical drawing symbols for aeronautical, aerospacecraft and spacecraft use. These mechanical symbols should be used by all who have occasion to prepare schematic drawings for aeronautical, aerospacecraft and spacecraft for the Departments of the Army, the Navy, and the Air Force.

The symbols formerly contained in the basic issue of Standard MIL-STD-17, dated 6 July 1950, section 3 were considered carefully in the preparation of Standard MIL-STD-17B-2 and where there was no good reason for making a change, their use was adopted. Certain new symbols have been added.

Standard MIL-STD-17A has been revised and published as MIL-STD-17B-1. MIL-STD-17 now consists of the following two parts:

- Part 1 - Mechanical Symbols (Other Than  
Aeronautical, Aerospacecraft and  
Spacecraft Use)
- Part 2 - Mechanical Symbols for Aeronautical,  
Aerospacecraft and Spacecraft Use

MIL-STD-17B-2  
23 January 1963

## CONTENTS

	Page
Paragraph 1. Scope . . . . .	1
2. Applicable Documents . . . . .	1
3. Definitions (Not Applicable) . . . . .	2
4. Symbols . . . . .	2
4.1 Tube and Hose Lines . . . . .	2
4.2 Hydraulic Equipment . . . . .	5
4.3 Oxygen Equipment . . . . .	9
4.4 Power Plant Equipment . . . . .	15
4.5 Vacuum Instrument Equipment . . . . .	19
4.6 Miscellaneous Valves . . . . .	22
4.7 Fittings . . . . .	24
4.8 Environmental Control Equipment . . . . .	28

MIL-STD-17B-2  
23 January 1963

MECHANICAL SYMBOLS FOR  
AERONAUTICAL, AEROSPACECRAFT AND SPACECRAFT USE

1. SCOPE

1.1 This standard establishes an approved list of graphical symbols that shall be used in preparation of schematic diagrams for fluid, gaseous and vacuum systems in aeronautical, aerospacecraft and spacecraft equipments diagrammatically.

2. APPLICABLE DOCUMENTS

2.1 The following document, of the issue in effect on date of invitation for bids or request for proposal forms a part of this standard to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-C-25516 - Connectors, Electrical, Miniature,  
Coaxial, Shielded and Unshielded,  
Environment Resistant Type, General  
Specification For

(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.)














MIL-STD-17B-2  
23 January 1963

### 3. DEFINITIONS (Not Applicable)













### 4. SYMBOLS

#### 4.1 Tube and Hose Lines

4.1.1 Power plant, instrument, fire extinguisher and miscellaneous tube and hose line symbols.

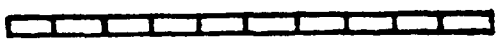










Service	Riser or stack	Symbol
Bellows		
Bleed return		
Drain		
Engine coolant		
Foam solution		
Fuel oil vent		
Fuel supply		

MIL-STD-17B-2  
23 January 1963

Symbol	Riser or stack	Service
———— LO ————		Lubricating oil
- - - - OB - - - -		Oil breather
———— OD ————		Oil dilution
———— PN ————		Pneumatic
		Self-sealing
———— V ————		Vacuum
- - - - V - - - -		Vent
- - - - PV - - - -		Vent pressure
- - - - VR - - - -		Vent return
———— WI ————		Water injection
———— ————		Water, cold
———— ————		Water, hot

MIL-STD-17B-2  
23 January 1963

4.1.2 Hydraulic tube and hose line symbols

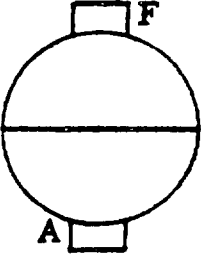




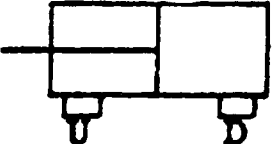
Service	Symbol
Brake	
Down (or close)	
Emergency pressure	
Hose connection, rigid tubing	
Hose, flexible	
Return	
Supply fluid, pump suction	
Suction gravity	
Supply pressure	
Up (or open)	
Vent	

MIL-STD-17B-2  
23 January 1963



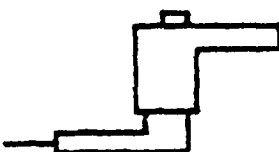


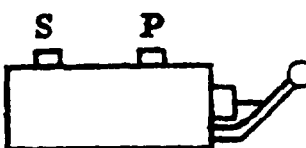
## 4.2 HYDRAULIC EQUIPMENT

4.2.1 General. The hydraulic symbols shown merely present outlines. The schematic diagram should show the cutaway section of each unit at least in schematic form.

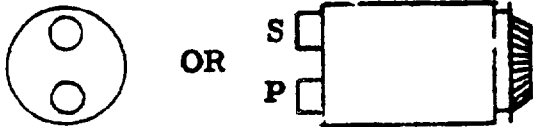
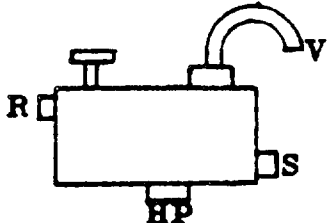

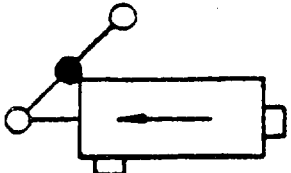
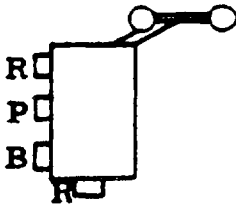
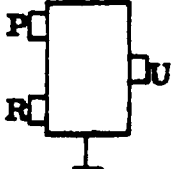
### 4.2.2 Hydraulic equipment symbols

Symbol	Service
	Accumulator
	Air bottle, emergency
	Brake control
	Bungee, air-oil
	Coupling, self-sealing
	Cylinder, actuating

MIL-STD-17B-2  
23 January 1963

Service	Symbol
Debooster, brake	
Filter or strainer	
Fitting, swivel	
Gage, pressure	
Gage and snubber, pressure	
Pump, hand	

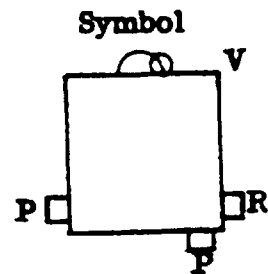
MIL-STD-17B-2  
23 January 1963

Symbol	Service
	Pump, power driven
	Reservoir
	Valve, check, automatic
	Valve, check, manual
	Valve, brake control
	Valve, gun charger control

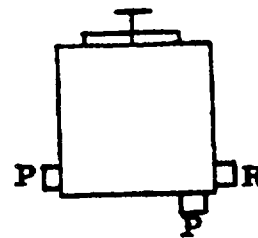
MIL-STD-17B-2  
23 January 1963

**Service**

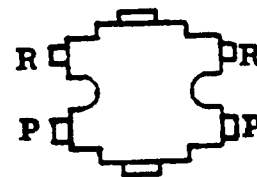
**Valve, pressure regulating  
(unloading) automatic**



**Valve, pressure regulating  
(unloading) manual**



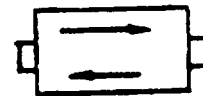
**Valve, relief**



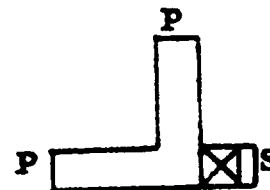
**Valve, restrictor, both ways**



**Valve, restrictor, partial  
one-way**



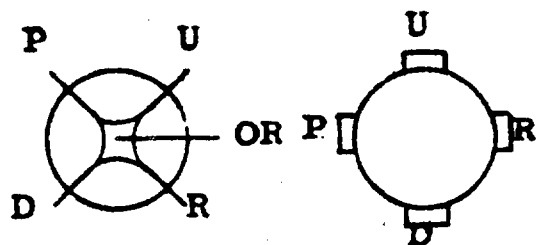
**Valve, shuttle**



MIL-STD-17B-2  
23 January 1963

**Symbol**

**Service**

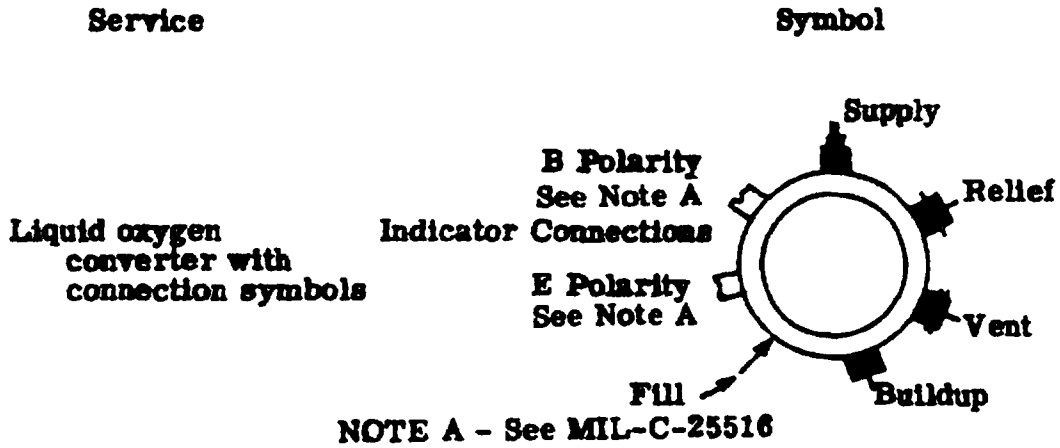


**Valve or selector,  
directional control**

**4.3 OXYGEN EQUIPMENT**

**4.3.1 Tube and Hose Line Symbols**

MIL-STD-17B-2  
23 January 1963



<p>Distribution Line, High pressure (2000 psi)</p>	
--	--

<p>Distribution line, low pressure (70 to 500 psi)</p>	
--	--

<p>Filler line</p>	
--------------------	--

<p>Electrical line</p>	
------------------------	--



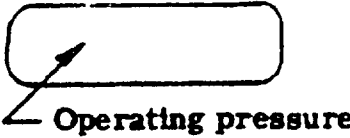
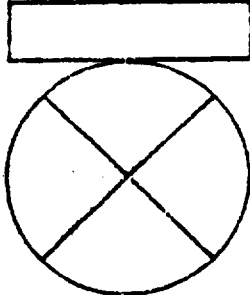
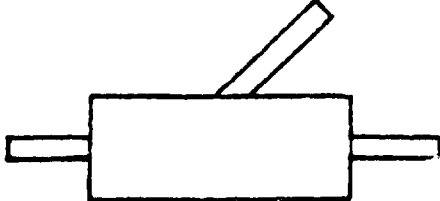

<p>Flexible line</p>	
----------------------	--

<p>Warming equipment</p>	
--------------------------	--

<p>Overboard vent line</p>	
----------------------------	--

MIL-STD-17B-2  
23 January 1963

### 4.3.2 Oxygen Equipment Symbols

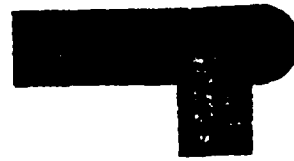
Symbol	Service
	Mask mounted regulator
	Recharger assembly
	Oxygen cylinder
	Aneroid operated valve
	On - off valve (toggle)
	Automatic mask presents (3 unit)

MIL-STD-17B-2  
23 January 1963

**Service**

**Symbol**

**Liquid oxygen drain valve**



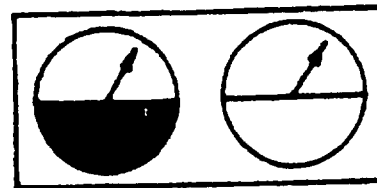
**Quantity indicator**



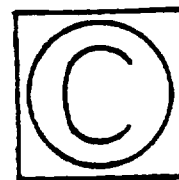
**Repeater quantity indicator**



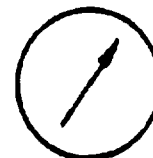
**Oxygen control panel**



**Pressure Suit Controller**











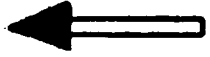

**Pressure gage**



**Automatic coupling (disconnect)**



MIL-STD-17B-2  
23 January 1963

symbol	Service
	Check valve, style A
	Check valve, style B
	Check valve, style C
	Check valve, style D
	Check valve, style E
	Check valve, style F
	Check valve, style G
	Check valve, style H
	Check valve, spring loaded
	13 Fill valve

MIL-STD-17B-2  
23 January 1963 Service

Symbol

Portable unit (continuous flow)



Portable unit (demand)



Portable unit (pressure demand)



Pressure reducer



Automatic, continuous flow regulator



Diluter demand regulator



Helmet regulator



Seat kit regulator





Mask - regulator hose



Helmet - regulator hose







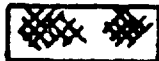


MIL-STD-17B-2  
23 January 1963



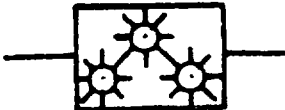

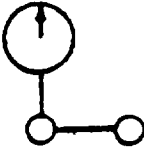




Symbol	Service
	Line valve
	Fill - buildup - vent valve

#### 4.4 POWER PLANT EQUIPMENT


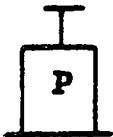
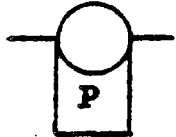
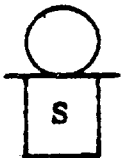
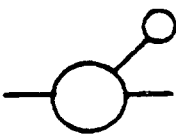
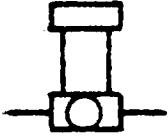


##### 4.4.1 Power Plant Equipment Symbols

Symbol	Service
 OR 	Cooler, oil
	Detector, carbon monoxide
WITH SCREEN  	Filler neck
	Filter, fuel
	Filter, induction air

MIL-STD-17B-2  
23 January 1963

Service	Symbol
Flowmeter	
Gage glass	
Gear box	
Governor, propeller	
Indicator, quantity	
Motor, pneumatic	
Pump	
Pump, air	
Pump, auxiliary fuel, electric driven	

MIL-STD-17B-2  
23 January 1963

Symbol	Service
	Pump, coolant
	Pump, primer, hand
	Pump, primer, motor driven
	Pump, scavenger
	Pump, wobble
	Pump and motor, propeller feather
	Radiator, coolant
	Scupper

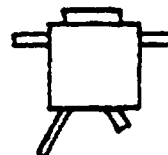
MIL-STD-17B-2  
23 January 1963

**Service**  
**Separator, oil**

**Symbol**



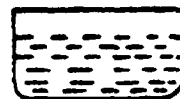
**Strainer**



**Sump**



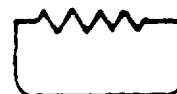
**Tank**



**Tank, droppable**



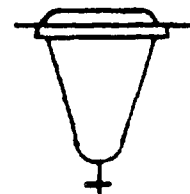
**Tank, expansion**



**Tank, self-sealing**



**Trap, water**



MIL-STD-17B-2  
23 January 1963

Symbol

Service



Valve, defueling



Valve, fuel selector

#### 4.5 VACUUM INSTRUMENT EQUIPMENT

##### 4.5.1 Vacuum instrument equipment symbols

Symbol

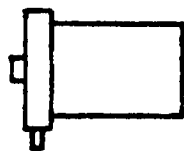
Service



Air filter - turn and bank indicator



Boot, de-icer



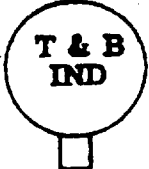

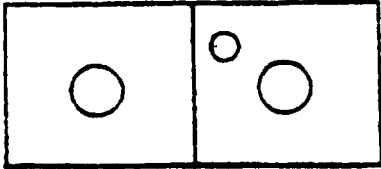
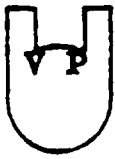



Filter, air

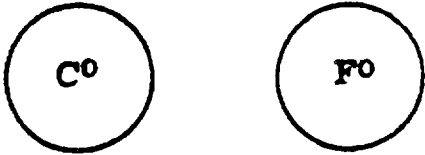
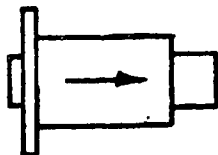
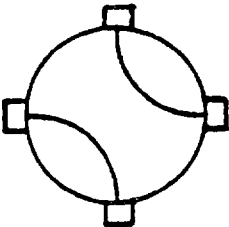
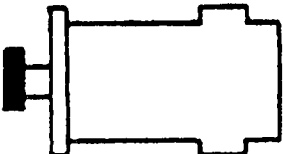
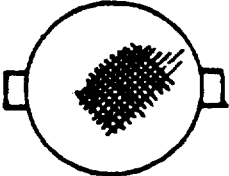
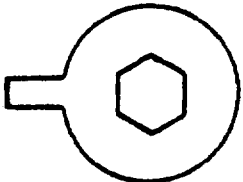


Gage, vacuum

MIL-STD-17B-2  
23 January 1963

Service	Symbol
Indicator, directional gyro	
Indicator, gyro horizon	
Indicator, turn and bank	
Outlet, vacuum	
Pilot, automatic	
Pump, vacuum	
Selector, static pressure	

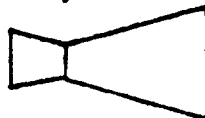
MIL-STD-17B-2  
23 January 1963

Symbol	Service
	Thermometer
	Valve, air check
	Valve, selector, four-way
	Valve, vacuum control, turn and bank indicator
	Valve, vacuum relief
	Valve, vacuum throttling

MIL-STD-17B-2  
23 January 1963

**Service**  
**Venturi tube**

**Symbol**



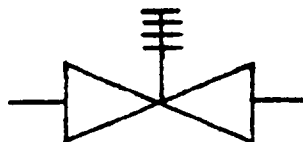
**4 6 MISCELLANEOUS VALVES**

**4.6 1 Miscellaneous valve symbols**

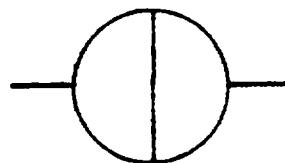
**Service**

**Symbol**

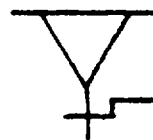
**Back pressure**



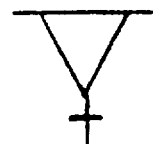
**Cross feed**



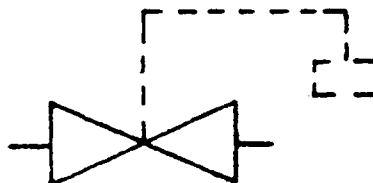
**Dump**



**Drain**



**Float operated**



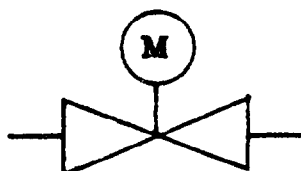
MIL-STD-17B-2  
23 January 1963

**Symbol**

**Service**



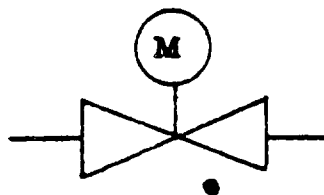
**Gate**



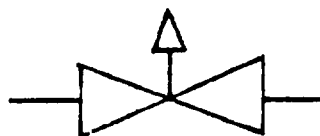
**Gate, motor operated**



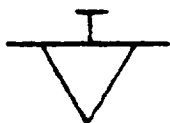
**Globe**



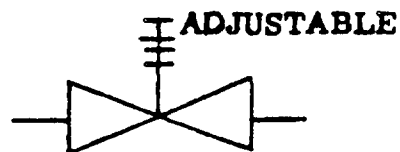
**Globe, motor operated**



**Needle**



**Poppet**



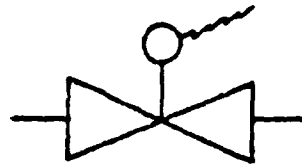
**Pressure regulator**

MIL-STD-17B-2  
23 January 1963

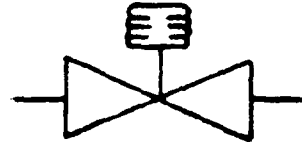
**Service**

**Symbol**

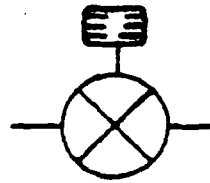
**Solenoid**



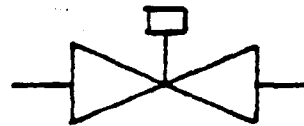
**Supercharger regulator**



**Temperature control**



**Water regulator**



**4.7 FITTINGS**

**4.7.1 Fitting Symbols**

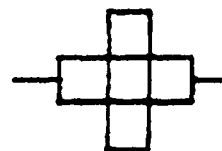
**Service**

**Symbol**





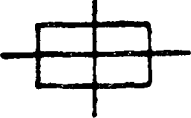
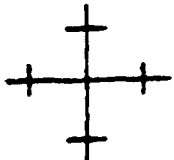

**Banjo**



**Bulkhead fitting**



MIL-STD-17B-2  
23 January 1963

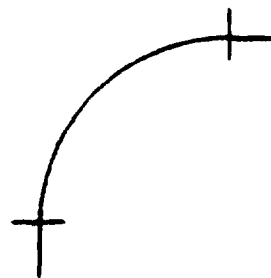
Symbol	Service
	Bushing
	Cap
	Connector, hose
	Connector, nut and sleeve
	Coupling, female
	Cross
	Elbow, 45 degrees

MIL-STD-17B-2  
23 January 1963

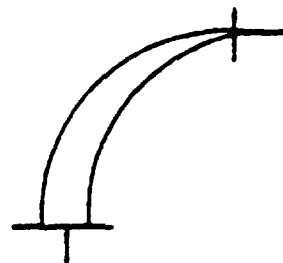
**Service**

**Symbol**

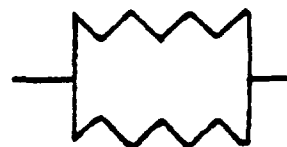
**Elbow, 90 degrees**



**Elbow, reducing**



**Expansion joint, bellows**



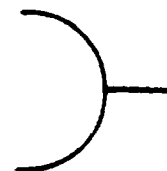
**Expansion joint, sliding**



**Flange, reducing**



**Nipple**



MIL-STD-17B-2  
23 January 1963

**Symbol**

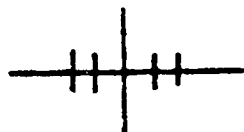
**Service**



**Reducer, concentric**



**Tee**



**Union, flanged**



**Union, screwed**



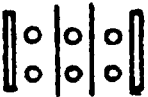
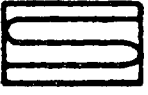










MIL-STD-17B-2  
23 January 1963

## 4.8 ENVIRONMENTAL CONTROL EQUIPMENT

### 4.8.1 ENVIRONMENTAL CONTROL EQUIPMENT SYMBOLS

Service	Symbol
Air cycle cooling unit	
Heat exchanger, air to air	
Heat exchanger, liquid to liquid	
Heat exchanger, liquid to air	
Pump, liquid	
Heater, electric	
Heater, combustion	
Blower	
Fan	
Water separator	
Ejector, or jet pump	

MIL-STD-17B-2  
23 January 1963

Symbol	Service
	Condenser, refrigerant
	Compressor, refrigerant
	Evaporator, refrigerant
	Radiator, to space
	Check valve
	Flow control valve
	Shut-off-valve
	Modulating valve
	Pressure regulating valve
	Relief valve
	Orifice, flow control
	Temperature controller
	Storage tank
	Cryogenic storage container

MIL-STD-17B-2  
23 January 1963

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.

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.

Copies of this standard for military use may be obtained as indicated in the general provisions of the Department of Defense Index of Specifications and Standards.

The title and identifying symbols should be stipulated when requesting copies of military standards.

Custodians:

Army - MU  
Navy - Ships  
Air Force - ASD

Preparing activity:

Navy - Ships  
(Project DRPR-0059(2))



FOLD

---

POSTAGE AND FEES PAID



**OFFICIAL BUSINESS**  
**PENALTY FOR PRIVATE USE \$300**

Commander, Naval Ship Engineering Center  
Code 6124, Center Building  
Prince George's Center  
Hyattsville, MD 20782

---

FOLD