

**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.

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## 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

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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.)














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### 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		

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

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#### 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	

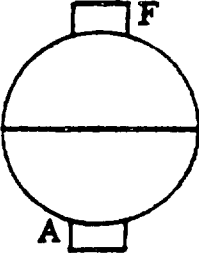




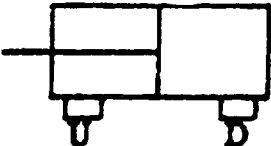


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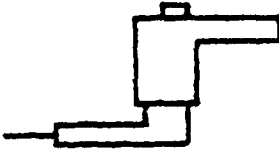


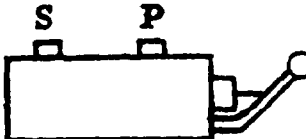
## 4.2 HYDRAULIC EQUIPMENT

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.

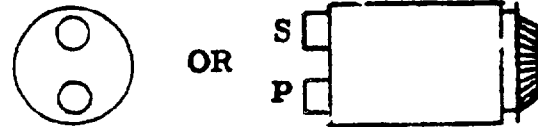
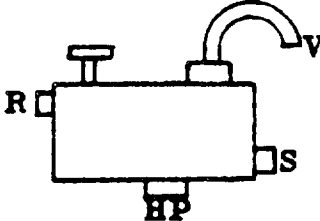

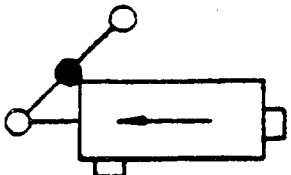
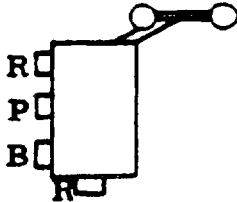
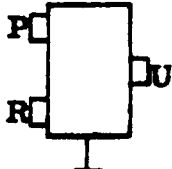
### 4.2.2 Hydraulic equipment symbols

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

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

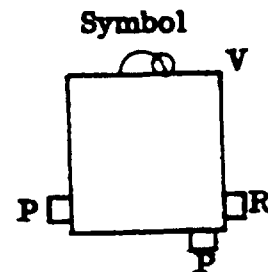
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Symbol	Service
	Pump, power driven
	Reservoir
	Valve, check, automatic
	Valve, check, manual
	Valve, brake control
	Valve, gun charger control

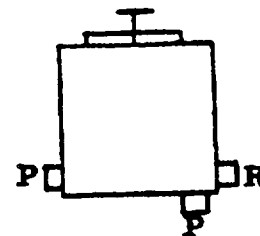
MIL-STD-17B-2  
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**Service**

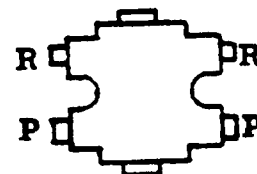
**Valve, pressure regulating  
 (unloading) automatic**



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



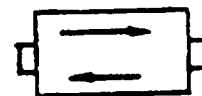
**Valve, relief**



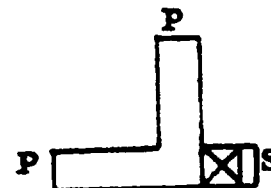
**Valve, restrictor, both ways**



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



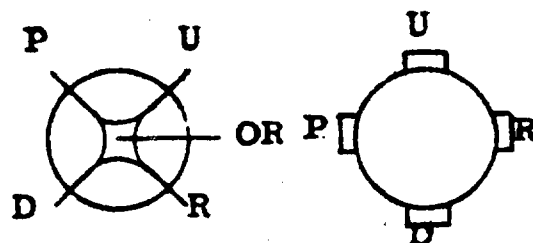
**Valve, shuttle**



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**Symbol**

**Service**

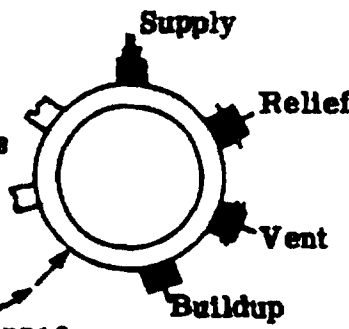









**Valve or selector,  
directional control**

**4.3 OXYGEN EQUIPMENT**



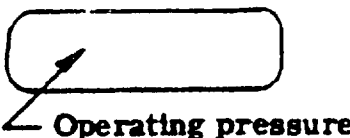
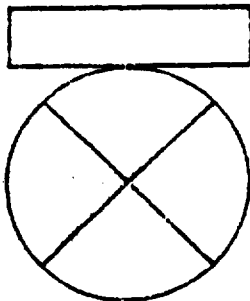
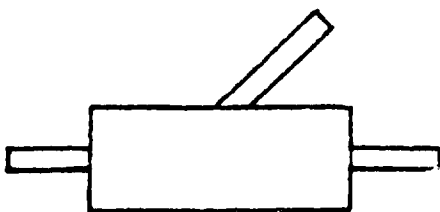
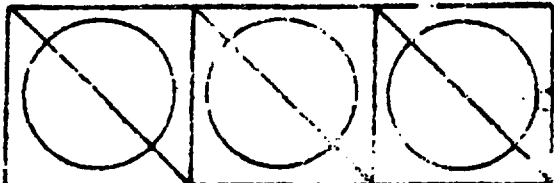
**4.3.1 Tube and Hose Line Symbols**

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Service	Symbol
Liquid oxygen converter with connection symbols	<p>Indicator Connections</p>  <p>NOTE A - See MIL-C-25516</p>
Distribution Line, High pressure (2000 psi)	
Distribution line, low pressure (70 to 500 psi)	
Filler line	
Electrical line	
Flexible line	
Warming equipment	
Overboard vent line	

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### 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)

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**Service**

**Symbol**

**Liquid oxygen drain valve**



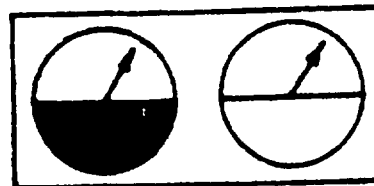
**Quantity indicator**



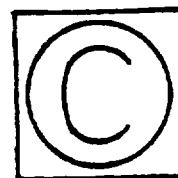
**Repeater quantity indicator**



**Oxygen control panel**



**Pressure Suit Controller**



**Pressure gage**









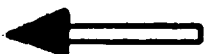



**Automatic coupling (disconnect)**



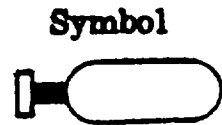


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symbol	Service
	Check valve, style A
	Check valve, style B
	Check valve, style C
	Check valve, style D
	Check valve, style E
	Check valve, style F
	Check valve, style G
	Check valve, style H
	Check valve, spring loaded
	13 Fill valve

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**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**







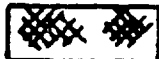


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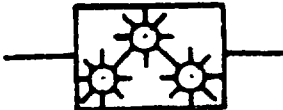

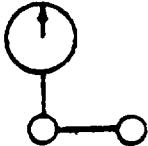




Symbol	Service
	Line valve
	Fill - buildup - vent valve

#### 4.4 POWER PLANT EQUIPMENT


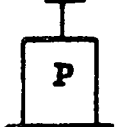
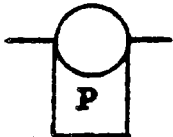
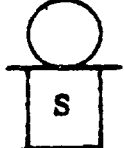
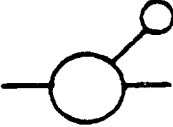
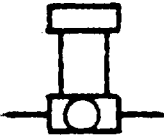
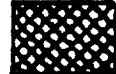


##### 4.4.1 Power Plant Equipment Symbols

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

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

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

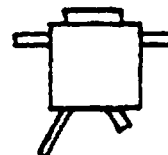
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**Service**  
**Separator, oil**

**Symbol**



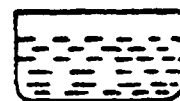
**Strainer**



**Sump**



**Tank**



**Tank, droppable**



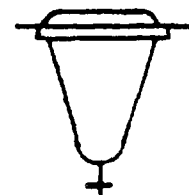
**Tank, expansion**



**Tank, self-sealing**



**Trap, water**



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**Symbol**

**Service**



**Valve, defueling**



**Valve, fuel selector**

## 4.5 VACUUM INSTRUMENT EQUIPMENT

### 4.5.1 Vacuum instrument equipment symbols

**Symbol**

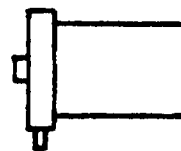
**Service**



**Air filter - turn and bank indicator**



**Boot, de-icer**



**Filter, air**



**Gage, vacuum**

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**Service**

**Indicator, directional gyro**

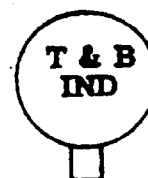
**Symbol**



**Indicator, gyro horizon**



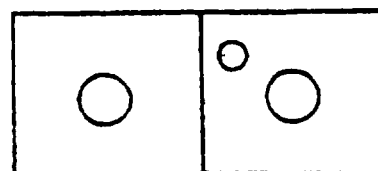
**Indicator, turn and bank**



**Outlet, vacuum**



**Pilot, automatic**



**Pump, vacuum**

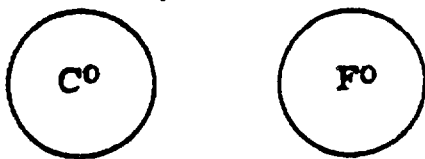
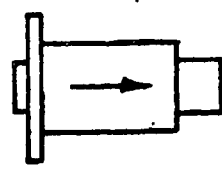
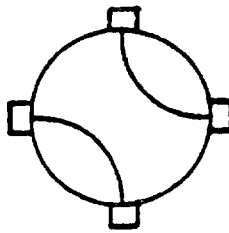
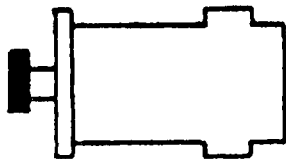
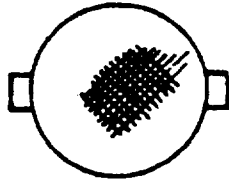
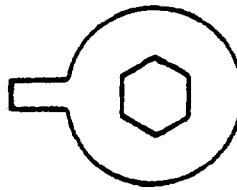


**Selector, static pressure**





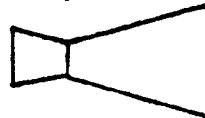
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Symbol	Service
	Thermometer
	Valve, air check
	Valve, selector, four-way
	Valve, vacuum control, turn and bank indicator
	Valve, vacuum relief
	Valve, vacuum throttling

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**Service**  
**Venturi tube**

**Symbol**



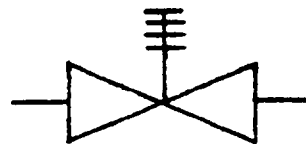
#### **4 6 MISCELLANEOUS VALVES**

##### **4.6 1 Miscellaneous valve symbols**

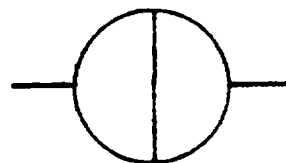
**Service**

**Symbol**

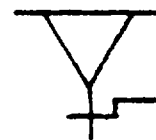
**Back pressure**



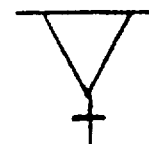
**Cross feed**



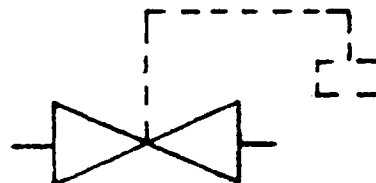
**Dump**



**Drain**



**Float operated**



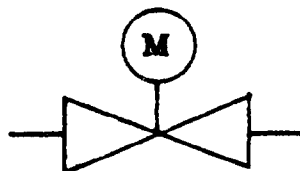
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**Symbol**

**Service**



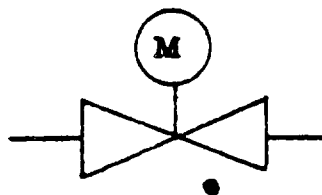
**Gate**



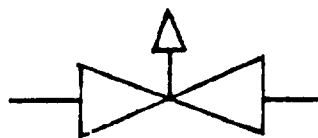
**Gate, motor operated**



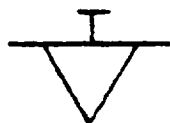
**Globe**



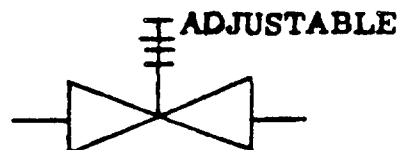
**Globe, motor operated**



**Needle**



**Poppet**

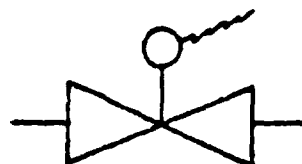


**Pressure regulator**

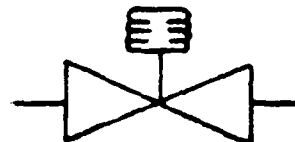
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**Service**

**Solenoid**

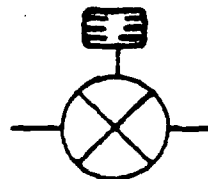
**Symbol**



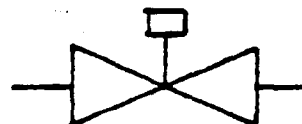
**Supercharger regulator**



**Temperature control**



**Water regulator**



## 4.7 FITTINGS

### 4.7.1 Fitting Symbols

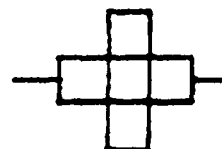
**Service**

**Symbol**



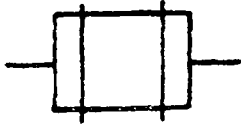
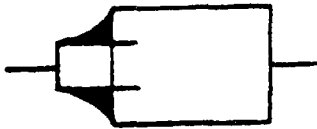
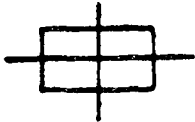
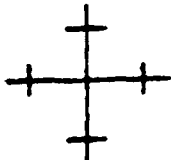

**Banjo**



**Bulkhead fitting**



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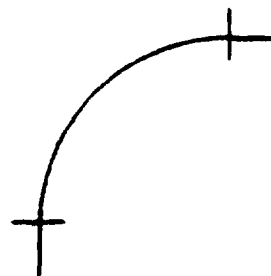
Symbol	Service
	Bushing
	Cap
	Connector, hose
	Connector, nut and sleeve
	Coupling, female
	Cross
	Elbow, 45 degrees

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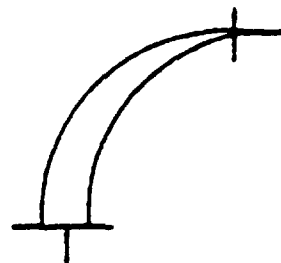
**Service**

**Symbol**

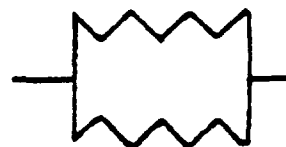
**Elbow, 90 degrees**



**Elbow, reducing**



**Expansion joint, bellows**



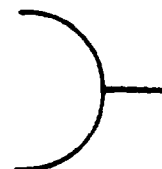
**Expansion joint, sliding**



**Flange, reducing**



**Nipple**



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**Symbol**

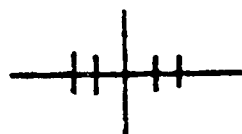
**Service**



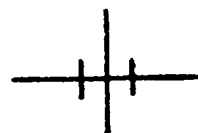
**Reducer, concentric**



**Tee**



**Union, flanged**

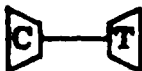
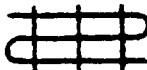

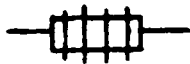









**Union, screwed**

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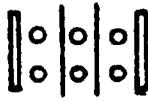











## 4.8 ENVIRONMENTAL CONTROL EQUIPMENT

### 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	



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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

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