

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 ————		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

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4.1.2 Hydraulic tube and hose line symbols

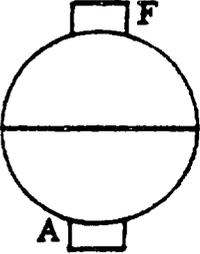
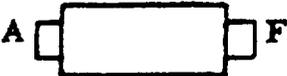
Service	Symbol
Brake	
Down (or close)	
Emergency pressure	
Hose connection, rigid tubing	
Hose, flexible	
Return	
Supply fluid, pump suction	
Suction gravity	
Supply pressure	
Up (or open)	
Vent	

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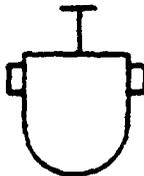
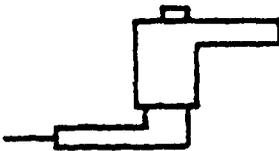
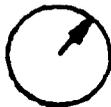
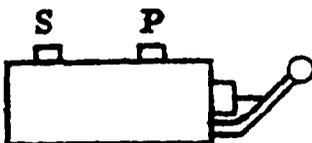
4.2 HYDRAULIC EQUIPMENT

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.

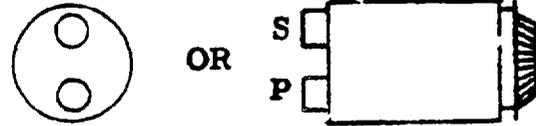
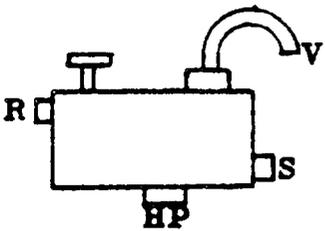
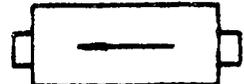
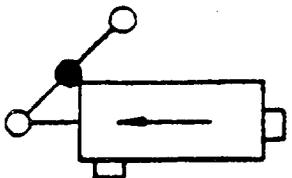
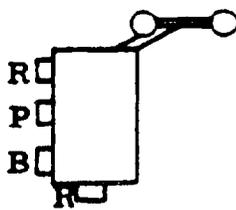
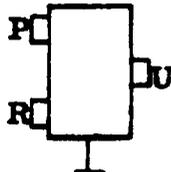
4.2.2 Hydraulic equipment symbols

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	

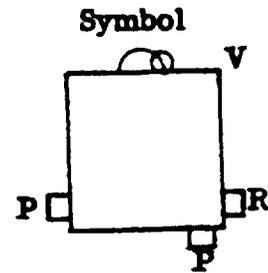
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Symbol	Service
	Pump, power driven
	Reservoir
	Valve, check, automatic
	Valve, check, manual
	Valve, brake control
	Valve, gun charger control

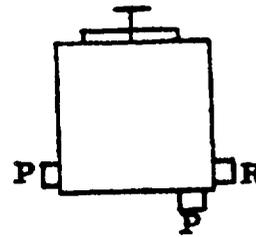
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Service

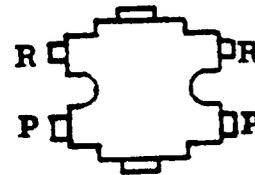
**Valve, pressure regulating
(unloading) automatic**



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



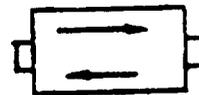
Valve, relief



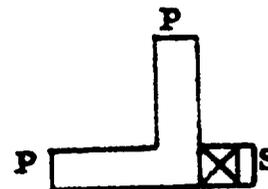
Valve, restrictor, both ways



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



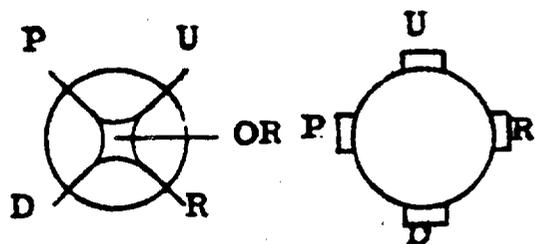
Valve, shuttle



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Symbol

Service

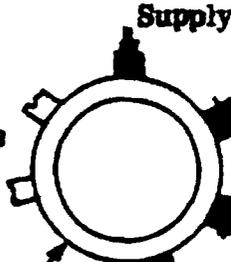
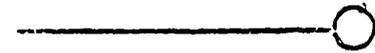


**Valve or selector,
directional control**

4.3 OXYGEN EQUIPMENT

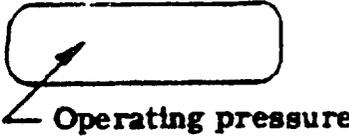
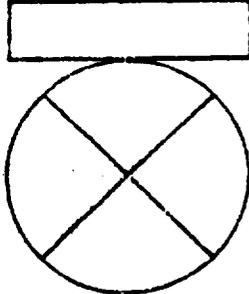
4.3.1 Tube and Hose Line Symbols

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Service	Symbol
Liquid oxygen converter with connection symbols	<p data-bbox="773 404 938 466">B Polarity See Note A</p> <p data-bbox="612 472 948 500">Indicator Connections</p> <p data-bbox="773 527 938 588">E Polarity See Note A</p>  <p data-bbox="863 635 921 664">Fill</p> <p data-bbox="1075 353 1174 382">Supply</p> <p data-bbox="1194 435 1290 463">Relief</p> <p data-bbox="1194 568 1268 596">Vent</p> <p data-bbox="1103 635 1224 664">Buildup</p>
NOTE A - See MIL-C-25516	
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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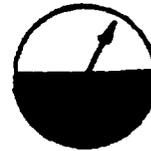
Service

Symbol

Liquid oxygen drain valve



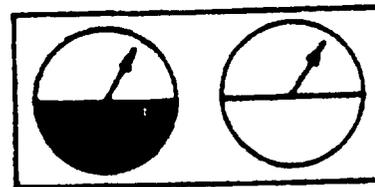
Quantity indicator



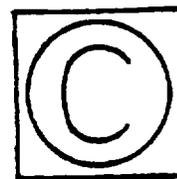
Repeater quantity indicator



Oxygen control panel



Pressure Suit Controller



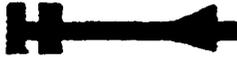
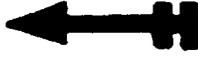
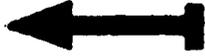
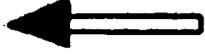
Pressure gage



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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Symbol

Portable unit (continuous flow)



Portable unit (demand)



Portable unit (pressure demand)



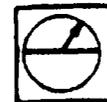
Pressure reducer



Automatic, continuous flow regulator



Diluter demand regulator



Helmet regulator



Seat kit regulator



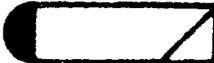
Mask - regulator hose



Helmet - regulator hose

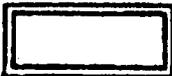
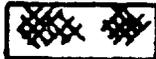


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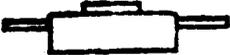
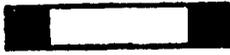
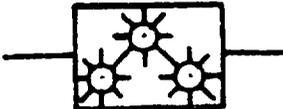
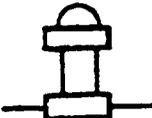
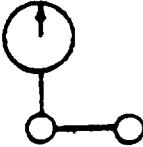
Symbol	Service
	Line valve
	Fill - buildup - vent valve

4.4 POWER PLANT EQUIPMENT

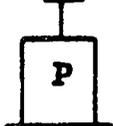
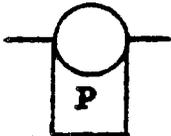
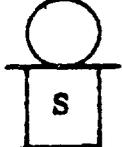
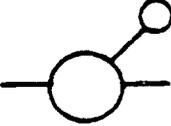
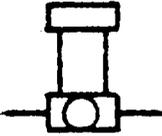
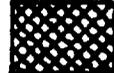
4.4.1 Power Plant Equipment Symbols

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
	Scupper

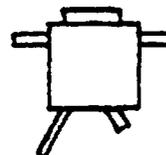
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Service
Separator, oil

Symbol



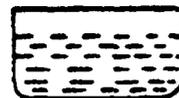
Strainer



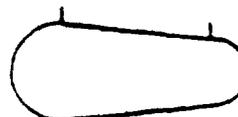
Sump



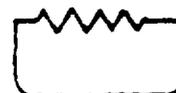
Tank



Tank, droppable



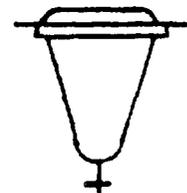
Tank, expansion



Tank, self-sealing



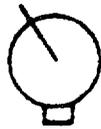
Trap, water



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Symbol

Service



Valve, defueling



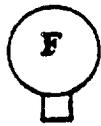
Valve, fuel selector

4.5 VACUUM INSTRUMENT EQUIPMENT

4.5.1 Vacuum instrument equipment symbols

Symbol

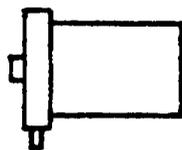
Service



Air filter - turn and bank indicator



Boot, de-icer

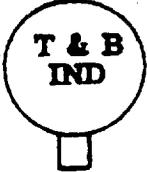
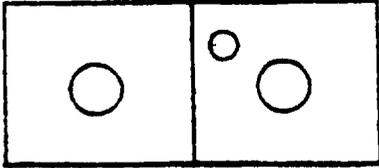
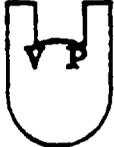


Filter, air

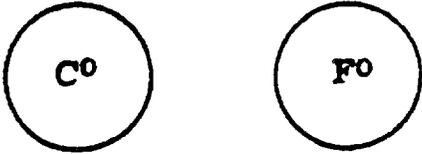
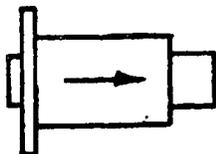
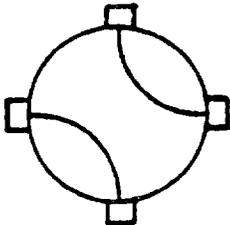
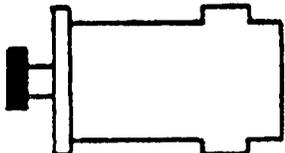
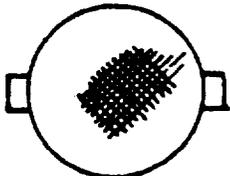
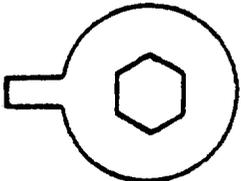


Gage, vacuum

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

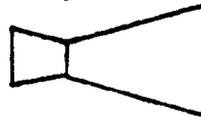
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Symbol	Service
	Thermometer
	Valve, air check
	Valve, selector, four-way
	Valve, vacuum control, turn and bank indicator
	Valve, vacuum relief
	Valve, vacuum throttling

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Service
Venturi tube

Symbol



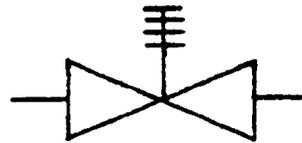
4 6 MISCELLANEOUS VALVES

4.6 1 Miscellaneous valve symbols

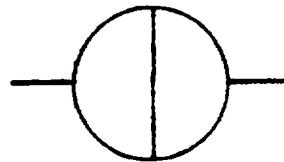
Service

Symbol

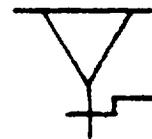
Back pressure



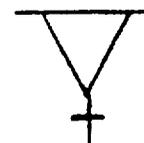
Cross feed



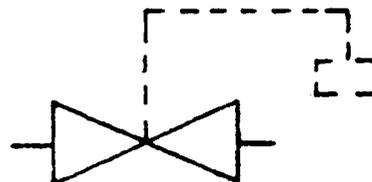
Dump



Drain



Float operated



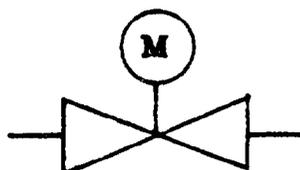
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Symbol

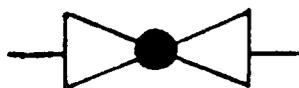
Service



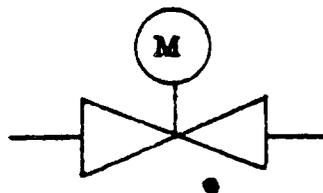
Gate



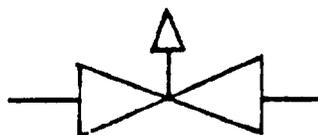
Gate, motor operated



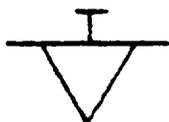
Globe



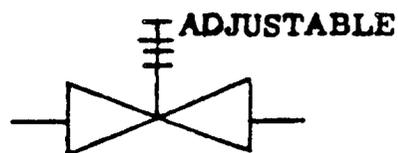
Globe, motor operated



Needle



Poppet



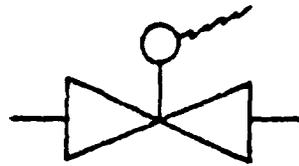
Pressure regulator

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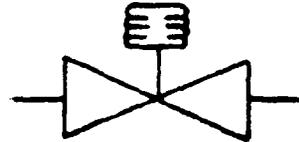
Service

Symbol

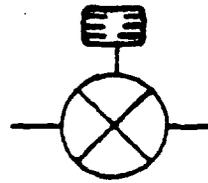
Solenoid



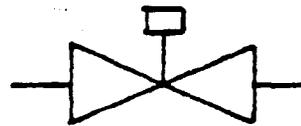
Supercharger regulator



Temperature control



Water regulator



4.7 FITTINGS

4.7.1 Fitting Symbols

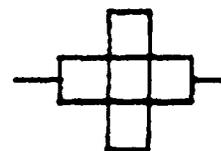
Service

Symbol

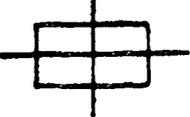
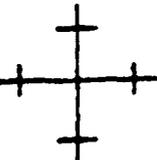
Banjo



Bulkhead fitting



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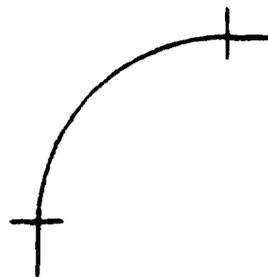
Symbol	Service
	Bushing
	Cap
	Connector, hose
	Connector, nut and sleeve
	Coupling, female
	Cross
	Elbow, 45 degrees

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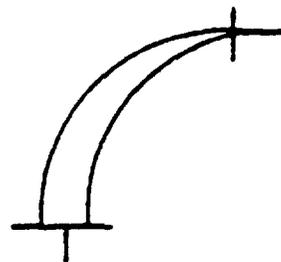
Service

Symbol

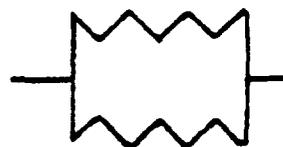
Elbow, 90 degrees



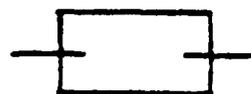
Elbow, reducing



Expansion joint, bellows



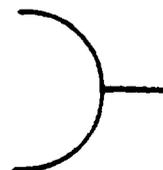
Expansion joint, sliding



Flange, reducing



Nipple



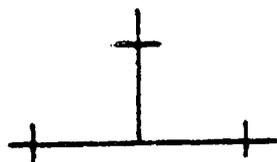
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Symbol

Service



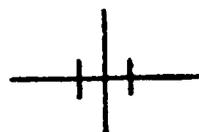
Reducer, concentric



Tee



Union, flanged

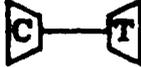
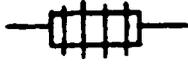


Union, screwed

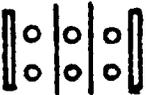
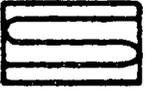
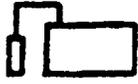
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4.8 ENVIRONMENTAL CONTROL EQUIPMENT

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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