

ENVIRONMENTAL SYSTEMS SCHEMATIC SYMBOLS

Issued 5-15-63
Revised

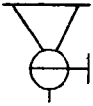
1. PURPOSE: This Aerospace Recommended Practice establishes a standard set of drafting schematic symbols to represent the components used in environmental systems of aerospace craft.
2. SCOPE: These recommendations provide a list of graphical symbols for use on environmental systems schematic diagrams. The symbols listed are those most commonly employed on engineering drawings.
3. USE OF SYMBOLS: A schematic diagram facilitates tracing the functioning of a system without regard to the actual physical size, shape, or location of the component, device, or parts. Schematic symbols provide a shorthand method to show graphically the functioning of an installation. A schematic symbol represents the function of a part in the system. A symbol for a unit is considered as representing the aggregate of all its parts (example, a unit may employ different drives). A symbol may be drawn to any proportional size that suits a particular drawing depending on reduction or enlargement anticipated. If essential for purposes of contrast, some symbols may be drawn relatively smaller than the other symbols on a diagram. An example of symbol usage is shown at the end of the list on Page 12.
 - 3.1 These symbols have been devised based upon the following concepts:
 - 3.1.1 A schematic diagram is one in which easily drawn symbols represent the actual part. The symbols are designed where possible to pictorially represent the functions the parts perform.
 - 3.1.2 Circles, squares, rectangles, triangles and lines (both curved and straight) are the basic building blocks or portions thereof.
 - 3.1.3 Symbols are constructed in the simplest manner using the basic blocks or portions thereof.
 - 3.1.4 Letter coding is used to indicate specific type of multi-purpose symbols (example, temperature or pressure gage).
 - 3.1.5 Intelligence lines are used to show where one unit is remotely connected to and controls another unit. The number of wires or lines employed to obtain the desired control is not indicated. Intelligence lines are represented by short dashed single lines. The type of intelligence used is identified by letter coding.
 - 3.1.6 All plumbing is indicated by solid double lines. The symbolization used within the lines indicates the medium employed.
4. NOMENCLATURE: The list of graphical symbols for use on environmental systems schematic diagrams is presented by the following pages.

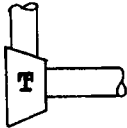
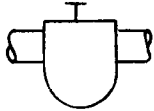
PREPARED BY SAE COMMITTEE A-9, AEROSPACE ENVIRONMENTAL SYSTEMS

ARP 780

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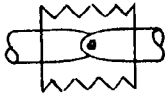
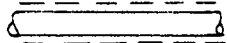
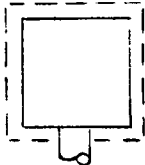
UNIT DESCRIPTION	SYMBOL AND/OR CODE
AIR INLET	
AIR OUTLET	
DRAIN (WITH A MANUAL VALVE)	
<u>DRIVES:</u>	
DIAPHRAGM, PNEUMATIC	
ELECTRIC MOTOR ALTERNATING CURRENT	
DIRECT CURRENT	
ELECTRIC SOLENOID ALTERNATING CURRENT	
DIRECT CURRENT	
HYDRAULIC MOTOR	

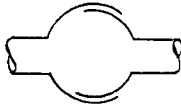
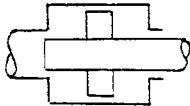
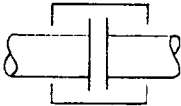
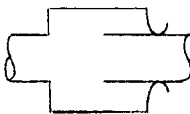
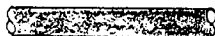
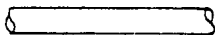
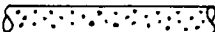
ENVIRONMENTAL SYSTEMS SCHEMATIC SYMBOLS	Issued 5-15-63 Revised	ARP 780
UNIT DESCRIPTION	SYMBOL AND/OR CODE	
DRIVES (CONT'D.) MANUAL PISTON TURBINE SPRING LOAD EJECTOR FILTER FLEX-SECTION, BRAIDED FLEX-SECTION, FREE	T       	

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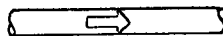
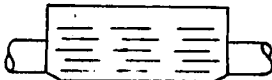
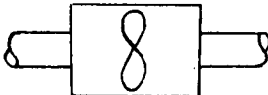
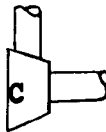
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UNIT DESCRIPTION	SYMBOL AND/OR CODE
FLEX-SECTION, RESTRAINED	
GAGE IDENTIFICATION * ABSOLUTE PRESSURE AP DIFFERENTIAL PRESSURE DP QUANTITY GAL, LB, ETC. RPM N TEMPERATURE T VACUUM V	
HEAT EXCHANGER	
HEATER, COMBUSTION	
HEATER, ELECTRIC	
INSULATION, LINE	
INSULATION, TANK OR RESERVOIR	

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UNIT DESCRIPTION		SYMBOL AND/OR CODE	
JOINT, BALL			
JOINT, PRESSURE COMPENSATING			
JOINT, ROTARY			
JOINT, SLIP			
LIGHT, INDICATOR IDENTIFICATION*			
AMBER A BLUE B GREEN G RED R WHITE W			
<u>LINES:</u>			
BLEED AIR			
CABIN AIR			
RAM AIR			

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UNIT DESCRIPTION			SYMBOL AND/OR CODE
LINES (CONT'D.)			
VENT AIR			
WATER			
STEAM			
AMMONIA GAS			
AMMONIA LIQUID			
FREON GAS			
FREON LIQUID			
NITROGEN GAS			
NITROGEN LIQUID			
OXYGEN GAS			
OXYGEN LIQUID			
FUEL			
ETHYLENE GLYCOL			
INTELLIGENCE			-----
ELECTRICAL			--- E ---
HYDRAULIC			--- H ---

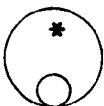
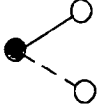
ENVIRONMENTAL SYSTEMS SCHEMATIC SYMBOLS		Issued 5-15-63 Revised	ARP 780
UNIT DESCRIPTION		SYMBOL AND/OR CODE	
LINES (CONT'D.)			
INTELLIGENCE (CONT'D.)			
PNEUMATIC		--- PH ---	
FLOW DIRECTION		 	
LINE CONNECTION			
LINE CONNECTION, QUICK DISCONNECT NON-SELF SEALING			
SELF-SEALING			
ORIFICE			
RESERVOIR			
<u>ROTATING UNITS:</u>			
BLOWER			
COMPRESSOR			

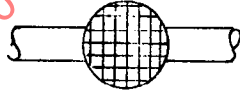
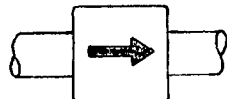
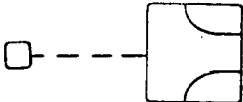
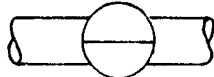
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UNIT DESCRIPTION	SYMBOL AND/OR CODE
ROTATING UNITS (CONT'D.) PUMP IDENTIFICATION * CENTRIFUGAL C GEAR G RECIPROCATING R SCREW S VANE VN	
<u>SENSORS:</u> AMBIENT PRESSURE	
COOLING EFFECT	
FLOW	
LIQUID LEVEL	
STATIC PRESSURE	
TEMPERATURE	

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UNIT DESCRIPTION	SYMBOL AND/OR CODE	
SENSORS (CONT'D.)		
TOTAL PRESSURE		
SHAFT		
STRAINER		
TANK		
<u>VALVES:</u>		
CHECK		
COMPARTMENT PRESSURE REGULATOR		
COMPARTMENT PRESSURE REGULATOR - REMOTE		
CONTROL - 2 POSITION, 2 PORT OPEN		
CLOSED	