

4. COMPONENTS:

The following figures set forth the basic component symbols, as well as modifiers that specify drives and accessories.

5. SPECIAL COMPONENTS:

It is recognized that most systems will require the occasional use of unique components not described in this document. Where possible, these should be represented by combinations of the symbols herein. The resulting combination for a given component should be surrounded by a dashed line, if necessary to make it clear that it is a single component. Several examples of composite symbols are presented in the figures.

6. PLUMBING:

Tubing and hoses should be represented by solid double lines. Each line should be identified as to function by use of the appropriate cross-hatch code described in the figures. It is recommended that line size (outside diameter for tubing, inside diameter for hose) be specified in the format \emptyset X.XX, suffixed with the appropriate material/type letter code listed in this document.

7. LEGENDS:

It is recommended that each system schematic contain a legend identifying the nomenclature of all symbols used. Numerical codes should be used to relate the symbols in the legend to the appropriate locations on the schematic.

8. COMPONENT DRAWINGS:

It is recommended that each component drawing include a schematic of the component represented thereon.

9. OTHER SYMBOLS AND SYSTEMS:

Refer to SAE AS1290 for symbols relevant to actuators, control valves, and other components associated with hydraulic and pneumatic systems.

10. NOMENCLATURE:

Refer to SAE AIR1660 and AIR1615 for definitions of the nomenclature used herein.

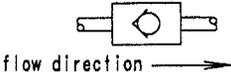
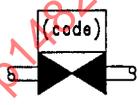
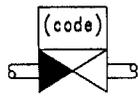
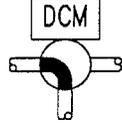
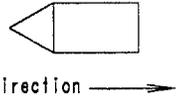
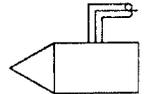
<p><u>CODES FOR ELECTRICAL DRIVES:</u></p> <p>AC MOTOR ACM</p> <p>DC MOTOR DCM</p> <p>STEPPER MOTOR SM</p> <p>TORQUE MOTOR TM</p> <p>AC SOLENOID ACS</p> <p>DC SOLENOID DCS</p>	<p><u>CHECK VALVE:</u> </p>
<p><u>CODES FOR PNEUMATIC DRIVES:</u></p> <p>AIR TURBINE MOTOR ATM</p> <p>AIR PRESSURE MOTOR APM</p>	<p><u>SHUTOFF VALVES:</u></p> <p>MANUAL </p> <p>ACTUATED, NORMALLY-OPEN </p> <p>ACTUATED, NORMALLY-CLOSED </p>
<p><u>CODES FOR HYDRAULIC DRIVES:</u></p> <p>FUEL TURBINE MOTOR FTM</p> <p>HYDRAULIC MOTOR HM</p> <p>FUEL PRESSURE MOTOR FPM</p>	<p><u>ROTARY VALVES:</u></p> <p>BASIC SYMBOL </p> <p>EXAMPLE- 3 WAY, 2 POSITION, DC MOTOR ACTUATED </p>
<p><u>CODES/SYMBOLS FOR MECHANICAL DRIVES:</u></p> <p>ENGINE DRIVEN ED</p> <p>FLOAT ACTUATED </p> <p>MANUAL </p> <p>GRAVITY ACTUATED </p>	<p><u>LEVEL CONTROL SHUTOFF VALVES:</u></p> <p>BASIC SYMBOLS</p> <hr style="border-top: 1px dashed black;"/> <p>INTEGRAL </p> <p>REMOTE PILOT-OPERATED </p>
<p><u>MISCELLANEOUS CODES:</u></p> <p>NORMALLY-OPEN NO</p> <p>NORMALLY-CLOSED NC</p>	

FIGURE 1

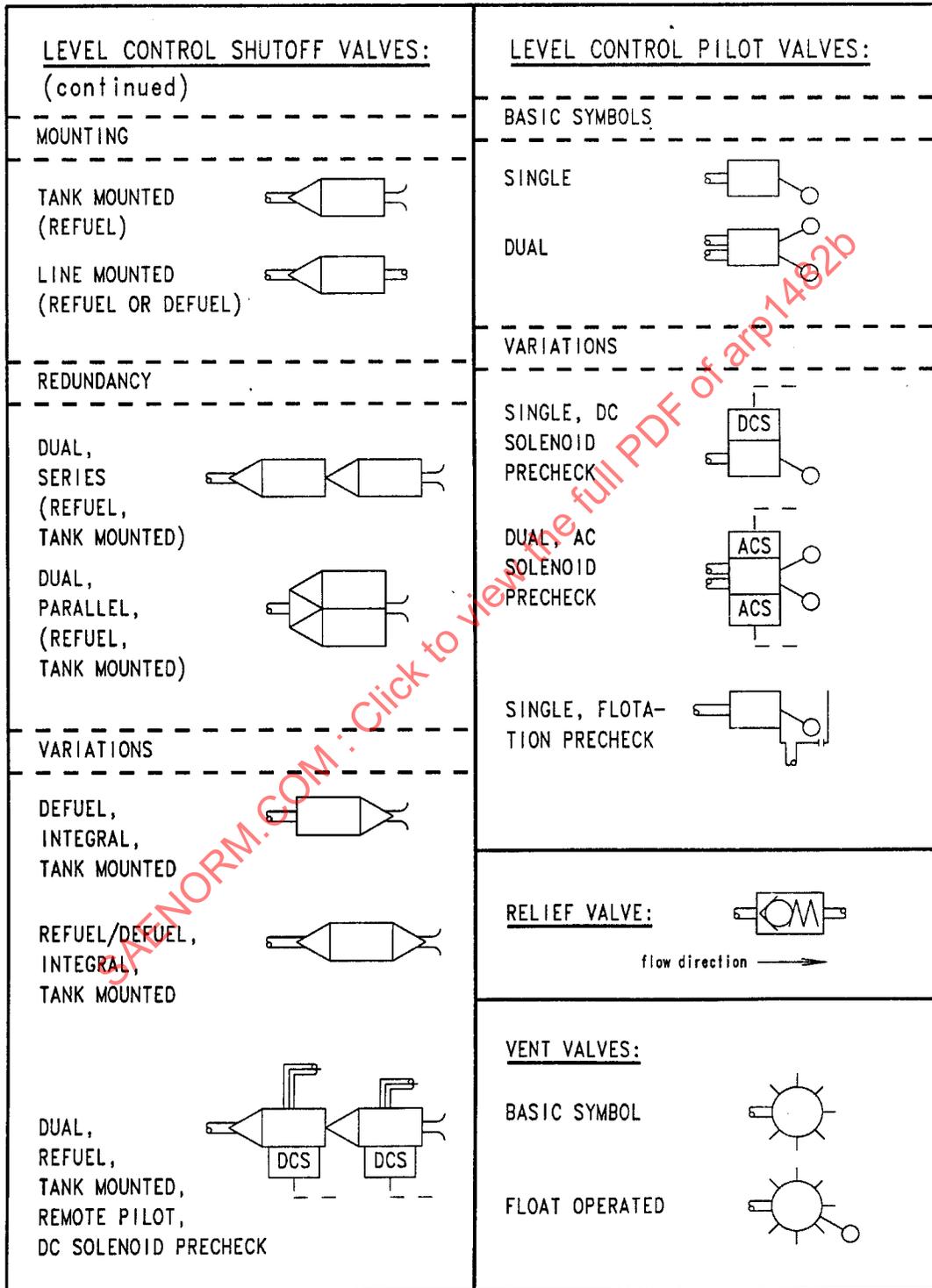


FIGURE 1 (Continued)

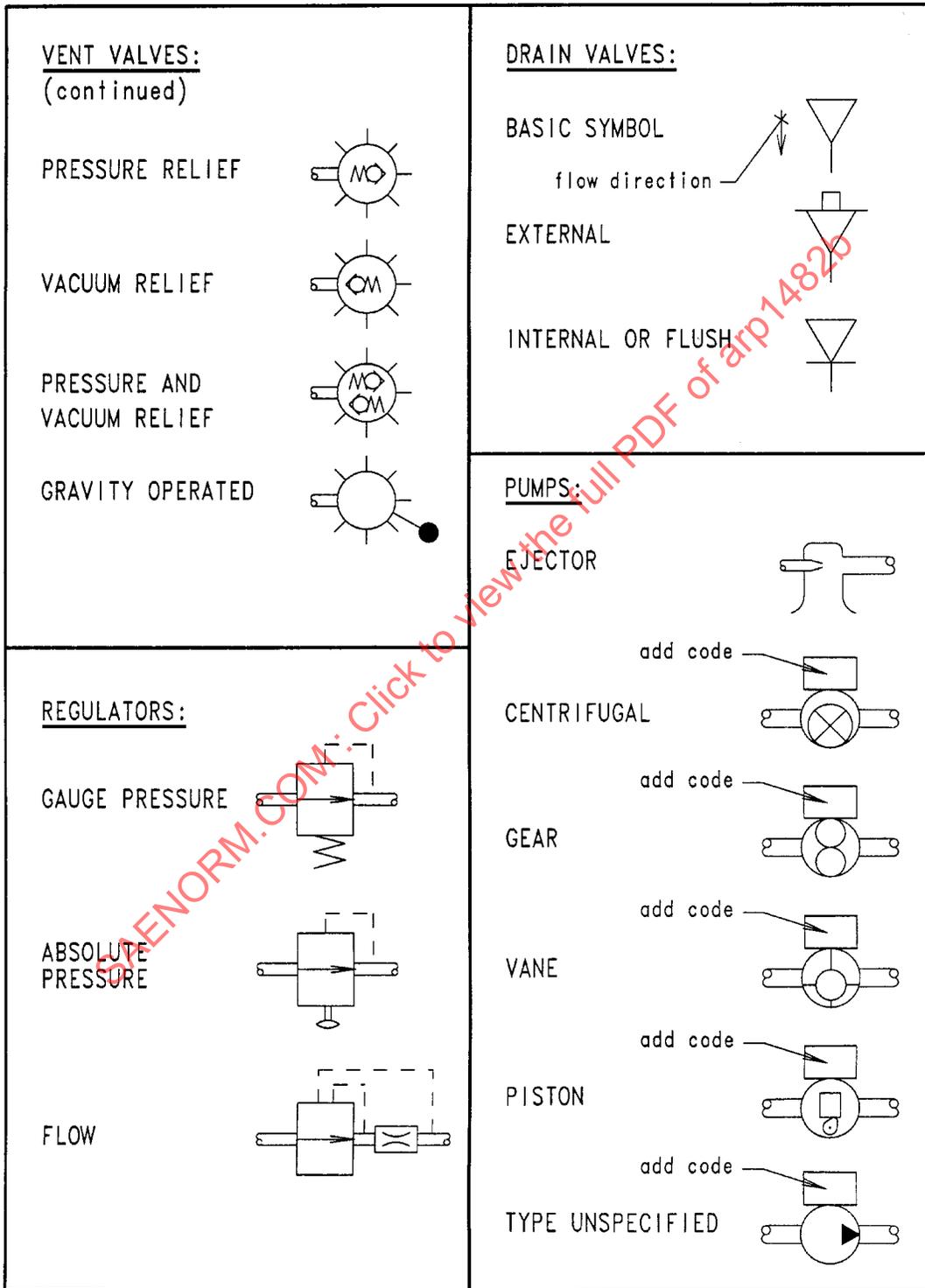


FIGURE 1 (Continued)

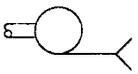
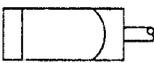
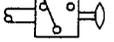
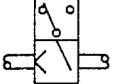
<u>GRAVITY REFUELING CONNECTIONS:</u>		<u>AERIAL REFUELING CONNECTIONS:</u>	
CAP- BASIC SYMBOL		REFUELING HOSE AND DROGUE (mates with probe)	
FLUSH CAP		RECEIVER PROBE (mates with drogue)	
EXTENDED CAP		REFUELING BOOM (mates with receptacle)	
SCUPPER		RECEIVER RECEPTACLE (mates with boom)	
<u>PRESSURE REFUELING CONNECTIONS:</u>		<u>INDICATOR SWITCHES:</u>	
SINGLE POINT CAP AND ADAPTER (BASIC SYMBOL)		GAUGE PRESSURE	
FLUSH CAP AND ADAPTER		ABSOLUTE PRESSURE	
EXTENDED CAP AND ADAPTER		DIFFERENTIAL PRESSURE	
CLOSED CIRCUIT RECEPTACLE (RETURN TO REFUEL STATION)		FLOAT	
		TEMPERATURE	
		FLOW RATE	

FIGURE 1 (Continued)

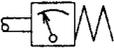
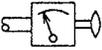
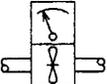
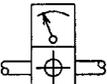
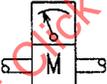
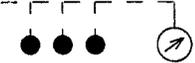
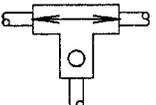
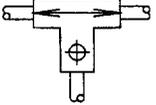
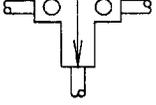
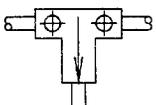
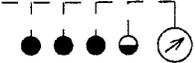
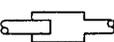
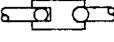
<p><u>TRANSDUCERS:</u></p> <p>GAUGE PRESSURE </p> <p>ABSOLUTE PRESSURE </p> <p>DIFFERENTIAL PRESSURE </p> <p>FLOAT </p> <p>TEMPERATURE </p> <p>FLOW RATE (VOLUMETRIC) </p> <p>FLOW RATE (POSITIVE DISPLACEMENT) </p> <p>MASS FLOW RATE (ANGULAR MOMENTUM RECOVERY TYPE) </p>	<p><u>QUANTITY MEASURING DEVICES:</u> (continued)</p> <p>DENSITOMETER </p> <p>DRIP STICK </p> <p>DIP STICK </p>
<p><u>QUANTITY MEASURING DEVICES:</u></p> <p>ELECTRONIC (BASIC SYMBOL) </p>	<p><u>FLOWRATE PROPORTIONERS:</u></p> <p>VOLUMETRIC DIVIDER </p> <p>POSITIVE DISPLACEMENT DIVIDER </p> <p>VOLUMETRIC EQUALIZER </p> <p>POSITIVE DISPLACEMENT EQUALIZER </p>
<p>EXTERNAL COMPENSATION </p> <p>SELF COMPENSATION </p>	<p><u>COUPLINGS:</u></p> <p>QUICK DISCONNECT-NON-SELF-SEALING </p> <p>QUICK DISCONNECT-SELF-SEALING </p>

FIGURE 1 (Continued)

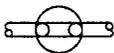
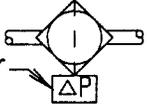
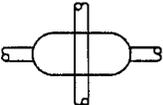
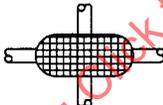
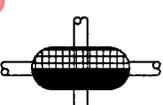
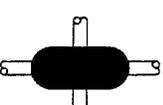
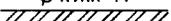
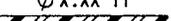
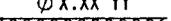
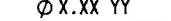
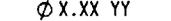
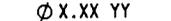
<p><u>COUPLINGS: (continued)</u></p> <p>BREAKAWAY VALVE- SELF-SEALING </p> <p>COMBINATION SELF- SEALING DISCONNECT AND BREAKAWAY VALVE </p>	<p><u>SEPARATORS:</u></p> <p>MICRONIC FILTER  ΔP indicator (if used)</p> <p>SCREEN </p> <p>STRAINER </p> <p>GAS/LIQUID </p>
<p><u>HEAT EXCHANGERS:</u></p> <p>BASIC SYMBOL </p> <p>GAS TO GAS </p> <p>LIQUID TO GAS OR GAS TO LIQUID </p> <p>LIQUID TO LIQUID </p>	<p><u>LINES:</u></p> <p>ENGINE FEED  ϕ X.XX YY</p> <p>MOTIVE FLOW  ϕ X.XX YY</p> <p>REFUEL  ϕ X.XX YY</p> <p>TRANSFER  ϕ X.XX YY</p> <p>REFUEL/TRANSFER  ϕ X.XX YY</p> <p>DEFUEL  ϕ X.XX YY</p> <p>VENT  ϕ X.XX YY</p> <p>PRESSURIZATION  ϕ X.XX YY</p> <p>SENSING  ϕ X.XX YY</p> <p>DRAIN  ϕ X.XX YY</p> <p>ELECTRICAL </p> <p>note: X.XX = line size; YY = material (see pg. 2)</p>
<p><u>SEPARATORS:</u></p> <p>FILTER  ΔP indicator (if used)</p>	

FIGURE 1 (Continued)