



Standard Practice for Mechanical Symbols, Shipboard—Heating, Ventilation, and Air Conditioning (HVAC)¹

This standard is issued under the fixed designation F 856; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This practice covers symbols used on heating, ventilation, and air conditioning (HVAC) detailed engineering drawings.

1.2 These symbols may be useful on contract and preliminary design drawings.

2. Significance and Use

2.1 When symbolic representation is required for an item not covered in this standard, the character of the symbol shall be adequately identified and shall be subject to one interpretation only. If necessary, a note shall be attached to the symbol for further clarity.

2.2 Symbolic representation does not require exact or scale layouts of the actual system. Therefore, the symbols may be used in all views of the system layout.

3. Abbreviations

3.1 The abbreviations (for use only in this practice) are defined as follows:

AF = axial fan,
AFD = automatic fire damper with manual override,
BD = balance damper,
CC = cooling coil,
CCW = counter clockwise,
CE = convection heater, electric,
CF = centrifugal fan,
CS = convection heater, steam,
CW = clockwise,
EH = turret heater electric,

EP = duct preheater, electric,
ER = duct reheater, electric,
EU = electric unit heater,
F = filter,
FA = flame arrester,
FCA = fan coil assembly,
FCU = fan coil unit,
G = grille,
GC = gravity cooling coil,
H = humidistat, humidifier,
L = louver,
M = motor,
MFD = manual fire damper,
NE = natural exhaust,
NS = natural supply,
R = return air,
RO = remote operated,
SFD = solenoid fire damper,
SP = preheater, steam,
SR = reheater, steam,
SU = steam unit heater,
T = thermostat,
TE = tempered air, electric,
TS = tempered air, steam,
U = undercut,
UC = unit cooler,
V = volume, volumetric, and
VC = volume control.

4. Illustrations



















4.1 Illustrations for HVAC symbols are given in Figs. 1-4.

5. Keywords

5.1 air conditioning; design symbols; engineering symbols; heating; HVAC; marine; ship; symbols; ventilation

¹ This practice is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.11 on Machinery and Piping Systems.

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AIR FLOW DUCTS			AIR FLOW DUCTS		
NO	TITLE	SYMBOL	NO	TITLE	SYMBOL
1	SUPPLY DUCT		11	DUCT - UP AND DOWN	
2	EXHAUST DUCT		12	DUCT - UP AND DOWN WATERTIGHT OR CLASS "A" CONSTRUCTION (SEE NOTE 1)	
3	AIR CONDITIONING DUCT		13	TRUNK UP	
4	RETURN AIR DUCT		14	TRUNK UP WATERTIGHT OR CLASS "A" CONSTRUCTION (SEE NOTE 1)	
5	WATERTIGHT OR CLASS "A" CONSTRUCTION DUCT (SEE NOTE 1)		15	TRUNK DOWN	
6	FLEXIBLE CONNECTION		16	TRUNK DOWN WATERTIGHT OR CLASS "A" CONSTRUCTION (SEE NOTE 1)	
7	DUCT UP		17	TRUNK UP AND DOWN	
8	DUCT UP WATERTIGHT OR CLASS "A" CONSTRUCTION (SEE NOTE 1)		18	TRUNK UP AND DOWN WATERTIGHT OR CLASS "A" CONSTRUCTION (SEE NOTE 1)	
9	DUCT DOWN				
10	DUCT DOWN WATERTIGHT OR CLASS "A" CONSTRUCTION (SEE NOTE 1)				

NOTE 1—"Class A" is in reference to bulkhead classification as described in the Code of Federal Regulations, Title 46, Section 92.07-5. (Available from Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.)

FIG. 1 HVAC Symbols for Air Flow Ducts

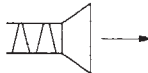


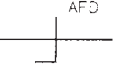
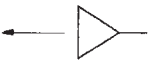
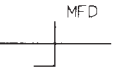



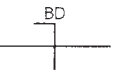

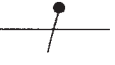
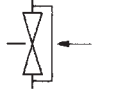






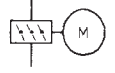
DUCT FITTINGS			DUCT FITTINGS		
NO	TITLE	SYMBOL	NO	TITLE	SYMBOL
1	SUPPLY TERMINAL TYPE "E"		11	WATERTIGHT COVER, MANUAL OR FIRE CLOSURE CLASS "A" CONSTRUCTION, MANUAL (SEE NOTE 1)	
2	SUPPLY TERMINAL DOWN TO DECK		12	FIRE DAMPER, AUTOMATIC W/ MANUAL OVERRIDE	 AFD
3	SUPPLY TERMINAL CONE		13	FIRE DAMPER, MANUAL	 MFD
4	EXHAUST TERMINAL DOWN TO DECK		14	FIRE DAMPER, SOLENOID	 SFD
5	EXHAUST TERMINAL CONE		15	BALANCE DAMPER	 BD
6	EXHAUST GRILLE		16	DIVERTING DAMPER	
7	RETURN AIR GRILLE		17	VOLUMETRIC DAMPER	 V
8	DIFFUSER		18	SLIDING DAMPER	
9	REGISTER		19	MULTI-LOUVER DAMPER, MANUAL OPERATED	
10	AIR INTAKE/DISCHARGE LIFT TYPE		20	MULTI-LOUVER DAMPER, MOTOR OPERATED	 M

FIG. 2 HVAC Symbols for Duct Fittings

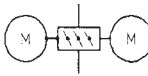

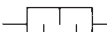



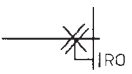

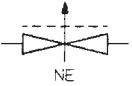
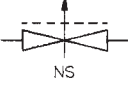



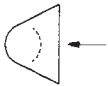

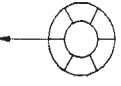









DUCT FITTINGS			DUCT FITTINGS		
NO	TITLE	SYMBOL	NO	TITLE	SYMBOL
21	MULTI-LOUVER DAMPER, MOTOR OPERATED 2 MOTORS		31	NATURAL SUPPLY THROUGH UNDERCUT DOOR	
22	SILENCER		32	GOOSENECK	
23	WATERTIGHT CLOSURE HORIZONTAL		33	DOUBLE GOOSENECK	
24	WATERTIGHT CLOSURE HORIZONTAL W/ REMOTE OPERATING GEAR				
25	WATERTIGHT CLOSURE VERTICAL				
26	NATURAL EXHAUST THROUGH BULKHEAD W/ WIRE MESH				
27	NATURAL SUPPLY THROUGH BULKHEAD W/ WIRE MESH				
28	NATURAL EXHAUST THROUGH LOUVERED DOOR				
29	NATURAL SUPPLY THROUGH LOUVERED DOOR				
30	NATURAL EXHAUST THROUGH UNDERCUT DOOR				

FIG. 2 HVAC Symbols for Duct Fittings (continued)

VENTILATORS					
NO	TITLE	SYMBOL	NO	TITLE	SYMBOL
1	COWL VENTILATOR		11	HUMIDIFIER	
2	NATURAL EXHAUST VENTILATOR (SEE NOTE 2)		12	GRAVITY COOLING COIL	
3	AXIAL FLOW FAN HORIZONTAL				
4	AXIAL FLOW FAN VERTICAL				
5	CENTRIFUGAL FAN LEFT HAND (CCW)				
6	CENTRIFUGAL FAN RIGHT HAND (CW)				
7	PROPELLER FAN				
8	FLAME ARRESTOR				
9	FAN COIL ASSEMBLY				
10	FAN COIL UNIT				

NOTE 1—This symbol is commonly referred to as a Breidert ventilator.

FIG. 3 HVAC Symbols for Ventilators

APPLIANCES			APPLIANCES		
NO	TITLE	SYMBOL	NO	TITLE	SYMBOL
1	MIXING BOX DUAL DUCT AIR CONDITIONING		11	DUCT PREHEATER, ELECTRIC	
2	GREASE INTERCEPTOR HOOD (SEE NOTE 3)		12	DUCT REHEATER, ELECTRIC	
3	COOLING COIL		13	UNIT HEATER, ELECTRIC	
4	PREHEATER COIL, STEAM		14	UNIT HEATER, STEAM	
5	REHEATER COIL, STEAM		15	UNIT COOLER	
6	TEMPERED AIR HEATER, ELECTRIC		16	AIR FILTER, PANEL	
7	TEMPERED AIR HEATER, STEAM		17	AIR FILTER, ROLL	
8	CONVECTION HEATER, ELECTRIC		18	FILTER GAGE	
9	CONVECTION HEATER, STEAM		19	THERMOSTAT	
10	TURRET HEATER, ELECTRIC		20	HUMIDISTAT	

NOTE 1—This symbol is commonly referred to as a Gaylord hood.

FIG. 4 HVAC Symbols for Appliances



F 856 – 97 (2004)

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