



SPORLAN

Modulating 3-Way Valve

Types MTW-7S, -9S, -17S, -21S



Patents: US 9371920, EP2956697
and other International Patents Pending



ENGINEERING YOUR SUCCESS.

Compatible Controllers

IB-G Interface Board

- Simplify MTW control
 - 0-10 VDC or 4-20 mA
- See Bulletin 100-50-2.1 for more information on the IB-G Interface Board.



Kelvin II Series

- The temperature and pressure controls allow precise stand-alone control of air temperature or pressure.
- See Bulletin 100-50-5 for more information about the Kelvin II Series Controls.



Temperature Control



Pressure Control

Modulating 3-Way Valve

Types MTW-7S, -9S, -17S, -21S

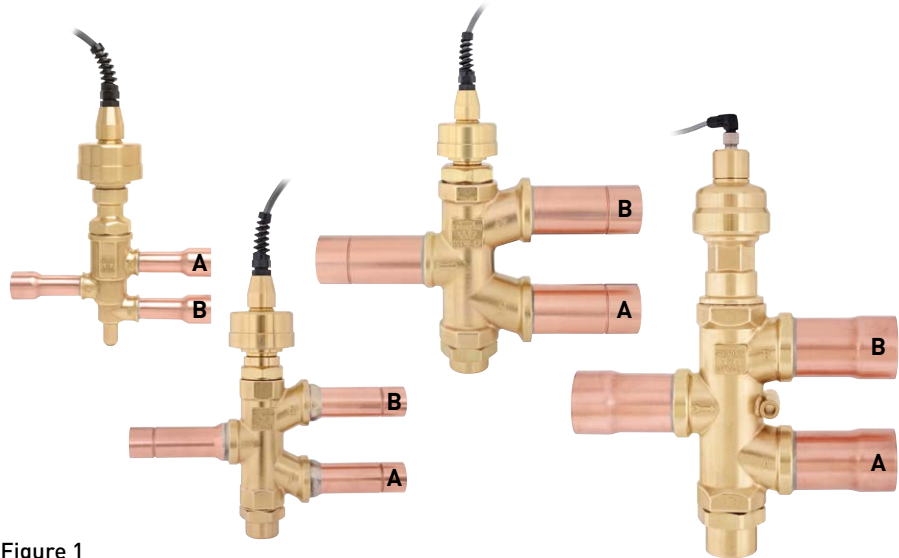


Figure 1

Features and Benefits

- Improved performance from modulated control
- Reduction in number of modulation valves required per system
 - Simplified system piping enables piping material cost reduction
 - Reduced install time enables labor cost reduction
 - Single actuator reduces control and wiring complexity
- Bi-sealing piston assembly

Description

The Modulating 3-Way (MTW) valve allows control of refrigerant flow through two outlet ports. Two valve pistons are attached to a connecting rod and also to the stepper motor. As the MTW valve modulates one port opens and the other port closes. The movement of the valve pistons relative to the two ports is inversely proportional.

Application

The MTW valve is typically located in the discharge line for dehumidification, reheat and heat reclaim applications. Sporlan recommends piping Outlet A to the normal condenser and Outlet B to the reclaim/reheat condenser. Outlet connections A and B are designated on the valve body. See Figure 1.

See capacity tables beginning on page 4. For additional refrigerant capacities and other applications, please contact Sporlan Division technical support.

Specifications

SPECIFICATION	MTW-7S, MTW-9S and MTW-17S	MTW-21S
Motor Type	Permanent Magnet Bipolar Internal (Wet) Motor	
Compatible Refrigerant	All Common HCFC, HFC & HFO Refrigerants	
Compatible Oil	All Common Mineral, Polyolester & Aklylbenzene Oils	
Supply Voltage	12 Volts DC $\pm$ 10%	12 Volts DC +5% / -10%
Cable	Hermetic (20' Standard)	Removable M12 Connection, 20' Standard
Phase Resistance	75 Ohms $\pm$ 10%	40 Ohms $\pm$ 10%
Holding Current	Not Recommended	
Number of Full Steps	6,386 Full Steps	
Step Rate	200 Steps per Second (PPS)	
Initialization	6,386 Steps Closing	
Overdriving	Recommended on 10% Overdrive Closed per Day Maximum	
MRP/MAP/MWP	700 PSIG (48.3 Barg)	
MOPD	700 PSIG (48.3 Barg)	
Maximum Internal Leakage	400 CC/Min at 100 PSID (6.9 Bar) Dry Air	
Maximum External Leakage	0.10 Oz/yr. at 300 PSIG (2.8 g/year at 20 Bar)	
Maximum Fluid Temperature Range	-40°F to 240°F (-40°C to 116°C)	
Ambient Temperature Range	-40°F to 140°F (-40°C to 60°C)	
Installation Maximum Temperature	240°F (116°C) for 15 Minutes (Wet Rag Required for Brazing)	
Relative Humidity	0-100% (Condensing)	
Mounting Orientation	Motor Assembly Above Horizontal	
Flow Direction	Forward Flow Only	
Certification	UL File: SA5460, CCN: SFJQ2/SFJQ8 (MTW-9S and -17S)	
Clearance to Remove Motor	MTW-7S - 3-7/8" MTW-9S - 5-1/4" MTW-17S - 6-3/4"	8-5/8"
Clearance to Remove Bottom Plug	MTW-7S - N/A MTW-9S - 2-1/4" MTW-17S - 2-3/4"	2-5/8"

Nomenclature

MTW	-9(S)	-9 ODF	-20'	-S
Modulating 3-Way Valve	Valve Model (Serviceable)	Fitting Size and Type	Cable Length	Stripped and Tinned Cable Ends

Wiring

In normal valve operation direction, 100% open = "A" port closed.

Product Offering

PART DESCRIPTION	PART NUMBER
MTW-7S - 7 ODF 20'-S	183935
MTW-7S - 5 ODF 20'-S	183934
MTW-7S - 4 ODF 20'-S	183933
MTW-9S - 9 ODF 20'-S	183918
MTW-9S - 7 ODF 20'-S	183919
MTW-9S - 5 ODF 20'-S	183920
MTW-17S - 17 ODF 20'-S	183921
MTW-17S - 13 ODF 20'-S	183922
MTW-17S - 11 ODF 20'-S	183923
MTW-21S - 21 ODF - M12 20'-S	183932
MTW-21S - 17 ODF - M12 20'-S	183831
MTW-21S - 13 ODF - M12 20'-S	183930
KIT MTW-7S 20'-S	183936
KIT MTW-9S 20'-S	183924
KIT MTW-17S 20'-S	183925
KIT MTW-21S 20'-S	183926

Flow Capacity - Discharge (Tons)

Valve Model	Evaporator Temp (°F)	Refrigerant																			
		R-22					R-134a					R-407A					R-407C				
		Pressure Drop Across Valve (psid)																			
		0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10
MTW-7S	40	2.7	3.9	6.9	9.1	13.2	2.3	3.3	5.9	7.8	11.4	2.7	3.9	7.0	9.2	13.4	2.7	4.0	7.1	9.3	13.5
	20	2.6	3.7	6.7	8.8	12.8	2.2	3.2	5.7	7.5	11.0	2.6	3.8	6.7	8.9	12.9	2.6	3.8	6.8	8.9	13.0
	0	2.5	3.6	6.4	8.4	12.3	2.1	3.0	5.4	7.2	10.5	2.5	3.6	6.5	8.5	12.3	2.5	3.7	6.5	8.6	12.4
	-20	2.4	3.4	6.2	8.1	11.7	2.0	2.9	5.2	6.8	10.0	2.4	3.4	6.2	8.1	11.7	2.4	3.5	6.2	8.2	11.9
	-40	2.3	3.3	5.9	7.7	11.2	1.9	2.7	4.9	6.5	9.4	2.3	3.3	5.8	7.6	11.1	2.3	3.3	5.9	7.7	11.3
MTW-9S	40	5.0	7.0	12.1	15.7	22.3	4.3	6.0	10.5	13.6	19.4	5.0	7.1	12.2	15.8	22.5	5.1	7.2	12.4	16.0	22.8
	20	4.8	6.8	11.7	15.2	21.6	4.1	5.8	10.0	13.0	18.6	4.8	6.8	11.8	15.2	21.6	4.9	6.9	11.9	15.4	21.9
	0	4.6	6.5	11.3	14.6	20.7	3.9	5.5	9.6	12.4	17.8	4.6	6.5	11.3	14.6	20.7	4.7	6.6	11.4	14.8	21.0
	-20	4.4	6.3	10.8	14.0	19.9	3.7	5.3	9.1	11.8	16.9	4.4	6.2	10.8	13.9	19.8	4.5	6.3	10.9	14.1	20.1
	-40	4.2	6.0	10.3	13.3	19.0	3.5	5.0	8.7	11.2	16.1	4.2	5.9	10.2	13.2	18.7	4.3	6.0	10.4	13.4	19.0
MTW-17S	40	9.5	13.2	22.5	28.9	40.8	8.1	11.4	19.5	25.1	35.6	9.5	13.3	22.7	29.1	41.1	9.6	13.5	23.0	29.5	41.6
	20	9.1	12.8	21.8	28.0	39.5	7.8	10.9	18.7	24.1	34.1	9.2	12.8	21.8	28.0	39.5	9.3	13.0	22.1	28.4	40.1
	0	8.8	12.3	21.0	26.9	38.0	7.5	10.5	17.9	23.0	32.7	8.8	12.3	20.9	26.9	37.9	8.9	12.4	21.2	27.3	38.5
	-20	8.4	11.8	20.1	25.8	36.4	7.1	10.0	17.0	21.9	31.1	8.4	11.7	19.9	25.6	36.1	8.5	11.9	20.3	26.0	36.7
	-40	8.0	11.2	19.2	24.6	34.7	6.7	9.4	16.1	20.8	29.5	7.9	11.1	18.9	24.3	34.2	8.1	11.3	19.2	24.7	34.9
MTW-21S	40	19.3	25.7	40.7	50.4	67.7	16.8	22.5	35.6	44.3	59.8	19.2	25.6	40.5	50.2	67.5	19.6	26.1	41.3	51.3	68.9
	20	18.7	24.9	39.4	48.8	65.6	16.2	21.6	34.2	42.5	57.5	18.5	24.7	39.0	48.4	65.0	18.9	25.2	39.9	49.5	66.5
	0	18.0	24.0	38.0	47.1	63.2	15.5	20.7	32.8	40.7	55.0	17.7	23.7	37.4	46.4	62.4	18.2	24.2	38.3	47.5	63.9
	-20	17.3	23.1	36.5	45.2	60.7	14.8	19.7	31.2	38.8	52.4	16.9	22.6	35.7	44.3	59.5	17.4	23.2	36.6	45.4	61.0
	-40	16.5	22.1	34.9	43.2	58.1	14.0	18.7	29.6	36.8	49.7	16.1	21.5	34.0	42.1	56.6	16.5	22.0	34.8	43.2	58.1

Valve Model	Evaporator Temp (°F)	Refrigerant																			
		R-407F					R-404A					R-507A					R-410A				
		Pressure Drop Across Valve (psid)																			
		0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10
MTW-7S	40	2.9	4.2	7.4	9.8	14.2	2.6	3.7	6.6	8.7	12.6	2.6	3.7	6.6	8.6	12.5	3.4	4.9	8.7	11.3	16.4
	20	2.8	4.0	7.2	9.4	13.7	2.5	3.5	6.3	8.3	12.0	2.5	3.5	6.3	8.3	12.0	3.3	4.7	8.4	11.0	15.9
	0	2.7	3.9	6.9	9.0	13.1	2.3	3.4	6.0	7.9	11.5	2.3	3.4	6.0	7.9	11.5	3.2	4.5	8.1	10.6	15.4
	-20	2.6	3.7	6.6	8.6	12.5	2.2	3.2	5.7	7.5	10.9	2.2	3.2	5.7	7.5	10.9	3.0	4.4	7.8	10.2	14.7
	-40	2.4	3.5	6.2	8.2	11.9	2.1	3.0	5.4	7.1	10.2	2.1	3.0	5.4	7.0	10.2	2.9	4.2	7.4	9.7	14.0
MTW-9S	40	5.3	7.5	13.0	16.8	23.9	4.7	6.6	11.4	14.8	21.0	4.7	6.6	11.4	14.7	20.9	6.2	8.7	15.0	19.4	27.5
	20	5.2	7.3	12.6	16.2	23.1	4.5	6.3	11.0	14.1	20.1	4.5	6.3	10.9	14.1	20.1	6.0	8.5	14.6	18.8	26.7
	0	5.0	7.0	12.1	15.6	22.1	4.3	6.0	10.4	13.5	19.2	4.3	6.0	10.4	13.5	19.1	5.8	8.2	14.1	18.2	25.7
	-20	4.7	6.7	11.5	14.9	21.1	4.1	5.7	9.9	12.8	18.2	4.1	5.7	9.9	12.7	18.1	5.6	7.8	13.5	17.4	24.7
	-40	4.5	6.3	10.9	14.1	20.1	3.8	5.4	9.3	12.0	17.1	3.8	5.4	9.3	12.0	17.1	5.3	7.5	12.9	16.6	23.6
MTW-17S	40	10.1	14.2	24.1	31.0	43.7	8.9	12.4	21.1	27.1	38.2	8.8	12.4	21.1	27.0	38.1	11.7	16.3	27.8	35.6	50.1
	20	9.8	13.7	23.3	29.9	42.1	8.5	11.9	20.2	26.0	36.6	8.5	11.8	20.2	25.9	36.5	11.3	15.8	27.0	34.6	48.6
	0	9.4	13.1	22.4	28.7	40.5	8.1	11.3	19.3	24.8	34.9	8.1	11.3	19.2	24.7	34.8	10.9	15.3	26.0	33.4	46.9
	-20	9.0	12.5	21.4	27.4	38.7	7.7	10.7	18.3	23.5	33.1	7.7	10.7	18.2	23.4	33.0	10.5	14.7	25.0	32.1	45.1
	-40	8.5	11.9	20.3	26.1	36.8	7.2	10.1	17.2	22.1	31.2	7.2	10.1	17.2	22.0	31.1	10.0	14.0	23.9	30.6	43.1
MTW-21S	40	20.5	27.4	43.3	53.7	72.1	17.6	23.5	37.1	46.0	61.7	17.5	23.3	36.9	45.7	61.4	23.3	31.1	49.1	60.7	81.4
	20	19.8	26.5	41.8	51.8	69.6	16.9	22.5	35.6	44.1	59.2	16.8	22.4	35.4	43.8	58.9	22.6	30.2	47.7	59.1	79.1
	0	19.1	25.4	40.2	49.9	67.0	16.1	21.5	33.9	42.1	56.5	16.0	21.3	33.7	41.8	56.1	21.9	29.2	46.1	57.1	76.5
	-20	18.3	24.4	38.5	47.7	64.1	15.3	20.4	32.2	39.9	53.6	15.2	20.2	32.0	39.6	53.2	21.1	28.1	44.4	55.0	73.7
	-40	17.4	23.2	36.7	45.5	61.1	14.4	19.2	30.4	37.6	50.6	14.3	19.1	30.1	37.4	50.2	20.2	26.9	42.5	52.7	70.6

Capacities based upon 100°F condensing temperature, 60°F liquid entering expansion valve, isentropic compression plus 50°F, evaporator temperature as shown plus 25°F superheat suction gas. Reference the table below for liquid correction factors.

Correction Factors

Discharge and Suction Applications - (°F)

REFRIGERANT	Liquid Temperature Entering Expansion Valve (°F)										
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
	Correction Factor, CF Liquid Temperature										
R-22	1.22	1.18	1.15	1.11	1.07	1.04	1.0	0.96	0.92	0.88	0.84
R-134a	1.27	1.22	1.18	1.14	1.09	1.05	1.0	0.95	0.91	0.86	0.81
R-407A	1.28	1.23	1.19	1.14	1.10	1.05	1.0	0.95	0.90	0.85	0.79
R-407C	1.26	1.22	1.18	1.13	1.09	1.05	1.0	0.95	0.91	0.86	0.81
R-407F	1.26	1.22	1.18	1.13	1.09	1.05	1.0	0.95	0.91	0.86	0.81
R-404A	1.34	1.29	1.23	1.17	1.12	1.06	1.0	0.94	0.88	0.81	0.74
R-507A	1.35	1.29	1.24	1.18	1.12	1.06	1.0	0.94	0.87	0.81	0.74
R-410A	1.26	1.22	1.18	1.13	1.09	1.05	1.0	0.95	0.90	0.85	0.80

These correction factors correct for net refrigerating effect and are based on an evaporator temperature of 0°F (-15°C), however they may be used for any evaporator temperature because the variation in the factors across the range is insignificant.

Flow Capacity - Discharge (kW)

Valve Model	Evaporator Temp (°C)	Refrigerant																			
		R-22					R-134a					R-407A					R-407C				
		Pressure Drop Across Valve (bar)																			
		0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7
MTW-7S	5	8.0	11.5	21.8	31.5	42.7	6.8	9.8	18.6	27.0	36.7	0.4	11.6	21.9	31.7	42.9	8.1	11.7	22.1	32.0	43.3
	-5	7.8	11.2	21.2	30.6	41.5	6.6	9.5	17.9	26.0	35.4	7.8	11.2	21.2	30.7	41.5	7.9	11.3	21.4	31.0	41.9
	-15	7.5	10.8	20.5	29.6	40.1	6.3	9.1	17.2	25.0	34.1	7.5	10.8	1.1	29.5	40.0	7.6	10.9	20.6	29.9	40.5
	-25	7.3	10.5	19.7	28.6	38.7	6.1	8.7	16.5	24.0	32.7	7.2	10.4	19.6	1.6	38.4	7.3	10.5	19.8	28.7	38.9
	-35	7.0	10.0	19.0	27.4	37.2	5.8	8.3	15.8	22.9	31.2	6.9	9.9	18.7	27.1	36.7	7.0	10.1	19.0	27.5	37.2
MTW-9S	5	15.0	21.1	38.4	54.5	72.5	12.8	18.0	32.9	46.9	62.7	15.0	21.1	38.5	54.5	72.5	15.2	21.4	39.0	55.2	73.5
	-5	14.6	20.5	37.3	52.9	70.4	12.4	17.4	31.8	45.2	60.5	14.5	20.5	37.2	52.8	70.2	14.7	20.7	37.7	53.5	71.2
	-15	14.1	19.9	36.1	51.2	68.2	11.9	16.8	30.6	43.5	58.2	14.0	19.7	35.9	50.9	67.7	14.2	20.0	36.4	51.6	68.7
	-25	13.6	19.2	34.9	49.4	65.8	11.4	16.1	29.3	41.7	55.8	13.4	18.9	34.5	48.9	65.0	13.6	19.2	35.0	49.6	66.1
	-35	13.1	18.4	33.5	47.5	63.3	10.9	15.3	28.0	39.9	53.3	12.9	18.1	33.0	46.7	62.2	13.1	18.4	33.5	47.5	63.3
MTW-17S	5	28.5	39.9	71.6	101	133	24.4	34.2	61.5	86.7	115	28.5	39.9	71.5	100	133	28.9	40.4	72.5	102	135
	-5	27.7	38.8	69.5	97.7	129	23.6	33.0	59.4	83.7	111	27.6	38.6	69.2	97.2	129	28.0	39.1	70.2	98.7	131
	-15	26.9	37.5	67.3	94.6	125	22.7	31.7	57.1	80.6	107	26.6	37.2	66.8	93.8	124	27.0	37.8	67.8	95.3	126
	-25	25.9	36.2	65.0	91.3	121	21.8	30.4	54.8	77.2	103	25.6	35.8	64.1	90.1	119	26.0	36.3	65.2	91.6	121
	-35	24.9	34.8	62.5	87.8	116	20.8	29.1	52.3	73.8	98.1	24.5	34.2	61.4	86.2	114	24.9	34.8	62.5	87.8	116
MTW-21S	5	59.5	79.3	131	176	223	51.8	69.0	114	154	196	58.9	78.5	130	174	221	60.2	80.3	133	178	226
	-5	57.9	77.1	127	171	217	50.0	66.7	110	148	189	57.1	76.1	126	168	214	58.4	77.8	129	172	219
	-15	56.1	74.8	124	166	210	48.1	64.2	106	143	182	55.1	73.4	121	163	207	56.4	75.2	124	167	212
	-25	54.2	72.3	120	160	203	46.2	61.6	102	137	175	53.0	70.6	117	156	199	54.3	72.4	120	160	204
	-35	52.3	69.7	115	154	196	44.1	58.9	97.5	131	167	50.7	67.7	112	150	190	52.1	69.5	115	154	196

Valve Model	Evaporator Temp (°C)	Refrigerant																			
		R-407F					R-404A					R-507A					R-410A				
		Pressure Drop Across Valve (bar)																			
		0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7
MTW-7S	5	8.6	12.3	23.3	33.7	45.6	7.5	10.9	20.5	29.6	40.1	7.5	10.8	20.4	29.6	40.0	10.0	14.3	27.0	39.0	52.6
	-5	8.3	12.0	22.6	32.6	44.2	7.3	10.5	19.7	28.6	38.6	7.3	10.5	19.7	28.5	38.6	9.7	14.0	26.3	38.0	51.3
	-15	8.0	11.6	21.8	31.5	42.7	7.0	10.0	18.9	27.4	37.1	7.0	10.0	18.9	27.4	37.0	9.4	13.6	25.6	36.9	49.8
	-25	7.7	11.1	21.0	30.3	41.1	6.7	9.6	18.1	26.2	35.4	6.7	9.6	18.1	26.1	35.3	9.1	13.1	24.7	35.7	48.2
	-35	7.4	10.7	20.1	29.1	39.3	6.3	9.1	17.2	24.9	33.7	6.3	9.1	17.2	24.8	33.6	8.8	12.6	23.8	34.4	46.4
MTW-9S	5	16.0	22.5	41.0	58.0	77.2	13.9	19.6	35.7	50.6	67.3	13.9	19.6	35.6	50.5	67.1	18.4	26.0	47.2	66.7	88.5
	-5	15.5	21.8	39.7	56.3	74.9	13.4	18.9	34.5	48.8	64.9	13.4	18.9	34.4	48.7	64.7	18.0	25.3	46.1	65.1	86.4
	-15	15.0	21.1	38.4	54.4	72.4	12.9	18.2	33.1	46.8	62.3	12.9	18.1	33.0	46.7	62.1	17.5	24.6	44.7	63.3	83.9
	-25	14.4	20.3	37.0	52.4	69.7	12.3	17.4	31.6	44.8	59.5	12.3	17.3	31.5	44.6	59.3	16.9	23.8	43.3	61.2	81.2
	-35	13.8	19.5	35.5	50.2	66.8	11.7	16.5	30.1	42.6	56.6	11.7	16.5	29.9	42.4	56.4	16.3	23.0	41.7	59.0	78.2
MTW-17S	5	30.4	42.5	76.2	107	141	26.4	36.9	66.2	93.0	123	26.3	36.8	66.0	92.7	122	35.0	48.9	87.5	123	162
	-5	29.5	41.2	73.9	104	137	25.5	35.6	63.9	89.7	118	25.4	35.5	63.7	89.4	118	34.1	47.7	85.4	120	158
	-15	28.5	39.8	71.5	100	133	24.5	34.2	61.3	86.1	114	24.4	34.1	61.1	85.8	113	33.2	46.4	83.0	116	153
	-25	27.5	38.4	68.8	96.7	128	23.4	32.7	58.6	82.3	109	23.3	32.6	58.4	82.0	108	32.1	44.9	80.4	113	148
	-35	26.3	36.8	66.0	92.7	122	22.2	31.1	55.7	78.3	103	22.1	30.9	55.5	77.9	103	31.0	43.2	77.5	109	143
MTW-21S	5	63.0	84.1	139	186	236	53.7	71.6	118	158	201	53.4	71.2	118	157	200	71.4	95.2	157	210	266
	-5	61.2	81.6	135	181	229	51.8	69.1	114	153	194	51.5	68.7	113	152	193	69.8	93.0	153	205	260
	-15	59.2	79.0	130	175	222	49.8	66.4	110	147	186	49.5	65.9	109	146	185	67.9	90.5	149	200	253
	-25	57.1	76.2	126	168	214	47.6	63.5	105	140	178	47.3	63.0	104	139	177	65.8	87.7	145	194	245
	-35	54.9	73.2	121	162	206	45.3	60.4	99.8	134	170	45.0	60.0	99.0	133	168	63.5	84.7	140	187	237

Capacities based upon 35°C condensing temperature, 15°C liquid entering expansion valve, isentropic compression plus 30°C, evaporator temperature as shown plus 15°C superheat suction gas. Reference the table below for liquid correction factors.

Correction Factors

Discharge and Suction Applications - (°C)

REFRIGERANT	Liquid Temperature Entering Expansion Valve (°C)										
	-15°	-10°	-5°	0°	5°	10°	15°	20°	25°	30°	35°
	Correction Factor, CF Liquid Temperature										
R-22	1.19	1.16	1.13	1.10	1.07	1.03	1.0	0.97	0.93	0.90	0.86
R-134a	1.24	1.20	1.16	1.12	1.08	1.04	1.0	0.96	0.92	0.87	0.83
R-407A	1.25	1.21	1.17	1.13	1.09	1.04	1.0	0.96	0.91	0.87	0.82
R-407C	1.23	1.20	1.16	1.12	1.08	1.04	1.0	0.96	0.92	0.87	0.83
R-407F	1.24	1.20	1.16	1.12	1.09	1.05	1.0	0.96	0.92	0.88	0.83
R-404A	1.30	1.25	1.20	1.15	1.10	1.05	1.0	0.95	0.89	0.83	0.77
R-507A	1.31	1.26	1.21	1.16	1.11	1.05	1.0	0.94	0.89	0.83	0.77
R-410A	1.23	1.20	1.16	1.12	1.08	1.04	1.0	0.96	0.92	0.87	0.83

These correction factors correct for net refrigerating effect and are based on an evaporator temperature of 0°F (-15°C), however they may be used for any evaporator temperature because the variation in the factors across the range is insignificant.

Flow Capacity - Suction (Tons)

Valve Model	Evaporator Temp (°F)	Refrigerant																			
		R-22					R-134a					R-407A					R-407C				
		Pressure Drop Across Valve (psid)																			
		0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10
MTW-7S	40	1.9	2.7	4.7	6.2	8.3	1.5	2.1	3.7	4.7	6.3	1.8	2.6	4.6	6.0	8.0	1.8	2.6	4.6	6.0	8.0
	20	1.5	2.2	3.9	5.0	6.6	1.2	1.7	2.9	3.6	4.8	1.4	2.1	3.7	4.6	6.2	1.4	2.1	3.7	4.6	6.2
	0	1.2	1.7	3.1	3.9	5.2	0.9	1.3	2.2	2.7	3.4	1.1	1.6	2.8	3.5	4.7	1.1	1.6	2.8	3.5	4.7
	-20	0.9	1.4	2.4	3.0	3.8	0.7	1.0	1.6	1.9	2.1	0.8	1.2	2.1	2.6	3.3	0.9	1.2	2.1	2.6	3.3
	-40	0.7	1.0	1.8	2.2	2.6	0.5	0.7	1.1	1.2	1.2	0.6	0.9	1.5	1.8	2.1	0.6	0.9	1.5	1.8	2.0
MTW-9S	40	3.5	4.9	8.5	10.9	14.8	2.8	3.9	6.8	8.4	11.2	3.4	4.8	8.2	10.5	14.3	3.4	4.8	8.3	10.6	14.3
	20	2.9	4.1	7.0	9.0	11.8	2.2	3.1	5.2	6.5	8.3	2.7	3.8	6.6	8.2	11.1	2.7	3.9	6.7	8.3	11.1
	0	2.3	3.3	5.7	6.9	9.1	1.7	2.4	3.9	4.8	5.7	2.2	3.0	5.2	6.3	8.3	2.2	3.1	5.1	6.3	8.2
	-20	1.8	2.6	4.2	5.2	6.6	1.3	1.9	2.8	3.3	3.5	1.7	2.3	3.8	4.6	5.7	1.7	2.4	3.8	4.6	5.6
	-40	1.4	2.0	3.1	3.7	4.2	1.0	1.3	1.8	1.9	1.9	1.2	1.8	2.7	3.2	3.4	1.3	1.8	2.7	3.1	3.3
MTW-17S	40	6.7	9.4	15.9	20.3	28.2	5.4	7.5	12.7	16.0	21.0	6.5	9.0	15.3	19.6	27.1	6.5	9.1	15.5	19.8	27.2
	20	5.5	7.7	13.1	16.8	22.3	4.3	6.0	9.9	12.2	15.4	5.2	7.3	12.4	15.7	20.9	5.3	7.4	12.5	15.8	20.9
	0	4.5	6.3	10.7	13.1	16.9	3.4	4.7	7.4	8.9	10.2	4.2	5.8	9.8	12.0	15.3	4.2	5.9	9.7	12.0	15.2
	-20	3.6	5.0	8.1	9.8	11.9	2.6	3.6	5.2	5.9	6.1	3.2	4.5	7.2	8.7	10.3	3.3	4.5	7.2	8.6	10.0
	-40	2.8	3.9	5.9	6.9	7.4	1.9	2.4	3.3	3.4	3.4	2.4	3.4	5.0	5.8	6.0	2.5	3.4	5.0	5.6	5.7
MTW-21S	40	14.3	19.1	30.1	37.2	67.0	11.8	15.7	24.7	38.2	46.8	13.8	18.4	28.9	35.7	64.4	14.0	18.7	29.5	36.4	64.1
	20	12.1	16.2	25.5	31.5	51.2	9.7	12.9	23.8	28.2	31.2	11.4	15.2	24.0	38.0	47.7	11.7	15.5	24.5	37.9	47.1
	0	10.1	13.5	21.3	30.9	36.4	7.8	10.4	17.2	19.2	19.3	9.3	12.4	19.6	28.1	32.4	9.5	12.7	23.3	27.9	31.4
	-20	8.3	11.1	19.1	22.1	23.2	6.2	8.2	11.3	11.4	11.4	7.5	9.9	16.8	19.2	19.7	7.6	10.1	16.7	18.7	19.0
	-40	6.7	8.9	13.3	14.0	14.0	4.8	5.6	6.4	6.4	6.4	5.8	7.8	11.0	11.3	11.3	6.0	7.9	10.8	10.9	10.9

Valve Model	Evaporator Temp (°F)	Refrigerant																			
		R-407F					R-404A					R-507A					R-410A				
		Pressure Drop Across Valve (psid)																			
		0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10
MTW-7S	40	1.9	2.8	4.9	6.4	8.6	1.7	2.5	4.4	5.8	7.7	1.7	2.5	4.4	5.8	7.7	2.3	3.4	6.0	7.8	11.3
	20	1.5	2.2	3.9	5.1	6.8	1.4	2.0	3.5	4.6	6.1	1.4	2.0	3.6	4.6	6.1	1.9	2.8	4.9	6.4	8.6
	0	1.2	1.7	3.1	3.8	5.1	1.1	1.6	2.8	3.5	4.7	1.1	1.6	2.8	3.5	4.7	1.5	2.2	3.9	5.1	6.8
	-20	0.9	1.3	2.3	2.9	3.7	0.8	1.2	2.1	2.6	3.4	0.8	1.2	2.1	2.6	3.5	1.2	1.7	3.1	3.9	5.2
	-40	0.7	1.0	1.7	2.0	2.4	0.6	0.9	1.5	1.9	2.3	0.6	0.9	1.6	1.9	2.4	0.9	1.3	2.3	2.9	3.8
MTW-9S	40	3.6	5.1	8.8	11.3	15.4	3.2	4.6	7.8	10.1	13.8	3.2	4.6	7.8	10.1	13.9	4.4	6.2	10.6	13.7	19.3
	20	2.9	4.1	7.1	9.2	12.0	2.6	3.7	6.3	8.1	10.9	2.6	3.7	6.3	8.2	10.9	3.6	5.1	8.8	11.3	15.4
	0	2.3	3.3	5.6	6.9	9.0	2.1	2.9	5.0	6.2	8.3	2.1	2.9	5.0	6.3	8.3	2.9	4.1	7.1	9.2	12.1
	-20	1.8	2.5	4.1	5.1	6.3	1.6	2.3	3.7	4.7	5.9	1.6	2.3	3.8	4.7	6.0	2.3	3.3	5.7	6.9	9.2
	-40	1.4	1.9	3.0	3.5	3.9	1.2	1.7	2.7	3.3	3.9	1.2	1.7	2.8	3.4	4.0	1.8	2.6	4.2	5.2	6.5
MTW-17S	40	6.9	9.7	16.5	21.0	29.2	6.2	8.6	14.6	18.7	26.3	6.2	8.6	14.6	18.7	26.4	8.4	11.7	19.8	25.4	35.4
	20	5.6	7.9	13.4	17.1	22.7	5.0	7.0	11.9	15.2	20.6	5.0	7.0	11.9	15.2	20.7	6.9	9.7	16.5	21.0	29.4
	0	4.5	6.3	10.7	13.1	16.8	4.0	5.6	9.5	11.8	15.5	4.0	5.6	9.5	11.9	15.6	5.7	7.9	13.4	17.2	23.0
	-20	3.5	4.9	7.9	9.6	11.5	3.1	4.4	7.1	8.8	10.9	3.1	4.4	7.2	8.9	11.2	4.5	6.3	10.7	13.2	17.2
	-40	2.7	3.7	5.6	6.5	6.8	2.4	3.3	5.2	6.1	6.9	2.4	3.3	5.2	6.3	7.1	3.5	4.9	7.9	9.7	11.8
MTW-21S	40	14.8	19.8	31.1	38.5	69.7	12.9	17.2	27.0	33.4	63.1	12.8	17.1	27.0	33.3	63.6	17.5	23.3	36.7	45.4	60.5
	20	12.4	16.5	26.0	32.1	52.3	10.7	14.3	22.5	27.8	48.0	10.7	14.2	22.4	27.7	48.5	14.9	19.8	31.2	38.5	70.6
	0	10.1	13.5	21.3	30.8	36.1	8.8	11.7	18.4	28.2	34.2	8.7	11.7	18.4	28.5	34.9	12.4	16.5	26.1	32.2	53.4
	-20	8.2	10.9	18.6	21.3	22.1	7.0	9.4	17.1	20.1	21.9	7.0	9.4	17.3	20.5	22.6	10.2	13.6	21.4	31.3	37.4
	-40	6.4	8.6	12.4	12.8	12.8	5.5	7.4	11.9	13.0	13.0	5.5	7.4	12.1	13.4	13.5	8.2	11.0	18.9	21.9	23.0

Capacities based upon 60°F liquid and 25°F superheated vapor. Reference the table below for liquid correction factors..

Correction Factors

Discharge and Suction Applications - (°F)

REFRIGERANT	Liquid Temperature Entering Expansion Valve (°F)										
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
	Correction Factor, CF Liquid Temperature										
R-22	1.22	1.18	1.15	1.11	1.07	1.04	1.0	0.96	0.92	0.88	0.84
R-134a	1.27	1.22	1.18	1.14	1.09	1.05	1.0	0.95	0.91	0.86	0.81
R-407A	1.28	1.23	1.19	1.14	1.10	1.05	1.0	0.95	0.90	0.85	0.79
R-407C	1.26	1.22	1.18	1.13	1.09	1.05	1.0	0.95	0.91	0.86	0.81
R-407F	1.26	1.22	1.18	1.13	1.09	1.05	1.0	0.95	0.91	0.86	0.81
R-404A	1.34	1.29	1.23	1.17	1.12	1.06	1.0	0.94	0.88	0.81	0.74
R-507A	1.35	1.29	1.24	1.18	1.12	1.06	1.0	0.94	0.87	0.81	0.74
R-410A	1.26	1.22	1.18	1.13	1.09	1.05	1.0	0.95	0.90	0.85	0.80

These correction factors correct for net refrigerating effect and are based on an evaporator temperature of 0°F (-15°C), however they may be used for any evaporator temperature because the variation in the factors across the range is insignificant.

Flow Capacity - Suction - (kW)

Valve Model	Evaporator Temp (°C)	Refrigerant																			
		R-22					R-134a					R-407A					R-407C				
		Pressure Drop Across Valve (bar)																			
		0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7
MTW-7S	5	5.9	8.5	16.0	22.9	28.5	4.7	6.7	12.6	17.2	21.9	5.7	8.2	15.4	1.3	27.5	5.7	8.3	15.5	22.3	27.6
	-5	4.9	7.1	13.3	18.3	23.5	3.8	5.4	10.1	13.7	17.1	4.7	6.7	12.6	17.3	22.2	4.7	6.7	12.7	17.4	22.2
	-15	4.0	5.8	10.9	14.9	18.8	3.0	4.3	7.9	10.6	12.7	3.8	5.4	10.1	13.8	17.3	3.8	5.4	10.2	13.8	17.3
	-25	3.3	4.7	8.7	11.8	14.6	2.3	3.4	6.0	7.8	8.7	3.0	4.3	7.9	0.9	13.0	3.0	4.3	7.9	10.6	12.9
	-35	2.6	3.7	6.8	9.0	10.6	1.8	2.7	4.4	5.2	5.3	2.3	3.3	6.0	7.8	9.0	2.3	3.3	6.0	7.7	8.8
MTW-9S	5	11.2	15.8	28.6	40.3	51.1	9.0	12.7	22.9	30.8	38.7	10.8	15.3	27.6	38.9	49.3	10.9	15.4	27.9	39.3	49.4
	-5	9.4	13.3	24.1	32.9	41.8	7.3	10.3	18.1	24.3	29.8	8.9	12.6	22.8	31.1	39.4	9.0	12.7	23.0	31.2	39.4
	-15	7.8	11.0	20.0	26.6	33.2	5.9	8.3	14.1	18.5	21.6	7.3	10.2	18.5	24.5	30.5	7.3	10.3	18.7	24.6	30.3
	-25	6.4	9.0	15.6	20.9	25.3	4.6	6.5	10.7	13.3	14.2	5.8	8.2	14.1	18.7	22.4	5.9	8.2	14.1	18.6	22.0
	-35	5.1	7.2	12.1	15.7	17.8	3.6	4.8	7.6	8.6	8.6	4.5	6.4	10.6	13.5	14.9	4.6	6.4	10.6	13.3	14.4
MTW-17S	5	21.5	30.1	53.7	75.0	97.1	17.3	24.2	43.2	58.5	72.6	20.8	29.0	51.8	72.3	93.5	21.0	29.3	52.3	73.1	93.7
	-5	18.2	25.4	45.3	62.6	79.0	14.2	19.8	34.5	45.9	55.1	17.2	24.0	42.9	59.1	74.4	17.4	24.3	43.4	59.3	74.2
	-15	15.1	21.1	37.8	50.5	62.1	11.4	16.0	26.8	34.6	39.0	14.1	19.6	35.0	46.5	56.9	14.2	19.8	35.4	46.5	56.4
	-25	12.4	17.3	29.8	39.3	46.4	9.1	12.7	20.1	24.3	24.9	11.3	15.7	26.8	35.1	40.9	11.4	15.9	26.8	34.9	40.0
	-35	10.0	14.0	23.0	29.0	31.7	7.0	9.1	14.1	15.1	15.1	8.9	12.4	20.0	24.8	26.2	8.9	12.5	19.9	24.3	25.2
MTW-21S	5	46.7	62.2	102	136	231	38.5	51.3	84.4	139	162	44.8	59.8	98.4	131	222	45.7	60.9	100	134	221
	-5	40.3	53.6	88.3	151	182	32.3	43.0	83.4	105	113	38.0	50.7	83.4	142	170	38.8	51.6	85.0	142	168
	-15	34.3	45.7	75.2	119	136	26.7	35.6	63.2	73.9	74.3	31.8	42.4	69.8	108	122	32.4	43.2	71.1	108	119
	-25	28.8	38.4	71.5	88.3	92.5	21.7	29.0	45.0	46.9	46.9	26.2	34.9	64.0	77.6	79.7	26.7	35.6	63.6	75.9	76.9
	-35	23.8	31.8	53.3	59.8	59.8	17.4	21.8	28.4	28.4	28.4	21.2	28.2	45.7	49.4	49.4	21.6	28.8	45.0	47.6	47.6

Valve Model	Evaporator Temp (°C)	Refrigerant																			
		R-407F					R-404A					R-507A					R-410A				
		Pressure Drop Across Valve (bar)																			
		0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7
MTW-7S	5	6.1	8.8	16.5	23.7	29.6	5.5	7.9	14.8	21.3	26.5	5.5	7.9	14.9	21.4	26.5	7.4	10.7	20.0	28.8	38.6
	-5	5.0	7.2	13.6	18.7	24.0	4.5	6.5	12.2	17.5	21.5	4.5	6.5	12.2	17.6	21.6	6.2	8.9	16.8	24.1	30.2
	-15	4.1	5.8	11.0	14.9	18.9	3.6	5.2	9.8	13.4	17.1	3.7	5.3	9.9	13.5	17.2	5.1	7.4	13.8	19.9	24.7
	-25	3.2	4.6	8.6	11.6	14.3	2.9	4.2	7.7	10.5	13.1	2.9	4.2	7.9	10.6	13.3	4.2	6.0	11.2	15.4	19.6
	-35	2.5	3.6	6.5	8.6	10.1	2.3	3.2	5.9	7.9	9.6	2.3	3.3	6.0	8.0	9.7	3.3	4.8	8.9	12.0	15.0
MTW-9S	5	11.6	16.4	29.6	41.7	53.0	10.3	14.5	26.3	37.1	47.5	10.3	14.6	26.4	37.1	47.7	14.0	19.7	35.6	50.2	66.2
	-5	9.6	13.6	24.6	33.5	42.7	8.6	12.1	21.8	30.8	38.4	8.6	12.1	21.9	30.8	38.7	11.8	16.6	30.1	42.4	54.3
	-15	7.9	11.1	20.1	26.7	33.3	7.0	9.8	17.8	24.0	30.3	7.0	9.9	17.9	24.2	30.5	9.8	13.8	25.1	35.3	44.0
	-25	6.3	8.9	15.4	20.5	24.7	5.6	7.9	13.9	18.7	22.9	5.6	7.9	14.4	18.9	23.2	8.1	11.3	20.6	27.6	34.7
	-35	5.0	7.0	11.6	15.0	16.8	4.4	6.2	10.6	13.9	16.3	4.5	6.3	10.7	14.1	16.6	6.5	9.1	15.9	21.4	26.0
MTW-17S	5	22.3	31.1	55.5	77.6	101	19.7	27.5	49.2	68.7	90.4	19.7	27.6	49.2	68.7	90.8	26.7	37.3	66.6	92.9	122
	-5	18.5	25.9	46.3	63.9	80.6	16.4	22.9	40.9	57.2	72.8	16.4	23.0	41.0	57.3	73.3	22.6	31.6	56.5	78.8	103
	-15	15.2	21.2	37.9	50.6	62.2	13.5	18.8	33.6	45.7	56.9	13.5	18.8	33.7	46.0	57.4	18.9	26.4	47.2	65.9	83.4
	-25	12.3	17.1	29.3	38.5	45.3	10.9	15.2	26.4	35.3	42.5	10.9	15.2	27.2	35.6	43.1	15.6	21.8	38.9	52.4	65.1
	-35	9.7	13.5	22.0	27.6	29.6	8.6	12.0	20.2	26.0	29.4	8.6	12.1	20.4	26.4	30.2	12.6	17.6	30.3	40.3	48.1
MTW-21S	5	48.2	64.3	106	141	240	41.8	55.7	91.7	122	217	41.7	55.5	91.4	122	218	56.6	75.4	124	165	208
	-5	41.1	54.7	90.1	154	186	35.5	47.3	77.9	104	170	35.4	47.2	77.7	104	172	49.0	65.3	107	143	248
	-15	34.5	46.0	75.7	119	136	29.8	39.7	65.3	109	127	29.7	39.6	65.2	110	130	41.9	55.8	91.9	122	195
	-25	28.6	38.0	70.1	86.1	89.4	24.6	32.8	64.0	80.9	87.8	24.6	32.8	64.0	82.2	90.3	35.4	47.1	77.5	124	145
	-35	23.2	30.9	50.8	55.8	55.8	20.0	26.7	47.5	55.6	55.9	20.0	26.7	48.3	57.2	57.8	29.4	39.1	73.2	91.6	97.7

Capacities based upon 15°C liquid and 15°C superheated vapor. Reference the table below for liquid correction factors.

Correction Factors

Discharge and Suction Applications - (°C)

REFRIGERANT	Liquid Temperature Entering Expansion Valve (°C)										
	-15°	-10°	-5°	0°	5°	10°	15°	20°	25°	30°	35°
	Correction Factor, CF Liquid Temperature										
R-22	1.19	1.16	1.13	1.10	1.07	1.03	1.0	0.97	0.93	0.90	0.86
R-134a	1.24	1.20	1.16	1.12	1.08	1.04	1.0	0.96	0.92	0.87	0.83
R-407A	1.25	1.21	1.17	1.13	1.09	1.04	1.0	0.96	0.91	0.87	0.82
R-407C	1.23	1.20	1.16	1.12	1.08	1.04	1.0	0.96	0.92	0.87	0.83
R-407F	1.24	1.20	1.16	1.12	1.09	1.05	1.0	0.96	0.92	0.88	0.83
R-404A	1.30	1.25	1.20	1.15	1.10	1.05	1.0	0.95	0.89	0.83	0.77
R-507A	1.31	1.26	1.21	1.16	1.11	1.05	1.0	0.94	0.89	0.83	0.77
R-410A	1.23	1.20	1.16	1.12	1.08	1.04	1.0	0.96	0.92	0.87	0.83

These correction factors correct for net refrigerating effect and are based on an evaporator temperature of 0°F (-15°C), however they may be used for any evaporator temperature because the variation in the factors across the range is insignificant.

Flow Capacity - Liquid (Tons)

Valve Model	Evaporator Temp (°F)	Refrigerant																			
		R-22					R-134a					R-407A					R-407C				
		Pressure Drop Across Valve (psid)																			
		0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10
MTW-7S	40	15.0	21.6	38.4	50.1	72.0	14.4	20.8	36.9	48.2	69.3	13.8	19.9	35.3	46.2	66.4	14.8	21.3	37.8	49.4	70.9
	20	14.7	21.1	37.5	49.0	70.4	13.9	20.0	35.6	46.5	66.8	13.4	19.3	34.3	44.8	64.4	14.4	20.6	36.7	47.9	68.9
	0	14.3	20.6	36.6	47.8	68.7	13.4	19.2	34.2	44.7	64.2	13.0	18.6	33.1	43.3	62.2	13.9	20.0	35.5	46.4	66.7
	-20	13.9	20.0	35.6	46.5	66.9	12.8	18.4	32.8	42.8	61.6	12.5	17.9	31.9	41.7	59.9	13.4	19.3	34.3	44.8	64.4
	-40	13.5	19.5	34.6	45.2	64.9	12.3	17.6	31.3	40.9	58.8	12.0	17.2	30.6	40.0	57.5	12.9	18.6	33.0	43.1	62.0
MTW-9S	40	25.2	35.4	61.0	78.5	111	24.2	34.1	58.7	75.5	106	23.2	32.7	56.2	72.4	102	24.8	35.0	60.1	77.4	109
	20	24.6	34.7	59.6	76.7	108	23.3	32.9	56.5	72.8	103	22.5	31.7	54.5	70.2	98.8	24.1	34.0	58.4	75.2	106
	0	24.0	33.8	58.2	74.9	105	22.4	31.6	54.3	69.9	98.5	21.8	30.6	52.7	67.8	95.5	23.3	32.9	56.5	72.8	103
	-20	23.4	32.9	56.6	72.8	103	21.5	30.3	52.1	67.0	94.4	21.0	29.5	50.7	65.3	92.0	22.5	31.7	54.6	70.2	98.9
	-40	22.7	32.0	55.0	70.7	99.6	20.6	29.0	49.8	64.1	90.2	20.1	28.3	48.7	62.7	88.3	21.7	30.5	52.5	67.6	95.2
MTW-17S	40	45.9	64.1	109	139	194	44.2	61.7	105	134	187	42.4	59.1	100	128	179	45.3	63.3	107	137	192
	20	44.9	62.7	106	136	190	42.6	59.4	101	129	180	41.1	57.4	97.4	125	174	44.0	61.4	104	133	186
	0	43.8	61.2	104	133	185	40.9	57.1	97.0	124	173	39.7	55.4	94.1	120	168	42.6	59.5	101	129	180
	-20	42.6	59.5	101	129	181	39.2	54.8	93.0	119	166	38.2	53.4	90.6	116	162	41.1	57.4	97.5	125	174
	-40	41.4	57.8	98.1	126	175	37.5	52.4	88.9	114	159	36.7	51.3	87.0	111	155	39.6	55.3	93.8	120	168
MTW-21S	40	74.9	99.9	157	194	259	72.0	96.0	151	187	249	69.3	92.3	146	180	240	74.1	98.8	156	192	256
	20	73.3	97.7	154	190	253	69.4	92.5	146	180	240	67.2	89.5	141	174	232	72.0	96.0	151	187	249
	0	71.5	95.3	150	186	247	66.7	88.9	140	173	231	64.9	86.5	136	168	224	69.7	92.9	146	181	241
	-20	69.6	92.7	146	181	241	64.0	85.2	134	166	221	62.5	83.3	131	162	216	67.3	89.7	141	175	233
	-40	67.6	90.0	142	175	234	61.2	81.5	128	159	211	60.0	80.0	126	156	208	64.8	86.3	136	168	224

Valve Model	Evaporator Temp (°F)	Refrigerant																			
		R-407F					R-404A					R-507A					R-410A				
		Pressure Drop Across Valve (psid)																			
		0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10
MTW-7S	40	15.0	21.5	38.3	50.0	71.9	11.0	15.8	28.0	36.6	52.6	10.7	15.4	27.4	35.8	51.4	15.0	21.6	38.4	50.2	72.1
	20	14.6	21.0	37.3	48.7	70.0	10.5	15.2	26.9	35.2	50.6	10.3	14.8	26.3	34.4	49.4	14.8	21.2	37.7	49.3	70.9
	0	14.2	20.4	36.2	47.3	67.9	10.1	14.5	25.8	33.7	48.4	9.85	14.2	25.2	32.9	47.3	14.5	20.8	36.9	48.3	69.4
	-20	13.7	19.7	35.0	45.7	65.8	9.61	13.8	24.6	32.1	46.1	9.38	13.5	24.0	31.3	45.0	14.1	20.3	36.0	47.1	67.6
	-40	13.2	19.0	33.8	44.1	63.5	9.12	13.1	23.3	30.5	43.8	8.89	12.8	22.7	29.7	42.7	13.7	19.7	35.0	45.7	65.7
MTW-9S	40	25.2	35.4	60.9	78.4	110	18.4	26.0	44.7	57.5	80.9	18.0	25.4	43.7	56.2	79.1	25.3	35.6	61.2	78.8	111
	20	24.5	34.5	59.3	76.4	108	17.7	25.0	43.0	55.3	77.9	17.3	24.4	42.0	54.0	76.1	24.8	35.0	60.2	77.4	109
	0	23.8	33.5	57.6	74.1	104	17.0	23.9	41.1	52.9	74.5	16.6	23.3	40.2	51.7	72.8	24.3	34.2	58.9	75.8	107
	-20	23.0	32.4	55.8	71.7	101	16.2	22.8	39.2	50.4	71.0	15.8	22.2	38.2	49.2	69.3	23.7	33.4	57.4	73.9	104
	-40	22.2	31.3	53.8	69.2	97.5	15.4	21.6	37.2	47.9	67.4	15.0	21.1	36.2	46.6	65.7	23.0	32.5	55.8	71.8	101
MTW-17S	40	45.9	64.1	109	139	194	33.7	47.0	79.9	102	143	32.9	46.0	78.0	99.8	139	46.2	64.5	109	140	196
	20	44.7	62.4	106	136	189	32.4	45.2	76.8	98.2	137	31.6	44.2	75.0	96.0	134	45.4	63.4	108	138	192
	0	43.4	60.6	103	132	184	31.0	43.3	73.5	94.0	131	30.3	42.3	71.8	91.8	128	44.4	62.0	105	135	188
	-20	42.0	58.7	99.6	127	178	29.6	41.3	70.1	89.6	125	28.8	40.3	68.3	87.4	122	43.3	60.5	103	131	183
	-40	40.5	56.6	96.1	123	172	28.0	39.2	66.5	85.0	119	27.3	38.2	64.8	82.8	116	42.1	58.8	99.8	128	178
MTW-21S	40	75.2	100	158	195	260	55.4	73.8	116	144	192	54.1	72.1	114	141	187	75.9	101	159	197	262
	20	73.3	97.6	154	190	253	53.3	71.0	112	138	184	52.1	69.4	109	135	180	74.6	99.3	157	193	258
	0	71.1	94.8	149	185	246	51.0	68.0	107	132	176	49.8	66.3	105	129	172	73.0	97.2	153	189	252
	-20	68.8	91.7	145	179	238	48.6	64.8	102	126	168	47.4	63.2	99.6	123	164	71.2	94.8	149	185	246
	-40	66.4	88.5	140	172	230	46.1	61.5	96.9	120	160	44.9	59.9	94.4	117	155	69.2	92.2	145	180	239

Capacity based upon 60°F liquid. Reference the table below for liquid correction factors.

Correction Factors

Liquid Applications - (°F)

REFRIGERANT	Liquid Temperature Entering Expansion Valve (°F)										
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
	Correction Factor, CF Liquid Temperature										
R-22	1.27	1.22	1.18	1.14	1.09	1.05	1.00	0.95	0.91	0.86	0.81
R-134a	1.32	1.27	1.21	1.16	1.11	1.05	1.00	0.95	0.89	0.84	0.78
R-407A	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-407C	1.32	1.27	1.22	1.16	1.11	1.05	1.00	0.94	0.89	0.83	0.77
R-407F	1.33	1.27	1.22	1.16	1.11	1.06	1.00	0.94	0.88	0.83	0.77
R-404A	1.34	1.29	1.23	1.17	0.12	1.06	1.00	0.94	0.88	0.82	0.76
R-507A	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.70
R-410A	1.33	1.28	1.22	1.17	1.11	1.06	1.00	0.94	0.88	0.82	0.76

These correction factors correct for net refrigerating effect and are based on an evaporator temperature of 0°F (-15°C), however they may be used for any evaporator temperature because the variation in the factors across the range is insignificant.

Flow Capacity - Liquid (kW)

Valve Model	Evaporator Temp (°C)	Refrigerant																			
		R-22					R-134a					R-407A					R-407C				
		Pressure Drop Across Valve (bar)																			
		0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7
MTW-7S	5	49.4	70.9	133	192	257	47.6	68.4	128	185	247	45.5	65.4	123	177	20	48.7	69.9	131	189	253
	-5	48.4	69.6	131	188	252	46.0	66.2	124	179	239	44.3	63.7	120	172	230	47.4	68.2	128	184	247
	-15	47.3	68.1	128	184	246	44.4	63.9	120	172	231	43.0	61.8	116	167	224	46.1	66.3	124	179	240
	-25	46.2	66.5	125	179	240	42.8	61.6	116	166	223	41.6	59.8	112	161	216	44.7	64.2	121	173	232
	-35	45.1	64.8	122	175	234	41.2	59.2	111	160	214	40.2	57.7	108	156	209	43.2	62.2	117	168	225
MTW-9S	5	83.1	117	212	299	394	80.1	113	204	288	379	76.7	108	196	276	363	82.0	116	209	295	388
	-5	81.5	115	208	293	386	77.5	109	198	278	367	74.7	105	191	268	354	79.9	113	204	287	379
	-15	79.7	112	203	286	378	74.8	105	191	269	354	72.5	102	185	260	343	77.7	109	198	279	368
	-25	77.8	110	199	280	369	72.1	101	184	259	341	70.1	98.7	179	252	332	75.3	106	192	271	357
	-35	75.9	107	194	273	359	69.3	97.6	177	249	328	67.7	95.3	173	243	321	72.9	103	186	262	345
MTW-17S	5	152	212	379	529	692	146	204	365	509	667	140	196	350	488	639	150	209	374	522	684
	-5	149	208	371	518	679	142	198	353	493	645	136	191	340	475	622	146	204	364	509	666
	-15	146	203	363	507	664	137	191	341	476	623	132	185	330	461	604	142	198	354	495	648
	-25	142	199	355	495	649	132	184	328	459	600	128	179	320	446	584	138	192	343	480	628
	-35	139	194	346	483	632	127	177	316	441	577	124	173	309	431	564	133	186	332	464	608
MTW-21S	5	250	333	549	731	922	241	321	528	704	887	232	309	508	677	853	248	330	543	724	913
	-5	245	327	538	717	904	233	310	511	681	858	225	300	494	659	830	241	322	529	705	889
	-15	240	320	526	701	884	225	300	493	657	829	219	291	480	639	806	235	313	515	686	864
	-25	234	312	514	685	863	217	289	475	633	799	212	282	464	618	780	228	303	499	665	838
	-35	228	304	501	667	841	208	278	457	609	768	204	272	448	597	753	220	293	483	643	811

Valve Model	Evaporator Temp (°C)	Refrigerant																			
		R-407F					R-404A					R-507A					R-410A				
		Pressure Drop Across Valve (bar)																			
		0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7	0.03	0.06	0.2	0.4	0.7
MTW-7S	5	49.3	70.8	133	191	256	36.1	51.9	97.5	140	188	35.3	50.8	95.3	137	184	49.4	71.1	133	192	257
	-5	48.1	69.2	130	187	250	34.9	50.2	94.2	135	182	34.1	49.0	92.1	132	177	48.7	70.0	131	189	253
	-15	46.9	67.4	127	182	244	33.6	48.3	90.7	130	175	32.8	47.2	88.6	127	171	47.8	68.7	129	185	249
	-25	45.6	65.5	123	177	237	32.2	46.3	87.0	125	168	31.4	45.2	84.9	122	164	46.8	67.2	126	181	243
	-35	44.2	63.5	119	172	230	30.8	44.2	83.1	119	160	30.0	43.1	81.0	116	156	45.6	65.6	123	177	237
MTW-9S	5	83.1	117	212	299	394	61.0	85.9	156	219	289	59.7	84.0	152	214	283	83.5	118	213	300	395
	-5	81.2	114	207	292	385	59.0	83.0	150	212	279	57.6	81.1	147	207	273	82.2	116	210	295	389
	-15	79.1	111	202	284	375	56.8	79.9	145	204	269	55.4	78.0	141	199	263	80.7	114	206	290	382
	-25	76.9	108	196	276	364	54.4	76.6	139	196	258	53.1	74.8	136	191	252	79.0	111	202	284	374
	-35	74.5	105	190	268	353	52.0	73.2	133	187	246	50.7	71.4	129	182	240	77.1	109	197	277	365
MTW-17S	5	152	212	379	529	693	112	156	278	389	509	109	152	272	380	498	153	213	381	532	696
	-5	148	207	370	517	677	108	151	269	376	492	105	147	263	367	481	150	210	375	524	686
	-15	145	202	361	504	660	104	145	259	362	473	101	142	253	353	462	148	206	368	514	673
	-25	141	196	351	490	641	99.6	139	248	347	454	97.2	136	242	338	443	144	202	360	503	659
	-35	136	190	340	475	621	95.1	133	237	331	434	92.8	130	231	323	423	141	197	352	491	643
MTW-21S	5	251	335	551	734	926	185	247	407	542	683	181	241	397	530	668	253	338	556	740	933
	-5	246	327	538	717	905	179	239	393	524	660	175	233	384	511	645	250	332	547	729	919
	-15	239	319	525	699	881	172	230	378	504	635	168	224	369	492	620	245	326	537	716	902
	-25	232	310	510	679	857	165	220	363	483	609	161	215	354	471	594	240	319	526	700	883
	-35	225	300	494	659	830	158	211	347	462	582	154	205	338	450	567	234	312	513	684	862

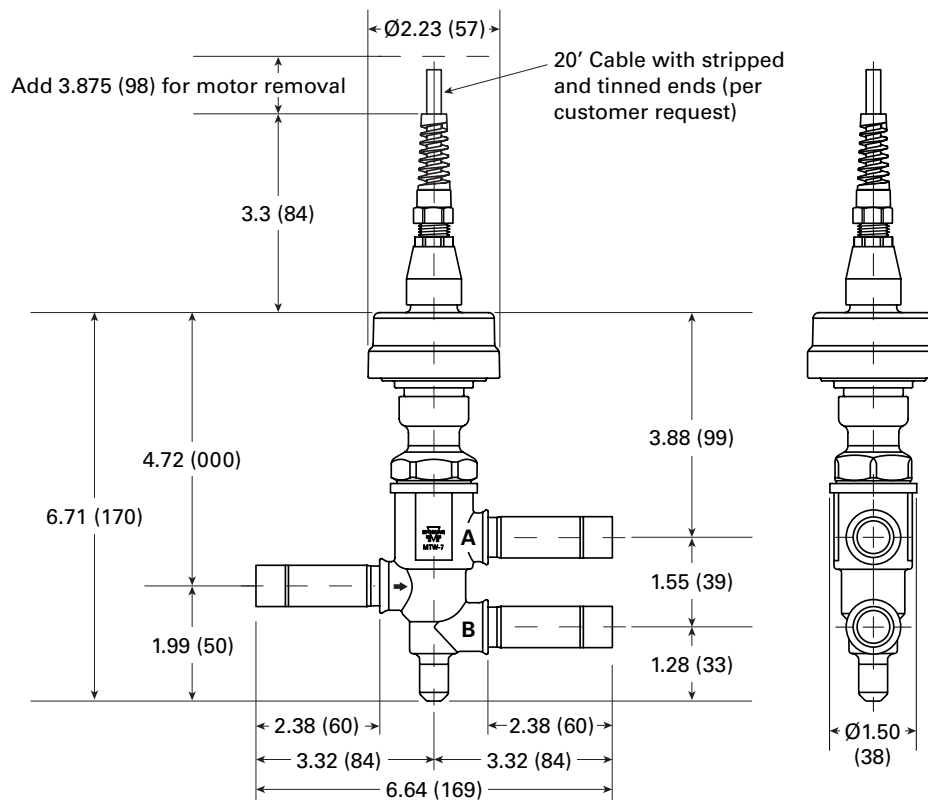
Capacity based upon 15°C liquid. Reference the table below for liquid correction factors.

Correction Factors

Liquid Applications - (°C)

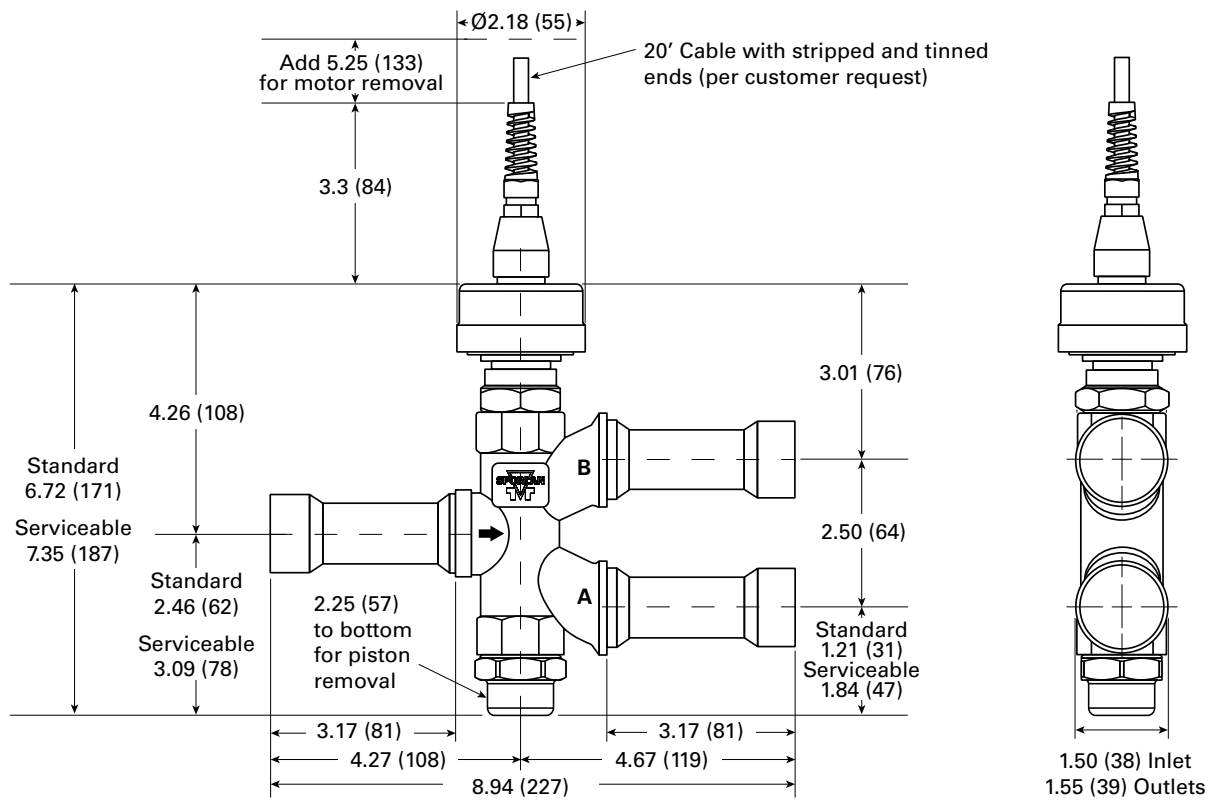
REFRIGERANT	Liquid Temperature Entering Expansion Valve (°C)										
	-15°	-10°	-5°	0°	5°	10°	15°	20°	25°	30°	35°
	Correction Factor, CF Liquid Temperature										
R-22	1.24	1.20	1.16	1.12	1.08	1.04	1.0	0.96	0.92	0.88	0.83
R-134a	1.28	1.24	1.19	1.14	1.10	1.05	1.0	0.95	0.90	0.86	0.81
R-407A	1.30	1.25	1.20	1.15	1.10	1.05	1.0	0.95	0.90	0.84	0.79
R-407C	1.29	1.24	1.19	1.15	1.10	1.05	1.0	0.95	0.90	0.85	0.80
R-407F	1.29	1.24	1.19	1.15	1.10	1.05	1.0	0.95	0.90	0.85	0.80
R-404A	1.37	1.31	1.25	1.19	1.12	1.06	1.0	0.94	0.87	0.81	0.74
R-507A	1.37	1.31	1.25	1.19	1.13	1.06	1.0	0.94	0.87	0.80	0.73
R-410A	1.29	1.25	1.20	1.15	1.10	1.05	1.0	0.95	0.90	0.84	0.79

These correction factors correct for net refrigerating effect and are based on an evaporator temperature of 0°F (-15°C), however they may be used for any evaporator temperature because the variation in the factors across the range is insignificant.

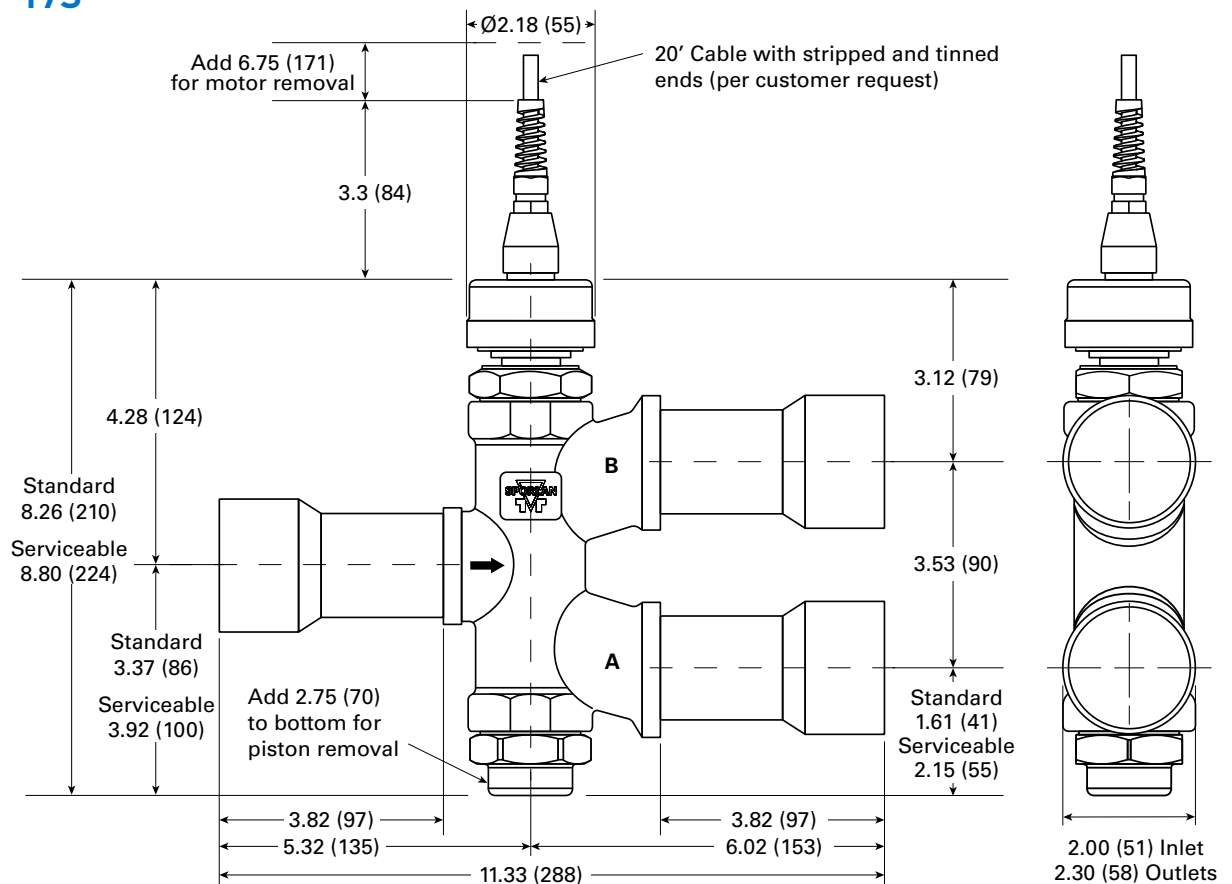


Dimensions - Inches (mm)

MTW-9S

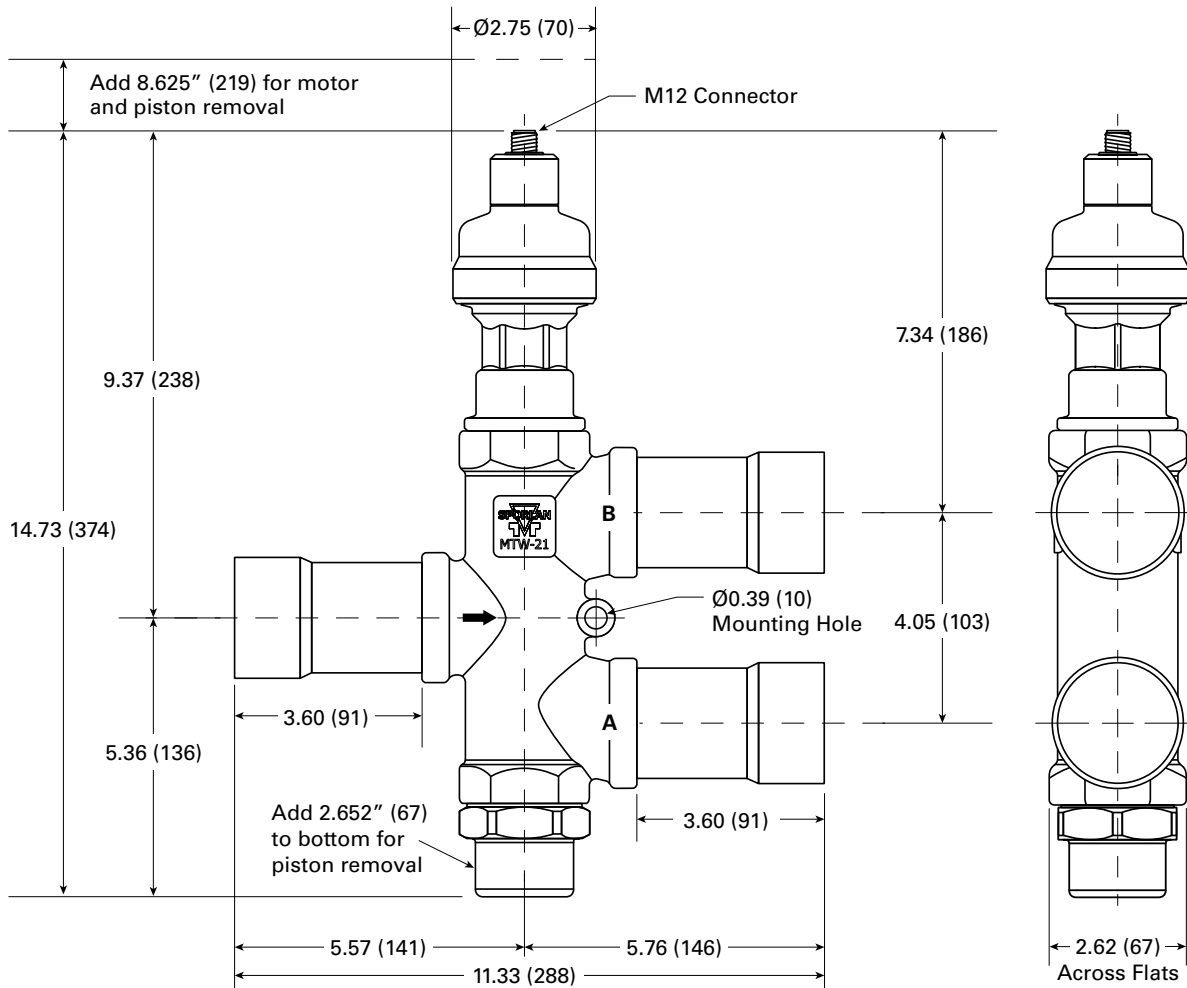


MTW-17S



Dimensions - Inches (mm)

MTW-21S



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