Bulletin 560

MVI

INTERCOOLER PACKAGE

Featuring:

Matrix LLC Level Control

RETA

MEMBER iiar International Institute of Ammonia Refrigeration

IARW International Association of Refrigerated Warehouses

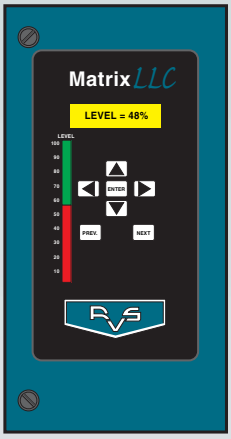
Technology for the Future, Available Today!

MVI Intercooler Package

The MVI Intercooler Package reduces installation time and cost compared to field fabricated units. At the heart of the package is the Matrix LLC Control Panel which provides total intercooler control. The MVI Intercooler Package is available in a complete range of vessel diameters from 16" to 144", with or without subcooling pipe coils. Major components are maintained in inventory to enable fast, on-time shipments to meet your most demanding requirements.

Matrix LLC Control

The RVS Matrix LLC Panel utilizes the latest in microprocessor technology to provide a total control solution for refrigeration vessel packages. The Matrix LLC is packaged into a UL/cUL listed NEMA 4 steel panel with built-in power transformer, assuring a completely tested and functional unit requiring only a single power connection in the field.



Operator Interface

- Door-mounted (7) button keypad. No need to open enclosure to change settings
- Easy-to-read 16 character alphanumeric display with LED dual color bar graph

Liquid Level Management

- Reads 4-20mA signal from level probe and provides visual readout in digital display and color bar indicator on panel
- High and low level alarms and cutouts
- Two 4-20mA analog outputs for control of proportional feed valve(s)
- Built in transformer for 24VAC or 24VDC power to motorized valve

Communications

- Industry standard protocol MODBUS-RTU over RS-485
- Capable of remote monitoring and control of system parameters

ASME 250 psig Intercooler Vessel with Dual Relief Assembly

- National Board Registration
- Internal vent lines reduce insulation cost and protect against shipping damage (not available on small models)
- Stainless steel nameplate bracket and standoff to prevent corrosion

Liquid Level Column

- Level indicating column with wire cable and transmitter
- High level shutdown float switch for compressor protection

Proportional Liquid Feed Assembly

- Modulating valve minimizes vessel pressure surges and liquid line hammer
- Backup solenoid valve or UPS (uninterrupted power supply) provides positive shutoff in the event of a power failure

ASME 400 psig Oil Pot with Relief Valve

- Oil pot mounted and piped with all required service valves
- Relief valve piped back to main vessel

Options

- Subcooling Coil
- Conventional on/off solenoid and hand expansion valve liquid feed assemblies (single or dual)
- 1.5kw oil pot heater
- Seismic Design
- Post weld heat treatment
- Radiography of pipe welds

SELECTION PROCEDURE

STEP 1: From Table 1, select a model with capacity equal to or greater than the required capacity at the given high stage compressor suction temperature.

STEP 2: Determine the method of pre-cooling the liquid feed to the low temperature side of the system. The standard method of pre-cooling is to flashcool the liquid directly into the intercooler vessel. This method provides for the most economical equipment and operating cost. An optional method is to pre-cool the liquid utilizing a sub-cooling pipe coil in the intercooler vessel. The sub-cooling pipe coil is required for applications where the liquid is being fed to remote locations. If a coil is required add the suffix 'C' to the model number (i.e., MVIC-36).

STEP 3: From Table 3a and 3b, select the liquid feed assembly. For flash type intercoolers the liquid feed assembly must be selected for total high stage capacity requirements less any high temperature evaporator loads which are not fed from the intercooler. For coil type intercoolers the liquid feed assembly must be selected based on the subcooling and booster desuperheat loads only. This load can be closely approximated by multiplying the total booster capacity by 0.25.

STEP 4: Available surge volume is listed in Table 2 for flash and coil type intercoolers . If the intercooler is handling high temperature evaporators and/or low temperature defrost loads consideration must be given to required surge volume.

WHEN ORDERING PLEASE SPECIFY:

Intercooler model number and liquid feed model number. If sub-cooling coil is required add suffix 'C' to intercooler model number. Please include required high stage compressor capacity in tons of refrigeration and saturated suction.

Table 1 MVI INTERCOOLER CAPACITIES

MODEL NO.	Tons of Refrigeration R-717 High Stage Suction Temperature (F)			
	+30°F	+20°F	+10°F	0°F
MVI-16	55	50	45	40
MVI-20	87	80	72	64
MVI-24	128	116	105	93
MVI-30	202	184	166	147
MVI-36	293	267	240	214
MVI-42	401	366	329	292
MVI-48	526	479	431	383
MVI-54	662	603	542	481
MVI-60	820	747	672	597
MVI-72	1,179	1,075	967	858
MVI-84	1,612	1,470	1,321	1,174
MVI-96	2,114	1,927	1,734	1,540
MVI-108	2,671	2,435	2,190	1,945
MVI-120	3,279	2,990	2,689	2,387
MVI-144	4,749	4,330	3,894	3,457

Capacities are based on +95°F liquid supply temp.

Table 2 SURGE VOLUME, WEIGHT, OPERATING CHARGE

MODEL NO.	Vertical Flash Intercooler Package			MODEL NO.	Vertical Coil Type Intercooler Package		
	Surge Volume Cubic Feet (Ft^3)	Operating Charge Lbs. of NH3	Shipping Weight Lbs. (Approx.)		Surge Volume Cubic Feet (Ft^3)	Operating Charge Lbs. of NH3	Shipping Weight Lbs. (Approx.)
MVI-16	5.2	84	1,750	MVIC-16	2.9	178	1,920
MVI-20	9.8	104	2,025	MVIC-20	6.6	233	2,240
MVI-24	14.3	158	2,330	MVIC-24	7.1	446	2,750
MVI-30	22.2	257	2,720	MVIC-30	10.5	729	3,405
MVI-36	31.6	385	3,320	MVIC-36	11.9	1,184	4,330
MVI-42	68.1	543	4,320	MVIC-42	37.9	1,763	5,705
MVI-48	87.3	733	5,050	MVIC-48	58.9	1,882	6,820
MVI-54	111.1	946	6,675	MVIC-54	63.8	2,856	8,650
MVI-60	139.2	1,141	7,485	MVIC-60	79.1	3,571	9,850
MVI-72	197.9	1,637	11,015	MVIC-72	104.7	5,408	14,050
MVI-84	277.0	2,239	13,480	MVIC-84	124.5	8,404	17,650
MVI-96	355.0	3,078	17,145	MVIC-96	175.5	10,337	22,460
MVI-108	443.3	4,116	22,475	MVIC-108	180.4	14,746	29,150
MVI-120	541.2	4,899	31,905	MVIC-120	164.5	20,128	40,100
MVI-144	766.0	7,025	45,250	MVIC-144	238.3	28,359	56,700

Operating charge is based on +20°F refrigerant temperature

Table 3A SINGLE FEED ASSEMBLY - MOTORIZED VALVE

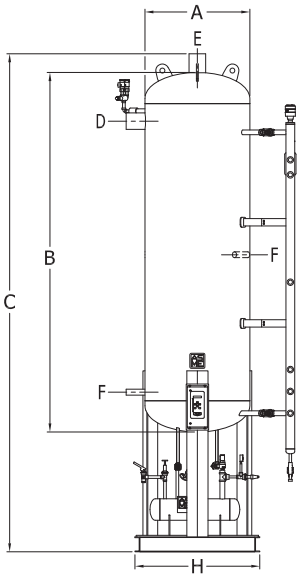
MODEL NO.	VALVE SIZE	TR (MT)	LINE SIZE
PLF075	3/4"	170	1"
PLF100	3/4"	270	1-1/4"
PLF125	1"	415	1-1/2"
PLF150	1-1/4"	650	2"
PLF200	1-1/2"	1,100	2-1/2"
PLF300	2"	2,000	4"

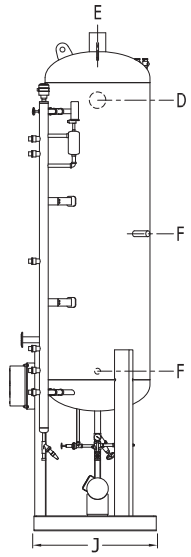
Sealed motor Liquid Feed Assembly (assembled) including Danfoss sealed motor valve (24VDC), Solenoid valve (120V), Strainer, (2) Globe isolation valves, and (1) Angle bypass valve

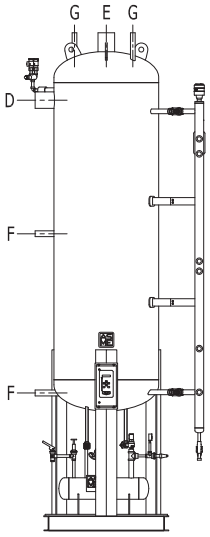
Table 3B DUAL FEED ASSEMBLY - MOTORIZED VALVE

MODEL NO.	VALVE SIZE	TR (MT)	LINE SIZE
PLF200/200	1-1/2" - 1-1/2"	2,200	2-1/2"
PLF125/300	1" - 2"	2,415	1-1/2" - 4"
PLF150/300	1-1/4" - 2"	2,650	2" - 4"
PLF200/300	1-1/2" - 2"	3,100	2-1/2" - 4"
PLF300/300	2" - 2"	4,000	4" - 4"

Two sealed motor Liquid Feed Assemblies (assembled) including (2) Danfoss sealed motor valve (24VDC), (2) Solenoid valve (120V), (2) Strainer, (4) Globe isolation valves, and (1) Angle bypass valve







VERTICAL INTERCOOLER PACKAGE

MODEL No.	A VESSEL DIAMETER	B VESSEL LENGTH	C OVERALL HEIGHT	D BOOSTER DISCHARGE	E DRY GAS OUTLET	F LIQUID IN/OUT	H BASE WIDTH	J BASE LENGTH
MVI-16	16	96	152	3	3	1	44	41
MVI-20	20	108	163	3	3	1	44	25
MVI-24	24	112-1/2	168	4	4	1-1/4	44	28
MVI-30	30	115	171	5	5	1-1/4	44	34
MVI-36	36	118	174	6	6	1-1/2	44	36
MVI-42	42	144	200	6	6	2	50	49
MVI-48	48	147	203	8	8	2	56	52
MVI-54	54	150	206	8	8	2	62	58
MVI-60	60	153	209	8	8	2-1/2	70	65
MVI-72	72	159	215	10	10	3	80	77
MVI-84	84	165	221	10	10	3	73	73
MVI-96	96	171	227	12	12	4	81-1/2	81-1/2
MVI-108	108	177	235	12	12	4	95	95
MVI-120	120	183	241	14	14	4	103-1/2	103-1/2
MVI-144	144	195	255	16	16	5	124-1/2	124-1/2

WITH OPTIONAL SUBCOOLING COIL

MODEL No.	G COIL IN/OUT
MVIC-16	3/4
MVIC-20	3/4
MVIC-24	1
MVIC-30	1-1/4
MVIC-36	1-1/2
MVIC-42	1-1/2
MVIC-48	1-1/2
MVIC-54	2
MVIC-60	2
MVIC-72	3
MVIC-84	3
MVIC-96	4
MVIC-108	4
MVIC-120	5
MVIC-144	6

All dimensions are given in inches and are for reference only. Consult factory for certified drawing.

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