Bulletin 570A

MVA

MATRIX VERTICAL ACCUMULATOR PACKAGE

FEATURING THE

Matrix LLC

LIQUID LEVEL CONTROL PANEL

RETA

MEMBER iiar International Institute of Ammonia Refrigeration

IARW International Association of Refrigerated Warehouses

Technology for the Future, Available Today!

MVA Matrix Vertical Accumulator Package

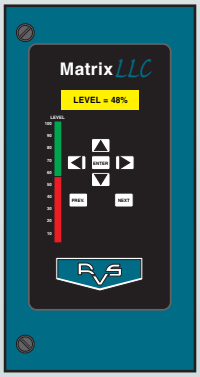
The Matrix Vertical Accumulator Package (MVA) has been engineered to provide total refrigerant liquid / vapor separation for compressor protection, oil collection, and liquid level control in a complete factory assembled, tested, and ready to install product - reducing installation time and total equipment cost compared to field fabricated units. At the heart of the MVA Package is the Matrix LLC (Liquid Level Control) Panel which provides automated refrigerant liquid level control within the accumulator vessel.

The MVA utilizes the highest quality and most advanced components in the industry. All components are maintained in inventory to enable fast, on-time shipments. Custom MVA sizes and arrangements are available - contact the factory for assistance. For the premier solution to refrigerant accumulation with pumped liquid transfer to the high side of the system without the need for equalization or hot gas assist, see RVS' MTP Matrix Transfer Package Bulletin 5100.

Matrix LLC Liquid Level Control Panel

Features:

- Microprocessor Technology in a NEMA4 Steel Enclosure, UL/cUL Listed
- Single Power Connection Required
- Door Mounted (7) Button Keypad
- Easy to Read 16 Character Alphanumeric Display with LED Dual Color Bar Graph
- Reads 4-20mA Signal From Level Probe and Provides Visual Readout in Digital Display and Color Bar Graph
- 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
- Remote Communication and Control Via MODBUS RTU Over RS-485
- See RVS Bulletin 515 for More Information on Matrix LLC



RVS Quality

- Surfaces Prepped to SSPC-SP6
- Vessel Hydrostatically Pressure Tested in Accordance with ASME BPVC, Section VIII, Div. 1
- Factory Package Piping Welded and Tested in Accordance With ASME B31.5
- Entire Assembly is Fully Evacuated to Eliminate Moisture and Charged With Dry Nitrogen
- Entire Assembly is Coated With a High Solids Epoxy Paint
- Controls Wired, Programmed, and Tested

ASME, 250 PSIG, Accumulator Vessel

- National Board Registration
- Vertical Vessel Configuration Available From 24" to 144" Outside Diameter
- Dual Safety Relief Valve Assembly Set at 250 PSIG (Shipped Loose)
- Pump Vent, Oil Pot Vent and Oil Pot Relief Piping Internally Routed to Vessel Vapor Space
- Stainless Steel Nameplate Bracket and Standoff to Prevent Corrosion

#5 Liquid Level Column

- Liquid Level Indicating Column With Isolation Valves
- Five Level Indicators With Frost Shields and Oil Drain
- Danfoss Cable Type, Electronic Level Probe
- High Level Shutdown Mechanical Float Switch for Compressor Protection

ASME, 400 PSIG, Oil Pot

- Oil Pot Mounted and Piped With All Required Service Valves
- Single, Replaceable Cartridge Style, Safety Relief Valve
- Relief Valve Discharge Piped Internal to the Main Vessel Vapor Space
- Optional Dual Relief Assembly

Options

- 300 or 350 PSIG Vessel Design Rating
- Stainless Steel Vessel, Oil Pot, and/or Level Column Construction
- Boil-Out or Sub-Cooling Coil
- Corrosion Allowance on Vessel Shell, Heads, and/or Nozzles
- Post Weld Heat Treatment (PWHT)
- SA333 Grade 6 Low Temperature or Stainless Steel Piping
- 1.5 kw Oil Pot Heater (Service by Others)
- Non-Destructive Examination of Pipe Welds
- Seismic Design Calculations
- Liquid Feed Assembly with Solenoid and Motorized or Hand Expansion Valve (Single or Dual)

SELECTION PROCEDURE

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

STEP 2: From Table 2, check the available surge volume for the model selected against the required system surge volume. If the available surge volume is not adequate, select the next larger model with sufficient surge volume (or contact factory).

STEP 3: Determine the method of liquid transfer to the high pressure receiver or other point in the system. The traditional method of liquid transfer is to drain liquid to a pumped or hot gas assisted transfer vessel or package.

The modern method of liquid transfer to the high side or other point in the system is to employ a high differential pressure pump to the accumulator package which eliminates the need for equalization of the accumulator vessel and eliminates hot gas assisted draining / pumping. See RVS' MTP Matrix Transfer Package, Bulletin 5100, or consult the factory.

An optional method includes adding a coil in the accumulator vessel to boil out liquid and run the vessel "dry". If a coil is required, add a 'C' to the model number (i.e., MVAC-36). For subcooling coil applications, contact the factory.

WHEN ORDERING SPECIFY:

1) The accumulator model number (i.e., MVA-36). If a coil is added, add a 'C' to the accumulator model number (i.e., MVAC-36).
2) The required capacity of the accumulator in tons of refrigeration, the saturated suction temperature, and the required surge volume.
3) If applicable, specify the duty of an added coil, either boil-out or sub-cooling. **4)** The liquid feed temperature if adding a liquid supply.

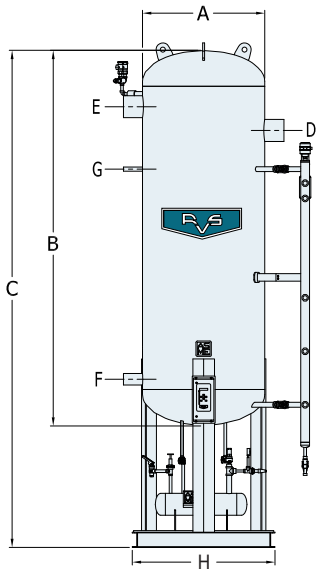
Table 1 MVA ACCUMULATOR CAPACITIES

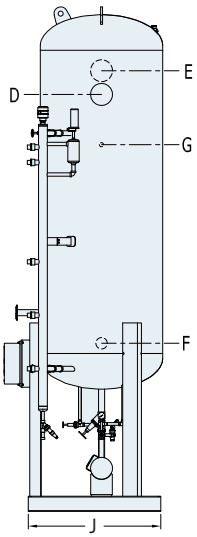
MODEL No.	Tons of Refrigeration R-717									
	Single Stage Suction Temperature*						Two Stage Suction Temperature **			
	+30°F	+20°F	+10°F	+0°F	-10°F	-20°F	-20°F	-30°F	-40°F	-50°F
MVA-16	62	56	51	45	39	34	40	34	29	24
MVA-20	99	90	81	72	63	54	64	55	46	38
MVA-24	145	132	118	105	92	79	93	80	67	56
MVA-30	229	209	188	166	146	126	148	126	107	90
MVA-36	333	303	273	242	212	183	215	184	156	130
MVA-42	456	416	373	331	290	251	295	252	213	179
MVA-48	599	546	490	435	381	329	387	331	280	234
MVA-54	754	687	617	547	479	414	487	416	352	295
MVA-60	934	851	765	678	594	514	603	516	437	366
MVA-72	1,344	1,224	1,100	975	854	739	867	742	628	526
MVA-84	1,838	1,674	1,504	1,334	1,169	1,011	1,187	1,016	860	720
MVA-96	2,410	2,195	1,972	1,750	1,532	1,326	1,556	1,332	1,127	944
MVA-108	3,045	2,774	2,492	2,211	1,936	1,675	1,966	1,683	1,424	1,193
MVA-120	3,739	3,405	3,060	2,714	2,377	2,056	2,414	2,066	1,749	1,465
MVA-144	5,415	4,931	4,431	3,930	3,443	2,978	3,496	2,992	2,532	2,121

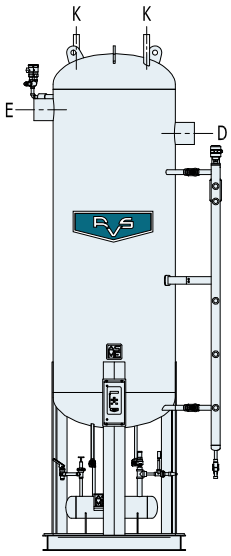
* Single stage capacities based on +95°F liquid supply temperature
** Two stage capacities based on +25°F liquid supply temperature

Table 2 SURGE VOLUME, OPERATING CHARGE, WEIGHT

MODEL NO.	Vertical Accumulator Package		
	Surge Volume Cubic Feet (FT3)	Refrigerant Charge Cubic Feet (FT3)	Shipping Weight Lbs. (Approx.)
MVA-16	3.0	0.9	1,550
MVA-20	4.9	1.5	1,685
MVA-24	7.1	2.2	1,920
MVA-30	20.0	4.2	2,535
MVA-36	29.9	6.7	2,840
MVA-42	38.7	10.0	3,645
MVA-48	78.1	14.1	4,545
MVA-54	91.9	18.9	6,200
MVA-60	127.0	12.0	6,900
MVA-72	171.4	21.5	10,455
MVA-84	234.5	35.6	12,945
MVA-96	287.2	54.1	16,110
MVA-108	337.3	79.0	21,555
MVA-120	414.9	108.3	30,935
MVA-144	509.7	191.8	44,400







VERTICAL ACCUMULATOR PACKAGE

MODEL No.	A VESSEL DIAMETER	B VESSEL LENGTH	C OVERALL HEIGHT	D SUCTION INLET	E DRY GAS OUTLET	F* LIQUID OUT	G* 3-WAY VENT	H BASE WIDTH	J BASE LENGTH
MVA-16	16	85	133	3	3	2	3/4	44	41
MVA-20	20	87	137	4	4	3	1-1/4	44	25
MVA-24	24	88.5	143	5	4	3	1-1/4	44	28
MVA-30	30	115	169	6	5	3	1-1/4	44	34
MVA-36	36	118	170	6	6	4	1-1/4	44	36
MVA-42	42	121	172	8	6	4	1-1/4	50	49
MVA-48	48	147	198	8	8	4	1-1/4	56	52
MVA-54	54	150	201	10	8	4	1-1/4	62	58
MVA-60	60	153	202	10	8	(2) 4	(2) 1-1/4	70	65
MVA-72	72	159	208	12	10	(2) 4	(2) 1-1/4	80	77
MVA-84	84	165	213	12	10	(2) 4	(2) 1-1/4	73	73
MVA-96	96	171	219	14	12	(2) 4	(2) 1-1/4	81-1/2	81-1/2
MVA-108	108	177	235	16	12	(2) 4	(2) 1-1/4	95	95
MVA-120	120	183	240	16	14	(2) 4	(2) 1-1/4	103-1/2	103-1/2
MVA-144	144	195	255	20	16	(2) 4	(2) 1-1/4	124-1/2	124-1/2

WITH OPTIONAL BOIL-OUT COIL

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

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

* F and G connections are not included on MVAC models with optional boil-out coil. Note: These connections may be required along with a liquid make-up connection if coil duty is for sub-cooling.

Refrigeration Vessels & Systems Corporation

A wholly owned subsidiary of EVAPCO, Inc.

1520 Crosswind Dr. • Bryan, TX 77808 USA

PHONE: 979-778-0095 • FAX: 979-778-0030 • E-MAIL: sales@rvscorp.com • www.rvscorp.com

EVAPCO, Inc. — World Headquarters & Research/Development Center

EVAPCO, Inc. • P.O. Box 1300 • Westminster, MD 21158 USA

PHONE: 410-756-2600 • FAX: 410-756-6450 • E-MAIL: marketing@evapco.com • www.evapco.com

EVAPCO North America

EVAPCO, Inc.
North American Headquarters
P.O. Box 1300
Westminster, MD 21158 USA
Phone: 410-756-2600
Fax: 410-756-6450
E-mail: marketing@evapco.com

EVAPCO South America

EVAPCO Brasil
Equipamentos Industriais Ltda.
Al. Vênus, 151 – CEP: 13347-659
Indaiatuba –São Paulo – Brasil
Phone: (55+11) 5681-2000

EVAPCO Europe

EVAPCO Europe BVBA
European Headquarters
Heersterveldweg 19
Industrieterrein Oost
3700 Tongeren, Belgium
Phone: (32) 12-395029
Fax: (32) 12-238527
E-mail: evapco.europe@evapco.be

EVAPCO Asia/Pacific

EVAPCO Asia/Pacific Headquarters
Evapco (Shanghai) Refrigeration
Equipment Co., Ltd.
1159 Luoning Rd.,
Baoshan Industrial Zone
Shanghai 200949, P.R. China
Phone: (86) 21-6687-7786
Fax: (86) 21-6687-7008
E-mail: marketing@evapcochina.com

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