



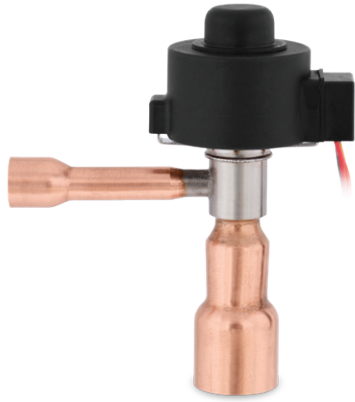
SPORLAN

Unipolar Electric Expansion Valve

For Refrigeration and Light Commercial Air Conditioning



ENGINEERING YOUR SUCCESS.



Features and Benefits

Unipolar Electric Expansion Valve (Type OEV)

- Advanced unipolar electric expansion valves for refrigeration and light commercial air conditioning systems
- Highly engineered bearing design for oil-less applications
- Analogous capacities to respective SER-AA to SER-DS electric expansion valves
- Optimized stator design for maximum corrosion resistance
- Minimal flow restriction construction (15 tons R-410A)
- Innovative needle design for consistency and high life cycles

Unipolar Electric Expansion Valve

For Refrigeration and Light Commercial Air Conditioning Applications

The Sporlan Type OEV valves are the latest line of unipolar electric expansion valves that will help achieve the optimal balance between performance and cost. The OEV valve family offers 5 port sizes to cover a wide range of capacities.

Specifications

Drive Type	Direct Drive Step Motor
Motor Type	Unipolar
Flow Path (Expansion)	Side Inlet
Number of Steps	500
Steps to Open	32 +/- 20
Operating Stroke	0.123" (3.125 mm)
Resolution	0.000128" (0.00625 mm)
Step Rate	30 - 80 PPS
Full Motion Transit Time	6.25 sec @ 80 PPS
MOPD	500 PSIG 300 PSIG (OEV-D)
Max. Rated Pressure	700 PSIG
Fluid Temp	-50°F to 160°F
Ambient Temp	-50°F to 160°F
Moisture / Humidity	≤ 95% RH
Internal Leakage	800 sccm @ 1.0 Mpa
External Leakage	0.10 oz/yr. at 300 PSIG (2.8 g/year at 20 bar)
Rated Voltage	12 VDC +/-10%
Rated Current	Max. 400 mA/winding
Phase Resistance	46 +/- 4 Ohms
Insulation Class	Class E
Compatible Refrigerants	HCFC, HFC, HFO
Compliance/Certification	MH4576, UL 429

Nomenclature

VALVE			COIL				
OEV	D	4 X 7 ODF	CEC	300	N	5	2
Valve Model	Port Size	Connection Size (Inlet x Outlet)	Stator	Lead Wire Length (cm)	Connector	Number of Pins	Series Number
	AA	2 X 2 ODF					
	A	3 X 4 ODF					
	B	2 X 2 ODF					
	C	3 X 4 ODF					
	D	4 X 7 ODF					

FOR USE ON REFRIGERATION and/or AIR CONDITIONING SYSTEMS ONLY

Bulletin 100-20-8, March 2020 supersedes Bulletin 100-20-8, January 2020 and all prior publications.

Capacity - Tons

Valve Model	Evaporator Temp (°F)	Refrigerant															
		R-410A								R-507A							
		Pressure Drop Across Valve (psid)															
		80	120	160	200	240	280	320	360	75	100	125	150	175	200	225	250
OEV-AA	40	0.59	0.72	0.83	0.93	1.02	1.10	1.18	1.25	0.39	0.45	0.50	0.55	0.60	0.64	0.68	0.71
	20	0.57	0.70	0.81	0.91	0.99	1.07	1.15	1.22	0.37	0.43	0.48	0.52	0.56	0.60	0.64	0.67
	0	0.56	0.68	0.79	0.88	0.97	1.04	1.12	1.18	0.35	0.40	0.45	0.49	0.53	0.57	0.60	0.64
	-20	0.54	0.66	0.76	0.85	0.93	1.01	1.08	1.14	0.32	0.38	0.42	0.46	0.50	0.53	0.56	0.59
	-40	0.52	0.64	0.73	0.82	0.90	0.97	1.04	1.10	0.30	0.35	0.39	0.43	0.46	0.49	0.52	0.55
OEV-A	40	1.52	1.86	2.15	2.40	2.63	2.84	3.04	3.23	1.01	1.16	1.30	1.43	1.54	1.65	1.75	1.84
	20	1.48	1.82	2.10	2.35	2.57	2.78	2.97	3.15	0.95	1.10	1.23	1.35	1.46	1.56	1.65	1.74
	0	1.44	1.77	2.04	2.28	2.50	2.70	2.88	3.06	0.90	1.04	1.16	1.27	1.37	1.47	1.56	1.64
	-20	1.39	1.70	1.97	2.20	2.41	2.60	2.78	2.95	0.84	0.97	1.08	1.19	1.28	1.37	1.45	1.53
	-40	1.34	1.64	1.90	2.12	2.32	2.51	2.68	2.85	0.78	0.90	1.01	1.10	1.19	1.27	1.35	1.42
OEV-B	40	2.11	2.58	2.98	3.33	3.65	3.95	4.22	4.47	1.40	1.61	1.80	1.98	2.14	2.28	2.42	2.55
	20	2.06	2.52	2.91	3.25	3.56	3.85	4.12	4.36	1.32	1.53	1.71	1.87	2.02	2.16	2.29	2.42
	0	2.00	2.45	2.83	3.16	3.46	3.74	4.00	4.24	1.25	1.44	1.61	1.76	1.91	2.04	2.16	2.28
	-20	1.93	2.36	2.73	3.05	3.34	3.61	3.86	4.10	1.16	1.34	1.50	1.65	1.78	1.90	2.02	2.12
	-40	1.86	2.28	2.63	2.94	3.22	3.48	3.72	3.95	1.08	1.25	1.40	1.53	1.65	1.77	1.87	1.98
OEV-C	40	5.20	6.37	7.35	8.22	9.01	9.73	10.4	11.0	3.45	3.98	4.45	4.87	5.26	5.63	5.97	6.29
	20	5.07	6.21	7.17	8.02	8.79	9.49	10.1	10.8	3.26	3.77	4.21	4.61	4.98	5.33	5.65	5.96
	0	4.93	6.04	6.97	7.79	8.54	9.22	9.86	10.5	3.08	3.55	3.97	4.35	4.70	5.02	5.33	5.62
	-20	4.76	5.83	6.73	7.53	8.24	8.90	9.52	10.1	2.87	3.31	3.70	4.06	4.38	4.69	4.97	5.24
	-40	4.59	5.62	6.49	7.26	7.95	8.58	9.18	9.73	2.67	3.08	3.44	3.77	4.08	4.36	4.62	4.87
OEV-D	40	10.8	13.2	15.3	17.1	18.7	20.2	—	—	7.17	8.28	9.25	10.1	10.9	11.7	12.4	13.1
	20	10.6	12.9	14.9	16.7	18.3	19.7	—	—	6.79	7.84	8.76	9.60	10.4	11.1	11.8	12.4
	0	10.3	12.6	14.5	16.2	17.8	19.2	—	—	6.40	7.39	8.26	9.05	9.77	10.4	11.1	11.7
	-20	9.90	12.1	14.0	15.7	17.1	18.5	—	—	5.97	6.89	7.70	8.44	9.12	9.75	10.3	10.9
	-40	9.55	11.7	13.5	15.1	16.5	17.9	—	—	5.55	6.41	7.17	7.85	8.48	9.06	9.61	10.1

Correction Factors - (°F)

REFRIGERANT	Liquid Temperature Correction Factor, (°F)														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-22	1.57	1.51	1.46	1.40	1.34	1.29	1.23	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-134a	1.69	1.63	1.56	1.49	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.86	0.78	0.71
R-404A	2.01	1.92	1.82	1.72	1.62	1.52	1.42	1.32	1.22	1.11	1.00	0.89	0.78	0.66	0.54
R-407A	1.78	1.70	1.63	1.55	1.48	1.40	1.32	1.24	1.16	1.08	1.00	0.92	0.83	0.75	0.66
R-407C	1.72	1.65	1.58	1.51	1.44	1.37	1.30	1.22	1.15	1.08	1.00	0.92	0.85	0.77	0.69
R-407F	1.72	1.65	1.58	1.51	1.44	1.37	1.30	1.23	1.15	1.08	1.00	0.92	0.84	0.76	0.68
R-410A	1.77	1.70	1.62	1.55	1.48	1.40	1.32	1.25	1.17	1.09	1.00	0.92	0.83	0.73	0.63
R-507A	2.05	1.95	1.85	1.75	1.64	1.54	1.44	1.33	1.22	1.11	1.00	0.89	0.77	0.65	0.52

Capacity - kW

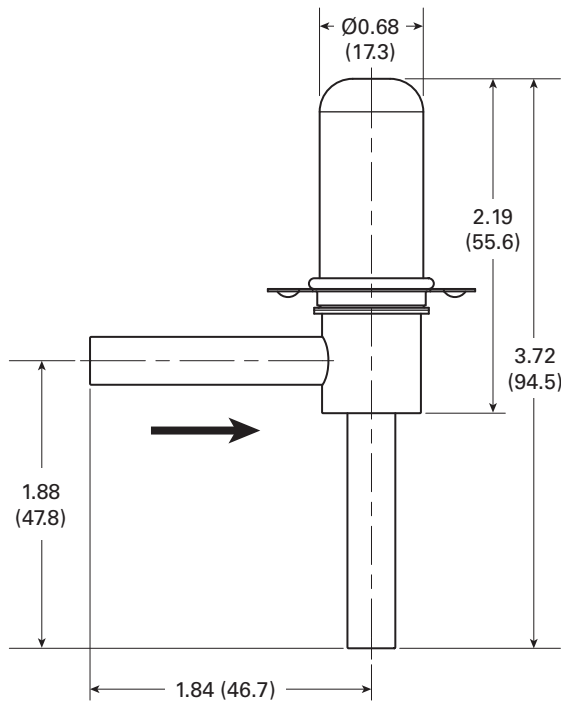
Valve Model	Evaporator Temp (°C)	Refrigerant															
		R-410A								R-507A							
		Pressure Drop Across Valve (bar)															
		5	8	11	14	17	20	23	26	4	6	8	10	12	14	16	18
OEV-AA	5	1.97	2.49	2.92	3.30	3.63	3.94	4.22	4.49	1.20	1.47	1.70	1.90	2.08	2.25	2.41	2.55
	-10	1.90	2.41	2.82	3.18	3.51	3.81	4.08	4.34	1.12	1.37	1.58	1.76	1.93	2.09	2.23	2.37
	-20	1.85	2.34	2.75	3.10	3.42	3.71	3.97	4.22	1.06	1.29	1.49	1.67	1.83	1.98	2.11	2.24
	-30	1.80	2.27	2.67	3.01	3.31	3.59	3.85	4.10	0.99	1.22	1.40	1.57	1.72	1.86	1.99	2.11
	-40	1.74	2.20	2.57	2.90	3.20	3.47	3.72	3.96	0.93	1.14	1.31	1.47	1.61	1.74	1.86	1.97
OEV-A	5	5.09	6.44	7.55	8.52	9.38	10.2	10.9	11.6	3.11	3.81	4.40	4.92	5.38	5.82	6.22	6.59
	-10	4.92	6.22	7.29	8.23	9.07	9.83	10.5	11.2	2.88	3.53	4.07	4.56	4.99	5.39	5.76	6.11
	-20	4.79	6.05	7.10	8.01	8.83	9.57	10.3	10.9	2.73	3.34	3.86	4.32	4.73	5.11	5.46	5.79
	-30	4.64	5.87	6.89	7.77	8.56	9.28	9.96	10.6	2.57	3.14	3.63	4.06	4.44	4.80	5.13	5.44
	-40	4.48	5.67	6.65	7.50	8.27	8.97	9.62	10.2	2.40	2.94	3.39	3.79	4.15	4.48	4.79	5.09
OEV-B	5	7.06	8.93	10.5	11.8	13.0	14.1	15.1	16.1	4.31	5.28	6.10	6.82	7.47	8.07	8.62	9.15
	-10	6.82	8.63	10.1	11.4	12.6	13.6	14.6	15.6	4.00	4.89	5.65	6.32	6.92	7.48	7.99	8.48
	-20	6.64	8.40	9.85	11.1	12.2	13.3	14.2	15.1	3.79	4.64	5.35	5.99	6.56	7.08	7.57	8.03
	-30	6.44	8.14	9.55	10.8	11.9	12.9	13.8	14.7	3.56	4.36	5.03	5.63	6.16	6.66	7.12	7.55
	-40	6.22	7.87	9.23	10.4	11.5	12.4	13.3	14.2	3.33	4.07	4.70	5.26	5.76	6.22	6.65	7.05
OEV-C	5	17.4	22.0	25.8	29.1	32.1	34.8	37.3	39.7	10.6	13.0	15.0	16.8	18.4	19.9	21.3	22.5
	-10	16.8	21.3	24.9	28.1	31.0	33.6	36.1	38.3	9.85	12.1	13.9	15.6	17.1	18.4	19.7	20.9
	-20	16.4	20.7	24.3	27.4	30.2	32.7	35.1	37.3	9.33	11.4	13.2	14.8	16.2	17.5	18.7	19.8
	-30	15.9	20.1	23.5	26.6	29.3	31.7	34.0	36.2	8.77	10.7	12.4	13.9	15.2	16.4	17.5	18.6
	-40	15.3	19.4	22.7	25.7	28.3	30.7	32.9	35.0	8.20	10.0	11.6	13.0	14.2	15.3	16.4	17.4
OEV-D	5	36.2	45.8	53.7	60.6	66.7	72.4	77.6	82.5	22.1	27.1	31.3	35.0	38.3	41.4	44.2	46.9
	-10	35.0	44.2	51.9	58.5	64.5	69.9	-	-	20.5	25.1	29.0	32.4	35.5	38.3	41.0	43.5
	-20	34.0	43.1	50.5	57.0	62.8	68.1	-	-	19.4	23.8	27.5	30.7	33.6	36.3	38.8	41.2
	-30	33.0	41.8	49.0	55.3	60.9	66.0	-	-	18.3	22.4	25.8	28.9	31.6	34.1	36.5	38.7
	-40	31.9	40.3	47.3	53.4	58.8	63.8	-	-	17.1	20.9	24.1	27.0	29.5	31.9	34.1	36.2

Correction Factors - (°C)

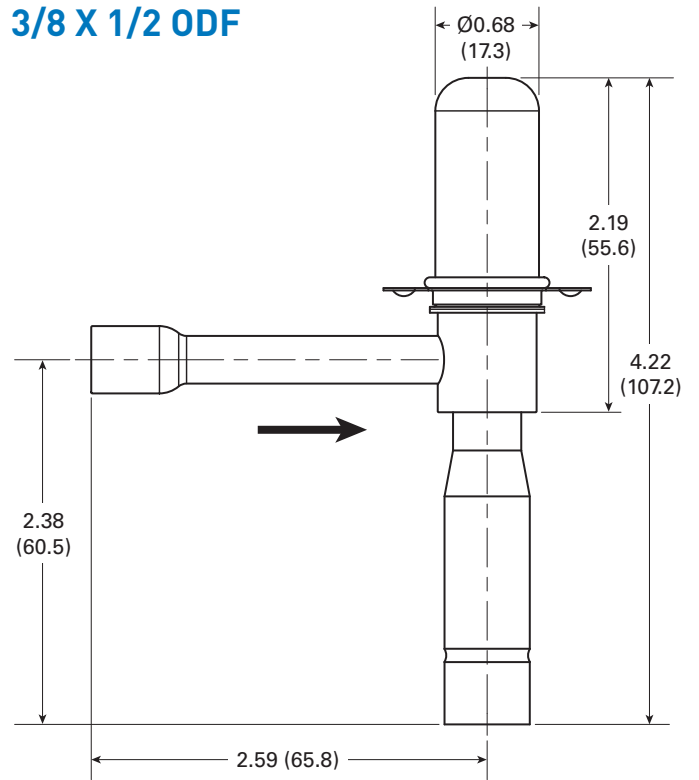
REFRIGERANT	Liquid Temperature Correction Factor, (°C)														
	-18	-12	-7	-1	4	10	16	21	27	32	38	43	49	54	60
R-22	1.57	1.51	1.46	1.40	1.34	1.29	1.23	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-134a	1.69	1.63	1.56	1.49	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.86	0.78	0.71
R-404A	2.01	1.92	1.82	1.72	1.62	1.52	1.42	1.32	1.22	1.11	1.00	0.89	0.78	0.66	0.54
R-407A	1.78	1.70	1.63	1.55	1.48	1.40	1.32	1.24	1.16	1.08	1.00	0.92	0.83	0.75	0.66
R-407C	1.72	1.65	1.58	1.51	1.44	1.37	1.30	1.22	1.15	1.08	1.00	0.92	0.85	0.77	0.69
R-407F	1.72	1.65	1.58	1.51	1.44	1.37	1.30	1.23	1.15	1.08	1.00	0.92	0.84	0.76	0.68
R-410A	1.77	1.70	1.62	1.55	1.48	1.40	1.32	1.25	1.17	1.09	1.00	0.92	0.83	0.73	0.63
R-507A	2.05	1.95	1.85	1.75	1.64	1.54	1.44	1.33	1.22	1.11	1.00	0.89	0.77	0.65	0.52

Dimensions - Inches (mm)

1/4 X 1/4 ODF



3/8 X 1/2 ODF

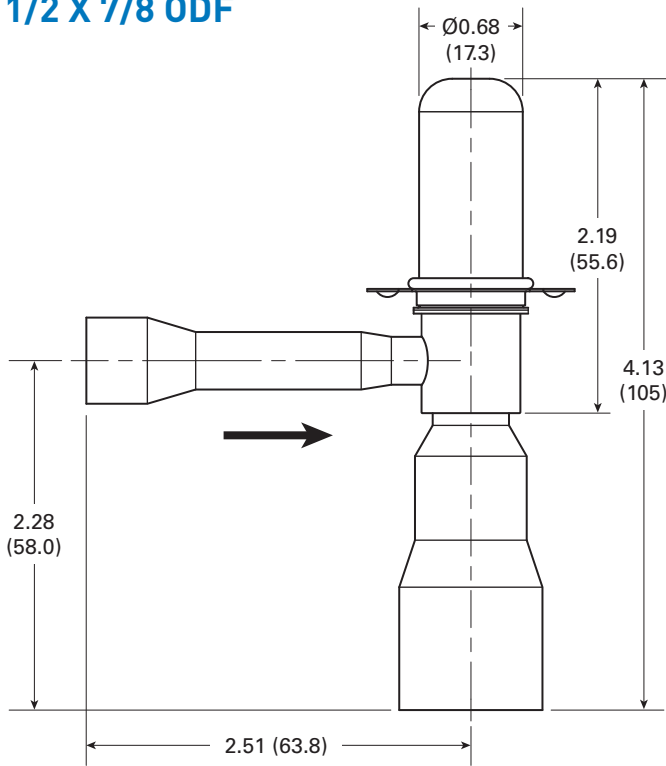


VALVE	PART NUMBER	INLET FITTING	OUTLET FITTING
OEV-AA 1/4 X 1/4 ODF	953390	1/4 ODF	1/4 ODF
OEV-A 1/4 X 1/4 ODF	953391		
OEV-B 1/4 X 1/4 ODF	953392		
OEV-C 1/4 X 1/4 ODF	953393		
OEV-D 1/4 X 1/4 ODF	953394		

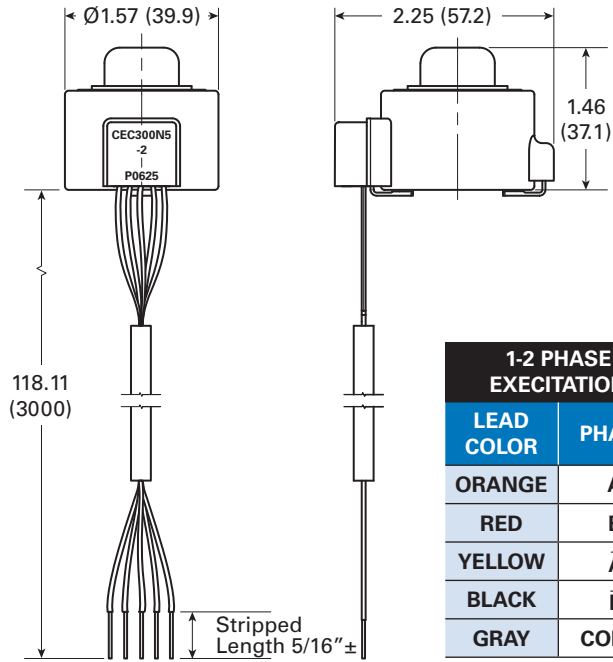
VALVE	PART NUMBER	INLET FITTING	OUTLET FITTING
OEV-AA 3/8 X 1/2 ODF	953425	3/8 ODF	1/2 ODF
OEV-A 3/8 X 1/2 ODF	953426		
OEV-B 3/8 X 1/2 ODF	953427		
OEV-C 3/8 X 1/2 ODF	953428		
OEV-D 3/8 X 1/2 ODF	953429		

Dimensions - Inches (mm)

1/2 X 7/8 ODF



COIL



1-2 PHASE EXECUTION	
LEAD COLOR	PHASE
ORANGE	A
RED	B
YELLOW	\bar{A}
BLACK	\bar{B}
GRAY	COM +

VALVE	PART NUMBER	INLET FITTING	OUTLET FITTING
OEVD 1/2 X 7/8 ODF	953446	1/2 ODF	7/8 ODF

COIL	PART NUMBER	COIL LENGTH Inches (mm)
CEC300N5-2	953447	118 (3000)

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