

# CRANKCASE PRESSURE REGULATING VALVES



**UL and SF**  
**LISTED or**  
**Recognized**

Crankcase Pressure Regulating Valves are designed to prevent overloading of the compressor motor by limiting the crankcase pressure to a predetermined maximum value during and after a defrost cycle or a normal shutdown period. These valves automatically throttle the vapor flow from the evaporator until the compressor can handle the load.

Sporlan manufactures five adjustable direct acting models...CRO-4, CRO-6, CROT-6, CRO-10 and CROT-10...all models respond only to their outlet pressure and modulate to prevent the suction pressure at the compressor from rising above the valve setting. Since these valves are adjustable, the setting may be altered to suit the specific system requirements.

## Selection and Capacity Ratings

The ratings for these valves vary depending on these items: design suction pressure after pulldown, maximum allowable suction pressure recommended by the compressor or unit manufacturer (this is the valve setting), and pressure drop across the valve. The difference between the design suction pressure and the valve setting determines how much of the valve stroke is used. Therefore, the valve setting should be kept as high as possible without exceeding the recommendation of the compressor or unit manufacturer. Once this information is available, the correct CRO can be selected from the data below.

Connections – (Standard Connections are in **BOLD** type).

**CRO-4 – 3/8", 1/2" ODF Solder and 3/8", 1/2" SAE Flare**

**CRO-6, \*CROT-6 – 5/8", 7/8", 1-1/8" ODF Solder and 1/2", 5/8" SAE Flare.**

**CRO-10, \*CROT-10 – 7/8", 1-1/8", 1-3/8" ODF Solder.**

**\*\*T\*\* indicates access valve on inlet connection.**

## Installation

Crankcase pressure regulating valves are installed in the suction line between the evaporator and compressor, and downstream of any other controls or accessories. When installing CRO's with solder type connections, the internal parts should be protected by wrapping the valve with a wet cloth.

CRO-6 & CRO-10 are listed by Underwriters Laboratories, Inc. – Guide – SFJQ – File No. SA5460 and Canadian Standards Association – Certification Record No. LR-19953. CRO-4 is a recognized component UL Guide No. SFJQ8, File Number SA5460, also a recognized component in Canada.

## CRO – Valve Nomenclature/Ordering Instructions

CRO	T	10	0/60	1-1/8 ODF
Valve Type Close on Rise of Outlet Pressure	Access Valve on Inlet Connection CROT-6 or CROT-10	Port Size in Eighths of an Inch	Adjustment Range - psig  See specifications for available adjustment ranges	Connections - ODF Solder or SAE Flare

## Capacities – kW

Capacities based on 38°C condensing temperature, 6°K superheat, 0°C subcooling, and 0.14 bar pressure drop across valve.

TYPE and ADJUSTMENT RANGE	DESIGN EVAP. TEMP. °C	SATURATED SUCTION PRESSURE – bar (Reference)	R-22						DESIGN EVAP. TEMP. °C	SATURATED SUCTION PRESSURE – bar (Reference)	R-134a					
			VALVE SETTING – barg								VALVE SETTING – barg					
			0.7	1.4	2.1	2.8	3.5	4.2			0.7	1.4	2.1	2.8	3.5	4.2
<b>CRO-4</b> 0/20 psig 0/1.4 barg	-40	0.0	0.61	0.61	—	—	—	—	-25	0.0	0.59	0.59	—	—	—	—
	-35	0.3	0.61	0.70	—	—	—	—	-20	0.3	0.59	0.69	—	—	—	—
	-30	0.6	0.53	0.80	—	—	—	—	-15	0.6	0.52	0.79	—	—	—	—
	-25	1.0	—	—	—	—	—	—	-10	1.0	—	0.79	—	—	—	—
<b>CRO-4</b> 0/50 psig 0/3.4 barg	-40	0.0	0.48	0.61	0.61	0.61	—	—	-20	0.3	0.49	0.64	0.69	0.69	—	—
	-30	0.6	0.50	0.67	0.80	0.80	—	—	-15	0.6	0.49	0.66	0.79	0.79	—	—
	-25	1.0	—	0.66	0.85	0.91	—	—	-5	1.4	—	—	0.83	1.02	—	—
	-15	1.9	—	—	0.76	0.99	—	—	5	2.5	—	—	—	0.91	—	—
<b>CRO-4</b> 0/75 psig 0/5.2 barg	-40	0.0	0.46	0.48	0.61	0.61	0.61	0.61	-15	0.6	0.49	0.62	0.76	0.79	0.79	0.79
	-30	0.6	0.50	0.64	0.77	0.80	0.80	0.80	-10	1.0	—	0.64	0.78	0.90	0.90	0.90
	-15	1.9	—	—	0.75	0.93	1.12	1.14	-5	1.4	—	—	0.79	0.95	1.02	1.02
	-10	2.5	—	—	—	0.86	1.07	1.27	5	2.5	—	—	—	0.89	1.10	1.28
<b>CRO(T)-6</b> 0/60 psig 0/4.1 barg	-40	0.0	1.62	2.54	3.45	4.27	4.27	—	-15	0.6	1.21	2.35	3.50	4.65	5.49	—
	-30	0.6	—	2.41	3.57	4.73	5.58	—	-10	1.0	—	2.03	3.32	4.61	5.90	—
	-15	1.9	—	—	2.07	3.67	5.27	—	-5	1.4	—	—	2.90	4.34	5.79	—
	-5	3.2	—	—	—	—	2.99	—	5	2.5	—	—	—	—	4.55	—
<b>CRO(T)-10</b> 0/60 psig 0/4.1 barg	-40	0.0	5.29	9.79	9.79	9.79	9.79	—	-15	0.6	—	7.83	12.3	12.3	12.3	—
	-30	0.6	—	7.95	12.5	12.5	12.5	—	-10	1.0	—	4.63	12.7	13.9	13.9	—
	-15	1.9	—	—	2.16	12.1	17.3	—	-5	1.4	—	—	8.72	15.6	15.6	—
	-5	3.2	—	—	—	—	5.13	—	5	2.5	—	—	—	—	16.2	—
			VALVE SETTING – barg								VALVE SETTING – barg					
			2.7	3.4	4.1	4.8	5.5	6.2			2.7	3.4	4.1	4.8	5.5	6.2
<b>CRO(T)-6</b> 30/110 psig 2.1/7.6 barg	-10	2.5	2.22	3.41	4.60	5.79	6.98	8.17	-10	1.0	3.40	4.27	5.14	6.00	6.24	6.24
	-5	3.2	—	2.53	3.84	5.15	6.46	7.76	-5	1.4	—	4.24	5.21	6.19	7.05	7.05
	0	4.0	—	—	2.68	4.11	5.55	6.98	0	1.9	—	—	5.10	6.18	7.27	7.91
	5	4.8	—	—	—	—	4.16	5.73	5	2.5	—	—	—	5.94	7.14	8.35
<b>CRO(T)-10</b> 30/110 psig 2.1/7.6 barg	-10	2.5	1.78	9.24	16.7	19.1	19.1	19.1	-10	1.0	13.2	13.9	13.9	13.9	13.9	13.9
	-5	3.2	—	2.31	10.5	18.7	21.1	21.1	-5	1.4	—	15.6	15.6	15.6	15.6	15.6
	0	4.0	—	—	1.75	10.7	19.7	23.1	0	1.9	—	—	17.4	17.4	17.4	17.4
	5	4.8	—	—	—	—	9.48	19.3	5	2.5	—	—	—	19.4	19.4	19.4

For complete information consult your nearest Sporlan Wholesaler or email europecold@parker.com and request Bulletin 90-10.

# CRANKCASE PRESSURE REGULATING VALVES

## Capacities – kW

Capacities based on 38°C condensing temperature, 6°K superheat, 0°C subcooling, and 0.14 bar pressure drop across valve.

TYPE and ADJUSTMENT RANGE	DESIGN EVAP. TEMP. °C	SATURATED SUCTION PRESSURE – bar (Reference)	R-404A						DESIGN EVAP. TEMP. °C	SATURATED SUCTION PRESSURE – bar (Reference)	R-407C						
			VALVE SETTING – barg								VALVE SETTING – barg						
			0.7	1.4	2.1	2.8	3.5	4.2			0.7	1.4	2.1	2.8	3.5	4.2	
<b>CRO-4</b> 0/20 psig 0/1.4 barg	-40	0.3	0.41	0.47	—	—	—	—	-40	-0.15	—	—	—	—	—	—	
	-35	0.6	0.35	0.55	—	—	—	—	-35	0.1	0.57	0.57	—	—	—	—	
	-30	1.0	—	0.55	—	—	—	—	-30	0.4	0.55	0.67	—	—	—	—	
	-25	1.5	—	—	—	—	—	—	-25	0.7	—	0.77	—	—	—	—	
<b>CRO-4</b> 0/50 psig 0/3.4 barg	-40	0.3	0.34	0.44	0.47	0.47	—	—	-35	0.1	0.45	0.57	0.57	0.57	—	—	
	-30	1.0	—	0.46	0.59	0.64	—	—	-30	0.4	0.47	0.61	0.67	0.67	—	—	
	-25	1.5	—	—	0.58	0.73	—	—	-25	0.7	—	0.63	0.77	0.77	—	—	
	-15	2.6	—	—	—	0.64	—	—	-15	1.6	—	—	0.77	0.98	—	—	
<b>CRO-4</b> 0/75 psig 0/5.2 barg	-40	0.3	0.33	0.41	0.47	0.47	0.47	0.47	-35	0.1	0.42	0.52	0.57	0.57	0.57	0.57	
	-30	1.0	—	0.45	0.55	0.64	0.64	0.64	-30	0.4	0.45	0.57	0.67	0.67	0.67	0.67	
	-15	2.6	—	—	—	0.63	0.78	0.93	-15	1.6	—	—	0.74	0.90	1.00	1.00	
	-10	3.3	—	—	—	—	0.71	0.88	-10	2.2	—	—	—	0.87	1.06	1.13	
<b>CRO(T)-6</b> 0/60 psig 0/4.1 barg	-40	0.3	1.00	1.70	2.39	3.09	3.29	—	-35	0.1	1.47	2.33	3.19	3.99	3.99	—	
	-30	1.0	—	1.40	2.31	3.23	4.14	—	-30	0.4	—	2.34	3.32	4.30	4.64	—	
	-20	2.0	—	—	—	2.57	3.75	—	-15	1.6	—	—	2.54	3.96	5.37	—	
	-10	3.3	—	—	—	—	—	—	-5	2.8	—	—	—	—	3.78	—	
<b>CRO(T)-10</b> 0/60 psig 0/4.1 barg	-40	0.3	2.33	6.67	7.47	7.47	7.47	—	-35	0.1	4.71	9.17	9.17	9.17	9.17	—	
	-30	1.0	—	2.97	8.67	9.86	9.86	—	-30	0.4	—	9.03	10.5	10.5	10.5	—	
	-20	2.0	—	—	—	8.23	12.7	—	-15	1.6	—	—	—	6.61	15.3	15.3	
	-10	3.3	—	—	—	—	—	—	-5	2.8	—	—	—	—	—	11.5	
			VALVE SETTING – barg									VALVE SETTING – barg					
			2.7	3.4	4.1	4.8	5.5	6.2				2.7	3.4	4.1	4.8	5.5	6.2
<b>CRO(T)-6</b> 30/110 psig 2.1/7.6 barg	-15	2.6	1.54	2.43	3.32	4.21	5.09	5.98	-10	2.2	2.57	4.58	6.16	7.74	7.78	7.78	
	-10	3.3	—	—	2.75	3.75	4.74	5.74	-5	2.8	—	3.01	4.19	5.38	6.57	7.75	
	-5	4.1	—	—	—	2.94	4.05	5.16	0	3.6	—	—	3.31	4.62	5.94	7.26	
	0	5.0	—	—	—	—	2.94	4.17	5	4.5	—	—	—	3.39	4.85	6.30	
<b>CRO(T)-10</b> 30/110 psig 2.1/7.6 barg	-15	2.6	—	6.21	11.8	14.3	14.3	14.3	-10	2.2	5.47	17.1	17.1	17.1	17.1	17.1	
	-10	3.3	—	—	6.98	13.2	16.0	16.0	-5	2.8	—	6.74	14.2	19.1	19.1	19.1	
	-5	4.1	—	—	—	6.85	13.8	17.9	0	3.6	—	—	7.04	15.3	21.2	21.2	
	0	5.0	—	—	—	—	5.41	13.1	5	4.5	—	—	—	5.91	15.1	23.5	
TYPE and ADJUSTMENT RANGE	DESIGN EVAP. TEMP. °C	SATURATED SUCTION PRESSURE – bar (Reference)	R-409A						DESIGN EVAP. TEMP. °C	SATURATED SUCTION PRESSURE – bar (Reference)	R-507						
			VALVE SETTING – barg								VALVE SETTING – barg						
			0.7	1.4	2.1	2.8	3.5	4.2			0.7	1.4	2.1	2.8	3.5	4.2	
<b>CRO-4</b> 0/20 psig 0/1.4 barg	-25	0.0	0.60	0.60	—	—	—	—	-40	0.4	0.39	0.47	—	—	—	—	
	-20	0.3	0.61	0.70	—	—	—	—	-35	0.7	—	0.55	—	—	—	—	
	-15	0.6	0.54	0.80	—	—	—	—	-30	1.1	—	0.50	—	—	—	—	
	-10	1.0	—	0.82	—	—	—	—	-25	1.6	—	—	—	—	—	—	
<b>CRO-4</b> 0/50 psig 0/3.4 barg	-20	0.3	0.50	0.65	0.70	0.70	—	—	-40	0.4	0.33	0.43	0.47	0.47	—	—	
	-15	0.6	0.51	0.68	0.80	0.80	—	—	-30	1.1	—	0.44	0.57	0.64	—	—	
	-5	1.4	—	—	0.85	1.02	—	—	-25	1.6	—	—	0.55	0.70	—	—	
	5	2.4	—	—	—	0.94	—	—	-15	2.8	—	—	—	—	—	—	
<b>CRO-4</b> 0/75 psig 0/5.2 barg	-15	0.6	0.50	0.63	0.77	0.80	0.80	0.80	-40	0.4	0.32	0.40	0.47	0.47	0.47	0.47	
	-10	1.0	—	0.65	0.80	0.90	0.90	0.90	-30	1.1	—	0.43	0.53	0.64	0.64	0.64	
	-5	1.4	—	—	0.80	0.97	1.02	1.02	-15	2.8	—	—	—	—	0.73	0.89	
	5	2.4	—	—	—	0.91	1.11	1.27	-10	3.5	—	—	—	—	0.65	0.82	
<b>CRO(T)-6</b> 0/60 psig 0/4.1 barg	-15	0.6	1.27	2.43	3.58	4.74	5.54	—	-40	0.4	0.94	1.64	2.33	3.02	3.28	—	
	-10	1.0	—	2.12	3.42	4.71	6.00	—	-30	1.1	—	1.27	2.18	3.08	3.99	—	
	-5	1.4	—	—	3.01	4.45	5.89	—	-20	2.1	—	—	—	2.32	3.48	—	
	5	2.4	—	—	—	—	4.74	—	-10	3.5	—	—	—	—	—	—	
<b>CRO(T)-10</b> 0/60 psig 0/4.1 barg	-15	0.6	1.02	8.23	12.4	12.4	12.4	—	-40	0.4	1.94	6.25	7.43	7.43	7.43	—	
	-10	1.0	—	5.16	13.2	13.9	13.9	—	-30	1.1	—	2.16	7.81	9.78	9.78	—	
	-5	1.4	—	—	9.47	15.6	15.6	—	-20	2.1	—	—	—	6.66	12.6	—	
	5	2.4	—	—	—	—	17.6	—	-10	3.5	—	—	—	—	—	—	
			VALVE SETTING – barg									VALVE SETTING – barg					
			2.7	3.4	4.1	4.8	5.5	6.2				2.7	3.4	4.1	4.8	5.5	6.2
<b>CRO(T)-6</b> 30/110 psig 2.1/7.6 barg	-10	1.0	3.47	4.33	5.20	6.07	6.26	6.26	-15	2.8	—	2.20	3.08	3.95	4.83	5.71	
	-5	1.4	—	4.31	5.28	6.25	7.03	7.03	-10	3.5	—	—	2.45	3.43	4.41	5.39	
	0	1.9	—	—	5.18	6.25	7.33	7.84	-5	4.3	—	—	—	2.56	3.65	4.74	
	5	2.4	—	—	—	6.03	7.22	8.41	0	5.2	—	—	—	—	2.46	3.67	
<b>CRO(T)-10</b> 30/110 psig 2.1/7.6 barg	-10	1.0	13.6	13.9	13.9	13.9	13.9	13.9	-15	2.8	—	4.81	10.3	14.1	14.1	14.1	
	-5	1.4	—	15.6	15.6	15.6	15.6	15.6	-10	3.5	—	—	5.17	11.3	15.8	15.8	
	0	1.9	—	—	17.3	17.3	17.3	17.3	-5	4.3	—	—	—	4.56	11.4	17.6	
	5	2.4	—	—	—	19.1	19.1	19.1	0	5.2	—	—	—	—	2.57	10.2	