

DEFROST DIFFERENTIAL PRESSURE REGULATING VALVES

In many supermarket applications refrigerant gas from the discharge line or from the top of the receiver is used for defrost. This method of defrost diverts a portion of the hot gas or cool gas (from the top of the receiver) to the suction line and back through the evaporator being defrosted. The gas condenses in the evaporator and flows in reverse, through check valves, around the TEV and liquid line solenoid valve. Liquid refrigerant then flows to the liquid header where it is distributed to evaporators not in the defrost cycle. In order for this reverse flow to occur, the pressure of the defrost header must be greater than the pressure of the liquid header. The difference in pressure is known as the defrost differential.



DDR-20



OLDR-15

The **OLDR** is in the **full open position** when the coil is de-energized, and it's in differential operation mode when the coil is energized.

The **LDR** is in **differential operation mode** when the coil is de-energized, and it is in the full open position when the coil is energized.

The **DDR-20** is designed to create a differential pressure between its inlet (discharge) pressure and the receiver pressure.

A solenoid bypass feature is incorporated in the valve so that the valve can be made to go full open when there is no need for a differential to be created. Energizing the solenoid coil opens the valve fully.

Location and Piping

The (O)LDR valves is located between the receiver and the liquid header. The DDR-20 is located in the discharge line before the condenser. The two types of defrost differential valves (liquid line and discharge line) are not to be applied on the same system.

Adjustment Range and Pressure Settings

All defrost differential valves are set by turning the adjusting stem located under the cap on the pilot differential valve. The adjustment range is 0.3 to 3.5 bar. The (O)LDR has a factory setting of 1.2 bar and the DDR-20 has a factory setting of 2 bar. Turning the stem clockwise increases the setting, counterclockwise decreases the setting.

Several methods are used to obtain the defrost differential. The (O)LDR is designed to maintain a differential pressure between the receiver and the liquid header.

Sporlan liquid line differential valves have a solenoid bypass feature that allows the valve to remain full open or modulate to maintain a differential. We supply two versions of liquid line differential valves:

Capacities – kW

Capacities based on 5°C evaporator temperature, 38°C condensing temperature, 14°K superheat return gas, discharge gas temperature 28°C above isentropic compression.

VALVE TYPE	REFRIGERANT								
	134a			404A & 507			407C		
	PRESSURE DROP ACROSS VALVE – bar								
	0.14	0.21	0.35	0.14	0.21	0.35	0.14	0.21	0.35
LDR-15, OLDR-15	155	190	246	110	135	174	153	187	242
LDR-20, OLDR-20	343	420	543	243	298	384	338	414	534
DDR-20	27	33	42	29	35	45	34	41	53

OLDR – Valve Nomenclature/Ordering Instructions

O	LDR	15	5/50	1-3/8" ODF	120/50-60
Normally Open	Liquid Differential Regulator	Valve Size	Adjustment Range – psi	Connection (Inches)	Electrical Specifications

DDR – Valve Nomenclature/Ordering Instructions

DDR	20	5/50	1-5/8" ODF	120/50-60
Discharge Differential Regulator	Valve Size	Adjustment Range – psi	Connection (Inches)	Electrical Specifications

Specifications

VALVE TYPE	PORT SIZE – mm	DIFFERENTIAL SETPOINT RANGE	CONNECTIONS – Inches INLET x OUTLET	COIL
OLDR-15	25.4	0.34/3.4 bar	1-3/8 ODF x 1-3/8 ODF	MKC-2
LDR-15				OMKC-2
OLDR-20	33.3		1-5/8 ODF x 1-5/8 ODF or	MKC-2
LDR-20			2-1/8 ODF x 2-1/8 ODF	OMKC-2
DDR-20			1-5/8 ODF x 1-5/8 ODF	MKC-2

M.R.P. of 27.5 bar. MOPD of 20.5 bar.
For complete information consult your nearest Sporlan Wholesaler or email europesold@parker.com and request Bulletin 90-50.