

200RB...-FLR are normally closed solenoid valves for various application duties.


Features

- Normally closed
- Pilot operated requires minimum operating pressure differential
- Compact size
- Extended fittings: No disassembly necessary for brazing
- ATEX compliance coil in 24VAC/50Hz and 230VAC/50Hz



200RB...-FLR + ASC3-EX...

Coil

 II 3G Ex nA IIA T3 Gc U

Selection Table Valves

Type	Part no.	Kv-Value [m3/h]	Capacity [kW] Liquid line duty	Connections Solder / ODF	
				[mm]	[inch]
200RB 3T3-FLR (mm)	801323	0.4	7.3	10	
200RB 3T3-FLR	801445				3/8"
200RB 4T10-FLR	801446	0.9	17.3	10	
200RB 4T4-FLR	801447				1/2"
200RB 4T3-FLR	801448				3/8"
200RB 4T12-FLR	801449	1.6	30.4	12	
200RB 6T4-FLR	801450				1/2"
200RB 6T12-FLR	801451				
200RB 6T5-FLR	801452				5/8"

Note: Nominal capacity at +38°C condensing temperature +4°C evaporating temperature, 1 K subcooling and 0.15 bar pressure drop.




Selection Table Coils

Type	Part no.
ASC3-EX24VAC, 50Hz	801125
ASC3-EX230VAC, 50Hz	801126

Technical Data Valve

Max. allowable working pressure PS	31 bar
Test pressure PT	34.1 bar
Operating temperature range TS	-40°C...+120°C
Max. ambient temperature	-40°C...+50°C

Technical Data Coils

Supply voltage ASC3-EX24VAC ASC3-EX230VAC	24VAC ±10% 230VAC ±10%
Frequency	50 Hz
Ambient temperature range	-40°C...+50°C
Protection class	IP65
Cable length	3 m
Marking (only coil)	 II 3G Ex nA IIA T3 Gc U,  

Quick Selection (0.15 bar pressure drop)

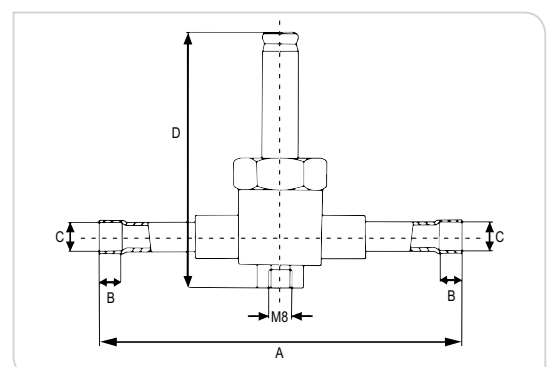
Liquid temperature °C	Capacity in kW Evaporating temperature °C													Valve type
	R290		R290											
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
70	4.6	4.5	4.4	4.2	4.1	4.0	3.8	3.7	3.5	3.4	3.3	3.1	3.0	200RB3...FLR
	10.9	10.6	10.3	10.0	9.7	9.4	9.0	8.7	8.4	8.0	7.7	7.4	7.0	200RB4...FLR
	19.2	18.6	18.1	17.5	17.0	16.4	15.9	15.3	14.7	14.1	13.5	12.9	12.4	200RB6...FLR
65	5.1	5.0	4.9	4.7	4.6	4.4	4.3	4.2	4.0	3.9	3.7	3.6	3.4	200RB3...FLR
	12.1	11.8	11.5	11.2	10.8	10.5	10.2	9.9	9.5	9.2	8.8	8.5	8.2	200RB4...FLR
	21.2	20.7	20.2	19.6	19.0	18.5	17.9	17.3	16.7	16.1	15.5	14.9	14.3	200RB6...FLR
60	5.6	5.5	5.3	5.2	5.1	4.9	4.8	4.6	4.5	4.3	4.2	4.1	3.9	200RB3...FLR
	13.3	12.9	12.6	12.3	12.0	11.6	11.3	11.0	10.6	10.3	9.9	9.6	9.3	200RB4...FLR
	23.3	22.7	22.2	21.6	21.0	20.5	19.9	19.3	18.7	18.1	17.5	16.9	16.2	200RB6...FLR
55	6.1	5.9	5.8	5.7	5.5	5.4	5.2	5.1	5.0	4.8	4.7	4.5	4.4	200RB3...FLR
	14.4	14.1	13.7	13.4	13.1	12.8	12.4	12.1	11.7	11.4	11.0	10.7	10.3	200RB4...FLR
	25.2	24.7	24.1	23.6	23.0	22.4	21.8	21.2	20.6	20.0	19.4	18.8	18.1	200RB6...FLR
50	6.5	6.4	6.3	6.1	6.0	5.8	5.7	5.6	5.4	5.3	5.1	5.0	4.8	200RB3...FLR
	15.5	15.2	14.8	14.5	14.2	13.8	13.5	13.1	12.8	12.4	12.1	11.7	11.4	200RB4...FLR
	27.2	26.6	26.1	25.5	24.9	24.3	23.7	23.1	22.5	21.9	21.2	20.6	20.0	200RB6...FLR
45	7.0	6.9	6.7	6.6	6.4	6.3	6.2	6.0	5.9	5.7	5.6	5.4	5.2	200RB3...FLR
	16.6	16.2	15.9	15.6	15.2	14.9	14.6	14.2	13.9	13.5	13.1	12.8	12.4	200RB4...FLR
	29.1	28.5	27.9	27.4	26.8	26.2	25.6	24.9	24.3	23.7	23.1	22.4	21.8	200RB6...FLR
40	7.5	7.3	7.2	7.0	6.9	6.7	6.6	6.4	6.3	6.1	6.0	5.8	5.7	200RB3...FLR
	17.6	17.3	17.0	16.6	16.3	16.0	15.6	15.3	14.9	14.5	14.2	13.8	13.5	200RB4...FLR
	31.0	30.4	29.8	29.2	28.6	28.0	27.4	26.8	26.2	25.5	24.9	24.3	23.6	200RB6...FLR
30	8.3	8.2	8.1	7.9	7.8	7.6	7.5	7.3	7.2	7.0	6.9	6.7	6.5	200RB3...FLR
	19.7	19.4	19.1	18.7	18.4	18.0	17.7	17.3	16.9	16.6	16.2	15.8	15.5	200RB4...FLR
	34.7	34.1	33.5	32.9	32.3	31.6	31.0	30.4	29.8	29.1	28.5	27.8	27.2	200RB6...FLR
25	8.8	8.6	8.5	8.3	8.2	8.0	7.9	7.7	7.6	7.4	7.3	7.1	7.0	200RB3...FLR
	20.8	20.4	20.1	19.7	19.4	19.0	18.7	18.3	18.0	17.6	17.2	16.8	16.5	200RB4...FLR
	36.5	35.9	35.3	34.7	34.1	33.4	32.8	32.2	31.5	30.9	30.2	29.6	28.9	200RB6...FLR
20		9.1	8.9	8.8	8.6	8.5	8.3	8.2	8.0	7.9	7.7	7.5	7.4	200RB3...FLR
		21.5	21.1	20.8	20.4	20.1	19.7	19.3	19.0	18.6	18.2	17.8	17.5	200RB4...FLR
		37.7	37.1	36.5	35.8	35.2	34.6	33.9	33.3	32.6	32.0	31.3	30.7	200RB6...FLR

Select the valve type from tables for capacity value corresponding to system (evaporator) cooling capacity. For other pressure drop than 0.15, please use the below correction factors.

Correction factors $K_{\Delta P}$														
ΔP , bar	0.05	0.1	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70
$K_{\Delta P}$	1.73	1.22	1.0	0.87	0.77	0.71	0.65	0.61	0.58	0.55	0.52	0.50	0.48	0.46

Dimensions [mm]

Type	A	B	Connection / ODF	D
200RB 3T3-FLR (mm)	126	8	10 mm	88.3
200RB 3T3-FLR	126	8	3/8"	88.3
200RB 4T10-FLR	126	8	10 mm	88.3
200RB 4T4-FLR	126	10	1/2"	88.3
200RB 4T3-FLR	126	8	3/8"	88.3
200RB 4T12-FLR	126	10	12 mm	88.3
200RB 6T4-FLR	126	10	1/2"	88.3
200RB 6T12-FLR	126	10	12 mm	88.3
200RB 6T5-FLR	126	13	16 mm & 5/8"	88.3



General Information

200RB...-FLR are solenoid valves for open or close of refrigerant flow.

The listed products are not in scope of ATEX product directive 94/9/EC as they do not incorporate an own source of ignition.

200RB...-FLR must be installed in an appropriate housing to protect them from mechanical damage or shock.

⚠ Safety Instructions

- Read operating instructions thoroughly. Failure to comply can result in device failure, system damage or personal injury.
- According to EN 13313 it is intended for use by persons having the appropriate knowledge and skill.
- R290 requires special handling and care due to its flammability. Sufficient ventilation is required during service of the system. Contact with rapidly expanding gases can cause frostbite and eye damage. Proper protective equipment (gloves, eye protection, etc.) has to be used.
- In a severely contaminated system, avoid breathing acid vapors and avoid contact with skin from contaminated refrigerant/lubricants. Failure to do so could result in injury.
- Ensure that the system is correctly labeled with applied refrigerant type and a warning for explosion risk.

WARNING: Do not use a solenoid valve as a safety shut-off valve or for service purpose.

- Do not release any refrigerant into the atmosphere!
- Do not exceed the specified maximum ratings for pressure, temperature.
- Before opening any system make sure pressure in system is brought to and remains at atmospheric pressure.
- Ensure that the system piping is grounded.
- Before installation or service disconnect voltage from system and device.
- Observe and avoid mechanical damage of component housing.
- Ensure that design, installation and operation are according to European and national standards/regulations

Installation

- Do not dent, bend, or use the enclosing tube as a lever. A damaged enclosing tube may result in coil burnout, inoperative valve or leakage.
- Direction of flow must match with arrow on valve body.

Recommended external pipe connection

Nominal pipe connection	Outside diameter	
	Min. (mm)	Max. (mm)
3/8"	9.47	9.55
1/2"	12.62	12.73
5/8"	15.80	15.90
10 mm	9.95	10.05
12 mm	11.96	12.05
16 mm	15.95	16.05

Mounting Location (Fig. 1, 2)

- Allow sufficient clearance above the valve for removal of Coil.
Valves may be mounted in horizontal or vertical lines (Fig. 1). Up-side down position is not allowed and can cause mal-function (Fig. 2).

Fig. 1

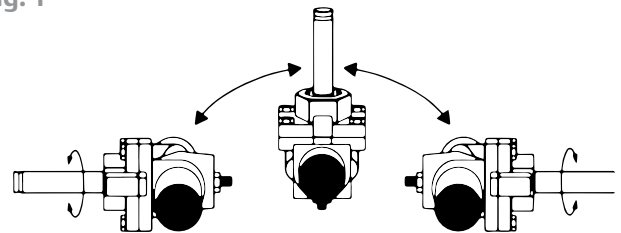
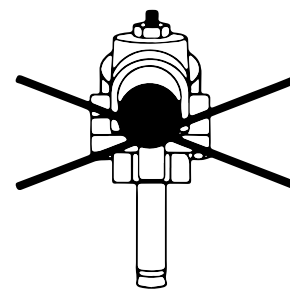


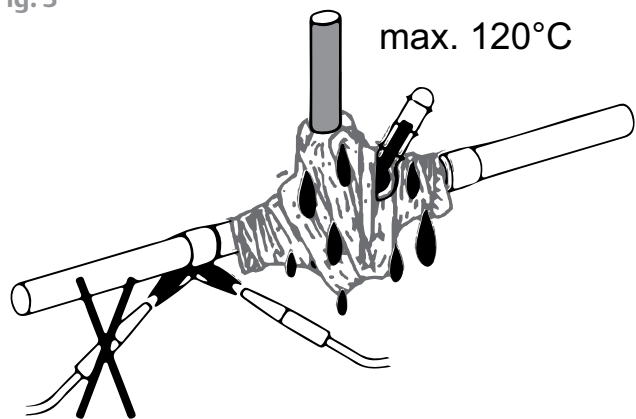
Fig. 2



Brazing (Fig. 3)

- Perform and consider the brazing joint as per EN 14324.
- Before and after brazing clean tubing and brazing joints.
- **Do not disassemble valve for brazing.**
- To avoid oxidization, it is advised to purge the system with an inert gas such as nitrogen while brazing.
- **Do not exceed max. body temperature of 120°C.**

Fig. 3



⚠ Service / Maintenance

- Defective 200RB...-FLR must be replaced; they cannot be repaired.
- Before any service disconnect electrical power of the coil and use permanent magnet to keep the valve open while emptying the system.
- Before any debrazing ensure that the flammable refrigerant is pumped out of the system and the room around the system is well vented so no refrigerant left.
- **Warning:** Never remove energized coil from valve. This applies also for testing purposes.

Technical Data of 200RB... -FLR

- Max. allowable working pressure PS: 31 bar
- Test pressure PT: 34.1 bar
- Operating Temperature Range TS: -40°C...+120°C
- Max. ambient temperature: -40°C...+50°C
- Released / compatible for: R290, mineral-, alkyl benzene and ester lubricants
- Standards: EN 12284

200RB types, not listed in the following table, are not released for use with flammable refrigerants!

Type	Part no.
200RB 3T3-FLR (mm)	801323
200RB 3T3-FLR	801445
200RB 4T10-FLR	801446
200RB 4T4-FLR	801447
200RB 4T3-FLR	801448
200RB 4T12-FLR	801449
200RB 6T4-FLR	801450
200RB 6T12-FLR	801451
200RB 6T5-FLR	801452

- Internal parts must be protected from foreign material and moisture. An Emerson filter drier is recommended to be installed.
- Minimize vibrations in the piping lines by appropriate solutions.

Pressure Test

- After completion of installation, a pressure test must be carried out according to EN 378 for systems which must comply with European pressure equipment directive 97/23/EC.
- Max. system test pressure: 34.1 bar.

⚠ Warning

- Failure to do so could result in loss of refrigerant and personal injury.
- The pressure test must be conducted by skilled persons with due respect regarding the danger related to pressure.

Tightness Test

Conduct tightness test according to EN 378-2 with appropriate equipment and method to identify tightness of external joint. The allowable leakage rate must be according system manufacturer’s specification.

Operation

- Before operation let the parts cool down to a temperature < 40°C.
- Cycle valve several times. A distinct “click” should be heard each time the solenoid coil is energized.

Note: Emerson solenoid valves are equipped with a continuous-duty coil, which when energized for an extended period of time becomes hot. This is normal.


General Information

ASC3-EX Series Coils are for use with Emerson 200 RB...-FLR series solenoid valves approved for use with R290.

Applied type of ASC3-EX coils

Voltage	Coil
24VAC 50 Hz	ASC3-EX24VAC
230VAC 50 Hz	ASC3-EX230VAC

Coils have following markings:

 II 3G Ex nA IIA T3 Gc U

These components must be installed in an appropriate housing to protect them from mechanical damage or shock.

Safety Instructions

- Read operating instructions thoroughly. Failure to comply can result in device failure, system damage or personal injury.
- According to EN 13313 it is intended for use by persons having the appropriate knowledge and skill.
- R290 requires special handling and care due to its flammability. Good ventilation is required during service of the system. Contact with rapidly expanding gases can cause frostbite and eye damage. Proper protective equipment (gloves, eye protection, etc.) has to be used.
- The coil should be fused in accordance with local codes.
- Ensure that the system piping is grounded.
- Ensure that the system is correctly labeled with applied refrigerant type and a warning for explosion risk.
- Do not exceed the specified maximum ratings for voltage and current.
- Before installation or service disconnect all voltages from system and device.
- Do not energize coil unless it is attached to the valve.
- Observe and avoid mechanical damage of component housing.
- Do not use any other fluid media without prior approval of Emerson. Use of fluids not listed could result in: Change of hazard category of product and consequently change of conformity assessment requirement for product in accordance with European pressure equipment directive 97/23/EC.
- Ensure that design, installation and operation are according to European and national standards/regulations.

Installation of Coils (Fig. 1)

- Ensure that the cables are mounted without tension; always leave the cable a bit loose.
- Ensure that cables are not mounted near sharp edges.
- Do not bend or mechanically stress the cable outlet, maintain a clearance of 20 mm to neighboring parts.
- Mount O-ring with smaller diameter over enclosing tube.
- Place coil over the enclosing tube.
- Insert O-ring with larger diameter inside of the orange color clip.
- Press the clip with mounted O-ring over the coil on the enclosing tube until it snaps.

Electrical Connection

- Before energizing the valve be sure that the source voltage and frequency matches that on the coil label.
- **Note:** ASC3-EX coils are intended for continuous-duty, which when energized for an extended period of time, it becomes hot. This is normal.
- **Molded plug and cable assembly**
Brown and blue color wires to be connected to the power supply and yellow/green color wire to the ground.

Service / Maintenance



Warning

- **Disconnect electrical power before service and wait for coil temperature to cool down before attempting to disassemble it, or use gloves, failure to do so could lead to injury.**
- ASC3-EX disassembly: see Fig. 2

Technical Data

- Supply voltage variation: $\pm 10\%$
- Frequency: 50 Hz

Coil	Inrush current [A]	Holding current [A]
ASC3-EX230VAC	0.22	0.052
ASC3-EX24VAC	2.23	0.57

- Ambient temperature range: $-40...+50^{\circ}\text{C}$
- Protection class: IP65
- Marking: ; 

 II 3G Ex nA IIA T3 Gc U

Fig. 1: ASC3-EX...



Fig. 2

