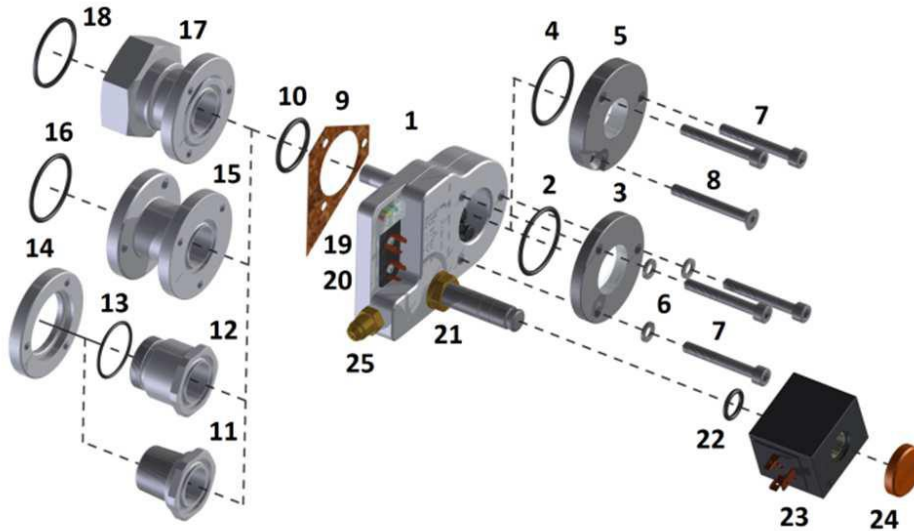


System Components

Note: For details, see Fig. 1, 3, 4

Fig. 1



Legend	Description	Legend	Description
1	Base unit	14	Flange ring Aluminum (TR4)/Steel (TR5)
2	Sight glass O-Ring TR4	15	Flange adapter
3	Sight glass TR4	16	Flange adapter O-Ring backside
4	Sight glass O-Ring TR5	17	
5	Sight glass TR5	18	
6	Spring washer: 3 pcs (TR4)	19	Connection for CAB 302
7	Screws (M6 x 45)	20	Relay connector for CAB 301
8	Countersunk screw: 1pcs (TR5)	21	Enclosing tube
9	Screw transport holder (discard) <i>(not needed for preassembled TR4/5)</i>	22	Solenoid coil lower O-Ring (12.4x2.6 mm/0.49x0.1 inches)
10	Adapter front O-Ring	23	Solenoid coil
11/12	Adapter with thread connection	24	Solenoid coil cap incl. O-Ring (20.0x3.0 mm/0.79x0x12 inches)
13	Adapter O-Ring backside	25	7/16"-UNF oil connection incl. O-Ring (7.6x1.8 mm/0.3x0.07 inches)

A: Installation with Screw adapters: (see Fig. 1 - 3) Adapter types: ADP 302, ADP 303, ADP 303 CO2

1. **TR4/TR5** delivered with already assembled adapters, **are not ready** to be installed, for installation the adapter has to be removed:
 - a. Remove screws (7), spring washer (6), adapter (11/12) and sight glass (3)
 - b. Make sure that O-rings (2 or 4 and 10) stick to the sight glass and adapter, all O-rings are

greased and should not fall out.

2. Remove plug or sight glass from thread on compressor and make sure the thread is free of sealing material and no indication of damages.
3. Put adapter ring (14) loose on vessel thread connection.
4. Mount adapter (11 or 12) with consideration adapter type as follows:

NPTF tapered threaded Adapters (11):

- Inspect thread part and sealing surface is free of nicks and burrs.
- Wrap teflon tape around male thread in proper direction
- Screw adapter into port and tight by hand until stop reached.
- Tighten by wrench with 59 ft lb
- Do not turn backward!

Warning: Over or insufficient tightening, will damage the thread or cause the leakage.

- Follow below step 5 to 9.

UNF threaded Adapters (12):

- Mount O-ring (13) to the adapter (12). Pay attention to proper seating of the O-ring when mounting the adapter. Tighten by hand and apply 18.43 ft lb torque.
 - Follow below step 5 to 9.
5. Locate O-ring (10) into the Adapter (11 or 12) (front side).
 6. Locate the stamped groove into the adapter ring (14) in line with the base unit (1) marking (Fig. 2).
 7. Mount the base unit (1) including O-ring (10) to the adapter ring (14). **Note: For proper function the unit must be installed horizontally by rotating Adapter ring (14) (Fig. 3,4).**
 8. Tighten the three screws (7 & 8) only hand tight, then gradually and evenly in ½ turns until reaching the dedicated torque of 8.85 ft lb. This procedure is mandatory to achieve full leak tightness.
 9. Connect the oil supply line to 7/16-20 UNF thread (25).

B: Installation with Flange adapter: (see Fig. 1 - 3)

Adapter types: ADP 301, ADP 315 CO2

The use of flange type adapter is applicable to vessels having the same holes arrangement as adapter. This insures the horizontal installation of TR (Fig. 3,4).

1. **TR4/TR5** delivered with already assembled adapters, **are ready** to be installed, do not disassemble!
2. Remove the sight glass from the compressor.
3. Mount O-ring (16) between adapter (15) and compressor. Uses screws M6 (not part of delivery) and tighten according to compressor manufacturer instruction.
4. Connect the oil supply line to 7/16-20 UNF thread (25).

Pressure Test:

After completion of installation, a pressure test must be carried out as follows:

- according to EN 378 for systems which must comply with European pressure equipment directive 14/68/EU.
- to maximum working pressure of system for other applications.

⚠ 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 a tightness test according to EN 378-2 with appropriate equipment and method to identify leakages of external joints.

Electrical Connection:

- For mounting of coil please refer to coil operating instruction.
- Connect CAB 302 (19) and CAB 301 (20) cable assemblies to TR and coil. Recommended torque for the plug screws is 0.22 ft lb.

Wiring of Relay via CAB 301:

- **Note:** Do not switch the compressor directly. Use compressor's power relay instead. See Fig. 5 for connection of TR to the safety loop (SL) of a rack controller.
- Connect the CAB 301 cable (20) to the relay connection according Fig. 3,4:
 BU = blue BK = black BN = brown

Wiring:

For 24 V Supply

- The CAB 302 cable assembly requires a 24 VAC coil.
- Connect CAB 302 plug to pins (19) and wire to the power supply (i.e. ECT- 623 transformer) acc. Fig. 3

Operation: (Fig. 4)

TR4 and TR 5 are fully level controlled. The sight glass of each device is divided into three operational zones. When the level reaches the yellow zone (Yellow) the TR starts filling after a time delay of 10 sec. A further level drop to the red zone (Red) will switch the alarm relay after a time delay of 20 sec / 120 sec.

The current status is indicated with the 3 LEDs according to the following table:

Operating Condition / Status	Function	Contact position	LED
Supply power is off or normal oil level (<50%)	OK	BK-BU close BK-BN open	Green ●
Oil Level (close 40%)	Injection		Green ● Yellow ●
Oil Level < 40%	Injection		Yellow ●
Oil level too low < 30%	Alarm + Injection	BK-BU open BK-BN close	Red ● Yellow ●

- To provide the correct oil level at any time we recommend to keep the TR4/5 always powered on (also during compressor stand-by and shutdown mode).
- **First Installation:** After connecting TR to power supply and oil level below 50%, TR starts injecting after 10 sec delay to bring oil immediately to a safe level.

Service and Maintenance:

- The oil connector with strainer and O-ring can be removed for cleaning or replacement (see Fig. 5). Recommended torque: 8.85 ft lb.
- The enclosing tube (21) with hexagon screw can be removed carefully for cleaning or replacement. Before reassembly a new O-ring is required. Recommended torque: 14.75 ft lb.
- For electrical check see Fig. 6. ①-④ 24VAC, ②-③ to solenoid coil.

Fig. 2

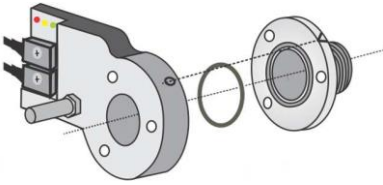


Fig. 3

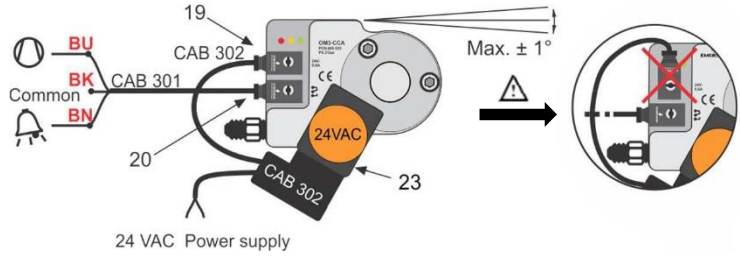


Fig. 4

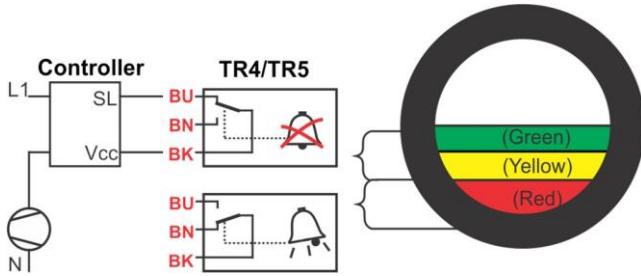


Fig. 5

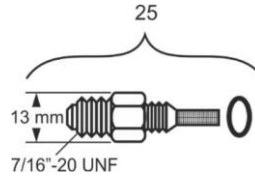


Fig. 6

