

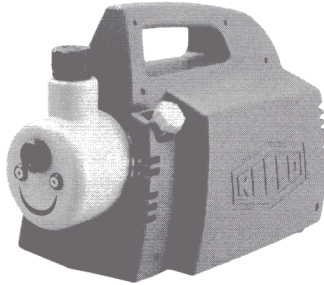
# INSTRUCTIONS

Refrigeration  
Service Products  
and Components

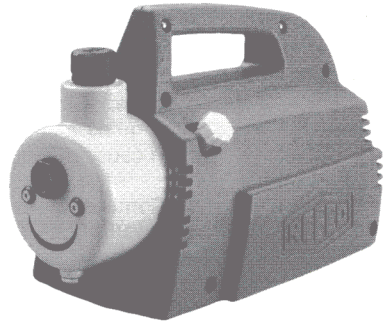


## Instructions of use and service

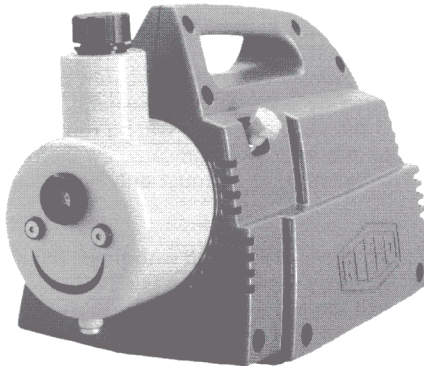
### REFCO Rotary vane Vacuum Pumps



**RL-2**



**RL-4**



**RL-8**

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## Important:

⚠ **Read this manual and become familiar with the specifications and operation of REFCO vacuum pumps prior to use. The instructions of use will give you important information in regards to the operation, service and the disposal of the pump.**

## Use of the pump:

The REFCO vacuum pumps have been especially designed and manufactured for the evacuation of closed vessels and units in the field of refrigeration and air-conditioning. The pump must always be operated by a qualified professional technician!

⚠ The vacuum pump must only be used in the field of refrigeration and air-conditioning and **must not** be used, built in or mounted into other appliances and applications.

⚠ The vacuum pump **must not** be used as a compressor or to build up pressure with air or other gases.

⚠ The vacuum pump **must not** be operated in flammable environments or places where explosive gas could be present.

⚠ The vacuum pump **must not** be used in connection with aggressive liquids and gases such as i.e. ammonia or pure oxygen which could cause damage to parts and components of the pump.

⚠ Combustible refrigerants such as i.e. R600a, R600, R290, must be vented through the exhaust to the outside of buildings by means of a venting hose. (see accessories)

⚠ The vacuum pump **must not** be used to pump liquids such as i.e. water, fuels, oils, beverages, other liquid food, liquid refuse or faeces.

## Set up operation/transport:

The vacuum pumps supplied without electrical plug must be equipped with an electrical triple-pole plug according to the norms and regulations of the country where the vacuum pump will be used. The plug must be fitted by a trained professional. The electrical power supply with which the vacuum pump will be run, must be in accordance with the voltage and frequency indicated on the rating plate of the vacuum pump. The vacuum pump must only be connected to a fused electric installation.

The vacuum pump is supplied without oil filling. Prior to the first operation the vacuum pump must be filled to half level of the oil sight glass (Pos.20) with the oil provided (DV-44/DV-45). The oil is being filled in through the port of the oil mist filter (Pos.19).

⚠ Only fill oil up to half level of the oil sight glass. Refit the oil mist filter (Pos.21) after filling.

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△ Remove the flare cap from the intake port to start the pump (with model RL-8 also turn the ball valve to open position). Connect the charging hose to the intake port as soon as the pump motor reaches full speed.

△ Running the pump without being connected to a system and pulling vacuum will result in extensive exhaust of oil mist through the oil mist filter.

△ Carry the vacuum pump on the designated handle only.

△ Keep the pump levelled and secured during transport to avoid oil spillage. Oil spillage could cause damage to the electric motor.

## Electric data:

The electric data is mentioned under "technical data" on page 8 of this manual.

## Technical description:

The REFCO vacuum pumps RL-2, RL-4, RL-8 are rotary vane type vacuum pumps. The pump is cooled internally by a mechanical impeller during operation. A fitted oil mist filter allows oil back flow into the oil circulation system of the pump head. The gas ballast valve prevents the build up of condensation inside the oil box and the pump head. The motor is protected by a thermocouple which turns the pump off automatically if overheated.

△ Caution! The motor will restart automatically after a cooling period of approximately 20 minutes.

## Contents of delivery of standard execution RL-2, RL-4, RL-8

- Vacuum pump oil DV-44/DV-45.
- Multilingual instructions of use

The RL-8 is in addition equipped with a ball valve to isolate the pump from a system.

△ The pumps are supplied without oil filling. They must be filled with the oil provided prior to the first operation.

**Option:** Intake port with anti back flow to prevent oil suck back in case of an accidental shut off of the pump or power cut.

Intake port **with** back flow prevention:

for RL-2:	RL-2-307-RS	4663786
for RL-4:	RL-4-307-RS	4663336
for RL-8:	RL-8-307-RS	4664244

## Other accessories

Vacuum gauge with ball valve:

For vacuum pumps RL-2, RL-4, RL-8; RL-VAC 4663981

Special hose to vent combustible refrigerant from closed environments: Available for RL-2, RL-4: 10859-CL-197-Y-SP 9881865

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## Note:

Please note the minimal operating temperatures for the vacuum pumps is described under "technical data" on page 8 of this manual. If the environmental temperatures are below the minimal rates the pump may take several seconds or minutes until the motor runs on full speed and the pump can develop its full capacity.

⚠ Always turn off and disconnect power before moving or servicing the REFCO vacuum pumps.

⚠ The vacuum pump and especially the front cover can reach **temperatures of up to 70°C (160°F)** during operation.

Check the appropriate oil level (half level of sight glass) and make sure that there is enough oil. Should the oil be cloudy, dark or contaminated, or should the oil level have increased without refilling, change the oil immediately.

Ensure that the air intake of the impeller fan at the back of the pump is not covered with any objects or cloths etc. Preventing the air flow through the pump can lead to an automatic motor shut off by the thermo couple.

⚠ Caution! Automatic restart after cooling time of approx. 20 minutes.

## Service/Oil change:

The main service point of a vacuum pump is the oil. Vacuum pump oil must be changed at least after every 20 hours of service or whenever the oil in the sight glass is cloudy or dark.

The oil must be changed immediately after an evacuation of a heavily contaminated system. Residue of moist/water in the oil may cause corrosion and damage to the vacuum pump.

⚠ Contaminated oil may damage the vacuum pump.

## Change of oil:

- Run the pump until operating temperature has been reached. Turn the pump of and disconnect from mains.
- Unscrew the oil mist filter (Pos.19)
- Drain oil through drain plug (RL-4/RL-8 Pos.23) or through opening for oil mist filter. (model RL-2 does not have an oil drainage plug and the oil must be drained through opening of oil mist filter).
- Connect pump to the mains again and turn on. Let the pump run for 10-15 seconds with open intake port in order to drain oil residue in the pump head.
- Turn the pump of and disconnect from the mains.
- Drain possible oil residue.
- Remount oil drain plug (Pos.23).
- Refill with oil to half level of sight glass.
- Refit oil mist filter (Pos.19). Let the pump run for a few seconds.

⚠ If the oil has been strongly contaminated the oil change procedure must be repeated after a run time of 30 minutes in order to assure that all waste particals inside the pump have been washed out with the oil.

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In order to achieve best performance with the REFCO vacuum pumps only use REFCO oils DV-44, DV-45, DV-46, DV-48 or REFCO ester oil.

⚠ Waste oil must be disposed of according to the rules and regulations which apply in the country of use of the pump.

Further service work than oil change has to be executed by a specialised company.

## Trouble shooting

Condition	Possible problem	Solution
Pump does not run on full speed	Oil temperature too low	Put the pump in warmer environment/room
	Unsuitable oil – too thick	Change with REFCO oil
	Pump dirty	Change oil
	Defective motor	Call customer service
Motor does not start at all	Defective capacitor	Change capacitor Call customer service
Motor drones but does not run Pump locked up	Oil heavily contaminated	Change pump head Call customer service
Motor runs – no performance	Broken clutch pin	Call customer service
Oil spillage on oil mist filter	Pump overfilled with oil	Adjust oil to half level of sight glass, drain additional oil
Extensive oil mist from oil mist filter	Pump pressure = atmospheric pressure	Oil mist will disappear as soon as a certain vacuum has been reached
Oil not visible in sight glass	Not enough oil in pump	Top up with oil
Oil cloudy or dark	Contaminated oil	Change oil
Not enough vacuum	Gas ballast open	Close gas ballast valve Call customer service
Motor noisy	Bearings worn out Defective fan impeller	Call customer service Change impeller
Pump loses oil	Leaking gasket of oil box	Change O-ring
	Leaking gasket of sight glass	Change sight glass
	Leaking gaskets box screws	Change gaskets of oil of screws
	Leaking shaft seals	Call customer service

## Warranty

REFCO grants a 24 month warranty period. Damage caused due to improper use, lack of service as described in this manual, use of the pump for other applications as the designated ones, use of unsuitable vacuum pump oil or opening and dismantling the pump during warranty period by the user will lead to loss of warranty. For repairs during the warranty period the vacuum pump must be returned to the seller at owners cost.

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## Technical data

Capacity l/min (cfm)  
End vacuum with closed gas  
ballast valve (at 20°C)  
Minimal oil temperature  
for motor start up  
Intake port SAE  
Gas ballast  
Oil mist filter  
Oil back flow prevention  
Oil capacity ml  
Motor protection JP  
Power supply  
Motor KW/U/min  
Measurements (LxWxH)mm  
Weight kg

## RL-2

35 (1.25)  
  
0.020 mbar (15 microns)  
  
+5°C  
1/4"  
yes  
yes  
optional  
125  
41  
220/240V <sup>a</sup>  
0.16/2400  
271x167x195  
3.800

## RL-4

65 (2.3)  
  
  
  
+5°C  
1/4"+3/8"  
yes  
yes  
optional  
250  
41  
50/60Hz  
0.19/2400  
301x152x204  
5.560

## RL-8

150 (5.3)  
  
  
  
+2°C  
1/4"+3/8"  
yes  
yes  
optional  
500  
41  
0.37/2800  
360x220x250  
11.800

## Spare parts

### Spare parts for RL-2

			Part No
3	RL-2-3000	Oil box complete with gaskets	4661589
20	RL-2-3011	Oil sight glass complete	4661597
19	RL-4-303	Oil mist filter complete	4495471
24	RL-2/4-3060	Gas ballast valve complete	4661423
53	RL-8-4071	Rubber pads (4 pcs)	4507631
55	RL-2-406	Capacitor	4661075
48	RL-4-415	On-Off switch	4496770
52	RL-2-4000	Housing complete (2 parts)	4661538
1	RL-2-2A	Vacuum stage complete	4661482

### Spare parts RL-4

			Part No
3	RL-4-3000	Oil box complete with gaskets	4507674
20	RL-4-3011	Oil sight glass complete	4507682
23	RL-4-310	Oil drain plug with gasket	4496761
19	RL-4-303	Oil mist filter complete	4495471
24	RL-2/4-3060	Gas ballast valve complete	4661423
53	RL-8-4071	Rubber pads (4 pcs)	4507631
55	RL-4-406	Capacitor	4661066
48	RL-4-415	On-Off switch	4496770
52	RL-4-4000	Housing complete (2 parts)	4661474
1	RL-4-2A	Vacuum stage complete	4661954

### Spare parts RL-8

			Part No
3	RL-8-3000	Oil box complete with gaskets	4507607
20	RL-8-3011	Oil sight glass complete	4507615
23	RL-4-310	Oil drain plug with gasket	4496761
19	RL-8-303	Oil mist filter complete	4507445
24	RL-8-3060	Gas ballast valve complete	4507623
53	RL-8-4071	Rubber pads (4 pcs)	4507631
55	RL-8-426	Capacitor	4507470
48	RL-4-415	On-Off switch	4496770
52	RL-8-4000	Housing complete (2 parts)	4507640
1	RL-8-2A	Vacuum stage complete	4507658

## Disposal of vacuum pump

Unrepairable vacuum pumps must be disposed of according to the rules and regulations of the country of use of the pump. The plastic parts are marked with a recycling code accordingly. Other components such as waste oil etc. are to be disposed of according to the domestic applicable rules and regulations.

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