

Technical Manual

Topmater R15

**Electromagnetic diaphragm pump
for the dosing of liquid detergent**

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1 General

This technical manual contains all the information required for installation, start-up, service and repair of the **Topmater R15** liquid detergent dosing unit.

Before installation and start-up and before any service and repair work, you must read the information contained in the technical manual.

All safety instructions must be observed.

The **Topmater R15** is an electromagnetic diaphragm dosing pump for automatic dosing of liquid detergent. It is designed for the use in commercial dishwashers with discontinuous operation.

Warranty:

Operational safety, functionality and performance of this dosing unit are only guaranteed by the manufacturer under the following conditions:

- installation, connection, adjustments, service and repair must be performed by authorized personnel only
- the dosing unit must only be used in accordance with the contents of this technical manual
- original spare parts only must be used for service and repair
- only the approved **Henkel-Ecolab** liquid detergents must be used.

1.1 Safety instructions

The dosing unit must only be run at the permitted supply voltage (see type label).

Repairs must only be carried out when the unit is switched off.

Suitable protective clothing must be worn, when carrying out service and repair work and when changing the liquid detergent container.

The safety regulations which apply when handling chemicals must always be observed.

2 Assembly

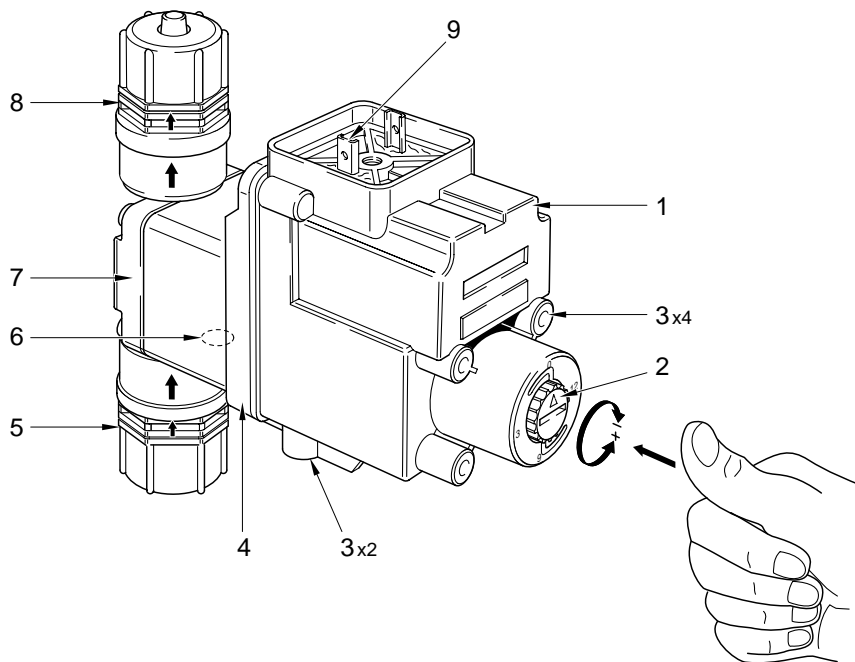


Fig. 1

- 1 Housing
- 2 Bleed button / delivery adjustment screw
adjustment range: 0-100 % in 15 steps (turn cw. for maximum setting)
- 3 Mounting holes (4x)
- 4 Cover
- 5 Connection „product feed hose“
- 6 Safety outlet
- 7 Pump head
- 8 Connection „dosing hose“
- 9 Power connection socket (230V AC)

3 Functional description

The **Topmater R15** dosing pump automatically meters liquid detergent from the product container to the wash tank as long as the appropriate enable signal is applied from the dishwasher. The adjustment screw (2, Fig. 1) allows you to adjust the dosage between 0 and 100% in 15 steps.

The pump head is specially designed for automatic intake and bleeding.

If you press the adjustment screw (2, Fig. 1) the product feed hose and dosing hose can be filled quickly and the pump head can be bled quickly when the unit is put into operation for the first time and after any repairs have been carried out.

4 Mounting and connection

4.1 Overview

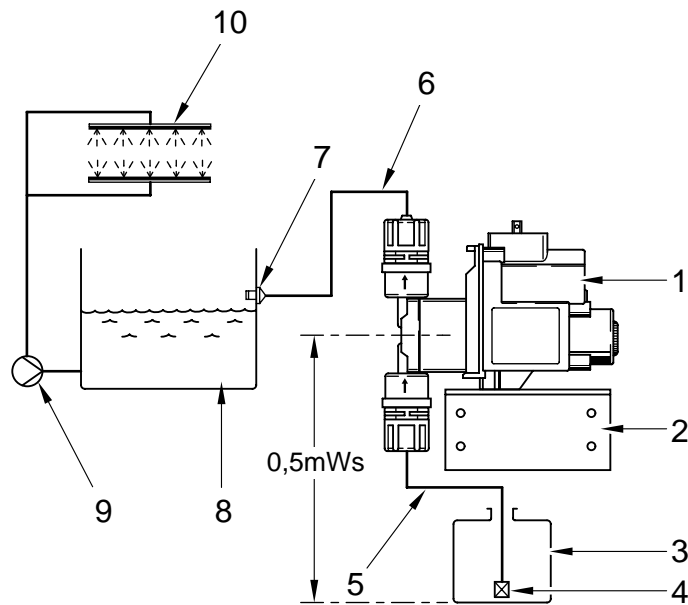


Fig. 2

- 1 Topmater R15
- 2 Console
- 3 Product reservoir
- 4 Bottom filter (or suction pipe)
- 5 Product feed hose
- 6 Dosing hose
- 7 Detergent injection point
- 8 Wash tank
- 9 Circulating pump
- 10 Wash jets

4.2 Mounting

The dosing unit is designed to be installed in the motor compartment of the dishwasher or outside the dishwasher by means of a console (see accessories).

CAUTION: To ensure correct operation of the dosing unit, the following values must be observed:

- Suction head: max. 0.5 mWs (see Fig. 2)
- Pumping head: max. 2 mWs (see Fig. 2)
- The unit must be mounted in such a way that the safety outlets (6, Fig. 1) in the pump head (4) do not point upward.

Perform the mounting of the unit using two special screws (EJOT B40x10, in the package supplied). Threaded attachment holes on the housing are provided for this purpose [two on the bottom of the housing and four on the back of the housing] (3, Fig. 1).

CAUTION: If you use longer screws of the same type, the maximum thread reach must not exceed 11 mm, otherwise the unit could be damaged.

4.3 Connection of the product feed hose and the dosing hose

CAUTION: The product feed hose and dosing hose must not be kinked. A strainer (bottom filter) must be connected to the product feed hose to prevent impurities from entering the dosing pump.

Perform the connection of the product feed hose and dosing hose to the dosing unit as shown in Fig. 3

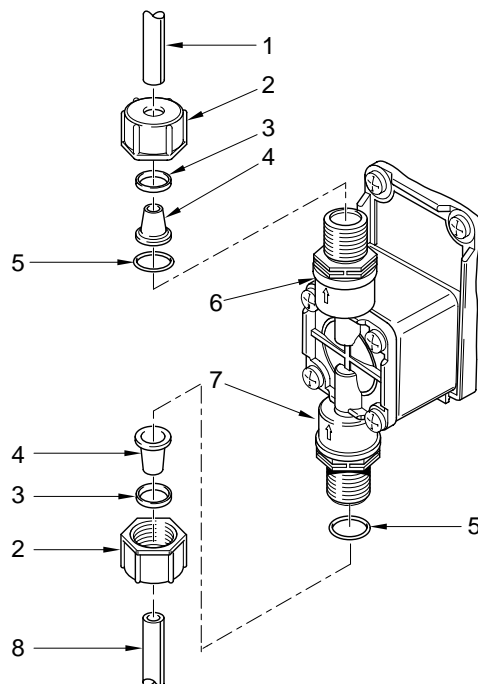


Fig. 3

- 1 Dosing hose
- 2 Union nut
- 3 Cutting ring
- 4 Hose stem
- 5 O-ring
- 6 Connection „dosing hose“
- 7 Connection „product feed hose“
- 8 Prod feed hose

4.4 Electrical connection

WARNING: The permitted supply voltage is 230 VAC 6 - 10%, 50/60 Hz.

CAUTION: When making the electrical connection, all applicable international, national and local safety regulations must be complied with.

Connection to the unit:

Perform the connection of the power supply cable to the dosing unit as shown in Fig. 4.

NOTE: The housing (4) can be turned by 90° if required, but the connector core must remain in the same position.

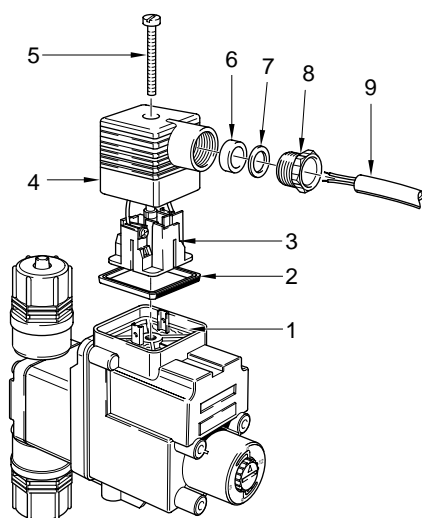


Fig. 4

- 1 Power supply socket
- 2 Profile seal
- 3 Connector core
- 4 Housing
- 5 Screw
- 6 Seal
- 7 Washer
- 8 PG threaded connector
- 9 Power supply cable

Connection to the dishwasher:

The power supply cable must be connected to the switchbox in the dishwasher in parallel with the activation of the rinse program, if no special connection is provided for this dosing unit.

5 Adjustment and startup

5.1 Adjusting the dosage

The dosage can be set between 0 and 100% in 15 steps using the dosage adjustment screw (2, Fig. 1). Maximum dosage is achieved when the screw is turned fully counter-clockwise.

5.2 Startup

Perform the startup as follows:

1. Insert the product feed hose (5, Fig. 2), complete with bottom filter (4) or pick up tube (suction pipe), into the product reservoir.
2. Set the pump stroke to maximum dosage and bleed the product feed hose, the pump head and the dosing hose by repeatedly pressing the adjustment screw (2, Fig. 1).
3. Activate the washing program on the dishwasher.
4. Activate the washing program on the dishwasher a number of times to check for correct operation.
5. Set the dosage to the required amount by means of the adjustment screw.

6 Service and repair information

CAUTION: Repairs must only be carried out when unit is interrupted from it's power supply.

NOTE: The item numbers used in this chapter refer to the exploded view in chapter 8.

Original spare parts only must be used.

Suitable protective clothing must be worn when carrying out service and repair work and when changing the liquid detergent container.

It is recommended that the pump, the product feed hose and the dosing hose are checked periodically for leaks.

6.1 Replacement of the suction- and pressure valve

1. Release the union nut (7) and remove the product feed hose.
2. Unscrew the valve body (11).

NOTE: When installing the new valve body, ensure that the direction of the arrow on the valve body corresponds to the direction of the arrow on the pump head and that the O-ring (12) is located correctly.

3. Screw in the valve body.
4. Connect the product feed hose.
5. Bleed the pump head and check that there are no leaks and that the unit operates correctly.
6. Replace the pressure valve (16) in the same way.

6.2 Replacement of the diaphragm

1. Remove the four screws (14) from the pump head (13) and remove the pump head from the housing cover (4).
2. Lift the edge of the diaphragm (6) carefully, twist it to the left through 90° to disengage it and then remove it from the housing cover (4).

NOTE: The safety diaphragm (5) must be replaced if it is damaged. This must be inserted in the pump head before the new diaphragm is installed.

3. Insert the new diaphragm and lock it in place by twisting it through 90° to the right.

NOTE: The securing screws must be tightened in diagonal pairs to ensure that the diaphragm is compressed evenly.

4. Mount the pump head.
5. Bleed the pump head, check that there are no leaks and that the unit operates correctly.

6.3 Replacement of the pump head

1. Remove the product feed hose and the dosing hose.
2. Remove the four screws (14) on the pump head (13) and carefully remove the pump head.

NOTE: The securing screws must be tightened in diagonal pairs to ensure that the diaphragm is compressed evenly.

3. Mount the new pump head (the arrows indicate the direction of flow).
4. Bleed the pump head, check that there are no leaks and that the unit operates correctly.
5. Set the dosage as described in section 5.1.

6.4 Replacement of the electromagnet and the PCB

1. Remove the two screws (2) from the housing cover (4) and tilt the cover forwards away from the housing.
2. Carefully withdraw the magnet housing (19) from the pump housing (1).
3. Replacing the magnet: carefully remove the PCB from the magnet housing and connect it to the new magnet housing.
4. Replacing the PCB: carefully remove the PCB from the magnet housing, remove the two spade connectors from the PCB and connect a new PCB.
5. Insert the PCB and the magnet housing in the pump housing.

CAUTION: During the next step, you must ensure that the housing seal (3) is seated correctly. Press the magnet towards the power supply connector with your finger so that the centering shoulder of the housing cover is located below the magnet.

6. Attach the housing cover to the housing as shown in figure 5 and screw tight.
7. Bleed the pump head, check that there are no leaks and that the unit operates correctly.

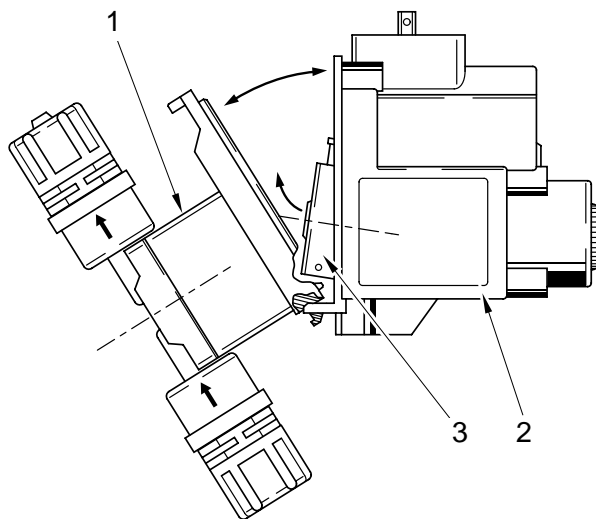


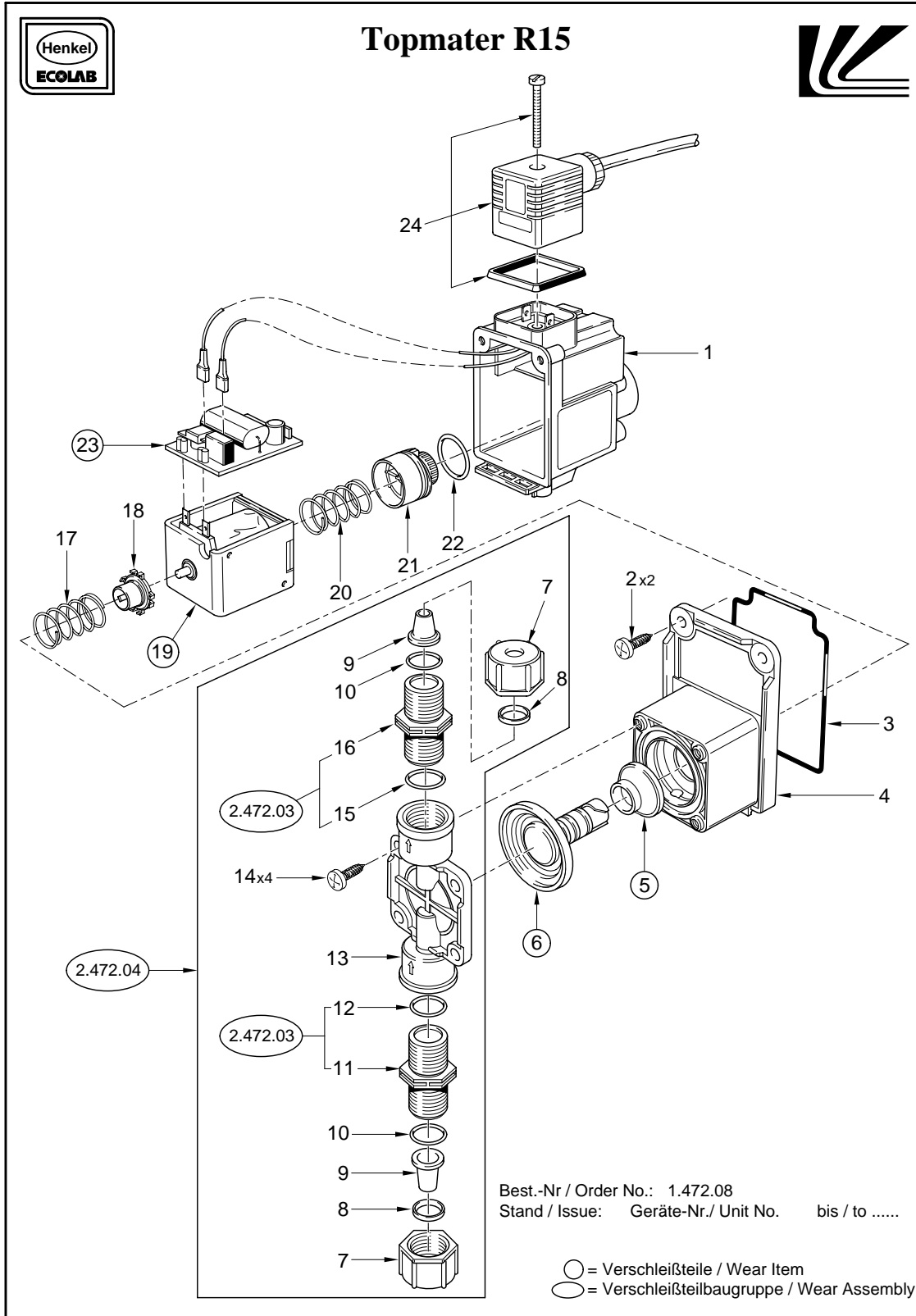
Fig. 5

- 1 Housing cover
- 2 Housing
- 3 Magnet

7 Troubleshooting

Symptoms	Cause/fault	Corrective action
Pump does not dose	Product feed hose kinked or damaged Pump head defective Diaphragm defective Suction or pressure valve defective	Replace product feed line Replace pump head Replace diaphragm Replace defective valve
Leakage of liquid detergent leaks between pump head and housing	Diaphragm defective	Replace diaphragm
Pump does not produce strokes	Power supply interrupted (no activation signal) Power supply cable defective Coil defective PCB defective	Check dishwasher contacts replace power supply cable, coin or PCB if required

8 Exploded view



9 Spare parts list

Pos.	Description	Part no.
	Pump head, complete	247204
1	Housing	34720155
2	EJOT-PT screw	413071794
3	Seal, rubber	417401005
4	Housing cover	34720156
5	Bellows	34720159
6	Diaphragm	34720150
7	Coupling screw, R3/8, PP	34720160
8	Cutting ring, R3/8, PVDF	34500190
9	Hose stem, R3/8, V2A	34000287
10	O-ring, ø10x2.5, EPDM	417001080
11	Valve (suction valve)	247203
12	O-ring, ø10x2.5, EPDM (p/o pos. no 11)	417001080
13	Pump head	34720151
14	EJOT-PT screw	413071794
15	O-ring, ø10x2.5, EPDM (incl. with spare part group "valve", item 16)	417001080
16	Valve (pressure valve)	247203
17	Spring	411128016
18	Spring plate	34720152
19	Magnet, 230V AC	417702007
20	Spring	411128017
21	Adjustment screw	34720154
22	O-ring, ø20x2, EPDM	417001194
23	PCB R15, 230V AC	247142
	<u>Note:</u> up to serial no. D02 = part no. 247165 (PCB R15 w. adapter) replaces part no. 247135	
24	Plug, IP 65	418468003

10 Technical data

Supply voltage:	230V AC +6 -10 %, 50/60 Hz
Magnet coil insulation class:	F
Power consumption:	0.23 A
Protection class:	IP 65
Bimetallic thermal switch:	250V, 3 A, cut-off: 110 °C +/- 6% cut-in: approx. 90°C -20%
Max. operation time:	S3-25%, 2 minutes (corresponds to an intermittent service with a max. puls duration of 30 sec. and a min. pause of 90 sec.)
Max. operation time for pre-metering:	10 minutes.
Dosage:	approx. 5.6 l/h (1.6 ml/stroke -20%)
Dosage adjustment:	manual, 0-100%, in 15 steps
Suction head:	max. 0.5 mWs, self-priming
Dosing head:	max. 2 mWs, self-bleeding
Product feed line connection:	for hose dia 4x1 mm
Dosing line connection:	for hose dia 4 x1 mm
Mounting position:	horizontal or vertical
Ambient temperature and temperature of liquid detergent:	max. 50 °C
Dimensions:	36 x 140 x 195 mm (W x H x D)
Weight:	0.3 kg

Because of the company's policy of continuous improvements to its products, the specification may be changed without notice.

11 Accessories and installation material

Description	Article No.
Console R15/R15	34720164
Bottom filter, V2A (for hose, dia.4x1 mm)	223951
Soft PVC hose, dia. 4x1 mm	417400006
Teflon tube, dia. 6x1 mm	417400215