

Operating Instructions



SWISS MADE

English

Operating Instructions

English

Service

Operating Instructions

Temperature Control Unit

300 (DG) • 301 (DG)

Contents

1. Safety instructions	28
2. Range of application	28
3. Commissioning	28
4. Switching on	30
5. Switching off	33
6. Changing the consumer. Shutting the unit down for more than one month. Restarting the unit	33
7. Maintenance	33
8. Ordering replacement parts	35
9. Transport	35
10. Optional features	36
11. Trouble-shooting	36
12. Technical data	37
 Guidelines for handling hoses	 39
 Service	 41
 EC declaration of conformity	 56

1. Safety instructions

- **Emergency Off:** Switch off the yellow/red main switch on the temperature control unit.
- **Thermal oil is flammable under certain conditions. Therefore:**
 - Do not place the unit near a heat source (e.g. furnace in a die-casting plant).
 - Always keep the heat insulation of the unit clean. Insulation saturated with thermal oil is a fire risk.
 - Repair any leaks in the temperature control circuit immediately (the unit, interconnecting lines, consumer, etc.)
- **Burning thermal oil can be extinguished using the following:**
 - AFFF spray-foam fire extinguishers
 - Powder fire extinguisher (avoid use in dust-sensitive installations, e.g. computer controls, EDP, etc.)
 - CO₂ fire extinguisher (backfire danger, not always suitable)
A fire extinguisher suitable for use with the equipment located in the room and compatible with all applicable safety regulations shall be provided by the operator and kept accessible at all times.
- **Never use the unit without side panels.**
- **Keep all sprays and cleaning agents containing solvent away from the unit.**
- **Danger of injury from escaping hot thermal oil. Therefore:**
 - When operating at high outlet temperatures, cool the unit down and switch it off before disconnecting any line of the temperature control circuit.
 - Make sure that the pump is not running.
- **In installations in which malfunction of the temperature control system could endanger operating personnel or cause significant damage to the installation, an independent monitoring device capable of shutting the installation down reliably must be installed for process supervision.**
- **The unit shall not be used in areas endangered by explosion.**
- **This instruction manual should be kept by the operator.**
Please ensure that these instructions are read. This will prevent unnecessary costs and problems during commissioning and will avoid production breakdown.

2. Range of application

The temperature control unit is designed for heating or cooling injection moulds, die-casting dies, extruders, calenders, mixers, and other consumers in areas not endangered by explosion.

The unit is built for operation with thermal oil up to 300 °C.

For technical data, see Section 12.

3. Commissioning

3.1 Unpacking

Do not tip the unit. Heat transfer fluid left over from the test run could flow out and saturate the insulation.

3.2 Setting up

The unit is designed for an ambient temperature of 10 to 40 °C. When positioning the unit, ensure that sufficient ventilation is provided. The distance between units resp. between unit and wall must be at least 10 cm.

Place the unit on a level surface and engage the wheel brake.

Do not place the unit in the vicinity of a heat source (e.g. furnace in a die-casting plant) as the thermal oil is flammable under certain conditions.

3.3 Inspecting the consumer

Before connecting the temperature control unit to the consumer, check the following points:

- 1 Test for free flow through the channels.
- 2 Remove fluid residue and contamination using compressed air: Foreign objects, such as metal chips, could damage the pump.
- 3 Remove rust, scale and oil deposits, which drastically reduce the exchange of heat between consumer and heat transfer fluid and increase the pressure drop in the consumer.

The unit can be cleaned using the Regloplas descaling unit REG (→ "Regloplas Temperature Control Units" booklet, Section "REG").

Oil deposits can be removed using System Cleaner SR 80 (→ "Regloplas Temperature Control Units" booklet, data sheet "SR 80").

- 4 **When converting from water or steam to thermal oil, any remaining water in the consumer and in the pipe connections must be completely removed: steam pressure caused by heating could cause an accident!**

Proceed according to Section 7.3.

3.4 Water quality

In order to avoid damage to the unit cooler, the water used must meet the following specifications:

Total hardness 5 to 22.5 °e

pH value 7 to CCE*

Conductivity max. 1000 µS/cm

*CCE = calcium carbonate equilibrium

The addition of corrosion inhibitor RK 93 is strongly recommended (→ "Regloplas Temperature Control Units" booklet, data sheet "RK 93").

3.5 Interconnecting lines

See also page 39.

- *Outlet and inlet:* Use only pressure and heat-resistant all-metal hoses with conical fittings in accordance with DIN 3863 (→ "Regloplas Temperature Control Units" booklet, Section "Accessories"). When the connection is made with tubes, expansion must be taken into account. The hoses shall be routed to prevent accidental contact.
- *Cooling water mains:* The pressure must be at least 2 bar. For connection to communal water supply mains, prevailing regulations and safety measures shall be observed (e.g. connection to the unit via a system separator). Use only pressure-tight flexibles (→ "Regloplas Temperature Control Units" booklet, Section "Accessories").
- *Water drain:* Must be non-return and open at all times. The hose shall be attached such that any steam emissions at the beginning of cooling do not constitute a danger.

A leaky cooler could cause oil to flow into the drainage water; observe local regulations.

- *Overflow pipe of the expansion vessel:* Must be open at all times.

For safety reasons, the cooling circuit must be connected at all times.

3.6 Electrical connections

- 1 Compare mains voltage and frequency with rating plate.
- 2 Check value of the back-up fuse with data on the wiring diagram and current input on the rating plate.
- 3 Observe local rules and safety regulations when connecting unit to mains.

The cores of the connecting cable shall be marked in accordance with IEC standards:

3P E ————— yellow/green

————— black-brown-blue

3.7 Filling the heat transfer fluid

After inspecting the consumer and making the hose and electrical connections, proceed as follows:

- 1 Switch on main switch at the unit.

In the RT 45 control system, operation checkout runs for approx. 3 s. While the test is running, 6 dots will appear on the two displays (display 1, page 31). When the test has concluded positively, the display will go off. The RT 45 is now ready for operation (operation mode "stand-by").

The message "oFF" will then appear on the display at the right.

If a different message appears, see Section 4.2 and the separate RT 45 "Operating Instructions", Section 6.2.

- 2 Open vents and any shut-off valves on the consumer.
- 3 Using a funnel, pour the thermal oil into the filling port slowly until the red level-monitor indicator lamp goes out. The lamp is located on the top of the unit, at the rear near the filling port. For filling quantity, see table "Technical data", Section 12.

Note: Each time the thermal oil is refilled, the unit and the temperature control circuit must be evacuated as follows: Switch on the unit. To avoid overheating the heating elements due to initial air pockets in the temperature control circuit, the outlet pressure in the unit is monitored by means of a minimum-pressure switch. This switch will stop heating should the pressure drop below the minimum (0.7 bar) and trigger the flow alarm.

Adjust the set-point value to approximately 10 °C; operate the unit at this value for approximately 10 minutes to evacuate the system.

Recommended thermal oils: Regloplas RO 150 or RO 300, Santotherm 66 or BP Transcal SA (→ "Regloplas Temperature Control Units" booklet, Section "Accessories").

We recommend the addition of system cleaner SR 80 as a preventive measure (→ "Regloplas Temperature Control Units" booklet, Section "SR 80").

- 4 Do not close the vent consumer valve until oil flows steadily.
- 5 Since fresh thermal oil contains moisture, it is essential that the moisture be removed before use as described in Section 7.3, steps 4 and 5.

4. Switching on (Fig. 1)

- 1 Switch on the unit using the "On/Off" switch at the RT 45.

The set-point value "SP1" or "SP2" will appear on the display at the right, and the actual value "S1" of internal sensor Sn1 or "S2" of the external sensor Sn2 on the display at the left.

In normal operation, the system is always controlled via the external sensor. If the external sensor is not connected, the controller will switch to the internal sensor automatically.

For further possible displays, see Section 4.2 or RT 45 "Operating Instructions", Section 6.2.

- 2 Continue filling heat transfer fluid until the pump runs without interruption and the level indicator lamp goes out, i.e. a sufficient amount of fluid is circulating in the temperature control circuit (unit, interconnecting lines, consumer. etc.).
- 3 Check the temperature control circuit for leaks.

4.1 Adjustment elements

Adjust the required set-point value using the Δ or ∇ (5) key.

Please refer to RT 45 "Operating Instructions" for further adjustment values, e.g. upper and lower limit of the fluid and the consumer temperatures.

- 1 Display for actual value at temperature sensor Sn1 or Sn2.
- 2 Display for set-point values SP1, SP2, and malfunctions.
- 3 Lamps for actual value of outlet temperature S1 (sensor Sn1) and consumer temperature S2 (sensor Sn2).
- 4 Lamps for first and second set-point value SP1 or SP2.
- 5 Keys for adjusting set-point values and programming.
- 6 Reset key with malfunction lamp for alarm, as well as for switching set-point value SP1–SP2 and vice versa.
- 7 Key with lamps for suction and leak-stop mode.
- 8 Key for flow indicator and malfunction lamp for flow.
- 9 Malfunction lamp for heat transfer fluid level.
- 10 Malfunction lamp for pump motor.
- 11 Malfunction lamp for overheating.
- 12 On/Off key with lamp indicating operation mode.

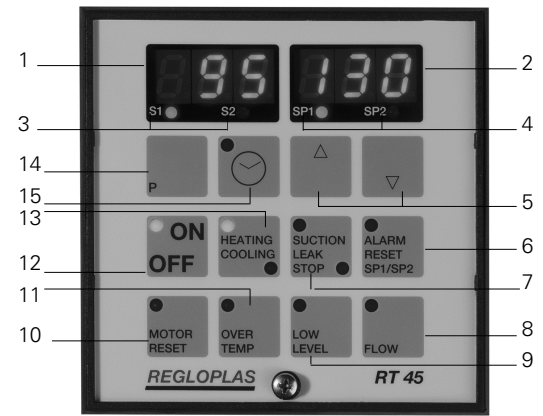


Fig. 1: Operating and display elements

- 13 Lamps for heating and cooling.
- 14 Key for programming.
- 15 Key with lamp for programming the timer.

4.2 Operation Displays



Automatic operation checkout in progress (approx. 3 s).
During the test, 6 dots appear in the display.



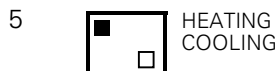
Upon completion of the test described in Display 1, "oFF" will appear.
When the main switch is on, the RT45 is in "Stand by" mode.



- Steady light: unit in operation.
- Flashing light: pump run-out activated.



If present, the timer is used to switch the unit on and off.
The unit can be switched on and off at any time using the "On/Off" key.



Unit heating or cooling (upper or lower lamp lit).

6  SUCTION
LEAK STOP

Unit is in suction mode when the upper lamp is lit.

7  SUCTION
LEAK STOP

Unit is in leak-stop mode when the lower lamp is lit.

8  120
SP1 ■

In normal mode, the temperature set-point value SP1 is displayed.

9  120
SP1 □ SP2 □

Display of the temperature set-point value input externally (0 to 10 V or 0/4 to 20 mA). Neither "SP1" nor "SP2" lights up.

10  A 2

In computer mode, the unit address is displayed, e.g. "A 2".

11  ...

Heating and cooling procedures are controlled externally.

12  120
SP2 ■

Display of the second programmed set-point value "SP2" and the lighting of the "SP2" lamp. Controlled in accordance with SP2.

13  90
S1 ■

Display of the actual temperature of internal sensor Sn1 (fluid temperature). The "S1" lamp lights up.

14  90
S2 ■

Display of the actual temperature of external sensor "Sn2" (usually consumer temperature). The "S2" lamp lights up.

5. Switching off

5.1 Using "On/Off" key

Depending on the temperature of the heat transfer fluid, the switching-off program runs as follows:

- All displays are extinguished with the exception of "oFF" in the right-hand display. Pump and control system are switched off. RT 45 switches to standby mode.
- The "On/Off" display flashes: The pump continues to run. The unit cools until the fluid has reached the programmed pump run-out temperature "PtE". The pump and control system are then switched off. The RT 45 switches to stand by mode. All displays are extinguished except of "oFF".

5.2 By previous draining of the consumer

See Section 10.

6. Changing the consumer. Shutting the unit down for more than one month. Restarting the unit.

Before detaching the connecting line, ensure that the unit is switched off and that all circuits are pressureless.

Drain the unit completely and store in a dry place between 10 and 40 °C for the period that it is not in use.

Under certain conditions, water may condense in the unit; therefore, steps 2 through 5 in Section 7.3 must be performed before the unit is switched on.

7. Maintenance

7.1 Periodic inspections and maintenance

In order to facilitate maintenance work, the RT 45 control system is equipped with a service-interval display. We recommend that the corresponding service interval be entered, e.g. 2000 hours. For programming, see "RT 45 Operating Instructions", Section 4.2, item "S. 0."

Please note that these instructions are based on a daily operating time of 8 hours. When working more than one shift per day, the inspection and service intervals must be shortened accordingly. Faulty parts must be repaired or replaced immediately.

- **Inspection and maintenance procedures shall be performed by trained personnel only.**
- **Maintenance of electrical components shall be performed by electricians only.**
- **Switch the unit off before disconnecting the mains.**
- **Change control insert only when the main switch is off.**
- **To avoid the hazards associated with the magnetic fields produced by magnetic-drive pumps, please take the following precautions:**
 - **Persons with pacemakers and/or implanted metal components must maintain sufficient distance from these pumps and should not perform maintenance/repair procedures.**
 - **When sliding magnetic drive components together, the motor shall be held such that magnetic forces cannot cause fingers to be trapped between the components.**
 - **Adequate distance shall be maintained between the pump and computers, diskettes, credit cards, electronic watches, etc.**

7.1.1 Daily inspection/maintenance

Check the temperature control circuit (unit, interconnecting lines, consumer, etc.) for leaks. Find the cause and remove the leaked fluid. Replace any insulation on which oil has been spilled immediately and clean up any oil spills.

7.1.2 Monthly inspections/maintenance

- 1 Check for free intake of cooling air for the pump motor at the intake aperture.
Clean with compressed air by blowing from the inside.
- 2 Clean filter as required.

7.1.3 Semi-annual inspection/maintenance

- 1 Check for correct function and cleanliness of the level control.
Drain the unit via the drain plug. Switch the unit using the "On/Off" key. The "Low Level" lamp should light up and the pump should switch off within max. 20 s. Remove and clean the level control switch.
- 2 Check for correct function of the safety thermostat:
Attention: The temperature control circuit (interconnecting lines, consumer, etc.) must be suitable for the check temperature.
Adjust set-point value at the controller to 320 °C.
If necessary for the functional test, set the value "S--" to 320 °C, as described in the separate "RT 45 Operating Instructions".
As soon as the actual value of the temperature has reached 320 °C, the display lamp "Over Temp" should light up and the heater switch off.
- 3 Check the electrical equipment: earth connections and contactors; check for any loose terminals, etc.
- 4 Test the oil after approx. 1000 operating hours (equivalent to approx. six months in 1-shift operation). To determine whether the oil can continue to be used, it must be analyzed, preferably by the manufacturer. Darkening of the oil is no indication of its condition.
For the test, approx. 1 litre of the used fluid will be needed. For safety reasons, the sample should be taken at a low temperature (approx. 30 °C. Oil vapour is flammable). The sample must be marked with address, date of sampling, outlet temperature and type of fluid.
Normally, the analysis is performed by the manufacturer at cost.
- 5 Dismantle solenoid valve as shown in drawing (→ Service, page 52): check diaphragm for scaling and damage. Test for easy movement of core and spring pin. Clean or replace these parts as required.

7.1.4 Annual inspection/maintenance

Replace the oil after approx. 2000 operating hours (equivalent to approx. one year in 1-shift operation). This, however, is an approximate value. Under certain conditions (high temperature, narrow bores of the consumer, predominantly heating, etc.) the oil may have to be changed more frequently (→ 7.2).

7.2 Replacing heat transfer fluid

Replace the heat transfer fluid as follows:

- 1 Drain the unit and the consumer completely via their respective drain plugs.
- 2 Clean the unit and the consumer as described in Sections 7.3 and 7.4 and in accordance with the number of operating hours.
- 3 Refill as described in Section 3.7.

7.3 Converting the consumer from water to thermal oil.

Procedure in case condensation water has formed.

- 1 Check consumer for scaling. The unit can be cleaned with the aid of the REG unit (→ "Regloplas Temperature Control Units" booklet, data sheet "REG").
- 2 **Attention:** All residue in the temperature control circuit (hose connections, consumer, etc.) must be completely removed. Steam pressure built up during heating can cause accidents. Procedure:
- 3 Fill the unit with thermal oil as described in Section 3.7.
- 4 Let the unit run at 100 °C for at least 30 minutes.
- 5 Once no boiling sounds can be heard, raise the temperature to the operating temperature in increments of 10 °C. As long as boiling sounds can be heard, continue running the unit at the same temperature. The installation is then ready for operation with thermal oil.

7.4 Cleaning

Exercise caution when using cleaning solvents: due to the risk of explosion, do not blow through the unit; flush it.

When using solvents, observe manufacturer's instructions for use. Thermal oil and solvents can be flammable under certain conditions; do not clean near heat sources.

We recommend carrying out the following cleaning procedure *every time heat transfer fluid is added or replaced*. Under unfavourable operating conditions, this procedure should be carried out more frequently. This applies in particular to steps 5 and 6.

- 1 Drain unit via the drain plug.
- 2 Clean circuit filter.
- 3 Check cooler for scaling; clean using descaling unit REG as necessary.
- 4 If the oil is particularly dirty or the pressure gauge registers high pressure, dismantle and clean the heaters.
- 5 Dismantle level switch and clean.
- 6 Dismantle the cooling system solenoid valve as shown in appended drawing (→ Service, page 53): check diaphragm for scaling and damage. Test for free movement of core and spring pin. Clean or replace these parts as needed.

8. Ordering replacement parts

Use only original replacement parts.

To ensure efficient ordering of replacement parts and to avoid errors, we need the following details:

- 1 Unit type
- 2 Serial number
- 3 Voltage
- 4 Frequency

This information can be found on the unit rating plate.

- 5 Item number of the part. This number can be found on the drawings and diagrams in this instruction manual (→ Service) as well as on the electrical diagrams in the electrical compartment of the unit.

9. Transport

Before shipping, drain the unit completely by opening the drain plug; due to the risk of freezing at low temperatures (cracking of the cooling pipes), blow out as follows:

- 1 Adjust set-point value to 0 °C at the controller.
- 2 Ensure that the "Cooling" light is lit, i.e. the solenoid valve of the cooling system is open.
- 3 Blow out cooler using compressed air at a maximum pressure of 6 bar.
- 4 Do not tilt the unit. Residual heat transfer fluid within the unit could flow out and saturate the heat insulation, creating a fire risk.
- 5 Use the original packing material.
- 6 Mark the top clearly.

10. Optional features

10.1 Leak-stop mode and consumer draining by suction

By reversing the pump's direction of rotation, the heat transfer fluid can be suctioned through the consumer.

Note:

- *Leak-stop mode with thermal oil: Pump performance is greatly reduced during heating, resulting in significant thermal load on the oil. Therefore, the oil must be checked or replaced at correspondingly shorter intervals. See Sections 7.1.3, step 4, and 7.1.4.*
- *Suction mode: The volume of heat transfer fluid in the consumer must be less than the expansion volume in the unit (see table "Technical data", Section 12), otherwise the unit will overflow.*

Leak-stop mode

The unit can be set to leak-stop mode by pressing the "Suction/Leak-stop" key once. The lower lamp of the key will light up. Leak-stop mode is possible only when the set-point value is between 0 and 250 °C.

Suction mode

The unit can be set to suction mode by pressing the "Suction/Leak Stop" key twice; the consumer connected to the unit will be drained. The upper lamp will light up.

Suction is possible only when the fluid temperature S1 is below the programmed pump run-out temperature "PtE". If this is not the case, the unit will first cool down to this value.

Suction and leak-stop modes can be interrupted by pressing the "On/Off" key.

By pressing the "On/Off" button again (wait until the "Suction/Leak-Stop" lamp goes off), the unit will be switched back to normal mode.

10.2 Cooler by pass circuit

The unit is equipped with a cooler by pass circuit to reduce the thermal load on the heater material and increase controlling performance (undershooting of the temperature) during the cooling procedure.

Operation (Fig. 2)

Heating: The three-way valve (15) is open in direction 15-2, i.e. cooler (1) is by passed.

The heat transfer fluid flows as follows: 15-2-3-20-15.

Cooling: The three-way valve (15) is open in direction 15-2, i.e. the heat transfer fluid flows through the cooler.

The flow of the heat transfer fluid is as follows: 15-1-2-3-20-15.

The cooling sequence functions as follows:

If the outlet temperature is higher than the set-point value at the controller, the three-way valve is opened by the servo motor so that the heat transfer fluid circulates through the cooler. The three-way valve control is continuous.

10.3 Flow rate measurement

Max. operating temperature 350 °C.

When the "Flow" key is pressed, the flow rate will be shown in l/min in the right display. The unit can be programmed to monitor the minimum flow rate, i. e. alarm when flow rate is too low. For instructions, see "RT 45 Operating Instructions", Sections 7.1 and 7.3 ("FLC").

11. Trouble-shooting

For malfunction displays on the RT 45 control system, see "RT 45 Operating Instructions", Section 6.2.

12. Technical data

			300 (DG)	301 (DG)	350
Outlet temperature	max.	°C	300	300	350
Heat transfer fluid			Thermal oil	Thermal oil	Thermal oil
Filling quantity			9 15**	15–18 25–31**	15–20
Expansion volume	max.		14	20	20
Heating capacity at 400 V		kW	12*	24; 36*	20; 30
Cooling capacity		kW	160*	160*	70; 115; 160
at outlet temperature		°C	280	280	340
Cooler (K)			1*	1 *	1; 2; 3
Pump capacity/type			FM 30	FM 30 FM 65	FM 65
Flow rate	max.	l/min.	60*	60* 75*	75
Delivery head	max.	m	65*	65* 110*	110
Control			RT 45	RT 45	RT 45
Measuring mode (standard)			Pt 100	Pt 100	Pt 100
Power consumption		kW	13.5*	Heating cap. +1.5* +2.8*	Heating cap. +2.8
Operating voltage (standard)		V/Hz	400/50, 3 PE	400/50, 3 PE	400/50, 3 PE
Connections					
Outlet/inlet			M 18 x 1.5	M 26 x 1.5	DN 20/PN 40
Cooling water mains			3/4" 3/4"	3/4" 3/4"	3/4" 3/4"
Dimensions W/H/D		mm	400/1150/1155 400/1150/1155**	435/1350/1165 700/1400/1165**	600/1639/1635
Weight	approx.	kg	155 235**	210–225 300–330**	450
Ambient temperature	max.	°C	40		
Noise level		dB (A)	<70		
Colour finish	Grey RAL 7024/7035				
Notes	*Per zone **Dual-zone unit (DG)				

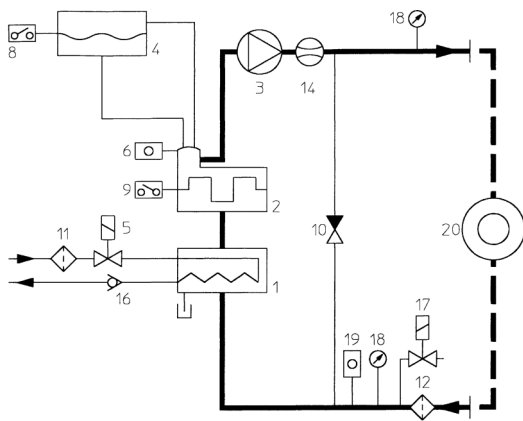


Fig. 1: Principal of operation: Types 300, 301

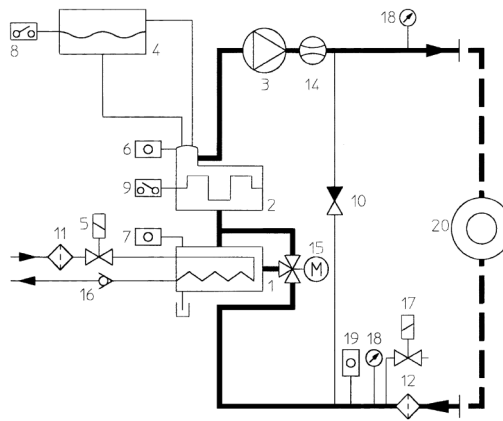


Fig. 2: Principal of operation: Types 301, 350 with cooler by pass circuit

- 1 Cooler
- 2 Heater
- 3 Pump
- 4 Expansion vessel
- 5 Solenoid valve, cooling
- 6 Outlet temperature sensor
- 7 Temperature sensor for cooler
- 8 Level control
- 9 Safety thermostat
- 10 By pass
- 11 Filter water mains
- 12 Filter circuit
- 13 --
- 14 Flow monitor
- 15 Three-way valve (model 301, option)
- 16 One-way check valve
- 17 Solenoid valve, consumer drainage (option)
- 18 Pressure gauge
- 19 Inlet temperature sensor (option)
- 20 Consumer

Richtlinien für das Anschliessen von Schläuchen Recommandations relatives aux flexibles Guidelines for handling hoses

Ein möglichst grosser Biegeradius verlängert die Lebensdauer der Schläuche.

Un grand rayon de courbure prolonge la vie des flexibles.

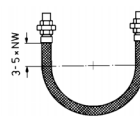
Use of the largest possible bending radius will extend the lifetime of the hoses considerably.

Falsch/Faux/Incorrect

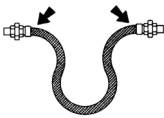


- Zu geringe Schlauchlänge: Schlauch wird an den Anschlussstellen abgeknickt.
- *Le flexible est trop court. Il est «cassé» aux raccords.*
- Hose too short. The hose is kinked at the joints.

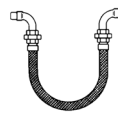
Richtig/Juste/Correct



- Ausreichende neutrale Schlauchenden vorsehen (3 bis 5 x NW).
- *Prévoir des bouts neutres suffisants (3 à 5 x NW).*
- Provides sufficient neutral length of hose (3–5 x NW).



- Zu starke Biegebeanspruchung an den Anschlussstellen.
- *Sollicitations excessives aux raccords.*
- Excessive strain due to bending at the couplings.



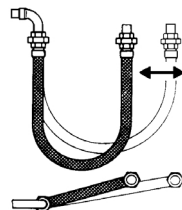
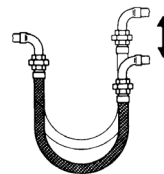
- Anbringen von Rohrbogen.
- *Utilisation de coudes.*
- Install pipe bends.



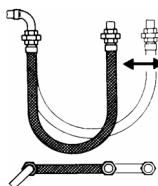
- Falscher Einbau: Stauchen in der Längsachse.
- *Compression en long.*
- Incorrect fitting: butted strain in lateral direction.



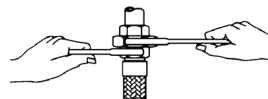
- Anbringen von Rohrbogen.
- *Utilisation de coudes.*
- Install pipe bends.



- Torsion: Schlauchachse und Bewegungsrichtung nicht in einer Ebene.
- *Torsion: le plan du flexible ne coïncide pas avec celui du mouvement.*
- Torsion: The axis of the hose and the direction of motion are not along the same plane.



- Die Rohrachsen müssen parallel laufen und die Bewegungsrichtung in einer Ebene liegen.
- *Les deux plans, flexible et mouvement, doivent coïncider.*
- The axes of the pipes must be parallel and the direction of motion lie along the same plane.



- Auch bei der Montage kann Torsion entstehen.
- *Une torsion peut se produire au montage.*
- Torsion can be caused during installation.

- Schlauch mit einem zweiten Schraubenschlüssel festhalten.
- *Immobiliser le flexible avec une deuxième clé.*
- Hold the hose with a second spanner.

Service

300 (DG) • 301 (DG)

Achtung

Das Elektroschema befindet sich im Elektroteil des Gerätes.
Bei Bestellung von Ersatzteilen immer Gerätenummer angeben.

Attention

Le schéma électrique se trouve dans la partie électrique de l'appareil.
Toujours indiquer le numéro de l'appareil quand vous commandez les pièces de rechange.

Note

The electrical diagram is located in the electrical compartment of the unit.
Always state the unit serial number when ordering replacement parts.

Stückliste
Liste de pièces
Parts list

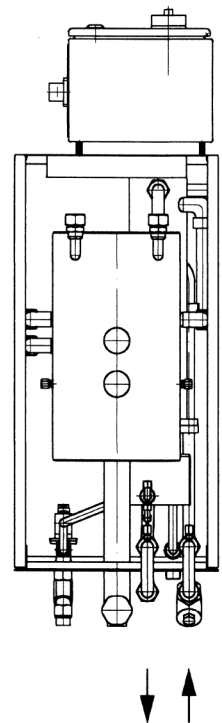
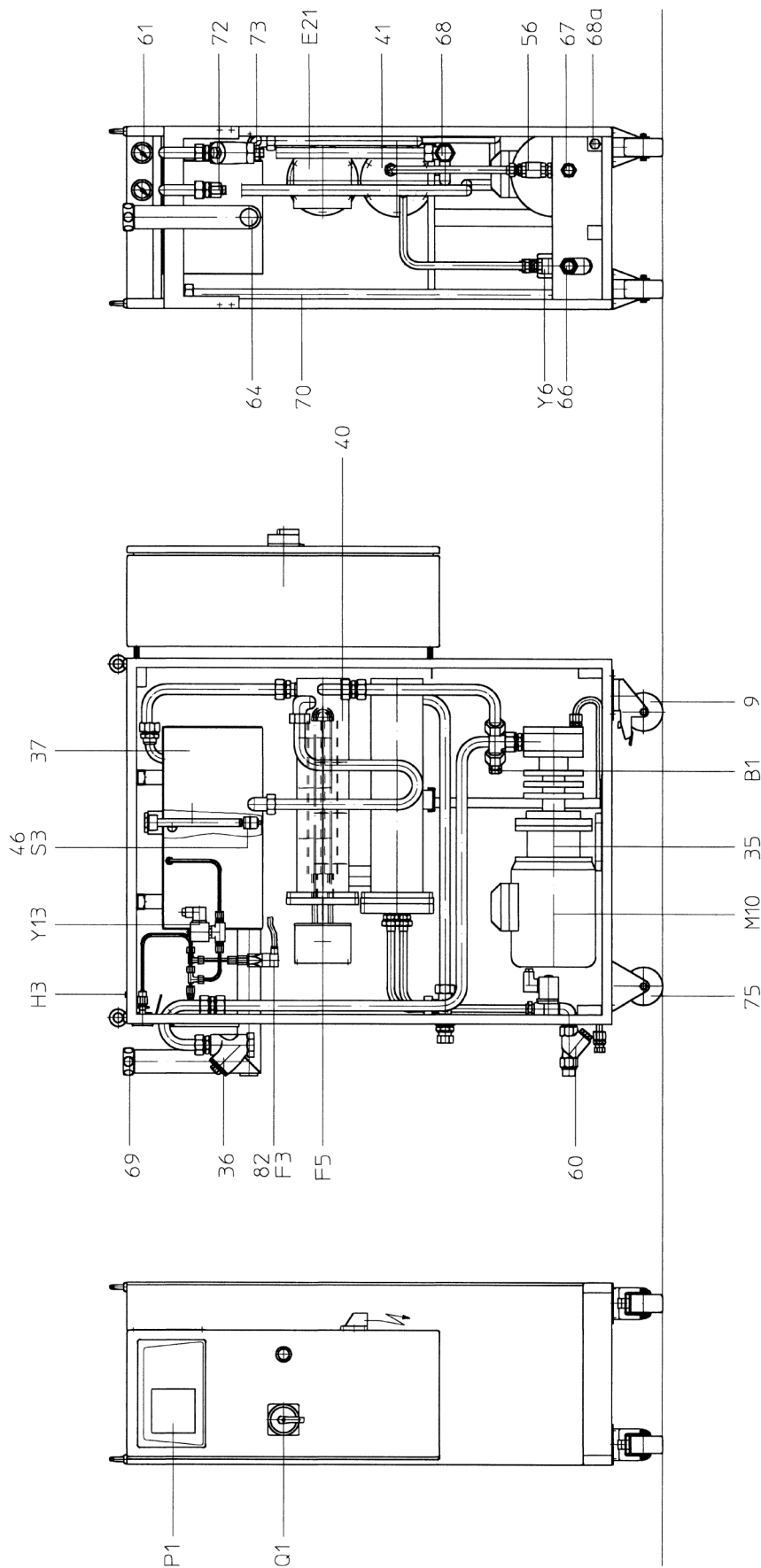
300/301 (DG)
807.011a 807.010a
807.012a 807.015a
807.007a 807.044a

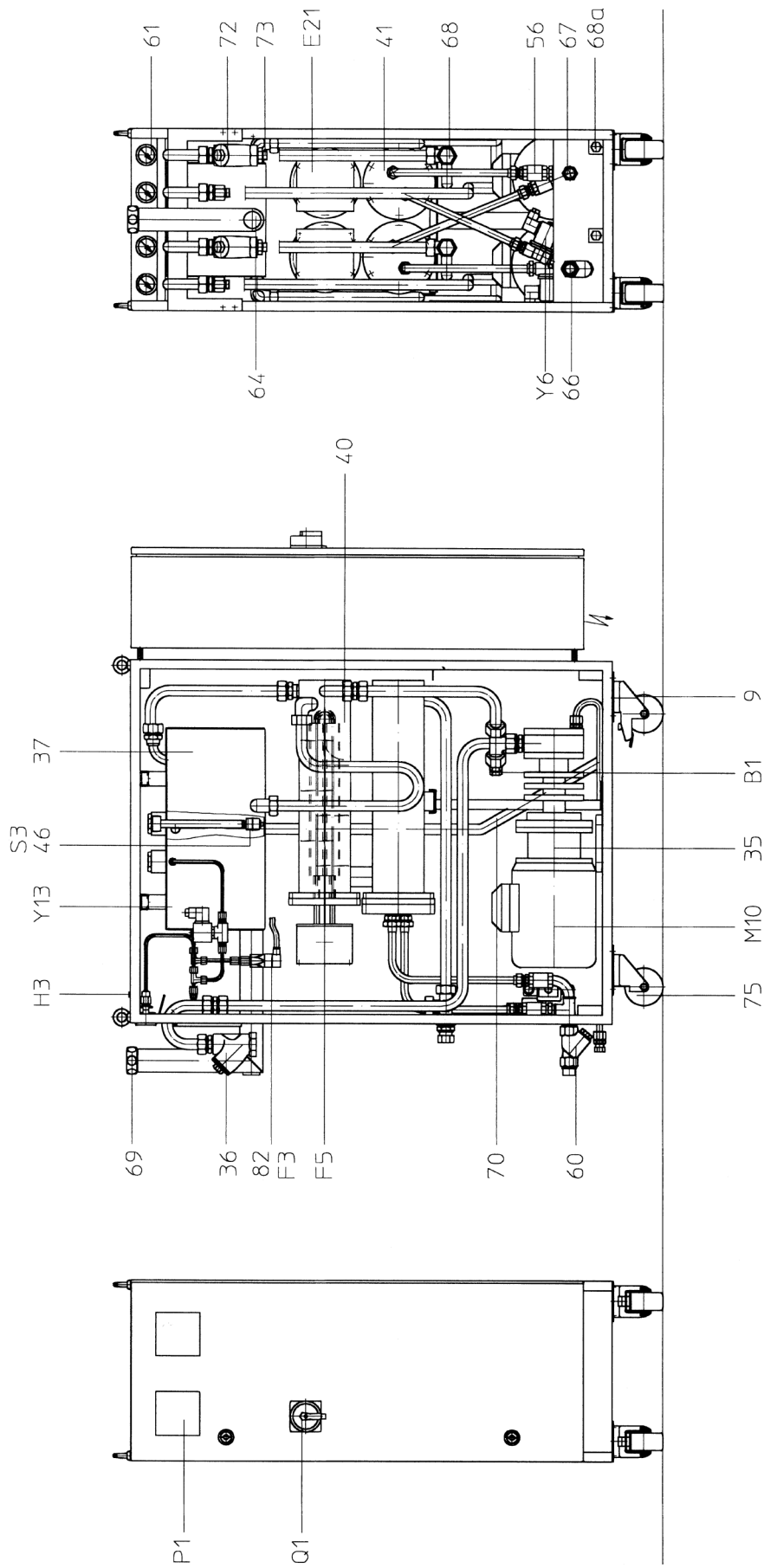
Pos.	Artikel	Article	Item
9	Rolle mit Radsperre	Roulette avec blocage	Castor with wheel brake
35	Pumpe	Pompe	Pump
36	Filter Kreislauf	Filtre circuit	Filter circuit
37	Ausdehnungsgefäß	Vase d'expansion	Expansion vessel
40	System mit Isolation	Système avec isolation	System with insulation
41	Kühler	Refroidisseur	Cooler
46	Schwimmer	Flotteur	Float
56	Rückschlagventil	Soupape de retenue	Check valve
58	By-Pass	By-pass	By pass
60	Filter Wassernetz	Filtre réseau d'eau	Water mains filter
61	Manometer	Manomètre	Pressure gauge
64	Ölstandsanzeige	Indicateur de niveau d'huile	Oil level gauge
66	Wassernetz	Réseau d'eau	Cooling water mains
67	Wasserablauf	Sortie d'eau	Water drain
68-a	Ablass-Stutzen	Bouchon de vidange	Drain plug
69	Einfüllstutzen	Tube de remplissage	Filler pipe
70	Überlauf	Trop-plein	Overflow
72	Vorlauf	Sortie	Outlet
73	Rücklauf	Entrée	Inlet
75	Rolle	Roulette	Castor
82	Strömungswächter	Surveillance de flux	Flow monitor
84	Dreiwegventil	Valve à 3 voies	Three-way valve
B1	Temperaturfühler intern	Sonde de température interne	Internal temperatur sensor
B6	Fühler Pt 100 im Medium	Sonde Pt 100 dans le fluide	Sensor Pt 100 in the fluid
B7	Fühler Pt 100 im Kühler	Sonde Pt 100 dans le refroidisseur	Sensor Pt 100 in the cooler
H3	Lampe unteres Niveau	Lampe niveau inférieur/bas	Indicator lamp, lower level
E21	Heizung	Chauffage	Heater
F3	Minimaldruckschalter	Pressostat de pression minimale	Min. pressure switch
F5	Sicherheitsthermostat	Thermostat de sécurité	Safety thermostat
M10	Motor	Moteur	Motor
P1	Regler	Régulateur	Controller
Q1	Hauptschalter	Interrupteur principal	Main switch
S3	Schwimmerschalter	Interrupteur du flotteur	Level switch
Y6	Magnetventil Kühlung	Electro-vanne de refroidissement	Solenoid valve, cooling
Y13	Magnetventil Absaugung	Electro-vanne pour aspiration	Solenoid valve, suction

Übrige Elektroteile siehe Couvert im Elektroteil des Gerätes.

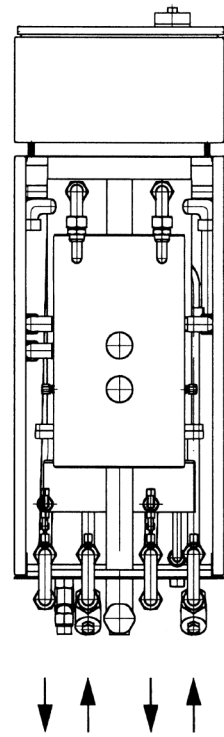
Pour les autres composants électriques, voir l'enveloppe dans la partie électrique de l'appareil.

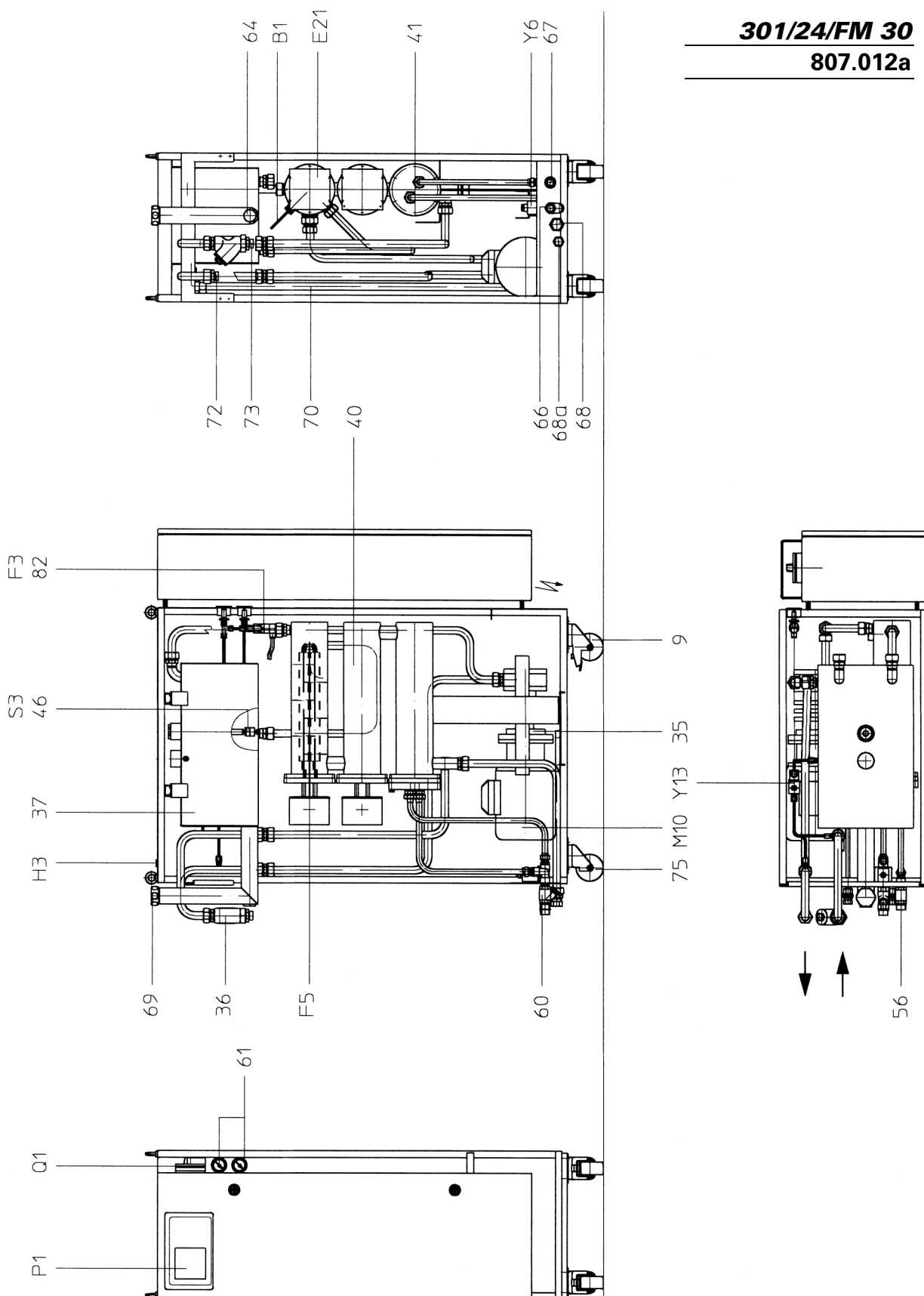
For additional electrical parts, see envelope in the electrical part of the unit.

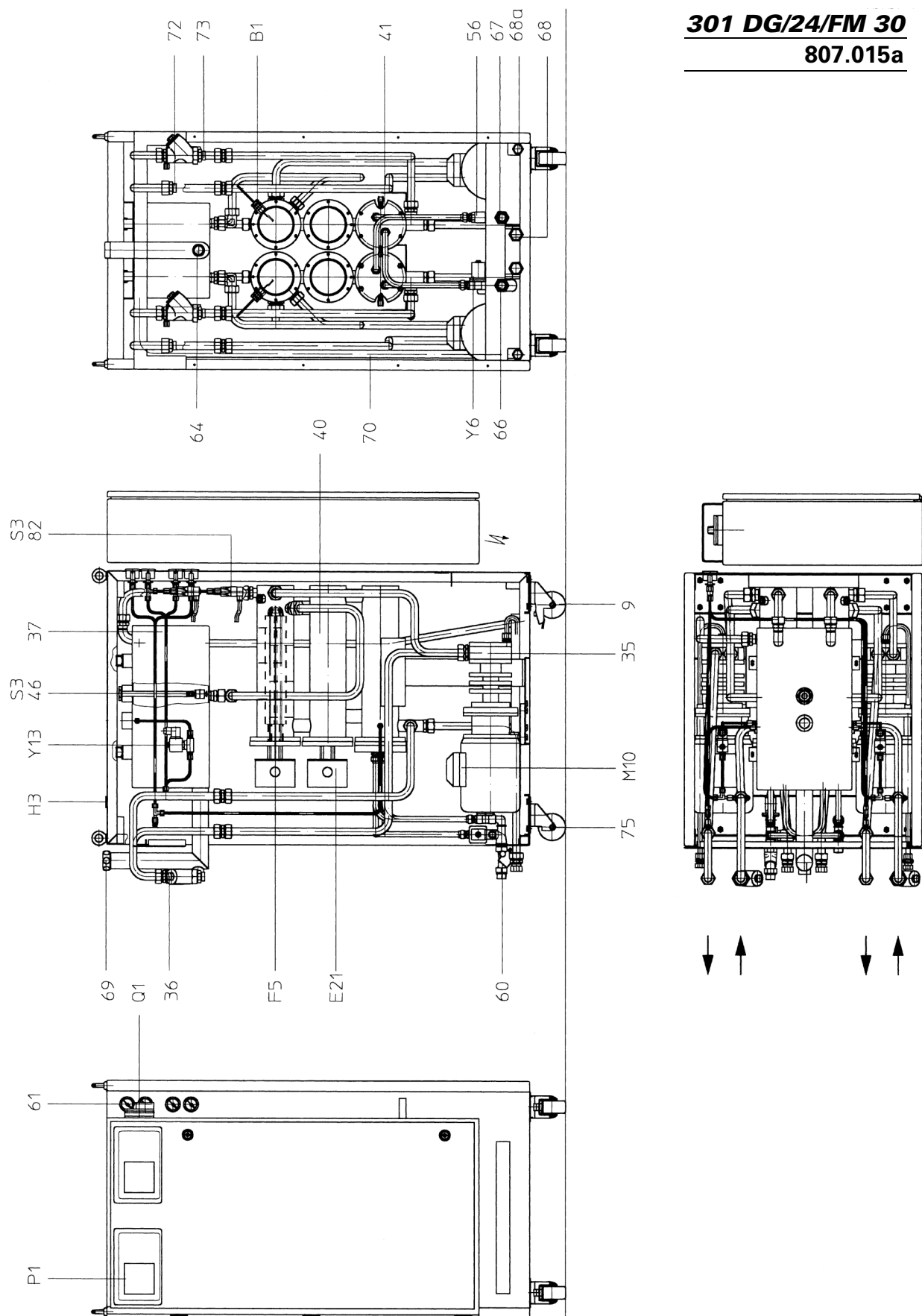




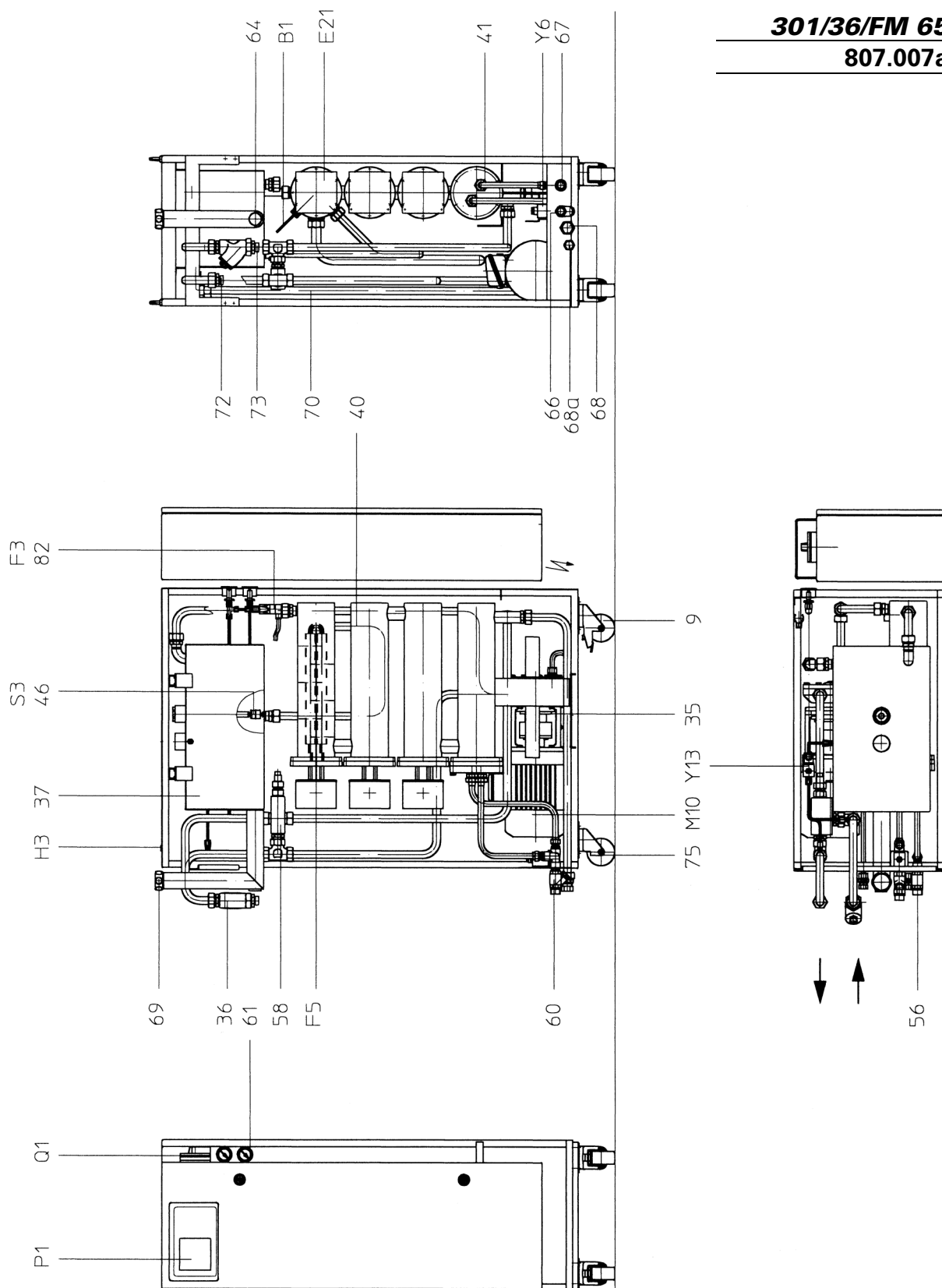
300 DG
807.010a







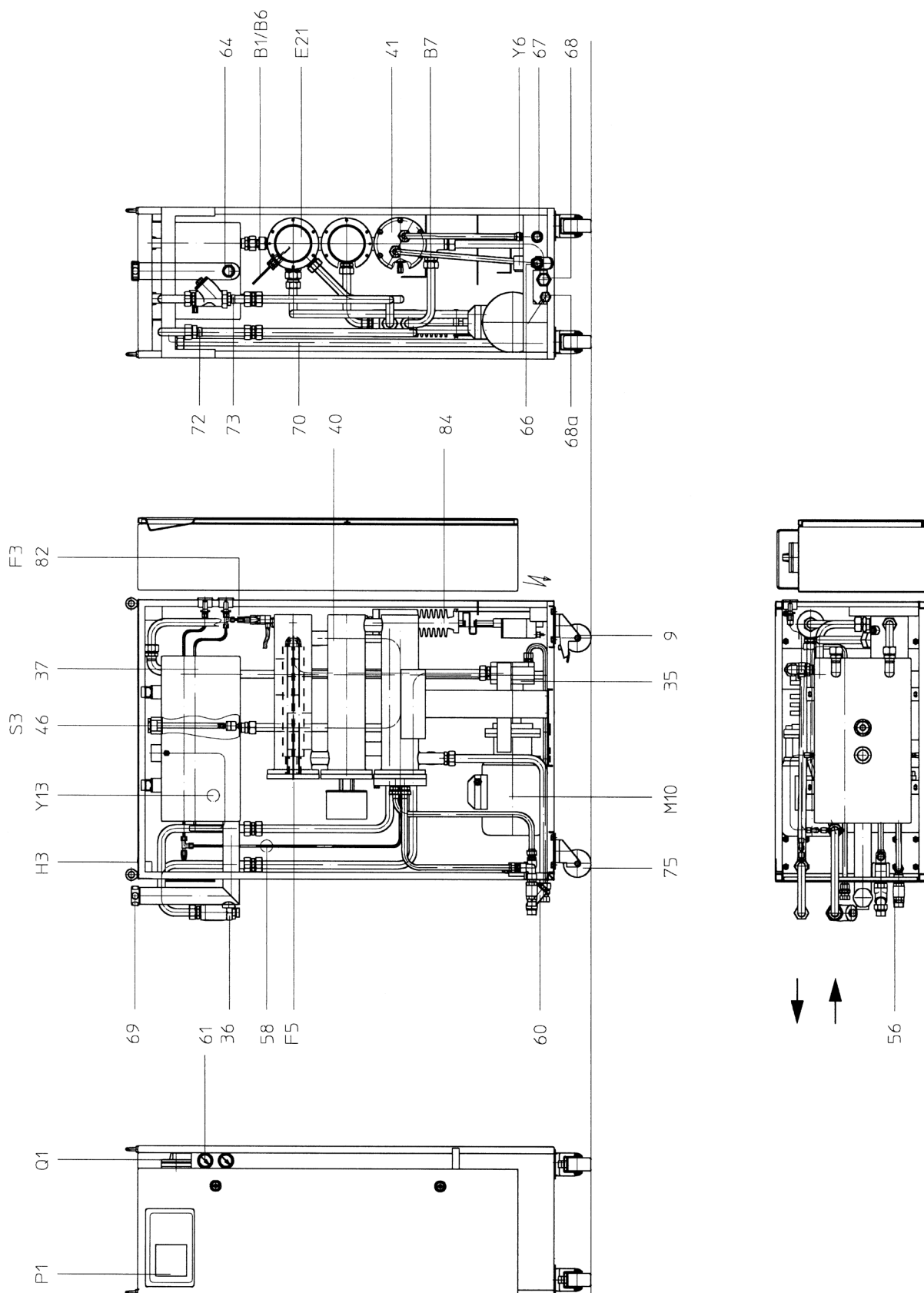
301 DG/24/FM 30
807.015a



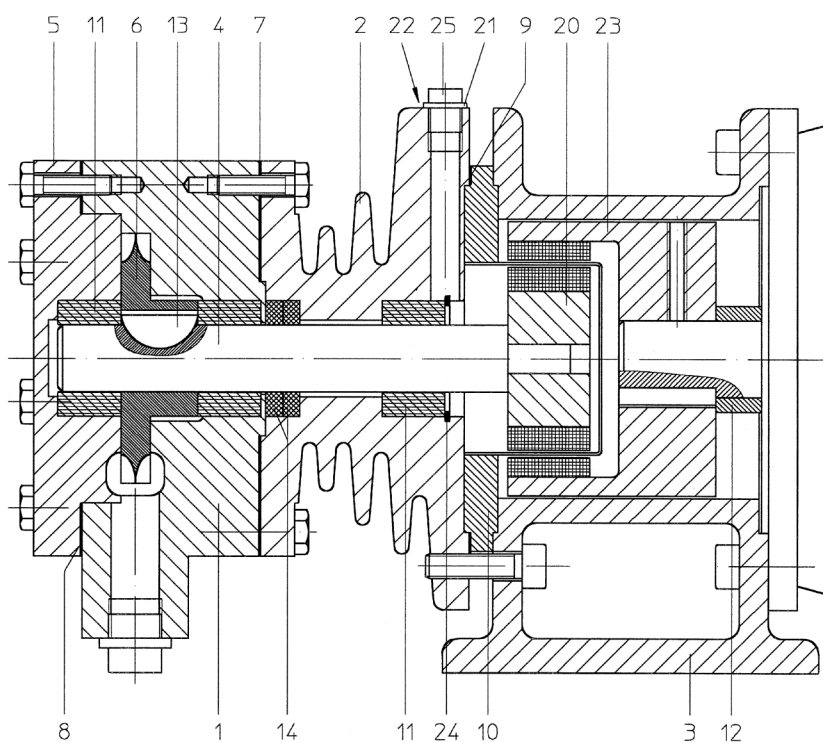
301/36/FM 65
807.007a

Mit Dreiwegventil
Avec valve à 3 voies
With three-way valve

301
807.044a



Pos.	Artikel	Article	Item
1	Pumpenkörper	Corps de pompe	Pump body
2	Kühlstrecke	Corps de refroidissement	Cooling sleeve
3	Zwischenflansch	Flasque intermédiaire	Intermediate flange
4	Welle	Axe	Shaft
5	Pumpendeckel	Couvercle de pompe	Pump cover
6	Lauftrad	Hélice	Impeller
7	Dichtung Kühlstrecke	Joint corps de refroidissement	Seal for cooling sleeve
8	Deckeldichtung	Joint pour couvercle	Cover seal
9	Dichtung Spalttopf	Joint tube de séparation	Can seal
10	Spalttopf	Tube de séparation	Can
11	Kohlelager	Palier	Carbon bearing
12	Distanzscheibe	Anneau d'écartement	Disk spacer
13	Keil	Clavette	Key
14	Graphitring	Anneau graphité	Graphite ring
20	Magnetkupplung Pumpenseite	Accouplement magnétique, côté pompe	Magnetic drive, pump side
21	Kupferdichtung	Joint cuivre	Copper seal
22	Kupferdichtung	Joint cuivre	Copper seal
23	Magnetkupplung Motorseite	Accouplement magnétique, côté moteur	Magnetic drive, motor side
24	Sicherungsring	Circlip	Circlip
25	Entlüftungsschraube	Vis de sortie d'air	Vent screw



Pos.	Artikel	Article	Item
1	Gehäuse	Corps	Housing
2	Laterne	Cage d'accouplement	Stool
3	Deckel	Couvercle	Cover
4	Welle	Axe	Shaft
5	Lauftrad	Hélice	Impeller
6	Gleitlager	Palier de glissement	Sleeve bearing
7	Dichtung	Joint	Gasket
8	Dichtung	Joint	Gasket
9	Dichtung	Joint	Gasket
10	Dichtung	Joint	Gasket
11	Radialdichtring	Bague d'étanchéité	Radial-shaft seal ring
12	Toleranzring	Bague de tolérance	Tolerance ring
13	Toleranzring	Bague de tolérance	Tolerance ring
14	Kupplungsschutz	Grille de protection	Coupling guard
15	Gewindeflansch	Flasque fileté	Screwed flange
16	Spalttopf	Tube de séparation	Can
17	Kupplung	Accouplement	Drive
18	Magnetkup. Pumpenseite	Acc. mag., côté pompe	Mag. drive, pump side
19	Magnetkup. Motorseite	Acc. mag., côté moteur	Mag. drive, motor side
20	Verschluss-Schraube	Bouchon	Screwed plug
21	Sicherungsring	Circlip	Retaining ring
22	Motor	Moteur	Motor

Für Pumpe FM 65 (TOE-CY-6091 MK) des Gerätetyps 301 gilt: Diese Pumpe hat eine Keramikwelle. Wegen Bruchgefahr der Welle muss zum Wechseln der Flachdichtung der Gehäusedeckel mit größter Vorsicht abgehoben werden. Ein Verkanten der Welle führt zu einem Bruch des SiC-Gleitlagers bzw. der Welle.

Grundsätzlich ist die Pumpe wartungsfrei. Lediglich die Flachdichtung und der Spaltkopf können bei Bedarf ersetzt werden.

Ein Auswechseln der Gleitlager darf nur durch den Hersteller erfolgen.

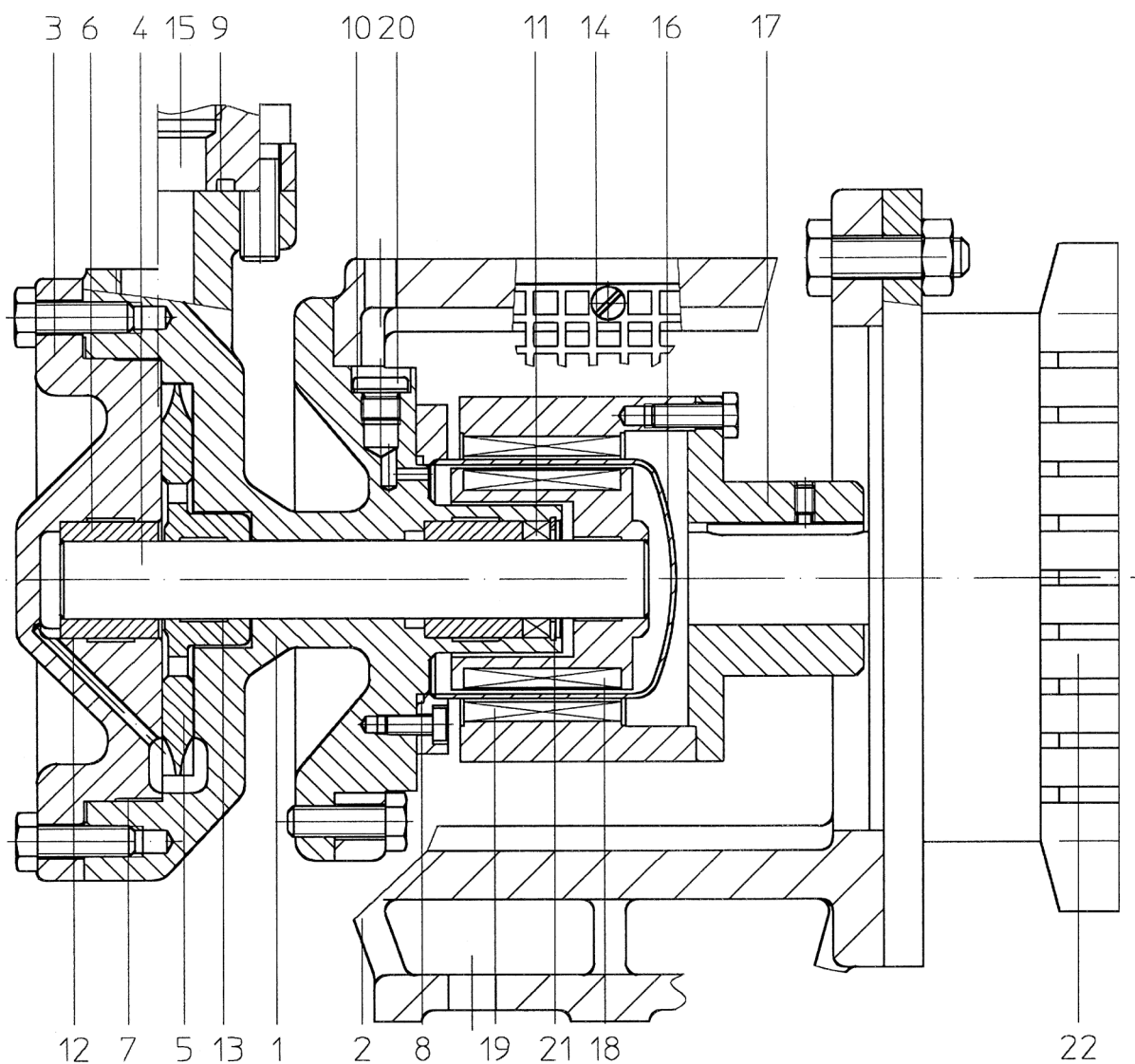
Pompe FM 65 (TOE-CY-6091 MK): cette pompe possède un arbre en céramique! Pour changer la garniture plate, soulever avec précaution le couvercle du boîtier en raison du danger de rupture. En effet, un montage ou démontage incorrects ainsi qu'un gauchissement de l'arbre entraînent la rupture du palier de glissement SiC et de l'arbre. Cette pompe ne demande pratiquement pas d'entretien. Il suffit, le cas échéant, de changer les garnitures plates et le tube de séparation.

Les paliers à glissement ne doivent être changés que par le fabricant.

Pump FM 65 (TOE-CY-6091 MK): This pump has a ceramic shaft. To prevent damage, the housing cover must be lifted with extreme care when replacing the flat packing. Tilting the shaft could break the SiC slide bearing or the shaft.

The pump is essentially maintenance-free. The flat packing and the gap sleeve may be replaced as necessary.

The slide bearing shall be replaced by the manufacturer only.

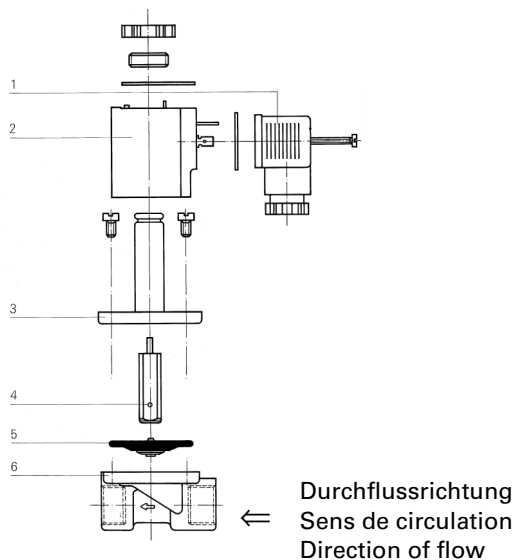


Magnetventil
Electro-vanne
Solenoid valve

EVSI 12¹/₂"

600.562

Pos.	Artikel	Article	Item
1	Anschlussdose	Boîte de raccordement	Terminal box
2	Spule	Bobine	Coil
3	Ankerführung	Guidage de l'ancre	Armature guide
4	Anker mit Feder	Ancre avec ressort	Armature with spring
5	Membrane	Membrane	Diaphragm
6	Gehäuse	Corps	Housing

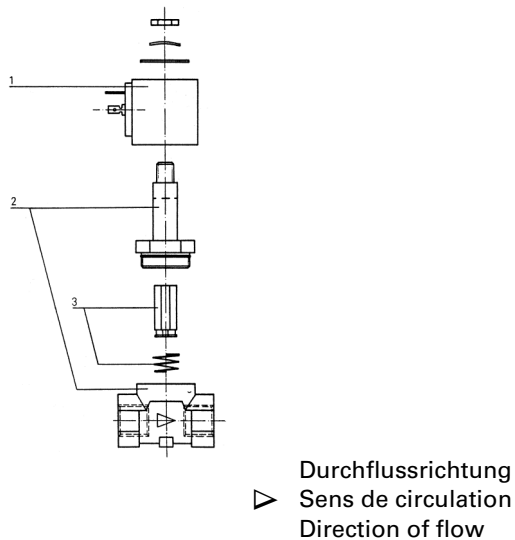


Magnetventil
Electro-vanne
Solenoid valve

121 K 1¹/₄"

600.799

Pos.	Artikel	Article	Item
1	Spule	Bobine	Coil
2	Ankerführung Gehäuse	Guidage de l'ancre Corps	Housing for armature guide
3	Anker mit Feder	Ancre avec ressort	Armature with spring



Schwimmerschalter

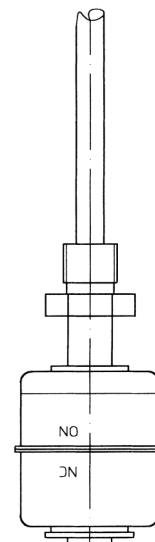
Bei einem Austausch des Schwimmerschalters muss die Bezeichnung «NO» gemäss Abbildung oben sein. Andernfalls funktioniert die Niveauekontrolle nicht.

Interrupteur à flotteur

Lors d'un remplacement de l'interrupteur à flotteur, la désignation «NO» doit se situer en haut (voir croquis). Dans le cas contraire, le contrôle de niveau ne fonctionne pas.

Float switch

When replacing the float switch, the designation "NO" must be on the upper side as shown in the diagram. Otherwise the level control will not function.

**Sicherheitsthermostat**

Der Sicherheitsthermostat schaltet nach Erreichen der eingestellten Fühlertemperatur um und bleibt verriegelt.

Nach Unterschreitung des eingestellten Grenzwertes um ca. 10% des Skalenumfanges kann der Thermostat entriegelt werden.

Wiedereinschaltknopf (1) drücken.

Thermostat de sécurité

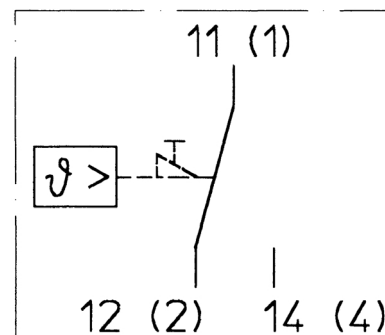
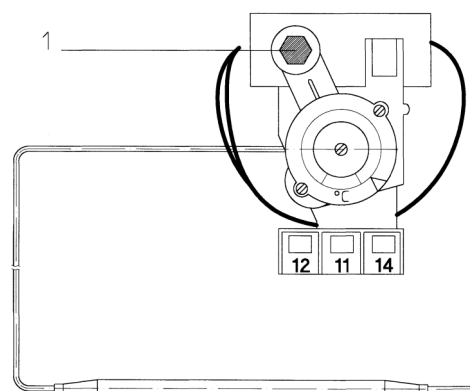
Le thermostat de sécurité commute lorsque la température de sonde est atteinte et reste verrouillé.

Après que la température de sonde soit descendue d'au moins 10% sous la valeur limite réglée, réarmer le thermostat en enfonçant le bouton (1).

Safety thermostat

When the sensor reaches the temperature set, the safety thermostat switches off and remains locked.

Once the sensor temperature has dropped approximately 10% of the full scale range, the thermostat can be reset by pressing the reset button (1).

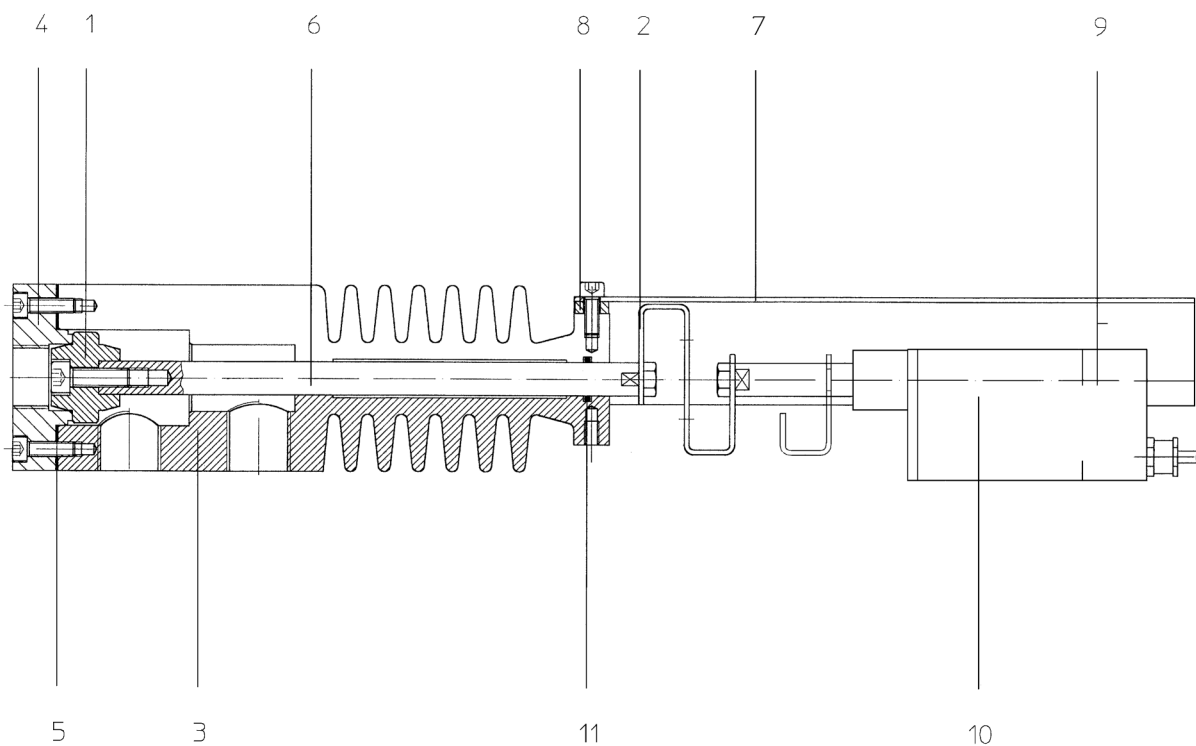


Dreiwegventil
Valve à 3 voies
Three-way valve

12886

712.031

Pos.	Artikel	Article	Item
1	Kolben	Piston	Piston
2	Kupplungsfeder	Ressort d'accouplement	Drive spring
3	Ventilkörper	Corps de valve	Valve body
4	Deckel	Couvercle	Cover
5	Dichtscheibe	Rondelle d'étanchéité	Gasket disk
6	Kolbenstange	Tige de piston	Piston rod
7	Halter	Support	Support
8	Distanzrohr	Tube d'écartement	Tube spacer
9	Distanzrohr	Tube d'écartement	Tube spacer
10	Servomotor	Servomoteur	Servomotor
11	O-Ring	Joint torique	O-ring



**EC Declaration of Conformity for Machinery.
Directive 89/392/EEC, Annex II A**

Regloplas AG, CH-9006 St.Gallen

declares that the machine described below, on the basis of its design and construction, as well as the model brought on the market by us, fulfils the basic pertinent safety and health requirements of the EU Guidelines.

Any unauthorized modification made to the machine will render this declaration invalid.

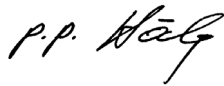
Description of the machine: **Temperature Control Unit**

Type:	Serial Number:	Type:	Serial Number:
300	542 060 –	301	560 051 –
300 DG	370 210 –	301 DG	563 001 –

Pertinent EU Guidelines: EU Machine Guidelines 89/392/EEC.
EU Electromagnetic Compatibility Guidelines 89/336/EEC.

Related standards: EN 292-1, EN 292-2, EN 60204-1, EN 73/23/EEC

Title of signatory: Technical Director

Place/Date/Signature: St.Gallen, 23.7.1999 



Regloplas AG
Flurhofstrasse 158
CH-9006 St. Gallen
Tel. + 41 71 282 58 00
Fax + 41 71 282 58 40
E-mail regloplas@regloplas.com
Internet www.regloplas.com