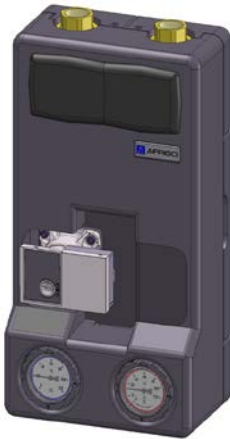


Mess-, Regel- und
Überwachungsgeräte
für Haustechnik,
Industrie und Umweltschutz

Lindenstraße 20
74363 Güglingen
Telefon +49 7135 102-0
Service +49 7135-102-211
Telefax +49 7135-102-147
info@afriso.de
www.afriso.de



Operating instructions

Heating pump assembly for increased return temperature with solid fuel boilers

PrimoTherm[®] 180-2 RTA with 3-way mixer and actuator
PrimoTherm[®] 180-3 RTA with thermal fixed value valve
(45 °C/55 °C/60 °C)




-  Read instructions before using device!
-  Observe all safety information!
-  Keep instructions for future use!

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1 This instruction manual

This instruction manual is part of the product.

- ▶ Read this manual before using the product.
- ▶ Keep this manual during the entire service life of the product and always have it readily available for reference.
- ▶ Always hand this manual over to future owners or users of the product.

1.1 Explanation of symbols and typeface

Symbol	Meaning
	Prerequisite for an activity
	Activity consisting of a single step
1.	Activity consisting of a several steps
	Result of an activity
•	Bulleted list
Text	Indication on display
Highlighting	Highlighting

2 Safety

2.1 Intended use

The heating pump assembly PrimoTherm® 180-2 RTA/180-3 RTA may only be used to circulate the following liquids in intrinsically safe, closed, thermal heating systems with a maximum capacity of 32 kW and a maximum flow rate of 1400 l/h.

- Heating circuit water as per VDI 2035
- Water/glycol mixtures with an admixture of max. 20 %

Any use other than the application explicitly permitted in this instruction manual is not permitted.



2.2 Predictable incorrect application

The heating pump assembly PrimoTherm® 180-2 RTA/180-3 RTA must never be used in the following cases:

- Use with drinking water
- Use with adherent, corrosive or flammable fluids
- Hazardous area (Ex)

If the device is operated in hazardous areas, sparks may cause deflagrations, fires or explosions.

2.3 Safe handling

This product represents state-of-the-art technology and is made according to the pertinent safety regulations. Each device is subjected to a function and safety test prior to shipping.

- ▶ Operate the product only when it is in perfect condition. Always observe the operating instructions, all pertinent local and national directives and guidelines as well as the applicable safety regulations and directives concerning the prevention of accidents.

2.4 Staff qualification

The product may only be mounted, commissioned, operated, maintained, decommissioned and disposed of by qualified, specially trained staff.

Electrical work may only be performed by trained electricians and in compliance with all applicable local and national directives.

2.5 Modifications to the product

Changes or modifications made to the product by unauthorised persons may lead to malfunctions and are prohibited for safety reasons.

2.6 Usage of spare parts and accessories

Usage of unsuitable spare parts and accessories may cause damage to the product.

- ▶ Use only genuine spare parts and accessories of the manufacturer.



2.7 Liability information

The manufacturer shall not be liable in any form whatsoever for direct or consequential damage resulting from failure to observe the technical instructions, guidelines and recommendations.

The manufacturer or the sales company shall not be liable for costs or damages incurred by the user or by third parties in the usage or application of this device, in particular in case of improper use of the device, misuse or malfunction of the connection, malfunction of the device or of connected devices. The manufacturer or the sales company shall not be liable for damage whatsoever resulting from any use other than the use explicitly permitted in this instruction manual.

The manufacturer shall not be liable for misprints.

3 Product description

PrimoTherm® 180-2 RTA with 3-way mixer and mixer is used with solid fuel boilers which have a controller for increasing the return temperature. The opening temperatures must be set at this controller.

PrimoTherm® 180-3 RTA automatically controls the return temperature of the system water to the heat generator to the value adjusted in the valve.

PrimoTherm® 180-2 RTA/180-3 RTA is a pre-assembled, tightness-tested and heat-insulated pump assembly. The integrated, temperature-controlled condensation protection valve is the connection between the solid fuel heating system or the buffer storage.

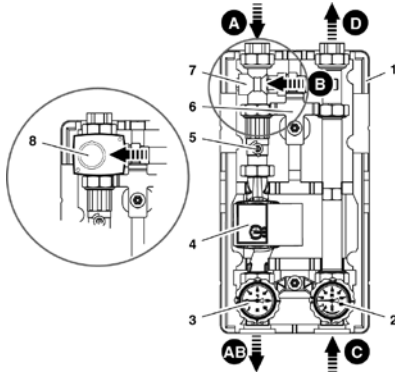
The pump assembly can be installed vertically or horizontally. To select the installation position, the thermometers and the pump head are rotated to the desired position.

The universal insulation allows for the installation of virtually any standard pump (with G1½ connection and a length of 180 mm) without reworking of the insulation. The second ball valve in the return line lets you replace the pump without draining the system.

In addition, the system is modular so that the flow line can be mounted at the left or the right side. Optional temperature probes Ø 6 mm can be mounted to all ball valves.



3.1 Properties









- 1** Insulation
- 2** Ball valve, can be shut off, with thermometer red and gravity brake
- 3** Ball valve, can be shut off, with thermometer blue
- 4** Circulation pump (various manufacturers)
- 5** Ball valve
- 6** Bracket
- 7** Condensation protection valve (180-3 RTA only)
- 8** 3-way mixer with actuator (180-2 RTA only)

- A** Return storage
- B** Bypass
- AB** Return boiler
- C** Flow boiler
- D** Flow storage

Fig. 1: PrimoTherm® components



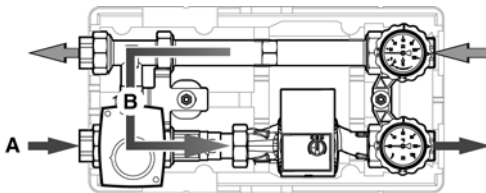
Table 1: Thermometer ball valve

Thermometer ball valve with gravity brake			
	0°	Normal operation gravity brake active	
	90°	Maintenance: Ball valve closed	
	45°	Commissioning, filling, venting, flushing – both sides open (gravity brake not active)	

3.2 Function principle (180-2 RTA)

Start mode (heating up of the boiler), transition phase when opening temperature is reached and regular operation

In the case of this version, the individual operating phases are controlled by the boiler control of the mixing valve.

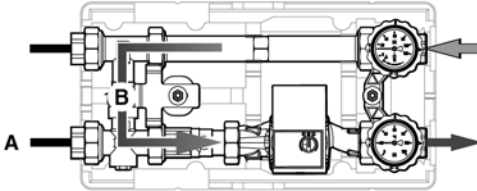




3.3 Function principle (180-3 RTA)

Start mode (heating up of boiler)

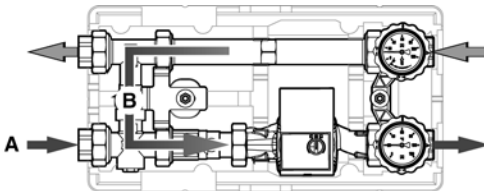
When the boiler heats up, the condensation protection valve is fully closed in the direction of the consumer (return storage A). The liquid coming from the boiler is recirculated in the small circuit (bypass B), which causes the boiler temperature to increase more rapidly.



Transition phase when opening temperature is reached

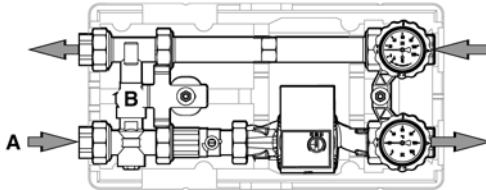
When the opening temperature is reached (e.g. 55 °C), the circuit to the consumer (return storage A) is opened proportionally and the bypass (B) is reduced accordingly.

The boiler temperature increases and heat is provided to the consumer; however, the return temperature will not fall below the set temperature.



Regular operation

During further operation, the temperature increases until the condensation protection valve is fully open (return storage A). The bypass (B) is closed correspondingly. If the inlet temperature (return storage A) drops to approx 10 °C above the set opening temperature (e.g. 65 °C), the admixture via the bypass (B) is increased proportionally and outlet A is closed proportionally.



Insulation

The form-fit insulation is also used to package the product for safe transport. It can be used for all applications:

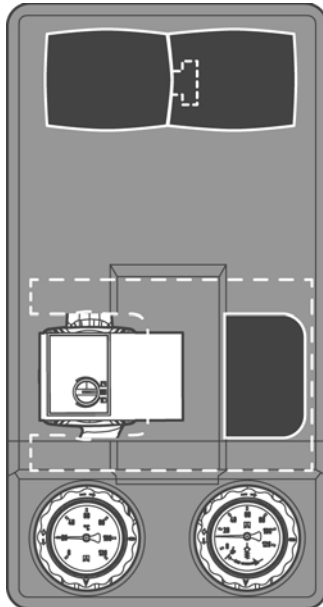
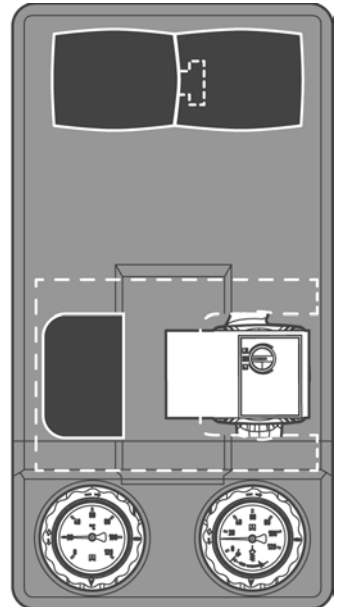


Fig. 2: Flow right



Flow left



4 Technical specifications

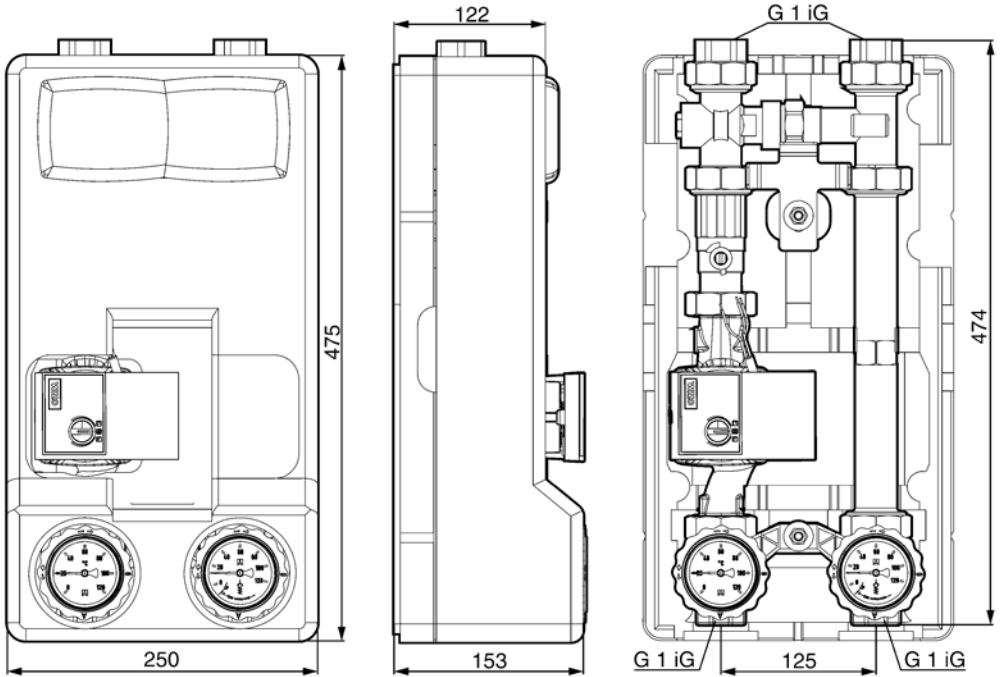


Fig. 3: Dimensions [mm] and connections



Table 2: Technical specifications

Parameters	Value	
	180-2 RTA	180-3 RTA
General specifications		
Weight	Approx. 8 kg	
Material of fittings	Brass	
Insulation material	Polypropylene EPP	
System		
System pressure	Max. 10 bar Observe maximum pressure of circulation pump used!	
System capacity	Max. 50 kW	Max. 32 kW
System flow rate	Max. 2150 l/h	Max. 1400 l/h
Operating temperature range		
Medium	Max. 100 °C	
Pressure loss		
A-AB	Flow coefficient NS = 4.8 m ³ /h	Flow coefficient NS = 2.94 m ³ /h
B-AB		Flow coefficient NS = 2.12 m ³ /h

4.1 Approvals, tests and conformities

See operating instructions of the manufacturer of the circulation pump for versions with circulation pump.

5 Transport and storage

- ▶ Transport and store PrimoTherm® in the original box.



6 Mounting and commissioning

6.1 Preparing mounting

Installing the pump (PrimoTherm® without pump only)

- ✓ Only use circulation pumps with a constant speed of rotation.
- ▶ Install pump with a length of 180 mm.
Connection thread G1½, tightening torque 80 Nm.

Interchanging flow/return

Unless otherwise specified, all information in these operating instructions relates to the installation type "flow storage right".

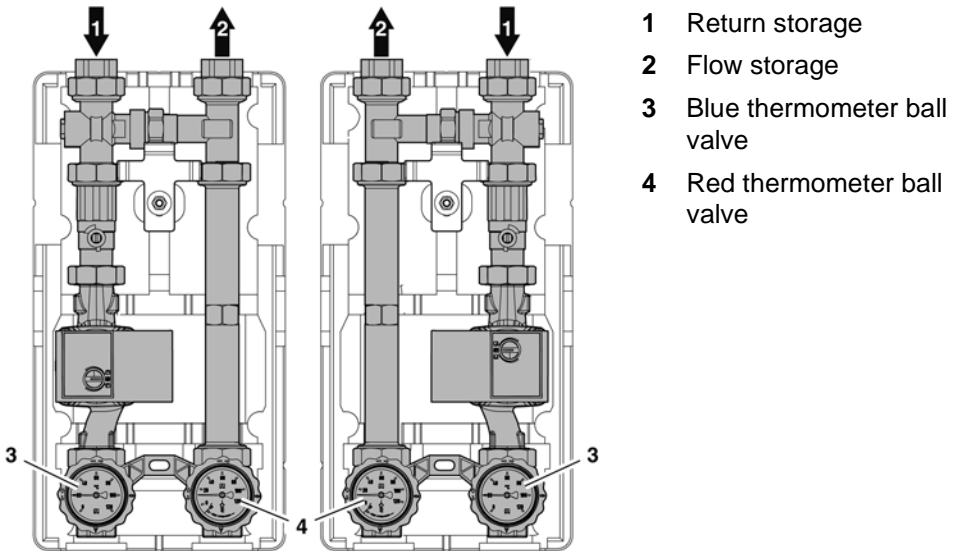
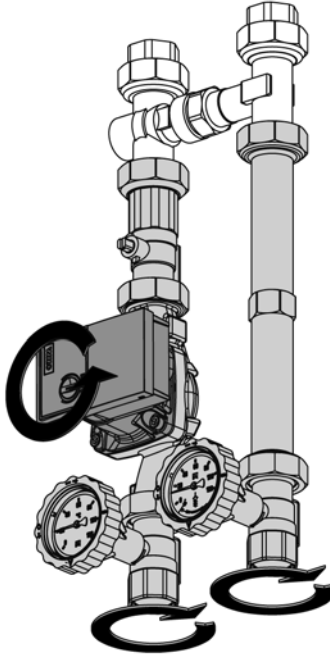


Fig. 4: Flow storage right
(condition as supplied)

Flow storage left

1. Interchange left and right lines, turn pump head.

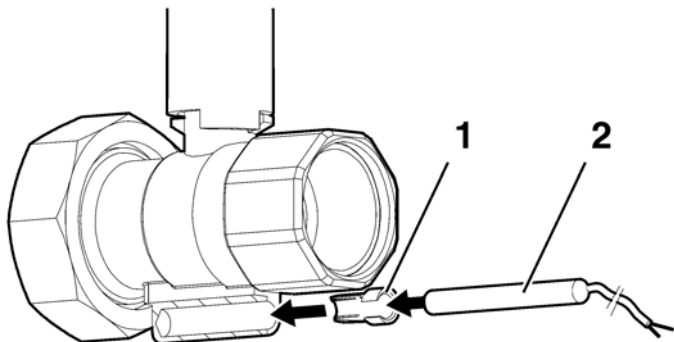


2. Fit the insulation as shown in fig. 2, page 9.

6.2 Mounting the temperature probe (optional)

Depending on the type of the temperature probe (2), it may be necessary to shorten the ferrule (1).

- Mount the temperature probe.

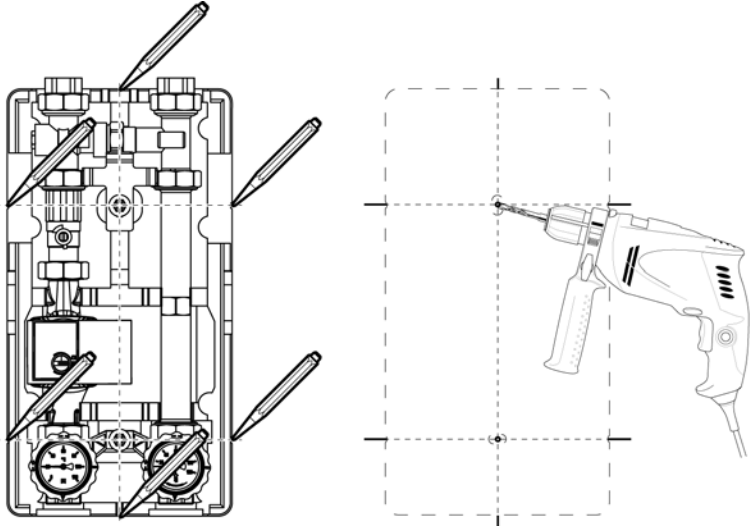


6.3 Mounting the device

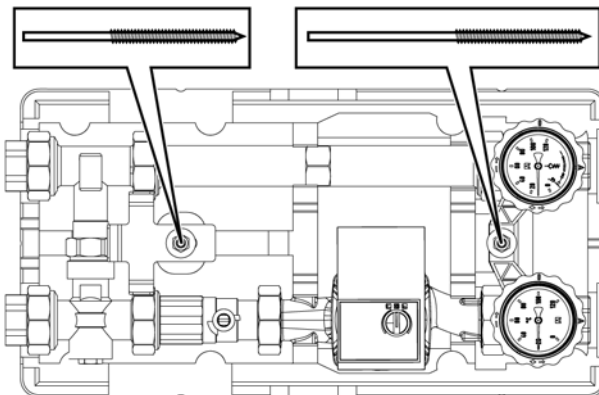
Wall mounting

The pump assembly can be mounted to a wall both vertically or horizontally.

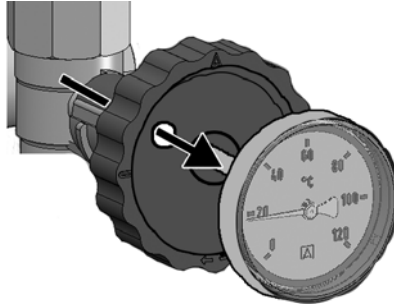
1. Remove the upper insulation.
2. Hold the pump assembly with the lower insulation to the wall (align with a level) and mark the position of the holes. Interconnect the opposing marks.



3. Drill holes \varnothing 10 mm at the position of the two centre marks and fit the enclosed dowels. Screw the long hanger bolt into the hole at the end with the thermometer ball valves, the short hanger bolt into the hole at the end with the bracket.



4. Rotate the thermometer by 90° in the case of horizontal mounting position.



5. Fit the pump assembly with the bottom insulation and secure it with the bracket, a washer and a nut.
6. Connect the pipes of the heating circuit to the connections of the fittings (no mechanical stress).
7. Refit the upper insulation.

6.4 Electrical connection

- Mains voltage is interrupted and cannot be switched on.
- ▶ Connect the circulation pump and the actuator as described in the corresponding operating instructions.

6.5 Commissioning the system

- The thermometer ball valves are in 0° setting, see table 1, page 7.
1. Perform a pressure test and check all screwed connections for tightness.
 2. To fill the system, set the thermometer ball valve with gravity brake to 45° setting.
 3. Fill the system and apply pressure.
 4. Set the thermometer ball valve to 0° setting.

7 Operation

Proper operation is only possible if all shut-off fittings (thermometer ball valves, ball valve) are open (0° setting, see table 1, page 7).



8 Maintenance

Replacing a defective circulation pump

1. Close the blue thermometer ball valve and the ball valve in the pump line (90° setting).
2. Replace the circulation pump.
3. Open the thermometer ball valve and the ball valve (0° setting).

9 Troubleshooting

Repairs may only be performed by specially trained, qualified staff.

- ▶ Also observe the corresponding operating instructions in the case of malfunctions of the circulation pump.

Table 3: Troubleshooting

Problem	Possible reason	Repair
System is noisy.	Air in the system.	▶ Vent the system.
Other malfunctions.	–	▶ Call AFRISO service hotline.

10 Decommissioning, disposal

1. Switch off the supply voltage.
2. Dismount the device (see chapter 6, page 12, reverse sequence of steps).
3. To protect the environment, this device must **not** be disposed of together with the normal household waste. Dispose of the device according to local directives and guidelines.

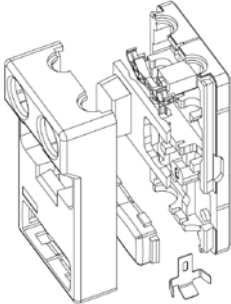
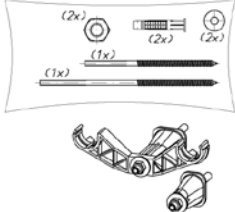
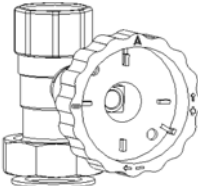
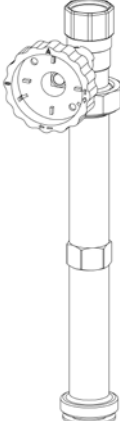


This device consists of materials that can be reused by recycling firms. The electronic inserts can be easily separated and the device consists of recyclable materials.

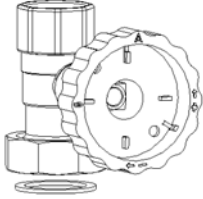
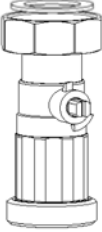
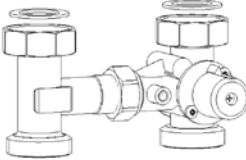
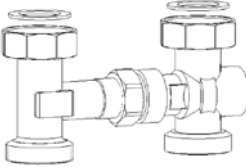


If you do not have the opportunity to dispose of the used device in accordance with environmental regulations, please contact us for possibilities to return it.



11 Spare parts

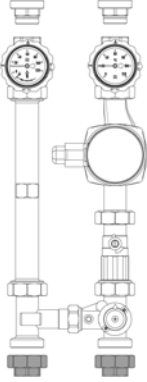

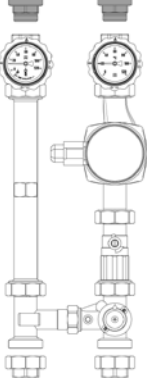

Part no.	Part	Drawing
77540	Insulation + wall mounting kit + accessories	
77588	Wall mounting kit	
77539	Ball valve for pump With gravity brake, pre-assembled	
77538	Return line Consists of ball valve for pump with gravity brake, pre-assembled, and spacer pipe	



Part no.	Part	Drawing
77537	Ball valve for pump Pre-assembled	
77536	Ball valve for pump G1½ x flange	
77589	3-way mixer with T piece KV 10	
77534 77533 77532	Condensation protection valve 740 KVs 3.5/60 °C with T piece Condensation protection valve 740 KVs 3.5/45 °C with T piece Condensation protection valve 740 KVs 3.5/55 °C with T piece	
77530	Thermometer kit RTA Flow red/return blue with gravity brake symbol	
78208	Actuator ARM 343 6 Nm, 230 V, 120 s	



12 Accessories

Part no.	Part	Drawing
77612	<p data-bbox="169 236 505 300">Connection kit (primary end) G1½ female x 1 female</p> 	
77613	<p data-bbox="169 707 538 770">Connection kit (secondary end) G1½ male x 1 male</p> 	



13 Warranty

The manufacturer's warranty for this product is 24 months after the date of purchase. This warranty shall be good in all countries in which this device is sold by the manufacturer or its authorised dealers.

14 Copyright

The manufacturer retains the copyright to these operating instructions. These operating instructions may not be reprinted, translated, copied in part or in whole without prior written consent.

We reserve the right to technical modifications with reference to the specifications and illustrations in this manual.

15 Customer satisfaction

Customer satisfaction is our prime objective. Please get in touch with us if you have any questions, suggestions or problems concerning your product.

16 Addresses

The addresses of our worldwide representations and offices can be found on the Internet at www.afriso.de.