ACCESSORIES

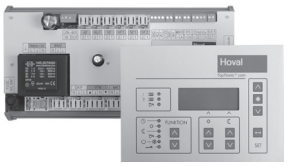
Hoval

Responsibility for energy and environment

Matching components to ensure proper system function.

Page

Controls



Control armatures

Page

Description

Heating control TopTronic®T/N

- modular heating circuit regulator with integrated regulation functions for
  - 1 mixing circuit
  - 1 heating circuit without mixer
  - hot water charging circuit
- optional extension of functionality with key modules for
  - 2nd mixer circuit
  - bivalent operation
  - solar circuit integration
- user friendly and intelligent user interface
- integrated short instruction set
- large LCD display for showing current data, parameters, error messages and operation states
- plain text display and background lighting
- 7 large function keys for
  - day room temperature
  - night room temperature
  - hot water temperature
  - operation mode selection (holiday, absence, heating operation extension, automatic operation, summer, heating operation permanent - reduced, frost protection)
  - characteristic curve setting
  - plant information
  - emission measurement and manual operation
- press-and-turn button for simple setting of desired temperature and functions
- plug-in connection terminals
- accessories
  - heat generator sensor
  - outside sensor
  - flow sensor
  - calorifier sensor
  - various key modules
  - wall mounting case
  - BMS module 0-10 V
  - MOD bus TTT/ZM module
  - SMS remote control unit

Functions
- weather controlled flow temperature regulator with or without room influence taking account of building characteristics and switching optimisation
- hot water charging circuit
  - with various operation modes (e.g. storage tank priority or parallel operation)
  - energy saving temperature
  - adjustable legionella prevention function
  - adjustable storage tank after-run
  - storage tank emptying protection
  - limiting and protection functions
- optimal adjustment of the regulation characteristics for various heat generators
- characteristic heating curve adjustment
- digital switching clock with
  - one channel for each heating circuit and hot water charging circuit
  - 3 individually preset standard programmes for all channels and up to 3 switching cycles per day per channel
  - adjustable on/off times
  - automatic summer/winter changeover
  - power reserve for several years
- pump anti-blocking protection
- frost protection
- operating hours and impulse counter
- function dependent relay test
- plaster drying function for underfloor heating

Heating control TopTronic®T/N

Heating control TopTronic®T/NWP

- flue gas temperature monitoring option
- self test with error diagnosis and error memory
- can be networked using 2-wire data bus for up to 5 central units (cascade function for up to 5 heat generators), extendable for up to 10 mixer circuits
- variable inputs and outputs
- demand contact or modem switching function

Application
- oil or gas boiler (1 or 2 stage) or modulating with 0-10 V supplementary module
- regulation for heat generators such as solar collectors, wood fired boilers, heat pumps
- for room heating and hot water charging circuits in heating plants or substations
- pre-controlling of plants such as ventilators, air conditioning etc
- flexible integration into modern communication systems for automated optimisation of complete plants
- allows for reasonably priced remote control with SMS remote control unit via cell phone.

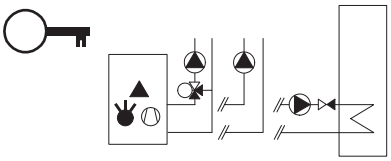
Heating control TopTronic®T/NWP

for applications with heat pumps
Design as for heating control TopTronic®T/N, but additional
- with integrated cooling function
- day room temperature and offset-setting at cooling
- night room temperature and offset-setting at cooling
- operation mode selection (holiday, absence, heating or cooling operation extension, automatic operation, summer, heating or cooling operation permanent - reduced, frost protection)
- manual operation for heating mode and rinse function for brine circuite

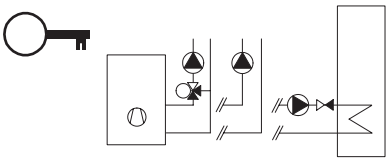
Functions
identical to heating control TopTronic®T/N, but with the following adjustments:
- Weather controlled flow temperature regulator with or without room influence taking account of building characteristics and switching optimisation for heating operation
- Outside temperature controlled flow temperature regulator for cooling operation with adjustable characteristic cooling curve
- optimal adjustment of the regulation characteristics for various heat pump types
- Automatic summer/winter time changeover, automatic exchange to heating or cooling operation

Application
- Regulation for heat pump plants and heat pump plants with active or passive cooling function
- For additional distribution of cooling energy on active/passive heat pump plants into the mixer circuits.

■ **Part N°**



Heating regulator TopTronic®T/N	Part N°
TopTronic®T/N Application • oil or gas boiler (1 or two stage) or modulating with 0 - 10 V supplementary module • regulation for heat generators such as solar collectors, solid fuel boilers Control function integrated for - 1 mixing circuit - 1 heating circuit without mixer - hot water charging circuit Optional extension of functionality with key module Only one key module possible! Sensors and connecting terminals must be ordered separately.	2034 937



TopTronic®T/NWP Application • regulation for heat pump plants and heat pump plants with active or passive cooling function • Additional control for additional heating circuits for larger plants with active or passiv cooling function Control function integrated for - 1 mixing circuit - 1 heating circuit without mixer - hot water charging circuit Optional extension of functionality with key module Only one key module possible! Sensors and connecting terminals must be ordered separately.	6023 606

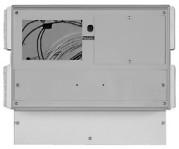
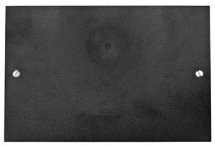
■ **Part N°**

	Accessories for heating regulator TopTronic®T	Part N°
	**Room station RS-T** for TopTronic®T effective on one mixing circuit	2034 939
	**Remote control RFF-T** for TopTronic®T effective on one mixing circuit	2022 239
	**Outdoor sensor AF 200** (may be included in the heat generator scope of delivery) for one mixing circuit or for the mean value (per regulator 2 outdoor temperature sensors possible)	2022 995
	**Flue gas temperature sensor PT 1000/4** L = 2.5 m including fixing screws (installation on site)	6913 57
	**Solar temperature sensor PT 1000** silicone sensor, can be used as collector/calorifier sensor L = 2.5 m max. permissible temperature 240 °C (included in key module Solar)	2022 990
	**Cable sensor KVT 20/5/6** with 5 m cable	2022 992
	**Cable sensor KTY81-210** can be used as heat source sensor dew point resistant. Connection made of PVC Cross-section: 2 x 0.22 mm^2 L = 2500 mm 50 mm free ends with wire end ferrules Measuring current of approx. 1mA Protective sleeve: 6 mm, L = 50 mm, material V4A 1.4571 max. operating temperature: -50°C to +200 °C	2040 586

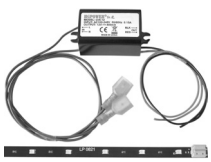
Part N°

	Part N°
 **Clamp-on temperature sensor VF202K** usable as flow or return sensor. with 2 m cable and plug	6012 595
 **Contact sensor VF204S** can be used as flow or return flow sensor with 4 m cable and plug	6012 688
 **Clamp connectors** for the extension of sensor lines	2037 954
 **Connecting terminal set X1-X4** For installing the TopTronic®T in a switching cabinet consisting of connecting terminals X1, X2, X3, X4 to fit heating control unit TopTronic®T/N and TopTronic®T/NWP	6912 37

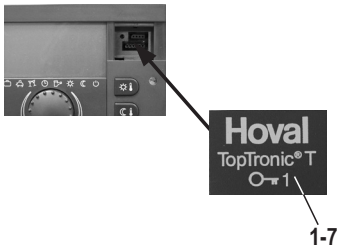
■ **Part N°**

	Control unit case	Part N°
	Control unit case for TopTronic®T/N and TopTronic®T/NWP	
	**Control unit case WG1** for installation of heating regulator TopTronic®T/N Plastic casing with clear plastic cover Colour light grey incl. pre-wiring on terminal bar Fine fuse: 6.3 A Dimensions: 365 x 320 x 160 mm	6012 598
	**Control unit case WG2** for installation of two heating regulators TopTronic®T/N. Incl. pre-wiring on terminal bar and fine fuse 6.3 A Plastic casing with clear plastic cover Colour light grey, 365 x 320 x 160 mm (For the second unit only the mixer circuit terminals are wired to output terminals.)	6012 599
	**Control unit case MSK** for installation of one heating regulator Plastic casing, colour dark grey Terminals wired on terminal bar. 281 x 94 x 93 mm Recommendation: For extension module for boiler controller. Connection of max. 8 electric cables. The cables must be placed in cable ducts. For larger plants use case WG1, WG2 or a switching cabinet.	6012 508
	Mounting frame for installation in switching cabinet of the heating regulator TopTronic®T/N	6004 505
	**Blind cover** for TopTronic®T in place of installation of a heating regulator smooth Colour anthracite	2374 72

Accessories boiler control unit TopTronic®T

	**LED set 1 (small)** for MultiJet®(16-25), UltraOil®(16-35) UltraGas®(15-50), Thermalia®(6-15) Thermalia®twin for lighting of the Hoval logo Can be installed in the control Different options of actuation.	6027 905
	**LED set 2 (wide)** for UltraOil®(50-80), UltraGas®(70-1000) for lighting of the Hoval logo. Can be installed in the control; different options of actuation.	6027 906

■ **Part N°**



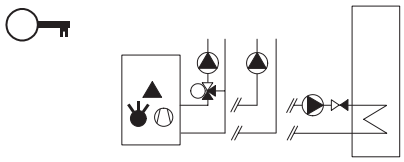
1-7

Accessories for heating regulation system TopTronic®T

Part N°

for TopTronic®T/N and TopTronic®T/NWP.

Key Modules for Hoval TopTronic®T
For further functions in addition
to the standard functions.
Key module consisting of:
function key for insertion into the
TopTronic®T incl. accessories
Only one key module possible!

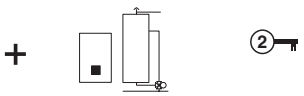


Standard functions
already realised in the TopTronic®T.
- 1 mixing circuit
- 1 heating circuit without mixer
- hot water charging circuit

Functions of the key modules

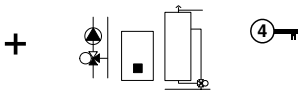
key module	2nd mixing circuit	solid buffer bivalent	solar
①	●		
②		●	
③			●
④	●	●	
⑤	●		●
⑥		●	●
⑦	●	●	●

Key module 1 6012 154
for 2nd mixing circuit
function key 1, 1 flow sensor, 2 loose plugs



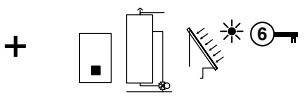
Key module 2 6012 155
for solid fuel/ buffer storage unit/ bivalent plant
function key 2, 3 immersion sensor, 4 loose plugs

Key module 3 6012 156
for solar plants
function key 3, 1 collector sensor, 1 storage sensor, 4 loose plugs

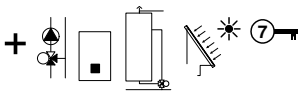


Key module 4 6012 157
for 2nd mixing circuit and solid fuel/ buffer storage unit/ bivalent plant
function key 4, 1 flow sensor, 3 immersion sensor, 6 loose plugs

Key module 5 6012 158
for 2nd mixing circuit and solar plant
function key 5, 1 flow sensor, 1 collector sensor, 1 storage sensor, 6 loose plugs



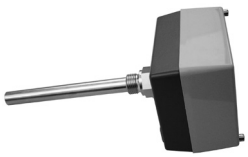
Key module 6 6012 159
for solid fuel/buffer storage unit/bivalent plant and solar plant
function key 6, 1 collector sensor, 4 immersion sensor, 6 loose plugs



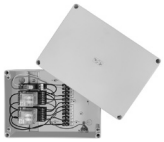
Key module 7 6012 160
for 2nd mixing circuit, solid fuel/buffer storage unit/ bivalent and solar plant
function key 7, 1 flow sensor, 1 collector sensor, 4 immersion sensor, 8 loose plugs

Sensor types
immersion /
storage sensor : type KVT20/5/6 (L = 5 m)
without immersion well
flow sensor : type VF204S with plug
collector sensor : type PT1000 (silicon)

Part N°

	Part N°
 **Simple thermostat with setting in casing** 15-95 °C, setting (visible from outside) in casing, immersion depth 100/150 mm switching differential 6K, splash proof plastic casing, nickel plated brass immersion well with thread seal G ½", max. operating pressure 10 bar. 1 switchover contact max. 6A (incl.) at 230 V.	
simple thermostat - immersion depth 100 mm **RAKTW.1000B**	6010 081
simple thermostat - immersion depth 150 mm **RAKTW.1000S**	6010 082
 **Strap-on flow temperature guard** **RAK-TW1000S** 15-95 °C, setting (visible from outside) under case cover, with strap	242 902
 **Calorifier thermostat control TW 12** universal storage tank thermostat controller for thermostatic pump charge demand, setting in casing, visible from outside. 15 - 95 °C, switching differential 6K, capillar length 700 mm incl. fastening material for Hoval storage tanks, can be used with integrated immersion well	6010 080
 **Double thermostat ATH-22** Usable as minimal thermostat flow to open the loading pump. Usable as maximal thermostat to limit the flow. Bottom part of the casing made of die-cast aluminium with plastic cover, with rigid shaft 1 separate temperature adjustment each in the casing Type of protection IP54 Switching capacity: 230V/10A cos=1 Control range 1.2 : 0°C … +100°C Switching differential 1.2 : 3-4% of the scale range Immersion sleeve: G 1/2",L=150mm, D=15mm Immersion sleeve brass nickel-plated Version according to DIN EN 14597	2054 650
 **Flue gas thermostat AGT 519** Switching temperature 80 °C (switching differential approx. 15 K) 1 switchover contact 10 A at 230 V/ 50 Hz ohm resistive load Simple screw fastening on flue pipe, with 2 m connecting cable. Tested according to DIN 3440	6412 56
 **Temperature controller LAE LTR-5TSRE** Electronic 2 point temperature controller -50 °C - 150 °C switching interval 1-25 K 1 switchover contact cable sensor 2 m/ ø 0,7 mm	2004 485

■ **Part N°**

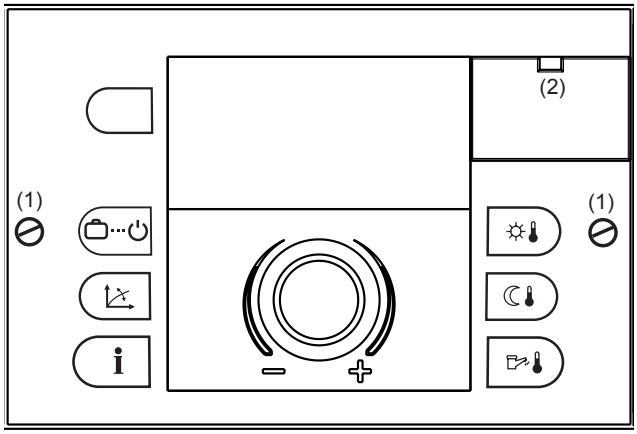
	Accessories – Hoval system components	Part N°
	**System component SB-K5** For combination of external constant temperature demand/minimum value actuation (ventilation/swimming pool, ...). Without casing. Consisting of: relay R1K, support/snap track (8 cm) incl. fastenings for installation in boiler controller, Rast5 plug – 2 pin, yellow, wired. External potential free demand contact necessary.	6013 066
	**System component SB-K6** For combination of external calorifier demand with thermostat Without casing Consisting of: relay R1K, support/snap track (8 cm) incl. fastenings for installation in boiler controller, Rast5 plug – 2 pin, green, wired	6013 067
	**System component SB-R1K (relay)** For universal implementation Relay with switchover contact 230V/10A Without casing Consisting of: relay R1K, support/snap track (8 cm) incl. fastenings for installation in boiler controller	6013 064
	**System component SB-R3K (relay)** For universal implementation Relay with 3 switchover contacts 230V/10A Without casing. Consisting of: relay R3K, support/snap track (8 cm) incl. fastenings for installation in boiler controller	6013 065
	**System component SB-K8/9/1** For connection of 2 water heating demand signals with 2 thermostats (As there is no pump after-run, not suitable for gas boilers!) without connection fittings. Consisting of: casing, 250 x 175 x 100 mm Colour light grey 1 relay R1K 2 relays R3K wired to outgoing terminals	6013 068
	**Casing for system component SB-GE** For installing the system components when this is not possible in the boiler controller. Without relay without connection fittings Consisting of: casing, 250 x 175 x 100 mm Colour light grey Maximum number of relays: 4 pieces R3K or 8 pieces R1K 12 outgoing terminals and N/ PE common terminals	6013 063

Technical data

Installation

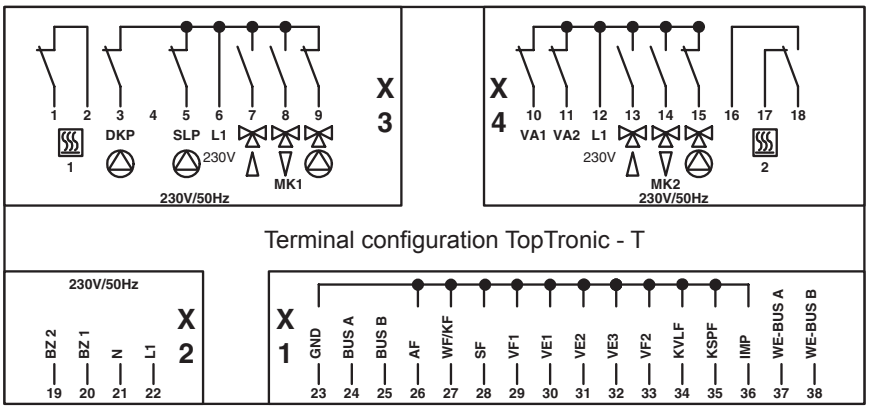
The TopTronic®T control unit is designed to be built in and is installed in the front part of the switching panel after the electrical connections have been completed.
The unit is fastened with the two lateral fixing screws (1).
If the device is installed in a closed switching cabinet, separate installation panels with the cut-out shown on the page 'technical data' should be provided.

(1) fixing screws
(2) installation location for key module



Electrical connection

Electrical connection TopTronic®T/N and TopTronic®T/NWP



The terminals on the plug X1 are operated only on low voltage!

Technical data

Electrical installations

The unit must be provided with a 6.3 A/T prefuse on the supply side. The starting power for burner and pump motors switched via the control unit may not exceed this value.
The electrical connection and cabling to the devices to be controlled is done on the rear of the device according to the markings in the colour coded connection fields. The length of the connecting leads should be sufficient to allow the unit to be replaced.

ATTENTION:
All the connection terminals on the plug X1 operate with protective low voltage and should under no circumstances come into contact with the mains power supply.
The device will be destroyed if this is not observed.

The connection terminals within the fields marked red generally operate with mains current depending on the operating state.

230 V / 50 Hz

Safety measures in respect of electromagnetic compatibility

- Cables, sensors and data bus wiring which carry mains current must always be laid separately, leaving a distance of at least 2 cm between the cables. Cables may be crossed.
- For control devices with their own power supply it is essential to ensure that mains supply and sensor or bus wiring are laid separately. Where cable ducts are used these should have separators.
- A minimum distance of 40 cm to other electrical devices with electromagnetic emissions such as contactors, motors, transformers, dimmers, microwave devices, televisions, loudspeakers, computers, wireless telephones etc. should be maintained when installing controller devices or room control units.
- A minimum distance of 40 cm must be maintained between room control units and central units. Several central units in one data bus system can be installed directly next to each other.
- The mains supply for the heating system (boiler - control panel – control unit) must be have its own independent electrical circuit. Neither neon lamps nor any other devices which could cause disturbance may be connected or connectable.
- Shielded cables must be used for data bus wiring.
  Recommended implementation:
  J-Y(St)Y 2 x 2 x 0.6
  Maximum permitted cable length: 100 m
- The cable shielding must be earthed on one side using the ground conductor connection, e.g. on the heating source casing, ground conductor terminal etc. A cable may not be earthed more than once (can lead to disturbance – ground loop).
- The outside sensor should not be installed near transmitting and receiving equipment (on garage walls near receiver for door opener, amateur radio antennae, radio alarm systems or close to transmission stations etc.).

Recommended wiring cross sections and maximum permitted cable lengths:

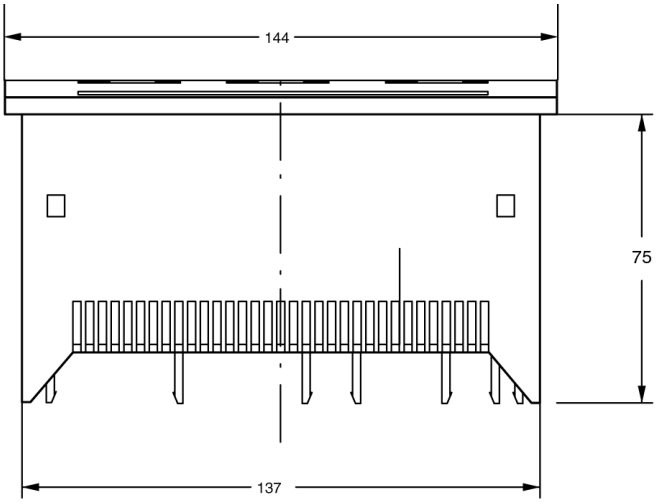
All wiring carrying mains current (mains connections, burner, pumps, actuators etc.):
1.5 mm^2
maximum permitted lengths:
No limit for installation within a building

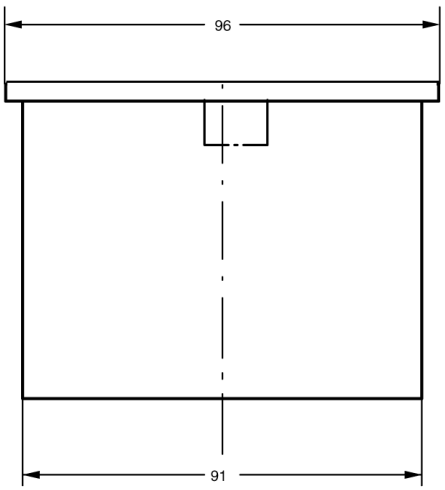
All sensors and wiring carrying low voltage current: at least 0.5 mm^2
Long cable connections should be avoided because of the possibility of interference signals!

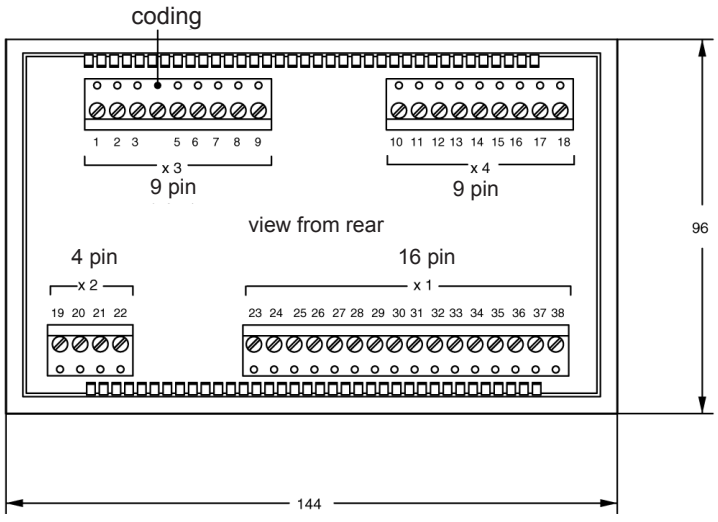
Technical data

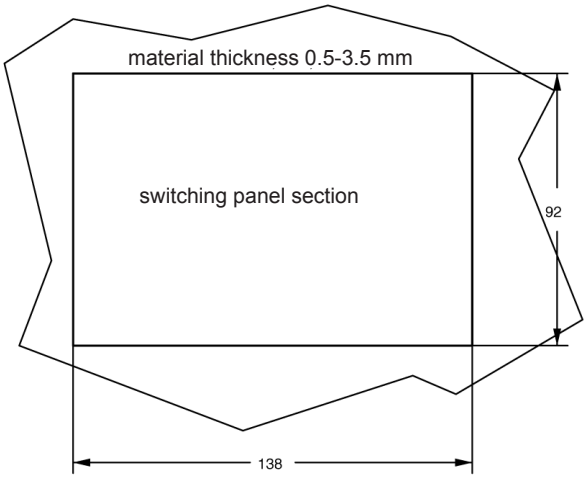
mains voltage:	230 V + 6 %/ – 10 %
nominal frequency:	50...60 Hz
pre-fuse:	max. 6.3 A/slow
max. contact load for output relay:	2 A (cos. $\phi \leq 0.8$)
bus interfaces:	T2B bus for connection with room devices, DSL-gateway and further TopTronic®T control units. OpenTherm bus for connection of heat generators with OpenTherm interface.
operation mode switch:	9 heating programmes including three standard time switching programmes.
prescribed reference values:	heating curve gradient: out.....3.5 radiator exponent 1.0 - 10.0 projected value –20 °C.....0 °C hot water temperature 10 °C.....max. boiler temperature
switching timer minimum interval:	For each heating circuit as well as for the DHW circuit there are three switching circuits available per day (21 per week) 10 minutes. Accuracy of the internal clock: ± 50 sec./month
data reserve:	plant data and switching timer power reserve at least 5 years from delivery
display:	LCD with alphanumeric display and symbols
device dimensions:	144 x 96 x 75 mm (WxHxD)
Type protection:	IP 30
ambient temperature:	0 °C...50 °C
storage temperature:	–25°C...60 °C
colour:	anthracite similar to RAL 7021
fastening:	version for installation with side screw fittings
accessories:	plug-in screw connectors X 1 = 16 pin X 2 = 4 pin X 3 = 9 pin (coded) X 4 = 9 pin
additional devices:	room unit RS-T remote control RFF-T DSL-gateway further devices

remote connection and/or connection to the building management system see separate brochure









Description

Communication modules

BMS module 0-10 V - TopTronic®T (building management system)
- BMS module for
  - connection to the TopTronic®T bus by transmission the control voltage (0-10 V) resp. demand the output voltage (0-10 V)

Functions:
- Gives a temperature reference value to the boiler resp. to a cascading boiler system (input 1)
- Gives a performance reference value to a sole boiler (input 2)
- Measure of the actual performance of a boiler (output 1)

Optional
- Set consisting of module and transformer for external power supply.

BMS module 0-10 V - TopTronic®T

MOD bus TTT/ZM - TopTronic®T (Module for connection to a building management system)
- Communication module for data transfer from Hoval TopTronic®T control system to BMS plants via MOD bus protocol.
- 1 MOD bus coupler per cascade combination (up to 5 TopTronic®T controllers) necessary. The data points of each controller are clearly selectable over a separate addressing.
- Dimensions:
  L x W x H 110 x 75 x 60 mm
- Interfaces:
  - T2B bus for connection to TopTronic®T
  - MOD bus for connection to BMS

MOD bus connection
- Type of interface:
  RS232 – null modem
- Baud rate: 9600 Baud
- Attitude data / stop bits:
  8 data bits, 1 stop bit
- Parity: even
- Master / slave mode: slave
- MOD bus address: 2
- Protocol: RTU
- Voltage supply by the T2B bus of TopTronic®T

MOD bus TTT/ZM

Attention:
The specification of the „MOD-bus connection“ is not changeable.

BMS module 0 - 10 V/ OT - OpenTherm TopGas® (building management system)
- BMS module for connection to the Hoval TopGas® (BIC 335/ BIC 300) by transmission the control voltage (0-10 V).

Functions:
- The interface transforms the 0-10 V signal into a temperature reference value or into a performance reference value for the control of a TopGas® with BIC 335 or BIC 300.
- Gives a temperature reference value to the gas condensing boiler Hoval TopGas®
- Gives a performance reference value to the gas condensing boiler Hoval TopGas®
- The way of control of the Hoval TopGas® is configurable by the DIP switches.

BMS module 0-10V / OT - OpenTherm

Description

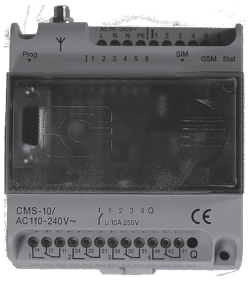
Remote connection

SMS remote control unit

- SMS remote control unit as simple telecontrol and detection system for the heating installation.
- To be mounted in a switching cabinet.
- Connection to all Hoval boilers possible.
- 6 inputs (digital)
- 4 outputs
- Dimensions:
  L x W x H: 90 x 88 x 66 mm
- Appliance programming by Hoval according to the customers request

- SIM card is not included. Telephone network resp. provider is freely selectable.

- Consisting of:
  - basis unit with aerial small,
  - magnet aerial base with 2.5 m aerial cable
  - cable for programming
  - interface converter USB-RS232
  - CD with programming software and manual



SMS remote control unit

System component SMS remote control unit

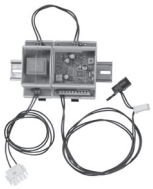
- SMS remote control unit as simple telecontrol and detection system for the heating installation pre-mounted in control panel for wall mounting. Connection to all Hoval heat generators possible.
- System component consisting of maintenance switch, the mounting in the wall mounted case and the wiring of the sms remote control unit over relay contacts direct to connecting terminals.
- 6 inputs (digital), 3 before-wired
- 4 outputs, 2 before-wired
- Dimensions:
  L x W x H: ca. 250 x 175 x 100 mm

- SIM card is not included. Telephone network resp. provider is freely selectable.

- Provided accessoires consisting of:
  - aerial small,
  - magnet aerial base with 2.5 m aerial cable
  - cable for programming
  - interface converter USB-RS232
  - CD with programming software and manual

System component SMS remote control unit

■ **Part N°**

	Communication modules	Part N°
	In combination with TopTronic®T	
	**BMS module 0 - 10V** **(building management system)** for TopTronic®T Control 1-10 V corresp. to 11.5-115°C For further information see technical data! Heating control unit TopTronic®T needed!	6016 383
	**Mains transformer for BMS module 0-10 V** for installation in switching cabinet 230/15 V - 2.7 VA (top hat rail installation)	2028 726
	**Set BMS-Module 0-10 V** **(Building management system)** Consisting of: BMS-Module and Trafo	6015 195
	**MOD bus TTT/ZM** Module for connection with BMS systems Communication module for data exchange between Hoval TopTronic® control systems with BMS plants via MOD bus protocol Interfaces: T2B bus for TopTronic® and RS232 for MOD bus connection.	6014 389
	**Ethernet module** Unit for connection of the TopTronic®T controller to the building management system via Ethernet. Access to the TopTronic®T controller via Ethernet within the home network.	6023 507
	Can only be used in combination *with TopGas® (OpenTherm bus)*	
	**BMS module 0-10 V/OT - OpenTherm** **(building management system)** no control unit TopTronic®T necessary power supply via OT bus TopGas® classic Cannot be installed in the boiler control panel! TopGas® (30-60) Can be installed in the boiler control panel!	6016 725

■ **Part N°**

	Remote connection	Part N°
	**SMS remote control unit** (simple telecontrol and detection system to the heating installation). Delivery consisting of basis unit with aerial small, magnet aerial base with 2.5 m cable, cable for programming RS232, interface converter USB-RS232, CD with programming software Communication per SMS The SIM card for GSM connection is not included! (telephone network freely selectable)	6018 867
	**System component SMS remote control unit** (simple telecontrol and detection system to the heating installation pre-mounted in control panel for wall mounting) Communication via SMS. Delivery consisting of basis unit in casing with maintenance switch, volt-free relay contacts and with aerial small, magnet aerial base with 2.5 m cable, cable for programming RS232, interface converter USB-RS232, CD with programming software The SIM card for GSM connection is not included! (telephone network freely selectable) For further information see technical data!	6022 797

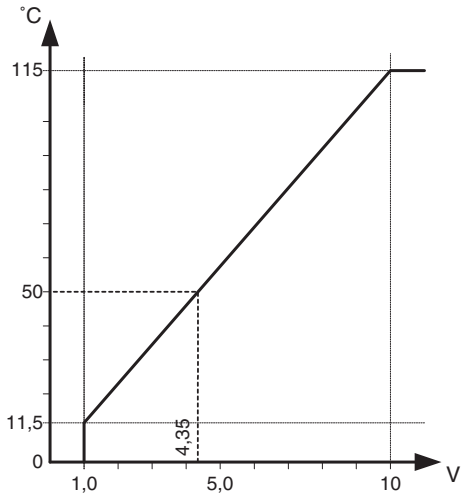
Technical data

BMS module 0-10 V - TopTronic®T (building management system)

1. temperature control (input 1)
If Hoval boilers with TopTronicT® regulation are part of a cascading boiler system, the boilers should be connected with each other by the internal T2B bus. By this way the internal cascade controller of the TopTronicT® can prevent a mistake of the switching on/off of boilers.
If connected by the bus, only **one** BMS module 0-10 V for a Hoval cascading system is necessary, which gives a temperature reference value to the cascading system.

The voltage signal is applied at the input 1 (temperature reference value).
- The signal conversion is linear.
- 1.0 V = 11.5 °C to 10 V = 115 °C
- voltage < 1.0 V = no reference value is transmitted.
- The input value is processed as a additional heat demand value to heat generator(s). This value is considered additonally to the heat demand value ascertained by the TopTronic®T regulation.

temperature control (input 1)

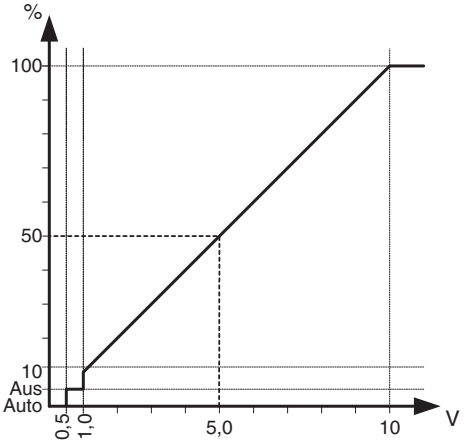


2. performance control (input 2)
The control voltage must be intruded at input 2 of the module, if the heat generator should get a performance reference value from the building management system.
If the cascade strategy regulation of the Hoval boilers is assumed by the building management system, a performance control of the two boilers and therefore a module 0-10 V for each boiler is necessary.
If the 2nd boiler is connected to one common flue gas pipe, it is important that:
The 2nd boiler may only switched on, if the first boiler has reach not less than 60 % of the nominal output.

Performance control with modulating heat generators
(only H-Gen type 5 (e.g.: UltraGas®):

0 to 0.4 V	=	without performance control (automatic mode)
0.5 V to 0.9 V	=	OFF 0 %
1.0 to 10 V	=	ON 10 % to 100 %

performance control (input 2)

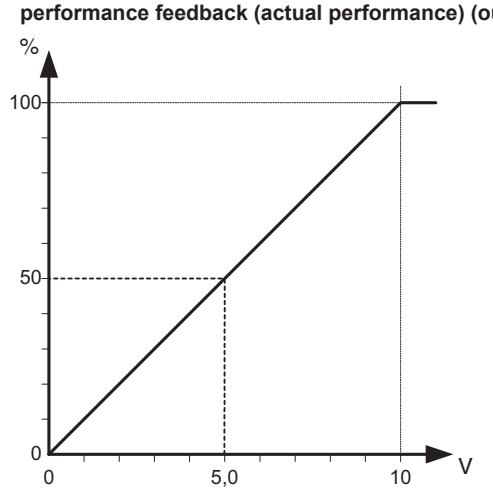


3. performance feedback (actual performance) (output 2)
For each central controller a performance output can be used. If the boilers are connected in a cascading system and the performance feedback should be collected from each single boiler, it is necessary to allocate each single module to the relative controller.

The allocation is made by adjusting the bus address by a selector switch at the BMS module.

Performance feedback with modulating heat generators
(H-Gen type 5 (e.g.: UltraGas®))
The output signal is activated according the performance actual value:
0.0 V = OFF
0.1 to 10 V = 1 % - 100 %

performance feedback (actual performance) (output 2)



Technical data

MOD bus TTT/ZM
(module for connection to a building management system)

- Communication module for data transfer from Hoval TopTronic® control system to BMS plants via MOD bus protocol.
- 1 MOD Bus coupler per cascade combination (up to 5 TopTronic®T controllers) necessary. The data points of each controller are clearly selectable over a separate addressing.

- Dimensions: LxWxH 110x75x60 mm
- Interfaces: - T2B bus for connection to TopTronic®T
  - MOD bus interface

ATTENTION:
The specification of the „MOD-bus connection“ is not changeable.

MOD bus connection

- Type of interface: RS232 – null modem
- Baud rate: 9600 Baud
- Attitude data / stop bits: 8 data bits, 1 stop bit
- Parity: even
- Master / slave mode: slave
- MOD bus address: 2
- Protocol: RTU
- Voltage supply: by the T2B bus of TopTronic®T

Data points:

Reference value:
- transmission of a temperature reference value to the heat generator resp. to the heat generator cascading system (TopTronic®T controllers)
- transmission of a performance reference value to the heat generator

Actual value:
- Feedback of the current stage resp. the current performance (H- Gen type 5) of the heat generator
- Status of the heat generator (H-Gen type 5)
- Transmission of all troubles (incl. trouble code)
- Status of the pump outputs and other variable outputs
- Temperature values of all boiler sensors (H-Gen type 5)
- etc.

Connection to other bus systems:
The communication module can be used together with a universal gateway for building communication systems with LON, EIB, Profibus, BACnet, M bus as well as various manufacturer-specific communication protocols.

Special interface cards, adapters and connectors for configuring hardware and software are available.

For services such as commissioning, configuring and connection of communication protocol drivers an individual planning is necessary.

Universal gateways are available for 25, 50, 100 and 250 data points.

BMS module 0 - 10 V/ OT - OpenTherm
(building management system)
can only be used in combination with TopGas® (OpenTherm-Bus)

- Dimensions: L x W x H 68x45x23 mm
- Voltage supply: by the OT bus

Temperature control

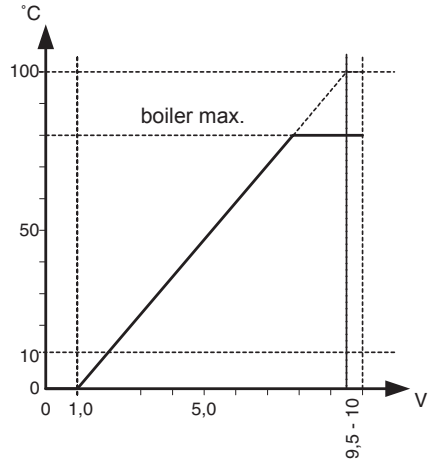
- DIP switch 1 = OFF
- The module converts an input signal at input into a reference value for the heat generator.
- The signal conversion is linear. 1.0 V = 0 °C to 9.5 V = 100 °C.
- When the voltage is below 1.0 V: the reference value is not transmitted.

Performance control

- DIP switch 1 = ON
- The module converts an input signal at input into a performance reference value.
- Limiting to the maximum flow temperature reference value

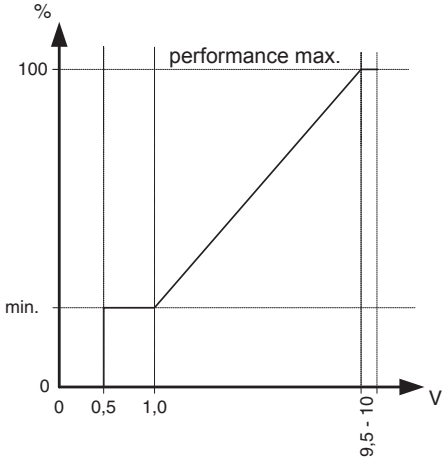
Four different ranges can be differed:
- 0 - 0.5 V no heat demand
- 0.5 - 1 V minimal performance
- 1 - 9.5 V performance depends on 0 - 10 V signal
- 9.5 - 10 V maximal performance

External temperature regulation with 0-10 V



0 - 1.0 V = no demand
1.0 - 9.5 V = 0 °C - 100 °C

Performance control



Technical data

SMS remote control unit

The SMS remote control unit can be used as simple telecontrol and detection system to the heating installation. The connection is made by a GSM connection, whereby the telephone network resp. the provider is freely selectable (depending on the SIM card used). Communication to the heating system takes place constantly by SMS. The SIM card is not provided with the equipment and has to be ordered separately.

Connection to all Hoval boilers possible, whereby with the TopTronic®T controller among other things the following essential functions are convertible:

- switch the operation mode to standby resp. to automatic operation (provided that free inputs on the TopTronic®T are available).
- SMS message if the boiler failed
- Fax and e-mail only possible with the support of the provider
- etc.

Dimensions:
L x W x H 90 x 88 x 60 mm
(top hat rail installtion)

Delivery:

- basis unit with aerial small
- magnet aerial base with 2.5 m aerial cable
- cable for programming RS232
- interface converter USB-RS232
- CD with programming software

Technical Data:

• operating voltage:	AC 110-240 VA 50/60 Hz
• power input:	8 VA/6 W
• number of outputs:	4 x change-over contact (pulsable over adjustable time)
• breaking capacity output:	10 A 250 V
• number of inputs:	6 x digital
• Inputs switch. on threshold:	85 V~

Ambient conditions

• Ta:	-25...+55 °C
• relative humidity:	5...95 % (no condensing)
• Type protection:	IP20

Detailed listing of the functions:
Integration of all inputs and outputs of the Hoval boilers resp. the heating system

- 6 digital inputs
- 4 relay outputs with change-over contacts (pulsable over adjustable time)

Sampling and operate by remote control

- state enquiry of all inputs and outputs via SMS
- remote control of the outputs via SMS (by pre-defined message)

Identification of loss of power

- Alarm by SMS when fall of voltage resp. when rebuilding of the tension at the remote control unit and thus at the heating system.

Cyclic resp. event controlled report

- Regular control messages of the SMS remote control unit by a message possible
- Notification with changes in status at input of the remote control unit by status change via SMS.

Receiver of message and cyclic transmission

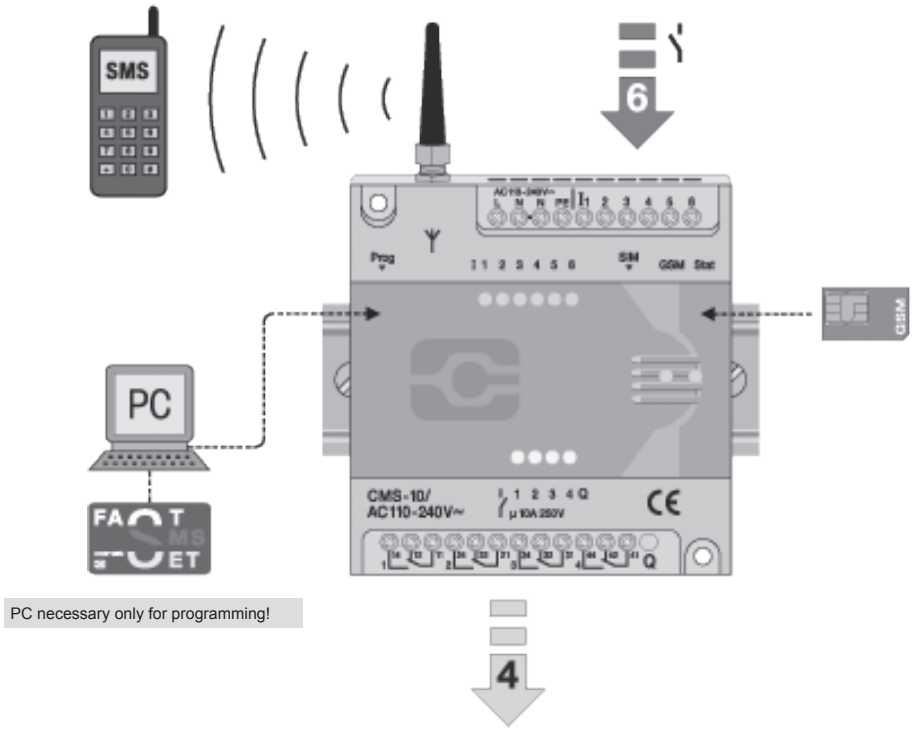
- integrated directory store up to 50 different recipient numbers
- cyclic alarm transmission on up to 5 different receivers, according to the selected order

Security

- password protection adjustable
- confirmation message after accessing an output

Programming software for simple configuration of the unit

- easy configuring by provided programming software
- Set up the desired language (10 languages, upgradeable)
- Individually adaptable messages



PC necessary only for programming!

Description

TopTronic® online

- Package for user-friendly access to the Hoval heat generator or the Hoval heating system via the Internet with the DSL gateway
- Operation and modification of the connected heating controller or several heating controllers (max. 5) Hoval TopTronic®T via remote access
- Access:
  - In real time
  - From each location with Internet connection and computer with Java-capable Internet browser
  - Logon using personalised account, user name and password, on the Hoval server http://myboiler.hoval.com
  - Via smartphone (Android mobiles by any manufacturer, Blackberry, Windows mobile phone 7, iPhone, iPod).
- Additional functions on the Hoval server
- Graphical representation of the Hoval TopTronic®T heating regulator in the browser, i.e. same operation as on the installed system.
- Request of system information such as ouside temperature, hot water temperature and detailed information as well as setting of the room temperature and specific parameters.
- Supply security of the heating system via personal, configurable fault message management with notification via SMS or e-mail; conveniently configurable using the personal address book on the Hoval server.
- Notification on failure of the DSL gateway and interruption of the Internet connection.
- Possibility of allowing several users to access the heating system (e.g. installer, system supervisor).
- Overview over several systems possible (e.g. for installer, system supervisor).
- Secure connection between the server and DSL gateway by using encryption technology.
- The interaction between the Hoval server and DSL gateway means no static IP address is required for the DSL connection.

Preconditions:
- Hoval TopTronic®T (from 2009 onwards)
- DSL Internet connection (IPv4, permanently online)
- DSL router with free LAN port for connection of the Hoval DSL gateway
- Regarding integration into existing networks, it is necessary to contact the system administrator in order to obtain an IPv4 address that can be accessed from the Internet.

Computer with Internet access | DSL connection | DSL gateway | TopTronic® T

Scope of services

- Hoval server account (personal user name and password).
- Operation of the heating regulator via remote access (controller mapping).
- Parameter setting of the heating system via the usual user hierarchy of system owner/ specialist/OEM (authorisation via code).
- Request of system information such as ouside temperature, hot water temperature and detailed information as well as setting of the room temperature and specific parameters.
- Individually-configurable fault message management.
- Address book on the Hoval server.
- Forum for information exchange.

Scope of supply:
- DSL gateway with fastening material
- Ethernet cable (patch cable 2 m) for connection to a router (cable with mains plug not included).

Option:
- Visualisation of the system diagram with ACT values.
  The heating systems is displayed on a system diagram which shows system information.
  The visualisation can be called up on the Internet at any time, and provides an overview of the current status of the system.

Part N°

Remote connection in combination with Hoval TopTronic®T	Part N°
TopTronic® online with DSL gateway • User-friendly access to the Hoval heat generator or the Hoval heating system via the Internet with the DSL gateway • Operation and modification of the connected heating controller or several heating controllers (max. 5) Hoval TopTronic®T via remote access	6021 339

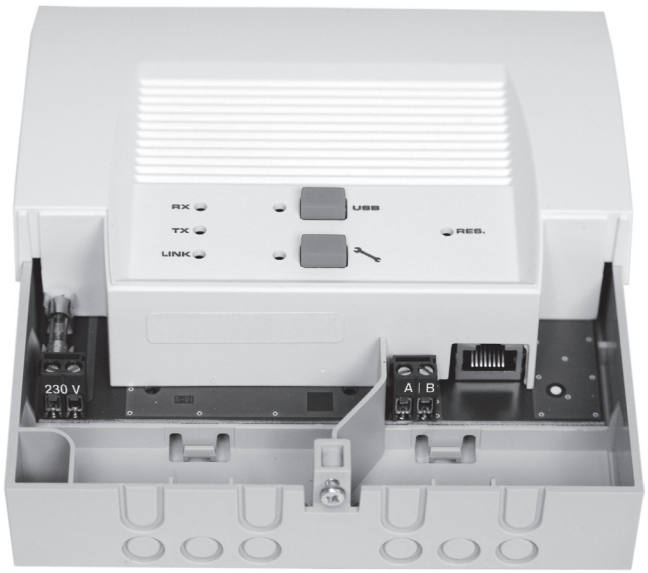
Technical data

DSL gateway

Dimensions
L x W x H: 160 x 145 x 48 mm

Possible setups:
- Top hat rail mounting
- Wall mounting

Technical data:
- Operating voltage 230 V +-10 %
- Mains frequency: 50/60 Hz
- Power consumption: 6 VA
- Temperature range: 0-50 °C
- Interfaces: System bus T2B
  Ethernet -> 10/100 Mbps
- Cable with mains plug not included



Description

Hoval solar controller ESR / UVR

- Electronic solar universal controller
- Temperature difference controller
- Collector sensor overvoltage protection
- Wall fastening material
- *ESR21/UVR61:* Front panel with large display for symbol and text display, and navigation keys
- *UVR 64:* LCD display for measurement and setting values, selector switch for interrogations or settings, check lamps, input keys
- Temperature sensor Ø 6 mm
- Electrical connection 230 V/50 Hz
- *UVR:* Speed control of the circulating pumps with on/off function

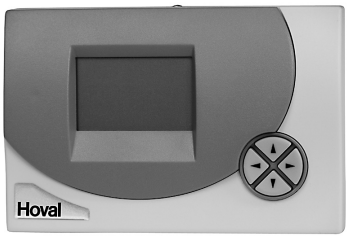
Characteristics

- Temperature difference control using 2 temperature sensors to the set value.
- Absolute temperature control to the set minimum/maximum value by means of a temperature sensor.
- In event control, the next specified control loop is authorised when the set temperature difference is undershot.
- Programme number can be set using the specified hydraulic system.
- Adjustable pump run-on times and hystereses.
- Overvoltage protection at all inputs
- Protection against data loss (EEPROM) with minimum memory
- *UVR:* Programmable pump speed control for conventional standard circulation pumps with 3 control functions

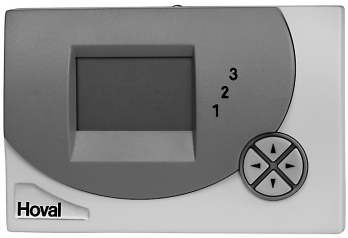
Type ESR 21-R

For solar systems with one consumer, e.g. water heater, buffer storage tank or swimming pool

- Single-circuit universal controller **with** heat meter and frost protection function incl. wall fastening material
- 1 adjustable temperature difference function
- 1 relay output for valve or pump
- 3 inputs for temperature sensors
- Adjustable minimum/maximum temperatures
- 1 collector sensor type PT1000, max. 250 °C, with silicone cable, L = 2 m, surge voltage protection
- 2 temperature sensors type PT1000, max. 90 °C, with cable L = 2 m

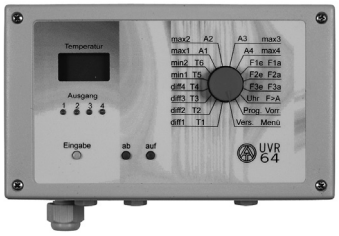


ESR 21-R



UVR 61-3

Solar controller Type	control circuit Quantity
ESR 21-R	1
UVR 61-3	3
UVR 64	4



UVR 64

Type UVR 61-3

For solar systems with 2 consumers, e.g. water heater and buffer storage tank or water heater and swimming pool

- Three-circuit universal controller **with** heat meter and frost protection function incl. wall fastening material
- 3 adjustable temperature difference functions
- 3 outputs:
  - 1 triac for speed control of circulating pump
  - 2 auxiliary relay changeover contacts by auxiliary relay module (built-in).
- 6 inputs for temperature sensors
- Adjustable minimum/maximum temperatures
- 1 collector sensor type PT1000, max. 250 °C, with silicone cable, L = 2 m, surge voltage protection
- 4 temperature sensors type PT1000, max. 90 °C, with cable L = 2 m

Delivery

- Solar controller as described, completely packaged

Electronic flow rate sensor for heat quantity metering
see solar fittings group

Type UVR64

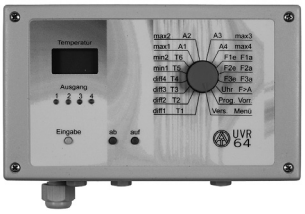
For solar systems with 3 consumers e.g. water heater, buffer storage tank and swimming pool

- Four-circuit universal controller **without** heat meter with frost protection function incl. wall fastening material
- 4 adjustable temperature difference functions
- 4 outputs:
  - 2 triacs for speed control of circulating pumps
  - 2 auxiliary relay changeover contacts
- 6 inputs for temperature sensors
- 2 adjustable minimum temperatures and 4 maximum temperatures
- Adjustable, temperature-dependent switching hystereses
- Day timer switch
- 1 collector sensor type PT1000, max. 240 °C, with silicone cable, L = 2 m, surge voltage protection
- 5 temperature sensors type PT1000, max. 90 °C, with cable, L = 2 m

Delivery

- Solar controller as described, completely packaged

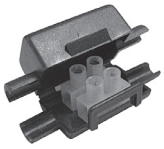
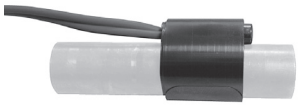
Part N°

	Hoval solar controller	Part N°
	**Hoval solar controller ESR 21-R** One circuit universal automatic controller with: Wall mounting material, 1 collector sensor type PT1000, 240 °C with overvoltage protection 2 temperature sensors type PT1000 90°C Cable length 2 m	6012 773
	**Hoval solar controller UVR 61-3** Three circuit universal automatic controller with: Wall mounting material, 1 collector sensor type PT1000, 240 °C with overvoltage protection 4 temperature sensors type PT1000 90 °C Cable length 2 m	6012 774
	**Hoval solar controller UVR 64** Four-circuit universal controller with: Wall mounting material, 1 collector sensor type PT1000, 240 °C with overvoltage protection, silicone cable, length 2 m, 5 temperature sensors type PT1000 90 °C, cable length 2 m, 4 immersion sleeves, Teflon shrink-fit hoses	2427 44

Accessories

	**Protective pipe immersion sleeve SB100 ½"** brass nickel-plated PN10 - 100 mm	2018 835
	**Protective pipe immersion sleeve SB150 ½"** brass nickel-plated PN10 - 150 mm	2018 836
	**Protective pipe immersion sleeve SB280 ½"** brass nickel-plated PN10 - 280 mm	2018 837
	**Protective pipe immersion sleeve SS100 ½"** stainless steel 1.4571 PN16 - 100 mm	2018 838
	**Protective pipe immersion sleeve SS150 ½"** stainless steel 1.4571 PN16 - 150 mm	2018 839
	**Protective pipe immersion sleeve SS280 ½"** stainless steel 1.4571 PN16 - 280 mm	2018 840

Part N°

	Accessories	Part N°
	**Solar temperature sensor PT 1000** silicone sensor, can be used as collector/calorifier sensor L = 2.5 m max. permissible temperature 240 °C (included in key module Solar)	2022 990
	**Clamp connectors** for the extension of sensor lines	2037 954
	**Ultra fast temperature sensor** for UVR 61-3 and UVR 64 with short response time, to use in combination with speed regulation and flow calorifier for example. with screw connection ½" Sensor characteristics: PT1000 Cable length: 2 m Ø 4 mm	2040 414
	**Interface module USB** for ESR, UVR 61-3 und UVR 64 Datalogging of temperatures and output status of up to 2 controllers simultaneously with USB port for connection to a PC incl. software	2023 094
	**Scroll spring for sensor mounting** For easy fitting of a sensor to a pipe. Ø 15-45 mm	2038 427

Technical data

Type		ESR21-R	UVR 61-3	UVR 64
• Temperature difference function	pcs.	1	3	4
• Sensor inputs with surge voltage protection	pcs.	3	6	6
• Temperature indication range	°C	-50 to +199	-50 to +199	-50 to +199
Outputs	pcs.	1	3	4
• Output 1		Relay changeover contact	Triac	Triac
• Output 2		-	Relay changeover contact	Triac
• Output 3		-	Relay changeover contact	Relay changeover contact
• Output 4		-	-	Relay changeover contact
Switching capacity				
• Output 1	V/A	250/2.5 [1]	250/1.5 [1]	250/1.5
• Output 2	V/A	-	250/1.5 [1]	250/1.5
• Output 3	V/A	-	250/1.5 [1]	250/2.5
• Output 4	V/A	-	-	250/2.5
Electrical connection				
• Voltage	V	230	230	230
• max. tolerance, (+/-)	%	10	10	10
• Frequency	Hz	50-60	50-60	50-60
• Maximum power consumption	W	3	3	3
Setting ranges				
• Temperature difference function	K	0-99	0-99	0-99
• Threshold values, logarithmic	°C	-20 °C to +150 °C	-20 °C to +150 °C	0 °C to +150 °C
Temperature sensor			Resistance sensor, linearised	
• Diameter Ø	mm	6	6	6
• Sensor accuracy	%	±1	±0.5	±1
• *Temperature sensor PT1000*	pcs.	2	3	5
Permitted max. temperature	°C	90	90	90
Electrical cable length	m	2	2	2
• *Temperature sensor PT1000 (collector sensor)*	pcs.	1	1	1
Permitted max. temperature (intermittent)	°C	240	240	240
Electrical cable length (silicone)	m	2	2	2
• Surge voltage protection		incl.	incl.	incl.
Speed control				
• Fan speeds		-	30	30
Timer switch		-	incl.	incl.
• Adjustable time window		-	3	3
• Backup battery		-	incl.	incl.
Data backup		EEPROM	EEPROM	EEPROM
• Interface		-	for USB module (accessory)	for USB module (accessory)
Dimensions W x H x D	mm	150 x 100 x 50	150 x 100 x 50	170 x 100 x 75

Sensor resistance

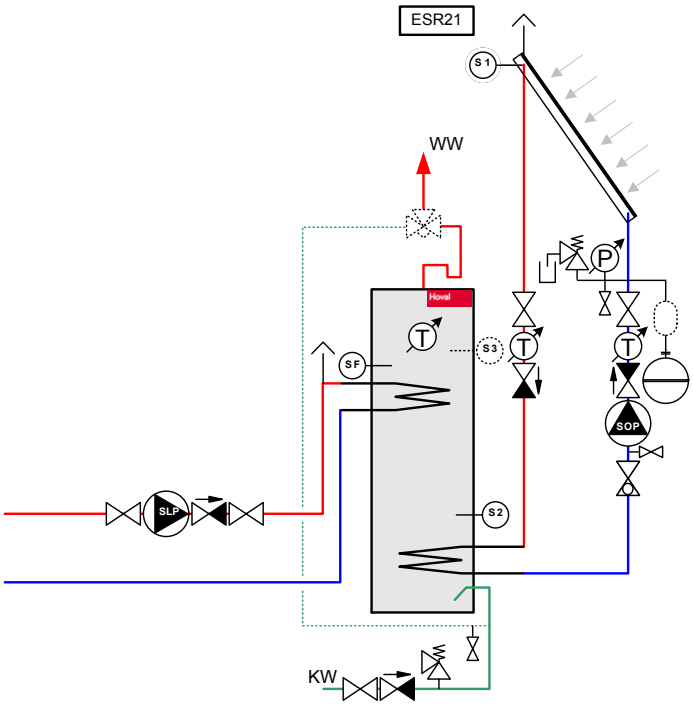
Temperature	°C	0	10	20	25	30	40	50	60	70	80	90	100
Resistance (R) PT1000	Ω	1000	1039	1078	1097	1117	1155	1194	1232	1271	1309	1347	1385

[1] ohmic inductive cos phi 0.6

Examples

Type ESR 21-R

Solar system with water heater
(Supplemental heating by heating regulator)



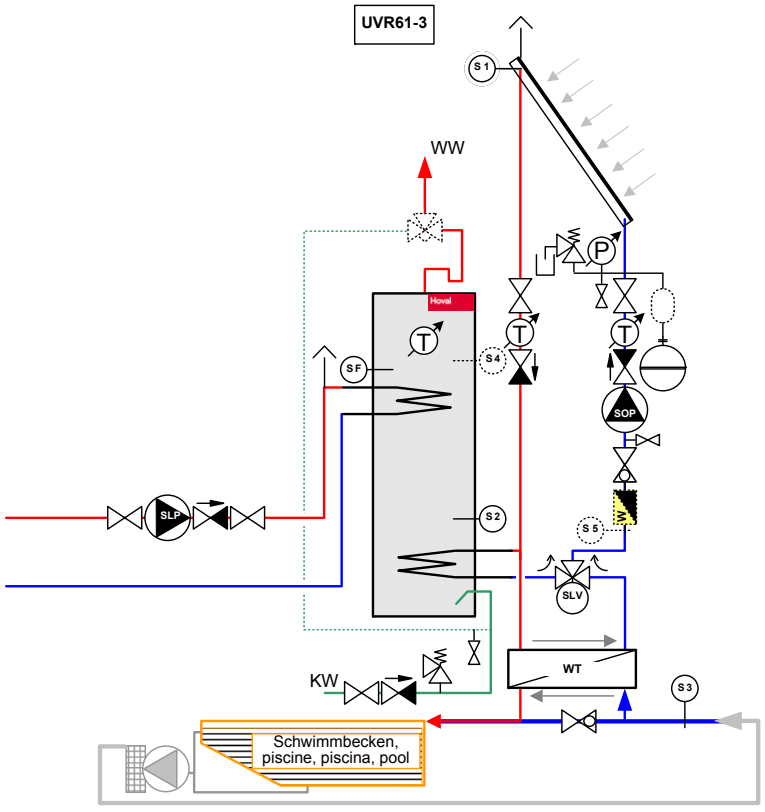
SOP Solar circuit pump

S1 Differential control sensor 1
S2 Differential control sensor 2
S3 Differential control sensor 3

Parameter settings and electrical diagrams
see System Technology CD

Type UVR 61-3

Solar system with water heater and swimming pool
(Supplemental heating by heating regulator)



SOP Solar circuit pump

SLV water diverter solar circuit (single-wire control)

S1 Differential control sensor 1
S2 Differential control sensor 2
S3 Differential control sensor 3
S4 Differential control sensor 4

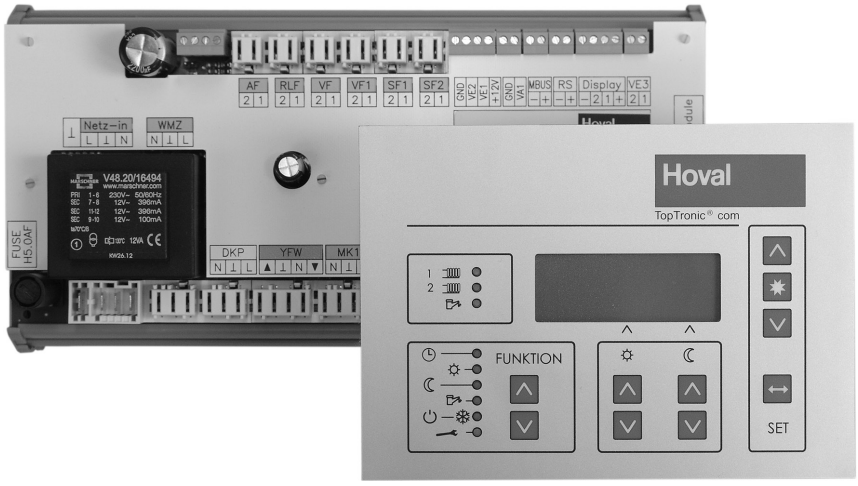
Parameter settings and electrical diagrams
see System Technology CD

Description

TopTronic® com district heating controller

- Control unit for controlling local and district heating transfer stations and the associated consumers in non-communicative networks
- Integrated functions for
  - 1 primary valve
  - 1 direct circuit
  - 1 mixer circuit
  - 1 hot water charging
  - 1 circulation (other functions also possible)
  - Variable functions with corresponding inputs, outputs (2x analog inputs 4-20 mA/0-10 V, 1x analog output 4-20 mA)
  - External 0-10 V or 4-20 mA setpoint specification via integrated analog inputs
  - Integrated fault signalling relay (volt-free contact)
  - 230 VAC output for heat meter supply
- Number of circuits to be controlled can be increased using expansion modules (max. 20 mixer circuits possible)
- Control unit for control panel installation (mounting on DIN rail)
- Connection technology configured as pluggable screw terminals, some in coded RAST5 design
- Cascade connection of 10 controllers in master/slave combination possible
- M bus interface for heat meter readout (max. 16 M bus stations)
- Control unit and display independent from one another, display separately available

CAUTION: Display for operating the district heating controller and mating connector set must be ordered separately!



TopTronic® com district heating controller (display incl. screen)

- Accessories
  - TopTronic® com display
  - TopTronic® com mating connector set
  - TopTronic® com multifunction mixer circuit module
  - Room thermostat
  - Various sensors

Functions
- Weather-controlled flow temperature controller
- Operating mode changeover (automatic mode, heating mode, reduced mode, hot water only, district heating OFF/frost protection, maintenance/manual mode)
- Different password-protected user levels (end user, specialist and customer service technician level)
- Electronic output power limit possible in conjunction with a suitable heat meter
- Outside temperature-dependent return flow temperature limit
- Reduction characteristic curve for network protection
- Outside temperature-dependent heating curve control with consideration for the building coefficient
- Integrated event memory
- Time and date via integrated RTC
- Buffer storage circuit can be connected on the primary or secondary side of the heat exchanger
- Room control by thermostat function
- Adjustable building coefficient (= building storage capacity)
- Frost protection monitoring of the heating circuits and the hot water accumulator
- 3 switching time programmes per day and heating circuit or hot water charging
- Periodic triggering of the pumps and actuators (anti-seizing protection)
- Warm water input circuit
  - with different operating modes (e.g.: accumulator priority or parallel mode)
  - With adjustable charging criteria (e.g.: Adjustable water heater charging times, undershooting the minimum of water heater set value, etc.)
  - With adjustable switch-off criteria (e.g.: achieving the water heater set value, achieving the lower water heater sensor set value, etc.)
  - With adjustable charging interruption (if the water heater charging flow temperature is too low, if the water heater set temperature is not reached)

Use
- Control of district heating stations or other transfer stations in a very wide power range
- For room heating and hot water charging circuit
- Upstream control for technical systems such as ventilation, air conditioning systems, etc.

TopTronic® com display

- Control unit and display independent of one another, TopTronic® com separately available
- Display with splash water-protected membrane keypad for installation in the front of the control panel
- 4-line alphanumeric, illuminated display
- Light-emitting diodes for displaying the operating statuses

CAUTION: Display for operating the district heating controller must be ordered separately!

Part N°

TopTronic® com district heating controller	Part N°

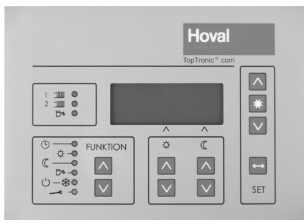
TopTronic® com district heating controller 2044 950

Use
- Control unit for controlling local and district heating transfer stations and the associated consumers

Integrated functions for
- 1 primary valve
- 1 direct circuit
- 1 mixer circuit
- 1 hot water charging
- 1 circulation (other functions also possible)
- Various additional variable inputs and outputs

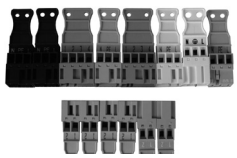
Optional expansion of function with various modules is possible!

Display for operating the district heating controller and mating connector set must be ordered separately!



TopTronic® com display 2044 952

- Display with splash water-protected membrane keypad for installation in the front of the control panel
- 4-line alphanumeric, illuminated display
- Light-emitting diodes for displaying the operating statuses



TopTronic® com mating connector set 6030 656
- Comprising all RAST5 mating connectors for connection of sensors and actuators to the TopTronic® com district heating controller.
- TopTronic® com mating connector set must be ordered separately!

■ **Part N°**

	Accessories	Part N°
	**Multifunction mixer circuit module TopTronic® com** • Mixer circuit expansion to the control unit • TopTronic® com. • DIN rail mounting directly adjacent to the TopTronic® com main controller. • Connection to the main controller via ribbon cable. (Data connection) • The electrical power supply must be made separately. • Complete operation via the display of the TopTronic® com main controller. • Integrated function for: - 1 direct circuit (2-point output) or - 1 mixer circuit (3-point output) or - 1 hot water charging (2-point output) and - additional variable functions with corresponding inputs, outputs • Possibility for connecting a flow temperature thermostat and reaction for it • Connection technology configured as pluggable screw terminals, some in coded RAST5 design. • Dimensions 93 x 125 x 95 (L x W x H) Mating connector set must be ordered separately!	2044 994
	**Mating connector set for TopTronic® com mixer circuit module** • Comprising all necessary RAST5 mating connectors for connecting sensors and actuators to the TopTronic® com multifunction mixer circuit module. • TopTronic® com mating connector set for mixer circuit module must be ordered separately.	6031 650
	**Room thermostat with remote control** RS-W (cable connection)	6023 044
	**Fresh air sensor PT1000** Sensor for district heating applications for connection to the TopTronic® com Affective on all heating circuits connected to the control unit (incl. MK expansion modules)	2045 002
	**Pipe contact sensor ANTF2 PT1000** Sensor with 4.5 m cable for district heating applications for connection to the TopTronic® com. Can be used as a flow sensor in heating circuits with a clamping band for attachment.	2048 011
	**Cable sensor KBTF Pt1000** Sensor with 4.5 m cable for district heating applications for connection to the TopTronic® com	2047 973

Technical data

Supply voltage:	230 V AC / 50 Hz
Heat meter output:	230 V AC / 50 Hz
Switch power of motors and pumps	5 A / 230 V AC
Operating temperature:	0 °C / 45 °C
Storage temperature:	-10 °C / 70 °C
Protection rating of the controller:	IP 44 acc. to DIN 40050 installed in the control panel
Real-time clock with battery backup:	96 hours
Pump outputs:	8 relay outputs not separate, 230 V AC, 5 A fused
Fault signalling relay output	1 relay, volt-free
Connection technology	Pluggable screw terminals, some in coded RAST5 design

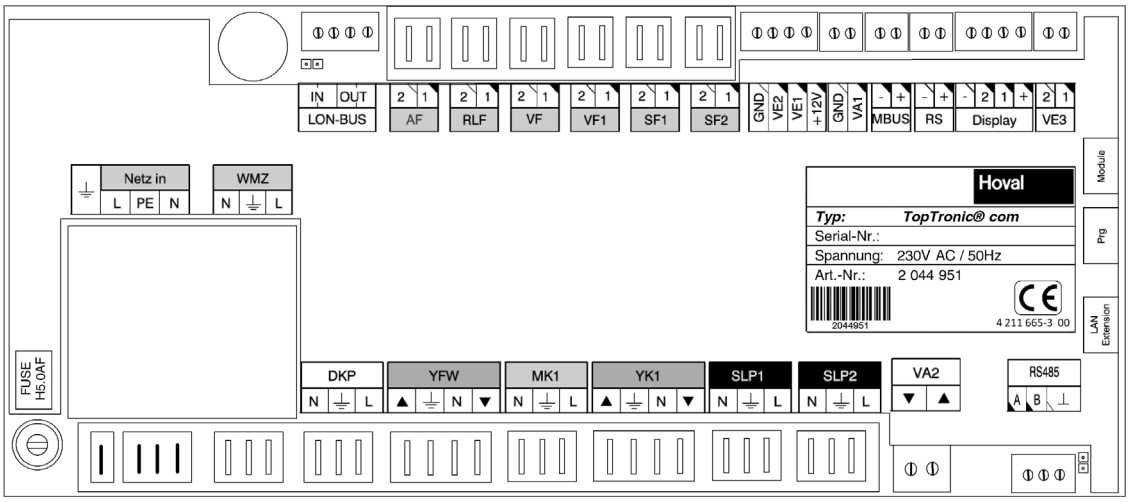
EMC tests:	Interference emission requirement EN61000-6-3:2007 Interference voltage 230 V AC EN55022 CL B Interference voltage LON bus, across difference buildings EN55022 TA, CL B Electromagnetic field intensity EN55022 CL B

Immunity requirement EN61000-6-2:2005
Electromagnetic field EN61000-4-3
Electrostatic discharge (ESD) EN61000-4-2
Rapid transients (BURST) EN61000-4-4
Conducted disturbances immunity EN61000-4-6
Surge voltages on AC supply and signal cables EN61000-4-5
Voltage dips/voltage interruption EN61000-4-11

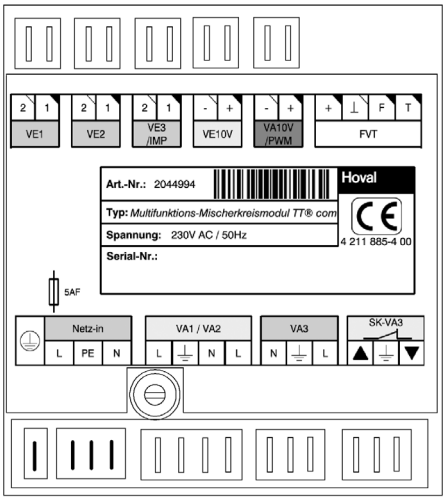
Other standards: Low-Voltage Directive: Directive 2006/95/EC

Dimensions	245 x 125 x 95 (L x W x H)

Electrical connection TopTronic® com



Electrical connection TopTronic® com mixer circuit module



Technical data

Electrical installations

The equipment feeder cable must be protected by a 6.0 A fuse. The connection current for pumps and motors is not allowed to exceed 5.0 A.
The electrical connection and the onward cabling to the control devices is performed on the control unit. The length of the connection leads must be sufficient to allow the device to be exchanged.

CAUTION:
All connection terminals for the sensor or communication lines operated with safety extra-low voltage and are not allowed to contact the mains voltage under any circumstances.
The devices will suffer irreparable damage if this requirement is not complied with.

Safety measures for EMC installation

- Cables carrying mains voltage must be routed separately from sensor or data bus cables. There must be a minimum distance of 2 cm between the cables. Cable crossovers are permitted.
- For control units with their own mains connection, separate routing of power cables and sensor or bus cables is absolutely essential. If using cable ducts, these must be equipped with separator strips.
- When installing control units or room stations, maintain a minimum clearance of 40 cm from other electrical devices with electromagnetic emissions, such as switching contactors, motors, transformers, dimmers, microwave ovens and TV sets, loudspeakers, computers, mobile phones, etc.
- Maintain a minimum distance of 40 cm between room devices and central devices. Several central devices on the same data bus can be installed directly adjacent to one another.
- The mains connection for the heating system (boiler control panel regulator unit) must be designed as an independent electrical circuit. Neither fluorescent lamps nor any other equipment which might cause interference may be connected, nor may it be possible to connect such equipment.
- Shielded cables must be used as data bus cables (RS485 for master/slave communication).
  Recommended designs:
  J-Y(St)Y 2 x 2 x 0.6
- Max. permitted cable length in data bus cables (LON-B bus communication) depending on topology and routing type
- The cable shield must be earthed at one end on the protective earth connection, multiple earthing of a cable is not permitted (ground loop) and can lead to malfunctions.
- The fresh air sensor must not be fitted in the vicinity of transmitters and receivers (on garage walls near receivers for garage door openers, amateur radio antennae, radio alarm installations or in the immediate vicinity of transmitters etc.).

Recommended cable cross-sections and maximum permitted cable lengths:

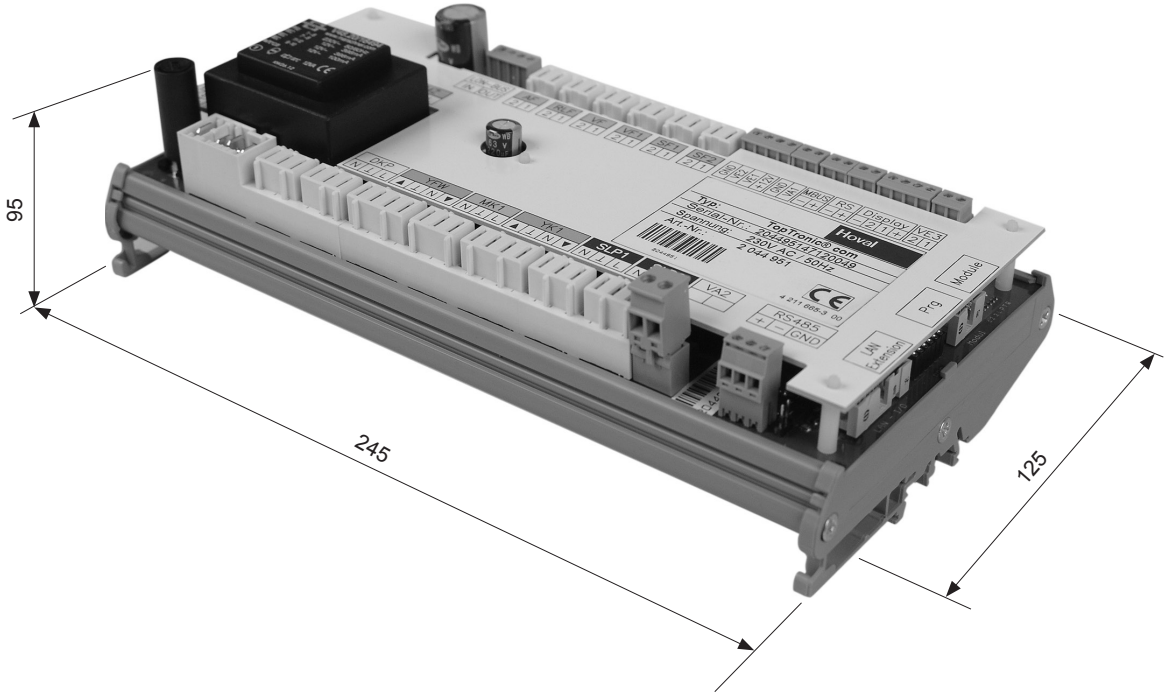
- All cables carrying mains voltage (mains connection, pumps, actuators, etc.):
  Recommended cable cross sections:
  1.5 mm^2

- All sensor cables
  Recommended cable cross sections:
  min. 0.5 mm^2
  Maximum permitted length:
  50 m; if 30 m or more, shielded and twisted.
  The shield is only allowed to be connected at one end.

Dimensions
Assembly

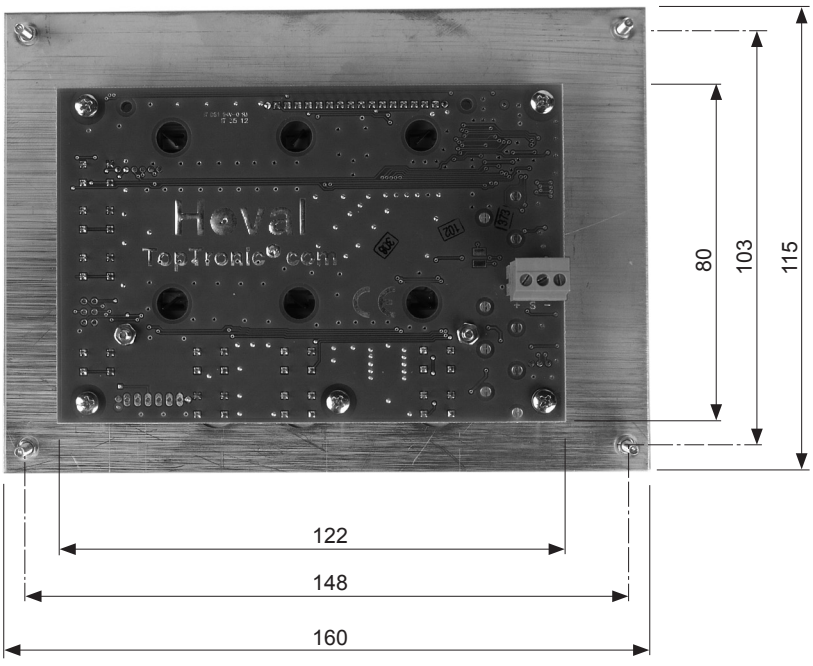
TopTronic® com
The TopTronic® com control unit is designed as a built-in unit for DIN rail mounting in a metal or plastic housing.

(dimensions in mm)



TopTronic® com display
(dimensions in mm)

Rear view



Description

Controller RKP 111A

- Continuous electronic fixed setting controller with PI action.
- Setting range: 0 °C to 60 °C / 60 °C to 120 °C. plastic casing with removable cover.
- For on-wall or switching panel installation.
- permitted ambient temperature during operation 0 °C to 50 °C.

For installation in a switching cabinet a supplementary sensor is necessary.

Fixed setting controller RKP 111A

Continuous operation, simple controller: size equivalent to a thermostat, with three point setting signal. Temperature sensor and set point component are integrated in the device. Installation with strap-on band directly on heating pipe or with immersion well – protection pipe (see accessories). Also available with external sensor RFT 310A or RFT 302A e.g. for installation in casing or switching cabinet (see accessories). Wiring: mains supply 230 V/ 50 Hz and connection to actuator.

Strap-on sensor RFT 301A

- With strap fastening
- Measurement range –30 °C to +120 °C.
- Measurement element PT 1000.
- Application range –30 °C to +120 °C.

Immersion sensor PT1000/6

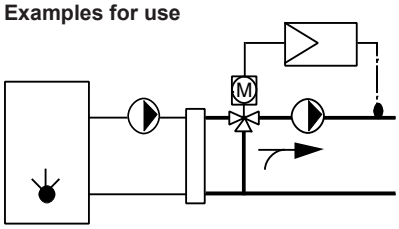
(without immersion well)

- diameter 6 mm
- cable length 2.5 m

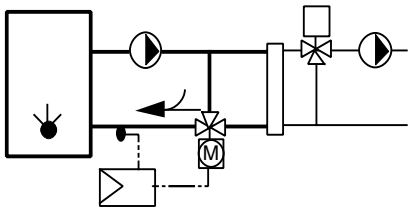
Applications

- flow temperature control
- lower limit monitoring of the return flow temperature
- heat exchanger control

Examples for use



flow temperature control



lower limit monitoring of the boiler return flow temperature

Part N°

	Flow temperature control or lower limit monitoring of the boiler return flow temperature	Part N°
	**Fixed setting controller RKP 111A 003 (PI)** 0 - 120°C, without sensor	2022 838
	**Installation set RZB070/RZB071** for RKP 111A 003 for installation on DIN standard rail	2022 839
	**Contact sensor RFT 301A** for RKP 111A	2018 843
	**Immersion sensor PT1000/6** Ø 6 mm, cable length 2.5 m	2018 842
	**Protective pipe immersion sleeve SB100 ½"** brass nickel-plated PN10 - 100 mm	2018 835

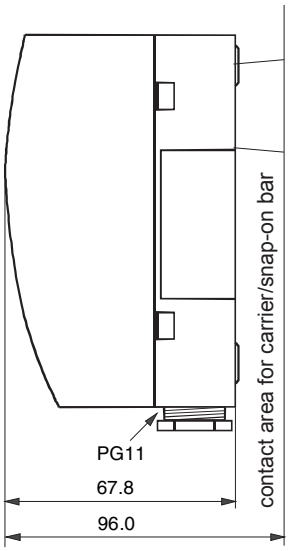
Technical data

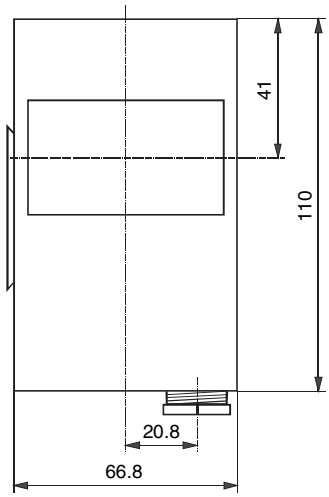
Controller RKP 111A 003
Continuous electronic fixed setting controller with PI action.

1 set point scale switchable 0 - 60 °C or 60 - 120 °C
2 DIP switch:

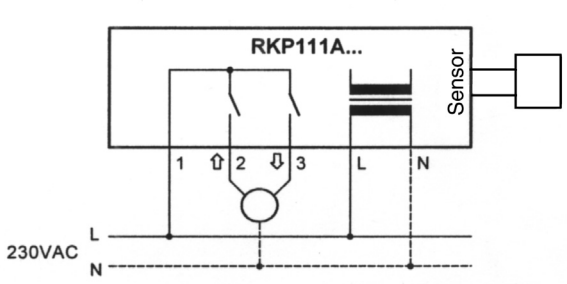
	set point	DIP1OFF 0..60 °C	/	DIP1ON 60..120 °C
	proportional range Xp	DIP2OFF ±20 K	/	DIP2ON ±10 K
	neutral zone Nz	DIP3OFF ±3,0 K	/	DIP3ON ±1.5 K
	mixer run-time	DIP4OFF ≥30 s	/	DIP4ON ≥60 s

3 connection terminals for sensor 1000
4 connection terminals for 230 VAC





Terminals



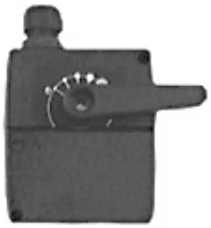
L	phase operational voltage
N	neutral
1	phase potential free control contacts
2	output ‘open’ for setting motor
3	output ‘closed’ for setting motor
Sensor	terminals for sensor PT 1000

Description

Three way valves

Type B3G460
- Three way valve, brass PN 10, 110 °C.
- Connections with inner thread.

Motor drives



Motor drive NR 230-20B
- 230 V ~.
- 2 wire control. Actuation time 140 s, control force 10 Nm.
- Ambient temperature 0 °C / 50 °C.

Motor drive NR 230-20S
- As for drive NR 230-20B.
- With auxiliary switch 230 V, 0.5 A and connecting cable 2.0 m.

Motor drive NR 230E-20
- 230 V
- Single wire control. Actuation time 140 s, control force 10 Nm.
- Ambient temperature 0 °C/ 50 °C.

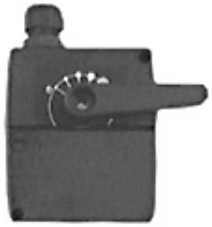
Motor drive NR 230E-20S
- As for drive NR 230E-20.
- With auxiliary switch 230 V, 0.5 A and connecting cable 2.0 m.

■ **Part N°**

Three way valves — Part N°

Three way valve B3G460 PN10
with inner thread, brass
for manual operation or operation with actuator NR..., case, cap, shaft and segment made of brass, maintenance-free O-ring seal.
Mounting optionally on left or right side.
Operating pressure 10 bar.
Max. operating temperature + 110 °C

Type	DN	screw connection	kvs[1]	operating pressure bar	Part N°
B3G460	15	Rp ½"	2.5	10	2039 167
B3G460	20	Rp ¾"	6.0	10	2039 168
B3G460	25	Rp 1"	12.0	10	2039 169
B3G460	32	Rp 1¼"	18.0	10	2039 170
B3G460	40	Rp 1½"	26.0	10	2039 171
B3G460	50	Rp 2"	40.0	10	2039 172



Motor drive for three way valves DN 15 to DN 50

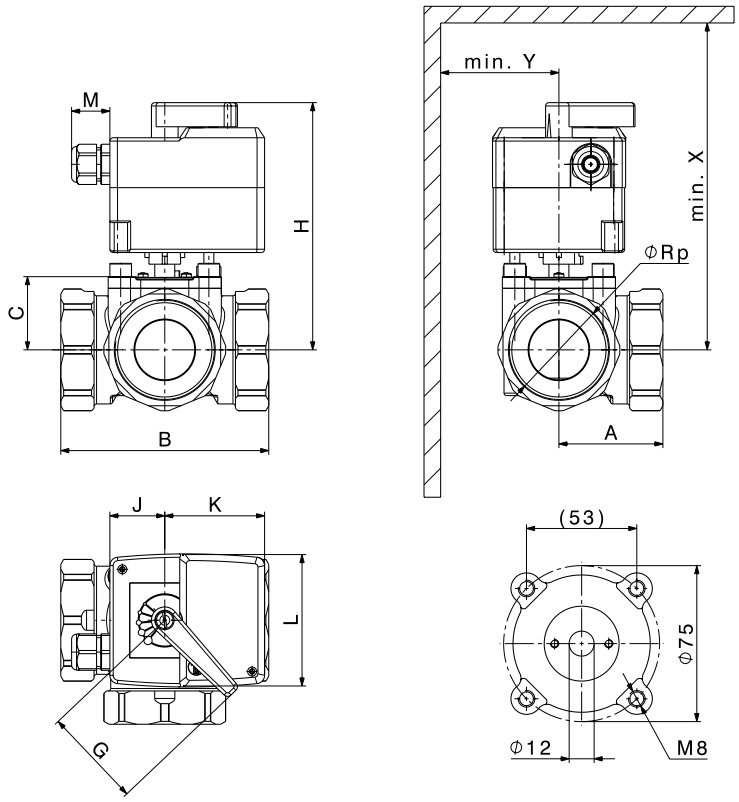
For valves B3G460.
Operating voltage 230 V/50 Hz, torque 10 Nm, actuation time 140 s, manual/automatic positioning, reversible scale for position indicator 0....10.

Motor drive for three way valves: 2 wire control	**NR 230-20B**	245 209
Motor drive for three way valves: 2 wire control with auxiliary switch	**NR 230-20S**	245 212
Motor drive for three way valves: Single wire control	**NR 230E-20**	245 235
Motor drive for three way valves: Single wire control with auxiliary switch	**NR 230E-20S**	245 215

Technical data

Motorised three way valves
Type B3G460/NR 230-20

- three way valves made of brass, connections with inner thread.
- max. operating temperature + 110 °C
- operating pressure PN10
- motor drive, 230 V, 50 Hz
- actuation time 140 s
- control force 10 Nm.
- lever for manual operation
- ambient temperature 0 / +50 °C.



DN	screw connection	kvs[1]	A	B	C	G	H	J	K	L	M	X	Y	kg
15	Rp ½"	2,5	40	80	34.5	60	139.5	33	60	80	23	220	50	1.07
20	Rp ¾"	6	41	81	34.5	60	139.5	33	60	80	23	220	50	1.13
25	Rp 1"	12	41	82	34.5	60	142	33	60	80	23	230	50	1.27
32	Rp 1 ¼"	15	42.5	85	37	60	142	33	60	80	23	230	50	1.63
40	Rp 1 ½"	26	58	116	41.5	60	147	33	60	80	23	240	50	2.66
50	Rp 2"	40	62.5	125	42.5	60	147	33	60	80	23	240	50	2.81

[1] = volume flow m^3/h at a flow resistance of 1 bar

Technical data

Installation notes

- The device must not be installed with the motor facing downwards.
- The valve can be used both for mixing as well as for distributing.
- The permitted pressure difference Δp max. may not be exceeded.

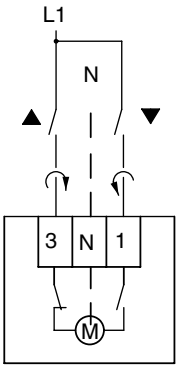
Installation

- Observe the installation instructions when assembling drive and mixing valve.
- The black adapter sleeve must be used for the three way valve.

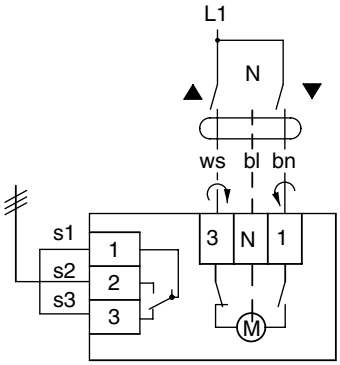
Electrical connection

1 x 230 V, 50 Hz. 3.5 W

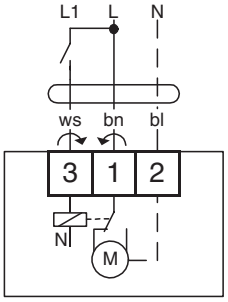
Type NR 230–20 B



Type NR 230-20S
with 2 m connecting cable.
with auxiliary switch 230 V, 0.5 A.
Function is adjustable.

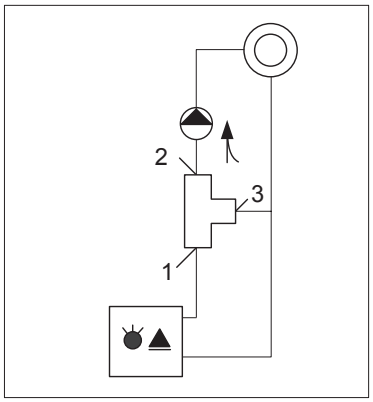


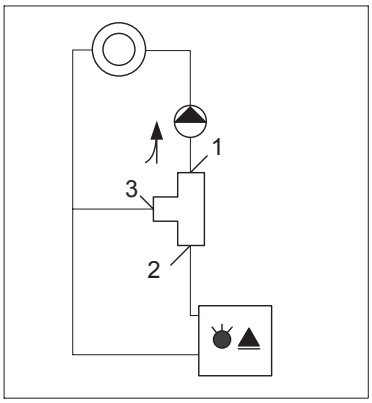
Type NR 230E-20
with 2 m connecting cable.
without auxiliary switch 230 V,
0.5 A. Function is adjustable.



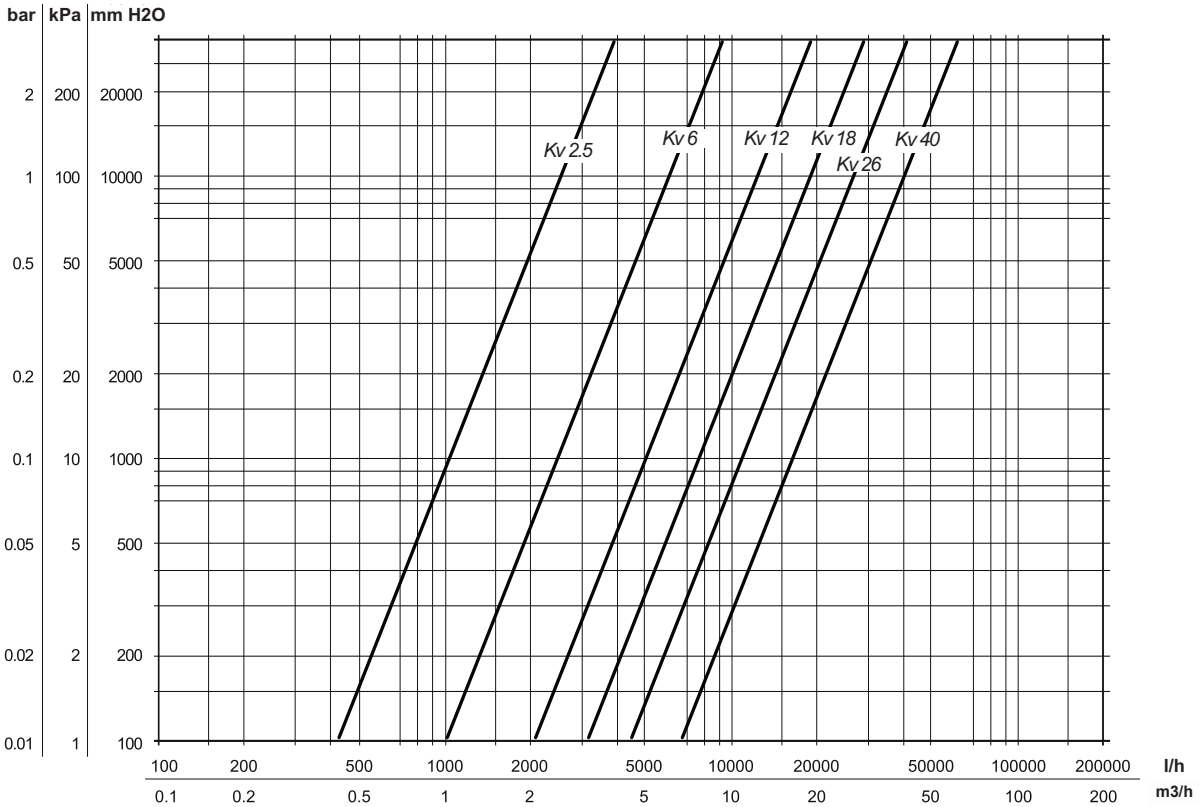
rotate clockwise to open
rotate anti-clockwise to open

Installation position type B3G460
The direction of motor rotation is anti-clockwise





Note:
Numbers correspond to numbers on the valve



Description

Hoval motorised three-way valves VXP459
Size DN ½" - 1 ½" / PN 16, 120 °C

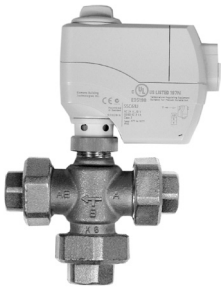
Valve type VXP 459
- Valve body made from gunmetal incl. screw connections
- In valve types with
  kvs 2.5-6.3 equal-percentage characteristic
  kvs 10-25 linear characteristic
- Only used as mixing valve
- Valve stroke 5.5 mm

Motor drive SSC 319
- Voltage 230 V, 50 Hz, 6 VA
- Control signal 3-point
- Operating time 150 s
- Limit switch
- Manual adjustment
- Permitted ambient temperature
  0 °C bis +50 °C

Hoval zone valve VC 4613
Size DN ½" - 1"

Straight form with internal thread, operating voltage 230 V/50 Hz., 1 built-in volt-free limit switch with 1 changeover contact max. 6 A.

■ **Part N°**



Motor three-way valve — Part N°

Type VXP459/SSC319 PN 16, 120 °C
Three-way valve made from gunmetal incl. screw connections. Can be used as mixing valve. Motor drive 230 V (3-point). Valve and motor drive are supplied packaged separately.

DN	Screw connection	kvs [1]	Δpo [2]	
15	R ½"	2.5	4	6010 074
15	Rp ½"	4	4	6010 075
20	Rp ¾"	6.3	2	6010 076
25	Rp 1"	10	3	6010 077
32	Rp 1¼"	16	1.5	6010 078
40	Rp 1½"	25	0.7	6010 079

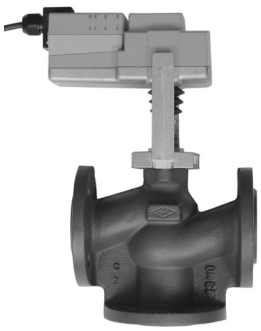
R = External thread
Rp = Internal thread

[1] Flow rate in m^3/h with a pressure loss of 1 bar.
[2] Max. permitted differential pressure (closing pressure)

H7.. R / NV230A-TPC,
PN 6, 120 °C
Three-way valve made from cast iron, with flange connection.
Motor drive with quick coupling, 230 V (3-point), actuator force 1000 N.
Valve and motor drive are supplied packaged separately.

DN	kvs [1]	Δpo [2]	
65	58	2.0	6021 198
80	90	1.35	6021 199

[1] Flow rate in m^3/h with a differential pressure of 1 bar.
[2] Closing pressure in bar



H7100R / EV230A-TPC
PN 6, 120 °C
Three-way valve made from cast iron, with flange connection.
Motor drive 230 V, (3-point)
Actuator force 2500 N.

DN	kvs [1]	Δpo [2]	
100	145	1.6	6021 200

[1] Flow rate in m^3/h with a differential pressure of 1 bar.
[2] Closing pressure in bar

■ **Part N°**

Part N°

Zone valve

Type VC4613
Straight form with internal thread made from gunmetal, operating voltage 230 V/50 Hz., 1 built-in volt-free limit switch with 1 change-over contact max. 6 A. Max. operating pressure 4 bar, opens in 7.2 s single-wire control.

	Screw connection	kvs [1]	
VC 4613	Rp ½"	3	2012 049
VC 4613	Rp ¾"	5	2012 050
VC 4613	Rp 1"	6	2012 051

Rp = Internal thread
[1] Flow rate in m^3/h with a pressure loss of 1 bar.

H7..R / NV230A-TPC
PN 6, 120 °C

Three-way as through valve made from gunmetal, with flange connection (middle connection "B" closed).
Motor drive with quick coupling, 230 V (3-point)
Actuator force 1000 N.

DN	kvs [1]	Δpo [2] bar	
65	58	2.0	6021 214
80	90	1.35	6021 215

H7100R / EV230A-TPC
PN 6, 120 °C

Three-way as through valve made from gunmetal, with flange connection (middle connection "B" closed).
Motor drive 230 V, (3-point).
Actuator force 2500 N.

DN	kvs [1]	Δpo [2] bar	
100	145	1.6	6021 216

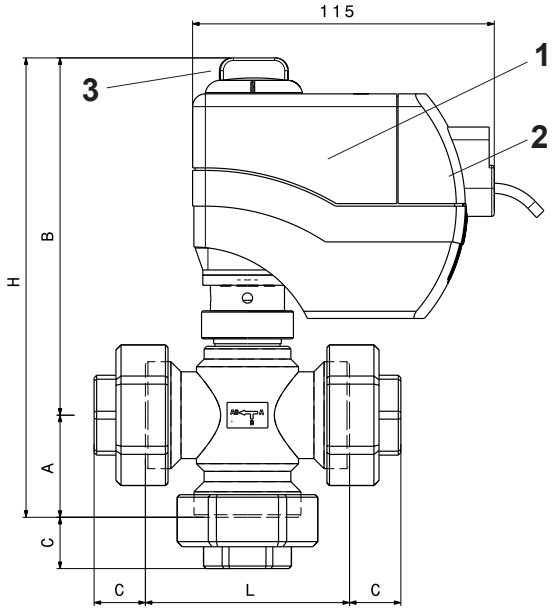
[1] Flow rate in m^3/h with a differential pressure of 1 bar.
[2] Closing pressure in bar

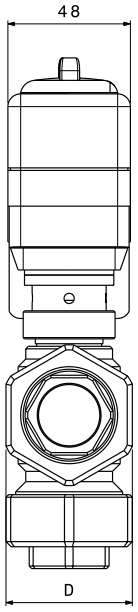
Technical data

Motorised three-way valve
Type VXP459/SSC319

Three-way mixing valve VXP459
- Three-way mixing valve with valve body made from gunmetal incl. screw connections.
- Can only be used as a mixing element.
- Operating pressure max. 16 bar.
- Media
  Domestic hot water: up to max. 110 °C, intermittent up to max. 120 °C
  Cold water: above 2 °C
  Water with antifreeze:
  up to max. 50% by vol.
  Recommendation
  Water treatment acc. to VDI2035

Drive SSC319
- Motor 230 V~, 50 Hz, 6 VA.
- Operating time 150 s
- For 2-wire control.
- Permitted ambient temperature 0 / +50 °C.
- Actuator force 300 N





max. width

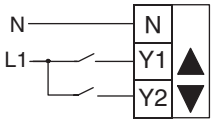
1 Motor (can be rotated as required).
2 Electrical connection.
3 Rotary knob for manual actuation.

DN	Screw connection	kvs[1] m³/h	L	H	A	b	C	D	Δ_{p0}[2] bar	Weight[3] kg
15	R ½"	2.5	65	166	32.5	134	23	39	4	1.2
15	Rp ½"	4	80	178	40	138	24	39	4	1.4
20	Rp ¾"	6.3	80	180	40	140	27	48	2	1.5
25	Rp 1"	10	105	204	52.5	152	29	70	3	2.2
32	Rp 1¼"	16	105	211	52.5	158	32	80	1.5	3.2
40	Rp 1 ½"	25	130	226	65	161	35	100	0.7	3.9

[1] Flow rate in m³/h with a pressure loss of 1 bar.
[2] Max. permitted differential pressure (closing pressure) between connection B and AB.
[3] incl. screw connections and drive

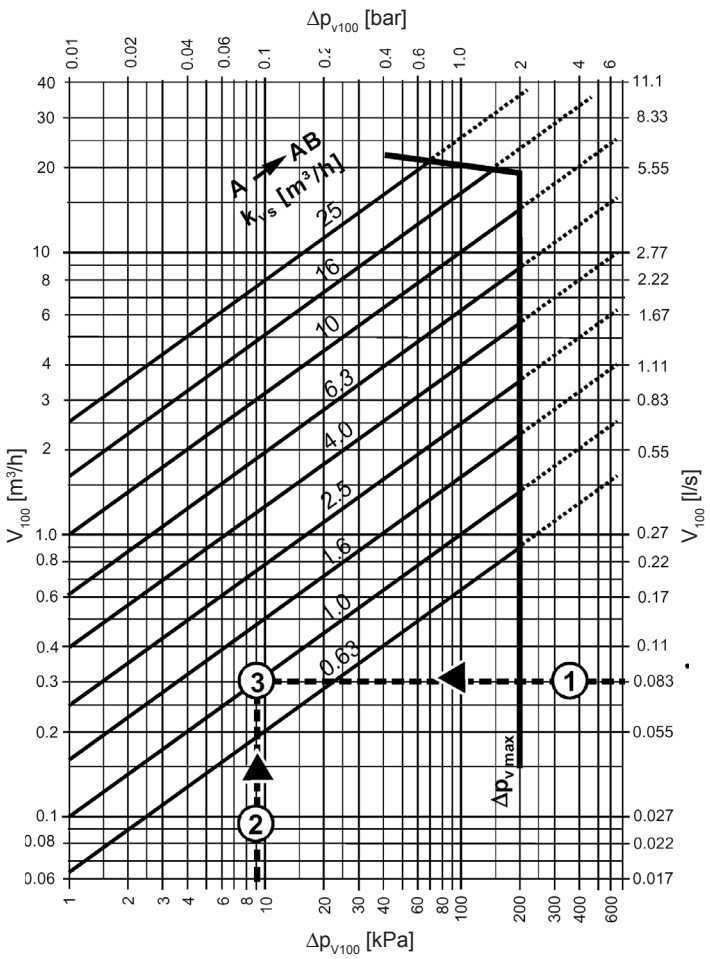
R = External thread
Rp = Internal thread

Electrical connection



Technical data

Dimensioning diagram



Δp_{Vmax} maximum permitted pressure difference across the valve in all operating statuses

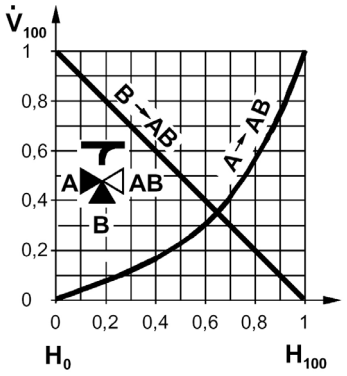
Δp_{v100} permitted pressure difference with fully opened valve at nominal stroke

V_{100} maximum flow rate

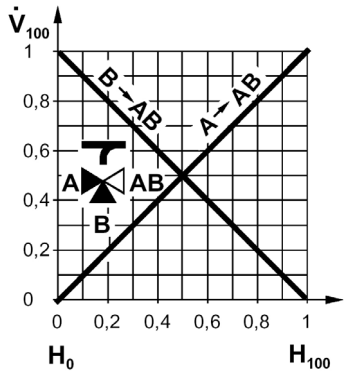
Control characteristics

VXP459 - Three-way valves are only allowed to be used as mixers.

VXP459.15-2.5 to VXP459.25-6.3



VXP459.25-10 to VXP459.40-25



V_{100} = Flow rate

H_0 = Valve stroke 0% = from A -> AB closed, bypass B opened

H_{100} = Valve stroke 100% = from A-> AB opened, Bypass B closed

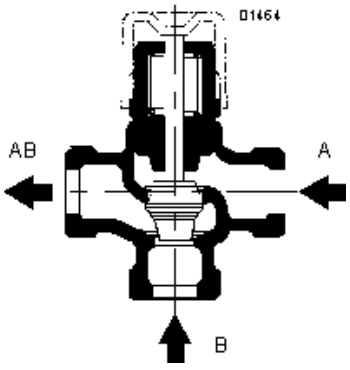
Gate AB = Constant total flow from A and B -> AB

Gate A = Variable flow rate in straight flow From A -> AB

Gate B = Variable flow rate in bypass flow From A -> AB

Installation instructions

- Installation with the motor pointing downwards is not permitted.
- The flow direction must be as shown by the arrow on the valve body.
  Recommendation
  Install a strainer before the valve



Mixing: Flow from A and B -> AB
Valve spindle moves in: Flow A -> AB opens, bypass B closes
Valve spindle moves out: Flow A -> AB closes, Bypass B opens

Description

Motorised straight way ball valve Type K2..B / SR230A

- Straight way ball valve made of brass, nickel-plated with internal thread incl. screw connections
- Operating temperature max. 90°C
- Operating pressure 16 bar
- Closing pressure Δpo = 10 bar
- Motor drive, 230 V, 50 Hz, with relay for single wire control and control direction switch
- Actuation time 90 s (no intermediate positions possible)
- Lever for manual operation
- Admissible ambient air temperature 0 / + 50°C

Delivery
- Straight way ball valve and motor drive delivered separately packed

Part N°

Type K2..B / SR230A

Motorised straight way ball valve, connections with inner thread incl. motor drive SR230A

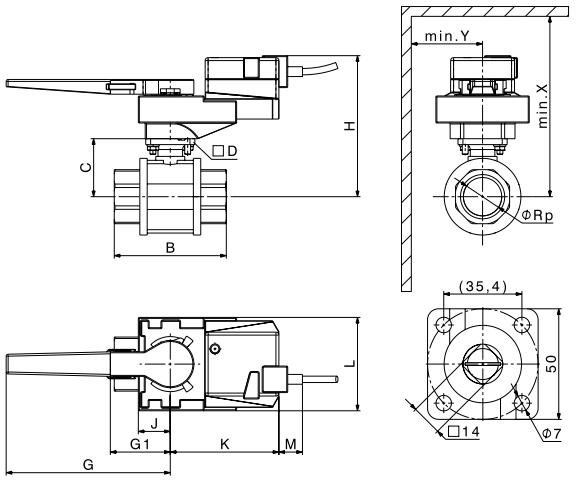
Type	DN	screw connection	kvs [1]	Part N°
K215B / SR230A	15	Rp ½"	15	6027 403
K220B / SR230A	20	Rp ¾"	28	6027 405
K225B / SR230A	25	Rp 1"	39	6027 406
K232B / SR230A	32	Rp 1¼"	84	6027 407
K240B / SR230A	40	Rp 1½"	156	6027 408
K250B / SR230A	50	Rp 2"	243	6027 409

[1] Flow rate in m^3/h at an opening degree of 100 % and a pressure loss of 1 bar

Technical data

Motorised straight way ball valve
Type K2..B / SR230A

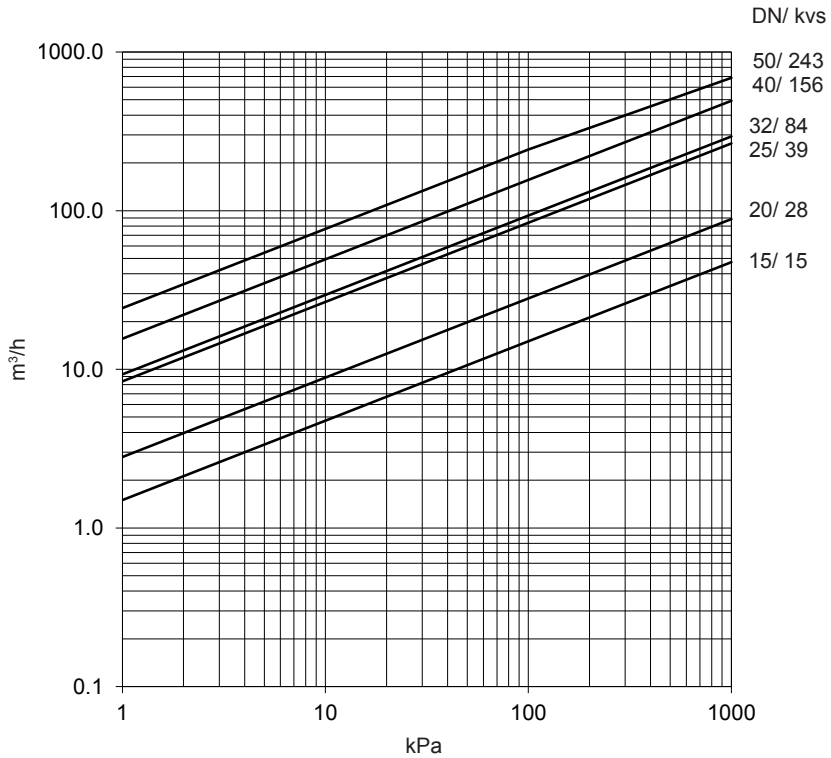
- Straight way ball valve made of brass, nickel-plated with internal thread
- Operating temperature max. 90°C
- Operating pressure 16 bar
- Closing pressure Δpo = 10 bar
- Motor drive, 230 V, 50 Hz, with relay for single wire control and control direction switch
- Actuation time 90 s (no intermediate positions possible)
- Lever for manual operation
- Admissible ambient air temperature 0 / +50°C



DN	Screw connection	kvs [1]	B	C	D	G	G1	H	J	K	L	M	X	Y	kg
15	Rp ½"	15	64	37	50	176	70	122	34	117	95	60	240	90	1.8
20	Rp ¾"	28	74	42	50	176	70	127	34	117	95	60	240	90	2.1
25	Rp 1"	39	90	48	50	176	70	133	34	117	95	60	240	90	2.5
32	Rp 1 ¼"	84	104	54	50	176	70	139	34	117	95	60	240	90	2.8
40	Rp 1 ½"	156	114	60	50	176	70	145	34	117	95	60	240	90	2.7
50	Rp 2"	243	135	70	50	176	70	155	34	117	95	60	240	90	5.4

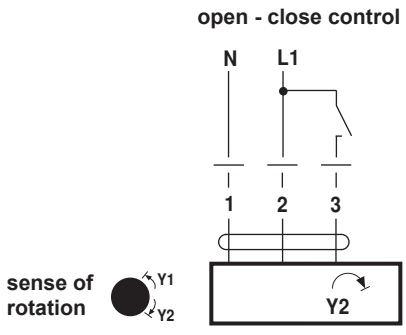
[1] = volume flow m^3/h at a flow resistance of 1bar

Flow resistance



m^3/h = volume flow
kPa = flow resistance (1 kPa = 10 mbar = 100 mm WS)

Electrical connection
1 x 230 V, 50 Hz



rotary drive		rotary valve
Y2		A – AB = 0%

Parallel connection of additional drives possible. Performance data of supply must be observed!

Description

Motorised switch ball valve
Type R3..BL / LR230A, NR230A, SR230A

- Switch ball valve made of brass, nickel-plated with internal thread
- Operating temperature max. 100°C.
- Operating pressure 16 bar
- Closing pressure Δpo = 5 bar
- Motor drive, 230 V, 50 Hz with relay for single wire control and control direction switch
- Actuation time 90 s (no intermediate positions possible)
- Lever for manual operation
- Admissible ambient air temperature 0 / +50°C

Delivery
- Switch ball valve and motor drive delivered separately packed

Part N°

Motorised switch ball valve
Type R3..BL / LR230A, NR230A, SR230A,
connections with internal thread
incl. motor drive SR230A

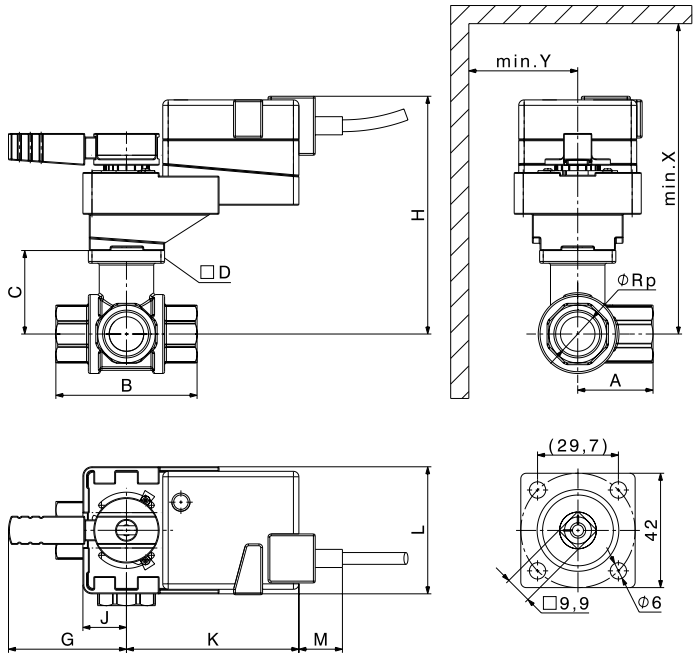
Type	DN	Screw connection	kvs [1]	Part N°
R3020-BL2/ LR230A	20	Rp ¾"	11.0	6027 410
R3025-BL2/ LR230A	25	Rp 1"	10.0	6027 411
R3032-BL3/ NR230A	32	Rp 1¼"	15.0	6027 412
R3040-BL4/ SR230A	40	Rp 1½"	47.0	6027 413
R3050-BL4/ SR230A	50	Rp 2"	75.0	6027 414

[1] Flow rate in m^3/h at an opening degree of 100 % and a pressure loss of 1 bar

Technical data

Motorised switch ball valve
Type R3..BL / LR, NR, SR230A

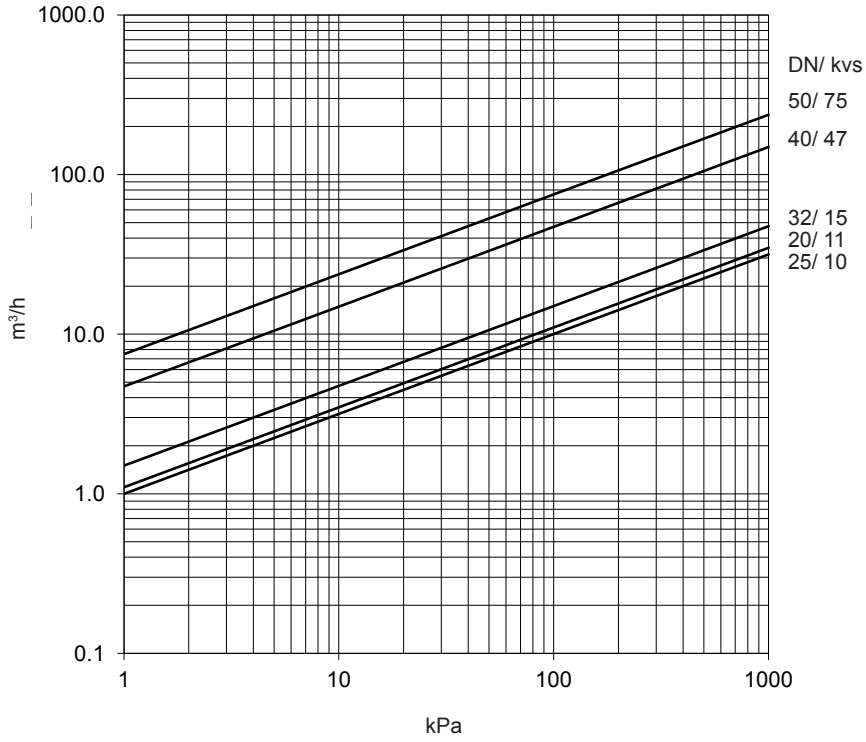
- Switch ball valve made of brass, nickel-plated with internal thread.
- Operating temperature max. 110 °C
- Operating pressure 16 bar
- Closing pressure Δpo = 5 bar
- Motor drive, 230 V, 50 Hz. with relay for single wire control and control direction switch
- Actuation time 90 s (no intermediate positions possible)
- Lever for manual operation
- Admissible ambient air temperature 0 / + 50 °C



DN	Screw connection	kvs[1]	A	B	C	D	G	H	J	K	L	M	X	Y	kg
20	Rp ¾"	11.0	41.5	78	47.5	42	65	132.5	25	103	70	31	220	90	1.1
25	Rp 1"	10.0	45	87	47.5	42	65	132.5	25	103	70	31	220	90	1.4
32	Rp 1 ¼"	15.0	55.5	105	52	42	65	138	28	100	83	41	230	90	2.1
40	Rp 1 ½"	47.0	66.5	122	62	42	65	148	28	100	83	41	240	90	2.7
50	Rp 2"	75.0	79	142	68	42	65	154	33	117	92	60	250	90	3.7

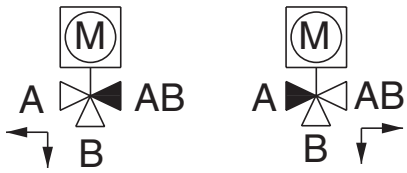
[1] = volume flow m³/h at a flow resistance of 1bar

Flow resistance



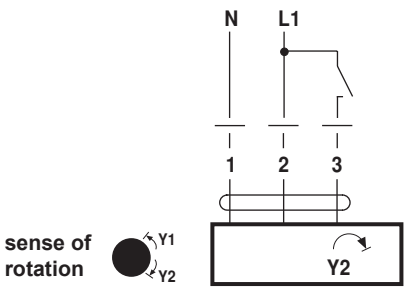
m³/h = volume flow
kPa = flow resistance (1 kPa = 10 mbar = 100 mm WS)

Flow rate
Depending on position control contact



Electrical connection
1 x 230 V, 50 Hz

open - close control



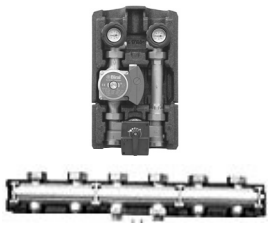
sense of rotation

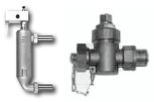
rotary drive		rotary valve
Y2		A - B = 100% AB - B = 0%

Parallel connection of additional drives possible.
Performance data of supply must be observed!

Page

Hydraulic system components





Description

Heating armature group for mixing circuit

- Suitable for wall distributor construction.
- With 3-way motor mixer.
- 2 ball valves with thermometer.
- Heat-insulating box made of EPP half shells.
- Heating flow/pump left.

HA20-3BM-R (¾"), HA25-3BM-R (1"), HA32-3BM-R (1¼")
Fully assembled and electrically wired with:

- Connecting cable with plug for Hoval TopTronic®T controller.
- 3-way motor mixer with integrated bypass, adjustable from 0 - 50 %.
- Backflow preventer with deaeration adjusting screw.
- Biral heating circuit pump (enclosed separately).

Optional

- Type HA25 and HA32 are also available without pump.

HA40-3M-R (1½"), HA50-3M-R (2")
Without connecting cable and plug, electrically unwired with:

- Backflow preventer with deaeration adjusting screw.
- without Biral pump (must be ordered separately).

Delivery

- Heating armature group completely packaged.
- Optional bypass valve available.

On site

- Conversion option to heating flow/pump right.
- Installation of the Biral pump (DN20-DN32).
- Mounting of the bypass valve (DN20-DN32, option).

Heating armature group HA-3BM-L for mixing circuit

- Design as heating armature group HA-3BM-R, but: heating flow/pump right.

Heating armature group HA-3BT-R for mixing circuit

HA25-3BT-R (1")
Fully assembled and electrically wired with:

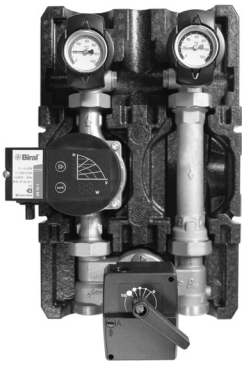
- Suitable for wall distributor construction.
- With 3-way mixer with thermal actuator with constant-value control circuit including strap-on sensor and safety temperature limiter and with integrated bypass, adjustable from 0 - 50 %.
- Backflow preventer.
- Biral heating circuit pump (enclosed separately).
- 2 ball valves with thermometer.
- Heat-insulating box made of EPP half shells.
- Heating flow/pump left.

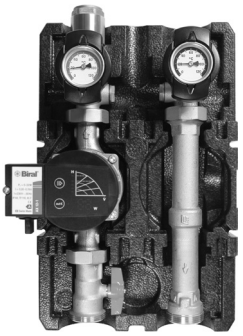
Delivery

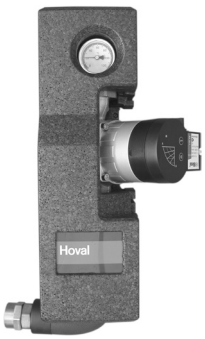
- Heating armature group completely packaged.
- Biral pump separate.

On site

- Installation of the Biral pump.







Loading group LG-2 Heating armature group HA-2

- For the connection of a side calorifier or as heating circuit without mixer
- Suitable for wall distributor construction.
- 2 ball valves with thermometer.
- Heat-insulating box made of EPP half shells.
- Heating flow/pump left.

LG/ HA20-2 (¾"), LG/ HA25-2 (1"), LG/ HA32-2 (1¼")
Fully assembled and electrically wired with:

- Connecting cable with plug for Hoval TopTronic®T controller.
- Backflow preventer (enclosed separately).
- Biral pump (enclosed separately).

Optional

- Type LG/ HA25-2 and LG/ HA32-2 are also available without pump.

LG/ HA40-2 (1½"), LG/ HA50-2 (2")
Without connecting cable and plug, electrically unwired with:

- Non-return valve with deaeration adjusting screw.
- without Biral pump (must be ordered separately).

Delivery

- Armature group completely packaged.

On site

- Conversion option to heating flow/pump right.
- Installation of the Biral pump (DN20-DN32).

Loading group LG25-2 Compact for the direct installation at side calorifier

- For the connection of a side calorifier.
- Installation directly on the calorifier ER (200 - 500), CR (200 - 1000) or without connecting bend in the feed line or at the boiler
- 1 ball valve pressure-side with non-return valve
- 1 ball valve suction-side with thermometer completely assembled and electrically wired with:
  - Connecting cable with plug for Hoval TopTronic®T controller.
  - Biral loading circuit pump (enclosed separately).
- Heat-insulating box made of EPP half shells.
- Fully isolated connection bend with screw joing (enclosed separately).

Delivery

- Loading group with connection bend completely packaged.
- Biral pump (enclosed separately).

On site

- Installation of the connection bend.
- Installation of the Biral pump.

Description

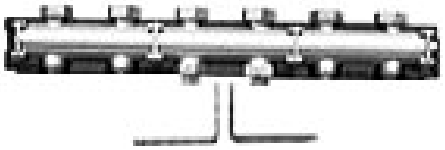
Bypass groups

BG25-3 (1"), BG32-3 (1¼")
- Bypass with fittings.
- Without pump.
- Suitable for the installation under the wall distributor.

Standard pressure distributor WV-S
Not upgradeable

WV-S 25-2/3 (1")
- Pressure distributor (bronze) for
  - 2 armature groups DN25 on the top
  - 1 armature group DN25 at the bottom (in connection with the connection set WV-S 25-U)
- Thermal insulation made of EPP shells.
- Bracket for installation.
- Variable connections boiler-side.

System pressure distributor WV-M
Upgradeable



WV-M 20 (¾"), WV-M 25 (1"), WV-M 32 (1¼"), WV-M 40 (1½"), WV-M 50 (2")
- Bronze pressure distributor.
- Thermal insulation made of EPP shells; DN 20 (¾") with heat-insulating caps; the actual insulation is done by the heat-insulating box of the HA group.
- Bracket for installation, DN 40 and 50 without bracket.
- Variable connections boiler-side.

On site
- Upgrade options for additional armature groups.
- Conversion to pressureless design possible (only DN20-32).

Mounting console MKW-WV 40

For installing the pressure distributor WV-M 40 on the wall. 1 set 2 pcs. each.

For wall distributors with more than 4 HA groups absolutely use console for floor installation!

Mounting console for floor installation MKW-WV 40/50

For installing the pressure distributor WV-M 40 und WV-M 50 on the floor. 1 set 2 pcs. each.

For wall distributors with up to 4 HA groups 1 Set, for wall distributors with more than 5 HA groups 2 sets required!

Upgrade module EW-WV

DN 20, 25, 32 without insulation, a new insulation must be ordered for the upgraded distributor.
DN 40, 50 with insulation

Description

Selection table

Selection recommendation heating armature group (HA)

Output in [kW]			Volume flow [l/h]	HA group direct (HA..-2) for max. pressure drop [mbar]		HA group with mixer (HA..-3) for max. pressure drop [mbar]	
Δ 10 K	Δt 15 K	Δt 20 K		30	60	30*)	60
5	7,5	10	430	20	20	20	20
7,5	11,3	15	645	25		25	
10	15,0	20	860				25
12.5	18,8	25	1075	32		32	
15	22.5	30	1290	40	25		
17,5	26,3	35	1505			40	32
20	30	40	1720		32		
22.5	33,8	45	1935		40		
25	37.5	50	2150				
30	45	60	2580			50	40
35	52.5	70	3009				
40	60	80	3439	50			50
45	67.5	90	3869				
50	75	100	4299				
60	90	120	5159		50		
70	105	140	6019				
80	120	160	6879				
90	135	180	7739				

Example: *The pressure drop must be matched with the pump used.*

*) **Only on depressurized distributor!**

direct (without mixer) circuit 25 kW at Δt 20K, up to 60 mbar results in a HA 25-2

Mixer circuit 20 kW at Δt 10K, up to 60 mbar results in a HA 32-3

Selection recommendation wall distributor (WV)

Total power in [kW]			Total Volume flow [l/h]	Number of HA groups at max. pressure drop [mbar]							
				2(WV..-2)		3(WV..-3)		4(WV..-4)		5(WV..-5)	
10 K	15 K	20 K		30	60**)	30	60**)	30	60**)	30	60**)
5	7,5	10	430	20	20	20	20	20	20	20	20
7,5	11,3	15	645								
10	15,0	20	860								
12.5	18,8	25	1075								
15	22.5	30	1290								
17,5	26,3	35	1505			25		25		25	
20	30	40	1720	25							25
22.5	33,8	45	1935								
25	37.5	50	2150		25		25		25		
30	45	60	2580			32		32		32	
35	52.5	70	3009	32							32
40	60	80	3439						32		
45	67.5	90	3869								
50	75	100	4299	40	32	40	32	40		40	
60	90	120	5159	50		50		50	40	50	40
70	105	140	6019				40				
80	120	160	6879		40						
90	135	180	7739				50		50		50
100	150	200	8598		50						
110	165	220	9458								
120	180	240	10318								
130	195	260	11178								
140	210	280	12038								

Total volume flow = 1075 + 1720 = 2795 l/h The next largest volume flow is selected
The next largest value for a pressure drop from the max. 300 mmWC: results in a distributor WV32-2

) **Only in pressureless design or for systems without mixer!

The distributor should have at least the nominal diameter of the largest HA groups.

■ **Part N°**

Hoval heating armature groups		Part N°
Heating armature group HA-3BM-R with 3-way motor mixer and heat-insulating box. Installation right (flow left).		
HA group - type	Pump - type	
DN20 (¾")		
Pump with stepless speed control		
HA20-3BM-R/AX 12-4	AX12-4	6020 519
HA20-3BM-R/AX 13-4	AX13-4	6020 659
DN25 (1")		
Pump with stepless speed control		
HA25-3BM-R/AX 12-1	AX12-1	6020 520
HA25-3BM-R/AX 13-1	AX13-1	6020 521
HA25-3BM-R	without pump	6023 300
Pumps for HA25-3BM-R for heating armature group HA25-3BM-R without pump.		
A12-1	230 V	2030 392
A13-1	230 V	2030 393
DN32 (1¼")		
Pump with stepless speed control		
HA32-3BM-R/AX 13-2	AX13-2	6020 522
HA32-3BM-R/A 15-2	A15-2	6023 297
HA32-3BM-R	without pump	6023 301
Pumps for HA32-3BM-R for heating armature group HA32-3BM-R without pump.		
A13-2	230 V	2030 397
A14-2	230 V	2030 398
DN40 (1½")		
HA40-3M-R	without pump	6014 867
Pumps for HA40-3M for heating armature group HA40-3M without pump. Transition pieces and threaded flanges must be ordered separately if necessary.		
A14-2	230 V	2030 398
Transition piece Z17		2004 408
Threaded flange Z29		2029 652
A15-2	230 V	2030 399
Transition piece Z17		2004 408
Threaded flange Z29		2029 652
A401-1	230 V	2030 407
ModulA 40-12 250 PN6-16	230 V	2053 966
DN50 (2")		
HA50-3M-R	without pump	6014 869
Pumps for HA50-3M-R for heating armature group HA50-3M-R without pump. Transition pieces and threaded flanges must be ordered separately if necessary.		
A500	230V	2040 758
Transition piece Z42 (2 pieces required)		2004 421
ModulA 50-12 270 PN6-16	230V	2053 969
Transition piece Z41		2004 420

■ **Part N°**

Hoval heating armature groups		Part N°
Heating armature group HA-3BM-L with 3-way motor mixer and heat-insulating box. Installation left (flow right)		
HA group - type	Pump - type	
DN20 (¾")		
Pump with stepless speed control		
HA20-3BM-L/AX 12-4	AX12-4	6020 523
HA20-3BM-L/AX 13-4	AX13-4	6025 429
DN25 (1")		
Pump with stepless speed control		
HA25-3BM-L/AX 12-1	AX12-1	6020 524
HA25-3BM-L/AX 13-1	AX13-1	6020 525
HA25-3BM-L	without pump	6023 327
Pumps for HA25-3BM-L for heating armature group HA25-3BM-L without pump.		
A12-1	230 V	2030 392
A13-1	230 V	2030 393
DN32 (1¼")		
Pump with stepless speed control		
HA32-3BM-L/AX 13-2	AX13-2	6020 526
HA32-3BM-L/A 15-2	A15-2	6023 298
HA32-3BM-L	without pump	6023 328
Pumps for HA32-3BM-L for heating armature group HA32-3BM-L without pump.		
A13-2	230 V	2030 397
A14-2	230 V	2030 398

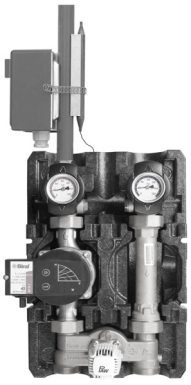
Loading group LG-2 **Heating armature group HA-2** For the connection of a side calorifier or as heating circuit without mixer, with heat-insulating box. Installation right (flow left).		
LG/ HA group - type	Pump - type	
DN20 (¾")		
Pump with stepless speed control		
LG/ HA20-2/AX12-4	AX12-4	6020 527
DN25 (1")		
Pump with stepless speed control		
LG/ HA25-2/AX 12-1	AX12-1	6020 528
LG/ HA25-2/AX 13-1	AX13-1	6020 529
LG/ HA25-2	without pump	6023 324
Pumps for LG/ HA25-2 for heating armature group LG/HA25-2 without pump.		
A12-1	230 V	2030 392
A13-1	230 V	2030 393
DN32 (1¼")		
Pump with stepless speed control		
LG/ HA32-2/AX 13-2	AX13-2	6020 530
LG/ HA32-2	without pump	6023 325
Pumps for LG/ HA32-2 for heating armature group LG/HA32-2 without pump.		
A13-2	230 V	2030 397
A14-2	230 V	2030 398
A15-2	230 V	2030 399

■ **Part N°**

Hoval heating armature groups		Part N°
DN40 (1½")		
HA40-2	without pump	6014 868
Pumps for HA40-2		
for heating armature group HA40-2 without pump. Transition pieces and threaded flanges must be ordered separately if necessary.		
A14-2	230 V	2030 398
Transition piece Z17		2004 408
Threaded flange Z29		2029 652
A15-2	230 V	2030 399
Transition piece Z17		2004 408
Threaded flange Z29		2029 652
A401-1	230 V	2030 407
ModulA 40-12 250 PN6-16	230 V	2053 966
DN50 (2")		
HA50-2	without pump	6014 870
Pumps for HA50-2		
for heating armature group HA50-2 without pump. Transition pieces and threaded flanges must be ordered separately if necessary.		
A500	230V	2040 758
Transition piece Z42 (2 pieces necessary)		2004 421
ModulA 50-12 270 PN6-16	230V	2053 969
Transition piece Z41		2004 420

Compact loading group LG-2
With heat-insulating box for the direct installation on the CombiVal ER (160-500) and CombiVal CR (200-1000), in the feed line or on the boiler.

Type	Flow/ Return	Pump - type	
DN25 (1")			
Pump with stepless speed control			
LG25-Compact/AX12-1	1"	AX12-1	6020 492



Heating armature group HA-3BT-R
with 3-way mixer with thermal actuator and heat-insulating box. Installation right (flow left).

HA group - type	Pump - type	
DN25 (1")		
HA25-3BT-R/AX12-1	AX12-1	6031 812

■ **Part N°**

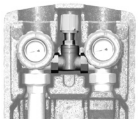
Hoval heating armature groups — Part N°

Heat meter installation section DN 25 — 6006 990
for unmixed heating circuit
for heat meters:
¾" x 110 mm or 1" x 130 mm

Heat meter installation section DN 25 — 6006 991
for mixed heating circuit
for heat meters:
¾" x 110 mm or 1" x 130 mm

Thermometer well ½"
for temperature sensor ∅ D, depth L
for the installation in the thermo ball valve.

	D [mm]	L [mm]	
D 5.5/ 30 mm	5,5	30	2010 062
D 6.0/ 60 mm	6,0	60	2010 063

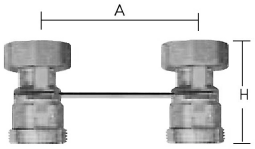


Bypass valve
Pressure range 0.1 - 0.6 bar
Overflow set for the installation:
- DN20 on the armature group,
- DN 25/ DN 32: in in the armature group.

Pressure range 0.6 to 1.5 bar
- DN 32: on the armature group

RPM-regulated pumps must be set to a constant speed!

DN20	0,1 - 0,6 bar	6013 684
DN25/ DN32	0,1 - 0,6 bar	6006 989
DN32	0,6 - 1,5 bar	6014 849



Holding plate
Suited to Hoval boiler connection set AS,
for the installation of a Hoval loading group LG-2/ unmixed HA group HA-2.

	A [mm]	H [mm]	
DN 25	125	60	2022 446
DN 32	125	70	2022 447

Wall bracket
for the installation of a Hoval armature group on the wall.

Type	Dimens. between centre lines mm	Connection Top	Bottom	Wall distance mm	
DN 20	90	Rp 1"	R ¾"	70,85,100	6019 209
DN 25	125	Rp 1½"	R 1"	87 - 162	6019 210
DN 32	125	Rp 2"	R 1½"	142,167	6025 295

Bypass group BG25-3 — 6007 189
for boiler circuit
for the installation below the wall distributor
complete with fittings (without pumps)

■ **Part N°**

Hoval wall distributor — **Part N°**

Standard pressure distributor WV-S 25-2/3 — 6031 809
DN25 (1")
wall distributor (not expandable)
of brass
for 2 armature groups on the top, resp.
1 additional group at the bottom (in connection with connection set WV-S25-U)
with thermal insulation made of EPP shells,
including brackets

Connection set WV-S 25-U — 6007 004
for the installation of a HA group DN25 below at the standard pressure distributor

System pressure distributor expandable
Bronze wall distributor for armature groups.
DN20 without thermal insulation,
DN25-DN50 with thermal insulation.
DN20-DN32 including brackets,
DN 40/50 without brackets.
Variable connections boiler-side.
With separate components attachment of additional armature groups and conversion to pressureless operation possible.

Wall distributor type	HA groups	
DN20 (¾")		
WV-M 20-2	2 HA groups	6013 694
WV-M 20-3	3 HA groups	6013 695
DN25 (1")		
WV-M 25-2	2 HA groups	6006 945
WV-M 25-3	3 HA groups	6006 946
DN32 (1¼")		
WV-M 32-2	2 HA groups	6006 947
WV-M 32-3	3 HA groups	6006 948
DN40 (1½")		
WV-M 40-2	2 HA groups	6015 116
WV-M 40-3	3 HA groups	6015 117
DN50 (2")		
WV-M 50-2	2 HA groups	6015 143

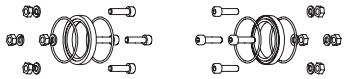
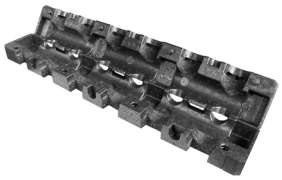
Console for wall installation MKW-WV 40 — 6015 119
for installing a pressure distributor WV-M 40 on the wall
Set (2 pieces)

For wall distributors with more than 4 HA groups absolutely use console for floor installation!

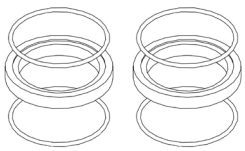
Console for floor installation MKB-WV 40/50 — 6015 120
for installing the pressure distributor WV-M supported on the floor
Set (2 pieces)

For wall distributors with up to 4 HA groups 1 set, for wall distributors with 5 or more HA groups 2 sets necessary!

■ **Part N°**

Hoval wall distributor		Part N°
	**Upgrade module EW-WV-M** For wall distributors for the additional installation of an armature group. DN20-DN32 without thermal insulation, DN 40/ 50 including thermal insulation.	
	EW-WV-M 20	DN 20 — 6013 696
	EW-WV-M 25	DN 25 — 641 191
	EW-WV-M 32	DN 32 — 641 211
	EW-WV-M 40	DN 40 — 6015 118
	EW-WV-M 50	DN 50 — 6015 145
	**Coupling console** For the installation of a HA group DN25 below at the system pressure distributor	
	HA 25 to WV-M 25	2012 818
	HA 32 to WV-M 32	2012 835
	**Pressureless kit** For the installation in system distributors WV-M for pressureless operation	
	DN 20	6012 738
	DN 25	6005 075
	DN 32	6005 423
	**Thermal insulation** EPP thermal insulation jacket for system wall distributor WV-M 25,32. Only required for expanding the system wall distributor.	
	Wall distributor type	HA groups
	DN25 (1")	
	WV-M 25-3	For 3 HA groups — 6006 956
	WV-M 25-4	For 4 HA groups — 6006 957
	WV-M 25-5	For 5 HA groups — 6008 872
	WV-M 25-6	For 6 HA groups — 6008 880
	DN32 (1¼")	
	WV-M 32-3	For 3 HA groups — 6006 958
	WV-M 32-4	For 4 HA groups — 6006 959
	WV-M 32-5	For 5 HA groups — 6008 883
	WV-M 32-6	For 6 HA groups — 6008 881
	**Adapter set DN20-DN25** for the installation of the HA group DN20 to a wall distributor DN25 or a connection set DN25. Installation height 120 mm	6013 693
	**Adapter fitting DN25-DN32** for the installation of the HA group DN25 to a wall distributor DN32.	6006 954
	Adapter fitting DN25-DN40 for the installation of the HA group DN25 to a wall distributor DN40	6014 852
	Adapter fitting DN25-DN50 for the installation of the HA group DN25 to a wall distributor DN50.	6014 864

■ **Part N°**

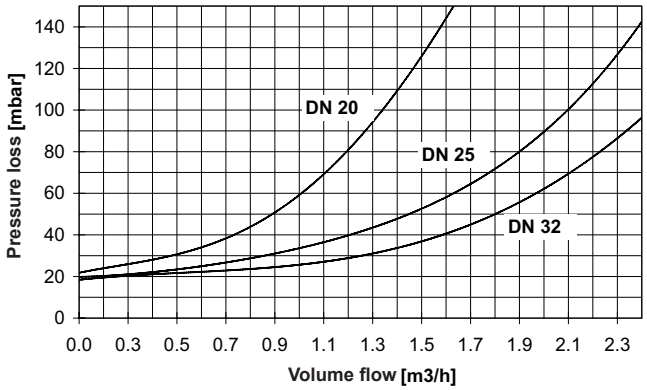
	Hoval wall distributor	Part N°
	**Adapter set DN32-DN25** for the installation of the HA group DN32 to a wall distributor DN25.	6006 953
	**Adapter set DN32-DN25** for the installation of the HA group DN32 to a connection set DN25	6007 191
	**Adapter fitting DN32-DN40** for the installation of the HA group DN32 to a wall distributor DN40 or a connection set AS40-S/NT/ HT.	6014 863
	**Adapter fitting DN32-DN50** for the installation of the HA group DN32 to a wall distributor DN50.	6014 865
	**Adapter fitting DN40-DN50** for the installation of the HA group DN40 to a wall distributor DN50.	6014 866

Technical data

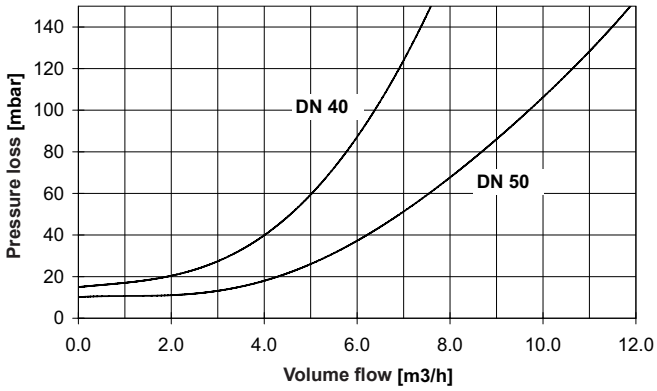
Pressure drop heating armature groups

HA-2 heating circuit without mixer

DN20, DN25, DN32

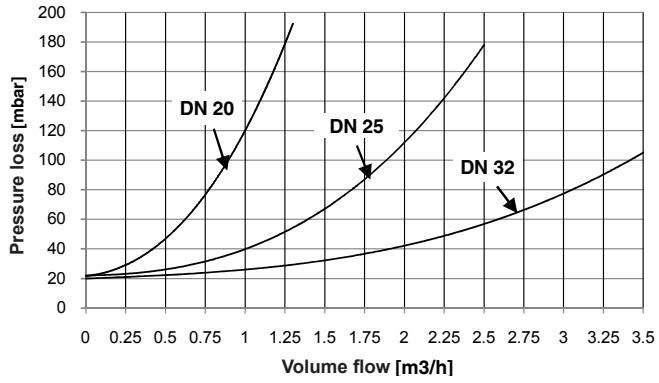


DN40, DN50

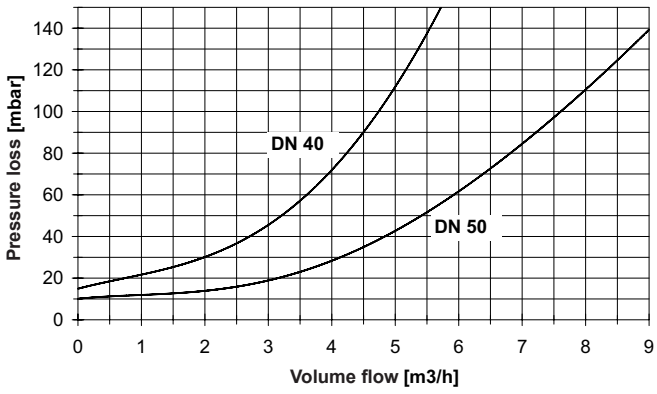


HA-3 heating circuit with mixer

DN20, DN25, DN32

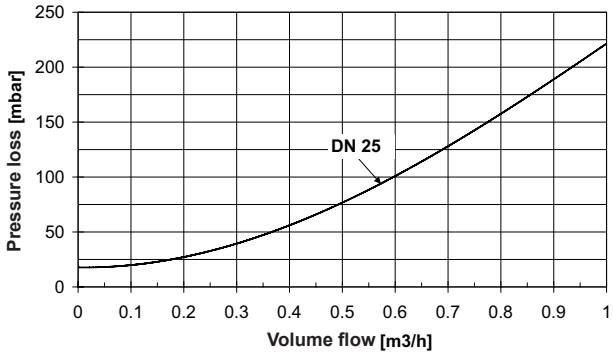


DN40, DN50



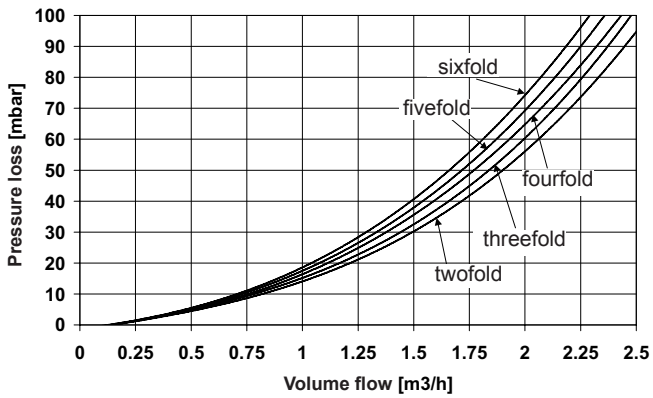
HA-3 thermal

DN25

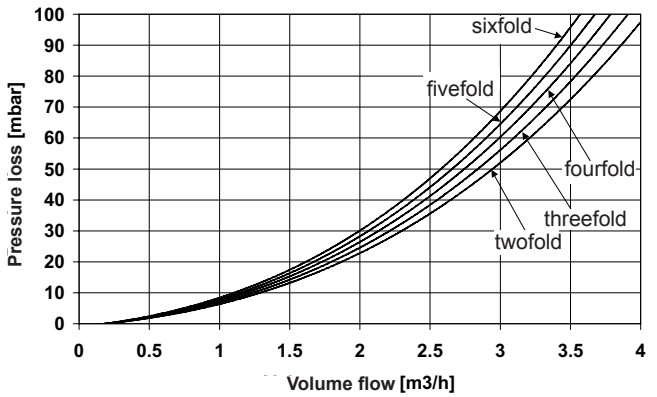


Pressure drop system wall distributor

WV-M 20-2,-3,-4,-5,-6



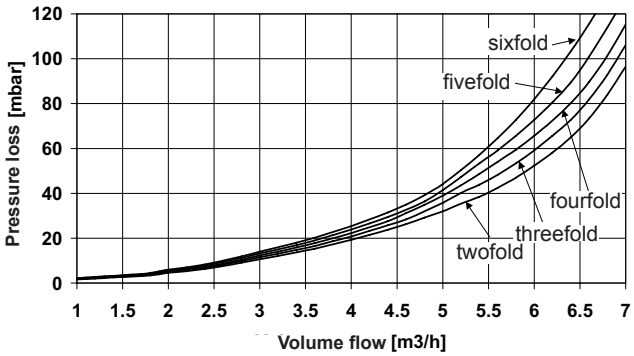
WV-M 25-2,-3,-4,-5,-6 / WV-S 25-2/3



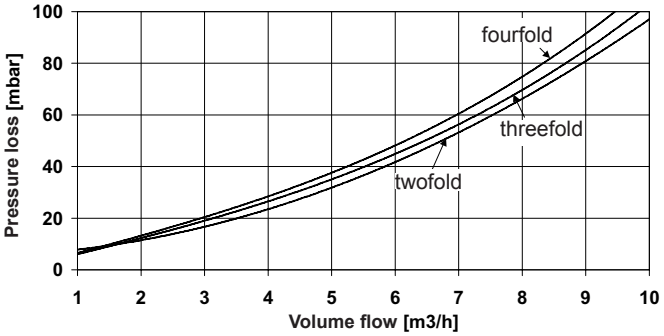
Technical data

Pressure drop system wall distributor

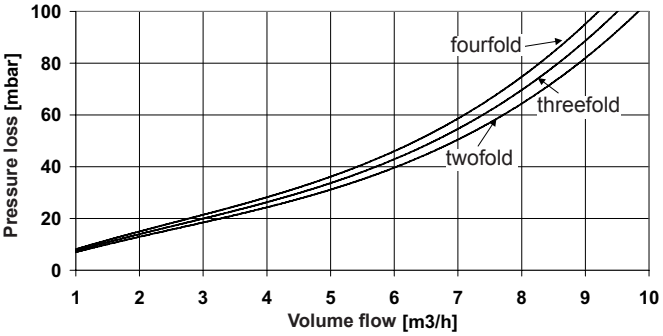
WV-M 32-2,-3,-4,-5,-6



WV-M 40-2,-3,-4

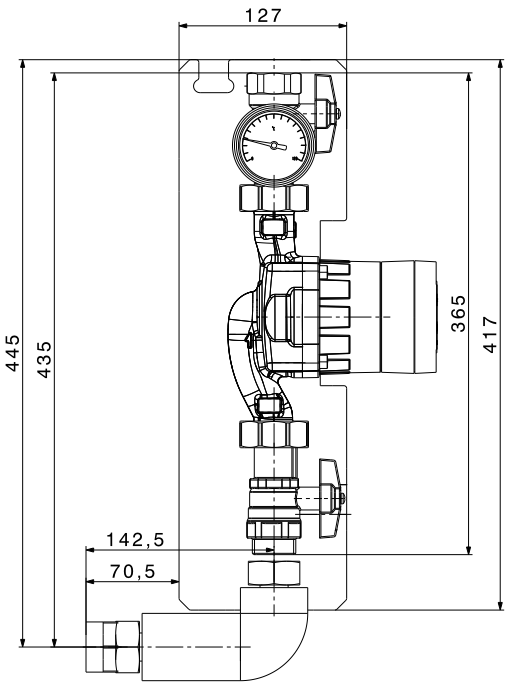


WV-M 50-2,-3



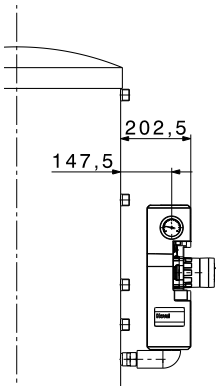
Dimensions

Loading group LG25-2 Compact

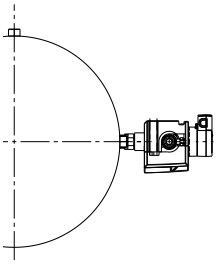


Example loading group LG25-2 Compact installed at calorifier

Page view



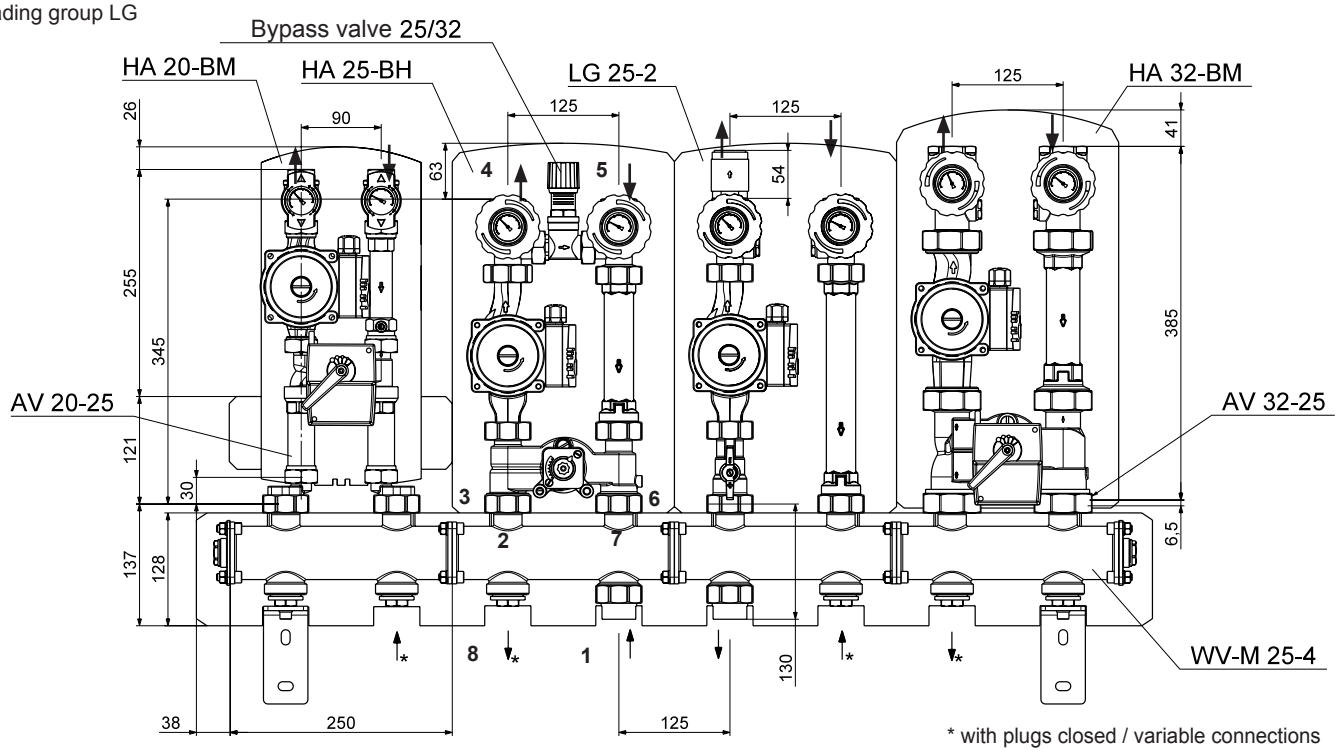
View from above



Dimensions

System wall distributor WV and heating armature groups for boiler or wall installation

with heating armature group HA
or loading group LG



* with plugs closed / variable connections

Heating armature groups

Type	Notation	max. pressure [bar]	max. temp. [°C]	kvs value [m³/h]	Dimension betw. centre lines [mm]	Installation height without insulation [mm]	Installation width including insulation [mm]	Height Insulation [mm]	3 Supply/ 6 Outflow	4 Outflow/ 5 Supply	Overall dimensions Pump [connection x mm]
LG/ HA 20-2	Loading group to calorifier or heating circuit without mixer	8	110	4,3	90	255	180	385	R 1"	Rp ¾"	1" x 130
LG/ HA 25-2				6,3	125	345	250	415	R 1½"	Rp 1"	1½" x 180
LG/ HA 32-2		6		12,3	125	385	250	448	R 2"	Rp 1¼"	2" x 180
HA 40-2				18,9	160	560	320	610	DN 40	Rp 1½"	DN40/PN6 x 250
HA 50-2				31,2	180	630	360	660	DN 50	Rp 2"	DN50/PN6 x 280
HA 20-3B...	Heating circuit with mixer	8		3,0	90	255	180	385	R 1"	Rp ¾"	1" x 130
HA 25-3B...				6,0	125	345	250	415	R 1½"	Rp 1"	1½" x 180
HA 32-3B...		6		10.8	125	385	250	448	R 2"	Rp 1¼"	2" x 180
HA 40-3B...				14,3	160	560	320	610	DN 40	Rp 1½"	DN40/PN6 x 250
HA 50-3B...				24.6	180	630	360	660	DN 50	Rp 2"	DN50/PN6 x 280

Heating wall distributor

Type	Notation	max. pressure [bar]	max. temp. [°C]	kvs value [m³/h]	Dimension betw. centre lines [mm]	Installation height without insulation [mm]	Installation width including insulation [mm]	Height Insulation [mm]	1 Supply 8 Outflow/	2 Outflow/ 7 Supply
WV-M 20-2	Heating wall distributor	5	110	8,0	90	80	440	85	Rp ¾ "	Rp 1"
WV-M 20-3				7.8			620			
WV-M 25-2				12,8	125	100	580	128	Rp 1"	Rp 1½"
WV-M 25-3				12,3			830			
WV-M 32-2				21,5	125	125	600	150	Rp 1¼"	Rp2"
WV-M 32-3				20.5			850			
WV-M 40-2				34,0	160	170	740	190	DN 50	DN 40
WV-M 40-3				32,7			1060			
WV-M 50-2				45,3	180	225	840	220	DN 65	DN 50

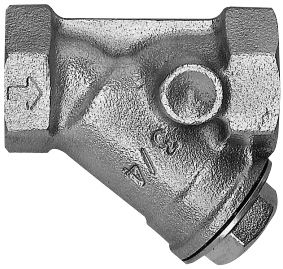
Description

Silt trap

- Type Rp ½", ¾", 1", 1¼", 1½"
- Gunmetal casing, PN 10
- Max. operating pressure: 10 bar
- Max. operating temperature 65 °C
- Sieve made of stainless steel,
  Type Rp ½", ¾", 1": size of mesh 0,4 mm
  Type Rp 1¼", 1½": size of mesh 0,5 mm

Delivery

- Silt trap packed and supplied separately.



Sludge separator

- Type DC 20 - ¾", DC 25 - 1",
  DC 32 - 1¼", DC 40 - 1½"
- Casing, collecting chamber and drain valve made of brass, PN 10
- Seals made of EPDM
- Connections:
  - upper Rp ½" with cap
  - Mains pipes (lateral)
    Type DC 20 - Rp ¾"
    Type DC 25 - Rp 1"
    Type DC 32 - Rp 1¼"
    Type DC 40 - Rp 1½"
  - Drain (below) with hose connection
- Lockable drain (below) with hose connection
- Temperature range 0-110 °C
- Max. operating pressure: 10 bar
- Max. glycol fraction: 50 %
- Particle separation capacity to 0,005 mm

Delivery

- Sludge separator packed and supplied separately.

Sludge separator with magnetic ring

- Type Dirtmag 25 - 1"
- Casing, cover and internal elements of plastic HDPE
- Connections, upper plug, drain screw, T-piece, locknut for T-piece and drain valve made of brass
- T-piece, turnable 90°
- Seals made of EPDM
- Connections:
  - upper Rp ½" with cap
  - mains pipes
    Type Dirtmag 25 - Rp 1"
  - drain (below) with hose connection
- Lockable drain (below) with hose connection
- Temperature range 0 - 90 °C
- Max. operating pressure 3 bar
- Max. glycol fraction: 30 %

Delivery

- Sludge separator delivered separately packed.

Description

Fillcontrol for heating plants

- Type: FS-BA15-¾"
- for permanent connection with the heating plant according to DIN EN 1717 with DIN DVGW approval, consisting of: lock, system separator BA, pressure reducer, silt trap, pressure gauge, drain funnel
- Connection fittings ¾"
- Max. operating pressure: 10 bar
- Min. input pressure: 1,5 bar
- Output pressure: 0,5 - 4 bar
- Drainage funnel: DN 40
- Pressure loss: 1,1 bar
- Max. filling capacity: 1270 l/h
- Max. entry temperature: 30 °C
- Max. outlet temperature: 65 °C

Delivery
- Filling station packed and supplied separately.

Thermostatic water mixer TM200

3-way mixing valve made of brass
for water temperature regulation.
Connection fittings R ¾"
Water temperature max. 90 °C
Setting range 30 - 60 °C
Throughput quantity 27 l/min (at Δp = 1 bar)
kvs value 1,62

Water level limiter

The water level limiting device 933 incorporates the magnetic transmission of the float movement to a micro-switch which enables a check to be made without lowering the water level. The electrical switching unit can be rotated by 360° and replaced without the need to drain the plant.
The water level limiting device 933.1 locks on being switched off. When the interruption has been removed, the plant can be reactivated with the help of the release button on the device.

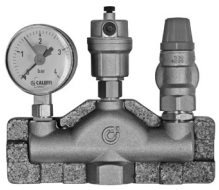
• Operating overpressure max.	10 bar
• Operating temperature max.	120 °C
• Fuse type	IP 65 according to DIN 40050
• Micro-switch	two-way contact 1 pin
• Installation position	main axis vertical
• Power-handling capacity	10 (3) A/ 250 V
• Component approval number	TÜV-HWB-01-190
• Registration number	10074

■ **Part N°**

	Fittings	Part N°
	**Silt trap** Gunmetal casing, PN 10 Max. operating temperature 65 °C Sieve made of stainless steel, Type Rp ½", ¾", 1": size of mesh 0,4 mm Type Rp 1¼", 1½": size of mesh 0,5 mm	
	DN15 - ½"	2029 487
	DN20 - ¾"	2029 488
	DN25 - 1"	2029 489
	DN32 - 1¼"	2029 490
	DN40 - 1½"	2029 491
	**Sludge separator** Casing, collecting chamber and drain valve made of brass, PN 10 Temperature range 0 - 110 °C	
	DC 20 - ¾"	2029 530
	DC 25 - 1"	2029 531
	DC 32 - 1¼"	2029 532
	DC 40 - 1½"	2029 533
	**Sludge separator with magnetic ring Dirtmag 25 - 1"** Casing, cover and internal elements of plastic HDPE Temperature range 0 - 90 °C Max. operating pressure: 3 bar Max. glycol fraction: 30% manual air-bleeding	2054 376
	**Automatic quick release air vent 3/8"** with cut-off valve	2052 976
	**Automatic quick release air vent** with cut-off valve ½" Accessory for sludge separator	2002 582
	**Thermostatic water mixer TM200** 3-way-mixing valve for regulating of the water temperature Material: brass Connection dimension R ¾" Hot water temperature max. 90°C Adjustment range 30-60°C Flow rate 27 l/min (at Δp = 1 bar) Flow coefficient value (kvs) 1.62	2005 915

Further types/sizes
see Solar/Solar armature groups

■ **Part N°**

	Part N°
 **Filling station FS-BA15-¾"** for stationary connection with the heating plant according to DIN EN 1717 with DIN DVGW approval Casing made of brass Consisting of lock, system separator BA, pressure reducer, silt trap, pressure gauge, drain funnel incl. connection fittings ¾" Max. operating pressure: 10 bar Min. inlet pressure: 1.5 bar Outlet pressure: 0.5-4 bar Drain funnel: DN 40 Pressure drop: 1.1 bar Max. filling capacity: 1270 l/h Max. entry temperature: 30°C Max. outlet temperature: 65°C	6017 054
 **Safety set** Complete with safety valve (3 bar), Pressure gauge and autom. aspirator with shut-off valve. Connection inner thread	
DN15 - 1" Range of application to 50 kW	641 184
DN20 - 1" Range of application to 100 kW	6014 390
DN25 - 1" Range of application to 200 kW	6018 709
DN32 - 1¼" Range of application to 350 kW	6018 710
 **Syr water level limiter** The water level limiting device 933 incorporates the magnetic transmission of the float movement to a micro-switch which enables a check to be made without lowering the water level. The electrical switching unit can be rotated by 360° and replaced without the need to drain the plant. The water level limiting device 933.1 locks on being switched off. When the interruption has been removed, the plant can be reactivated with the help of the release button on the device.	
Syr water level limiter 933.1 with locking	2000 117

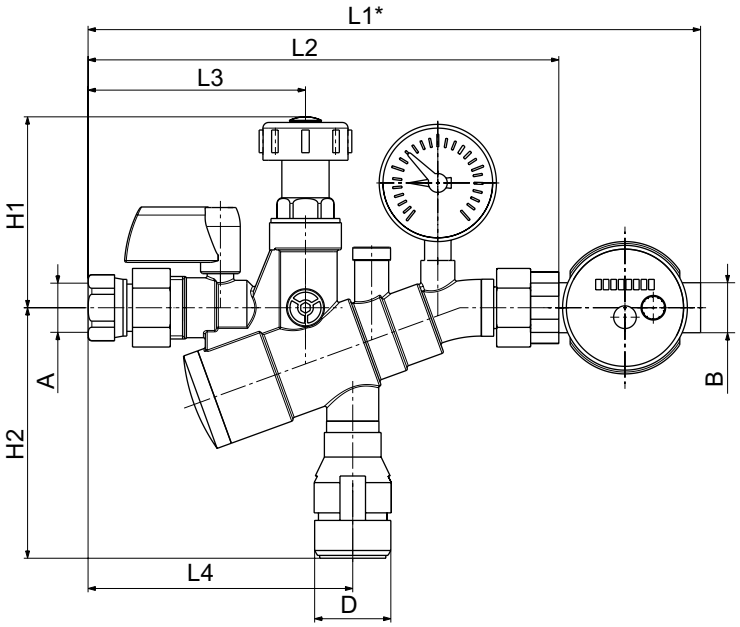
Syr water level limiter

• Operating overpressure max.	10 bar
• Operating temperature max.	120 °C
• Fuse type	IP 65 according to DIN 40050
• Micro-switch	two-way contact 1 pin
• Installation position	main axis vertical
• Power-handling capacity	10 (3) A/ 250 V
• Component approval number	TÜV-HWB-01-190
• Registration number	10074

Technical data / Dimensions

Fillcontrol for heating plants
(Dimensions in mm)

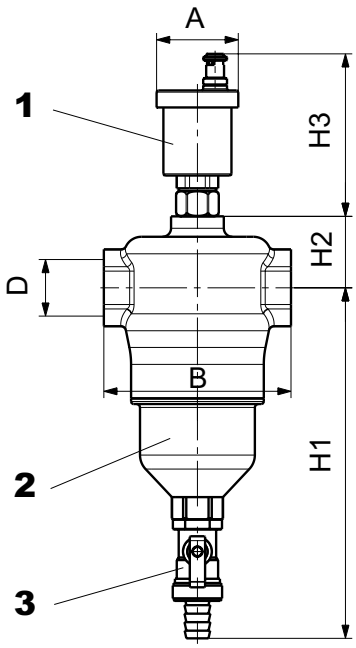
Fillcontrol for heating plants
- Type: FS-BA15 - ¾"
- for permanent connection with the heating plant according to DIN EN 1717 with DIN DVGW approval, consisting of:
  Lock, system separator BA, pressure reducer, silt trap, pressure gauge, drain funnel
- Connection fittings ¾"
- Max. operating pressure: 10 bar
- Min. input pressure: 1,5 bar
- Output pressure: 0,5 - 4 bar
- Drainage funnel: DN 40
- Pressure loss: 1,1 bar
- Max. filling capacity: 1270 l/h
- Max. entry temperature: 30 °C
- Max. outlet temperature: 65 °C



Type	A	B	D	L1	L2	L3	L4	H1	H2
FS-BA15-¾"	Rp ¾" internal	R ¾" external	40	324	249	115	140	101	133

Sludge separator
- Type DC 20 - ¾", DC 25 - 1", DC 32 - 1¼", DC 40 - 1½"
- Casing, collecting chamber and drain valve made of brass
- Seals made of EPDM
- Connections:
  - upper Rp ½" with cap
  - Mains pipes (lateral)
    Type DC 20 - Rp ¾"
    Type DC 25 - Rp 1"
    Type DC 32 - Rp 1¼"
    Type DC 40 - Rp ½"
  - Drain (below) with hose connection
- Temperature range 0 - 110 °C
- Max. operating pressure: 10 bar
- Max. glycol fraction: 50 %
- Particle separation capacity to 0,005 mm

The recommended maximum speed of the medium in the pipes is 1,2 m/s. The following table shows the maximum flow values necessary to obtain these conditions:



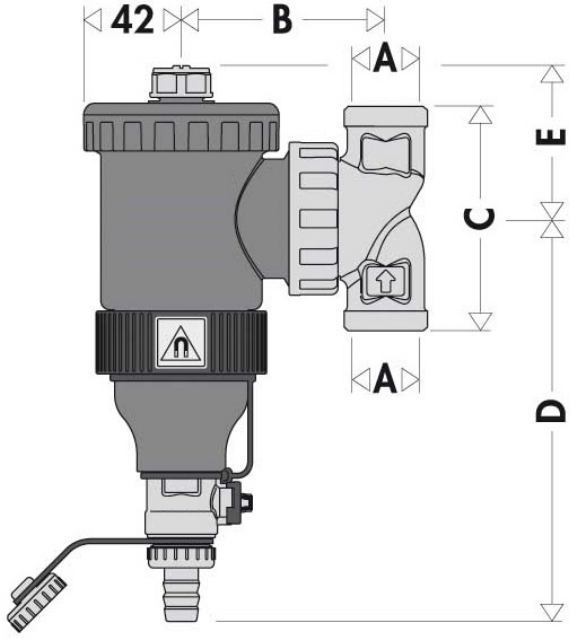
Dimensions	Ø 22-¾"-1"	1"	1¼"	1½"
l/min	22,7	35,18	57,85	90,36
m³/h	1,36	2,11	3,47	5,42

Type	DN	D	B	A	H1	H2	H3
DC 20 - ¾"	20	Rp ¾"	110	48	187,5	45	95,5
DC 25 - 1"	25	Rp 1"	110	48	187,5	45	95,5
DC 32 - 1¼"	32	Rp 1¼"	124	48	207,5	45	95,5
DC 40 - 1½"	40	Rp 1½"	124	48	207,5	45	95,5

Technical data / Dimensions

Sludge separator with magnetic ring
(Dimensions in mm)

- Type Dirtmag 25 - 1"
- Casing, cover and internal elements of plastic HDPE
- Connections, upper plug, drain screw, T-piece, locknut for T-piece and drain valve made of brass
- T-piece, turnable 90°
- Seals made of EPDM
- Connections:
  - upper Rp ½" with cap
  - mains pipes
    Type Dirtmag 25 - Rp 1"
  - drain (below) with hose connection
- Lockable drain (below) with hose connection
- Temperature range 0 - 90 °C
- Max. operating pressure 3 bar
- Max. glycol fraction: 30 %

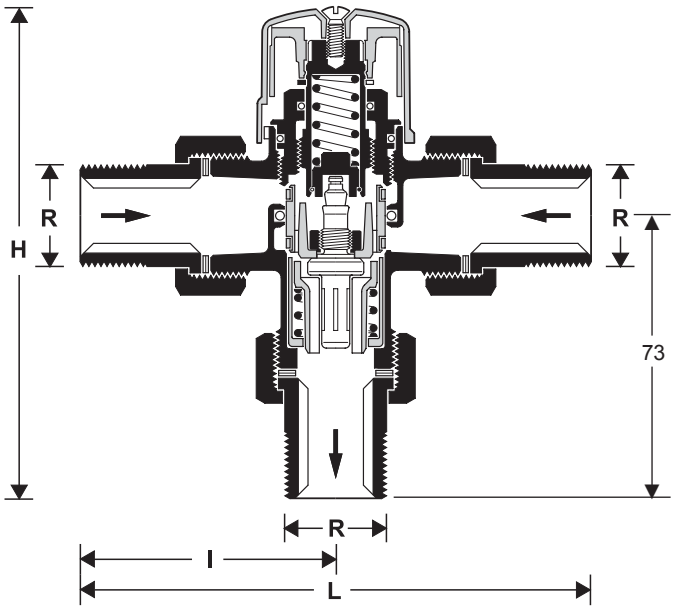


Type	DN	A	B	C	D	E	Weight kg
Dirtmag 25 - 1“	25	Rp 1"	87,5	141	172,5	65,5	1,5

Thermostatic water mixer TM200
(Dimensions in mm)

Thermostatic water mixer TM200
3-way mixing valve made of brass
for water temperature regulation.

- Operating pressure max. 10 bar
- Max. pressure difference 2,5 bar
- Installation position as required
- Water temperature max. 90 °C
- Connection fitting R ¾"
- Setting range 30 - 60 °C
  Factory setting for 40 °C
- Throughput quantity
  at Δp = 1 bar 27 l/min
- kvs value 1,62
- Adjustment precision <± 4 K



	H	L	I	R ∅	connection
TM200	128	134	67	22	¾"

Part N°

Diaphragm safety valve
The diaphragm safety valve type 1915 is designed to protect closed heating systems from over pressurisation according to DIN EN 12828. The connection size of the valve is to be determined in accordance with the capacity of the heat generator to be protected. The maximum operating pressure of the installation and the corresponding maximum response pressure of the safety valve must be observed. The valve is equipped with a separate seat seal ahead of the diaphragm. The valve can be lifted by means of a twist grip. Its body is made of high-quality, low-lead brass alloy (DN 15 - DN 32) resp. low-lead red brass alloy resistant to dezincification (DN 40-DN 50). Spring cap, diaphragm and other interior parts are made of highly heat-proof and non-ageing rubbery-elastic synthetic material. The spring is made of corrosion resistant spring steel wire. Max. admissible temperature 120 °C.

Type	G1/DN1 Entry side	G2/DN2 Exit side	Response pressure	Part N°
1915-1" 3 bar	1"	DN32 - 1¼"	3 bar	2034 775
1915-1" 4 bar	1"	DN32 - 1¼"	4 bar	2034 352
1915-1" 5 bar	1"	DN32 - 1¼"	5 bar	2034 777
1915-1" 6 bar	1"	DN32 - 1¼"	6 bar	2034 365
1915-1" 8 bar	1"	DN32 - 1¼"	8 bar	2034 776
1915-1" 10 bar	1"	DN32 - 1¼"	10 bar	2034 778
1915-1¼" 3 bar	1¼"	DN40 - 1½"	3 bar	2034 779
1915-1¼" 4 bar	1¼"	DN40 - 1½"	4 bar	2034 780
1915-1¼" 5 bar	1¼"	DN40 - 1½"	5 bar	2034 781
1915-1¼" 6 bar	1¼"	DN40 - 1½"	6 bar	2034 782
1915-1¼" 8 bar	1¼"	DN40 - 1½"	8 bar	2034 783
1915-1¼" 10 bar	1¼"	DN40 - 1½"	10 bar	2034 794
1915-1½" 4 bar	1½"	DN50 - 2"	4 bar	2034 795
1915-1½" 5 bar	1½"	DN50 - 2"	5 bar	2034 796
1915-1½" 6 bar	1½"	DN50 - 2"	6 bar	2034 353
1915-1½" 8 bar	1½"	DN50 - 2"	8 bar	2034 797
1915-1½" 10 bar	1½"	DN50 - 2"	10 bar	2034 798
1915-2" 3,5 bar	2"	DN65 - 2½"	3,5 bar	2034 799
1915-2" 4 bar	2"	DN65 - 2½"	4 bar	2034 800
1915-2" 5 bar	2"	DN65 - 2½"	5 bar	2034 801
1915-2" 6 bar	2"	DN65 - 2½"	6 bar	2034 364
1915-2" 8 bar	2"	DN65 - 2½"	8 bar	2034 802
1915-2" 10 bar	2"	DN65 - 2½"	10 bar	2034 803

Technical data / dimensions

Safety valves on heat generators
acc. to DIN EN 12828, TRD 721***

Code letter H, blow-off pressure psv 2.5 and 3.0 bar for heat generator output levels ≤ 900

G1 / G2	½ - ¾	¾ - 1	1 - 1¼	1¼ - 1½	1½ - 2	2 - 2½
pSV / bar	Blow-off power / kW					
2.5	≤ 50	≤ 100	≤ 200	≤ 350	≤ 600	≤ 900
3.0						

Code letter D/G/H, for heat generator output levels > 900 kW [1)]

DN1 / DN2	20 x 32	25 x 40	32 x 50	40 x 65	50 x 80 [4)]	65 x 100	80 x 125	100 x 150	125 x 200	150 x 250
pSV / bar	Blow-off line / kW									
2.5	198	323	514	835	1291	2199	3342	5165	5861	9484
3.0 [2)]	225	367	583	948	1466 [3)]	2493	3793	5864	6654	10824
3.5	252	411	652	1061	1640	2790	4245	6662	7446	12112
4.0	276	451	717	1166	1803	3067	4667	7213	8185	13315
4.5	302	492	782	1272	1966	3344	5088	7865	8924	14518
5.0	326	533	847	1377	2129	3621	5510	8516	9663	15720
5.5	352	574	912	1482	2292	3898	5931	9168	10403	16923
6.0	375	612	972	1580	2443	4156	6322	9773	11089	18040
7.0	423	690	1097	1783	2757	4690	7135	11029	12514	20359
8.0	471	769	1222	1987	3071	5224	7948	12286	13941	22679
9.0	519	847	1346	2190	3385	5759	8761	13542	15366	24998
10.0	563	920	1462	2378	3676	6253	9514	14705	16686	27146

Legend:

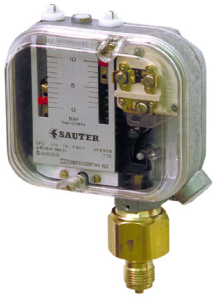
G1 / G2	Dimension in inches inlet / outlet safety valve
DN1 / DN2	Dimension in DN inlet / outlet safety valve
pSV	Response pressure safety valve in bar
Blow-off line	Dimension inlet, outlet safety valve in DN or G (thread in inch)
kW	Maximum output in kW heat generator

*** Safety valves must:**
- Have a minimum diameter of DN 15.
- Open at a pressure that does not exceed the maximum configuration pressure of the system and must be capable of preventing the maximum operating pressure from being exceeded by more than 10%, although exceeding the level by 0.5 bar is permitted if the maximum operating pressures are not more than 3 bar.

Example:

1) Hoval UltraGas 1000, max. system pressure 2.5 bar.
according to the output (1000 kW), a valve with code letters D/G/H must be selected
2) Selection of response pressure for safety valve (pSV), generally pSV - 0.5 bar or 3 bar 10% of system pressure *
in the example max. system pressure 2.5 bar + 0.5 bar = 3 bar.
3) Selection of boiler output / in example 1000 kW.
4) Selection of blow-off power, i.e. inlet and outlet dimension of safety valve.

Part N°



Pressure switch
The pressure switch DFC 17B76 F001 is used for monitoring and limiting the pressure in liquids. The robust, splash-proof, light-alloy casing and the vibration-proof snap switch enable the monitor to be used in heavy-duty applications. The product is tested to VdTÜV, pressure 100/1 and, therefore, are also suitable for use in steam-boiler (TRD604) and hot-water installations (DIN 4751). The upper and lower switching points can be set separately. The pressure sensor is made of brass for non-aggressive-media.

Setting rang	Min. switching differ.		Max. value sensor	Weight	Part N°
0 ... 10 bar	0,5 bar	40 bar	70 °C	1,1 kg	2024 278

Boiler filling- and emptying cock URS 1372
Heavy model with external, cap and chain, without key, made of brass, max. working temperature 90 °C, max. working pressure 10 bar.

Type	Working temperature	Working pressure	Connection	Part N°
URS 1372	90 °C	10 bar	½"	240 219

Reduction sleeve for emptying cock
ATUSA reduction sleeve No. 240 black, malleable cast iron fitting with internal thread.

Type	Connection	Part N°
No. 240	1" - ½"	2030 024
No. 240	1½" - ½"	2029 767
No. 240	2" - ½"	2030 025

Boiler Type		1" - ½"	1½" - ½"	2" - ½"
Uno-3	(50-90)	•		
Uno-3	(110-125)	•		
Uno-3	(160-360)		•	
Max-3	(420-2700)		•	
Max-3 plus	(420-2700)		•	

Part N°

Pressure gauge
Pressure gauge with adjustable red branded needle, adjustable at the dial, split bar, diameter 80 mm, connection vertical ½".

Working pressure	Connection	Diameter	Part N°
0 ... 6,0 bar	½"	80 mm	2029 769
0 ... 10,0 bar	½"	80 mm	2000 118

Pushbutton cock for pressure gauge
Pushbutton cock made of brass, nickel-plated,
Max. working temperature 100 °C,
Max. working pressure 25 bar.

Working pressure	Working temperature	Connection	Part N°
25 bar	100 °C	½"	2024 276

Thermometer
Thermometer TBH 80, casing made of stainless steel 1.4301, viewing glass made of normal glass, error margin classe 1 DIN-16203, diameter 80 mm.
Accessories: screw-in- and shrink-wrap sheath tube. Use for insulated tubes up to max. 2" (60,3 mm).

Type	Length mm	Part N°
0 - 100 °C	88	2029 770

Welding bush
Welding bush TBH, for thermometer TBH, made of steel

Length mm	Part N°
88	2025 204

Screw thread bush
Screw thread bush TBH, for thermometer TBH, made of brass, screw thread ½".

Length mm	Part N°
88	2029 427

Description

Hydraulic switches with deaerator MHK..., MH..

- Air and gas separator with dirt and mud backstop, for permanent degassing and clearing of the heating medium of mud.
- With hydraulic switch for the isolation of the delivered flows in the boiler
- Welded pressure vessel made of steel
- Cleaning opening in the soil
- Exhaust automat with automatic shut-off valve
- Casing inclusive insulation.

Hydraulic switches MHK (25), MHK (32)

- Welded pressure vessel made of steel with connecting pieces, screwcaps and seals
- Cleaning opening in the soil
- Exhaust automat with automatic shut-off valve
- Casing inclusive insulation.

Hydraulic switches with deaerator MH (40) up to MH (200)

- Welded round pressure vessel made of steel with connecting pieces, screwcaps and flanges
- Cleaning opening in the soil
- Exhaust automat with automatic shut-off valve
- Fitting ½" for the temperature sensor in the cover
- Rinsing and emptying device 1" on the soil and the cover
- Foot which is in the height adjustable for fastening to the soil
- Casing inclusive insulation.

■ **Part N°**

Hydraulic switches with deaerator — **Part N°**

MHK (25), MHK (32)

Complete insulated and encased, inclusive screwcaps and seals (suitably Hoval module wall separator). Exhaust automat with automatic shut-off and emptying mechanism in the soil.

Hydraulic switches Type	
MHK (25)	242 880
MHK (32)	242 881

MH (40) - MH (200)
completely insulated and encased, inclusive Victaulic flanges, ½“ fitting for the temperature sensor, exhaust automat with automatic shut-off valve, rinsing and emptying device on the soil and the cover.

Hydraulic switches Type	
MH (40)	6032 313
MH (50)	6032 314
MH (65)	6032 307
MH (80)	6032 308
MH (100)	6032 315
MH (125)	6032 310
MH (150)	6032 311
MH (200)	6032 312

Technical data

Hydraulic switches (25-65)

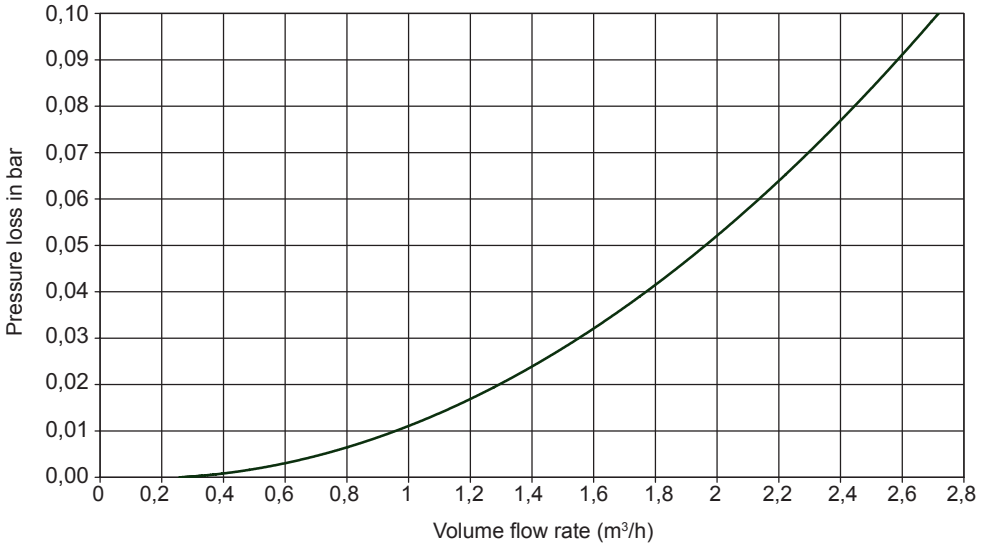
Type		(25)	(32)	(40)	(50)	(65)
• Output at Δt = 20 K	kW	50	70	135	135	180
• Delivery	m^3/h	2	3	6	6	8
• Pressure losses				see flow characteristic		
• Connection dimension		Rp 1½"	Rp 2"	DN 40	DN 50	DN 65
• Cleaning opening		1"	1"	2“	2“	2“
• Emptying mechanism		1"	1"	1“	1“	1“
• Rinsing system		-	-	1“	1“	1“
• Sleeve with immersion pocket for temperature sensor		-	-	½“	½“	½“
• Sleeve for magnetite separator		2 x ¾"	2 x ¾"	4 x ¾“	4 x ¾“	4 x ¾“
• Working / test pressure	bar	6 / 9	6 / 9	6 / 9	6 / 9	6 / 9
• Max. operation temperature	°C	110	110	110	110	110

Hydraulic switches (80-200)

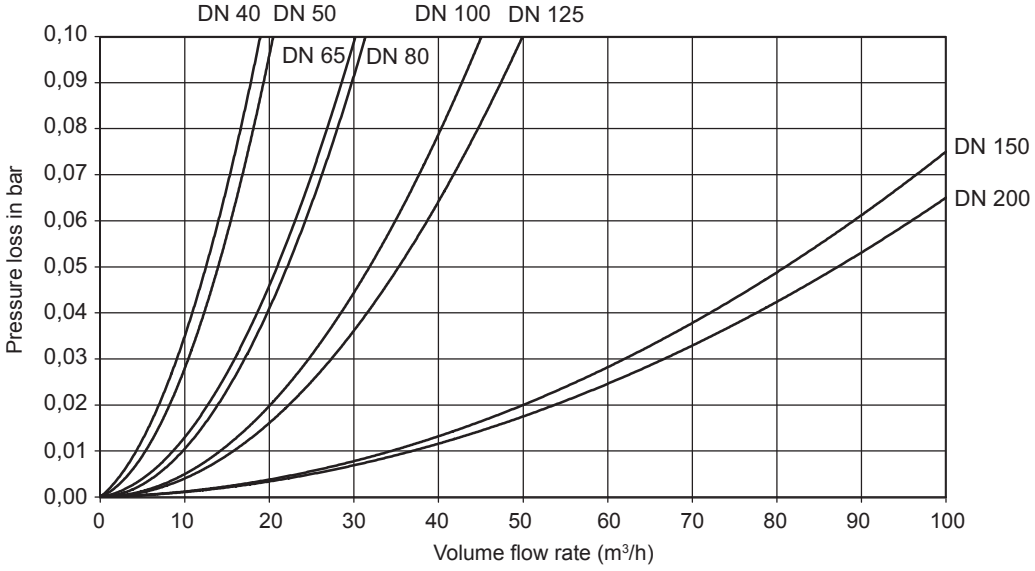
Type		(80)	(100)	(125)	(150)	(200)
• Output at Δt = 20 K	kW	280	450	700	1150	2300
• Delivery	m^3/h	12	20	30	50	100
• Pressure losses				see flow characteristic		
• Connection dimension		80/PN6	100/PN6	125/PN6	150/PN6	200/PN6
• Cleaning opening		2“	2“	2“	2“	2“
• Emptying mechanism		1"	1"	1“	1“	1“
• Rinsing system		1“	1“	1“	1“	1“
• Sleeve with immersion pocket for temperature sensor		½“	½“	½“	½“	½“
• Sleeve for magnetite separator		4 x ¾“	4 x ¾“	4 x ¾“	4 x ¾“	4 x ¾“
• Working / test pressure	bar	6 / 9	6 / 9	6 / 9	6 / 9	6 / 9
• Max. operation temperature	°C	110	110	110	110	110

Technical data

Flow characteristic
Hydraulic switches MHK (25), MHK (32)

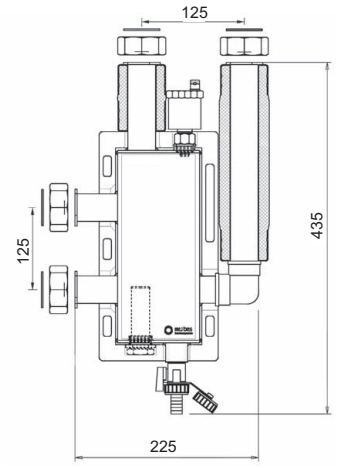


Flow characteristic
Hydraulic switches MH (40) to MH (200)

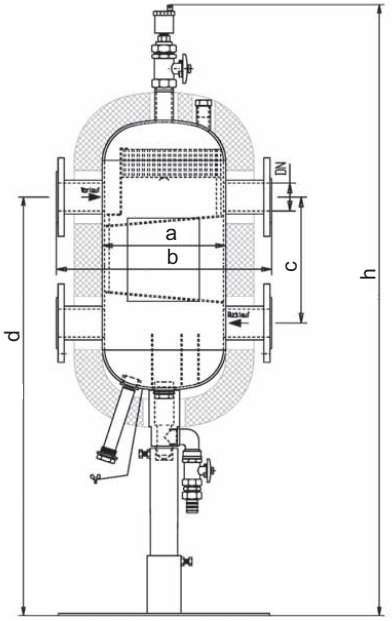


Dimensions

Dimensions
Hydraulic switches MHK (25), MHK (32)

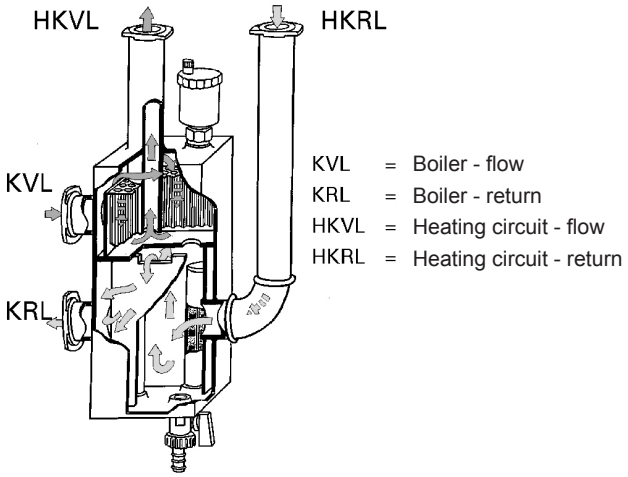


Dimensions
Hydraulic switches MH (40) to MH (200)

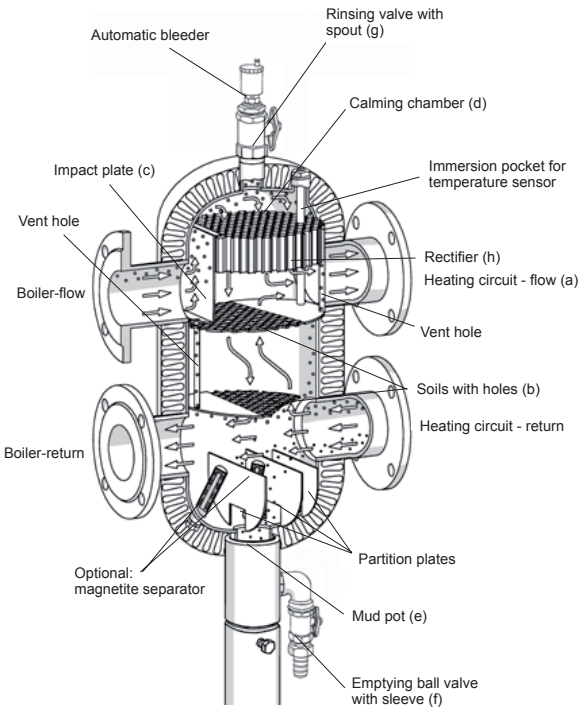


Type	a	b	c	d	h
(40)	220	382	225	700-1100	1000-1400
(50)	220	382	225	700-1100	1000-1400
(65)	220	382	225	700-1100	1000-1400
(80)	220	382	225	700-1100	1000-1400
(100)	300	500	340	900-1300	1250-1650
(125)	300	500	340	900-1300	1250-1650
(150)	420	660	450	1050-1450	1500-1900
(200)	420	660	450	1050-1450	1500-1900

Connection technology
Hydraulic switches MHK (25), MHK (32)

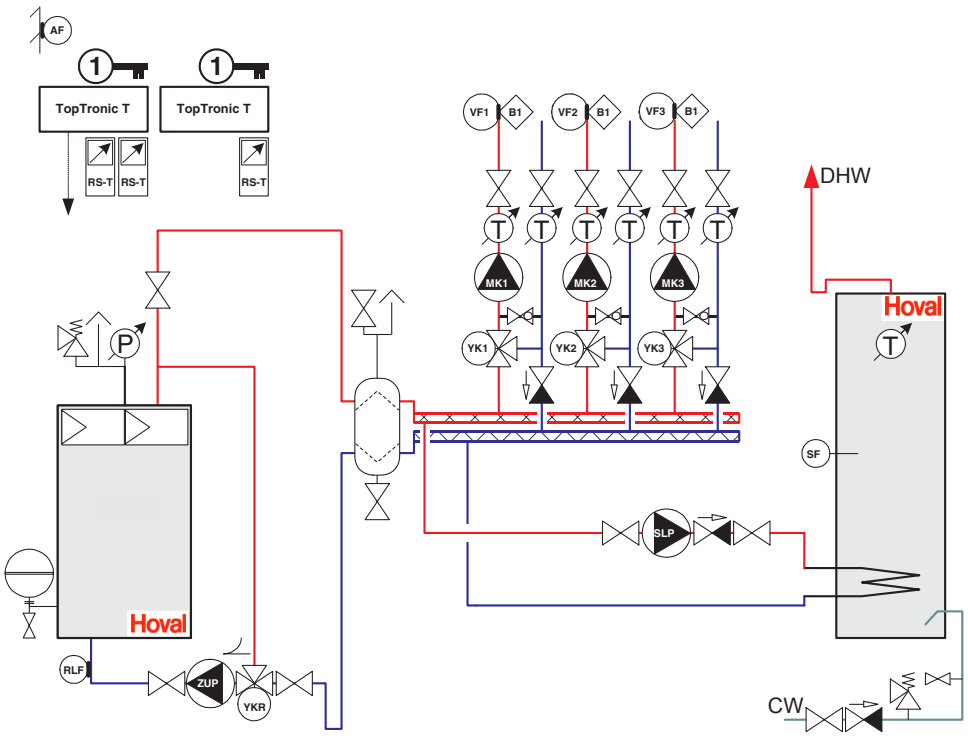


Connection technology
Hydraulic switches MH (40) to MH (200)



Examples

Hydraulic schematic BBA100



RS-T	Room station	MK1	Pump mixing circuit 1	YK1	Actuator mixer 1
AF	Outdoor sensor 1	MK2	Pump mixing circuit 2	YK2	Actuator mixer 2
RLF	Return flow sensor	MK3	Pump mixing circuit 3	YK3	Actuator mixer 3
VF1	Flow sensor 1	SLP	Calorifier loading pump	YKR	Actuator return mixer
VF2	Flow sensor 2	ZUP	Feed pump		
VF3	Flow sensor 3				
SF	Calorifier sensor				
B1	Flow temperature monitor (optional)				

Description

Hoval diaphragm-type expansion chambers

Reflex
- For closed heating and cooling water systems. Works on the static pressure maintenance principle using a nitrogen buffer. The gas chamber and water chamber are separated from each other by a diaphragm.
- with threaded connectors
- non-replaceable diaphragm, permitted operating temperature 70 °C

Reflex F 18-24
- flat type container
- for operating overpressure to 3 bar
- for wall installation
- white coated

Reflex NG 18-25
- for operating overpressure to 6 bar
- for wall installation
- red coated

Reflex NG 35-140 or N 200-1000
- for operating overpressure to 6 bar
- free-standing type with feet
- red coated

Reflex S
- for use in solar systems
- for wall installation- red coated
- max. operating pressure 10 bar
- max. operating temperature 120 °C
- diaphragm according to DIN 4807 part 3 permitted operating temperature 70 °C

Delivery
- expansion chamber delivered separately packed.

On-site
- safety valve / pressure gauge

wall type reflex F
Type
18
24

wall type reflex NG
Type
18/6
25/6

free-standing type reflex NG/N
Type
NG 35/6
NG 50/6
NG 80/6
NG 100/6
NG 140/6
N 200/6
N 250/6
N 300/6
N 400/6
N 500/6
N 600/6
N 800/6
N 1000/6

type
S 12
S 18
S 25
S 33

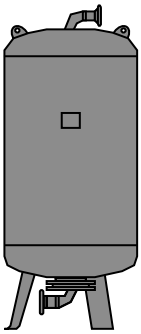
Approval
according to Pressure Equipment Directive 97/23EC

Series-connected containers

- Made of sheet steel, standing from V60, with feet
- necessary for plants with return flow temperatures > 70 °C or in cooling plants ≤ 0 °C
- can also be used as buffer chamber
- for operating overpressure to 10 bar
- red coated

Delivery
- series-connected container delivered separately packed.

type
V6
V12
V20



Series-connected containers

- Made of sheet steel, standing, with feet
- necessary for plants with return flow temperatures > 70 °C or in cooling plants ≤ 0 °C
- can also be used as buffer chamber
- for operating overpressure to 10 bar
- red coated

Delivery
- series-connected container delivered separately packed.

type
V60/10
V200/10
V300/10
V350/10

Approval
according to Pressure Equipment Directive 97/23EC

■ **Part N°**

Expansion chambers — Part N°

Reflex F
Flat type container for wall installation,
colour white.
Model for operating overpressure to 3 bar.

Reflex Type	H mm	B mm	T mm	A	Part N°
F 18	444	350	158	G ¾"	2006 627
F 24	444	350	180	G ¾"	2006 628

Reflex NG
For wall installation, colour red.
Model for operating overpressure to 6 bar.

Reflex Type	Ø D mm	H mm	A	Part N°
NG 18/6	280	345	R ¾"	242 790
NG 25/6	280	465	R ¾"	242 791

Reflex NG
Free-standing device with feet, colour red.
Model for operating overpressure to 6 bar.

Reflex Type	Ø D mm	H mm	A	Part N°
NG 35/6	354	460	R ¾"	242 792
NG 50/6	409	493	R ¾"	2026 088
NG 80/6	480	565	R 1"	2026 089
NG 100/6	480	670	R 1"	2026 090
NG 140/6	480	912	R 1"	2026 091
N 200/6	634	760	R 1"	242 797
N 250/6	634	890	R 1"	242 798
N 300/6	634	1060	R 1"	242 799
N 400/6	740	1070	R 1"	242 800
N 500/6	740	1290	R 1"	242 801
N 600/6	740	1530	R 1"	2006 651
N 800/6	740	1995	R 1"	2006 652
N 1000/6	740	2410	R 1"	2006 653

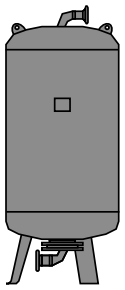
Reflex S
for wall installation, red coated.
Execution for operating overpressure to 10 bar.
Without fastening clip

Reflex Type	Ø D mm	H mm	A	Part N°
S 12/10	280	300	R ¾"	2006 635
S 18/10	280	380	R ¾"	2006 636
S 25/10	280	500	R ¾"	2006 637
S 33/10	354	450	R ¾"	2006 638

Series-connected container
Made of sheet steel, standing, red coated.
Execution for operating overpressure to 10 bar.

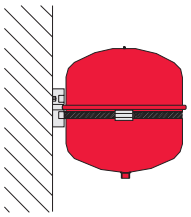
Type	Ø D mm	H mm	A	Part N°
V 6/10	206	245	R ¾"	2032 084
V 12/10	280	285	R ¾"	2032 085
V 20/10	280	360	R ¾"	2032 086

Part N°



Series-connected container
Made of sheet steel, standing, with feet,
colour red.
Model for operating overpressure to 10 bar.

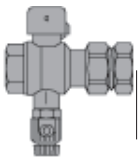
Type	Ø D mm	H mm	A	Part N°
V 60/10	409	730	R 1"	2006 864
V 200/10	634	900	DN40	242 824
V 300/10	634	1200	DN40	242 825
V 350/10	634	1340	DN40	242 827



Console with strap-on band 242 878
for Reflex N type 18-25, vertical installation,
container connection upwards or downwards.

container connection side

Quick connection SU R¾ x ¾ 2427 71
for diaphragm-type expansion chambers in
closed heating and cooling water plants.
With shut-off valve against unintended
closing (check ball) and drain according
to DIN 4751 Part 2,
tested by TÜV
Connection R ¾"

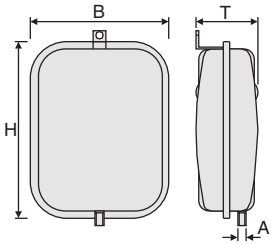


container
connection
side

Quick connection SU R 1 x 1 2427 72
for diaphragm-type expansion chambers in
closed heating and cooling water plants.
With shut-off valve against unintended
closing (check ball) and drain according
to DIN 4751 Part 2
tested by TÜV
Connection R 1" PN10/120 °C

Technical data / Dimensions

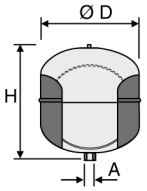
Hoval Reflex pressure expansion chambers



Reflex F 18-24
- flat type container, colour white
- for operating overpressure to 3 bar
- pre-pressure 1.5 bar [1]
- permitted operating temperature for the diaphragm 70 °C

Type			F 18	F 24
• Container capacity		litre	18	24
• Usable content		litre	16	22
• Height	H	mm	444	444
• Width	B	mm	350	350
• Depth	T	mm	158	180
• Connection dimension	A		G ¾"	G ¾"
• Weight		kg	9,5	9,8
• Pre-pressure [1]		bar	1,5	1,5
• Max. operating pressure		bar	3	3

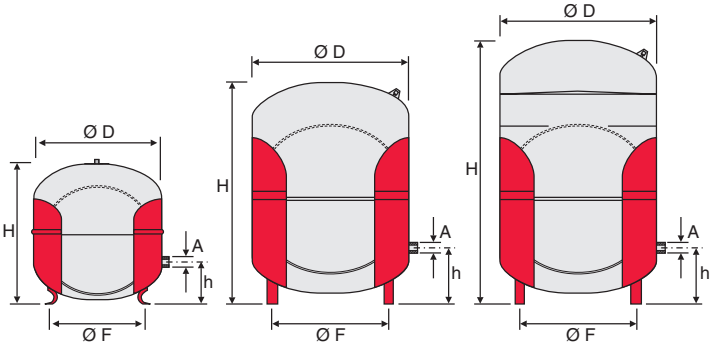
[1] The necessary pre-pressure must be ensured before installation in accordance with the plant requirements!



Reflex NG 18-25
- wall mounted container, colour red
- for operating overpressure to 6 bar
- pre-pressure 1.5 bar [1]
- permitted operating temperature for the diaphragm 70 °C

Type			NG 18/6	NG 25/6
• Container capacity		litre	18	25
• Usable content		litre	16,2	22,5
• Diameter Ø	D	mm	280	280
• Height	H	mm	345	465
• Connection dimension	A		R ¾"	R ¾"
• Weight		kg	3,5	4,6
• Pre-pressure [1]		bar	1,5	1,5
• Max. operating pressure		bar	6	6

[1] The necessary pre-pressure must be ensured before installation in accordance with the plant requirements!



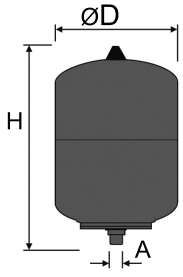
Reflex NG 35-140; N 200-1000
- free-standing container with feet, red coated
- for operating overpressure to 6 bar
- pre-pressure 1.5 bar [1]
- permitted operating temperature for the diaphragm 70 °C

Type			NG					N							
			35/6	50/6	80/6	100/6	140/6	200/6	250/6	300/6	400/6	500/6	600/6	800/6	1000/6
• Container capacity		litre	35	50	80	100	140	200	250	300	400	500	600	800	1000
• Usable content		litre	31	45	72	90	126	180	225	270	360	450	540	720	900
• Diameter Ø	D	mm	354	409	480	480	480	634	634	634	740	740	740	740	740
• Height	H	mm	460	493	565	670	912	760	890	1060	1070	1250	1530	1995	2410
• Height	h±3	mm	130	175	173	173	173	225	225	225	225	225	245	245	245
• Diameter Ø	F	mm	320	340	370	370	370	485	485	485	570	570	570	570	570
• Connection dimension	A		R ¾"	R ¾"	R 1"	R 1	R 1"	R 1"	R 1"	R 1"	R 1"	R 1"	R 1"	R 1"	R 1"
• Weight		kg	5,4	8,6	11,5	13	16,6	24,2	27,7	29,2	45,5	52,2	66,5	107	140
• Pre-pressure [1]		bar	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
• Max. operating pressure		bar	6	6	6	6	6	6	6	6	6	6	6	6	6

[1] Other pre-pressures are possible by pumping up or evacuating the gas buffer.

Technical data / Dimensions

Hoval Reflex pressure expansion chambers



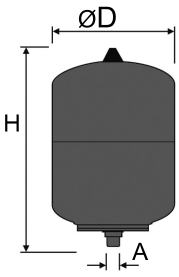
Reflex S 12-33
- wall mounted container, red coated
- for operating overpressure to 10 bar
- pre-pressure 1,5 bar [1]
- permitted operating temperature for the diaphragm 70 °C

Type			S 12/10	S 18/10	S 25/10	S 33/10
• Container capacity		litre	12	18	25	33
• Usable content		litre	11	14	19	23
• Diameter	D	mm	280	280	280	354
• Height	H	mm	300	380	500	450
• Connection dimension		¾"	¾"	¾"	¾"	¾“
• Weight		kg	3,5	4,5	5,5	6,3
• Pre-pressure [1]		bar	1,5	1,5	1,5	1,5
• Max. operating pressure		bar	10	10	10	10

[1] The necessary pre-pressure must be ensured before installation in accordance with the plant requirements! In most cases 2 bar can be assumed; in this case the plant filling pressure must be set at 2,5 bar!

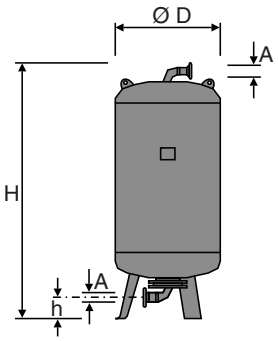
Technical data / Dimensions

Reflex Series-connected container V 6-20
- red coated
- necessary for plants with return flow temperatures > 70 °C



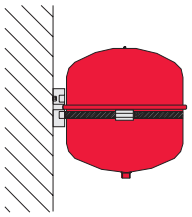
Reflex Type	Ø D mm	H mm	A	weight kg
V 6/10	206	245	¾"	2
V 12/10	280	285	¾"	3
V 20/10	280	360	¾"	4

Series-connected container
for operating overpressure to 6 bar.
Sheet steel, free-standing on feet, colour red.



Type	Ø D mm	H mm	h mm	A	weight kg	capacity l
V 60	409	730	170	R 1“	23	60
V 200	634	900	142	DN 40	43	200
V 300	634	1200	142	DN 40	48	300
V 350	634	1340	142	DN 40	51	350

Console with strap-on band
for Reflex NG type 18-25, vertical installation,
container connection upwards or downwards.



Engineering

Regulations and Guidelines
The following regulations and guidelines must be observed.
- Hoval: Technical Information and Installation Instructions
- guidelines SWKI-93-1; safety equipment for heating plants.
- hydraulics regulations

Sizing of the expansion chamber

Expansion volume V_N
The calculation is based on the formula

$$V_N = V_A \cdot f \cdot x \text{ (litres)}$$

V_A = water capacity of the cold heating plant
f = thermal expansion factor
x = excess to take account of inaccuracies in determining V_A and unavoidable small water losses.

Water capacity V_A
As a rule of thumb the following may be assumed:
- heating walls:
  approx. 9 litres/kW nominal capacity
- pipe radiators:
  approx. 11 litres/ kW nominal capacity
- underfloor heating:
  approx. 20 litres/kW nominal capacity

Expansion factor f
The mean water temperature t_m is determined as the basis for the thermal expansion factor f.

$$t_m = \frac{(t_V + t_R)}{2} \Rightarrow f$$

t_V = highest plant flow temperature
t_R = highest plant return flow temperature
t_m = mean water temperature in the plant

Excess factor x
for the individual plant types and for different nominal capacities Q (kW)
x = 3 to max. 30 kW
x = 2 for over 30 to 150 kW
x = 1.5 for over 150 kW

Notes
- The possible intake capacity must be at least V_N.
- The selection table allows a quick estimate for plants equipped with safety valves designed to react at 3 bar.
- It is essential to avoid a too small capacity. In case of doubt the next largest chamber volume should be selected.

Selection of series-connected containers
From 50 °C plant return flow temperature we recommend the installation of a series-connected container.
From 70 °C plant return flow temperature a series-connected container must be installed.

Rule of thumb for sizing the series-connected container:
Capacity of the series-connected container = 10 % of expansion volume V_N with 70 °C return flow temperature, for higher temperatures 20 % of the expansion volume V_N.

mean water temperature	t_m [°C]	30°	40°	50°	60°	70°	80°	90°	100°
thermal expansion factor	f	0,004	0,008	0,012	0,017	0,023	0,029	0,036	0,043

Thermal expansion factor for plant water with frost protection agent (e.g. glycol).

proportional addition in %	mean water temperature t_m [°C] 20	30	40	50	60	70	80	90	100	110	120	130
10 %	0,005	0,007	0,011	0,015	0,020	0,026	0,032	0,039	0,046	0,055	0,063	0,073
20 %	0,008	0,011	0,014	0,018	0,023	0,029	0,035	0,042	0,049	0,058	0,067	0,076
30 %	0,010	0,013	0,016	0,021	0,026	0,031	0,038	0,044	0,052	0,060	0,069	0,078
40 %	0,015	0,017	0,021	0,025	0,030	0,036	0,042	0,049	0,056	0,064	0,073	0,082
50 %	0,018	0,020	0,024	0,028	0,033	0,039	0,045	0,052	0,059	0,067	0,076	0,085

Engineering
Notes for Implementation

Installation

Series-connected containers

- To reduce the temperature of the expansion volume series-connected containers are installed between the plant and the expansion chamber.
- Series-connected containers protect the diaphragm of the expansion chamber from temperature overload. The temperature of the diaphragm may not exceed 70 °C in the long term. In a cooling system a temperature ≤ 0 °C should be avoided to prevent the diaphragm from freezing onto the container.
- Generally it is sufficient to size a series-connected container at 10 to 20 % of the maximum water capacity of the expansion chambers. The minimum size depends on the individual plant characteristics.
- With solar plants the size should correspond to the collector capacity.
- The series-connected containers must not be insulated.

Expansion chambers

- Expansion chambers may not be installed immediately adjacent to heat radiating parts such as flues etc.
- The expansion chamber should preferably be connected with the heating system at the boiler drainage point via a shut-off fitting with a removable or sealable activating device. In this way it is not necessary to drain the whole plant when servicing the container.
- The expansion chamber should preferably be connected to the suction side of the circulation pump in the return flow pipe. This makes the pressure situation in the plant significantly simpler and gasification or cavitation in the circulation pumps is largely avoided.
- In connection with the return flow system an expansion chamber connected to the return flow of the heating system can affect the system as follows: If the initially cold boiler water is heated while the pump is switched off and the mixer is closed, the water expands in the direction of the expansion chamber.
  With a switching arrangement as in fig. 1 this means that despite the return flow loop warm boiler water reaches the return flow and can, as described above, heat up the radiators.

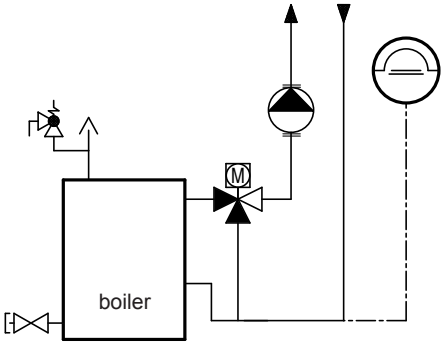
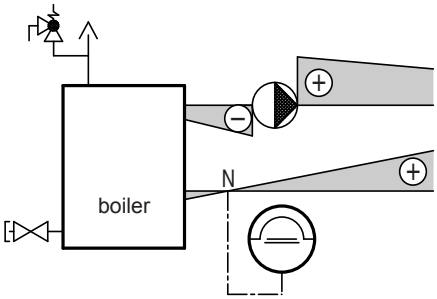


fig.1 wrongly connected expansion chamber



Heat generator with low through-flow resistance

- However, if the expansion chamber is connected as shown in fig. 2 warm (and therefore lighter) boiler water can only rise up the expansion pipe and never reach the radiators via the descending part of the return flow loop.

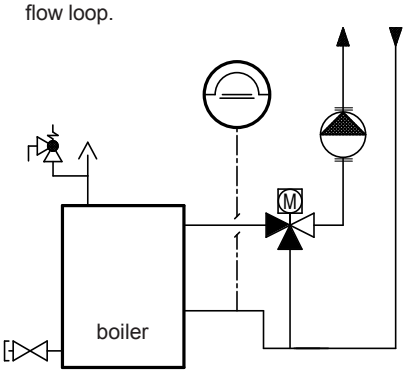
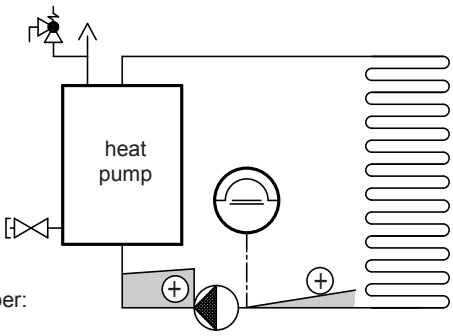


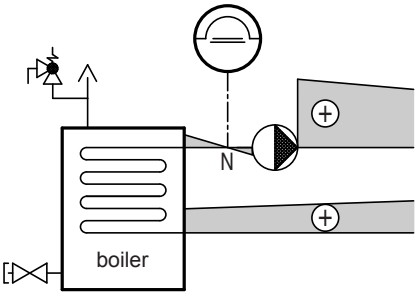
fig. 2 correct connection of the expansion chamber: expansion belongs to heat generator

With heat pump plants and other low temperature heating systems the circulation pump is often the warmest part of the plant, because the heat from the motor warms up the heating water further. This increases the danger of calcium precipitation in the circulation pump Therefore it is to be recommended to install the pump in the colder return flow in such plants.



Best position of the 'neutral point' and installation of the circulation pump and connection of the pressure expansion chamber

Connect the pipe to the expansion chamber as close as possible to the suction inlet of the pump. In this way the whole circulation remains in a state of overpressure compared with the static pressure during operation.



Heat generator with large through-flow resistance

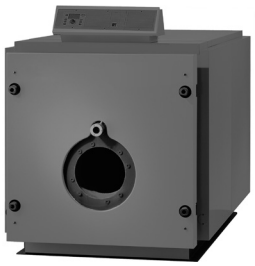
■ **Part N°**

Oil burners

to Uno-3, Max-3, THW-I NT E, THW-I HT E, THD-U E, THDSD-I

Part N°

The details in the table are recommendations. Other combinations are possible.



Oil burners	Uno-3	Max-3	THW-I NT E	THW-I HT E	THD-U E	THDSD-I	Part N°
Oil burner BTL 14 P; 2-stage	110,125						**2045 674**
Oil burner BTL 20 P; 2-stage	160,190,220						**2041 874**
Oil burner BTL 26 P; 2-stage	250						**2037 074**
Oil burner SPARK 35 DSG; 2-stage	280						**2045 639**
Oil burner TBL 45 P DACA; 2-stage	320,360				500		**2045 679**
Oil burner TBL 60 P DACA; 2-stage		420			650,800		**2037 225**
Oil burner TBL 85 P DACA; 2-stage		530,620			1000		**2045 680**
Oil burner TBL 105 P DACA; 2-stage		750			1200		**2037 087**
Oil burner TBL 130 P DACA; 2-stage				10/05	1500		**2045 678**
Oil burner TBL 160 P DACA; 2-stage		1000			2000		**2037 784**
Oil burner TBL 210 P; 2-stage		1250,1500		13/08	2500		**2035 319**
Oil burner BT 250 DSPG; 2-stage progress							**2045 651**
Modulation kit cTRON 08			23/15				**2045 724**
Oil burner BT 250 DSG 4T; 2-stage		1800		17/10,22/15	3000,3500	25/20,30/25	**2038 735**
Oil burner BT 300 DSPG; 2-stage progress							**2045 656**
Modulation kit cTRON 08			28/20				**2045 724**
Oil burner BT 300 DSG 4T; 2-stage		2200,2700		27/20	4000	35/30	**2045 654**
Oil burner GI 350 DSPG; 2-stage progress							**2040 715**
Modulation kit cTRON 08			35/25	34/25		45/40,55/50	**2045 724**
Oil burner GI 420 DSPG; 2-stage progress							**2045 676**
Modulation kit cTRON 08			40/30	39/30,43/35			**2045 724**
Oil burner GI 510 DSPG; 2-stage progress							**2045 677**
Modulation kit cTRON 08			45/35,50/40	48/40		70/60	**2045 724**
Oil burner GI 1000 DSPG; 2-stage progres			55/45,60/50,	54/45,59/50,			**2045 675**
Modulation kit cTRON 08			70/60,80/70	68/60,78/70		90/80,110,100	**2045 724**

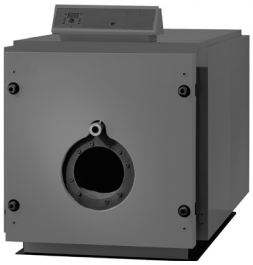
■ **Part N°**

Gas burners

to Uno-3, Max-3, CompactGas, THW-I NT E, THW-I HT E, THD-U E, THDSD-I

Part N°

The details in the table are recommendations. Other combinations are possible.



Gas burners	Uno-3	Max-3	CompactGas	THW-I NT E	THW-I HT E	THD-U E	THDSD-I	Part N°
Gas burner, 2-stage, BTG 28 P	190,220							**2045 688**
Gas burner, 2-stage, TBG 85 P		530,620				1000		**2032 031**
Gas burner, 2-stage, TBG 85 PN pneu m		530,620						**2044 595**
Gas burner, 2-stage, TBG 120 P		750	1000			1200,1500		**2045 689**
Gas burner, 2-stage, TBG 120 PN pneu m		750	1000					**2035 102**
Gas burner, 2-stage, TBG 150 P		1000	1400		10/05	2000		**2045 690**
Gas burner, 2-stage, TBG 150 PN pneu m		1000	1400					**2034 884**
Gas burner, 2-stage, TBG 210 PN pneu m		1250,1500	1800					**2045 692**
Gas burner, 2-stage, TBG 210 P		1250,1500	1800		13/08	2500		**2045 691**
Gas burner, 2-stage, BGN 250 P			2200		17/10	3000		**2045 685**
Gas burner, 2-stage, BGN 300 P		1800,2200	2800	23/15,28/20	22/15	3500,4000	25/20,30/25	**2045 686**
Gas burner, 2-stage, BGN 350 P		2700			27/20		35/30	**2045 687**
Gas burner, pneu. modul. GI 500 DSPGN ME				35/25,40/30, 45/35	34/25,39/30, 43/35		45/40,55/50	**2045 697**
Gas burner, pneu. modul. GI 700 DSPGN ME				50/40,55/45	48/40,54/45		70/60	**2045 699**

Low-NOx burners

Gas burner, 2-stage & Low NOx, BTG 15 P	110,125							**2045682**
Gas burner, 2-stage & Low NOx, BTG 20 P	160							**2045683**
Gas burner, 2-stage & Low NOx, TBG 35 P	250,280,320							**2045684**
Gas burner, 2-stage & Low Nox, TBG 45 P	360					500		**2037645**
Gas burner, 2-stage & Low NOx, TBG 60 P		420				650,800		**2039496**
Gas burner, pneu m & Low NOx, TBG 800 ME				70/60	68/60		90/80	**2045696**
Gas burner, pneu m & Low NOx, GI 1000 LX				80/70,90/80	78/70,89/80		110/100,130/120	**2045694**

■ **Part N°**

Dual burners
to THW-I NT E, THW-I HT E, THD-U E, THSD-I

Part N°

The details in the table are recommendations. Other combinations are possible.

Dual burners	THW-I NT E	THW-I HT E	THD-U E	THSD-I	Part N°
Dual burner, 2-stage, TBML 80PN			650,800,1000		**2045728**
Dual burner, 2-stage, TBML 160PN		10/05	1200,1500		**2045729**
Dual burner, 2-stage, COMIST 180		13/08	2000		**2039536**
Dual burner, 2-stage, COMIST 250	23/15	17/10,22/15	2500,3000,3500	25/20,30/25,35/30	**2028414**
Dual burner, 2-stage, COMIST 300	28/20	27/20	4000		**2045727**
Dual burner, 2-stage, GI MIST 350 DSPGM	35/25	34/25		45/40,55/50	**2045730**
Dual burner, 2-stage, GI MIST 420 DSPGM	40/30	39/30			**2045731**
Dual burner, 2-stage, GI MIST 510 DSPGM	45/35,50/40	43/35,48/40		70/60	**2045732**
Dual burner, 2-stage, GI MIST 1000 DSPGM	55/45,60/50,70/60,80/70	54/45,59/50,68/60,78/70		90/80,110/100	**2045733**

■ **Part N°**

Important for selection of burner:
- gas pressure
- gas type
- exact power output of the boiler

The details in the table are recommendations. Other combinations are possible.

	Part N°
Gas trains	
Gas train BM.405	**2037 499**
Gas train MM.407 B01 S20 TBG	**2045 708**
Gas train BM.407 TBG	**2037 647**
Gas train BM.410 TBG	**2034 186**
Gas train BM.412 TBG	**2032 096**
Gas train M412-S30 B01	**2044 567**
Gas train BM.415 TBG	**2045 701**
Gas train M415-S30; 1 1/2"	**2045 706**
Gas train M420-S30	**2041 887**
Gas train BM.420.0215/L 12P	**2045 703**
Gas train BS.5050DH.0315C/L	**2045 704**
Gas train VGD20.503 TBG..PN	**2045 711**
Gas train VGD40.065 GI700	**2045 713**
Gas train VGD40.065 1000LX	**2045 712**
Gas train VGD40.080 1000LX	**2045 715**
Gas train VGD20.503 2" GI700	**2045 710**
Gas train VGD40.080 GI700	**2045 714**
Gas train BM.415.0215/L; 1 1/2"	**2045 702**
Gas train BS.5050DH.0315C/L; DN 65	**2040 475**
Gas train M412-S10 B01; 1 1/4"	**2045 705**
Gas adapters	
Gas adapter 1 1/2"M X 1 1/4"F	**2045 716**
Gas adapter 1 1/2"M x 3/4"F	**2035 100**
Gas adapter 2"M x 1 1/2"F	**2032 060**
Gas adapter 3"M x 2"F	**2041 888**
Gas adapter 2"M x 1 1/4"F	**2034 187**
Gas adapter 3"M x 1 1/2"F	**2045 717**
Modulation kits	
Modulation kit cTRON 08 from TBG	**2045 725**
Modulation kit from TBG 600-800 ME	**2045 726**
Modulation kit cTRON 08	**2045 724**
Gas ball valves	
Gas ball valve BTVS 1/2"FF	**2045 719**
Gas ball valve BTVS 3/4"FF	**2029 518**
Gas ball valve BTVS 1"FF	**2045 718**
Gas ball valve BTVS 1 1/4"FF	**2035 117**
Gas ball valve BTVS 1 1/2"FF	**2031 055**
Gas ball valve BTVS 2"FF	**2037 868**
Gas ball valve BTVS DN65	**2026 049**
Gas ball valve BTVS DN80	**2045 720**
Anti-vibration compensators	
Anti-vibration compensator BTGA 1/2"	**2045 722**
Anti-vibration compensator BTGA 3/4"	**2029 517**
Anti-vibration compensator BTGA 1"	**2045 721**
Anti-vibration compensator BTGA 1 1/4"	**2035 116**
Anti-vibration compensator BTGA 1 1/2"	**2032 033**
Anti-vibration compensator BTGA 2"	**2037 867**
Anti-vibration compensator BTGA DN65	**2026 048**
Anti-vibration compensator BTGA DN80	**2045 723**
Gas valve tightness controls	
Gas valve tightness control VPS504.S01	**2035 101**
Gas valve tightness control VPS504.S02	**2032 059**
Pressure regulations	
Pressure regul and filter BTFR/5CE DN65	**2045 734**
Pressure reg and filter BTFR/5CE DN65 MA	**2045 735**
Pressure reg and filter BTFR/5CE DN80 VI	**2045 736**

■ **Part N°**

Part N°

Swiss Association for
Technical Inspections

Boiler inspection
Pressure test certificate issued by the independent authority „Swiss Association for Technical Inspections“ (ASIT).

Part. no. Boiler	Article Boiler total	Pressure bar	
7007 666	UltraGas (125)	5	7004 384
7007 667	UltraGas (150)	5	7004 385
7007 668	UltraGas (200)	5	7004 386
7007 669	UltraGas (250)	5	7004 387
7007 670	UltraGas (300)	5	7004 388
7010 273	UltraGas (350)	6	7004 389
7010 274	UltraGas (400)	6	7004 390
7010 275	UltraGas (450)	6	7004 391
7010 276	UltraGas (500)	6	7004 392
7007 675	UltraGas (575)	6	7004 399
7007 676	UltraGas (650)	6	7004 400
7007 677	UltraGas (720)	6	7004 401
7007 678	UltraGas (850)	6	7011 759
7007 679	UltraGas (1000)	6	7011 760

Part. no. Boiler	Article Boiler total	Pressure bar	
7006 279	CompactGas (1000)	6	7011 761
7006 280	CompactGas (1400)	6	7011 762
7006 281	CompactGas (1800)	6	7011 763
7006 282	CompactGas (2200)	6	7011 764
7006 283	CompactGas (2800)	6	7011 765

Part. no. Boiler	Article Boiler store	Pressure bar	
8002 655	Max-3 (420)	6	7004 338
8002 656	Max-3 (530)	6	7004 359
8002 657	Max-3 (620)	6	7004 360
8002 658	Max-3 (750)	6	7004 361
8002 659	Max-3 (1000)	6	7004 362
8002 660	Max-3 (1250)	6	7004 363
7011 420	Max-3 (1500)	6	7004 364
7011 421	Max-3 (1800)	6	7004 365
7011 422	Max-3 (2200)	6	7004 366
7011 423	Max-3 (2700)	6	7004 367

Part. no. Boiler	Article Boiler store	Pressure bar	
7003 515	7-Uno-3 (110)	4	7004 339
7003 516	7-Uno-3 (125)	4	7004 339
7003 517	7-Uno-3 (160)	4	7004 340
7003 519	7-Uno-3 (190)	5	7004 341
7003 521	7-Uno-3 (220)	5	7004 341
7003 523	7-Uno-3 (250)	5	7004 343
7003 525	7-Uno-3 (280)	5	7004 343
7003 527	7-Uno-3 (320)	4	7004 345
7003 528	7-Uno-3 (360)	4	7004 345

Part N°

			Part N°
Part. no. Boiler	Article Modul-Plus	Pressure bar	
7004 789	F21	6/5	7004 402
	blunt-welded F21	6/5	7004 403
	blunt-welded F21	10/8	7004 404
7004 790	F31	6/5	7004 417
	blunt-welded F31	6/5	7004 411
	blunt-welded F31	10/8	7004 405
7004 793	F32	6/5	7004 418
	blunt-welded F32	6/5	7004 412
	blunt-welded F32	10/8	7004 406
7004 791	F41	6/5	7004 419
	blunt-welded F41	6/5	7004 413
	blunt-welded F41	10/8	7004 407
7004 794	F42	6/5	7004 420
	blunt-welded F42	6/5	7004 414
	blunt-welded F42	10/8	7004 408
7004 792	F51	6/5	7004 421
	blunt-welded F51	6/5	7004 415
	blunt-welded F51	10/8	7004 409
7004 795	F52	6/5	7004 422
	blunt-welded F52	6/5	7004 416
	blunt-welded F52	10/8	7004 410

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High-efficiency mini energy pumps

Heating pumps

Cold water pumps

Process water pumps

Page

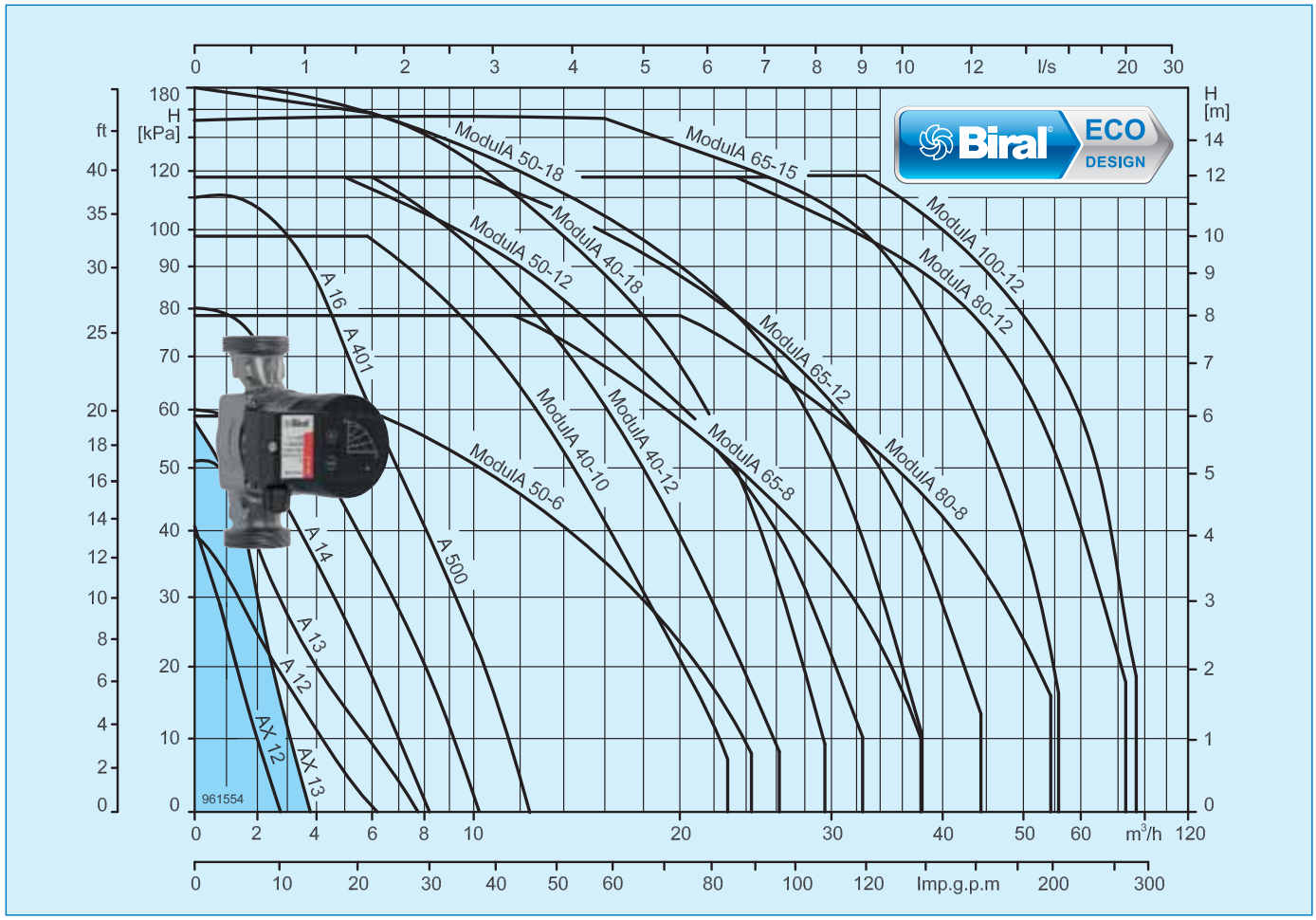
Unregulated circulating pumps

■ **Overview of types/characteristic curves**

AX 12 ... AX 13

Summary

Type	Connection	Nominal width DN	Discharge head max. mWS	Installation length mm	Operating pressure max./bar	EEI-value
AX 12	G 2”	32	4	170	10	≤0.21
AX 13	G 2”	32	6	170	10	≤0.23
AX 12-1	G 1½”	25	4	180	10	≤0.21
AX 13-1	G 1½”	25	6	180	10	≤0.23
AX 12-2	G 2”	32	4	180	10	≤0.21
AX 13-2	G 2”	32	6	180	10	≤0.23
AX 12-3	G 1½”	25	4	130	10	≤0.21
AX 13-3	G 1½”	25	6	130	10	≤0.23
AX 12-4	G 1”	15	4	130	10	≤0.21
AX 13-4	G 1”	15	6	130	10	≤0.23



Description/Part N°

Biral pumps AX 12 - AX 13 — Part N°

- High-efficiency pipe installation pump with permanent-magnet motor for hot water and solar heating systems.
- Split pipe in continuous design with two exterior seals, ceramic floating bearings with carbon axial bearings.
- Cast iron pump body
- With attached stepless speed control (pressure-dependent), including sensor system. Proportional pressure, constant pressure or fixed speed freely selectable. Automatic night reduction, can be deactivated. Power consumption display.

Motor
Motor 1 x 230 V, 50 Hz, partially isolatable
Stator winding isolation according to class "F" (155 °C)Integrated motor protection

Medium temperature +15 °C to +110 °C

Operating pressure: max. 10 bar

Connections
With external thread including seals (without fittings)

Design on request
- Adapter pieces for adapting the installation length with replacement pumps (see "Recirculation pump type comparison").

Biral Type	External thread	Installation length mm	
including thermal insulation jacket			
AX 12	R 2"	170	2032 644
AX 13	R 2"	170	2032 649
AX 12-1	R 1½"	180	2032 645
AX 13-1	R 1½"	180	2032 650
AX 12-2	R 2"	180	2032 646
AX 13-2	R 2"	180	2032 651
without thermal insulation jacket			
AX 12-3	R 1½"	130	2032 647
AX 13-3	R 1½"	130	2032 652
AX 12-4	R 1"	130	2032 648
AX 13-4	R 1"	130	2032 653

Fittings
2 fittings black design
including seals. Shipped with the pump (packaged separately).

DN	
1 ½" - ¾"	2030 455
1 ½" - 1"	2030 456
2" - ¾"	2030 457
2" - 1"	2030 460
2" - 1 ¼"	2030 461
2" - 1 ½"	2030 462

Technical data/Characteristic curves

AX 12, -1, -2, -3, -4

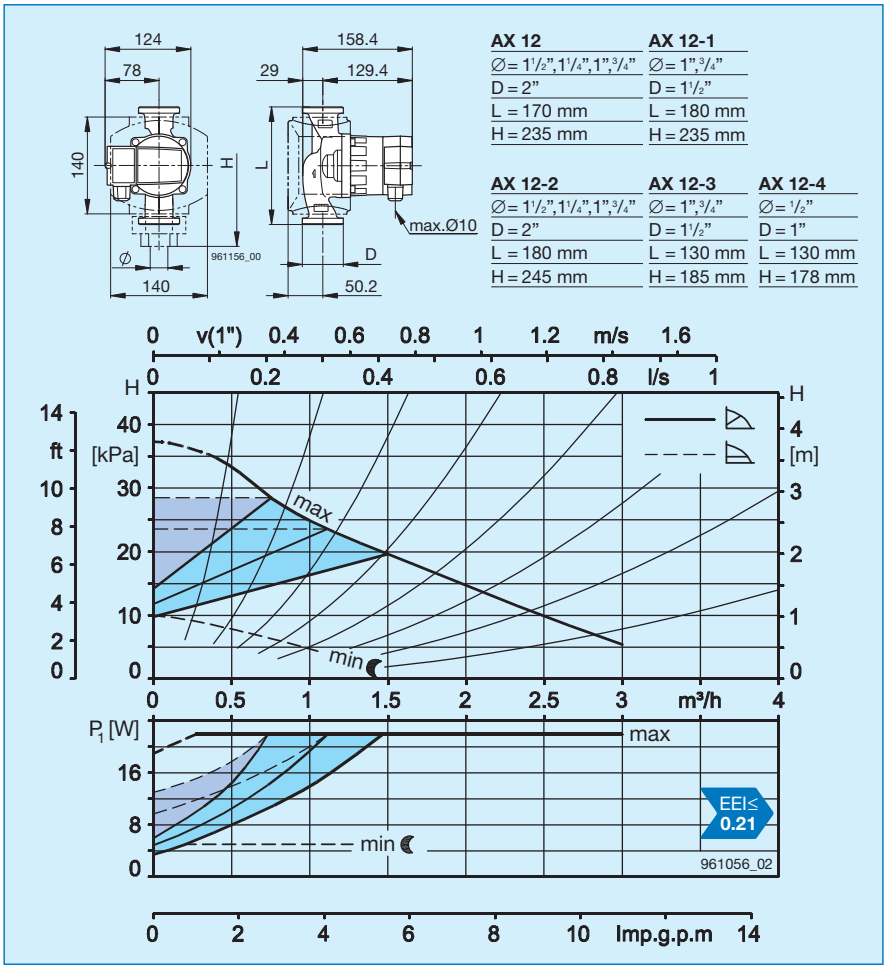
Installation length		**130/170/180 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +110°C
Required operating pressure at at 75°C water temperature at 90°C water temperature at 110°C water temperature For every ±100 m altitude		500 m a.s.l. 0.05 bar 0.30 bar 1.10 bar ±0.01 bar
Weight		2.3 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.05…0.19 A
	min	0.05 A
Power	Regulation	5…22 W
	min	5 W

To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	110
30	30	110
35	35	90
40	40	70

The pump is fitted with internal electric motor protection and requires no external motor protection.

The pumps AX 12,-1,-2 are fitted with a thermal insulation shell.



AX 12
Ø = 1½",1¼",1",¾"
D = 2"
L = 170 mm
H = 235 mm

AX 12-1
Ø = 1",¾"
D = 1½"
L = 180 mm
H = 235 mm

AX 12-2
Ø = 1½",1¼",1",¾"
D = 2"
L = 180 mm
H = 245 mm

AX 12-3
Ø = 1",¾"
D = 1½"
L = 130 mm
H = 185 mm

AX 12-4
Ø = ½"
D = 1"
L = 130 mm
H = 178 mm

AX 13, -1, -2, -3, -4

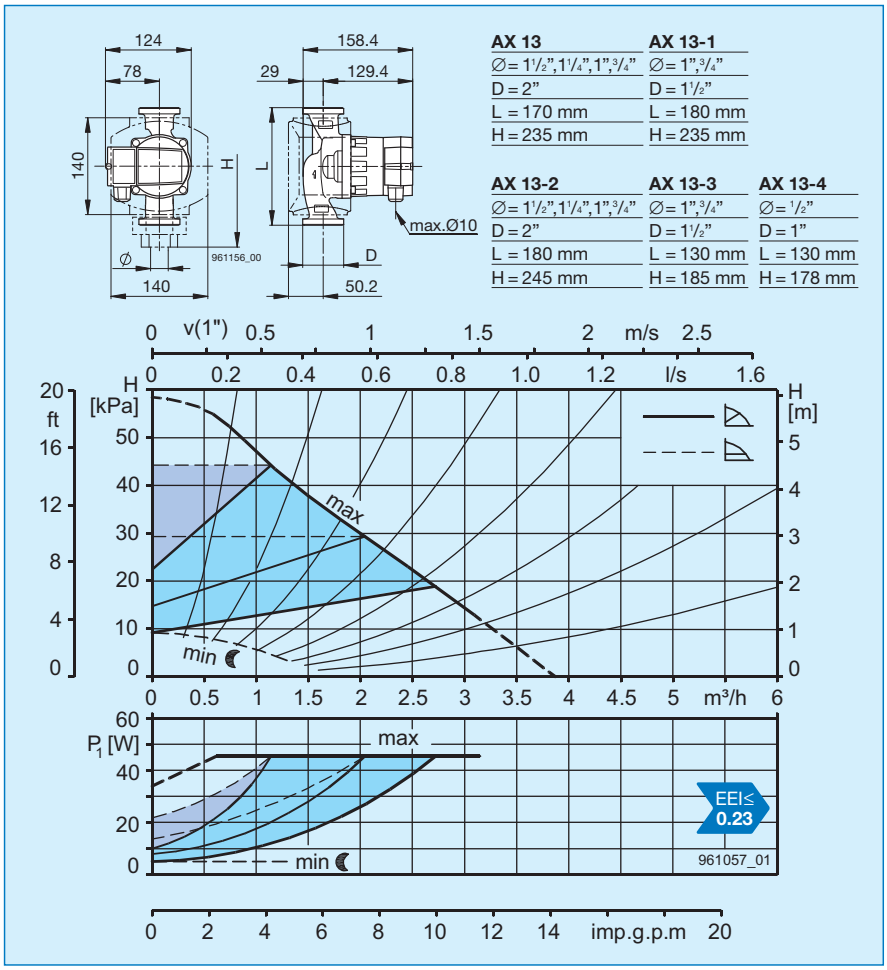
Installation length		**130/170/180 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +110°C
Required operating pressure at at 75°C water temperature at 90°C water temperature at 110°C water temperature For every ±100 m altitude		500 m a.s.l. 0.05 bar 0.30 bar 1.10 bar ±0.01 bar
Weight		2.3 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.05…0.38 A
	min	0.05 A
Power	Regulation	5…45 W
	min	5 W

To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	110
30	30	110
35	35	90
40	40	70

The pump is fitted with internal electric motor protection and requires no external motor protection.

The pumps AX 13,-1,-2 are fitted with a thermal insulation shell.



AX 13
Ø = 1½",1¼",1",¾"
D = 2"
L = 170 mm
H = 235 mm

AX 13-1
Ø = 1",¾"
D = 1½"
L = 180 mm
H = 235 mm

AX 13-2
Ø = 1½",1¼",1",¾"
D = 2"
L = 180 mm
H = 245 mm

AX 13-3
Ø = 1",¾"
D = 1½"
L = 130 mm
H = 185 mm

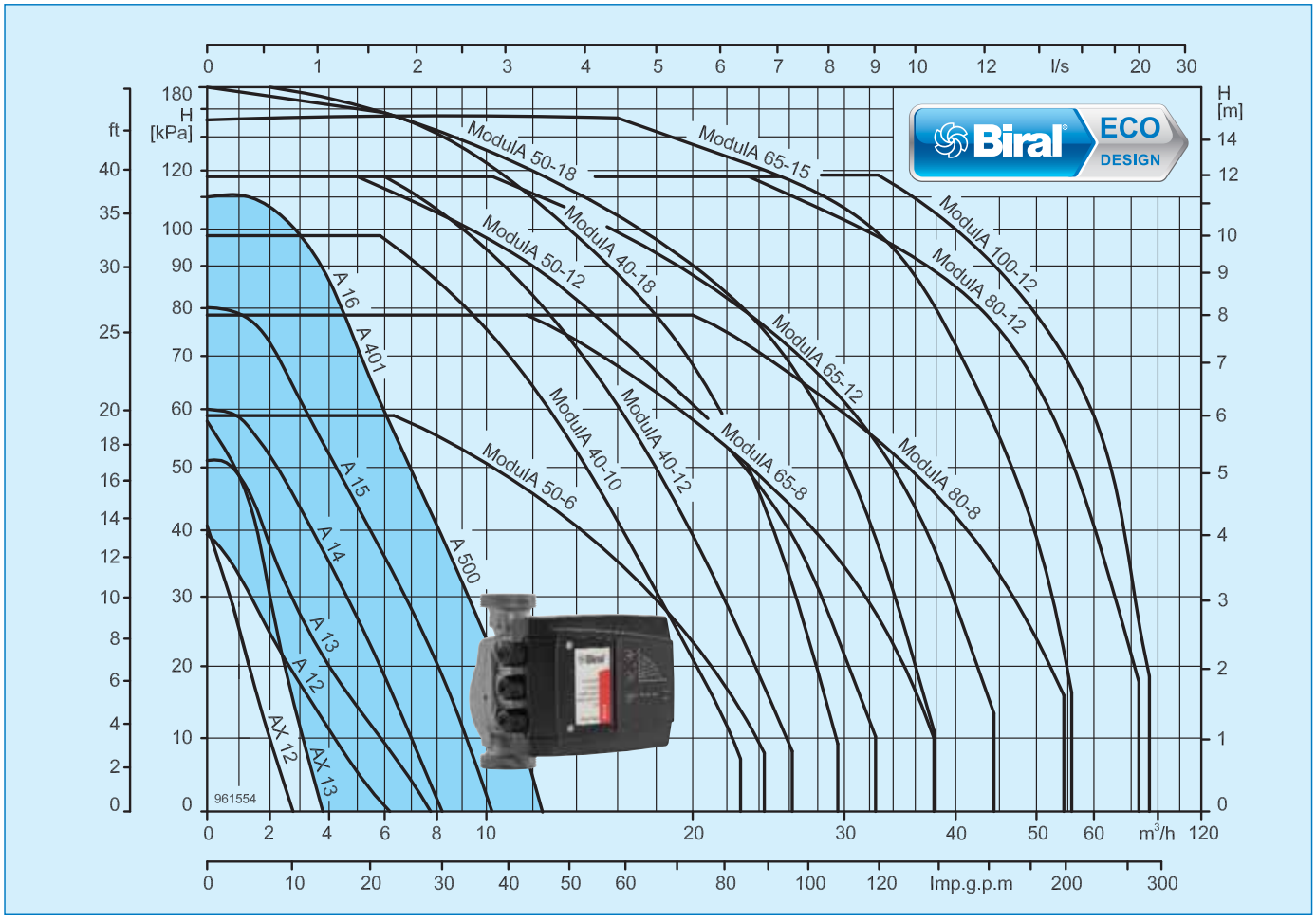
AX 13-4
Ø = ½"
D = 1"
L = 130 mm
H = 178 mm

■ **Overview of types/characteristic curves**

A 12 ... A 401, A 500

Summary

	Type	Connection	Nominal width DN	Discharge head max. mWS	Installation length mm	Operating pressure max./bar	EEI-value
	A 12	G 2”	32	4	170	10	≤0.21
	A 13	G 2”	32	5	170	10	≤0.21
	A 14	G 2”	32	6	170	10	≤0.22
	A 15	G 2”	32	8	170	10	≤0.22
	A 12-1	G 1½”	25	4	180	10	≤0.21
	A 13-1	G 1½”	25	5	180	10	≤0.21
	A 14-1	G 1½”	25	6	180	10	≤0.22
	A 15-1	G 1½”	25	8	180	10	≤0.22
	A 16-1	G 1½”	25	11	180	10	≤0.21
	A 12-2	G 2”	32	4	180	10	≤0.21
	A 13-2	G 2”	32	5	180	10	≤0.21
	A 14-2	G 2”	32	6	180	10	≤0.22
	A 15-2	G 2”	32	8	180	10	≤0.22
	A 16-2	G 2”	32	11	180	10	≤0.21
	A 401	PN 6/10	40	11	220	10	≤0.22
	A 401-1	PN 6/10	40	11	250	10	≤0.22
	A 500	PN 6/10	50	11	220	10	≤0.22



Description/Part N°

Biral A 12 - A 16

Biral A 401, A 500

Biral pumps A 12 - A 16, A 401, A 500 — Part N°

- High-efficiency pipe installation pump with permanent-magnet motor
- Split pipe in continuous design with two exterior seals, ceramic floating bearings with carbon axial bearings.
- Cast iron pump body
- With attached stepless speed control (pressure-dependent), including sensor system. Proportional pressure, constant pressure or fixed speed freely selectable. Automatic night reduction, can be deactivated. Alert or system status message.
- Options:
  Signal module BIM A:
  - System status or ready message
  - External OFF
  - External minimum speed
  - Twin pump function

  Control module BIM B:
  - External specified speed 0-10 V/0-20 mA
  - PWM
  - External OFF
  - Twin pump function

Motor
Motor 1 x 230 V, 50 Hz, partially isolatable
Stator winding isolation
according to class "F" (155 °C)
Integrated motor protection

Medium temperature +15 °C to +95 °C
(briefly up to 110 °C)

Operating pressure
A 12 to A 16: max. 10 bar
A 401, A 500: max. 6/10 bar

Connections
A 12 to A 16
With external thread including seals
(without fittings)

A 401, A 500
With flange connections including bolts and sealing for PN6, without counterflanges.

For PN10/16 order special sealing kit.

Design on request
- Adapter pieces for adapting the installation length with replacement pumps
  (see "Recirculation pump type comparison").

Part N°

Biral A 12 - A 16

Biral A 12 - A 16
max. 10 bar
(with external thread without fitting)

Biral Type	External thread	Installation length mm	Part N°
A 12	R 2"	170	2030 382
A 13	R 2"	170	2030 383
A 14	R 2"	170	2030 384
A 15	R 2"	170	2030 385
A 12-1	R 1½"	180	2030 392
A 13-1	R 1½"	180	2030 393
A 14-1	R 1½"	180	2030 394
A 15-1	R 1½"	180	2030 395
A 16-1	R 1½“	180	2040 757
A 12-2	R 2"	180	2030 396
A 13-2	R 2"	180	2030 397
A 14-2	R 2"	180	2030 398
A 15-2	R 2"	180	2030 399
A 16-2	R 2"	180	2030 400

Fittings
2 fittings black design
including seals. Shipped with the pump (packaged separately).

DN	Part N°
1 ½" - ¾"	2030 455
1 ½" - 1"	2030 456
2" - ¾"	2030 457
2" - 1"	2030 460
2" - 1 ¼"	2030 461
2" - 1 ½"	2030 462

Biral A 401, A 500

Biral A 401, A 500
max. 6/10 bar (with flange connections)

Biral Type	DN	Installation length mm	Part N°
A 401	40	220	2030 386
A 401-1	40	250	2030 407
A 500	50	220	2040 758

Part N°

Part N°

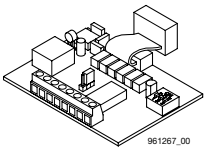
Sealing set for flanges PN 10/16
consisting of screws and seals.
Shipped with the pump (packaged separately).

DN	
40	2030 443
50	2030 444

Welded-on flanges
2 welded-on flanges black design, without screws and seals. Shipped with the pump (packaged separately).

DN	PN	
40	6	2030 463
50	6	2030 464
40	10/16	2030 468
50	10/16	2030 469

Biral interface module (BIM)



Signal module BIM A 2030 439
- System status or ready message
- External OFF
- External minimum speed
- Twin pump function

Control module BIM B 2030 442
- External specified speed 0-10 V/0-20 mA
- PWM
- External OFF
- Twin pump function

Thermal insulation jackets for Biral mini pumps

Type	For Biral pump	
WD 2	For A 12 to A 15; A 12-1 to A 16-1 A 12-2 to A 16-2	2035 226
WD 3	For A 401, A 401-1	2036 055
WD 11	For A 500	2040 775

Technical data/Characteristic curves

A 12, -1, -2

Installation length		**170/180 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +110°C [2]
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		3.8 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…0.25 A
	min	0.14 A
Power	Regulation	8…33 W
	min	8…19 W

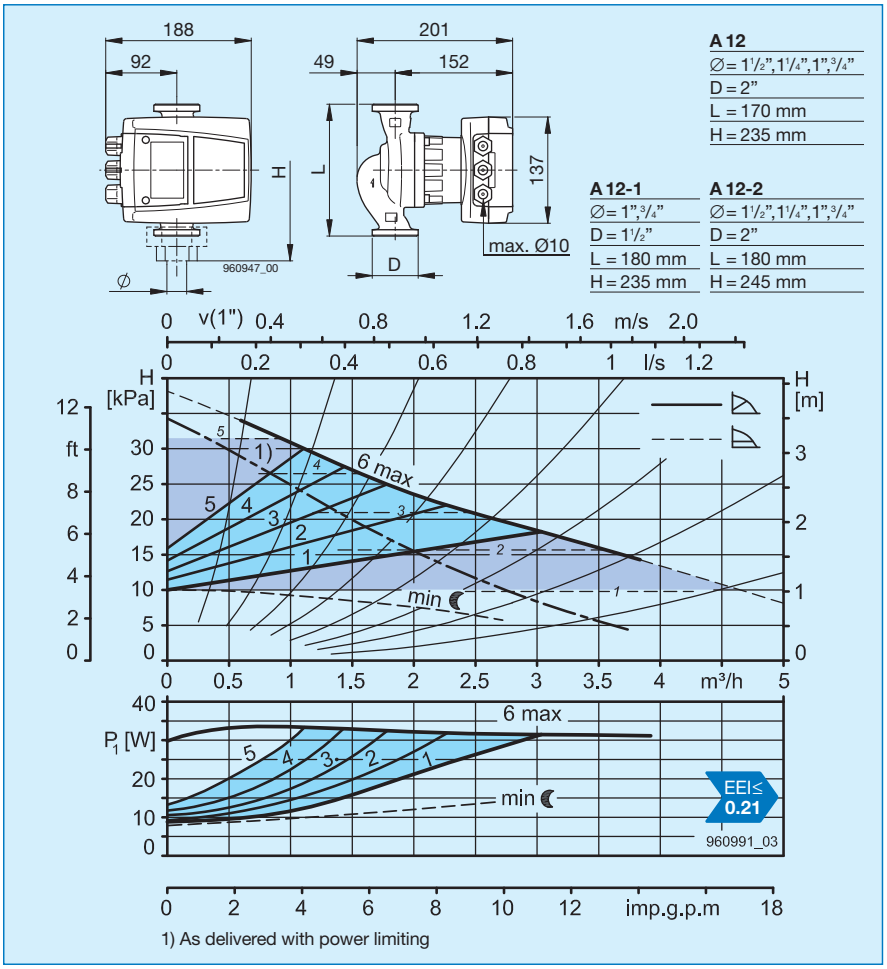
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	95/110 [2]
30	30	95/110 [2]
35	35	90
40	40	70

[2] for short periods, approx. 30 min

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump is provided with fault or operating message (switchable).

Options:
– Heat insulation shells
– BIM A signal module
– BIM B control module



1) As delivered with power limiting

A 13, -1, -2

Installation length		**170/180 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +110°C [2]
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		3.8 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…0.35 A
	min	0.14 A
Power	Regulation	8…50 W
	min	8…19 W

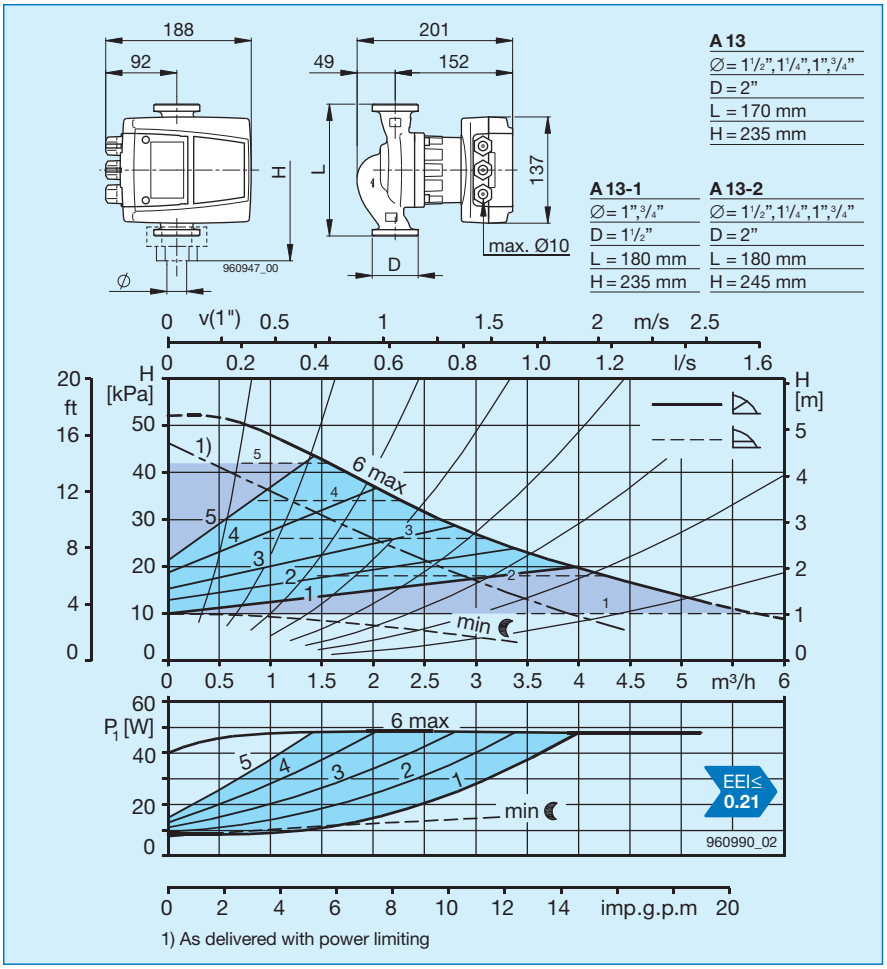
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	95/110 [2]
30	30	95/110 [2]
35	35	90
40	40	70

[2] for short periods, approx. 30 min

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump is provided with fault or operating message (switchable).

Options:
– Heat insulation shells
– BIM A signal module
– BIM B control module



1) As delivered with power limiting

Technical data/Characteristic curves

A 14, -1, -2

Installation length		**170/180 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +110°C [2]
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		3.8 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…0.5 A
	min	0.14 A
Power	Regulation	8…70 W
	min	8…19 W

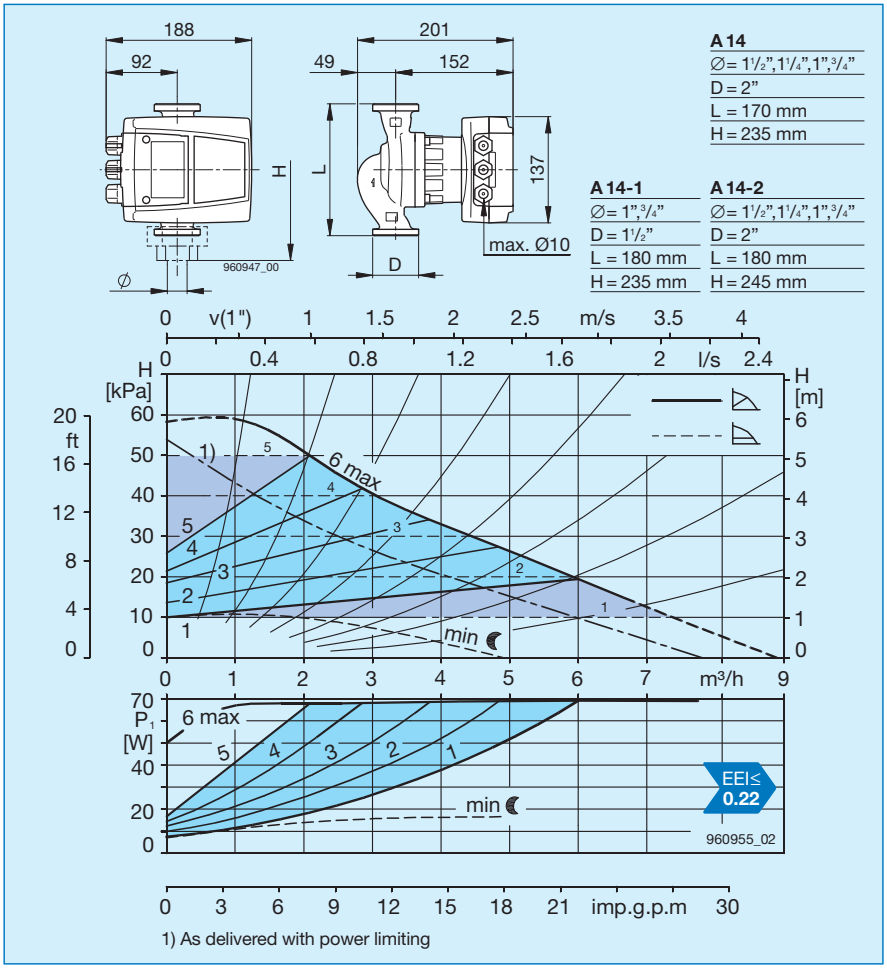
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	95/110 [2]
30	30	95/110 [2]
35	35	90
40	40	70

[2] for short periods, approx. 30 min

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump is provided with fault or operating message (switchable).

Options:
– Heat insulation shells
– BIM A signal module
– BIM B control module



1) As delivered with power limiting

A 15, -1, -2

Installation length		**170/180 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +110°C [2]
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		3.8 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…0.8 A
	min	0.14 A
Power	Regulation	8…107 W
	min	8…19 W

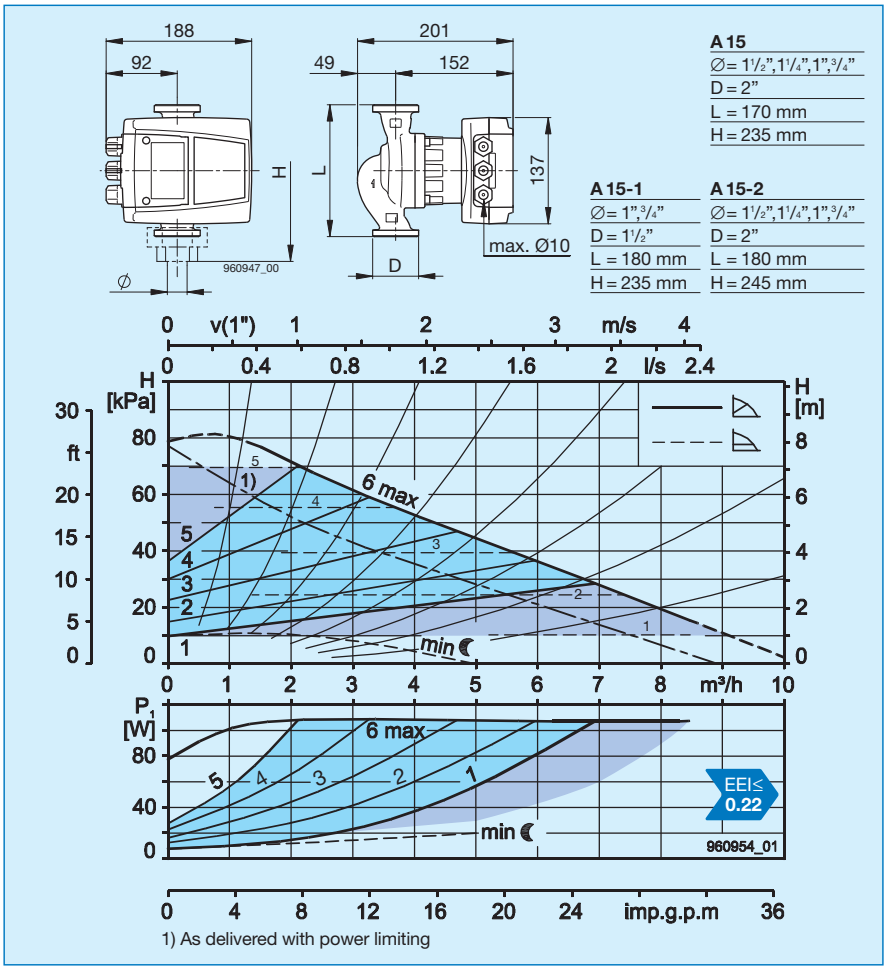
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	95/110 [2]
30	30	95/110 [2]
35	35	90
40	40	70

[2] for short periods, approx. 30 min

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump is provided with fault or operating message (switchable).

Options:
– Heat insulation shells
– BIM A signal module
– BIM B control module



1) As delivered with power limiting

Technical data/Characteristic curves

A 16-1, A 16-2

Installation length		**180 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +110°C 2)
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		3.8 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…1.25 A
	min	0.14 A
Power	Regulation	8…174 W
	min	8…19 W

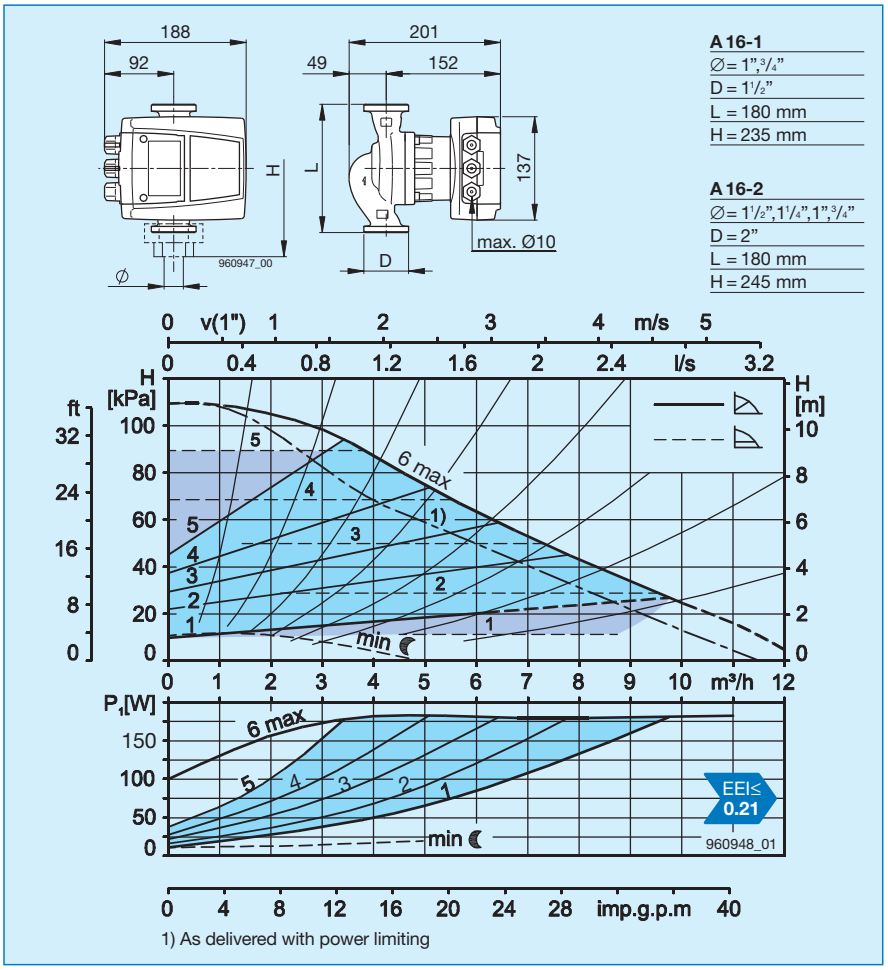
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	95/110 2)
30	30	95/110 2)
35	35	90
40	40	70

2) for short periods, approx. 30 min

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump is provided with fault or operating message (switchable).

Options:
– Heat insulation shells
– BIM A signal module
– BIM B control module



1) As delivered with power limiting

A 401, A 401-1

Installation length	**A 401** **A 401-1**	**220 mm** **250 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +110°C 2)
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		9 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…1.25 A
	min	0.14 A
Power	Regulation	8…174 W
	min	8…19 W

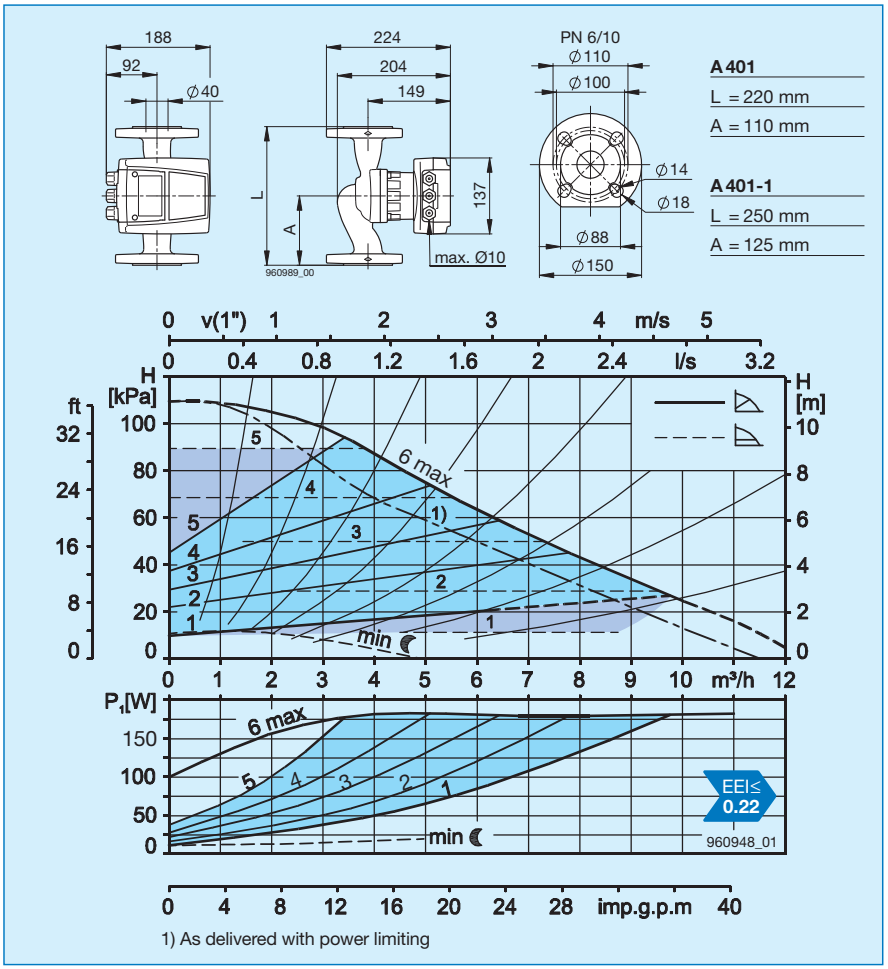
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	95/110 2)
30	30	95/110 2)
35	35	90
40	40	70

2) for short periods, approx. 30 min

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump is provided with fault or operating message (switchable).

Options:
– Heat insulation shells
– BIM A signal module
– BIM B control module



1) As delivered with power limiting

Technical data/Characteristic curves

A 500

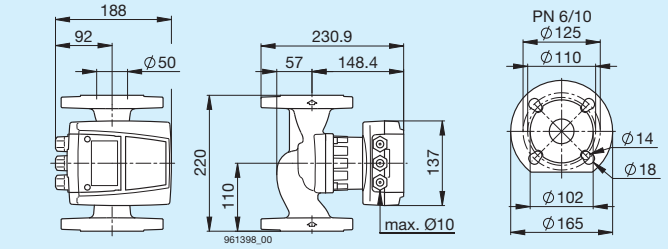
Installation length		**220 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +110°C [2]
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		10.5 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…1.25 A
	min	0.14 A
Power	Regulation	8…174 W
	min	8…19 W

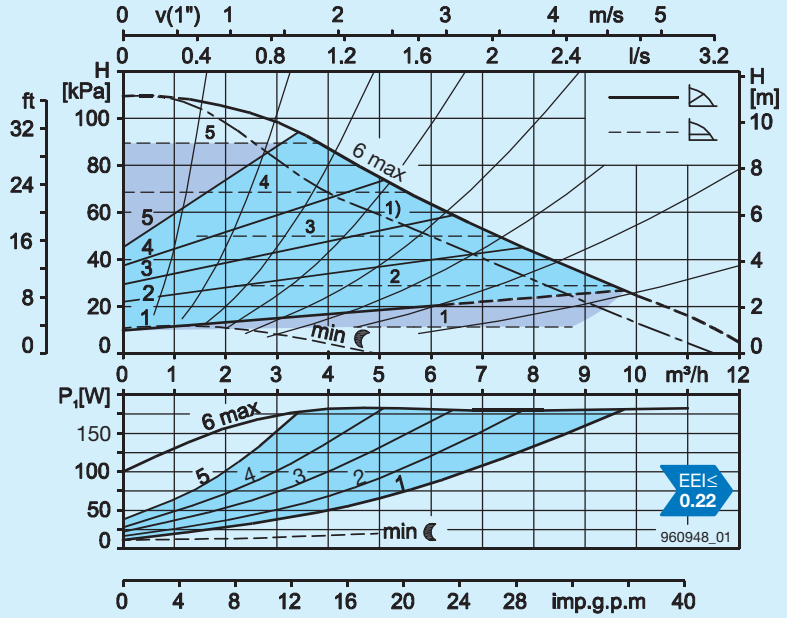
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	95/110 [2]
30	30	95/110 [2]
35	35	90/110 [2]
40	40	70/110 [2]

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump is provided with fault or operating message (switchable).

Options:
– Heat insulation shells
– BIM A signal module
– BIM B control module





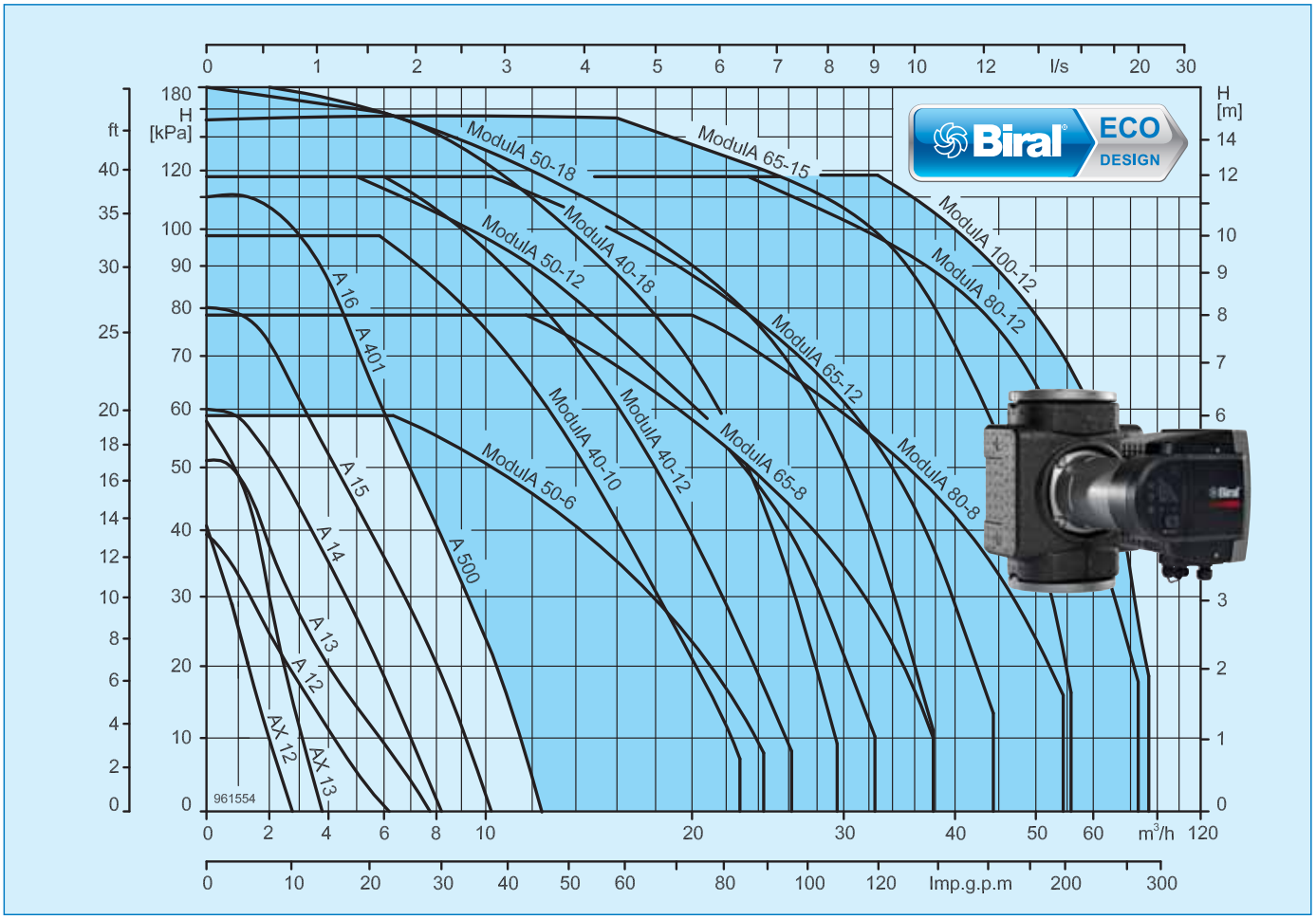
1) As delivered with power limiting

■ **Overview of types/characteristic curves**

ModulA ... RED
with flange connections

Summary

Type	Connection	Nominal width DN	Discharge head max. mWS	Installation length mm	Operating pressure max./bar	EEI-value
ModulA 40-10 220 RED	PN 6-16	40	10	220	16	≤0.19
ModulA 40-12 250 RED	PN 6-16	40	12	250	16	≤0.18
ModulA 40-18 250 RED	PN 6-16	40	18	250	16	≤0.18
ModulA 50-6 240 RED	PN 6-16	50	6	240	16	≤0.19
ModulA 50-12 270 RED	PN 6-16	50	12	270	16	≤0.18
ModulA 50-18 270 RED	PN 6-16	50	18	270	16	≤0.17
ModulA 65-8 270 RED	PN 6-16	65	8	270	16	≤0.17
ModulA 65-12 340 RED	PN 6-16	65	12	340	16	≤0.17
ModulA 65-15 340 RED	PN 6-16	65	15	340	16	≤0.17
ModulA 80-8 360 RED	PN 6	80	8	360	6	≤0.17
ModulA 80-8 360 RED	PN 10/16	80	8	360	16	≤0.17
ModulA 80-12 360 RED	PN 6	80	12	360	6	≤0.17
ModulA 80-12 360 RED	PN 10/16	80	12	360	16	≤0.17
ModulA 100-12 450 RED	PN 6	100	12	450	6	≤0.17
ModulA 100-12 450 RED	PN 10/16	100	12	450	16	≤0.17



Description/Part N°

Biral ModulA ... RED

Biral pumps ModulA ... RED **Part N°**

- High-efficiency pipe installation pump with permanent-magnet motor for hot water and solar heating systems including thermal insulation jackets
- Speed control for:
  - Proportional pressure pp
  - Constant pressure cp
  - Constant speed cs
- Cast iron pump body
- Alert or system status message (can be toggled)
- Power limit (can be activated)
- External OFF or external ON (can be toggled)
- Display of operating states

Motor
Voltage 1 x 230 V, frequency 50/60 Hz, protection rating (IEC 34-5) IP44,
insulation class F (155°C),
integrated motor protection

Medium temperature +15°C to +110 °C

Connections
With flange connections including bolts and sealing for PN6, without counterflanges.

For PN10/16 with DN 40 - DN 65
order special sealing set.

Design on request
- Adapter pieces for adapting the installation length with replacement pumps
  (see "Recirculation pump type comparison").

Notice
We recommend using contacts 10/11 (external OFF or external ON) to connect the ModulA pump. Variant: Connection via a sufficiently dimensioned switching relay.

Unit type reference for ModulA

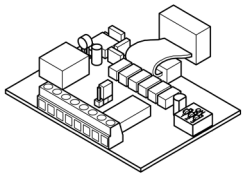
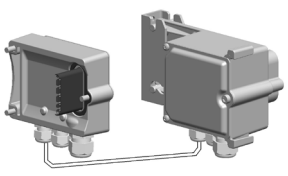
Example ModulA 40-10 220 RED

ModulA	High-efficiency pump
40	Nominal diameter
10	Delivery height (mWC)
220	Installation length (mm)
RED	Heating system

Biral ModulA ... RED
with flange connections

Type	Nominal diameter DN	Delivery height max. mWC	Installation length mm	Flange PN	Operating pressure max. bar	
ModulA	40	10	220	6-16	16	2053 965
ModulA	40	12	250	6-16	16	2053 966
ModulA	40	18	250	6-16	16	2053 967
ModulA	50	6	240	6-16	16	2053 968
ModulA	50	12	270	6-16	16	2053 969
ModulA	50	18	270	6-16	16	2053 970
ModulA	65	8	270	6-16	16	2053 971
ModulA	65	12	340	6-16	16	2053 972
ModulA	65	15	340	6-16	16	2053 973
ModulA	80	8	360	6	6	2053 984
ModulA	80	8	360	10/16	16	2053 985
ModulA	80	12	360	6	6	2053 986
ModulA	80	12	360	10/16	16	2053 987
ModulA	100	12	450	6	6	2053 988
ModulA	100	12	450	10/16	16	2053 989

■ **Part N°**

		Part N°
	Sealing set for flanges PN 10/16 consisting of screws and seals. Shipped with the pump (packaged separately).	
	DN	
	40	2030 443
	50	2030 444
	65	2030 445
	**Welded-on flanges** 2 welded-on flanges black design, without screws and sealing. Shipped with the pump (packaged separately).	
	DN / PN	
	40 / 6	2030 463
	50 / 6	2030 464
	65 / 6	2030 465
	80 / 6	2030 466
	100 / 6	2030 467
	40 / 10/16	2030 468
	50 / 10/16	2030 469
	65 / 10/16	2030 470
	80 / 10/16	2030 471
	100 / 10/16	2030 472
	**Biral interface module (BIM)**	
	Signal module BIM A2 - System status or ready message - External minimum speed - Twin pump function	2054 036
	Control module BIM B2 - External specified speed 0-10 V/0-20 mA - PWM - Twin pump function	2054 037
	**Remote adapter** - Enables access via smartphone (iOS, Android) for pump configuration and data retrieval. - Biral Remote APP, free Internet download.	2054 038
	**Kit for offset installation of electronics** If space is at a premium or for improved ease of use. Ambient temperature: max. 40°C	2054 035

Technical data/Characteristic curves

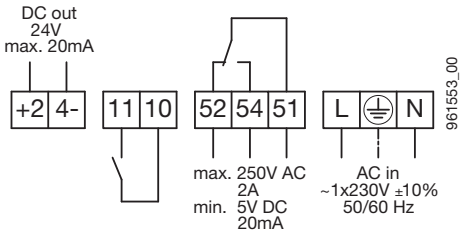
ModulA 40-10 220 RED

Nominal diameter	DN 40
Discharge head H max.	10 m
Installation length	220 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	+15°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	16.3 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	18-341 W
Rated current	0.19-1.54 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

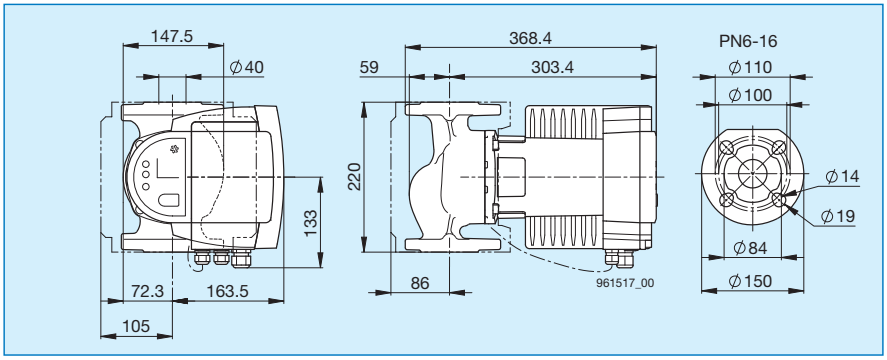
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

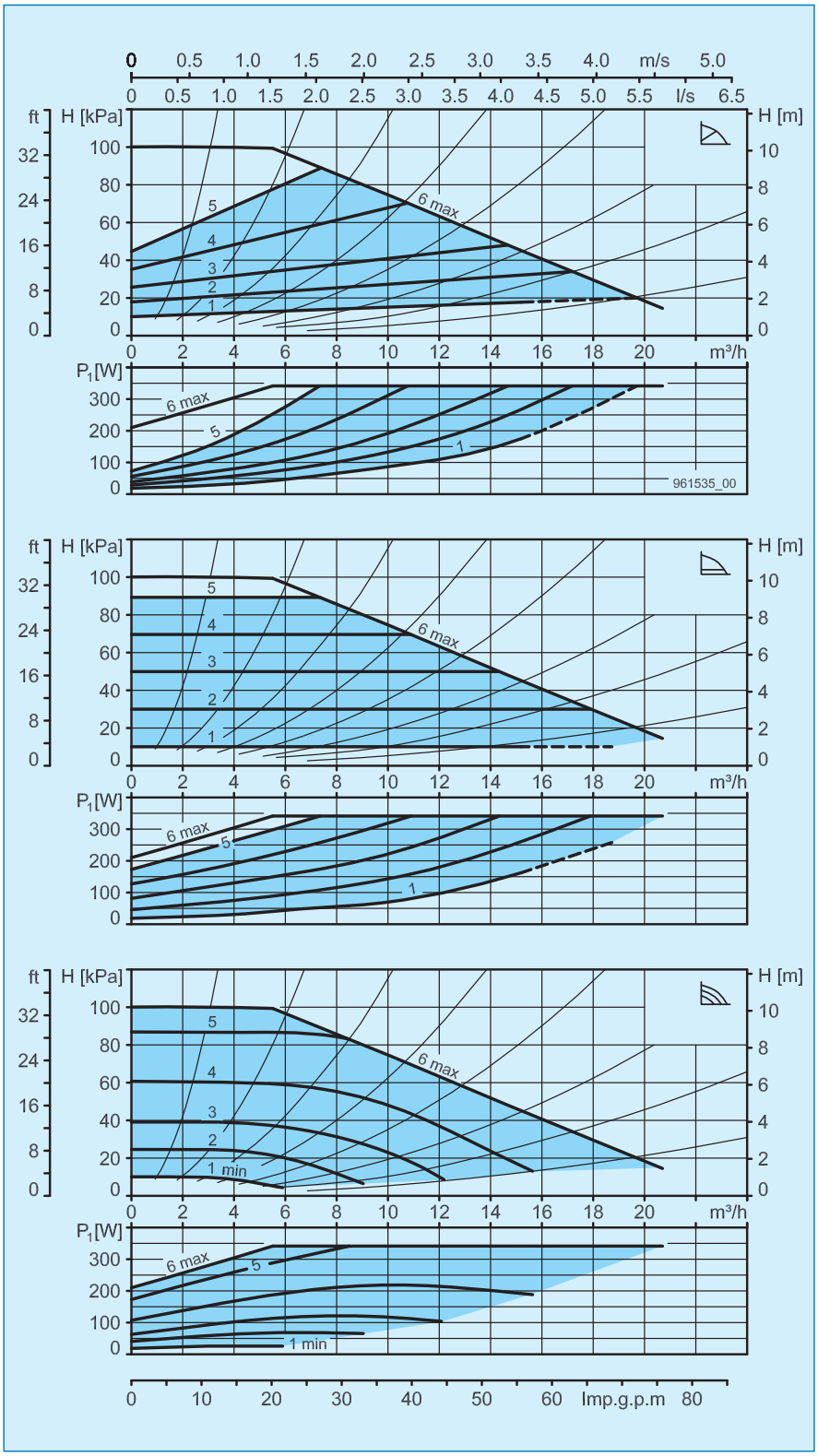
Included in the scope of delivery

- Heat insulation shells
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

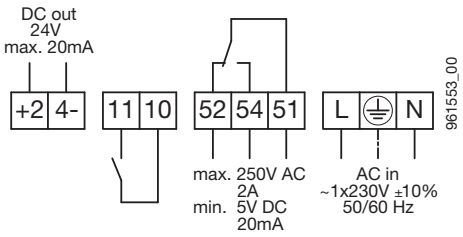
ModulA 40-12 250 RED

Nominal diameter	DN 40
Discharge head H max.	12 m
Installation length	250 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	+15°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	16.1 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	17 - 421 W
Rated current	0.18 - 1.91 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

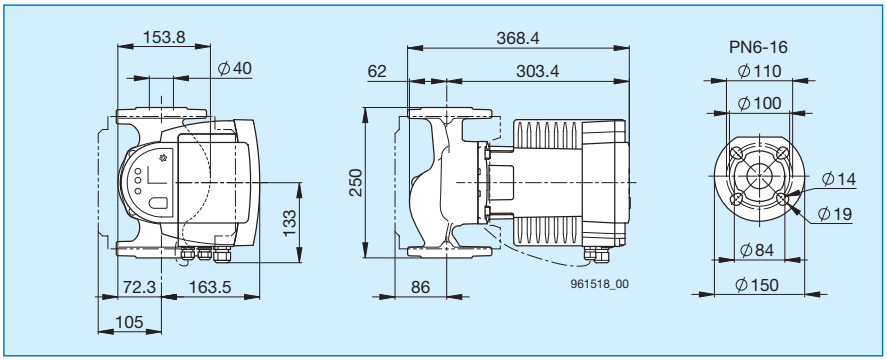
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

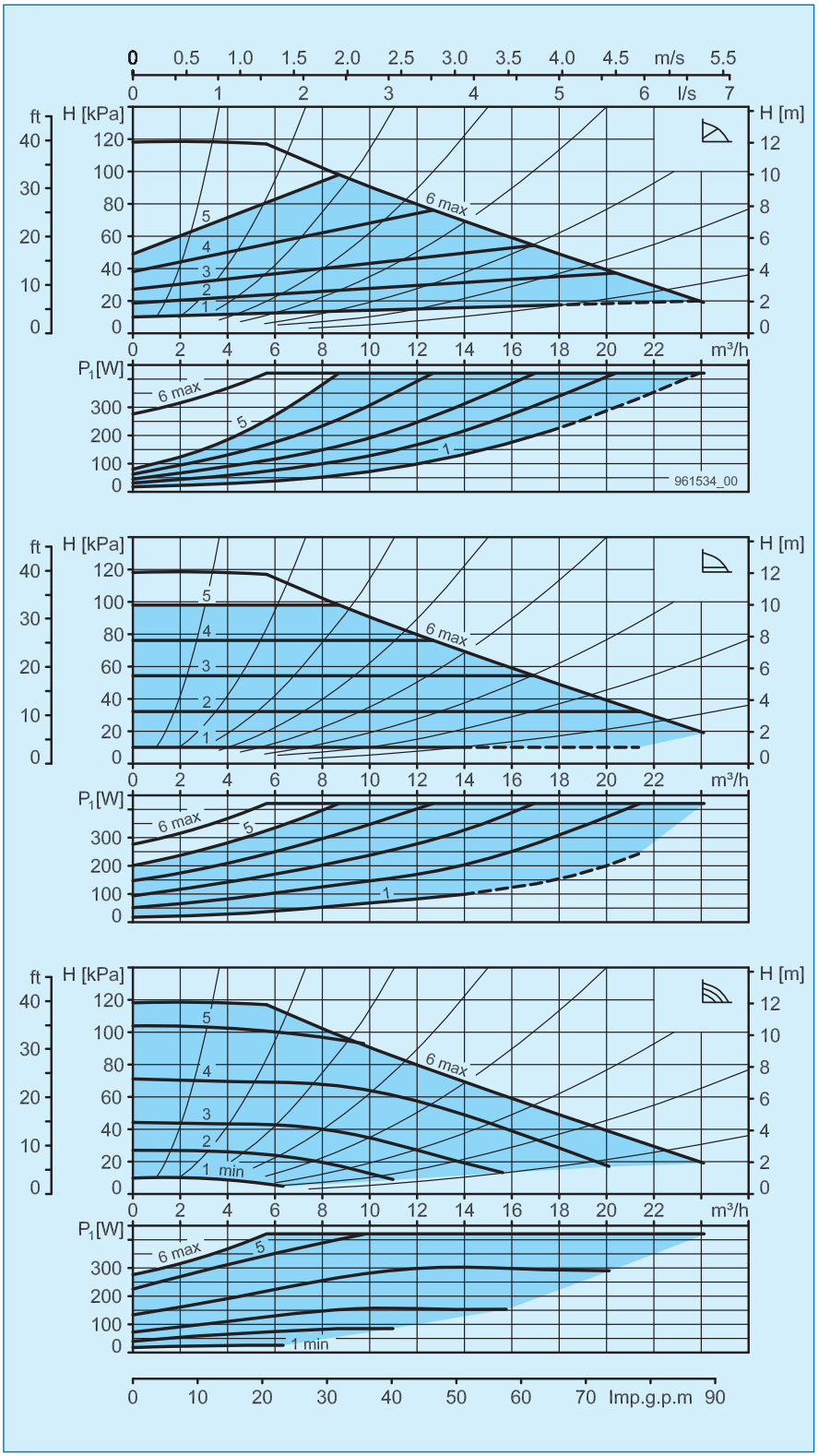
Included in the scope of delivery

- Heat insulation shells
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

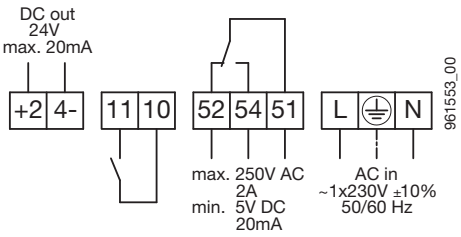
ModulA 40-18 250 RED

Nominal diameter	DN 40
Discharge head H max.	18 m
Installation length	250 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	+15°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	16.1 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	16 - 594 W
Rated current	0.18 - 2.63 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

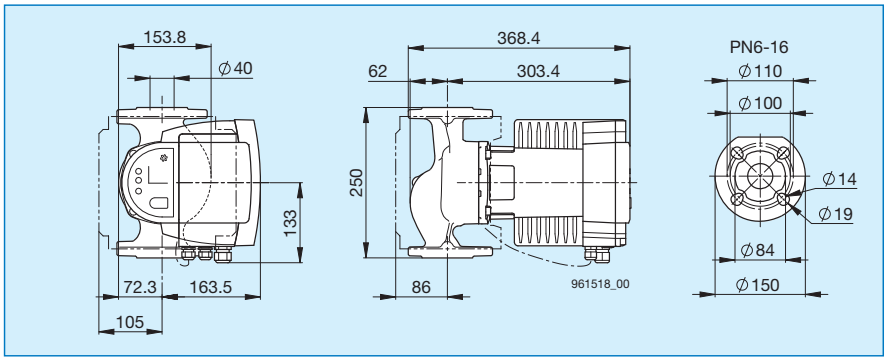
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

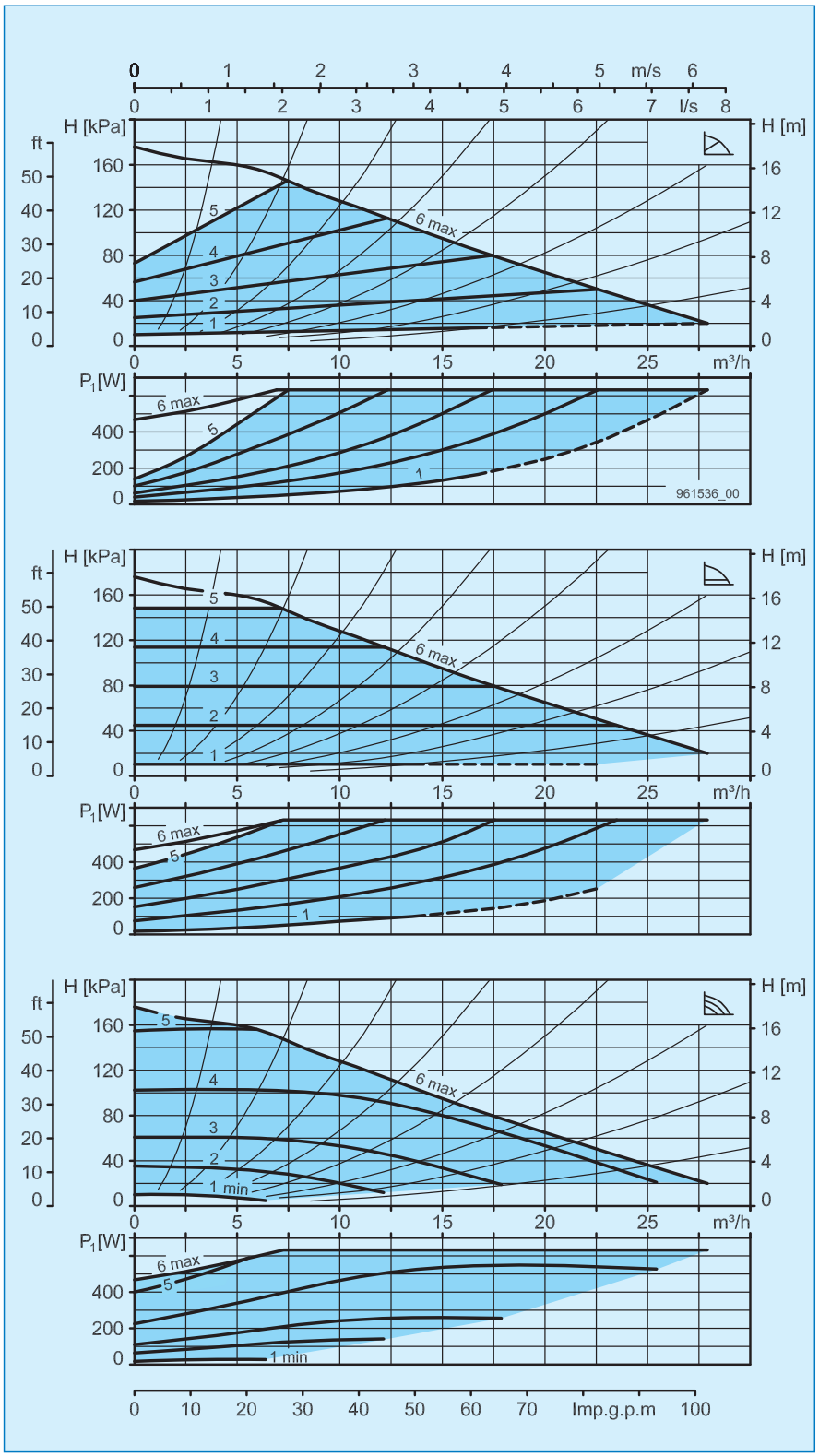
Included in the scope of delivery

- Heat insulation shells
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

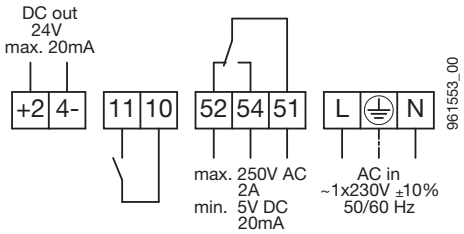
ModulA 50-6 240 RED

Nominal diameter	DN 50
Discharge head H max.	6 m
Installation length	240 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	+15°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	17.6 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	21 - 236 W
Rated current	0.21 - 1.09 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

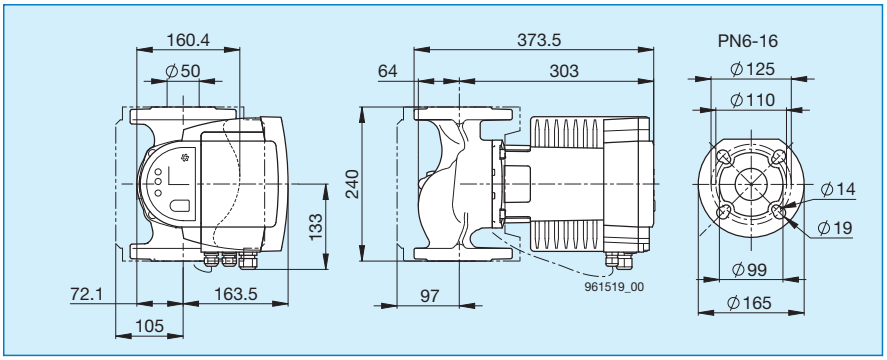
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

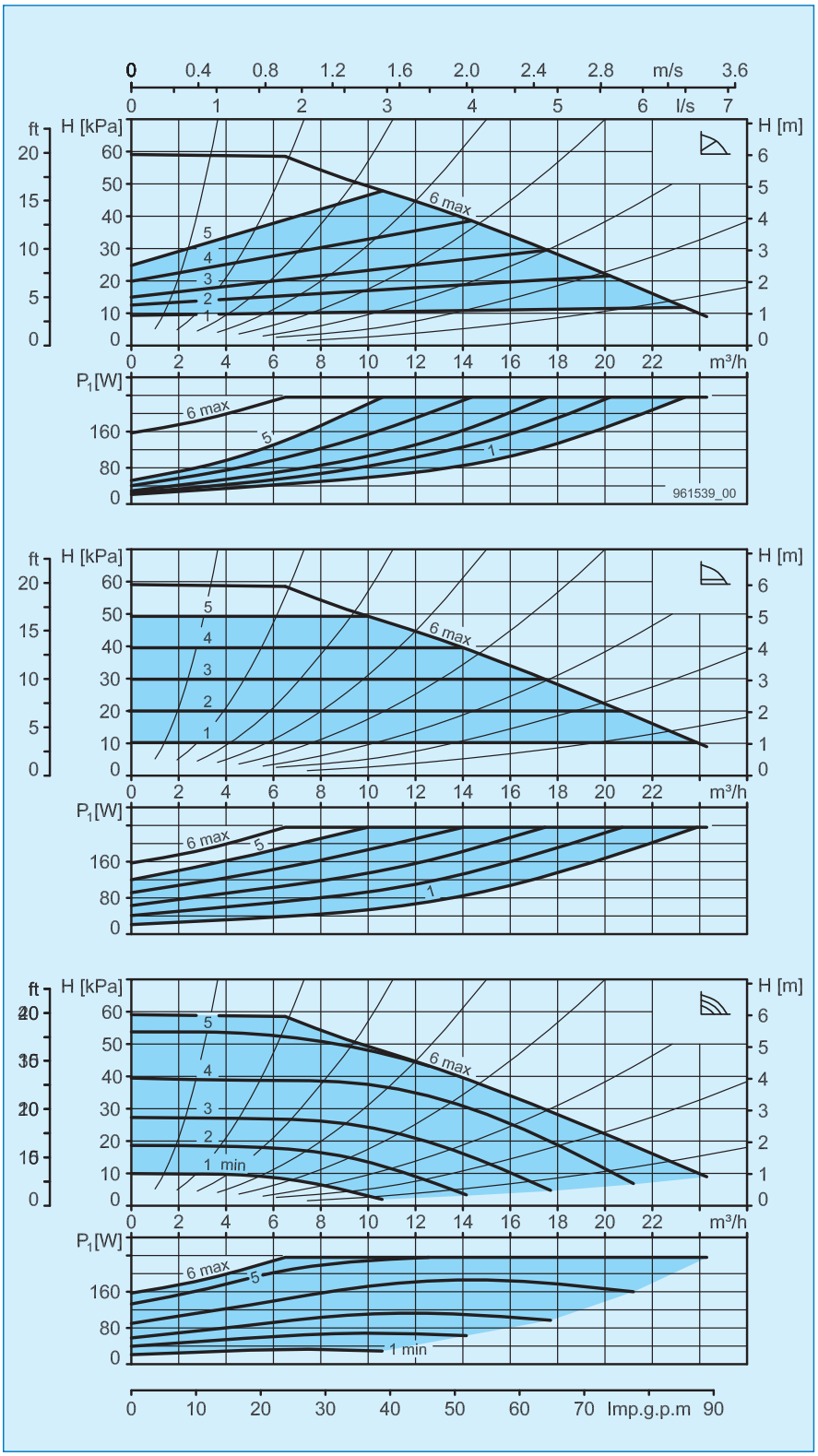
Included in the scope of delivery

- Heat insulation shells
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

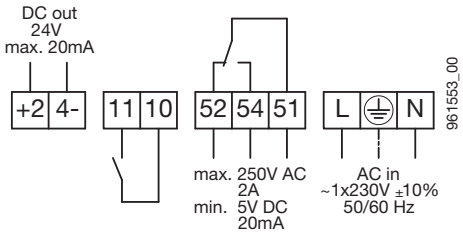
ModulA 50-12 270 RED

Nominal diameter	DN 50
Discharge head H max.	12 m
Installation length	270 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	+15°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	18.1 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	20 - 516 W
Rated current	0.21 - 2.32 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

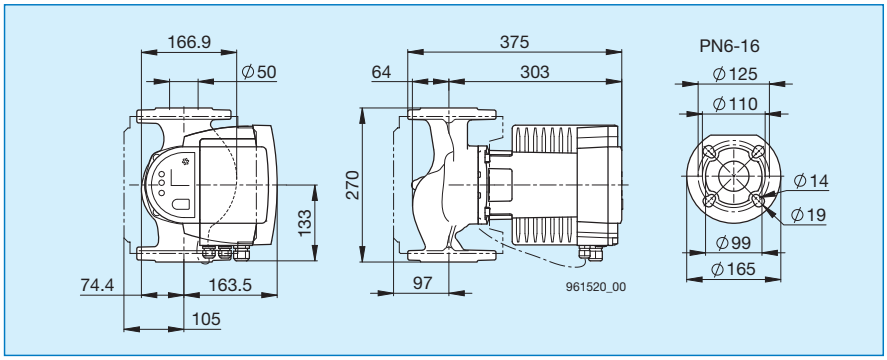
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

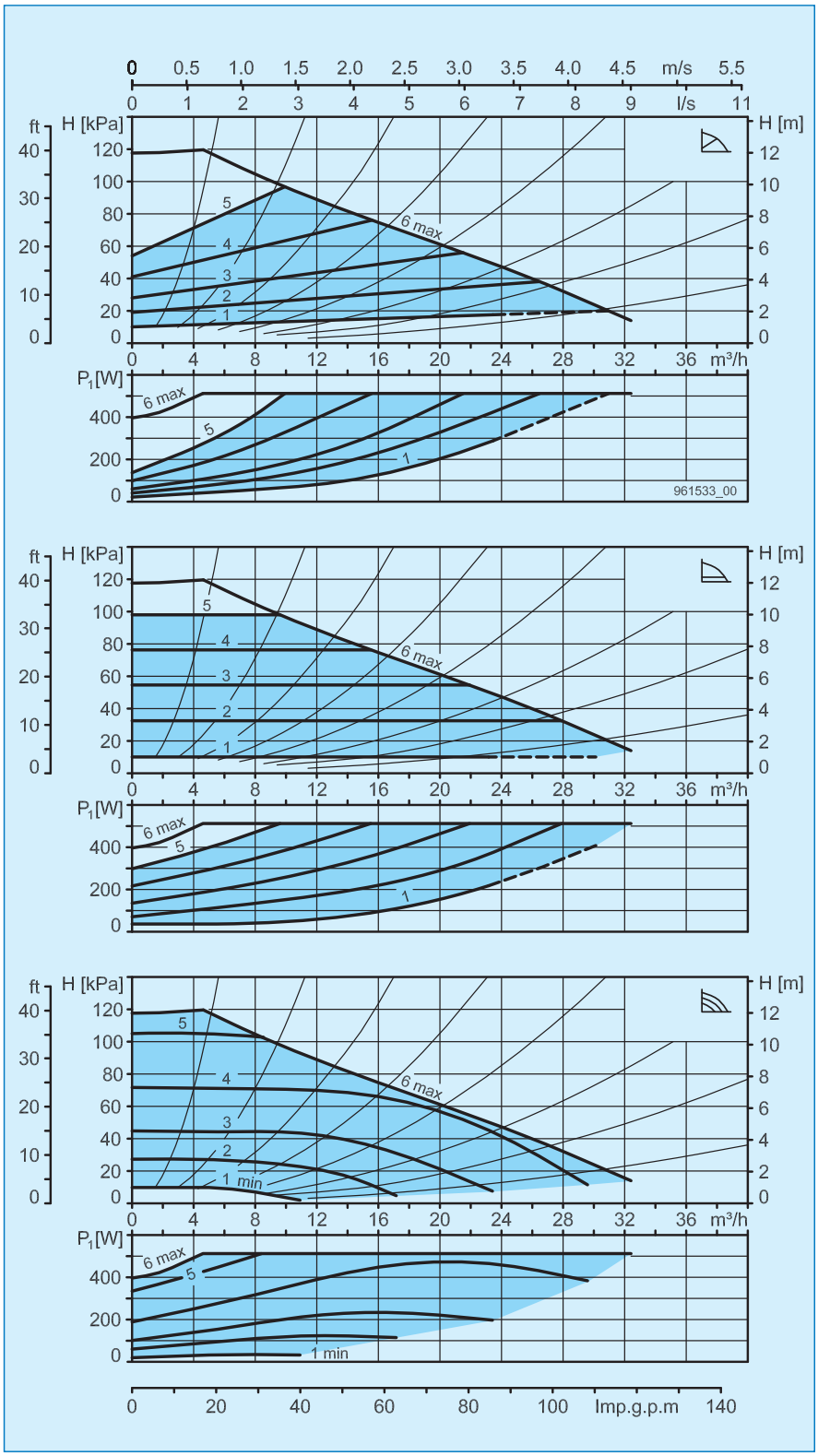
Included in the scope of delivery

- Heat insulation shells
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

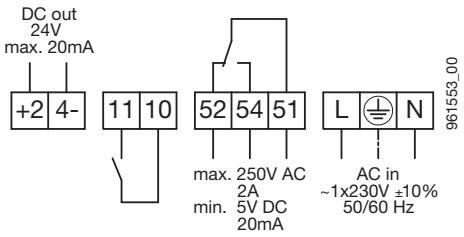
ModulA 50-18 270 RED

Nominal diameter	DN 50
Discharge head H max.	18 m
Installation length	270 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	+15°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	18.8 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	22 - 742 W
Rated current	0.21 - 3.34 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

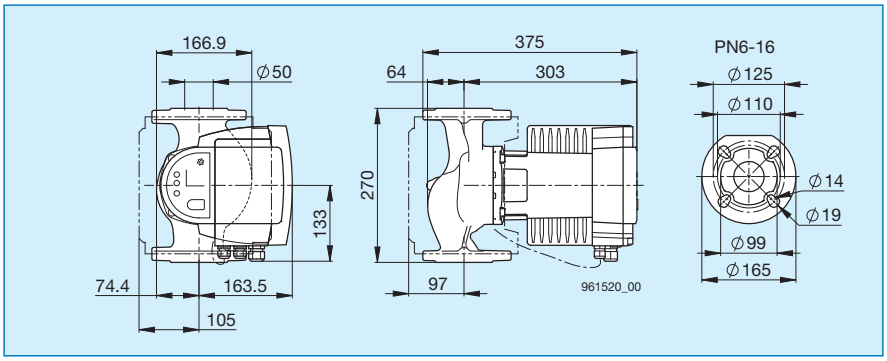
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

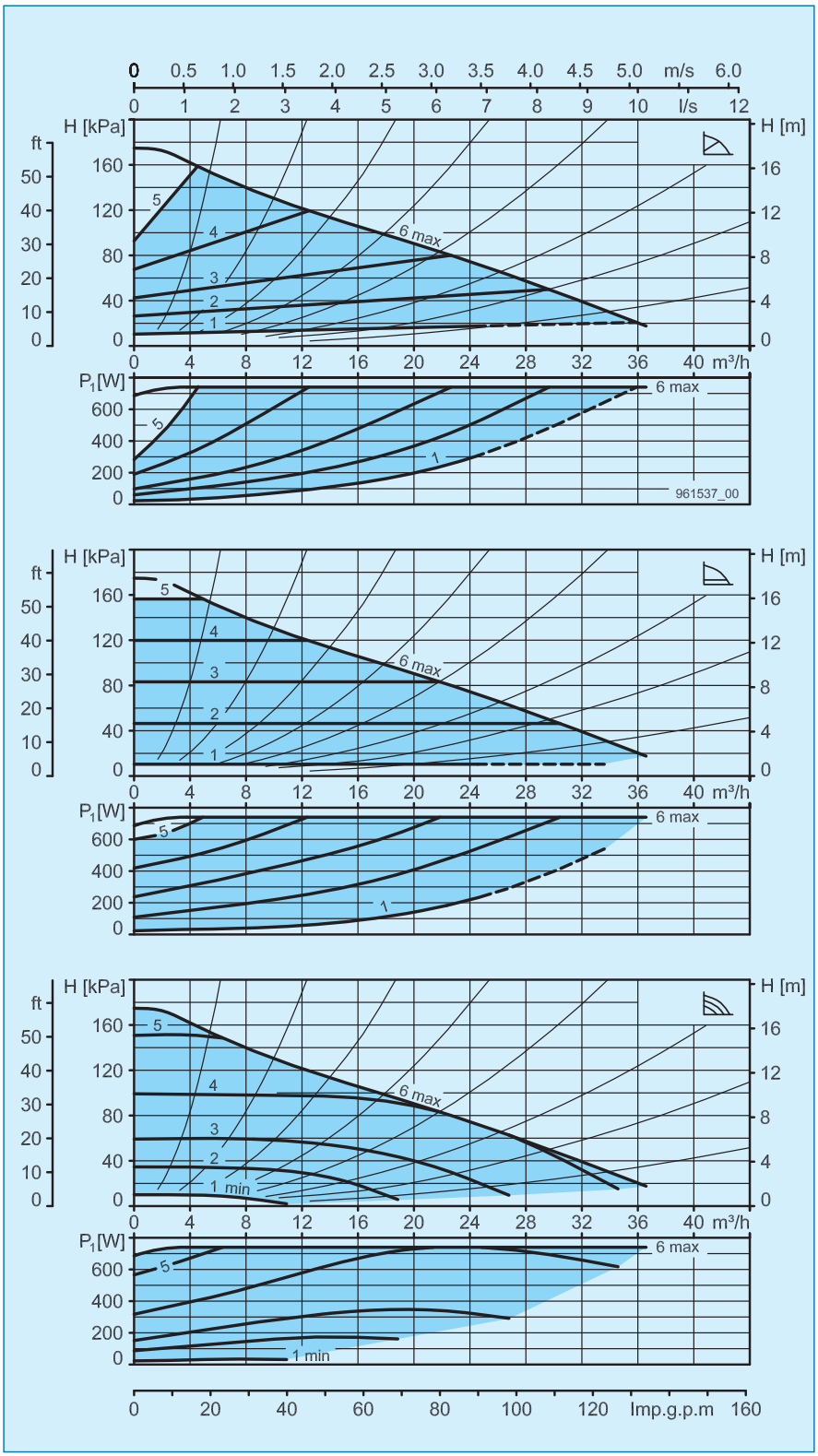
Included in the scope of delivery

- Heat insulation shells
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

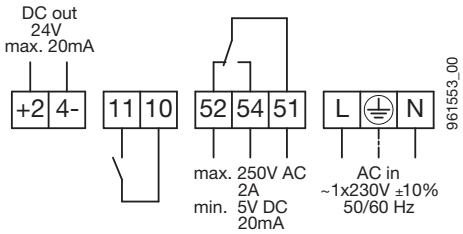
ModulA 65-8 270 RED

Nominal diameter	DN 65
Discharge head H max.	8 m
Installation length	270 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	+15°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	20.6 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	22 - 464 W
Rated current	0.24 - 2.10 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

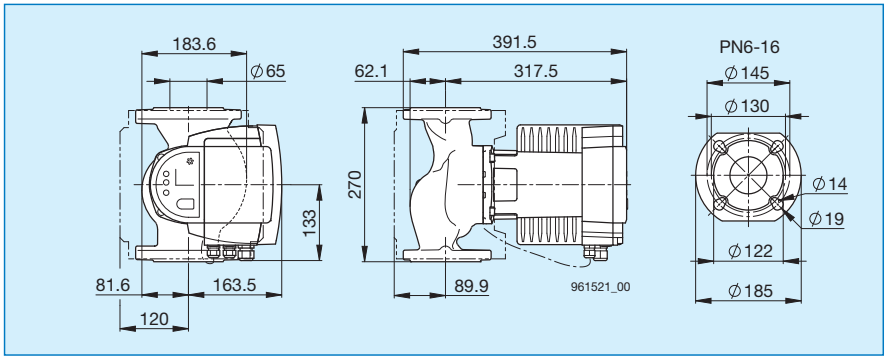
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

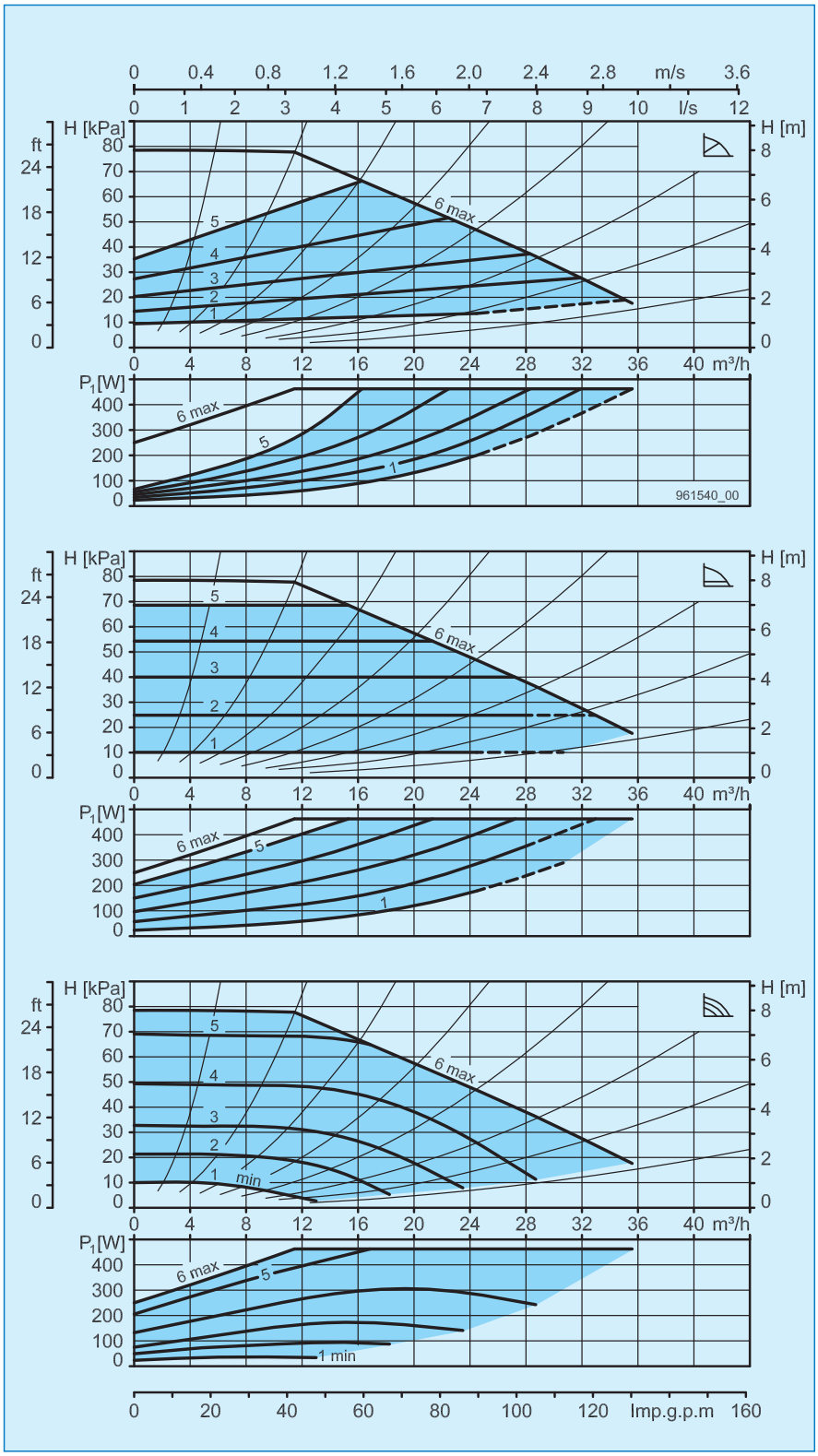
Included in the scope of delivery

- Heat insulation shells
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

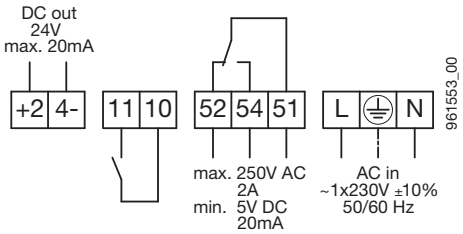
ModulA 65-12 340 RED

Nominal diameter	DN 65
Discharge head H max.	12 m
Installation length	340 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	+15°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	21.5 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	21-736 W
Rated current	0.22-3.32 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

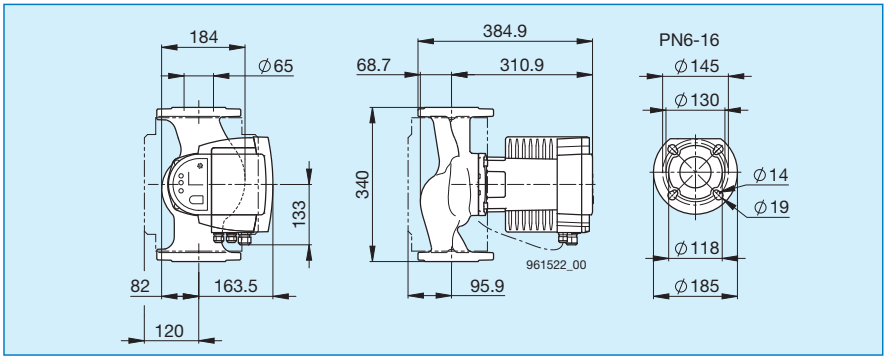
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

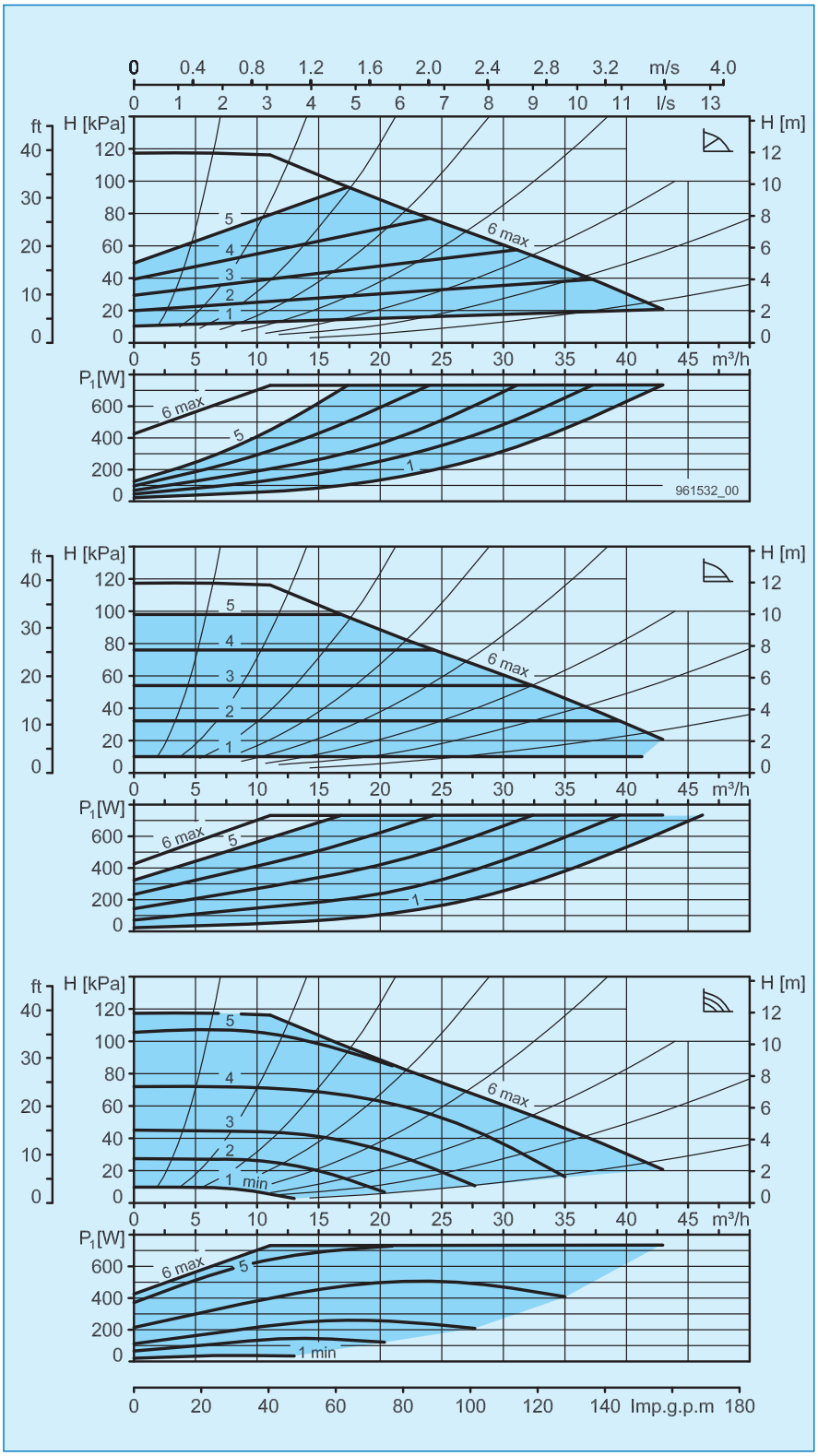
Included in the scope of delivery

- Heat insulation shells
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

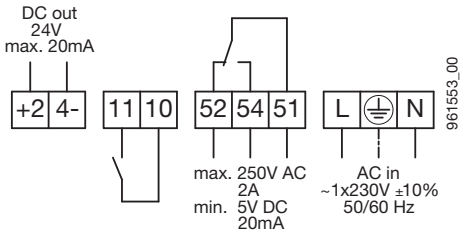
ModulA 65-15 340 RED

Nominal diameter	DN 65
Discharge head H max.	15 m
Installation length	340 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	+15°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	24.0 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	30-1254 W
Rated current	0.28-5.68 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

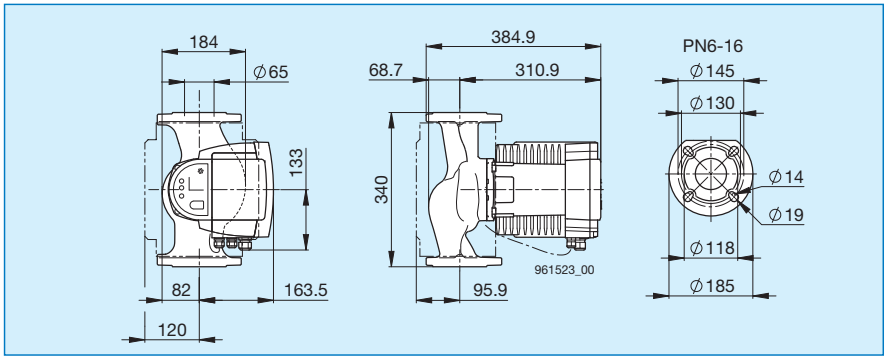
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

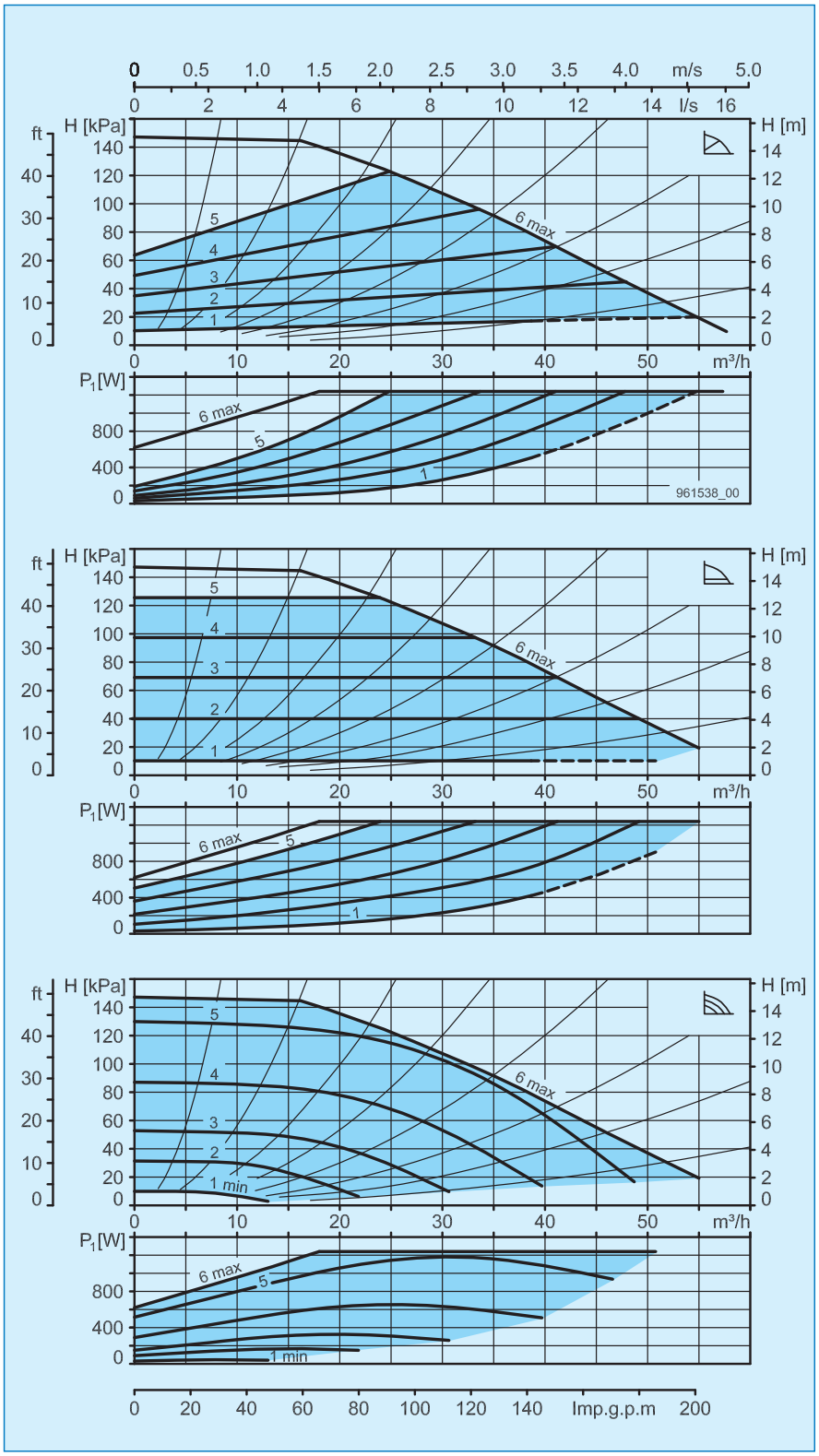
Included in the scope of delivery

- Heat insulation shells
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

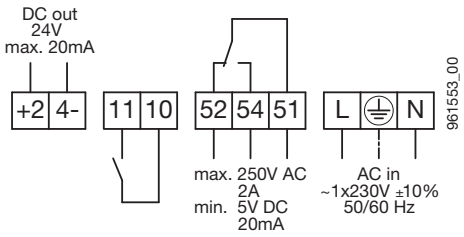
ModulA 80-8 360 RED

Nominal diameter	DN 80	
Discharge head H max.	8 m	
Installation length	360 mm	
Flange connection	PN 6	PN 10/16
Operating pressure max.	6 bar	16 bar
Media temperature	+15°C to +110°C	
Ambient temperature	0°C to +40°C	
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar	
Weight	29.1 kg	

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	29 - 704 W
Rated current	0.29 - 3.08 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

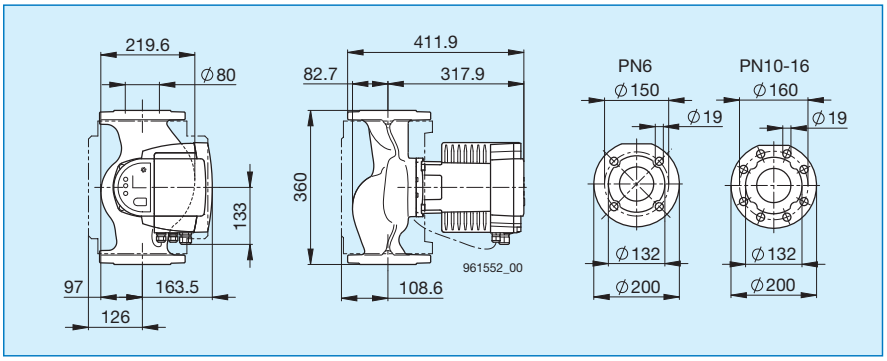
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

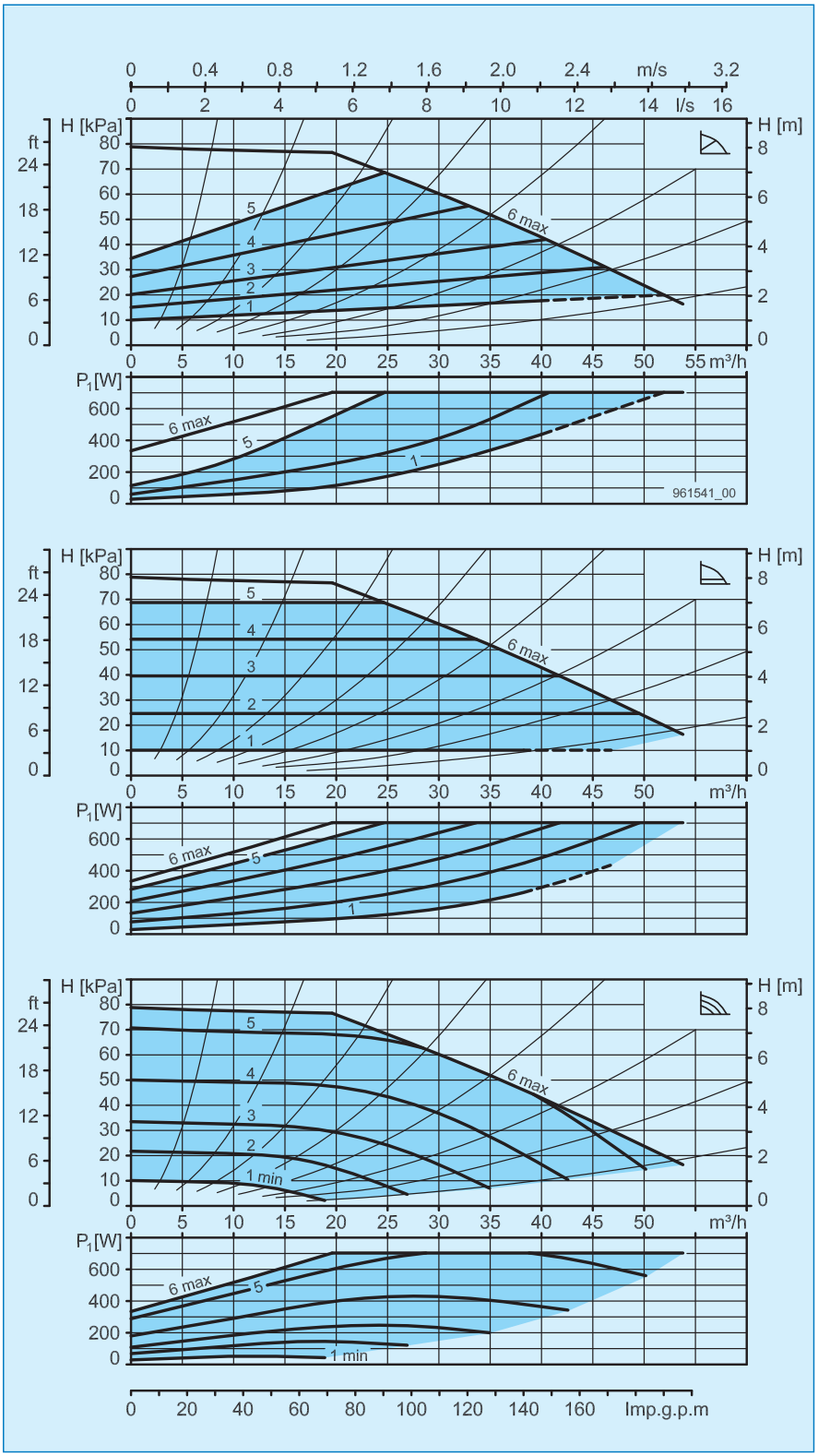
Included in the scope of delivery

- Heat insulation shells
- Seal set for flange PN 6 or PN 10/16

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote





Technical data/Characteristic curves

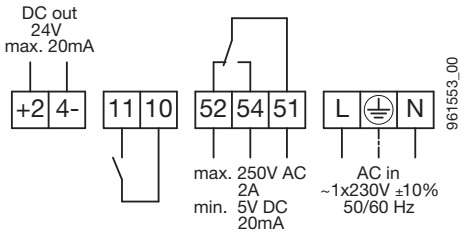
ModulA 80-12 360 RED

Nominal diameter	DN 80	
Discharge head H max.	12 m	
Installation length	360 mm	
Flange connection	PN 6	PN 10/16
Operating pressure max.	6 bar	16 bar
Media temperature	+15°C to +110°C	
Ambient temperature	0°C to +40°C	
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar	
Weight	29.1 kg	

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	35 - 1282 W
Rated current	0.32 - 5.56 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

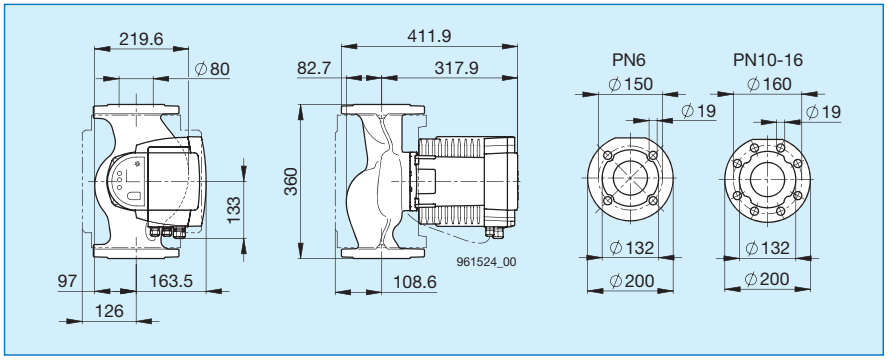
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

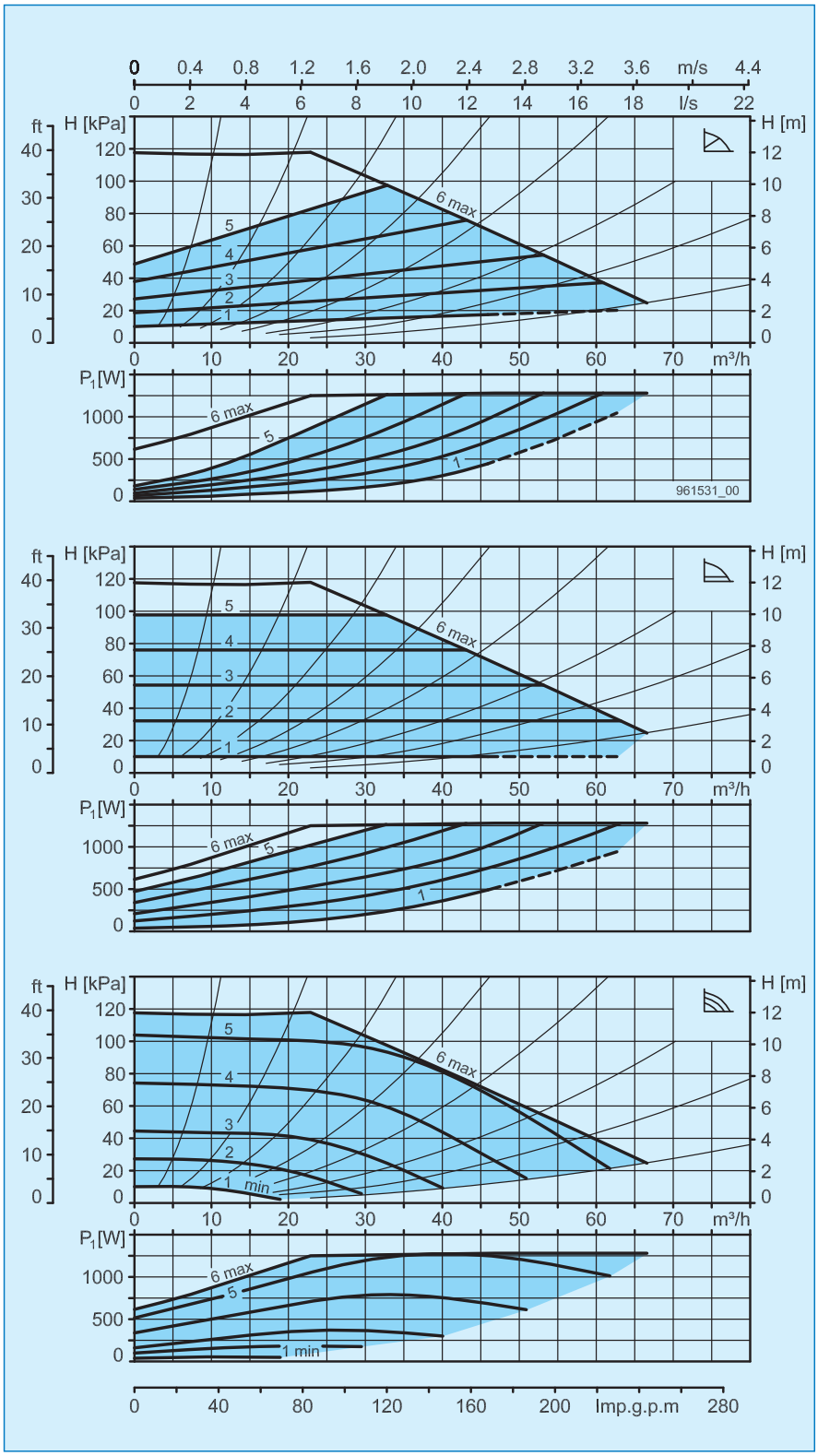
Included in the scope of delivery

- Heat insulation shells
- Seal set for flange PN 6 or PN 10/16

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote





Technical data/Characteristic curves

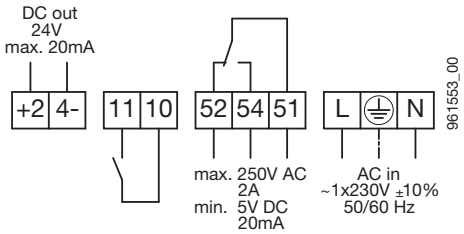
ModulA 100-12 450 RED

Nominal diameter	DN 100	
Discharge head H max.	12 m	
Installation length	450 mm	
Flange connection	PN 6	PN 10/16
Operating pressure max.	6 bar	16 bar
Media temperature	+15°C to +110°C	
Ambient temperature	0°C to +40°C	
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar	
Weight	34.0 kg	

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	35 - 1563 W
Rated current	0.32 - 6.78 A
Motor protection	integrated

Connection diagram



+24-	24 V DC out
11, 10	External OFF or external ON
52, 54, 51	Error or operating message
L, PE, N	Power supply

Switch

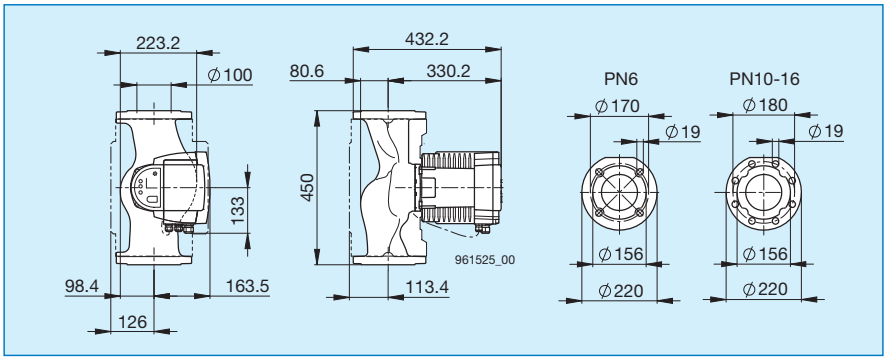
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

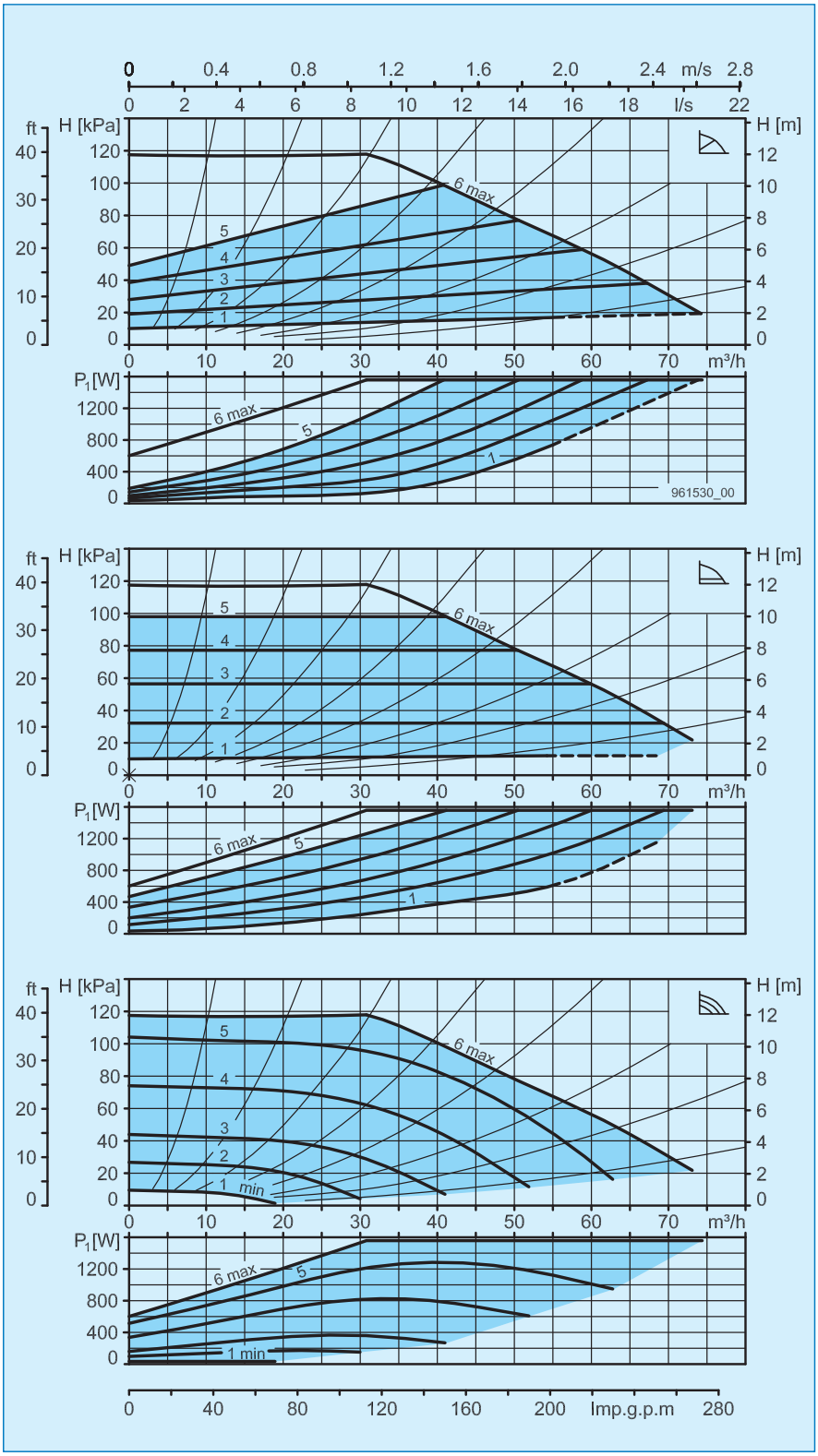
Included in the scope of delivery

- Heat insulation shells
- Seal set for flange PN 6 or PN 10/16

Options

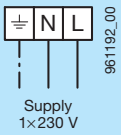
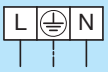
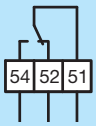
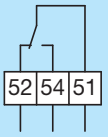
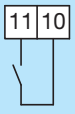
- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote





Standard/Connection diagram

Standard

	AX 12, AX 13 5…45 W	A 12…A 401, A 500 8…174 W	ModulA…RED 16…1563 W
			
Fault or operating message (switchable)	–	✔	✔
External OFF or external ON (switchable)	–	–	✔2)
Power limit (activatable)	–	–	✔
Power limiting (can be deactivated)	–	✔	–
Automatic night lowering (activatable)	✔	✔	–
Thermal insulation shells	✔1)	–	✔
Connection diagram **Pump** **L** = Lead **N** = Neutral line ⏚ = PE wire, protective conductor	 Supply 1×230 V	 Supply 1×230 V	 AC in ~1×230 V ±10% 50/60 Hz
51-54 Error or operating notification (switchable) as closing contact: closes for fault/operation **51-52** Error or operating message (switchable) as opening contact: opens for fault/operation		 max. 250 V 1 A	 max. 250 V AC 2 A min. 5 V DC 20 mA
10-11 External OFF or external ON (switchable) with closing contact			

1) The pumps AX 12-3, -4, AX 13-3, -4 are supplied without heat insulation shells.

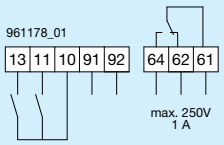
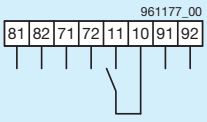
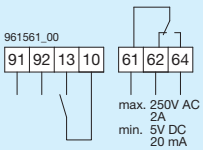
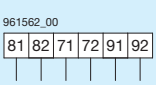
2) We recommend switching module A pumps via contacts 10/11 (external OFF/ON).

■ Options/Connection diagram

Options

	AX 12, AX 13 4…45 W	A 12…A 401, A 500 8…174 W	ModulA…RED 16…1563 W
Biral interface module BIM A signal module – Operating or ready message – External OFF – External minimum speed – Twin pump function	–	✔	–
Biral interface module BIM B control module – External speed specification 0–10 V/0–20 mA – PWM/multi-thermal interface – External OFF – Twin pump function	–	✔	–
Biral interface module BIM A2 signal module – Operating or ready message – External minimum speed – Twin pump function	–	–	✔
Biral interface module BIM B2 control module – External speed specification 0–10 V/0–20 mA – External minimum speed – Twin pump function	–	–	✔
Thermal insulation shells	–	✔	–
Set for recessed installation of electronics	–	–	✔

Connection diagram

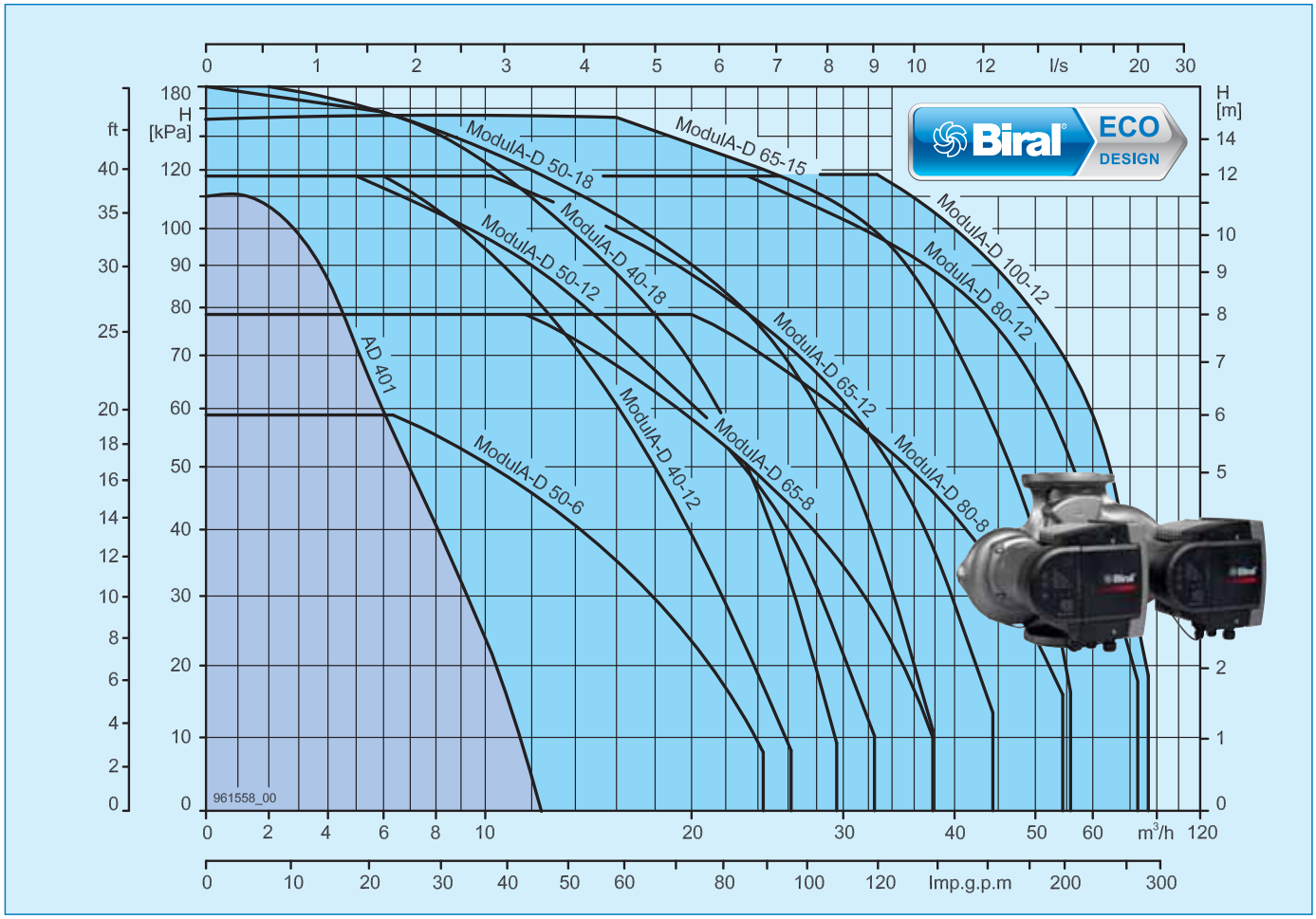
BIM A signal module **10-11** External OFF with closed contact **10-13** External minimum speed with closing contact **61-64** Operating or ready message (switchable) as a closing contact: Closes for operating/ready message **61-62** Operating or ready message (switchable) as opening contact: opens at operating/ready signal **91-92** Twin pump function			
BIM B control module **10-11** External OFF with closing contact **81-82** Multi-thermal/PWM interface for external speed specification **71-72** Analogue input 0…10 V or 0…20 mA for external speed specification **91-92** Twin pump function			
BIM A2 signal module **10-13** External minimum speed with closing contact **61-64** Operating or ready message (switchable) as a closing contact: closes at operating/ready message **61-62** Operating or ready message (switchable) as opening contact: opens at operating/ready message **91-92** Twin pump function			
BIM B2 control module **81-82** Multi-thermal /PWM interface for external speed specification **71-72** Analogue input 0…10 V or 0…20 mA for external speed specification **91-92** Twin pump function			

■ Overview of types/characteristic curves

AD…
ModulA-D… RED

Summary

Type	Connection	Nominal width DN	Discharge head max. mWS	Installation length mm	Operating pressure max./bar	EEI-value
AD 401	PN 6/10	40	11	220	10	≤0.22
ModulA-D 40-12 250 RED	PN 6-16	40	12	250	16	≤0.18
ModulA-D 40-18 250 RED	PN 6-16	40	18	250	16	≤0.18
ModulA-D 50-6 240 RED	PN 6-16	50	6	240	16	≤0.19
ModulA-D 50-12 270 RED	PN 6-16	50	12	270	16	≤0.18
ModulA-D 50-18 270 RED	PN 6-16	50	18	270	16	≤0.17
ModulA-D 65-8 340 RED	PN 6-16	65	8	270	16	≤0.17
ModulA-D 65-12 340 RED	PN 6-16	65	12	340	16	≤0.17
ModulA-D 65-15 340 RED	PN 6-16	65	15	340	16	≤0.17
ModulA-D 80-8 360 RED	PN 6	80	8	360	6	≤0.17
ModulA-D 80-8 360 RED	PN 10/16	80	8	360	16	≤0.17
ModulA-D 80-12 360 RED	PN 6	80	12	360	6	≤0.17
ModulA-D 80-12 360 RED	PN 10/16	80	12	360	16	≤0.17
ModulA-D 100-12 450 RED	PN 6	100	12	450	6	≤0.17
ModulA-D 100-12 450 RED	PN 10/16	100	12	450	16	≤0.17



Description/Part N°

AD 401

Biral pumps AD 401 — Part N°

- High-efficiency pipe installation pump with permanent-magnet motor for hot water and solar heating systems.
- Split pipe in continuous design with two exterior seals, ceramic floating bearings with carbon axial bearings.
- Cast iron pump body
- With attached stepless speed control (pressure-dependent), including sensor system. Proportional pressure, constant pressure or fixed speed freely selectable. Alert or system status message (alternative)
- Options for AD 401
  Signal module BIM A:
  - System status or ready message
  - External OFF
  - External minimum speed
  - Twin pump function

  Control module BIM B:
  - External specified speed 0-10 V/0-20 mA
  - PWM
  - External OFF
  - Twin pump function

Motor
Motor 1 x 230 V, 50 Hz, partially isolatable
Stator winding isolation according to class "H" (180°C).
Integrated motor protection

Operating temperature +15 °C to +95 °C

Operating pressure
AD 401: max. 6/10 bar

Connections
With flange connections including bolts and seals for PN6, without counterflanges.

Design on request
- Adapter pieces for adapting the installation length with replacement pumps (see Biral type comparison).

Biral AD 401 (with flange connections)

Biral Type	PN	DN	Installation length mm	Part N°
AD 401	6/10	40	220	2037 304

Signal module BIM A — 2030 439
- System status message
- External on/off switching
- Night reduction
- Twin pump function

Control module BIM B — 2030 442
- Analogue (0-10 V or 0-20 mA)
- External on/off switching
- PWM (pulse width modulation) signal
- Twin pump function

Notice: Twin pumps
Control module 2x required.

Description/Part N°

Biral pumps ModulA ... RED **Part N°**

- High-efficiency pipe installation pump with permanent-magnet motor for hot water and solar heating systems including thermal insulation jackets
- Speed control for:
  - Proportional pressure pp
  - Constant pressure cp
  - Constant speed cs
- Cast iron pump body
- Alert or system status message (can be toggled)
- Power limit (can be activated)
- External ON/OFF
- Display of operating states
- Signal module BIM-A2 2x installed
  - System status message
  - Night reduction
  - Twin pumps

Motor
Voltage 1 x 230 V, frequency 50/60 Hz, protection rating (IEC 34-5) X4D,
insulation class F (155°C),
integrated motor protection

Energy efficiency index EEI
See Project planning

Medium temperature +15°C to +110 °C

Connections
With flange connections including bolts and seals for PN6, without counterflanges.

For PN10/16 with DN 40 - DN 65 order special sealing set.

Design on request
- Adapter pieces for adapting the installation length with replacement pumps (see "Recirculation pump type comparison").

Notice
We recommend using contacts 10/11 (external ON/OFF) to connect the ModulA-D pump (contact open = pump ON). Variant: Connection via a sufficiently dimensioned switching relay.

Unit type reference for ModulA-D

Example ModulA-D 40-12 250 RED

ModulA	High-efficiency pump
40	Nominal diameter
12	Delivery height (mWC)
250	Installation length (mm)
RED	Heating system

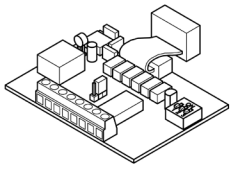
Biral ModulA-D…RED with flange connections

Type	Nominal diameter DN	Delivery height max. mWC	Installation length mm	Flange PN6-16	Operating pressure max. bar	
ModulA-D	40	12	250	6-16	16	2054 018
ModulA-D	40	18	250	6-16	16	2054 019
ModulA-D	50	6	240	6-16	16	2054 020
ModulA-D	50	12	270	6-16	16	2054 021
ModulA-D	50	18	270	6-16	16	2054 022
ModulA-D	65	8	340	6-16	16	2054 023
ModulA-D	65	12	340	6-16	16	2054 024
ModulA-D	65	15	340	6-16	16	2054 025
ModulA-D	80	8	360	6	6	2054 026
ModulA-D	80	8	360	10/16	16	2054 027
ModulA-D	80	12	360	6	6	2054 028
ModulA-D	80	12	360	10/16	16	2054 029
ModulA-D	100	12	450	6	6	2054 030
ModulA-D	100	12	450	10/16	16	2054 031

■ **Part N°**

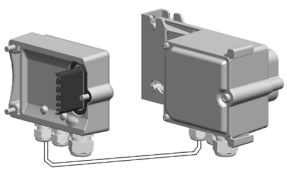
		Part N°
Sealing set for flanges PN 10/16 consisting of screws and seals. Shipped with the pump (packaged separately).		
DN		
40		2030 443
50		2030 444
65		2030 445

Welded-on flanges 2 welded-on flanges black design, without screws and seals. Shipped with the pump (packaged separately).		
DN	PN	
40	6	2030 463
50	6	2030 464
65	6	2030 465
80	6	2030 466
100	6	2030 467
40	10/16	2030 468
50	10/16	2030 469
65	10/16	2030 470
80	10/16	2030 471
100	10/16	2030 472



Biral interface module (BIM)	
Signal module BIM A2 - System status or ready message - External minimum speed - Twin pump function	2054 036
Control module BIM-B2 - Analogue (0-10 V or 0-20 mA) - PWM - Twin pump function	2054 037

Remote adapter - Enables access via smartphone (iOS, Android) for pump configuration and data retrieval. - Biral Remote APP, free Internet download.	2054 038



Kit for offset installation of electronics If space is at a premium or for improved ease of use. Ambient temperature: max. 40°C	2054 035
2 of each are required!	

Technical data/Characteristic curves

AD 401

Characteristics, see single pump, A 401

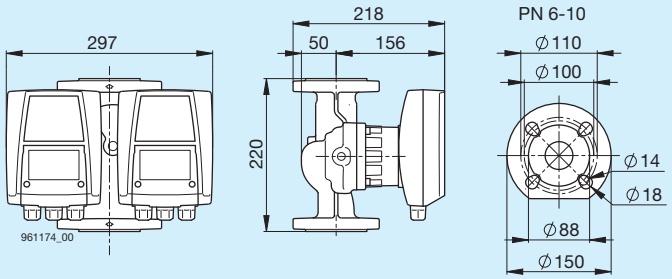
Alternating operation (22h/22h)
or reserve operation (22h/2h)
The pumps are designed for single operation in systems with increased safety requirements (pump 1 or pump 2). The switching of pumps occurs based on time or failure of a pump.
The BIM A signal module (2×) is required.

Parallel operation with constant speed (cs)
(pump 1 + pump 2) are only permitted with constant speed (cs), however, not with proportional pressure (pp) or constant pressure (cp).
In this type of operation, no Biral interface module is required.

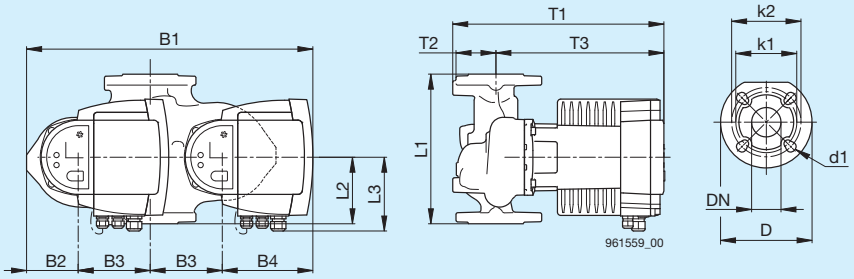
Parallel operation
with external speed specification
(0–10 V/0–20 mA/PWM) can be operated via the BIM B2 control module (2×).

Options:
– BIM A signal module (2×)
– BIM B control module (2×)

AD 401



ModulA-D



ModulA-D ... RED

Characteristics, see single pumps, module A…RED

Required operating pressure at	500 m a.s.l.
at 75°C water temperature	0.90 bar
at 95°C water temperature	1.20 bar
at 110°C water temperature	1.50 bar
For every ±100 m altitude	±0.01 bar

Alternating operation (22h/22h)
or reserve operation (22h/2h)
The pumps are designed for single operation in systems with increased safety requirements (pump 1 or pump 2). The switching of pumps occurs based on time or failure of a pump.

Parallel operation with constant speed (cs)
(pump 1 + pump 2) only permitted with constant speed (cs), however, not with proportional pressure (pp) or constant pressure (cp).
In this type of operation no Biral interface module is required.

Parallel operation
with external speed specification
(0–10 V/0–20 mA/PWM) can be operated via the BIM B2 control module (2×).

Included in the scope of delivery:
– BIM A2 signal module (2×)
and a 2-wire, shielded connection cable.

Options:
– BIM A signal module (2×)
– BIM B control module (2×)

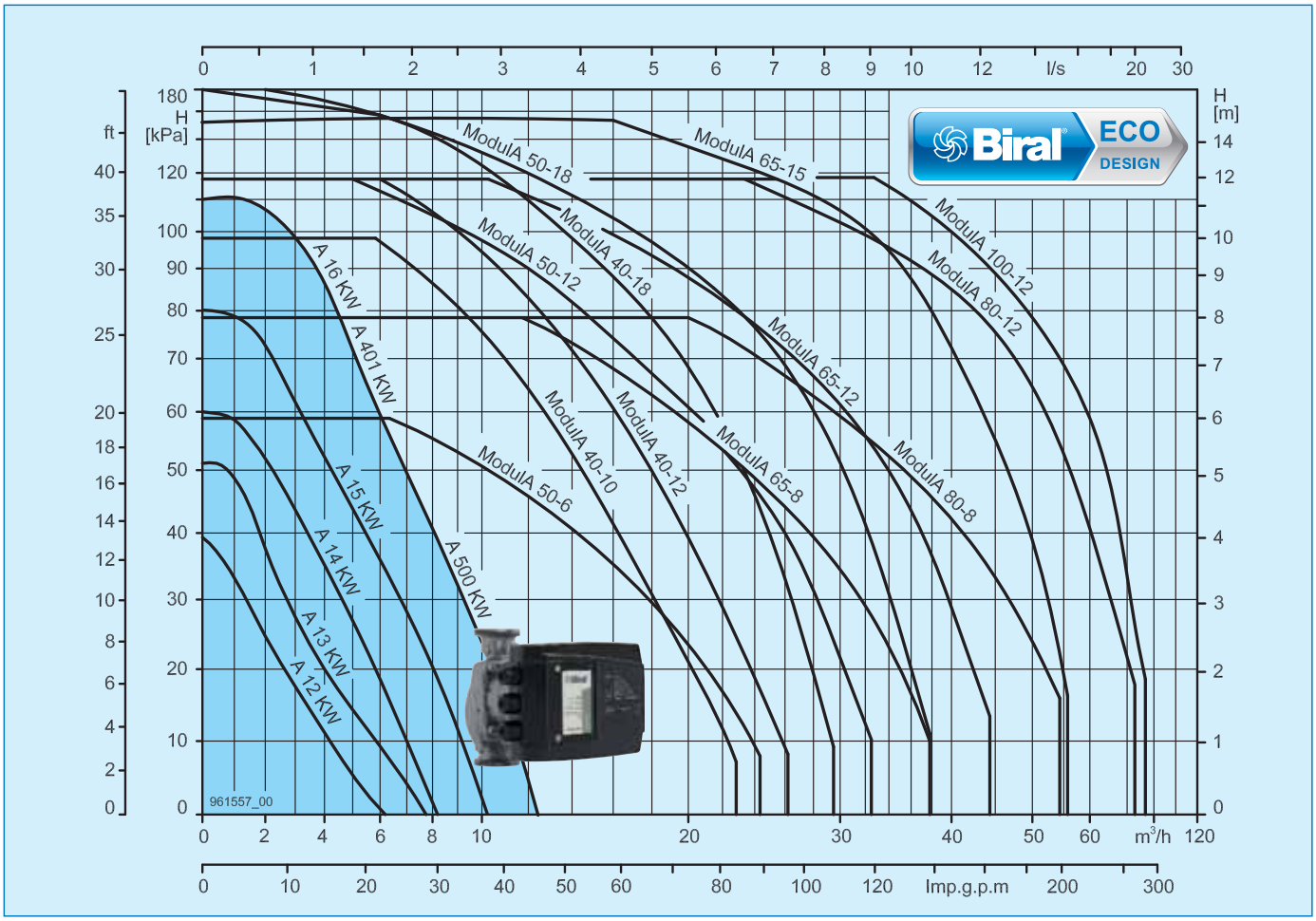
	ModulA-D ... RED								
	40-12 250 40-18 250	50-6 240	50-12 270 50-18 270	65-8 340 65-12 340	65-15 340	80-8 360 80-12 360	80-8 360 80-12 360	100-12 450	100-12 450
	PN 6-16	PN 6-16	PN 6-16	PN 6-16	PN 6-16	PN 6	PN 10/16	PN 6	PN 10/16
DN	40	50	50	65	65	80	80	100	100
L1	250	240	270	340	340	360	360	450	450
B1	512	515	517	522	522	538	538	546	546
B2	88	91	93	98	98	114	114	122	122
B3	130	130	130	130	130	130	130	130	130
B4	164	164	164	164	164	164	164	164	164
D	150	165	165	185	185	200	200	220	220
k1 (PN 6)	100	110	110	130	130	150	–	170	–
k2 (PN 10/16)	110	125	125	145	145	–	160	–	180
d1	4×14/19	4×14/19	4×14/19	4×14/19	4×14/19	4×19	8×19	4×19	8×19
L2	115	125	120	140	140	160	160	190	190
L3	133	133	133	133	133	133	133	133	133
T1	376	383	381	391	391	418	418	436	436
T2	65	71	72	74	74	94	94	99	99
T3	304	303	303	311	311	318	318	330	330
Weight [kg]	32	35	36	42	48	58	58	68	68

■ **Overview of types/characteristic curves**

A 12 KW ... A 401 KW, A 500 KW

Summary

	Type	Connection	Nominal width DN	Discharge head max. mWS	Installation length mm	Operating pressure max./bar	EEI-value
	A 12 KW	G 2”	32	4	170	10	≤0.21
	A 13 KW	G 2”	32	5	170	10	≤0.21
	A 14 KW	G 2”	32	6	170	10	≤0.22
	A 15 KW	G 2”	32	8	170	10	≤0.22
	A 12-1 KW	G 1½”	25	4	180	10	≤0.21
	A 13-1 KW	G 1½”	25	5	180	10	≤0.21
	A 14-1 KW	G 1½”	25	6	180	10	≤0.22
	A 15-1 KW	G 1½”	25	8	180	10	≤0.22
	A 16-1 KW	G 1½”	25	11	180	10	≤0.21
	A 12-2 KW	G 2”	32	4	180	10	≤0.21
	A 13-2 KW	G 2”	32	5	180	10	≤0.21
	A 14-2 KW	G 2”	32	6	180	10	≤0.22
	A 15-2 KW	G 2”	32	8	180	10	≤0.22
	A 16-2 KW	G 2”	32	11	180	10	≤0.21
	A 401 KW	PN 6/10	40	11	220	10	≤0.22
	A 401-1 KW	PN 6/10	40	11	250	10	≤0.22
	A 500 KW	PN 6/10	50	11	220	10	≤0.22



Description/Part N°

Biral A 12 KW – A 16 KW

Biral A 401 KW, A 500 KW

Part N°

Biral pumps
A 12 KW - A 16 KW, A 401 KW, A 500 KW

- High-efficiency pipe installation pump with permanent-magnet motor
- Split pipe in continuous design with two exterior seals, ceramic floating bearings with carbon axial bearings.
- Cast iron pump body
- With attached stepless speed control (pressure-dependent), including sensor system. Proportional pressure, constant pressure or fixed speed freely selectable. Automatic night reduction, can be deactivated. Alert or system status message.
- Options:
  Signal module BIM A:
  - System status or ready message
  - External OFF
  - External minimum speed
  - Twin pump function

  Control module BIM B:
  - External specified speed 0-10 V/0-20 mA
  - PWM
  - External OFF
  - Twin pump function

Motor
Motor 1 x 230 V, 50 Hz, partially isolatable
Stator winding isolation according to class "F" (155 °C)
Integrated motor protection

Medium temperature -10°C to +95 °C

Operating pressure
A 12 KW to A 16 KW: max. 10 bar
A 401 KW, A 500 KW: max. 6/10 bar

Connections
A 12 KW to A 16 KW
With external thread including seals (without fittings)

A 401 KW, A 500 KW
With flange connections including bolts and seals for PN6, without counterflanges.

For PN10/16 order special sealing kit.

Design on request
- Adapter pieces for adapting the installation length with replacement pumps (see "Recirculation pump type comparison").

■ **Part N°**

Biral A 12 KW – A 16 KW

Biral A 12 KW – A 16 KW
max. 10 bar
(with external thread without fitting)

Biral Type	External thread	Installation length mm	Part N°
A 12 KW	R 2"	170	2038 320
A 13 KW	R 2"	170	2038 323
A 14 KW	R 2"	170	2038 326
A 15 KW	R 2"	170	2038 329
A 12-1 KW	R 1½"	180	2038 321
A 13-1 KW	R 1½"	180	2038 324
A 14-1 KW	R 1½"	180	2038 327
A 15-1 KW	R 1½"	180	2038 330
A 16-1 KW	R 1½“	180	2040 762
A 12-2 KW	R 2"	180	2038 322
A 13-2 KW	R 2"	180	2038 325
A 14-2 KW	R 2"	180	2038 328
A 15-2 KW	R 2"	180	2038 331
A 16-2 KW	R 2"	180	2038 332

Fittings
2 fittings including seals.
Shipped with the pump (packaged separately).

DN	Design	Part N°
1 ½" - ¾"	galvanised	2011 887
1 ½" - 1"	galvanised	2036 688
2" - ¾"	galvanised	2030 452
2" - 1"	galvanised	2030 451
2" - 1 ¼"	galvanised	2030 453
2" - 1 ½"	galvanised	2030 454

Biral A 401 KW, A 500 KW

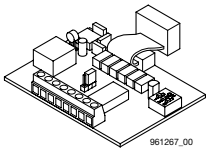
Biral A 401 KW, A 500 KW
max. 6/10 bar
(with flange connections)

Biral Type	DN	Installation length mm	Part N°
A 401 KW	40	220	2038 333
A 401-1 KW	40	250	2038 334
A 500 KW	50	220	2040 763

Part N°

		Part N°
Sealing set for flanges PN 10/16 consisting of screws and seals. Shipped with the pump (packaged separately).		
DN		
40		2030 443
50		2030 444

Threaded flanges 2 threaded flanges, galvanised design, without screws and seals.Shipped with the pump (packaged separately).		
DN	PN	
40	6	2012 155
50	6	2012 156
40	10/16	2012 161
50	10/16	2012 162



Signal module BIM A — 2030 439
- System status or ready message
- External OFF
- External minimum speed
- Twin pump function

Control module BIM B — 2030 442
- External specified speed 0-10 V/0-20 mA
- PWM
- External OFF
- Twin pump function

Technical data/Characteristic curves

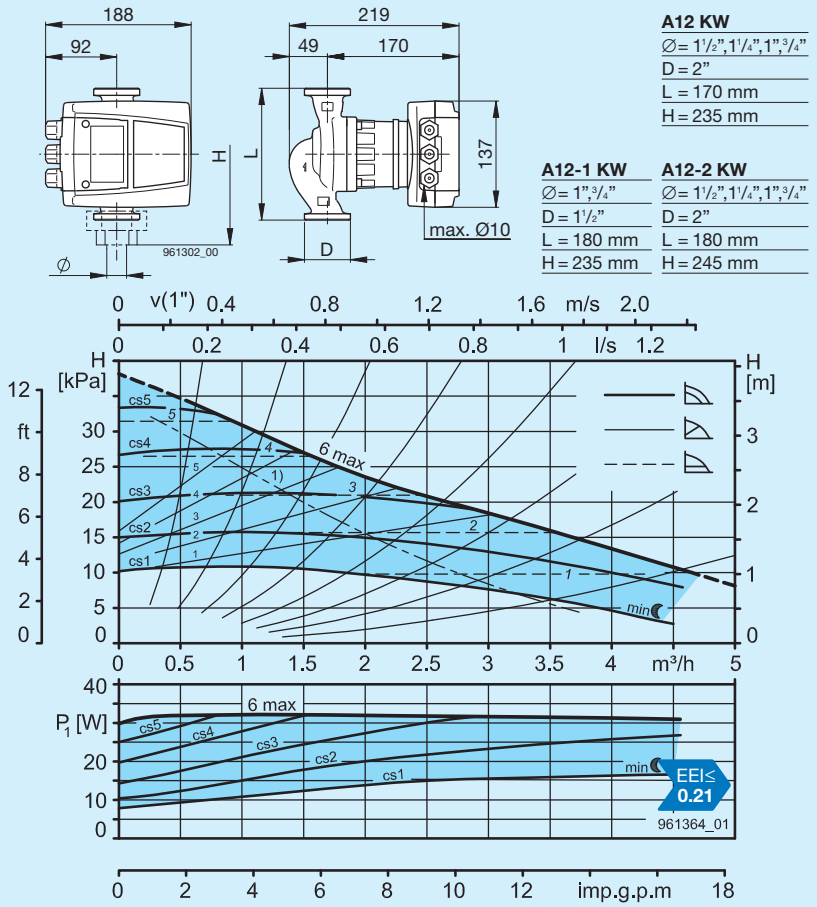
A 12 KW, -1, -2

Installation length		**170/180 mm**
Operating pressure max.		10 bar
Media temperature		–10°C to +95°C
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		3.8 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…0.25 A
	min	0.14 A
Power	Regulation	8…33 W
	min	8…19 W

Ambient temp.	Media temperature	
°C	min. °C	max. °C
30	–10	95
35	–10	90
40	–10	70

The pump is suitable for cold water application.
The pump is fitted with internal electric motor protection and requires no external motor protection.
The pump is provided with fault or operating message (switchable).

Options:
– BIM A signal module
– BIM B control module



1) As delivered with power limiting/Constant speed, 6

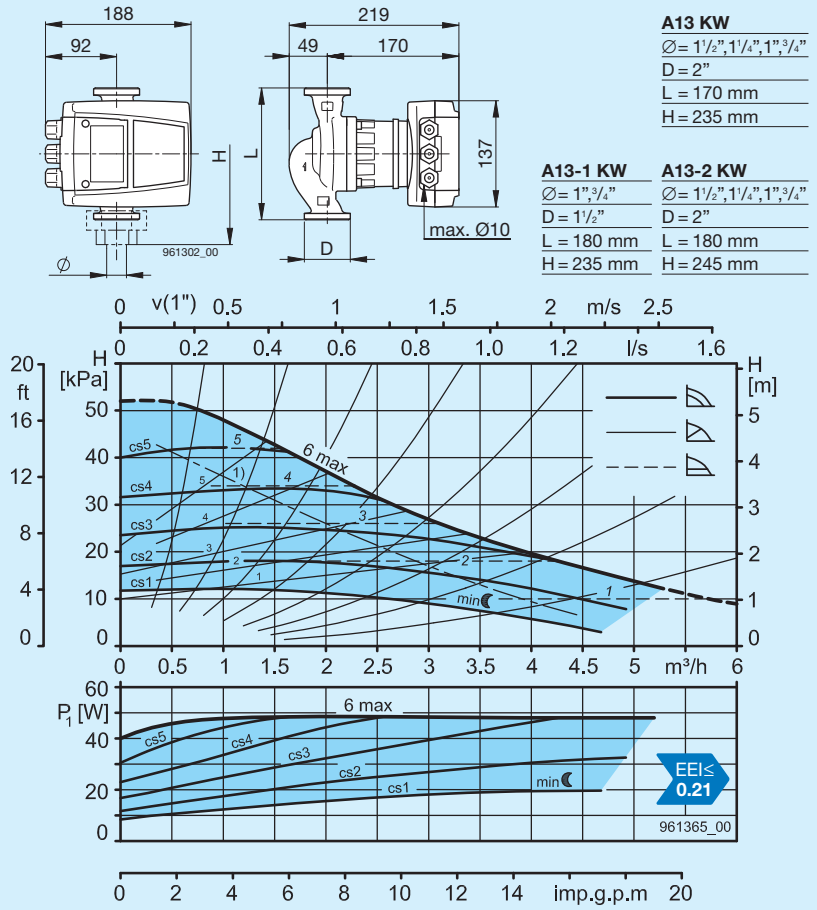
A 13 KW, -1, -2

Installation length		**170/180 mm**
Operating pressure max.		10 bar
Media temperature		–10°C to +95°C
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		3.8 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…0.35 A
	min	0.14 A
Power	Regulation	8…50 W
	min	8…19 W

Ambient temp.	Media temperature	
°C	min. °C	max. °C
30	–10	95
35	–10	90
40	–10	70

The pump is suitable for cold water application.
The pump is fitted with internal electric motor protection and requires no external motor protection.
The pump is provided with fault or operating message (switchable).

Options:
– BIM A signal module
– BIM B control module



1) As delivered with power limiting/Constant speed, 6

Technical data/Characteristic curves

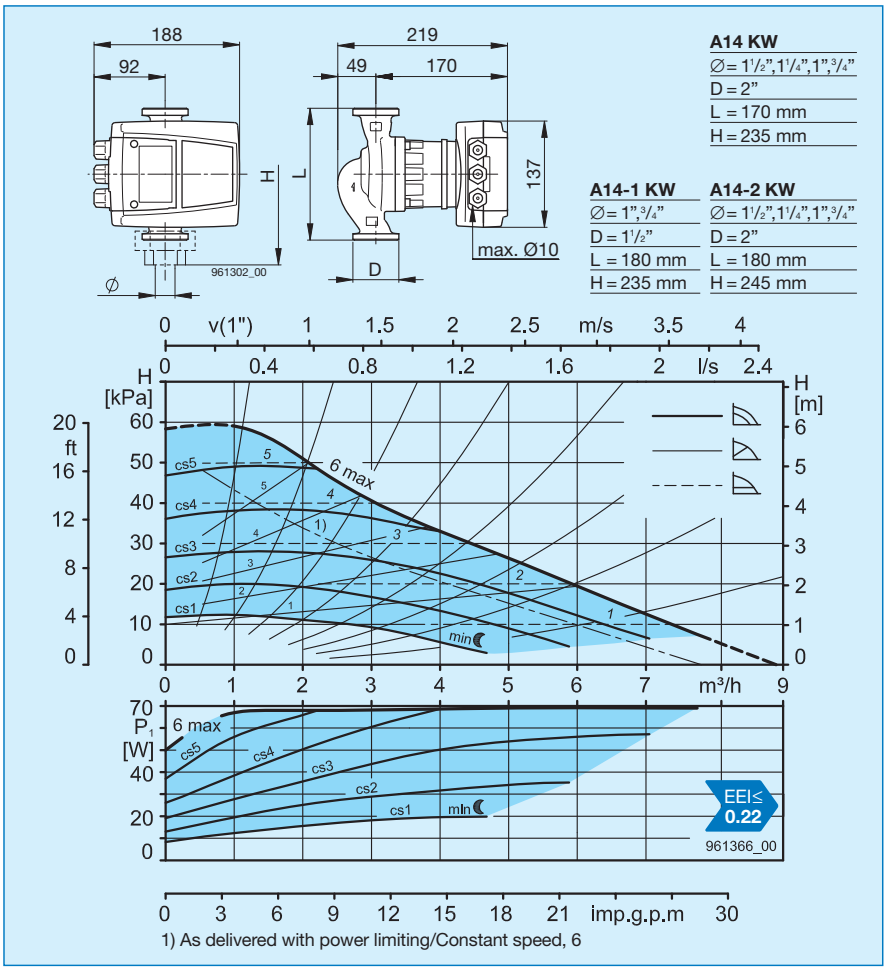
A 14 KW, -1, -2

Installation length		**170/180 mm**
Operating pressure max.		10 bar
Media temperature		–10°C to +95°C
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		3.8 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…0.5 A
	min	0.14 A
Power	Regulation	8…70 W
	min	8…19 W

Ambient temp.	Media temperature	
°C	min. °C	max. °C
30	–10	95
35	–10	90
40	–10	70

The pump is suitable for cold water application.
The pump is fitted with internal electric motor protection and requires no external motor protection.
The pump is provided with fault or operating message (switchable).

Options:
– BIM A signal module
– BIM B control module



1) As delivered with power limiting/Constant speed, 6

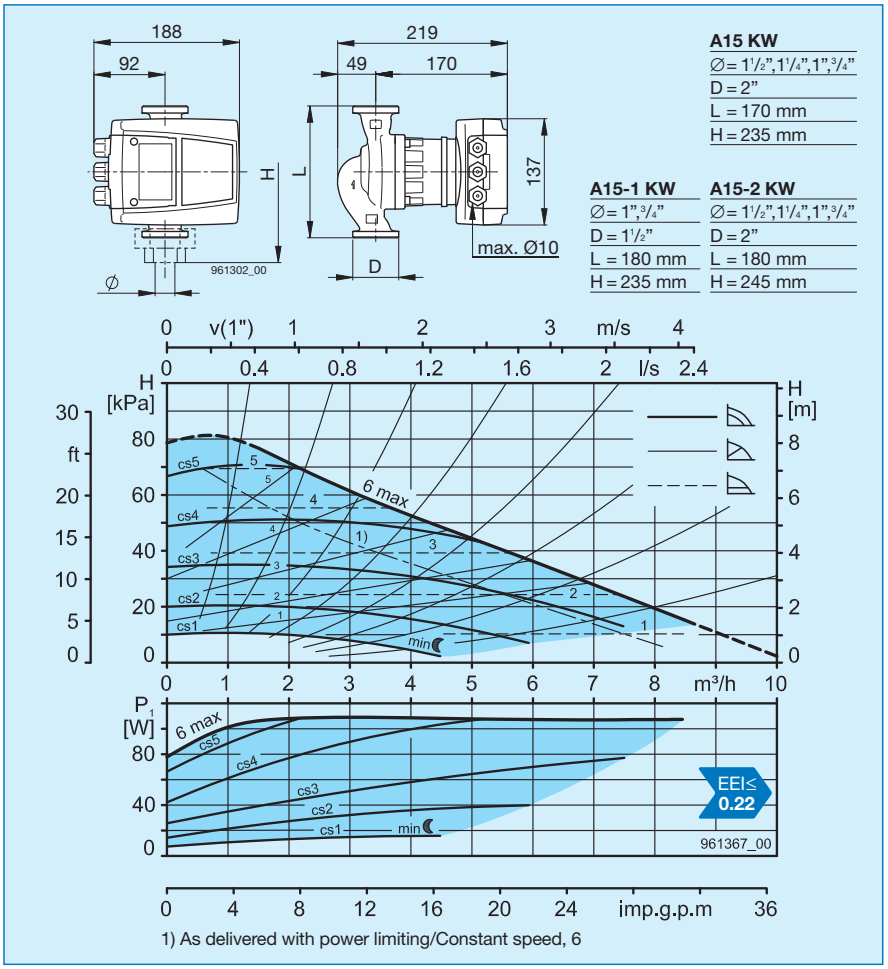
A 15 KW, -1, -2

Installation length		**170/180 mm**
Operating pressure max.		10 bar
Media temperature		–10°C to +95°C
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		3.8 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…0.8 A
	min	0.14 A
Power	Regulation	8…107 W
	min	8…19 W

Ambient temp.	Media temperature	
°C	min. °C	max. °C
30	–10	95
35	–10	90
40	–10	70

The pump is suitable for cold water application.
The pump is fitted with internal electric motor protection and requires no external motor protection.
The pump is provided with fault or operating message (switchable).

Options:
– BIM A signal module
– BIM B control module



1) As delivered with power limiting/Constant speed, 6

Technical data/Characteristic curves

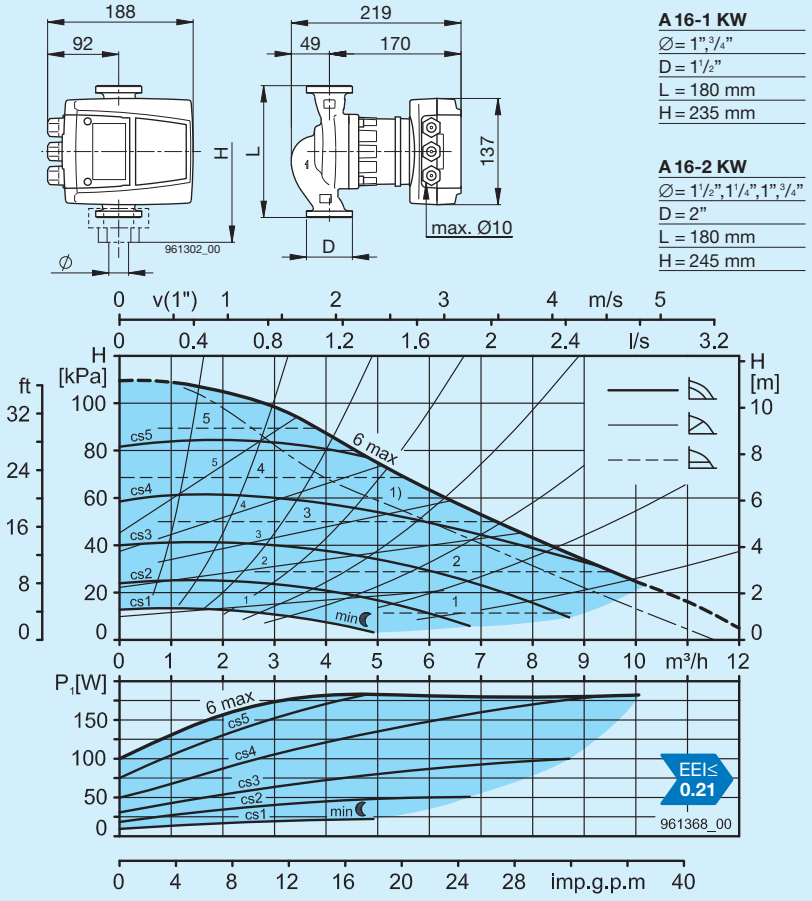
A 16-1 KW, A 16-2 KW

Installation length		**180 mm**
Operating pressure max.		10 bar
Media temperature		–10°C to +95°C
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		3,8 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…1.25 A
	min	0.14 A
Power	Regulation	8…174 W
	min	8…19 W

Ambient temp.	Media temperature	
°C	min. °C	max. °C
30	–10	95
35	–10	90
40	–10	70

The pump is suitable for cold water application.
The pump is fitted with internal electric motor protection and requires no external motor protection.
The pump is provided with fault or operating message (switchable).

Options:
– BIM A signal module
– BIM B control module



1) As delivered with power limiting/Constant speed, 6

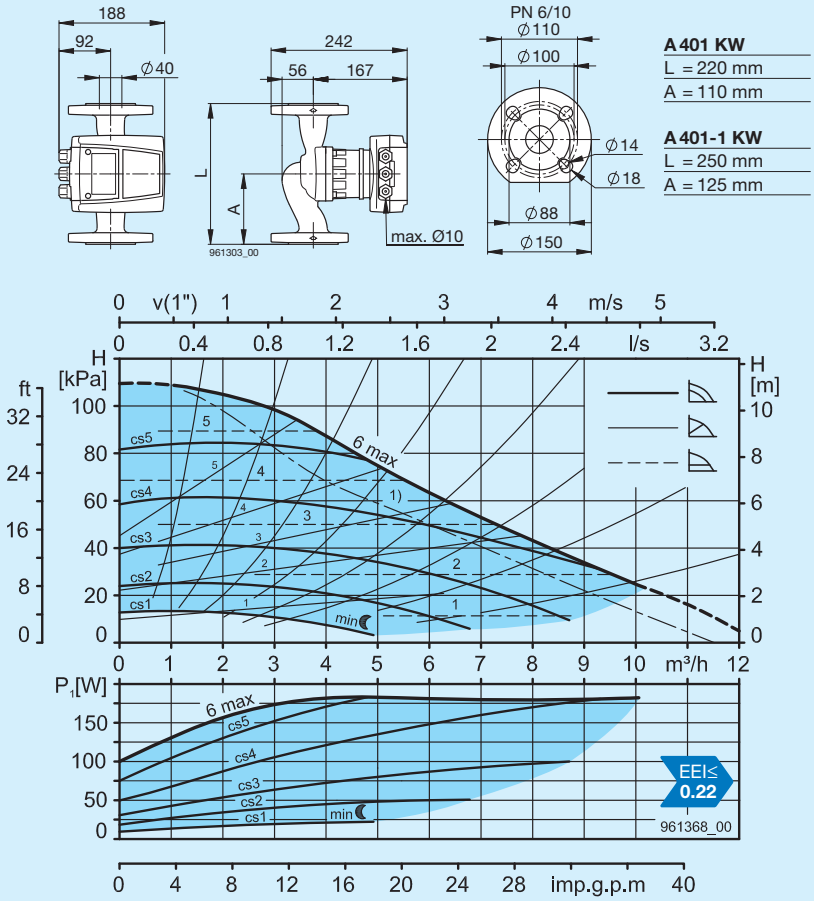
A 401 KW, A 401-1 KW

Installation length	**A 401 KW** **A 401-1 KW**	**220 mm** **250 mm**
Operating pressure max.		10 bar
Media temperature		–10°C to +95°C
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		9 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…1.25 A
	min	0.14 A
Power	Regulation	8…174 W
	min	8…19 W

Ambient temp.	Media temperature	
°C	min. °C	max. °C
30	–10	95
35	–10	90
40	–10	70

The pump is suitable for cold water application.
The pump is fitted with internal electric motor protection and requires no external motor protection.
The pump is provided with fault or operating message (switchable).

Options:
– BIM A signal module
– BIM B control module



1) As delivered with power limiting/Constant speed, 6

Technical data

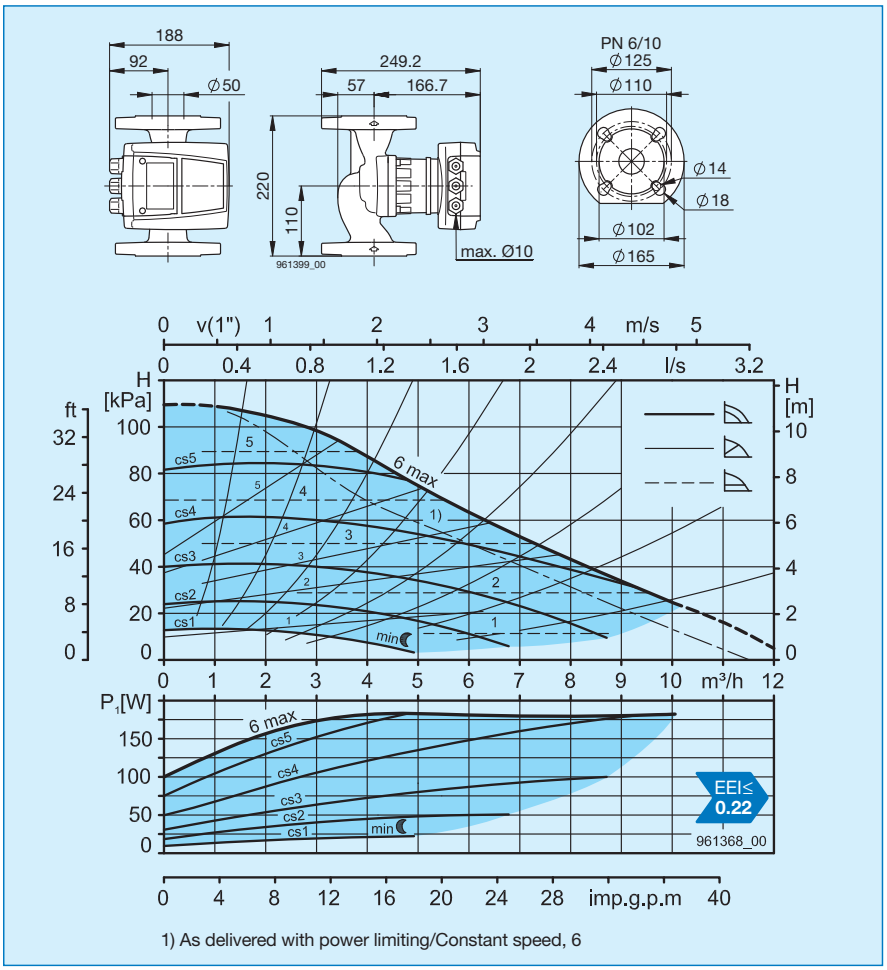
A 500 KW

Installation length		**220 mm**
Operating pressure max.		10 bar
Media temperature		–10°C to +95°C
Ambient temperature		max. 40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		11 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…1.25 A
	min	0.14 A
Power	Regulation	8…174 W
	min	8…19 W

Ambient temp.	Media temperature	
°C	min. °C	max. °C
30	–10	95
35	–10	90
40	–10	70

The pump is suitable for cold water application.
The pump is fitted with internal electric motor protection and requires no external motor protection.
The pump is provided with fault or operating message (switchable).

Options:
– BIM A signal module
– BIM B control module



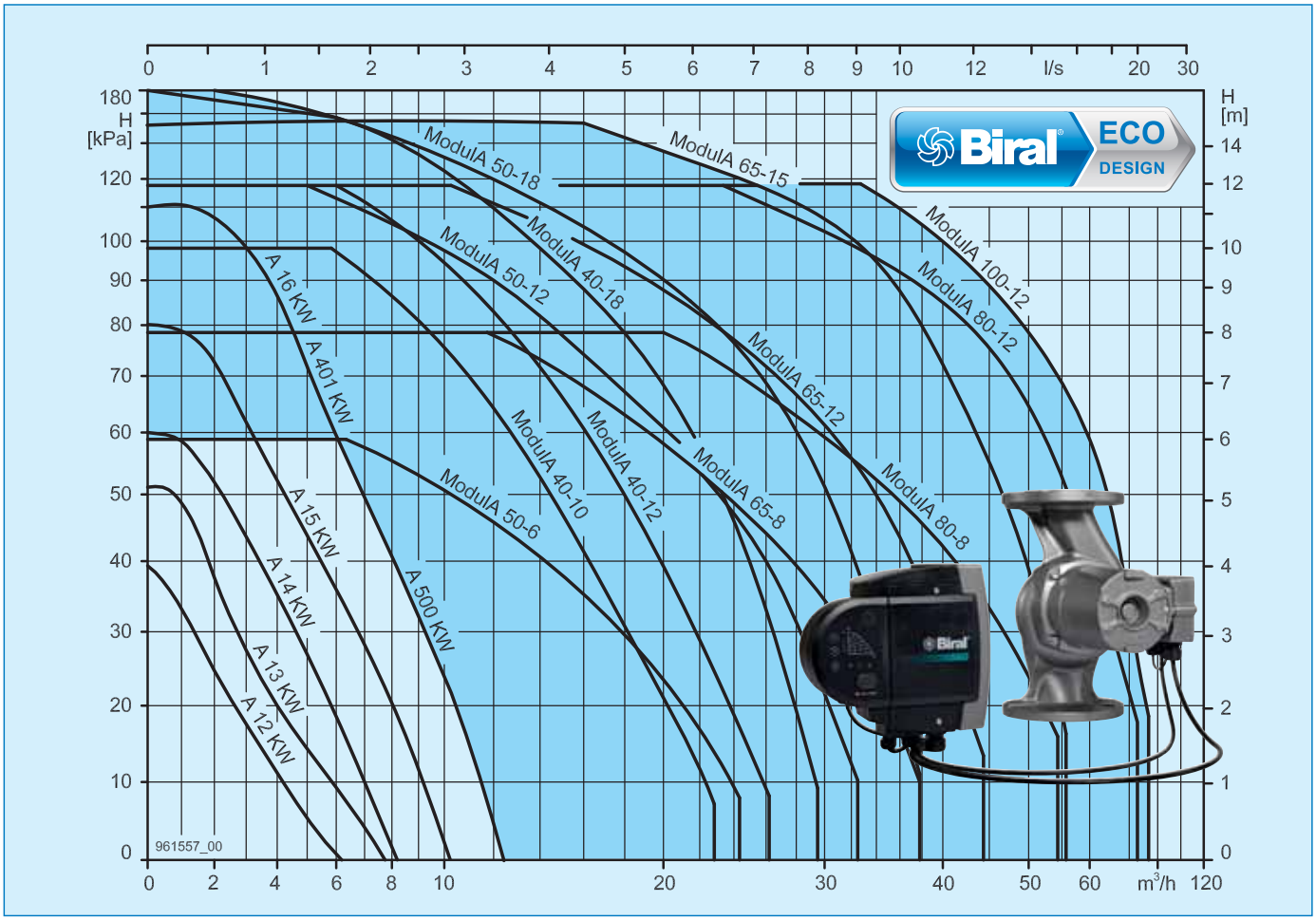
1) As delivered with power limiting/Constant speed, 6

■ **Overview of types/characteristic curves**

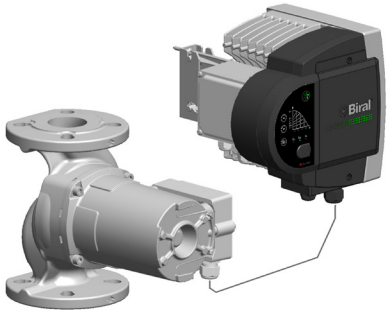
ModulA ... GREEN
with flange connections

Summary

Type	Connection	Nominal width DN	Discharge head max. mWS	Installation length mm	Operating pressure max./bar	EEI-value
ModulA 40-10 220 GREEN	PN 6-16	40	10	220	16	≤0.19
ModulA 40-12 250 GREEN	PN 6-16	40	12	250	16	≤0.18
ModulA 40-18 250 GREEN	PN 6-16	40	18	250	16	≤0.18
ModulA 50-6 240 GREEN	PN 6-16	50	6	240	16	≤0.19
ModulA 50-12 270 GREEN	PN 6-16	50	12	270	16	≤0.18
ModulA 50-18 270 GREEN	PN 6-16	50	18	270	16	≤0.17
ModulA 65-8 270 GREEN	PN 6-16	65	8	270	16	≤0.17
ModulA 65-12 340 GREEN	PN 6-16	65	12	340	16	≤0.17
ModulA 65-15 340 GREEN	PN 6-16	65	15	340	16	≤0.17
ModulA 80-8 360 GREEN	PN 6	80	8	360	6	≤0.17
ModulA 80-8 360 GREEN	PN 10/16	80	8	360	16	≤0.17
ModulA 80-12 360 GREEN	PN 6	80	12	360	6	≤0.17
ModulA 80-12 360 GREEN	PN 10/16	80	12	360	16	≤0.17
ModulA 100-12 450 GREEN	PN 6	100	12	450	6	≤0.17
ModulA 100-12 450 GREEN	PN 10/16	100	12	450	16	≤0.17



Description/Part N°



Biral ModulA ... GREEN
Connecting cable 2 m

Biral pumps ModulA ... GREEN — **Part N°**

- High-efficiency pipe installation pump with permanent-magnet motor with special protective coating for cold water systems.
- Speed control for
  - Proportional pressure pp
  - Constant pressure cp
  - Constant speed cs
- Cast iron pump body
- Alert or system status message (can be toggled)
- Power limit (can be activated)
- External OFF or external ON (can be toggled)
- Display of operating states
- Pump electronics with cable, plug connection and wall console for offset installation.
- Frost protection max. glycol content 50%

Motor
Voltage 1 x 230 V, frequency 50/60 Hz, protection rating (IEC 34-5) IP44,
insulation class F (155°C),
integrated motor protection

Medium temperature -10°C to +95 °C

Connections
With flange connections including bolts and seals for PN6, without counterflanges.

For PN10/16 with DN 40 - DN 65 order special sealing set.

Design on request
- Adapter pieces for adapting the installation length with replacement pumps (see "Recirculation pump type comparison").

Notice
We recommend using contacts 10/11 (external OFF or external ON) to connect the ModulA pump.Variant: Connection via a sufficiently dimensioned switching relay.

Unit type reference for ModulA

Example ModulA 40-10 220 GREEN

ModulA	High-efficiency pump
40	Nominal diameter
10	Delivery height (mWC)
220	Installation length (mm)
GREEN	Cold water

Biral ModulA ... GREEN with flange connections

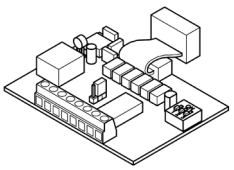
Type	Nominal diameter DN	Delivery height max. mWC	Installation length mm	Flange PN	Operating pressure max. bar	
ModulA	40	10	220	6-16	16	2053 990
ModulA	40	12	250	6-16	16	2053 991
ModulA	40	18	250	6-16	16	2053 992
ModulA	50	6	240	6-16	16	2053 993
ModulA	50	12	270	6-16	16	2053 994
ModulA	50	18	270	6-16	16	2053 995
ModulA	65	8	270	6-16	16	2053 996
ModulA	65	12	340	6-16	16	2053 997
ModulA	65	15	340	6-16	16	2053 998
ModulA	80	8	360	6	6	2054 000
ModulA	80	8	360	10/16	16	2054 001
ModulA	80	12	360	6	6	2054 002
ModulA	80	12	360	10/16	16	2054 003
ModulA	100	12	450	6	6	2054 004
ModulA	100	12	450	10/16	16	2054 005

■ **Part N°**

		Part N°
Sealing set for flanges PN 10/16 consisting of screws and seals. Shipped with the pump (packaged separately).		
DN		
40		2030 443
50		2030 444
65		2030 445

Threaded flanges 2 threaded flanges, galvanised design, without screws and seals.Shipped with the pump (packaged separately).		
DN	PN	
40	6	2012 155
50	6	2012 156
65	6	2012 157
40	10/16	2012 161
50	10/16	2012 162
65	10/16	2012 163

Larger flanges on site!



Biral interface module (BIM)

Signal module BIM A2 2054 036
- System status or ready message
- External minimum speed
- Twin pump function

Control module BIM B2 2054 037
- External specified speed 0-10 V/0-20 mA
- PWM
- Twin pump function

Remote adapter 2054 038
- Enables access via smartphone (iOS, Android) for pump configuration and data retrieval.
- Biral Remote APP, free Internet download.

Technical data/Characteristic curves

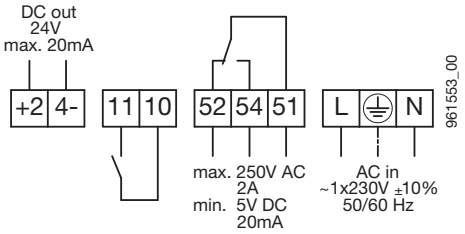
ModulA 40-10 220 GREEN

Nominal diameter	DN 40
Discharge head H max.	10 m
Installation length	220 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	–10°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	18.3 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	18 - 341 W
Rated current	0.19 - 1.54 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

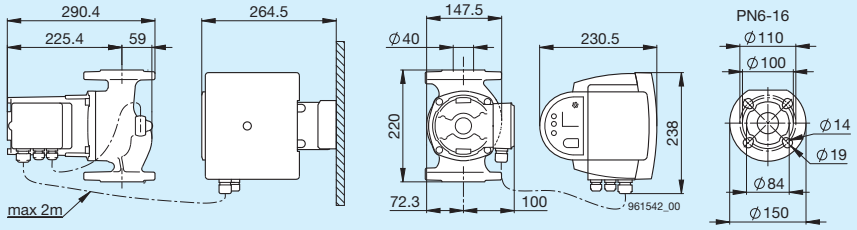
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

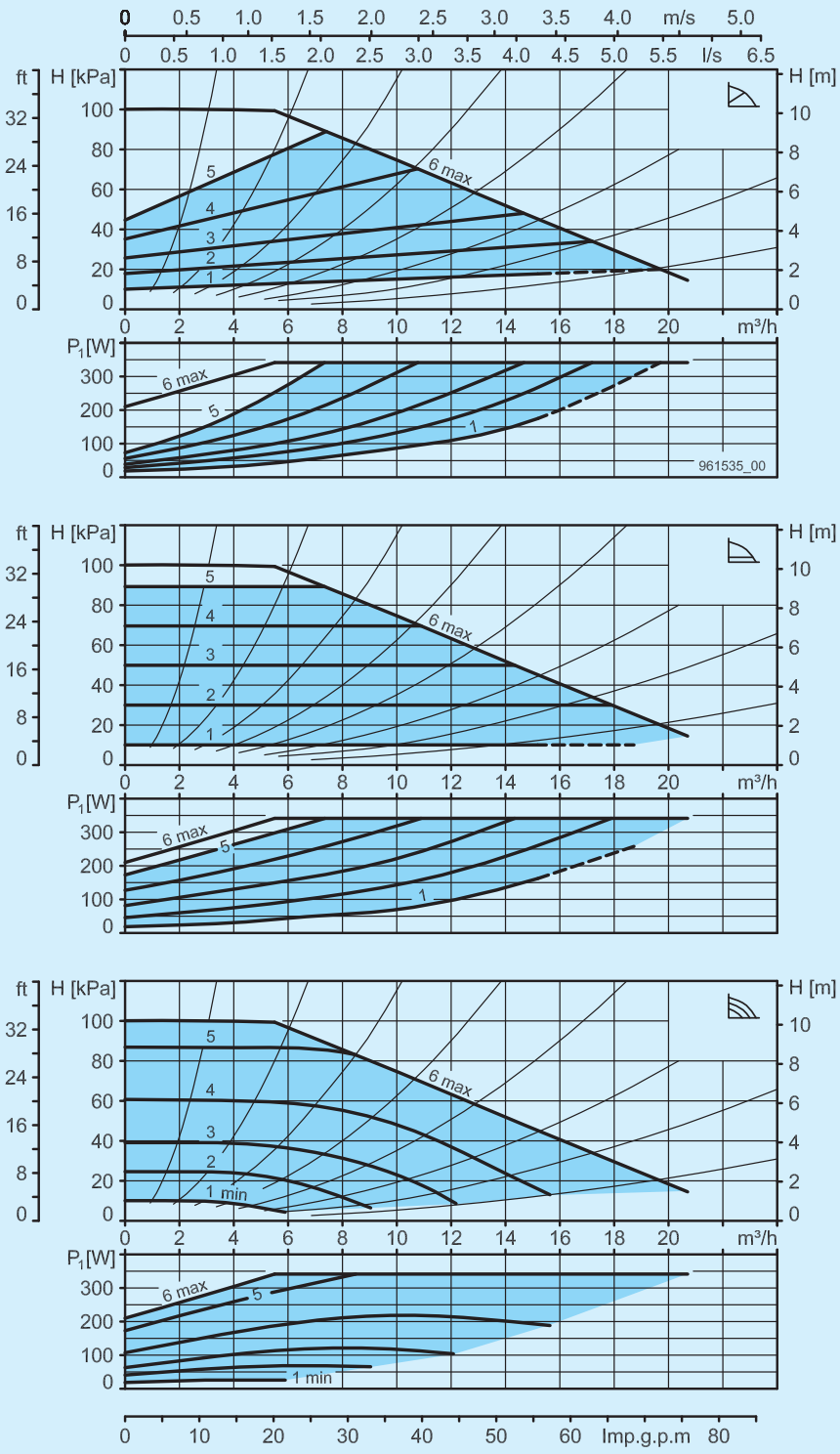
Included in the scope of delivery

- Kit for recessed installation of electronics (pre-installed)
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

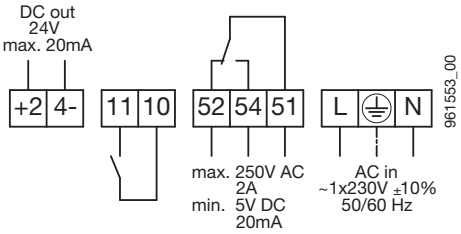
ModulA 40-12 250 GREEN

Nominal diameter	DN 40
Discharge head H max.	12 m
Installation length	250 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	–10°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	18.1 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	17 - 421 W
Rated current	0.18 - 1.91 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

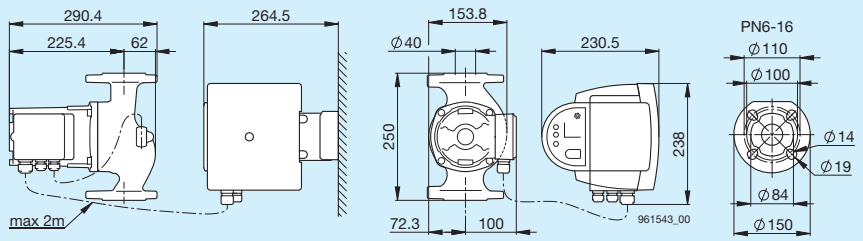
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

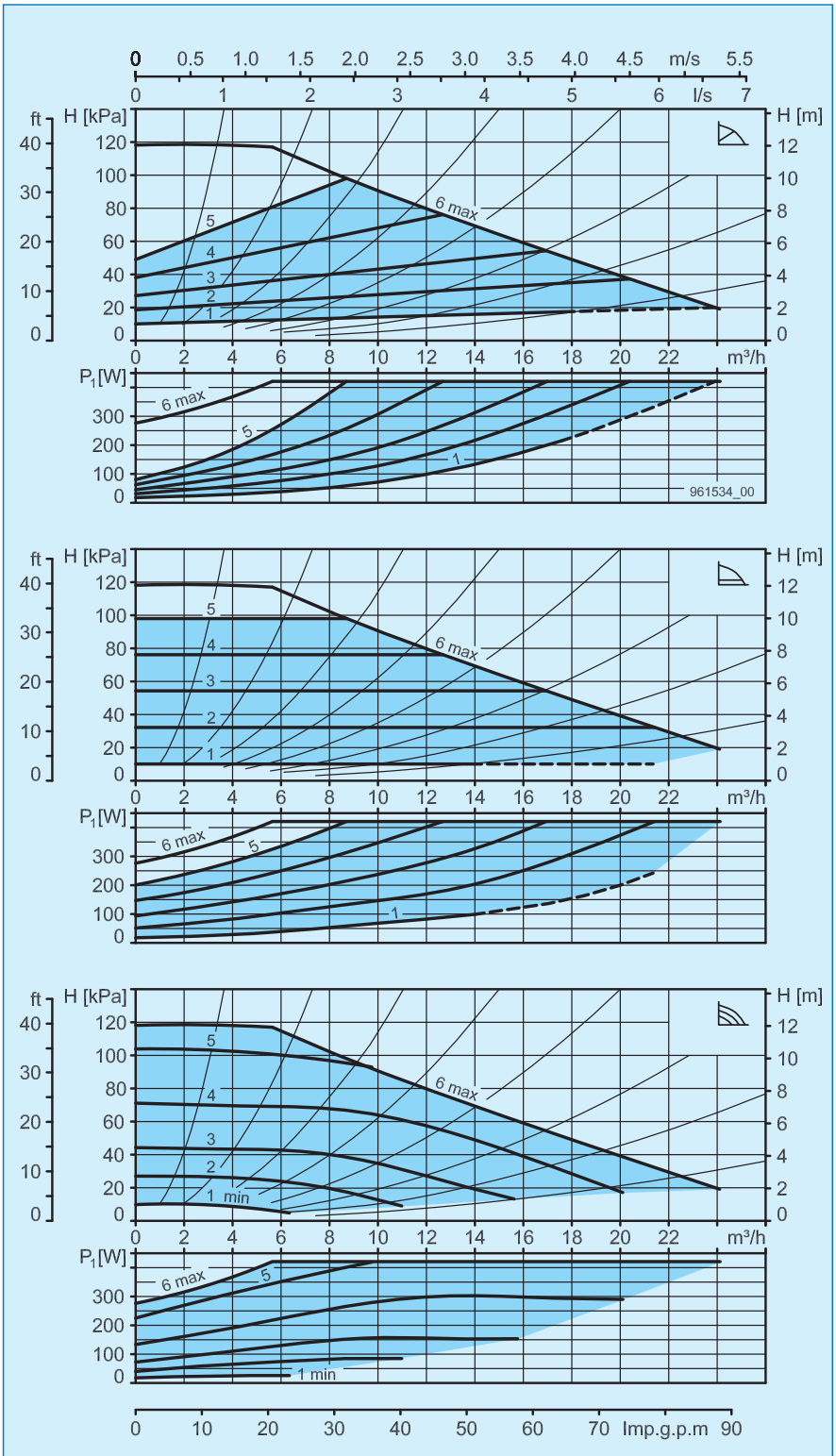
Included in the scope of delivery

- Kit for recessed installation of electronics (pre-installed)
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

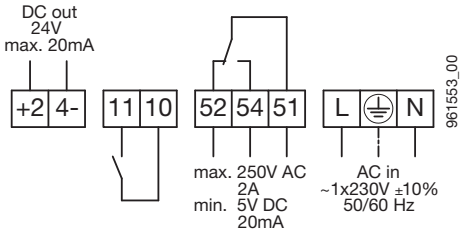
ModulA 40-18 250 GREEN

Nominal diameter	DN 40
Discharge head H max.	18 m
Installation length	250 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	–10°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	18.1 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	16 - 594 W
Rated current	0.18 - 2.63 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

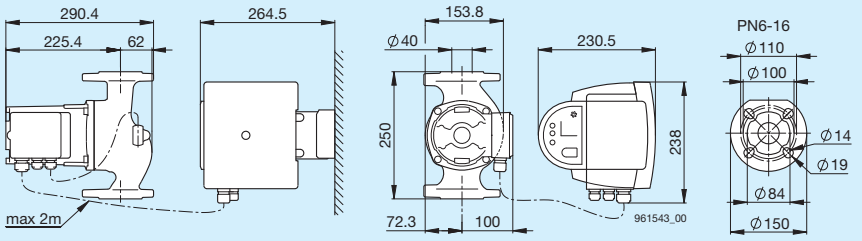
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

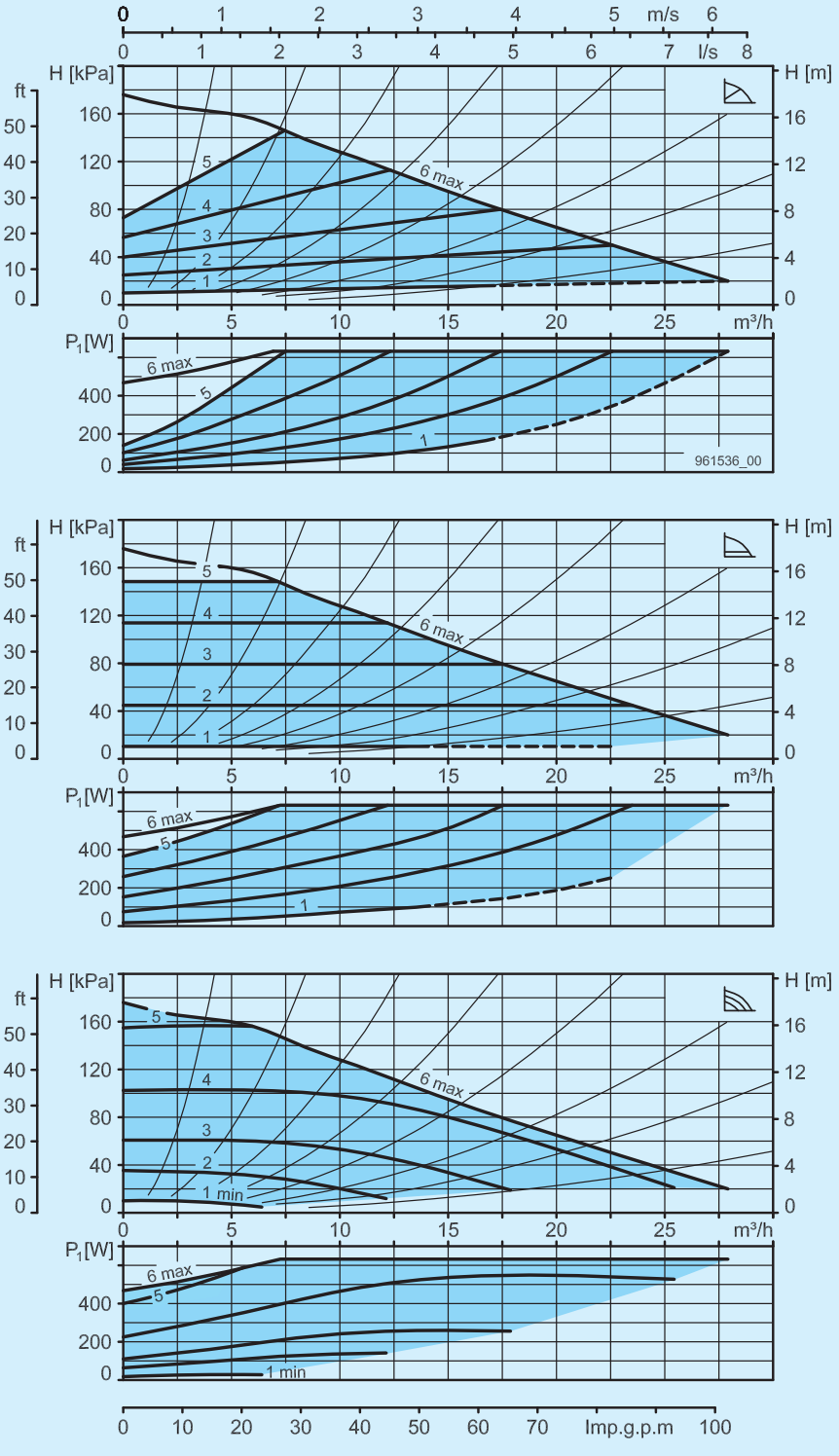
Included in the scope of delivery

- Kit for recessed installation of electronics (pre-installed)
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

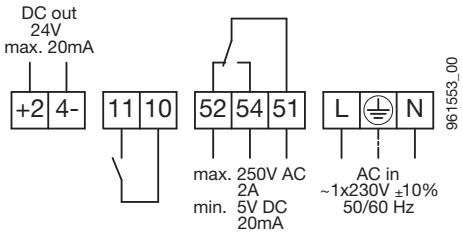
ModulA 50-6 240 GREEN

Nominal diameter	DN 50
Discharge head H max.	6 m
Installation length	240 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	–10°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	19.6 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	21 - 236 W
Rated current	0.21 - 1.09 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

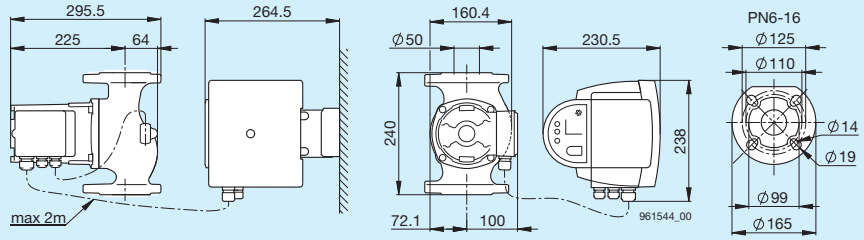
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

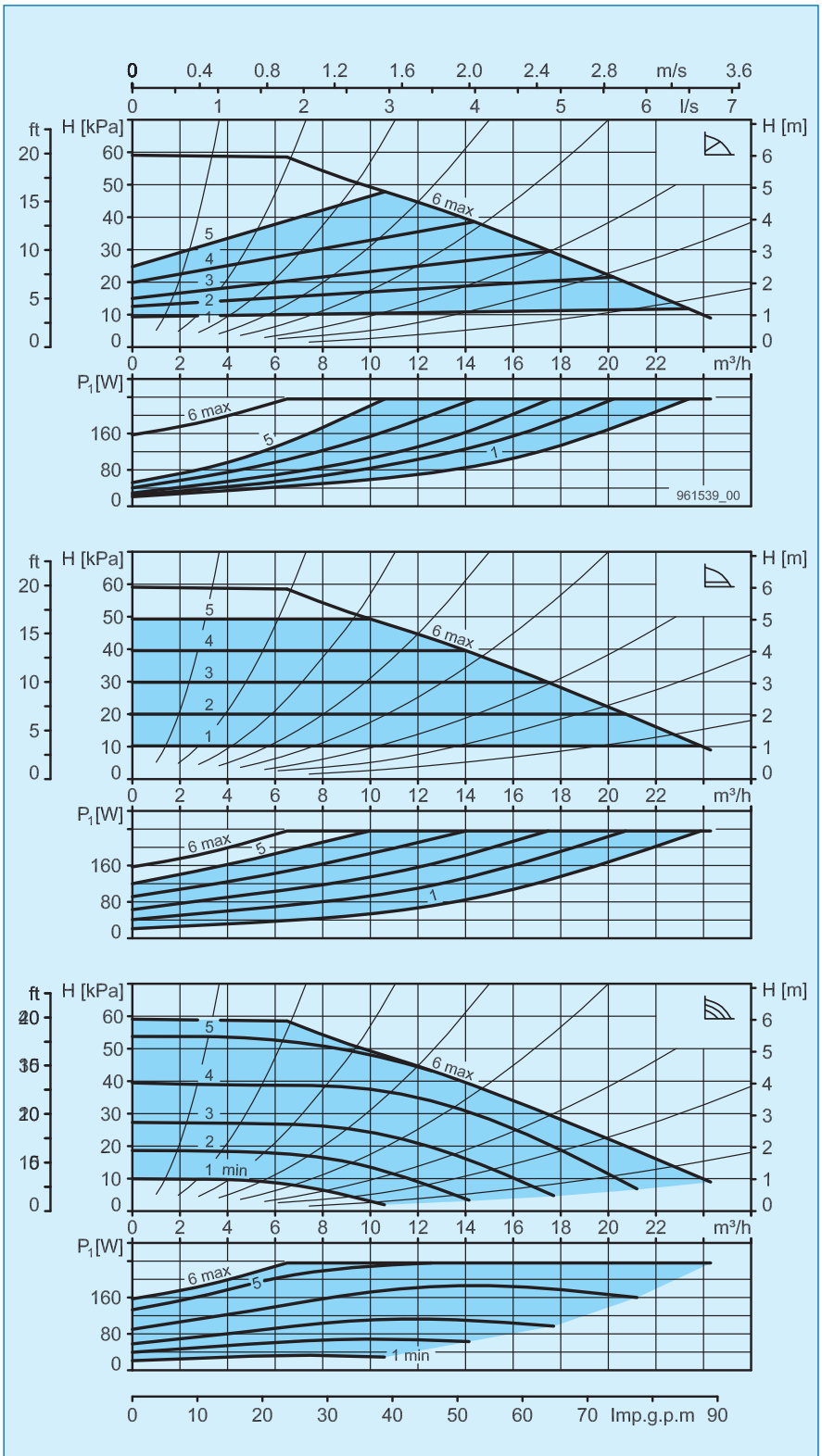
Included in the scope of delivery

- Kit for recessed installation of electronics (pre-installed)
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

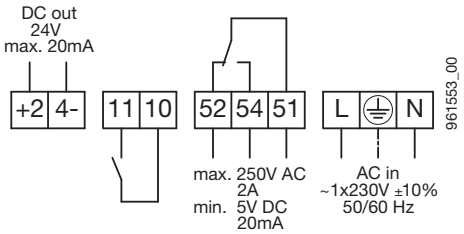
ModulA 50-12 270 GREEN

Nominal diameter	DN 50
Discharge head H max.	12 m
Installation length	270 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	–10°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	20.1 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	20 - 516 W
Rated current	0.21 - 2.32 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

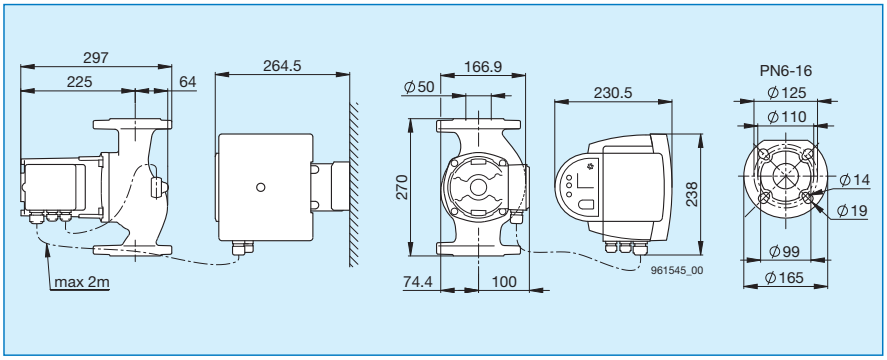
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

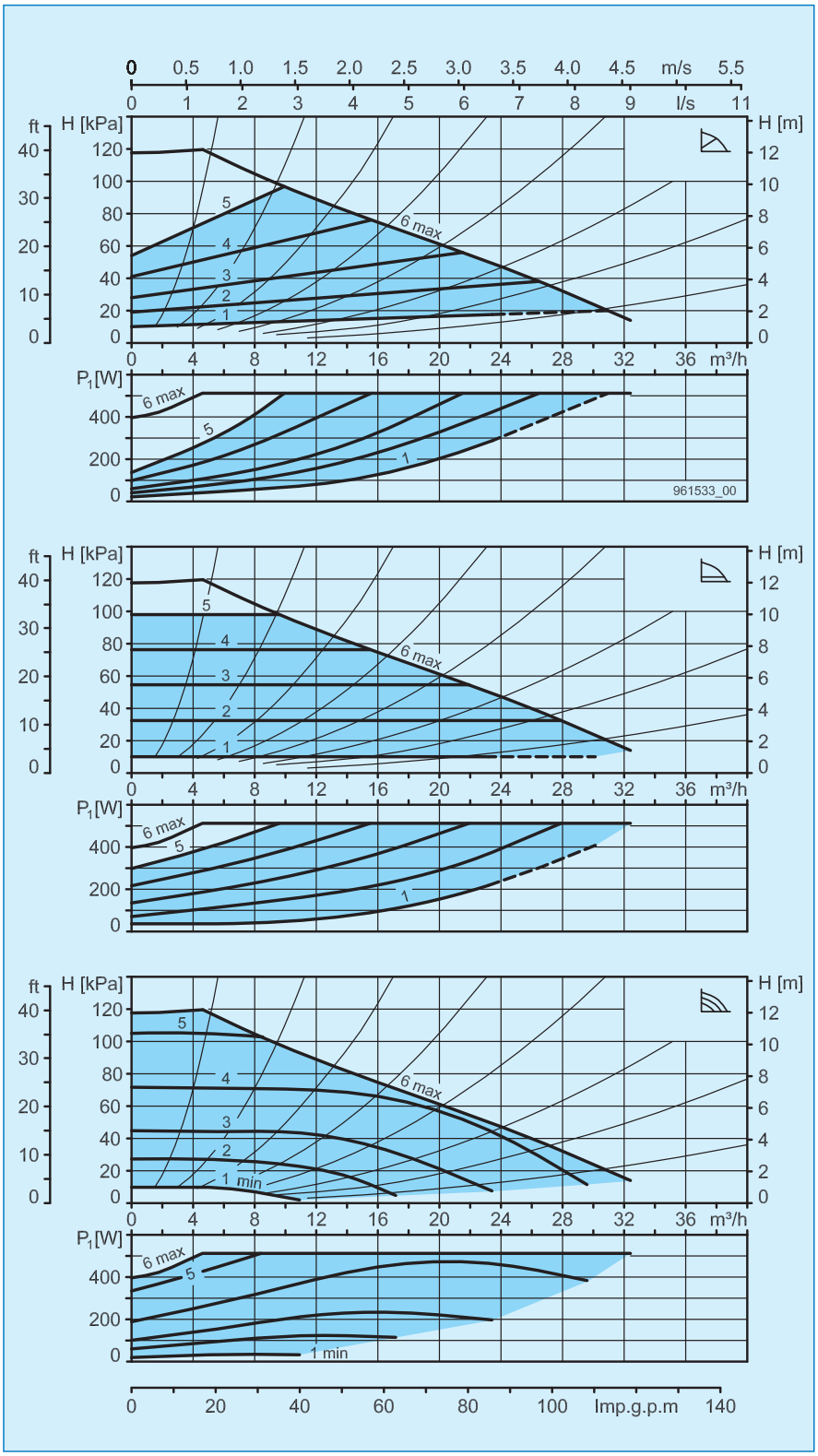
Included in the scope of delivery

- Kit for recessed installation of electronics (pre-installed)
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

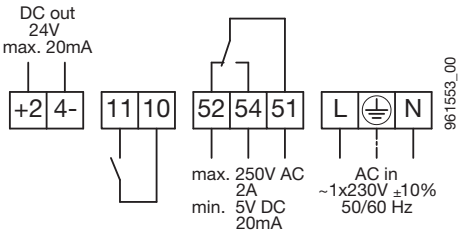
ModulA 50-18 270 GREEN

Nominal diameter	DN 50
Discharge head H max.	18 m
Installation length	270 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	–10°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	20.8 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	22 - 742 W
Rated current	0.21 - 3.34 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

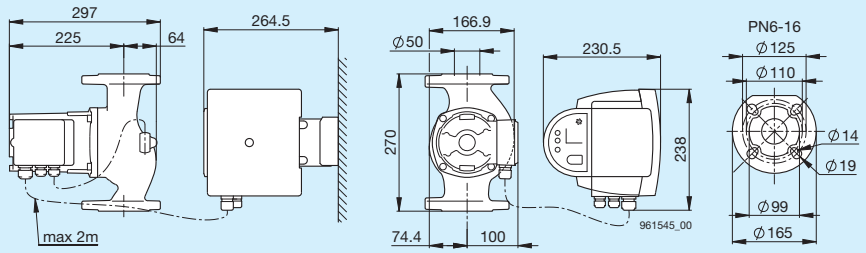
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

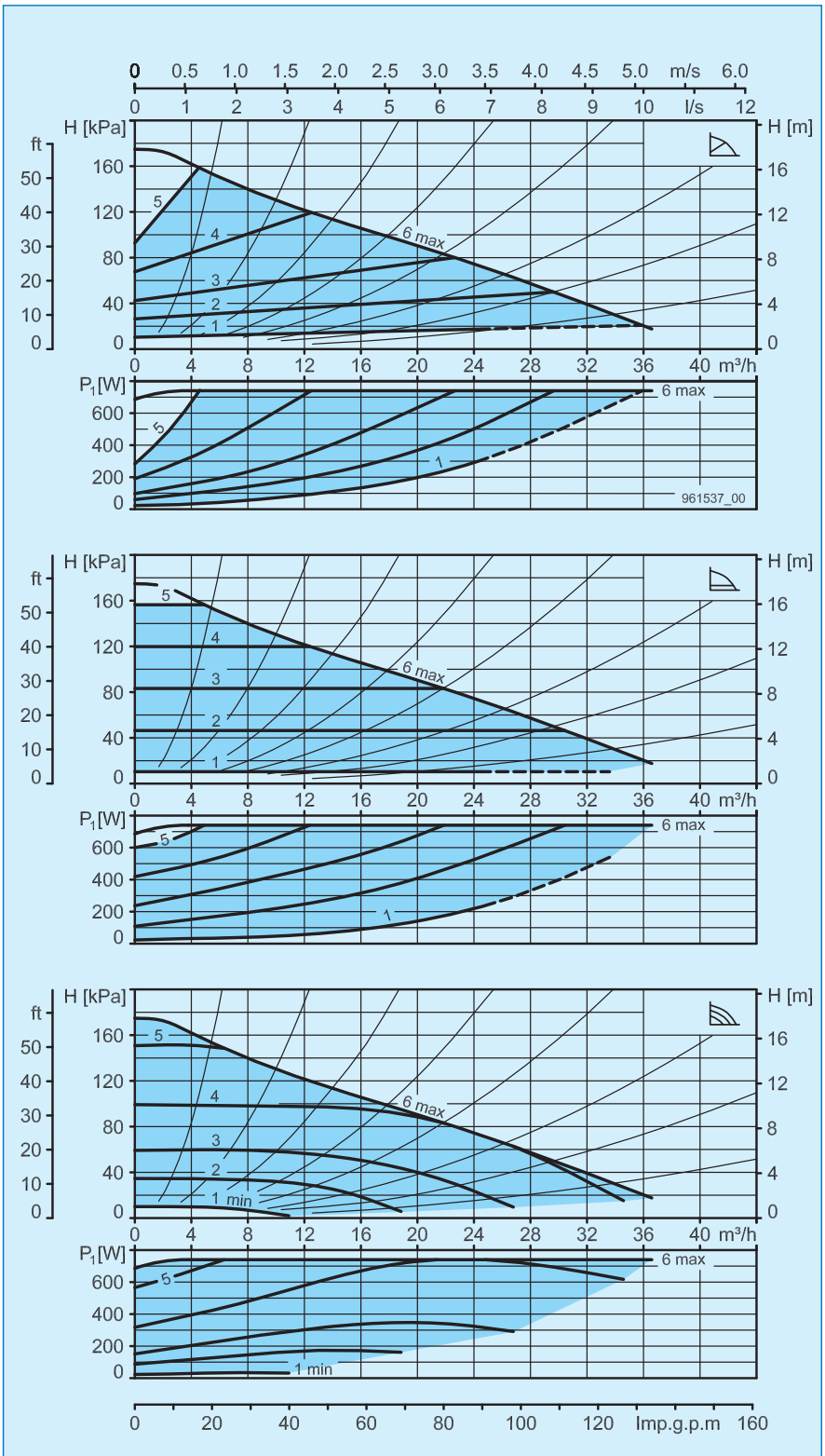
Included in the scope of delivery

- Kit for recessed installation of electronics (pre-installed)
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

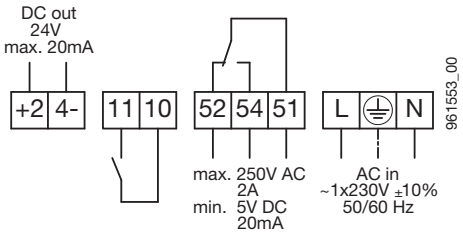
ModulA 65-8 270 GREEN

Nominal diameter	DN 65
Discharge head H max.	8 m
Installation length	270 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	–10°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	22.6 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	22 - 464 W
Rated current	0.24 - 2.10 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

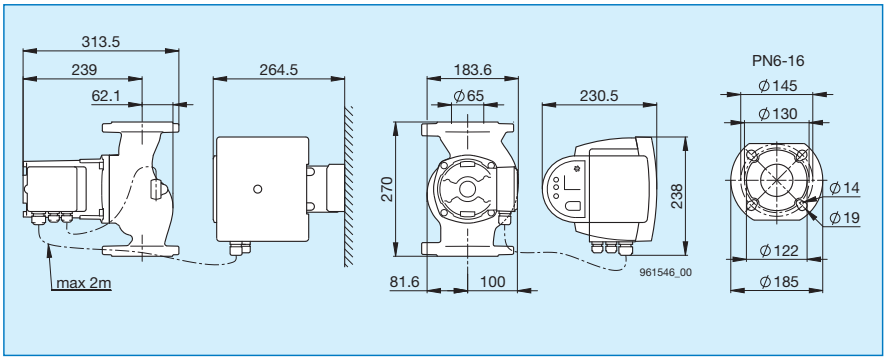
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

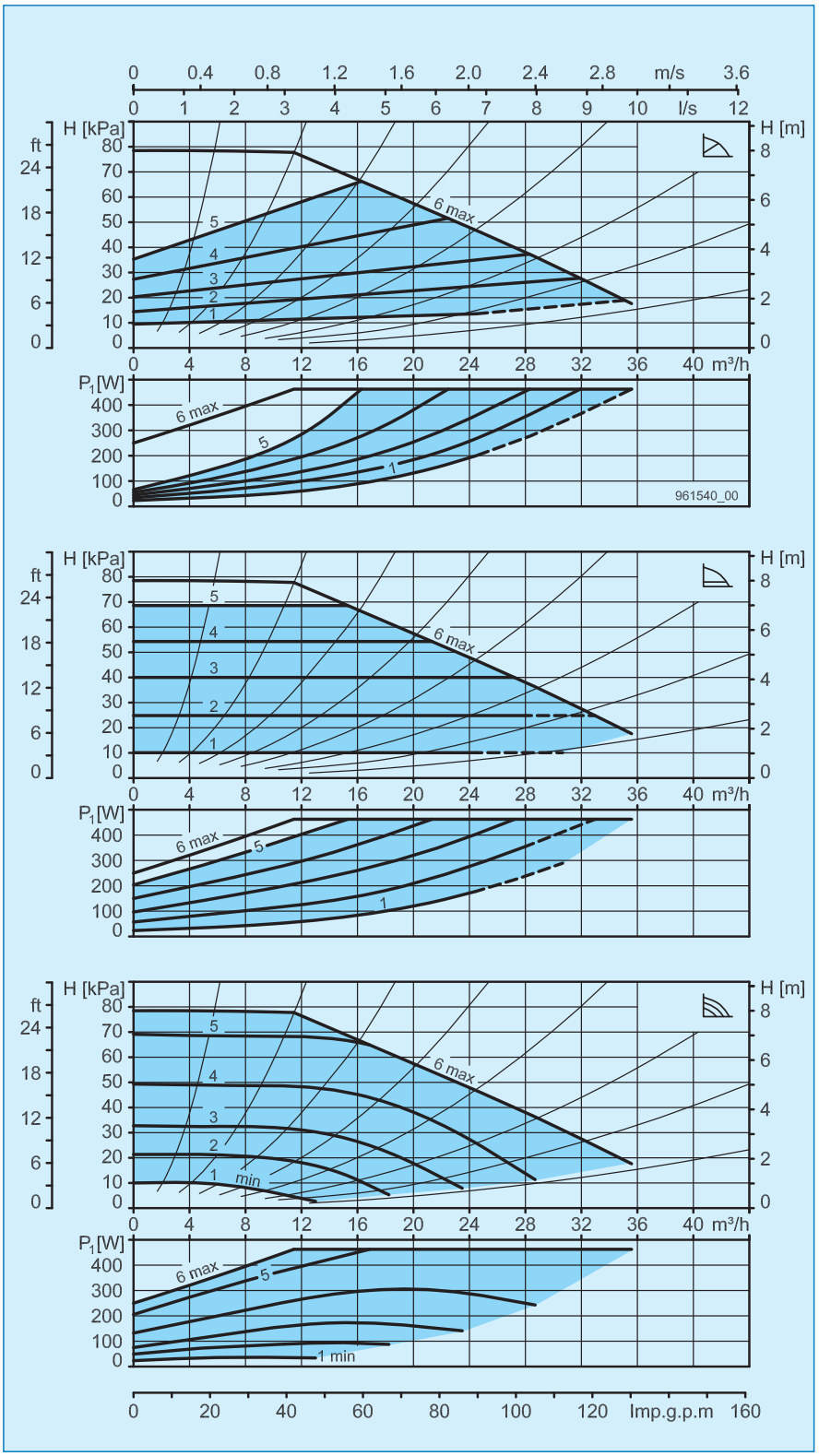
Included in the scope of delivery

- Kit for recessed installation of electronics (pre-installed)
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

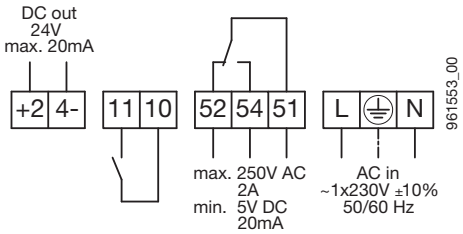
ModulA 65-12 340 GREEN

Nominal diameter	DN 65
Discharge head H max.	12 m
Installation length	340 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	–10°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	23.5 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	21-736 W
Rated current	0.22-3.32 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

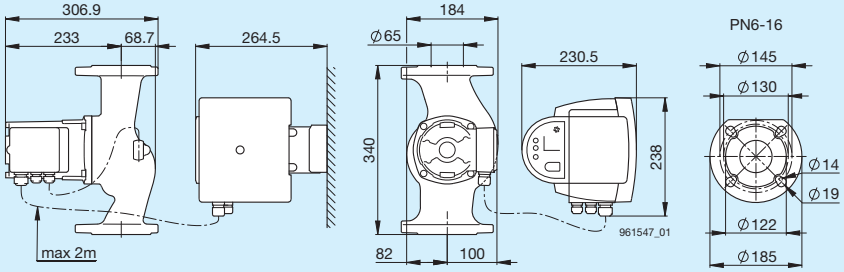
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

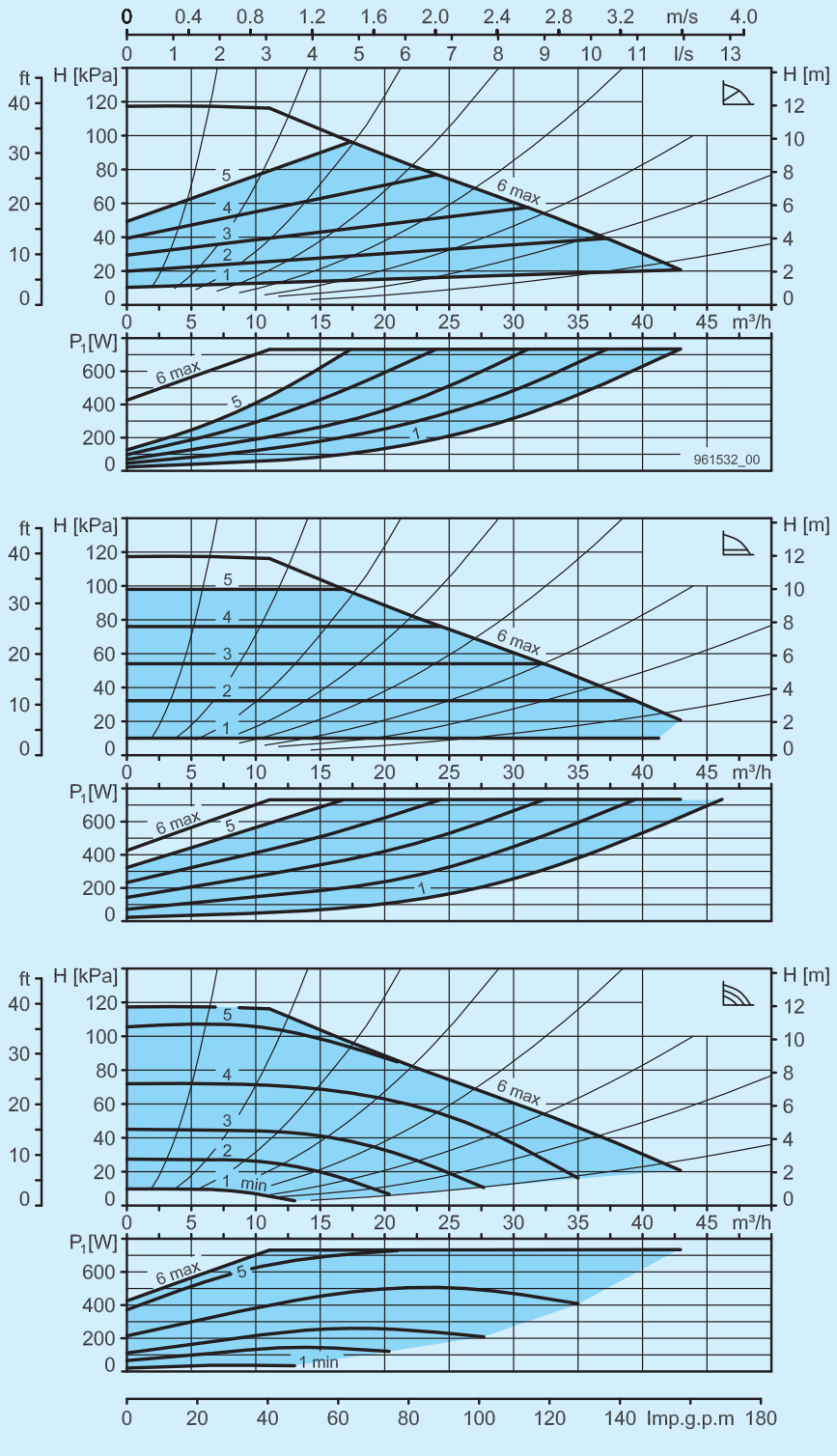
Included in the scope of delivery

- Kit for recessed installation of electronics (pre-installed)
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

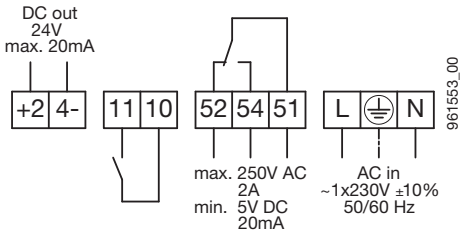
ModulA 65-15 340 GREEN

Nominal diameter	DN 65
Discharge head H max.	15 m
Installation length	340 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	–10°C to +110°C
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar
Weight	26.0 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	30-1254 W
Rated current	0.28-5.68 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

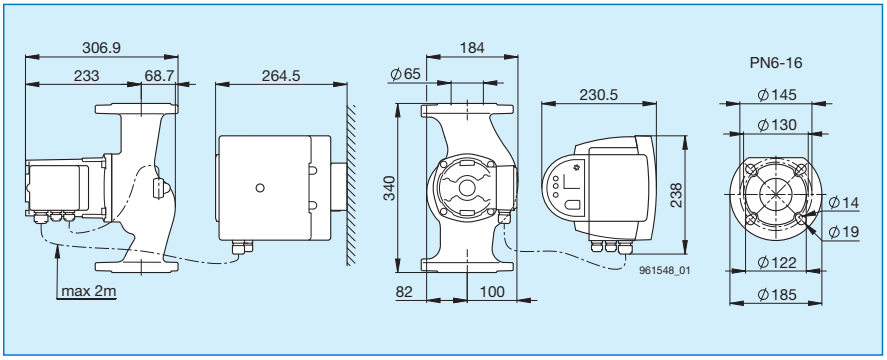
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

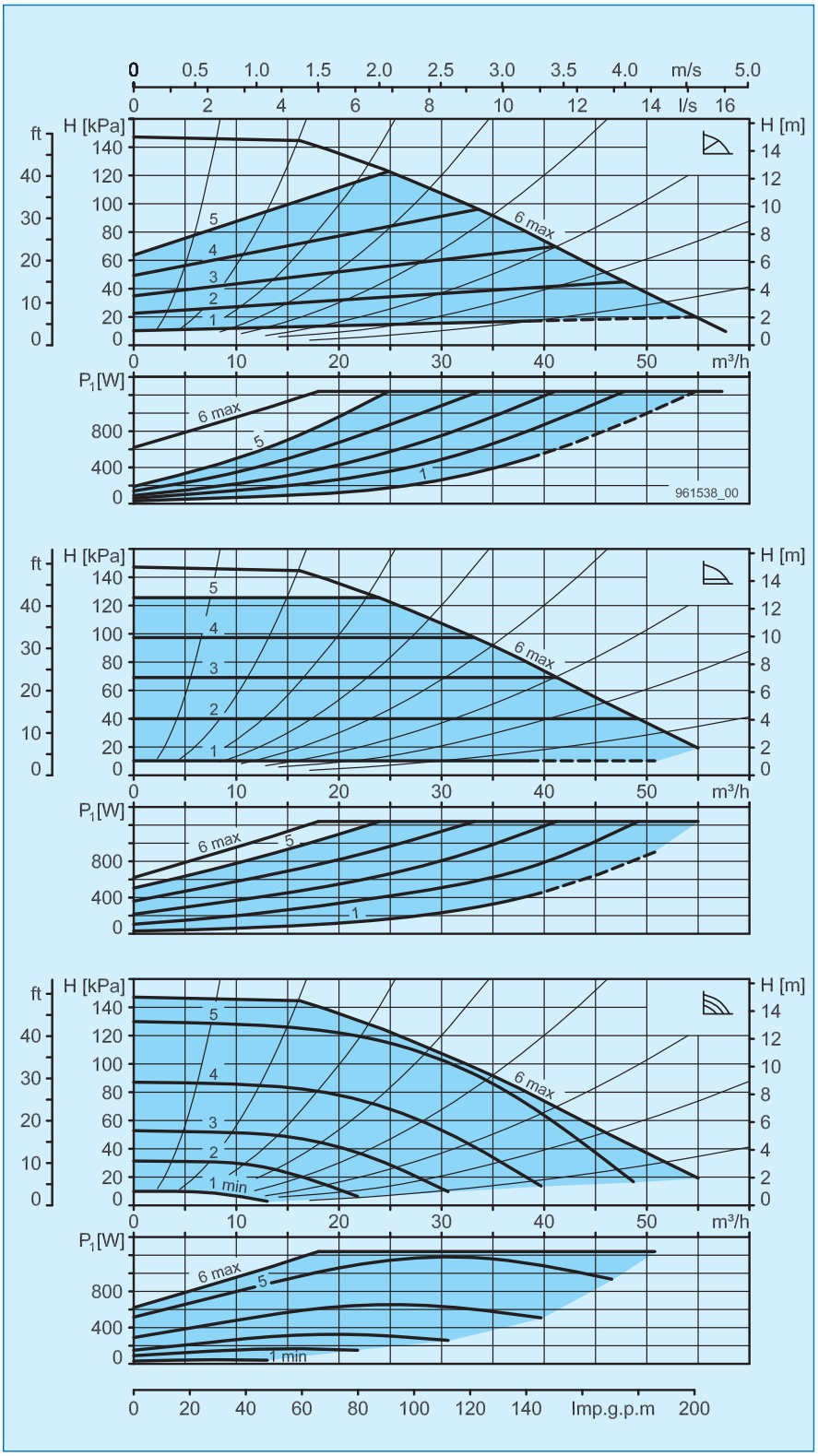
Included in the scope of delivery

- Kit for recessed installation of electronics (pre-installed)
- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

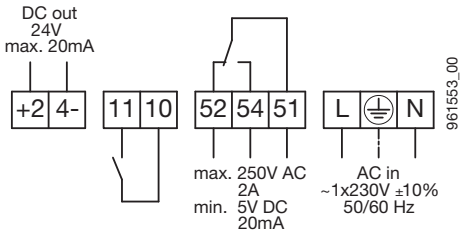
ModulA 80-8 360 GREEN

Nominal diameter	DN 80	
Discharge head H max.	8 m	
Installation length	360 mm	
Flange connection	PN 6	PN 10/16
Operating pressure max.	6 bar	16 bar
Media temperature	–10°C to +110°C	
Ambient temperature	0°C to +40°C	
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar	
Weight	31.1 kg	

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	29 - 704 W
Rated current	0.29 - 3.08 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

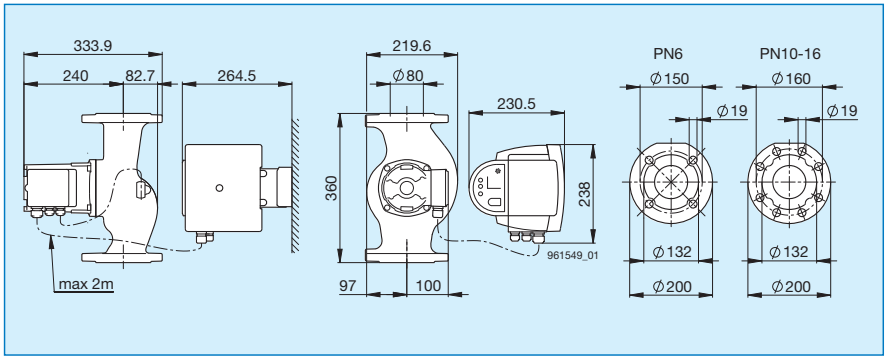
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

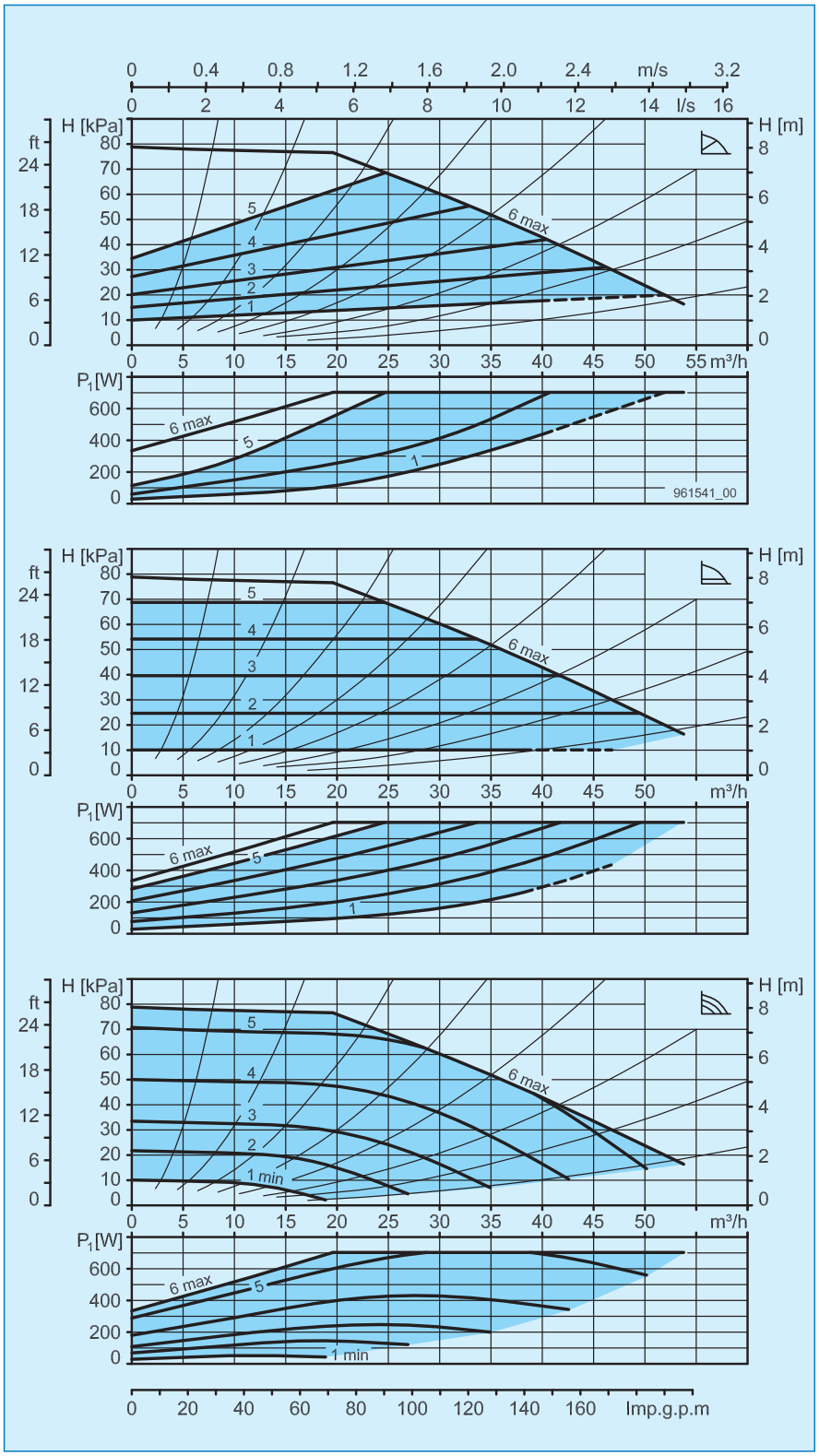
Included in the scope of delivery

- Kit for recessed installation of electronics (pre-installed)
- Seal set for flange PN 6 or PN 10/16

Options

- BIM A2 signal module
- BIM B2 control module
- Biral Remote





Technical data/Characteristic curves

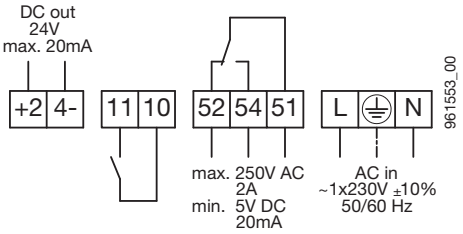
ModulA 80-12 360 GREEN

Nominal diameter	DN 80	
Discharge head H max.	12 m	
Installation length	360 mm	
Flange connection	PN 6	PN 10/16
Operating pressure max.	6 bar	16 bar
Media temperature	–10°C to +110°C	
Ambient temperature	0°C to +40°C	
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar	
Weight	31.1 kg	

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	35 - 1282 W
Rated current	0.32 - 5.56 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

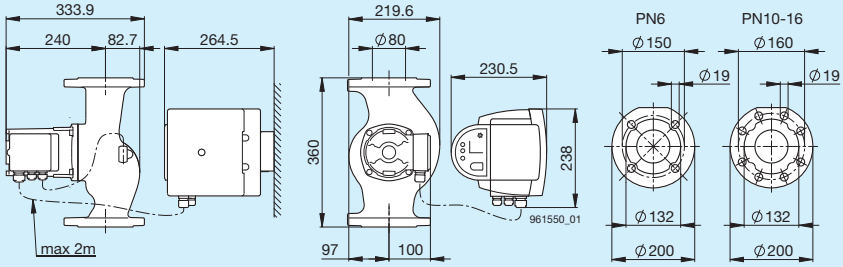
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

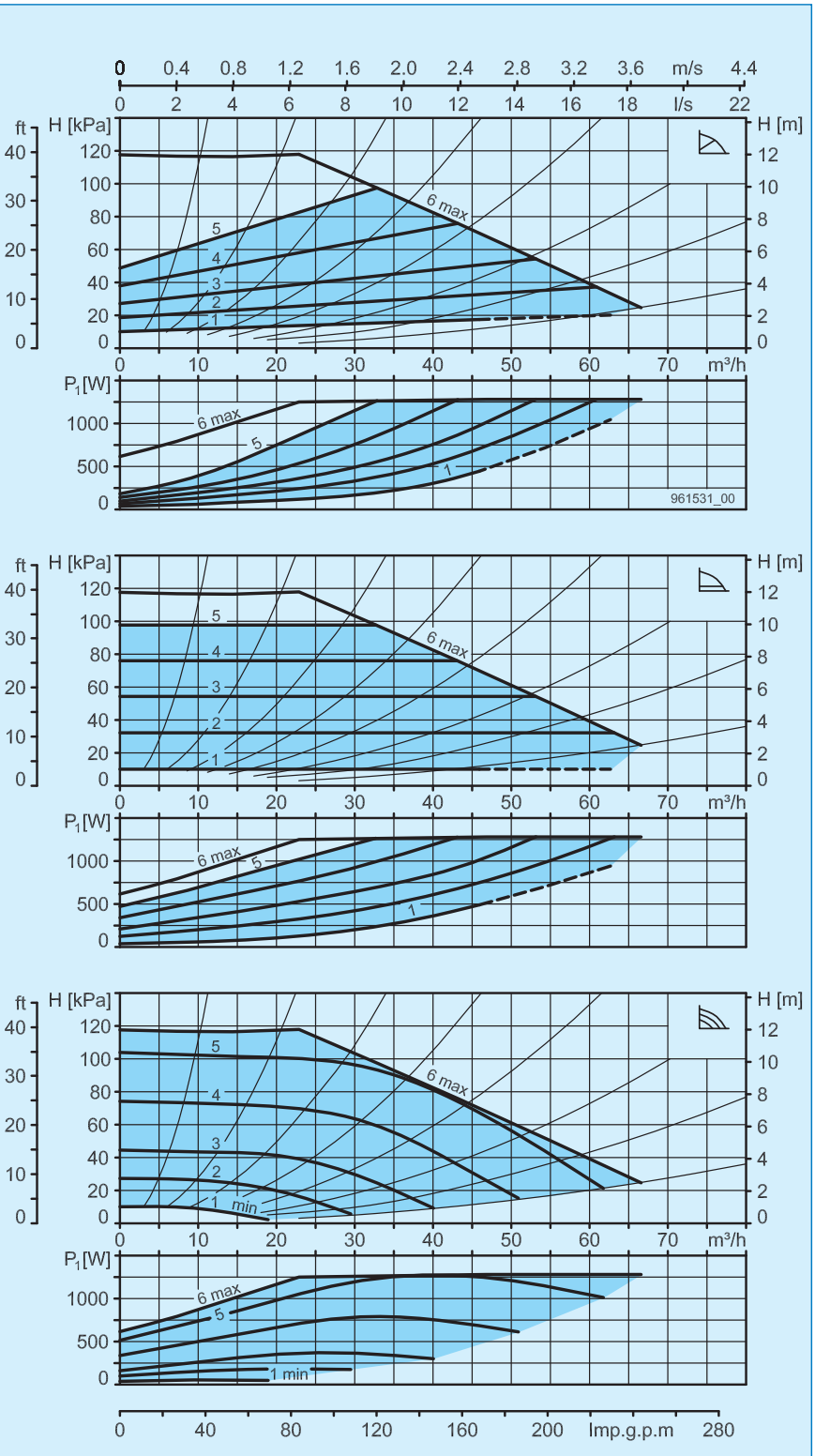
Included in the scope of delivery

- Kit for recessed installation of electronics (pre-installed)
- Seal set for flange PN 6 or PN 10/16

Options

- BIM A2 signal module
- BIM B2 control module
- Biral Remote





Technical data/Characteristic curves

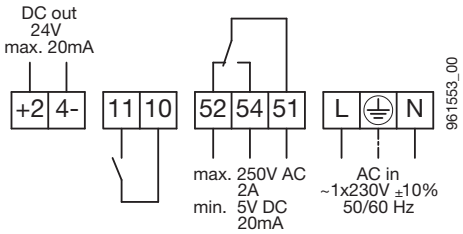
ModulA 100-12 450 GREEN

Nominal diameter	DN 100	
Discharge head H max.	12 m	
Installation length	450 mm	
Flange connection	PN 6	PN 10/16
Operating pressure max.	6 bar	16 bar
Media temperature	–10°C to +110°C	
Ambient temperature	0°C to +40°C	
Required operating pressure at at 75°C water temperature at 95°C water temperature at 110°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.35 bar 0.65 bar ±0.01 bar	
Weight	36.0 kg	

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	35 - 1563 W
Rated current	0.32 - 6.78 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

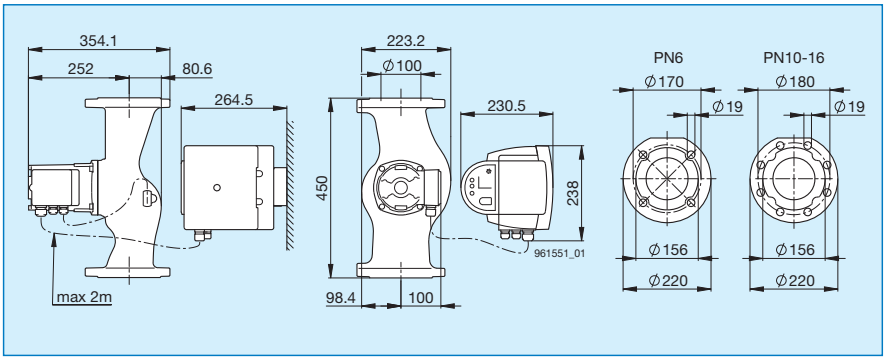
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

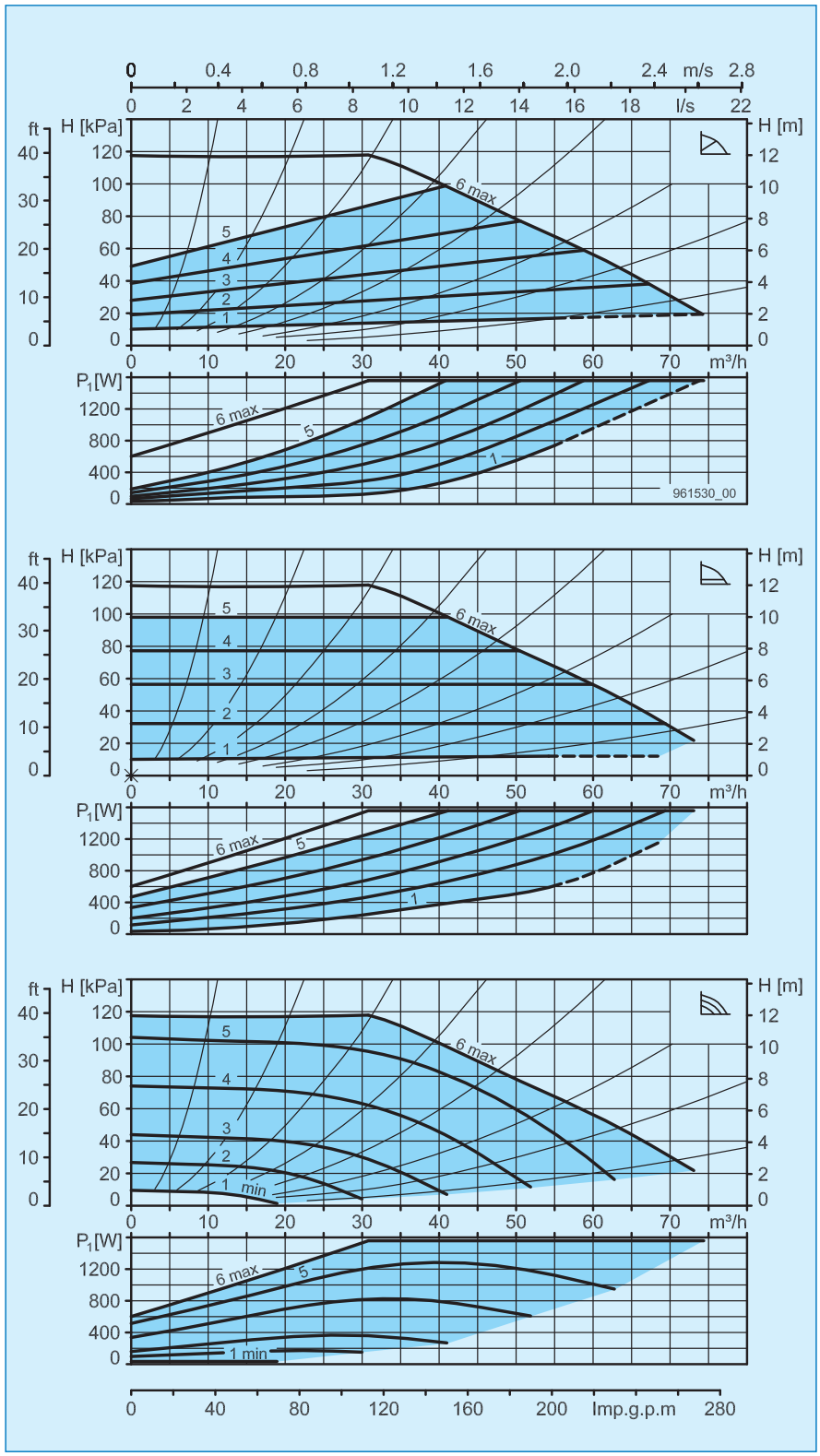
Included in the scope of delivery

- Kit for recessed installation of electronics (pre-installed)
- Seal set for flange PN 6 or PN 10/16

Options

- BIM A2 signal module
- BIM B2 control module
- Biral Remote





Standard/Connection diagram

Standard

A12 KW…A401 KW
A500 KW
8…174 W

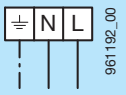
ModulA…GREEN
16…1563 W

Fault or operating message (switchable)	✔	✔
External OFF or external ON (switchable)	–	✔3)
Power limit (activatable)	–	✔
Power limiting (can be deactivated)	✔	–
Automatic night lowering (activatable)	✔	–
Media temperature: up to –10 °C	✔	✔

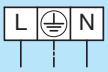
Connection diagram

Pump

L = Lead
N = Neutral line
⏚ = PE wire, protective conductor

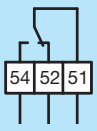


Supply
1×230 V

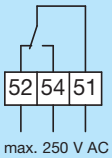


AC in
~1×230 V ±10%
50/60 Hz

51-54 Error or operating notification (switchable) as closing contact: closes for fault/operation
51-52 Error or operating message (switchable) as opening contact: opens for fault/operation

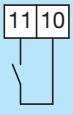


max. 250 V
1 A



max. 250 V AC
2 A
min. 5 V DC
20 mA

10-11 External OFF or external ON (switchable) with closing contact



3) We recommend switching module A pumps via contacts 10/11 (external OFF/ON).

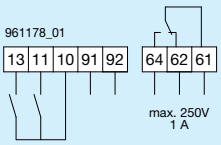
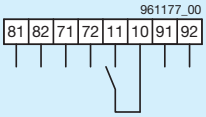
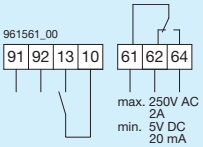
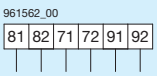
■ Options/Connection diagram

Options

A 12 KW…A 401 KW
A 500 KW
8…174 W

ModulA…GREEN
16…1563 W

	A 12 KW…A 401 KW A 500 KW 8…174 W	ModulA…GREEN 16…1563 W
Biral interface module BIM A signal module – Operating or ready message – External OFF – External minimum speed – Twin pump function	✔	–
Biral interface module BIM B control module – External speed specification 0–10 V/0–20 mA – PWM/multi-thermal interface – External OFF – Twin pump function	✔	–
Biral interface module BIM A2 signal module – Operating or ready message – External minimum speed – Twin pump function	–	✔
Biral interface module BIM B2 control module – External speed specification 0–10 V/0–20 mA – External minimum speed – Twin pump function	–	✔

Connection diagram	**BIM A signal module** **10-11** External OFF with closed contact **10-13** External minimum speed with closing contact **61-64** Operating or ready message (switchable) as a closing contact: Closes for operating/ready message **61-62** Operating or ready message (switchable) as opening contact: opens at operating/ready signal **91-92** Twin pump function		
	BIM B control module **10-11** External OFF with closing contact **81-82** Multi-thermal/PWM interface for external speed specification **71-72** Analogue input 0…10 V or 0…20 mA for external speed specification **91-92** Twin pump function		
	BIM A2 signal module **10-13** External minimum speed with closing contact **61-64** Operating or ready message (switchable) as a closing contact: closes at operating/ready message **61-62** Operating or ready message (switchable) as opening contact: opens at operating/ready message **91-92** Twin pump function		
	BIM B2 control module **81-82** Multi-thermal /PWM interface for external speed specification **71-72** Analogue input 0…10 V or 0…20 mA for external speed specification **91-92** Twin pump function		

■ **Overview of types/characteristic curves**

AXW smart

The smart technology recognises the consumption habits in the home and switches the pump on and off as required.
1×230 V

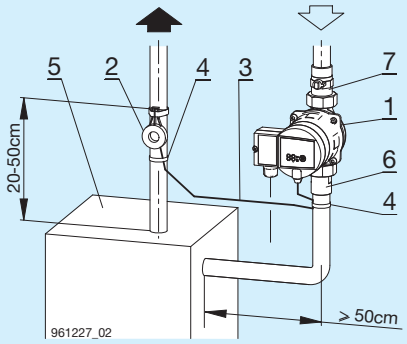
Summary

Type	Connection	Nominal width DN	Discharge head max. mWS	Installation length mm	Operating pressure max. bar
AXW smart 10	G 1¼"	20	1	120	10
AXW smart 12	G 1¼"	20	2	120	10
AXW smart 13	G 1¼"	20	3	150	10
AXW smart 14	G 1¼"	20	6	150	10

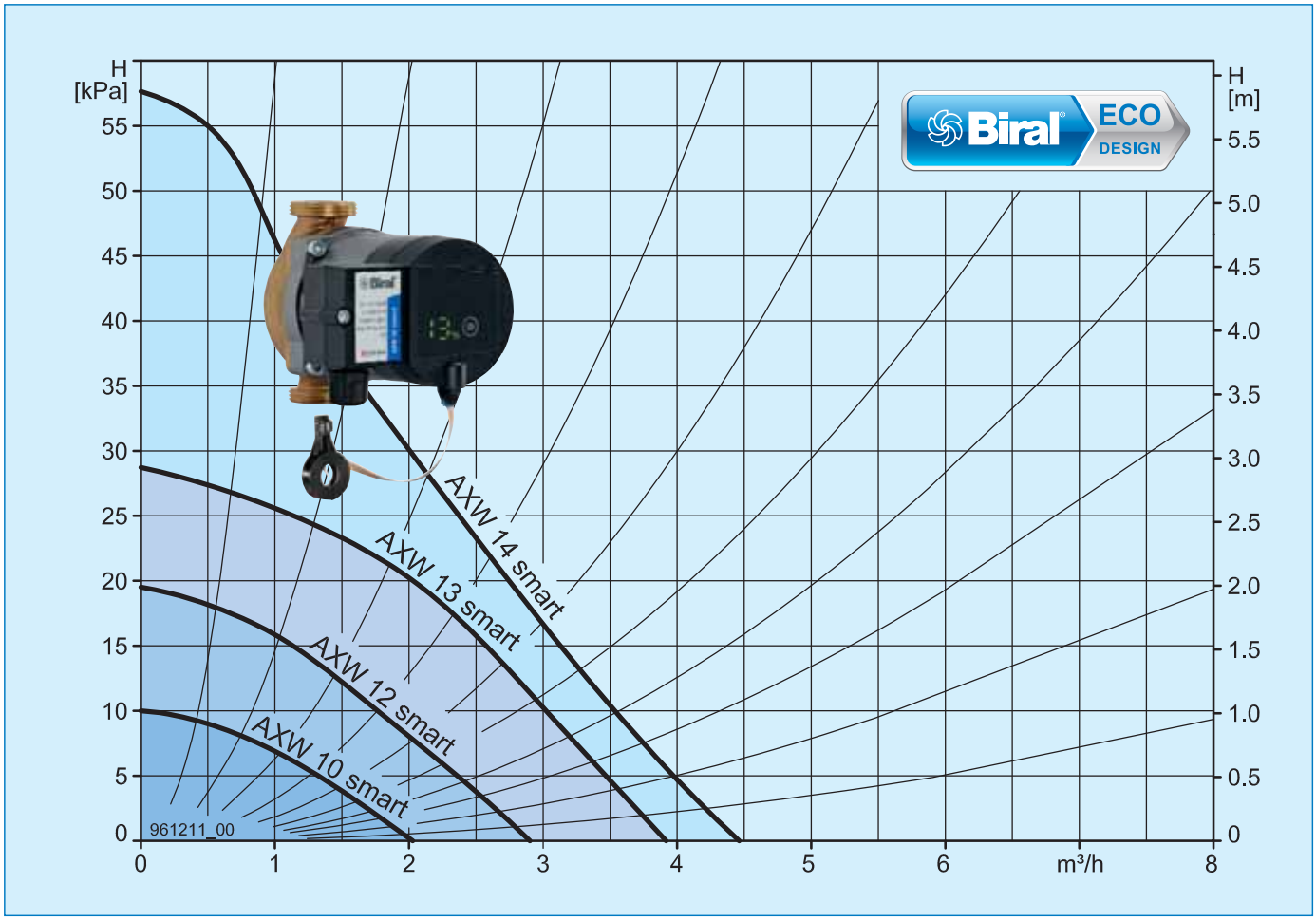
Installation conditions

Optimum spacing of cable box with temperature sensor from hot water heater: 20 to 50 cm

Determine spacing from pump to fitting position of cable box with temperature sensor. Draw sensor cable from cable box with the required cable length. The length of the sensor cable is 2.5 m



1 Pump
2 Cable box with temperature sensor
3 Sensor cable (2.5 m)
4 Cable binders
5 Hot water heater
6 Return valve (Return flow valve)
7 Ball valve



Options/Connection diagram

Standard

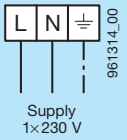
High-efficiency permanent magnet technology	✔
«Experiential» smart technology recognises and anticipates your consumption habits to make hot water available	✔
Variable comfort setting from maximum energy saving to maximum comfort	✔
Legionella protection	✔
Information via LED display	✔
Weekend and holiday recognition	✔
Shut-off set Non-return valve and ball valve	✔
Types of control (Proportional pressure, contact pressure and constant speed)	–
Fault or operating message (switchable)	–
Power limiting (can be deactivated)	–

Electrical connection

Pump

L = Lead
N = Neutral line
⏚ = PE wire, protective conductor

Note:
Continuous voltage of 230 V required



Options

Sensor cable (5 m)	✔
Signal module	–
Control module	–
Thermal insulation shells	–

Description/Part N°

Biral pumps AXW smart — Part N°

- High-efficiency process water pump as pipe installation pump with synchronous motor in permanent-magnet technology with the highest efficiency
- Split pipe in continuous design with two exterior seals, ceramic floating bearings with carbon axial bearings.
- The attached controller learns the consumption habits and switches the pump on/off proactively.
- Cable box with VL temperature sensor, pull-out cable length max. 2.5 m RL temperature sensor integrated in pump.
- LED display with information about operating performance.
- Bronze pump body
- Pump including shut-off set comprising non-return valve and ball-type stop valve.

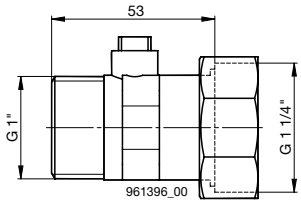
Motor
1 x 230 V, 50 Hz
With integrated motor protection
Barrier according to class F (155°C)

Medium temperature
+15 °C to 65 °C; briefly up to max. 85°C
Water hardness: max. 35° fH (20° dH)

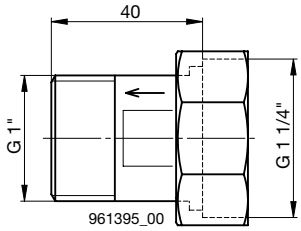
Operating pressure: max. 10 bar

Connections
With external thread including seals

Biral Type	External thread	Installation length mm without Shut-off set	with	Part N°
AXW 10 smart	R1¼"	120	217	2037 575
AXW 12 smart	R1¼"	120	217	2037 576
AXW 13 smart	R1¼"	150	247	2037 577
AXW 14 smart	R1¼"	150	247	2037 578



Ball-type stop valve
Material: Brass



Check valve
Material: Brass
Opening pressure: 20–35 mbar

Technical data/Characteristic curves

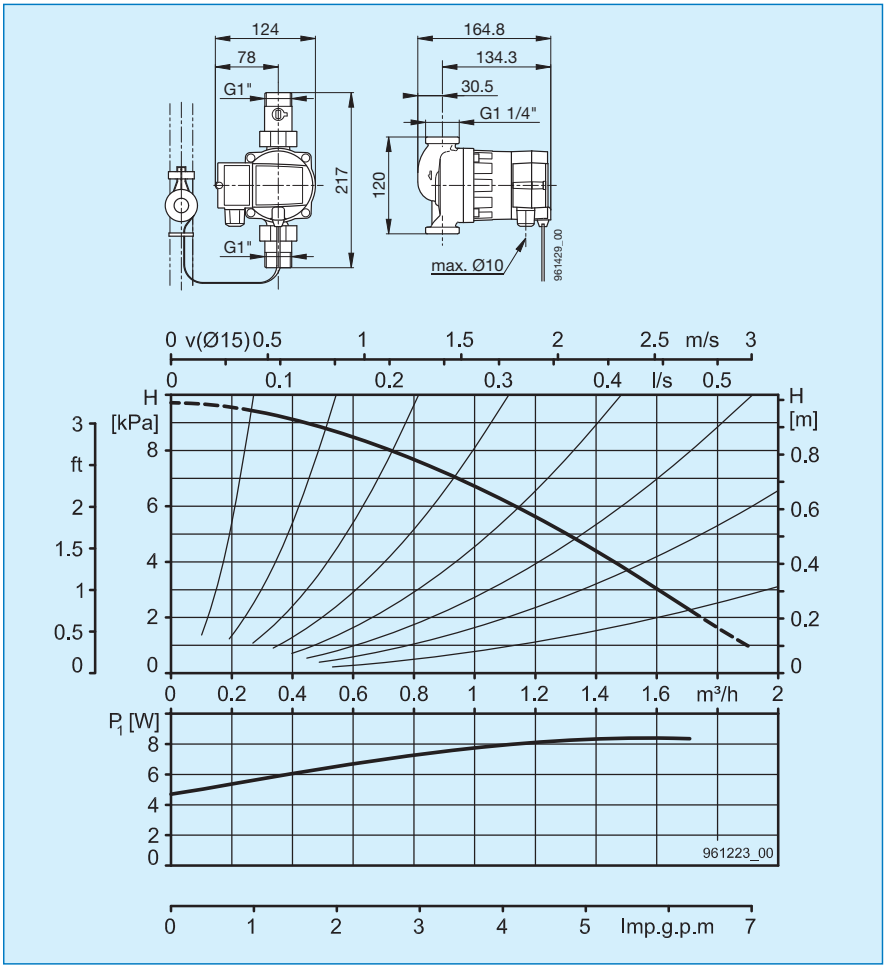
AXW 10 smart

Installation length	**120 mm**
Operating pressure max.	10 bar
Media temperature	+15°C to +65°C (for shorts periods max. 85 °C for thermal disinfection).
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.	
Ambient temperature	max. 40 °C
Water hardness	max. 35°fH (20°dH)
Required operating pressure at at 65°C water temperature at 85°C water temperature For every ±100 m altitude	500 m a.s.l. 0.05 bar 0.30 bar ±0.01 bar
Weight	2.4 kg
Voltage	1×230 V, 50 Hz
Current	0.04…0.1 A
Power	4.7…8.4 W

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump always starts with a high torque.

Pump housing: bronze

Included in the scope of delivery:
– Shut-off set
(Non-return valve and ball valve)



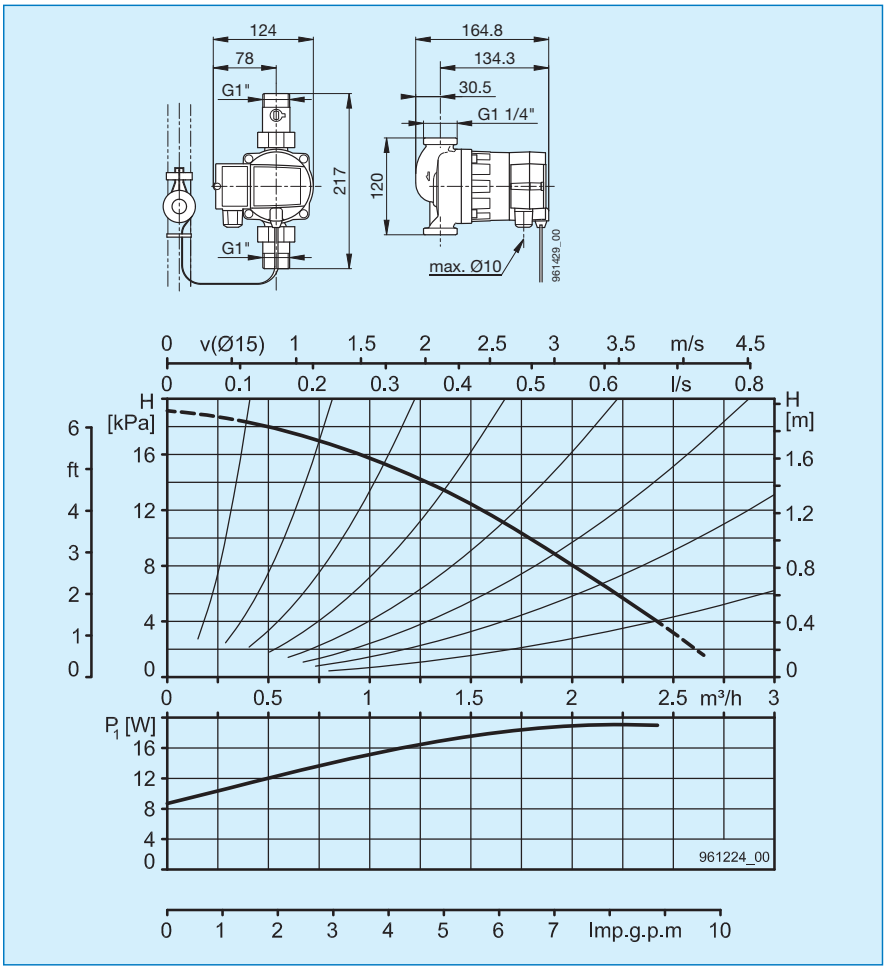
AXW 12 smart

Installation length	**120 mm**
Operating pressure max.	10 bar
Media temperature	+15°C to +65°C (for shorts periods max. 85 °C for thermal disinfection).
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.	
Ambient temperature	max. 40 °C
Water hardness	max. 35°fH (20°dH)
Required operating pressure at at 65°C water temperature at 85°C water temperature For every ±100 m altitude	500 m a.s.l. 0.05 bar 0.30 bar ±0.01 bar
Weight	2.4 kg
Voltage	1×230 V, 50 Hz
Current	0.07…0.15 A
Power	8.7…19 W

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump always starts with a high torque.

Pump housing: bronze

Included in the scope of delivery:
– Shut-off set
(Non-return valve and ball valve)



Technical data/Characteristic curves

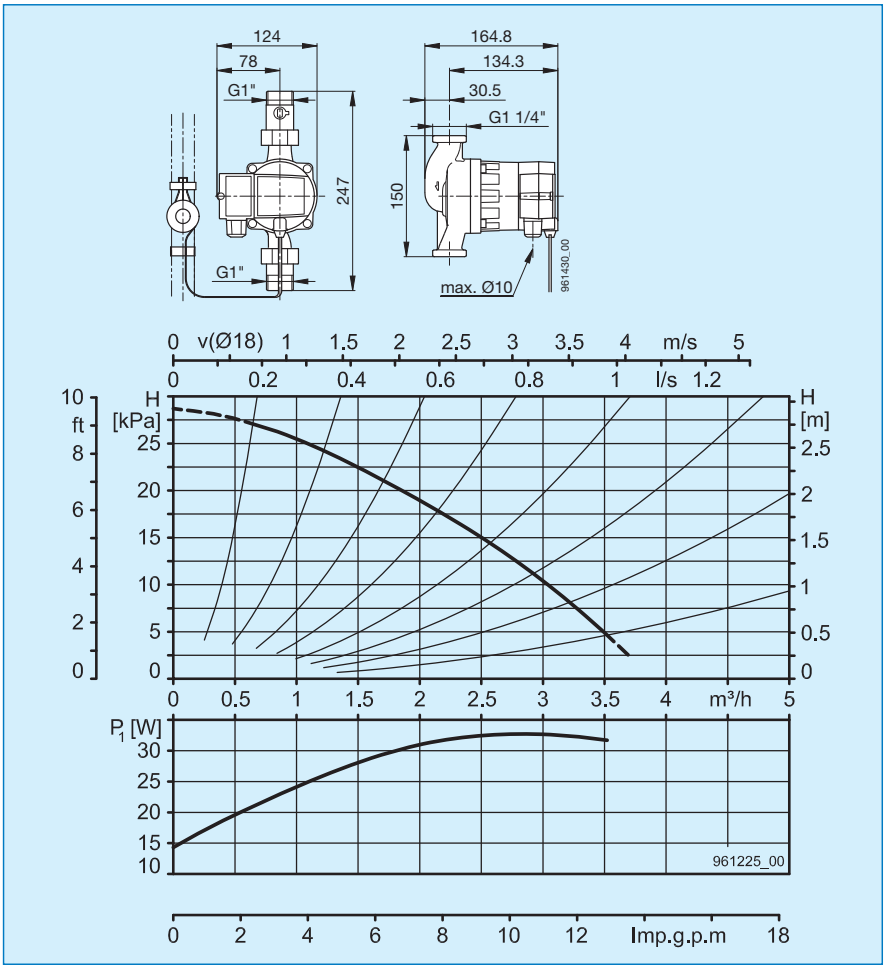
AXW 13 smart

Installation length	**150 mm**
Operating pressure max.	10 bar
Media temperature	+15°C to +65°C (for shorts periods max. 85 °C for thermal disinfection).
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.	
Ambient temperature	max. 40 °C
Water hardness	max. 35°fH (20°dH)
Required operating pressure at at 65°C water temperature at 85°C water temperature For every ±100 m altitude	500 m a.s.l. 0.05 bar 0.30 bar ±0.01 bar
Weight	2.6 kg
Voltage	1×230 V, 50 Hz
Current	0.12…0.3 A
Power	14.3…32.7 W

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump always starts with a high torque.

Pump housing: bronze

Included in the scope of delivery:
– Shut-off set
(Non-return valve and ball valve)



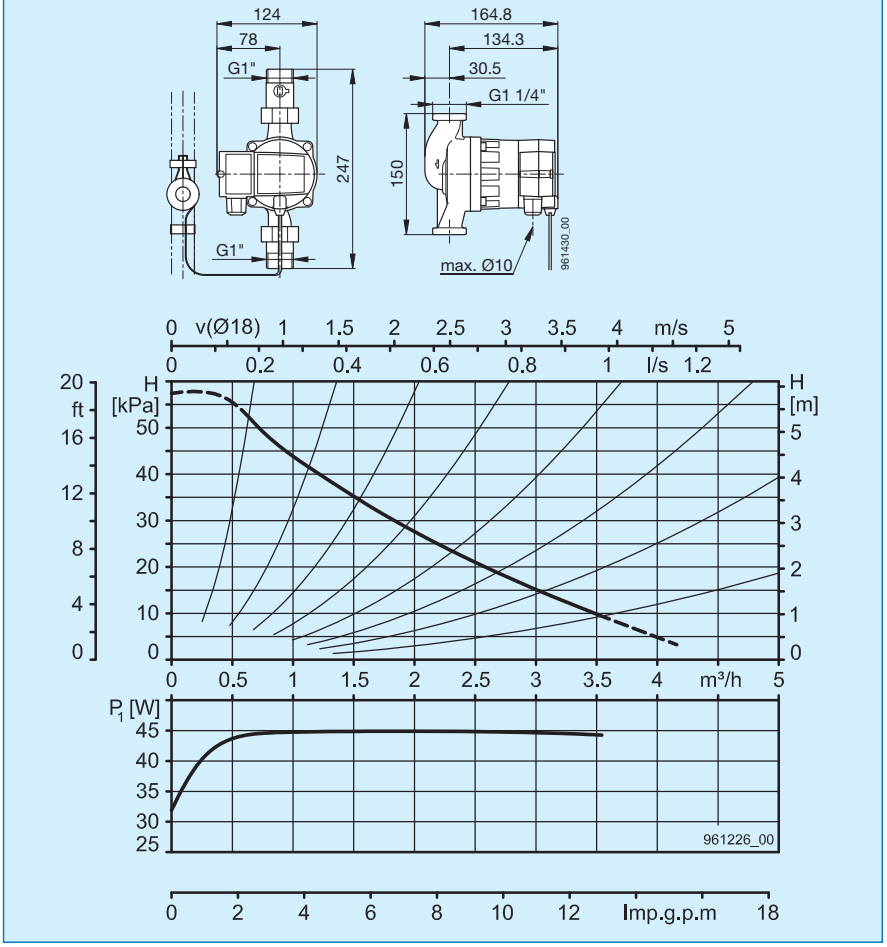
AXW 14 smart

Installation length	**150 mm**
Operating pressure max.	10 bar
Media temperature	+15°C to +65°C (for shorts periods max. 85 °C for thermal disinfection).
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.	
Ambient temperature	max. 40 °C
Water hardness	max. 35°fH (20°dH)
Required operating pressure at at 65°C water temperature at 85°C water temperature For every ±100 m altitude	500 m a.s.l. 0.05 bar 0.30 bar ±0.01 bar
Weight	2.6 kg
Voltage	1×230 V, 50 Hz
Current	0.28…0.38 A
Power	32…45 W

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump always starts with a high torque.

Pump housing: bronze

Included in the scope of delivery:
– Shut-off set
(Non-return valve and ball valve)

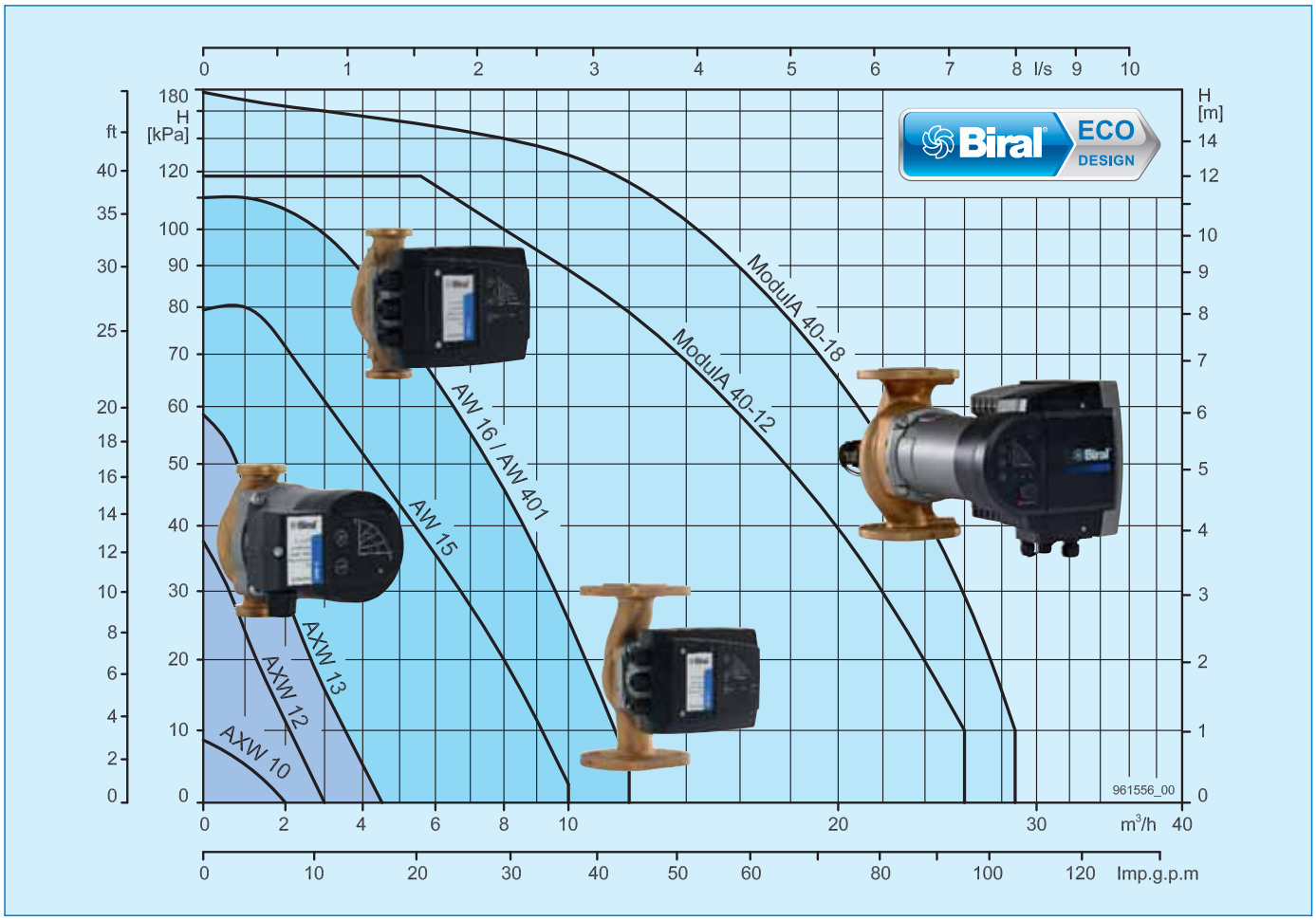


■ **Overview of types/characteristic curves**

AXW / AW
ModulA BLUE

Summary

	Type	Connection	Nominal width DN	Discharge head max. mWS	Installation length mm	Operating pressure max./bar
	AXW 10	G 1¼"	20	1	120	10
	AXW 12	G 1¼"	20	4	120	10
	AXW 13	G 1¼"	20	6	150	10
	AXW 12-1	G 1½"	25	4	180	10
	AXW 13-1	G 1½"	25	6	180	10
	AW 15-2	G 2"	32	8	180	10
	AW 16-2	G 2"	32	11	180	10
	AW 401-1	PN 6/10	40	11	250	10
	ModulA 40-12 250 BLUE	PN 6-16	40	12	250	16
	ModulA 40-18 250 BLUE	PN 6-16	40	18	250	16



Description/Part N°

Biral AXW 12, 13

Biral AW 15-2, AW 16-2

Biral pumps
AXW 10, AXW 12, AXW 13,
AW 15, AW 16, AW 401

Part N°

- High-efficiency process water pump as pipe installation pump with permanent-magnet motor
- Split pipe in continuous design with two exterior seals, ceramic floating bearings with carbon axial bearings.
- With attached stepless speed control (pressure-dependent), including sensor system. Proportional pressure, constant pressure or fixed speed freely selectable. Power consumption display.
- Malfunction is indicated.
- Bronze pump body
- Pump types AXW 12 and AXW 13 incl. shut-off set comprising check valve and ball-type stop valve.

Motor
1 x 230 V, 50 Hz
Stator winding isolation according to class "F" (155 °C)Integrated motor protection.

Medium temperature
65 °C (max. 35°fH = 20°dH)
85 °C (max. 25°fH = 14°dH)

Operating pressure
AXW 10 - AW 16: max. 10 bar
AW 401: max. 6/10 bar

Connections
AXW 10, AXW 12, AXW 13, AW 15, AW 16
With external thread including seals (without fittings)
A 401
With flange connections including bolts and seals for PN 6, without counterflanges.

Biral AXW 10
max. 10 bar

Type	Biral External thread	Installation length mm	
AXW 10	R 1 ¼"	120	2053 896

Fittings
2 fittings including seals.
Shipped with the pump (packaged separately).

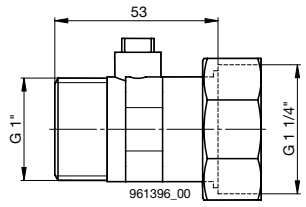
DN	Design	
1 ¼" - ¾"	Galvanised	2030 510
1 ¼" - ¾"	Bronze	2030 511

Part N°

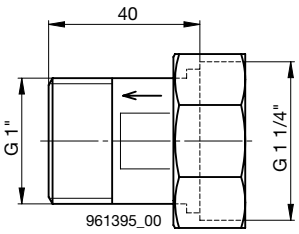
Part N°

Biral AXW 12, AXW 13
max. 10 bar
(incl. shut-off set comprising ball valves and check valve)

Biral Type	Outer threads	Installation length mm without	with Shut-off set	Part N°
AXW 12	R1¼"	120	217	2036 041
AXW 13	R1¼"	150	247	2036 042



Ball-type stop valve
Material: Brass



Check valve
Material: Brass
Opening pressure: 20–35 mbar

Biral AXW 12, 13

Biral AW 15-2, AW 16-2

Biral AXW 12-1, AXW 13-1, AW 15-2, AW 16-2
max. 10 bar
(with external thread without fitting)

Biral Type	External threads	Installation length mm	Part N°
AXW 12-1	R1½"	180	2036 043
AXW 13-1	R1½"	180	2036 044
AW 15-2	R2"	180	2036 013
AW 16-2	R2"	180	2042 003

Fittings
2 fittings including seals.
Shipped with the pump (packaged separately).

DN	Design	Part N°
1 ½" - ¾"	Galvanised	2011 887
1 ½" - 1"	Galvanised	2036 688
2" - ¾"	Galvanised	2030 452
2" - 1"	Galvanised	2030 451
2" - 1 ¼"	Galvanised	2030 453
2" - 1 ½"	Galvanised	2030 454

Part N°

Biral AW 401-1

Biral AW 401-1
max. 6/10 bar (with flange connections)

Biral Type	DN	Installation length mm	Part N°
AW 401-1	40	250	2040 760

Sealing set for flanges PN 10/16 2030 443
consisting of screws and seals.
Shipped with the pump (packaged separately).
DN 40

Threaded flanges
2 threaded flanges galvanised design
(without screws and seals),
Shipped with the pump (packaged separately).

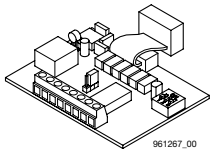
DN	PN	Part N°
40	6	2012 155
40	10/16	2012 161

Thermal insulation jacket

Type		Part N°
WD 1	For AXW 12-1, AXW 13-1	2034 693
WD 2	For AW 15-2, AW 16-2	2035 226
WD 3	For AW 401-1	2036 055

Biral interface module (BIM)

Signal modules/Control modules
For Biral type AW 15-2, AW 16-2, AW 401-1,



Signal module BIM A 2030 439
- System status or ready message
- External OFF
- External minimum speed
- Twin pump function

Control module BIM B 2030 442
- External specified speed
  0-10 V/0-20 mA
- PWM
- External OFF
- Twin pump function

Technical data/Characteristic curves

AXW 10

Installation length		**120 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +85°C
Permissible water hardness		65°C (max. 35°fH = 20°dH)
		85°C (max. 25°fH = 14°dH)
Required operating pressure at at 75°C water temperature at 85°C water temperature For every ±100 m altitude		500 m a.s.l. 0.05 bar 0.30 bar ±0.01 bar
Weight		2.3 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.04…0.08 A
	min	0.04 A
Power	Regulation	4…7 W
	min	4 W

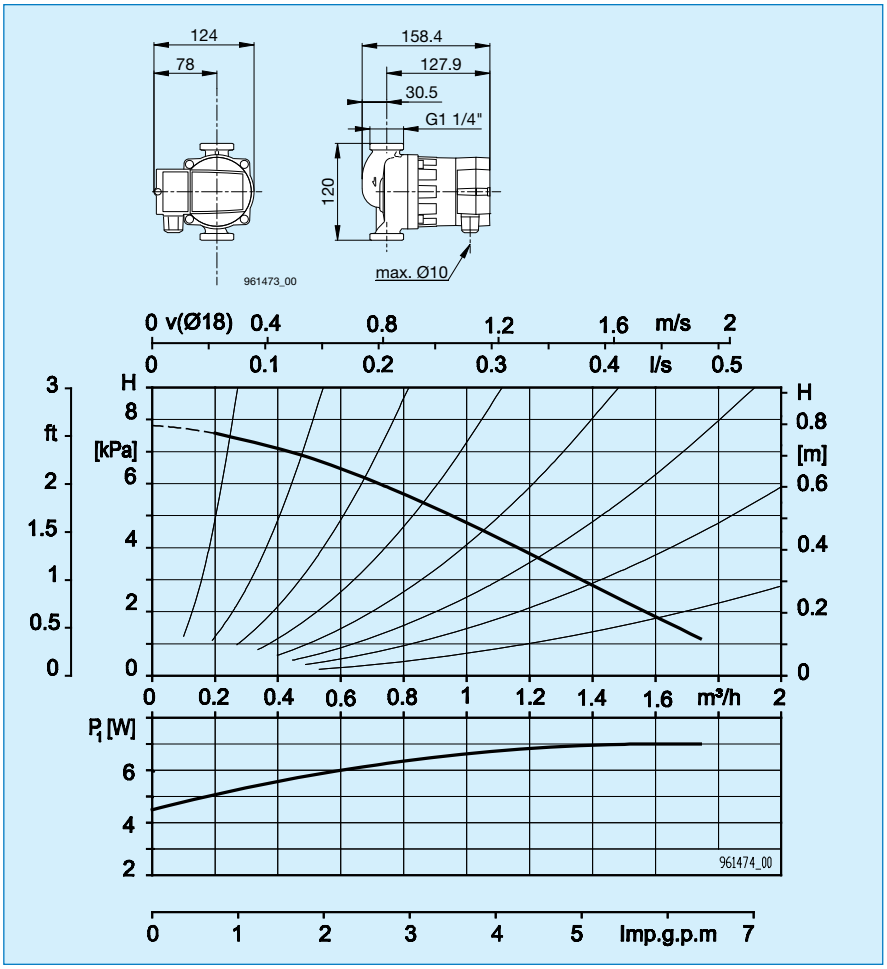
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	85
30	30	85
35	35	85
40	40	70

The pump is fitted with internal electric motor protection and requires no external motor protection.

Pump housing: bronze

Optional:
– Shut-off set



AXW 12, AXW 12-1

Installation length		**120/180 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +85°C
Permissible water hardness		65°C (max. 35°fH = 20°dH)
		85°C (max. 25°fH = 14°dH)
Required operating pressure at at 75°C water temperature at 85°C water temperature For every ±100 m altitude		500 m a.s.l. 0.05 bar 0.30 bar ±0.01 bar
Weight		2.3 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.05…0.19 A
	min	0.05 A
Power	Regulation	5…22 W
	min	5 W

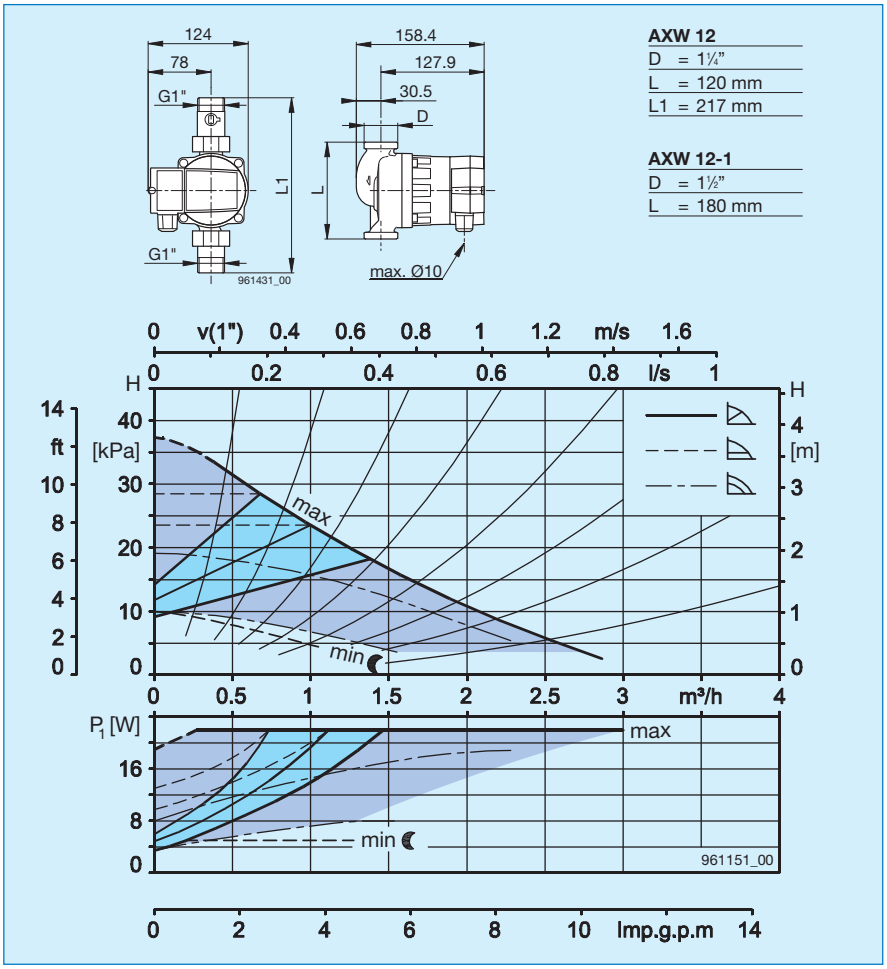
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	85
30	30	85
35	35	85
40	40	70

The pump is fitted with internal electric motor protection and requires no external motor protection.

Pump housing: bronze

AXW 12: incl. shut-off set
AXW 12-1: Shut-off set not available



Technical data/Characteristic curves

AXW 13, AXW 13-1

Installation length		**150/180 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +85°C
Permissible water hardness		65°C (max. 35°fH = 20°dH)
		85°C (max. 25°fH = 14°dH)
Required operating pressure at at 75°C water temperature at 85°C water temperature For every ±100 m altitude		500 m a.s.l. 0.05 bar 0.30 bar ±0.01 bar
Weight		2.3 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.05…0.38 A
	min	0.05 A
Power	Regulation	5…45 W
	min	5 W

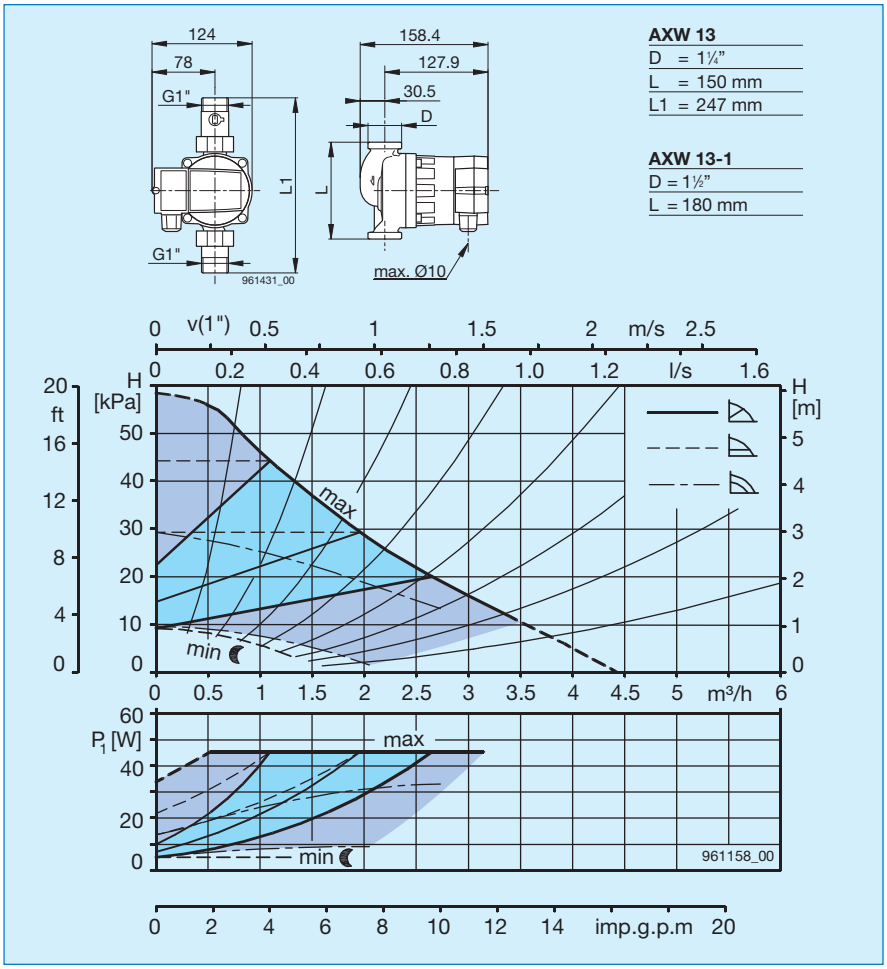
To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	85
30	30	85
35	35	85
40	40	70

The pump is fitted with internal electric motor protection and requires no external motor protection.

Pump housing: bronze

AXW 13: incl. shut-off set
AXW 13-1: Shut-off set not available



Technical data/Characteristic curves

AW 15-2

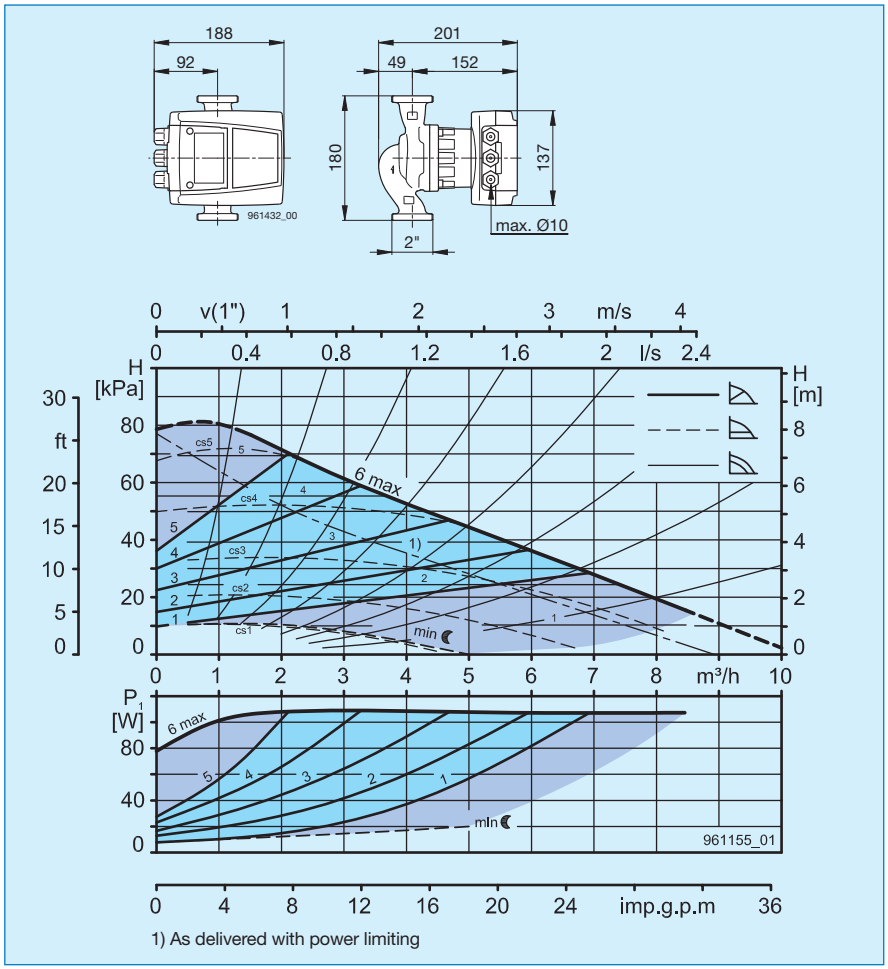
Installation length		**180 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +85°C
Permissible water hardness		65°C (max. 35°fH = 20°dH)
		85°C (max. 25°fH = 14°dH)
Required operating pressure at at 75°C water temperature at 85°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		4.2 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…0.8 A
	min	0.14 A
Power	Regulation	8…107 W
	min	8…19 W

To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	85
30	30	85
35	35	85
40	40	70

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump is fitted with fault or ready indication (switchable).

Pump housing: bronze



1) As delivered with power limiting

AW 16-2

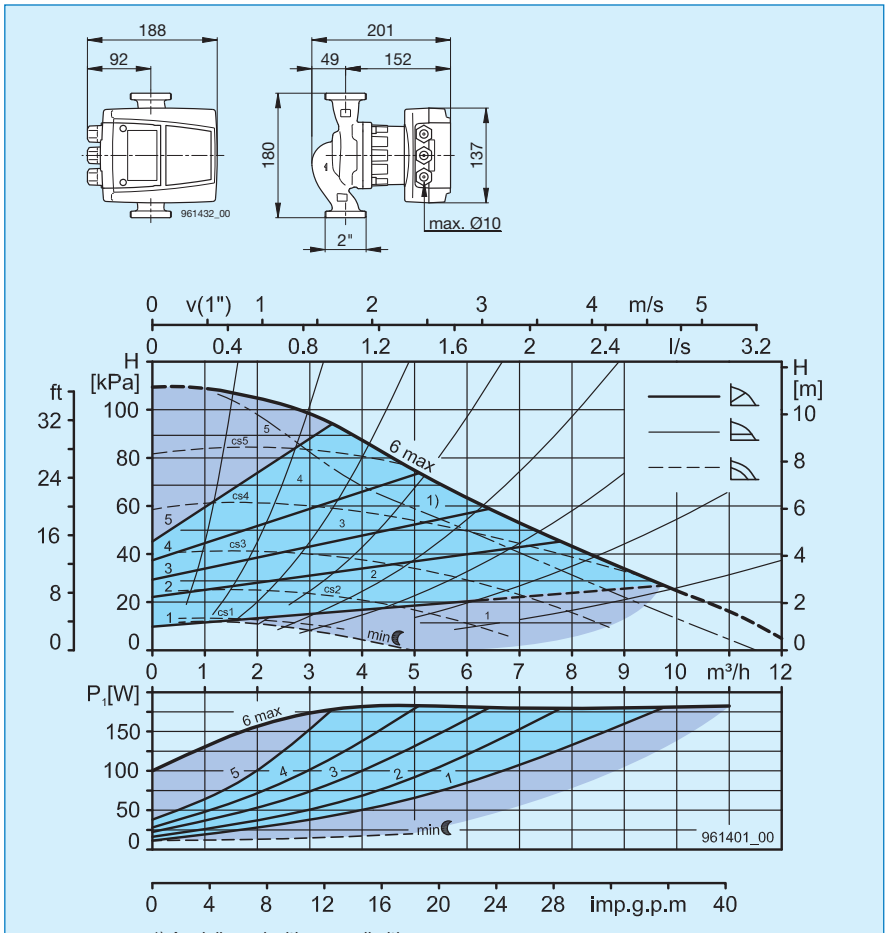
Installation length		**180 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +85°C
Permissible water hardness		65°C (max. 35°fH = 20°dH)
		85°C (max. 25°fH = 14°dH)
Required operating pressure at at 75°C water temperature at 85°C water temperature For every ±100 m altitude		500 m a.s.l. 0.10 bar 0.55 bar ±0.01 bar
Weight		4.2 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…1.25 A
	min	0.14 A
Power	Regulation	8…174 W
	min	8…19 W

To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	85
30	30	85
35	35	85
40	40	70

The pump is fitted with internal electric motor protection and requires no external motor protection. The pump is fitted with fault or ready indication (switchable).

Pump housing: bronze



1) As delivered with power limiting

Technical data/Characteristic curves

AW 401-1

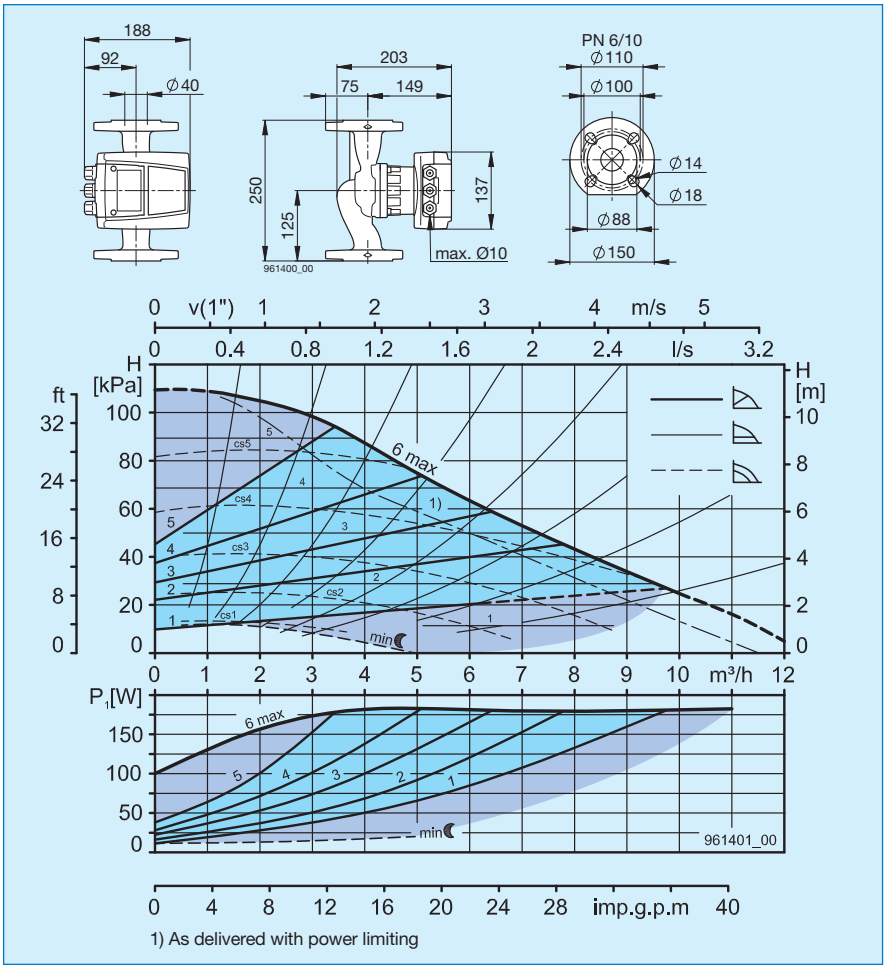
Installation length		**250 mm**
Operating pressure max.		10 bar
Media temperature		+15°C to +85°C
Permissible water hardness		65°C (max. 35°fH = 20°dH)
		85°C (max. 25°fH = 14°dH)
Required operating pressure at		500 m a.s.l.
at 75°C water temperature		0.10 bar
at 85°C water temperature		0.55 bar
For every ±100 m altitude		±0.01 bar
Weight		9 kg
Voltage		1×230 V, 50 Hz
Current	Regulation	0.1…1.25 A
	min	0.14 A
Power	Regulation	8…174 W
	min	8…19 W

To avoid the formation of condensation the media temperature must always be higher than the ambient temperature.

Ambient temp.	Media temperature	
°C	min. °C	max. °C
15	15	85
30	30	85
35	35	85
40	40	70

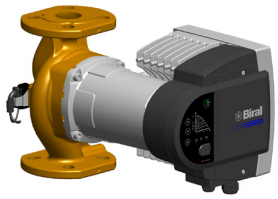
The pump is fitted with internal electric motor protection and requires no external motor protection. The pump is fitted with fault or ready indication (switchable).

Pump housing: bronze



1) As delivered with power limiting

Description/Part N°



Biral ModulA BLUE

Biral pumps ModulA BLUE — Part N°

- High-efficiency pipe installation pump with permanent-magnet motor for process water
- Speed control for:
  - Proportional pressure pp
  - Constant pressure cp
  - Constant speed cs
- Bronze pump body
- Alert or system status message (can be toggled)
- Power limit (can be activated)
- External OFF or external ON (can be toggled)
- Display of operating states

Motor
Voltage 1 x 230 V, frequency 50/60 Hz, protection rating (IEC 34-5) IP44,
insulation class F (155°C),
integrated motor protection

Medium temperature
65°C (max. 35°fH = 20°dH)
85°C (max. 25°fH = 14°dH)

Connections
With flange connections including bolts and seals for PN6, without counterflanges.

For PN10/16 order special sealing kit.

Design on request
- Adapter pieces for adapting the installation length with replacement pumps
  (see "Recirculation pump type comparison").

Notice
We recommend using contacts 10/11 (external OFF or external ON) to connect the ModulA pump. Variant: Connection via a sufficiently dimensioned switching relay.

Unit type reference for ModulA

Example ModulA 40-12 220 BLUE

ModulA	High-efficiency pump
40	Nominal diameter
12	Delivery height (mWC)
250	Installation length (mm)
BLUE	Process water

Biral ModulA BLUE
with flange connections

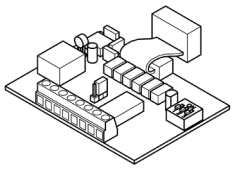
Type	Nominal diameter DN	Delivery height max. mWC	Installation length mm	Flange PN	Operating pressure max. bar	
ModulA	40	12	250	6-16	16	2054 032
ModulA	40	18	250	6-16	16	2054 033

Part N°

	Part N°
Sealing set for flanges PN 10/16 consisting of screws and seals. Shipped with the pump (packaged separately). DN 40	2030 443

Threaded flanges
2 threaded flanges galvanised design (without screws and seals), shipped with the pump (packaged separately).

DN	PN	
40	6	2012 155
40	10/16	2012 161



Biral interface module (BIM)

Signal module BIM A2 — 2054 036
- System status or ready message
- External minimum speed
- Twin pump function

Control module BIM B2 — 2054 037
- External specified speed
  0-10 V/0-20 mA
- PWM
- Twin pump function

Remote adapter — 2054 038
- Enables access via smartphone (iOS, Android) for pump configuration and data retrieval.
- Biral Remote APP, free Internet download.

Technical data/Characteristic curves

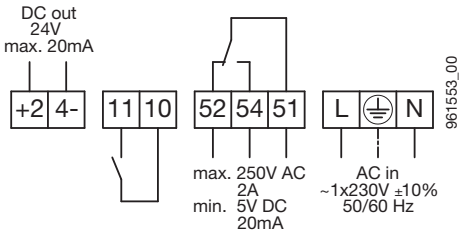
ModulA 40-12 250 BLUE

Nominal diameter	DN 40
Discharge head H max.	12 m
Installation length	250 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	+15°C bis +85°C
	65°C (max 35°dH =20°dH)
	85°C (max 25°dH =14°dH)
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 85°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.25 bar ±0.01 bar
Weight	18.1 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	17 - 421 W
Rated current	0.18 - 1.91 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

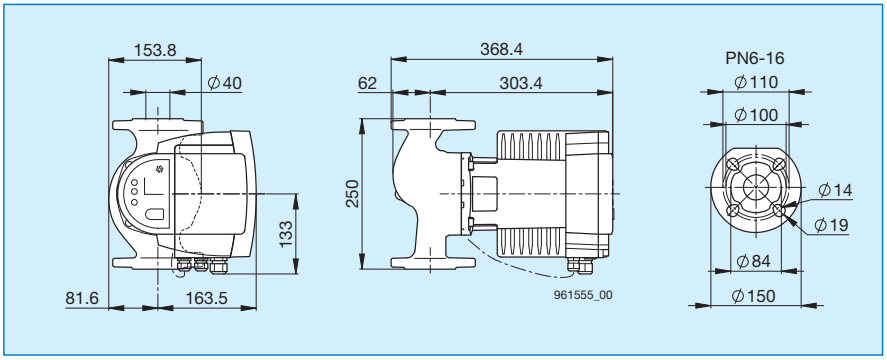
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

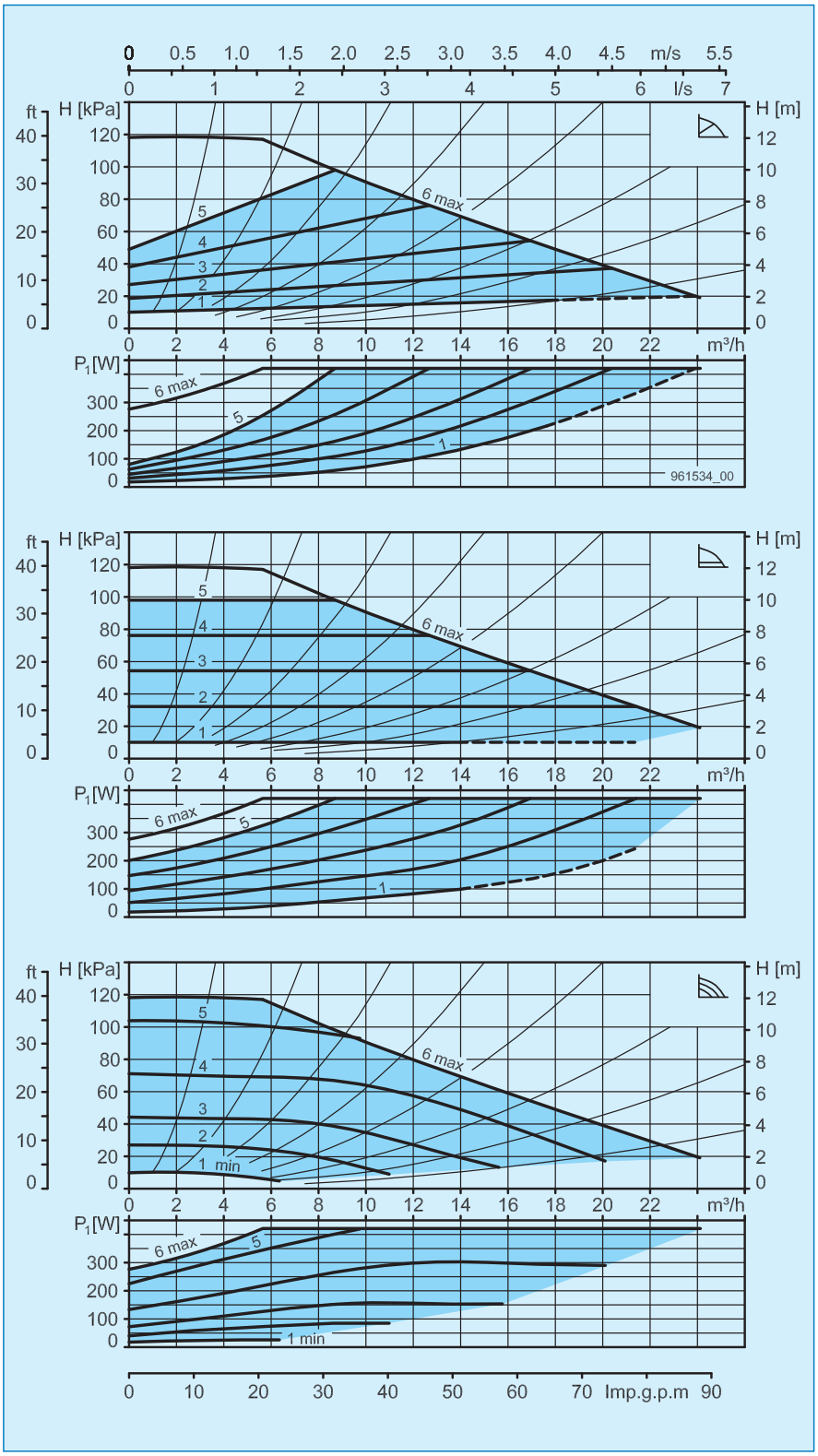
Included in the scope of delivery

- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote
- Sealing set for flanges PN 10/16





Technical data/Characteristic curves

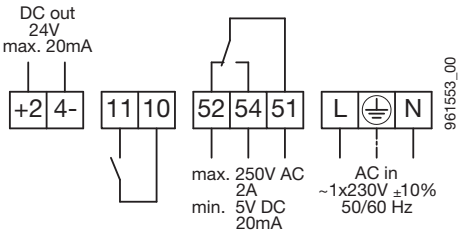
ModulA 40-18 250 BLUE

Nominal diameter	DN 40
Discharge head H max.	18 m
Installation length	250 mm
Flange connection	PN 6-16
Operating pressure max.	16 bar
Media temperature	+15°C bis +85°C
	65°C (max 35°dH =20°dH)
	85°C (max 25°dH =14°dH)
Ambient temperature	0°C to +40°C
Required operating pressure at at 75°C water temperature at 85°C water temperature For every ±100 m altitude	500 m a.s.l. 0.10 bar 0.25 bar ±0.01 bar
Weight	18.1 kg

Electrical data

Voltage	1×230 V
Frequency	50/60 Hz
Power P_1	16-594 W
Rated current	0.18-2.63 A
Motor protection	integrated

Connection diagram



+24- 24 V DC out
11, 10 External OFF or external ON
52, 54, 51 Error or operating message
L, PE, N Power supply

Switch

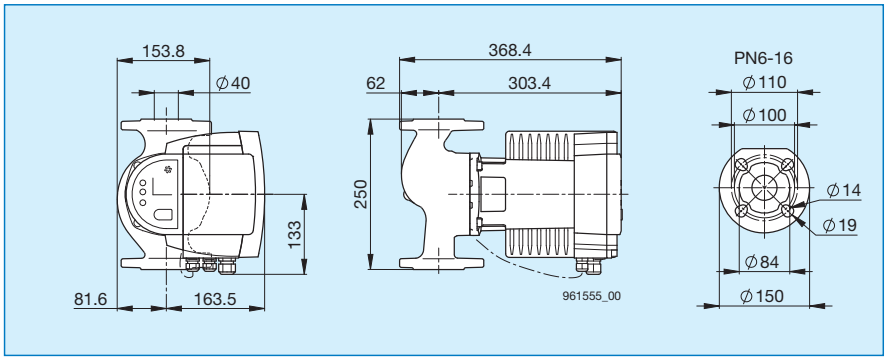
- Error or operating message (switchable)
- External OFF or external ON (switchable)
- Power limit (activatable)

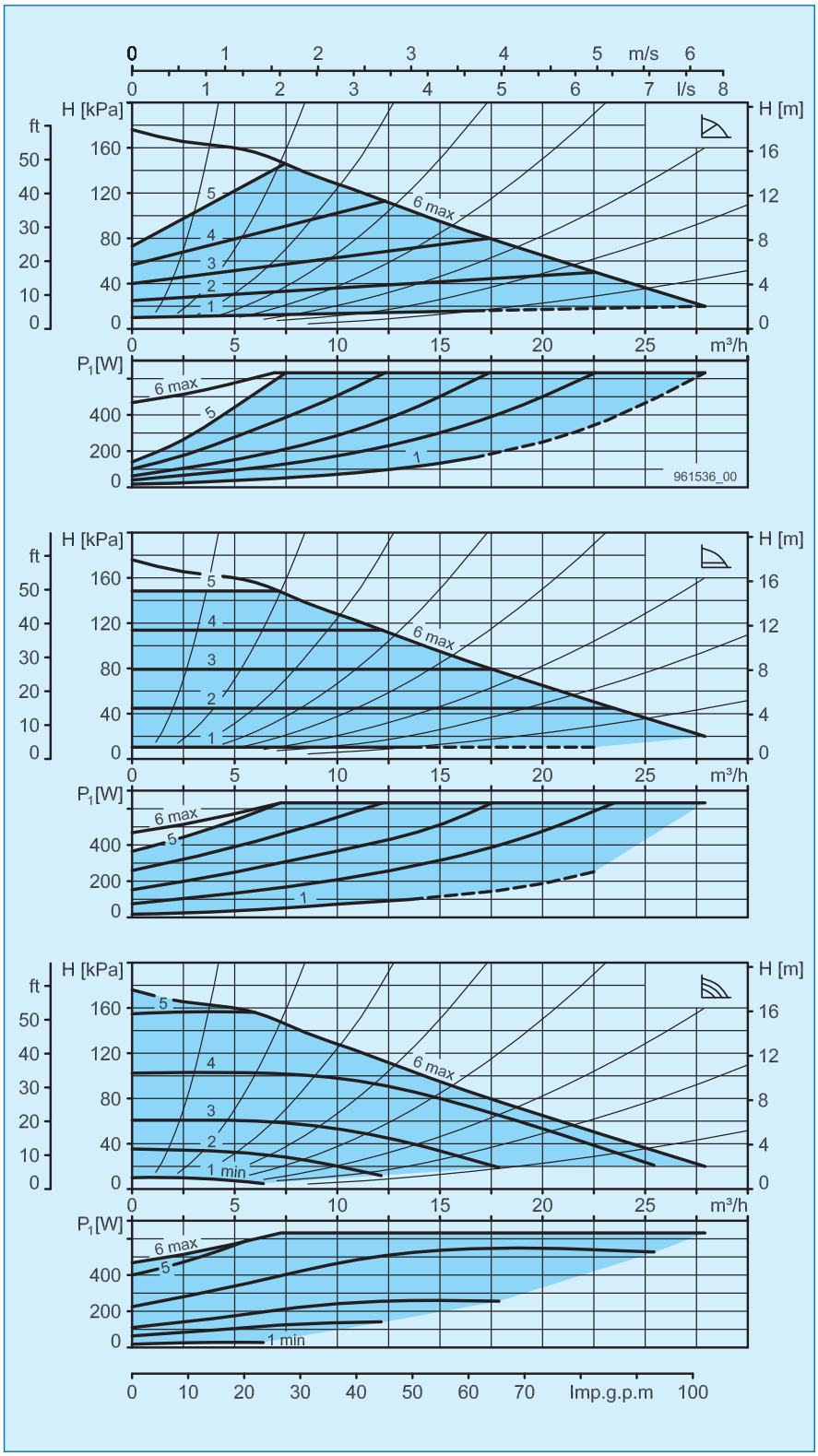
Included in the scope of delivery

- Seal set for flange PN 6

Options

- BIM A2 signal module
- BIM B2 control module
- Set for recessed installation of electronics
- Biral Remote
- Sealing set for flanges PN 10/16





■ Options/Connection diagram

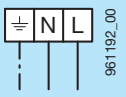
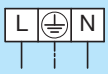
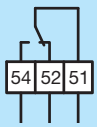
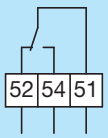
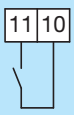
Standard

	AXW 10, AXW 12, AXW 13 4…45 W	**AW 15…AW 401** 8…174 W	**ModulA…BLUE** 16…594 W
Fault or operating message (switchable)	–	✔	✔
External OFF or external ON (switchable)	–	–	✔2)
Power limit (activatable)	–	–	✔
Power limiting (can be deactivated)	–	✔	–
Automatic night lowering (activatable)	✔	✔	–
Thermal insulation shells	–	–	–
Shut-off set Non-return valve and ball valve	only for the G 1¼" design	–	–
Types of control (Proportional pressure, contact pressure and constant speed)	✔ AXW 10 Constant speed	✔	✔

Connection diagram

Pump

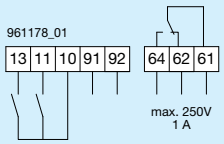
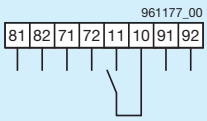
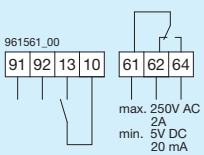
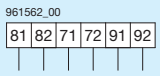
L = Lead
N = Neutral line
⏚ = PE wire, protective conductor

	 Supply 1×230 V	 Supply 1×230 V	 AC in ~1×230 V ±10% 50/60 Hz
51-54 Error or operating notification (switchable) as closing contact: closes for fault/operation **51-52** Error or operating message (switchable) as opening contact: opens for fault/operation		 max. 250 V 1 A	 max. 250 V AC 2 A min. 5 V DC 20 mA
10-11 External OFF or external ON (switchable) with closing contact			

2) We recommend switching module A pumps via contacts 10/11 (external OFF/ON).

Options/Connection diagram

Options

		AXW 10, AXW 12, AXW 13 4…45 W	AW 15…AW 401 8…174 W	ModulA…BLUE 16…594 W
	Biral interface module **BIM A signal module** – Operating or ready message – External OFF – External minimum speed – Twin pump function	–	✔	–
	Biral interface module **BIM B control module** – External speed specification 0–10 V/0–20 mA – PWM/multi-thermal interface – External OFF – Twin pump function	–	✔	–
	Biral interface module **BIM A2 signal module** – Operating or ready message – External minimum speed – Twin pump function	–	–	✔
	Biral interface module **BIM B2 control module** – External speed specification 0–10 V/0–20 mA – External minimum speed – Twin pump function	–	–	✔
	Thermal insulation shells	AXW 12-1, 13-1	✔	✔
	Kit for recessed installation of electronics	–	–	✔
Connection diagram	**BIM A signal module** **10-11** External OFF with closed contact **10-13** External minimum speed with closing contact **61-64** Operating or ready message (switchable) as a closing contact: Closes for operating/ready message **61-62** Operating or ready message (switchable) as opening contact: opens at operating/ready signal **91-92** Twin pump function			
	BIM B control module **10-11** External OFF with closing contact **81-82** Multi-thermal/PWM interface for external speed specification **71-72** Analogue input 0…10 V or 0…20 mA for external speed specification **91-92** Twin pump function			
	BIM A2 signal module **10-13** External minimum speed with closing contact **61-64** Operating or ready message (switchable) as a closing contact: closes at operating/ready message **61-62** Operating or ready message (switchable) as opening contact: opens at operating/ready message **91-92** Twin pump function			
	BIM B2 control module **81-82** Multi-thermal /PWM interface for external speed specification **71-72** Analogue input 0…10 V or 0…20 mA for external speed specification **91-92** Twin pump function			

Overview of types/Connection diagram

Models:

WX/W

Pumps
for hot water supplies
1×230 V
3×400 V

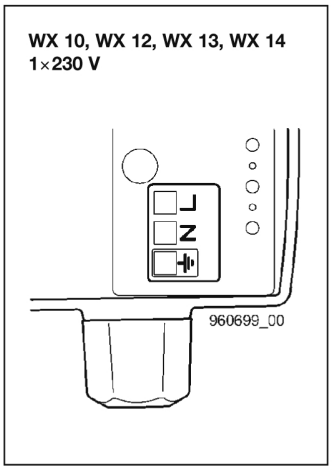
List of models

● Standard design
○ Special design

DN	Installation dimensions	Type	PN10	PN6-16
25	1¼″×120 mm	WX 10, WX 12	●	
	1¼″×150 mm	WX 13	●	
		WX 14	●	
40	∅ 40×250 mm	W 401, W 402, W 403		●

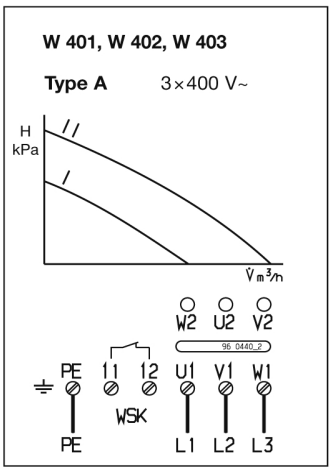
Electrical connection

WX 10, WX 12, WX 13, WX 14
1×230 V

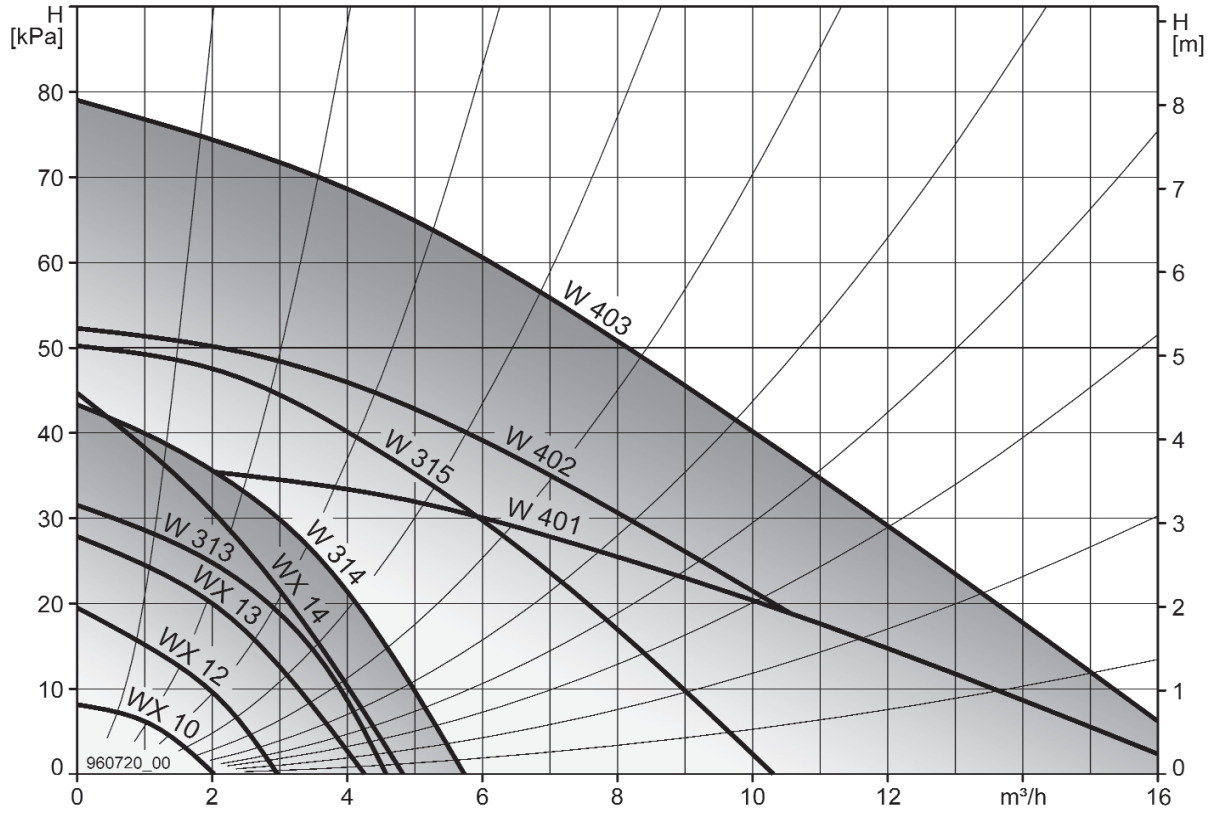


W 401, W 402, W 403

Type A 3×400 V~



Overview of types/characteristic curves



Description/Part N°

Biral pumps
WX 10 - WX 14

Part N°

- Pipe installation pump with split-pipe motor for process water
- Special split pipe with exterior seals. Ceramic bearings and ceramic shaft with axial bearings
- Bronze pump body
- With one speed

Motor
WX 10 - WX 14: 1 x 230 V, 50 Hz
W 313 - W 315: 3 x 400 V, 50 Hz
The motors are short-circuit-proof and do not need overload protection.
Stator winding isolation:
according to class „F“ (155°C): WX 10 - WX 14

Operating temperature
65°C (max. 22°fH)
95°C (max. 14°fH)

Operating pressure: max. 10 bar

Connections
With outer thread incl. sealing (without fittings)
WX 10 - WX 14

WX 10 - WX 14
(without fittings) 1 x 230 V

Biral Type	Outer thread	Installation length mm	Speed 1/min	
WX 10	R 1 ¼"	120	2600	2030 378
WX 12	R 1 ¼"	120	2000	2030 379
WX 13	R 1 ¼"	150	2550	2030 380
WX 14	R 1 ¼"	150	2350	2030 381

Part N°

Fittings
2 fittings incl. sealing. Delivered with the pump (separately packed).

DN	Design	Part N°
1 ½" - 1"	galvanised	2036 688
1 ½" - ¾"	galvanised	2011 887
2" - 1"	galvanised	2030 451
2" - 1 ¼"	galvanised	2030 453
2" - 1 ½"	galvanised	2030 454

Description/Part N°

Biral pumps
W 401 - W 403

Part N°

- Pipe installation pump with split-pipe motor for process water
- Special split pipe with exterior seals. Floating bearings with axial bearings
- Bronze pump body
- With one speed

Motor
3 x 400 V, 50 Hz
The motors with installed winding protective ground must be protected with a motor protection, e.g., with a controller BS 712 W4 or BS 752. Stator winding isolation according to class "H" (180°C).

Operating temperature
65°C (max. 22°fH)
95°C (max. 14°fH)

Operating pressure: max. 6/10/16 bar

Connections
With flange connections incl. bolts and sealings for PN 6, without counterflanges.

For PN 10/16 order special sealing kit.

Biral W 401 - W 403
max. 6/10/16 bar, 3x 400V
(with flange connections)

Biral Type	DN	Installation length mm	Casing	
W 401	40	250	Bronze	2031 046
W 402	40	250	Bronze	2031 731
W 403	40	250	Bronze	2031 732

Sealing set for flanges PN 10/16
consisting of screws and seals.
Delivery with the pump (separately packed).

DN	
40	2030 443

Threaded flanges
2 threaded flanges, galvanised design (without screws and seals).
Delivery with the pump (separately packed).

DN	PN	
40	6	2012 155
40	10/16	2012 161

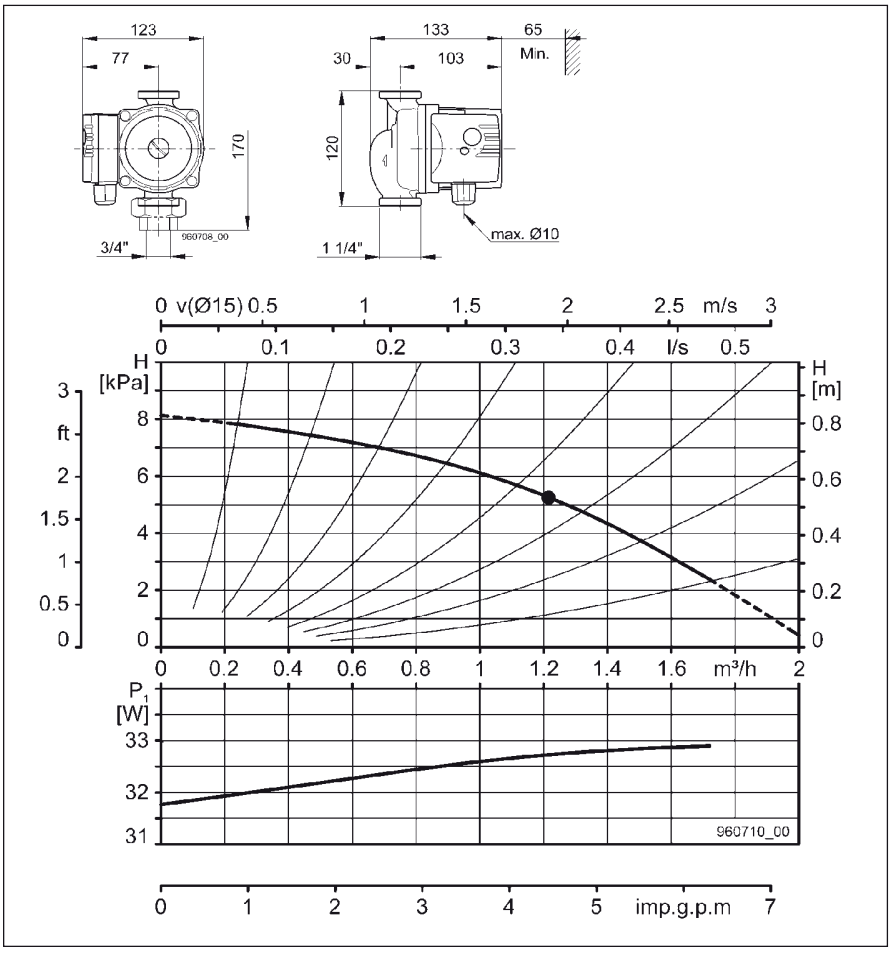
Technical data/Characteristic curves

WX 10 1×230 V

Installation length	120 mm
Permissible operating pressure	10 bar
Permissible operating temp.	65°C (max. 22°fH =12°dH)
	95°C (max. 14°fH =8°dH)
Required operating pressure at	500 m a.s.l.
at 65°C water temperature	0.4 bar
at 95°C water temperature	+0.6 bar
Weight	2.4 kg
Voltage	1×230 V, 50 Hz
Speed	2600 rpm
Current	0.19 A
Power	31...33 W
Capacitor built in 2 µF, 400 V	

The motor is short-circuit proof and requires no overload protection.

Pump housing: bronze

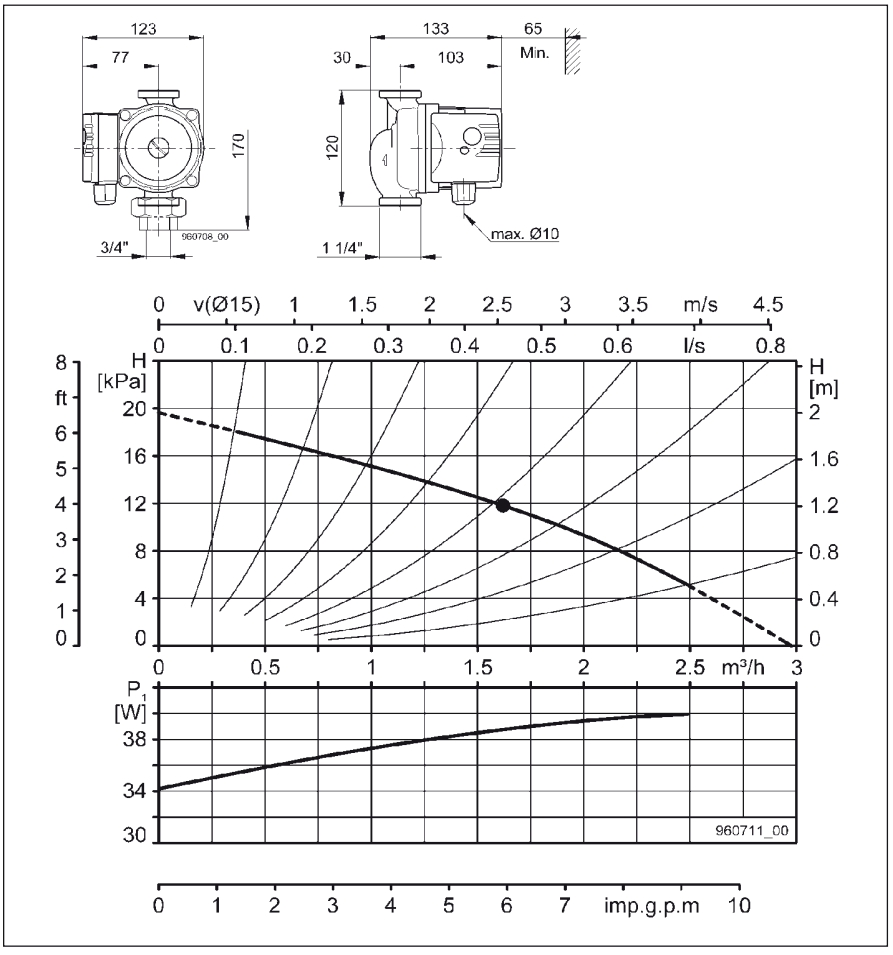


WX 12 1×230 V

Installation length	120 mm
Permissible operating pressure	10 bar
Permissible operating temp.	65°C (max. 22°fH =12°dH)
	95°C (max. 14°fH =8°dH)
Required operating pressure at	500 m a.s.l.
at 65°C water temperature	0.4 bar
at 95°C water temperature	+0.6 bar
Weight	2.4 kg
Voltage	1×230 V, 50 Hz
Speed	2200 rpm
Current	0.21 A
Power	34...40 W
Capacitor built in 2 µF, 400 V	

The motor is short-circuit proof and requires no overload protection.

Pump housing: bronze



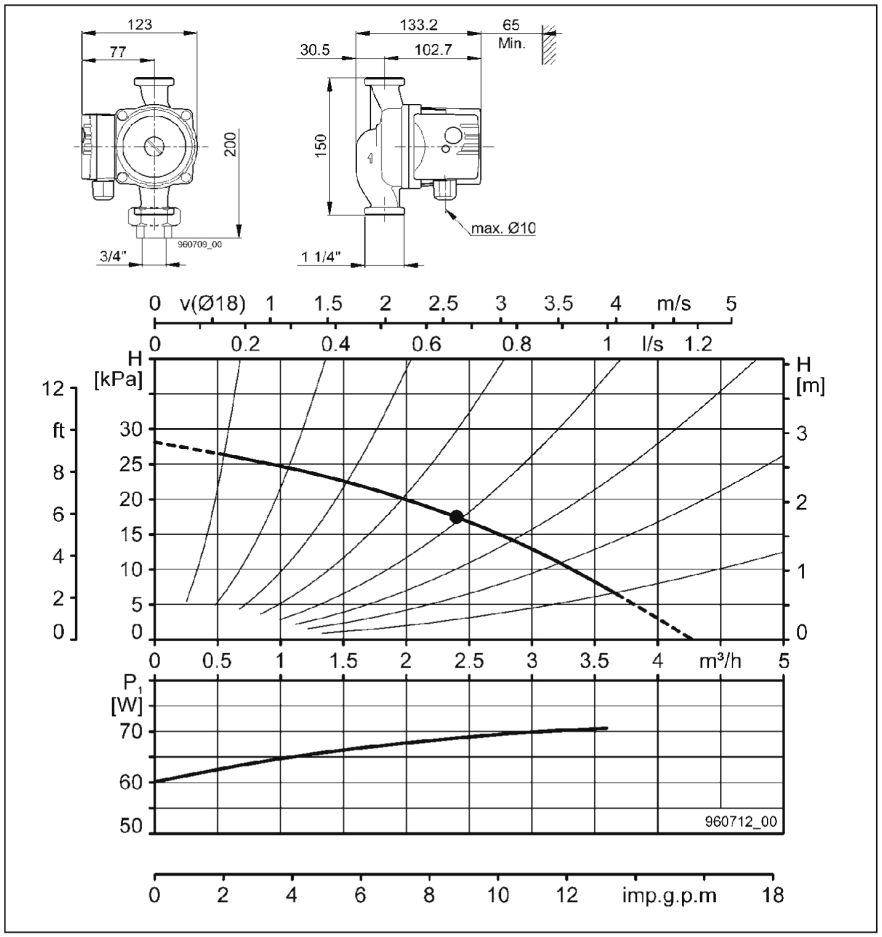
Technical data/Characteristic curves

WX 13 1×230 V

Installation length	**150 mm**
Permissible operating pressure	10 bar
Permissible operating temp.	65°C (max. 22°fH =12°dH)
	95°C (max. 14°fH =8°dH)
Required operating pressure at at 65°C water temperature at 95°C water temperature	500 m a.s.l. 0.4 bar +0.6 bar
Weight	2.6 kg
Voltage	1×230 V, 50 Hz
Speed	2600 rpm
Current	0.35 A
Power	60...70 W
Capacitor built in 2 µF, 400 V	

The motor is short-circuit proof and requires no overload protection.

Pump housing: bronze

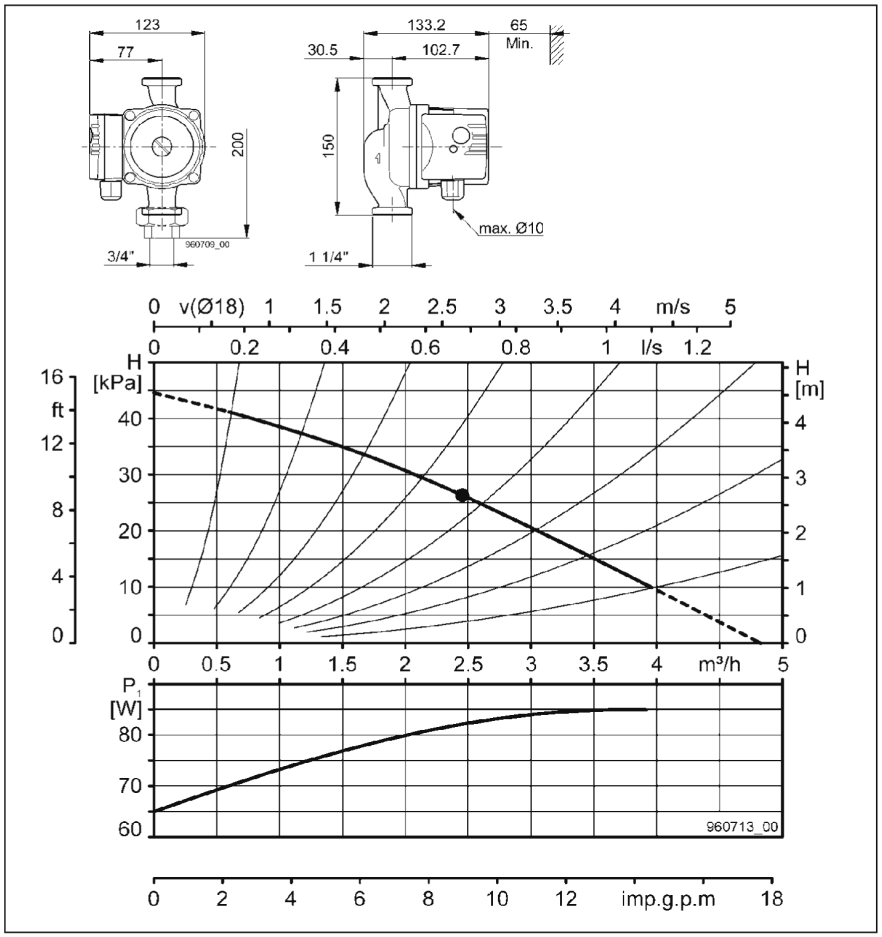


WX 14 1×230 V

Installation length	**150 mm**
Permissible operating pressure	10 bar
Permissible operating temp.	65°C (max. 22°fH =12°dH)
	95°C (max. 14°fH =8°dH)
Required operating pressure at at 65°C water temperature at 95°C water temperature	500 m a.s.l. 0.4 bar +0.6 bar
Weight	2.6 kg
Voltage	1×230 V, 50 Hz
Speed	2400 rpm
Current	0.42 A
Power	65...85 W
Capacitor built in 2 µF, 400 V	

The motor is short-circuit proof and requires no overload protection.

Pump housing: bronze



■ Technical data/Characteristic curves

W 401

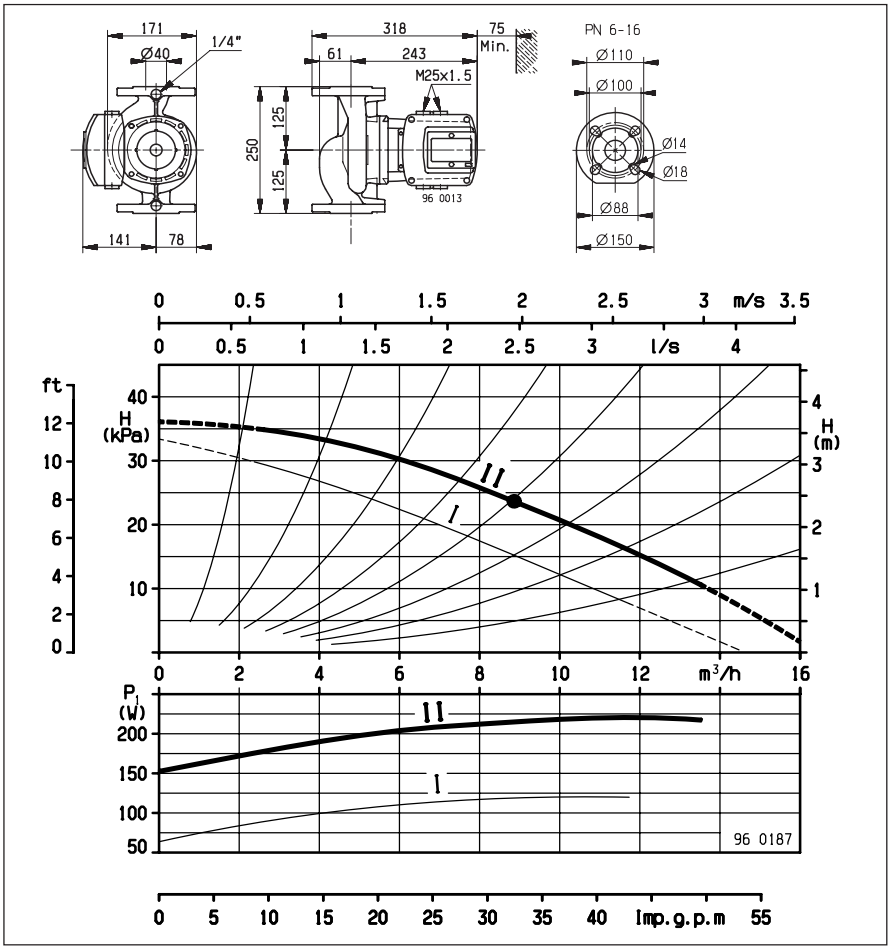
Installation length	**250 mm**
Permissible operating pressure	6 - 16 bar
Permissible operating temp.	65°C (max. 22°fH) 95°C (max. 14°fH)
Required operating pressure at at 65°C water temperature at 95°C water temperature	500 m a.s.l. 0.4 bar +0.6 bar
Weight	14.5 kg

Speed	II	1400 rpm
	I	1180 rpm
Power	II	160...235 W
	I	60...120 W

	Level	Current	Remarks
Plug type A: **3×400 V, 50 Hz**	II I	0.8 A 0.3 A	Connect power II only
Plug type B: **1×230 V, 50 Hz**	II	1.7 A	Operating capacitor 12 µF, 280 V connect power II only
Plug type B: **3×230 V, 50 Hz**	II	1.7 A	Connect power II only

Motor protection required

Special design: Bronze



W 402

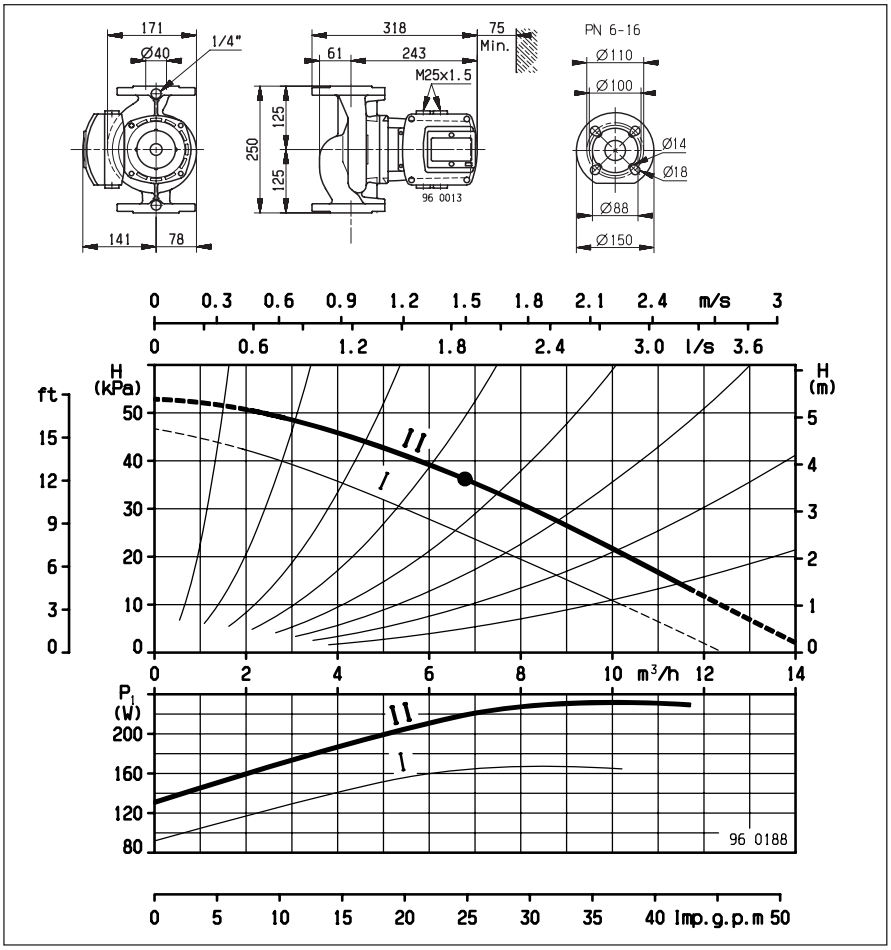
Installation length	**250 mm**
Permissible operating temp.	65°C (max. 22°fH) 95°C (max. 14°fH)
Required operating pressure at at 65°C water temperature at 95°C water temperature	500 m a.s.l. 0.4 bar +0.6 bar
Weight	14.5 kg

Speed	II	2780 rpm
	I	2450 rpm
Power	II	135...225 W
	I	95...165 W

Motor protection required

	Level	Current	Remarks
Plug type A: **3×400 V, 50 Hz**	II I	0.5 A 0.3 A	Connect power II only
Plug type B: **1×230 V, 50 Hz**	II	1.35 A	Operating capacitor 8 µF, 280 V connect power II only
Plug type B: **3×230 V, 50 Hz**	II	1 A	Connect power II only

Special design: Bronze



Technical data/Characteristic curves

W 403

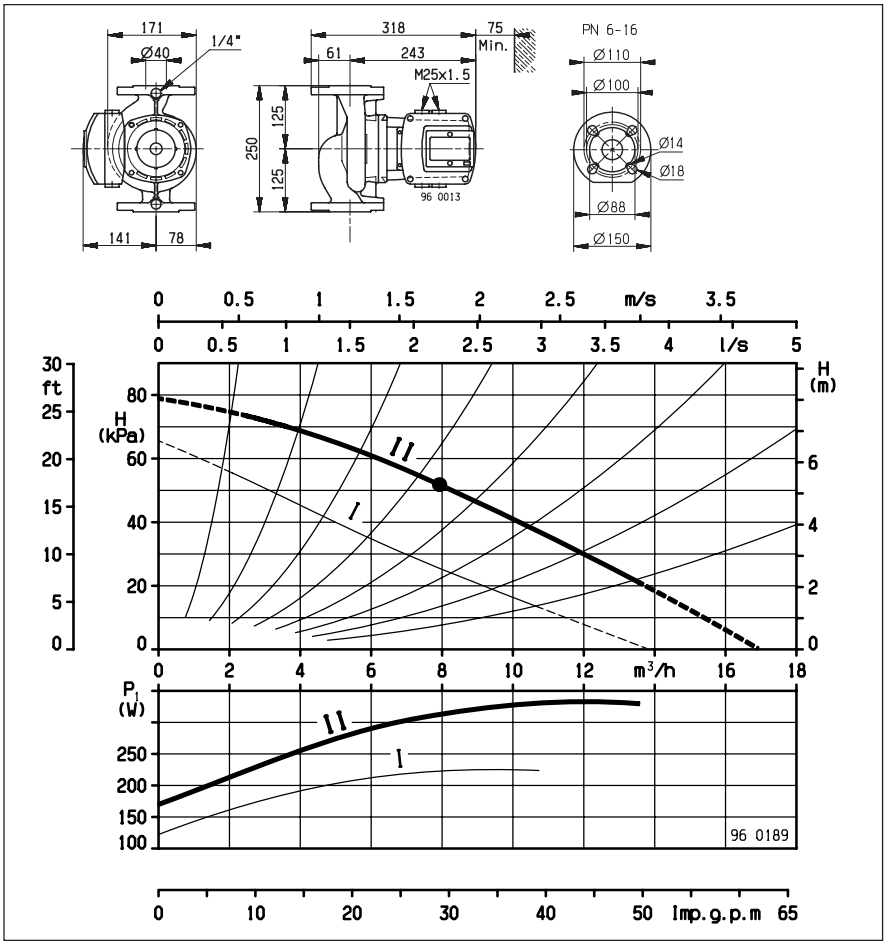
Installation length	**250 mm**
Permissible operating pressure	6 - 16 bar
Permissible operating temp.	65°C (max. 22°fH) 95°C (max. 14°fH)
Required operating pressure at at 65°C water temperature at 95°C water temperature	500 m a.s.l. 0.4 bar +0.6 bar
Weight	14.5 kg

Speed	II	2680 rpm
	I	2200 rpm
Power	II	180...330 W
	I	130...225 W

	Level	Current	Remarks
Plug type A: **3×400 V, 50 Hz**	II I	0.6 A 0.4 A	Connect power II only
Plug type B: **1×230 V, 50 Hz**	II	1.9 A	Operating capacitor 8 µF, 280 V connect power II only
Plug type B: **3×230 V, 50 Hz**	II	1.3 A	Connect power II only

Motor protection required

Special design: Bronze



Overview of types

Control devices to optimisme a successful range of pumps

Series:

BC

Motor protection is necessary for reliable operation of 2-stage pumps (above P1 = 120 W). The pumps are protected at both speeds with the BC 712 W4 (wall-mounted) or the BC 752 (fitted in switch cabinet).

The BC 710 is suitable for switching pumps ON/OFF at certain times. Specially 1-phase service water pumps.

	Type	Control function
	BC 710	ON/OFF switch
	BC 712 W4	Motor protection
	BC 712 W4	Motor protection

Selection table

			Motor protection	ON/OFF
Selection table for service water pumps		**WX 10, WX 12**	–	
		WX 13, WX 14	–	BC 710
		**W 401, W 402, W 403**	BC 712 W4 [1] BC 752 [1]	BC 710 + BC 712 W4

[1] for 3-phase pumps

ON/OFF: automatic time-dependent

■ **Part N°**

Biral control devices for control panel installation

Part N°

Motor protection module BS 752
- For pumps with three-phase motor with integrated winding protective ground. Without power element.
- Switching functions:
  - Pump switch-off in case of malfunction
  - Display of the malfunction shutdown
  - Possible remote signalling with volt-free change-over contact
  - Suitable for ZLT
- Can be used for pumps W 401 .... W 403

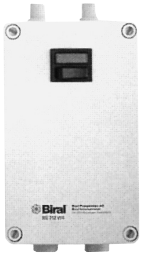
BS 752 — 2030 429

Biral control devices for wall installation

On/off switching BS 710
- Controller for the automatic, time-dependent on/off switching of pumps
- For pumps with short-circuit-proof motors Connection 1 x 230 V.

On site:
Contactor for connection, 3 x 400 V.

BS 710 — 2030 430



Motor protection BS 712 W4
- For pumps with three-phase motor with integrated winding protective ground
- Manual on/off switching
- Integrated motor protection
- Connection for external on/off switching (e.g. BS 710)

BS 712 W4 — 2030 431

Technical data

BC 710:
On/Off switch
Control equipment
for automatic,
time-dependent ON/OFF
switching of pumps

Switching functions
– Manual ON/OFF switch (✋/0)
– Automatic, time-dependent
ON/OFF control (🕒).
Minimum switching intervals
15 minutes.

Dimensions:
(W, H, D) 80×152×65 mm
Connection:
1×230 V, 50 Hz
Contact rating:
max. 6 A
Protection type:
IP 31 according to
DIN 40050

Suitable for pump types
BC 710 for pumps
with short-circuit proof motor:
Supply 1×230 V:
WX 10, WX 12, WX 13, WX 14

BC 710 for pumps
with motor protection:
Supply 3×400 V:
BS 710 + BS 712 W4/BS 752:
W 401, W 402, W 403 (3×400 V)

BC 712 W4:
Motor protection
Motor protection for pumps
3×400 V
and winding protection
contact

Switching functions
– Manual ON/OFF switch
– Built-in motor protection

Speed is selected manually
by a plug on the pump.

Caution:
The pump must be switched off
before changing the position
of the plug.

Additional switching facilities
– Connection for external ON/OFF
switching (such as BC 710)

Dimensions:
(W, H, D) 105×170×82 mm
Connection:
3×400 V, 50 Hz
Contact rating:
max. 4,0 kW
Protection type:
IP 31 nach DIN 40050

Suitable for pump types
3×400 V only
W 401…W 403

Technical data

BC 752:
Motor protection module
Motor protection module for pumps with three-phase motors and winding protection contact (controls only).

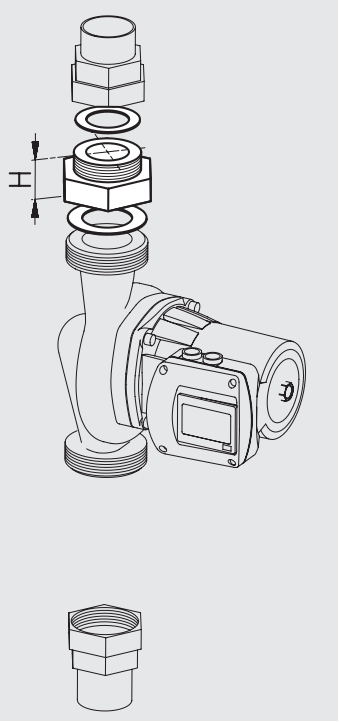
DIN standard module for control cabinet fitting.

Switching functions
- Switches pump off in the event of thermal overload.
- Indication of alarms.
- Potentialfree contact to indicate run and alarm status of the pump.
- Suitable for central control technology.

Dimensions:
(W, H, D) 45×75×105
Connection:
1×230 V, 50 Hz
Contact rating:
max. 3 A
Protection type:
IP 20 according to DIN 40050

Suitable for pump types
3×400 V only
W 401…W 403

■ **Part N°**

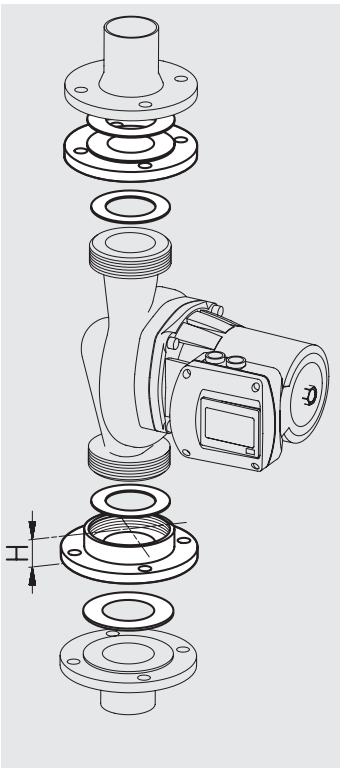


Transition piece

The installation kit comprises a transition piece and a sealing piece

Z	G	H	Part N°
10	1¼" / 1¼"	30	2004 381
11	1¼" / 2"	20	2004 382
12	1½" / 2"	20	2004 383
13	2" / 2"	10	2004 404
14	2" / 2"	15	2004 405
15	2" / 2"	20	2004 406
16	2" / 2"	34	2004 407
17	2" / 2"	40	2004 408
21	2" / 2¼"	20	2004 409
81*	1¼" / 2"	40	2004 411
82*	1¼" / 2"	60	2004 412
83*	1¼" / 1½"	30	2029 649
84*	1¼" / 2"	30	2029 650
85	1¼" / 1"	30	2029 659

*Bronze

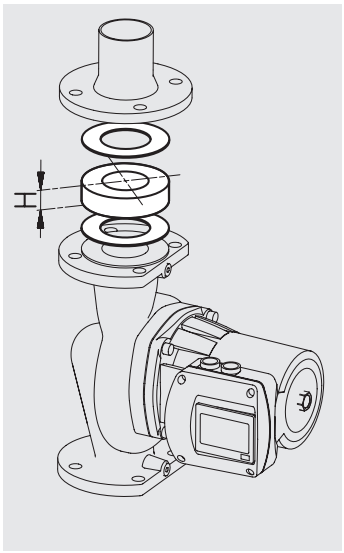


Threaded flange PN 6

The installation kit comprises a transition piece and a sealing piece

Z	G/DN	H	Part N°
25	2" / 32	40	2030 680
26	2" / 32	16	2030 681
28	2" / 32	10	2029 651
29	2" / 40	30	2029 652
30	2" / 50	40	2004 414

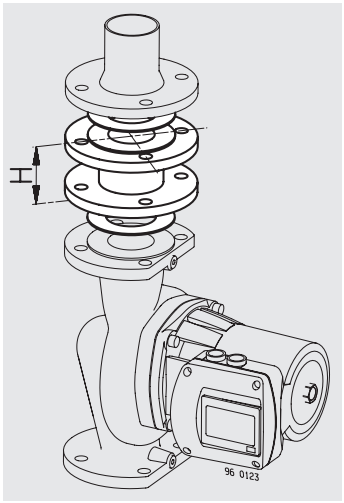
■ **Part N°**



Transition piece

The installation kit comprises a transition piece and a sealing piece

Z	G	H	Part N°
32	40	10	2004 415
33	40	20	2004 416
34	40	30	2004 417
35	40	40	2004 418
36	40	50	2004 419
41	50	10	2004 420
47	50	20	2029 653
42	50	30	2004 421
43	50	50	2004 422
56	65	10	2029 654
50	65	30	2004 423
51	65	40	2004 424
59	80	10	2004 425
60	80	30	2029 655
65	100	20	2029 657
66	100	50	2029 658

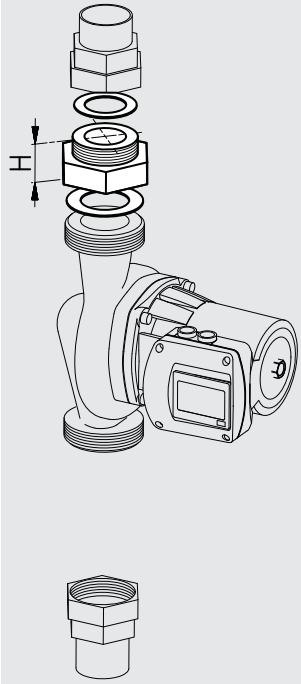


Intermediate flange PN 6

The installation kit comprises a transition piece and a sealing piece

Z	G	H	Part N°
37	40	73	2004 426
44	50	65	2004 427
45	50	85	2004 428
46	50	135	2004 429
52	65	70	2004 430
53	65	85	2029 660
54	65	125	2029 661
55	65	155	2029 662
61	80	80	2029 663

Technical data

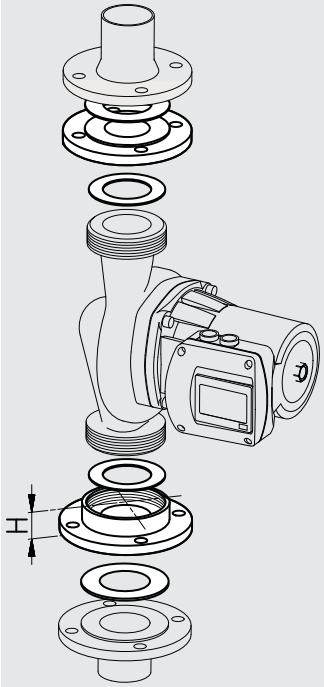


Intermediate piece

Z	G	H	
10	1¼″ / 1¼″	30	
11	1¼″ / 2″	20	
12	1½″ / 2″	20	
13	2″ / 2″	10	
14	2″ / 2″	15	
15	2″ / 2″	20	
16	2″ / 2″	34	
17	2″ / 2″	40	
21	2″ / 2¼″	20	
81	1¼″ / 2″	40	*
82	1¼″ / 2″	60	*
83	1¼″ / 1½″	30	*
84	1¼″ / 2″	30	*
85	1¼″ / 1″	30	

** brons*

The adapter kit includes an intermediate piece and gaskets.



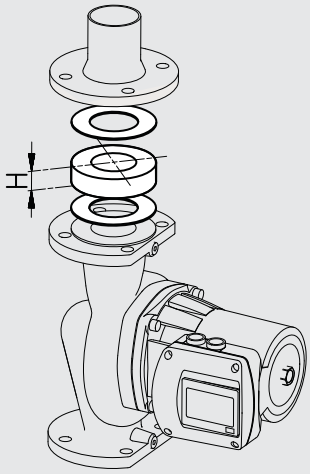
Threaded flange (PN 6)

Z	G/DN	H
25	2″ / 32	40
26	2″ / 32	16
28	2″ / 32	10
29	2″ / 40	30
30	2″ / 50	40

Square screwed flange (PN 6)

	G/DN	H
70	2″ / 32	20

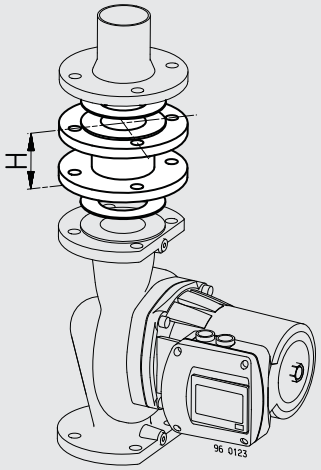
The adapter kit includes two flanges, gaskets and bolts.



Intermediate piece

Z	DN	H
32	40	10
33	40	20
34	40	30
35	40	40
36	40	50
41	50	10
47	50	20
42	50	30
43	50	50
56	65	10
50	65	30
51	65	40
59	80	10
60	80	30
65	100	20
66	100	50

The adapter kit includes an intermediate piece, gaskets and bolts.



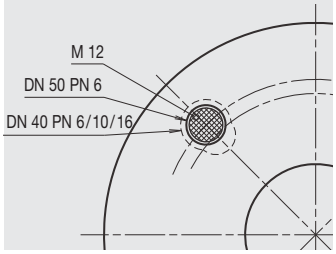
Intermediate flange PN 6

Z	DN	H
37	40	73
44	50	65
45	50	85
46	50	135
52	65	70
53	65	85
54	65	125
55	65	155
61	80	80

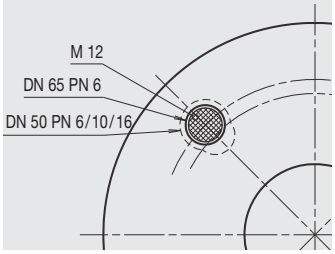
The adapter kit includes two intermediate flange, gaskets and bolts.

Exchange of pump for differing nominal diameter

Existing pipeline DN 50, PN 6
Pump DN 40, PN 6/10/16

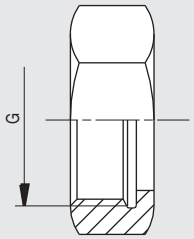


Existing pipeline DN 65, PN 6
Pump DN 50, PN 6/10/16

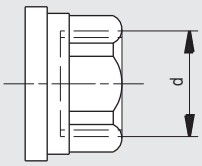


Technical data

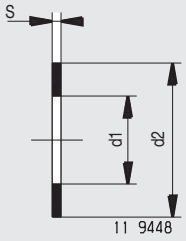
A



B

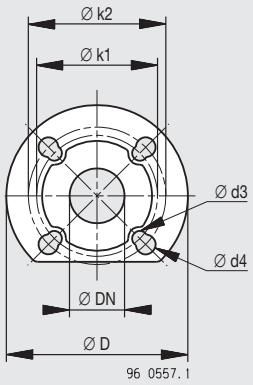


C



Tube fittings

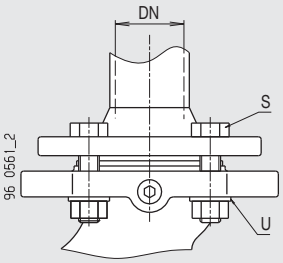
rp	A	B	C
	G	d	∅ d1/∅ d2×s
¾"	1¼"	¾"	27/38×2
1"	1½"	1"	32/44×2
		¾"	
1¼"		1¼"	
	2"	1"	45/55×2
		¾"	

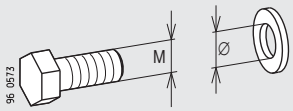


Combi-flange

PN 6 / PN 10 / PN 16

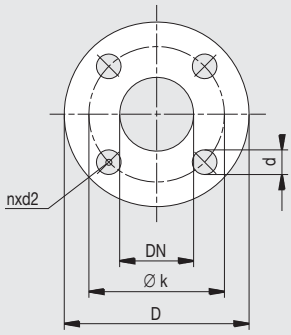
	PN6/PN 10/PN 16				
DN	D	k1	k2	d3	d4
40	155	100	110	14	18
50	165	110	125	14	18
65	185	130	145	14	18





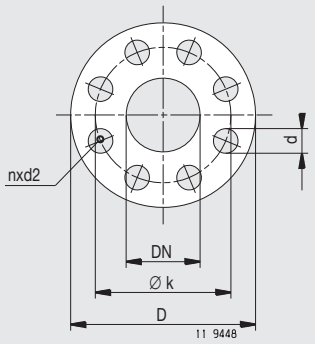
S	S	U	U
PN 6	PN 10/16	PN 6	PN 10/16
4×M12	4×M16	Ø14	Ø18

*Pump flanges DN 40, 50, 65 are drilled with fixing holes PN 6/PN 10/PN 16. The washers «**U**» supplied must be fitted on the pump side for reliable screw connection (S) of the flanges.*



PN 6
DN 32 – DN 100

	PN6			
DN	D	k	d	n×d2
32	120	90	14	4×M12
40	130	100	14	4×M12
50	140	110	14	4×M12
65	160	130	14	4×M12
80	190	150	18	4×M16
100	210	170	18	4×M16



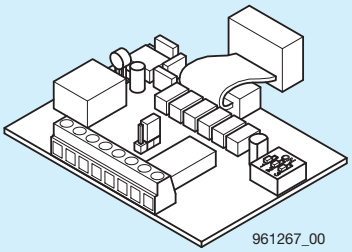
PN 10/16
DN 32 – DN 100

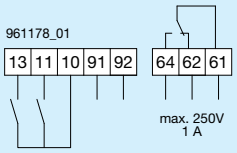
	PN 10/16			
DN	D	k	d	n×d2
32	140	100	18	4×M16
40	150	110	18	4×M16
50	165	125	18	4×M16
65	185	145	18	4×M16
80	200	160	18	8×M16
100	220	180	18	8×M16

■ **Overview/Options/Connection diagram**

Options

Biral interface module
BIM A signal module
for A pumps



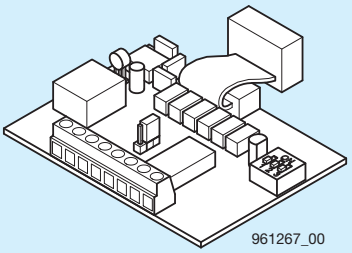


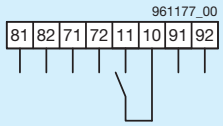
BIM A
- Operating or ready message
- External OFF
- External minimum speed
- Twin pump function

Note:
Not possible in combination with control module

Connection diagram
10-11 External OFF
with closed contact
10-13 External minimum speed
with closing contact
61-64 Operating or ready message
(switchable) as a closing contact:
Closes for operating/ready message
61-62 Operating or ready message
(switchable) as opening contact:
opens at operating/ready signal
91-92 Twin pump function

Biral interface module
BIM B control module
for A pumps



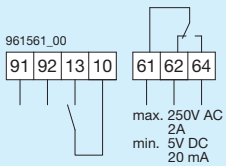


BIM B
- External speed specification
  0–10 V/0–20 mA
- PWM/multi-thermal interface
- External OFF
- Twin pump function

Note:
Not possible in combination with signal module

Connection diagram
10-11 External OFF
with closing contact
81-82 Multi-thermal/PWM interface
for external speed specification
71-72 Analogue input 0…10 V or 0…20 mA
for external speed specification
91-92 Twin pump function

Biral interface module
BIM A2 signal module
for ModulA

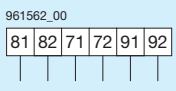


BIM A2
- Operating or ready message
- External minimum speed
- Twin pump function

Note:
Not possible in combination with control module

Connection diagram
10-13 External minimum speed
with closing contact
61-64 Operating or ready message
(switchable) as a closing contact:
closes at operating/ready message
61-62 Operating or ready message
(switchable) as opening contact:
opens at operating/ready message
91-92 Twin pump function

Biral interface module
BIM B2 control module
for modulA



BIM B2
- External speed specification
  0–10 V/0–20 mA
- External minimum speed
- Twin pump function
- Zwillingspumpenfunktion

Note:
Not possible in combination with signal module

Connection diagram
81-82 Multi-thermal /PWM interface
for external speed specification
71-72 Analogue input 0…10 V or 0…20 mA
for external speed specification
91-92 Twin pump function

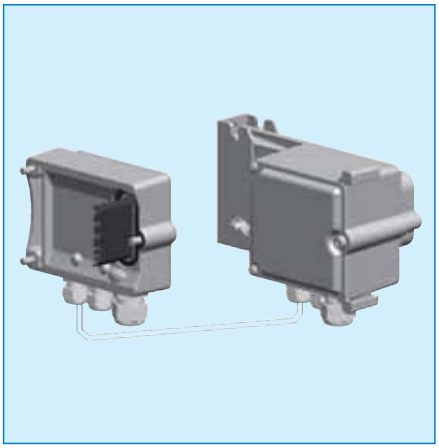
■ Overview of options

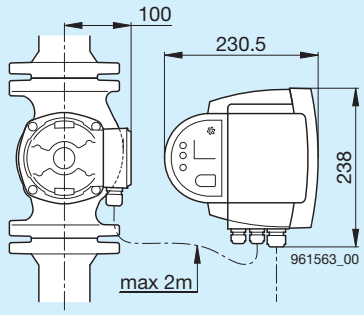
Options

Construction set for offset electronics installation for ModulA

Media temperature: up to 110 °C
Ambient temperature: max. 40 °C
Pump can be insulated
up to 100 °C medium temperature

Note:
If condensation forms (medium temperature lower than ambient temperature) it is recommended to use the cold water version (KW) with coating resistant to condensation.





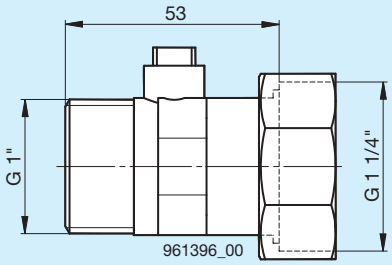
Shut-off set for service water

(Non-return valve and ball valve)

The shut-off set is included as standard with the following pumps:
AXW 10 smart, AXW 12 smart
AXW 13 smart, AXW 14 smart AXW 12, AXW 13

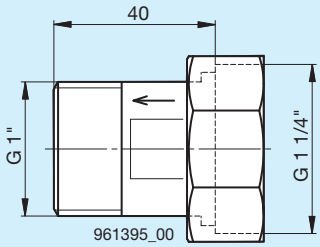
For AXW 12-1 and AXW 13-1 not available

Ball valve



Material: Brass

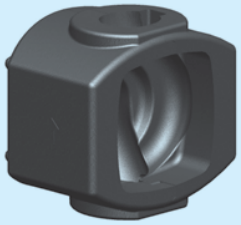
Non-return valve

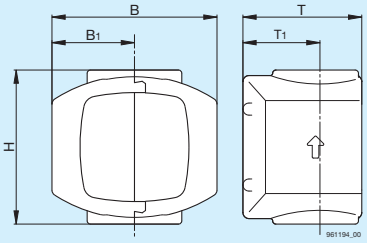


Material: Brass
Opening pressure: 20–35 mbar

Thermal insulation shells

Fire protection class B2 to DIN 4102





Pump type	Type	B	B1	H	T	T1
AX 12, AX 12-1, AX 12-2	WD 1 [1]	140	70	140	90	50
AX 13, AX 13-1, AX 13-2						
AXW 12-1, AXW 13-1						
A 12, A 12-1, A 12-2	WD 2	150	75	140	108	70
A 13, A 13-1, A 13-2						
A 14, A 14-1, A 14-2						
A 15, A 15-1, A 15-2						
A 16-1, A 16-2						
AW 15-2, AW 16-2						
A 401, A 401-1, AW 401-1	WD 3	150	75	178	140	78

[1] The AX 12, -1, -2 and AX 13, -1, -2 pump is supplied with thermal insulation WD 1

Notice for project planning and installation

1. Selection of circulating pump

Recommendation for regulated circulating pumps
Regulated circulating pumps continually adjust the flowrate along a pre-defined characteristic with changing pipe characteristics.

Nevertheless it is also worthwhile here to make a careful choice of the right pump size.

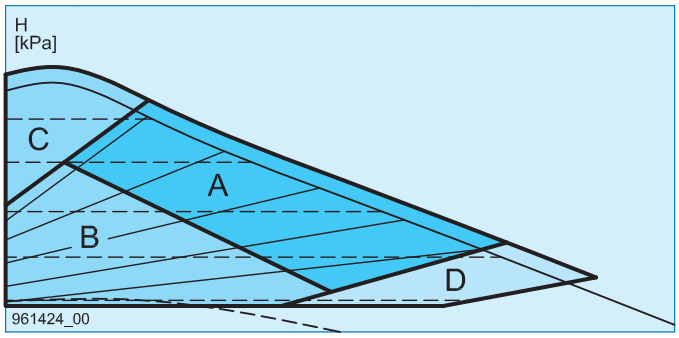


Fig.: Choice of regulated pumps

A = *Optimum control range*
– *Range with the best degree of overall effectiveness*

B = *Limited control range*
– *If possible select a smaller pump*

C = *Limited control range*
– *The pump works but has limited control*

D = *Outside the control range*
– *If possible avoid*

2. Required operating pressure at circulating pump

If the operating pressure is too low, adequate lubrication of the pump sliding bearings (water lubrication) is not ensured and therefore their service life is reduced.
The values specified should therefore be observed without fail.
The required operating pressure depends on the type of pump, the maximum temperature of the medium and the static pressure.
If the position of the expansion vessel is not ideal, the operating pressure at the pump inlet when operating the pump can be reduced further (see fig. 2).

This can lead to penetration of air and inadequate bearing lubrication. In this case the static operating pressure must be raised accordingly.

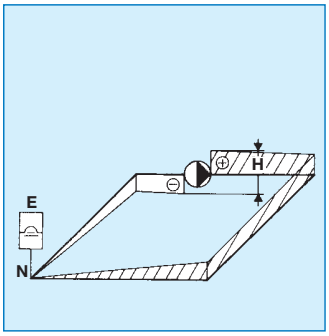


Fig. 2: Pressure distribution

⊕ = *Overpressure range*
⊖ = *Underpressure range*
E = *Expansion vessel*
N = *Neutral point*
H = *Delivery head of pump*

Notice for project planning and installation

3. Requirements of medium

Water treatment
The European standard, EN 14868 and the SWKI guidelines, BT102-01, must be adhered to.

Overall hardness
7 to 14 °fH (4-8 °dH)

pH value
8.3 to 9.5 (8.3 to max. 9 for systems with aluminium or non-ferrous metal components)

Oxygen
<0,1 mg/dm³

The systems must be thoroughly flushed before filling.

Anti-frost mixture
Water/glycol mixture with up to 50% glycol is permitted. From 10% glycol proportion the delivery data of the pumps must be corrected according to fig. 3.

Example
$H_{mixture}$ = 30 kPa
$Q_{mixture}$ = 7 m³/h

Medium:
50% glycol mixture
at –10 °C operating temperature

Factors according to fig. 4:
Fh = 1,26
Fq = 1,57
Conversion of required pump operating point for water heat transfer
H_{water} = $H_{mixture} \times Fh$
= 30×1,26 = 37,8 kPa
Q_{water} = $Q_{mixture} \times Fq$
= 7×1,57 = 11 m³/h

Circulating pump complying with operating point Q_{water}/H_{water}:
ModulA 40-10 220 GREEN

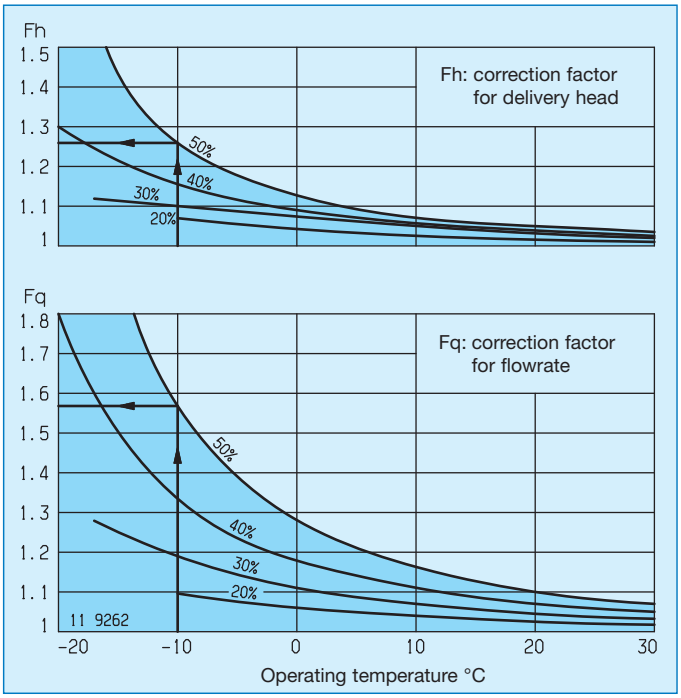


Fig. 3: Correction factors for pump characteristic compared with water delivery

4. Pipeline connection and pump installation

- Always fit pump between two shut-off devices
- Fit pump so that the motor shaft is horizontal, regardless of the position of the pump casing (fig. 4)
- The arrow on the pump casing shows the flow direction (fig. 5)
- Fit pump in pipeline free from stress
- When the pump is fitted do not work too closely with a welding flame
- The fitting of heating pumps on the inlet side reduces the danger of contamination. They should preferably be fitted on the return side if the temperature of the medium is very high.

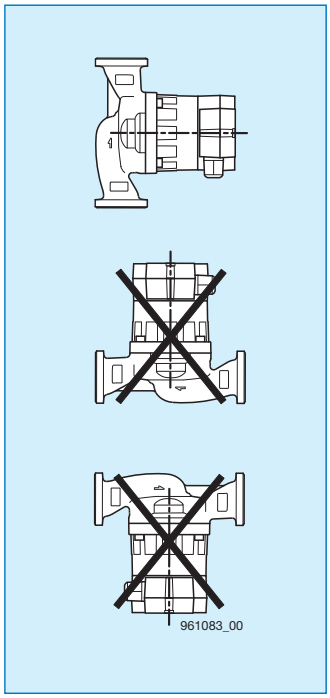


Fig. 4: Fitting pump

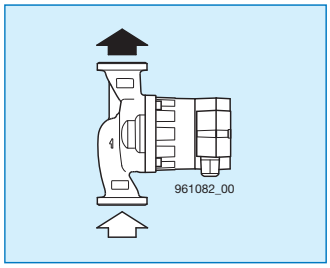


Fig. 5: Flow direction

Notice for project planning and installation

5. Choice of control type

Regulated pumps can be operated in three different control types:

Regulation with proportional operating pressure (PP)
The internal regulation increases the differential pressure of the system with increasing flowrates. This desired regulation curve can be preset. This regulation is particularly suitable for the following systems:

- Two-pipe heating systems with thermostatic valves and
  - long pipe sections
  - valves with wide working range
  - high pressure losses
- Floor heating systems with thermostatic valves and high pressure losses
- Systems with primary circuit pumps with high pressure loss.

Regulation with constant operating pressure (CP)
The internal regulation keeps the differential pressure of the system constant if the flowrate changes. This pressure can be preset. This regulation is particularly suitable for the following systems:

- Two-pipe systems with thermostatic valves and
  - delivery head larger than 2 m
  - natural circulation (low pressure loss, large pipe dimensions)
- Floor heating systems with thermostatic valves
- Single-pipe heating systems with thermostatic valves and regulating valves
- Systems with primary circuit pumps with low pressure loss

Regulation with constant speed (CS)
With this form of regulation the internal pressure regulation is switched off. The speed of the pump can be adjusted to a constant value manually or by an external signal (auxiliary module 0–10 V). This form of regulation is particularly suitable for systems with constant pressure conditions (heat exchangers, boiler feed pumps, etc.) or for external system regulation.

Notice for project planning and installation

6. Choice of regulation characteristic

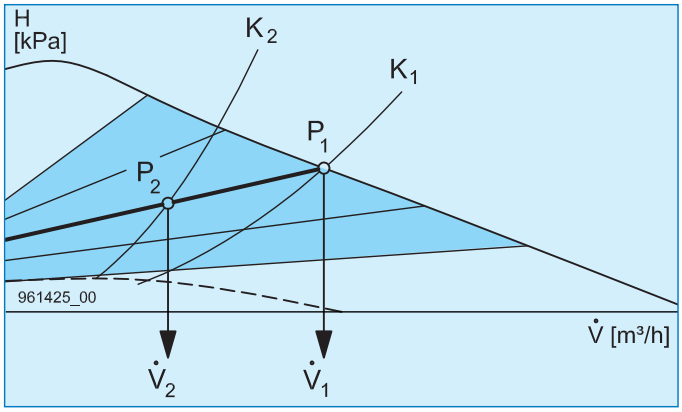


Fig. 6: Continuous variation of pump speed in regulated pumps

With changing pipeline resistance (K_1 ➜ K_2) regulated circulating pumps continuously adjust the flowrate along a pre-defined characteristic curve (fig. 6).
The required regulation characteristic can be set by means of the rotary switch or key A2 (fig. 7).

7. Operation of A pumps

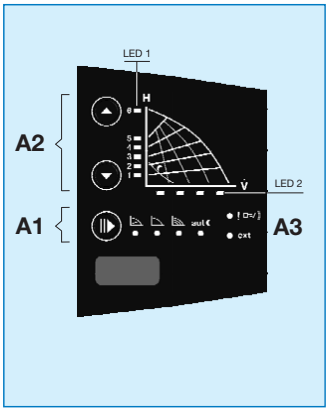


Fig. 8: Setting regulation characteristic curves

Operation
Regulated circulating pumps can be operated in three different regulation modes and in part have a so-called automatic minimum speed.

A1 Form of regulation

A2 Regulation characteristics 1…5
6 max. pump characteristic

A3 Illuminated symbol for fault, ext. operation

Proportional pressure

Constant pressure

Constant speed

Aut. with and without automatic minimum speed

LED 1: Indication of regulation characteristic set

LED 2: Indication of current rate of flow V̇ (25 …100%)

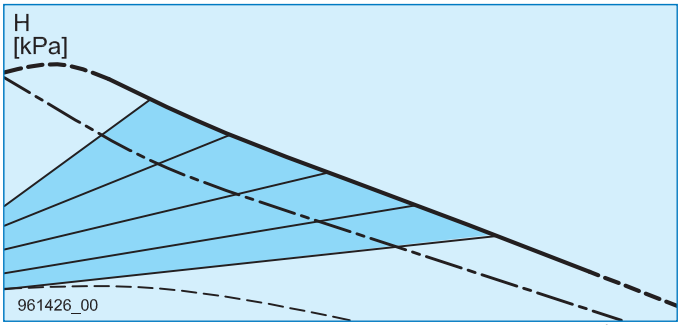


Fig. 7: Power limiting for electrically regulated pumps
–·–·–·– Power limiting

Service limit for A pumps
All regulated circulating pumps are supplied with preset power limiting.
This characteristic curve is sufficient owing to the power reserve in the design.

The limiting also saves energy and flow noise is reduced owing to over-dimensioned pumps.
If full power is required, the pump can be changed over in the terminal box (see operating instructions).

Notice for project planning and installation

8. Operation of ModulA

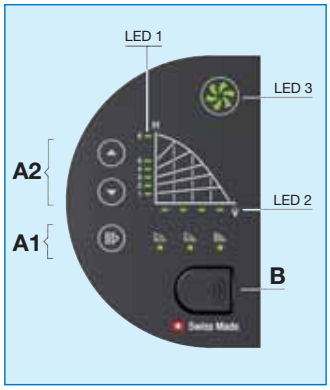


Fig. 9

A1 Setting the control type

Proportional pressure

Constant pressure

Constant speed

A2 Setting of the control characteristics 10 control characteristics (stage) can be set

LED 1: Display of control characteristics set (stage)

LED 2: Display of current V̇ delivery amounts (25 … 100%)

LED 3: Biral impeller displays the status of the pump

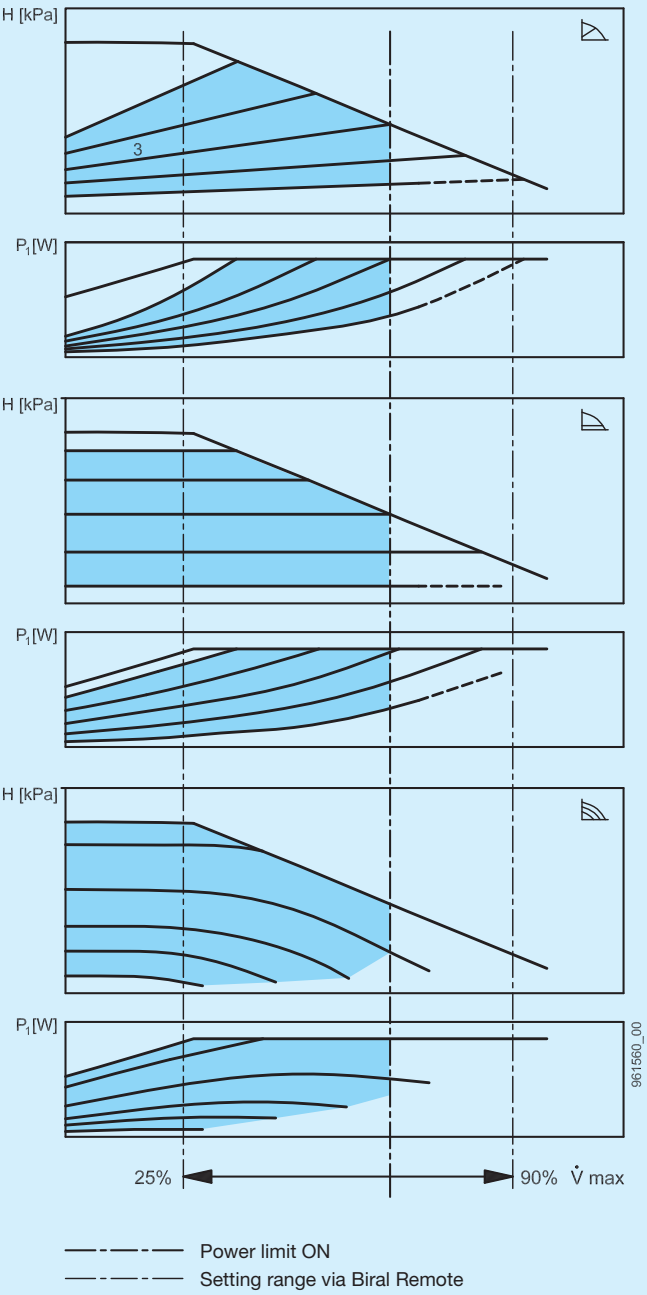
B Slot for remote adapter

9. Power limit for ModulA

The power limit (volume flow limit V̇) can be activated in the pump.

The pre-set maximum volume flow V̇ is at the end of control characteristic 3 (proportional pressure).

The volume flow limit V̇ can be set from 25…90% via Biral Remote.



Page

Description

Hoval flat station, type WKH for heating and water heating

- Hoval flat station for a convenient heat supply and hygienic water heating for individual residential units
- With variable heat output up to approx. 10 kW, hot water output approx. 37 or 45 kW and an even hot water temperature.
- Compact design for on-wall and in-wall mounting
- 7 connections ¾" at the bottom
- Pressure stage PN 6

Comprising:
- Base plate with connection rail
- High-capacity hot water heat exchanger in soldered construction
- Hot water proportional regulator with temperature adjustment
- Adjustable zone valve for heating (optional actuator)
- Differential pressure regulator in the primary circuit (built-in)
- Differential pressure regulator in the flat heating circuit (built-in)
- Adjustable return temperature limiter (built-in, factory setting 40°C - not present in design with underfloor heating)
- Thermostatic temperature maintenance module
- Strainer in the system flow and flat return
- Adapter for heat meter and sensor sleeve heat meter
- 3 built-in adapters for water metering (cold water total, hot water, cold water flat)
- 2 x air-bleeding

Option:
- Design with increased hot water output 45 kW
- Design for radiator heating (WKH)
- Design for underfloor heating with built-in high-efficiency pump and fixed value control (WKH FWR)

Accessories:
- Mounting brackets and connection accessories
- Actuator for zone valve
- Room thermostat controller for zone valve and underfloor heating distributor

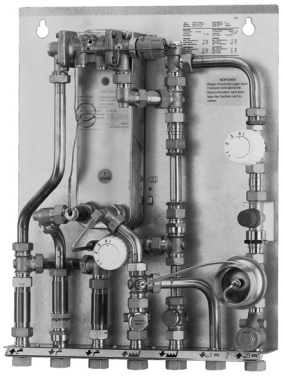
Installation versions:
- On-wall unit with connection accessories for front-wall connection
- On-wall unit with connection accessories for in-wall connection
- In-wall unit with connection accessories
- On-wall or in-wall unit optionally with built-in underfloor heating distributor up to 12 heating circuits

Scope of delivery:
Station pre-mounted on base plate, incl. all fittings, installation box, installation accessories and underfloor heating distributor delivered separately

On-wall unit APK for flat station WKH

In-wall unit UPK for flat station WKH

■ **Part N°**



Hoval flat station	Part N°
Hoval flat station WKH for radiator heating circuit and water heating Flat station mounted on base plate, heat output up to 10 kW, hot water output 37 or 45 kW, incl. • Base plate with connection rail • Hot water heat exchanger • Combination regulating valve: - Proportional flow regulator - Thermostatic hot water controller - Integrated differential pressure regulator • Adjustable zone valve for heating • Differential pressure regulator in the flat heating circuit • Adjustable return temperature limiter (factory setting 40 °C) • Thermostat temperature maintenance module • Strainer on the primary and secondary side • Adapter for heat meter and sensor sleeve heat meter • 3 adapters, water metering • Air-bleeding • Earth connection	
Flat station WKH 37 Nominal hot water output 37 kW	6032 018
Flat station WKH 45 Nominal hot water output 45 kW	6032 019

Accessories for flat station WKH

(supplied with delivery for installation)

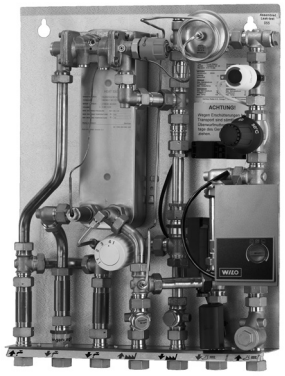
Actuator for built-in zone valve TWA-A/NC incl. valve adapter, closed without current, function display in cover, protection class II, connection line 2 x 0.55 mm (1.2 m long), 230 V, for triggering via room thermosta	2036 280
Sealing set for ball valves Type Klingersil C-4400, 24x17x2 mm, 50 pcs	2038 069

■ **Part N°**

On-wall mounting of the flat station WKH and on-wall mounting accessories	Part N°
On-wall unit APK for front-wall installation WKH powder-coated, comprising cover with door, open at the bottom, colour white (similar to RAL 9016) W x H x D = 630 x 740 x 180 mm	2040 116
On-wall connection rail for pre-assembly or 7 bottom connections 28 mm for pre-installation incl. attachment material	2036 282
Straight way ball valve for connection to the mounting bracket for 7 bottom connections ¾“, length 60 mm for flat station WKH, 7 pcs. required	2036 305
On-wall unit APK for in-wall installation WKH powder-coated, comprising cover with door, closed at the bottom, colour white (similar to RAL 9016) W x H x D = 630 x 740 x 180 mm	2040 115
In-wall rail 7 x ¾“ foamed for pre-assembly of the pipes to the rails for in-wall routing of the pipes	2036 281
Right angle ball valve ¾“ for connection to the in-wall rail for flat station WKH, 7 pcs. required	2038 517
Flexible corrugated tube connector ¾“ 60 - 90 mm for connection of the flat station for flat station WKH, 7 pcs. required	2036 306

In-wall mounting of flat station WKH and in-wall accessories (for pre-assembly or preliminary installation of the connections)	
In-wall unit WKH with built-in connection rail and mounting template, standing or wall-mounted, white powder-coated (similar to RAL 9016) W x H x D = 636 x 830 – 900 x 150 mm	2038 516
Front casing with door for in-wall unit, comprising frame and door, white powder-coated (similar to RAL 9016) W x H x D = 666 x 757 x 15 mm	2038 514
Straight way ball valve for installation in the in-wall unit, connections ¾“, length 60 mm for flat station WKH, 7 pcs. required	2036 305

Part N°



Hoval flat station	Part N°
Hoval flat station WKH FWR Flat station for underfloor heating, mounted on base plate, heat output up to 10 kW, hot water output 37 or 45 kW, incl. • Base plate with connection rail • Hot water heat exchanger • Combination regulating valve: - Proportional flow regulator - Thermostatic hot water controller - Integrated differential pressure regulator • Adjustable zone valve for heating incl. actuator • Built-in pump module for underfloor heating with integrated high-efficiency pump and with thermostatic fixed value control • Thermostat temperature maintenance module • Built-in safety temperature limiter • Strainer on the primary and secondary side • Adapter for heat meter and sensor sleeve heat meter • 3 adapters, water metering • 2 x air-bleeding • Earth connection	
Flat station WKH FWR 37 Nominal hot water output 37 kW	6032 020
Flat station WKH FWR 45 Nominal hot water output 45 kW	6032 021
Sealing set for ball valves Type Klingersil C-4400, 24x17x2 mm, 50 pcs	2038 069

■ **Part N°**

Accessories for flat station **WKH FWR** supplied with the delivery for installation or for additional installation	**Part N°**
 **Room thermostat with** **analogue day programme RTU 512T** Electrical connection 230V / 50-60 Hz., volt-free switch-over contact max. 1A with inductive loads (motors, coils). Analogue timer with day programme, power reserve approx. 5 hours, shortest switching time 15 min. Programme switch for 3 heating programmes. Separate setting dials for day and night temperature. White casing 158 x 75 x 37 mm.	2012 096
Room thermostat with **analogue week programme RTU 522 W** Electrical connection 230V / 50-60 Hz., volt-free switch-over contact max. 1A with inductive loads (motors, coils). Analogue timer with week programme, power reserve approx. 5 hours, shortest switching time 2 hours. Programme switch for 3 heating programmes. Separate setting dials for day and night temperature. White casing 158 x 75 x 37 mm.	2012 097
Individual room controller, type FH-WC for triggering 10 actuators and the circulating pump of external room thermostats, input voltage 230 V, Output voltage 24 V, W x H x D = 315 x 110 x 61 mm	2036 455
 **Actuator, type TWA-K/NC** for underfloor heating distributor, for controller FH-WC 24V, 50Hz, closed without current	2036 456

■ Part N°

On-wall mounting of flat station WKH FWR and on-wall mounting accessories

Part N°

On-wall unit APK
for front-wall installation WKH FWR
powder-coated, comprising cover with door,
open at the bottom, colour white
(similar to RAL 9016)
W x H x D = 630 x 740 x 180 mm — 2040 116
for installation of an underfloor
heating distributor
up to 7 heating circuits
W x H x D = 630 x 1300 x 180 mm — 2038 459
up to 8-12 heating circuits
W x H x D = 1000 x 1300 x 180 mm — 2038 460

On-wall connection rail for pre-assembly — 2036 282
for 7 bottom connections 28 mm
for preinstallation incl. attachment material

Straight way ball valve — 2036 305
for connection to the mounting bracket for
7 bottom connections ¾“, length 60 mm
for WKH FWR 7 pcs required

On-wall unit APK for — 2040 115
in-wall installation WKH FWR
powder-coated, comprising cover with door,
closed at the bottom, colour white
(similar to RAL 9016)
W x H x D = 630 x 740 x 180 mm

In-wall rail 7 x ¾“ — 2036 281
foamed for pre-assembly of the pipes
to the rails for in-wall routing of the pipes

Right angle ball valve ¾“ — 2038 517
for connection to the in-wall rail
for WKH FWR 7 pcs required

Flexible corrugated tube connector ¾" — 2036 306
60 – 90 mm for connection of the flat station
for WKH FWR 7 pcs required

In-wall mounting of flat station WKH FWR and in-wall accessories

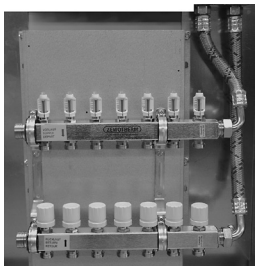
(for pre-assembly or preliminary installation
of the connections)

In-wall unit WKH FWR — 2038 516
with built-in connection rail and mounting
template, standing or wall-mounted,
white powder-coated (similar to RAL 9016)
W x H x D = 636 x 830 - 900 x 150 mm

Front casing with door — 2038 514
for in-wall unit, comprising frame and door,
white powder-coated (similar to RAL 9016)
W x H x D = 666 x 757 x 15 mm

Straight way ball valve — 2036 305
for installation in the in-wall unit,
connections ¾“, length 60 mm
for WKH FWR 7 pcs, required

■ **Part N°**



Underfloor heating distributor for flat station, for installation in the in-wall unit (for connection to the flat station)	**Part N°**
Underfloor heating distributor, comprising • Mounting plate • Sound-insulated armoured tubes for flat stations, incl. sealing and screwed joint. • Flow rate indicator in flow distributor bar • Flow balancing valve in the return for optional mounting of a therm. actuator M 30 x 1,5 • 2 air-bleeding valves • 2 drain valves	
for 2 underfloor heating circuits	6026 364
for 3 underfloor heating circuits	6026 365
for 4 underfloor heating circuits	6026 366
for 5 underfloor heating circuits	6026 367
for 6 underfloor heating circuits	6026 368
for 7 underfloor heating circuits	6026 369
for 8 underfloor heating circuits	6026 370
for 9 underfloor heating circuits	6026 371
for 10 underfloor heating circuits	6026 372
for 11 underfloor heating circuits	6026 383
for 12 underfloor heating circuits	6026 384

■ **Part N°**

In-wall mounting of flat station WKH FWR with built-in distributor and in-wall accessories (for pre-assembly or preliminary installation of the connections)

Part N°

In-wall unit WKH FWR-V
with built-in connection rail and mounting template, standing, white powder-coated (similar to RAL 9016)

In-wall unit WKH FWR-V 2 – 7 2038 518
for 2 – 7 heating circuits,
W x H x D = 636 x 1368 - 1438 x 150 mm

In-wall unit WKH FWR-V 8 – 12 2038 519
wide design for 8–12 heating circuits,
W x H x D = 876 x 1368 - 1438 x 150 mm

Front casing with door 2036 308
for in-wall unit WKH FWRV 2-7, comprising frame and door, white powder-coated (similar to RAL 9016)
W x H x D = 665 x 1290 x 15 mm

for in-wall unit WKH FWRV 8 - 12, comprising frame and door, white powder-coated (similar to RAL 9016)
W x H x D = 900 x 1290 x 15 mm 2038 515

Straight way ball valve 2036 305
for installation in the in-wall unit,
connections ¾“, length 60 mm,
for flat station WKH FWR 7 pcs. required

Individual room controller, type FH-WC 2036 455
for triggering up to 10 actuators and the circulating pump of external room thermostats from input voltage 230 V, (2A), output voltage 24 V,
W x H x D = 315 x 110 x 61 mm

Actuator, type TWA-K/NC 2036 456
for underfloor heating distributor,
for controller FH-WC
24V, 50Hz, closed without current

Technical data

Hoval flat station WKH

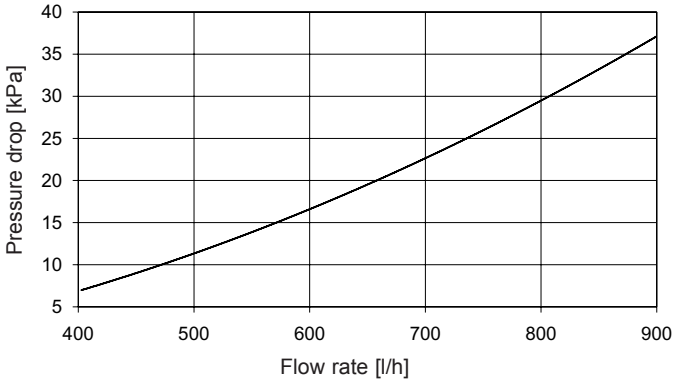
Flat station type	WKH 37	WKH 45
Hot water output (kW)	37 - 40	40 - 50
Hot water flow rate (l/min) at hot water temperature 45°C and flow temp. 65°C	15	18
Flat heat output	adjustable up to approx. 10 kW	
Max. operating temperature	90°C	
Operating pressure	PN 10	
Minimum cold water pressure	2 bar	
Weight (basic module)	approx. 14 kg	
Connections	flat-sealing Rp ¾"	
Dimensions with on-wall casing (WxHxD) mm	WKH: 630 x 740 x 180 WKH FWR: 630 x 740 x 180 WKH FWR-V 2 – 7 Heating circuits: 630 x 1300 x 180 WKH FWR-V 8 – 12 Heating circuits: 1000 x 1300 x 180	
Dimensions with in-wall casing (WxHxD) mm	WKH: 636 x 830 – 900 x 150 WKH FWR: 636 x 830 – 900 x 150 WKH FWR-V 2 – 7 Heating circuits: 636 x 1368 – 1438 x 150 WKH FWR-V 8 – 12 Heating circuits: 876 x 1368 – 1438 x 150	

Technical data

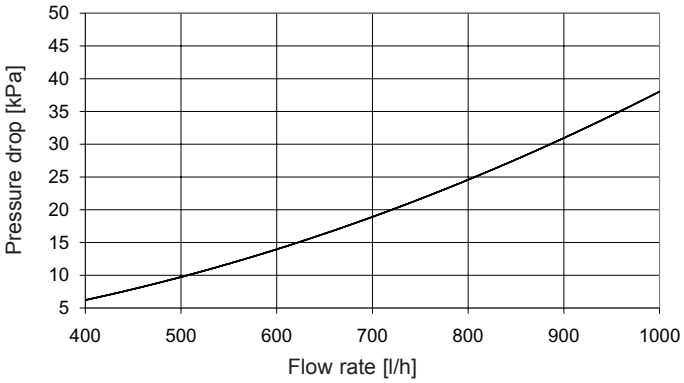
Pressure drop diagrams
Hoval flat stations WKH – WKH FWR:

Heating-side pressure drop
depending on the heating water flow rate of the hot water heat exchanger

Flat station WKH 37

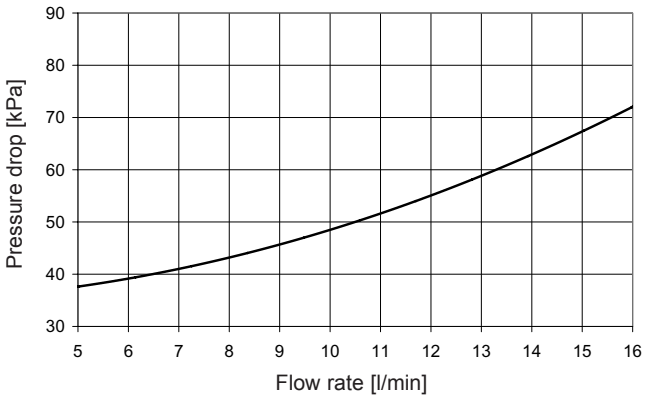


Flat station WKH 45

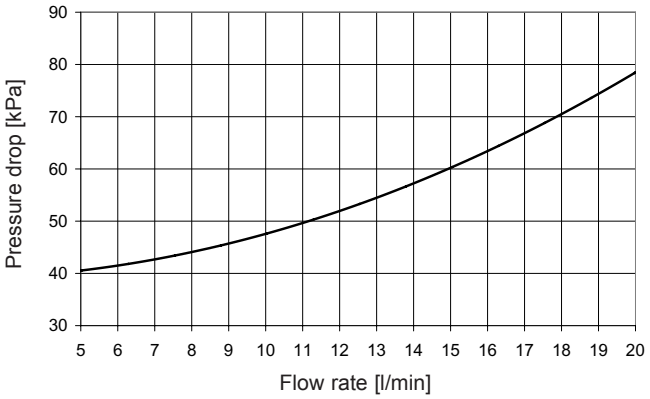


Drinking-water side pressure drop
depending on the hot water flow rate

Flat station WKH 37



Flat station WKH 45



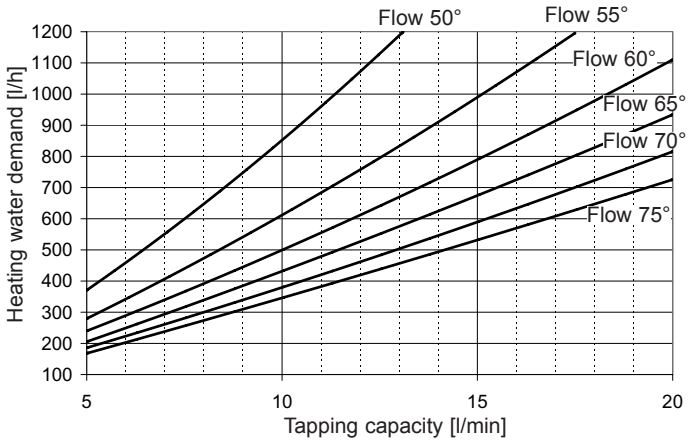
Technical data

Hot water outputs

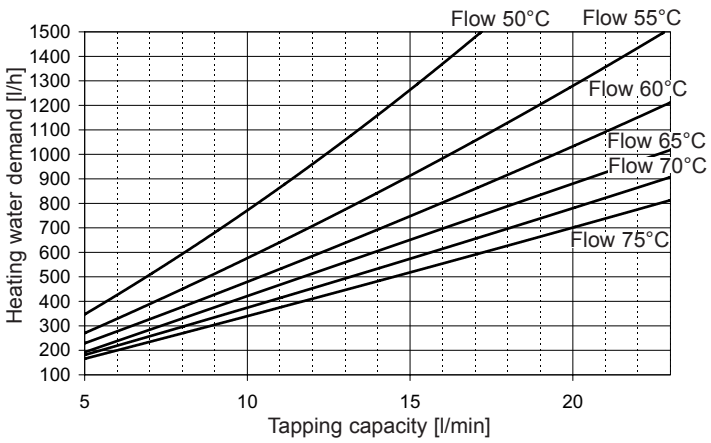
Hoval flat stations WKH – WKH FWR:

Hot water output 10 °C ⇨ 45 °C

Flat station WKH 37

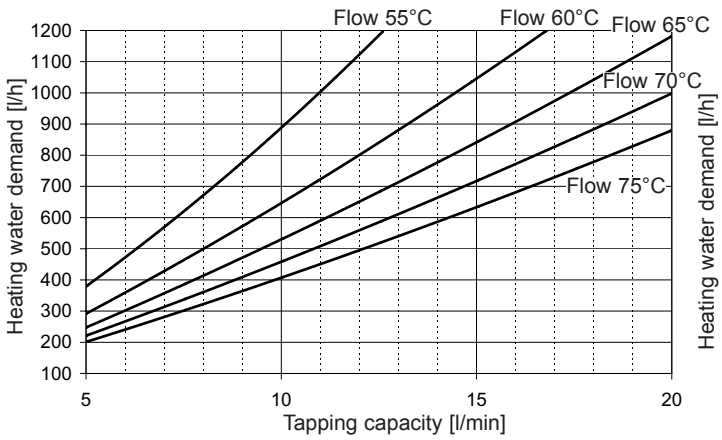


Flat station WKH 45

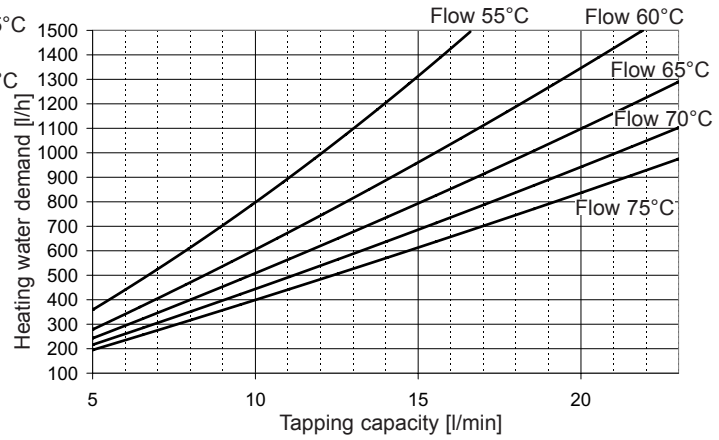


Hot water output 10 °C ⇨ 50 °C

Flat station WKH 37

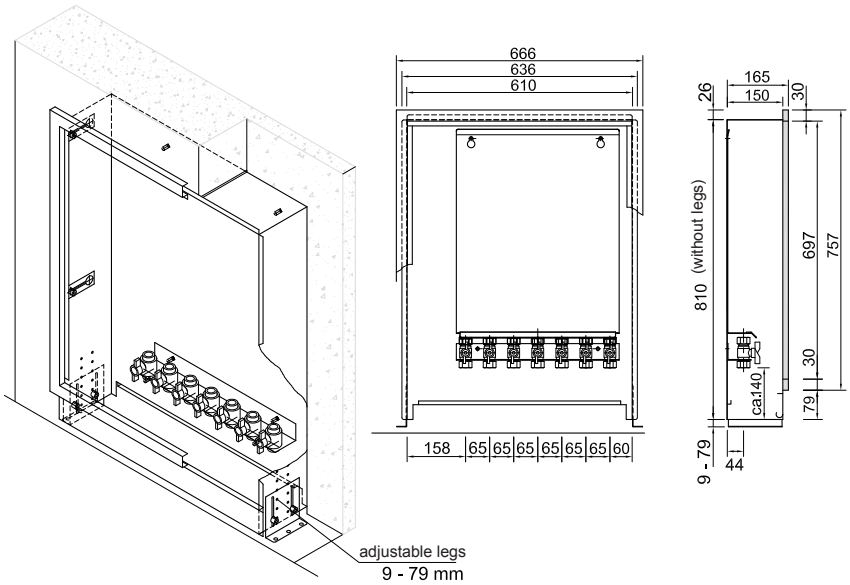


Flat station WKH 45



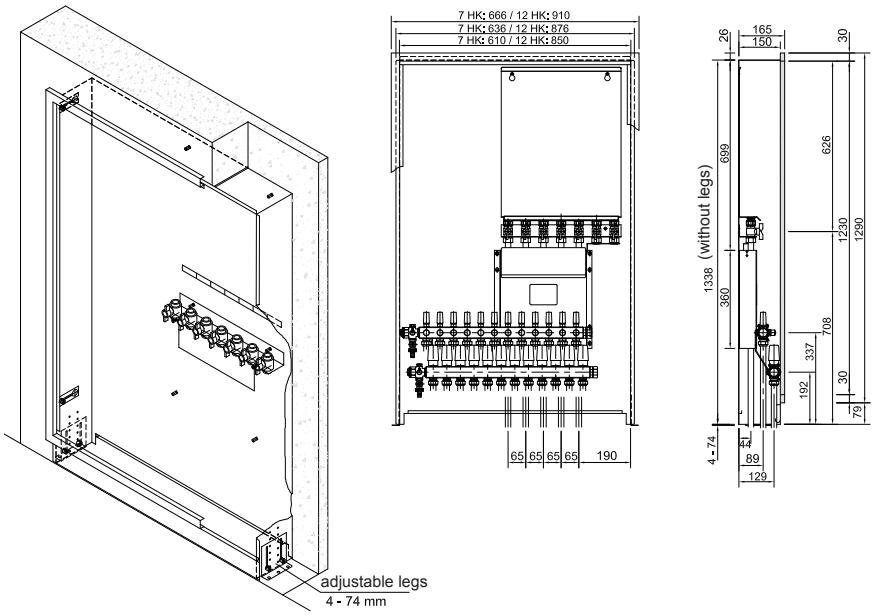
Dimensions

Hoval flat station WKH and WKH FWR – in-wall mounting



View from above

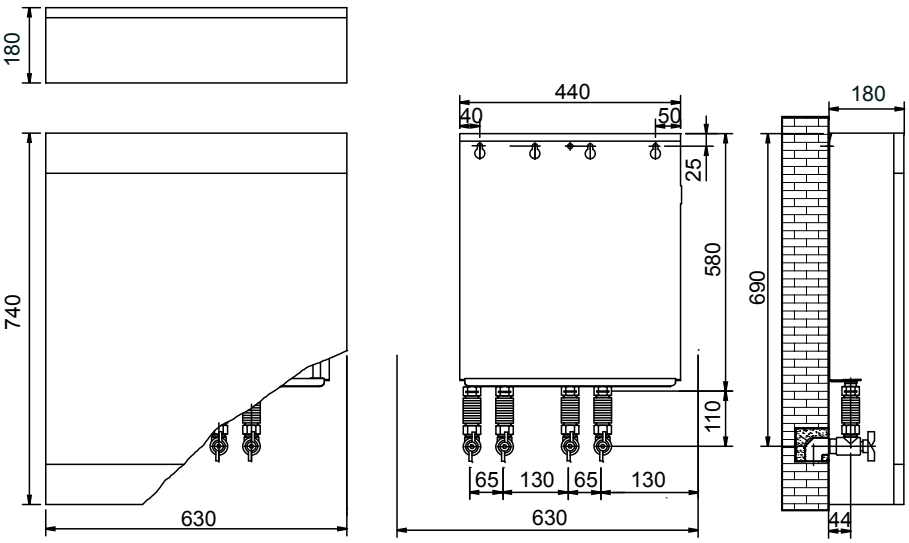
1 CW inlet
2 HW outlet
3 CW outlet
4 Heating flow from section
5 Heating return to section
6 Heating flow (flat)
7 Heating return (flat)



View from above

1 CW inlet
2 HW outlet
3 CW outlet
4 Heating flow from section
5 Heating return to section
6 Heating flow (flat)
7 Heating return (flat)

Hoval flat station WKH – on-wall mounting in-wall installation

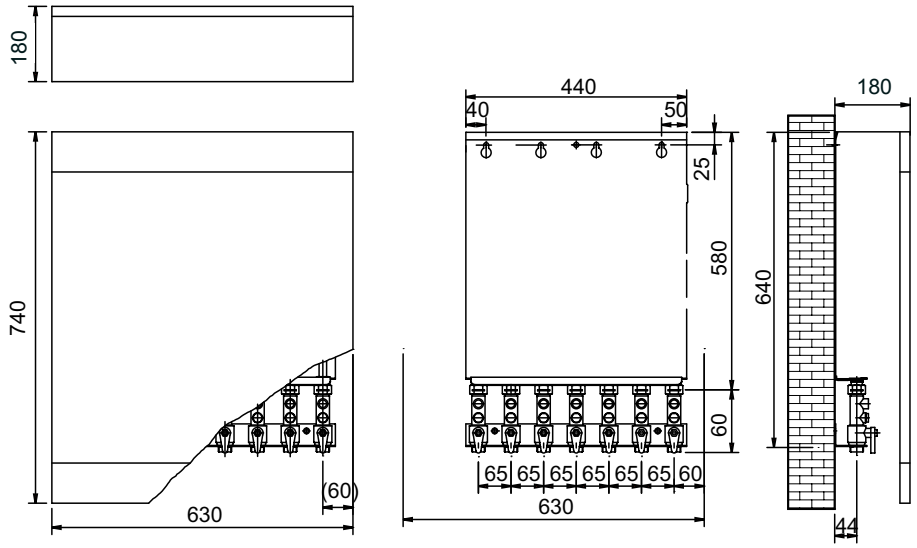


View from above

1 CW inlet
2 HW outlet
3 CW outlet
4 Heating flow from section
5 Heating return to section
6 Heating flow (flat)
7 Heating return (flat)

Dimensions

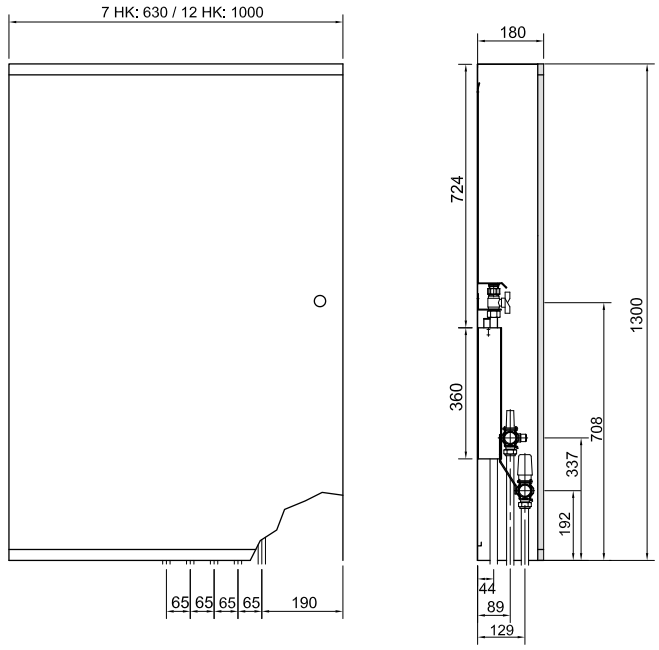
Hoval flat station WKH – on-wall mounting front-wall installation



View from above

1 CW inlet
2 HW outlet
3 CW outlet
4 Heating flow from section
5 Heating return to section
6 Heating flow (flat)
7 Heating return (flat)

Hoval flat station WKH FWR - on-wall mounting



View from above

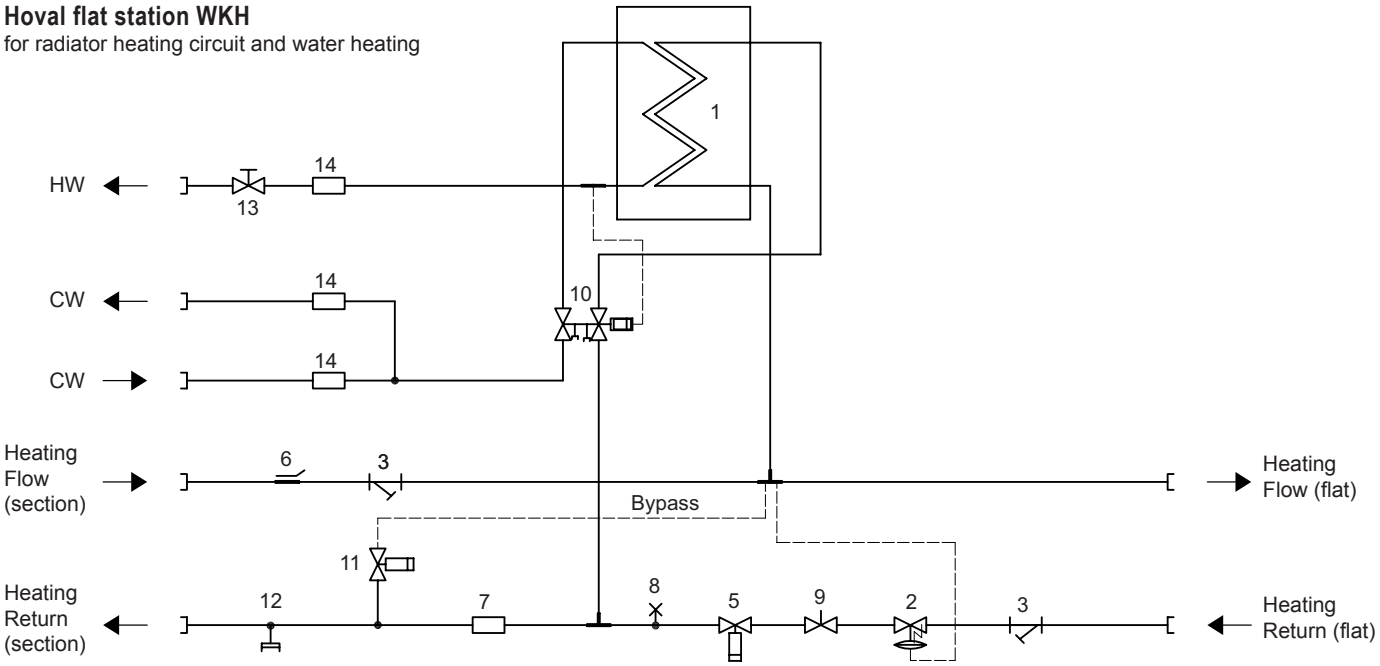
1 CW inlet
2 HW outlet
3 CW outlet
4 Heating flow from section
5 Heating return to section
6 Heating flow (flat)
7 Heating return (flat)

Examples

Hydraulic schematic

Hoval flat station WKH

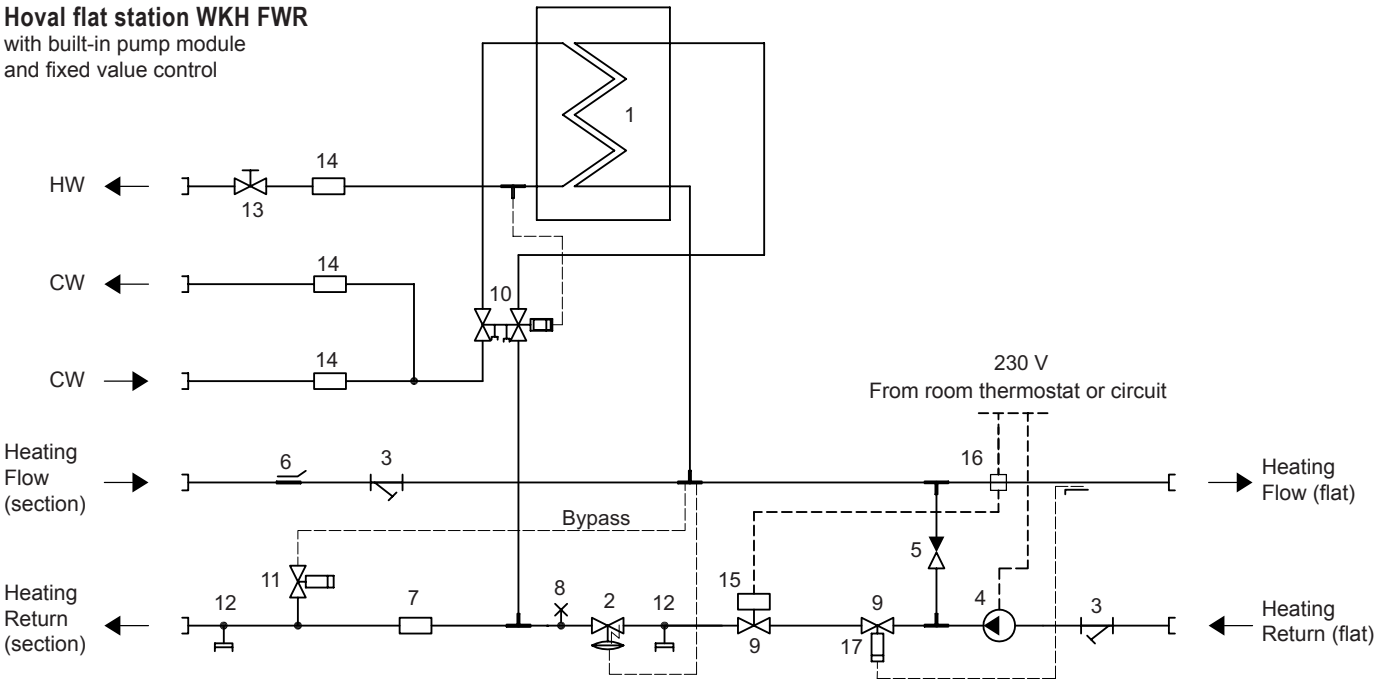
for radiator heating circuit and water heating



1 Plate heat exchanger
2 Differential pressure regulator, flat heating circuit 0.1 bar
3 Strainer (screen size 0.6 mm)
5 Return temp. limiter preset
6 Connection possible for sensor WMZ
7 Adapter for WMZ (¾“ x 110 mm)
8 Air-bleeding
9 Adjustable zone valve
10 PTC2+P controller
11 Temperature maintenance module (preset)
12 T-piece with plug ½"
13 Hot water limiter
14 Adapter for KWGesZ, KWZ, WWZ (¾“ x 80 mm)

Hoval flat station WKH FWR

with built-in pump module and fixed value control



1 Plate heat exchanger
2 Differential pressure regulator, flat heating circuit 0,2 bar
3 Strainer (screen size 0.6 mm)
4 Circulating pump WILO Yonos PARA 15/6-130
5 Non-return valve
6 Connection for WMZ M10x1
7 Adapter for WMZ (¾“ x 110 mm)
8 Air-bleeding
9 Adjustable zone valve
10 PTC2+P controller
11 Temperature maintenance module (preset)
12 T-piece with plug ½"
13 Hot water limiter
14 Adapter for KWGesZ, KWZ, WWZ (¾“ x 80 mm)
15 Thermal actuator TWA-A/NC 230 V
16 Safety thermostat 56°C +/-3K
17 Fixed value control 15-50°C

Engineering

Plate heat exchangers (copper-soldered)

Quality of the plant water on the heating side and the tap water on the drinking water side where copper-soldered plate heat exchangers are used:

Heating water side:
European Standard EN 14868, SWKI Directive BT 102-01, ÖNORM H 5195-1 and Directive VDI 2035 must be complied with.
In particular, the following specifications must be complied with:

- All parts of the heat exchanger which come into contact with water are made of copper or stainless steel. Due to the risk of corrosion, the **sum of the chloride, nitrate and sulphate content** [1] in the heating water must not exceed a total of 100 mg/l.
  The **pH-value** [2] of the heating water should be between 8.3 and 9.5 after 6 - 12 weeks of heating operation to avoid obstruction of the flow as a result of deposits of corrosion products.
- Treated heating water must be checked at least once per year, unless the inhibitor manufacturer prescribes more frequent inspections in the directions for use.

Drinking water side:

- All parts of the heat exchanger which come into contact with water are made of copper or stainless steel.
- To prevent deposits and abrasion, a filter < 100 µm must be installed upstream of the heat exchanger.
- The maximum temperature on the drinking water side is 60 °C, whereby the **total hardness** [3] of the water must not exceed 14 °dH (2.5 mmol/l). If, for hygiene reasons, hot water temperatures of over 60 °C are required, measures must be implemented to prevent the formation of deposits (calcification). However, a hot water temperature of 70 °C must never be exceeded.
- The **pH-value** [2] of the drinking water must be between 7 and 9.
- Due to the risk of corrosion, the **sum of the chloride, nitrate and sulphate content** [1] of the drinking water must not exceed a total of 100 mg/l. The **maximum free chloride concentration** [4] is 0.5 mg/l.
- Due to the risk of deposits forming, the **mineral content** [5] of the tap water must not exceed 250 mg/l. The maximum **conductance** [6] is 500µS/cm.
- **Softened water** [7] must be blended with at least 50 % tap water to ensure that the ratio of [Ca2+ and Mg2+] to [HCO3-] is over 0.5.
- If the sulphate [SO4 2-] content exceeds the carbonate [HCO3-] content, copper-soldered heat exchangers must not be used.

Limit values (in tabular form):

Type	**Conductance** [6] of the tap water	**Residual hardness** [7] in relation to the total hardness of the tap water		**pH-value** [2] after 6-12 weeks	**max. free chloride concentration** [4]	**Sum of chloride, nitrate and sulphate content** [1]	**Mineral content** [5] of the tap water	**Total hardness** [3]	
	µS/cm	mmol/l	%	-	mg/l	mg/l	mg/l	°dH	mmol/l
Plate heat exchanger - heating water side	-	-		8.3 - 9.5	-	< 100	-	-	-
Plate heat exchanger - drinking water side	< 500	> 0.5	> 50	7.0 - 9.0	< 0.5	< 100	< 250	< 14	< 2.5

Earth connection
The existing earth connection must be earthed in order to avoid corrosion damage.

1. General

1.1 The following Terms and Conditions shall apply to all our present and future contracts for deliveries and other services (even if the said Terms and Conditions are not specifically mentioned in verbal, telephonic or fax communications).

1.2 All deviations from the present Terms and Conditions, ancillary verbal agreements and subsequent contractual amendments shall only be valid if they have been confirmed by us in writing.

1.3 Buying terms and conditions of the client shall not be valid even if they are not specifically rejected by us. Our Standard Terms and Conditions of Delivery shall be regarded as accepted at the latest upon receipt of our goods and services by the client.

1.4 If a provision of the present Terms and Conditions of Delivery proves to be wholly or partially invalid, the contracting parties shall replace the aforesaid provision by a new provision which comes as close as possible to the legal and economic intention of the invalid provision.

2. Offers

2.1 Our offers shall be subject to change without notice.

2.2 Orders shall only be regarded as accepted when they have been confirmed by us in writing.

2.3 Illustrations, drawings and all technical details in catalogues and printed material shall be approximate values as customary within the industry. They shall only be binding if specific reference is made to them in the contract. We shall also reserve the right to make technical and design changes after the conclusion of the contract.

2.4 Cost estimates, drawings and other documents shall remain our property and shall be subject to copyright protection; they may not be made available to third parties.

3. Regulations in the country of destination

3.1 At the latest at the time of the order, the buyer shall draw our attention to the regulations and standards in force in the country of destination relating to the design of the delivered goods and the operation thereof and also to the execution of services.

3.2 Our deliveries and services shall comply with the regulations and standards in the country of destination provided the buyer has drawn our attention thereto in accordance with Section 3.1.

3.3 The buyer shall duly inform us of any special application features of goods ordered from us if these differ from our general recommendations.

4. Prices

4.1 Our prices shall be ex works, net, excluding packaging.

4.2 All ancillary costs, e.g. freight, insurance, export, transit, import and other approvals, licenses and authentications, shall be for the account of the buyer. The buyer shall also bear all taxes, charges, customs duty, etc., which are levied in connection with the contract.

4.3 We shall reserve the right to make price adjustments if wage rates or material prices change between the date of the order confirmation and the contractual performance of the contract. Price increases shall normally be notified three months in advance. We shall be bound to the price stated in the order confirmation for a period of three months after the effective date of the price increase.

5. Payment terms

5.1 Unless otherwise agreed in writing, our invoices shall be payable within thirty days with no cash discount. Payment shall be deemed to have been made when the amount in question is at our unrestricted disposal on our account in Swiss Franks.

5.2 Payment dates shall be observed even if any delays whatsoever occur after shipment of the goods from our works. The buyer shall not be permitted to reduce or withhold payments on account of complaints or counterclaims not recognised by us.

5.3 Payments shall also be made if insignificant components are missing but usage of the delivered goods is not rendered impossible as a result or if rectification work has to be carried out on the delivery. We shall be entitled to reject rectification of the defect as long as the buyer has not discharged his/its obligations to us.

5.4 If the buyer fails to comply with the agreed payment dates, default interest shall be paid from the agreed due date without a reminder being issued; the aforesaid interest shall be based on the interest rates prevailing at the domicile of the buyer, but shall be not less than four percent above the current discount rate of the Swiss Central Bank.

5.5 We shall be entitled to make deliveries of pending orders dependent upon settlement of outstanding claims.

6. Reservation of title

6.1 Delivered goods shall remain our property (reserved goods) pending full and complete payment of all present and future claims to which we are entitled regardless of their legal cause. This shall also apply if payments are made in settlement of specifically designated claims.

6.2 The buyer shall be entitled to process and sell reserved goods in the ordinary course of business.

6.3 If our reserved goods are combined or intermingled with other goods, the buyer shall hereby transfer his/its ownership rights in the new goods or chattels to us upon the conclusion of the contract in the amount of the invoice value of the reserved goods.

6.4 If the goods are resold by the buyer, he/it shall hereby transfer to us upon the conclusion of the contract with us his/its claims arising from the aforesaid resale in the amount of the invoice value of the reserved goods.

6.5 If the reserved goods are used by the buyer to perform a works or works delivery contract, his/its claim from the aforesaid works or works delivery contract shall hereby be assigned to us in the same amount and on the same date as for the purchase price claim (Section 6.4).

6.6 As long as he/it is honouring his/its payment obligations, the buyer shall, however, be authorised to collect his/its resale claim which has been assigned to us. He/it may not dispose of such claims by way of assignment to third parties, however. The empowerment of the buyer to collect the claim may be revoked by us at any time. We shall be entitled to notify third party debtors of the assignment. The buyer shall be entitled to provide us with the necessary information and documents in order to enable us to enforce our rights.

6.7 If the value of our securities exceeds our total claims by more than 10 %, we shall be obliged to release securities of our choice at the request of the buyer.

6.8 The buyer shall inform us immediately of any pledge or other impediment to our property enforced by third parties.

6.9 The buyer shall be obliged to collaborate in measures required to protect our title. He/it shall, in particular, empower us upon the conclusion of the contract to make entries or prior notice of the reservation of title at his/its cost in public registers, books and documents, etc., in accordance with the relevant national laws and shall perform all formalities in this respect.

6.10 The buyer shall maintain the reserved goods at his/its cost for the duration of the reservation of title and shall insure the said goods against theft, breakage, fire, water and other risks in our favour. He/it shall also take all steps to ensure that our property claims are neither adversely affected nor rescinded.

7. Delivery periods

7.1 Delivery periods and deadlines stated by us shall be approximate unless we have given an express written confirmation of a deadline as binding.

7.2 Delivery periods shall be deemed to have been met if notification of readiness to deliver has been sent to the buyer before the end of the delivery period.

7.3 The delivery period shall be prolonged if details required for the performance of the contract are not received on time or if they are subsequently changed by the buyer.

7.4 The delivery period shall also be reasonably prolonged if impediments arise which we cannot avert despite exercise of the necessary care (e.g. major operational disruptions, industrial disputes, delayed or defective deliveries, force majeure, etc.).

7.5 If an agreed delivery date is met by more than 14 days, the buyer shall be obliged to set us a reasonable period of grace. The buyer may only withdraw from the contract if our goods have not been delivered by the end of the said period of grace. Compensation claims for non-performance, delayed performance or any consequential losses shall be excluded unless there was gross negligence on our part.

8. Transfer of risk

8.1 Unless expressly agreed otherwise in writing, our „ex works“ deliveries shall be made in accordance with the international rules on the interpretation of commercial clauses of the International Chamber of Commerce (Incoterms) in the version in force on the date of the order confirmation.

8.2 The transfer of risk shall be determined by the aforesaid Incoterms.

8.3 Insurance against damages of any kind shall be the responsibility of the buyer.

8.4 Complaints in connection with the transport shall be immediately notified by the buyer to the last carrier upon receipt of the delivery.

8.5 If despatch is delayed at the request of the buyer or for any other reasons not attributable to us, the risk shall pass to the buyer on the original date envisaged for the „ex works" delivery. We shall be entitled to demand payment from this date onwards.

9. Delivery inspection

9.1 The buyer shall be required to inspect deliveries immediately. If the goods do not comply with the order or the delivery note or if visible defects are identified, he/it shall be obliged to notify the aforesaid to us in writing within eight days of receipt. Later complaints shall not be recognised. (Re transport damages, cf. Section 8.4)

10. Assembly and operations

10.1 The assembly, putting into operation, operation and maintenance of the delivered goods shall be carried out in accordance with our guidelines. They may be executed by our staff or by appropriately trained third parties as agreed with the buyer.

10.2 If we require a commissioning certificate for certain product groups, warranty claims for the proper functioning of the equipment can only be enforced if a proper hand-over has been documented by a confirmed commissioning certificate received by us within one month of the hand-over.

11. Warranty

11.1 Warranty period

11.1.1 The general warranty period shall be 12 months from the first commissioning but no longer than 18 months from the date on which the relevant goods left our works.

If despatch is delayed for reasons not attributable to us, the warranty shall lapse no later than 18 months after notification of the readiness to deliver.

The general warranty period shall exclude electrical components for which the warranty period shall be 6 months from the first commissioning but no later than 12 months from the date of shipment from our works.

11.1.2 We refer to Section 11.6.1 with regard to the warranty period for third party products.

11.1.3 The warranty period for components which we have repaired during the warranty period or have delivered as replacement shall be 12 months from the completion of our repair or from the date of the replacement delivery but no longer than the end of a period equivalent to twice the original warranty period as per Section 11.1.1.

11.2 Liability for material, design and workmanship defects

11.2.1 The contractual condition of the goods shall be based on the condition upon the transfer of risk.

11.2.2 Defects shall be notified to us immediately in writing.

11.2.3 We shall be liable for all components which can be shown to have become defective or unusable before the end of the warranty period as a result of defective materials, defective design or defective workmanship, with such components being repaired or replaced ex works immediately at our choice.

11.3 Liability for warranted qualities

11.3.1 Warranted qualities shall only be those which are specifically designated as such in the order confirmation or in the relevant specifications.

11.3.2 The aforesaid assurance shall apply at the latest until the end of the warranty period. If a taking-over test has been agreed with the buyer, the assurance shall be deemed as performed if proof of the relevant qualities is furnished during the aforesaid test.

11.3.3 If the warranted qualities are not performed or only partially performed, the buyer shall be entitled to an immediate rectification. The buyer shall grant us the necessary time and opportunity for this purpose.

11.3.4 If the rectification is abortive or only partially successful, the buyer shall be entitled to a reasonable reduction of the purchase price. If the defect is so serious that it cannot be rectified within a reasonable period of time, and if deliveries or services for the notified purpose are not usable or are only usable to a much lesser extent, the buyer shall be entitled to refuse acceptance of the defective component or to withdraw from the contract if part-acceptance is economically unreasonable. We shall only be obliged to refund amounts which have been paid to us for the components affected by the aforesaid withdrawal.

11.4 Exclusion of liability for defects

11.4.1 Our liability shall exclude damages which cannot be proved to have been sustained as a result of defective material, defective design or defective workmanship.

11.4.2 Damages shall therefore be excluded for example which were caused by
- improper work of other persons with regard to planning, site preparation, assembly, operation and maintenance;
- plant concepts and designs which do not comply with the latest state of the art;
- non-observance of our guidelines for planning, assembly, commissioning, operations and maintenance;
- force majeure (e.g. thunderstorms).

11.4.3 The following shall be excluded in particular
- corrosion damages (e.g. as a result of aggressive water, unsuitable water treatment, oxygen intakes, emptying the plant over a longer period of time, falling below the dew point, chemical or electrochemical effects, etc.);
- damages caused by air pollution (e.g. the accumulation of intense dust, aggressive vapours, etc.);
- damages caused by unsuitable equipment and fuels;
- damages caused by overcharging, excessive water pressure, scaling, improper electrical connections and inadequate fuse protection.

11.4.4 Components shall also be excluded from the warranty which are subject to natural wear and tear (e.g. burner nozzles, combustion chamber inserts, ignition and monitoring components in contact with fire, fireclay and wall facings, fuses, seals and flexible tubes).

11.5 Commissioning certificate

11.5.1 We hereby draw attention to the due and proper hand-over and - if envisaged - the commissioning certificate in accordance with Section 10.2 as prerequisites for our warranty.

11.6 Deliveries and services of sub-contractors

11.6.1 Our liability for third party products which form a major part of the delivered goods (e.g. warehouse and conveying equipment, burners, measuring and control equipment, electrical components, flue gas and waste water cleaning equipment) shall - if permissible - be limited to an assignment of our claims against the suppliers of the said third party products.

12. Exclusion of further liability

12.1 The buyer shall have no rights and claims for materials, design and workmanship defects or the lack of warranted qualities unless specifically mentioned in Sections 11.1 to 11.6.

12.2 All claims for compensation, reduction in the contract price, rescission of the contract or withdrawal from the contract shall be excluded in particular unless these are specifically mentioned. Under no circumstances shall the buyer have any compensation claim for damages which were not sustained by the delivered goods themselves (e.g. replacement costs, cost for establishing the cause of the damage, expertises, production stoppages, production losses, lost orders, lost profit and other direct or indirect damages). The aforesaid liability exclusion shall not apply in the event of gross negligence on our part.

12.3 The exclusion as per Section 12.2 shall apply for all breaches of contract and all claims of the buyer regardless of why they were lodged from a legal point of view. It shall therefore also apply for a breach of any ancillary obligations (e.g. inadequate advice, etc.).

13. Jurisdiction

13.1 **The place of jurisdiction for the buyer and for us shall be Vaduz.** We shall be entitled to bring action against the buyer at his/its domicile, however.

13.2 The legal relationship between the parties shall be governed by the substantive laws of Switzerland. The application of the UN convention on contracts for the international sale of goods (CISG) shall be excluded.

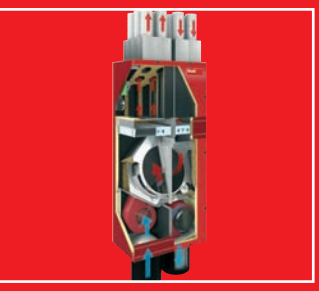
Hoval

Responsibility for energy and environment.

The Hoval brand is internationally known as one of the leading suppliers of indoor climate control solutions. More than 66 years of experience have given us the necessary capabilities and motivation to continuously develop exceptional solutions and technically advanced equipment. Maximising energy efficiency and thus protecting the environment are both our commitment and our incentive. Hoval has established itself as an expert provider of intelligent heating and ventilation systems that are exported to over 50 countries worldwide.

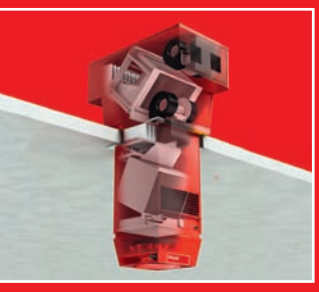
Hoval heating technology

As an energy-neutral supplier with a full range of products, Hoval helps its customers to select innovative system solutions for a wide range of energy sources, such as heat pumps, biomass, solar energy, gas, oil and district heating. Services range from private residential units to large-scale industrial projects.



Hoval residential ventilation

Increased comfort and more efficient use of energy from private housing to industrial halls: our controlled residential ventilation products provide fresh, clean air for living and working space. Our innovative system for a healthy room climate uses heat and moisture recovery, while at the same time protecting energy resources and providing a healthier environment.



Hoval indoor climate systems

Supplying fresh air, removing extract air, heating, cooling, filtering and distributing air, utilising heat gains or recovering cold energy – no matter what the task, Hoval indoor climate systems provide tailor-made solutions with low planning and installation costs.

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