TACOFLOW3 GENS

HEATING CIRCUIT PUMPS (OEM VERSION)

ADVANTAGES

- Various versions for heating applications available
- Controlled by an external PWM signal with profile "heating" or "solar", with feedback
- Manual unlock function
- Small and compact design
- TacoSmart plug with connected 1.2 m voltage and signal cable

Glandless circulation pumps for hot water heating systems in residential and commercial buildings.

DESCRIPTION

The TacoFlow3 GenS is driven by permanent-magnet synchronous motors.
These innovative motors achieve a high efficiency at low operating costs.
They are maintenance-free and do not need replacement of seals and gaskets.

INSTALLATION POSITION

The pump can be installed both horizontally or vertically.
The arrow indicating the medium's flow direction must be observed.

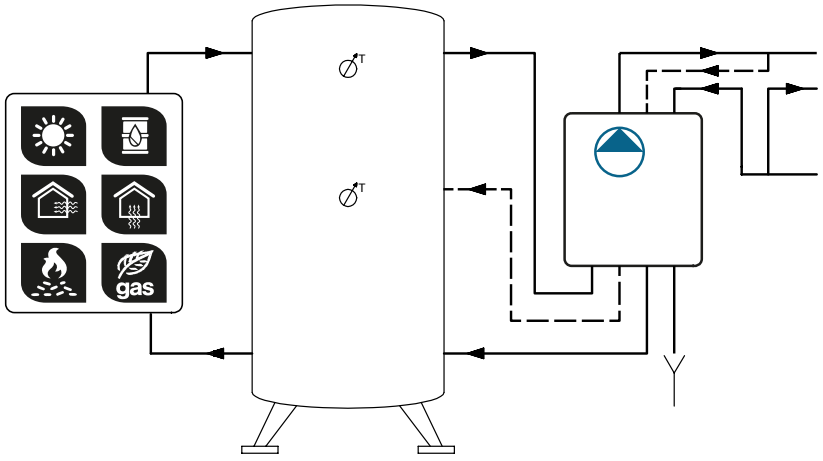
OPERATION

The circulation pump are of a glandless design, since the rotating parts of the motor run inside the pumped medium. This provides lubrication for the motor and the rotating parts.
The circulation pump is equipped with anti-blocking protection which automatically unblocks the pump in the event of a blockage.
The circulation pumps are controlled via an external PWM signal (heating or solar).

BUILDING CATEGORIES

- Apartment blocks, single family dwellings, housing estates, multiple dwelling units
- Smaller public buildings
- Hotels and restaurants, industrial kitchens
- School buildings and sports facilities
- Office, commercial and industrial buildings
- Facilities with partial use, such as barracks, camping sites

SYSTEM/BASIC DIAGRAM



TECHNICAL DATA

Heating circuit pump

- Ambient temperature: +0 °C to +55 °C
- Permissible temperature range*: +2 °C to +95 °C (briefly: 110 °C)
- Static pressure: Max. 0.6 MPa – 6 bar
- Minimum pressure at suction port:
  - 0.005 MPa (0.05 bar) at 75 °C
  - 0.025 MPa (0.25 bar) at 85 °C
  - 0.055 MPa (0.55 bar) at 95 °C
- Max. relative humidity: ≤ 95%
- Sound pressure level: <33 dB (A)
- Low Voltage Directive (2014/30/EC): Standards applied: EN 62233, EN 60335-1 and EN 60335-2-51
- EMC Directive (2014/35/EC); Standards applied: EN 61000-3-2, EN 61000-3-3, EN 55014-1 and EN 55014-2
- Ecodesign Directive (2009/125/EC); Standards applied: EN 16297-1 and EN 16297-2
- Approval and label: VDE, CE, GS

Material

- Pump body:
  - Cast iron (CDP-coated (EN-GJL-200))
  - Composite plastic
- Rotor / Impeller: Graphite, Ceramic, Composite plastic PPS, Ferrite, EPDM
- Rotor housing: Composite plastic PA6T
- Motor: Composite plastic PA66, steel, copper

Motor and electronics

- Supply voltage: 1x230 V (+10% / -15%)
- Pump power plug TacoSmart with installed 1.2 m cable (to be ordered separately)
- Power rating (P1): Min. 3 W, Max. 63 W
- Rated current (I1): Min. 0.05 A, Max. 0.53 A
- Insulation class: H
- Protection rating: IPX4D
- Safety category: II
- Starting current: <3 A

Fluids

- Heating water (VDI 2035; SWKI BT 102-01; ÖNORM H 5195-1)
- Water and proprietary additives used against corrosion and freezing up to 40 %

* To prevent condensate in the motor and on the control electronics, the temperature of the pumped medium must always be higher than the ambient temperature.

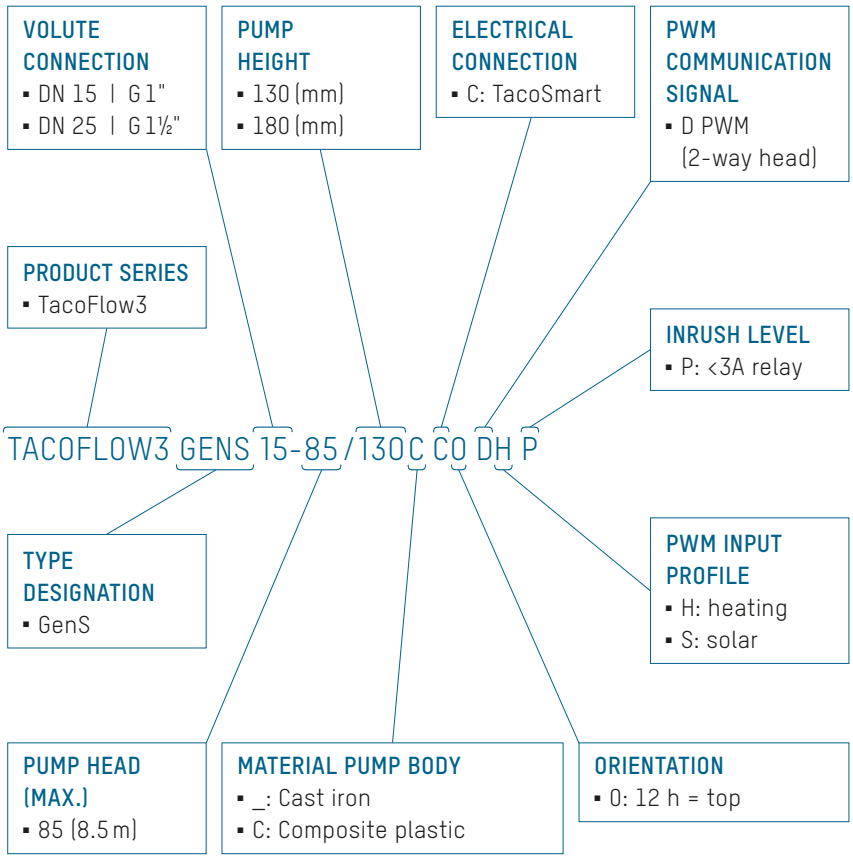
TYPE OVERVIEW

TacoFlow3 GenS | Heating circuit pumps
High efficiency pump made of cast iron and composite plastic (heating only) with plug connection.
Pump head: 8.5 m

Order no.	Designation	Connec-tion	Centre distance	Weight
301.2151.029*	GenS 15-85/130C CO DH P	G 1"	130 mm	1.2 kg
301.2155.029**	GenS 15-85/130C CO DS P	G 1"	130 mm	1.2 kg
301.2251.029*	GenS 15-85/130 CO DH P	G 1"	130 mm	1.7 kg
301.2255.029**	GenS 15-85/130 CO DS P	G 1"	130 mm	1.7 kg
301.4251.029*	GenS 25-85/130 CO DH P	G 1½"	130 mm	1.85 kg
301.4255.029**	GenS 25-85/130 CO DS P	G 1½"	130 mm	1.85 kg
301.5251.029*	GenS 25-85/180 CO DH P	G 1½"	180 mm	2.0 kg
301.5255.029**	GenS 25-85/180 CO DS P	G 1½"	180 mm	2.0 kg

* PWM protocol: heating | ** PWM protocol: solar

TYPE KEY

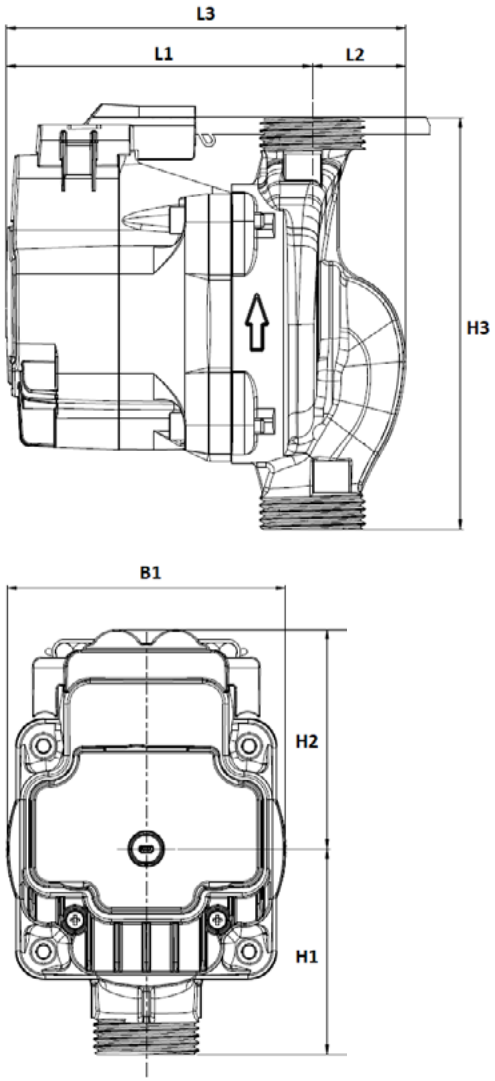


ENERGY EFFICIENCY INDEX

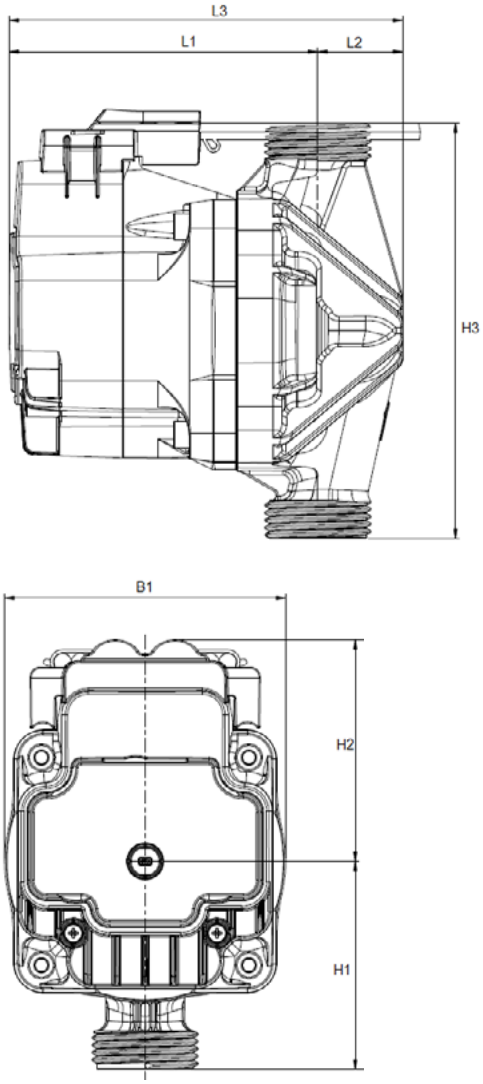
EEI ≤ 0,20 - Part 2
Reference value for the most efficient circulation pump is EEI ≤ 0.20

DIMENSIONAL DRAWING

Pump body: Cast iron



Pump body: Composite plastic



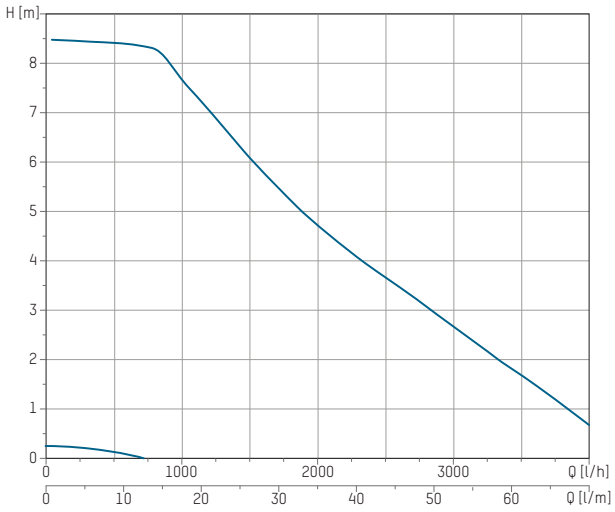
MEASUREMENT TABLE

Order no.	L1	L2	L3	B1	H1	H2	H3
301.2251.029	98	30	128	88	65	70	130
301.2255.029							
301.4251.029							
301.4255.029							
301.5251.029					90		180
301.5255.029							

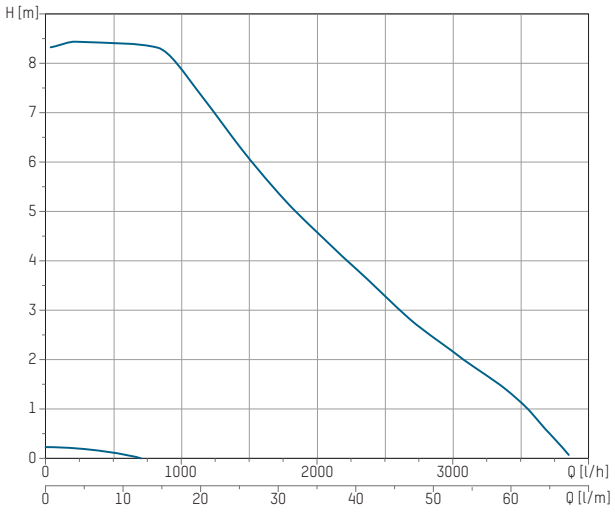
Order no.	L1	L2	L3	B1	H1	H2	H3
301.2151.029	98	27	125	88	65	70	130
301.2155.029							

PERFORMANCE CURVES

Pump body: Cast iron

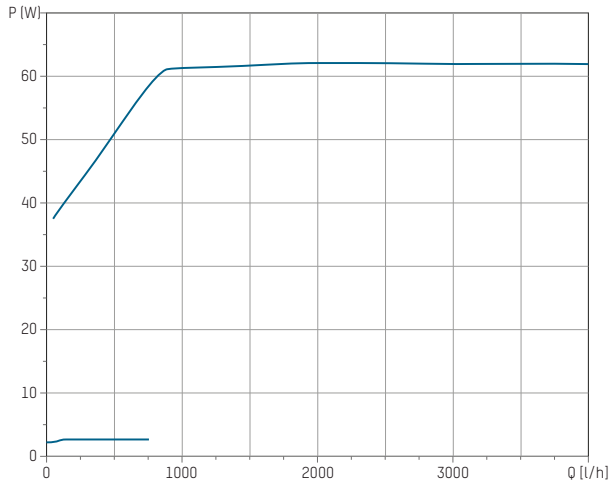


Pump body: Composite plastic

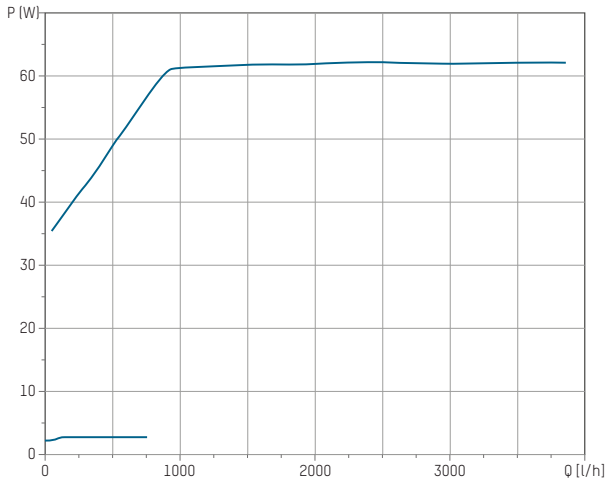


POWER CONSUMPTION CURVES

Pump body: Cast iron



Pump body: Composite plastic

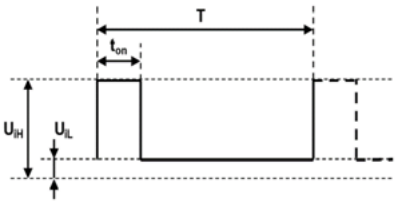


EXPLANATION PWM CONTROL SIGNALS

Control signals

The TacoFlow3 GenS platform can communicate with heat generators (boiler or other device) via pulse width modulation (PWM).
The pump is controlled by an external controller, but can also send information back to it.

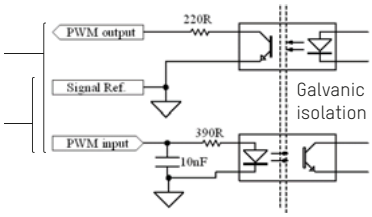
Communication
The PWM communication is standardized in accordance with VDMA 24224 «Wet runner circulating pumps - Specification of PWM control signals». Customer-specific versions can also be developed on request.



d= duty cycle [%]
T = period [s]
UIH=Input voltage higher value
UIL=Input voltage lower value

Input protocol

The PWM interface can be 1-way or 2-way and is galvanically isolated to ensure that the user does not come into contact with high voltage.



PWM interface electrical specification

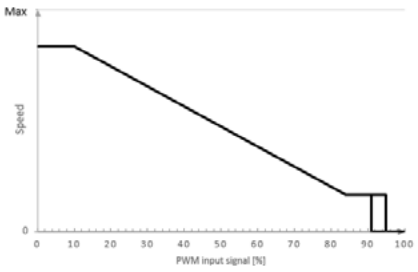
PWM input frequency	100 – 4000 Hz
Input Voltage upper value UiH	4 – 24 V
Input Voltage lower value UiL	<1 V
Input current at UiH	<15 mA
PWM input operating range	0-100 %
PWM output frequency	75Hz ±5%
Accuracy of output signal	±2 %
Output duty cycle	0 – 100%
Output transistor collector voltage	<70 V
Output transistor collector current	<25 mA
Power dissipation on output resistor	<250 mW
Insulation voltage	3750 V
Sensible to polarity change	Coded connector

Input protocol

According to the VDMA 24224 the input signal can have a "heating" profile or a "solar" profile.

"Heating" profile
In the "heating" profile in case of cable breakage in a gas boiler system, the circulator continues to work at maximum speed to guarantee the transfer heat to the primary exchanger.

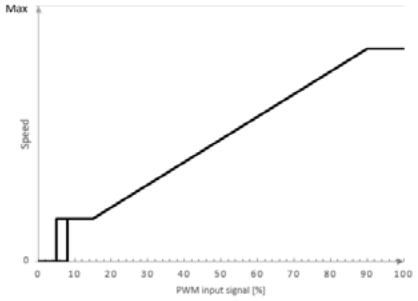
PWM Heating Profile



Pump Status	PWM input signal
Maximum Speed (Max)	≤10 %
Variable Speed (Min-Max)	>10 ... ≤84 %
Minimum Speed (Min)	>84 ... ≤91 %
Hysteresis area (On/Off)	>91 ... ≤95 %
Standby mode (Off)	>95 ... ≤100 %

"Solar" profile
In the "solar" profile in case of cable breakage the circulator stops to avoid overheating of the solar thermal system.

PWM Solar Profile



Pump Status	PWM input signal
Standby mode (Off)	≤5 %
Hysteresis area (On/Off)	>5 ... ≤8 %
Minimum Speed (Min)	>8 ... ≤15 %
Variable Speed (Min-Max)	>15 ... ≤90 %
Maximum Speed (Max)	>90 ... ≤100 %

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