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JUMO PINOS L01

Calorimetric flow sensor

Brief description

The JUMO PINOS L01 flow sensor measures and monitors flow velocities of water and aqueous media. The measurement method is based on the calorimetric measuring principle and therefore does not include any moving parts. This measuring principle is based on the cooling of a heatable temperature probe. Due to the flow behavior of the liquid, heat is taken from the temperature probe. The higher the flow velocity, the higher the heat emission of the heating element. The measured value can be output via an analog output from 0(4) to 20 mA. A variant with switching output is also available. The condition of the device is displayed using 3 LEDs.

The JUMO PINOS L01 can be used for a nominal pressure up to 75 bar and in a permitted flow range of 10 to 150 cm/s.

To allow for simple startup of the flow sensor, it is equipped with a micro USB interface while a setup program is also available as an accessory. A switching point can be set on-site using a push-button on the user interface. Due to its robust design with protection type IP65/67, the flow sensor can also be used in difficult environmental conditions.

The main areas of use are the monitoring of cooling water circuits, pumps, heat exchangers, leak monitoring for process lines, dry-run protection for pumps, as well as the monitoring of lubrication circuits.



Type 406040

Customer benefits

- **Configuration interface**
Simple connection to the JUMO PC setup is possible via the micro USB interface.
- **Flexibility**
By turning the sensor 360°, the measuring device can be installed in any installation position, independent to the direction of flow.
- **Process reliability**
Different fittings and versions ensure simple and reliable connection.

Special features

- Analog or switching output
- No moving parts
- Variable installation position of the sensor (can be rotated 360°)
- Switching point is adjustable on-site

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Technical data

Output

Analog output – flow sensor	Basic setting	Setting range
Attenuation	0 s	0 to 99 s
Scale start	10 cm/s	10 to 150 cm/s
Scale end	150 cm/s	10 to 150 cm/s
Behavior on error	3.4 mA	0, 3.4 or 22 mA
Output signal	0(4) to 20 mA	0 to 20, 4 to 20, 20 to 0, 20 to 4mA
Switching output – flow switch	Basic setting	Setting range
Output behavior	Normally Open Contact	N/O contact, N/C contact, window opening function, window closing function
Switching point (Sp)	75 cm/s	10 to 150 cm/s
Release point (Rsp)	60 cm/s	10 to 150 cm/s
Switch-on delay	0 s	0 to 99 s
Behavior on error	switch off	switch on, switch off

Flow velocity	Measuring range 10 to 150 cm/s
Repeatability	±2 % from measuring end value
Measuring accuracy	±10 % from measuring end value
Temperature drift	±0.2 %/K from measuring end value
Response time to flow change	4 to 10 s

Reference conditions	
Medium	Water
Medium temperature	20 °C ±5 °C
Ambient temperature	20 °C ±5 °C
Installation position	JUMO installation device vertical riser pipe rotation ±5 % away from preferred direction

Electrical data

Voltage supply Requirement	DC 24 V ±10 %, SELV The device must be equipped with an electrical circuit that meets the requirements of EN 61010-1 with regard to "Limited-energy circuits".
Electromagnetic compatibility Interference emission Interference immunity	Acc. to DIN EN 61326-1 Class A – only for industrial use Industrial requirement
Current consumption	Analog output - flow sensor: ≤ 200 mA Switching output - flow switch: ≤ 400 mA

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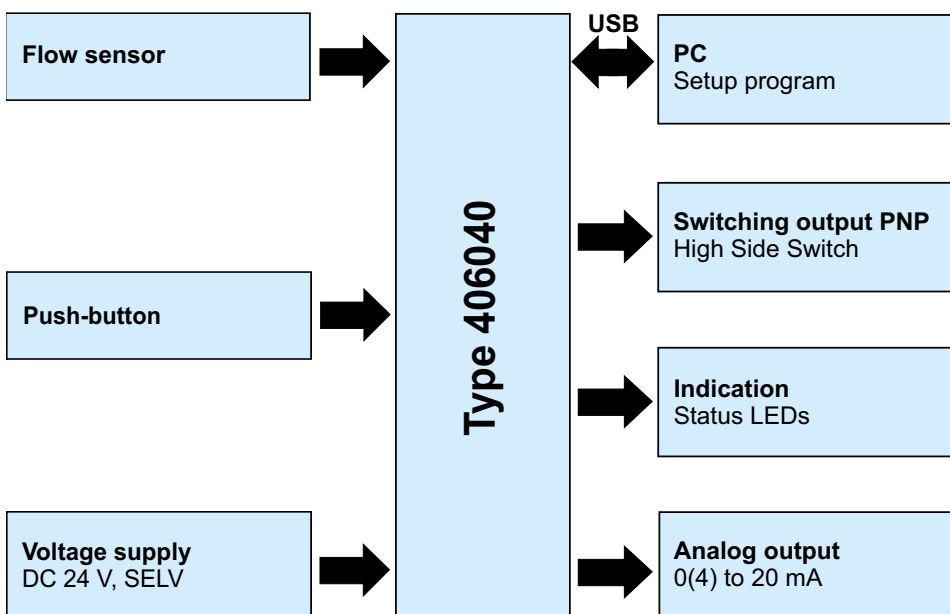
Housing and environmental conditions

Housing	PA66-GF30
Parts in contact with the medium	Stainless steel 316L, 316Ti (1.4404, 1.4571), sealing material FPM Viton
Nominal pressure	PN 75
Burst pressure	200 bar
Weight	approx. 100 g (depending on the probe length)
Protection type according to EN 60529	IP65 IP67 (only for sealed lid and cable box screwed on)
Ambient temperature range on the housing	-25 to +70 °C
Medium temperature range	-25 to +80 °C (water or aqueous solutions, no abrasive media)
Storage temperature range	-25 to +80 °C
Resistance to climatic conditions:	
Operation	100 % relative humidity including condensation of the housing
Storage	90 % relative humidity without condensation
Mounting position	Horizontal or vertical, housing can be rotated

Operation

On-site	Switching output variant: Button on the device to set the switching point
Setup interface	Micro USB socket

Block diagram





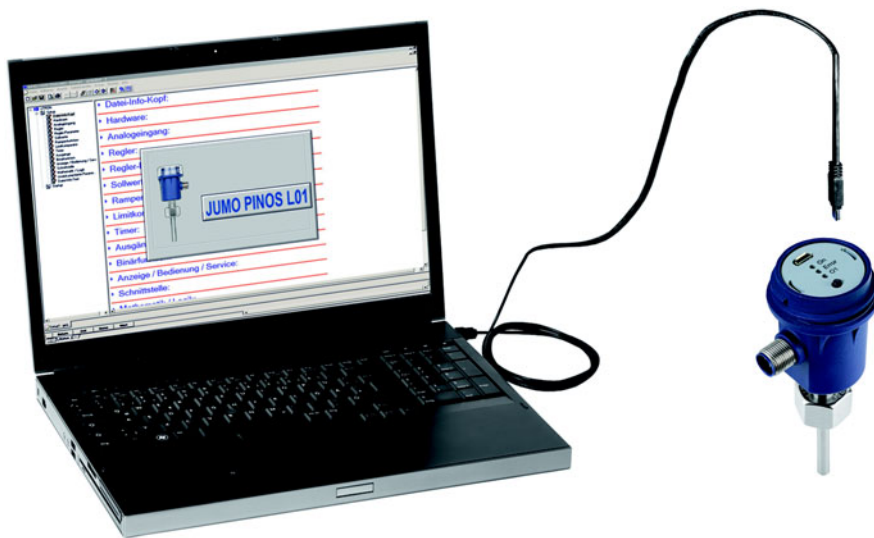
Setup program

Function

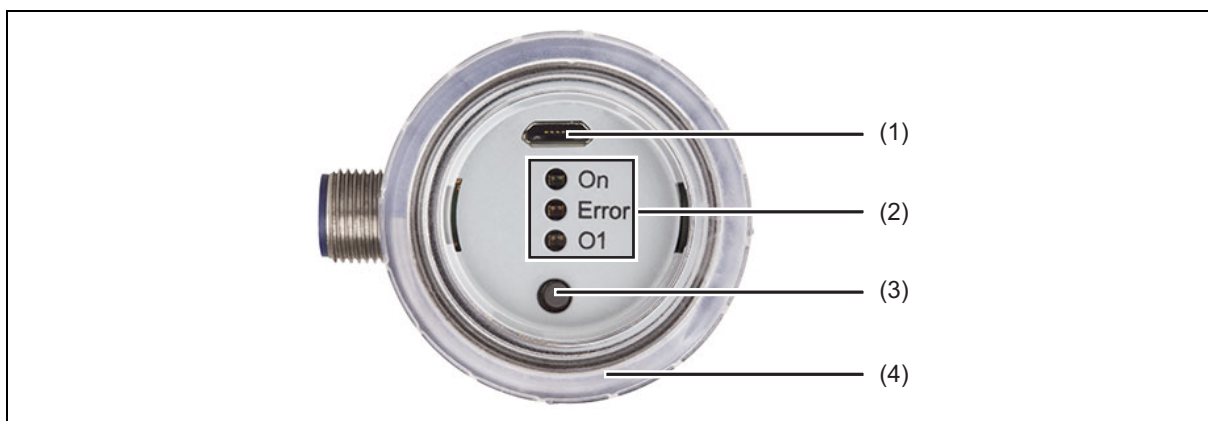
The setup program serves the configuration of the flow sensor using a PC. The configuration data can be archived on data carriers and printed. The setup program can be used to overwrite changed parameters with the default settings at any time. The connection between flow sensor and PC is established via a micro USB interface.

- Set the behavior of the outputs when the measuring range is exceeded
- Set the analog output function (optional)
- Set the switching output function (optional)

The configuration of the flow sensor is possible **without** auxiliary energy via the micro USB interface.



Display and control elements



- | | | | |
|-----|---|-----|---|
| (1) | Micro USB interface | (3) | Button |
| (2) | LEDs
On: green LED
Error: red LED
O1: yellow LED | (4) | Protective lid with viewing window (IP67) |

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Connection diagram

The connection diagram in the data sheet provides preliminary information about the connection options. For the electrical connection, only use the installation instructions or the operating manual. The knowledge and the correct technical compliance with the safety information and warnings contained in these documents are mandatory for mounting, electrical connection, and startup as well as for safety during operation.

Connection for	Type	PIN	Description	Terminal assignment
Analog output		1	+24 V	
		2	Analog output	
		3	GND	
		4	Not used	
Switching output		1	+24 V	
		2	Not used	
		3	GND	
		4	Switching output	
PC	Micro USB interface ^a (Type B)			

^a The micro USB interface is designed only to configure the flow sensor. Continuous operation is not admissible.

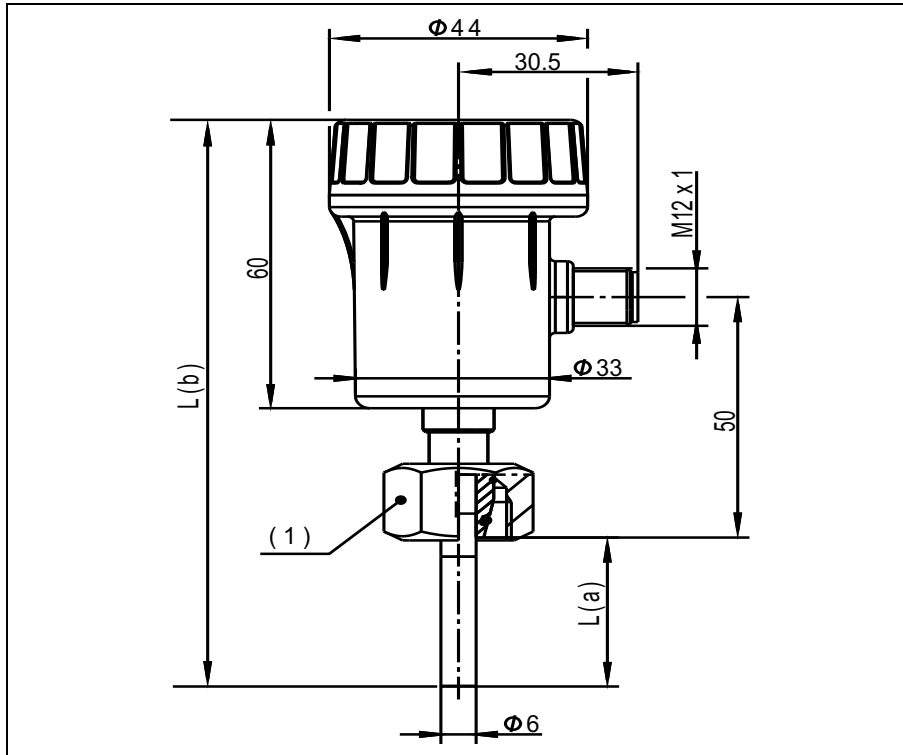
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Dimensions



(1) Union nut L12, M18 × 1.5; DIN EN ISO 8434-1, AF 22

	Nominal pipe width	Internal pipe diameter [mm]
NTS 110	DN 20	20 to 23.7
NTS 120	DN 25	26 to 29.7
NTS 130	DN 32	32 to 38.4
NTS 140	DN 40	38 to 44.3
NTS 150	DN 50	50 to 56.3

Sensor design + process connection	L (a) mm	L (b) mm
NTS 182	37	124
NTS 183	51	138
NTS 184	65	152

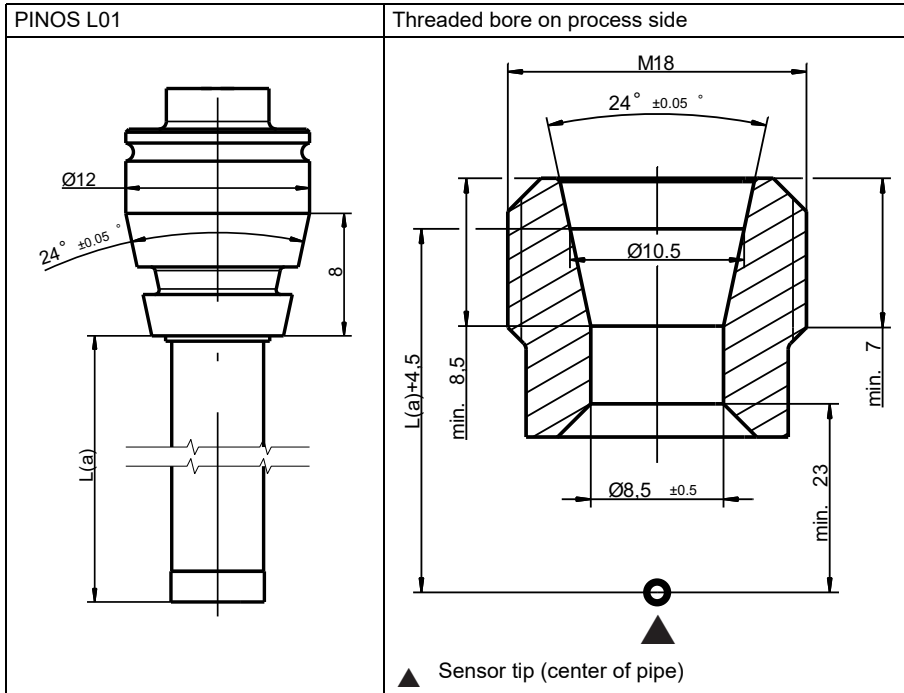
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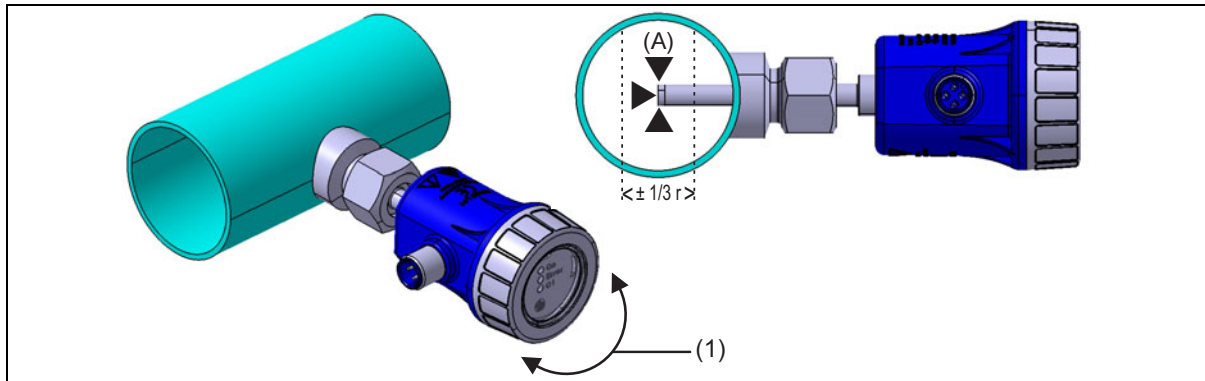
Conical plug





Installation

Mounting example

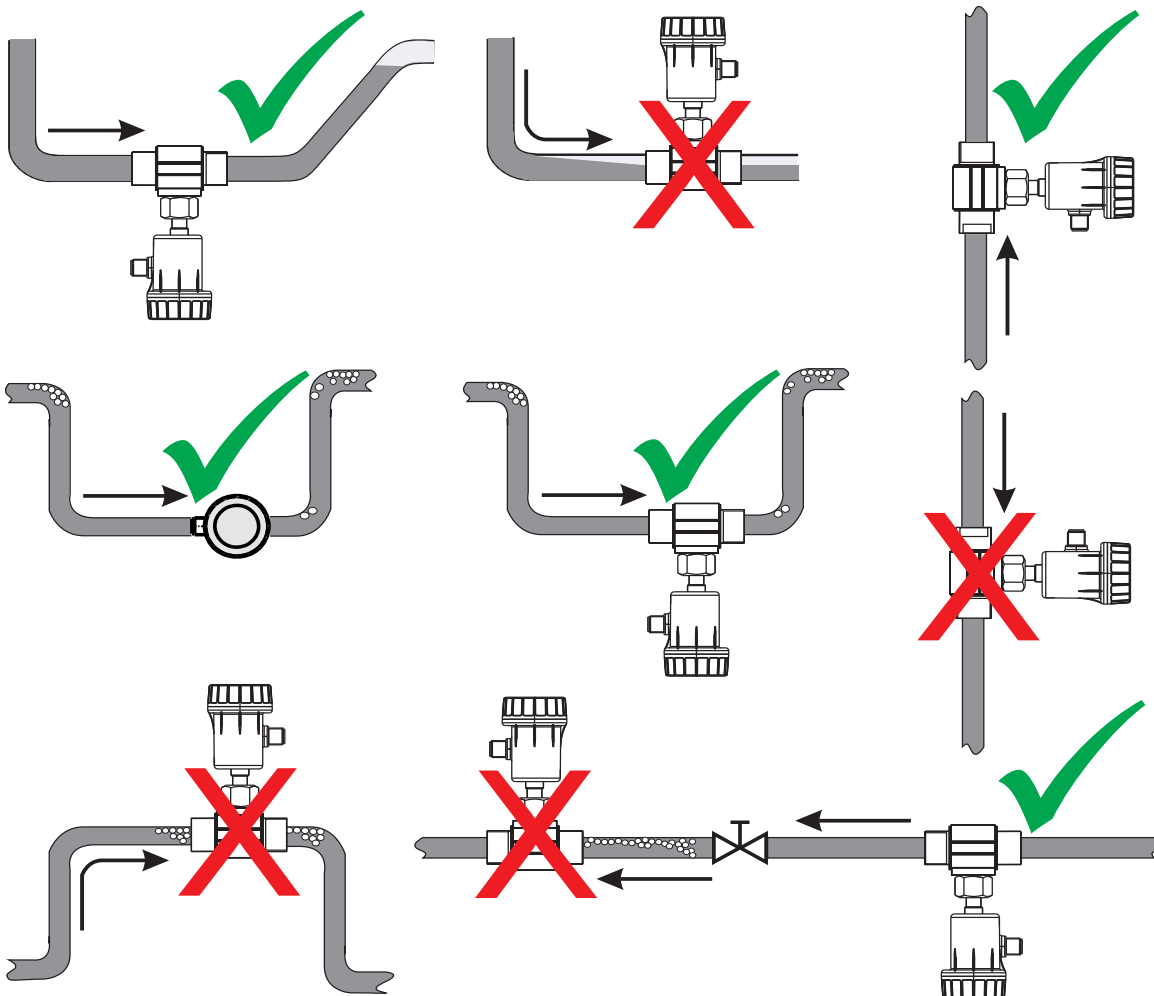


(1) Sensor alignment can be turned 360°.

Preferred direction:
 Flow is towards M12 connector

(A) Pipe center

(position sensor tip within $\pm 1/3 r$)



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Order details

(1) Basic type	
406040	JUMO PINOS L01 – calorimetric flow sensor
(2) Basic type extension	
000	None
999	Special version
(3) Output	
402	0 to 20 mA, 3-wire
406	4 to 20 mA, 3-wire
470	1x PNP switching output
(4) Nominal width	
110	DN 20
120	DN 25
130	DN 32
140	DN 40
150	DN 50
(5) Process connection	
182	Union nut M18 × 1.5, sensor length L(a) 37 mm
183	Union nut M18 × 1.5, sensor length L(a) 51 mm
184	Union nut M18 × 1.5, sensor length L(a) 65 mm
(6) Extra code	
000	None
100	Customer-specific configuration (specifications in plain text)

Order code (1) (2) (3) (4) (5) (6)
 Order example 406040 / 000 - 406 - 140 - 182 / 000

Installation recommendation

Nominal width	Installation situation			
	Stainless steel welded socket	PVC glue fitting/ PVC T-piece	Screw-in adapter	Other
DN 20	L(a)= 37 (NTS 182)	L(a)= 37 (NTS 182)	L(a) = 51 (NTS 183) or L(a) = 65 (NTS 184)	Upon request
DN 25				
DN 32		L(a)= 51 (NTS 183)		
DN 40				
DN 50				

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Accessories

Item	Part no.
Setup program on CD-ROM, multilingual	00609195
Micro USB cable, type A USB connector on micro-B USB connector, length 3 m	00616250
4-pin cable box (straight) M12 × 1 with 2 m PVC cable	00404585
4-pin angled socket M12 x 1 with 2 m PVC cable	00409334

Welded socket

A hole of Ø 20 mm must be drilled at the installation location and the welded socket welded on centrally.

DN	Material	Nominal pressure	Temperature operating range	h	ØD	Part no.
20	Stainless steel 316L	PN 25	-25 to +80°C	45	26.9	00667698
25					33.7	00659696
32					42.4	00659697
40					48.3	00659699
50				50	60.3	00659700

- Other variants for alternative pipe diameters available on request.
- Pressure Equipment Directive (2014/68/EU): article 4, paragraph 3 - "Sound engineering practice".

Screw-in adapter

* Profile seal

Thread code	Material	Nominal pressure	Temperature operating range	Sealing material	Width across flats	h(a)	h(b)	Part no.
G 1/2	Stainless steel 316L	PN 25	-25 to +80°C	FPM	27	14	31.7	00669206
G 3/4					32	16	33.7	00669205

- Other variants for alternative pipe diameters available on request.
- Pressure Equipment Directive (2014/68/EU): article 4, paragraph 3 - "Sound engineering practice".

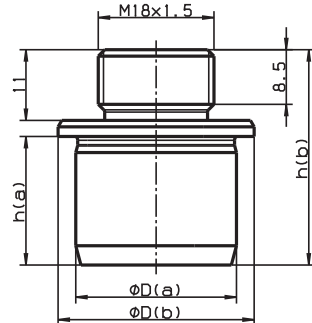
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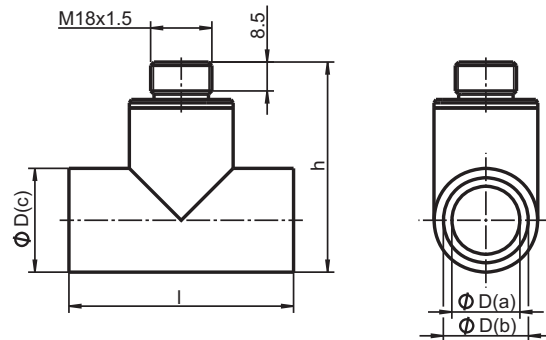
PVC spigot



DN	Material	Nominal pressure	Temperature operating range	h(a)	h(b)	øD(a)	øD(b)	Part no.
20 to 50	PVC-U	PN 16	0 to +60°C	20	33.5	25	30.5	00671018

- For gluing in PVC T-pieces with (reduced) outflow of ø 25 mm.
- Other variants for alternative pipe diameters available on request.
- Pressure Equipment Directive (2014/68/EU): article 4, paragraph 3 - "Sound engineering practice".

PVC T-piece



DN	Material	Nominal pressure	Temperature operating range	øD(a)	øD(b)	øD(c)	h	l	Part no.
20	PVC-U	PN 16	0 to +60°C	20	25.2	30.5	62.5	66	00670832
25				31	32.2	41	70.5	78	00670845
32				39	40.2	50	81	98	00670850
40				49	50.2	62	92	108	00670862
50				62	63.2	77	105	145	00670866

- Other variants for alternative pipe diameters available on request.
- Pressure Equipment Directive (2014/68/EU): article 4, paragraph 3 - "Sound engineering practice".