



*MEASURING, CONTROLLING, REGULATING WITH BUILT-IN  
INTELLIGENCE: HSW FLOW INSTRUMENTATION*

*Products from Henke-Sass, Wolf are manufactured according to the strictest guidelines in accordance with total quality management and DIN EN ISO 9001. Batch traceability up to the initial material, intensive checks that accompany production, extremely modern production lines and highly motivated, superbly trained employees guarantee the typical HSW quality for trouble-free function over the entire product cycle.*

	DW-K	DW-L	DW-R	DW-N	DW-U	DW-D	DW-F	DW-FS	DW-S	DW-SM	DW-T
<b>Seite</b> <i>Page</i>	10-11	12-13	16-17	18	19-21	22-24	25-27	28-29	30-31	32-33	34-35
<b>Verstellbarer Schalterpunkt</b> <i>Adjustable switch point</i>	X	X	X								
<b>Verstellbarer Schalterpunkt an Skala/Display</b> <i>Adjustable switch point on scale/display</i>				X	X	X	X		X	X	X
<b>Anzeige des Momentandurchflusses</b> <i>Display of current flow rate</i>					X	X	X		X		
<b>Totalisator</b> <i>Totalisator</i>						X	X		X		
<b>Sensorik ohne bewegliche Teile</b> <i>Sensor technology without moving parts</i>									X	X	X
<b>Analogausgang</b> <i>Analogue output</i>						X	X	X	X	X	X
<b>Spannungsausgang</b> <i>Voltage output</i>						X	X		X		
<b>Frequenzausgang</b> <i>Frequency output</i>							X	X	X	X	X
<b>Schnittstelle optional</b> <i>Interface optional</i>						X	X	X	X	X	X
<b>Messprinzip:</b> <i>Measuring principle:</i>											
<b>Pendelprinzip mechanisch</b> <i>Mechanical pendulum principle</i>				X	X						
<b>Pendelsystem mit Magnetrückstellung</b> <i>Pendulum system with magnetic resetting</i>		X									
<b>Pendelsystem berührungslos</b> <i>Contactless pendulum system</i>			X								
<b>Pendelsystem mit progressiver Rückstellkraft</b> <i>Pendulum system with progressive resetting force</i>						X					
<b>Schaufelradprinzip</b> <i>Paddle wheel principle</i>							X	X			
<b>Kolbenmessprinzip</b> <i>Piston measurement principle</i>	X										
<b>Ultraschall-Verfahren</b> <i>Ultrasonic method</i>									X	X	
<b>Kaliometrisches Prinzip</b> <i>Calimetric principle</i>											X

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## RELIABILITY IS SO BENEFICIAL

Excellent quality and maximum flexibility characterize the solutions from Henke-Sass, Wolf in the area of flow instrumentation. Optimal flow reliability is achieved with the modern instruments from Henke-Sass, Wolf for monitoring, measuring, checking and control.

The flowswitches and flowmeters from Henke-Sass, Wolf are high-quality, reliable instruments for measuring, monitoring and controlling flows. They have proven themselves in many industrial sectors, such as in smelting, vacuum, sealing and sinter furnaces. They are used in induction, welding, desalination and rectifier facilities. Henke-Sass-Wolf offers intelligent and effective solutions for water treatment, heat exchangers, compressors, turbines, laser devices, x-ray equipment, etc. Some of our solutions are also available in ATEX versions.

Also for our industrial products, we have a high degree of technological know-how, typical of Henke-Sass, Wolf, which we also consistently implement in production. And based on our strong international orientation, we are able to deliver top quality at competitive prices.



Henke-Sass, Wolf achieves reliability with modern instruments and methods for monitoring, measuring, checking and control.



HSW flow instrumentation combines intelligence with efficiency.



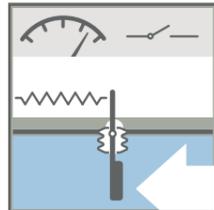
High degree of technical know-how combined with top quality.



Reliability combined with flexibility.

## THE RIGHT TECHNOLOGY FOR RELIABLE RESULTS

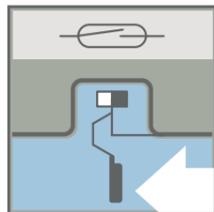
Our flow instrumentation uses various methods to get reliable results under all circumstances:



### Mechanical pendulum principle

Henke-Sass, Wolf traditionally uses the pendulum measuring principle. Here, a measuring plate fastened to a lever projects into the flowing medium. Depending on the flow velocity, the plate will change its position. The change in position is transferred to the respective evaluation device via the lever. This is the basic principle which is identical for all HSW pendulum devices.

Using the the mechanical principle, the pendulum system is deflected against the force of an external spring. The seal is realized by bellows made of stainless steel. The deflection is detected by a mechanical system. The output is given via a scale with pointer or via a microswitch.



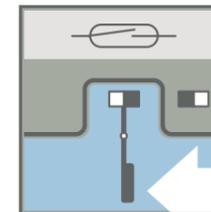
### Contactless pendulum system

For this pendulum system, the signal is transmitted without contact by a permanent magnet, arranged on the pendulum, to a reed switch located outside of the medium (protective gas contact).

The resetting force is generated by a leaf spring, which simultaneously serves as a bearing for the lever.

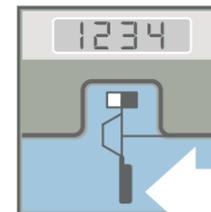


HSW methods ensure high precision and excellent measuring dynamics.



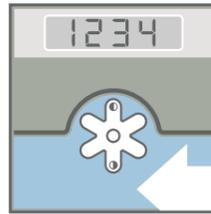
### Pendulum system with magnetic resetting

Signals are transmitted the same way as on the pendulum system, without contact. However, resetting does not occur by means of a spring, but by the force of two repelling magnets.



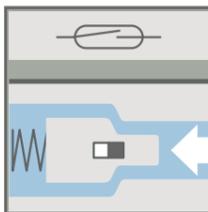
### Pendulum system with progressive resetting force

The patented pendulum system works with a progressive spring system, which allows, for this measuring principle, outstanding measuring dynamics within a minimum amount of space. Here, too, signals are transmitted without contact.



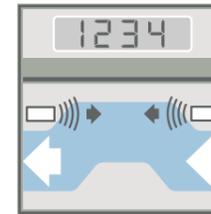
**Paddle wheel principle**

A paddle wheel submerged in the flowing medium rotates as a result of the flow. There are permanent magnets in 2 paddle wheels. A sensor located in the mount detects a signal every time the magnet moves past. Thus, a digital, flow-dependent signal is produced.



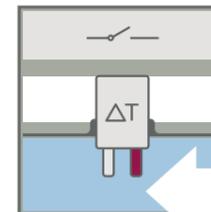
**Piston measurement principle**

The principle: A special piston equipped with a permanent magnet is held in a defined position by a spring. The medium displaces the piston against the force of the spring according to the flow. If the switching point is fallen short of or exceeded, the reed switch outside of the medium is switched without contact by the permanent magnets. The construction is absolutely leak-tight, and can be easily dismantled for any cleaning work. The special piston, divided into a measuring and a guiding section, combines precise switching with high reliability.



**Ultrasonic method**

These flowtransmitters work with two ultrasonic sensors which are arranged opposite one another. The delay time of the sound depends on the flow velocity. Both sensors work alternately as transmitter and receiver. The difference in the delay time is proportional to the flow velocity. Unlike other ultrasonic measuring systems, the HSW method works in parallel with the direction of flow. This method offers an extremely compact design, high precision, excellent measuring dynamics and the option of measuring very high flow velocities without having to reduce the cross section.



**Calorimetric principle**

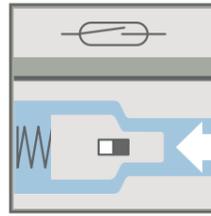
A highly precise and very fast temperature sensor in the sensor of the measuring device monitors the medium temperature. Using a micro-heater, the sensor is held at a defined temperature level, which is above the temperature of the medium. The temperature at the sensor changes depending on the flow velocity. This tendentially changes the temperature difference between the sensor and medium. High-precision electronics prevent the change in temperature difference by adapting the heat output. The heat output is then proportional to the flow velocity and is used to generate the output signal. Temperature changes in the medium are recorded separately and subtracted accordingly.



HSW flow technology relies on high-precision electronics.

## FLOWSWITCH DW-K

### VERSATILE, RELIABLE, INEXPENSIVE!



The DW-K was developed for applications such as monitoring coolant circulation systems with low flow rates. It is compact and ideal for switching points between 0.1 and 2.5 l/min, which meets the desires and demands of our customers. It works reliably according to the piston measuring principle and is resistant to dirt and calcification.

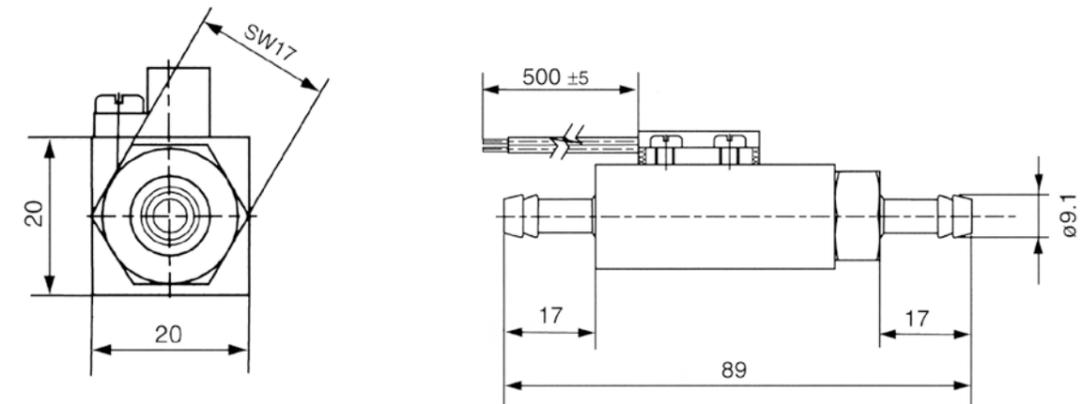


- For monitoring lubricant, coolant and water circulation systems (gases on request)
- Individual connection solutions, material designs and switching ranges can also be supplied in small quantities
- Low switching points possible, large switching range ■ Requires little space, can easily be disassembled
- Robust design, very reliable with a long service life, inexpensive
- Position-independent
- Ideal for low switching points (between 0.1 and 2.5 l/min)

### Technical data

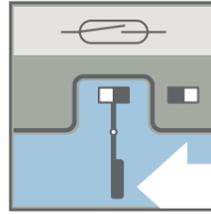
Switch range:	0.1 – 2.5 l/min.
Connection:	Nipples for 8 mm flexible tube or 1/4" internal thread (other versions available on request)
Reed switch:	200 V, 15 W, 1 A max. (others on request)
Piston:	POM
Spring:	Stainless steel
Housing:	Brass, stainless steel (others on request)
Flow direction:	Optional
Hysteresis:	Approx. 0.1 l/min.
Pressure max.	max. 25 bar (others on request)
Temperature max.	100 °C

### Technical drawings /Example



A multitude of special designs are available on request with regard to materials, switching points, connection variants, etc.

## FLWSWITCH DW-L INEXPENSIVE AND FLEXIBLE!



The DW-L offers a very inexpensive and yet flexible option for monitoring flow rates. It works according to the principle with magnetic resetting and its standard version is made completely of plastic.

Special variants allow the combination with metal materials, thereby expanding its range of applications.



DW-LP



DW-LE



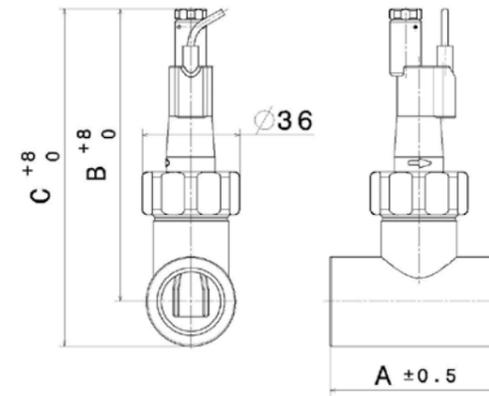
- Plastic version – no corrosion
- Easy adjustment of the switching point by means of set screw
- No spring – always the same resetting force
- Low pressure loss
- Different versions, easy adaptation to different requirements ■ Very inexpensive

### Technical data

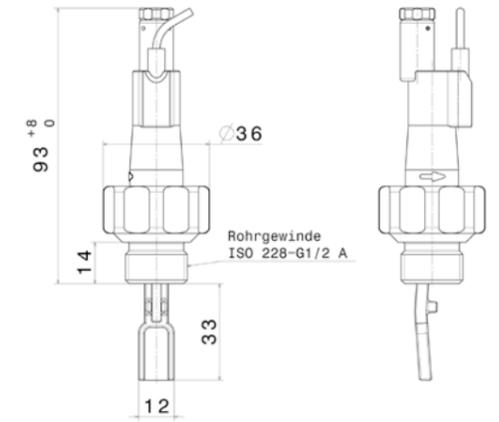
Switch supply:	180 V, 10 W, 0.5 A max. (other versions available on request)		
Switch:	Normally open contact (closed contact and two-way contact on request)		
	DW-LE	DW-LP	DW-LM
Temperature max.*	100 °C	60 °C	100 °C
Pressure max.	PN10	PN6**	PN10

Medium temperature, \*\* at 20° medium temperature, at 60° PN 2.5

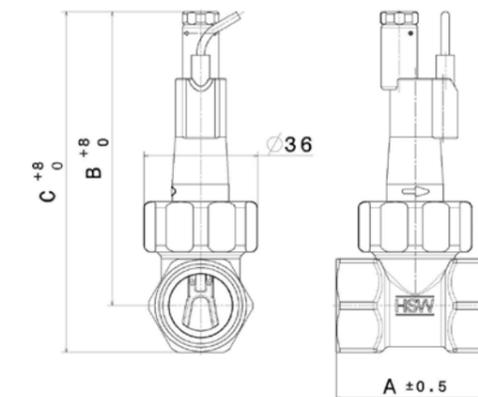
### Technical drawings



DW-LP



DW-LE



DW-LM

## FLOWSWITCH DW-L

Flow rate l/min.

DN	Rp	Typ Type		Flow rate l/min.*
DN10	3/8"		DW-LM	1.5-4
DN15	1/2"	DW-LP	DW-LM	2-5
DN20	3/4"	DW-LP	DW-LM	4-10
DN25	1"	DW-LP	DW-LM	6-15
DN32	1 1/4"	DW-LE	DW-LP	10-25
DN40	1 1/2"	DW-LE	DW-LP	15-38
DN50	2"	DW-LE	DW-LM	20-50
DN65	2 1/2"	DW-LE		34-85
DN80	3"	DW-LE		50-125
DN100	4"	DW-LE		80-200
DN125	5"	DW-LE		150-400
DN150	6"	DW-LE		250-600

Other ranges/switching points on request

### Dimensions

DN	Rp	DW-LE	DW-LP			DW-LM		
			A mm	B mm	C mm	A mm	B mm	C mm
DN10	3/8"	siehe Zeichnung/see drawing				50	94	109
DN15	1/2"	siehe Zeichnung/see drawing	54	103	119	50	94	109
DN20	3/4"	siehe Zeichnung/see drawing	66	109	126	50	94	109
DN25	1"	siehe Zeichnung/see drawing	79	113	133	50	98	116
DN32	1 1/4"	siehe Zeichnung/see drawing	96	117	142	50	103	126
DN40	1 1/2"	siehe Zeichnung/see drawing	116	122	153	50	108	135
DN50	2"	siehe Zeichnung/see drawing				50	133	169

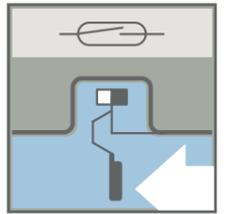
### Materials

	Gehäuse Housing	Einschraubteil/T-Stück Screw-in part/T-piece	Pendel Pendulum	Temperatur max.* Temperature max.*	Druck max. Pressure max.
DW-LE	Noryl GFN3	POM	Noryl GFN3	100 °C	PN10
DW-LP	Noryl GFN3	PVC	Noryl GFN3	60 °C	PN6**
DW-LM	Noryl GFN3	Messing/Brass	Noryl GFN3	100 °C	PN10

Medium temperature, \*\* at 20° medium temperature, at 60° PN 2.5

## FLOWSWITCH DW-R

VERSATILE AND EXTREMELY RELIABLE!



The DW-R, which works according to the contactless pendulum principle, has proven itself to be a simple, reliable and inexpensive solution for monitoring flows in pipelines. Special versions are available on request with regard to materials, switching behaviour/switching points, connection variants, etc.



- Divided structure, top section and pendulum system fixed to pipe section, ensuring that cleaning can be done easily and quickly – without adjustment
- Entire pendulum system is easily exchangeable
- Pendulum system made completely of stainless steel as standard
- Pressure-independent function
- Low pressure loss
- Simple, reliable and inexpensive flowswitch
- Resistant to contaminated media and calcification (with the

exception of magnetic particles)

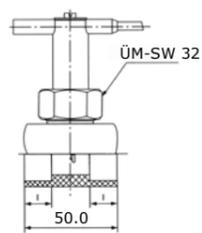
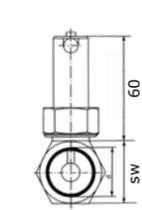
# FLOWSWITCH DW-R

## Technical data

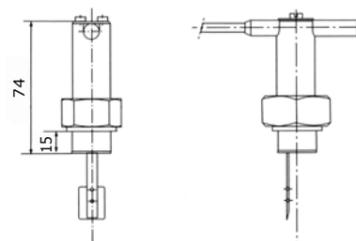
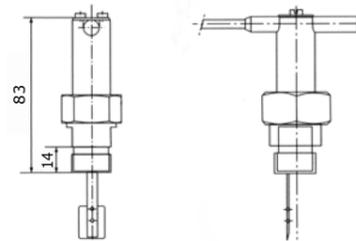
Power supply:	230 V; 1.5 A; 80 W; 90 VA max.
Protection type:	IP 65 (others on request)
Temperature of medium:	100 °C max. (others on request)
Ambient temperature:	70 °C max.
Switch:	Can be used normally closed or normally open contact, SPDT switch is available on request
Switch hysteresis:	Approx. 5 %

## Technical drawings

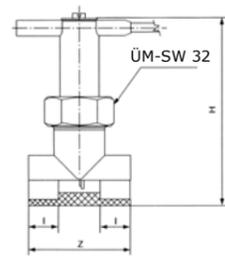
Standard model



Insertable-/Weld-on Version (DW-RE) G 1/2"



Ausführung mit PVC-T-Stück



## Materials

A	Brass
B	Brass nickel-plated
C	Stainless steel
D	Stainless steel/PVC

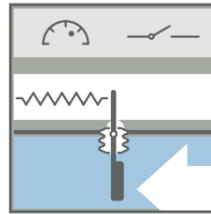
## Dimensions

d Internal thread* Rp	NW Nominal	I mm	Material (A+B) SW mm	Material (C) SW mm	Material (A+B) Z mm	Material (C) Z mm	Material (D) I mm	Material (D) H mm	Material (D) Z mm
3/8"	10	11	30	30	50	50	16	99	54
1/2"	15	11	30	30	50	50	16	99	54
3/4"	20	11	30	30	50	50	19	109	66
1"	25	15	37	-	50	80	22	113	79
1 1/4"	32	15	46	-	50	95	26	126	96
1 1/2"	40	15	52	-	50	115	31	132	116
2"	50	15	-	-	120	120	38	149	143

## Flow rate l/min.

Type	DN	R"	On	Off	Q max.	PN bar	t max. °C
DW-R-10	10	3/8"	2.7-4.5	1.7-3.5	40	25	110
DW-R-15	15	1/2"	4.5-6.5	3.0-5.5	45	25	110
DW-R-20	20	3/4"	8.5-12.0	6.6-11.0	80	25	110
DW-R-25	25	1"	13.0-20.0	11.0-19.0	130	25	110
DW-R-32	32	1 1/4"	17.0-26.0	15.0-25.0	160	25	110
DW-R-40	40	1 1/2"	28.0-45.0	27.0-43.0	300	25	110
DW-R-50	50	2"	45.0-58.0	43.0-56.0	500	25	110
DW-R-E	50	2"	44.0-65.0	40.0-60.0	500	25	110
DW-R-E	65	2 1/2"	78.0-115.0	70.0-105.0	750	25	110
DW-R-E	80	3"	120.0-175.0	110.0-165.0	1,400	25	110
DW-R-E	100	4"	190.0-285.0	175.0-265.0	2,500	25	110
DW-R-E	125	5"	310.0-450.0	280.0-420.0	2,900	25	110
DW-R-E	150	6"	440.0-655.0	410.0-600.0	3,300	25	110

## FLWSWITCH DW-N RELIABLE MONITORING, EASY OPERATION!

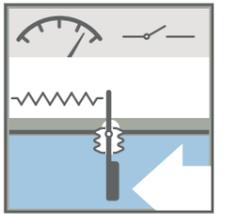


Flowswitch with adjustable switching point and optical switching display using a glow lamp. The DW-N is based on the extremely reliable mechanical pendulum principle. The devices are very robust and operationally reliable. Both contaminated media and magnetic fields are no problem. Since no magnets are used, even ferrous media have no adverse effects.



- Simple switching point adjustment in accordance with small scale
- Compulsory movement transmission to the micro-switch ■ Hermetic separation of the medium from the micro-switch by means of bellows
- Resistant to contamination and magnetic fields
- High electrical load capacity
- Maximum operational reliability and serviceability ■ Available for all flow directions and installation positions ■ Ex version also available
- Version with two switches is available

## FLOWMETER DW-U RELIABLE MONITORING AND MEASURING!



Simple, very reliable flow meter with analogue display of the current flow, adjustable switching point, optical switching display via a glow lamp. The DW-U offers all advantages of the DW-N device, but also displays the current flow rate.



- Display of current flow rate
- Simple switching point adjustment in accordance with small scale
- Hermetic separation of the medium from the micro-switch by means of bellows
- Resistant to contamination and magnetic fields
- High electrical load capacity
- Maximum operational reliability and serviceability ■ Available for all flow directions and installation positions ■ Ex version also available
- Version with two switches is available

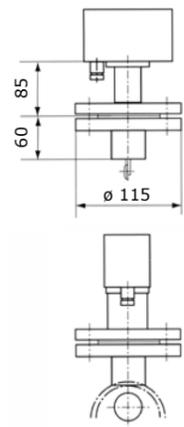
# FLOWMETER DW-U AND FLOWSWITCH DW-N

## Technical data

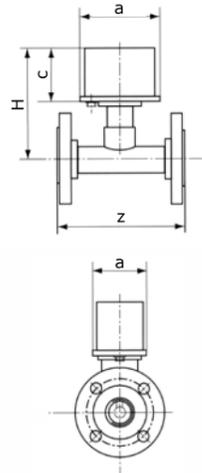
Flow proportion: (for type DW-U(N)-AU-FL and for all EX types)	1:5 max. (1:4 max.)
Switch/measuring accuracy up to 20 l/min.: 21 – 200 l/min.: 200 and more l/min.: (depends on flow direction and medium at 20°C)	±5 % (of final value) ±4 % (of final value) ±3 % (of final value)
Pressure drop: (average loss of pressure, value on request)	0.1 – 0.3 bar
Switch hysteresis: (furthermore, it depends on pressure, value on request)	Up to 2 bar 10 %
Operating temperature: (higher temperatures on request)	Max. 100 °C
Ambient temperature:	Max. 70 °C
Power supply:	250 V/10 A
Protection type: (IP65 on request)	IP55
Lamp: (other voltages are available on request)	250 V/2 mA
<b>Available in Ex version (ATEX):</b>	Ex, IIGD, EEx c, IIB T 4, IP 65, T 110°

## Connection variants

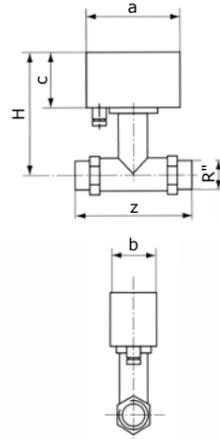
Flange adaptor (AU-FL)



Flange (FL)



Thread



## Dimensions

Connection thread R"	10	15	20	25	32	40	50
	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Length Z without flange	135+1	135+1	135+1	135+1	170+2	170+2	170+2
Length Z with side flanges	155±2	155±2	155±2	155±2	190±2	190±2	190±2
Height H	145+1	145+1	145+1	145+1	150+2	155+2	160+2
Measuring part	a x b x c = 100 x 70 x 70 (mm)						

## Materials

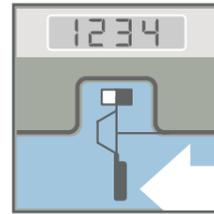
	T-piece	Pendulum system	Bellows	Working pressure max.
A	Brass; W. No. 2.0380.10	Brass; W. No. 2.0380.10	Stainless steel; W. Nr. 1.4571	16 bar 16 bar
B	Stainless steel; W. No. 1.4571	Stainless steel; W. No. 1.4571	Stainless steel; W. No. 1.4571	16 bar 16 bar
C	PVC	Stainless steel; W. No. 1.4571	Stainless steel; W. No. 1.4571	16 bar 16 bar

## Schaltbereich für Wasser 20°C / Flow rate for water 20°C

Connection thread R	Nominal width DN	l/min min. H <sub>2</sub> O		l/min max. H <sub>2</sub> O		Durchflussverhältnis* Flow proportion*	
			m <sup>3</sup> /h		m <sup>3</sup> /h	DW-U/N	DW-U/N-Ex
3/8"	10	1		25		1:5	1:4
1/2"	15	1		55		1:5	1:4
3/4"	20	5		100		1:5	1:4
1"	25	6	= 0.36	150	= 9	1:5	1:4
1 1/4"	32	10	= 0.6	250	= 15	1:5	1:4
1 1/2"	40	20	= 1.2	400	= 24	1:5	1:4
2"	50	50	= 3.0	600	= 36	1:5	1:4
2 1/2"	65	80	= 4.8	1,000	= 60	1:4	1:4
3"	80	120	= 7.2	1,500	= 90	1:4	1:4
4"	100	200	= 12	2,400	= 144	1:4	1:4
5"	125	300	= 18	4,000	= 255	1:4	1:4
6"	150	400	= 24	5,500	= 330	1:4	1:4
8"	200	700	= 42	10,000	= 600	1:4	1:4
10"	250	1,200	= 72	15,000	= 900	1:4	1:4
12"	300	1,700	= 102	20,000	= 1,200	1:4	1:4
14"	350	2,500	= 150	30,000	= 1,800	1:4	1:4
16"	400	3,000	= 180	40,000	= 2,400	1:4	1:4
20"	500	5,000	= 300	60,000	= 3,600	1:4	1:4
24"	600	7,000	= 420	75,000	= 4,500	1:4	1:4

# FLOWTRANSMITTER DW-D

## RELIABLE MONITORING, EXACT CONTROL!



The DW-D is a flowtransmitter with a digital display of the current flow rate, analogue output, totalisator, voltage output, two adjustable switching relays and a display of the switching point for monitoring limit values. It works according to the patented HSW pendulum principle with progressive resetting force.

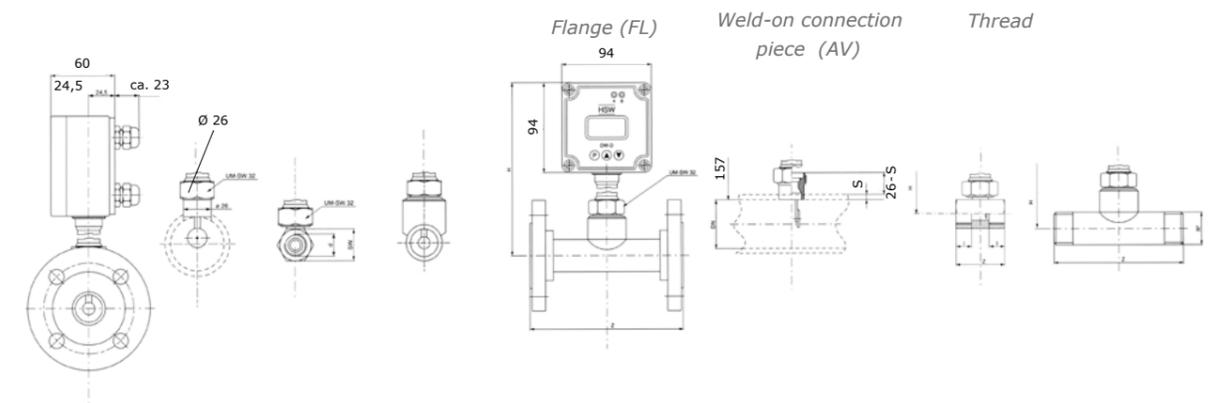


- Extremely reliable way deflection measuring method ■ For liquids and gases
- Resistant to contamination (with the exception of magnetic particles)
- No bearings, no friction
- Very wide measuring range
- Linear output signal
- High precision in a wide temperature range
- Very good price/performance ratio
- Optional: RS232C interface
- Totalisator

### Technical data

Power consumption:	200 mA max.
Power supply:	24 V DC ± 10 %
Analogue output:	4–20 mA
Voltage output:	0–10 V
Totalisator:	With EEPROM memory
Display:	LCD dot matrix module, 2 x 8 positions, illuminated
Medium temperature:	-20–100 °C (other ranges on request)
Accuracy:	±2 % of final value
Protection type:	IP 65
Measuring range:	Flow ratio 1:10 standard (e.g. 10–100 l/min.)
Max. pressure:	25 bar (higher values on request)
Flow direction:	any
Make and break contacts:	2 x 230 V 1 A max., adjustable

### Connection variants



### Flow rate for water 20 °C

Connection thread	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	20"	24"
Nominal width DN	10	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400	500	600
min. H <sub>2</sub> O in l/min. in m <sup>3</sup> /h	1,5	1,5	5	6	10	20	50	80	120	200	300	400	700	1200	1700	2500	3000	5000	7000
max. H <sub>2</sub> O in l/min. in m <sup>3</sup> /h	25	45	100	150	250	400	600	1,000	1,500	2,400	4,000	4,500	10,000	15,000	20,000	30,000	40,000	60,000	75,000
Flow proportion	1:10	1:10	1:10	1:10	1:10	1:10	1:10	1:10	1:10	1:10	1:10	1:10	1:10	1:10	1:10	1:10	1:10	1:10	1:10

# FLOWTRANSMITTER DW-D

## Dimensions

Connection thread R/Rp	10 3/8"	15 1/2"	20 3/4"	25 1"	32 1 1/4"	40 1 1/2"	50 2"
Length Z (female thread) Material A (mm)	50	50	50	50	50	50	170***
Length Z (female thread)* Material B (mm)	50	50	50	-----	-----	-----	-----
Length Z (male thread)** Material B (mm)	-----	-----	-----	135	170	170	170
Length Z (with side flanges) Material A+B (mm)	155±2	155±2	155±2	155±2	190±2	190±2	190±2
Height H Material A/B (mm)	157/157	157/157	157/157	162/178	167/178	171/178	179/188

\* For dimensions of material C (PVC), please ask separately  
 \* Male thread on request \*\* Female thread on request \*\*\* Male thread

## Materials

Type	Connection	T-piece	Pendulum	Housing	Flange	Connection part
Brass (A)	Thread	Brass	Stainless steel	Messing Brass	-----	-----
Brass (A)	Flange	Brass	Stainless steel	Brass	Steel	-----
Brass (A)	Welded version	-----	Stainless steel	Brass	-----	Steel
Stainless steel (B)	Thread	Stainless steel	Stainless steel	Stainless steel	-----	-----
Stainless steel (B)	Flange	Stainless steel	Stainless steel	Stainless steel	Stainless steel	-----
Stainless steel (B)	Welded version	-----	Stainless steel	Stainless steel	-----	Stainless steel
PVC (C)	Thread	PVC	Stainless steel	Stainless steel	-----	-----
PVC (C)	Flange	PVC	Stainless steel	Stainless steel	PVC	-----
PVC (CC)	Saddle clamp	-----	Stainless steel	Stainless steel	-----	PVC



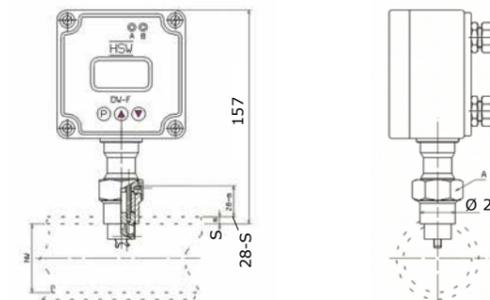
# PADDLE WHEEL FLOWTRANSMITTER DW-F FOR WIDER MEASURING RANGES!

The DW-F flowtransmitter is an extension for the DW-D deflec-tor plate flowtransmitter and is equipped with a paddle wheel sensor. The DW-F device type corresponds exactly to the struc-ture of the DW-D device type with the exception of the sensor system. The DW-F works with a paddle wheel rather than with a pendulum system. This opens up additional possibilities of ideally adapting the HSW DW-F flowtransmitter to the corre-sponding application areas.



- Paddle wheel principle
- For liquids
- High measuring sensitivity and very wide measuring range
- High-quality bearings
- Linear output signal
- High precision in a wide temperature range
- Very good price/performance ratio
- Optional: RS232C interface
- Totalisator

## Technical drawings



Additional dimensions see DW-D page 22-24

## PADDLE WHEEL FLOWTRANSMITTER DW-F

### Technical data

Power consumption:	200 mA max.
Power supply:	24 V DC ± 10 %
Totalisator:	With EEPROM memory
Medium temperature:	-20–80 °C
Accuracy:	±2 % of final value
Signal transmission system:	Magnet/hall sensor
Protection type:	IP 65
Measuring range:	Flow ratio 1:20 (e.g. 5–100 l/min.)
Max. pressure:	25 bar (higher values on request)
Make and break contacts:	2 x 230 V 1 A max., adjustable
Axis:	Carbide
Bearing:	Sapphire
Paddle wheel:	POM
Body:	Brass or stainless steel
Housing:	Polycarbonate

### Flow rate for water 20 °C

Connection thread	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	20"	24"
Nominal width DN	10	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400	500	600
min. H <sub>2</sub> O in l/min. in m <sup>3</sup> /h	0,5	0,5	2,5	3	5	10	25	40	60	100	150	200	350	600	850	1250	1500	2500	3500
max. H <sub>2</sub> O in l/min. in m <sup>3</sup> /h	25	45	100	150	250	400	600	1,000	1,500	2,400	4,000	4,500	10,000	15,000	20,000	30,000	40,000	60,000	75,000
Flow proportion	1:20	1:20	1:20	1:20	1:20	1:20	1:20	1:20	1:20	1:20	1:20	1:20	1:20	1:20	1:20	1:20	1:20	1:20	1:20

## PADDLE WHEEL FLOWTRANSMITTER DW-F

### Baumaße/Dimensions

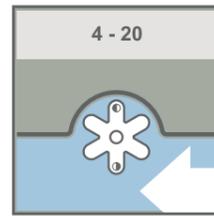
Connection thread R/Rp	10 3/8"	15 1/2"	20 3/4"	25 1"	32 1 1/4"	40 1 1/2"	50 2"
Length Z (female thread) Material A (mm)	50	50	50	50	50	50	170***
Length Z (female thread)* Material B (mm)	50	50	50	-----	-----	-----	-----
Length Z (male thread)** Material B (mm)	-----	-----	-----	135	170	170	170
Length Z (with side flanges) Material A+B (mm)	155±2	155±2	155±2	155±2	190±2	190±2	190±2
Height H Material A/B (mm)	157/157	157/157	157/157	162/178	167/178	171/178	179/188

\* For dimensions of material C (PVC), please ask separately  
\* Male thread on request \*\* Female thread on request \*\*\* Male thread

### Materials

Type	Connection	T-piece	Pendelum	Housing	Flange	Anschlusssteil Connection part
Brass (A)	Thread	Brass	Stainless steel	Brass	-----	-----
Brass (A)	Flange	Brass	Stainless steel	Brass	Steel	-----
Brass (A)	Welded version	-----	Stainless steel	Brass	---	Stahl Steel
Stainless steel (B)	Thread	Stainless steel	Stainless steel	Stainless steel	---	-----
Stainless steel (B)	Flange	Stainless steel	Stainless steel	Stainless steel	Stainless steel	-----
Stainless steel (B)	Welded version	-----	Stainless steel	Stainless steel	-----	Edelstahl Stainless steel
PVC (C)	Thread	PVC	Stainless steel	Stainless steel	-----	-----
PVC (C)	Flange	PVC	Stainless steel	Stainless steel	PVC	-----
PVC (CC)	Saddle clamp	-----	Stainless steel	Stainless steel	-----	PVC PVC

## FLOWTRANSMITTER DW-FS FLOW MONITORING IN COMPACT DESIGN



By restricting it to the main function (analogue flow output signal), a very compact design has been realized at an extremely reasonable price. There are two product series of the DW-FS: the DW-FS and the DW-FS-AV. Both work according to the paddle wheel principle. The signal is transmitted using a Hall sensor and magnet. A 4–20 mA or frequency output signal is provided, which is programmed customer-specifically. This makes it possible to adapt the system individually to the respective application.



DW-FS



Paddle wheel

- DW-FS is the inline variant with T-piece.
- The DW-FS-AV is welded onto larger pipelines

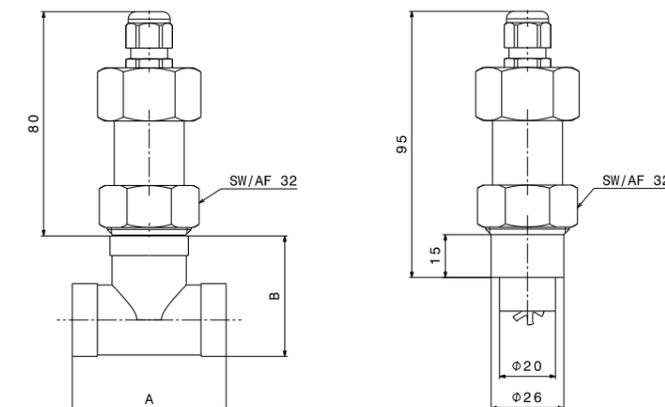
### Technical data DW-FS, DW-FS-AV

Measuring principle:	Paddle wheel
Housing:	Stainless steel (1.4571)
Paddle wheel:	POM
Bearing:	Ruby/sapphire
Axis:	Hard metal
Accuracy:	±2 % of final value
Power supply:	12–24 V DC
Signalausgänge:	4–20 mA, Frequenz (parametrierbar max. 32 kHz)
Signalausgänge:	
Ambient temperature:	-40–80 °C
Medium temperature:	-40–100 °C
Electrical connection:	3 m cable

#### Measuring range:

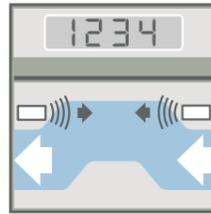
Typ Type	DN	Rp	Range min. l/min	Range max. l/min
DW-FS-15	15	1/2"	2.5	50
DW-FS-20	20	3/4"	5.5	92
DW-FS-25	25	1"	8	145
DW-FS-32	32	1 1/4"	14	240
DW-FS-40	40	1 1/2"	22	375
DW-FS-50	50	2"	35	580
DW-FS-AV	Bereich/Range 0.3–5 m/s			

### Technical drawings



Typ Type	Dim. A	Dim. B
DW-FS-15	80	43
DW-FS-20	55	43
DW-FS-25	58	51
DW-FS-32	65	62
DW-FS-40	67	68
DW-FS-50	78	81

# ULTRASONIC FLOWTRANSMITTER DW-S MONITORING WITH ULTRASONIC SENSOR SYSTEM



The flowtransmitter of type DW-S works with two ultrasonic sensors which are arranged opposite one another. With an extremely compact design, it offers high precision, excellent measuring dynamics and the option of measuring high flow velocities without reducing the cross section.



Configuration software (optional)

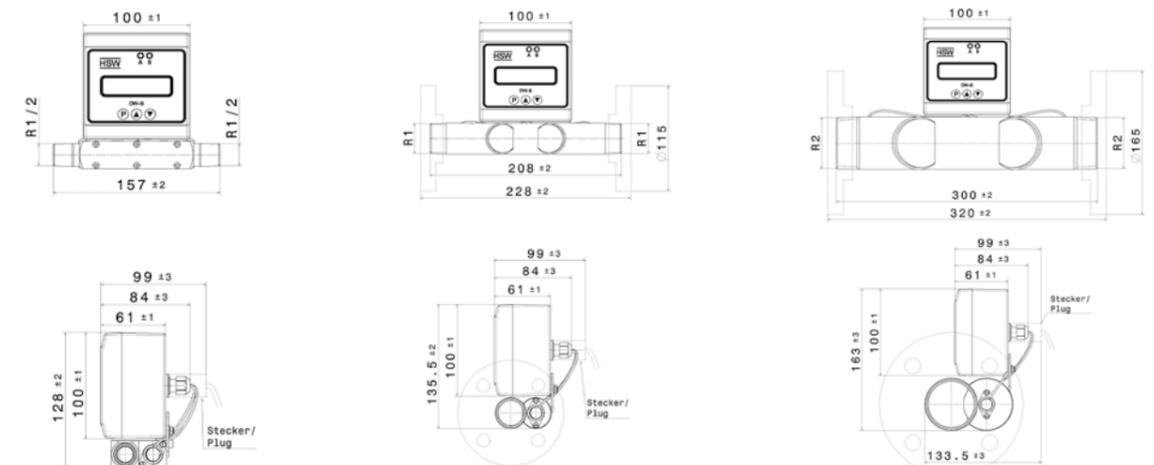
- No moving parts
- No cross section reduction – no pressure loss
- Very high measuring dynamics
- Even high flow velocities can be measured with no problem
- Compact design
- Very good long-term stability
- Excellent price-to-performance ratio
- Totalisator included

Typ/Type	DW-S-15-A	DW-S-15-B	DW-S-25-B	DW-S-FL-25-B	DW-S-50-B	DW-S-FL-50-B
Measuring range	0.5–80 l/min.	0.5–80 l/min.	1–180 l/min.	1–180 l/min.	8–1,000 l/min.	8–1,000 l/min.
Connection	1/2" external thread	1/2" external thread	1" external thread	Flange DN25 PN 16	2" external thread	Flange DN50 PN 16
Material	Brass 2.0401	Stainless steel 1.4571	Stainless steel 1.4571	Edelstahl 1.4571 Stainless steel 1.4571	Edelstahl 1.4571 Stainless steel 1.4571	Edelstahl 1.4571 Stainless steel 1.4571

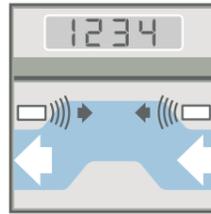
## Technical data

Sensors:	Stainless steel 1.4571
Housing:	Aluminium, die cast
Measurement functions:	Flow speed, flow quantity and totaliser
Display:	2 x 16 digits illuminated
Power supply:	24 V DC ± 15 %
Power consumption:	200 mA max.
Relays:	30 V DC/1 A (2x) SPDT
Signal output:	4–20 mA, 0–210 V, frequency (adjustable max. 32 kHz)
Interface:	RS232, RS-485 (with optional interface cable only)
Measuring principle:	Ultrasonic transit-time difference method
Medium:	Acoustical conductive fluids, gas solids contents ≤ 10 volume %
Operation:	3 buttons at the front side
Flow direction:	Optional (housing is rotatable)
Accuracy:	±2 % v. M.E. at norm conditions
Operation temperature:	-10–60 °C
Operation temperature (medium):	-20–100 ° (higher on request)
Pressure loss:	No cross-section reduction
Max. pressure:	25 bar
Protection class:	IP 67
Unities:	Selectable

## Technical data with dimensions



# ULTRASONIC FLOWTRANSMITTER DW-SM VERSATILE



The flowtransmitter type DW-SM works according to the same principle as the DW-S, but does without the display. Thanks to the integrated USB interface, the DW-SM is very easy to program for many applications.



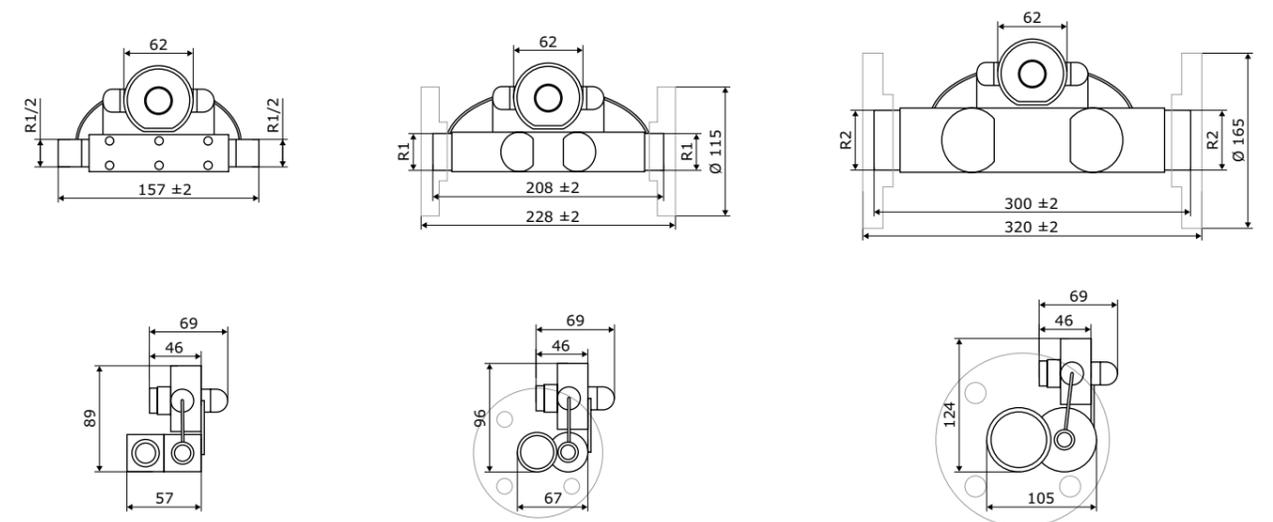
- No moving parts
- No cross section reduction – no pressure loss
- Very high measuring dynamics
- Even high flow velocities can be measured with no problem
- Compact design
- Very good long-term stability
- Excellent price-to-performance ratio
- Easy programming thanks to the USB interface

Typ/Type	DW-SM-15-A	DW-SM-15-B	DW-SM-25-B	DW-SM-FL-25-B	DW-SM-50-B	DW-SM-FL-50-B
Measuring range	0.5–80 l/min.	0.5–80 l/min.	1–180 l/min.	1–180 l/min.	8–1,000 l/min.	8–1,000 l/min.
Connection	2" external thread	1/2" external thread	1" external thread	Flange DN25 PN 16	2" external thread	Flange DN50 PN 16
Material	Brass 2.0401	Stainless steel 1.4571				

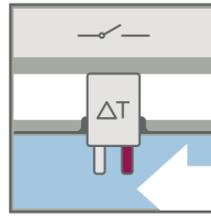
## Technical data

Sensors:	Stainless steel 1.4571
Housing:	Aluminium
Power supply:	24 V DC ± 15 %
Power consumption:	200 mA max.
Relays:	30 V DC/1 A (2x) SPDT
Signal output:	4–20 mA, 0–10 V, frequency (adjustable max. 32 kHz)
Interface:	RS232, RS-485 (with optional interface cable only)
Measuring principle:	Ultrasonic transit-time difference method
Medium:	Acoustical conductive fluids, gas solids contents ≤ 10 volume %
Operation:	By USB interface
Flow direction:	Optional
Accuracy:	±2 % v. M.E. at norm conditions
Operation temperature:	-10–60 °C
Operation temperature (medium):	-20–100 ° (higher on request)
Pressure loss:	No cross-section reduction
Max. pressure:	25 bar
Protection class:	IP 67

## Technical drawings



## FLOWSENSOR DW-T ELECTRONIC FLOW MONITORING



The DW-T works without moving parts and is ideal for monitoring flows with a minimum amount of pressure loss. The DW-T works according to the familiar calorimetric principle and has been ideally adapted to the requirements of modern process monitoring through the implementation of the newest components as well as a special measuring routine.

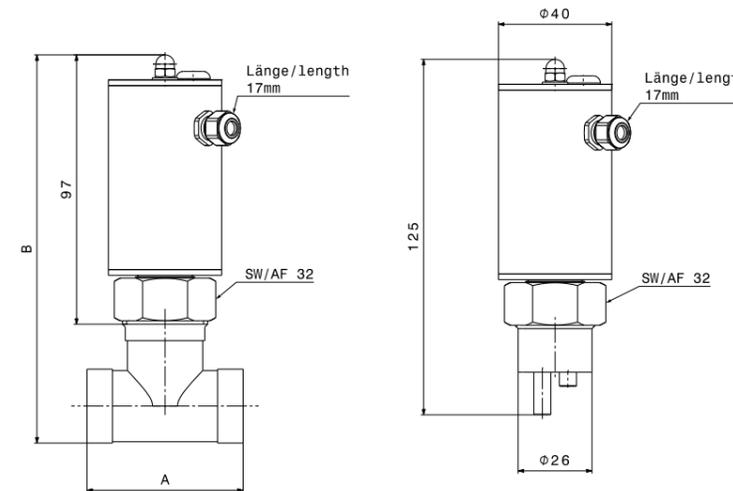


- Integrated USB interface for easy configuration to individual wishes
- Welded-on version for easy adaptation to a wide range of line sizes (DW-T AV)
- Inline version (DW-T) with T-piece

### Technical data

Measuring principle:	Calorimetric
Housing (wetted parts):	Stainless steel (1.4571)
Power supply:	24 V DC $\pm$ 10 %
Analogue output:	4–20 mA, can be calibrated
Switches:	2 x Transistor open collector 100 mA max.
Ambient temperature:	-25–60 °C
Medium temperature:	-25–80 °C
Electrical connection:	3 m cable
Protection class:	IP 67
Max. pressure:	50 bar
Adjustment range:	0.1–1.5 m/s
Connection:	Welding socket or T-section (1/2"–2" Thread)

### Technical drawings



Type	DN	Rp	Dim. A	Dim. B
DW-T-15	15	1/2"	80	140
DW-T-20	20	3/4"	55	140
DW-T-25	25	1"	58	148
DW-T-32	32	1 1/4"	65	159
DW-T-40	40	1 1/2"	67	165
DW-T-50	50	2"	78	178



## Security completed by Benefits



### ***Special requirements – special solutions***

*Henke-Sass, Wolf develops special solutions for special conditions or special requirements. Our own development platform allows us to quickly, flexibly and reliably meet new technical challenges. Thanks to our strong product portfolio and our high degree of production expertise, we can produce special versions of the existing flowswitches within a short time. We will be glad to accommodate special customer wishes – If you are looking for a special solution or have special wishes, just contact us.*