

## ATD



- analog transmitter
- current / voltage output
- large temperature range

13

## ATD-2



- analog transmitter
- current / voltage output
- switch output

13

## KSR



- contact protection relay

13

## MC-01, MT-02, CI-420, DFD-2



- compatible with COVOL
- monitoring / totalizing / dosing
- potentialfree relay output

13



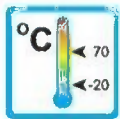
# Analog transmitter

## ATD



### Operation

Magnet-inductive linearway sensors detect the position of the magnet float and provide an analog signal.



### Application

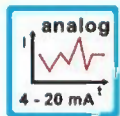
The analog transmitter type ATD can be used in combination with various flowmeters (see table page 2).

Then they produce an appropriate signal for the respective flow.

The signal can be employed by the user for most different measuring applications and tasks of regulation.

Areas of application:

- Coolingsystems and cooling circuits
- Medicine technology
- Pharmaceutical industry
- Chemical industry
- Research and development



### Features

The ATD series proves itself through reliable function and high repeatability. Further characteristics of this series are:

- analog output (4 - 20 mA / 0 - 10 V)
- high temperature range
- high electromagnetic compatibility
- Zero and span of the measuring range separately adjustable (2 potentiometer)

### Installation hints

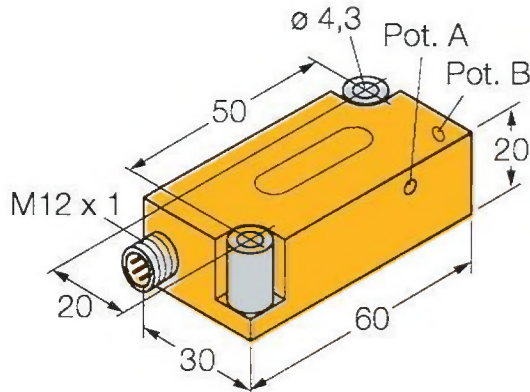
The analog transmitter type ATD must be used only in combination with the flowmeters indicated on page 2 (table).

The operating instruction for ATD must be observed under any circumstances!



# Technical Data

## Dimensions



## Application- / combination options

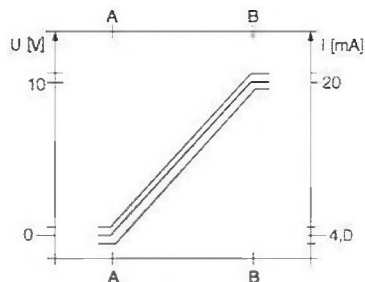
Type		Type		Type	
DKG-1	+	DWG-1,5 to DWG-18	+	RVO/U-1	+
DKG-2	-	DWG-35 to DWG-150	-	RVO/U-2	-
DKM-1	+	DWG-L1,5 to DWG-L18	+	RVO/U-L1	+
DKM-2	-	DWG-L35 to DWG-L150	-	RVO/U-L2	-
DKM/A	+	DWM-1,5 to DWM-18	+		
DKME	+	DWM-35 to DWM-150	-		
DKME/A	+	DWM-L1,5 to DWM-L18	+	RVM/U-1	+
		DWM-L35 to DWM-L150	-	RVM/U-2	-
		DWM/A-1,5 to DWM/A-18	+	RVM/U-L1	+
DUG-4 to DUG-45	+	DWM/A-35 to DWM/A-150	-	RVM/U-L2	-
DUG-70 to DUG-250	-	DWM/A-L1,5 to DWM/A-L18	+		
DUM-4 to DUM-55	+	DWM/A-L35 to DWM/A-L150	-		
DUM-70 to DUM-250	-				
DUM/A-4 to DUM/A-55	+				
DUM/A-70 to DUM/A-250	-				

+ Combination possible    - Combination not possible

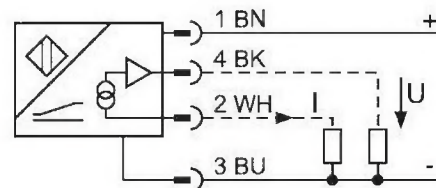
## Technical Data

Measuring range [A...B]:	10...50 mm (adjustable 2 Potentiometer)
Repeatability:	≤ 0,5 % of range [A...B] (≤ depending on positioner)
Linearity error:	≤ 10% of full scale of the flowmeter
Temperature drift:	≤ ± 0,09 % / K
Operating temperature:	-20 °C...+70 °C
Operating voltage $U_B$ :	15...30 VDC
Residual ripple:	≤ 10 % $U_{SS}$
No-load current $I_0$ :	≤ 23 mA
Design breakdown voltage:	≤ 0,5 kV
Output function:	4 wire, analog output
Short-circuit protection:	yes
Wire rupture safety / polarity reversal protection:	yes / complete
Analog output (voltage):	0...10 V
Analog output (current):	4...20 mA
Load resistance voltage output:	≥ 4,7 kΩ
Load resistance current output:	≤ 0,4 kΩ
Measuring frequency:	800 Hz
Recovery time at output:	≤ 12 ms
Housing material:	Plastic, PBT-GF20-V0
Connection:	Plug, M12 x 1
Vibration stability:	55 Hz (1 mm)
Shock resistance:	30 x g (11 ms)
Ingress protection:	IP 67

## Measuring range



## Connection diagram



ATD 2 0001 06-04 E.M

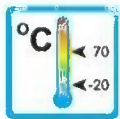
# Analog transmitter

## ATD-2



### Operation

A Hall-sensor detects the position of the magnet float and provides an analog signal.



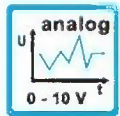
### Application

The analog transmitters type ATD-2 can be used in combination with various flowmeters (see table page 2).

They produce an appropriate signal for the respective flow. The signal can be employed by the user for most different measuring applications and tasks of regulation.

Areas of application:

- Coolingsystems and cooling circuits
- Medicine technology
- Pharmaceutical industry
- Chemical industry
- Research and development



### Features

The ATD-2 series proves itself through reliable function and high repeatability.

The analog transmitters ATD-2 are bolted to the chosen flowmeter ex works, where also the analog output is adjusted to the according measuring range.

Further characteristics of this series are:

- Currency- or voltage output (4 - 20 mA / 0 - 10 V)
- Switch output
- High temperature range
- Full metal version

### Installation hints

The analog transmitter type ATD-2 must be used only in combination with the flowmeters indicated on page 2 (table). The electronics cannot be mounted to any other flowmeter without adjustment at Meister Strömungstechnik GmbH.

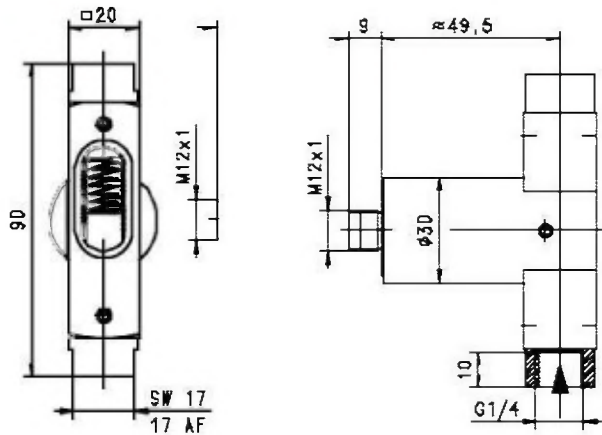
The operating instruction for ATD-2 must be observed under any circumstances!





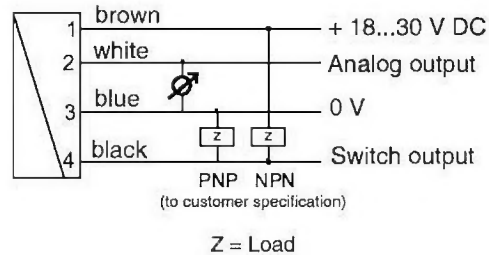
# Technical data

## Dimensions



ATD-2 on RVO/U-4

## Connection diagram



### Technical data

<b>Measuring range:</b>	depends on used flowmeter (see table below)
<b>Accuracy:</b>	± 3 % f.s.d.
<b>Repeatability:</b>	1 % f.s.d.
<b>Operating temperature:</b>	-20 °C...+70 °C
<b>Storage temperature:</b>	-20 °C...+80 °C
<b>Operating voltage:</b>	18...30 VDC
<b>Power consumption:</b>	< 1 W
<b>Analog output:</b>	4 - 20 mA or 0 - 10 V (to customer specification)
<b>Limit value switch:</b>	electronic programmable Min.- or Max.-Switch, max. 100 mA, short circuit proof, free from polarization errors
<b>Hysteresis (electronic):</b>	
by Min.-Switch	2 % f.s.d. beyond the limit value
by Max.-Switch	2 % f.s.d. beneath the limit value
<b>Hysteresis (mechanic):</b>	depends on flowmeter
<b>Indication (Switch output only):</b>	LED (on = ok / off = alarm)
<b>Body material:</b>	Stainless Steel 1.4305
<b>Connection:</b>	for round plug M12 x 1, 4pol
<b>Ingress protection:</b>	IP 67

### Combination options

Flowmeter		Flowmeter		Flowmeter		Flowmeter	
DKG-1	▼	DUG-4 to DUG-45	▲	DWG-1,5 to DWG-18	▼	RVO/U-1	▼
DKG-2	▼	DUG-70 to DUG-250	▲	DWG-35 to DWG-50	▼	RVO/U-2	▼
DKM-1	▲	DUM-4 to DUM-55	▲	DWG-L1,5 to DWG-L18	▼	RVO/U-4	▲
DKM-2	▲	DUM-70 to DUM-110	▲	DWG-L35 to DWG-L100	▼	RVO/U-L1	▼
DKM/A	▲	DUM/A-4 to DUM/A-55	▲	DWM-1,5 to DWM-18	▲	RVO/U-L2	▼
DKME	▲	DUM/A-70 to DUM/A-110	▲	DWM-35 to DWM-50	▼	RVO/U-L4	▲
DKME/A	▲			DWM-L1,5 to DWM-L18	▲	RVM/U-1	▲
				DWM-L50 to DWM-L100	▼	RVM/U-2	▲
				DWM/A-1,5 to DWM/A-18	▲	RVM/U-4	▲
				DWM/A-35 to DWM/A-50	▼	RVM/U-L1	▲
				DWM/A-L1,5 to DWM/A-L18	▲	RVM/U-L2	▲
				DWM/A-L50 to DWM/A-L100	▼	RVM/U-L4	▲

▲ Combination possible

▼ Combination on request



# Contact Protection-Relay KSR



Contact protection relays (KSR) are used to achieve a higher contact rating. They serve as overload-protection for the reed contacts on our flow monitors and have been specially trimmed for this application; to avoid oscillation, the relay is equipped with a fixed time delay of two sec. between ON and Off.

The KSR provides a potential-free change over contact (SPDT) which can be used to switch higher loads (pumps, solenoid valves or similar).

Reed contacts usually have a very long lifetime, provided they are operated within their allowable electrical ratings. They react very sensitive to overloads, which means, that the stated max. values must under no circumstances be exceeded, not even for a fractional moment (switch ON/OFF peaks).

Such a short overload usually damages the reed contacts permanently.

Danger of overload to reed contacts exists with:

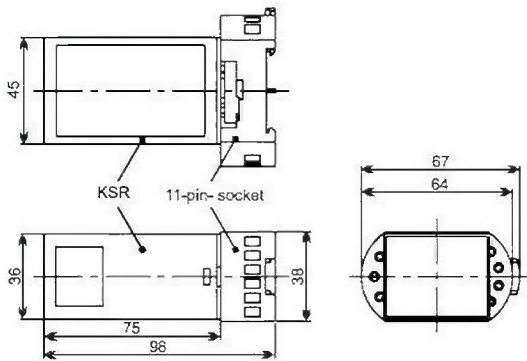
- Inductive loads (voltage peaks during ON/OFF switching)
- Capacitive loads (current peaks during ON switching)
- Resistive loads, specially bulbs (current peaks through the cold filament during ON switching)

In above mentioned cases current or voltage peaks may occur which are multiple above over the nominal values; therefore, in case of uncertainty, the KSR should be employed to avoid malfunctions due to damaged reed contacts.

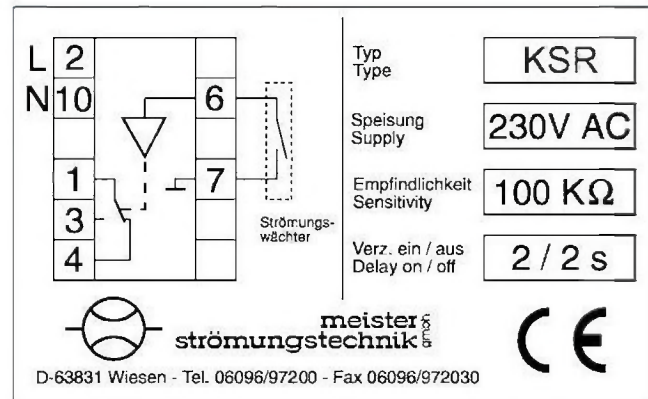
**meister**  
**strömungstechnik** gmbh



## Dimensions



## Connection - diagram



Technical Data	KSR
Dimensions(H x W x D)	45 x 36 x 75 mm
(D) with 11-pin. plug-in socket for DIN - rail 4677 (EN 50022)	98 mm
Operating temperature	-10 °C bis +70°C
Supply	230 V AC 50 – 60 Hz (24 V + 115 V on request)
Relay output	active with open reed-contact, Contact-material: Ag
Switch rating	230 V AC / 5 A
max. cable length between flow limiter and KSR	40 m
Isolating Voltage	4,0 kV

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## MC-01 MT-02



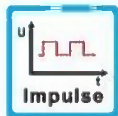
### Operation

The MC-01 and MT-02 digital displays are measuring transducers, which are used in conjunction with the COVOL positive displacement meter.



### Application

The MC-01 and MT-02 digital displays are used together with the positive displacement meter COVOL for flow monitoring, volume-counting and batching.



Impulse



analog  
i



analog  
u



### Features

The series proves itself through reliable function and easy handling. Further characteristics of these types are:

- Suitable for control panels
- Battery back up system
- Wide temperature range

### Installation hints

The operating instruction for MC-01 / MT-02 must be observed under any circumstances!





## Technical data

### Digital display MC-01

The MC-01 digital display is used in conjunction with the positive displacement meter COVOL, for example for flow monitoring and volume counting.

With the included preset counter batching is possible. For this function a potential free relay output is provided.



Technical data	
Power supply	110, 220-240, 24 V AC at 50-60 Hz, 12 (not with analog output) 24 V DC
Power consumption	< 3 VA
Signal input COVOL	reed contact, 0...100 Hz
Analog input (60 Ω input resistor)	0-20, 4-20 mA, 0-5, 0-10, 1-5, 2-10 V DC
Relay output (for preset counter)	1 A, 250 V AC, 60 VA
Accuracy	0,01 % (0,4 % at analog input signal)
Temperature range	-10 °C...+60 °C
Optional: analog output with 12 bit resolution (Not with analog input signal)	0-20, 4-20 mA 0-5, 0-10, 1-5, 2-10 V DC
Display	2 lines, alphanumeric Display with 16 digits according to DIN 43700 (optional backlighted)
Housing dimensions	96 x 96 x 190 mm (w x d x l), for panel mounting, cut-out 90 x 90 mm
Counter	7 digits
Standard	Battery back up system, adaptive filter for stable display, flow display in l / h or m <sup>3</sup> / h
Optional	remote push button for batching, IP-65 front protection

### Digital display MT-02

The MT-02 digital display is used in conjunction with the positive displacement meter COVOL for example for flow monitoring (no flow indication) and volume counting.

With the included preset counter batching is possible. For this function a potential free relay output is provided.



Technical data	
Power supply	110, 220, 240, 24 V AC at 50-60 Hz, 12, 24 V DC
Power consumption	< 1 VA
Signal input COVOL	reed contact, 0...100 Hz
Signal input TTL	5 V, 0...10000 Hz
Relay output (for preset counter)	1 A, 250 V AC, 200 VA
Accuracy	no lost pulses
Temperature range	-10 °C...+60 °C
Liter / pulse	0,00001...99,99999 (Standard) 0,0000001...0,9999999
Display	7 digits LED - display
Housing dimensions	96 x 96 x 190 mm (w x d x l), for panel mounting, cut-out 90 x 90 mm
Counter	7 digits
Standard	Battery back up system, remote push button for batching
Optional	Second relay, interface for 5 V or 10 V proximity sensor

MC\_MT 2 0002 05-06 E M



# Measuring converter

## CI-420 DFD-2



### Operation

The measuring converters CI-420 and DFD-2 are converting a frequency signal into an analog signal or into a standard count pulse.



### Application

The CI-420 and DFD-2 measuring converters work together with the positive displacement meter COVOL for flow measurement or volume counting of liquids.

### Features

The series proves itself through reliable function and easy handling. Further characteristics of these types are:

- Easy mounting (on mounting rails according to DIN 47667 / EN 50.022/50.035)
- High temperature range

### Installation hints

The operating instruction for CI-420 and DFD-2 must be observed under any circumstances!



## Technical data

### Frequency / analog converter CI-420

The measuring converter CI-420 transforms the frequency signal of the positive displacement meter COVOL into a 0 to 20 or a 4 to 20 mA signal. The adjustment will be made by jumpers and decade-switches



Technical data	
Power supply	110, 220-240, 24 V AC at 50-60 Hz, 12, 24 V DC
Power consumption	< 1 VA
Signal input COVOL	reed contact, 0...100 Hz
Switch off frequency	0,04 Hz
Accuracy	0,2 % of full scale
Temperature range	-10 °C...+60 °C
Analog output with 12 bit or 16 bit resolution	0-20, 4-20 mA 0-5, 0-10, 1-5, 2-10 V DC
Mounting	on mounting rail according to DIN 46277 / EN 50.022 / 50.035
Standard	adaptive filter for stable output signal

### Frequency converter DFD-2

The DFD-2 converts the frequency signal from the positive displacement meter COVOL into a standard count pulse. The adjustment will be made by jumpers and decade switches. For example, the COVOL signal output of 8,77 pulses per litre, can be converted from the DFD-2 into one puls per m<sup>3</sup>, depending on the settings.



Technical data	
Power supply	110, 220, 240, 24 V AC at 50-60 Hz, 12, 24 V DC
Power consumption	< 1 VA
Signal input COVOL	reed contact, 0...100 Hz
Accuracy	No lost pulses
Temperature range	-10 °C...+60 °C
Input / output range	0,00000001...0,9999
Signal output	TTL (5 V), optoisolated max. 30 V, 50 mA, square wave (50 %)
Pulswidth (output)	0,5 ms. (standard, on request: up to 1 s)
Mounting	on mounting rail according to DIN 46277 / EN 50.022 / 50.035

CI\_DFD 2 0003 05-06 E M

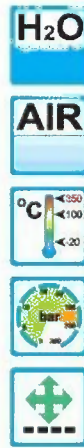
## VSB



- incorporated needle valve
- manifold up to 12 units

14

## NV



- needle valve
- for high temperatures
- high compressive strength
- threaded connection

14

## SF, SFD, SFM



- strainer
- for high temperatures
- high compressive strength
- easy cleaning

14





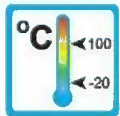
# Blockvalve

## VSB



### Operation

The VSB's can be supplied in single or multiple configuration. The integrated needle valves allow the individual adjustment of the branchlines.



### Application

The blockvalves type VSB allow, by means of an integrated needle valve, the individual regulating of the flow rate through the flow monitor / indicator. The VSB's can be employed in single or multiple configuration (the multiple configuration is factory assembled).

The instruments are employed for example in the following applications:

- Monitoring of central lubrication systems
- Monitoring of lubricating systems with oil circulation.

### Characteristics

Properties of this sturdy series are:

- Manifolds up to 12 units
- max. 25 l/min per single unit
- max. 75 l/min per manifold
- Threaded connection, special threads on request

### Installation hints:

Principally the data of the mounted instruments (operating instructions and data sheets) must be observed when installing the VSB's. The feeding can be made either from the left or right hand side.

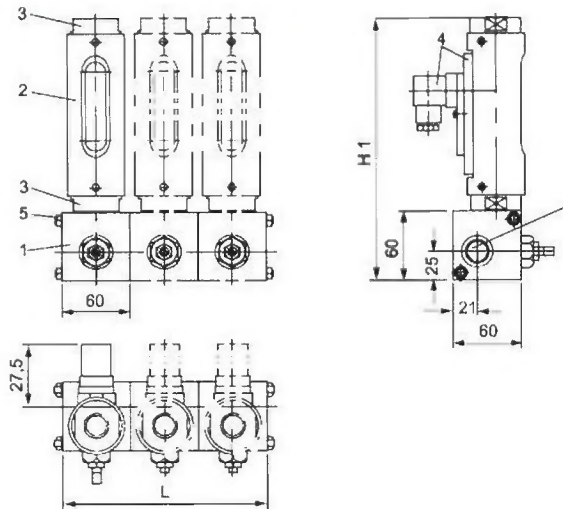
The VSB must not be used as a supporting part in a pipe construction.

The medium must not carry any solid parts!

We recommend to install strainers model SFD or SFM. The operating instruction for VSB must be adhered to.



# Technical Data



Pos.	Description
1	Valveblock
2	Flow monitor
3	Connection
4	Switch-housing
5	Threaded-rod
	Nut
	Washer

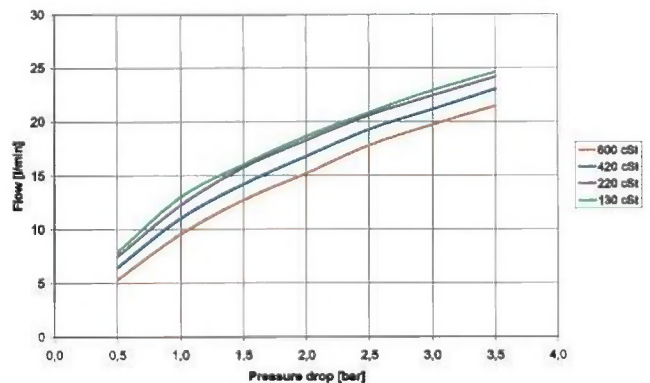
## Summary of types VSB

Type	Overall dimensions			H1	Weight	
	G	Thread depth [mm]	L [mm]		Aluminum [g]	Stainl. steel [g]
VSB-1	1/2"	14	60	depending on fitted flow monitor / indicator	560	1510
VSB-2	1/2"	14	120		1180	3080
VSB-3	1/2"	14	180		1770	4620
VSB-4	1/2"	14	240		2360	6160
VSB-5	1/2"	14	300		2950	7700
VSB-6	1/2"	14	360		3540	9240
VSB-7	1/2"	14	420		4130	10780
VSB-8	1/2"	14	480		4720	12320
VSB-9	1/2"	14	540		5310	13860
VSB-10	1/2"	14	600		5900	15400
VSB-11	1/2"	14	660		6490	16940
VSB-12	1/2"	14	720		7080	18480

Operating Data	VSB
Max. operating pressure:	16 bar
Max. operating temperature:	100 °C

### Pressure drop:

The diagram on the right shows the maximum flow of oil with different viscosities at a predetermined pressure drop. The measurement has been made with fully opened needle valve.



Material	Aluminum-Version	Stainless steel-Version
	Body:	Aluminum
Stem:	Brass	
Stemlocknut:	1.4305	
Gaskets:	Viton	Viton
Other materials on request		

# Needle Valve

## NV

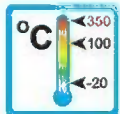
### Operation

Seat and plug of the needle valve are conical shaped. By lifting or lowering the plug, the available cross-section can be increased or decreased, that way a fine adjustment of the actual flow is achieved.



### Application

Flow-adjustment of liquids and gases.



### Features

Characteristics of this sturdy type are:

- Suitability for high temperature
- high pressure resistance
- Threaded connections  
special threads on request

### Installation hints

The installation of the needle valve can be done in any way in the system. The flow direction must be observed.

The needle valve must not be used as a supporting part in a pipeconstruction!

The medium must not contain any solid particles!  
We recommend the installation of strainer type SFD or SFM.

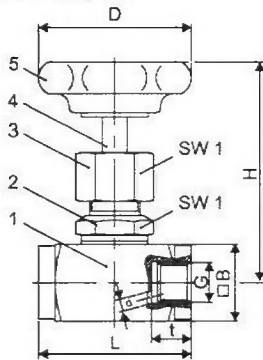
NV 1 0001 07-04 E M





# Technical Data

## NV Stainless Steel



Pos.	Description	Material
1	Body	1.4571
2	Stemguide	1.4571
3	Stuffing-box nut	1.4571
4	Stem	1.4571
5	Handwheel	Plastic
not illustrated	Stem sealing	Teflon, optional Graphite

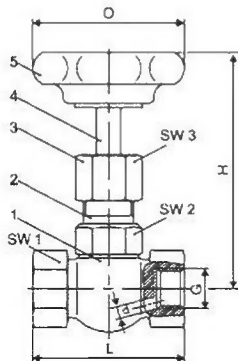
Thread	L	H	D	t	B	SW 1	d	kv-value*
G 1/8"	45	70	50	11	25	22	4	4
G 1/4"	50	72	50	13	25	22	5	8
G 3/8"	55	72	50	13	25	22	6	10
G 1/2"	60	72	63	16	30	22	7	12
G 3/4"	75	95	63	18	35	27	9	18
G 1"	100	110	90	22	45	32	12	32
G 1 1/4"	110	130	100	24	60	41	15	60
G 1 1/2"	130	140	100	28	70	41	22	115
G 2"	130	140	100	28	70	41	22	130

\*in l/min, at 1 bar differential pressure and max. opening

### Technical Data

Connection:	Withworth - pipe thread according to DIN 259, female both sides (other on request)				
Temperature max.:	250 °C (350 °C with graphite stem sealing)				
Nominal Pressure (PN):	200 bar, from 50 °C watch pressure derate				
Pressure derate:	at 50 °C: 6%	at 100 °C: 15%	at 200 °C: 37%	at 300 °C: 60%	at 400 °C: 84%

## NV Brass



Pos.	Description	Material
1	Body	Cu Zn 39 Pb 3 F 37
2	Stemguide	Ms 58
3	Stuffing-box nut	Ms 58
4	Stem	Ms 58
5	Handwheel	Plastic
not illustrated	Stem sealing	G 1/8" to G 1/2" Perbunan G 3/4" to G 2" Teflon

Thread	L	H	D	SW 1	SW 2	SW 3	d	kv-value*
G 1/8"	50	70	50	22	19	19	4	4
G 1/4"	50	78	50	22	19	19	5	8
G 3/8"	50	78	50	22	19	19	6	10
G 1/2"	55	78	63	25	19	19	6,5	11
G 3/4"	67	90	63	32	22	22	9	18
G 1"	75	95	63	40	22	22	11	—
G 1 1/4"	110	105	90	54	24	27	13	—
G 1 1/2"	110	110	90	58	24	27	15	—
G 2"	110	110	90	70	27	27	15	—

\*in l/min, at 1 bar differential pressure and max. opening

### Technical Data

Connection:	Withworth - pipe thread DIN 259, female both sides (other on request)				
Temperature max.:	100 °C				
Nominal pressure (PN):	100 bar, from 50 °C watch pressure derate				
Pressure derate:	at 50 °C: 6%	at 100 °C: 15%			



# Strainer

## SF, SFD, SFM

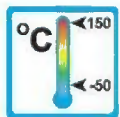
### Operation

Inside the strainer a screen basket is fitted to retain solids. Additionally the type SFM is equipped with magnets to withhold ferromagnetic particles.



### Application

Retaining of particles contained in liquids or gases.



### Features

Characteristics of this sturdy type are:

- high temperature resistance
- high pressure resistance
- Magnet separator (SFM only)
- Easy maintenance
- Threaded connection  
Special threads on request

### Installation hints

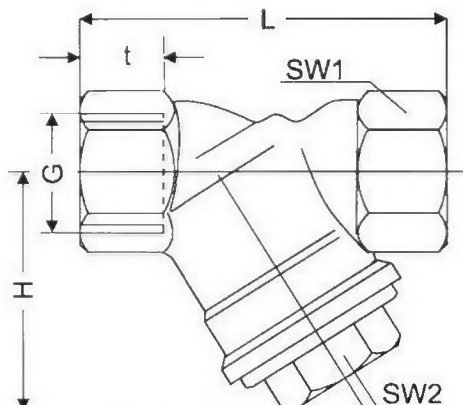
The installation of the strainer can be done in any way in the system. The flow direction must be observed.

The strainer must not be used as a supporting part in a pipe-construction.



# Technical Data

## SF, SFD, SFM



G	Type	Material			Type	Material			Type	Material		
		RG	MS	VA		RG	MS	VA		RG	MS	VA
1/4"	SF-8	x			SFD-8	x						
3/8"	SF-10	x			SFD-10	x						
1/2"	SF-15	x		x	SFD-15	x		x	SFM-15	x		x
3/4"	SF-20	x		x	SFD-20	x		x	SFM-20	x		x
1"	SF-25	x		x	SFD-25	x		x	SFM-25	x		x
1 1/4"	SF-32	x		x	SFD-32	x		x	SFM-32	x		
1 1/2"	SF-40	x		x	SFD-40	x		x	SFM-40	x		
2"	SF-50	x		x	SFD-50	x		x	SFM-50	x		
2 1/2"	SF-65		x		SFD-65		x					
3"	SF-80		x		SFD-80		x					
				Strainerbasket: 0,6 mm mash size stainless steel			Strainerbasket: 0,25 mm mash size stainless steel			Strainerbasket: 0,6 mm mash size stainless steel Magnets: hardferrite		
				RG: red brass			MS: brass			VA: stainless steel		

Type	G	L	Overall dimensions [mm]				SW1	SW2	PN		
			t	H	RG	MS			VA		
SF-8	1/4"	56	11	35	21	17	16	-	-		
SF-10	3/8"	56	11	35	21	17	16	-	-		
SF-15	1/2"	66	13	42	27	22	16	-	40		
SF-20	3/4"	77	14	50	31	27	16	-	40		
SF-25	1"	90	15	62	38	32	16	-	40		
SF-32	1 1/4"	112	18	78	47	41	16	-	40		
SF-40	1 1/2"	120	18	82	54	46	16	-	40		
SF-50	2"	150	22	95	66	56	16	-	40		
SF-65	2 1/2"	220	23	125	85	70	-	-	-		
SF-80	3"	243	26	140	100	75	-	-	-		

Type	G	L	Overall dimensions [mm]				SW1	SW2	PN		
			t	H	RG	MS			VA		
SFD-8	1/4"	56	11	35	21	17	16	-	-		
SFD-10	3/8"	56	11	35	21	17	16	-	-		
SFD-15	1/2"	59	12	40	29	19	16	-	40		
SFD-20	3/4"	77	14	50	31	27	16	-	40		
SFD-25	1"	90	15	62	38	32	16	-	40		
SFD-32	1 1/4"	112	18	78	47	41	16	-	40		
SFD-40	1 1/2"	120	18	82	54	46	16	-	40		
SFD-50	2"	150	22	95	66	56	16	-	40		
SFD-65	2 1/2"	220	23	125	85	70	-	16	-		
SFD-80	3"	243	26	140	100	75	-	16	-		

Type	G	L	Overall dimensions [mm]				SW1	SW2	PN		
			t	H	RG	MS			VA		
SFM-15	1/2"	66	13	42	27	22	16	-	16		
SFM-20	3/4"	77	14	50	31	27	16	-	16		
SFM-25	1"	90	15	62	38	32	16	-	16		
SFM-32	1 1/4"	112	18	78	47	41	16	-	-		
SFM-40	1 1/2"	120	18	82	54	46	16	-	-		
SFM-50	2"	150	22	95	66	56	16	-	-		

SF-SFD-SFM 2 0002 05-06 E M

