

DKH 512



Differential pressure controllers

Flow and differential pressure controller

DKH 512

The DKH 512 is a flow and differential pressure controller with a wide range of applications. Perfect for use in district heating substations, central heating and air-conditioning systems. Compact, and featuring an electrophoretically painted ductile iron body for optimum rust protection, the DKH 512 also features two inline valves that keep noise to a minimum. A manual shut-off function ensures easy maintenance.



Technical description

Application:

District heating substations, primary side, as well as in central heating and air-conditioning.

Heating and cooling systems with variable flow.

Function:

Differential pressure control over the load and flow control.

Closes at increasing flow or Δp .

Dimensions:

DN 15-50

Pressure class:

PN 25

Differential pressure (Δp_V):

Max. differential pressure:

1600 kPa = 16 bar (ΔH_{max})

Min. differential pressure:

Low flow (LF): 12 kPa (ΔH_{min})

Normal flow (NF): 20 kPa (ΔH_{min})

High flow (HF): 40 kPa (ΔH_{min})

(Valid for max. position, fully open. Other positions will require lower differential pressure, check with the software HySelect.)

Setting range:

Differential pressure fixed at 15, 40, 60 or 100 kPa.

Temperature:

Max. working temperature: 150°C

Min. working temperature: -10°C

Media:

Water or neutral fluids, water-glycol mixtures (0-57%).

Material:

Valve body: Ductile iron EN-GJS-400-15

Diaphragms and gaskets: EPDM

Surface treatment:

Electrophoretic painting.

Marking:

Label: IMI TA and technical specification.

Valve body: Material and flow direction arrow.

Connection:

Male thread according to ISO 228.

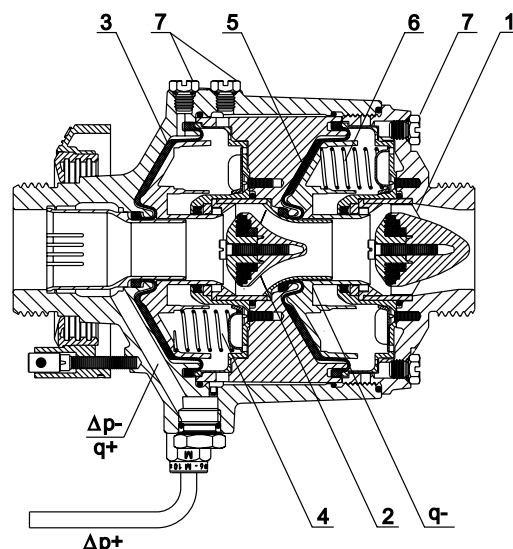
Operating function

Flow (1) and differential pressure (2) controller are integrated in series in a common compact housing. The differential pressure controller also acts as a control throttle for flow control and as a stop valve.

The pressure upstream of the consumer acts through an external impulse pipe ($\Delta p+$) to the inlet side of the differential pressure diaphragm (3) and attempts to close the valve.

The pressure downstream of the consumer (upstream of the valve) acts through an internal impulse boring ($\Delta p-$) to the outlet side of the differential pressure diaphragm and attempts to open the valve together with the force of the differential pressure control spring (4). As long as the forces on the diaphragm are in balance, the valve stands still. If the differential pressure increases, the valve closes until a new equilibrium is reached and vice versa.

Pressure drop on the differential pressure valve acts through internal impulse borings ($q+$, $q-$) to the flow control diaphragm (5) and attempts to close the valve against the force of the flow control spring (6). As long as the forces on the diaphragm are in balance, the valve stands still. If the flow increases, the valve closes until a new equilibrium is reached and vice versa.



Sizing

Select the size according to maximal flow. Maximal flow depends on the nominal size (DN) and pressure drop in the throttle (F_c) 12, 20 or 40 kPa.

Total pressure drop is calculated by the formula:

$$\Delta p_{\min} = F_c + \left(0.01 \frac{q}{K_{vd}}\right)^2 \quad [l/h, \text{kPa}]$$

Installation

Install the valve in the return pipe, downstream of the consumer. Flow direction is shown by the arrow on the valve's identification plate. The best position is horizontal with vent screws (7) on top. Installation of a strainer upstream of the controller is recommended.

Connect copper impulse pipe ($\Delta p+$) to the pipeline upstream of the consumer. In case of a horizontal pipeline connect the copper impulse pipe laterally to prevent air and dirt from entering.

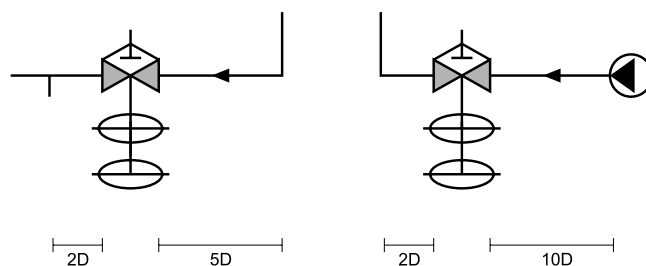
It is important to ensure that working temperature and pressure do not exceed allowed values.

Before you mount the controller, check the fitting length of the controller and distance between connections on the pipeline. You should fit the connections (welding and threaded ends) to the pipeline first, then clean the remains of welding operations if needed. Then install the controller. If you use flanged connections, check pitch diameter and the diameter of the holes for the screws.

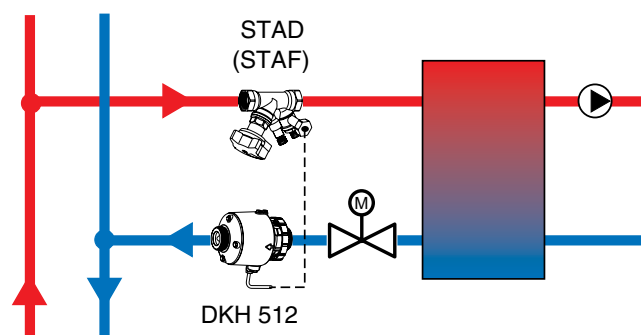
When the pipeline and the controller is full of water and the pressure is stabilised, vent the controller by the vent screws (7). Installation of a balancing valve STAD (STAF) is recommended to enable flow measurement, commissioning and troubleshooting.

Normal pipe fittings

Try to avoid mounting taps and pumps immediately before the valve.



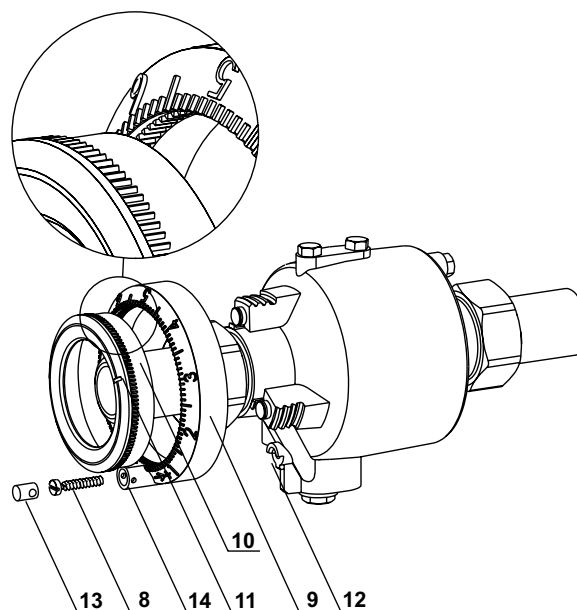
Application example



Setting

Flow adjustment

1. Unscrew the fixing screw (8) so that you can turn the scale easily.
2. Push the black scale (9) towards the valve's body so that it is separated from the brown setting ring (10) - the teeth go apart.
3. In the flow chart find the desired flow and corresponding position of the adjustment scale. Align the appropriate number on the scale with red pointer (11) on the brown setting ring (10).
4. Push the black scale (9) back to the brown setting ring (10) - the teeth couple again.
5. Turn the black scale (9) together with the brown setting ring (10) clockwise until it stops.
6. Now set the desired flow so that you turn the scale anticlockwise until the fixing screw (8) is aligned with the hole (12) on the valve body (the red point on the black scale and the red mark on the body should be aligned).
7. Screw in the fixing screw (8) in the hole on the valve body (12).
8. In front of the fixing screw (8) you can put an inserted piece (13) that can be plumbed (use holes on the scale (14) and inserted piece).



Flow chart for water has been measured on each individual valve. Each valve has its own identity number and individual flow chart included in the scope of supply. The copy of the chart can be provided by supplier. Provide next data: type, DN, Fc, Δp , serial number.

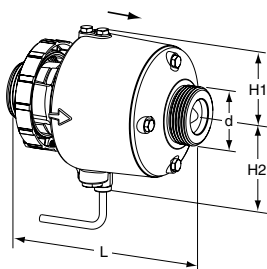
Differential pressure adjustment

Differential pressure is factory-preset to a fixed value of 15/40/60/100 kPa.

Manual closing

Turn the black scale (9) together with the brown setting ring (10) clockwise to the end position.

Articles



DN 15-50

Male thread – Separate connections optional.

1200 mm capillary pipe (Ø6) with compression coupling 1/4" included.

LF, low flow

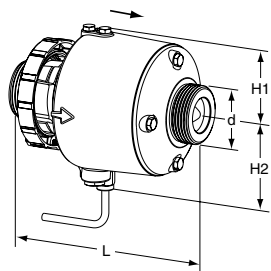
DN	d	L	H1	H2	Kvd	q _{max} [m ³ /h]	Kg	EAN	Article No
15 kPa									
15/20	G1	123	45	92	7,0	1,1	1,6	3831112525429	52 757-020
25/32	G1 1/4	145	53	97	18	3,3	2,7	3831112525528	52 757-025
40/50	G2	190	66	110	40	7,5	4,8	3831112526648	52 757-040
40 kPa									
15/20	G1	123	45	92	7,0	1,1	1,6	3831112525894	52 757-120
25/32	G1 1/4	145	53	97	18	3,3	2,7	3831112501973	52 757-125
40/50	G2	190	66	110	40	7,5	4,8	3831112504691	52 757-140
60 kPa									
15/20	G1	123	45	92	7,0	1,1	1,6	3831112500204	52 758-120
25/32	G1 1/4	145	53	97	18	3,3	2,7	3831112501966	52 758-125
40/50	G2	190	66	110	40	7,5	4,8	3831112525856	52 758-140
100 kPa									
15/20	G1	123	45	92	7,0	1,1	1,6	3831112500211	52 758-020
25/32	G1 1/4	145	53	97	18	3,3	2,7	3831112500228	52 758-025
40/50	G2	190	66	110	40	7,5	4,8	3831112503373	52 758-040

NF, normal flow

DN	d	L	H1	H2	Kvd	q _{max} [m ³ /h]	Kg	EAN	Article No
15 kPa									
15/20	G1	123	45	92	7,0	1,3	1,6	3831112525436	52 757-220
25/32	G1 1/4	145	53	97	18	4,4	2,7	3831112525498	52 757-225
40/50	G2	190	66	110	40	10	4,8	3831112526617	52 757-240
40 kPa									
15/20	G1	123	45	92	7,0	1,3	1,6	3831112525962	52 757-320
25/32	G1 1/4	145	53	97	18	4,4	2,7	3831112503311	52 757-325
40/50	G2	190	66	110	40	10	4,8	3831112503670	52 757-340
60 kPa									
15/20	G1	123	45	92	7,0	1,3	1,6	3831112525948	52 758-220
25/32	G1 1/4	145	53	97	18	4,4	2,7	3831112525474	52 758-225
40/50	G2	190	66	110	40	10	4,8	3831112526273	52 758-240
100 kPa									
15/20	G1	123	45	92	7,0	1,3	1,6	3831112525870	52 758-320
25/32	G1 1/4	145	53	97	18	4,4	2,7	3831112525481	52 758-325
40/50	G2	190	66	110	40	10	4,8	3831112503038	52 758-340

→ = Flow direction

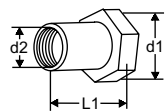
Kvd = Is the Kv value of the differential pressure control component when fully open.


HF, high flow

DN	d	L	H1	H2	Kvd	q_{max} [m ³ /h]	Kg	EAN	Article No
15 kPa									
15/20	G1	123	45	92	7,0	1,8	1,6	3831112525887	52 757-420
25/32	G1 1/4	145	53	97	18	6,0	2,7	3831112526976	52 757-425
40/50	G2	190	66	110	40	14	4,8	3831112505124	52 757-440
40 kPa									
15/20	G1	123	45	92	7,0	1,8	1,6	3831112525955	52 757-520
25/32	G1 1/4	145	53	97	18	6,0	2,7	3831112504257	52 757-525
40/50	G2	190	66	110	40	14	4,8	3831112505018	52 757-540
60 kPa									
15/20	G1	123	45	92	7,0	1,8	1,6	3831112504837	52 758-420
25/32	G1 1/4	145	53	97	18	6,0	2,7	3831112504622	52 758-425
40/50	G2	190	66	110	40	14	4,8	3831112504240	52 758-440
100 kPa									
15/20	G1	123	45	92	7,0	1,8	1,6	3831112504868	52 758-520
25/32	G1 1/4	145	53	97	18	6,0	2,7	3831112525733	52 758-525
40/50	G2	190	66	110	40	14	4,8	3831112504066	52 758-540

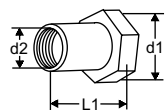
→ = Flow direction

Kvd = Is the Kv value of the differential pressure control component when fully open.

Connections for DN 15-50

With female thread

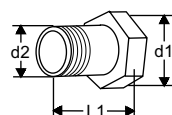
Threads according to ISO 228.
Swivelling nut

d1	d2	L1*	EAN	Article No
G1	G1/2	26	3831112501027	52 759-015
G1	G3/4	32	3831112501034	52 759-020
G1 1/4	G1	47	3831112501041	52 759-025
G1 1/4	G1 1/4	52	3831112501058	52 759-032
G2	G1 1/2	52	3831112503489	52 759-040
G2	G2	64,5	3831112503205	52 759-050


With female thread Rc

Threads according to ISO 7-1
Swivelling nut

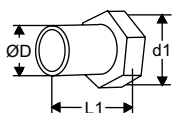
d1	d2	L1*	EAN	Article No
G1	Rc1/2	26	3831112527454	52 751-301
G1	Rc3/4	32	3831112527461	52 751-302
G1 1/4	Rc1	47	3831112527478	52 751-303
G1 1/4	Rc1 1/4	52	3831112527485	52 751-304
G2	Rc1 1/2	52	3831112527492	52 751-305
G2	Rc2	64,5	3831112527508	52 751-306


With male thread

Threads according to ISO 7
Swivelling nut

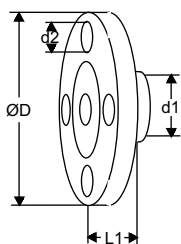
d1	d2	L1*	EAN	Article No
G1	R1/2	34	3831112500983	52 759-115
G1	R3/4	40	3831112500990	52 759-120
G1 1/4	R1	40	3831112501003	52 759-125
G1 1/4	R1 1/4	45	3831112501010	52 759-132
G2	R1 1/2	45	3831112503342	52 759-140
G2	R2	50	3831112503472	52 759-150

*) Fitting length (from the gasket surface to the end of the connection).



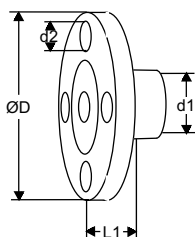
For welding
Swivelling nut

d1	D	L1*	EAN	Article No
G1	20,8	37	3831112500945	52 759-315
G1	26,3	42	3831112500952	52 759-320
G1 1/4	33,2	47	3831112500969	52 759-325
G1 1/4	40,9	47	3831112500976	52 759-332
G2	48,0	47	3831112501140	52 759-340
G2	60,0	52	3831112501294	52 759-350



With flange
Flange according to EN-1092-2:1997, type 16.

d1	d2	D	L1*	EAN	Article No
G1	M12	95	10	3831112501065	52 759-515
G1	M12	105	20	3831112501072	52 759-520
G1 1/4	M12	115	5	3831112504318	52 759-525
G1 1/4	M16	140	15	3831112501096	52 759-532
G2	M16	150	5	3831112504325	52 759-540
G2	M16	165	20	3831112501317	52 759-550

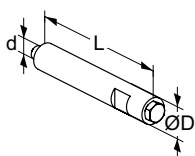


With flange (extended)
Attention! Must be used on the inlet side.
Flange according to EN-1092-2:1997, type 16.

d1	d2	D	L1*	EAN	Article No
G1	M12	95	47	3831112501157	52 759-615
G1	M12	105	47	3831112500136	52 759-620
G1 1/4	M12	115	62	3831112503533	52 759-625
G1 1/4	M16	140	62	3831112526129	52 759-632
G2	M16	150	72	3831112505025	52 759-640
G2	M16	165	72	3831112503892	52 759-650

*) Fitting length (from the gasket surface to the end of the connection).

Accessories



Venting extension
Suitable when insulation is used.
Stainless steel/EPDM/Brass.

d	D	L	EAN	Article No
M6	12	70	3831112531727	52 759-220

