DKH 512

6-10-18 XX

Flow and Differential Pressure Controller

2007.05

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.

Pressure class:
PN 25

Max. differential pressure:
1600 kPa = 16 bar

Pressure drop on the throttle (Fc):
12, 20 or 40 kPa.

Temperature:
Max. working temperature: 140°C
Min. working temperature: -10°C

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

Media:
Water and neutral fluids, water-glycol mixtures.

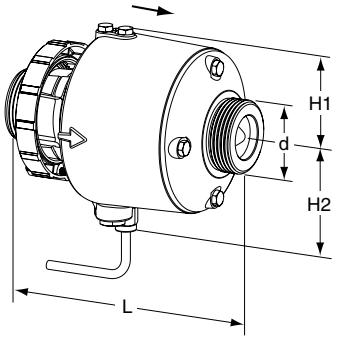
Material:
Valve body:
DN 15-20: Brass BS 2874
DN 25-80: Ductile iron EN-GJS-400-18LT
Diaphragms and gaskets: EPDM

Surface treatment:
Electrophoretic painting.

Marking:
TA, DN, PN, GGG 40.3, Kvs, Δp and flow direction arrow.

DKH 512 (Fc = 12 kPa)

DN 15-50



15 kPa

TA No	DN	d	L	H1	H2	Kvs	q_{max} (l/h)	Kg
52 757-020	15/20	G1	123	45	92	7,0	1,1	1,6
52 757-032	25/32	G1 1/4	145	53	97	18	3,3	2,7
52 757-050	40/50	G2	190	66	110	40	7,5	4,8

40 kPa

TA No	DN	d	L	H1	H2	Kvs	q_{max} (l/h)	Kg
52 757-120	15/20	G1	123	45	92	7,0	1,1	1,6
52 757-132	25/32	G1 1/4	145	53	97	18	3,3	2,7
52 757-150	40/50	G2	190	66	110	40	7,5	4,8

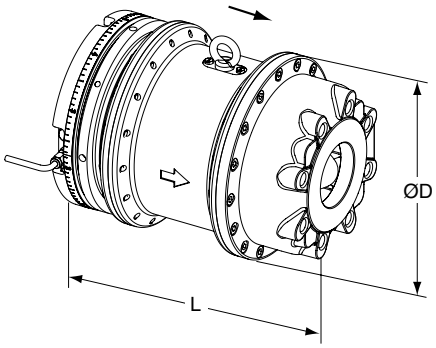
60 kPa

TA No	DN	d	L	H1	H2	Kvs	q_{max} (l/h)	Kg
52 758-120	15/20	G1	123	45	92	7,0	1,1	1,6
52 758-132	25/32	G1 1/4	145	53	97	18	3,3	2,7
52 758-150	40/50	G2	190	66	110	40	7,5	4,8

100 kPa

TA No	DN	d	L	H1	H2	Kvs	q_{max} (l/h)	Kg
52 758-020	15/20	G1	123	45	92	7,0	1,1	1,6
52 758-032	25/32	G1 1/4	145	53	97	18	3,3	2,7
52 758-050	40/50	G2	190	66	110	40	7,5	4,8

DN 65-80



15 kPa

TA No	DN	L	ØD	Kvs	q_{max} (l/h)	Kg
52 757-065	65	290	220	60	15	30
52 757-080	80	310	220	60	18	32

40 kPa

TA No	DN	L	ØD	Kvs	q_{max} (l/h)	Kg
52 757-165	65	290	220	60	15	30
52 757-180	80	310	220	60	18	32

60 kPa

TA No	DN	L	ØD	Kvs	q_{max} (l/h)	Kg
52 758-165	65	290	220	60	15	30
52 758-180	80	310	220	60	18	32

100 kPa

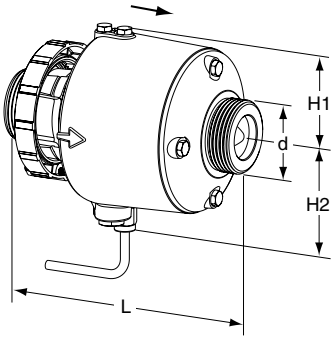
TA No	DN	L	ØD	Kvs	q_{max} (l/h)	Kg
52 758-065	65	290	220	60	15	30
52 758-080	80	310	220	60	18	32

Capillary pipe (Ø6) included:
DN 15-50: 1 200 mm
DN 65-125: 1 500 mm

→ = Flow direction

DKH 512 (Fc = 20 kPa)

DN 15-50



15 kPa

TA No	DN	d	L	H1	H2	Kvs	q_{max} (l/h)	Kg
52 757-220	15/20	G1	123	45	92	7,0	1,3	1,6
52 757-232	25/32	G1 1/4	145	53	97	18	4,4	2,7
52 757-250	40/50	G2	190	66	110	40	10	4,8

40 kPa

TA No	DN	d	L	H1	H2	Kvs	q_{max} (l/h)	Kg
52 757-320	15/20	G1	123	45	92	7,0	1,3	1,6
52 757-332	25/32	G1 1/4	145	53	97	18	4,4	2,7
52 757-350	40/50	G2	190	66	110	40	10	4,8

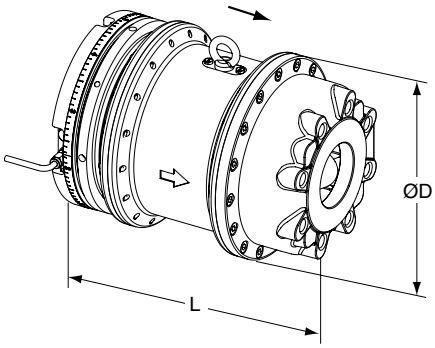
60 kPa

TA No	DN	d	L	H1	H2	Kvs	q_{max} (l/h)	Kg
52 758-220	15/20	G1	123	45	92	7,0	1,3	1,6
52 758-232	25/32	G1 1/4	145	53	97	18	4,4	2,7
52 758-250	40/50	G2	190	66	110	40	10	4,8

100 kPa

TA No	DN	d	L	H1	H2	Kvs	q_{max} (l/h)	Kg
52 758-320	15/20	G1	123	45	92	7,0	1,3	1,6
52 758-332	25/32	G1 1/4	145	53	97	18	4,4	2,7
52 758-350	40/50	G2	190	66	110	40	10	4,8

DN 65-80



15 kPa

TA No	DN	L	ØD	Kvs	q_{max} (l/h)	Kg
52 757-265	65	290	220	60	20	30
52 757-280	80	310	220	60	24	32

40 kPa

TA No	DN	L	ØD	Kvs	q_{max} (l/h)	Kg
52 757-365	65	290	220	60	20	30
52 757-380	80	310	220	60	24	32

60 kPa

TA No	DN	L	ØD	Kvs	q_{max} (l/h)	Kg
52 758-265	65	290	220	60	20	30
52 758-280	80	310	220	60	24	32

100 kPa

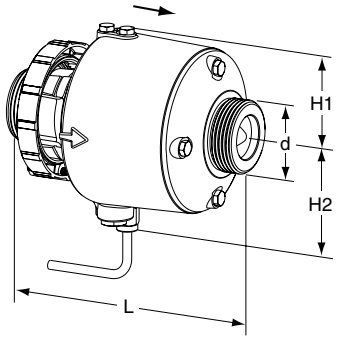
TA No	DN	L	ØD	Kvs	q_{max} (l/h)	Kg
52 758-365	65	290	220	60	20	30
52 758-380	80	310	220	60	24	32

Capillary pipe (Ø6) included:
DN 15-50: 1 200 mm
DN 65-125: 1 500 mm

→ = Flow direction

DKH 512 (Fc = 40 kPa)

DN 15-50



15 kPa

TA No	DN	d	L	H1	H2	Kvs	q_{max} (l/h)	Kg
52 757-420	15/20	G1	123	45	92	7,0	1,3	1,6
52 757-432	25/32	G1 1/4	145	53	97	18	4,4	2,7
52 757-450	40/50	G2	190	66	110	40	10	4,8

40 kPa

TA No	DN	d	L	H1	H2	Kvs	q_{max} (l/h)	Kg
52 757-520	15/20	G1	123	45	92	7,0	1,3	1,6
52 757-532	25/32	G1 1/4	145	53	97	18	4,4	2,7
52 757-550	40/50	G2	190	66	110	40	10	4,8

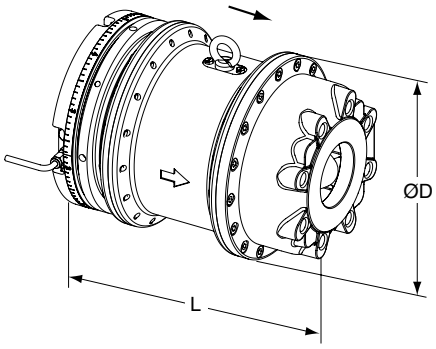
60 kPa

TA No	DN	d	L	H1	H2	Kvs	q_{max} (l/h)	Kg
52 758-420	15/20	G1	123	45	92	7,0	1,3	1,6
52 758-432	25/32	G1 1/4	145	53	97	18	4,4	2,7
52 758-450	40/50	G2	190	66	110	40	10	4,8

100 kPa

TA No	DN	d	L	H1	H2	Kvs	q_{max} (l/h)	Kg
52 758-520	15/20	G1	123	45	92	7,0	1,3	1,6
52 758-532	25/32	G1 1/4	145	53	97	18	4,4	2,7
52 758-550	40/50	G2	190	66	110	40	10	4,8

DN 65-80



15 kPa

TA No	DN	L	ØD	Kvs	q_{max} (l/h)	Kg
52 757-465	65	290	220	60	20	30
52 757-480	80	310	220	60	24	32

40 kPa

TA No	DN	L	ØD	Kvs	q_{max} (l/h)	Kg
52 757-565	65	290	220	60	20	30
52 757-580	80	310	220	60	24	32

60 kPa

TA No	DN	L	ØD	Kvs	q_{max} (l/h)	Kg
52 758-465	65	290	220	60	20	30
52 758-480	80	310	220	60	24	32

100 kPa

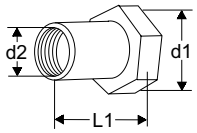
TA No	DN	L	ØD	Kvs	q_{max} (l/h)	Kg
52 758-565	65	290	220	60	20	30
52 758-580	80	310	220	60	24	32

Capillary pipe (Ø6) included:
DN 15-50: 1 200 mm
DN 65-125: 1 500 mm

→ = Flow direction

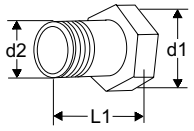
Connections for DN 15-50

With female thread



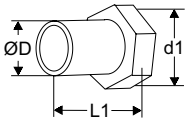
TA No	d1	d2	L1
52 759-015	G1	G1/2	26
52 759-020	G1	G3/4	32
52 759-025	G1 1/4	G1	47
52 759-032	G1 1/4	G1 1/4	52
52 759-040	G2	G1 1/2	52
52 759-050	G2	G2	64,5

With male thread



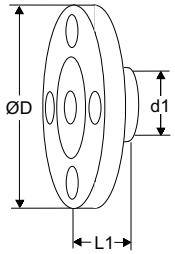
TA No	d1	d2	L1
52 759-115	G1	G1/2	34
52 759-120	G1	G3/4	40
52 759-125	G1 1/4	G1	40
52 759-132	G1 1/4	G1 1/4	45
52 759-140	G2	G1 1/2	45
52 759-150	G2	G2	50

For welding



TA No	d1	D	L1
52 759-315	G1	20,8	37
52 759-320	G1	26,3	42
52 759-325	G1 1/4	33,2	47
52 759-332	G1 1/4	40,9	47
52 759-340	G2	48,0	47
52 759-350	G2	60,0	52

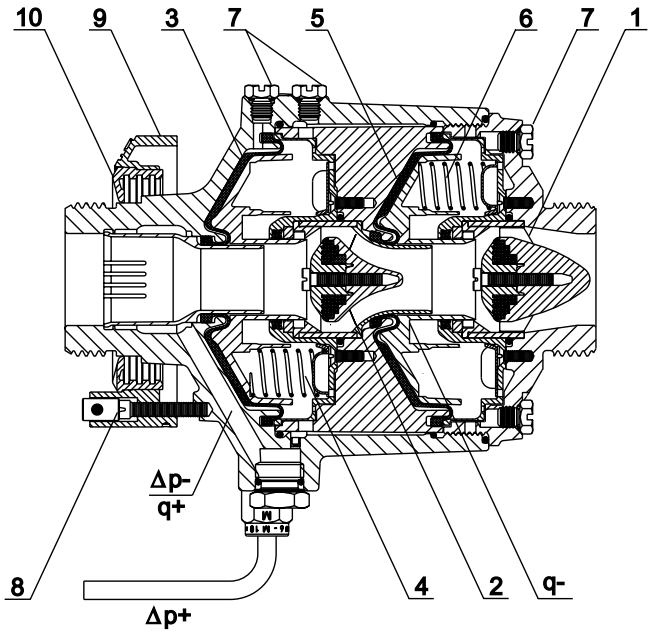
With flange



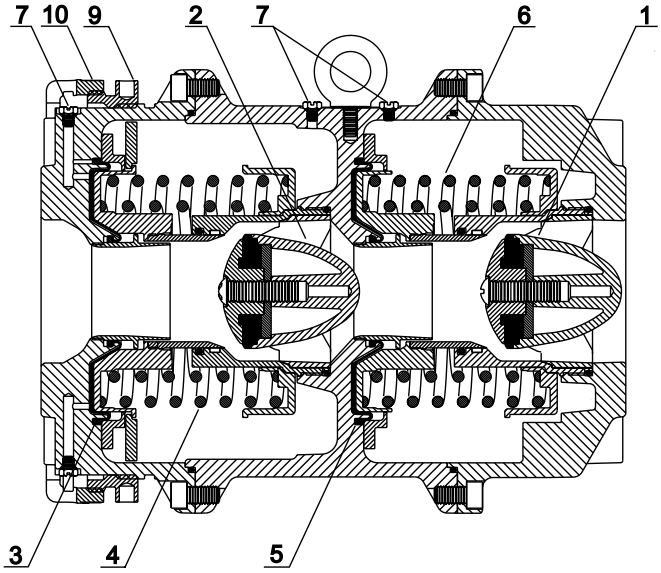
TA No	d1	D	L1
52 759-515	G1	95	10
52 759-520	G1	105	20
52 759-525	G1 1/4	115	5
52 759-532	G1 1/4	140	15
52 759-540	G2	150	5
52 759-550	G2	165	20

Operating function

DN 15-50



DN 65-80

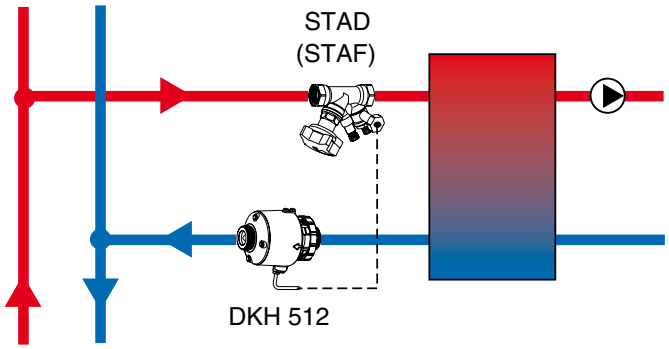


Flow (1) and differential pressure (2) controller are integrated in series in a common compact housing. The differential pressure controller acts also as a control throttle for flow control and as a stop valve.

The pressure upstream the consumer acts through an external impulse pipe (Δp+) to the inlet side of the differential pressure diaphragm (3) and attempts to close the valve. The pressure downstream the consumer (upstream the valve) acts through an internal impulse boring (Δp-) to the outlet side of the differential pressure diaphragm and attempts to open the valve together with the force of differential pressure control spring (4). As long as the forces on the diaphragm are in balance, valve stands still. If differential pressure increases, valve closes until 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 flow control spring (6). As long as the forces on the diaphragm are in balance, valve stands still. If flow increases, valve closes until new equilibrium is reached and vice versa.

Installation



Install the valve in the return pipe, downstream 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 the controller is recommended.

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

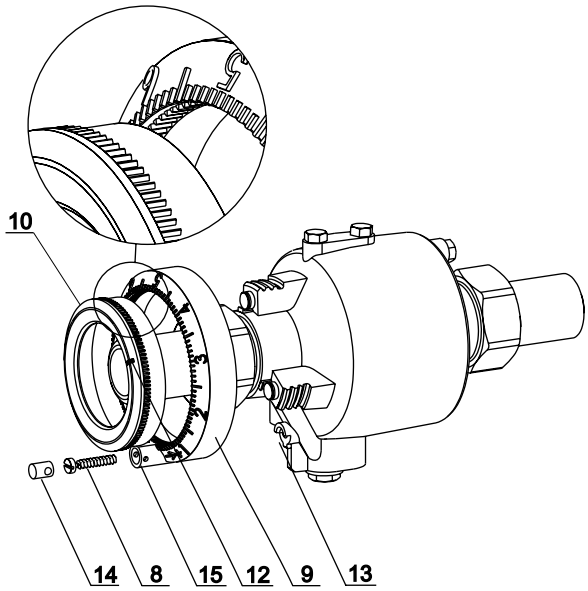
It is important to ensure that working temperature and pressure do not exceed allowed values.

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 stabilized, vent the controller by the vent screws (7).

Installation of a balancing valve STAD (STAF) is recommended to enable flow measurement, commissioning and troubleshooting.

Setting



Flow adjustment of DN 15-50

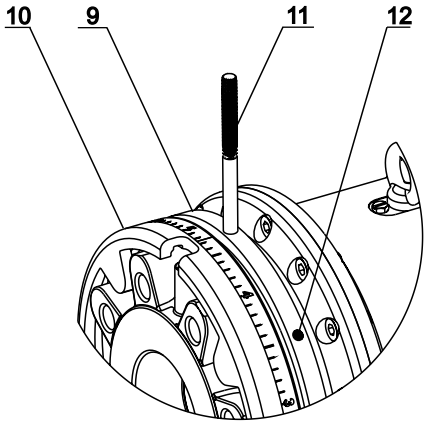
1. Unscrew the fixing screw (8) so that you can turn the scale easily.
2. Push the black scale (9) towards the valve's body so that it is separated from the brown setting ring (10) - the teeth go apart.
3. In the flow chart find the desired flow and corresponding position of the adjustment scale. Align the appropriate number on the scale with red pointer (12) on the brown ring (10).
4. Push the black scale (9) back to the brown ring (10) - the teeth couple again.
5. Turn the scale (9) together with the setting ring (10) clock wise until it stops.
6. Now set the desired flow so that you turn the scale anti-clockwise until fixing screw (8) is aligned with the hole (13) 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 (13).
8. In front of the fixing screw (8) you can put an inserted piece (14) that can be plombed (use holes on the scale (15) and inserted piece).

Differential pressure adjustment

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

Manual closing

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



Flow adjustment of DN 65-80

1. In the flow chart find the desired flow and corresponding position of the adjustment ring (9).
2. Adjust the flow adjustment ring (9) until the red pointer (12) is aligned with the corresponding number on the scale (8).
3. The flow adjustment nut is turned by the batons (11) supplied with the controller.

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.

Sizing

Select the size according to maximal flow. Maximal flow depends on nominal size (DN) and pressure drop in the throttle (Fc). Total pressure drop is calculated by the equation:
$\Delta p = Fc + 100 \times q^2 / Kvs^2$ [kPa], where q is flow in m^3/h and Fc is constant pressure drop (12, 20 or 40 kPa) in differential pressure conrtoller (control throttle).