

FRAKTA DVK DN10-DN32 Combination valve - Pressure-independent balancing and control valve

Application

The Frakta DVK pressure-independent control valve is used in heating, air-conditioning and refrigeration systems.

It provides modulating or open/closed control with full Valve authority independent of possible fluctuations in the differential pressure of the system.

The Frakta DVK combines an externally adjustable dynamic volume flow controller with a differential pressure controller and a modulating control valve with full valve authority. The Frakta DVK makes it easy to achieve 100% control of the

water volume flow in the building and ensures maximum comfort with simultaneous reduction in energy consumption. Another advantage: No additional control is required if the system is extended or the design data is changed.

Reduction in volume flow and pump pressure + maximisation ΔT - Shorter reaction time and improved system stability



Advantages

type of construction

- Less time required to specify the components required for hydraulic balancing (only the volume flow data is required) - No valve authority calculation required
- Flexibility when converting the installed system

Setup

- Reduction of the total number of valves through the 3-in-1 combined design
- Fast commissioning thanks to automatic adjustment and control of the system
- No straight minimum pipe lengths before and after the control valve required
- Differential pressure measurement possible
- Built-in shut-off function by means of integrated control valve (leakage rate)

Operation

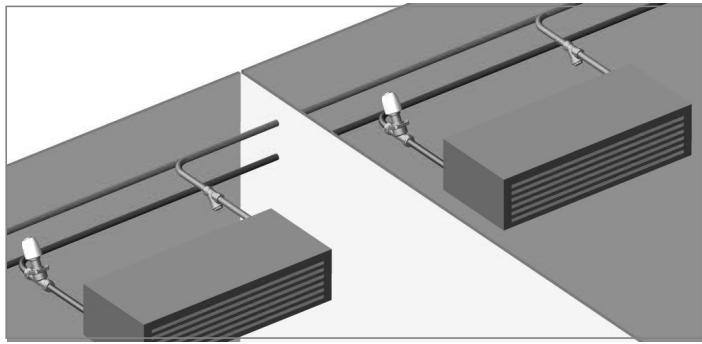
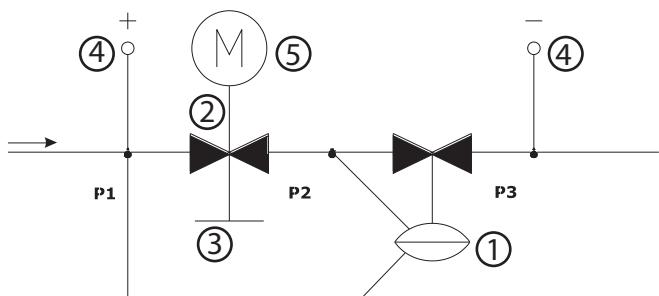
- High comfort for end users thanks to high-precision temperature control
- Longer service life due to fewer actuator movements

Attributes

- The presetting has no influence on the valve travel; full modulation of the valve travel at any time, independent of the set volume flow rate
- The constant differential pressure via the modulating control unit ensures 100% valve authority
- Automatic volume flow control prevents excessive volume flows independent of pressure fluctuations in the system
- Thermal actuator On/Off or 0-10V, normally closed
- Electric actuator 0-10V, (linear or logarithmic) or 3-point control, or on/off, normally closed.
- High volume flow attainable with minimum inherent pressure loss, thanks to innovative valve design
- To achieve perfect control characteristics with the selected actuator, 4 different valve strokes are available
- Precise presetting through infinitely variable presetting scale

FRAKTA DKV DN10-DN32 Combination valve - Pressure-independent balancing and control valve

Functional principle Frakta DKV



Installation and adjustment

The Frakta DKV is supplied with a protective cap which additionally enables a shut-off function.

Presetting is straightforward, as the setting value can be read from a simple volume flow diagram. As soon as the flow rate is adjusted, the actuator can be mounted. The valve is now ready for operation.

To optimize energy consumption, the pump is adjusted to the differential pressure required above the critical valve (min ΔP). If the Min ΔP differential pressure is present, hydraulic balancing in the system is automatically guaranteed.

working pressure

Frakta DKV DN10 to DN32, can be used for a maximum differential pressure of 800 kPa.

closing pressure

Frakta DKV is able to close against the following loads of EN 1349 class IV:

DN10 to DN25: 600 kPa (6 Bar) - based on 100N actuating force
DN25L to DN32: 800 kPa (8 Bar) - based on 100N actuating force

shut-off function

Mounted with the protective cap (only DN10 to DN32) it is possible to shut off up to 10 bar for Frakta DKV.

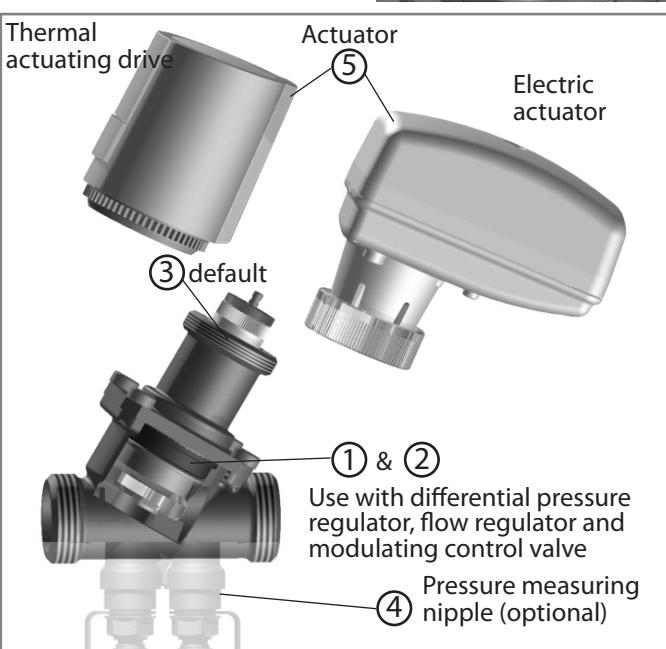
manual mode

Electric actuator

The actuator can be operated manually using a 3 mm Allen key. Wenn ein manueller Betrieb vorgenommen wurde, ohne dass

advice

the operating voltage was switched off, the operating voltage must be switched off and on again to activate the self-calibration for correct positioning.



FRAKTA DKV DN10-DN32 Combination valve - Pressure-independent balancing and control valve

Functional principle.

The innovative design of the Frakta DKV combines a fully modulating control valve unit that guarantees 100% valve authority at all times. The Frakta DKV combines two completely independent movements, one for presetting the volume flow and one for modulating control. The presetting is adjusted radially without affecting the valve travel.

The fully modulating control takes place in axial direction and always with full utilization of the maximum valve stroke. In the example shown below, the volume flow over the entire control range from 10 to 0 V is calculated independently of the preset flow rate (300 L/h or 150 L/h) is modulating controlled.

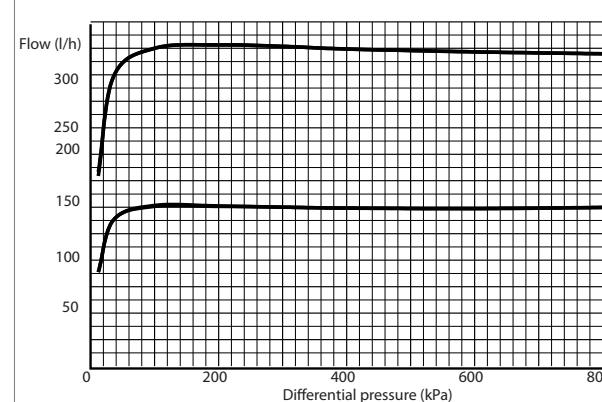
While the control valve unit generates proportional, modulating control independent of the preset flow rate, the differential pressure regulator ensures that the maximum, preset flow rate is never exceeded.

Regardless of pressure fluctuations in the system, the maximum volume flow is kept constant up to a maximum differential pressure of 800 kPa.

Flow rate/differential pressure/ Preset diagram

Sample: Frakta DKV
(Preset max. vol. current: 300 L/h, 150 L/h)

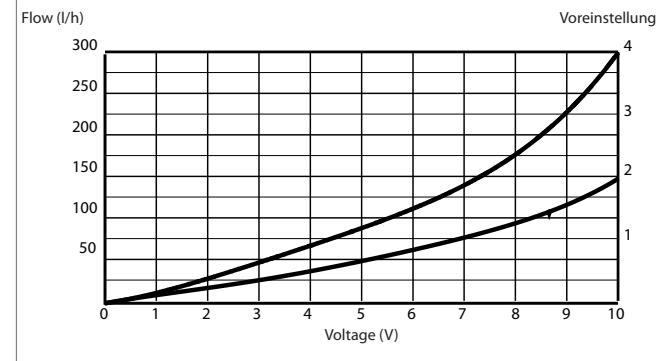
Volume flow as a function
of the differential pressure
and the default



Flow rate/differential pressure/ Preset diagram

Sample: Frakta DKV
(Preset max. vol. current: 300 L/h, 150 L/h)

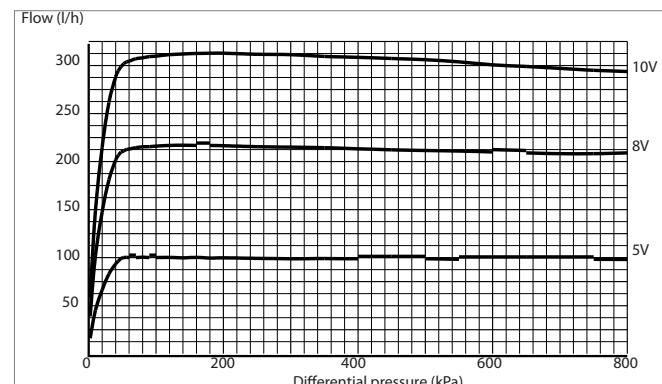
Volume flow as a function of the
default setting and the
control voltage



Flow rate/differential pressure/ Preset diagram

Sample: Frakta DKV
(control voltage: 10 V, 8 V, 5 V)

Volume flow as a function of the
differential pressure and the
control voltage



FRAKTA DVK DN10-DN32 Combination valve - Pressure-independent balancing and control valve

Technical data, materials

valve body

DN 10-15-20-25-32

Entzinkungsbeständiges Messing, CW602N

differential pressure regulator:

PPS 40% glass

spring:

Edelstahl

diaphragm:

HNBR

packing:

EPDM

pressure rating:

PN25

Max. differential pressure:

800 kPa

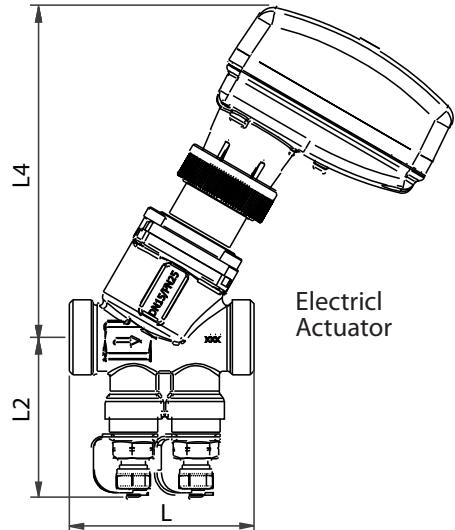
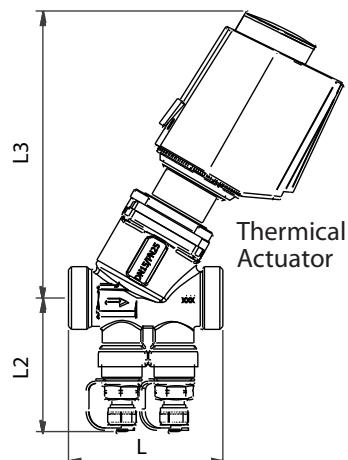
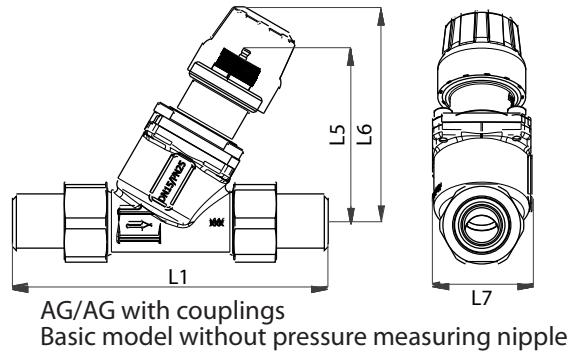
medium temperature:

0°C bis 120°C

The pipe system must be properly vented to prevent the formation of air inclusions. Frakta DVK is suitable for up to 50% glycol mixtures (ethylene and propylene mixtures).

Recommendation: Water treatment according to VDI 2035.

Frakta Vertriebs GmbH accepts no liability if an actuator other than the Frakta actuator is used.



Installation dimensions & weight

Valve Dimension	DN10	DN15		DN20		DN25/DN25L		DN32			
Connection Thread	AG/AG G 1/2	AG/AG G 3/4	IG/IG G 1/2	AG/AG G 1	IG/IG G 3/4	AG/AG G 1-1/4	IG/IG G 1	AG/AG G 1-1/2	IG/IG G 1-1/4		
height	L	65	65	75	70	79	78/104	83/100	104	104	
	L1	114	122	-	131	-	-	-	-	-	
	L2	57	57	57	57	57	59/63	59/63	68	68	
	L3	121	121	121	121	121	124/139	124/139	139	139	
	L4	117	117	117	117	117	120/135	120/135	135	135	
	L5	68	68	68	68	68	68/85	68/85	85	85	
	L6	83	83	83	83	83	83/100	83/100	100	100	
	L7	38	38	38	38	38	38/63	38/63	63	63	
weight kg	Basis	0,36	0,38	0,42	0,40	0,45	0,51/1.02	0,55/1.04	1,17	1,17	
	DM	0,45	0,47	0,52	0,50	0,54	0,62/1.12	0,65/1.14	1,27	1,27	

Dim.	DN10 - DN15		DN15 - DN20		DN20	DN25	DN25L	DN32		
Typ	Low		High		High	Low	High	-		
Hub	mm	2,5	5,0	2,5	5,0	5,5	5,5	5,5		
Volu- men- strom Bereich	L/h	30 - 200	65 - 370	100 - 575	220 - 1330	300-1800	280-1800	600-3609	550-4001	
	L/s	0,008-0,056	0,018-0,103	0,028-0,160	0,061-0,369	0,083-0,500	0,078-0,500	0,167-1,003	0,153-1,111	
	gpm	0,13 - 0,88	0,29 - 1,63	0,44 - 2,53	0,97 - 5,85	1,32-7,93	1,23-7,93	2,64-15,89	2,42-17,62	
Regel- ber.	kPa	14-800	14-800	14-800	15-800	18-800	15-800	15-800		
Kvs	m3/h	0,5	0,9	1,3	2,7	2,9	2,9	7,5	7,6	

FRAKTA DKV DN10-DN32 Combination valve - Pressure-independent balancing and control valve

Technical Data Actuators DN 10-15-20-25-32

Version:	Electrical, modulating
protection class:	IP 43 EN 60529
frequency:	50/60 Hz
control command:	0-10V DC or 3-point
actuating force:	120 N
stroke:	5,5 mm (switch 2,5-5,0-5,5mm)
Operating time 5.5 mm:	75 sec 0-10V / 150 sec 3-Point
Ambient temperature:	+1°C to 50°C
Cable length:	1,5 m
Weight:	215 g

Electrical, modulating 5,0 - 5,5 mm, 24V AC-DC/ 0-10V DC/ 8 sec/mm

VA120.1M

Electrical, modulating 2,5 mm, 24V AC-DC/ 0-10V DC/ 8 sec/mm

VA120.1M



FRAKTA DKV DN10-DN32 Combination valve - Pressure-independent balancing and control valve

Actuator requirements

Valve lift Closed component "X"

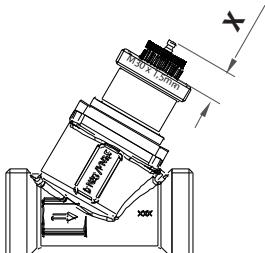
2,5 mm stroke = 11,4 mm

5,0 mm stroke = 9,3 mm

5,5 mm stroke = 8,8 mm

Minimum actuating force: 100N

Actuator connection: M30 x 1,5mm



combination table: Frakta DKV DN10-15-20-25-32 / Actuator

Frakta DKV can be equipped with thermal actuators as well as electric actuators.

The valve design, combined with Frakta actuators, provides a perfect control characteristic that ensures full Control range of the system optimized.



AG/AG ISO 228	Typ	Stroke	volume-area L/h	Dim.	24V 2,5 mm	24V 5,0 - 5,5mm
	DN10 AG/AG LOW 2,5	2,5	30-200	DN10	●	
	DN10 AG/AG LOW 5,0	5,0	65-370	DN10		●
	DN15 AG/AG LOW 2,5	2,5	30-200	DN15	●	
	DN15 AG/AG LOW 5,0	5,0	65-370	DN15		●
	DN15 AG/AG HIGH 2,5	2,5	100-575	DN15	●	
	DN15 AG/AG HIGH 5,0	5,0	220-1330	DN15		●
	DN20 AG/AG HIGH 2,5	2,5	100-575	DN20	●	
	DN20 AG/AG HIGH 5,0	5,0	220-1330	DN20		●
	DN20 AG/AG HIGH 5,5	5,5	300-1800	DN20		●
	DN25 AG/AG LOW 5,5	5,5	280-1800	DN25		●
	DN25L AG/AG HIGH 5,5	5,5	600-3609	DN25		●
	DN32 AG/AG 5,5	5,5	550-4001	DN32		●
IG/IG ISO 228	Typ	Hub	Volumen- bereich L/h	Dimension		
	DN15 IG/IG LOW 2,5	2,5	30-200	DN15	●	
	DN15 IG/IG LOW 5,0	5,0	65-370	DN15		●
	DN15 IG/IG HIGH 2,5	2,5	100-575	DN15	●	
	DN15 IG/IG HIGH 5,0	5,0	220-1330	DN15		●
	DN20 IG/IG HIGH 2,5	2,5	100-575	DN20	●	
	DN20 IG/IG HIGH 5,0	5,0	220-1330	DN20		●
	DN20 IG/IG HIGH 5,5	5,5	300-1800	DN20		●
	DN25 IG/IG LOW 5,5	5,5	280-1800	DN25		●
	DN25L IG/IG HIGH 5,5	5,5	600-3609	DN25		●
	DN32 IG/IG 5,5	5,5	550-4001	DN32		●

FRAKTA DKV DN10-DN32 Combination valve - Pressure-independent balancing and control valve

product portfolio

Dim.	Typ	volume-area l/h	AG/AG	AG/AG pressure measuring nipples	IG/IG	IG/IG pressure measuring nipples
DN10	Low 2,5 mm	30-200	53-1300	53-1320	-	-
	Low 5,0 mm	65-370	53-1309	53-1329	-	-
DN15	Low 2,5 mm	30-200	53-1302	53-1322	53-1342	53-1362
	Low 5,0 mm	65-370	53-1310	53-1330	53-1350	53-1370
	High 2,5 mm	100-575	53-1304	53-1324	53-1344	53-1364
	High 5,0 mm	220-1330	53-1305	53-1325	53-1345	53-1365
DN20	High 2,5 mm	100-575	53-1312	53-1332	53-1352	53-1372
	High 5,0 mm	220-1330	53-1308	53-1328	53-1348	53-1368
	High 5,5 mm	300-1800	53-1311	53-1331	53-1318	53-1338
DN25	Low 5,5 mm	280-1800	53-1317	53-1337	53-1319	53-1339
DN25L	High 5,5 mm	600-3609	53-1313	53-1333	53-1353	53-1373
DN32	5,5 mm	550-4001	53-1314	53-1334	53-1354	53-1374
DN40	15 mm	1370-9500	-	-	-	53-1375-01
DN50	15 mm	1400-11500	-	-	-	53-1376-01

Accessories

Couplings set/2 pcs, with seals

Material: dezincification-resistant brass, CW602N



Dim.	threads	Art.- Nr.
DN10	G 1/2 - R3/8	0378133010
DN15	G 3/4 - R1/2	0378133015
DN20	G 1 - R3/4	0378133020

Prefabricated insulation - Only suitable for heating systems

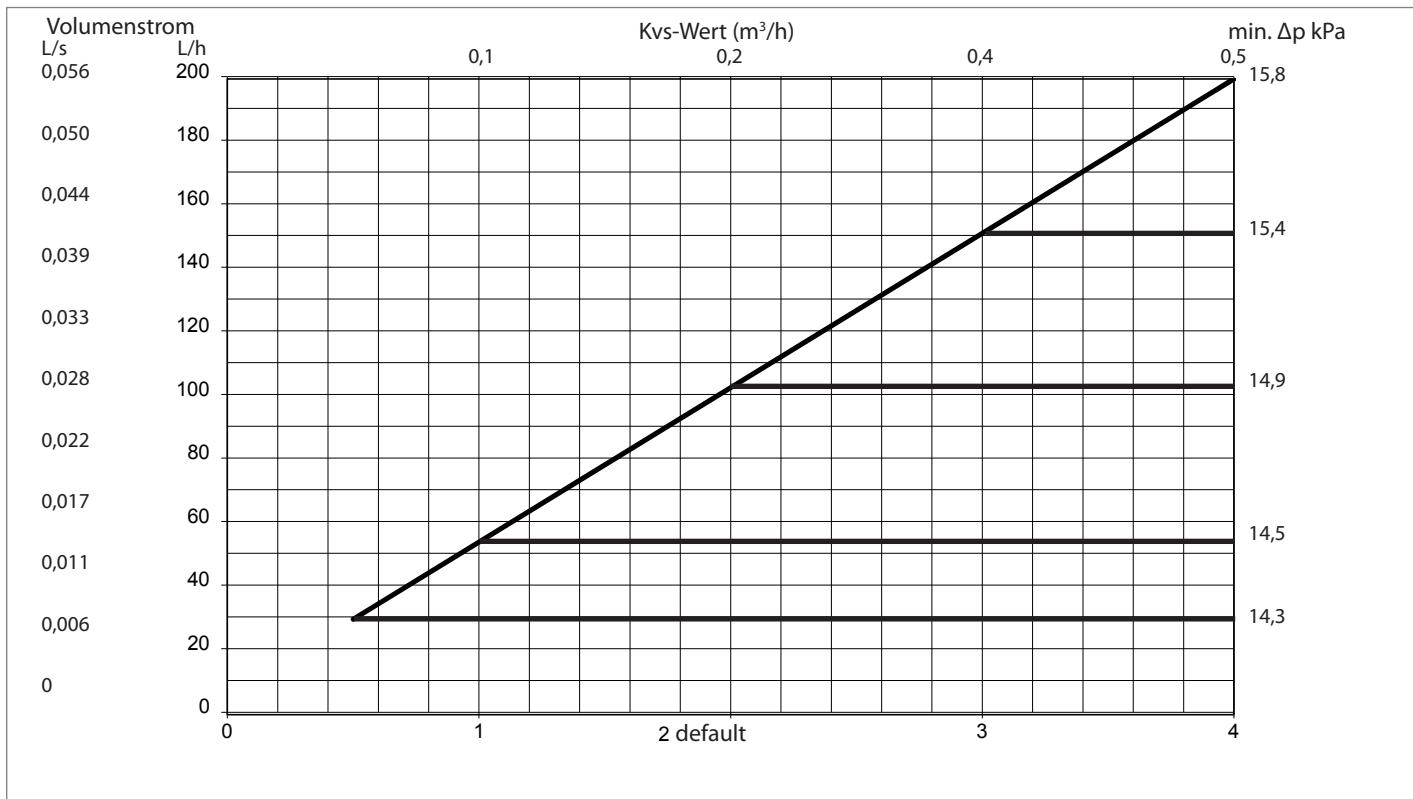
Material: EPP, medium temperature up to 120°C



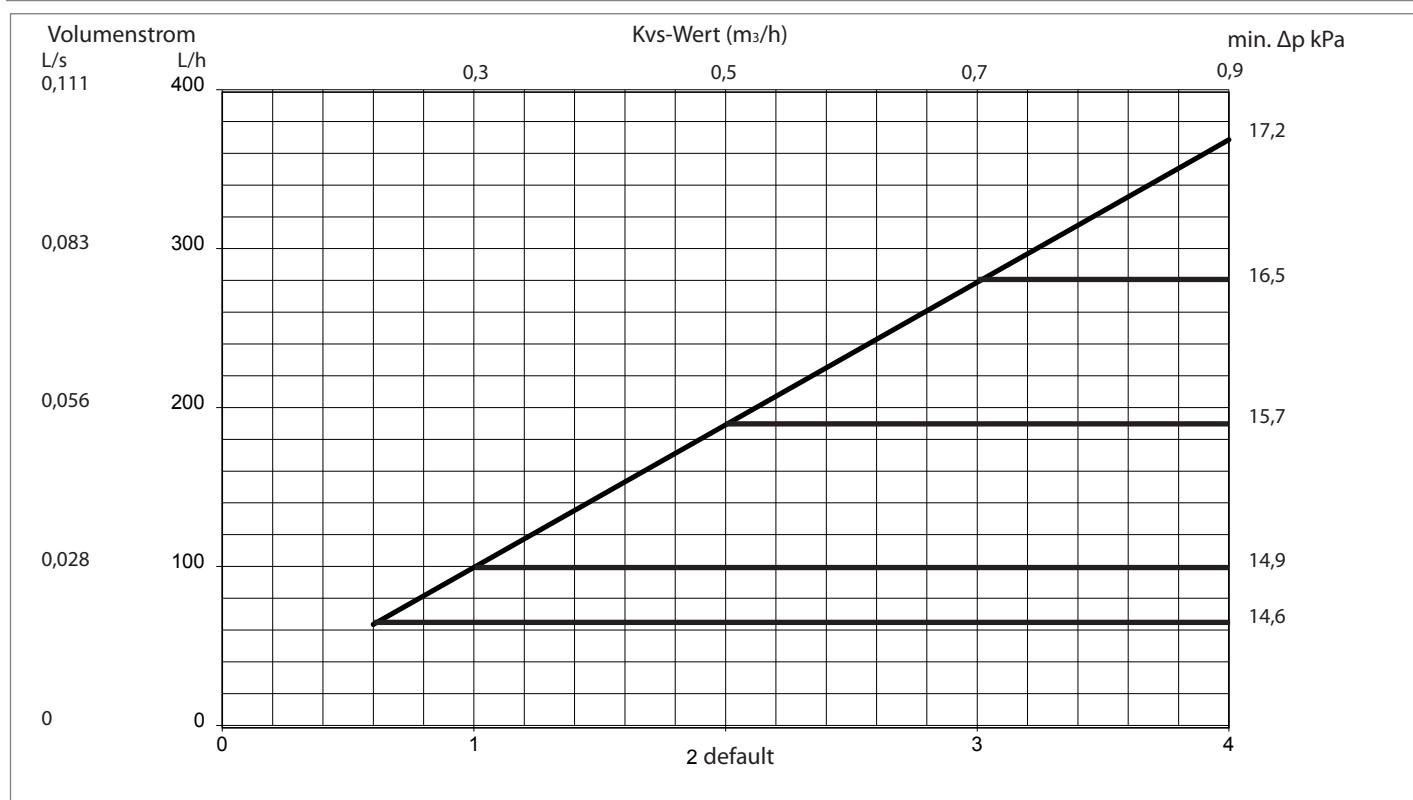
Dim.	
DN10-15-20	DKV-ISO-10-15-20
DN25	DKV-ISO-25
DN25L-32	DKV-ISO-25L-32

FRAKTA DKV DN10-DN32 Combination valve - Pressure-independent balancing and control valve

Frakta DKV . Low 2,5 DN10/15

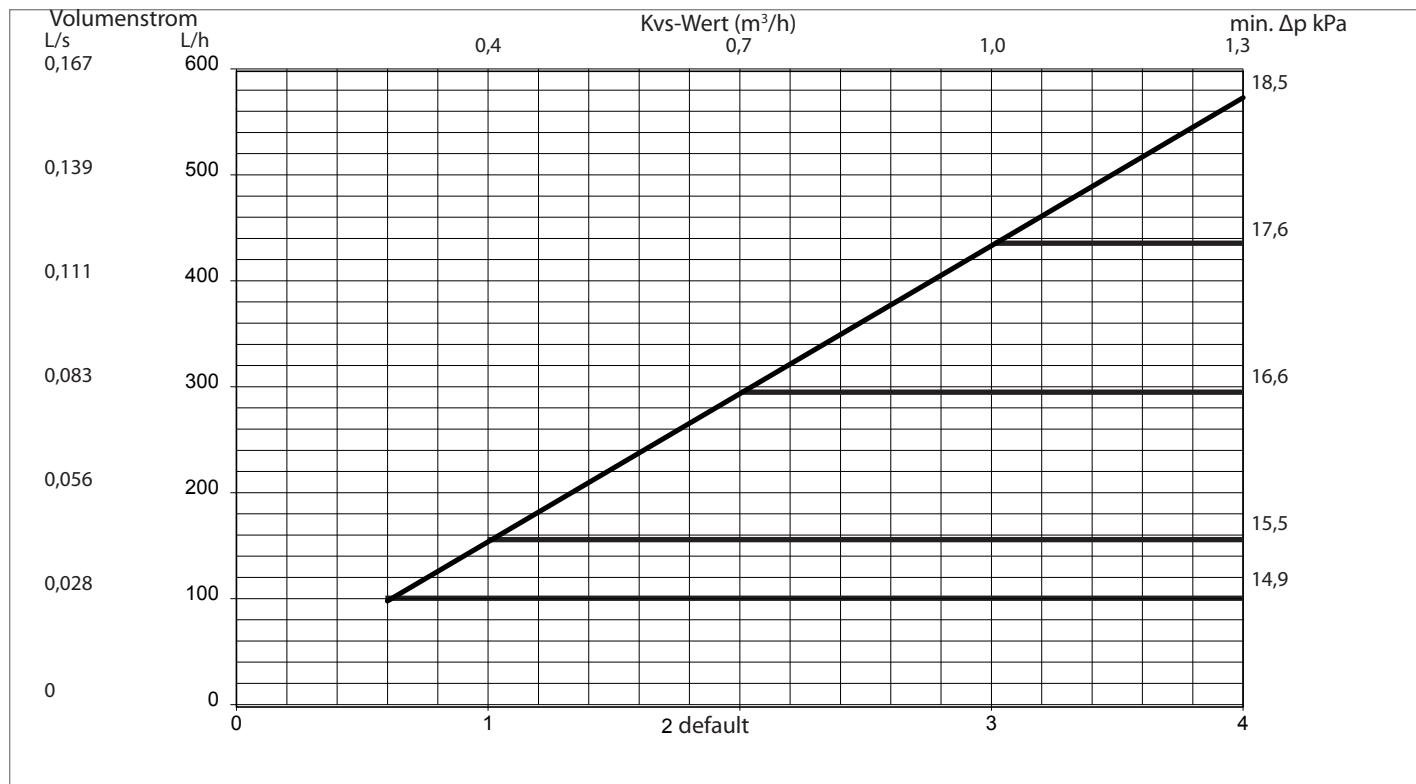


Frakta DKV . Low 5,0 DN10/15

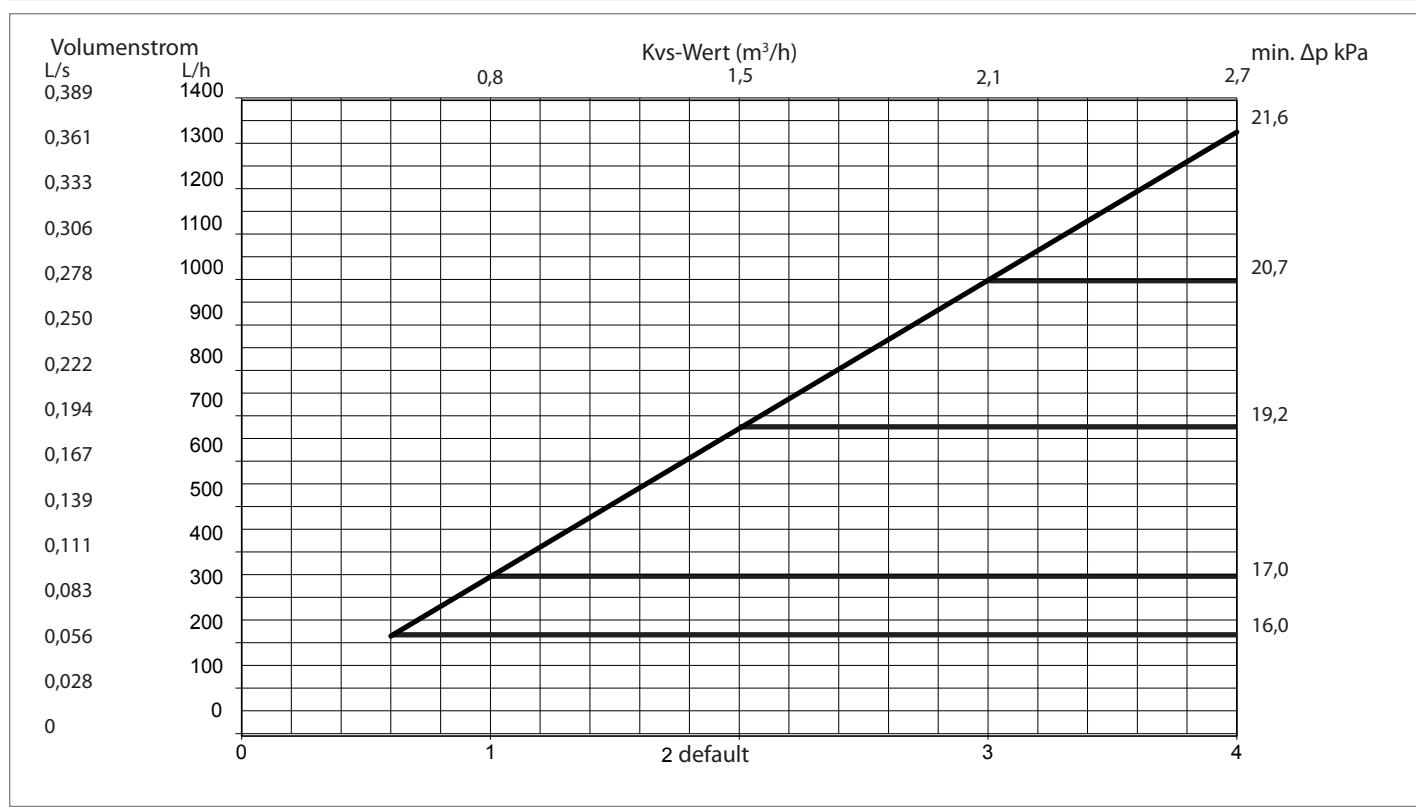


FRAKTA DKV DN10-DN32 Combination valve - Pressure-independent balancing and control valve

Frakta DKV . High 2,5 DN15/20

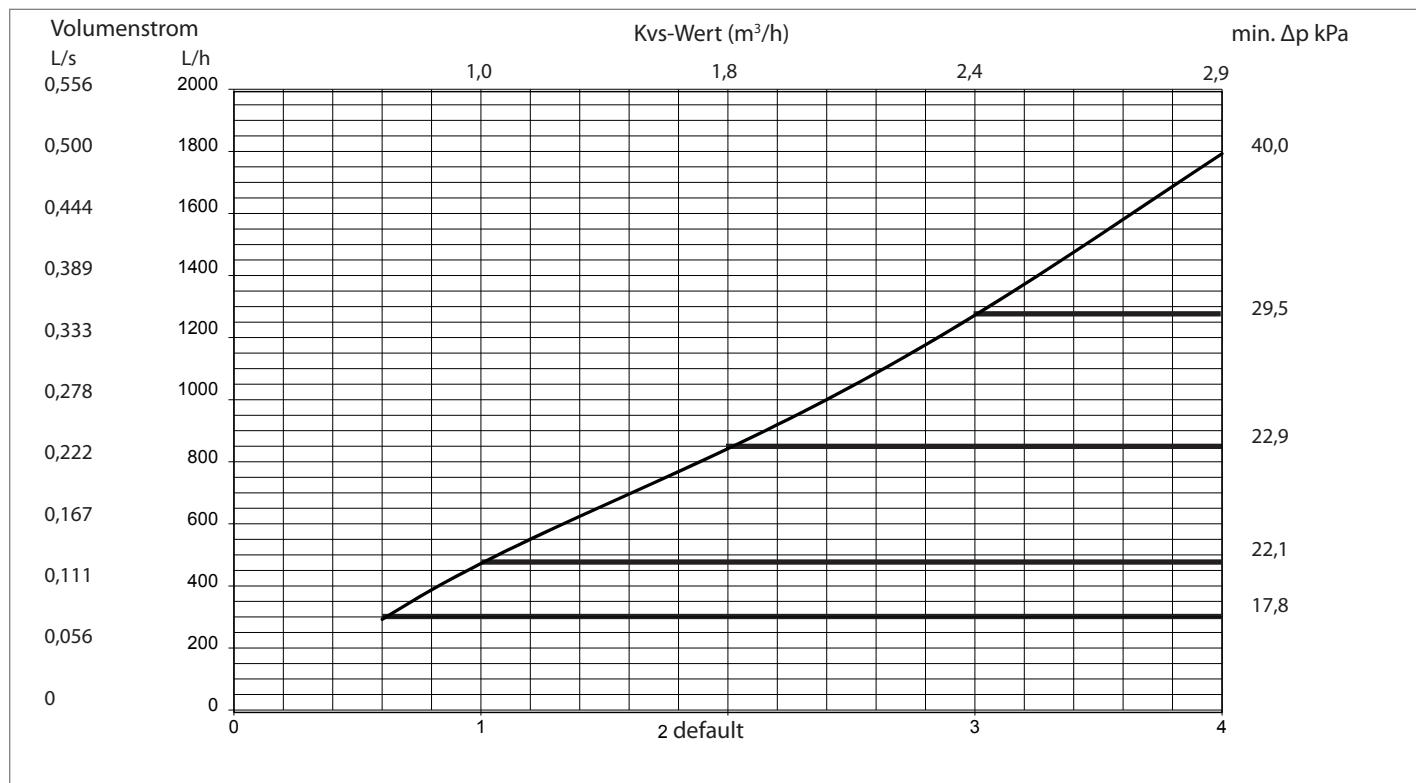


Frakta DKV . High 5,0 DN15/20

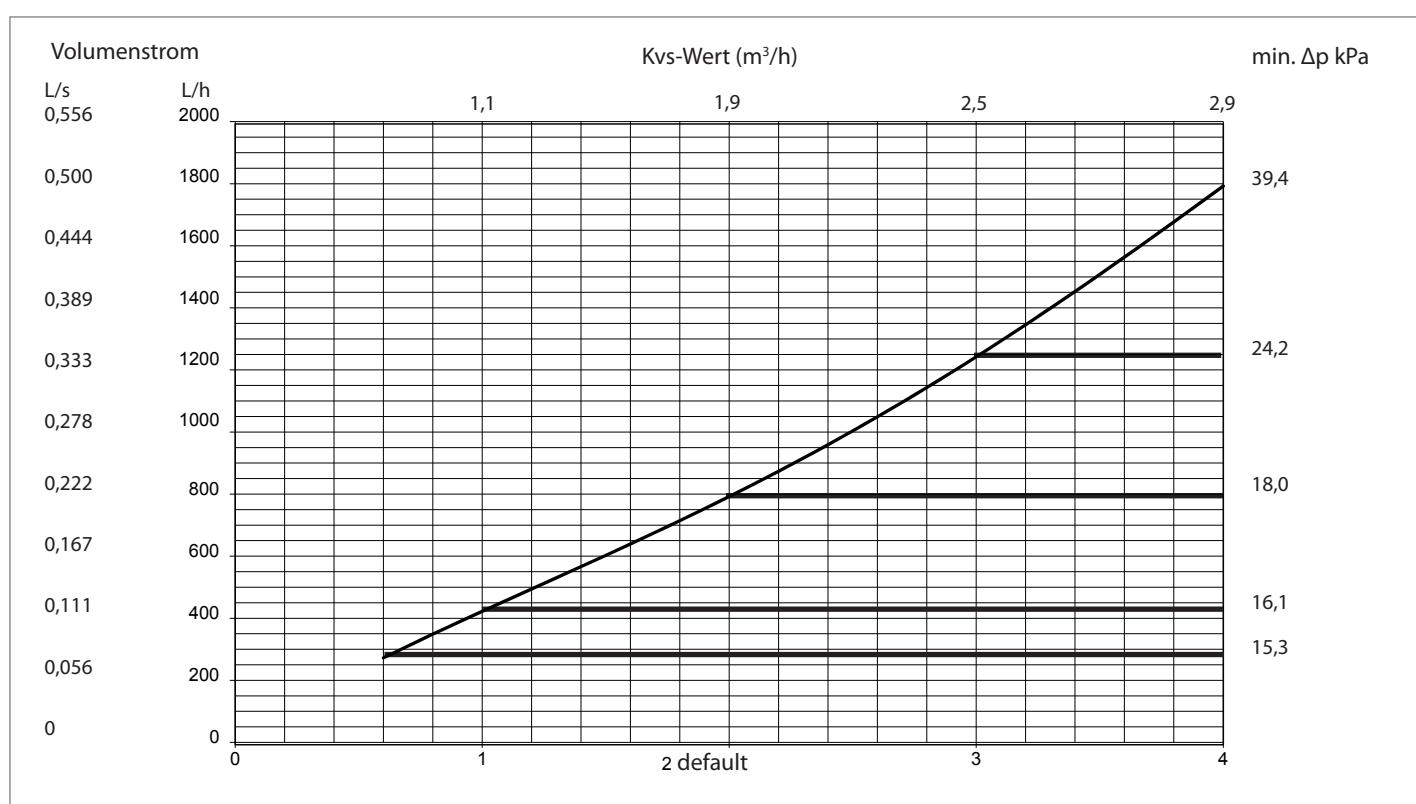


FRAKTA DKV DN10-DN32 Combination valve - Pressure-independent balancing and control valve

Frakta DKV . High 5,5 DN20

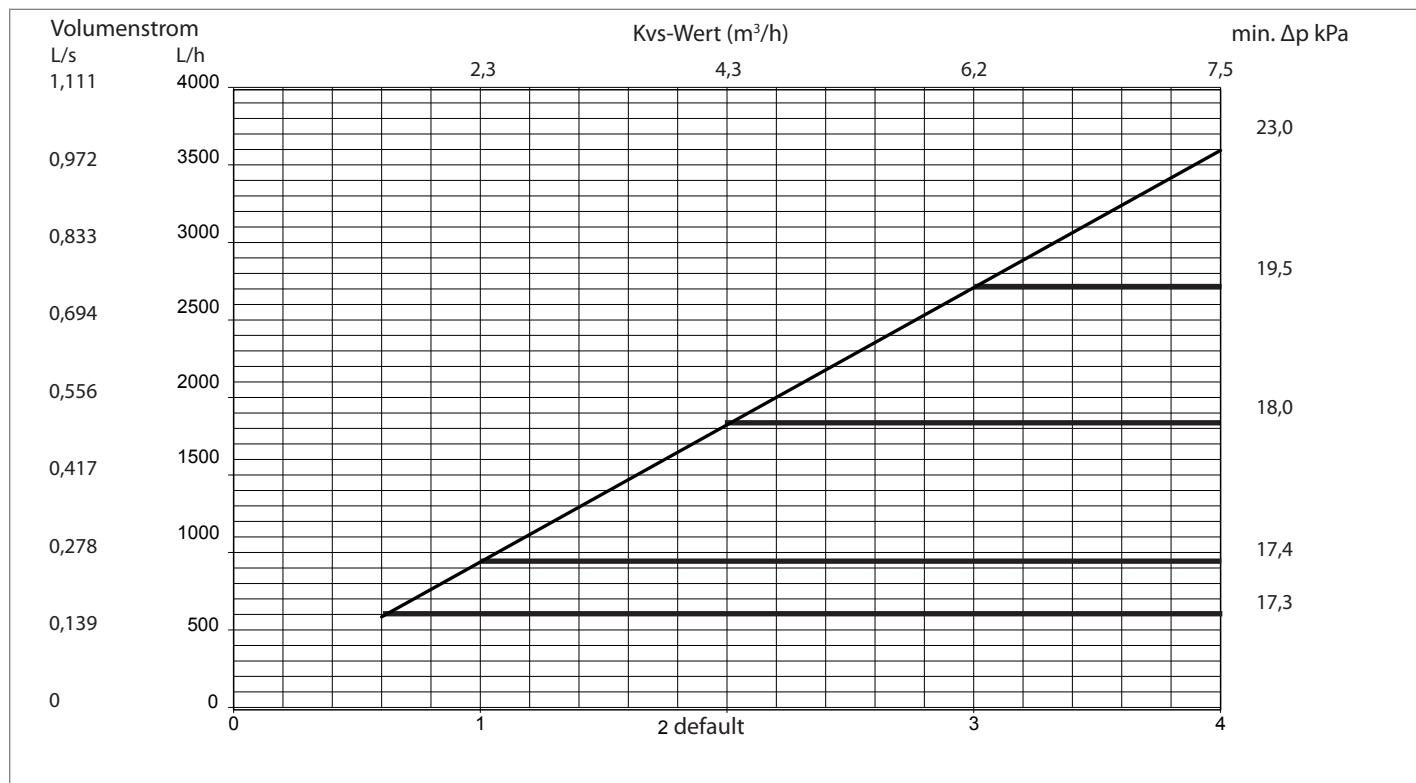


Frakta DKV Compact . Low 5,5 DN25

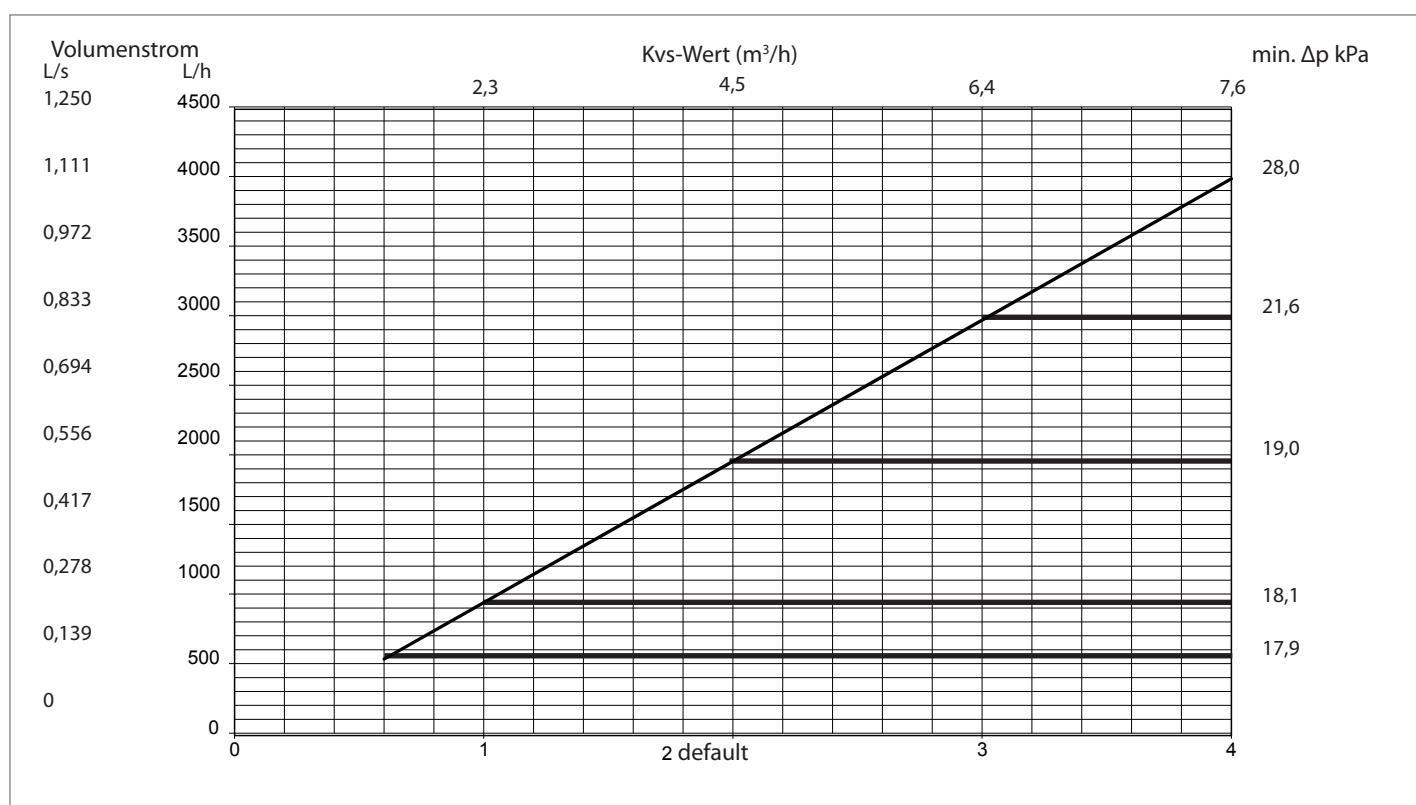


FRAKTA DKV DN10-DN32 Combination valve - Pressure-independent balancing and control valve

Frakta DKV . High 5,5 DN25L



Frakta DKV Compact . DN32



FRAKTA DKV DN10-DN32 Combination valve - Pressure-independent balancing and control valve

Presetting and volume flow rate

Frakta DKV Low 2,5 DN10/15 volume flow			Frakta DKV Low 5,0 DN10/15 volume flow			Frakta DKV High 2,5 DN15/20 volume flow			
default	I/h	I/s	I/h	I/s	gpm	I/h	I/s	gpm	
0,5	30	0,008	0,13			100	0,028	0,44	
0,6	35	0,010	0,15			128	0,036	0,56	
0,8	45	0,012	0,20	65	0,018	0,29	156	0,043	0,69
1,0	54	0,015	0,24	83	0,023	0,37	184	0,051	0,81
1,2	64	0,018	0,28	101	0,028	0,44	212	0,059	0,93
1,4	74	0,020	0,32	119	0,033	0,52	240	0,067	1,06
1,6	83	0,023	0,37	137	0,038	0,60	268	0,074	1,18
1,8	93	0,026	0,41	155	0,043	0,68	296	0,082	1,30
2,0	103	0,029	0,45	173	0,048	0,76	324	0,090	1,42
2,2	113	0,031	0,50	191	0,053	0,84	351	0,098	1,55
2,4	122	0,034	0,54	209	0,058	0,92	379	0,105	1,67
2,6	132	0,037	0,58	226	0,063	1,00	407	0,113	1,79
2,8	142	0,039	0,62	244	0,068	1,08	435	0,121	1,92
3,0	151	0,042	0,67	262	0,073	1,15	463	0,129	2,04
3,2	161	0,045	0,71	280	0,078	1,23	491	0,136	2,16
3,4	171	0,047	0,75	298	0,083	1,31	519	0,144	2,29
3,6	181	0,050	0,79	316	0,088	1,39	547	0,152	2,41
3,8	190	0,053	0,84	334	0,093	1,47	575	0,160	2,53
	200	0,056	0,88	352	0,098	1,55			
			370	0,103	1,63				

4,0

Frakta DKV High 5,0 DN15/20 volume flow			Frakta DKV High 5,5 DN20 volume flow			Frakta DKV Low 5,5 DN25 volume flow			
default	I/h	I/s	I/h	I/s	gpm	I/h	I/s	gpm	
0,6	220	0,061	0,97	300	0,083	1,32	280	0,078	1,23
0,8	285	0,079	1,26	395	0,110	1,74	356	0,099	1,57
1,0	351	0,097	1,54	480	0,133	2,11	430	0,119	1,89
1,2	416	0,116	1,83	558	0,155	2,46	502	0,139	2,21
1,4	481	0,134	2,12	632	0,176	2,78	574	0,159	2,53
1,6	546	0,152	2,41	704	0,196	3,10	647	0,180	2,85
1,8	612	0,170	2,69	776	0,216	3,42	722	0,201	3,18
2,0	677	0,188	2,98	850	0,236	3,74	800	0,222	3,52
2,2	742	0,206	3,27	927	0,258	4,08	881	0,245	3,88
2,4	808	0,224	3,56	1008	0,280	4,44	967	0,269	4,26
2,6	873	0,242	3,84	1094	0,304	4,82	1057	0,294	4,65
2,8	938	0,261	4,13	1185	0,329	5,22	1151	0,320	5,07
3,0	1004	0,279	4,42	1280	0,356	5,64	1250	0,347	5,50
3,2	1069	0,297	4,71	1380	0,383	6,07	1353	0,376	5,96
3,4	1134	0,315	4,99	1483	0,412	6,53	1460	0,406	6,43
3,6	1199	0,333	5,28	1589	0,441	6,99	1571	0,436	6,92
3,8	1265	0,351	5,57	1695	0,471	7,46	1685	0,468	7,42
	1330	0,369	5,85	1800	0,500	7,93	1800	0,500	7,93

4,0

Frakta DKV High 5,5 DN25L volume flow			Frakta DKV DN32 volume flow			
default	I/h	I/s	I/h	I/s	gpm	
0,6	600	0,167	2,64	550	0,153	2,42
0,8	777	0,216	3,42	753	0,209	3,32
1,0	954	0,265	4,20	956	0,266	4,21
1,2	1131	0,314	4,98	1159	0,322	5,10
1,4	1308	0,363	5,76	1362	0,378	6,00
1,6	1485	0,413	6,54	1565	0,435	6,89
1,8	1662	0,462	7,32	1768	0,491	7,79
2,0	1839	0,511	8,10	1971	0,548	8,68
2,2	2016	0,560	8,88	2174	0,604	9,57
2,4	2193	0,609	9,66	2377	0,660	10,47
2,6	2370	0,658	10,44	2580	0,717	11,36
2,8	2547	0,708	11,22	2783	0,773	12,26
3,0	2724	0,757	12,00	2986	0,829	13,15
3,2	2901	0,806	12,78	3189	0,886	14,04
3,4	3078	0,855	13,55	3392	0,942	14,94
3,6	3255	0,904	14,33	3595	0,999	15,83
3,8	3432	0,953	15,11	3798	1,055	16,73
4,0	3609	1,003	15,89	4001	1,111	17,62

FRAKTA DV DN10-DN32 Combination valve - Pressure-independent balancing and control valve

protocol sheet

type of pump

control type

nominal value

installing

signature

Date

Specification texts Frakta DKV...

Franck DKV - pressure-independent dynamic balancing, control and shut-off valve.

With fully modulating control independent of the preset flow rate and fluctuating differential pressures in the system.
Use with flow regulator, continuously adjustable without stroke limiter, differential pressure regulator and modulating control valve

With DDC or on/off actuator

Optionally with pressure measuring nipple.

The valve must be able to withstand a maximum differential pressure of 600 kPa (6 bar) DN10-DN25 and 800 kPa (8 bar) DN25L-DN50 to be closed with a leakage rate max 0.01% of nominal volume flow according to EN1349 class IV.

Consisting of:

Compact body made of hot pressed brass for DN10-DN32, PN25, 120°C, with internal or external thread. Pre-adjustable volume flow control valve.

Fully modulating control valve with 0-10 V DC or on/off actuator.
Differential pressure regulator. Control range 14 - 800 kPa, valve stroke: 2.5 mm - 5.0 mm - 5.0 - 15 mm.

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