

Frese ALPHA Cool cartridges

Application

Frese ALPHA Cool cartridges are used in cooling applications for the distribution of flow in various sections of the system.

The dynamic balancing valve ensures easy and reliable balancing of the system, regardless of any fluctuations in the differential pressure of the system.

Frese ALPHA Cool cartridges limits maximum flow in the system and ensures the most economical operation.

Can be used in both variable and constant flow systems.

Frese ALPHA Cool cartridge guarantees the specified flow in Frese ALPHA Wafer types DN50-DN1000.



Benefits

- Quick and easy selection as only flow data are required
- Security that the specified flow will not be exceeded
- Easy to install according to pre-defined flow
- Minimized commissioning time due to automatic balancing of the system
- High comfort for the end-users due to right balance of the hydraulic system.
- The valves automatically find the hydraulic balance regardless of pressure fluctuations in the system
- No main circuit or branch balancing valves needed in the system
- Improved response to water hammer due to the shock absorption by the rubber diaphragm of the cartridge

Features

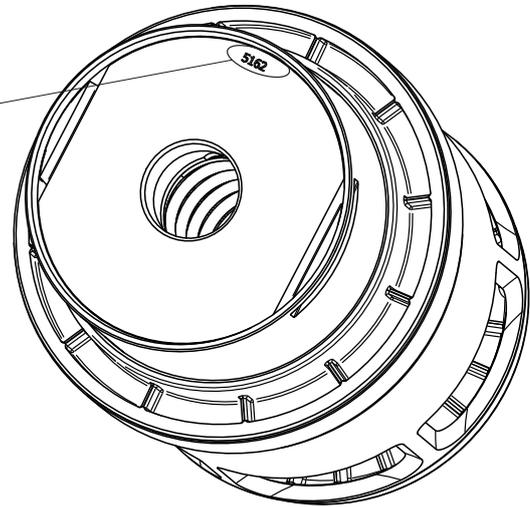
- No minimum straight pipe lengths required before or after the valve
- Built-in optional P/T plugs for needle system
- Minimized friction and noise due to the patented cartridge design based on the PPS/rubber diaphragm contact

Frese ALPHA Cool cartridges

Indication of flow rate on orifice plate

The four-digit number on the orifice plate is identical with the last four digits of the Frese product code. The orifice can be identified by this number and the corresponding flow rate can be read from the flow rate tables.

Frese no.	Flow [l/h]	Flow [l/s]	Flow [gpm]	Min. ΔP [kPa]
59-35162	3404	0.946	15.0	16
59-35200	4769	1.325	21.0	19
59-35227	5678	1.577	25.0	21



Identification of cartridge

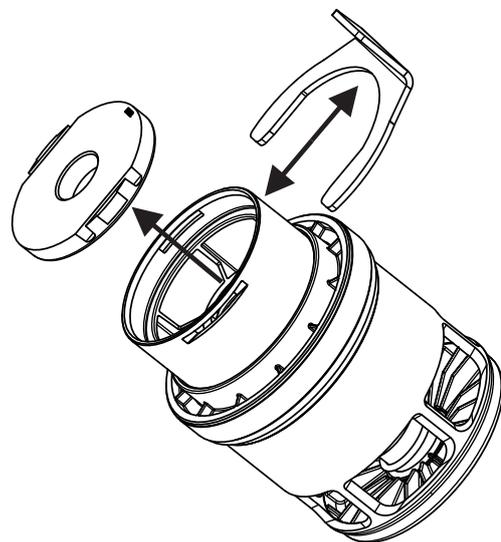
The three-digit number on the cartridge is identical with the first three digits of the Frese product code. The cartridge can be identified by this number and the corresponding flow rate can be read from the flow rate tables.

Frese no.	Flow [l/h]	Flow [l/s]	Flow [gpm]	Min. ΔP [kPa]
59-35162	3404	0.946	15.0	16
59-35200	4769	1.325	21.0	19
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Removal of orifice plate

The orifice plate can be removed by the special orifice-tool by sliding it in the grooves on the cartridge and back again. Then the orifice plate can be taken out. The orifice plate can be clicked back into the cartridge again.



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Frese ALPHA Cool Cartridge Operation

When the pressure increases the spring will be compressed and thereby the piston will reduce the outlet area and vice versa. The result is a constant flow rate through the valve, independent of pressure fluctuations.



Function

The following applies to all flow control valves:

$$Q = K_v \cdot \sqrt{\Delta p}$$

Q = Flow (m³/h)
 K_v = Opening area
 Δp = Differential pressure (Bar)

The Frese ALPHA Cool cartridge reacts to pressure fluctuations in the system ensuring that the differential pressure across the pre-adjustment unit is kept constant. This ensures that the maximum flow limit is achieved in accordance with the design.

Flow Calculation

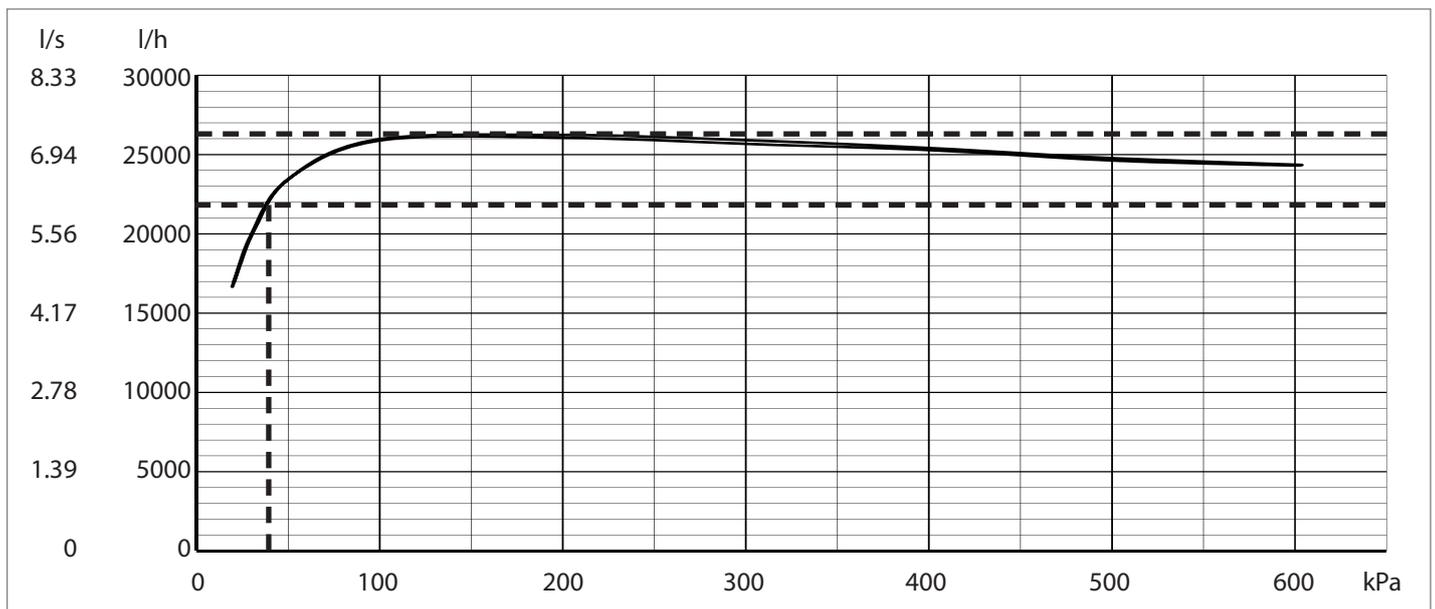
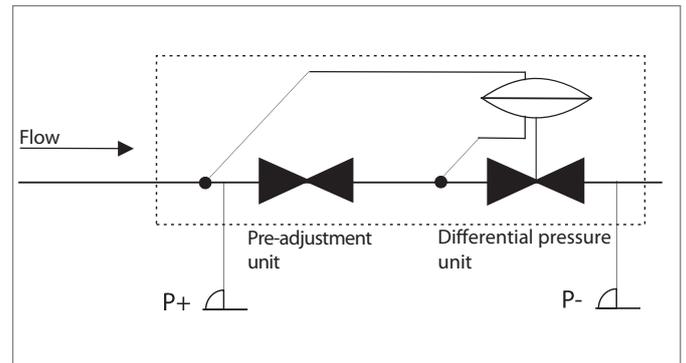
The flow through the valve can be identified by measuring the differential pressure (Δp) across the valve:

If the measured differential pressure is above the minimum Δp, the flow is the one stated on the graph for the valve.

If the measured differential pressure is below the minimum Δp, the flow can be found by using the formulas below.

Flow Calculation	
$Q = K_v \cdot \sqrt{\Delta p}$	Q = m ³ /h Δp = Bar
$Q = K_v \cdot 100 \cdot \sqrt{\Delta p}$	Q = l/h Δp = kPa
$Q = \frac{K_v}{36} \cdot \sqrt{\Delta p}$	Q = l/s Δp = kPa

Simplified Outline



Schematic view of the flow characteristic for cartridge type Frese no. 59-55349 Nominal flow 6.750 l/s / 24300 l/h. The cartridge enters the pressure range at 38 kPa and maintains the flow at a constant level to 600 kPa.

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Technical Data Frese ALPHA Cool cartridge

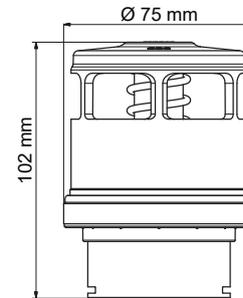
Cartridge material:	PPS glass-reinforced
O-rings:	EPDM
Spring:	Stainless steel 1.4310
Diaphragm:	HNBR reinforced
Medium temperature:	-20°C to +80°C
Diff. pressure range:	11 - 600 kPa

Product Programme

Frese ALPHA Cool Cartridge

Frese no.	Flow [l/h]	Flow [l/s]	Flow [gpm]	Min. ΔP [kPa]	Kv
59-35162	3404	0.946	15.0	16	8.5
59-35200	4769	1.325	21.0	15	12.3
59-35227	5678	1.577	25.0	13	15.7
59-35252	6813	1.893	30.0	12	19.7
59-35274	7721	2.145	34.0	11	23.3
59-45252	9084	2.523	40.0	21	19.8
59-45274	10220	2.839	45.0	18	24.1
59-45296	11355	3.154	50.0	16	28.4
59-45303	12491	3.470	55.0	18	29.4
59-45320	13399	3.722	59.0	18	31.6
59-45333	14762	4.101	65.0	16	36.9
59-45341	15897	4.416	70.0	17	38.6
59-55296	17033	4.731	75.0	36	28.4
59-55303	18168	5.047	80.0	38	29.5
59-55313	19304	5.362	85.0	37	31.7
59-55320	20439	5.678	90.0	40	32.3
59-55333	21575	5.993	95.0	36	36.0
59-55341	22710	6.308	100.0	36	37.9
59-55349	24300	6.750	107.0	38	39.4
59-55356	24981	6.939	110.0	37	41.1
59-55371	27600	7.667	121.5	40	43.6
59-55385	30204	8.390	133.0	40	47.8
59-55396	31794	8.832	140.0	41	49.7
59-55409	34400	9.556	151.5	43	52.5
59-55417	36570	10.158	161.0	46	53.9
59-55425	38607	10.724	170.0	47	56.3
59-55433	40878	11.355	180.0	50	57.8
59-65425	42922	11.923	189.0	59	55.9
59-65433	45420	12.617	200.0	62	57.7
59-65440	47691	13.248	210.0	59	62.1

Dimensions Frese ALPHA Cool Cartridge



Specification text

Frese ALPHA Cool cartridges DN50 - DN1000:

The cartridge for automatic balancing valve (flanged housing) shall be made of PPS glass-reinforced

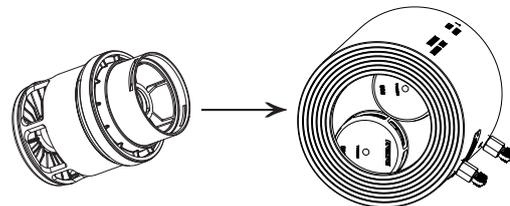
There shall be only one differential pressure control range up to 600 kPa

The flow rate shall be defined by the interchangeable orifice plate within the cartridge

The cartridge diaphragm shall be made of reinforced HNBR

The cartridge O-rings shall be made of EPDM

The cartridge spring shall be made of 1.4310 stainless steel



The pipe system shall be properly ventilated to avoid risk of air pockets. Glycolic mixtures up to 50% are applicable (both ethylene and propylene).
Recommendation: Water treatment to VDI 2035.

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