

Fact sheet

AB-QM NovoCon flow checker DN 40-100

Verifying the flow on DN 40 to DN 100 AB-QM valves

Flow verification in the installation



Fig. 1

To verify that an installation functions according to the design specifications checking only the most critical valve in the installation is needed (see figure 1).

The AB-QM maintains a constant differential pressure over the valve and any excess pressure will automatically be throttled. If there is not enough differential pressure the valve cannot reach the set flow.

The valve that is furthest away from the pump or the valve in the circuit with the highest resistance has the lowest available differential pressure, so if this critical valve has enough pressure it means the other valves will also function properly.

Important:

To get useful measurement the commissioning zone should run on full load, so all actuators in the installation should be opened fully. This ensures that you are measuring under the most unfavorable circumstances. The AB-QM's will have more differential pressure available when the installation is working on partial load. Please check if coincidence factor was taken into consideration.

Method of verification

AB-QM DN 40-100

Measure the differential pressure across the whole valve.

The Test plugs are placed in such a way that differential pressure p1–p3 (Δp) over the valve is measured (see figure 2).

If the measured value is below 30 kPa (HF versions 60 kPa) then there is not enough differential pressure available for the AB-QM to function properly. If the measured value is above 30 kPa then the AB-QM has enough differential pressure available and the flow is according to the setting (see figure 3).

Method of measurement

Measure the differential pressure across the control valve.

The Test plugs are placed in such a way that p1–p2 is measured (see figure 2).

Therefore the measured differential pressure can be used to calculate the flow directly. It's necessary to use the table that was derived from statistical measurements

Since the measurements across the measuring points are influenced by the dynamic pressure, turbulences, flow patterns, internal tolerances, setting accuracy and accuracy of the measuring equipment we believe that the total accuracy of the measurement is lower than performance of the valve.

Therefore we recommend not to adjust the setting when the results are within 10 % of the expected flow.

Calculating the flow

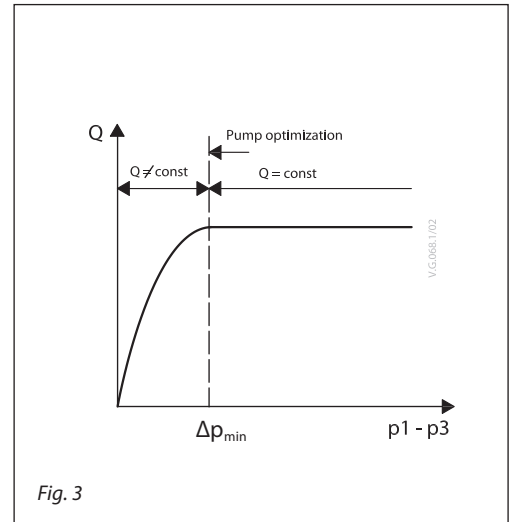
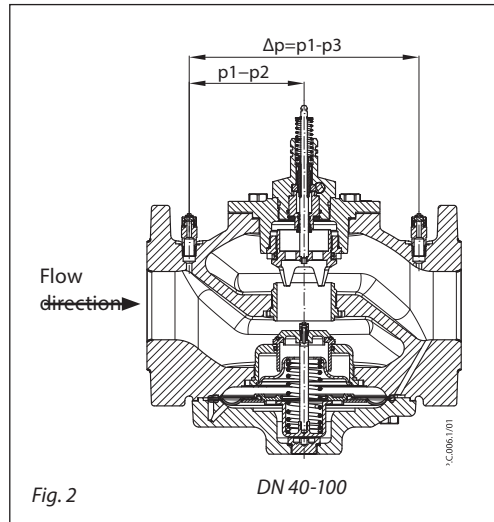
$$\Delta p_{cv} = p1 - p2$$

$$Q = kv_{cv} \times \sqrt{\Delta p_{cv}}$$

For kv_{cv} values see table in figure 4.

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Presetting	DN 40	DN 50 / DN 50HF	DN 65 / DN 65HF	DN 80 / DN 80HF	DN 100 / DN 100HF
Set (%)	kv_{cv} (m ³ /h)				
20,0%	3,49	6,13	9,99	12,85	17,33
22,5%	4,04	7,01	11,34	14,64	19,87
25,0%	4,59	7,91	12,70	16,45	22,43
27,5%	5,17	8,83	14,08	18,27	24,99
30,0%	5,77	9,76	15,47	20,09	27,57
32,5%	6,39	10,70	16,88	21,92	30,16
35,0%	7,03	11,66	18,29	23,76	32,76
37,5%	7,68	12,62	19,71	25,61	35,37
40,0%	8,36	13,59	21,15	27,47	37,99
42,5%	9,05	14,56	22,59	29,33	40,62
45,0%	9,77	15,53	24,04	31,20	43,27
47,5%	10,50	16,51	25,49	33,09	45,92
50,0%	11,25	17,49	26,95	34,98	48,59
52,5%	12,02	18,46	28,41	36,87	51,27
55,0%	12,81	19,43	29,87	38,78	53,96
57,5%	13,63	20,39	31,34	40,70	56,66
60,0%	14,45	21,35	32,80	42,62	59,37
62,5%	15,30	22,29	34,27	44,55	62,09
65,0%	16,17	23,23	35,73	46,49	64,83
67,5%	17,06	24,14	37,19	48,44	67,58
70,0%	17,97	25,05	38,64	50,40	70,33
72,5%	18,89	25,93	40,09	52,36	73,10
75,0%	19,84	26,80	41,54	54,34	75,88
77,5%	20,80	27,65	42,97	56,32	78,67
80,0%	21,79	28,47	44,40	58,31	81,47
82,5%	22,79	29,27	45,82	60,31	84,29
85,0%	23,81	30,04	47,23	62,31	87,11
87,5%	24,85	30,79	48,62	64,33	89,95
90,0%	25,91	31,50	50,01	66,35	92,79
92,5%	26,99	32,18	51,38	68,38	95,65
95,0%	28,09	32,83	52,73	70,42	98,52
97,5%	29,21	33,44	54,07	72,47	101,40
100,0%	30,35	34,02	55,39	74,53	104,29

Fig. 4 The flow is according to setting if the calculated flow is in the range of ±10 % of the set flow.

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