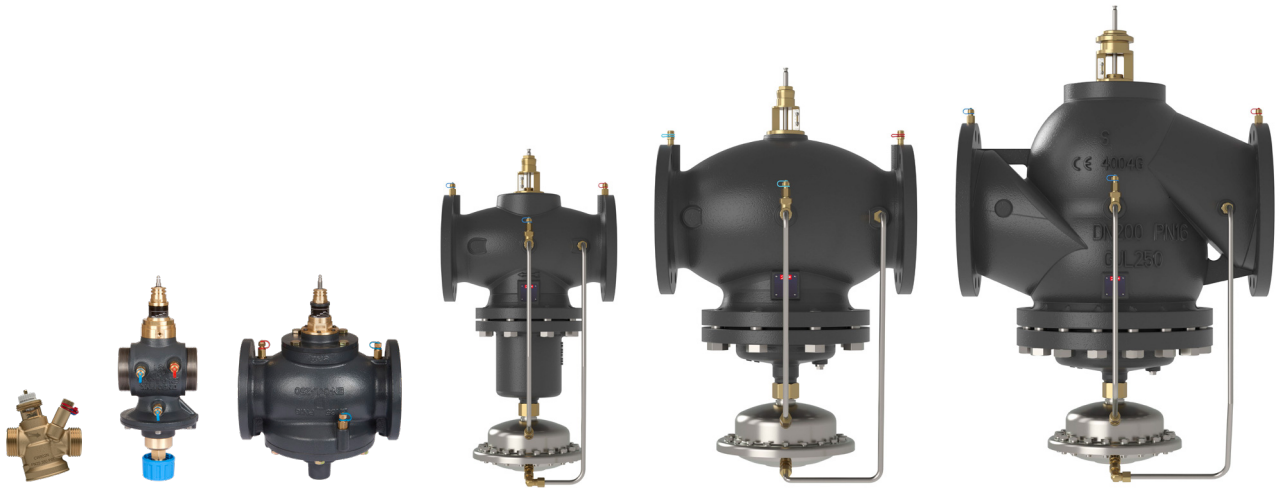


## Data sheet

# AB-QM 4.0 / AB-QM Pressure Independent Control Valves (PICV) DN 15-250



*The AB-QM valve equipped with an actuator is a control valve with full authority and an automatic balancing function / flow limitation. Typical applications are: Temperature control with permanent automatic balancing on terminal units (chillers, air-handling units, fan coils, induction units, radiation panels and heat exchangers). Without an actuator is a flow limiter e.g for one-pipe systems.*

**Description**

The Danfoss AB-QM is a Pressure Independent Control Valve (PICV) that combines high accuracy and durability with market leading user-friendliness. The design of the AB-QM is fully geared towards making your project run on time and on budget while delivering the most efficient HVAC system.


Pressure independent valves are control valves with an automatic balancing function. An in-built pressure controller keeps a constant differential pressure over the control valve, ensuring full authority and automatic flow limitation. By combining two functions in one, control and automatic hydronic balance, Danfoss PICVs provide a cost-efficient solution for the challenges faced by forward-looking designers of HVAC systems.

The Danfoss AB-QM delivers the lowest total cost of ownership because:

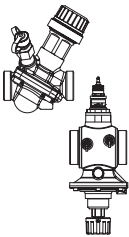
- Precise flow limitation ensures always the right flow at the right time, ensuring minimized pumping energy
- Full range from DN15 to DN250 for flows up to 407 m<sup>3</sup>/h
- Available with internal and external thread for universal applicability
- Danfoss' durability test ensures the AB-QM has best-in-class resistance to scaling and clogging
- Easy troubleshooting because of the always visible setting and the ability to measure flow through test plugs
- Minimum hysteresis for stable and precise temperature control
- Future-ready with a range of smart actuators, ready for data driven and optimized HVAC 4.0

## Ordering

### AB-QM 4.0 threaded version (with test plugs and without test plugs) - External thread


| Type  |       |                            |                            | With test plugs | Without test plugs |
|---|-------|----------------------------|----------------------------|-----------------|--------------------|
| Picture   | DN    | Q <sub>nom.</sub><br>(l/h) | Ext. thread<br>(ISO 228/1) | Code No.        | Code No.           |
|  | 15 LF | 200                        | G 3/4 A                    | 003Z8200        | 003Z8220           |
|   | 15    | 650                        |                            | 003Z8201        | 003Z8221           |
|   | 15 HF | 1,200                      |                            | 003Z8202        | 003Z8222           |
|   | 20    | 1,100                      | G 1 A                      | 003Z8203        | 003Z8223           |
|   | 20 HF | 1,900                      |                            | 003Z8204        | 003Z8224           |
|   |       |                            |                            |                 |                    |

### AB-QM threaded version (with test plugs and without test plugs) - External thread

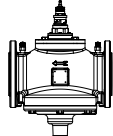
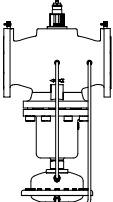
| Type  |       |                            |                            | With test plugs | Without test plugs |
|---|-------|----------------------------|----------------------------|-----------------|--------------------|
| Picture   | DN    | Q <sub>nom.</sub><br>(l/h) | Ext. thread<br>(ISO 228/1) | Code No.        | Code No.           |
|  | 25    | 1,700                      | G 1 1/4 A                  | 003Z1214        | 003Z1204           |
|   | 25HF  | 2,700                      |                            | -               | 003Z1224           |
|   | 32    | 3,200                      | G 1 1/2 A                  | 003Z1215        | 003Z1205           |
|   | 32 HF | 4,000                      |                            | -               | 003Z1225           |
|   | 40    | 7,500                      | G 2 A                      | 003Z0770        | *                  |
|   | 50    | 12,500                     | G 2 1/2 A                  | 003Z0771        |                    |
|   |       |                            |                            |                 |                    |
|   |       |                            |                            |                 |                    |

\* AB-QM DN 15-32 w/o TP can not be upgraded to version with TP




### AB-QM 4.0 threaded version (with test plugs and without test plugs) - Internal thread

| Type  |       |                            |                          | With test plugs | Without test plugs |
|---|-------|----------------------------|--------------------------|-----------------|--------------------|
| Picture   | DN    | Q <sub>nom.</sub><br>(l/h) | Int. thread<br>(ISO 7/1) | Code No.        | Code No.           |
|  | 15 LF | 200                        | Rp 1/2                   | 003Z8300        | 003Z8320           |
|   | 15    | 650                        |                          | 003Z8301        | 003Z8321           |
|   | 15 HF | 1,200                      |                          | 003Z8302        | 003Z8322           |
|   | 20    | 1,100                      | Rp 3/4                   | 003Z8303        | 003Z8323           |
|   | 20 HF | 1,900                      |                          | 003Z8304        | 003Z8324           |
|   |       |                            |                          |                 |                    |

### AB-QM flanged version

| Picture   | DN     | Q <sub>nom.</sub><br>(l/h) | Flange connection<br>(EN 1092-1) | Code No. |
|---|--------|----------------------------|----------------------------------|----------|
|  | 50     | 12,500                     | PN 16                            | 003Z0772 |
|   | 65     | 20,000                     |                                  | 003Z0773 |
|   | 65 HF  | 25,000                     |                                  | 003Z0793 |
|   | 80     | 28,000                     |                                  | 003Z0774 |
|   | 80 HF  | 40,000                     |                                  | 003Z0794 |
|   | 100    | 38,000                     |                                  | 003Z0775 |
|   | 100 HF | 59,000                     |                                  | 003Z0795 |
|  | 125    | 90,000                     |                                  | 003Z0705 |
|   | 125 HF | 110,000                    |                                  | 003Z0715 |
|   | 150    | 145,000                    |                                  | 003Z0706 |
|   | 150 HF | 190,000                    |                                  | 003Z0716 |
|   | 200    | 200,000                    |                                  | 003Z0707 |
|   | 200 HF | 270,000                    |                                  | 003Z0717 |
|   | 250    | 300,000                    |                                  | 003Z0708 |
|   | 250 HF | 370,000                    |                                  | 003Z0718 |

**Ordering** *(continuous)*  
**Accessories & spare parts**

| Type  | Comments |            | Code No. |
|---|----------|------------|----------|
|   | To pipe  | To valve   |          |
| Union connection<br>(CW617N)<br>(1 pcs.)<br>         | R 1/2    | DN 15      | 003Z0232 |
|   | R 3/4    | DN 20      | 003Z0233 |
|   | R 1      | DN 25      | 003Z0234 |
|   | R 1 1/4  | DN 32      | 003Z0235 |
|   | R 1 1/2  | DN 40      | 003Z0279 |
|   | R 2      | DN 50      | 003Z0278 |
| Tailpiece welding<br>(W. Nr. 1.0308)<br>(1 pcs.)<br> | Weld.    | DN 15      | 003Z0226 |
|   |          | DN 20      | 003Z0227 |
|   |          | DN 25      | 003Z0228 |
|   |          | DN 32      | 003Z0229 |
|   |          | DN 40      | 003Z0270 |
|   |          | DN 50      | 003Z0276 |
|    | Weld.    | DN 15      | 003Z1271 |
|   |          | DN 20      | 003Z1272 |
|   |          | DN 25      | 003Z1273 |
|   |          | DN 32      | 003Z1274 |
|   |          | DN 40      | 003Z1275 |
|   |          | DN 50      | 003Z1276 |
| Tailpieces for soldering<br>(CW614N)<br>(2 nuts, 2 gaskets, 2 soldering plugs)  | 15x1 mm  | DN 15      | 065Z7017 |
| Handle AB-QM<br>(necessary accessory if installing valve without actuator)  |          | DN 40-100  | 003Z0695 |
|   |          | DN 125-150 | 003Z0696 |
|   |          | DN 200-250 | 003Z0697 |
| Shut off accessories  |          | DN15-32    | 003Z0230 |
| Stem heater for AB-QM DN 40-100 / AME 435 QM  |          |            | 065Z0315 |
| Stem heater for AB-QM DN 125, 150 / AME 55 QM / AME 655   |          |            | 065Z7022 |
| Elbow test plug extension (1 pcs.)  |          |            | 003Z3944 |
| Straight test plug extension (1 pcs.)   |          |            | 003Z3945 |
| Straight plug extension set (1 pcs.)  |          |            | 003Z3946 |

## Technical data

|   |                               | DN  | AB-QM 4.0 (threaded version)  |      |       |       |       | AB-QM (threaded version)            |         |         |         |                      |                             |  |
|---|-------------------------------|-----|---|------|-------|-------|-------|-------------------------------------|---------|---------|---------|----------------------|-----------------------------|--|
| Nominal diameter                        |                               | DN  | 15 LF   | 15   | 15 HF | 20    | 20 HF | 25                                  | 25 HF   | 32      | 32 HF   | 40                   | 50                          |  |
| Flow range                              | Q <sub>nom</sub> (100 %)¹)    | l/h | 200   | 650  | 1.200 | 1.100 | 1.900 | 1.700                               | 2.700   | 3.200   | 4.000   | 7.500                | 12.500                      |  |
|   | Q <sub>high</sub> ³)          |     | 200   | 650  | 1.200 | 1.100 | 1.900 | 1.870                               | 2.970   | 3.520   | 4.400   | 7.500                | 12.500                      |  |
| Setting range ¹), ²)                    |                               | %   | 10-100  |      |       |       |       | 20-110                              |         |         |         | 40-100               |                             |  |
| Diff. pressure ³), ⁴)                   | Δp <sub>min</sub>             | kPa | 16  | 16   | 25    | 16    | 25    | 20 (25)                             | 35 (40) | 25 (30) | 35 (40) | 30                   |                             |  |
|   | Δp <sub>max</sub>             |     | 600   |      |       |       |       |                                     |         |         |         |                      |                             |  |
| Pressure stage                          |                               | PN  | 25  |      |       |       |       | 16                                  |         |         |         |                      |                             |  |
| Control range                           |                               |     | 1:1000  |      |       |       |       |                                     |         |         |         |                      |                             |  |
| Control valve's characteristic          |                               |     | Linear (could be converted by actuator to equal percentage)   |      |       |       |       |                                     |         |         |         |                      |                             |  |
| Leakage rate with recommended actuators |                               |     | IEC 60534-4:2007 class IV   |      |       |       |       | IEC 60534-4:2007 class III          |         |         |         |                      |                             |  |
| For shut off function                   |                               |     | Acc. to ISO 5208 class A - no visible leakage   |      |       |       |       |                                     |         |         |         |                      |                             |  |
| Flow medium                             |                               |     | Water and water mixture for closed heating and cooling systems according to plant type I for DIN WN 14868. When used in Plant type II for DIN EN 14868 appropriate protective measures are taken. The requirements of VDI 2035, part 1+2 are observed |      |       |       |       |                                     |         |         |         |                      |                             |  |
| Medium temperature                      |                               | °C  | -10 ... +95   |      |       |       |       | (-10*) + 2 ... 120                  |         |         |         |                      |                             |  |
| Storage and transport temp.             |                               |     | -40 ... +70   |      |       |       |       |                                     |         |         |         |                      |                             |  |
| Stroke                                  |                               | mm  | 4   |      |       |       |       | 4.5                                 |         |         |         | 10                   |                             |  |
| Connection                              | ext. thread (ISO 228/1)       |     | G ¾ A   |      |       | G 1 A |       | G 1¼ A                              |         | G 1½ A  |         | G 2 A                | G 2 ½ A                     |  |
|   | int. thread (ISO 7/1)         |     | Rp ½  | Rp ½ | Rp ½  | Rp ¾  | Rp ¾  | -                                   |         |         |         |                      |                             |  |
|   | actuator                      |     | M30 x 1.5   |      |       |       |       |                                     |         |         |         |                      | Danfoss standard            |  |
| Materials and medium                    |                               |     |   |      |       |       |       |                                     |         |         |         |                      |                             |  |
| Materials in the medium                 | Valve bodies                  |     | DZR Brass   |      |       |       |       |                                     |         |         |         |                      | Grey iron EN-GJL-250 (GG25) |  |
|   | Membranes and O-rings         |     | EPDM  |      |       |       |       |                                     |         |         |         |                      |                             |  |
|   | Shutter guide                 |     | PPSU  |      |       |       |       | N/A                                 |         |         |         |                      |                             |  |
|   | Shutter                       |     | DZR Brass   |      |       |       |       | -                                   |         |         |         |                      |                             |  |
|   | Springs                       |     | W.Nr.1.4310   |      |       |       |       | W.Nr.1.4310, W.Nr. 1.4568           |         |         |         |                      |                             |  |
|   | Spring support                |     | PPSU  |      |       |       |       | -                                   |         |         |         |                      |                             |  |
|   | Cone (Pc)                     |     | -   |      |       |       |       | W.Nr. 1.4305                        |         |         |         | CW 614N, W.Nr.1.4305 |                             |  |
|   | Cone (Cv)                     |     | PPSU  |      |       |       |       | CW 614N                             |         |         |         |                      |                             |  |
|   | Seat (Pc)                     |     | -   |      |       |       |       | EPDM                                |         |         |         | W.Nr. 1.4305         |                             |  |
|   | Seat (Cv)                     |     | DZR Brass   |      |       |       |       |                                     |         |         |         |                      | W.Nr. 1.4305                |  |
| Materials out of medium                 | Screw                         |     | -   |      |       |       |       | Stainless steel A2                  |         |         |         |                      |                             |  |
|   | Plastic parts                 |     | ABS   |      |       |       |       | PA                                  |         |         |         | POM                  |                             |  |
|   | Insert parts and outer screws |     | -   |      |       |       |       | CW 614N, W.Nr. 1.4310, W.Nr. 1.4401 |         |         |         |                      |                             |  |

<sup>1)</sup> Factory setting of the valve is done at nominal setting range.

<sup>2)</sup> Regardless of the setting, the valve can modulate below 1 % of set flow.

<sup>3)</sup> When set above 100 %, minimum starting pressure needed is higher, see figures in the ().

<sup>4)</sup> At min differential pressure valve reaches at least 90% of nominal flow. Declaration of performance is available upon request.

<sup>\*</sup> If the medium temperature when using AB-QM DN 15-32 is below 2 °C, than ice forming on the spindle must be prevented, there fore valve and actuator should be insulated.

For AB-QM DN40-100 stem heaters must be used: Code 065B2171, 065Z0315 or 065Z7022.

According suitability and usage especially in not oxygen tight systems please mind the instructions given by the coolant producer.

Pc - pressure controller part

Cv - Control valve part

## Technical data (continuous)

## AB-QM (flanged version)

| Nominal diameter                        |  | DN               | 50   | 65     | 65 HF  | 80     | 80 HF  | 100    | 100 HF |
|---|--|------------------|--|--------|--------|--------|--------|--------|--------|
| Flow range                              | Q <sub>nom</sub> (100 %) <sup>1)</sup> | l/h              | 12,500   | 20,000 | 25,000 | 28,000 | 40,000 | 38,000 | 59,000 |
|   | Q <sub>high</sub>                      |                  | 12,500   | 20,000 | 25,000 | 28,000 | 40,000 | 38,000 | 59,000 |
| Setting range <sup>1), 2)</sup>         |  | %                | 40-100   |        |        |        |        |        |        |
| Diff. pressure <sup>3), 5)</sup>        | Δp <sub>min</sub>                      | kPa              | 30   |        | 60     | 30     | 60     | 30     | 60     |
|   | Δp <sub>max</sub>                      |                  | 600  |        |        |        |        |        |        |
| Pressure stage                          |  | PN               | 16   |        |        |        |        |        |        |
| Control range                           |  |                  | Acc. to standard IEC 534 control range is high as Cv characteristic is linear. (1:1000)  |        |        |        |        |        |        |
| Control valve's characteristic          |  |                  | Linear (could be converted by actuator to equal percentage)  |        |        |        |        |        |        |
| Leakage rate with recommended actuators |  |                  | max. 0.05 % of Q <sub>nom</sub>  |        |        |        |        |        |        |
| For shut off function                   |  |                  | Acc. to ISO 5208 class A - no visible leakage  |        |        |        |        |        |        |
| Flow medium                             |  |                  | Water and water mixture for closed heating and cooling systems according to plant type I for DIN EN 14868. When used in plant Type II for DIN EN 14868 appropriate protective measures are taken. The requirements of VDI 2035, part 1 + 2 are observed. |        |        |        |        |        |        |
| Medium temperature                      |  | °C               | -10 ... +120   |        |        |        |        |        |        |
| Storage and transport temp.             |  |                  | -40 ... 70   |        |        |        |        |        |        |
| Stroke                                  |  | mm               | 10   | 15     |        |        |        |        |        |
| Connection                              | flange                                 | PN 16            |  |        |        |        |        |        |        |
|   | actuator                               | Danfoss standard |  |        |        |        |        |        |        |
| Materials in the water                  |  |                  |  |        |        |        |        |        |        |
| Valve bodies                            |  |                  | Grey iron EN-GJL-250 (GG25)  |        |        |        |        |        |        |
| Membranes/ Bellow                       |  |                  | EPDM   |        |        |        |        |        |        |
| O-rings                                 |  |                  | EPDM   |        |        |        |        |        |        |
| Springs                                 |  |                  | W.Nr. 1.4568, W.Nr. 1.4310   |        |        |        |        |        |        |
| Cone (Pc)                               |  |                  | CuZn40Pb3 - CW 614N, W.Nr. 1.4305  |        |        |        |        |        |        |
| Seat (Pc)                               |  |                  | W.Nr. 1.4305   |        |        |        |        |        |        |
| Cone (Cv)                               |  |                  | CuZn40Pb3 - CW 614N  |        |        |        |        |        |        |
| Seat (Cv)                               |  |                  | W.Nr. 1.4305   |        |        |        |        |        |        |
| Screw                                   |  |                  | Stainless Steel (A2)   |        |        |        |        |        |        |
| Flat gasket                             |  |                  | NBR  |        |        |        |        |        |        |

| Nominal diameter                            |                                 | DN  | 125  | 125 HF  | 150          | 150 HF  | 200     | 200 HF  | 250     | 250 HF  |
|---|---------------------------------|-----|--|---------|--------------|---------|---------|---------|---------|---------|
| Flow range                                  | $Q_{nom}$ (100 %) <sup>1)</sup> | l/h | 90,000   | 110,000 | 145,000      | 190,000 | 200,000 | 270,000 | 300,000 | 370,000 |
|   | $Q_{high}$ <sup>3)</sup>        |     | 100,000  | 120,000 | 160,000      | 209,000 | 220,000 | 300,000 | 330,000 | 407,000 |
| Setting range <sup>2)</sup>                 |                                 | %   | 40-110   |         |              |         |         |         |         |         |
| Diff. pressure<br><small>3), 4), 5)</small> | $\Delta p_{min}$                | kPa | 40 (60)  | 60 (80) | 40 (60)      | 60 (80) | 45 (65) | 60 (80) | 45 (65) | 60 (80) |
|   | $\Delta p_{max}$                |     | 600  | 600     | 600          | 600     | 600     | 600     | 600     | 600     |
| Pressure stage                              |                                 | PN  | 16   |         |              |         |         |         |         |         |
| Control range                               |                                 |     | 1:1000   |         |              |         |         |         |         |         |
| Control valve's characteristic              |                                 |     | Linear (could be converted by actuator to equal percentage)  |         |              |         |         |         |         |         |
| Leakage rate with recommended actuators     |                                 |     | max.0.01 % of $Q_{nom}$  |         |              |         |         |         |         |         |
| Flow medium                                 |                                 |     | Water and water mixture for closed heating and cooling systems according to plant type I for DIN EN 14868. When used in plant Type II for DIN EN 14868 appropriate protective measures are taken. The requirements of VDI 2035, part 1 + 2 are observed. |         |              |         |         |         |         |         |
| Medium temperature                          |                                 | °C  | -10 ... +120   |         |              |         |         |         |         |         |
| Storage and transport temp.                 |                                 |     | -40 ... 70   |         |              |         |         |         |         |         |
| Stroke                                      |                                 | mm  | 30   |         |              |         |         |         |         |         |
| Connection                                  | flange                          |     | PN 16  |         |              |         |         |         |         |         |
|   | actuator                        |     | Danfoss standard   |         |              |         |         |         |         |         |
| Materials in the water                      |                                 |     |  |         |              |         |         |         |         |         |
| Valve bodies                                |                                 |     | Grey iron EN-GJL-250 (GG 25)   |         |              |         |         |         |         |         |
| Membranes/ Bellow                           |                                 |     | W.Nr.1.4571  |         | EPDM         |         |         |         |         |         |
| O-rings                                     |                                 |     | EPDM   |         |              |         |         |         |         |         |
| Springs                                     |                                 |     | W.Nr.1.4401  |         | W.Nr.1.4310  |         |         |         |         |         |
| Cone (Pc)                                   |                                 |     | W.Nr.1.4404NC  |         | W.Nr.1.4021  |         |         |         |         |         |
| Seat (Pc)                                   |                                 |     | W.Nr.1.4027  |         |              |         |         |         |         |         |
| Cone (Cv)                                   |                                 |     | W.Nr.1.4404NC  |         | W.Nr.1.4021  |         |         |         |         |         |
| Seat (Cv)                                   |                                 |     | W.Nr.1.4027  |         |              |         |         |         |         |         |
| Screw                                       |                                 |     | W.Nr.1.1181  |         |              |         |         |         |         |         |
| Flat gasket                                 |                                 |     | Graphite gasket  |         | Non asbestos |         |         |         |         |         |

<sup>1)</sup> Factory setting of the valve is done at nominal setting range.

<sup>2)</sup> Regardless of the setting, the valve can modulate below 1 % of set flow.

<sup>3)</sup> When set above 100 %, minimum starting pressure needed is higher, see figures in the ().

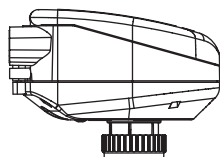
<sup>4)</sup> In case AB-QM is used above 400 kPa differential pressure contact Danfoss design center to assure proper design.

<sup>5)</sup> At min differential pressure valve reaches at least 90% of nominal flow. Declaration of performance is available upon request.

Pc - pressure controller part

Cv - Control valve part

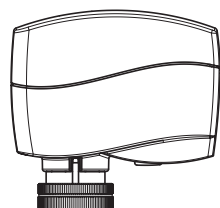
## Actuators overview AB-QM DN 15-32



### NovoCon® S

NovoCon® S is a high accuracy multi-functional field bus actuator, specifically designed for use in combination with the Pressure Independent Balancing Control Valve type AB-QM in sizes from DN 15 LF-32 HF. The actuator with AB-QM is used to control water supply to fan coil units, chilled beams, induction units, small re-heaters, re-coolers, AHU's and other terminal units for zone control, in which heating/ chilled water is the controlled medium.

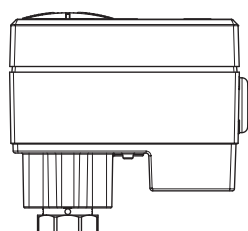
| Type       | Speed          | Power supply | Control signal                | Communication protocol   | Enclosure                           | Code No. |
|------------|----------------|--------------|-------------------------------|--------------------------|-------------------------------------|----------|
| NovoCon® S | 3/6/12/24 s/mm | 24 V ac/dc   | 0-10 V, 2-10V, 0-20mA, 4-20mA | BACnet MS/TP, Modbus RTU | IP 54 (IP40 if mounted upside down) | 003Z8504 |



### AME 110/120 NL

The AME 110 and 120 are high precision modulating gear actuators that can be mounted on the AB-QM for precise control. They have a calibration function so the travel of the actuator always matches the stroke of the AB-QM perfectly. The actuator is suitable for both linear and logarithmic characteristics. The AME 110/120 fits to AB-QM DN 15 LF to DN 32 HF.

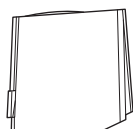
| Type        | Speed   | Feedback signal | Power supply | Control signal                | Enclosure | Code No. |
|-------------|---------|-----------------|--------------|-------------------------------|-----------|----------|
| AME 110 NL  | 24 s/mm | No              | 24 V ac      | 0-10 V, 2-10V, 0-20mA, 4-20mA | IP 42     | 082H8057 |
| AME 110 NLX | 24 s/mm | Yes             |              |                               |           | 082H8060 |
| AME 120 NL  | 12 s/mm | No              |              |                               |           | 082H5059 |



### AME 13 SU/SD

The AME 13 is a precision gear actuator that has a built-in spring that will close the valve (Spring Down, SD) or open the valve (Spring Up, SU) if the power on the actuator is lost. The characteristic can be set to Logarithmic or Linear with a dip switch. The AME 13 SU/SD fits to AB-QM DN 15 LF to DN 32 HF.

| Type        | Speed   | Spring          | Power supply | Control signal                | Feedback signal | Enclosure | Code No. |
|-------------|---------|-----------------|--------------|-------------------------------|-----------------|-----------|----------|
| AME 13 SU-1 | 14 s/mm | Spring to open  | 24 V ac      | 0-10 V, 2-10V, 0-20mA, 4-20mA | 0-10 V, 2-10V   | IP 42     | 082H5006 |
| AME 13 SD-1 | 14 s/mm | Spring to close |              |                               |                 |           | 082H5007 |



### ABNM-A5

The ABNM is a thermal modulating actuator. It can be used to modulate the AB-QM if speed or precision is not the first concern. ABNM has either a Logarithmic (LOG) or a Linear (LIN) characteristic which should be chosen to fit the application. It is available in Normally Open (NO) and Normally Closed (NC) versions, as well as in 24V DC and AC. The ABNM-A5 fits to AB-QM DN 15 LF to DN 32 HF.

| Type    | NO/NC | LOG/LIN | Supply voltage | Stroke | Full stroke time | Enclosure | Code No. |
|---------|-------|---------|----------------|--------|------------------|-----------|----------|
| ABNM-A5 | NC    | LOG     | 24 V ac        | 5 mm   | 3-5 min          | IP 54     | 082F1160 |
| ABNM-A5 | NC    | LIN     |                | 5 mm   |                  |           | 082F1161 |
| ABNM-A5 | NC    | LOG     |                | 6.5 mm |                  |           | 082F1162 |
| ABNM-A5 | NO    | LOG     |                | 6.5 mm |                  |           | 082F1163 |
| ABNM-A5 | NC    | LIN     |                | 6.5 mm |                  |           | 082F1164 |
| ABNM-A5 | NO    | LIN     | 24 V dc        | 6.5 mm |                  |           | 082F1165 |
| ABNM-A5 | NC    | LOG     |                | 6.5 mm |                  |           | 082F1166 |
| ABNM-A5 | NO    | LOG     |                | 6.5 mm |                  |           | 082F1167 |

Note: ABN & ABNM A5 with 5mm stroke are only able to open AB-QM DN 25-32 90%.

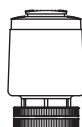
| Cables   | Code No. |
|----------|----------|
| 1 meter  | 082F1081 |
| 5 meter  | 082F1082 |
| 10 meter | 082F1083 |

### TWA-Q

TWA-Q is a thermal actuator that is used for On/Off applications, where control precision and speed are not prioritized. It is available in Normally Open (NO) and Normally Closed (NC) versions and in 24 and 230 Volt. TWA-Q has a position indicator to show if it is open or closed. The TWA-Q fits to AB-QM DN 15 LF to DN 32 HF.

| Type  | NC/NO | Voltage   | Stroke | Full stroke time <sup>1)</sup> | Enclosure | Code No. |
|-------|-------|-----------|--------|--------------------------------|-----------|----------|
| TWA-Q | NC    | 230V AC   | 5 mm   | <3 min.                        | IP 54     | 082F1600 |
| TWA-Q | NO    | 230V AC   | 5 mm   |                                |           | 082F1601 |
| TWA-Q | NC    | 24V AC/DC | 5 mm   |                                |           | 082F1602 |
| TWA-Q | NO    | 24V AC/DC | 5 mm   |                                |           | 082F1603 |

<sup>1)</sup> at room temperature.



## Actuators overview AB-QM DN 40-100

### AME 435 QM

The AME 435 QM is a high precision modulating gear actuator that can be mounted on the AB-QM for precise control. It has a calibration function, so the travel of the actuator always matches the stroke of the AB-QM perfectly. The actuator is suitable for both linear and logarithmic characteristics. The AME 435 QM fits to AB-QM DN 40 to DN 100 HF.

| Type       | Speed       | Power supply | Control signal                   | Feedback signal | Enclosure | Code No.        |
|------------|-------------|--------------|----------------------------------|-----------------|-----------|-----------------|
| AME 435 QM | 7.5/15 s/mm | 24 V ac/dc   | 0-10 V, 2-10V,<br>0-20mA, 4-20mA | 0-10 V, 2-10V   | IP 54     | <b>082H0171</b> |

### AME 25 SU/SD

The AME 25 SU/SD is a precision gear actuator that has a built-in spring that will close the valve (Spring Down, SD) or open the valve (Spring Up, SU) if the power on the actuator is lost. The characteristic can be set to Logarithmic or Linear with a dip switch. The AME 25 SU/SD fits to AB-QM DN 40 to DN 100 HF.

| Type      | Speed   | Power supply | Control signal                   | Feedback signal | Enclosure | Code No.        |
|-----------|---------|--------------|----------------------------------|-----------------|-----------|-----------------|
| AME 25 SD | 15 s/mm | 24 V ac      | 0-10 V, 2-10V,<br>0-20mA, 4-20mA | 0-10 V, 2-10V   | IP 54     | <b>082H3038</b> |
| AME 25 SU |         |              |                                  |                 |           | <b>082H3041</b> |

Please consider adapter is needed **003Z0694**

## Actuators overview AB-QM DN 125-150

### AME 55 QM

AME 55 QM and AME 655-1 actuators are used with pressure independent balancing and control valve type AB-QM DN 125 and DN 150.

| Type      | Speed  | Power supply | Control signal                   | Feedback signal | Enclosure | Code No.        |
|-----------|--------|--------------|----------------------------------|-----------------|-----------|-----------------|
| AME 55 QM | 8 s/mm | 24 V ac      | 0-10 V, 2-10V, 0-20mA,<br>4-20mA | 0-10 V, 2-10V   | IP 54     | <b>082H3078</b> |

### AME 655, 655-1

| Type      | Speed    | Power supply | Control signal                   | Feedback signal                  | Enclosure | Code No.        |
|-----------|----------|--------------|----------------------------------|----------------------------------|-----------|-----------------|
| AME 655   | 2/6 s/mm | 24 V ac/dc   | 0-10 V, 2-10V, 0-20mA,<br>4-20mA | 0-10 V, 2-10V,<br>0-20mA, 4-20mA | IP 54     | <b>082G3442</b> |
| AME 655-1 |          |              |                                  |                                  |           | <b>082H5010</b> |

### AME 658 SU/SD-1

AME 658 SU/SD-1 actuator is used together with pressure independent balancing and control valves type AB-QM DN 125 and DN 150. The AME 658 SU/SU-1 is a precision gear actuator that has a built-in spring that will close the valve (Spring Down, SD) or open the valve (Spring Up, SU) if the power on the actuator is lost. The characteristic can be set to Logarithmic or Linear with a dip switch.

| Type         | Speed    | Power supply | Control signal                   | Feedback signal                  | Enclosure | Code No.        |
|--------------|----------|--------------|----------------------------------|----------------------------------|-----------|-----------------|
| AME 658 SU-1 | 4/6 s/mm | 24 V ac/dc   | 0-10 V, 2-10V, 0-20mA,<br>4-20mA | 0-10 V, 2-10V,<br>0-20mA, 4-20mA | IP 54     | <b>082H5012</b> |
| AME 658 SD-1 |          |              |                                  |                                  |           | <b>082H5011</b> |

## Actuators overview AB-QM DN 200-250

### AME 85 QM

AME 85 QM and AME 685-1 are used together with large pressure independent balancing and control valves type AB-QM DN 200 and DN 250.

| Type      | Speed  | Power supply | Control signal                   | Feedback signal | Enclosure | Code No.        |
|-----------|--------|--------------|----------------------------------|-----------------|-----------|-----------------|
| AME 85 QM | 8 s/mm | 24 V ac      | 0-10 V, 2-10V, 0-20mA,<br>4-20mA | 0-10 V, 2-10V   | IP 54     | <b>082G1453</b> |

## Presetting

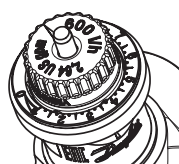
### DN 15-32

The calculated flow can be adjusted easily without using special tools. The change of presetting (factory setting is 100% (10) follow steps below:

1. Remove the blue protective cap or the mounted actuator
2. Raise the pointer (DN 25-32)
3. Turn the pointer (clockwise to decrease) to the new setting
4. Press pointer back into lock position (DN 25-32) the presetting scale indicates values from 100% flow to 0% (DN 25-32) and 10-0 (DN 15-20). Clockwise turning would decrease the flow value while counter clockwise would increase it.

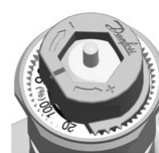
#### DN 15 - 32

DN 15, 20



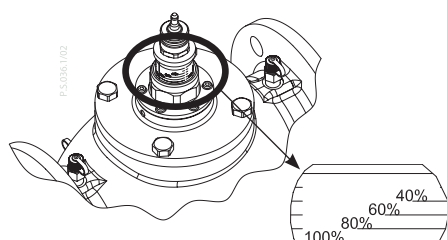
0 - 10

DN 25, 32

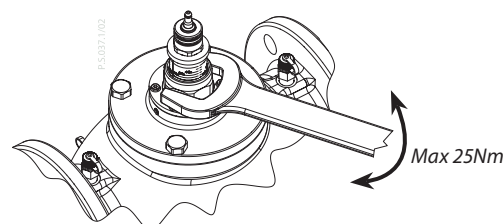


0 - 100 %

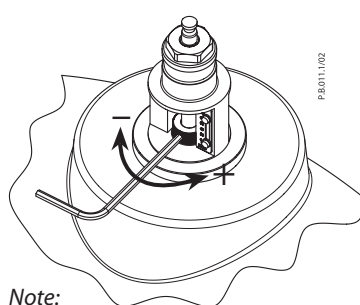
#### DN 40 - 100



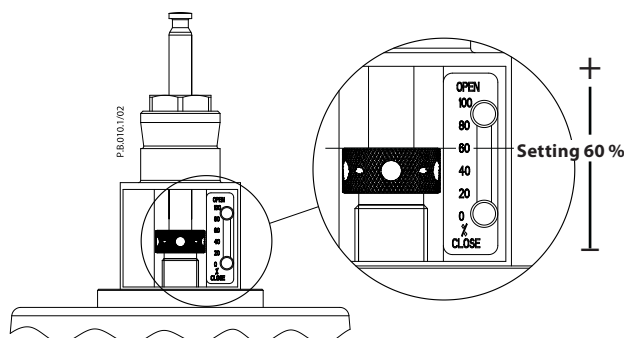
Note: 1 turn = 10 %



#### DN 125-250



Note:  
1 turn = 5 %



## Service

### DN 15-32

For the service shut off function, it is recommended to install the valve in the supply water pipe.

### DN 40-100

For the service shut-off function, the valve can be installed in either supply or return pipe.

Valves are equipped with manual shut-off for isolating function up to 16 bar.

### DN 125-250

For the service shut-off function, the valve can be installed in either supply or return pipe.

For shut-off set the valve to 0%.



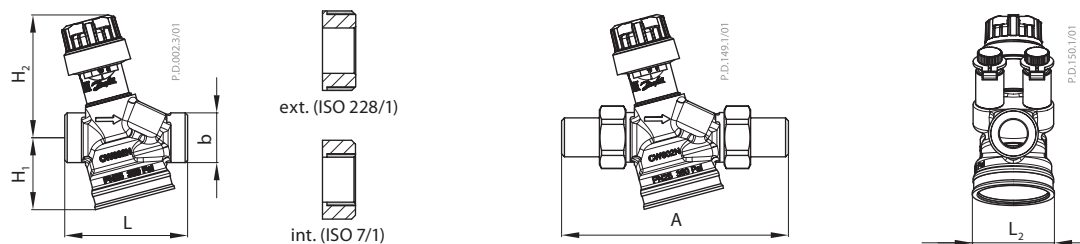
**Tender text**

A pressure independent balancing and control valve with a linear control characteristic that is independent of the available pressure and setting. Make: Danfoss AB-QM or equivalent.

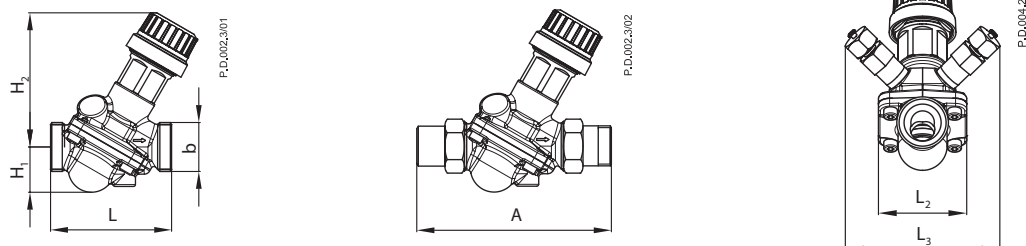
The pressure independent valve should have the following features:

- Automatic flow limitation function
- Membrane driven design for reduced clogging risk
- Modulating below 1% of set flow, regardless of the setting
- Maximum flow clearly marked on the valve
- Authority of 1 at all settings
- Ability to close against 16 Bar of differential pressure.
- Linear control characteristic
- Linear setting
- Control ratio 1:1000
- Test plugs for pump optimization and flow verification for DN 15-250. Available in the range from DN 10 – 250 from one supplier.
- Option to change the characteristic from linear to equal percentage at all sizes by adjusting actuator settings.
- Leakage rate of no visible leakage (IEC 60534-4:2007 class IV) for DN 15 - DN 20 in combination with recommended actuator
- Leakage of 0.05 % of the  $Q_{nom}$  for DN 25 - DN 100 (IEC 60534-4:2007 class III) in combination with recommended actuator
- Leakage of 0.01 % of the  $Q_{nom}$  for DN 125 - DN 250 (IEC 60534-4:2007 class IV) in combination with recommended actuator
- Flow measurements (AB-QM DN 15, 20) according to BS7350:1990

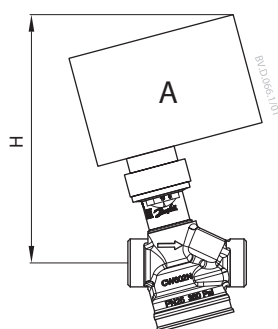
Dimensions



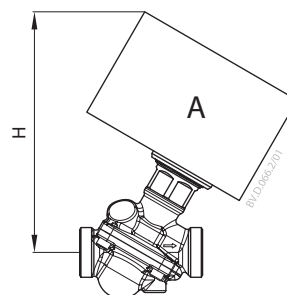
| DN | Length   |      |          |      | Height         |                | Threaded | Welded | L <sub>2</sub><br>(mm) |
|----|----------|------|----------|------|----------------|----------------|----------|--------|------------------------|
|    | external |      | internal |      | H <sub>1</sub> | H <sub>2</sub> | A        |        |                        |
|    | L (mm)   | b    | L (mm)   | b    | (mm)           |                |          |        |                        |
| 15 | 65       | G ¾A | 75       | Rp ½ | 38.2           | 65.2           | 120      | 139    | 42.6                   |
| 20 | 82       | G 1A | 85       | Rp ¾ | 43.9           | 67.2           | 143      | 166    | 49.4                   |



| DN | Length    |       | Height         |                | Threaded | Welded | L <sub>2</sub> | L <sub>3</sub> |
|----|-----------|-------|----------------|----------------|----------|--------|----------------|----------------|
|    | L<br>(mm) | b     | H <sub>1</sub> | H <sub>2</sub> | A        |        |                |                |
|    |           |       | (mm)           |                |          |        | (mm)           |                |
| 25 | 104       | G 1 ¼ | 39.2           | 82.6           | 174      | 188    | 71             | 79             |
| 32 | 130       | G 1 ½ | 48.7           | 93.8           | 207      | 214    | 90             | 79             |



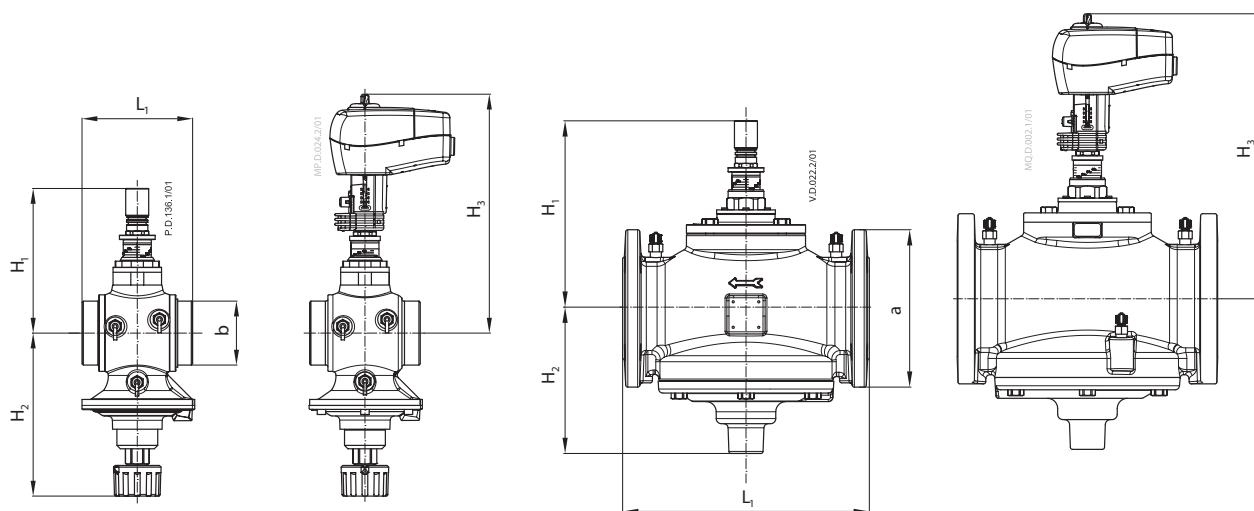
DN 15, 20



DN 25, 32

| DN | TWA-Q  | ABNM | AME/AMV 110NL,<br>120 NL, AMI 140 | NovoCon S | AME 13 SU | Valve weight<br>(kg) |          |
|----|--------|------|-----------------------------------|-----------|-----------|----------------------|----------|
|    | H (mm) |      |                                   |           |           | external             | internal |
| 15 | 110.8  | 97.8 | 131.3                             | 130.1     | 210.7     | 0.56                 | 0.59     |
| 20 | 112    | 99   | 132.5                             | 131.3     | 212.1     | 0.75                 | 0.73     |
| 25 | 117    | 124  | 155                               | 153       | 233.9     | 1.45                 |          |
| 32 | 128    | 136  | 166                               | 164       | 245       | 2.21                 |          |

Dimensions (continuous)



AB-QM DN 40, 50

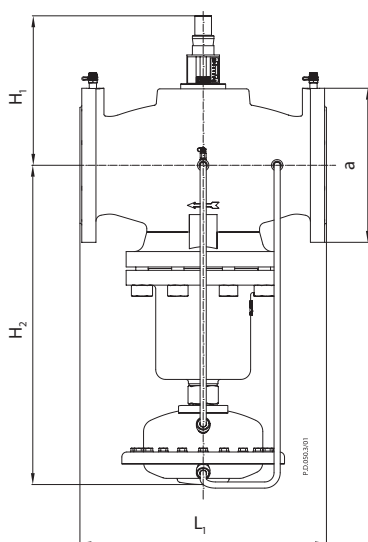
AB-QM + AME 435 QM

AB-QM DN 50-100

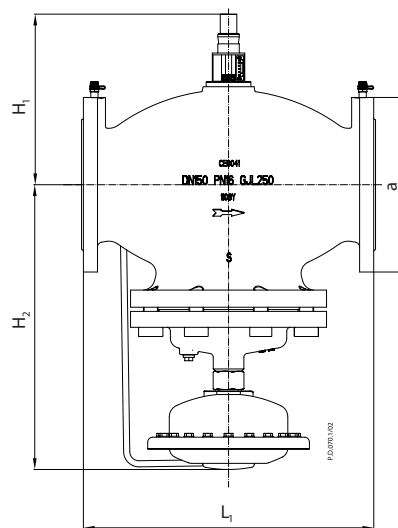
AB-QM + AME 435 QM

| DN | L <sub>1</sub> | H <sub>1</sub> | H <sub>2</sub> | H <sub>3</sub> | b<br>(ISO 228/1) | Weight<br>(kg) |
|----|----------------|----------------|----------------|----------------|------------------|----------------|
|    | mm             |                |                |                |                  |                |
| 40 | 110            | 170            | 174            | 280            | G 2              | 6.9            |
| 50 | 130            | 170            | 174            | 280            | G 2 ½            | 7.8            |

| DN  | L <sub>1</sub> | H <sub>1</sub> | H <sub>2</sub> | H <sub>3</sub> | a<br>(EN 1092-2) | Weight<br>(kg) |
|-----|----------------|----------------|----------------|----------------|------------------|----------------|
|     | mm             |                |                |                |                  |                |
| 50  | 230            | 170            | 174            | 280            | 165              | 14.2           |
| 65  | 290            | 220            | 172            | 330            | 185              | 38.0           |
| 80  | 310            | 225            | 177            | 335            | 200              | 45.0           |
| 100 | 350            | 240            | 187            | 350            | 220              | 57.0           |



AB-QM DN 125



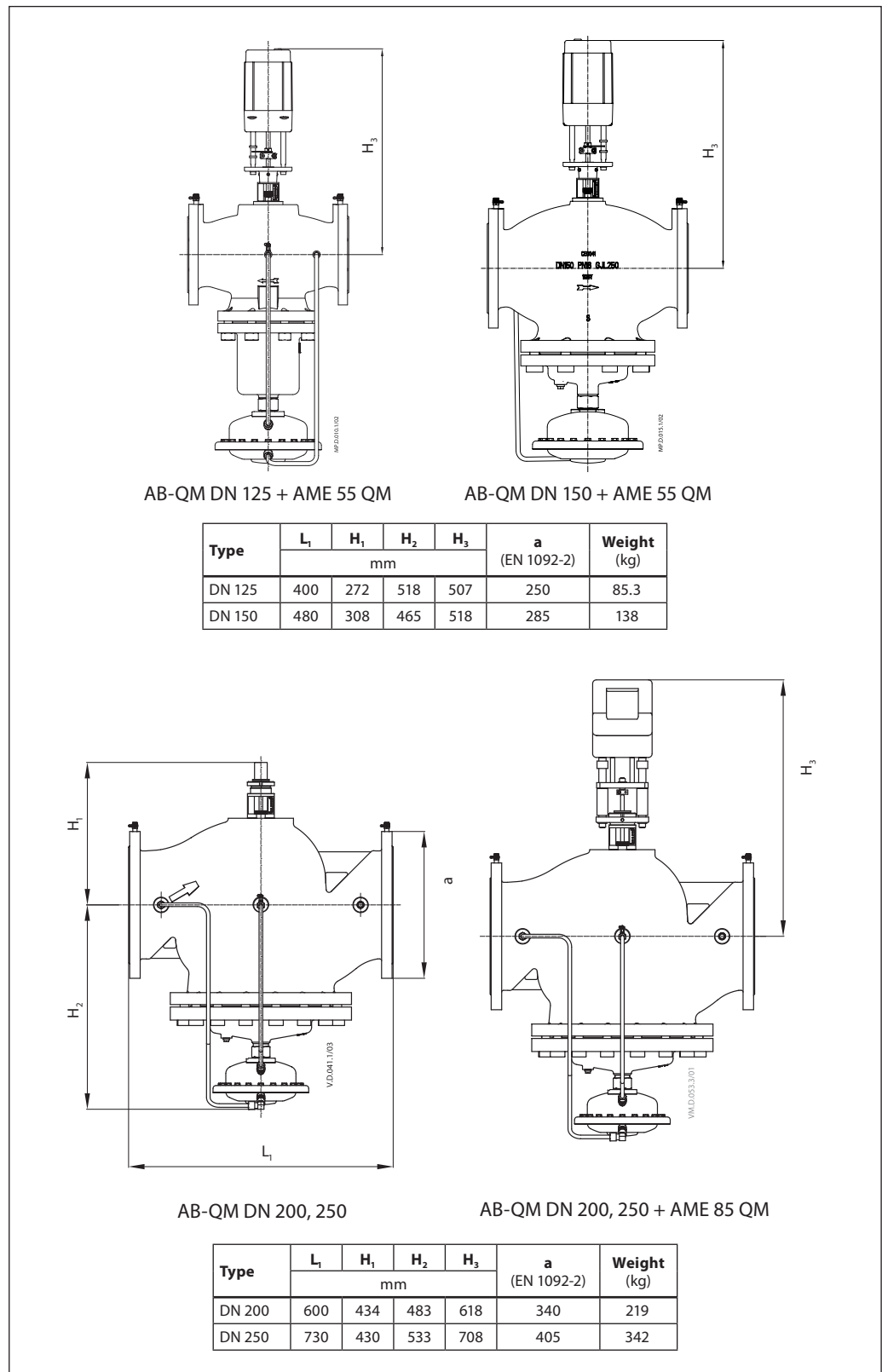
AB-QM DN 150

| DN  | L <sub>1</sub> | H <sub>1</sub> | H <sub>2</sub> | a<br>(EN 1092-2) | Weight<br>(kg) |
|-----|----------------|----------------|----------------|------------------|----------------|
|     | mm             |                |                |                  |                |
| 125 | 400            | 272            | 518            | 250              | 85.3           |
| 150 | 480            | 308            | 465            | 285              | 138            |

Data sheet

AB-QM DN 15-250

Dimensions (continuous)



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