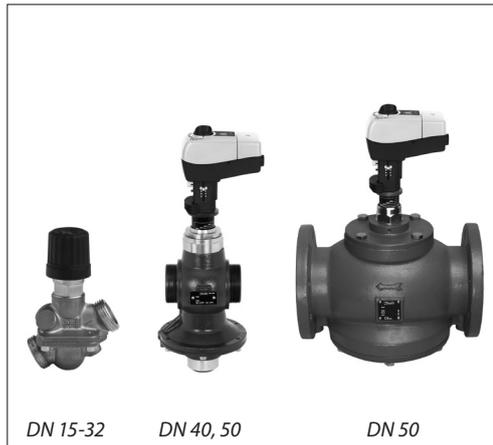


Data sheet

# Flow controller with integrated control valve (PN 16) AHQM - return and flow mounting

Description



AHQM is a self-acting flow controller with integrated control valve primarily for use in district heating systems or in secondary district heating systems as well. The controller closes when set max. flow is exceeded.

In combination with Danfoss electrical actuators AMV(E) can be controlled by ECL electronic controllers.

The controllers have a control valve with adjustable flow restrictor, connection neck for electrical actuator, and an actuator with one control diaphragm.

Controllers are used together with Danfoss electrical actuators:

- DN 15-32 with
  - AMV(E) 10
  - AMV(E) 13 with spring return function
  - AMV(E) 130, AMV(E) 140
  - AMV(E) 130H, AMV(E) 140H with manual operation
- DN 40-50 with
  - AMV(E) 435
  - AMV(E) 25 SD spring return function (spring down)

AHQM, DN 15-32 combined with AMV(E) 13 has been approved according to DIN EN 14597.

**Main data:**

- DN 15-50
- $k_{vs}$  1.0-20 m<sup>3</sup>/h
- Flow range 0.035-38 m<sup>3</sup>/h
- PN 16
- Flow restrictor  $\Delta p_r$ :
  - 0.12 bar for DN 15-20
  - 0.14 bar for DN 25-32
  - 0.2 bar for DN 40, 50
- Temperature:
  - Circulation water / glycolic water up to 30%: 2 ... 120 °C
- Connections:
  - Ext. thread (weld-on, thread and flange tailpieces)
  - Flange

Ordering

Example AHQM controller:  
Flow controller with integrated control valve, DN 15,  $k_{VS}$  1,6; PN 16; flow restrictor  $\Delta p$  0,12 bar;  $T_{max}$  120 °C; ext. thread

- 1x AHQM DN 15 controller  
Code No.: **003L3594**

Option:

- 1x Weld-on tailpieces  
Code No.: **003H6908**

Electrical actuator AMV(E) must be ordered separately.

AHQM Controller

Picture	DN (mm)	$k_{vs}$ (m <sup>3</sup> /h)	Connection	Code No.	
	15	1.0	Cylindr, ext, thread acc, to ISO 228/1	G ¾ A	<b>003L3592</b>
		1.25			<b>003L3593</b>
		1.6			<b>003L3594</b>
	20	2.5		G 1 A	<b>003L3595</b>
	25	4.0			<b>003L3596</b>
	32	6.3			<b>003L3597</b>
	40	12.5			<b>003L3601</b>
	50	20			<b>003L3602</b>
	50	20			Flange EN 1092-2

Ordering (continuous)

Accessories

Picture	Type designation	DN	Connection	Code No.
	Weld-on tailpieces	15	-	003H6908
		20		003H6909
		25		003H6910
		32		003H6911
		40		003H6912
		50		003H6913
	External thread tailpieces	15	Conical ext. thread acc. to EN 10226-1	R 1/2 003H6902
		20		R 3/4 003H6903
		25		R 1 003H6904
		32		R 1 1/4 003H6905
		40		R 1 1/2 065F6061
		50		R 2 065F6062
	Flange tailpieces	15	Flanges PN 25, acc. to EN 1092-2	003H6915
		20		003H6916
		25		003H6917

Technical data

Valve (thread version)

Nominal diameter	DN	15	20	25	32	40	50			
k <sub>vs</sub> value	m <sup>3</sup> /h	1.0	1.25	1.6	2.5	4.0	6.3	12.5	20	
Flow range		Q <sub>min</sub> <sup>1)</sup>	0.035	0.11	0.2	0.25	0.43	0.65	1.5	2.5
	Q <sub>nom</sub> <sup>1)</sup>	0.43	0.7	1.0	1.2	2.2	3.4	7.5	12.5	
Available Δp required for Q <sub>max</sub> <sup>2)</sup>	bar	0.3	0.4	0.5	0.4	0.4	0.4	0.6	0.4	
Stroke	mm	5.5		5			10			
Control valve authority	1 (100 %) in the range of flow setting									
Control characteristic	Linear									
Leakage acc. to standard IEC 534	≤ 0.05 % of k <sub>vs</sub>									
Nominal pressure	PN	16								
Min. differential pressure	bar	see remark <sup>2)</sup>								
Max. differential pressure		4								
Medium	Circulation water / glycolic water up to 30%									
Medium pH	Min, 7, max, 10									
Medium temperature	°C	2 ... 120								
Connections	External thread									
<b>Materials</b>										
Valve body	DZR CW602N (CuZn36Pb2As)							Grey cast iron EN-GJL-250 (GG25)		
Valve seat DP, CV								St. steel, mat.No,1,4404		
Valve cone DP								St. steel, mat.No,1,4404		
Valve cone CV	EPDM							DZR CW602N (CuZn36Pb2As)		
Sealing DP								EPDM		
Sealing CV	Metal									

<sup>1)</sup> At differential pressure across the controller Δp<sub>AHQM</sub> ≥ 0.5 bar

<sup>2)</sup> For flows smaller than Q<sub>max</sub> → Δp<sub>min</sub> =  $\left(\frac{Q}{k_{vs}}\right)^2 + \Delta p_{MCV}$

**Note:**  
DP - diff. pressure controller, CV - control valve

Technical data (continuous)

Actuator

For valve	DN	15	20	25	32	40	50
Actuator size	cm <sup>2</sup>	8.5	13	20	32	64	
Nominal pressure	PN	16					
Flow restrictor diff. pressure Δp <sub>b</sub>	bar	0.12		0.14		0.2	
<b>Materials</b>							
Housing*		DZR CW602N (CuZn36Pb2As)				Grey cast iron EN-GJL-250 (GG25)	
Diaphragm		EPDM					
Impulse tube		-					

\* Actuator housing is part of valve body.

AHQM (flange version)

Nominal diameter	DN	50
k <sub>vs</sub> value		20
Flow range	Q <sub>min</sub>	2.5
	Q <sub>nom</sub> <sup>1)</sup>	12.5
Available Δp required for Q <sub>max</sub> <sup>2)</sup>	bar	0.7
Stroke	mm	10
Control valve authority		1 (100 %) in the range of flow setting
Control characteristic		Linear
Leakage acc. to standard IEC 534		≤ 0.05 % of k <sub>vs</sub>
Nominal pressure	PN	16
Min. differential pressure	bar	see remark <sup>2)</sup>
Max. differential pressure		4
Medium		Circulation water / glycolic water up to 30 %
Medium pH		Min. 7, max. 10
Medium temperature	°C	2 ... 120
Connections		Flange
<b>Materials</b>		
Valve body		Grey cast iron EN-GJL-250 (GG25)
Valve seat DP, CV		St. steel, mat.No,1,4404
Valve cone DP		
Valve cone CV		DZR CW602N (CuZn36Pb2As)
Sealing DP		EPDM
Sealing CV		Metal

<sup>1)</sup> At differential pressure across the controller Δp<sub>AHQM</sub> ≥ 0.5 bar

<sup>2)</sup> For flows smaller than Q<sub>max</sub> → Δp<sub>min</sub> =  $\left(\frac{Q}{k_{vs}}\right)^2 + \Delta p_{MCV}$

**Note:**

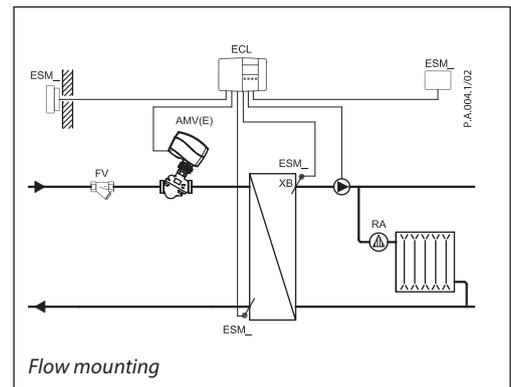
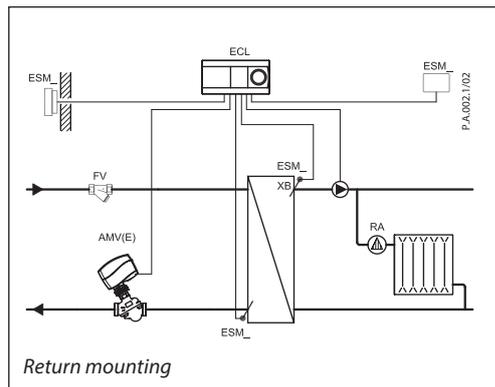
DP - diff. pressure controller, CV - control valve

Actuator

For valve	DN	50
Actuator size	cm <sup>2</sup>	64
Nominal pressure	PN	16
Flow restrictor diff. pressure Δp <sub>b</sub>	bar	0.2
<b>Materials</b>		
Housing		Grey cast iron EN-GJL-250 (GG25)
Diaphragm		EPDM
Impulse tube		-

**Application principles**

- Indirectly connected heating system



**Installation positions**

**DN 15-32**

The controllers can be installed in horizontal or vertical pipes with (connection neck for) electrical actuator oriented upwards.

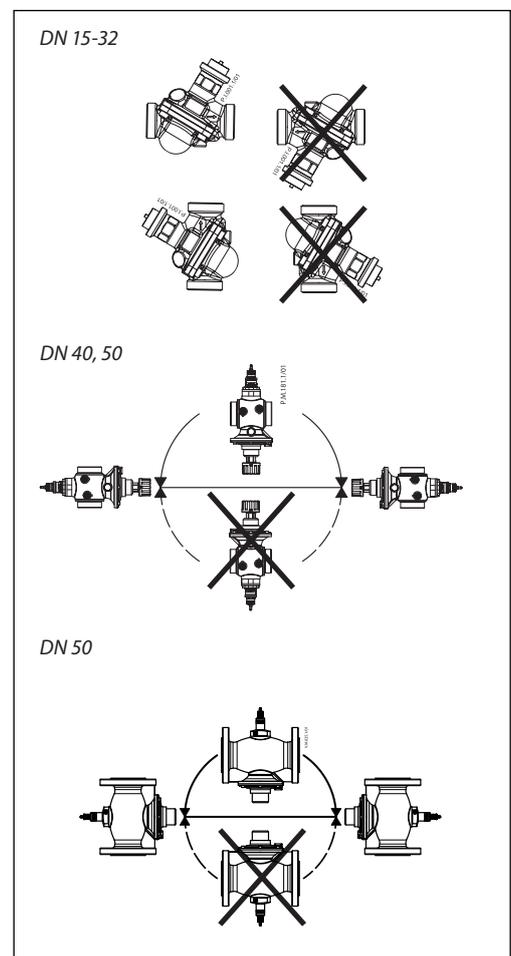
**DN 40-50**

The controllers can be installed with (connection neck for) electrical actuator oriented horizontal or upwards.

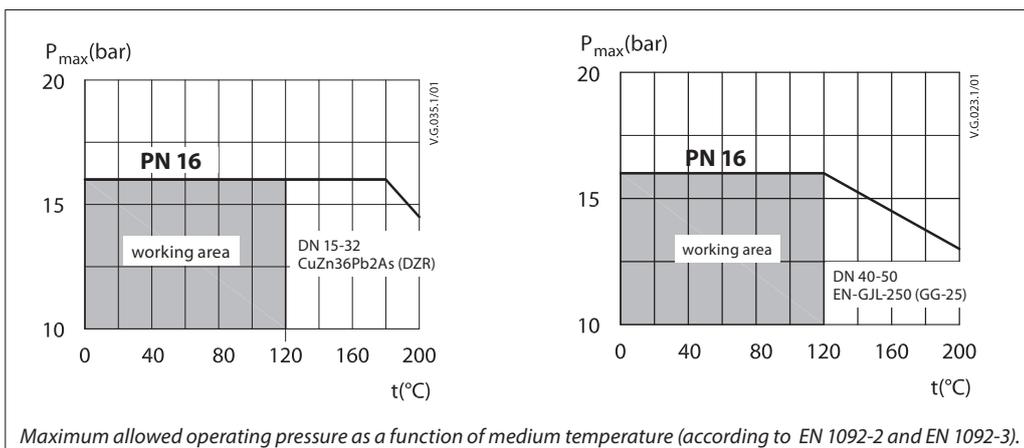
**Electrical actuator**

**Note!**

Installation positions for electrical actuators AMV(E) have to be observed as well. Please see relevant Data Sheet.



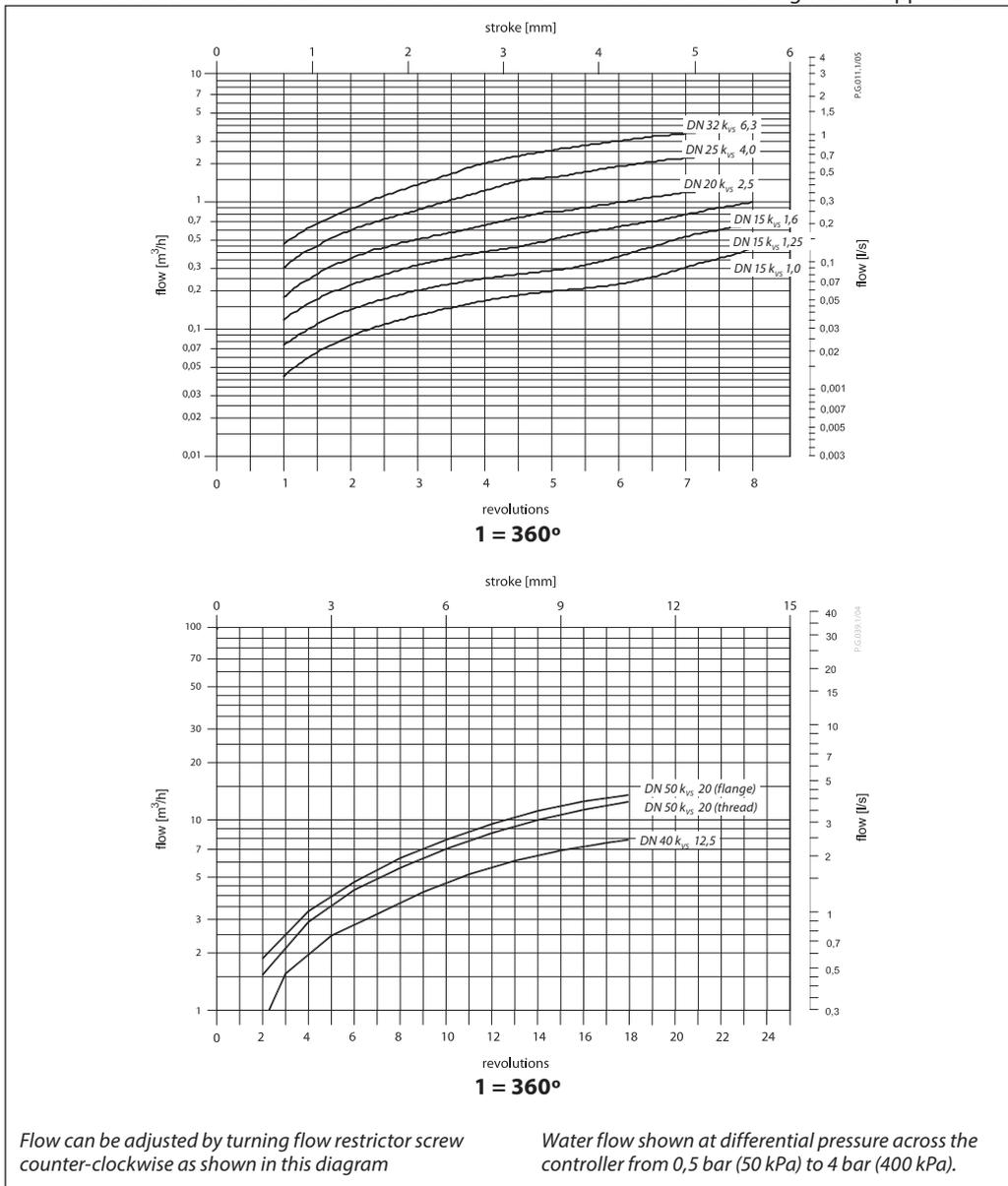
Pressure temperature diagram



Flow diagram

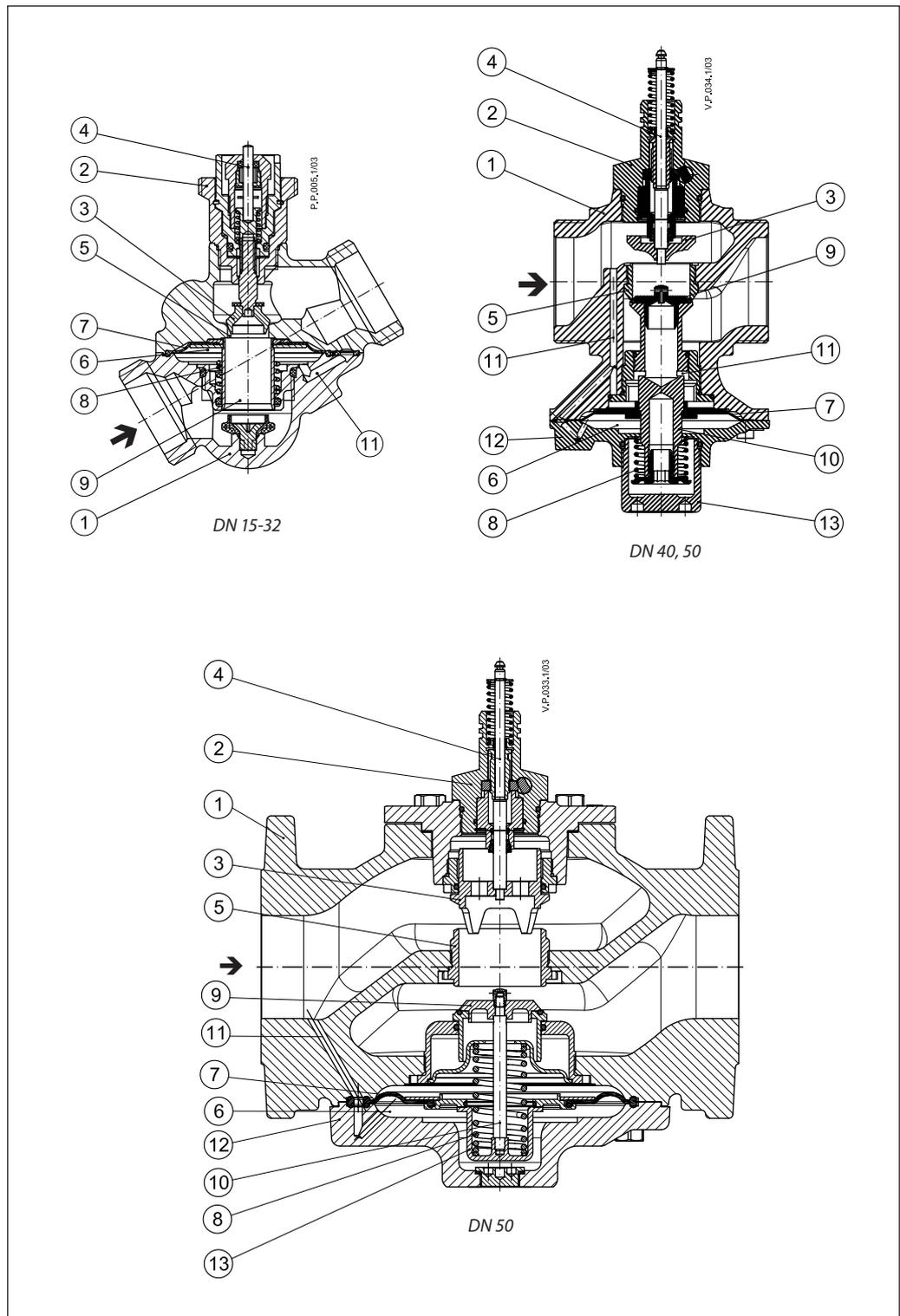
Sizing and setting diagram

Relation between actual flow and number of revolutions on flow restrictor. Values given are approximate.



Design

1. Valve body
2. Control valve insert
3. Adjustable flow restrictor
4. Control valve stem
5. Valve seat
6. Differential pressure actuator
7. Control diaphragm
8. Built-in spring for flow rate control
9. Pressure relieved valve cone
10. Valve stem
11. Control drain
12. Control diaphragm cover
13. Spring cover



**Function**

*Flow controller with integrated control valve*  
 Flow volume causes the pressure drop across the adjustable flow restrictor. Resulting pressures are being transferred through external impulse tubes or control drains within valve body to the actuator chambers and act on control diaphragm. The flow restrictor diff. pressure is controlled and limited by means of built-in spring for flow rate control.

Additionally the electrical actuator will operate from zero to set max. flow according to the load.

**Settings**

*Flow setting*  
 Flow setting is being done by the adjustment of the flow restrictor position. The adjustment can be performed on the basis of flow adjustment diagram (see relevant instructions) and/or by the means of heat meter.

**Dimensions**

DN 15-32

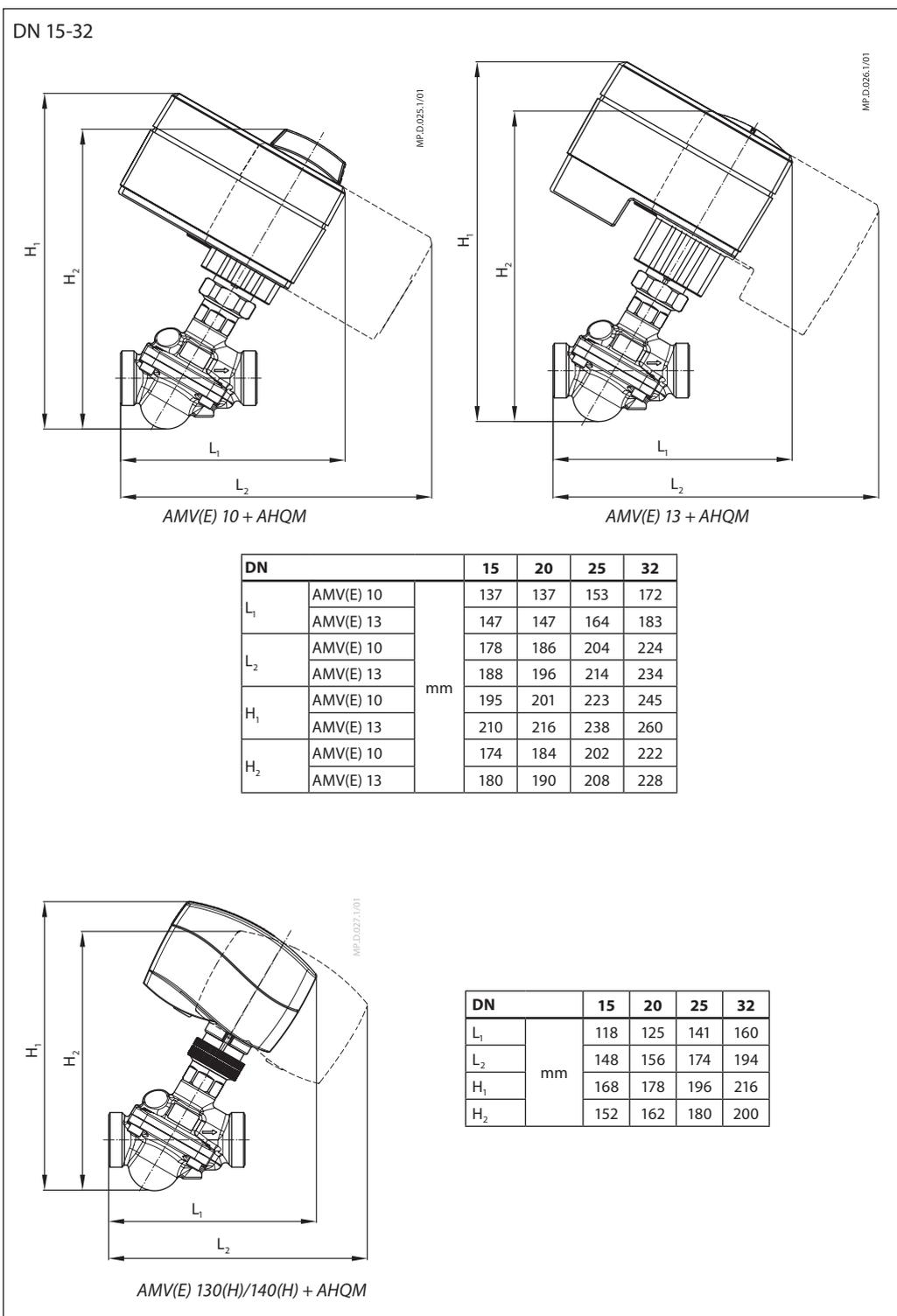
DN	15	20	25	32
L	65	82	104	130
H	24	31	39	49
H1	57	59	72	84
D (ISO 228/1)	G 3/4A	G 1A	G 1 1/4A	G 1 3/4A
Valve weight	0.51	0.67	1.47	2.23

DN	15	20	25	32
SW	32 (G 3/4A)	41 (G 1A)	50 (G 1 1/4A)	63 (G 1 3/4A)
d	21	26	33	42
R <sup>1)</sup>	1/2	3/4	1	1 1/4
L1 <sup>2)</sup>	130	150	160	-
L2	120	143	174	207
L3	139	154	159	184
k	65	75	85	-
d <sub>2</sub>	14	14	14	-
n	4	4	4	-

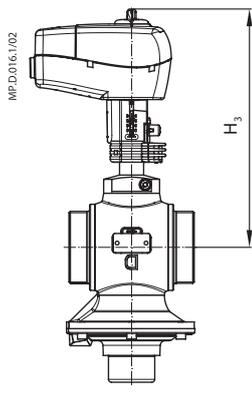
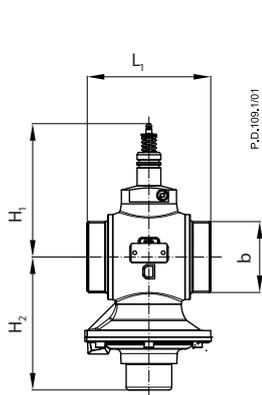
<sup>1)</sup> Conical ext. thread acc. to EN 10226-1  
<sup>2)</sup> Flanges PN 25, acc. to EN 1092-2

Dimensions (continuous)

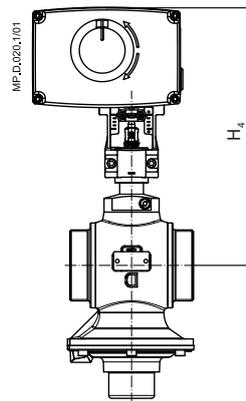


Dimensions (continuous)

DN 40, 50

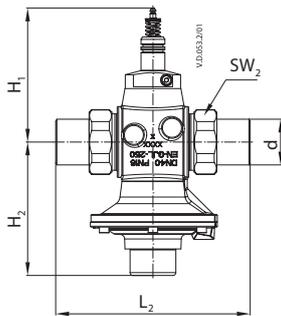
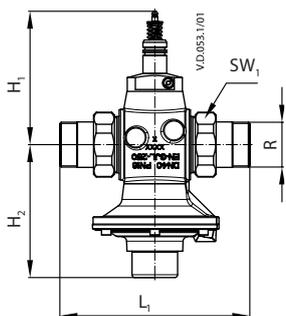


AMV(E) 435 + AHQM



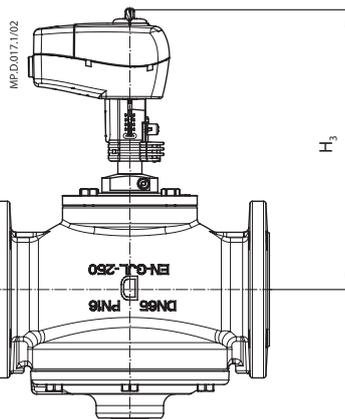
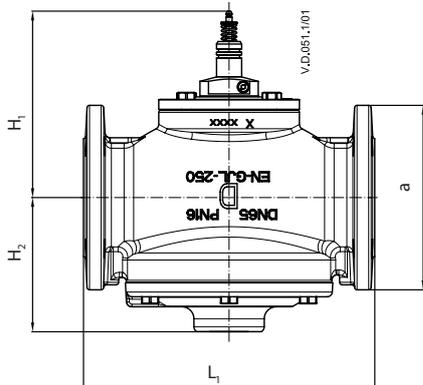
AMV(E) 25 SD + AHQM + adapter **065Z0311**

DN	L <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	b	Valve weight (kg)
	mm						
40	110	141.5	141	247.5	272.5	G 2	5.4
50	130	141.5	141	247.5	272.5	G 2½	6.2

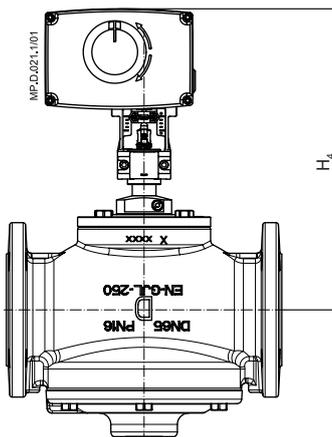


DN	40	50
R	1½	2
SW <sub>1</sub>	64	80
SW <sub>2</sub>	70	82
d	48.3	60.3
L <sub>1</sub>	200	244
L <sub>2</sub>	204	234
H <sub>1</sub>	141.5	141
H <sub>2</sub>	141.5	141

DN 50



AMV(E) 435 + AHQM



AMV(E) 25 SD + AHQM + adapter **065Z0312**

DN	L <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	a	Valve weight (kg)
	mm						
50	230	141.5	141	247.5	272.5	165	12.7



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