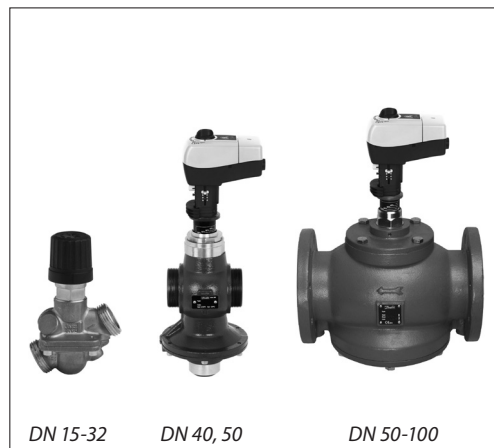


Data sheet

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 40-100 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 15-100
- k_{vs} 1,0-90 m³/h
- Flow range 0,035-38 m³/h
- PN 16
- Flow restrictor Δp_b :
 - 0,12 bar for DN 15-20
 - 0,14 bar for DN 25-32
 - 0,2 bar for DN 40, 50
 - 0,3 bar for DN 65-100
- 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 Δp 0,12 bar; T_{max} 120 °C; ext. thread

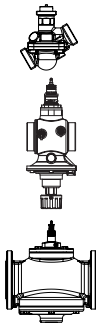
- 1x AHQM DN 15 controller
Code No.: **003L3594**

Option:

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

Electrical actuator AMV(E) must be ordered separately.

AHQM Controller

Picture	DN (mm)	k_{vs} (m ³ /h)	Connection		Code No,
	15	1,0	Cylindr, ext, thread acc, to ISO 228/1	G ¾ A	003L3592
		1,25			003L3593
		1,6			003L3594
	20	2,5		G 1 A	003L3595
	25	4,0		G 1¼ A	003L3596
	32	6,3		G 1¾ A	003L3597
	40	12,5		G 2 A	003L3601
	50	20		G 2½ A	003L3602
	50	20	Flange EN 1092-2		003L3603
	65	50			003L3604
	80	63			003L3605
	100	90			003L3606

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 _{v5} value		m³/h	1,0	1,25	1,6	2,5	4,0	6,3	12,5	20
Flow range	Q _{min}		0,035	0,11	0,2	0,25	0,43	0,65	1,5	2,5
	Q _{nom} ¹⁾		0,43	0,7	1,0	1,2	2,2	3,4	7,5	12,5
Available Δp required for Q _{max} ²⁾		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 _{v5}							
Nominal pressure		PN	16							
Min. differential pressure		bar	see remark ²⁾							
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							
Materials										
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									DZR CW602N (CuZn36Pb2As)	
Sealing DP			EPDM						EPDM	
Sealing CV									Metal	

¹⁾ At differential pressure across the controller Δp_{AHQM} ≥ 0,5 bar

²⁾ For flows smaller than Q_{max} → Δp_{min} = $\left(\frac{Q}{k_{VS}}\right)^2 + \Delta p_{MCV}$
³⁾ Depends on DN

Note:

DP - diff. pressure controller, CV - control valve

Technical data (continuous)

Actuator

For valve	DN	15	20	25	32	40	50
Actuator size	cm²	8,5	13	20	32	64	
Nominal pressure	PN	16					
Flow restrictor diff. pressure Δp _b	bar	0,12			0,14		0,2
Materials							
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	65	80	100
k _{vs} value		m³/h	20	50	63	90
Flow range	Q _{min}		2,5	4,0	5,6	7,6
	Q _{nom} ¹⁾		12,5	20	28	38
Available Δp required for Q _{max} ²⁾		bar	0,7	0,5	0,5	0,5
Stroke		mm	10	15		
Control valve authority			1 (100 %) in the range of flow setting			
Control characteristic			Linear			
Leakage acc. to standard IEC 534			≤ 0,05 % of k _{vs}			
Nominal pressure		PN	16			
Min. differential pressure		bar	see remark ²⁾			
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			
Materials						
Valve body			Grey cast iron EN-GJL-250 (GG25)			
Valve seat DP, CV			St. steel, mat. No,1,4404	St. steel, mat.No,1,4305		
Valve cone DP						
Valve cone CV			DZR CW602N (CuZn36Pb2As)			
Sealing DP			EPDM			
Sealing CV			Metal			

¹⁾ At differential pressure across the controller $\Delta p_{AHQM} \geq 0,5$ bar

²⁾ For flows smaller than Q_{max} $\Delta p_{min} = \left(\frac{Q}{k_{vs}} \right)^2 + \Delta p_{MCV}$

³⁾ Depends on DN

Note:

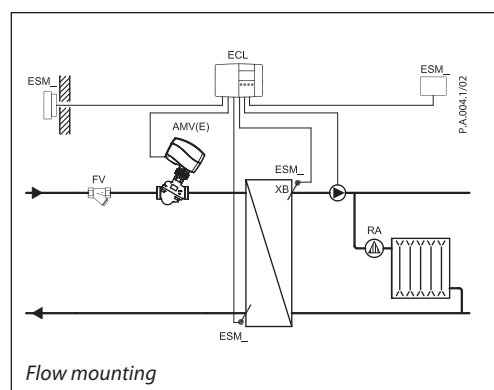
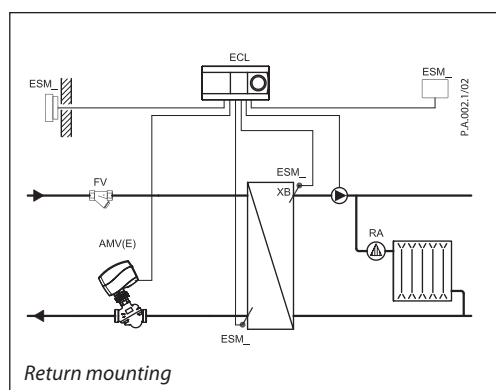
DP - diff. pressure controller, CV - control valve

Actuator

For valve	DN	50	65	80	100
Actuator size	cm²	64	143	169	227
Nominal pressure	PN	16			
Flow restrictor diff. pressure Δp _b	bar	0,2	0,3		
Materials					
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 40-100

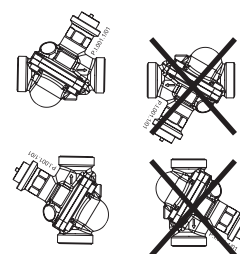
The controllers can be installed with (connection neck for) electrical actuator oriented horizontal or upwards.

Electrical actuator

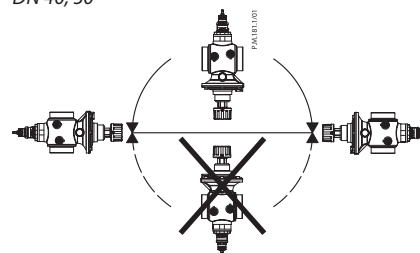
Note!

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

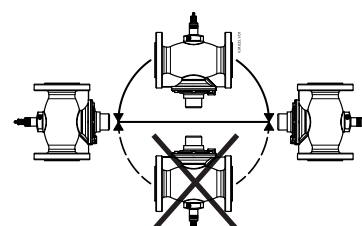
DN 15-32



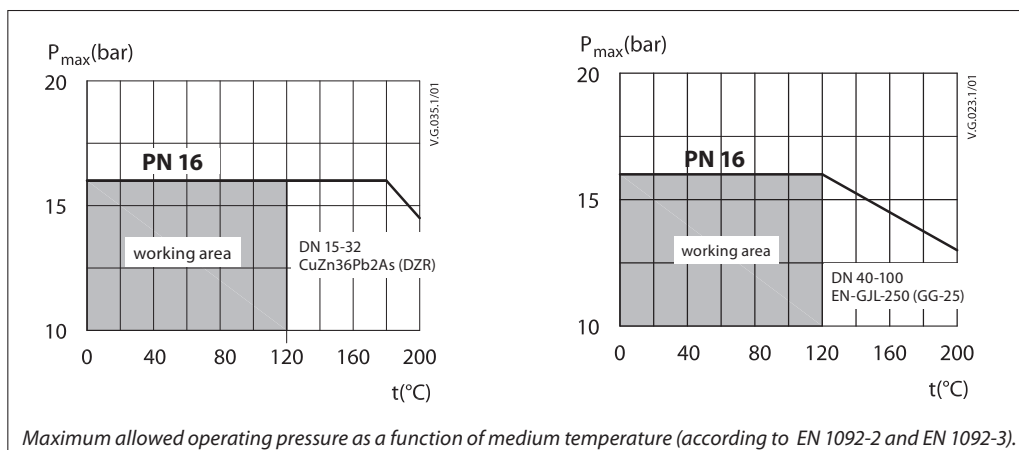
DN 40, 50



DN 50-100



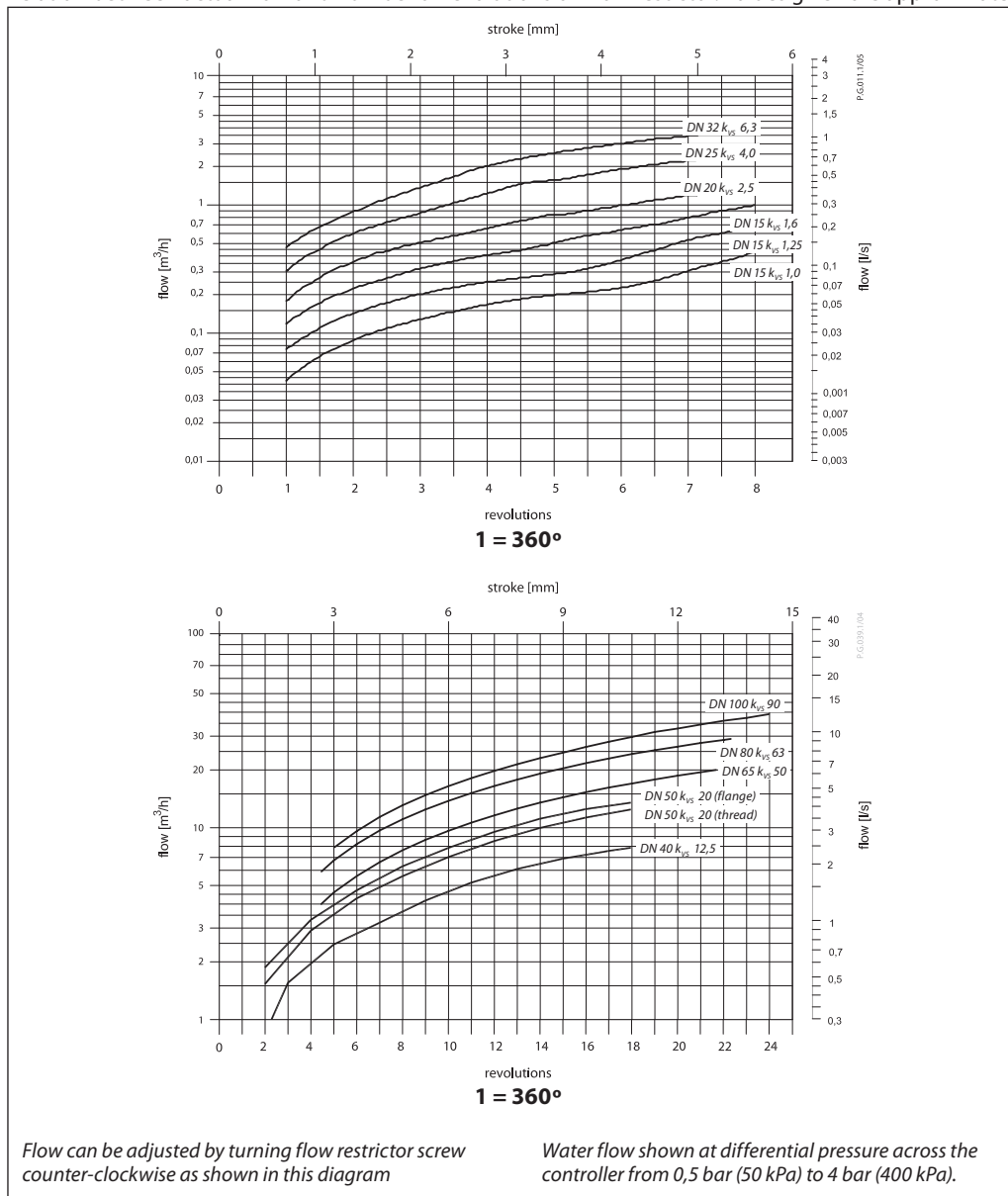
Pressure temperature diagram



Flow diagram

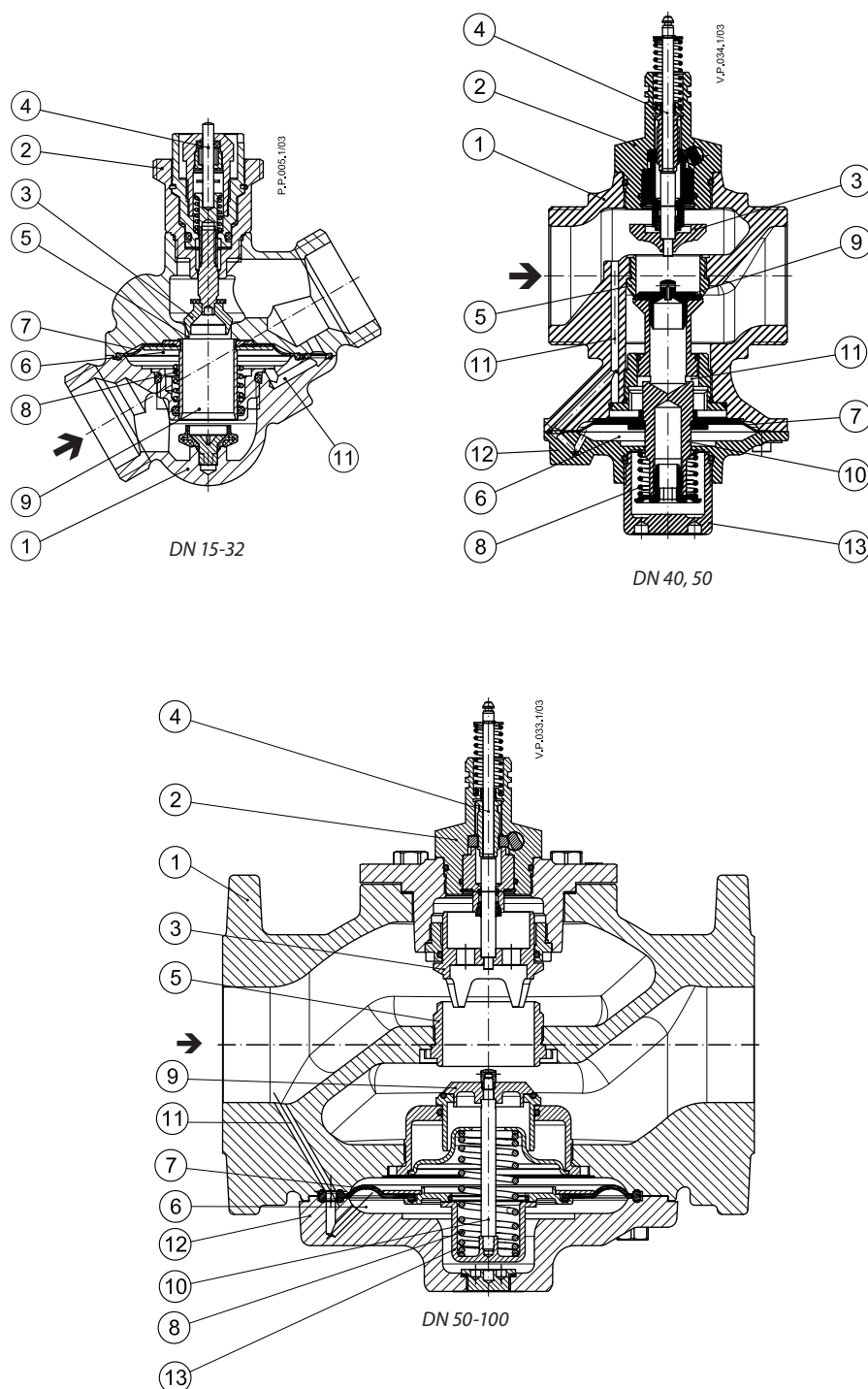
Sizing and setting diagram

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.

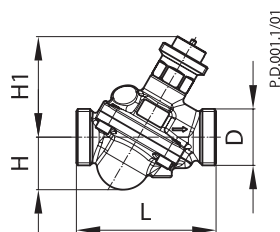
Settings

Flow setting

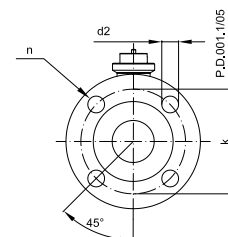
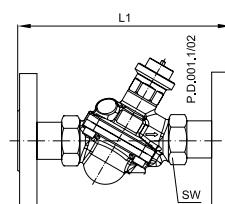
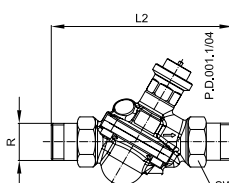
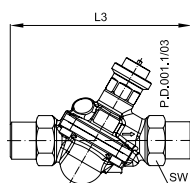
Flow setting is being done by the adjustment of the flow restrictor position. The adjustment can be performed on the basis of flow adjustment diagram (see relevant instructions) and/or by the means of heat meter.

Dimensions

DN 15-32



DN		15	20	25	32
L	mm	65	82	104	130
H		24	31	39	49
H1		57	59	72	84
D (ISO 228/1)		G ¾A	G 1A	G 1¼A	G 1½A
Valve weight	kg	0,51	0,67	1,47	2,23

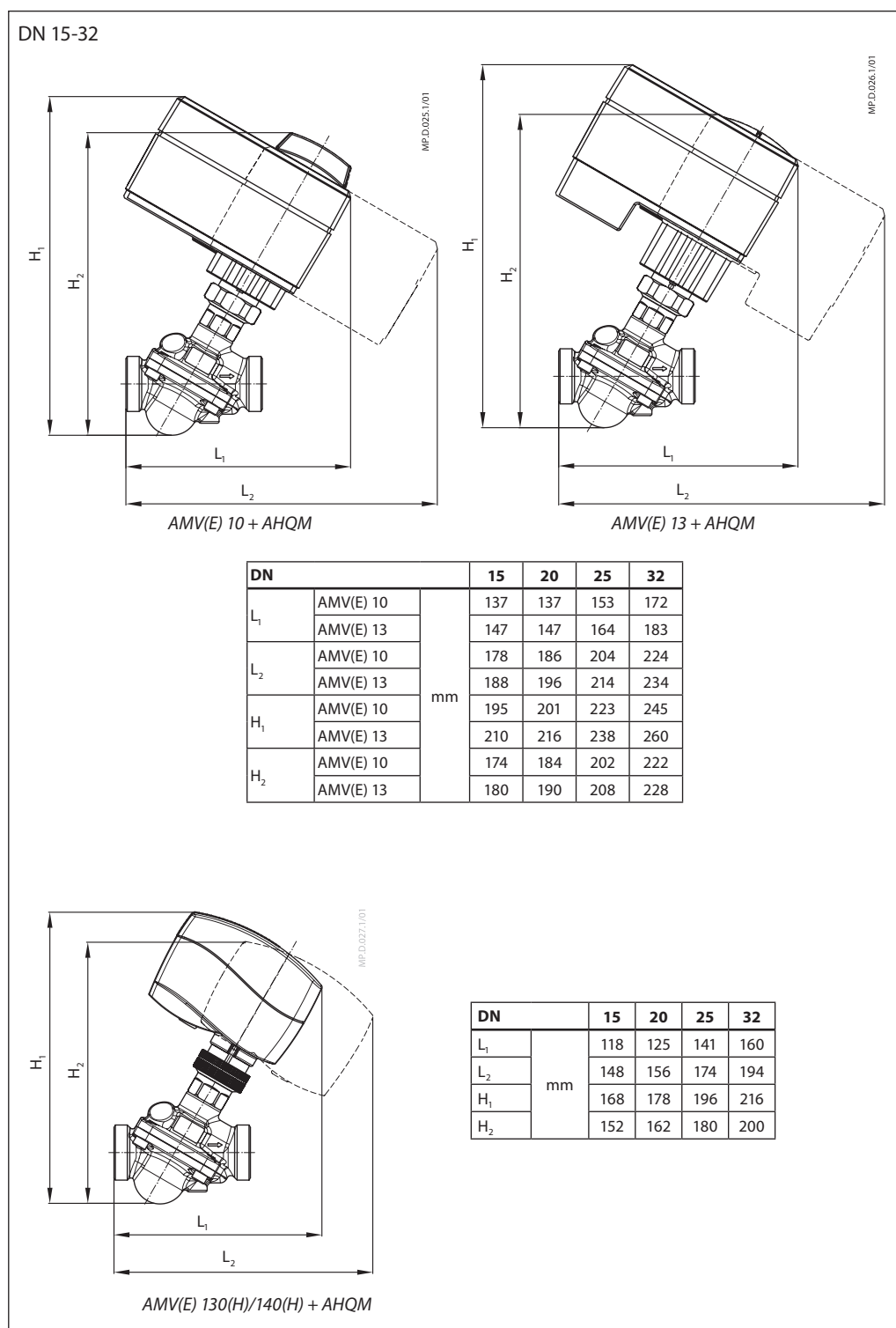


DN		15	20	25	32
SW		32 (G ¾A)	41 (G 1A)	50 (G 1¼A)	63 (G 1½A)
d		21	26	33	42
R ¹⁾		½	¾	1	1 ¼
L1 ²⁾		130	150	160	-
L2	mm	120	143	174	207
L3		139	154	159	184
k		65	75	85	-
d ₂		14	14	14	-
n		4	4	4	-

¹⁾ Conical ext. thread acc. to EN 10226-1

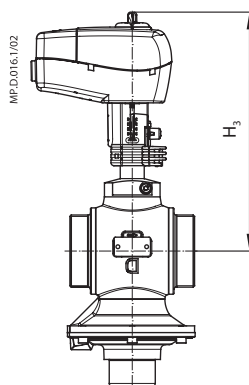
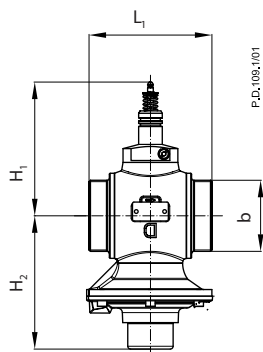
²⁾ Flanges PN 25, acc. to EN 1092-2

Dimensions (continuous)

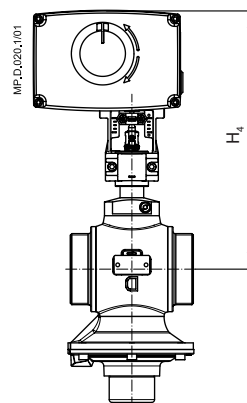


Dimensions (continuous)

DN 40, 50

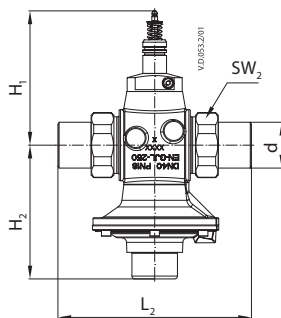
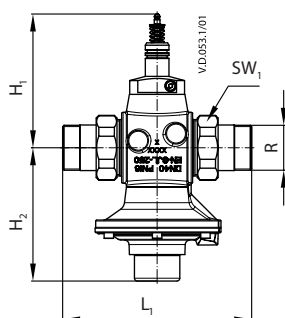


AMV(E) 435 + AHQM



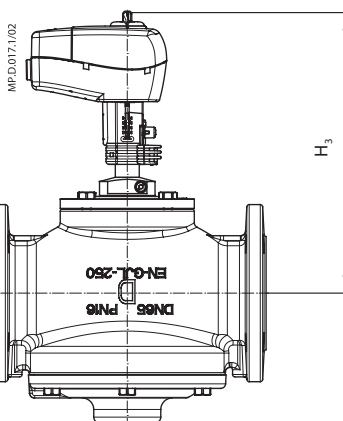
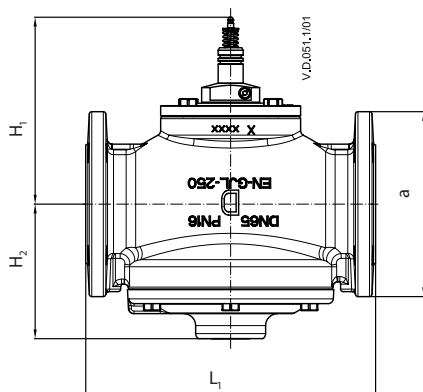
AMV(E) 25 SD + AHQM
+ adapter 065Z0311

DN	L ₁	H ₁	H ₂	H ₃	H ₄	b	Valve weight
	mm					ISO 228/1	(kg)
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

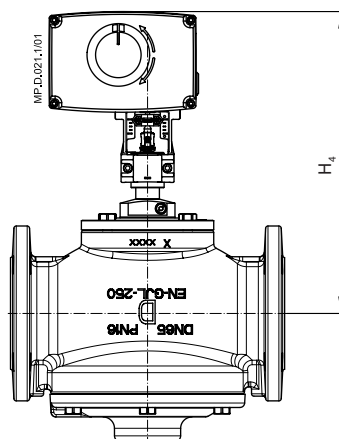


DN	40	50
R	1½	2
SW ₁	64	80
SW ₂	70	82
d	48,3	60,3
L ₁	200	244
L ₂	204	234
H ₁	141,5	141
H ₂	141,5	141

DN 50-100



AMV(E) 435 + AHQM



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

DN	L ₁	H ₁	H ₂	H ₃	H ₄	a	Valve weight
	mm					(EN 1092-2)	(kg)
50	230	141,5	141	247,5	272,5	165	12,7
65	290	187	132	293	318	185	31,0
80	310	190	139,5	296	321	200	37,5
100	350	202	152	308	333	220	51,0

