

# KTM 512

Pressure independent balancing and control valve



Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

High-performing and compact, these pressure-independent control valves for variable flow heating and cooling systems are particularly effective in situations requiring high temperatures and/or pressure drops. They are also suitable for use on the secondary side in district heating and comfort cooling systems. Rust protection is assured due to the electrophoretically painted ductile iron body, while the plug delivers valve characteristic, suitable for modulating control.

### > Inline design

Inline flow allows high pressure drops without noise.

### > Adjustable flow

Ensures the design flow.

### > Adapters

For use with most available actuators.



## > Technical description

### Application:

Heating and cooling systems.

### Functions:

Differential pressure control over the built-in control valve and flow control.

### Dimensions:

DN 15-125

### Pressure class:

PN 25 and PN 16

### Differential pressure ( $\Delta p_V$ ):

Max. differential pressure: 1600 kPa = 16 bar ( $\Delta H_{\max}$ )

Min. differential pressure:

Low flow (LF): 24 kPa ( $\Delta H_{\min}$ )

Normal flow (NF): 40 kPa ( $\Delta H_{\min}$ )

High flow (HF): 80 kPa ( $\Delta H_{\min}$ )

(Valid for max. position, fully open. Other positions will require lower differential pressure, check with the software TA-Select.)

### Temperature:

Max. working temperature: 120°C

Min. working temperature: -10°C

### Media:

Water or neutral fluids, water-glycol mixtures.

### Material:

Valve body: Ductile iron EN-GJS-400

Diaphragms and gaskets: EPDM

Valve plug: EPDM/Stainless steel

### Surface treatment:

Electrophoretic painting.

### Marking:

TA, DN, PN, Kvs, material and flow direction arrow.

### Flanges:

DN 15-50: According to EN-1092-2:1997, type 16.

DN 65-125: According to EN-1092-2:1997, type 21.

### Actuators:

KTM 512 can be equipped with adapters for the most common actuators - see "Adapters for actuators".

The max. lift of the actuator must be checked. In the case of a shorter lift the maximum achieved flow will be decreased.

Consult your local sales office for details.

### Max. lift of the control valve:

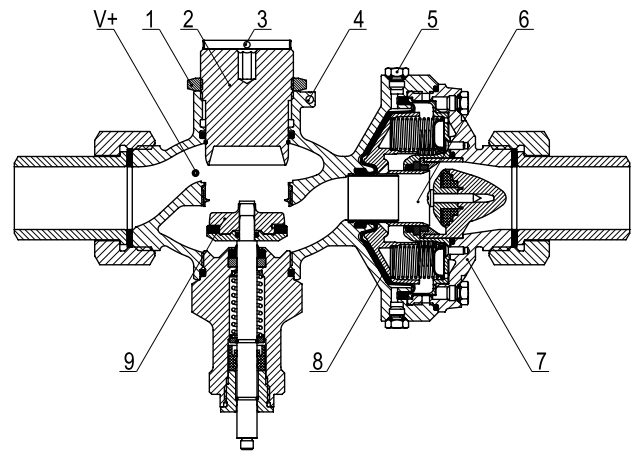
DN 15-50: 10 mm

DN 65-125: 20 mm

## Operating function

### DN 15-50

1. Fixing nut
2. Throttle
3. Holes for plumbing (throttle)
4. Holes for plumbing (valve body)
5. Venting screws
6. Inline differential pressure controller
7. Valve body
8. Diaphragm
9. Control valve



The throttle (2) for flow adjustment, the control valve (9) and the diaphragm operated inline the differential pressure controller (6) are built in series in a common valve body.

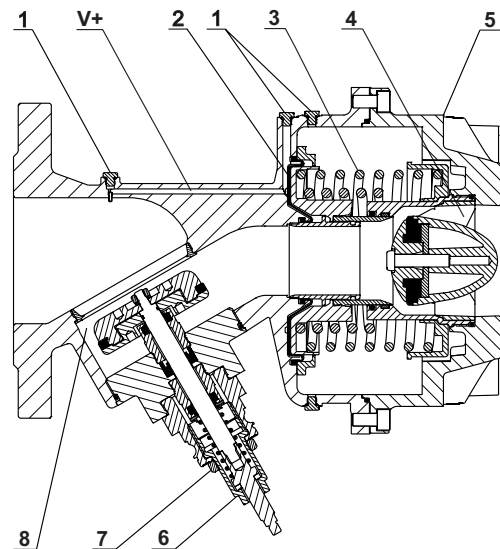
Pressure upstream of the throttle acts through an internal impulse pipe (V+) to the inlet side of the diaphragm (8).

Pressure downstream the control valve acts to the outlet side of the diaphragm together with a spring force.

The differential pressure controller pressure relieves the control valve, and at the same time limits the flow to the preset value. As the control valve is pressure relieved, it is possible to use low force actuators.

### DN 65-125

1. Venting screws
2. Diaphragm
3. Spring
4. Inline differential pressure controller
5. Valve body
6. Flow adjustment screw
7. Fixing nut
8. Control valve



The control valve (8) and the diaphragm operated inline differential pressure controller (4) are built in series in a common valve body.

Pressure upstream of the control valve acts through an internal impulse pipe (V+) to the inlet side of the diaphragm (2).

Pressure downstream of the control valve acts to the outlet side of the diaphragm together with a spring force.

The differential pressure controller pressure relieves the control valve, and at the same time limits the flow to the preset value. As the control valve is equipped with lift limitation device, stepless adjustment of maximum flow is possible. As the control valve is pressure relieved, it is possible to use low force actuators.

## Sizing

The valve is capable of achieving a maximum flow according to the previous tables.

Min. differential pressure:

Low flow (LF): 24 kPa ( $\Delta H_{min}$ )

Normal flow (NF): 40 kPa ( $\Delta H_{min}$ )

High flow (HF): 80 kPa ( $\Delta H_{min}$ )

(Valid for max. position, fully open. Other positions will require lower differential pressure, check with the software TA-Select.)

## Installation

Install the valve in the return pipe, downstream the consumer, or in the inlet pipe, upstream the consumer. Flow direction is shown by the arrow on the valve body.

Install the valve so that venting is possible and the flow adjustment scale is visible. Check allowed positions of the actuator.

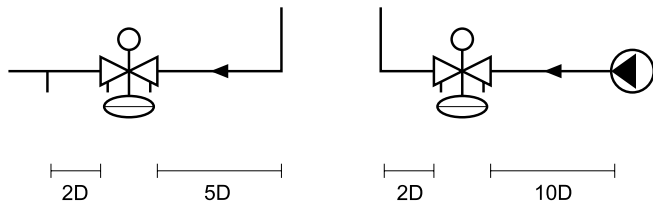
Installation of a strainer upstream of the valve is recommended.

When filling, vent the body by using the venting screws.

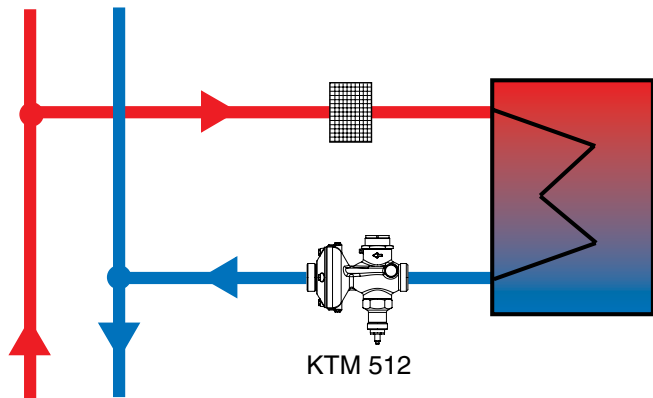
### Normal pipe fittings

Try to avoid mounting taps and pumps immediately before the valve.

Installation recommendation for accurate measurement due to distortion of fully developed turbulent flow profile.



### Application example



## Setting

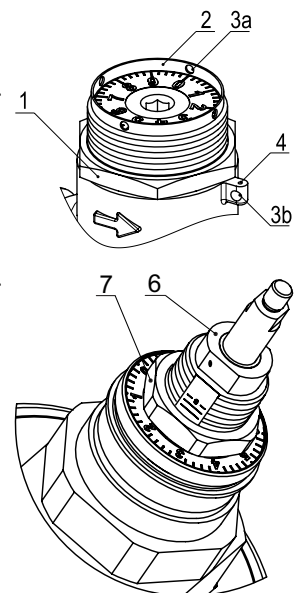
### DN 15-50

Release the fixing nut (1). Turn the flow setting screw (2) clockwise to the position of 0,0 turns. Turn the flow setting screw **anticlockwise** corresponding to the number of turns on the flow chart. Tighten the fixing nut. The flow setting can be sealed by using the holes (3a and 3b) on the flow setting screw and the valve body.

### DN 65-125

Release the fixing nut (7). Turn the flow setting screw (6) clockwise to the position of 0,0 turns. Turn the flow setting screw **anticlockwise** corresponding to the number of turns on the flow chart. Tighten the fixing nut.

Detailed instructions are delivered with the valves.



**Table - Example:**

Valid table is delivered with each valve.

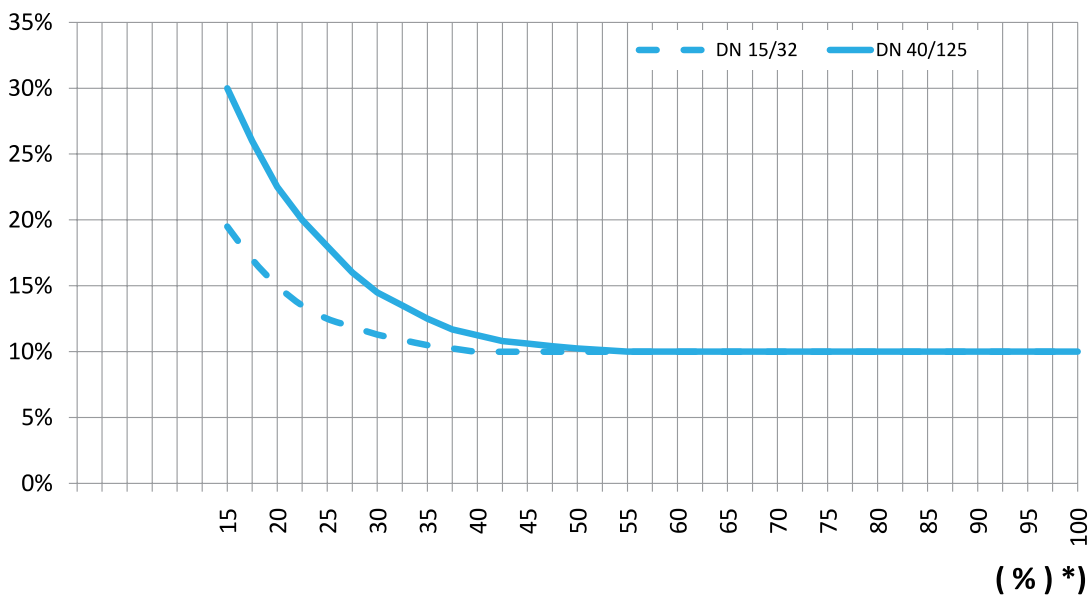
KTM 512 DN 15/20 LF					
Position - Einstellung					
	0,0	1,0	2,0	3,0	4,0
,0	0,02	0,29	0,49	0,59	0,72
,1	0,05	0,31	0,50	0,60	0,73
,2	0,07	0,33	0,51	0,62	0,74
,3	0,10	0,35	0,52	0,63	0,75
,4	0,13	0,37	0,53	0,64	0,76
,5	0,16	0,39	0,54	0,66	0,77
,6	0,18	0,41	0,55	0,67	0,78
,7	0,21	0,43	0,56	0,68	0,79
,8	0,24	0,45	0,57	0,69	0,80
,9	0,26	0,47	0,58	0,71	0,81

Flow - Volumenstrom (m<sup>3</sup>/h)

$p_1=4\text{bar}$     $p_2=3\text{bar}$     $\Delta p=1\text{bar}$   
 $\Delta p < >> 1\text{bar} \Rightarrow \text{Flow} = \approx$

## Measuring accuracy

### Kv deviation at different settings (LF/NF/HF)



\*) Setting (%) of fully open valve.

## Actuator recommendation at varying inlet pressures

The minimum actuator force required to operate the KTM 512 valves is dependent upon the maximum inlet pressure of the system. The following table shows the actuator recommendations from TA at varying inlet pressures.

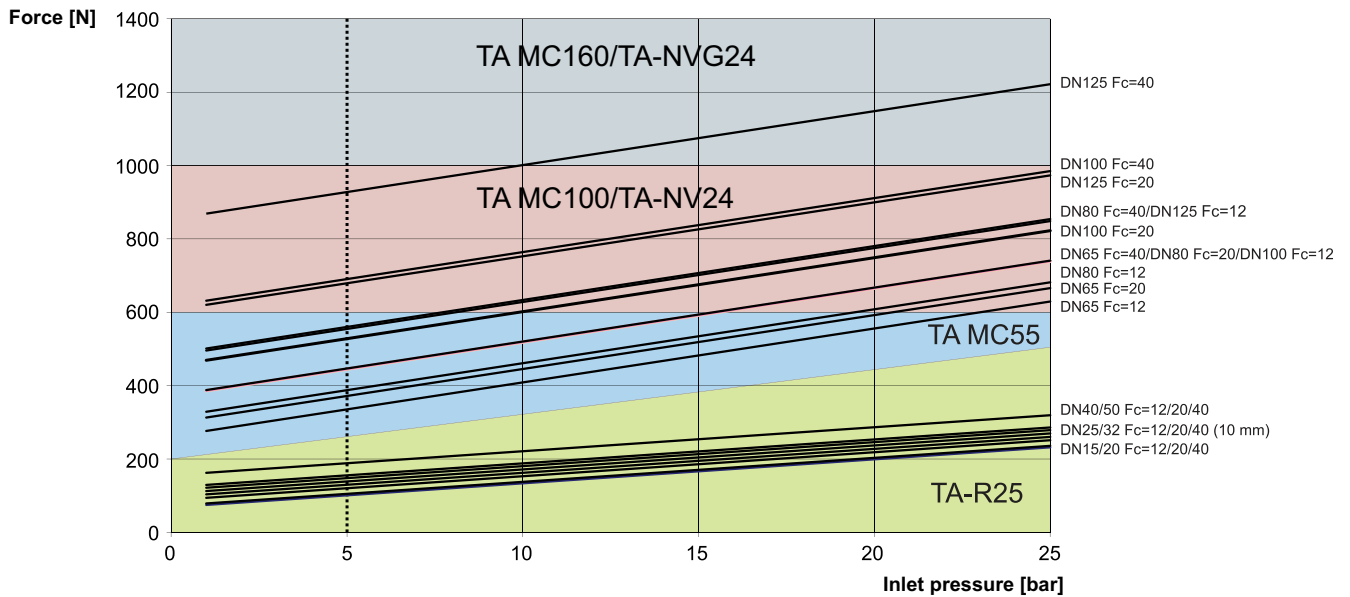
For other inlet pressures, the graph (Fig. 1) should be used to establish the minimum actuator force required.

Valve size	Valve Fc value	Stroke (mm)	Theoretical minimum actuator force (N) at varying static inlet pressures				
			5 bar	10 bar	15 bar	20 bar	25 bar
DN 15/20	12	10	110	135	170	200	235
	20		110	135	170	200	235
	40		115	140	175	205	240
DN 25/32	12		130	155	190	220	255
	20		140	165	195	230	260
	40		160	185	215	250	280
DN 40/50	12		150	175	205	240	270
	20		170	190	225	255	290
	40		205	225	255	290	320
DN 65	12	20	360	410	485	560	630
	20		400	445	520	595	670
	40		475	520	595	665	740
DN 80	12		415	465	535	610	685
	20		480	520	595	670	740
	40		600	635	710	785	855
DN 100	12		480	520	595	670	745
	20		565	605	675	750	825
	40		740	765	840	915	985
DN 125	12		595	630	705	775	850
	20		730	755	830	900	975
	40		995	1005	1075	1150	1225

Article No	EAN	TA recommended actuators	Actuator force (N)	Max. stroke (mm)
44 756-975	3831112504967	TA-R25/24V	500	10
61 055-003	3831112506510	TA MC55/24V	600	20
61 100-001	3831112511675	TA MC100/24V	1000	20
50 358-020	3831112507050	TA-NV24	1000	20
61 160-001	3831112512160	TA MC160/24V	1600	30
50 358-120	3831112512115	TA-NVG24	1600	20

**Note:** TA-R25/F24 fast acting version (Article No 44 756-977) is not recommended.

Fig. 1

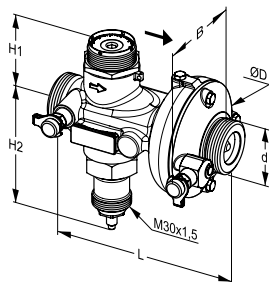


## Articles

### DN 15-50 Threads according to ISO 228

#### With measuring points

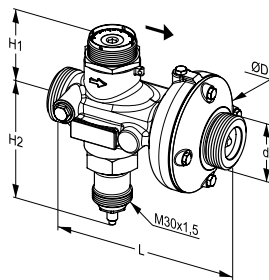
##### PN 25



Article No	EAN	DN	d	D	L	H1	H2	B	$q_{max}$ [m <sup>3</sup> /h]	Kg
<b>LF, low flow</b>										
52 796-220	3831112507692	15/20	G1	78	110	45	98	73	0,8	1,5
52 796-225	3831112507722	25/32	G1 1/4	97	150	53	94	80	3,2	2,0
52 796-240	3831112507753	40/50	G2	125	190	66	94	97	7,6	4,5
<b>NF, normal flow</b>										
52 796-020	3831112507708	15/20	G1	78	110	45	98	73	1,0	1,5
52 796-025	3831112507739	25/32	G1 1/4	97	150	53	94	80	3,8	2,0
52 796-040	3831112507760	40/50	G2	125	190	66	94	97	9,5	4,5
<b>HF, high flow</b>										
52 796-420	3831112507715	15/20	G1	78	110	45	98	73	1,4	1,5
52 796-425	3831112507746	25/32	G1 1/4	97	150	53	94	80	5,4	2,0
52 796-440	3831112507777	40/50	G2	125	190	66	94	97	12,6	4,5

#### Without measuring point

##### PN 25

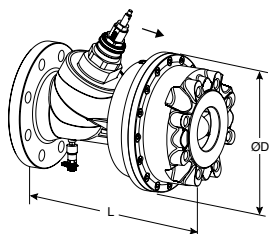


Article No	EAN	DN	d	D	L	H1	H2	$q_{max}$ [m <sup>3</sup> /h]	Kg
<b>LF, low flow</b>									
52 756-220	3831112502154	15/20	G1	78	110	45	98	0,8	1,5
52 756-225	3831112501874	25/32	G1 1/4	97	150	53	94	3,2	2,0
52 756-240	3831112501591	40/50	G2	125	190	66	94	7,6	4,5
<b>NF, normal flow</b>									
52 756-020	3831112502178	15/20	G1	78	110	45	98	1,0	1,5
52 756-025	3831112501881	25/32	G1 1/4	97	150	53	94	3,8	2,0
52 756-040	3831112501607	40/50	G2	125	190	66	94	9,5	4,5
<b>HF, high flow</b>									
52 756-420	3831112502185	15/20	G1	78	110	45	98	1,4	1,5
52 756-425	3831112501898	25/32	G1 1/4	97	150	53	94	5,4	2,0
52 756-440	3831112501614	40/50	G2	125	190	66	94	12,6	4,5

→ = Flow direction

**DN 65-125**

DN 65-125 are flanged and do not need any separate connections.

**With measuring points****PN 25 (DN 65-80 also fit PN 16 flanges)**

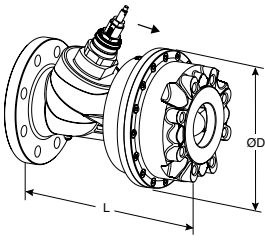
Article No	EAN	DN	D	L	H1	H2	q <sub>max</sub> [m <sup>3</sup> /h]	Kg
<b>LF, low flow</b>								
52 791-765	3831112509634	65	220	290	110	145	15,4	22
52 791-780	3831112509665	80	220	310	110	145	16,7	24
52 791-790	3831112509511	100	320	350	160	185	26,6	54
52 791-791	3831112509573	125	320	400	135	210	35,6	58
<b>NF, normal flow</b>								
52 791-865	3831112509641	65	220	290	110	145	21,6	22
52 791-880	3831112509672	80	220	310	110	145	22,7	24
52 791-890	3831112509528	100	320	350	160	185	41,2	54
52 791-891	3831112509580	125	320	400	135	210	54,9	58
<b>HF, high flow</b>								
52 791-965	3831112509658	65	220	290	110	145	29,6	22
52 791-980	3831112509689	80	220	310	110	145	32,5	24
52 791-990	3831112509535	100	320	350	160	185	50,6	54
52 791-991	3831112509597	125	320	400	135	210	66,8	58

**PN 16**

Article No	EAN	DN	D	L	H1	H2	q <sub>max</sub> [m <sup>3</sup> /h]	Kg
<b>LF, low flow</b>								
52 791-490	3831112512986	100	320	350	160	185	26,6	54
52 791-491	3831112513044	125	320	400	135	210	35,6	58
<b>NF, normal flow</b>								
52 791-590	3831112512979	100	320	350	160	185	41,2	54
52 791-591	3831112513037	125	320	400	135	210	54,9	58
<b>HF, high flow</b>								
52 791-690	3831112509504	100	320	350	160	185	50,6	54
52 791-691	3831112509566	125	320	400	135	210	66,8	58

→ = Flow direction



**Without measuring point****PN 25 (DN 65-80 also fit PN 16 flanges)**

Article No	EAN	DN	D	L	H1	H2	q <sub>max</sub> [m <sup>3</sup> /h]	Kg
<b>LF, low flow</b>								
52 793-765	3831112509849	65	220	290	110	145	15,4	22
52 793-780	3831112509870	80	220	310	110	145	16,7	24
52 793-790	3831112509726	100	320	350	160	185	26,6	54
52 793-791	3831112509788	125	320	400	135	210	35,6	58
<b>NF, normal flow</b>								
52 793-865	3831112509856	65	220	290	110	145	21,6	22
52 793-880	3831112509887	80	220	310	110	145	22,7	24
52 793-890	3831112509733	100	320	350	160	185	41,2	54
52 793-891	3831112509795	125	320	400	135	210	54,9	58
<b>HF, high flow</b>								
52 793-965	3831112509863	65	220	290	110	145	29,6	22
52 793-980	3831112509894	80	220	310	110	145	32,5	24
52 793-990	3831112509740	100	320	350	160	185	50,6	54
52 793-991	3831112509801	125	320	400	135	210	66,8	58

**PN 16**

Article No	EAN	DN	D	L	H1	H2	q <sub>max</sub> [m <sup>3</sup> /h]	Kg
<b>LF, low flow</b>								
52 793-490	3831112509696	100	320	350	160	185	26,6	54
52 793-491	3831112509757	125	320	400	135	210	35,6	58
<b>NF, normal flow</b>								
52 793-590	3831112509702	100	320	350	160	185	41,2	54
52 793-591	3831112509764	125	320	400	135	210	54,9	58
<b>HF, high flow</b>								
52 793-690	3831112509719	100	320	350	160	185	50,6	54
52 793-691	3831112509771	125	320	400	135	210	66,8	58

→ = Flow direction

## Adapters for actuators

### For DN 15-50

#### For recommended actuators

Article No	EAN	For actuator
52 757-031	3831112511996	TA-R25
52 757-035	3831112512023	TAHC MC55, MC100
52 757-041	3831112512061	TA-NV24, Belimo UNV 003

#### For other actuators

Article No	EAN	For actuator
52 757-001	3831112503595	Siemens SQS, Belimo NRDVX-3-T-SI
52 757-002	3831112505490	JCI VA-745x
52 757-007	3831112505339	Lineg NL
52 757-008	3831112503465	Danfoss AMV 10, 13, 20, 23
52 757-011	3831112500259	Samson 5825
52 757-016	3831112500167	Clorius V2.05, V4.10
52 757-019	3831112503007	TAC-FORTA M400, M800
52 757-022	3831112505360	Siemens SQX, SKD, SKB
52 757-024	3831112504950	TAHC MC25, K
52 757-026	3831112511538	TAHC MC100 FSE/FSR
52 757-028	3831112511965	TAHC MC45
52 757-029	3831112511972	TA-NV24, Belimo UNV 002
52 757-030	3831112511989	Sauter AVM 104/114
52 757-033	3831112512009	JCI VA-715x, VA-720x, VA-774x
52 757-034	3831112512016	Heimeier, Thermostatic head
52 757-036	3831112512030	K&P MD200
52 757-037	3831112512047	Belimo NRDVX-SR-T-CA
52 757-038	3831112512054	TA-R25 plastic
52 757-042	3831112512078	Honeywell ML

### For DN 65-125

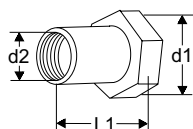
#### For recommended actuators

Article No	EAN	For actuator
52 757-901	3831112512283	TA-NV24, Belimo UNV 003
52 757-905	3831112509269	TAHC MC 55
52 757-907	3831112512085	TAHC MC 100
52 757-913	3831112511910	TAHC MC 160

#### For other actuators

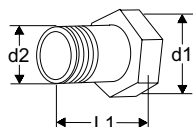
Article No	EAN	For actuator
52 757-902	3831112509252	Danfoss AMV 55
52 757-903	3831112510661	Siemens SQX, SKD
52 757-904	3831112504486	Sauter AVN 224, AVF 234, AVM 234
52 757-906	3831112512092	TAC Forta

## Connections



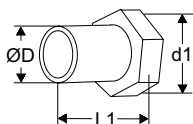
### With female thread

Threads according to ISO 228

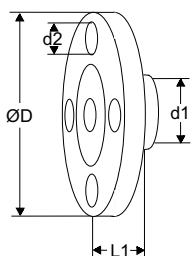


### With male thread

Threads according to ISO 7



### For welding

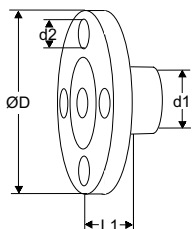


### With flange

Flange according to EN-1092-2:1997, type 16.

Length flange to flange according to EN-558-2-1995, serie 1.

**Note!** Can be used on inlet and outlet side on valves **without** measuring points. **Inlet side** on valves **with** measuring points only.



### With flange (extended)

**Note!** Must be used on the **outlet** side on valves **with** measuring points. (Length flange to flange **not** according to EN-558-2-1995, serie 1.)

Article No	EAN	d1	d2	L1*
52 759-015	3831112501027	G1	G1/2	26
52 759-020	3831112501034	G1	G3/4	32
52 759-025	3831112501041	G1 1/4	G1	47
52 759-032	3831112501058	G1 1/4	G1 1/4	52
52 759-040	3831112503489	G2	G1 1/2	52
52 759-050	3831112503205	G2	G2	64,5

Article No	EAN	d1	d2	L1*
52 759-115	3831112500983	G1	R1/2	34
52 759-120	3831112500990	G1	R3/4	40
52 759-125	3831112501003	G1 1/4	R1	40
52 759-132	3831112501010	G1 1/4	R1 1/4	45
52 759-140	3831112503342	G2	R1 1/2	45
52 759-150	3831112503472	G2	R2	50

Article No	EAN	d1	D	L1*
52 759-315	3831112500945	G1	20,8	37
52 759-320	3831112500952	G1	26,3	42
52 759-325	3831112500969	G1 1/4	33,2	47
52 759-332	3831112500976	G1 1/4	40,9	47
52 759-340	3831112501140	G2	48,0	47
52 759-350	3831112501294	G2	60,0	52

Article No	EAN	d1	d2	D	L1*
52 759-515	3831112501065	G1	M12	95	10
52 759-520	3831112501072	G1	M12	105	20
52 759-525	3831112504318	G1 1/4	M12	115	5
52 759-532	3831112501096	G1 1/4	M16	140	15
52 759-540	3831112504325	G2	M16	150	5
52 759-550	3831112501317	G2	M16	165	20

Article No	EAN	d1	d2	D	L1*
52 759-615	3831112501157	G1	M12	95	47
52 759-620	3831112500136	G1	M12	105	47
52 759-625	3831112503533	G1 1/4	M12	115	62
52 759-632	3831112526129	G1 1/4	M16	140	62
52 759-640	3831112505025	G2	M16	150	72
52 759-650	3831112503892	G2	M16	165	72

\*) Fitting length (from the gasket surface to the end of the connection).

The products, texts, photographs, graphics and diagrams in this document may be subject to alteration by TA Hydraulics without prior notice or reasons being given.

For the most up to date information about our products and specifications, please visit [www.tahydraulics.com](http://www.tahydraulics.com).

6-10-25 KTM 512 04.2011