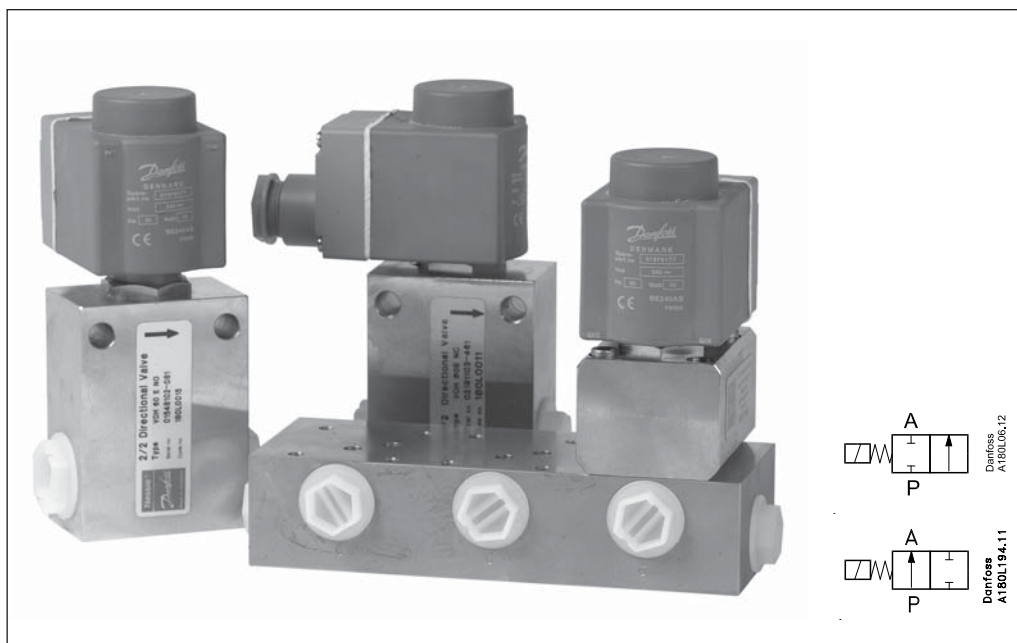


## 2/2 way Directional Control Valves, type VDH

### For inline mounting and Cetop 3 flange mounting (ISO 4401)



#### Inline versions:

- VDH 30 E 2/2,
- VDH 60 E 2/2,
- VDH 120 E 2/2

#### Cetop 3 block version:

- VDH 30 EC 2/2

<b>Application</b>	Directional valves are used to control water flow direction.	The valves are designed for tap water, i.e. without additives (EU-Directive 98/83/EC).
<b>Function</b>	The directional valves are pilot operated On/Off 2/2-way seat valves electrically activated by 1 coil.	
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Corrosion resistant surfaces</li> <li>• Easy to clean surfaces</li> <li>• The seat valve design ensures zero leakage</li> </ul>	<ul style="list-style-type: none"> <li>• High degree of protection, IP 67</li> <li>• Cetop valve installable on all cetop 3 blocks</li> </ul>
<b>Variants</b>	The valve housing comes in standard version in stainless steel AISI 304 (W. nr. 1.4301). The valve is available as a normally closed valve (NC) or as a normally open valve (NO).	On request the valve housing is obtainable in stainless steel AISI 316 L (W. nr. 1.4401), please contact the Danfoss Sales Organization for Water Hydraulics.
<b>Filtration</b>	The water supplied to the valve must be filtered: 10 µm absolute, $\beta_{10}$ -value > 5000 filter is recommended.	For further information on filters, please contact the Danfoss sales department for water hydraulics.

**Technical Data**

Valve type	VDH 30 E 2/2	VDH 30 EC 2/2	VDH 60 E 2/2	VDH 120 E 2/2
Max. inlet pressure cont.	140 bar	140 bar	140 bar	140 bar
Max. inlet pressure peak-NO	170 bar	170 bar	170 bar	170 bar
Max. inlet pressure peak-NC	200 bar	200 bar	200 bar	200 bar
Max. flow	30 l/min	30 l/min	60 l/min	120 l/min
Min. Flow	1 l/min	1 l/min	1 l/min	5 l/min
Pressure loss at max flow	6 bar	7 bar	8 bar	6 bar
Max. opening time	150 ms	150 ms	150 ms	150 ms
Max. closing time	350 ms	350 ms	350 ms	400 ms
Operation pressure *)	3,5 bar	3,5 bar	3,5 bar	1 bar
Leakage at pressure higher than 10 bar	0 ml/min (drip proof)	0 ml/min (drip proof)	0 ml/min (drip proof)	0 ml/min (drip proof)
Degree of protection	IP 67	IP 67	IP 67	IP 67
Port connection	G 3/8"	Cetop 3 block	G 1/2 "	G 1/2 "
Max. fluid temperature	50°C	50°C	50°C	50°C
Max. ambient temperature	50°C	50°C	50°C	50°C
Weight (incl. coil)	1.6 kg	1.2 kg	1.6 kg	1.8 kg

\*) The pressure in port P must always be higher than the pressure in port A (Pp>Pa).

**Temperature**
*Storage temperature:*

- -40°C to +70°C – provided that the valve is drained of fluid and stored "plugged"

*Operation on (clean) water:*

- Fluid temperature and ambient temperature: +3°C to +50°C

*Operation on water containing antifreeze:*

- Fluid temperature and ambient temperature: -30°C 1) to +50°C

1) please see paragraph on antifreeze protection

**Antifreeze Protection**

If a system requires antifreeze protection, Danfoss recommends Dowcall N or Chillsafe mono propylene glycol from the Dow Chemical Company and Arco Chemical Company, respectively. Both antifreezes are biologically degradable and must be used together with demineralized water.

**Mixing ratio must be:**

- min. 30% antifreeze and 70% demineralized water providing frost protection to -13°C and preventing biofilm in the system.
- max. 50% antifreeze and 50% demineralized water due to increased viscosity, providing frost protection to -30°C.

Code Numbers

Valves (without coil)	Steel type	Port connection	Function symbol	Code number
VDH 30 E 2/2 NC	AISI 304	G 3/8"	Danfoss A180L06.12	180L0002
VDH 30 E 2/2 NO	AISI 304	G 3/8"	Danfoss A180L194.11	180L0003
VDH 60 E 2/2 NC	AISI 304	G 1/2"	Danfoss A180L06.12	180L0011
VDH 60 E 2/2 NO	AISI 304	G 1/2"	Danfoss A180L194.11	180L0015
VDH 120 E 2/2 NC	AISI 304	G 1/2"	Danfoss A180L06.12	180L0001
VDH 120 E 2/2 NO	AISI 304	G 1/2"	Danfoss A180L194.11	180L0005
VDH 30 EC 2/2 NC	AISI 304	Cetop 3	Danfoss A180L06.12	180L0048
VDH 30 EC 2/2 NO	AISI 304	Cetop 3	Danfoss A180L194.11	180L0049

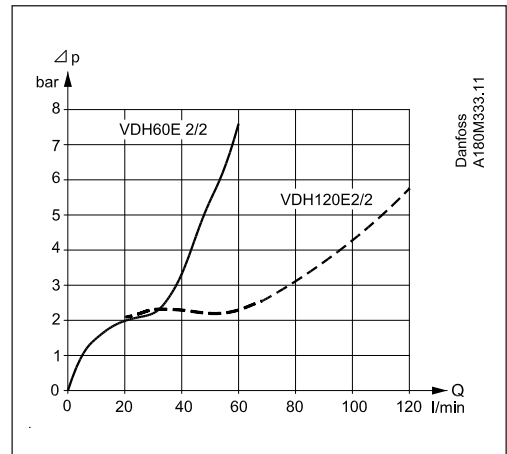
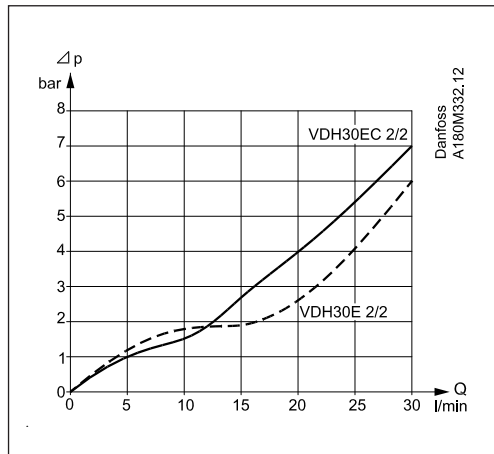
The valves are supplied without coils which must be ordered separately.  
VDH 30EC 2/2 way valves are supplied with screws and O-rings.

Cetop 3 blocks	Steel type	Weight	Code number
Block for 1 cetop valve	AISI 304	1.0 kg	180L0061
Block for 2 cetop valves	AISI 304	1.8 kg	180L0062
Block for 3 cetop valves	AISI 304	2.6 kg	180L0063
Block for 4 cetop valves	AISI 304	3.4 kg	180L0064

Coil	New coils (clip-on) (NC + NO)
24 V / 50 Hz / 10 W	018F7920
220 V / 50 Hz / 10 W	018F7921
240 V / 50 Hz / 10 W	018F7924
24 V / 60 Hz / 10 W	018F7922
220 V / 60 Hz / 10 W	018F7925
240 V / 60 Hz / 10 W	018F7926
110 V / 50/60 Hz / 10 W	018F7923
12 V d.c. / 18 W	018F7913
24 V d.c. / 18 W	018F7914

ATEX - consult the document "solenoid valves intended for use in ATEX classified areas" 521B1101

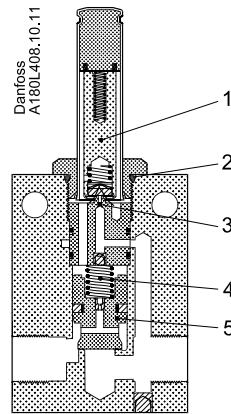
**Pressure losses at different flows**



**Cross-section of valves**

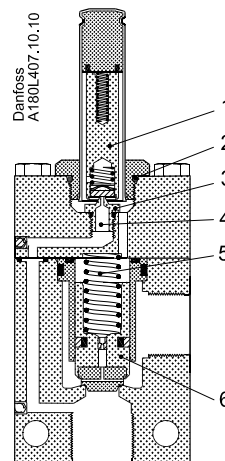
**VDH 30E2/2 and VDH 60E2/2 (inline)**

1. Armature
2. O-ring
3. Orifice
4. Spring
5. Poppet



**VDH 120E2/2 (inline)**

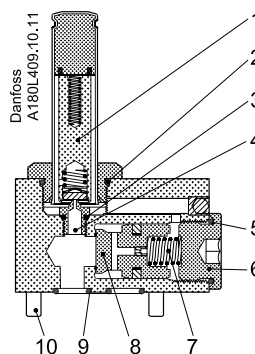
1. Armature
2. O-ring
3. O-ring
4. Orifice
5. Spring
6. Poppet



Cross-section of valves

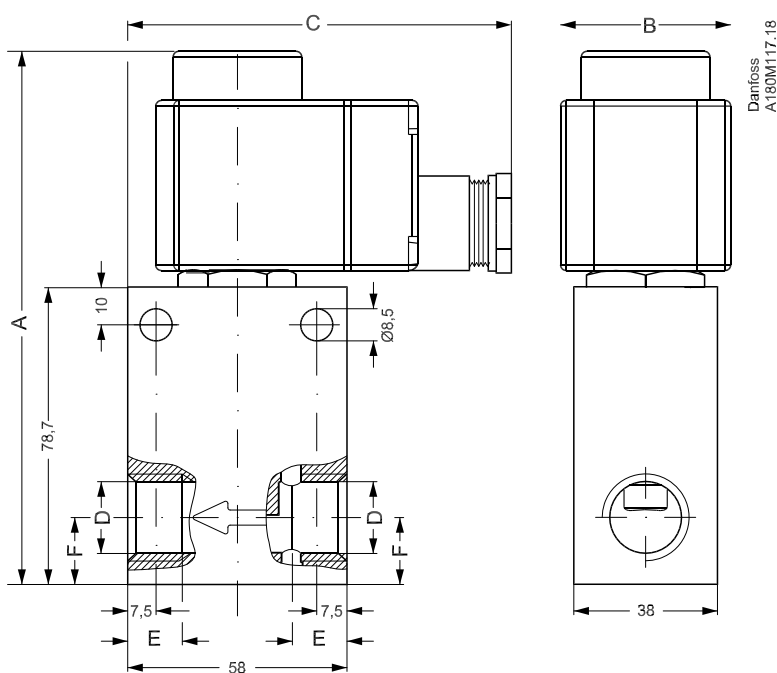
VDH 30EC2/2 (Cetop)

1. Armature
2. O-ring
3. O-ring
4. Orifice
5. O-ring
6. Plug
7. Spring
8. Poppet
9. O-ring
10. Screw



Dimensions (mm)

VDH30 E2/2 and  
VDH60 E2/2  
(inline)

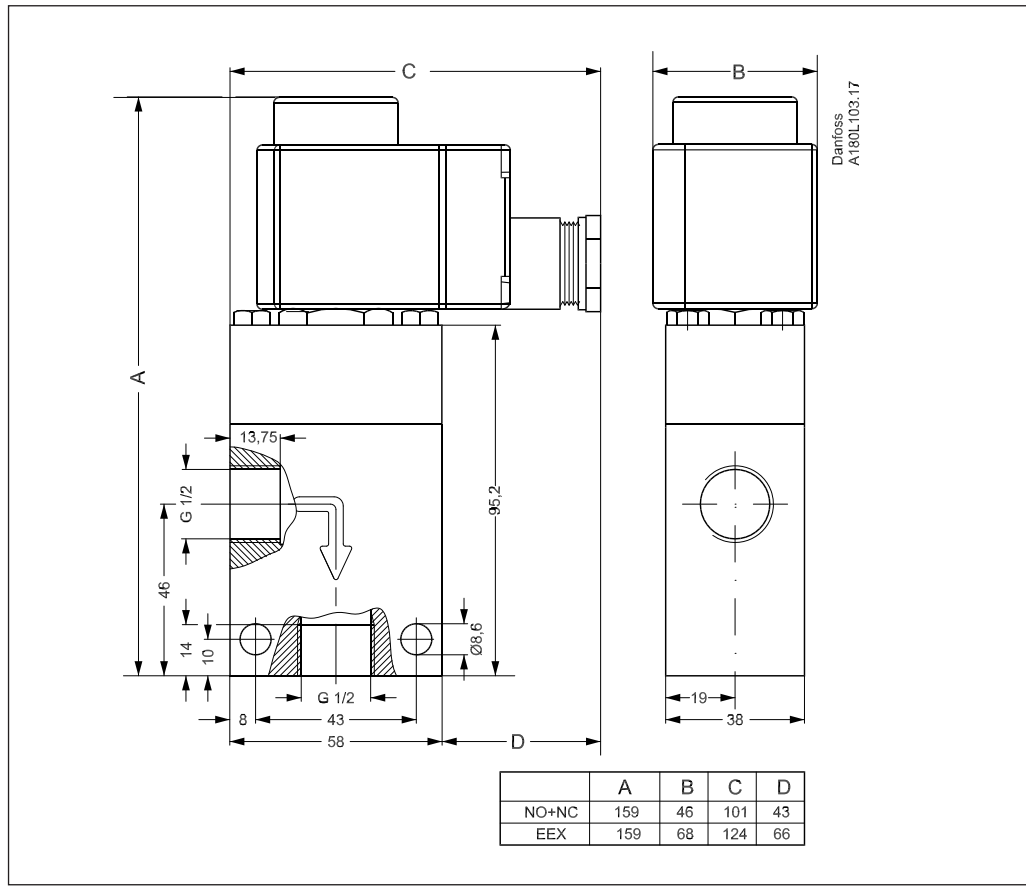


	D	E	F
VDH 30	G 3/8	12	17.7
VDH 60	G 1/2	14	18.7

	A	B	C
NO+NC	142	46	101
EEX	142	68	124

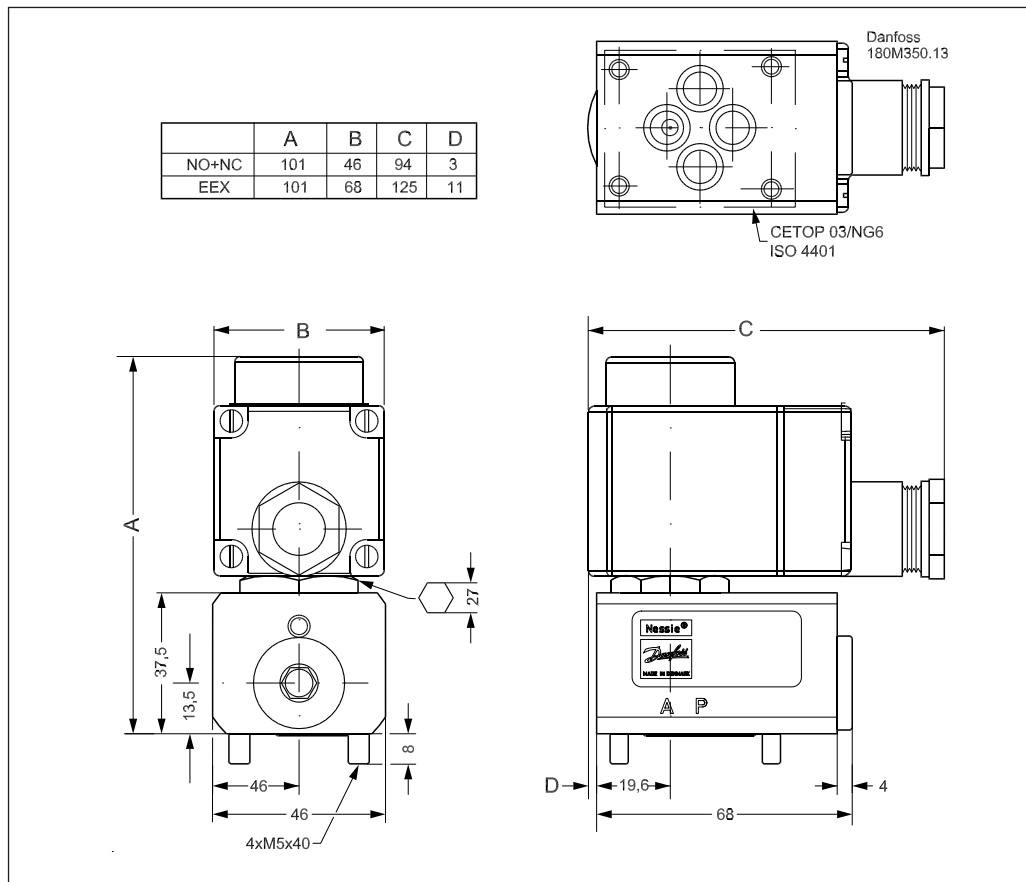
Dimensions (mm)

VDH120 E2/2 (inline)



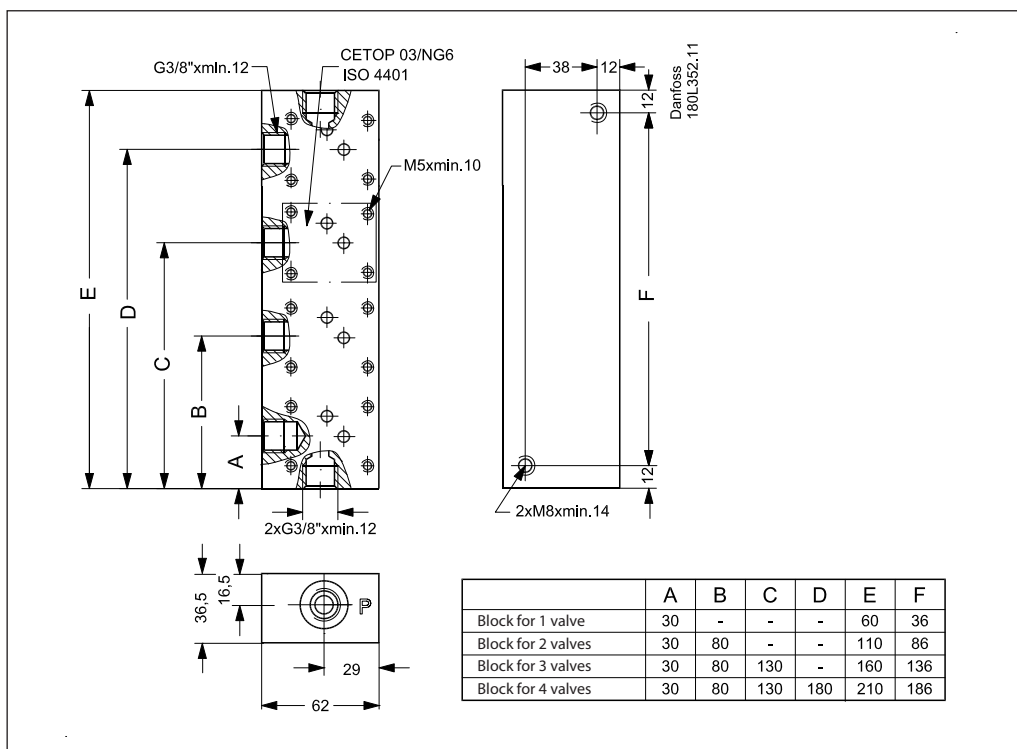
Dimensions (mm)

VDH30 EC2/2 (Cetop 03)



Dimensions (mm)

Cetop blocks



Mounting of inline valves

Inline valves are mounted in line in flow direction (follow the arrow on the valve) and fixed either

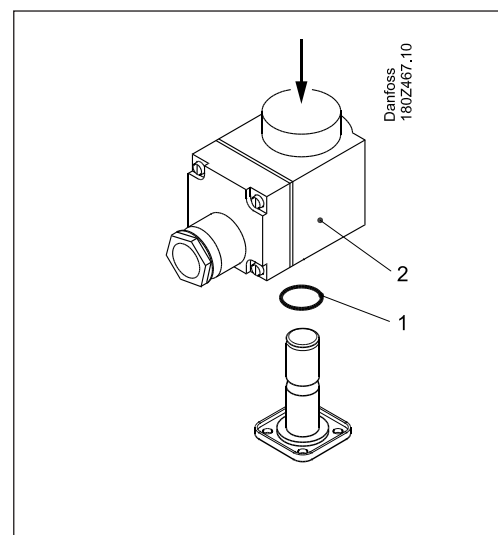
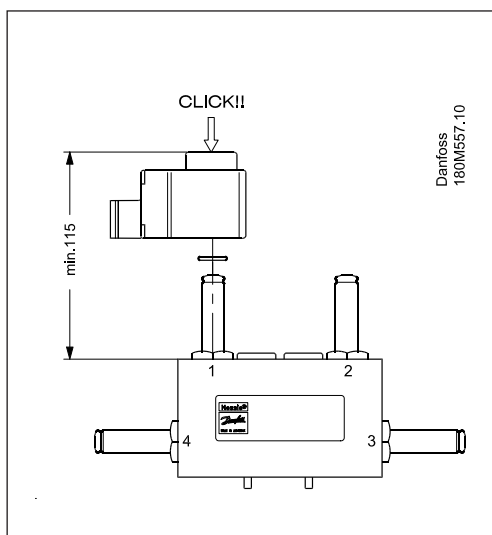
directly in the pipe connections or with bolts in the fixation holes on the valve.

Mounting of valve on Cetop block

The valve is designed to be mounted on a block with CETOP 3-port connection. Four stainless steel screws and four O-rings are supplied with the valve for mounting. Remember to smear/

spray the threads on the screws with Molykote® D pasta from Dow Corning, or Klüber UH1 84-201 from Klüber lubrication, before mounting the valve.

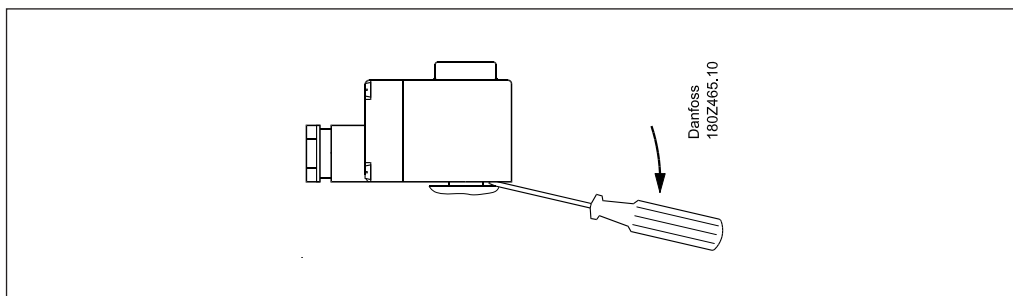
Mounting of coil on valve



Coil on valves with short armature tubes (NC and NO valves)

1. Place the o-ring on the armature tube.
2. The coil is clicked on by means of a light pressure by hand – without using tools.

Dismounting



Accessories  
Code Nos.

Spare parts	Code number
Poppet kit for VDH 30E 2/2, VDH 30 EC2/2 and 2/2 VDH 60E 2/2	180L5005
Poppet kit for VDH120E 2/2 (pos. 6)	180L5001
Armature kit, NC (pos. 1)	180L5002
Armature kit, NO (pos. 1)	180L5010
Orifice kit VDH 30E 2/2	180Z0099
Orifice kit VDH 60E 2/2	180Z0099
Orifice kit VDH 120E 2/2	180Z0098

O-ring for mounting on block	Dimensions	Code number
NBR, 1 pc. (pos. 11)	9.25 × 1.78	633B1243

Assembly screw	Tightening torque	Code number
M5 × 40 ISO 4762 A4, 1 pc (pos. 10)	7 Nm	681X0162

Tools	Application	Code number
Special tool for orifice insert	Mounting/dismounting of orifice Orifice insert in valve housing: 12 Nm ± 2 Nm Armature to be screwed into the valve housing: 60 Nm ± 2 Nm	180Z0034
Spool tool included in 180L5005	Mounting of spool	
Permanent magnet	For manual activation of valve	180Z0212

For further details on coils, please see 521B0980.

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