

Data sheet

Directional control valve

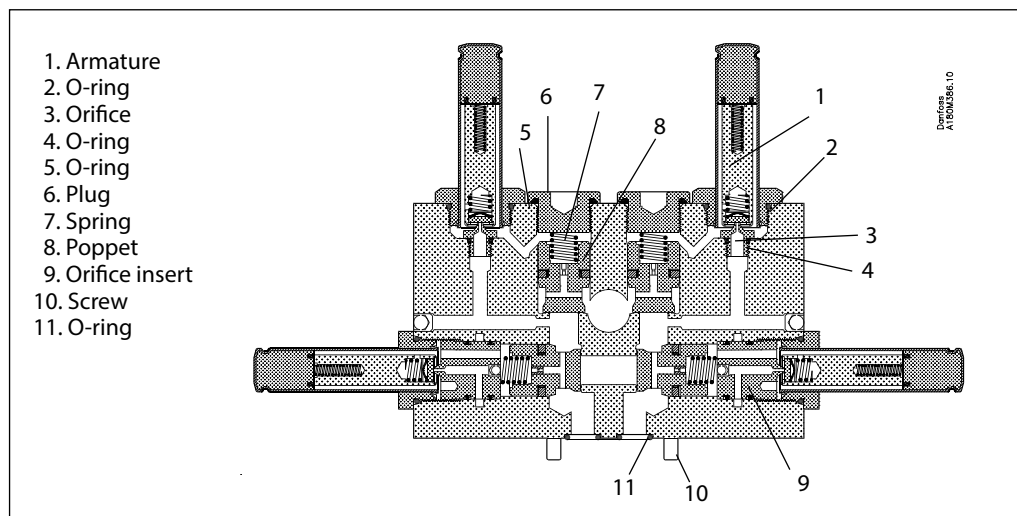
VDH 30EC 4/3

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



Introduction

The VDH 30 EC is designed for controlling the direction of water flow. The valves are designed for tap water, i.e. without additives (EU-Directive 98/83/EC).


Function

The directional valves are pilot operated On/Off seat valves electrically activated by 4 coils. The valves are designed according to the seat valve principle where each individual seat valve is controlled by its own pilot stage.

This valve type contains 4 seat valves altogether: two inlet valves and two outlet valves. As each seat valve is individually controlled by its own pilot, this design offers many different valve configurations to the end user.

Features

- Installable on all Cetop 3 blocks and inline blocks
- Corrosion resistant surfaces
- Easy-to-clean surfaces
- The seat valve design ensures minimum leakage
- High degree of enclosure, IP67
- Many valve configurations available

Versions

The valve housing comes in standard version in stainless steel AISI 304 (W. No. 1.4301) or ISI 316 (W. No. 1.4401)

The valve is available as a Normally Close valve (NC) or in a combination of Normally Open (NO) and Normally Closed (NC)

Temperature

Storage temperature:

- -40°C to +70°C [-40 to 158 °F] – 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 [37 to 122 °F]

Operation on water containing antifreeze:

- Fluid temperature and ambient temperature: -30°C [1] to +50°C [-22 to 122 °F]

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 [9 °F] and preventing biofilm in the system.
- max. 50% antifreeze and 50% demineralized water due to increased viscosity, providing frost protection to -30°C [-22 °F].

Filtration

The water supply must be filtered through a 10 µm abs., β₁₀-value > 5000 filter.

For further filter details, please contact the Danfoss Sales Organization.

Technical data and Code numbers

Valve body	VDH 30EC - NC Stainless steel, AISI 304	VDH 30EC - NC Stainless steel, AISI 316	VDH 30 EC 2xNC + 2x NO Stainless steel, AISI 3040
Code number	180L0046	180L0047	180L0050
Function symbol			
Max. pressure port P, A and B ¹⁾	140 barg [2030 psig]		
Return pressure, port T (T ≤ A, B pressure ¹⁾)	140 barg [2030 psig]		
Min. inlet pressure	5 barg [72.5 psig]		
Max. flow	30 l/min [8 gpm]		
Min. flow	1 l/min [0.2 gpm]		
Pressure loss	See curve page 4		
Leakage, port P → A, B, T	0 ml/min [0 gpm]		
Leakage, port A, B → T	0 ml/min [0 gpm]		
Leakage, port A, B → P (inlet pressure port P = 0 barg)	max. 5 ml/min [max. 0.0013 gpm]		
Leakage, port A, B → P (inlet pressure port P = pressure port A,B)	0 ml/min [0 gpm]		
Opening time when changing direction ²⁾	110 ms		
Closing time when changing direction ²⁾	130 ms		
Weight	3.8 kg [8 lbs]		

The valves are supplied with screw and O-rings, but without coils.

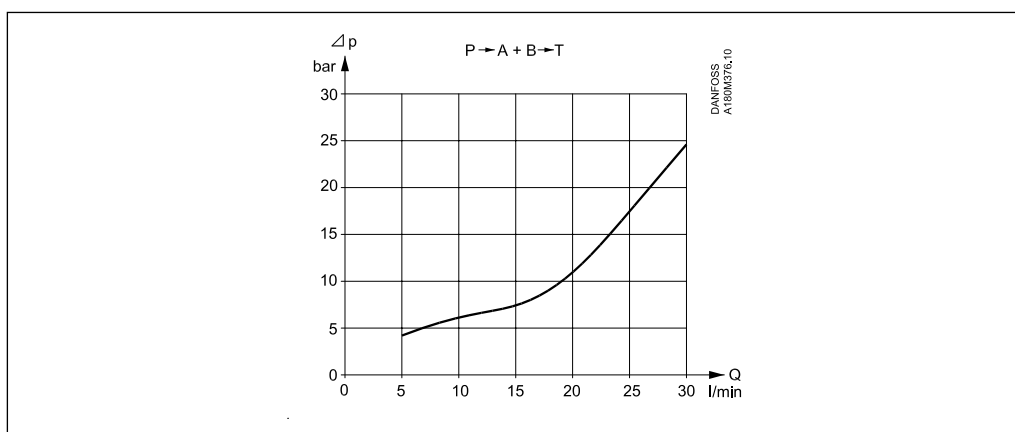
Coils type BE / Without LED / incl. Terminal box								
Description	Code no.	Voltage	Power	Voltage tolerance	T max Ambient °C [°F]	Connection	Enclosure	Weight kg [lbs]
Coil 240V-60Hz-IP67	018F7926	240V 60Hz	15W	± 10-15%	80 [176]	Terminal box	IP67	0.3 [0.7]
Coil 240V-50Hz-IP67	018F7924	240V 50Hz	11W		80 [176]	Terminal box	IP67	0.3 [0.7]
Coil 220-230V-50Hz-IP67	018F7921	220-230 V 50 Hz	12W		80 [176]	Terminal box	IP67	0.3 (0.7)
Coil 220-230V-50-60Hz-IP67	018F7919	220-230 V 50-60Hz	17W 14W		50 [122]	Terminal box	IP67	0.3 [0.7]
Coil 220V-60Hz-IP67	018F7925	220V 60Hz	13W		80 [176]	Terminal box	IP67	0.3 [0.7]
Coil 200V-50-60Hz-IP67	018F7929	200V 50/60Hz	10W		80 [176]	Terminal box	IP67	0.3 [0.7]
Coil 110V-50-60Hz-IP67	018F7923	110V 50- 60Hz	15W 13W		50 [122]	Terminal box	IP67	0.3 [0.7]
Coil 24V-60Hz-IP67	018F7922	24V 60Hz	14W		80 [176]	Terminal box	IP67	0.3 [0.7]
Coil 24V-50Hz-IP67	018F7920	24V 50Hz	12W		80 [176]	Terminal box	IP67	0.3 [0.7]
Coil 42V-50Hz-IP67	018F7927	42V 50Hz	10W		80 [176]	Terminal box	IP67	0.3 [0.7]
Coil 24V-DC- IP67	018F7914	24V DC	16W	± 10%	50 [122]	Terminal box	IP67	0.3 [0.7]
Coil 12V-DC- IP67	018F7913	12V DC	15W	± 10%	50 [122]	Terminal box	IP67	0.3 [0.7]

**Code numbers
(continued)**

Cetop 3 blocks

Description	Weight kg [lbs]	Code number
Inline block for 1 valve (P&T direct for VPH 15E)	0.8 [1.7]	180L0060
Block for 1 valve	2.4 [5.3]	180L0081
Block for 2 valves	4.4 [9.7]	180L0082
Block for 3 valves	7.3 [16.1]	180L0083
Block for 4 valves	9.6 [21.2]	180L0084
Cover plate incl. screws and O-ring (for covering-up non-used valve outlets on block)	0.1 [0.2]	180L0079

**Pressure losses at
different flows**



Available valve configurations

The table below shows the possible valve configurations, depending on which coils are activated.

For VDH 30EC 4/3 NC

Function	1	2	3	4
	off	off	off	off
	off	on	off	on
	on	off	on	off
	off	off	on	off
	on	off	off	off
	off	off	off	on
	off	on	off	off
	off	off	on	on
	on	on	off	off
	off	on	on	off
	on	off	off	on
	on	on	on	on

Danfoss
A180M326.10

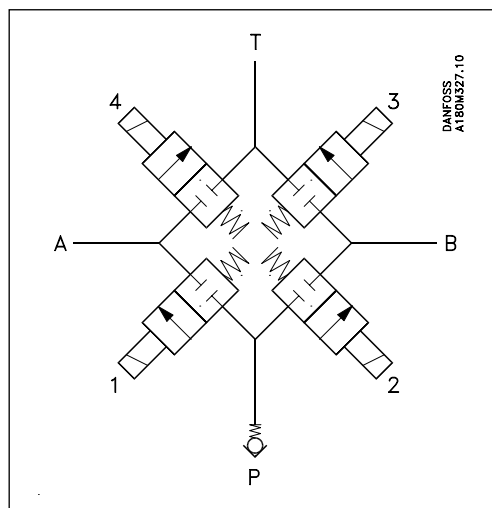
Diagram showing flow routes through the valve, port lettering and coil numbers.

For VDH 30EC 4/3 NC + NO

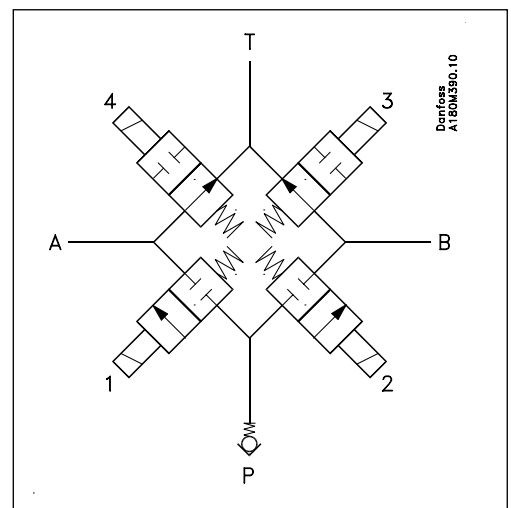
Function	1	2	3	4
	NC	NC	NO	NO
	off	off	on	on
	off	on	on	off
	on	off	off	on
	off	off	off	on
	on	off	on	on
	off	off	on	off
	off	on	on	on
	off	off	off	off
	on	on	on	on
	off	on	off	on
	on	off	on	off
	on	on	off	off

Danfoss
A180M359.10

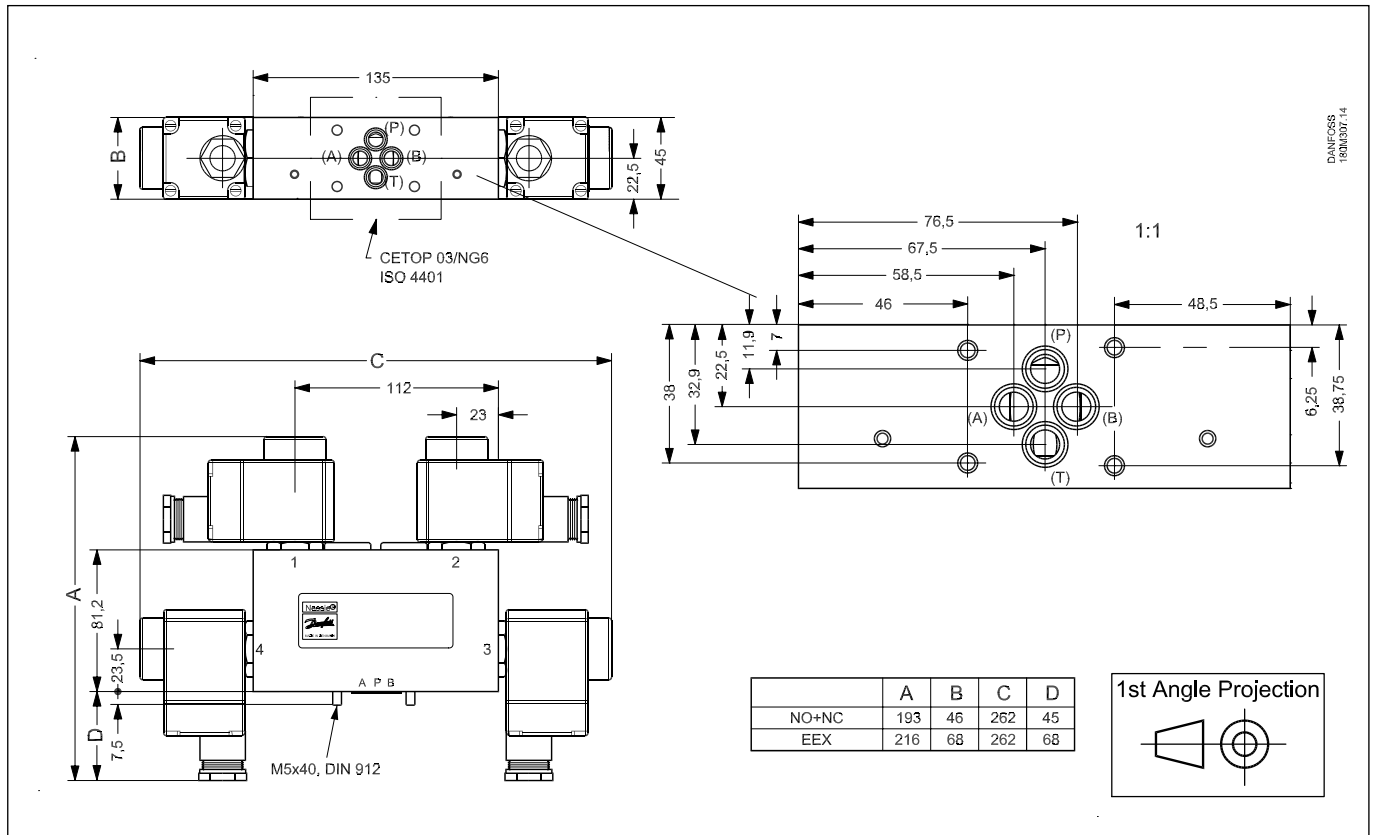
For VDH 30EC 4/3 NC



For VDH 30EC 4/3 NC + NO

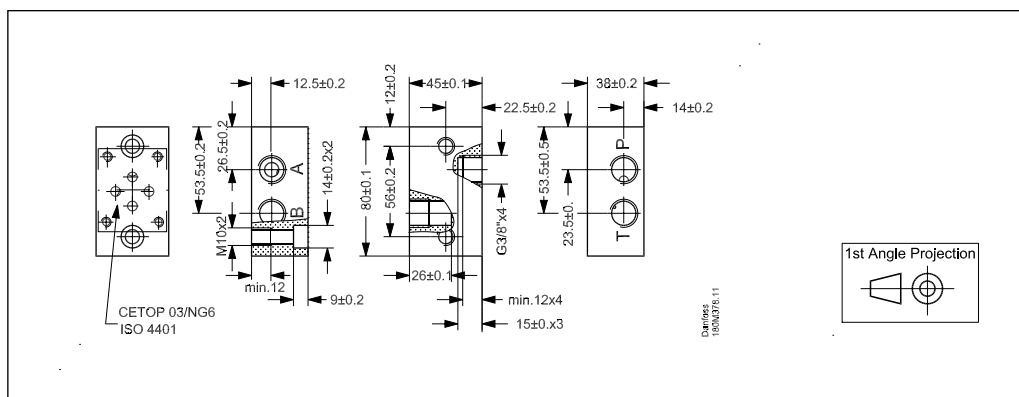


Dimensions (mm)
VDH 30EC 4/3

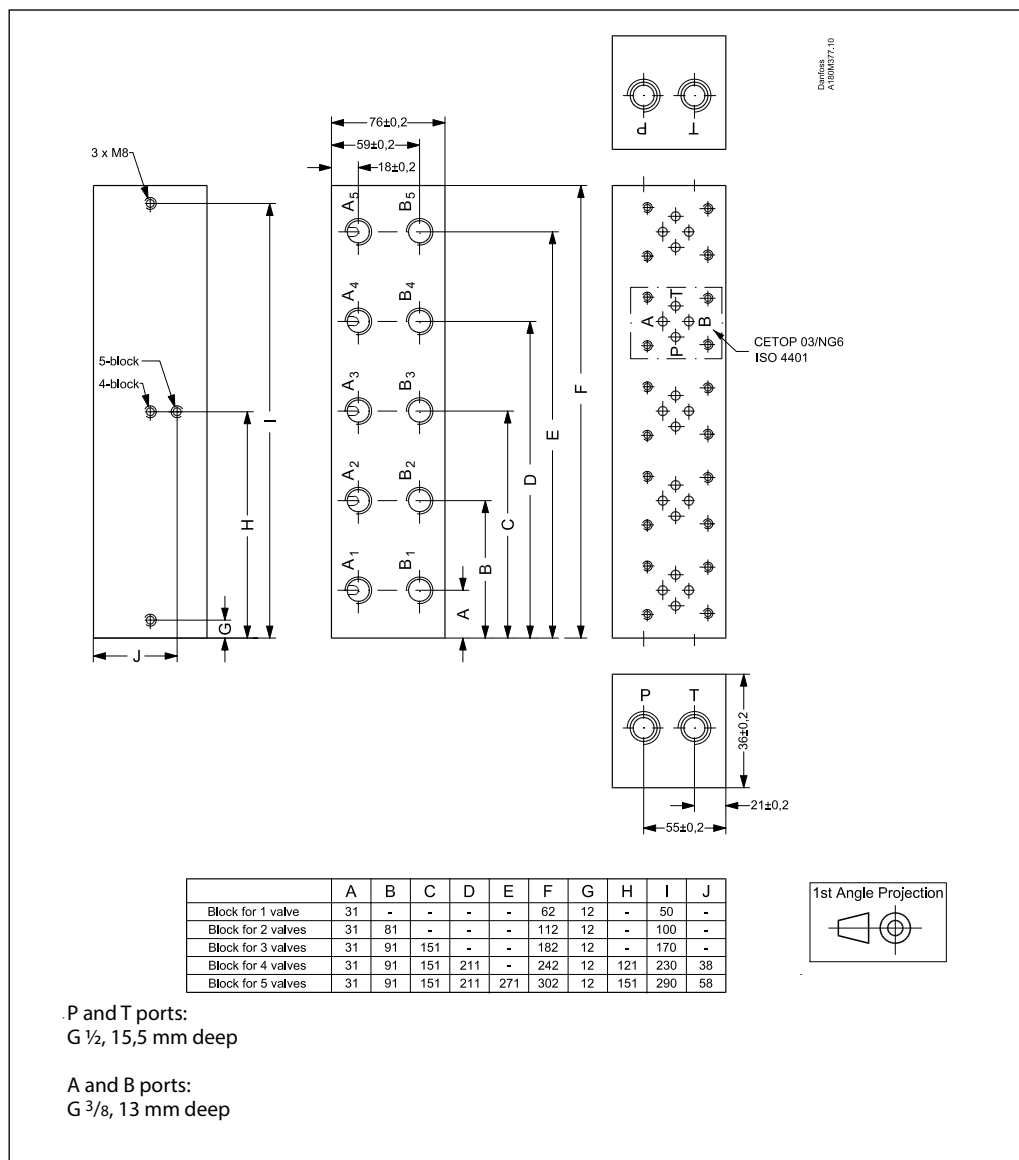


**Dimensions (mm)
Inline block for 1 valve**

180L0060



**Dimensions (mm)
Cetop blocks**



**Spare parts
Code numbers**

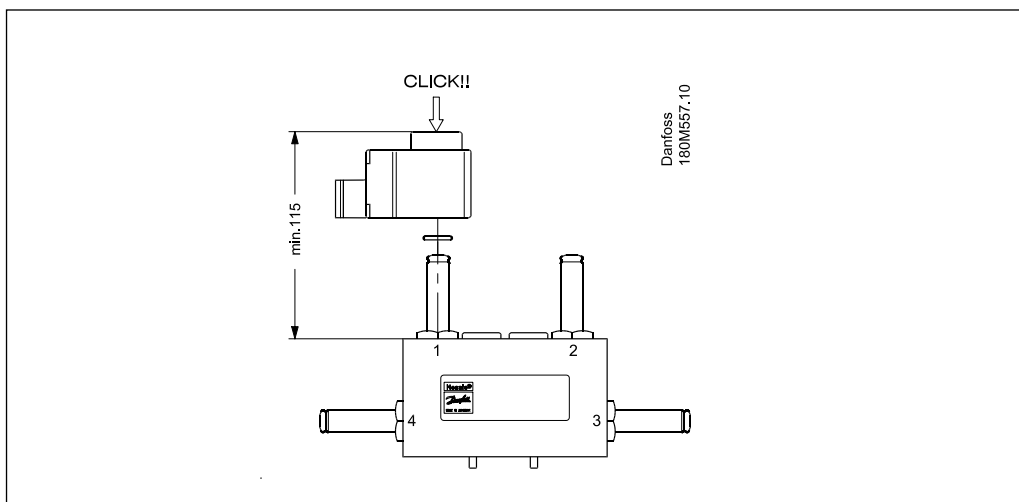
Spare parts		Code number
Poppet kit (pos. 8)		180L5005
Armature kit, NC (pos. 1)		180L5002
Armature kit, NO (pos. 1)		180L5010
Orifice kit		180Z0099 + 180Z0098
O-ring for mounting on block	Dimensions	Code number
NBR, 1 pc (pos. 11)	9.25 x 1.78	633B1243
Assembly screw	Tightening torque	Code number
M5 x 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 inser in valve housing: 12 Nm \pm 2 NM Armature to be screwed into the valve housing: 60 Nm \pm 2 Nm	180Z0034
Spool tool incl. in 180L5005	Mounting of spool	
Permanent magnet	For mounting activation of valve	180Z0212

**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/

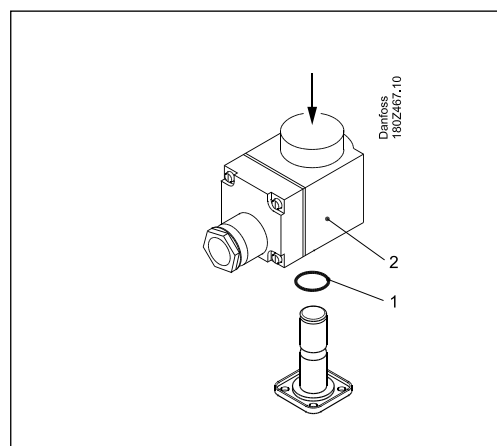
spray the threads on the screws with Molykote® D pasta from Dow Corning, or Klüber UH1 84-201 from Klüber lubrication, before mounting the valve.

Mounting of coil

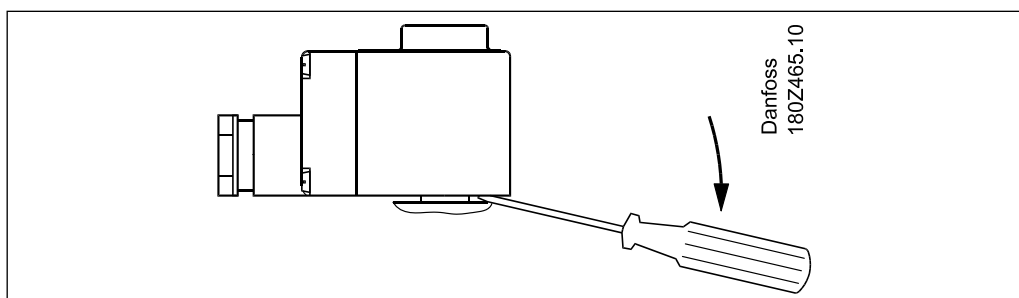


Coil on valves with short armature tubes (NC and NO valves)

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 of coil



ENGINEERING
TOMORROW

Danfoss

Danfoss A/S
High Pressure Pumps
Nordborgvej 81
DK-6430 Nordborg
Denmark

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.
