

Data sheet

# VDHT Solenoid valves

Standard NPT (National Pipe Thread)



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**Data sheet | Solenoid valve VDHT - NPT Thread**

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<b>Table of Contents</b>	1.	Picture overview .....	3
	2.	Introduction .....	4
	3.	VDHT valve .....	4
	4.	Overview single valves .....	5
	5.	Overview block valves .....	6
	6.	Overview coils and accessories .....	7
	7.	VDHT drawing spare part. ....	8
	8.	Overview spare parts. ....	18
	9.	Pressure losses p INLET to OUTLET .....	19

Data sheet | Solenoid valve VDHT - NPT Thread

1. Picture overview

<p><b>VDHT for small flows</b></p> 	
<p><b>VDHT 1/4 E</b></p>	
<p><b>VDHT for small and medium flows</b></p> 	
<p><b>VDHT 3/8 E</b> <b>VDHT 1/2 E</b></p>	
<p><b>VDHT for big flows</b></p> 	
<p><b>VDHT 1 ED</b></p>	<p><b>VDHT 1 EA</b></p>
<p><b>VDHT block valve</b></p> 	
<p><b>VDHT B 2-5 stations</b> Input G 1/2 / G 3/4 Output G 1/2</p>	<p><b>VDHT BL 2-4 stations</b> Input G 3/4 / G 1 Output G 3/4 / G 1</p>
<p><b>VDHT Cetop 3 manifold</b></p> 	
<p><b>VDHT 30 EC 3</b> G 3/8 / Cetop 3 manifold</p>	

**2. Introduction**

The VDHT valve series are designed for several applications in neutral media compatible with the sealing and O-ring materials used. Typical media are water, cleaning fluids and light heating oil.

The valves are used in several applications: car wash systems, stationary high pressure cleaning, mobile cleaning vehicles and dust bindings systems, ect.

**Function**

The directional valves are pilot operated ON/OFF – seat valves electrically activated by a coil.

**Features**

- Corrosion resistant
- Easy-to-clean
- Reliability
- Dirt tolerant, max. sieve (strainer) width 200 µm or better
- High temperature-resistant
- Robust design prevents leakage
- High coil density IP67 (NEMA 4X)
- Compact design

**Versions**

The valve housing, blocks and manifolds are made of stainless steel AISI 304 (W.No. 1.4301), and the piston of stainless steel AISI 316 (W.No. 1.4401). Standard valves are delivered with PTFE piston and FPM sealings.

VDHT inline valves are available with a number of mounting possibilities, flow direction, port size: ¼, ⅜, ½, ¾ and 1" NPT and more - defining the following designation. The VDHT valves are also available in BSP.

VDHT integrated valve blocks provide a space and cost-saving solution in applications where valves are placed next to each other. Furthermore, integrated valves blocks provide a pressure loss reduction.

**3. VDHT valve selection overview**

<b>E</b>	Straight flow direction	<b>N</b>	New version slimline
<b>EA</b>	Angular flow direction	<b>BL N</b>	Block version large / New version stroke
<b>EC 3</b>	Cetop 3 manifold	<b>F</b>	Flange port input
<b>ED</b>	Displaced flow direction	<b>NC</b>	Normally closed
<b>HP</b>	High pressure variant	<b>NO</b>	Normally opened
<b>B</b>	Block version small	<b>BSP</b>	British Standard Pipe
<b>BL</b>	Block version large	<b>NPT</b>	National Pipe Thread
<b>BLM</b>	Block version manual bypass	<b>SAE</b>	Unified national fine thread

**Temperature**

- Medium temperature: 2–90 °C (35–194 °F)
- Ambient temperature: 2–80 °C (35–176 °F) depending on the coil specification
- Storage temperature: -40–80 °C (-40–176 °F) Provided that the valve is drained from fluid and stored “plugged”.

**General**

<b>P<sub>in</sub> &gt; P<sub>out</sub></b>	For correct functioning of the VDHT valves, always ensure the inlet pressure to be higher than the outlet pressure
<b>Pilot flow</b>	The VDHT pilot operated poppet type (armature + poppet) always needs min. 1 l/min. (0.26 gpm) flow to ensure correct functioning
<b>Viscosity</b>	Max viscosity of fluid: 45mm <sup>2</sup> /s. Remark fluid viscosity has influence on pressure drop and opening/closing time of the VDHT valves.

## Data sheet | Solenoid valve VDHT - NPT Thread

### 4. Overview single valves

#### 2/2-way solenoid valve, type VDHT 1/4" NPT

Opening / Closing time NC (at Qnom) 100–200 ms / 100–200 ms



Description	Code no.	Q nom l/min. (gpm)	p max barg (psig)	T max °C (°F)	Con- nec- tion	Operating pressure/ barg (psig)	Weight excl. coil kg (lbs)	Piston Ø mm	Orifice kit
VDHT 1/4 E NC NPT	180L0243	15 (4.0)	100 (1450)	90 (194)	NPT 1/4	0.3 (4.0)	0.6 (1.7)	Ø11.9	-
VDHT 1/4 E NO NPT	180L0244	15 (4.0)	100 (1450)	90 (194)	NPT 1/4	0.3 (4.0)	0.6 (1.7)	Ø11.9	-

#### 2/2 - way solenoid valve, type VDHT 3/8" and 1/2" NPT

Opening / Closing time NC (at Qnom) 100–125 ms / 200–300 ms



Description	Code no.	Q nom l/min. (gpm)	p max barg (psig)	T max °C (°F)	Con- nec- tion	Operating pressure/ barg (psig)	Weight excl. coil kg (lbs)	Piston Ø mm	Orifice kit
VDHT 3/8 E HP NC NPT	180L0127	30 (8)	210 (3000)	90 (194)	NPT 3/8	3.5 (51)	1.2 (2.6)	Ø18.1	1
VDHT 3/8 E NO NPT	180L0205	30 (8)	160 (2400)	90 (194)	NPT 3/8	3.5 (51)	1.2 (2.6)	Ø18.1	1
VDHT 1/2 E HP NC NPT	180L0128	60 (16)	210 (3000)	90 (194)	NPT 1/2	3.5 (51)	1.2 (2.6)	Ø18.1	1
VDHT 1/2 E NO NPT	180L0209	60 (16)	160 (2400)	90 (194)	NPT 1/2	3.5 (51)	1.2 (2.6)	Ø18.1	1

#### 2/2 - way solenoid valve, type VDHT 1" ED and EA NPT

Opening / Closing time NC (at Qnom) 500–900 ms / 1200–2000 ms



Description	Code no.	Q nom l/min. (gpm)	p max barg (psig)	T max °C (°F)	Con- nec- tion	Operating pressure/ barg (psig)	Weight excl. coil kg (lbs)	Piston Ø mm	Orifice kit
VDHT 1 ED NC NPT N	180L1013	150 (40)	140 (2000)	90 (194)	NPT 1	3.5 (51)	2.6 (5.0)	Ø35.1	1
VDHT 1 ED NO NPT N	180L1035	150 (40)	140 (2000)	90 (194)	NPT 1	3.5 (51)	2.6 (5.0)	Ø35.1	1
VDHT 1 EA NC NPT N	180L1004	150 (40)	140 (2000)	90 (194)	NPT 1	3.5 (51)	2.6 (5.0)	Ø35.1	1

## Data sheet | Solenoid valve VDHT - NPT Thread

### 5. Overview block valves 2/2 - way solenoid block valve, type VDHT B2, B3, B4 NPT

Opening / Closing time NC (at Qnom) 500–900 ms / 1200–2000 ms



Description	Code no.	Q nom l/m (gpm)	p max barg (psig)	T max °C (°F)	Connection	Operating pressure/ barg (psig)	Weight excl. coil kg (lbs)	Piston Ø mm	Orifice kit
VDHT B2 1/2 NC NPT	180L0269	60 (16)	160 (2400)	90 (194)	NPT 1/2-NPT 1/2	3.5 (51)	3.7 (8.2)	Ø18.1	1
VDHT B2 1/2 NC-NO NPT	180L0177	60 (16)	160 (2400)	90 (194)	NPT 1/2-NPT 1/2	3.5 (51)	3.7 (8.2)	Ø18.1	1
VDHT B3 3/4-1/2 NC NPT	180L0255	60 (16)	160 (2400)	90 (194)	NPT 3/4-NPT 1/2	3.5 (51)	5.5 (12.2)	Ø18.1	1
VDHT B4 3/4-1/2 NC NPT	180L0207	60 (16)	160 (2400)	90 (194)	NPT 3/4-NPT 1/2	3.5 (51)	7.4 (16.3)	Ø18.1	1

### 2/2 - way solenoid block valve, type VDHT BL2S, BL2S, BL3 NPT

Opening / Closing time NC (at Qnom) 500–900 ms / 1200–2000 ms



Description	Code no.	Q nom l/m (gpm)	p max barg (psig)	T max °C (°F)	Connection	Operating pressure/ barg (psig)	Weight excl. coil kg (lbs)	Piston Ø mm	Orifice kit
VDHT BL2S 1 NC NO NPT N	180L1006	150 (40)	140 (2000)	90 (194)	NPT 1 - NPT 1	3.5 (51)	7 (15.5)	Ø35.1 N	1
VDHT BL2S 1 NC NPT N	180L1001	150 (40)	140 (2000)	90 (194)	NPT 1 - NPT 1	3.5 (51)	7 (15.5)	Ø35.1 N	1
VDHT BL2S 1 NC-NO NPT N	180L0296	150 (40)	140 (2000)	90 (194)	NPT 1 - NPT 1	3.5 (51)	7 (15.5)	Ø35.1 N	1
VDHT BL3 3/4 NC NPT N	180L1010	120 (32)	140 (2000)	90 (194)	NPT 3/4 - NPT 3/4	3.5 (51)	10.5 (23.2)	Ø35.1 N	1

### 2/2 way cetop 3 valves , BSP

Opening / Closing time NC (at Qnom) 100–125 ms / 200–300 ms



Description	Code no.	Q nom l/m (gpm)	p max barg (psig)	T max °C (°F)	Connection	Operating pressure/ barg (psig)	Weight excl. coil kg (lbs)	Piston Ø mm	Orifice kit
VDHT 30 EC NC	180L0096	30 (8)	160 (2400)	90 (194)	Cetop 3	3.5 (51)	1 (2.2)	Ø18.1	1
VDHT 30 EC NO	180L0097	30 (8)	160 (2400)	90 (194)	Cetop 3	3.5 (51)	1 (2.2)	Ø18.1	1

### Cetop 3 block for 2/2 way valves



Description	Code no.	Q nom l/m (gpm)	p max barg (psig)	T max °C (°F)	Connection	Operating pressure/ barg (psig)	Weight kg (lbs)	Piston Ø mm	Orifice kit
Cetop 3 block f. 2 VDH or VDHT 30 EC3	180L0062	30 (8)	160 (2400)	N/A	BSP 3/8"	–	1.8 (4.0)	–	–
Cetop 3 block f. 3 VDH or VDHT 30 EC3	180L0063	30 (8)	160 (2400)	N/A	BSP 3/8"	–	2.6 (5.7)	–	–
Cetop 3 block f. 4 VDH or VDHT 30 EC3	180L0064	30 (8)	160 (2400)	N/A	BSP 3/8"	–	3.4 (7.5)	–	–

## Data sheet | Solenoid valve VDHT - NPT Thread

### 6. Overview coils and accessories



Description	Code no. HPP	Voltage	Power	Voltage tolerance	T max Ambiente °C (°F)	Connection	Enclosure	Weight kg (lbs)
<b>Type BB / Without LED / for Hirschmann plug / excl. plug</b>								
Coil 240V-50Hz-10W-IP65	018F7906	240V 50Hz	11W	+/- 10-15%	80 (176)	DIN 43650-A	IP65	0.2 (0.5)
Coil 24V-50Hz-10W-IP65	018F7905	24V 50Hz	11W		80 (176)	DIN 43650-A	IP65	0.2 (0.5)
Coil 240V-50Hz-10W-IP65	018F7928	24V DC	16W	+/- 10%	50 (122)	DIN 43650-A	IP65	0.2 (0.5)

<b>Type BE / Without LED / incl. Terminal box</b>									
Coil 240V-60Hz-10W-IP67	018F7926	240V 60Hz	15W	+/- 10-15%	80 (176)	Terminal box	IP67	0.3 (0.7)	
Coil 240V-50Hz-10W-IP67	018F7924	240V 50Hz	11W		80 (176)	Terminal box	IP67	0.3 (0.7)	
Coil 220-230V-50Hz-10W-IP67	018F7921	220-230 V 50 Hz	12W		80 (176)	Terminal box	IP67	0.3 (0.7)	
Coil 220-230V-50-60Hz-10W-IP67	018F7919	220-230 V 50-60Hz	17W 14W		50 (122)	Terminal box	IP67	0.3 (0.7)	
Coil 220V-60Hz-10W-IP67	018F7925	220V 60Hz	13W		80 (176)	Terminal box	IP67	0.3 (0.7)	
Coil 200V-50-60Hz-10W-IP67	018F7929	200V 50/60Hz	10W		80 (176)	Terminal box	IP67	0.3 (0.7)	
Coil 110V-50-60Hz-10W-IP67	018F7923	110V 50-60Hz	15W 13W		50 (122)	Terminal box	IP67	0.3 (0.7)	
Coil 24V-60Hz-10W-IP67	018F7922	24V 60Hz	14W		80 (176)	Terminal box	IP67	0.3 (0.7)	
Coil 24V-50Hz-10W-IP67	018F7920	24V 50Hz	12W		80 (176)	Terminal box	IP67	0.3 (0.7)	
Coil 42V-50Hz-10W-IP67	018F7927	42V 50Hz	10W		80 (176)	Terminal box	IP67	0.3 (0.7)	
Coil 24V-DC-18W-IP67	018F7914	24V DC	16W		+/- 10%	50 (122)	Terminal box	IP67	0.3 (0.7)
Coil 12V-DC-18W-IP67	018F7913	12V DC	15W		+/- 10%	50 (122)	Terminal box	IP67	0.3 (0.7)

<b>Type BE / Without LED / for Hirschmann plug / prepare for terminal box</b>								
Coil 200V-50-60Hz-10W-IP67	018F7918	200V 50/60 Hz	10W	+/- 10-15%	50 (122)	Terminal box	IP67	0.2 (0.5)
Coil 240V-50Hz-10W-IP67	018F7917	240V 50 Hz	11W		80 (176)	Terminal box	IP67	0.2 (0.5)
Coil 24V-DC-18W-IP67	018F7912	24V DC	16W	+/- 10%	50 (122)	Terminal box	IP67	0.3 (0.7)

<b>Type BY / Without LED / for Hirschmann plug / excl. plug / UL Recognised</b>								
Coil 208-240V-50-60Hz-14W-IP65-UL	018F7908	208-240V 50/60 Hz	16W 14W	+/- 10-15%	50 (122)	DIN43650-A	IP65	0.2 (0.5)
Coil 110V-50-60Hz-14W-IP65-UL	018F7909	110V 50-60 Hz	14W		50 (122)	DIN43650-A	IP65	0.2 (0.5)
Coil 24V-50-60Hz-14W-IP65-UL	018F7907	24V 50-60 Hz	14W 12W		50 (122)	DIN43650-A	IP65	0.2 (0.5)

<b>Type BE / excl. LED / Incl. cable</b>								
Coil 48V-50-60Hz-10W-IP67-4m cable	018F7915	48V 50Hz	10W	+/- 10-15%	80 (176)	4 m.. cable	IP67	0.3 (0.7)

<b>Type BO / Ex mb II T4 Gb - 2014/34/EU (ATEX) EN60079-D-2012+A11:2013, EN60079-D:2018, EN60079-18:2015 + A1:2017, EN60730-1:2011<sup>1)</sup></b>								
Coil Ex mb IIC T4 24V-50/60 Hz 10W-IP67	018Z6595 <sup>2)</sup>	24V 50/60 Hz	10W	±10%	60 (140)	5 m. cable	IP67	0.6 (1.4)
Coil Ex mb IIC T4 110V-50/60 Hz 10W-IP67	018Z6593 <sup>2)</sup>	110V 50/60 Hz	10W	±10%	60 (140)	5 m. cable	IP67	0.6 (1.4)
Coil Ex mb IIC T4 230V-50/60 Hz 10W-IP67	018Z659 <sup>2)</sup>	230V 50/60 Hz	10W	±10%	60 (140)	5 m. cable	IP67	0.6 (1.4)
Coil Ex mb IIC T4 240V-50/60 Hz 10W-IP67	018Z6591 <sup>2)</sup>	240V 50/60 Hz	10W	±10%	60 (140)	5 m. cable	IP67	0.6 (1.4)
Coil Ex mb IIC T4 Gb 24V DC - IP67-10W-IP67	018Z6596 <sup>2)</sup>	24V DC	10W	± 10%	60 (140)	5 m. cable	IP67	0.6 (1.4)

<sup>1)</sup> Due to physical dimensions of the ATEX coil, it is not possible to use these in combination with the HPP block valves (BL2 - 5)

<sup>2)</sup> Code nos. to be ordered in Danfoss Sensing Solutions (PL04)

## Data sheet | Solenoid valve VDHT - NPT Thread



042N1256



042N1278

Connecting plug / Typ BY / excl. LED / for Hirschmann connection (DIN 43650-A) UL Recognised									
Plug EN175301-803 A PG9	042N1256 <sup>1)</sup>	-	Excl LED	-	125(257)	BE-BB-BY	IP67	0.1 (0.3)	
Plug EN175301-803 A PG8	042N1278 <sup>1)</sup>		Excl LED		90 (194)	BE-BB-BY	IP65	0.1 (0.3)	



Connecting plug / Typ BY / incl. LED / for Hirschmann connection (DIN 43650-A) UL Recognised									
Plug EN175301-803 A 230V AC/DC LED	042N0265 <sup>1)</sup>	230V AC	Incl LED	-	60 (140)	BE-BB-BY	IP65	0.1 (0.3)	
Plug EN175301-803 A 24V AC/DC LED + PACK	042N0263 <sup>1)</sup>	24V AC/DC	Incl LED	-	60 (140)	BE-BB-BY	IP65	0.1 (0.3)	



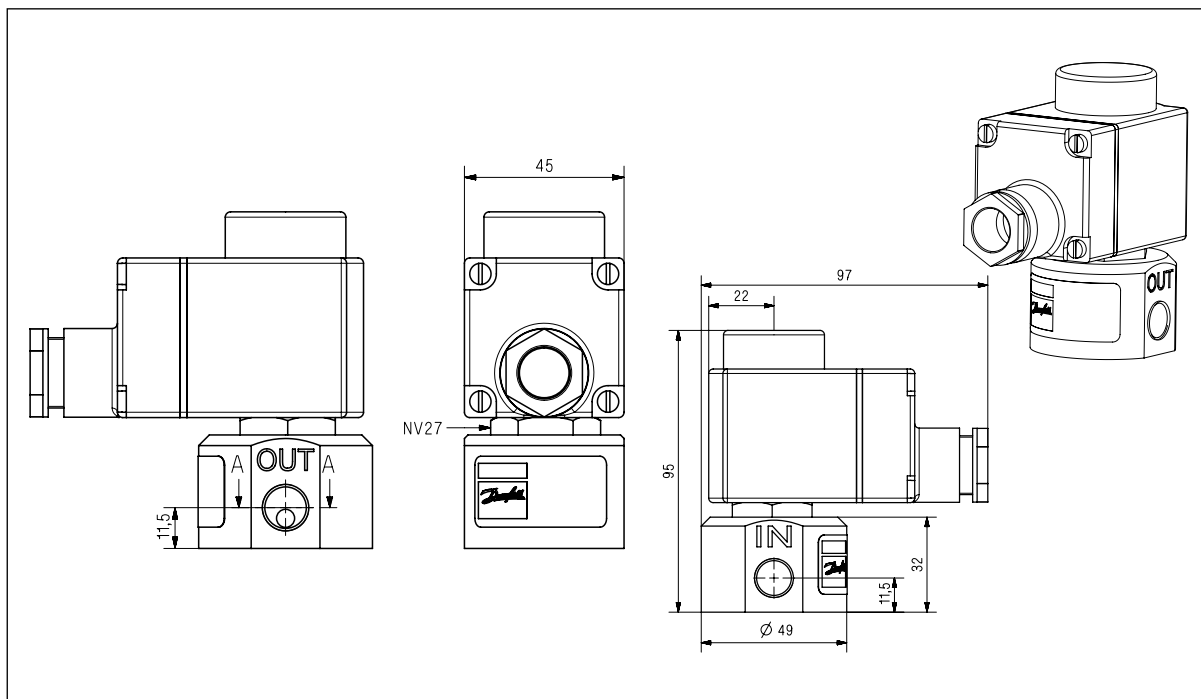
Connection terminal box / Permanent magnet									
Terminal box excl. LED pack unit 100 Pe	018Z0279	-	Excl LED 100 PE	-	80 (176)	BE	IP67	0.1 (0.3)	
Terminal box incl. LED 48-220V DC 24-250V-50Hz / only BE	018Z0089 <sup>1)</sup>	48-220V DC24 -250V 50/60 Hz	Incl. LED	-	80 (176)	BE	IP67	0.1 (0.3)	
Permanent magnet	180Z0212	for testing	-	-	-	-	-	0.3 (0.7)	

<sup>1)</sup> Code nos. to be ordered in Danfoss Sensing Solutions (PL04)



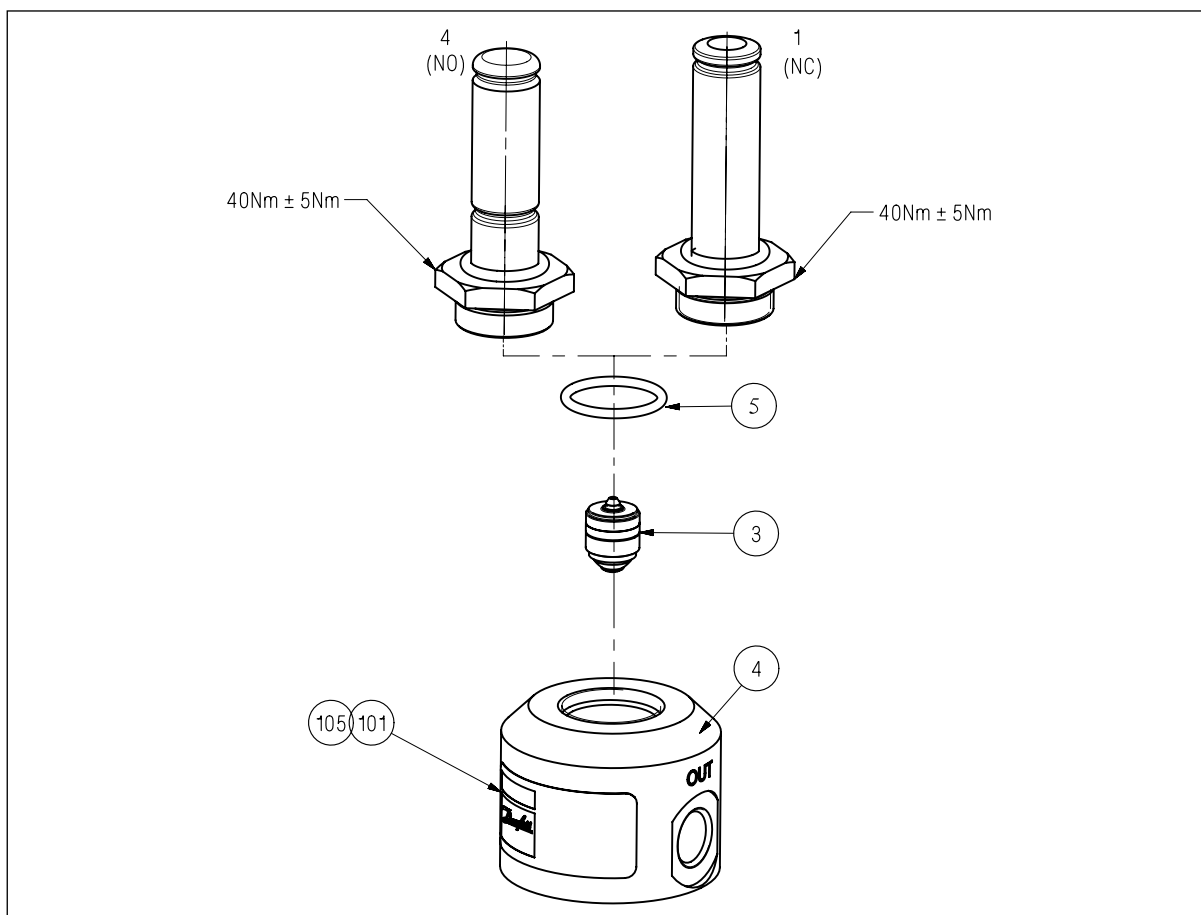
7. VDHT drawing spare part

VDHT 1/4 E  
Drawings  
Spare parts



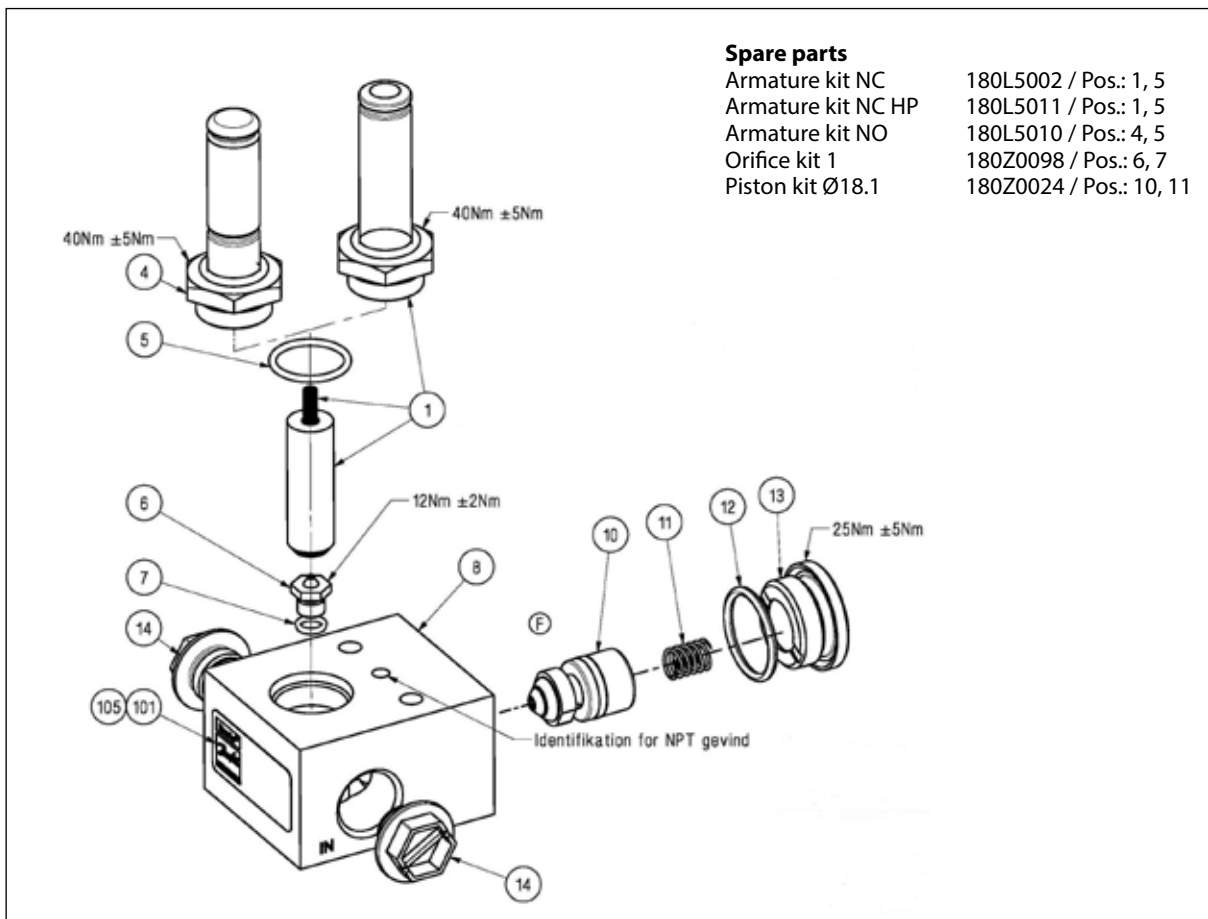
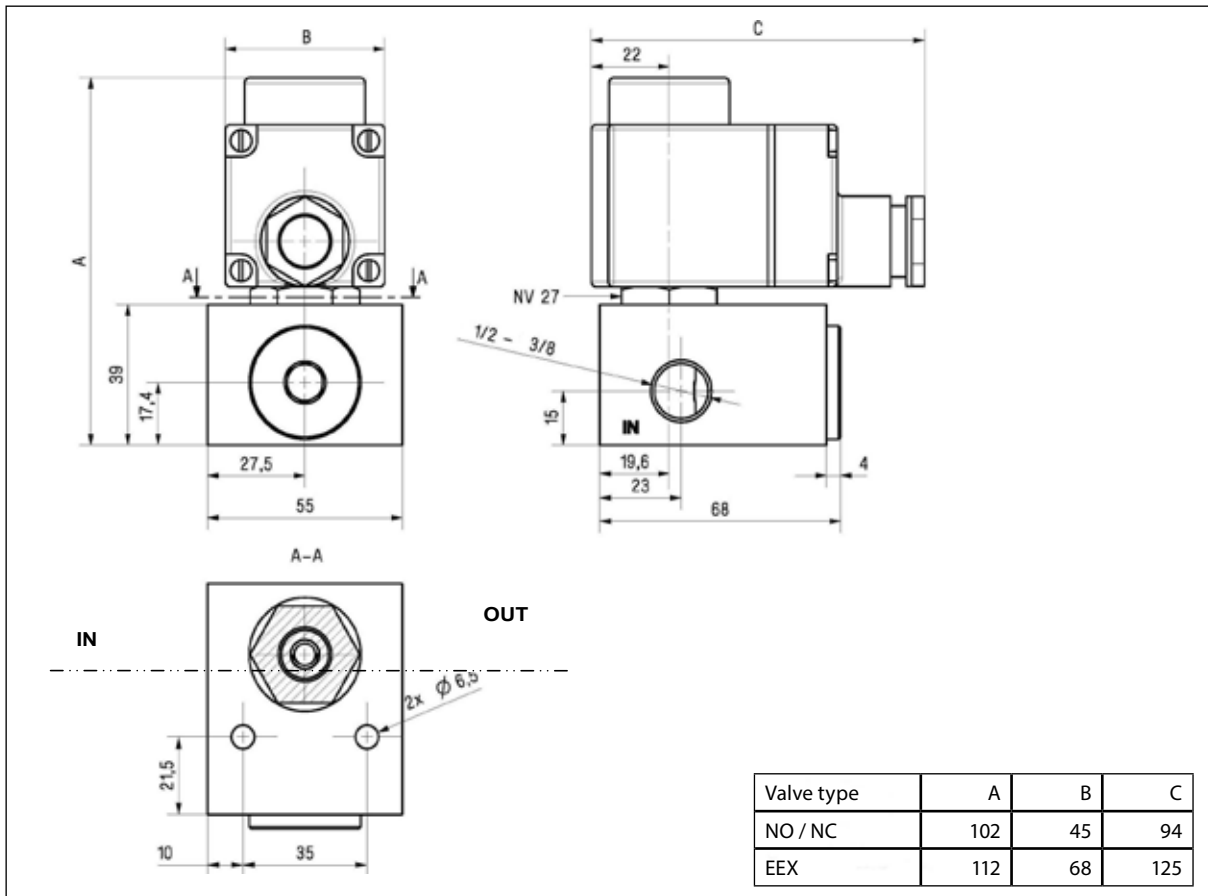
**Spare parts**

Armature kit NC	180L5002 / Pos.: 1, 5
Armature kit NO VDHT 1/4	180L5013 / Pos.: 4,5
Piston kit Ø11.9	180Z0251 / Pos.: 3



Data sheet | Solenoid valve VDHT - NPT Thread

VDHT 3/8 E  
 VDHT 1/2 E  
 Drawings  
 Spare parts

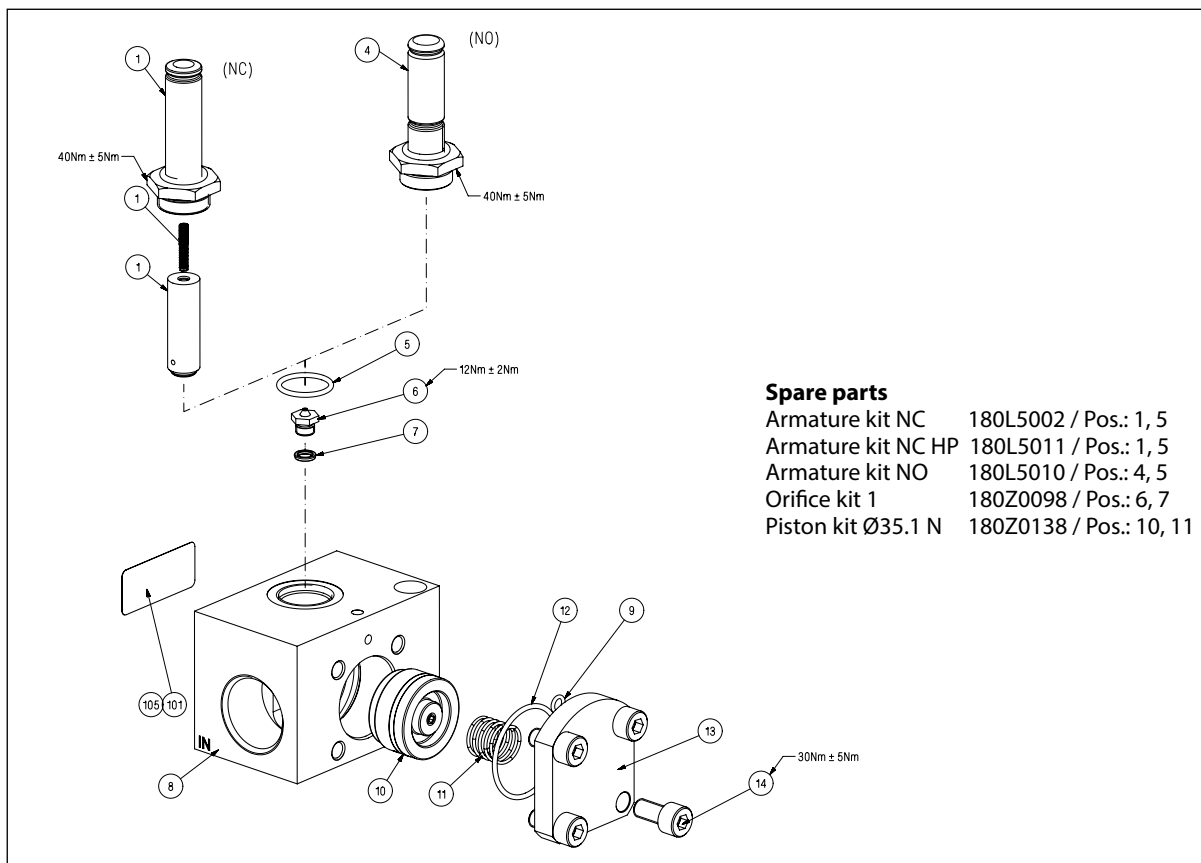
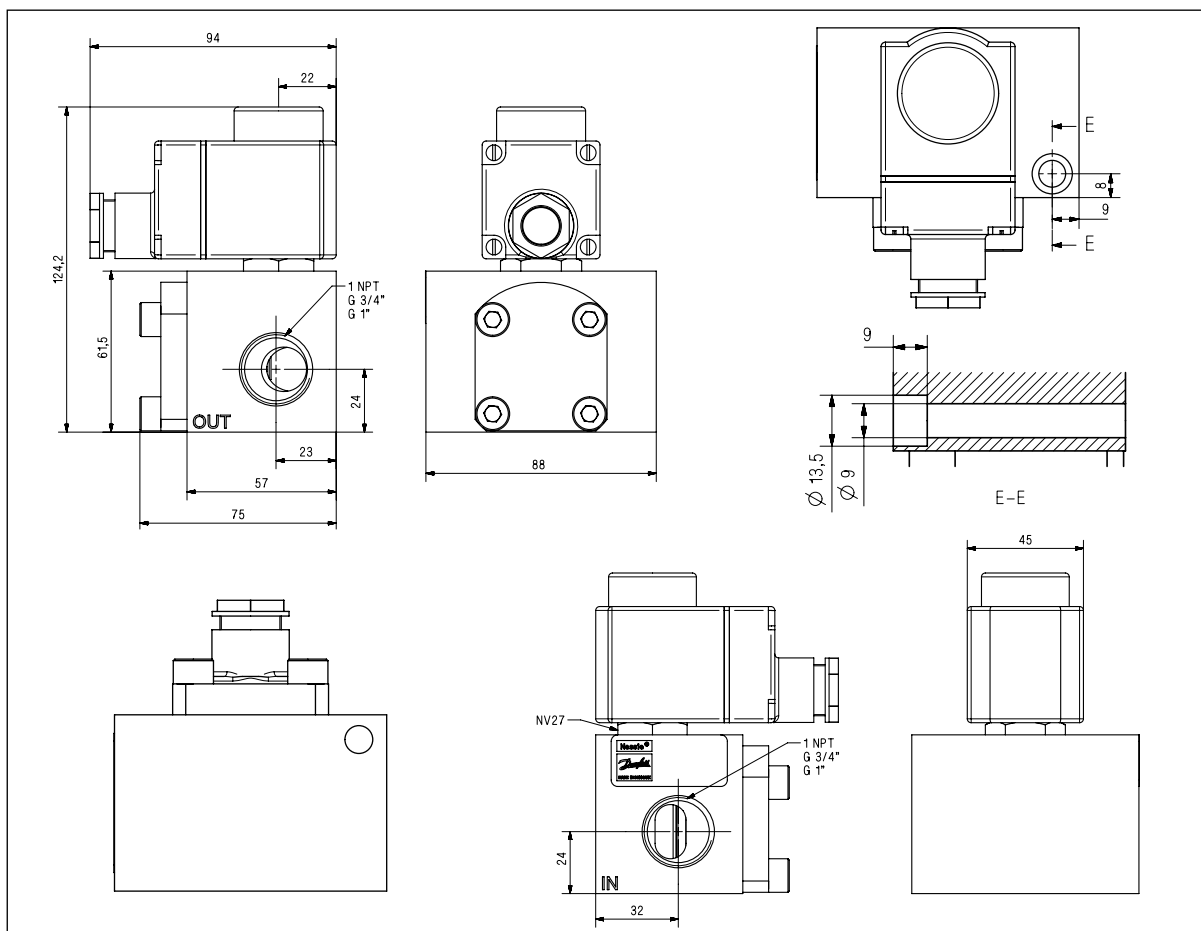


**Spare parts**

- Armature kit NC 180L5002 / Pos.: 1, 5
- Armature kit NC HP 180L5011 / Pos.: 1, 5
- Armature kit NO 180L5010 / Pos.: 4, 5
- Orifice kit 1 180Z0098 / Pos.: 6, 7
- Piston kit  $\phi 18.1$  180Z0024 / Pos.: 10, 11

Data sheet | Solenoid valve VDHT - NPT Thread

VDHT 1 ED N  
Drawings  
Spare parts

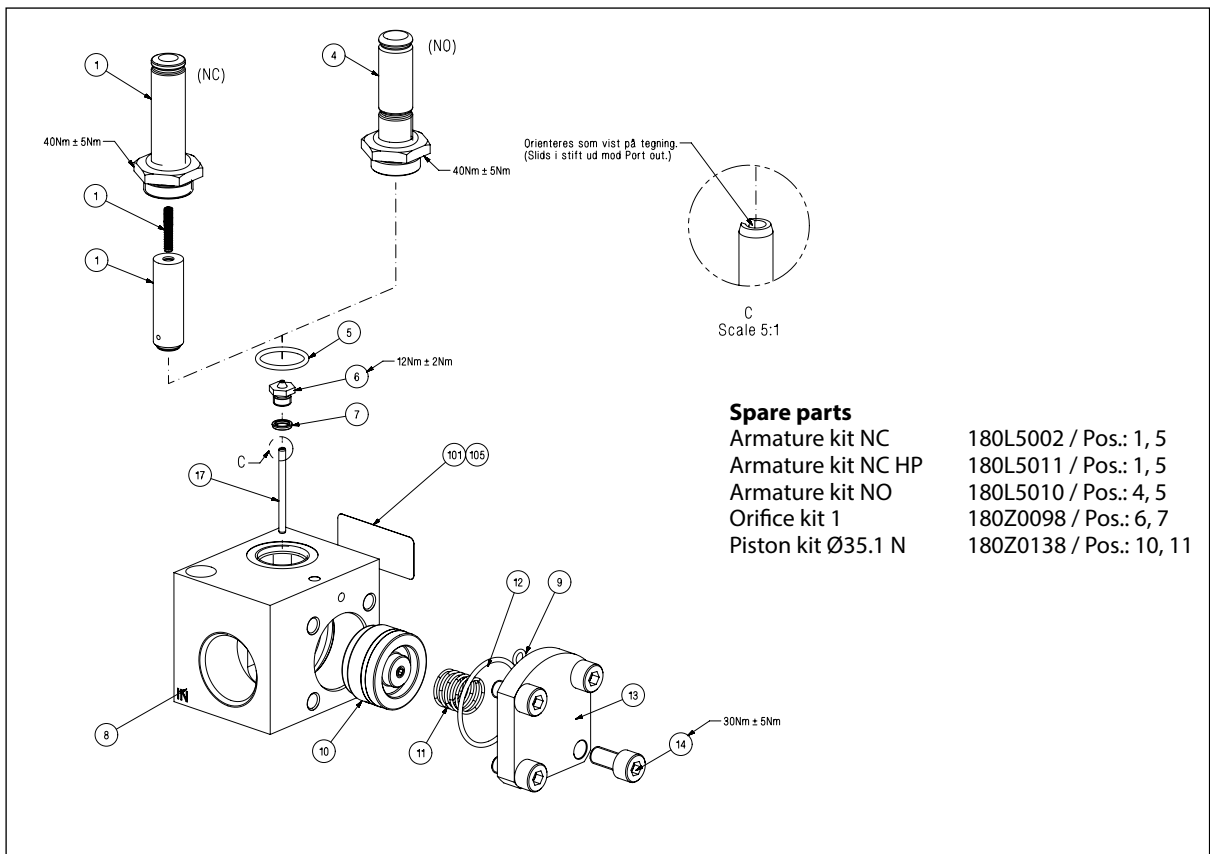
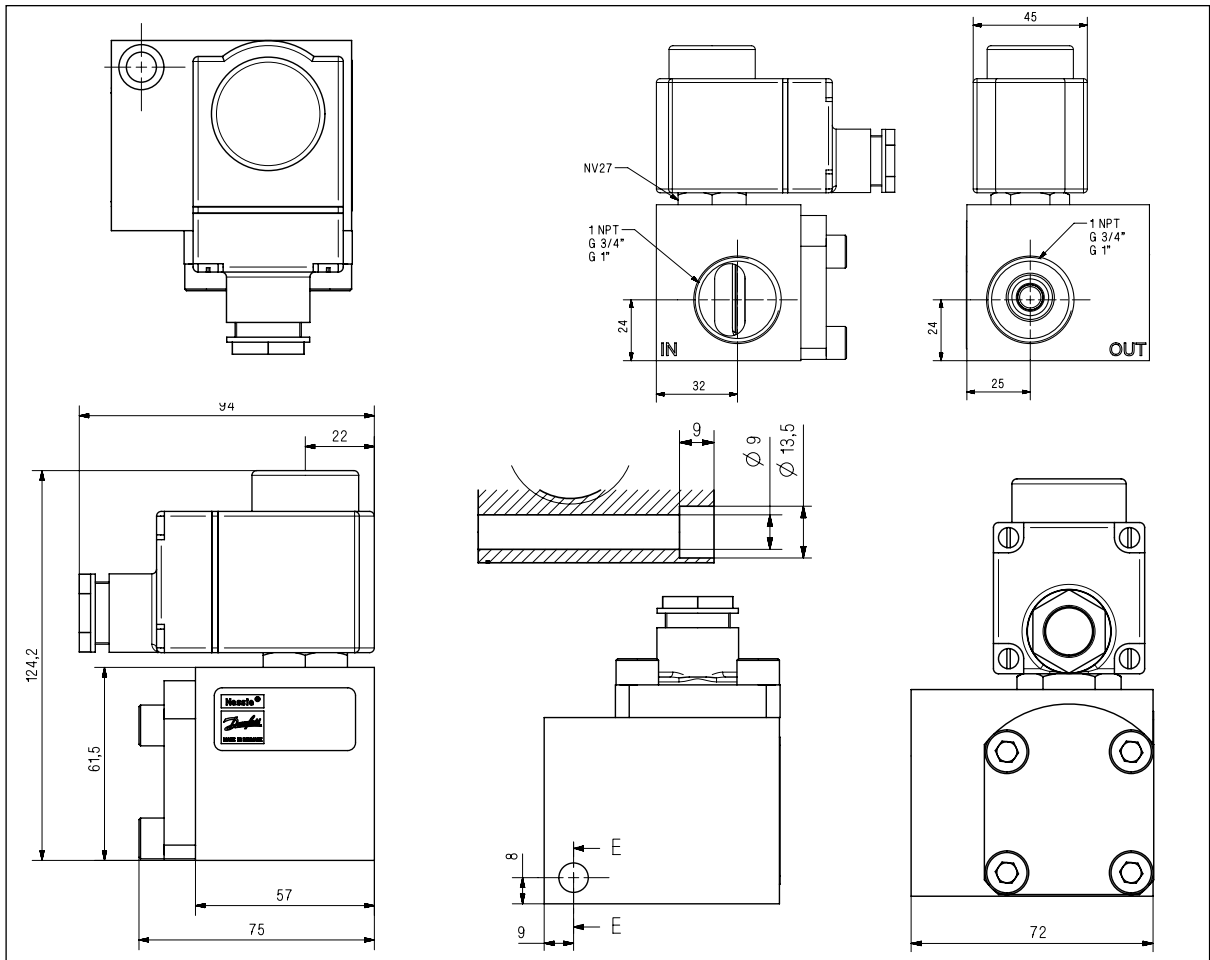


**Spare parts**

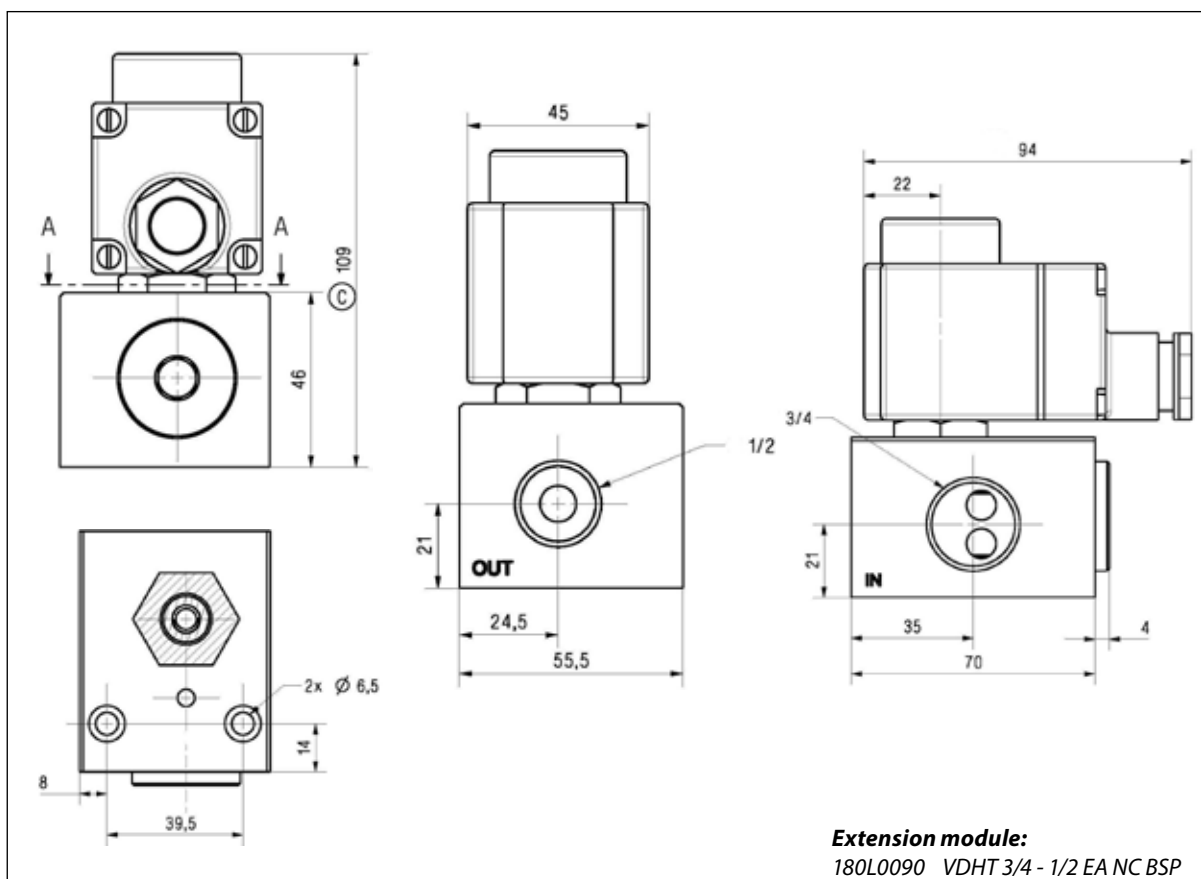
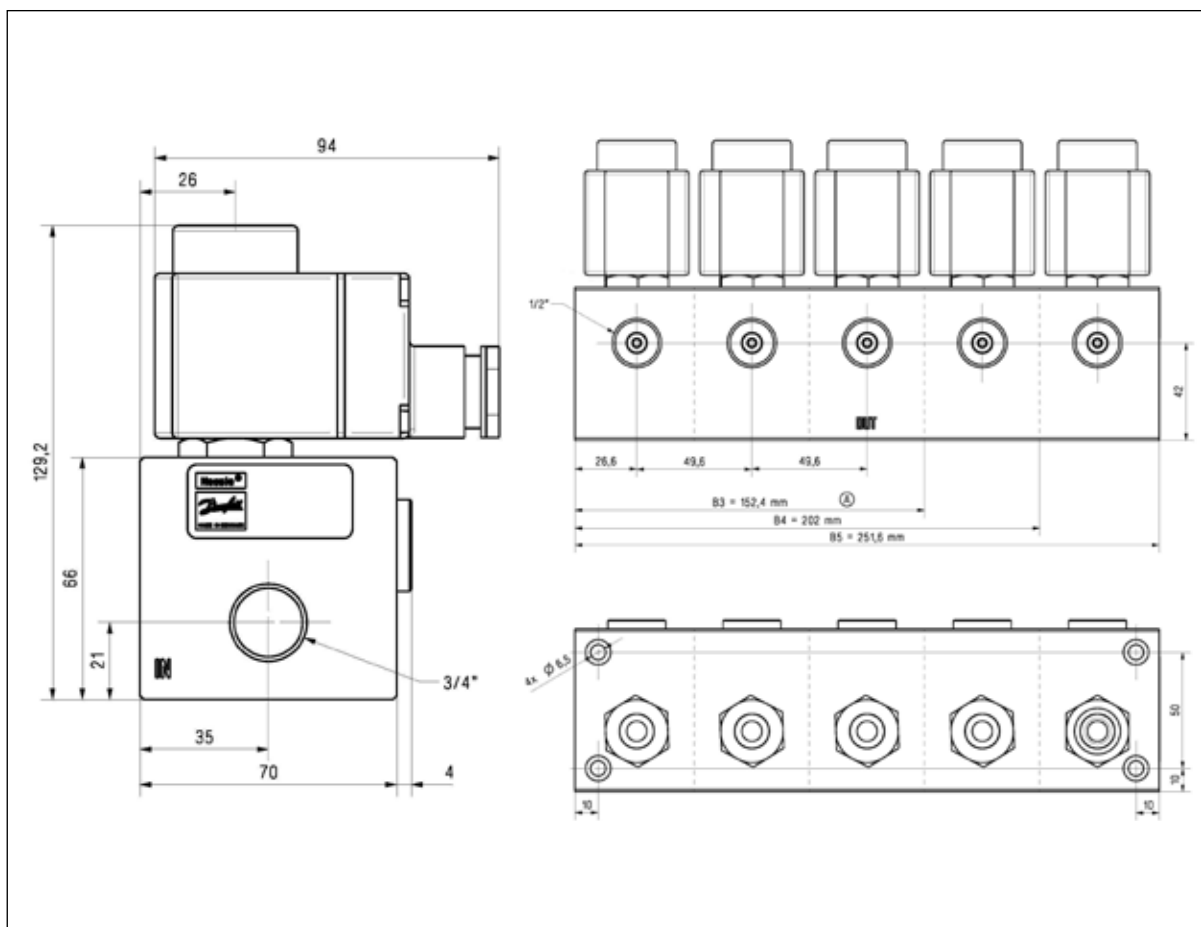
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- Armature kit NC HP 180L5011 / Pos.: 1, 5
- Armature kit NO 180L5010 / Pos.: 4, 5
- Orifice kit 1 180Z0098 / Pos.: 6, 7
- Piston kit Ø35.1 N 180Z0138 / Pos.: 10, 11

Data sheet | Solenoid valve VDHT - NPT Thread

VDHT 1 EA  
Drawings  
Spare parts

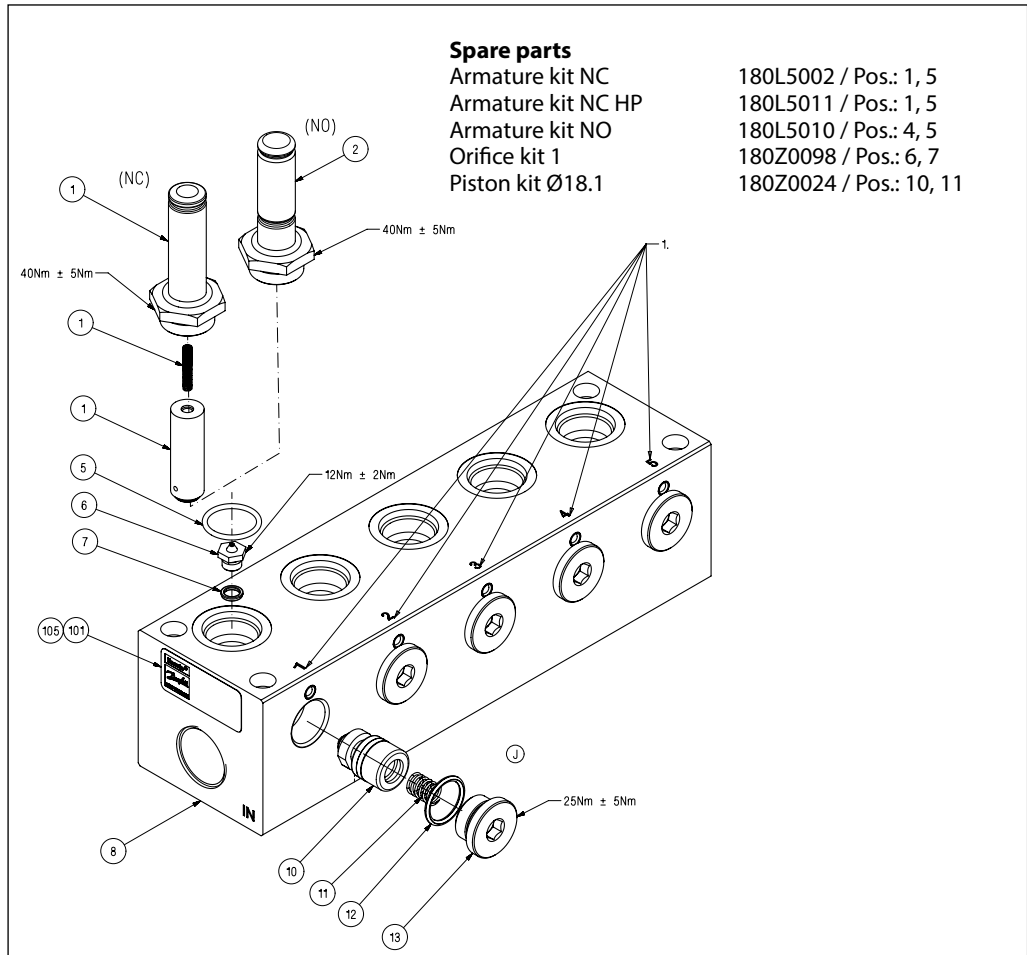
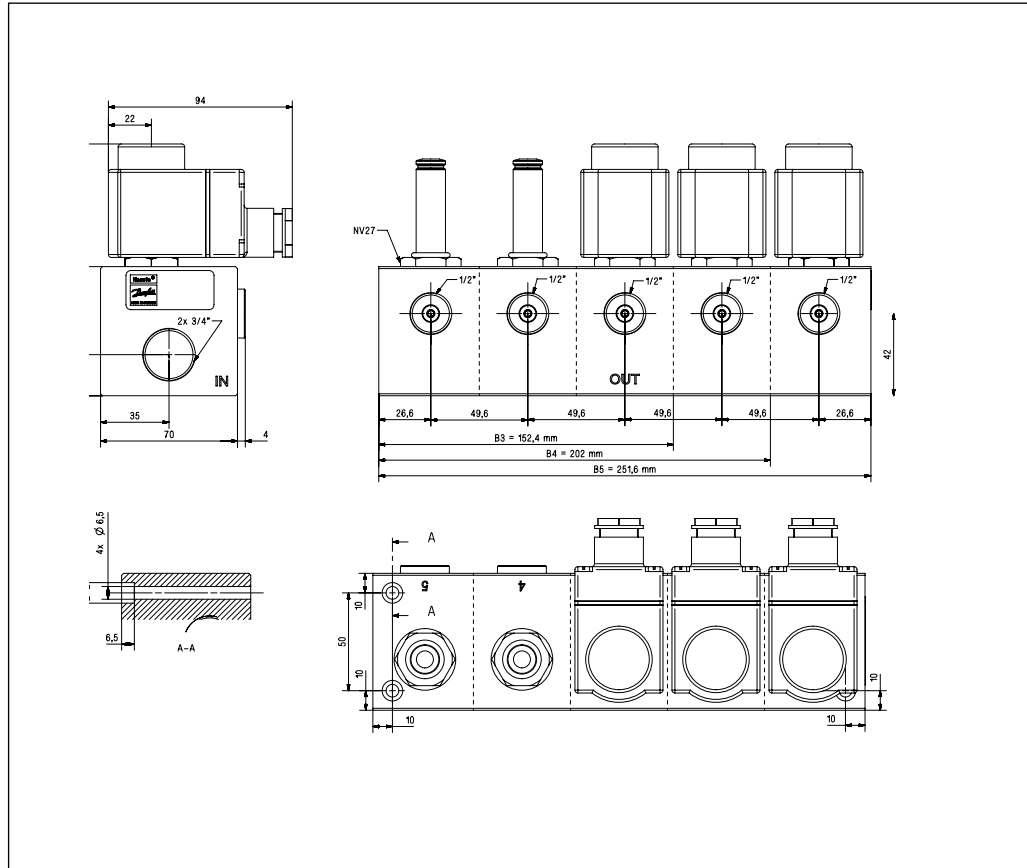


VDHT B  
Drawings

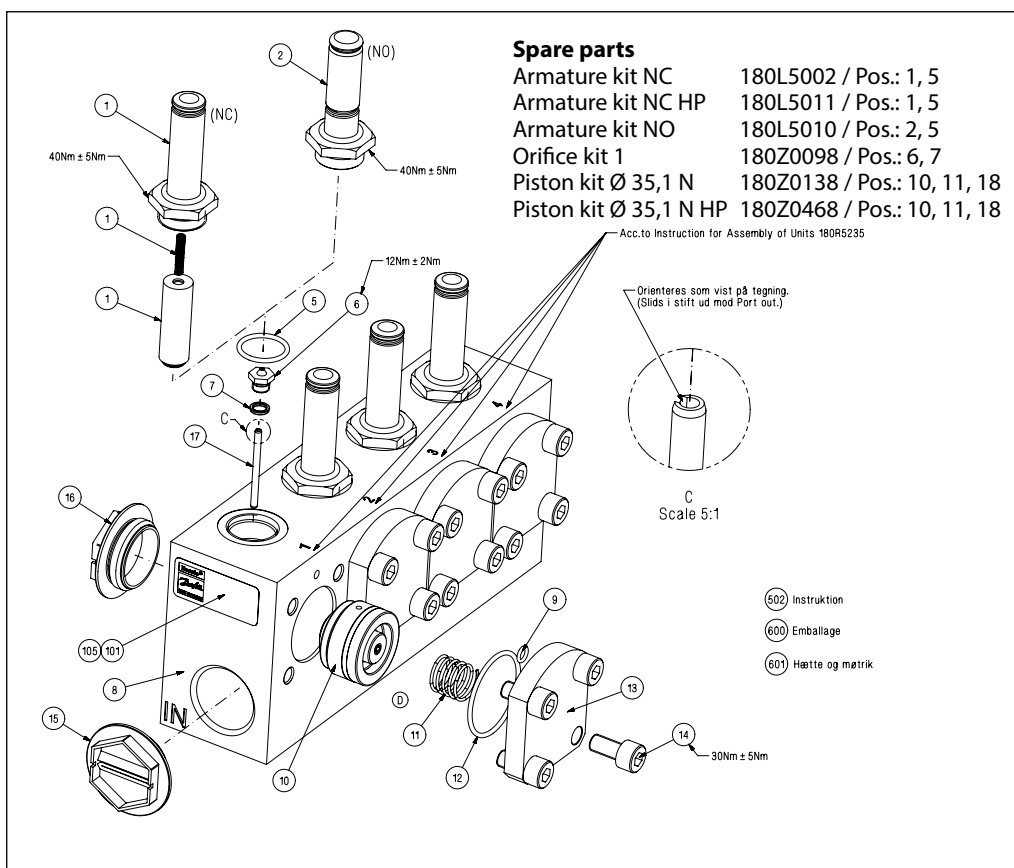
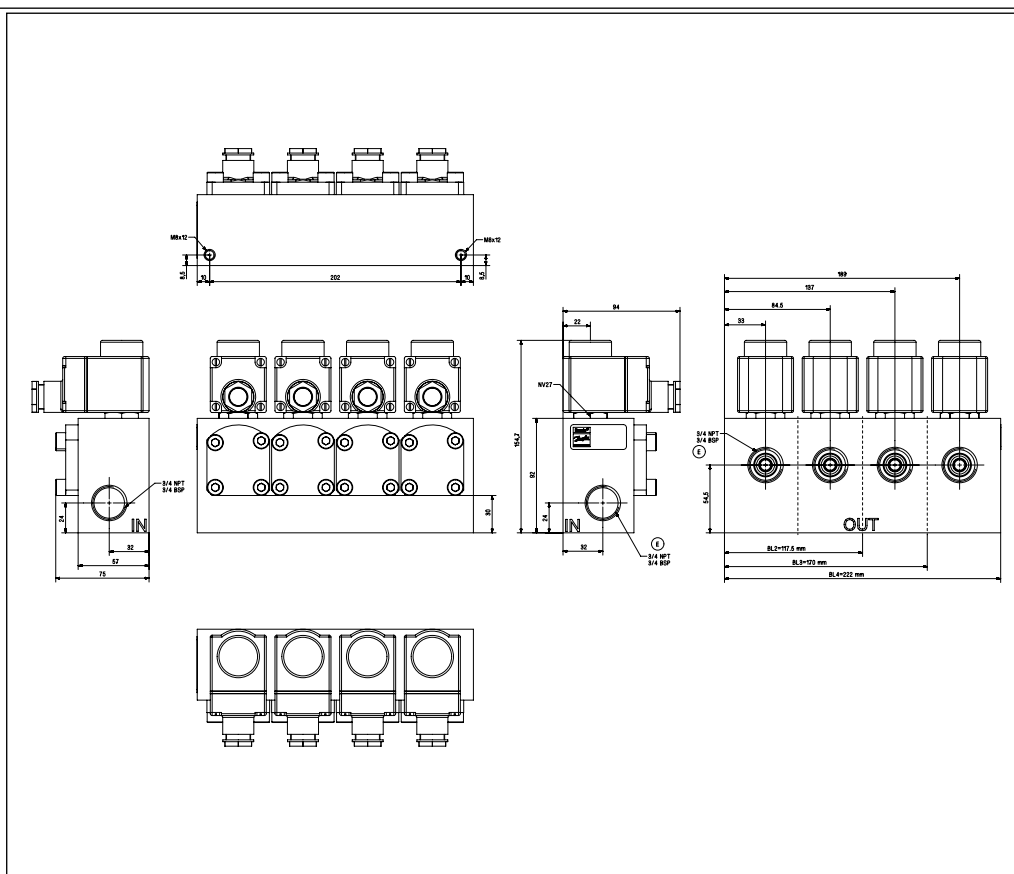


Data sheet | Solenoid valve VDHT - NPT Thread

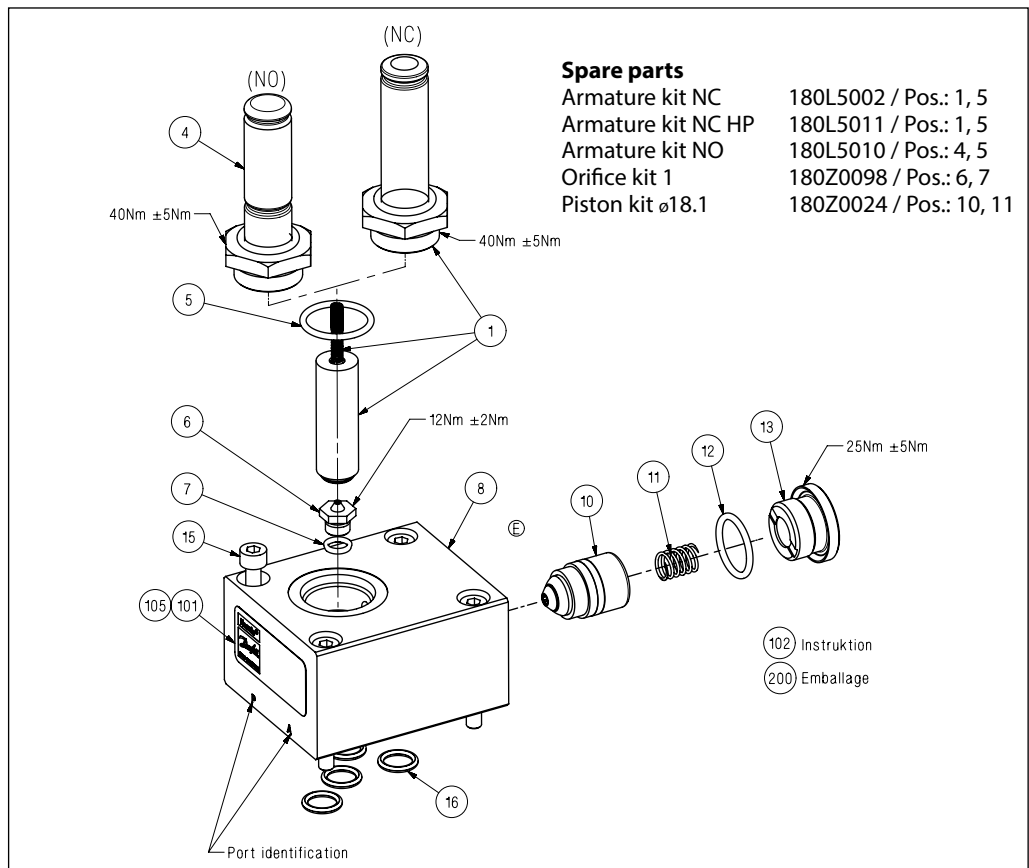
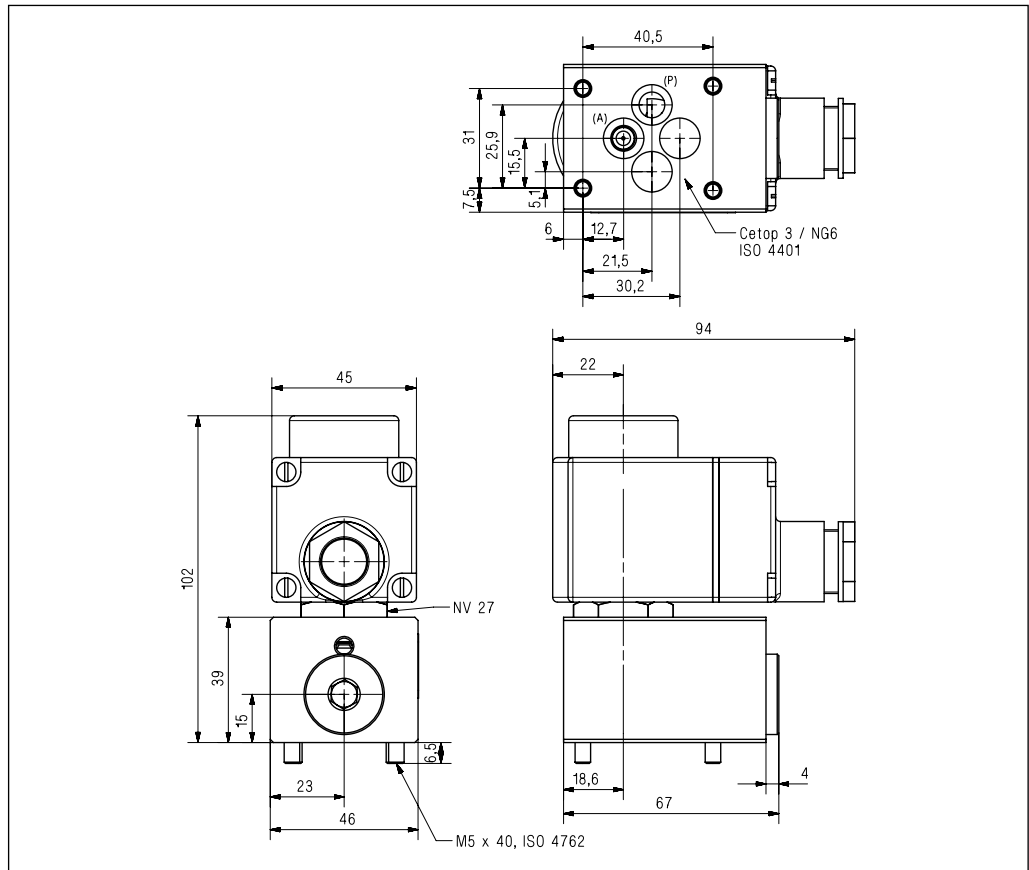
VDHT B  
Spare parts



VDHT BL N  
Drawings



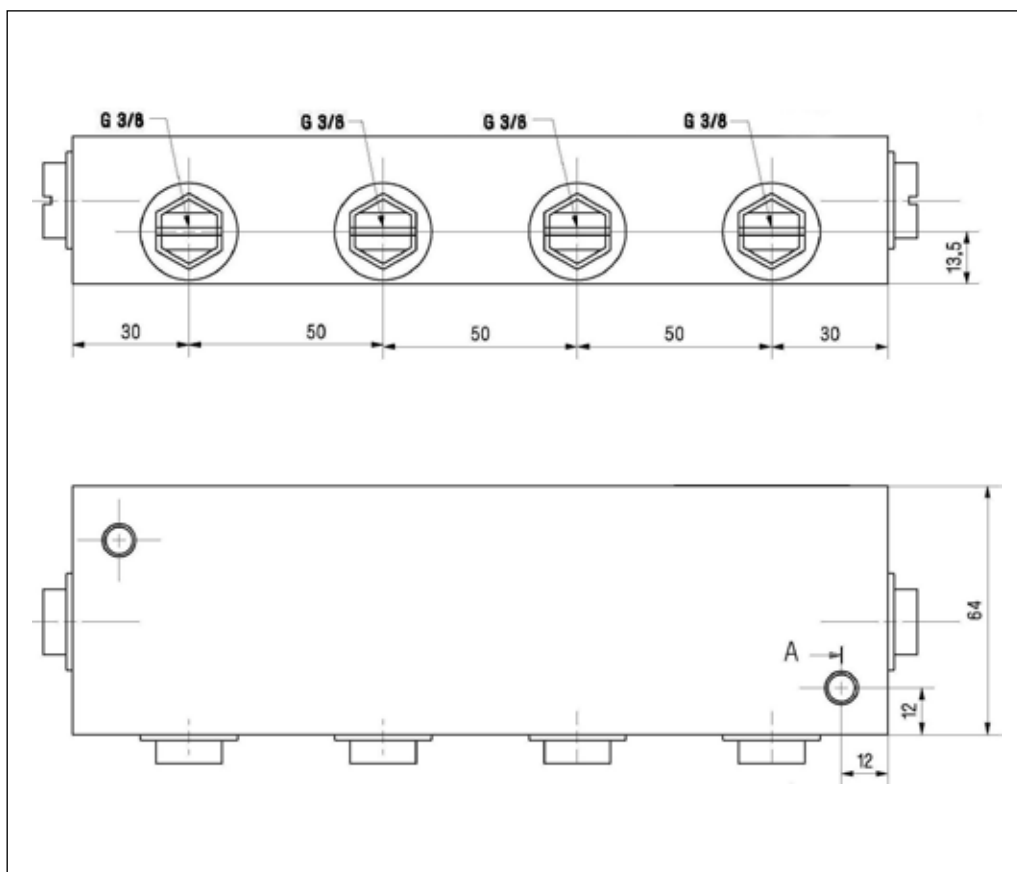
VDHT 30 EC3  
Drawings





Data sheet | Solenoid valve VDHT - NPT Thread

Block for CETOP 3 Valves  
Drawing



**Data sheet | Solenoid valve VDHT - NPT Thread**
**8. Overview spare parts**

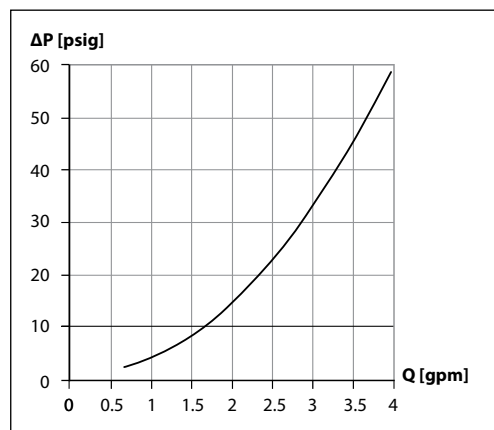
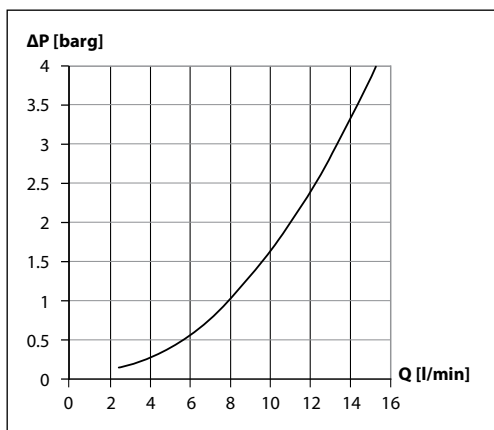
	Valve type	Code no	Other	Pos. no. explosion drawing	T max °C (°F)	Weight kg (lbs)	Piston Ø mm	Orifice kit
	Piston kit Ø11.9 VDHT 1/4 E	180Z0251		3	90 (194)	0.09 (0.2)	Ø11.9	-
	Piston kit Ø18.1 VDHT 3/8 VDHT B	180Z0024		10, 11	90 (194)	0.09 (0.2)	Ø18.1	-
	Piston kit Ø35.1 VDHT 1 VDHT BL	180Z0026		10, 11	90 (194)	0.1 (0.4)	Ø35.1	-
	Piston kit Ø35.1 N VDHT 3/4 to 1 N VDHT BL N	180Z0138	Slimline	10, 11	90 (194)	0.1 (0.4)	Ø35.1 N	-
	Piston kit Ø35.1 HP N VDHT HP 3/4 to 1 VDHT BL HP N	180Z0468	Slimline	10, 11	90 (194)	0.1 (0.4)	Ø35.1 N	-
	Orifice kit 1 VDHT	180Z0098	standard	6, 7	90 (194)	0.09 (0.2)	-	1
	Armature kit NC VDHT 1/4 to 1 VDHT B / BL / BL N	180L5002		1, 5	90 (194)	0.1 (0.4)	-	-
	Armature kit NC HP VDHT 3/8 to 1 VDHT B / BL / BL N	180L5011		1, 5	90 (194)	0.1 (0.4)	-	-
	Armature kit NO VDHT 3/8 to 1 VDHT B / BL / BL N	180L5010		4, 5	90 (194)	0.1 (0.4)	-	-
	Armature kit NO HP VDHT 1/4 VDHT B / BL / BL N	180L5013		4, 5	90 (194)	0.1 (0.4)	-	-

Data sheet | Solenoid valve VDHT - NPT Thread

9. Pressure losses p  
INLET to OUTLET

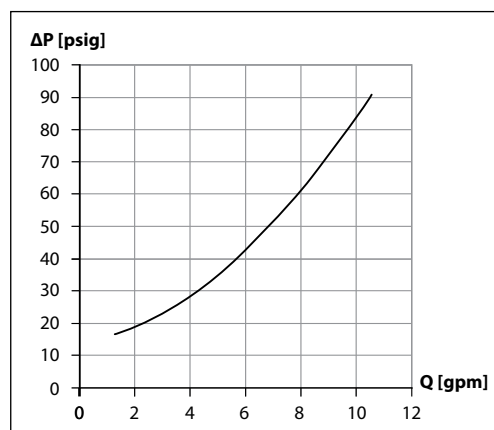
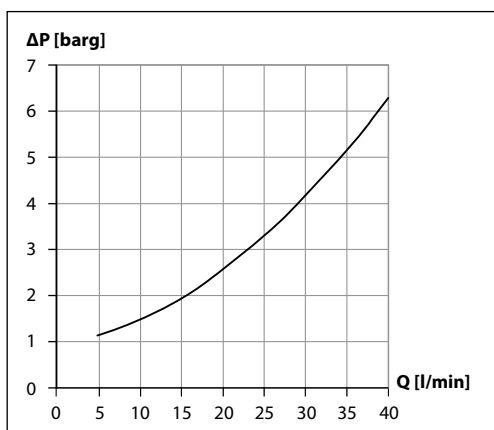
Pressure losses p  
INLET to OUTLET

VDHT 1/4 E



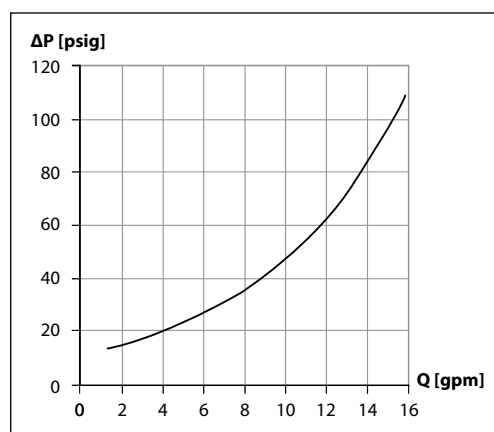
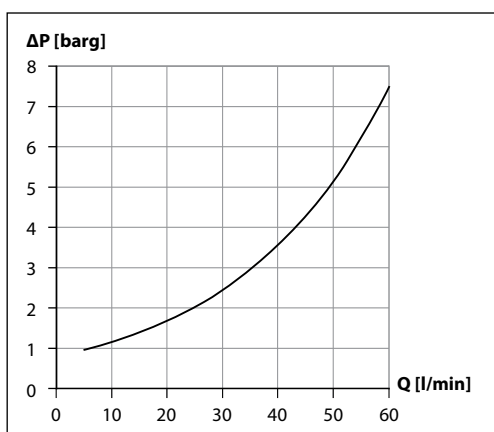
Pressure losses p  
INLET to OUTLET

VDHT 3/8 E



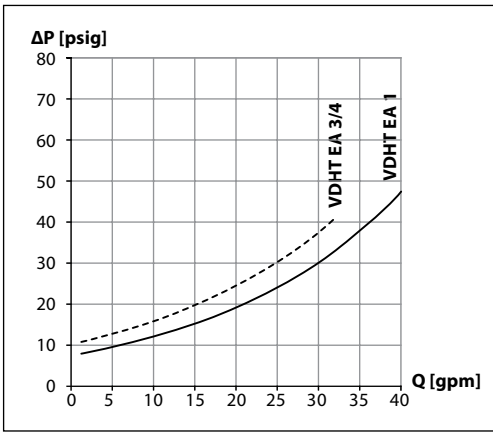
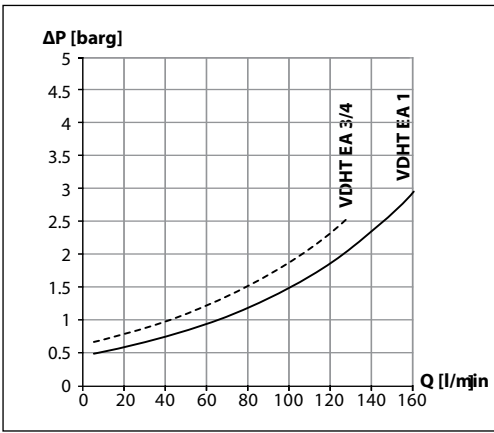
Pressure losses p  
INLET to OUTLET

VDHT 1/2 E

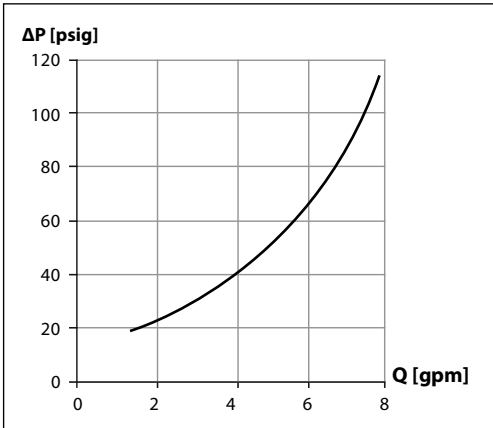
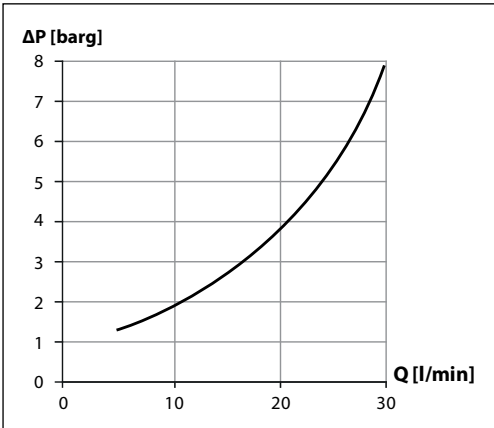


Data sheet | Solenoid valve VDHT - NPT Thread

Pressure losses p  
INLET to OUTLET  
VDHT EA 3/4  
VDHT EA 1



Pressure losses p  
INLET to OUTLET  
VDHT 30 EC3





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