



## Collection of Instructions

Instructions for Danfoss

Refrigeration & Air conditioning Controls



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# Instructions

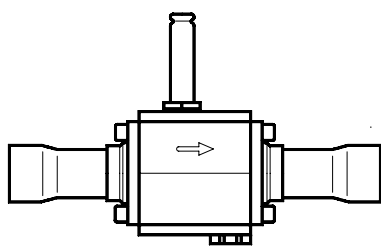
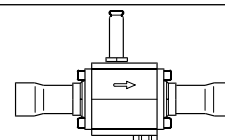
*Danfoss*

032R9518

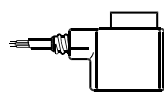
032R9518

## Solenoid valves

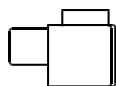
EVR 32, EVR 40



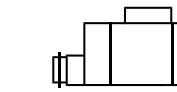
EVR 32/40



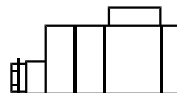
a.c. ~



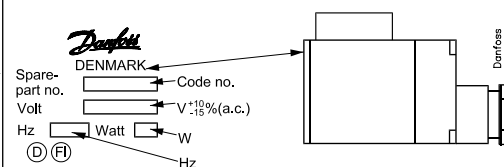
a.c. ~



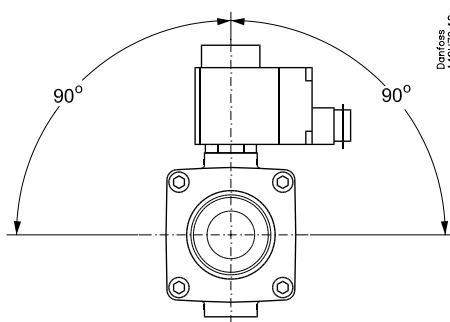
a.c. ~



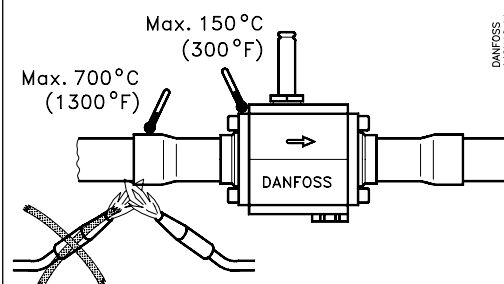
12 W a.c. ~  
20 W d.c. —



Danfoss A32F595.10



Danfoss A42H79.10



DANFOSS A42H10.11

10 W a.c.



t<sub>max.</sub> 80°C (175°F)

10/ 12 W a.c.



t<sub>max.</sub> 80°C (175°F)

20 W d.c.



t<sub>max.</sub> 50°C (120°F)



t<sub>min.</sub> -40°C (-40°F)

Min. medium temperature: -40°C (-40°F)  
Max. medium temperature: 105°C (221°F)

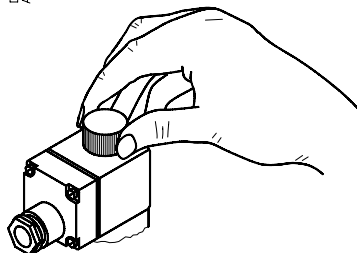
Max. working pressure: PS = 32 bar / 464 psig

Max. opening diff. pressure (MOPD): →

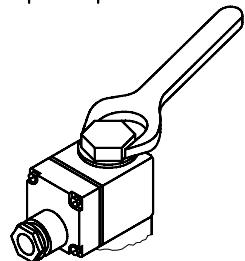


### Previous version

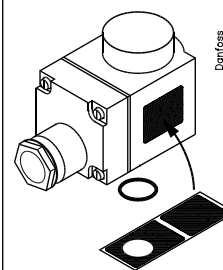
DANFOSS A32F159.12



Nm | kpm | ft-lbs  
1,4 | 0,15 | 1

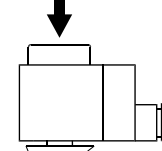


### Clip-on

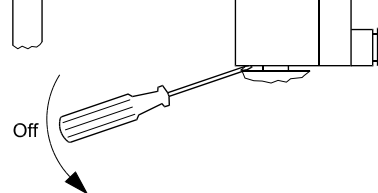


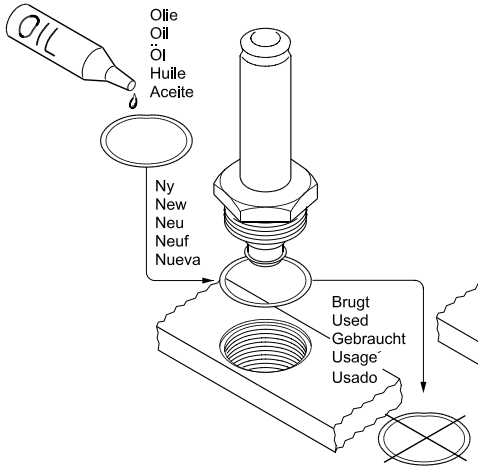
Danfoss A69F503.11

On



Off





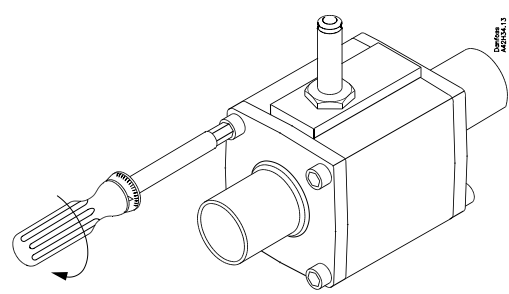
Olie  
Oil  
Öl  
Huile  
Aceite

Ny  
New  
Neu  
Neuf  
Nueva

Brugt  
Used  
Gebraucht  
Usage  
Usado

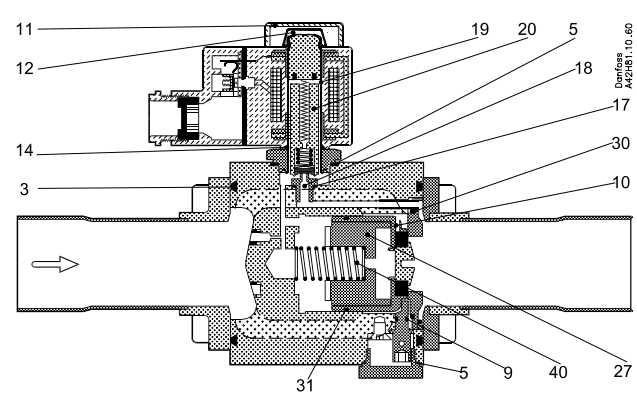
Nm	kpm	ft-lbs
75	7.5	56

75 Nm ± 5 Nm



Danfoss  
A42H3.1.3

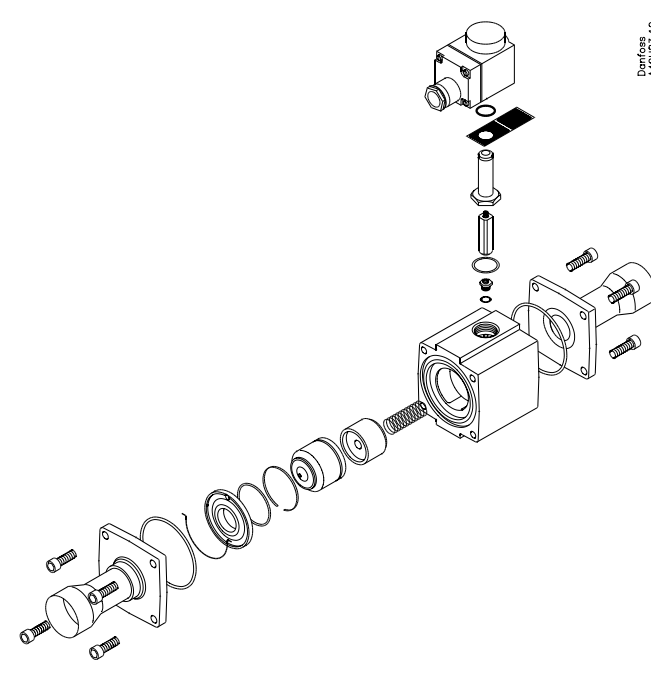
Nm	kpm	ft-lbs
20	2.0	15



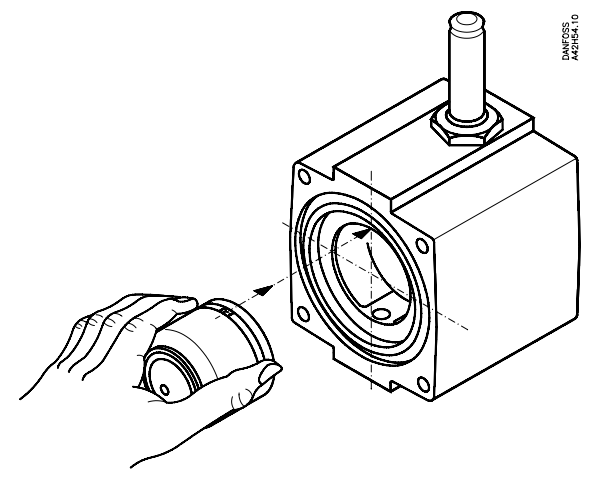
11 12 14 3 5 9 10 17 18 19 20 27 30 31 40

Danfoss  
A42H3.1.10.40

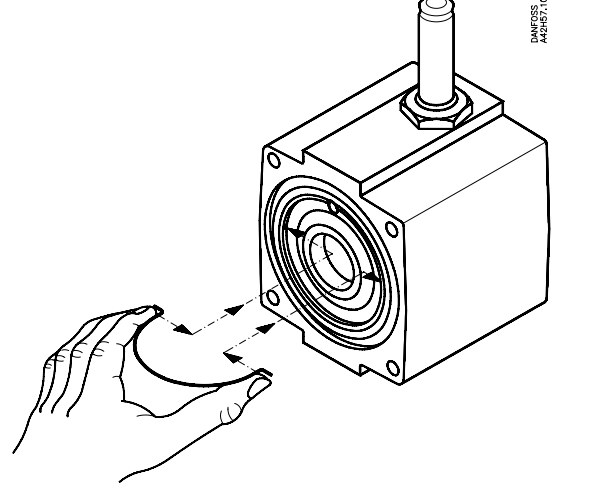
EVR 32/40



Danfoss  
A42H3.1.0

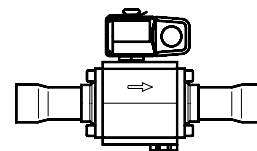


Danfoss  
A42H3.4.10



Danfoss  
A42H3.7.10

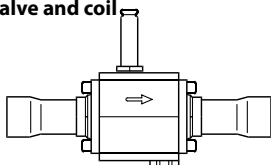




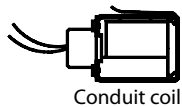
### EVR 32/40

032R9524

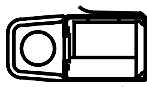
#### Valve and coil



EVR 32/40



Conduit coil

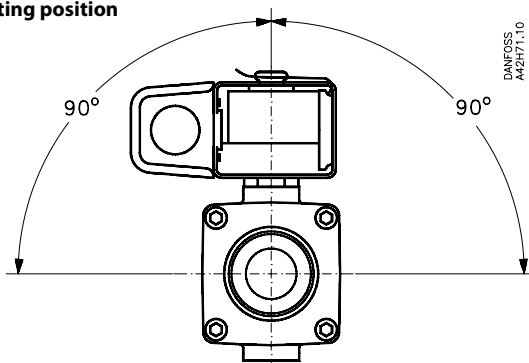


Junction box

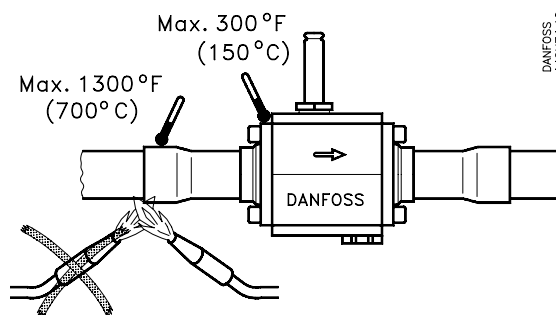
#### Operating conditions

Max. working pressure (MWP)	EVR 32/40: 400 psig (28 bar p <sub>e</sub> )		
Max. test pressure	650 psig (45 bar p <sub>e</sub> )		
Max. opening diff. pressure (MOPD)		AC	DC
	EVR 32 - 40	350 psig (24 bar p <sub>e</sub> )	205 psig (14 bar p <sub>e</sub> )
Refrigerant temperature	max.	220°F (105°C)	
	min.	-40°F (-40°C)	
Ambient temperature	max.	120°F (50°C)	
	min.	-40°F (-40°C)	
Refrigerant	R22, R134a, R404A, R507		

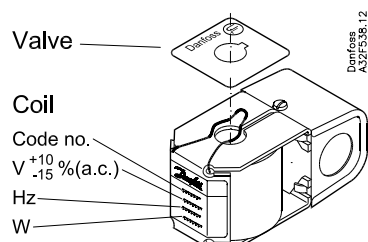
#### Mounting position



#### Soldering of copper connections



#### Identification of coil and valve



#### Caution

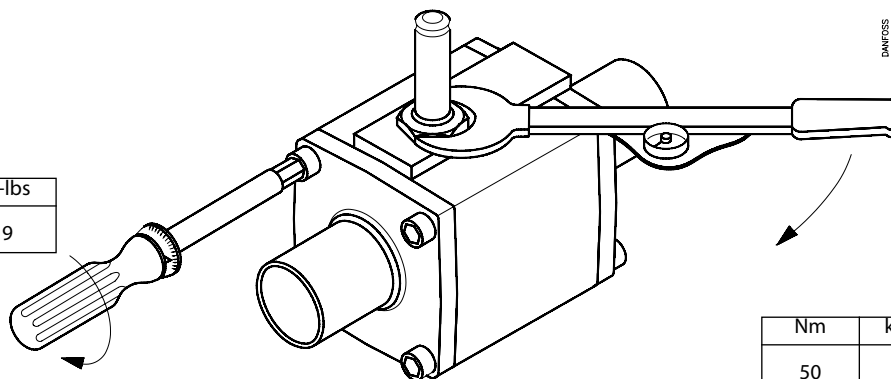
Wiring and fusing (when used) must comply with prevailing local and national wiring codes and ordinances.

#### Transformer selection

Coil		Inrush [Volt-Amp]	Holding [W] [Volt-Amp]	
208-240 V	50-60 Hz	76	17.5	40
110-120 V	50-60 Hz	76	17.5	40
24 V	60 Hz	76	17.5	40
120/208 V	50-60 Hz	76	17.5	40
120 V DC			23.0	

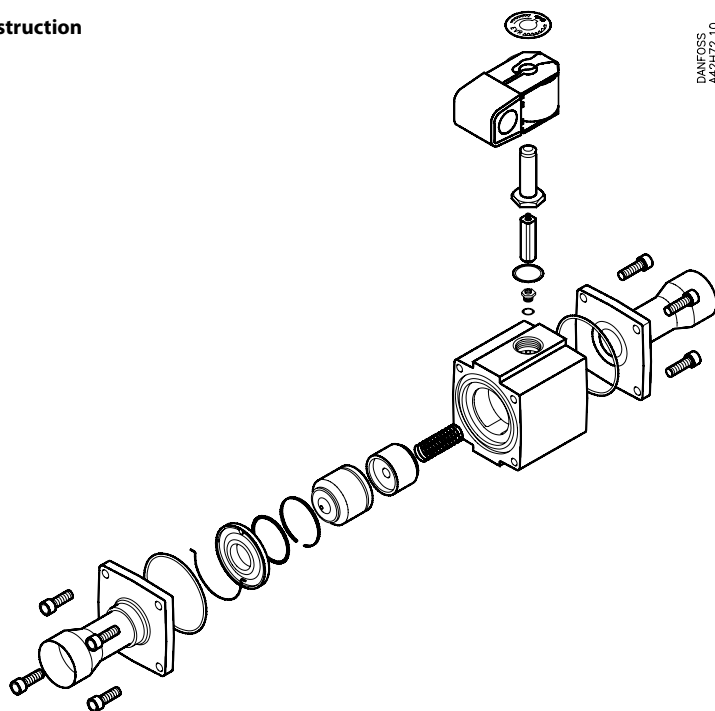
#### Tightening torques

Nm	kpm	ft-lbs
12	1.2	9



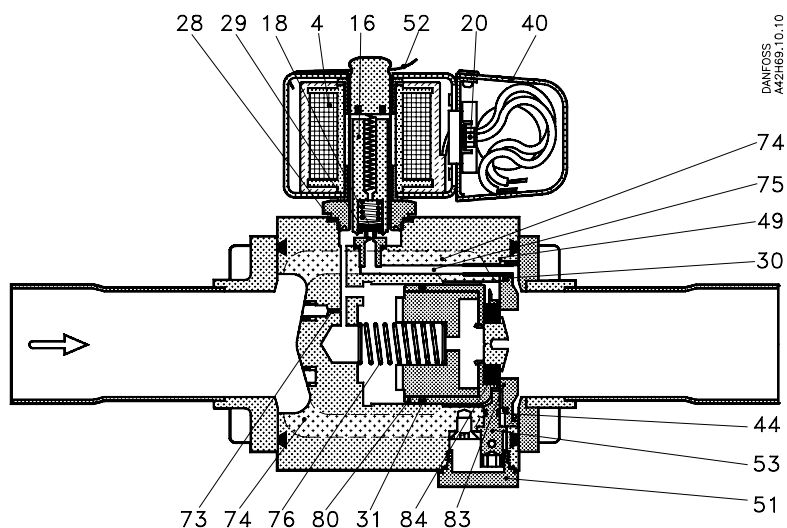
Nm	kpm	ft-lbs
50	5.0	37.5

## Valve and coil construction

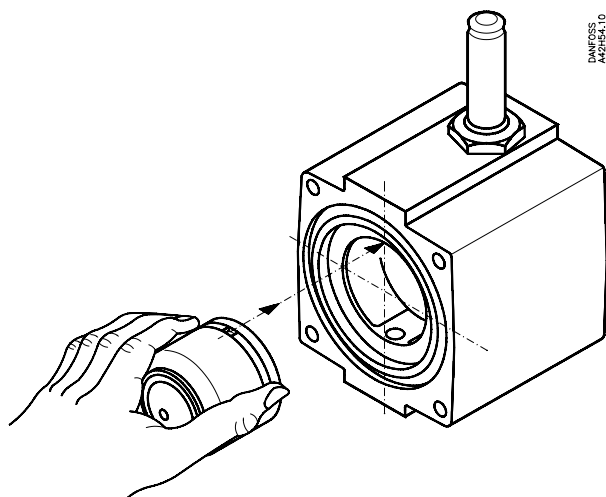


## Cut-away

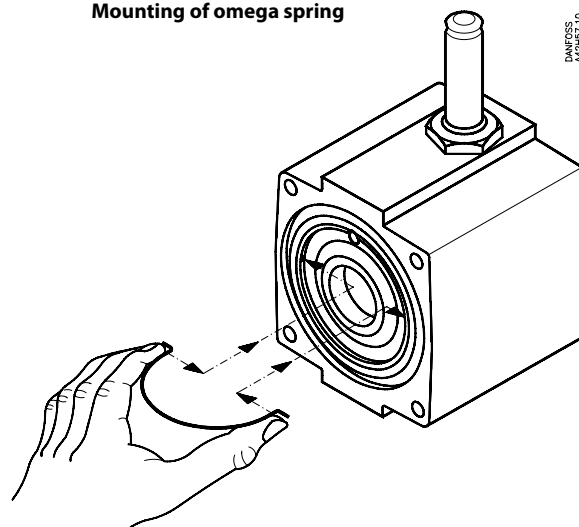
(Position numbers:  
see Danfoss Technical Leaflet)



## Mounting of piston



## Mounting of omega spring

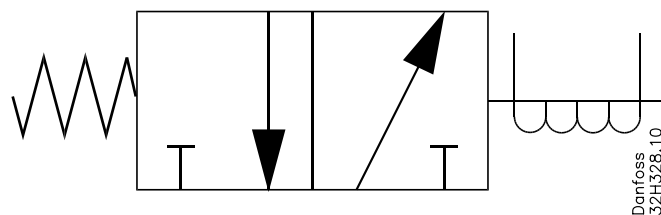
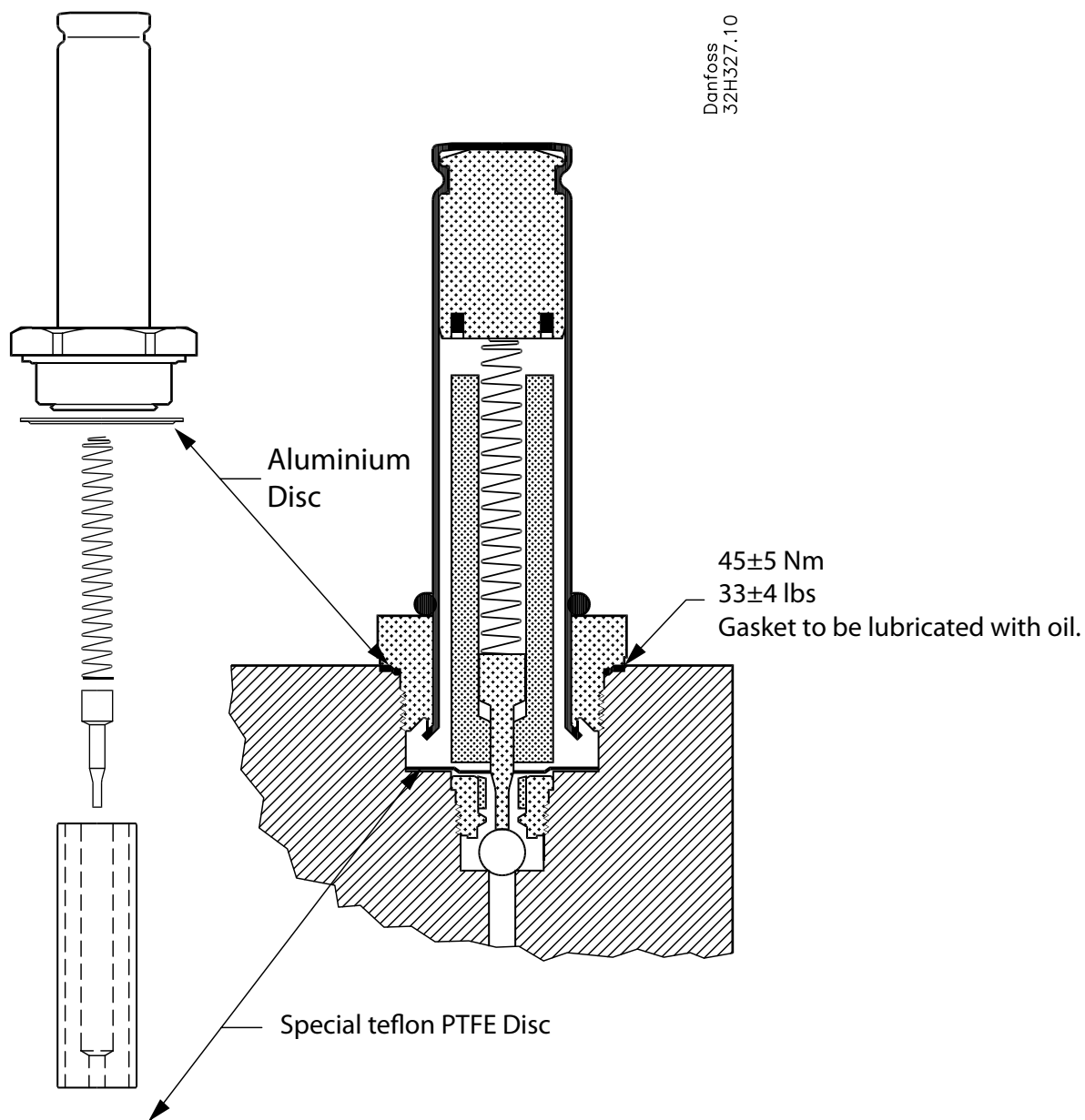


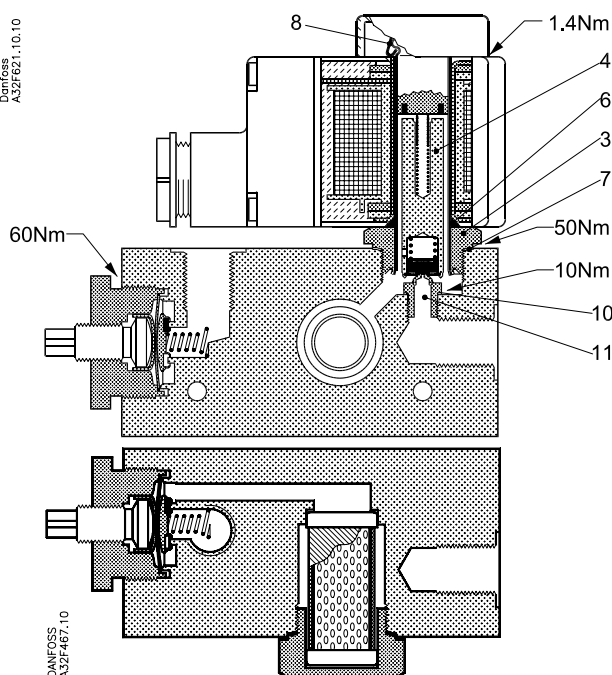
# Instructions

032R9530

032R9530

## Solenoid valve EVRB 3-way NC for DC voltage





Pakningerne smøres med køleolie.

The gaskets to be lubricated with oil.

Die Dichtungen sind mit  
Kältemittelöl zu schmieren.

#### Service kits

Pos.	Designation
------	-------------

#### Strainer kit **Code no. 032F5284**

1.	Strainer
2.	Al-gasket

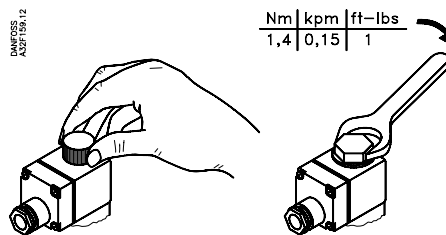
#### Service kit for EVRB-NC **Code no. 032F5285**

3.	Armature tube
4.	Armature
5.	O-ring
6.	O-ring
7.	Al-gasket
8.	Snap fastener

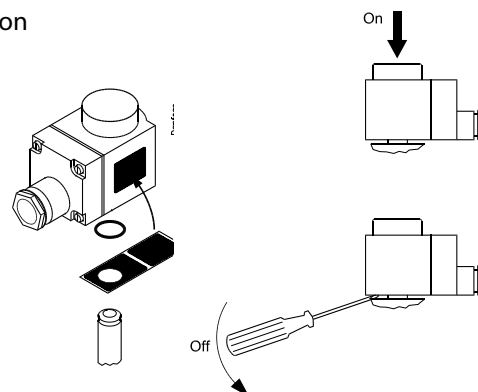
#### Seal kit for EVRB **Code no. 032F5281**

2.	Al-gasket
5.	O-ring
6.	O-ring
7.	Al-gasket
10.	Al-gasket

#### Previous version



#### Clip-on



#### Accessories

Pos.	Designation
------	-------------

#### Orifice kit for oil/refrigerant mixture **Code no. 032F5229**

7.	Al-gasket
10.	Al-gasket
11.	Orifice no. 2, 0.65 mm

#### Orifice kit for oil/refrigerant mixture **Code no. 032F5237**

7.	Al-gasket
10.	Al-gasket
11.	Orifice no. 3, 0.8 mm

#### Orifice kit for oil/refrigerant mixture **Code no. 032F5238**

7.	Al-gasket
10.	Al-gasket
11.	Orifice no. 4, 1.05 mm

#### Orifice kit for oil/refrigerant mixture and NH<sub>3</sub> liquid **Code no. 032F5239**

7.	Al-gasket
10.	Al-gasket
11.	Orifice no. 8X, 3.3 mm

#### Orifice kit for oil/refrigerant mixture and NH<sub>3</sub> liquid **Code no. 032F5259**

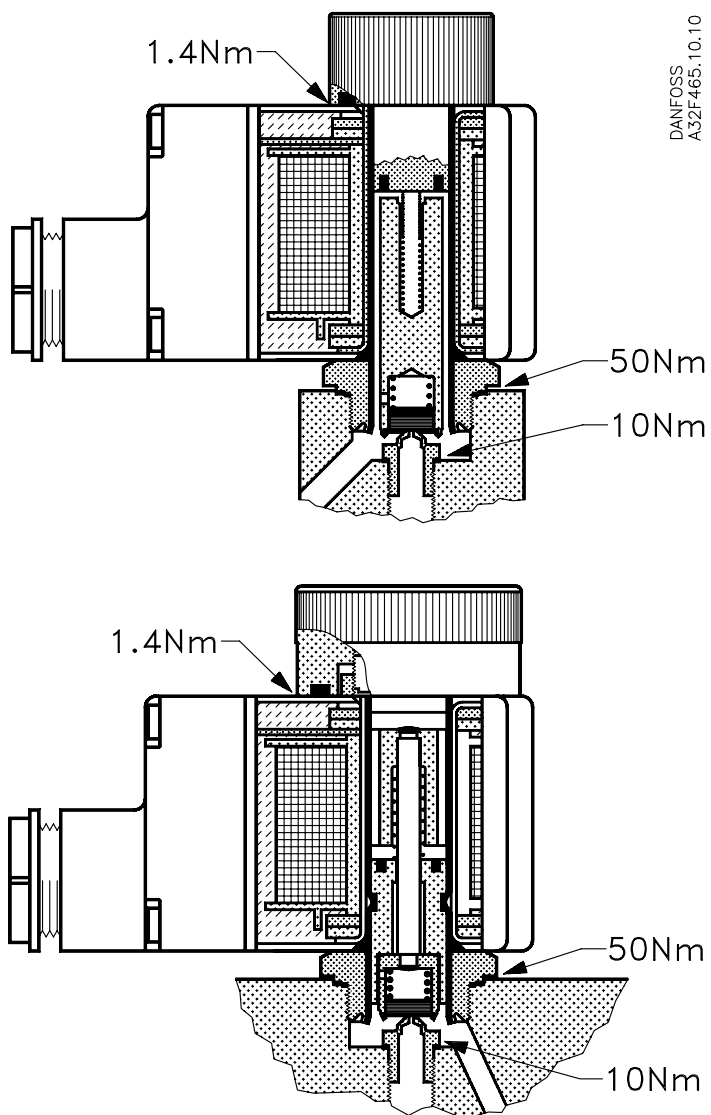
7.	Al-gasket
10.	Al-gasket
11.	Orifice no. 5A, 1.15 mm



# INSTRUCTIONS

## EVRB - NC, EVRB - NO

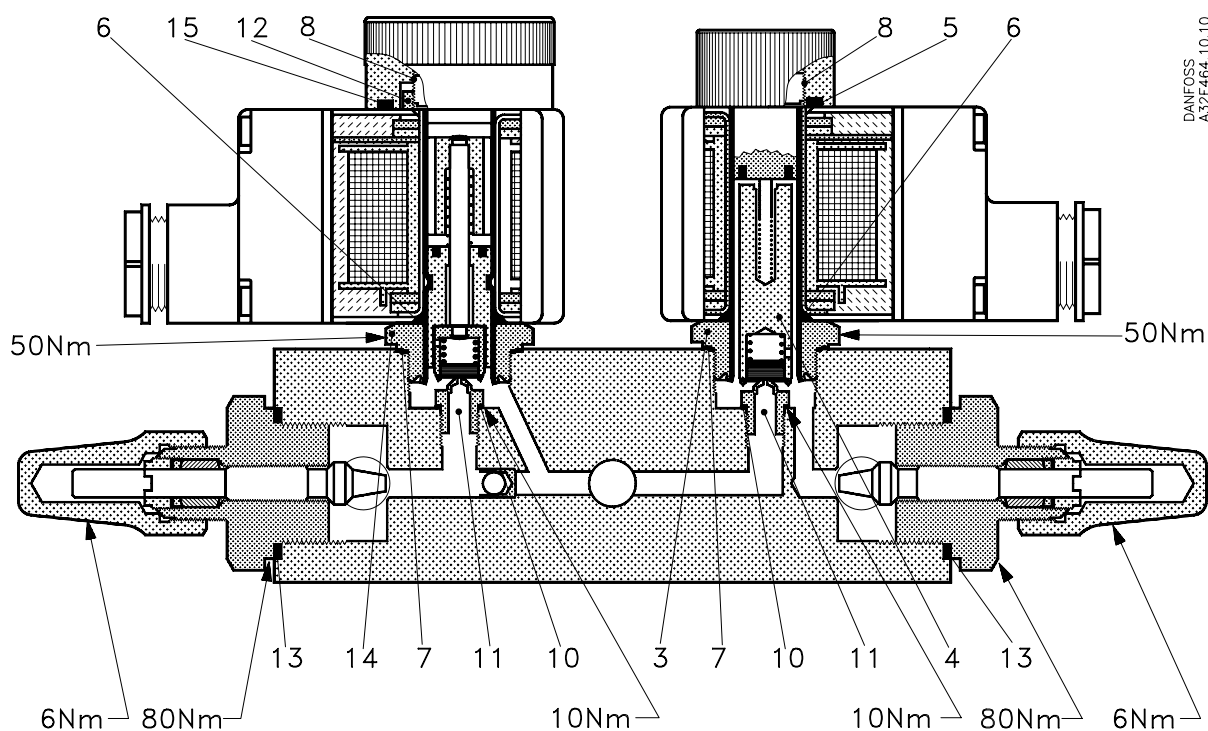
032R9514



DANFOSS  
A32F465.10.10

032R9514

Pakningerne smøres med fryseolie.  
The gaskets to be lubricated with oil.  
Die Dichtungen sind mit Kältemittelöl zu schmieren.


DANFOSS  
A32F464.10.10

Pakningerne smøres med køleolie  
The gaskets to lubricated with oil  
Die Dichtungen sind mit Kältemittelöl zu schmieren

#### Service kits

Pos.	Designation
------	-------------

Service kit for EVRB-NC **Code no. 032F5285**

3.	Armature tube
4.	Armature
5.	O-ring
6.	O-ring
7.	Al-gasket
8.	Snap fastener

Service kit for EVRB-NO **Code no. 032F5286**

6.	O-ring
7.	Al-gasket
8.	Snap fastener
12.	Spacer
14.	NO unit assembly
15.	O-ring

#### Accessories

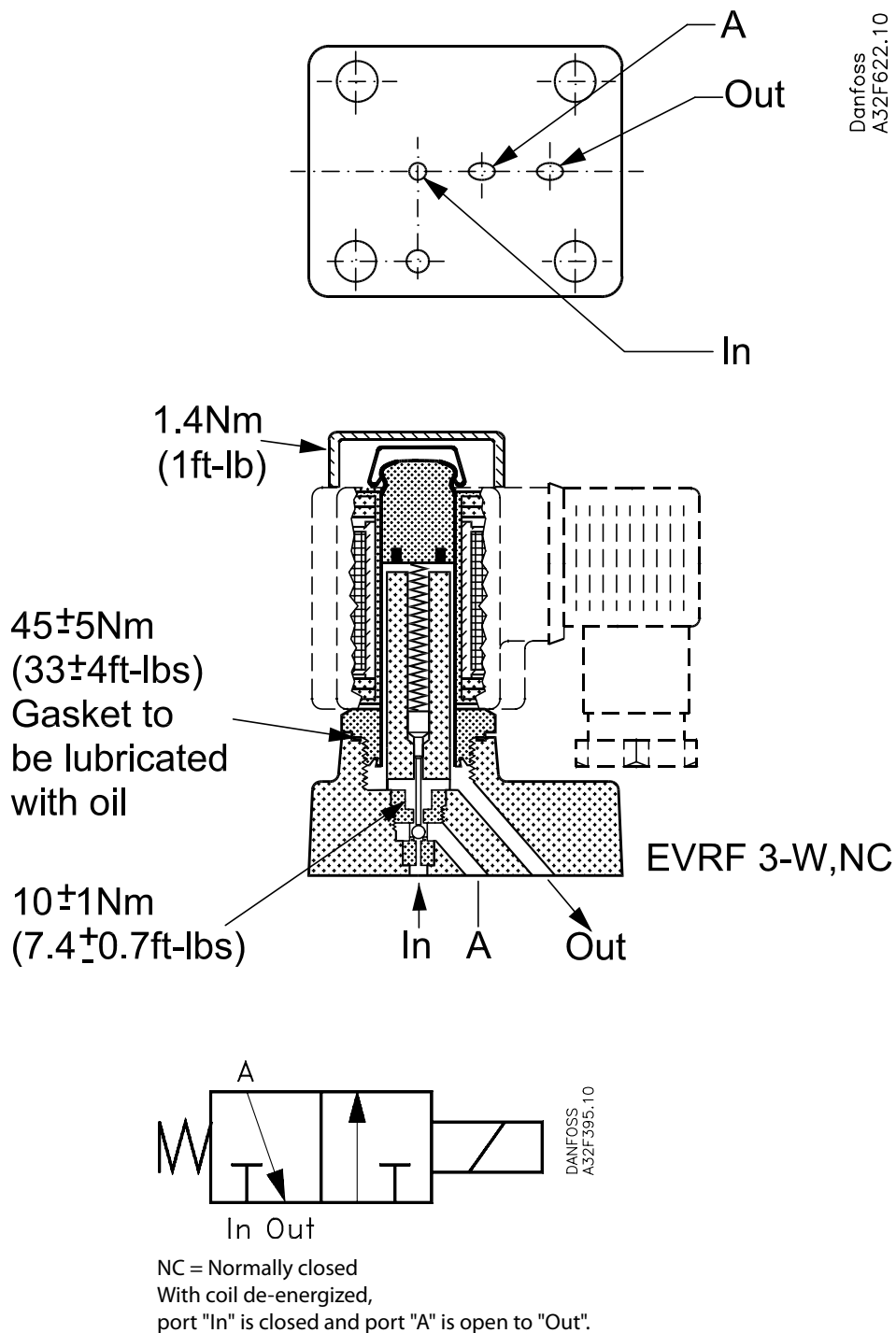
Pos.	Designation
------	-------------

Seal kit for EVRB **Code no. 032F5282**

5.	1 pc. O-ring
6.	2 pcs. O-ring
7.	2 pcs. Al-gasket
10.	2 pcs. Al-gasket
13.	2 pcs. Gasket
15.	1 pc. O-ring

Orifice kit for EVRB **Code no. 032F5228**

7.	Al-gasket
10.	Al-gasket
11.	Orifice, 2.3 mm



Coil: 10 W a.c. type 018Z

Min. ambient temperature: -40°C (-40°F)

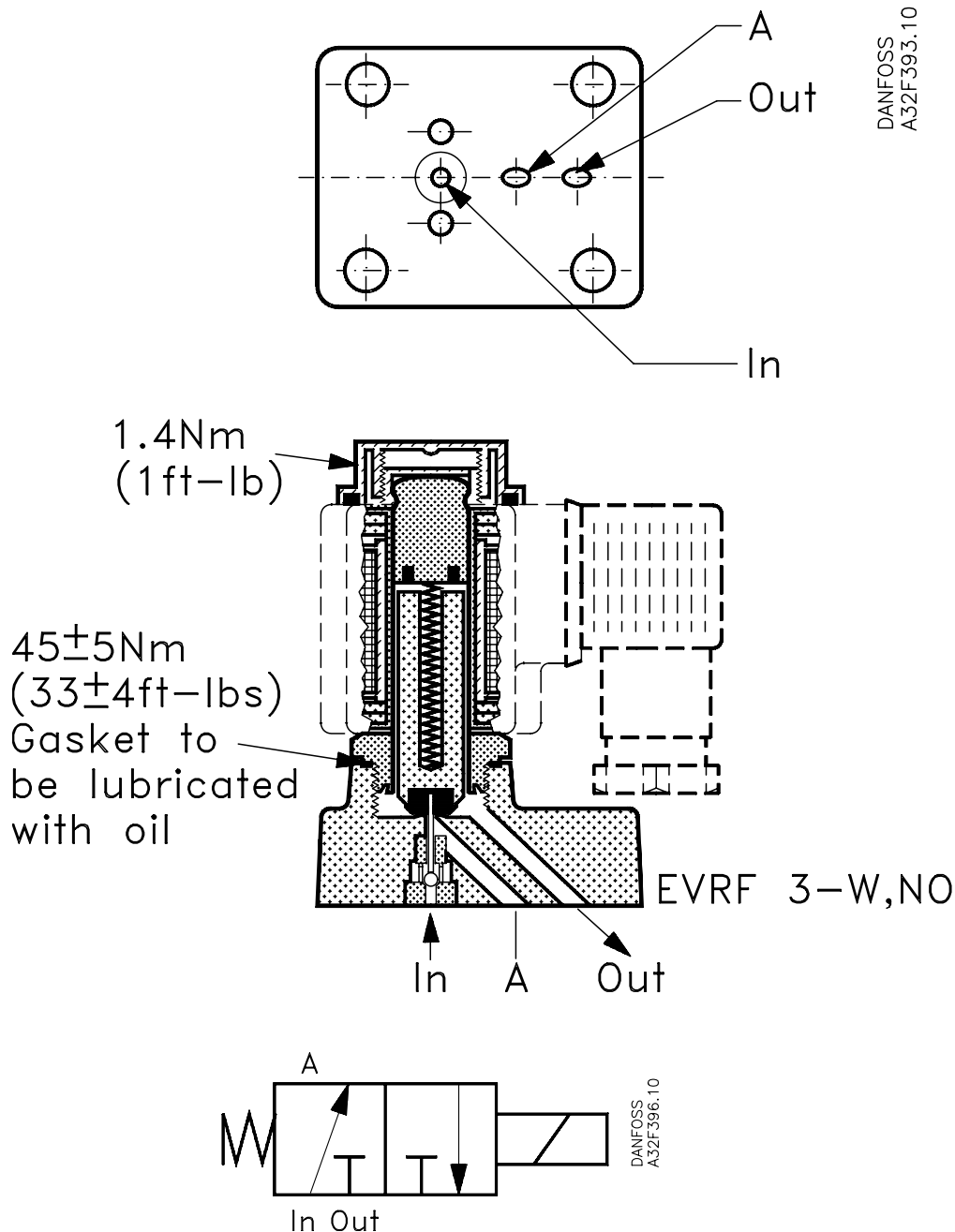
Max. ambient temperature: +80°C (+175°F)

Min. medium temperature: -40°C (-40°F)

Max. medium temperature: +130°C (+265°F)

Max. working pressure: PB = 28 bar / MWP = 405 psig

Max. opening diff. pressure: MOPD = 25 bar (360 psi)



NO = Normally open  
With coil de-energized,  
port "In" is open to A and "Out" is closed.

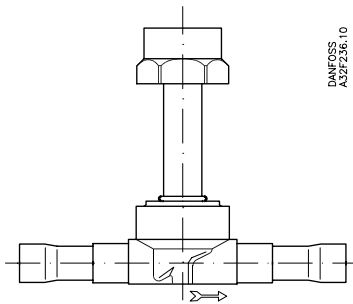
Coil:	10 W a.c. type 018Z
Min. ambient temperature:	-40°C (-40 °F)
Max. ambient temperature:	+80 °C (+175 °F)
Min. medium temperature:	-40 °C (-40 °F)
Max. medium temperature:	+130 °C (+265 °F)
Max. working pressure:	PB = 28 bar / MWP = 405 psig
Max. opening diff. pressure:	MOPD = 25 bar (360 psig)



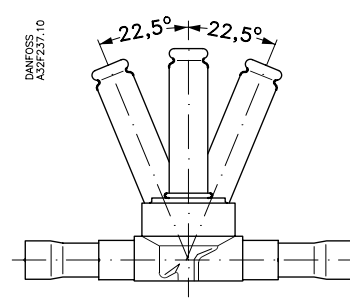
**EVRP 6, EVRP 10, Normally Closed (NC)**

032R9503

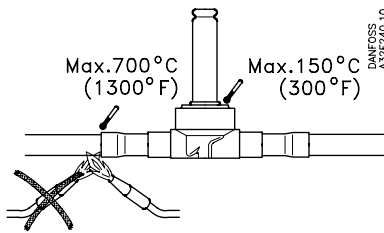
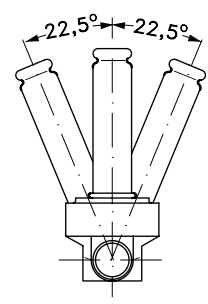
032R9503



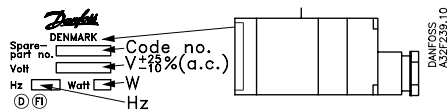
DANFOSS  
A32F236.10



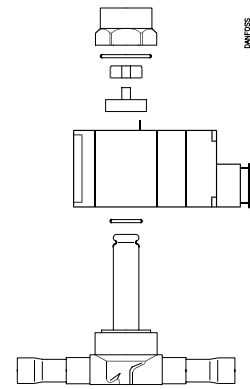
DANFOSS  
A32F237.10



DANFOSS  
A32F240.10



DANFOSS  
A32F238.10

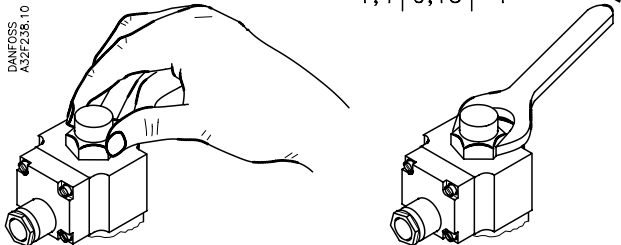


DANFOSS  
A32F240.10

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RI.3K.A1.02 → DKRCC.PI.BG0.A1.02-520H1800 11-2006

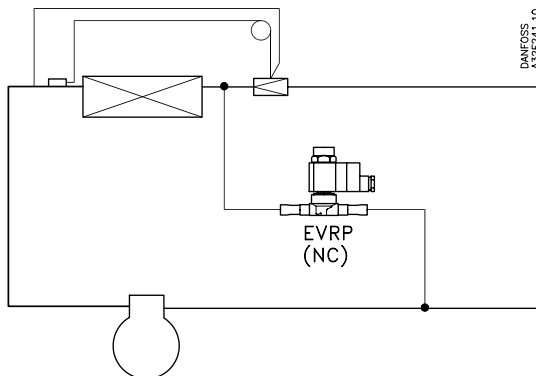
DANFOSS  
A32F238.10



Nm	kpm	ft-lbs
1,4	0,15	1

Opening differential pressure  $\Delta p$ ,

MOPD (vapour):	21 bar (300 psi)
MOPD (liquid):	10 bar (145 psi)
Max. working pressure:	28 bar (400 psig)
Max. temperature of medium:	120 °C (250 °F)
Ambient temperature:	-60 → 80 °C (-75 → 175 °F)

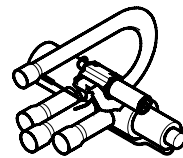


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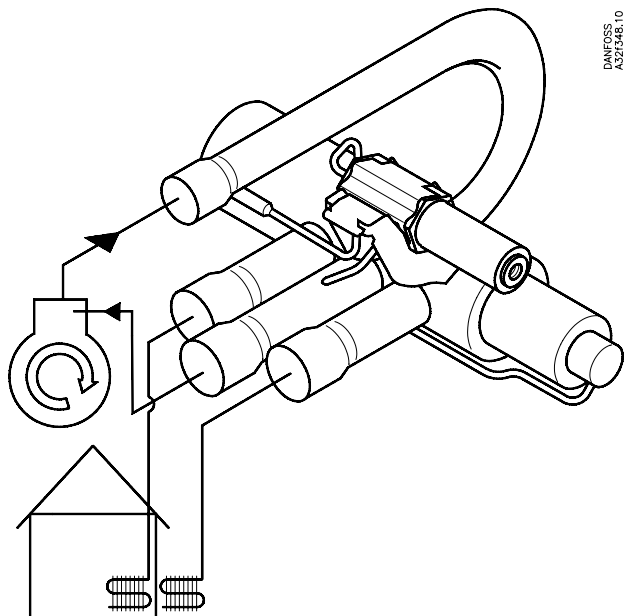
EVRP  
(NC)

RI.3K.A1.02 → DKRCC.PI.BG0.A1.02 - 520H1800

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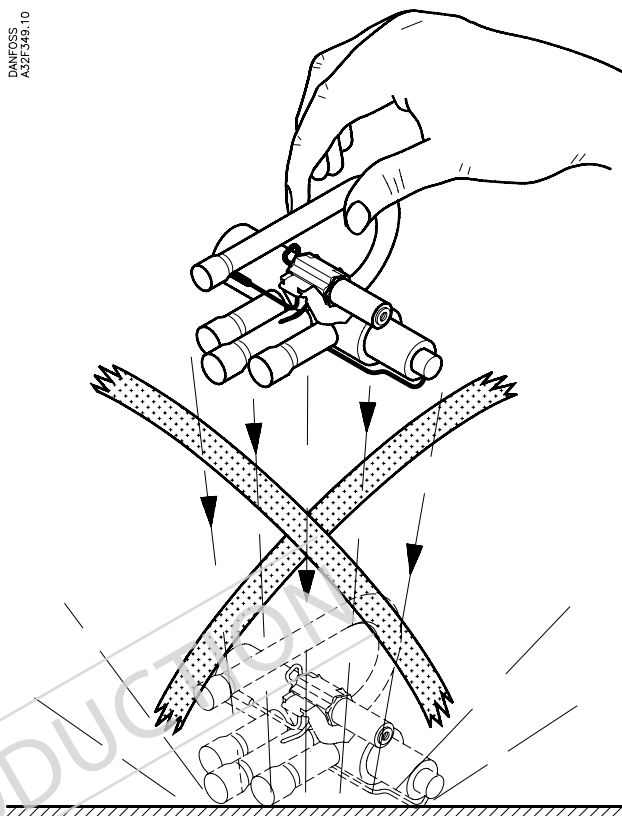


032R9508



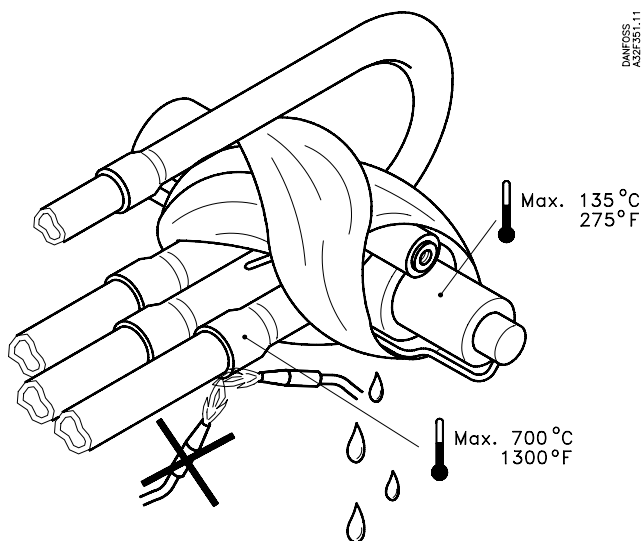
DANFOSS  
A32F349.10

DANFOSS  
A32F349.10

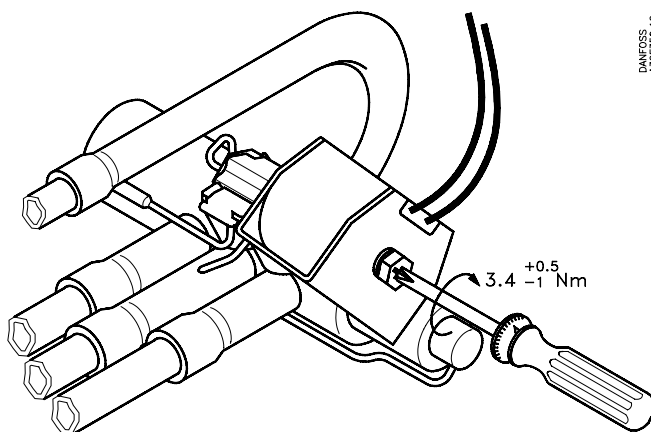


032R9508

OUT OF PRODUCTION



DANFOSS  
A32F350.11



DANFOSS  
A32F350.12

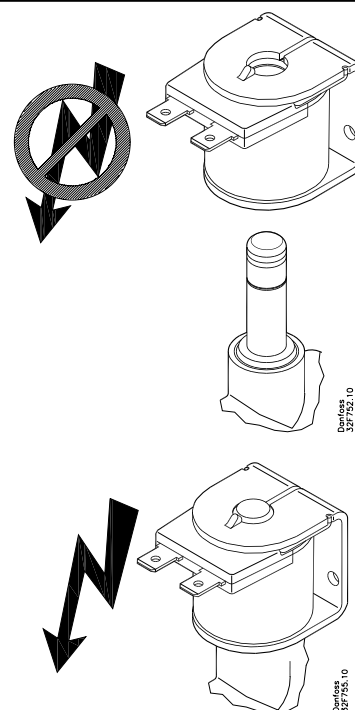
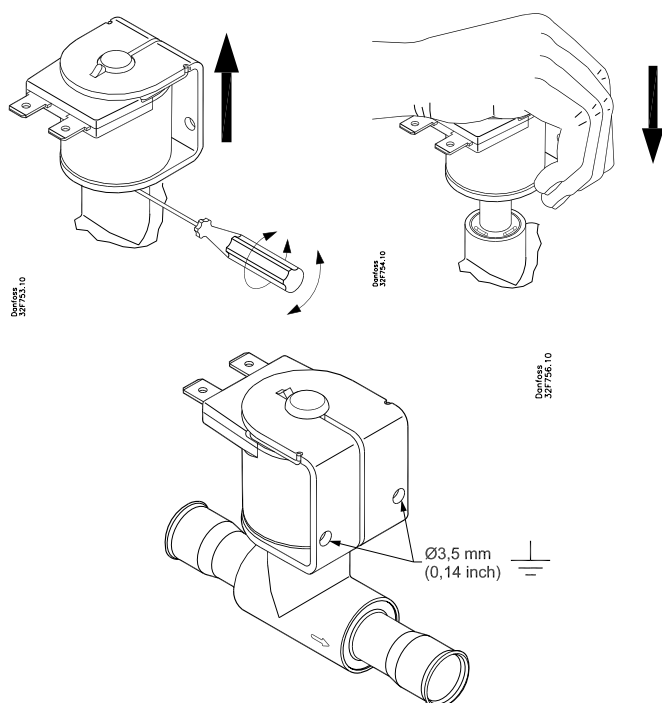
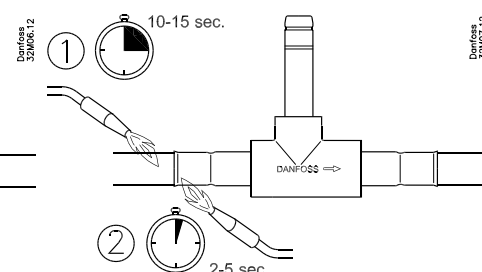
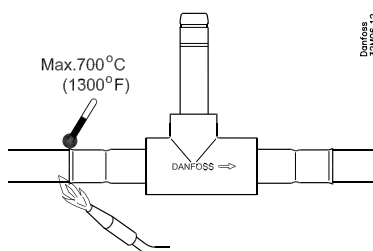
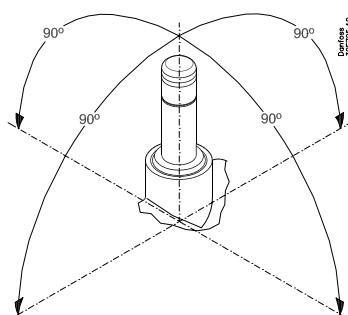
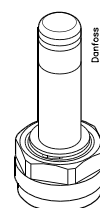
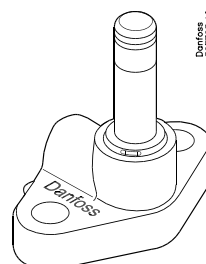
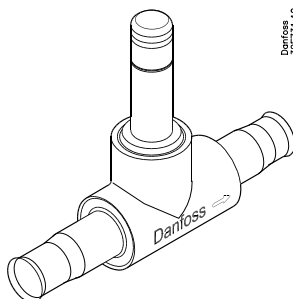
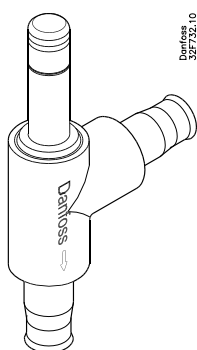
# Instructions

*Danfoss*

032R9526

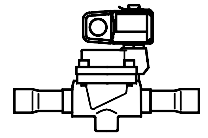
032R9526

## Solenoid valves - US version. EVU 1 to 8, EVUB and EVUF NC (Normally Closed)



Max. opening differential pressure MOPD:  
Max. working pressure:  
Max. temperature of medium:  
Ambient temperature :

Coil dependent  
70 barg / 1014 psig  
-40°C to +105°C / -40°F to +220°F  
-40°C to +60°C / -40°F to +140°F

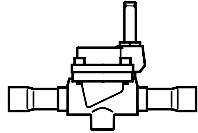


### EVR 25

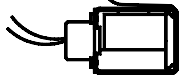
032R9523

032R9523

#### Valve and coil



EVR 25



Conduit coil

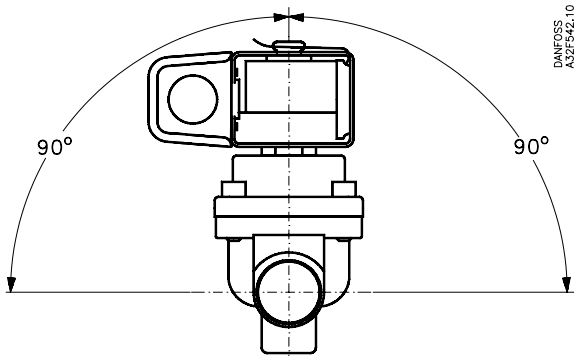


Junction box

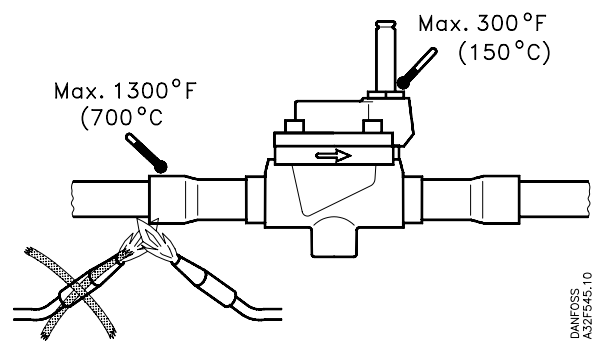
#### Operating conditions

Max. working pressure (MWP)	EVR 25: 500 psig (35 bar p <sub>e</sub> )		
Max. test pressure	650 psig (45 bar p <sub>e</sub> )		
Max. opening diff. pressure		AC	DC
	EVR 25	350 psig (24 bar p <sub>e</sub> )	205 psig (14 bar p <sub>e</sub> )
Refrigerant temperature	max. min.	220°F (105°C) -40°F (-40°C)	
Ambient temperature	max. min.	120°F (50°C) -40°F (-40°C)	
Refrigeration	R22, R134a, R404A, R507		

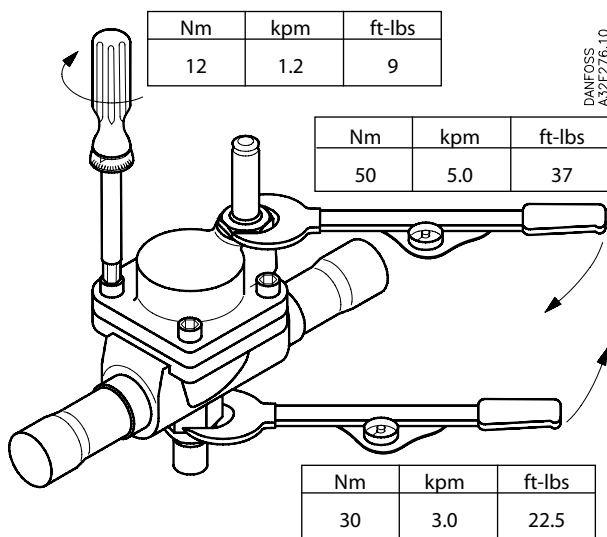
#### Mounting position



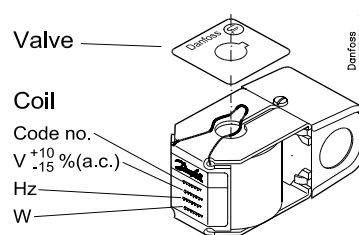
#### Soldering of copper connections



#### Tightening torques



#### Identification of coil and valve



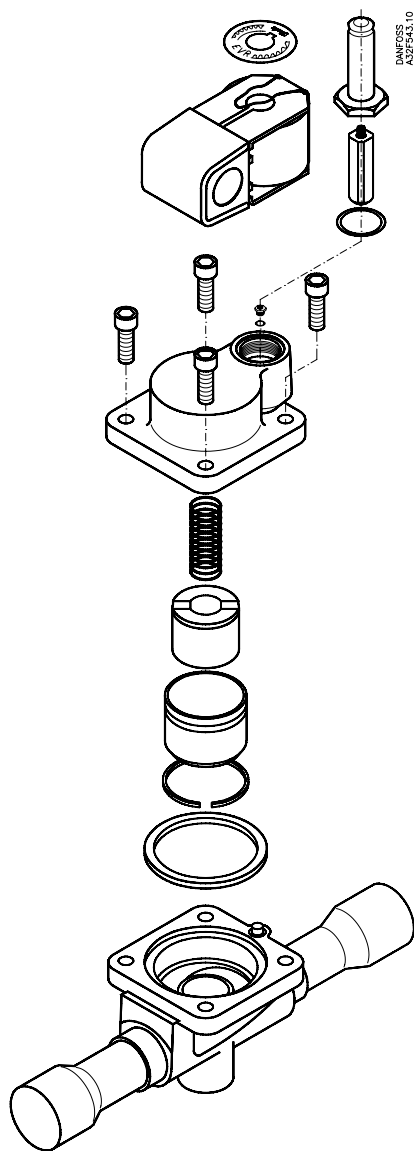
#### Caution

Wiring and fusing (when used) must comply with prevailing local and national wiring codes and ordinances.

#### Transformer selection

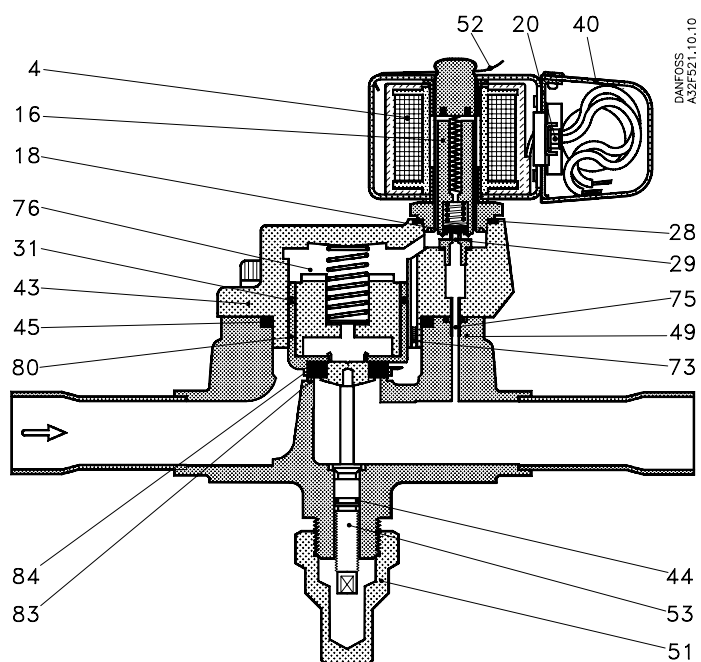
Coil		Inrush [Volt-Amp]	Holding [W] [Volt-Amp]	
208-240 V	50-60 Hz	76	17.5	40
110-120 V	50-60 Hz	76	17.5	40
24 V	60 Hz	76	17.5	40
120/208 V	50-60 Hz	76	17.5	40
120 V DC			23.0	

## Valve and coil construction



## Cut-away

(Position numbers:  
See Danfoss Technical Leaflet)





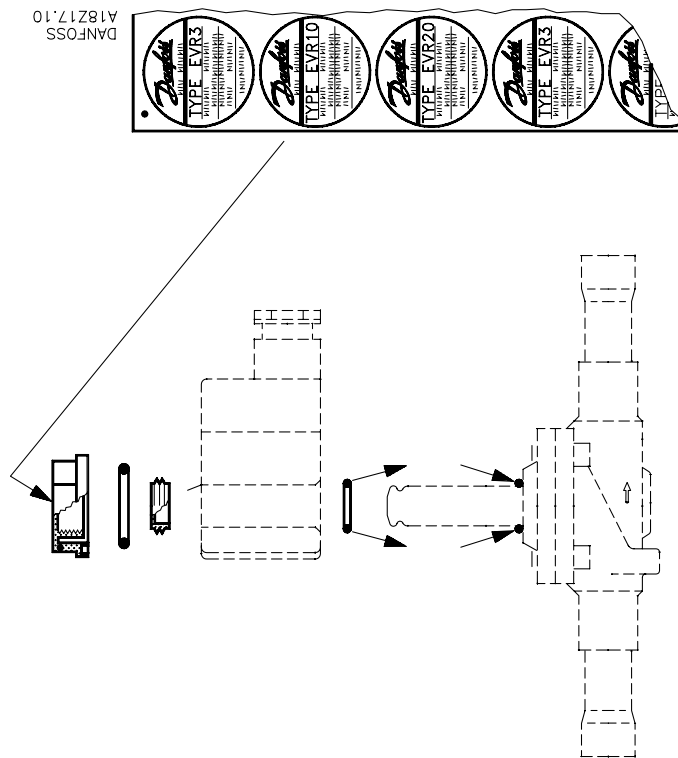
# INSTRUCTIONS

NC 018Z0093  
NO 018Z0091  
NC 018Z0096

## Seal Kit

018R9673

NC 018Z0093

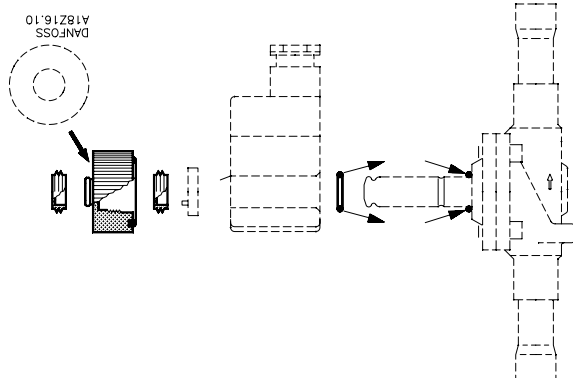


EVR (NC)

DANFOSS  
A18Z17.10

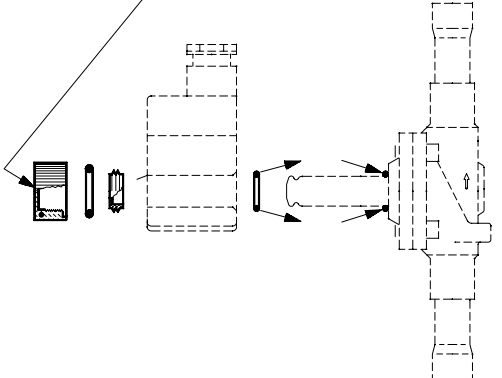
018R9673

NO 018Z0091



EVR NO

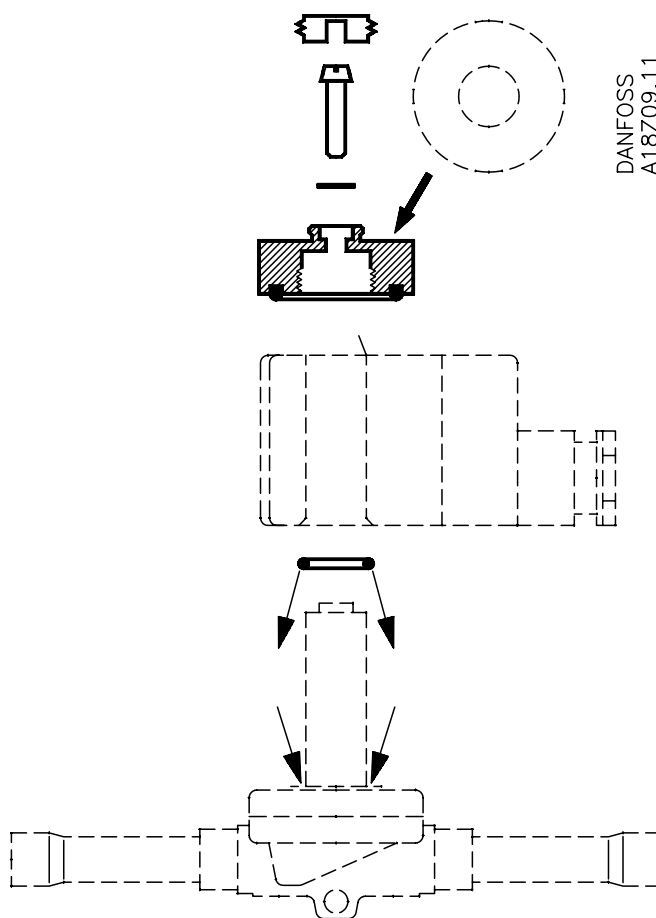
NC 018Z0096



EVRA, EVM (NC)

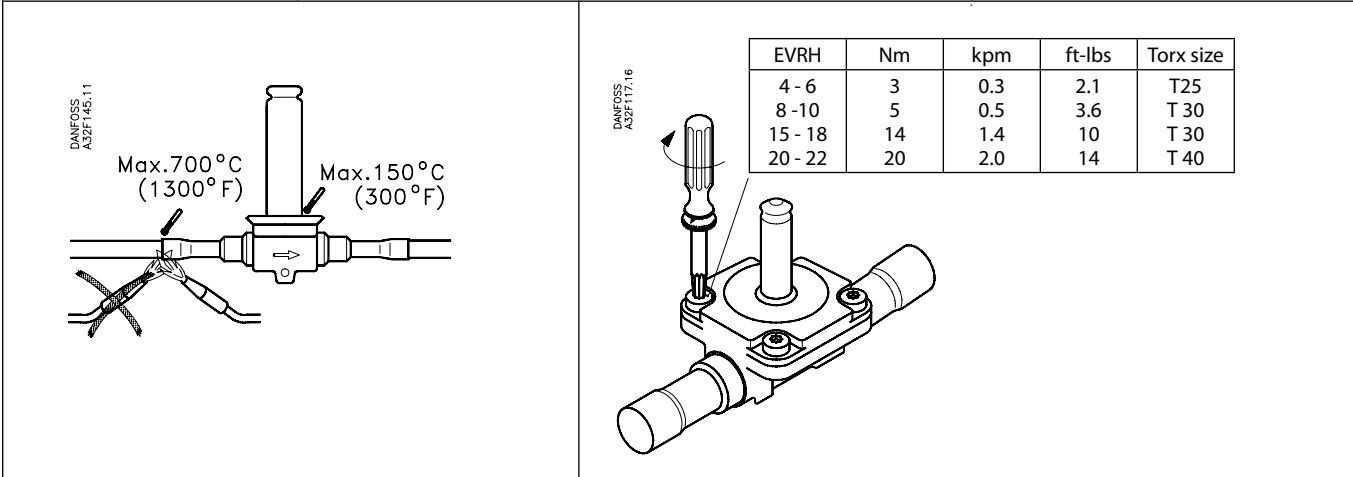
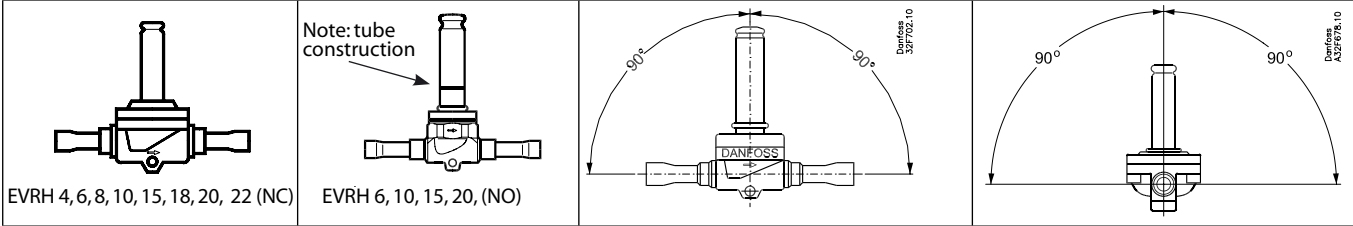
DANFOSS  
A18Z20.10

EVR for railways

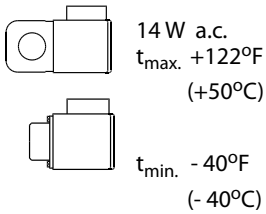


## Solenoid valves

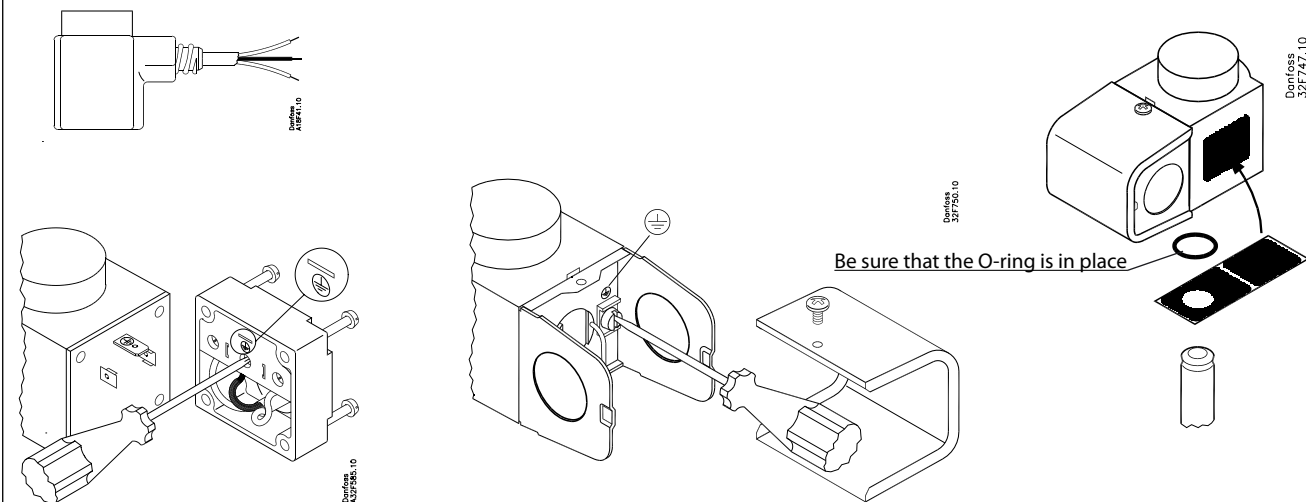
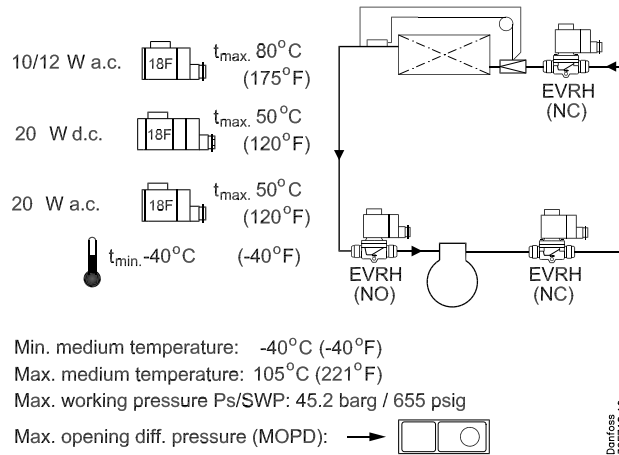
### EVRH 4-22 Normally Closed and Normally Open (NC/NO)



#### UL approved coils



- Data on armature tube
- US data on label

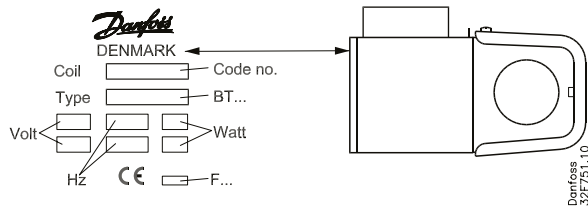




# Instructions

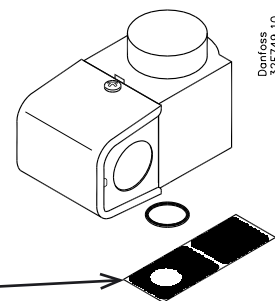
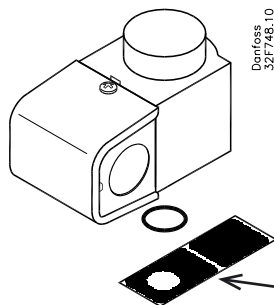
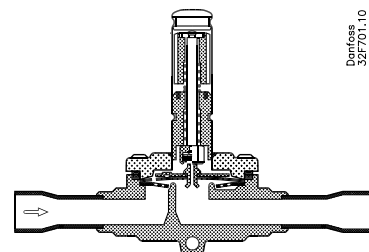
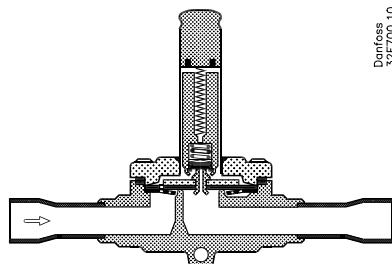
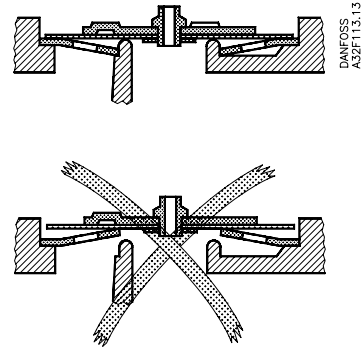
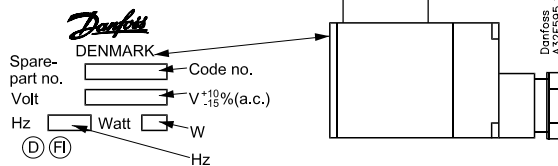
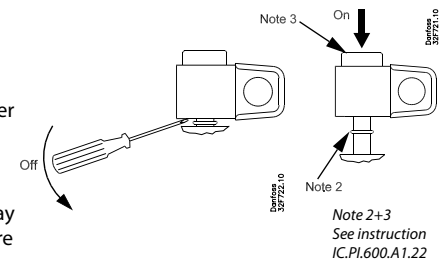
032R9533

032R9533

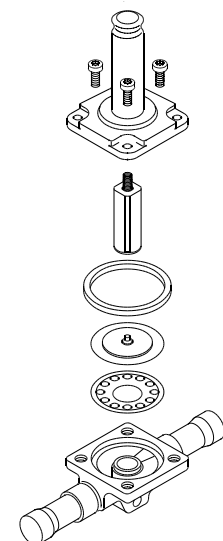


## Warning

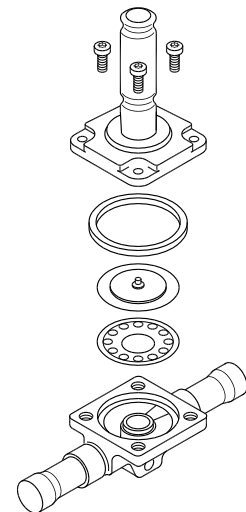
Never switch on power to the coil when the coil is dismounted from the valve. Otherwise the coil may be damaged and there is risk of injuries and burns.



**Sticker applies only to UL products !**



EVRH 4-22 (NC)



EVRH 4-20 (NO)

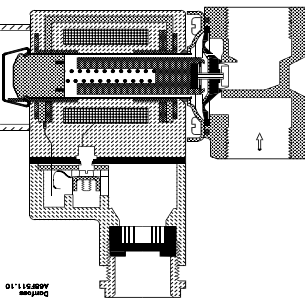
**Note:** UL approval are only recognized when one of the EVRH series of solenoid valves is combined with a general purpose coil.



068R9545

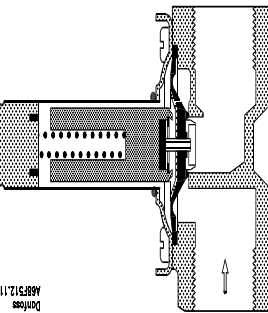
068R9545

EVSR 10

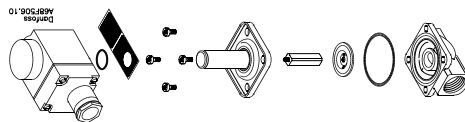


A68F506.10

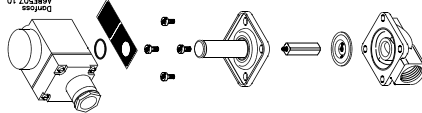
EVSR 12, 14, 18, 22



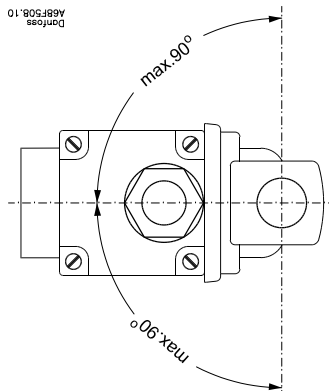
A68F512.11



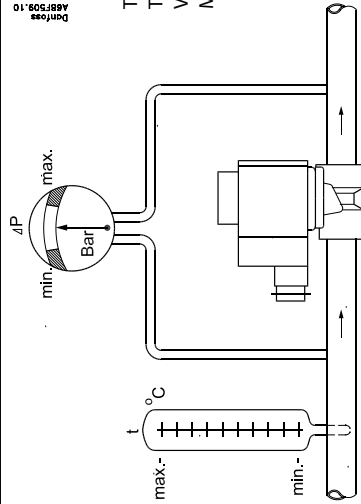
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A68F507.10



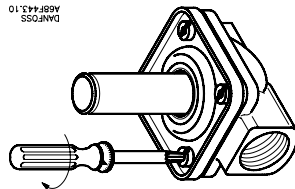
A68F508.10



A68F509.10

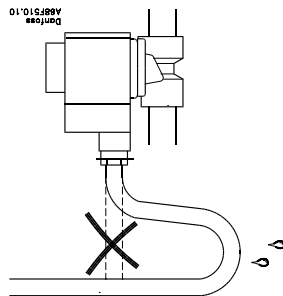
$T_{amb}$   
medium  
Viscosity  
Max. test pressure = 16 bar

= +50°C max.  
= -35 → +60°C  
= 50 cSt. max.



A68F43.10

EVSR	Nm	kpm	ft-lbs
10	1.4	0.14	1.0
12	2.8	0.28	2.0
14	2.8	0.28	2.0
18	4.5	0.45	3.2
22	4.5	0.45	3.2



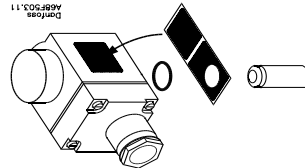
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NC

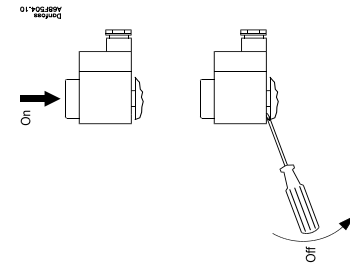
$\Delta p$   
bar

	10 W a.c.		12 W a.c.		20 W d.c.	
	min.	max.	min.	max.	min.	max.
EVSR 10, 12, 14, 18, 22	0.1	5.0	0.1	5.0	0.1	5.0

Clip-on



A68F503.11



On

Off

## EV 220B 65, 80, 100

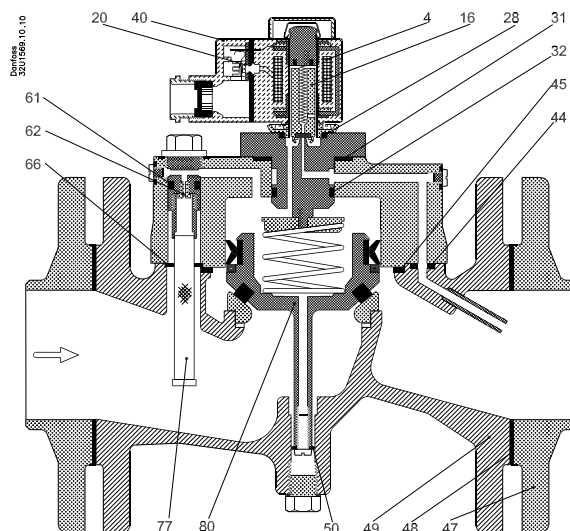
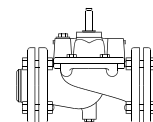


Fig. 1

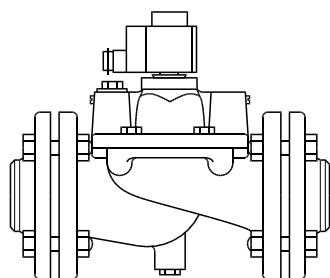


Fig. 2

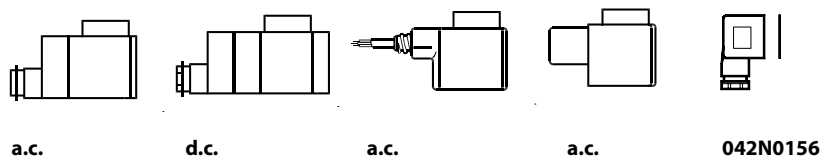


Fig. 3

### DANSK

#### Magnetventil

##### Tekniske data

Ventilen er lukket, når spolen er strømløs.  
Medier (angivet ved stemping på dækslet):  
W = ferskvand, B = neutral brine,  
O = olie, L = luft  
Min. medietemperatur: -25°C  
Maks. medietemperatur: +90°C  
Maks. prøvningstryk (p<sub>g</sub>): 15 bar = 1500 kPa.  
Maks. tilladelig spændingsvariation:  
+10/-15% for a.c., ±10% for d.c.  
Maks. åbningsdifferenstryk (MOPD), spolespænding  
-frekvens og -effekt: Se spole- og topskilt.

##### Konstruktion

4. Spole
16. Anker
20. Jordskrue
28. Pakning
31. Pakning
32. O-ring
40. Klemdåse
44. O-ring
45. Pakning for ventildæksel
47. Flange
48. Flangepakning
49. Ventilhus
50. Pakning
61. O-ring
62. Udligningsdyse
66. O-ring
77. Filter
80. Servostempel

#### Montering

Ventilen skal monteres med spolen opad og med gennemstrømning i pilens retning. Spoleenheden kan drejes vilkårligt i forhold til ventilhuset.

#### El-tilslutning

Før spolen tilsluttes, kontroller da, om spolens angivne spænding og frekvens er den samme som nettets.  
Ved spoler med kabel skal den grøn-gule ledning forbindes til jord.  
Ved spoler med AMP tilslutning skal spadestikket mærket ⊕ forbindes til jord.  
Spoler med klemdåse er forsynet med en Pg 13.5 kabelforskrining for 6 - 14 mm kabel. Klemdåsens indvendige jordskrue 20 forbindes til jord.

#### Service

Hvis ventilen skilles ad, bør servocylinderen og servostempels styr smøres med vandfast, syrefrit fedtstof. Gevindestykket på filter og skrue behandles med pakpasta.  
Undersøg om pakninger og O-ringe trænger til udskiftning.  
Bestillingsnr., se reservedelskataloget.  
En udligningsdyse 62 med større dysediameter end standard medleveres som tilbehør. Den kan anvendes både til vand og brine, hvor der ønskes en hurtigere lukning af ventilen.  
Når en spole skal bestilles, bedes følgende angivet: Spænding, frekvens og tilslutningsart (enten 1 m kabel, AMP tilslutning eller klemdåse).

AMP stikdåse, IP 65: bestillingsnr. 042N0156.

### ENGLISH

#### Solenoid valve

##### Technical data

The valve is closed when the coil is de-energized.  
Media (indicated by a stamp on the cover):  
W = fresh water, B = neutral brine,  
O = oil, L = air  
Min. medium temperature: -25°C  
Max. medium temperature: +90°C  
Max. test pressure (p<sub>g</sub>): 15 bar = 1500 kPa.  
Max. permissible voltage variation:  
+10/-15% for a.c., ±10% for d.c.  
Max. opening differential pressure (MOPD), coil voltage, frequency and capacity: See coil and top label.

##### Design

4. Coil
16. Armature
20. Earth screw
28. Gasket
31. Gasket
32. O-ring
40. Terminal box
44. O-ring
45. Gasket for valve cover
47. Flange
48. Flange gasket
49. Valve body
50. Gasket
52. Locking knob and top nut
61. O-ring
66. O-ring
77. Filter
80. Servo-piston

## Mounting

The valve must be mounted coil upwards with flow in the direction of the arrow. The coil unit may be turned optionally in relation to the valve body.

## Electrical connections

Before mounting the coil, check that its specified voltage and frequency match those of the mains supply.

In the case of coils with cable, the green-yellow lead must be connected to earth.

On coils with AMP connection the spade marked ⊕ must be connected to earth. Coils with terminal boxes are equipped with a Pg 13.5 screwed cable connection for 6 - 14 mm cable. The internal earth screw 20 of the terminal box must be connected to earth.

## Service

If the valve is dismantled, the servo-cylinder and servo-piston guide should be lubricated with water resistant, acid-free grease. Jointing paste is applied to the thread on the filter and screws.

Check whether packings and O-rings need replacing. Code numbers are given in the spare parts catalogue.

One equalising orifice with a larger orifice diameter than standard is supplied as an accessory. It can be used for both water and brine where faster closing of the valve is required. When ordering a coil, please quote the following: Voltage, frequency and type of connection (either 1 m cable, AMP connection or terminal box).

AMP socket, IP 65: code No. 0420156.

## Elektrischer Anschluss

Vor dem Anschluss der Spule ist zu prüfen, ob die angegebene Spannung und Frequenz mit dem Versorgungsnetz übereinstimmt.

Bei Spulen mit Dreileiterkabel ist der grün/ gelbe Leiter für die Erdung vorgesehen.

Bei Spulen mit AMP-Anschluss ist die ⊕ gekennzeichnete Steckzunge für die Erdung vorgesehen. Spulen mit Klemmendose sind mit einer Pg 13.5 Kabelverschraubung für 6 - 14 mm Kabel versehen. Die innenseitige Erdungs-schraube der Anschluss-dose ist zu erden.

## Wartung

Nach einer Zerlegung des Ventils sind der Servozylinder und die Führung des Servokolbens mit einem wasserfesten, säurefreien Fett leicht einzufetten. Das Gewindestück des Filters und die Schrauben sind mit Dichtungspaste zu bestreichen. Zugleich ist zu untersuchen, ob möglicherweise Dichtungen und O-Ringe erneuert werden sollten. Artikelnummern hierfür: Siehe Ersatzteil Katalog.

Eine Ausgleichsdüse 62 mit einem gegenüber dem Standard grösseren Düsendurchmesser wird mitgeliefert. Diese für Wasser und Sole verwendbare Düse kann benutzt werden, wenn ein schnelleres Schliessen des Ventils erwünscht ist.

Bei einer Bestellung von Spulen erbitten wir folgende Angaben: Spannung, Frequenz und Anschlussart (1 m Kabel, AMP-Steckzungen oder Klemmendose).

AMP-Steckdose, IP 65: Artikelnummer 042N0156

## Montage

Monter la vanne la bobine orientée vers le haut et avec passage du fluide dans le sens de la flèche. L'unité de bobine peut être tournée à volonté par rapport au corps de vanne.

## Connexion électrique

Avant de raccorder la bobine, s'assurer que la tension et la fréquence indiquées correspondent à celles du réseau.

Pour les bobines avec câble, le fil vert-jaune doit être relié à la terre.

En ce qui concerne les bobines avec raccordement AMP, la fiche spatulée marquée ⊕ doit être mise à la terre. Les bobines avec boîte à bornes comportent un raccord de câble tube élect. de 13,5 pour câbles de 6 à 14 mm. La vis intérieure de la boîte à bornes doit être reliée à la terre.

## Entretien

En cas de désassemblage de la vanne, graisser le servocylindre et le guide du servopiston à l'aide d'une graisse résistante à l'eau et non acide. Enduire de pâte de joint la partie filetée du filtre et des vis. Examiner si les joints et les bagues toriques nécessitent un remplacement. Pour les numéros de code, voir notre catalogue de pièces de rechange. Un orifice d'égalisation 62 d'un diamètre d'orifice supérieur à celui standard est inclus dans la livraison comme accessoire. Il peut être utilisé aussi bien pour l'eau que pour la saumure dans le cas où l'on désire une fermeture plus rapide de la vanne.

À la commande d'une bobine, spécifier: la tension, la fréquence et la nature de raccordement (soit 1 m de câble, soit raccord AMP, soit boîte à bornes).

La prise de courant AMP, IP 65:  
n° de code 042N0156.

## DEUTSCH

## Magnetventil

### Technische Daten

Das Ventil ist bei stromloser Spule geschlossen. Medien (Kennzeichen in den Deckel einschlagen): W = Frischwasser, B = Neutrale Sole,

O = Öl, L = Luft

Min. Medientemperatur: -25°C

Max. Medientemperatur: +90°C

Max. Prüfdruck (p<sub>e</sub>): 15 bar = 1500 kPa.

Max. zulässige Spannungsabweichung:

+10/-15% für a.c., ±10% für d.c.

Max. Öffnungsdifferenzdruck (MOPD), Spulenspannung, -frequenz und -leistung: Siehe Spulenschild und Kennschild.

### Konstruktion

4. Spule
16. Anker
20. Erdungsschraube
28. Dichtung
32. O-Ring
40. Klemmendose
44. O-Ring
45. Dichtung für Ventildeckel
47. Flansch
48. Flanschdichtung
49. Ventilgehäuse
50. Dichtung
61. O-Ring
62. Ausgleichsdüse
66. O-Ring
77. Filter
80. Servokolben

## Montage

Das Ventil ist mit nach oben gerichteter Spule und mit Durchfluss in Pfeilrichtung einzubauen. Die Spuleneinheit kann gegenüber dem Ventilgehäuse beliebig gedreht werden.

## FRANÇAIS

## Electrovannes

### Caractéristiques techniques

Le vanne est fermée à bobine hors tension.

Médiums (indiqués par estampage sur le couvercle):

W = eau douce, B = saumure neutre,

O = huile, L = air

Température min. du médium: -25°C

Température max. du médium: +90°C

Pression d'essai max. (p<sub>e</sub>): 15 bar = 1500 kPa.

Variation de tension max. admissible:

+10/-15% pour c.a., ±10% pour c.c.

Pression différentielle max. d'ouverture

(MOPD), tension, fréquence et puissance de bobine: Voir plaque sur bobine et plaque sur partie supérieure.

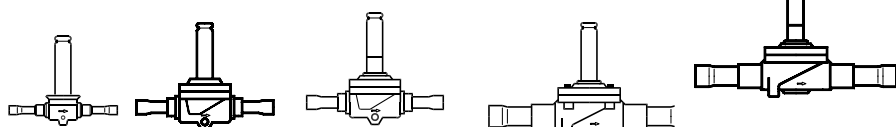
### Construction

4. Bobine
16. Induit
20. Vis de terre
28. Joint
31. Joint
32. Bague torique
40. Boîte à bornes
44. Bague torique
45. Joint pour couvercle de vanne
47. Bride
48. Joint de bride
49. Corps de vanne
50. Joint
61. Bague torique
62. Orifice d'égalisation
66. Bague torique
77. Filtre
80. Servopiston



032R9531

HC



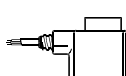
EVRE 2, 3 (NC)

EVRE 6, 10 (NC)

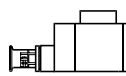
EVRE 6, 10 (NO)

EVRE 15, 18, 20 (NC)

EVRE 15, 20 (NO)



10W a.c. ~

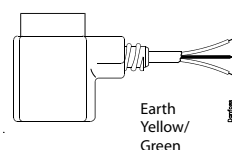


10W a.c. ~

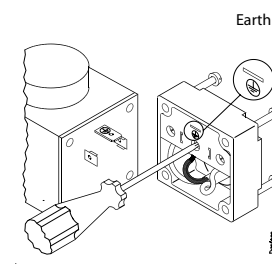


12 W a.c. ~  
20 W d.c. --

a.c. ~

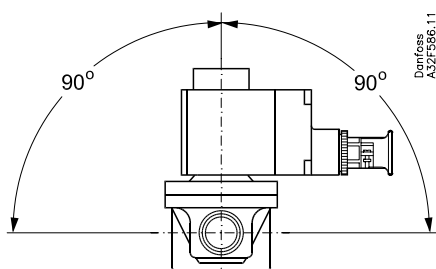


Earth  
Yellow/  
Green

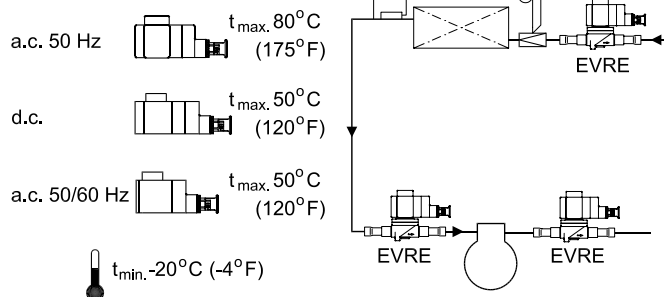


Earth

032R9531



Danfoss  
A32F586.11



Min. medium temperature :  $-20^{\circ}C$  (-4°F)

Max. medium temperature :  $105^{\circ}C$  (221°F)

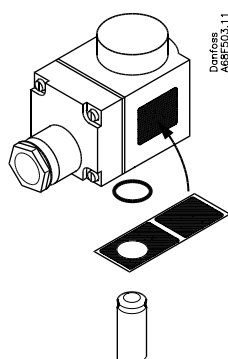
Max. working pressure : EVRE 2 -10 PB = 35bar

Max. working pressure : EVRE 15 - 20 PB = 32bar

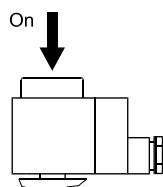
Max. opening diff. pressure (MOPD) : →

Danfoss  
A32F656.10

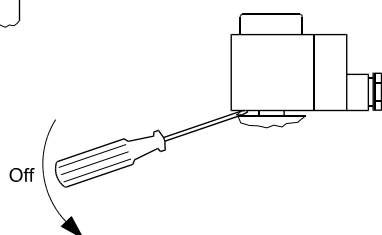
### Clip-on



Danfoss  
A68F503.11

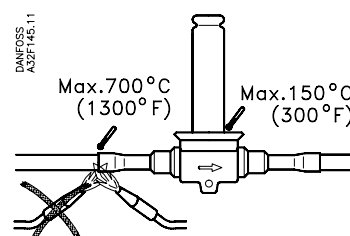


Danfoss  
A68F504.10



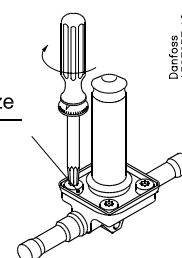
Off

Only use coils for zone II ( EEx nA II T3)

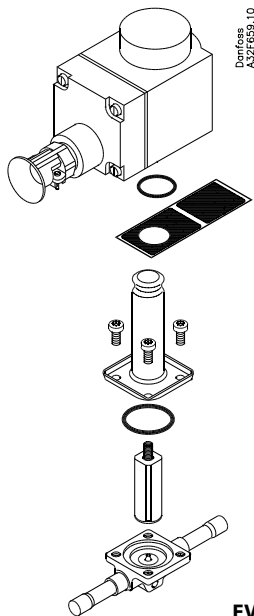


Danfoss  
A32F146.11

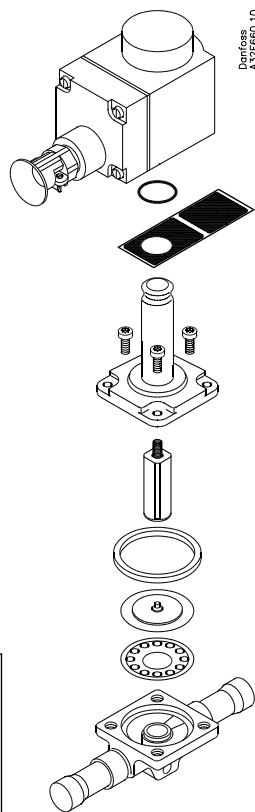
EVRE	Nm	kpm	ft-lbs	Torx size
2 - 3	1.4	0.15	1	T 15



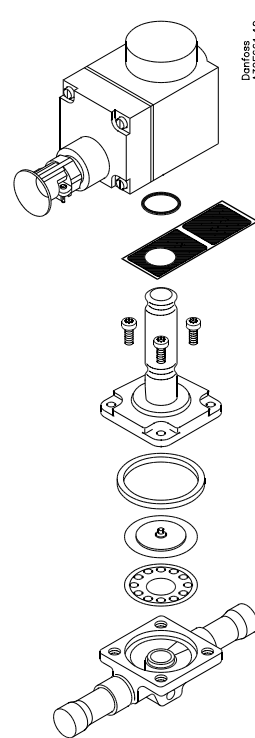
Danfoss  
A32F657.10



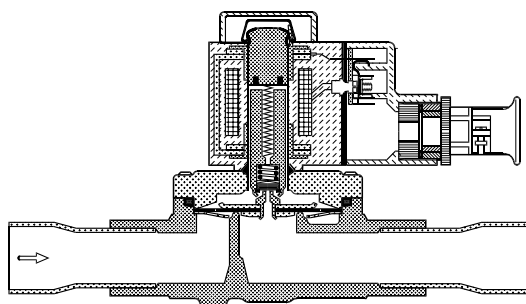
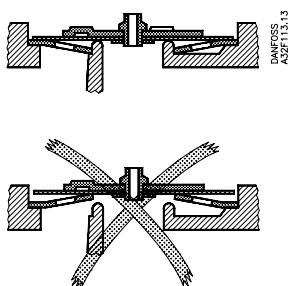
**EVRE 2-3 (NC)**



**EVRE 6-20 (NC)**

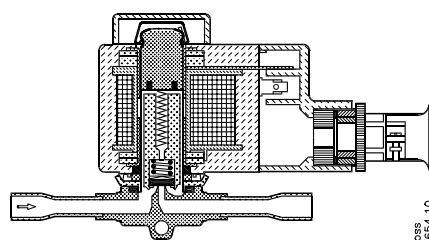


**EVRE 6-20 (NO)**



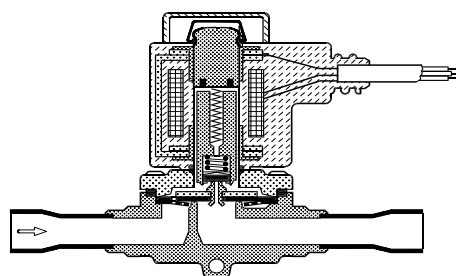
**EVRE 15-20 (NC)**

Danfoss  
A32F662.10



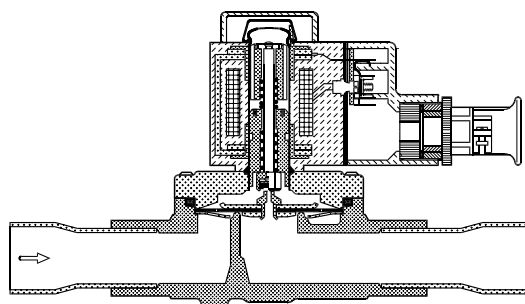
**EVRE 3 (NC)**

Danfoss  
A32F654.10



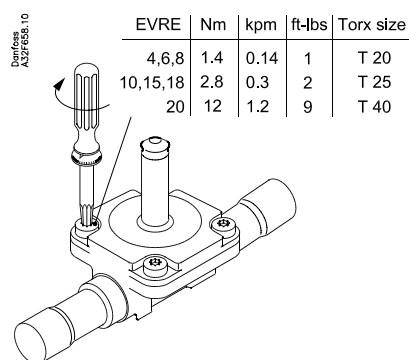
**EVRE 6-10 (NC)**

Danfoss  
A32F653.10



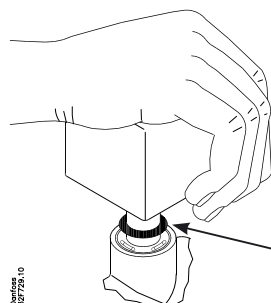
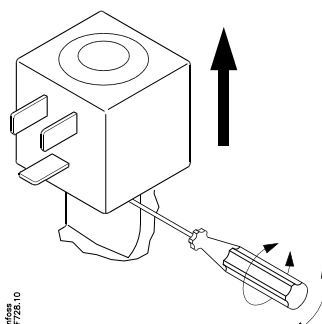
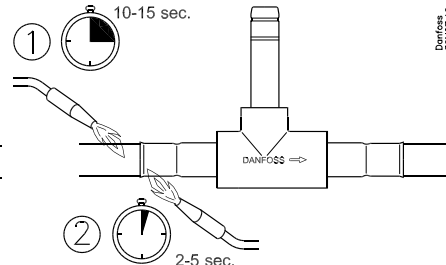
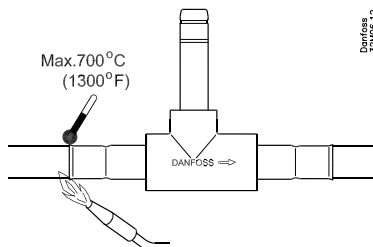
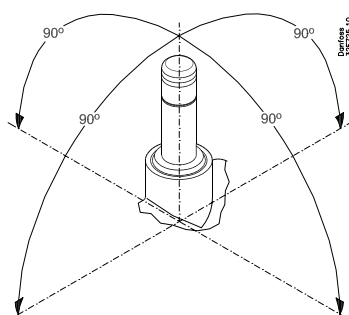
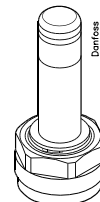
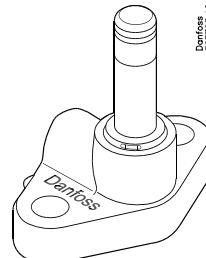
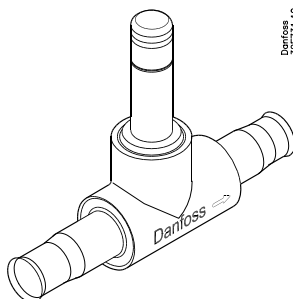
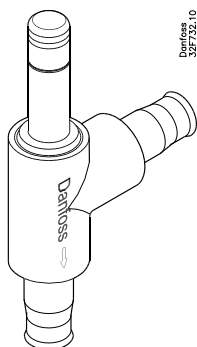
**EVRE 6-20 (NO)**

Danfoss  
A32F650.10

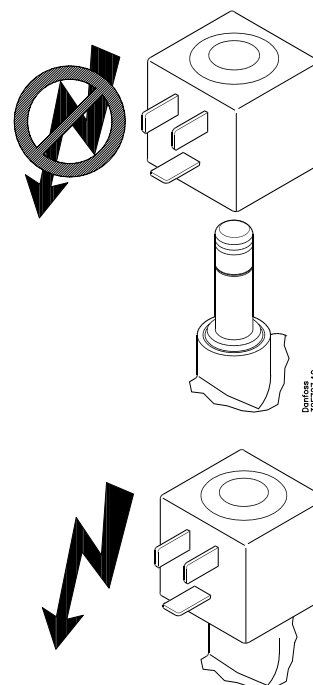


## Solenoid valves

EVU 1 to 8, EVUB and EVUF NC (Normally Closed)



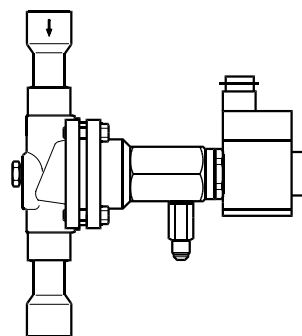
Be sure that the O-ring is in place



Max. opening differential pressure MOPD:  
Max. working pressure:  
Max. temperature of medium:  
Ambient temperature :

Coil dependent  
70 barg / 1014 psig  
-40°C to +105°C / -40°F to +220°F  
-40°C to +60°C / -40°F to +140°F

**Solenoid valve**  
**PKVD**



Max. 140°C  
(285°F)



PKVD	Nm	ft-lbs
12	$10^{+2}_0$	$7.5^{+1.5}_0$
15	$15^{+2}_0$	$11^{+1.5}_0$
20	$15^{+2}_0$	$11^{+1.5}_0$

RI3MA200





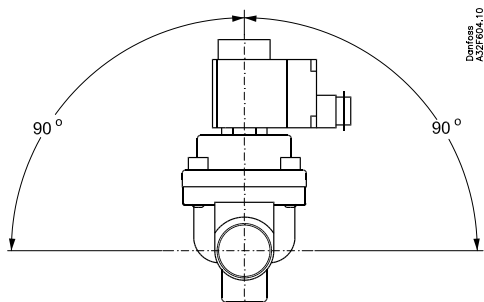
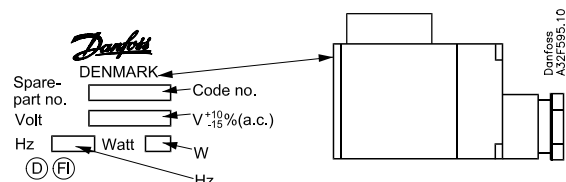
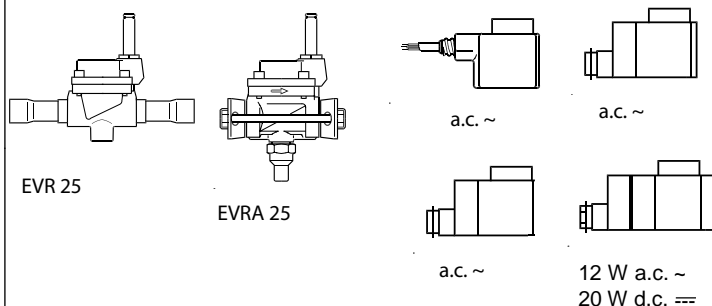
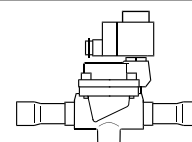
# Instructions

032R9520

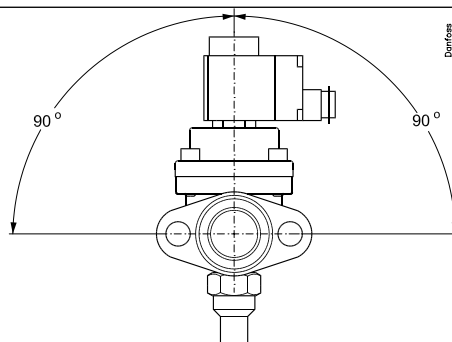
032R9520

## Solenoid valves

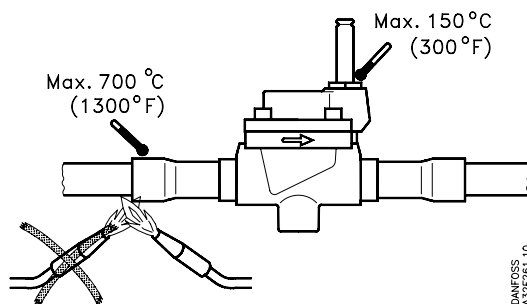
### EVR 25, EVRA 25



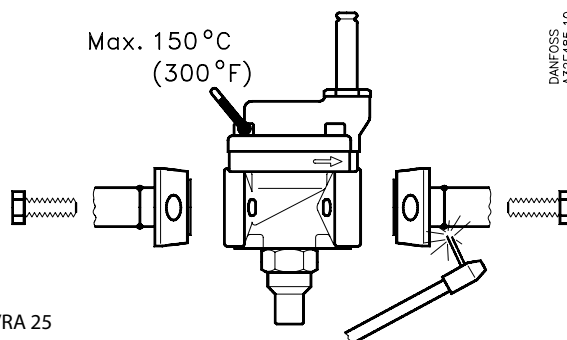
EVR 25



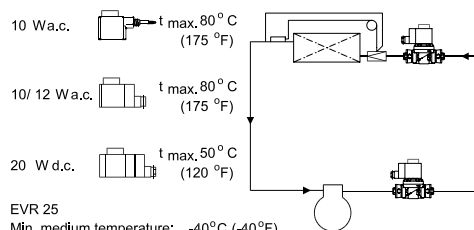
EVRA 25



EVR 25

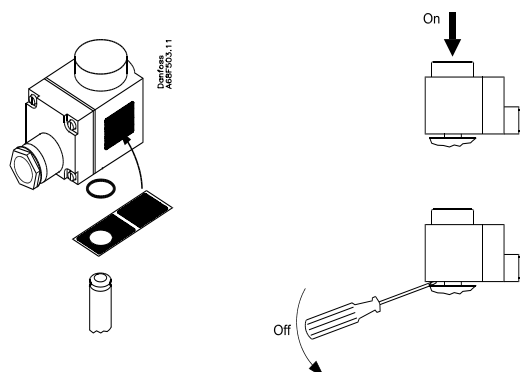
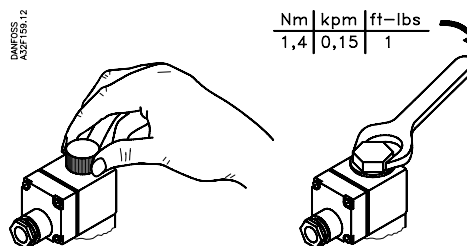


EVRA 25



**EVR 25**  
Min. medium temperature:  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ )  
Max. medium temperature:  $105^{\circ}\text{C}$  ( $221^{\circ}\text{F}$ )  
Max. working pressure: PB=28 bar/ MW P 405 psig

**EVRA 25**  
Min. medium temperature:  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ )  
Max. medium temperature:  $105^{\circ}\text{C}$  ( $221^{\circ}\text{F}$ )  
Max. working pressure: PB=42 bar/ MW P 600 psig  
Max. opening diff. pressure (MOPD):



Nm	kpm	ft-lbs
30	3.0	22.5

Nm	kpm	ft-lbs
50	5.0	37

Nm	kpm	ft-lbs
30	3.0	22.5

DANFOSS  
A3ZF278.10

EVR 25

Nm	kpm	ft-lbs
30	3.0	22.5

Nm	kpm	ft-lbs
60	6.0	45.0

Nm	kpm	ft-lbs
50	5.0	37

Nm	kpm	ft-lbs
30	3.0	22.5

DANFOSS  
A3ZF487.10

EVRA 25

EVR 25

DANFOSS  
A3ZF608.10

EVR 25

DANFOSS  
A3ZF608.10

EVRA 25

DANFOSS  
A3ZF608.10

EVRA 25 (NC)

DANFOSS  
A3ZF278.11

# Instructions

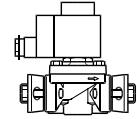
**Danfoss**

032R9519

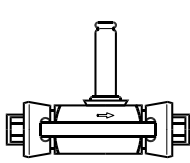
032R9519

## Solenoid valves

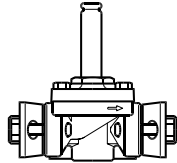
EVRA 3 - 20  
EVRAT 10 - 20



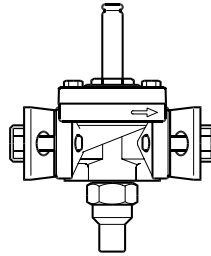
R 717 (NH<sub>3</sub>), HFC, HCFC, CFC



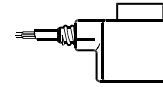
EVRA 3



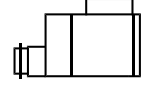
EVRA 10/EVRAT 10



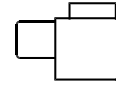
EVRA 10, 15, 20/EVRAT 10, 15, 20



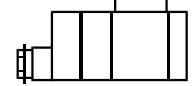
a.c. ~



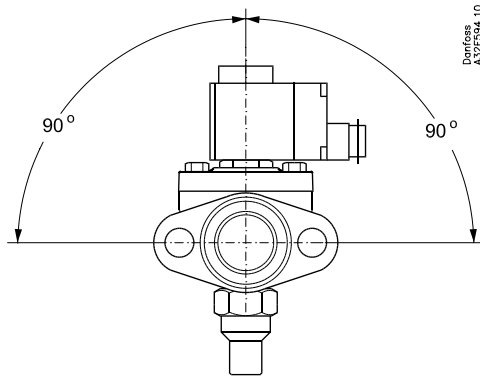
a.c. ~



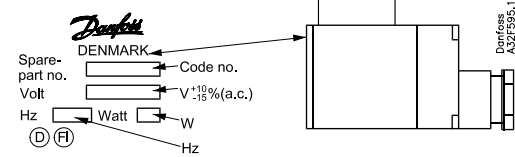
a.c. ~



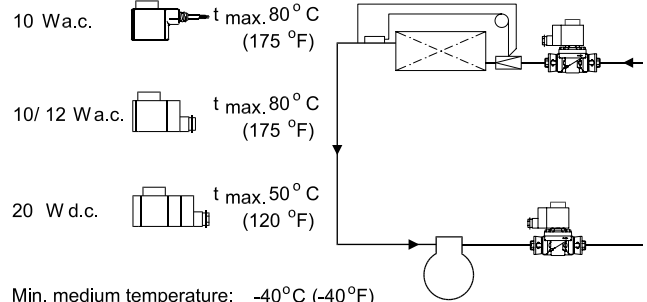
12 W a.c. ~  
20 W d.c. ==



Danfoss  
A32F594.10



Danfoss  
A32F595.10

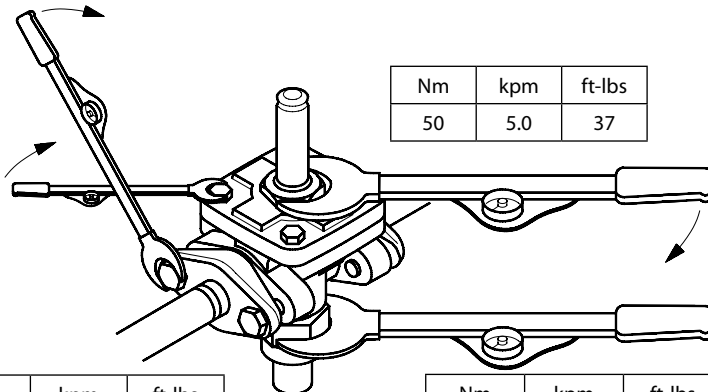


Min. medium temperature: -40 °C (-40 °F)  
 Max. medium temperature: 105 °C (221 °F)  
 Max. working pressure: PB=42 bar/ MWP 609 psig

Max. opening diff. pressure (MOPD):   
 Max. working pressure

Danfoss  
A32F680.11

Nm	kpm	ft-lbs
60	6.0	45.0

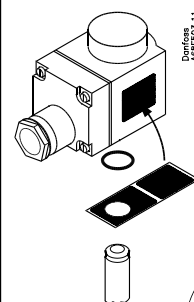
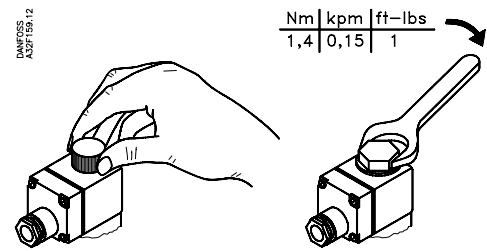


Nm	kpm	ft-lbs
50	5.0	37

Nm	kpm	ft-lbs
20	2.0	15

Nm	kpm	ft-lbs
30	3.0	22.5

DANFOSS  
A32F495.10

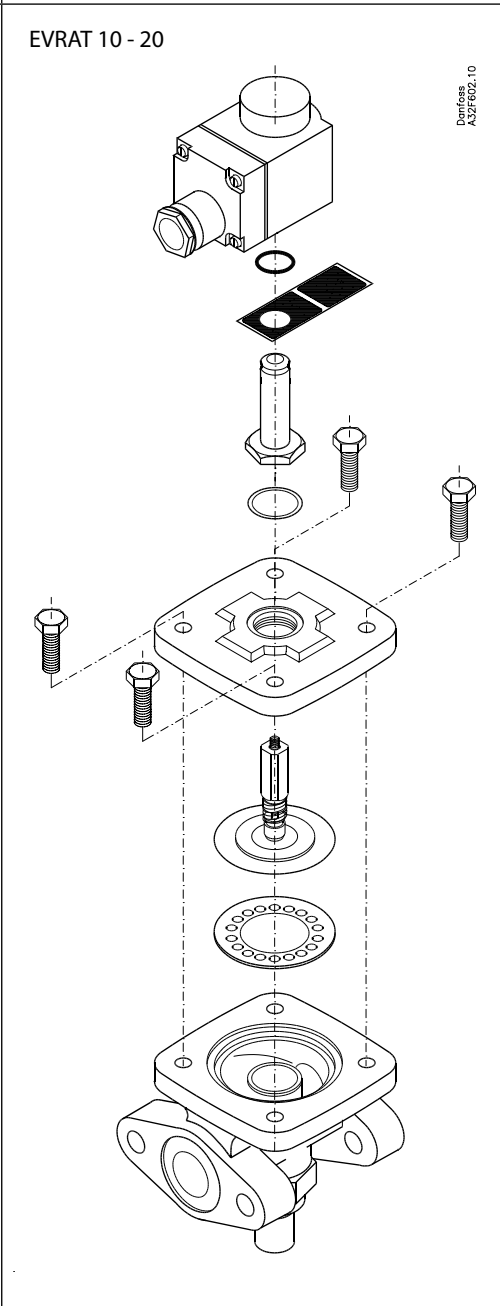
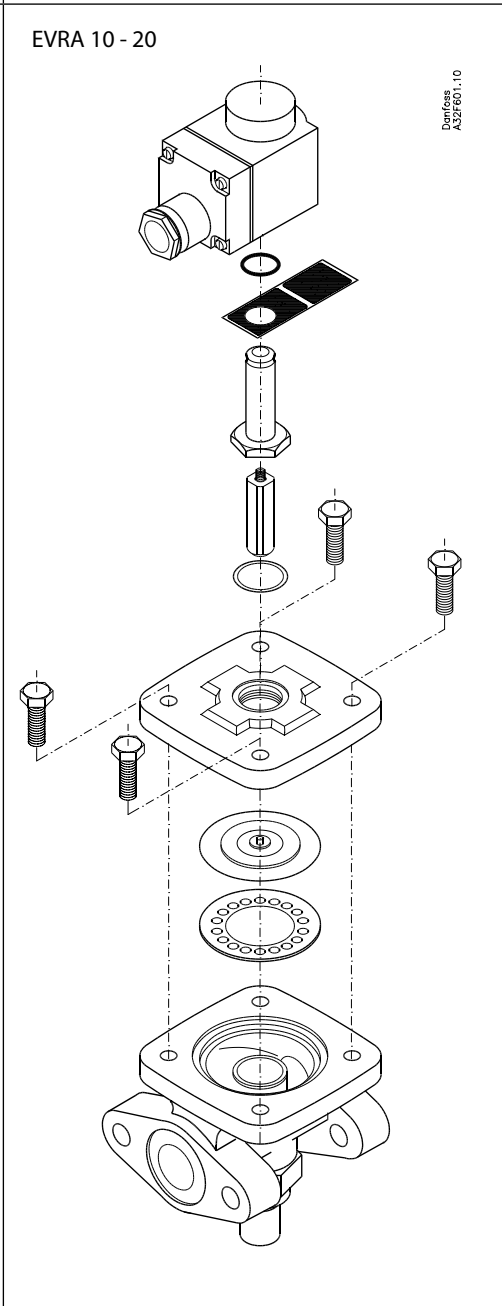
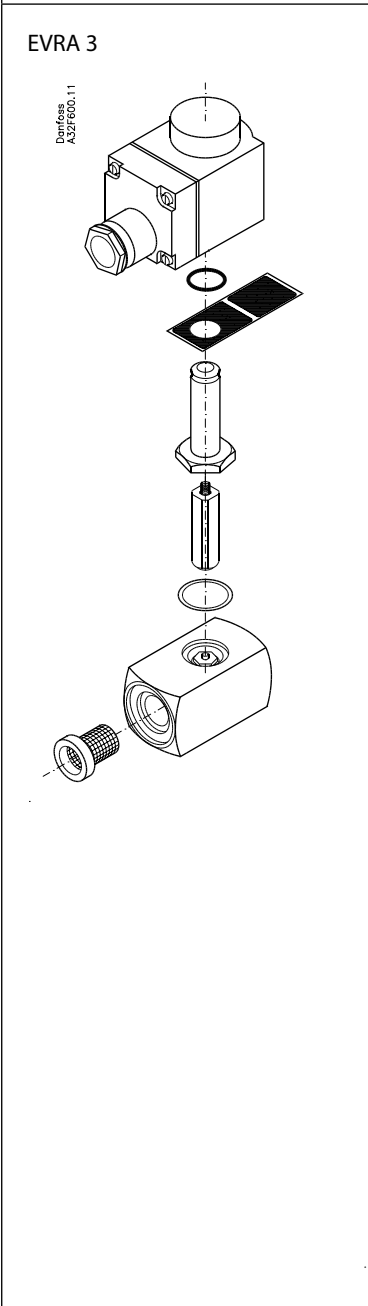
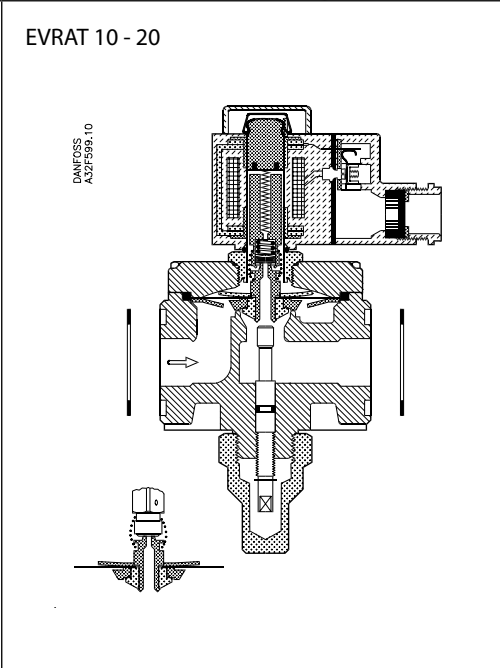
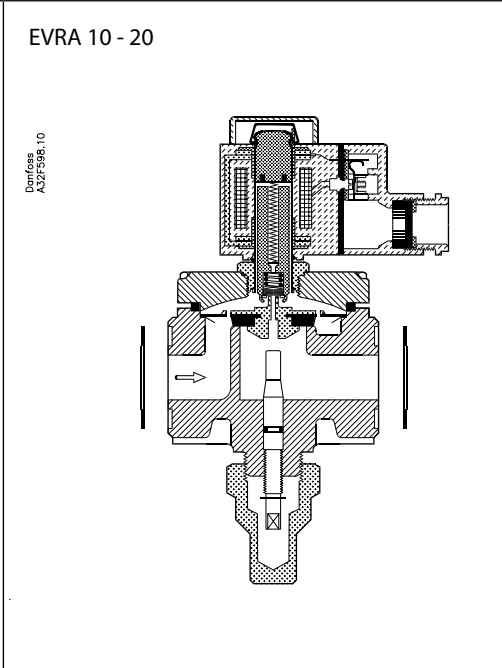
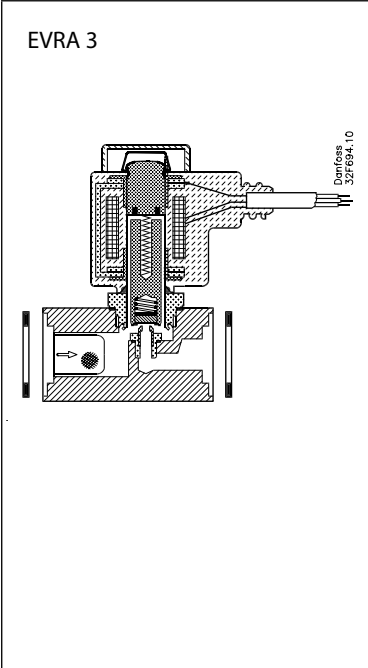


Off

On

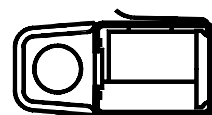
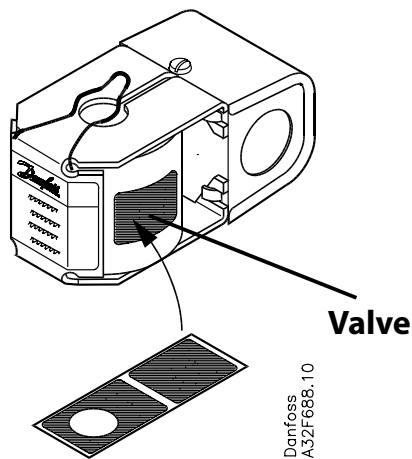
Off

Danfoss  
A32F594.10

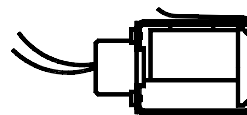


## Solenoid valves

Type EVRA/ EVM  
only used with U<sub>L</sub>-GP coil



Conduite coil

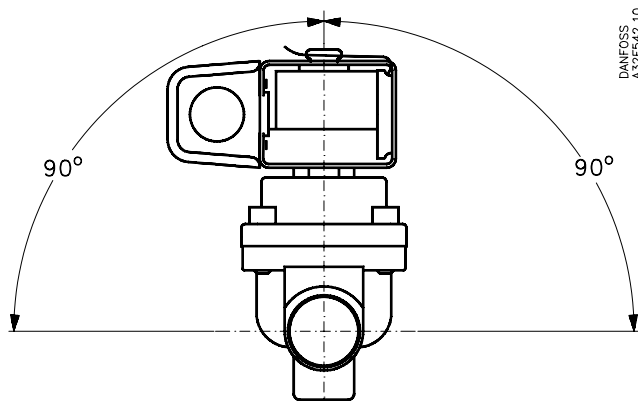


Junction box

### Caution

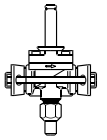
Wiring and fusing (when used) must comply with prevailing local and national wiring codes and ordinances

### Mounting position

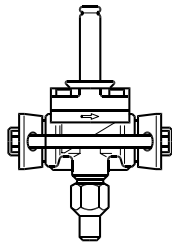


### Transformer selection

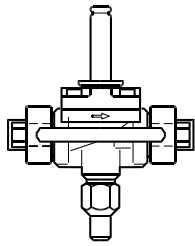
Coil		Inrush V - Amp.	Holding	
			W	V - Amp.
208-240 V	50-60 Hz	76	17.5	40
110-120 V	50-60 Hz			
24 V	60 Hz			
120/208 V	50-60 Hz			



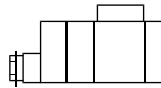
032R9669



EV RAT 10



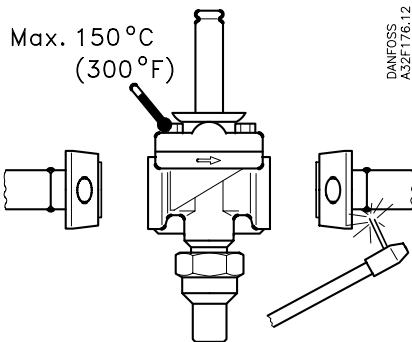
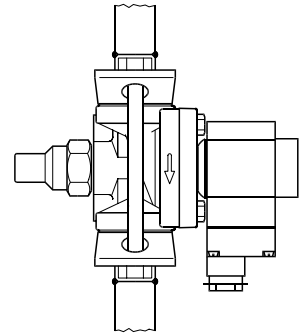
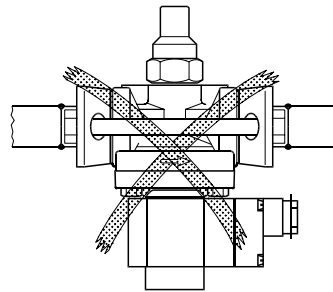
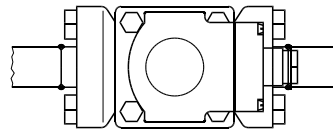
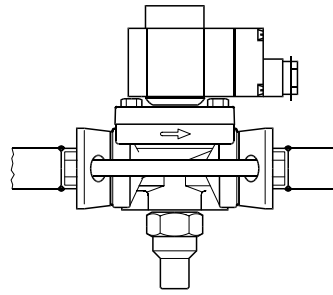
EV RAT 15, 20



12 V a.c.

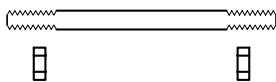
Danfoss  
A32F612.10

032R9669



Max. 150 °C  
(300 °F)

DANFOSS  
A32F176.12



12 W d.c.

t max. 50 °C  
(120 °F)



t min. -40 °C (-40 °F)

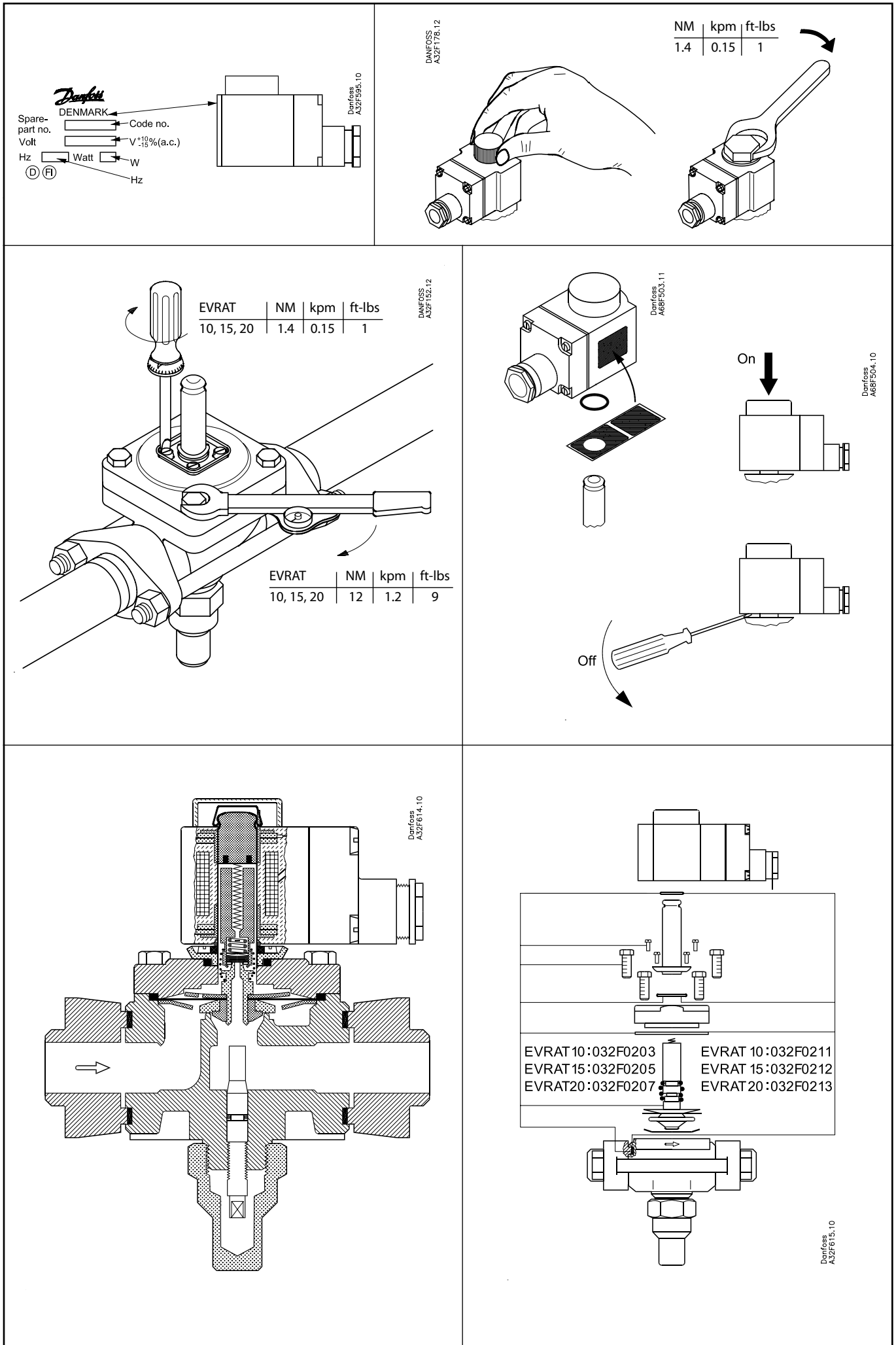
Min. medium temperature: EV RAT -40 °C (-40 °F)

Max. medium temperature: EV RAT 105 °C (221 °F)

Max. working pressure: PB=28 bar/ MWP 405 psig

Max. opening diff. pressure (MOPD): → 21 bar (300psig)

Danfoss  
A32F613.10



# Instructions



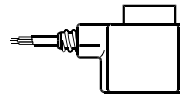
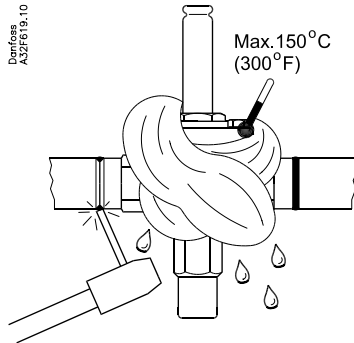
032R9513

032R9513

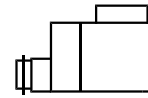
## Solenoid valve

### EVRS 3-20 and EVRST 10-20

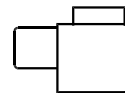
Body materiale Stainless steel  
1.4308 for EVRS 10/15/20  
1.4301 for EVRS 3



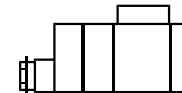
a.c.~



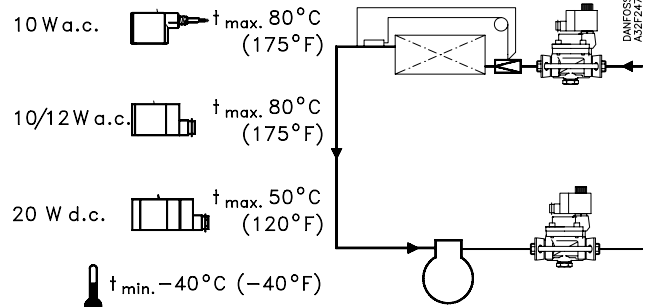
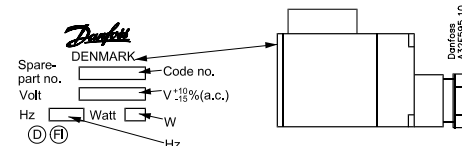
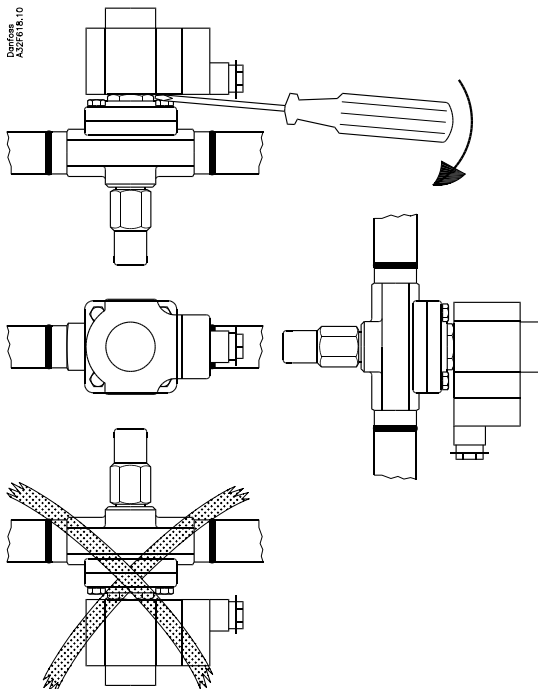
a.c.~



a.c.~



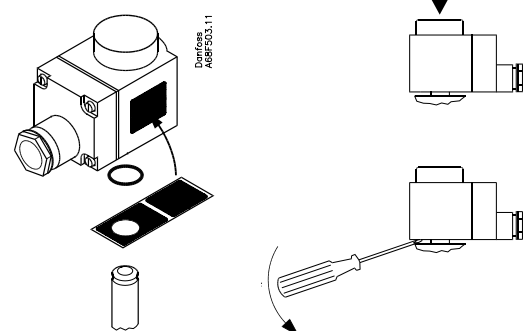
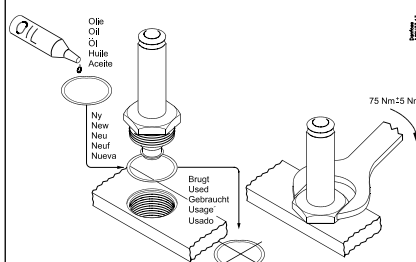
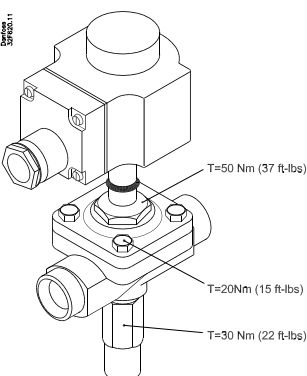
a.c.~



Min. medium temperature:  $-40^{\circ}C / -40^{\circ}F$   
 Max. medium temperature:  $105^{\circ}C / 221^{\circ}F$   
 Max. working pressure Ps: EVRS/T 3, 10, 15: 50 barg/ 725 psig  
 EVRST/20: 28 barg/ 406 psig for  
 032F3086 and 032F2237  
 50 barg/ 725 psig for 032F5437  
 and 032F5438

Max. opening diff. pressure:  $\longrightarrow$    
 Max. working pressure Ps:  $\longrightarrow$

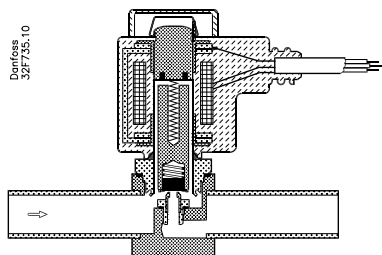
## Clip-on



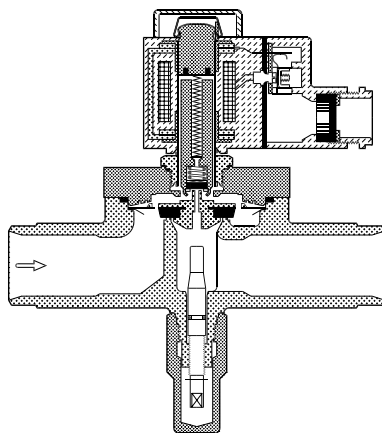


# Instructions

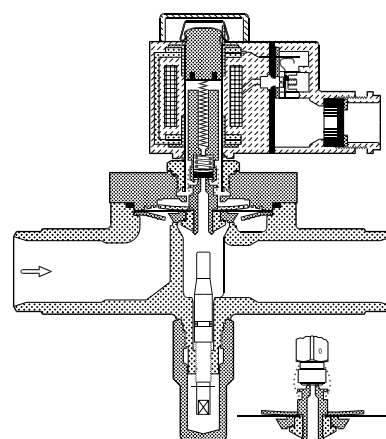
**EVRS 3**



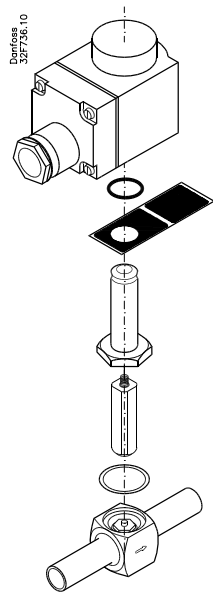
**EVRS 10-20**



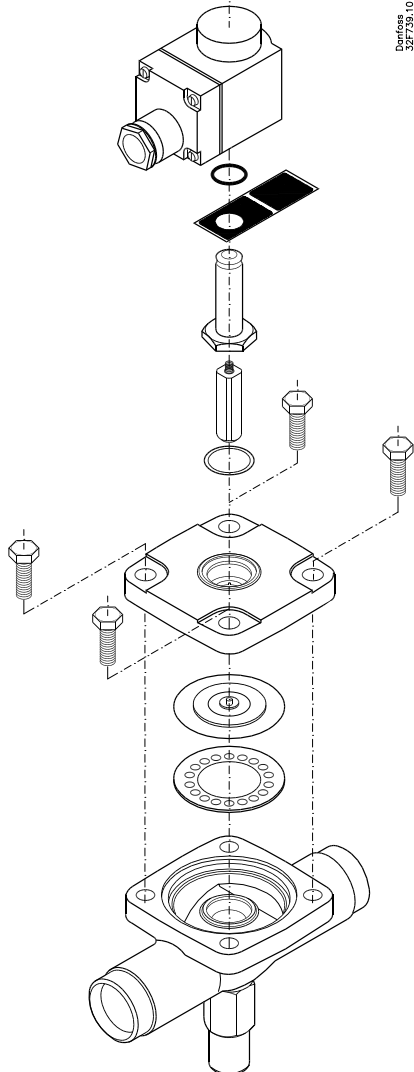
**EVRST 10-20**



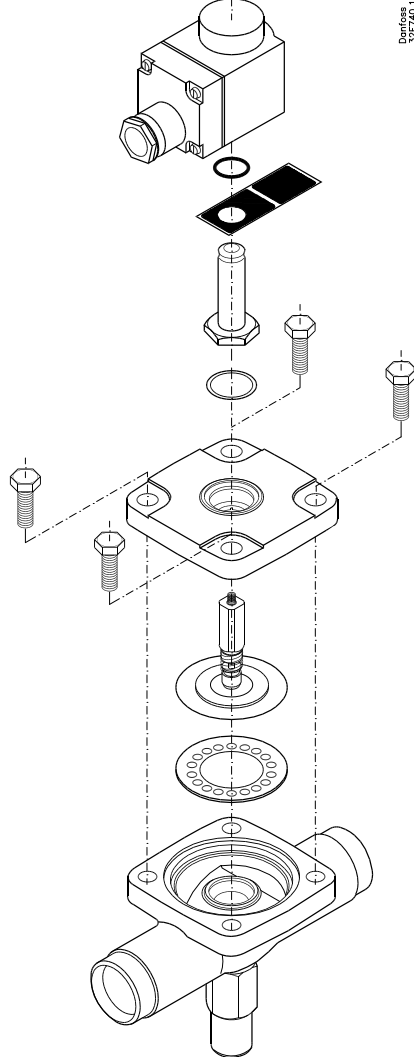
**EVRS 3**



**EVRS 10-20**



**EVRST 10-20**



#### Installation

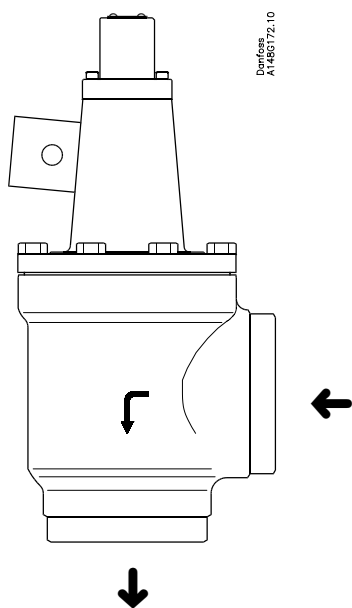


Fig. 1

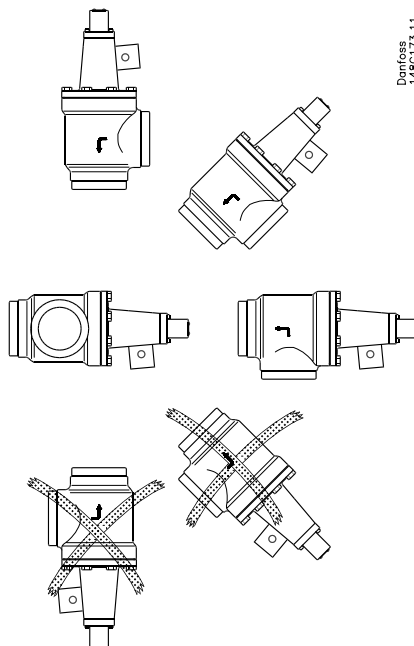


Fig. 2

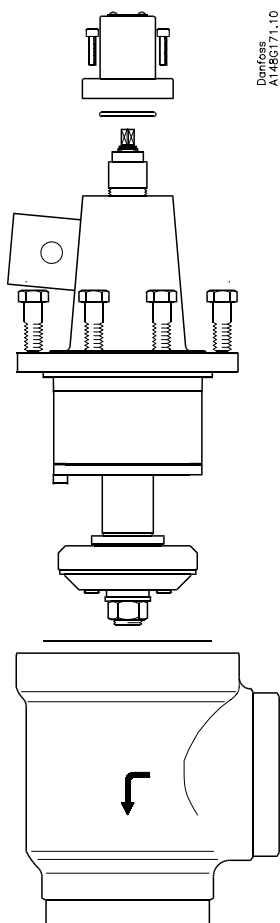


Fig. 3

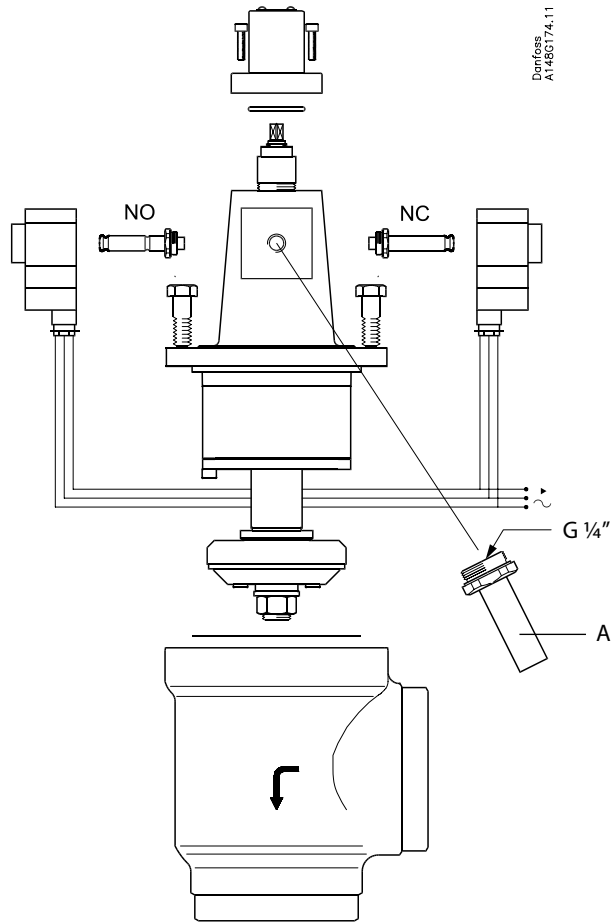
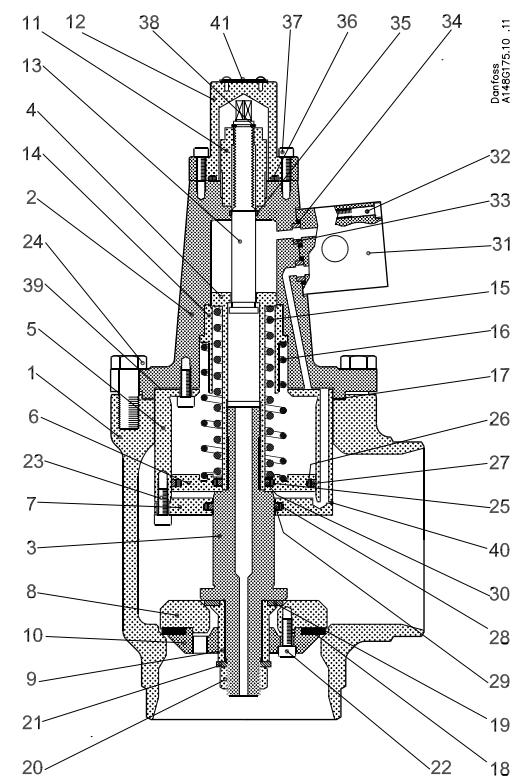


Fig. 4



Pos. 4	Nm	LB-feet
DN 80-100	30	22
DN 125-150	50	37

Pos. 24	Nm	LB-feet
DN 80	44	32
DN 100	75	55
DN 125-150	183	135

Fig. 5

Danfoss  
A148C175.10.10

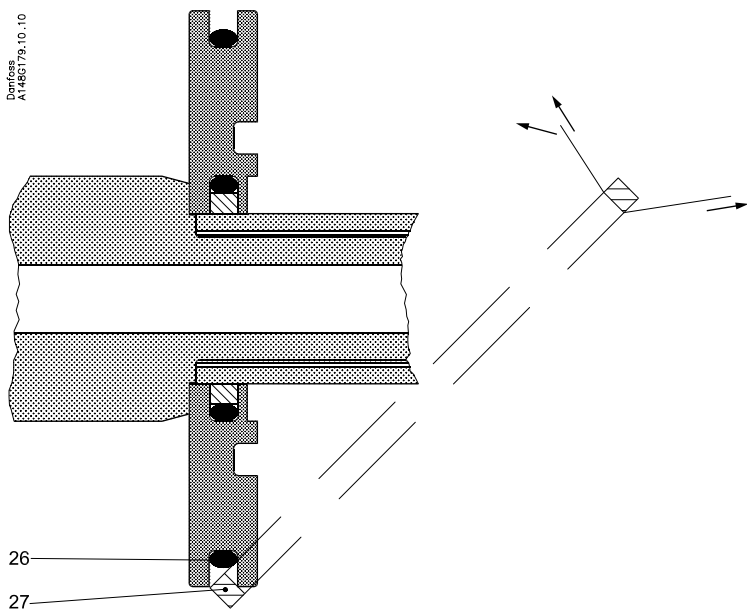


Fig. 6

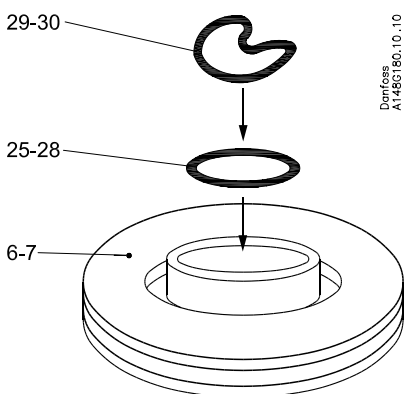


Fig. 7

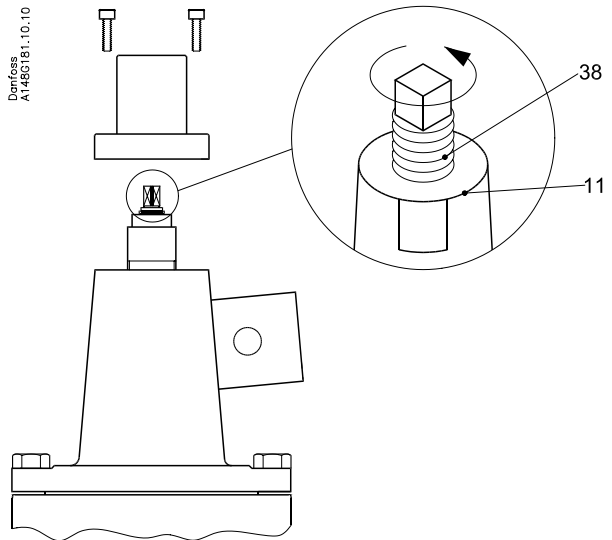


Fig. 8

## Installation

### Refrigerants

Applicable to all common non-flammable refrigerants, including R717 and noncorrosive gases/liquids dependent on sealing material compatibility. Flammable hydrocarbons are not recommended. The valves are only recommended for use in closed circuits. For further information please contact Danfoss.

### Temperature range

GPLX:  $-60^{\circ}/+150^{\circ}\text{C}$  ( $-76^{\circ}/+302^{\circ}\text{F}$ )

### Pressure range

GPLX: The valves are designed for a max. working pressure of 40 bar g (580 psi g).

### Installation

GPLX valves in sizes DN 80 to DN 150 can be installed as shown in fig. 2, i.e. in  $90^{\circ}$  from vertical position with pilot valve and side branch downwards. If there is welding slag and/or dirt in the system, it is strongly recommended to install strainers in connection with the GPLX valve.

The valve is designed to withstand a high internal pressure. However, the piping system should be designed to avoid liquid traps and reduce the risk of hydraulic pressure caused by thermal expansion. It must be ensured that the valve is protected from pressure transients like "liquid hammer" in the system.

**It is important always to install strainers in the pipes leading to the pilot valves.**

### Recommended flow direction (Fig. 1)

Important:

The flow direction must be from the side branch towards the cone.

### Welding (Fig. 3)

Remove the actuator before welding to prevent damage to the gasket (pos. 17) between the valve body and bonnet, as well as the teflon gasket (pos. 18, 19) in the valve seat. Only materials and welding methods, compatible with the valve housing material, must be welded to the valve housing. The valve should be cleaned internally to remove welding debris on completion of welding and before the valve is reassembled. Avoid welding debris and dirt in the threads of the housing and the bonnet. Removing the bonnet can be omitted provided that: The valve housing must be free from stresses (external loads) after installation.

**OBS: Be sure not to damage the teflon gasket (pos. 18, 19) and the spindle surface (pos. 3). If these parts are damaged the valve will leak.**

Removing the bonnet can be omitted provided that:

The temperature in the area between the valve body and bonnet during welding does not exceed  $+150^{\circ}\text{C}/+302^{\circ}\text{F}$ . This temperature depends on the welding method as well as on any cooling of the valve body during the welding itself. (Cooling can be ensured by, for example, wrapping a wet cloth around the valve body.) Make sure that no dirt, welding debris etc. get into the valve during the welding procedure.

Be careful not to damage the gasket (pos. 17).

The valve housing must be free from stresses (external loads) after installation.

GPLX valves must not be mounted in systems where the outlet side of the valve is open to atmosphere. The outlet side of the valve must always be connected to the system or properly capped off, for example with a welded-on end plate.

### Assembly (Fig. 5)

Remove welding slag and dirt from pipes and valve body.

**OBS: Only 1 hot gas supply is required (Pos. A on fig. 4); connect this supply to the pilot valve armature.**

### Colours and identification

The GPLX valves are painted with a yellow oxide primer in the factory and the external actuator top is zinc-chromated. Precise identification of the valve is made via the ID plate (pos. 41) at the top of the cap (pos. 12), as well as by the stamping on the valve body. The external surface of the valve housing must be prevented against corrosion with a suitable protective coating after installation and assembly.

Protection of the ID plate when repainting the valve is recommended.

## Maintenance

### Replacement of sealing elements - disassembling of GPLX

Evacuate the pipe system in which the valve is installed. Switch off the pilot current and the hot gas supply. Remove the bolts (pos. 24). Remove the valve top (actuator).

### Replacement of teflon rings in the seat (Pos. 18 and pos. 19)

Remove the nut (pos. 20), the screw (pos. 22), the valve cone (pos. 8 and pos. 10), and remove the bushing (pos. 9). Replace the Teflon rings (pos. 18) and (pos. 19) and assemble the parts in reverse order.

### Replacement of sealing rings (pos. 27), (pos. 29) and (pos. 30)

**A.** Remove the cap (pos. 12) and the lock ring (pos. 38). Unscrew the spindle (pos. 13) clockwise till it is disengaged from the thread.

**B.** Unscrew the bolts (pos. 23). Pull the spindle (pos. 3) out of the valve top. Unscrew the bolt (pos. 4) clockwise. Remove the springs (pos. 15 and 16) and the spindle (pos. 13) and bushing (pos. 14). Pull out the piston (pos. 6) and guide (pos. 7).

**C. NB:** Handle the valve spindle very carefully, as any damage (e.g. scratches and marks) to the spindle may cause valve leakage.

**D.** Remove the sealing rings (pos. 27, 29 and 30). At renovation of the valve Danfoss recommends replacement of all sealing elements. The spare parts set for the GPLX valves includes all sealing elements.

**E.** Mount the O-ring (pos. 25, 28) and then the sealing ring (pos. 29, 30) as shown in fig 7. Important: Fold the sealing ring as shown. Be certain that there are no sharp folds and do not use tools to mount the sealing ring.

**F.** Mount the O-ring (pos. 26) and then the sealing ring (pos. 27) as shown in fig 6. In order not to damage the ring use 2 plastic strips to pull the ring to the right place.

**G.** Reassemble the actuator in reverse order: C-B-A. NB. Turn the piston (pos. 6) as shown on fig. 5.

### Manual opening (Fig. 8)

In case of power loss the GPLX valve will close (NC). The valve can be opened by hand, if the cap (pos. 12) is removed and the spindle (pos. 13) is turned anti-clockwise. To close the valve, turn the spindle (pos. 13) clockwise. The spindle (pos. 13) must be screwed to the lowest possible position (contact between spring ring (pos. 38) and thread bushing (pos. 11) during normal operation.

### Tightening (Fig. 4)

Tighten the bonnet with a torque wrench, to the values indicated in the table. Use only original Danfoss parts, O-rings and gaskets for replacement. Materials of new parts are certified for the relevant refrigerant. In cases of doubt, please contact Danfoss. Danfoss accepts no responsibility for errors and omissions. Danfoss Industrial Refrigeration reserves the right to make changes to products and specifications without prior notice.

**DECLARATION OF CONFORMITY**  
The Pressure Equipment Directive 97/23/EC



**Name and Address of Manufacturer within the European Community**

Danfoss Industrial Refrigeration A/S  
Stormosevej 10  
PO Box 60  
DK-8361 Hasselager  
Denmark

**Description of Pressure Equipment**

Refrigerant two step gas powered stop valve

**Type GPLX**

Nominal bore	<b>DN 80-150 mm.</b> (3 - 6 in.)	
Classified for	<b>Fluid Group I</b> (all refrigerants (toxic, nontoxic, flammable and nonflammable)). For further details / restrictions – see Installation Instruction.	
Temperature range and maximum allowable working pressure	Standard application	PS40 bar (580 psi) at –60°C/+150°C (–76°F/+302°F)

**Conformity and Assessment Procedure Followed**

Category	<b>II</b>		<b>III</b>	
Module	<b>D1</b>		<b>B1+D</b>	
Certificate ID	<b>D1:</b> 07 202 0511 Z 0009/1/H-0002		<b>B1:</b> 07 202 0124 Z 0289/2/0001 <b>D:</b> 07 202 0511 Z 0009/1/H-0001	
Normal bore	Standard application	DN 80 mm (3 in.)	DN100-150 mm (4-6 in.)	
	High pressure application	DN 80 mm (3 in.)	DN100-150 mm (4-6 in.)	

**Name and Address of the Notified Body which carried out the Inspection**

TÜV-Nord e.V.  
Grosse Bahnstrasse 31  
22525 Hamburg, Germany



**Name and Address of the Notified Body monitoring the Manufacturer's Quality Assurance System**

TÜV-Nord e.V.  
Grosse Bahnstrasse 31  
22525 Hamburg, Germany

**References of Harmonised Standards used**

EN 10028-3      EN 10213-3      EN 10222-4

**References of other Technical Standards and Specifications used**

prEN 12284      DIN 3158  
AD-Merkblätter      DIN 2840

**Authorised Person for the Manufacturer within the European Community**

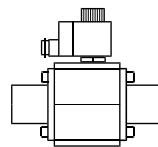
**Name:** Morten Steen Hansen

**Title:** Production Manager

**Signature:**

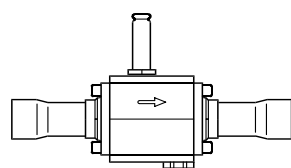
**Date:** 05/07/2002

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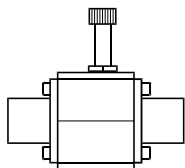


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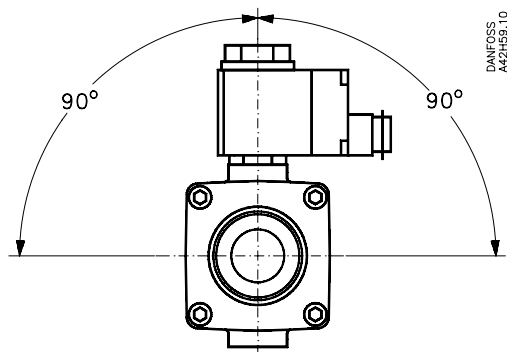
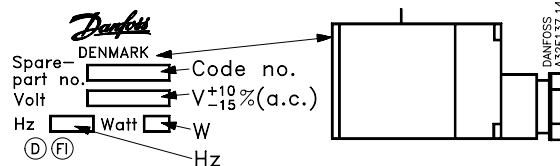
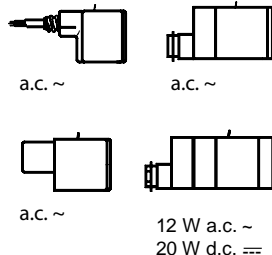
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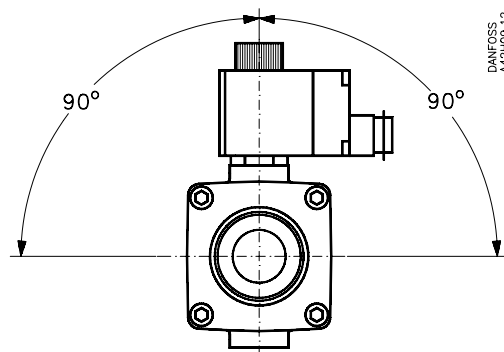
EVR 32/40



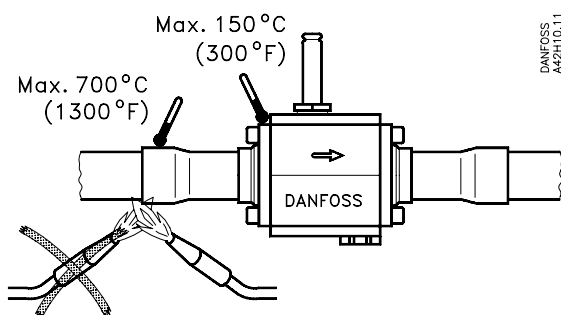
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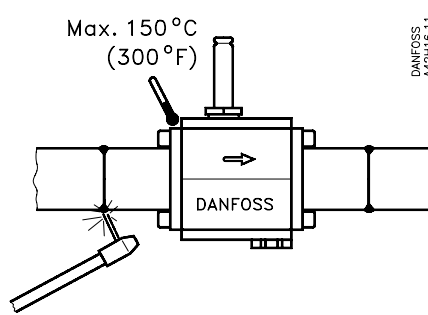
EVR 32/40



EVRA 32/40

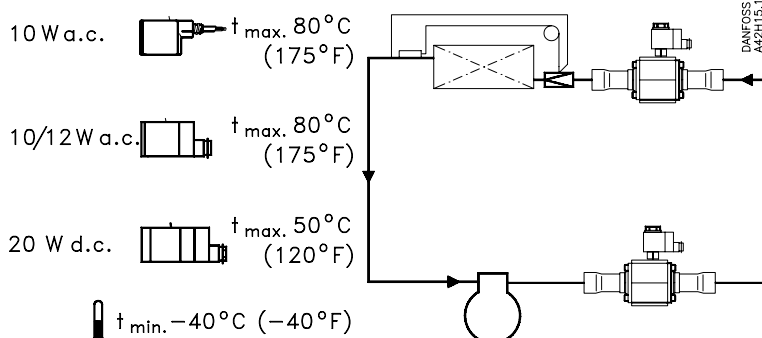


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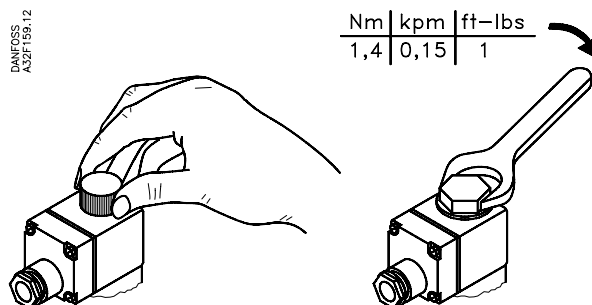


EVRA 32/40

#### EVR/EVRA

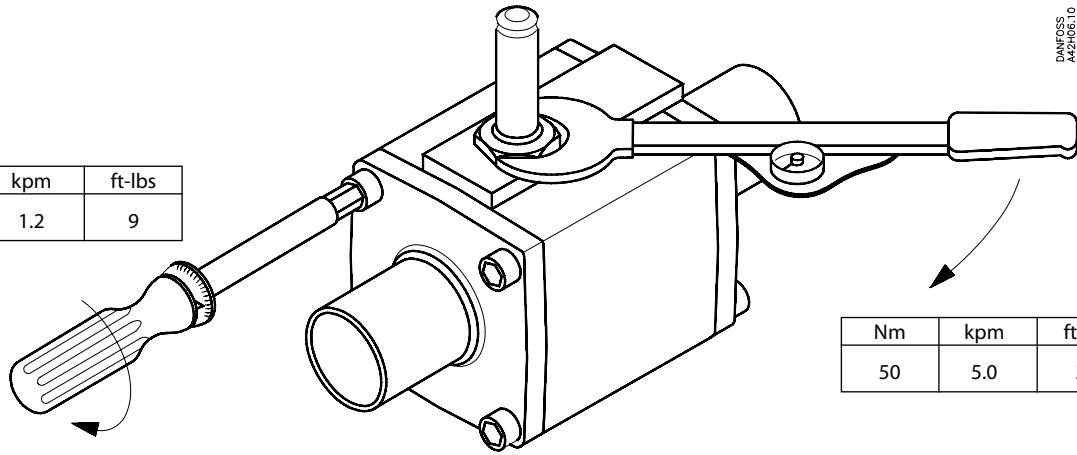


Min. medium temperature: -40°C (-40°F)  
Max. medium temperature: 105°C (220°F)  
Max working pressure: PB 28 Bar / MWP 405 psig  
Max opening diff. pressure (MOPD): →



Nm	kpm	ft-lbs
1,4	0,15	1

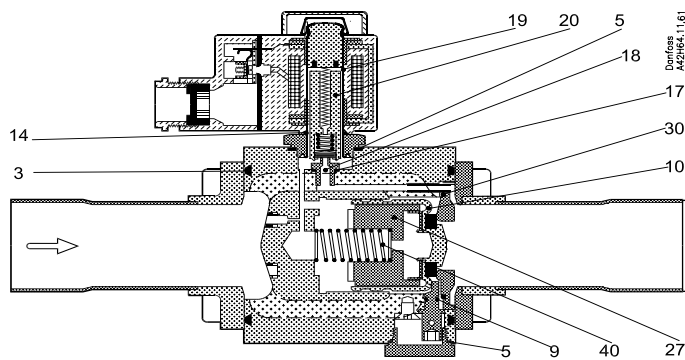
Nm	kpm	ft-lbs
12	1.2	9



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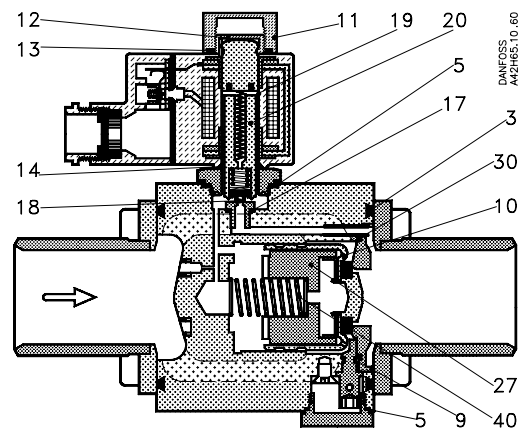
Nm	kpm	ft-lbs
50	5.0	37

EVR 32/40



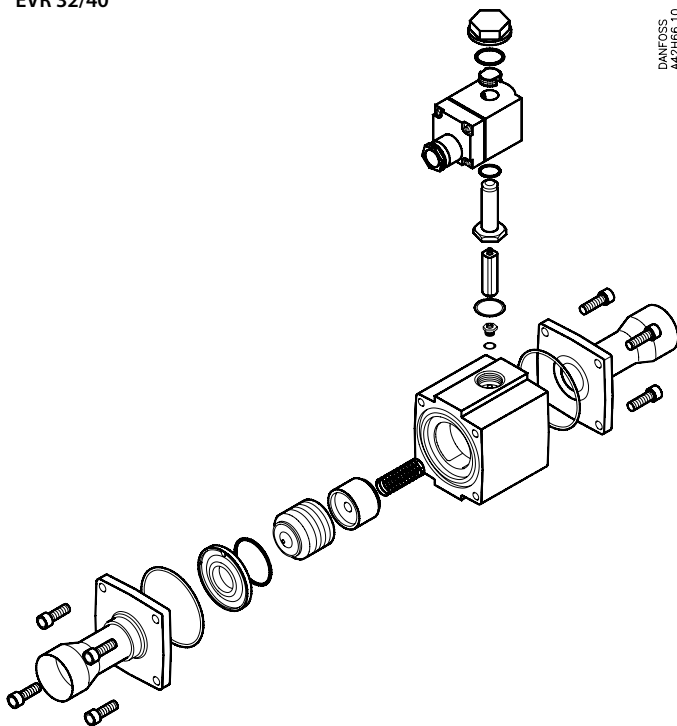
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EVRA 32/40



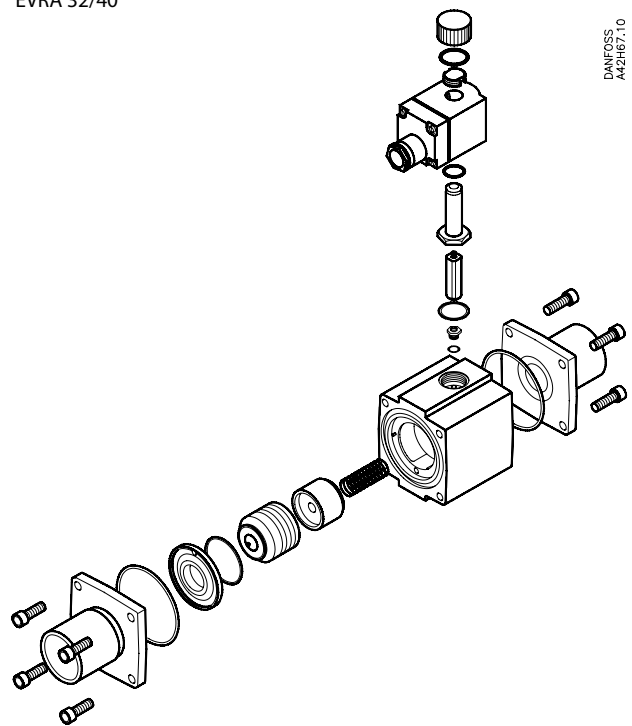
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EVR 32/40



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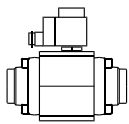
EVRA 32/40



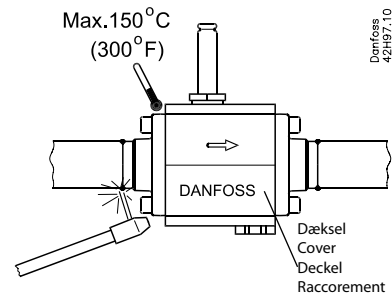
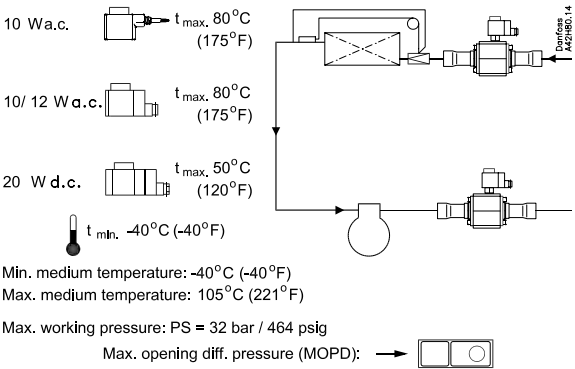
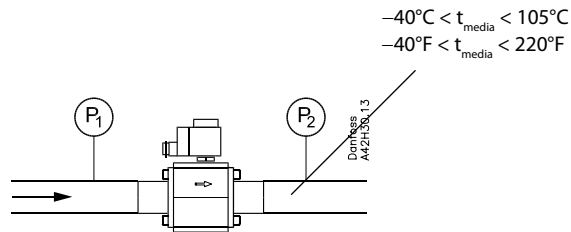
DANFOSS  
A42H67.10

Solenoid valves for ammonia

EVRA 32 / EVRA 40



Kølemidler/ Refrigerants/ Kältemittel/ Réfrigérants/Köldmedier: R717, HCFC, HFC



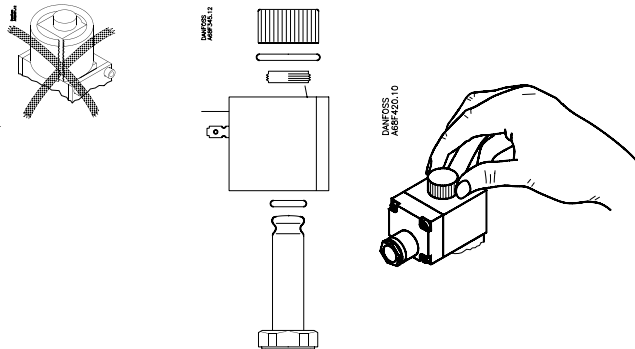
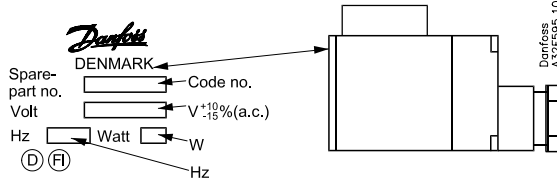
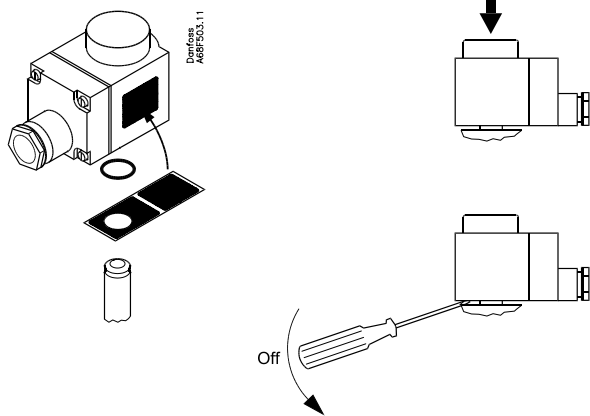
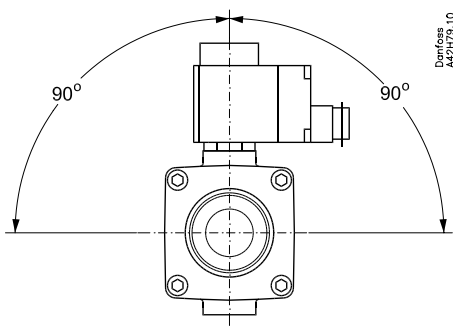
Dækselmateriale P285QH EN 10222-4. Ventilen skal indbygges spændingsløst i rørsystemet, og montagen må kun ske med kvalificeret personale og processer. Efter sammenføijningen bør ventilen overfladebehandles for at undgå korrosion.

Cover material P285QH EN 10222-4. Installation is to be carried out with qualified personnel and processes only. After welding, the valve should be surfaced to be corrosion-proof.

Deckelmateriale P285QH EN 10222-4. Der Einbau des Ventils muß im Leitungssystem spannungsfrei erfolgen und nur mit qualifiziertem Personal und Prozeß ausgeführt werden. Um Korrosion zu verhindern, ist nach dem Schweißen eine Oberflächenbehandlung auszuführen.

Les tubes de raccordement sont en acier type P 285 QH EN 10222-4. L'installation doit être réalisée suivant la procédure en vigueur, par du personnel qualifié. Après soudage les raccords doivent être protégés contre la corrosion.

Lock/Anslutning, materialP285QH EN 10222-4. Ventilen skall inmonteras i spänningslöst tillstånd i rørsystemet och monterat får endast ske av behörig personal enligt anvisningarna. Efter inmonteringen bör ventilen ytbehandlas för att skydda mot korrosion.





# Instructions

032R9532

032R9532

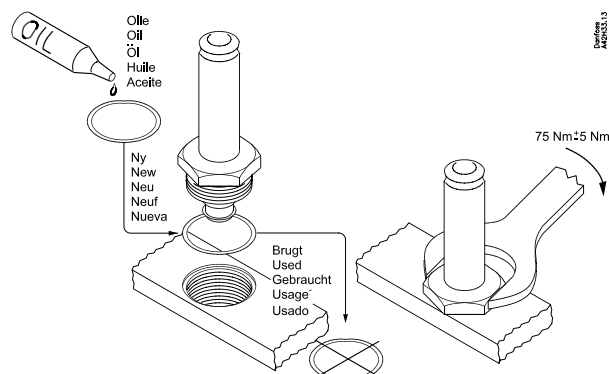
Pakning skal skiftes, hvis ventilen adskilles.

The gasket must be replaced if the valve is dismantled.

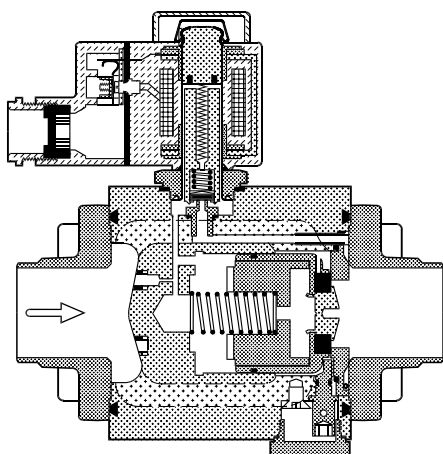
Bei der Demontage des Ventils, muß die Dichtung ausgewechselt werden.

Changer le joint chaque fois que la vanne est démontée.

Packning skall bytas om ventilen tas isär.

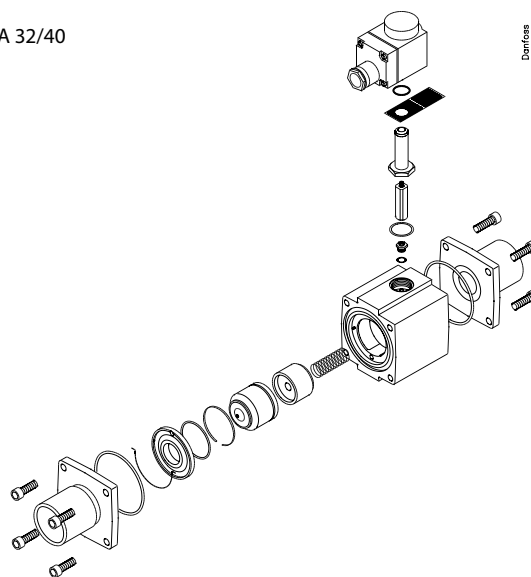


EVRA 32/40

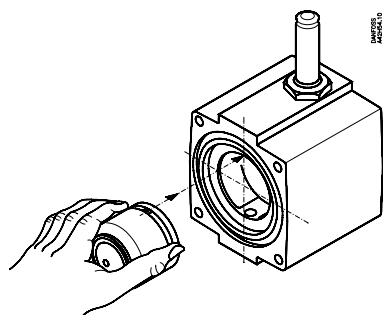


Danfoss  
A42H85-10

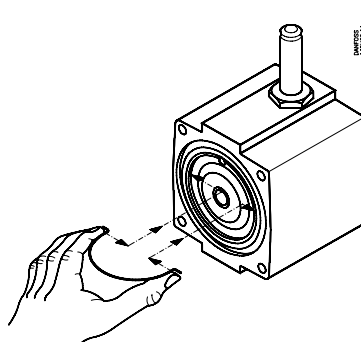
EVRA 32/40



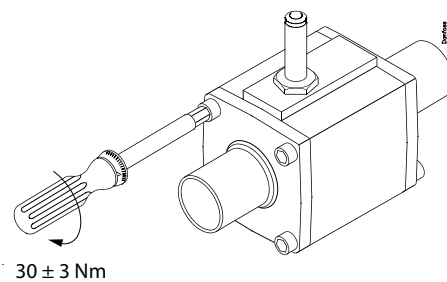
Danfoss  
A42H84-10



Danfoss  
A42H84-10



Danfoss  
A42H84-10



30 ± 3 Nm

Danfoss  
A42H84-10

## Dansk

Service på ventilen må ikke udføres, mens venti-len er under tryk.

Der bør kun anvendes ori-ginale Danfoss reserve-dele.

Al service og montage må kun udføres af autoriseret personale

## English

Do not carry out service when internal pressure is present in the valve.

Use only original Danfoss spare parts.

Only authorized personnel is to carry out all service and installation

## Deutsch

Service darf nicht aus-geführt werden, wenn das Ventil unter Druck ist.

Nur originale Danfoss Ersatzteile verwenden.

Service und Installation darf nur von autorisier-tem Personal ausgeführt werden.

## Francais

Ne pas démonter la vanne si celle-ci est sous pression

Utiliser uniquement des pièces détachées Danfoss

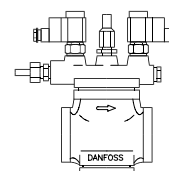
Ces vannes ne doivent être démontées que par du personnel autorisé.

## Svenska

Service på ventilen får inte utföras när ventilen är under tryck.

Använd alltid Danfoss ori-ginal reservedelar.

All service och montage får endast utföras av be-hörig personal.



027R9737

027R9737

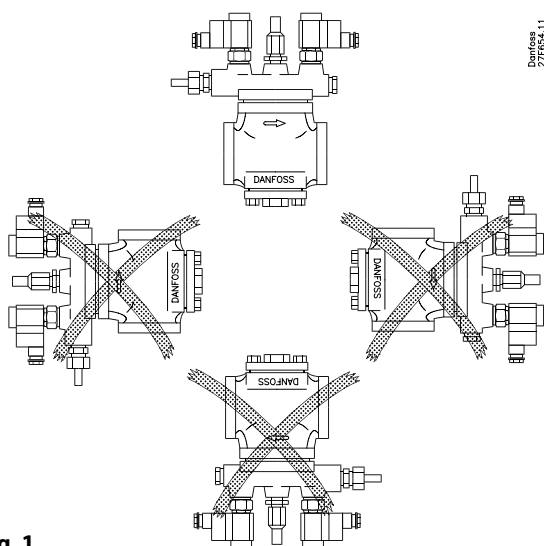


Fig. 1

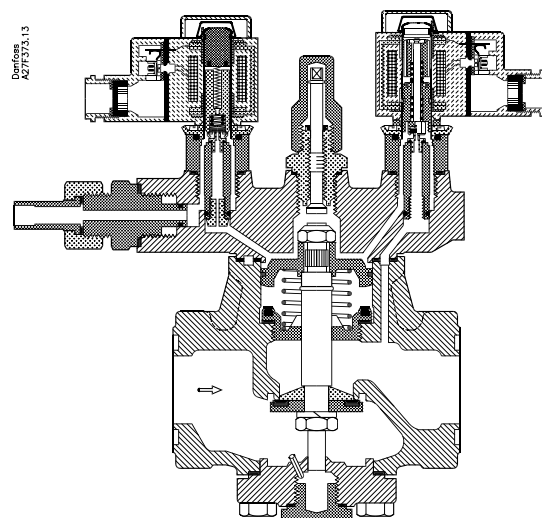


Fig. 2, PML NC/NC

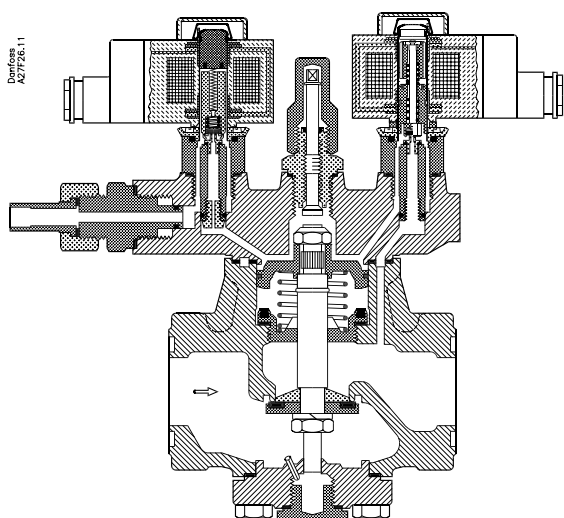
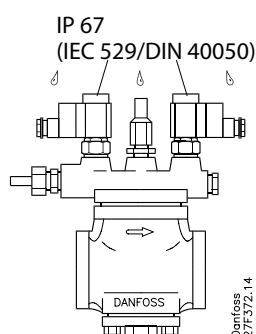




Fig. 3, PML NC/NO



$$120 > TB(^{\circ}C) \geq -60 \Rightarrow PB(bar) = 28$$

Fig. 5

Danfoss A27F372.1.1  
10/12 W a.c.  $\pm 10\%$    
Max. opening diff. pressure (MOPD) 21bar (300psig)  
  
20 W d.c.  $\pm 10\%$    
Max. opening diff. pressure (MOPD) 14bar (200psig)

$t_{min.} -40^{\circ}C$   
( $-40^{\circ}F$ )

$t_{max.} 80^{\circ}C$   
( $175^{\circ}F$ )

$t_{min.} -40^{\circ}C$   
( $-40^{\circ}F$ )

$t_{max.} 50^{\circ}C$   
( $120^{\circ}F$ )

Fig. 6

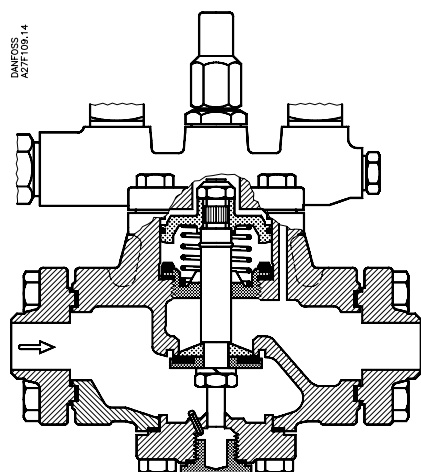


Fig. 4, PML


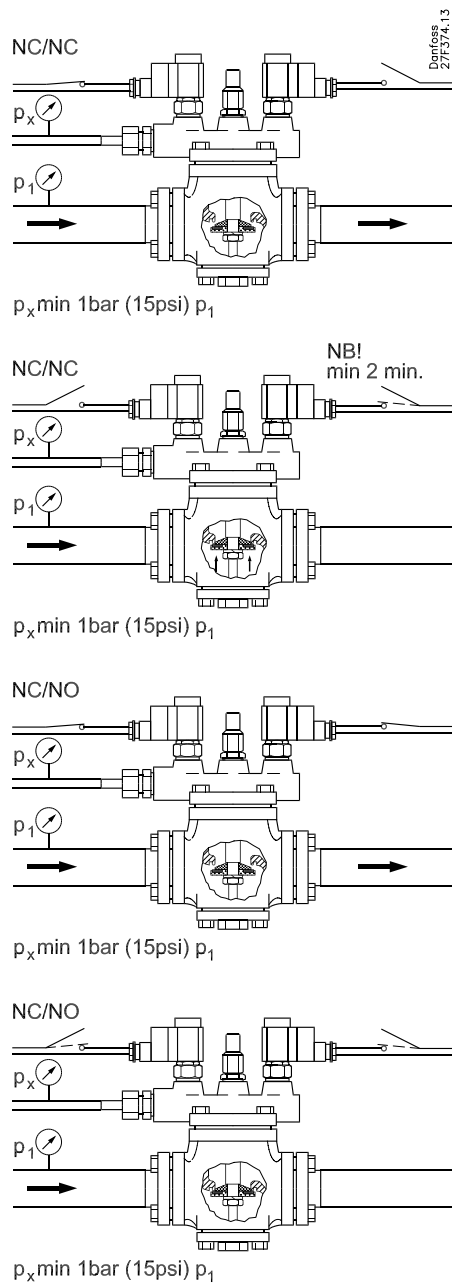
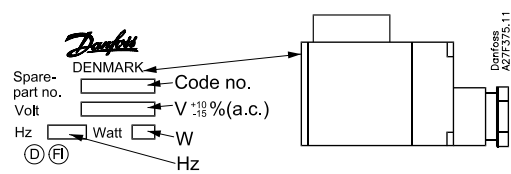
Pos. item				DANFOSSE 1421035611		
				Nm	kpm	lbf-ft
				10	1	7.4
	Tightening Torque in Nm					
	PML 32	PML 40	PML 50	PML 65		
a	50					
b	50					
c	50					
e	60			80		
e	45	60			80	
f	55			60		
g	30					
h	60				100	

Table 1



**Fig. 7**



**Fig. 8**

---

**Installation**


---

**Refrigerants**

Applicable to all common non-flammable refrigerants, including R717 and non-corrosive gases/liquids dependent on sealing material compatibility. Flammable hydrocarbons are not recommended. The valve is only recommended for use in closed circuits. For further information please contact Danfoss.

**Temperature range**

PML: -60/+120°C (-76/+248°F)

**Pressure range (fig. 5)**

PML: The valves are designed for a max. working pressure of 28 bar g (406 psi g).

**Technical data**

The PML can be used in suction, liquid, hot-gas and liquid/vapour lines. The PML regulates the flow of the medium by on/off function, depending on the control impulse from the screwed-on pilot valves. The PML has three connections for pilot valves: two in series, marked "S I" and "S II", and one in parallel with these two, marked "P", see figs. 2 and 3.

**Installation**

Flange set for the PML is delivered separately. The valve must be installed with the arrow in the direction of the flow and the top cover upwards (fig. 4). The top cover can be rotated 4 X 90° in relation to the valve body.

The valve is fitted with a spindle for manual opening.

If an external pilot valve is used, the pilot line must be connected to the upper side of the main line so that any dirt and oil from the plant will not find its way into the pilot line.

The valve is designed to withstand a high internal pressure. However, the piping system should be designed to avoid liquid traps and reduce the risk of hydraulic pressure caused by thermal expansion. It must be ensured that the valve is protected from pressure transients like "liquid hammer" in the system.

**Welding**

If using welding flanges, only materials and welding methods, compatible with the flange material must be welded to the flanges. The flanges should be cleaned internally to remove welding debris on completion of welding and before the valve is inserted.

The valve housing and flanges must be free from stresses (external loads) after installation.

PML valves must not be mounted in systems where the outlet side of the valve is open to atmosphere. The outlet side of

the valve must always be connected to the system or properly capped off, for example with a welded-on end plate.

**Colours and identification**

The PML valves are Zinc-Chromated in the factory. If further corrosion protection is required, the valves can be painted. Precise identification of the valve is made via the ID plate on the top cover. The external surface of the valve housing must be prevented against corrosion with a suitable protective coating after installation and assembly.

Protection of the ID plate when repainting the valve is recommended.

---

**Maintenance**


---

**Service**

The PML valves are easy to dismantle and most of its parts are replaceable. When the bottom cover is removed, the strainer can be taken out for cleaning. Do not open the valve while the valve is still under pressure.

- Check that the O-ring has not been damaged.
- Check that the spindle is free of scratches and impact marks.
- If the teflon ring has been damaged, the parts must be replaced.

**Assembly**

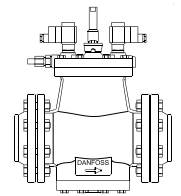
Remove any dirt from the body before the valve is assembled. Check that all channels in the valve are not blocked with articles or similar.

**Tightening***Tightening torques*

See fig. 4 and table 1.

Use only original Danfoss parts, including packing glands, O-rings and gaskets for replacement. Materials of new parts are certified for the relevant refrigerant.

In cases of doubt, please contact Danfoss. Danfoss accepts no responsibility for errors and omissions. Danfoss Industrial Refrigeration reserves the right to make changes to products and specifications without prior notice.



027R9523

027R9523

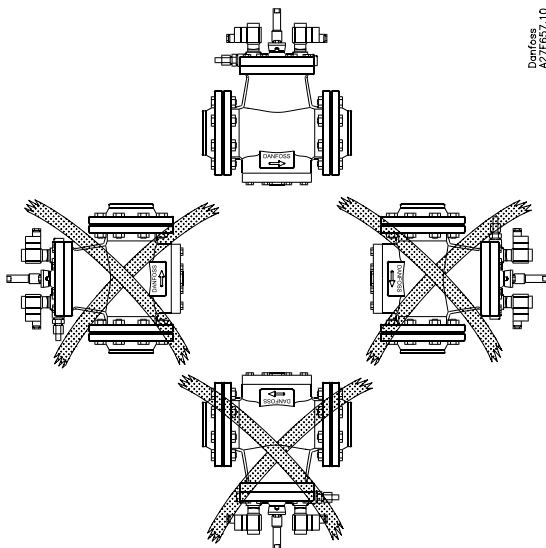


Fig. 1

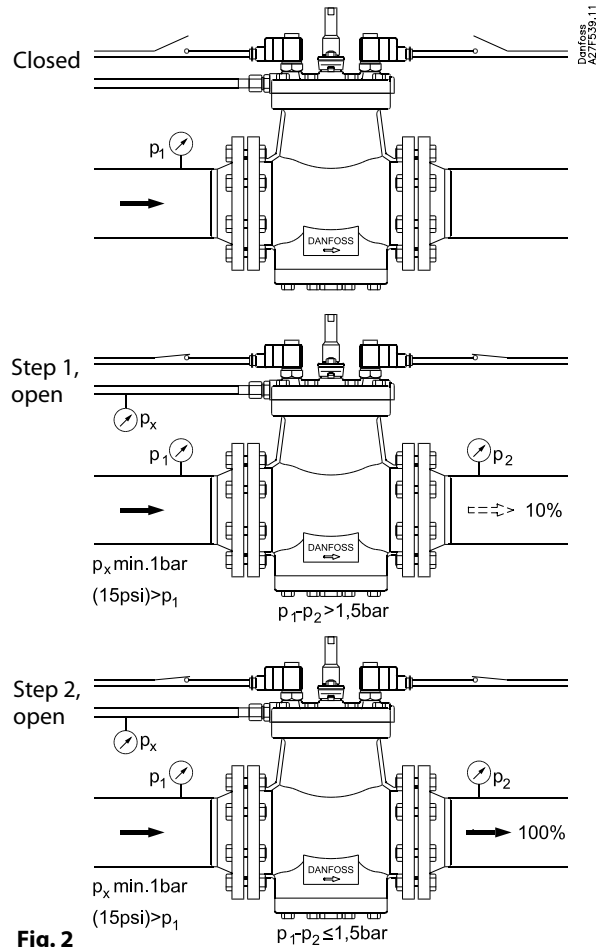


Fig. 2

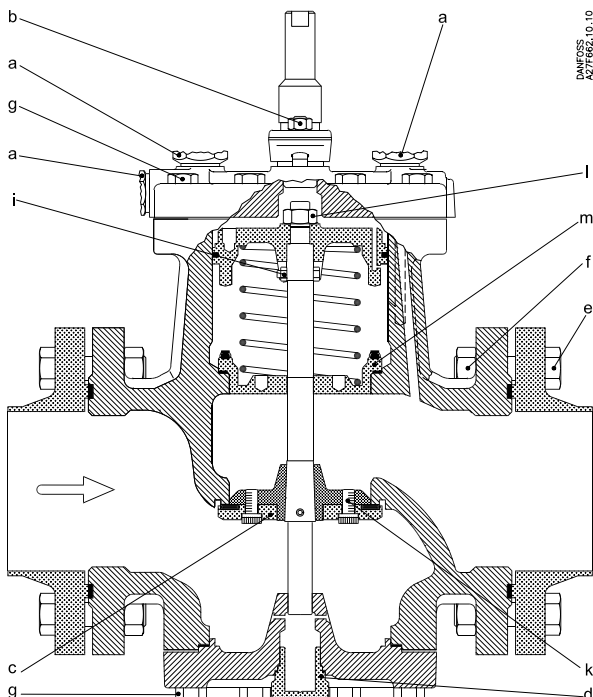
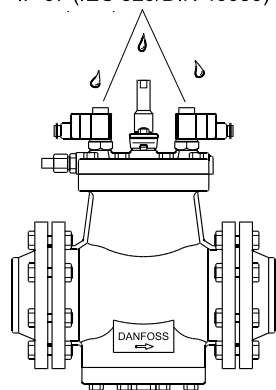


Fig. 3

Pos. item	Torque		
	Nm	kpm	lbf-ft
	10	1	7.4
Tightening Torque in Nm			
	80	100	125
a	50		
b	65		
c	25		
d	140		
e	80	80	125
f	105	135	200
g	75	80	125
i	9		
k	25	40	60
l	45	60	90
m	150	220	310

Table 1

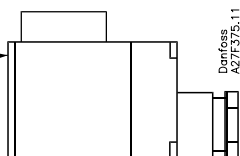
IP 67 (IEC 529/DIN 40050)



Danfoss  
A27F379.12

$140 > T_B(^{\circ}C) \geq 10 \Rightarrow P_B(bar) = 28$   
 $-10 > T_B(^{\circ}C) > 50 \Rightarrow P_B(bar) = 21$

**Danfoss**  
 DENMARK  
 Spare-part no.   
 Volt   
 Hz  Watt   
 (D) (F) Hz



Danfoss  
A27F375.11

Fig. 4

Danfoss  
A27F371.11

$10/12 \text{ W a.c.} \pm 10\%$



$t_{min.} -40^{\circ}C$   
 $(-40^{\circ}F)$

$t_{max.} 80^{\circ}C$   
 $(175^{\circ}F)$

Max. opening diff. pressure  
 (MOPD) 21bar (300psig)

$20 \text{ W d.c.} \pm 10\%$



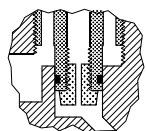
$t_{min.} -40^{\circ}C$   
 $(-40^{\circ}F)$

$t_{max.} 50^{\circ}C$   
 $(120^{\circ}F)$

Max. opening diff. pressure  
 (MOPD) 14bar (200psig)

Fig. 5

$p_x > p_1 + 2bar$



Danfoss  
A27F378.12

SII

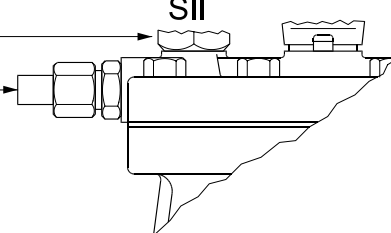


Fig. 6

## Installation

### Refrigerants

Applicable to all common non-flammable refrigerants, including R717 and non-corrosive gases/liquids dependent on sealing material compatibility. Flammable hydrocarbons are not recommended. The valve is only recommended for use in closed circuits. For further information please contact Danfoss.

### Temperature range

PML: -60/+120°C (-76/+248°F)

### Pressure range (fig. 5)

PML: The valves are designed for a max. working pressure of 28 bar g (406 psi g).

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The PML can be used in suction, liquid, hot-gas and liquid/vapour lines. The PML regulates the flow of the medium by on/off function, depending on the control impulse from the screwed-on pilot valves. The PML has three connections for pilot valves: two in series, marked "S I" and "S II", and one in parallel with these two, marked "P", see fig. 3.

### Installation

Flange set for the PML is delivered separately. The valve must be installed with the arrow in the direction of the flow and the top cover upwards (fig. 1). The top cover can be rotated 4 X 90° in relation to the valve body. The valve is fitted with a spindle for manual opening.

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the valve must always be connected to the system or properly capped off, for example with a welded-on end plate.

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Protection of the ID plate when repainting the valve is recommended.

## Maintenance

### Service

The PML valves are easy to dismantle and most of its parts are replaceable. When the bottom cover is removed, the strainer can be taken out for cleaning. Do not open the valve while the valve is still under pressure.

- Check that the O-ring has not been damaged.
- Check that the spindle is free of scratches and impact marks.
- If the teflon ring has been damaged, the parts must be replaced.

### Assembly

Remove any dirt from the body before the valve is assembled. Check that all channels in the valve are not blocked with particles or similar.

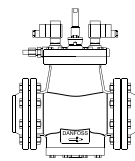
### Tightening

#### *Tightening torques*

See fig. 3 and table 1.

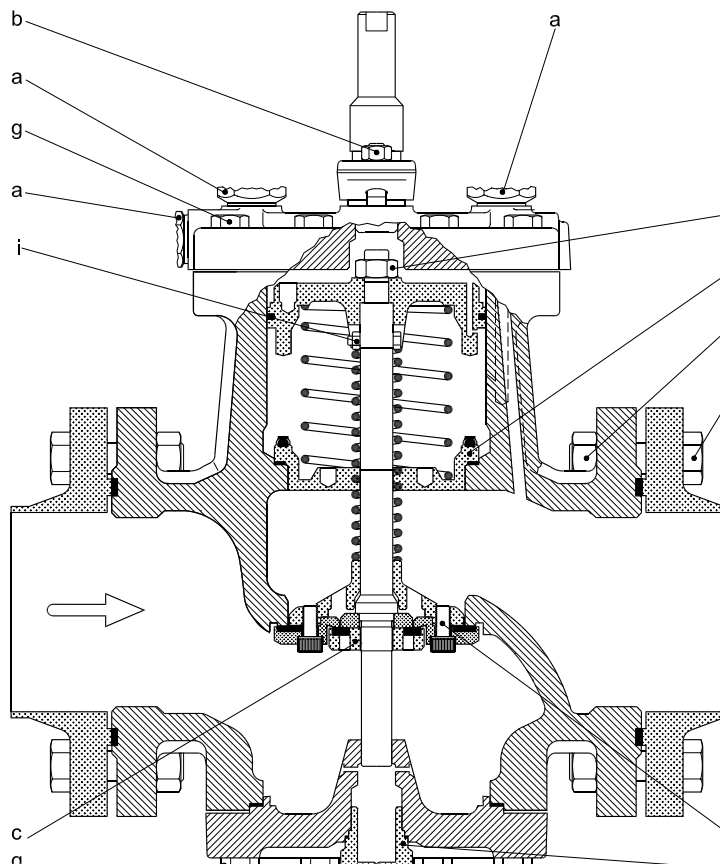
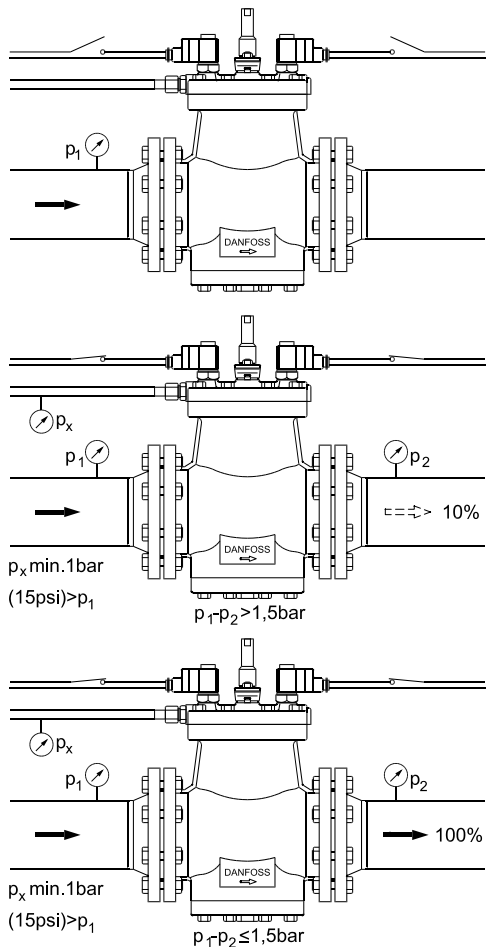
Use only original Danfoss parts, including packing glands, O-rings and gaskets for replacement. Materials of new parts are certified for the relevant refrigerant.

In cases of doubt, please contact Danfoss. Danfoss accepts no responsibility for errors and omissions. Danfoss Industrial Refrigeration reserves the right to make changes to products and specifications without prior notice.



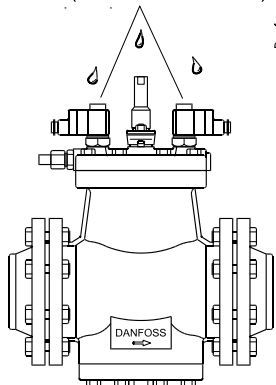
027R9740

R 12, R 22, R 502, R 717

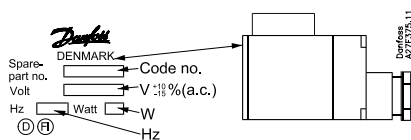


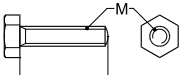

027R9740

IP 67 (IEC 529/DIN 40050)




140 > TB(°C) ≥ 10 ⇒ PB(bar) = 28  
-10 > TB(°C) > 50 ⇒ PB(bar) = 21




Pos. Item.	Gevind Thread Gewinde Filetage					
			Nm 10	kpm 1	lbf-ft 7.4	
	PML					
	80	100	125	80	100	125
a	M 24 × 1.5			50		
b	M 12 × 1.75			65		
d	M 35 × 1.5			140		
e	M 20 × 2.5 L=70	M 20 × 2.5 L=75	M 24 × 3 L=80			
f	M 20 × 2,5		M 24 × 3	105	135	200
g	M 14 × 2 L=45	M 14 × 2 L=55	M 16 × 2 L=60	75	80	125
h	M 6 × 1 L=30		M 6 × 1 L=35			
i	M 6 × 1			9		
k	M 8 × 1.25 L=160	M 10 × 1.5 L=20	M 12 × 1.75 L=20	25	40	60
l	M 14 × 1.5	M 16 × 1.5	M 20 × 1.5	45	60	90
m	M 100 × 2	M 120 × 2	M 45 × 2	150	220	310
n	M 8 × 1.25	M 10 × 1.5	M 12 × 1.75			



Danfoss  
A2/F371.11

10/12 W a.c.  $\pm 10\%$  

Max. opening diff. pressure  
(MOPD) 21bar (300psig)

20 W d.c.  $\pm 10\%$  

Max. opening diff. pressure  
(MOPD) 14bar (200psig)

$t_{min.} -40^{\circ}\text{C}$   
( $-40^{\circ}\text{F}$ )

$t_{max.} 80^{\circ}\text{C}$   
( $175^{\circ}\text{F}$ )

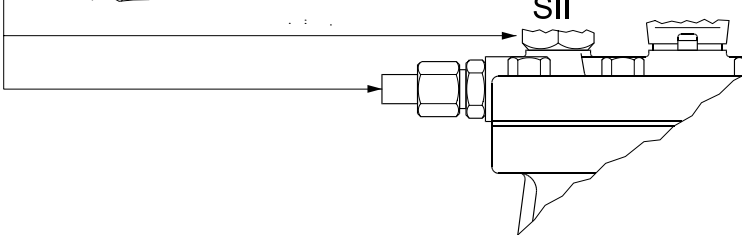
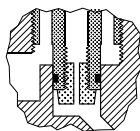
$t_{min.} -40^{\circ}\text{C}$   
( $-40^{\circ}\text{F}$ )

$t_{max.} 50^{\circ}\text{C}$   
( $120^{\circ}\text{F}$ )

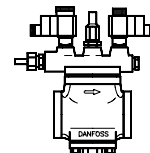
Min. medium temperature:  $-60^{\circ}\text{C}$  ( $-75^{\circ}\text{C}$ )

Max. medium temperature:  $120^{\circ}\text{C}$  ( $250^{\circ}\text{F}$ )

$p_x > p_1 + 2\text{bar}$



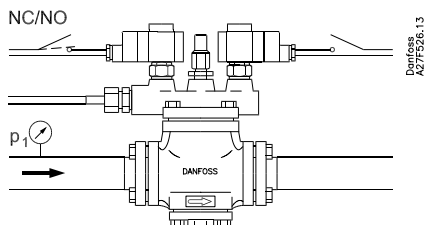
Reservedele: Se RX.3F.A  
Spare parts: See RX.3F.A  
Ersatzteile: Siehe RX.3F.A  
Pièces de rechange: Voir dans RX.3F.A



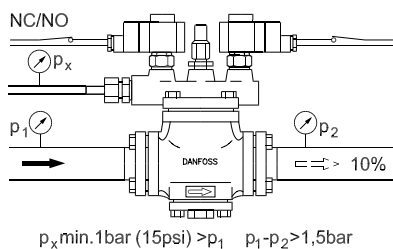
027R9511

027R9511

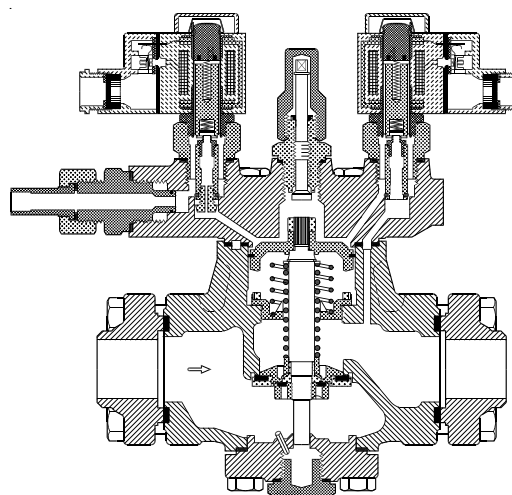
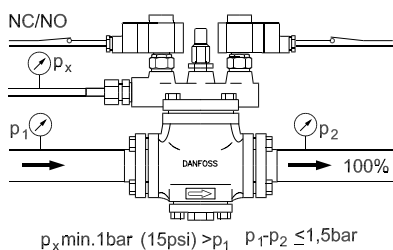
Closed

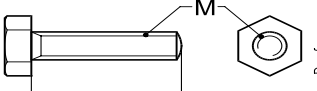
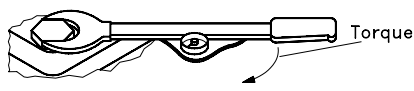


Step 1, open




Step 2, open



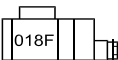
Pos. item								
	PMLX 32	PMLX 40	PMLX 50	PMLX 65	PMLX 32	PMLX 40	PMLX 50	PMLX 65
a	M24 × 1.5				50 Nm			
b	M20 × 1.5				50 Nm			
c	M24 × 1.5				50 Nm			
d	M12 × 1.75		M14 × 2	M14 × 2	60 Nm		80 Nm	
e	M10 × 1.5	M12 × 1.75		M14 × 2	45 Nm	60 Nm		80 Nm
f	M12 × 1.75		M16 × 2		55 Nm		60 Nm	60 Nm
g	M12 × 1.5				30 Nm			
h	M48 × 1.5	M52 × 2	M64 × 2	M80 × 2	60 Nm	60 Nm	60 Nm	100 Nm

1 Nm = 0.1 kpm = 0.74 lbf-ft

Danfoss  
AZ7F371.11

10/12 W a.c.  $\pm 10\%$  

Max. opening diff. pressure  
(MOPD) 21bar (300psig)

20 W d.c.  $\pm 10\%$  

Max. opening diff. pressure  
(MOPD) 14bar (200psig)

$t_{min.} -40^{\circ}\text{C}$   
( $-40^{\circ}\text{F}$ )

$t_{max.} 80^{\circ}\text{C}$   
( $175^{\circ}\text{F}$ )

$t_{min.} -40^{\circ}\text{C}$   
( $-40^{\circ}\text{F}$ )

$t_{max.} 50^{\circ}\text{C}$   
( $120^{\circ}\text{F}$ )

**Danfoss**

DENMARK

Spare-part no.

Volt

Hz

Watt

Hz

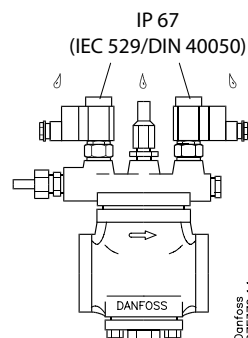
Code no.

$V \pm 10\%$  (a.c.)

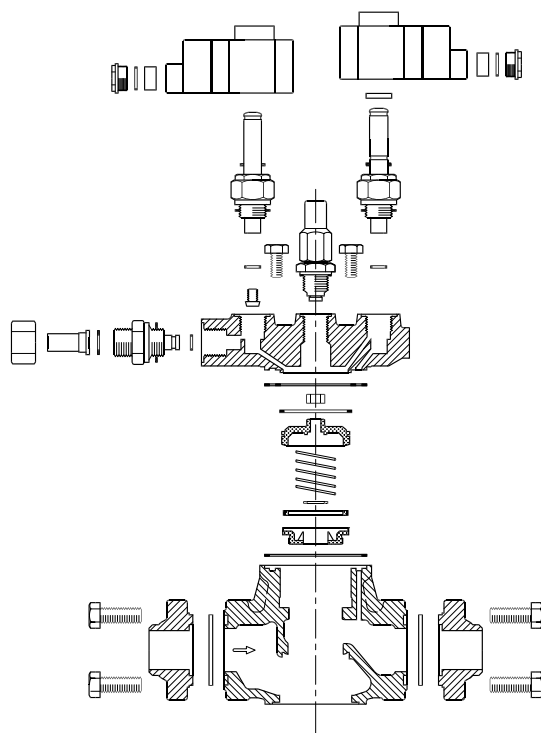
W

Hz

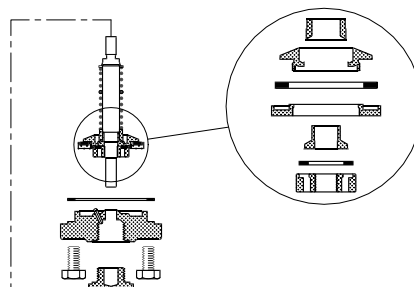
Danfoss  
AZ7F371.11



$120 > TB (^{\circ}\text{C} \geq -50 \Rightarrow PB (\text{bar}) = 28$



Danfoss  
27F372.14



#### Reserve dele

#### Spare parts

#### Ersatzteile

#### Pièces de rechange:

Se RX.3F.B

See RX.3F.B

Siehe RX.3F.B

Voir RX.3F.B

#### Teknisk brochure

#### Technical leaflet

#### Technische Broschüre

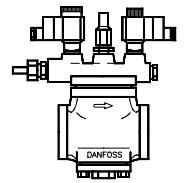
#### Fiche technique:

Se RD.3F.B

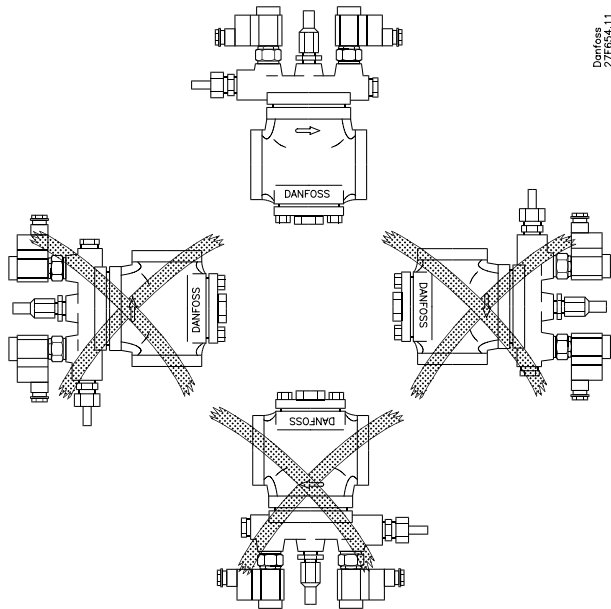
See RD.3F.B

Siehe RD.3F.B

Voir RD.3F.B



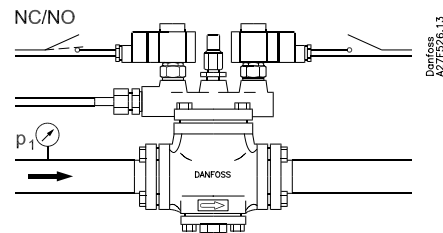
027R9518



Danfoss  
27F654.11

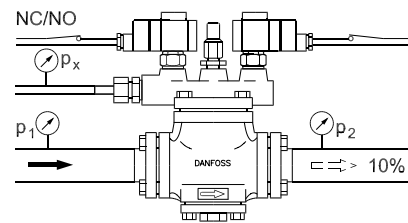
Fig. 1

Closed



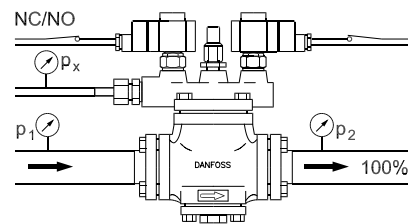
Danfoss  
27F656.13

Step 1,  
open



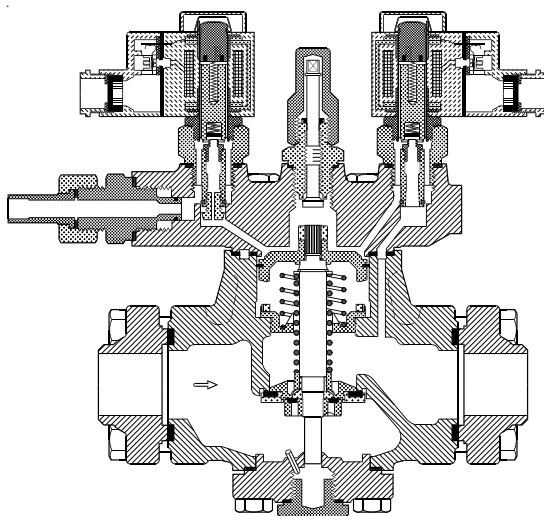
$$p_x \text{ min. } 1 \text{ bar (15 psi)} > p_1 \quad p_1 - p_2 > 1,5 \text{ bar}$$

Step 2,  
open



$$p_x \text{ min. } 1 \text{ bar (15 psi)} > p_1 \quad p_1 - p_2 \leq 1,5 \text{ bar}$$

Fig. 2



Danfoss  
27F536.12

Fig. 3




Pos. item				DAVISBROS PARTS 11		
				Nm	kpm	lbf-ft
				10	1	7.4
Tightening Torque in Nm						
	PMLX 32	PMLX 40	PMLX 50	PMLX 65		
a	50					
b	50					
c	50					
e	60			80		
d	105	135		200		
e	45	60			80	
f	55			60		
g	30					
h	60				100	

Table 1

Danfoss  
 A27F371.11  
 10/12 W a.c.  $\pm 10\%$    
 Max. opening diff. pressure  
 (MOPD) 21bar (300psig)  
 20 W d.c.  $\pm 10\%$    
 Max. opening diff. pressure  
 (MOPD) 14bar (200psig)

$t_{min.} -40^{\circ}\text{C}$   
 (-40°F)  
 $t_{max.} 80^{\circ}\text{C}$   
 (175°F)  
 $t_{min.} -40^{\circ}\text{C}$   
 (-40°F)  
 $t_{max.} 50^{\circ}\text{C}$   
 (120°F)

Fig. 4

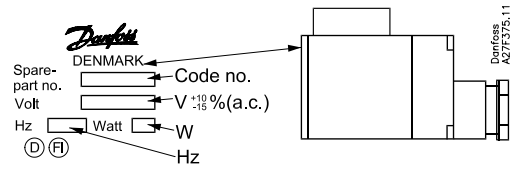


Fig. 5

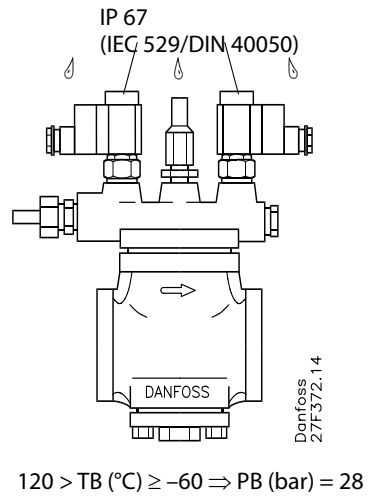


Fig. 6

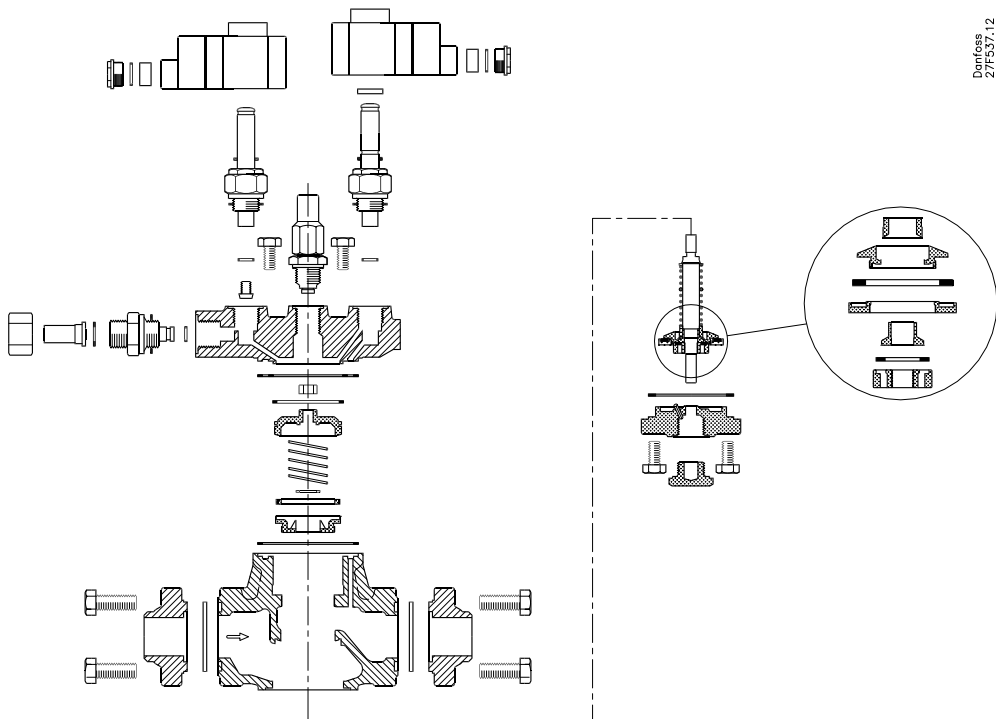


Fig. 7

---

**Installation**


---

**Refrigerants**

Applicable to all common non-flammable refrigerants, including R717 and non-corrosive gases/liquids dependent on sealing material compatibility. Flammable hydrocarbons are not recommended. The valve is only recommended for use in closed circuits. For further information please contact Danfoss.

**Temperature range**

PMLX: -60/+120°C (-76/+248°F)

**Pressure range**

PMLX: The valves are designed for a max. working pressure of 28 bar g (406 psi g).

**Technical data**

PMLX can be used in suction, liquid, hot-gas and liquid/vapour lines. The PMLX regulates the flow of the medium by two step on/off function, depending on the control impulse from the screwed-on pilot valves.

**Installation**

Flange set for the PMLX is delivered separately. The valve must be installed with the arrow in the direction of the flow and the top cover upwards (fig. 1). The top cover can be rotated 4 X 90° in relation to the valve body.

The valve is fitted with a spindle for manual opening.

When an external pilot valve is used, the pilot line must be connected to the upper side of the main line so that any dirt and oil from the plant will not find its way into the pilot line.

The valve is designed to withstand a high internal pressure. However, the piping system should be designed to avoid liquid traps and reduce the risk of hydraulic pressure caused by thermal expansion. It must be ensured that the valve is protected from pressure transients like "liquid hammer" in the system.

**Welding**

If using welding flanges, only materials and welding methods, compatible with the flange material must be welded to the flanges. The flanges should be cleaned internally to remove welding debris on completion of welding and before the valve is inserted.

The valve housing and flanges must be free from stresses (external loads) after installation.

PMLX valves must not be mounted in systems where the outlet side of the valve is open to atmosphere. The outlet side of the valve must always be connected to the system or properly capped off, for example with a welded-on end plate.

**Colours and identification**

The PMLX valves are Zinc-Chromated in the factory. If further corrosion protection is required, the valves can be painted. Precise identification of the valve is made via the ID plate on the top cover. The external surface of the valve housing must be prevented against corrosion with a suitable protective coating after installation and assembly.

Protection of the ID plate when repainting the valve is recommended.

---

**Maintenance**


---

**Service**

The PMLX valves are easy to dismantle and most of its parts are replaceable. When the bottom cover is removed, the strainer can be taken out for cleaning. Do not open the valve while the valve is still under pressure.

- Check that the O-ring has not been damaged.
- Check that the spindle is free of scratches and impact marks.
- If the teflon ring has been damaged, the parts must be replaced.

**Assembly**

Remove any dirt from the body before the valve is assembled. Check that all channels in the valve are not blocked with articles or similar.

**Tightening**

*Tightening torques*

See fig. 3 and table 1.

Use only original Danfoss parts, including packing glands, O-rings and gaskets for replacement. Materials of new parts are certified for the relevant refrigerant.

In cases of doubt, please contact Danfoss. Danfoss accepts no responsibility for errors and omissions. Danfoss Industrial Refrigeration reserves the right to make changes to products and specifications without prior notice.

**DECLARATION OF CONFORMITY**  
The Pressure Equipment Directive 97/23/EC



**Name and Address of Manufacturer within the European Community**

Danfoss Industrial Refrigeration A/S  
Stormosevej 10  
PO Box 60  
DK-8361 Hasselager  
Denmark

**Declaration**

We hereby declare that below-mentioned equipment are classified for Fluid Group I (all refrigerants (toxic, non-toxic, flammable and non-flammable)), and that all are covered by Article 3, paragraph 3.

For further details / restrictions – see Installation Instruction

**Description of Pressure Equipment**

Refrigerant main regulating valves  
Type **PM, PMC, PMFH, PMFL, MRV, MEV**

Nominal bore **DN ≤ 25 mm.** (1 in)

**References of other Technical Standards and Specifications used**

prEN 12284      DIN 3158  
EN 1563      AD-Merkblätter

**Authorised Person for the Manufacturer within the European Community**

**Name:** Morten Steen Hansen      **Title:** Production Manager

**Signature:**

**Date:** 16/01/2002

14889715 - rev. 1

**DECLARATION OF CONFORMITY**  
The Pressure Equipment Directive 97/23/EC



**Name and Address of Manufacturer within the European Community**

Danfoss Industrial Refrigeration A/S  
Stormosevej 10  
PO Box 60  
DK-8361 Hasselager  
Denmark

**Description of Pressure Equipment**

Refrigerant main regulating valves  
**Type PM, PML, PMLX, PMFH, PMFL, MRV, MEV**

Nominal bore	DN 32-150 mm (1 1/4 - 6 in.)	
Classified for	<b>Fluid Group I</b> (all refrigerants (toxic, nontoxic, flammable and nonflammable)). For further details / restrictions – see Installation Instruction.	
Temperature range	All	-60°C (-76°F) to 120°C (248°F)
Maximum allowable working pressure		28 bar (406 psi)

**Conformity and Assessment Procedure Followed**

Category	<b>II</b>	<b>III</b>
Module	<b>D1</b>	<b>B1 + D</b>
Certificate ID	D1: 07 202 0511 Z 0009/1/H-0002	B1: 07 202 0511 Z 0074/1/H-0001 D: 07 202 0511 Z 0009/1/H-0001
Nominal bore	DN 32-125 mm (1 1/4 - 5 in)	DN 150 mm (6 in)

**Name and Address of the Notified Body which carried out the Inspection**

TÜV-Nord e.V.  
Grosse Bahnstrasse 31  
22525 Hamburg, Germany



**Name and Address of the Notified Body monitoring the Manufacturer's Quality Assurance System**

TÜV-Nord e.V.  
Grosse Bahnstrasse 31  
22525 Hamburg, Germany

**References of Harmonised Standards used**

**References of other Technical Standards and Specifications used**

prEN 12284      DIN 3158  
EN 1563        AD-Merkblätter

**Authorised Person for the Manufacturer within the European Community**

**Name:** Morten Steen Hansen

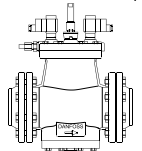
**Title:** Production Manager

**Signature:**

**Date:** 16/01/2002

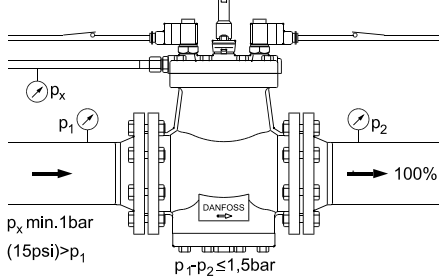
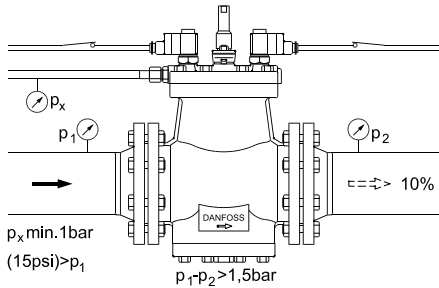
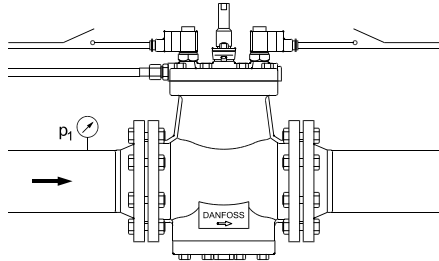
148B9704 - rev. 1



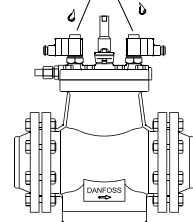


027R9510

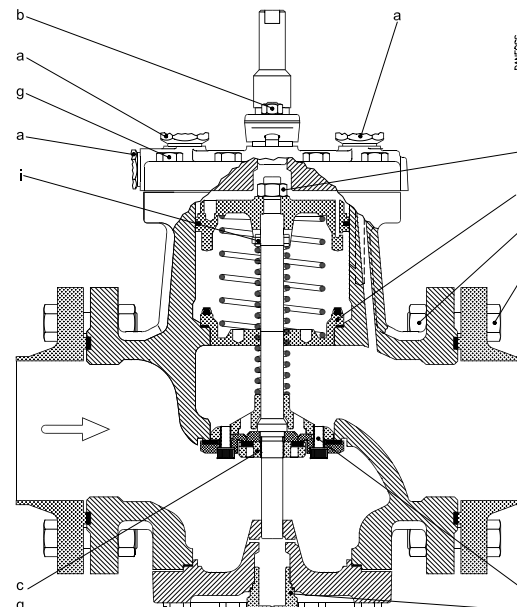
027R9510

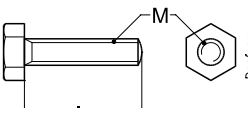



IP 67 (IEC 529/DIN 40050) 12  
A27F388.12



140 > TB(°C) ≥ 10 ⇒ PB(bar) = 28  
-10 > TB(°C) > 50 ⇒ PB(bar) = 21



Pos. item						
	PMLX 80	PMLX 100	PMLX 125	PMLX 80	PMLX 100	PMLX 125
a	M24 × 1.5			50 Nm		
b	M12 × 1.75			25 Nm		
c	M22 × 1.5	M22 × 1.5	M26 × 1.5	60 Nm	60 Nm	80 Nm
d	M35 × 1.5			175 Nm		
e	M20 × 2.5	M20 × 2.5	M24 × 3			
f	M20 × 2.5		M24 × 3	105 Nm	135 Nm	200 Nm
g	M14 × 2	M14 × 2	M16 × 2	80 Nm	80 Nm	125 Nm
h	M6 × 1					
i	M6 × 1				10 Nm	
k	M8 × 1.25	M10 × 1.5	M12 × 1.75	25 Nm	40 Nm	60 Nm
l	M14 × 1.5	M16 × 1.5	M20 × 1.5	45 Nm	60 Nm	90 Nm
m	M100 × 2	M120 × 2	M145 × 2	150 Nm	220 Nm	310 Nm
o	M8 × 1.25	M10 × 1.5	M12 × 1.75			

1 Nm = 0.1 kpm = 0.74 lbf-ft

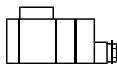
10 / 12 W a.c. +10  
-15%



$t_{\min} = -40^{\circ}\text{C} (-40^{\circ}\text{F})$   
 $t_{\max} = 80^{\circ}\text{C} (175^{\circ}\text{F})$

Max. opening diff. pressure (MOPD) 21 bar (300psig)

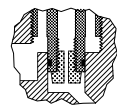
20 W a.c. +10  
-15%



$t_{\min} = -40^{\circ}\text{C} (-40^{\circ}\text{F})$   
 $t_{\max} = 50^{\circ}\text{C} (120^{\circ}\text{F})$

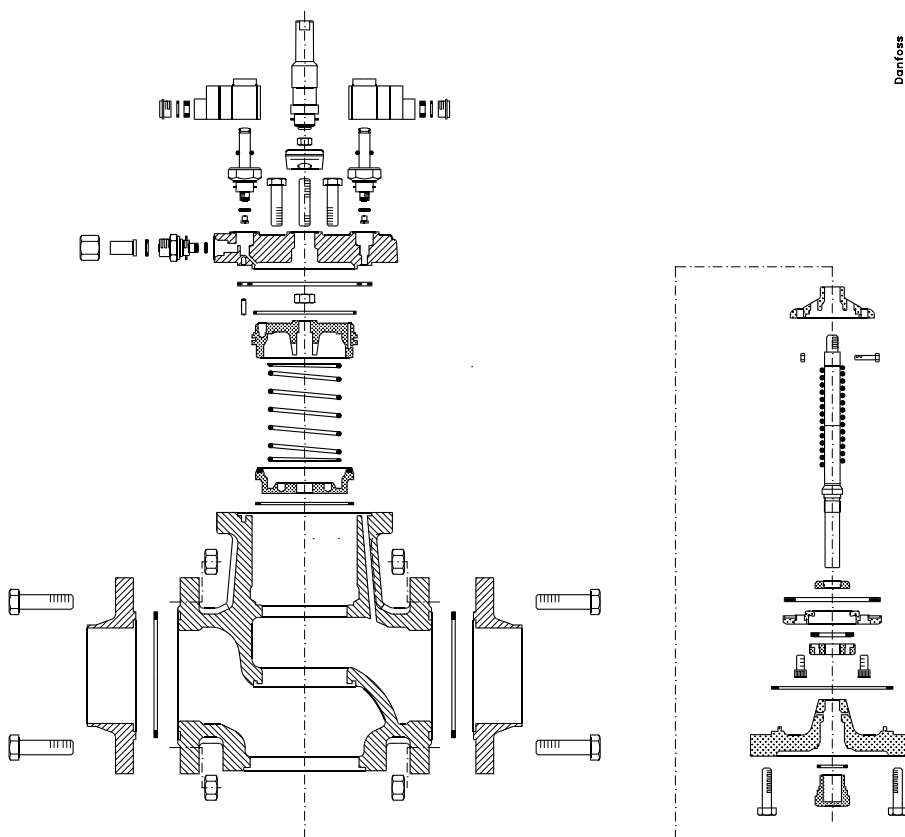
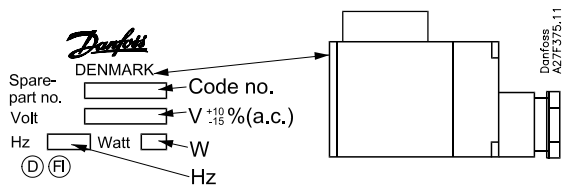
Max. opening diff. pressure (MOPD) 14 bar (200psig)

$p_x > p_1 + 2\text{bar}$



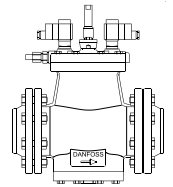
SII

Danfoss  
A27F378.12



**Reserve dele**  
**Spare parts**  
**Ersatzteile**  
**Pièces de rechange:**  
Se RX.3F.B  
See RX.3F.B  
Siehe RX.3F.B  
Voir RX.3F.B

**Teknisk brochure**  
**Technical leaflet**  
**Technische Broschüre**  
**Fiche technique:**  
Se RD.3F.B  
See RD.3F.B  
Siehe RD.3F.B  
Voir RD.3F.B



027R9521

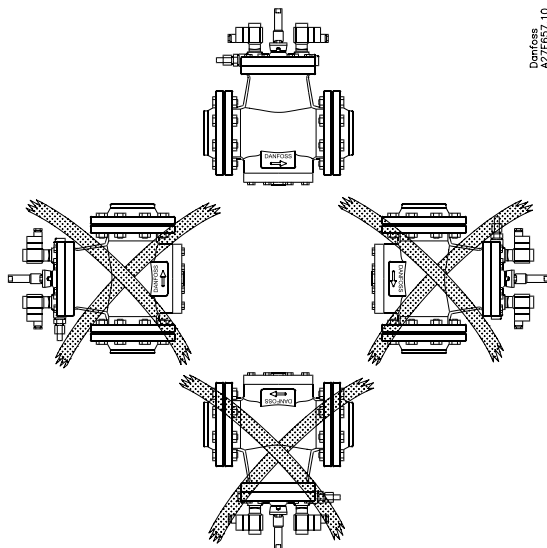


Fig. 1

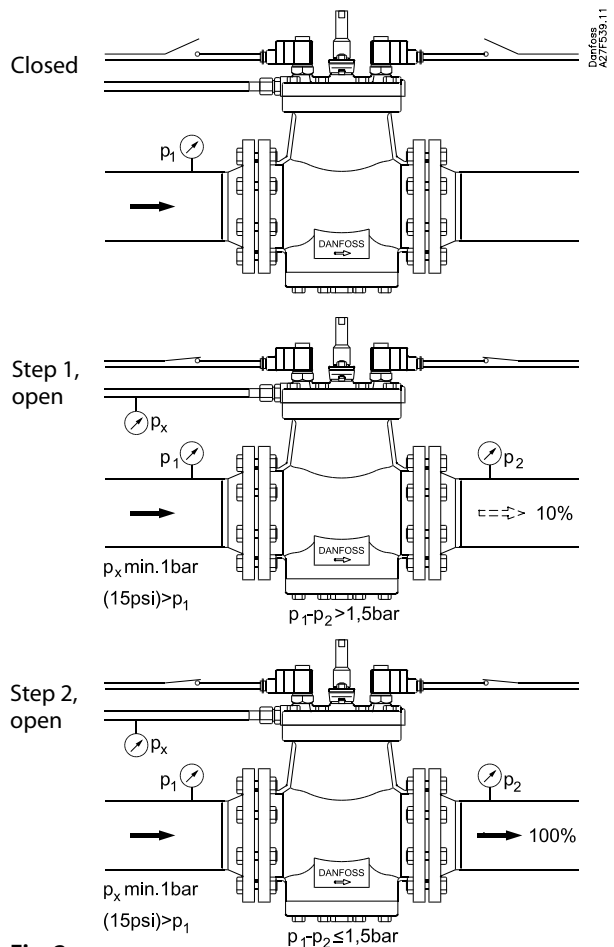


Fig. 2

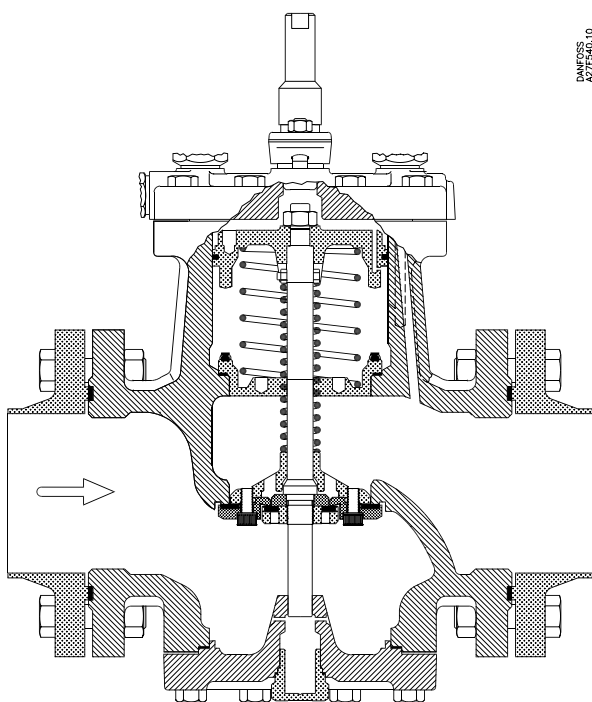



Fig. 3

Pos. item	Torque		
	Nm	kpm	lbf-ft
	10	1	7.4
Tightening Torque in Nm			
	80	100	125
a	50		
b	65		
c	25		
d	140		
e	80	80	125
f	105	135	200
g	75	80	125
i	9		
k	25	40	60
l	45	60	90
m	150	220	310

Table 1

027R9521

Danfoss  
A27F371.11

10/12 W a.c.  $\pm 10\%$    $t_{min.} -40^{\circ}\text{C}$   
 $(-40^{\circ}\text{F})$   
 $t_{max.} 80^{\circ}\text{C}$   
 $(175^{\circ}\text{F})$   
 Max. opening diff. pressure  
 (MOPD) 21bar (300psig)


20 W d.c.  $\pm 10\%$    $t_{min.} -40^{\circ}\text{C}$   
 $(-40^{\circ}\text{F})$   
 $t_{max.} 50^{\circ}\text{C}$   
 $(120^{\circ}\text{F})$   
 Max. opening diff. pressure  
 (MOPD) 14bar (200psig)

Fig. 4

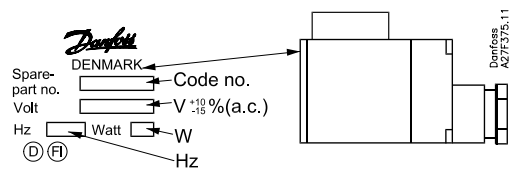


Fig. 5

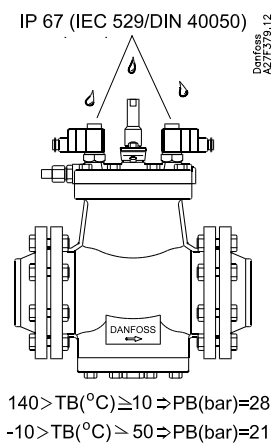


Fig. 6

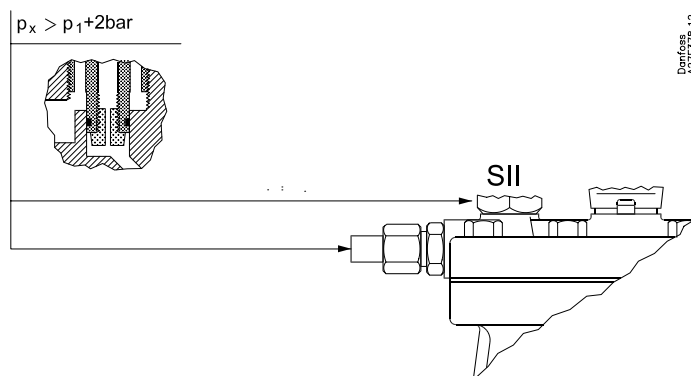


Fig. 7

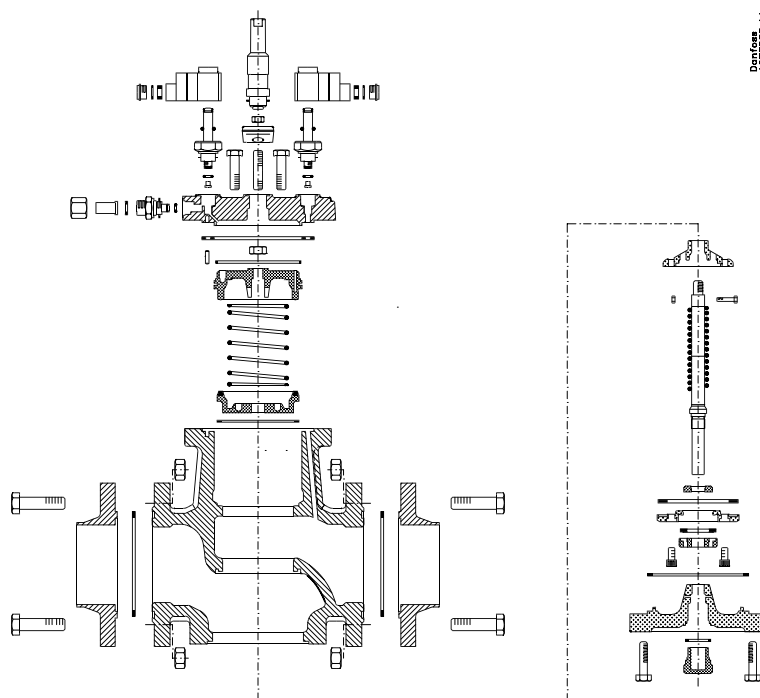


Fig. 8

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**Installation**


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**Refrigerants**

Applicable to all common non-flammable refrigerants, including R717 and non-corrosive gases/liquids dependent on sealing material compatibility. Flammable hydrocarbons are not recommended. The valve is only recommended for use in closed circuits. For further information please contact Danfoss.

**Temperature range**

PMLX: -60/+120°C (-76/+248°F)

**Pressure range**

PMLX: The valves are designed for a max. working pressure of 28 bar g (406 psi g).

**Technical data**

PMLX can be used in suction, liquid, hot-gas and liquid/vapour lines. The PMLX regulates the flow of the medium by two step on/off function, depending on the control impulse from the screwed-on pilot valves.

The PMLX has three connections for pilot valves: two in series, marked "S I" and "S II", and one in parallel with these two, marked "P", see fig. 3.

**Installation**

Flange set for the PMLX is delivered separately. The valve must be installed with the arrow in the direction of the flow and the top cover upwards (fig. 1). The top cover can be rotated 4 X 90° in relation to the valve body.

The valve is fitted with a spindle for manual opening.

When an external pilot valve is used, the pilot line must be connected to the upper side of the main line so that any dirt and oil from the plant will not find its way into the pilot line.

The valve is designed to withstand a high internal pressure. However, the piping system should be designed to avoid liquid traps and reduce the risk of hydraulic pressure caused by thermal expansion. It must be ensured that the valve is protected from pressure transients like "liquid hammer" in the system.

**Welding**

If using welding flanges, only materials and welding methods, compatible with the flange material must be welded to the flanges. The flanges should be cleaned internally to remove welding debris on completion of welding and before the valve is inserted.

The valve housing and flanges must be free from stresses (external loads) after installation.

PMLX valves must not be mounted in systems where the outlet side of the valve is open to atmosphere. The outlet side of the valve must always be connected to the

system or properly capped off, for example with a welded-on end plate.

**Colours and identification**

The PMLX valves are Zinc-Chromated in the factory. If further corrosion protection is required, the valves can be painted. Precise identification of the valve is made via the ID plate on the top cover. The external surface of the valve housing must be prevented against corrosion with a suitable protective coating after installation and assembly.

Protection of the ID plate when repainting the valve is recommended.

---

**Maintenance**


---

**Service**

The PMLX valves are easy to dismantle and most of its parts are replaceable. When the bottom cover is removed, the strainer can be taken out for cleaning.

Do not open the valve while the valve is still under pressure.

- Check that the O-ring or gaskets have not been damaged.
- Check that the spindle is free of scratches and impact marks.
- If the teflon ring has been damaged, the parts must be replaced.

**Assembly**

Remove any dirt from the body before the valve is assembled. Check that all channels in the valve are not blocked with particles or similar.

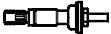
**Tightening**

*Tightening torques*

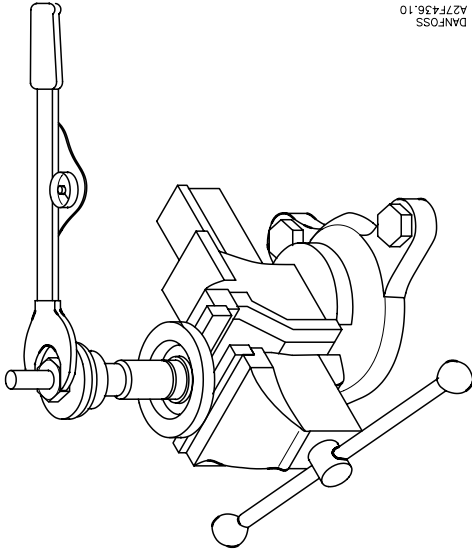
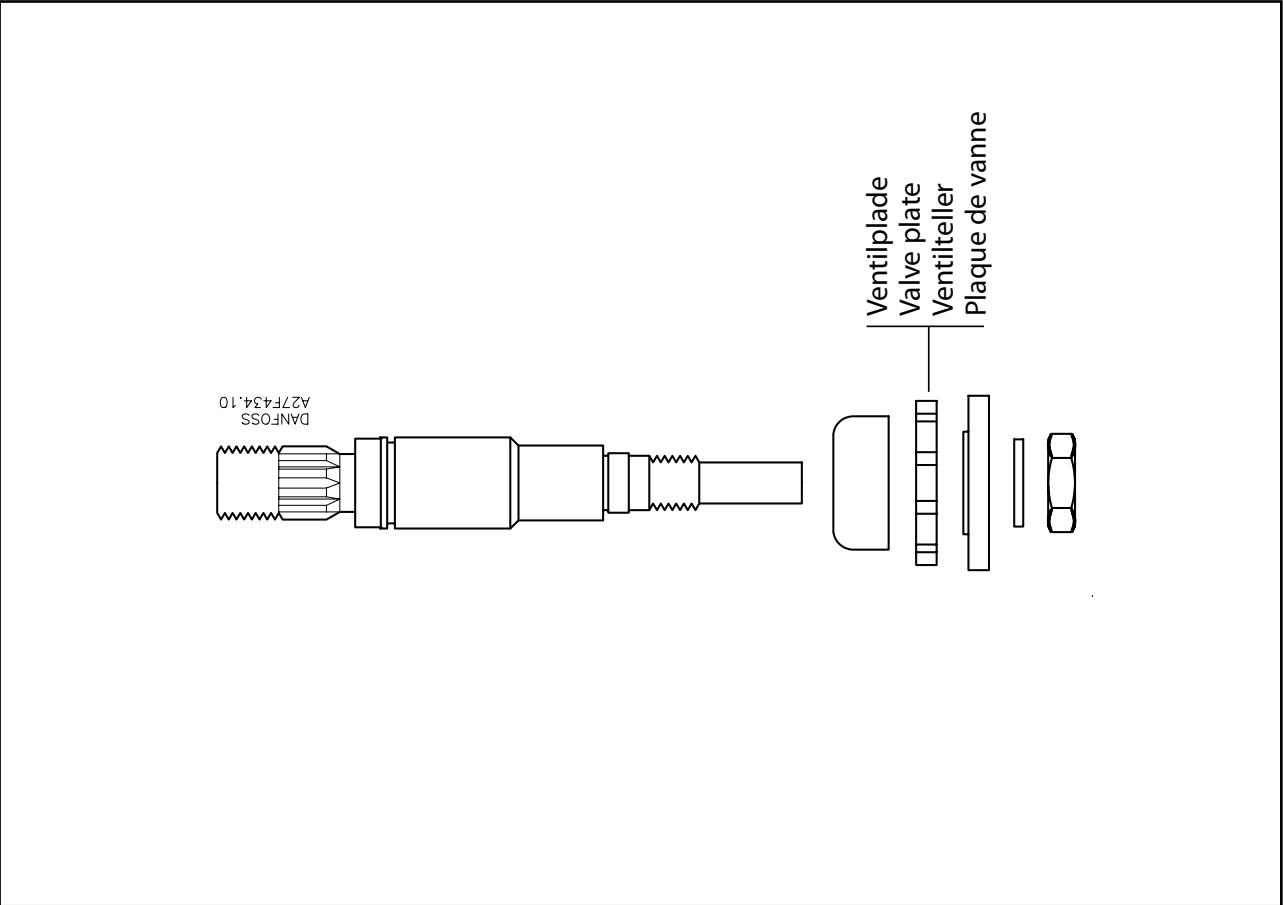
See fig. 3 and table 1.

Use only original Danfoss parts, including packing glands, O-rings and gaskets for replacement. Materials of new parts are certified for the relevant refrigerant.

In cases of doubt, please contact Danfoss. Danfoss accepts no responsibility for errors and omissions. Danfoss Industrial Refrigeration reserves the right to make changes to products and specifications without prior notice.



027R9501



Ventilplade Valve plate Ventilteller Plaque de vanne	Ventil type Valve type Ventil Typ Type de vanne	Tilspændingsmoment Tightening torque Anzugsmoment Couple de serrage
<b>Code no.</b>		Nm
<b>027F0683</b>	PM 5-25, PMC 5-20 PMFL 200, PMFH 200	35 ±5
<b>027F0684</b>	PM 32 PMFL 300, PMFH 300	55 ±5 35 ±5
<b>027F0685</b>	PM 40, PML 32 PMFL 500	55 ±5 50 ±5
<b>027F0686</b>	PM 50 PML 40	60 ±5 55 ±5
<b>027F0687</b>	PM 65, PML 50	60 ±5
<b>027F0688</b>	PML 65	65 ±5
<b>027F0689</b>	PMFL 80 - 1, 2, 3	17 ±2
<b>027F0690</b>	PMFL 80 - 4, 5, 6, 7 PMFH 80 - 2, 4, 5, 6, 7	17 ±2
<b>027F0691</b>	PMFL 125, PMFH 125	35 ±5

### Installation

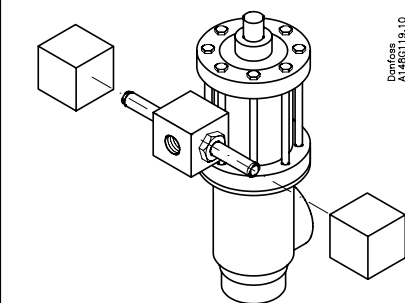


Fig. 1

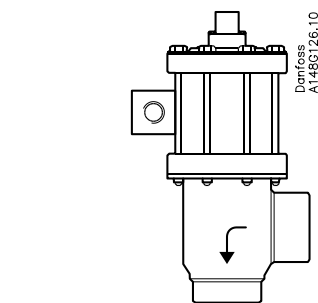


Fig. 2a

GPS 100-150

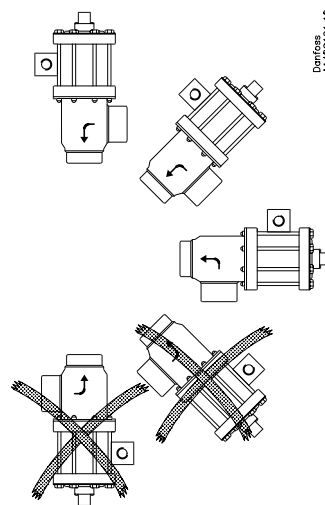


Fig. 2b

GPS 40-80

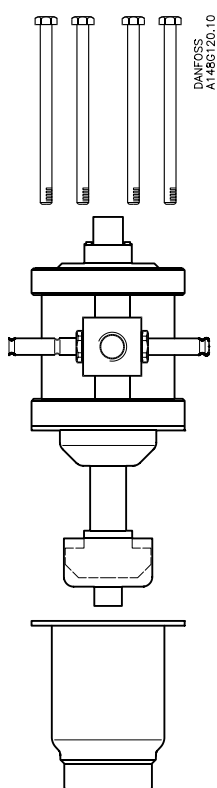


Fig. 3

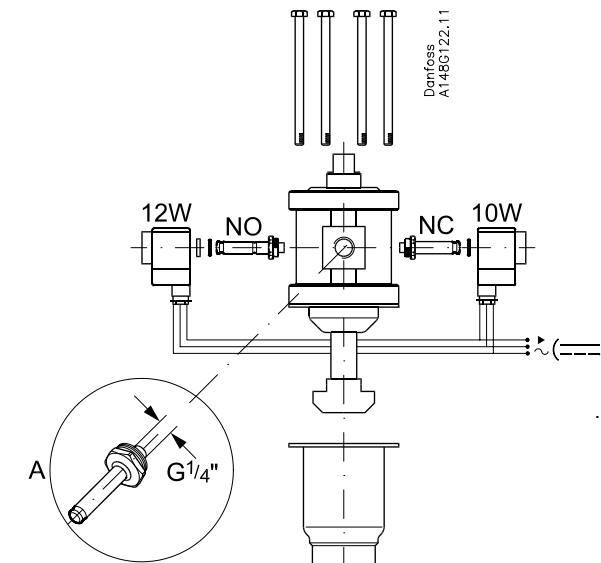
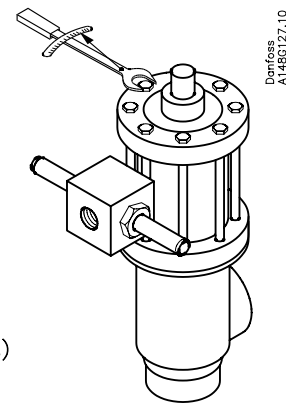


Fig. 4a



		Nm	ft. lb.
DN 40-50	=	40	30
DN 65-80	=	40	30
DN 100	=	70	52
DN 125	=	150	110
DN 150	=	300	220

Fig. 4b

### ENGLISH

#### Refrigerants

R717 (ammonia), R22, R134a, R404A, R407, R407B, R407C, R744.

#### Installation

GPS valves in sizes DN 100 to DN 150 are always installed in vertical position fig. 2a.

GPS valves in other sizes are installed as shown in fig. 2b, i.e. in 90° from vertical position with pilot valve and side branch downwards. If there is welding slag and/or dirt in the system, it is strongly recommended to install strainers in connection with the GPS valve.

It is important always to install strainers in the pipes leading to the pilot valves.

#### Flow direction

**IMPORTANT:** The flow direction must be from the side branch towards the cone (fig. 2a+2b).

#### Welding

Remove the actuator before welding (fig. 3). OBS: Be sure not to damage the teflon cone ring and the spindle. If these parts are damaged the valve will leak.

#### Assembling

Remove welding slag and dirt from pipes and housing. The valve cone is protected with a cap. (B) Remove this cap before the valve is assembled (fig.3). OBS: Only 1 hot gas supply is required (Cf. Illustration A on fig. 4a); connect this supply to the pilot valve armature.

#### Tightening

Use a torque wrench to tighten the 8 bolts connecting the housing with the actuator. Tighten the bolts in accordance with the table fig. 4b.

#### Manual opening

For instance by failure of current, see instruction overleaf.

#### Colours

In factory the valve housings are painted in a oxide yellow primer. The actuator is metallized.

DANSK	DEUTSCH	ESPAÑOL
<b>Kølemidler</b> R717 (ammoniak), R22, R134a, R404A, R407, R407B, R407C, R744.	<b>Kältemittel</b> R717 (Ammoniak), R22, R134a, R404A, R407, R407B, R407C, R744.	<b>Refrigerantes</b> R717 (Amoniac), R22, R134a, R404A, R407, R407B, R407C, R744.
<b>Installation</b> GPS ventiler i størrelse DN 100 til DN 150 må kun monteres lodret fig. 2a. GPS ventiler i de øvrige størrelser monteres som vist i fig. 2b, d. v. s. i en position fra lodret til 90° fra lodret position med pilotventilen og sidestuds nedad. I rørsystemer med svejssesprøjt og snavs anbefales det, at der installeres filtre i forbindelse med GPS ventilen. Der bør altid installeres filtre i rør, der leder til en magnetventil.	<b>Montage</b> Das GPS Ventil in Dimensionen DN 100 bis DN 150 muss nur in senkrechter Position installiert werden Fig. 2a. GPS Ventile in übrigen Dimensionen werden wie in Fig. 2b gezeigt montiert, d.h. in einer Position von senkrecht bis 90° von senkrechter Position mit dem Pilotventil und Seitenstutzen abwärts. In Rohrsystemen mit Schweißschlacken und Schmutz empfiehlt es sich, Filter im Anschluß an das GPS Ventil zu installieren. In Rohren, die zu einem Magnetventil führen, müssen immer Filter installiert werden.	<b>Instalación</b> Válvulas GPS en dimensiones DN 100 hasta DN 150 deben instalarse solamente en posición vertical (fig. 2a). Válvulas GPS en otras dimensiones se deben instalar como ilustrado en la fig. 2b, o sea en una posición entre vertical y 90° de tal posición con la válvula piloto y el racor lateral hacia abajo. En tuberías con escorias y suciedades de soldadura se recomienda la instalación de filtros en conexión con la válvula GPS. Siempre debe instalarse filtros en tubos que conducen a una válvula de accionamiento magnético.
<b>Strømningsretning</b> VIGTIGT: Strømningsretningen skal være fra sidestuds og ned mod keglen (fig. 2a+b).	<b>Strömungsrichtung</b> WICHTIG: Die Strömungsrichtung wie auf der Zeichnung angegeben (Fig. 2a+2b) - d.h. von dem Seitenstutzen zum Kegel hinab.	<b>Sentido de la corriente</b> IMPORTANTE: El Sentido de la corriente tiene que ser como indicado en el dibujo (fig. 2a+2b) o sea desde el racor lateral hacia el cono.
<b>Svejsning</b> Aktuatoren skal afmonteres før isvejsning af ventilhuset (fig. 3). OBS: Teflonringen på keglen og spindlen må ikke beskadiges. Beskadigelse af disse dele vil forårsage utætheder i ventilen.	<b>Schweißen</b> Den Antrieb vor dem Einschweißen des Ventilgehäuses demontieren (Fig. 3). Achtgeben, daß weder Teflonkegelring noch Spindel beschädigt werden, was Undichtigkeiten zur Folge haben wird.	<b>Soldadura</b> Hay que desmontar el actuador antes de soldar la caja de la válvula (fig. 3). NOTA: No dañar el anillo de teflon del cono y del vástago. Si estas partes se dañan, habrá fugas en la válvula.
<b>Samling</b> Svejsesprøjt og snavs skal fjernes fra rør og hus. Ventilkeglen er beskyttet med en hætte. (B) Denne fjernes inden ventilen samles (fig. 3). OBS: Der kræves kun 1 varmgastilførsel, der tilsluttes magnetventilens armatur (Jvf. illustration A på fig. 4a).	<b>Sammlung</b> Schweißschlacken und Schmutz von Rohren und Gehäuse entfernen. Der Ventilkegel ist mit einer Schutzkappe (B) versehen. Diese Kappe vor Sammlung des Ventils entfernen. OBS: Nur 1 Heißgaszuleitung ist erforderlich (vgl. Illustration A der Figur 4a); diese Zuleitung ist an die Armatur der Magnetventile anzuschließen.	<b>Montaje</b> Quitar escorias y suciedades de soldadura en los tubos y la caja. El cono de la válvula está protegido por una capucha (B) que se quita antes de montar la válvula (fig. 3). NOTA: Sólo se requiere un suministro de gas caliente que se conecta a la armadura de las válvulas piloto de accionamiento magnético (Véase la ilustración A de fig. 4a).
<b>Tilspænding</b> De 8 bolte, der forbinder aktuatoren med ventilhuset, spændes med en momentnøgle iht. fig. 4b.	<b>Zuspannung</b> Verwenden Sie einen Drehmoment-schlüssel, um die 8 Schrauben, die das Gehäuse mit dem Antrieb verbinden, laut Fig. 4b festzuziehen.	<b>Apriete</b> Utilizar una llave dinamométrica para apretar los 8 pernos de conexión del cuerpo con el servo (fig. 4b).
<b>Manuel tvangsåbning</b> F. eks. ved strømsvigt se vejledning på omstående side.	<b>Manuelle Zwangsöffnung</b> Zum Beispiel bei Stromausfall - siehe Anleitung umstehend.	<b>Apertura manual forzada</b> Por ejemplo en caso de apagón (véase instrucción a la vuelta).
<b>Farve</b> Ventilhusene er fra fabrikken malet med en oxydgul primer. Aktuatoren er metaliseret.	<b>Farben</b> Die Ventilgehäuse werden in der Fabrik mit oxydgelbem Grundierungsanstrich versehen. Der Antrieb wird metallisiert.	<b>Color</b> Los cuerpos de las válvulas GPS salen de la fábrica tratados con una pintura de fondo de color amarillo de óxido. El actuador está metalizado.



## Maintenance

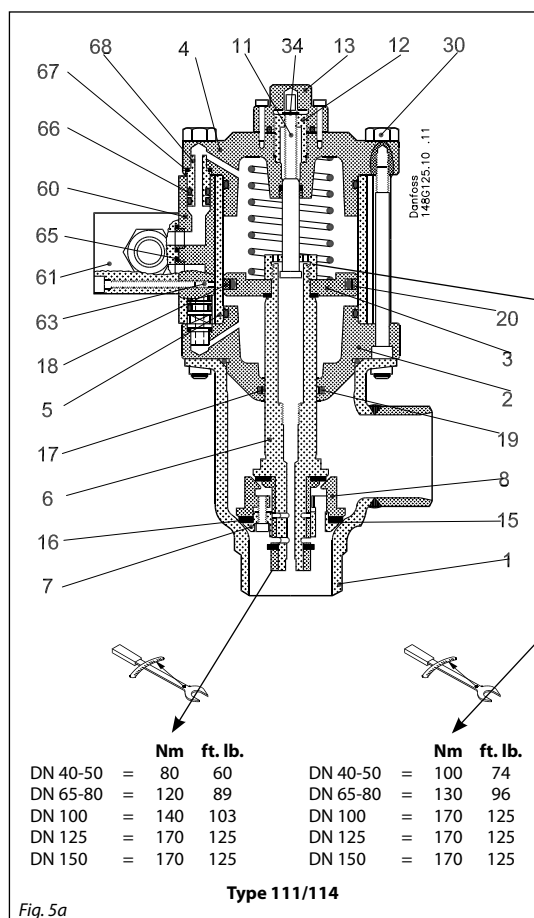


Fig. 5a

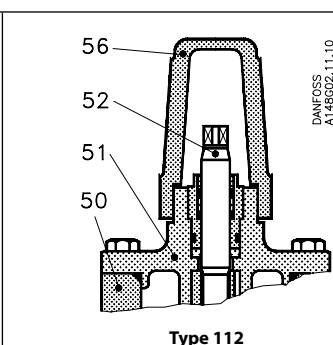


Fig. 5b

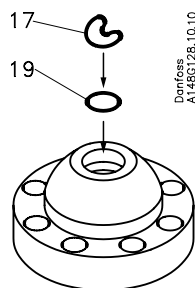


Fig. 6

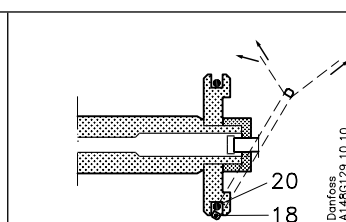


Fig. 7

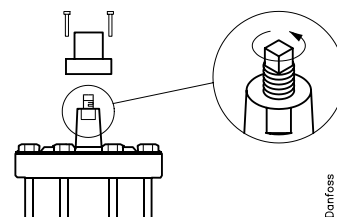


Fig. 8

## ENGLISH

### Replacement of sealing elements Disassembling of GPS

Evacuate the pipe system in which the valve is installed. Switch off the pilot current and the hot gas supply. Remove the bolts (30). Remove the valve top (actuator).

### Replacement of teflon rings in the seat (15) and (16)

Remove the nut (32), the valve cone (7) and (8), and remove the bushing (9). Replace the Teflon rings (15) and (16) and assemble the parts in reverse order.

### Replacement of sealing rings (17) and (18)

- Remove the cap (13) and the lock ring (34). Unscrew the spindle (11) clockwise till it is disengaged from the thread.
- Remove the bolts (28), the top cover (4), the pilot block (60), the spring (10), the cylinder pipe (5) and the pilot connections (68).
- Loosen the lock screw (26), remove the nut (14), the piston (3), and the valve spindle (6). - NB: Handle the valve spindle very carefully, as any damage (e.g. scratches and marks) to the spindle may cause valve leakage.

- Remove the sealing rings (17) and (18). At renovation of the valve Danfoss recommends replacement of all sealing elements. The spare parts set for the GPS valves includes all sealing elements.
- Mount the O-ring (19) and then the sealing ring (17) as shown in fig 6. Important: Fold the sealing ring as shown. Be certain that there are no sharp folds and do not use tools to mount the sealing ring.
- Mount the O-ring (20) and then the sealing ring (18) as shown in fig 7. In order not to damage the ring use 2 plastic strips to pull the ring to the right place.
- Mount the O-rings (66) on nipples for the pilot connection. Mount the nipples (68) with the gaskets (67), tighten 30-35 Nm.

### Reassemble the actuator in reverse order: C-B-A.

#### NB.

Turn the piston (3) as shown on fig. 5a.

#### Manual opening

In case of power loss the GPS valve will close (NC). The valves without forced

closing device can be opened by hand, if the cap is removed and the spindle is turned anti-clockwise. To close the valve, turn the spindle clockwise. The spindle must be screwed to the lowest possible position during normal operation (fig. 8).

## DANSK

### Udskiftning af tætningsselement Adskillelse af GPS

Rørsystemet, hvori ventilen er monteret, evakueres. Styrestrøm og varmgastilførsel afbrydes. Fjern boltene (30). Ventiltoppen fjernes.

### Udskiftning af sædepakning (15) og (16)

Fjern møtrikken (32), ventilkeglen (7) og (8) og bøsningen (9). Udskift teflonringene (15) og (16) og monter delene i modsat rækkefølge.

### Udskiftning af tætningsring (17) og (18)

- Fjern hættten (13) og låseringen (34). Spindlen (11) skrues med uret indtil den ikke har indgreb i gevindet længere.
- Fjern boltene (28), topdækslet (4), pilotblokken (60), fjederen (10), cylinderrøret (5) og pilotforbindelserne (68).
- Løsn låseskruen (26), fjern møtrikken (14), stemplet (3) og stempelstangen

- (6). NB: Behandl stempelstangen meget varsomt, da ridser og mærker kan forårsage lækager i ventilen.
- D. Fjern tætningsringene (17) og (18). Ved renovering af ventilen anbefaler Danfoss, at samtlige tætningsselementer udskiftes. GPS reservedelssættet indeholder samtlige tætningsselementer.
- E. Monter O-ringen (19) og tætningsringen (17), som vist på fig. 6. Vigtigt: Fold tætningsringen som vist. Der må ikke være "skarpe knæk" på ringen, og der må ikke anvendes værktøj til montagen.
- F. Monter O-ringen (20) og derefter tætningsringen (18) som vist på fig. 7. Undgå at beskadige ringen ved at anvende 2 plasticstrimler til at trække ringen på plads.
- G. Monter O-ringene (66) på niplerne til pilotforbindelserne. Monter så niplerne (68) med pakningerne (67), spænd med 30-35 Nm.

**Saml aktuatoren i modsat rækkefølge: C-B-A.**

**OBS:**

**Vend stemplet (3) som vist på fig. 5a.**

**Manuel tvangsåbning**

Ved strømsvigt lukker GPS ventilen (NC). Ventilene uden tvangslukningsmekanisme kan åbnes ved håndkraft, hvis hætten fjernes, og spindlen drejes mod uret. Ventilen lukkes ved at dreje spindlen med uret. Spindlen skal være skruet i lavest mulige position under normal drift (fig. 8).

**DEUTSCH**

**Austausch der Dichtungselemente  
Demontage des GPS**

Evakuieren Sie das Leitungsrohr, an dem das Ventil installiert ist. Schalten Sie den Steuerungsstrom sowie die Heißgasversorgung ab. Entfernen Sie die Schrauben (30). Entfernen Sie die Membrankammer (Stellglied-element).

**Austausch der Teflonringe im Sitz  
(15) und (16)**

Entfernen Sie die Mutter (32), den Ventilkegel (7) und (8) sowie die Buchse (9). Ersetzen Sie die Teflonringe (15) und (16) und setzen Sie die Teile in der umgekehrten Reihenfolge wieder zusammen.

**Austausch der Dichtungsringe  
(17) und (18)**

- A. Entfernen Sie die Kappe (13) und den Verschlussring (34). Schrauben Sie die Spindel (11) so lange im Uhrzeigersinn bis sie vom Gewinde gelöst ist.
- B. Entfernen Sie die Schrauben (28), den oberen Deckel (4), der Pilotblock (60), die Feder (10), das Zylinderrohr (5) und die Pilotanschlüsse (68).

- C. Lockern Sie die Verschlussschraube (26) und entfernen Sie die Mutter (14), den Kolben (3) und die Ventilspindel (6). -P.S.: Behandeln Sie die Ventilspindel sehr vorsichtig, da jegliche Beschädigung (z.B. Kratzer und Stellen) der Spindel zu Ventilleckagen führen können.
- D. Entfernen Sie die Dichtungsringe (17) und (18). Danfoss empfiehlt, alle Dichtungselemente bei Wiederaufbereitung des Ventils zu ersetzen. Das Ersatzteilset für die GPS-Ventile enthält alle Dichtungselemente.
- E. Montieren Sie den O-ring (19) und danach den Dichtungsring (17), siehe hierzu Abb. 6. Wichtig: Falten Sie den Dichtungsring wie abgebildet. Achten Sie darauf, daß keine scharfen Knicke entstehen und verwenden Sie keine Werkzeuge um den Dichtungsring zu montieren.
- F. Montieren Sie den O-ring (20) und danach den Dichtungsring (18), siehe hierzu Abb. 7. Verwenden Sie 2 Plastikstreifen um den Ring an die richtige Stelle ziehen, damit Sie den Ring nicht verletzen.
- G. Montieren Sie die O-ringe (66) auf die Nippel für den Pilotanschluß. Die Nippel (68) mit den Dichtungen (67) montieren, 30-35 Nm anziehen.

**Setzen Sie das Stellgliedelement in der umgekehrten Reihenfolge: C-B-A wieder zusammen.**

**WICHTIG:**

**Den stempel (3) wie auf fig. 5a. gezeigt montieren.**

**Zwangsöffnung**

Beim Stromausfall schließt das GPS Ventil (NC). Die Ventile ohne Zwangsverschluss können manuell geöffnet werden, indem die Kappe entfernt und die Spindel entgegen dem Uhrzeigersinn gedreht wird. Um das Ventil zu schließen, muß die Spindel im Uhrzeigersinn gedreht werden. Während Normalbetriebes muß die Spindel bis zur untersten Position eingeschraubt werden (fig. 8).

**ESPAÑOL**

**Sustitucion de los elementos del prensa  
Desmontaje de GPS**

Vaciar el sistema de tuberías en el que la válvulas se encuentra instalada. Desconectar la tensión piloto y el suministro de gas caliente. Desmontar los pernos (30). Desmontar la parte superior de la válvula (servo).

**Sustitucion de los aros de teflon del  
asiento (15) y (16)**

Desmontar la tuerca (32), los conos del asiento (7) y (8) el casquillo (9). Sustituir los aros de teflon (15) y (16) y montar las piezas en el orden inverso.

**Sustitucion de los toricos (17) y (18)**

- A. Desmontar la caperuza (13) y el aro de fijación (34). Desatornillar el vástago (11) en el sentido de las agujas del reloj hasta que se salga de la rosca.
- B. Desmontar los pernos (28), la tapa superior (4), bloque de piloto (60), el resorte (10), el tubo distanciador (5) y las conexiones de piloto (68).
- C. Aflojar la tuerca de fijación (26), desmontar la tuerca (14), el pistón (3) y el vástago de la válvula (6). - Nota: Manejar el vástago de la válvula con mucho cuidado, ya que cualquier daño sobre el, (rayaduras, marcas, etc.) podrían ser la causa de fugas.
- D. Desmontar los aros (17) y (18). Recomendamos sustituir los aros tóricos de la válvula. El juego de repuestos para las válvulas GPS, incluye todos los aros tóricos de la misma.
- E. Montar el aro tórico (19) y el aro (17) tal como se indica en la figura 6. Importante: Doblar el aro tal como se muestra en dicha figura. Asegurarse de que el aro no sufre dobleces bruscos y no utilizar herramientas para montarlo.
- F. Montar el aro tórico (20) y después el aro (18) tal como se indica en la figura 7. Para situar el aro en su posición correcta utilizar dos regletas de plástico, evitando con ello la posibilidad de dañarlo.
- G. Montar los aros tóricos (66) en los racores para las conexiones de piloto. Montar los racores (68) con las guarniciones (67), apretar 30-35 Nm.

**Montar el servo en el orden: C-B-A.**

**NOTA:**

**Colocar el pistón (3) como indicado en la fig. 5a.**

**Apertura manual**

En caso de corte de corriente, se cierra la válvula GPS (NC). Las válvulas sin dispositivo de cierre forzado pueden abrirse con la mano, desmontando la caperuza y haciendo girar el vástago en el sentido contrario a las agujas del reloj. La válvula se cierra girando el vástago en el sentido de las agujas del reloj. El vástago debe estar apretado en la posición más baja posible durante el funcionamiento normal (fig. 8).