

ENGINEERING
TOMORROW



Service and Parts Manual

Directional Valve Group

ECO 80



Revision history

Table of revisions

Date	Changed	Rev
December 2019	First edition	0101

Contents

Function

Safety.....	4
Sectional view.....	5

Installation

Identification and oil flow direction for standard assembled ECO 80 LS.....	6
Installation and plug orientation.....	7
Connections pump side and max flow setting.....	8
Installation of lever.....	9
Main spool assembly installation.....	10

Service parts

EVP, pump side module.....	11
EV PX, electrical LS unloading valve.....	13
EV B, basic module.....	14
PVLP shock and PVLA suction valves.....	16
EVO, end plate.....	18
EVBS spools.....	19
EVM, mechanical actuation.....	21
EVC, cover for mechanical actuation.....	22
EVOS, open spool through action.....	23
EVOS, open spool mechanical actuation.....	24
EVME, spring center/detent.....	25
EVME through action.....	25
EVME, micro switch NO.....	26
EVH, hydraulic actuation.....	27
EVHC, proportional electrical control.....	28
EVHCO, ON/OFF.....	29
EV PN, pneumatic actuator.....	30
EV PN, electrical pneumatic actuator.....	31
EVT, assembly kit.....	32
Set of seals.....	33

Function

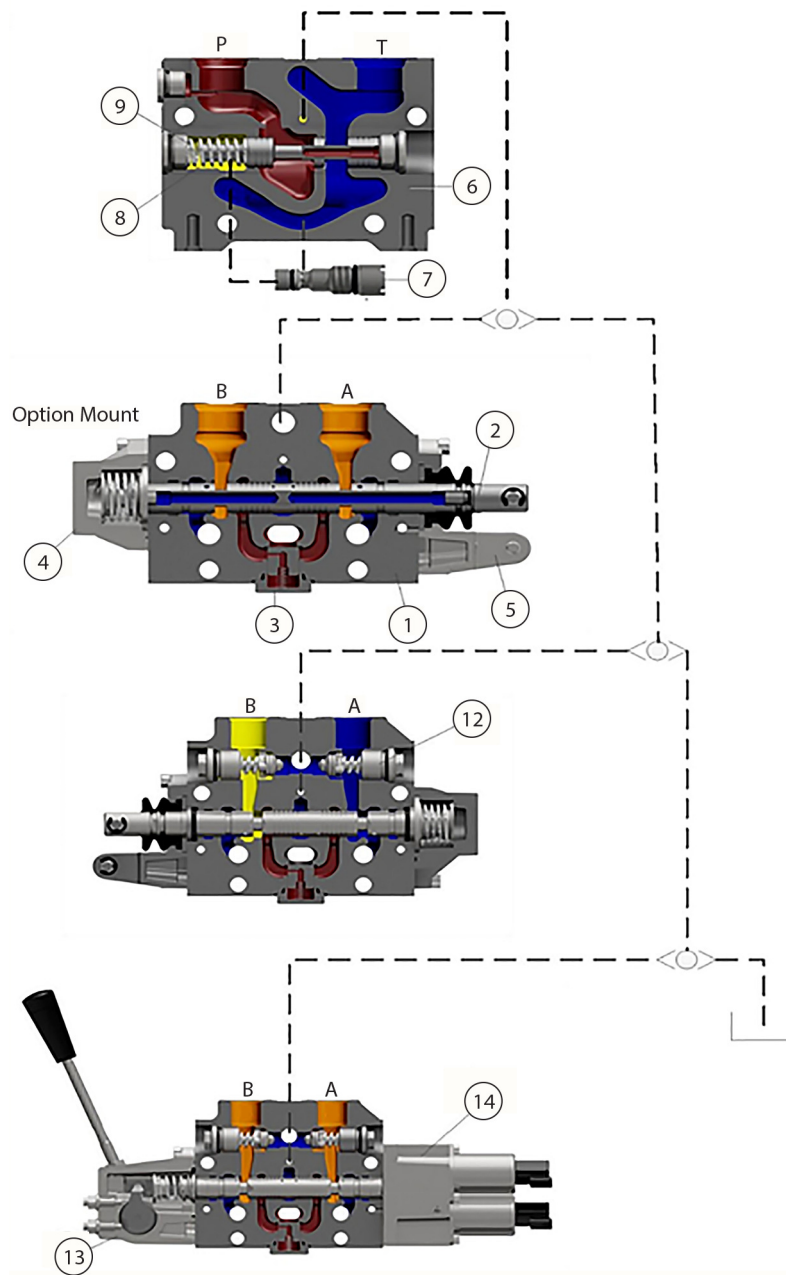
Safety

It is the customer's responsibility to decide on the required degree of safety for the system. All marks and all types of directional control and proportional valves can fail and cause serious damage. It is therefore important to analyze all aspects of the application. Proportional valves are used in many different operating conditions and applications; therefore the manufacturer of the application is responsible for making the final selection of the products and assuring that all performance, safety and warning requirements of the application are met.

Cost-free repairs, as mentioned in Danfoss General Conditions of Sale, are carried out only at Danfoss or at service shops authorized by Danfoss.

Function

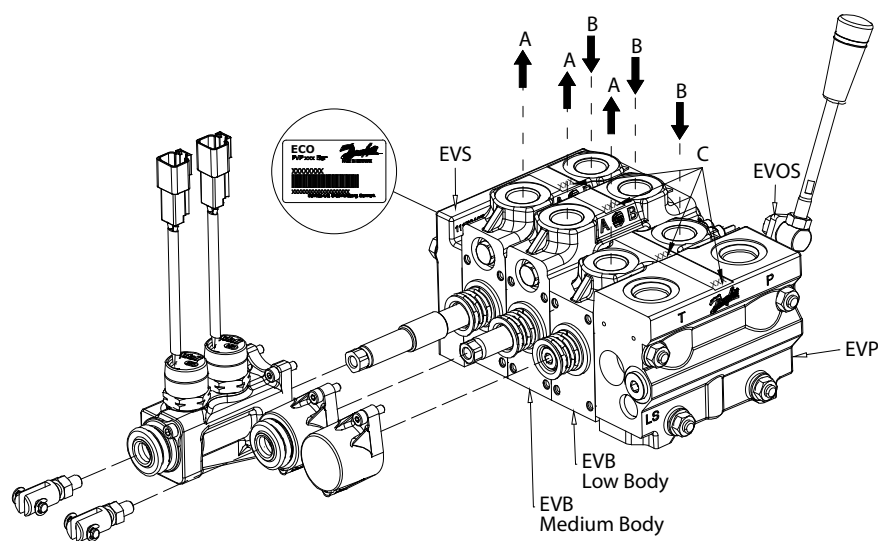
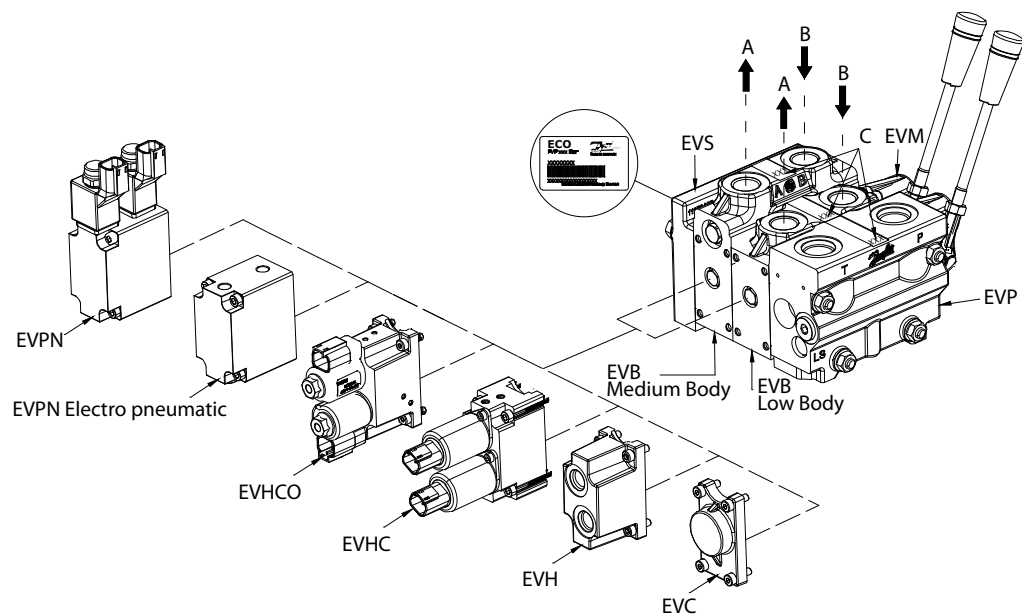
ECO 80 LS sectional view



1	Workstation EVB	8	Unloader spool
2	Spool EVBS	9	Unloader spool spring
3	Check valve	10	LS Shuttle
4	Spring center EVME	11	Load sensing
5	Actuator EVOS	12	Shock valve
6	Pump Inlet EVP	13	Spring center (EH) EVM
7	Load sense relief	14	Electric Actuator

Installation

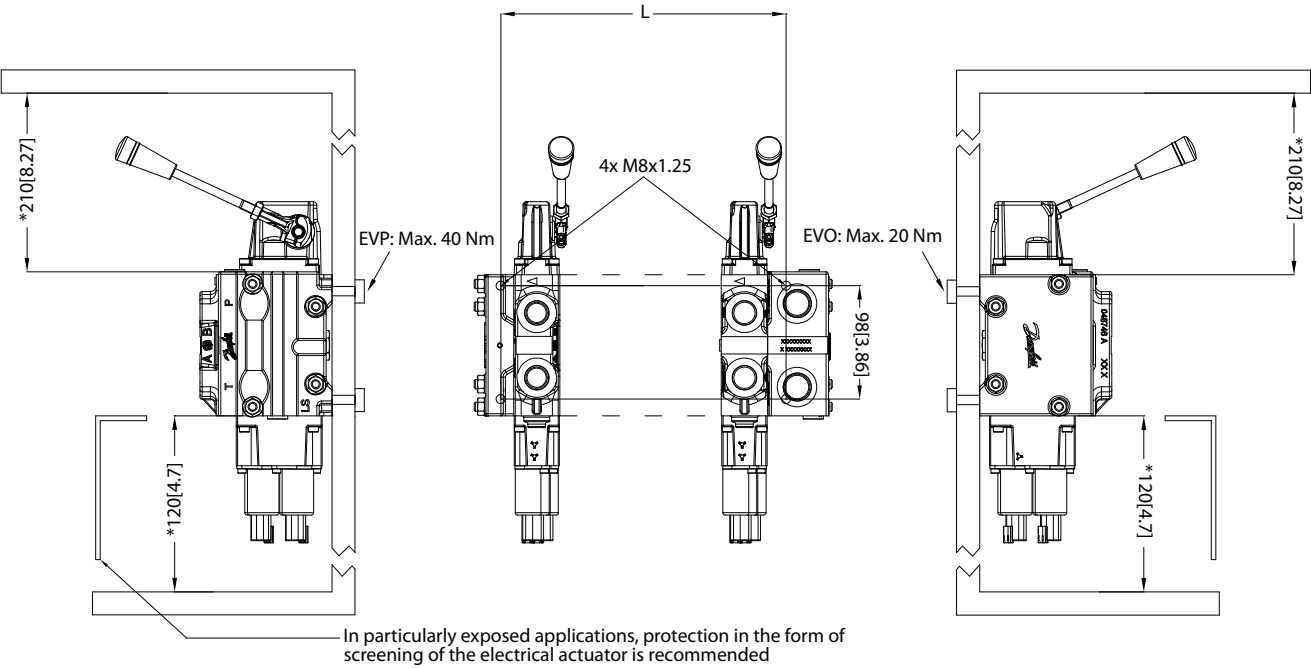
Identification and oil flow direction for standard assembled ECO 80 LS



C: Label with ECO 80 number, week and year of installation and series number.

Installation

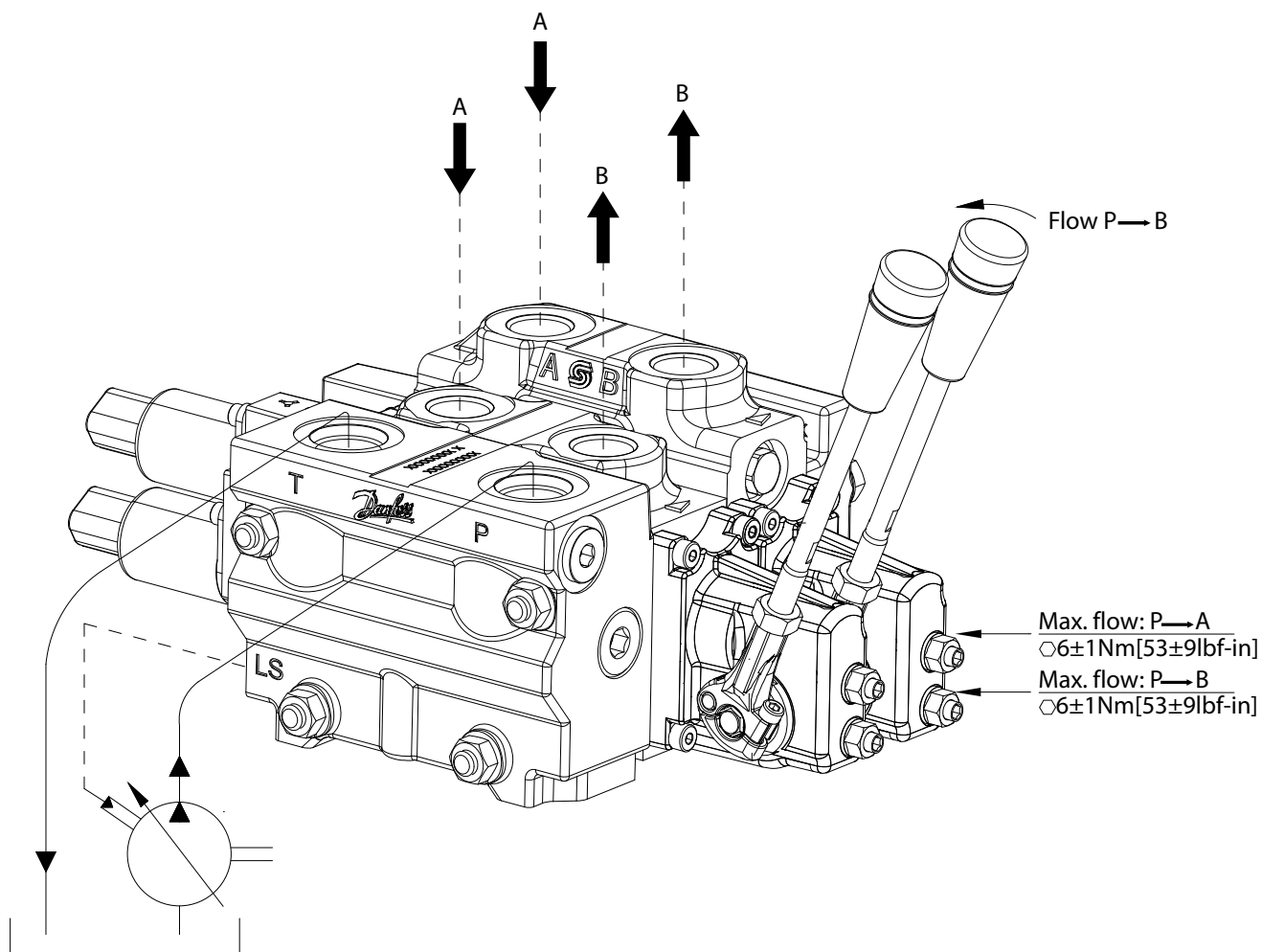
ECO 80 installation and plug orientation



No. of EVB		1	2	3	4	5	6	7	8	9	10	11	12
L	mm	65	105	145	185	225	265	305	345	385	425	465	505
	[in]	2.56	4.13	5.71	7.28	8.86	10.43	12.01	13.58	15.16	16.73	18.31	19.88

Installation

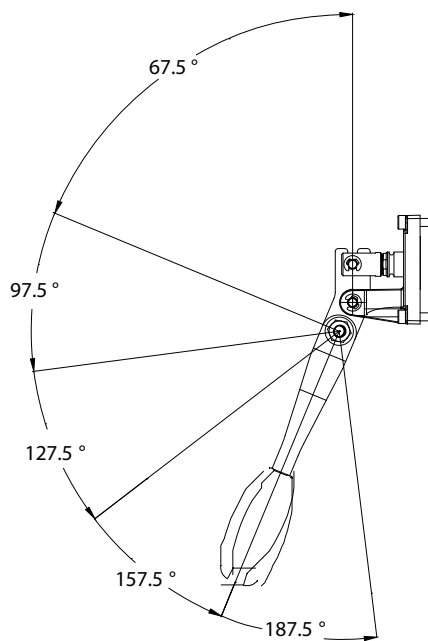
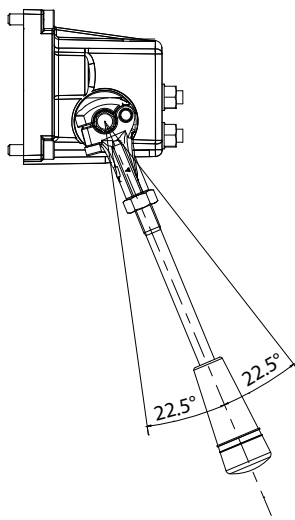
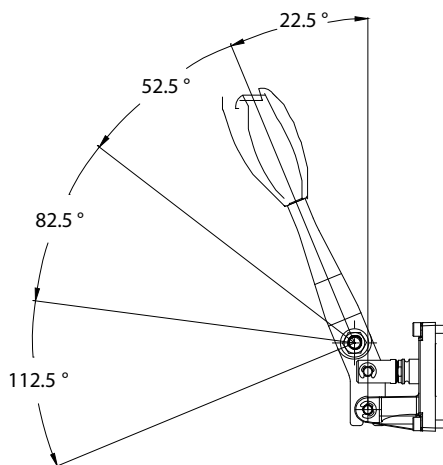
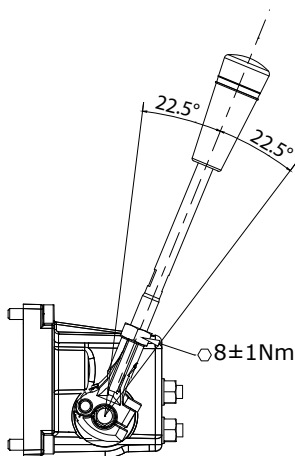
ECO 80 connections pump side and max flow setting



Installation

ECO 80 installation of lever

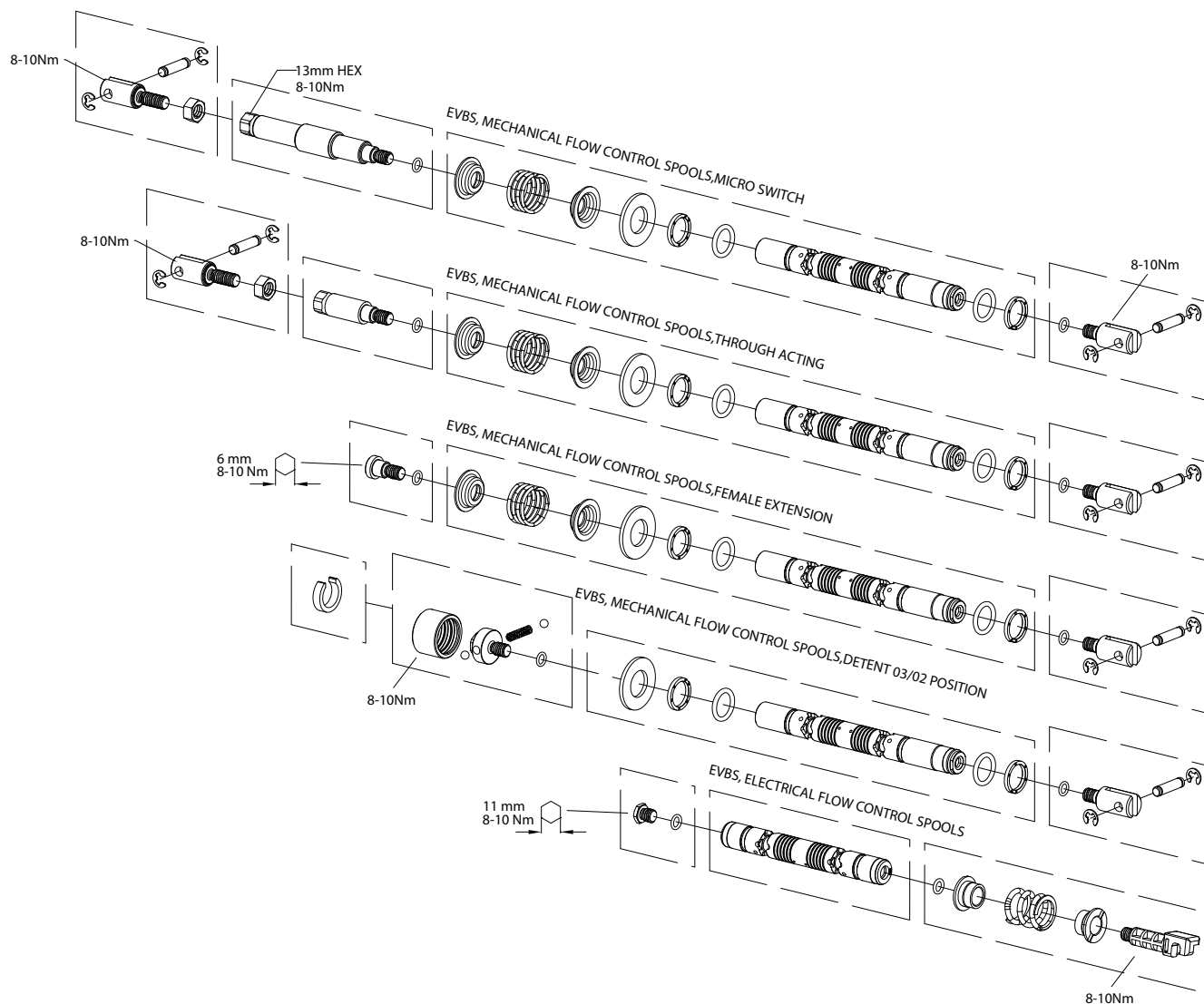
Remember to screw the lever all the way in.



Installation

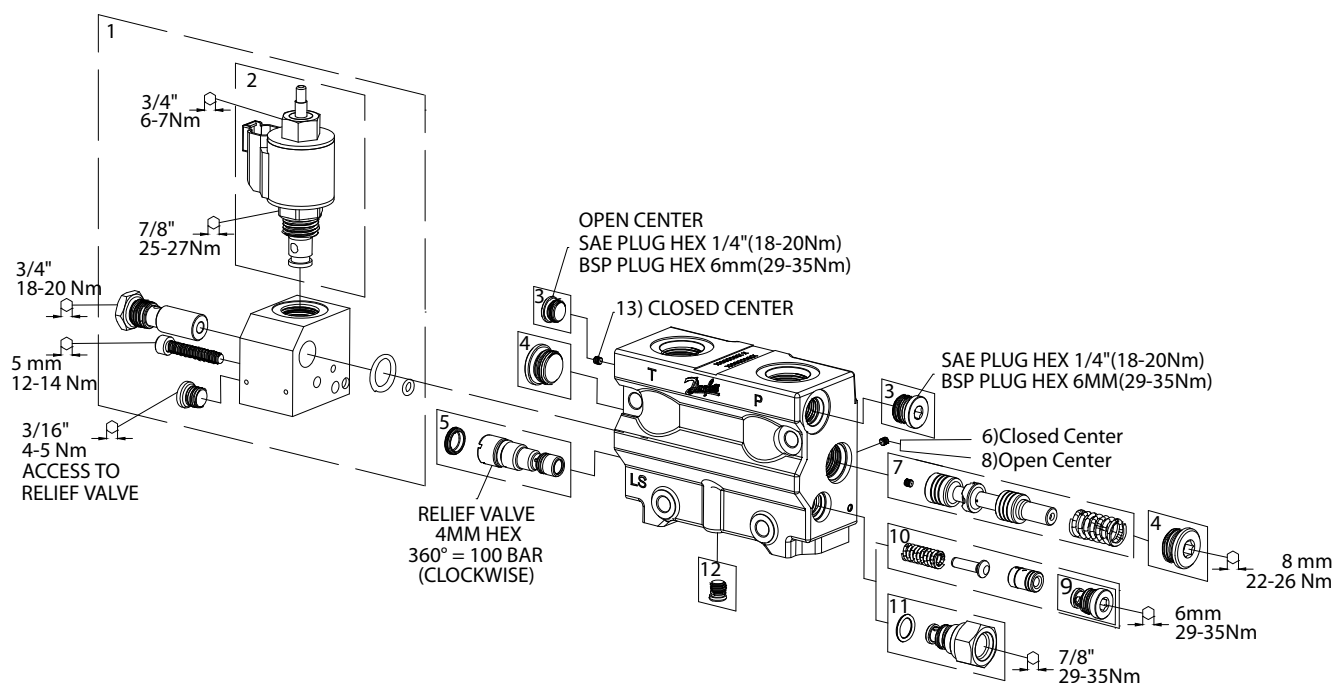
ECO 80 main spool assembly installation

Standard main spool assembly



Service parts

ECO 80 EVP, pump side module



Type	Description	Code number	P-port	T-port*	Letter
EVP	Open center	11173005	G1/2"	G1/2"	A
		11172981	7/18-14	7/18-14	
	Closed center	11173006	G1/2"	G1/2"	B
		11173002	7/18-14	7/18-14	
	Open center with pilot supply	11172996	G1/2"	G1/2"	C
		11173010	7/18-14	7/18-14	
	Closed center with pilot supply	11172997	G1/2"	G1/2"	D
		11173011	7/18-14	7/18-14	
	Open center with pilot supply and facilities for EVPX	11173023	G1/2"	G1/2"	E
		11173000	7/18-14	7/18-14	

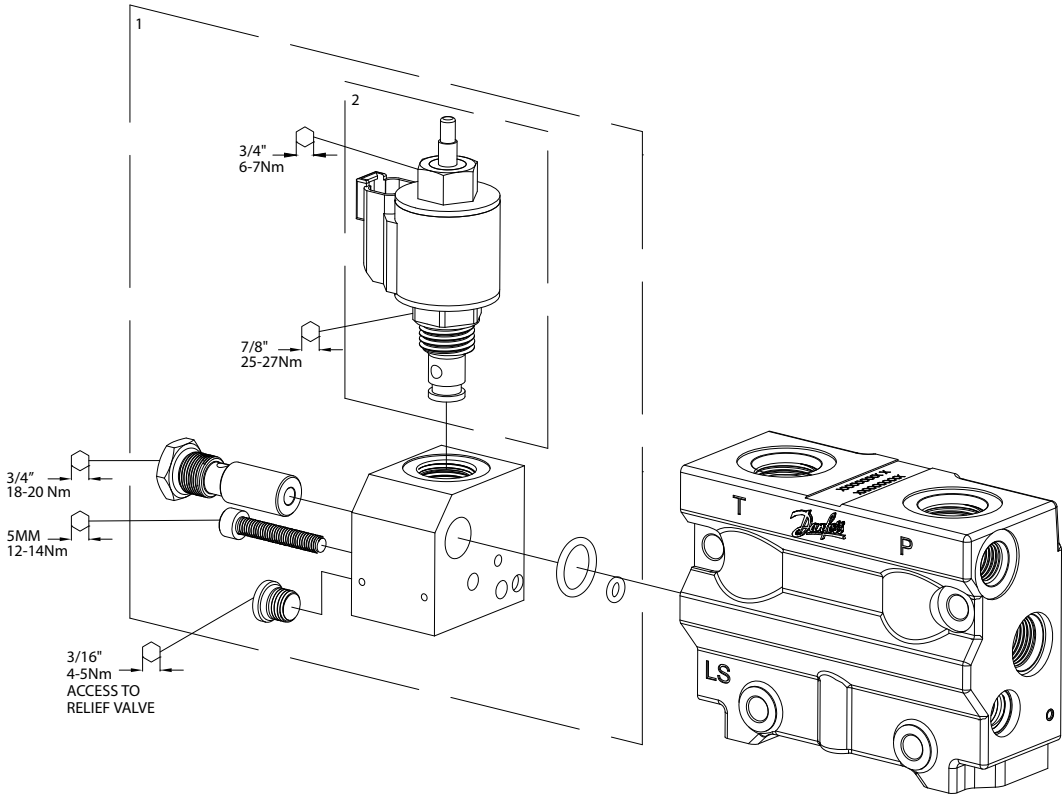
Item	Description	Code number	Letter				
			A	B	C	D	E
1	EVPX housing incl. EVPX	See section EVPX	-	-	-	-	-
2	EVPX coil	See section EVPX	-	-	-	-	-
3	Plug	-	2	2	2	2	2
4	Plug	-	2	2	2	2	2
5	Relief valve incl. sealed plastic adjusting screw	-	1	1	1	1	1
6	Orifice for closed center EVP (Ø0,8 x M6)	-	-	1	-	1	-
7	Inlet compensator assembly	-	1	1	1	1	1
8	Plug for open center EVP (Pipe M6 x 1)	-	1	-	1	-	1
9	Plug	-	-	-	1	1	1
10	Pilot supply	-	-	-	1	1	1
11	Plug for external pilot oil supply	-	1	1	-	-	-

Service parts

Item	Description	Code number	Letter				
			A	B	C	D	E
12	Plug	-	1	1	1	1	1
13	Plug for closed center EVP (Pipe M6 x 1)	-	-	1	-	1	-
*	Conversion kit open to closed – and closed to open – center (Including item 3, 6, 8 and 13)	11177668	-	-	-	-	-

Service parts

ECO 80 EVPX, electrical LS unloading valve



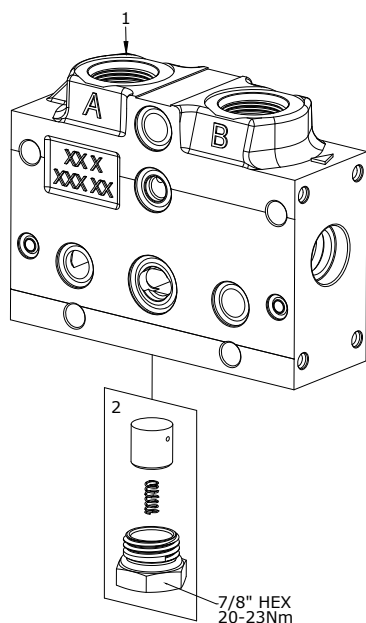
EVPX

Description	Code number
Normally open: LS pressure relieved with no signal to EVPX – 12 V	11172430
Normally open: LS pressure relieved with no signal to EVPX - 24 V	11172429

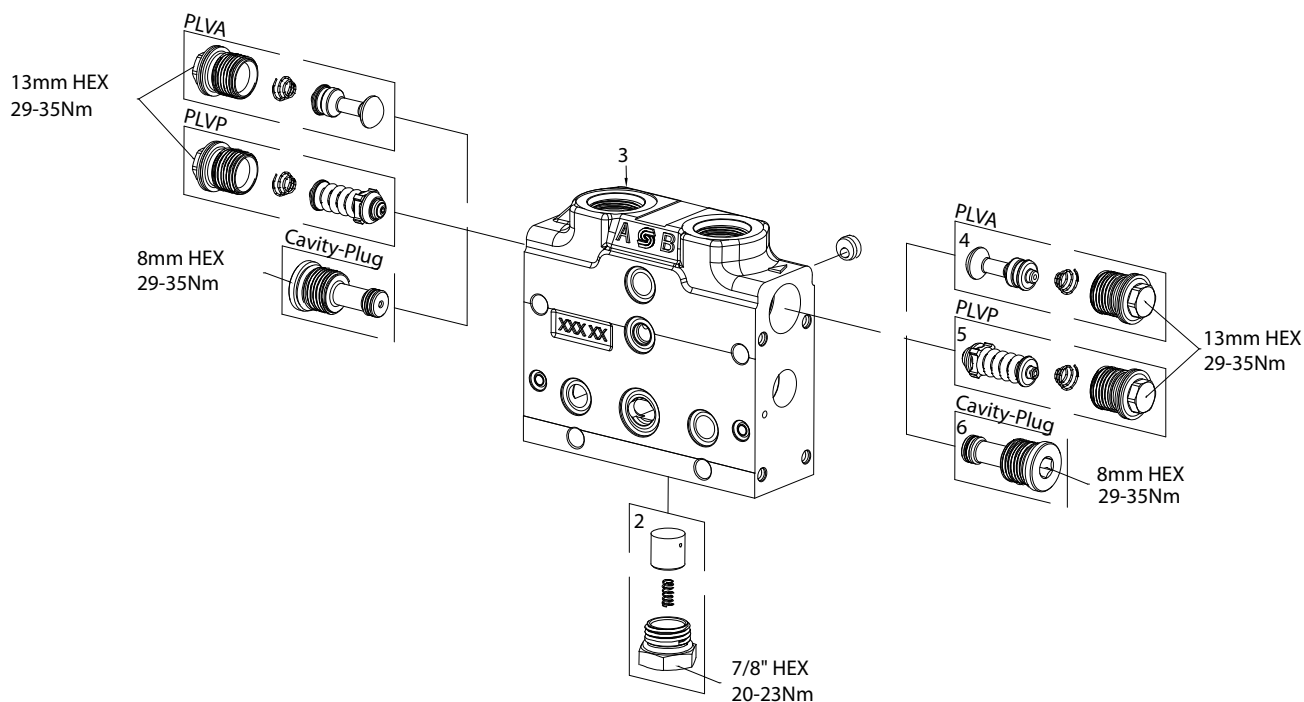
Service parts

ECO 80 EVB, basic module

Low body, no facilities for PVLP/PVLA



Medium body, with facilities for PVLP/PVLA



Service parts

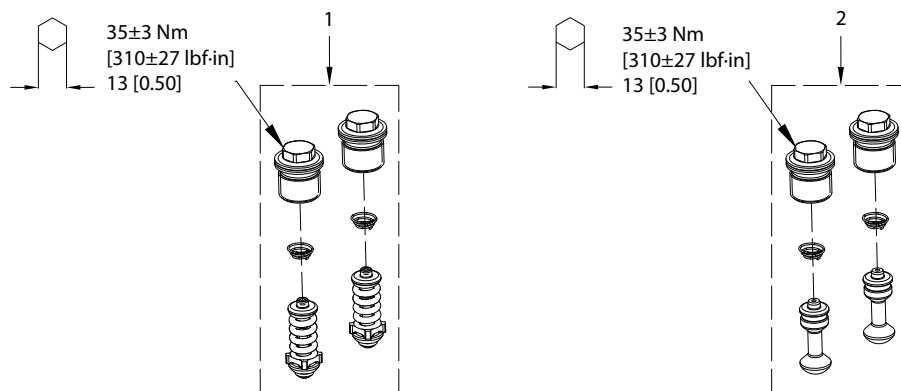
Mechanical and electrical EVB

Type	Description	Code number	P-port	T-port*	Letter
EVB Mechanical	Low body without facilities for PVLP/PVLA	11168505	G1/2"	G1/2"	A
		11168504	7/18-14	7/18-14	
	Medium body with facilities for PVLP/PVLA	11168503	G1/2"	G1/2"	B
		11168502	7/18-14	7/18-14	
EVB Electrical	Low body without facilities for PVLP/PVLA	11168506	G1/2"	G1/2"	C
		11168507	7/18-14	7/18-14	
	Medium body with facilities for PVLP/PVLA	11168509	G1/2"	G1/2"	D
		11168508	7/18-14	7/18-14	

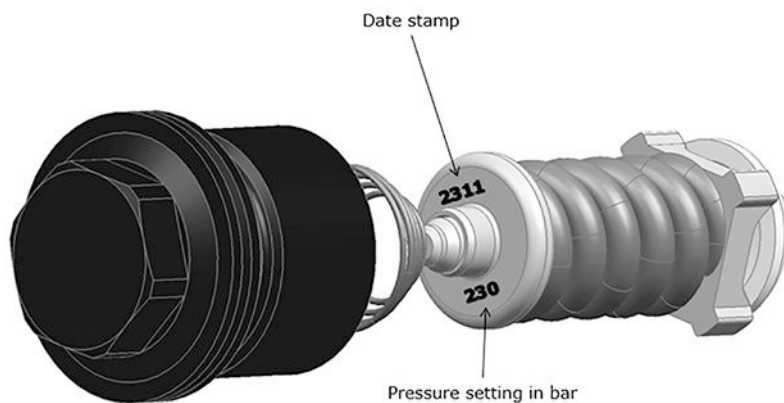
Item	Description	Code number	Letter			
			A	B	C	D
1	Low body EVB	See above	1	-	1	-
2	Check valve assembly	-	1	1	1	1
3	High body EVB	See above	-	1	-	1
4	PVLA valve assembly	See page (PVLP/PVLA)	-	-	-	-
5	PVLP, shock and suction valve assembly	See page (PVLP/PVLA)	-	-	-	-
6	Anti-cavitation plug	See page (PVLP/PVLA)	-	-	-	-

Service parts

ECO 80 PVLP shock and PVLA suction valves



PVLP/PVLA

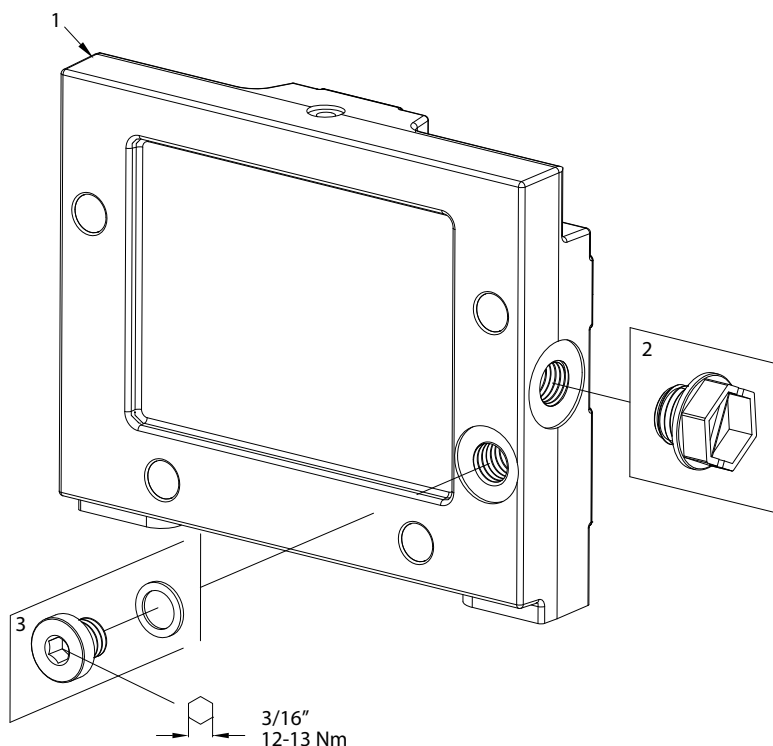


Service parts

Type	Part number
PVLA	157B2001
PVLP	157B2032
	157B2050
	157B2063
	157B2080
	157B2100
	157B2125
	157B2140
	157B2150
	157B2160
	157B2175
	157B2190
	157B2210
	157B2230
	157B2240
	157B2250
	157B2265
	157B2280
	157B2300
	157B2320
Adjustable PVLP	11006594 (121-250 bar [1755-3626 psi])
	11006596 (251-285 bar [3640-4134 psi])
Cavity plug	11177714

Service parts

ECO 80 EVO, end plate



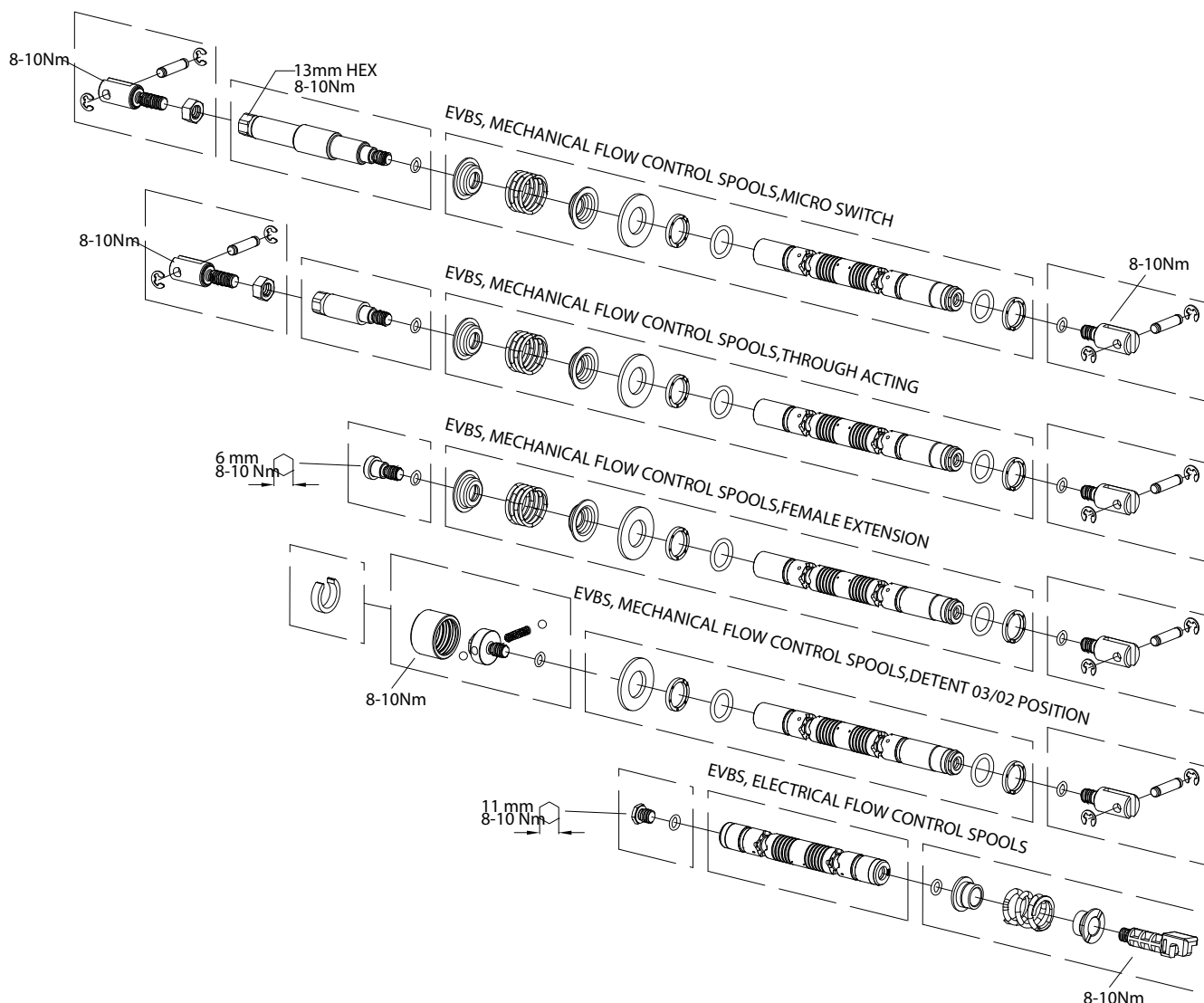
Type	Description	Code number	LX-port	Letter
EVO	End plate without LX-connection	11191585	-	A
	End plate with LX-connection	11191583	1/8 BSP	B
		11191582	7/16-20	
	End plate with Pneumatic port	11191584	1/8 BSP	C

Item	Description	Code number	Letter		
			A	B	C
1	EVO End Plate	See above	1	1	1
2	Plug for LX port	-	-	1	-
3	Plug for pneumatic port	-	-	1	1

New EVO end plates released October 2018. See [PIB \(link\)](#) for details.

Service parts

ECO 80 EVBS spools



Type	Description	Letter
EVBS	Mechanical flow control spool, female extension and micro switch	A
	Mechanical flow control spool, female extension and through acting	B
	Mechanical flow control spool, female extension and detent 03/02 position	C
	Mechanical flow control spool, female extension	D
	Electrical flow control spool	E

Item	Description	Code number	Letter				
			A	B	C	D	E
1	Female extension	050548	1	1	-	-	-
2	Screw including O-ring Ø 6.0 x 1.5	-	1	-	-	-	-
3	Main spool assembly	-	1	1	1	-	-
4	Female extension	11169581	1	1	1	1	-
5	Screw incl. O-ring Ø 6.0 x 1.5	-	-	1	-	-	-

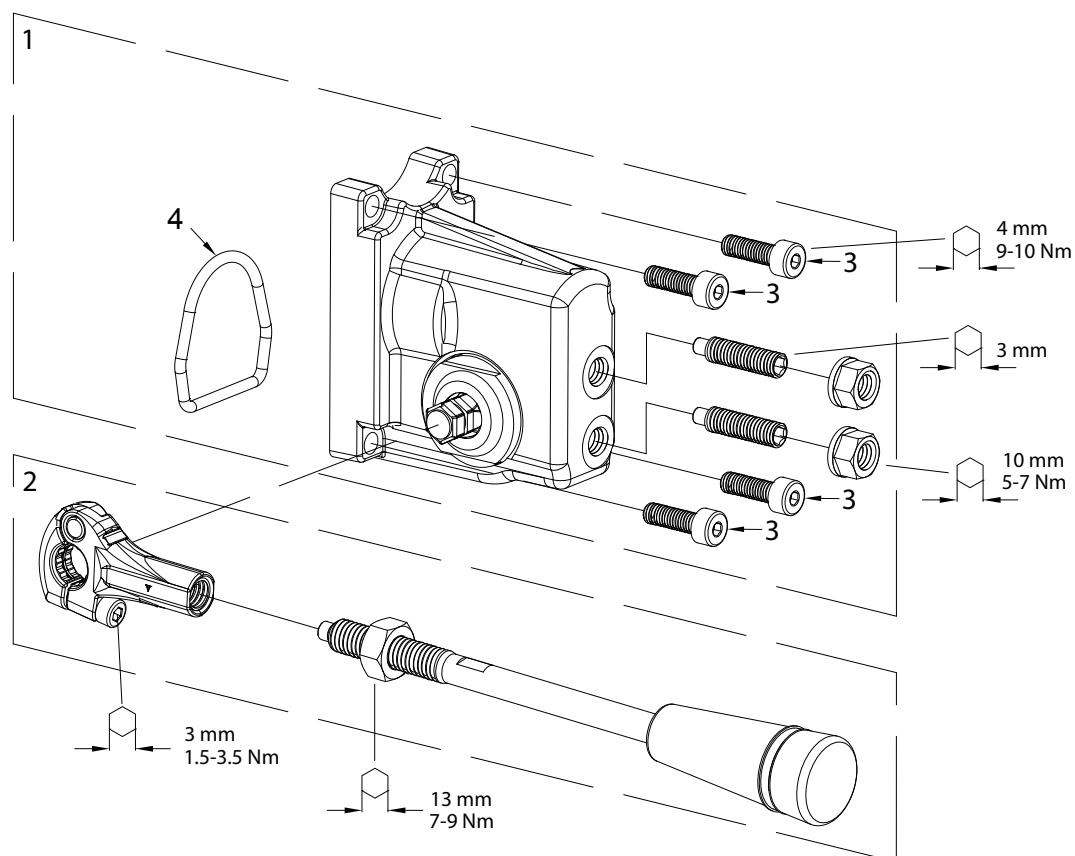
Service parts

Item	Description	Code number	Letter				
			A	B	C	D	E
6	Screw incl. O-ring Ø 6.0 x 1.5	-	-	-	1	-	-
7	Main spool assembly without spring and spring stop	-	-	-	1	-	-
8	Detent kit	11177713	-	-	-	1	-
9	Plug incl. O-ring Ø 6.0 x 1.5	-	-	-	-	-	1
10	Main spool	-	-	-	-	-	1
11	Tension rod incl. spring, spring stop and O-ring Ø 6.0 x 1.5	-	-	-	-	-	1

[For EVBS spool part numbers, see ECO 80 Technical Information.](#)

Service parts

ECO 80 EVM, mechanical actuation

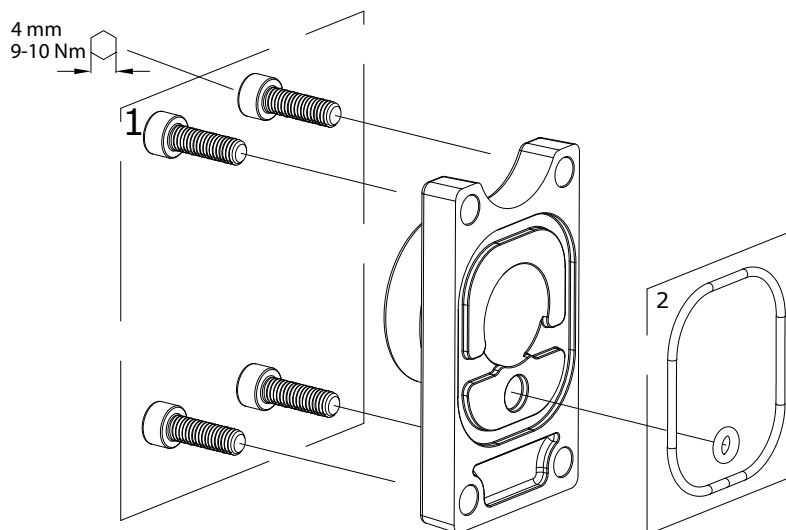


Type	Description	Code number	Letter
EVM	EVM actuator	11119157	A
	EVM actuator with lever	11167001	B
	EVM actuator with adjustment screws	11145204	C
	EVM actuator with adjustment screws and lever	11167002	D

Item	Description	Code number	Letter			
			A	B	C	D
1	EVM	-	1	1	1	1
2	Lever with handle and base	11107587	-	1	-	1
3	Screw M5 x 16 (12.9)	-	4	4	4	4
4	Profile O-ring	-	1	1	1	1

Service parts

ECO 80 EVC, cover for mechanical actuation

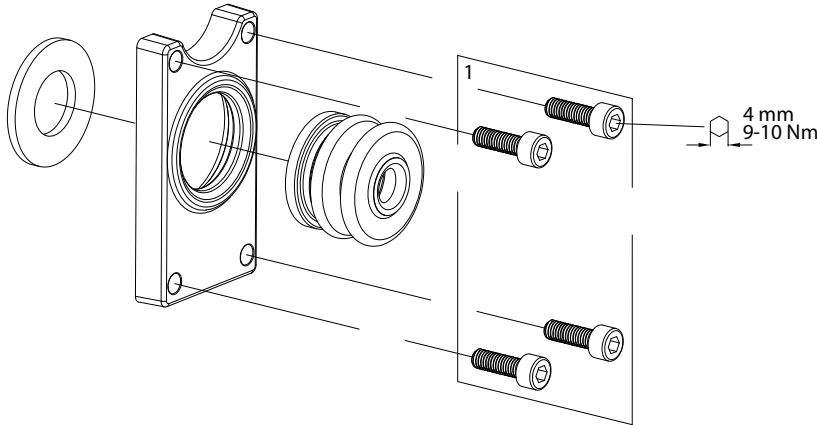


Type	Description	Code number
EVC	Cover for mechanical activation	11171318

Item	Description
1	Screw M5 x 16 (12.9)
2	O-ring Ø 20.35 x 1.78

Service parts

ECO 80 EVOS, open spool through action

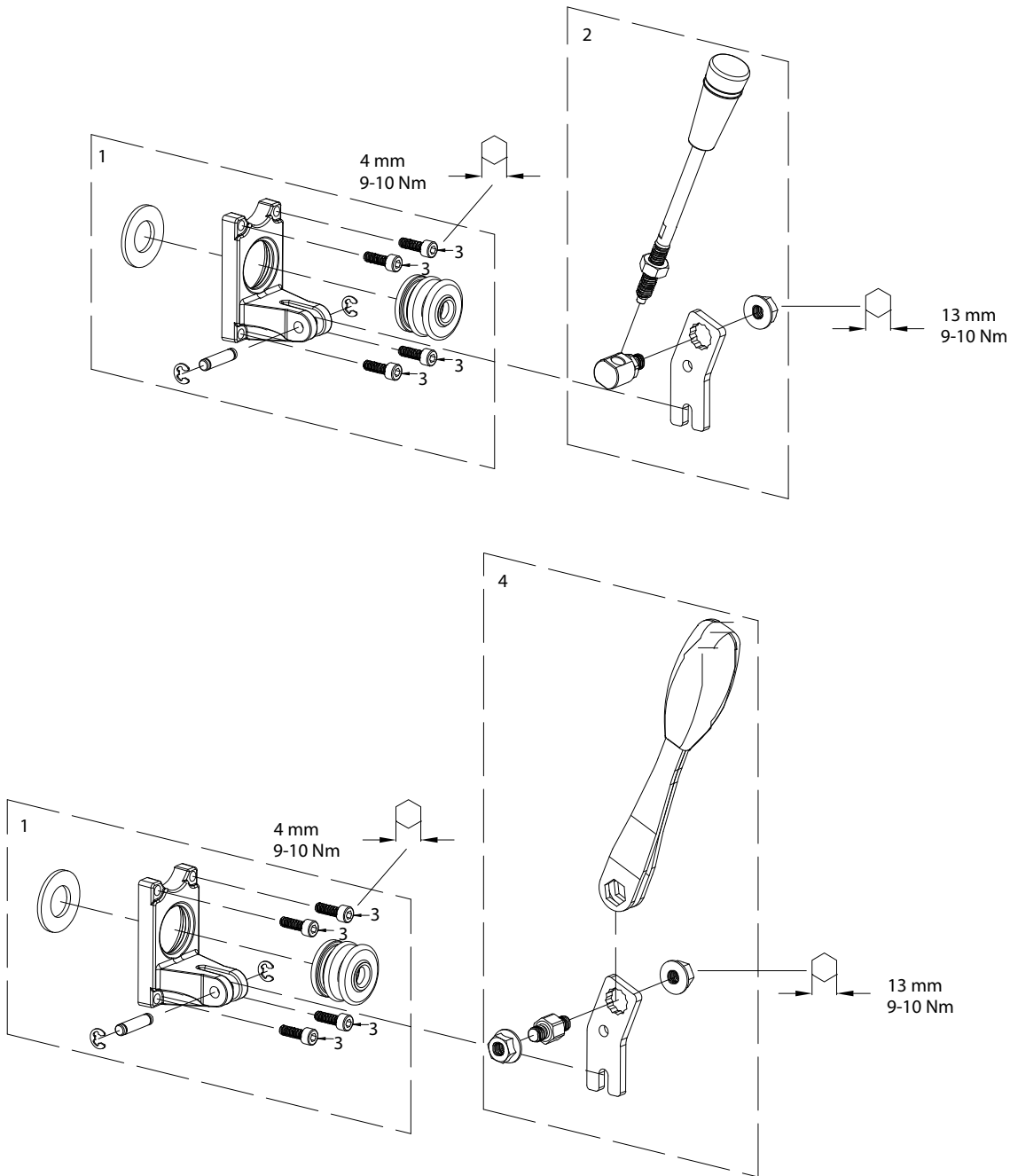


Type	Description	Code number
EVOS	EVOS80LS-Actuator-Thru	11175233

Item	Description
1	Screw M5 x 16 (12.9)

Service parts

ECO 80 EVOS, open spool mechanical actuation



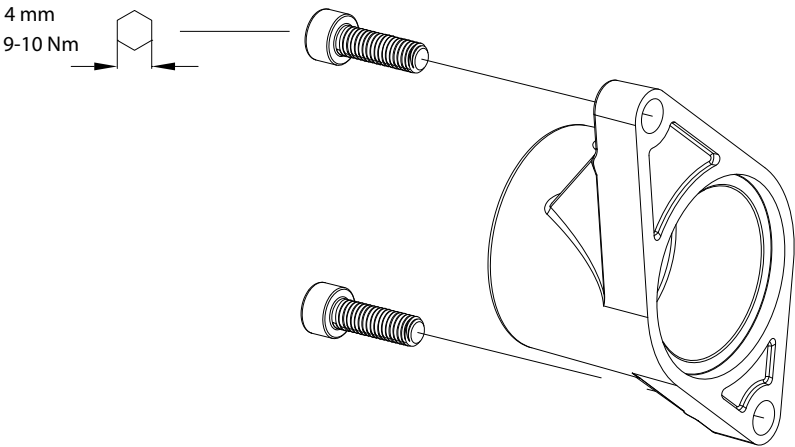
Type	Description	Code number
EVOS	EVOS80LS-Actuator-Mech	047768
	EVOS80LS-Actuator-Mech with lever	11175314
	EVOS80LS-Actuator-Mech with robust lever	11227308

Item	Description	Code number
1	Housing incl. screws	-
2	Lever with handle and base	11170923

Service parts

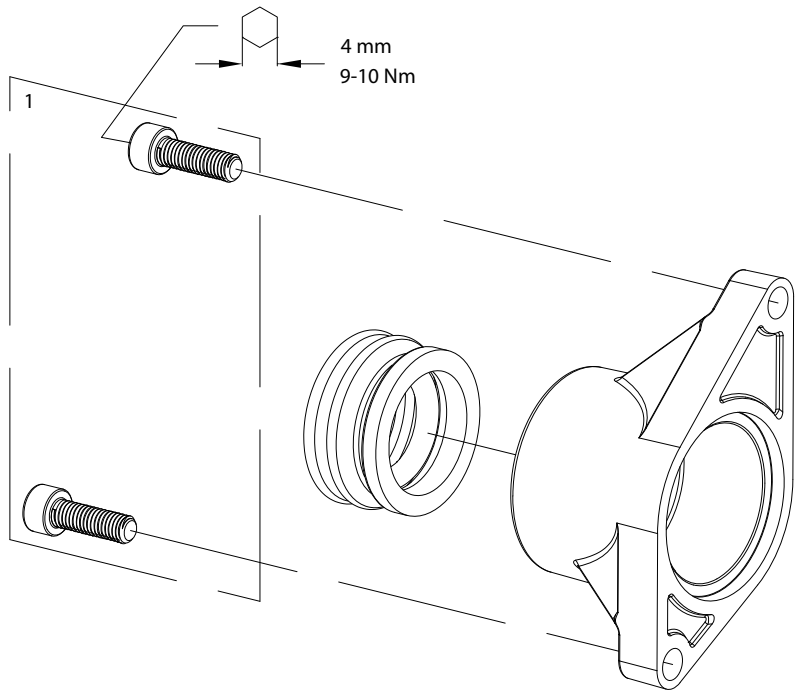
Item	Description	Code number
3	Screw M5 x 16 (12.9)	-
4	Robust lever with handle and base	11194826

ECO 80 EVME, spring center/detent



Type	Description	Code number
EVME	Spring centering, detent 03/02 position	11169579

ECO 80 EVME, through action

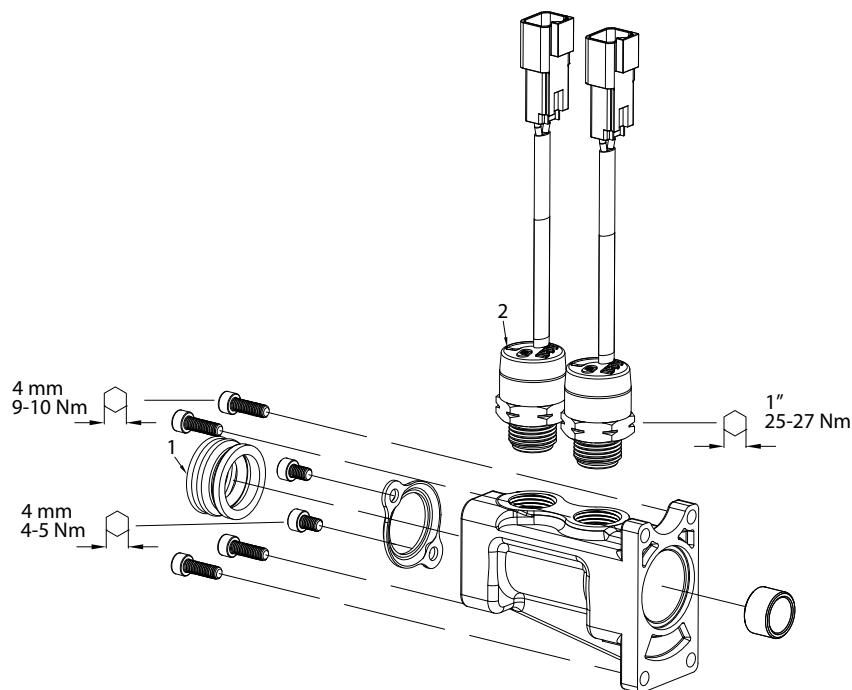


Type	Description	Code number
EVME	Through action	11169580

Service parts

Item	Description
1	Screw M5 x 16 (12.9)

ECO 80 EVME, micro switch NO

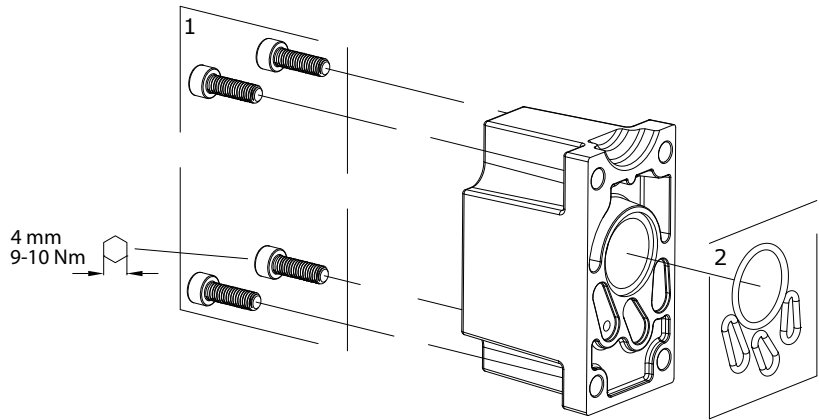


Type	Description	Code number
EVME	Micro switch NO	11170841

Item	Description	Code number
1	Rubber boot	11177717
2	Micro switch	11178486

Service parts

ECO 80 EVH, hydraulic actuation

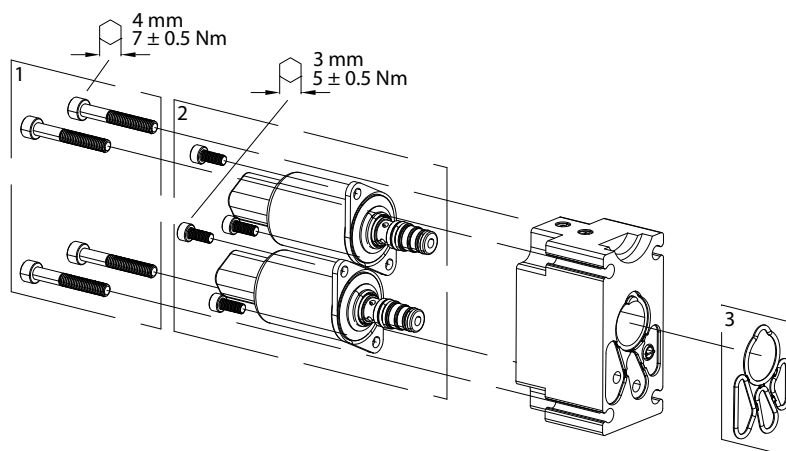


Type	Description	Code number	Letter
EVH	Cover for hydraulic actuation – 9/16-18 UNF	11169487	A
	Cover for hydraulic actuation – G1/4	11169486	B

Item	Description	Code number	Letter	
			A	B
1	Screw M5 x 16 (12.9)	-	4	4
2	Set of seals	-	1	1

Service parts

ECO 80 EVHC, proportional electrical control

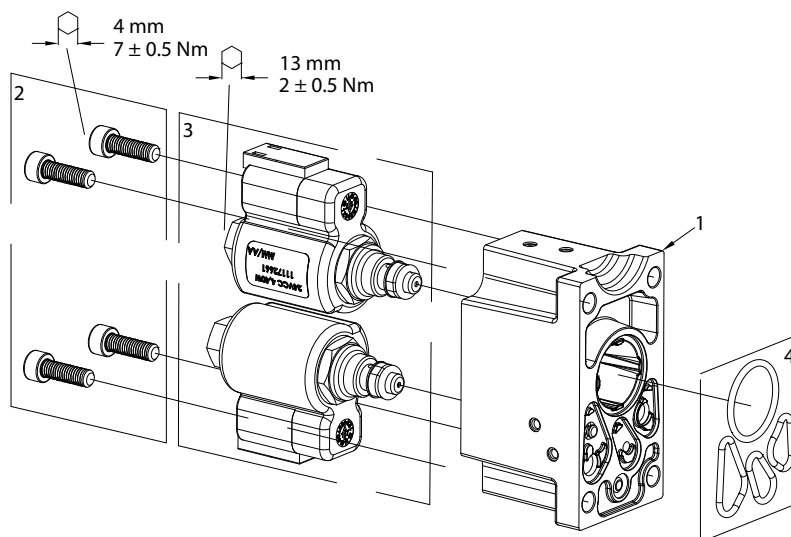


Type	Description	Code number	Letter
EVHC	DEUTSCH connector 12 V	11162297	A
	DEUTSCH connector 24 V	11162298	B

Item	Description	Code number	Letter			
			A	B	C	D
1	Screw M5 x 16 (12.9)	-	4	4	4	4
2	Proportional Coil 12 V, DEUTSCH connector incl. 4 screws	11061233	2	-	2	-
	Proportional Coil 24 V, DEUTSCH connector incl. 4 screws	11061234	-	2	-	2
3	Set of seals	-	1	1	1	1

Service parts

ECO 80 EVHCO, ON/OFF



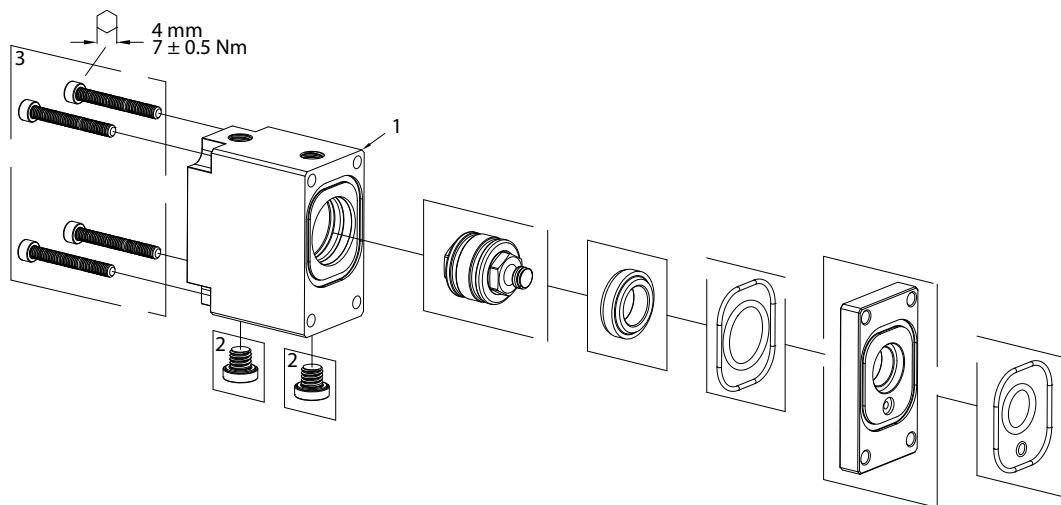
Type	Description	Code number	Letter
EVHCO	DEUTSCH connector 12 V	11186922	A
	DEUTSCH connector 24 V	11186911	B

Item	Description	Code number	Letter	
			A	B
1	Housing	-	1	1
2	Screw M5 x 16	-	4	4
3	Coil DEUTSCH connector 12 V	11198786	2	-
	Coil DEUTSCH connector 24 V	11198787	-	2
4	Set of seals	11198712	1	1

[This is a new version of the EVHCO ON/OFF actuator released June 2019. See PIB PV2019-419 for details.](#)

Service parts

ECO 80 EVPN, pneumatic actuator

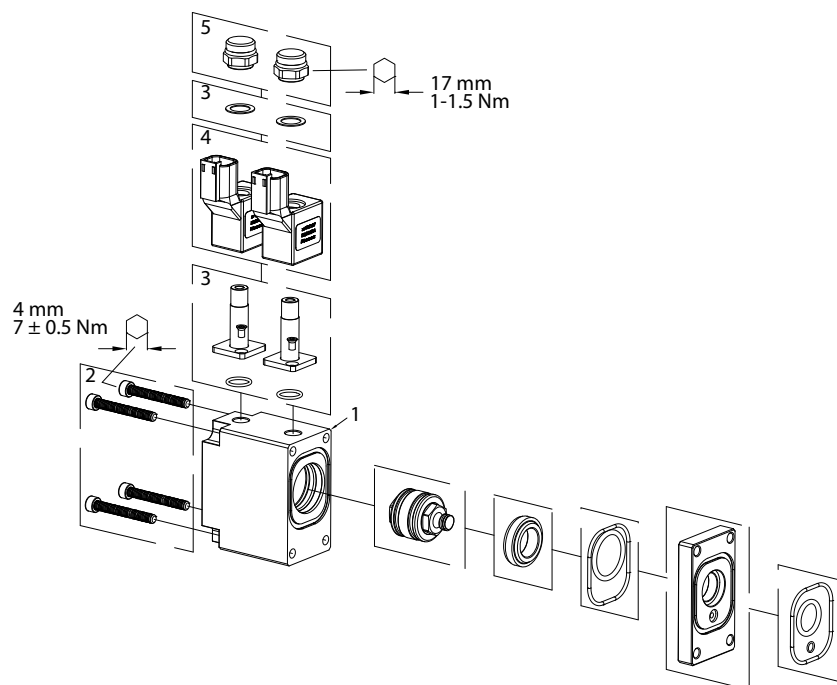


Type	Description	Code number	Letter
EVPN	Pneumatic actuator module	11198492	A

Item	Description	Code number	Letter
			A
1	EVPN	-	1
2	Plug for Air Inlet supply 1/8 BSP – ISO1179 N-NBR90	-	2
3	Screw M5 x 65	-	4
*	Set of seals	11230331	1

Service parts

ECO 80 EVPN, electrical pneumatic actuator

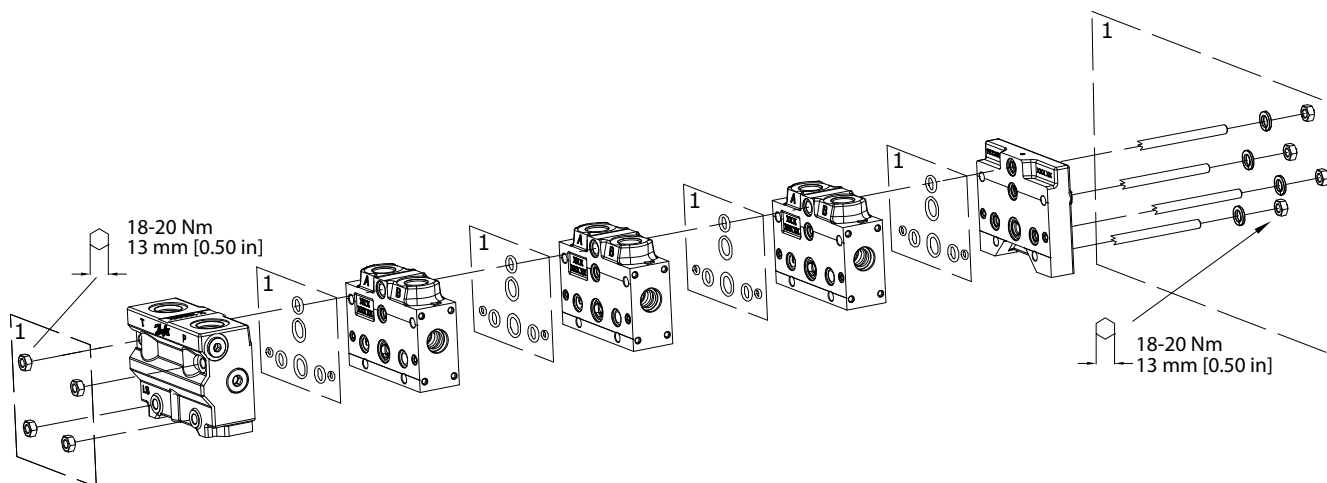


Type	Description	Code number	Letter
EVPN	Electric pneumatic actuator module – DEUTSCH connector 12 V	11193722	A
	Electric pneumatic actuator module – DEUTSCH connector 24 V	11193723	B
	Electric pneumatic actuator module – AMP connector 24 V	11194345	C

Item	Description	Code number	Letter		
			A	B	C
1	EVPN	-	1	1	1
2	Screw M5 x 65	-	4	4	4
3+4+5	Coil DEUTSCH connector 12 V	11234123	2	-	-
	Coil DEUTSCH connector 24 V	11234124	-	2	-
	Coil AMP connector 24 V	11142988	-	-	2
*	Set of seals	11230331	1	1	1

Service parts

ECO 80 EVT, assembly kit



Item	Description	Code number
1	Set of seals for ECO 80 wit 7 work sections: EVB 80	11178489

Service parts

ECO 80 set of seals

Type		Code number	Letter
EVP	Module	11177669	A
EVP with facilities for EVPX	Module	11177670	B
EVB, Low & High body	Module	11177712	C
EVT	For ECO 80 wit 7 work sections: EVB 80	11178489	D
EVBS, Mechanical spools	Module	11177715	E
EVM	Module	11177716	F
EVHC/O and EVH	Module	11177718	G
EVC	Module	11187093	H

Description	Letter							
	A	B	C	D	E	F	G	H
O-ring Ø 11.0 x 2.0	1	1	-	-	-	-	-	-
O-ring Ø 15.3 x 2.4 (NBR D-90)	2	2	-	-	-	-	-	-
O-ring Ø 11.89 x 1.98 (NBR D-90)	2	1	-	-	-	-	-	-
O-ring Ø 1.98 x 11.89 (NBR D-90)	-	1	-	-	-	-	-	-
Plug 7/16-20 UNF-2A	-	1	-	-	-	-	-	-
O-ring Ø 16.36 x 2.21 (NBR D-90)	-	-	1	-	-	-	-	-
O-ring Ø 15.6 x 1.78	-	-	2	-	-	-	-	-
O-ring Ø 7.65 x 1.78 (NBR D-90)	-	-	2	-	-	-	-	-
O-ring Ø 2.5 x 11 (NBR D-90)	-	-	-	24	-	-	-	-
O-ring Ø 2 x 5 (NBR D-70)	-	1	-	16	-	-	-	-
O-ring Ø 2.62 x 15.54 (Viton)	-	1	-	16	-	-	-	-
O-ring Ø 2.62 x 15.54 (NBR D-70)	-	-	-	-	2	-	-	-
Backup	-	-	-	-	2	-	-	-
Seal nut	-	-	-	-	-	2	-	-
Screw M5 x 16 (12.9)	-	-	-	-	-	4	4	4
Profile O-ring	-	-	-	-	-	1	-	-
Profile ring	-	-	-	-	-	-	2	-
Profile ring	-	-	-	-	-	-	2	-
O-ring Ø 20.35 x 1.78 (NBR D-70)	-	-	-	-	-	-	1	-
O-ring Ø 41 x 1.78 (NBR D-70)	-	-	-	-	-	-	-	1
O-ring Ø 3.68 x 1.78 (NBR D-70)	-	-	-	-	-	-	-	1

Products we offer:

- DCV directional control valves
- Electric converters
- Electric machines
- Electric motors
- Gear motors
- Gear pumps
- Hydrostatic motors
- Hydrostatic pumps
- Orbital motors
- PLUS+1® controllers
- PLUS+1® displays
- PLUS+1® joysticks and pedals
- PLUS+1® operator interfaces
- PLUS+1® sensors
- PLUS+1® software
- PLUS+1® software services, support and training
- Position controls and sensors
- PVG proportional valves
- Steering components and systems
- Telematics

Danfoss Power Solutions is a global manufacturer and supplier of high-quality hydraulic and electric components. We specialize in providing state-of-the-art technology and solutions that excel in the harsh operating conditions of the mobile off-highway market as well as the marine sector. Building on our extensive applications expertise, we work closely with you to ensure exceptional performance for a broad range of applications. We help you and other customers around the world speed up system development, reduce costs and bring vehicles and vessels to market faster.

Danfoss Power Solutions – your strongest partner in mobile hydraulics and mobile electrification.

Go to www.danfoss.com for further product information.

We offer you expert worldwide support for ensuring the best possible solutions for outstanding performance. And with an extensive network of Global Service Partners, we also provide you with comprehensive global service for all of our components.

Hydro-Gear

www.hydro-gear.com

Daikin-Sauer-Danfoss

www.daikin-sauer-danfoss.com

Local address:

**Danfoss
Power Solutions (US) Company**
2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515 239 6000

**Danfoss
Power Solutions GmbH & Co. OHG**
Krokamp 35
D-24539 Neumünster, Germany
Phone: +49 4321 871 0

**Danfoss
Power Solutions ApS**
Nordborgvej 81
DK-6430 Nordborg, Denmark
Phone: +45 7488 2222

**Danfoss
Power Solutions Trading
(Shanghai) Co., Ltd.**
Building #22, No. 1000 Jin Hai Rd
Jin Qiao, Pudong New District
Shanghai, China 201206
Phone: +86 21 2080 6201

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