

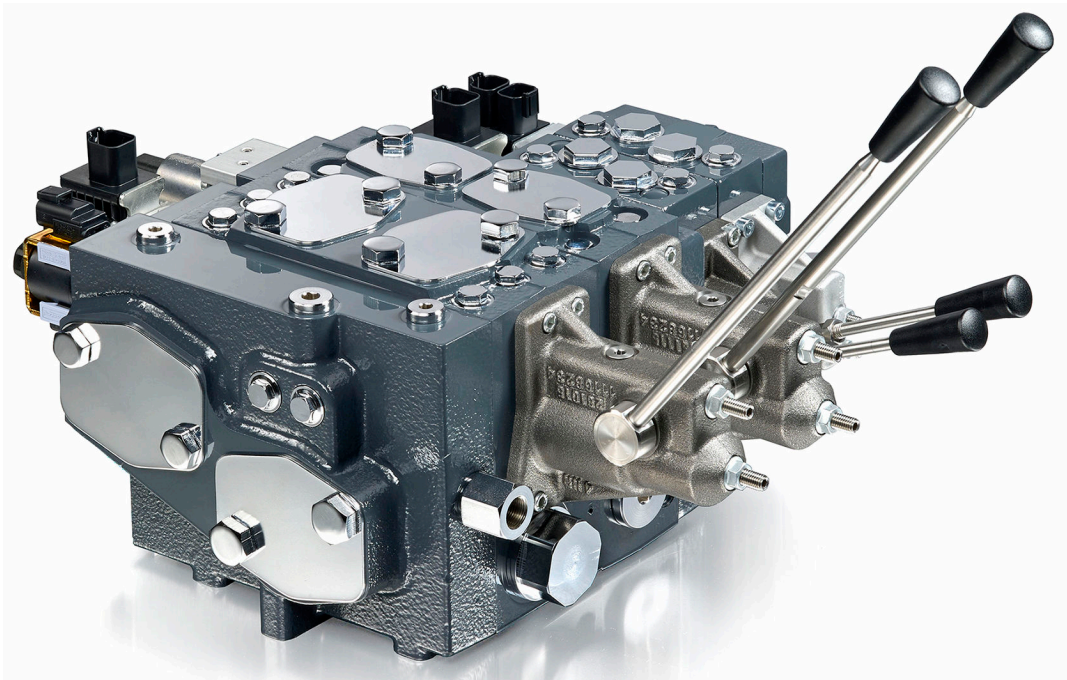
ENGINEERING
TOMORROW



Service and Parts Manual

Proportional Valve Group

PVG 128/256



Revision history

Table of revisions

Date	Changed	Rev
July 2017	First edition	0101

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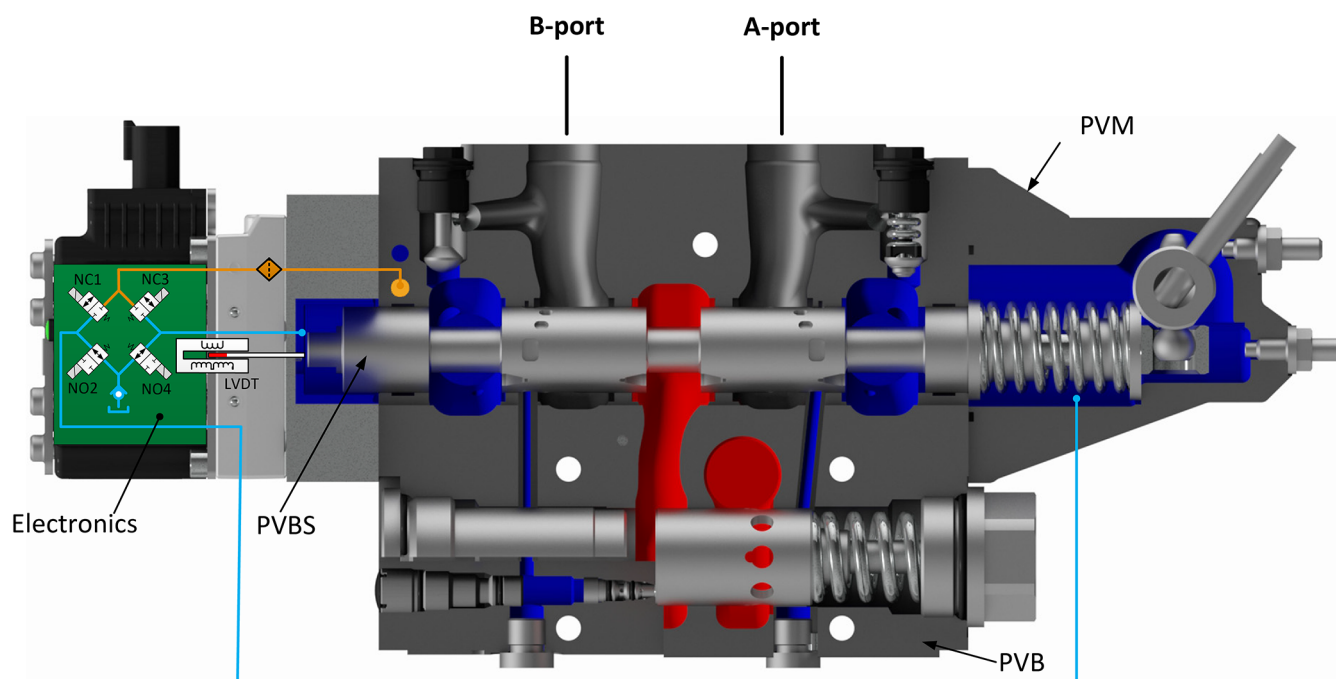
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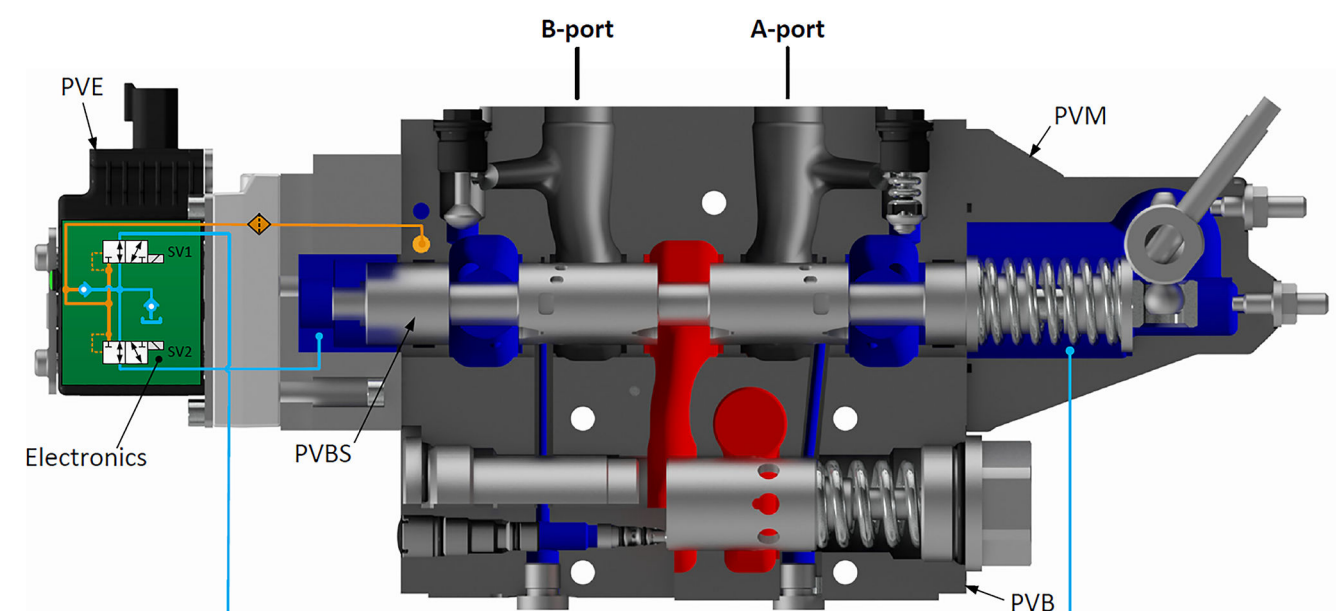
Function

Sectional Drawing

PVG 256 with PVEH



PVG 256 with PVEO

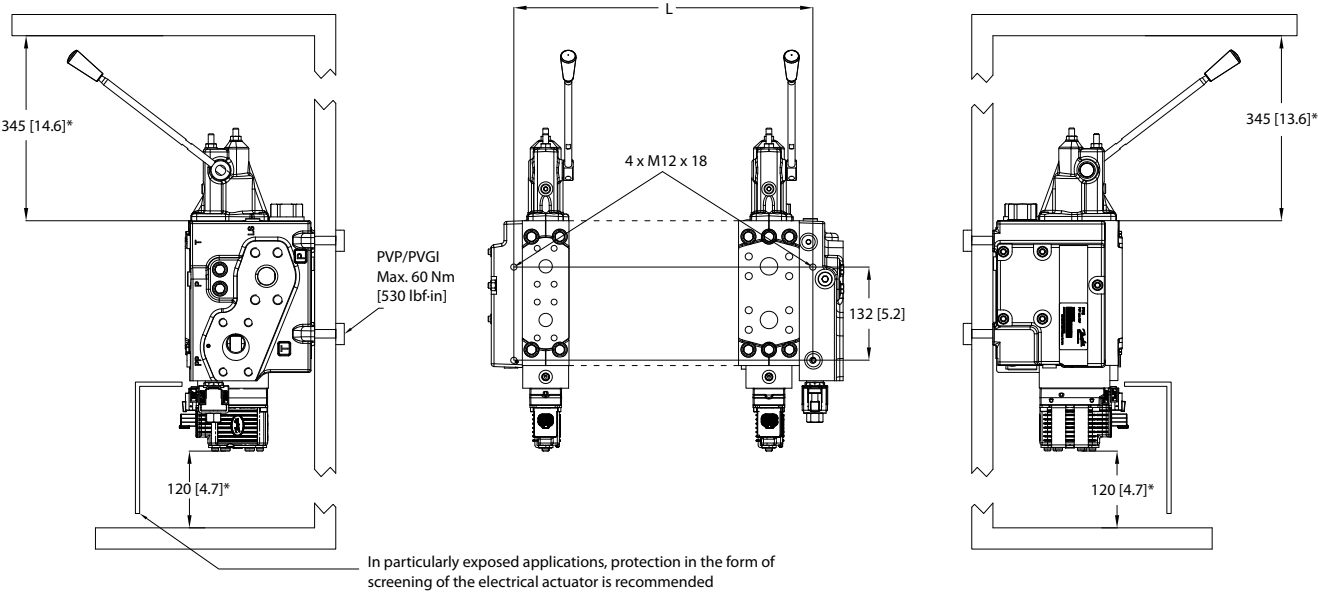


Installation

Installation and Plug Orientation

PVB 128	1	2	3	4	5	6	7	8	9
L (mm)	98.5	164.5	230.5	296.5	362.5	428.5	494.5	560.5	626.5
L (in)	3.88	6.48	9.07	11.67	14.27	16.87	19.47	22.07	24.67

PVB 256	1	2	3	4	5	6	7
L (mm)	118.5	204.5	290.5	376.5	462.5	548.5	634.5
L (in)	4.67	8.05	11.44	14.82	18.21	21.59	24.98



* Room for dismantling

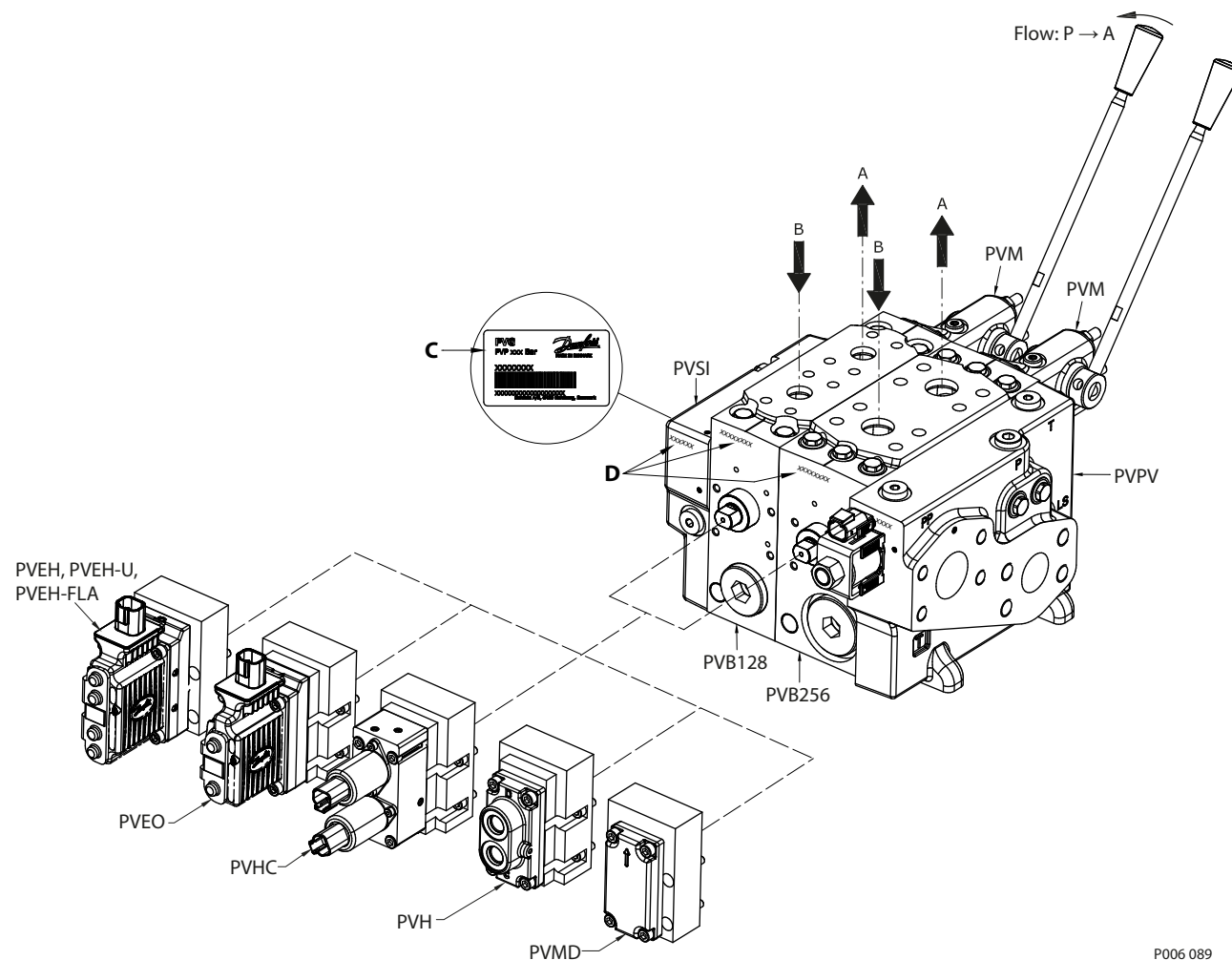
Installation

Installation and Identification

Identification

- C** PVG - number, week and year of installation and series number PVP - pressure setting
- D** Engraved P/N on PVPV, PVB and PVSI

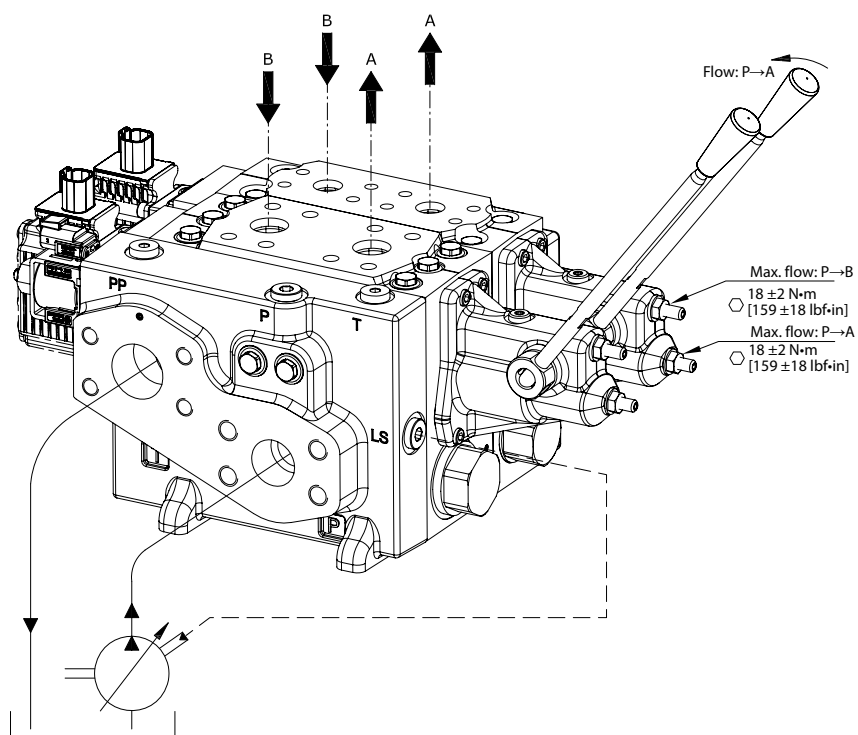
Oil flow direction for standard assembled groups.



P006 089

Installation

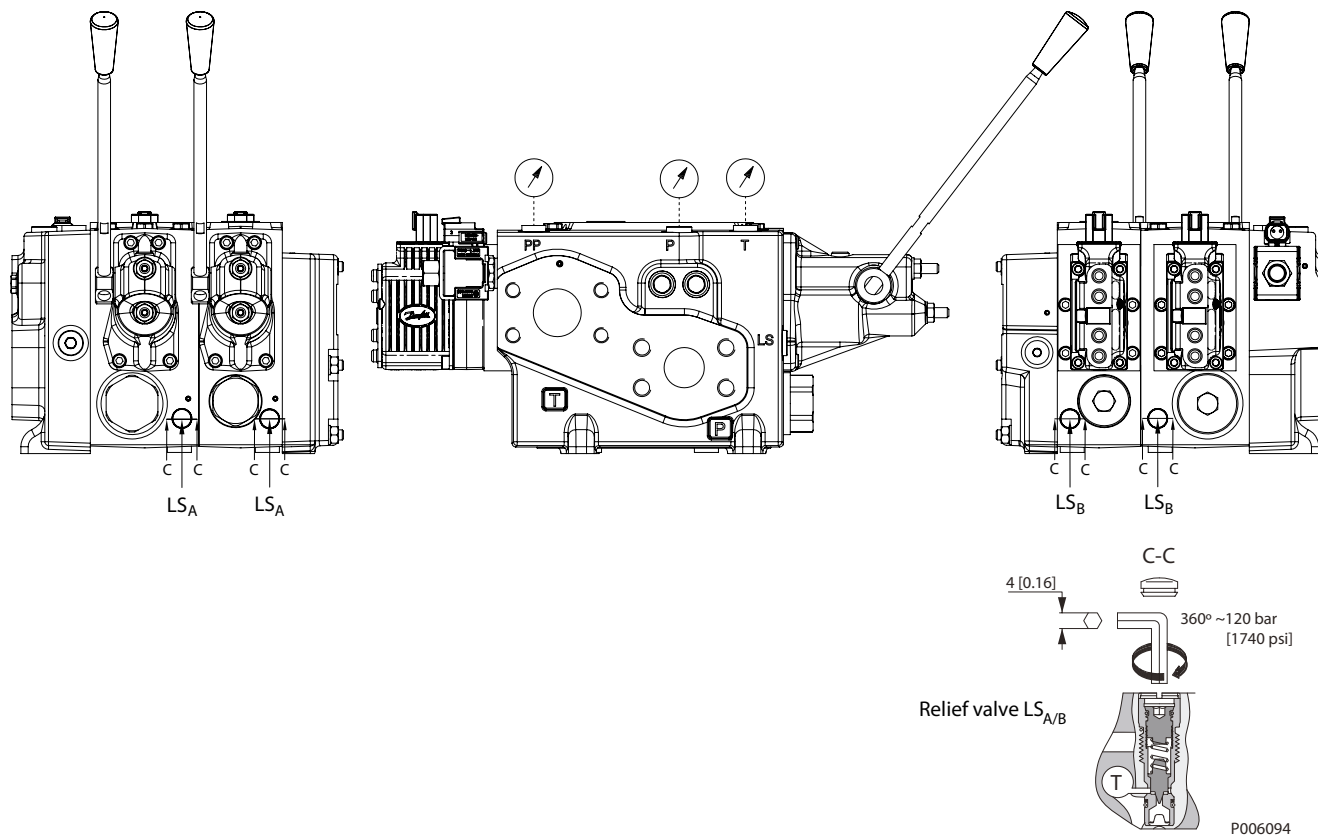
Connections Pump Side and Max Flow Setting



Installation

PVB Pressure Settings

Pressure setting LS_A , LS_B



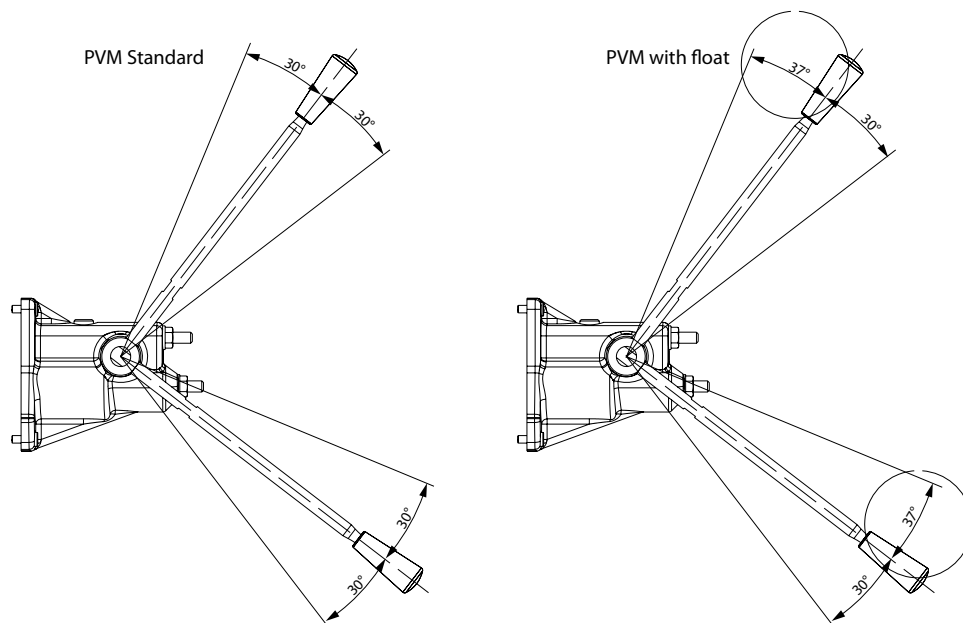
Rated pressure

Product	Rated Pressure
PVG 128 with PVSI	350 bar [5076 psi]
PVG 256 w PVSI	350 bar [5076 psi]

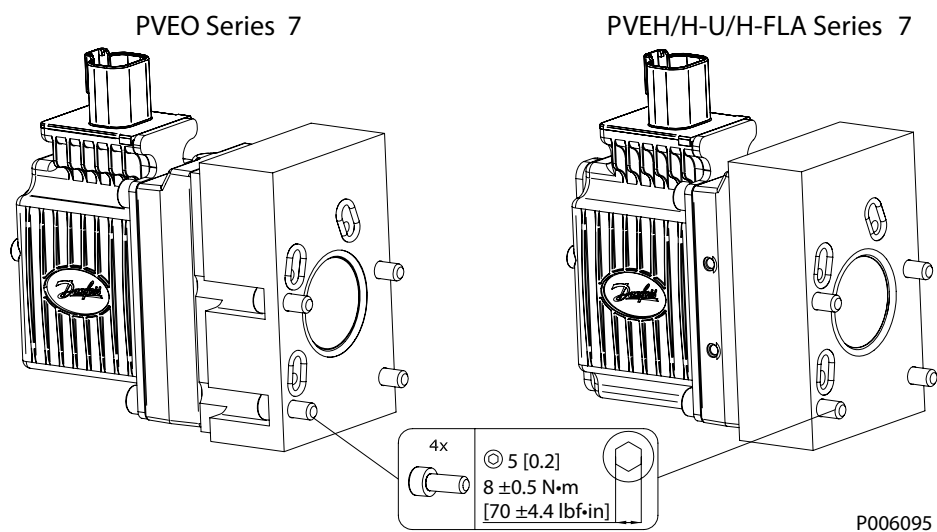
Installation

Installation of Lever

Screw the lever completely in



Installation of PVE



P006095

Warning

For safety reasons, the PVE actuator and interface components must be considered as one unit. Do not try to disassemble under any circumstances.

Installation

PVE Connector and Technical Data

PVE connector variants

1x4 DEUTSCH	1x6 DEUTSCH	1x4 DIN

Pin		Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
PVEO	1x4 DEUTSCH	Udc_A	GND	GND	Udc_B		
	1x4 DIN	Udc_A	Udc_B		GND		
PVEH PVEH-U	1x4 DEUTSCH	Us	Error	GND	Udc		
	1x4 DIN	Udc	Us	Error	GND		
PVEH-FLA	1x6 DEUTSCH	Us	Error	Float		GND	Udc

PVE control specifications

PVEO control specifications

Control specification		PVEO	
Supply Voltage (Udc)	Rated	12 Vdc	24 Vdc
	Range	11→15 Vdc	22→30 Vdc
	Max. ripple	5%	5%

PVEH/H-FLA and PVEH-U control specifications

Control specification		PVEH/H-FLA	PVEH-U
Supply Voltage (Udc)	Rated/Range	11→32 Vdc	11→32 Vdc
	Max. ripple	5%	5%
Signal Voltage (Us)	Neutral	$U_s = 0.5 \cdot U_{dc}$	$U_s = 5 \text{ V}$
	Q: P→A	$U_s = (0.5 \rightarrow 0.25) \cdot U_{dc}$	$U_s = 5 \text{ V} \rightarrow 2.5 \text{ V}$
	Q: P→B	$U_s = (0.5 \rightarrow 0.75) \cdot U_{dc}$	$U_s = 5 \text{ V} \rightarrow 7.5 \text{ V}$
Signal Voltage PWM (Us)	Neutral	$U_s = 50\% \text{ DUT}$	
	Q: P→A	$U_s = 50\% \rightarrow 25\% \text{ DUT}$	
	Q: P→B	$U_s = 50\% \rightarrow 75\% \text{ DUT}$	
PWM Frequency (Us)	Recommended	>1000 Hz	
Input Impedance	Rated	12 kΩ	
Input Capacitance	Rated	100 nF	

PVE operating conditions

PVEO, PVEH/H-U/H-FLA Operating Conditions		
Pilot Pressure	Nominal	13.5 bar [196 psi]
	Minimum	10.0 bar [145 psi]
	Maximum	15.0 bar [220 psi]
Storage Temperature	Ambient	-50°C→90°C [-58°F→194°F]

Installation

PVEO, PVEH/H-U/H-FLA Operating Conditions		
Operating Temperature	Ambient	-40°C→90°C [-40°F→194°F]
Oil Viscosity	Operating range	12→75 cSt [65→347 SUS]
	Minimum	4 cSt [39 SUS]
	Maximum	460 cSt [2128 SUS]
Oil Cleanliness	Maximum	Maximum

PVE LED characteristics

PVEO LED characteristics

Color	LED view	Function
Green		Power ON

PVEH/H-FLA LED characteristics

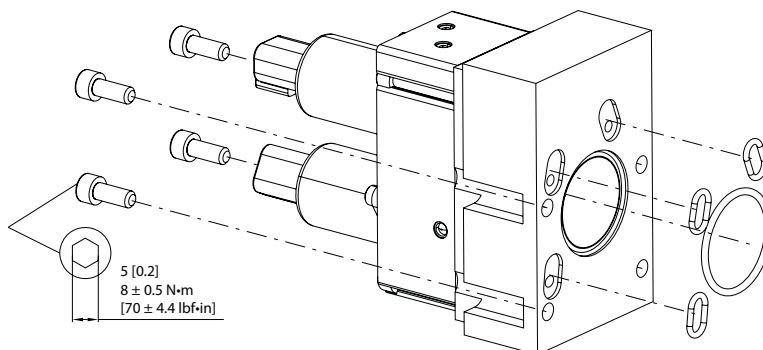
Color	LED view	Function
Green		Operating
Green @ 1.5 Hz		Neutral - Power Save
Red		Internal fault
Red @ 1.5 Hz		External or Float fault

PVEH-U LED characteristics

Color	LED view	Function
Green		Operating
Green @ 1.5 Hz		Neutral - Power Save
Red		Internal fault
Red @ 1.5 Hz		External or Float fault
Yellow		Disable mode

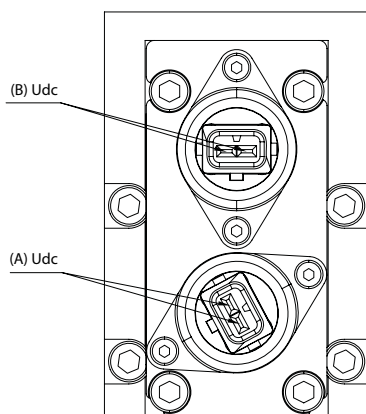
Installation

Installation of PVHC

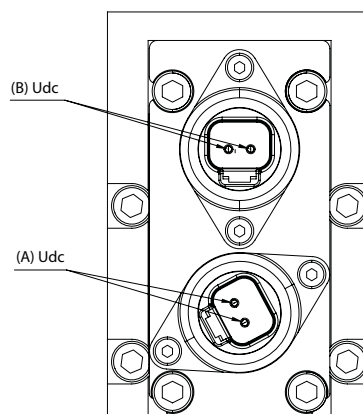


The seal in the PVHC connector and the seals for individual conductors are crucial for correctly sealing the connector.

DEUTSCH Version



AMP Version



Technical data

Controller output current range	12 V	1 - 1500 mA
	24 V	0 - 750 mA
Coil resistance	12 V	$4.72 \Omega \pm 5\%$
	24 V	$20.8 \Omega \pm 5\%$
Pilot pressure (over tank)*	Nominal	25 bar [363 psi]
	Minimum	21 bar [305 psi]
	Maximum	25 bar [363 psi]
Control pressure	Range	5 - 15 bar [72.5 - 217.5 psi]
Max. tank pressure	Port T Static	25 bar [363 psi]
	Port T Dynamic	30 bar [435 psi]
Temperature range	Ambient	$-30^{\circ}\text{C} \rightarrow 80^{\circ}\text{C}$ [$-22^{\circ}\text{F} \rightarrow 176^{\circ}\text{F}$]
	Medium	$-20^{\circ}\text{C} \rightarrow 80^{\circ}\text{C}$ [$-4^{\circ}\text{F} \rightarrow 176^{\circ}\text{F}$]
Oil viscosity	Operating range	$12 \rightarrow 75 \text{ mm}^2/\text{s}$ [$65 \rightarrow 347 \text{ SUS}$]
	Minimum	$4 \text{ mm}^2/\text{s}$ [39 SUS]
	Maximum	$400 \text{ mm}^2/\text{s}$ [2130 SUS]
Enclosure - Protection class	DEUTSCH DT	IP 67

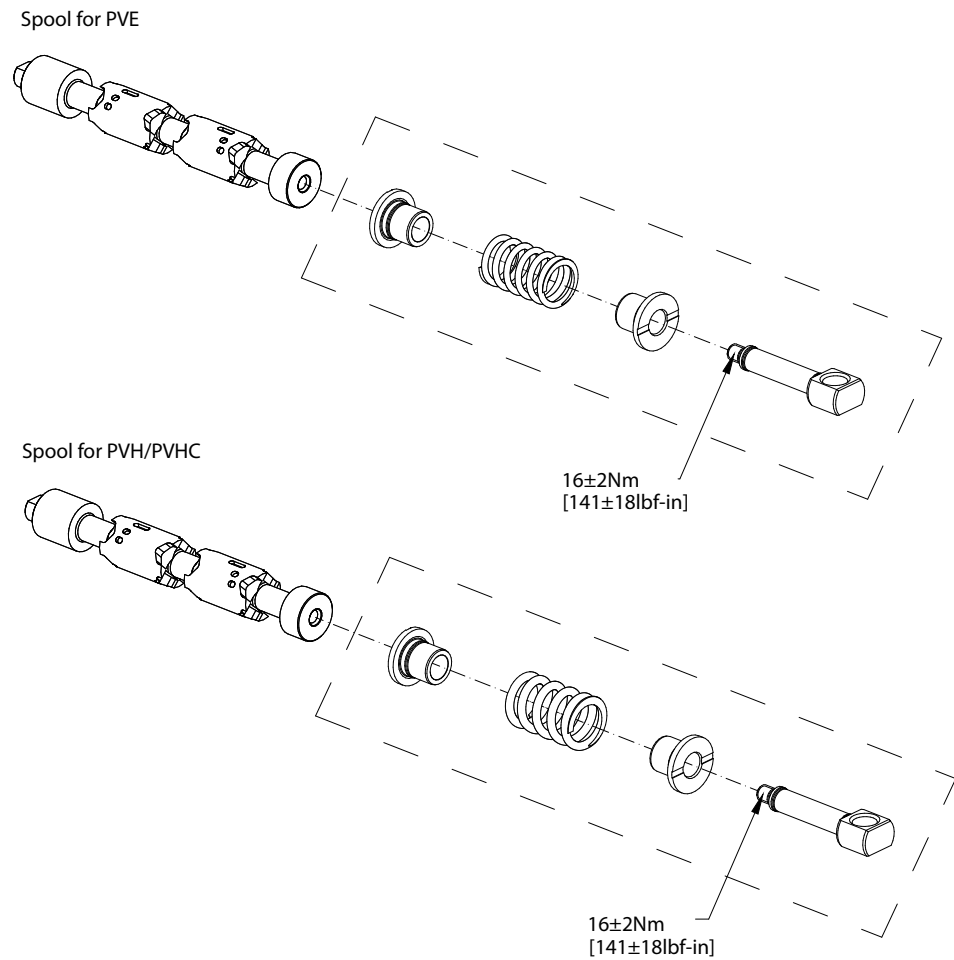
Installation

Technical data (continued)

	AMP JPT 12/24 V	IP 66
Filtering in the hydraulic system; Max. permissible degree of contamination		23/19/16 (ISO 4406, 1999 version)

* Designed to be used with hydraulic activated spools

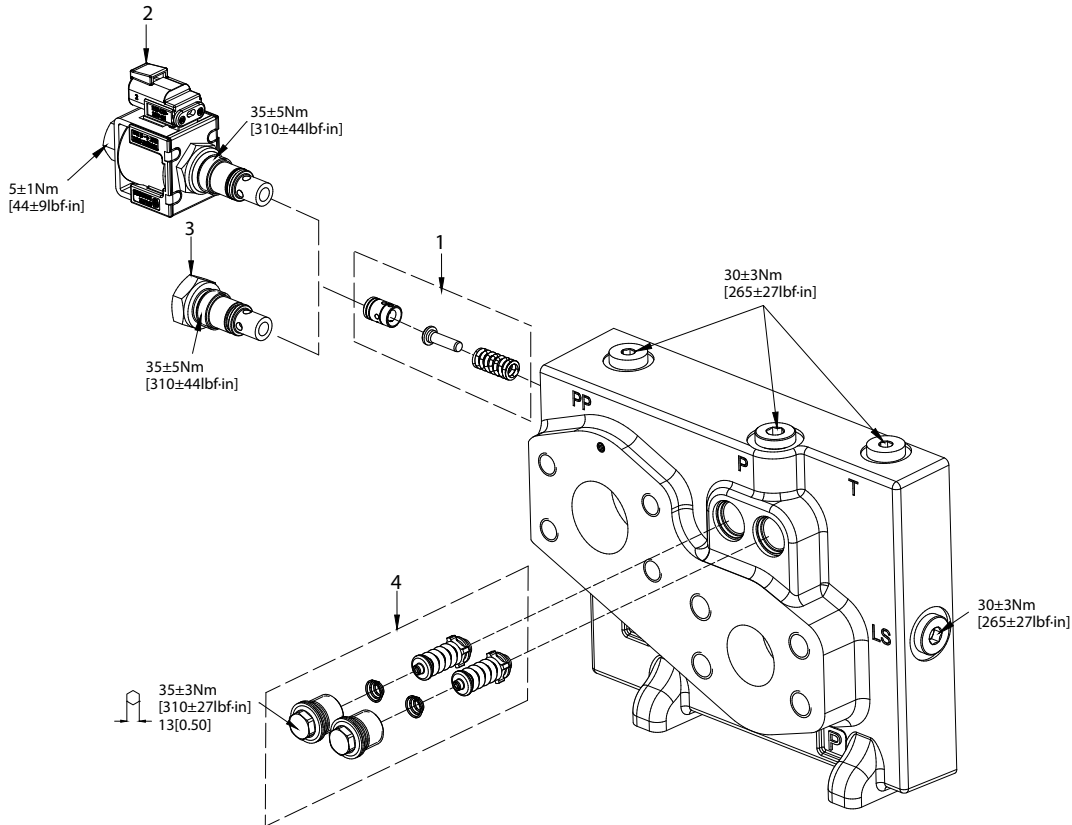
Standard Main Spool Assembly PVE and PVH/PVHC



Same tightening torque for PVE and PVH/PVHC spools

PVG 128/256 Service Parts

PVPV, Closed Center Pump Side Module

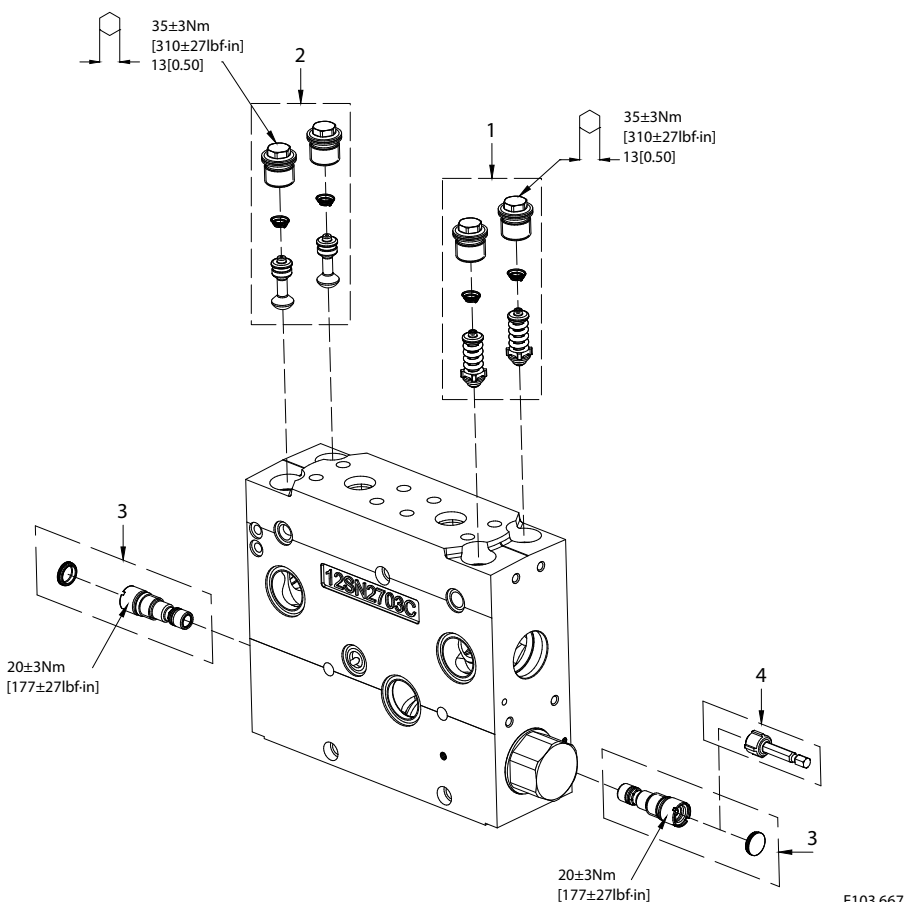


Type	Description	Code number				Letter
		Metric flange	G1-1/2" BSP	SAE flange	Thread ports 1-7/8 UNF	
PVPV	Closed center with pilot supply for electrical actuation, pilot gage port, and facility for pilot shut off	11173130				A
			11176703			
				11176691		
					11176702	
	Closed center with pilot supply for hydraulic actuation, pilot gage port, and facility for pilot shut off	11178095				B
			11178098			
				11178117		
					11178119	

Item	Description	Code numbers	Letter	
			A	B
1	Pilot pressure reducing valve	-		
2	PVPP 12V	11160318		
2	PVPP 24V	11160319		
3	Plug if no PVPP is mounted	-		
4	Shock and anti-cavitation Valve	See PVL/PVLA	2	2

PVG 128/256 Service Parts

PVB 128, Basic Module



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Warning

Risk of leak

The module will leak if the flange mount screws are not properly secured.

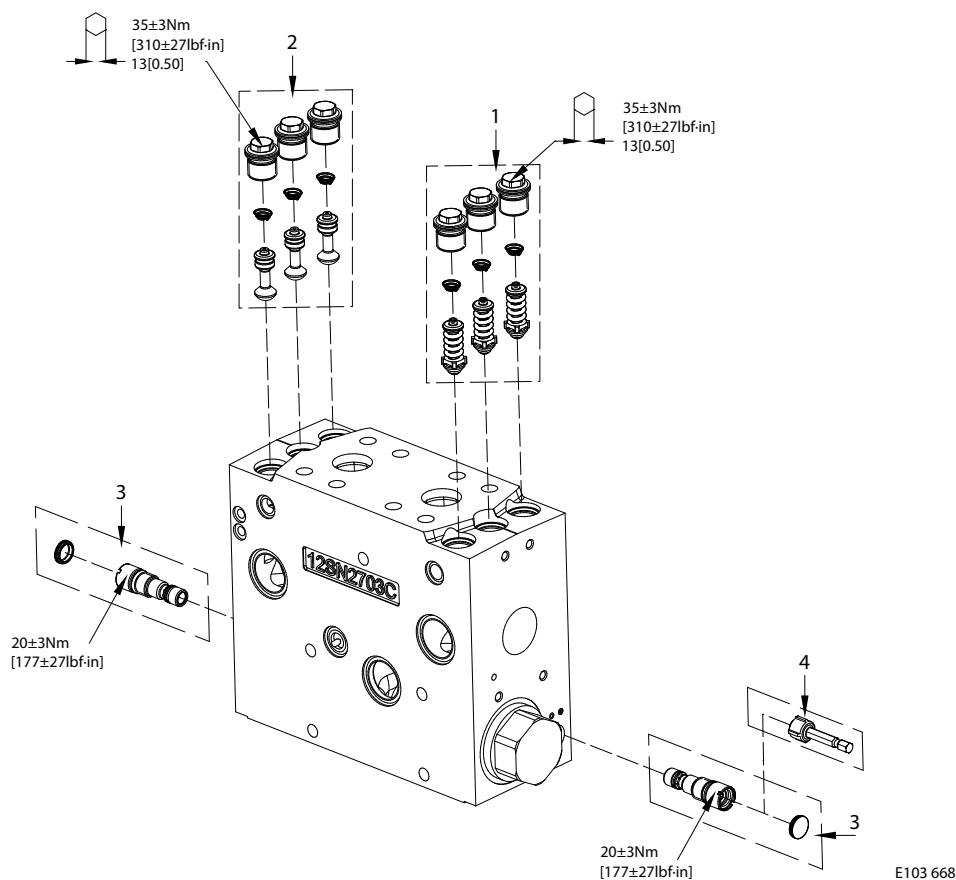
Flange mount screws according to ISO 6162-2.

Type	Description	Code number				Letter
		Metric flange	G1-1/2" BSP	SAE flange	Thread ports 1-7/8 UNF	
PVB 128	Compensated basic module	11170522	11170528	11170524	11170526	A
	Compensated basic module with LSA/B relief valve for each work port	11176915	11176918	11176916	11176917	B
	Compensated basic module with LSA/B relief valve for each work port and 2xPVLs for each work port	11165621	11170527	11170523	11170525	C

Item	Description	Code number	Letter		
			A	B	C
1 and 2	Shock and anti-cavitation Valve	See PVLp/PVLA			4
3	LS relief valve	155L6495		2	2
4	LS relief valve service tool	155L6494			

PVG 128/256 Service Parts

PVB 256, Basic Module

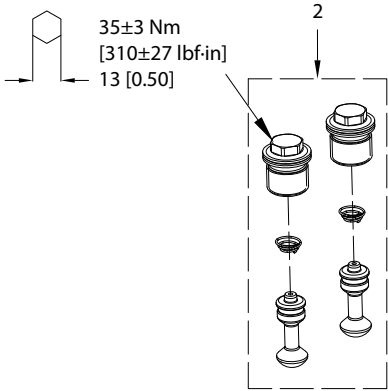
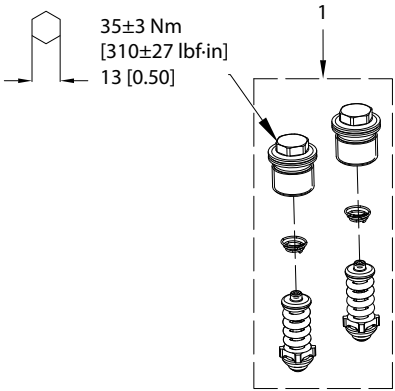


Type	Description	Code number				Letter
		Metric flange	G1-1/2" BSP	SAE flange	Thread ports 1-7/8 UNF	
PVB 256	Compensated basic module	11169244	11169252	11169248	11177020	A
	Compensated basic module with LSA/B relief valve for each work port	1117015	11177017	11177016	11177019	B
	Compensated basic module with LSA/B relief valve for each work port and 3xPVLPs for each work port	11169243	11169251	11169247	11177018	C
	Turbo compensator feature basic module with LS A/B relief valve for each work port and 3xPVLPs for each work port	11183379	11183406	11183404	11183402	D

Item	Description	Code number	Letter			
			A	B	C	D
1 and 2	Shock and anti-cavitation Valve	See PVL/PVLA			4	4
3	LS relief valve	155L6495		2	2	2
4	LS relief valve service tool	155L6494				

PVG 128/256 Service Parts

PVLP Shock and PVLA, Suction Valves

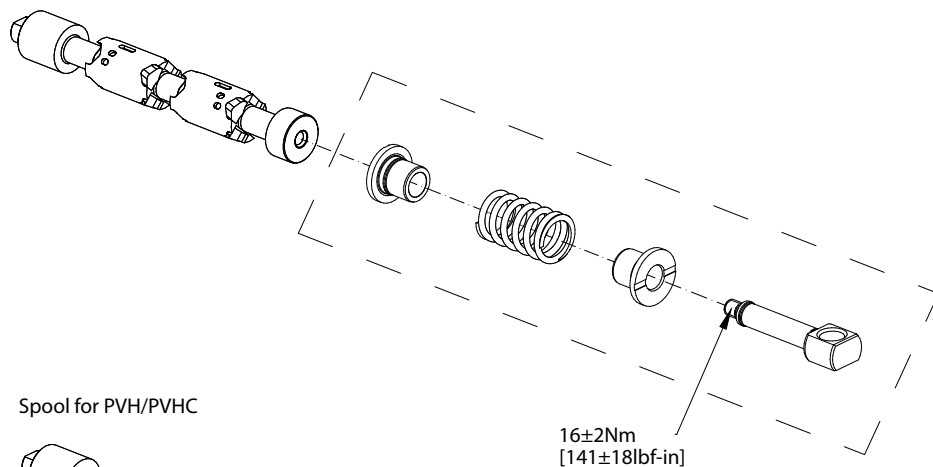


Type	Part number	PVLP/PVLA
PVLA	157B2001	
PVLP	157B2032	
	157B2050	
	157B2063	
	157B2080	
	157B2100	
	157B2125	
	157B2140	
	157B2150	
	157B2160	
	157B2175	
	157B2190	
	157B2210	
	157B2230	
	157B2240	
	157B2250	
	157B2265	
	157B2280	
	157B2300	
	157B2320	
	157B2350	
	157B2380	
Plug	157B2002	

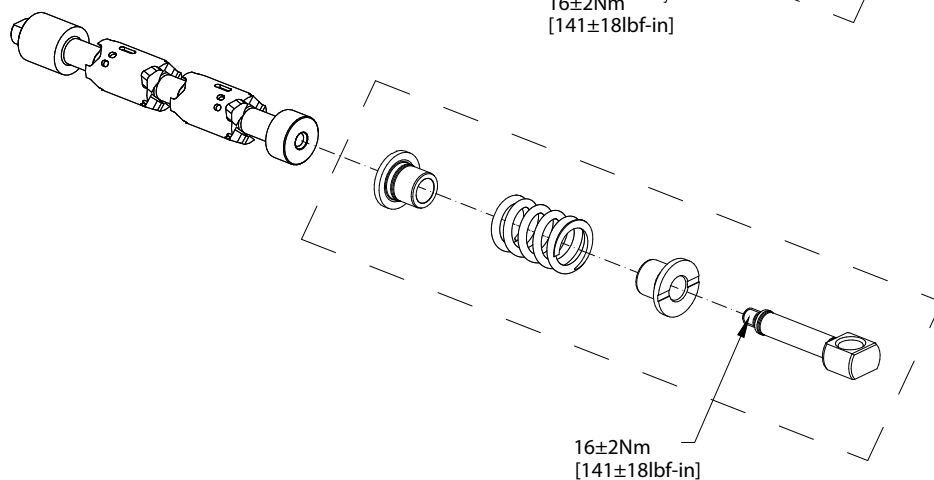
PVG 128/256 Service Parts

PVBS Main Spool

Spool for PVE



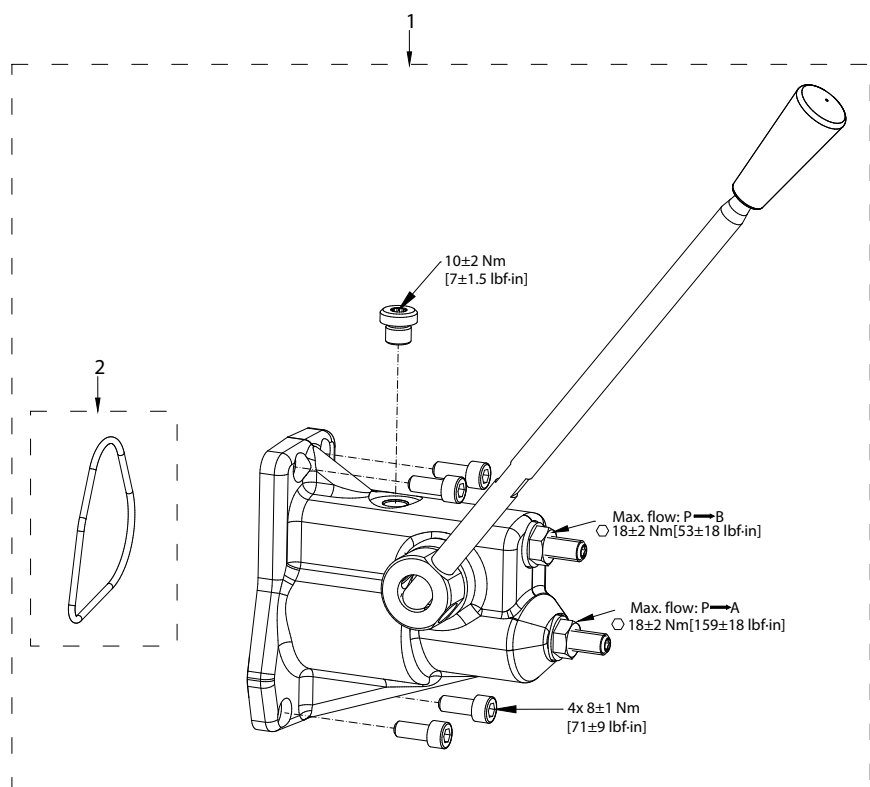
Spool for PVH/PVHC



Do not use hole in tension bar for tightening spool assembly. Use a 17 mm wrench instead.
 For spool part numbers, see *PVG 128/256 Technical Information*, pages 42-57.

PVG 128/256 Service Parts

PVM Mechanical Activation



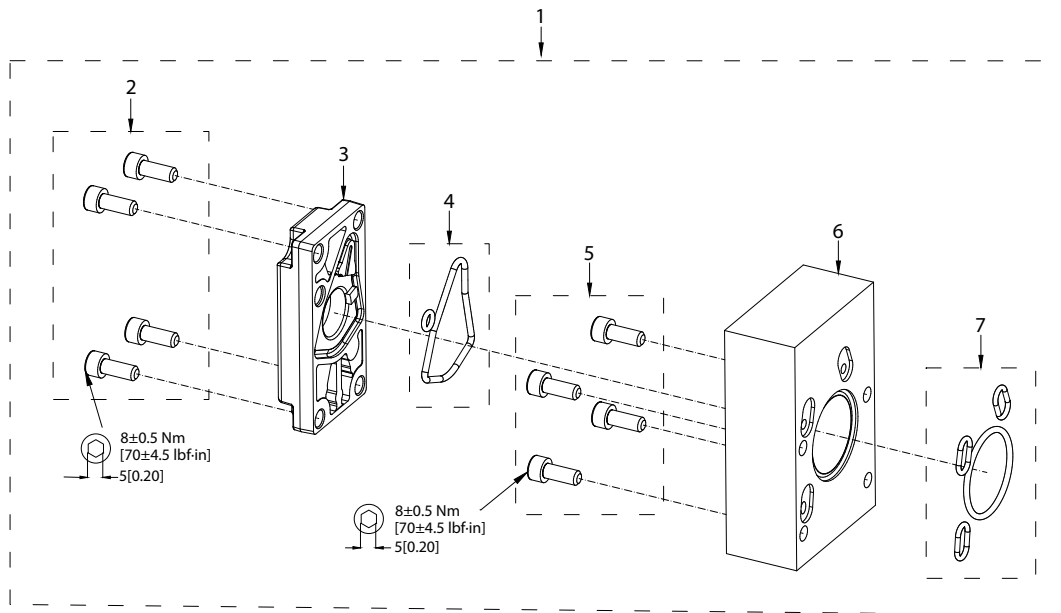
P109628

Type	Description	Code number
PVM 256	Non-adjustable with Base and Lever	11176644
	Adjustable with Base and Lever and BSP Gauge Plug	11175317
	Adjustable with Base and Lever and BSP Gauge Plug	11176635

Item	Description	O-ring bag	10 pcs in bag
2	O-ring (one pcs per PVM	TBA	1

PVG 128/256 Service Parts

PVMD



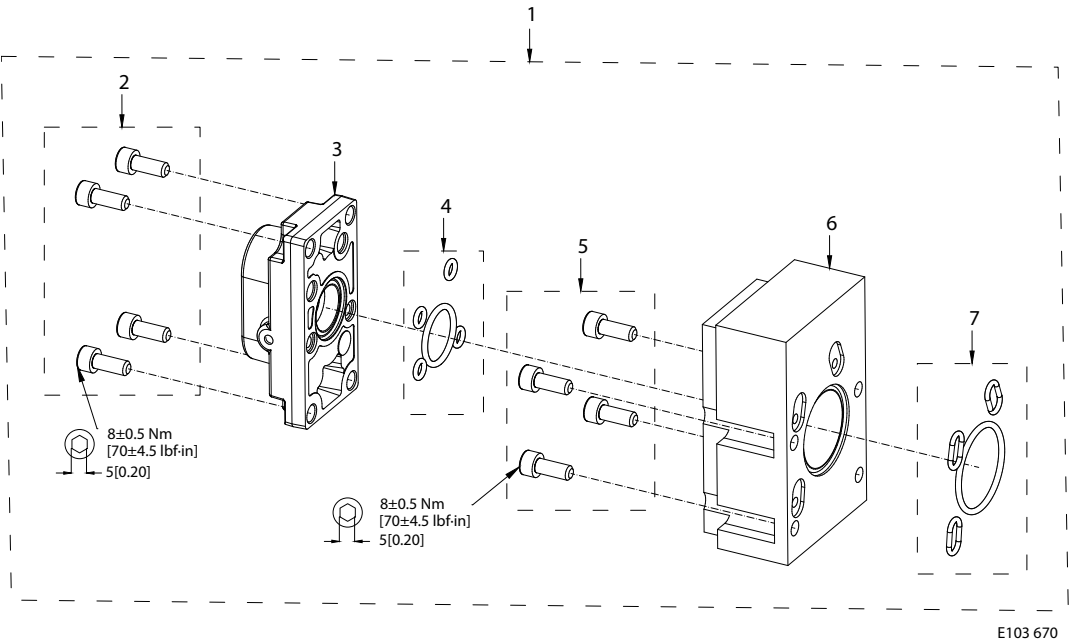
P109629

Type	Description	Code number
PVMD assembly	Cover manual actuation only	11187779

Item	Description	Code number	
1	Assembly		1
2	Screwkit		1
3	PVMD cover, including 2 and 4	157B0001	1
4	Seal kit	157B3999	1
5	Screwkit		1
6	Interface block - inverted		1
7	Seal kit for 10 pcs	11191632	1

PVG 128/256 Service Parts

PVH



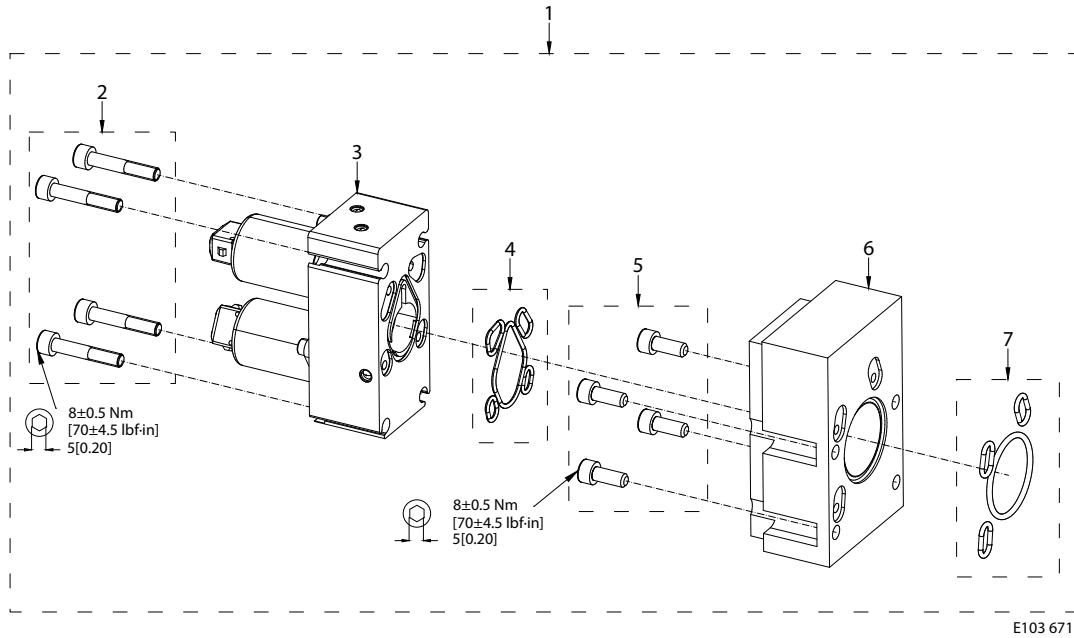
Type	Description	Code number
PVH assembly	G1/4" BSP	11187777
PVH assembly	9/16"-18 UNF	11187776

Item	Description	Code number	
1	Assembly		1
2	Screwkit		1
3	PVH cover, including 2 and 4	157B0008	1
4	Seal kit	157B3999	1
5	Screwkit		1
6	Interface block - inverted		1
7	Seal kit	11191632	1

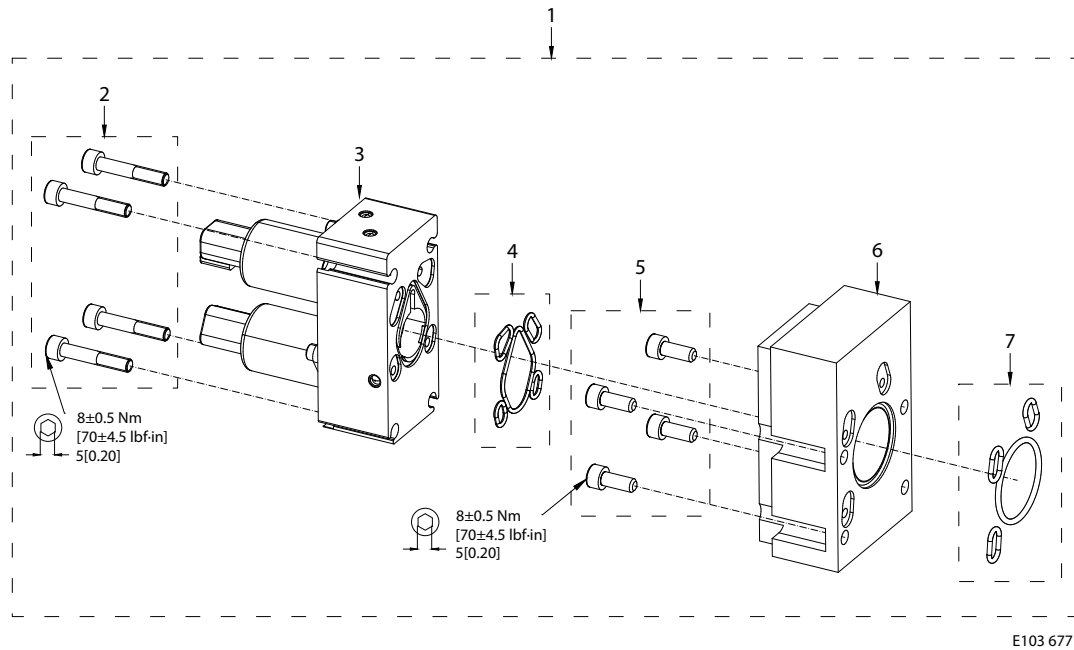
PVG 128/256 Service Parts

PVHC, High Current Actuation

PVHC with AMP connector



PVHC with DEUTSCH connector



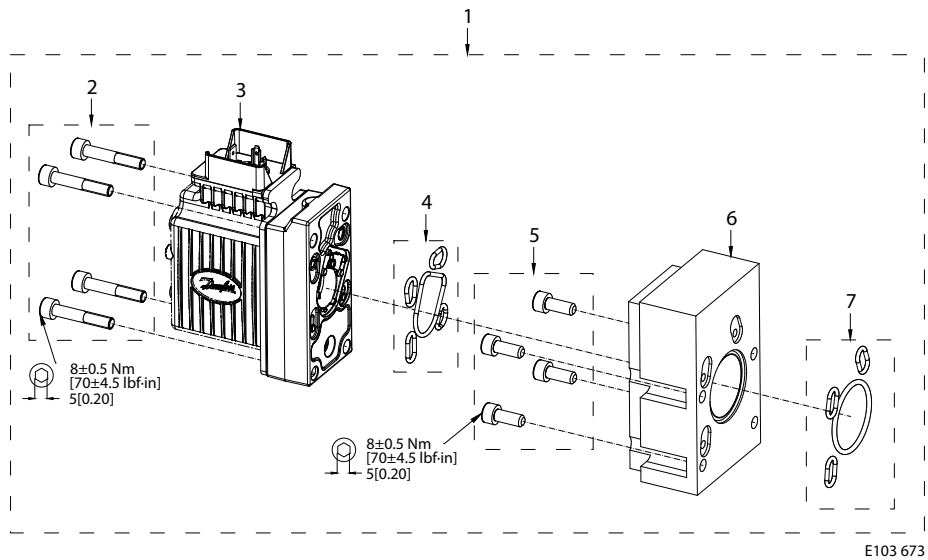
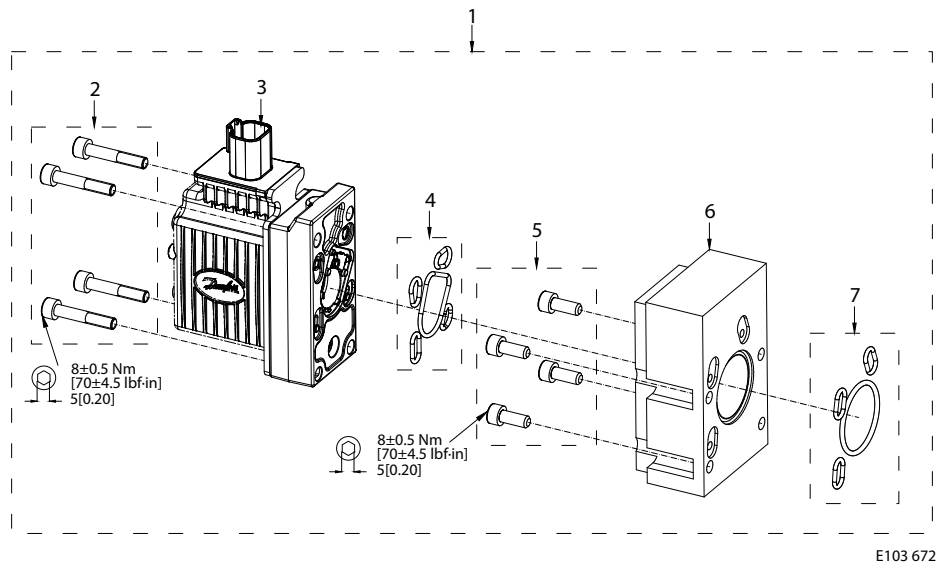
Type	Description	Code number
PVHC	12V AMP	11187757
	12V DEUTSCH	11187772
	24V AMP	11187774
	24V DEUTSCH	11187775

PVG 128/256 Service Parts

Item	Description	Code number	
1	Assembly		1
2	Screwkit	155L4199	1
3	Acuator assembly		1
4	Seal kit	11061235	1
5	Screwkit		1
6	Interface block - inverted		1
7	Seal kit	11191632	1

PVG 128/256 Service Parts

PVEO, On/Off Actuator

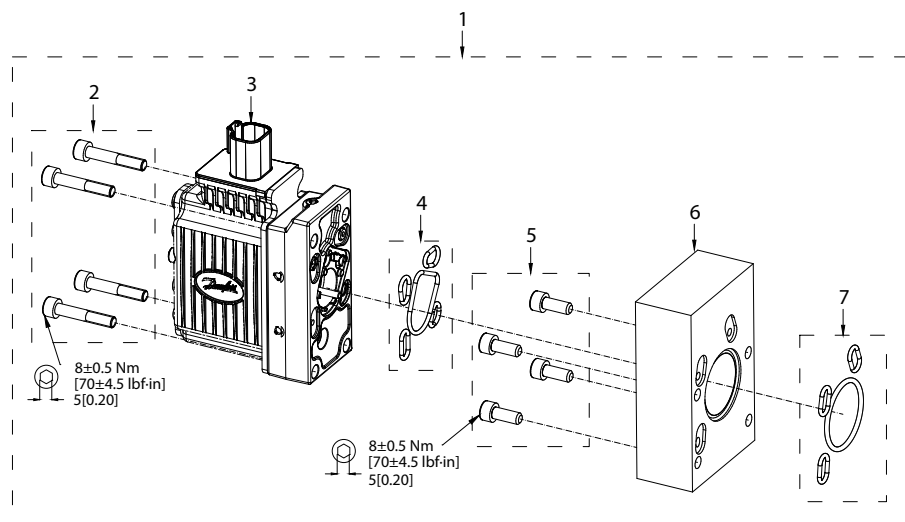


Type	Description	Code number
PVEO	1x4 DEU (12 Vdc)	11186328
	1x4 DEU (24 Vdc)	11186330
	1x4 DIN (12 Vdc)	11186331
	1x4 DIN (24 Vdc)	11186342

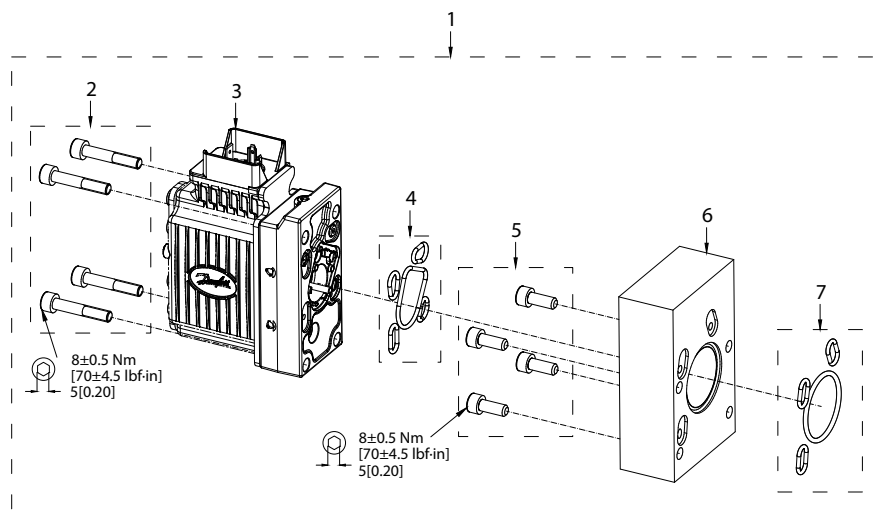
Item	Description	Code number	
1	Assembly		1
2	Screwkit	155L4199	1
3	Acuator assembly		1
4	Seal kit	157B4997	1
5	Screwkit		1
6	Interface block		1
7	Seal kit	11191632	1

PVG 128/256 Service Parts

PVEH, Proportional Actuator

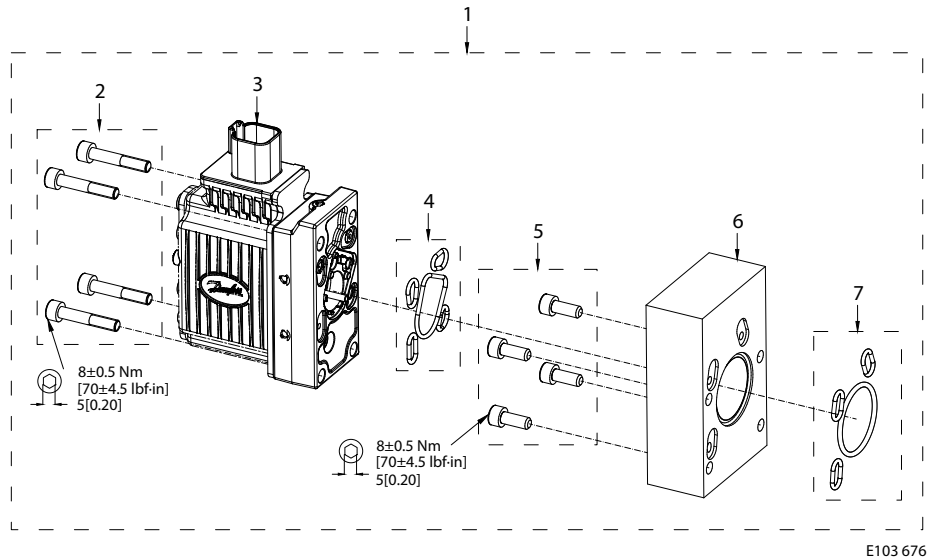


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E103 675

PVG 128/256 Service Parts



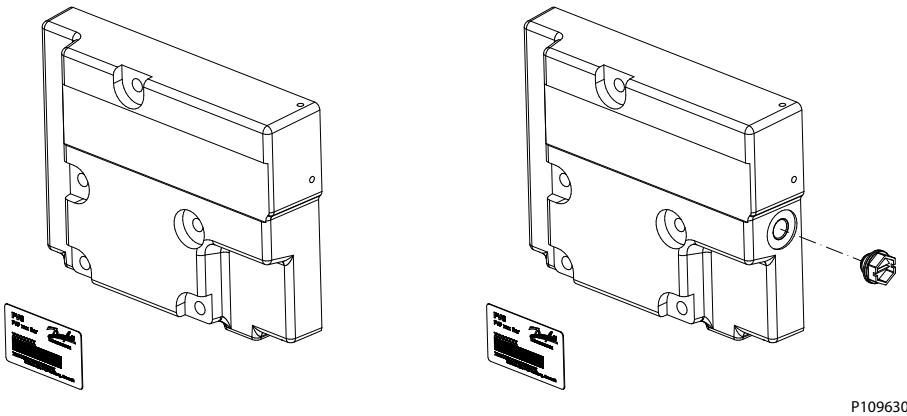
Type	Description	Code number
PVEH	1x4 DEU	11186325
	1x4 DEU	11186326
	1x4 DIN	11186321
	1x4 DIN	11186322
PVEH-U	1x4 DIN	11186323
	1x4 DIN	11186324
PVEH-FLA	1x6 DEU	11186327

Item	Description	Code number	
1	Assembly		1
2	Screwkit	155L4199	1
3	Actuator assembly		1
4	Seal kit	157B4997	1
5	Screwkit		1
6	Interface block		1
7	Seal kit with 10 pcs	11191632	1

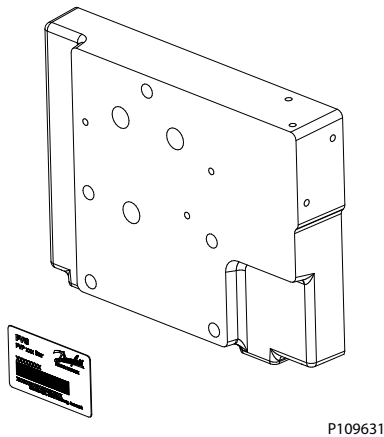
PVG 128/256 Service Parts

PVSI, PVGI, and PVSI with P and T connection

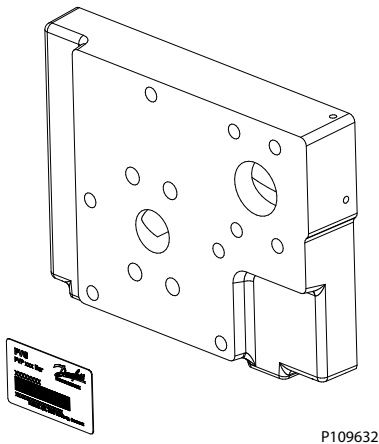
PVSI endplate



PVGI interface plate



PVSI with P and T port

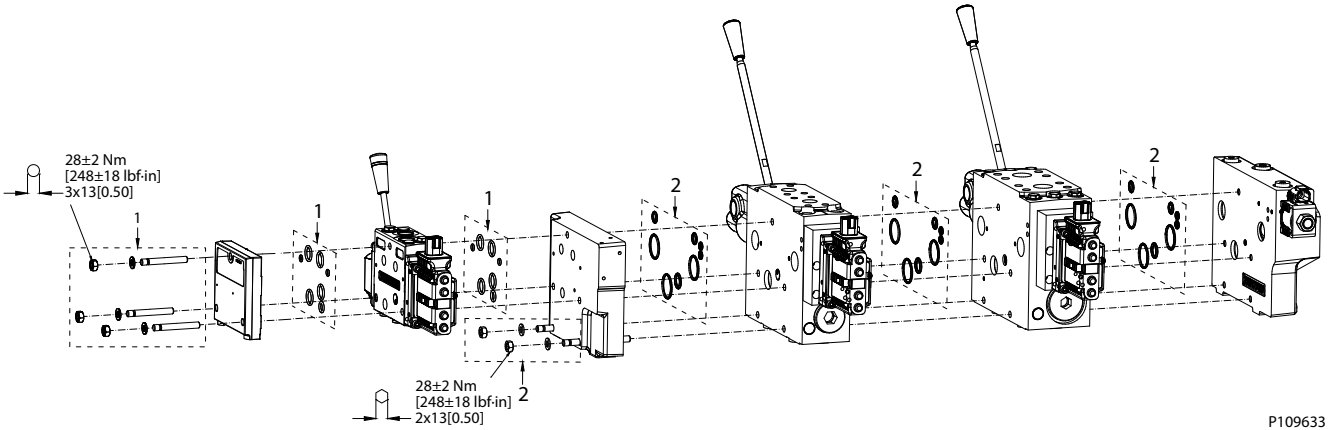


PVG 128/256 Service Parts

Type	Description	Code number
PVGI	Interface plate	11171422
	Interface plate with T0	11171423
PVSI	Endplate	11171419
	Endplate with LX BSP	11179950
	Endplate with LX UNF	11179949
	Metric Flange 1"	11171418
	Thread Ports G1" BSP	11179952
	SAE Flange 1" UNC screws	11171421
	Thread Ports 1-5/16 UNF	11171416

PVG 128/256 Service Parts

PVAS Only PVG 128/256 – 2 and 3 bolt kit



Item	Description	Code number
1	Set of seals for 7 work sections: PVB 32	11156335
2	Seat of seals for 5 work sections: PVB 128/256	11180333

For PVAS part numbers, see [PVG 128/256 Technical Information](#), pages 91-94.

Products we offer:

- Bent Axis Motors
- Closed Circuit Axial Piston Pumps and Motors
- Displays
- Electrohydraulic Power Steering
- Electrohydraulics
- Hydraulic Power Steering
- Integrated Systems
- Joysticks and Control Handles
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