

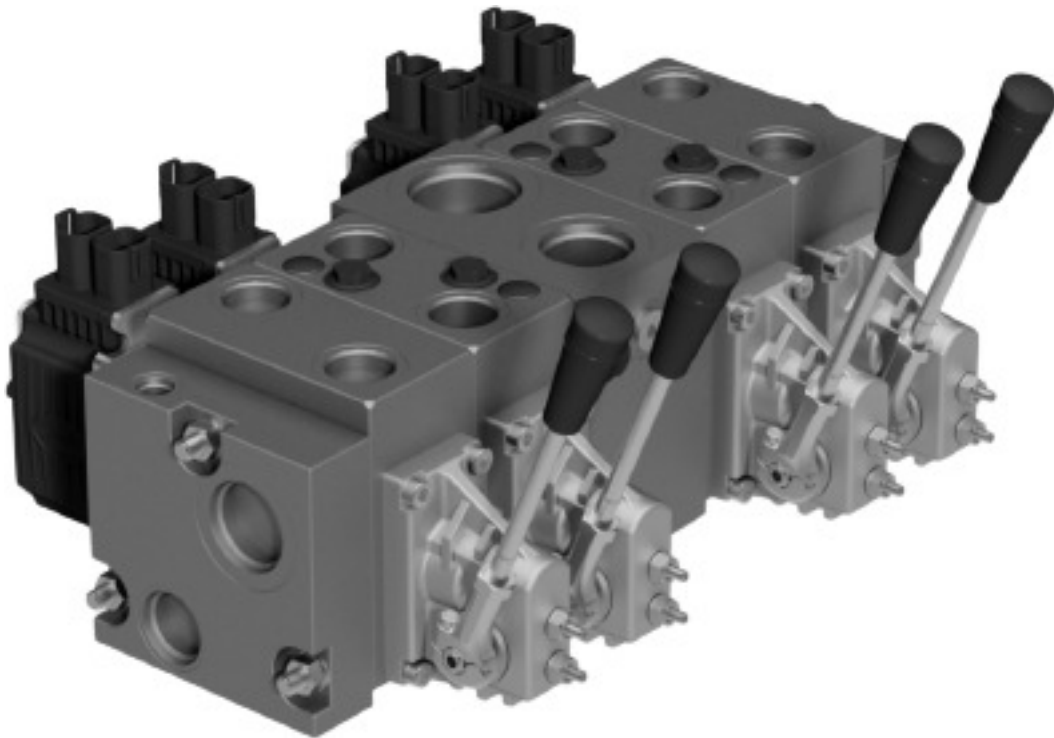
ENGINEERING  
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Technical Information

# Proportional Valve Group

## PVG 48



**Revision history**

*Table of revisions*

<b>Date</b>	<b>Changed</b>	<b>Rev</b>
March 2024	Updated PVB images	0103
August 2023	Added new content: PVST & PVSI	0102
May 2023	First edition	0101

## **PVG 48**

PVG 48 is an addition to the pre-compensated PVG family.

The PVG 48 program is intended to deliver the highest possible flow and lowest possible pressure drop, using the same interface as PVB 32.

PVB 48 is a compensated module that is intended for controlling a work function behavior in terms of flow and pressure, independent of the load pressure of the functions used simultaneously.

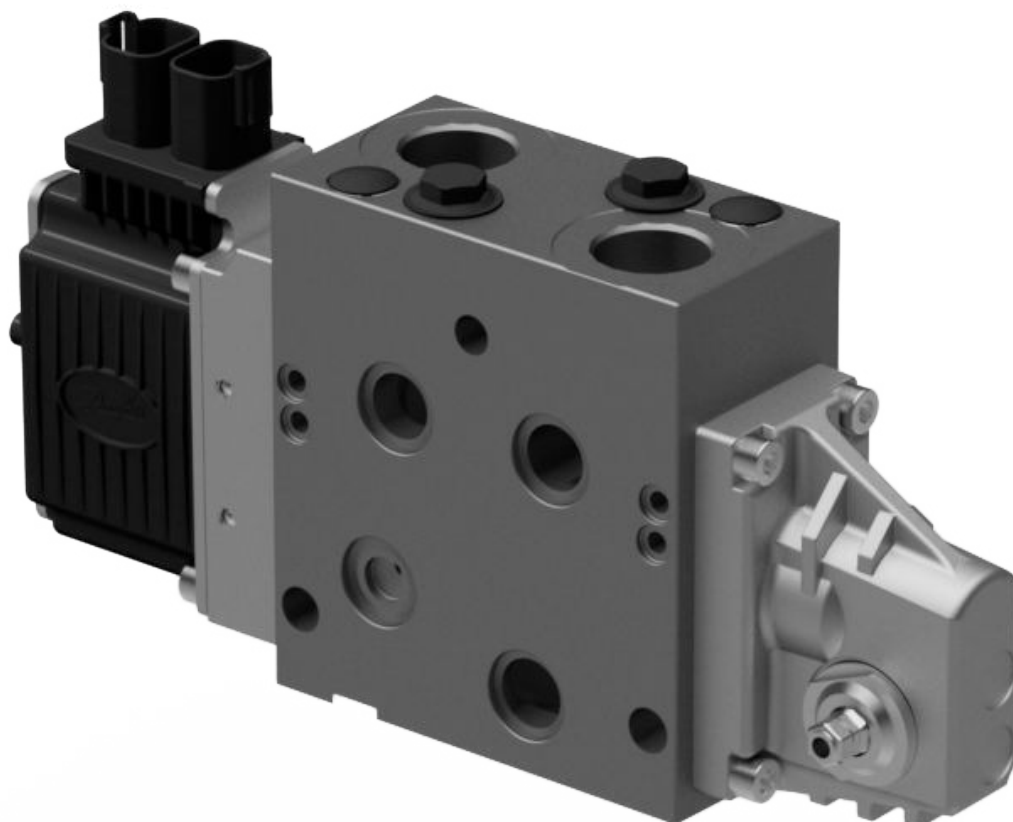
The PVB 32 interface allows the integration of the PVB 48 in the PVG 32/16 valve stacks without additional adapters.

Spool stroke is  $\pm 7$  mm in the PVB 48 module like in the PVB 32, this allows the use the common modules, such as PVM housing, PVE actuators, shock valve with anti-cavitation valve (PVLP), anti-cavitation valve (PVLA) or LS A/B relief valves.

Additional anti-cavitation valve in A port is available in select PVB variants, for improved anti-cavitation capability.

### **PVG 48 features**

- Integrated compensator with neutral bleed off
- Integrated LS shuttle network
- Optional shock/anti-cavitation valve facility (PVLP/PVLA)
- Optional Integrated adjustable LS A/B pressure relief valves
- T0 facility
- Optional increased anti-cavitation on A port
- Easy integration with the entire PVG portfolio

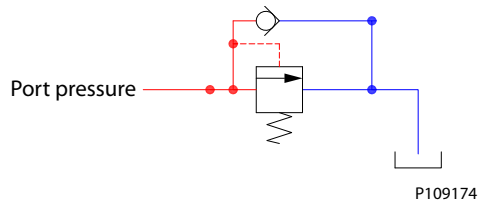


### PVLP Shock and Anti-Cavitation Valve

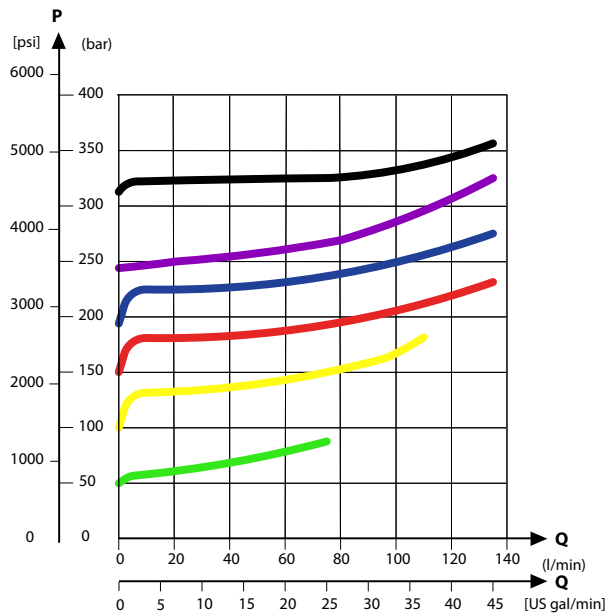
The PVLP shock and anti-cavitation valve will relieve a pressure peak to the internal tank galleries and will furthermore suck oil from the tank to the work port to prevent cavitation. Pressure settings range: 32–400 bar [460–5800 psi].

The pressure setting of the PVLP must always be 20 bar [290 psi] higher than  $LS_{A/B}$  setting in the same module.

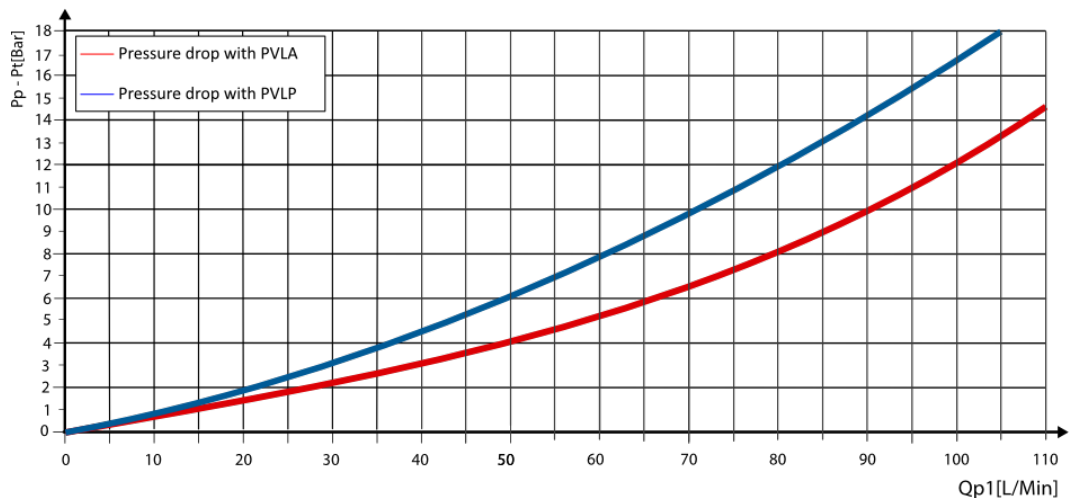
PVLP schematic



PVLP Shock Valve Characteristics

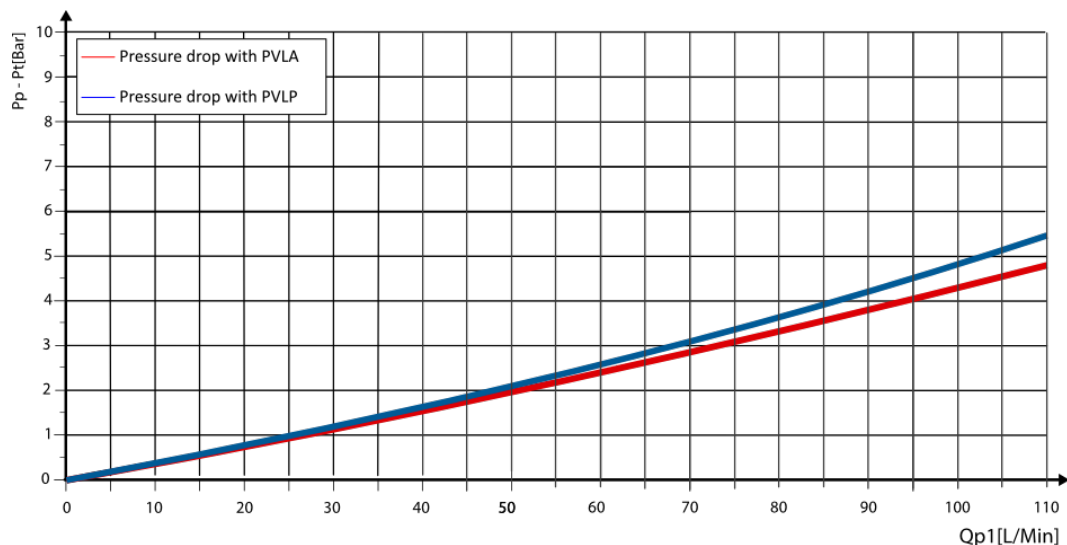


PVLP/PVLA Suction valve characteristics, B port and A port without additional anti-cavitation valve



## PVLP Shock and Anti-Cavitation Valve

*PVLP/PVLA Suction valve characteristics, A port with additional anti-cavitation valve*



### Technical specification

Parameter	Minimum	Recommended range	Maximum
Fluid temperature	-30°C [-22°F]	30 to 60°C [86 to 140°F]	90° [194°F]
Fluid Viscosity	4 mm <sup>2</sup> /s [39 SUS]	12 to 75 mm <sup>2</sup> /s [65 to 347 SUS]	460 mm <sup>2</sup> /s [2128 SUS]
Fluid cleanliness (mechanical activation)	23/19/16 (according to ISO 4406)		
Fluid cleanliness (PVE activation)	18/16/13 (according to ISO 4406)		
Operating temperature	Ambient: -30 to -60°C [-22 to 140°F]		

### Part numbers for PVLP according to pressure settings

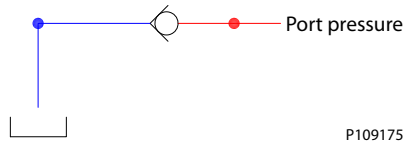
Part number	Pressure in bar [psi]	Part number	Pressure in bar [psi]
157B2032	32 [464]	157B2210	210 [3045]
157B2050	50 [725]	157B2230	230 [3335]
157B2063	63 [913]	157B2240	240 [3480]
157B2080	80 [1160]	157B2250	250 [3626]
157B2100	100 [1450]	157B2265	265 [3844]
157B2125	125 [1813]	157B2280	280 [4061]
157B2140	140 [2031]	157B2300	300 [4351]
157B2150	150 [2176]	157B2320	320 [4641]
157B2160	160 [2321]	157B2350	350 [5076]
157B2175	175 [2538]	157B2380	380 [5511]
157B2190	190 [2756]	—	—

### PVLA Suction Valve

The PVLA valve is an accessory available for PVB basic modules.

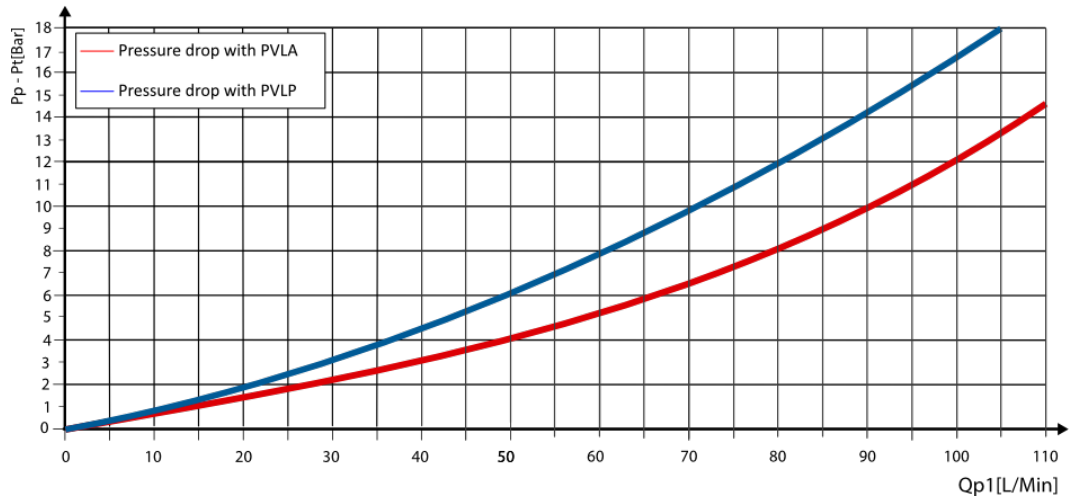
The PVLA will suck fluid from the tank to the work port to prevent cavitation by the 0.5 bar spring. The plug will ensure that when using a single acting spool, all flow returning through the work port is led to tank.

*PVLA schematic*

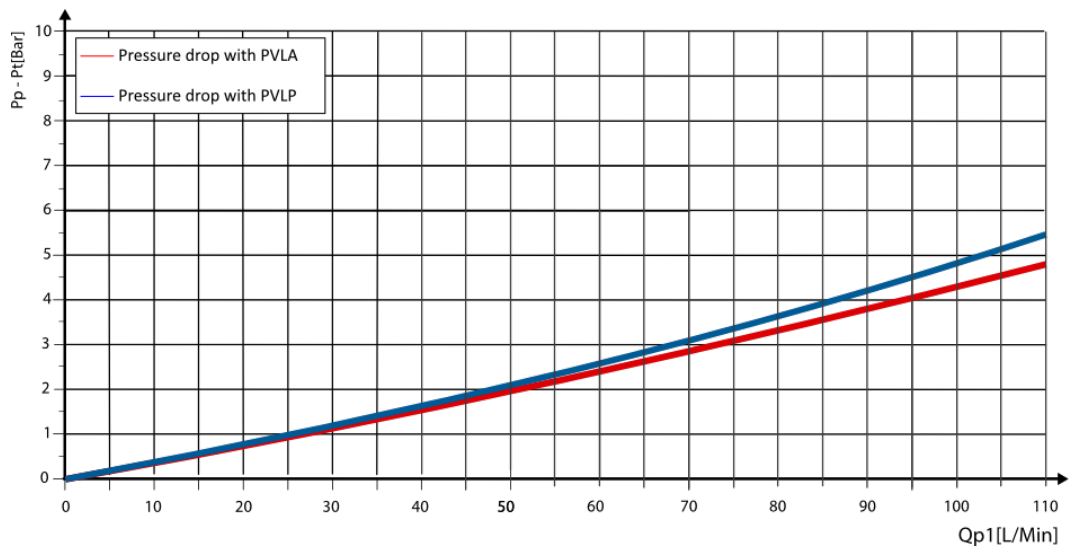


P109175

*PVLP/PVLA Suction valve characteristics, B port and A port without additional anti-cavitation valve*



*PVLP/PVLA Suction valve characteristics, A port with additional anti-cavitation valve*



## PVLA Suction Valve

### *PVLA Technical specification*

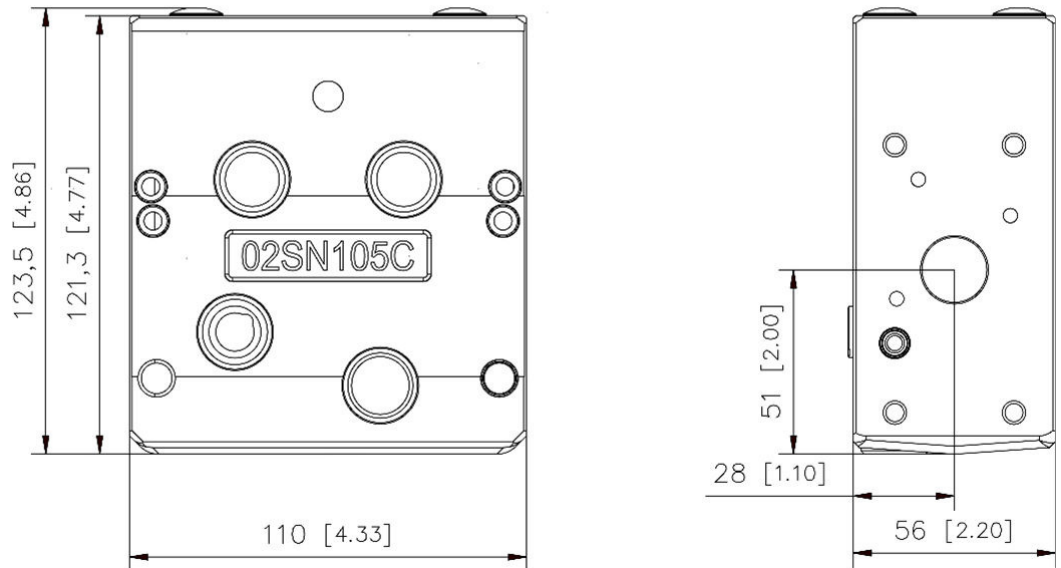
Parameter	Minimum	Recommended range	Maximum
Fluid temperature	-30°C [27°F]	30 to 60°C [86 to 140°F]	90°C [194°F]
Fluid viscosity	4 mm <sup>2</sup> /s [39 SUS]	12 to 75mm <sup>2</sup> /s [65 to 347 SUS]	460 mm <sup>2</sup> /s [2128 SUS]
Fluid cleanliness (mechanical activation)	23/19/16 (according to ISO 4406)		
Fluid cleanliness (PVE activation)	18/16/13 (according to ISO 4406)		
Operating temperature	Ambient: -30 to 60°C [-22 to 140°F]		

### *PVLA suction valve part number*

PVLA suction valve	Plug
157B2001	157B2002

**PVB 48**

*PVB 48 Dimensional Drawing*



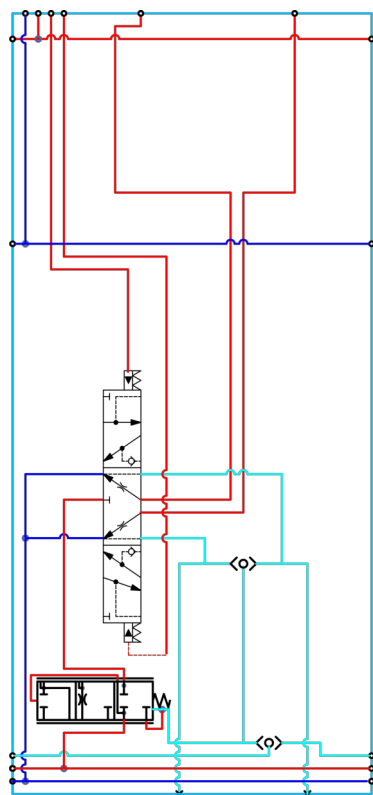
*PVB with additional Anti-cavitation feature*



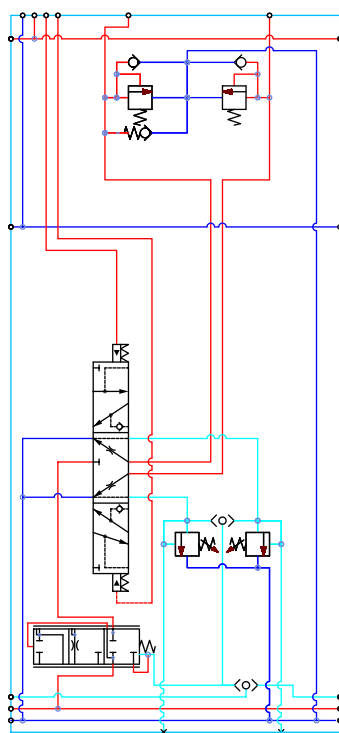


**PVB 48**

*PVB without PVLP/PVLA*

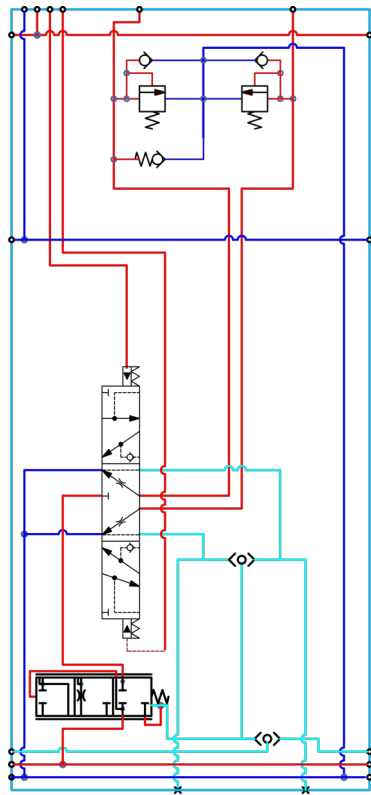


*PVB without PVLP/PVLA, with LS A/B*

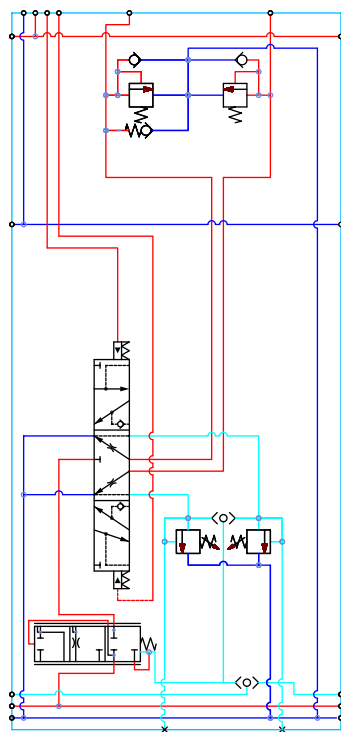


**PVB 48**

*PVB with PVLP/PVLA and additional Anti-cavitation*



*PVB with PVLP/PVLA, additional Anti-cavitation and LS A/B*



PVB 48

*Pressure and flow specification*

Max. continuous pressure	Max. intermittent pressure	Max. rated flow.
350 bar [5067 psi]	420 bar [6090 psi]	180 L/min [47,5 US gal/min] at 20 bar margin pressure.

*Technical specifications*

Parameters	Minimum	Recommended range	Maximum
Fluid Temperature	-30°C [-22°F]	30 to 60°C [86 to 140°F]	90° [194°F]
Fluid Viscosity	4 mm <sup>2</sup> /s [39 SUS]	12 to 75mm <sup>2</sup> /s [65 to 347 SUS]	460 mm <sup>2</sup> /s [2128 SUS]
Fluid cleanliness	23/19/16 [according to ISO 4406]		
Operating temperature	Ambient: -30 to 60°C [-22 to 140°F]		

*Part numbers for compensated PVB 48, with shuttle valve and T0 facility*

Part number	A/B Port	PVLP/PVLA	Additional Anti-cavitation valve	LS A/B	T0 facility
11268949	3/4" BSP	No	No	No	Yes
11269011				Yes	
11269018		Yes <sup>1</sup>	No		
11253967			Yes		
11269039	1-1/16 UNF	No	No	No	
11269065				Yes	
11269068		Yes <sup>1</sup>	No		
11269152			Yes		

<sup>1</sup>PVB48 with additional Anti-cavitation feature on A port

**PVBS for PVB 48**

The main spool (PVBS 48) determines the flow or pressure out of the work section.

The PVBS 48 main spool variant is based on PVBS 32 spool platform and therefore have a wide selection of additional features, which enables you to tailor the PVG to suit the function in the application for a hydraulic system. PVBS 48 supports higher flow range.

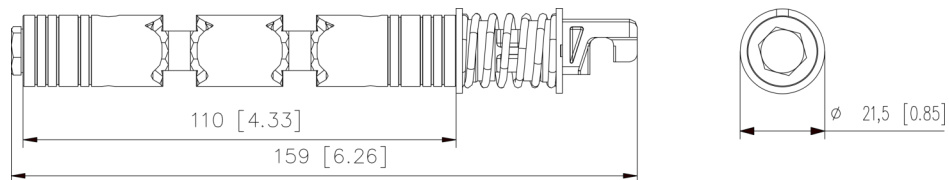
The PVBS 48 main spool can be activated in three different ways:

- Mechanically by a PVM lever.
- Electrically by a PVE/PVHC actuator
- Hydraulically by a PVH actuator

*PVBS 48 Main Spool*



*PVBS 48 Dimensional Drawing*



Weight: 0.25 kg [0.55 lb]

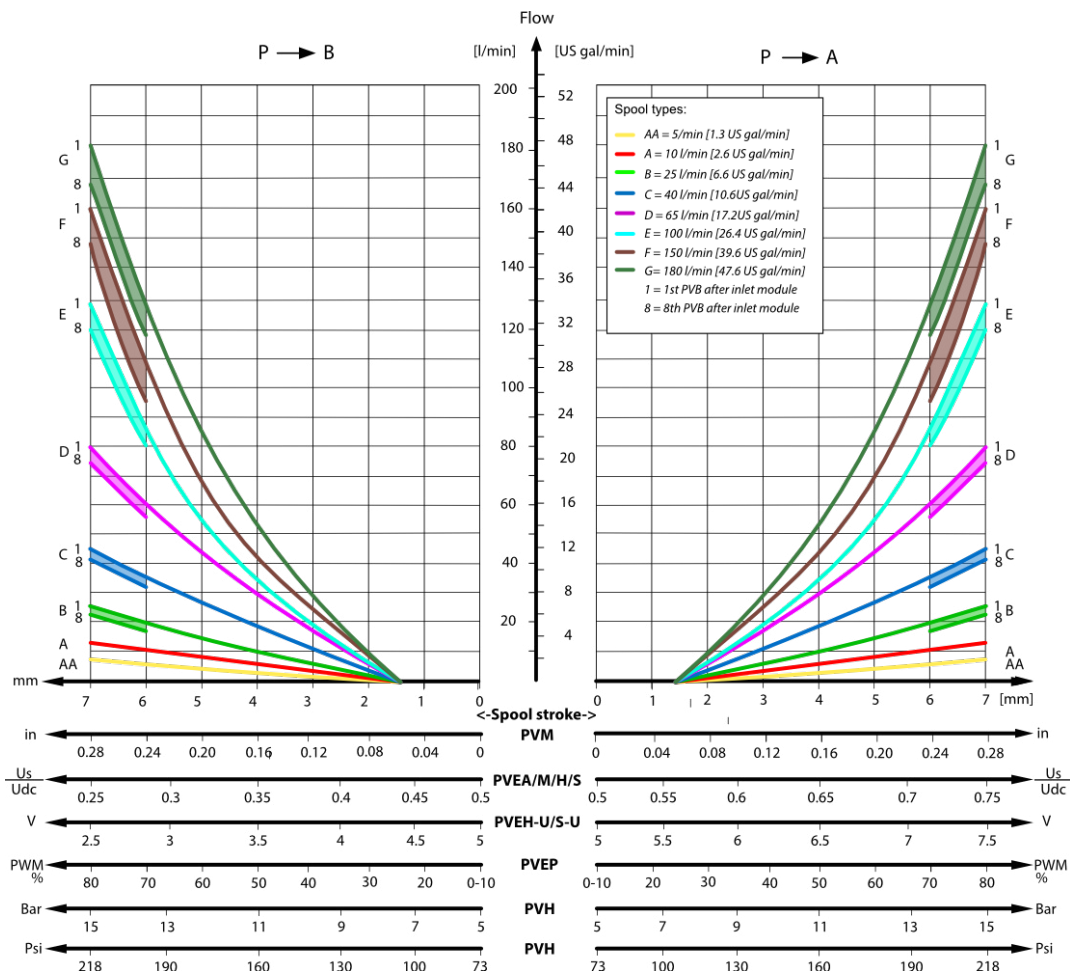
*Technical Specification*

Parameter	Minimum	Recommended Range	Maximum
Fluid temperature	-30°C [-22°F]	30 to 60°C [86 to 140°F]	90°C [194°F]
Fluid viscosity	4 mm <sup>2</sup> /s [39 SUS]	12 to 75 mm <sup>2</sup> /s [65 to 347 SUS]	460mm <sup>2</sup> /s [2128 SUS]
Fluid cleanliness	23/19/16 (according to ISO 4406)		
Operating temperature	Ambient: -30 to 60°C [-22 to 140°F]		

**PVBS 48 main spool flow characteristics**

Fluid flow at different travel at +20 bar margin.

**PVBS for PVB 48**



Spools AA-E are standard PVBS32, showing the flow in a PVB48 module. Note that the flow will be higher than they are rated for in a PVB32 module.

*PVBS 48 Closed in neutral flow control*

Part number	Actuation	PVB with shuttle valve	Flow L/min [US gal/min]			
			A→T	P→A	P→B	B→T
11284885	PVE	yes	150 [39.6]	150 [39.6]	150 [39.6]	150 [39.6]
11284886	PVE	yes	180 [47.6]	180 [47.6]	180 [47.6]	180 [47.6]
11284791	PVH/PVHC	yes	150 [39.6]	150 [39.6]	150 [39.6]	150 [39.6]
11284780	PVH/PVHC	yes	180 [47.6]	180 [47.6]	180 [47.6]	180 [47.6]

*PVBS 48 Throttled open neutral position*

Part number	Actuation	PVB with shuttle valve	Flow L/min [US gal/min]			
			A→T	P→A	P→B	B→T
11284779	PVE	yes	150 [39.6]	150 [39.6]	150 [39.6]	150 [39.6]
11284887	PVE	yes	180 [47.6]	180 [47.6]	180 [47.6]	180 [47.6]
11284902	PVH/PVHC	yes	150 [39.6]	150 [39.6]	150 [39.6]	150 [39.6]
11284781	PVH/PVHC	yes	180 [47.6]	180 [47.6]	180 [47.6]	180 [47.6]

**PVPM 48**

The closed center PVPM 48 mid-inlet module act as a simple manifold and is intended for use with variable displacement pump (Closed Center). The PVPM features two PVLP shock/anti-cavitation valve facilities for pressure peak protection and anti-cavitation protection.

PVPM must be combined with PVP/PVPV 32 closed center inlet or start plate with pilot reduction valve and LS port, to supply pilot pressure for the actuators and send signal to the variable pump. For start plate, see PVG 32 start plate section.

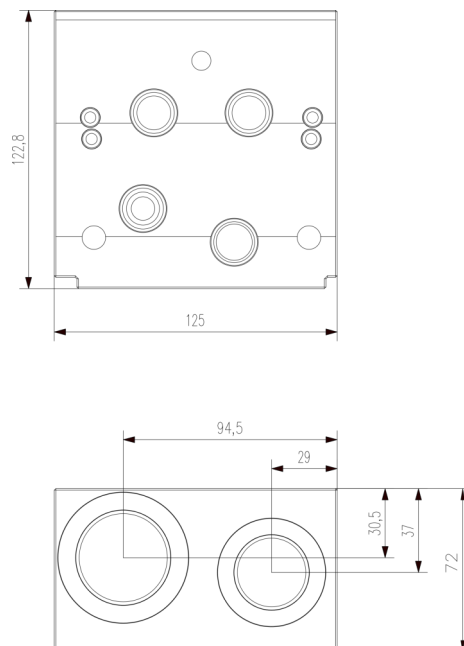
The PVPM closed center inlet features:

- Two integrated shock/anti-cavitation valve facilities (PVLP)
- Threaded ports for P/T
- Pilot pressure compatible
- T0 compatible

*PVPM 48*



*PVPM 48 Dimensional drawing*



**PVPM 48**

*PVPM Schematic*



*Technical specification for PVPM 48*

Max. P-port continuous	Max. P-port intermittent	Max. T-port/static/dynamic	Max. rated flow
350 bar [5076 psi]	400 bar [5800 psi]	25/40 bar [365/580 psi]	400 l/min [132.1 US gal/min]

*Technical specification for PVPM 48*

Parameters	Minimum	Recommended Range	Maximum
<b>Fluid temperature</b>	-30°C [-22°F]	30 to 60°C [86 to 140°F]	90° [194°F]
<b>Fluid viscosity</b>	4 mm <sup>2</sup> /s [39 SUS]	12 to 75 mm <sup>2</sup> /s [65 to 347 SUS]	460 mm <sup>2</sup> /s [2128 SUS]
<b>Fluid cleanliness (Mechanical activation)</b>	23/19/16 (according to ISO 4406)		
<b>Fluid cleanliness (PVE actuation)</b>	18/16/13 (according to ISO 4406)		
<b>Operating temperature</b>	Ambient: -30 to 60°C [-22 to 140°F]		

**PVPM 48**

*Part number for PVPM 48*

<b>Part Number</b>	<b>Port connection</b>	<b>P-port</b>	<b>T-port</b>	<b>Gage port</b>	<b>T0 facility</b>	<b>PVLP</b>	<b>Pilot oil pressure</b>	<b>Weight</b>
11295307	BSP	G 1"	G 1-1/4"	G 1/4"	Yes	2 x PVLP	No	5,5 kg [11,02 lb]
11295286	SAE	1 5/16-12 UNF	1-5/8-12 UNF	1/2-20 UNF	Yes	2 x PVLP	No	5.5 kg [11,02 lbs]



**PVSI 48**

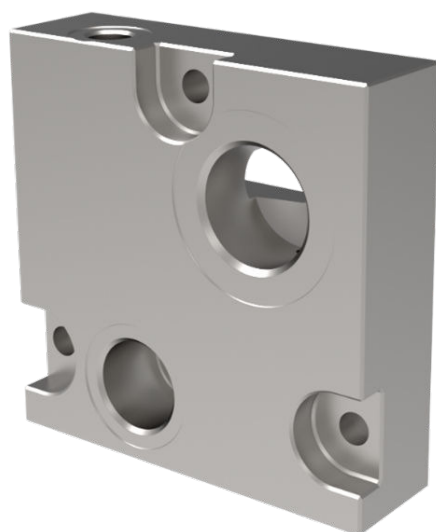
The PVSI 48 end plate is placed at the end of the valve stack section. PVSI 48 have additional P- and T-port enabling additional pump flow to PVG 48 valve. The PVSI 48 feature a PVLP shock/anti cavitation valve facility for pressure peak/anti-cavitation protection. The unique design of the PVSI ensures very low internal pressure drop in the PVG. Due to the placement of the tank port, increased tank pressure may be expected.

The end plate is ensuring Load Sense (LS) pressure is relieved to tank when the valve is not operated.

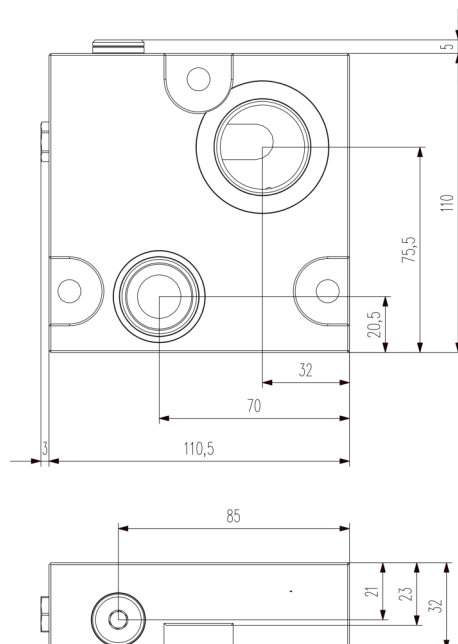
**The PVSI 48 with P-, T-, M connection features:**

- Threaded P/T/M port
- Integrated shock valve facility

*PVSI 48*

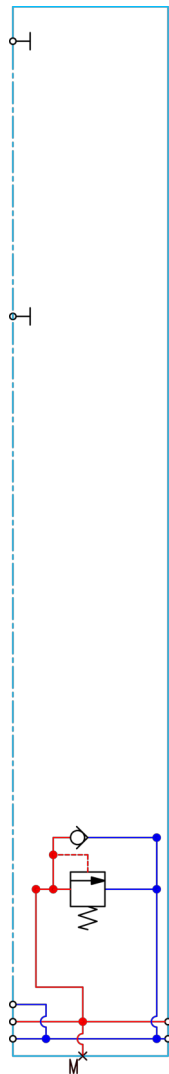


*PVSI 48 Dimensional drawing*



**PVSI 48**

*PVSI 48 Schematic*



*Maximum pressure for P- and T- port*

Max. P-port continuous	Max. P-port intermittent	Max. T-port/static/dynamic	Max. rated flow
350 bar [5076 psi]	400 bar [5800 psi]	25/40 bar [365/580 psi]	300 l/min [65,9 US gal/min]

*Technical specifications PVSI 48*

Parameters	Minimum	Recommended range	Maximum
<b>Fluid Temperature</b>	-30°C [-22°F]	30 to 60°C [86 to 140°F]	90° [194°F]
<b>Fluid viscosity</b>	4 mm <sup>2</sup> /s [39 SUS]	12 to 75 mm <sup>2</sup> /65 to 347 SUS]	460 mm <sup>2</sup> /s [2128 SUS]
<b>Fluid cleanliness</b>	23/19/16 (according to ISO 4406)		
<b>Operating temperature</b>	Ambient: -30 to 60°C [-22 to 140°F]		

**PVSI 48**

*Part number for PVSI 48 with P-, T-, and M-ports*

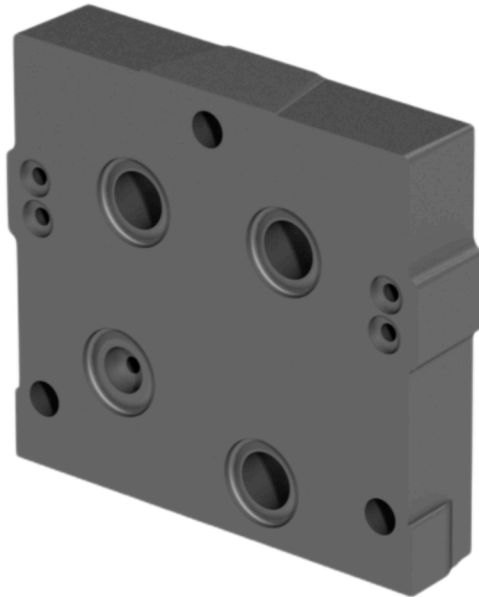
<b>Part number</b>	<b>Port connection</b>	<b>P-port</b>	<b>T-port</b>	<b>M-port</b>	<b>PVLP</b>	<b>Weight</b>
11295287	BSP	G 3/4"	G 1"	G 1/4"	1 x PVLP	1.9kg [4,18 lb]
11295308	SAE	1-1/16-12 UNF	1-5/16-12 UNF	1/2-20 UNF	1 x PVLP	1.9kg [4,18 lb]

### Spacer Plate

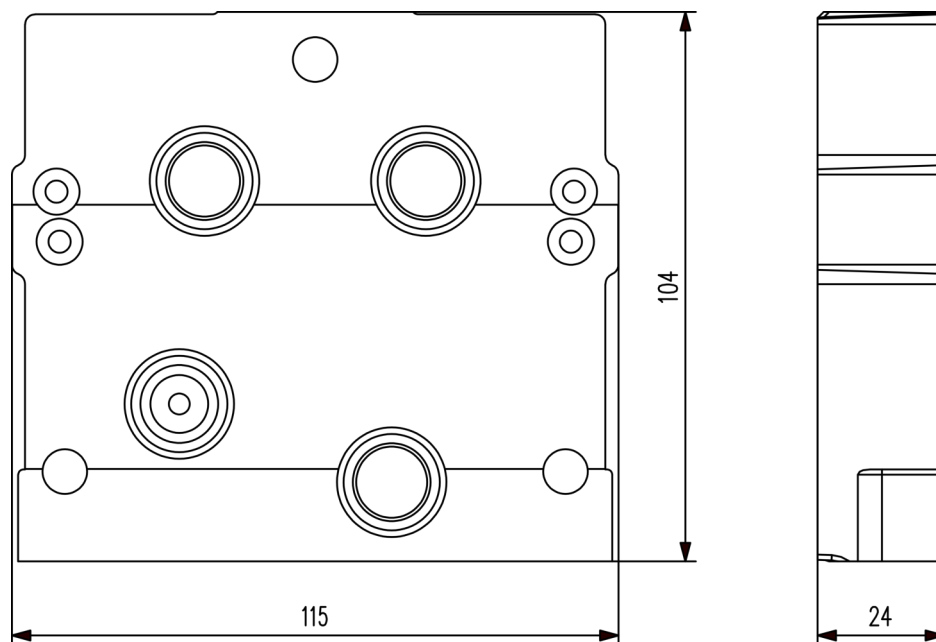
When using PVB 48 with PVPV 32, it is required to add a spacer plate between the inlet section and the module, as the fittings conflict with the PVB 48 body.

Part no.	Width
11145036	24mm [0.94"]

*Spacer plate*

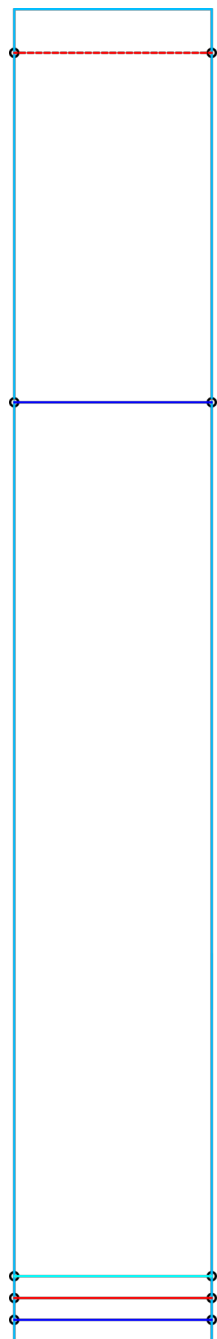


*Dimensional drawing*



### Spacer Plate

*Spacer plate schematic*



## Spacer Plate

### PVST with T-connection

#### Part numbers for PVST with T-connection

Part number	Material	T-port	Mounting feet	Weight
<b>157B2500</b>	Steel	G1/2	M8	0.47 kg [1.05 lb]
<b>157B2520</b>		7/8-14	5/16-18	
<b>157B2912</b>	Iron	M22x1.5 DIN 3852-1	M8	0.6 kg [1.32 lb]
<b>11004462</b>		M22x1.5 ISO 6149		

## PVSI Start Plate

The PVG 32 PVSI iron start plates is for use with PVPM in a closed center configuration for use with variable displacement pumps.

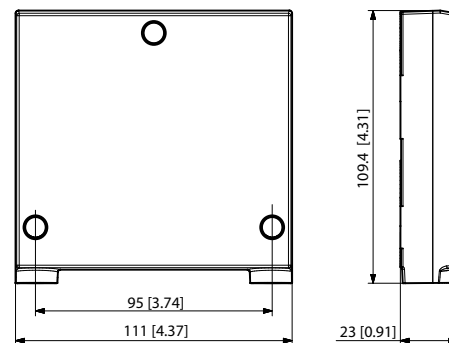
#### The PVSI Start Plates features:

- Integrated pilot pressure reducing valve (PPRV) for PVE
- Integrated sealing for groups with/without T0 port
- Threaded ports for LS and T0 port

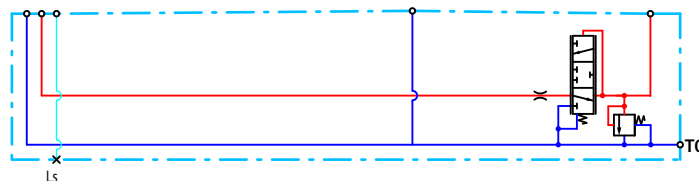
#### PVSI start plate



#### Dimensions



#### Schematic



#### Maximum pressure for P- and T-port

Max. P-port continuous	Max. P-port intermittent	Max. T-port static/dynamic
350 bar [5076 psi]	400 bar [5800 psi]	25/40 bar [365/580 psi]

#### Part numbers for PVSI start plates

Part number	LS-, T0-port	Mounting	Weight
<b>11091772</b>	9/16-18-UNF	5/16-18 UNC	1.6 kg [3.53 lb]
<b>11091773</b>	G1/4"	M8	

### **Common and compatible modules for PVG48/32**

For the following modules, see PVG32 Technical information.

*[PVP Inlet Modules](#)*

*[Actuation](#)*

*[PVS End Plates](#)*

*[PVSKM full flow Cut Off Modules](#)*

*[PVSP and PVSPM Priority Modules](#)*

**PVAS Stay Bolt kits**

The table below shows the required length of the stay bolt for a PVG48 with Mid inlet (PVPM48) and end plates (PVSI48) on both ends of the PVG.

No. of PVB48	1	2	3	4	5	6	7	8	9	10
Length mm [inch]	174 [6,85]	207 [8,15]	263 [10,35]	319 [12,56]	375 [14,76]	431 [16,97]	487 [19,17]	543 [21,38]	599 [23,58]	655 [25,79]
Part no.	11188213	157B8003	157B8004	11188207	157B8026	157B8027	11188200	157B8010	157B8061	11188189

Further details for assembly kits, for combinations with PVG256/128/32/16 can be found in PVG32 Technical information.

[PVAS Stay Bolt part numbers](#)



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