

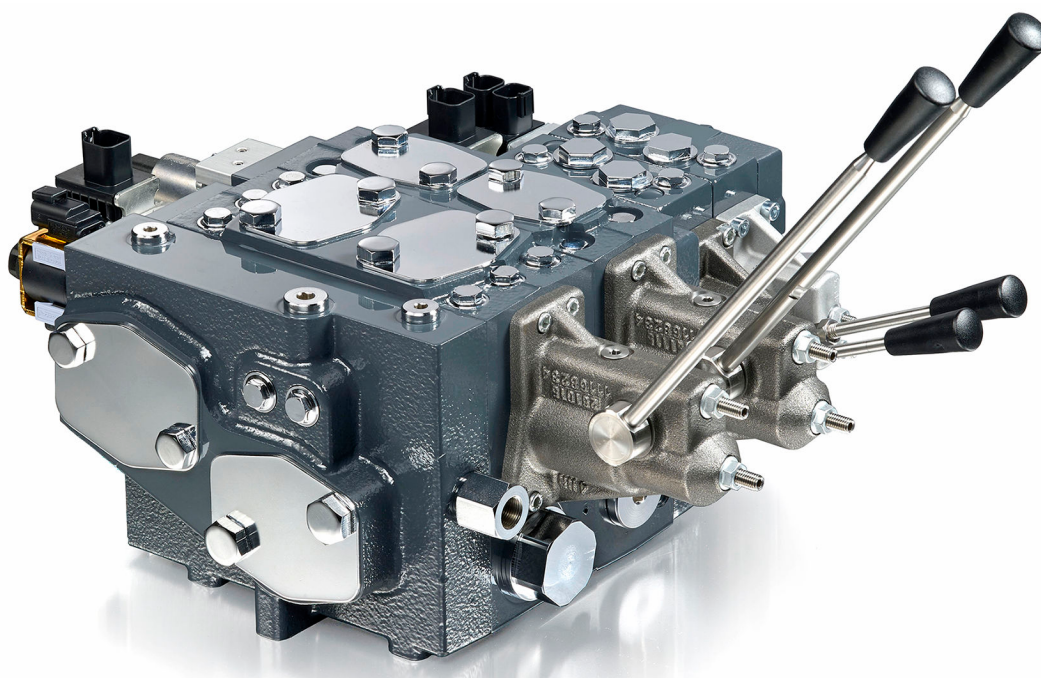
ENGINEERING
TOMORROW



Technical Information

PVG 128/256

Proportional Valve Group



Revision history

Table of revisions

Date	Changed	Rev
July 2024	Added LSRV information to Inlet Modules	0603
March 2024	Updated table information	0602
December 2023	Major content revisions and restructuring	0601
May 2023	Updated PVB 256 3-way compensator table	0512
January 2023	Update Compensated PVB 256 table	0511
July 2021	Corrected PVB 256 3-way Compensator with LS A/B parts table	0510
March 2021	Corrected PVS1 with P and T port dimensions	0509
May 2020	Minor revision - data corrections throughout, updated version number to match online catalogue.	0508
	Changed document number from 'BC00000380' to 'BC220686485279'	XX
June 2019	Minor changes throughout document, new images added.	0407
September 2018	Safety topic added.	0406
August 2018	Layout changes, minor edits	0405
June 2018	Table for dimensions page 90 update.	0404
March 2018	Minor edits	0403
January 2018	correction to part number pg 54	0402
October 2017	Updated port names on schematics	0401
July 2017	Updated specs and dimensions	0301
March 2017	Corrected PVAS equation	0203
March 2017	Updated PVAS tables	0202
January 2017	Changed PVEO and PVEH product data	0201
November 2016	First edition	0101

Contents

General Information

Safety in Systems.....	5
PVG 128/256 Proportional Valve Group.....	7
PVG general description.....	8
Features of the PVG 128/256 valve.....	8

Inlet Modules

PVPV256 Inlets (for variable displacement pumps).....	11
PVP128 OC and PVP128 OC/CC Inlets.....	13
OC256 Module (add-on module, configurable for variable or fixed displacement pumps).....	17

Inlet Module Accessories

PVPP Pilot Shut Off Valve.....	19
PVPE/PVPH Full Flow Bypass Valve.....	19

PVB 128 Variant Overview

PVB 128 3-way Compensator.....	22
PVB 128 3-way Compensator with LS A/B.....	25
PVB 128 3-way Compensator with LS A/B and PVLP.....	29

PVB 256 Variant Overview

PVB 256 3-way Compensator.....	35
PVB 256 3-way Compensator with LS A/B.....	39
PVB 256 3-way Compensator with LSA/B and PVLP.....	43
PVB 256 3-way Compensator with LS A/B, PVLP and Turbo.....	48

PVLP Shock and PVLA Suction Valves

PVLP Overview.....	53
PVLP Technical Data.....	53

PVBS Main Spool

PVBS Main Spools variant overview.....	56
Flow control spools.....	56
PVBS main spools product details.....	56
PVS Main spools part numbers.....	58
Flow control spools.....	59
Flow control spool closed neutral position.....	59
Flow control spool throttled open neutral position.....	59
Single acting cylinder flow control spool closed neutral position, flow control B port.....	60
Flow control spool closed neutral position with A-float.....	61

PVM Manual Activation

PVM Technical Data.....	63
-------------------------	----

PVH Hydraulic Actuation

PVH Technical Data.....	65
-------------------------	----

PVHC Electro-Hydraulic Actuator type

PVHC Technical Data.....	67
--------------------------	----

PVMD Cover Manual Actuation Only

PVMD Part Numbers.....	68
------------------------	----

PVE Electrical Actuator

PVE Series 7 Electrical Actuator.....	69
---------------------------------------	----

PVE Variant Overview

PVE Variant Overview.....	71
PVEO.....	71
PVEO.....	72
PVEO Schematics and Dimensions.....	73
PVEO Technical Data.....	73
PVEO 128/256 Reaction Times.....	74
PVEO Variants for PVG.....	74
PVEH.....	75

Contents

PVEH Overview.....	75
PVEH Schematics and Dimensions.....	76
PVEH Technical Data.....	76
PVEH Reaction Times.....	78
PVEH Hysteresis and Ripple.....	78
PVEH Variants for PVG.....	79
Connector Overview	
Connector Overview.....	80
Fault Monitoring and Reaction	
Generic Fault Reaction.....	81
PVEH Fault Reaction Overview.....	82
Functionality Overview	
Standard and Fixed US 0-10 Vdc.....	83
PWM Voltage Control.....	83
Float A-Port (-FLA).....	85
PVE Power Save.....	85
Special Features	
Dedicated Float Pin (UF).....	86
Disable Mode.....	86
Performance Overview	
PVG 128/256 Reaction Times.....	87
Hysteresis and Ripple.....	88
Oil Consumption.....	88
PVSI/PVGI End and Interface Plates	
PVSI with or without LX-connection.....	90
PVSI with P and T port connections.....	91
PVGI Interface Plate.....	92
PVAS	
PVG Valve Schematics	
Valve Schematics.....	96
Dimension Overview	
Dimension Overview for PVG 128/256.....	98
Specifications example.....	101

General Information

Safety in Systems

All types and brands of control valves, including proportional valves, can fail. Therefore, the necessary protection against the serious consequences of a functional failure should always be built into the system.

General safety considerations

Warning

Because the proportional valve is used in many different applications and under different operating conditions, it is the sole responsibility of the OEM to ensure that all performance, safety and warning requirements of the application are met in this selection of products and complies with relevant machine-specific and generic standards.

The OEM is fully responsible for making and documenting their own hazard and risk assessment including the consequences of the system in case of pressure failure and uncontrolled movements. The Danfoss documentation can only be used as input for the activity.

Control system example

An example of a control system using an aerial lift is shown below:

Aerial lift

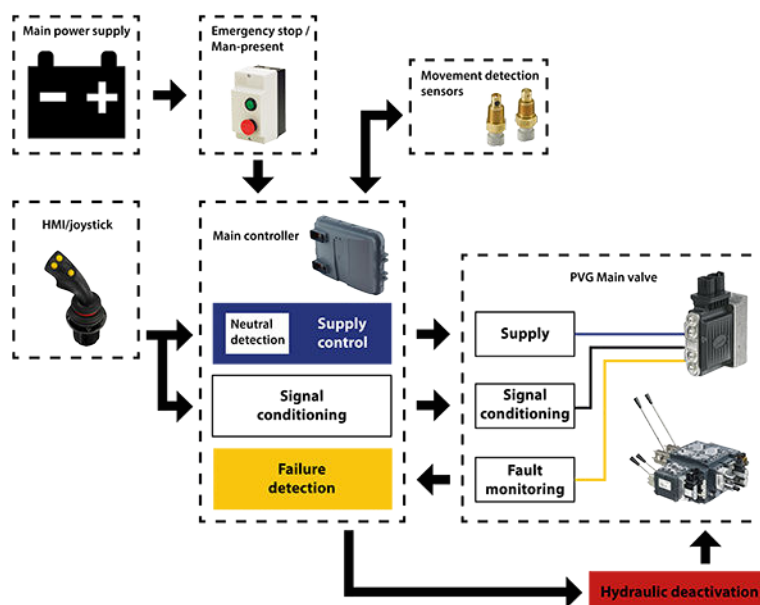


This example breaks down the control system into smaller bits explaining the architecture in depth. Even though many Danfoss components are used in the PVG control system.

The function of the control system is to use the output from the PVE together other external sensors to ensure the PLUS+1 main controllers correct function of the aerial lift.

General Information

Electrical block diagram



Warning

It is the responsibility of the equipment manufacturer that the control system incorporated in the machine is declared as being in conformity with the relevant machine directives.

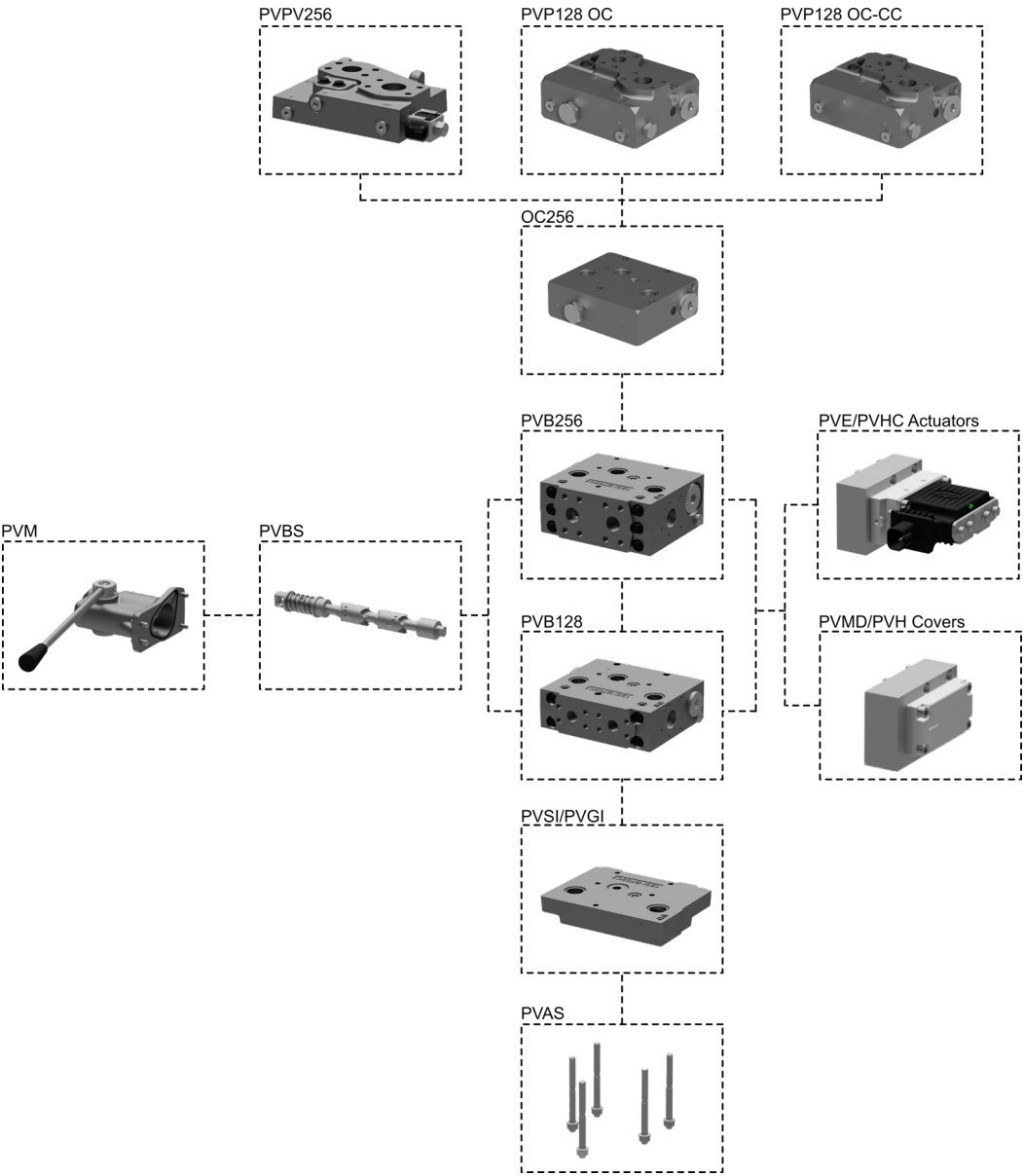
Caution

A mix of electrical actuation and hydraulic actuation on the same valve stack is not safe. PVE and PVH are designed for different pilot pressure.

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

General Information

PVG 128/256 Proportional Valve Group



Navigation

PVPV	PVB 256	PVB 128
PVBS Main Spool on page 56	PVM	PVE Series 7 Electrical Actuator on page 69/PVHC
PVMD/PVH Covers	PVS1/PVGI End and Interface Plates on page 89	PVAS

General Information

PVG general description

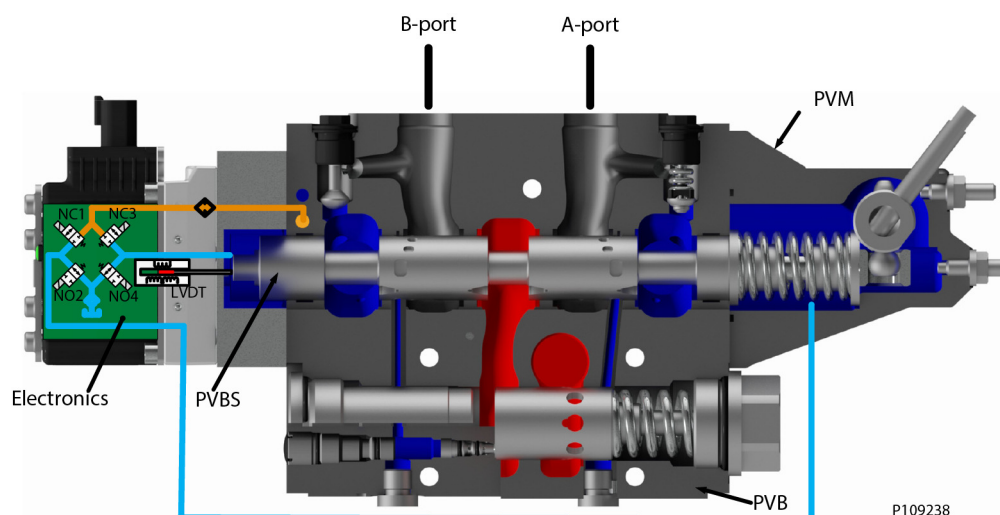
PVG is a hydraulic, load-sensing proportional valve, designed for optimal machine performance and maximum design flexibility.

The PVG valve design is based on a modular concept that enables machine designers to specify a valve solution suitable for multiple market segments across multiple applications.

The load independent proportional control valve and high performance actuator technology combined with a low pressure drop design improves the machine performance and efficiency – increasing productivity and reducing energy consumption.

Features of the PVG 128/256 valve

- Inlet flow up to 1200 l/min [317 US gal/min]
- Compact sectional platform solution for easy integration with PVG 16/32/48
- Load-independent flow control:
 - Oil flow to an individual function is independent of the load pressure of this function
 - Oil flow to one function is independent of the load pressure of other functions
- Reliable regulation characteristics across the entire flow range
- Load sense relief valves for A and B port enables reduced energy loss at target pressure
- Optimized for lower pressure drop and higher efficiency
- Several options for connection threads and flange mount
- Compact design, easy installation and serviceability
- Static Load sense system when selecting pump control
- Internal T0 connection in all PVS/PVGI

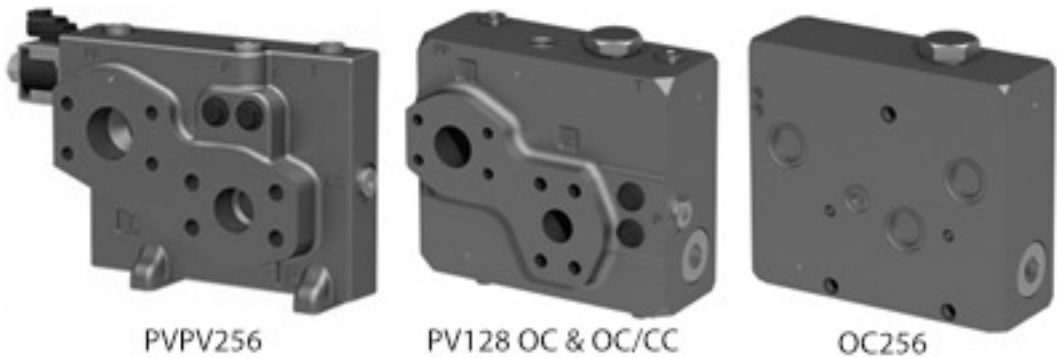


P109238

Inlet Modules

The PVG 128/256 inlets, also referred to as pump side modules, act as an interface between the PVG 128/256 proportional valve group and the hydraulic pump and tank reservoir.

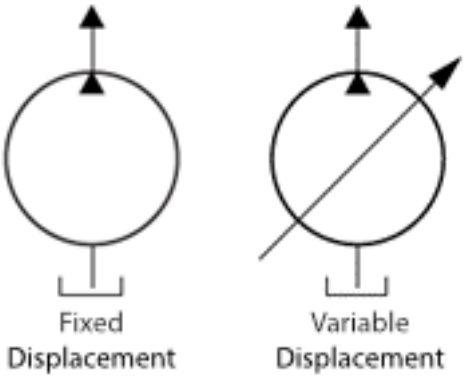
Included in this section are a variety of inlets intended for variable and/or fixed pump applications, as well as an additional module that can be used to convert an existing assembly between variable and fixed pump use.



The inlet module variants are based on a generic platform with a selection of additional features, enabling you to tailor the PVP to suit the demands of any hydraulic system:

- [PVPV256 Inlets](#) on page 11 (for variable displacement pumps)
- [PVP128 OC and PVP128 OC/CC Inlets](#) on page 13 (for fixed displacement pumps)
- [OC256 Module](#) on page 17 (add-on module, configurable for variable or fixed displacement pumps)

Pump Symbols by Displacement Type



Technical Data - All Inlet Variants

Max. rated pressure	P-port continuous	350 bar	[5076 psi]
	P-port intermittent	400 bar	[5800 psi]
	T-port static/dynamic	25/40 bar	[363/580 psi]
Oil temperature	Recommended	30 to 60°C	[86-140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°C	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]

Inlet Modules*Technical Data - All Inlet Variants (continued)*

Oil viscosity	Operating range	12 to 75 mm ² /s	[65 to 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	[2128 SUS]
Oil contamination according to ISO 4406	Maximum	23/19/16	

Inlet Modules

PVPV256 Inlets

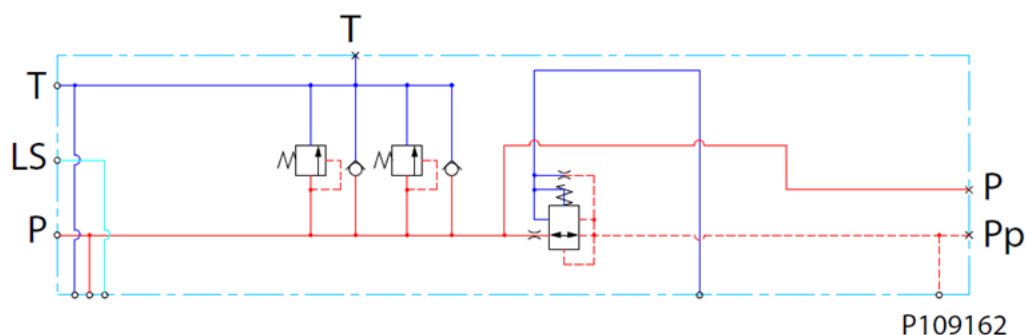
The PVPV256 inlets, also referred to as pump side modules, act as an interface between the PVG 128/256 proportional valve group and the hydraulic pump and tank reservoir. The PVPV256 is intended for use in variable pump applications.

All variants include a pilot pressure reducing valve (PPRV) for PVE or PVH/PVHC actuation. All models can be actuated via PVM manual actuators.

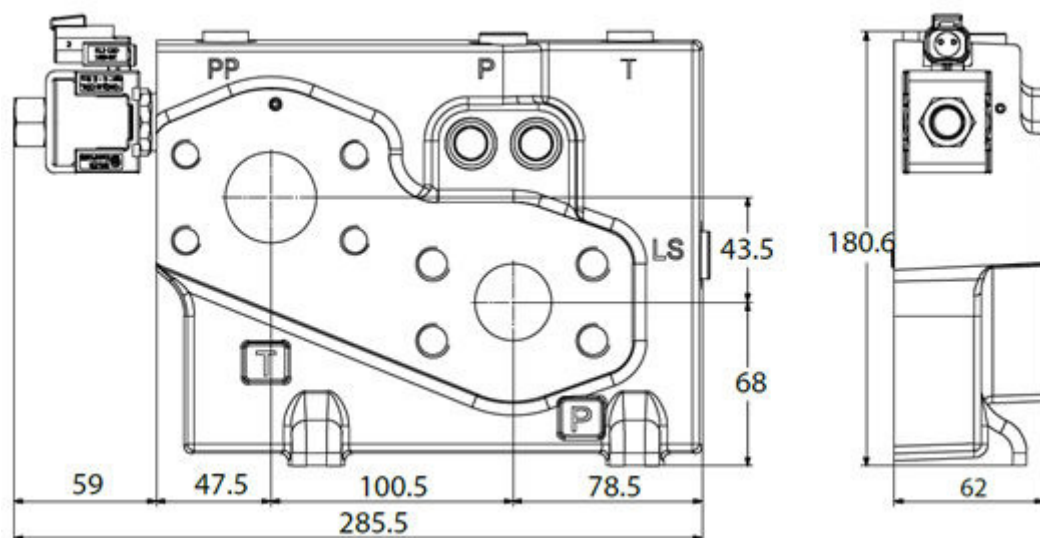
All variants are prepared for 2x anti-shock/anti-cavitation valves (PVLP) valves. See [PVLP Shock and PVLA Suction Valves](#) on page 53.

Optional electrically actuated pilot shut off valve (PVPP) provides additional functional system safety by removing pilot oil from the electrical actuation or hydraulic actuation system, disabling main spool actuation. See [Inlet Module Accessories](#) on page 19.

Schematic



Dimensional Drawing



Drawing shown with optional PVPP

Technical Data

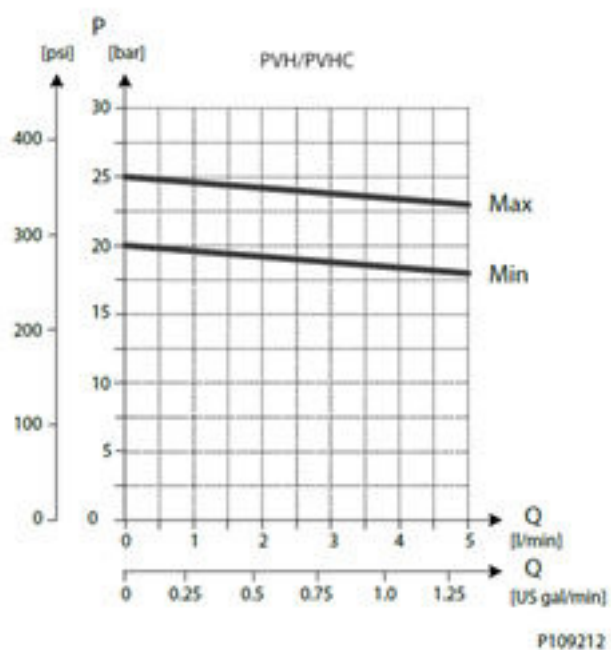
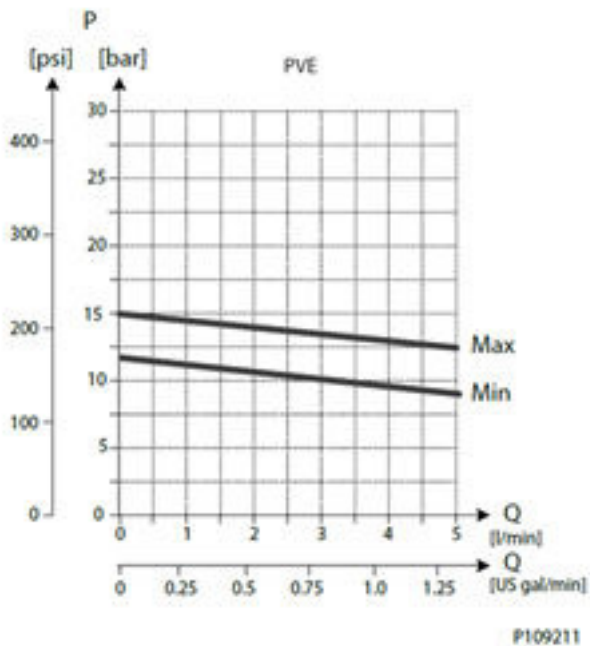
Rated P-port flow	600 l/min	[159 US gal/min]
-------------------	-----------	------------------

Inlet Modules

Part numbers for PVPV256

Part Number	PPRV	P-port	T-Port	LS-port Gauge-port	M-port Gauge-port	T- and Pp Gauge-port	Mounting Thread
11173130	PVE 13,5 bar	Metric Flange 1-1/4"	Metric Flange 1-1/2"	G3/8"BSP	G3/8"BSP	G1/4"BSP	M12
11176703		Threaded Ports G1-1/2" BSP	Threaded Ports G1-1/2" BSP	G3/8"BSP	G3/8"BSP	G1/4"BSP	M12
11176691		SAE Flange 1-1/4"	SAE Flange 1-1/2"	9/16-18 UNF (SAE-6)	3/4-16 UNF (SAE-8)	7/16-20 UNF (SAE-4)	M12
11176702		Threaded Ports 1-7/8" UNF (SAE-24)	Threaded Ports 1-7/8" UNF (SAE-24)	9/16-18 UNF (SAE-6)	3/4-16 UNF (SAE-8)	7/16-20 UNF (SAE-4)	M12
11178095	PVH/PVHC 25 bar	Metric Flange 1-1/4"	Metric Flange 1-1/2"	G3/8"BSP	G3/8"BSP	G1/4"BSP	M12
11178098		Threaded Ports G1-1/2" BSP	Threaded Ports G1-1/2" BSP	G3/8"BSP	G3/8"BSP	G1/4"BSP	M12
11178117		SAE Flange 1-1/4"	SAE Flange 1-1/2"	9/16-18 UNF (SAE-6)	3/4-16 UNF (SAE-8)	7/16-20 UNF (SAE-4)	M12
11178119		Threaded Ports 1-7/8" UNF (SAE-24)	Threaded Ports 1-7/8" UNF (SAE-24)	9/16-18 UNF (SAE-6)	3/4-16 UNF (SAE-8)	7/16-20 UNF (SAE-4)	M12

Pilot Pressure Reduction Valve Performance



Inlet Modules

PVP128 OC and PVP128 OC/CC Inlets

The PVP128 OC and PVP128 OC/CC inlets, also referred to as pump side modules, act as an interface between the PVG 128/256 proportional valve group and the hydraulic pump and tank reservoir. The PVP128 OC is intended for use in fixed pump applications, while the PVP128 OC/CC can be used in both fixed and variable pump applications.

All variants include a pilot pressure reducing valve (PPRV) for PVE or PVH/PVHC actuation. All models can be actuated via PVM manual actuators.

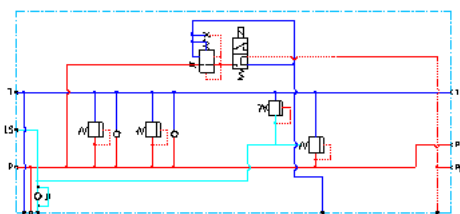
All variants are prepared for 2x anti-shock/anti-cavitation valves (PVLP) valves. See [PVLP Shock and PVLA Suction Valves](#) on page 53.

All variants are prepared for optional electrically actuated pilot shut off valve (PVPP), which provides additional functional system safety by removing pilot oil from the electrical actuation or hydraulic actuation system, disabling main spool actuation. See [Inlet Module Accessories](#) on page 19.

OC/CC variants include facility for optional electrically (PVPE) or hydraulically (PVPH) actuated full flow dump valve relieves pump flow to tank, reducing pump standby pressure in fixed displacement pump applications. See [Inlet Module Accessories](#) on page 19.

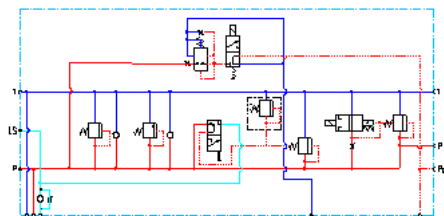
OC/CC variants include OC/CC selector, allowing for easy conversion between variable (CC) and fixed (OC) pump applications.

Schematic — PVP128 OC



Schematic shown with optional PVPP

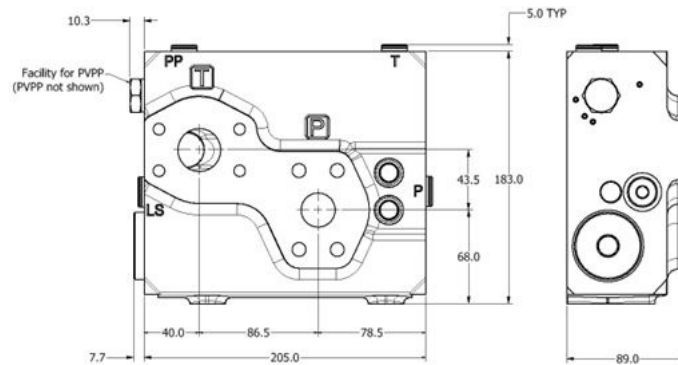
Schematic — PVP128 OC/CC



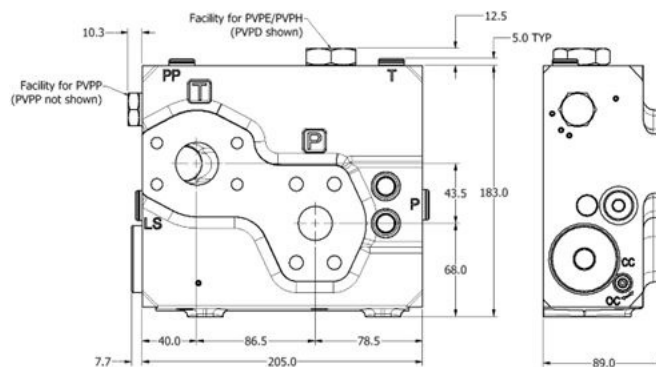
Schematic shown with optional PVPP & PVPE

Inlet Modules

Dimensional Drawing — PVP128 OC



Dimensional Drawing — PVP128 OC/CC



Technical Data

Rated P-port flow	500 l/min	[132 US gal/min]
-------------------	-----------	------------------

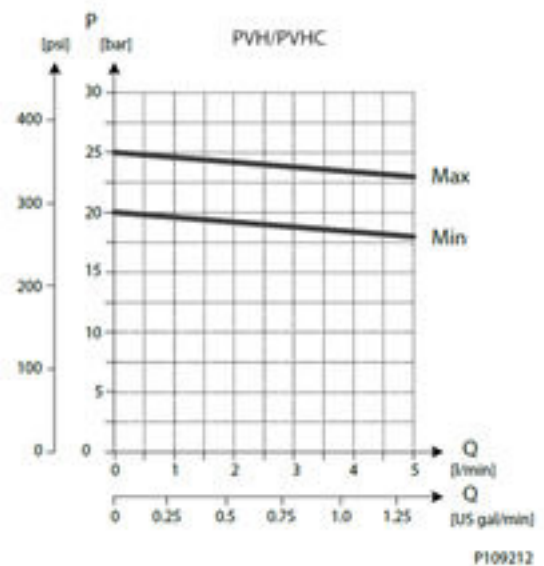
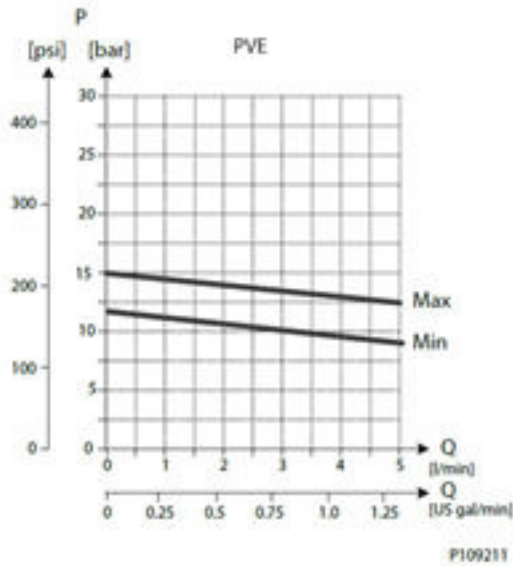
Part numbers for PVP128 OC & PVP128 OC/CC

Part Number	PPRV	P-Port Flange (C62)	T-Port Flange (C61)	LS Port	P Gauge Port	T and Pp Gauge Ports	PVPE/PVPH facility	OC/CC Selector	Mounting Thread
11244804	PVE 13,5 bar	Metric 1"	Metric 1-1/4"	G3/8" BSP	G3/8" BSP	G1/4" BSP	No	No	M12
11244805		SAE 1"	SAE 1-1/4"	9/16-18 UNF (SAE-6)	3/4-16 UNF (SAE-8)	7/16-20 UNF (SAE-4)			
11244780	PVH/ PVHC 25 bar	Metric 1"	Metric 1-1/4"	G3/8" BSP	G3/8" BSP	G1/4" BSP			
11244781		SAE 1"	SAE 1-1/4"	9/16-18 UNF (SAE-6)	3/4-16 UNF (SAE-8)	7/16-20 UNF (SAE-4)			
11215893	PVE 13,5 bar	Metric 1"	Metric 1-1/4"	G3/8" BSP	G3/8" BSP	G1/4" BSP	Yes*	Yes	
11215895		SAE 1"	SAE 1-1/4"	9/16-18 UNF (SAE-6)	3/4-16 UNF (SAE-8)	7/16-20 UNF (SAE-4)			
11243703	PVH/ PVHC 25 bar	Metric 1"	Metric 1-1/4"	G3/8" BSP	G3/8" BSP	G1/4" BSP			
11243704		SAE 1"	SAE 1-1/4"	9/16-18 UNF (SAE-6)	3/4-16 UNF (SAE-8)	7/16-20 UNF (SAE-4)			

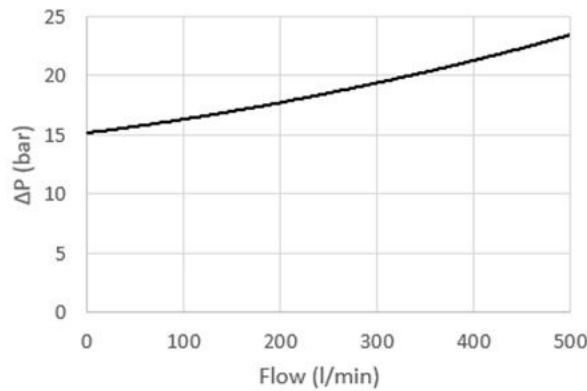
* If PVPE/PVPH is not required, inlet selection must include PVPD on specification sheet for OC/CC variants

Inlet Modules

Pilot Pressure Reduction Valve Performance



Neutral Bypass Pressure Drop Characteristics

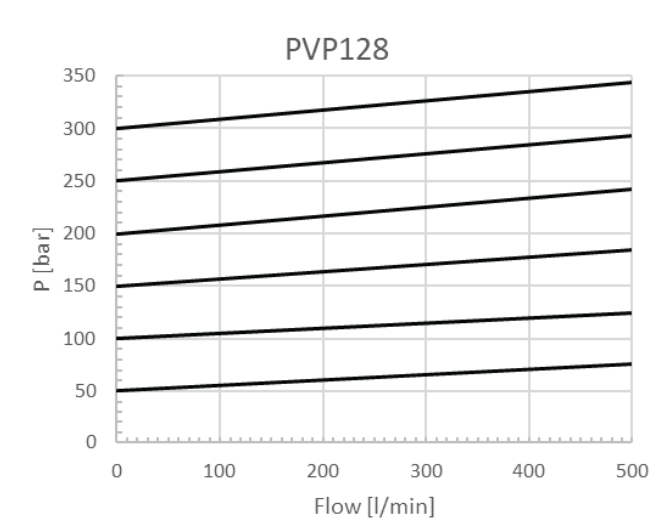


Inlet relief pressure is dependent on inlet flow rate and will follow the curves in the graphs below. The final relief setting should be made at the maximum application flow rate. This setting must not exceed the continuous pressure rating of any component in the valve stack.

Inlet shock valves (PVLV) are necessary to mitigate pressure spikes in flow transition periods and should not be replaced with PVLA (anti-cavitation valve only). PVLVs have a fixed setting and should be specified 30 bar above maximum application pressure (Inlet LS relief setting at maximum application flow rate for fixed pump application or PC setting of pump for variable pump application).

Inlet Modules

Integrated LS pressure relief valve characteristics



Inlet Modules

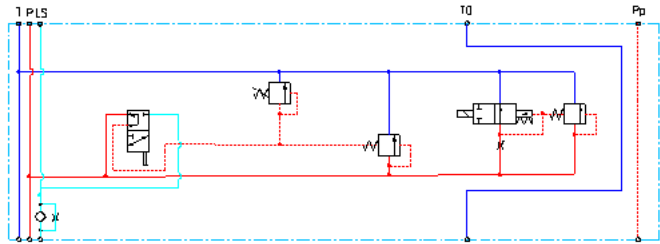
OC256 Module

The OC256 module is an add-on module used to convert an existing assembly using a PVPV256 inlet from variable to fixed pump use. The OC256 module should be mounted immediately after the inlet and before the first working section. This allows for the LS shuttle network to transmit the highest load pressure to the OC256 module, allowing for proper function of the unloader when in the open center configuration.

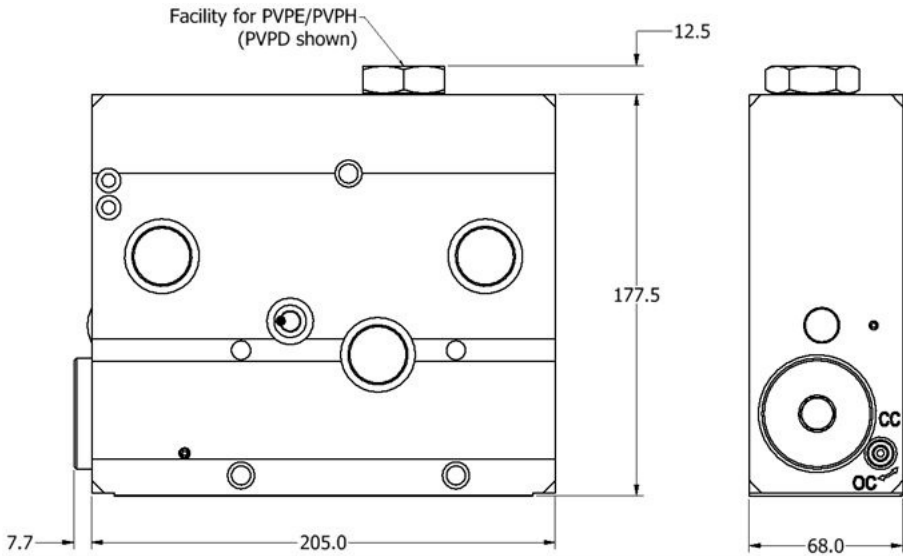
The OC256 module includes facility for electrically (PVPE) or hydraulically (PVPH) actuated full flow dump valve that relieves pump flow to tank, reducing pump standby pressure in fixed displacement pump applications. See [Inlet Module Accessories](#) on page 19.

The OC256 module include OC/CC selector, allowing for easy conversion between variable (CC) and fixed (OC) pump applications.

Schematic



Dimensional Drawing



Technical Data

Rated P-port flow	600 l/min	[159 US gal/min]
-------------------	-----------	------------------

*When paired with PVPV256 inlet

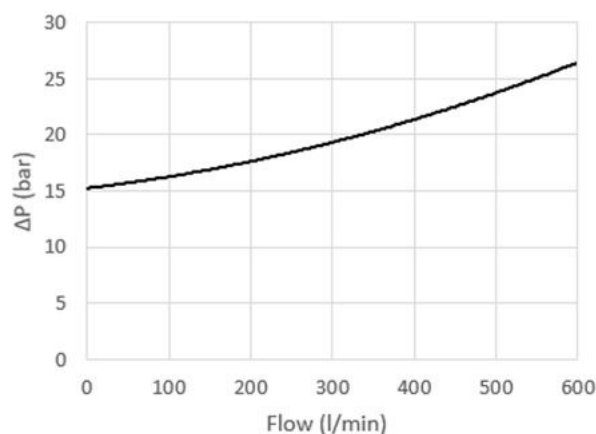
Part number for OC256

Part Number	PPRV	Ports	PVPE/PVPH facility	OC/CC Selector	Mounting Thread
11217812	None	None	Yes*	Yes	None

* If PVPE/PVPH is not required, inlet selection must include PVPD on specification sheet

Inlet Modules

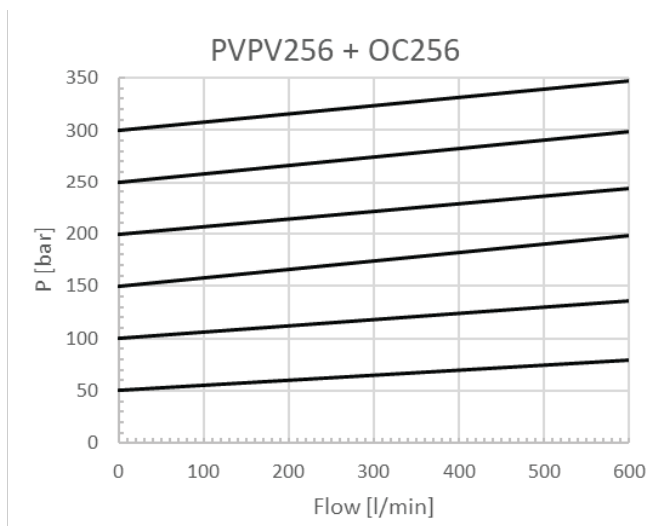
Neutral Bypass Pressure Drop Characteristics



Inlet relief pressure is dependent on inlet flow rate and will follow the curves in the graphs below. The final relief setting should be made at the maximum application flow rate. This setting must not exceed the continuous pressure rating of any component in the valve stack.

Inlet shock valves (PVLP) are necessary to mitigate pressure spikes in flow transition periods and should not be replaced with PVLA (anti-cavitation valve only). PVLPs have a fixed setting and should be specified 30 bar above maximum application pressure (Inlet LS relief setting at maximum application flow rate for fixed pump application or PC setting of pump for variable pump application).

Integrated LS pressure relief valve characteristics



Inlet Module Accessories

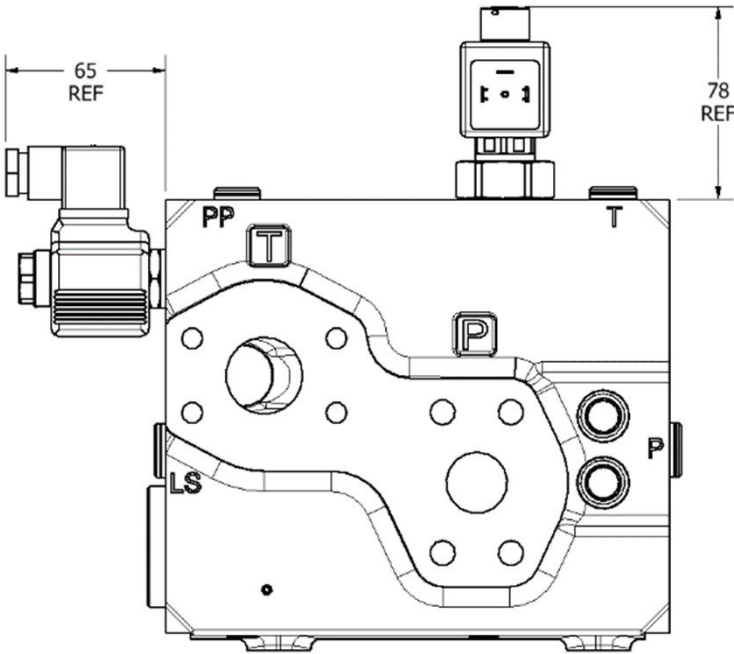
PVPP Pilot Shut Off Valve

Optional electrically actuated pilot shut off valve (PVPP) provides additional functional system safety by removing pilot oil from the electrical actuation or hydraulic actuation system, disabling main spool actuation. Spools can still be operated manually via the PVM lever. If PVPP is not required, it can be neglected from the specification sheet. PVPP is available on PVPV256, PVP128 OC, and PVP128 OC/CC.

Part Number	Voltage	Connector
11160318	12V	1x4 DIN
11160319	24V	1x4 DIN

PVPE/PVPH Full Flow Bypass Valve

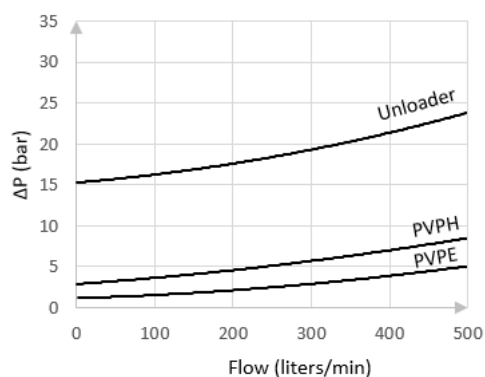
Optional electrically (PVPE) or hydraulically (PVPH) actuated full flow dump valve relieves pump flow to tank, reducing pump standby pressure in fixed displacement pump applications. If PVPE/PVPH is not required, PVPD must be included on the specification sheet. PVPE/PVPH are available on PVP128 OC/CC & OC256.



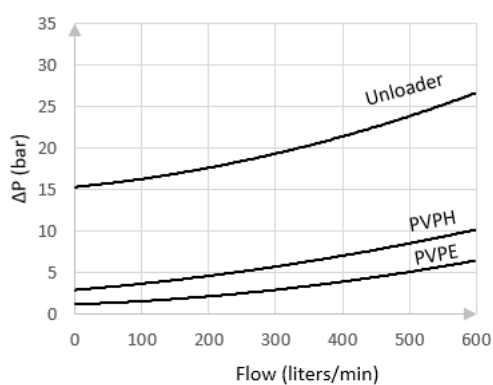
Part Number	Type	Actuation Type	Connection
11271986	PVPE	12V	1x4 DIN
11272287	PVPE	24V	1x4 DIN
11272266	PVPE	12V	1x2 Deutsch
11278656	PVPE	24V	1x2 Deutsch
11272294	PVPH	Hydraulic	G1/4 BSP Port
11272239	PVPD	None	None

Inlet Module Accessories

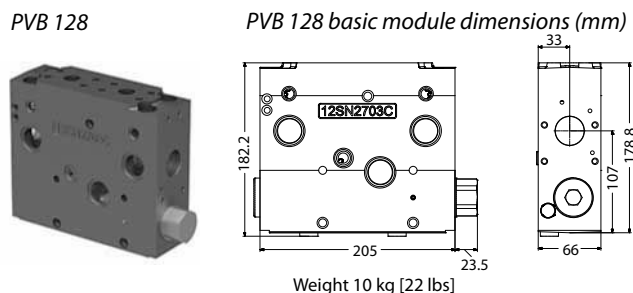
Neutral Bypass Pressure Drop Characteristics – PVP128 OC & PVP128 OC/CC



Neutral Bypass Pressure Drop Characteristics – OC256 with PVPV256



PVB 128 Variant Overview

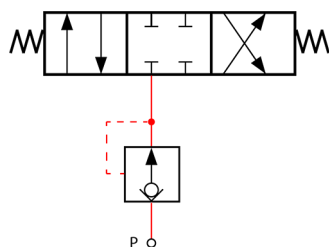


The PVG 128 Basic modules (PVB), also referred to as work sections, is the interface between the PVG 128 proportional valve group and the work function such as a cylinder or a motor.

The PVB basic module variants are based on a generic platform with a selection of additional features, enabling you to tailor the PVB to suit the demands of any hydraulic system.

The compensator is a 3-way type which include load drop check valve functionality, compensator function and neutral relief which avoid A and B port pressure build up in neutral.

Symbol - compensated PVB



The generic PVB basic module platform includes the following main variants:

Compensated PVB 128 Compensated basic module.

Compensated PVB 128 w LSA/B Compensated basic module with LSA/B relief valve for each work port.

Compensated PVB 128 with LSA/B and PVLP Compensated basic module with LSA/B relief valve for each work port and 2xPVLPs for each work port.

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.

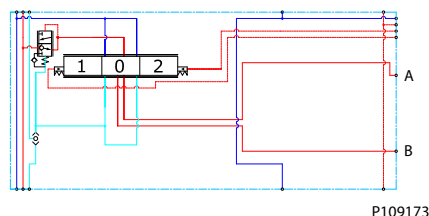
PVB 128 Variant Overview

PVB 128 3-way Compensator

The compensated PVB is intended for controlling a work function where the function behavior in terms of flow and pressures requires independency on the load pressure of other functions used simultaneously.

The compensator is a 3-way type which include load drop check valve functionality, compensator function and neutral relief which avoid A and B port pressure build up in neutral.

Schematic



Technical data

Max. rated pressure	A/B port continuous	350 bar	[5076 psi]
	A/B port intermittent	400 bar	[5800 psi]
Max. rated flow*	A/B port	300 L/min	[79 US gal/min]
Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°C	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 to 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	[2128 SUS]
Oil contamination according to ISO 4406	Maximum	23/19/16	
Max. internal leakage at 100 bar [1450 psi] and 21 mm ² /s [102 SUS]	A/B→T without shock valve	70 cm ³ /min	[4.27 in ³ /min]
	A/B→T with shock valve	80 cm ³ /min	[4.88 in ³ /min]

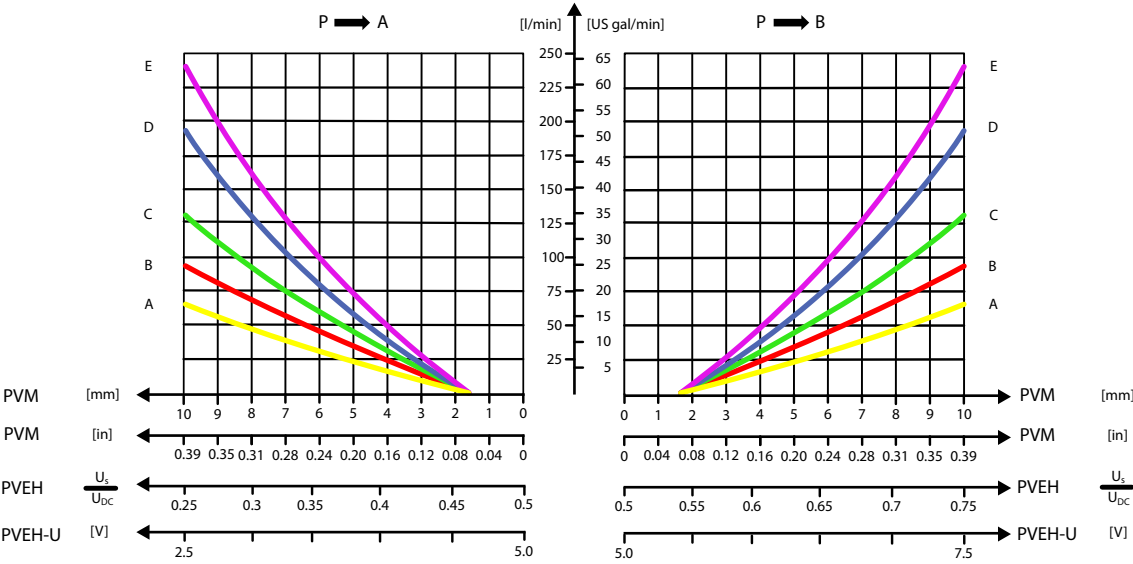
* Rated flow at 15 bar margin pressure

Part numbers for Compensated PVB 128

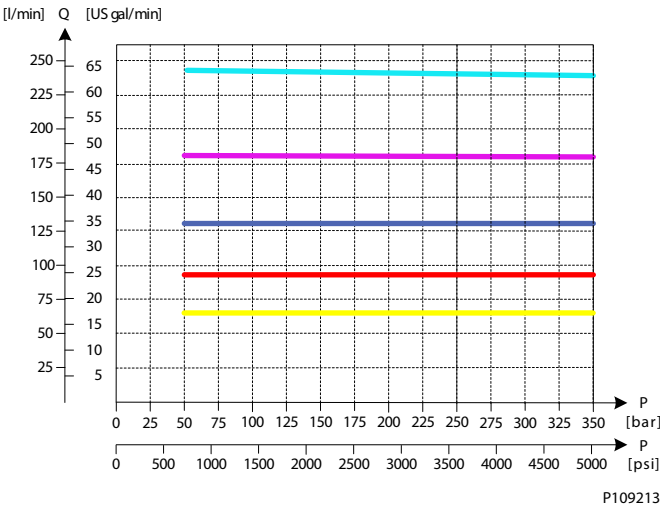
Part number	A/B-port	PVLP/PVLA	LS A/B-port
11170522	Metric Flange 3/4"	-	-
11170528	G 1" BSP	-	-
11170524	SAE Flange 3/4" UNC	-	-
11170526	Thread Ports 1 5/16 UNC	-	-

PVB 128 Variant Overview

Oil flow as function of spool travel

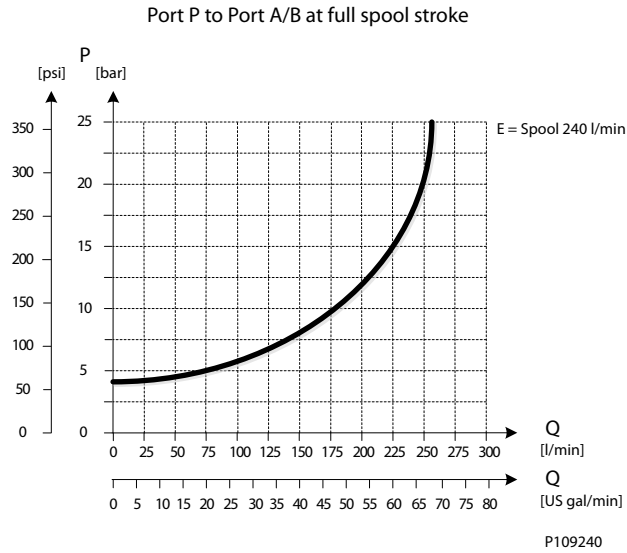


Load Independent Oil Flow, Pressure Compensated

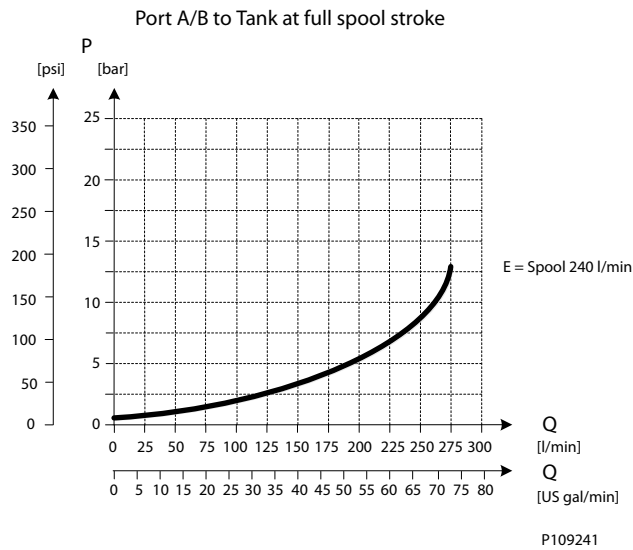


PVB 128 Variant Overview

PVB 128 Upstream Performance



PVB 128 Downstream Performance



PVB 128 Variant Overview

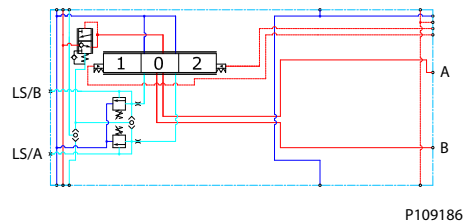
PVB 128 3-way Compensator with LS A/B

The compensated PVB is intended for controlling a work function where the function behavior in terms of flow and pressures requires independency on the load pressure of other functions used simultaneously.

The integrated LSA/B relief valves are used to limit the maximum work port pressure on the A and B-ports individually.

The compensator is a 3-way type which include load drop check valve functionality, compensator function and neutral relief which avoid A and B port pressure build up in neutral.

Schematic



Technical data

Max. rated pressure	A/B port continuous	350 bar	[5076 psi]
	A/B port intermittent	400	[5800 psi]
Max. rated flow*	A/B port	250 l/min	[66 US gal/min]
Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 to 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	[2128 SUS]
Oil contamination according to ISO 4406	Maximum	23/19/16	
Max. internal leakage at 100 bar [1450 psi] and 21 mm ² /s [102 SUS]	A/B→T without shock valve	70 cm ³ /min	[4.27 in ³ /min]
	A/B→T with shock valve	80 cm ³ /min	[4.88 in ³ /min]

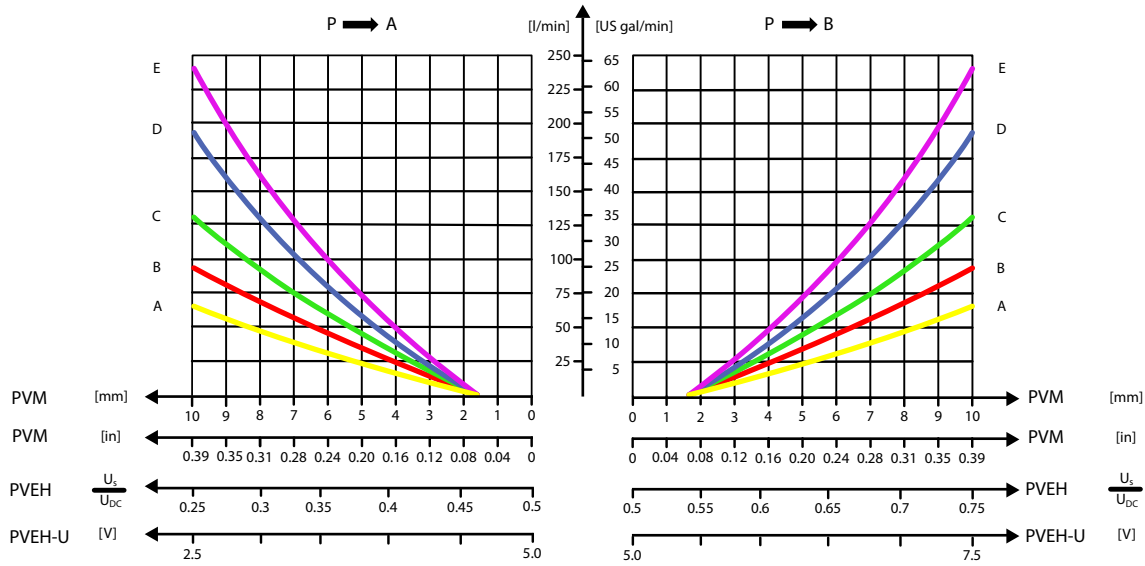
* Rated flow at 15 bar margin pressure

Part numbers for Compensated PVB with LS A/B

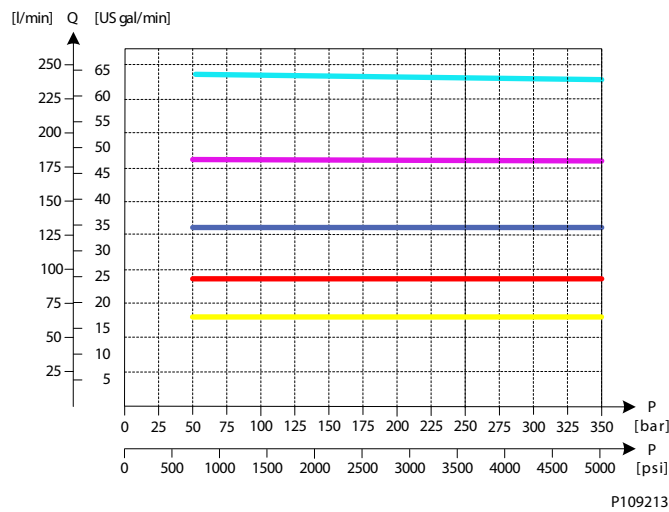
Part number	A/B-port	PVLP/PVLA	LS A/B-port
11176915	Metric Flange 3/4"	-	G1/4"BSP
11176918	G 1" BSP	-	G1/4"BSP
11176916	SAE Flange 3/4" UNC	-	7/16-20 UNC
11176917	Thread Ports 1 5/16 UNC	-	7/16-20 UNC

PVB 128 Variant Overview

Oil flow as function of spool travel



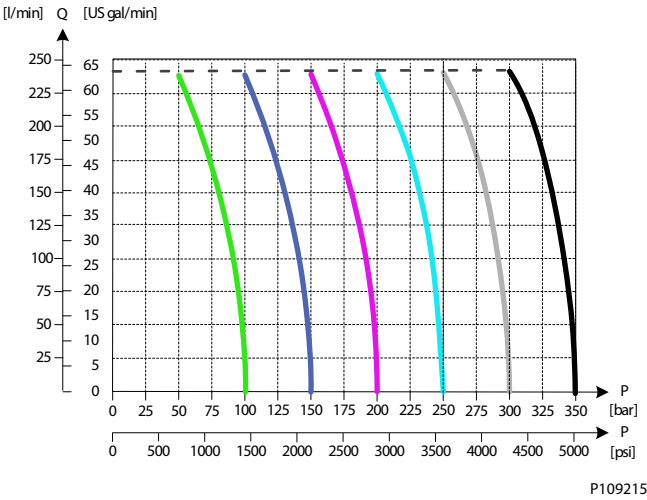
Load Independent Oil Flow, Pressure Compensated



P109213

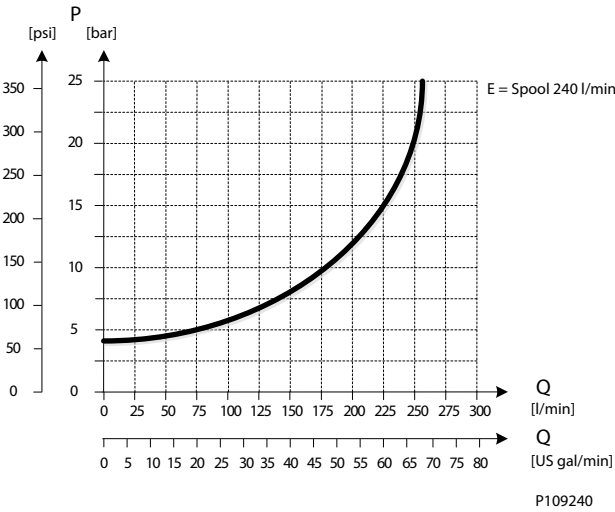
PVB 128 Variant Overview

LS A/B Pressure Relief Valve



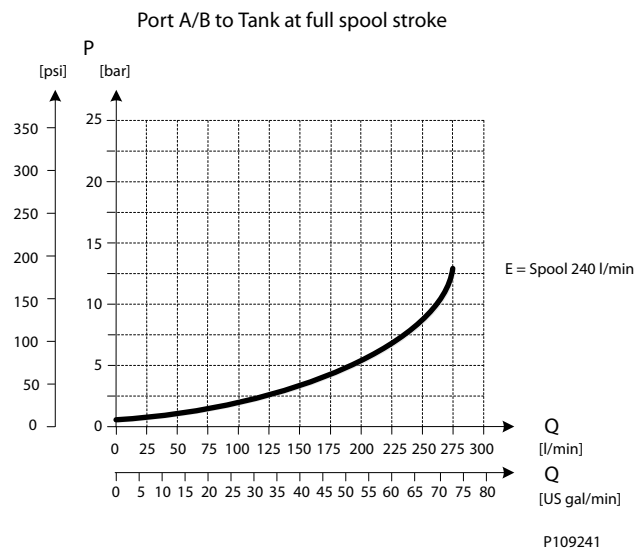
PVB 128 Upstream Performance

Port P to Port A/B at full spool stroke



PVB 128 Variant Overview

PVB 128 Downstream Performance



PVB 128 Variant Overview

PVB 128 3-way Compensator with LS A/B and PVLP

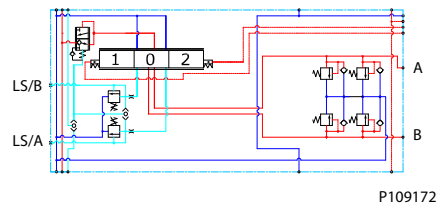
The compensated PVB is intended for controlling a work function where the function behavior in terms of flow and pressures requires independency on the load pressure of other functions used simultaneously.

The integrated LS A/B relief valves are used to limit the maximum work port pressure on the A and B-ports individually.

Featuring 2xPVLP shock/anti-cavitation valves on each work port for pressure peak protection and anti-cavitation prevention

The compensator is a 3-way type which include load drop check valve functionality, compensator function and neutral relief which avoid A and B port pressure build up in neutral.

Schematic



Technical data

Max. rated pressure	A/B port continuous	350 bar	[5076 psi]
	A/B port intermittent	400	[5800 psi]
Max. rated flow*	A/B port	250 l/min	[66 US gal/min]
Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 to 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	[2128 SUS]
Oil contamination according to ISO 4406	Maximum	23/19/16	
Max. internal leakage at 100 bar [1450 psi] and 21 mm ² /s [102 SUS]	A/B→T without shock valve	70 cm ³ /min	[4.27 in ³ /min]
	A/B→T with shock valve	80 cm ³ /min	[4.88 in ³ /min]

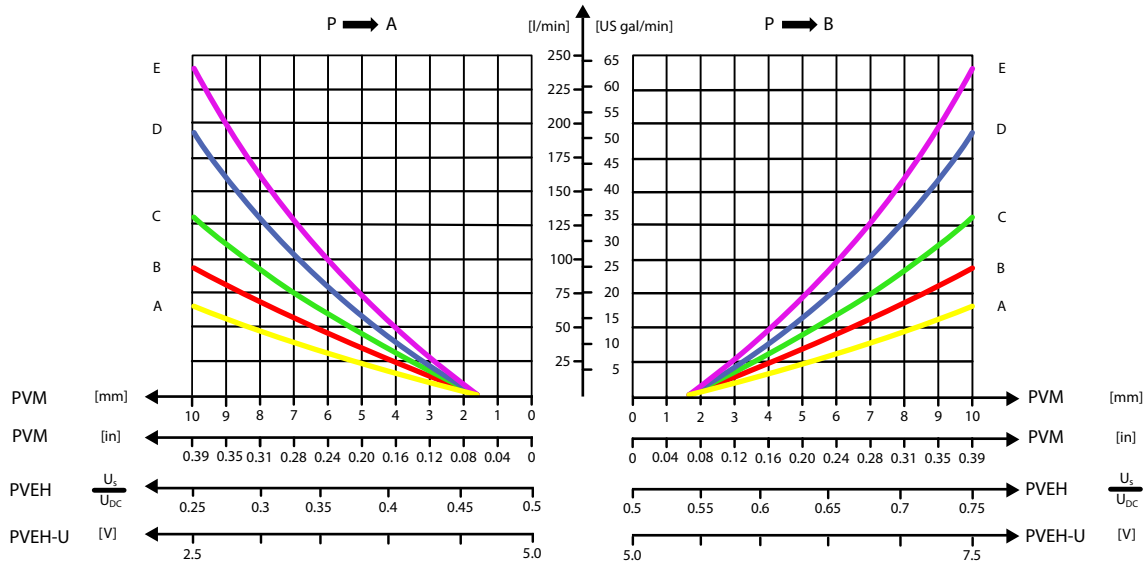
* Rated flow at 15 bar margin pressure

Part numbers for Compensated PVB 128 with LSA/B and PVLP

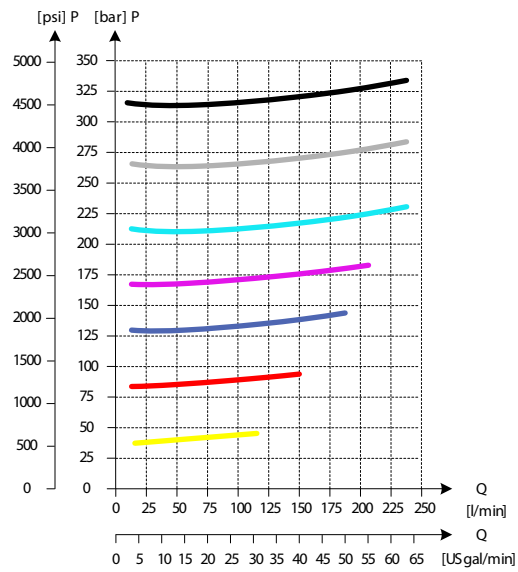
Part number	A/B-port	PVLP/PVLA	LS A/B-port
11165621	Metric Flange 3/4"	2 PVLP/PVLA	G1/4"BSP
11170527	G 1" BSP	2 PVLP/PVLA	G1/4"BSP
11170523	SAE Flange 3/4" UNC	2 PVLP/PVLA	7/16-20 UNC
11170525	Thread Ports 1 5/16 UNC	2 PVLP/PVLA	7/16-20 UNC

PVB 128 Variant Overview

Oil flow as function of spool travel



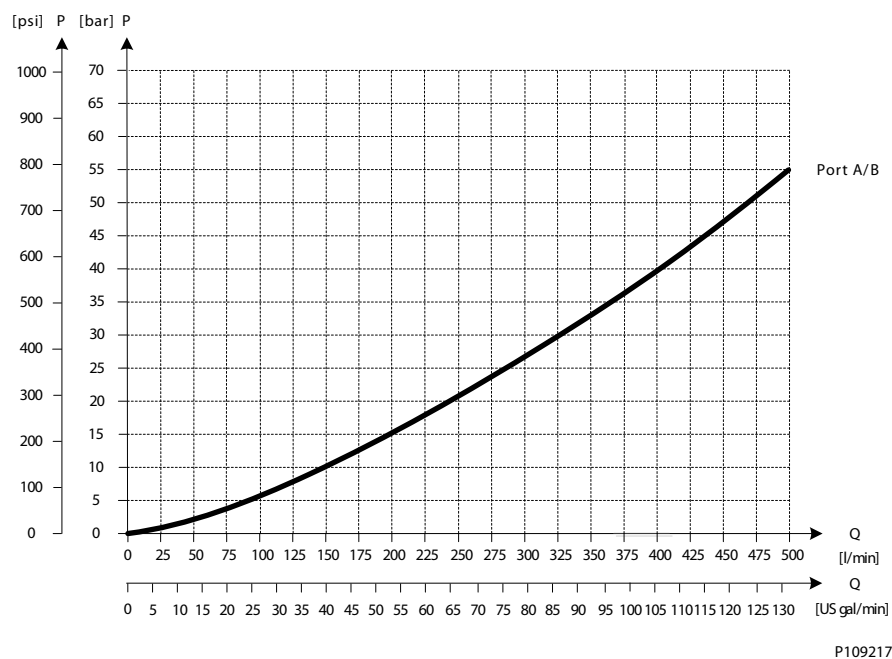
2xPVLP Shock Valve



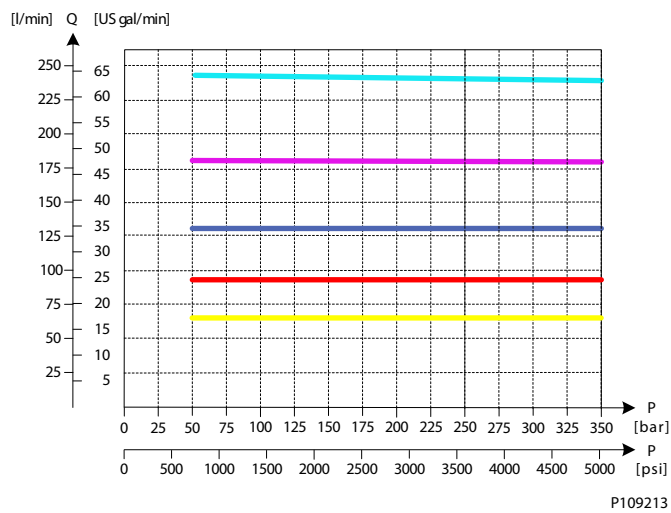
P109216

PVB 128 Variant Overview

2xPVLA Suction Valve

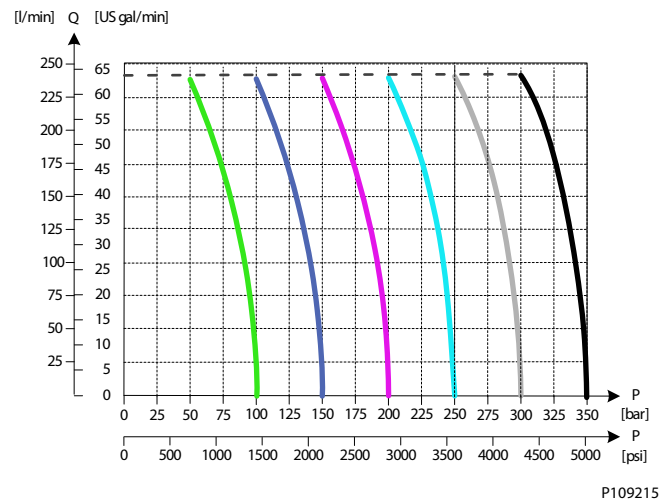


Load Independent Oil Flow, Pressure Compensated



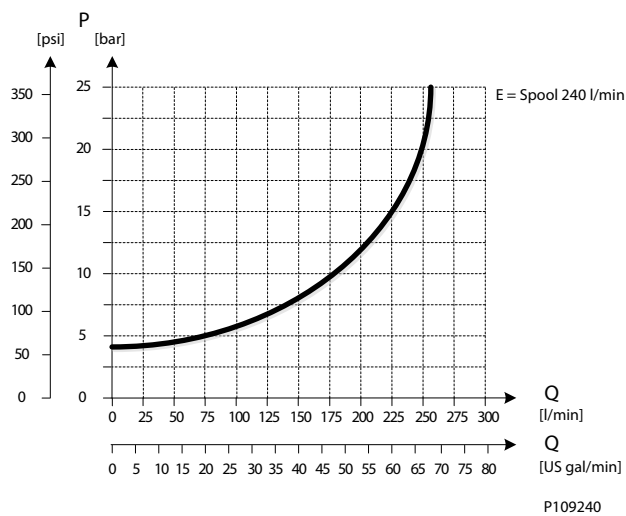
PVB 128 Variant Overview

LS A/B Pressure Relief Valve



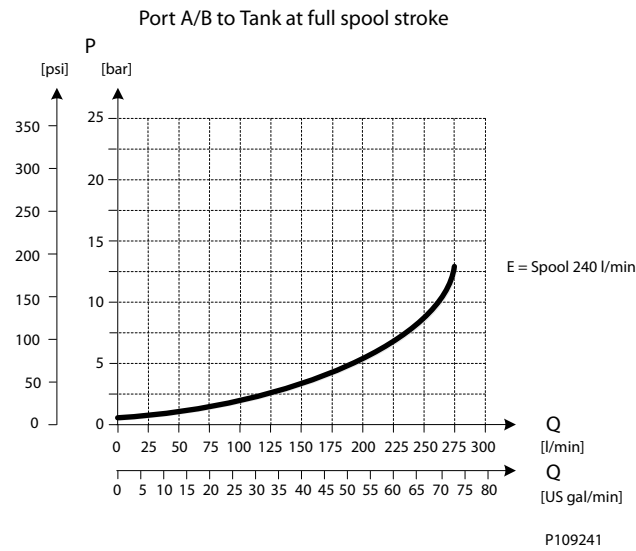
PVB 128 Upstream Performance

Port P to Port A/B at full spool stroke



PVB 128 Variant Overview

PVB 128 Downstream Performance

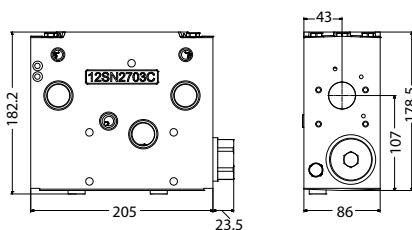


PVB 256 Variant Overview

PVB 256



PVB 256 basic module dimensions (mm)



Weight 16 kg [35.3 lbs]

The PVG 256 Basic modules (PVB), also referred to as work sections, is the interface between the PVG 256 proportional valve group and the work function such as a cylinder or a motor.

The PVB basic module variants are based on a generic platform with a selection of additional features, enabling you to tailor the PVB to suit the demands of any hydraulic system.

The compensator is a 3-way type which includes load drop check valve functionality, compensator function and neutral relief which avoid A and B port pressure build up.

The generic PVB basic module platform includes the following main variants.

Compensated PVB 256 Compensated basic module.

Compensated PVB 256 with LS A/B Compensated basic module with LSA/B relief valve for each work port.

Compensated PVB 256 with LS A/B and PVLP Compensated basic module with LSA/B relief valve for each work port and 3xPVLPs for each work port.

Compensated PVB 256 with Turbo compensator feature Compensated basic module with LS A/B relief valve for each work port and 3xPVLPs for each work port.

PVB 256 Variant Overview

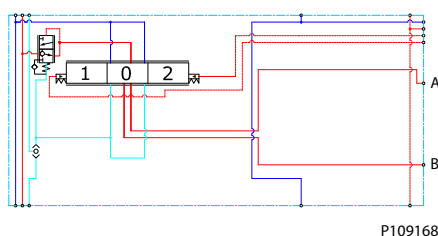
PVB 256 3-way Compensator

The compensated PVB is intended for controlling a work function where the function behavior in terms of flow and pressures requires independency on the load pressure of other functions used simultaneously.

The integrated LS A/B relief valves are used to limit the maximum work port pressure on the A and B-ports individually.

The compensator is a 3-way type which include load drop check valve functionality, compensator function and neutral relief which avoid A and B port pressure build up in neutral.

Schematic



Technical data

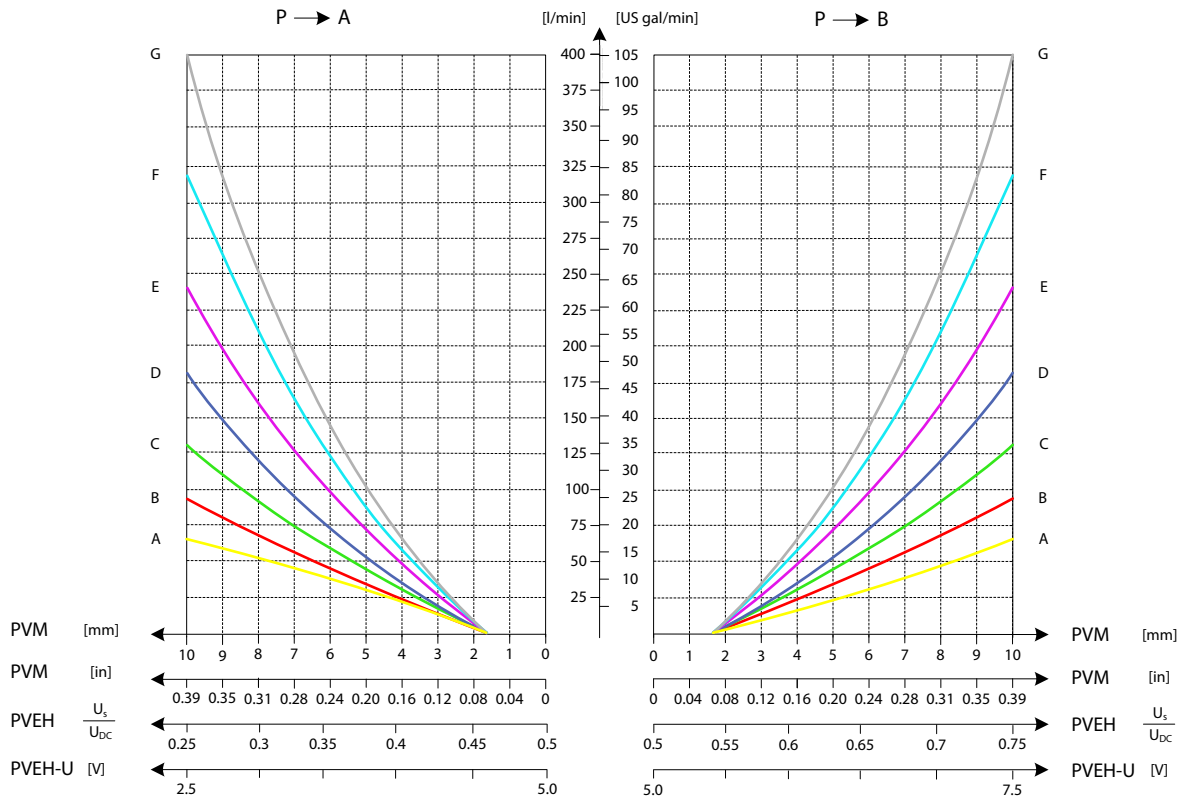
Max. rated pressure	A/B port continuous	350 bar	[5076 psi]
	A/B port intermittent	400 bar	[5800 psi]
Max. rated flow	A/B port	450 l/min	[119 US gal/min]
Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 to 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	[2128 SUS]
Oil contamination according to ISO 4406	Maximum	23/19/16	
Max. internal leakage at 100 bar [1450 psi] and 21 mm ² /s [102 SUS]	A/B→T without shock valve	70 cm ³ /min	[4.27 in ³ /min]
	A/B→T with shock valve	85 cm ³ /min	[5.19 in ³ /min]

Part numbers for Compensated PVB 256

Part number	A/B port	PVLP/PVLA	LS A/B port
11169244	Metric Flange 1"	-	-
11169252	G1-1/4 BSP	-	-
11169248	SAE Flange 1" UNC	-	-
11177020	Thread Ports 1-5/16-12 UNC	-	-

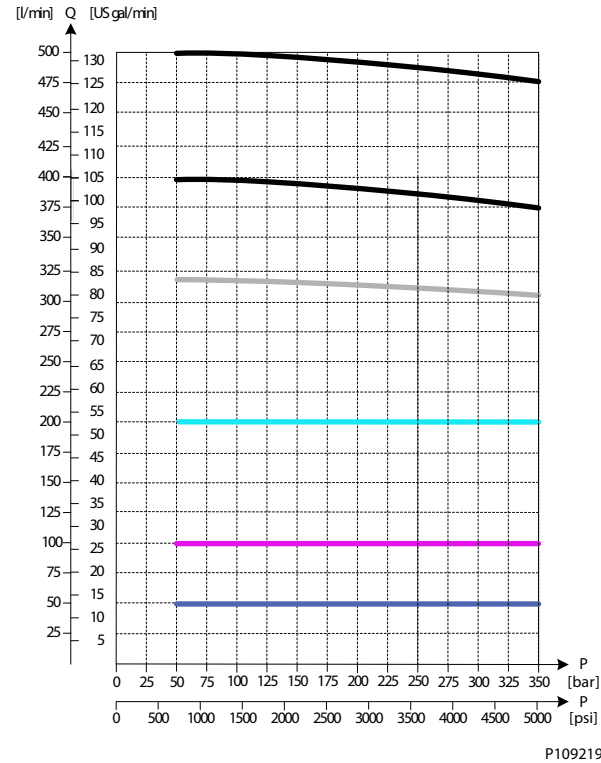
PVB 256 Variant Overview

Oil Flow as Function of Spool Travel

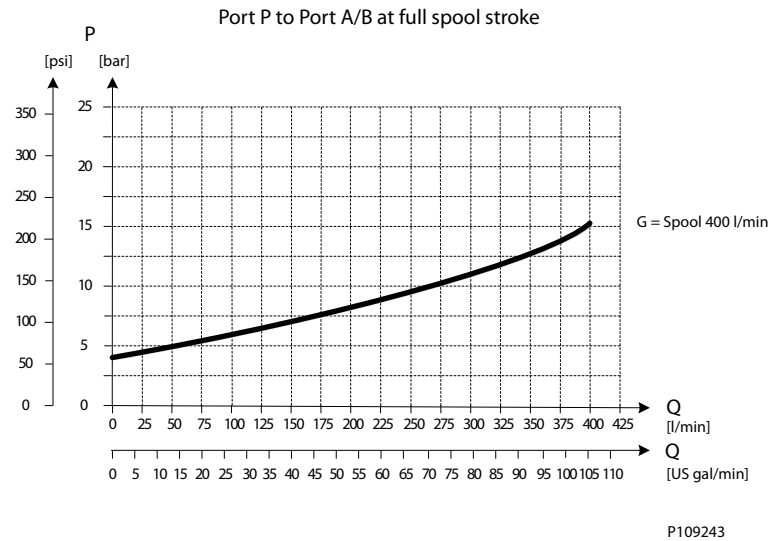


PVB 256 Variant Overview

Load Independent Oil Flow, Pressure Compensated

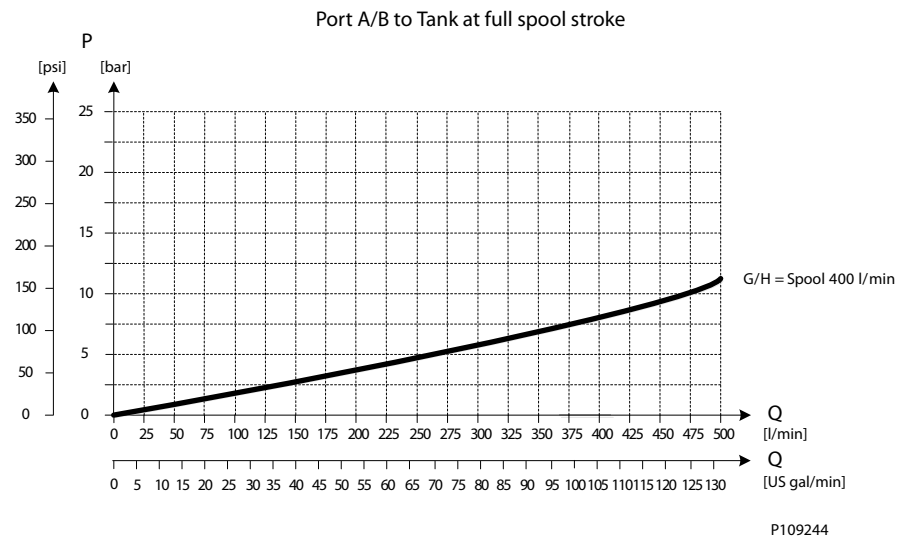


PVB 256 Upstream Performance



PVB 256 Variant Overview

PVB 256 Downstream Performance



PVB 256 Variant Overview

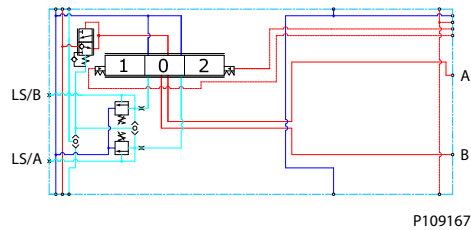
PVB 256 3-way Compensator with LS A/B

The compensated PVB is intended for controlling a work function where the function behavior in terms of flow and pressures requires independency on the load pressure of other functions used simultaneously.

The integrated LS A/B relief valves are used to limit the maximum work port pressure on the A and B-ports individually.

The compensator is a 3-way type which include load drop check valve functionality, compensator function and neutral relief which avoid A and B port pressure build up in neutral.

Schematic



Technical data

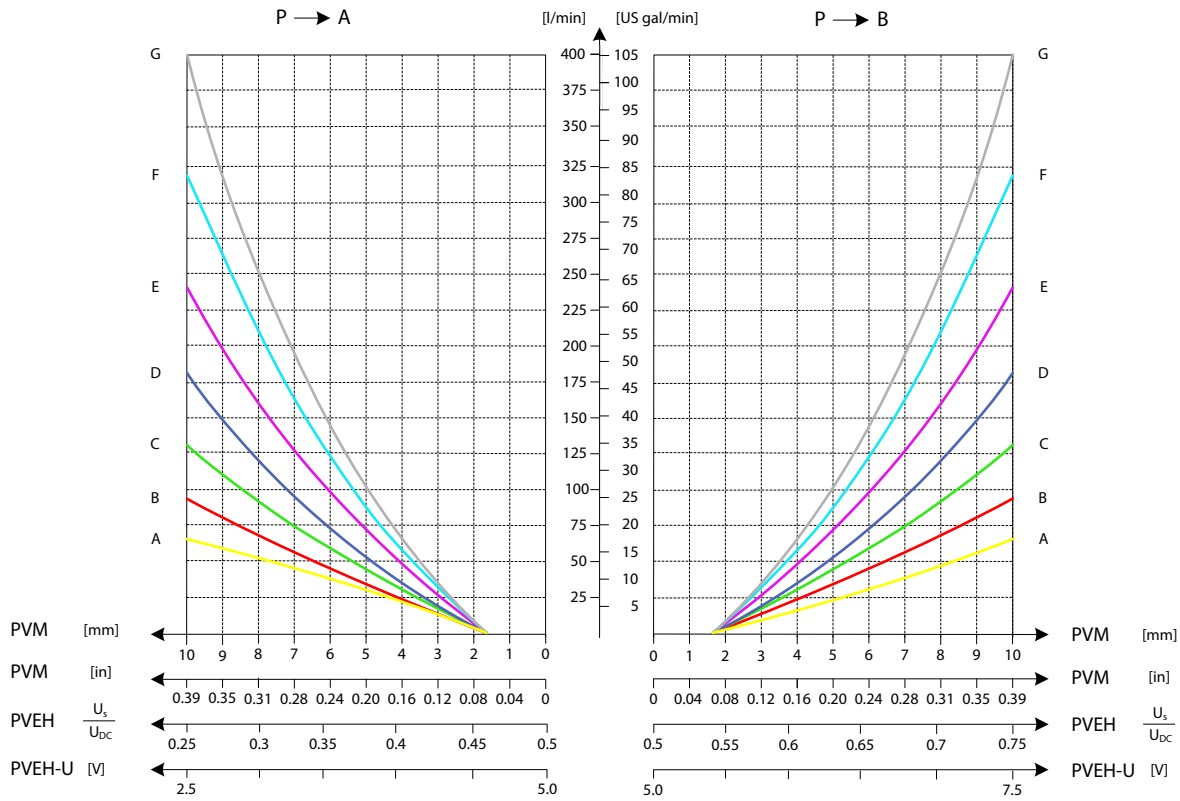
Max. rated pressure	A/B port continuous	350 bar	[5076 psi]
	A/B port intermittent	400	[5800 psi]
Max. rated flow	A/B port	450 l/min	[119 US gal/min]
Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 to 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	[2128 SUS]
Oil contamination according to ISO 4406	Maximum	23/19/16	
Max. internal leakage at 100 bar [1450 psi] and 21 mm ² /s [102 SUS]	A/B→T without shock valve	70 cm ³ /min	[4.27 in ³ /min]
	A/B→T with shock valve	85 cm ³ /min	[5.19 in ³ /min]

Part numbers for Compensated PVB 256 with LSA/B

Part number	A/B-port	PVLP/PVLA	LS A/B-port
11177015	Metric Flange 1"	-	G1/4"BSP
11177017	G1-1/4 BSP	-	G1/4"BSP
11177016	SAE Flange 1" UNC	-	7/16-20 UNC
11177019	Thread Ports 1-5/16-12 UNC	-	7/16-20 UNC

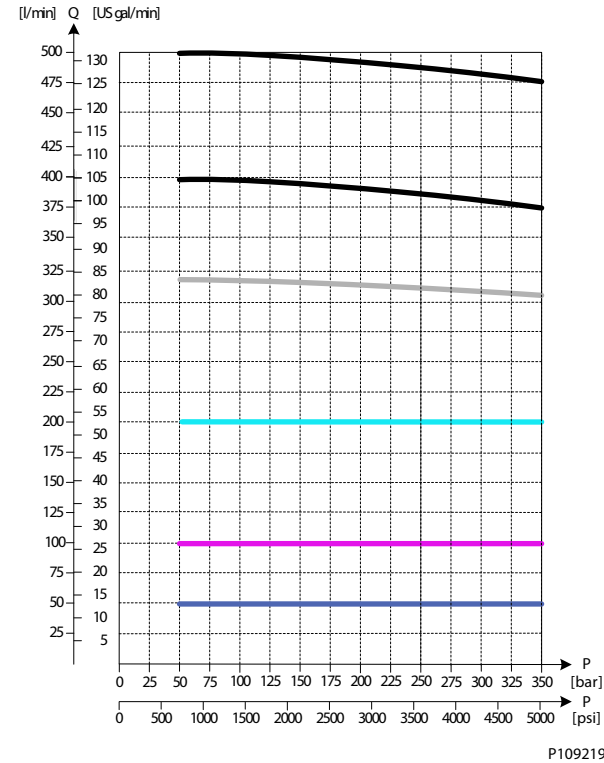
PVB 256 Variant Overview

Oil Flow as Function of Spool Travel

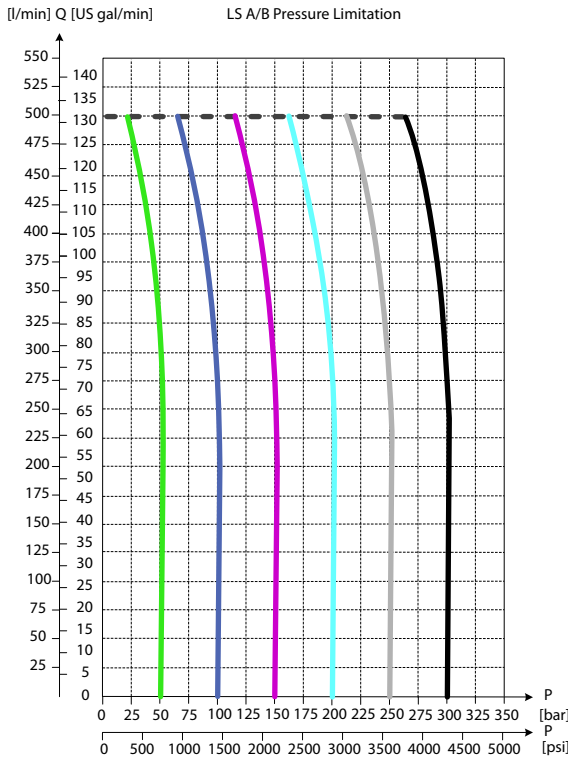


PVB 256 Variant Overview

Load Independent Oil Flow, Pressure Compensated

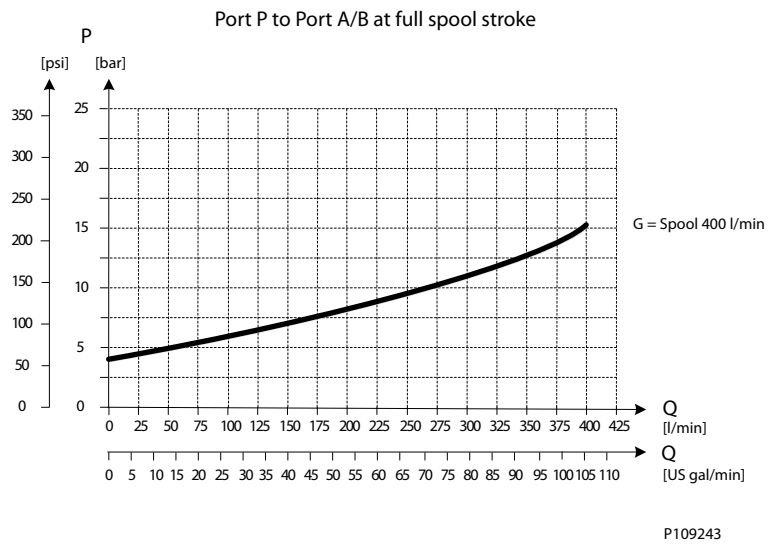


LS A/B Pressure Limitation

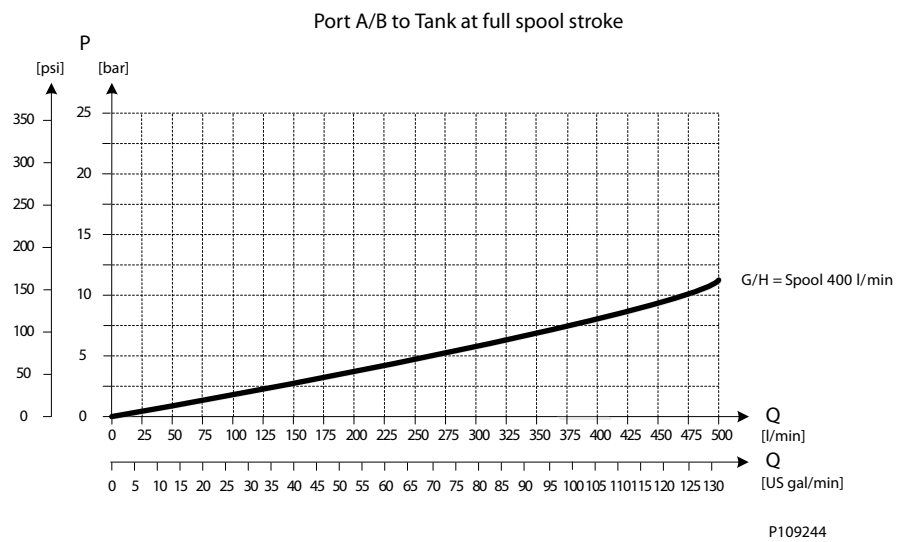


PVB 256 Variant Overview

PVB 256 Upstream Performance



PVB 256 Downstream Performance



PVB 256 Variant Overview

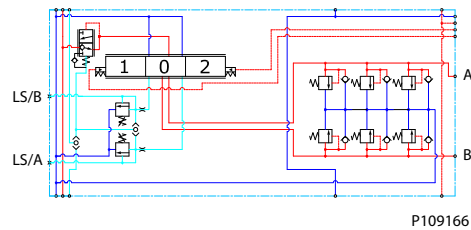
PVB 256 3-way Compensator with LSA/B and PVLP

The compensated PVB is intended for controlling a work function where the function behavior in terms of flow and pressures requires independency on the load pressure of other functions used simultaneously.

The integrated LS A/B relief valves are used to limit the maximum work port pressure on the A and B-ports individually.

Featuring 3xPVLP shock/anti-cavitation valves on each work port for pressure peak protection and anti-cavitation prevention.

The compensator is a 3-way type which include load drop check valve functionality, compensator function and neutral relief which avoid A and B port pressure build up in neutral.



Technical data

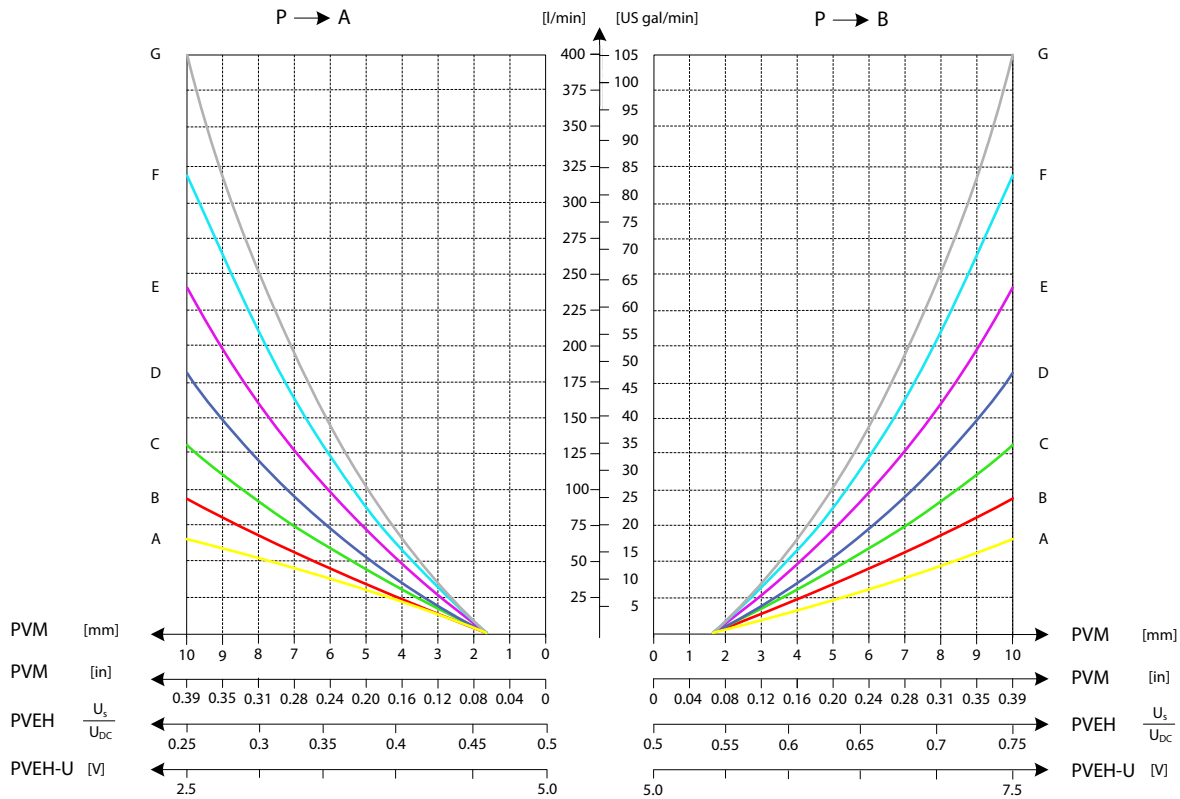
Max. rated pressure	A/B port continuous	350 bar	[5076 psi]
	A/B port intermittent	400 bar	[5800 psi]
Max. rated flow	A/B port	450 l/min	[119 US gal/min]
Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 to 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	[2128 SUS]
Oil contamination according to ISO 4406	Maximum	23/19/16	
Max. internal leakage at 100 bar [1450 psi] and 21 mm ² /s [102 SUS]	A/B→T without shock valve	70 cm ³ /min	[4.27 in ³ /min]
	A/B→T with shock valve	85 cm ³ /min	[5.19 in ³ /min]

Part numbers for Compensated PVB 256 with LSA/B and PVLP

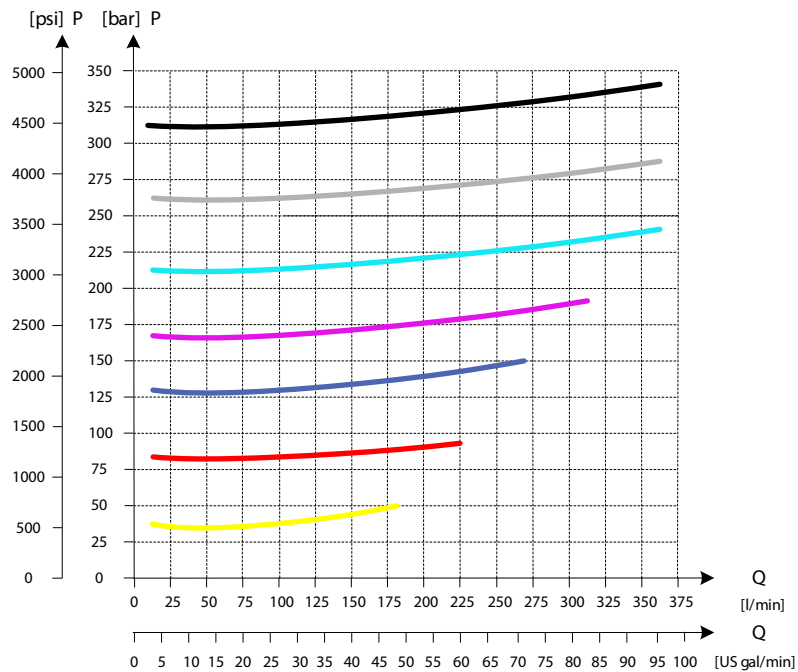
Part number	A/B port	PVLP/PVLA	LS A/B port
11169243	Metric Flange 1"	3 PVLP/PVLA	G1/4"BSP
11169251	G1-1/4	3 PVLP/PVLA	G1/4"BSP
11169247	SAE Flange 1" UNC	3 PVLP/PVLA	7/16-20 UNC
11177018	Thread Ports 1-5/16-12 UNC	3 PVLP/PVLA	7/16-20 UNC

PVB 256 Variant Overview

Oil Flow as Function of Spool Travel



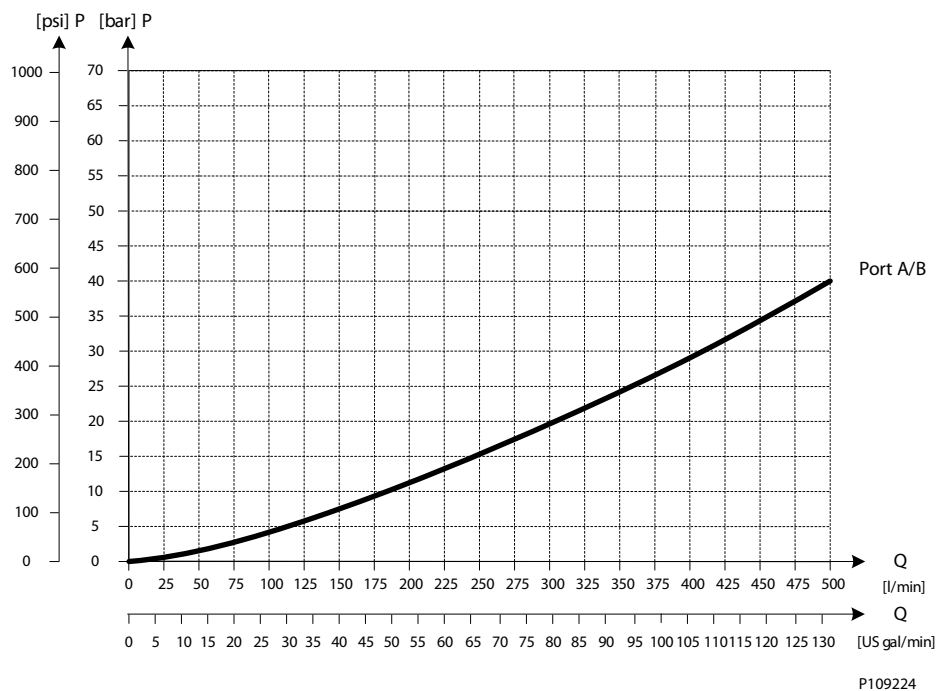
3xPVLP Shock Valve



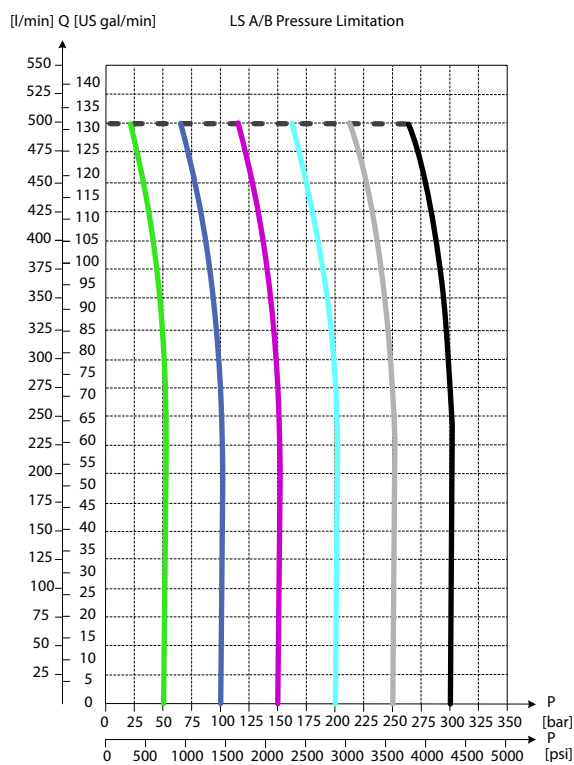
P109221

PVB 256 Variant Overview

3xPVLA Suction Valve

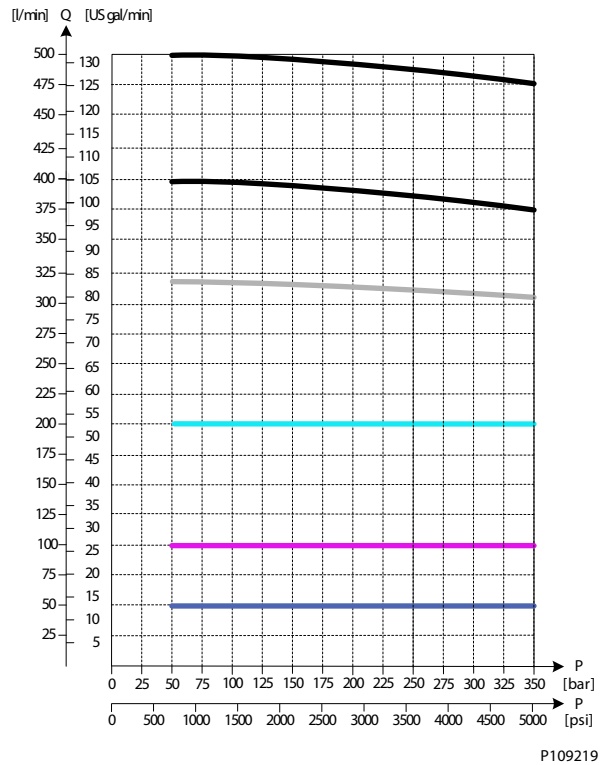


LS A/B Pressure Limitation

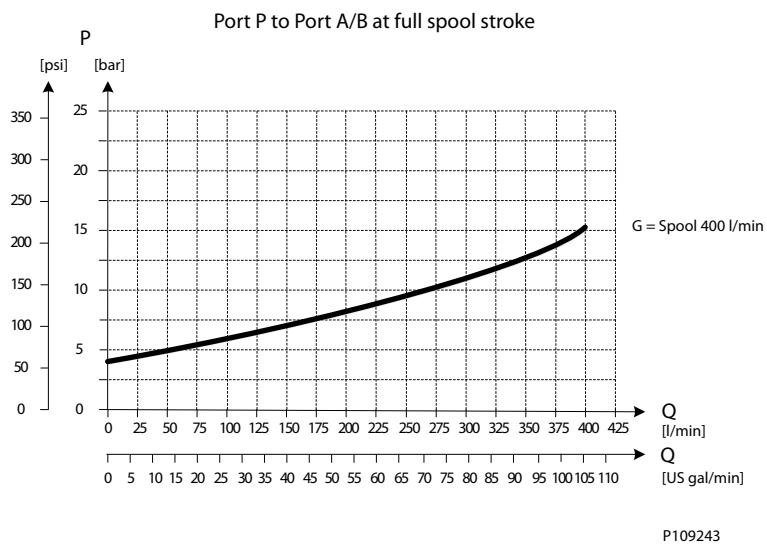


PVB 256 Variant Overview

Load Independent Oil Flow, Pressure Compensated

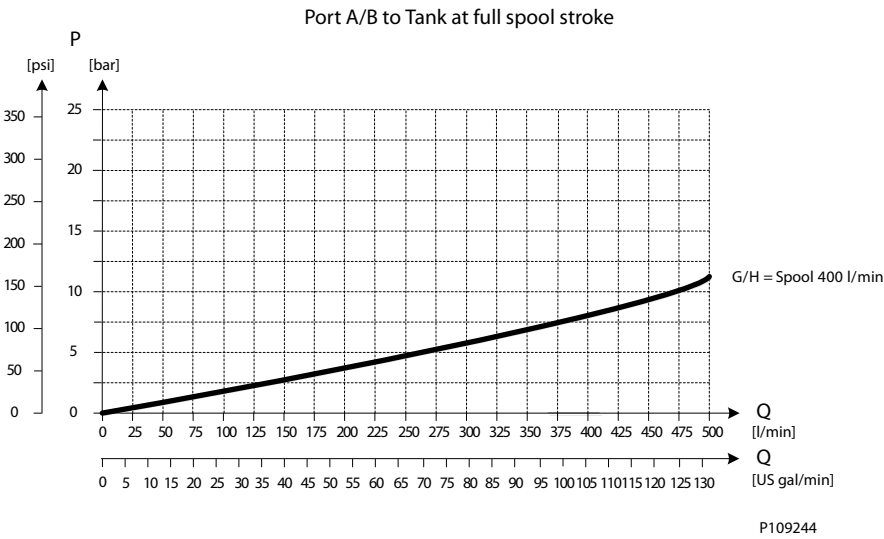


PVB 256 Upstream Performance



PVB 256 Variant Overview

PVB 256 Downstream Performance



PVB 256 Variant Overview

PVB 256 3-way Compensator with LS A/B, PVLP and Turbo

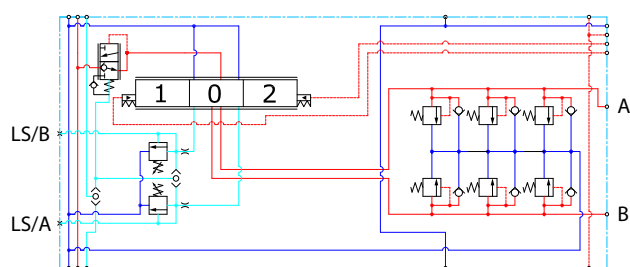
The compensated PVB is intended for controlling a work function where the function behavior in terms of flow and pressures requires independency on the load pressure of other functions used simultaneously.

The integrated LS A/B relief valves are used to limit the maximum work port pressure on the A and B-ports individually.

Featuring 3xPVLP shock/anti-cavitation valves on each work port for pressure peak protection and anti-cavitation prevention.

The compensator is a 3-way type which include load drop check valve functionality, compensator function and neutral relief which avoid A and B port pressure build up in neutral.

Schematic



P109169

Technical data

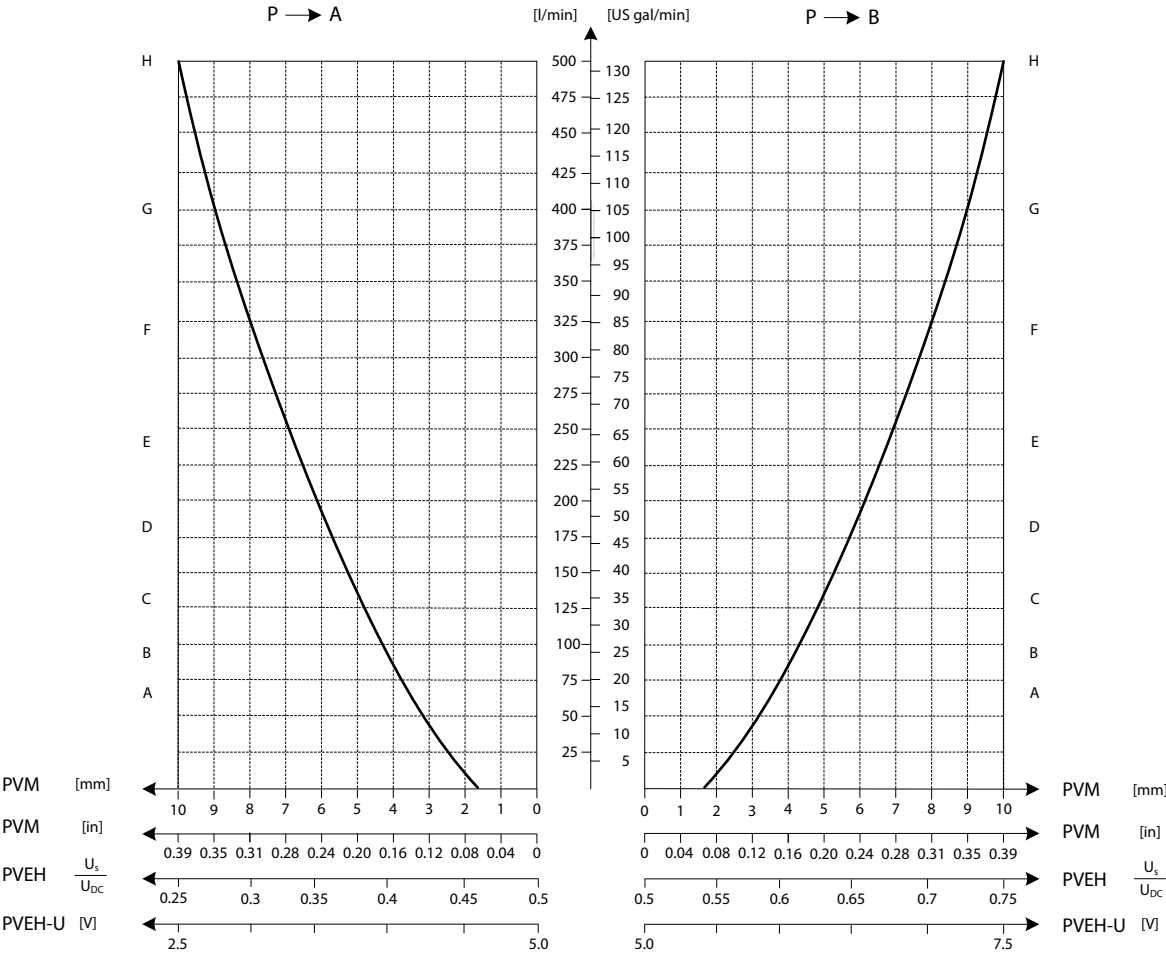
Max. rated pressure	A/B port continuous	350 bar	[5076 psi]
	A/B port intermittent	400 bar	[5800 psi]
Max. rated flow	A/B port	500 l/min	[132 US gal/min]
Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 to 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	[2128 SUS]
Oil contamination according to ISO 4406	Maximum	23/19/16	
Max. internal leakage at 100 bar [1450 psi] and 21 mm ² /s [102 SUS]	A/B→T without shock valve	70 cm ³ /min	[4.27 in ³ /min]
	A/B→T with shock valve	85 cm ³ /min	[5.19 in ³ /min]

Part numbers for Compensated PVB 256 with LSA/B, PVLP and Turbo

Part number	A/B port	PVLP/PVLA	LS A/B port
11183379	Metric Flange 1"	3 PVLP/PVLA	G1/4"BSP
11183406	G1 BSP	3 PVLP/PVLA	G1/4"BSP
11183404	SAE Flange 1" UNC	3 PVLP/PVLA	7/16-20 UNC
11183402	Thread Ports 1-5/16-1 UNC	3 PVLP/PVLA	7/16-20 UNC

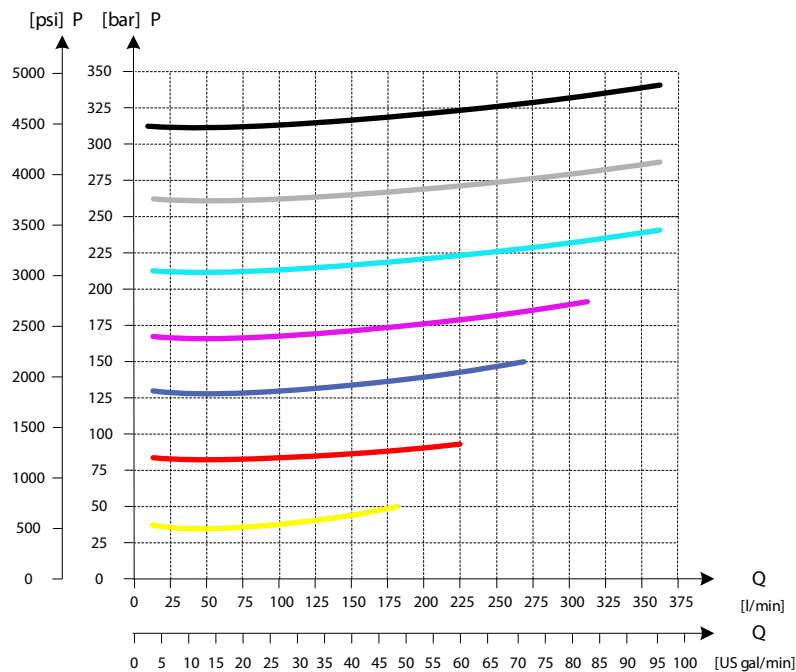
PVB 256 Variant Overview

Oil Flow as Function of Spool Travel



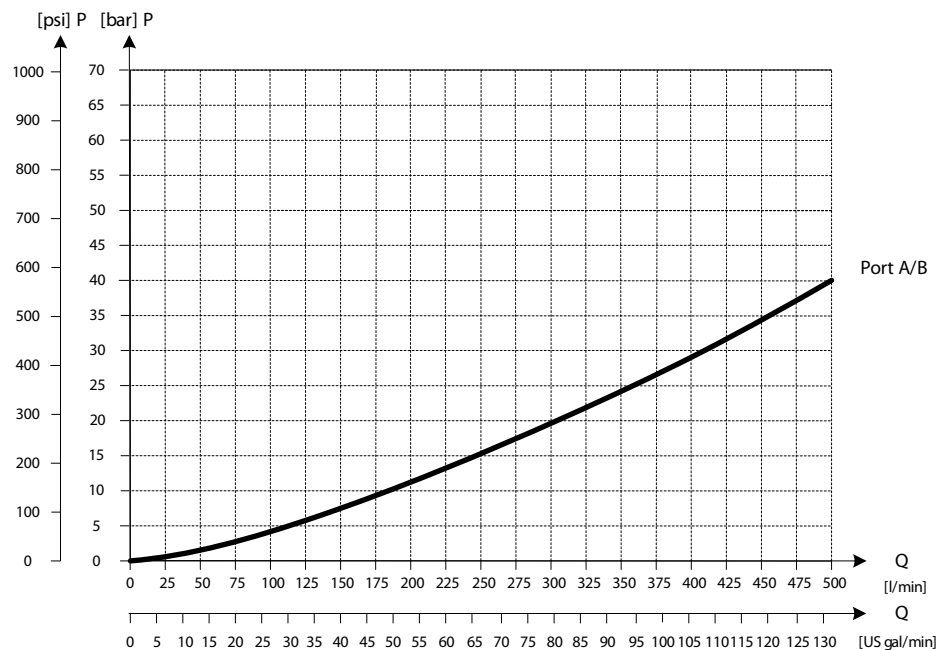
PVB 256 Variant Overview

3xPVLP Shock Valve



P109221

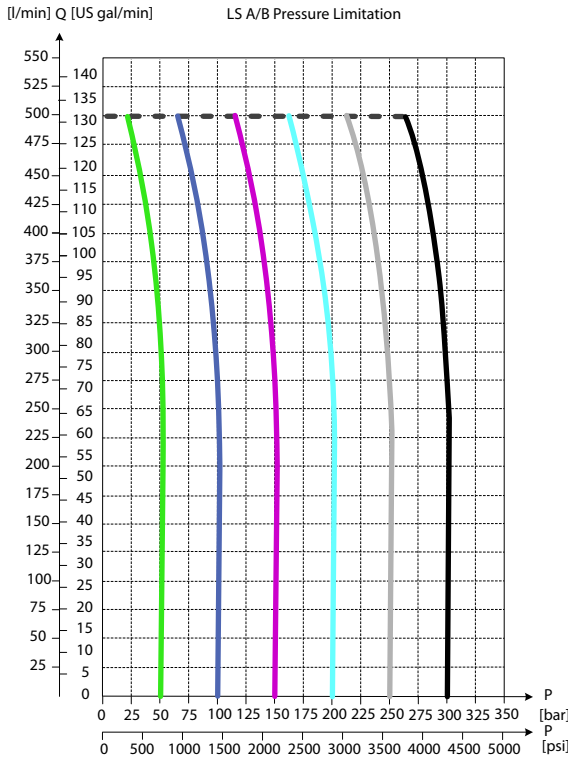
3xPVLA Suction Valve



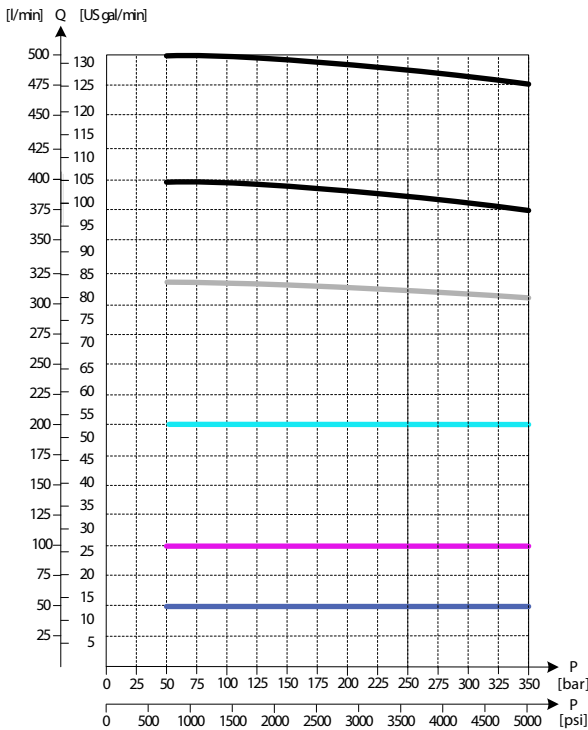
P109224

PVB 256 Variant Overview

LS A/B Pressure Limitation



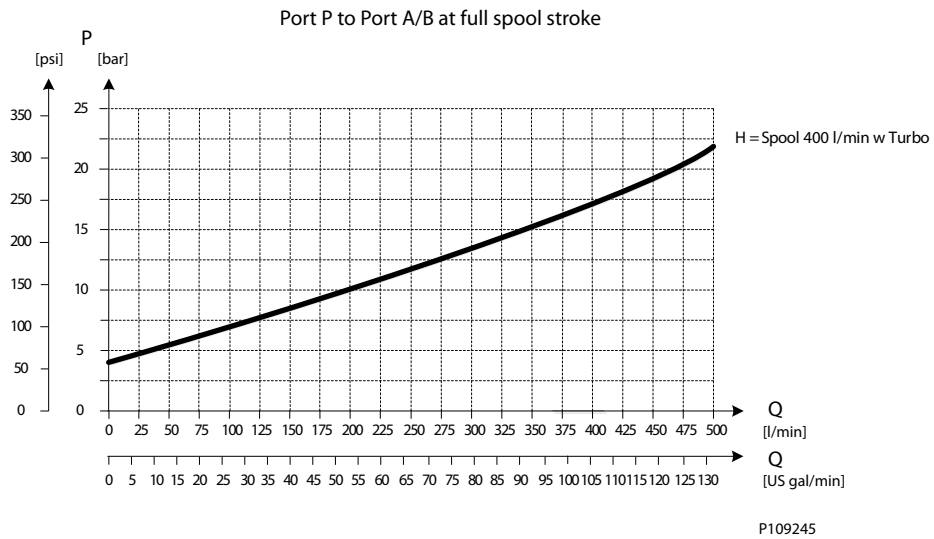
Load Independent Oil Flow, Pressure Compensated



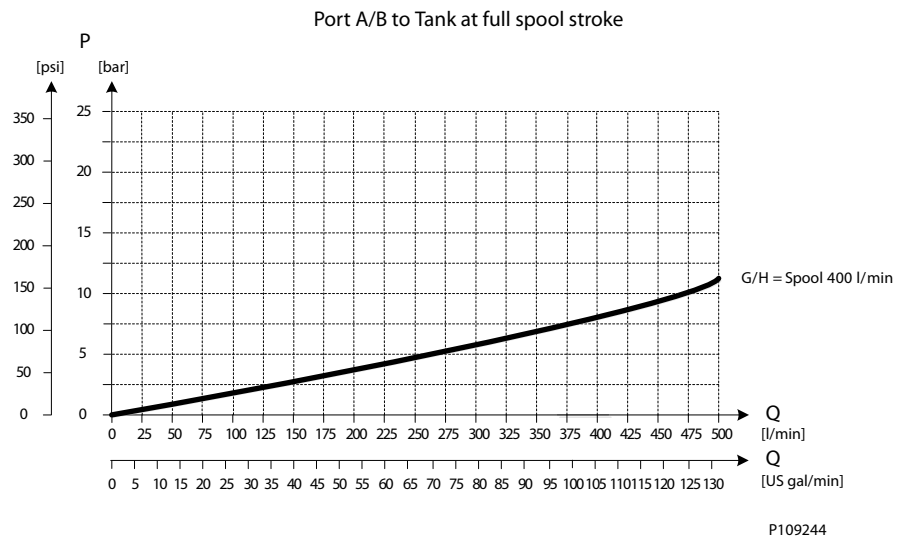
P109219

PVB 256 Variant Overview

PVB 256 Turbo Upstream Performance



PVB 256 Downstream Performance



PVLP Shock and PVLA Suction Valves

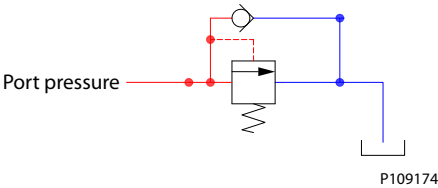
PVLP Overview

PVLP is set at an oil flow of 10 l/min [2.6 US gal/min] per unit.

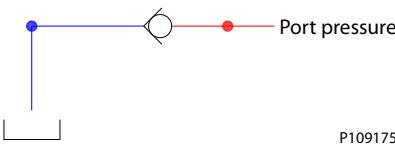
The shock valve PVLP is designed to absorb shock effects. Consequently, it should not be used as a pressure relief valve.

If the working function requires the use of a pressure relief valve, a PVB basic module with built-in LSA/B pressure limiting valve should be used.

PVLP schematic



PVLA schematic



PVLP Technical Data

Technical data

Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 to 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	[2128 SUS]
Oil contamination according to ISO 4406	Maximum	23/19/16	

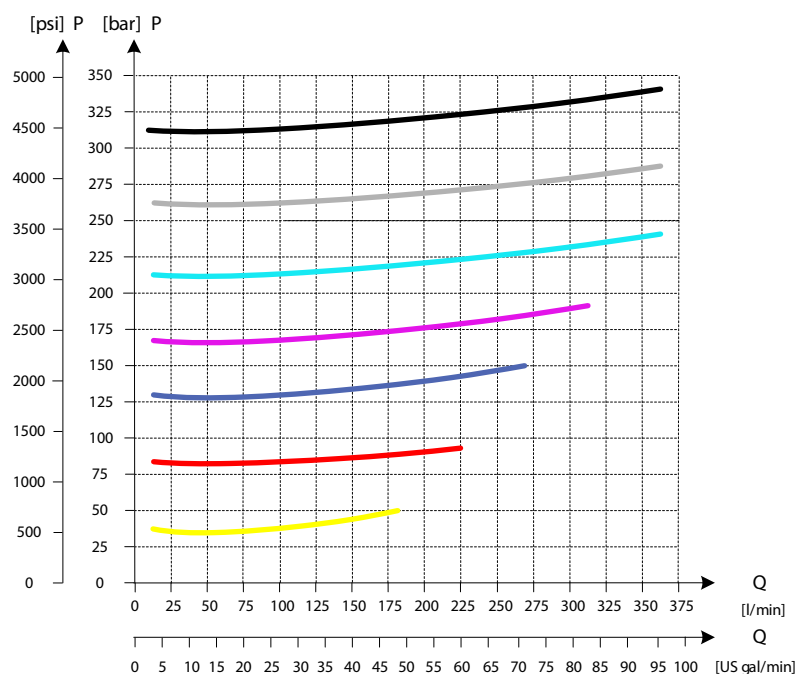
PVLP Shock and PVLA Suction Valves

Part numbers for PVLP Shock and PVLA Suction Valves

Description	Pressure setting in bar	Part number
PVLA	-	157B2001
PVLP	32	157B2032
	50	157B2050
	63	157B2063
	80	157B2080
	100	157B2100
	125	157B2125
	140	157B2140
	150	157B2150
	160	157B2160
	175	157B2175
	190	157B2190
	210	157B2210
	230	157B2230
	240	157B2240
	250	157B2250
	265	157B2265
	280	157B2280
	300	157B2300
	320	157B2320
	350	157B2350
	380	157B2380
PLUG	-	157B2002

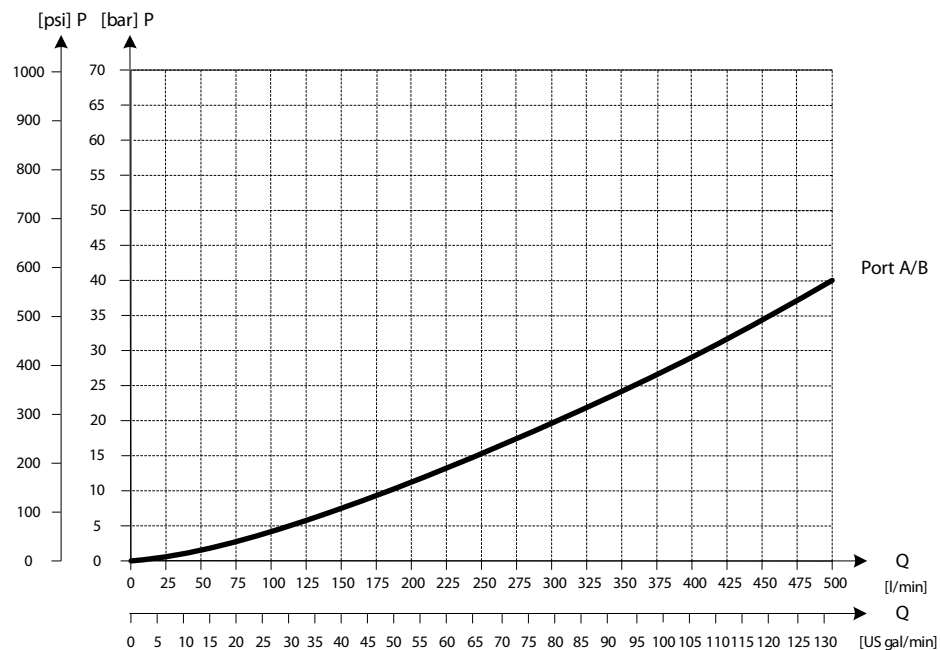
PVLP Shock and PVLA Suction Valves

3xPVLP Shock Valve



P109221

3xPVLA Suction Valve



P109224

PVBS Main Spool

The PVG 128/256 main spools (PVBS) determines the flow out of the work section.

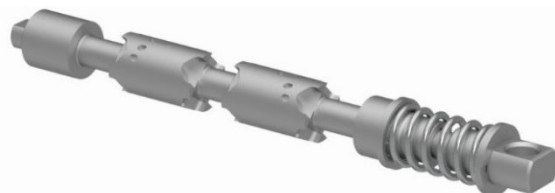
The PVBS main spool variants are based on a generic platform with a wide selection of additional features, enabling you to tailor the PVBS to suit the demands of any hydraulic system and any function.

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

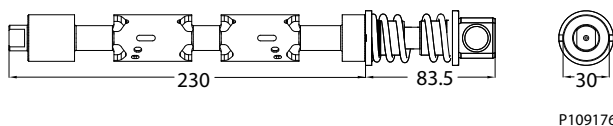
- Mechanically by a PVM lever
- Electrically by either a PVE or a PVHC actuator
- Hydraulically by a PVH actuator

All spools can be mechanically activated.

PVBS Main Spool



PVBS Main Spool dimensions



PVBS Main Spools variant overview

Flow control spools

- Flow control spool closed neutral position
- Flow control spool throttled open neutral position
- Single acting cylinder flow control spool closed neutral position, flow control B port
- Flow control spool closed neutral position with A-float

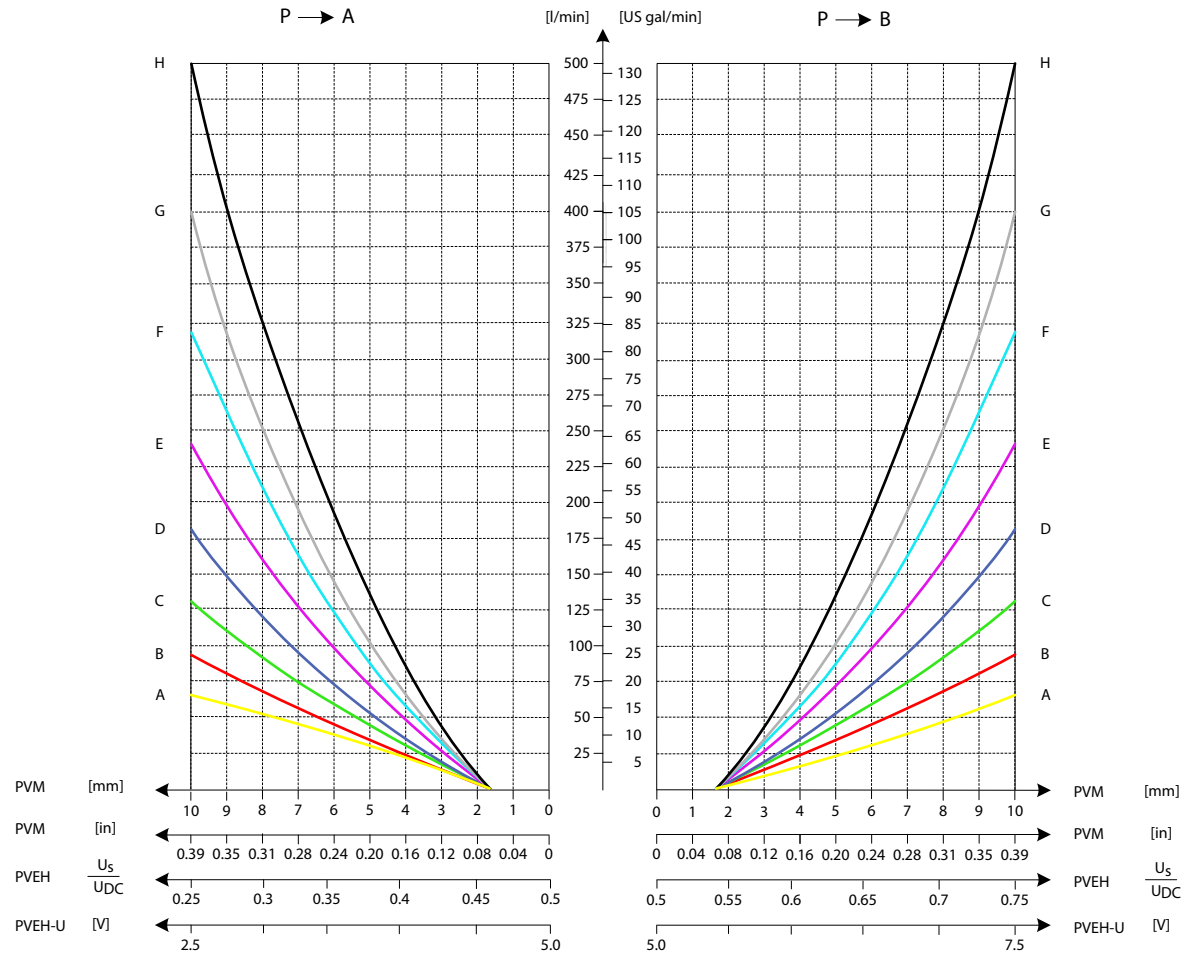
PVBS main spools product details

Technical data

Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 to 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	[2128 SUS]
Oil contamination according to ISO 4406	Maximum	23/19/16	

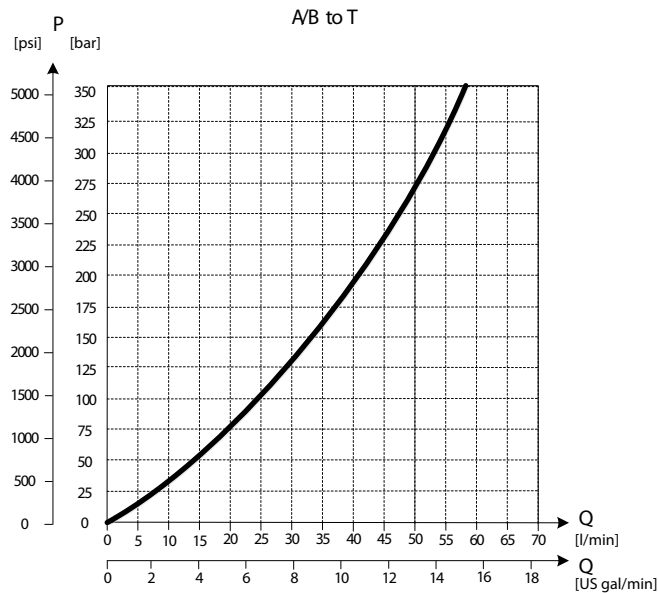
PVBS Main Spool

Progressive Oil Flow as Function of Spool Travel



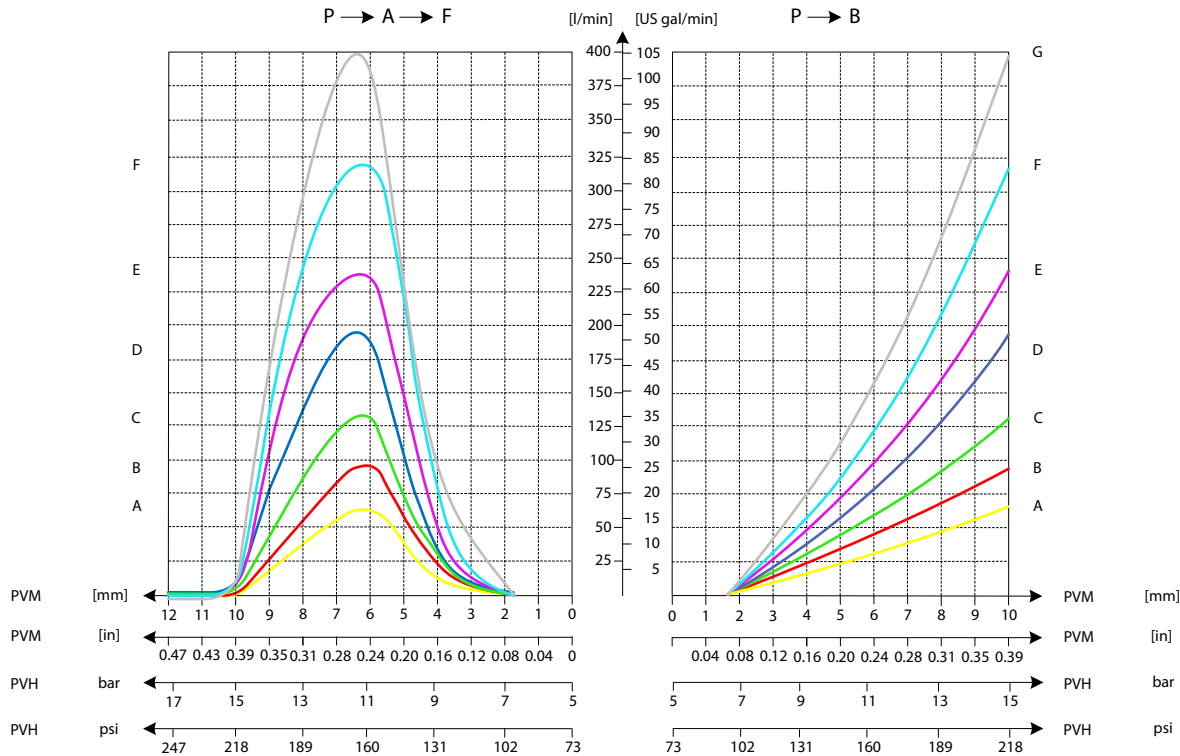
PVBS Main Spool

Pressure drop for open spool in neutral position



P109253

Progressive oil flow characteristic of spool with A-float



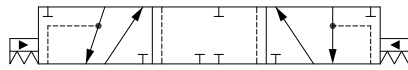
PVS Main spools part numbers

PVBS Main Spool

Flow control spools

Flow control spool closed neutral position

Schematic



P109177

Symmetric flow control spools

Part number	Actuation	Flow - l/min (US gal/min)			
		A→T	P→A	P→B	B→T
11177686	PVE	65 [17.17]	65 [17.17]	65 [17.17]	65 [17.17]
11177738	PVE	95 [25.10]	95 [25.10]	95 [25.10]	95 [25.10]
11177750	PVE	130 [34.34]	130 [34.34]	130 [34.34]	130 [34.34]
11177448	PVE	180 [47.55]	180 [47.55]	180 [47.55]	180 [47.55]
11177798	PVE	240 [63.40]	240 [63.40]	240 [63.40]	240 [63.40]
11178733	PVE	320 [84.54]	320 [84.54]	320 [84.54]	320 [84.54]
11177058*	PVE	400 [105.67]	400 [105.67]	400 [105.67]	400 [105.67]
11184159	PVH/PVHC	65 [17.17]	65 [17.17]	65 [17.17]	65 [17.17]
11184846	PVH/PVHC	95 [25.10]	95 [25.10]	95 [25.10]	95 [25.10]
11182643	PVH/PVHC	130 [34.34]	130 [34.34]	130 [34.34]	130 [34.34]
11182640	PVH/PVHC	180 [47.55]	180 [47.55]	180 [47.55]	180 [47.55]
11182638	PVH/PVHC	240 [63.40]	240 [63.40]	240 [63.40]	240 [63.40]
11182635	PVH/PVHC	320 [84.54]	320 [84.54]	320 [84.54]	320 [84.54]
11182621*	PVH/PVHC	400 [105.67]	400 [105.67]	400 [105.67]	400 [105.67]

* Up to 500 l/min in combination with PVB 256 3-way Turbo Compensator feature

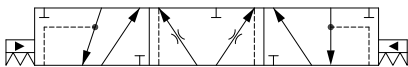
Asymmetric spools

Part number	Actuation	Flow - l/min (US gal/min)			
		A→T	P→A	P→B	B→T
**	PVH/PVHC	65 [17.17]	65 [17.17]	130 [34.34]	130 [34.34]
	PVH/PVHC	95 [25.10]	95 [25.10]	180 [47.55]	180 [47.55]
	PVH/PVHC	130 [34.34]	130 [34.34]	240 [63.40]	240 [63.40]
	PVH/PVHC	180 [47.55]	180 [47.55]	320 [84.54]	320 [84.54]
	PVH/PVHC	240 [63.40]	240 [63.40]	400 [105.67]	400 [105.67]

** Please contact your Danfoss Power Solutions representative if one of these variants is needed.

Flow control spool throttled open neutral position

Schematic



P109178

PVBS Main Spool

Symmetric flow control spools

Part number	Actuation	Flow - l/min (US gal/min)			
		A→T	P→A	P→B	B→T
1	PVE	65 [17.17]	65 [17.17]	65 [17.17]	65 [17.17]
11182537	PVE	95 [25.10]	95 [25.10]	95 [25.10]	95 [25.10]
11178290	PVE	130 [34.34]	130 [34.34]	130 [34.34]	130 [34.34]
11178310	PVE	180 [47.55]	180 [47.55]	180 [47.55]	180 [47.55]
11182619	PVE	240 [63.40]	240 [63.40]	240 [63.40]	240 [63.40]
11182618	PVE	320 [84.54]	320 [84.54]	320 [84.54]	320 [84.54]
11182617 ²	PVE	400 [105.67]	400 [105.67]	400 [105.67]	400 [105.67]
(1)	PVH/PVHC	65 [17.17]	65 [17.17]	65 [17.17]	65 [17.17]
11183604	PVH/PVHC	95 [25.10]	95 [25.10]	95 [25.10]	95 [25.10]
11183602	PVH/PVHC	130 [34.34]	130 [34.34]	130 [34.34]	130 [34.34]
11183441	PVH/PVHC	180 [47.55]	180 [47.55]	180 [47.55]	180 [47.55]
11178318	PVH/PVHC	240 [63.40]	240 [63.40]	240 [63.40]	240 [63.40]
11180718	PVH/PVHC	320 [84.54]	320 [84.54]	320 [84.54]	320 [84.54]
11178984 (2)	PVH/PVHC	400 [105.67]	400 [105.67]	400 [105.67]	400 [105.67]

¹ Please contact your Danfoss Power Solutions representative if one of these variants is needed.

² Up to 500 l/min in combination with PVB 256 3-way Turbo Compensator feature

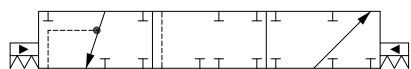
Asymmetric flow control spools

Part number	Actuation	Flow - l/min (US gal/min)			
		A→T	P→A	P→B	B→T
**	-	65 [17.17]	65 [17.17]	130 [34.34]	130 [34.34]
	-	95 [25.10]	95 [25.10]	180 [47.55]	180 [47.55]
	-	130 [34.34]	130 [34.34]	240 [63.40]	240 [63.40]
	-	180 [47.55]	180 [47.55]	320 [84.54]	320 [84.54]
	-	240 [63.40]	240 [63.40]	400 [105.67]	400 [105.67]

** Please contact your Danfoss Power Solutions representative if one of these variants is needed.

Single acting cylinder flow control spool closed neutral position, flow control B port

Schematic



P109179

Part number	Actuation	Flow - l/min (US gal/min)			
		A→T	P→A	P→B	B→T
1	PVE	-	-	65 [17.17]	65 [17.17]
(1)	PVE	-	-	95 [25.10]	95 [25.10]
(1)	PVE	-	-	130 [34.34]	130 [34.34]
(1)	PVE	-	-	180 [47.55]	180 [47.55]
(1)	PVE	-	-	240 [63.40]	240 [63.40]
(1)	PVE	-	-	320 [84.54]	320 [84.54]
(1) ²	PVE	-	-	400 [105.67]	400 [105.67]

PVBS Main Spool

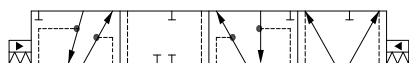
Part number	Actuation	Flow - l/min (US gal/min)			
		A→T	P→A	P→B	B→T
(1)	PVH/PVHC	-	-	65 [17.17]	65 [17.17]
(1)	PVH/PVHC			95 [25.10]	95 [25.10]
(1)	PVH/PVHC	-	-	130 [34.34]	130 [34.34]
(1)	PVH/PVHC	-	-	180 [47.55]	180 [47.55]
(1)	PVH/PVHC	-	-	240 [63.40]	240 [63.40]
(1)	PVH/PVHC	-	-	320 [84.54]	320 [84.54]
(1)(2)	PVH/PVHC	-	-	400 [105.67]	400 [105.67]

¹ Please contact your Danfoss Power Solutions representative if one of these variants is needed.

² Up to 500 l/min in combination with PVB 256 3-way Turbo Compensator feature

Flow control spool closed neutral position with A-float

Schematic



P109180

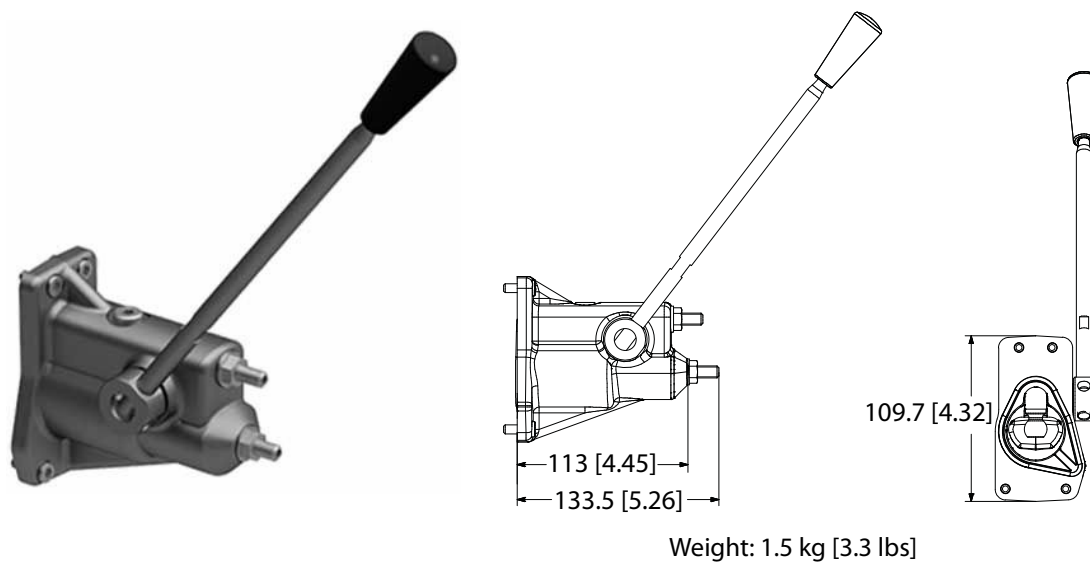
Symmetric flow control spools

Part number	Actuation	Flow - l/min (US gal/min)			
		A→T	P→A→F	P→B	B→T
¹	PVE	65 [17.17]	65 [17.17]	65 [17.17]	65 [17.17]
(1)	PVE	95 [25.10]	95 [25.10]	95 [25.10]	95 [25.10]
(1)	PVE	130 [34.34]	130 [34.34]	130 [34.34]	130 [34.34]
(1)	PVE	180 [47.55]	180 [47.55]	180 [47.55]	180 [47.55]
(1)	PVE	240 [63.40]	240 [63.40]	240 [63.40]	240 [63.40]
(1)	PVE	320 [84.54]	320 [84.54]	320 [84.54]	320 [84.54]
(1)	PVH/PVHC	65 [17.17]	65 [17.17]	65 [17.17]	65 [17.17]
(1)	PVH/PVHC	95 [25.10]	95 [25.10]	95 [25.10]	95 [25.10]
(1)	PVH/PVHC	130 [34.34]	130 [34.34]	130 [34.34]	130 [34.34]
(1)	PVH/PVHC	180 [47.55]	180 [47.55]	180 [47.55]	180 [47.55]
(1)	PVH/PVHC	240 [63.40]	240 [63.40]	240 [63.40]	240 [63.40]
(1)	PVH/PVHC	320 [84.54]	320 [84.54]	320 [84.54]	320 [84.54]

¹ Please contact your Danfoss Power Solutions representative if one of these variants is needed.

PVM Manual Activation

PVM Lever dimensions



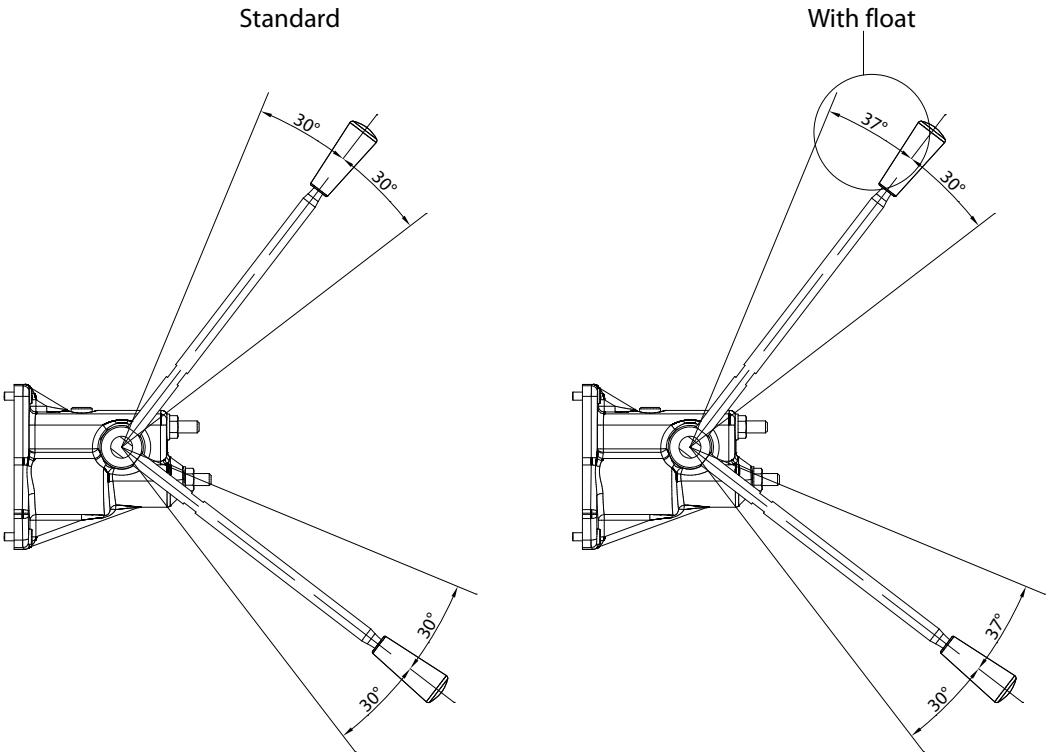
The PVM manual activation cover is intended for use on any work section where the operator has to have the ability to interact with the spool manually.

The adjustment screws are intended for limiting the spool travel and thereby the maximum achievable flow.

PVM Manual Activation

PVM Technical Data

Handle Installation



Technical data

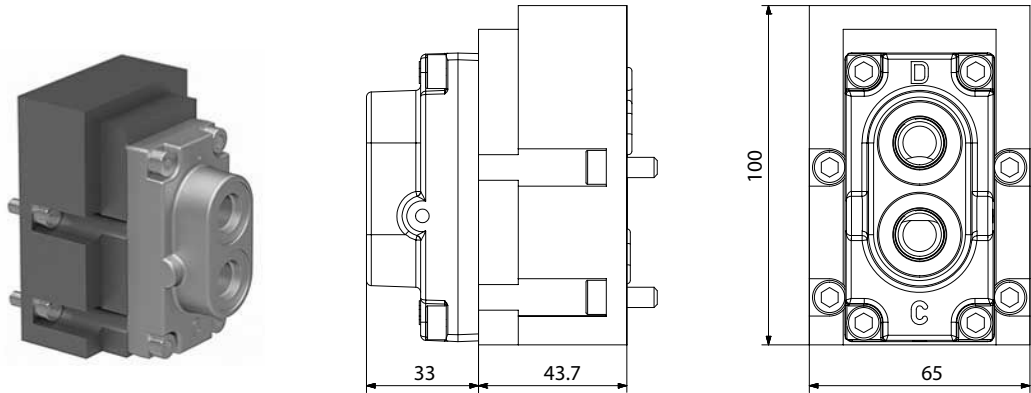
Spool displacement		Torque	
From neutral position	PVM+PVMD	12 N·m	106 lb·in
	PVM+PVE	12 N·m	106 lb·in
	PVM+PVH	30 N·m	265 lb·in
Max. spool travel	PVM+PVMD	30 N·m	265 lb·in
	PVM+PVE	30 N·m	265 lb·in
	PVM+PVH	91 N·m	805 lb·in
Standard Control Range		30°	
Control lever range + float position		37°	

Part numbers for PVM Manual Activation

Part number	Material	Adjustment screws	Lever base and lever	B-port Gauge
11176644	Cast iron	-	Yes	No
11175317	Cast iron	Yes	Yes	G1/8" BSP
11176635	Cast iron	Yes	Yes	3/8"-24 UNF

PVH Hydraulic Actuation

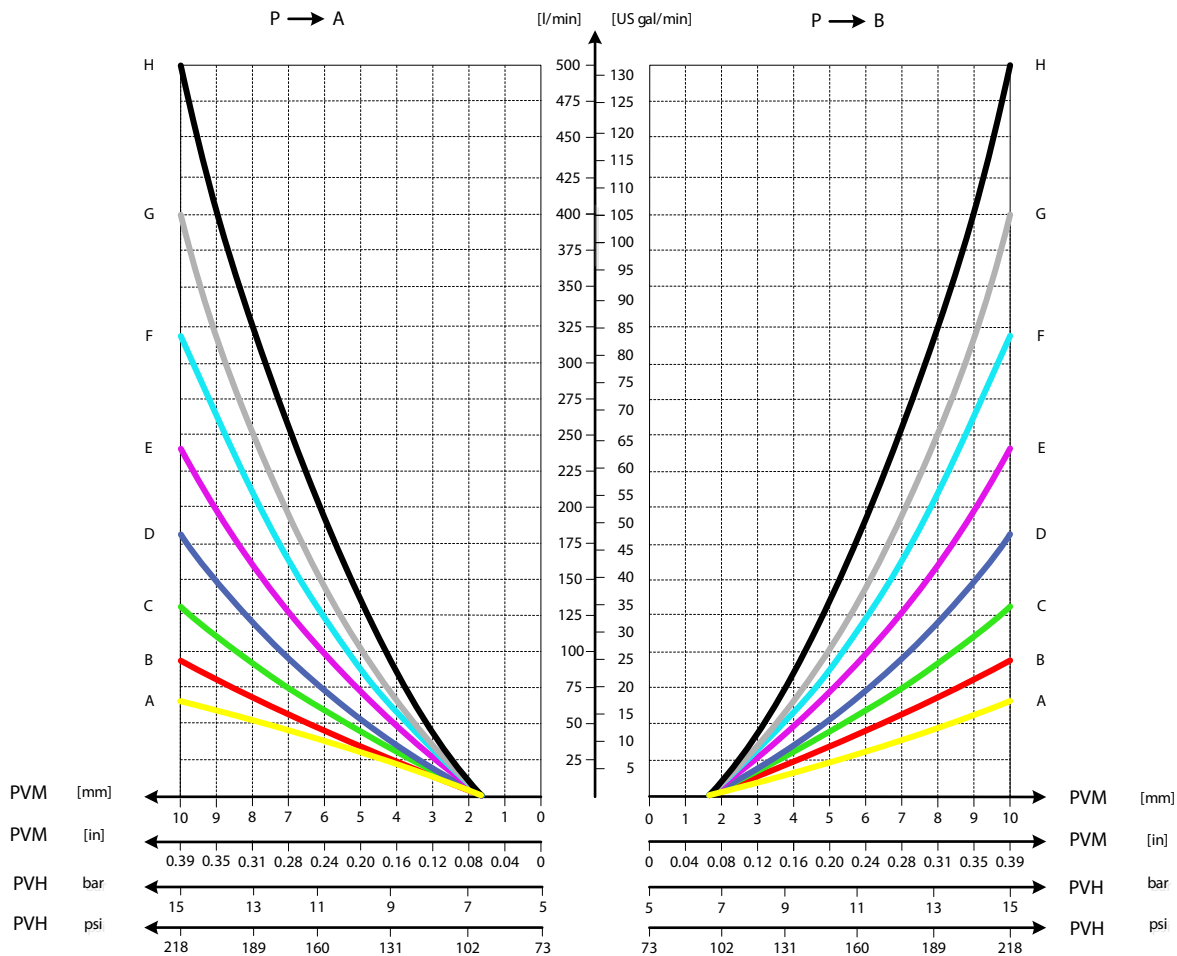
PVH dimensions



Weight: 1.9 kg [4.2 lbs]

The PVH hydraulic actuation cover is intended for use on any work section where the operator wants to have a possibility to interact with the main spool via a hydraulic joystick.

Inlet with Hydraulic Pilot Pressure is needed.



P109247

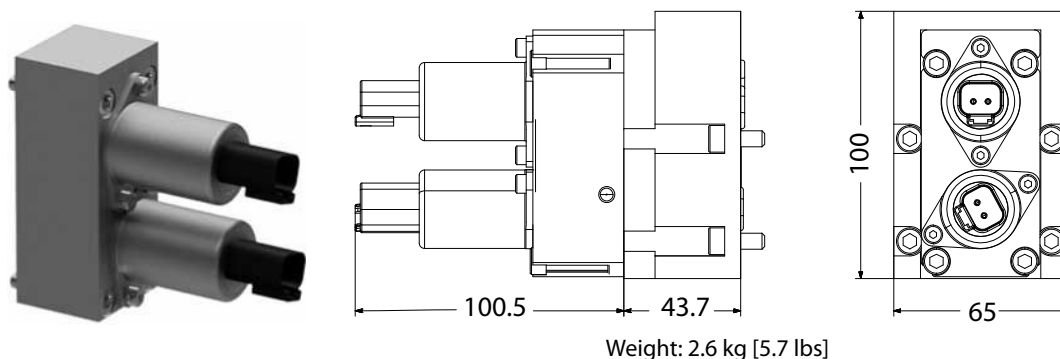
PVH Hydraulic Actuation**PVH Technical Data***Technical data*

Main Spool Spring control pressure range	5 – 15 bar	[73 – 218 psi]
Pilot oil pressure range between 20 and 25 bar	20 – 25 bar	[290 – 362 psi]
Max. pressure on port T (the hydraulic remote control lever should be connected directly to tank).	10 bar	[145 psi]

Part numbers for PVH Hydraulic Actuation

Part number	Material	Connection
11187777	Aluminum	G1/4" BSP
11187776	Aluminum	9/16"-18 UNF

PVHC Electro-Hydraulic Actuator type



The PVHC is an electrical actuator module for main spool control.

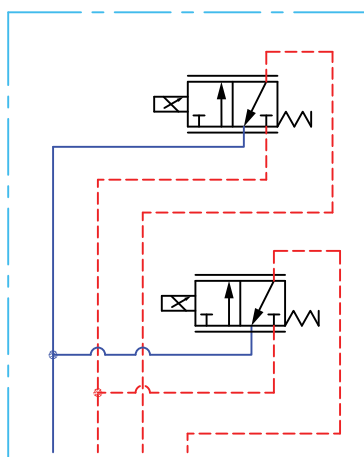
The PVHC control is done by dual Pulse Width Modulated (PWM) high current supply 100-400 Hz PWM control signals.

The hysteresis is affected by viscosity, friction, flow forces, dither frequency and modulation frequency. The spool position will shift when conditions are changed such as temperature change.

Inlet with Hydraulic Pilot Pressure is needed.

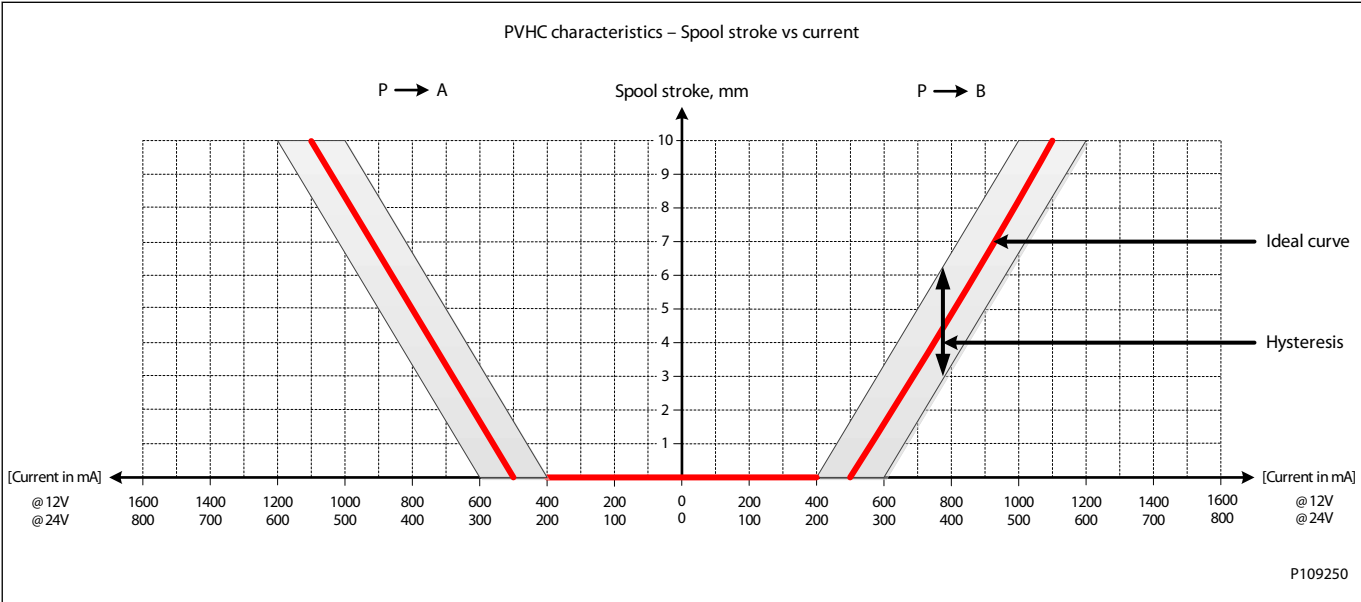
Dither frequency with a certain amplitude is needed for optimal application performance.

Schematic



P109249

PVHC Electro-Hydraulic Actuator type



PVHC Technical Data

Technical data

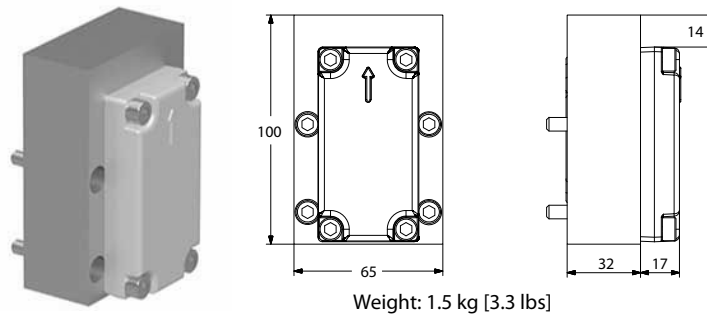
Main Spool Spring control pressure range	5-15 bar	[73-218 psi]
Pilot oil pressure range between 20 and 25 bar	20-25 bar	[290-362 psi]
Max. pressure on port T	10 bar	[145 psi]
PVHC 12 Volt Current Input	0-1500 mA	
PVHC 24 Volt Current Input	0-750 mA	
Ambient Temperature Range	-30°C to 80°C	[-22 °F to 176°F]
Medium Temperature Range	-20°C to 80°C	[-4 °F to 176°F]
Oil contamination according to ISO 4406 Maximum	23/19/16	

Part numbers for PVHC Electro-Hydraulic Actuator types

Part number	Power supply	Connector type
11187757	12V	AMP
11187772	12V	DEUTSCH
11187774	24V	AMP
11187775	24V	DEUTSCH

PVMD Cover Manual Actuation Only

PVMD dimensions



The PVMD cover is used when work section is purely mechanical activated.

PVMD Part Numbers

Part numbers for PVMD Covers

Part number	Material
11187779	Aluminum

PVE Electrical Actuator

PVE Series 7 Electrical Actuator

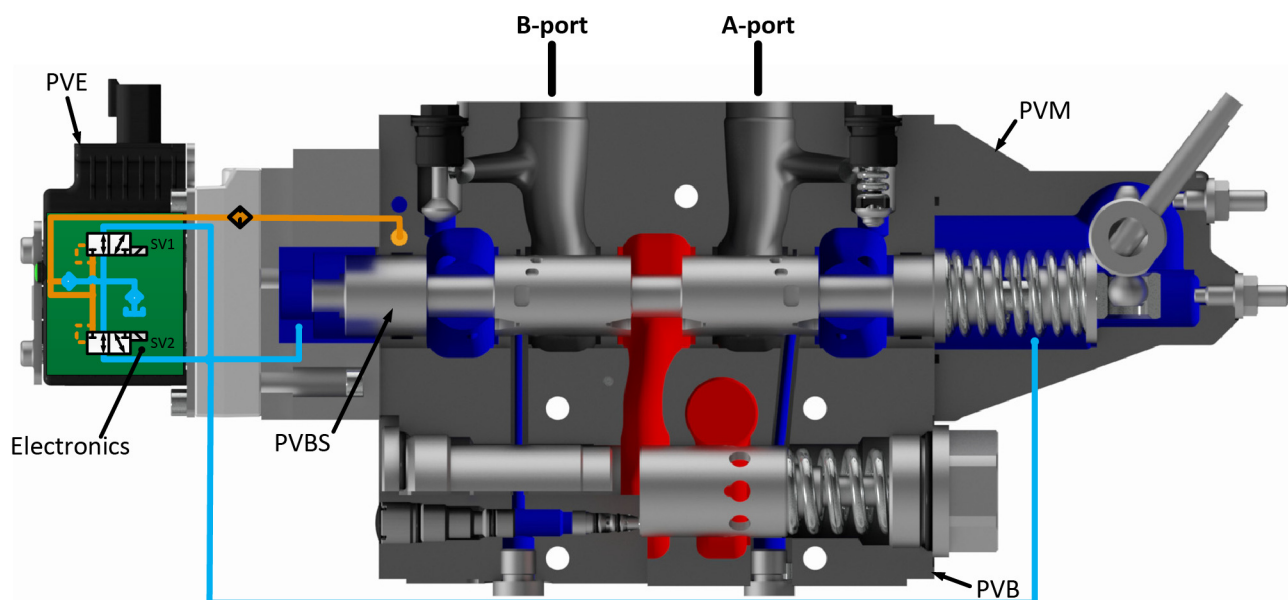
The analog PVE Series 7 is an electro-hydraulic actuator used to control a single work section of a PVG proportional valve group. The PVE Series 7 actuator program includes variants with different performance levels and features for PVG 128/256.

The actuator positions the main spool in a PVG work section in order to control either the flow or the pressure of the oil distributed to/from the work function. The control signal to the actuator is an analog voltage signal, enabling the user to operate the work function remotely by means of a joystick, a controller or the similar.

The electro-hydraulic solenoid valve bridge of the actuator is available in different designs utilizing different regulation principles, depending on performance variant. The actuator positions the main spool by distributing pilot oil pressure to either side of it, pressurizing one side by pilot pressure while relieving the opposite side to tank and vice versa, as illustrated below. All proportional actuators feature a closed-loop spool control and continuous fault monitoring.

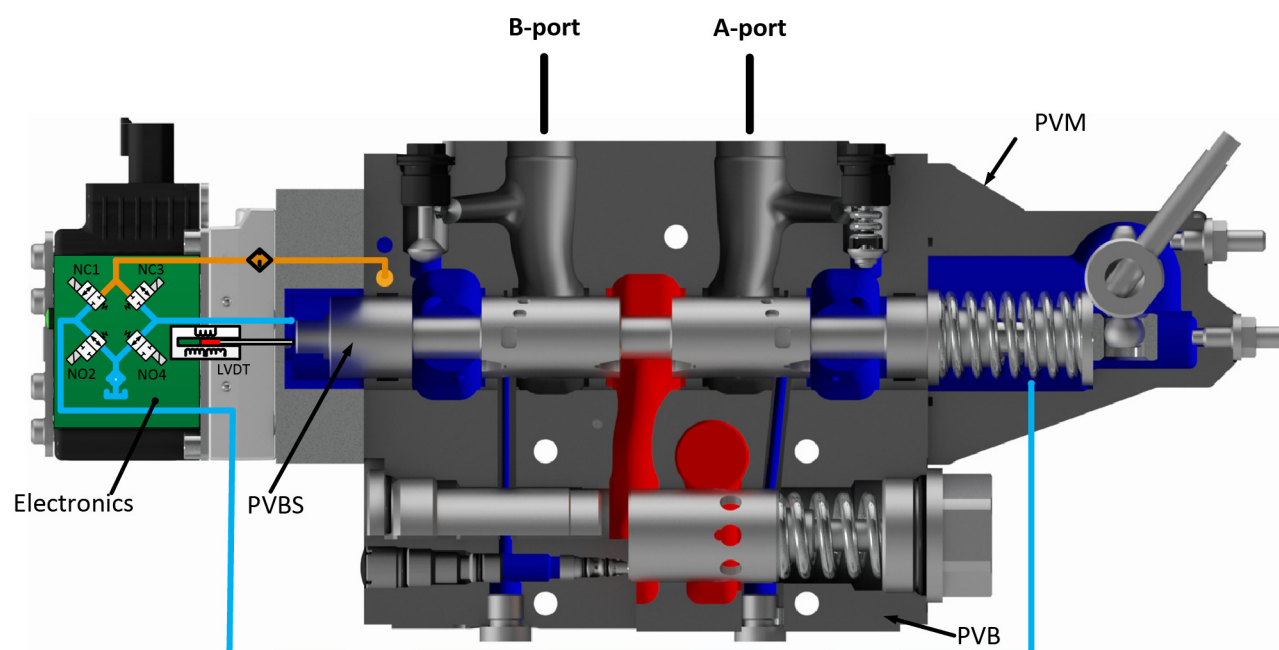
The analog PVE Series 7 actuator program for PVG 128/256 features two different main hydraulic principle variants (PVEO and PVEH). The different hydraulic principles combined with the different solenoid valve regulation principles determine whether the actuator controls the spool proportionally according to a demand signal or ON/OFF according to a voltage signal. The voltage control characteristic of the PVE Series 7 actuators is shown in the figure below to the left.

PVG 256 with PVEO



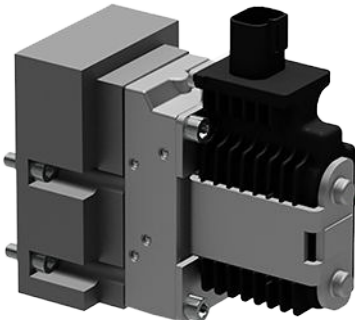
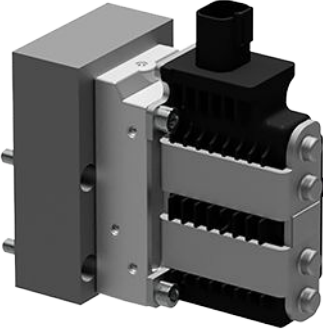
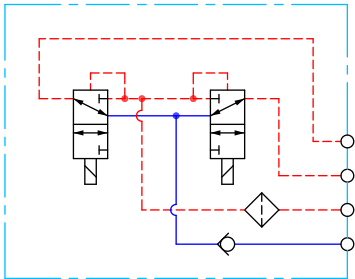
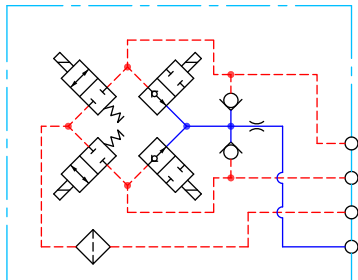
PVE Electrical Actuator

PVG 256 with PVEH



PVE Variant Overview

PVE Variant Overview

PVEO Series 7	PVEH Series 7
	
Symbol	Description
 P109195	PVEO ON/OFF voltage control for non-proportional functions. • Neutral position or max. spool stroke according to control signal • Variants available with 12 V dc or 24 Vdc supply voltage • Variants available with DEUTSCH or DIN/Hirschmann connectors • To be used with standard PVE pilot oil pressure of 13.5 bar • LED only indicating Power ON or Power OFF
 P109198	PVEH Proportional spool control for functions with high performance and reaction demands. • All variants with 11-32 Vdc multi-voltage power supply • Variants available with DEUTSCH or DIN/Hirschmann connectors • To be used with standard PVE pilot oil pressure of 13.5 bar • All variants with LED indicating error state and active or passive fault monitoring • Variants available with Float (-F) or 0-10 V dc control signal (-U) functionality

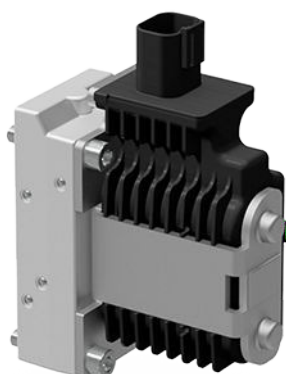
PVEO

PVE Variant Overview

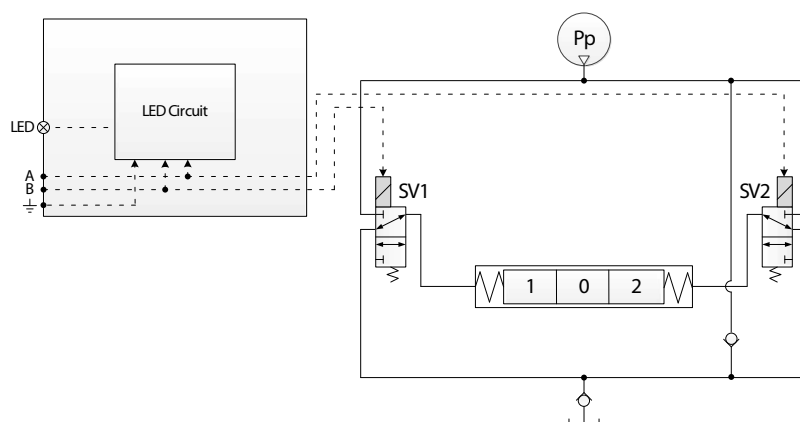
PVEO

The PVEO actuator is a non-proportional ON/OFF control actuator with open-loop spool control primarily used to control simple ON/OFF work functions where a proportional control of speed or oil flow is not a requirement

PVEO



PVEO functionality



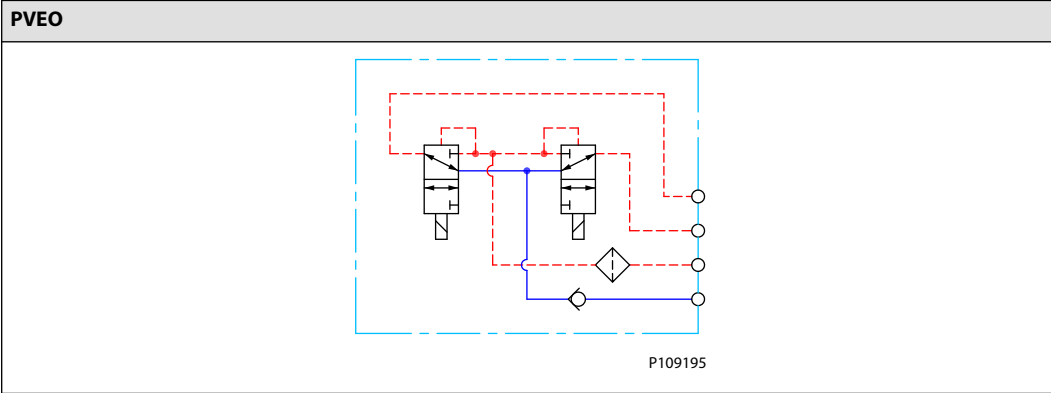
The standard PVEO functionality includes the simplest electric circuit of the PVG 128/256 actuator program, using a fixed 12 Vdc or 24 Vdc supply voltage or signal voltage and a simple LED circuit to control the LED light indicating Power ON/OFF.

An energization of solenoid valve SV1 and a simultaneous de-energization of SV2 will cause the main spool to move to the right direction and vice versa. If both SV1 and SV2 are energized or de-energized simultaneously, the main spool stays locked in its neutral position.

PVE Variant Overview

PVEO Schematics and Dimensions

PVEO schematics



Dimensions

PVEO		Connector height
P109127		DEU = 24 mm [0.94 in]
		DIN = 13 mm [0.51 in]
		Weight: 2 kg [4.4 lbs]

PVEO Technical Data

Control Specification

Description	Type	Value	
Supply Voltage (Udc)	Rated	12 Vdc	24 Vdc
	Range	11 to 15 Vdc	22 to 30 Vdc
	Max. ripple	5%	
Current Consumption	Typical	708 mA	361 mA
	Minimum	430 mA	220 mA
	Maximum	944 mA	482 mA

Operating Conditions

Description	Type	Value	
Pilot Pressure	Nominal	13.5 bar	[196 psi]
	Minimum	10.0 bar	[145 psi]
	Maximum	15.0 bar	[218 psi]

PVE Variant Overview

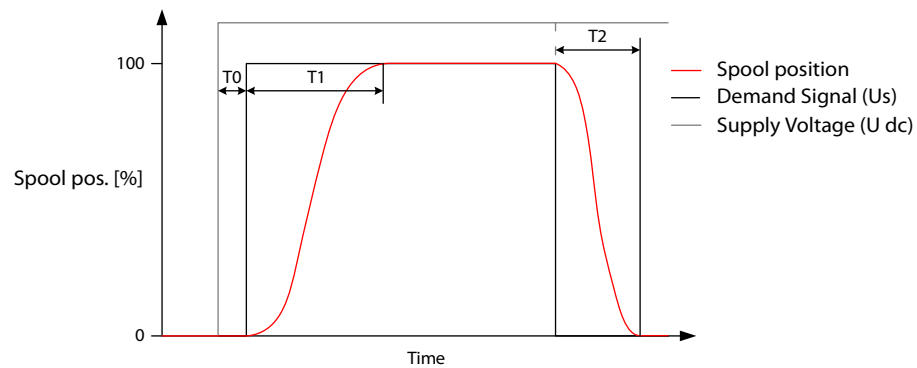
Operating Conditions (continued)

Description	Type	Value	
Oil Consumption	Neutral	0.0 l/min	[0.0 gal/min]
	Locked position	0.0 l/min	[0.0 gal/min]
	Actuating	0.9 l/min	[0.24 gal/min]
Max T-port pressure	Static	25 bar	[365 psi]
Max T-port pressure	Intermittent	40 bar	[580 psi]
Storage Temperature	Ambient	-50 to +90°C	[-58 to +194°F]
Operating Temperature	Ambient	-40 to +90°C	[-40 to +194°F]
Oil Viscosity	Operating range	12 to 75 cSt	[65 to 347 SUS]
	Minimum	4 cSt	[39 SUS]
	Maximum	460 cSt	[2128 SUS]
Oil Cleanliness	Maximum	18/16/13 (according to ISO 4406)	

LED characteristic

Color	LED characteristic	Description
Green constant		Power ON

PVEO 128/256 Reaction Times



P109128

PVEO

Reaction	PVG128	PVG 256
T1 A-port – Neutral to maximum spool stroke @ Constant Udc	375 ms	375 ms
T1 B-port – Neutral to maximum spool stroke @ Constant Udc	520 ms	520 ms
T2 A-port – Maximum spool stroke to neutral @ Constant Udc	350 ms	350 ms
T2 B-port – Maximum spool stroke to neutral @ Constant Udc	600 ms	600 ms

PVEO Variants for PVG

PVG 128/256 Variants

Part number	Type	Connector	IP	Udc	Functionality
11186328	PVEO	1x4 DEU	67	12 Vdc	Standard
11186330	PVEO	1x4 DEU	67	24 Vdc	Standard

PVE Variant Overview

PVG 128/256 Variants (continued)

Part number	Type	Connector	IP	Udc	Functionality
11186331	PVEO	1x4 DIN	65	12 Vdc	Standard
11186342	PVEO	1x4 DIN	65	24 Vdc	Standard

PVEH

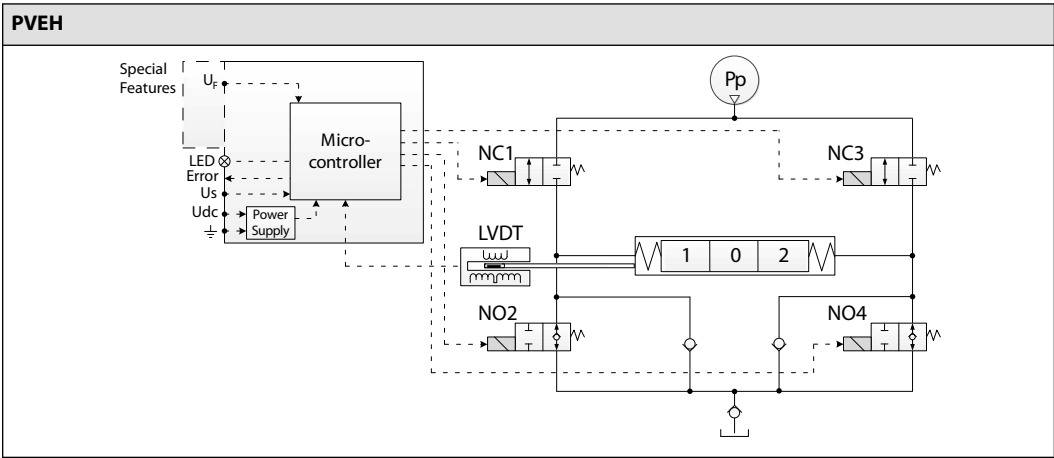
PVEH Overview

The PVEH actuator is a proportional control actuator with closed-loop spool control primarily used to control work functions with high performance requirements.

The PVEH functionality includes an electric circuit with a closed-loop logic. An embedded microcontroller processes the signal voltage and the LVDT feedback signal and regulates the solenoid valves accordingly. Features such as active or passive fault monitoring, LED indicating fault state, error output pin and Power Save are all default PVEH features.

A continuous modulation of solenoid valves NC1 and NO4 together, with a simultaneous energization of NO2 and de-energization of NC3, causes the main spool to move to the right direction and vice versa. When the main spool is stroked to the far right, a simultaneous energization of both NO2 and NO4 and de-energization of both NC1 and NC3 locks the main spool in its stroked position. An emergency stop activated when the spool is stroked will cause all solenoid valves to de-energize causing the main spool to move back to its neutral position by means of the main spool neutral spring and the hydraulic principle.

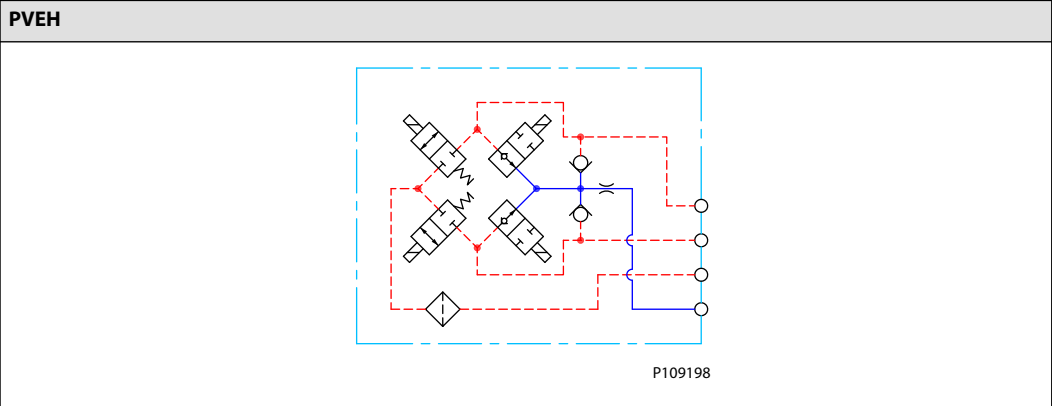
Functionality



PVE Variant Overview

PVEH Schematics and Dimensions

Schematics



Dimensions

PVEH	Connector height
2 kg [4.4] P109158	DEU = 24 mm [0.94 in]
	DIN = 13 mm [0.51 in]

PVEH Technical Data

Control Specification

Description	Type	Value
Supply Voltage (U_{DC})	Rated Range	11 to 32 V_{DC}
	Max. ripple	5%
Signal Voltage PWM (U_S)	Neutral	$U_S = 0.5 U_{DC} = 50\% \text{ DUT}$
	Q: P to A	$U_S = (0.5 \text{ to } 0.25) U_{DC} = 50\% \text{ to } 25\% \text{ DUT}$
	Q: P to B	$U_S = (0.5 \text{ to } 0.75) U_{DC} = 50\% \text{ to } 75\% \text{ DUT}$
Input Impedance	Rated	12 k Ω
Input Capacitance	Rated	1 nF

PVE Variant Overview

Current consumption

Description	@ 12 V _{DC}	@ 24 V _{DC}
PWM Frequency (U _S) recommended	> 1000 Hz	> 1000 Hz
Current Consumption	540 mA	270 mA
Power Save	25 mA @ U _{DC} = 32 V _{DC}	

Pilot pressure

Minimum	Nominal	Maximum
10.0 bar [145 psi]	13.5 bar [196 psi]	15.0 bar [218 psi]

Fluid consumption

Neutral	Locked position	Actuating
0.0 l/min	0.0 l/min	0.7 l/min [0.18 US gal/min]

Technical specification

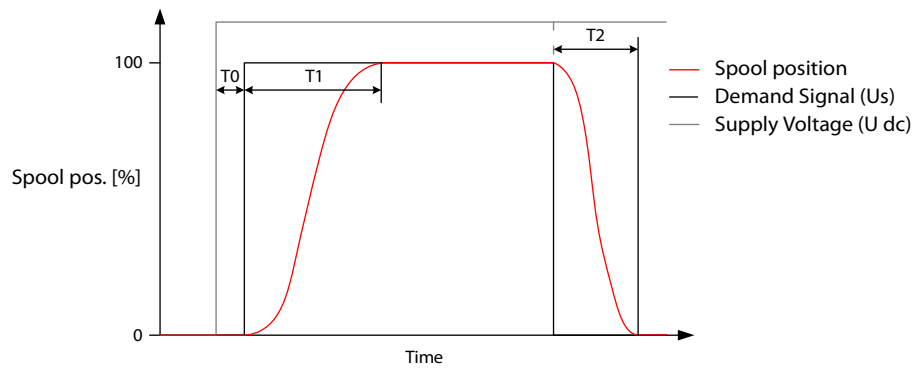
Parameter	Minimum	Recommended range	Maximum
Fluid viscosity	4 mm ² /s [39 SUS]	12 to 75 mm ² /s [65 to 347 SUS]	460 mm ² /s [2128 SUS]
Fluid cleanliness	18/16/13 (according to ISO 4406)		
Storage temperature	Ambient: -50 to 90°C [-58 to 194°F]		
Operating temperature	Ambient: -40 to 90°C [-40 to 194°F]		
Max. T-port pressure static / intermittent	25 / 40 bar [365 / 580 psi]		

LED Characteristic

Color	LED Characteristic	Description
Green constant		No error – Actuating
Green flashing @ 1.5 Hz		Neutral – Power save
Red constant		Internal error
Red flashing @ 1.5 Hz		External or Float error
Yellow		Disable mode

PVE Variant Overview

PVEH for PVG 128/256 Reaction Times



P109128

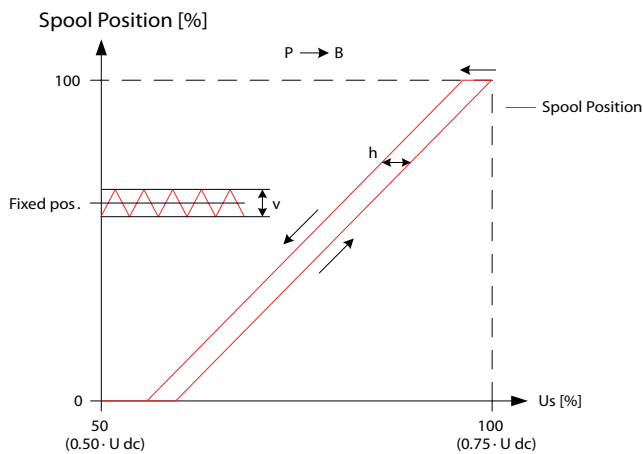
PVEH

Reaction	PVG 128/256
T0 – Boot up	80 ms
T1 – Neutral to maximum spool stroke @ Power ON	400 ms
T2 – Maximum spool stroke to neutral @ Power OFF	300 ms
T1 – Neutral to maximum spool stroke @ Constant U_{dc}	380 ms
T2 – Maximum spool stroke to neutral @ Constant U_{dc}	270 ms
T0 + Deadband	130 ms

For more information on reaction times, see [Reaction Times](#).

PVEH Hysteresis and Ripple

Spool position vs. supply (%)



Description	Type	PVEH
Hysteresis (h)	Rated [%]	<2
Steady state ripple @ fixed U_s (v)	Rated [mm]	0.0

PVE Variant Overview

PVEH Variants for PVG

PVG 128/256 variants

Part number	Type	<i>Connector</i>	IP	<i>Fault monitoring</i>	Functionality
11186325	PVEH	1x4 DEU	67	Passive	Standard
11186326	PVEH	1x4 DEU	67	Active	Standard
11186321	PVEH	1x4 DIN	65	Passive	Standard
11186322	PVEH	1x4 DIN	65	Active	Standard

Connector Overview

Connector Overview

PVEO 4-pin Connector

Pinout	Pin 1	Pin 2	Pin 3	Pin 4
1x4 DEUTSCH	U _{DC_A}	GND	GND	U _{DC_B}
1x4 DIN	U _{DC_A}	U _{DC_B}	-	GND

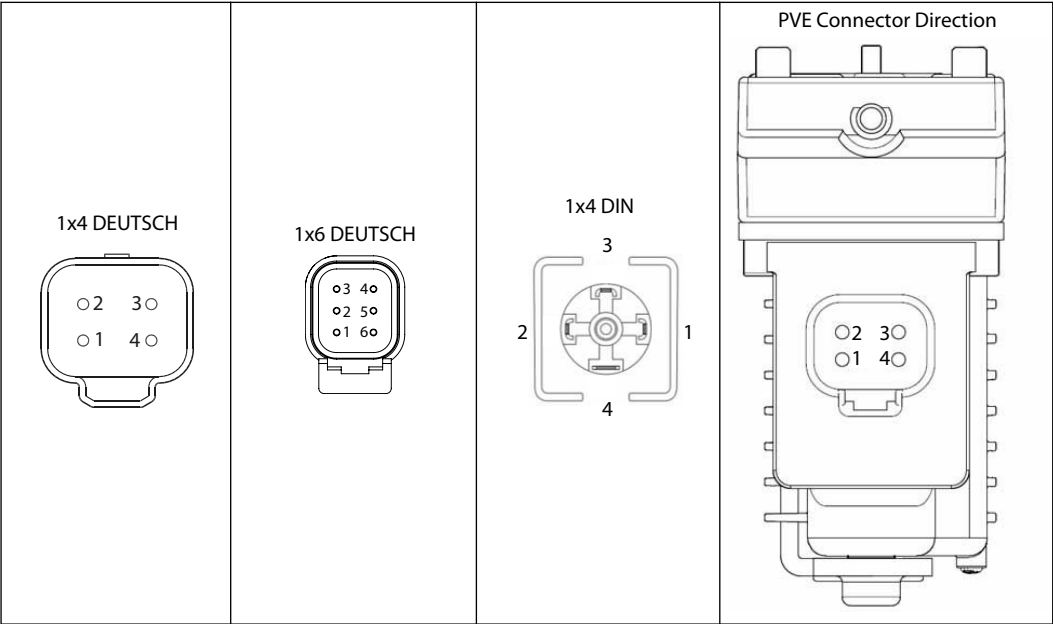
PVEH/PVEH-U

Pinout	Pin 1	Pin 2	Pin 3	Pin 4
1x4 DEUTSCH	U _S	Error	GND	U _{DC}
1x4 DIN	U _{DC}	U _S	Error	GND

PVEH-FLA 6-pin Connector

Pinout	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
1x6 DEUTSCH	U _S	Error	Float	-	GND	U _{DC}

Connector diagrams



Fault Monitoring and Reaction

All proportional control PVG 128/256 actuators feature:

- Integrated fault monitoring
- Detecting spool stroke inconsistencies
- Detecting internal hardware defects
- Detecting demand signal inconsistencies
- Fault reaction depending on the type of fault monitoring
 - Generic
 - Specific

Passive and active fault monitoring refers to whether or not the actuator is reacting on the error when it is detected.

Active fault monitoring

No matter what kind of error is detected, the solenoid valves will be disabled and the operation that the valves/spool controls will stop immediately and spool will go to neutral position. Active fault monitoring keeps a “memory” of the error, even if it is no longer registered. The active fault monitoring does not have Auto Recovery because of this “memory” and a reboot/restart will therefore be required to reactivate the solenoid valves.

With an active fault monitoring the following scenarios will take place when an error is detected/occurs:

- The LED light will switch from green to red and the error pin output will go high
- The solenoid valves will be disabled and the operation that the valves/spool controls will stop immediately
- The active fault monitoring does not have Auto Recovery, so when the error is fixed/no longer is registered a reboot/restart of the PVE is required to reactivate it.

Passive fault monitoring

Passive fault monitoring does not disable the solenoid valves when an error is detected. It will continue to operate despite that an error was detected. When the error no longer is registered the passive fault monitoring will “forget” the error and continue as if the error was never there.

With a passive fault monitoring the following conditions will happen when an error is detected/occurs:

- The LED light will switch from green to red and the error pin output will go high
- The solenoid valves will continue operating at the set point given at the time of the error
 - Only exception is if the error is caused by the supply voltage (U_{DC}) being either above or below the allowed range or if the temperature measured on the internal electronics board is higher than allowed. In these cases, the solenoid valves will be disabled.

Generic Fault Reaction

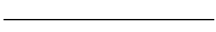
All PVE actuators with fault monitoring are triggered by the following main events:

Control Signal Monitoring	The Control signal voltage (U_S) is continuously monitored. The permissible range is between 15% and 85% of the supply voltage (U_{DC}). Outside this range the PVE will switch into an error state. A disconnected U_S pin (floating) is recognized as a neutral set point.
Transducer/LVDT Supervision	The internal LVDT wires are monitored. If the signals are interrupted or short-circuited, the PVE will switch into an error state.

Fault Monitoring and Reaction

Supervision of Spool Position	The actual position must always correspond to the demanded position (U_S). If the actual spool position is further out from neutral than the demanded spool position or in opposite direction, the PVE will switch into an error state. Spool position closer to neutral and in same direction will not cause an error state – the situation is considered <i>in control</i> .
Temperature Monitoring	When the temperature is too high the PVE LED will light constant red and solenoid valves will be disabled.

PVEH Fault Reaction Overview

Description	Monitoring	LED	Solenoid valves	Error pin output	Fault reaction time (ms)
					PVEH
Spool not at setpoint	Active*		Disabled	High	500
	Passive		-	High	250
Unable to reach float position	Active*		Disabled	High	1000
	Passive		-	High	1000
U dc > max.	Active		Disabled	-	-
	Passive		Disabled	-	-
U dc < min.	Active		Disabled	-	-
	Passive		Disabled	-	-
Us out of range	Active*		Disabled	High	500
	Passive		-	High	250
LVDT error	Active*		Disabled	High	500
	Passive		-	High	250
Temp > max.	Active*		Disabled	High	250
	Passive		Disabled	High	250

* Does not have Auto Recovery

Functionality Overview

Standard and Fixed US 0-10 Vdc

All standard proportional actuator variants PVEH can be controlled by an analog signal voltage (Us) or a PWM controlled signal voltage (Us) proportional to the supply voltage (Udc).

PVEO

Description	Type	Value	
Supply voltage (Udc)	Rated	12 Vdc	24 Vdc
	Range	11 to 15 Vdc	22 to 30 Vdc
	Max. ripple	5%	

PVEH

Description	Type	Value
Supply voltage (Udc)	Rated	11 to 32 Vdc
	Range	11 to 32 Vdc
	Max. ripple	5%
Signal voltage (Us)	Neutral	$U_s = 0.5 \cdot U_{dc}$
	Q: P to A	$U_s = (0.5 \text{ to } 0.25) \cdot U_{dc}$
	Q: P to B	$U_s = (0.5 \text{ to } 0.75) \cdot U_{dc}$

The PVEH-U variants are controlled by a fixed 0-10 Vdc signal voltage (Us), directly compatible with standard PLC control.

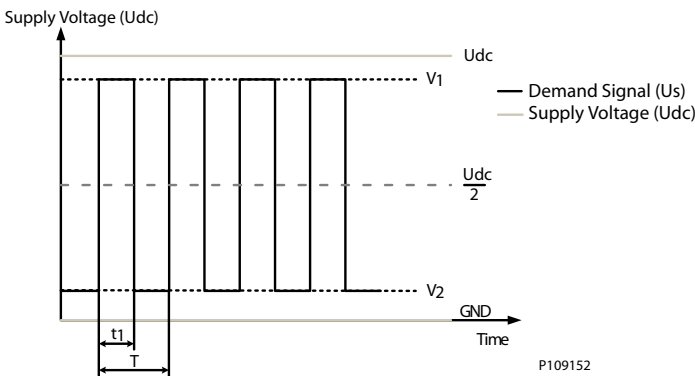
PVEH-U

Description	Type	Value
Supply voltage (Udc)	Rated	11 to 32 Vdc
	Range	11 to 32 Vdc
	Max. ripple	5%
Signal voltage (Us)	Neutral	$U_s = 5 \text{ V}$
	Q: P to A	5 V to 2.5 V
	Q: P to B	5 V to 7.5 V

PWM Voltage Control

The PVEH actuator variants can be controlled by a PWM controlled signal voltage (Us) proportional to the supply voltage (Udc).

The V_1 and V_2 must be symmetrical around $U_{dc}/2$ and V_1 must be equal to or less than U_{dc} .



P109152

Functionality Overview

PVEH Control specification

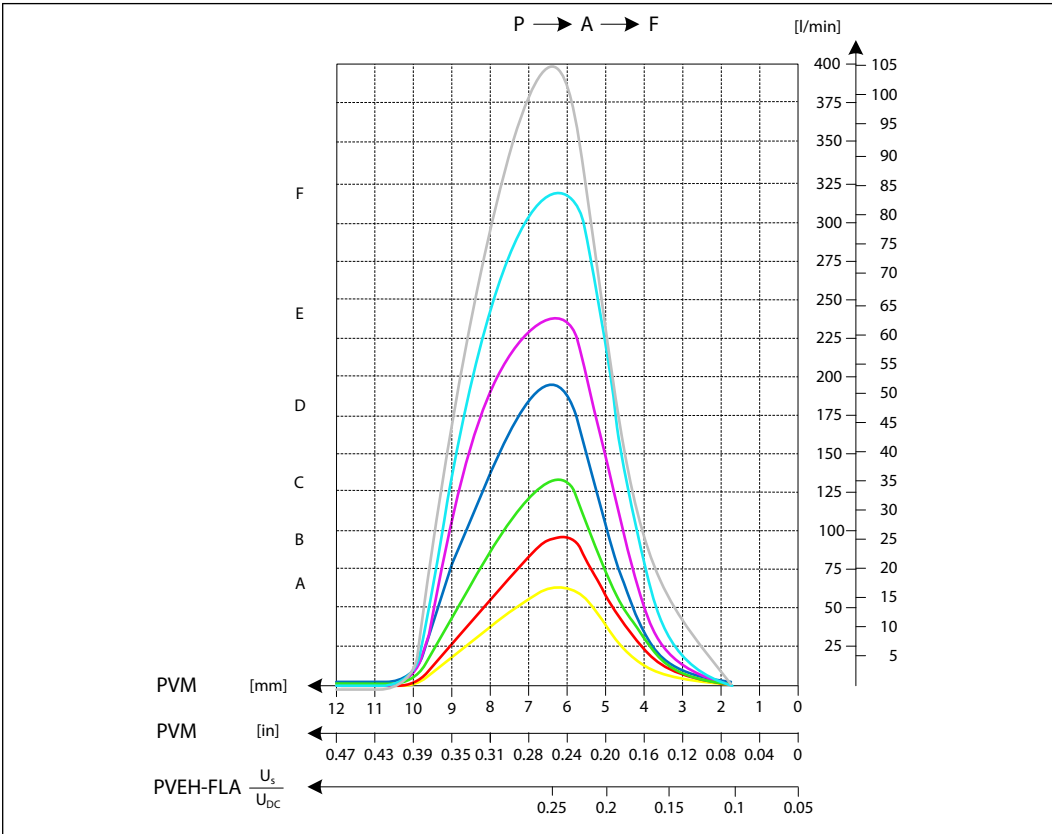
Description	Type	Value
Supply Voltage (Udc)	Rated	11 to 32 Vdc
	Range	11 to 32 Vdc
	Max. ripple	5%
Signal Voltage PWM (Us)	Neutral	Us = 50% DUT
	Q: P to A	Us = 50% to 25% DUT
	Q: P to B	Us = 50% to 75% DUT
PWM Frequency (Us)	Recommended	> 1000 Hz

Functionality Overview

Float A-Port (-FLA)

The Float A-Port functionality enables the proportional PVEH-FLA actuator variants to enter the main spool into a float position. The PVE actuators with Float A-Port functionality is compatible with the dedicated main spools with electronic float in A-port.

PVE Type	PVBS Type	Standard Flow Control	Float Control
PVEH-FLA (1x6 pin)	Deadband 0.8 mm	$U_s = (0.25 \rightarrow 0.75) \cdot U_{dc}$	U dc to dedicated float pin (UF)
	Max. A-port flow 5.5 mm		



PVE Power Save

All proportional actuator variants feature a Power Save mode, de-energizing the solenoid valve bridge. The Power Save mode is entered when the signal voltage (U_s) and the LVDT spool position has been in neutral for 750 ms. As soon as the signal voltage (U_s) or the LVDT spool position is out of neutral the PVE will leave its Power Save mode and re-energize the solenoid valve bridge as usual.

The Power Save mode results in increased power efficiency by reducing the current consumption of the PVE actuators in neutral position. The Power Save mode has no effect on the performance of the PVE actuator.

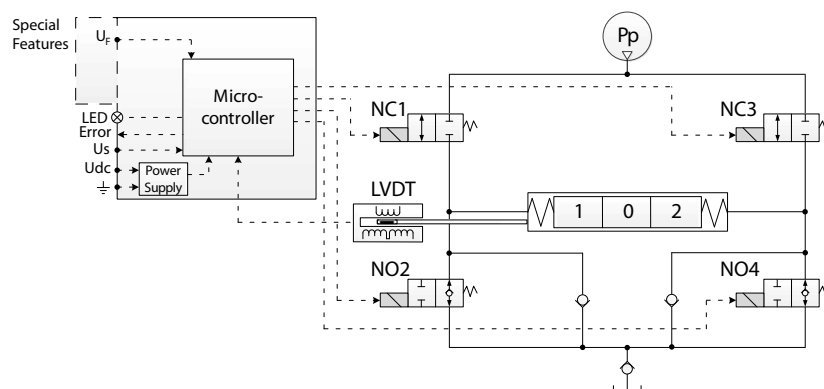
Special Features

Dedicated Float Pin (UF)

The Dedicated Float Pin (UF) feature is related to the PVEH-FLA actuator variant enabling the user to move the main spool into its float position by power. The PVEH-FLA uses 1x6 pin AMP or DEUTSCH connectors.

- Normal operation: Low or not connected
- High Float
- Input range: U_{DC}
- Max. voltage: 32 V_{DC}

PVEH-FLA functionality diagram



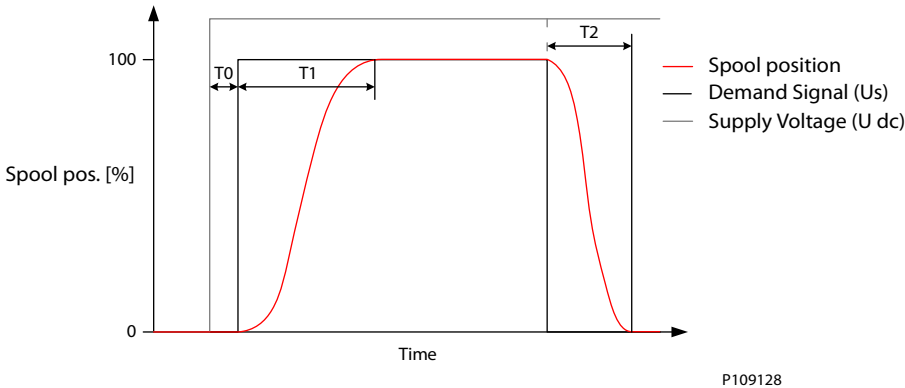
Disable Mode

The PVEH-U actuator variants controlled by a fixed 0-10 V_{DC} signal voltage (U_S), feature the ability to enter a disable mode. This causes the counteracting force on the main spool created by the solenoid valve bridge to deactivate, when using Manual OverRide (MOR).

The disable mode is entered by sending a signal voltage (U_S) of 15% or lower of 10 V_{DC} when in Power Save.

Performance Overview

PVG 128/256 Reaction Times



Reaction
T0 – Boot-up [ms]
T1 – Neutral to max. spool stroke
T2 – Max. spool stroke to neutral
T1 – Neutral to max. spool stroke
T2 – Max. spool stroke to neutral

PVEO

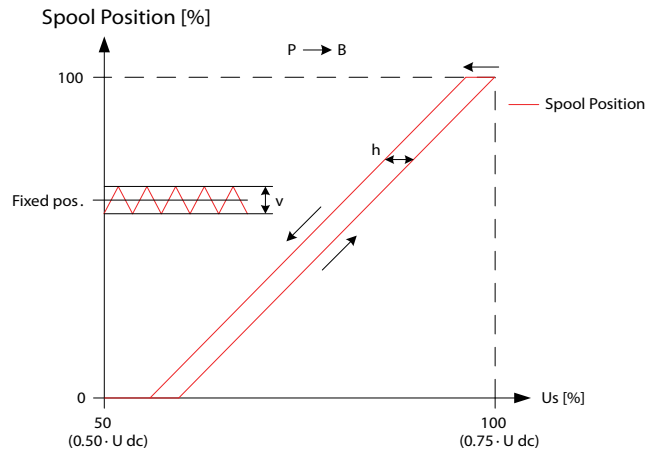
Reaction	PVG128	PVG 256
T1 A-port – Neutral to maximum spool stroke @ Constant Udc	375 ms	375 ms
T1 B-port – Neutral to maximum spool stroke @ Constant Udc	520 ms	520 ms
T2 A-port – Maximum spool stroke to neutral @ Constant Udc	350 ms	350 ms
T2 B-port – Maximum spool stroke to neutral @ Constant Udc	600 ms	600 ms

PVEH

Reaction	PVG 128	PVG 256
T0 – Boot up	80 ms	80 ms
T1 – Neutral to maximum spool stroke @ Power ON	400 ms	380 ms
T2 – Maximum spool stroke to neutral @ Power OFF	300 ms	270 ms
T1 – Neutral to maximum spool stroke @ Constant Udc	320 ms	320 ms
T2 – Maximum spool stroke to neutral @ Constant Udc	250 ms	250 ms
T0 + Deadband	130 ms	130 ms

Performance Overview

Hysteresis and Ripple



Type	Hysteresis (h)	Steady state ripple @ fixed Us (v)
	Rated [%]	Rated [mm]
PVEH 256	1.5	0.0

Oil Consumption

Type	Neutral	Locked position	Actuating
	[l/min]		
PVEO	0.0	0.0	0.9
PVEH	0.0	0.0	0.7

PVSI/PVGI End and Interface Plates

The PVG PVGI Interface Plate acts as an interface between the PVB 256/128 and PVB 48/32/16 basic modules, which enables you to build a combo valve with PVB 256/128/48/32/16.

Optional the PVSI End Plate features additional P and T connection to accommodate an additional 600 l/min pump flow.

The PVS end plate variants are based on a generic platform with a selection of additional features, enabling you to tailor the PVSI/PVGI to suit the demands of any hydraulic system. Versions available with LX connection, and P and T connections. PVSI and PVGI are all in cast iron.

The generic PVSI/PVGI End and Interface Plates platform includes the following main variants:

- PVSI with or without LX-connection
- PVSI with P and T connections
- PVSI Interface plate

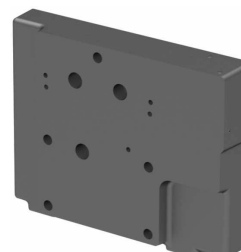
PVSI with or without LX connection



PVSI with P and T connections



PVGI Interface plate



Technical data

Max. rated pressure	P-port continuous	350 bar	[5076 psi]
	P-port intermittent	400 bar	[5800 psi]
	T-port static/dynamic	25/40 bar	[363/580 psi]
Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 → 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	23/19/16
Oil contamination according to ISO 4406	Maximum	23/19/16	

For more information about PVSI/PVGI End and Interface Plates, see:

[PVSI with or without LX-connection](#) on page 90

[PVSI with P and T port connections](#) on page 91

[PVGI Interface Plate](#) on page 92

PVSI/PVGI End and Interface Plates

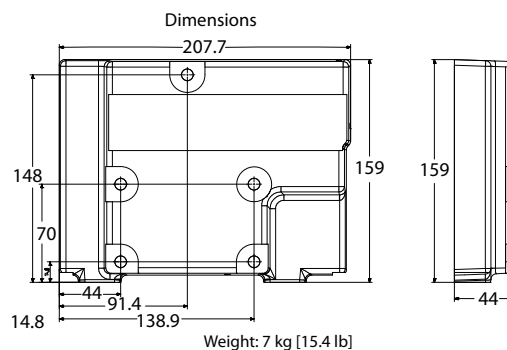
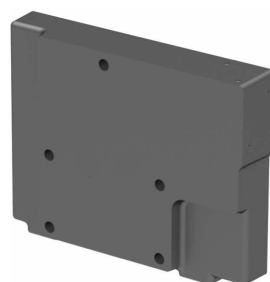
PVSI with or without LX-connection

The PVSI made of Cast Iron work as an End Plate.

The PVSI with LX connection enables another valves LS pressure to be shuttled to the pump when needed.

The LX port treads are with BSP or UNF tread.

PVSI with or without LX connection



Schematic



P109227

Technical data

Max. rated pressure	P-port continuous	350 bar	[5076 psi]
	P-port intermittent	400 bar	[5800 psi]
	T-port static/dynamic	25/40 bar	[363/580 psi]
Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 → 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	23/19/16
Oil contamination according to ISO 4406	Maximum	23/19/16	

Part numbers for PVSI End Plate with or without LX connection

Part number	LX-port	Mounting feet
11171419	-	M12
11179950	G1/4"BSP	M12
11179949	7/16-20 UNF	M12

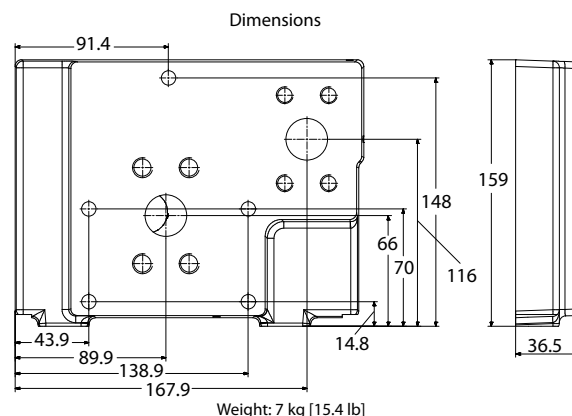
PVSI/PVGI End and Interface Plates

PVSI with P and T port connections

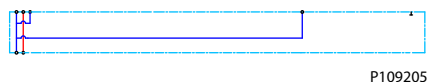
The PVSI with P and T port connections enables an additional 600 l/min pump flow to a PVG 128/256 valve.

Metric and SAE flange connections as well as BSP and UNF threaded ports.

PVSI with P and T port connections



Schematic



Technical data

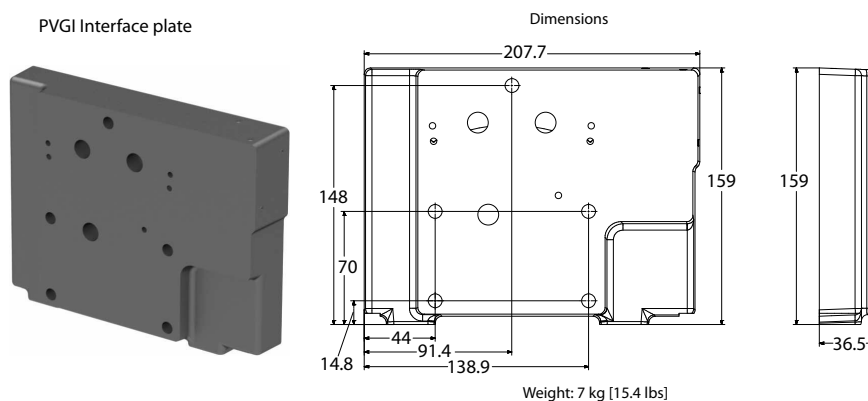
Max. rated pressure	P-port continuous	350 bar	[5076 psi]
	P-port intermittent	400 bar	[5800 psi]
	T-port static/dynamic	25/40 bar	[363/580 psi]
Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 → 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	23/19/16
Oil contamination according to ISO 4406	Maximum	23/19/16	

Part number	P-port	T-port	Width	Mounting feet
11171418	Metric Flange 1"	Metric Flange 1-1/4"	37 mm	M12
11179952	Thread Ports G1" BSP	Thread Ports G1-1/4" BSP	44 mm	M12
11171421	SAE Flange 1" UNF	SAE Flange 1-1/4" UNF	37 mm	M12
11171416	Thread Ports 1-5/16 UNF	Thread Ports 1-5/8 UNF	44 mm	M12

PVSI/PVGI End and Interface Plates

PVGI Interface Plate

The PVGI Interface Plate connects the P-, T-, LS- and Pp-channels in PVB 128/256 to the corresponding channels in PVB 32 and/or 16 modules. T0 variant featured for PVB 32 modules equipped with T0.



Schematic



Technical data

Max. rated pressure	P-port continuous	350 bar	[5076 psi]
	P-port intermittent	400 bar	[5800 psi]
	T-port static/dynamic	25/40 bar	[363/580 psi]
Oil temperature	Recommended	30 to 60°C	[86 to 140°F]
	Minimum	-30°C	[-22°F]
	Maximum	90°	[194°F]
Ambient temperature	Recommended	-30 to 60°C	[-22 to 140°F]
Oil viscosity	Operating range	12 to 75 mm ² /s	[65 → 347 SUS]
	Minimum	4 mm ² /s	[39 SUS]
	Maximum	460 mm ² /s	23/19/16
Oil contamination according to ISO 4406	Maximum	23/19/16	

Part number	T0	PVGI width	Mounting feet
11171422	No	37 mm	M12
11171423	Yes	37 mm	M12

PVAS

Stay Bolts for PVG128/256 consists of 2 different kits:

1. PVAS containing 2 stay bolts – shall be placed in spec sheet under PVAS1.
2. PVAS containing 3 stay bolts – shall be placed in spec sheet under PVAS2.

Furthermore, o-rings are included in the PVAS kits (no additional part number required).

For valve groups consisting of ONLY PVG128/256 components:

1. Sum the values of the PVG128/256 components using values from Table 1.
2. Find this value in the L column of Table 1.1 & Table 1.2. Record PVAS PNs from PVAS1 and PVAS2 columns.

For combo valve groups consisting of PVG128/256 AND PVG48/32/16:

1. Sum the values of the PVG128/256 components using values from Table 1.
2. Find this value in the L column of Table 1.1. Record PVAS1 PN from PVAS1 column.
3. Sum the values of ALL PVG256/128/48/32/16 components using values from Table 1.
4. Find this value in the L column of Table 1.2. Record PVAS2 from PVAS2 column.

Table 1: Lengths for PVAS Calc

Series	Type	L
PVG 128/256	PVPV256 PVP128 OC PVP128 OC/CC	4
	OC256	68
	PVB128	66
	PVB256	86
	PVSI256 PVG1256	36
PVG 48/32/16	PVB48	56
	PVB32 PVBM32 PVBZ32 PVSK32 PVSKM32 PVSP32	48
	PVSPM32	
	PVB16	40
	PVPM48	72
	PVPM32	48
	PVSI48	23
	PVS32 PVSI32 PVST32	23
	PVSD32	24
	24mm Spacer PN: 11145036	24

Table 1.1: PVAS1

L	PVAS1	L	PVAS1
20-48	11187676	361-372	11187658
-	-	373-384	11187675
-	-	385-396	11187680

PVAS

Table 1.1: PVAS1 (continued)

L	PVAS1	L	PVAS1
-	-	-	-
97-108	11187320	409-420	11187683
-	-	421-432	11187686
121-132	11187672	433-444	11187693
-	-	445-456	11187699
-	-	-	-
-	-	469-480	11187696
169-180	11187617	-	-
181-192	11187677	493-504	11187705
-	-	505-516	11187691
205-216	11187673	517-528	11187703
-	-	529-540	11187687
229-240	11187655	541-552	11187688
-	-	553-564	11187697
253-264	11187678	565-576	11187692
-	-	577-588	11187694
277-288	11187681	-	-
289-300	11187656	601-612	11187704
301-312	11187684	613-624	11187690
313-324	11187679	625-636	11187710
-	-	637-648	11187689
337-348	11187682	649-660	11187709
-	-	661-672	11187695

Table 1.2: PVAS2

L	PVAS2	L	PVAS2
20-48	11188219	361-372	11188205
49-60	11188218	373-384	157B8026
61-72	157B8000	385-396	11188204
73-84	11188217	397-408	157B8007
97-108	11188216	409-420	11188203
109-120	157B8001	421-432	157B8027
121-132	11188215	433-444	11188202
133-144	157B8021	445-456	157B8008
145-156	11188214	457-468	11188201
157-168	157B8002	469-480	157B8028
169-180	11188213	481-492	11188200
181-192	157B8022	493-504	157B8009
193-204	11188212	505-516	11188199
205-216	157B8003	517-528	157B8029
217-228	11188211	529-540	11188198
229-240	157B8023	541-552	157B8010
241-252	11188210	553-564	11188197
253-264	157B8004	565-576	157B8030

PVAS

Table 1.2: PVAS2 (continued)

L	PVAS2	L	PVAS2
265-276	11188209	577-588	11188196
277-288	157B8024	589-600	157B8061
289-300	11188208	601-612	11188195
301-312	157B8005	613-624	157B8081
313-324	11188207	625-636	11188194
325-336	157B8025	637-648	157B8062
337-348	11188206	649-660	11188189
349-360	157B8006	661-672	157B8082

Example PVG256/128 Group

	PVPV256	OC256	PVB256	PVB128	PVSI256
L Values from Table 1	4	68	86	66	36
Sum of PVG128/256	260				
PVAS1 from Table 1.1	11187678				
PVAS2 from Table 1.2	157B8004				

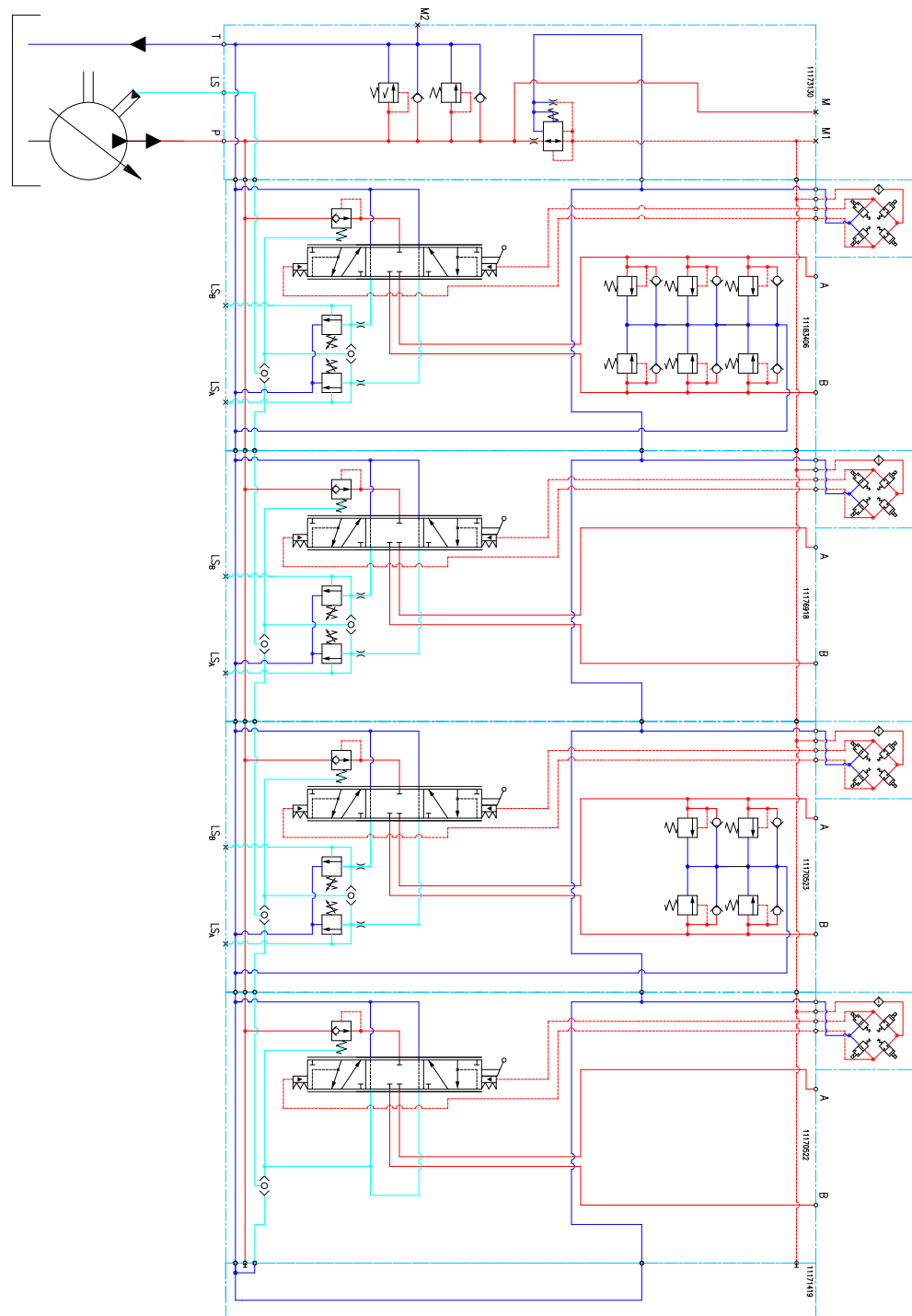
Example PVG256/128/48/32/16 Group

	PVP128 OC	PVB256	PVB128	PVGI25 6	PVB48	PVB32	PVB16	PVSI32
L Values from Table 1	4	86	66	66	56	48	40	23
Sum of PVG128/256	192							
Sum of PVG128/256/48/32/16	359							
PVAS1 from Table 1.1	11187677							
PVAS2 from Table 1.2	157B8006							

PVG Valve Schematics

Valve Schematics

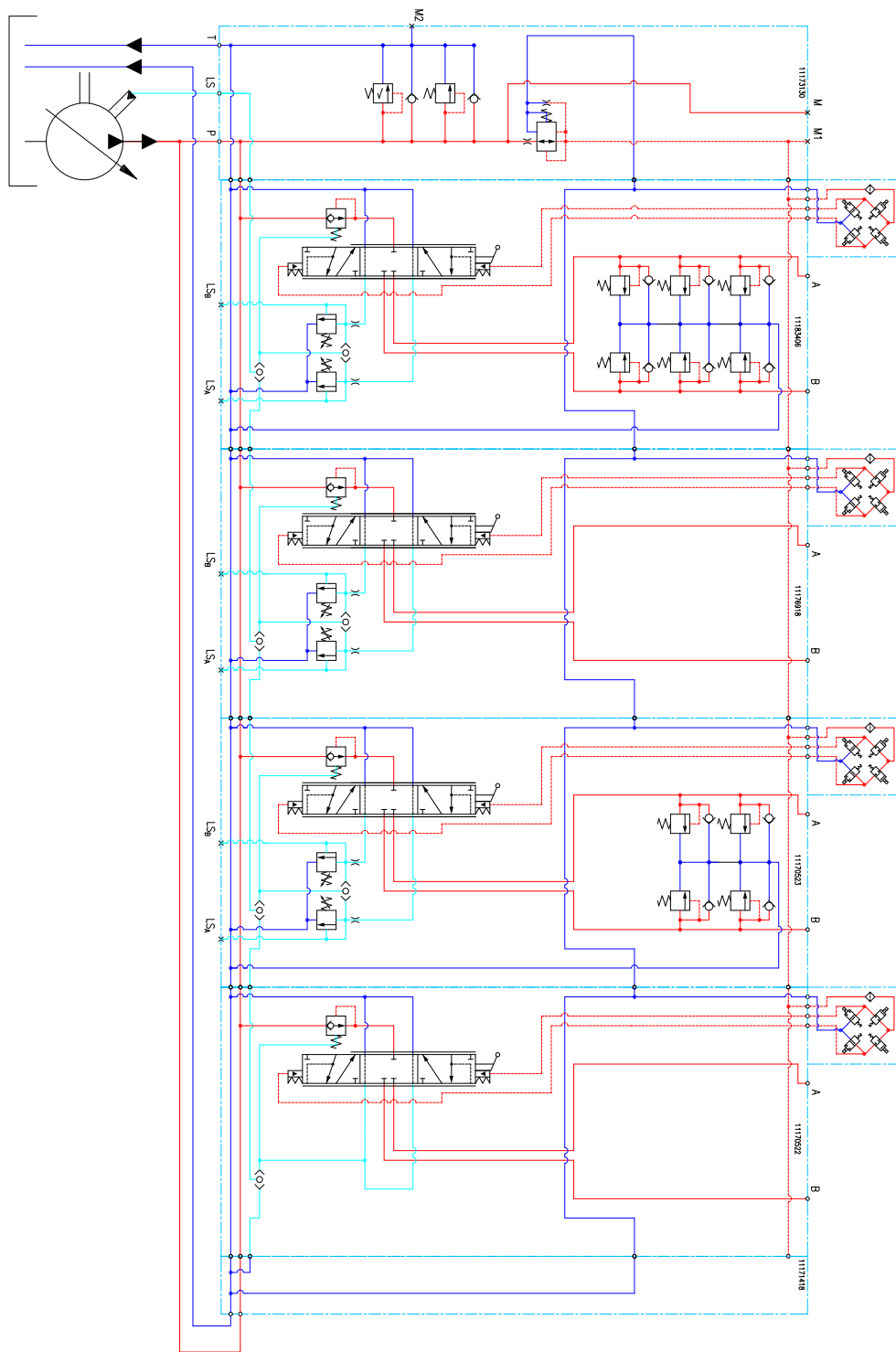
PVG 128/256 Schematic with Basic End Plate



P109254

PVG Valve Schematics

PVG 128/256 with P- and T-connection end plate

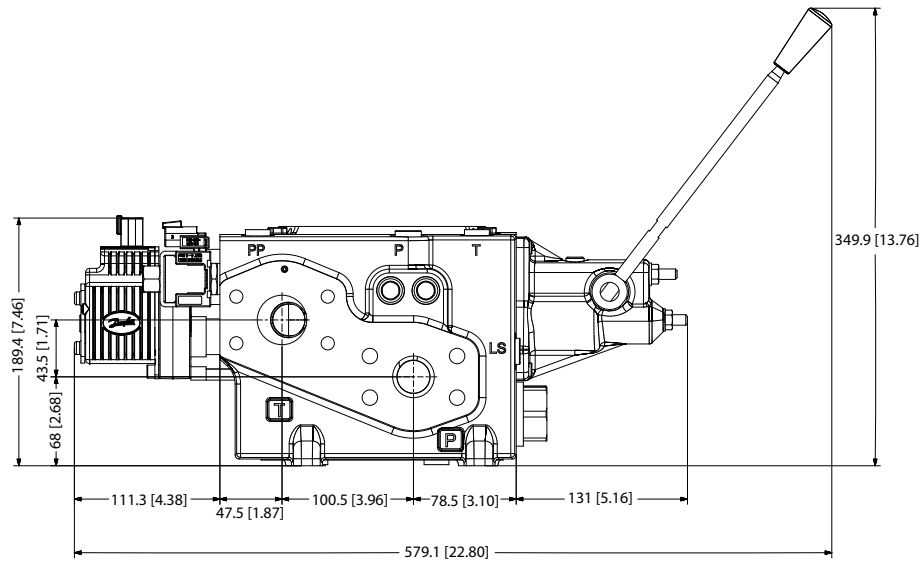


P109255

Dimension Overview

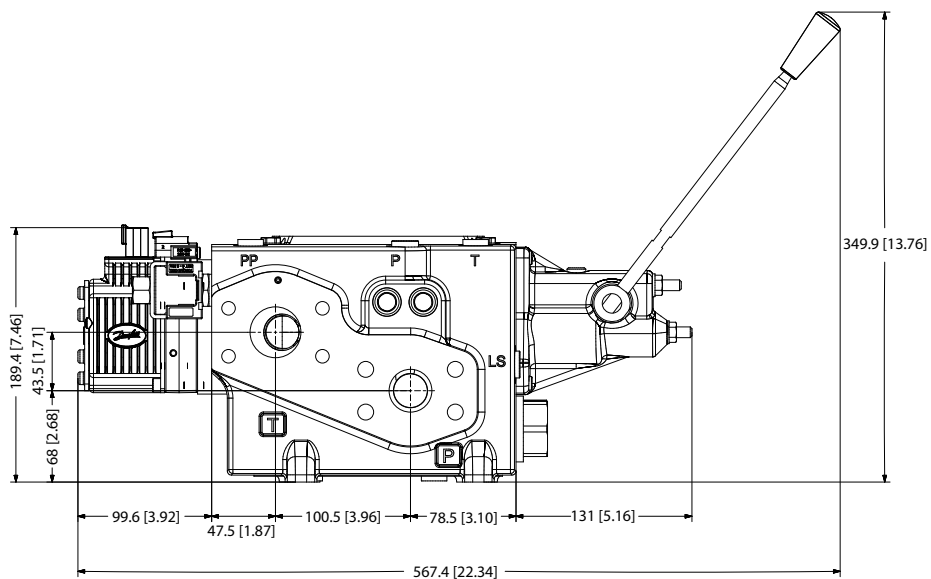
Dimension Overview for PVG 128/256

PVEO



P109644

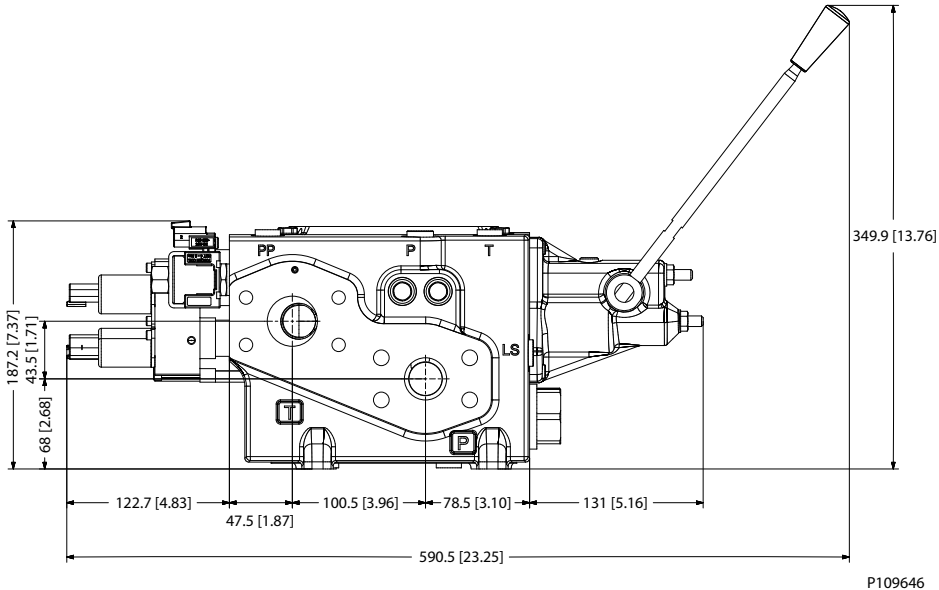
PVEH



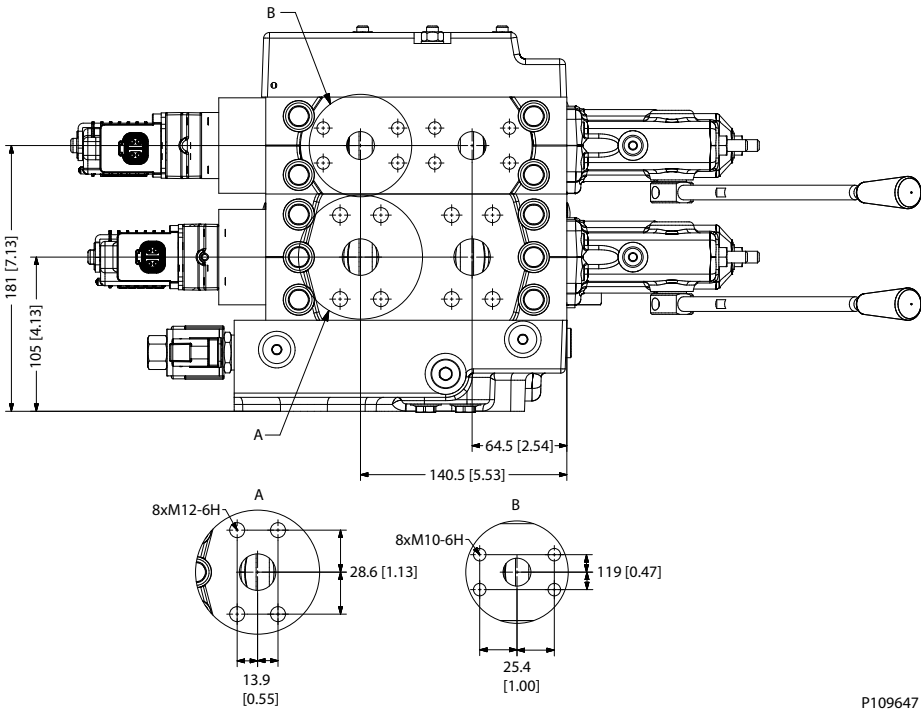
P109645

Dimension Overview

PVHC



PVG 128/256 Dimensions



Dimension Overview

Number of PVB 256			Number of PVB 128									
			0	1	2	3	4	5	6	7	8	9
0	L1	mm	-	98.5	164.5	230.5	296.5	362.5	428.5	494.5	560.5	626.5
		[in]	-	[3.88]	[6.48]	[9.07]	[11.67]	[14.27]	[16.87]	[19.47]	[22.07]	[24.67]
	L2	mm	-	176.5	249.5	309.5	382.5	443.5	515.5	576.5	649.5	709.5
		[in]	-	[6.95]	[9.82]	[12.19]	[15.06]	[17.46]	[20.30]	[22.70]	[25.57]	[27.93]
1	L1	mm	118.5	184.5	250.5	316.5	382.5	448.5	514.5	580.5	646.5	-
		[in]	[4.67]	[7.26]	[9.86]	[12.46]	[15.06]	[17.66]	[20.26]	[22.85]	[25.45]	-
	L2	mm	200.5	273.5	334.5	406.5	467.5	540.5	600.5	673.5	734.5	-
		[in]	[7.89]	[10.77]	[13.17]	[16.00]	[18.41]	[21.28]	[26.64]	[26.52]	[28.92]	-
2	L1	mm	204.5	270.5	336.5	402.5	468.5	534.5	600.5	-	-	-
		[in]	[8.05]	[10.65]	[13.25]	[15.85]	[18.44]	[21.04]	[23.64]	-	-	-
	L2	mm	285.5	358.5	418.5	491.5	552.5	625.5	685.5	-	-	-
		[in]	[11.24]	[14.11]	[16.48]	[19.35]	[21.75]	[24.63]	[26.99]	-	-	-
3	L1	mm	290.5	356.5	422.5	488.5	554.5	520.5	-	-	-	-
		[in]	[11.44]	[14.04]	[16.63]	[19.23]	[21.83]	[24.43]	-	-	-	-
	L2	mm	370.5	443.5	503.5	576.5	637.5	709.5	-	-	-	-
		[in]	[14.59]	[17.46]	[19.82]	[22.70]	[25.10]	[27.93]	-	-	-	-
4	L1	mm	376.5	442.5	508.5	574.5	640.5	-	-	-	-	-
		[in]	[14.82]	[17.42]	[20.02]	[22.62]	[25.22]	-	-	-	-	-
	L2	mm	467.5	528.5	600.5	661.5	734.5	-	-	-	-	-
		[in]	[18.40]	[20.81]	[23.64]	[26.04]	[28.92]	-	-	-	-	-
5	L1	mm	462.5	528.5	594.5	660.5	-	-	-	-	-	-
		[in]	[18.21]	[20.81]	[23.41]	[26.00]	-	-	-	-	-	-
	L2	mm	552.5	612.5	685.5	746.5	-	-	-	-	-	-
		[in]	[21.75]	[24.11]	[26.99]	[29.39]	-	-	-	-	-	-
6	L1	mm	548.5	614.5	-	-	-	-	-	-	-	-
		[in]	[21.59]	[24.19]	-	-	-	-	-	-	-	-
	L2	mm	637.5	697.5	-	-	-	-	-	-	-	-
		[in]	[25.10]	[27.46]	-	-	-	-	-	-	-	-
7	L1	mm	634.5	-	-	-	-	-	-	-	-	-
		[in]	[24.98]	-	-	-	-	-	-	-	-	-
	L2	mm	722.5	-	-	-	-	-	-	-	-	-
		[in]	[28.44]	-	-	-	-	-	-	-	-	-

Technical Information
PVG 128/256 Technical Information

Dimension Overview

Specifications example

Specification Sheet		PVG 256 Combo										
Valve type:												
Subsidiary / Dealer		DPS XXX		Danfoss Sold-To Party No.				Customer		Shark Marine		
Valve No.		8xxxxxx		Customer Part No.		xxxxxxx		Application		Marine Crane		
Filled in by		Mr. X		Date		07-04-2017		Revision No		EAU		
Function		A-Port				B-Port						
1		PVLP	157B2380	P=	11173130	PVPV 256	11160319	KIT PVPP				
		PVLP	157B2380			bar						
2	Boom up/down 400 l/min CN	PVM 256	11175317		11169243	PVB 256	11177058	PVBS	11186321	PVEH 256		
		PVLP	157B2350	LSA=	100	bar	LSB=	315 bar	157B2350	PVLP		
		PVLP	157B2350						157B2350	PVLP		
		PVLP	157B2350						157B2350	PVLP		
3	Winch motor 180 l/min ON	PVM 256	11175317		11165621	PVB 128	11178310	PVBS	11186321	PVEH 256		
		PVLP	157B2350	LSA=	315	bar	LSB=	315 bar	157B2350	PVLP		
		PVLP	157B2350						157B2350	PVLP		
4					11171422	PVGI 256						
				LSA=		bar	LSB=		bar			
5	Boom Swing 40 l/min ON	PVM	157B3171		157B6233	PVB	157B7122	PVBS	157B4292	PVEO		
		PVLP	157B2350	LSA=	250	bar	LSB=	250 bar	157B2350	PVLP		
6					157B2014	PVS						
				LSA=		bar	LSB=		bar			
7												
				LSA=		bar	LSB=		bar			
8												
				LSA=		bar	LSB=		bar			
9												
				LSA=		bar	LSB=		bar			
10												
				LSA=		bar	LSB=		bar			
11												
				LSA=		bar	LSB=		bar			
12												
				LSA=		bar	LSB=		bar			
13												
				LSA=		bar	LSB=		bar			
14												
				LSA=		bar	LSB=		bar			
15												
				LSA=		bar	LSB=		bar			
18	PVAS	1.	11187677	2.	157B8004	3.						
19	Painting											
20	Customer Text on Group Label											
21	Customer Text on Packaging Label (Box)											

Products we offer:

- Cartridge valves
- DCV directional control valves
- Electric converters
- Electric machines
- Electric motors
- Gear motors
- Gear pumps
- Hydraulic integrated circuits (HICs)
- 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.

Local address:

Hydro-Gear

www.hydro-gear.com

Daikin-Sauer-Danfoss

www.daikin-sauer-danfoss.com

**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.