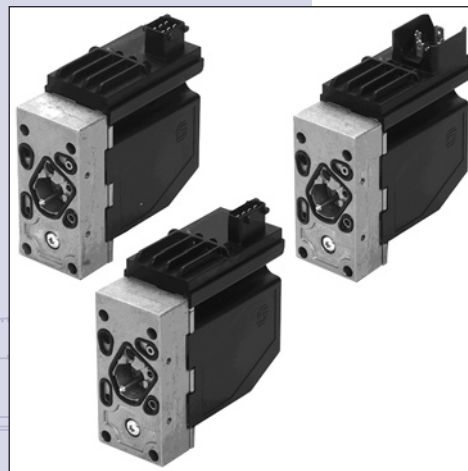




PVEA/H/S
Electrohydraulic
Actuator

Product Electrical
Installation

Technical
Information



Revision History

Table of Revisions

Date	Page	Changed	Rev.
9 Feb, 2010	5	Proportional Valve Body drawing updated	BA
4 Apr, 2007			AA

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Front cover illustrations: 2413, 2412

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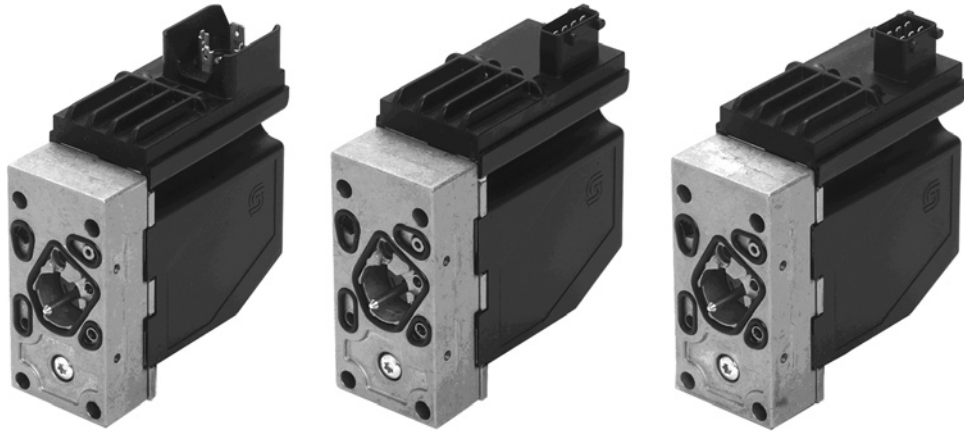
Literature References

Refer to *PVG 32 Proportional Valves Technical Information 520L0344*, *PVG 100 Proportional Valves Technical Information 520L0720*, *PVG 120 Proportional Valves Technical Information 520L0356*, *PVE Series 4 for PVG 32, PVG 100 and PVG 120 Technical Information 520L0553*, *Instructions for PVG Series 4 for PVG32/100 520L0619*, *Instructions for PVG Series 4 for PVG120 520L0651* for complete product electrical and mechanical specifications.

Refer to *PVEA/H/S Compliant Function Block User Manual 11020635* for compliant function block set-up information.

Technical literature is available at: www.sauer-danfoss.com

Product Image



The philosophy of Sauer-Danfoss electrohydraulic actuation, type PVE, is integration of electronics, sensors, and actuators into a single unit that interfaces directly to the proportional valve body.

Code/ Part Numbers

PVG 32/100

PVEA/H/S Proportional Actuation Code number 157B...

		Hirschmann® connector 11 to 32 Vdc	AMP® connector 11 to 32 Vdc	Deutsch® connector 11 to 32 Vdc
PVEA	Standard, active fault monitoring	Not available	4734	4792
	Standard, passive fault monitoring	Not available	4735, 4775*	Not available
PVEH	Standard, active fault monitoring	4032	4034, 4074*	4092
	Standard, passive fault monitoring	4033, 4073*	4035, 4075*	4093
PVES	0% hysteresis, active fault monitoring	4832	4834	4892
	0% hysteresis, passive fault monitoring	4833	4835, 4865	Not available

* Anodized version.

PVG 120

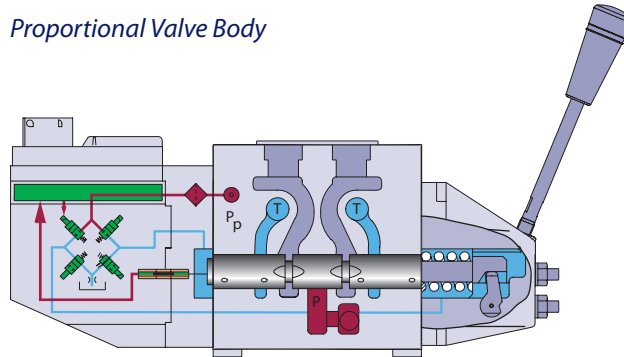
PVEH Proportional Actuation Code number 155G...

		Hirschmann connector 11 to 32 Vdc	AMP connector 11 to 32 Vdc	Deutsch connector 11 to 32 Vdc
PVEH	Standard, active fault monitoring	4092	4094	Not available
	Standard, passive fault monitoring	4093	4095	Not available

**Description/
 Theory of Operation**

The philosophy of Sauer-Danfoss electrohydraulic actuation, type PVE, is integration of electronics, sensors and actuators into a single unit that interfaces directly to the proportional valve body.

Proportional Valve Body

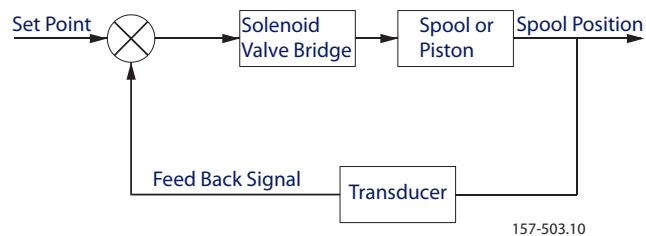


V310134.A

Closed Loop Control

All the proportional actuators feature an integrated feedback transducer that measures spool movement in relation to the input signal, and by means of a solenoid valve bridge, controls the direction, velocity and position of the main spool of the valve. The integrated electronics compensate for flow forces on the spool, internal leakage, changes in oil viscosity, pilot pressure, etc. This results in lower hysteresis and better resolution. Furthermore the electronics enable built in safety like fault monitoring, directional indication and LED light indication.

Closed Loop Control Schematic

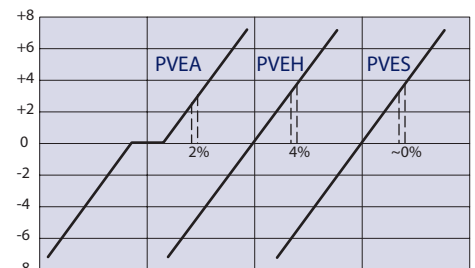


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The PVEA/H/S versions are recommended where requirements include fault monitoring, low hysteresis, and high resolution, but the reaction time is not critical.

Main Features of PVEA/H/S

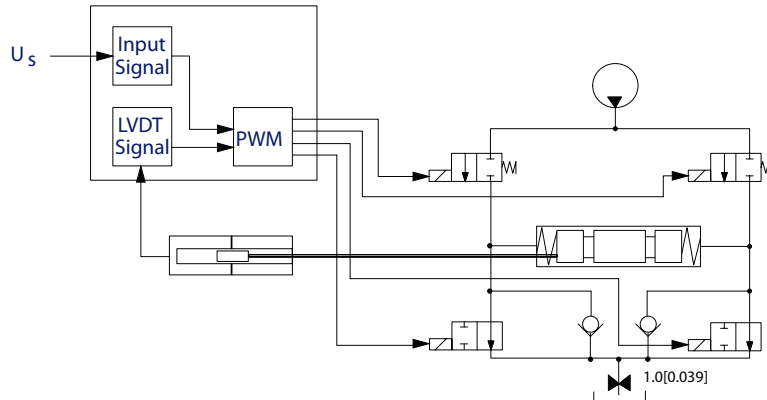
- Inductive transducer
- Integrated pulse width modulation
- Low hysteresis
- Hirshmann, AMP, or Deutsch connector
- As option with directional indicator (DI)
- Fault monitoring with transistor output for signal source
- Low electrical power
- No set-up procedure



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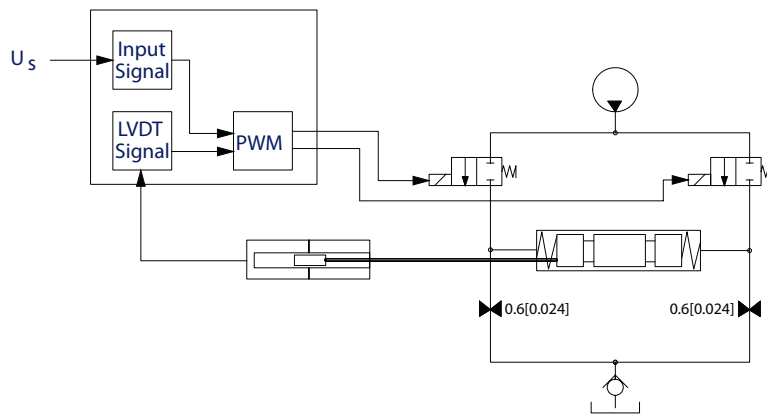
Hydraulic Schematics

PVEH/PVES



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PVEA



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Electrical Specifications

The following data is for a typical hydraulic system with mineral based hydraulic oil with a viscosity of 21 mm²/second [102 SUS] and a temperature of 50° C [122° F].

Specifications

Supply voltage U _{DC} rated	11 to 32 Vdc	
Supply voltage U _{DC} range	11 to 32 Vdc	
Supply voltage U _{DC} maximum ripple	5%	
PVEA current consumption at rated voltage	0.33 A at 12 Vdc	0.17 A at 24 Vdc
PVEH/ PVES current consumption at rated voltage	0.57 A at 12 Vdc	0.3 A at 24 Vdc
Signal voltage: Neutral	0.5 · U _{DC}	
Signal voltage: A port B port	0.25 · U _{DC} to 0.75 U _{DC}	
Signal current at rated voltage	0.25 mA to 0.70 mA	
Input impedance in relation to 0.5 · U _{DC}	12 kΩ	
PVEA power consumption	3.5 W	
PVEH/ PVES power consumption	7	

Fault Monitoring

Warning

It's up to the customer to decide on the required degree of safety for the system.

Fault Monitoring Overview

Type	Fault monitoring	Delay before error out	Error mode	Error output status	Error output on PVE*	LED light	Memory (reset needed)
PVEO	No fault monitoring	-	-	-	-	-	-
PVEA PVEH PVES	Active	500 ms (PVEA: 750 ms)	No fault	Low	<2 V	Green	-
			Input signal faults	High	~U _{DC}	Flashing red	Yes
			Transducer (LVDT)			Constant red	
	Close loop fault						
	Passive	250 ms (PVEA: 750 ms)	No fault	Low	<2 V	Green	-
			Input signal faults	High	~U _{DC}	Flashing red	No
Transducer (LVDT)			Constant red				
Close loop fault							

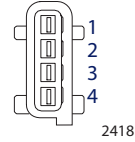
* Measurement between fault output pin and ground.

Pinout

AMP Version Pinout

Pin	Description
1	U _S
2	U _{DC}
3	Ground
4	Error

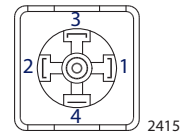
Pin Location



Hirschmann Version Pinout

Pin	Description
1	U _{DC}
2	U _S
3	Error
4	Ground

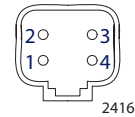
Pin Location



Deutsch Version Pinout

Pin	Description
1	U _S
2	Error
3	Ground
4	U _{DC}

Pin Location



Pin Compatibility

PLUS+1™ Module Pin Type/ PVEA/H/S Pin Compatibility

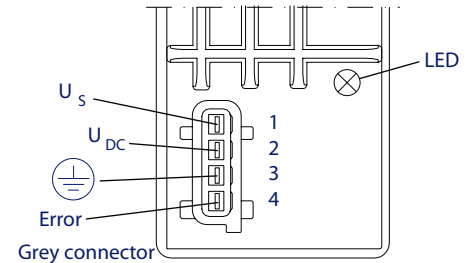
PLUS+1 module pin type	Acceptable use: AMP connector pin number	Acceptable Use: Hirschmann connector pin number	Acceptable use: Deutsch connector pin number
DOUT/PVG Pwr 1-3	2	1	4
PWMOUT/DOUT/PVGOUT 1-3	1	2	1
Power ground -	3	4 (Ground)	3
Dig in	4	3	2

Input/ Output Matrix

AMP Version Proportional

Function	Signal voltage (U_S)
Neutral	U_S (pin 1) = $0.5 \cdot U_{DC}$
Q: P -> A	U_S (pin 1) = $(0.5 \rightarrow 0.25) \cdot U_{DC}$
Q: P -> B	U_S (pin 1) = $(0.5 \rightarrow 0.75) \cdot U_{DC}$

PVEA/ PVEH/ PVES

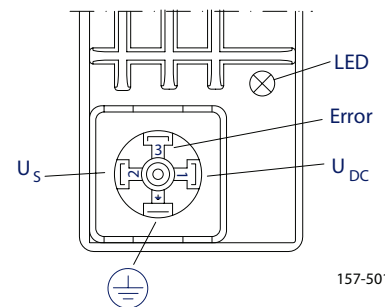


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Hirschmann Version Proportional

Function	Signal voltage (U_S)
Neutral	U_S (pin 2) = $0.5 \cdot U_{DC}$
Q: P -> A	U_S (pin 2) = $(0.5 \rightarrow 0.25) \cdot U_{DC}$
Q: P -> B	U_S (pin 2) = $(0.5 \rightarrow 0.75) \cdot U_{DC}$

PVEH/ PVES

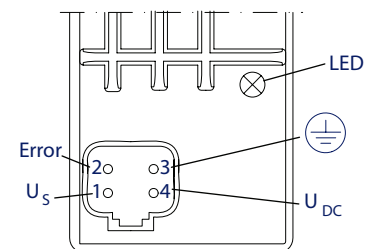


157-501.10

Deutsch Version Proportional

Function	Signal voltage (U_S)
Neutral	U_S (pin 1) = $0.5 \cdot U_{DC}$
Q: P -> A	U_S (pin 1) = $(0.5 \rightarrow 0.25) \cdot U_{DC}$
Q: P -> B	U_S (pin 1) = $(0.5 \rightarrow 0.75) \cdot U_{DC}$

PVEA/ PVEH/ PVES



157-759.11

Mating Connector

AMP Version PVEA/H/S Mating Connector Parts List

Description	Quantity	Ordering number
Wire sealing (Blue)	4	AMP 828904-1
Blind plug (transparent)	1	AMP 828922-1
JPT contact (loose piece)	4	AMP 929930-1
JPT housing keying B (Gray)	1	AMP 2-967059-1
Sauer-Danfoss mating connector kit	1	157B4994*

* AMP connector with 4m cable.

Hirschmann Version PVEH/S Mating Connector Parts List

Description	Quantity	Ordering number
Connector	1	Hirschmann 931 969-100
Gasket	1	Hirschmann 730 801-002
Sauer-Danfoss mating connector kit	1	984L3156

Deutsch Version PVEA/H/S Mating Connector Parts List

Description	Quantity	Ordering number
Connector	1	Deutsch DTO6-4S
Wedge lock	1	Deutsch W4S
Socket contact (14 and 16 AWG)	4	Deutsch 0462-209-16141
Sauer-Danfoss mating connector kit	1	11007498



PVEA/H/S Electrohydraulic Actuator
Product Electrical Installation Technical Information
Notes

Notes



Our Products

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Proportional valves

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