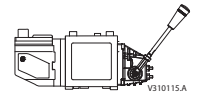


Installation Guide

Electrical Actuating Module PVED-CX series 4 for PVG 32



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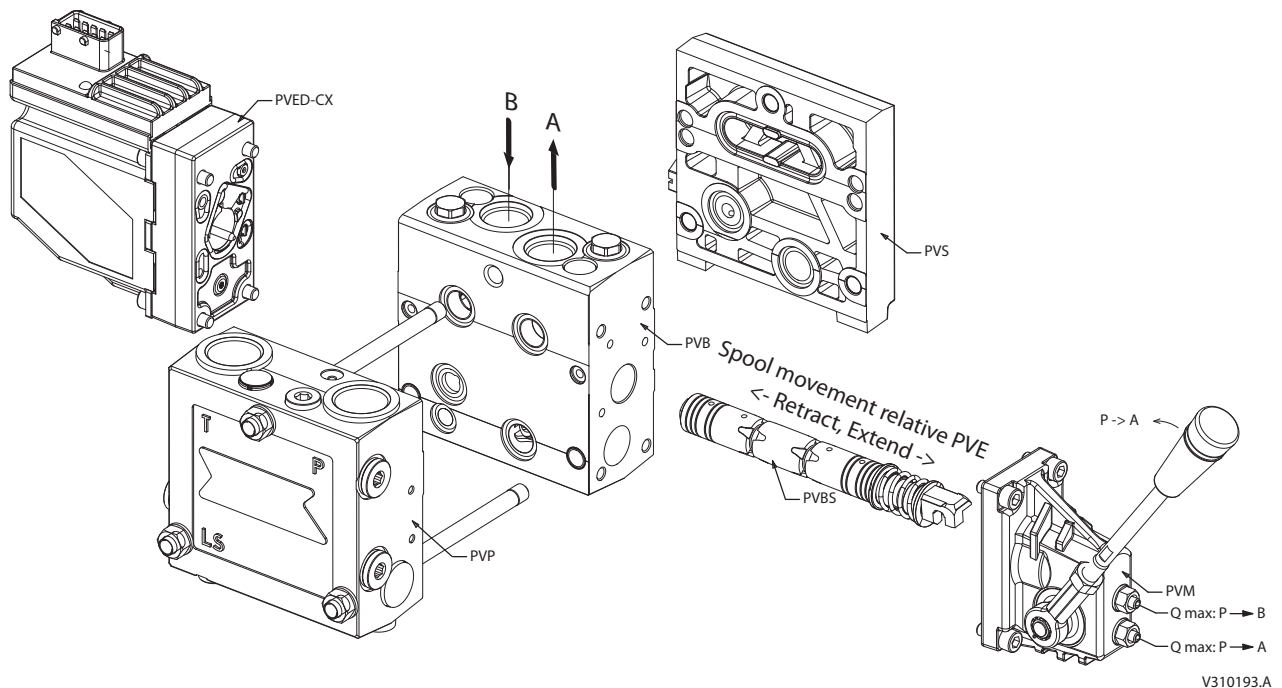
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Oliestrømmens retning for standard monterede grupper.

Oil flow direction for standard assembled groups.

Richtung des Ölstroms für Standard-Baugruppen.

Sens du débit pour ensembles standard.



▲ Advarsel Ved udskiftning af PVE skal både det elektriske og det hydrauliske system være afbrudt og olietryk udlignet.
Hydraulisk olie kan påføre både miljømæssige skader og personskader.
Udskiftning af moduler kan introducere fremmedlegemer i og fejl på systemet. Det er vigtigt, at arbejdsområdet holdes rent og at komponenterne behandles forsigtigt.

▲ Warning When replacing the PVE, the electrical and the hydraulic systems must be turned off and the oil pressure released.
Hydraulic oil can cause both environmental damage and personal injuries.
Module replacement can introduce contamination and errors to the system. It is important to keep the work area clean and components should be handled with care.

▲ Warnung Beim auswechseln vom PVE muss das elektrische und hydraulische System ausgeschaltet sein. Es darf kein Oeldruck im System vorhanden sein. Hydrauliköl kann zu Umwelt- und Personenschäden führen. Es ist auf äusserste Sauberkeit zu achten und das die Komponenten vorsichtig behandelt werden.

▲ Avertissement En recharger le PVE, le système électrique et hydraulique doit être coupé et la pression d'huile doit être contrebalancée.
L'huile hydraulique peut causée du dommage de l'environnement et blessures.
Recharger des modules peuvent introduit corps étrangers dans et sur le système. Il est d'importance de tenir la zone du travail propre et manier les composants avec précaution.

Technical Data

Supply Voltage		SW alarm
Nominal (Vbat and Vbat2)	10 - 32 V	
Minimum (Vbat and Vbat2)	9.5 V	9.0 V
Maximum (Vbat and Vbat2)	33.5 V	35.5 V
Max ripple	5%	
Consumption @ 12V		
Current consumption in Full Operational mode	750 mA	
Power consumption in full operational mode	9 W	
Current consumption in hand operational mode or power save	90 mA	
Power consumption in hand operational mode or power save	1.1 W	

Activation of solenoid valves by low voltage outside nominal is for short term exceptions i.e. Maximum 10% of operating time and for max 5 minutes within an hour.

Activation of solenoid valves by 9-10V will give reduced valve performance.

>36V and <8V will shut down electronics

Oil Consumption

Solenoids depowered	0.2 - 0.4 l/min [0.05 - 0.10 US gal/min]
Spool locked by pilot oil	0.1 - 0.2 l/min [0.03 - 0.05 US gal/min]
Continuous actuation	0.9 - 1.1 l/min [0.24 - 0.29 US gal/min]
One actuation (neutral to max)	0.002 l/min [0.0005 US gal]

Oil viscosity: 21.0 ± 0.5 cSt, Pilot.

Pilot pressure (P-T): 13.3 ± 0.5 bar

Filtering in the hydraulic system

Max. allowed degree of contamination	23/19/16 (ISO 4406, 1999 version)
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Oil viscosity

Oil viscosity	range	12 - 75 mm ² /s [65 - 347 SUS]
	min.	4 mm ² /s [39 SUS]
	max.	460 mm ² /s [2128 SUS]

Oil temperature

Oil temperature	range	30 - 60°C [86 - 140°F]
	min.	-30°C [-22°F]
	max.	90°C [194°F]

Pilot pressure

Pilot pressure (relative to T pressure)	nom.	13.5 bar [196 psi]
	min.	10.0 bar [145 psi]
	max.	15.0 bar [217 psi]

PCB temperature

PCB temperature	range	0 - 85°C [32 - 185°F]
	min	-30°C [-22°F]
	max average	85°C [185°F]
	max instant	100°C [212°F]

Operating temperature

	Min	Max
Ambient	-30°C [-22°F]	70°C [158°F]
Stock	-40°C [-40°F]	90°C [194°F]
Recommended long time storage in packaging	10°C [50°F]	30°C [86°F]

Version with AMP JPT connector

Grade of enclosure	IP 66
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⚠ Warning

By operation with PCB temperature below 0°C the transition to fault mode due to spool monitoring is delayed as described in Electro hydraulic actuator type PVED-CX series 4 technical information - 11070179.

If temperature max values are exceeded the PVED-CX transits to fault state.

Technical Data

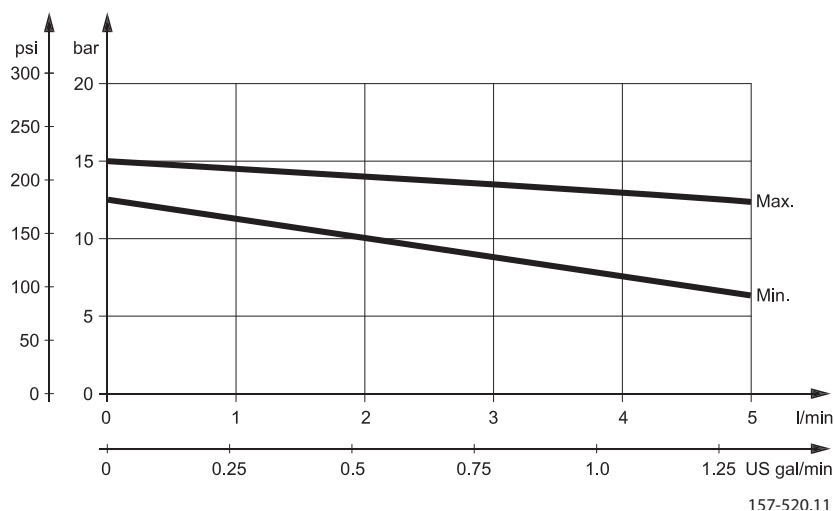
Følgende tekniske data bygger på typiske testresultater. Der anvendes mineralsk olie med en viskositet på 21 mm²/s (102 SUS) og en temperatur på 50°C (122°F).

The following technical data are from typical test results. For the hydraulic system a mineral based hydraulic oil with a viscosity of 21 mm²/s [102 SUS] and a temperature of 50° C [122° F] were used.

Folgende technische Daten bauen auf typische Testergebnisse. Es wurde Mineralöl mit einer Viskosität von 21 mm²/s (102 SUS) und einer Temperatur von 50°C [122°F] verwendet.

Les caractéristiques techniques suivantes sont tirées de résultats de tests typiques. Pour le système hydraulique, on a utilisé une huile minérale d'une viscosité de 21 mm²/s [102 SUS] et à une température de 50° C [122° F].

PVP modules, Pilot Pressure Curves



Reaction time for actuation

Function @ 21 cSt @ 13,3 bar	Solenoids	
Reaction time, neutral to max spool travel	Powered	Min 50ms / Max 200ms
Reaction time, max spool travel to neutral	Powered	Max 150ms
Reaction time, power on to max spool travel	Powered	Min 1000ms / Max 4000ms
Reaction time, max spool travel to neutral	Disabled	Max 175ms
Power up From power on to CAN active		Max 1000ms
ASSIST run time per module		4 seconds
Hysteresis @0.02Hz		Typ 0% / Max 1%

Oil viscosity: 21,0 ± 0,5 cSt, Pilot. Pilot pressure (P-T): 13,3±0,5bar

Bemærk: I særligt udsatte maskiner anbefales der beskyttelse i form af screening

Beachte: In besonders ausgesetzten Maschinen wird Schutz in Form von elektrischer Abschirmung empfohlen.

NB: In particularly exposed applications, protection in the form of screening is recommended.

Remarque : Pour les applications particulièrement exposées, il est recommandé d'installer une protection par écran.

▲ WARNING

Alle mærker og typer af retningsventiler – også proportional ventiler – kan svigte og forårsage alvorlig skade. Det er derfor vigtigt at analysere maskinen i alle enkeltheder.

Da proportionalventiler anvendes under mange forskellige driftsbetingelser og i mange forskellige maskiner, er det alene maskinproducentens ansvar at træffe det endelige produktvalg og sikre at samtlige maskinens krav til ydelse, sikkerhed og advarsler er opfyldt.

Ved valg af reguleringssystem – og sikkerhedsniveau – kan man f.eks. støtte sig til ISO 13849 (sikkerhedsrelaterede bestanddele i reguleringssystemet).

All marks and all types of directional control valves – inclusive proportional valves – can fail and cause serious damage. It is therefore important to analyse all aspects of the application.

Because the proportional valves are used in many different operation conditions and applications, the manufacturer of the application is alone responsible for making the final selection of the products – and assuring that all performance, safety and warning requirements of the application are met.

The process of choosing the control system – and safety level – could e.g. be governed by ISO 13849 (Safety related parts of control system).

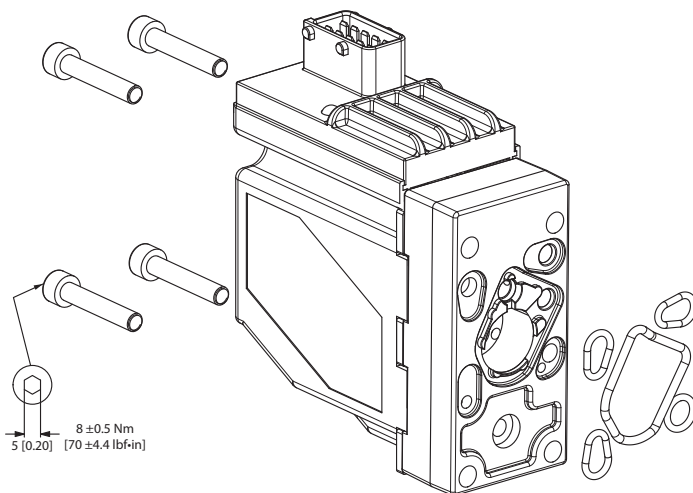
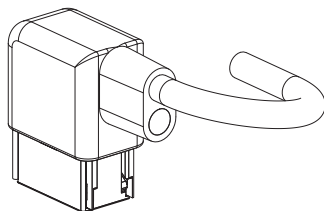
Alle Fabrikate und Typen von Wegeventilen – einschließlich Proportionalventile – können versagen und schlimme Unfälle verursachen. Es ist daher wichtig, die Anwendung in allen Details zu analysieren.

Weil Proportionalventile unter vielen unterschiedlichen Arbeitsbedingungen und in vielen verschiedenen Anwendungen benutzt werden, trägt allein der Maschinenhersteller die Verantwortung für seine endgültige Produktewahl, und er ist ebenfalls dafür verantwortlich, dass alle Leistungs-, Sicherheits- und Warnungsanforderungen an seine Maschine erfüllt sind.

Zur Wahl vom Reglersystem und Sicherheitsniveau kann man sich z.B. auf ISO 13849 stützen

Tous les distributeurs - y compris les distributeurs proportionnels - peuvent tomber en panne et entraîner de sérieux dommages. C'est la raison pour laquelle il est important d'analyser chaque aspect de l'application. Les vannes proportionnelles étant utilisées dans de nombreuses conditions d'exploitation et applications différentes, le fabricant de l'application porte l'entière responsabilité de la sélection finale des produits et du respect des exigences en matière de rendement, de sécurité et d'avertissement. Le choix du système de commande – et du niveau de sécurité – peut être fait par exemple sur la base de la norme ISO 13849 (parties du système de commande relatives à la sécurité).

**Montage af PVED-CX
Installation of PVED-CX
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Installation de PVED-CX**



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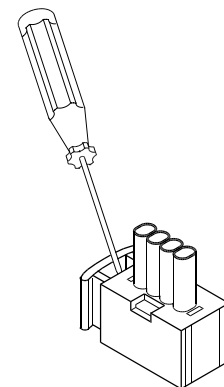
AMP versions:

Pakningen i PVED-CX stikket er afgørende for at korrekt tæthed af stikket opnås.

The seal in the PVED-CX connector is crucial for correctly sealing the connector.

Die Dichtung im PVED-CX-Stecker ist für die Dichtheit des Steckers von entscheidendem Einfluss.

Le joint de la prise PVED-CX ainsi joue un rôle essentiel dans la qualité de l'étanchéité de la prise.



157-378.10

Control

PVED-CX er styret ved hjælp af Controller Area Network (CAN) kommunikation. Standarden er CANopen CiA Standard 301 version 4.02 og CiA standard 408 version 1.5.1. Vi henviser til Danfoss Electrohydraulic actuator PVED-CX Series 4 Technical Information. SAP 11070179 for yderligere information.

The PVED-CX is controlled by Controller Area Network (CAN) communication. The standard is CANopen CiA Standard 301 version 4.02 and CiA standard 408 version 1.5.1. For further information please see the Danfoss Electrohydraulic actuator PVED-CX Series 4 Technical Information. SAP 11070179.

Das PVED-CX Modul wird durch Controller Area Network (CAN) Kommunikation gesteuert. Die Standarden sind CANopen CiA Standard 301 Version 4.02 und CiA Standard 408 Version 1.5.1. Für weitere Informationen sehen Sie bitte die Danfoss Electrohydraulic actuator PVED-CX Series 4 Technical Information. SAP 11070179.

Le PVED-CX communique par CAN (Controller Area Network). Les standards sont CANopen CiA Standard 301 Version 4.02 et CiA Standard 408 Version 1.5.1. Pour plus d'information veuillez consulter Danfoss Electrohydraulic actuator PVED-CX Series 4 Technical Information. SAP 11070179.

Udluftning

Hvis gruppen er monteret vertikalt, anbefales det at udlufte ved justerskruer (Pos. A).

Bleeding

If the group is installed vertically, it is recommended to bleed it at the adjusting screws (Pos. A).

Entlüftung

Wenn die Gruppe vertikal montiert ist, empfehlen wir an den Justierschrauben zu entlüften (Pos. A).

Purge

Si l'ensemble est monté verticalement, il est recommandé de le purger au moyen des vis d'ajustage (Pos.A).

Beskyttelse

Alle PVED-CX-moduler overholder tæthedegrad IP66 i henhold til IEC 529.

Det anbefales dog, at PVED-CX'en på særligt udsatte steder beskyttes i form af en afskærmning eller lignende.

Protection

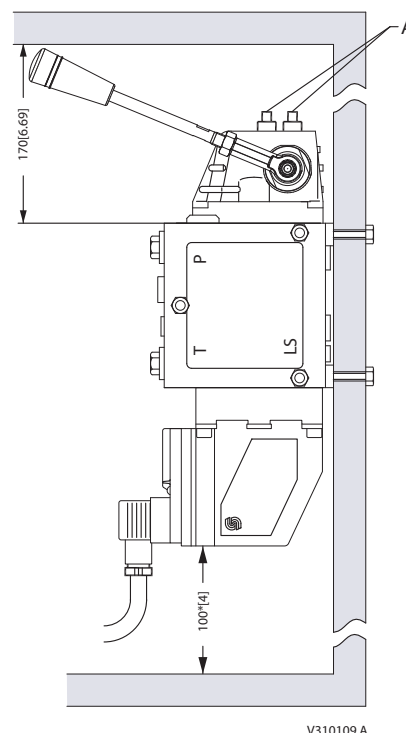
All PVED-CX modules comply with protection class IP66 in accordance with IEC 529. However, in particularly exposed applications protection in the form of screening is recommended.

Schutzart

Alle PVED-CX-Module erfüllen die Schutzart IP66 gemäß IEC 529. Es ist jedoch empfehlenswert, der PVED-CX in besonders ausgesetzten Einsatzbereichen mit einer Abschirmung oder dergleichen zu schützen.

Protection

Tous les modules PVED-CX possèdent le degré de protection IP66 conformément à la IEC 529. Dans les zones particulièrement exposées, il est cependant conseillé de protéger le PVED-CX à l'aide d'un écran ou d'un dispositif similaire.



V310109.A

LED color interpretation

LED	Status	CAN	Vbat2	Local switch /ASIC
Green	Full operational	Enabled	Enabled	Enabled
	Power save	Enabled	Enabled	Disabled
	Hand operational	Enabled	Enabled	Disabled
	Warning	Enabled	Enabled	Disabled
Orange	Fault Critical or Severe	Enabled	Disabled	Disabled
Red	Fault Severe internal handshake	Disabled	Disabled	Disabled

LED blinking interpretation

LED	Freq.	Indicates
Green	20 Hz	Spool is further out than SW-dead-band (EDS 0x6343 & EDS 0x6344) caused by a valid set point. No fault is present.
Orange	10 Hz	Module has found fault on neighbor and has reported error code 0x8309, 0x830A or 0x8308. Neighbor reporting by LED has precedence over self reporting by LED. This is also happening by missing neighbor.
Orange	1 Hz	Initialization of EEPROM after firmware download has ended. If the initialization process was not finalized before power off the process will restart at next boot up and then blink by finalization.

Wiring J0

Description	Color
CAN-L	Yellow
CAN-H	Orange
Ground	Brown
Vbat	Red
Vbat2	Green

Neighbor Guide

Node connector	J1	J2	J3	...	Jn
Neighbor connector	Jn	J1	J2	...	Jn-1
Example					
Node Id	20	21	22	...	26
Neighbor node Id	26	20	21	...	25

