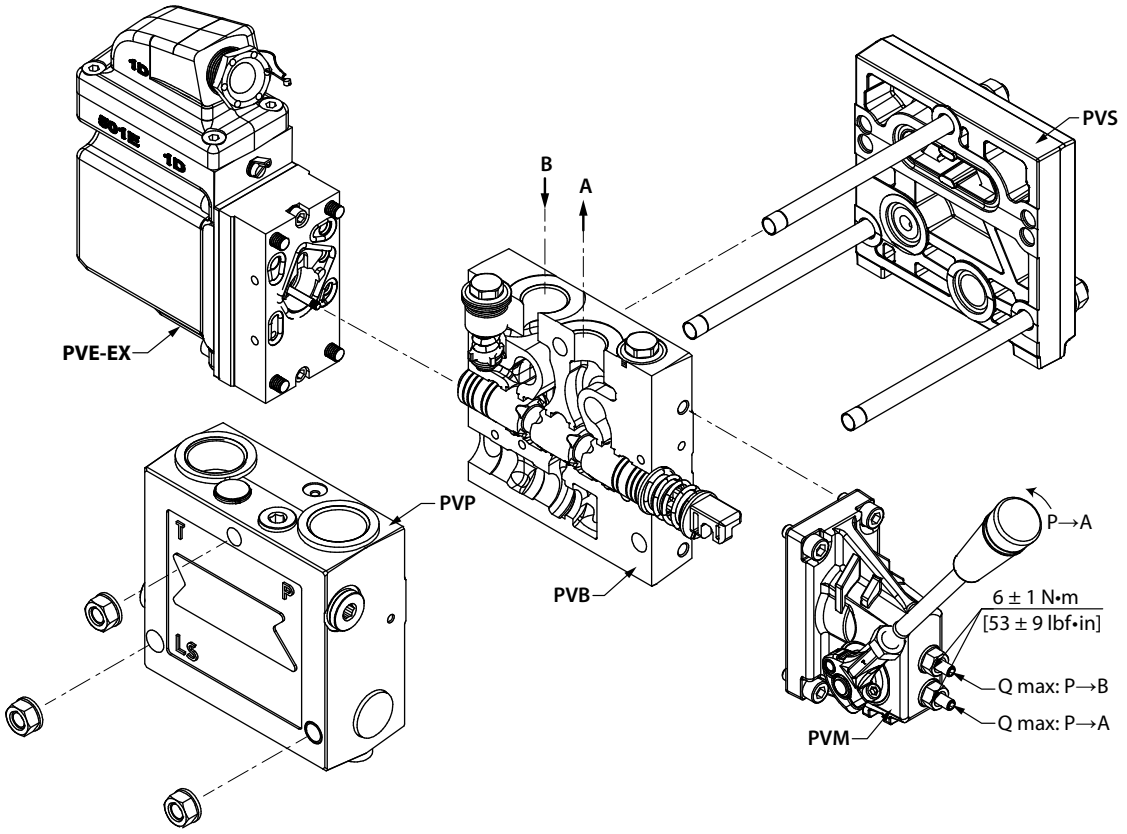
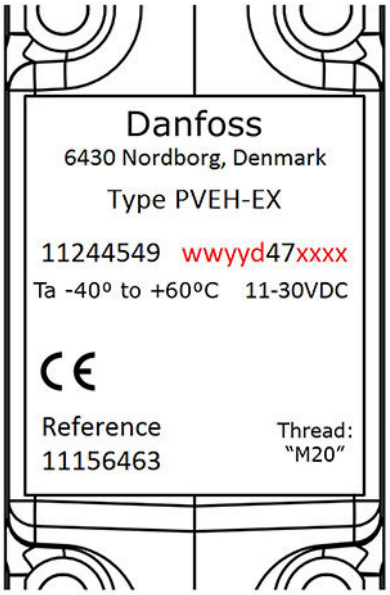
ENGINEERING
**TOMORROW**

**Installation Guide**

# Electrohydraulic Actuators
## PVEH-PAS






1. Protect the LVDT pin.
2. Ensure all O-rings are mounted and properly aligned in the grooves before mounting the PVEH to the PVG valve.
3. The four screws (M6 x 40mm) must be tightened to 9±2Nm[6.64 ± 1.48lbt*ft]

Use screws made from stainless steel grade A4 or stronger (enclosed).

**Warning**

It is important that the PVEH is installed correctly in order to have a safe system and a proper functional application.

**Warning**

In the event of damage to enclosure, plug or cable, the PVEH must be replaced and the failing part must under no circumstance be repaired.

**Warning**

It is not allowed to disassemble fasteners and LVDT assembly as this may affect flame paths.

The PVEH is equipped with a top part that holds the cable gland for cable installation.

1. Cable material must be according to the specification.
2. Remove the shield of an appropriate length to expose the wires. If shield shall be connected to the earthing terminal, make sure to have shield enough to crimp into the cable shoe and attach properly to the chassis. See Internal and External connection (page 9).
3. Strip the wires such that a suitable length of copper is exposed.
4. Insert wires and cable through the gland and grommet.
5. Insert wires into screw terminals and tighten the screws. See Pin layout table at page 8.
6. Pull the cable back to the position where the cable jacket is still going through the grommet.
7. Immerse the terminal compartment and mate the male and female connector. Ensure that the O-ring is properly seated in its groove and that excess wires are not trapped between the two elements.
8. Tighten the screws to the specified torque, 6 ± 1 N•m [4.43 ± 0.74 lbt•ft].
9. Tighten the gland to the specified torque in which the cable is locked correctly (See cable and grommet table at page 6). Then fix the safety wire.

There are two options available for cable glands:

1. Use the supplied built-in cable gland (certified with the product).
2. Use a pre-certified standard cable gland.

**Mounting of supplied built-in cable gland**

The PVEH has a built in cable gland for cable installation.

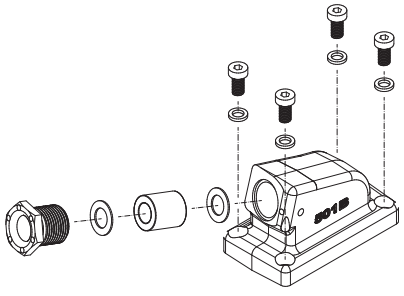
The cable gland and grommet ensures that the internal components are not exposed to the outside.

The PVEH is delivered with 2 grommets for different cable diameters.

The cable gland needs to meet the diameter of the cable and to the PVEH. See cable gland and grommet table below.

| Grommet (Inner diameter) | Tread type | Tread size | Temperature span | Cable diameter span | Tightening torque |
|---|---|---|---|---|---|
| 10.5 mm [0.42 in] | M20 | 1.5 mm [0.06 in] | -40°C to +76°C<br>-40°F to +168.8°F | 9.98 mm to 10.5 mm [0.40 in to 0.42 in] | 20 N |
| 13.5 mm [0.54 in] | | | | 12.7 mm to 13.5 mm [0.51 in to 0.54 in] | |

- The cable gland must be screwed in at least 5 full threads.
- The cable gland has to be tightened to the specificed torque.
- The safety wire (not included) is to be installed between the cable gland and the top gland.



*Supplied built-in cable gland*

**Warning**

All brands and all types of directional control valves, inclusive proportional controlled valves, can fail and cause serious damage. It is therefore important to evaluate all aspects of the application.

The proportional controlled 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 to ensure that all erformance, safety and warning requirements of the application are met.

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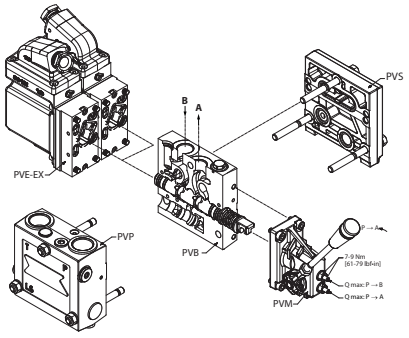
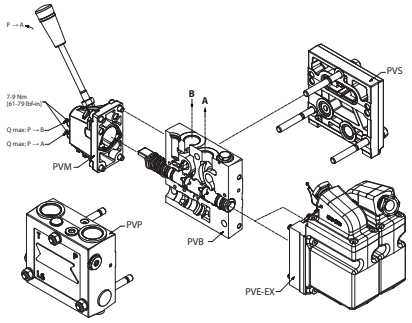
For mounting of the valve group, PVG 32, please consult the technical information literature at *http://www.powersolutions.danfoss.com/*

- PVG 32 literature number: BC152886483664 (old BC00000038 or 520L0344)

The PVEH can be installed either as standard or optional mount.

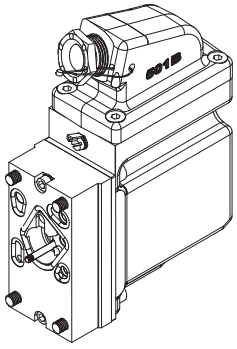



*Standard mount*

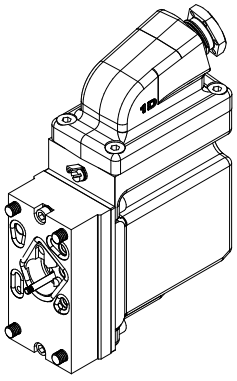



*Optional mount*

The design of the PVEH enables the customer to choose if the cable shall exit towards or away from the PVG group. This can be achieved by turning and lifting the top part as seen below.



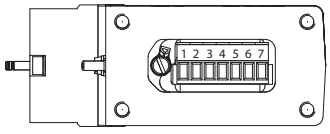
*Cable exit towards PVG*



*Cable exit away from PVG*

| Pole # | Version | Pin #1 | Pin #2 | Pin #3 | Pin #4 | Pin #5 | Pin #6 | Pin #7 |
|---|---|---|---|---|---|---|---|---|
| 7 | PVEH-DI | $U_S$ | $V_{bat}2^*$ | Gnd | Error | DI-A | DI-B | $V_{bat}$ |

* If only one power source is used, $V_{bat}$ and $V_{bat}2$ shall be connected together.



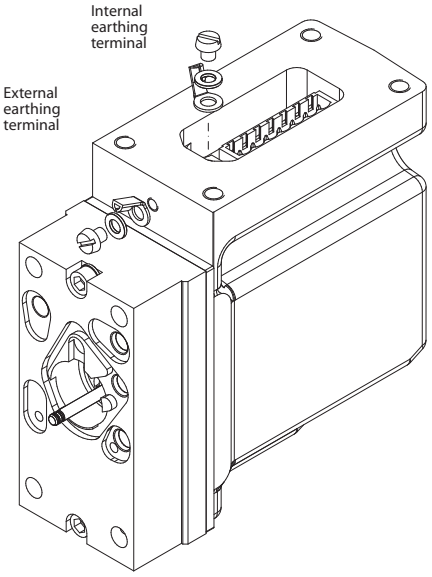

*Pin layout*

| Pin | | Function of the pin |
|---|---|---|
| 1 | $U_S$ | Demand signal |
| 2 | $V_{bat}2$ | Supply voltage to solenoid valves<br>(can be switched off separately) |
| 3 | Gnd | Ground |
| 4 | Error | Error pin (see fault monitoring table) |
| 5 | DI-A | Signal low when spool is stroked to A side |
| 6 | DI-B | Signal low when spool is stroked to B side |
| 7 | $V_{bat}$ | Supply voltage to DI versions |

*Control*

| Function | Signal voltage |
|---|---|
| Neutral | $U_S = 0.5 \times U_{DC}$ |
| Q: P→A | $U_S = (0.5 \rightarrow 0.25) \times U_{DC}$ |
| Q: P→B | $U_S = (0.5 \rightarrow 0.75) \times U_{DC}$ |

The PVEH is pre-calibrated from the factory to be inside the dead band of the proportional valve. The position sensor built into the PVEH cannot be adjusted by user. Any biasing of the position has to be incorporated in the demand signal.
Internal earthing terminal enables a shield to be connector to chassis.




*Earthing connections*

1. Remove the jacket from the shield at a length that allows to mount the cable shoe into the threaded hole next to the connector.
2. Crimp or solder the shield into the cable shoe.
3. Attach the cable shoe to the chassis via the M4 screw and the self-locking ring.
4. Tighten to a torque of 5 ± 2 N•m.

External earthing terminal enables an earth wire to be connected to the PVEH.

1. Crimp o rsolder the earth wire into the cable shoe.
2. Attach the cable shoe to the chassis via the M4 screw and the self-locking ring.
3. Tighten to a torque of 5 ± 2 N•m.