



Hydrovar Considerations for Location and Installation

The Xylem Hydrovar variable speed drive is influenced on simple design features that maintain the sealing of its electrical housing: correct gasket contact, workmanship of electrical wiring, and ingress rating aligned to application location. If any one of these design features become compromised, a Hydrovar product failure may result. Proper installation practices and location are extremely important. To ensure proper protection, Hydrovar installation from a skilled technician is required.

Water damage is one of the more common issues that reduces variable speed product life. Differences in ambient air temperature can cause condensation to form, increasing the risk of equipment failure and short circuits. Condensation can also form as the temperature cools at night or when the equipment is shut down. For the internal components and wiring connections within the Hydrovar or utility panel, moisture and corrosion can affect continuity and the lifespan of the connections. It is essential to select corrosion-resistant materials to maintain continuity where moisture is likely to be present. It is also important to inspect critical electrical connections to the utility panel, such as power and grounding connections, for signs of corrosion.

IP Rating Table

| Solids (1st number) | | Liquids (2nd number) | |
|---------------------|---|----------------------|--|
| 0 | No protection | 0 | No protection |
| 1 | Protected against objects > 50mm (hands) | 1 | Protection against dripping water or condensation |
| 2 | Protected against objects > 12mm (fingers) | 2 | Protection against water spray 15° from vertical |
| 3 | Protected against objects > 2.5mm (tools/wires) | 3 | Protection against water spray 60° from vertical |
| 4 | Protected against objects > 1mm (small tools) | 4 | Protection against water spray from all direction |
| 5 | Protected against dust, limited ingress | 5 | Protection against low pressure jets of water |
| 6 | Totally protected against dust | 6 | Protected against high pressure water jets and heavy seas |
| 7 | N/A | 7 | Protection against the effects of immersion (5 inches to 3.3 feet) |
| 8 | N/A | 8 | Protected against immersion |

A potential point of failure regarding ingress is where the cable connections are made through the Hydrovar gland plate. The cable glands and wiring conduit components must be selected to match or exceed the enclosure rating to properly seal out dirt, dust, and particles, and maintain the Hydrovar's ingress rating.

The Hydrovar's ingress rating is certified to IP55, which provides protection of the following considerations:

- Protection from dirt, dust, and other non-corrosive material. The ingress of dust is not totally prevented, but cannot enter in an amount sufficient to interfere with satisfactory operation of the machine.
- Complete protection from external contact with enclosed equipment.
- Protected against low pressure water jets from any direction. Limited ingress permitted.

The Hydrovar is not designed for outdoor installation applications. For outdoor applications with direct exposure to rain, snow/ice and sunlight, the Hydrovar's IP55 ingress rating is not designed for these environments. Additionally,

locations protected from weather and not subject to saturation with water or other liquids but subject to moderate degrees of moisture are also not recommended.

Examples include partially protected locations under canopies, roofed open porches, and like locations, and interior locations subject to moderate degrees of moisture, such as some basements, some barns, and some cold-storage warehouses. Placing the Hydrovar in a manmade shelter may not be an adequate weatherproofing method.

For areas of high moisture, direct sunlight, and additional cooling needs, the Hydrovar may need to be placed inside a secondary electrical cabinet. The secondary electrical cabinet can provide protection from falling dirt, dust, water, ice, corrosive materials, and sunlight. To ensure maximum product life when mounting the Hydrovar drive inside an electrical cabinet, you must pay attention to the following:

- Physical size & cooling
- Enclosure material
- Enclosure rating (NEMA and/or IP ratings)
- Finish & coating (corrosive environment consideration)

Specific to cooling, when a frequency drive (i.e. Hydrovar) is installed in a panel or a closed metallic box, adequate cooling is required to ensure that the temperature around it will not exceed the maximum temperature rating. Manufacturers often state the cooling airflow required for each model (often indicated by the CFM requirement, or cubic feet per minute). Make sure your enclosure's system CFM is at or above the drive's required CFM.



For guidelines for proper installation instructions, please refer to the product instruction and operation manual provided within the Hydrovar packaging.

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- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

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