

		Document Code: <b>ED-P-02.01-04</b>	Design Specification: <b>HIGH VOLTAGE ELECTRIC INDUCTION MOTORS (IEC 60034)</b>	
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If the naming sequence of windings is U, V, W – coinciding with the supply phase sequence – the direction of rotation (defined in section “Direction of Rotation”) will be to the right (CW). If the direction of rotation is opposite (CCW), the naming sequence of terminals shall be maintained.

The lead-in bushing through the motor frame to the terminal box shall be sealed to prevent the entry of moisture and foreign matter.

If the way of the cables from the stator to the terminal box pass through the pipe of the air cooling, on the route from the stator to the terminal box, shall be installed in rigid steel pipes or similar.

#### 5.10.2. Terminal box if there is differential protection

These boxes shall have the same constructive characteristics that have been indicated in the previous section for terminal boxes.



The differential protection of the motor shall carry out applying the diagram called “self balancing differential”.

These toroidal current transformers shall be installed **in the main terminal box**.

Their secondary windings shall be connected to an auxiliary terminal box independently from the high voltage box.

Other solutions apart from differential protection shall be approved by Repsol.

The whole terminal box and toroidal transformer shall be appropriate for dangerous place indicated in the data sheet of the motor.

#### 5.10.3. Auxiliary boxes

The boxes shall be of steel plate, steel alloy or stainless steel. The covers shall have neoprene joints and shall be screwed on the boxes.

The minimum thickness of the walls and of the cover shall be 2 mm (1/16”), except for the stainless steel boxes that may be 1.5 mm.

Except for stainless steel boxes, they shall have screwed holes and double seal metallic cable glands appropriate to the cable indicated in the data sheet and appropriate to the Ex protection mode of the box.

The degree of protection shall be IP 659.

They shall be installed on the opposite side of the terminal box.

Independent boxes shall be installed for the following services:

- For the heat resistance of the windings, bearings, air, and water.
- For the secondary windings of the differential protection’s current transformers.
- For level instruments, water leakage, etc.

Between the sensors and these boxes intermediate boxes are no allowed.

These services shall be able to group in one or more boxes if there is an appropriate separation between the several services and there is a Repsol approval, it must be justified in the offer by the manufacturer. The space heater’s box shall be always independent.

#### 5.11. Bearings and lubrication



**a)** Motors of more than 750 kW at 3.000 r.p.m., 800kW at 3.600 r.p.m., 1.050 kW at 1.500 r.p.m. and 1.150kW at 1800 r.p.m. shall have sleeve bearings. These shall be preferably self-lubricating, with an oiling ring.

The maximum allowable temperature increment (above the ambient temperature specified in the project documentation) is 40 K measuring the temperature of the antifriction metal. This temperature shall be measured with the motor running at full load and stabilized.

The sleeve bearing material shall support a superior operating temperature of 130°C (266°F).