6"- 8"-10" Rewindable Submersible Motors

INSTALLATION AND OPERATING INSTRUCTIONS

MWCP

Water cooled motors with encapsulated resin filled stator. Coupling dimensions and flange according to NEMA standard.

Pear

FFATURES.

- 5 15 HP / 1 PH. 220-230 V/60 HZ
- 5,5-60 HP / 3 PH. 220-230 V/60 Hz
- · High efficiency provides operation cost savings
- · Motor casing and shaft made of AISI304L stainless steel (Optional AISI316L)
- · High resistance coated cast iron upper and lower bracket (Optional AISI304L / AISI316L)
- Water lubricated Kingsbury type thrust bearings
- Protection IP68
- Sand slinger protection
- Pressure equalizing diaphragm •
- Insulation class F
- Removable lead cable
- · Starting method D.O.L. or star/delta
- Max. voltage fluctuation: ±10%
- Max. water temperature: 95°F (35°C) with at least 0.16 m/s of water flow speed
- Max. motor startings per hour: 20
- Max. immersion depth: 1150 feet (350 m)

MRCP - MRSP

Rewindable submersible motors, asynchronous, two or four pole submersible motor, made combining cast iron and AISI 304 stainless steel or full stainless steel 304 or 316, to get the best durability and resistance. Available up to 75 HP.

Our electrical design provides the best efficiency motor, bringing the best performance out of your submersible pump.

PEARL MOTORS suitable for use with variable frequency drive (30Hz - 60Hz).

FFATURES:

- 6" Rewindable motors up to 50 HP
- 8" Rewindable motors up to 125 HP
- 10" Rewindable motors up to 250 HP
- High efficiency provides operation cost savings
- · Flange with NEMA standards
- · Stainless steel shaft
- · Optional high corrosion resistive materials (AISI 304 - AISI 316 - Duplex - Bronze)
- Max. ambient water temperature 85°F (30° C) (optional up to 150°F (70°C)
- Standard voltage 220/230/380/460V 50/60 Hz (Allowable voltage tolerance \pm %10)
- · Variable operation revolutions by frequency convertor (over 30 Hz)
- Availability to be operated by Soft-Starter
- CW & CCW direction of rotation
- PVC. PP & PE2 + PA winding wire, which provides long service life
- Max. immersion depth 6": 1150 feet (350 m)
- Max. immersion depth 8" & 10": 1640 feet (500 m)



BEFORE MOTOR INSTALLATION. PERFORM THE FOLLOWING PROCEDURES:

- 1. Review instruction manual and follow standard safety procedures.
- 2. Disconnect electrical power supply to motor.
- 3. Place motor in vertical or horizontal position for water fillina.
- 4. Manually verify motor shaft is free to rotate in both directions.
- 5. Check the water level and fill if necessary.



Liquid level MUST be checked before installation! Risk of damage to the motor if instructions are not followed

1. SAFETY INFORMATION

Read this documentation carefully before installation. It contains fundamental instructions for installation, operation and maintenance. The symbols shown below together with the words "DANGER" and "WARNING" indicate a risk of danger if instructions are not followed.

Risk of electric shock if instructions are not followed.



Risk of injury and/or damage to person and/or property if instructions are not followed.

Risk of damage to the motor, pump and/or systems if instructions are not followed.

4. PEARL SUBMERSIBLE MOTORS

4.1 GENERAL INFORMATION

PEARL Submersible Motors are reliable apparatus designed to provide many years of operation without the need for routine maintenance, in case they are installed correctly. We therefore recommend reading this manual carefully and follow the written instructions thoroughly. We decline any responsibility for injury to persons and/or damage to property due to failure to follow our instructions.

This manual is for use in standard applications: please refer to your sales contact for instructions regarding special installations. Please contact technical support or our sales department for further inquiries.

4.2 APPLICATIONS AND SERVICE

PEARL Submersible Motors have been designed to be connect to all types of submersible pumps for use in domestic, industrial and agricultural systems for the lifting of substantially clean water. Please contact our technical support department for information regarding other types of installation.

5. TECHNICAL SPECIFICATIONS

PEARL Submersible Motors are squirrel cage asynchronous, electric rotor and called "wet-end" types, meaning that the winding of the motor is immersed completely under a water based mix, and this acts as the motor's internal liquid coolant.

Motors are protected against dust and against access to dangerous parts with wiring protected against the effects of the submersion. All motors can operate indifferently in both the clockwise and counterclockwise directions.

5.1 OPERATION AND TEMPERATURE

PEARL Submersible Motors can operate continuously to supply nominal power, provided they are powered by nominal voltage and frequency and the external water temperature outside the motor does not exceed 30°C (86°F), according to NEMA standards.

Variations in the power supply voltage must be limited roughly $\pm 10\%$ of the nominal value. The service factor is 1 for 50 Hz motors, and 1.15 for 60 Hz motors.

In applications where the water temperature exceeds 30°C (86°F), it is possible in these cases to use these motors but the power must be downgraded according to a specific correction coefficient; please refer to below table.

| Water Temperature (°F) | THE POWER CAN BE ABSORBED FROM THE MOTOR COMPARED TO ITS NAME PLATE (%) | | | | | |
|------------------------------|---|-----------|--|--|--|--|
| | 6" MOTORS | 8" MOTORS | | | | |
| 95 | 95% | 90% | | | | |
| 104 | 78% | 71% | | | | |
| 113 | 60% | 40% | | | | |

As an example, a standard, 8" 100 HP motor working with an external water temperature of 35° C (95° F), can be used to deliver maximum power of 100 x 0.95 = 95 HP.

Standard version motors can be used with external water temperatures of up to 40° C (104° F) provided they are downgraded correctly. In this calculations water flow speed around the motor considered not less than 0,5 m / sec in 6", 1 m / sec in 8".

Otherwise, motors should be constructed with winding wires that are specific for high temperatures.

2. PREPARATION FOR INSTALLATION

Before the installation, the pump should be checked if it has been damaged during the shipment or not.

The following should be checked before the installation:

- Check if there is any fracture or cut on the pump, motor and power cables and do not start the installation until damaged area is repaired.
- Make sure that insulation resistance is not lower than 20 M Ω (megaohm) by testing it with a 500 V Meger Tester.

The table below shows the condition of motors and power cables according to the insulation resistance data that's measured.

| CONDITION OF THE MOTOR AND POWER CABLES | megahm Value (MΩ) |
|--|----------------------|
| A new motor (which is not in well) or a used motor which can be reinstalled in well | 20.0 |
| A new motor in well | 2.0 |
| A motor in good condition in well | 0.5 - 2.0 |
| Damaged motor (It is not a must to take the pump out of the well, it can continue working) | 0.02 - 0.5 |
| Damaged motor and power cables (The pump has to be taken out of the well, power cables and motor have to be repaired or replaced. The motor can continue working in this condition but it will not work for long time) | 0.01 - 0.02 |
| Broken motor (The pump has to be taken out of the well, power cables have to be repaired or the motor has to be replaced) | 0 - 0.01 |

The table above is prepared for the motors at 77°F. At higher temperatures, insulation resistance will be lower.

3. FILLING THE MOTOR WITH WATER

PEARL Submersible Motors are already filled with water-antifreeze mix. In consequence of potential evaporation while transport and storage, it is necessary to control the water-level inside the motor.

ATTENTION! Before operation control the water level inside the motor, if necessary fill the motor with clean water.

3.1- Position the motor horizontally. Remove the screw (1) of filling hole and the screw (2) of the emptying hole. Pour the clean water into the motor, make sure that no air left inside the motor. Replace the screw (2) of emptying hole. (Fig. 1A)



Fig. 1A



3.2 Position the motor vertically. Complete the missing water from the (1) screw of filling hole. Wait around 2-3 minutes. So there will be no air left into the motor. If there is still some water missing, fill it completely again and close the screw. (Fig. 1B)

4. COOLING THE MOTOR

Most important factor of submersible motors long service life is that the motor has to be cooled well. (Fig. 2) Required flow velocity around the motor is given in the table below for motors being cooled well enough.

If the motor will be installed in an open body of water (i.e pool) or diameter of the well is much bigger than the diameter of the motor, Flow Inducer Sleeve must be used to provide the flow velocities that are given in the table above, around the motor.



| MODEL | MOTOR | RATING | MINIMUM WATER FLOW | | | |
|------------------|-----------|-----------|--------------------|----------|--|--|
| WIDDEL | HP | kW | m / seg | ft / seg | | |
| 6MRCP | 5 - 25 | 4 - 18.5 | 0.2 | 0.65 | | |
| 6MRSP | 30 - 40 | 22 - 30.5 | 0.5 | 1.64 | | |
| 8MRCP | 40 - 75 | 30 - 56 | 0.2 | 0.65 | | |
| 8MRSP | 85 - 125 | 60 - 93 | 0.5 | 1.64 | | |
| 10MRCP 10MRSP | 125 - 250 | 90 - 180 | 0.5 | 1.64 | | |

Required flow inducer sleeve's inside diameter that depends on the flow rate is given below as a diagram. For example, if a pump that has a 15 kW motor will be working at 120 GPM flow rate, minimum inside diameter of the flow inducer sleeve should be selected as 10 inch.





6. INSTALLATION



When the submersible pumps are installed to the well, they are connected to discharge flange with column pipes. For that reason column pipes and the couplings that connect the column pipes to each other are the parts that carry the pump. Extra attention and care is needed when the pipes are connected to each other. For the open body of water applications (i.e. pools), bottom part of the pump should be at least 12" higher than the bottom of the pool or the well and also flow inducer sleeve should be used outside of the motor for cooling it.

PEARL Submersible Pumps can only work safely up to 50 g/m³ amount of sand. If the amount of sand in the water is more than 50 g/m³, bearings of submersible pump will failure in short time because of wearing out. Failures that might be caused by the excessive amount of sand are out of WARRANTY.

If the pump installation will not be done by the PEARL distributors installation crews, people who will do the installation have to be professionals and experienced in this topic.



Handle the motor with appropriate lifting equipment. Any knock or impact can damage it even if there is no sign of external damage.



Check that the motor drive shaft and the pump drive shaft can turn freely.

6.1 CONNECTING THE SUBMERSIBLE MOTOR TO THE PUMP:

Required equipments for the pump installation are listed below.

- · Three-legged table
- 2 pipe clamps that match with the column pipe's diameter
 A hoist that will be able to carry the weight of the pump
- and column pipes that will be lowered to the well
- A steel sling that will be able to carry the weight of the pump and column pipes
- 2 chain pipe wrenches
- Enough amount of the plastic cable clamp to fit the power cables to column pipes (Power cables must be fitted to the column pipe in every 3 m)

In order to do the electrical controls and connect the panel safely, clamp-on ammeter and meger tester are needed. It is very important that electrical works are done by the professionals for the safety during the installation and starting the pump.

7. POWER SUPPLY CABLE

The choice of the power supply cables for the connection of the motor to the control panel is extremely important, as these parts must fulfill three fundamental requirements:

- The cable must be suitable for operation in wet environments and its class of insulation must be above the nominal voltage for the system.
- The capacity of the cable must be in excess of the charge current; this value is equal to the nominal current of the motor for the type with three terminal wires, and is equal to 58% of the nominal current of the motor for the type with six terminals.
- 3. Voltage drops along the power supply line must be contained to within strict limits (max 5%).

7.1 CONNECTION OF POWER CABLES

Connection of the power cable that will be used along the well and until the control panel with the power cable on the motor must be done very carefully and by the professionals only. Unless the insulation after the connection is well done, short circuit might happen when the connection area is in the water. Insulation of each cable should be stripped only as far as necessary to provide room for a stake type connector. Each individual joint should be taped with rubber electrical tape, using two layers by wrapping tightly for eliminating airspaces as much as possible.

Total thickness of tape should be no less than the thickness of the cable insulation in order to prevent the smashing of the cables when the pump is lowered in the well.

8. POWER CABLE SELECTION

Power cable that will be used should be appropriate to work under the water. For power cable selection, you can either use the table below or get in touch with VANSAN to ask for help for this occasion.



Unless the power cable is selected as water-proof and appropriate to be used under the water, the submersible pump is out of warranty.

Selection of power cable depends on the motor's power and the length of cable. Table below shows the maximum cable lengths that can be used depending on the motor power and cable size. Power cable length of the motor is 1×5 m for DOL 2×5 m for Star-Delta.

8.1 CONNECTION OF THE SUBMERSIBLE PUMP TO THE CONTROL PANEL

After the installation of the submersible pump in the well, power cables that are coming out of the pump should be connected to the electrical control panel. This process should be done by only a professional electrician. Electrical control panel should be protected from the water and moisture. The most important thing that should be taken into consideration is that the power cables should not be smash or bended.

Connections to the electrical control panel should be done depending on the schematic instructions that are taped inside the electrical control panel's cover. Liquid level electrodes should be also connected depending on the instructions.

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Total thickness of tape should be no less than the thickness of the cable insulation in order to prevent the smashing of the cables when the pump is lowered in the well.

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Unless the power cable is selected as water-proof and appropriate to be used under the water, the submersible pump is out of warranty.

Selection of power cable depends on the motor's power and the length of cable. Table below shows the maximum cable lengths that can be used depending on the motor power and cable size. Power cable length of the motor is 1×16.4 ft for DOL 2 $\times 16.4$ ft for Star-Delta.



8.1 CONNECTION OF THE SUBMERSIBLE PUMP TO THE CONTROL PANEL

After the installation of the submersible pump in the well, power cables that are coming out of the pump should be connected to the electrical control panel. This process should be done by only a professional electrician. Electrical control panel should be protected from the water and moisture. The most important thing that should be taken into consideration is that the power cables should not be smash or bended.

Connections to the electrical control panel should be done depending on the schematic instructions that are taped inside the electrical control panel's cover. Liquid level electrodes should be also connected depending on the instructions.

Before the connection between electrical control panel and the main system of electricity, it should be checked with a circuit - tester to be sure there is no electricity in the control panel. Before the connection of the electrical control panel is done, power cable's insulation should be controlled by a Meger Tester.



The connection of the wire that exits the motor to the wire that must be brought to the control panel is particularly delicate and must be executed with great care by skilled personnel.

9. WIRING DIAGRAMS

In our motors, a series of three wires exits the motor in addition to a fourth, yellow/green wire for earth connection; these must be connected to the terminals for the controls.

D.O.L. CONNECTION FOR 3 PH MOTORS





STANDARD CONNECTION FOR 1 PH MOTORS



10. LEAD CABLE CONNECTION INSTRUCTIONS FOR 1 PH MOTORS TO CONTROL BOXES





a) Black (Neutral) b) Grey (Main) c) Brown (Auxiliar) d) Yellow-Green (Ground)

11. CHECKING THE DIRECTION OF ROTATION

The direction of rotation of the pump, which is indicated on its plate, is extremely important for the correct operation of the system. When the motor and the cables have been connected, use a crane or hoist to lift the pump and motor assembly and provide a short pulse of electric current. The electric pump tends to take the opposite direction of that of the drive shaft of the motor due to the recoil. Check if the direction of rotation of the drive shaft of the motor is correct; if not, swap over the terminals of the control panel to change it.

12. ADJUSTMENT OF PROTECTION DEVICES

Adjust the overload relay of the appliance to the value of the nominal current of the motor and start it. With an ammeter check the three phases, the amp-draw must be balanced (the maximum acceptable unbalance is 8%) and must be less than the value of the current shown on the label of the motor.

Reduce slowly the calibration of the overload relay until it starts.

Increase the calibration of the relay by 5% and start the motor again. If the relay starts again, it will be necessary to increase calibration by a further 5% or otherwise leave the fixed value.

13. POWER CABLE SELECTION

| MOTOR RATING | 3 | COOPER WIRE SIZE | | | | | | | | | | |
|----------------------|-------|------------------|------|------|------|------|------|------|------|------|------|------|
| VOLTS | H.P. | 14 | 12 | 10 | 8 | 6 | 4 | 2 | 0 | 00 | 000 | 0000 |
| | 1 1/2 | 320 | 510 | 800 | 1260 | | | | | | | |
| | 2 | 250 | 390 | 610 | 960 | 1500 | | | | | | |
| | 3 | 180 | 290 | 450 | 710 | 1110 | 1690 | | | | | |
| | 5 | | | 300 | 470 | 730 | 1110 | 1690 | | | | |
| 200 V 60Hz | 7 1/2 | | | | 340 | 530 | 810 | 1230 | 1690 | | | |
| 01 50Hz | 10 | | | | 250 | 390 | 600 | 920 | 1240 | 1540 | | |
| 50112 | 15 | | | | | 270 | 410 | 630 | 850 | 1060 | 1270 | |
| | 20 | | | | | | 320 | 480 | 650 | 810 | 970 | 1150 |
| | 25 | | | | | | | 390 | 530 | 660 | 790 | 930 |
| | 30 | | | | | | | | 430 | 540 | 640 | 750 |
| | 1 1/2 | 430 | 680 | 1070 | 1680 | | | | | | | |
| | 2 | 320 | 510 | 790 | 1250 | 1940 | | | | | | |
| | 3 | 240 | 380 | 600 | 940 | 1470 | 2240 | | | | | |
| | 5 | | 250 | 390 | 620 | 960 | 1470 | 2230 | | | | |
| 230 V 60Hz | 7 1/2 | | | 290 | 450 | 700 | 1070 | 1630 | 2200 | | | |
| 220 V 50Hz | 10 | | | | 340 | 520 | 800 | 1220 | 1640 | 2050 | | |
| ELO V CONE | 15 | | | | | 360 | 550 | 830 | 1130 | 1410 | 1680 | |
| | 20 | | | | | | 420 | 640 | 860 | 1070 | 1280 | 1510 |
| | 25 | | | | | | 340 | 520 | 700 | 870 | 1040 | 1230 |
| | 30 | | | | | | | 420 | 570 | 710 | 850 | 1000 |
| | 1 1/2 | 1720 | | | | | | | | | | |
| | 2 | 1280 | 2030 | | | | | | | | | |
| | 3 | 960 | 1530 | 2400 | | | | | | | | |
| | 5 | 630 | 1000 | 1570 | 2470 | | | | | | | |
| | 7 1/2 | 460 | 730 | 1150 | 1800 | 2610 | | | | | | |
| 460 V 60Hz | 10 | | 550 | 850 | 1340 | 2090 | 3190 | | | | | |
| AND | 15 | | | 590 | 920 | 1430 | 2190 | 3340 | | | | |
| 360 V 50Hz | 20 | | | | 700 | 1100 | 1670 | 2550 | 3340 | | | |
| (Divide lengths by | 25 | | | | 570 | 890 | 1360 | 2070 | 2600 | 3500 | | |
| 1.4 for 360 V 60 Hz) | 30 | | | | | 730 | 1110 | 1690 | 2280 | 2650 | 3400 | |
| | 40 | | | | | | 850 | 1300 | 1750 | 2190 | 2610 | 3070 |
| | 50 | | | | | | 680 | 1040 | 1400 | 1750 | 2090 | 2450 |
| | 60 | | | | | | | 870 | 1180 | 1470 | 1760 | 2070 |
| | 75 | | | | | | | | 950 | 1190 | 1420 | 1670 |
| | 100 | | | | | | | | | 890 | 1060 | 1240 |

13. ELECTRICAL DATA 60 HZ

6MWCP ELECTRICAL DATA

| TYPE | Р | N | axial Load | VOLT. | nN | IN | IN - SF | IA | Efficie | ency (% | load) | Cos 0 (% load) | | | TN | TA | | | | | | | |
|-----------|-------------|-----------|---------------|-------|-------|-------|---------|---------|---------|---------|-------|----------------|--------|------|-------|-------|------|------|-------|------|------|------|------|
| | [HP] | [kW] | [kN] | ۷ | rpm | A | Α | А | 50 | 75 | 100 | 50 | 75 | 100 | Nm | Nm | | | | | | | |
| | | | | 460 | 3470 | 7.8 | 8.6 | 32.0 | 71.1 | 75.9 | 77.7 | 0.73 | 0.79 | 0.83 | 10.9 | 18.1 | | | | | | | |
| 6MWCP 50 | CP 50 5.0 4 | 5.0 4 | 20 | 380 | 3465 | 9.4 | 10.4 | 38.7 | 71.1 | 75.9 | 77.7 | 0.73 | 0.79 | 0.83 | 11.0 | 18.4 | | | | | | | |
| | | | | 220 | 3455 | 16.3 | 17.9 | 66.9 | 70.0 | 75.0 | 77.0 | 0.73 | 0.79 | 0.83 | 11.2 | 19.0 | | | | | | | |
| | | | | 460 | 3430 | 9.8 | 10.8 | 52.5 | 73.5 | 78.6 | 80.0 | 0.79 | 0.83 | 0.88 | 15.2 | 29.2 | | | | | | | |
| 6MWCP 75 | 7.5 | 5.5 | 20 | 380 | 3425 | 11.9 | 13.1 | 63.6 | 73.5 | 78.6 | 80.0 | 0.79 | 0.83 | 0.88 | 15.3 | 29.5 | | | | | | | |
| | | | | 220 | 3415 | 20.5 | 22.5 | 109.8 | 72.5 | 77.5 | 79.0 | 0.79 | 0.83 | 0.88 | 15.5 | 30.1 | | | | | | | |
| | | | | 460 | 3460 | 14.2 | 15.8 | 75.0 | 69.6 | 75.6 | 78.1 | 0.74 | 0.81 | 0.85 | 20.5 | 44.8 | | | | | | | |
| 6MWCP 100 | 10 | 7.5 | 20 | 380 | 3455 | 17.2 | 20.0 | 90.8 | 69.6 | 75.6 | 78.1 | 0.74 | 0.81 | 0.85 | 20.6 | 45.1 | | | | | | | |
| | | | | 220 | 3445 | 29.7 | 32.7 | 156.8 | 69.0 | 74.7 | 77.1 | 0.79 | 0.83 | 0.88 | 20.8 | 45.7 | | | | | | | |
| | | | | 460 | 3490 | 18.0 | 22.2 | 97.2 | 72.6 | 78.1 | 85.5 | 0.75 | 0.81 | 0.90 | 30.1 | 71.0 | | | | | | | |
| 6MWCP 150 | 15 11 | 150 15 11 | 5 11 | 11 | 15 11 | 15 11 | 20 | 380 | 3485 | 21.8 | 25.1 | 117.7 | 72.6 | 78.1 | 85.5 | 0.75 | 0.81 | 0.90 | 30.2 | 71.3 | | | |
| | | | | 220 | 3475 | 37.6 | 29.1 | 203.2 | 71.6 | 77.2 | 84.5 | 0.75 | 0.81 | 0.90 | 30.4 | 71.9 | | | | | | | |
| | | | | 460 | 3485 | 26.4 | 30.4 | 195.0 | 72.3 | 77.9 | 80.1 | 0.77 | 0.81 | 0.86 | 41.1 | 98.0 | | | | | | | |
| 6MWCP 200 | 20 | 15 | 20 | 380 | 3480 | 32.0 | 36.8 | 236.1 | 72.3 | 77.9 | 80.1 | 0.77 | 0.81 | 0.86 | 41.2 | 98.3 | | | | | | | |
| | | | | 220 | 3470 | 55.2 | 39.4 | 407.7 | 71.5 | 77.0 | 79.2 | 0.77 | 0.81 | 0.86 | 41.4 | 98.9 | | | | | | | |
| | | 5 18.5 | 18.5 | 18.5 | 18.5 | | 460 | 3490 | 34.1 | 39.2 | 265.0 | 71.8 | 77.5 | 80.0 | 0.74 | 0.80 | 0.85 | 50.5 | 138.0 | | | | |
| 6MWCP 250 | 25 | | | | | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 8.5 20 | 20 | 380 | 3485 | 41.3 | 47.5 | 320.8 | 71.8 | 77.5 | 80.0 | 0.74 |
| | | | | 220 | 3475 | 71.3 | 47.7 | 554.1 | 70.9 | 76.5 | 79.0 | 0.74 | 0.80 | 0.85 | 50.8 | 138.9 | | | | | | | |
| | | | | 460 | 3485 | 39.5 | 43.5 | 300.0 | 74.4 | 79.3 | 81.1 | 0.75 | 0.80 | 0.86 | 60.2 | 157.0 | | | | | | | |
| 6MWCP 300 | 30 | 22 | 20 | 380 | 3480 | 47.8 | 55.0 | 363.2 | 74.4 | 79.3 | 81.1 | 0.75 | 0.80 | 0.86 | 60.3 | 157.3 | | | | | | | |
| | | | | 220 | 3470 | 82.6 | 56.8 | 627.3 | 73.4 | 79.3 | 80.1 | 0.75 | 0.80 | 0.86 | 60.5 | 157.9 | | | | | | | |
| | | | | 460 | 3490 | 55.6 | 58.8 | 444.0 | 73.1 | 78.4 | 80.7 | 0.74 | 0.80 | 0.84 | 81.6 | 240.0 | | | | | | | |
| 6MWCP 400 | 40 | 30 | 26.5 | 380 | 3485 | 67.3 | 77.4 | 537.5 | 73.1 | 78.4 | 80.7 | 0.74 | 0.80 | 0.84 | 81.7 | 240.3 | | | | | | | |
| | | | | 220 | 3475 | 116.3 | - | 928.4 | 72.2 | 77.5 | 79.8 | 0.74 | 0.80 | 0.84 | 81.9 | 240.9 | | | | | | | |
| | | | | 460 | 3480 | 69.0 | 79.3 | 516.0 | 73.4 | 78.6 | 80.8 | 0.70 | 0.78 | 0.83 | 100.7 | 249.0 | | | | | | | |
| 6MWCP 500 | 50 | 37 | 26.5 | 380 | 3475 | 83.5 | 96.0 | 624.6 | 73.4 | 78.6 | 80.8 | 0.70 | 0.78 | 0.83 | 100.8 | 249.3 | | | | | | | |
| | | | | 220 | 3465 | 144.3 | - | 1,078.9 | 73.5 | 77.7 | 79.9 | 0.70 | 0.78 | 0.83 | 101.0 | 249.9 | | | | | | | |
| | | | | 460 | 3480 | 81.0 | 88.5 | 559.0 | 75.4 | 80.1 | 81.9 | 0.73 | 0.80 | 0.85 | 123.5 | 286.0 | | | | | | | |
| 6MWCP 600 | 60 | 45 | 26.5 | 380 | 3475 | 98.1 | 112.8 | 676.7 | 75.4 | 80.1 | 81.9 | 0.73 | 0.80 | 0.85 | 123.6 | 286.3 | | | | | | | |
| | | | | 220 | 3465 | 169.4 | - | 1,168.8 | 74.2 | 70.1 | 81.0 | 0.73 | 0.80 | 0.85 | 123.8 | 286.9 | | | | | | | |

| P2: | Rated output | P1: |
|----------|------------------------------------|--------------|
| V: | Rated voltage | N: |
| SF: | Service factor | Cos ϕ : |
| In: | Rated current | ŋ: |
| In (SF): | Service factor current | C: |
| ls/In: | Locked rotor current-Rated current | Ø: |
| Cs/Cn: | Locked rotor Torque-Rated Torque | LC: |

Power consumption

RPM Power factor

Efficiency Capacitor

Cable section

Cable length

6MRCP ELECTRICAL DATA

| MODEL | P | 'N | axial Load | VOLT. | nΝ | IN | IN (SF) | IA | E | FFICIENC (% load) | Y | | Cos (% load) | |
|-----------|--------|--------|---------------|-------|------|------|---------|------|----|----------------------|-----|----|-----------------|-----|
| | [HP] | [kW] | [kN] | V | rpm | A | Α | А | 50 | 75 | 100 | 50 | 75 | 100 |
| 6MRCP 50 | 5 | 3.7 | 20 | 230 | 3350 | 16.8 | 19.3 | 87.8 | 69 | 70 | 70 | 65 | 74 | 85 |
| 6MRCP 50 | 5 | 3.7 | 20 | 460 | 3350 | 8.4 | 9.7 | 44 | 69 | 70 | 70 | 65 | 74 | 85 |
| 6MRCP 75 | 7.5 | 5.5 | 20 | 230 | 3360 | 22.6 | 26 | 117 | 71 | 72 | 72 | 65 | 74 | 85 |
| 6MRCP 75 | 7.5 | 5.5 | 20 | 460 | 3360 | 11.3 | 13 | 59 | 71 | 72 | 72 | 65 | 74 | 85 |
| 6MRCP 100 | 10 | 7.5 | 20 | 230 | 3380 | 28.4 | 32.7 | 147 | 77 | 78 | 78 | 65 | 74 | 85 |
| 6MRCP 100 | 10 | 7.5 | 20 | 460 | 3380 | 14.2 | 16.3 | 73 | 77 | 78 | 78 | 65 | 74 | 85 |
| 6MRCP 150 | 15 | 11 | 20 | 230 | 3400 | 39.2 | 45.1 | 199 | 80 | 81 | 81 | 67 | 76 | 87 |
| 6MRCP 150 | 15 | 11 | 20 | 460 | 3400 | 19.6 | 22.5 | 101 | 80 | 81 | 81 | 67 | 76 | 87 |
| 6MRCP 200 | 20 | 15 | 20 | 230 | 3440 | 54.6 | 62.8 | 279 | 79 | 82 | 80 | 66 | 75 | 86 |
| 6MRCP 200 | 20 | 15 | 20 | 460 | 3440 | 27.3 | 31.4 | 141 | 79 | 82 | 80 | 66 | 75 | 86 |
| 6MRCP 250 | 25 | 18.5 | 20 | 230 | 3450 | 69 | 79.4 | 346 | 79 | 81 | 80 | 64 | 73 | 85 |
| 6MRCP 250 | 25 | 18.5 | 20 | 460 | 3450 | 34.5 | 39.7 | 178 | 79 | 81 | 80 | 64 | 73 | 85 |
| 6MRCP 300 | 30 | 22 | 20.5 | 230 | 3460 | 80 | 92 | 392 | 80 | 81 | 81 | 65 | 74 | 85 |
| 6MRCP 300 | 30 | 22 | 20.5 | 460 | 3460 | 40 | 46 | 207 | 80 | 81 | 81 | 65 | 74 | 85 |
| 6MRCP 400 | 40 | 30 | 26.5 | 460 | 3480 | 53.4 | 61.4 | 272 | 81 | 82 | 82 | 66 | 75 | 86 |
| 6MRCP 500 | 50 | 37 | 26.5 | 460 | 3490 | 66.6 | 76.6 | 341 | 80 | 82 | 81 | 66 | 75 | 86 |

6MRSP ELECTRICAL DATA

| MODEL | Р | 'N | axial Load | VOLT. | nΝ | IN | IN (SF) | IA | E | EFFICIENC (% load) | Y | | Cos (% load) | |
|-----------|--------|--------|---------------|-------|------|------|---------|------|----|-----------------------|-----|----|-----------------|-----|
| | [HP] | [kW] | [kN] | V | rpm | А | А | А | 50 | 75 | 100 | 50 | 75 | 100 |
| 6MRSP 50 | 5 | 3.7 | 20 | 230 | 3350 | 16.8 | 19.3 | 87.8 | 69 | 70 | 70 | 65 | 74 | 85 |
| 6MRSP 50 | 5 | 3.7 | 20 | 460 | 3350 | 8.4 | 9.7 | 44 | 69 | 70 | 70 | 65 | 74 | 85 |
| 6MRSP 75 | 7.5 | 5.5 | 20 | 230 | 3360 | 22.6 | 26 | 117 | 71 | 72 | 72 | 65 | 74 | 85 |
| 6MRSP 75 | 7.5 | 5.5 | 20 | 460 | 3360 | 11.3 | 13 | 59 | 71 | 72 | 72 | 65 | 74 | 85 |
| 6MRSP 100 | 10 | 7.5 | 20 | 230 | 3380 | 28.4 | 32.7 | 147 | 77 | 78 | 78 | 65 | 74 | 85 |
| 6MRSP 100 | 10 | 7.5 | 20 | 460 | 3380 | 14.2 | 16.3 | 73 | 77 | 78 | 78 | 65 | 74 | 85 |
| 6MRSP 150 | 15 | 11 | 20 | 230 | 3400 | 39.2 | 45.1 | 199 | 80 | 81 | 81 | 67 | 76 | 87 |
| 6MRSP 150 | 15 | 11 | 20 | 460 | 3400 | 19.6 | 22.5 | 101 | 80 | 81 | 81 | 67 | 76 | 87 |
| 6MRSP 200 | 20 | 15 | 20 | 230 | 3440 | 54.6 | 62.8 | 279 | 79 | 82 | 80 | 66 | 75 | 86 |
| 6MRSP 200 | 20 | 15 | 20 | 460 | 3440 | 27.3 | 31.4 | 141 | 79 | 82 | 80 | 66 | 75 | 86 |
| 6MRSP 250 | 25 | 18.5 | 20 | 230 | 3450 | 69 | 79.4 | 346 | 79 | 81 | 80 | 64 | 73 | 85 |
| 6MRSP 250 | 25 | 18.5 | 20 | 460 | 3450 | 34.5 | 39.7 | 178 | 79 | 81 | 80 | 64 | 73 | 85 |
| 6MRSP 300 | 30 | 22 | 20.5 | 230 | 3460 | 80 | 92 | 392 | 80 | 81 | 81 | 65 | 74 | 85 |
| 6MRSP 300 | 30 | 22 | 20.5 | 460 | 3460 | 40 | 46 | 207 | 80 | 81 | 81 | 65 | 74 | 85 |
| 6MRSP 400 | 40 | 30 | 26.5 | 460 | 3480 | 53.4 | 61.4 | 272 | 81 | 82 | 82 | 66 | 75 | 86 |
| 6MRSP 500 | 50 | 37 | 26.5 | 460 | 3490 | 66.6 | 76.6 | 341 | 80 | 82 | 81 | 66 | 75 | 86 |

| CAPACITOR [µF] | | | | | | | |
|----------------|---------|-------|--|--|--|--|--|
| POWER | C START | C RUN | | | | | |
| 7,5 Hp | 145 | 130 | | | | | |
| 10 Hp | 280 | 140 | | | | | |
| 15 Hp | 300 | 200 | | | | | |

- P2: Rated output V: Rated voltage

v. SF: Service Tactor In: Rated current

In (SF): Service factor current Is/In: Locked rotor current-Rated current Cs/Cn: Locked rotor Torque-Rated Torque

| | LUCKEU | 10101 | CULLEUIG | maleu |
|------|--------|-------|----------|---------|
| (Cn· | Lockod | rotor | Torque | Dated ' |

| Loonou | | ounone | |
|---------|-------|---------|------|
| I ocked | rotor | Torque- | Rate |

| LC: |
|-----|
| |

P1:

N:

 $\cos \phi$: Power factor ŋ: C: Efficiency Capacitor Ø: Cable section Cable length

RPM

Power consumption

8MRCP ELECTRICAL DATA

| MODEL | P | 'N | axial Load | VOLT. | nN | IN | IN (SF) | IA | Efficiency (% load) | | y (% load) Cos (% load) | | | d) |
|-----------|--------|--------|---------------|-------|------|-------|---------|-----|---------------------|----|-------------------------|----|----|-----|
| | [HP] | [kW] | [kN] | V | rpm | A | A | А | 50 | 75 | 100 | 50 | 75 | 100 |
| 8MRCP400 | 40 | 30 | 45 | 460 | 3450 | 51.0 | 58.7 | 258 | 83 | 83 | 82 | 82 | 86 | 90 |
| 8MRCP500 | 50 | 37 | 45 | 460 | 3460 | 61.4 | 70.6 | 308 | 85 | 85 | 84 | 82 | 86 | 90 |
| 8MRCP600 | 60 | 45 | 45 | 460 | 3460 | 74.8 | 86 | 382 | 85 | 85 | 84 | 82 | 86 | 90 |
| 8MRCP750 | 75 | 55 | 45 | 460 | 3450 | 90.2 | 103.7 | 458 | 85 | 85 | 84 | 83 | 87 | 91 |
| 8MRCP1000 | 100 | 75 | 45 | 460 | 3450 | 123.1 | 141.6 | 625 | 85 | 85 | 84 | 82 | 86 | 91 |
| 8MRCP1250 | 125 | 92 | 55 | 460 | 3430 | 152.8 | 175.7 | 770 | 85 | 85 | 84 | 82 | 86 | 90 |

8MRSP ELECTRICAL DATA

| MODEL | P | 'N | axial Load | VOLT. | nΝ | IN | IN (SF) | IA | Effic | iency (% | oad) | С | os (% load | d) |
|-----------|--------|------|---------------|-------|------|-------|---------|-----|-------|----------|------|----|------------|-----|
| | [HP] | [kW] | [kN] | ۷ | rpm | A | А | А | 50 | 75 | 100 | 50 | 75 | 100 |
| 8MRSP400 | 40 | 30 | 45 | 460 | 3450 | 51.0 | 58.7 | 258 | 83 | 83 | 82 | 82 | 86 | 90 |
| 8MRSP500 | 50 | 37 | 45 | 460 | 3460 | 61.4 | 70.6 | 308 | 85 | 85 | 84 | 82 | 86 | 90 |
| 8MRSP600 | 60 | 45 | 45 | 460 | 3460 | 74.8 | 86 | 382 | 85 | 85 | 84 | 82 | 86 | 90 |
| 8MRSP750 | 75 | 55 | 45 | 460 | 3450 | 90.2 | 103.7 | 458 | 85 | 85 | 84 | 83 | 87 | 91 |
| 8MRSP1000 | 100 | 75 | 45 | 460 | 3450 | 123.1 | 141.6 | 625 | 85 | 85 | 84 | 82 | 86 | 91 |
| 8MRSP1250 | 125 | 92 | 55 | 460 | 3430 | 152.8 | 175.7 | 770 | 85 | 85 | 84 | 82 | 86 | 90 |

10MRCP ELECTRICAL DATA

| MODEL | | N | axial Load | VOLT. | nN | IN | IN (SF) | IA | Efficiency (% load) | | | Cos (% load) | | |
|-------------|--------|------|---------------|-------|------|-------|---------|------|------------------------|----|-----|-----------------|----|-----|
| | [HP] | [kW] | [kN] | V | rpm | A | А | А | 50 | 75 | 100 | 50 | 75 | 100 |
| 10MRCP 1250 | 125 | 92 | 75 | 460 | 3500 | 149.4 | 171.8 | 748 | 84 | 84 | 84 | 87 | 90 | 92 |
| 10MRCP 1500 | 150 | 110 | 75 | 460 | 3500 | 180.5 | 207.6 | 910 | 84 | 85 | 84 | 86 | 89 | 91 |
| 10MRCP 1750 | 175 | 129 | 75 | 460 | 3510 | 207.0 | 238.1 | 1050 | 85 | 86 | 85 | 87 | 90 | 92 |
| 10MRCP 2000 | 200 | 147 | 75 | 460 | 3500 | 236.0 | 271.4 | 1197 | 85 | 85 | 85 | 87 | 90 | 92 |
| 10MRCP 2250 | 225 | 166 | 75 | 460 | 3490 | 266.2 | 306.13 | 1347 | 85 | 85 | 85 | 87 | 90 | 92 |
| 10MRCP 2500 | 250 | 185 | 75 | 460 | 3490 | 297.0 | 306.13 | 1502 | 85 | 85 | 85 | 87 | 90 | 92 |

10MRSP ELECTRICAL DATA

| MODEL | Р | 'N | axial Load | VOLT. | T. nN IN IN (SF) IA Efficiency (% load) (% | | | Efficiency (% load) | | Cos (% load) | | | | |
|-------------|--------|--------|---------------|-------|--|-------|--------|------------------------|----|-----------------|-----|----|----|-----|
| | [HP] | [kW] | [kN] | V | rpm | A | А | А | 50 | 75 | 100 | 50 | 75 | 100 |
| 10MRSP 1250 | 125 | 92 | 75 | 460 | 3500 | 149.4 | 171.8 | 748 | 84 | 84 | 84 | 87 | 90 | 92 |
| 10MRSP 1500 | 150 | 110 | 75 | 460 | 3500 | 180.5 | 207.6 | 910 | 84 | 85 | 84 | 86 | 89 | 91 |
| 10MRSP 1750 | 175 | 129 | 75 | 460 | 3510 | 207.0 | 238.1 | 1050 | 85 | 86 | 85 | 87 | 90 | 92 |
| 10MRSP 2000 | 200 | 147 | 75 | 460 | 3500 | 236.0 | 271.4 | 1197 | 85 | 85 | 85 | 87 | 90 | 92 |
| 10MRSP 2250 | 225 | 166 | 75 | 460 | 3490 | 266.2 | 306.13 | 1347 | 85 | 85 | 85 | 87 | 90 | 92 |
| 10MRSP 2500 | 250 | 185 | 75 | 460 | 3490 | 297.0 | 306.13 | 1502 | 85 | 85 | 85 | 87 | 90 | 92 |

14. DIMENSIONS



6MWCP DIMENSIONS

| MODEL | Р | 2 | l | - | WEIGHT | | |
|-----------|--------|--------|--------|---------|--------|---------|--|
| WUDEL | [HP] | [kW] | [mm] | [plg] | [Kg] | [lbs] | |
| 6MWCP 50 | 5 | 3.7 | 650 | 25.6 | 41 | 90.6 | |
| 6MWCP 75 | 7.5 | 5.5 | 675 | 26.6 | 43 | 95 | |
| 6MWCP 100 | 10 | 7.5 | 730 | 28.7 | 48 | 106 | |
| 6MWCP 150 | 15 | 11 | 790 | 31.1 | 55 | 121.6 | |
| 6MWCP 200 | 20 | 15 | 862 | 33.9 | 61 | 134.8 | |
| 6MWCP 250 | 25 | 18.5 | 922 | 36.3 | 68 | 150.3 | |
| 6MWCP 300 | 30 | 22 | 962 | 37.9 | 74 | 163.6 | |
| 6MWCP 400 | 40 | 30 | 1107 | 43.6 | 88 | 194.5 | |
| 6MWCP 500 | 50 | 37 | 1127 | 44.4 | 137 | 302.8 | |
| 6MWCP 600 | 60 | 45 | 1157 | 45.6 | 150 | 331.5 | |

6MRCP DIMENSIONS

| MODELO | P | 2 | l | _ | PESO | | |
|-----------|--------|--------|--------|---------|--------|---------|--|
| WIUDELU | [HP] | [kW] | [mm] | [plg] | [Kg] | [lbs] | |
| 6MRCP 50 | 5.5 | 4 | 649 | 25.6 | 40 | 88.4 | |
| 6MRCP 75 | 7.5 | 5.5 | 678 | 26.7 | 43.5 | 96.1 | |
| 6MRCP 100 | 10 | 7.5 | 758 | 29.8 | 50 | 110.5 | |
| 6MRCP 150 | 15 | 11 | 851 | 33.5 | 60 | 132.6 | |
| 6MRCP 200 | 20 | 15 | 973 | 38.3 | 72 | 159.1 | |
| 6MRCP 250 | 25 | 18.5 | 1006 | 39.6 | 76 | 168 | |
| 6MRCP 300 | 30 | 22 | 1106 | 43.5 | 87 | 192.3 | |
| 6MRCP 400 | 40 | 30 | 1247 | 49.1 | 103 | 227.6 | |
| 6MRCP 500 | 50 | 37 | 1347 | 53 | 110 | 243.1 | |



| MODELO | Р | 2 | l | _ | PESO | | |
|-----------|--------|--------|--------|---------|--------|---------|--|
| WIODELU | [HP] | [kW] | [mm] | [plg] | [Kg] | [lbs] | |
| 6MRSP 50 | 5.5 | 4 | 594 | 23.4 | 38 | 83.9 | |
| 6MRSP 75 | 7.5 | 5.5 | 623 | 24.5 | 42 | 92.8 | |
| 6MRSP 100 | 10 | 7.5 | 703 | 27.7 | 48 | 106.1 | |
| 6MRSP 150 | 15 | 11 | 796 | 31.3 | 58 | 128.2 | |
| 6MRSP 200 | 20 | 15 | 918 | 36.14 | 70 | 154.7 | |
| 6MRSP 250 | 25 | 18.5 | 951 | 37.4 | 74 | 163.5 | |
| 6MRSP 300 | 30 | 22 | 1051 | 41.4 | 85 | 187.5 | |
| 6MRSP 400 | 40 | 30 | 1196 | 47 | 101 | 223.2 | |
| 6MRSP 500 | 50 | 37 | 1296 | 50.8 | 108 | 238.6 | |

Otras opciones:

Conductores de motor con diferentes longitudes Diferentes voltajes de suministro



14. DIMENSIONS



8MRCP DIMENSIONS

| MODEL | Р | 2 | l | - | WEIGHT | | |
|-----------|--------|--------|--------|---------|--------|---------|--|
| WUDEL | [HP] | [kW] | [mm] | [plg] | [Kg] | [lbs] | |
| 8MRCP400 | 40 | 30 | 1056 | 41.6 | 129 | 284 | |
| 8MRCP500 | 50 | 37 | 1116 | 43.9 | 138 | 304.9 | |
| 8MRCP600 | 60 | 45 | 1201 | 47.3 | 152 | 335.9 | |
| 8MRCP750 | 75 | 55 | 1286 | 50.6 | 170 | 375.7 | |
| 8MRCP1000 | 100 | 75 | 1391 | 54.7 | 195 | 430.9 | |
| 8MRCP1250 | 125 | 92 | 1536 | 60.5 | 212 | 468.5 | |

8MRSP DIMENSIONS

| MODEL | Р | 2 | l | - | WEIGHT | | |
|-----------|--------|--------|--------|---------|--------|---------|--|
| WIUDEL | [HP] | [kW] | [mm] | [plg] | [Kg] | [lbs] | |
| 8MRSP400 | 40 | 30 | 948 | 37.3 | 125 | 276.3 | |
| 8MRSP500 | 50 | 37 | 1008 | 39.7 | 134 | 296.1 | |
| 8MRSP600 | 60 | 45 | 1093 | 43 | 148 | 327 | |
| 8MRSP750 | 75 | 55 | 1178 | 46.4 | 166 | 366.9 | |
| 8MRSP1000 | 100 | 75 | 1283 | 50.5 | 191 | 422.1 | |
| 8MRSP1250 | 125 | 92 | 1428 | 56.2 | 208 | 459.6 | |

Other Options: Motor Leads with different lengths Different supply voltages

10MRCP - 10MRSP DIMENSIONS

| | Р | 2 | l | - | WEIGHT | | |
|----------------------------|--------|--------|--------|---------|--------|---------|--|
| MODEL | [HP] | [kW] | [mm] | [plg] | [Kg] | [lbs] | |
| 10MRCP 1250 10MRSP 1250 | 125 | 92 | 1430 | 56.29 | 284 | 626 | |
| 10MRCP 1500 10MRSP 1500 | 150 | 110 | 1510 | 59.44 | 311 | 686 | |
| 10MRCP 1750 10MRSP 1750 | 175 | 129 | 1610 | 63.38 | 338 | 745 | |
| 10MRCP 2000 10MRSP 2000 | 200 | 147 | 1740 | 68.50 | 370 | 816 | |
| 10MRCP 2250 10MRSP 2250 | 225 | 166 | 1820 | 71.65 | 400 | 882 | |
| 10MRCP 2500 10MRSP 2500 | 250 | 185 | 1820 | 71.65 | 405 | 893 | |



6" - 8" -10" SUBMERSIBLE MOTORS

| No | PARTS | MATERIAL |
|-----|-----------------------------|----------------------|
| 1 | Stator | - |
| 1.1 | Winding wire | Copper |
| 1.2 | Stator package | M350 M350 |
| 1.3 | Stator shell | AISI 304 |
| 2 | Rotor | - |
| 2.1 | Shaft sleeve | Coated CrNi |
| 2.2 | Balance ring | St 37 |
| 2.3 | Copper ring | Cu |
| 3 | Radial bearing | Carbon |
| 4 | Upper bearing body | GG20-22 |
| 5 | Bushing | Bronze |
| 6 | Slinger (sand guard) | NBR_EPDM |
| 7 | Hexagon socket cap screws | Stainless Steel |
| 8 | Copper ring | Cu |
| 9 | Cover seal | AISI 420 |
| 10 | Mechanical seal | Ceramic Carbon |
| 11 | Axial thrust bearing key | AISI 420 |
| 12 | Axial thrust bearing | Carbon With Antimony |
| 13 | Retaining ring | St 37 |
| 14 | Tie rod | Stainless Steel |
| 15 | Lower bearing body | GG20-22 |
| 16 | Thrust bearing support | GG20-22 |
| 17 | Ball holder | St 37 (Coated Cr+3) |
| 18 | Thrust bearing ball | Stainless Steel |
| 19 | Tilting pads | AISI 420 |
| 20 | 0-ring | NBR 70 |
| 21 | Thrust bearing body | GG20 |
| 22 | Copper ring | Cu |
| 23 | Nut | Stainless Steel |
| 24 | Screw (thrust bearing base) | Stainless Steel |
| 25 | Membrane | NBR-EPDM |
| 26 | Membrane body | GG22 |
| 27 | Hexagon socket cap screws | Stainless Steel |
| 28 | Check-valve | Bronze |
| 29 | 0-ring | NBR 70 |
| 30 | Cable seal | NBR |
| 31 | Cover seal | AISI 304 |
| 32 | Nut | Stainless Steel |
| 33 | Plush (r 3/8") | Bronze |
| 34 | Ball holder pins | Stainless Steel |
| | | |

16. MATERIALS AND COMPONENTS





WATER LUBRICATED RADIAL

Slinger helps to prevent the

sand inside the water of the

well entering in mechanical

seal to inside of the motor.

CHROME-PLATED BEARING

Chrome-plated and precisely

which are located in the radial bearings operating area, have a great importance for bearing

machined bearing collets

COLLET

the rotor.

seal and through mechanical

CARBON BEARINGS

HIGH THRUST CAPACITY













UP-THRUST RING Provides safe operation conditions for motor by absorbing Up-Thrust loads with it's machined surface and water channels on it.

CABLE CONNECTION Preventing the water inside the motor to run through the cable and reach connection parts of power cables by specifically designed cable . seats.

ADJUSTMENT SCREW Standard shaft height can be precisely adjusted by the adjustment screw on the thrust bearing base.

MEMBRANE

Membrane minimizes the expansion pressure that is caused by heating of cooling water's inside the motor.

SLINGER (SAND GUARD) Slinger helps to prevent the sand inside the water of the well entering in mechanical seal and through mechanical seal to inside of the motor.

PT100 OVERHEATING PROTECTION By connecting the PT100 thermal sensors to the slot that is standardly placed on upper bearing body, motor temperature values can be easily measured.







HIGH QUALITY MECHANICAL SEALING SYSTEM High sand resistance and

degree of IP68 protection. Although mechanical seal is optionally used by other companies, it is always used by PEARL as a standard. to prevent sand and other particles to get in motors to provide long bearing life.





PRESSURE BALANCING CHECKVALVE

When pressure increases, it throw water out of the motor. When pressure drops, it filtrates the water inside well and gets it inside the motor by the help of this checkvalve to balance the pressure inside. That's why pressure differences inside motor never causes membrane under motor to blow up.

PRACTICAL CABLE CONNECTION Extremely simple and very practical power cable connection to the motor body. Only for 6" Encapsulated submersible motors



17. MAINTENANCE

Routine maintenance is not required for PEARL Submersible Motors; however, situations may arise when maintenance is necessary. To locate the cause of any problem quickly and to respond correctly, follow the instructions given in point troubleshooting table.



Before starting any maintenance, disconnect the motor from the main power supply or generator if any.

The maintenance should be performed only by qualified personnel.

18. STORAGE

Motors should be stored in areas that do not go below -55 C (-67F).

Even if there are not maximum recommended values for the storage temperature, is not recommended to keep them at temperatures above 45 C (113F) for long period of time.

19. TROUBLESHOOTING

| PROBLEM | POSSIBLE CAUSE | REMEDY |
|--------------------------------------|---|--|
| | Motor absorbs excessive amount of current | Stop the motor quickly and get in touch with the service |
| | Pump is jammed | Pull out the pump and send it to the service |
| Thermal protection system is running | Motor is broken | Pull out the pump and check if motor has any failures and send it to the service |
| | Setting of thermal relay or selection of relay is wrong | Check the thermal relay and its settings |
| | Motor runs on two phases | Check power phases, fuses and cable conncetions |
| Frequent starts and stops | Liquid level electrodes are too close to each other | Distance between two electrodes must be at least 3 meters. Lower electrode should be installe 30 cm up from pump discharge |
| | Pump equipments are partly/completely blocked | Pull out the pump and have it repaired |
| | There is excessive amount of air or gas in the water of the well | Fluid must be processed to have air or gas out of it |
| | Motor's axial thrust bearing is broken | Pull out the pump and replace the axial thrust bearing motor |
| Pump runs noisy and vibrating | Selected pump is not suitable for this ap- plication | Pull out the pump and install a suitable pump for the application |
| | Pump's bearing are worn out | Replace the pump's bearings |
| | Fixing of the installation is weak | Check the installation |
| | Duty point is out of pump's characteristic curve | Close the valve to decrease the flow rate to make the pump to work at duty point |
| | No electricity supply | Contact the electricity supply authorities |
| Dump doop not rup | The fuses are blown | Replace the blown fuses with the new ones |
| | The dry-running protection has cut off the electricity supply to the pump, due to low water level | Check the water level |
| Control panel runs noisy | Contactor's circuits are worn out | Check the circuits of the contactor, have them repaired or replaced |



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