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SUBMERSIBLE MOTORS

CATALOGUE
60Hz





THE BEGRENNING

Of **Duke Pumping Solutions Private Limited**, way back in 1989, was a resolute attempt to produce a few irrigation equipment's using the limited facilities. Eventually the founder's dream was coming true as the small production unit he started kept growing rapidly. Now, after more than five eventful decades, it is an enormous, widely reputed organization, which produces more than wide varieties of perfectly engineered pumps and motors.

DUKE PUMPING SOLUTIONS PRIVATE LIMITED

Since 1989 we design and manufacture submersible pumps & motors. Thanks to significant investments in production automation and extensive use of robotized assembly we offers submersible pumps and motors with high hydraulic characteristics and a very competitive quality/price ratio: made in India. Our range includes submersible motors from 3" to 10" also in stainless steel for the most demanding applications. **Duke Pumping Solutions Private Limited** has always been manufacturing submersible motors for the entire range of pumps covering all power from 0.37kW – 185kW (0.5HP - 250HP).

THE INFRASTRUCTURE

Of **Duke Pumping Solutions Private Limited** is pretty comprehensive with state-of-the-art machineries and high potential in-house R&D. All within its own covered area of 16,815 square meters. The production environment is accredited with ISO 9001-2015 and ISO 14001-2004 certifications and the products are IS 9283-2013 certified. The R&D team always stays in tune with the changing scenario and seldom fails incoming up with outstanding solutions every time.

WITH NO DOUBTS

Behind this growth lies the untiring, innovative, enthusiastic and Dedicated team work and, of course, a flawlessly maintained value system too.



CONTENT

WATER FILLED REWINDABLE SUBMERSIBLE MOTORS

Description
Specification and Material of Construction
Technical Data

OIL FILLED SUBMERSIBLE MOTOR

Description
Specification and Material of Construction
Technical Data

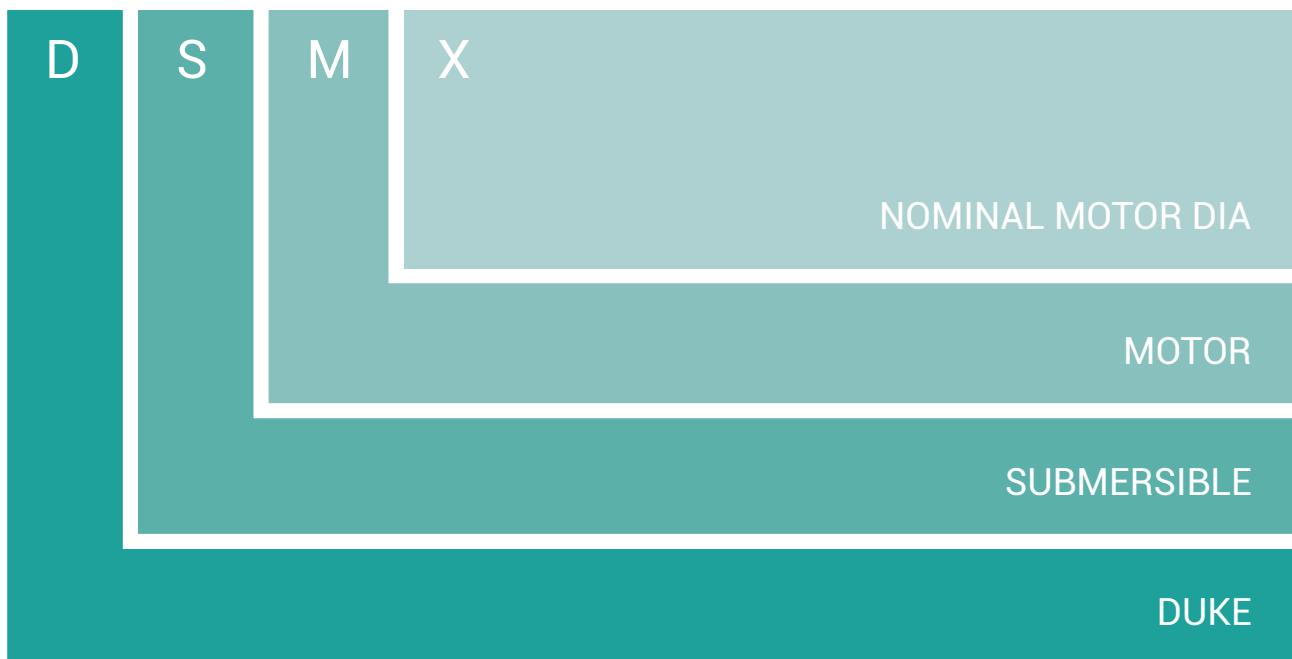
SMART DC MOTOR

Description
Technical Data

TABLE CHART

Cable Selection Chart
Conversion Table

MODEL IDENTIFICATION CODE



NOTES

- These motors are meant only for clear water applications
- Electrical Performances of the motors remain the same for all types of materials of constructions
- The given performances are for the ideal testing conditions at factory and the actual performance may vary according to the field parameters
- In view of our continuous development the information / technical specifications / descriptions / illustrations given are subject to change without prior notice.

WARNING

- Considering these motors are electrical appliances, utmost care shall be taken during installation / commissioning / operations / maintenance & servicing.
- Apart from the general guidelines the local electrical regulations shall be adhered strictly.
- Proper Earthing of motor & control panels is mandatory.
- These motors are not for swimming pool applications.

GENERAL INFORMATION

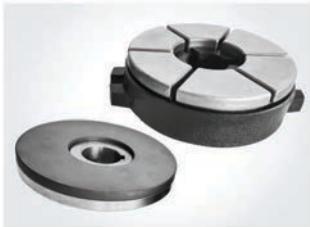
DUKE'S SUBMERSIBLE MOTORS

Duke's DSM - Series are Deep well / Tube well / Borewell / Borehole clear water submersible Motors. These motors are Re-windable, wet type, water / oil cooled motors, designed to drive Duke's or any brands NEMA submersible pumps. These are available from 3" to 10" sizes as standard supply. The windings are made up EC grade copper conductor and insulation & sheath of excellent insulation and water-proof property. High performance, specially designed, water lubricated thrust bearings are provided to withstand high axial thrust loads exerted by whole bore well water column and pumping systems. These motors are available in different types of MoCs like Fully Stainless Steel or Cast Iron constructions. The mounting dimensions are as per NEMA Standards and keyway type motors can also be supplied against requirement.

GENERAL FEATURES

- Rigid Constructions
- Suitable for Heavy Load Applications
- Highly Durable
- High Operating Efficiency
- Easy to dismantle & service
- Re-windable
- Available in Different MoCs
- Both Oil seal & Mechanical seal constructions available
- Heavy duty trust bearings
- Winding Wires: Polywrap / PVC/PE2-PA
- Lead-out Cable: TPR/RUBBER/PVC
- High Temperature models availble [up to 70° C]

MAIN PARTS



Heavy duty bearings with high thrust capacity

High wear resistance Self aligning segments to withstand fluctuating loads. Improved efficiency due to the inherent properties of Carbon and that of high hardened, lapped and polished Stainless Steel Segments resulting in longer life.



Oil sealing system for high sand resistance and degree of protection: IP68

It is always used by Duke as a standard, to prevent sand and other particles to get in motors to provide long bearing life.



Mechanical sealing system for high sand resistance and degree of protection: IP68

Mechanical seal is always used by Duke as a standard, to prevent sand and other particle to get in Motor to provide long bearing life.



Water lubricated radial carbon bearings

We use Radial carbon bearings, which have channels in its structure that makes it possible to get lubricated by water easily.



Motor Base with Magnet

Motor Base are provided with Magnets in it which stops Metals particles from entering into Motor which gradually increases life of Motor.



Grommet with In-built washer

Nitrile Rubber with SS Washer which protect Motor from Sand going inside from Cable and Grommet giving proper sealing.



Diaphragm

The expansion pressure that is caused due to heating of water inside the Motor is minimized using Diaphragm.



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.



Up-Thrust ring

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

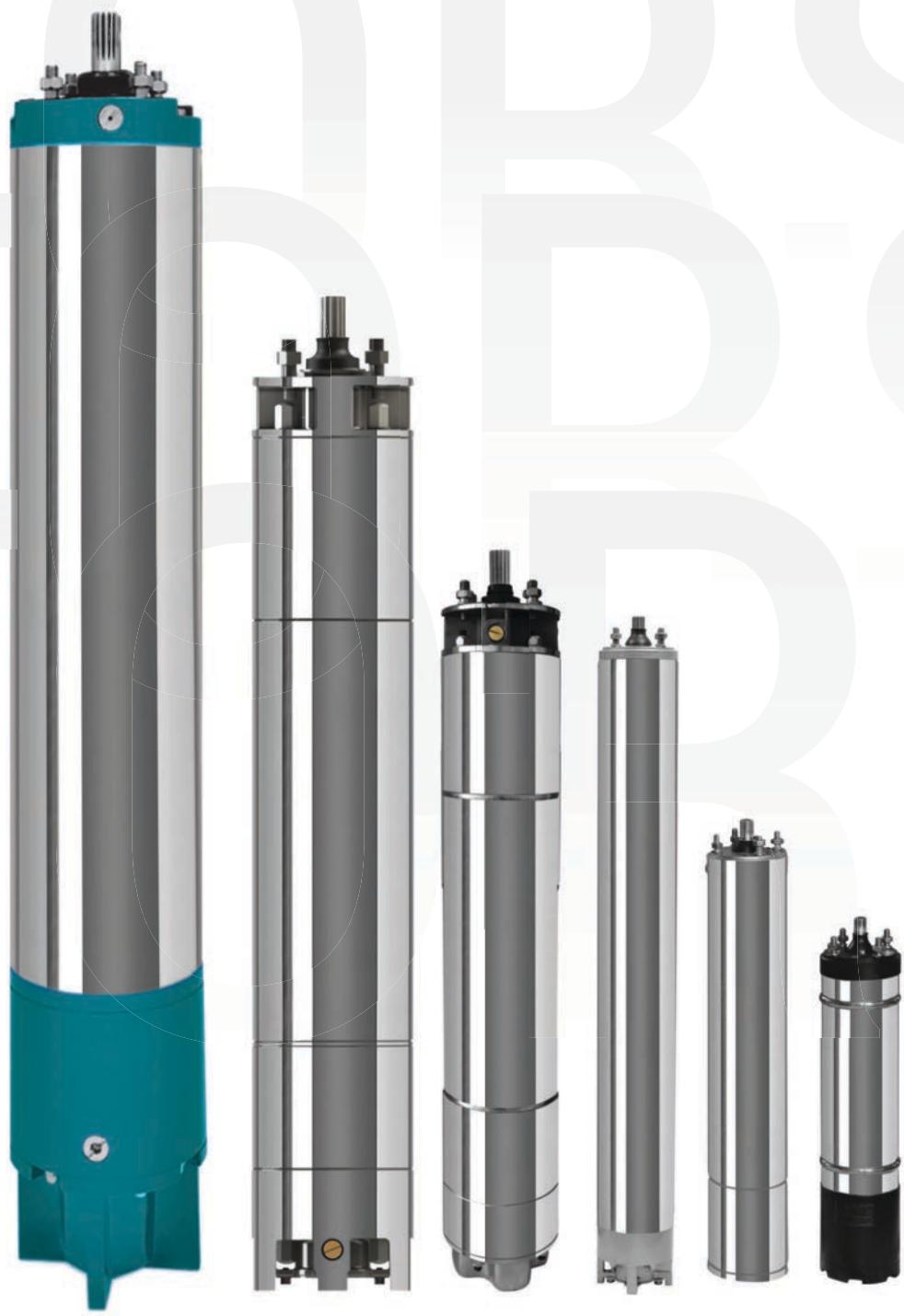


Pressure balancing checkvalve

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

SUBMERSIBLE MOTORS

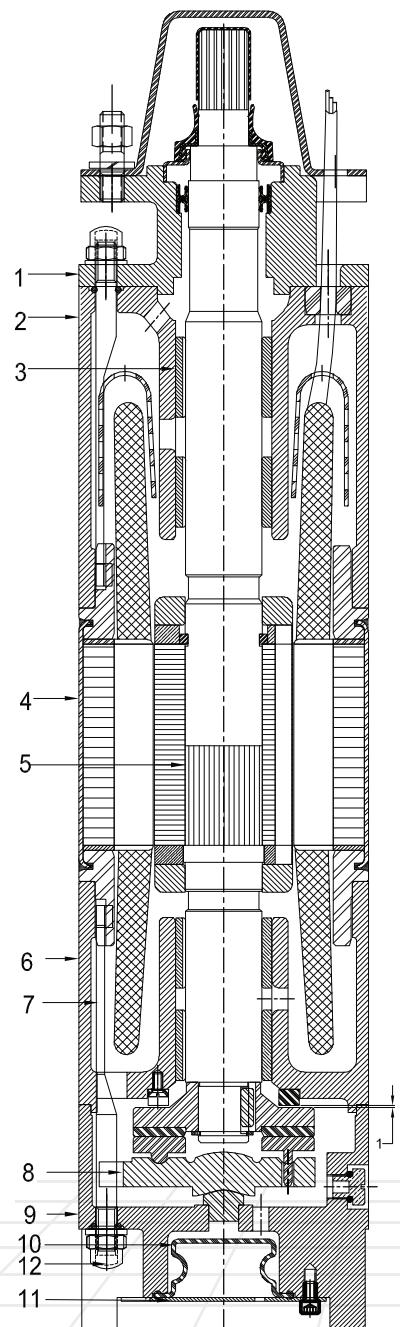




MOC

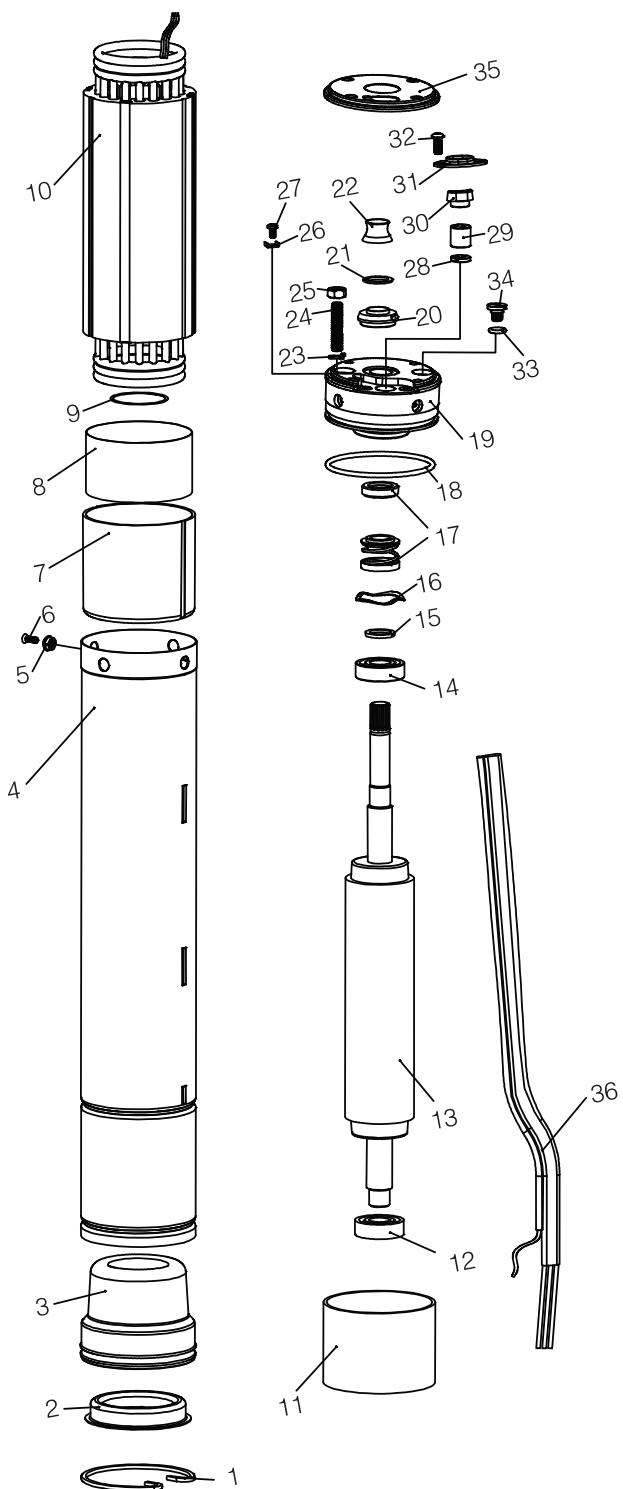
| NO. | PART NAME | MATERIAL |
|-----|------------------|--|
| 1 | ADAPTOR | STAINLESS STEEL / CI |
| 2 | UPPER HOUSING | STAINLESS STEEL / CI |
| 3 | BEARING BUSH | CARBON |
| 4 | STATOR | STAMPING-CRNO M-47 WITH C6 COATING, PIPE-STAINLESS STEEL |
| 5 | ROTOR | SHAFT-STAINLESS STEEL STAMPING-CRNO M-47 WITH EPOXY POWDER COATING |
| 6 | LOWER HOUSING | STAINLESS STEEL / CI |
| 7 | T-BOLT | CARBON STEEL WITH EN8 GRADE POWDER COATING |
| 8 | THRUST BEARING | CI / CARBON WITH COATING |
| 9 | MOTOR BASE | STAINLESS STEEL / CI |
| 10 | DIAPHRAGM | NITRILE RUBBER |
| 11 | MOTOR BASE PLATE | STAINLESS STEEL / CI |
| 12 | FASTENERS | STAINLESS STEEL / SS-304 & 316 |

CROSS-SECTIONAL DRAWING



EXPLODED DRAWING

4" OIL FILLED MOTOR

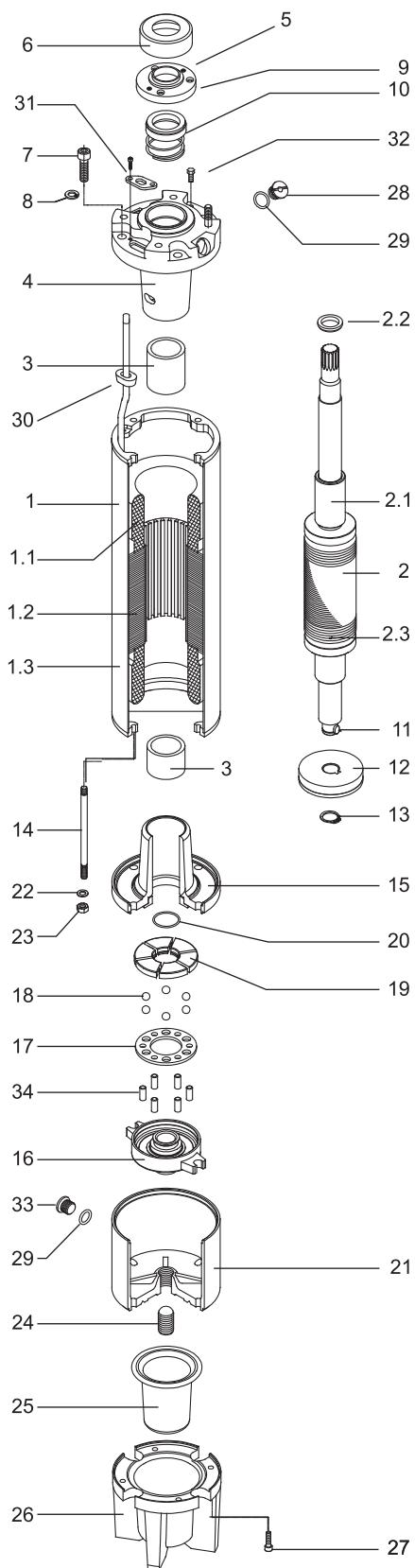


| NO. | PART NAME |
|-----|-------------------|
| 1 | Snap Ring |
| 2 | Bottom Cover |
| 3 | Diaphragm |
| 4 | Motor Shell |
| 5 | Washer |
| 6 | Screw |
| 7 | Lower Bracket |
| 8 | Insulating Paper |
| 9 | O ring |
| 10 | Stator |
| 11 | Insulating Paper |
| 12 | Lower Bearing |
| 13 | Rotor |
| 14 | Upper bearing |
| 15 | Washer |
| 16 | Spring Washer |
| 17 | Mechanical Seal |
| 18 | O ring |
| 19 | Upper Housing |
| 20 | Sand Guard |
| 21 | Washer |
| 22 | Sand Slinger |
| 23 | Spring Washer |
| 24 | Stud |
| 25 | Nut |
| 26 | Washer |
| 27 | Earth Screw |
| 28 | O ring |
| 29 | Cable Grommet |
| 30 | Cable Grommet Nut |
| 31 | Cable Clamp |
| 32 | Screw |
| 33 | O ring |
| 34 | Drain Plug |
| 35 | Upper Shell |
| 36 | Cable |

EXPLODED DRAWING

WATER FILLED MOTOR

DSM6 - 50 & 60 HP | DSM8 - 100 to 150 HP | DSM10 - 110 to 250 HP



| NO. | PART NAME |
|-----|-----------------------------|
| 1 | Stator |
| 1.1 | Winding wire |
| 1.2 | Stator package |
| 1.3 | Stator shell |
| 2 | Rotor |
| 2.1 | Shaft sleeve |
| 2.2 | Balance ring |
| 2.3 | Copper ring |
| 3 | Radial bearing |
| 4 | Upper bearing body |
| 5 | Bushing |
| 6 | Slinger (sand guard) |
| 7 | Hexagon socket cap screws |
| 8 | Copper ring |
| 9 | Cover seal |
| 10 | Mechanical seal |
| 11 | Axial thrust bearing key |
| 12 | Axial thrust bearing |
| 13 | Retaining ring |
| 14 | Tie rod |
| 15 | Lower bearing body |
| 16 | Thrust bearing support |
| 17 | Ball holder |
| 18 | Thrust bearing ball |
| 19 | Tilting pads |
| 20 | O-ring |
| 21 | Thrust bearing body |
| 22 | Copper ring |
| 23 | Nut |
| 24 | Screw (thrust bearing base) |
| 25 | Membrane |
| 26 | Membrane body |
| 27 | Hexagon socket cap screws |
| 28 | Check-valve |
| 29 | O-ring |
| 30 | Cable seal |
| 31 | Seal cover |
| 32 | Nut |
| 33 | Plug (3/8") |
| 34 | Ball holder pins |

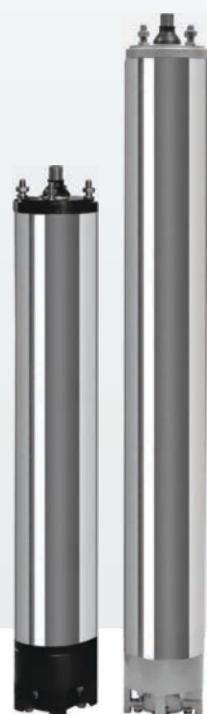
4"

WATER FILLED IE3 SERIES

TECHNICAL DETAILS

| Nominal Diameter | 4" Motor (100 mm) | |
|-----------------------|------------------------------------|--------------------------------------|
| Max. Outer Diameter | 3.74" (95 mm) | |
| Power Range | 1Ph | 0.5 HP to 7.5 HP |
| | 3Ph | 1.5 HP to 7.5 HP |
| Nominal Speed | 3450 RPM | |
| Voltage range | 1Ph | 230 V, 60 Hz, A.C Supply |
| | 3Ph | 230V, 380V & 460V, 60 Hz, A.C Supply |
| Class of Insulation | F | |
| Degree of protection | IP 58 | |
| Direction of rotation | Anti-Clock wise | |
| Type of duty | S1 (Continues) | |
| Minimum cooling flow | 0.15 m/sec | |
| Max. Liquid temp. | 33° C / 92° F | |
| Starts per hour | 20 Times | |
| Method of starting | Single Phase - Capacitor Start | |
| | Capacitor Run | |
| | Three Phase - Direct On Line (DOL) | |
| Cable leadout type | 3 Core Flat Cable | |

DSM4 WATER FILLED MOTOR



APPLICATIONS



RESIDENTIAL



SMALL IRRIGATION



FOUNTAIN



WATER SUPPLY



SMALL INDUSTRIES



SOLAR

TECHNICAL DATA

| 4" 1Phase 230V, 60Hz Water Filled Motor | | | | | | | | | | | | | Service Factor 1.15 | | | | |
|--|------|-------------|-----------------------|----------------------|----------------------|----|-----|------------------------|------|------|---------------------------|-----------------------|----------------------|---------------------|------------------|-------------|-------------------|
| HP | kW | Voltage (V) | Full Load Current (A) | Starting Current (A) | Efficiency at % Load | | | Power Factor at % Load | | | Max. Down Thrust Load (N) | Full Load Torque (Nm) | Starting Torque (Nm) | Cable Size (sq. mm) | Cable Length (m) | Height (mm) | Gross Weight (kg) |
| | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | | | | | | |
| 0.5 | 0.37 | 230 | 5 | 15 | 39 | 42 | 45 | 0.78 | 0.80 | 0.80 | 3000 | 1.3 | 2.2 | 1.5 | 2.3 | 481 | 15 |
| 1 | 0.75 | 230 | 7 | 23 | 50 | 55 | 57 | 0.78 | 0.80 | 0.82 | 3000 | 2.8 | 4.5 | 2.5 | 2.3 | 521 | 17 |
| 1.5 | 1.1 | 230 | 8.5 | 25 | 53 | 60 | 61 | 0.89 | 0.90 | 0.90 | 3000 | 4.0 | 6.7 | 2.5 | 2.7 | 551 | 19 |
| 2 | 1.5 | 230 | 12 | 37 | 53 | 60 | 62 | 0.88 | 0.90 | 0.90 | 3000 | 5.4 | 9.2 | 4 | 3.1 | 601 | 21 |
| 3 | 2.2 | 230 | 19 | 61 | 55 | 62 | 65 | 0.80 | 0.82 | 0.85 | 3000 | 8.5 | 15 | 4 | 3.1 | 671 | 25 |
| 5 | 3.7 | 230 | 28 | 94 | 56 | 62 | 66 | 0.82 | 0.86 | 0.90 | 3000 | 9.5 | 18 | 6 | 3.1 | 781 | 31 |
| 7.5 | 5.5 | 230 | 37 | 120 | 61 | 69 | 72 | 0.82 | 0.86 | 0.90 | 3000 | 10 | 21 | 6 | 3.1 | 841 | 34 |
| 4" 3Phase 230V, 380V & 460V, 60Hz Water Filled Motor | | | | | | | | | | | | | Service Factor 1.15 | | | | |
| HP | kW | Voltage (V) | Full Load Current (A) | Starting Current (A) | Efficiency at % Load | | | Power Factor at % Load | | | Max. Down Thrust Load (N) | Full Load Torque (Nm) | Starting Torque (Nm) | Cable Size (sq. mm) | Cable Length (m) | Height (mm) | Gross Weight (kg) |
| | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | | | | | | |
| 1.5 | 1.1 | 230 | 5 | 25 | 70 | 73 | 76 | 0.61 | 0.76 | 0.83 | 3000 | 3 | 6.7 | 2.5 | 2.7 | 551 | 19 |
| | | 380 | 3 | 15 | 70 | 73 | 76 | 0.61 | 0.76 | 0.83 | | 3 | 7.7 | 1.5 | 2.7 | | |
| | | 460 | 2.5 | 13 | 70 | 73 | 76 | 0.61 | 0.76 | 0.83 | | 3 | 8.2 | 1.5 | 2.7 | | |
| 2 | 1.5 | 230 | 6.7 | 34 | 64 | 66 | 69 | 0.59 | 0.73 | 0.81 | 3000 | 4.1 | 8.2 | 4 | 3.1 | 601 | 22 |
| | | 380 | 4.1 | 21 | 64 | 66 | 69 | 0.59 | 0.73 | 0.81 | | 4.1 | 9.2 | 1.5 | 2.7 | | |
| | | 460 | 3.4 | 17 | 64 | 66 | 69 | 0.59 | 0.73 | 0.81 | | 4.1 | 10 | 1.5 | 2.7 | | |
| 3 | 2.2 | 230 | 9.5 | 48 | 70 | 73 | 75 | 0.52 | 0.65 | 0.74 | 3000 | 6.1 | 15 | 4 | 3.1 | 671 | 26 |
| | | 380 | 5.8 | 29 | 70 | 73 | 75 | 0.52 | 0.65 | 0.74 | | 6.1 | 17 | 2.5 | 2.7 | | |
| | | 460 | 4.8 | 24 | 70 | 73 | 75 | 0.52 | 0.65 | 0.74 | | 6.1 | 18 | 2.5 | 2.7 | | |
| 5 | 3.7 | 230 | 16 | 56 | 69 | 71 | 74 | 0.52 | 0.66 | 0.75 | 3000 | 11 | 16 | 6 | 3.1 | 781 | 33 |
| | | 380 | 9.6 | 34 | 69 | 71 | 74 | 0.52 | 0.66 | 0.75 | | 11 | 18 | 2.5 | 2.7 | | |
| | | 460 | 8 | 28 | 69 | 71 | 74 | 0.52 | 0.66 | 0.75 | | 11 | 19 | 2.5 | 2.7 | | |
| 7.5 | 5.5 | 230 | 23 | 92 | 71 | 73 | 76 | 0.56 | 0.68 | 0.77 | 3000 | 15 | 23 | 6 | 3.1 | 841 | 36 |
| | | 380 | 14 | 56 | 71 | 73 | 76 | 0.56 | 0.68 | 0.77 | | 15 | 30 | 4 | 3.1 | | |
| | | 460 | 12 | 46 | 71 | 73 | 76 | 0.56 | 0.68 | 0.77 | | 15 | 34 | 4 | 3.1 | | |

FEATURES

- Suitable for size of 100 mm (4") & above bore well.
- Stainless Steel high strength shaft.
- High Efficiency electrical design (Low Operation cost, cool running winding)
- Motor filling with water with Anti-corrosive liquid
- Specially designed thrust bearing to withstand high axial thrust loads.
- Winding connections with solid solder joints.
- Special magnet provision in motor base and newly designed self-spring action diaphragms.
- Epoxy powder coating on rotor.
- Graded cast iron housing with precisely fitted bush and special bearing counter provision for horizontal application of pump set.
- NEMA Standard.
- CED Coated Motor Assembly

4"

OIL FILLED SERIES

TECHNICAL DETAILS

| Nominal Diameter | | 4" Motor (100 mm) |
|-----------------------|-----|--------------------------------------|
| Max. Outer Diameter | | 95 mm |
| Power Range | 1Ph | 0.37 kW to 2.2 kW |
| | 3Ph | 0.37 kW to 7.5 kW |
| Nominal Speed | | 2850 rpm |
| Voltage range | 1Ph | 1 Phase 220/230 V, 60 Hz, A.C Supply |
| | 3Ph | 3 Phase 380-415 V, 60 Hz, A.C Supply |
| Class of Insulation | | F |
| Degree of protection | | IP 68 |
| Direction of rotation | | Anti-Clock wise |
| Type of duty | | S1 (Continues) |
| Minimum cooling flow | | 0.15 m/sec |
| Max. Liquid Temp. | | 33° C |
| Starts per hour | | 20 Times |
| Method of starting | 1Ph | 1 Ph - CSR |
| | 3Ph | 3 Ph - Direct On Line (DOL) |
| Cable lead out type | | 3/4 core flat cable |

DSM04 OIL FILLED MOTOR



APPLICATIONS



RESIDENTIAL



SMALL IRRIGATION



FOUNTAIN



WATER SUPPLY



SMALL INDUSTRIES



SOLAR

TECHNICAL DATA

| Single Phase, 115 V, 2 Wire [PSC] | | | | | | | | | Service Factor 1.15 | | | | |
|-----------------------------------|------|-------------|-----------------------|----------------------|----------------------|------------------------|-----------------|---------------------------|---------------------|---------------------|------------------|-------------|-------------------|
| HP | kW | Voltage (V) | Full Load Current (A) | Starting Current (A) | Efficiency at % Load | Power Factor at % Load | Capacitor (MFD) | Max. Down Thrust Load (N) | Torque (Nm) | Cable Size (sq. mm) | Cable Length (m) | Height (mm) | Gross Weight (kg) |
| 0.5 | 0.37 | 115V | 6.8 | 23.8 | 56.6 | 0.86 | 50 | 2000 | 1.02 | 1.5 | 1.5 | 412 | 8 |
| | | 230V | 3.4 | 10.8 | 56.6 | 0.86 | 15 | | | | | | |
| 0.75 | 0.55 | 115V | 8.7 | 31 | 61 | 0.94 | 60 | 2000 | 1.52 | 1.5 | 1.5 | 437 | 9 |
| | | 230V | 4.2 | 15 | 61 | 0.90 | 20 | | | | | | |
| 1.0 | 0.75 | 115V | 11.2 | 45 | 65 | 0.94 | 80 | 2000 | 2.07 | 1.5 | 1.5 | 457 | 10 |
| | | 230V | 5.4 | 21.8 | 67 | 0.93 | 25 | | | | | | |
| 1.5 | 1.1 | 115V | 15.7 | 55 | 67 | 0.94 | 100 | 2000 | 3.04 | 2 | 1.5 | 487 | 11 |
| | | 230V | 7.2 | 25.7 | 71.5 | 0.94 | 35 | | | 1.5 | 1.5 | | |
| 2.0 | 1.5 | 115V | 20.2 | 80 | 71 | 0.95 | 130 | 3000 | 4.15 | 2.3 | 1.5 | 544 | 13 |
| | | 230V | 9.6 | 34 | 75 | 0.95 | 40 | | | 2 | 1.5 | | |

| Single Phase, 115 V, 2 Wire [PSC] | | | | | | | | | Service Factor 1.15 | | | | |
|-----------------------------------|------|-------------|-----------------------|----------------------|----------------------|------------------------|-----------------|---------------------------|---------------------|---------------------|------------------|-------------|-------------------|
| HP | kW | Voltage (V) | Full Load Current (A) | Starting Current (A) | Efficiency at % Load | Power Factor at % Load | Capacitor (MFD) | Max. Down Thrust Load (N) | Torque (Nm) | Cable Size (sq. mm) | Cable Length (m) | Height (mm) | Gross Weight (kg) |
| 0.5 | 0.37 | 230V | 5.5 | 22.5 | 48 | 0.90 | 12 | 1500 | 1.24 | 1.5 | 1.5 | 357 | 8 |
| 0.75 | 0.55 | 230V | 6.3 | 28 | 53 | 0.94 | 15 | 1500 | 1.84 | 1.5 | 1.5 | 377 | 8 |
| 1 | 0.75 | 115V | 12.9 | 46 | 65 | 0.98 | 60 | 1500 | 2.07 | 2 | 1.5 | 380 | 8 |
| 1 | 0.75 | 230V | 7.6 | 36 | 54 | 0.93 | 20 | 1500 | 2.50 | 1.5 | 1.5 | 402 | 9 |
| 1.5 | 1.1 | 115V | 14.9 | 58 | 67 | 0.98 | 80 | 1500 | 3.04 | 2 | 1.5 | 400 | 9 |
| 1.5 | 1.1 | 230V | 9.4 | 46 | 58 | 0.96 | 25 | 2500 | 3.60 | 1.5 | 1.5 | 432 | 11 |
| 2 | 1.5 | 230V | 12 | 59 | 63 | 0.97 | 30 | 2500 | 5.00 | 2 | 1.5 | 475 | 12 |
| 3 | 2.2 | 230V | 15.6 | 90 | 69 | 0.98 | 40 | 2500 | 7.35 | 2.3 | 2 | 520 | 14 |

FEATURES

- Suitable for 100 mm & above bore well.
- Available in Capsule Couple and Spline Couple.
- Highly Lubricant Oil Filled Motor
- Stainless Steel High Strength Shaft
- Enamelled Winding Wire
- Anti-Friction Ball Bearings With Long Life
- Pressure Equalizing Spring Loaded Diaphragm
- NEMA Standard

| Three Phase, 230V, 380V & 460V [DOL] | | | | | | | | Service Factor 1.15 | | | | |
|--------------------------------------|------|-------------|-----------------------|----------------------|----------------------|------------------------|---------------------------|---------------------|---------------------|------------------|-------------|-------------------|
| HP | kW | Voltage (V) | Full Load Current (A) | Starting Current (A) | Efficiency at % Load | Power Factor at % Load | Max. Down Thrust Load (N) | Torque (Nm) | Cable Size (sq. mm) | Cable Length (m) | Height (mm) | Gross Weight (kg) |
| 0.5 | 0.37 | 230V | 3.4 | 18 | 63 | 0.77 | 1500 | 1.2 | 1.5 | 1.5 | 410 | 7.8 |
| | | 380V | 1.9 | 9 | 68 | 0.77 | | | | | | |
| 0.75 | 0.55 | 230V | 4.4 | 24 | 68 | 0.77 | 1500 | 1.8 | 1.5 | 1.5 | 410 | 7.8 |
| | | 380V | 2.6 | 9 | 68 | 0.77 | | | | | | |
| 1 | 1 | 230V | 5 | 28 | 70 | 0.80 | 1500 | 2.5 | 1.5 | 1.5 | 430 | 9 |
| | | 380V | 2.9 | 13 | 70 | 0.80 | | | | | | |
| | | 460V | 1.8 | 8 | 70 | 0.80 | | | | | | |
| 1.5 | 1 | 230V | 6.3 | 35 | 72 | 0.82 | 2500 | 3.6 | 1.5 | 1.5 | 450 | 10 |
| | | 380V | 3.6 | 17 | 72 | 0.82 | | | | | | |
| | | 460V | 2.5 | 11.8 | 72 | 0.82 | | | | | | |
| 2.0 | 1.5 | 230V | 7.9 | 44 | 74 | 0.82 | 2500 | 5.0 | 1.5 | 1.5 | 480 | 11 |
| | | 380V | 4.6 | 22 | 74 | 0.82 | | | | | | |
| | | 460V | 3.2 | 15.3 | 74 | 0.82 | | | | | | |
| 3.0 | 2.2 | 230V | 10.8 | 58 | 78 | 0.83 | 2500 | 7.4 | 1.5 | 2.0 | 540 | 14 |
| | | 380V | 62 | 26 | 78 | 0.83 | | | | | | |
| | | 460V | 4.6 | 19.3 | 78 | 0.83 | | | | | | |
| 4.0 | 3.0 | 230V | 14.2 | 63 | 76 | 0.82 | 2500 | 10.0 | 2.0 | 2.0 | 602 | 19 |
| | | 380V | 8.3 | 38 | 77 | 0.82 | | | | | | |
| | | 460V | 5.8 | 26.5 | 77 | 0.82 | | | | | | |
| 5.0 | 3.7 | 230V | 16.2 | 71 | 77 | 0.82 | 4500 | 13.4 | 2.0 | 2.0 | 650 | 20 |
| | | 380V | 9.4 | 44 | 77 | 0.82 | | | | | | |
| | | 460V | 7 | 32.7 | 77 | 0.82 | | | | | | |
| 5.5 | 4.0 | 230V | 17 | 90 | 78 | 0.85 | 4500 | 13.4 | 2.0 | 2.3 | 650 | 20 |
| | | 380V | 9.9 | 56 | 78 | 0.85 | | | | | | |
| | | 460V | 7.5 | 27.2 | 78 | 0.85 | | | | | | |
| 7.5 | 5.5 | 230V | 23.4 | 102 | 78 | 0.84 | 4500 | 18.4 | 2.3 | 3.0 | 762 | 26 |
| | | 380V | 13.5 | 61 | 78 | 0.84 | | | | | | |
| | | 460V | 10.3 | 46.5 | 78 | 0.80 | | | | | | |
| 10.0 | 7.5 | 230V | 31.5 | 140 | 80 | 0.86 | 4500 | 25.0 | 2.3 | 3.0 | 880 | 33 |
| | | 380V | 18.2 | 90 | 80 | 0.86 | | | | | | |
| | | 460V | 13.8 | 68.2 | 80 | 0.86 | | | | | | |

WATER COOLED MOTORS

4" | **6"**

PMSM MOTORS
SMART DC SERIES

DSM4/6 SMART DC MOTOR



APPLICATIONS



RESIDENTIAL



SMALL IRRIGATION



FOUNTAIN



WATER SUPPLY



SMALL INDUSTRIES



SOLAR

TECHNICAL DETAILS

| Nominal Diameter | | 4" Motor (100 mm) |
|-----------------------|-----|---------------------------------|
| Max. Outer Diameter | | 3.74" (95 mm) |
| Power Range | 3Ph | 1 HP to 10 HP |
| Nominal Speed | | 3300 RPM & 4500 RPM |
| Voltage Range | 3Ph | 110V to 450V, 60 Hz, A.C Supply |
| Class of Insulation | | F |
| Degree of protection | | IP 58 |
| Direction of rotation | | Anti-Clock wise |
| Type of duty | | S1 (Continues) |
| Minimum cooling flow | | 0.15 m/sec |
| Max. Liquid temp. | | 92° F / 120° F (33° C / 50° C) |
| Starts per hour | | 20 Times |
| Method of starting | | 1 HP to 10 HP (VFD) |
| Cable lead out type | | 3 Core Flat Cable |

TECHNICAL DETAILS

| Nominal Diameter | | 6" Motor (150 mm) |
|-----------------------|-----|---------------------------------|
| Max. Outer Diameter | | 5.66" (144 mm) |
| Power Range | 3Ph | 15 HP & 20 HP |
| Nominal Speed | | 3300 RPM & 4500 RPM |
| Voltage Range | 3Ph | 110V to 450V, 60 Hz, A.C Supply |
| Class of Insulation | | F |
| Degree of protection | | IP 58 |
| Direction of rotation | | Anti-Clock wise |
| Type of duty | | S1 (Continues) |
| Minimum cooling flow | | 0.15 m/sec |
| Max. Liquid temp. | | 92° F / 120° F (33° C / 50° C) |
| Starts per hour | | 20 Times |
| Method of starting | | 15 HP & 20 HP (VFD) |
| Cable lead out type | | 3 Core Flat Cable |

TECHNICAL DATA

4" 3Phase, 110 Hz Water Filled Motor

| kW | HP | Full Load Current (A) | Full Load Efficiency % | Height (mm) | Net Weight (kg) |
|------|-----|-----------------------|------------------------|-------------|-----------------|
| 0.75 | 1 | 9 | 76 | 390 | 12 |
| 0.75 | 1 | 8.2 | 76 | 390 | 11 |
| 1.5 | 2 | 7.1 | 79 | 410 | 12 |
| 2.2 | 3 | 8.0 | 86 | 440 | 15 |
| 3.7 | 5 | 9.5 | 86 | 490 | 17 |
| 5.5 | 7.5 | 12.7 | 87 | 540 | 20 |
| 7.5 | 10 | 17.3 | 88 | 600 | 24 |

6" 3Phase, 110-145 Hz Water Filled Motor

| kW | HP | Full Load Current (A) | Full Load Efficiency % | Height (mm) | Net Weight (kg) |
|----|----|-----------------------|------------------------|-------------|-----------------|
| 11 | 15 | 35 | 89 | 769 | 57 |
| 15 | 20 | 27 | 88 | 841 | 65 |

FEATURES

- Suitable for 100 mm (4"), 150 mm (6") & above bore well.
- Up to 94% Motor Efficiency
- 20 to 30% Higher Efficiency than Star Rated Pump sets.
- Easy Rewindable & Repairable Water Filled Submersible Motor.
- Smooth Starting Using VFD Controller and can be Used Low Voltage Area.
- Virtually NO Maintenance Cost.
- Premium Material SS/CI Robust Construction
- Nema Standards,
- Suitable for 110 to 415 Voltages for 3-phase.
- Frequency: Upto 110 Hz
- Speed: 3300 RPM

6"

WATER FILLED TURBO SERIES

TECHNICAL DETAILS

| Nominal Diameter | 6" Motor (150 mm) |
|-----------------------|--------------------------------------|
| Max. Outer Diameter | 5.67" (144 mm) |
| Power Range 3Ph | 7.5 HP to 60 HP |
| Nominal Speed | 3450 RPM |
| Voltage Range 3Ph | 230V, 380V & 460V, 60 Hz, A.C Supply |
| Class of Insulation | F |
| Degree of protection | IP 58 |
| Direction of rotation | Anti-Clock wise |
| Type of duty | S1 (Continues) |
| Minimum cooling flow | 0.15 m/sec |
| Max. Liquid temp. | 92° F / 120° F (33° C / 50° C) |
| Starts per hour | 20 Times |
| Method of starting | 7.5 HP to 60 HP (DOL / Star-Delta) |
| Cable lead out type | 3 Core Flat Cable |

DSM6 WATER FILLED MOTOR



APPLICATIONS



AGRICULTURE



INDUSTRIAL



GENERAL
WATER SUPPLY



FOOD PROCESSING
INDUSTRY



LIVESTOCK
WATERING



SOLAR

TECHNICAL DATA

6" IE3 3Phase 230V, 380V & 460V, 60Hz Water Filled Motor

Service Factor 1.15

| HP | kW | Voltage (V) | Full Load Current (A) | Starting Current (A) | Efficiency at % Load | | | Power Factor at % Load | | | Max. Down Thrust Load (N) | Full Load Torque (Nm) | Starting Torque (Nm) | Cable Size (sq. mm) | Cable Length (m) | Height (mm) | Gross Weight (kg) | | | |
|------|------|-------------|-----------------------|----------------------|----------------------|----|-----|------------------------|------|------|---------------------------|-----------------------|----------------------|---------------------|------------------|-------------|-------------------|--|--|--|
| | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | | | | | | | | | |
| 7.5 | 5.5 | 230 | 23.0 | 106.0 | 75 | 79 | 79 | 0.64 | 0.75 | 0.82 | 15500 | 17.4 | 16.0 | 6 | 2.70 | 744 | 52 | | | |
| | | 380 | 13.8 | 62.0 | 76 | 79 | 79 | 0.67 | 0.77 | 0.83 | | 17.4 | 15.1 | 6 | | | | | | |
| | | 460 | 12.0 | 51.2 | 77 | 79 | 79 | 0.68 | 0.78 | 0.83 | | 14.3 | 12.5 | | | | | | | |
| 10 | 7.5 | 230 | 32.0 | 145.0 | 76 | 79 | 80 | 0.61 | 0.73 | 0.80 | 15500 | 23.7 | 22.5 | 6 | 2.70 | 779 | 58 | | | |
| | | 380 | 16.8 | 81.0 | 77 | 79 | 80 | 0.67 | 0.77 | 0.83 | | 23.7 | 20.3 | 6 | | | | | | |
| | | 460 | 15.0 | 66.9 | 77 | 79 | 80 | 0.68 | 0.78 | 0.83 | | 19.6 | 16.8 | | | | | | | |
| 12.5 | 9.3 | 230 | 38.0 | 183.0 | 77 | 79 | 80 | 0.62 | 0.73 | 0.80 | 15500 | 29.4 | 29.0 | 10 | 2.70 | 824 | 63 | | | |
| | | 380 | 20.0 | 101.0 | 78 | 79 | 80 | 0.67 | 0.77 | 0.83 | | 29.5 | 26.0 | 6 | | | | | | |
| | | 460 | 18.0 | 83.4 | 78 | 79 | 80 | 0.68 | 0.78 | 0.84 | | 24.4 | 21.5 | | | | | | | |
| 15 | 11 | 230 | 43.3 | 221.0 | 78 | 81 | 82 | 0.63 | 0.74 | 0.82 | 15500 | 34.7 | 35.7 | 10 | 2.70 | 874 | 68 | | | |
| | | 380 | 26.5 | 129.0 | 78 | 82 | 82 | 0.64 | 0.76 | 0.82 | | 34.6 | 34.4 | 8 | | | | | | |
| | | 460 | 22.0 | 106.5 | 78 | 82 | 82 | 0.64 | 0.77 | 0.83 | | 28.6 | 28.4 | | | | | | | |
| 17.5 | 13 | 230 | 55.0 | 289.0 | 77 | 81 | 83 | 0.58 | 0.70 | 0.78 | 15500 | 40.8 | 50.6 | 10 | 3.15 | 894 | 72 | | | |
| | | 380 | 30.0 | 164.0 | 78 | 82 | 83 | 0.61 | 0.73 | 0.81 | | 40.8 | 74.3 | 10 | | | | | | |
| | | 460 | 26.0 | 135.4 | 78 | 82 | 83 | 0.62 | 0.74 | 0.82 | | 33.7 | 61.4 | | | | | | | |
| 20 | 15 | 230 | 58.0 | 324.0 | 81 | 83 | 84 | 0.66 | 0.76 | 0.83 | 15500 | 47.2 | 59.6 | 10 | 3.15 | 949 | 77 | | | |
| | | 380 | 34.5 | 188.0 | 82 | 84 | 84 | 0.68 | 0.79 | 0.85 | | 47.3 | 56.6 | 10 | | | | | | |
| | | 460 | 29.0 | 155.3 | 82 | 84 | 84 | 0.69 | 0.80 | 0.85 | | 39.1 | 46.8 | | | | | | | |
| 25 | 18.5 | 230 | 68.0 | 401.0 | 78 | 82 | 83 | 0.62 | 0.73 | 0.79 | 15500 | 58.2 | 81.9 | 16 | 3.15 | 1004 | 85 | | | |
| | | 380 | 40.0 | 249.0 | 78 | 82 | 82 | 0.61 | 0.72 | 0.79 | | 58.2 | 83.7 | 10 | | | | | | |
| | | 460 | 36.0 | 205.7 | 78 | 82 | 82 | 0.62 | 0.73 | 0.80 | | 48.1 | 69.1 | | | | | | | |
| 30 | 22 | 230 | 81.0 | 521.0 | 82 | 85 | 85 | 0.68 | 0.76 | 0.79 | 15500 | 68.9 | 96.7 | 16 | 3.15 | 1074 | 89 | | | |
| | | 380 | 46.9 | 390.0 | 83 | 84 | 85 | 0.69 | 0.78 | 0.80 | | 68.9 | 95.0 | 10 | | | | | | |
| | | 460 | 42.0 | 322.1 | 83 | 84 | 85 | 0.70 | 0.79 | 0.81 | | 57.0 | 78.5 | | | | | | | |
| 35 | 26 | 230 | 109.0 | 658.0 | 84 | 85 | 86 | 0.65 | 0.74 | 0.78 | 15500 | 81.4 | 135.1 | 16 | 3.15 | 1149 | 112 | | | |
| | | 380 | 61.0 | 360.0 | 84 | 86 | 86 | 0.65 | 0.76 | 0.83 | | 81.7 | 121.5 | 10 | | | | | | |
| | | 460 | 50.0 | 297.3 | 84 | 86 | 86 | 0.66 | 0.76 | 0.84 | | 67.5 | 100.4 | | | | | | | |
| 40 | 30 | 230 | 116.0 | 757.0 | 79 | 82 | 84 | 0.61 | 0.73 | 0.80 | 27500 | 93.9 | 139.7 | 16 | 3.15 | 1294 | 127 | | | |
| | | 380 | 67.0 | 436.0 | 80 | 84 | 85 | 0.64 | 0.77 | 0.83 | | 94.0 | 133.0 | 10 | | | | | | |
| | | 460 | 55.0 | 360.2 | 80 | 84 | 85 | 0.65 | 0.78 | 0.84 | | 77.7 | 109.9 | | | | | | | |
| 50 | 37 | 230 | 133.0 | 757.0 | 79 | 83 | 84 | 0.61 | 0.73 | 0.80 | 27500 | 93.9 | 139.7 | 16 | 3.15 | 1369 | 138 | | | |
| | | 380 | 84.0 | 568.0 | 78 | 82 | 83 | 0.61 | 0.74 | 0.80 | | 115.9 | 193.7 | 16 | | | | | | |
| | | 460 | 68 | 469.2 | 78 | 82 | 83 | 0.62 | 0.75 | 0.81 | | 95.8 | 160.0 | | | | | | | |
| 60 | 45 | 230 | 190.0 | 1023.0 | 75 | 79 | 80 | 0.58 | 0.71 | 0.78 | 27500 | 93.9 | 139.7 | 16 | 4.00 | 1347 | 110 | | | |
| | | 380 | 110.0 | 592.0 | 75 | 79 | 80 | 0.58 | 0.71 | 0.78 | | 115.9 | 193.7 | 16 | | | | | | |
| | | 460 | 84 | 454 | 80 | 82 | 83 | 0.62 | 0.75 | 0.81 | | 95.8 | 160.0 | | | | | | | |

FEATURES

- Suitable for size of 150 mm (6") & above bore well.
- Stainless Steel high strength shaft.
- High Efficiency electrical design (Low Operation cost, cool running winding)
- Motor filling with water with Anti-corrosive liquid
- Specially designed thrust bearing to withstand high axial thrust loads.
- Winding connections with solid solder joints.
- Special magnet provision in motor base and newly designed self-spring action diaphragms.
- Epoxy powder coating on rotor.
- Graded cast iron housing with precisely fitted bush and special bearing counter provision for horizontal application of pump set.
- CED Coated

8"

WATER FILLED MIZZEL SERIES

TECHNICAL DETAILS

| Nominal Diameter | 8" Motor (200 mm) |
|-----------------------|------------------------------------|
| Max. Outer Diameter | 7.4" (188 mm) |
| Power Range | 3Ph |
| Nominal Speed | 20 HP to 150 HP |
| Voltage Range | 380 V & 460 V, 60 Hz, A.C Supply |
| Class of Insulation | F |
| Degree of protection | IP 58 |
| Direction of rotation | Anti-Clock wise |
| Type of duty | S1 (Continues) |
| Minimum cooling flow | 0.15 m/sec |
| Max. Liquid temp. | 92° F / 120° F (33° C / 50° C) |
| Starts per hour | 20 Times |
| Method of starting | 20 HP to 150 HP (DOL / Star-Delta) |
| Cable lead out type | 3 Core Flat Cable |



DSM8 WATER FILLED MOTOR

APPLICATIONS



GENERAL
WATER SUPPLY



AGRICULTURE



INDUSTRIAL



IRRIGATION
SYSTEM



FOOD PROCESSING
INDUSTRY



HOTEL

TECHNICAL DATA

| 8" 3Phase 230V, 380V & 460V, 60Hz Water Filled Motor | | | | | | | | | | | | | Service Factor 1.15 | | | | |
|--|------|-------------|-----------------------|----------------------|----------------------|----|-----|------------------------|------|------|---------------------------|-----------------------|----------------------|---------------------|------------------|-------------|-------------------|
| HP | kW | Voltage (V) | Full Load Current (A) | Starting Current (A) | Efficiency at % Load | | | Power Factor at % Load | | | Max. Down Thrust Load (N) | Full Load Torque (Nm) | Starting Torque (Nm) | Cable Size (sq. mm) | Cable Length (m) | Height (mm) | Gross Weight (kg) |
| | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | | | | | | |
| 20 | 15 | 380 | 41 | 195 | 80 | 82 | 82 | 0.75 | 0.8 | 0.81 | 45000 | 75 | 105 | 10 | 2.7 | 970 | 100 |
| | | 460 | 30 | 159 | 78 | 80 | 80 | 0.75 | 0.8 | 0.81 | | 73 | 95 | | | | |
| 25 | 18.5 | 380 | 49 | 238 | 81 | 82 | 82 | 0.76 | 0.81 | 0.83 | 45000 | 81 | 113 | 10 | 2.7 | 1017 | 109 |
| | | 460 | 36 | 193 | 79 | 81 | 81 | 0.76 | 0.8 | 0.82 | | 75 | 98 | | | | |
| 30 | 22 | 380 | 59 | 288 | 81 | 82 | 83 | 0.78 | 0.83 | 0.85 | 45000 | 88 | 123 | 10 | 2.7 | 1056 | 115 |
| | | 460 | 44 | 239 | 80 | 81 | 81 | 0.77 | 0.82 | 0.84 | | 83 | 108 | | | | |
| 35 | 26 | 380 | 66 | 328 | 81 | 83 | 84 | 0.77 | 0.85 | 0.87 | 45000 | 93 | 130 | 16 | 3.4 | 1169 | 131 |
| | | 460 | 51 | 280 | 81 | 82 | 82 | 0.79 | 0.84 | 0.87 | | 90 | 117 | | | | |
| 40 | 30 | 380 | 68 | 393 | 82 | 85 | 85 | 0.8 | 0.83 | 0.85 | 45000 | 99 | 142 | 16 | 3.4 | 1208 | 137 |
| | | 460 | 54 | 302 | 82 | 84 | 83 | 0.8 | 0.86 | 0.88 | | 96 | 131 | | | | |
| 45 | 33 | 380 | 72 | 412 | 83 | 85 | 85 | 0.79 | 0.82 | 0.87 | 45000 | 118 | 165 | 16 | 3.4 | 1310 | 148 |
| | | 460 | 55 | 364 | 82 | 83 | 84 | 0.79 | 0.81 | 0.85 | | 113 | 147 | | | | |
| 50 | 37 | 380 | 84 | 513 | 83 | 85 | 85 | 0.76 | 0.82 | 0.85 | 45000 | 121 | 178 | 16 | 3.4 | 1362 | 159 |
| | | 460 | 68 | 391 | 84 | 85 | 85 | 0.78 | 0.86 | 0.87 | | 120 | 163 | | | | |
| 60 | 45 | 380 | 99 | 660 | 84 | 86 | 86 | 0.73 | 0.81 | 0.85 | 45000 | 149 | 241 | 16 | 3.4 | 1429 | 170 |
| | | 460 | 79 | 517 | 85 | 87 | 86 | 0.78 | 0.85 | 0.87 | | 147 | 220 | | | | |
| 75 | 55 | 380 | 117 | 841 | 84 | 87 | 87 | 0.72 | 0.81 | 0.84 | 45000 | 182 | 320 | 35 | 3.4 | 1507 | 188 |
| | | 460 | 97 | 606 | 86 | 87 | 87 | 0.78 | 0.85 | 0.88 | | 179 | 288 | | | | |
| 85 | 63 | 380 | 137 | 962 | 85 | 87 | 87 | 0.71 | 0.83 | 0.85 | 45000 | 213 | 359 | 35 | 3.4 | 1530 | 204 |
| | | 460 | 107 | 768 | 85 | 87 | 87 | 0.76 | 0.86 | 0.89 | | 205 | 330 | | | | |
| 100 | 75 | 380 | 156 | 1125 | 85 | 87 | 87 | 0.72 | 0.82 | 0.86 | 45000 | 250 | 433 | 35 | 3.4 | 1600 | 230 |
| | | 460 | 147 | 898 | 85 | 87 | 87 | 0.78 | 0.83 | 0.89 | | 240 | 398 | | | | |
| 125 | 93 | 380 | 192 | 1019 | 86 | 87 | 87 | 0.74 | 0.80 | 0.84 | 55000 | 307 | 660 | 32 | 4.0 | 1471 | 210 |
| | | 460 | 158 | 842 | 86 | 87 | 87 | 0.73 | 0.80 | 0.84 | | 297 | 610 | | | | |
| 150 | 110 | 380 | 232 | 1232 | 86 | 86 | 86 | 0.74 | 0.8 | 0.84 | 55000 | 362 | 858 | 32 | 4.0 | 1601 | 235 |
| | | 460 | 191 | 1018 | 86 | 86 | 86 | 0.73 | 0.8 | 0.84 | | 350 | 820 | | | | |

FEATURES

- Suitable for 200 mm & above bore well.
- Stainless Steel high strength shaft.
- High Efficiency electrical design (Low Operation cost, cool running winding)
- Motor filling with water with Anti-corrosive liquid
- Specially designed thrust bearing to withstand high axial thrust loads.
- Winding connections with solid solder joints.
- Special magnet provision in motor base and newly designed self-spring action diaphragms.
- Epoxy powder coating on rotor.
- Graded cast iron housing with precisely fitted bush and special bearing counter provision for horizontal application of pump set.
- CED Coated

9"

WATER FILLED IE3 SERIES

TECHNICAL DETAILS

| Nominal Diameter | 9" Motor (225 mm) |
|-----------------------|------------------------------------|
| Max. Outer Diameter | 8.86" (225 mm) |
| Power Range | 3Ph |
| Nominal Speed | 85 HP to 200 HP |
| Voltage Range | 380 V & 460 V, 60 Hz, A.C Supply |
| Class of Insulation | F |
| Degree of protection | IP 58 |
| Direction of rotation | Anti-Clock wise |
| Type of duty | S1 (Continues) |
| Minimum cooling flow | 0.15 m/sec |
| Max. Liquid temp. | 92° F / 120° F (33° C / 50° C) |
| Starts per hour | 20 Times |
| Method of starting | 85 HP to 200 HP (DOL / Star-Delta) |
| Cable lead out type | 3 Core Flat Cable |



DSM9 WATER FILLED MOTOR

APPLICATIONS



GENERAL
WATER SUPPLY



AGRICULTURE



INDUSTRIAL



IRRIGATION
SYSTEM



FOOD PROCESSING
INDUSTRY



HOTEL

TECHNICAL DATA

| 9" 3Phase 380V & 460V, 60Hz Water Filled Motor | | | | | | | | | | | | | Service Factor 1.15 | | | | |
|--|-----|-------------|-----------------------|----------------------|----------------------|----|-----|------------------------|------|------|---------------------------|-----------------------|----------------------|---------------------|------------------|-------------|-------------------|
| HP | kW | Voltage (V) | Full Load Current (A) | Starting Current (A) | Efficiency at % Load | | | Power Factor at % Load | | | Max. Down Thrust Load (N) | Full Load Torque (Nm) | Starting Torque (Nm) | Cable Size (sq. mm) | Cable Length (m) | Height (mm) | Gross Weight (kg) |
| | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | | | | | | |
| 85 | 63 | 380 | 216 | 1120 | 82 | 84 | 85 | 0.69 | 0.78 | 0.83 | 60000 | 267 | 325 | 25 | 3.9 | 1545 | 300 |
| | | 460 | 172 | 803 | 83 | 85 | 85 | 0.76 | 0.83 | 0.86 | | 267 | 281 | | | | |
| 110 | 82 | 380 | 273 | 1430 | 84 | 86 | 86 | 0.7 | 0.79 | 0.84 | 60000 | 346 | 382 | 35 | 3.9 | 1615 | 312 |
| | | 460 | 225 | 1160 | 84 | 86 | 86 | 0.71 | 0.8 | 0.84 | | 345 | 375 | | | | |
| 125 | 93 | 380 | 309 | 1710 | 85 | 87 | 86 | 0.73 | 0.82 | 0.86 | 60000 | 408 | 474 | 35 | 3.9 | 1745 | 337 |
| | | 460 | 254 | 1308 | 86 | 87 | 87 | 0.77 | 0.84 | 0.87 | | 408 | 437 | | | | |
| 175 | 130 | 380 | 362 | 1980 | 85 | 87 | 87 | 0.75 | 0.83 | 0.86 | 60000 | 468 | 535 | 35 | 3.9 | 2275 | 420 |
| | | 460 | 294 | 1557 | 85 | 87 | 87 | 0.77 | 0.84 | 0.87 | | 469 | 508 | | | | |
| 200 | 150 | 380 | 448 | 2690 | 84 | 87 | 87 | 0.66 | 0.77 | 0.87 | 60000 | 583 | 896 | 35 | 3.9 | 2500 | 460 |
| | | 460 | 377 | 2130 | 85 | 87 | 87 | 0.7 | 0.79 | 0.84 | | 585 | 858 | | | | |

FEATURES

- Suitable for 225 mm & above bore well.
- Stainless Steel high strength shaft.
- High Efficiency electrical design (Low Operation cost, cool running winding)
- Motor filling with water with Anti-Corrosive liquid
- Specially designed thrust bearing to withstand high axial thrust loads.
- Winding connections with solid solder joints.
- Special magnet provision in motor base and newly designed self-spring action diaphragms.
- Epoxy powder coating on rotor.
- Graded cast iron housing with precisely fitted bush and special bearing counter provision for horizontal application of pump set.
- CED Coated

10"

WATER FILLED TURBO SERIES

TECHNICAL DETAILS

| Nominal Diameter | 10" Motor (250 mm) |
|-----------------------|-------------------------------------|
| Max. Outer Diameter | 9.13" (232 mm) |
| Power Range | 3Ph |
| Nominal Speed | 110 HP to 250 HP |
| Voltage Range | 380 V & 460 V, 60 Hz, A.C Supply |
| Class of Insulation | F |
| Degree of protection | IP 58 / 68 |
| Direction of rotation | Anti-Clock wise |
| Type of duty | S1 (Continues) |
| Minimum cooling flow | 0.5 m/sec |
| Max. Liquid temp. | 92° F / 120° F (33° C / 50° C) |
| Starts per hour | 10 Times |
| Method of starting | 110 HP to 250 HP (DOL / Star-Delta) |
| Cable lead out type | 3 Core Flat Cable |



DSM10 WATER FILLED MOTOR

APPLICATIONS



GENERAL
WATER SUPPLY



AGRICULTURE



INDUSTRIAL



IRRIGATION
SYSTEM



FOOD PROCESSING
INDUSTRY



HOTEL

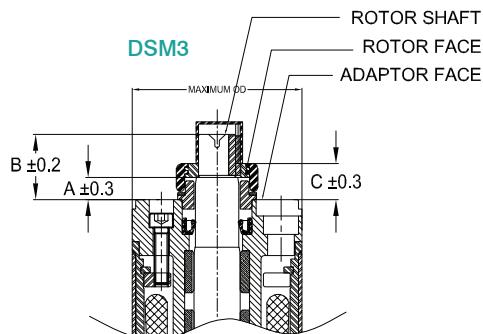
TECHNICAL DATA

| 10" 3Phase 380V & 460V, 60Hz Water Filled Motor | | | | | | | | | | | Service Factor 1.15 | | | |
|---|-----|----------------|--------------------------|-------------------------|----------------------|----|-----|------------------------|------|------|---------------------|------------------|-------------|-------------------|
| HP | kW | Voltage (V) | Full Load Current (A) | Starting Current (A) | Efficiency at % Load | | | Power Factor at % Load | | | Cable Size (sq. mm) | Cable Length (m) | Height (mm) | Gross Weight (kg) |
| | | | | | 50 | 75 | 100 | 50 | 75 | 100 | | | | |
| 110 | 81 | 380 | 171 | 904 | 85 | 85 | 85 | 0.8 | 0.83 | 0.85 | 25 | 5 | 1310 | 228 |
| | | 460 | 138 | 729 | 85 | 85 | 85 | 0.82 | 0.85 | 0.87 | | | | |
| 125 | 93 | 380 | 194 | 1027 | 85 | 85 | 85 | 0.8 | 0.83 | 0.85 | 25 | 5 | 1370 | 256 |
| | | 460 | 156 | 829 | 85 | 85 | 85 | 0.82 | 0.85 | 0.87 | | | | |
| 150 | 110 | 380 | 234 | 1242 | 85 | 86 | 85 | 0.79 | 0.82 | 0.84 | 35 | 5 | 1430 | 284 |
| | | 460 | 189 | 1002 | 85 | 86 | 85 | 0.81 | 0.84 | 0.86 | | | | |
| 175 | 130 | 380 | 268 | 1423 | 86 | 87 | 86 | 0.8 | 0.83 | 0.85 | 35 | 5 | 1510 | 311 |
| | | 460 | 217 | 1148 | 86 | 87 | 86 | 0.82 | 0.85 | 0.87 | | | | |
| 200 | 150 | 380 | 306 | 1621 | 86 | 86 | 86 | 0.8 | 0.83 | 0.85 | 35 | 5 | 1610 | 338 |
| | | 460 | 247 | 1308 | 86 | 86 | 86 | 0.82 | 0.85 | 0.87 | | | | |
| 225 | 165 | 380 | 345 | 1831 | 86 | 86 | 86 | 0.8 | 0.83 | 0.85 | 35 | 5 | 1740 | 370 |
| | | 460 | 279 | 1478 | 86 | 86 | 86 | 0.82 | 0.85 | 0.87 | | | | |
| 250 | 185 | 380 | 385 | 2040 | 86 | 86 | 86 | 0.8 | 0.83 | 0.85 | 35 | 5 | 1820 | 400 |
| | | 460 | 311 | 1647 | 86 | 86 | 86 | 0.82 | 0.85 | 0.87 | | | | |

FEATURES

- Suitable for 225 mm & above bore well.
- Stainless Steel high strength shaft.
- High Efficiency electrical design (Low Operation cost, cool running winding)
- Motor filling with water with Anti-Corrosive liquid
- Specially designed thrust bearing to withstand high axial thrust loads.
- Winding connections with solid solder joints.
- Special magnet provision in motor base and newly designed self-spring action diaphragms.
- Epoxy powder coating on rotor.
- Graded cast iron housing with precisely fitted bush and special bearing counter provision for horizontal application of pump set.
- CED Coated

MOUNTING DIMENSIONAL DETAILS

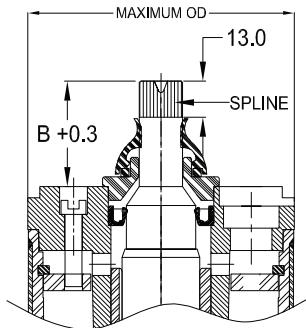


DSM3 (Key-Way)

| Model | Height | | | Play | Maxi OD |
|-------|--------|----|------|------------|--------------------|
| | A | B | C | | |
| DSM3 | 9.5 | 28 | 15.5 | 1.0 to 2.0 | $\varnothing 74.0$ |

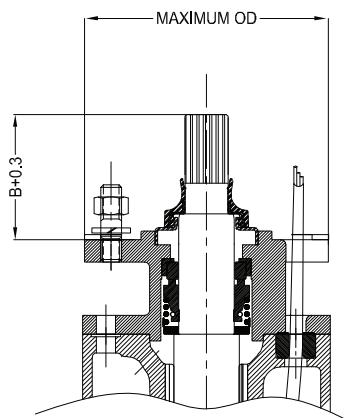
DSM4 (NEMA)

| Model | Height | Play | Max. OD (\varnothing) |
|---------|--------|------------|---------------------------|
| | B | | |
| DSM4HPR | 38 | 1.0 to 2.0 | 3.78" (96 mm) |



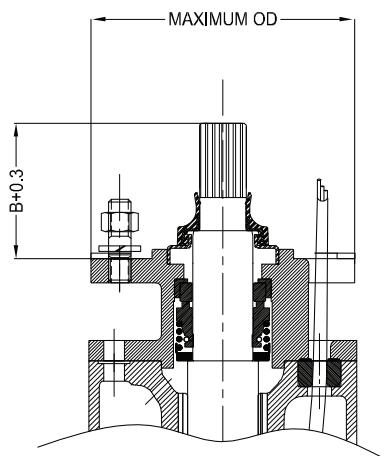
DSM5 - DSM9 (NEMA)

| Model | Height | Play | Max. OD (\varnothing) |
|-------------------|--------|------------|---------------------------|
| | B | | |
| DSM6 | 72.8 | 1.5 to 2.0 | 5.67" (144 mm) |
| DSM7 (6" Joining) | 72.8 | 1.5 to 2.0 | 6.8" (172 mm) |
| DSM7 (8" Joining) | 101.5 | 1.5 to 2.5 | 7.09" (180 mm) |
| DSM8 | 101.5 | 1.5 to 2.5 | 7.09" (180 mm) |
| DSM8H | 101.5 | 1.5 to 2.5 | 7.28" (185 mm) |
| DSM9 | 101.5 | 1.5 to 2.5 | 8.74" (222 mm) |



DSM10 (NEMA)

| Model | Height | Play | Max. OD (\varnothing) |
|-------|--------|------------|---------------------------|
| | B | | |
| DSM10 | 101.25 | 1.5 to 2.0 | 9.13" (232 mm) |



LEAD - CABLES DIMENSION

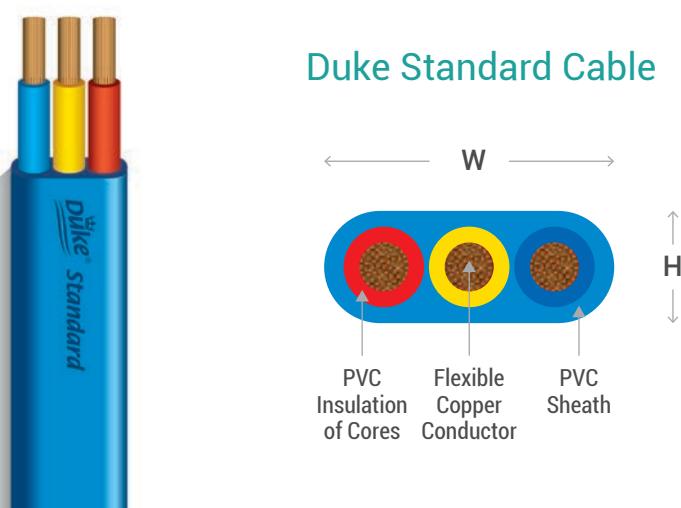
(Duke Standard Cable) 3 Core Flat Cable (IS 694)

| Conductor | | Insulation | Sheath | Conductor Resistance @ 20°C (max) ohms/km. | W x H |
|-----------------|-------------------------------|------------------------|------------------------|---|---------------|
| Area sq. mm. | No. of Wires / Dia. mm. | Thickness (Nom) mm. | Thickness (Nom) mm. | | |
| 1.0 | 14/0.30* | 0.60 | 0.90 | 18.10 | 10.0 X 4.70 |
| 1.5 | 22/0.30* | 0.60 | 0.90 | 12.10 | 10.40 X 5.20 |
| 2.5 | 36/0.30* | 0.70 | 1.00 | 7.41 | 12.90 X 6.10 |
| 4.0 | 56/0.30** | 0.80 | 1.00 | 4.95 | 15.20 X 6.80 |
| 6.0 | 84/0.30** | 0.80 | 1.10 | 3.30 | 17.40 X 7.60 |
| 10.0 | 140/0.30** | 1.00 | 1.40 | 1.91 | 22.20 X 9.30 |
| 16.0 | 224/0.30** | 1.00 | 1.40 | 1.21 | 28.0 X 11.40 |
| 25.0 | 350/0.30** | 1.20 | 2.00 | 0.780 | 35.50 X 14.70 |
| 35.0 | 490/0.30** | 1.20 | 2.00 | 0.554 | 39.50 X 16.20 |

Note: * As per class 2 of IS:8130/1984

** As per class 5 of IS:8130/1984

Duke Standard Cable



Submersible Pumpset Cable Selection Chart for 220 Voltage - Single Phase - 50 Hz

| HP | Installation Depth in MTR | | | | | | | | | | | | | | | | | | | | |
|------|---------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 128 | 140 | 180 | 200 | 220 | 270 | 320 | 370 | 420 | 470 |
| 0.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2.5 | 2.5 | 2.5 | 2.5 | 4 | 4 | 4 | 6 | 6 | 6 |
| 0.75 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 4 | 4 | 4 | 6 | 10 | 10 | 10 | 10 |
| 1 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 4 | 4 | 4 | 6 | 6 | 6 | 10 | 10 | 10 | 16 |
| 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2.5 | 2.5 | 2.5 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 10 | 10 | 10 | 16 | 16 | 16 | 25 |
| 2 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 10 | 10 | 10 | 16 | 16 | 16 | 25 | 25 |
| 3 | 2.5 | 2.5 | 2.5 | 2.5 | 4 | 4 | 6 | 6 | 6 | 10 | 10 | 10 | 16 | 16 | 16 | 25 | 25 | 35 | 35 | 35 | 35 |
| 4 | 4 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 10 | 10 | 10 | 16 | 16 | 16 | 25 | 25 | 35 | 35 | 35 | 35 | 35 |
| 5 | 4 | 4 | 4 | 4 | 6 | 6 | 10 | 10 | 10 | 10 | 10 | 16 | 16 | 25 | 25 | 35 | 35 | 50 | 50 | 50 | 50 |
| 6 | 6 | 6 | 6 | 6 | 10 | 10 | 10 | 10 | 10 | 16 | 16 | 25 | 25 | 25 | 35 | 35 | 50 | 50 | 50 | 50 | 50 |
| 7.5 | 6 | 6 | 6 | 10 | 10 | 10 | 10 | 10 | 16 | 16 | 25 | 25 | 25 | 35 | 35 | 50 | 50 | 50 | 50 | 50 | 50 |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 16 | 25 | 25 | 25 | 25 | 35 | 35 | 35 | 50 | 50 | 50 | 50 | 50 | 50 |

Submersible Motor 3P - 400V, 50Hz, Direct on Line (D.O.L)

| kW | HP | Cable Size sq.mm, copper wire - 70°C rated insulation | | | | | | | | | | | | | | | | | |
|------|------|---|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|-----|-----|------|------|
| | | 2.5 | 4 | 6 | 10 | 16 | 25 | 35 | 50 | 70 | 95 | 120 | 150 | 185 | 240 | 300 | 400 | | |
| 4 | 5.5 | 180 | 290 | 430 | 710 | | | | | | | | | | | | | | |
| 5.5 | 7.5 | 130 | 210 | 320 | 530 | 830 | | | | | | | | | | | | | |
| 7.5 | 10 | 80 | 150 | 230 | 390 | 610 | 940 | | | | | | | | | | | | |
| 9.3 | 12.5 | 80 | 130 | 190 | 320 | 510 | 770 | | | | | | | | | | | | |
| 11 | 15 | 60 | 100 | 160 | 270 | 430 | 650 | 890 | | | | | | | | | | | |
| 13 | 17.5 | | 90 | 140 | 230 | 370 | 560 | 770 | | | | | | | | | | | |
| 15 | 20 | | 80 | 120 | 200 | 320 | 490 | 880 | 920 | | | | | | | | | | |
| 18.5 | 25 | | | 100 | 160 | 260 | 400 | 540 | 740 | 980 | | | | | | | | | |
| 22 | 30 | | | | 140 | 220 | 340 | 470 | 630 | 840 | | | | | | | | | |
| 26 | 35 | | | | | 120 | 190 | 290 | 380 | 540 | 720 | 920 | | | | | | | |
| 30 | 40 | | | | | | 150 | 250 | 340 | 470 | 520 | 790 | 940 | | | | | | |
| 37 | 50 | | | | | | 130 | 200 | 280 | 380 | 600 | 640 | 760 | 890 | 1020 | | | | |
| 45 | 60 | | | | | | | 170 | 240 | 330 | 440 | 570 | 890 | 810 | 940 | | | | |
| 52 | 70 | | | | | | | 150* | 210 | 290 | 390 | 500 | 800 | 710 | 820 | 980 | | | |
| 55 | 75 | | | | | | | | 140* | 190 | 270 | 360 | 470 | 5600 | 660 | 770 | 910 | | |
| 60 | 80 | | | | | | | | | 180 | 250 | 340 | 440 | 530 | 630 | 730 | 870 | 1010 | |
| 67 | 90 | | | | | | | | | 160* | 220 | 300 | 390 | 460 | 550 | 630 | 750 | 860 | 1000 |
| 75 | 100 | | | | | | | | | | 200* | 270 | 350 | 420 | 490 | 570 | 680 | 780 | 910 |
| 83 | 111 | | | | | | | | | | 180* | 250 | 320 | 390 | 450 | 530 | 630 | 730 | 850 |
| 85 | 114 | | | | | | | | | | | 230 | 290 | 350 | 410 | 480 | 570 | 650 | 750 |
| 93 | 125 | | | | | | | | | | | 220* | 280 | 340 | 390 | 460 | 550 | 620 | 720 |
| 110 | 150 | | | | | | | | | | | | 220 | 270 | 310 | 360 | 420 | 480 | 550 |
| 130 | 175 | | | | | | | | | | | | 200* | 240 | 280 | 330 | 390 | 440 | 520 |
| 150 | 200 | | | | | | | | | | | | | 200* | 240 | 280 | 330 | 380 | 440 |
| 185 | 250 | | | | | | | | | | | | | | 210* | 250 | 280 | 330 | |

Submersible Motor 3P - 400V, 50Hz, Star Delta (S.D.)

| kW | HP | Cable Size sq.mm, copper wire - 70°C rated insulation | | | | | | | | | | | | | | | | | |
|------|------|---|-----|-----|-----|-----|-----|------|-----|-----|------|------|------|------|------|------|-----|-----|------|
| | | 2.5 | 4 | 6 | 10 | 16 | 25 | 35 | 50 | 70 | 95 | 120 | 150 | 185 | 240 | 300 | 400 | | |
| 4 | 5.5 | 270 | 430 | 640 | | | | | | | | | | | | | | | |
| 5.5 | 7.5 | 190 | 310 | 480 | 790 | | | | | | | | | | | | | | |
| 7.5 | 10 | 130 | 220 | 340 | 580 | 910 | | | | | | | | | | | | | |
| 9.3 | 12.5 | 120 | 180 | 280 | 480 | 760 | | | | | | | | | | | | | |
| 11 | 15 | 80 | 150 | 240 | 400 | 640 | 970 | | | | | | | | | | | | |
| 13 | 17.5 | 70 | 130 | 210 | 340 | 550 | 840 | | | | | | | | | | | | |
| 15 | 20 | 70 | 120 | 180 | 300 | 480 | 730 | 1020 | | | | | | | | | | | |
| 18.5 | 25 | 60 | 90 | 150 | 240 | 390 | 600 | 810 | | | | | | | | | | | |
| 22 | 30 | | 70 | 120 | 210 | 330 | 510 | 700 | 940 | | | | | | | | | | |
| 26 | 35 | | 60* | 100 | 180 | 280 | 430 | 580 | 810 | | | | | | | | | | |
| 30 | 40 | | | 90 | 150 | 240 | 370 | 610 | 700 | 930 | | | | | | | | | |
| 37 | 50 | | | | 120 | 190 | 300 | 420 | 570 | 750 | 950 | | | | | | | | |
| 45 | 60 | | | | | 100 | 160 | 250 | 360 | 490 | 550 | 850 | | | | | | | |
| 52 | 70 | | | | | | 90* | 150 | 220 | 310 | 430 | 580 | 750 | 800 | | | | | |
| 55 | 75 | | | | | | | 130 | 210 | 280 | 400 | 540 | 700 | 840 | 890 | | | | |
| 60 | 80 | | | | | | | | 120 | 190 | 270 | 370 | 510 | 660 | 790 | 940 | | | |
| 67 | 90 | | | | | | | | 100 | 180 | 240 | 330 | 450 | 580 | 690 | 820 | 940 | | |
| 75 | 100 | | | | | | | | | 90* | 150 | 210 | 300 | 400 | 520 | 630 | 730 | 850 | 1020 |
| 83 | 111 | | | | | | | | | | 130 | 190 | 270 | 370 | 480 | 580 | 670 | 790 | 940 |
| 85 | 114 | | | | | | | | | | 180* | 180 | 250 | 340 | 430 | 520 | 610 | 720 | 850 |
| 93 | 125 | | | | | | | | | | | 120* | 160 | 240 | 330 | 420 | 510 | 580 | 690 |
| 110 | 150 | | | | | | | | | | | | 130* | 190 | 250 | 330 | 400 | 460 | 540 |
| 130 | 175 | | | | | | | | | | | | | 160* | 220 | 300 | 360 | 420 | 490 |
| 150 | 200 | | | | | | | | | | | | | | 150* | 190 | 250 | 300 | 360 |
| 185 | 250 | | | | | | | | | | | | | | | 180* | 240 | 270 | 310 |

CONVERSTION TABLE

FLOW RATE

| litre per second l/s | litre per minute l/min | cubic meter per hour m ³ /h | cubic meter per hour ft ³ /h | cubic foot per minute ft ³ /min | imp.gallon per minute imp.gal./min | US gallon per minute US gal./min | US barrel per day is barrel/d (petroleum) |
|----------------------|------------------------|--|---|--|------------------------------------|----------------------------------|---|
| 1 | 60 | 3.6 | 127.133 | 2.1189 | 13.2 | 15.85 | 543.439 |
| 0.017 | 1 | 0.06 | 2.1189 | 0.0353 | 0.22 | 0.264 | 9.057 |
| 0.278 | 16.667 | 1 | 35.3147 | 0.5886 | 3.666 | 4.403 | 150.955 |
| 0.008 | 0.472 | 0.0283 | 1 | 0.0167 | 0.104 | 0.125 | 4.275 |
| 0.472 | 28.317 | 1.6990 | 60 | 1 | 6.229 | 7.480 | 256.475 |
| 0.076 | 4.546 | 0.2728 | 9.6326 | 0.1605 | 1 | 1.201 | 41.175 |
| 0.063 | 3.785 | 0.2271 | 8.0209 | 0.1337 | 0.833 | 1 | 34.286 |
| 0.002 | 0.110 | 0.0066 | 0.2339 | 0.0039 | 0.024 | 0.029 | 1 |

LIQUID

| Cubic meter m ³ | litre l | milli litre ml | imp. gallon imp. gal | US gallon US gal | cubic foot ft ³ |
|----------------------------|---------|---------------------|-----------------------|--------------------------|----------------------------|
| 1 | 1000 | 1 x 10 ⁶ | 220 | 264.2 | 35.3147 |
| 0.001 | 1 | 1000 | 0.22 | 0.2642 | 0.0353 |
| 1 x 10 ⁻⁶ | 0.001 | 1 | 22 x 10 ⁻⁴ | 2.642 x 10 ⁻⁴ | 3.53 x 10 ⁻⁵ |
| 0.00455 | 4.546 | 4546 | 1 | 1.201 | 0.1605 |
| 0.00378 | 3.785 | 3785 | 0.8327 | 1 | 0.1337 |
| 0.0283 | 28.317 | 28317 | 6.2288 | 7.4805 | 1 |

LIQUID HEAD AND PRESSURE

| newton per square meter N/m ² (Pa) | kilo pascal kPa | bar | kilogram force per square centimeter Kgf/cm ² | pound force per square inch psi | foot for water ft H ₂ O | meter for water ft H ₂ O | millimeter of mercury mm Hg | inch of mercury in Hg |
|---|-----------------|----------------------|--|---------------------------------|------------------------------------|-------------------------------------|-----------------------------|-------------------------|
| 1 | 0.001 | 1 x 10 ⁻⁵ | 1.02 x 10 ⁻⁵ | 1.45 x 10 ⁻⁴ | 3.35 x 10 ⁻⁴ | 1.02 x 10 ⁻⁴ | 0.0075 | 2.95 x 10 ⁻⁴ |
| 1000 | 1 | 0.01 | 0.0102 | 0.145 | 0.335 | 0.102 | 7.5 | 0.295 |
| 1 x 10 ⁻⁵ | 100 | 1 | 1.02 | 14.5 | 33.52 | 10.2 | 750.1 | 29.53 |
| 98,067 | 98.07 | 0.981 | 1 | 14.22 | 32.81 | 10 | 735.6 | 28.96 |
| 6895 | 6.895 | 0.069 | 0.0703 | 1 | 2.31 | 0.703 | 51.72 | 2.036 |
| 2984 | 2.984 | 0.03 | 0.0305 | 0.433 | 1 | 0.305 | 22.42 | 0.882 |
| 9789 | 9.789 | 0.098 | 0.1 | 1.42 | 3.28 | 1 | 73.42 | 2.891 |
| 133.3 | 0.133 | 0.0013 | 0.0014 | 0.019 | 0.045 | 0.014 | 1 | 0.039 |
| 3386 | 3.386 | 0.0338 | 0.0345 | 0.491 | 1.133 | 0.0345 | 25.4 | 1 |

LENGTH

1609.37 metres = - 1.60934 kilometers

| millimeter mm | centimeter cm | meter m | inch in | foot ft | yard yd |
|---------------|---------------|---------|---------|---------|---------|
| 1 | 0.1 | 0.001 | 0.0394 | 0.0033 | 0.0011 |
| 10 | 1 | 0.01 | 0.3937 | 0.0328 | 0.0109 |
| 1000 | 100 | 1 | 39.3701 | 3.2808 | 1.0936 |
| 25.4 | 2.54 | 0.0254 | 1 | 0.0833 | 0.0278 |
| 304.8 | 30.48 | 0.3048 | 12 | 1 | 0.3333 |
| 914.4 | 91.44 | 0.9144 | 36 | 3 | 1 |

1 Kilometer = 1000 metres = 0.62137 miles 1 mile =

MASS

| kilogram kg | pound lb | hundred weight cwt | tonne t | ton long tn | short ton sh tn |
|-------------|----------|--------------------|-------------------------|-------------------------|------------------------|
| 1 | 2.205 | 0.0197 | 0.001 | 9.84 x 10 ⁻⁴ | 0.0011 |
| 0.454 | 1 | 0.0089 | 4.54 x 10 ⁻⁴ | 4.46 x 10 ⁻⁴ | 5.0 x 10 ⁻⁴ |
| 50.802 | 112 | 1 | 0.0508 | 0.05 | 0.056 |
| 1000 | 2204.6 | 19.684 | 1 | 0.9842 | 1.1023 |
| 1016 | 2240 | 20 | 1.0161 | 1 | 1.102 |
| 907.2 | 2000 | 17.857 | 0.9072 | 0.8929 | 1 |

TEMPERATURE

| To Convert From | To | Use Formula |
|--|--|---|
| Temperature Celsius, tc Temperature Fahrenheit, tf Temperature Celsius, tc Temperature Fahrenheit, tf Temperature Kelvin, tk Temperature Kelvin, tk | Temperature Kelvin, tk Temperature Kelvin, tk Temperature Fahrenheit, tf Temperature Celsius, tc Temperature Celsius, tc Temperature Fahrenheit, tf | K = tc + 273.15 K = (tF + 459.67 / 1.8) F = 1.8 tc + 32 C = (tF - 32) / 1.8 C = tk - 273.15 F = 1.8tk - 459.67 |

NOTE



OUR ACHIEVEMENTS



National Quality Award -2010 by Hon. President of India Smt. Pratibha Patil



Entrepreneurship Award-2010 by Hon. Chief Minister of Gujarat Shri Narendra Modi



Best MSME Awards 2012-13



National Quality Award - 2006



Rajasthan Energy Conservation Award - 2012



National Entrepreneurship Award - 2009



EMPOWER Award - 2009



Super SME Award - 2016



National Lean Manufacturing System Award - 2016



MSME Award - 2010



Best MSME Award 2013 - 14

OUR AWARDS & CERTIFICATE





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