

Duke[®]
SAVE ENERGY
PUMPS & PIPES



www.dukepumps.com

DUKE
**SUBMERSIBLE
MOTORS**

CATALOGUE
50Hz



THE BEGGINING

Of DUKE PLASTO TECHNIQUE PVT. LTD., 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 PLASTO TECHNIQUE PVT. LTD.

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 Plasto Technique Pvt. Ltd. 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 Plasto Technique Pvt. Ltd. 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

OIL FILLED SUBMERSIBLE MOTOR

Description

Specification and material of construction

Technical Data

WATER FILLED REWINDABLE SUBMERSIBLE MOTORS

Description

Specification and material of construction

Technical Data

SMART DC MOTOR

Description

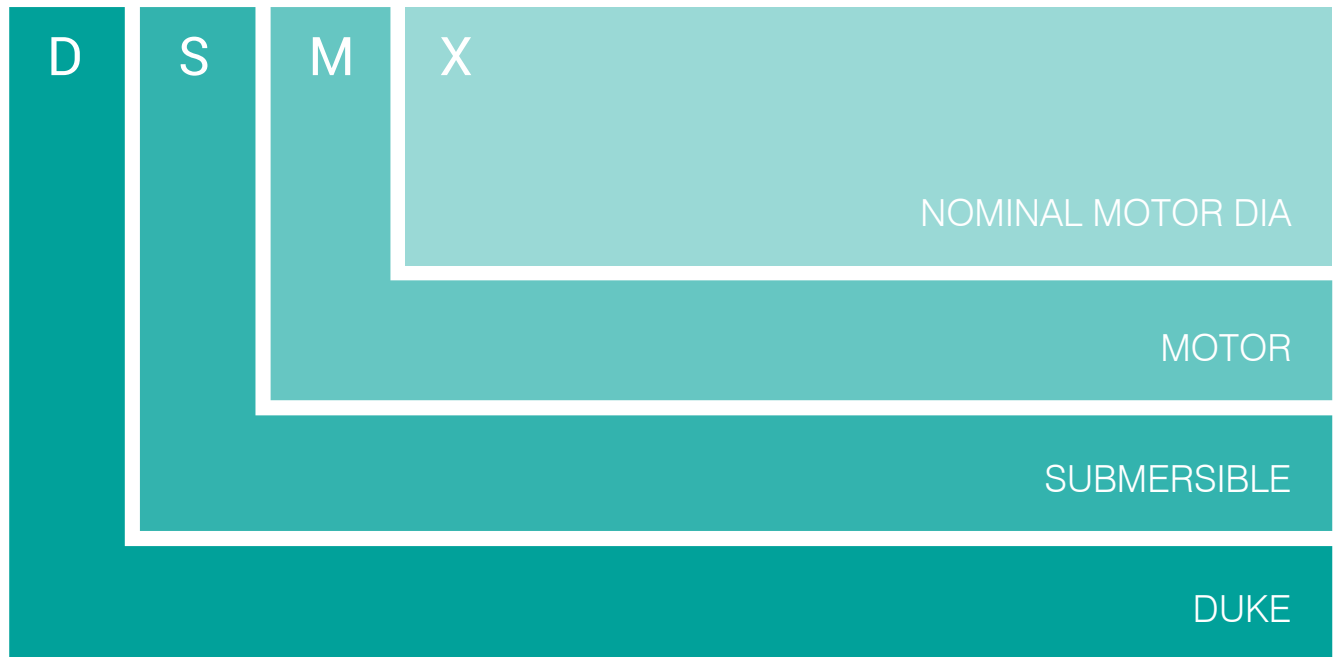
Technical Data

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.

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

- ☑ Rigidin 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 thrust bearings
- ☑ Winding Wires: Polywrap / PVC/PE2-PA
- ☑ Lead-out Cable: TPR/RUBBER/PVC
- ☑ High Temperature models available [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 checkvalve 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 checkvalve to balance the pressure inside. That's why pressure differences inside motor never causes membrane under motor to blow up.

SUBMERSIBLE MOTORS





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RESIDENTIAL



SMALL IRRIGATION



FOUNTAIN



WATER SUPPLY



SMALL INDUSTRIES

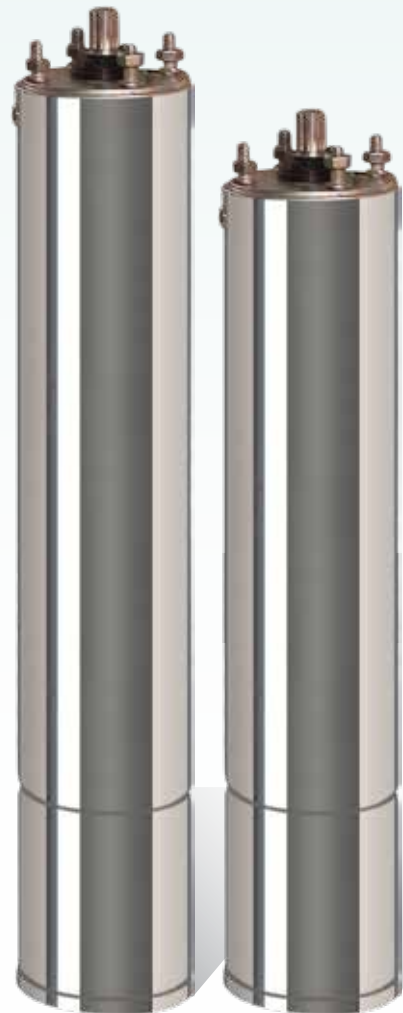


SOLAR

APPLICATIONS

DSM04
OIL FILLED MOTOR

OIL FILLED
SERIES



TECHNICAL DETAILS

Nominal Diameter		4" Motor (100 mm)					
Max. Outer Diameter		98 mm		Type of duty	S1 (Continues)		
Power Range	1Ph	0.37 kW to 2.6 kW		Minimum cooling flow	0.15 m/sec		
	3Ph	0.37 kW to 7.5 kW		Max. Liquid Temp.	35° C		
Nominal Speed		2850 rpm		Starts per hour	20 Times		
Voltage range		1 Phase 220/230 V, 50 Hz, A.C Supply		Method of starting	1 Phase - CSR		
		3 Phase 380-415 V, 50 Hz, A.C Supply			3 Phase - Direct On Line (DOL)		
Class of Insulation		F		Cable lead out type	Permanently connected		
Degree of protection		IP 68			3/4 core flat cable		
Direction of rotation		Anti-Clock wise					

TECHNICAL DATA

4" Single Phase 220V/ 230V, 3 wire Oil Filled Motor									
kW	HP	Full Load Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down thrust Load (N)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
0.37	0.5	3.7	54	0.93	1500	1.5	1.5	341	6.7
0.55	0.75	4.7	57	0.93	1500	1.5	1.5	356	7.3
0.75	1	6.2	60	0.93	1500	1.5	1.5	386	8.7
1.1	1.5	8.0	63	0.93	1500	1.5	1.5	426	10.6
1.5	2	10.5	65	0.93	2500	2	1.5	476	12.9
2.2	3	15.0	66	0.93	2500	2.3	2	581	17.7
2.6	3.5	17.8	67	0.93	2500	2.3	2	591	19.8

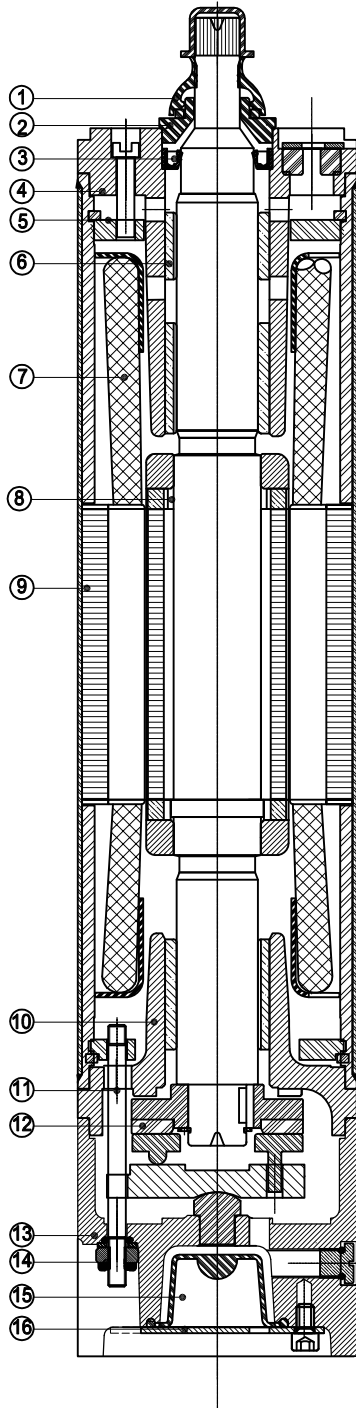
4" Three Phase 380 - 415 V, Oil filled Motor									
kW	HP	Full Load Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down thrust Load (N)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
0.37	0.5	1.4	58	0.75	1500	1.5	1.5	341	6.7
0.55	0.75	1.8	61	0.76	1500	1.5	1.5	356	7.3
0.75	1	2.5	64	0.77	1500	1.5	1.5	371	8
1.1	1.5	3.2	67	0.78	2500	1.5	1.5	406	9.8
1.5	2	4	69	0.79	2500	1.5	1.5	451	11.7
2.2	3	6	71	0.8	2500	1.5	2	541	15.7
3	4	8	72	0.81	2500	2	2	621	19.8
3.7	5	9.5	72	0.8	2500	2	2	626	21.4
4	5.5	10	74	0.82	2500	2	2	725	23.7
5.5	7.5	12	75	0.83	4500	2.3	3	815	28
7.5	10	15	76	0.84	4500	2.3	3	875	34

FEATURES

- Suitable for size of 100 mm (4") & above bore well.
- Available in Capsule Couple and Spline Couple.
- Highly Lubricant Oil Filled Motor
- Stainless Steel High Strength Shaft
- Enameled Winding Wire
- Anti-Friction Ball Bearings With Long Life
- Pressure Equalizing Spring Loaded Diaphragm
- NEMA Standard

CROSS-SECTIONAL DRAWING

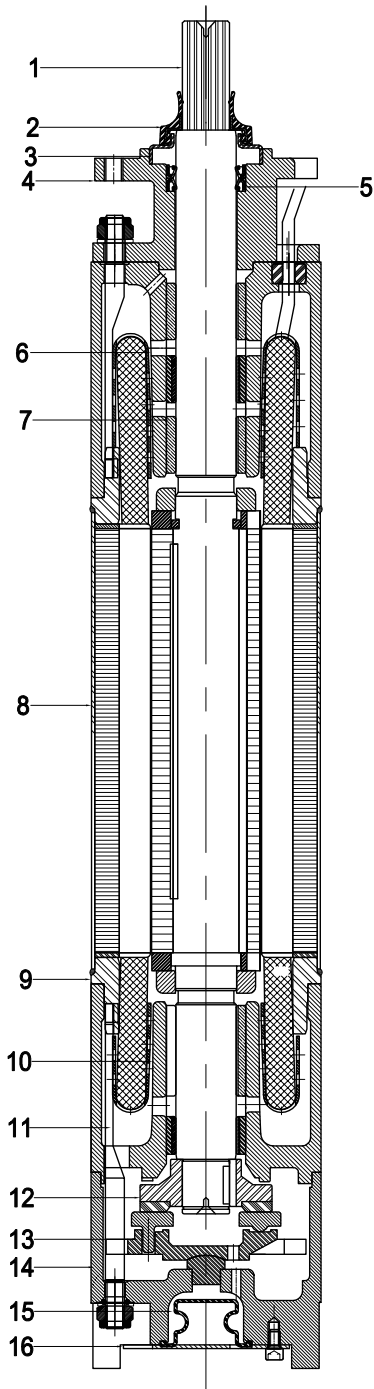
DSM4



NO.	PART NAME	MATERIAL
1	SAND SLINGER	NITRILE RUBBER
2	SAND COVER	SS 304
3	OIL SEAL	NITRILE RUBBER
4	ADAPTOR	SS 304
5	FLANGE	MILD STEEL
6	BEARING BUSH	BRONZE LTB-4
7	WINDING WIRE	PVC+BOPP+COPPER
8	ROTOR	STAMPING-CRNO M47 SHAFT- SS
9	STATOR	STAMPING-CRNO M47 PIPE- SS 304
10	LOWER HOUSING	SS 304
11	STUD	SS 304
12	THRUST BEARING WITH LOOSE SEGMENT	CARBON + SS
13	MOTOR BASE	SS 304
14	FASTENERS	SS 304
15	DIAPHRAGM	NITRILE RUBBER
16	MOTOR BASE PLATE	SS 410

CROSS-SECTIONAL DRAWING

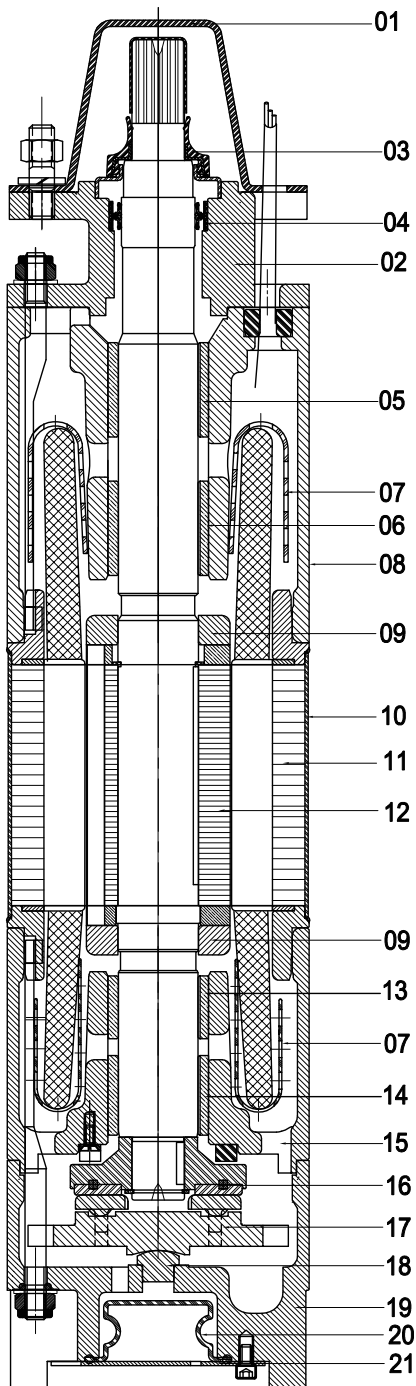
DSM5



NO.	PART NAME	MATERIAL
1	ROTOR SHAFT	SS AISI 410
2	SAND SLINGER	NITRILE RUBBER+SS
3	SAND COVER	SS AISI-410
4	ADAPTOR	CI,FG-200
5	OIL SEAL	NITRILE RUBBER
6	UPPER HOUSING	CI,FG-200
7	BEARING BUSH	LTB-4
8	STATOR TUBE	SS AISI 202
9	END RING	MILD STEEL
10	LOWER HOUSING	CI,FG-200
11	STUD M10X111	SS AISI-410
12	THRUST BEARING PLATE	PVC/NYLON 66
13	THRUST BEARING	SS AISI 410
14	MOTOR BASE	CI,FG-200
15	DIAPHRAM	NITRILE RUBBER
16	MOTOR BASE PLATE	SS AISI-410

CROSS-SECTIONAL DRAWING

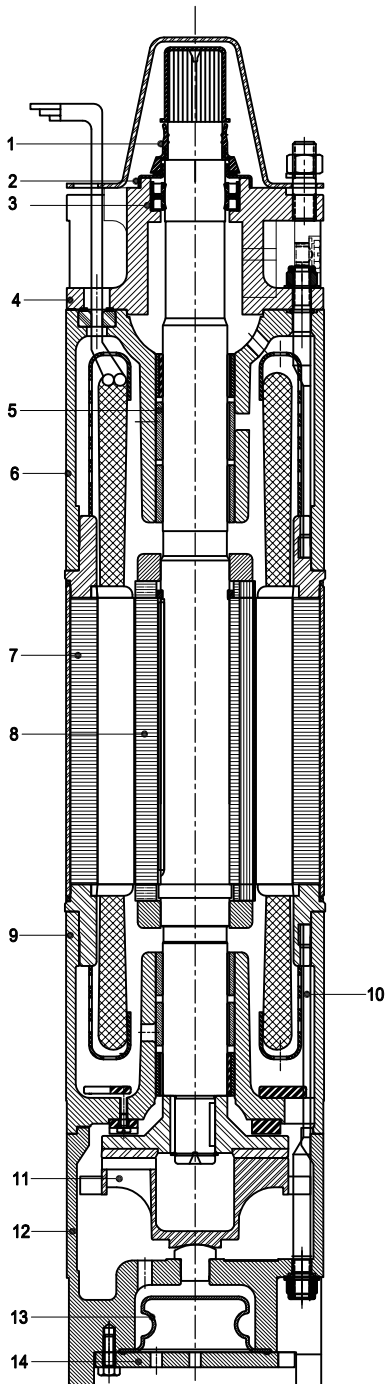
DSM6



NO.	PART NAME	MATERIAL
1	PROTECTION CLAMP	MS
2	ADAPTOR	CI,FG-260
3	SAND SLINGER	NITRILE RUBBER
4	OIL SEAL	NITRILE RUBBER+SS
5	RUBBER BUSH	NITRILE RUBBER+SS
6	BEARING BUSH	LTB-4
7	WINDING CAP	LDPE
8	UPPER HOUSING	CI,FG-260
9	BALANCE RING	CI,FG-150
10	STATOR TUBE	SS- 202
11	STATOR	STAMPING-CRNO M-47
12	ROTOR	STAMPING-CRNO M-47
13	RUBBER BUSH	NITRILE RUBBER+SS
14	BEARING BUSH	LTB-4
15	LOWER HOUSING	CI,FG-260
16	T.B.PLATE	CI+CARBON
17	THRUST BEARING BASE	SS- 420
18	ROCKER SUPPORT	SS- 410
19	MOTOR BASE	CI,FG-260
20	DAIPHRAGM	NITRILE RUBBER
21	MOTOR BASE PLATE	SS- 410

CROSS-SECTIONAL DRAWING

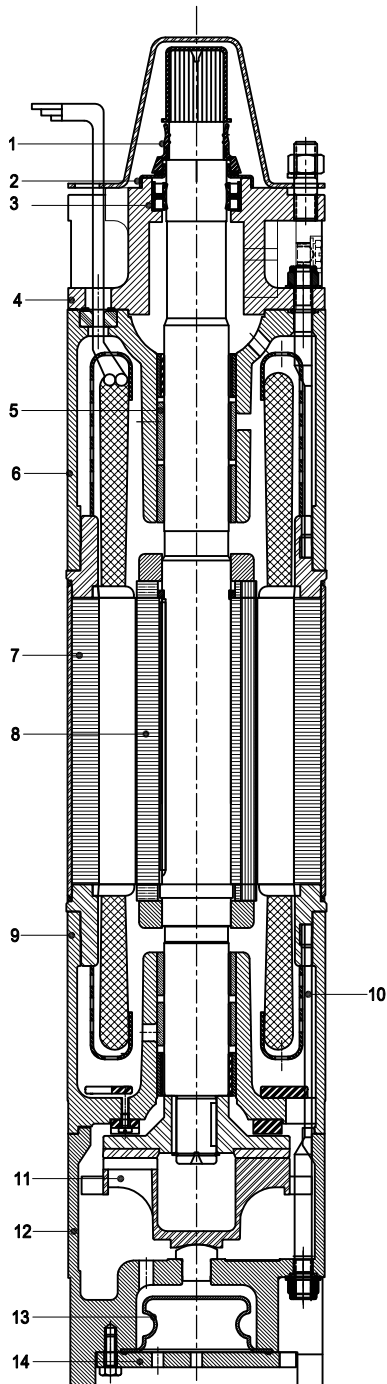
DSM7



NO.	PART NAME	MATERIAL
1	SAND SLINGER	NITRILE RUBBER
2	SAND COVER	SS AISI-410
3	OIL SEAL	NITRILE RUBBER
4	ADAPTOR	CI,FG-200
5	BEARING BUSH	BRONZ LTP-4
6	UPPER HOUSING	CI,FG-200
7	STATOR	STAMPING-CRNO PIPE-SS
8	ROTOR	SHAFT-SS STAMPING-CRNO
9	LOWER HOUSING	CI,FG-200
10	T-BOLT	CARBON STEEL EN8
11	THRUST BEARING	SS AISI-410, PVC-NYLON 66
12	MOTOR BASE	CI,FG-200
13	DIAPHRAGM	NITRILE RUBBER
14	MOTOR BASE PLATE	CAST IRON

CROSS-SECTIONAL DRAWING

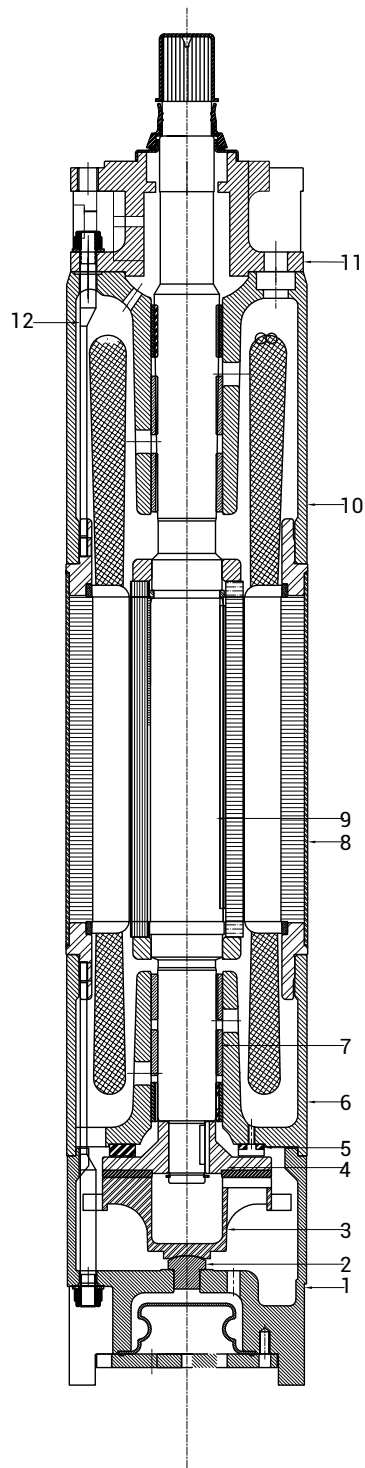
DSM8



NO.	PART NAME	MATERIAL
1	SAND SLINGER	NITRILE RUBBER
2	SAND COVER	SS AISI-410
3	OIL SEAL	NITRILE RUBBER
4	ADAPTOR	CI,FG-200
5	BEARING BUSH	BRONZ LTP-4
6	UPPER HOUSING	CI,FG-200
7	STATOR	STAMPING-CRNO PIPE-SS
8	ROTOR	SHAFT-SS STAMPING-CRNO
9	LOWER HOUSING	CI,FG-200
10	T-BOLT	CARBON STEEL EN8
11	THRUST BEARING	SS AISI-410, PVC-NYLON 66
12	MOTOR BASE	CI,FG-200
13	DIAPHRAGM	NITRILE RUBBER
14	MOTOR BASE PLATE	CAST IRON

CROSS-SECTIONAL DRAWING

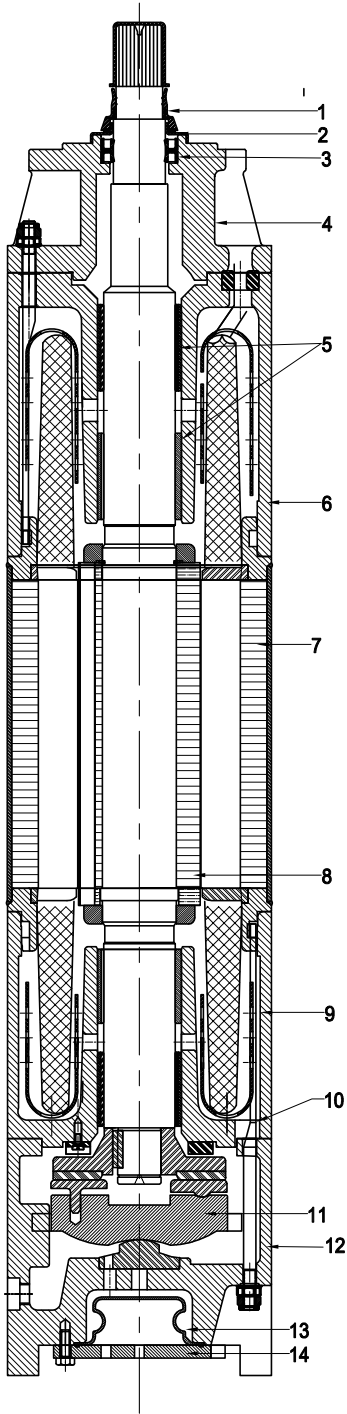
DSM8H



NO.	PART NAME	MATERIAL
1	MOTOR BASE	CI, FG-260
2	ROCKER SUPPORT	SS AISI 410
3	THRUST BEARING BASE	SS AISI 420
4	T.B.PLATE	SS AISI 410+CARBON
5	THRUST COUNTER PLATE	PVC NYLON-66
6	LOWER HOUSING	CI, FG-260
7	BEARING BUSH	BRONZE LTB-4
8	STATOR	STAMPING CRNO-47 PIPI 202
9	ROTOR	STAMPING CRNO-47 SHAFT 410
10	UPPER HOUSING	CI, FG-260
11	ADAPTOR	CI, FG-260
12	T-BOLT	MILD STEEL

CROSS-SECTIONAL DRAWING

DSM9

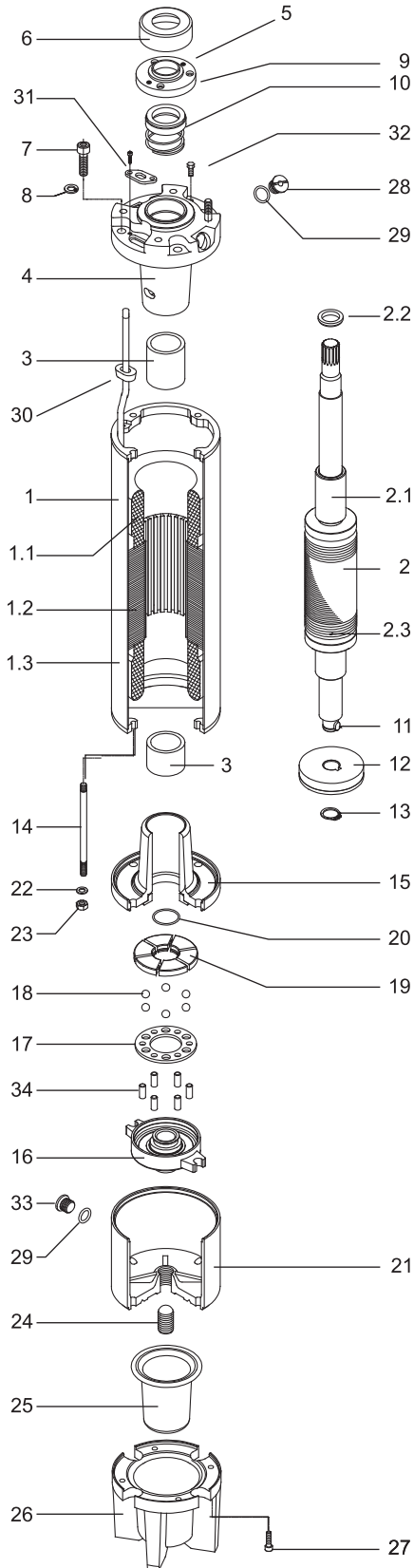


NO.	PART NAME	MATERIAL
1	COUPLE	SS 410
2	SAND GUARD	SS 410
3	OIL SEAL	NITRILE RUBBER
4	ADAPTOR	CI,FG-200,
5	BEARING & RUBBER BUSH	BRONZ LTB-4 & RUBBER+CS
6	UPPER HOUSING	CI,FG-200
7	STATOR	STAMPING-CRNO M47 + PIPE-SS
8	ROTOR	SHAFT-SS+ STAMPING-CRNO M47
9	LOWER HOUSING	CI,FG-200
10	T-BOLT	CARBON STEEL EN8
11	THRUST BEARING	SS 410, PVC-NYLON 66
12	MOTOR BASE	CI,FG-200
13	DIAPHRAGM	NITRILE RUBBER
14	MOTOR BASE PLATE	CI,FG-200

EXPLODED DRAWING

WATER FILLED MOTOR

DSM6 - 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 she!
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 thrst bearing
13	Retaining ring
14	Tie rod
15	Lower bearing body
16	Thrust bearing support
17	Ball holder
18	Thrust bearing ball
19	TWngpads
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

3



RESIDENTIAL



SMALL IRRIGATION



FOUNTAIN



WATER SUPPLY



SMALL INDUSTRIES



SOLAR

APPLICATIONS

DSM3

WATER FILLED MOTOR

WATER FILLED

MIZZLE SERIES



TECHNICAL DETAILS

Nominal Diameter		3" Motor (75 mm)
Max. Outer Diameter		73 mm
Power Range	1Ph	0.37 kW to 1.1 kW Single Phase
Speed		2880 RPM
Voltage range	1Ph	Single Phase 230 V, 50 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
Starts Per Hour		20 Times
Method of starting		Single Phase - Capacitor Start Capacitor Run (CSCR)
Cable lead out type		3 Core Flat Cable

TECHNICAL DATA

3" 1Phase - 230V, 50Hz Water Filled Motor										
kW	HP	Full Load Current (A)	Starting Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down Thrust Load (N)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
0.55	0.75	6	13	44	0.9	1500	1	2.7	408	9.5
0.75	1.0	6.8	14	46	0.9	1500	1	2.7	448	10
0.93	1.25	8.8	16	48	0.9	1500	1	2.7	488	11
1.1	1.5	10	19	51	0.9	1500	1	2.7	538	12

FEATURES

- Suitable for size of 75 mm (3") & 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.
- Key type Assembly Rotor

4



RESIDENTIAL



SMALL IRRIGATION



FOUNTAIN



WATER SUPPLY



SMALL INDUSTRIES



SOLAR

APPLICATIONS

DSM4

WATER FILLED MOTOR

WATER FILLED

IE3 SERIES



TECHNICAL DETAILS

Nominal Diameter		4" Motor (100 mm)
Max. Outer Diameter		95 mm
Power Range	1Ph	0.37 kW to 3.7 kW Single Phase
	3Ph	0.75 kW to 5.5 kW Three Phase
Speed		2800 RPM
Voltage range	1Ph	Single Phase 220 V, 60 Hz, A.C Supply
	3Ph	Three Phase 220 V & 380 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.		33° C
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

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

TECHNICAL DATA

4" 1Phase 230V, 50Hz Water Filled Motor												
kW	HP	Full Load Current (A)	Starting Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down Thrust Load (N)	Starting Torque (Nm)	Torque (Nm)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
0.37	0.5	5	11	43	0.90	3000	2.0	1.2	1.5	2.3	481	15
0.55	0.75	6	15	50	0.90	3000	2.9	1.8	1.5	2.3	501	16
0.75	1.0	6.8	18	55	0.90	3000	4.1	2.5	2.5	2.3	521	17
1.1	1.5	9.9	25	60	0.90	3000	6.1	3.7	2.5	2.7	551	19
1.5	2	13	34	63	0.90	3000	8.3	4.9	4	3.1	601	21
2.2	3	18	50	66	0.90	6500	13.3	7.4	4	3.1	671	25
3.7	5	27	63	68	0.90	6500	15.5	8.6	6	3.1	781	31

4" 3Phase 380-415V, 50Hz Water Filled Motor												
kW	HP	Full Load Current (A)	Starting Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down Thrust Load (N)	Starting Torque (Nm)	Torque (Nm)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
0.75	1	2.7	8	65	0.60	3000	4.5	2.5	1.5	2.3	521	17
1.1	1.5	3.9	12	68	0.70	3000	6.7	3.7	1.5	2.7	551	19
1.5	2	4.5	16	70	0.70	3000	9	5	1.5	2.7	601	22
2.2	3	6.6	24	70	0.70	6500	14.1	7.5	2.5	2.7	671	25
3	4	8.2	27	72	0.70	6500	19	10	2.5	2.7	741	28
3.7	5	10	34	72	0.70	6500	22	12.4	2.5	2.7	781	31
5.5	7.5	14.2	46	72	0.70	6500	33.7	18.7	4	3.1	841	34

5



AGRICULTURE



INDUSTRIAL



GENERAL
WATER SUPPLY



FOOD PROCESSING
INDUSTRY



LIVESTOCK
WATERING



SOLAR

APPLICATIONS

DSM5

WATER FILLED MOTOR

WATER FILLED

IE3 SERIES



TECHNICAL DETAILS

Nominal Diameter		5" Motor (125 mm)
Max. Outer Diameter		122 mm
Power Range	1Ph	2.2 kW to 7.5 kW Single Phase
	3Ph	0.75 kW to 11.0 kW Three Phase
Speed		2880 RPM
Voltage range	1Ph	Single Phase 230 V, 50 Hz, A.C Supply
	3Ph	Three Phase 380-415 V, 50 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
Starts per hour		20 Times
Method of starting		Single Phase - Capacitor Start Capacitor Run (CSCR)
		Three Phase - Direct On Line (DOL)
Cable lead out type		3 Core Flat Cable

FEATURES

- Suitable for size of 125 mm (5") & 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

TECHNICAL DATA

5" IE3 1Phase 230V, 50Hz Water Filled Motor										
kW	HP	Full Load Current (A)	Starting Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down Thrust Load (N)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
2.2	3	16	42	60	0.90	10000	2.5	2.7	626	35
3	4	19	48	61	0.90	10000	4	2.7	656	36
3.7	5	26	64	65	0.91	10000	4	2.7	681	38
4.5	6	31	75	66	0.92	10000	6	2.7	721	45
5.5	7.5	35	79	68	0.93	10000	6	2.7	761	47
7.5	10	45	93	69	0.94	10000	8	2.7	801	49

5" IE3 3Phase 380-415V, 50Hz Water Filled Motor										
kW	HP	Full Load Current (A)	Starting Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down Thrust Load (N)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
0.75	1	2.9	15	66	0.68	10000	1.5	2.7	551	31
1.1	1.5	3.5	18	70	0.69	10000	1.5	2.7	566	32
1.5	2	4.3	21	74	0.70	10000	1.5	2.7	596	33
2.2	3	6.3	31	75	0.72	10000	1.5	2.7	626	35
3	4	7.9	38	76	0.72	10000	1.5	2.7	656	36
3.7	5	9	41	76	0.74	10000	2.5	2.7	681	38
4.5	6	11	50	76	0.72	10000	2.5	2.7	721	45
5.5	7.5	13.8	60	77	0.73	10000	2.5	2.7	761	47
7.5	10	17	73	78	0.73	10000	4.0	2.7	801	49
9.3	12.5	21	86	81	0.72	10000	4.0	2.7	846	53
11	15	27	110	81	0.73	10000	4.0	2.7	876	49

6



AGRICULTURE



INDUSTRIAL



GENERAL
WATER SUPPLY



FOOD PROCESSING
INDUSTRY



LIVESTOCK
WATERING



SOLAR

APPLICATIONS

DSM6

WATER FILLED MOTOR

WATER FILLED

IE3 SERIES



TECHNICAL DETAILS

Nominal Diameter		6" Motor (150 mm)
Max. Outer Diameter		144 mm
Power Range	1Ph	2.2 kW to 7.5 kW Single Phase
	3Ph	2.2 kW to 45 kW Three Phase
Speed		2880 RPM
Voltage Range	1Ph	Single Phase -230 V, 50 Hz, A.C Supply
	3Ph	Three Phase- 380-415 V, 50 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		0.15 m/sec
Max. Liquid temp.		33° C / 50° C
Starts per hour		20 Times
Method of starting		Single Phase - Capacitor Start Capacitor Run (CSCR) Three Phase - 2.2 kW to 7.5 kW Direct On Line (DOL), 4 kW to 45 kW Star Delta (DOL /S.D.)
Cable lead out type		3 Core Flat Cable

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

TECHNICAL DATA

6" IE3 1Phase 230V, 50Hz Water Filled Motor												
kW	HP	Full Load Current (A)	Starting Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down Thrust Load (N)	Starting Torque (Nm)	Torque (Nm)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
2.2	3	15	36	64	0.85	15500	17	10	4	2.7	617	44
3	4	21	50	64	0.86	15500	19	12	6	2.7	642	46
3.7	5	26	62	65	0.88	15500	20	14	6	2.7	657	47
4.5	6	30	70	66	0.9	15500	21	15	6	2.7	677	50
5.5	7.5	38	87	67	0.9	15500	24	18	8.0	2.7	727	55
7.5	10	47	105	70	0.91	15500	27	25	8.0	2.7	762	60

6" IE3 3Phase 380 - 415V, 50Hz Water Filled Motor												
kW	HP	Full Load Current (A)	Starting Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down Thrust Load (N)	Starting Torque (Nm)	Torque (Nm)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
2.2	3	6.4	30	74	0.72	15500	17	10	1.5	2.7	617	44
3	4	8	37	76	0.70	15500	19	12	1.5	2.7	642	46
4	5	8.5	39	78	0.73	15500	20	14	2.5	2.7	657	47
4.5	6	11	50	79	0.73	15500	21	15	2.5	2.7	677	50
5.5	7.5	14	62	80	0.74	15500	24	18	2.5	2.7	727	55
7.5	10	18	79	81	0.74	15500	27	25	2.5	2.7	762	60
9.3	12.5	23	99	81.5	0.74	15500	35	31	4.0	2.7	807	65
11	15	27	116	82	0.73	15500	43	37	4.0	2.7	857	70
13	17.5	31	131	82	0.76	15500	51	43	4.0	2.7	877	73
15	20	35	144	82.5	0.72	15500	62	49	4.0	3.15	932	80
18.5	25	42	169	83	0.71	15500	98	61	4.0	3.15	987	89
22	30	52	206	83	0.73	15500	118	74	6.0	3.15	1057	95
26	35	60	231	83.5	0.74	15500	146	84	6.0	3.15	1132	117
30	40	65	245	84	0.81	27500	196	98	8.0	3.15	1237	127
37	50	80	289	84	0.82	27500	196	98	8.0	3.15	1312	138
45	60	87	340	84	0.85	27500	390	150	16.0	4	1347	110

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AGRICULTURE



INDUSTRIAL



GENERAL
WATER SUPPLY



FOOD PROCESSING
INDUSTRY



LIVESTOCK
WATERING



SOLAR

APPLICATIONS

DSM7

WATER FILLED MOTOR

WATER FILLED

MIZZLE SERIES



TECHNICAL DETAILS

Nominal Diameter		7" Motor (175 mm)
Max. Outer Diameter		172 mm (6" Pump Connection) / 180 mm (8" Pump Connection)
Power Range	3Ph	7.5 kW to 55 kW Three Phase
Speed		2880 RPM
Voltage Range	3Ph	Three Phase- 380-415 V, 50 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 / 50° C
Starts per hour		20 Times
Method of starting		Three Phase - 7.5 kW to 55 kW (DOL / SD)
Cable lead out type		3 Core Flat Cable

TECHNICAL DATA

7" 3Phase 380-415V, 50Hz Water Filled Motor										
kW	HP	Full Load Current (A)	Starting Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down Thrust Load (N)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
7.5	10	19	70	80	0.73	45500	2.5	2.7	859	80
9.3	12.5	23	83	81	0.76	45500	2.5	2.7	885	82
11	15	28	100	81	0.77	45500	4	2.7	919	88
13	17.5	30	106	82	0.75	45500	4	2.7	940	93
15	20	38	135	82	0.77	45500	4	2.7	965	100
18.5	25	46	162	83	0.80	45500	6	2.7	1012	109
22	30	53	185	83	0.81	45500	6	2.7	1051	115
26	35	58	201	84	0.74	45500	6	2.7	1164	131
30	40	67	230	84	0.76	45500	8	2.7	1203	137
33.5	45	73	250	84	0.80	45500	8	3.4	1248	148
37	50	83	282	84	0.78	45500	10	3.4	1300	159
45	60	98	331	85	0.79	45500	10	3.4	1367	180
55	75	112	375	86	0.82	45500	16	3.9	1445	203

FEATURES

- Suitable for size of 175 mm (7") & 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

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GENERAL
WATER SUPPLY



AGRICULTURE



INDUSTRIAL



IRRIGATION
SYSTEM



FOOD PROCESSING
INDUSTRY



HOTEL

APPLICATIONS

DSM8

WATER FILLED MOTOR

WATER FILLED

TURBO SERIES



TECHNICAL DETAILS

Nominal Diameter		8" Motor (200 mm)
Max. Outer Diameter		22 kW to 63 kW - 188 mm / 75 kW to 110 kW - 192 mm
Power Range	3Ph	22 kW to 110 kW Three Phase
Speed		2880 RPM
Voltage Range	3Ph	Three Phase 380-415 V, 50 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		0.15 m/sec
Max. Liquid temp.		33° C / 50° C
Starts per hour		20 Times
Method of starting		Three Phase – 22 kW to 110 kW (DOL & S.D.)
Cable lead out type		3 Core Flat Cable

TECHNICAL DATA

8" 3Phase 380-415V, 50Hz Water Filled Motor												
kW	HP	Full Load Current (A)	Starting Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down Thrust Load (N)	Starting Torque (Nm)	Torque (Nm)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
22	30	46	160	80	0.81	45500	112	73	6	2.75	1157	137
26	35	54	187	81	0.81	45500	126	86	6	2.75	1187	147
30	40	62	213	81	0.82	45500	141	99	8	2.75	1212	160
33.5	45	71	244	82	0.83	45500	167	111	8	3.5	1282	158
37	50	77	262	82	0.84	45500	194	123	10	3.5	1322	166
45	60	91	307	82	0.84	45500	266	150	10	3.5	1437	188
55	75	108	361	83	0.85	45500	321	199	16	4	1517	203
63	85	125	415	83	0.85	45500	377	208	16	4	1577	213
75	100	145	545	85	0.85	45500	476	248	25	4	1370	186
81	110	157	590	86	0.84	55000	588	274	25	4	1400	195
92	125	178	670	86	0.84	55000	679	306	25	4	1480	210
110	150	205	775	86	0.87	55000	822	370	35	4	1610	235

FEATURES

- Suitable for size of 200 mm (8") & 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

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GENERAL
WATER SUPPLY



AGRICULTURE



INDUSTRIAL



IRRIGATION
SYSTEM



FOOD PROCESSING
INDUSTRY



HOTEL

APPLICATIONS

DSM9

WATER FILLED MOTOR

WATER FILLED TURBO SERIES



TECHNICAL DETAILS

Nominal Diameter		9" Motor (225 mm)
Max. Outer Diameter		225 mm
Power Range	3Ph	45.0 kW to 110 kW Three Phase
Speed		2880 RPM
Voltage Range	3Ph	Three Phase 380-415 V, 50 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
Starts per hour		20 Times
Method of starting		Three Phase – 45.0 kW to 93.0 kW (DOL & S.D.)
Cable lead out type		3 Core Flat Cable

TECHNICAL DATA

9" 3Phase 380-415V, 50Hz Water Filled Motor										
kW	HP	Full Load Current (A)	Starting Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down Thrust Load (N)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
45	60	75	255	83	0.81	60000	16	4	1465	238
55	75	106	349	83	0.82	60000	25	4	1545	258
63	85	122	396	84	0.83	60000	25	4	1615	275
75	100	149	476	84	0.84	60000	25	4	1685	291
93	125	168	524	84	0.85	60000	25	4	1815	323
110	150	198	560	85	0.85	60000	35	4	1931	365

FEATURES

- Suitable for size of 225 mm (9") & 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

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GENERAL
WATER SUPPLY



AGRICULTURE



INDUSTRIAL



IRRIGATION
SYSTEM



FOOD PROCESSING
INDUSTRY



HOTEL

APPLICATIONS

DSM10

WATER FILLED MOTOR

WATER FILLED TURBO SERIES



TECHNICAL DETAILS

Nominal Diameter		10" Motor (250 mm)
Max. Outer Diameter		232 mm
Power Range	3Ph	83 kW to 185 kW Three Phase
Speed		2880 RPM
Voltage Range	3Ph	Three Phase 380-415 V, 50 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.		33° C / 50° C
Starts per hour		10 Times
Method of starting		Three Phase – 83 kW to 185 kW (DOL & S.D.)
Cable lead out type		3 Core Flat Cable

TECHNICAL DATA

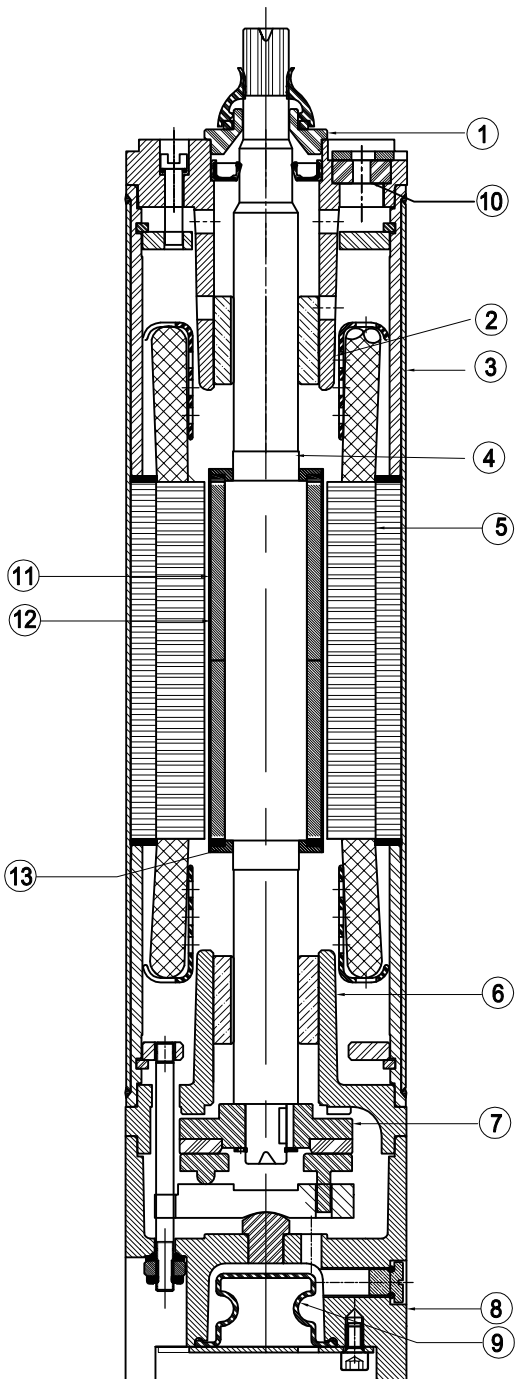
10" 3Phase 380-415V, 50Hz Water Filled Motor												
kW	HP	Full Load Current (A)	Starting Current (A)	Full Load Efficiency %	Full Load Power Factor	Max. Down Thrust Load (N)	Starting Torque (Nm)	Torque (Nm)	Cable Size (sq. mm)	Cable Length (m)	Height (mm)	Net Weight (kg)
83	110	154	575	87	0.85	75000	281	344	25	5	1310	228
93	125	177	661	86	0.85	75000	311	391	25	5	1370	256
110	150	214	799	86	0.84	75000	364	472	35	5	1430	284
130	175	243	905	88	0.85	75000	431	601	35	5	1510	311
150	200	276	1030	88	0.85	75000	494	696	35	5	1610	338
165	225	316	1177	87	0.85	75000	558	786	35	5	1740	370
185	250	352	1312	87	0.85	75000	605	1109	35	5	1820	400

FEATURES

- Suitable for size of 250 mm (10") & 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

CROSS-SECTIONAL DRAWING

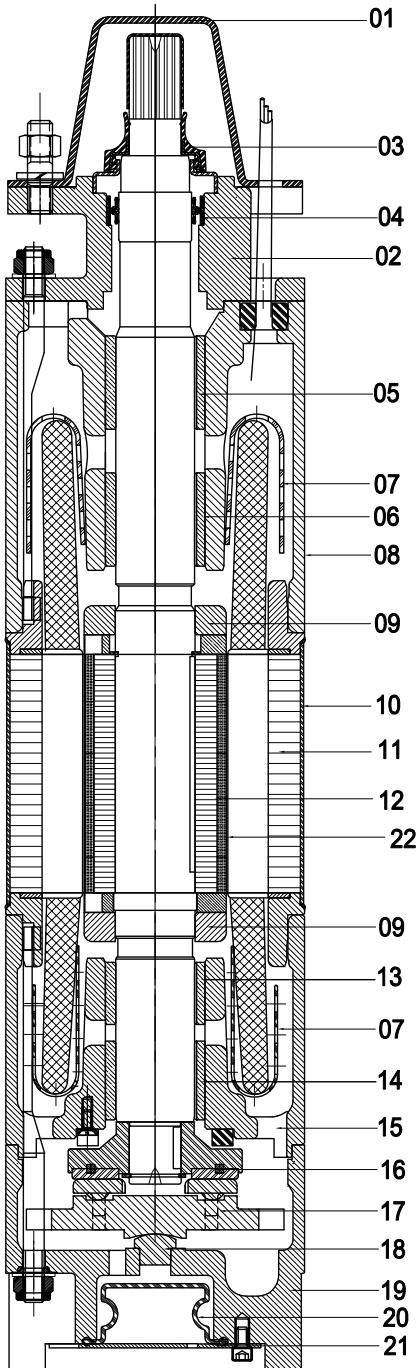
DSM4 (DC Solar)



NO.	PART NAME	MATERIAL
1	SAND SLINGER	NITIRILE RUBBER + SS 410
2	ADAPTOR	STAINLESS STEEL
3	STATOR TUBE	SS-202
4	ROTOR	SS-420
5	STATOR	CRNO-M47
6	LOWER HOUSING	STAINLESS STEEL
7	T. B. PLATE	TEFLON + FG200
8	MOTOR BASE	STAINLESS STEEL
9	DIAPHRAGM	NITIRILE RUBBER
10	GROMMET	NITIRILE RUBBER
11	MAGNET	PERMENANT MAGNET
12	ROTOR TUBE	SS-304
13	ROTOR WASHER	SS-304

CROSS-SECTIONAL DRAWING

DSM6 (DC Solar)



NO.	PART NAME	MATERIAL
1	PROTECTION CLAMP	MS
2	ADAPTOR	CI,FG-260
3	SAND SLINGER	NITRILE RUBBER
4	OIL SEAL	NITRILE RUBBER+SS
5	RUBBER BUSH	NITRILE RUBBER+SS
6	BEARING BUSH	LTB-4
7	WINDING CAP	LDPE
8	UPPER HOUSING	CI,FG-260
9	BALANCE RING	CI,FG-150
10	STATOR TUBE	SS- 202
11	STATOR	STAMPING-CRNO M-47
12	ROTOR	STAMPING-CRNO M-47
13	RUBBER BUSH	NITRILE RUBBER+SS
14	BEARING BUSH	LTB-4
15	LOWER HOUSING	CI,FG-260
16	T.B.PLATE	CI+CARBON
17	THRUST BEARING BASE	SS- 420
18	ROCKER SUPPORT	SS- 410
19	MOTOR BASE	CI,FG-260
20	DAIPHRAGM	NITRILE RUBBER
21	MOTOR BASE PLATE	SS- 410
22	MAGNET	PERMENANT MAGNET

4 | 6



RESIDENTIAL



SMALL IRRIGATION



FOUNTAIN



WATER SUPPLY



SMALL INDUSTRIES



SOLAR

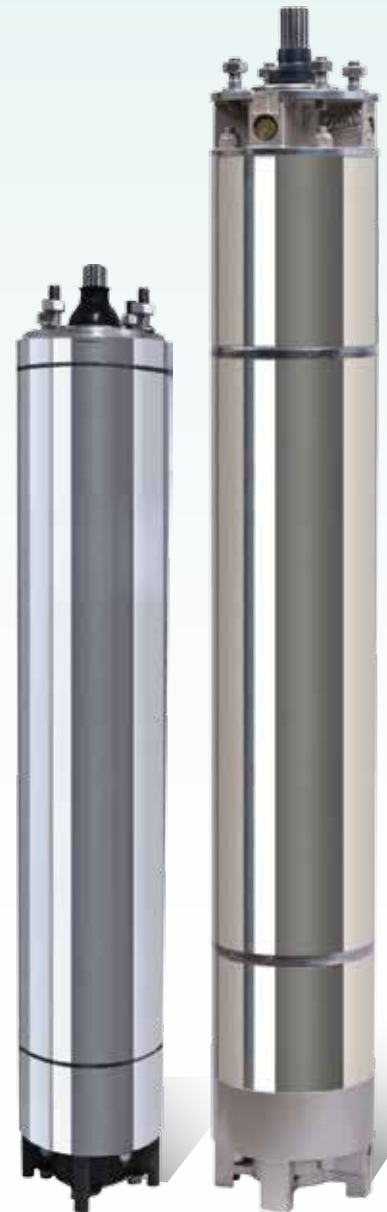
APPLICATIONS

DSM4/6

SMART DC MOTOR

PMSM MOTORS

SMART DC SERIES



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" PMSM (DC) Smart - Water Filled Motor - 4 Pole, 115-145Hz, 3300-4350 rpm									
Motor Rated Power - P ₂ (kW)	Motor Rated Power - P ₂ (HP)	Motor input Power - P ₁ (W)	Motor Nominal Voltage (V)	Max. PV Panel Power Voltage - Vmp (V)	Current at Vmp - Imp (A)	Full Load Efficiency (%)	Full Load Power Factor	Height (mm)	Net Weight (kg)
0.75	1	1200	80	111	9	79	0.83	390	12
0.75	1	1200	110	148	10	79	0.83	390	12
1.5	2	1800	160	222	9	81	0.83	410	12.5
2.2	3	3000	230	370	10	85	0.82	440	15
3.7	5	4800	380	555	10	85	0.82	490	18
5.5	7.5	6750	280	407	18	87	0.84	540	20
7.5	10	9000	380	555	18	87	0.84	600	24

6" PMSM (DC) Smart - Water Filled Motor - 4 Pole, 115-145Hz, 3300-4350 rpm									
Motor Rated Power - P ₂ (kW)	Motor Rated Power - P ₂ (HP)	Motor input Power - P ₁ (W)	Motor Nominal Voltage (V)	Max. PV Panel Power Voltage - Vmp (V)	Current at Vmp - Imp (A)	Full Load Efficiency (%)	Full Load Power Factor	Height (mm)	Net Weight (kg)
11	15	14400	380	555	27	90	0.85	769	57
15	20	18000	380	555	36	90	0.86	841	65

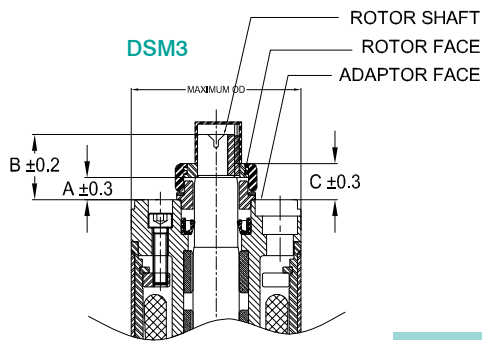
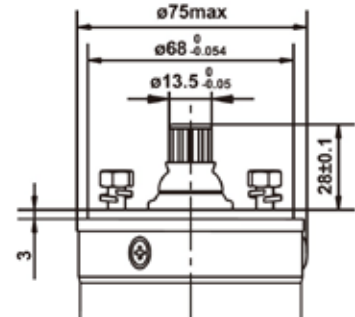
FEATURES

- Suitable for size of 100 mm (4"), 150 mm (6") & above bore well respectively.
- Up to 90% 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 / 145 Hz
- Speed: 3300 RPM / 4350 RPM

MOUNTING DIMENSIONAL DETAILS

DSMO4 (NEMA)

Model	Height			Maxi OD
	A	B	C	
DSMO4	9.5	28	15.5	Ø98.0

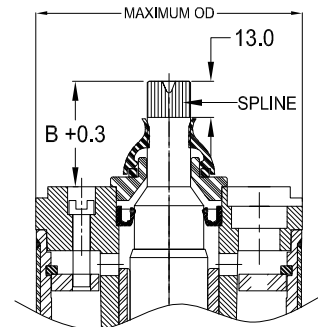


DSM3 (Key-Way)

Model	Height			Play	Maxi OD
	A	B	C		
DSM3	9.5	28	15.5	1.0 to 2.0	Ø74.0

DSM4 (NEMA)

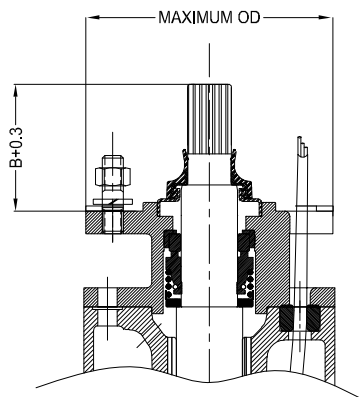
Model	Height	Play	Maxi OD
	B		
DSM4HPR	38	1.0 to 2.0	Ø96.0



DSM5 - DSM10 (NEMA)

Height and Play Setting Details

Model	Height	Play	Maxi OD
	B		
DSM5	72.8	1.5 to 2.0	Ø120.0
DSM6	72.8	1.5 to 2.0	Ø144.0
DSM8	101.5	1.5 to 2.5	Ø180.0
DSM8H	101.5	1.5 to 2.5	Ø185.0
DSM8 (110-150 Hp)	101.5	1.5 to 2.5	Ø192.0
DSM9	101.5	1.5 to 2.5	Ø222.0
DSM10	101.25	1.5 to 2.0	Ø232.0



LEAD - CABLES DIMENSION

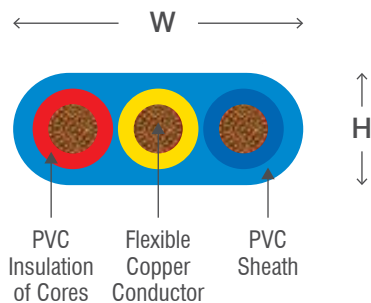
(Duke Standard Cable) 3 Core Flat Cable (IS 694)

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	500
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	6
0.75	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	10	10	10	10
1	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	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	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	25
3	2.5	2.5	2.5	2.5	4	4	6	6	6	6	10	10	10	16	16	16	25	25	25	35	35	35
4	4	4	4	4	4	6	6	6	6	10	10	16	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	25	35	35	35	50	50	50
6	6	6	6	6	10	10	10	10	10	16	16	16	25	25	25	35	35	35	50	50	50	50
7.5	6	6	6	10	10	10	10	10	10	16	16	25	25	25	35	35	35	50	50	50	50	50
10	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	870	
93	125							120*	160	240	330	420	510	580	690	820	830	
110	150								130*	190	250	330	400	460	540	630	720	820
130	175									160*	220	300	360	420	490	580	660	780
150	200									150*	190	250	300	360	420	490	570	660
185	250										180*	240	270	310	370	420	490	

CONVERSION 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 Kelvin, tk	K = tc + 273.15
Temperature Fahrenheit, tf	Temperature Kelvin, tk	K = (tf + 459.67 / 1.8)
Temperature Celsius, tc	Temperature Fahrenheit, tf	F = 1.8 tc + 32
Temperature Fahrenheit, tf	Temperature Celsius, tc	C = (tf - 32) / 1.8
Temperature Kelvin, tk	Temperature Celsius, tc	C = tk - 273.15
Temperature Kelvin, tk	Temperature Fahrenheit, tf	F = 1.8tk - 459.67



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