



DS

Submersible Sump Pumps



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Features and Applications



Model **DS**

■ Features

- Double mechanical seal in oil chamber
An oil lubricated double mechanical seal with lower faces of hard silicon carbide provides strong and reliable shaft sealing
- Robust construction and compact design
Of rugged cast iron construction, with all fasteners of stainless steel.
- In built motor protection
Quick acting dual response overloads provides protection against overload, lock or open phase.
- High Heads
High heads generated with open impeller design & 2 pole motor.

■ Applications

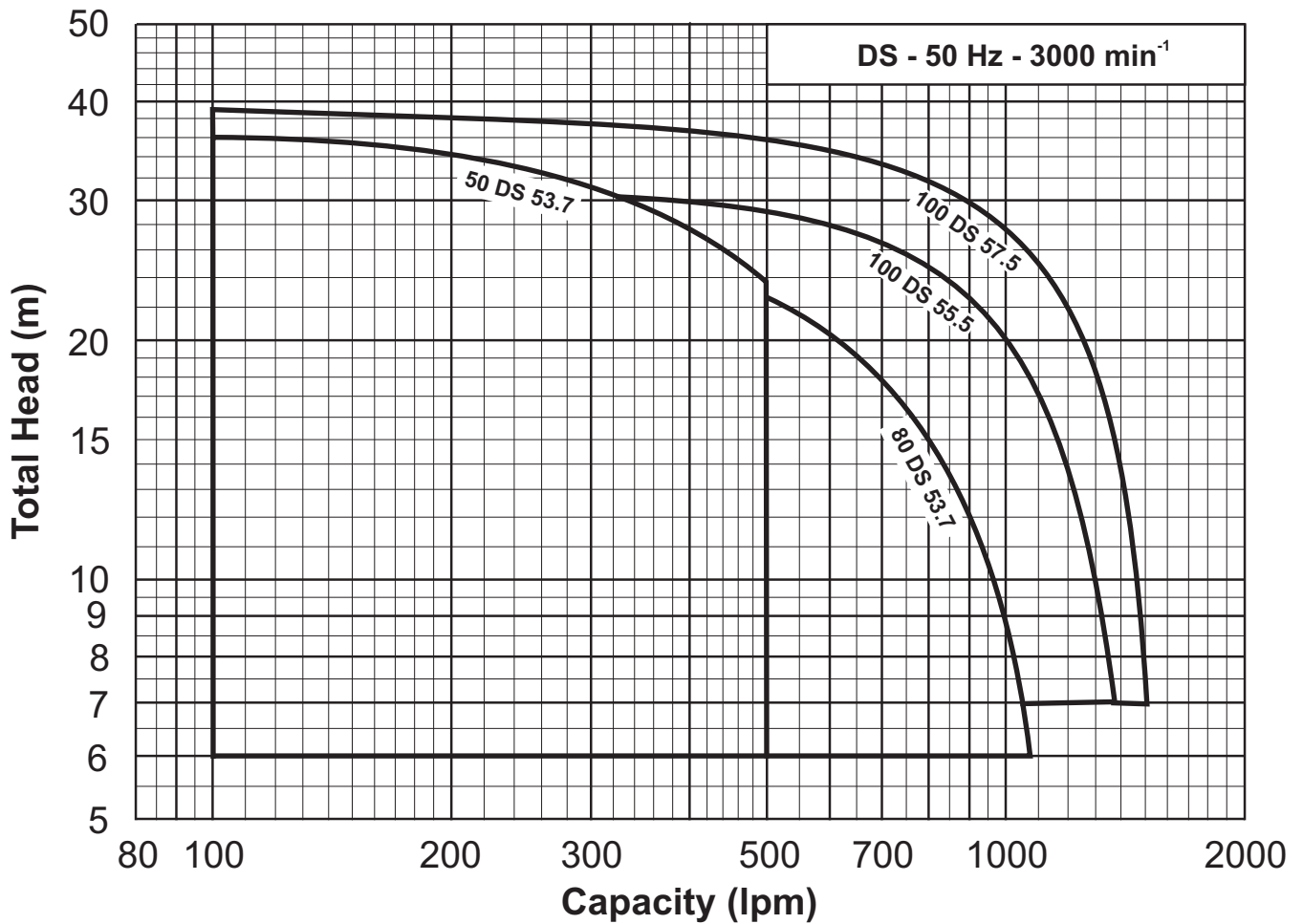
- Purification tank drainage
- Rain and spring water drainage
- Water supply

Specifications

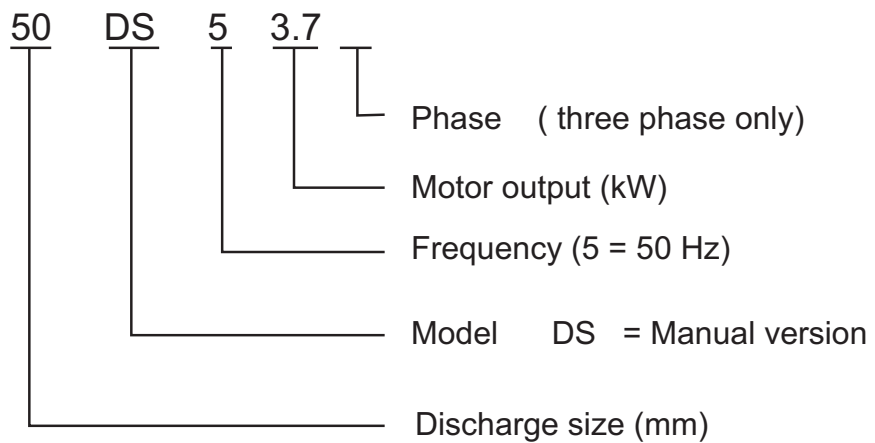
		Standard	Optional
Scope	Discharge	50 - 100 mm	
	Motor Power	3.7 - 7.5 kW (3ph.)	
	Performance	Capacity: 100 - 1500 lpm Head: 6 - 39m.	
Liquid	Type	Dirty Water.	
	Max. Temp.	40°C (manual type)	
	Max. Solids	Refer to table below	
Submergence	Maximum	8 m.	
	Minimum	Refer to low water level (L.W.L) in dimensions.	
Construction	Impeller	Semi-open (with strainer)	
	Mechanical Seal	Oil lubricated double mechanical seal, single spring.	
Materials	Casing	Cast Iron	
	Impeller	Cast Iron	
	Suction Cover	Cast Iron	
	Shaft	403 Stainless Steel	
	Motor Frame	Cast Iron	
	Fasteners	304 Stainless Steel	
	Mechanical Seal	Upper Faces: Carbon / Ceramic Lower Faces: Silicon Carbide / Silicon Carbide Lubricating Oil: Turbine oil VG32 (SAE 10W/20W)	
Motor	Type	Air filled dry submersible, IP58, Class F insulation.	
	Poles/Speed	2 pole / 2900 rpm	
	Applicable Voltages	380/400/415 Volt, 3 phase, 50 Hz	
	Starting	DOL	
	Protection	In built overload protection	
	Bearings	Pre lubricated sealed ball bearings.	
Cable	Length	10m. (3.7 to 7.5kW)	
Accessories	Flange	Discharge elbow with screwed companion flange. (3.7 to 7.5 kW sizes)	
			Quick Discharge Connector (QDC)

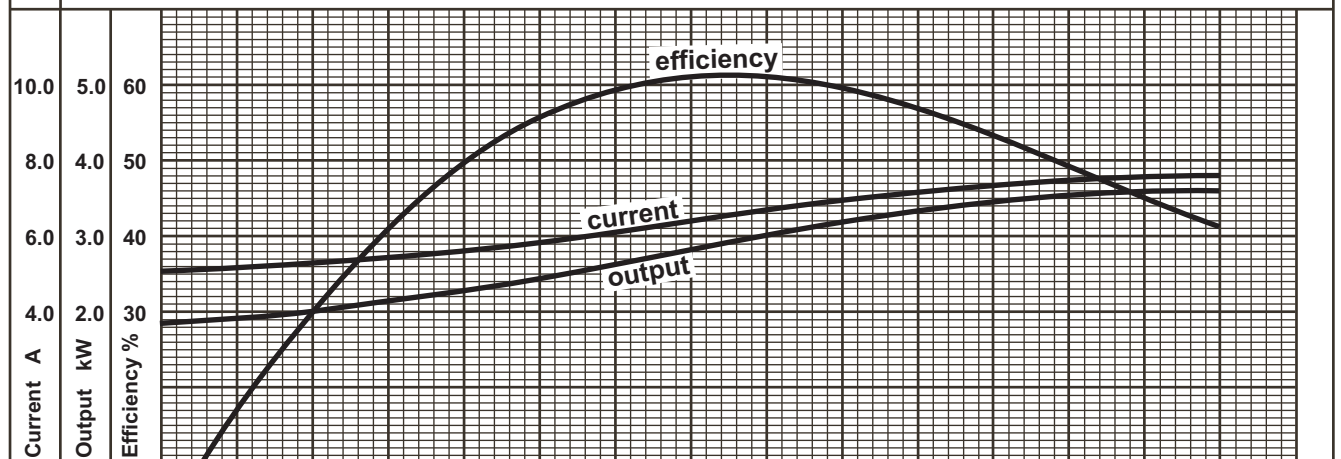
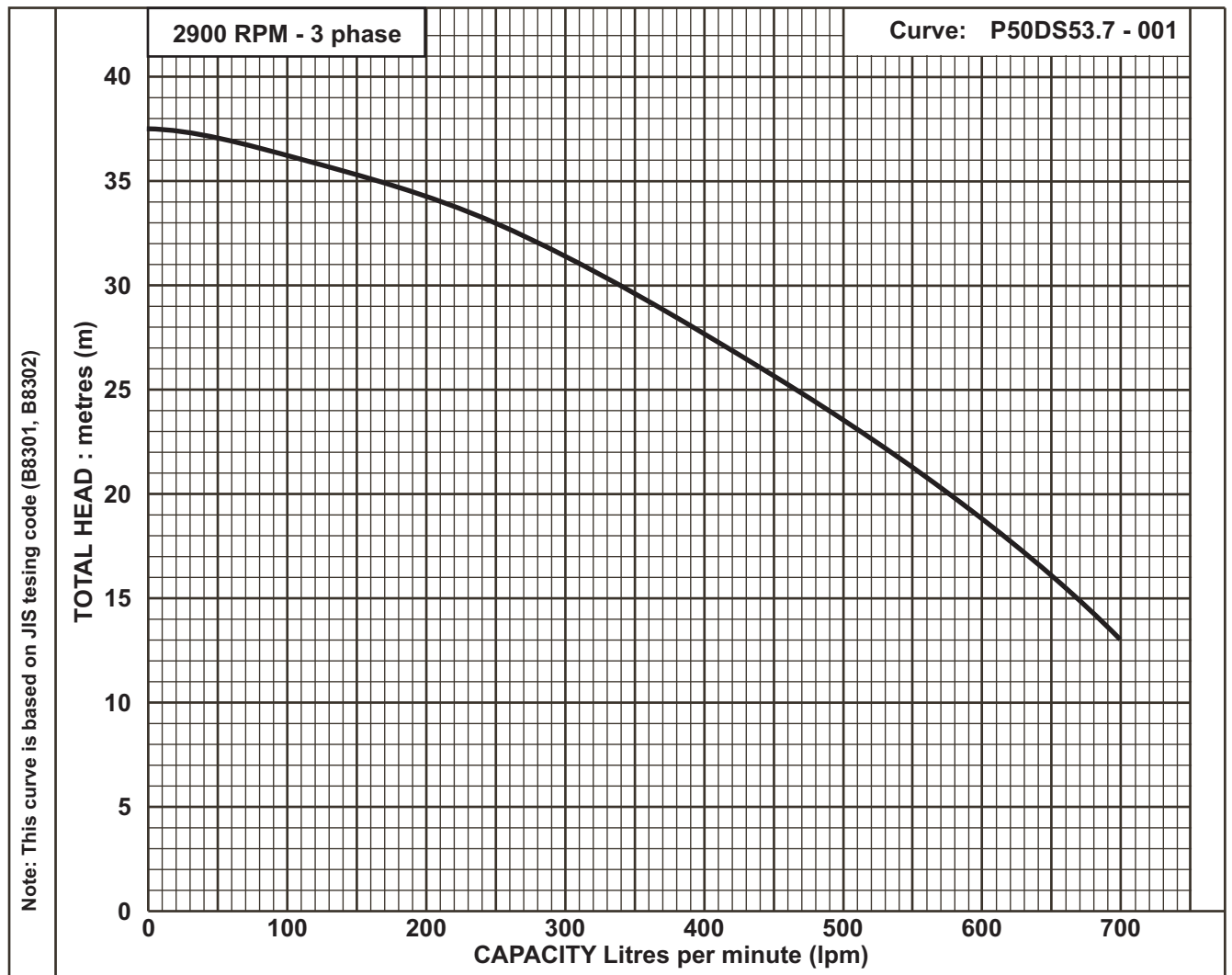
Solids Handling			
Model	- discharge	50 Ø	80 Ø
	- motor kW	All	All
	Max. diameter of solids	5 mm	7 mm
	Max. length of fibres	50 mm	50 mm

Performance Chart



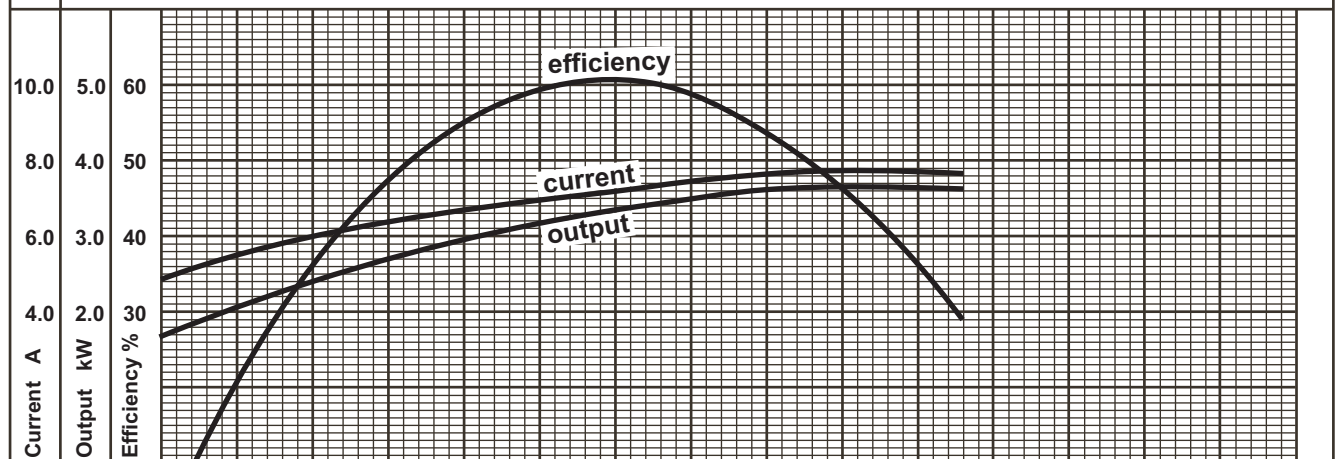
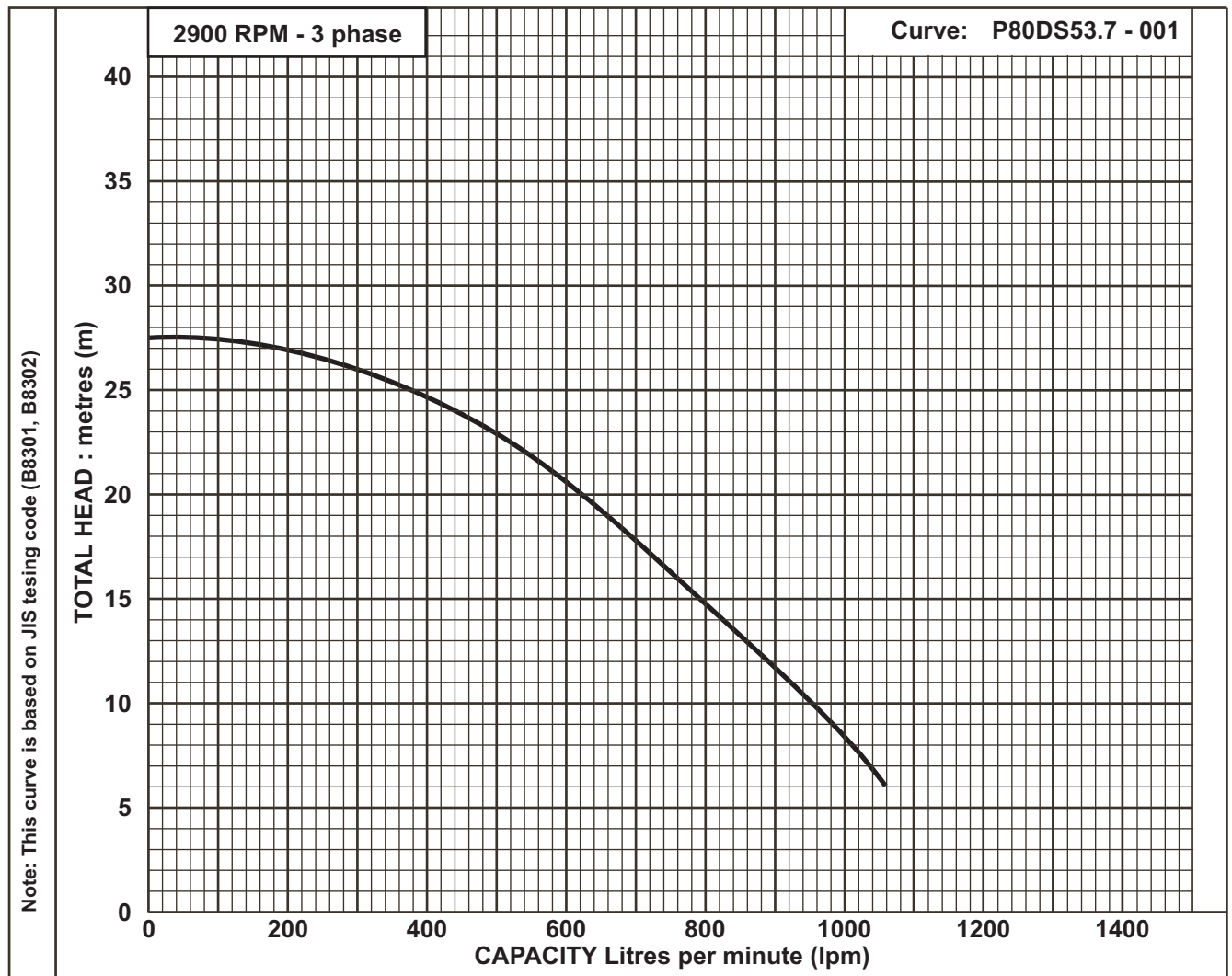
Model code





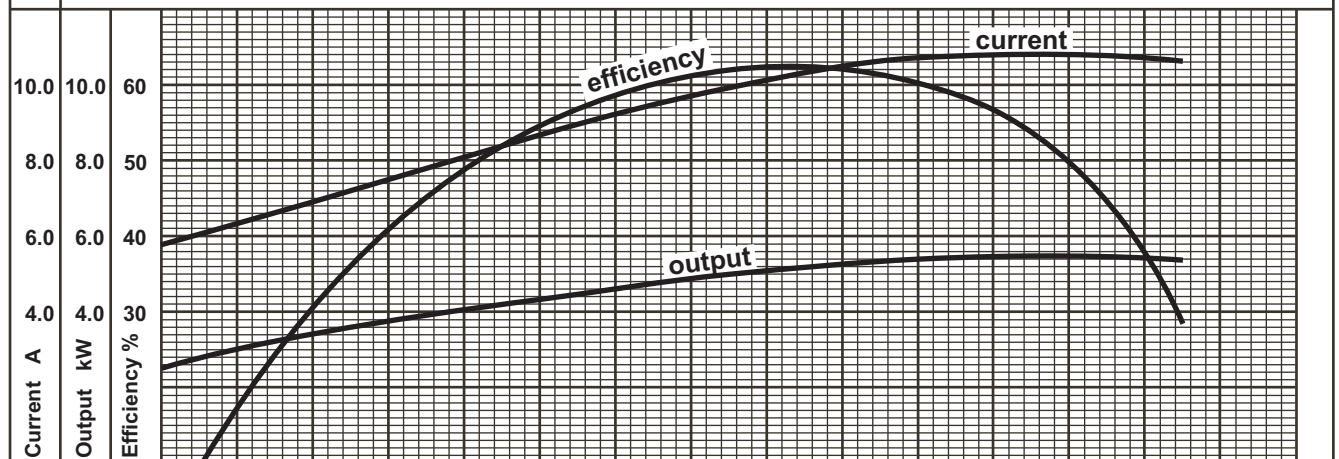
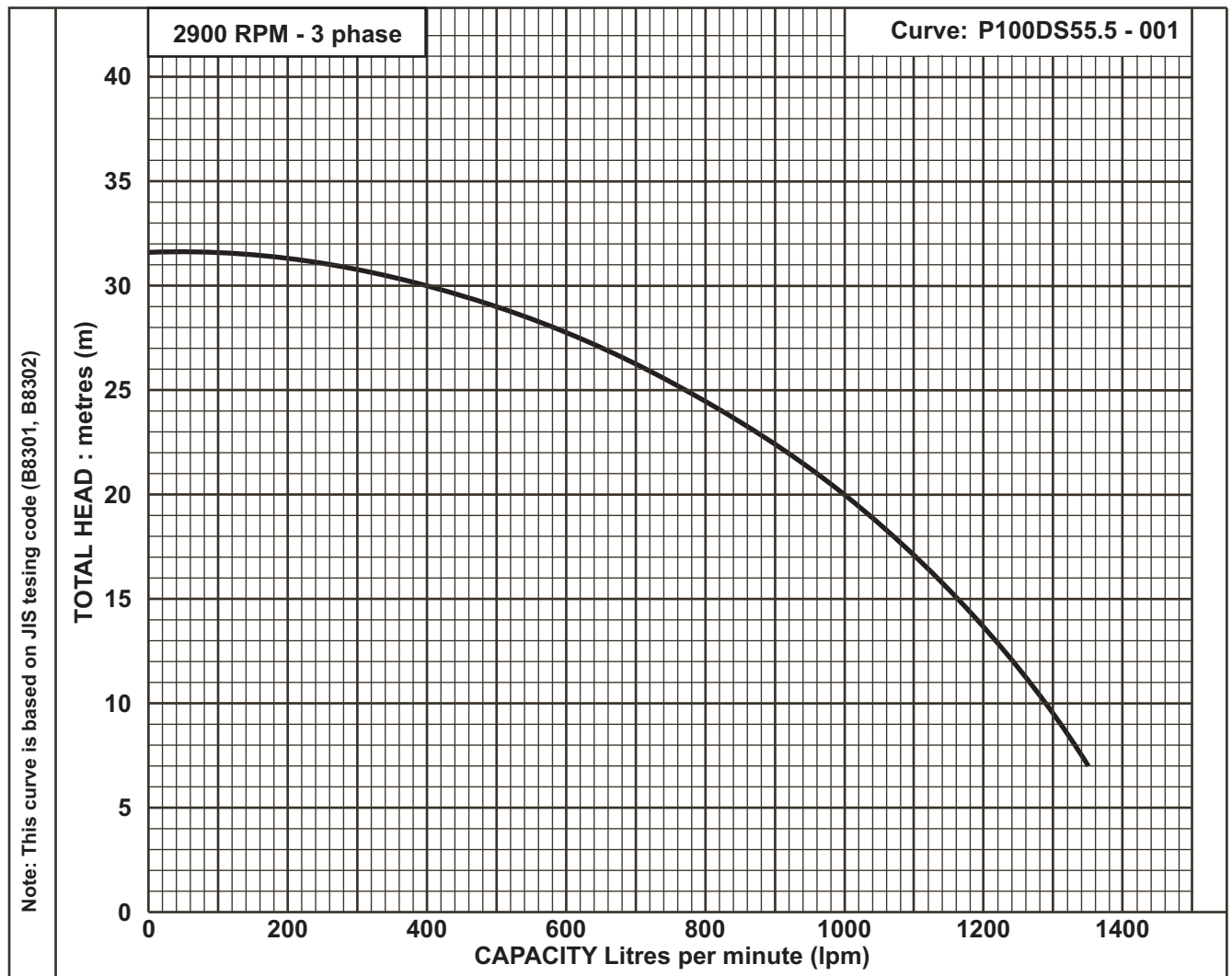
Test No.	Pump			Motor - 400 V - 3ph			
	Capacity lpm	Total Head m	Effic. %	Current A	Input kW	Effic. %	Output kW
1	0	37.5	0	5.050	2.588	71.0	1.837
2	110	36.0	31.9	5.280	2.802	72.2	2.023
3	250	33.0	55.6	5.810	3.253	74.3	2.417
4	450	25.7	59.5	6.920	4.135	76.6	3.167
5	700	13.0	41.3	7.600	4.646	77.3	3.591

Model: 50 DS 53.7	Frequency: 50 Hz		
Discharge Ø: 50 mm	Output: 3.7kW		
Pump Rating	Capacity - lpm :	110	450
	Total Head - m	36.0	25.7
Motor Rating	400 Volt	7.8 Amp	2900 rpm
	Maker: Ebara	Type: Dry Type	



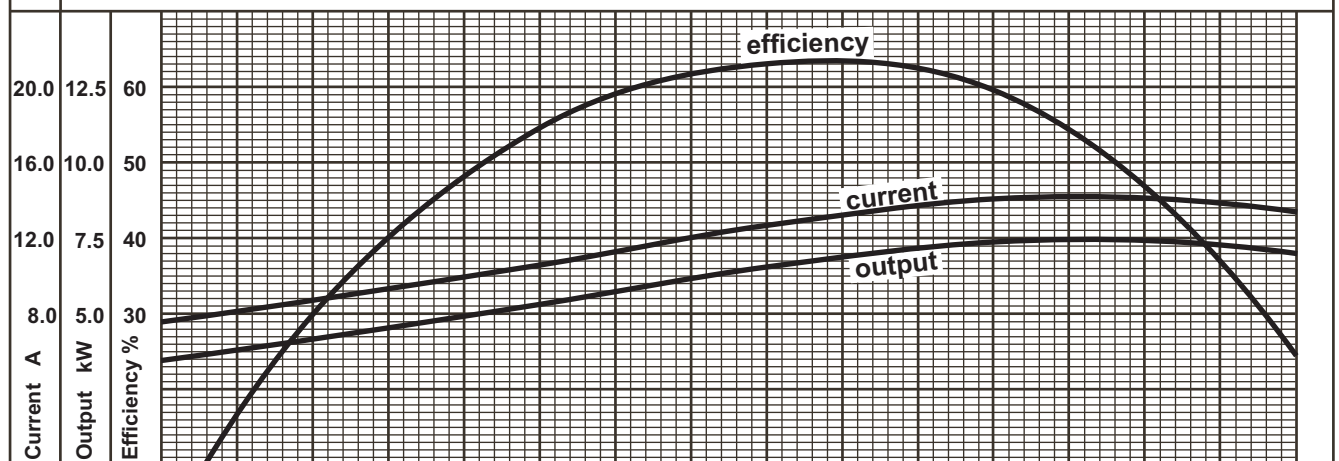
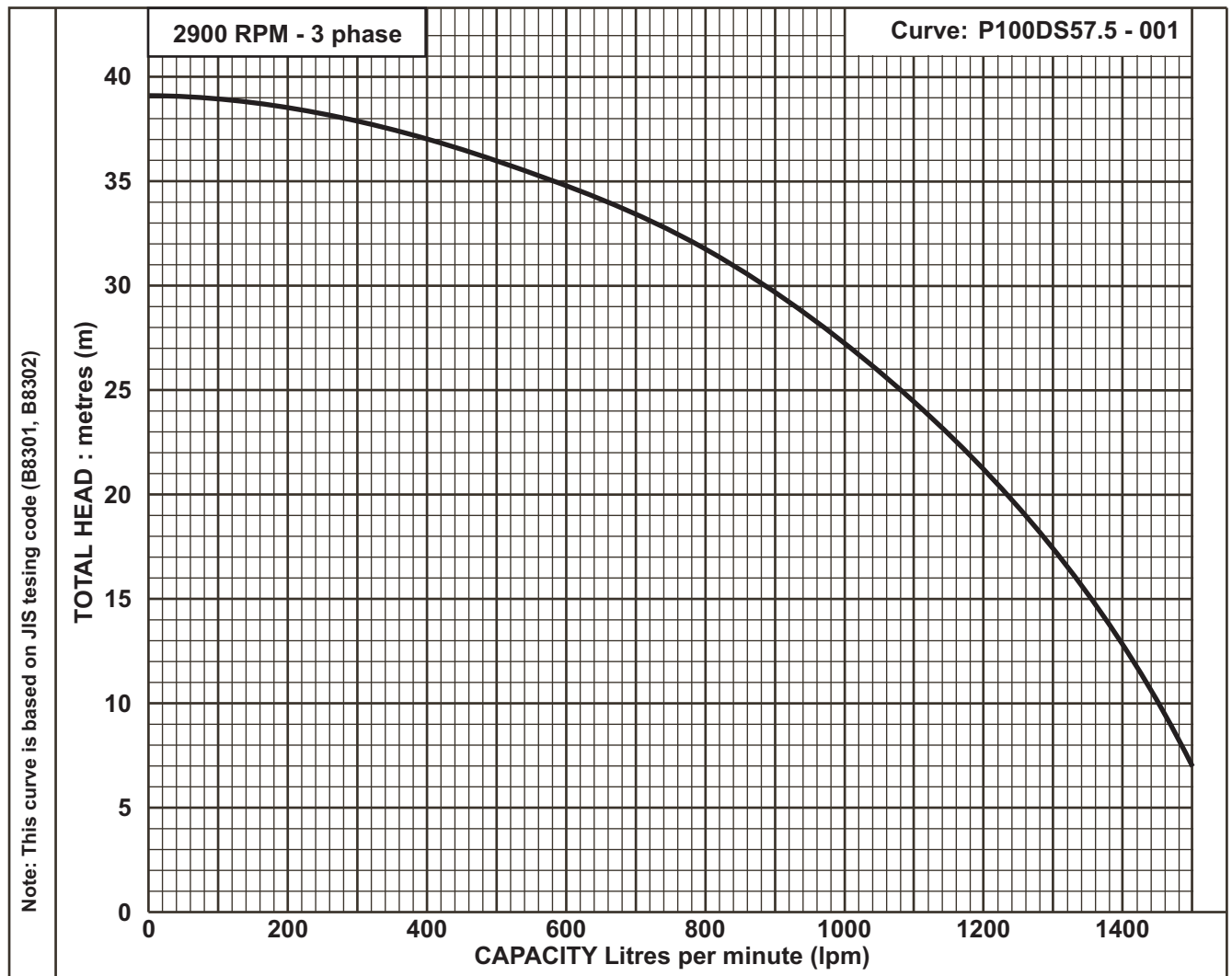
Test No.	Pump			Motor - 400 V - 3ph			
	Capacity lpm	Total Head m	Effic. %	Current A	Input kW	Effic. %	Output kW
1	0	27.5	0	4.810	2.364	69.4	1.640
2	500	22.9	59.1	6.900	4.126	76.5	3.156
3	650	19.3	60.0	7.280	4.420	77.0	3.403
4	800	14.8	53.6	7.610	4.655	77.3	3.598
5	1060	6.0	28.7	7.630	4.672	77.3	3.611

Model:	80 DS53.7	Frequency:	50 Hz
Discharge Ø:	80 mm	Output:	3.7kW
Pump Rating	Capacity - lpm :	500	1060
	Total Head - m	22.9	6.0
Motor Rating	400 Volt	7.8Amp	2880rpm
	Maker: Ebara	Type: Dry Type	



Test No.	Pump			Motor - 400 V - 3ph			
	Capacity lpm	Total Head m	Effic. %	Current A	Input kW	Effic. %	Output kW
1	0	31.6	0	5.80	3.484	71.2	2.480
2	500	29.0	54.6	8.70	5.565	77.7	4.324
3	750	25.4	61.9	9.90	6.373	78.6	5.009
4	1000	20.0	60.2	10.70	6.856	78.9	5.409
5	1350	7.0	28.6	10.60	6.806	78.9	5.370

Model: 100 DS55.5	Frequency: 50 Hz		
Discharge Ø: 100mm	Output: 5.5kW		
Pump Rating	Capacity - lpm :	340	1350
	Total Head - m	30.4	7.0
Motor Rating	400 Volt	10.8A	2900rpm
	Maker: Ebara	Type: Dry Type	

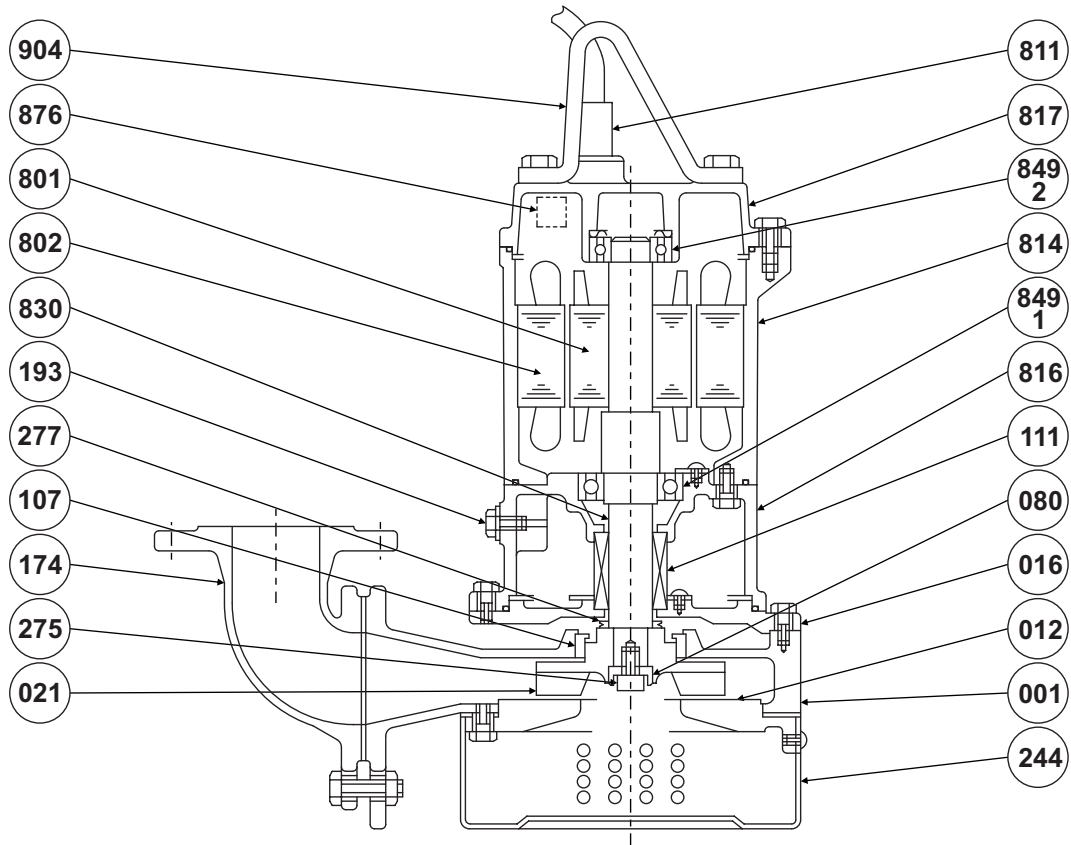


Test No.	Pump			Motor - 400 V - 3ph			
	Capacity lpm	Total Head m	Effic. %	Current A	Input kW	Effic. %	Output kW
1	0	39.2	0	7.60	4.627	74.8	3.461
2	500	36.0	54.6	10.60	6.776	79.2	5.366
3	800	31.8	63.1	12.70	8.177	80.3	6.566
4	1100	24.5	59.6	14.10	9.128	80.7	7.366
5	1500	7.0	24.5	13.40	8.660	80.6	6.980

Model: 100DS57.5	Frequency: 50 Hz		
Discharge Ø: 100mm	Output: 7.5kW		
Pump Rating	Capacity - lpm :	100	1500
	Total Head - m	38.6	7.0
Motor Rating	400 Volt	14.3A	2900rpm
	Maker: Ebara	Type: Dry Type	

Sectional View

50 DS 53.7, 80 DS 53.7, 100 DS 55.5 & 57.5



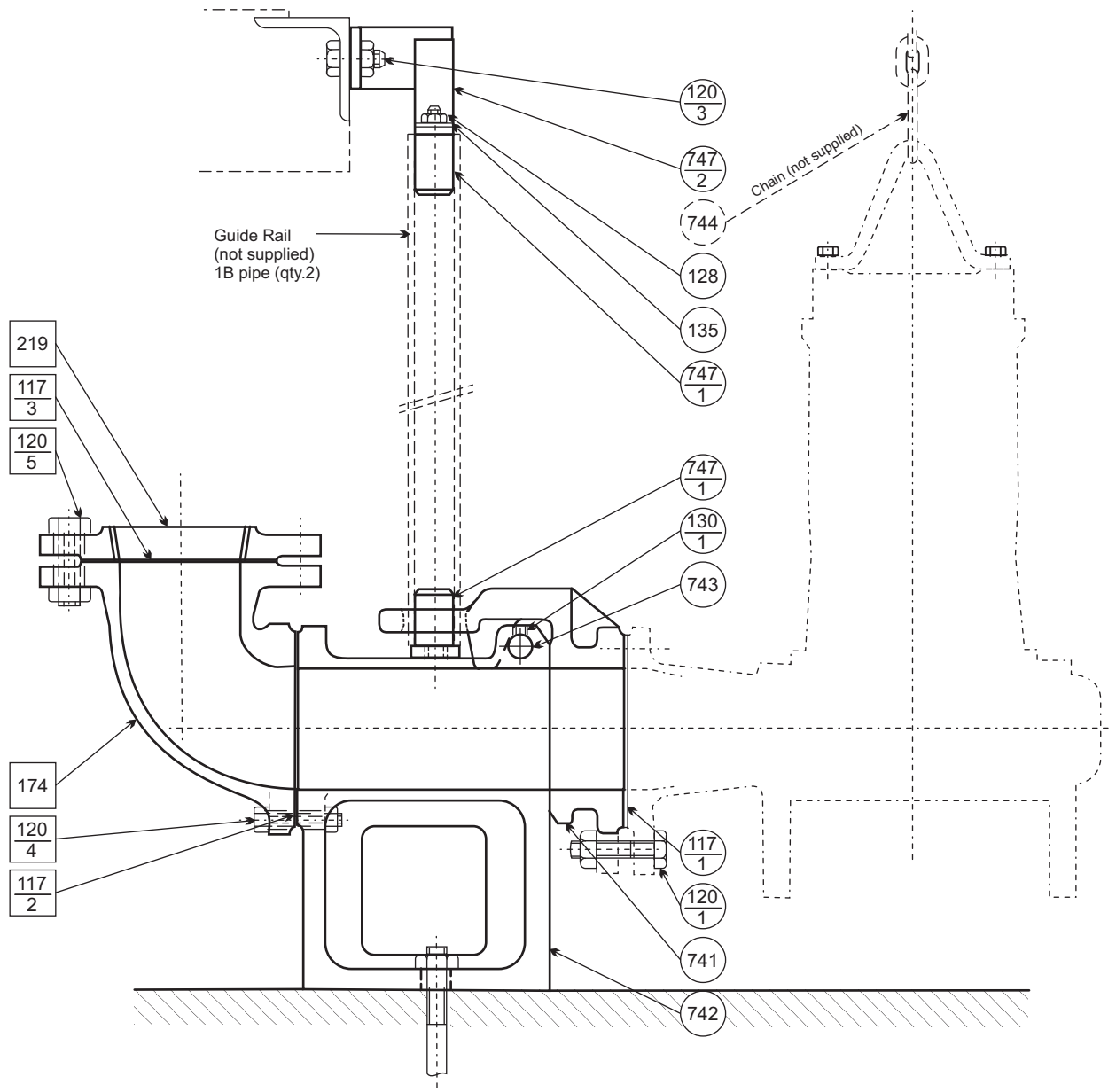
Item Number	Description	Material	Quantity per unit
001	Casing	FC200 Cast iron	1
012	Suction Cover	FC200 Cast iron	1
016	Mechanical Seal Cover	FC200 Cast iron	1
021	Impeller	FCD400 Graphite Cast iron	1
080	Bushing	SS Steel	1
107	Casing Ring	SUS Stainless Steel	1
111	Mechanical Seal		1
174	Discharge Bend	FC200 Cast iron	1
193	Oil Plug	SUS304 Stainless Steel	1
244	Strainer	SPCC Steel	1
275	Impeller Bolt	SUS304 Stainless Steel	1
277	V Ring	NBR Rubber	1

Item Number	Description	Material	Quantity per unit
801	Rotor		1
802	Stator #		1
811	Submersible Cable		1
814	Motor frame	FC150 Cast iron	1
816	Power Side Bracket	FC150 Cast iron	1
817	Opposite Side Bracket	FC150 Cast iron	1
830	Shaft #	SUS403 Stainless Steel	1
849-1	Ball Bearing		1
849-2	Ball Bearing		1
876	Protector		1
904	Lifting Handle	SS Steel	1

refers to pump side of shaft material

Sectional View Model LM 50 & 80 Quick Discharge Connector

Applicable to all 50 & 80 mm DS models



Item Number	Description	Material	Quantity per unit
117-1	Gasket	NBR Rubber	1
117-2	Gasket	NBR Rubber	1
117-3	Gasket	NBR Rubber	1
120-1	Bolt & Nut	SUS Stainless Steel	4
120-3	Bolt & Nut	SUS Stainless Steel	2
120-4	Bolt & Nut	SUS Stainless Steel	4
120-5	Bolt & Nut	SUS Stainless Steel	4or8
128	Nut	SUS Stainless Steel	2
130-1	Set Screw	SUS Stainless Steel	1

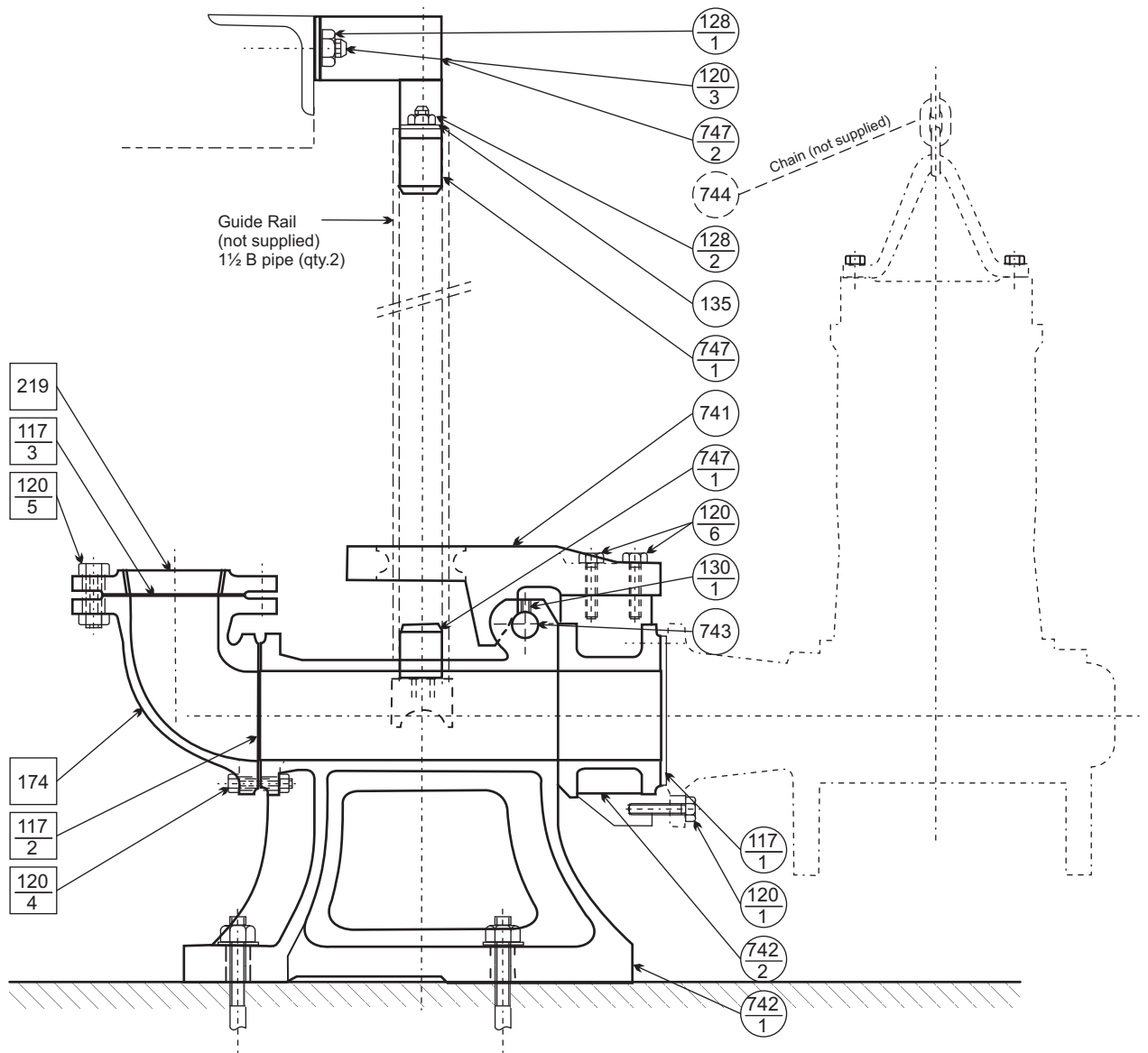
Item Number	Description	Material	Quantity per unit
135	Washer	SUS Stainless Steel	2
174	Discharge Bend	FC200 Cast iron	1
219	Companion Flange	FC200 Cast iron	1
741	Sliding Guide	FC200 Cast iron	1
742	QDC Body	FC200 Cast iron	1
743	Suspension Bar	SUS Stainless Steel	1
744	Chain	(Not supplied)	1
747-1	Guide Pin	S17C Steel	4
747-2	Guide Support	SS Steel	1

Note: Those parts with item number indicated in a are supplied with the pump.

Sectional View

Model LL 100 Quick Discharge Connector

Applicable to all 100 mm DS models



Item Number	Description	Material	Quantity per unit
117-1	Gasket	NBR Rubber	1
117-2	Gasket	NBR Rubber	1
117-3	Gasket	NBR Rubber	1
120-1	Bolt	SUS Stainless Steel	4
120-3	Bolt	SUS Stainless Steel	2
120-4	Bolt & Nut	SUS Stainless Steel	4
120-5	Bolt & Nut	SUS Stainless Steel	4or8
120-6	Bolt	SUS Stainless Steel	4
128-1	Nut	SUS Stainless Steel	2
128-2	Nut	SUS Stainless Steel	2
130-1	Set Screw	SUS Stainless Steel	1

Item Number	Description	Material	Quantity per unit
135	Washer	SUS Stainless Steel	2
174	Discharge Bend	FC200 Cast iron	1
219	Companion Flange	FC200 Cast iron	1
741	Sliding Guide	FCD400 Cast Iron	1
742-1	QDC Body	FC200 Cast iron	1
742-2	QDC Flange	FC200 Cast iron	1
743	Suspension Bar	SUS Stainless Steel	1
744	Chain	(Not supplied)	1
747-1	Guide Pin	SS400 Steel	4
747-2	Guide Support	SS Steel	1

Note: Those parts with item number indicated in a are supplied with the pump.

Dimensions - Manual Models - DS

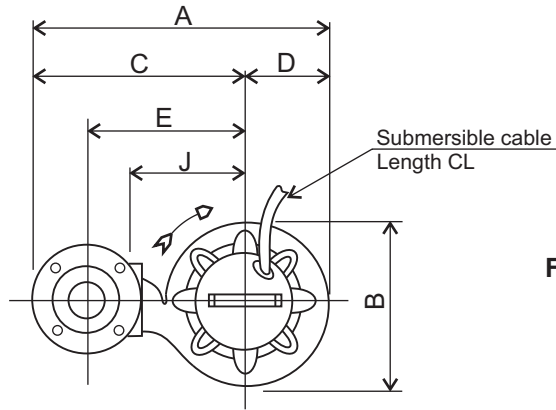
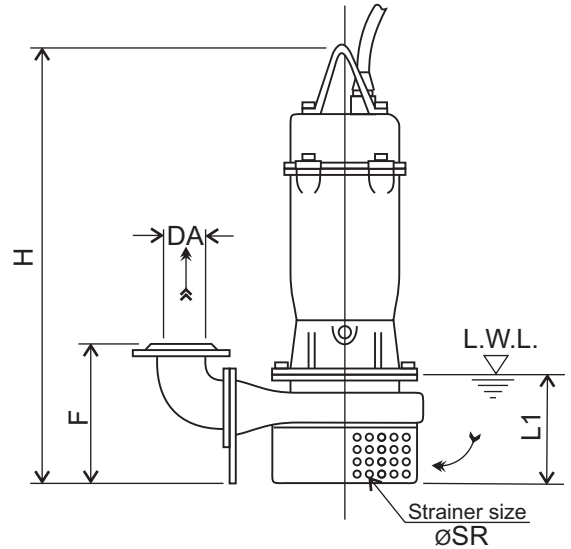


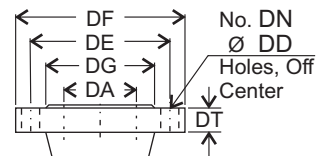
Figure 2



Note:

- 1/. L.W.L (Low Water Level)
Is limited to 10 minutes operation at low water level.
- 2/. Is limited to 30 minutes operation with water level below top of motor.

Discharge Flange Dimensions
(JIS 10kgf/cm²)



DA	DE	DF	DG	DT	DN	DD
50	120	155	96	18	4	15
80	150	185	126	18	8	15
100	175	210	151	20	8	15

Size	Model	Fig.	Output KW	Phase	DA	A	B	C	D	E	F	H	DE	J	L1	$\varnothing SR$	CL	Weight
50	50 DS 53.7	2	3.7	3	50	433	245	313	120	235	198	619	-	180	160	10	10 m	61 kg
80	80 DS 53.7	2	3.7	3	80	503	268	368	135	275	215	625	-	200	160	10	10m	64 kg
100	100 DS 55.5	2	5.5	3	100	615	309	460	155	355	257	730	-	250	200	13	10m	92 kg
	100 DS 57.5	2	7.5	3	100	615	309	460	155	355	257	730	-	250	200	13	10m	104 kg

Units: mm unless otherwise specified

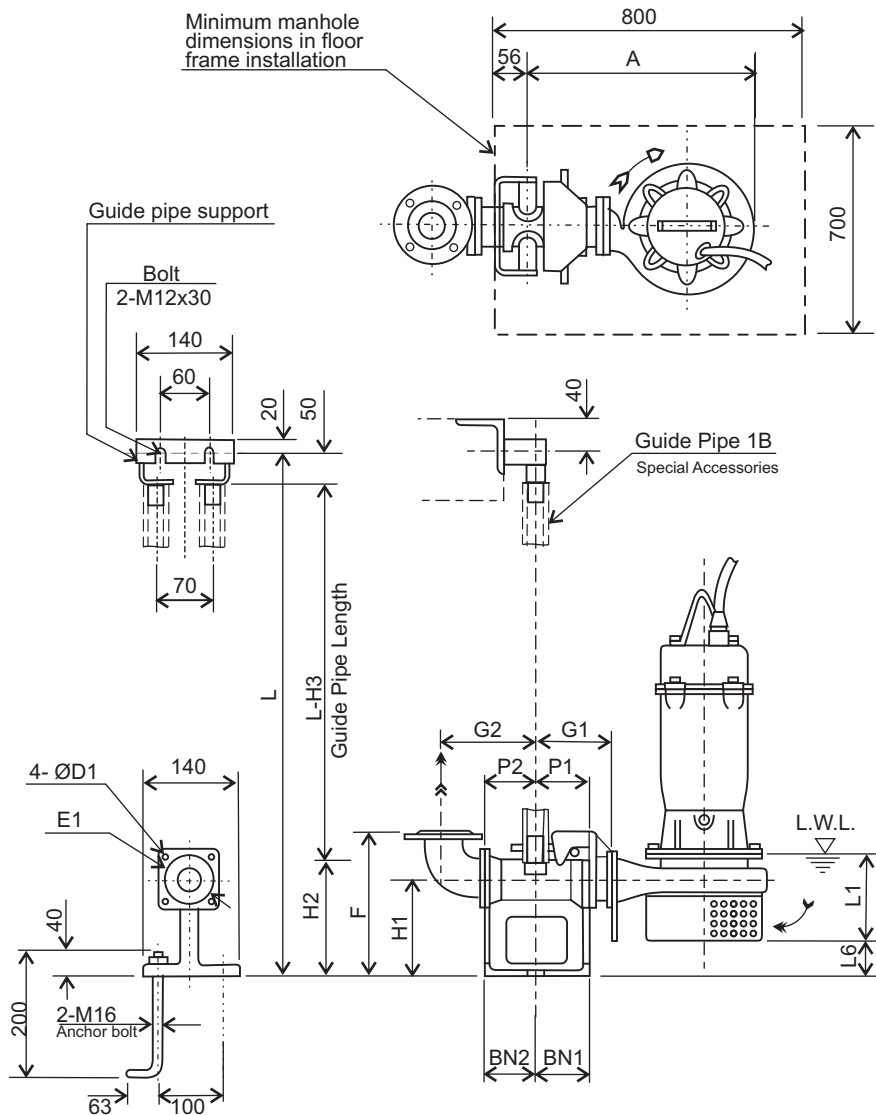
Ebara Submersible Sump Pumps

Model **DS**

Dimensions with QDC

Pump **DS** QDC **LM**

■ Applicable Models - 50 DS 53.7, 80 DS 53.7



Note:

1/ For detailed dimensions of the pumps, refer to separate dimension data sheets.

2/ The discharge bend and companion flange supplied with the pump are used with the QDC.

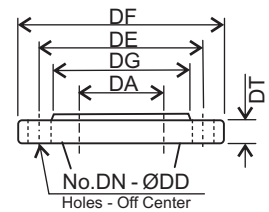
3/ The weight in dimension tables refers only to the weight of the QDC.

4/ Standard accessories supplied with QDC include:-

- Connector body with foundation bolts.
- Guide pipe support
- Sliding Glide
- Adaptor Flange

Guide Pipe is not supplied.

Discharge Flange
(JIS 10kgf/cm²)



DA	DE	DF	DG	DT	DN	DD
50	120	155	96	18	4	15
80	150	185	126	18	8	15

Pump Model	A	P1	P2	G1	G2	F	H1	H2	H3	L1	L6	BN1	BN2	D1	E1	QDC Model	Weight
50 DS 53.7	415	75	80	115	135	230	135	165	215	160	32	75	80	12	120	LM50	11 kg
80 DS 53.7	460	75	90	125	165	285	175	230	280	160	70	75	90	15	155	LM80	17 kg

Units: mm unless otherwise specified

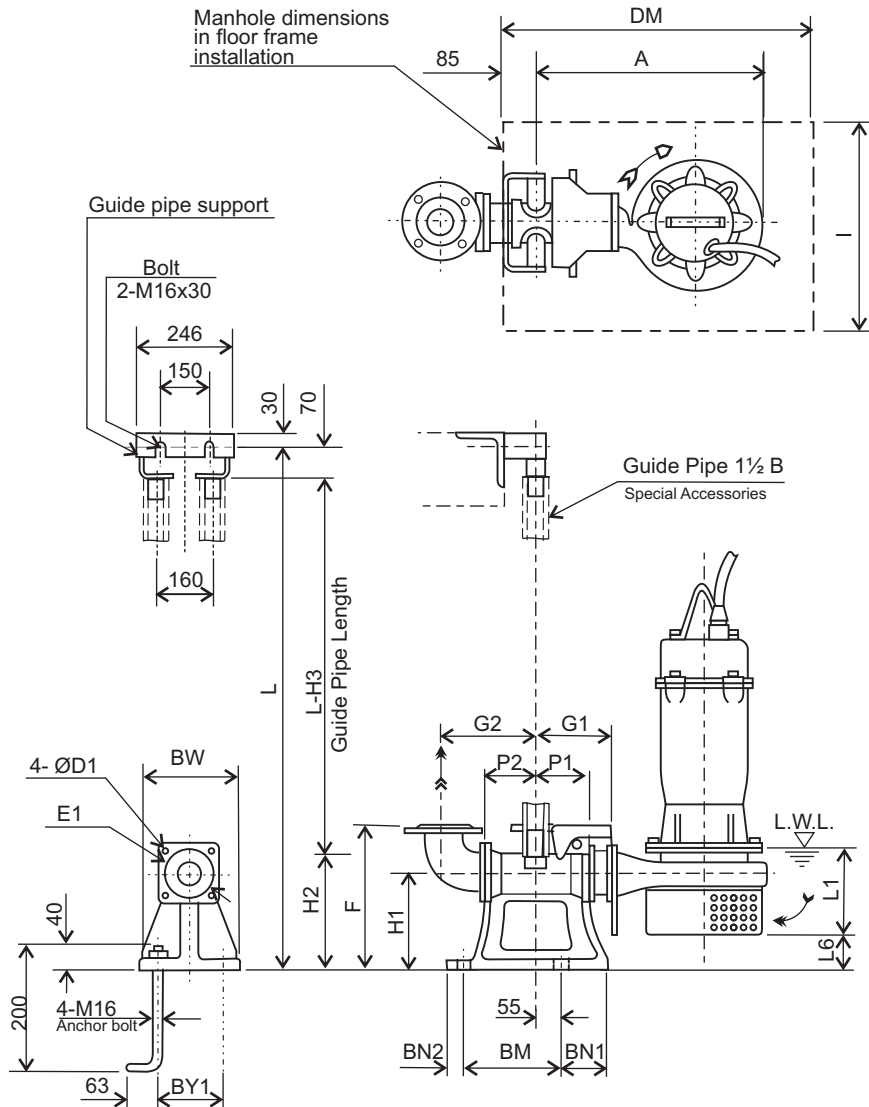
Ebara Submersible Sump Pumps

Model **DS**

Dimensions with QDC

Pump **DS** QDC **LL**

■ Applicable Models - 100 DS (5.5 & 7.5 kW)



Note:

1/ For detailed dimensions of the pumps, refer to separate dimension data sheets.

2/ The discharge bend and companion flange supplied with the pump are used with the QDC.

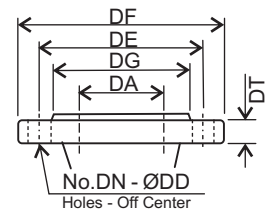
3/ The weight in dimension tables refers only to the weight of the QDC.

4/ Standard accessories supplied with QDC include:-

- Connector body with foundation bolts.
- Guide pipe support
- Sliding Glide
- Adaptor Flange

Guide Pipe is not supplied.

Discharge Flange
(JIS 10kgf/cm²)



DA	DE	DF	DG	DT	DN	DD
100	175	210	151	20	8	15

Pump Model	A	P1	P2	G1	G2	F	H1	H2	H3	L1	L6	BN1	BN2	BM	BY1	BW	DM	I	D1	E1	QDC Model	Weight
100 DS 55.5	590	105	105	185	210	365	240	265	335	200	108	100	40	220	180	230	800	700	19	175	LL100	46 kg
100 DS 57.5	590	105	105	185	210	365	240	265	335	200	108	100	40	220	180	230	800	700	19	175	LL100	46 kg

Units: mm unless otherwise specified

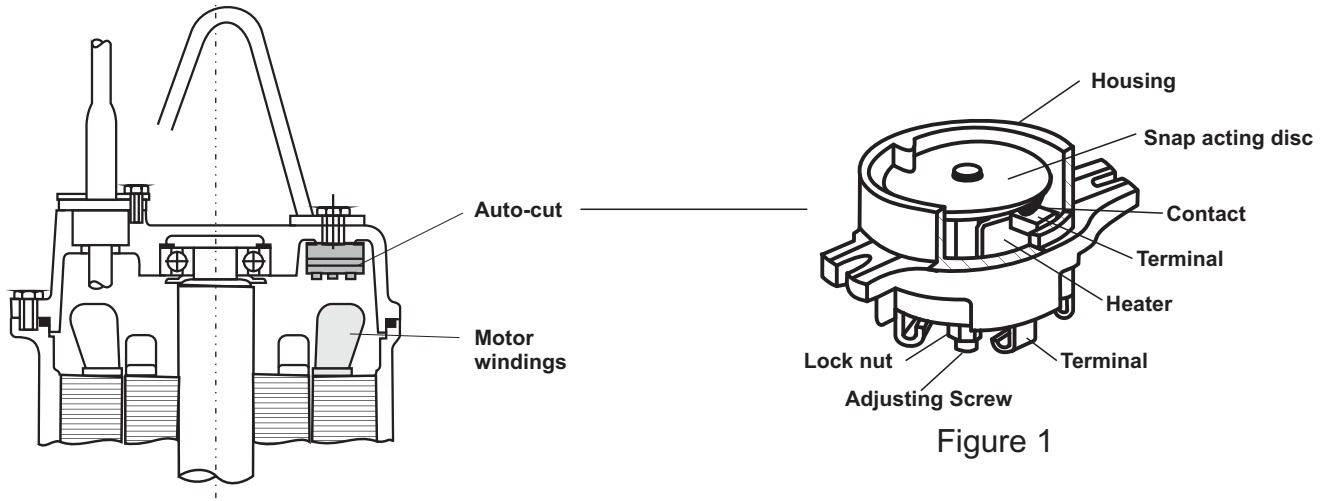
Applicable Models	Output kW	Mechanical Seal Type	Lubricating Oil		Bearings	
			Capacity - CC	Type	Bottom	Top
DS	3.7	A-30	1180	Turbine Oil SAE 10W or SAE 20W (Turbine Oil#32)	6308ZZ	6304ZZ
	5.5	A-35	1700		6308ZZ	6306ZZ
	7.5				6309ZZ	6306ZZ

No.	Part Name	Material	No. per Set	Type A-30 A-35	
1	Packing	N.B.Rubber	1		
2	Floating Ring	Ceramic	1		
3	Seal Ring	Carbon Graphite	1		
4	Spring	304 SS	1		
5	Seal Ring	Silicon Carbide	1		
6	Floating Ring	Silicon Carbide	1		
7	Packing	N.B.Rubber	1		

Applicable to DS

The three pole model that is used for three phase models is illustrated below.

The Auto-Cut consists of: 3 sets of contacts, 1 snap-acting disk, 3 heaters, 3 terminals and 1 calibration bolt and nut, all enclosed in a bakelite housing.



The Auto-Cut is installed directly over the motor winding of the motor where it not only senses over heating of the winding but also excess amperage draw by each winding.

Figure 2 shows the Auto-Cut in its normal operating condition (contacts closed). When actuating temperature is reached, the snap acting disc opens to interrupt the circuit as shown in figure 3 and stops the motor.

When the motor temperature cools down to the safe operating temperature, the snap acting disc resets automatically to the original position as shown in figure 2, and the motor restarts.

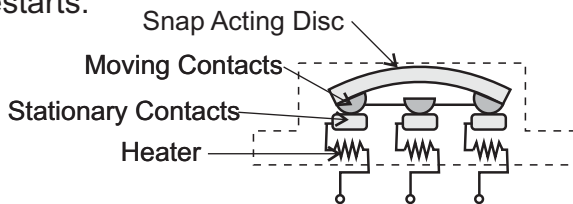


Figure 2

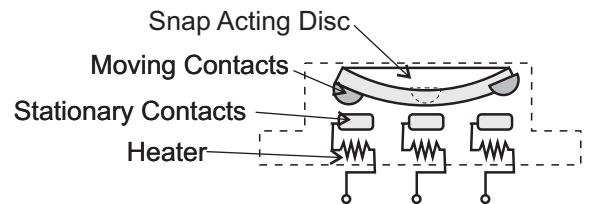
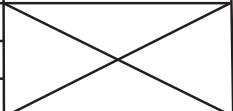


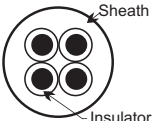
Figure 3

To suit models DS		
Phase	Power kW	Auto-Cut
Three Phase	3.7	KA-313-GDZL103
	5.5	KA-314-HRXL00
	7.5	KA-314-HKZL201

Technical Data

Cable Specifications

Applicable Models		Motor	Starting	Length		Number & size of conductor(s)	
						Power Cable(s)	Protector Cable
DS	Three Phase	3.7	DOL	10m	H07RN-F	4 x 1.5 mm ²	
		5.5	DOL	10m	H07RN-F	4 x 1.5 mm ²	
		7.5	DOL	10m	H07RN-F	4 x 2.5 mm ²	

Item	Cross sectional area of conductors	No. of conductors	Cable Type	Sheath Material	Insulation Material	Sheath Thickness mm	Insulation Thickness mm	Overall Diameter mm	
Three Phase	1.5 mm ²	4	2PNCT	PCR	EPR	1.7	0.8	11.2	
	2.5 mm ²					1.9	0.9	13.2	

PCR = Polychloroprene Rubber EPR = Ethylene Propylene Rubber

Note: Cable specifications were changed in 2009 to be meet CE market requirements.
See page 500 for more details.

Motor Data

3.7 to 7.5 kW, Three Phase, 2 Pole Motors

Hz	Poles	Phase	Output (kW)	Voltage	Applicable Models
50	2	3	3.7 to 7.5	415 V	DS

Name-Plate Rating	Model	VZDS	VZDS	VZDS			
	Output - kW	3.7	5.5	7.5			
	Phase	3	3	3			
	Poles	2	2	2			
	Volts	415	415	415			
	Amps	7.8	9.8	13.2			
	Speed - rpm	2890	2920	2910			
	Insulation Class	F	F	F			
No Load Test	Amps	3.90	2.70	3.27			
	Watts	600	340	400			
Resistance at 20° C	Ohms	2.585	1.846	1.257			
75% Load	Current - Amps	6.45	7.59	10.17			
	Efficiency - %	74.26	83.68	84.44			
	Power Factor - %	80.61	90.40	91.41			
	Speed - rpm	2922	2945	2942			
100% Load	Current - Amps	7.80	9.80	13.20			
	Efficiency - %	76.74	84.51	85.13			
	Power Factor - %	86.00	92.39	92.85			
	Speed - rpm	2890	2923	2918			
Locked Rotor Torque - %		233	168	159			
Start Current - amps		53.0	70.0	94.0			
Number starts per hour		20	20	20			
Design Standard		JEC37	JEC37	JEC37			
Voltage Tolerance		± 10%	± 10%	± 10%			
Frequency Tolerance		± 5%	± 5%	± 5%			
Gd ² - kgm ²		0.0110	0.0300	0.0370			
Mft's Symbols		EB	EB	EB			



Change to Cable Specifications

Note: Cable specifications were changed in 2009 to be meet CE market requirements.

Materials and colour of cables where changed as below.

Cables with the same gland shape are interchangeable, providing conductor size is suitable for motor power.



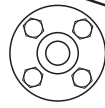
Note that superceded cable conductors were often of larger size as they were designed for use with lower voltage (200Volt) motors.

"New" CE Marked cables (from August 2009)								
Applicable Models		Motor kW	Starting method	Length of cable	Material	Number & size of conductors		
						Power Cable(s)	Gland Shape	Protector Cable
DS	Three Phase	3.7	DOL	10m	H07RN-F	4 x 1.5 mm ²		
		5.5						
		7.5						

Cable Colours (& tag)	BLACK 1 (U1), BLACK 2 (V1) & BLACK 3 (W1) with GREEN/YELLOW Earth (PE)
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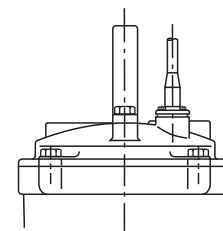
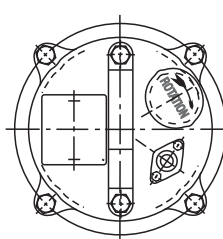
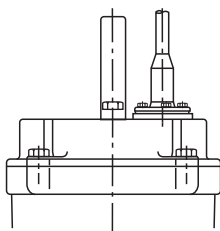
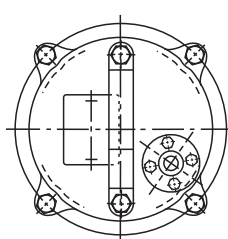
The cable number is printed along each black cable.



Superceded cables (pre August 2009)								
Applicable Models		Motor kW	Starting method	Length of cable	Material	Number & size of conductors		
						Power Cable(s)	Gland Shape	Protector Cable
DS	Three Phase	3.7	DOL	10m	HVCT	4 x 2 mm ²		
		5.5				4 x 3.5 mm ²		
		7.5				4 x 5.5 mm ²		

Cable Colours	RED, WHITE & BLACK with GREEN Earth
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The diagrams below illustrate the changes to the 5.5 & 7.5 kW model DS pumps and can be used to assist in identifying whether they are current or superceded versions, which is necessary to ensure the correct replacement cables are supplied.



Superceded 5.5 & 7.5 kW

New 5.5 & 7.5 kW