

DIESEL ENGINE

MODEL 4DSP-50

Performances

Ratings		3000 rpm	
		PRIME	STAND-BY
Rated Output	kWm	50	54

Note:

PRIME POWER: The prime power is the maximum power available with varying loads for an unlimited number of hours. The average power output during a 24h period of operation must not exceed 80% of the declared prime power between the prescribed maintenance intervals and at standard environmental conditions. A 10% overload is permissible for 1 hour every 12 hours of operation.

STAND-BY POWER: The stand-by power is the maximum power available for a period of 500 hours/year with a mean load factor of 90% of the declared stand-by power. No kind of overloads is permissible for this use.

Specifications

Mechanical system

Engine model	4DSP-50
Engine type	In-line, 4 stroke, water cooled
Combustion type	Direct Injection
Cylinder type	Dry liner
Air intake type	Normally Aspirated
Cylinder No.	4
Bore*Stroke(mm)	95*105
Total displacement(L)	2.977
Compression ratio	17.5:1
Firing order	1-3-4-2
Injection timing	15°±1°
Speed governor	Mechanical ≤8%
Exhaust temperature (°C)	≤550
Mean Effective Pressure (KPa)	780
Noise Level(dBA)	≤93
Exhaust gas back pressure(KPa)	5
Exhaust flow (m ³ /h)	950
Cooling air flow (m ³ /h)	510
Air for combustion flow (m ³ /h)	390
Piston Speed(m/s)	10.2
Dry weight (kg)	300
Dimension(L*W*H)(mm)	750*460*1100 (with muffler)
Rotation	Counter clockwise viewed from flywheel
Flywheel housing/flywheel	SAE4/ 7.5"

Mechanism

Type	Over head valve
Valves per cylinder	2
Valve lash(cold state)	Air intake valve 0.30-0.40mm Exhaust valve 0.30-0.40mm

Valve timing (crankshaft rotating angel)

Air intake valve open	24.5° before top dead center
Air intake valve close	55.5° after bottom dead center
Exhaust valve open	54° before bottom dead center
Exhaust valve close	26° after top dead center

Specific fuel consumption

rpm	3000
Fuel consumption (g/kWh)	≤230

Oil consumption

Oil consumption(g/kWh)	≤1.65
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Fuel system

Fuel injector pump	BQ pump
Governor model	RSV full range type
Feed pump	Mechanical type
Injection nozzle	multi holes type
Fuel filter	Spin-on type
Fuel	Diesel

Lubrication system

Type	Mixed type, pressure and splash lubrication
Oil pump Displacement/speed (L/min/r/min)	Inner and outer rotor type 25/2000
Oil filter	Spin-on type
Lube oil total system capacity	9L including pipes, filters etc.

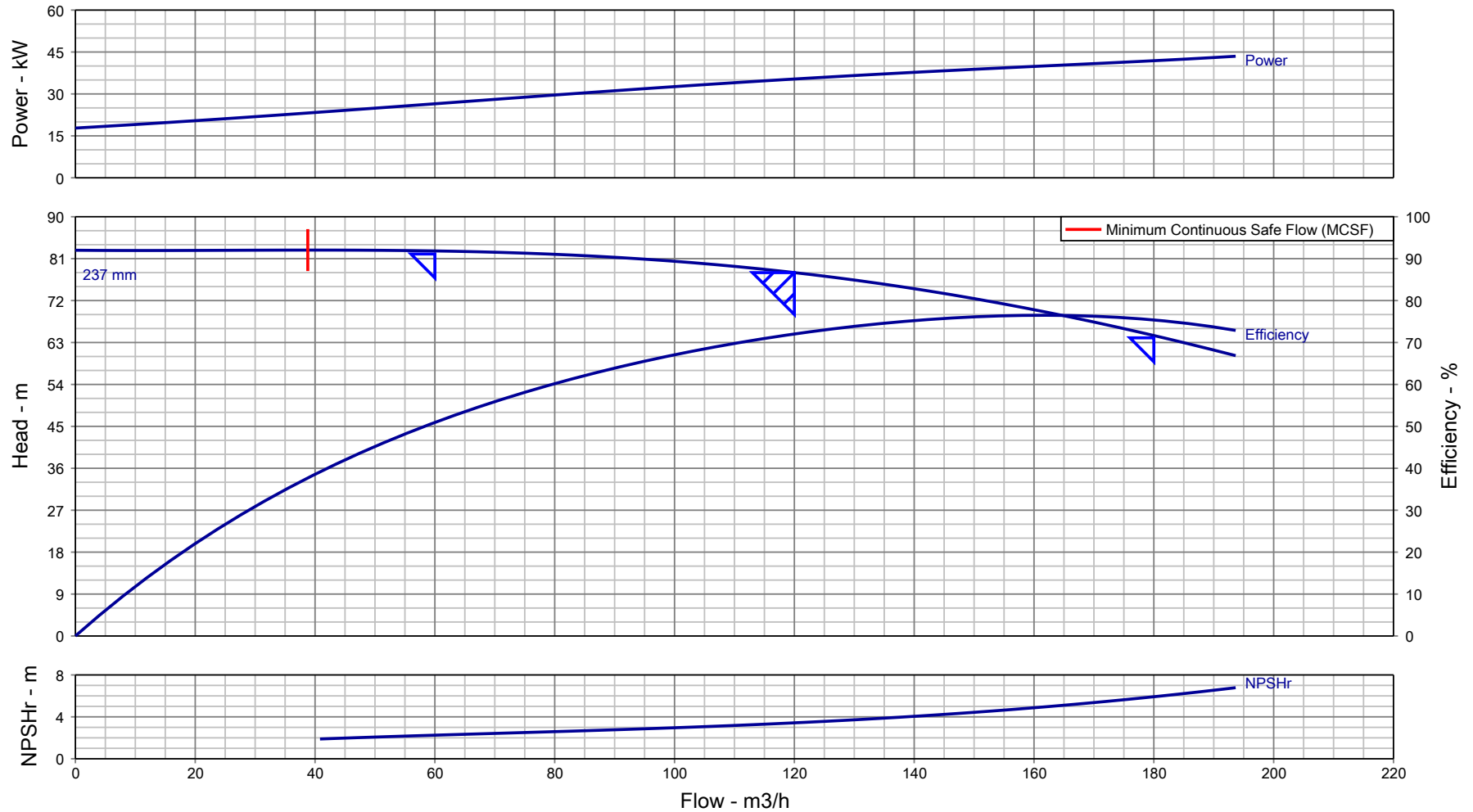
Cooling system

Cooling method	Water cooled, forced circulation
Coolant capacity: engine only	6L
Engine + radiator	12L
Water pump type	Centrifugal type driven by belt
Water pump capacity(L/min)	≥100
Thermostat	Opening temp.73°C
Cooling fan	Φ420mm, 7blades, PA

Electronic system

Charging alternator	14v/350w
AVR	Built-in type
Starting motor	12v/3.8kW
Battery capacity	12v/100Ah

Pump Performance Curve



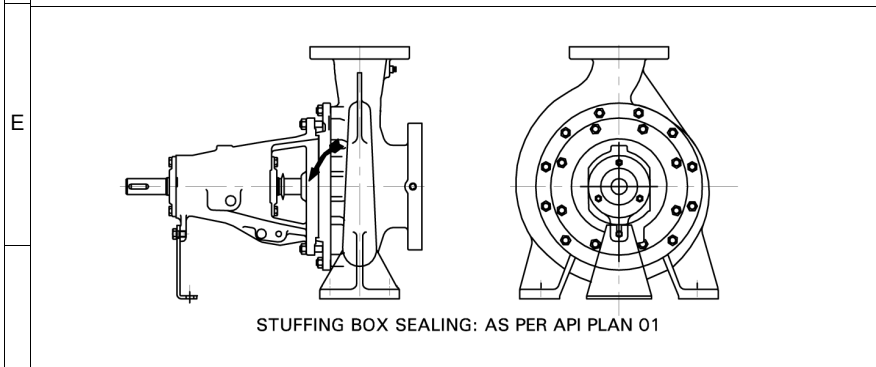
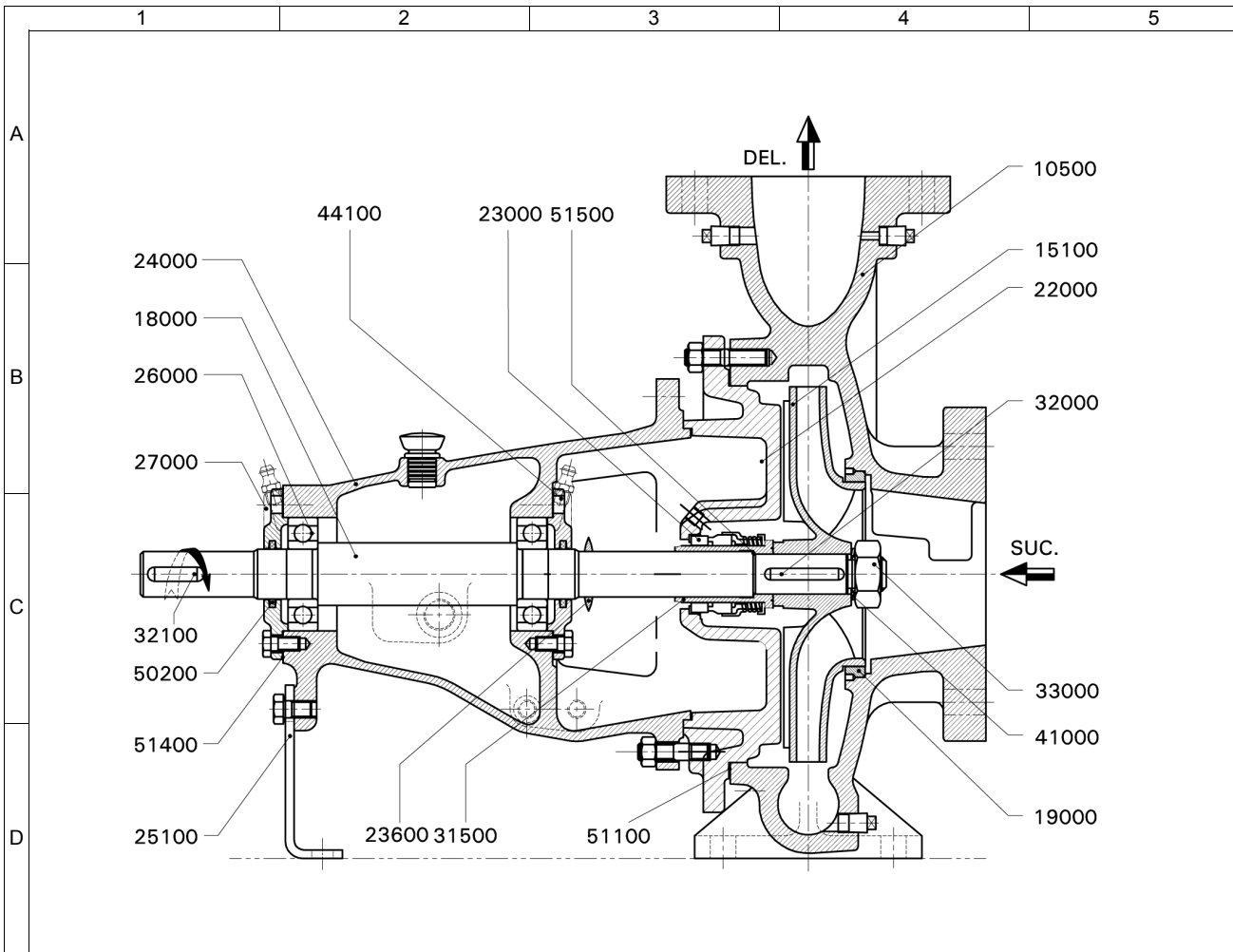
Customer :	Pump Size/ Stages : DB 80/26/ 1	Flow, rated : 120.0 m ³ /h
Customer enquiry :	Speed, rated : 2960 rpm	Differential Head : 78.00 m
Project : Default	Based on curve number : HD10220A0 Rev 0	Fluid density rated : 0.998 kg/dm ³
Quote number : 312657	Viscosity : 1.00 cSt	Efficiency : 72.03 %
Item number : 001	Cq/Ch/Ce/Cn [HI2010] : 1.00 / 1.00 / 1.00 / 1.00	Power, rated : 35.34 kW
Quantity : 1	Minimum recommended driver rating : 45.00 kW / 60.35 hp	NPSH required : 3.43 m
Date last saved : 09 Oct 2020 8:08 AM	Performance testing standard : ISO 9906 / ANSI-HI 14.6 Gr 2B	Liquid Type/ Application : Water

Notes: 1. Performance at shut off condition is approximate. 2. Rated impeller diameter is approximate. 3. Only duty point is guaranteed as per testing standard.



Enriching Lives

Pump Performance Datasheet			
General			
Customer	:	Quote number	: 312657
Customer Enquiry No.	:	Pump model	: DB 80/26
Project	: Default	Stages	: 1
End user	: -	Based on curve number	: HD10220A0 Rev 0
Tag number	: 001	Date last updated	: 09 Oct 2020 8:08 AM
Service	: -	Quantity of pumps	: 1
Operating Conditions		Liquid	
Flow, rated	: 120.0 m3/h	Liquid handled	: Water
Suction pressure, rated / max	: 0.00 bar.g / 0.00 bar.g	Additional liquid description	: Fresh Water
Discharge pressure, rated	: 7.64 bar.g	Temperature, max	: 20.00 deg C
Head, rated (requested)	: 78.00 m	Solids diameter, max	: 0.00 mm
NPSH available, rated	: Value not specified	Solids in suspension by volume	: 0.00 %
Frequency	: 50 Hz	Specific gravity, rated / max	: 0.998 / 0.998 kg/dm3
Performance		Viscosity, Rated / Max.	: 1.00 cSt / -
Pump speed, rated	: 2960 rpm	Driver & Power Data	
Impeller Dia, Rated (Approx.)	: 237 mm	Driver sizing specification	: Maximum Power
Impeller diameter, maximum	: 264 mm	Margin over specification	: 0.00 %
Impeller diameter, minimum	: 205 mm	Power, rated	: 35.34 kW
Efficiency at duty point	: 72.03 %	-	: -
NPSH required / margin required	: 3.43 m / 0.50 m	-	: -
MCSF	: 38.79 m3/h	Driver Rating	: 45KW
Cq/Ch/Ce: [-]	: 1.00 / 1.00 / 1.00	Pressure Data	
Water eq. duties (Qw/Hw/Ew)	: 120.0 m3/h / 78.00 m / 72.03 %	Maximum working pressure	: 8.11 bar.g
Suction / Delivery nozzle size	: 100 mm / 80.00 mm	Maximum allowable working pressure	: 16.00 bar.g
Noise level	: 90 dB	Maximum allowable suction pressure	: 1.96 bar.g
Vibration level (RMS)	: 5.1 mm/s	Hydrostatic test pressure	: 18.34 bar.g
Test standard	: ISO 9906 / ANSI-HI 14.6 Gr 2B	Construction	
Starting condition	: Closed Delivery Valve	Basic construction	: End Suction Pump-OH1
Material		Impeller type	: Enclosed
MOC Code	: 16MOC	Selection status	: Acceptable
Material (Casing / Impeller / Shaft)	: CI IS210:FG260 (012) / CI IS210:FG260 (012) / ST ST ASTM A276-410 ANLD (253)	Rec. Pipe Size (Suc / Del)	: 150 mm / 150 mm
-	: -		



NOTES:

- " * " INDICATES RECOMMENDED SPARES.
- FASTENERS IN LIQUID CONTACT ARE IN CS

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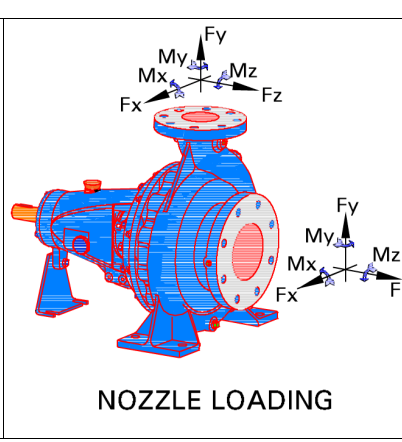
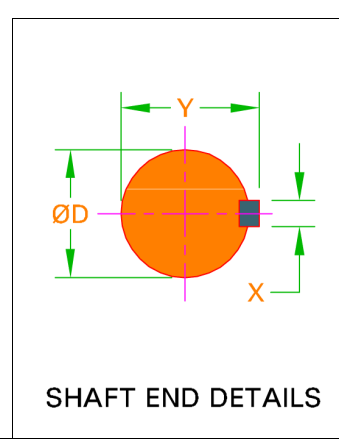
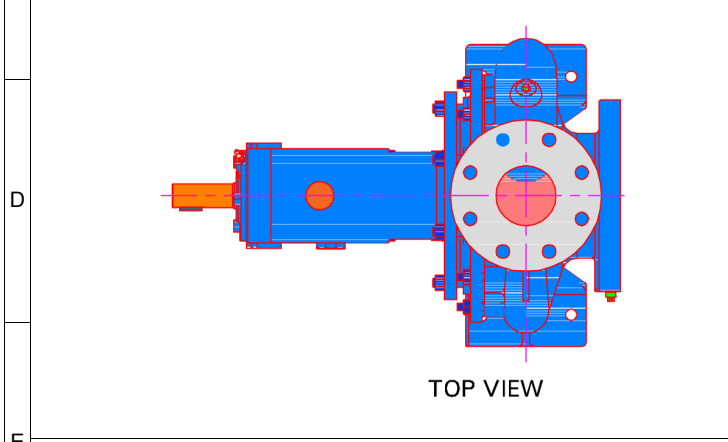
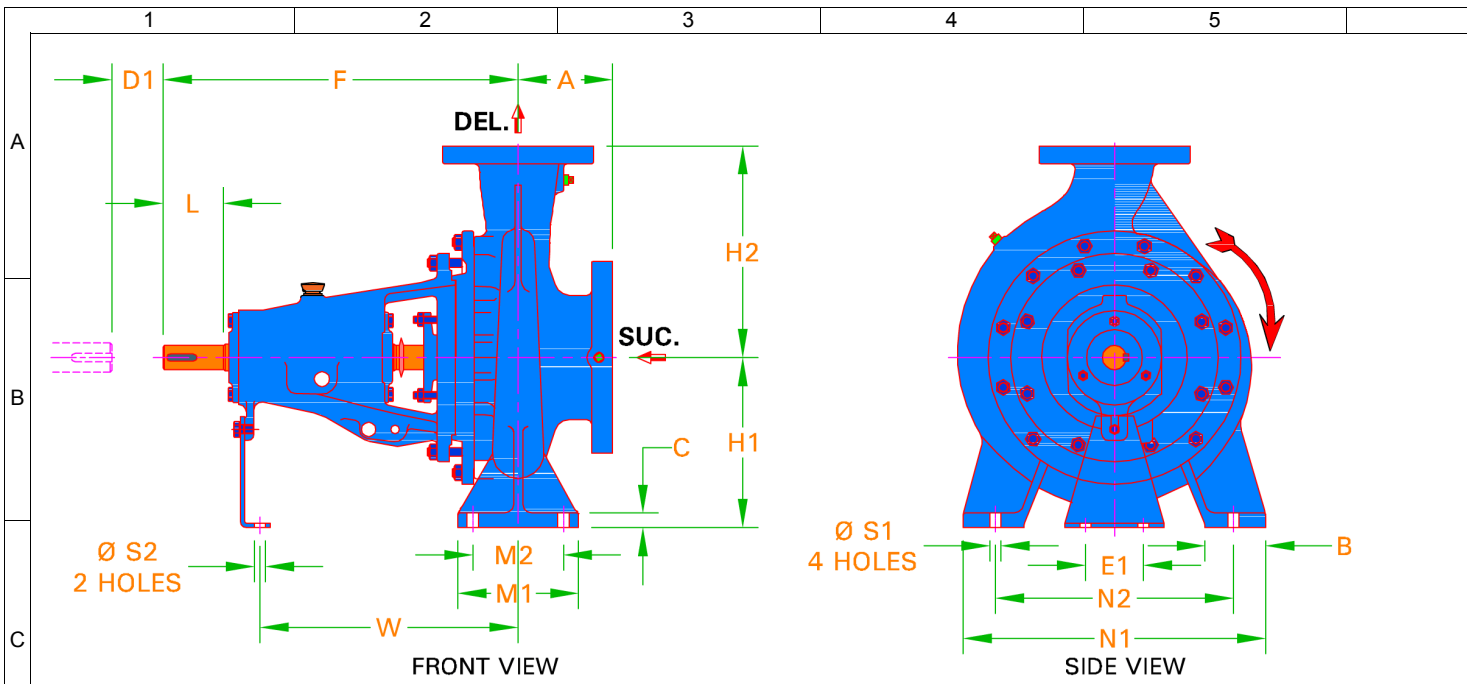
PART NO.	PART DESCRIPTION	MAT. CODE	MOC DESCRIPTION
10500	PUMP CASING	012	CI IS210:FG260
15100*	IMPELLER	012	CI IS210:FG260
18000*	PUMP SHAFT	253	ST ST ASTM A276-410 ANLD
19000*	WEAR RING - SUCTION SIDE	012	CI IS210:FG260
22000	CASING COVER	012	CI IS210:FG260
23000*	MECHANICAL SEAL	998	DIN SEAL
23600*	LIQUID DEFELCTOR	370	NATURAL RUB ASTM D2000AA-70SHORE/7MPa
24000	BEARING HOUSING	012	CI IS210:FG260
25100	SUPPORT FOOT	042	MS IS:5986-Fe410WA (OLD-IS:1079)
26000*	DEEP GROOVE BALL BEARING	000	STEEL
27000	BEARING COVER DE & NDE	012	CI IS 210-FG 260
31500*	SHAFT SLEEVE - MECHANICALSEAL	565	ST ST ASTMA276-410(210/250BHN)-ANLD
32000*	KEY FOR IMPELLER	253	ST ST ASTM A276-410 ANLD
32100	KEY FOR COUPLING	053	CS IS1570:40C8 HOT RLD
33001*	IMPELLER NUT	664	AUS ST ASTMA194/194M-8M-UNS S31600 (NUT)
41000*	LOCK WASHER-IMPELLER NUT	054	SPRING ST IS:4072-80C6
44100	GREASE NIPPLE	444	CS IS:1367 Part3 CL4.6 CDP
50200*	FELT RING	375	FELT
51100*	GASKET-CASING COVER	702	NON ASBESTOS FERROLITE NAM37 OR EQ
51400*	GASKET-BEARING COVER	702	NON ASBESTOS FERROLITE NAM37 OR EQ
51500*	GASKET-SHAFT SLEEVE	702	NON ASBESTOS FERROLITE NAM37 OR EQ

PUMP	DB 80/26	MOC	16
ENQUIRY NO./DATE	/	QUANTITY	1
PO. NO./DATE	-	TAG NO.	001
QUOTATION NO.	0	DATE.	-
O/A. NO.	-	MISI.	-
CUSTOMER	-		
END USER	-		
PROJECT	Default		
CONSULTANT	-		
SERVICE	-		

Kirloskar Brothers Limited
KIRLOS KARVADI - 416308, DIST.- SANGLI (INDIA)

CROSS SECTIONAL DRAWING

DRAWING NO.	TC02-1
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Enriching Lives

PUMP DUTIES

CAPACITY	120.0 m ³ /h	EFFICIENCY	72.03 %
TOTAL HEAD	78.00 m	PUMP INPUT	35.34 kW
DENSITY	0.998 kg/dm ³	NPSHR	3.43 m

FLANGE DRILLING STANDARD AND DETAILS

SUCTION	BS EN1092 PN16 FF	DELIVERY	BS EN1092 PN16
NOM. SIZE	RF DIA.	P.C.D.	NO OF HOLES
SUCTION	100 mm	N.A.	180 mm
DELIVERY	80.00 mm	N.A.	160 mm

ALLOWABLE NOZZLE LOADING

	FORCES			MOMENTS		
	Fx	Fy	Fz	Mx	My	Mz
SUCTION	91.00 kgf	227.0 kgf	182.0 kgf	1,353 N.m	677 N.m	677 N.m
DELIVERY	68.00 kgf	170.0 kgf	136.0 kgf	1,020 N.m	510 N.m	510 N.m

TAPPING DETAILS

DESCRIPTION	SIZE / TYPE
Suction Gauge	1/4"BSP
Delivery Gauge	1/4"BSP
Casing Drain	3/8"BSP
Casing Vent	NA
Bearing Cooling in / out	NA
Pad Cooling in / out	NA
Priming in	NA
Base Drain	NA

DIRECTION OF ROTATION FROM DE: CLOCKWISE

PUMP	DB 80/26	PUMP WT.	91.00
REC. DRIVER RATING	45KW	GD*2	0.03 kg
ENQ. NO./DATE	/	RATED SPEED	2960R
PO. NO./DATE	-	QUANTITY	1
QUOTATION NO.	0	TAG NO.	001
O/A NO.	-	DATE	-
CUSTOMER	-	MISI	-
END USER	-		
PROJECT	Default		
CONSULTANT	-		
SERVICE	-		

NOTES:
 • ALL DIMENSIONS ARE IN mm
 • DIM 'D1' INDICATES THE DISTANCE REQUIRED TO REMOVE BACK PULL OUT ASSEMBLY.

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A	F	H1	H2	B	C	M1	M2	N1	N2	S1	E1	S2	W	-	D
125	470	200	280	80.00	16.00	160	120	400	315	18.00	110	14.00	267	-	32.00
X	Y	L	D1	-	-	-	-	-	-	-	-	-	-	-	-
10.00	35.00	80.00	140	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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PUMP OUTLINE DRAWING

DRAWING NO. TL02-1-