

# DIESEL ENGINE

## KDP SERIES FOR FIRE PUMP

### Model: 4KDP-45

**Prime power** 45.0KW(60HP)/3000 rpm  
**Standby Power** 49.5KW(66HP)/3000 rpm

#### Engine Specifications

In-Line, 4 stroke, water-cooled, Natural Aspiration  
 Combustion type Direct injection  
 Cylinders - Bore × stroke 4 - 90 × 105 mm  
 Displacement 2672 cc  
 Firing order 1 – 3 – 4 – 2  
 Compression ratio 18 : 1  
 Dry weight Approx. 250 kg  
 Dimension(LxWxH) 800 × 636 × 765 mm  
 Rotation Anti-clockwise  
 Flywheel / Housing SAE # 7.5 / # 4

#### Fuel System

Injection pump Direct Injection type  
 Governor Mechanicaltype  
 Feed pump Mechanicaltype  
 Injection nozzle Multi-hole type/ 0.255 mm  
 Opening pressure 20+0.5MPa  
 Fuel filter Single Stage, Paper

#### Fuel Consumption

Prime power at 3000rpm 11.1 liters/h  
 Standby Power at 3000rpm 12.2 liters/h

#### Cooling System

Cooling method Fresh water forced type  
 Water pump Centrifugal, Belt driven  
 Max. water Temp 95 degree C.  
 Cooling Fan Blade 7EA - Ø 410 mm

#### Lubrication System

Lub. Oil Pan Capacity 6.5 liters  
 Max. allowable Oil Temp 110 degree C.  
 Min. 294 kPa  
 Max. 490 kPa  
 Oil pressure

#### Intake & Exhaust System

Max air restriction Clean 2 kPa / Dirty 5 kPa  
 Exhaust back Max 6 kPa

#### Engineering Data

Combustion Air 1.92m<sup>3</sup>/min  
 Exhaust Gas 4.79m<sup>3</sup>/min

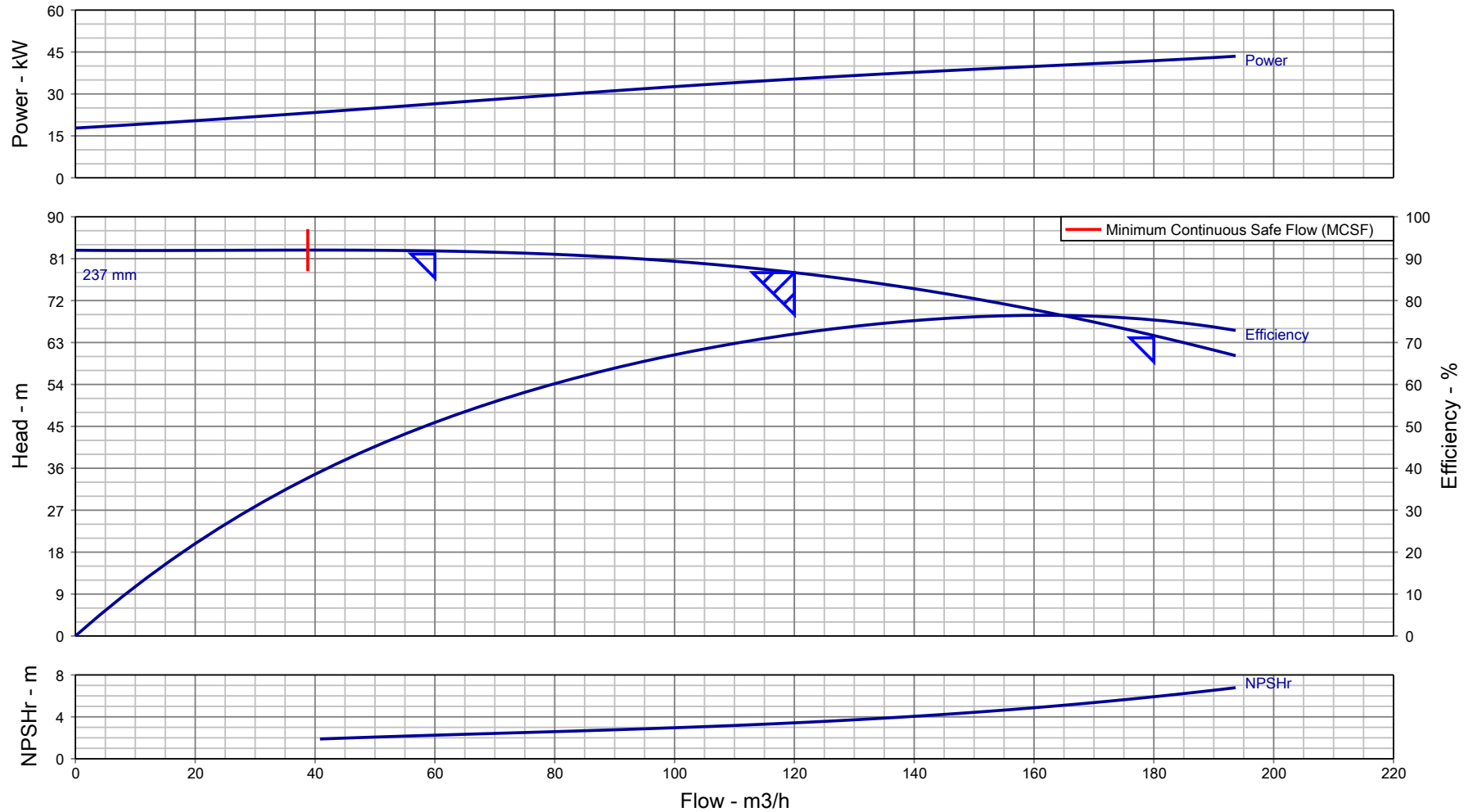
#### Electric System

Charging generator 13.5 V × 36 A  
 Starting motor 12 V × 3.7 kW  
 Battery 12 Vx 120 Ah

#### Conversion Table

PS = kW × 1.3596      in. = mm × 0.0394  
 psi = kg/cm<sup>2</sup> × 14.2233  
 HP= PS x 0.98635

## Pump Performance Curve



Customer :	Pump Size/ Stages : DB 80/26/ 1	Flow, rated : 120.0 m <sup>3</sup> /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 <sup>3</sup>
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

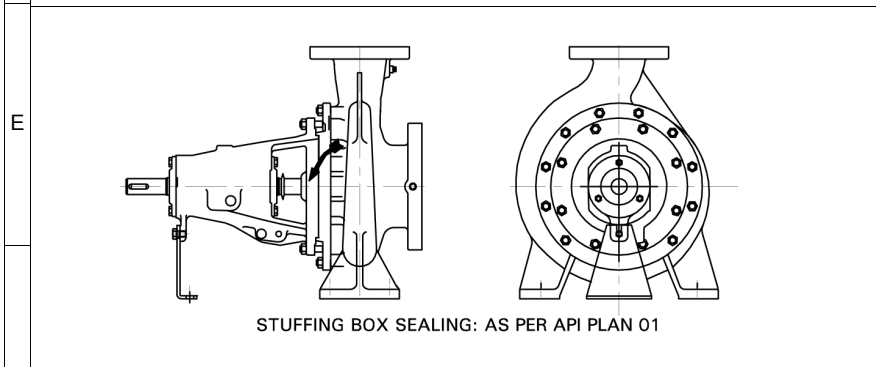
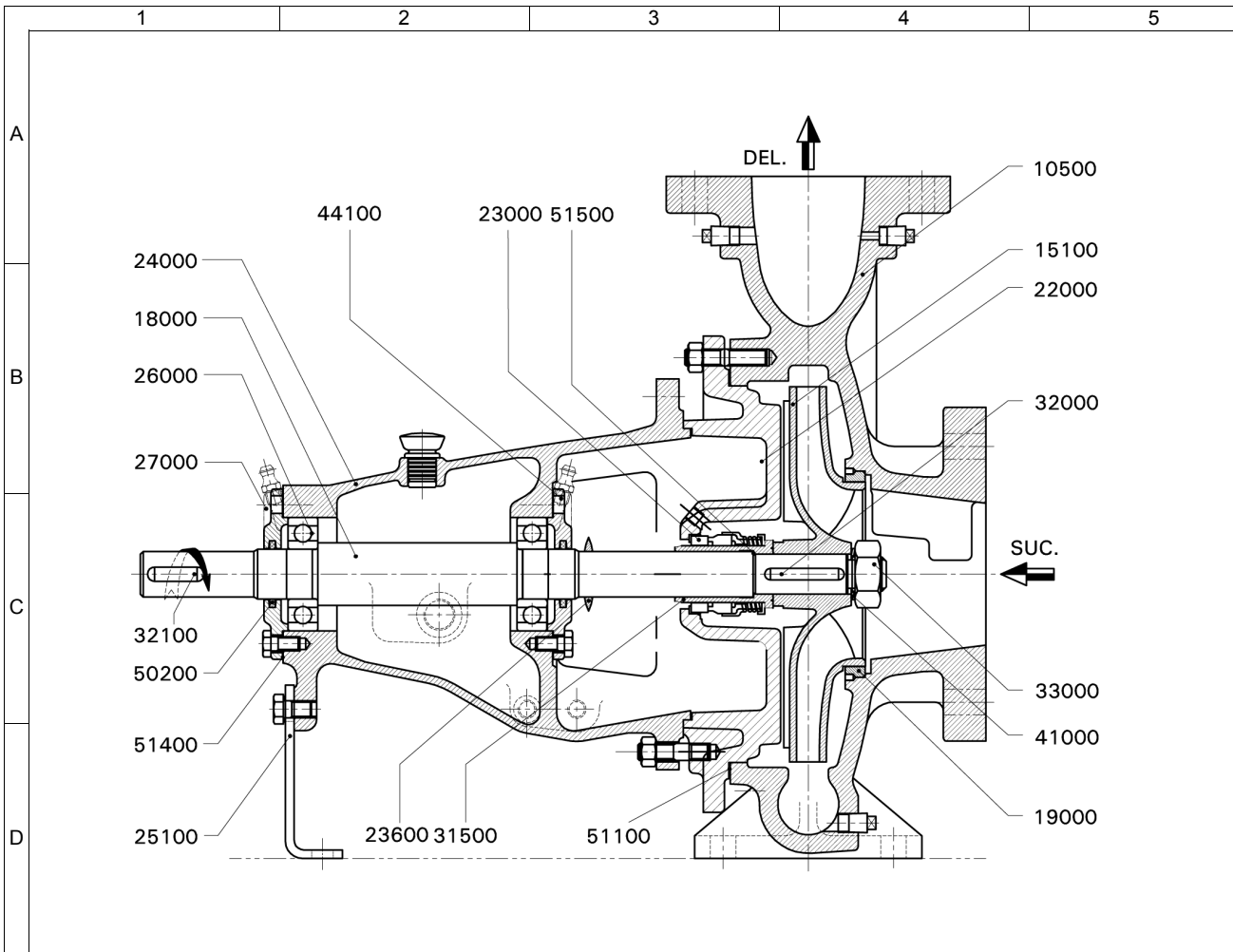
Notes: 1. Performance at shut off condition is approximate. 2. Rated impeller diameter is approximate. 3. Only duty point is guaranteed as per testing standard.



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## 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 / -				
		Driver & Power Data						
		Pump speed, rated	:	2960 rpm	Driver sizing specification	: Maximum Power		
		Impeller Dia, Rated (Approx.)	:	237 mm	Margin over specification	: 0.00 %		
		Impeller diameter, maximum	:	264 mm	Power, rated	: 35.34 kW		
		Impeller diameter, minimum	:	205 mm	-	: -		
		Efficiency at duty point	:	72.03 %	-	: -		
		NPSH required / margin required	:	3.43 m / 0.50 m	Driver Rating	: 45KW		
				Pressure Data				
				MCSF	:	38.79 m3/h	Maximum working pressure	: 8.11 bar.g
				Cq/Ch/Ce: [-]	:	1.00 / 1.00 / 1.00	Maximum allowable working pressure	: 16.00 bar.g
Water eq. duties (Qw/Hw/Ew)	:			120.0 m3/h / 78.00 m / 72.03 %	Maximum allowable suction pressure	: 1.96 bar.g		
Suction / Delivery nozzle size	:	100 mm / 80.00 mm	Hydrostatic test pressure	: 18.34 bar.g				
Noise level	:	90 dB	Construction					
Vibration level (RMS)	:	5.1 mm/s	Basic construction	: End Suction Pump-OH1				
Test standard	:	ISO 9906 / ANSI-HI 14.6 Gr 2B	Impeller type	: Enclosed				
Starting condition	:	Closed Delivery Valve	Selection status	: Acceptable				
Material		Rec. Pipe Size (Suc / Del)		: 150 mm / 150 mm				
MOC Code	:	16MOC						
Material (Casing / Impeller / Shaft)	:	CI IS210:FG260 (012) / CI IS210:FG260 (012) / ST ST ASTM A276-410 ANLD (253)						
-	:	-						



**NOTES:**

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

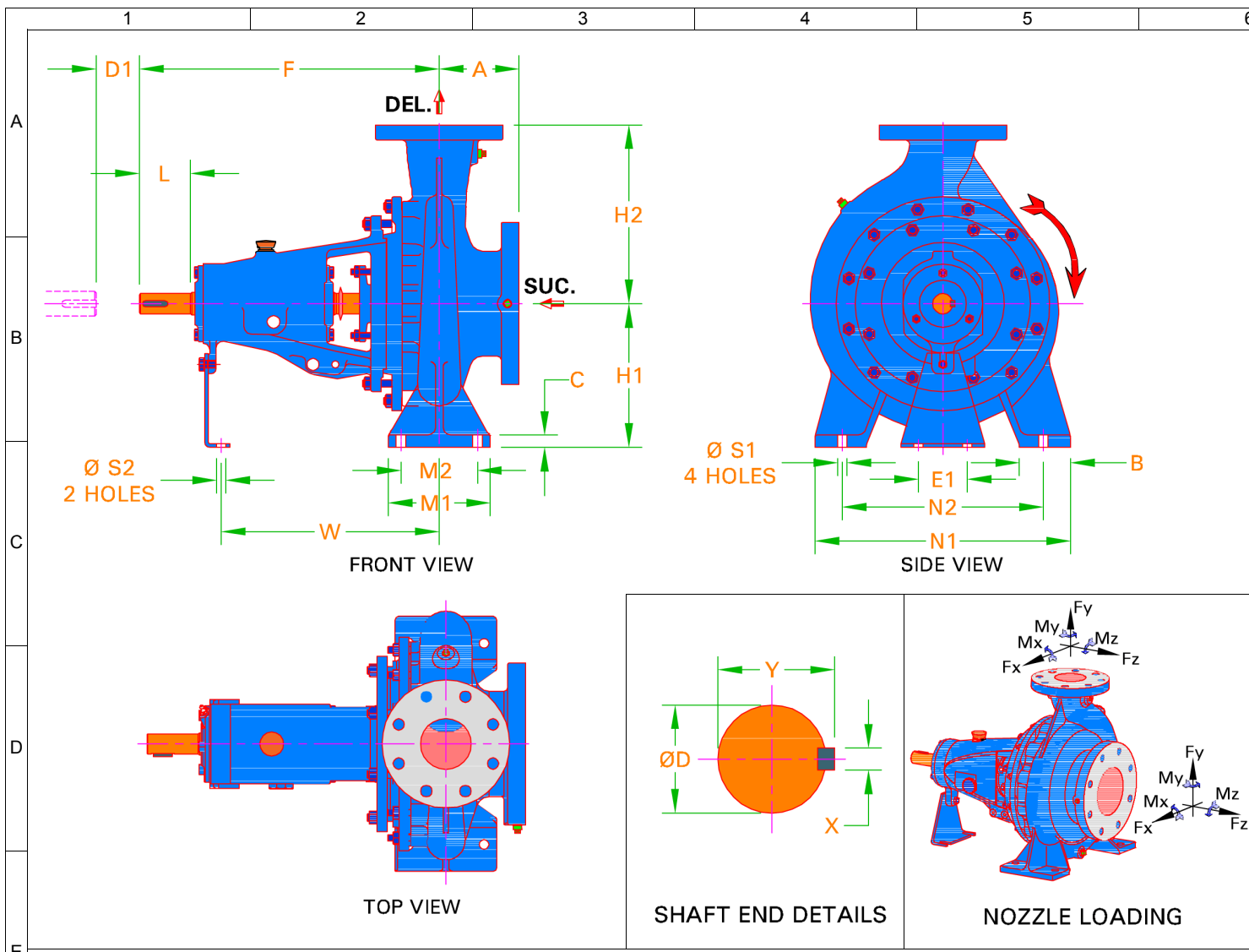
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PART NO.	PART DESCRIPTION	MAT. CODE	MOC DESCRIPTION
10500	PUMP CASING	012	CI IS210:FG260
15100*	IMPELLER	012	CI IS210:FG260
18000*	PUMP SHAFT	253	ST ST ASTM A276-410 ANLD
19000*	WEAR RING - SUCTION SIDE	012	CI IS210:FG260
22000	CASING COVER	012	CI 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	-		

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

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

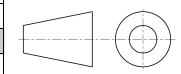
FLANGE DRILLING STANDARD AND DETAILS					
SUCTION	BS EN1092 PN16 FF	DELIVERY	BS EN1092 PN16		
	NOM. SIZE	RF DIA.	P.C.D.	NO OF HOLES	HOLE DIA.
SUCTION	100 mm	N.A.	180 mm	8	18.0
DELIVERY	80.00 mm	N.A.	160 mm	8	18.0

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
		GD*2	0.03 kg
REC. DRIVER RATING	45KW	RATED SPEED	2960R
ENQ. 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	-		



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PUMP OUTLINE DRAWING

**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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