




DOCUMENT NO. & REV.	J300027231_R3	<b>THERMAX   SPX</b> 
JOB NO.	J300027	ENERGY TECHNOLOGIES LIMITED
TITLE	CONDENSATE EXRRACTION PUMP DATASHEET	Page 1 of 8
PROJECT	ACC for 6.5 MW Power Plant for national cement company at Yemen	
CUSTOMER	M/s. Thermax Limited – Power Division A/C NCC,yemen.	

<u>TITLE</u>	<b>CONDENSATE EXRRACTION PUMP DATASHEET</b>
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		END USER : <b>National Cement Company</b> Aden Yemen					CUSTOMER : <b>M/s. Thermax Limited</b> Power Division Wakdewadi,Pune.
CONSULTANT: <b>FICHTNER CONSULTING ENGINEERS (INDIA) PVT LTD</b> CHENNAI			CLIENT DOCUMENT NO.				
3	Client Submission	12-Feb-19	ARK	VS	MVK		
2	Client Submission	25-Jan-19	VS	VS	MVK		
1	Client Submission	17-Jan-19	ARK	VS	MVK		
0	Client Submission	31-Oct-18	ARK	VS	MVK		
REV.NO.	ISSUED FOR	DATE	PREP BY	CHK BY	APPD BY		

Format No.:- TSPX/DES/F07 Rev.0

Customer Code : 0616518900  
 THERMAX SPX ENERGY  
 TECHNOLOGIES LIMITED,  
 4TH FLOOR, ENERGY HOUSE,  
 D II BLOCK, PLOT NOS: 38 & 39,  
 MIDC CHINCHWAD,  
 PUNE.  
 MAHARASHTRA  
 411019

Number: 9973943083  
 Pos-Nr.: 000100  
 Date: 28.01.2019  
 Page: 1 of 3

PO.NO: LOI  
 PO.Item No:  
 Pump Description: WKT 50/6 PUMP+ STD ACCESSORIES

PO Date: 27.11.2018  
 Qty.: 2  
 Ident.No :INWKT

### Project And Pump Details

Project	NCC YEMEN	Pump Type	WKT
Indent no	18042180693	Pump Size	50
Sales Quotation number	18042181112	Number Of Stages	6
		Quantity	2
		Design According To	KSB STD.
		Application	CONDENSATE EXTRACTION PUMP
		Pump Type & Size	WKT 50/6
		Revision No	02
		Revision Date	21.01.2019
		Pump Scope	PUMP+ B/F+ CPLG+ GUARD+ M.SEAL+
		Note For Scope of Supply-1	PLAN 13,61+ MOTOR STOOL+
		Note For Scope of Supply-2+	SPL. TOOL+ PAINTING + PACKING

### Operating Data

Liquid Handled	CONDENSATE WATER	Vapour Pressure (kg/cm2)	0.203
Water Quality O2 ( ppm)	< 0.02	Suction Pressure (kg/cm2)	0.56 (A)
Water Quality PH	> 9	Pump Discharg Pressure(kg/cm2)	14.36 (A)
Operating Temperature (Deg C)	60	Diff.Pressure (kg/cm2)	13.8
Specific Gravity	0.9832	Nominal Efficiency ( %)	53.1
NPSHA (m)	2.46	effectivespeed (rpm)	2955
Rated Flow (m3/h)	33	Minimum Flow (m3/h)	14.2
Rated Head (m)	140.35	Shut Off Head (m)	191
BKW (kW )	23.3	Tolarance on Shut Off Head	+ / - 5%
Nominal Speed (rpm)	2900	Noise Level	85dba<1 mtr
Reqd. Motor Rating (kW)	30	Overall vibration-RMS	5 mm/s
NPSHR (m)	1.72		

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### Pump Design

Pump Design	KSB STD	Casing Flange Type	ASME B 16.5
Casing Type	DIFFUSER	Flange Faces	RF
Casing Connection	NPT	Nozzle Suction Size/Position	DN 100 / HORIZONTAL
Hydro pr discharge (kg/cm 2)	26	Nozzle Suction Machining	ASME B 16.5 CLASS 150 RF
Stuffing Box Type	NORMAL	Nozzle Disch. Size /Position	DN 80 / HORIZONTAL
Bearing Type	PLAIN+ ANTIFRICTION	Nozzle Discharge Machining	ASME B 16.5 CLASS 300 RF
Pressure Stage	1	Hydro test Pr Suction (kg/cm2)	2
SealMake	EBIL	Perf.Curve No	Q _ D
SealType	P13 R/B D28 NFAC C/SIC-VITON	Execution	INDOOR
SealSize	D32	Direction Of Rotation	CCW
Seal Matl Code	BSTFN	Rotation Remark	SEEN FROM DRIVE END
Bearing Lubrication	SUMP OIL	Setting Depth (mm)	389
Column pipe length (mm)	0	Impeller Dia suction (mm)	160X10 (CURVE:1785.454/221)
Flushing 1 API Plan	13	Impdia Stage (mm)	160X9 (CURVE:1785.454/221/3)
		Barrel length	900
		Quenching API Plan	61

### Material

Suction Casing	A 216 GR. WCB	Suction Impeller	A 743 GR. CA6NM
Discharge Casing	A 216 GR. WCB	Shaft Protection Sleeve	A 276 TYPE 316
Stage Casing	A 216 GR. WCB	Wearing Ring / Wear Plate	CR HARD 400
Last stage casing	A 216 GR. WCB	Impeller Ring	1.4024.19
Stage impeller	A 743 GR. CA6NM	Stuffing Box Housing	A 216 GR WCB
Diffuser Suction	A 743 GR. CA6NM	Wearing ring clearance (mm)	0.5
Stage Diffuser	A 743 GR. CA6NM		
Pump Shaft	A276 TYPE 410 CH.PL		
Intermediate Shaft	A276 TYPE 410		
Barrel	IS 2062 GR E250 A		
Distributor Casing	IS2062GRE250.A+ A 106GR.B + A105		
Motor Lanter	IS 2062 GR E250A		
Column Pipe	IS 2062 GR.E250A+ A106 B		

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### Drive And Accessories

Prime Mover	MOTOR	Coupling Guard	NORMAL
Prime Mover Proc By	THERMAX	Coupling Make	UNIQUE
Prim Mover Receipt At works	NO	Coupling Type/Size	METALLIC FLEXIBLE SPACER TYPE/
Mot Make / Frame Size	CGL / ND200L		80X-125/250
Base Frame Type	M S FABRICATED		

### Coating

Paint	KSB STD	Paint Discription	WI 1110002
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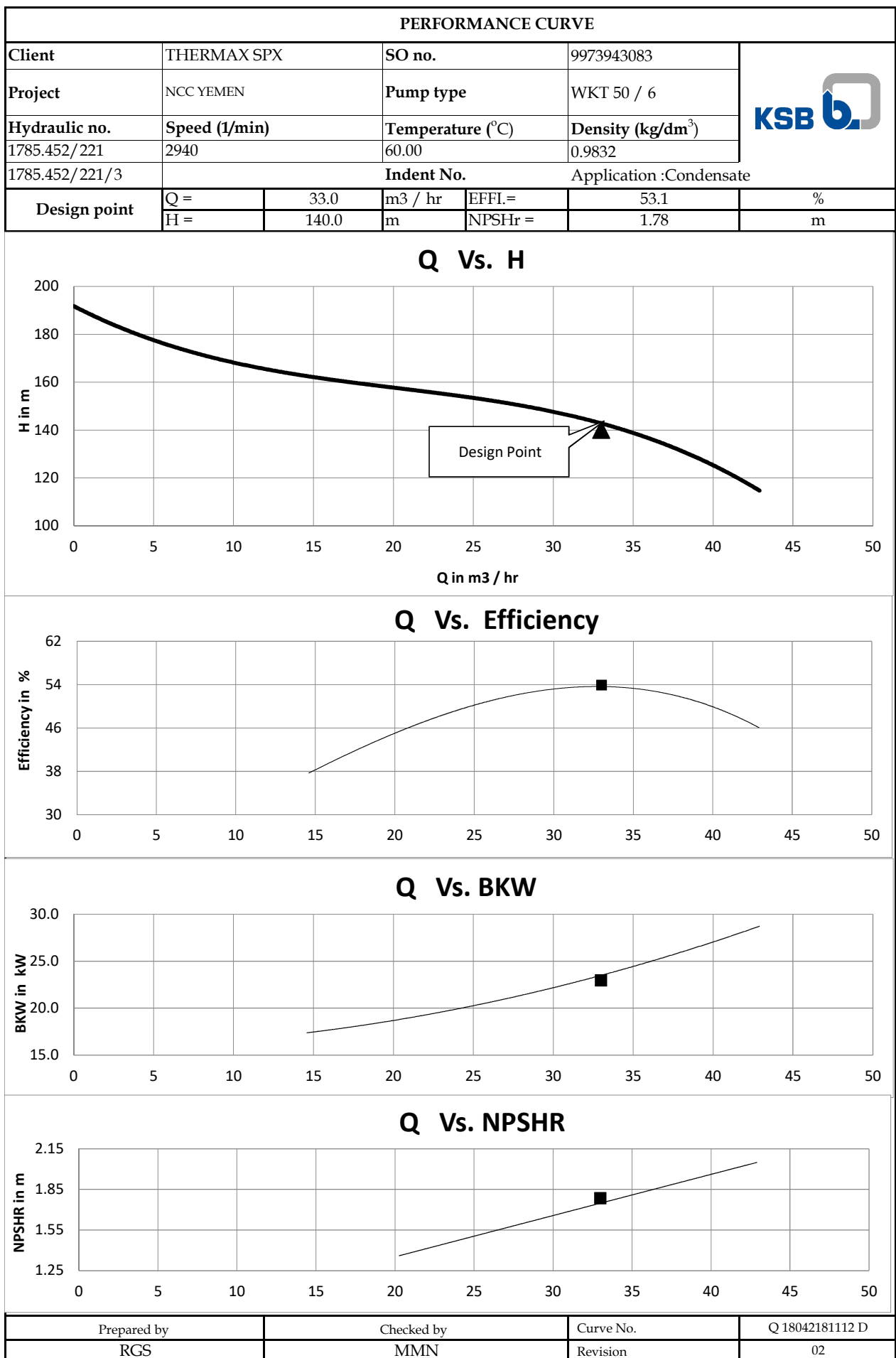
### Documentation Certificate

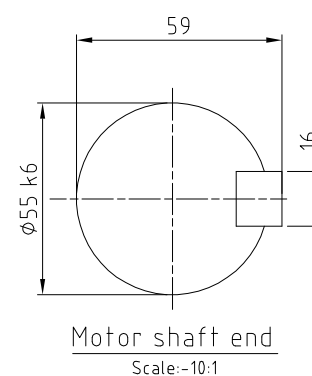
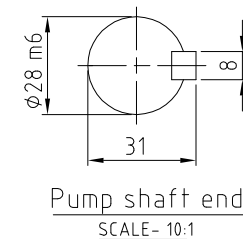
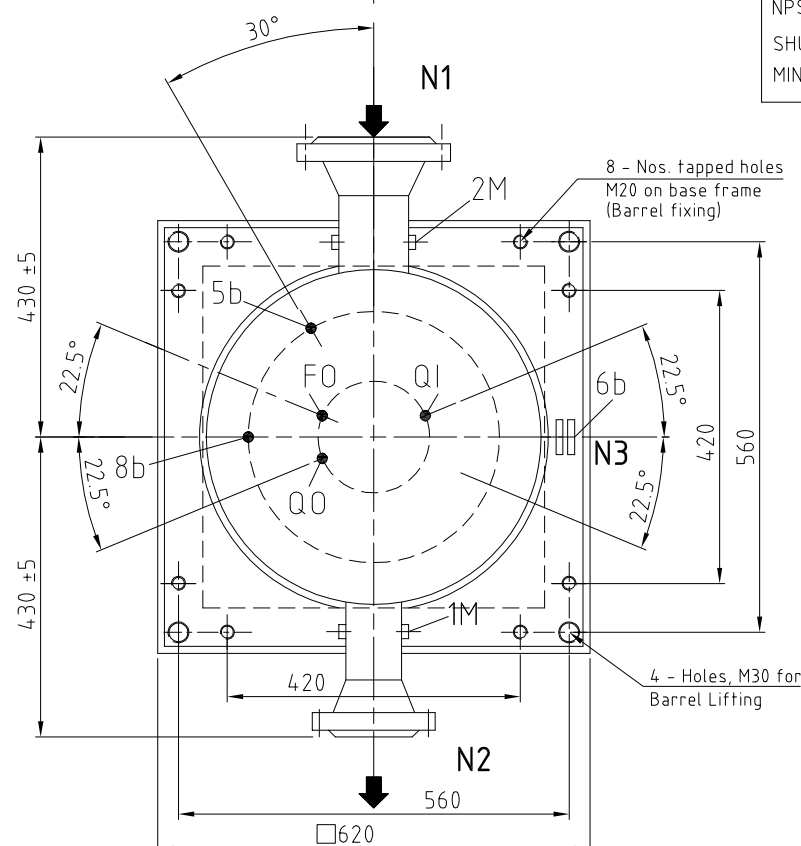
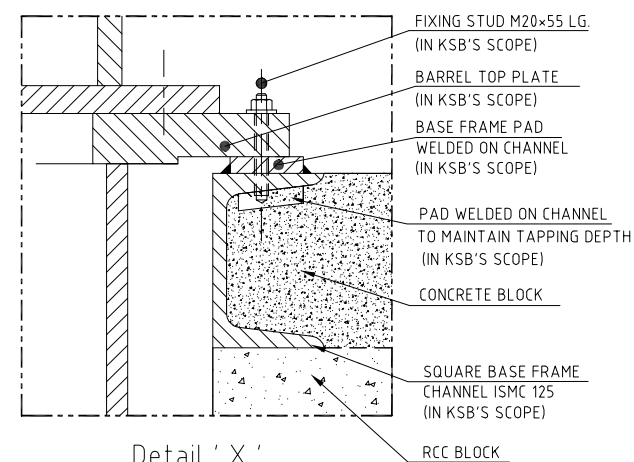
GA Drawing	YES	Test Report Submission	YES
CS Drawing	YES	Witness Performance	YES
P & I Diagram	YES	Witness Strip	YES
Inspection By	CLIENT / TPI	Witness Other Remark	DIMENSION, VISUAL
QCP Number	5/9973943083	Witness Others	NPSHR
Pump Perf. Test As per	HIS		

### Additional Remark

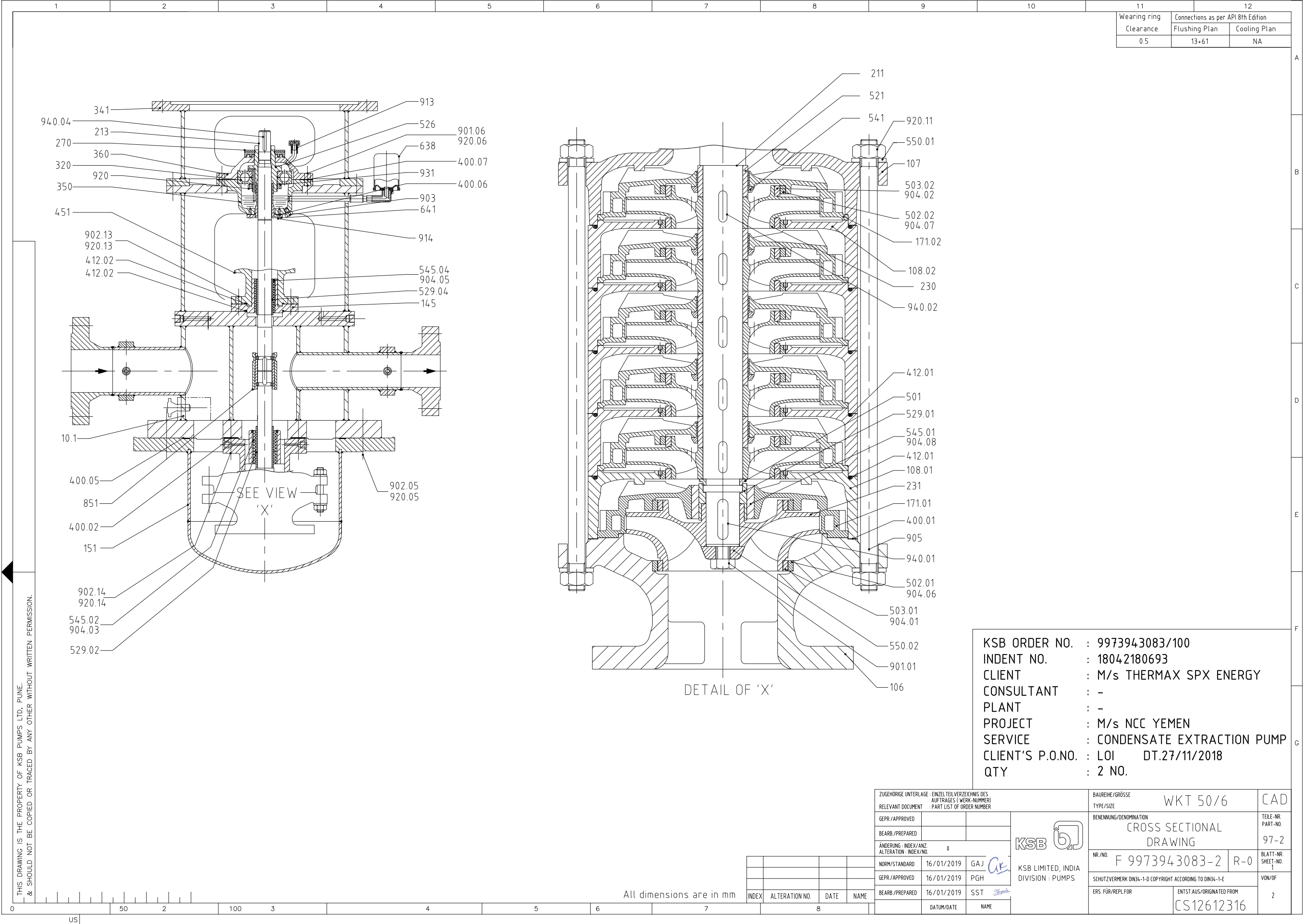
Prepared by MADHURIMA NEEL








CONNECTIONS AS PER API 610									
PLAN	DESCRIPTION								
13	(F0) - RECIRCULATION FROM MECH. SEAL THROUGH ORIFICE TO PUMP SUCTION-DN15								
61	(Q1/Q0) - VENT / INLET & DRAIN - NPT 1/2" PLUGGED.								
DIRECTION OF ROTATION OF PUMP CCW : SEEN FROM COUPLING END									
GD <sup>2</sup> OF PUMP : 0.119 KGM <sup>2</sup> GD <sup>2</sup> OF COUPLING : 0.0332 KGM <sup>2</sup> COUPLING (POWER & MACHINERY) : 80X-125/250 WEIGHT OF MOTOR : 252 KG WEIGHT OF PUMP, BARREL, : 770 KG MOTOR LANTERN, BASE FRAME & COUPLING : TOTAL WEIGHT : 1022 KG									
CONNECTIONS--(KSB SUPPLY)									
1M	: PRESSURE GAUGE	- NPT 1/2"							
2M	: VACUUME GAUGE	- NPT 1/2"							
5b	: VENT	- NPT 3/4" PLUGGED ( TO BE CONNECTED TO VAPOUR SPACE OF SUCTION VESSEL)							
6b	: STD. CONNECTION	- DN 15 WITH BLIND FLANGE. (Not applicable for "CEP")							
8b	: LEAKAGE DRAIN	- NPT 1/2" PLUGGED. (To be connected drain at site)							
<input checked="" type="radio"/> As per KSB STD.		DN	<input checked="" type="radio"/> Forces in kg			<input checked="" type="radio"/> Moments in mkg			
Discharge		80	Fx	Fy	Fz	Mx	My	Mz	
Suction		100	150	150	150	120	120	120	
Drain-6b : CL. 150 RF			N3	15(1/2")	89.0	60.5	035.1	11.2	4 16
Discharge : CL. 150 RF			N2	80(3")	191	152.4	127.0	23.9	4 19
Suction : CL. 150 RF			N1	100(4")	229	190.5	157.2	23.9	8 19
Flanges ASME B 16.5a			Sr.No.	DN	D	k	g	b	Holes Dia
KSB ORDER NO. : 9973943083/100 INDENT NO. : 18042180693 CLIENT : M/s THERMAX SPX CONSULTANT : - PLANT : - PROJECT : M/s NCC YEMEN SERVICE : CONDENSATE EXTRACTION PUMP CLIENT'S P.O.NO. : LOI DT.27/11/2018 QTY : 2 NO.									
ALL DIMENSIONS ARE IN mm. <div style="float: right;">             ◀ Not in KSB scope of supply              KSB scope of supply           </div>									
ZUGEHÖRIGE ZEICHNUNGEN REFERENCE DRAWINGS IP20156-50C - ROHTEIL/RAW PART -				ENTWORFEN F WERKSTOFF DESIGNED FOR MATERIAL -- BAUREIHE/TYPE WKT 50/6		SACHMERKMALLEISTE NACH OBJECT PARAMETER LIST ACCORDING TO -- KG -		MASSSTAB SCALE 1:15	
INDEX	ALTERATION NO.	DATE	NAME	BENENNUNG/DENOMINATION GENERAL ARRANGEMENT DRAWING NR./NO. F 9973943083-1 R0					
FREIGABE/RELEASE GEPR./APPROVED BEARB./PREPARED ANDERUNG : INDEX/ANZ. ALTERATION : INDEX/NO. STELLE/DEPARTMENT COMP.CENTRE NORM/STANDARD 31/12/2018 GAJ GEPR./APPROVED 31/12/2018 PGH BEARB./PREPARED 31/12/2018 SST				TEILE-NR. PART-NO. -- BLATT-NR. SHEET-NO. 1 ANZ.D.BL. NO. OF SHEET 1					
DATUM/DATE NAME				KSB PUMPS LTD. INDIA. DIVISION : PUMPS					



Wearing ring Clearance	Connections as per API 8th Edition	
	Flushing Plan	Cooling Plan
0.5	13+61	NA

KSB ORDER NO. : 9973943083/100  
INDENT NO. : 18042180693  
CLIENT : M/s THERMAX SPX ENERGY  
CONSULTANT : -  
PLANT : -  
PROJECT : M/s NCC YEMEN  
SERVICE : CONDENSATE EXTRACTION PUMP  
CLIENT'S P.O.NO. : LOI DT.27/11/2018  
QTY : 2 NO.

ZUGEHÖRIGE UNTERLAGE : EINZELTEILVERZEICHNIS DES AUFTRAGES ( WERK-NUMMER ) RELEVANT DOCUMENT : PART LIST OF ORDER NUMBER		BAUREIHE/GRÖSSE TYPE/SIZE WKT 50/6		CAD
GEPR./APPROVED		KSB  KSB LIMITED, INDIA DIVISION : PUMPS		TEILE-NR. PART-NO. 97-2
BEARB./PREPARED				NR./NO. F 9973943083-2
ÄNDERUNG : INDEX/ANZ ALTERATION : INDEX/NO. 0		SCHUTZVERMERK DIN34-1-D COPYRIGHT ACCORDING TO DIN34-1-E		BLATT-NR. SHEET-NO. 1
NORM./STANDARD 16/01/2019 GAJ		ENTST.AUS/ORIGINATED FROM CS12612316		VON/OF 2
GEPR./APPROVED 16/01/2019 PGH				
BEARB./PREPARED 16/01/2019 SST				
DATUM/DATE				
NAME				

All dimensions are in mm



## List of components

**F9973943083-2****2 of 2**

Part no.	Part description	Material	Qty	Part no.	Part description	Material	Qty
10-1	Distributor casing	IS2062 GR E250 A	1	529.01	Bearing sleeve (Suction diffuser)	A276 Type316	1
106	Suction casing	A216 Gr.WCB	1	--	--	--	--
107	Discharge casing	A216 Gr.WCB	1	529.04	Bearing sleeve (Drive shaft)	A276 Type316	1
108.01	Stage casing(1st stage)	A216 Gr.WCB	1	541	Stage bush	A276 TYPE 410 HARD	5
108.02	Stage casing	A216 Gr.WCB	4	545.02	Bearing bush (Disc.casing)	IS5517 45C8-KHW	1
145	Adapter	A216 Gr.WCB	1	545.01	Bearing bush (Suction diffuser)	IS5517 45C8-KHW	1
151	Barrel	IS2062 GR E250 A	1	--	--	--	--
171.01	Suction diffuser	A743 Gr.CA6NM	1	545.04	Bearing bush (Adapter)	IS5517 45C8-KHW	1
171.02	Diffuser	A743 Gr.CA6NM	5	550.02	Washer(for impeller bolt)	A276 TYPE 316	1
211	Pump shaft	A276 Type 410 ch.plated	1	550.01	Washer(for tie rods)	IS5517 45C8	16
--	--	--	--	638	Constant level oiler	Aluminium/Glass	1
--	--	--	--	641	Oil level tube	STEEL	1
213	Drive shaft	A276 Type 410 COND H	1	--	--	--	--
230	Impeller (Stage)	A743 Gr.CA6NM	5	851	Conical coupling	A276 TYPE 316	1
231	Suction impeller	A743 Gr.CA6NM	1	--	--	--	--
270	Deflector	IS5517 45C8	1	--	--	--	--
320	Angular Contact bearing	ST	1	901.06	Hex.bolt (Brg cover/dist.casing)	8.8	4
341	Motor lantern	IS2062 GR E250 A	1	901.01	Impeller bolt	A193 GR B8M CL1	1
350	Bearing housing	IS 210 GR FG 260	1	902.05	Stud (Barrel/dist.casing)	6.8	20
360	Bearing cover	IS 210 GR FG 260	1	902.14	Stud(dist.casing/dis.casing)	6.8	8
--	--	--	--	902.13	Stud (Dist.casing/st.box hsg)	6.8	12
--	--	--	--	903	Magnetic drain plug	IS5517 45C8	1
400.01	Gasket (suc.casing/1st stage)	AF160	1	905	Tie rods	817 M 40 V	8
400.02	Gasket (disc.casing/dist.casing)	AF160	1	913	Vent plug	EN8+Aluminium	1
--	--	--	--	914	Hex.set screw (Oil level pipe)	12.9	4
--	--	--	--	904.06	Hex.set screw (Suc.w.ring)	A276 Type316L	6
400.05	Gasket (dist.casing/barrel)	AF160	1	904.03	Hex.set screw (Bearing bush in disc.)	A276 Type316L	1
400.06	Gasket (oil level tube)	AF159	1	904.08	Hex.set screw (Bearing bush in diffuser)	A276 Type316L	1
400.07	Gasket (brg cover)	AF159	1	904.05	Hex.set screw (Bearing bush in st.box)	IS5517 45C8	1
412.01	O ring (1st stage)	FKM 80	1	904.07	Hex.set screw (Stage w.ring)	A276 Type316L	30
412.01	O' ring(stage)	FKM 80	4	904.01	Hex.set screw (suction imp.ring)	A276 Type316L	6
412.02	O' ring(Adapter)	NB70	1	904.02	Hex.set screw (stage imp.ring)	A276 Type316L	30
412.02	O' ring(St.box)	NB70	1	920.06	Hex.nut (Brg cover/dist.casing)	6	4
--	--	--	--	920.05	Hex.nut (Barrel/dist.casing)	6	20
451	Stuffing box housing	A216 Gr.WCB	1	920.14	Hex.nut (dist.casing/dis.casing)	6+A2A	8
501	Split ring	A276 Type 316L	1	920.13	Hex.nut (Dist.casing/st.box hsg)	6	12
502.01	Wearing ring - suction	CHROME HARD 400	2	920.11	Hex.nut (For tie rod)	A194 Gr.2H	16
502.02	Wearing ring - stage	CHROME HARD 400	10	920	Slotted nut	IS5517 45C8	1
503.01	Impeller ring - suction	1.4024.19	2	931	Lock washer	IS:513 TYPE D	1
503.02	Impeller ring - stage	1.4024.19	10	940.02	Key (stage impellers)	A276 Type 410 A	5
521	Stage sleeve	A276 TYPE 410 A	5	940.01	Key (suction impeller)	A276 Type 410 A	1
526	Centering sleeve	IS5517 45C8	1	940.04	Key (coupling)	IS5517 45C8	1
529.02	Bearing sleeve (pump shaft)	A276 Type316	1				
<b>KSB order no:</b>		<b>9973943083-100</b>		<b>Pump type &amp; size:</b>		<b>WKT 50/6</b>	