

SPECIAL CONDITION OF CONTRACT

1. TECHNICAL SPECIFICATION:

General information		
Unit:	Raw water intake facility of M/s BCPL	
Service	Raw water intake pumps	
Nos. required	02	
Parallel operation required	Yes	
Driver	Electrical motor	
DATA SHEET		
A. OPERATING CONDITIONS		
Type of pump	Vertical Turbine Pump	
Liquid Handled	River Water	
Temp (deg C)	Ambient	
Specific Gravity	1	
Solids in Suspension	NIL	
Vapor Pressure at PT (Kg/cm ² ,a)	0.04	
Viscosity at PT (cST)	1	
Capacity/Discharge (M ³ /Hr)	600 m ³ /Hr (Rated)	
Discharge Pressure (Kg/Cm ²)	6.5 kg at delivery flange	
Suction Pressure (Kg/Cm ²)	Atmospheric	
Diff. Pressure (Kg/Cm ²)	5.5	
Head (m)	55	
NPSH Available, (m)	Flooded Suction	
B. SITE/INSTALLATION DATA		
Site Temperature (Deg c)	Min.:1 ; Max: 40	
Location	Lepetkata, Assam	
Source of water	River Burhidihing	
Line rating & dimension	Discharge : 150 #, 250 mm	
C. MANUFACTURERS SPECIFICATIONS		
Pump Manufacturer:	To be provided by pump supplier	
Model No:		
D. MATERIAL OF CONSTRUCTION		
Impeller	To be provided by pump supplier	
Shaft (Impeller shaft/Intermediate / head shaft)		
Sleeve		
Casing		
Casing Neck Ring/ Impeller Wear Ring		
Packing	GLAND	
Bush bearing	Finostos / cut less rubber	

Signature

E. DRIVER/MOTOR DETAILS (MOTOR ALREADY EXIST)		
Motor Rating		150 KW
Motor Speed		1481 RPM
Voltage		6600 V
Make		BHEL.
All relevant drawings and data sheet is enclosed for reference.		
F. INSPECTION & TEST		
Shop Test/Inspection		Required
Material Certificates		Required
Hydrostatic Test		Required
Running Performance Test		Required
Dismantle & Inspection After Test		Required
Dimensional check		Required
Check for direction of rotation of pump and driver		Required

2. **SCOPE OF SUPPLY:**

Sl. No.	Description	Qty
1	Pump assembly	02 Nos
2	Pump coupling	02 Nos
<u>Note : Electrical motor and motor foundation is already available and excluded from the scope of supply</u>		

Pump assemblies to be supplied in properly packed wooden container to avoid damages during transportation.

3. **SUBMISSION OF DRAWING/ DOCUMENTS :**

Vendor shall submit following documents for review and record to BCPL at various stages after placement of PO as per instruction of concern BCPL official.

1. Data Sheet (For review and approval)
2. Performance curve (For review and approval)
3. GA drawing (For review and approval)
4. **Cross sectional drawing with Bill of material** (at the time of supply) . Bill of material shall include part no, name of components, MOC, material quantity installed per unit and size where applicable. Cross sectional drawing will show all equipment parts, design assembly and running clearances and balancing data required for erection and maintenance.
5. Installation plan (at the time of supply)
6. QA plan of vendor for review and approval of BCPL (For review and approval)
7. Inspection plan and testing procedure for review and approval by BCPL (For review and approval)

Signature B.L.

8. Test records/certificates (at the time of supply)
 9. Statutory approval certificate (if any)
 10. Recommended list of maintenance spares. (at the time of supply)
 11. Installation manual. (at the time of supply)
 12. Operation & Maintenance manual for pump and motor. (at the time of supply)
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All above documents shall be submitted in 03 sets .

4. QUALITY ASSURANCE PLAN :

Immediately after receipt of formal order, vendor shall submit quality assurance plan for manufacturing, covering quality control of critical brought out items/material, inspection & testing at various stages of production, quality control records and site assembly and testing as may be applicable to the specific order and obtain prior approval from BCPL concern official .

5. INSPECTION & TESTING :

- Unless otherwise specified, all pumps shall be inspected and all tests shall be witnessed by BCPL or third party agency duly consented by BCPL .
- Vendor shall give BCPL at least 15 days' notice prior to commencement of testing.
- All test shall be carried out as mentioned in Para (table) 1. F and all reports shall be submitted after obtaining signature from BCPL representative or third party inspection (as applicable).

6. WARRANTY :

Vendor shall agree for warranty against conformance of material specification, bad workman ship and manufacturing defects for 12 months from the date of supply.

7. DELIVERY

Within 03 months from the date of placement of purchase order.

Signature Bnd -

1.0 SITE DATA INFORMATION

1.1 PLANT LOCATION

Site Location	:	Lepetkata, Assam
Nearest Railway Station	:	Moran (Proposed)
Nearest Important Town	:	Dibrugarh (15 km)
Nearest Airport	:	Dibrugarh Airport (Approx. 25km)
Nearest Port	:	Kolkata (1365 km)
Nearest State Highway	:	NH-37 (Approx. 500 m)
Source of Water	:	River Burhi Dihing
Rainy season	:	June-September (Peak)
Annual Rainfall	:	Max: 3241 mm Min: 1856 mm Average: 2630 mm

Maximum Rainfall Recorded in
24 hour : 606.9 mm

1.2 METEOROLOGICAL DESIGN DATA

Relevant meteorological design data towards preparing process engineering specifications is as follows:

S. No.	Parameter	Minimum	Normal / Average	Maximum / Design
(A) METEOROLOGICAL DATA				
1	Elevation above mean sea level, m		111 (Dibrugarh/ Mohanbari)	
2	Barometric pressure, mBar	964.1	996.5	1007.3
3	Ambient temperature, °C	$t_{min} = 1.0$	$t_{nor} =$	$t_{max} = 39.8$
4	Dry Bulb temperature, °C	$t_{min} = 27.8$	$t_{nor} =$	$t_{max} = 32.2$
5	Wet Bulb temperature, °C	$t_{min} =$	$t_{nor} =$	$t_{max} = 25.6$
6	Relative humidity, %	49% @ t_{min}	@ t_{nor}	93% t_{max}
7	Rainfall data: (a) for 1-hour period (b) for 24-hour period			→ Not available → 606.9 mm
8	Wind data (a) wind velocity (b) Prevailing wind direction	≤ 1 km/hr NW to SE		61 km/hr
(B) DATA FOR EQUIPMENT DESIGN				
1	Design dry bulb temperature, °C max/min			32.2/27.8
2	Design wet bulb temperature, °C			25.6 (Note-1)
3	Low ambient temperature for MDMT, °C			1
4	Design air temperature for air exchangers °C			39.8
5	Coincident temperature and relative humidity for Air Blower / Air Compressor design.			88% @ 32.2°C (HOLD)

[Note-1: Wet bulb temperature of 28°C to be considered for cooling tower design.]

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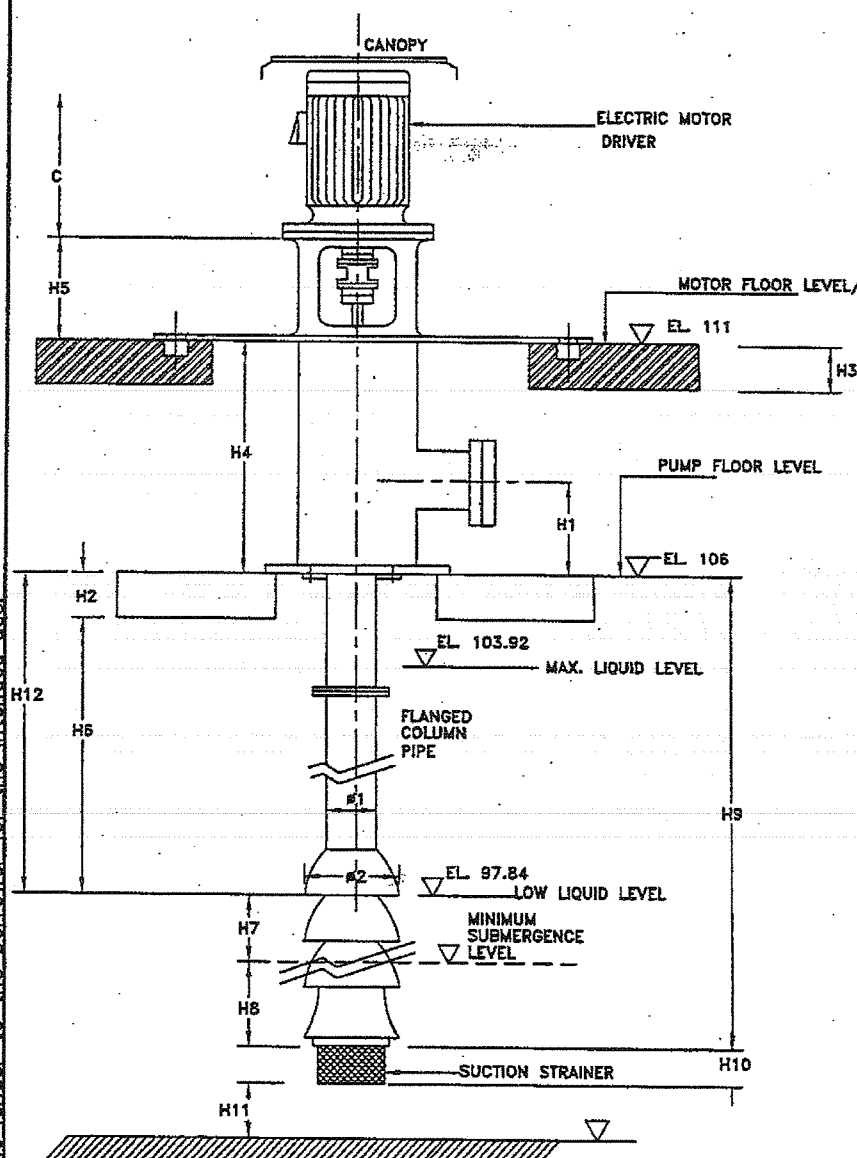
EL 1045-SK-107 Rev 0

PUMP ITEM NO: 121-PA-101 A/B/C

PUMP VENDOR: M/S KBL

NOTES:

1. NO OF PUMPS REQUIRED : 3
2. BOLT DETAILS: DIA --- LENGTH --- NO. --- TYPE ---
FURNISH SEPERATE DRGS/DETAILS
3. WEIGHT DETAILS:
(a) MAX. ERECTION WEIGHT (KG):
(b) MAX. MAINTENANCE WEIGHT (KG):
4. M/s KBL SHALL FURNISH DETAILS OF MOUNTING PLAN, MOUNTING PLATE FOR THE SUBJECT PUMPS.



M/s KBL SHALL FURNISH FOLLOWING DIMENSIONS IN MM.

S.NO	DESCRIPTION	DIMENSIONS(mm)
1.	Ø1	
2.	Ø2	
3.	H1	350 mm
4.	H2	
5.	H3	
6.	H4	5000 mm
7.	H5	
8.	H6	
9.	H7	780 mm
10.	H8	670 mm
11.	H9	
12.	H10	500 mm
13.	H11	
14.	H12	8160 mm
15.	C	
16.		

TOTAL SHAFT LENGTH W.R.T MOTOR FLOOR/PUMP SUPPORT LEVEL INCLUDING THE MOUNTING PLATE= H4 + H9 = 14560 mm.
MINIMUM SUBMERGENCE LEVEL W.R.T. THE SUCTION BELL BOTTOM= H8 = 670 mm.

THIS IS A SCHEMATIC DRAWING. VENDOR SHALL FURNISH THIS DRAWING DULY FILLED-IN



ENGINEERS INDIA LIMITED
KOLKATA

RAW WATER INTAKE PUMP

DRAWING NO.

6907-121-PA-DS-5052

RE

DATA SHEET
HIGH VOLTAGE SQUIRREL CAGE
INDUCTION MOTOR

Datasheet No.
6907-16-50-DS-5052
Rev.No. 0
Page 2 of 2

PURCHASER'S DATA					
A: Site conditions					
1	Ambient temperature, minimum:	39.8 °C	3	Atmospheric condition:	Humid & highly corrosive
	maximum:	41 °C	4	Altitude:	< 1000 m
	design:	40 °C	5	Location:	Indoor
2	Relative humidity:	93 %			
B: Technical particulars					
1	Motor tag no.:	121-PM-101 A/B/C	17	Hazardous area classification:	Safe
2	Driven equipment name:		18	Gas group:	NA
3	Voltage:	6.6 kV ±10%	19	Type of explosion protection:	NA
4	Phase:	Three	20	Type of ingress protection:	IP 55
5	Frequency:	50 Hz ±3%	21	Reacceleration:	☒ Not ☐ Not required
6	Fault level:	40 kA	22	Diff. protection CTs:	☐ Required ☒ Not required
7	Fault duration:	0.25 sec.		CT specs.:	
8	System earthing:	Resistance	24	Color shade:	632 as per IS 5
9	Duty:	Continuous	25	Thermistors:	☐ Required ☒ Not required
10	Method of starting:	D.O.L.	26	RTD:	☐ Required ☒ Not required
11	Cable size:	Later mm ²	27	BTD:	☐ Required ☒ Not required
12	Cable type:	Al. cond. XLPE insulated	28	RTD/BTD monitoring device:	☐ Required ☒ Not required
13	Temperature rise:	80 °C			
14	Cooling:				
15	Insulation class:	F(temp rise limited to Class B)	29	Applicable specification:	EIL spec. 6-51-0031
DRIVEN EQUIPMENT MANUFACTURER'S DATA					
1	Suggested motor rating:		9	Coupling type:	
2	Manufacturer:		10	Torque required, starting:	
3	Type of driver mounting:			maximum:	
4	Driven equipment:		12	GD ² of eqpt., including flywheel:	
5	Shaft kW:			excluding flywheel:	
6	kW at maximum load:		13	Maximum thrust:	
7	Speed:		14	Pulsation rate:	
8	Rotation of eqpt. from coupling end:		15	Starting condition:	
MOTOR MANUFACTURER'S DATA					
1	Rating:	150 kW			
2	Manufacturer:	ABB, BHEL, CGL, Marathon Joyti, Kirloskar Elec.			
3	Frame designation:		19	Space heater - voltage & power:	
4	No. of poles:		20	Moment of inertia, GD ² :	
5	Full load speed:		21	DE/NDE bearing type & no.:	
6	Mounting:		22	Type of lubrication:	
7	Full load torque (FLT):		23	Type of main terminal box:	
8	Starting torque:		24	Type of neutral terminal box:	
9	Break down or pull out torque:		25	No. of Terminals	
10	Full load current (FLC):		26	Weight of motor:	
11	Starting current at 100% voltage:	500% of FLC	27	Thermistors, quantity:	
	(incl. ±V _e Tol.)			type:	
12	Rotation viewed from coupling end:		28	RTD, quantity:	
13	Starting time at 80%/100% voltage:			type:	
14	Locked rotor withstand time (cold/hot) at,		29	BTD, quantity:	
	80% voltage:			type:	
	100% voltage:		30	Shaft voltage:	
15	Time (Te) for increased Safety Motor at 100% Voltage		31	Critical speed, 1 st /2 nd stage:	
16	Efficiency at 75%/100% Load:		32	Pressurization panel: ☐ Applicable ☒ Not applicable	
17	Power factor at 75%/100% load:	0.85/0.87		make:	
18	Heating/Cooling Time Const. (min.)		33	Canopy: ☐ Required ☒ Not required	
			34	Fan rotation Design	Universal/Fixed/Can be changed

0	04.10.2010	ISSUED WITH PR(M/s KBL)	PM	ST	AKG
A	25.03.2010	ISSUED WITH MR	PM	ST	AKG
Rev.	Date	Purpose	Prepared	Checked	Approved

