

Green Technology Asia CO., LTD.

80/28 Moo 2 Tiwanon 48 Rd., T.Thasai A.Muang,
Nonthaburi 11000, Thailand
TEL 0-2580-8339 FAX 0-2952-3397



บริษัท กรีน เทคโนโลยี เอเชีย จำกัด

80/28 หมู่ที่ 2 ถนนติวานนท์ 48 ตำบลท่าทราย
อำเภอเมือง จังหวัดนนทบุรี 11000
โทร. 0-2580-8339 แฟกซ์ 0-2952-3397

Gruppo Aturia



INSTRUCTION MANUAL

Vertical Pump

Electric motor driven Vertical pump

Model	:	ELV-500S
Capacity	:	0.75 m ³ /s.
Total Head	:	5.30 m.
Speed	:	993 rpm.
Electric Motor	:	75 kw.

Electric Pumping Station No. 10 (P10)

Talat Kriap Subdistrict, Bang Pa-in District

Phra Nakhon Si Ayutthaya Province

By

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Technical Data

ข้อที่ 33.1

ข้อที่ 1

VERTICAL AXIAL FLOW PUMP

Model: ELV-500S ข้อที่ 2



Offer n° :	Offer_BQBS8E00773S_R3	Date : 23-May-24
Customer :	RID_THAILAND	Item : P10
Quantity :	2	Created by : Paolo Tresoldi
REQUESTED DUTIES:		Capacity Q : 2700.00 m3/h
		Head H : 5.30 m
		R.P.M. : 993.00 1/min
WORKING DATA AND PUMP CHARACTERISTICS		
Pumped liquid	Water	Pump length from baseplate to suction bell 6.3 m
Temperature	35.00 °C	Discharge Head 600 mm
Density	0.997 kg/dm³	Thrust bearing lubrication Oil
Kinematic viscosity	1.00 mm²/s	Pump/column bearings lubrication Self water
Capacity Q	2700.00 m3/h	Bearings life minimum 100000.00 hr
Head TMH	5.3 m	Impeller type Open
R.P.M.	993.00 1/min	Rotation (pump view from motor side) CCW
Pump input at duty point	46.69 kW	Shaft seal Soft packing PTFE
Bowl input at duty point	46.39 kW	Bowl wear rings Yes
Effective efficiency	84.00 %	Standard elastic coupling Yes
NPSH require	6.25 m	Installation Indoor
Minimum submergence (Max.)	1.50 mm	Ambient temperature 0 +40 °C
Operate Head	2.00-6.50 m	Maximum bowl diameter 851 mm
Column Size	500.00 mm	Gap Below Suction Bell 300 mm
Shaft size	43.00 mm	Shaft allowable torsional vibration stress <1/35
Max particle	90.00 mm	Shaft vibratory torque at maximum load <20%
Axial thrust at duty point	1239.00 kg	Statically and dynamically balanced ISO 1940/1 G 6.3
No. of stages	1.00	Column pipe ANSI/AWWA E101
		Column Connection FLANGE
		Line shaft ANSI/AWWA E101
		Line shaft Type Open
MATERIALS		
Pump bowl	ASTM A48 Class 35	Column pipe ASTM A53 Grade A
-Impeller hub / blades	ASTM A-Type CF8M	-Intermediate bearing Silicon Carbide
-Bowl wear rings	ASTM A-Type CF8M	-Shaft ASTM A-Type 416
-Shaft	ASTM A-Type 416	-Shaft sleeve ASTM A-Type 416
-Bearings	Silicon Carbide	-Bearing bushes Silicon Carbide
-Screws	Stainless Steel	-Shaft coupling Rigid Coupling
Discharge head	ASTM A36	-Screws Stainless Steel
-Bearing housing	ASTM A48 Class 30	Protection
-Elastic coupling	Flexible flange shaft coupling	-Vibration sensor Yes
-Shaft sleeve	ASTM A-Type 416	-RTD PT100 Yes
-Shaft	ASTM A-Type 416	-Float switch Yes
-Screws	Stainless Steel	-Monitoring unit Yes
-Motor stool	ASTM A36	
-Axial bearing	Anti-friction bearing	
ELECTRIC MOTOR (Y/D - Excluded)		
Squirrel Cage Induction Motor	Power: 75.0 kw	Power margin: 1.61
Totally Enclosed Fan Cooled	Speed: 993.0 rpm	60.63%
380Volt / 3Phase / 50Hertz		
DESCRIPTION OF SUPPLY		
Painting : ข้อที่ 19	Performance test :	
-Pre-treatment shot blasting SA 2.5 for all surfaces.	-Witness test in accordance with ISO9906 Liv.2 STANDARD	
-Primer 0.1mm. 1 component.	Pump weight:	
-Topcoat for part in contact with medium 0.25 mm. 2 component.	-2200kg	
-Top coat for part not in contact with medium 0.1mm. 1 component.		
-Acrylate Alkyd based coat RAL 5002.		
NOTES		
Sump floor level: -2.100		
Low water level: -0.300		
Minimum Submergent Level: -0.300 OK		
Shipment	Ex-Works delivery time	Offer Validity

ข้อที่ 7.1

ข้อที่ 7.2

ข้อที่ 7.6

ข้อที่ 7.4

ข้อที่ 7.3

ข้อที่ 7.2

ข้อที่ 8.2

ข้อที่ 8.1

ข้อที่ 8.2

ข้อที่ 8.4

ข้อที่ 8.3

ข้อที่ 8.5

ข้อที่ 9.2

ข้อที่ 11

ข้อที่ 9.7

ข้อที่ 8.6

ข้อที่ 8.3, 9.3

ข้อที่ 8.2

ข้อที่ 9.1

ข้อที่ 9.3

ข้อที่ 9.1

ข้อที่ 9.6

ข้อที่ 9.3

ข้อที่ 9.5

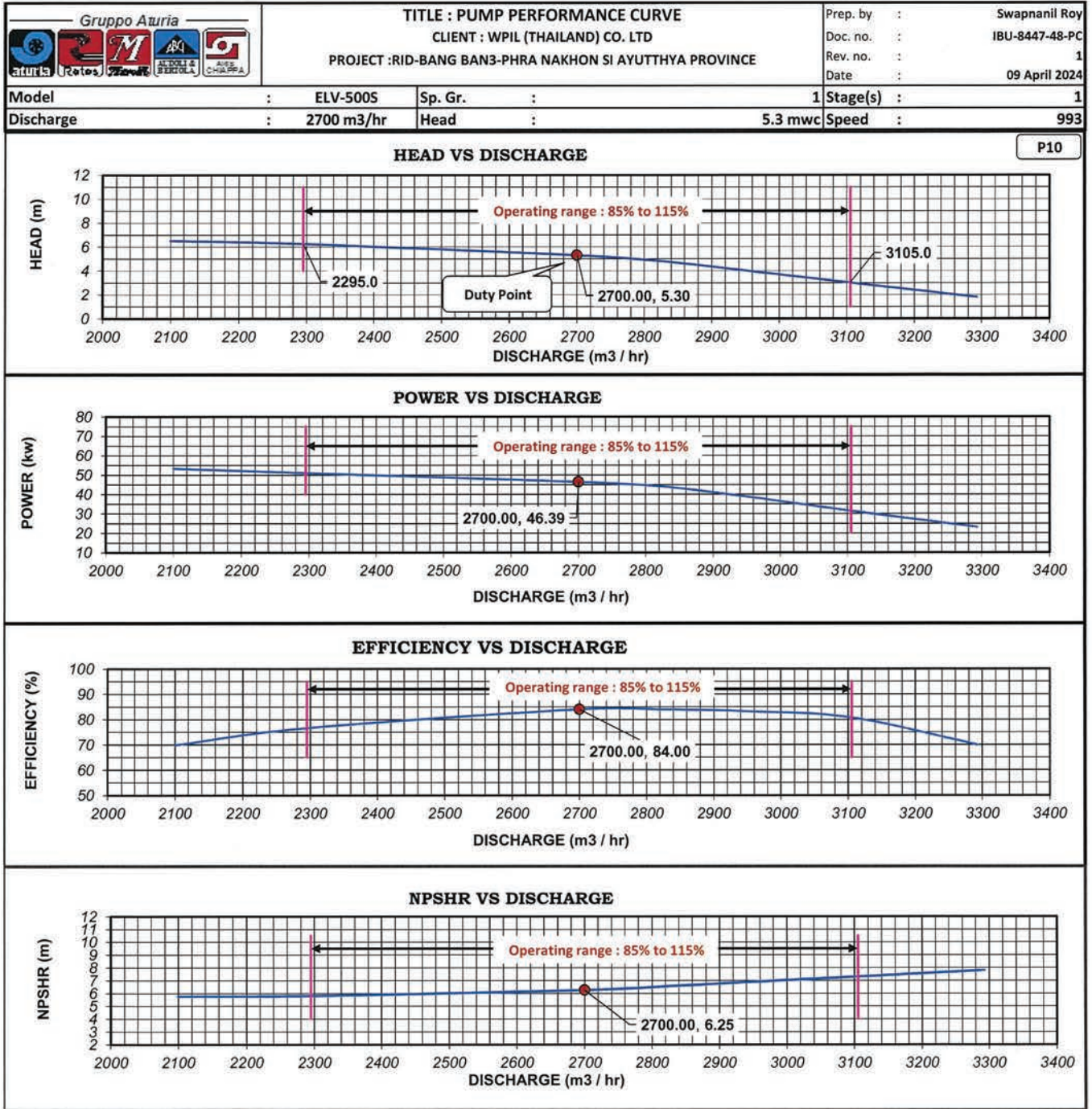
ข้อที่ 9.4

ข้อที่ 10

ข้อที่ 13.9

GRUPPO ATURIA SPA
Marco Staderini

ว่าที่ ร.อ.ธรรมณัฐ แก้วบุญส่ง
วิศวกรเครื่องกล สก.๒๙๗๐
โทร. ๐๘๑-๔๔๔-๔๖๖๗

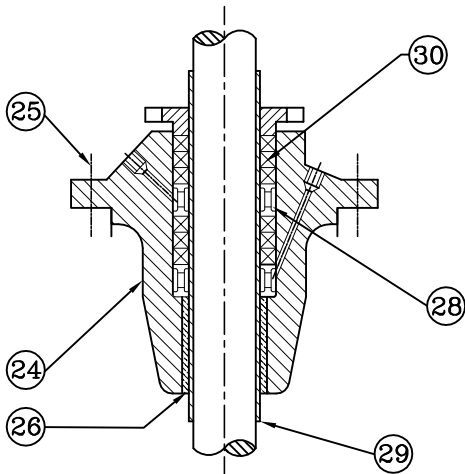
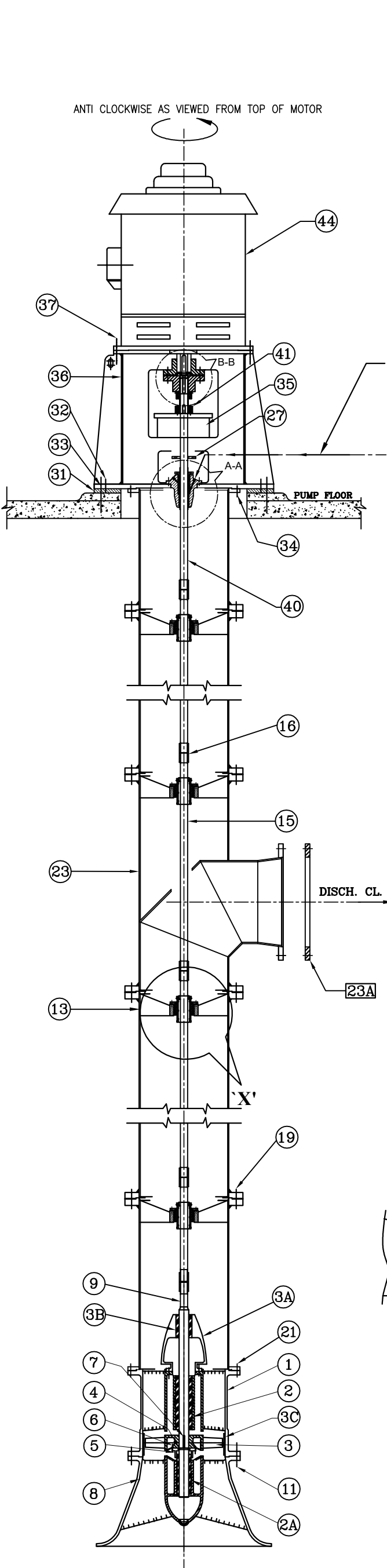


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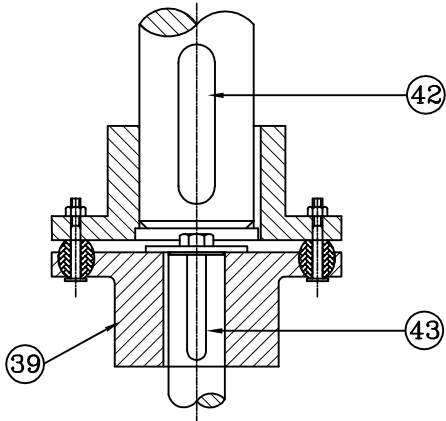
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GRUPPO ATURIA SPA
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DETAIL OF PACKING BOX
A-A



DETAIL OF FLEX. COUPLING
B-B

PAINTING NOTE (EPOXY):-
* Pre-treatment shot blasting SA2.5 for all surfaces.

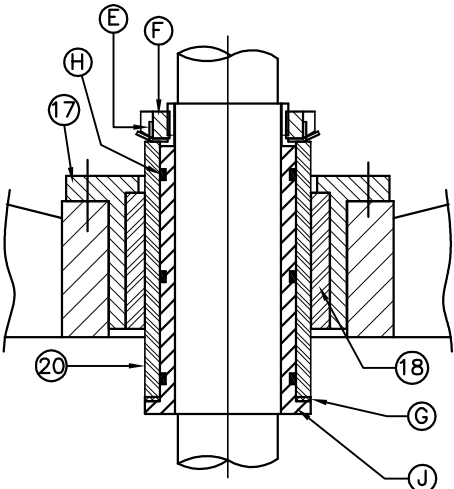
* Primer 0.1mm - 1 coat

* Top coat part in contact with medium 0.25mm - 2 coats

* Top coat part not in contact with medium 0.1mm - 1 coat

*Shade: RAL 9005 Black (Part contact with medium)

*Shade : Acrylate Alkyd based coat, RAL-5011 (Part not contact with medium) ②



ENLARGED VIEW OF 'X'

J	SLEEVE HOLDER	STAINLESS STL.
H	'O' RING	NITRILE RUBBER
G	GASKET	RUBBER
F	LOCK NUT	STAINLESS STL.
E	LOCK WASHER	STAINLESS STL.
SL.NO.	DESCRIPTION	MATERIAL

2	DRAWING REVISED	SG	28.05.24
1	DRAWING REVISED	SG	09.04.24
NO.	REVISION	SIGN	DATE

SL. NO.	DESCRIPTION	MATERIAL	REMARKS
44	MOTOR (VSS)	MANUFACTURER STD.	
43	KEY (HEAD SHAFT)	SS 416	
42	KEY (MOTOR SHAFT)	SS 416	
41	ADJUSTING NUT	STEEL	
40	HEAD SHAFT	ASTM A582 Gr. SS-416	
39	FLEXIBLE COUPLING ASSLY.	CI ASTM A48 CL.35	
37	BOLT & NUT	STAINLESS STEEL	
36	AUXILIARY DISCHARGE HEAD	ASTM A36	
35	THRUST BEARING HOUSING	MANUFACTURER STD.	
34	CAP SCREW	STAINLESS STEEL	
33	FND. BOLTS & NUT, WASHER	CARBON STEEL	
32	CAP SCREW	STAINLESS STEEL	
31	SOLE PLATE	ASTM A36	
30	PACKING	PTFE/TEFLON	
29	SLEEVE	SS 410	
28	LANTERN RING	BRONZE	
27	DEFLECTOR	POLYMER	
26	BUSH	POLYMER/BRONZE	
25	CAP SCREW	STAINLESS STEEL	
24	PACKING BOX	CI ASTM A48 CL.35	
23A	COMPANION FLANGE	ASTM A36	
23	UG ELBOW	ASTM A36	
21	BOLT & NUT	STAINLESS STEEL	
20	SLEEVE	SILICON CARBIDE	
19	BOLT & NUT	STAINLESS STEEL	
18	LINE SHAFT BEARING	SILICON CARBIDE	
17	BUSH RETAINER/CASING	STAINLESS STEEL	
16	SHAFT COUPLING	SS 416	
15	LINE SHAFT	ASTM A582 Gr. SS-416	
13	COLUMN PIPE	ASTM A36	
11	CAP SCREW	STAINLESS STEEL	
9	PUMP SHAFT	ASTM A582 Gr. SS-416	
8	SUCTION BELL	CI ASTM A48 CL.35	
7	KEY	SS 410	
6	CAP SCREW	STAINLESS STEEL	
5	THRUST RING RETAINER	SS 410	
4	THRUST RING	SS 410	
3C	CASING LINER	STAINLESS STEEL	
3B	BUSH	BRONZE	
3A	DIFFUSER CONE	CI ASTM A48 CL.35	
3	PROPELLER	SS CF8M	
2A	BUSH (SB)	BRONZE	
2	BUSH (DB)	CERAMIC/SILICON CARBIDE	
1	DISCHARGE BOWL	CI ASTM A48 CL.35	

BILL OF MATERIALS

GRUPPO ATURIA		SCALE : NONE	
DRAWN		NAME	DATE
CHECKED		S.GHATAK	19.03.24
APPROVED		S.GHATAK	19.03.24
DRAWING NO.		SK-12308-C	REV. 2

SECTIONAL DRAWING FOR VERTICAL TURBINE PUMP
CLIENT : WPIL (THAILAND) CO. LTD.
PROJECT : RID_BANG BAN3_PHRA NAKHON SI AYUTTHAYA PROVINCE

ANTI CLOCKWISE AS VIEWED FROM TOP OF MOTOR

P10

POCKET SIZE 150x150x250 DEEP

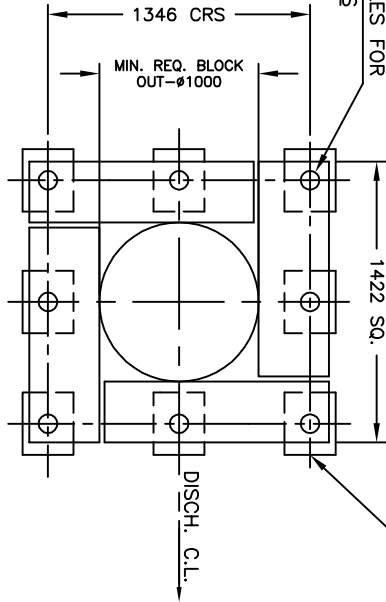
8 NOS ϕ 24 HOLES FOR
M20 FDN. BOLTS

V S S MOTOR

AU DISCH. HEAD CUM MOTOR
STAND WITH TBH

CUSTOMER SCOPE :-
CUSTOMER TO PROVIDE FILTERED WATER
FOR STEERING BOX BRG. LUBRICATION
1. FLOW - 5 LPM
2. PR. - 0.5 KG/CM²
3. MAX PARTICLE SIZE - 100 MICRON

MIN. REQ. BLOCK
OUT- ϕ 1000



DISCH. FLANG DRILLING DETAILS AS PER EN:1092 PN:10, 'F'		
SIZE	600 NB	
OD	780	
PCD	725	
NO OF BOLT HOLES	20	
HOLE DIA	30	
FLNG. THK.	28	

MOTOR DETAILS :	
MOTOR RATING IN KW	75
MAKE	ABB
SPEED IN RPM (RATED)	990
VOLTS(V)	380
BASE DIA	660
SCOPE	CLIENT

PUMP PERFORMANCE :

CAPACITY (M ³ /HR.)	2700
TOTAL BOWL HEAD (MWC)	5.30
BOWL EFFICIENCY (%)	84.00
BOWL INPUT AT DP IN KW	46.39
PUMP INPUT AT DP IN KW	46.69
SP. GR. OF WATER	1.00

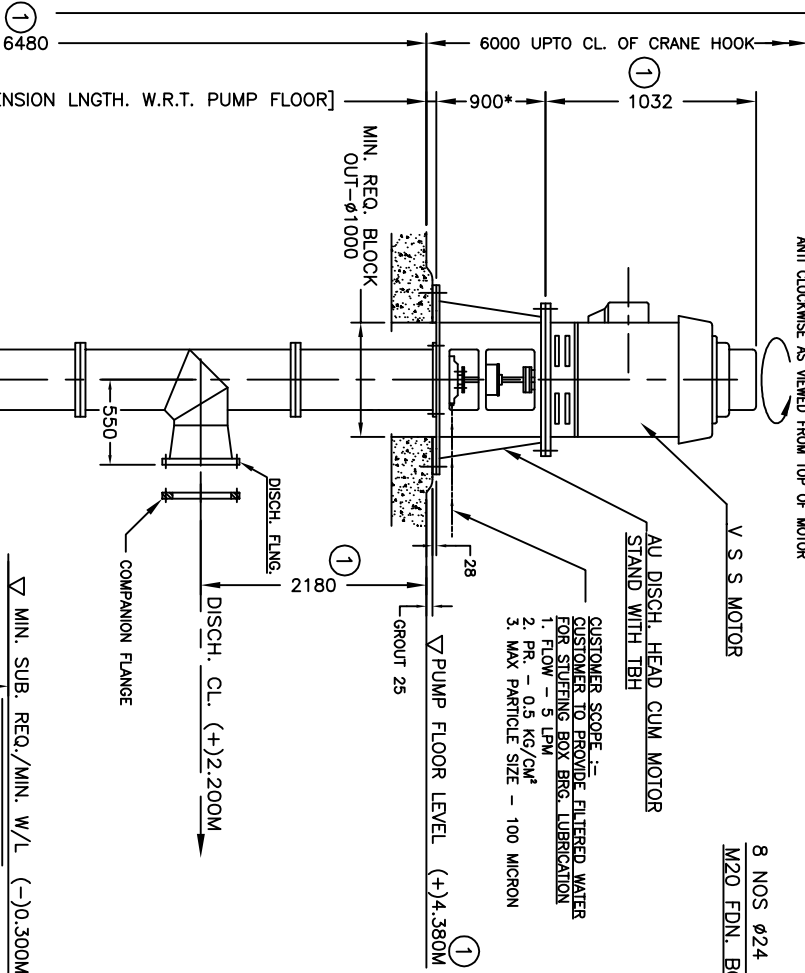
PUMP SPECIFICATION :

UG DISCH. OUTLET SIZE	600
COLUMN & SHAFT SIZE	500 X 43
PUMP MODEL	EIV-500S
NO. OF STAGE(S)	1 (ONE)
TYPE OF LUBRICATION	SELF WATER
COLUMN TYPE	FLANGED
NO. OF PUMPS	2 (TWO)
IMPELLER TYPE	OPEN

LOAD DATA :

STATIC LOAD (KG.)	DYNAMIC LOAD (KG.)	GD ² VALUE (Kg.-M ²)	PUMP	
			1) WT. OF MOTOR (APPROX.)	2) WT. OF EMPTY PUMP
1) RESULTANT VERTICAL LOAD ON FOUNDATION(MAX.) (FY, DISTRIBUTED OVER SOLE PLATE)	5262	↓	930	2515
2) RESULTANT HORIZONTAL LOAD ON FOUNDATION(MAX.) (FX, ACTING ALONG PUMP DISCH. C.L. IN REVERSE DIRECTION TO FLOW)	2332	←		
3) TOTAL DEAD WEIGHT	3445	↓		

PUMP THRUST BEARING HOUSING DETAILS	
TYPE	ANTI-FRICTION
AXIAL TH. AT DP (KG.)	1239
COOLING WATER INLET	TBH IS AIR COOLED
GRADE	VG-68
QTY.	2.25 LTR.
OIL TYPE	TURBINE OIL
MAX. LEVEL FROM TBH BASE	110 MM
MIN. LEVEL FROM TBH BASE	95 MM



▽ SUMP FLOOR LEVEL (-)2.100M

NOTES :-

- 1) PUMP HOUSE NATURAL FREQUENCY TO BE ADEQUATELY AWAY FROM PUMP ROTATIONAL SPEED.
- 2) ALL DIMENSIONS ARE IN 'MM' UNLESS OTHERWISE SPECIFIED.
- 3) ' * ' MARKED DIMENSION MAY VARY DURING DETAIL ENGINEERING.
- 4) FLOW QUALITY AT BELL-MOUTH ENTRY SHOULD BE VORTEX FREE AS PER HIS NORMS.

REF. NO. IBU-8447-48(1)



GRUPPO ATURIA

GENERAL ARRANGEMENT DRAWING FOR VERTICAL TURBINE PUMP
WITH UNDERGROUND DISCHARGE

CLIENT : WPIL (THAILAND) CO. LTD.

PROJECT : RID-BANG BAN3-PHRA NAKHON SI AYUTTHAYA
PROVINCE

SCALE : NONE

NAME DATE

DRAWN S. GHATAK 19.03.2024

CHECKED S. GHATAK 19.03.2024

APPROVEDS. GHATAK 19.03.2024

DRAWING NO. REV.

SK-12307-B 1