บริษัท ดับบลิวพีไอแอล (ไทยแลนด์) จำกัด
23 ซอยสถิตยุทธการ 3 ถนนติวานนท์ ตำบลท่าทราย อำเภอเมือง จังหวัดนนทบุรี 11000
โทร. 02-952-3397 อีเมล: wpil.thailand@gmail.com เว็บไซต์: www.wpil.co.th

# INDEX 2

# เอกสารรายละเอียดคุณลักษณะเฉพาะของเครื่องสูบน้ำ

# VERTICAL TURBINE PUMP DATA SHEET

WPIL Limited

## WPIL LIMITED "Formerly Worthington Pump India Limited"

| | | | | | | | Rev |
|---|---|---|---|---|---|---|---|
| 1 | CLIENT | Royal Irrigation Department | | DATE | 15 February 2023 | | |
| 2 | POROJECT | Ban Rung Nuea | | Country of origin | INDIA | ข้อที่3 | |
| 3 | SITE | Sisaket Province | | Country of manufacture | INDIA | ข้อที่4 | |
| 4 | Model | WVT-32-24 | | Country of assembly | INDIA | ข้อที่5 | |
| 5 | MANUFACTURER | WPIL LIMITED | ข้อที่ 1 | Job number | EB23014 | | |
| 6 | PERFORMANCE | | | SPECIFICATION | | | |
| 7 | Rated capacity | ข้อที่7.1 | 1,080.00 m3/hr. | Shaft Power (Min/Max) | 84.51/108.78 kw. | | |
| 8 | Total Bowl Head | ข้อที่7.2 | 30.24 mtr. | Discharge Flange | ISO 7005 PN10 | | |
| 9 | Speed | ข้อที่7.6 | 742.00 rpm. | Discharge outlet size | 400.00 mm. | | |
| 10 | Bowl efficiency | ข้อที่7.3 | 83.00 % | Column Size | 400.00 mm. | ข้อที่6 | |
| 11 | Bowl input at duty point | ข้อที่7.4 | 107.15 kw. | Shaft size | 56.00 mm. | | |
| 12 | Pump input at duty point | | 107.68 kw. | Bowl assembly model | WVT-32-24 | ข้อที่2 | |
| 13 | NPSH required | ข้อที่7.2 | 4.50 m. | No. of stages | 2.00 | | |
| 14 | Liquid Handled | | Water | Maximum bowl diameter | 686.00 mm. | | |
| 15 | Sp.gravity ( Assumed ) | | 1.00 | Pump suspension length | 7,000.00 mm. | | |
| 16 | Axial Thrust at Duty Point | | 2,933.00 kg. | Rotation (pump view from motor side) | CCW | | |
| 17 | More Design and Standard Information | | | Min. submergence | 690.00 mm. | | |
| 18 | Impeller Static and Dynamic Balance | ISO 1940/1 G 6.3 | ข้อที่ 8.2 | Bottom clearance | 300.00 mm. | | |
| 19 | Column pipe | ANSI/AWWA E101 | ข้อที่ 9.1 | Strainer Hight | 500.00 mm. | | |
| 20 | Line shaft Type | Open | ข้อที่ 9.3 | Impeller type | Mixed Flow | | |
| 21 | Line shaft | ANSI/AWWA E101 | ข้อที่ 9.3 | Pump weight | 3,500.00 Kg. | | |
| 22 | Shaft Allowable Torsional Vibration Stress | 1/35 | ข้อที่ 8.3,9.3 | Installation Type | Above Ground Discharge | | |
| 23 | Shaft Vibratory Torque | < 20% | | Column Connection | FLANGE | | |
| 24 | MATERIAL OF CONSTRUCTION | | | THRUST BEARINGS AND LUBRICATION | | | |
| 25 | PUMP BOWL | ASTM A48 Class 35 | ข้อที่ 8.1 | BEARING LIFE | 102,814.04 Hr | ข้อที่10 | |
| 26 | IMPELLER | ASTM A-Type CF8M | ข้อที่ 8.2 | RADIAL | Pain / Bush | | |
| 27 | PUMP SHAFT | ASTM A-Type 420 | ข้อที่ 8.3 | THRUST | Antifriction / 32316 | | |
| 28 | CASING WEAR RING | ASTM A-Type 316Ti | ข้อที่ 8.4 | OIL VISC. ISO GRADE | VG 68 | | |
| 29 | BOWL BEARING | Fiber Reinforced Ceramic | ข้อที่ 8.5 | LUBRICATION : | Turbine Oil | | |
| 30 | SHAFT SEAL | Packing seal/Carbonized Fiber | ข้อที่ 8.6 | CONSTANT LEVEL OILER : | Required | | |
| 31 | COLUMN | ASTM A36 | ข้อที่ 9.1 | COOLING SYSTEM | Water | | |
| 32 | DISCHARGE HEAD | ASTM A36 | ข้อที่ 9.2 | PRESSURE WATER COOLING | 1.00 Bar | | |
| 33 | LINE SHAFT | ASTM A-Type 420 | ข้อที่ 9.3 | OTHER PURCHASER REQUIREMENTS | | | |
| 34 | SHAFT COUPLING | Rigid Coupling | ข้อที่ 9.4 | Pump vibration sensor (TBH) | Yes | | |
| 35 | SHAFT SLEEVE | ASTM A-Type 316Ti | ข้อที่ 9.5 | Temp RTD PT100 (TBH) | Yes | | |
| 36 | LINE SHAFT BRARING | Silicon Carbide | ข้อที่ 9.6 | Pump Monitoring unit (PMU2023) | Yes | | |
| 37 | SHAFT LUBRICATION | Self Water | ข้อที่ 9.7 | Remote and monitor (PMU2023) | Yes | | |
| 38 | MOTOR STOOL | ASTM A36 | ข้อที่ 11 | Impeller (Spare part) | NA | | |
| 39 | SOLE PLATE | ASTM A36 | | Casing Wear ring (Spare part) | NA | | |
| 40 | BOLT & NUT | Stainless steel | | Shaft (Spare part) | NA | | |
| 41 | GASKETS | Non-asbestos | | Shaft sleeve (Spare part) | NA | | |
| 42 | POWER TRANSMISSION | Flexible Flange Shaft Coupling | ข้อที่ 12 | Shaft seal (Spare part) | NA | | |
| 43 | STRAINER | Galvanized Steel | | | | | |

วาที่ ร.ต.ธีธรรมณัฐ แก้วบุญส่ง
วิศวกรเครื่องกล สก.๒๙๗๐
โทร. ๐๘๑-๔๔๔-๔๖๖๗

WPIL (Thailand) Co., Ltd.

WPIL LIMITED., Formerly Worthington Pump India Limited "Trinity Plaza",3rd Floor, 84/1A, Topsia Road(South) Kolkata , India,
Phone : +91 33 4055 6800 Fax : +91 33 4055 6835

# VERTICAL TURBINE PUMP DATA SHEET

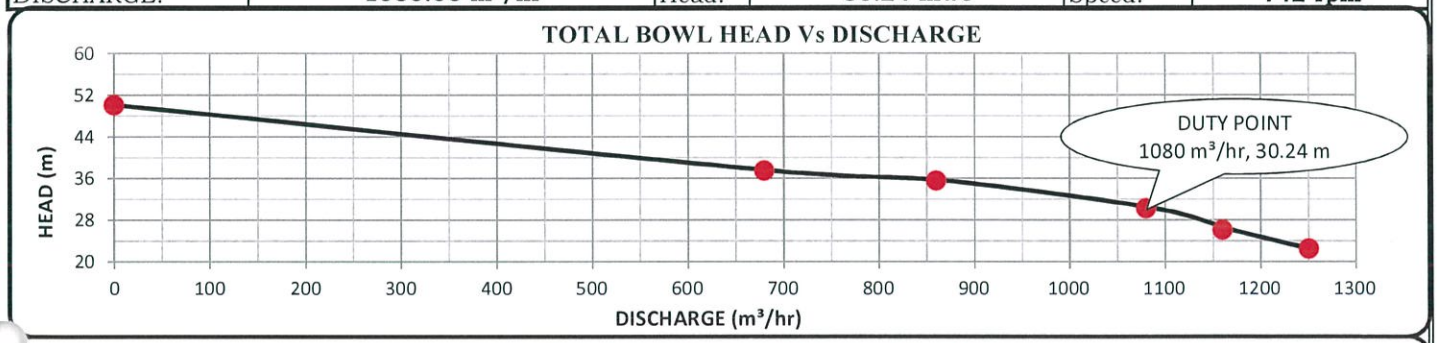
WPIL Limited

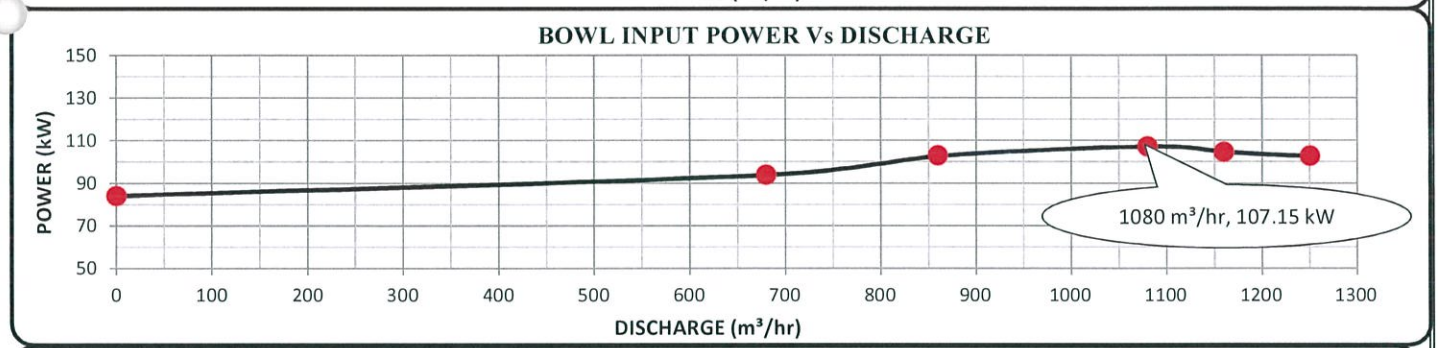
| | TEST | | DRIVER | | | |
|---|---|---|---|---|---|---|
| 45 | HYDROSTATIC COLUMN | Yes | DRIVER TYPE | Squirrel Cage Induction Motor | | |
| 46 | HYDROSTATIC TEST OF BOWLS | Yes | MOUNTING | IM3011, V1 (flange) | | |
| 47 | PERFORMANCE TEST ISO 9906 | Yes | STARTING METHOD | Star-Delta | | |
| 48 | NPSH TESTING | Yes | SOURCE | 380V/3PH/50HZ. | | |
| 49 | DYNAMIC BALANCE ROTOR | Yes | LUBRICANT | NLGI2 VG100 | | |
| 50 | COMPLETE UNIT TEST | Yes | MANUFACTURER | MERZ | | |
| 51 | SOUND LEVEL TEST | Yes | POWER | 160.00 | kW. | |
| 52 | MATERIAL CERTIFICATION REQUIRED | Yes | SPEED | 742.00 | RPM | |
| 53 | WITNESS TEST | DNV | POWER MARGINE | 1.49 48.59 | % | |
| 54 | **SURFACE PREPARATION AND PAINT** | | FRAME | 355M | | |
| 55 | **Part in contact with medium** ข้อที่ 19 | | ORIENTATION | Vertical | | |
| 56 | Pre-treatment shot blasting SA 2.5 for all surfaces. | | **PUMP STATION LEVEL TO MEAN Sea-Level** | | | |
| 57 | Anti Rust Primer 0.1mm.1 component. | | Pump Floor Level | 129.300 | m. | |
| 58 | Top coat 0.25 mm. 2 component. | | Center Line of Discharge | 130.000 | m. | |
| 59 | Shade RAL 9005 Black. | | Low Water Level | 124.100 | m. | |
| 60 | **Part not in contact with medium** | | Sump Flow Level | 122.000 | m. | |
| 61 | Pre-treatment shot blasting SA 2.5 for all surfaces. | | Pump Minimum Submergent | 123.490 | m. | |
| 62 | Anti Rust Primer 0.1mm.1 component. | | Minimum Submergent Check | OK | | |
| 63 | Top coat 0.1mm. 1 component. | | | | | |
| 64 | Acrylate Alkyd based coat RAL 5002. | | | | | |

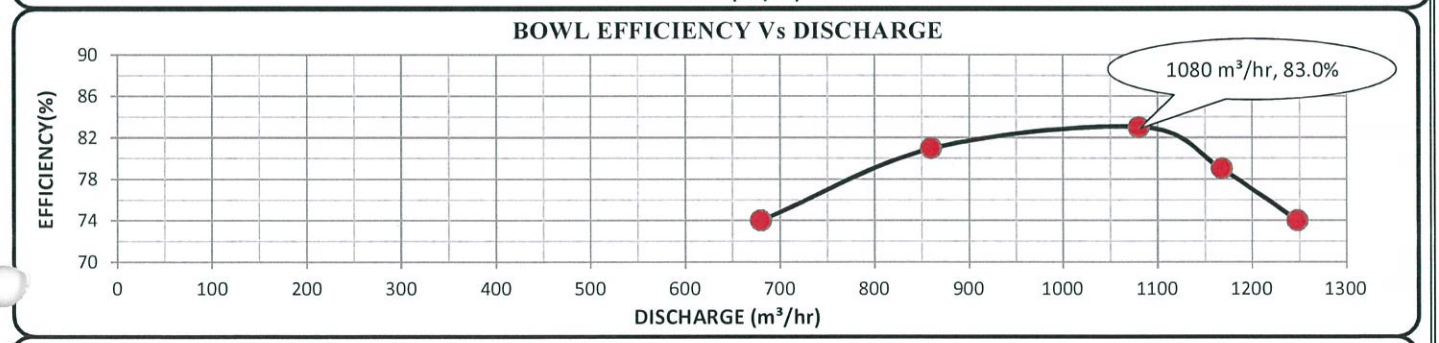
ว่าที่ ร.อ.ธรรมณัฐ แก้วบุญส่ง
วิศวกรเครื่องกล สก.๒๙๗๐
โทร. ๐๘๑-๔๔๔-๔๖๖๗

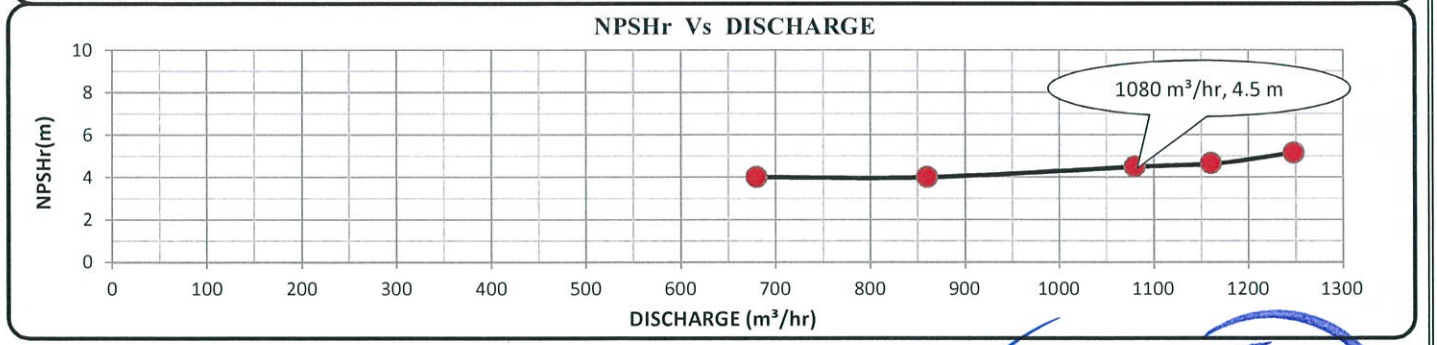
WPIL (Thailand) Co., Ltd.

| | | | | | |
|---|---|---|---|---|---|
| | PUMP MANUFACTURER: **WPIL Limited** Formerly Worthington Pump India Limited | | FQBS8E00240S_R.1 | | |
| | | | Revision | 1 | Date: 10-Jan-23 |
| **DOC. NAME** | **PERFORMANCE CURVE OF VERTICAL TURBINE PUMP** | | | | |
| MODEL: | **WVT-32-24** | Sp. Gr. | 1.00 | No. OF STAGE: | **2** |
| DISCHARGE: | **1080.00 m³/hr** | Head: | **30.24 mwc** | Speed: | **742 rpm** |



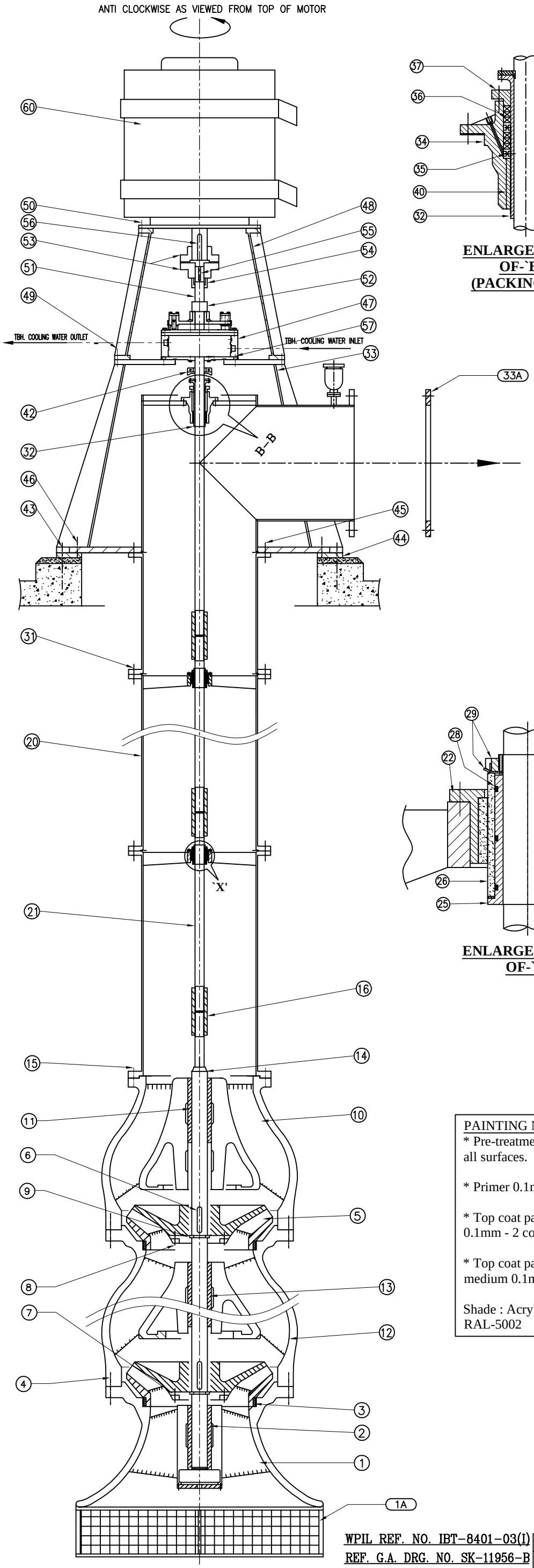



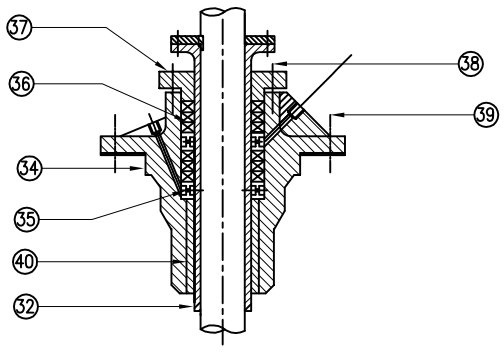




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WPIL LIMITED., Formerly Worthington Pump India Limited "Trinity Plaza" 3rd Floor, 84/1A, Topsia Road(South) Kolkata , India,
Phone : +91 33 4055 6800 Fax : +91 33 4055 6835

WPIL REF. NO. IBT-8401-03(I)




**ENLARGED VIEW OF-`B-B' (PACKING BOX)**




**ENLARGED VIEW OF-`X'**

| PUMP THRUST BEARING HOUSING DETAILS | | | |
|---|---|---|---|
| TYPE | | ANTIFRICTION | |
| AXIAL TH. AT DP (Kg) | | 2704 | |
| COOLING WATER INLET LINE | | FLOW | 10 LPM |
| | | PR. | 0.8-1.0 Kg/cm² |
| | | TEMP. | 26°C |
| OIL | GRADE | | VG 68 |
| | QTY. | | 2.5 LTR. |
| | MAX. LEVEL FROM FROM TBH BASE | | 65 MM |
| | MIN. LEVEL FROM FROM TBH BASE | | 55 MM |

NOTES FOR TBH :-
1) CHECK TBH OIL LEVEL BEFORE START OF THE PUMP.
2) CHECK COOLING WATER CIRCULATION THROUGH TBH COOLING LINE 30 SECONDS JUST AFTER THE PUMP START.

**MOTOR DETAILS : [SCOPE :- CLIENT]**

| | |
|---|---|
| MOTOR RATING IN KW | 160 |
| FRAME | 355M2-8 |
| SPEED IN RPM (RTD) | 742 |
| VOLTS(V) | 380 |
| BASE DIA | 800 |
| MOTOR COOLING | AIR |

**PUMP PERFORMANCE :**

| | |
|---|---|
| CAPACITY ($M^3$/HR.) | 1080 |
| TOTAL BOWL HEAD (MWC) | 30.24 |
| SHUT-OFF HEAD (MWC) | 51.90 |
| BOWL EFFICIENCY (%) | 83.00 |
| BOWL INPUT AT DP IN KW | 107.16 |
| PUMP INPUT AT DP IN KW | 107.68 |
| SP. GR. | 1.0 |

**PUMP SPECIFICATION :**

| | |
|---|---|
| PUMP MODEL | WVT-32-24 |
| NO. OF STAGE(S) | 2 |
| TYPE OF LUBRICATION | SELF WATER |
| COLUMN TYPE | FLANGED |
| COLUMN & SHAFT SIZE | 400 X 49 |
| DISCH. OUTLET SIZE | 400 |
| IMPELLER TYPE | CLOSED |
| STRAINER TYPE | BASKET |

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

* Primer 0.1mm - 1 coat

* Top coat part in contact with medium 0.1mm - 2 coats

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

Shade : Acrylate Alkyd based coat, RAL-5002

| S.L. NO | DESCRIPTION | MATERIAL | REMARKS |
|---|---|---|---|
| 60. | V.S.S. MOTOR | MANUFACTURER' STD. | |
| 57. | HEX. HD. SCREW | CARBON STEEL | |
| 56. | KEY | SS 410 | |
| 55. | KEY | SS 410 | |
| 53. | FLEX. COUPLING ASSLY. | CI ASTM A48 CL. 35 | |
| 52. | ADJUSTING NUT | STEEL | |
| 51. | HEAD SHAFT | SS 420-S | |
| 50. | BOLT & NUT | CARBON STEEL | |
| 49. | BOLT & NUT | CARBON STEEL | |
| 48. | MOTOR STAND | ASTM A36 / EQUIVALANT | |
| 47. | BEARING HOUSING ASSLY. | WPIL'S STD. | |
| 46. | HEX. HD. SCREW | CARBON STEEL | |
| 45. | HEX. HD. SCREW | SS 304 | |
| 44. | SOLE PLATE | ASTM A36 / EQUIVALANT | |
| 43. | FDN. BOLTS, NUTS & WASHER | CARBON STL. | |
| 42. | DEFLECTOR | POLYMER | |
| 40. | BUSH | POLYMER | |
| 39. | HEX. HD. SCREW | SS 304 | |
| 38. | STUD & NUT | SS 304 | |
| 37. | SPLIT PACKING GLAND | BRONZE | |
| 36. | PACKING | PTFE/TEFLON | |
| 35. | LANTERN RING | BRONZE | |
| 34. | PACKING BOX | CI ASTM A48 CL. 35 | |
| 33A. | COMPANION FLANGE | ASTM A36 / EQUIVALANT | |
| 33. | SURFACE DISCHARGE HEAD | ASTM A36 / EQUIVALANT | |
| 32. | SLEEVE | SS 420-S | |
| 31. | BOLT & NUT | SS 304 | |
| 29. | LOCK NUT & WASHER | STAINLESS STEEL | |
| 28. | 'O' RING | RUBBER | |
| 27. | GASKET | RUBBER | |
| 26. | SLEEVE | SILICON CARBIDE | |
| 25. | SLEEVE HOLDER | STAINLESS STEEL | |
| 24. | BUSH (LINE SHAFT) | SILICON CARBIDE | |
| 23. | CAP SCREW | SS 304 | |
| 22. | BUSH RETAINER/CASING | STAINLESS STEEL | |
| 21. | LINE SHAFT | SS 420-S | |
| 20. | COLUMN PIPE | ASTM A36 / EQUIVALANT | |
| 16. | LINE SHAFT COUPLING | SS 420-S | |
| 15. | BOLT & NUT | SS 304 | |
| 14. | PUMP SHAFT | SS 420-S | |
| 13. | BUSH (INTER BOWL) | CERAMIC/SILICON CARBIDE | |
| 12. | INTER. BOWL | CI ASTM A48 CL. 35 | |
| 11. | BUSH (DISCHARGE BOWL) | CERAMIC/SILICON CARBIDE | |
| 10. | DISCH. BOWL | CI ASTM A48 CL. 35 | |
| 9. | THRUST RING | SS 410 | |
| 8. | SOC. HD. CAP SCREW | SS 304 | |
| 7. | TH. RING RET. | SS 410 | |
| 6. | IMPELLER KEY | SS 420-S | |
| 5. | IMPELLER | ASTM A743, GR. CF8M | |
| 4. | CAP SCREW | SS 304 | |
| 3. | SEAL RING/WEAR RING | ASTM A - TYPE 304 | |
| 2. | BUSH (SUCTION BELL) | CUTLESS BACKED BY BRONZE | |
| 1A. | BASKET STRAINER ASSLY. | MS. GALVANISED | |
| 1. | SUCTION BELL | CI ASTM A48 CL. 35 | |

LIST OF MATERIALS

WPIL REF. NO. IBT-8401-03(I)
REF. G.A. DRG. NO. SK-11956-B

| NO. | REVISION | SIGN | DATE |
|---|---|---|---|
| | | | |

WPIL Limited
KOLKATA, INDIA.

CROSS SECTIONAL DRAWING FOR VERTICAL TURBINE PUMP

CLIENT : WPIL (THAILAND) CO. LTD.

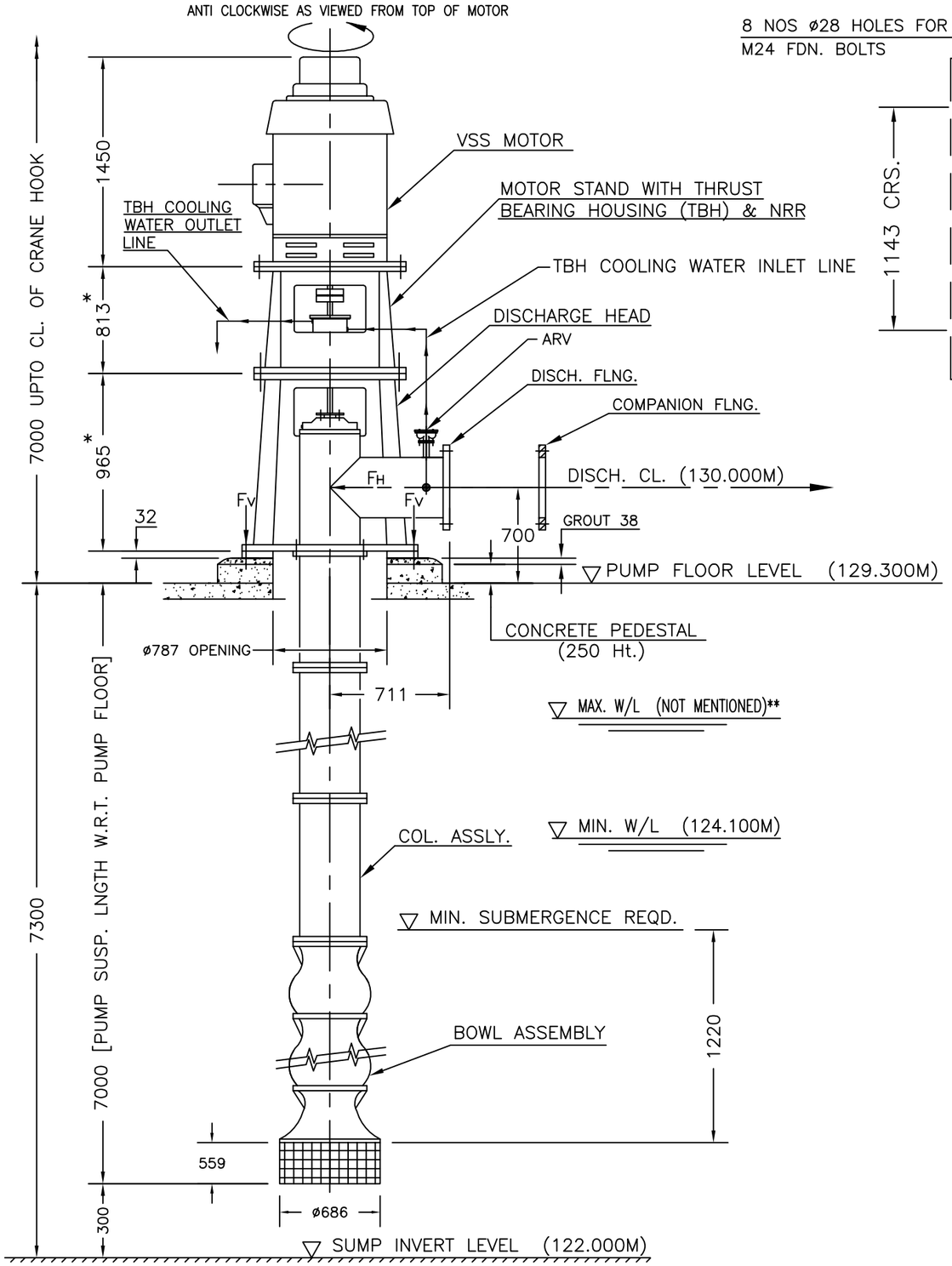
PROJECT : RID_BAN RUNG NUEA_SI SA KET PROVINCE

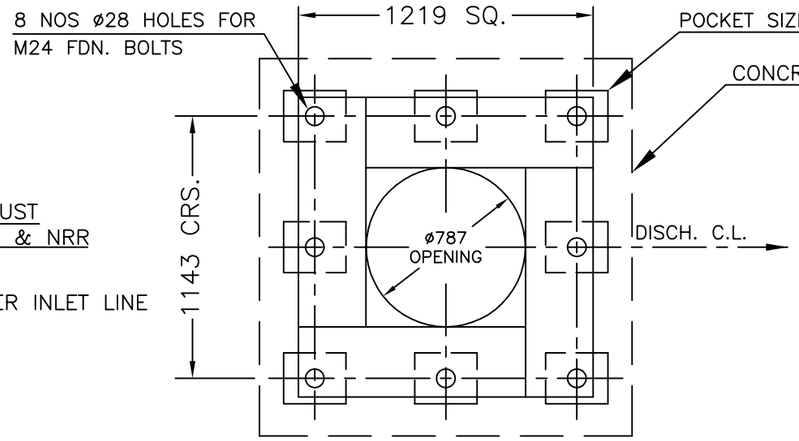
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| | NAME | DATE |
|---|---|---|
| DRAWN | S.Ghatak | 27.04.23 |
| CHECKED | S.Ghatak | 27.04.23 |
| APPROVED | S.Ghatak | 27.04.23 |

DRAWING NO. SK-11957-C
REV. 0

WPIL REF. NO. IBT-8401-03(I)




PLAN OF SOLE PLATE (SEGMENTAL IN FOUR PIECES)

| PUMP THRUST BEARING HOUSING DETAILS | | | |
|---|---|---|---|
| TYPE | | ANTIFRICTION | |
| AXIAL TH. AT DP (Kg) | | 2704 | |
| COOLING WATER INLET LINE | | FLOW | 10 LPM |
| | | PR. | 0.8-1.0 Kg/cm² |
| | | TEMP. | 26°C |
| OIL | GRADE | | VG 68 |
| | QTY. | | 2.5 LTR. |
| | MAX. LEVEL FROM FROM TBH BASE | | 65 MM |
| | MIN. LEVEL FROM FROM TBH BASE | | 55 MM |

NOTES FOR TBH :-
1) CHECK TBH OIL LEVEL BEFORE START OF THE PUMP.
2) CHECK COOLING WATER CIRCULATION THROUGH TBH COOLING LINE 30 SECONDS JUST AFTER THE PUMP START.

**MOTOR DETAILS : [SCOPE :- CLIENT]**

| | |
|---|---|
| MOTOR RATING IN KW | 160 |
| FRAME | 355M2-8 |
| SPEED IN RPM (RTD) | 742 |
| VOLTS(V) | 380 |
| BASE DIA | 800 |
| MOTOR COOLING | AIR |

| DISCH. FLANGE DRILLING DETAILS (AS PER EN:1092-1 PN:10, FF) | |
|---|---|
| NOM. SIZE | 400 |
| FLG. OD | 565 |
| P.C.D | 515 |
| NO. OF HOLES | 16 |
| DIA. OF HOLE | 26 |
| FLANGE THK. | 32 |

**PUMP PERFORMANCE :**

| | |
|---|---|
| CAPACITY ($M^3$/HR.) | 1080 |
| TOTAL BOWL HEAD (MWC) | 30.24 |
| SHUT-OFF HEAD (MWC) | 51.90 |
| BOWL EFFICIENCY (%) | 83.00 |
| BOWL INPUT AT DP IN KW | 107.16 |
| PUMP INPUT AT DP IN KW | 107.68 |
| SP. GR. | 1.0 |

**LOAD DATA :**

| | | | |
|---|---|---|---|
| STATIC LOAD (KG.) | 1) WT. OF MOTOR | 1650 | ↓ |
| | 2) WT. OF EMPTY PUMP | 3813 | ↓ |
| | 3) TOTAL DEAD WEIGHT | 5463 | ↓ |
| DYNAMIC LOAD (KG.) | 1) RESULTANT VERTICAL LOAD ON FOUNDATION(MAX.) (Fv, DISTRIBUTED OVER SOLE PLATE) | 6242 | ↓ |
| | 2) RESULTANT HORIZONTAL LOAD ON FOUNDATION(MAX.) (FH, ACTING ALONG PUMP DISCH. CL, IN REVERSE DIRECTION TO FLOW) | 6031 | ← |
| GD² VALUE (Kg.-M²) | PUMP | 24.75 | |

**PUMP SPECIFICATION :**

| | |
|---|---|
| PUMP MODEL | WVT-32-24 |
| NO. OF STAGE(S) | 2 |
| TYPE OF LUBRICATION | SELF WATER |
| COLUMN TYPE | FLANGED |
| COLUMN & SHAFT SIZE | 400 X 49 |
| DISCH. OUTLET SIZE | 400 |
| IMPELLER TYPE | CLOSED |
| STRAINER TYPE | BASKET |

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

| NO. | REVISION | SIGN | DATE |
|---|---|---|---|
| | | | |

WPIL REF. NO. IBT-8401-03(I)

WPIL Limited
KOLKATA, WEST BENGAL

GENERAL ARRANGEMENT DRAWING FOR VERTICAL TURBINE PUMP

CLIENT : WPIL (THAILAND) CO. LTD.

PROJECT : RID_BAN RUNG NUEA_SI SA KET PROVINCE

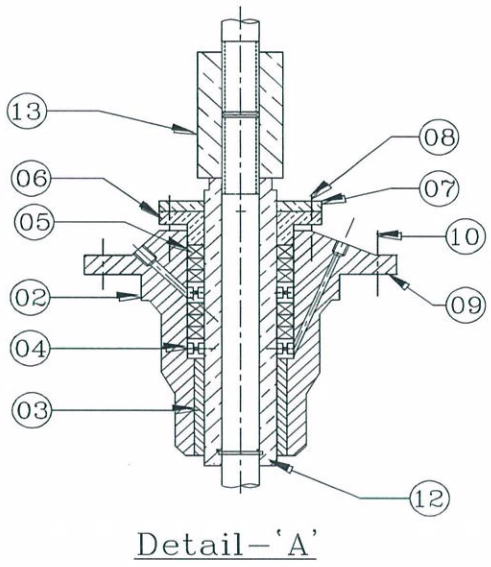
SCALE : NONE

| — | NAME | DATE |
|---|---|---|
| DRAWN | S.ROY | 27.04.23 |
| CHECKED | S. GHATAK | 27.04.23 |
| APPROVED | S. GHATAK | 27.04.23 |

DRAWING NO. SK-11956-B

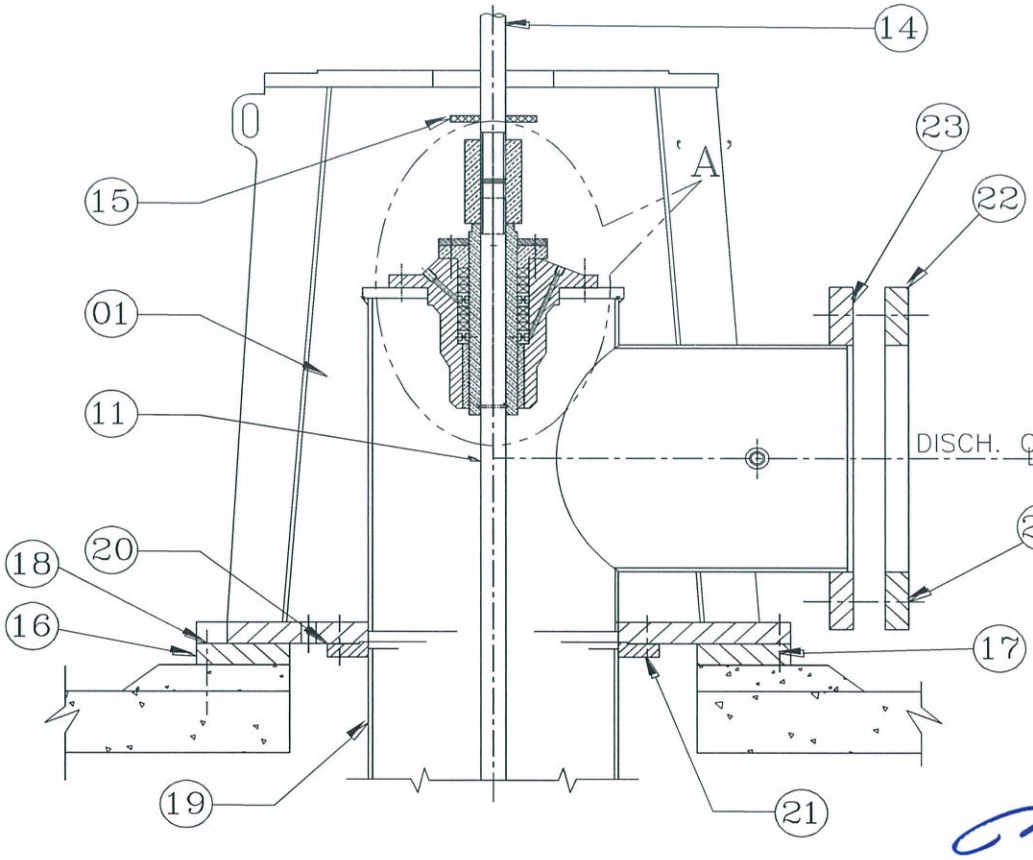
REV. 0

## 10 (a) Self water Lubricated Discharge Head Assembly With Line Shaft Coupling : Drg. No. - SK-10990-A




Detail–'A'

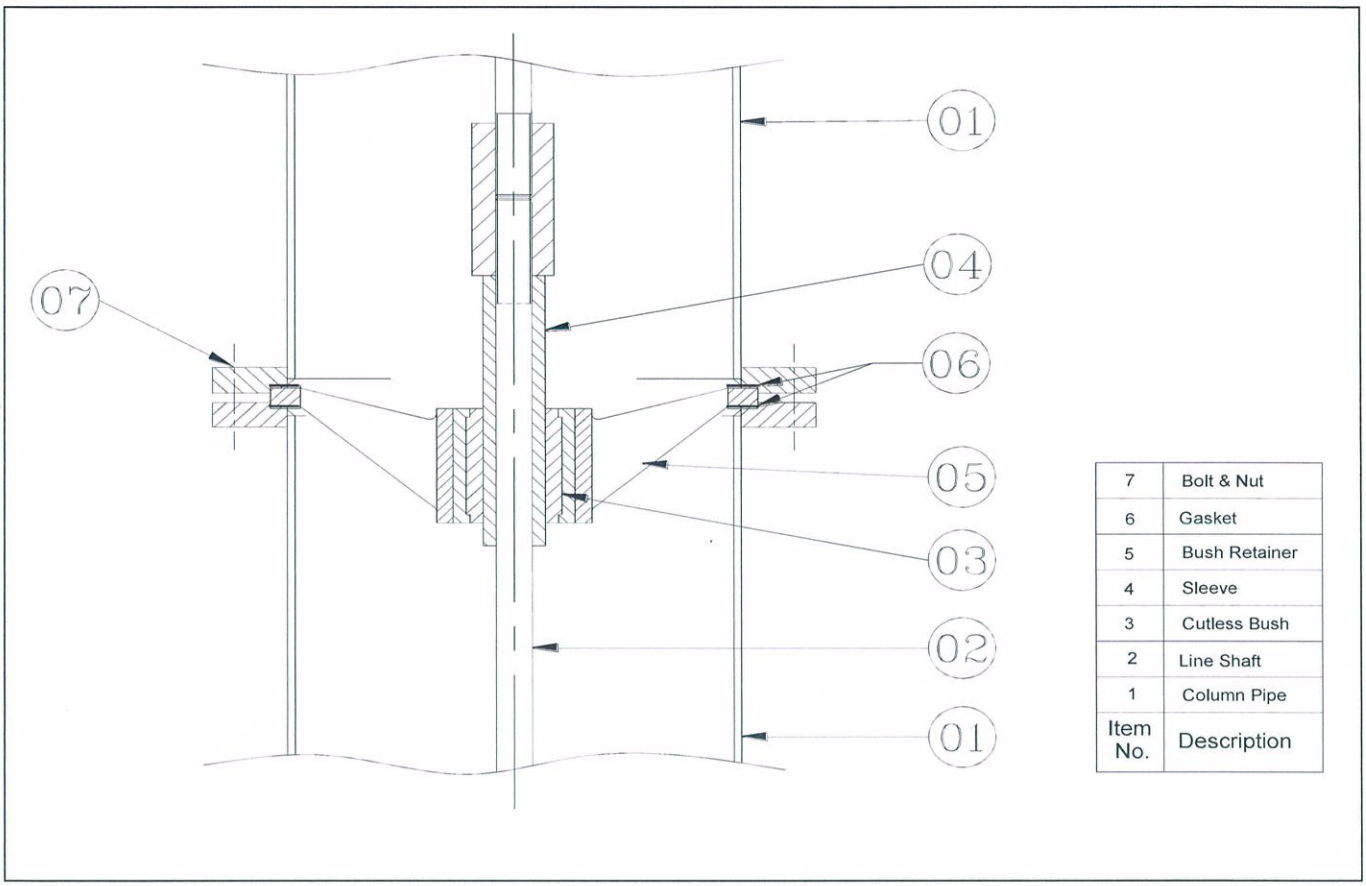
| Item No. | Description | Item No. | Description |
|---|---|---|---|
| 24 | Bolt & Nut | 15 | Deflector |
| 23 | Gasket | 14 | Top Head Shaft |
| 22 | Companion Flange | 13 | Shaft Coupling |
| 21 | Hex. Hd. Screw | 12 | Sleeve (Threaded) |
| 20 | Gasket | 11 | Bottom Head Shaft |
| 19 | Top Column Pipe | 10 | Hex. Hd. Screw |
| 18 | Foundation Bolt | 9 | Gasket |
| 17 | Hex Head Screw | 8 | Stud & Nut |
| 16 | Sole Plate | 7 | Bracket |
| | | 6 | Gland (Split) |
| | | 5 | Packing Rope |
| | | 4 | Lantern Ring |
| | | 3 | Bush |
| | | 2 | Packing Box |
| | | 1 | Discharge Head |




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**11 (a) Self water Lubricated Flanged Column Assembly with Line Shaft :**
**Drg. No. - SK-10982-A**

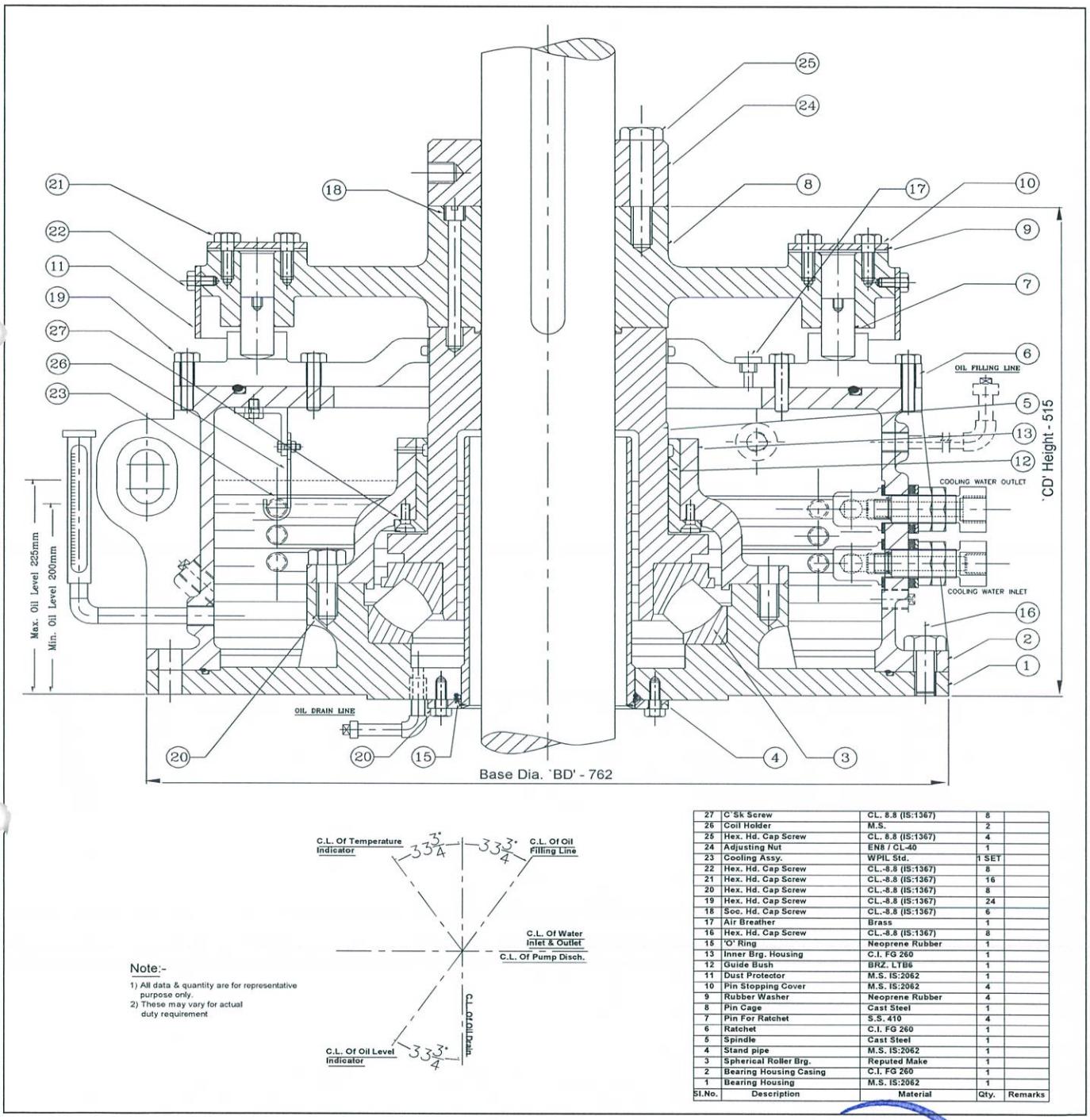



| Item No. | Description |
|---|---|
| 7 | Bolt & Nut |
| 6 | Gasket |
| 5 | Bush Retainer |
| 4 | Sleeve |
| 3 | Cutless Bush |
| 2 | Line Shaft |
| 1 | Column Pipe |

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## 14 (b) Sectional Arrangement Drawing For Water Cooled Antrifriction Type Thrust Bearing Housing Assembly : Drg. No. - SK-11000-C







Note:-
1) All data & quantity are for representative purpose only.
2) These may vary for actual duty requirement

| Sl.No. | Description | Material | Qty. | Remarks |
|---|---|---|---|---|
| 27 | C'Sk Screw | CL. 8.8 (IS:1367) | 8 | |
| 26 | Coil Holder | M.S. | 2 | |
| 25 | Hex. Hd. Cap Screw | CL. 8.8 (IS:1367) | 4 | |
| 24 | Adjusting Nut | EN8 / CL-40 | 1 | |
| 23 | Cooling Assy. | WPIL Std. | 1 SET | |
| 22 | Hex. Hd. Cap Screw | CL.-8.8 (IS:1367) | 8 | |
| 21 | Hex. Hd. Cap Screw | CL.-8.8 (IS:1367) | 16 | |
| 20 | Hex. Hd. Cap Screw | CL.-8.8 (IS:1367) | 8 | |
| 19 | Hex. Hd. Cap Screw | CL.-8.8 (IS:1367) | 24 | |
| 18 | Soc. Hd. Cap Screw | CL.-8.8 (IS:1367) | 6 | |
| 17 | Air Breather | Brass | 1 | |
| 16 | Hex. Hd. Cap Screw | CL.-8.8 (IS:1367) | 8 | |
| 15 | 'O' Ring | Neoprene Rubber | 1 | |
| 13 | Inner Brg. Housing | C.I. FG 260 | 1 | |
| 12 | Guide Bush | BRZ. LTB6 | 1 | |
| 11 | Dust Protector | M.S. IS:2062 | 1 | |
| 10 | Pin Stopping Cover | M.S. IS:2062 | 4 | |
| 9 | Rubber Washer | Neoprene Rubber | 4 | |
| 8 | Pin Cage | Cast Steel | 1 | |
| 7 | Pin For Ratchet | S.S. 410 | 4 | |
| 6 | Ratchet | C.I. FG 260 | 1 | |
| 5 | Spindle | Cast Steel | 1 | |
| 4 | Stand pipe | M.S. IS:2062 | 1 | |
| 3 | Spherical Roller Brg. | Reputed Make | 1 | |
| 2 | Bearing Housing Casing | C.I. FG 260 | 1 | |
| 1 | Bearing Housing | M.S. IS:2062 | 1 | |

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# DATA SHEET

International Electrotechnique Commission ( IEC Standards )

DATE 15/08/2021 MODEL MIDF 355 M2 - 8 POWER 160 KW 8 POLE SF.1.0

| PLATE DATA | | | | EFFICIENCY CLASS: | IE4 |
|---|---|---|---|---|---|
| DUTY | S1 | | △/ Y | Temp rise | B |
| f (Hz) | 50 | Un (V) | 380/660 | COS Ø | 0.83 |
| $n_N(min^{-1})$ | 742 | In (A) | 310.6/179.3 | Pn(KW) | 160 |
| IP | 55 | IS Class | F | Net V1 (Kg) | 1650 |

| Drive-end Bearing | 7322B | Non Drive-end Bearing | 6322C3 |
|---|---|---|---|

Phase-resistance at

| 19.6 °C | (Ω) | 0.01482 | (Ω) | 0.01483 | (Ω) | 0.01481 |
|---|---|---|---|---|---|---|

**TEMPERATURE-RISE TEST**

| Conn | U (V) | f (Hz) | In (A) | Pn (kw) | Lasting (h) | Terminal | Winding Initial °C | Winding Resistant Initial Ω | Final amb °C | Final frame °C | Final Winding Resistant Ω | Temp △ (K) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| △ | 380 | 50 | 310.6 | 160 | 5 | | 19.6 | 0.0148 | 20.2 | 66.5 | 0.0193 | 76.5 |

**LOAD TEST**

| Conn | Load | U (V) | f (Hz) | n $min^{-1}$ | s % | (A) | Input (KW) | Tn (Nm) | Output (KW) | η % | COS Ø | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| △ | 25% | 380 | 50 | 747 | 0.40 | 113.9 | 42.7 | 511.4 | 40.0 | 93.6 | 0.57 | |
| △ | 50% | 380 | 50 | 746 | 0.53 | 165.6 | 85.0 | 1024.1 | 80.0 | 94.1 | 0.78 | |
| △ | 75% | 380 | 50 | 744 | 0.80 | 237.7 | 126.7 | 1540.3 | 120.0 | 94.7 | 0.81 | |
| △ | 100% | 380 | 50 | 742 | 1.07 | 310.6 | 169.7 | 2059.3 | 160.0 | 94.3 | 0.83 | |
| △ | 125% | 380 | 50 | 740 | 1.33 | 393.4 | 212.3 | 2581.1 | 200.0 | 94.2 | 0.82 | |

**BREAKDOWN TORQUE TEST**

| Conn | U (V) | f (Hz) | n $min^{-1}$ | | (A) | Input (KW) | Tn (Nm) | Output (KW) | |
|---|---|---|---|---|---|---|---|---|---|
| △ | 380 | 50 | | | | | 5148.2 | | |

**DIELECTRIC TEST**

| U (V) | (a) |
|---|---|
| 1760 | 0.02 |

**LOCKED ROTOR TEST**

| Conn | U (V) | f (Hz) | Tn (Nm) | I (A) |
|---|---|---|---|---|
| △ | 380 | 50 | 4325.0 | 2018.9 |

**NO-LOAD TEST**

| Conn | U (V) | f (Hz) | n $min^{-1}$ | I (A) | Input (W) | COS Ø |
|---|---|---|---|---|---|---|
| △ | 380 | 50 | 749 | 85.4 | 4080.0 | |

| Lwa dB (A) | INSUL RES. | | |
|---|---|---|---|
| No Load | amb. T | (V) | (M Ω) |
| 68 | 20.2 | 500 | 500 |

Note : - TEFC , IC411 , Cooling fan Aluminum
- PT100 in winding 2 per phase with 3 wires
- PT100 in bearing at DE and NDE with 3 wires
- Insulated bearing at NDE - Bearing life 100,000 (h)
- Spece heaters 220v 50 Hz - SPM Nipple
- Vacuum pressure impregnation (VPI)
- Grease valve can put grease when motor run

Customer Approval

Signature Date

WPIL (Thailand) Co., Ltd.

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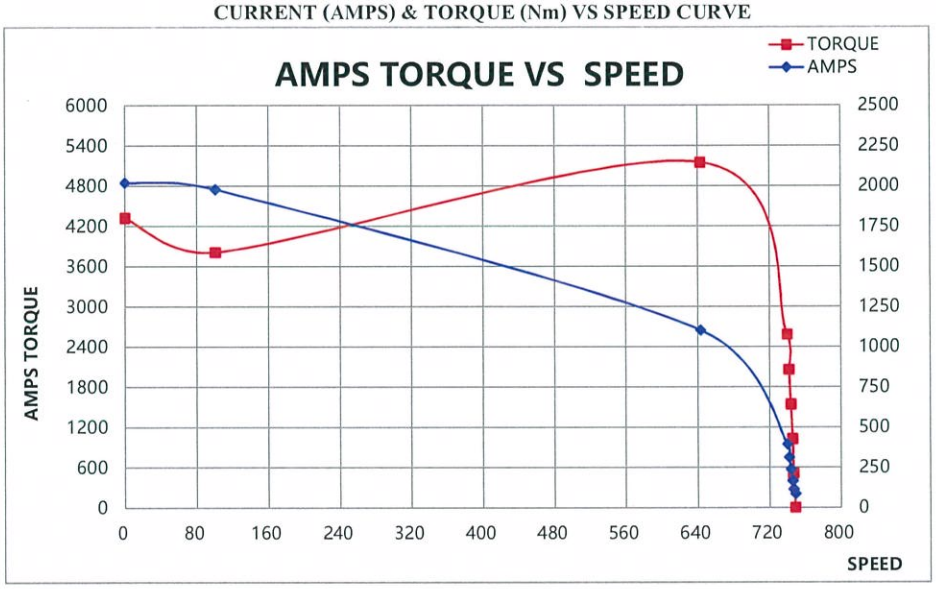
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International Electrotechnique Commission ( IEC Standards )

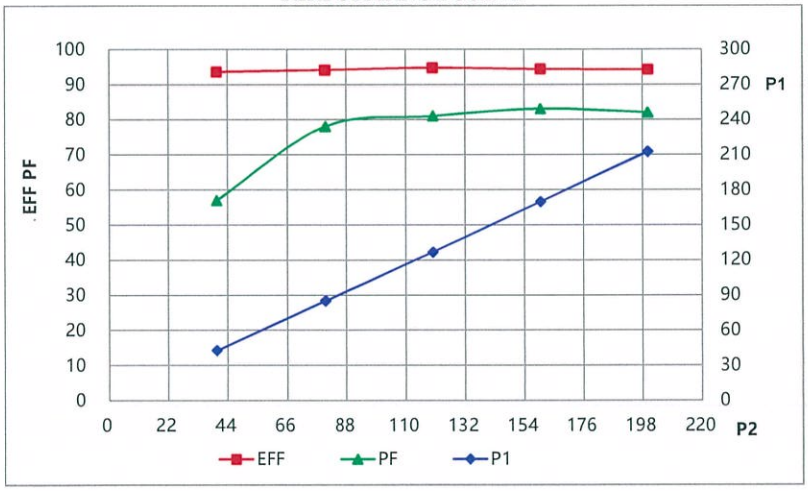
DATE 15/08/2021 MODEL MIDF 355 M2 - 8 POWER 160 KW 8 POLE

EFFICIENCY CLASS IE4

**CURRENT (AMPS) & TORQUE (Nm) VS SPEED CURVE**




**PERFORMANCE CURVE**




P1 = Input power
P2 = Output power
EFF = Efficiency
PF = Power Factor

Customer Approval _____ _____

Signature Date

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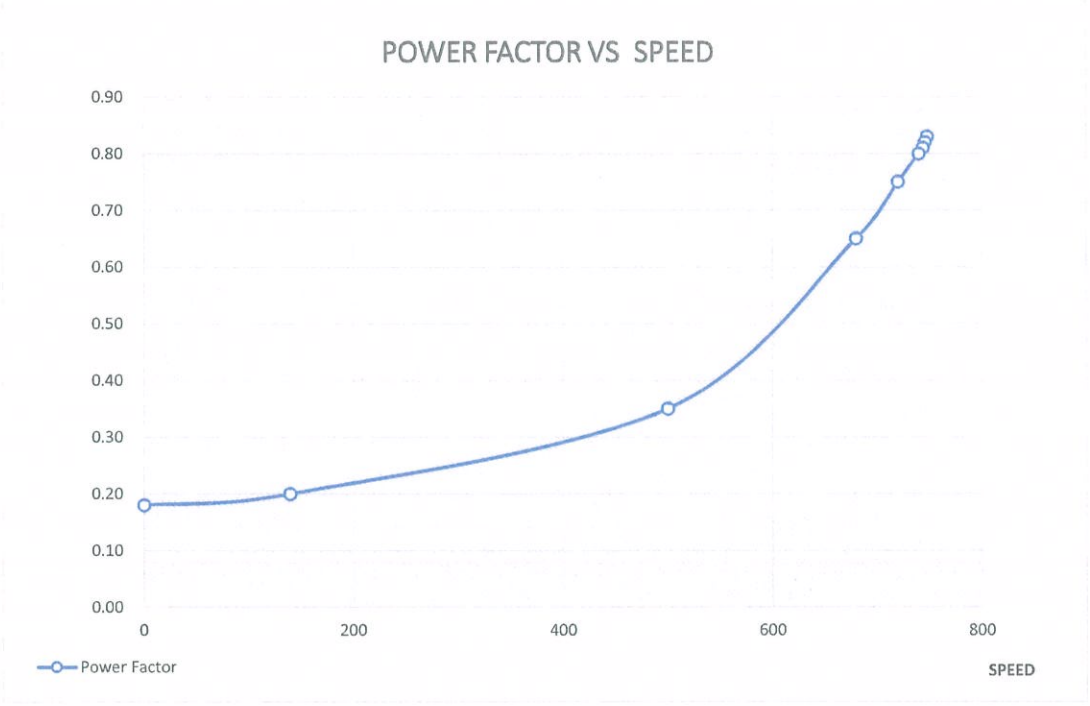
WPIL (Thailand) Co., Ltd.

International Electrotechnique Commission ( IEC Standards )

DATE 20/01/2023 MODEL MIDF 355M2-8 POWER 160 KW 8 POLE

EFFICIENCY CLASS IE4

POWER FACTOR CURVE (AS FUNCTION OF SPEED)




Customer Approval _____ _____

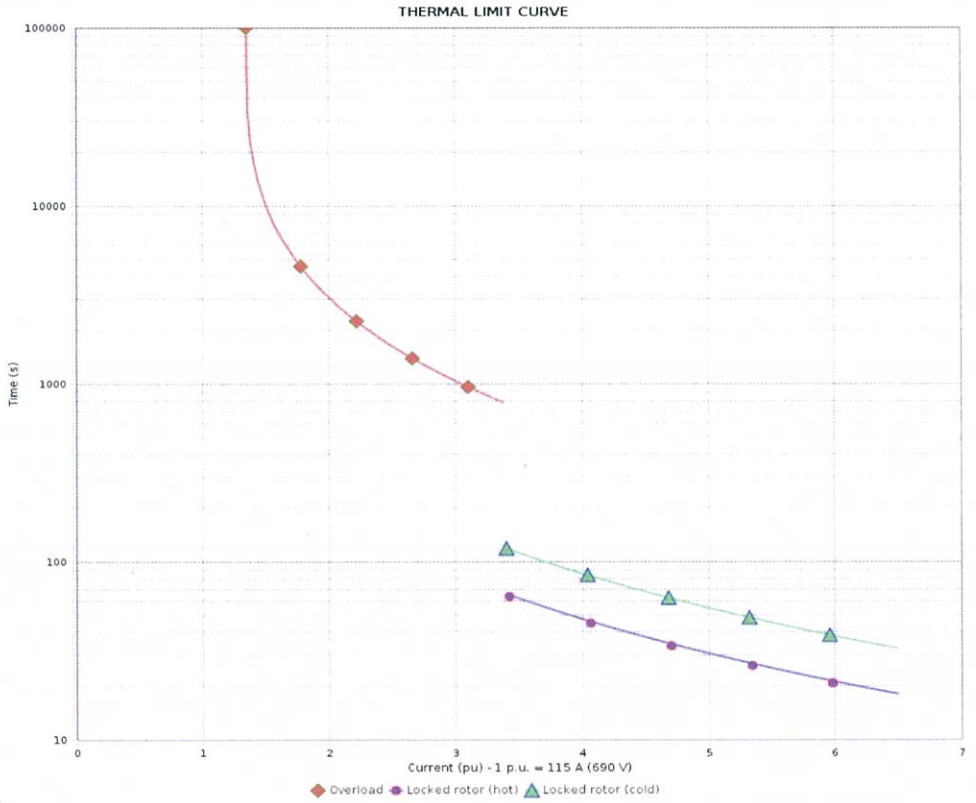
Signature Date

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WPIL (Thailand) Co., Ltd.

| | THERMAL LIMIT &<br>TEMPERATURE CALCULATING | Curve No.<br>1TM_160_8P |
|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Output: | 160 | kW | Pole: | 8 | P |
| Voltage: | 380/660 | V. | Frequency: | 50 | Hz |
| No. Starting (Cold): | 3 | times/hour | Full Load Current: | 310.6 | A |
| No. Starting (Hot): | 2 | times/hour | Efficiency: | 94.3 | % |
| | | | Power Factor: | 0.83 | |
| | | | Load $Wk^2$ | 615.4 | |




MANUFACTURE: MERZ by RONGCHENG RONGJIA POWER CO., LTD.

Temperature Calculating

A = Maximum number of starts per hour

B = Maximum product of starts per hours times

Where: load $Wk^2$

C = Minimum rest or off time in seconds between starts

Allowable starts per hour is the lesser of (1)A or (2)B divided by the load $Wk^2$

Starts per hour ≤ A or B/Load $Wk^2$, whichever is less

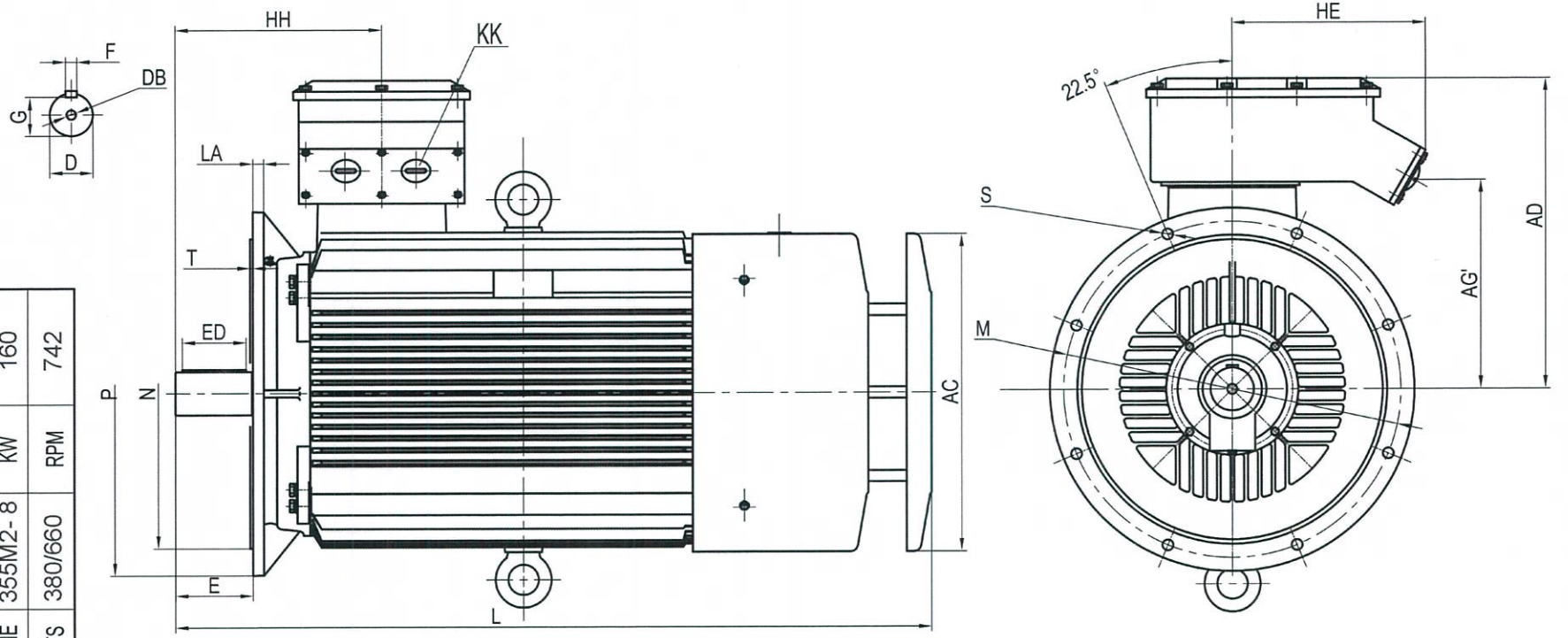
For 160KW 8P motor, load $Wk^2$ = 615.4, A = 5.1

Start per hour = B/Load $Wk^2$ = 1,680 / 615.4 = 2.7

Calculated value is less than A, therefore allowable starts per hour = 2.7 times

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WPIL (Thailand) Co., Ltd.




| CLIENT: MERZ (THAILAND) CO.,LTD. | | | |
|---|---|---|---|
| FRAME | 355M2- 8 | KW | 160 |
| VOLTS | 380/660 | RPM | 742 |

OUTLINE DIMENSIONS FLANGE MOUNTED MOTORS

SHAFT EXT.DE ONLY

| AC | AD | | AG' | HE | HH | KK | L | | | | LA | M | N | P | S | T | | | D | DB | E | ED | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 698 | 685 | | 475 | 436 | 454 | M63×1.5 | 1620 | | | | 24 | 740 | 680 | 800 | 24 | 6 | | | 95 | M24X50 | 170 | 140 | 25 | 86 |

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WPIL (Thailand) Co., Ltd.

URS CERTIFICATE NO.27027 UKAS QUALITY MANAGEMENT 043

CUSTOMER APPROVAL

SIGNATURE

DATE

MIDF 355 M2 - 8
V1
DIMENSION OUTLINE

DWG #

| | | | | | |
|---|---|---|---|---|---|
| DATE | | | | CHECKED BY | |
| DESIGNED BY | | | | APPROVED BY | |
| ISSUE | | DATE | | CERTIFIED BY | |
| ISSUE | | DATE | | CERTIFIED BY | |
| ISSUE | | DATE | | CERTIFIED BY | |
| ISSUE | | DATE | | CERTIFIED BY | |