

30-08-2011
12:30:54

INVENTORY NO

SIGN. AND DATE

REF. DRG. NO.

COMPUTER FILE NAME
I3130097035-S03-R00.DWG

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

DRG. NO. HY-TC-MPA1022-0111

SH. OF 03

2

3

4

5

6

7

8

9

10

11

12

ALL DIMENSIONS ARE IN mm

TYPE OF TURBINE :- K 1401-2

TYPE OF BOILER FEED PUMP :- FK 4E 36

TYPE OF BOOSTER PUMP :- FA 1B 75

WEIGHT OF SINGLE HEAVIEST PIECE FOR

TURBINE

26601

ERECTION in kg.

BFP

11500

MAINTENANCE in kg.

BP

3500

DIRECTION OF ROTATION VIEWED FROM BOOSTER PUMP TO BFP FOR :-

TURBINE

COUNTER CLOCKWISE

BFP

COUNTER CLOCKWISE

BP

CLOCK WISE

NOTE :-

The installation details shown here are only informative. For final installation, ref. the Assembly drawings furnished alongwith the respective equipment.

FOUNDATION BOLT ARRANGEMENT

DETAIL - M

TDBFP GRILLAGE ASSEMBLY

Secondary grouting

Foundation bolt to be wrapped with one side adhesive tape half overlap

75

750

Note: Sealing mortar pouring and bitumen shall be part of ERECTION contract

FOUNDATION BOLT ARRANGEMENT

DETAIL - M1

TDBFP GRILLAGE ASSEMBLY

Secondary grouting

Foundation bolt to be wrapped with one side adhesive tape half overlap

75

750

Note: Sealing mortar pouring and bitumen shall be part of ERECTION contract

PROPOSED TRENCH COVER

DETAIL - B

Chequered plate in civil contractor scope.

Insert plate - L=500

10thk x 100width @1000Pitch

in civil contractor scope.

DETAILS FOR FOUNDATION CALCULATIONS

NOTES :-

1. All dimensions are in mm and elevations are in metres.

2. This foundation drawing is only intended as basis for preparing the layout for foundation (by the BHEL). All civil structural dimensions are tentative and same shall be decided by the civil engineer concerned. The foundation design calculations shall consider all the static and dynamic loads acting simultaneously.

3. Suitable earth quake coefficient applicable for the project site should be adopted for seismic design of foundation as per IS 1893.

4. The foundation block should be designed so that natural frequencies of foundation are sufficiently away from the frequencies of machines. The design shall be as per DIN 4024 standard and IS.2974 part III.

5. Design of the foundation shall consider the allowable limits of vibration behaviour of machines (Group - T) as per VDI 2056.

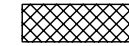
6. Bearing failure loads are less than failure load condition loads specified in col. 7 of the "Forces on Foundation " table.

8. Dynamic loads in axial direction are negligible.

9. Magnitude of unbalanced forces can be taken in vertical and horizontal directions as equal.

10. Max. live load on top of the deck is : 2000 kg./sq.m

11. Foundation block must not be joined to any other structure to avoid vibration transmission.

12. Portions shown thus  in top deck are filled with secondary grouting. The concrete surface in these areas is to be ensured free from dust, grease and oil. Any wooden plugs present in these areas are to be removed. The packing plates below the machine sole plates shall be embedded into a 20 mm thick layer of special grout (local to plates) and are to be levelled horizontally. later, total secondary grouting may be completed.

13. For grouting instructions ref. TC-9-1901 (5 sheets). And for grouting cement specification ref. TC-9-1900.

HORIZONTAL FRICTIONAL FORCES IN kgf

A- Working point of forces at front : 680 mm

B1,B2- Working point of forces at rear : 480 mm

C1,C2- Working point of forces at gear rear : 1067 mm

below turbine axis

2190 Kg

6980 Kg

2190 Kg

6980 Kg

4380 Kg

4380 Kg

6980 Kg

6980 Kg

2190 Kg

2190 Kg

6980 Kg

6980 Kg

THESE FORCES ALTERNATE IN DIRECTION

FOUNDATION BOLT ASSEMBLY

DETAIL - S

Secure by welding or screwing

Tack weld during final assembly

Shims embedded in non-shrinking sealing mortar (Ref. TC-9-1900)

Form work

Secondary grouting filled with non-shrinking mortar after final alignment and tightening of foundation bolt. (Ref. TC-9-1901)

Concrete deck thickness

Square Holes

Square washer

Locked during final assembly

Poured with backfill concrete (sand/cement 15:1)

Foundation bolt wrapped with Bitumen Felt.

Note: Sealing mortar pouring and bitumen shall be part of ERECTION contract

FORCES ON FOUNDATION IN kgf

LOAD POINT

LOAD CONDITION

STATIC LOAD WITHOUT ROTATING WEIGHT

ROTATING WEIGHT

OPERATING WEIGHT OF CONDENSER/VACUUM PULL

* SHORT CIRCUIT LOAD

LOAD DUE TO OPERATING TORQUE

** OPERATING UNBALANCE DYN. LOAD (ROTATING)

** FAILURE MODE LOAD (Blade breakage

Turbine : Blade breakage

1

2

3

4

5

6

7

A

-

1621

-

-

-

660

3960

A1

4665

-

-

-

-491

-

-

A2

4665

-

-

-

+491

-

-

B

-

-

-

-

-

-

-

B1

6845

980

6930

-

-246

399

2394

B2

6845

980

6930

-

+246

399

2394

3A

1000 EACH

315

-

-

± 785 EACH

32

-

C

1100

-

-

-

-

-

-

C1

-

550

-

-

+7294

60

360

C2

-

220

-

-

-7294

86

516

5A

2500 EACH

600

-

-

± 750 EACH

60

-

5B

2500 EACH

600

-

-

-

60

-

** At each supporting point acting in radial direction over 360 deg.

* Loads on either side of TG axis act in opposite directions and the direction changes at 50 cycles/sec.

NOTE :-

1. DOWNWARD FORCES ARE POSITIVE

2. GRADE OF BALANCING: TURBINE: A1.6, BFP, BP: G2.5

3. MASS MOMENT OF INERTIA: TURBINE: 95.42Kg. Sq.m.

BFP : 144 Kg. Sq.m] GD²

BP : 8.4 Kg. Sq.m]

SPEEDS:

EQUIPMENT

OPERATING MARGIN

RATED DESIGN

TRIP SPEED

CRITICAL SPEEDS

TURBINE

1495 TO 5700

5550

6105

9415

STATUS : PRELIMINARY

CUSTOMER: THE WEST BENGAL POWER DEVELOPMENT CORP. LTD.

CUSTOMERS CONSULTANT: DEVELOPMENT CONSULTANTS, KOLKATTA.

PROJECT: SAGARDIGHI THERMAL POWER PROJECT PHASE II EXTENSION UNITS-3&4(2 X 500MW).

DRN.

C.BALAJI

29.08.11

NO.OF VAR.

CHD.

G.N.PAWAR

29.08.11

-N.A.-

APPD.

GNP/MAR

29.08.11

-N.A.-

NAME

SIGN.

DATE

NO.OF

BHARAT HEAVY ELECTRICALS LTD.

HYDERABAD

29.08.11

-N.A.-

DEPT.

TCEP

UNTO.

DIMS.

GR.

SCALE

WEIGHT (KG)

REF. TO ASSY. DRG.

ITEM NO.

NO.OF ITEMS

415

G/M/F

1: 30

-N.A.-

-N.A.-

-N.A.-

-N.A.-

-N.A.-

TITLE

CARD CODE

DRAWING NO. (I-313-01-01935)

REV.

FOUNDATION ARRANGEMENT

N.A.

HY-TC-MPA1022-0111

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SHT. No 03

NO. OF SHT. 03

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