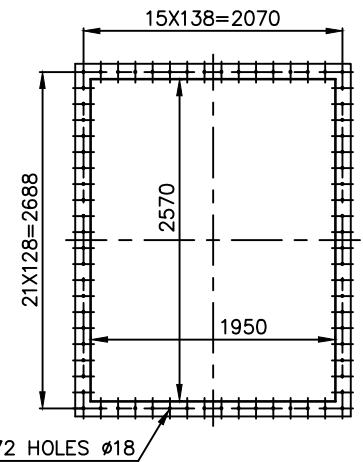
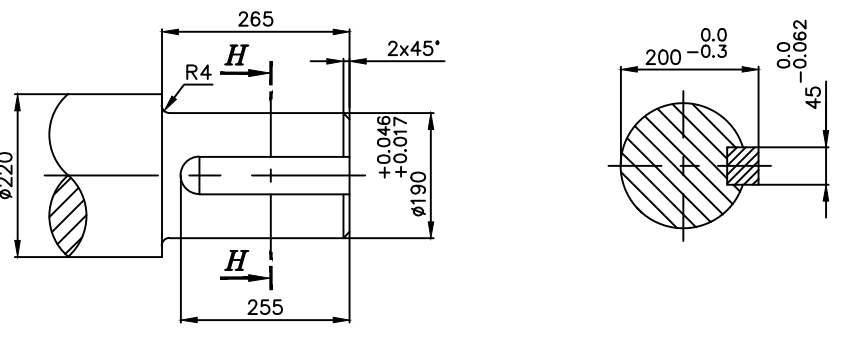


SUCTION FLANGE

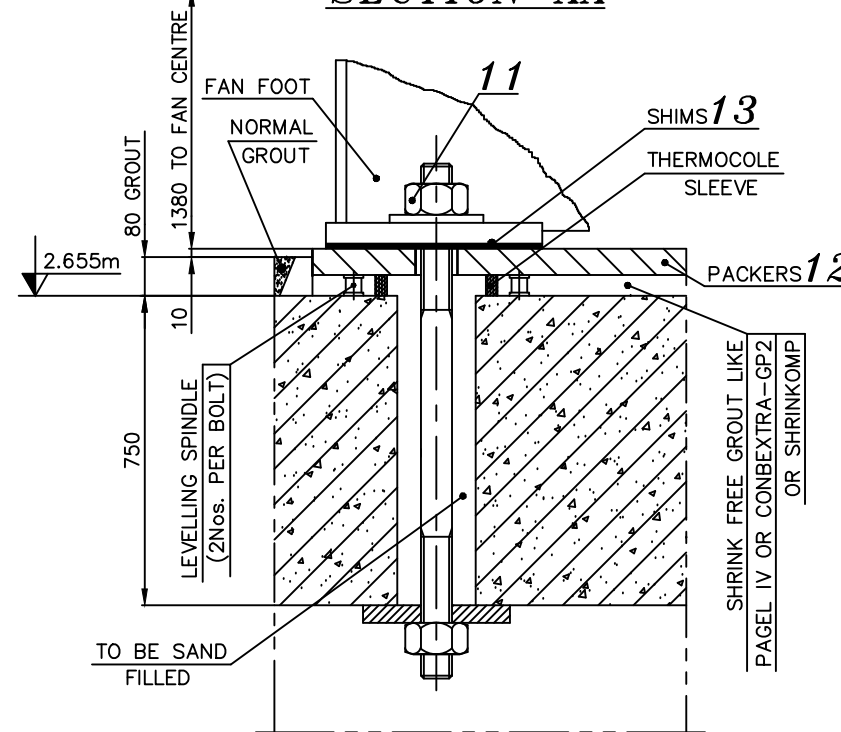


ELEVATION

MOTOR SHAFT END SECTION-HH

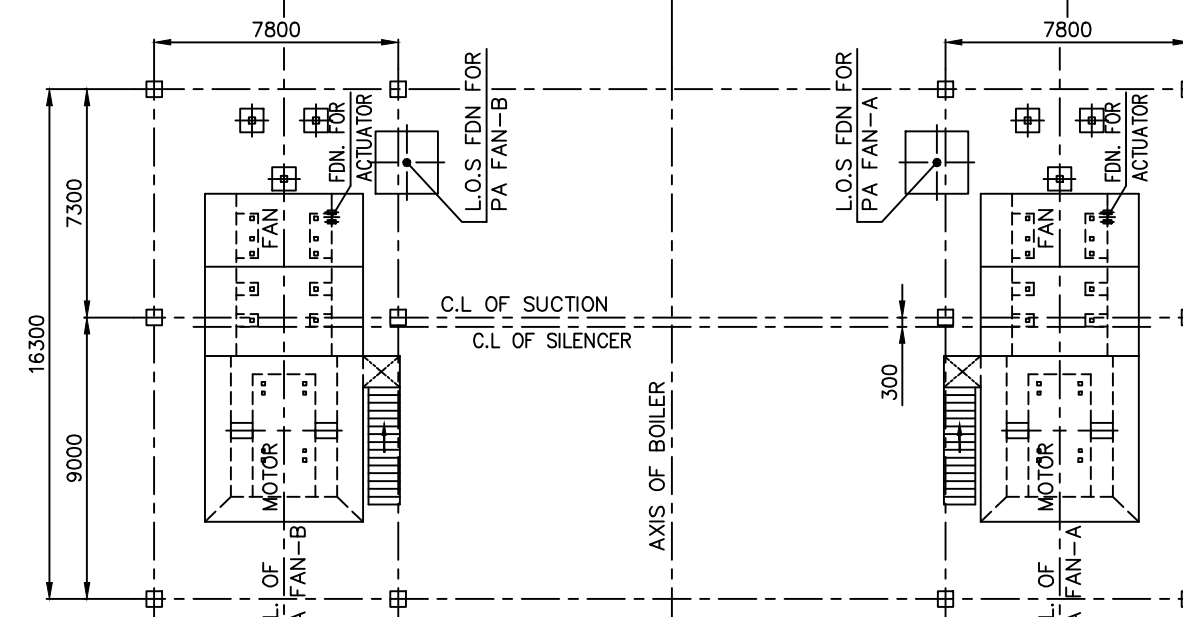


SECTION-AA

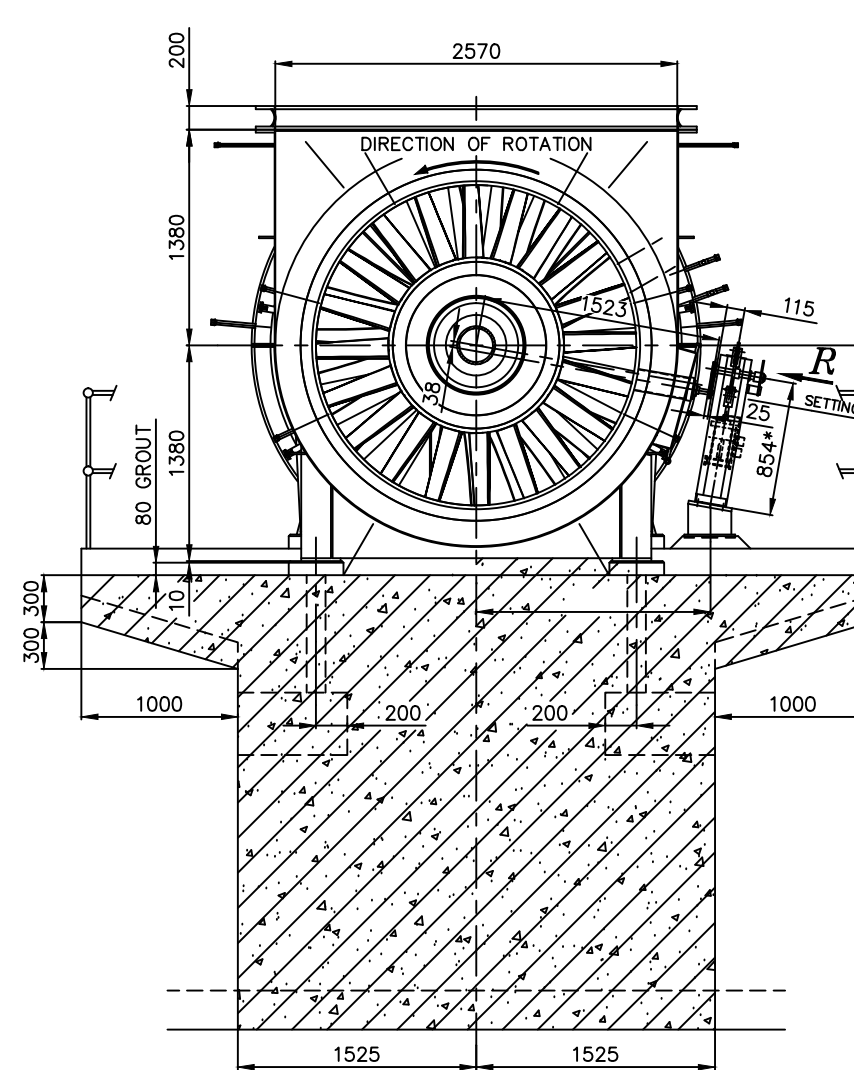


KEY PLAN

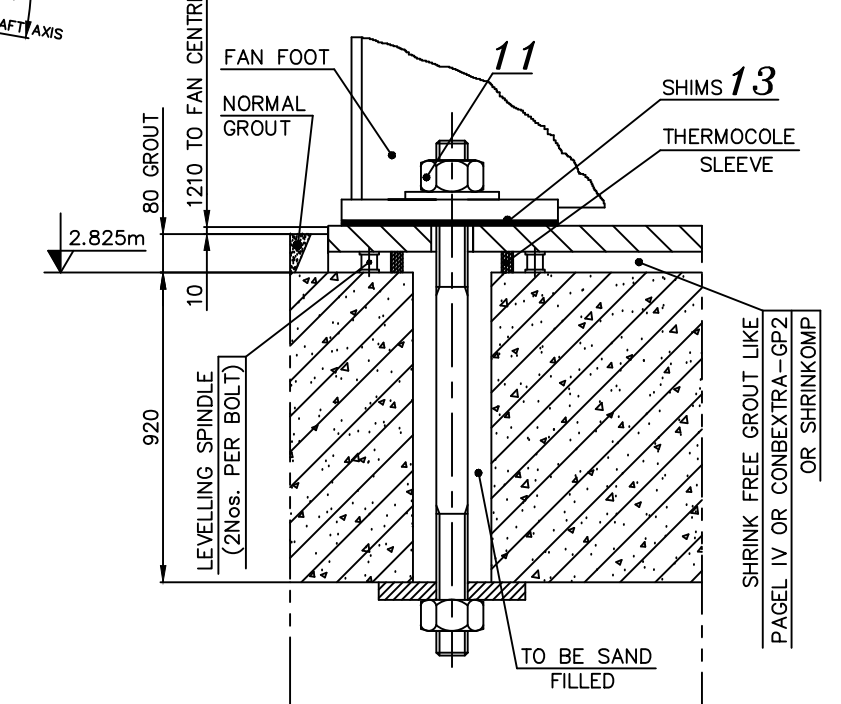
REFER DRG. No. 0-00-022-77365
(KEY PLAN SHOWN IS INFORMATIVE ONLY. FOR EXACT LOCATION, REFER GENERAL ARRANGEMENT OF BOILER SECTIONAL PLAN - 'AA')



SECTION-FF



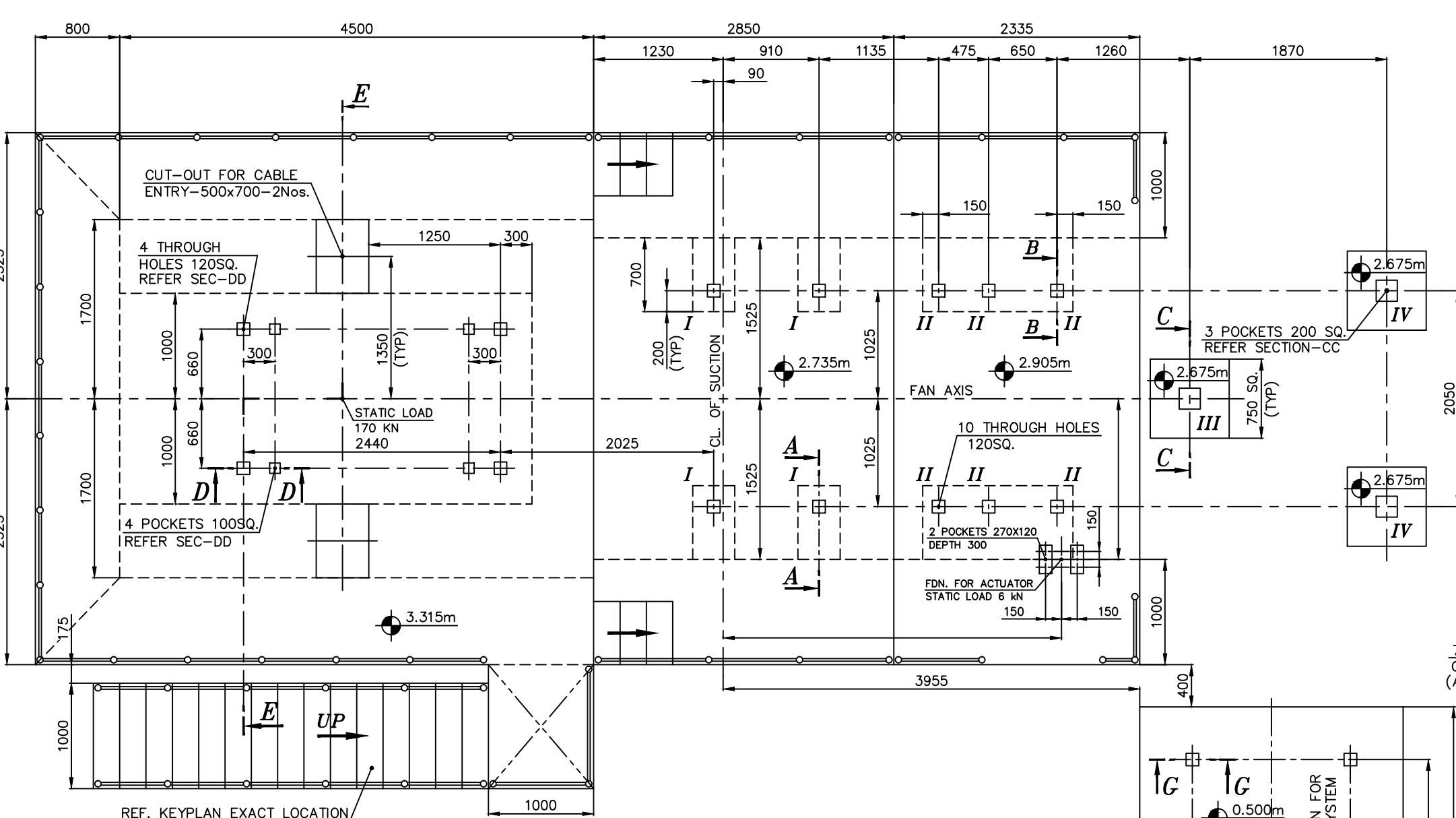
SECTION-BB



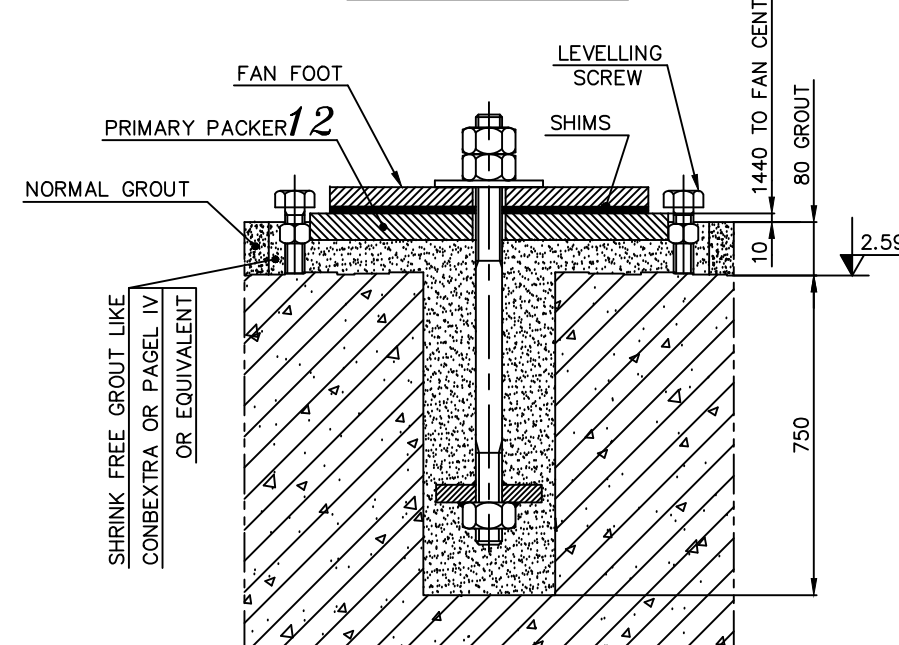
NOTES:-

- THE LOADS INDICATED ON FOUNDATION ARE WITHOUT ALLOWANCES FOR VIBRATIONS. CIVIL DESIGNERS ARE RESPONSIBLE FOR PROPER DESIGN OF FOUNDATION TAKING INTO ACCOUNT OF THE ALLOWANCES FOR VIBRATION ALSO.
- THE DIFFERENT NATURAL FREQUENCIES OF THE FOUNDATION HAVE TO BE 20% AWAY FROM THE SPEED FREQUENCY. $f_{nmax} = n/60$ AND 15% AWAY FROM THE DOUBLE OF THE SPEED FREQUENCY. $2 \times f_{nmax}$. THIS MEANS: $0.8 \times f_{nmax}$ TO $1.2 \times f_{nmax}$ AND $0.85 \times (2 \times f_{nmax})$ TO $1.15 \times (2 \times f_{nmax})$.
SPEED FREQUENCY $f_{nmax} = 25$ HZ
($2 \times f_{nmax}$) = 50 HZ
- THE STIFFNESS OF THE FOUNDATION HAS TO BE AT LEAST $C_F > 1.0E+06$ N/mm FOR EACH LOAD POINT OF THE FAN IN LONGITUDINAL, TRANSVERSAL AND VERTICAL DIRECTIONS RELATING TO THE FAN AXIS. IT HAS TO BE TAKEN INTO CONSIDERATION THAT ON SETTLING THE FOUNDATION THE TOTAL NATURAL FREQUENCIES OF THE FOUNDATION CAN ARISE DUE TO THE SOIL COMPACTION AND THE RESULTING INCREASES OF THE ELASTIC MODULUS. AN UNEVEN SETTLING OF THE FOUNDATION HAS TO BE EXCLUDED.
- THE RATIO OF THE FOUNDATION MASS TO THE ROTOR MASS HAS TO BE GREATER THAN 25.
- ADOPT IS: 2974 / PART-IV FOR THE FOUNDATION DESIGN.
- THE CONNECTING DUCTS AT INLET AND OUTLET OF FAN MUST BE SELF SUPPORTED AND SHOULD NOT BE WELDED WITH EXPANSION JOINTS.
- FOUNDATION POCKETS SHOULD BE PERPENDICULAR TO THE FLAT SURFACES OF FOUNDATION.
- ACCURATE TEMPLATES SHALL BE USED FOR LOCATING CORES FOR POCKET HOLES TO ENSURE THEIR DIMENSIONAL ACCURACY.
- TOLERANCE BETWEEN ANY TWO POCKET CENTRES IS ± 5 mm.
- TOLERANCE ON CONCRETE LEVELS ± 5 mm.
- IN AREAS WHERE SOLE PLATES AND ANCHOR PLATES ARE TO BE INCORPORATED IN FOUNDATION CONCRETE, THE SIZE OF THE COARSE AGGREGATE USED SHALL NOT EXCEED 20 mm AND DOWN GRADED TO FACILITATE CHIPPING AND SCRAPPING AND THEREBY ENSURING MAXIMUM CONTACT ON THE MATING AREAS.
- NON-SHRINK GROUT IS TO BE USED. REFER GENERAL SPECIFICATIONS ISSUED BY BHEL/RANIPET FOR NON-SHRINK GROUT. THIS ALSO CONTAINS THE PREPARATIONS OF PRIMARY PACKERS & SHIMS.
- GROUTING SHOULD BE DONE ONLY AFTER FINAL ALIGNMENT OF FAN.
- ELEVATIONS & POCKET DEPTH SHOWN IN FOUNDATION PLAN ARE INCLUDING GROUTING THICKNESS.
- GROUTING IS IN THE SCOPE OF ERECTION GROUP/CONTRACTOR.
- HANDRAILS, STEEL PLATFORMS & CANOPY FOR MOTOR AND THEIR EMBEDMENTS ARE IN THE SCOPE OF BHEL/TRICHY.
- FAN FOUNDATION SHOULD NOT BE USED AS SUPPORT FOR OTHER STRUCTURES OR EQUIPMENTS.
- FOUNDATION CONFIGURATION SHOWN IN THIS DRAWING IS ONLY INFORMATIVE/TYPICAL. TYPE AND DETAILS OF FOUNDATION ARE TO BE FINALISED BY CIVIL DESIGNERS.
- FOR MOTOR ERECTION, REFER MOTOR SUPPLIER'S ERECTION MANUAL.
- BASE FRAME, SOLE PLATE, FOUNDATION BOLTS, FDN. SLEEVE & FASTENERS RELATED TO MOTORS WILL BE IN THE SCOPE OF MOTOR SUPPLIER (BHEL BHOPAL UNIT)

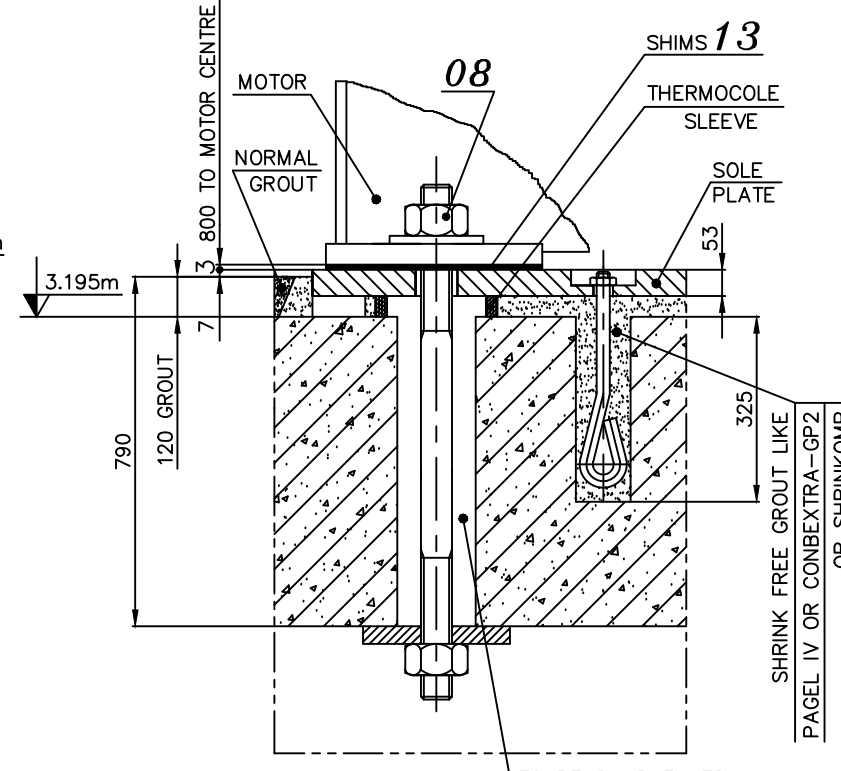
FOUNDATION PLAN



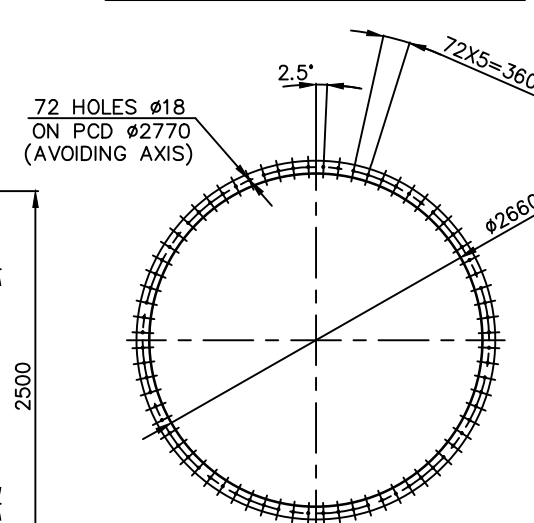
SECTION-CC



SECTION-DD



DELIVERY FLANGE



30/2	11154	Stat. and dyn. forces caused by air stream of suction box in vert. direction
30/1	26265	Stat. and dyn. forces caused by air stream of suction box in horiz. direction
16	35729	Axial thrust of the fan (due to pressure increase)
15	255055	Load during starting sequence by short-circuit torque of the motor
14	-	Foundation
13/2	21950	Max. load when lifting the fan housings upper part
13/1	20780	Max. load when lifting the rotor assembly
12	90070	Unbalance in case of damage
11	11208	Max. rotating load due to unbalance of the fan rotor
10	-	Oil supply unit with oil filling
9	-	Frame of the motor
8	-	Drive motor
7	3335	Radial load on motor shaft
6	2439	Axial thrust on motor shaft for motor with fixed bearing
5	680	Intermediate shaft with coupling
4	3030	Diffuser with tail fairing
3	2118	Complete rotor assembly
2	5050	Fan housing with straightener vane section
1	3130	Suction box with nose fairing & inlet nozzle and intermediate shaft cover
ID. NO.	(m) MASS IN (KG) INCLUDING INSULATION	(F) FORCE IN (N)
		DESIGNATION

FOUNDATION LOAD DATA

LOAD POINT	STATIC VERTICAL FORCE [N]	DYNAMIC VERTICAL FORCE [N]	STATIC HORIZONTAL IN AXIAL DIRECTION FORCE [N]	STATIC HORIZONTAL ACROSS TO AXIS FORCE [N]	DYN. HORIZONTAL ACROSS TO AXIS FORCE [N]
I	+29100	± 800	± 9000	± 2400	± 800
II	+33000	± 2300	± 6000	± 1300	± 1900
III	+16700	± 1400	± 3300	± 3300	± 1400
IV	+11500	± 900	± 3300	± 3300	± 900

SL NO	DESCRIPTION	MATERIAL	QTY.
15	OUTLET EXPANSION JOINT	IS:2062 & FABRIC EXP.PIECE	1
14	INLET EXPANSION JOINT	IS:2062 & FABRIC EXP.PIECE	1
13	SHIMS	ASTM A240	AS REQD.
12	PRIMARY PACKER	IS : 2062	7
11	FOUNDATION FASTENERS FOR FAN	ASTM A105	13
10	COUPLING GUARD	IS : 2062	1
09	SPACER COUPLING	STEEL	1
08	MOTOR WITH FNDN. FASTENERS	4375 KW /1495 RPM	1
07	BLADES	ENAC-AISI9MgSt6	40
06	IMPELLER HUB	P460 NH	1
05	HOUSING CORE	IS : 2062	1
04	DIFFUSER	IS : 2062	1
03	OUTLET GUIDE VANE ASSY.	IS : 2062	1
02	IMPELLER HOUSING	IS : 2062	1
01	SUCTION CHAMBER	IS : 2062	1

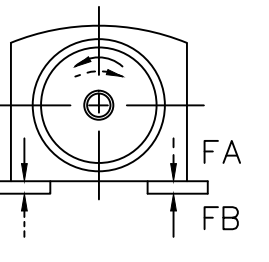
BILL OF MATERIAL

MOTOR BEARING LUBRICATION DETAILS:

	DE	NDE
BEARING SIZE	$\phi 180 \times 150$	$\phi 180 \times 150$
OIL FLOW RATE	7 LPM	7 LPM
MAX. OIL INLET PRESSURE	0.2 TO 0.5 Kg/cm ²	0.2 TO 0.5 Kg/cm ²
MAX. OIL INLET TEMP.	45 °C	45 °C
OIL GRADE	ISO VG 68 OR EQUI.	ISO VG 68 OR EQUI.
LUBRICATION TYPE	FORCED OIL LUBRICATION	

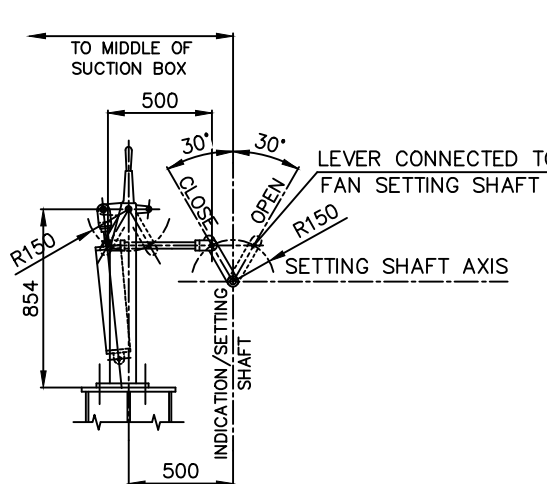
FOUNDATION LOAD OF MOTOR

MAX. FORCE CALCULATED FROM THE MAX. IMPULSE TORQUE - FM = 170 KN
FORCE EXERTED BY THE WEIGHT ON EACH SIDE----- FG = 83 KN
FOUNDATION LOAD ON EACH SIDE COMPRESSION - FA = FM+FG = 253 KN
TENSILE FORCE ----- FB = FM-FG = 87 KN
THE FORCE OCCUR ALTERNATIVELY 50 TIMES PER SECOND INDEPENDENT OF THE DIRECTION OF ROTATION.



VIEW-R*

(ON ACTUATOR & ITS LINKAGE)



DIMENSIONS / ITEMS MARKED WITH "*" WILL BE CONFIRMED LATER.

CUSTOMER Nos. R827 TO R831

CUSTOMER:	TELANGANA STATE POWER GENERATION CORPORATION LTD.
PROJECT :	YADADRI THERMAL POWER STATION-5X800MW NALGONDA DIST., TELANGANA STATE, INDIA
	BHARAT HEAVY ELECTRICALS LTD. BOILER AUXILIARIES PLANT RANIPET - 632 406

DEPT CODE	NAME	SIGN	DATE
DRN	P.SARAVANAN	Sd/-	27.11.2017
DESIN	PRASANNA	Sd/-	28.11.2017
CHD	PRASANNA	Sd/-	28.11.2017
APPD	P.M.JAVID	Sd/-	28.11.2017

TITLE	GA DRAWING FOR PA FAN WITH FOUNDATION PLAN AND LOADING DATA - PAF 20.5/11.2-2
DEPT.	SCALE N.T.S
SIGN	DRAWING NO. 1-00-100-29052
	SHEET 1 OF 1 REV. 00

Size A1