



13	SHIMS	S.S	AS REQD.
12	PRIMARY PACKER	IS : 2062	AS REQD.
11	FOUNDATION FASTENERS FOR FAN	ASTM A105	19.
10	COUPLING GUARD	IS : 1079	1
09	SPACER COUPLING	STEEL	1
08	MOTOR WITH FDN. FASTENERS	5925 KW/597 RPM	1
07	BLADES	GGG 40 OR EQUIVALENT (MODULAR CAST IRON)	16
06	IMPELLER HUB	LOAD RING: WetE500 OR EQUIVALENT Welding hub, Support ring, Others: P355NH OR EQUIVALENT	1
05	HOUSING CORE (FAN HOUSING HUB)	IS : 2062 OR EQUIVALENT	1
04	DIFFUSER	IS : 2062 OR EQUIVALENT	1
03	OUTLET GUIDE VANE ASSY.	IS : 2062 OR EQUIVALENT	1
02	IMPELLER HOUSING	IS : 2062 OR EQUIVALENT	1
01	SUCTION CHAMBER	IS : 2062 OR EQUIVALENT	1
SL NO	DESCRIPTION	MATERIAL	QTY.

BILL OF MATERIAL			
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MOTOR BEARING DATA:			
TYPE	-	SLEEVE BEARING	
SIZE	-	DE & NDE - #250	
LUBRICANT	-	IOC SERVOPRIME-VG 46 OR EQUIVALENT	
LUBRICATION	-	RING LUBRICATED	
OIL FILLING QTY.	-	17.5 LITRE PER BRG.	
MOTOR COOLER DATA:			
WATER FLOW RATE (FOR TWO ELEMENTS)	=	350 LPM	
WATER INLET / OUTLET TEMPERATURE	=	39°C/45°C	
PRESSURE DROP	=	380 mbar	
OPERATING PRESSURE	=	max. 6 bar	
TEST PRESSURE	=	9 bar	

KEY PLAN

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 FREQUENCY OF THE FOUNDATION HAVE TO BE 20% AWAY FROM THE SPEED FREQUENCY, $f_{max} = n/60$ AND 15% AWAY FROM THE DOUBLE OF THE SPEED FREQUENCY, $2 \times f_{max}$. THIS MEANS : $0.8 \times f_n$ TO $1.2 \times f_n$ AND $0.85 \times (2 \times f_n)$ TO $1.15 \times (2 \times f_n)$. SPEED FREQUENCY $f_{max} = 9.8$ HZ ($2 \times f_{max} = 19.7$ HZ)
- THE STIFFNESS OF THE FOUNDATION HAS TO BE ATLEAST $CF > 1.0E+06$ N/mm IN LONGITUDINAL, TRANSVERSAL AND VERTICAL DIRECTIONS RELATING TO THE FAN AXIS. IT HAS TO BE TAKEN INTO CONSIDERATION THAT ON SETTLING OF 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 ± 25 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.
- ELEVATION & POCKET DEPTHS SHOWN IN FOUNDATION PLAN ARE INCLUDING GROUTING THICKNESS.
- GROUTING IS IN SCOPE OF ERECTION GROUP OF BHEL/AUTHORISED AGENCY.
- HANDRAILS, STEEL PLATFORMS, STAIRS, STEEL LADDERS & 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 ARE IN THE SCOPE OF MOTOR SUPPLIER (BHEL BHOPAL UNIT)
- FOUNDATION SLEEVE OF THE MOTOR IS TO BE EMBEDDED IN THE CONCRETE AS PER THE DIMENSION SHOWN. AFTER CONCRETE HAS SET, THE EXCESS PROTRUDING HEIGHT TO BE SUITABLY CUT-OFF.

FAN DETAILS:-

TYPE	: SAF 44/20-2
NO. OF FANS PER BOILER	: TWO (IDENTICAL)
WEIGHT OF ROTATING PARTS	: 12500 Kg
GO ² OF FAN	: 30000 kg.m ²
SPEED OF FAN	: 590 RPM

MOTOR DETAILS:-

MAKE	: M/s. BHEL/BHOPAL
RATING	: 5925 KW / 597 RPM
FRAME SIZE	: 1TF4553-3
WEIGHT OF MOTOR	: 30000 Kg
GO ² OF MOTOR	: 4760 kg.m ²
MOTOR DRG. NO.	: 1 402 00 41258

LOADING ON MOTOR FOUNDATION

REACTION DUE TO WEIGHT ON EACH SIDE (G)	= 150 kN
MAX. SHORT CIRCUIT FORCE (MS)	= 508 kN
REACTION DOWNWARD (MS+G)	= 658 kN
REACTION UPWARDS (MS-G)	= 358 kN

MOTOR NOTES:-

- THE FORCES OCCUR ALTERNATELY INDEPENDENT OF THE DIRECTION OF ROTATION. (REFER LOADING ON FOUNDATION TABLE).
- THE TRANSFER OF VIBRATION FROM SURROUNDING EQUIPMENT HAS TO BE AVOIDED BY SUITABLE LAYOUT OF FOUNDATION.
- THE FIRST NATURAL FREQUENCIES OF THE FOUNDATION AFTER ERECTION OF THE MACHINE MUST DIFFER ATLEAST +25% & -20% FROM ONE & TWO TIMES RUNNING SPEED FREQUENCIES & TWO TIMES THE ELECTRICAL FREQUENCY.

00	ISSUED FOR NTPC REVIEW	16.09.2013	P.S.N	S.AGARWAL	V.P.SHYAM
REV	DESCRIPTION	DATE	DRAWN BY	CHECKED BY	APPR'D BY
NTPC DRG NO. 9572-102-RPT-PVM-B-008					
CUSTOMER (भारत भारती) NTPC (A Government of India Enterprise)					
PROJECT GADARWARA SUPER THERMAL POWER PROJECT STAGE-1 2 x 800MW STEAM GENERATOR PACKAGE					
BHARAT HEAVY ELECTRICALS LIMITED., BOILER AUXILIARIES PLANT RANIPET - 632 406					
TITLE GA DRAWING FOR ID FAN WITH FOUNDATION PLAN AND LOADING DATA SAF 44/20-2					
ALL DIMENSIONS IN MILLIMETRE. BHEL DRG. NO. 1-00-099-28803 00					
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