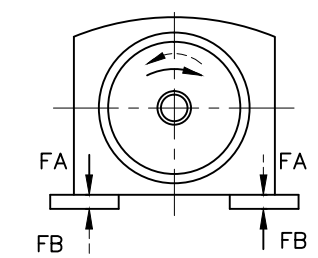


01. THE LOADS INDICATED ON FOUNDATION ARE WITHOUT ALLOWANCES FOR VIBRATIONS. CIVIL DESIGNERS/CONSULTANTS ARE RESPONSIBLE FOR PROPER DESIGN OF FOUNDATION TAKING INTO ACCOUNT OF THE ALLOWANCES FOR VIBRATION ALSO.
02. THE NATURAL FREQUENCY OF THE FOUNDATION SHOULD BE MINIMUM +20% AWAY FROM THE OPERATING FREQUENCY OF THE FAN. THE NATURAL FREQUENCY OF THE CONNECTING DUCT AND SUPPORTING STRUCTURE SHOULD BE CLEARLY AWAY FROM THE OPERATING FREQUENCY OF THE FAN.
03. ADOPT IS: 2974 / PART-IV FOR THE FOUNDATION DESIGN.
04. THE CONNECTING DUCTS AT INLET AND OUTLET OF FAN MUST BE SELF SUPPORTED AND SHOULD NOT BE WELDED WITH EXPANSION JOINTS.
05. FOUNDATION POCKETS SHOULD BE PERPENDICULAR TO THE FLAT SURFACES OF FOUNDATION.
06. ACCURATE TEMPLATES SHALL BE USED FOR LOCATING CORES FOR POCKET HOLES TO ENSURE THEIR DIMENSIONAL ACCURACY.
07. TOLERANCE BETWEEN ANY TWO POCKET CENTRES IS ± 5 mm.
08. TOLERANCE ON CONCRETE LEVELS ± 2 mm.
09. IN AREAS WHERE SLOE 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.
10. 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.
11. GROUTING SHOULD BE DONE ONLY AFTER FINAL ALIGNMENT OF FAN.
12. ELEVATION LEVELS & POCKET DEPTH SHOWN IN FOUNDATION PLAN INCLUDE GROUTING THICKNESS.
13. GROUTING IS IN THE SCOPE OF ERECTION GROUP/CONTRACTOR.
14. CANOPY OF MOTOR, HANDRAILS, STEEL PLATFORMS, STEEL LADDERS & THEIR EMBEDMENTS ARE IN THE SCOPE OF BHEL/TRICHY.
15. FAN FOUNDATION SHOULD NOT BE USED AS SUPPORT FOR OTHER STRUCTURES OR EQUIPMENTS.
16. FOUNDATION CONFIGURATION SHOWN IN THIS DRAWING IS ONLY INFORMATIVE/TYPICAL. TYPE AND DETAILS OF FOUNDATION ARE TO BE FINALISED BY CIVIL DESIGNERS/CONSULTANTS.
17. FOR MOTOR ERECTION, REFER MOTOR SUPPLIER'S ERECTION MANUAL.

TYPE	:	RADIAL, DOUBLE SUCTION, BACKWARD CURVED
MODEL	:	NDVZ 25
WEIGHT OF FAN WITHOUT MOTOR & COUPLING	:	22000 kg
WEIGHT OF ROTATING PARTS OF FAN	:	6500 kg
GD ² OF FAN	:	13500 kg.m ²
OPERATING SPEED OF FAN	:	VARIABLE 300 – 1450RPM
NO. OF FANS PER BOILER	:	ONE PER BOILER $\frac{1}{1}$
MAX. WEIGHT TO BE HANDLED FOR MAINTENANCE	:	6500 Kg (APPROX)

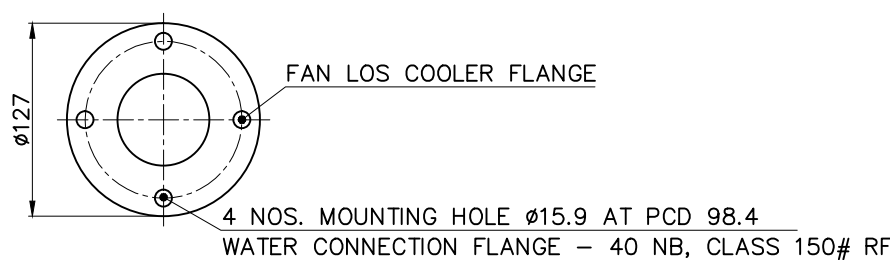
MAKE	:	M/s. BHEL, BHOPAL
TYPE	:	1LA7905-4, TETV, IP55
RATING	:	3050 kw / 1493 RPM /6600 V. 02
WEIGHT OF MOTOR	:	14500 KG
WEIGHT OF ROTATING PARTS	:	3000 KG
GD ² OF MOTOR	:	508 KGM ²
MOTOR DRAWING NO.	:	1 402 00 41044
BEARINGS	:	NU236 + 6236 MC 3
<div style="display: inline-block; vertical-align: middle;"> NDE </div> <div style="display: inline-block; vertical-align: middle; font-size: 2em; margin: 0 5px;">}</div>	:	NU232
LUBRICATION	:	GREASE, SERVOGEM - 3 OR EQUIVALENT.

MAX.FORCE CALCULATED FROM THE MAX. IMPULSES TORQUE - FM = 125.0 kN
 FORCE EXERTED BY THE WEIGHT ON EACH SIDE-----FG = 72.5 kN
 FOUNDATION LOAD ON EACH SIDE COMPRESSION -----FA = FM + FG = 197.5 kN
 TENSILE FORCE -----FB = FM - FG = 52.5 kN
 THE FORCES OCCUR ALTERNATIVELY INDEPENDENT OF THE DIRECTION OF ROTATION.



TYPE OF MACHINE	: VARIABLE SPEED HYDRAULIC COUPLING
COUPLING SIZE	:
TOTAL WEIGHT WITHOUT OIL	: 3650 kg
WEIGHT OF ROTATING PARTS WITH OIL	: 1200 kg
DYNAMIC FOUNDATION LOADING	: 800 N

PRIMARY WITH OIL	: 100 kgm ²
SECONDARY WITH OIL	: 23 kgm ²



FAN LOS COOLER FLANGE

4 NOS. MOUNTING HOLE $\phi 15.9$ AT PCD 98.4
WATER CONNECTION FLANGE - 40 NB, CLASS 150# RF

4600

1070

1220

834

5.0 KN

200 (TYP.)

203

1840

900

900

1215

940

1480

2600

1750

750

1750

750

1000

3.090m

2180

1250

1250

300

700

1100

1100

4 POCKETS 100 SQ. REFER SEC-DD

4 THROUGH HOLES 120 SQ. REF. SEC-DD

CUTOUT FOR CABLE ENTRY 300SQ.-2NOS.

4 POCKETS 360X160 DEPTH 410

4 THROUGH HOLES 120 SQ.

STATIC LOAD 50 KN

1640

900

900

1215

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750

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900

1215

940

1480

454 454

57 57

31 31

WATER OUTLET

WATER INLET

USE FLEXIBLE HOSE WITH FP2 FEMALE UNIONS
FOR CONNECTING THE WATER LINES WITH INLET AND
OUTLET OF THE BRG. (BHEL/BAP SCOPE OF SUPPLY)

COOLING WATER REQUIREMENT : 6m³/hour/FAN

Technical drawing of a fan lube oil supply unit. The drawing shows a cross-section of the unit installed in a concrete base. Key components and dimensions include:

- FAN LUBE OIL SUPPLY UNIT**: The main assembly being installed.
- FDN. BOLT M16X300**: A foundation bolt passing through the unit into the concrete base.
- 0.500m**: The height of the unit above the concrete base.
- 0.000m**: The height of the unit below the concrete base.
- 100 SQ**: The square base of the unit.
- SHRINK FREE GROUT**: The material used to fill the space around the unit's base.

Technical drawing of a shaft-hub assembly. The shaft has a diameter of $\phi 150 \times 6$. The hub has an outer diameter of 300 and an inner bore of 280. The hub's bore has a tolerance of -0.2 and a surface finish of $22 \mu\text{m}$. The shaft's diameter has a tolerance of $40 \mu\text{m}$.

Technical drawing showing the dimensions and tolerances for a shaft and a hole. The shaft has a diameter of $\phi 180$ and a length of 300. The hole has a diameter of $\phi 170$ and a length of 285. The tolerances for the hole diameter are $+0.040$ and -0.015 . The tolerances for the shaft diameter are $+0.000$ and -0.300 . The distance between the end of the shaft and the end of the hole is 5.

THERMOCOUPLE SLEEVE (TYPICAL)
(TO BE ARRANGED BY SITE)

PRIMARY PACKER
(TYPICAL)

LEVELLING SCREW

REMOVE THE BOLTS
AFTER ERECTION

SHIMS

SHRINK FREE GROUT LINE

AGEL IV OR CONCREXTRA-CP-2
OR SHRIKOMP

HAMMER DRESSED

TO BE SAND FILLED

Technical drawing of a sleeve and sole plate assembly. The drawing shows a cross-section of a concrete wall with a vertical sleeve and a horizontal sole plate. Labels include: NORMAL GROUT, SHIMS, THERMOCOLE, SLEEVE, SOLE PLATE, 10, 795, 106, GROUT PACKERS, 125, 10, TO BE SAND FILLED, SHINK FREE GROUT LIKE, PAGES IV OR CONCRETE, and CP2 OR SHINKOMP. Dimensions are given in inches.

Technical drawing of a rectangular plate. The overall dimensions are 17x160=2720 (length) and 6x150=900 (width). The inner dimensions are 2820 (length) and 950 (width). The thickness is 88. The drawing includes dimension lines and arrows indicating the measurements.

Diagram illustrating the connection between a pile and a pile cap, showing various components and dimensions:

- ADJUST HEIGHT TO MAINTAIN CLEARANCE:** Dimension indicating the height adjustment for clearance.
- 0.1 TO 0.5:** Dimension indicating the clearance height.
- SLEEVE:** Component surrounding the pile.
- CASING FOOT:** Component at the base of the casing.
- BASE PLATE:** Component supporting the pile.
- 10:** Dimension indicating the height of the base plate.
- 60:** Dimension indicating the height of the casing foot.
- SHRINK FREE / GROUT:** Dimension indicating the height of the shrink-free grout.
- NORMAL GROUT:** Dimension indicating the height of the normal grout.
- TO BE SAND FILLED:** Dimension indicating the height of the sand-filled section.

SECTION CC

106 GROUT

3.090m

1100

1100

700

700

30°

30°

CUT-OUT FOR CABLE ENTRY-2 Nos.

200

750

750

1100

1100

1750

1750

0.000m

MOVABLE CHANNELS 100X50 TO FORM CYLINDER TO EXACTLY FIT SITE (SUPPLIED LOOSE)

CHANNEL 100X50; L=750

GROUTED ALONG WITH FDN. EMBEDMENT

SHRINK FREE GROUT LIKE PAGEL IV OR CONEXTRA GP2 OR SHRINKOMP



FDN. BOLT

Dimensions: 100, 100, 100, 450, 50

Technical drawing of a rectangular structure, likely a window or door frame, showing dimensions in millimeters (mm). The drawing includes a central rectangle with a dashed line indicating a smaller inner rectangle. The outer dimensions are 128 mm on the left and right sides, and 118 mm on the top and bottom sides. The total width is 7x160=1120 mm, and the total height is 11x160=1760 mm. The inner dimensions are 1250 mm for the width and 1870 mm for the height.

REV	DATE	ALTERED:	S.S.B	REV	DATE	ALTERED:	S.S.B
02	28.03.2011	CHECKED:	P.M.J	01	06.01.2011	CHECKED:	P.M.J
01.	ACTUATOR AND ITS FOUNDATION DIM. ALTD.						
02.	MOTOR DETAILS SPEED ADDED						
03.	FAN SHAFT END ALTD.						
04.	BEARING LOCATION DIMENSION ALTD.						
05.	FAN SHAFT END DETAIL DIM. ALTD.						
01.	FFI 0.200m DELETED BASED ON TRICHY LAYOUT DRAWING.						
02.	SECTION - AA DIMENSION DELETED.						
03.	FAN DETAILS & KEY PLAN ALTD.						
04.	VIEW - P DIM. ALTD.						
05.	BEARING DETAILS ALTD.						

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CUSTOMER		INDIAN OIL CORPORATION LIMITED			
CONSULTANT		ENGINEERS INDIA LIMITED			
PROJECT		PARADIP REFINERY CPP			
		4 X 300 TPH			
 355-029		BHARAT HEAVY ELECTRICALS LIMITED, BOILER AUXILIARIES PLANT ; RANIPET-632 406			
		TITLE GENERAL ARRANGEMENT OF FCD BOOSTER FAN NDZV 25 HERAKLES			
	NAME	SIGNATURE	DATE		
DRN	S.S.B	Sd...	16.12.2010		
CHD	P.M.J	Sd...	16.12.2010		
APPD	P.M.J	Sd...	16.12.2010		
ALL DIMENSIONS ARE IN MILLIMETER				DRG.NO.	REV
PROJECTION		SCALE	1:45		
			1-00-099-21881		02