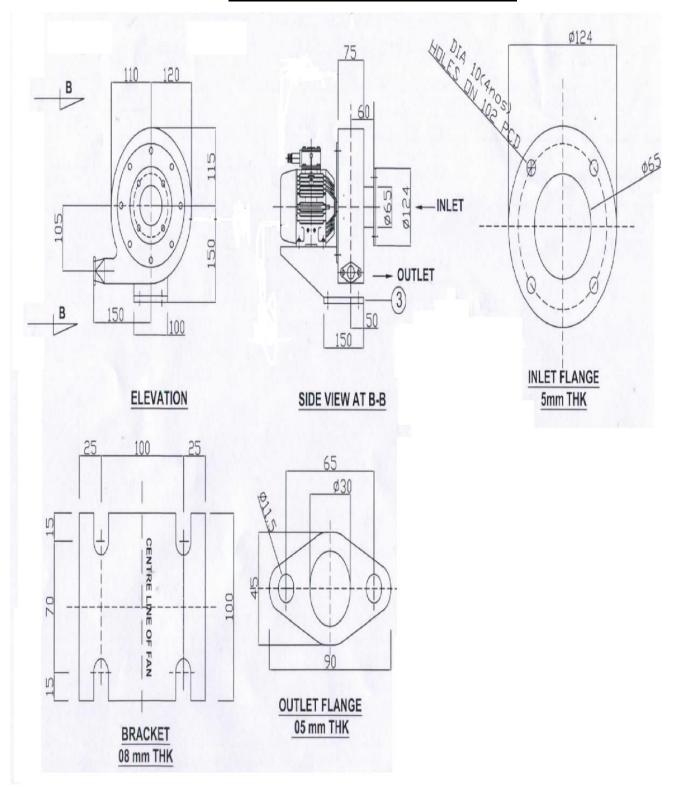
GA DRAWING TO MATCH DIMENSION FOR CONTROL FLUID VAPOR EXHAUSTER





BHARAT HEAVY ELECTRICALS LIMITED, HARIDWAR

Steam Turbine Engineering- Turbine Layout

PRE-QUALIFICATION REQUIREMENT Lube Oil /Control Fluid Vapour Exhauster

DOCUMENT NO. TL/OVE/PQR/20242721 Rev:00 Dt:13.12.24

Description: Oil Vapor exhauster handles oil fumes generated during the running of the turbine. It shall also maintain a partial vacuum in the main oil tank and turbine bearing pedestal etc. The fumes to be handled by the exhauster contain free droplets of oil. Viscosity grade of the oil is ISO VG046

tree droplets of control fluid. It shall also maintain a partial vacuum in the tank. The fumes to be handled by the exhauster shall contain Control fluid vapour exhauster is to handle the control fluid fumes generated during running of the turbine.

and proven design to maintain the required parameters to meet system requirements under all conditions base plate and other accessories. The vapour exhauster/CF Vapor Exhauster should be of very reliable The vapour exhauster/CF Vapor Exhauster used in system is complete assembly of Fan, motor, coupling

Motor

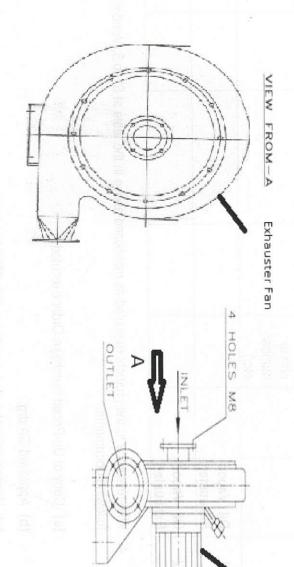


Figure 1

Acceptance Criteria: -

on or after 01.12.2014) with minimum following details - Yes/No exhausters Fan along with electric motor in last 10 years from the date of issuance of enquiry (i.e. P.O Vendor or its principal should have manufactured, tested and supplied at least 2 nos. Oil vapor

SI No.	Medium	Parameter	Value Range
	Lube oil/Control Fluid	Continuous discharge capacity at operating point	0.05 to 0.20 m3/sec
2.		Nominal discharge pressure at operating point	Minimum220 mmWC

Page 1 of 2

Deptt	Worked By	Checked By	Approved By
STE	H Gupta	Halogania HSDOGRA /www.14,12-24	ANUJ JAIN
CIE	L K MISHRA	SATISH KUMAR Salva Labe	VINOD KUMAR



BHARAT HEAVY ELECTRICALS LIMITED, HARIDWAR

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- Fan with AC motor (squirrel cage induction motor suitable for direct-on-line starting with continuous Vendor (Main pump supplier) or Sub vendor (Motor supplier) should have commissioned the Exhauster duty type (S1)) of 415V-AC, (+/-10%), 50Hz (+/-5%) & absolute sum variation 10% with starting current limited to 600% + (tolerances) as per IS: 12615-2011/ IEC 60034... Yes/No. ri
- In support of Clause No.1, vendor shall furnish their credential list, as per the following format. 3

olied	Name & address of customer	Contact Purchas Details of order the referent customer and (email & date phone number etc.)	Detail of Name & Contact Purchase Continuou address Details of order discharge supplied of the reference no. (m3/sec) customer customer and issue (email & date phone number etc.)	Continuous Discharge discharge capacity pressure (m3/sec) (mmWC)	Discharge pressure (mmWC)	Type & rating of motor used
Oil Vapor Exhauster						
Oil Vapor Exhauster						

- With reference to the projects executed as mentioned above in the table at Sl.no.3, Vendor to furnish following documents: 4
- (a) Copy of Un-Priced Purchase Order executed.
- (b) Approved GA drg.
- (c) Unpriced dispatch documents e.g .LR, SRV, Invoice etc.
- (d) Motor data sheet, wiring diagram, motor characteristics curve and GA drawing.

Note - BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

---End of PQR----

Page 2 of 2

Deptt	Worked By		Checked By	Approved By
STE	H Gupta	Kopr	HSDOGRA Remote 14.12-24	ANUJ JAIN TOWN (10/24
CIE	L K MISHRA	2000	SATISH KUMAR Salus Salus	VINOD KUMAR ANDRIN
	1988	184 17	A little	

MANUFA	ACTURER'S NAME AND ADDR	ESS			STANDARD QUAL	ITY PLAN		TO BE FILLED BY BHEL		TO BE FILLED BY	' BHEL
BHEL	VENDOR'S NAME	ITEM		OL FLUID VA XHAUSTER	POUR QP N DATE		E/QP/350 2024				
		DRG. NO.	AS PER I	PO	1	1					
		SPEC.	ST 3900)6							
		REV	AS PER I	PO		Page	1 of 3				
SL.	COMPONENT &	CHARACTERISTI	CS	CLASS	TYPE OF CHECK	QUANTUM OF	REFERENCE	ACCEPTANCE	FORMAT OF	AGENCY	REMARKS
NO.	OPERATIONS					CHECK	DOCUMENT	NORMS	RECORDS	M B N	
1	2	3		4	5	6	7	8	9 D	10	11

1.0	RAW MATERIAL												
1.1	CASING, SHAFT, IMPELLER, BLADES & BASE PLATE, SLEEVE, O- RING, SEALS	CHEMICAL, MECHANICAL PROPERTIES & SIZE	MAJOR	TEST & MEASUREMENT	100%	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	МТС	√	Р	V	-	NABL Lab TC
1.2	NUTS & BOLTS, LIFTING LUG & COUPLING	CHEMICAL, MECHANICAL PROPERTIES & SIZE	MAJOR	VISUAL	100%	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	TC	√	Р	V	-	
1.3	AC INDUCTION MOTOR (Please specify make, degree of protection and rating)	ROUTINE & TYPE TESTS CERTIFICATE INCLUDING DEGREE OF PROTECTION AND EXPLOSION PROOFNESS	MAJOR	REVIEW	100%	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	TC	*	P	٧	-	From BHEL Approved sources
2.0	INPROCESS INSPECTION												
2.1	ALL WELDS	QUALITY OF WELDS	MAJOR	DPT/MPT	100%	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	TC	√	Р	V	-	NOTE:1
2.2	IMPELLER	DIMENSIONS AFTER MACHINING	MAJOR	MEASUREMENT	100%	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	IR	-	Р	-	-	
		DYNAMIC BALANCING OF ROTOR	MAJOR	MEASUREMENT	100%	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	TC	√	Р	W	-	Ensure calibration of balancing machine
2.3	ASSEMBLY OF FAN	INTERNAL CLEARANCE BETWEEN IMPELLER & CASING	MAJOR	MEASUREMENT	100%	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	IR	√	Р	V	-	
3.0 FIN	AL INSPECTION ON THE COMP	PLETE ASSEMBLY	•										
3.1		OVERALL DIMENSIONS	MAJOR	MEASUREMENT	100%	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	TC	√	Р	W	-	

	LEGEND:	FOR CUSTOMER USE	
	RECORDS IDENTIFIED WITH '✓' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA		
MANUFACTURER/	DOCUMENTATION. IR: INSPECTION REPORT TC: TEST CERTIFICATE COC: CERTIFICATE OF CONFIRMANCE		APPROVED BY
SUBCONTRACTOR	M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER		
	INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION		
	ALL 'W' INDICATED IN COLUMN 'N' SHALL BE ' CHP ' OF CUSTOMER		

MANUFA	ACTURER'S NAME AND ADDR	RESS			STANDARD QUA	LITY PLAN		TO BE FILLED BY BHEL	TO BE FILLED BY BHEL TO BE FILLED BY BHEL					BY BHEL
BHEL	VENDOR'S NAME	ITEM		OL FLUID VA			BE/QP/350 2.2024							
		DRG. NO.	AS PER	R PO										
		SPEC.	ST 390	06										
		REV	AS PER		•		2 of 3							
SL.	COMPONENT &	CHARACTERIST	ΓICS	CLASS	TYPE OF CHECK	QUANTUM OF		ACCEPTANCE	FORMA		_	AGENO		REMARKS
NO.	OPERATIONS				_	CHECK	DOCUMENT	NORMS	RECOF		М	В	N	
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3.2		ONLINE GREASING F FOR MOTOR	ACILITY	MAJOR	VISUAL	100%	ORDERING SPEC. BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	ТС	~	P	W		
3.3		SEALS AS PER CLAUS SPEC ST39006	E 5.5 OF	Major	Visual	100%	ORDERING SPEC. BHEL APPD. DRG. / DATA SHEET	/ ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	TC	~	P	W		
3.4		PERFORMANCE (INC DISCHARGE V/S PRE: POWER CONSUMPT EFFICIENCY) & STRIP	SSURE & ION,	MAJOR	PERFORMANCE	100%	ORDERING SPEC. BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	ТС	*	P	W	-	
3.5		FAN SPEED AT 80% (VOLTAGE	OF RATED	MAJOR	ELECTRICAL	100%	ORDERING SPEC. BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	ТС	√	Р	W	-	
3.6		FAN SPEED, SMOOTI RUNNING, DIRECTIO ROTATION		MAJOR	VISUAL	100%	ORDERING SPEC. BHEL APPD. DRG. / DATA SHEET	/ ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	IR	✓	P	W	-	
3.7		NOISE LEVEL		MAJOR	MEASUREMENT	100%	ORDERING SPEC. BHEL APPD. DRG. / DATA SHEET	/ ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	IR	✓	P	W	-	
3.8		VIBRATION		MAJOR	MEASUREMENT	100%	ORDERING SPEC. BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	IR	√	Р	W	-	
3.9		CLEANING, PRESERV PACKING & PAINTIN INCLUDING PAINT TI (DFT)	G	MAJOR	VISUAL & MEASUREMENT	100%	ORDERING SPEC. BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	IR/TC		Р	-	-	
3.10		COMPLIANCE OF TEC REQUIREMENTS & COMPLETION OF DOCUMENTS	CHNICAL	MAJOR		100%	ORDERING SPEC. BHEL APPD. DRG. & DATA SHEET	/ ORDERING SPEC. / BHEL APPD. DRG. & DATA SHEET	coc		P	V	-	
NANUE	ACTURER/	REC	GEND: CORDS IDENTIFIED WITH '✓' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA						FOR CUSTOMER USE			APPRO	WED D	
	NTRACTOR	M: IND	OCUMENTATION. IR: INSPECTION REPORT TC: TEST CERTIFICATE COC: CERTIFICATE OF CONFIRMA I: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER IDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ILL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER									AFFRU	יאבט פו	

MANUFA	ACTURER'S NAME AND ADDRE	SS			STANDARD QUAI	ITY PLAN		TO BE FILLED BY BHEL		TO BE FILLED BY I	BHEL
	VENDOR'S NAME	ITEM	CONTROL	FLUID VA	POUR QP N		/BE/QP/350 .12.2024				
BHEL					REV	01					
		DRG. NO.	AS PER P	0							
		SPEC.	ST 39006	õ							
		REV	AS PER P	0		Pag	ge 3 of 3				
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTI	TICS CLASS TYPE OF CH			QUANTUM (CHECK	DF REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY N B N	REMARKS
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4.0	PACKING											
4.1		SOUNDNESS OF PACKING AGAINST TRANSIT DAMAGE	MAJOR	PHYSICAL	100%	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	ORDERING SPEC. / BHEL APPD. DRG. / DATA SHEET	INTERNAL RECORDS	Р	-	-	

NOTE 1: WELDING TO BE DONE BY QUALIFIED WELDER AS PER ASME IX WPS AND PQR TO BE CHECKED BY INSPECTING AGENCY.

NOTE 2: STRIP TEST SHALL BE CARRIED OUT IF ABNORMAL SOUND OBSERVED DURING PERFORMANCE TEST.

NOTE 3: ALL PAGES OF THE INSPECTION DOCUMENTS SHALL BE NUMBERED IN CHRONOLOGY WITH THE QAP CLAUSES, DULY MENTIONING THE CORRESPONDING QAP CLAUSE NO. AT THE TOP OF EACH PAGE.

NOTE 4: ONE 'INDEX' PAGE CONTAINING THE DOCUMENT DESCRIPTIONS, THEIR PAGE NO'S & QAP CL NO. SHALL BE ATTACHED UPFRONT THE INSPECTION DOCUMENTS.

NOTE 5: PAINTING CAN BE DONE ONLY AFTER INSPECTION CLEARANCE, AS PER CUSTOMER'S /BHEL APPROVED PAINT SPECIFICATION / SCHEDULE (IF REQUIRED). OTHERWISE MANUFACTURER'S STANDARD SHALL BE FOLLOWED.

NOTE 6: FOR ANY SPARES ITEM, APART FROM 'VISUAL INSPECTION' THE 'INTERCHANGEABILITY FITMENT CERTIFICATE' OR 'MATERIAL TC' ARE TO BE SUBMITTED, WITH SPECIFIC MENTIONING OF THE 'PART NO/ ITEM NO OF THE APPROVED GA/ X-SEC DRG.".

MANUFACTURER/ SUBCONTRACTOR	LEGEND: RECORDS IDENTIFIED WITH '✓' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. IR: INSPECTION REPORT TC: TEST CERTIFICATE COC: CERTIFICATE OF CONFIRMANCE M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER	FOR CUSTOMER USE	APPROVED BY
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		3.	<u>FLUID</u>	SPECIFICA	TION:							
प्रत्यक्ष एवं	कथा जाद		The spec	cification of cor	ntrol fluid is	given b	elow:					
P 1	-		Me	dium - Phosp	horic Easter	type H	S-D					
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ty NO.		सहमत AGREED		नम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्त	SUPERVISED BY	A.B.GU	PTA		alm	M
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ST-39006 चरिनांक एवं हस्ताक्षर SIGN & DATE उत्पाद मानक बीएच ईएल पष्ठ 13 का 2 PRODUCT STANDARD (STEAM TURBINE ENGINEERING) Page 2 Of 13 4. DATA SHEET OF CONTROL FLUID VAPOUR EXHAUSTER: Centrifugal Type सुन Discharge capacity 0.017 m3/sec Pressure difference 50 mm we Design temperature 100°c Operating temperature 65°c information on this documents is the property of Bharat Heavy ical Limited.It must not be used directly or indirectly in any way COPYRIGHT AND CONFIDENTIAL Exhauster shall be suitable for mounting on the oil tank and exhauster base plate shall match with the counter flange provided on the tank as per drawing shown in Annexure-I. Smooth functioning should be ensured when working with control fluid levels as given in the arrangement drawing in Annexure-II. 5. DESIGN AND CONSTRUCTION OF CONTROL FLUID VAPOUR EXHAUSTER: 5.1 All materials used in the construction of the exhauster shall be selected from the range of materials most appropriately suitable for the purpose and service conditions. The bidder shall furnish along with the bid the material specification for all the components to BHEL for their The infor Electrical review and acceptance by BHEL /owner. BHEL/owner reserves the right to ask for changes in material. दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका 5.2 The materials of construction of the exhauster shall be such as to resist corrosion and erosion and shall give a long trouble free service. 5.3 The supplier shall also furnish the method and frequency of lubrication of the bearings and quantity and type of lubricant required for normal operation. **a** 5.4 The design shall be such as to keep the friction loss and wear caused by and thrust, wear in स्वत्वाधिकार mechanical seals and bearings to the minimum. It should ensure long and trouble free service. The rotor of the exhauster should be balanced dynamically so that the vibration of the exhauster is not greater than 22 µm r.m.s. displacement in accordance with ISO 10816-3:2009. The noise level should not be greater than 85 dBA when measured at a distance of 1.5 meters above floor level and one meter horizontally from the base of the equipment. Net G 54 DATE हस्ताक्षर एवं दिनांक NOIS REV. NO. निर्माणकर्ता A.KUMAR NVENTORY NO. WORKED BY सामग्री सूची संख्या

जांचकर्ता

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सामग्री शूसी संख्या को SUPERSEDES अधिकमित करता है INVENTORY	5.5	a) I b) I c) I d) I e) I	No contami No seepage No leakage No seepage	ss and amer nation of the of lubrican of control of of control	nability ne mediu nts into to fluid gas fluid tov	for mainter um from ma he flow me ses outside wards moto	nance work. aterial abrad	led from the sphere. e along wi	th the sl	naft.	r	
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D CONFIDENTIAL the property of Bharat Heavy Electrical or indirectly in any way detrimental to of the company	5.8	The me		sign shall a	illow eas	sy access to	the parts fo	or mainten	ance wo	rk to	be	
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हस्तावर एवं दिनांक SIGN & DATE	5.15	SPECIA One set of together	The exhauster shall be mounted on the control fluid tank top. SPECIAL TOOLS & TACKLES: One set of tools required for erection, operation and maintenance shall be supplied together with each set comprising of two numbers of exhauster with motor. List of these tools shall be submitted along with the offer.									
सामग्री सूबी संख्या INVENTORY NO. १ - 5 4 6 9	REV.						निर्माणकर्ता WORKED BY जांचकर्ता CHECKED BY	A.KUMAR	Ash	12/12		

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Electri		6.1			ntrol fluid v	apour exha	uster.			
IAL feavy detrin		6.2	Location	Turbine oil room.						
समाज्ञ पूची मंख्या हरताबार एवं विनांक एवं हरताबार एवं विनांक एवं हरताबार एवं विनांक एवं हरताबार एवं विनांक एवं हरताबार स्वर्ग्याच्या के हरताबार हे प्रका प्रत्ये के विनांक एवं हरताबार विनांक एवं विनांक		6.3	Type of motor	Squirrel cag	ge,induction	motor				
		6.4	KW Rating:	It shall have at least 25% reserve						
CO propringing the cor					er required p					
Sty of P				exhauster w	when it is dis	eharging m	ax. qua	antity		
IT A ument d direct intere		6.5	VW actually required by	Compaits of	the exhausts					
COPYRIGE e information on this doc imited.It must not be use the		0.3		Capacity of	tile exilausio	JI.				
			conditions.							
		6.6	Rated voltage	4	15 V					
ĔΞ		6.7	Frequency		0 Hz					
P		6.8	9 .		= 10 % volt.					
त्यहा एव			The contraction of the contracti	±	5 % frequer	ncy.				
सकाप्र		6.0			= 10 %					
प ति है ह					0 % rated.					
पनीत कीसम् सम्ब		0.10	O 1	0	o 70 ratea.					
रवं मो इकल्स ना के हि										
गर प् महलेकि किसंप			speed							
EVENTORY NO. SIGN & DATE क्ष प्रतेण में दी गई स्वना मारव हेवी हेत किया जाए । प्रतिकार के विकास करें किया जाए । प्रतिकार के विकास करें किया जाए । प्रतिकार के विकास करें किया जाए । प्रतिकार के विकास करें किया जाए । प्रतिकार के विकास करें किया जाए । प्रतिकार के विकास करें किया जाए । प्रतिकार के विकास करें किया जाए । प्रतिकार के विकास करें किया जाए । प्रतिकार के विकास करें किया जाए । प्रतिकार के विकास करें किया जाए । प्रतिकार के विकास करें किया जाए । प्रतिकार के विकास करें किया जाए प्रतिकार के विकास करें किया जाए । प्रतिकार के विकास करें किया जा । प्रतिकार के विकास करें किया करें किया जा । प्रतिकार के विकास करें किया करें किया जा । प्रतिकार के विकास करें किया किया किया किया किया किया किया किया	6.11	No.of phases		Ιø						
स्वत्त् स्वनाम सरह प्रय	AVENTORY NO. SIGN & DATE		F 6		Continuous		(6)72			
दी गई र		6.13	Full load speed		shall be con					
लेख में स से वि		6 14	Full losd current		xhauster spe s per design.		esign.	ge 4 of all be be supplied by the quantity.		
表冊 II	*	supplied The motor requirem shall con IS:2253 I BS speci- Indian sta 6.1 Application: To drive 6.2 Location Turbine of 6.3 Type of motor Squirrel of 6.4 KW Rating: It shall he capacity exhauster 6.5 KW actually required by Driven equipment under specified operation/ startup conditions. 6.6 Rated voltage 6.7 Frequency 6.8 Permissible voltage plus Frequency variation under Normal rnnning condition. 6.9 Combined variation 6.10 Min. voltage required under Starting conditions to bring driven equipment upto rated speed 6.11 No.of phases 6.12 Type of duty 6.13 Full load current 6.15 Starting current 6.16 Starting torque 6.17 Break down torque 6.18 Efficiency at full load: 6.19 Power factor at full load REV. NO. 0 6		ot to exceed		ated				
- F	-				.3(Min) of ra					
ω .	7		Break down torque		wo times (M		value			
दिनांक DAT	7				0 % (Min)					
क्र दव		6.19	Power factor at full load	0.	.85 (Min)					
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6	_		1		Lar	1 gran a s			_	
_ <u>o</u>	$\uparrow \uparrow R$	EV. NO.			निर्माणकर्ता WORKED BY	A.KUMAR	المرا	L'in		
RY N		06			CARLED BY		1	(121		
NTO		00			जांचकर्ता	ANUJ JAIN	A.		-	
G (-2)					आवयता	ANUJ JAIN	I/Y\a	w/.	J	

6.20 Starting data 6.20.1 Starting Direct on line 6.20.2 Acceleration time with full 3.5 ± .05 secs. Load connected 6.20.3 Permissible starting duty cycle No. of starts Starts spread over an hot starts from hot condition with starts from hot cond	ur 2- withovinding	out a	का of secut	5 13
(STEAM TURBINE ENGINEERING) 6.20 Starting data 6.20.1 Starting Direct on line 6.20.2 Acceleration time with full 3.5 ± .05 secs. Load connected 6.20.3 Permissible starting duty cycle 3 Starts spread over an hot No. of starts Starts from hot condition of Injurious Heating to the with that can be carried by at full load with 80% of rails.	ur 2- withovinding runn	Cons		
6.20 Starting data 6.20.1 Starting 6.20.2 Acceleration time with full 7.5 ± .05 secs. Load connected 6.20.3 Permissible starting duty cycle No. of starts Starts spread over an hor starts from hot condition with star	ur 2- withovinding runn	Cons		
Load connected 6.20.3 Permissible starting duty cycle No. of starts Starts spread over an horizontal starts from hot condition with starts from hot condi	vitho indir runn ited	out a	secut	
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Load connected 6.20.3 Permissible starting duty cycle No. of starts Starts spread over an horizontal starts from hot condition will be capable of that can be carried by Load connected 3 Starts spread over an horizontal starts from hot condition will start from hot condition will be capable of that can be carried by 4 Starts spread over an horizontal starts from hot condition will be capable of that can be carried by 5 Starts spread over an horizontal starts from hot condition will be capable of that can be carried by	vitho indir runn ited	out a	secut	
6.20.3 Permissible starting duty cycle No. of starts Starts spread over an horizontal starts from hot condition with starts	vitho indir runn ited	out a	secut	20
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that can be carried by at full load with 80% of ra	indir runn ted		ny	
that can be carried by at full load with 80% of ra	runn ted	ng.	,	
that can be carried by at full load with 80% of ra	ted	-		
	4 70			
motor without impairing voltage for 5.0 minutes an	u / 0	%		
over all performance and of rated voltage for 1.0 sec	.			
period for which this over				
load is applicable				
period for which this over load is applicable 6.20.5 Locked rotor with stand time under hot condition at rated voltage shall				
hot condition at rated voltage shall				
be atleast 2.5 sec. more than starting time Single				
지 한 발 6.21 Winding				
E E E E E E E E E E E E E E E E E E E				
Class-B, Fungus resistant tropicalized 6.21.1 Class of insulation Class-B, Fungus resistant tropicalized N.A. 6.22 Winding temp. detector N.A. 6.22 Mechanical construction				
6.21.2 Winding temp. detector N.A. 6.22 Mechanical construction				
6.22 Mechanical construction 6.22.1 Shaft disposition mounting Horizontal / flange mount	od			
motor without impairing voltage for 5.0 minutes an of rated voltage for 1.0 sectors and period for which this over load is applicable 1000 COVENTIAN (a in influent) in a trace of the combination of the	cu.			
to driven equipment				
6 22 3 Direction of rotation and To suit exhauster				
6.22.3 Direction of rotation and To suit exhauster corresponding terminal designation				
corresponding terminal designation				
6.22.4 Enclosure and ventilation Francisco Bearing 6.22.5 Bearing 6.22.5 Bearing 6.22.6 Grounding device Francisco Bearing 6.22.6 Grounding device Francisco Bearing 6.22.7 Terminal connection for stator heads type and Francisco Bearing Francisco Bear	d-1P	255		
是	_	n,		
life not less than 30,000 hr				
Bearing as per supplier's d life not less than 30,000 hr 6.22.6 Grounding device Suitable arrangement shall provided for earthing the rat two separate and distinct connection points. Design				
provided for earthing the n		r		
at two separate and distinct				
connection points. Design				
earthing conductor shall be per IS:4722-1992.	e as			
6.22.7 Terminal connection for 3 terminals shall be connection	cted			
stator heads type and externally in the terminal b				
Number				
623 Cable for grounding points NA				
6.23 Cable for grounding points NA 6.24 Terminal box. To be provided with double	le			
6.24 Terminal box. To be provided with double compression cable gland for	or A	l cab	ole	
Sign Sign Sign Sign Sign Sign Sign Sign				
्र REV. NO. निर्माणकर्ता A.KUMAR		ek,		
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Tie va IGN &	BHFL	PRODUCT ST	CANDARD	2 13 11 0						
e v	//	(STEAM TURBINE E	ENGINEERING)	Page 6 of 13						
ES KY	6.24.1	Whether phases segregated	No							
SUPERSEDES INVENTORY	6.24.2	Fault level	45 KA for 0.25 sec	;						
INVE	6.25	Space heaters	NA							
indon		Rated voltage	NA							
(m) 원	6.26	SPECIAL REQUIREMENTS:								
आधिकमित करता है अधिकमित करता है	6.26.1	The motor shall be suitable to opera	ate in an environment of	oil fumes						
ाया सूर विकमि	6.26.2	The motor shall be suitable for rew	inding							
M 4	6.26.3	The motor shall have on line greasi								
io d	6.26.4	The motor construction shall be sui								
lectri	6.26.5	The terminal box shall be suitable f								
AL avy E		suitable for PVC insulated PVC sh		nium cables and shall be						
AND CONFIDENTIAL ants is the property of Bharat Heavy rectly or indirectly in any way detrin rest of the company		capable of being rotated by 180° in								
DEP ramy	6.27		Documents to be supplied. These shall be supplied in soft copies							
VFI edy in npany		each and two hard copies with the	equipments in the event	of an order						
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited.It must not be used directly or indirectly in any way detrimental to the interest of the company	(27.1	Chamataristic assess at 800/	The offer should b							
Sar Paragraph of the sar Parag	6.27.1	Characteristic curve at 80%, 100% and 110% of rated	The offer should be with following do							
r A ments direct		voltage.	triplicate. The offe							
GH docur used the ir		voltage.	considered if all the							
R In this not be			are not supplied.	iese documents						
COPYRIGHT nation on this docume It must not be used dii		i) Starting current v/s time.	are not supplied.							
ed.fr		ii) Torque v/s slip.								
he inf Limit		ii) Thermal with stand.								
F		,								
एवं । जाए	6.27.3	Type and frame size								
प्रत्यक्ष न किया	6.27.4	Starting time with full load(with 80		ige at terminal)						
स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई भूचना मारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रत्यक्ष एवं एक्स क्षम से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए	6.27.5	Safe stall time at 100% rated voltage	ge under hot condition.							
य मातिक गनिका	6.27.6	Motor GD2 value.								
स्वत्वाधिकार एवं गोपनीय चना मारत हेवी इलेक्ट्रिकल्स की सम्परि एह प्रयोग, जो कि कंपनी के हित में हानि	6.27.7	Weight of motor.	C1							
प्वंगी इकल्स नीके ति	6.27.8	Expected life of bearing and type of		amainal have						
गर ए इलेक्डि कि कंप	6.27.9	Type and size of cable for which g (i) Type and routine test certificates	•	rminai box.						
तियो स्थापित संस्था	6.27.10	(ii) In addition to 5.27.10(i),the foll		corried out						
.वत्व बनामाः स्हप्रयो		a. Degree of protection test as t	0	carried out.						
न्तृ स्थान		b. 20% over speed test for 2 mi								
अ में दी से किस्		c. Measurement of vibration as								
स प्रलेर इन रूप	6.28	Documents to be furnished within t		of order.						
इस।	6.28.1	Soft copies and two hard copies with	and the second of the second o							
11		in BHEL format which will be furn	•							
TE /	6.28.2	Drawing showing terminal detail of	f all terminals, location a	nd dimensions of box.						
BREIBRY QUÍ PATE STIPLE 21/17/1	6.28.3	Clearance required to remove rotor	from stator.							
N &	6.28.4	Rotor weight								
SIGN			2)							
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### ST-39006 उत्पाद मानक SIGN & DATE बीएच ईएल 13 7 PRODUCT STANDARD (STEAM TURBINE ENGINEERING) 7 of 13 Page 7.0 QUALITY ASSURANCE, INSPECTION AND TESTING a) The manufacturer shall conduct all tests required to ensure all the component parts of the CF vapour exhauster offered conform to the requirements of applicable सामग्री सूची संख्या को codes and standards. b) The bidder shall submit along with his offer quality plan in the BHEL format. The particular of the proposed shop tests and procedures for the test shall be submitted 7.1 The information on this documents is the property of Bhurat Heavy Electrical Limited.It must not be used directly or indirectly in any way detrimental to the interest of the company to BHEL/Owner for approval along with quality plan. The material shall be dispatched only after inspection and clearance of material 7.2 COPYRIGHT AND CONFIDENTIAL by BHEL/Owner and approval of test certificates by BHEL/owner. The minimum tests/checks to be carried out on CF vapour exhauster as envisaged by 7.3 BHEL are given below. This is however not intended to form a comprehensive testing programme as it suppliers responsibility to prepare the detailed Quality plan, which should also include tests/checks carried out by supplier as a part of their normal practice. This quality plan is subject to the approval of BHEL /Owner and BHEL/Owner reserves the right to ask for any more checks at the time of quality plan finalization. Testing of materials-The material of major component (Shaft, casing & impeller) shall be 7.3.1 tested as per relevant specification for its chemical composition and mechanical properties viz YS, uTS, Impact, % age elongation, % RA etc. Suitable NDT to ensure freedom from surface and subsurface defects shall be carried out. Following tests shall be carried out during various stages of manufacturer at 7.3 - 2manufacturers' works. अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए इस प्रलेख में दी गई सूचना मारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रत्यक्ष एवं Check for dimensions of all the component parts including surface finish, axial a) and radial run out of shaft etc. स्वत्वाधिकार एवं गोपनीय Non-destructive examination-DPT/MPI for casing shaft and seals etc. to ensure freedom b) from surface/Sub-surface defects. Bidder shall also inform his practice regarding checks being carried out to ensure freedom from internal defects on shaft, casing & impeller etc. Dynamic balancing of rotor as per ISO 1940 Gr6.3/ISO 1940 Gr2.5 or equivalent. c) Check for direction of rotation of Exhauster and its working as per clause 6.12 of spec. d) Performance testing eg. discharge V/S pressure, power consumption, noise and vibration e) etc. Strip down examination to check condition of bearing, mechanical clearance and axial f) play of shaft. Check the condition of the oil seals and any seepage of fluid through the seals. g) SIGN & DATE हस्ताक्षर एवं विनांक A.KUMAR निर्माणकर्ता REV. NO. INVENTORY NO. WORKED BY तामग्री सूची संख्या 06 7 जांचकर्ता ANUJ JAIN 5 CHECKED BY

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sh SUPERSEDES	cl to	fter testing the exhauster, all the eaned, dried and conserved. Al weather shall be given a suital	l the metal ble priming	lic surface e coats of app	xcept brig proved pai	ht parts ints. Ens	expo ure		
सामग्री सूची संख्या को नंदत्र। अधिकमित करता है to	st 7.3.4 Te dy	acking in water and dust proof prong to safeguard against any dest certificates indicating the acynamic balancing, performance prinished.	lamage dur tual test res	ing transit. sults of mate	erial testing	g NDT,		У	
y Electrimental	8.0 DO	CUMENTS TO BE SUPPLIEI	AETED T	THE DI ACI	EMENT (	E ODDI	ΕD		4
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COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	T	hese shall be supplied in six ha	rd copies e	ach and two	soft copie	es.			
ONF roperty directly	(i)	Contractual drawing i.e. preapp	oroval drgs	./ document	s in final s	shape			
of the		after incorporating BHEL's co	omments if	there are an	ıy.	8	week	S	
AN ents is rectly erest		Overhaul and spare parts list.				8	week	(S	
HT beumo sed di he into	(iii)	Equipment description.				8	weel	KS	
AIG his de	(iv)	Operating instructions.				12	2 wee	eks	
COPYRIGHT nation on this docume It must not be used di	G 5	Cleaning and maintenance inst	ructions			12	2 wee	eks	
Li martio	80.0	with lubrication diagram.							
informited.	10	Assembling and dismantling in	structions.				2 wee		
F		Record of test on noise levels.				Before			
_	(viii)	List of tools and tackles.					weel		
नका प्रत्यक्ष एवं हो न किया जाए		The static and dynamic loading	g details			8	weel	ks	
सका प्रत्यक्ष एवं हो न किया जा		on support/ foundation.							
इसका रक हो	(x)	Instruction on conservation and	deconserv	vation.		12	2 we	eks	
स्वत्वाधिकार एवं गीपनीय इस प्रलेख में थी गई सूचना मारल हेवी इलेक्ट्रिकल्स की सम्पत्ति है इष् अप्रत्यक्ष: रूप से किसी मी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक	9.0 <u>PR</u>	E-APPROVAL DOCUMENTS	S AT THE	TIME OF C	<u> PFFER</u>				
एवं य क्रिकल जन्मी के	(i) A	Assembly drawing with parts li	st nozzles	sizes and th	eir coordir	nates			
कार बी इली		base plate details and cross sect	The state of the s			iates,			
वादि मारत है योग, प		static & dynamic loading.	ionai arran	goment ator	16 111111				
स्वत् सूचना तरह प्र		Calculations with necessary dra	wings (tor	que/speed)	characteris	stic etc.	powe	er	
दी गई स्तीमी		requirement.	6- (-51	1 -1)		3			
स प्रलेख में। बा्रुक्प से वि		Welding procedure plan including	ng particul	ars of the we	elders.				
अप्रत्य	9.1 E	Examination of the preapproval	documents	by BHEL s	shall not				
17		elease the manufacturer and his				bilities.			
E 3 2		The pre approval documents sha							
हस्ताहार एवं दिनांक SIGN & DATE		No changes shall be made without							
N & N		<del>-</del> =	(5,16)						
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ATE ATE		(-B	उत्पाद मानक	ERVATION & PACKING.  The protective coating should be resistant to prevent all fluid specified & to prevent the deterioration of a give exact and precise details about the measurestion, which shall be checked 8c approved by BHEL.  The protective shall be checked 8c approved by BHEL.  The protective shall be checked 8c approved by BHEL.  The protective shall be checked 8c approved by BHEL.  The protective shall be checked 8c approved by BHEL.  The protective shall be suitably packed for transportation. It at least for 2 year in a very damp atmosphere.  The protective shall be shall			
देनांक एवं हस्ताक्षर SIGN & DATE		मा एच इ एम	PRODUCT STANDARD	पृष्ठ	13	का	9
₩ S			( STEAM TURBINE ENGINEERING)	Page	9	of	13
SUPERSEDES INVENTORY		10.	NAME PLATE IDENTIFICATION MARKINGS SHOULD BE	AS FOI	LLO	<u>WS</u>	
सामग्री सूची संख्या को SUPE अधिकमित करता है	=		<ul> <li>(i) Type / designation.</li> <li>(ii) Manufacturer.</li> <li>(iii) Manufacturer's works No.</li> <li>(iv) Year of manufacturing.</li> <li>(v) Purchase's order no.</li> <li>(vi) Volumetric flow (m³ / s)</li> </ul>				
CONFIDENTIAL property of Bharst Heavy Electrical indirectly in any way derinanted to	any way delimental to y		(vii) Operating temperature (°C) viii) Discharge pressure (MMWC) (ix) Flow medium (x) Speed  CLEANING, PAINTING, CONSERVATION & PACKING.				
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited It must not be used directly or indirectly in any way destinantial to	Limited. It must not be used directly of mairectly in the interest of the company		The surface shall be cleaned & prepared for the application of the country with non-silicatic abrasive agents. The protective coating should be control fluid contamination of control fluid specified & to prevent the coating itself. The supplier shall give exact and precise details envisaged by him for surface protection, which shall be checked & After testing the exhauster, its internals shall be thoroughly cleaned conserved before packing it. The exhauster shall be suitably packed	e resista the dete s about t 8c appro d, dried d for tra	nt to riorat he moved be and nspor	prevention of easured by BH	ent of res HEL.
1.	-		Instructions should be issued regarding reconservation, deconserva of package.	-	**		
	हानिकारक	12.	GENERAL:				
स्वत्वाधिकार एवं गोपनीय इस प्रतेख में दी गई सुवना मारत होती इसीस्ट्रकल्स की सम्पत्ति है	अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकार		The tenderer can make suitable offers even if there are minor devia not effect the efficient functioning of the equipment. However, the clearly spelt out. Supplier shall also fill in the blank data sheet and along with the offer. The offer may not be considered if all the tech and information called for in the specifications are not submitted al	deviation submite inical para	ons m the sa articu	ust bame lars	
गलेख में सी	रूप से किसी	13.	GUARANTEE:				
P. B.	3भरवाहा	13.1	The supplier shall guarantee trouble free and satisfactory operation for a period of 18 months after the installation and commissioning months from the day the equipment leaves the supplier's works whi	or for a	perio	od of 3	
हस्ताक्षर एवं दिनांक SIGN & DATE	1/2/12/1	13.2	The supplier shall guarantee the capacity, head and efficiency of the tested characteristics with control fluid fumes.				,
	<b>X</b>	REV. NO.	Sufurad A VIIMAD		Tr.	ľ	
सामग्री सूची संख्या INVENTORY NO.	69 4 9	06	WORKED BY	45	ik likliz	_	
सामग्री INVEN	5-6			Par	12/12	<u> </u>	

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दिनांक एवं हस्ताक्षर SIGN & DATE	माएग इएम	DDODUCT STANDADD	पृष्ठ	13	का	10
Rania SIG			Page	10	of	13
$\vdash$		(STEAM TORBINE ENGINEERING)	1 age	10	OI	13
SUPERSEDES INVENTORY		shall prepare the assessment report and a copy of the same shall supplier. The supplier shall replace / rectify the concerned item.	ll be formus free or	warde f char	d to t	he
सामग्री सूची संख्या को अधिकमित करता है		otherwise the finding of BHEL Representative shall be final a the supplier.	and bind	ing o	n	
सामग्री सू अधिकि		guarantee period.	n cost dı	ıring	the	
L vy Electrical rimental to	545 WHE	The contractor shall ensure proper erection of the exhauster and	d all ind	ividu	al par	ts
CONFIDENTIAL property of Bharat Heavy indirectly in any way detrin the company	_	PRODUCT STANDARD  (STEAM TURBINE ENGINEERING)  13.3 If during erection at site any deficiency in a part is detected BHEL site representative shall prepare the assessment report and a copy of the same shall be forwarded to the supplier. The supplier shall replace / rectify the concerned items free of charge. The supplier if he so desire may depute his representatives to site at his own cost otherwise the finding of BHEL. Representative shall be final and binding on the supplier.  13.4 The supplier shall repair / replace the defective parts at his own cost during the guarantee period.  14. ERECTION:  The contractor shall ensure proper erection of the exhauster and all individual parts bearing in mind ISO fitting tolerances and recommendations.  15. SPARES:  The supplier shall quote item wise price of recommended spares for 3 years and 5 years operation respectively.  16. Based on standard own experience.  17. Cross referred standard No. ISIS.4722, IS:325, IS:2253, IS:2254, IS: 4029, IS: 2148, IS: 12075, ISO:1940.  DATA TO BE FURNISHED BY BIDDER ALONGWITH OFFER:  10. Equipment and services offered:  Please state whether the following equipment service as specified in the Data sheets are offered or not  1.1 Exhauster as per specification  1.2 Motor/Make  1.3 Necessary instruments, test connections  1.4 Base plate as per Drg. shown in Annexure-1  1.5 Companion flanges  1.6 Spare parts  1.7 Maintenance and special erection tools  1.8 Commissioning of the set  2.0 Design and performance.  2.1 Designed capacity of each exhauster  2.2 Normal discharge pressure  2.3 Efficiency.  2.4 Rated speed.  2.5 Performance guaranteed when Installed as per given arrangement.  EV. NO.  Professed  AKUMAR  WORKED BY  ALUMAIN  ARABULAIN  Page 10 of 13  13 of 10  10 of 13  10 of 10  10 of 10	5			
AND ents is the rectty or erest of		Based on standard own experience. Cross referred standard No. IS IS:4722, IS:325, IS:2253, IS:22	PRODUCT STANDARD  TEAM TURBINE ENGINEERING)  Page 10 of  Page 10 o			
COPYRIGHT nation on this docum tr must not be used di			<u>R:</u>			
CO. The informatio Limited.It mu	1.0	Please state whether the following equipment service as specified in				
ধিনাক	2.0	1.1 Exhauster as per specification 1.2 Motor/Make 1.3 Necessary instruments, test connections 1.4 Base plate as per Drg. shown in Annexure-I 1.5 Companion flanges 1.6 Spare parts 1.7 Maintenance and special erection tools 1.8 Commissioning of the set 1.9 No of exhausters offered  Design and performance.  2.1 Designed capacity of each exhauster 2.2 Normal discharge pressure 2.3 Efficiency. 2.4 Rated speed.		Yes/N Yes/N Yes/N Yes/N Yes/N Yes/N	No No No No No No	
हस्ताक्षर एवं दिनांक SIGN & DAT 			rangeme	ent.		
सामग्री सूची संख्या INVENTORY NO. p-5469	REV. NO.	WORKED BY	Ach	TILLIE		
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दिनांक एवं हस्ताक्षर SIGN & DATE	बीएच ईएल				पृष्ट	13	का	1
दिनांक SIGN	BĤH			STANDARD	,		C	
			( STEAM TURBIN	NE ENGINEERING	) Pa	age 11	of	1.
ORY								
SUPERSEDES	3.0	Ma	terial of construction.					
SZ Z		3.1	Casing					
1 <u>€</u> 4⊵		3.2	Rotor and blades					
सामग्री सूची संख्या को अधिकमित करता है		3.3	Base plate					
मग्री सू		3.4	Wearing rings					
臣"		3.5	Type of bearing used					
to to		3.6	Type of coupling	,		*		
Electr		3.7	Packing					
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited.It must not be used directly or indirectly in any way detrimental to the interest of the company	4.0							
ENT harat 13 way	4.0	Con	nections.			,		
FID) y of B y in an		4.1	Suction size	120				
ON]		4.1 4.2	Discharge size					
D C of the		4.2	Discharge size					
AN terest	5.0	Dra	wings.					
3HT docum used d the in				x				
RIC a this of be		5.1	General arrangement and	sectional drawings end	losed with o	offer	Yes/N	lo
OP Y		***						
C forma ted.lt	6.0	Weig	ght schedule.					
The in Limi		6.1	Weight of exhauster					
		6.2	Weight of motor	×				
। प्रत्यक्ष एवं न किया जाए		6.3	Weight of exhauster with	motor and base frame		3		
का प्रत्य शेन कि								
न है इस कारक	7.0	<u>Cha</u>	racteristic curves.					
नीय सम्पक्षि में हानि		7.1	D					
ा मीप जन्म की के डिल		7.1 7.2	Power consumption/discl Discharge quantity/press					
र एव लेक्टिंग ह कंपनी		7.3	Discharge/efficiency	uic				
ष्टिका तहेवी इ		, .5	2 isomunger efficiency					
स्वत्वाधिकार एवं गोपनीय [बना भारत हेवी इलेक्ट्रिकल्स की सम्परि एड प्रयोग, जो कि कंपनी के हित में हारि	8.0	Any	deviation taken			Yes/N	No	
महस्त प्र निस्त	9.0	Dev	iations taken as mentioned	l here.				
ख में की संकिए								
स्वत्वाधिकार एवं गोपनीय इस प्रतेख में दी गई सूचना मारत हैदी इलेक्ट्रिक्स की सम्पत्ति है इसका अप्रतक्ष कर से किसी सी तरह प्रयोग, जो कि कपनी के हित में हानिकारक हो						73		
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सामग्री सूची संख्या VENTORY N - 5 4 ७	06				11.0	74.		
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### ST-39006 उत्पाद SIGN & DATE मानक दिनांक एवं हस्ताक्ष बीएच ई एन सिद्धास 13 का 12 **PRODUCT STANDARD** (STEAM TURBINE ENGINEERING) Page 12 of 13 SUPERSEDES Annexure-I सामग्री सूची संख्या को अधिकमित करता है 122 111 225 The information on this documents is the property of Bharat Heavy Electrical Limited.It must not be used directly or indirectly in any way detrimental to the interest of the company COPYRIGHT AND CONFIDENTIAL 115 105 1.5 150 100 A 65 9.5 99 90 अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रत्यक्ष एवं 17.5 2 65 100 स्वत्वाधिकार एवं गोपनीय **CONTROL FLUID VAPOUR EXHAUSTER** SIGN & DATE हस्ताक्षर एवं दिनांक 12112 REV. NO. A.KUMAR Ashall निर्माणकर्ता INVENTORY NO. 5469 WORKED BY सामग्री सूची संख्या 06 जांचकर्ता ANUJ JAIN CHECKED BY

### ST-39006 उत्पाद मानक दिनांक एवं हस्ताक्षर SIGN & DATE बीएच ई एम पृष्ठ 13 13 PRODUCT STANDARD Page 13 of 13 (STEAM TURBINE ENGINEERING) Annexure-II SUPERSEDES DATA SHEET OF CONTROL FLUID VAPOUR EXHAUSTER: High operating level Low operating level सामग्री सूची संख्या को अधिकमित करता है 2 16 700 The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company COPYRIGHT AND CONFIDENTIAL 5 6 SECTION-BB SECTION-AA अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए इस प्रलेख में दी गई सूचना मारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रत्यक्ष एवं 3 Control fluid pump. Control fluid pump.(Standby). 2. 3. Air vent 4. Strainer स्वत्वाधिकार एवं गोपनीय IN-coming chamber drain. 5. 15 10 Main chamber drain. Main hole cover. 11 Water detector 8. 9. Blind flange. 10. Strainer cover 11. Water detector 12. Pipe for warming. 13. Opening for level switch. 14. Inlet from cooler. CF TANK ARRANGEMENT 15. Inlet from regenerative system. 16. CF vapour exhauster SIGN & DATE हस्ताक्षर एवं दिनांक 17 A.KUMAR REV. NO. निर्माणकर्ता INVENTORY NO. WORKED BY सामग्री सूची संख्या 06 19 जांचकर्ता ANUJ JAIN CHECKED BY