ST38013 भी एम डे एल उत्पाद मानक पुष्ट 10 STEAM TURBINE ENGINEERING PRODUCT STANDARD Page SUPERSEDES INVENTORY NO TECHNICAL DELIVERY CONDITIONS AND GENERAL FEATURES FOR PUMP INCLUDING SPECIFIC REQUIREMENT OF QUALITY **DESIGN AND CONTRUCTION OF PUMP** 1.0 म्मोकमित करता है सामक्री सूची सञ्ज्या 1.1 All materials used in the construction of the pump shall be selected from the range of material most appropriately suitable for the purpose & service conditions. The bidder shall furnish along with bid, the material specification for all the components to BHEL for review and acceptance by BHEL / owner . BHEL / owner reserve the right to ask for change in material. The size shall be COPYRIGHT AND CONTIDENTIAL. The information on this describents is the property of Blinian Heavy Electron Limited It must now be used treated; an institute in any way definitential to the inferst of the company. standardized so as to ensure interchangeability. The material of construction of the pumps shall be such as to resist corrosion and erosion & 1.2 shall give a long trouble free service. 1.3 The supplier shall also furnish the method and frequency of lubrication of the bearings and quantity & type of lubricant required for normal operation but lubrication of bearings with the oil being handled is preferred. 1.4 The design shall be such as to keep the friction loss and wear caused by end thrust, wear in mechanical seals and bearings & cavitation to the minimum. It should ensure long and trouble free service. The rotor of the pump should be balanced dynamically so that the vibration is minimum. The sound pressure level of pump motor set should not be more than 85 dba when measured at a distance 1.5 m above floor and 1.0m horizontally from equipment base plate. Seals must comply with the following properties: 1.5 इस प्रजेष में तो गई सूतमा भारत होयां इजेतिष्ट्रायत्स्त की सम्पारंत है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से विश्वी भी तरस्र प्रयामा. जो कि कंपनी के ब्रिंत में झानेनअस्क हो भ किया (a) Ready access and amenability for maintenance work. (b) No contamination of the medium from material abraded from the seals. (c) No seepage of lubricants into the flow medium. गोपनीय (d) Minimum leakage losses with their positive removal. स्वत्वाधिकार एवं 1.6 At suitable points on the components crection eyes or lifting hooks shall be fitted for transport and crection. Their locations must be shown on the dimensional drawings. 1.7 Pump bearings shall be designed so as to ensure 30,000 hrs. continuous service. 1.8 The mechanical design shall allow easy access to parts for maintenance work to be carried out. Screw and nuts must be locked to prevent loosening.

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REV.NO. 04

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SIGNATURE & DATE

21.08.06

DATE

31-08-1984

NAME

DHARAMPAL

S.C.AGRAWAL

(A.K.JAIN) AGM

TSX

ANUJ JAIN

SSUED:

TRANSLATED BY

WORKED BY

CHECKED BY

PREPARED STE (TL/TA)

पर्यवेक्षणकर्ता SUPERVISED BY

निर्माणकता

जाचकर्ता

स्वीकति

APPROVED

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DATE & SIGNATURE

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		उत्पाद मानक ST38013
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Rha e SIGN &		STEAM TURBINE ENGINEERING PRODUCT STANDARD Page 2 of 10
SUPERSEDES INVENTORY NO	1.9	The discharge branch of the pump shall be taken out above the base plate by the supplier. The pumps shall be provided with drainage and venting devices.
सामग्री सूची सन्धा का अधिकमित तहरता है	1.11	All pump parts conveying oil shall be of oil tight construction. Compression type fittings are not permissible. Pump running at subscritical speeds, it shall be ensured that the critical speed lies above
COPYRIGHT AND CONFIDENTIAL The unformation on this documents is the property of Blanta Heavy Electronal Lumited It must not be used directly or indirectly in any way detrimental to the interest of the company	1.13	the maximum speed attainable during operation with a minimum margin of 15% of rated speed. For pump running at supercritical speeds, it shall be ensured that there is a difference of sufficient magnitude. The margin between the bordering critical speeds and pump rated speed shall be at least 20% of the rated speed. The type of coupling between pump & drive unit is to be taken into account while calculating the critical speeds for bending forces. Seals are to be designed such that they can be removed and reinstalled several times with out effecting the sealing quality. COUPLING Suitable coupling with guards shall be provided for coupling pump with motor and shall be designed to facilitate easy alignment. One set of coupling pins/ bolts shall be supplied in spare.
स्वत्ताधिकार एवं गोपनीय इस प्रकेष में दी गई सुबना भारत हेवा इनोक्ट्रिकेस की समादेत है इसका क्रायक एव स्रायक्ष रूप से किसी मी तरह प्रयोग जो कि ऊपनी के हित में झांकेकारक हो न किया जाए।	1.40	The pumps shall be mounted in the oil tank and hung from base plate at the tank top into the tank. For further details please refer the drawing No. attached herewith (STE-TL-001). All the seating machined surfaces of the base plate to be maintained for 0.5 mm flatness. SPECIAL TOOL & TACKLES One set of tools required for erection, operation and maintenance of the pumping sets shall be supplied together with each pump. List of these tools shall be submitted along with the offer.
सरक्षात्र एवं प्रध्यक्षतः SION & DATE इस उत्पंत्र में स्मृत्र स्मित्र स्मार्थ संप्र	2.0 2.1	QUALITY ASSURANCE, INSPECTION AND TESTING The manufacturer shall conduct all tests required to ensure all the component parts of the pump offered conform to the requirements of the specification and is in compliance with the requirements of applicable codes and standards. The bidder shall submit along with his offer quality plan in the enclosed format and in line with clause 2.0
सामग्री भाग मध्या INVENTOR Y NO P- SS 39	REV. NO. 04	निर्माणकर्ता WORKED BY D.PAL जांचकर्ता CHECKED BY ANUJ JAIN प्रिका

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समग्री धूनी संन्या SUPERSEDES को अधिकमित करत। INVENTOR !	2.4	The particulars of the proposed shops ubmitted to BHEL / its customer for the equipment shall be dispatched of BHEL/ its customer and approval of	r approval along with only after inspection a	quality plan.					
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	given to is suppose checks the appose checks and the check the che	The minimum tests/ checks to be carbelow. This is however not intended blers responsibility to prepare the decarried out by supplier as a part of toroval of BHEL/ its customer. BHEL hecks at the time of quality plan final cesting of Materials The material of each component shall hemical composition and mechanical of RA etc. Suitable NDT to ensure fine carried out.	to form a comprehens tailed quality plan, wh heir normal practice. It its customer reserve alisation. I be tested as per releval properties viz. YS, I	ive testing program ich should also income This quality plan is s the right to ask for ant specification for Impact, %age elon	nme as it clude tests subject to or any	s, to			
स्वत्वाधिकार एवं गोपनीय इस उन्तर ने व व तुम्म मरत हैवी होनेहरूकल के सम्बक्त है इसका प्रत्यत एव २५२७३ ११ में किसी मी तरह प्रवान, जो के कर्मी के हित्ते होनेकार हा न किया जरू।	2.5.2 F (a) (b) (c) (d)	Check for dimensions of all the co- and radial run out of shaft etc. Non destructive examination DPT of discharge pipe, ultrasonic test o Dynamic balancing of the rotor as equivalent. Pump casing and discharge pipe sl times the working pressure or 1.5 Pump impeller shall be subjected surface defect examination. The pressure test shall be carried o shall be 30 minutes. The testing the presence of BHEL's / custor Performance test with one of the c in case of D.C. motor the perform Performance test shall include ver	omponent parts included in shaft (≥50mm) to be per ISO 1940 (Gr.6.3) thall be subjected to hy times the pump shut-coto suitable NDT method with original bolts should be carried out mer representative. Out with original bolts should be carried out mer representative. Outract motor (A.C.) sance test may be carried if ication of pump char	ing surface finish, a arfaces of casing ar be carried out.) or VDI 2060 or. draulic pressure tends the whichever od like MPI/ DPT of the Duration of hydra at manufacturer's whall be carried out. ed out with test becared out.	axial axial at 2 higher. for aulic test works in However a motor.	Γ,			
DRY NO. SIGN & DATE 3.9 74 04	REV NO. 04	Vs pressure, power consumption,	efficiency, vibration a निर्माणकर्ता WORKED BY	D.PAL	<u>المام</u>	16/06/06			
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सामग्री सूर्या SUPERSEDES का इन्होंक्सिक करना INVENTORY NO			(f)	of BHEL represent	/ customer ative.	The character to c	aracteristics	DIN1944 class have to be condition of be	ertified by	BHEL/ cu	stomer		
COPYRIGHT AND CONFIDENTIAL	Launed.It must not be used directly or indirectly in any way detrimental to the interest. Of the company	2.5.4	and digives all the pack is sa Test balar furni	r testing the conserved in a suitable the compone ages should fe for two y certificates noing, hydra shed	e pump, all All metall: priming c ents of pund the suffici- rears in a v indicating aulic test, j	I the surface oat and to p as one iently strayery daming the test performa	aces and in es except be hen two con cunit and pa ong to safe, p atmosphe results of n ance test, str	any scepage ternals shall be right parts ex- acts of approv- ack in water a guard against re. naterial testin rip down exam	pe thorough posed to well paints. It and dust present any dama; any dama; g NDT, dy mination et	nly cleaned eather shal Ensure asse oof packag ge during t	l, dried l be embly o ge. The ransit a		
		3.1	deta: Calc	ls and cros	s sectional	arrange	ment along	zes and their with static ar / speed chara	nd dynamic	al loading			
स्वत्वाधिकार एवं गोपनीय इस प्रतेष में वी गई सभा मासा है बहु हम हन के वन महा है बहु कर	र पुरास मिलाह प्राचीता के एक तालिक होता में शामिक ताल की नक्षण आहे.	3.3	All v Exam man docu appr	velding sha nination of ufacturing a ments shall oval from I	the pre-ap and his sub form the HEL	proval de peontract basis for	ocuments b ors, of their the order.	er as per ASI y BHEL shal responsibilit No changes s	l not releas ties. The ap hall be mad	e the proval de without			
PRACTICAL PARTY.	39 Emperais	3.5 REV. NO. (docur	ty plan, det nents stand	ailing out ards, accep	various s	tages of ma vels, inspec	nufacturer al tion docume निर्माणकर्ता worked by	long with ranked. D.PAL	elevant		16/0	6/06
समग्री तुम्म सन्धा INVENTORY NO	P-55							जांचकर्ता CHECKED BY	A. JAIN	Dja	LÌ4	146	,,,

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स्टनाल क्य स्टब्स्डा SICN & DATE	miju		STEAM TURBINE EN	· · · -	पृष्ट	10	का	5
			PRODUCT STA	NDARD	Page	9: 5 	of ——	10
SUPERSHIPES INVENTORY NO	4.0	DOG	CUMENTS TO BE SUPPLIED AFTER	THE PLACEME	NT OF ORD	ER		
सम्प्री सुन्धा अस्या स्था अभक्तमित अस्या	4.1		e shall be supplied in 10 copies each or tw ractual drawings	vo copies and a set	of reproducib	le.		
रातमधी ।	4.2	Over	haul and spare parts lists	8 weeks				
ical r the	4.3	Equip	oment description	8 weeks				
AL, savy Electr trimental to	4.4	0 &	M manual (10 hard copy + 2CD)	:12 weeks				
DENTI	4.5	Reco	rd of test on noise levels before dispatch					
CONFIDENTIAL property of Blanca Heavy detrimes a company	4.6	Reco	rd of test to DIN 1944-III or equivalent	: Before dispat	ch or equivale	ent.		
AND (rents is the setty or ind	4.7	List	of tools and tackles	: 8 weeks				
COPYRIGHT AND CONFIDENTIAL. The information, or this documents is the property of Blanca Heavy Electrical amitted It must not be used directly or indirectly in any way derimental to the information of the company.	4.3		static/ dynamic loading details on ort/ foundation should be furnished	: 8 weeks				
COP	5.0	NAM	E PLATE IDENTIFICATION MARK	ING SHOULD B	E AS FOLLO	ws		
The u			ating plate is to be made of X12 or Ni18 and English both.	8 and plates should	be provided in	n		
त्रीहः संस्कृति स्थान	•	5.1	Type/ Designation.					
12 5880의 및 레보다 램 리		5.2	Manufacturer.					
ोपनीय ग्रह्म सम्ब		5.3	Manufacturer's works No.					
गर एवं न १६अस्टिक्स १३ कपना क		5.4	Year of manufacturing.				٠	
स्वत्वाधिकार धना भारत हवी इजे १४६ प्रयोग, जो कि		5.5	Purchaser's order No.					
स्वत्वाधिकार एवं गोपनीय इसप्रवेशमें येगमें युवन मत्यत्वी प्रतिष्ट्रकाम के सम्बेश हे इसका प्र सम्बन्ध का से छिलो में विस्थायोग, जो कि कामों के म्हिन झामेजायक हो न		5.6	Volumetric flow (1/m)					
स्वत्याधिकार एवं गोपनीय इस प्रकेष में या व्यापना मरत हवा इसिक्ट्रेक्स की तम्बेता हे इसका प्रत्यक्ष एव स्प्रत्यक्ष क्ष्म से फक्षी नी वस्त्र प्रयोग, जो कि कपनी के ब्रिंग म क्षाकेल्यक से नाक्सा जाए								
ениче вене GN & DATE 49106							:	
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INVENTORY CST 39	REV. NO. (04		निर्माणकर्ता WORKED BY D	PAL Y	da	1610	6/66
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A. JAIN

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K) IS	भी एवं ई	"UPI"	उत्पाद मानव	उत्पाद मानक					
R. DATE	mili	<i>III</i>	STEAM TURBINE ENGINEERING			पृष्ठ	10	का	7
दिनां ७ एवं इस्ताक्षर के Dz			PRODUCT STAN	DARD		Page	7	Of	10
SUPERSEDES INVENTORY NO									
			ANNEXUR <u>DATA TO BE FURNI</u> ALONG WITH BID	SHED BY BII					
सामग्री धुशे सन्धा ज न्होक्रमेत करत		1.0	EQUIPMENT AND SERVICE OFFE	RED			٠		
	•	ı	Please state whether the following equipart offered or not.	ment service as	s specifie	d in the	data sh	eet	
[TA] Heavy Elec Jetrimental		11.1	Pump as per specification	Yes/ No					
DASNIT of Bharat L any way d		1.2	Motor / Make	Yes/ No					
COPYRIGHT AND CONFIDENTIAL The miornation on this documents is the property of Blead Heavy Electrical Limited If must not be used directly or indirectly in any way detiminant to the interest of the company.		1.3	Necessary instruments, Test connections	Yes/No					
HHTA documents ed directly interest		1.4	Base plate as per drg.	Yes/ No					
COPYRIGHT mation on this docum must not be used dis- inter		1.5	Companion flanges	Yes/ No					
CO miornistic rted.fr.mus		1.6	Spare parts	Yes/ No					
		1.7	Maintenance and special erection tools	Yes/ No	v				
प्रत्यक्ष एन नाक्ष्या अध्		1.8	Commissioning of the set	Yes/ No	4				
ति है इसका नेवारक खे		2.0	DESIGN AND PERFORMANCE						
स्वत्वाधिकार् एटं नोपनीय ११मा मननश्चा इजाक् कथा क्षा भभार ११९ मधेमा नो १६ कार्म कक्षा में हार्	·	2.1	Rated capacity of each pump.	M³/hr					
क्राप्ट्र १६८१क्ष्य		2.2	Discharge head at rated capacity.						
दत्दाधि मामस्तर्भः हम्यास		2.3	Maximum discharge.						
स्वत्वाधिकार एवं गोपनीय इस प्रतेश में येनड युरान मरराध्ये इजाक्ष्यान की सम्मात है इसका प्रत्यक्ष एत इप्रत्यक्ष को से किसी सरह प्रयोग साधार भिक्त कहा में समिकारक हो नाक्ष्या आए।		2.4	Minimum discharge pressure corresponding to maximum flow.				-		
इस प्र									
हरनाहर एव स्थिता इ		•			·				٠
BNTORY \$33	RĘV. NO.	04		निर्माणकर्ता WORKED BY	D.PAL	-	العالم	161	06/06
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DATE	HIII	STEAM TURBINE ENGINEERING	पृष्ट 10	का 8
हिमां एवं अस्ताहर Da		PRODUCT STANDARD	Page 8	of 10
F.				
SCPLKSI 1458 INVENTORA NO	2.5	Shut off head.		
	2.6	Performance guarantee when installed Yes/No as per given arrangement.		
सामक्री भूदो सन्द्रम न नामेन्यामन करता	2.6	Pump B.H.P./KW at rated capacity.		
	2.7	Maximum allowable suction lift (for minimum NPSH REQUIRED).		
A.f., avy Electi dmental to	2.9	Efficiency		
COPYRIGHT AND CONFIDENTIAL. The information on this documents is the property of Bharat Heavy Electrical Lantined It must not be used directly or indirectly in any way detrinemal to the interest of the compeny.	3.0	MATERIAL OF CONSTRUCTION		
ONFILD openy of f	3.1	Casing.		
ND CC is the pro or indire of the on	3.2	Impeller.		
HTFA] locuments ad directly interest	. 3.3	Base plate.		
YRIG non this d	3.4	Wearing rings		
CO] fromatica d it muss	3.5	Shaft		
The in	3.6	Stuffing box.		
¥	3.7	Packing.		
स्तरवाधिकार एवं गोपनीय इस प्रजेष मधाण्ड सुतमामारतस्त्री इसेक्स्टेन्ट्र्य ने सम्प्रताहेड्ड्रन प्रथम एत स्प्रत्यम् रूपस्त केसीमा तस्त्र ग्रमाः जो कि करमी क इसमें प्रक्रिकारन हुत नाज्या जए	3.8	Mechanical scal.		
युं गरि। है इस्क	4.0	CONNECTION		
सोपनी इस्टार्भ सम्	4.1	Suction size.		
स्यस्वाधिकार एवं गोपनीय १०४ मास होब इडोक्ट्रूड ५४ मध्य १६ प्योग, बाञ्चिलभा कार्यान वा	4.2	Discharge size.		
यत्याधि स्वास्त्रहे	5.0	DRAWINGS		
हें स्टेशिक्ष सुद्	5.1	General arrangement and sectional Yes/No		
इस प्रतेष म		drawings enclosed with offer.		
EGINE DATE				
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### B 23	REV. NO. 04	निर्माणकर्ता WORKED BY D.PAL	Stal	16/06/02
सम्भाभूता सन्धा १८-५५३		जांचरुती CHECKEDBY A. JAIN	apri	16/6/06
·	<u> </u>	L CHECKETON A. JAIN		

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বিশাত ধৰ ধুধ্বাধাৰ DATE	mpa		STEAM TURBINE ENGIN PRODUCT STAND		l. `	ਾਲ 'age	10 9	का of	9
COPYRIGHTAND CONFIDENCE of Selection of Sele	6 6 7 7 8 8	7.0 7.1 7.2 7.3 8.0 9.0 0.1	WEIGHT SCHEDULE Weight of pump. Weight of motor. Weight of pump with motor and base frame CHARACTERISTIC CURVES Power consumption / discharge flow. Discharge quantity / Pressure. Discharge / efficiency. Any deviation taken against specifications Deviation taken as mentioned here. CONSTRUCTION FEATURES Type of pumps.	Yes/N	Ν̄ο				
स्वाक्त एवं सर्वाक इस प्रताम में दी तहें सुधना मास्त्र होताद . जन की सम्प्रता है इसका प्राप्त एवं स्ट्रिक्ट कर साक्षेत्रामा तस्ह प्रयोग, आहें करानी हैं। विस्ते प्राप्तिक एवं नाक्षेत्रा जाए ।	10 10 10	9.2 9.3 9.4 90.5 90.6 90.7	No. of stages. Type of impeller. Type of stuffing box sealing offerred. Type of coupling offered. Type of bearing and lubriction. Impeller diameter. Cross referred Standards: Nil						
INVENTORY NO	REV. NO. 04	-		निर्माणकर्ता WORKED BY जांचकर्ता CHECKED BY	D.PAL A. JAIN	4	Hen.		(08/06 C 6 00

