

Pre-Qualification Requirement for Lifting Beam

(For Material Code: W90312090102)

Document No. STE/TE/PQR/BI033/02

Qualification Criteria

The vendors meeting the below mentioned criteria shall be considered for further evaluation. Vendor to state its response as per Format below:

Sr. No.	PRE QUALIFICATION REQUIREMENTS	VENDOR RESPONSE
1	Supplier to confirm that they are regular supplier of Lifting Beam/EOT crane and shall have in-house capability of designing, manufacturing, inspection and in-house / outsourced testing facility.	YES/NO
2	Vendor should have experience of supplying at least 2 nos. of Lifting Beam / EOT crane of minimum capacity of 50 tonnes to Power Plant/OEM which must have been in successful operation for at least one year. For this, supplier has to submit either of following supporting documents meeting above pre-qualification requirement: A. 2 nos. copy of performance certificate in English from End User along with copy of unpriced purchase orders specifying that the product is in successful operation for one year from date of delivery (for Lifting Beam)/commissioning (for EOT). Or B. Second/repeat purchase order along with first purchase order [placed with minimum gap of one year after delivery (for Lifting Beam)/commissioning (for EOT) of first order] from same purchaser.	Documents Submitted YES/NO

General Notes:

- Against vendor's reply, BHEL reserves the right to verify /ask additional information / documents / clarifications. In case any information is found to be false / incorrect, BHEL reserves the right to reject vendor's offer.
- Vendor's offer shall not be considered if vendor fails to furnish the document / information / clarification as mentioned above or vendor doesn't meet the acceptance criteria (mentioned above from Sr. No. 1 to 5).
- All the documents and correspondences shall be accepted in English language only.
- BHEL team may visit Vendor works to assess vendor's manufacturing and/or testing facilities, if required.



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1.0 SCOPE

This document covers the broad guide lines on design and manufacture of welded lifting beam. Vendor to supply one lifting beam assembly consists of beam of box structure or other suitable structure, including following items for lifting purpose.

- 1) 2 nos. Endless Grummet Slings between Crane hook and lifting beam. (Description: - Endless grummet sling of minimum diameter 42mm (rope grade 1960 N/mm²) and indicative perimeter of 7000mm.)
- 2) 2 nos. Endless grummet sling for Lifting of HP Rotor (Description: 1 nos. Endless grummet sling of minimum dia. 21mm (rope grade 1960 N/mm²) and indicative perimeter of 9500mm + 1 no. Endless grummet sling of minimum dia. 21mm (rope grade 1960 N/mm²) and indicative perimeter of 9800mm)
- 3) 2 nos. Endless grummet sling for Lifting of IP Rotor (Description: 1 no Endless grummet sling of minimum dia. 27mm (rope grade 1960 N/mm²) and indicative perimeter of 10380mm + 1 no. Endless grummet sling of minimum dia. 27mm (rope grade 1960 N/mm²) and indicative perimeter of 10240mm)
- 4) 2 nos. Wire rope sling (eye type) for Lifting of LP Rotor (Description: 2 nos. Wire rope sling of minimum dia. 44mm (rope grade 1960 N/mm²) and indicative length of 7300mm).
- 5) 1 no Load shackle +1 nos. Lifting adaptor + 2 no. Endless grommet sling for lifting COP component 1(Adaptors to be suitably designed by supplier for lifting COP + Description of 1 no. load shackle- Load shackle 25T+ 2 nos. Endless grummet sling of minimum dia. 27mm (rope grade 1960N/mm²) and indicative perimeter of 5600mm.)
- 6) 2 nos. Adopter + 2nos. Load shackle for lifting of COP Component 2 (Description of 2 no adaptors-suitably designed for lifting COP + Description of 2 no. load shackle- Load shackle 25T.)
- 7) 4 nos. turn buckle + 2 nos. Braces for lifting LP Outer casing (Description: Turn buckle of Jaw & Jaw design 2"/16.78 T capacity + braces to be suitably designed by supplier for lifting LP Outer casing)
- 8) Protective (Secutex-PU)/Leather sheets: - total 6 nos. (2 nos. for each rotor)
- 9) Stand for lifting beam

Note:-

- a) Vendor to note that length of sling /adopters furnished above are indicative based upon dimension between crane hook and lifting bollard for lifting component mentioned in clause 9g as shown in drg 01209058000 (i.e. 1757mm).
- b) Vendor to note that dia. of sling between crane hook and lifting beam may change based upon the weight of the lifting beam (weight of lifting beam considered here is approx.5000kg).
- c) Maximum dia. of slings to be restricted to space available on components to be lifted given in drg no. 01209058000(for eg. refer View A & B of drg. 01209058000 sh1).



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- d) Parameter & length of the slings are critical and according to dimension given in the drawing, lifting slings for left and right of the same module may or may not be same.
- e) Location of lifting points for bladed HP/LP/IP shafts, COP & casing upper part shown in drawing 01209058000 are very critical and must be adhered while designing lifting beam and other associated components like slings, load shackles, turn buckles, braces etc.
- f) Vertical distance from crane maximum height to bottom most portion of the component (i.e. HP, IP & LP shaft, LP outer casing & COP) to be lifted is furnished in drawing 01209058000 and must be adhered while designing lifting beam and other associated components like slings, load shackles etc.
- g) Apart from above scope of supply, party to include other components in the scope of supply if necessary, to lift the following components.
 - 1) Bladed HP Shaft
 - 2) Bladed IP Shaft
 - 3) Bladed LP Shaft
 - 4) LP Outer casing
 - 5) Cross Over Pipe

2.0 PURPOSE

The lifting beam is required for lifting and transportation of fully bladed rotors and assembled outer casing (upper half) of LP turbine and COP at site, during assembly, erection and maintenance. Only one lifting beam has been foreseen for lifting of these components (bladed HP, IP and LP rotors, LP outer casing and COP).

3.0 WORKING LOAD LIMIT

Lifting beam shall be designed for WLL of 80 tons. All other lifting component as per scope of supply shall be designed for loads given in drawing 01209058000.

- 4.0** Vendor is fully responsible for making lifting beam functional at site. In case lifting beam dispatched to site in disassembled condition, vendor shall be responsible for assembly of lifting beam at site.

5.0 APPLICABLE CODE

The design, manufacture and testing of the Lifting Beam shall comply with the various requirements of the following standards.

DIN 15018 parts I, II & III DIN 15003



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IS:5, IS: 800, IS:807, IS:808, IS:1964, IS:2062, IS:2074, IS:2365, IS:2932, IS:3177, IS:3658, IS:3815, IS:3938, IS: 5749, IS:5749, IS:8791, IS:11732

This is not a complete list and cross-referred standard have not been listed.

Important: Lifting beam shall meet all statutory safety requirements like Factories Act 1948 an UP Factories Rules 1950 etc. Vendor shall submit certificates of Proof Load Testing Hooks/Bollards, Slings/Links used in place of slings and assembled Lifting Beam from competent authority as specified in Factories Act 1948.

For European vendor's following list of standards shall be applicable.

EN 13155, DIN 18800-1,-2,-3 & -7, ISO 5817, BGR 500, DIN 15018-1, DIN 15018-2, ISO 3834-3, ISO 15609-1, ISO 15614-1, EN 287-1, EN 1418, EN 10204, ISO 8501-1, ISO 12944-4, ISO/IEC 17025, EN 473, EN 1677, ISO 2768, ISO 13920.

Important: Lifting beam shall meet all statutory safety requirements as per VBG 9a.

Following standard to be followed for Shackles, Turn buckle and slings:-

1. Turnbuckle: - IS: 3121/ASTM F1145 or equivalent international standard.
2. Load shackles: - ISO 2415/EN 13889 or equivalent international standard.
3. Wire Rope Slings/Grummet slings: - IS: 2266/ DIN-EN-13414-3 or equivalent international standard.

6.0 DESIGN REQUIREMENTS

The detail mechanical designs will be worked out by the supplier. The design shall conform to the specified over all dimensions as well as specified requirements listed in the technical delivery condition.

6.1 Lifting bollards / hooks shall be arranged symmetrically about the center of gravity of the lifting beam, with the loading arrangement to be in the extreme end position. Each lifting bollard/hook shall have at least 60% loads rating of lifting beam. If separate lifting bollard / hooks are foreseen for assembled LP casing (top half) & COP then each of these shall have at least 30% load rating of lifting beam.

6.2 Adjustable load equipment has to be designed for less friction and single operation.

6.3 The overall height of the beam shall be kept as low as possible.



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- 6.4** The adjustable threads of device shall be secured against being unscrewed to extreme position. The number of load bearing threads shall be designed for maximum load case, required factor of safety and an impact factor of 1.25.

Horizontal displacement of center of mass has to consider up to ± 150 mm.

- 6.5** All enclosed spaces in the lifting beam shall be provided with drainage holes of adequate size.

- 6.6** The mechanical design of the lifting bollards, which are designed for attachments for two endless slings, must be such that the slings can be easily detached. Suitable pulleys/other arrangement shall be provided to keep the slings secured in positions.

- 6.7** Structural design shall be suitable for a maximum apex angle 120° at the main hook.

- 6.8** The lifting device shall be designed to withstand most severe combination of different loads which may occur simultaneously during the working. The acceptable stresses in various members shall in accordance with DIN 15018.

- 6.9** The lifting device shall be designed for hoisting class H1 of DIN 15018. Risk class "Average" shall be used for corrosion.

- 6.10** Complete lifting beam and its components shall be designed in line with standards / codes referred in clause 5.0. Manufacturing drawings for all the parts and sub-assemblies shall be worked in accordance with technical requirements specified. Strength calculations/Structural Analysis for all the load carrying members shall be worked out and submitted in form of a document for approval along with drawings for approval as per clause 7.1

7.0 DOCUMENTS TO BE SUBMITTED WITH TECHNICAL OFFER

These documents shall include:

- Overall General Arrangement Drawing (OGA) and Assembly drawings with part list.
- Strength calculations/Structural analysis.
- Quality plans.
- Welding procedure specifications and Procedure qualification record duly approved by third party. E.g. Lloyds etc.
- Functional description
- Additionally bought out components such as load equipment's, chain links, hitching ropes etc. have to be specified in the part list as follows:



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- A. Supplier
- B. Type
- C. Maximum load capacity

7.1 PRE-APPROVAL DOCUMENTS

Five copies of the pre-approval documents shall be submitted for the approval. These documents shall include:

- Overall General Arrangement Drawing (OGA) and Assembly drawings with part list.
- Strength calculations/Structural Analysis.
- Quality plans.
- Welding procedure specifications and Procedure qualification record duly approved by third party. e.g. Lloyds etc.

Approval of the pre-approval documents by the purchaser will in no way absolve the supplier and his subcontractor of their responsibility of sound design and manufacture of record rated load conditions. Commencement of manufacturing shall start after the approval of pre-approval documents by the purchaser. This information may be forwarded to customer and authorized inspection agency within the scope of the order.

8.0 FUNCTIONAL DESIGN

8.1 Functional Design Calculation & Mechanical Design

The following codes, standards and guidelines shall be applied for functional design calculations and mechanicals design as far as applicable.

- This TDC
- DIN 15018-1,-2/EN 13155 and further cross-referred DIN.
- Material as per IS: 2062, IS: 1964, for structural steel IS: 808 rolled steel beam, Channel and angle section etc. Grades, size and IS Number of the steel section to be used shall be clearly indicated on the manufacturing drawings.
- Relevant National/International Standard on the subject.
- All statutory obligations like Factories Act 1948 and UP Factories Rules 1950/VBG 9a for accident prevention, applicable regulation at the time if design and manufacturing.

8.2 Testing and Inspection Requirements

8.2.1 The supplier shall carry out inspection as agreed to established and maintain quality to ensure the mechanical accuracy of components, compliance with drawings, identification and acceptability of all materials, parts and equipment



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8.2.2 Quality plan for all major equipment/components/assemblies shall be submitted by supplier for approval as per the requirements of this specification in the BHEL format. Copies of all the test procedures acceptance norms and reference documents shall be furnished along with Quality Plans. In finalized QP, customer hold points shall be identified and communicated to supplier.

8.2.3 The purchaser shall be notified in writing for witnessing of tests and inspections identified as customer hold points (CHP) in the QP, three weeks in advance of the actual date of inspection/test. Quality Plan format shall be sent along with annexure-Q along with enquiry to supplier and approved QP shall form a part of purchase order.

8.2.4 The purchaser's representative shall be given full access to the shop in which equipment is being manufactured or tested and all test record shall be made available to him. Final inspection shall be carried out by the Purchaser's representative before the dispatch of the equipment. Final routine and type test shall be carried out in the presence of the purchaser's representative. Purchaser's representative may be qualified as purchaser's representative or its customer's representative or any other inspection agency as appointed by purchaser/its customer.

8.2.5 Q.A. documents package including copies of records / certificates for all tests / inspection carried out as per the quality plan / technical specification / drawings / data sheets shall be sent to purchaser along with the dispatch of the equipment to site. Q.A. documentation shall be submitted to Purchaser for approval prior to dispatch of equipment's.

All the sub-vendors for agreed list of bought-out items including all raw materials / semi-finished / finished component / shall be subject to the approval of BHEL Customer.

8.2.6 Q.A. package shall include the following.

- Approved Welding Procedure Specification and Procedure Qualification Record.
- Welder's Qualification records.
- Records of all N.D.T.
- Records of all tests / checks as per Quality Plan /drawing / specifications.
- Records of heat-treatment.
- Records of repairs. If any.

Records of deviations / concessions, if any and their approval purchaser / customer.



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- 8.2.7** All tests / checks during various stages of manufacture shall be carried out as per agreed quality plan / drawings specification requirements and shall be binding on supplier. However in the event of any deficiency observed in any part of equipment, purchaser reserves the right to extend the scope of inspection / testing if found necessary.
- 8.2.8** In case inspection / tests are performed by the supplier he shall demonstrate that he has qualified staff and necessary inspection / test equipment for the purpose.
- 8.2.9** In case the supplier intends to delegate the inspection and testing to some other agency then prior approval from the purchaser shall be required.
- 8.2.10** All inspections / tests listed shall be scheduled during the course of manufacture in such a way that flaws are detected on first opportunity well in time and remedial measure can be taken without jeopardizing the delivery dates.
- 8.2.11** Each certification shall include material specification, grade of steel, manufacture's marking batch no., specimen no. etc.
- 8.2.12** The test / checked envisaged by the purchaser to be carried out (listed below) are minimum requirement and are in addition to tests / checks carried out by supplier as per their internal practice, however, tests and inspection requirements shall be finalized in detail at the time of quality plan finalization.
- Material test for chemical and mechanical properties of all items. All materials shall be properly identified and material test certificates shall have correlation with the material identification. In the absence of test certificates / their correlation with the material, check tests for chemicals and mechanical properties shall be carried out.
 - Ultrasonic testing of hook before and after load testing shall be carried out as per IS:8791. Acceptance norms shall be as per IS:8791, Class-A
 - 100% D.P.T. of lifting bollard / hook after proof load test. Dye Penetration Test shall be carried out as per IS:3658 and acceptance norms shall be as per IS:11732, Level-1
 - Proof load test of hook / bollard as per IS:5749/ IS:3841. A certificate issued by competent authority should be submitted.
- 100% RT/UT of all welds in tension zone of lifting beam and weld taking the load at both ends of lifting beam shall be carried out as per ASME section-V acceptance norms shall be as per ASME section VIII. All other welds shall be subjected to 10% RT/UT. All field corner



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welds and welds not tested by RT/UT shall be subjected to 100% MPI / D.P.T. examination (accessible areas only).

All welding procedure and welders shall be qualified as per ASME section IX. Qualification shall be witnessed by purchaser's representative / third party inspection agency.

8.3 Stage Inspection – Stage inspection / supervision shall take place during course of manufacturing. Any deviation from the test / inspection, envisaged in the quality plans shall require the consent of the Purchaser.

All tested and examination listed shall be binding for stage inspection.

The supplier shall be responsible for the execution and commissioning of the inspection / test listed in the test and examination plans.

8.4 A pre-dispatch inspection will be carried out for all material / component / equipment / assemblies at the end of all shop tests at the supplier's works to check for –

- Verification of completeness and acceptance of all previous tests, inspections & checks performed and satisfactory documentation of the same.
- Checks for workmanship appearance and cleanliness.
- Checks for identification, painting, preservation and packing.

8.5 Acceptance Testing: Each lifting beam shall be subjected to functional test as per loading specified. In particular the freedom of movement of moving parts, adherence to the tolerance and also to the clearance necessary for proper functioning shall be demonstrated by the supplier.

8.5.1 Functional / load testing shall be carried out prior to dispatch unless otherwise agreed upon. This testing shall be done in presence of purchaser or his representative. Assembly and load testing shall be the sole responsibility of the supplier. A certificate of satisfactory performance should be signed by both parties in a suitable Performa. Supplier owns full responsibility to make it fully operative at site.

8.5.2 Incase slings are used in the lifting beam, then each slings leg shall be proof load tested to twice the permissible working load (maximum safe working load + dead weight of lifting beam) prior to use. Incase solid links etc. are used in place of slings Proof Load testing shall be at 1.5 times (safe working load + dead weight of lifting beam) a certificate issued by competent shall be furnished.



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8.5.3 Proof load testing shall be carried out 1.5 times the safe working load for 30 minutes. After the proof load test all items shall be checked dimensionally to detect any permanent set or other defect. After proof load test all weld seem shall be examined by 100% MPI / DPT (only one accessible area). A certificate issued by competent authority for Proof Load Testing shall be furnished.

8.5.4 Deflection test shall be carried out at safe working load. Deflection shall be noted after holding the load for 10 minutes (deflection should not exceed 1/900 of the span).

8.5.6 Identification marking:- The lifting beam shall be permanently labeled with beams own weight, permissible safe working load at the individual suspension point with the latter of sufficient size (approximately 100 mm).

A name plate will either be fixed or captive engraving made on Lifting Beam bearing to BHEL and manufacturer's name/identification marking, order number & year of manufacture. Beam size given length and width shall be put at a suitable location so that component can be unmistakable identified at a later date. Functional test stamping shall be affixed at the point along with the information specified above. A proper place preferably at the center of beam should be marked for putting BHEL emblem.

9.0 PRESERVATION / PAINTING

The part shall be properly conserved by applying suitable rust preventers for long storage in open humid environment. The Lifting Beam shall be given protective coating of one coat of red oxide zinc chromate primer (IS: 2074) and four finishing coats of dark admiralty gray shade no. 632 (unless otherwise specified) (IS: 5, IS: 2932). Prior to application to prime the surface shall be suitably prepared for painting. Final paint thickness shall not be less than 80 microns (unless otherwise specified). All bright finished parts to be given long lasting corrosion preventive coat. The moving parts shall be treated with long lasting lubricants. For lubrication required at future date, manufacture will furnish specification and supplier's address of the recommended lubricant, In case of any special working condition purchaser shall clearly specify the condition to supplier for giving proper anti-corrosion treatment.

Note: - Paint as per equivalent international standard may be accepted with prior permission from BHEL however preservation / painting should satisfy above clause 9.0.



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10.0 PACKING DISPATCH INSTRUCTION

Supplier shall be informed about the delivery site in advance. Suitable dispatch instruction will also be given. Supplier should send a copy of packing list and shipping documents well in advance (at least a month) before actual shipment.

Another copy of actual packing list/drawing/shipping documents should send along with consignment properly packed in a polythene cover. The parts shall be packed so that adequate protection is accorded against contamination, mechanical damage and corrosion.

Unless otherwise specified, assembly and testing of the Lifting Beam and warranty of its satisfactory performance at the place of delivery shall be responsibility of the supplier.

Assembly can be done at site with prior permission of the purchaser / the customer. However, full responsibility of assembly and testing lies with the supplier. Any assembly tools and commissioning spare required for this purpose shall be arranged by the supplier at his cost and risk. All statutory tests shall be carried out by supplier at his cost and risk.

STE-TE	Alok Kumar Singh		
STE-TE	Pradeep Kanaujia		
STE-TE	Munendra Mittal		
DEPTT.	NAME	SIGNATURE	DATE



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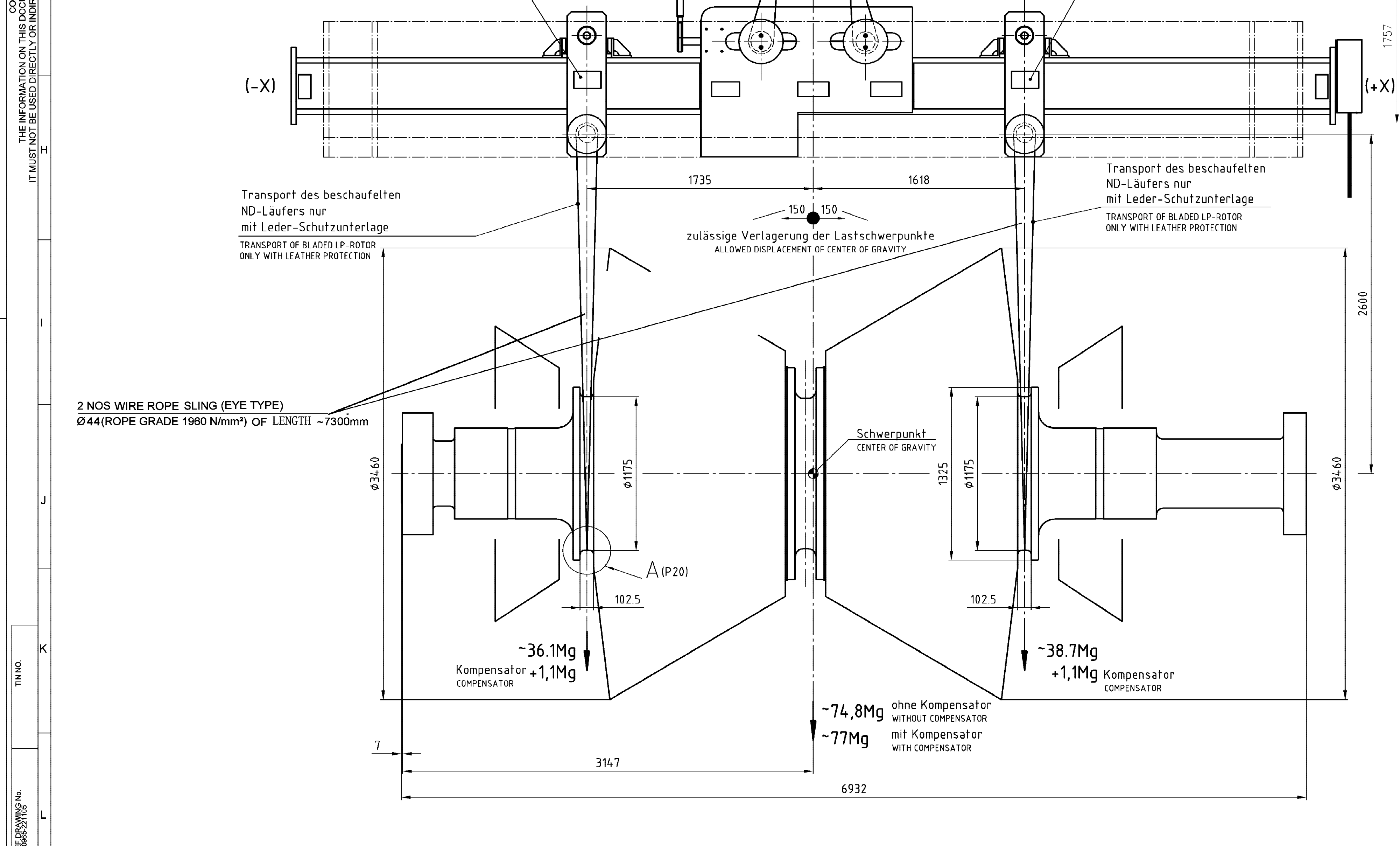
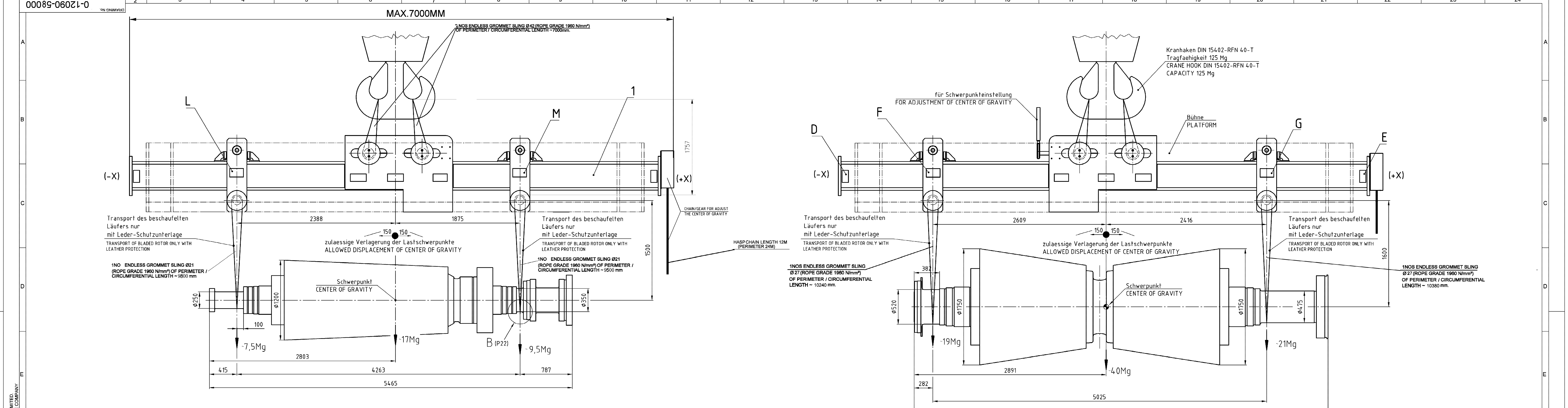
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RECORDS OF CHANGES					
SL. NO.	PARA NO. / ANNEXURE NO.	DOC. NO. / REV. NO.	REISSUE REV. NO.	REVISION DATE	NATURE OF CHANGE
1.	Addition of data in Scope of Supply at Page 1	00	01	18/07/2017	NEW DOCUMENT



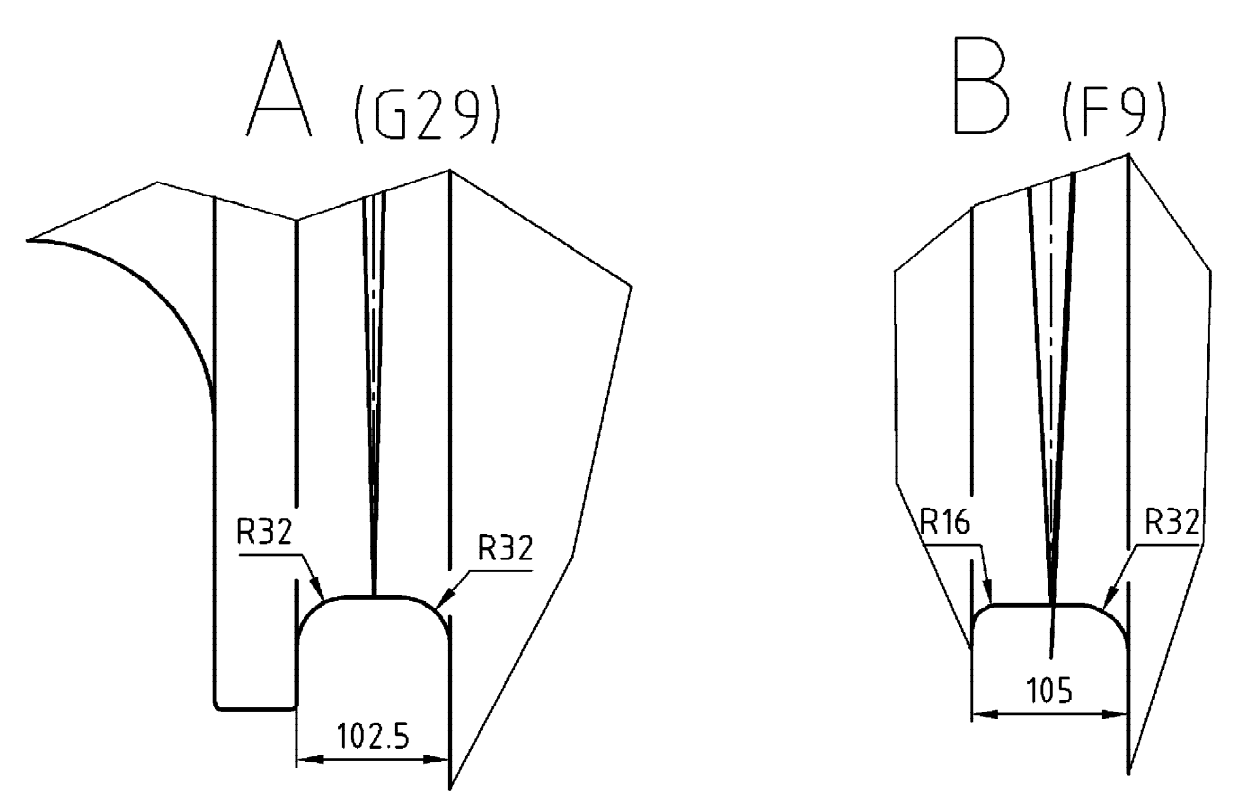
Schild Nr. PLATE No	Text
A	Typenschild des Herstellers nach VGB und Siemens PG Bestelldaten nach TLV 7050 NAME PLATE OF MANUFACTURER ACC. TO VGB AND SIEMENS PG ORDERING DATA ACC. TO TLV 7050
B	zul. Verlagerung des Lastschwerpunktes ALLOWED DISPLACEMENT OF CENTER OF GRAVITY ±150mm
C	Eigengewicht : xxxMg WEIGHT
D	(-X)
E	(+X)
F	MD-Welle IP-SHAFT 19,0 Mg
G	MD-Welle IP-SHAFT 21,0 Mg
H	ND-Welle LP-SHAFT 36,1Mg
J	ND-Welle LP-SHAFT 38,7 Mg
K	ND-Oberteil LP UPPER PART 13,6 Mg
L	HD-Welle HP-SHAFT 7,5 Mg
M	HD-Welle HP-SHAFT 9,5 Mg

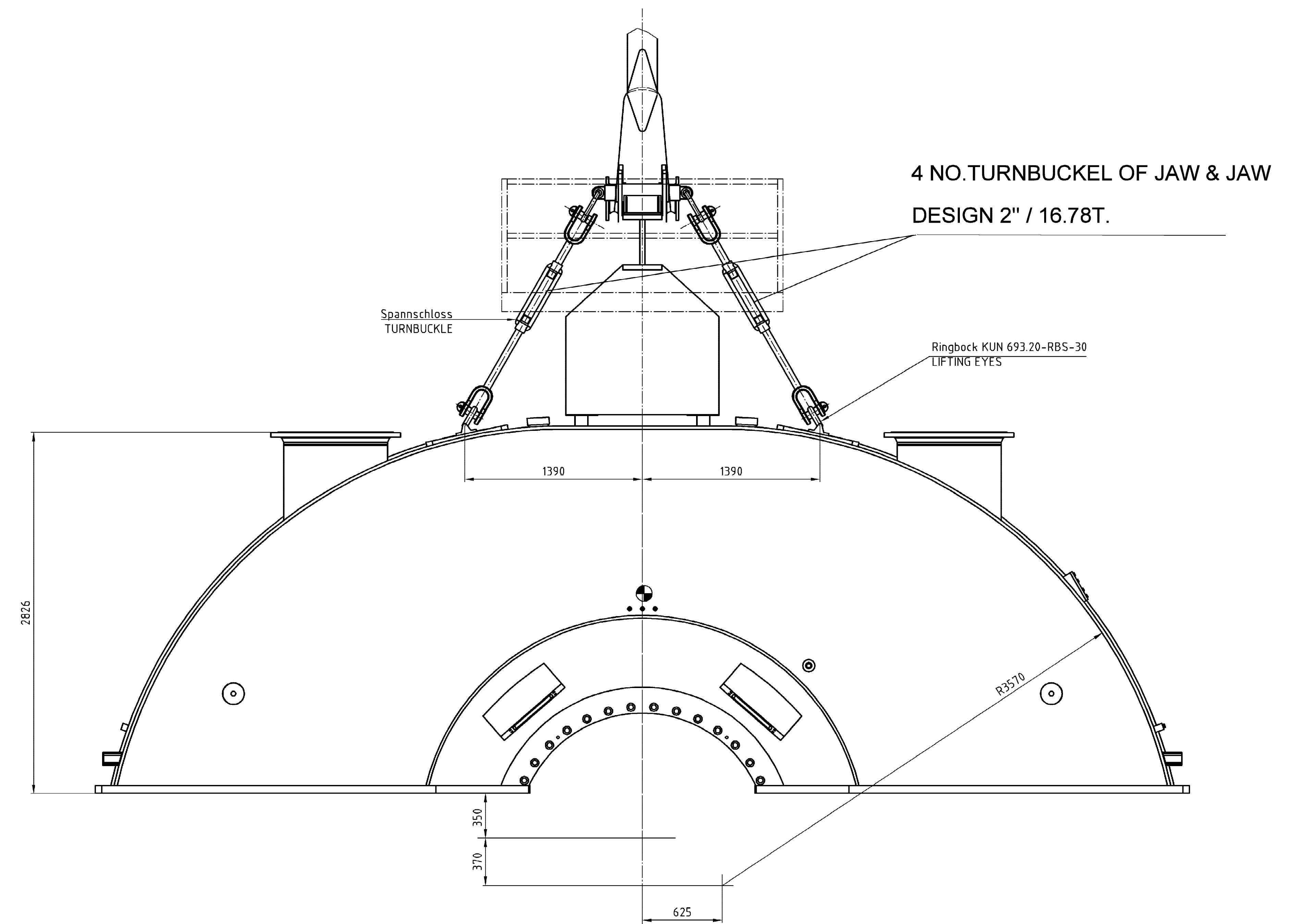
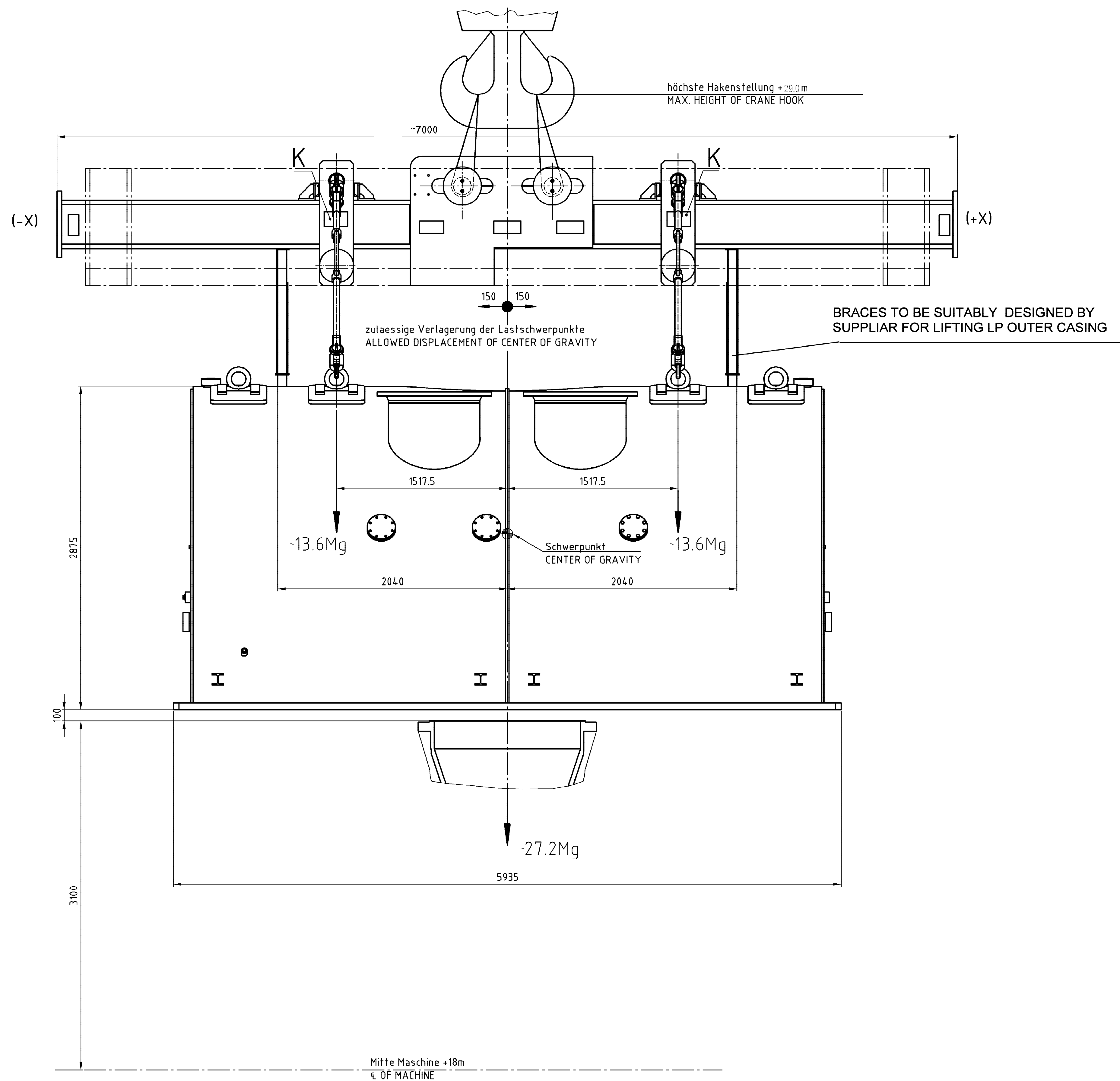
Die dargestellte Traverse ist nur ein Beispiel und nicht verbindlich für die Ausführung
THE ILLUSTRATED CROSS OVER BEAM IS FOR EXAMPLE ONLY AND NOT BINDING FOR EXECUTION

- Alle Gewichte inkl. Sicherheitszuschlag
WEIGHTS INCL. SAFETY ADDITION
- Achtung!**
-Anordnung und Einstellung der Traverse nach Montagevorschrift des Herstellers
- Seile gegen Vertauschen gekennzeichnet
- Transport der Wellen nur mit Leder-Schutzunterlage
- Die Traverse ist beidseitig mit einer durchgehenden Arbeitsbühne auszuführen

- ATTENTION!**
-ALIGNMENT AND ADJUSTMENT FOR CROSS BEAM ACCORDING TO OPERATION INSTRUCTION OF MANUFACTURER
- ROPES MARKED TO PREVENT INTERCHANGING
- TRANSPORTATION OF ROTORS ONLY WITH LEATHER PROTECTION
- THE CROSS-BEAM IS DESIGNED WITH WORK PLATFORMS ON BOTH SIDES
- Hinweis!**
Anschlageseite zum Kranhaken, zu den Bauteilen und Spanschlösser gehören zum Lieferumfang der Traverse
Bedienungsanleitung in deutsch
NOTE!
THE SCOPE OF SUPPLY OF LIFTING DEVICE INCLUDES LIFTING SLINGS FOR CRANE HOOK, MODULES AND TURNBUCKLES
OPERATION INSTRUCTION IN ENGLISH

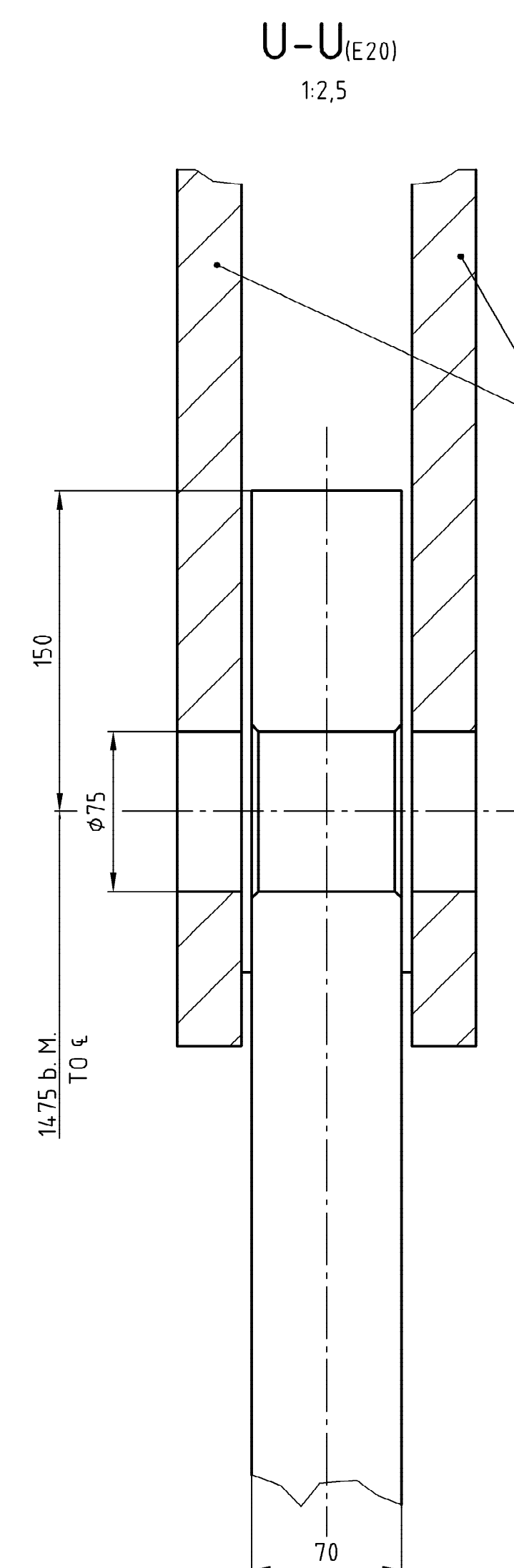
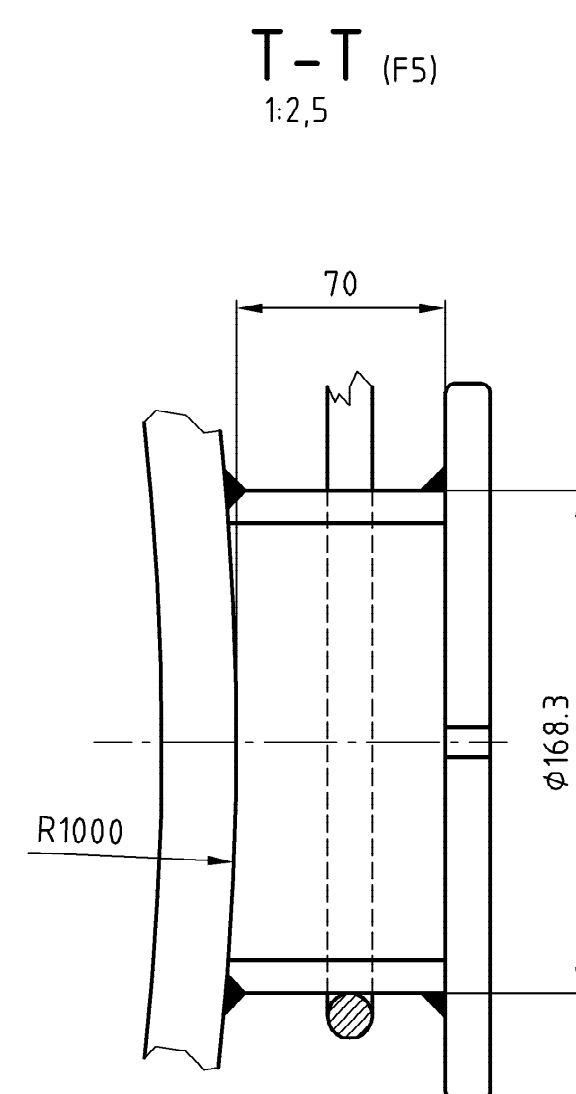
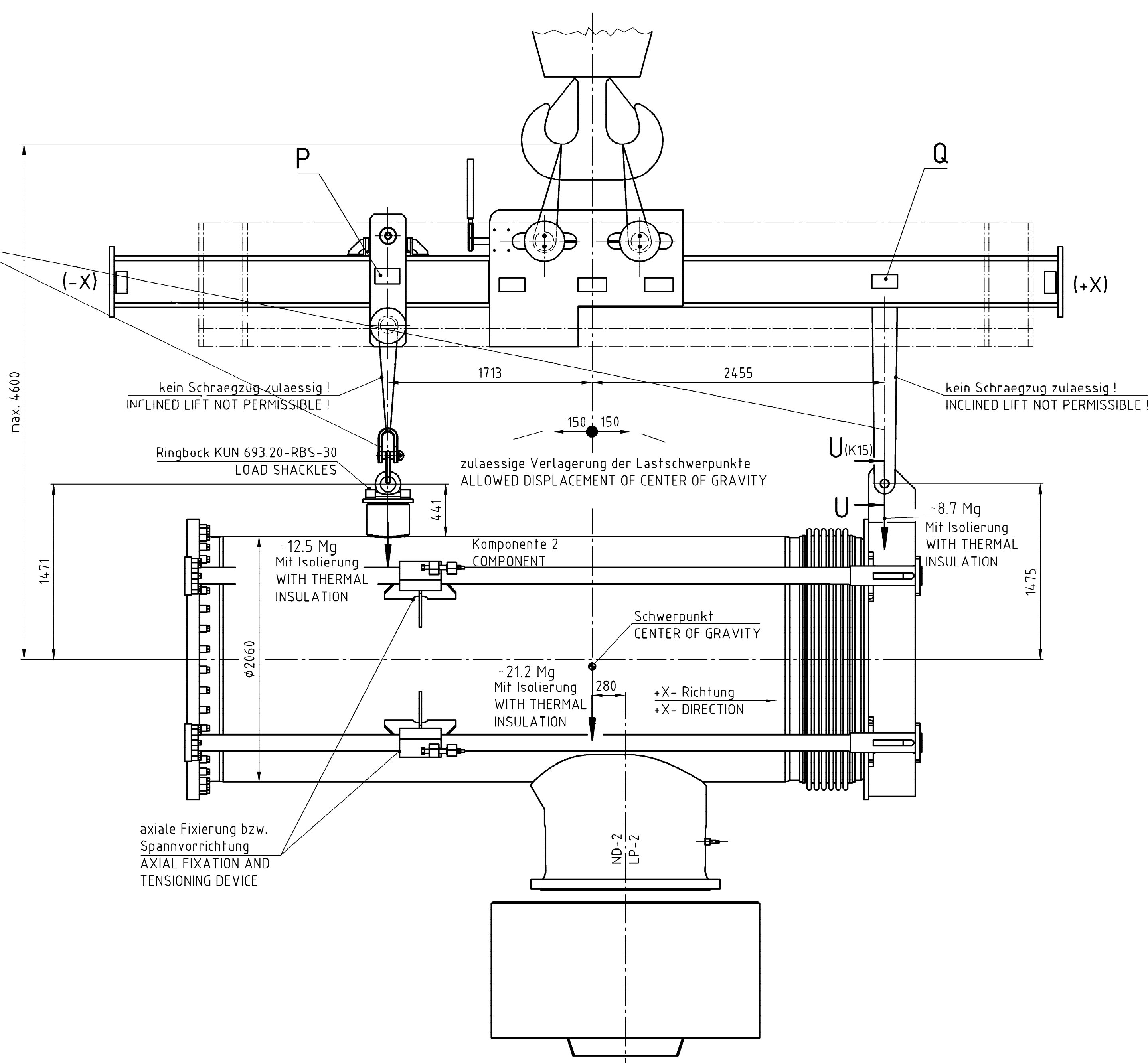
NOTE:- ALL TECHNICAL REQUIREMENTS & SCOPE OF SUPPLY SHALL BE AS PER TDC-F-01209058000-00





W90312090102

GMS No: C.B.O.M 012090 58000 CHECKED DATE STATUS OF PROJ 0 DATE TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT STEAM TURBINE																									
GRADE OF UNTOL.DIM MUCG-C/M/F AA0230208 WELDING-AB/C/D / AA0621104 GAS CUTTING-T3AA0621101 BHARAT HEAVY ELECTRICALS LTD. RANIPUR, HARDWAR <table><tr><td>INAME</td><td>SIGN</td><td>DATE</td><td>NO OF VISA</td></tr><tr><td>DRD MONIKA SINGH</td><td>SDV-</td><td>10.12.2012</td><td></td></tr><tr><td>CHD PRADEEP KUMAR</td><td>SDV-</td><td>10.12.2012</td><td></td></tr><tr><td>APPD G.K.RAY</td><td>SDV-</td><td>10.12.2012</td><td></td></tr></table>										INAME	SIGN	DATE	NO OF VISA	DRD MONIKA SINGH	SDV-	10.12.2012		CHD PRADEEP KUMAR	SDV-	10.12.2012		APPD G.K.RAY	SDV-	10.12.2012	
INAME	SIGN	DATE	NO OF VISA																						
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CHD PRADEEP KUMAR	SDV-	10.12.2012																							
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DRAWING MODIFIED DRAWING UPDATED SHEET NO. 1 IN TITLE BLOCK WEIGHT SYMBOL AS PER C/A NO. STE-17-F00508 C/A NO. STE-22-F0196 AS PER C/A NO. STE-16-F00517																									
DEPT STE SCALE WEIGHT (KG) REF. TO ASSY. DRG. CODE 4011  1:25 5000.00 ITEM					DEPT STE SCALE WEIGHT (KG) REF. TO ASSY. DRG. CODE 4011  1:25 5000.00 ITEM																				
TITLE : LIFTING DEVICE CROSS BEAM SHEET 2 CARD CODE DRAWING NO. 0-12090-58000 SHEET NO. 2 NO OF SHEETS 3																									



Schild Nr. PLATE No	Text TEXT	
N	Überströmgl., Komp.1 CROSS OVER PIPE COMP.1	15.2 Mg
O	Überströmgl., Komp.1 CROSS OVER PIPE COMP.1	16 Mg
P	Überströmgl., Komp.2 CROSS OVER PIPE COMP.2	12.5 Mg
Q	Überströmgl., Komp.2 CROSS OVER PIPE COMP.3	8.7 Mg

IDENTIFICATION ACCORDING TO HW04003977

W90312090102

G4M9 No/ C.B.O.M 0 12090 58000 OR DRAWING OFF				STATUS OF PRG OR NAME OF CUSTOMER/PROJECT		TYPE OF PRODUCT OR STEAM TURBINE			
GRADE OF UNTOL DIM M/C/G-C/M/F AA0230208 WELDING-A/B/C/D / AA0621104 GAS CUTTING-T/A/A0621101				DEPT STE CODE 4011		BHARAT HEAVY ELECTRICALS LTD. RANIPUR, HARDWAR			
REV 03 DATE 22.11.22 ALTERED CHECKED MANOJ SUDHAKAR DRAWING MODIFIED				REV 01 DATE 28.04.16 ALTERED CHECKED AFZAL DRAWING UPDATED		SCALE 1:25 WEIGHT (KG) 5000.00			
C/A NO. STE-22-F0196				AS PER C/A NO. STE-17-F0608		CARD CODE DRAWING NO 0-12090-58000			
AS PER C/A NO. STE-17-F0608				AS PER C/A NO. STE-16-F0147		SHEET NO 3 No. Of Sheets 3			

MANUFACTURER'S NAME AND ADDRESS			STANDARD QUALITY PLAN				TO BE FILLED BY BHEL		TO BE FILLED BY BHEL				
BHEL	VENDOR'S NAME	ITEM	LIFTING BEAM	QP NO.	QA BI QP 100								
				REV.	01								
		DRG. NO.	AS PER PO										
		SPEC.	AS PER PO										
		REV	AS PER PO			Page 1 of 3							
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS		CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS		AGENCY		REMARKS
										M	B	N	
1	2	3		4	5	6	7	8	9	D	10		11

1.0	MATERIALS											
1.1	PLATES	CHEMICAL COMPOSITION	MAJOR	ANALYSIS	1/THICKNESS	BHEL APPD. DRAWING & TDC	STANDARD AS PER APPD. DRAWING & TDC	TC	√	P	V	
		MECHANICAL PROPERTIES	MAJOR	MECH	1/THICKNESS	BHEL APPD. DRAWING & TDC		TC	√	P	V	Note-1
		ULTRASONIC TESTING (WHEREVER APPLICABLE)	MAJOR	UT	100%	BHEL APPD. DRAWING & TDC		TC	√	P	V	
1.2	LIFTING ADAPTOR, TURN BUCKLE, BRACES.	CHEMICAL COMPOSITION	MAJOR	ANALYSIS	1/HEAT	STANDARD AS PER APPD. DRAWING		TC	√	P	V	
		MECHANICAL PROPERTIES	MAJOR	MECH	1/HEAT PER HT BATCH			TC	√	P	V	
1.3	LIFTING S LINGS LOAD SHACKLE	LOAD TEST	MAJOR	PROOF LOAD TEST	100%	BHEL APPD. DRAWING / TDC	BHEL APPD. DRAWING / TDC	TC	√	P	V	
1.4	HOOKS / LIFTING BOLLARD	CHEMICAL COMPOSITION	MAJOR	ANALYSIS	1/HEAT	IS:3815/ 5749	AS PER SPECIFICATION	TC	√	P	V	
		MECHANICAL	MAJOR	MECH	1/HEAT PER HT BATCH	IS:3815/ 5749	AS PER SPECIFICATION	TC	√	P	V	
		DIMENSIONS	MAJOR	MEASURE	100%	APPD. DRAWING	APPD. DRAWING	I.R.	√	P	V	
		UT BEFORE LOAD TEST	MAJOR	UT	100%	IS:8791	IS:8791 CLASS-A	TC	√	P	V	
		LOAD TEST	MAJOR	LOAD TEST	100%	IS:5749/3841	IS:5749/3841	TC	√	P	V	
		UT AFTER LOAD TEST	MAJOR	UT	100%	IS:8791	IS:8791 CLASS-A	TC	√	P	V	
		DPT AFTER LOAD TEST	MAJOR	DPT	100%	IS: 3658	IS: 11732 LEVEL I	TC	√	P	V	

MANUFACTURER/SUBCONTRACTOR		LEGEND:	FOR CUSTOMER USE	APPROVED BY
		! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION.		
		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		

MANUFACTURER'S NAME AND ADDRESS			STANDARD QUALITY PLAN				TO BE FILLED BY BHEL		TO BE FILLED BY BHEL				
BHEL	VENDOR'S NAME	ITEM	LIFTING BEAM	QP NO.	QA BI QP 100								
				REV.	01								
		DRG. NO.	AS PER PO										
		SPEC.	AS PER PO										
		REV	AS PER PO		Page 2 of 3								
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS		CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS		AGENCY		REMARKS
										M	B	N	
1	2	3		4	5	6	7	8	9	D	10		11

2.0	IN PROCESS INSPECTION											
2.1	FABRICATION	VERIFICATION OF WPS & PQR FOR WELDER QUALIFICATION	MAJOR	VERIFY	100%	ASME-IX	ASME-IX	Records	√	P	W*	*W IN CASE OF NEW WELDER
		EDGE PREPARATION & FIT UP	MAJOR	VISUAL	100%	AS PER DRG.	AS PER DRG.	I.R.	√	P	-	
		WELD QUALITY OF BUTT WELDS	MAJOR	RT	100% TENSION ZONE + WELDS TAKING LOAD AT BOTH ENDS	ASME-V ARTICLE-2	ASME-VIII DIV 1, UW-51	NDT Reports	√	P	V	
		WELD QUALITY OF BUTT WELDS	MAJOR	RT	100% ALL OTHER BUTT WELDS	ASME-V ARTICLE-2	ASME-VIII DIV 1, UW-52	NDT Reports	√	P	V	
		WELD QUALITY OF ALL WELDS	MAJOR	DPT	100%	ASME-V ARTICLE -6	ASME-VIII DIV 1, APPENDIX VIII	NDT Reports	√	P	V	
2.2	FABRICATED ITEMS	DIMENSIONS & VISUAL	MAJOR	MEASURE	100%	AS PER DRG.	APPD. DRAWING	I.R.	√	P	V	
3.0	FINAL INSPECTION											
3.1	ASSEMBLY	DIMENSIONS & VISUAL	MAJOR	MEASURE & VISUAL	100%	BHEL APPD. DRAWING	BHEL APPD. DRAWING	I.R.	√	P	W	
		FUNCTIONAL TEST	MAJOR	VISUAL	100%	BHEL APPD. DRAWING / TDC	SMOOTH OPERATION	I.R.	√	P	W	
		LOAD TEST & DEFLECTION TEST	CRITICAL	SAFE WORKING LOAD TEST & PROOF LOAD TEST	100%	BHEL APPD. DRAWING / TDC	BHEL APPD. DRAWING / TDC	TC	√	P	W	Note-2

MANUFACTURER/SUBCONTRACTOR		LEGEND:	FOR CUSTOMER USE	APPROVED BY
		! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION.		
		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		

MANUFACTURER'S NAME AND ADDRESS			STANDARD QUALITY PLAN				TO BE FILLED BY BHEL		TO BE FILLED BY BHEL				
BHEL	VENDOR'S NAME	ITEM	LIFTING BEAM	QP NO.	QA BI QP 100								
				REV.	01								
		DRG. NO.	AS PER PO										
		SPEC.	AS PER PO										
		REV	AS PER PO			Page 3 of 3							
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS		CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS		AGENCY		REMARKS
										M	B	N	
1	2	3		4	5	6	7	8	9	D	10		11

		SURFACE CRACK EXAM OF WELDS (ACCESSIBLE AREAS) & HOOK (IF APPLICABLE)	MAJOR	DPT	100%	ASME-V ARTICLE -6	ASME-VIII DIV 1, APPENDIX VIII	NDT Reports	√	P	W		
		IDENTIFICATION, PRESERVATION & PACKING	MAJOR	VISUAL	100%	BHEL SPEC. PO & QP	BHEL SPEC. PO & QP	I.R.	√	P	-		

NOTE-1: Testing of Plates shall be carried out only if correlation with manufactures test certificate is not available

NOTE-2: The Slings, links, Hooks wherever applicable & complete beam shall also be certified by competent authority as per the Factory Act before offering the Beam for load test to nominated Inspection agency.

		LEGEND: ! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. 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	
MANUFACTURER/SUBCONTRACTOR				APPROVED BY