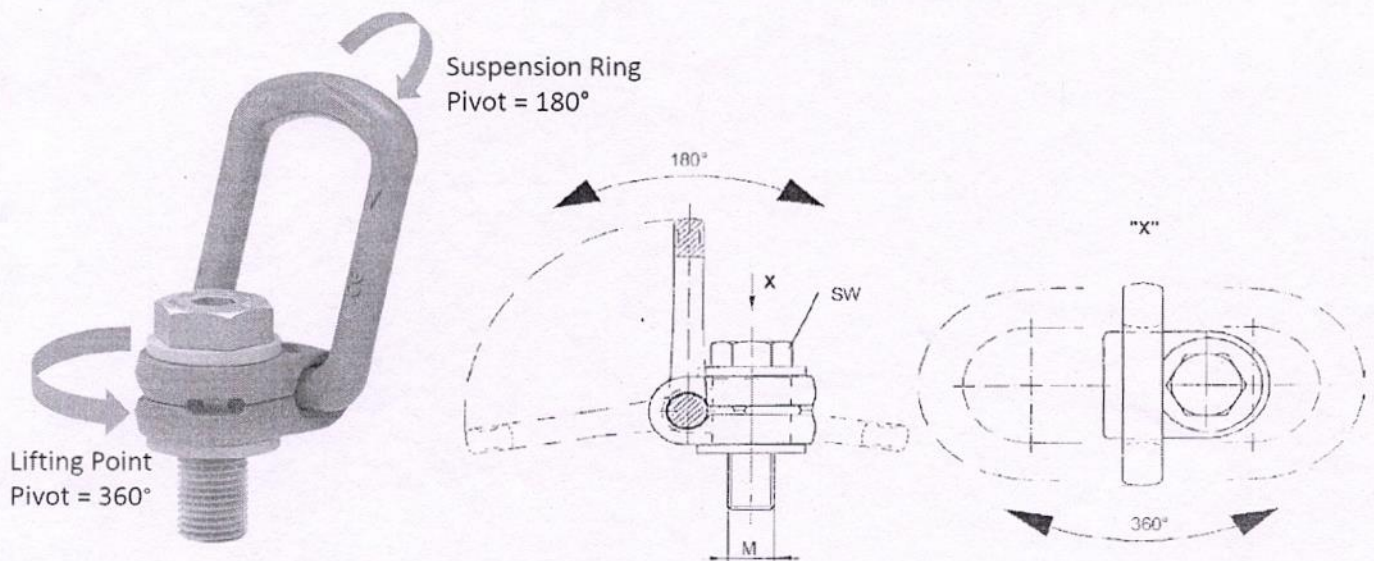


1. Item Description:

Load shackle are lifting tools, used for attaching loads to the corresponding load-carrying equipment. Load shackle allow components to be lifted and suspended securely, particularly in cases where components shall be turned or overturned and loaded in different directions. This is due to the fact that load shackle can be rotated through 360° and are designed to bear loads from all sides. Load shackle is critical components as it involves human safety as well as component safety.



Load Shackle

2. Qualification Criteria:

The parties meeting the below mentioned experience, Manufacturing & Testing Facilities Requirement and Technical Requirement shall be considered for further development of vendor for load shackle.

A. Experience Requirement:

- Vendor to confirm that they are supplier of Load shackle and shall have capability of manufacturing of the same at their works.
- Vendor must have experience of successfully manufacturing & supplying of at least ten (10) no. of Load shackle of each size mentioned in drawing 3-10740-56137 to OEMs of Steam Turbine (200 MW & above) or other reputed industry during last 7 years from the date of enquiry.
- Supplied Load shackle must be free to rotate 360° when installed, it should be adjustable in pull direction with foldable load ring (Refer description above).
- Forged suspension ring shall be according to EN 1677-1 or equivalent, electromagnetic crack detected and powder coated. Load shackle must have full WLL in any load direction.

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- e. Supplied Load shackle tested in accordance with DIN EN 1677-1, with a minimum of 20, 000 load cycles at 1.5 x WLL. Party to submit, test report as credential.
- f. Surfaces of load shackle shall be protected with corrosion protection coatings, Corrud-DT (Inorganic zinc-plated coating with a combination of zinc and aluminium plates) or equivalent.

Table -1

SL. No	Name of Customer	Detailed Address	Name, Phone no. and email - Id of contact person	Purchase order No.	Date of Supply	Bolt thread size	Working load Limit (WLL)	Manufacturing proof force (MPF) & Breaking Load	Surface Protection	Weight	Qty

Vendor to submit the following documents as an evidence of acceptance of supplied component, for the above mentioned successfully executed order:

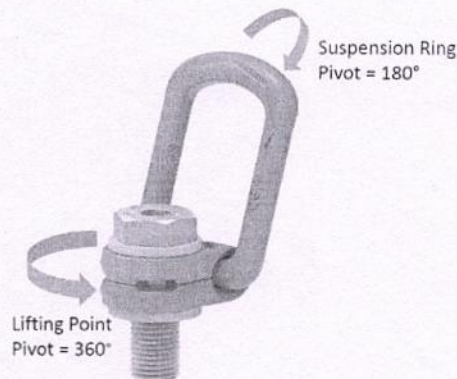
- I. 3 Nos. of Un-Priced Purchase Orders (POs) copies for above supply list.
- II. Drawing & photograph of supplied Load shackle mentioning bolt thread size, Working load limit (WLL) & Weight.
- III. Test report (showing standard followed for manufacturing, WLL, Manufacturing proof force, Breaking force etc.) of load shackle mentioned in Table -1 to be submitted. The correlation of test certificate with purchase order referred to be ensured by vendor.
- IV. Supplier to provide the document that they are approved supplier of Load shackle for the OEM of steam turbine manufacturers (200MW and above) or other reputed industry and at least two purchase order must have been executed to that customer (Supporting document: Approved Supplier of OEM & 2 no. purchase order copy from same OEM executed during last 7 year from the date of enquiry).

B. Manufacturing & Testing Facilities Requirement:

- a. Vendor to confirm that they have in-house machining facilities to manufacture the Load shackle.
- b. Vendor to confirm that they have in-house facility for inspection/testing/checking facilities for enquiry items.
- c. The supplier shall carry out inspection to establish and maintain quality to ensure the mechanical accuracy of components, compliance with drawings, identification and acceptability of all materials, parts and equipment.

C. Technical Requirement:

- a. Complete load shackle and its component shall be designed in line with standard ISO 898-1, ISO 4014, EN 1677-1, EN 10025-2, its cross referred standards and BHEL drawing 31074056137. The load shackle shall be designed for 4:1 Safety factor.
- b. The Load shackle must be free to rotate 360° when installed. Lifting point pivot: 360°, Suspension Ring Pivot: 180°.



- c. Load shackle must have full WLL in any load direction.
- d. Load shackle should be adjustable in pull direction with foldable load ring.
- e. Load shackle to tested in accordance with DIN EN 1677-1, with a minimum of 20, 000 load cycles at 1.5 x WLL. Party to submit test report with supply. Certificate issued by competent authority for testing shall be furnished.
- f. Surfaces of load shackle shall be protected with corrosion protection coatings, Corrod-DT (Inorganic zinc-plated coating with a combination of zinc and aluminium plates) or equivalent.
- g. Load shackle must have Clear marking of the minimum WLL for all loading direction.
- h. Load shackle may be used in conjunction with tapped holes in steel (minimum strength grade S235JR, 1.0038 according to EN 10025-2) or equivalent cast, without adversely affecting the working load limits .The surface roughness of the machined contact surface of the load shackle shall not exceed Rz 100.
- i. Load shackle shall be used with easily removable hexagon head bolt (hexagon head bolts as per ISO 4014) which has been 100 % inspected for cracks.
- j. Load shackle shall be delivered with operating instructions and declaration of conformity.
- k. Load shackle shall meet all statutory safety requirement like factory act 1948 and UP Factory rules 1950 or equivalent for accident prevention.
- l. Vendor shall submit certificates of proof load testing for load shackle used from competent authority as specified in Factory act 1948.
- m. The parts shall be properly conserved by applying corrosion protection coatings, Corrod-DT (Inorganic zinc-plated coating with a combination of zinc and aluminium plates) or equivalent for long storage in open humid environment.



(3)

Expression of Interest (EOI) for Manufacturing & Supply of Load Shackle

- n. The moving parts shall be treated with long lasting lubricant. For lubricant required at future date, manufacturer will furnish specification and supplier address of the recommended lubricant.

3) Selection of Supplier/ Manufacturer / Company:

Based on the information provided under this EOI, the prospective Supplier/ Manufacturer / Company shall be technically shortlisted. The short listed Supplier/ Manufacturer / Company will further be evaluated on the basis of terms and conditions defined in the enquiry.

Pre-bid clarification meeting can be held with the short listed parties regarding deliverables and physical checking of facilities at vendor works.