

TECHNICAL SPECIFICATIONS SHAPER MACHINE

(1) PURPOSE :

The portable type Shaper is required for machining of the blade insertion grooves in Alloy Steel (UTS < 980 N/MM², 0.2 Proof Stress- 700 N/MM²) Steam Turbine Rotors.

(2) TECHNICAL SPECIFICATIONS :

- 2.1 Length of stroke : Max.500 mm
- 2.2 No. of speeds to Ram : To be indicated by the party
- 2.3 No. of Ram cycles / min. : Max.140 strokes/min.
Steps to be indicated by the party
- 2.4 Motor Power : A.C. 7.5 H.P.
Specs. & make to be given by the party
- 2.5 Vertical Travel of tool post slide : 150 mm (**Manual feed only**)
- 2.6 Machine table is **NOT** required . Shaper length will be reduced accordingly.
- 2.7 The Shaper should have a **customized Tool post** as per enclosed BHEL Drg.No. R6729-0002 (**Ref. : ANNEXURE -1**).
- 2.8 The Machine should be mounted on a slide (bed on which machine will travel) which will be clamped to the shop floor bed plates during operation. The movement of the machine will be along the length of the rotor on the slides through a feed gear box with motor . Provision for automatic movement and clamping to be provided.
Overall dimensions of the machine should be as per the enclosed sketch .
(Ref. : ANNEXURE- 2)
Motor specifications to be given by the party.
- 2.9 Separate lever for minor adjustments in the ram stroke length shall be provided.**
- 2.10 Machine structure should be rigid so that vibrations do not occur during machining of blade insertion grooves.
- 2.11 Machine slide (bed on which machine will travel) should be of single piece cast iron block with hardened and ground guideways.
- 2.12 Automatic lubrication for each slide shall be provided.

- 2.13 There should not be any leakage / spillage of oil during operation or otherwise.
- 2.14 All moving guide ways, as well as their matching moving parts, shall be of hardened and ground steel.
- 2.15 Proper lifting arrangement shall be provided for shifting of machine from one place to another place.
- 2.16 Operator's platform shall be provided on both sides of machine.
- 2.17 Machine light shall be provided.
- 2.18 For proper evaluation of the offer , Machine catalogue / Drgs. / Sketches shall be provided along with the quotation.
- 2.19 Standard tool kit for operation and maintenance of the machine shall be provided.

(3) POWER SUPPLY :

AC 3-Phase, 415V +10 % / -15%, 50 HZ +/- 3%.

(4) SPARES :

Following Spares shall be provided :

- 4.1 Lubrication pump with its pipings 01 Set
- 4.2 All Oil seals 01 Set
- 4.3 Lead nut for ram movement 01 No.
- 4.4 Lead nut for Tool head slide 01 No.

(5) MANUALS :

5 sets of operation / maintenance manuals, containing electrical circuit diagram, detailed assembly drawings of each sub assembly with part list shall be provided.

(6) COLOUR :

Colour of the machine shall be apple green.

(7) WARRANTY :

Supplier shall provide full and complete Warranty/Guarantee for two years trouble free operation after successful commissioning of the machine.

(8) INSTALLATION and COMMISSIONING :

Party is to take full responsibility for carrying out start up and testing of the machine. Successful proving of **components** (complete machining of blade insertion grooves in one rotor) shall be considered as part of commissioning. During commissioning, accuracies as per **component drawing** (Refer **ANNEXURE -3**) are to be achieved.

(9) MACHINE ACCEPTANCE :

9.1 Provisional acceptance of the machine can be made by BHEL's representative at supplier's work prior to despatch, if desired.

9.2 Final acceptance shall be made by BHEL at it's plant following successful commissioning and achieving specified accuracy.

9.3 Accuracy chart and schematic drawings shall be submitted by the party along with the quotation.

9.4 Test certificate shall be furnished along with the machine.

(10) QUALIFYING CONDITION :

The supplier should be reputed original manufacturer of Shaper machines.