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INDIAN RAILWAYS

INTEGRAL COACH FACTORY, CHENNAI (I C F)

TECHNICAL SPECIFICATIONS FOR HYDRAULIC PRESS BRAKE (CAPACITY–80T)

Specification No: SHOP-10/MECH/HYDRAULIC PRESS BRAKE/80T/2023

	IMPORTANT FEATURES OF THE TENDER
1	**INSTRUCTIONS TO BIDDERS FOR FILLING TECHNICAL BID**
1.1	Unless otherwise stated, latest alterations/ revisions of specifications/ standards/ drawings shall be applicable. In respect of safety standards and environmental standards relevant to the machine, the machine manufacturers shall ensure compliance with International (CE/ISO/DIN/JIS)/National standards (IS) (Wherever applicable).
1.2	Tenderers should offer and quote for all the specified concomitant accessories, as these are considered essential for commissioning and utilization of the machine. Even if bidder does not recommend the purchase of any of these accessories, the price must be quoted for comparison purposes and their recommendation/suggestion to be indicated in the offer. Tenderers should also quote for optional accessories, spares and consumable spares as asked in the Specifications.
1.3	In case, any item is required in sets, please specify nos./pieces per set. This is essential for proper technical evaluation of the offer. Offers received without this may be considered as incomplete and liable to be rejected
1.4	The bidder should quote only for the specified make of sub-assemblies and equipment wherever specified. Makes of sub-systems other than the specified ones will normally not be acceptable. In case, some other make is quoted, specific reasons for the same including its features/advantages over specified makes must be brought out in the offer
1.5	In case there is a contradiction in any information provided (some parametric values given in the specification and those given in the brochure or some other document enclosed by the tenderer), unless specifically mentioned in the deviation cum confirmation statement under Annexure A of Section III, the values as given in the specification shall be taken as confirmed by the tenderer and offer evaluated accordingly.
1.6	Bidder or his authorized agent, in their own interest, should visit the consignees listed in Clause 3 Section-I with prior appointment with Controlling Officer of the consignee and acquaint themselves with existing process of manufacturing/remanufacturing, site conditions, availability of material Handling facilities etc.
1.7	The Purchaser may accept internationally accepted alternative specifications which ensure equal or higher quality than the specifications mentioned in the Technical Specification. However, the decision of the Purchaser in this regard shall be final. A copy of the alternative specifications offered should be sent along with the offer. The Tenderer should also furnish “Statement of Deviations” from tender specifications (as per Annexure A, Section-III) along with the offer.
2.0	**Description**
2.1	Non CNC Hydraulic Press Brake of Capacity 80 Ton (Tooled up) as per Specification No **SHOP-10/MECH/HYDRAULIC PRESS BRAKE/80T/2023**is required for manufacture of sheet metal components/sub assemblies of rolling stock of Indian Railways for consignee as listed in Clause 3.0 of Section-I.

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2.1.1	The Press Brake of 80T should be capable of bending profile of all the components listed in Annexure-F of Section-III for respective consignee as listed in Clause 3.0 of Section-IV. The profile of the components is given in their relevant drawings along with material specification
2.1.2	The Non CNC Press Brake of 80T should be capable to carry out all press forming operations through bending (i.e. air bending operation and coining/bottoming operations) on sheets/plates of components as listed in Annexure-F of Section-III.
2.1.3	The press brake should be capable to work in severe workshop conditions at full capacity continuously in double shift with ambient temperature 0^0C – 48^0C, relative humidity up to 98% and dusty environment. Changes in ambient conditions should not affect the performance of machine.
2.1.4	The Press brake shall be supplied tooled-up, with all tools and fixtures capable of producing bending profile on all the components listed in Annexure – F of Annexure-III.
2.2	**Leading Parameters: Non** CNC Hydraulic Press Brake machine shall conform to the following major & other parameters. The bidder should furnish the values of these parameters at S.No. 1.1 of Para 11 of the enclosed Annexure-A of Section-III

2.2.1	**MAJOR PARAMETERS:**	**Consignee Requirement**
2.2.1.1	Bending Capacity	80 Tons
2.2.1.2	Bending Length	1500 mm(min)
2.2.1.3	Bending Material &Thickness	Refer Annexure – F of Section – VI and drawings of components.
2.2.1.4	Working Height from ground level	800 to 850 mm
2.2.2	**OTHER PARAMETERS:**	
2.2.2.1	Throat depth	300 mm(min)
2.2.2.2	Beam Stroke	150 mm
2.2.2.3	Day light	400 mm(min)
2.2.2.4	Table Width	200 mm
2.2.2.5	Distance between housing/distance between frames	1000 mm
2.2.2.6	Approach speed	60 mm/sec
2.2.2.7	Pressing or bending speed	8 mm/sec
2.2.2.8	Return speed	60 mm/sec
2.2.2.9	**Back gauge**	
2.2.2.9.1	Range of Travel in X-axis	0-800 mm
2.2.2.9.2	Positioning speed of X-axis	240 mm/sec
2.2.2.9.3	Positional accuracy (X-axis)	+/- 0.01mm or better
2.2.2.10	Main Motor Power (100% duty cycle)	7.5 KW
Note:	**No deviation shall be permitted in Major parameters.**	

2.3	**Geometrical and Performance Standards**
2.3.1	The machine should meet the performance and testing criterion as laid down in DIN-55222 standards, IS: 2062 or equivalent International standards for machine

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	frame and other associated structure such as table, machine hydraulics as per ISO: 4401/4400 or DIN 24346/24340.
2.3.2	The machine should meet the quality standard/tolerances in forming/bending of the components as listed at Annexure-F of Section-III.
2.3.3	The Non CNC Press brake(s) machine should be capable of making multiple bends on work pieces to reduce set up and tear down time and maximize production i.e. it should be high productivity machine. The tolerances should also indicate the bending accuracies for different components given above to be processed on the machine offered. Contractor shall provide effective means for preventing "CROWNING EFFECT," i.e. bow at the center of formed components.
2.4	**Productivity Requirement**
2.4.1	The machine is to be provided completely tooled up and shall be utilized in double shift working on a regular basis. **The cycle time (floor to floor timing) for components as listed in Annexure –F of Section-III should be furnished in the offer by the Bidder.** The floor to floor time should be clearly indicated along with details of tools used, dies, punches, feed rate, any other relevant data etc. should be furnished for all the components in the format enclosed at S.No. 3 of Para 11 of Annexure-A of Section-III. The period shall be assumed as one shift of 8 hours with 85% availability of machine. The cycle time shall include the various elements involved such as given below: i. Set up time of the work/ components ii. Loading/ unloading time of components iii. Checking/ measurement time iv. Operation time for each component v. Total time for each component vi. Tear down time i.e. tool & die change time
2.4.2	The basis of the timing should be clearly given with breakup of all the parameters.
2.4.3	The timing should be maintainable for regular 08 hrs shift for Single/Double/Triple shift working 6/7 days a week with machine availability of 85%.
Note :	**i. The firm should also furnish tooling layout and force calculation for each component.** **ii. The tool layout should give the dimensional sketch indicating height of top and bottom tool, total travel of the top tool, height from table top to the lowest face of upper tool clamping and the bend profile of each component shown in Annexure 'F' of Section-III. The dimensional tolerance, surface finish value and hardness of each tool should be indicated separately.**
2.4.4	The machine manufacturer/ bidders shall furnish the quantified productivity norms for machine offered by them in terms of different types of components as listed in Annexure-F of Section-III in their offer. The machine manufacturer shall require demonstration of productivity parameters during commissioning/ testing performance of the machine at consignee end.
2.4.5	Productivity shall be as per items mentioned in Annexure-F of section-III.
2.4.6	Cycle time for all components need to be given by the bidders.
2.5	**Prove Out at Firm's Premises** The firm is required to demonstrate the following at the time of inspection to the inspecting authority, in addition to their normal checks carried out during assembly testing as part of quality control measures on the machine.

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2.5.1	Geometric and performance tests as per Clause 3.2.4.1
2.5.2	**Full load test –** The capability test shall be carried out & demonstrated at the time of machine inspection at firm's premises, by means of air bending of applicable maximum thickness of 1500mm long MS plate on 80 Ton Hydraulic Press Brake Machine
2.5.3	**Noise measurement test** as per Clause 1.1.2.5 of Section-II
2.5.4	In addition, the firm shall also be required to prove out the claimed cycle time on **05 blanks** of each of the components as listed in Annexure-F of Section-III on 80 Ton Non CNC Press Brake machine at manufacturer's premises during inspection. The manufacturer shall arrange the material/ blanks of components in required nos. for capability and prove-out tests on its own as per material specifications given in the drawings of the respective component
Note:	**i. The Bidder in the offer shall furnish actual test schemes along with sample charts for these tests; clearly showing the accuracies to be achieved on the machine.** **ii. Test pieces/material for prove out of above tests at Firm's Premises shall be arranged/supplied by the firm.**
2.6	**Prove-Out at Consignee's premises**
2.6.1	The firm shall be required to demonstrate the 80 Ton Non CNC Press Brake machine capability & prove out of the claimed productivity/cycle time during commissioning of machine on all components listed in Annexure-F of Section-III for continuous two shifts of 8-hours each. The required numbers of blanks for prove out shall be arranged by consignee at their end. However in case , component of a particular type is not available, the consignee can satisfy himself about the proving out based on achieving the specified bending accuracies and claimed productivity requirement/floor to floor time on maximum types of components as mentioned in Annexure-F of Section-III.
Note:	i. Tools & Equipment required for installation of the machine and Set of Test Mandrels/Special Gauges for checking & alignment of machine should be brought by the bidder. The bidder can take back these items after installation & commissioning of the machine, which are not in the scope of supply. ii. The bidder shall also be responsible for any deviation/rejection in prove out of the components due to wrong tooling, die, punches or malfunctioning of the machine during prove out and also for the delay in bending due to improper recommended tooling etc. Any changes in tooling during prove out shall be at the responsibility and cost of the bidder. The bidder shall supply the changed toolings at prove out stage as mentioned in Clause 4.2.9.

3.0	S.No.	Consignee	Quantity Required	Specification No.
	1.	Dy.CMM/SD/ICF/CHENNAI	01 No	SHOP-10/MECH/HYDRAULIC PRESS BRAKE/80T/2023
		Total	01 No	

4.	SCOPE OF SUPPLY:
4.1	The scope of supply shall include design, supply, and installation, testing, commissioning and proving out of Non CNC Hydraulic Press Brake 80 Ton

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	capacity on turnkey basis, required for forming / bending of all components listed in Annexure F of Section-III. The supply shall include all the concomitant accessories/ equipments as detailed in the specification and other concomitant accessories/ equipment, which the manufacturer considers essential to make the machine fully operational, when installed and commissioned. It shall also include installation and commissioning of related equipment, training of personnel in operation and maintenance of machine and supply of technical documentation.
4.2	**CONCOMITANT ACCESSORIES:** The Non CNC Hydraulic Press Brakes shall be accompanied by the following concomitant accessories whose cost shall be quoted individually:

4.2.1	First fill of lubrication oil, hydraulic oil, and grease etc. for initial commissioning of machine. The equivalent Indian standard for aboveoils shall be given **Note:** Lubricant oils, Coolants, greases etc. shall be from Indigenous sources like IOC, HPCL, BPCL, Castrol, Esso etc. Quantity and brand name of each item shall be given separately.	First fill
4.2.2	Pressure gauges to be provided in hydraulic system where pressureto be set or inspected.	02 Nos
4.2.3	Flexible electrical cables with copper conductor, laid in reinforced flexible conduit with end fittings on either side for connecting the incoming electrical supply from consignee's feeding point	One length of 10 meters
4.2.4	Refrigerant type oil cooler for Hydraulic System (**Firm shall indicatethe make and maximum heat removal rate in K Cal/hour**)	01 No.
4.2.5	Service Tools for operation and maintenance shall be provided. (**Description of tools offered along with their quantity shall also be clearly indicated in the offer**)	01 Set
4.2.6	Set of foundation anchors, bolts, leveling wedges etc.	01 Set
4.2.7	**Support Arms** – Four rigid adjustable bed mounted detachable handling arms with minimum 3 balls on each arm of 1 meter length for easy supporting of plates of 1.0 Ton capacity and components of various length and thickness given in Annexure-F of section-IV for respective consignee.	01 Set
4.2.8	**Handling Roller unit** – The handling roller unit shall be provided in front of the Press Brake to place the blanks before bending. The height of the roller stand shall be adjustable in accordance with the die height. The width and the length of roller stand shall be suitable (size shall be indicated in the offer) and it shall be able to withstand minimum load of 1 ton (the load bearing capacity shall be indicated in the offer). The mechanism provided for the adjustment of height of roller stand shall be explained in the offer. Provision of ramp to roll down the finished job from machine bed to the unloading and stacking area should be available and this should not infringe with the blank stacking table.	01 Set
4.2.9	Complete set of tooling required for bending of components listed in Annexure -F to leading parameters for respective consignee(detail of all tooling included in the set shall be furnished along with the make of tooling).	01 **Set**

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Note:	1. Firm should offer minimum no. of tools & dies required for bending of all the components listed in Annexure- F Section-III of leading parameters for respective consignees i.e. firm can offer one common tool and die for bending of more than one component. The price of the offered tools & dies should be quoted separately. 2. In order to have even material flow, V-dies shall have progressive radius on both sides of V-openings. 3. Tooling shall be of the make as specified in Clause 14.2 and the brand name shall be engraved or marked on the tooling. Punches shall be segmented for easy loading and unloading on the machine.	
4.2.10	Ball Transfer Unit to facilitate the sliding of sheets for finished components.	
4.2.11	Any other accessory considered necessary for operation of the Press Brake and for proving out of components listed in Annexure-F to leading parameters for respective consignee.	

4.3	**OPTIONAL ACCESSORIES:**
4.3.1	Any other accessory, which can provide enhanced capability or productivity of the machine, may be quoted as optional accessory giving full description and advantages.

5.	**EVALUATION CRITERIA**
	Total value of the offer will be calculated based on: - I. The cost of the basic machine. II. Cost of the concomitant accessories according to tender specifications. III. Cost of any other accessory which in the opinion of supplier is essentially required for making the machine fully functional. IV. Cost of Turnkey Charges viz. foundation, installation & commissioning etc. V. Cost of Preventive Maintenance inclusive of spares, material and labor cost during 1st & 2nd year of Warranty Period. VI. Cost of comprehensive CAMC for 5 years after warranty as per Clause no. 17. VII. Applicable duties and taxes, insurance and freight.
6.	**OTHER ITEMS TO BE QUOTED:**
	The following items will need to be quoted additionally though will not be part of commercial evaluation:

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	(i) Optional Accessories with breakup of individual items as specified in Clause 4.3 of Section- I (Ii) Consumables as per Clause 6 of Section-II with breakup of individual items as applicable.

7.	**DELIVERY SCHEDULE CHART:**
	In the event of acceptance of the offer, the machine shall be supplied as per the following Milestone Chart: **Name of the Machine: Non CNC Hydraulic Press Brake (Capacity – 80 Ton)** **Specification No.** SHOP-10/MECH/HYDRAULIC PRESS BRAKE/80T/2023

S.No.	**Activity**	**Activity Code**	**Outer Limit of Time Schedule expected byICF**
1.	Issue of LOA	D1	-
2.	Submission of PBG By Successful Bidder	D2	D1+30 days
3.	Issue of AT / Contract By ICF (after verification ofPBG)	D3	D2+30 days
4.	Opening of LC by ICF (forforeign suppliers)	D4	D3+30 days
5	Submission of GA drawings and requisition for the trial component (s) (if applicable) to consignee by Successful Bidder/Supplier along with information on power and other utilities required for machine.	D5	D3 + 45 days
6.	Approval of GA drawings by consignee (to be governed by Clause 11.2 of section-V) and confirmation of availability of components to be proved out at manufacturer premises and value of BG required for providing prove out components.	D6	D5+ 45 days
7.	Confirmation of availability of clear site by consignee	D7	By D6 (i.e. at the time ofapproval of GA drg.)
8	Completion of foundation	D8	D7+150 daysor latest by D 10
9	Submission of BG and collection of components from consignee by the supplier for prove out of machine at manufacturer's works.	D9	**D6 + 60 days**

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10	Supply/ Delivery of machine (for foreign suppliers on FOB basis)	D10	**For First machine:** D4 + 180 days Or D6 + 180 Days (whichever is later) **Thereafter subsequent machines**: @__01___machines per month
			Indigenous portion of supply (if any) **For first machine** D6 + 180 days **Or receipt of machine at site whichever is later** **Thereafter subsequent machines**: @__01___machines per month
	Supply/ Delivery of machine (for indigenous suppliers)	D10	**For First machine:** D6 + 180 days **Thereafter subsequent machines**: @_____machines per month
11	Power connection for the machine and other on site requirements to be provided by railways	D11	**D10 + 7 days**
12	Railway to give call to supplier for the commissioning of machine	D12	**D10 + 7 days**
13	Installation, commissioning and proving out of machine by supplier	D13	D11 + 120days or D12 + 120 days (whichever is later)
14.	Issue of PTC by consignee	D14	D13 + 30 days
15	Warranty by supplier	D15	D13 + 2 years

Notwithstanding the delivery period indicated elsewhere in the tender document, the delivery indicated in this schedule shall be taken as overriding and final.

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