

BRAITHWAITE & CO. LIMITED
5, HIDE ROAD,
KOLKATA – 700 043

TENDER NOTICE NO.BWT/PUR/CORP/2004/24 DT. 24.12.2004

Sealed tenders are invited for the supply as per the technical specifications of the following items from reputed manufacturers/suppliers with proven track record .

Sl No.	Description	Requirement (in Nos)			Total	EMD (Rs)
		CW	AW	VW		
A	Portable Spectrometer	4	4	4	12	48000/-
B	Laser Equipment for measuring camber and related accessories	2	2	-	4	2000/-
C	Electronic Weighing Bridge with Printing facility	1	1	-	2	48000/-
D	Diesel driven shunting locomotive	1	-	-	1	66000/-
E	Sub merged arc welding machine (Trolley Mounted) with accessories	4	1	-	5	20000/-
F	Portable Spectrometer	1	-	-	1	36000/-

Technical Specifications of the above Machine /System are enclosed herewith in the Annexures- B – G.

2. Issue of Tender Documents : Any working day except Sunday and Holidays between 10 AM to 3 PM on payment of Rs. 300/- (non-refundable) by DD/Pay Order to be issued in favour of Braithwaite & Co. Ltd payable at Kolkata for each tender document.
3. Last date and time of sale and submission of Tender Documents : Upto 3 PM on 24.01.2005 (Due Date)
4. Opening of Part-I of the Tender: At 3.30 PM on 24.01.2005

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5. The offer shall comprise of 2 Parts as under :
- (a) Part-I : Credential Bid, EMD and Techno-commercial Bid
 - (b) Part-II : Price Bid

Both the parts shall be submitted separately in 2 envelopes and these shall be put in 3rd envelope and all the three envelopes shall be superscribed with Tender No. BWT/PUR/CORP/2004/24 and Due on 24.01.2005.

6. Tender Documents can also be available by down loading from our website www.braithwaiteindia.com. In that case, Rs. 300/- in the form of DD/Pay Order is required to be submitted towards the cost of each tender document in addition to EMD amount alongwith the offer.
7. Sealed Tender, addressed to OSD (Purchase), Braithwaite & Co. Ltd., 5, Hide Road, Kolkata 700 043 may be dropped in our Tender Box No. 01 (in case of Hand Delivery) or may be sent by Registered Post but must reach us positively within 24.01.2005 (due date) by 3 PM.
8. Braithwaite reserves the right to accept /reject/split any or all tenders in part or full without assigning any reason.
9. An unconditional acceptance of commercial terms & conditions stipulated in Annexure 'A' of this tender is to be given alongwith the offer.

For BRAITHWAITE & CO. LTD

N. P. Ghosh
AM (Purchase)

Enclosure : Annexure A - G

BRAITHWAITE & CO. LIMITED
5, HIDE ROAD,
KOLKATA – 700 043

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General Information with Commercial Terms & Conditions :

- i) Tender will be considered as cancelled if the documents as required for Part-I and Part-II are not placed in respective envelope.
- ii) The tender is not transferable.
- iii) Braithwaite reserve the right to accept or reject any quotation without assigning any reason, whatsoever and without incurring any liabilities to the affected bidder.
- iv) Purchase preference will be applicable to Public Sector Undertakings (PSU) as per purchase preference policy of Govt. of India.

2. General Terms & Conditions :

2.1 Part-I : Credential Bid, EMD and Techno-commercial Bid

2.1.1 Credential Bid :

Tenderer should submit all papers related to credentiality as under :

- Details of supply of similar equipment in last 3 years alongwith the copies of Purchase Orders and successful commissioning certificates;
- Sales Tax Clearance Certificate;
- Income Tax Clearance Certificate

2.1.2 Earnest Money Deposit (EMD) : Earnest Money Deposits as prescribed in the para 1 of page 1 of tender document are required to be deposited as Bid Security/EMD by Demand Draft/Pay Order in favour of Braithwaite & Co. Limited, Kolkata failing which the Tender will not be considered. However, for SSI Units with single point registration with NSIC, payment of EMD/Security Deposit can be considered for exemption. Copy of the valid NSIC Registration Certificate should be furnished alongwith the bid.

EMD will be forfeited or revoked if the tender is withdrawn and/or if the price is escalated later within the validity of the tender. EMD without any interest shall be returned to unsuccessful bidder after finalisation of contract.

2.1.3 Techno-Commercial Bid :

EMD : Submission of EMD as per Clause 2.1.2

2.1.3.1 Security Deposit : 10% of the order value in the form of Bank Guarantee from an Indian Nationalised Bank which will be valid till completion of the commissioning the machine to be submitted within 15 days of receipt of purchase order. This Security Deposit will be released or after successful completion of the job and submission of Performance Guarantee.

2.1.3.1.1 Performance Guarantee : However, Security Deposit may be converted to Performance Bank Guarantee, intimating the same to the party.

2.1.3.2 Submission of improper Bank Guarantee will lead either rejection of offer or cancellation of order.

2.1.3.3 Bank Guarantee Format for EMD and Security Deposit is/are available from Purchase Department.

2.1.3.4 Validity : Offer should remain valid for 90 days from the date of opening of this tender.

2.1.3.5 Corrections (if any), must be signed at the appropriate place by the signatory of the bidder, otherwise offer will be treated as invalid.

2.1.3.6 Techno-commercial bid must accompany detailed description and specification of the equipment as offered.

2.1.3.7 Deviation statement between the tendered specification and the specification of the offered equipment must be submitted alongwith the offer..

2.1.3.8 Splitting of Tender : We reserve the right to split up the tendered quantity within more than one bidder without assigning any reason.

2.1.3.9 Liquidated Damage (LD) : In the event of failure on the part of the vendor to supply/errect/commission the equipment as per delivery schedule, Braithwaite reserves the right to recover by way of LD a sum of 0.5% for every week or part thereof subject to maximum 10% of the value of unexecuted/non-supply part of the order.

2.1.3.10 Risk Purchase Clause : In case the vendor fails to execute the contract fully or partly, Braithwaite shall have the right to procure/execute the work through other agencies as decided by Braithwaite at the risk and cost of vendor, after giving appropriate notice in writing.

2.1.3.11 Any legal dispute that may arise, will be settled within the jurisdiction of Court of Kolkata.

2.1.3.12 Payment Terms - (For item no.A,B,D,E & F) :

90% payment on receipt and acceptance of materials & balance 10% after successful commissioning and handing over the equipment.

For spares : 100% payment against proforma invoice on receipt of materials.

Payment terms for item no (c) i.e. Electronic Weigh Bridge

70% on receipt and acceptance of materials. 20% after complete erection of each equipment and balance 10% after successful commissioning and handing over of each equipment.

Erection charges per equipment : 90% of Erection charges within 30 days from the date of submission of bill after successful completion of Erection of the equipment and balance 10% after successful Commissioning and handing over of the equipment.

Commissioning charges per equipment : 100% payment will be made within 30 days from the date of submission of bill with proper certification after commissioning and handing over of the equipment.

For Spares : 100% payment against Proforma Invoice on receipt of materials.

For all supplies payment will be released on receipt of materials in good conditions at the respective Works of Braithwaite & Co. Ltd.

2.1.3.15 Price : Prices are fixed and not subject to variation on any account. Prices for equipment and accessories to be given in the separate enclosure (Price Bid). Break-up of prices considering Basic price, Excise Duty, Sales Tax, Packing and Forwarding, Freight & Insurance Charges etc. to be indicated separately. Price will remain firm till the execution of the order.

2.1.3.16 Excise Duty : In case of Price inclusive/exclusive of Excise Duty, vendor shall pass on the MODVAT benefit to Braithwaite by providing Transporters copy of Excise Duty invoice along with the supply. Otherwise, the same shall be deducted from vendor's Bill.

2.1.3.17 Delivery : Delivery shall be treated as the essence of the contract, Delivery period shall be reckoned from the date of issue of purchase order. The vendor should indicate their best possible delivery schedule with door delivery to the respective Works as mentioned in Para-1 of Page-1 of the tender documents.

2.1.3.18 Inspection : Quality Assurance Plan to be submitted by vendors during Engineering and the same should be approved by Braithwaite. Inspection will be carried out by our Inspector of the respective Works of Braithwaite in different stages during manufacturing of the equipments. All inspection and test will be carried out as per approved procedure of Braithwaite. You have to bear all cost of any and all inspection and tests

2.1.3.19 Packing Identification Mark : Vendor should pack the materials so as to avoid loss or damage during handling and transport by Rail/Road. Each package should contain a packing note mentioning the name of vendor, number and date of order, nomenclature of the stores etc.

Notwithstanding anything stated in this clause, the vendors shall be responsible for loss/damage/depreciation of the materials due to faulty, unprotected and insecure packing.

2.1.3.20 Despatch clearance : Materials will be delivered from Vendor's Works after getting the despatch clearance from Braithwaite. Vendor should inspect and select the proper place in consultation with Engineer-in-charge of Braithwaite for unloading of materials at the respective Works of Braithwaite & Co. Ltd.

2.1.3.21 Loading & Unloading of materials : Loading and Unloading of materials from the transport during delivery of the materials will be the responsibility of vendor. In case of heavier components Braithwaite will provide Crane facilities during unloading of the same.

2.1.3.22 Guarantee Period : All equipment should be free from any defect from faulty design and/or materials and workmanship. Vendor should provide guarantee for their product against supply of defective materials and workmanship for a period of 18 months from the date of delivery of materials or 12 months from the date of commissioning which ever is later. In case of any defectiveness towards materials or workmanship vendor have to repair/replace the same at free of cost.

2.1.3.23 Insurance : Vendor will provide the transit Insurance of the equipment at Vendor's cost.

2.1.3.24 Income Tax shall be recovered as per Company's rule.

2.1.3.25 At the time of Unloading, Erection and Commissioning of the equipment (if applicable) all safety measure of the equipment and vendor's employees will be taken care by vendor only. Braithwaite will not be responsible for any damage or loss.

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2.1.3.26 All materials required for the job should be entered in the Factory premises through challans. All challans should be endorsed by Security Deptt., Stores and in-charge of Capital Project.

2.1.3.27 During progress of work any unforeseen minor work not covered within the scope of contract shall have to be carried out by vendor at no extra cost to the Company.

2.1.3.28 **Force Majeure :** For the purpose of this clause, "Force majeure" means and even beyond the control of the Supplier and not involving the supplier's fault or negligence and not foreseeable. Such event may include, but are not restricted to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes. If a Force Majeure situations arises, the supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical and shall seek all reasonable alternative means of performance not prevented by the Force Majeure event.

2.1.3.29 **Termination & Suspension :**

The Company may at any time on breach of the contract by vendor, give them a written notice of such breach. If vendor does not cure that breach within a period of 30 days after receiving such notice then the Company may terminate the contract at any time there after stating therein the date of termination

On receiving the notice of termination, vendor will stop performance of the work order from the effective date of termination, hand over all drawings and documents and transfer all the rights of work to the Company.

In the event of termination, the Company and vendor will all together to arrive at the fair solution in determining the claims and payments due to each other arising out of such termination. If no fair solution is arrived at within 2 months from the effective date of termination, the matter shall be referred to Arbitration.

The Company may suspend the work in whole or in part at any time by giving notice to vendor in writing of such effect stating the nature, the date and the anticipated duration of such suspension.

On receiving the notice of suspension, vendor will stop all such work which the Company may at any time cancel the suspension notice for all or any part of suspended work by giving written notice. Vendor will resume the suspended work as expeditiously as possible after receipt of such withdrawal of suspension.

In the event of suspension, the Company shall not be liable to pay to vendor for any damage or loss or idle labour caused by such period of suspension of work.

- 2.1.3.30 Arbitration :** All questions disputes on difference whatsoever shall arise between the Company and vendor upon or in relation to or in connection with the contract, either party may forthwith give to the other notice in writing of the existence of such question, dispute or difference and the same shall be referred to the sole arbitration of the Managing Director of Braithwaite & Co. Ltd and his award shall be binding on both the parties. The M.D. shall have the right and authority to appoint an arbitrator any Officer of the Company, not below the rank of G.M. who is not directly connected with the Purchase Order.
- 2.1.3.31 Vendors must recommend spare parts required for maintenance for 2 years trouble-free operation of the equipment.
- 2.1.3.32 Necessary Training of our Personnel for operation and maintenance of the equipment shall have to be arranged by the successful vendor.

BRAITHWAITE & CO. LTD.

Annexure – B

A) SPECIFICATION FOR PORTABLE PLATE EDGE BEVELING MACHINE (M+/1657)

- | | | | |
|----|--------------------------------|---|---|
| 1. | Description | : | Portable Heavy Duty weld joint beveling machine, electrically powered suitable for beveling of Stainless Steel Alumn. And Mild Steel plate. |
| 2. | Plate Thickness | : | 6 mm to 40 mm. |
| 3. | Max. Bevel capacity | : | Bevel width 18 mm on standard 30 ⁰ bevel angle of material. |
| | Maximum width of bevel | : | 1½ tensile strength material of 45 Kgs per / mm. ² |
| | Maximum depth of bevel | : | 15mm on standard 30 ⁰ bevel angle on 45 Kg/mm ² Tensile strength material. |
| | Bevel Angles for Welding joint | : | 22.5 ⁰ , 30 ⁰ , 37.5 ⁰ , 45 ⁰ , 55 ⁰ . |

4. Bevel speed : 120 inches or 300 cm per minute (min.)
5. Motor
 - a) 2 HP
 - b) 440 V
 - c) 3 phase
 - d) 50 HZ
6. Cutter Rotation : 10 to 12 RPM
7. Special features :
 - a) Free running undercarriage with spring loaded shock absorbers and ball bearing casters.
 - b) Clamp roller & guide roller assembly for self guided & self propelled operation.
 - c) Machine should have easy adjustment for root face and depth of level.
 - c) Machine should be supplied with push button stop / Start switch and Magnetic starter with overload and undervoltage protection.

ANNXURE - D

C) TECHNICAL SPECIFICATIONS FOR WAGON WEIGHING SYSTEM

1.0 DESCRIPTION :

Wagons of various types needs to be weighed after manufacture, to determine their respective tare. To fulfil this purpose, we need to install a Weigh Bridge having facilities for weightment and Display of the weight of railway wagons. The wagon weighing system shall be installed at a suitable place at Clive Works and Angus Works.

2.0 SCOPE OF WORK :

The scope includes design, engineering, manufacture, supply erection / commissioning of wagon weighing system, complete with Electronic recording arrangement, print-out facility and calibration compatibility, civil engineering works like Pit with suitable drainage arrangement, R.C.C., concrete bay at both Inward and Outward side, Structural frame work for rail supporting arrangement at the Weigh-Bridge, rail plate, rail anchors / clips, anchor fastener, grouting material, earthing material (if required) to suit the Technical Specification / requirements as described in the following paragraphs.

The scope of work should include consumables reqd., for commissioning of the system. Any other equipment / component required to make the Weigh-Bridge operational are also to be included the scope of work.

The supplier shall clear the work site after completion of the work and remove all the debris, generated during execution of the work, to a suitable place as indicated by the Purchaser.

3.0 TECHNICAL SPECIFICATION :

- a) Type : Stationary
- b) Purpose : Railway Wagon Weighing System. Strain gauge/ load cell operated should have electro-mechanical arrangement to show and deliver results even during water logging or water accumulation in weigh-scale pit.
- c) Duty Range : To weigh one no. empty wagon / loaded wagon at a time with technical details as shown in Table-I enclosed herewith.

0 – 50 MT , 0 – 100 MT (separate offers to be made for these two ranges of weighment).
- d) Accuracy : 0.1 %
- e) Display : Digital Display of weight of individual wagon weighed in stationary condition.
- f) Rail gauge :
 - i) Broad gauge and meter gauge (with co-axial arrangement).
 - ii) Broad gauge only
(separate offers to be made for these two types of Rail gauge arrangement).
- g) Accessories : Total instrument package for Sensing and Display of the weight, complete with wiring and fittings and print-out facility.
- h) Calibration : The system shall be compatible for periodic Calibration arrangement by Competent Authority and Calibration Certificate is to be provided.
- i) Stand by Power Supply : No stand by power supply system is required.
- j) Grade of concrete : M-20
- k) Working Environment : Dusty & hostile. Adequate protection arrangement to be taken at appropriate places.

4.0 TECHNICAL INFORMATION/DOCUMENT TO BE SUPPLIED WITH TENDER :

- a) General arrangement drawings with overall dimensions.

- b) Technical write-up along with specifications.
- c) Specification and make of all major component/instruments.
- d) Details of Civil and Structural construction.
- e) Relevant and applicable National and International Standards.
- f) Control / Recorder room dimensions and fittings details.
- g) List of spares for 2 years trouble free operation.
- h) Hard disc / CD for all informations including detailed drawings etc.

5.0 TECHNICAL DOCUMENTS TO BE SUPPLIED BY SUCCESSFUL TENDERER :

- a) Dimensioned G.A. drawing of the Mechanical, Civil, Structural, Electronic and Electrical System.
- b) Circuit Diagram and complete bill of material of Electronic / Electrical System.
- c) Technical specifications of system as well as components.
- d) Operation and Maintenance manual.
- e) List of :
 - i) Commissioning spares.
 - ii) 2 years operational spares.
 - iii) Insurance spares.

6.0 FACILITIES TO BE PROVIDED BY THE PURCHASER :

- a) Reasonably levelled ground for installation of the system.
- b) Water connection (one of discharge point) near the work site.
- c) 440 V AC electric power connection with Isolation, switch for running maximum two nos. of welding machines.
- d) Two pairs of 52 Kg./M rail (max. 16 x each), for fixing on weigh bridge structure for Broad Gauge and Meter Gauge between approach and unit bays of the system.
- e) Material handling arrangement for unloading material from supplier's truck.
- f) Free entry of Tools/Tackles and erection equipment of the supplier, to the work site.

- g) Control room for housing instruments, recorder, display etc. constructed as per design provided by the supplier along with electrical supply and installations as required.
- h) Temporary store for storing material at supplier's risk.

TECHNICAL DETAILS OF VARIOUS WAGONS TO BE WEIGHED

Sl. No.	Type of wagon	Tare Wt. (MT)	Bogie Centre (mm)	Rail Gauge (mm)	Wheel Base (mm)
1)	BTPN	27.000	8,391	1676	2000
2)	BTPGLN	41.600	12,970	1676	2000
3)	BCNAHS	24.550	9,500	1676	2000
4)	BOXN	22.700	6,527	1676	2000
5)	BTAP	27.319	8,330	1676	2000
6)	BTCS	20.000	6,524	1676	2000
7)	Export (Petrol Tank)	20.000	9,900	1000	1753
8)	BOBRN	25.600	6,790	1676	2000
9)	BTAPHP	32.750	8,300	1676	2000

7.0 INSPECTION :

1. Inspection of components shall be done as per the relevant drawings prior to despatch by Braithwaite.
2. Final test after commissioning but prior to handing over shall be done as per relevant Indian / International Standards (to be specified along with offer).

Annexure - E

D) Diesel Hydraulic Shunting Locomotive

Design, Manufacture, Supply and Commissioning of Shunting Locomotive.

Specification

1. Gauge - 1676 mm
2. No. of Axles - Two
3. Axle Load - 15 Ton +/- 3%
4. Type of Engine - Diesel Engine
5. Power Developed - 157 KW / 220 HP (+0% - 5%) at 2100 RPM
6. Type of Transmission - Hydraulic Transmission
7. Drive - Through Cardan Shafts and final Drives
8. Wheel Dia over Thread - 914 mm
9. Coupler Coupling - IRS type Transition Coupler with Screw
10. Side Buffers - IRS type

- | | | |
|-----|-----------------------------------|--|
| 11. | Height of Coupler over rail level | - 1105 mm |
| 12. | Duty | - Yard Shunting |
| 13. | Gradient | - 0° |
| 14. | Maximum Curvature | - 10° |
| 15. | Haulage Capacity | - 300 ton (about 15 empty wagon @ 20 T tare) |

Mechanical Design

Main frame of the engine should have welded structure with good torsional rigidity and resistance to bending and provision for lifting by overhead cranes and should have heavy plate buffer beams and robust coupler pockets.

Wheel must be of Cast / Rolled steel solid type. Axles are of graded steel forging ultrasonically tested.

Driver's cabin is of fabricated construction enabling driving of the locomotive in either direction of travel. Large front and rear lookout windows for all round visibility and heavy duty sliding side windows.

Suitable handrails are to be provided along the sides of the hood, across ends and near footsteps to ensure safety. Footsteps at four corners of the frame are to be provided.

The locomotive should be equipped with air brake systems with designed brake rigging.

Pneumatic horns are to be fitted on either side of central desk. One fabricated fuel tank & battery house of suitable capacity to be fitted.

Adequate control including gauges, instruments and safety devices are to be provided for safe and satisfactory operation.

Annexure - G

TECHNICAL SPECIFICATION OF PORTABLE OPTICAL EMISSION SPECTROMETER

1. **Portable Optical Emission Spectrometer**
2. **Standard Analytical Models :**

- (i) Assay
- (ii) Grade
- (iii) Identification
- (iv) Pass / Fail

- **Assay**

The Software should have atleast 32 independent assay models. Each model should be able to analyse minimum 16 alloying elements.

Detection of Low Carbon percentage : ≤ 0.01%

Detection of Low Sulfur percentage : ≤ 0.01%

Detection of Low Phosphorus percentage : ≤ 0.01%

3. **Optics :**

- **Wavelength range (including S&P) 178.340 nm. Detector Photo-diode Array with full spectrum recording facility.**
4. **Excitation :**
 - Interrupted DC ARC.
 5. **Probe :**

The Probe itself should contain the Optics to eliminate loss of intensity with built-in high resolution LCD Display and function keys. The Probe should be connected with cable of sufficient length not less than ten meters and / or should have remote sensing facilities.
 6. **Software :**
 - Built-in help
 - Self test and default control values
 - No need for line profiling – a task once considered unavoidable.
 7. **Main Electronic Unit :**
 - Real time clock/calendar
 - High Resolution Electronic Display.
 - Internal Printer with paper.
 - The basic electronic unit should have provision for interfacing with external PC and external Printer.
- ** The supplier should indicate if any special gas is to be used for operation and it is also mandatory to mention separately the additional accessories required for its operation.**

Annexure – 'F'

**E. Sub merged arc Welding Machines (Trolley mounted) with accessories.
(SAW system for Angus Works & Clive Works)**

Technical specification

a) POWER SOURCE

Supply Voltage	-	415V + 10%, 3 ph, 50 Hz
Max. Input Current	-	65 Amps
Open Circuit Voltage	-	22.55 Volts or 30-60 Volts
Max. current at 60% duty cycle	-	1200 Amp
Max. Current at 100% Duty Cycle	-	800 Amp to 1030 Amp

Insulation	-	Class F
Max. ambient temp.	-	40 ^o C temp.
Type of cooling	-	Forced Air
Dimension LxWxH(mm)(approx)-		960 x 760 x 880 To 1000 x 800 x 900
Weight	-	325 to 370 kg
100% duty cycle	-	Continuous welding

Power source should be able to supply current to automatic welding heads of submerged arc and Mig/CO2 process and should have electronically controlled welding heads and should have flat output characteristics. The power source should be able to provide auxiliary power circuitry for running the welding heads and also provide heater supply for use with CO2 when needed. The auxiliary power supply should be available through two nos. sockets provided on the front panel. It should contain coarse and fine voltage control switches, push off central potentiometer Aux. Connector sockets and output terminals. The power source should be designed for continuous use and should have overload protector and optimized open circuit voltage.

Control Panel

i)	Input Voltage	-	110V
ii)	Speed Variation of Wire Feed/Creep Feed/Tractor	-	Stepless
iii)	Measuring Instrument	-	Welding current, Welding Voltage, Tractor Speed Meter
iv)	Auto/Manual & Rev/Forward switch	-	for Tractor
v)	Auto Change over	-	from creep speed to main speed
vi)	Weld/Tractor start/ stop push button	-	to be provided
vii)	Wire inch up/down switch	-	for perfect wire positioning
viii)	Indicating lamps	-	Power on / Weld on

AUTOMATIC WELDING HEAD

- 1) It should contain easy connectivity from SAW to Mig-Mag welding process and should have high degree of component interchangeability.
- 2) It should have modular system for flexibility and instant adaptability to cover a wide range of application like Boom mounting, tractor driven and stationary positions.
- 3) Nozzle should have flexibility to adjust itself in numerous positions to suit linear welding, fillet welding etc.
- 4) It should have heavy duty feed roller unit.
- 5) Controls should be within easy reach of operator.

- 6) It should have "Creep feed start" facility.
- 7) Head rotation 180% degree and knob control angle adjuster facility.
- 8) Solid state circuitry precise controls with inter lock facility.
- 9) It should be suitable for welding of centre sill or wagon corner positions with extension of welding head by 1 meter to suit with different types of nozzle size and shape.

WELDING HEAD

A)	Wire diameter range (single)	-	2.4 – 5.00 (mm)
B)	Wire feed speed (m/mn)	-	0.3 – 18
C)	Welding current range(A)	-	200 - 1200
D)	Vertical adjustment (mm)	-	100
E)	Horizontal adjustment (mm)	-	100
F)	Swivel arrangement (degree)	-	180 ⁰

TRACTOR

Speed range (m/mn)	-	0.15 to 1.5
Wheel centre (cm)	-	245
Dimension L X H X 10 (mm)	-	730 X 205 X 360
Input voltage	-	35V to 45V

ACCESSORIES

Contact tip, flux hose and melt union of suitable size.

(R. Mukherjee)
Manager (Maint.)

