



GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS

*(For Official Use Only)*

# HANDBOOK ON ARTISANS TOOLS FOR ELECTRIC LOCO SHEDS

CAMTECH/2002/E/TOOLS(TRS) /1.0

AUGUST, 2002

**Centre  
for  
Advanced  
Maintenance  
TECHnology**



**Excellence in**

**MAHARAJPUR, GWALIOR - 474 020**

HANDBOOK  
ON  
ARTISANS TOOLS  
FOR  
ELECTRIC LOCO SHEDS

## FOREWORD

Availability of proper tools with artisan staff is necessary to enhance their productivity. CAMTECH has prepared this hand book which covers the list of conventional as well as modern tools for electric loco sheds. Details of modern tools like make, model, specification, sources of supply and budgetary cost is also included.

It is recommended that Railways may supply these tools/ similar tools to artisan staff so that they can perform their assigned work efficiently.

***CAMTECH, GWALIOR***

*26.08.2002*

***M.L. GUPTA***

***EXECUTIVE DIRECTOR***

## **PREFACE**

It is necessary that proper tools are available with the artisans to increase productivity as well as quality of work. However proper tools are not available with artisan staff in the field. Therefore this handbook has been prepared which include the list of conventional as well as modern tools which should be available for use of artisans. It is recommended that all Railways should make available these tools to artisan staff in all electric loco sheds.

Details of modern tools have been given separately in annexure. Make, price and supplier name given in the handbook is for guidance only. If better tools with reasonable price or tools of same quality with lesser price are available in market, then Railways should procure the same. Information regarding manufacturers, suppliers and prices of modern tools given in annexure of this handbook was collected by staff of this centre from the market. CAMTECH could collect only limited information regarding manufacturers, suppliers, models, specifications and price due to time constraints and other limitations. Therefore Railways/ Indentors/ Users should explore the market to find out more manufacturers, suppliers, models, specifications and exact price.

This handbook does not supercede any instructions issued from Railway board and RDSO.

Technological upgradation and learning is a continuous process. Hence feel free to write to us for any addition/ modification in this handbook. I shall highly appreciate your contribution in this direction.

**CAMTECH/ GWALIOR**

Date: 20.08.2002

**RANDHAWA SUHAG**

DIRECTOR/ ELECTRICAL

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## **Introduction**

Indian Railways is one of the largest state owned railway system. Very large work force is available to keep the system working efficiently. However the productivity and quality of work has been poor and one of the reason has been that proper tools are not available with them. Therefore availability of proper tools with artisan staff is very necessary to enhance the productivity and quality of work. CAMTECH has prepared this handbook which list out conventional as well as modern tools which should be available with artisan staff of electric loco sheds. The information was collected by visiting various sheds, interaction with field staff, various tools manufacturers and market survey. A seminar was also conducted at CAMTECH in which field personnel from various railways participated and their views and suggestions were considered. It is hoped that this handbook will be very useful in improving the productivity of field staff.

CAMTECH could locate only limited manufacturers/ suppliers due to time constraints and other limitations. Therefore the list of manufacturers/ suppliers indicated for any tool provided in the handbook is no way exhaustive and the Railways/ indenters/ users are free to explore the availability of more manufacturers/ suppliers in the open market. The budgetary estimated cost for the tools is subjected to variation on account of market factors and/ or number of units purchased.

## 1. Tool Kit for Electrical Fitter

S.N.	NAME OF TOOLS	Qty.	Remark
1.	Double open end spanner (6mm to 22mm)	1 Set	
2.	Double end ring spanner (6mm to 22mm)	1 Set	
3.	Allen key set (1.5 to 12mm)	1 Set	
4.	Wire stripping plier	1 No	For details Refer page 14
5.	Electrically insulated combination pliers 8"	1 No	
6.	Nose pliers 6"	1 No	
7.	Circlip pliers	1 No	
8.	Round cable and wire cutter	1 No	For details Refer page 46
9.	Screw driver set consisting of Philips 3.5 x 125 & 5 x 125 Engg.S.Driver 3.5 x 125 6 x 125 Poker 125	1 Set	
10.	Auto ranging digital multimeter	1 No	For details Refer page 40
11.	Torch	1 No	



## 2. Tool Kit for Mechanical Fitter

S.N.	NAME OF TOOLS	QTY.
1.	Double open end spanner (6mm to 32mm)	1Set
2.	Single end spanner (50, 55mm)	1Set
3.	Double end ring spanner (6mm to 32mm)	1Set
4.	Combination pliers 8"	1 No
5.	Screw Driver ( Engineer pattern) 150, 300 mm	1 Set
6.	Ball pien hammer 850 gms.	1 No
7.	Flat chisel 200mm	1 No
8.	Flat file (smooth) 12"	1 No
9.	Steel scale 12"	1 No
10.	Measuring steel tape 2 m	1 No

### 3. Tools for Different Sections/ Tool Room

**(Quantity will be decided by shed officers depending upon loco holding and type of locos)**

S.N.	NAME OF TOOLS	Remark
1.	Double open end spanner (8mm to 55mm)	
2.	Single open end spanner (36, 41, 46, 50, 55, 60, 65, 75, 80 mm)	
3.	Double end ring spanner (6mm to 55 mm)	
4.	Adjustable wrench (150, 200, 250, 300, 375 mm)	
5.	Socket 19 mm square drive, size 34, 36, 38, 41, 46, 50 mm with accessories	
6.	Tubular box spanner 300 x 75/80 mm	
7.	Socket 12.5 mm square drive, (8 to 32mm) with accessories	
8.	Socket 25 mm square drive, (55 to 60mm) with accessories	
9.	HSS parallel shank (All sizes from 1.19 to 8 mm)	
10.	HSS taper shank (All sizes from 1.19 to 8 mm)	
11.	Flat files (smooth) 4", 6", 8", 12", 16", 18"	
12.	Flat file (rough) 4", 6", 8", 12", 16", 18"	

S.N.	NAME OF TOOLS	Remark
13.	Half round file (smooth) 4", 6", 8", 12", 16", 18"	
14.	Square file (smooth) 4", 6", 8", 12", 16", 18"	
15.	Round file (smooth) 4", 6", 8", 12", 16", 18"	
16.	Round file (rough) 4", 6", 8", 12", 16", 18"	
17.	Triangular file (smooth) 4", 6", 8", 12", 16", 18"	
18.	Triangular file (rough) 4", 6", 8", 12", 16", 18"	
19.	Wire stripping pliers	For details Refer page 14
20.	Combination pliers 150,175,200 mm	
21.	Nose pliers (4", 6")	
22.	Round cable and wire cutter	For details Refer page 46
23.	Circlip pliers inside (6", 12", 18")	
24.	Circlip pliers outside (6", 12", 18")	
25.	Water pump pliers 10"	
26.	Pipe wrench 200,300,450,900 mm	
27.	Torque wrench ( 0.2 to 1.4 kg m )	
28.	Torque wrench ( 0.3 to 3.5 kg m )	
29.	Torque wrench ( 1.4 to 7 kg m )	
30.	Torque wrench ( 3 to 14 kg m )	

S.N.	NAME OF TOOLS	Remark
31.	Torque wrench ( 7 to 35 kg m )	
32.	Torque wrench ( 14 to 56 kg m )	
33.	Torque wrench ( 49 to 105 kg m )	
34.	Torque wrench ( 55 to 140 kg m )	
35.	Screw driver ( Engineer pattern) 5x75, 6x125, 6x200, 8x200, 8x300	
36.	Screw driver(Electrician pattern) 3x50, 4x100, 5x150, 5x200, 5x300	
37.	Screw driver(Philips pattern) 5 x 75, 5 x 200	
38.	Allen key 1.5 to 22 mm	
39.	Ball pein hammer 250 g to 6.4 kg	
40.	Double sludge hammer (8,10,14 lbs)	
41.	Flat chisel 6" to 10"	
42.	Centre punch	
43.	Pin punch	
44.	Hand operated crimping tool upto 16 mm <sup>2</sup>	For details Refer page 32
45.	Hydraulic crimping tool, 10 to 300 mm <sup>2</sup> with dies	
46.	25t High lift hydraulic jack	
47.	Hydraulic jack 20t, 25t, 30t.	
48.	Steel scale 6",12",24" (Folding type)	
49.	Meter scale	
50.	Measuring tape 2 m, 30 m (Steel)	
51.	Digital vernier caliper (0- 150, 0-200, 0-300 mm)	For details Refer page 28

S.N.	NAME OF TOOLS	Remark
52.	Digital outside caliper (Spring bow type)	
53.	Digital inside caliper (Spring bow type)	
54.	Outside micrometer 0 – 400 mm	
55.	Inside micrometer 0 – 400 mm	
56.	Digital micro ohm meter	
57.	Digital micrometer (0 – 25 mm, 75 – 1000 mm)	For details Refer page 30
58.	Auto ranging digital multimeter	For details Refer page 40
59.	Motor operated meggar 2.5 & 5 kV	For details Refer page 38
60.	Oil BDV tester	
61.	Continuity tester	
62.	Digital clamp meter	For details Refer page 43
63.	Cell tester 10-0-10V	
64.	HV tester (2 kV, 5kV)	
65.	Universal multimeter	
66.	Digital AC voltmeter 0 – 600V	
67.	Digital DC voltmeter 0 – 600 V	
68.	Digital AC ammeter 0 – 50 A	
69.	Digital DC ammeter 0 – 50A	
70.	Surge comparison tester	For details Refer page 54
71.	Drill socket (1-2), (2-3), (3-4), (4-5)	

<b>S.N.</b>	<b>NAME OF TOOLS</b>	<b>Remark</b>
72.	Multi purpose portable power drill machine.	For details Refer page 22
73.	All purpose saw	For details Refer page 18
74.	Portable power angular grinder.	For details Refer page 34
75.	Portable power straight grinder.	For details Refer page 36
76.	Blower/ Dust extractor	For details Refer page 51
77.	Reversible wrench	
78.	Oil pump	
79.	Blow lamp	
80.	Hand operated pressure grease gun 1.5 Kg.	
81.	Pneumatic grease gun 20 Kg	For details Refer page 56
82.	Chain pipe wrench 710,1200,1610 mm	
83.	Pipe bend machine	
84.	Bolt cutter	
85.	Bearing puller	
86.	Hacksaw frame with blade 12"	
87.	Solder iron 35, 65, 100 watt	
88.	De-soldering iron	For details Refer page 53
89.	Pinion extractor	
90.	Pinion heating oil bath	

S.N.	NAME OF TOOLS	Remark
91.	Bearing extractor & insertor	
92.	Induction heater	For details Refer page 26
93.	Milli volt meter 0 to 75 m-volt	
94.	Spring balance 0 – 50 Kg	
95.	Portable balancer	For details Refer page 16
96.	Manometer	
97.	Digital anemometer	For details Refer page 57
98.	Vibration meter	
99.	Revolution counter	
100.	Commutator profile recorder	
101.	Two pin spanner for movement of rocker assembly	
102.	Rocker assembly locking gear opening and tightening spanner	
103.	Chamfering tool	
104.	Mica under cutting tool	
105.	Shock pulse meter	For details Refer page 24
106.	TM shaft spanner	
107.	Taper bearing extractor	
108.	Infrared heat tracer	For details Refer page 12
109.	Recording voltmeter	
110.	Recording ammeter	

S.N.	NAME OF TOOLS	Remark
111.	Portable ammeter	
112.	Portable voltmeter	
113.	Hot air gun/ Hot air blower	For details Refer page 20
114.	Hydrometer	
115.	Electronic timer	
116.	Stop watch	
117.	Stroboscope tachometer	
118.	Gear teeth micrometer	
119.	Industrial vacuum cleaner	
120.	Digital spirit level	For details Refer page 59
121.	Speedometer key	
122.	Hand inspection lamp	
123.	DJ trolley	
124.	Tirfer 1t, 3 t	
125.	Chain pulley block 1 t, 3 t	
126.	SMGR tap tightening tool	
127.	Helicoil fixing tool	
128.	Checking plate and spigot	
129.	Special pliers for removing contact main spring of DJ	

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## **ANNEXURE**

# **DETAILS OF MODERN TOOLS**

## 1. INFRARED HEAT TRACER



**Name** : Infra Red Heat Tracer

**Application** : Measurement of temperature of joints, connectors and other electrical equipment etc.

**I. Make** : M/s RAYTEK

**Model** : Raynger ST 60 ProPlus

**Specification** : Battery operated non contact thermometer suitable to read -32 to 600° C with circular laser beam and LED display.

Temperature range	-32-600° C (-25-1100°F)
Repeatability	$\leq \pm 0.5 \%$ or $\leq \pm 1^{\circ}\text{C}$ ( $\pm 2^{\circ}\text{F}$ ), whichever is greater
Response time	$\leq 0.5$ Sec, 95% response
Ambient operating range	0 to 50 °C
Power	9 v Alkaline or Ni Cd Battery
Weight	320 gms.
Distance to spot	30 : 1
Laser Sighting	Offset 8 Point circular
Data logging	12 point
Display resolution	0.1 °C/ F

**Budgetary cost :** Rs. 22000/-

**Source of supply :** Marketed by  
M/s Electronics Instrument  
Company, 2nd Floor,  
62- Prashant Building,  
Janmbhumi Marg,  
Fort, Mumbai 400 001

- II. **Make :** M/s MAYNARD  
**Model :** M - 9  
**Specification :** Battery operated non contact  
thermometer suitable to read -10 to  
400° C with circular laser beam and  
LED display.

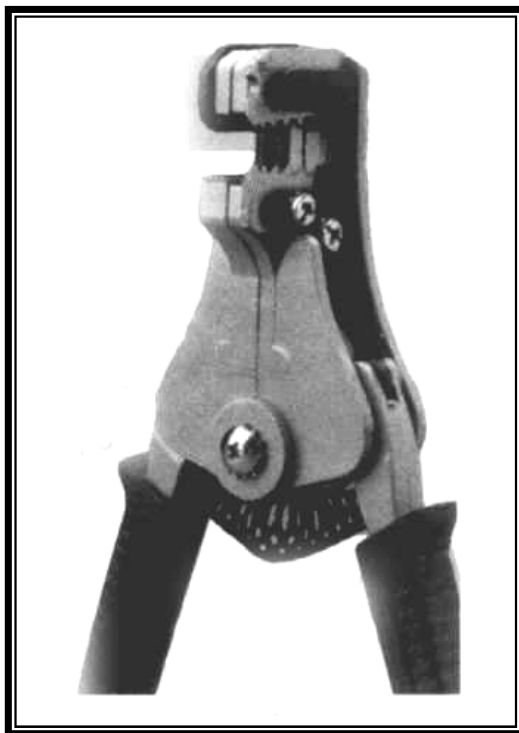
Temperature range	-10 to 400° C
Resolution	1 °C
Accuracy	± 2 °C
Response time	500 ms
Field of view	4 : 1
Power	9 v Battery
Display	LCD
Dimensions	126 x 75 x 29 mm

**Budgetary cost :** Rs. 7000/-

**Source of supply :** Marketed by  
M/s Gannon Dunkerley & Co., Ltd.  
P.B. 1547, Chartered Bank Building,  
M.G. Road, Fort, Mumbai - 400 001

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## 2. WIRE STRIPPING PLIER



**Name** : Stripping Plier

**Application** : Removing of wire insulation for termination.

**I. Make** : M/s AVEN

**Model** : 10.105

**Size** : Strips wire up to 7/8".  
**Features** : Automatic feature holds jaws open to remove wire without crushing ends. Practically eliminates all nicking, cutting, or fraying. Strips teflon, silicon and PVC wire. Made of aluminium with plastic molded handles.

**Budgetary cost** : Rs.900/-

**Source of supply** : Sold and serviced by  
**M/s Sumitron Exports Pvt. Ltd. P.O. Box 10227,**  
**Naraina, Phase I, New Delhi - 110 028**

**II. Make** : M/s JAINSON

**Size** : Stripping upto 4mm<sup>2</sup>

**Budgetary cost** : Rs. 200/-

**Source of supply** : M/s Jainson Pvt. Ltd.  
 Shree Gadia Engineering Works  
 Mumbai - 400068

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### 3. COMPUTERISED PORTABLE BALANCER



**Name** : Computerised Portable Balancer

**Application** : In-position dynamic balancing of auxiliary machines of locomotives.

**I. Make** : M/s BASELINE

**Model** : 2100

**Specifications** :

Sensor	Piezo-electric accelerometer with integral electronics
Speed range	400 to 6000 rpm
range of vibration	Velocity- Upto 400mm/sec. Displacement- Upto 4mm Pk-Pk
Phase angle	Shown with the help of stroboscopic light

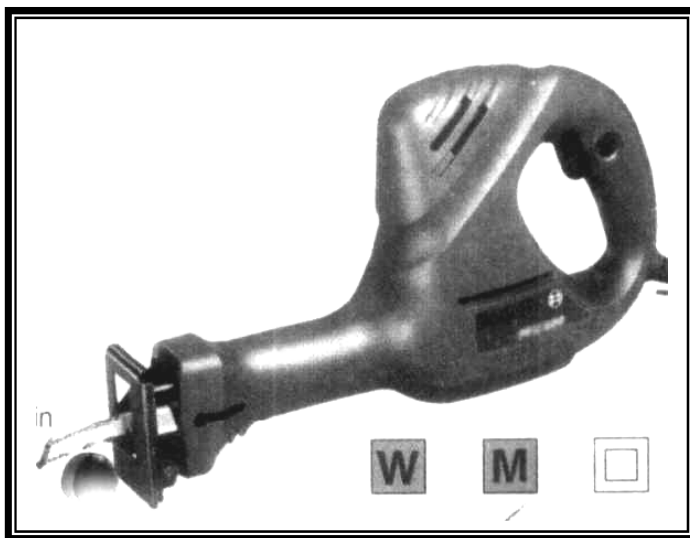
Controls	Power On/Off, menu driven alphanumeric backlit display in English, reset, accept, next and previous buttons on touch type membrane keys
Construction	Light weight aluminum enclosure
Power supply	220V, 50 Hz AC $\pm$ 10%
Temperature range	0 to 45 °C
Dimensions	90H x 235W x 185 D mm
Weight	1.8 Kg
Standard accessories	Sensor, Stroboscope, Brief case type carrying case, Operation manual

**Budgetary cost :** Rs.85, 000/-

**Source of supply :** M/s BASELINE Technologies  
E 17, Green Park  
New Delhi 110 016

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## 4. ALL PURPOSE SAW



**Name** : All Purpose Saw  
**Application** : Cutting work of sheet metal,  
Iron angles, pipes etc.

**I. Make** : M/s BOSCH  
**Model** : PFZ 600



**Specifications :**

Saw in wood	130 MM
Saw in steel	20 MM
Power input	600 W
No load stroke rate	2600 stroke/min.
Saw stroke length	28 MM
Weight	3.1 Kg.

**Budgetary cost** : Rs. 10,000/-

**Source of supply** : M/s BOSCH

Motor Industries Co. Ltd.,

Power tool division,

Hosur road, Adugodi,

- 560030

Bangalore

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## 5. HOT AIR GUN/ HOT AIR BLOWER



**Name** : Hot Air Gun/Hot Air Blower

**Application** : Drying of moisture of silica jel, drying of varnish of motor coils, drying of moisture of control panels, relays CTs, PTs etc.

**I. Make** : M/s BOSCH

**Model** : GHG 600 CE

### Specifications:

Rated power consumption	2000 W
Temperature range	100-600 <sup>0</sup> C
Air flow rate	350-550 Lit/min
Stepless temp. control	Yes

Airflow regulation	2 stage
Weight	0.7 Kgs.

**Budgetary cost** : Rs. 4250/-

**Source of supply** : M/s BOSCH

Motor Industries Co. Ltd.,

Power tool division,

Hosur road, Adugodi,

Bangalore - 560030

**II. Make** :  
M/s KPT

**Model** : KHG

**Specifications** :

Rated power consumption	2000 W
Temperature range	480-600 <sup>0</sup> C
Air flow rate	250-380 Lit/min
Weight	0.9 Kgs.

**Budgetary cost** : Rs. 2845/-

**Source of supply** : M/s KPT Sales and  
Service Ltd.,  
309, Vasant Vihar Commercial  
Complex, Dr. C.Gidwani Road,  
Chembur, Mumbai – 400074,  
Maharashtra (India)

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## 6. MULTIPURPOSE PORTABLE POWER DRILL MACHINE



**Name:** Multi purpose portable power drill machine

**Application :** Drilling of holes in metal, concrete and wood.

**I. Make :** M/s BOSCH

**Model :** GBM 10

### Specifications:

Power input	400 W
Impact rate	44800/ min.
R.P.M.	2200/ 2800 RPM
Weight	1.4 Kg
Battery backup in min.	NA
Volt/amp./watts	230V
Dia. in concrete	10 MM

Dia. in metal	8 MM
Dia. in wood	20 MM

**Budgetary cost** : Rs. 3885/-

**Source of supply** : M/s BOSCH  
Motor Industries Co. Ltd.,  
Power tool division,  
Hosur road, Adugodi,  
Bangalore - 560030

**II. Make** : M/s KPT

**Model** : PR 110

**Specifications** :

Power input	400 W
R.P.M.	2800 RPM
Weight	1.4 Kg
Volt	230V
Dia. in concrete	10 MM
Dia. in metal	10 MM
Dia. in wood	25 MM

**Budgetary cost** : Rs. 3200/-

**Source of supply** : M/s KPT Sales and Service Ltd.,  
309, Vasant Vihar  
Commercial Complex,  
Dr. C.Gidwani Road,  
Chembur, Mumbai – 400074  
Maharashtra (India)

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## 7. SHOCK PULSE METER



**Name** : **Shock Pulse Meter**

**Application** : Used for monitoring health of bearings of auxiliary machines and traction motors.

**I. Make** : **M/s SPM**

**Model** : **T 2000**

**Specifications** :

Measuring range, SPM	-9 to 99 dbsv
<b>RESOLUTION, SPM</b>	1 dbsv
<b>MEASURING RANGE, VIB</b>	0.5 to 99.9 mm/s RMS
Resolution, VIB	0.1 mm/s

Measuring range, TAC	10 to 20 000 r.p.m. optical
Measuring distance	max. 0.6 m
Resolution, TAC	1 r.p.m.
Temperature range	0° to 50°C
Power	6 x 1.5 V LR6 cells
Display	Liquid crystal
Dimensions	300 x 150 x 85 mm
Weight	0.85 Kgs.

**Budgetary cost :** Rs.35, 000/-

**Source of supply:** M/s SPM Instrument India Pvt.  
**LTD. 7-1-27/1, SRINIVASA**  
 Complex, Ameerpet,  
**HYDERABAD - 500 016**

II. **Make :** M/s **MAYNARD**  
**Model :** M - 2021T  
**Specifications :**

Measuring range	0 to 100 db
<b>RESOLUTION</b>	1 db
Temperature range	0° to 50°C
Power	2 x 9V (6LR61 duracells)
Display	16 x 2 line dot matrix LCD
Dimensions	245 x 120 x 53 mm
Weight	0.8 Kgs.

**Budgetary cost :** Rs.25, 500/-

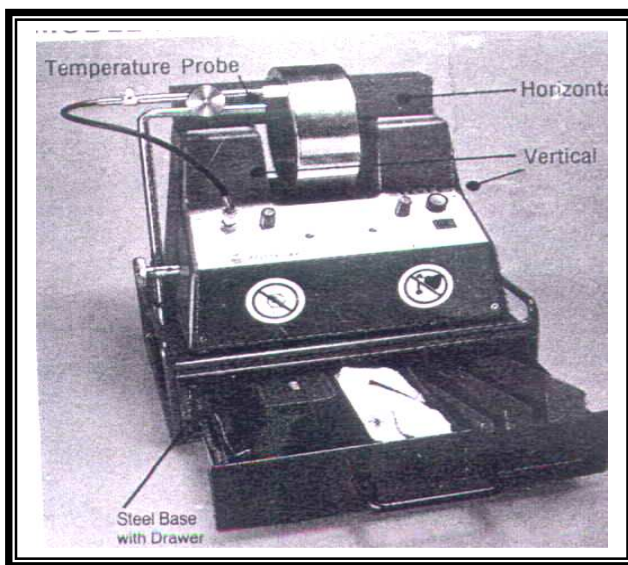
**Source of supply :** Marketed by  
 M/s Gannon Dunkerley & Co., Ltd.

P.B. 1547, Chartered Bank Building,  
 M.G. Road, Fort, Mumbai - 400 001

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## 8. INDUCTION HEATER



**Name** : Induction Heater

**Application** : Uniform and controlled heating of bearings/racers required for shrink fitting or removal.

**I. Make** : M/s INVENTUM

**Model** : HIB - 01

**Specification :**

<b>POWER</b>	3.3 kVA
<b>PHASE</b>	1 $\phi$
<b>VOLTAGE</b>	230V
<b>CURRENT</b>	15 A
<b>TEMPERATURE RANGE</b>	60° - 120°C (using solid state circuit)

**Budgetary cost** : Rs.30, 000/-

**Source of supply** : M/s INVENTUM

Engineering Co. Pvt. Ltd.

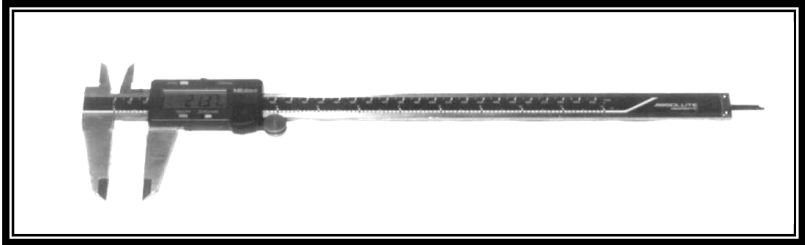
49,

Sarvoday Industrial Estate,

**Off Mahakali Caves Road,  
Andheri (E) Mumbai 400 093**

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## 9. DIGITAL VERNIER CALLIPERS



Name : **Digital Vernier Calipers**

**Application** : Measurement of depths, gaps, thickness, outside and inside diameters etc.

I. MAKE : **M/s MITUTOYO/ JAPAN**

MODEL : **500-197**

Specification :

Measuring range	0 - 200 mm
Resolution	0.01 mm
Instrumental error	$\pm 0.03$ mm or $\pm .0015''/+0.03$ mm
Repeatability	0.01 mm or $.0005''/0.01$ mm
Maximum response speed	<b>NOT PARTICULARLY PROVIDED</b> (No counting error due to scale speed)
Power supply	SR44 (silver oxide cell, 1 pc
Battery life	3.5 years under normal use

Operating temperature	0 <sup>0</sup> C to 40 <sup>0</sup> C
Storage temperature	-10 <sup>0</sup> C to 60 <sup>0</sup> C

**Budgetary cost** : Rs.7700/-

**Source of supply** : Marketed by  
M/s Industrial Consultants and  
Traders, B-345, Nehru Ground,  
Opposite, PNB, Faridabad  
(Generally available in local market also)

II. MAKE : **M/s GENERAL**  
MODEL : **400 PR 209**

Description :

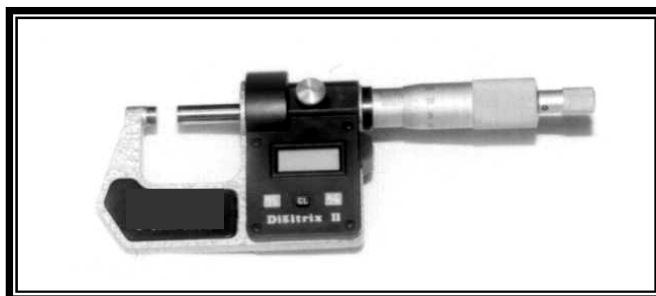
Measuring range, 0-150 mm. outside, inside and depth measurement. Read out on the high contrast LCD display. Floating zero checks deviation from reference size. True inch/ metric conversion without re-zeroing. Switching inch/metric selector with resolution to 0.0005 inch or 0.01mm.

**Budgetary cost** : Rs. 10,000/-

**Source of supply** : Marketed by  
M/s Sumitron Exports Pvt. Ltd.  
P.O. 10227 Naraina,  
New Delhi 110 028

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## 10. DIGITAL MICROMETER



**Name** : Digital Micrometer

**Application** : Measurement of small thickness  
and  
diameters of wires etc.

**I. Make** : M/s MITUTOYO/ Japan

**Model** : 293-811

**SPECIFICATION** :

Measuring range	0 - 25 mm
Instrumental error (20°C)	$\pm (L/75)$
Resolution	0.001 mm (.0005")
Quantizing error	$\pm 1$ count
Measuring force	5 to 10N
Display	LCD (6 digits and a minus sign)
Power Supply	SR44x1
Battery life	1.2 years

Operation temperature	5 <sup>0</sup> C to 40 <sup>0</sup> C
Storage temperature	-10 <sup>0</sup> C to 60 <sup>0</sup> C

**Budgetary cost :** Rs. 5500/-

**Source of supply :** Marketed by  
M/s Industrial Consultants and  
Traders, B-345, Nehru Ground,  
Opposite, PNB, Faridabad

**II. Make :** M/s CENTRAL

**Model :** 66-811

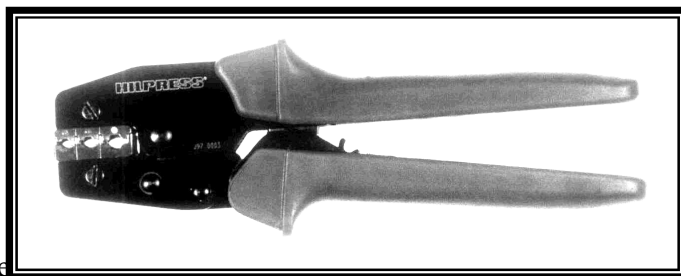
**DESCRIPTION :** MEASURE DIAMETER AND  
THICKNESS  
BETWEEN 0 - 1 INCH (0-25 MM)  
WITH 0.0001 INCH (0.001 MM)  
RESOLUTION. RATCHET  
SPINDLE CLICKS WHEN  
CONTACT  
PRESSURE IS CORRECT OR  
MEASURING

**Budgetary cost :** Rs. 7000/-

**Source of supply :** Marketed by  
M/s Sumitron Export Pvt. Ltd.  
P.O. 10227, Naraina,  
New Delhi - 110028

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## 11. HAND OPERATED CRIMPING TOOL



Name  
**Crimping Tool**

Application of lugs. : **Crimping**

I. Make : **M/s JAINSON**

**Model** : **SMART 16**

**Crimping range** : **0.5 - 16 mm<sup>2</sup>**

**Budgetary cost** : **Rs. 550/**

**Source of supply** : **M/s Jainson Pvt. Ltd.**

Shree Gadia Engg. Works,

Mumbai - 400068

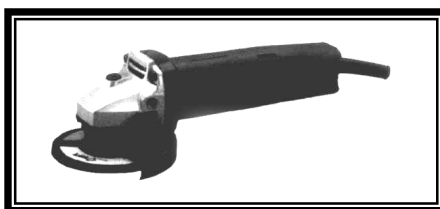
<b>II.</b>	<b>Make</b>	<b>:</b>	<b>M/s DOWELLS</b>
	<b>Model</b>	<b>:</b>	<b>SYT-2</b>
	<b>Crimping range</b>	<b>:</b>	<b>1.5 - 16 mm<sup>2</sup></b>
	<b>Budgetary cost</b>	<b>:</b>	<b>Rs. 700/-</b>
	<b>Source of supply</b>	<b>:</b>	<b>M/s Dowells Pvt. Ltd. Satguru Estate, Ist Floor, Goregaon(E), Mumbai- 400063</b>
<b>III.</b>	<b>Make</b>	<b>:</b>	<b>M/s HIL PRESH</b>
	<b>Model</b>	<b>:</b>	<b>11731</b>
	<b>Crimping range</b>	<b>:</b>	<b>0.5 - 1.5mm<sup>2</sup> 1.5 - 2.5mm<sup>2</sup> 4.0 - 6.0mm<sup>2</sup></b>
	<b>Budgetary cost</b>	<b>:</b>	<b>Rs. 6,500/-</b>
	<b>Source of supply</b>	<b>:</b>	<b>Sold and serviced by M/s Sumitron exports Pvt. Ltd. P.O. Box 10227, Naraina</b>

Phase - I, New Delhi - 110 028

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## 12. PORTABLE POWER ANGULAR GRINDER



**Name** : Angular Grinder  
**Application** : For grinding welding spots/ joints back gouging, sanding, rust removing and for preparing V grooves in bogie for welding.

**I. Make** : M/s BOSCH

**Model** : GWS 6-100

**Specifications** :

Grinding & cutting discs	100 MM DIA
Rubber packing pad	100 MM DIA
Cup brushes	60 MM DIA
No load speed	11000 RPM
Power input	670 W
Weight	1.4 Kgs.

**Budgetary cost** : Rs. 4,200/-

**Source of supply** : M/s BOSCH

Motor Industries Co. Ltd.,

Power tool division,

Hosur road, Adugodi,

Bangalore - 560030

**II. Make : M/s KPT**

**Model : KR 100**

**Specification :**

Grinding & cutting discs	100 MM DIA
No load speed	12000 RPM
Power input	670 W
Weight (w/o wheel)	1.5 Kgs.

**Budgetary cost : Rs.**  
4,000/-

**Source of supply : KPT Sales and**  
Service Ltd.,  
309, Vasant Vihar  
Commercial Complex, Dr.  
C.Gidwani Road,  
Chembur, Mumbai – 400074,  
Maharashtra India

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### 13. PORTABLE POWER STRAIGHT GRINDER



**Name** : Straight Grinder  
**Application** : For grinding, sanding, rust removing etc.

**I. Make** : M/s BOSCH  
**Model** : GGS 27

**Specifications :**

Grinding points	MAX. 25 MM DIA
No load speed	27000 RPM
Power input	500 W
Tool holder	Collet-Cap Max.8 MM DIA
Spindle collar dia	43 MM
Weight	1.3 Kgs.

**Budgetary cost** : Rs. 8,800/-  
**Source of supply** : M/s BOSCH

Motor Industries Co. Ltd.,  
 Power tool division,  
 Hosur road, Adugodi,  
 Bangalore – 560030

**II. Make :** M/s KPT

**Model :** KP 77-01

**Specifications :**

Grinding wheel dia	150 mm
No load speed	5500 RPM
Power input	240 V, 1800 W
Weight	7.1 Kgs.
Overall length	610 mm

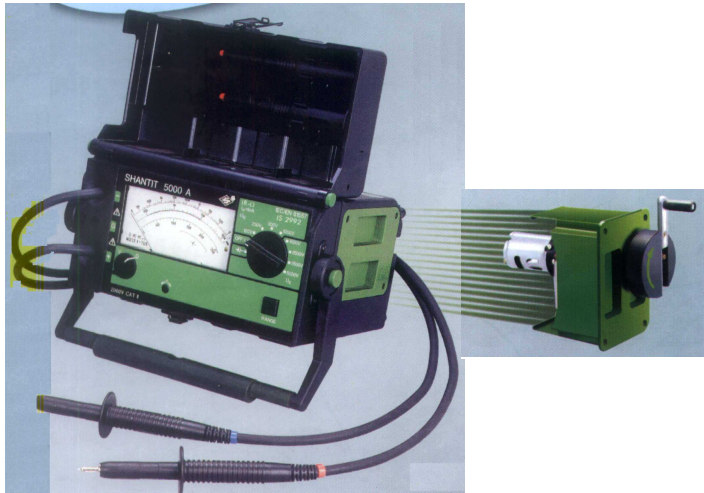
**Budgetary cost :** Rs. 12680 /-

**Source of supply** : KPT Sales and Service  
Ltd.

309, Vasant Vihar Commercial  
Complex, Dr. C.Gidwani Road,  
Chembur, Mumbai – 400074,  
Maharashtra India

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## 14. MOTOR OPERATED MEGGAR



**Name** : Motor Operated Meggar

**Application** : Insulation measurement of cables, motors, transformers etc.

**I. Make** : M/s Shanti Electronic Instrument

**Model** : 5000 AK

**Specification** :

Voltage Range	0.1/0.25/0.5/1.0/1.5/2.0/2.5/5.0 kV
Measuring Range	10 K $\Omega$ - 1 T $\Omega$
Supply Voltage	6 x 1.5 V

Voltage measurement	2000 V (AC or DC)
Dimension	290 x 250 x 140 mm
Weight	3.4 kg

**Budgetary cost :** Rs. 27000/-

**Source of supply :** M/s Shanti Electronic Instrument  
A 54, MIDC, Andheri East Mumbai  
Maharashtra - 400 093

**II. Make :** M/s MOTWANE  
**Model :** B50K

**Specification :**

<b>RESISTANCE INDICATING DEVICE</b>	Analog moving coil meter
Scale length	89 mm
Effective Range of measurement	0 - 50 G $\Omega$ and $\infty$
First effective range	50 M $\Omega$ to 5 G $\Omega$
Second effective range	5 G $\Omega$ to 50 G $\Omega$
<b>ACCURACY -</b> <ul style="list-style-type: none"> <li>First effective range</li> <li>Second effective range</li> <li>Max. deviation of pointer from any marked position</li> <li>Zero and infinity marks</li> </ul>	$\pm 5\%$ of reading $\pm 10\%$ of reading $< \pm 1\text{mm}$ $\pm 0.7\%$ of scale length
Terminal voltage (DC) <ul style="list-style-type: none"> <li>Rated terminal voltage</li> <li>Accuracy</li> </ul>	2500 V and 5000 V $< \pm 10\%$ at infinity scale mark. More than 90% at centre scale mark.

**Budgetary cost :** Rs.24000/-

**Source of supply :** M/s Motwane Mfg. Co. Ltd.  
Gyan Building, Nasik Road – 422  
101 Maharashtra.

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