STANDARDISATION OF HAND TOOLS FOR COACH MAINTENANCE - OPEN LINE

(Camtech/2006/M/C/TOOLS/1.0)

DECEMBER 2006

Centre
For
Advanced
Maintenance
TECHnology

Excellence in Maintenance

MAHARAJPUR, GWALIOR – 474005
FOREWORD

Standardisation of Hand Tools is an important step towards ensuring implementation of effective and uniform maintenance procedures. CAMTECH has taken an important lead in this direction by preparing this handbook giving compiled list of handtools required for open line coach maintenance.

Detailed description of each hand tool with important parameters will prove to be useful to the maintenance depots at the time of indenting the material thereby ensuring availability of proper tools to the maintenance staff.

CAMTECH, Gwalior
October 2006

Executive Director
PREFACE

CAMTECH has already circulated a report on “Standardisation of Infrastructural facilities for Freight Stock Maintenance” and CAMTECH has prepared this handbook to supplement the same.

- Standard Quality Hand Tools are the backbone of the maintenance and repair. Sub standard/ poor quality tools may cause injury to staff and life of the tool will be less, as such while standardising tools proper material specification of tools as per job requirement should be considered. Availability of proper tools with artisan staff is necessary to enhance the productivity and quality of work.

- To standardise Hand Tools needed for maintenance of freight stock at yard and wagon depot (sick line and ROH) a consolidated list of tools has been prepared. This will ensure quality maintenance of freight stock, which in turn shall:
  - Minimise failure of rakes/wagons
  - Ensure effective and uniform maintenance procedure over various depots/sicklines/intensive examination points scattered all over Indian Railways.
  - Fatigue of artisan staff shall be minimised.
  - Avoid shortcut during maintenance

- Opinion and suggestions were gathered from various depots and seminar conducted at CAMTECH-Gwalior on 22-12-05 to 23-12-05 and incorporated in this hand book.

Depots visited are:
- Katni depot - West Central Railway
- MGS depot - East Central Railway
- Baad depot - North Central Railway
- Bajwa depot - Western Railway
- Bhilai depot - South East Central Rly
Due to time constraints and other limitations CAMTECH could locate only limited manufacturers/suppliers. As such, the list of manufacturers/suppliers provided in the handbook is in no way exhaustive and the Railways/Indenters/Users are free to explore for 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 or number of units purchased or any other factor. So current budgetary quotation must be obtained to estimate the cost at the time of preparing indent.

The list of non-sparking tools required for maintenance of tank wagons handling petroleum products are contained in appendix-A. Non-sparking tools have an inherent quality to eliminate sparking caused by conventional steel tools causing explosion of gases and inflammatory material, which initiate combustion.

This handbook does not supersede any instructions laid down in the “Wagon Maintenance Manual”, Railway Board & RDSO publications and instructions given in it are for the purpose of guidance only.

CAMTECH, Gwalior
Date : 28.12.2005
(Kundan Kumar)
Director (Mech.)
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CORRECTION SLIPS

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CAMTECH/2006/M/C/TOOLS/1.0/C.S. # XX date----------

Where “XX” is the serial number of the concerned correction slip (starting from 01 onwards).

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HAND TOOLS FOR COACH MAINTENANCE
CHAPTER 1

1.1 List of Hand Tools for Coach Maintenance
(Fitter-Repair/Examination Gang at Train Passing)

1. Allan Key (Full Set)
2. Bar with flat nose (local made)
3. Chiesel: Octagonal chiesel 150x16 mm
4. Chiesel: Flat chiesel 300x25 mm
5. Hammer: Ball pein hammer 600 grams
6. Hot axle detector (Non contact type)
7. Pipe wrench: 400x60 mm
8. Punch: Centre punch 8” long
9. Punch: Cotter punch 8” long
10. Spanner 17x19 mm
11. Spanner 22x24 mm
12. Spanner 24x27 mm
13. Spanner 30x32 mm
14. Spanner 32x36 mm
15. Spanner adjustable 305x35 mm
16. Screw driver
17. Universal Key (Carriage lock)

Gauges

1. Dummy palm
2. Tyre defect (profile) gauge
Others

1. Hand gloves
2. Helmet
3. LED headlight
4. Tool bag
5. Walkie talkie
6. Safety shoes

Note

1. The hand book is written on hand tools. So no details of gauges and other items have been given in the hand book.

2. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

1.2 List of Hand Tools for Coach Maintenance
{SE/JE (Incharge)/Tool Room at Train Passing}

1. Allen key (Full set)
2. Bar with flat nose (local made)
3. Chiesel : Chiesel 8” with wire handle
4. Chiesel : Flat chiesel (full set)
5. Chiesel : Octagonal chiesel (full set)
6. Circlip plier (inner & external 19-60 mm)
7. Hammer : Sledge hammer 7 kg (local made)
8. Hammer : Ball pein hammer 600 & 800 grams
9. Hammer : Cross pein hammer 600 & 800 grams
10. Pipe wrench (300, 350 & 450mm)
11. Power drill 110 V AC
12. Power grinder
13. Punch : Centre punch 8” and 12” long
14. Punch : Cotter punch 8” and 12” long
15. Punch : Punch 8” with wire handle
16. Scale/tape : Measuring tape 5 meter
17. Scale/tape : Steel rule 6”
18. Screw driver 8x250mm
19. Socket 12.5mm (22 sockets) and accessories
20. Spanner: Double open end spanner 04 pcs set (3/8 to 7/8 inches)
21. Spanner: Double open end spanner 13 pcs set (6-36 mm)
22. Spanner: Ring 12 pcs.set (6-32 mm)
23. Spanner: Spanner adjustable 305x35 & 255x30 mm
24. Tongue (local made)
25. Wire punch

Gauges

1. 7.5 mm test plate and 8 mm and 12 mm test palm
2. Air pressure/Vacuum gauge
3. Bolster clearance gauge
4. Buffer height gauge
5. Tyre defect gauge

**Others**

1. Danger board (glow sign)/lamp
2. Hand gloves
3. Helmet
4. Intermediate coupling
5. Jacks 20t, 5t (Hydraulic type)
6. Ladder with platform 6 ft. height
7. Line block skid
8. LED headlight
9. Search light
10. Tool bag
11. Walkie talkie
12. Wooden packing for jacks
13. Wooden wedges

**Note:**

1. The handbook is written on hand tools. So no details of gauges & other items have been given in the handbook.
2. List should be displayed in SE/JE(C&W) office for the knowledge of working fitters.
3. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

4. This handbook is on hand tools. So no detail has been given for M&P including jacks etc.

1.3 List of Hand Tools for Coach Maintenance

{Fitter-Repair/Examination Gang at Pit Line Maintenance}

1. Allen key (Full set)
2. Bar with flat nose (local made)
3. Chiesel : Flat chiesel 200x25 mm
4. Chiesel : Octagonal chiesel 150x16 mm, 125x9 mm
5. Hammer: Ball pein hammer 800 & 1200 grams
6. Pipe wrench : 450x60 mm
7. Punch : Cotter punch 8” and 12” long
8. Punch : Drift punch 8” and 12” long
9. Scale/tape : Measuring tape 5 meter
10. Scale/tape : Steel rule 6”
11. Screw Driver with magnetic tip
12. Socket 12.5mm (22 sockets) and accessories
13. Spanner 13x17 mm
14. Spanner 17x19 mm
15. Spanner 22x24 mm
16. spanner 24x27 mm
17. Spanner 30x32 mm
18. Spanner 32x36 mm
19. Spanner adjustable 305x35 mm
20. Tongue (local made)

**Gauges**

1. Comb gauge for flange thickness
2. Crown clearance gauge
3. Dip stick
4. Gauge for A dimension of SAB
5. Gauge for buffer height
6. Piston stroke gauge
7. Tyre defect gauge
8. Wheel dia. measuring gauge
9. Wheel gauge

**Others**

1. Gum boot
2. Hand gloves
3. Helmet
4. LED headlight
5. Tool bag (local made)
6. Trolley for pit line
7. Walkie talkie

*Hand Tools for Coach Open Line Maintenance*
Note:
1. The hand book is written on hand tools. So no details of gauges and other items have been given in the hand book.
2. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

1.4 List of Hand Tools for Coach Maintenance

{Fitter- (Brake testing) at Pit Line Maintenance}

1. Adjustable spanner
2. Allen key (full set)
3. Chiesel: Octagonal chiesel 135x9 mm
4. Hammer: Ball pein hammer 600 grams
5. Pipe wrench: 450x60 mm
6. Punch: Centre punch 8” long
7. Scale/tape: Measuring tape: 3 meter
8. Scale/tape: Steel rule 6”
9. Screw driver with magnetic tip
10. Spanner 10x11 mm
11. Spanner 13x17 mm
12. Spanner 17x19 mm
13. Spanner 22x24 mm
14. Spanner 24x27 mm
15. Tongue (local made)
16. Water pump pliers

Gauges

1. Air pressure gauge (0.1 kg/cm$^2$ least count)
2. Dummy palm (BP& FP with gauge)
3. Gauge for ‘A’ dimension of SAB
4. Piston stroke gauge
5. Piston stroke gauge for BMBC
6. Spring balance with weight gauge
7. Vacuum gauge

Others

1. Gum boot
2. Hand gloves
3. Helmet
4. LED headlight
5. Stop watch
6. Tool bag
7. Walkie talkie
Note:

1. The hand book is written on hand tools. So, no details of gauges and other items have been given in the hand book.

2. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

1.5 List of Hand Tools for Coach Maintenance
{Fitter- Pipe Fitting Tools at Pit Line Maintenance}

1. Bar with flat nose (local made)
2. Cordless drill
3. Hacksaw with blade 12”
4. Hammer : Ball pein hammer 600 & 800 grams
5. Pipe wrench 450 mm
6. Punch : Centre punch 8” and 12” long
7. Scale/tape : Measuring tape 3 meter
8. Scale/tape : Steel rule 6”
9. Screw driver 8x250mm
10. Spanner 13x17 mm
11. Spanner 17x19 mm
12. Spanner 22x24 mm
13. Spanner 30x32 mm
14. Spanner 32x36 mm
15. Spanner: Single open end slogging spanner 30 to 36 mm
16. Spanner: Spanner adjustable 305x35 & 255x30 mm
17. Star type screw driver
18. Water pump pliers

**Others**

1. Helmet
2. Hand gloves
3. LED headlight
4. Tool bag

**Note:**

1. The hand book is written on hand tools. So, no details of gauges and other items have been given in the hand book.
2. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.
1.6 List of Hand Tools for Coach Maintenance
{Carpenter- Tools at Pit Line Maintenance}

1. Adzes
2. Axes
3. Brace
4. Chisel hexagonal 6”
5. Clamp
6. Claw hammer
7. Cutting pliers 6” PVC coated
8. Diamond cotter
9. Electric operated Saw 4” & 7”
10. File half round bastard 16” long
11. Foot rule folding
12. Grinding stone 8”
13. Hacksaw
14. Hammer: Cross pein hammer with wooden handle
   200 Gms & 500 Gms
15. Hand drill machine 110 V AC
16. Pin punch 4”
17. Pincer
18. Plane – i Try plane
   ii Smoothing plane
19. Pop rivet gun hand operated
20. Saw – i Cross cut saw
   ii Rep saw
21. Scale/tape: Measuring tape 3 meter
22. Scale/tape: Steel rule 6”
23. Screw driver 8”, 10”
24. Socket Spanner 12.5mm (22 sockets) and accessories
25. Star type Screw driver
26. Triangular file 6”

Others

1. Hand gloves
2. Ladder with platform 5 to 6 feet
3. LED headlight
4. Tool bag
5. Wooden wedges

Note:

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2. This handbook is on hand tools. So no detail has been given for M&P including jacks etc.
3. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

Hand Tools for Coach Open Line Maintenance
1.7 List of Hand Tools for Coach Maintenance
{Welder - Tools at Pit Line Maintenance}

1. Cutting blow pipe/Gas cutter
2. Gas torch for welding
3. Hammer : Chipping hammer 300 grams
4. Nozzles clean wire
5. Nozzles of different sizes (as per requirement)
6. Punch : Pin punch 8” long
7. Screw driver
8. Spanner cum cylinder key
9. Welding electrode holder

Others

1. Apron
2. Bucket
3. Gas lighter
4. Goggles
5. Hand gloves
6. Hand shield
7. Leg pad (leather)
8. Mask
9. Pin (to clean nozzle)
10. Safety shoes
11. Wire brush

Hand Tools for Coach Open Line Maintenance
12. Tongue (Local made)

**Note:**

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2. This handbook is on hand tools. So no detail has been given for M&P including jacks etc.
3. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

1.8 **List of Hand Tools for Coach Maintenance**

*{Cleaning - Tools at Pit Line Maintenance}*

1. 14" long cleaning brush
2. Broom
3. Bucket
4. Carriage washing brush
5. Commode chute (Chimney) brush
6. Disposal begs
7. Duster
8. Hand sweeping brush (Brush banister)
9. Harpic brush
10. Mopping brush with handle
11. Mopping cloth
12. Multipurpose brush big
13. Multipurpose brush small (with soup solution storing facility)
14. Scotch Brite
15. Scrubbing brush
16. Spoke brush
17. Tooth brush
18. Washing brush with 6 ft bamboo handle
19. Window squeegee

Others

1. Apron
2. Hand gloves
3. Mask

Note:

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2. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.
1.9 List of Hand Tools for Coach Maintenance
{Trimmer - Tools at Pit Line Maintenance}

1. Bent niddle
2. Cutting pliers
3. Hammer with wooden handle, 500 gms
4. Hot air gun for PVC flooring
5. Paint brush for patching 3”
6. Scissors – 10”
7. Straight niddle
8. Trailer measuring tape 40”

Note:

1. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

1.10 List of Hand Tools for Coach Maintenance
{Painter - Tools at Pit Line Maintenance}

1. ½", 1", 2", 3", Hand brush (Writing)
2. Coir brush
3. Hand brush (Stencil)
4. Paint brush
5. Painting Roller
6. Portable spray painting gun
7. Stencil cotter
8. Templates
9. Tool for pulley

Others

1. Bucket 10,20 litters
2. Cotton cloth piece (thick) 2feet x 2feet
3. Duster

Note:

1. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

1.11 List of Hand Tools for Coach Maintenance
{SE/JE (Incharge)/ Tool Room at Pit Line Maintenance}

1. Allen key (full set)
2. Bar with flat nose (local made)
3. Chisel : Chisel 8” with wire handle
4. Chisel : Flat chisel (full set)
5. Chisel : Octagonal chisel (full set)
6. Circlip plier (inner & external 19-60 mm)
7. Hacksaw with blade 12”
8. Hammer : Sledge hammer 7 kg (local made)
9. Hammer : Ball pein hammer 600 & 800 grams
10. Hammer : Cross pein hammer 600 & 800 grams
11. Pipe wrench (300,350 & 450mm)
12. Power drill
13. Power grinder
14. Punch : Centre punch 8” and 12” long
15. Punch : Cotter punch 8” and 12” long
16. Punch : Punch 8” with wire handle
17. Scale/tape : Measuring tape 3 meter
18. Scale/tape : Steel rule 6”
19. Screw driver 8x250mm
20. Socket 12.5mm (22 sockets) and accessories
21. Spanner: Double open end spanner 04 pcs set (3/8 to 7/8 inches)
22. Spanner: Double open end spanner 13 pcs set (6-36 mm)
23. Spanner: Ring 12 pcs set (6-32 mm)
24. Spanner: Spanner adjustable 305x35 & 255x30 mm
25. Tongue (local made)

**Gauges**

1. 7.5 mm test plate and 8 mm and 12 mm test palm
2. Air pressure gauge
3. Buffer height gauge

*Hand Tools for Coach Open Line Maintenance*
4. Digital wheel diameter gauge
5. Gauge for ‘A’ dimension of SAB
6. Piston stroke gauge
7. Tyre defect gauge
8. Wheel gauge
9. Wheel profile gauge

**Others**

1. Danger board (glow sign)/lamp
2. Gum boot
3. Hand gloves
4. Helmet
5. Jacks ,20t, 5t (Hydraulic type)
6. Ladder with platform 10 ft. height
7. LED headlight
8. Line block skid
9. Rain coat
10. Tool bag
11. Walkie talkie
12. Wooden packing for jacks
13. Wooden wedges

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2. This handbook is on hand tools. So no detail has been given for M&P including jacks etc.

3. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

List should be displayed in SE/JE(C&W) office for the knowledge of working fitters

1.12 List of Hand Tools for Coach Maintenance
{Fitter-Repair/ Examination Gang at Sick Line Maintenance}

1. Bar with flat nose (local made)
2. Chiesel : Flat chiesel 200x25 mm
3. Chiesel : Octagonal chiesel 150x16 mm, 125x9 mm
4. Hammer: Ball pein hammer 800 or 1200 grams
   1. Pipe wrench : 450x60 mm
   2. Punch : Cotter punch 8” or 12” long
   3. Punch : Drift punch 8” or 12” long
   4. Punch with wire
   5. Scale/tape : Measuring tape 3 meter
   6. Scale/tape : Steel rule 6”
   7. Screw driver with star also
   8. Socket 12.5mm (22 sockets) and accessories
   9. Spanner 12x13 mm
   10. Spanner 13x17 mm

*Hand Tools for Coach Open Line Maintenance*
11. Spanner 17x19 mm
12. Spanner 22x24 mm
13. Spanner 24x27 mm
14. Spanner adjustable 305x35 mm
15. Tongue (local made)

**Gauges**

1. Buffer height gauge
2. Dash pot oil level gauge
3. Gauge for A dimension of SAB
4. Gauge for CBC projection
5. Piston stroke gauge
6. Tyre defect gauge

**Other Gauge Required for “C” Schedule**

**Others**

1. Helmet
2. Hand gloves
3. Tool bag (local made)
4. Wooden packing
5. Wooden wedges
6. Safety shoes
7. Rail skied
Note:
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2. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

1.13 List of Hand Tools for Coach Maintenance
{Fitter- (Brake testing) at Sick Line Maintenance}

1. Adjustable spanner
1. Allen key (full set)
2. Chiesel : Octagonal chiesel 135x9 mm
3. Chipping hammer
4. Hammer : Ball pein hammer 600 grams
5. Pipe wrench : 450x60 mm
6. Punch : Centre punch  8” or 12” long
7. Scale/tape : Measuring tape 3 meter
8. Scale/tape : Steel rule  6”
9. Screw driver 8x250mm
10. Screw driver with magnetic tip
11. Spanner 13x17 mm
12. Spanner 17x19 mm
13. Spanner 24x27 mm
14. Spanner 22x24 mm
15. Spanner 24x27 mm
16. Tongue (Local made)
17. Troque wrench

**Gauges**

1. Air pressure gauge
2. Piston stroke gauge for BMBC
3. Vacuum gauge
4. Stop watch
5. Spring balance with standard weight

**Others**

1. Hand gloves
2. Helmet
3. Stop watch
4. Megna flax flaw detater
5. Tool bag

**Note:**

1. The hand book is written on hand tools. So, no details of gauges and other items have been given in the hand book.
2. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

1.14 List of Hand Tools for Coach Maintenance

{Fitter- Pipe Fitting Tools at Sick Line Maintenance}

1. Bar with flat nose (local made)
2. Cordless drill
3. Hacksaw with blade 12”
4. Hammer : Ball pein hammer 600 & 800 grams
5. Pipe wrench 450 mm
6. Punch : Centre punch 8” and 12” long
7. Scale/tape : Measuring tape 3 meter
8. Scale/tape : Steel rule 6”
9. Screw driver 8x250mm
10. Spanner 13x17 mm
11. Spanner 17x19 mm
12. Spanner 22x24 mm
13. Spanner 30x32 mm
14. Spanner 32x36 mm
15. Spanner: Single open end slogging spanner 30 to 36 mm
16. Spanner: Spanner adjustable 305x35 & 255x30 mm
17. Star type screw driver
18. Water pump pliers

**Others**

1. Helmet
2. Hand gloves
3. LED headlight
4. Tool bag

**Note:**

1. The hand book is written on hand tools. So, no details of gauges and other items have been given in the hand book.
2. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

### 1.15 List of Hand Tools for Coach Maintenance

*Carpenter- Tools at Sick Line Maintenance*

1. Adzes
2. Axes
3. Brace
4. Chisel hexagonal 6”
5. Clamp
6. Claw hammer
7. Cutting pliers 6” PVC coated
8. Diamond cotter
9. Electric operated Saw 4" & 7"
10. File half round bastard 16” long
11. Foot rule folding
12. Grinding stone 8”
13. Hacksaw
14. Hammer: Cross pein hammer with wooden handle
   200 Gms & 500 Gms
15. Hand drill machine 110 V AC
16. Pin punch 4”
17. Pincer
18. Plane – i Try plane
   ii Smoothing plane
19. Pop rivet gun hand operated
20. Saw – i Cross cut saw
   ii Rep saw
21. Scale/tape: Measuring tape 3 meter
22. Scale/tape: Steel rule 6”
23. Screw driver 8”, 10”
24. Socket Spanner 12.5mm (22 sockets) and accessories
25. Star type Screw driver
26. Triangular file 6”
Others
1. Hand gloves
2. Ladder with platform 5 to 6 feet
3. LED headlight
4. Tool bag
5. Wooden wedges

Note:

1. The handbook is written on hand tools. So no details of gauges & other items have been given in the handbook.
2. This handbook is on hand tools. So no detail has been given for M&P including jacks etc.
3. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

1.16 List of Hand Tools for Coach Maintenance
{Trimmer - Tools at Sick Line Maintenance}

1. Bent niddle
2. Cutting pliers
3. Hammer with wooden handle, 500 gms
4. Hot air gun for PVC flooring
5. Paint brush for patching 3”
6. Scissors – 10”
7. Straight niddle
8. Trailer measuring tape 40”

Note:

1. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

1.17 List of Hand Tools for Coach Maintenance

{Welder- Tools at Sick Line Maintenance}

1. Cutting blow pipe/Gas cutter
2. Gas torch for welding
3. Hammer : Chipping hammer  300 grams
4. Nozzles clean wire
5. Nozzles of different sizes (as per requirement)
6. Punch : Pin  punch 8” long
7. Screw driver
8. Spanner cum cylinder key
9. Welding electrode holder

Others

1. Apron
2. Bucket

Hand Tools for Coach Open Line Maintenance
3. Gas lighter  
4. Goggles  
5. Hand gloves  
6. Hand shield  
7. Leg pad (leather)  
8. Mask  
9. Pin (to clean nozzle)  
10. Safety shoes 
11. Wire brush  
12. Tongue (Local made)  

1.18 List of Hand Tools for Coach Maintenance  
{Cleaning - Tools at Sick Line Maintenance}  

1. 14" long cleaning brush 
2. Broom  
3. Bucket  
4. Carriage washing brush  
5. Commode chute (Chimney) brush  
6. Disposal begs  
7. Duster  
8. Hand sweeping brush (Brush banister)  
9. Harpic brush 
10. Mopping brush with handle 
11. Mopping cloth
12. Multipurpose brush big
13. Multipurpose brush small (with soup solution storing facility)
14. Scotch Brite
15. Scrubbing brush
16. Spoke brush
17. Tooth brush
18. Washing brush with 6 ft bamboo handle
19. Window squeegee

Others

4. Apron
5. Hand gloves
6. Mask

Note:

1. The handbook is written on hand tools. So no details of gauges & other items have been given in the handbook.
2. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.
1.19 List of Hand Tools for Coach Maintenance
{Painter - Tools at Sick Line Maintenance}

1. ½", 1", 2", 3", Hand brush (Writing)
2. Coir brush
3. Hand brush (Stencil)
4. Paint brush
5. Painting Roller
6. Portable spray painting gun
7. Stencil cotter
8. Templates
9. Tool for pulley

Others

1. Bucket 10,20 litters
2. Cotton cloth piece (thick) 2feet x 2feet
3. Duster

Note:

Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.
1.20 List of Hand Tools for Coach Maintenance
{SE/JE (Incharge)/ Tool Room at Sick Line Maintenance}

1. Allen key (full set)
2. Bar with flat nose (local made)
3. Chiesel : Flat chiesel (full set)
4. Chiesel : Octagonal chiesel (full set)
5. Circlip pliers (inner, external & universal 19-60 mm and 10-40 mm respectively)
6. Combination pliers 150,200 mm length
7. File : Flat, round and half round  12”
8. Hacksaw with blade 12”
9. Hammer : Nylon hammer with handle  2 lbs
10. Hammer :Cross pein hammer 600 & 800 grams
11. Hammer: Ball pein hammer 600,800,1000,1500 grams
12. Pipe wrench (350,450mm)
13. Pneumatic chipping hammer
14. Power drill
15. Power grinder
16. Punch : Centre punch 8” or 12” long
17. Punch : Cotter punch 8” or 12” long
18. Scale/tape: Measuring tape 3 meter
19. Scale/tape : Measuring tape 30 meter
20. Scale/tape : Steel rule  6”
21. Screw driver 8x250mm, 8x300 mm
22. Sockets 12.5 mm (22 sockets) and accessories
23. Spanner : Single end spanner AF-27,32,50,63,65 mm
24. Spanner : Spanner adjustable 305x35 & 380x43 mm
25. Spanner: Double open end spanner 04 pcs set (3/8 to 7/8 inches)
26. Spanner: Double open end spanner 13 pcs set (6-36 mm)
27. Spanner: Ring 12 pcs.set (6-32 mm)
28. Tongue
29. Torque wrench 7-35 kg.m, 7-50 kg.m

**Gauges**

1. Air pressure gauge (0.1 kg/cm2 least count)
2. Bolster clearing gauge (Adjustable)
3. Buffer face wear gauge
4. Buffer height gauge
5. Buffer projection gauge
6. CBC height gauge
7. Digital caliper of wheel diameter
8. Filler gauge
9. Gauge for ‘A’ dimension of SAB
10. Gauge for CBC
11. Piston stroke gauge
12. Shank wear gauge
13. Trammeling gauge
14. Tyre defect gauge
15. Vacuum gauge
16. Wheel gauge

Others

1. Danger board (glow sign)/lamps
2. Hand gloves
3. Helmet
4. Jacks 20t, 5t
5. Ladder with platform 10 ft. height
6. LED headlight
7. Line block skid with locking arrangement
8. Tool bag
9. Walkie talkie
10. Wire brush
11. Wooden packing for jacks (2’, 1.5’ and 1 feet long)
12. Wooden wedges

Note:

1. The hand book is written on hand tools. So no details of gauges and other items have been given in the hand book.
2. This hand book is on hand tools. So no detail has been given for M&P including jacks etc.
3. Quantities of the hand tools/gauges to be carried by fitter are to be decided locally depending on the gang strength.

List should be displayed in SE/JE (C&W) office for the knowledge of working fitters.
DESCRIPTION AND DETAIL OF THE HAND TOOLS
GENERAL TOOLS
2.1 GENERAL TOOLS

2.1.1 ALLEN KEY

**Description:** Chrome Vanadium Steel, Burnished finish
Generally conforming to IS 3082-1988

<table>
<thead>
<tr>
<th>Range of set</th>
<th>No. of pieces</th>
<th>Price/Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5-10 mm (1.5mm, 2mm, 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm)</td>
<td>09</td>
<td>126.00</td>
</tr>
</tbody>
</table>
2.1.2 BOX JOINT TYPE WATER PUMP PLIERS

**Description:** Seven-position slip joint, with induction hardened jaws, ribbed handles for slip free gripping. Box joint for perfect working provision of special protection against crushing grip injury. Drop forged chrome vanadium steel. Generally Conforming DIN5231D

<table>
<thead>
<tr>
<th>Length mm</th>
<th>Weight Gms</th>
<th>Price per p.</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>290</td>
<td>130.00</td>
</tr>
</tbody>
</table>
2.1.3 CHISELS

Description:

Octagonal Chiesel made from high grade steel, forged and ground. Differential heat treatment for cutting edge and striking end to ensure long life. As per IS 402/ 1990

<table>
<thead>
<tr>
<th>Length In mm</th>
<th>Cutting Edge in mm</th>
<th>Price Each Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>16</td>
<td>44.00</td>
</tr>
<tr>
<td>200</td>
<td>25</td>
<td>83.00</td>
</tr>
<tr>
<td>250</td>
<td>30</td>
<td>110.00</td>
</tr>
<tr>
<td>300</td>
<td>32</td>
<td>135.00</td>
</tr>
</tbody>
</table>

Flat Chiesel

<table>
<thead>
<tr>
<th>Length In mm</th>
<th>Cutting Edge in mm</th>
<th>Price Each Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>25</td>
<td>78.00</td>
</tr>
<tr>
<td>200</td>
<td>25</td>
<td>90.00</td>
</tr>
<tr>
<td>250</td>
<td>25</td>
<td>95.00</td>
</tr>
</tbody>
</table>
2.1.4 CIRCLIP PLIERS

Description:
Inner, External and Universal Circlip Pliers

Insulated With Thick C.A. Sleeve
Generally Conforming to IS 7989-1976
High grade steel

<table>
<thead>
<tr>
<th>Description</th>
<th>Capacity mm</th>
<th>Length in mm</th>
<th>Price Each Rs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight Nose</td>
<td>19-60</td>
<td>155</td>
<td>116.00</td>
</tr>
<tr>
<td>Bent Nose</td>
<td>19-60</td>
<td>160</td>
<td>123.00</td>
</tr>
<tr>
<td>Universal</td>
<td>10-40</td>
<td>140</td>
<td>158.00</td>
</tr>
</tbody>
</table>
2.1.5 FILE

**Description:** Engineer’s file with plastic handle
Generally Conforming to IS 1931-1962

<table>
<thead>
<tr>
<th>Description</th>
<th>Finish</th>
<th>Size (mm)</th>
<th>Price each (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat file</td>
<td>Bastard</td>
<td>200</td>
<td>74.00</td>
</tr>
<tr>
<td>Flat file</td>
<td>Bastard</td>
<td>300</td>
<td>120.00</td>
</tr>
<tr>
<td>Flat file</td>
<td>Smooth</td>
<td>200</td>
<td>114.00</td>
</tr>
<tr>
<td>Flat file</td>
<td>Smooth</td>
<td>300</td>
<td>184.00</td>
</tr>
<tr>
<td>Half round file</td>
<td>Bastard</td>
<td>200</td>
<td>167.00</td>
</tr>
<tr>
<td>Half round file</td>
<td>Bastard</td>
<td>300</td>
<td>292.00</td>
</tr>
<tr>
<td>Half round file</td>
<td>Smooth</td>
<td>200</td>
<td>198.00</td>
</tr>
<tr>
<td>Half round file</td>
<td>Smooth</td>
<td>300</td>
<td>332.00</td>
</tr>
<tr>
<td>Round file</td>
<td>Bastard</td>
<td>200</td>
<td>98.00</td>
</tr>
<tr>
<td>Round file</td>
<td>Bastard</td>
<td>250</td>
<td>138.00</td>
</tr>
<tr>
<td>Round file</td>
<td>Smooth</td>
<td>150</td>
<td>107.00</td>
</tr>
<tr>
<td>Round file</td>
<td>Smooth</td>
<td>250</td>
<td>153.00</td>
</tr>
</tbody>
</table>
### 2.1.6 HACKSAW

**Description:**
Generally Conforming to IS: 2594

<table>
<thead>
<tr>
<th>Nominal size L</th>
<th>Rs. each</th>
</tr>
</thead>
<tbody>
<tr>
<td>250, 300</td>
<td>80, 95</td>
</tr>
</tbody>
</table>
2.1.7 HAMMER WITH HANDLE

Description: Head drop forged from high grade steel and heat treated with good quality knotless seasoned wooden handles.
(Ball Pein, Cross pein)

Head as per IS 841-1983

Ball pein and Cross pein

<table>
<thead>
<tr>
<th>Weight in gms.</th>
<th>Price Each Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>83.00</td>
</tr>
<tr>
<td>500</td>
<td>121.00</td>
</tr>
<tr>
<td>600</td>
<td>143.00</td>
</tr>
<tr>
<td>800</td>
<td>168.00</td>
</tr>
</tbody>
</table>
2.1.8 PIPE WRENCHES

Description: Conforming to IS 4003-1978 (Part-I), Heavy duty housing with integral I-beam handle made of SG Iron for maximum strength. Suitably proportioned handle for comfortable grip (powder coated).

<table>
<thead>
<tr>
<th>Size mm</th>
<th>Capacity mm</th>
<th>Price each Rs</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>35</td>
<td>142.00</td>
</tr>
<tr>
<td>300</td>
<td>44</td>
<td>197.00</td>
</tr>
<tr>
<td>350</td>
<td>48</td>
<td>234.00</td>
</tr>
<tr>
<td>450</td>
<td>60</td>
<td>348.00</td>
</tr>
<tr>
<td>600</td>
<td>76</td>
<td>643.00</td>
</tr>
</tbody>
</table>
2.1.9 PUNCHES

**Description**: Generally Conforming to IS 7177-1974 Made out of high grade chrome steel accurately machined and heat treated. Deep knurling on the body to ensure firm grip.

<table>
<thead>
<tr>
<th>Description</th>
<th>Length in mm</th>
<th>Price each Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre Punch</td>
<td>100</td>
<td>22.00</td>
</tr>
<tr>
<td>Centre Punch</td>
<td>125</td>
<td>29.00</td>
</tr>
<tr>
<td>Drift Punch</td>
<td>100</td>
<td>23.50</td>
</tr>
</tbody>
</table>
2.1.10 SPANNERS

2.1.10.1 Adjustable Spanners

**Description**: Standard pattern Chrome Vanadium steel Generally Conforming to IS 6149-1984 Grade II

<table>
<thead>
<tr>
<th>Length mm</th>
<th>Capacity (mm)</th>
<th>Black Phosphate Finish Price Each Rs</th>
<th>Nickel Chrome Plated Price Each Rs</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>19</td>
<td>81.00</td>
<td>97.00</td>
</tr>
<tr>
<td>205</td>
<td>26</td>
<td>100.00</td>
<td>116.00</td>
</tr>
<tr>
<td>255</td>
<td>30</td>
<td>132.00</td>
<td>152.00</td>
</tr>
<tr>
<td>305</td>
<td>35</td>
<td>174.00</td>
<td>194.00</td>
</tr>
<tr>
<td>380</td>
<td>43</td>
<td>358.00</td>
<td>388.00</td>
</tr>
</tbody>
</table>
2.1.10.2 Double Open End Spanners

Description: Drop forged Chrome Vanadium Steel, Chrome Plated, Generally Conforming IS 2028-1998

<table>
<thead>
<tr>
<th>Size in mm</th>
<th>Price Each Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 x 7</td>
<td>17.00</td>
</tr>
<tr>
<td>8 x 9</td>
<td>18.00</td>
</tr>
<tr>
<td>10 x 11</td>
<td>23.00</td>
</tr>
<tr>
<td>12 x 13</td>
<td>29.00</td>
</tr>
<tr>
<td>14 x 15</td>
<td>32.00</td>
</tr>
<tr>
<td>16 x 17</td>
<td>42.00</td>
</tr>
<tr>
<td>18 x 19</td>
<td>50.00</td>
</tr>
<tr>
<td>20 x 22</td>
<td>61.00</td>
</tr>
<tr>
<td>21 x 23</td>
<td>68.00</td>
</tr>
<tr>
<td>24 x 26</td>
<td>87.00</td>
</tr>
<tr>
<td>25 x 27</td>
<td>97.00</td>
</tr>
<tr>
<td>30 x 32</td>
<td>125.00</td>
</tr>
<tr>
<td>30 x 36</td>
<td>142.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size in Inch</th>
<th>Price Each Rs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8 x 7/16</td>
<td>14.00</td>
</tr>
<tr>
<td>9/16 x 5/8</td>
<td>25.00</td>
</tr>
<tr>
<td>5/8 x 3/4</td>
<td>32.00</td>
</tr>
<tr>
<td>3/4 x 7/8</td>
<td>44.00</td>
</tr>
</tbody>
</table>
2.1.10.3 RING SPANNERS

Bi-hexagonal and Hexagonal

Deep Off Set

**Description:** Chrome vanadium steel, Chrome plated polish
Generally Conforming to IS-2029-1981

<table>
<thead>
<tr>
<th>Range of set</th>
<th>No. of pieces</th>
<th>Approx. Price/Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-22 mm</td>
<td>08</td>
<td>429.00</td>
</tr>
<tr>
<td>6-32 mm</td>
<td>12</td>
<td>1096.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No. of Pieces</th>
<th>Contents</th>
<th>Price in Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Size M 6x7, 8x9, 10x11, 12x13, 14x15, 16x17 16x17, 18x19, 20x22, 24x26, 25x28, 30x32</td>
<td>223.00, 416.00</td>
</tr>
<tr>
<td>6</td>
<td>1/8x3/16, 3/16x1/4, 1/4x5/16, 5/16x3/8, 3/8x7/16, 7/16x1/2</td>
<td>359.00</td>
</tr>
</tbody>
</table>
2.1.10.4 SINGLE OPEN END SLOGGING SPANNER

**Description:** Heavy-duty spanner with strong profiled handle and durable striking end. Drop forged HIGH GRADE Chrome Vanadium Steel with head set at 15 ° angles. Generally Conforming IS 4508-DIN133

<table>
<thead>
<tr>
<th>Size mm</th>
<th>Length mm</th>
<th>Weight Gms</th>
<th>Price per p.</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>200</td>
<td>520</td>
<td>308.00</td>
</tr>
<tr>
<td>32</td>
<td>200</td>
<td>500</td>
<td>325.00</td>
</tr>
<tr>
<td>36</td>
<td>210</td>
<td>705</td>
<td>358.00</td>
</tr>
<tr>
<td>41</td>
<td>225</td>
<td>950</td>
<td>468.00</td>
</tr>
<tr>
<td>46</td>
<td>280</td>
<td>1800</td>
<td>545.00</td>
</tr>
<tr>
<td>50</td>
<td>280</td>
<td>1750</td>
<td>737.00</td>
</tr>
<tr>
<td>55</td>
<td>320</td>
<td>3025</td>
<td>913.00</td>
</tr>
<tr>
<td>60</td>
<td>320</td>
<td>2905</td>
<td>1073.00</td>
</tr>
<tr>
<td>65</td>
<td>342</td>
<td>3850</td>
<td>1529.00</td>
</tr>
<tr>
<td>70</td>
<td>370</td>
<td>4700</td>
<td>1749.00</td>
</tr>
<tr>
<td>75</td>
<td>370</td>
<td>4550</td>
<td>2409.0</td>
</tr>
<tr>
<td>80</td>
<td>408</td>
<td>6850</td>
<td>3069.00</td>
</tr>
</tbody>
</table>
2.1.11 SCREW DRIVERS

Description:
Generally conforming to IS 844

Blade made from high-grade chrome vanadium steel, chrome plated fully hardened to give long life, Handles from high impact cellulose acetate.

<table>
<thead>
<tr>
<th>Blade size (mm)</th>
<th>Tip size (mm)</th>
<th>Price Each Rs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3x50</td>
<td>3 x 0.4</td>
<td>22.00</td>
</tr>
<tr>
<td>3x80</td>
<td>3 x 0.5</td>
<td>23.00</td>
</tr>
<tr>
<td>8x250</td>
<td>8x1.2</td>
<td>71.00</td>
</tr>
<tr>
<td>8x300</td>
<td>8x1.2</td>
<td>77.00</td>
</tr>
</tbody>
</table>
### 2.1.12 SOCKETS- 12.5 mm (1/2”), SQUARE DRIVE AND ACCESSORIES

**Description:** High Grade Chrome Vanadium Steel. As per IS 6131-1980 & 7381-1986 Bi-hexagonal & Hexagonal One Set

<table>
<thead>
<tr>
<th>Product Item</th>
<th>Sockets (mm)</th>
<th>Price Per Set Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 Sockets</td>
<td>10,11,12,13,14,15,16,17,18,19,21,22,23,24,26,27,28,29,30,32,33,34</td>
<td>2750.00</td>
</tr>
<tr>
<td>5 Accessories</td>
<td>Extension bar 125mm,255mm, Universal joint, T Handle, Ratchet Handle</td>
<td></td>
</tr>
</tbody>
</table>
2.112.1 Sockets Accessories

As per IS: 7991 & IS: 7975-1991

<table>
<thead>
<tr>
<th>Item</th>
<th>Length in mm</th>
<th>Price each Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension Bar</td>
<td>125</td>
<td>108.00</td>
</tr>
<tr>
<td>Extension Bar</td>
<td>255</td>
<td>130.00</td>
</tr>
<tr>
<td>Universal Joint</td>
<td>75</td>
<td>177.00</td>
</tr>
<tr>
<td>“T” Handle</td>
<td>300</td>
<td>124.00</td>
</tr>
<tr>
<td>Ratchet Handle</td>
<td>250</td>
<td>398.00</td>
</tr>
<tr>
<td>Offset handle</td>
<td>189</td>
<td>78.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product No.</th>
<th>Contents</th>
<th>Price each (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 sockets + 4 accessories</td>
<td>10,11, 13,14,17, 19,22, 24, 27, 30, 32 Extension bar 125mm,250mm,ratchet reversible 265 mm, sliding handle</td>
<td>1618.00</td>
</tr>
<tr>
<td>14 sockets + 4 accessories</td>
<td>8, 9,10,11, 12,13,14,15,16,17, 18,19, 21, 22 Extension bar 125mm,250mm, T Handle, Offset handle</td>
<td>1379.00</td>
</tr>
<tr>
<td>6 sockets + 1 accessory</td>
<td>11, 14,17, 19,22, 24 Accessory (Offset handle)</td>
<td>440.00</td>
</tr>
</tbody>
</table>
CARPENTER TOOLS
2.2 CARPENTER TOOLS

2.2.1 ADZES

IS : 663

<table>
<thead>
<tr>
<th>Nominal mass Kg</th>
<th>A</th>
<th>E</th>
<th>Dia of Hole</th>
<th>Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50</td>
<td>80</td>
<td>24</td>
<td>95</td>
</tr>
<tr>
<td>2</td>
<td>75</td>
<td>100</td>
<td>23</td>
<td>165</td>
</tr>
</tbody>
</table>
2.2.2 AXES

IS : 703

<table>
<thead>
<tr>
<th>Weight Kg</th>
<th>A±3</th>
<th>B±3</th>
<th>B₁±3</th>
<th>A±3</th>
<th>A±3</th>
<th>Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.80</td>
<td>171</td>
<td>35</td>
<td>32</td>
<td>51</td>
<td>70</td>
<td>140</td>
</tr>
<tr>
<td>2.70</td>
<td>216</td>
<td>41</td>
<td>38</td>
<td>51</td>
<td>83</td>
<td>165</td>
</tr>
</tbody>
</table>

Hand Tools for Coach Open Line Maintenance
2.2.3 BRACE

IS : 7041, 7042

<table>
<thead>
<tr>
<th>Normal size (2 x A)</th>
<th>A±2</th>
<th>B</th>
<th>C±3/0</th>
<th>D±3/0</th>
<th>E</th>
<th>F</th>
<th>Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>125</td>
<td>12</td>
<td>130</td>
<td>150</td>
<td>14</td>
<td>24</td>
<td>110</td>
</tr>
<tr>
<td>300</td>
<td>150</td>
<td>12</td>
<td>145</td>
<td>160</td>
<td>14</td>
<td>24</td>
<td>125</td>
</tr>
</tbody>
</table>

DIMENSIONS FOR CARPENTERS BRACE
(Dimensions are in mm)
2.2.4 CLAMP

<table>
<thead>
<tr>
<th>Length in mm</th>
<th>Price in Rs. each</th>
</tr>
</thead>
<tbody>
<tr>
<td>105</td>
<td>230.00</td>
</tr>
<tr>
<td>205</td>
<td>520.00</td>
</tr>
</tbody>
</table>
2.2.5 HAMMER

2.2.5. A Cross Pein Hammer with Handle

IS : 841-1983

<table>
<thead>
<tr>
<th>Nominal mass grams</th>
<th>A</th>
<th>D</th>
<th>G</th>
<th>Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>75</td>
<td>24</td>
<td>20</td>
<td>89</td>
</tr>
<tr>
<td>500</td>
<td>105</td>
<td>35</td>
<td>25</td>
<td>127</td>
</tr>
</tbody>
</table>
2.2.5. B Claw Hammer

IS : 6546

<table>
<thead>
<tr>
<th>Nominal size grams</th>
<th>A</th>
<th>G±1.5</th>
<th>N min.</th>
<th>Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>450/500</td>
<td>120</td>
<td>28</td>
<td>30</td>
<td>143</td>
</tr>
<tr>
<td>700</td>
<td>135</td>
<td>30</td>
<td>35</td>
<td>225</td>
</tr>
</tbody>
</table>
2.2.6 PLANE

2.2.6. A Try Plane

IS : 8205

<table>
<thead>
<tr>
<th>Normal size a</th>
<th>B±5</th>
<th>c±2</th>
<th>D±3</th>
<th>e±3</th>
<th>F±1.5 /0</th>
<th>Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>600</td>
<td>75</td>
<td>75</td>
<td>250</td>
<td>55.5</td>
<td>150</td>
</tr>
<tr>
<td>57</td>
<td>600</td>
<td>78</td>
<td>75</td>
<td>250</td>
<td>58.5</td>
<td>165</td>
</tr>
</tbody>
</table>

2.2.6. B Smoothing Plane

IS : 8206

<table>
<thead>
<tr>
<th>Normal size a</th>
<th>B±5</th>
<th>c±2</th>
<th>d±3</th>
<th>e±3</th>
<th>F±1.5 /0</th>
<th>Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>200</td>
<td>75</td>
<td>63</td>
<td>60</td>
<td>46.5</td>
<td>105</td>
</tr>
<tr>
<td>51</td>
<td>200</td>
<td>75</td>
<td>63</td>
<td>60</td>
<td>52.3</td>
<td>125</td>
</tr>
</tbody>
</table>
2.2.7 PINCER

Generally confirming to IS: 2615

<table>
<thead>
<tr>
<th>Length in mm</th>
<th>Price in Rs. each</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>131.00</td>
</tr>
</tbody>
</table>
2.2.8 SAW

2.2.8. A Cross Cut Saw

IS : 5098

Dimensions of Cross Cut Saw
(Dimensions are in mm)

<table>
<thead>
<tr>
<th>Length in mm</th>
<th>Rs. Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>145</td>
</tr>
<tr>
<td>350</td>
<td>160</td>
</tr>
</tbody>
</table>

2.2.8. B Rip Saw

IS: 5098

Dimensions of Rip Saw
(Dimensions are in mm)

<table>
<thead>
<tr>
<th>Length in mm</th>
<th>Rs. Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>305</td>
</tr>
<tr>
<td>650</td>
<td>345124</td>
</tr>
</tbody>
</table>
2.3 WELDING TOOLS/EQUIPMENT

2.3.1 ELECTRODE HOLDERS

Conforming to IS: 2641-1989

2.3.2 CUTTING NOZZLES

Conforming IS: 7653-1975
2.3.3 CUTTING TORCH

Description:
Conforming to IS: 7653-1975

Body and head are of forged brass to eliminate casting porosity. Standard model is 450 mm in length with right-angled head.
2.3.4 WELD FLUX CHIPPER (Pneumatic)

Description:
Blows per minute : 4200
Approx. Weight : 2 Kg
Overall Length : 257 mm
Air Inlet : Rc ½”
Type of handle : Straight
Make/model no. : CP-455 L
Chicago Pneumatic
Approximate price : 6590/-
CLEANING
TOOLS/EQUIPMENTS
2.4 CLEANING TOOLS/EQUIPMENTS

2.4.1 CARRIAGE WASHING BRUSH

**Feature:** Made of wood & coconut fibre

**Use:** External cleaning

**Cost:** Rs.80/-

2.4.2 COMMODE CHUTE (CHIMNEY) BRUSH

**Feature:** Made of wood & coconut fibre also available in plastic

**Use:** Inside cleaning & commode chute

**Cost:** Rs.100/-
2.4.3 DUSTER

**Feature:** Khadi cloth  
**Use:** Dusting work, panel, window glass etc cleaning work.  
**Cost:** Rs.8

2.4.4 HAND SWEEPING BRUSH (BRUSH BANISTER)

**Feature:** Made of wood & coconut fiber  
**Use:** Lavatory washing & floor dusting  
**Cost:** Rs. 50/-
2.4.5 HARPIC BRUSH

**Feature:** Made of plastic & nylon fibre  
**Use:** cleaning of critical area, glass shutter, chequered plates  
**Cost:** Rs.20/-

2.4.6 MOPPONG BURSH WITH HANDLE

**Feature:** Made of plastic & rubber pad or mopping cloth  
**Use:** Mopping of floor, side wall etc.  
**Cost:** Rs. 50
2.4.7 MOPPING CLOTH

Feature: Made of thick cotton fibre
Use: Mopping of floor
Cost: Rs.10/-

2.4.8 MULTIPURPOSE BRUSH BIG

Feature: Made of plastic & nylon fibre (with soap solution storing facility)
Use: To clean curved profile section
Cost: Rs.50/-
2.4.9 MULTIPURPOSE BRUSH SMALL (WITH SOAP SOLUTION STORING FACILITY)

**Feature:** Made of plastic & nylon fibre
**Use:** Wash basin, drain hole & curved profile portion
**Cost:** Rs.30/-

2.4.10 SCOTCH BRITE

**Feature:** Abrasive cleaning pad
**Use:** for abrasive cleaning purposes
**Cost:** Rs.10/-
2.4.11 SCRUBBING BRUSH

**Feature:** Made of wood & coconut fibre

**Use:** for scrubbing work as per requirement

**Cost:** Rs. 60/-

2.4.12 SPOKE BRUSH

**Feature:** Made of wood & coconut fibre

**Use:** for external washing, external cleaning panel & rexine

**Cost:** Rs. 35/-
2.4.13 TOOTH BRUSH

**Feature:** Made of plastic & nylon fibre

**Use:** Cleaning of ridge area, moulding corners, sides

**Cost:** Rs. 6/-

![Tooth Brush Image]

2.4.14 WINDOW SQUEEGEE

**Feature:** Made of plastic & rubber pad

**Use:** Mopping of Window class area

**Cost:** Rs. 30 – 40

![Window Squeegee Image]
POWER TOOLS
2.5 POWER TOOLS

2.5.1 ANGLE GRINDER

Description:
- Grinding disc dia.: 180 mm
- Spindle thread: M 14
- Power input: 2000 W
- No-load speed: 8500 rpm
- Weight: 4.2 kg
- Make/Model No.: BOSCH
- Approx. Price: Rs. 11795/-
2.5.2 CIRCULAR SAW

**Description:**

- Saw blade dia.: 184 mm
- Cutting depth at 90°/45°: 62 mm/49 mm
- Power input: 1400 W
- No-load speed: 4800 rpm
- Weight: 4.1 kg
- Make/Model No.: BOSCH
2.5.3 HIGH TORQUE DRILL

**Description:**
Dia. In steel : 10 mm
Power input : 420 W
No-load speed : 2200 rpm
Weight : 1.4 kg
Make/Model No. : BOSCH
Approx. Price : Rs. 3885/-
2.5.4 HOT- AIR GUN

**Description:**
- **Power input**: 2000 W
- **Temperature**: 100° to 600° C
- **Airflow rate**: 350/550 l/min
- **Airflow regulation**: 2-stage
- **Weight**: 0.7 kg
- **Make/Model No.**: BOSCH
- **Approx. Price**: Rs.
2.5.5 JIGSAW

Description:
Cutting depth – in wood : 85 mm
Cutting depth – in aluminium : 10 mm
Cutting depth – in steel : 4 mm
No load stroke rate : 500-3100 spm
Power input : 580 W
Weight : 2.5 kg
Make/Model No. : BOSCH
2.5.6 **LONG NECK STRAIGHT GRINDER**

**Description:**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grinding points max. dia.</td>
<td>25 mm</td>
</tr>
<tr>
<td>Power input</td>
<td>500 W</td>
</tr>
<tr>
<td>No-load speed</td>
<td>27000 rpm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.6 kg</td>
</tr>
<tr>
<td>Make/Model No.</td>
<td>BOSCH</td>
</tr>
<tr>
<td>Approx. Price</td>
<td>Rs. 15185/-</td>
</tr>
</tbody>
</table>

![Image of a hand tool](image-url)
2.5.7 PLANER with HSS Blade

Description:
Cutting depth adjustment : 0-1 mm
Rebate depth : upto 24 mm
Planing width : upto 82 mm
Power input : 750 W
No load speed : 13000 rpm
Weight : 2.8 kg
Make/Model No. : BOSCH
Approx. Price : Rs. 3225/-
2.5.8 ROUTER

Description:
Max. plunge depth : 50 mm
Tool holder : 8 mm
Rated power consumption : 1200 W
No load speed : 23000 rpm
Weight : 4.7 kg
Make/Model No. : BOSCH
2.6 MISC. TOOLS

2.6.1 LED HEADLIGHT

LED Headlight with 4,8,12-LED option (adjustable strap)
Approx. Price : Rs. 250/-
2.6.2 SAFETY HELMET

IS No. : 2925, To use during maintenance

<table>
<thead>
<tr>
<th>SIZE</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>540 mm to 590 mm</td>
<td>Labour Helmet – Rs.45/-</td>
</tr>
<tr>
<td></td>
<td>Supervisor Helmet - Rs.55/-</td>
</tr>
</tbody>
</table>

Note: It is preferable to use Fibre Reinforced Plastic Fluroscence Helmet.
2.6.3 SPRAY GUN

**Description:**
- Cup capacity: 1000 cc
- Air pressure: 18 – 70 psi
- Optional nozzle: 1.2 mm, 1.5 mm, 1.8 mm
- Weight: 4.7 kg
2.6.4 TORQUE WRENCHES

**Description**: The Torque wrench is a calibrated tool recommended for use in controlled tightening of nuts and bolts to avoid over/under stressing. To set simply turn an adjusting lever and set the reading on the scale. To operate, just pull the handle and when set torque is reached, the wrench will signal with an audible “click”. Release the wrench, it is set for the next operation.

<table>
<thead>
<tr>
<th>Torque capacity</th>
<th>Square drive mm</th>
<th>Price /piece</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-7 kg.m 7-50 Lb.Ft.</td>
<td>12.5</td>
<td>2673</td>
</tr>
<tr>
<td>7-35 kg.m 50-250 Lb.Ft.</td>
<td>12.5</td>
<td>2808.00</td>
</tr>
<tr>
<td>14-56 kg.m 100-400 Lb.Ft.</td>
<td>12.5</td>
<td>5328.00</td>
</tr>
</tbody>
</table>
2.6.5 TOOL BAGS/BOXES

Tool Bag/Boxes has to be made as per requirement.
DESCRIPTION AND DETAIL
OF
THE SOME MODERNISED HAND TOOLS
CHAPTER 3

DESCRIPTION AND DETAIL OF THE SOME MODERNISED HAND TOOLS

In this chapter we provide information’s above some new/modernised tools, which many prove to be more useful than the tools presently being used. However these new tools are not included in the list of tools recommended work spot wise. These new/modern tools may be procured and utilised in the field as per requirement at the work spot.
3.1 AUTOMATIC SELF-ADJUSTING SMALL SPANNER

**Description:** Automatic self-adjusting small spanner having functional capacity A/F 6 mm to 22 mm or SAE A/F 1/4" to 7/8"

**Material:** Alloy steel duly hardened jaw, nylon 6 moulded upon steel strip & insulated up to 1000 volts and stainless steel rivet.

(Source of supply – M/s. A Dinisha Marketing Co.)
3.2 AUTOMATIC SELF-ADJUSTING BIG SPANNER

**Description:** Automatic self-adjusting big spanner having functional capacity A/F 15 mm to 41 mm or SAE A/F 5/8" to 1 5/8"

**Material:** Alloy steel duly hardened jaw; nylon 6 moulded upon steel strip & insulated up to 1000 volts and stainless steel rivet.

(Source of supply – M/s. A Dinisha Marketing Co.)
3.3 AUTOMATIC SELF-ADJUSTING SMALL PIPE WRENCH

**Description:** Automatic self-adjusting small pipe wrench with aluminum handle having functional pipe capacity 1/8" to 3/4" Opening Φ 10 mm to 30 mm.

**Material:** - Alloy steel duly hardened jaw & cam; nylon 6 moulded on metal pipe handle and stainless steel rivet.

(Source of supply – M/s. A Dinisha Marketing Co.)
3.4 AUTOMATIC SELF-ADJUSTING BIG PIPE WRENCH

Description: Automatic self-adjusting big pipe wrench with aluminum handle having functional pipe capacity 1/2" to 2" Opening Ф 20 mm to 60 mm.

Material: Alloy steel duly hardened jaw & cam; nylon 6 moulded on metal pipe handle and stainless steel rivet.

(Source of supply – M/s. A Dinisha Marketing Co.)
3.5 SPANNER MULTI-WRENCH (RATCHET TYPE) 10 IN ONE

**Description:** Spanner multi-wrench (ratchet type) -16 effective sizes in one wrench having functional capacity A/F 10,12,16,17,19 mm & BS 1/4", 4/16, 3/8", 7/16", 1/2" 1/2".

**Material:**-Alloy steel duly hardened jaw; nylon 6 moulded on steel strip handle.

(Source of supply – M/s. A Dinisha Marketing Co.)
3.6 MULTI-WRENCH/ SPANNER

**Description:** Multi-wrench/ Spanner (22 sizes of METRIC and SAE in two wrenches) having functional capacity A/F MM 5,7,8,10,12,13 & MM 14,15,17,18,21.

**Material:** Alloy steel duly hardened jaw; nylon 6 moulded on steel strip handle

(Source of supply – M/s. A Dinisha Marketing Co.)
3.7 RATCHET WRENCH-RATCHET TYPE SPANNER

Description: Ratchet wrench- ratchet type spanner (12 sizes of MM & 5 sizes of SAE in three wrenches). The three spanners cover 12 sizes in MM – 8, 10, 11, 12, 13, 15, 16, 17, 18, 19, 21, 22.

Material:- Alloy steel duly hardened.

(Source of supply – M/s. A Dinisha Marketing Co.)
3.8 RATCHET WRENCH-RATCHET TYPE SPANNER

**Description:** Ratchet wrench- ratchet type spanner (12 sizes of SAE & 7 sizes of MM in three wrenches). The three spanners cover 12 sizes in MM – 8, 10, 11, 12, 13, 15, 16, 17, 18, 19, 21, 22.

**Material:** Alloy steel duly hardened

(Source of supply – M/s. A Dinisha Marketing Co.)

Hand Tools for Coach Open Line Maintenance
3.9 HEX KEYS

**Description:** Hex keys having functional A/F capacity of 4, 5, 6, 8, 10 mm

**Material:** Alloy steel duly hardened keys; nylon 6 moulded on steel strip handle and stainless steel rivet.

(Source of supply – M/s. A Dinisha Marketing Co.)
APPENDIX-A

Safety Rules For Hand Tools

1. Always use the right size and type of tool for the job being done. Keep tools in proper working condition. Never alter a tool from its original condition.

2. Always wear safety goggles when using punches, chisels, hammers and cutting tools.

3. Never use a tool as a hammer unless manufactured for that purpose.

4. Never use a pipe extension to increase the leverage of any wrench.

5. Adjustable wrenches should be tightly adjusted to the nut and pulled so that the force is on the side of the fixed jaw.

6. Never use a pipe wrench to bend, raise or lift a pipe.

7. Ratchet mechanisms should be cleaned and lubricated periodically with light grade oil.

8. Keep hammer heads tight on the handle. Never use a hammer with a loose or damaged handle.

9. Metal cutting chisels are intended for cutting, shaping and removing metal softer than the cutting edge itself.

10. Always strike the struck base of a Chiesel or punch. The striking face of the hammer should have a dia. approximately 10 mm larger than the struck face of the punch or Chiesel.

11. Never use screw drivers with rounded tips.

12. Never use a screwdriver as a Chiesel, punch, scraper or pry bar. Use screw driver for screw driving only.
Source of supply:

1. M/s. A Dinisha Marketing Co.
   Behind Shop # 54/55 Dagina Bazaar
   28/A, Mumbadevi Road, Shop # 3,
   Mumbai-400002
   E- Mail : dinisha_r@hotmail.com
   Phone/Fax : +91-22-22421095
   Mobile : +91-98694 22260

2. M/s Taparia Tools Ltd.
   423/424, A-2, Shah & Nahar
   Lower Parel (West)
   Mumbai-400013
   Web-site : http://www.tapariatools.com

3. M/s Mekaster Tools Ltd.
   10168, East Park Road (K.C.P.)
   Karol Bagh, New Delhi-110005

4. M/s Jhalani Tools (India) Ltd.
   Gedore House
   51-52, Nehru Place
   New Delhi-110019
5. M/s BOSCH  
Motor Industries Co.Ltd., Power tool division,  
Hosur Road, Adugodi  
Banglore-560030

6. Shree Ganesh Fibre Glass Co. (for safety helmet)  
New Delhi-34

7. Chicago Pneumatic Sales (for pneumatic tools)  
Chemtex house, Hiranandani Gardens  
Powai, Mumbai-400076  
Website: www.cp.com

8. M/s Hindustan Everest Tools Ltd.  
Dohil Chambers, 46 Nehru Place  
New Delhi-110019  
Web-site: http://www.eversttools.com
OUR OBJECTIVE

To upgrade maintenance technologies and methodologies and achieve improvement in productivity and performance of all Railway assets and man power which inter-alia would cover reliability, availability, utilisation and efficiency.

If you have any suggestions and any specific comments, please write to us.

Contact person : Director (Mech.)

Postal address : Indian Railways,
Centre for Advanced Maintenance Technology,
Maharajpur, Gwalior.
Pin code - 474 020

Phone : 0751- 2470890, 0751-2470803
Fax : 0751- 2470841