



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE GENERAL OF TRAINING

COMPETENCY BASED CURRICULUM

MECHANIC DIESEL

(Duration: One Year)

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 3



STANDARD SPECIFICATION TOOLS & EQUIPMENT



Directorate General of Training

ANNEXURE-I

MECHANIC DIESEL (For the Batch of 24Candidates)

Sr. No.	Name of the Tool & Equipment	Page No.
A. TRAINEES TOOL KIT		
1.	Allen Key set of 12 pieces	9
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3.	Callipers outside with spring	11
4.	Center Punch.	12
5.	Dividers with spring	13
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16.	Spanners socket with speed handle, T-bar, ratchet and universal set of 28 pieces with box	24
17.	Steel rule	25
18.	Steel tool box with lock and key (folding type)	26
19.	Wire cutter and stripper	27
B. INSTRUMENTS AND GENERAL SHOP OUTFIT - For 2 (1+1) units no additional items are required		
TOOLS & EQUIPMENT		
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23.	Air ratchet with standard accessories	31
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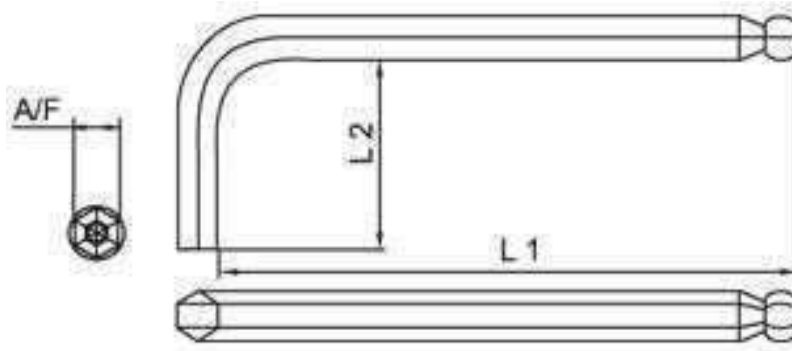
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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

1

Allen Key Set - Hexagonal - 2 - 14 mm, set of 12 Keys

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT
VOLUME 03 –ITEM NO - 186

1.1 Basic Indicative Diagram



- 1.2 Generally conform to I.S 3082 - 1988 pipe 117.3 Sizes in mm: 2, 2.5, 3, 3.5, 4, 4.5, 5, 6, 8, 10, 12, 14
- 1.3 Made from high grade alloy Steel - Chrome Vanadium Molybdenum (S2) which enables 0% higher torque as compared to Allen keys made from Cr - V Steel
- 1.4 Higher Hardness 57 - 62 HRC
- 1.5 Ball Head on one side to facilitate tightening & loosening of screws at 15 degree
- 1.6 Precision drawn and machined
- 1.7 Specially coated and Oiled for rust prevention



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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

2

Caliper - Inside, Spring Type - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 01

2.1 Basic Indicative Diagram



2.2 Inside calipers with Size: 150 mm

2.3 Material for

3.2.1 Legs: Carbon & Alloy Steel

3.2.2 Spring: Spring Steel

3.2.3 Others: Free Cutting Steel

2.4 Finish for

2.4.1 Legs: Polished

2.4.2 Rest parts: Auto Black

2.5 Hardness for

2.5.1 Tip: 50 - 55 HRC

2.5.2 Spring: 45 - 50 HRC

2.6 Proper rust preventive packing



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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

3

Caliper - Outside, Spring Type - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 02

3.1 Basic Indicative Diagram



3.2 Outside Calipers with Size: 150 mm

3.3 Material for

3.2.1 Legs: Carbon & Alloy Steel

3.2.2 Spring: Spring Steel

3.2.3 Others: Free Cutting Steel

3.4 Finish for

3.4.1 Legs: Polished

3.4.2 Rest parts: Auto Black

3.5 Hardness for

3.5.1 Tip: 50 - 55 HRC

3.5.2 Spring: 45 - 50 HRC

3.6 Proper rust preventive packing



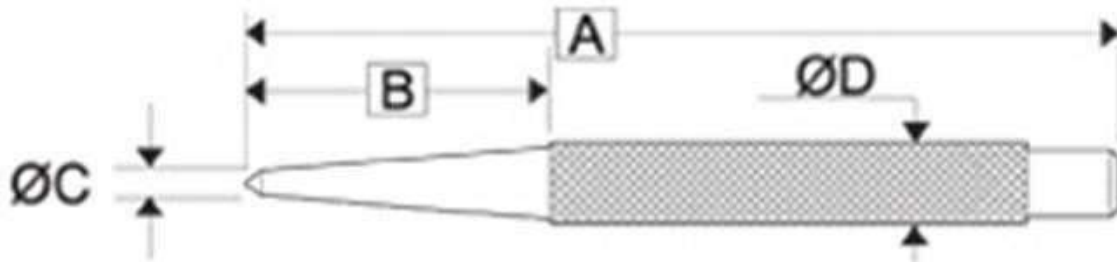
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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

4

Center Punch - 100 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 112

4.1 Basic Indicative Diagram



4.2 Generally conform to I.S. 7177 - 1974

4.3 Dimensions (in mm): A - 100, B - 33, Ø C - 4, Ø D - 10

4.3 Made from high grade chrome Steel

4.4 Hardness

4.4.1 Working surface: 55 - 57 HRC

4.4.2 Body: 35 - 45 HRC

4.5 Overall Length: 100mm

4.6 Black phosphate finish, Hardened & tempered

4.7 Deep knurling on body for firm grip



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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

5

Divider Spring Type - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 03

5.1 .Basic Indicative Diagram



5.2 Spring Divider Size(L): 150 mm

5.3 Material for

5.3.1 Legs: Carbon & Alloy Steel

5.3.2 Spring: Spring Steel

5.3.3 Others: Free Cutting Steel

5.4 Finish for

5.4.1 Legs: Polished

5.4.2 Rest parts: Auto Black

5.5 Hardness for

5.5.1 Tip: 50 - 55 HRC

5.5.2 Spring: 45 - 50 HRC

5.6 Proper rust preventive packing

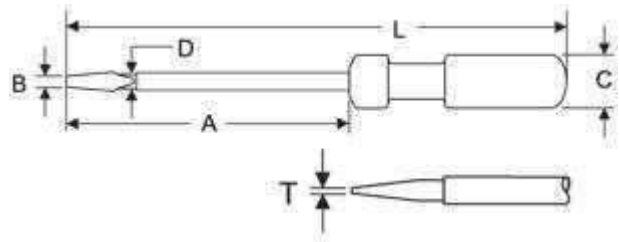


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

6 Screw Driver - Insulated - 10 X 250 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 152

152.1 6.1 Basic Indicative Diagram



6.2 Generally conform to IS 844 - 1979

6.3 Insulated Blade

6.4 Dimensions:

6.4.1 Size: 10 mm X 250 mm (A - 250 mm, D - 10 mm)

6.4.2 Tip Bit Size: B X T : 10 mm x 1.2 mm

6.5 Blade:

6.5.1 Blade made of high grade Silicon - Manganese Steel (EN 45 A)

6.5.2 Blade should be differentially hardened & tempered to resist wear, bending & meet high torque requirement

6.5.3 Hardness on Tip: 55 - 58 HRC

6.5.4 Minimum Torque Value: 1.46 Kg.m

6.5.5 Bright and Smooth Nickel Chrome plating finish to effectively protect blade against corrosion

6.6 Handle:

6.6.1 Material of Handle: Cellulose Acetate

6.6.2 Handle should be made of high grade CA Plastic, which is non-flammable & unaffected by oil, petrol, grease, water - practically anything

6.6.3 Handle should withstand rough use including hammering

6.6.4 Handle design should be such that it gives comfortable grip even at high torques

6.6.5 Handle & blade assembly should be insert molded

6.7 Tip:

6.7.1 Tip should be formed by Forging & Trimming

6.7.2 Tip should be precision-ground to 10 degree angle to ensure firm grip in the screw slot.

6.7.3 The Blade tip should be magnetized to lift small screw from confined places or to hold the screw in position

6.7.4 Tip sides & faces should be well ground with good finish

6.7.5 Double ear coining should be provided for the blade

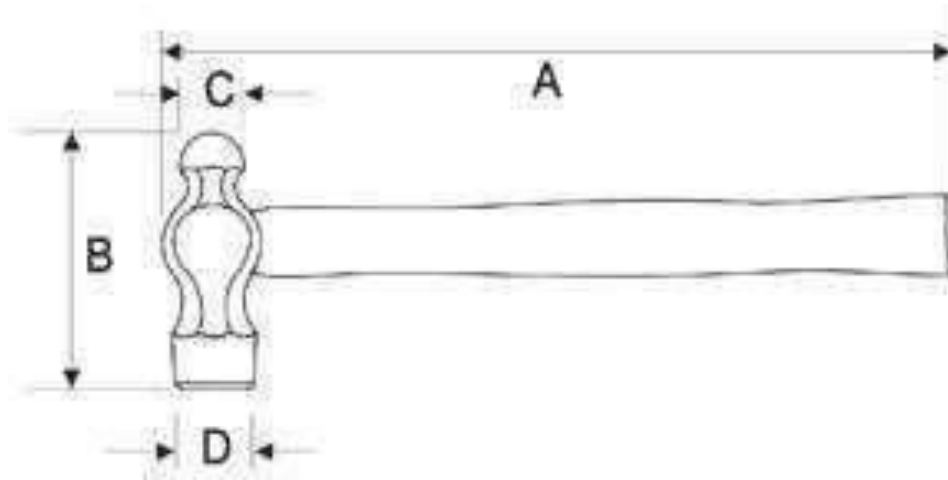


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

7 Hammer - Ball Peen - 500 grams with Handle

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 55

7.1 Basic Indicative Diagram



7.2 Generally conform to I.S. 841 - 1983

7.3 Ball Peen Hammer

7.4 Length: 300 mm + 10%

7.5 Weight: 500 grams

7.6 Drop forged from high grade carbon Steel

7.7 Material: EN - 9

7.8 Partially hardened upto 46 - 56 HRC on striking surface

Depth of Hardness: 6 mm

Phosphated and painted

7.9 Handle

7.9.1 Material: Hickory Wood/ Red Wood/ Babul Wood/ Indestructible Handle

7.9.2 Handle fixed firmly to hammer head so that it does not come out after long use

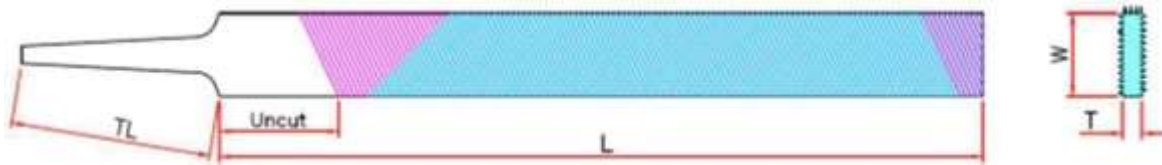


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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

8 File - Safe Edge - Second Cut - 200 mm with Handle

As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-FILES –ITEM NO - 21

8.1 Basic Indicative Diagram

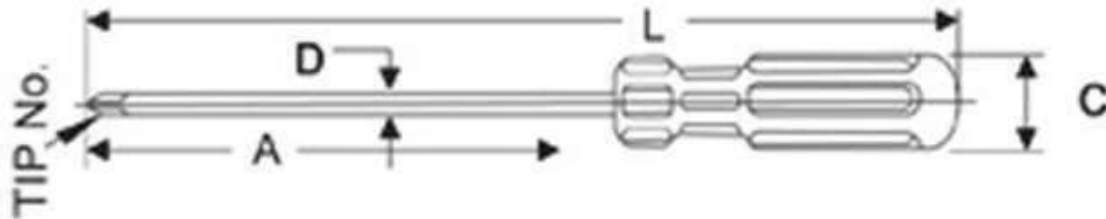


	Range (In MM)	
	From	To
8.2 Generally conforming to IS 1931-2000		
8.3 Body Length (L)	198	202
8.4 Tang Length (TL)	54	56
8.5 Width (W)	19.6	20.6
8.6 Thickness (T)	3.7	4.4
8.7 No. of Upcut / Inch	34	35
8.8 Upcut inclination	64°	66°
8.9 No. of Overcut / Inch	29	30
8.10 Overcut Inclination	44°	46°
8.11 No. of Edge cut / Inch	36	37
8.12 Edge cut Inclination	89°	91°
8.13 Hardness	60 HRC	64 HRC
8.14 Rake Angle	-7°	-12°

9 Screw Driver - Philips Set of 5 pieces (100 mm to 300 mm)

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 157

9.1 Basic Indicative Diagram



9.2 Generally conform to IS 844 - 1979

9.3 Sizes:

- | | | |
|-----------------|---------|--------------|
| 9.3.1 A: 50 mm | D: 3 mm | TIP SIZE: 00 |
| 9.3.2 A: 60 mm | D: 3 mm | TIP SIZE: 0 |
| 9.3.3 A: 75 mm | D: 3 mm | TIP SIZE: 1 |
| 9.3.4 A: 100 mm | D: 6 mm | TIP SIZE: 2 |
| 9.3.5 A: 200 mm | D: 8 mm | TIP SIZE: 3 |

9.4 Blade made of High Grade Silicon - Manganese Steel

9.5 Blade should be differentially hardened & tempered to resist wear, bending & meethigh torque requirement

9.6 Hardness on Tip: 55 - 58 HRC

9.7 The Blade tip should be magnetized to lift small screw from confined places or to holdthe screw in position

9.8 Bright and Smooth Nickel Chrome plating finish to effectively protect blade againstcorrosion

9.9 Handle should be made of high grade CA Plastic, which is non - flammable & unaffectedby oil, petrol, grease, water - practically anything

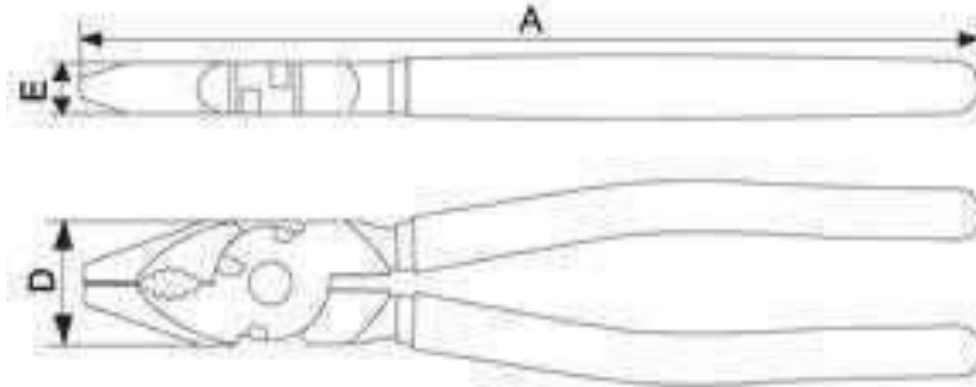
9.10 Handle should withstand rough use including hammering

9.11 Handle design should be such that it gives comfortable grip even at higher torques

10 Plier - Combination - 200 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 94

10.1 Basic Indicative Diagram



10.2 Generally conform to IS 3650 - 1981

10.3 Material: C - 70

10.4 Finish: Polished / Chrome plated / Satin finish

10.5 Length (A): 200 mm

10.6 Drop forged, hardened tempered

10.7 Differential hardening

10.8 Radius Gap from front side: Upto 0.2 mm

10.9 Play between shanks: Upto 0.3 mm

10.10 Shank Material: C70 / EN9

10.11 Rivet material: SAE 1541 / 40Cr4

10.12 Cutting Edge Hardness: 60 - 62 HRC

10.13 Shank Hardness: 40 - 48 HRC

10.14 Rivet Hardness: 38 - 42 HRC

10.15 High Voltage Insulation: Should be able to withstand 4000 V DC or 2800 V AC

10.16 Insulation Sleeves made from High Quality CA Plastic

10.17 Thicker Sleeves for comfortable Grip

10.18 Special thumb protector for sleeves to minimize the risk of electric shock in case pliers slip while in use.

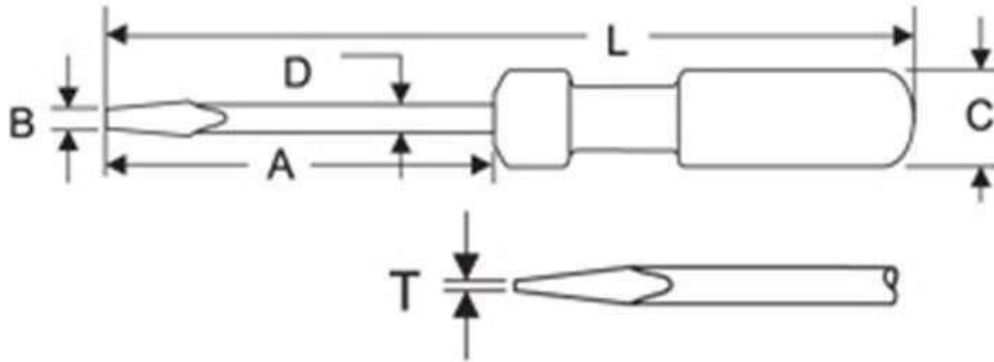
10.19 Should be able to cut soft (74 to 84 Kg/mm²) & Hard (140 Kg/mm²) wires

10.20 Should be able to cut 2 mm of hardwire Diameter & 1 mm of soft wire Diameter

11 Screw Driver – 9 X 200 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 144

11.1 Basic Indicative Diagram



11.2 Generally conform to IS 844 - 1979

11.3 Dimensions:

11.3.1 Size: 9 mm X 200 mm (A - 200 mm, D - 9 mm)

11.3.2 Tip Bit Size: B X T: 10 mm X 1.2 mm

11.4 Blade:

11.4.1 Blade made of high grade Silicon - Manganese Steel (EN 45 A)

11.4.2 Blade should be differentially hardened & tempered to resist wear, bending & meet high torque requirement

11.4.3 Hardness on Tip: 55 - 58 HRC

11.4.4 Minimum Torque Value: 1.46 Kg.m

11.4.5 Bright and Smooth Nickel Chrome plating finish to effectively protect blade against corrosion

11.5 Handle:

11.5.1 Material of Handle: Cellulose Acetate

11.5.2 Handle should be made of high grade CA Plastic, which is non-flammable & unaffected by oil, petrol, grease, water - practically anything

11.5.3 Handle should withstand rough use including hammering

11.5.4 Handle design should be such that it gives comfortable grip even at high torques

11.5.5 Handle & blade assembly should be insert molded

11.6 Tip:

11.6.1 Tip should be formed by Forging & Trimming

11.6.2 Tip should be precision-ground to 10 degree angle to ensure firm grip in the screw slot.

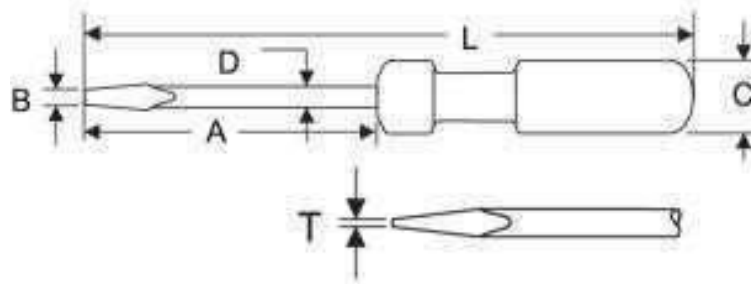
11.6.3 The Blade tip should be magnetized to lift small screw from confined places or to hold the screw in position

11.6.4 Tip sides & faces should be well ground with good finish

11.6.5 Double ear coining should be provided for the blade.

12 Screw Driver - 9 X 300 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 146

12.1 Basic Indicative Diagram

12.2 Generally conform to IS 844 - 1979

12.3 Dimensions:

12.3.1 Size: 9 mm X 300 mm (A - 300 mm, D - 9 mm)

12.3.2 Tip Bit Size: B X T : 10 mm X 1.5 mm

12.4 Blade:

12.4.1 Blade made of high grade Silicon - Manganese Steel (EN 45 A)

12.4.2 Blade should be differentially hardened & tempered to resist wear, bending & meet high torque requirement

12.4.3 Hardness on Tip: 55 - 58 HRC

12.4.4 Minimum Torque Value: 1.46 Kg.m

12.4.5 Bright and Smooth Nickel Chrome plating finish to effectively protect blade against corrosion

12.5 Handle:

12.5.1 Material of Handle: Cellulose Acetate

12.5.2 Handle should be made of high grade CA Plastic, which is non - flammable & unaffected by oil, petrol, grease, water - practically anything

12.5.3 Handle should withstand rough use including hammering

12.5.4 Handle design should be such that it gives comfortable grip even at Higher torques

12.5.5 Handle & blade assembly should be insert moulded

12.6 Tip:

12.6.1 Tip should be formed by Forging & Trimming

12.6.2 Tip should be precision - ground to 10 degree angle to ensure firm grip in the screw slot.

12.6.3 The Blade tip should be magnetized to lift small screw from confined Places or to hold the screw in position

12.6.4 Tip sides & faces should be well ground with good finish

12.6.5 Double ear coining should be provided for the blade.

13 Scriber - Bend and Straight - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 74

13.1 Basic Indicative Diagram



13.2 Scriber with Min. Length 150

13.3 90 ° Bend and Straight

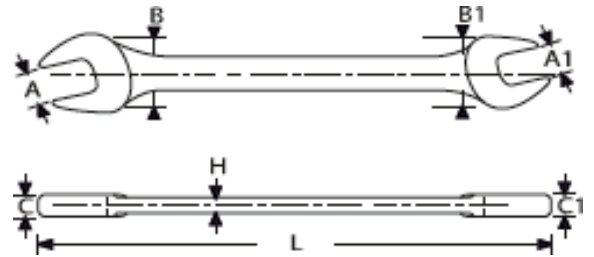
13.4 Both Point end Hardness 55 - 60 HRC

13.5 Should be of material EN - 9

14 Spanner - Double Ended - Set - 6 - 32 mm Set of 12

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 165

14.1 Basic Indicative Diagram



14.2 Generally Conform to IS 2028 - 1998

14.3 Sizes: 6X7, 8X9, 10X11, 12X13, 14X15, 16X17, 18X19, 20X22, 21X23, 24X27, 25X28, 30X32 mm

14.4 Slightly Rounded handles - Sand Blasted

14.5 Non Damaging Grip on nut due to close wrench opening tolerances

14.6 I - section design of handle and heads to combine strength and low weight

14.7 Salt Spray Test should be conducted

14.8 Should not have Sharp Cuts, Pit Marks, Cutting Burs

14.9 Should have Anti - Slip design Feature

14.10 Thoroughly corrosion protected with Nickel chrome finish

14.11 Deep forged from Chrome vanadium Steel (31CrV3)

14.12 Hardness: 42 - 45 HRC

14.13 Head at each end are of different sizes and set at an angle of 15 degrees

14.14 Web should be provided in forging

14.15 Minimum Torque Values in Kg.m

14.15.1 Nominal Width A/F 6-0.6, 7-0.9, 8-1.3, 9-1.9, 10-2.5, 11-3.3, 12-4.2

14.15.2 Nominal Width A/F 13-5.3, 14-6.5, 15-7.8, 16-9.4, 17-10.9, 18-13.0

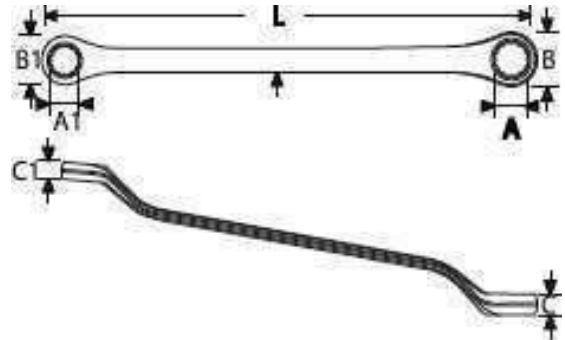
14.15.3 Nominal Width A/F 19-15.2, 20-17.50, 21-20.20, 22-22.9, 23-26.0, 24-29.3

14.15.4 Nominal Width A/F 25-32.8, 26-36.6, 27-40.7, 28-45.0, 30-54.6, 32-65.50

15 Spanner - Ring - Set - 6 - 32 mm set of 12

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 167

15.1 Basic Indicative Diagram



15.2 Generally Conform to IS 2029 - 1998

15.3 Sizes: 6X7, 8X9, 10X11, 12X13, 14X15, 16X17, 18X19, 20X22, 21X23, 24X27, 25X28, 30X32 mm

15.4 Thin walled rings to provide accessibility in confined spaces

15.5 Slightly rounded handles - sand blasted to give comfortable grip

15.6 Non Damaging Grip on nut due to close wrench opening tolerances

15.7 I - section design of handle and heads to combine strength and low weight

15.8 Thoroughly corrosion protected with Nickel chrome finish

15.9 Deep forged from Chrome vanadium Steel (31CrV3)

15.10 Forging Finish: Should be free from forging defects such as pitted, unfilling, excessflash etc

15.11 A/F broaching finish should be good and should have flank bihex

15.12 Grinding finish: Partline flash is smooth & enough ground

15.13 finish: Bright Ni - Cr plated

15.14 Plating thickness: Minimum 3.5 microns

15.15 Hardness: 42 - 48 HRC

15.16 Minimum Torque Values in Kg.m

15.16.1 Nominal Width A/F 6-1.8, 7-2.6, 8-3.50, 9-4.6, 10-5.90, 11-7.40, 12-9.10

15.16.2 Nominal Width A/F 13-10.90, 14-13.0, 15-15.30, 16-17.80, 17-20.50

15.16.3 Nominal Width A/F 18-23.4, 19-26.6, 20-30.0, 21-31.6, 22-37.5, 23-41.6

15.16.4 Nominal Width A/F 24-46.0, 25-50.6, 26-55.5, 27-60.6, 28-66.0, 30-77.5

15.16.5 Nominal Width A/F 32-90.10

16 ½” socket set

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 183

16.1 Basic Indicative Diagram



16.2 1/2 Inch Ratchet Socket Set, 2 Extension Bar, T - Bar, Universal Joint, Sockets = 8,9,10,11,12, 13,14,15,16,17,18,19,21,22,23,24, 26,27,28, 29,30 and 32 mm, in a Plastic Case Box

16.3 27 Pieces set which Includes 22 Pieces 1/2 inch Sockets: 8, 9, 10, 11, 12, 13, 14, 15,16, 17,18, 19, 21,

16.4 22, 23, 24, 26, 27, 28, 29, 30, 32 mm, Extension Bar - 5 inch, 10 inch, Universal Joint, Sliding T - Bar, Ratchet Handle

16.5 Cold forging from high quality Chrome Vanadium Steel

16.6 Ultra Premium Finish to provide scratch proof surface with enhanced protection against corrosion. (Mirror Finish & Matt finish not acceptable)

16.7 Should provide a Non slip grip even in slippery applications (Knurled Band)

16.8 48 Teeth Gear Structure Ratchet with quick release push button & Head Should be repairable.

16.9 Universal Joint should be hinged through 180° in both directions

16.10 Profile should provide larger contact area between socket and fastener

16.11 Brand & Size etched on each individual socket to ensure quick & convenient identification

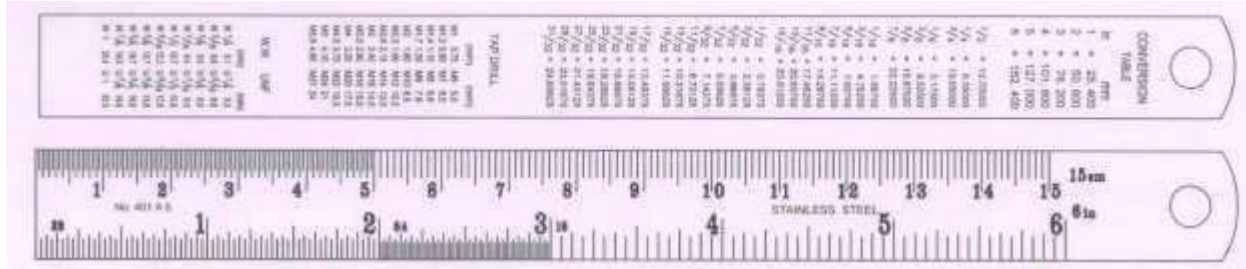
16.12 Blow moulded plastic case to securely fit all pieces for easy organization and convenient portability.



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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

17 Steel Rule - 300 mm, Graduated both in Metric and English Unit
As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 32

17.1 Basic Indicative Diagram



- 17.2 Material: Stainless Steel
- 17.3 Thickness: 0.5 mm
- 17.4 Hardness: 30 - 35 HRC (Specially Hardened)
- 17.5 Finish: Polished 2B / Anti-Glare Satin Chrome
- 17.6 Surface roughness: 0.6 Microns max
- 17.7 Range: 300 mm
- 17.8 Measuring least count: Metric Graduation +0.5 mm and English graduation 1/64 inch
- 17.9 Accuracy: Metrology Standard EEC Class - I

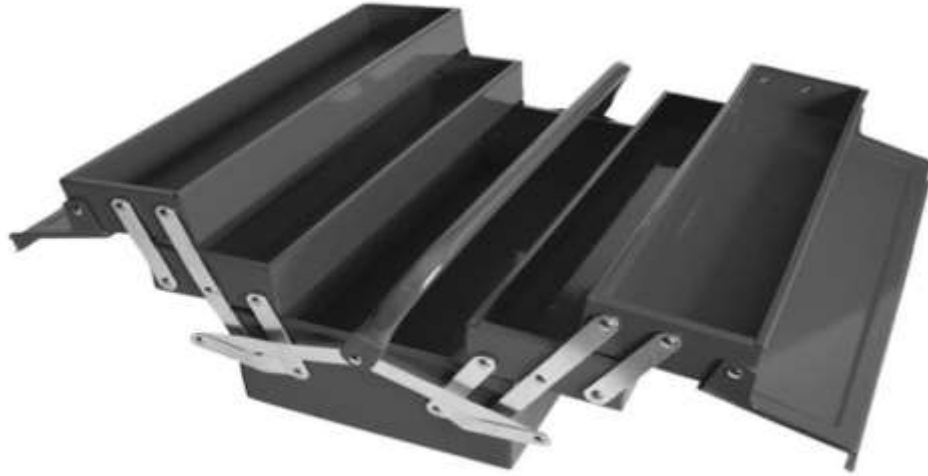


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SPECIFICATION FOR GENERAL HAND TOOLS – TOOL STORAGE

18 5 Tray Cantilever Tool Box - W:D:H = 450:200:150, ± 20 mm

As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS- TOOL STORAGE –ITEM NO - 01

18.1 Basic Indicative Diagram:



18.2 5 Tray Cantilever box with overall Dimensions:

18.2.1 Width : Depth: Height = 450 mm : 200 mm : 150 mm

18.2.2 Variation: ± 20 mm

18.3 Corrosion resistant powder coated finish

18.4 Riveting should be of Stainless Steel

18.5 Minimum Load Capacity: 33 kg

18.6 Construction in CRC Sheet with thickness:

18.6.1 Base and Side: 0.65 mm

18.6.2 Partition: 1.0 mm

18.7 Joining Clips should be of CRC Sheet with 1.5 mm thickness

18.8 Handle should be of ERW MS Pipe ϕ 12.7 mm X 1.0 mm thick

18.9 Provision of Padlock in lid

18.10 Color: Blue, Yellow, Red, Orange or Black

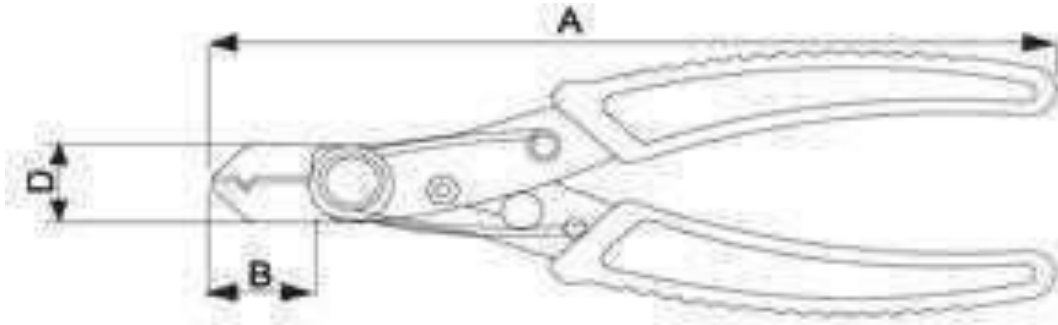


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

19 Wire Cutter and Stripper - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS
& EQUIPMENT VOLUME 03 –ITEM NO - 103

19.1 Basic Indicative Diagram



19.2 Generally conform to I.S. 5995 - 1971

19.3 Dimensions (in mm): A - 150, B - 18, D - 15

19.4 Sleeve should be made of Cellulose Acetate

19.5 Should withstand 400 V AC

19.6 Drop forged from high grade carbon Steel (EN 9)

19.7 Accurate machined and Heat treated

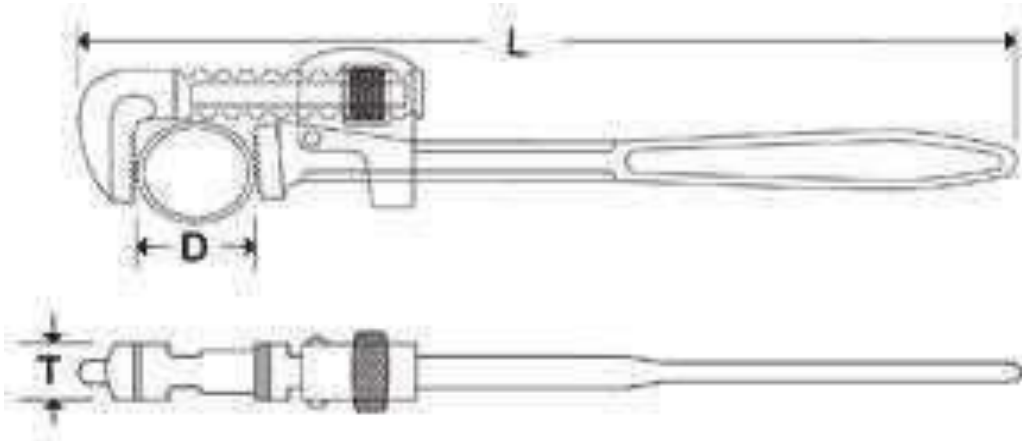


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

20 Stillson Pattern Pipe Wrenches - Length = 350 mm, Opening = 42 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 169

20.1 Basic Indicative Diagram



20.2 Generally Conform to IS 4003 (I) 1978

20.3 Length L: 350 mm

20.4 Opening D: 42 mm

20.5 Suitable to pipe size: 32 mm

20.6 Jaws should be dropped forged from high grade carbon Steel

20.7 Differential Hardness pattern of the handle & jaw permits resistance teeth & toughbody

20.8 Hardness

20.8.1 Jaws: 50 - 60 HRC

20.8.2 Jaw Shank: 35 - 45 HRC

20.9 Torque Value: 51 Kg.m

20.10 Jaws should have precision machined integral teeth with included angle of 76 degreesto provide best matching, strength & firm gripping, without biting on jobs

20.11 Should be provided with conical compression springs to balance the movable jaw properly so that forward and backward action is possible.

20.12 High grade malleable Cast Iron housing

20.13 Heat treated rivets of carbon Steel

20.14 Heat treated and specially knurled nut

20.15 Phosphated and painted to guard against rusting



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

21 Air Blow Gun with accessories

As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENT –ITEM NO - 18

21.1 Basic Indicative Diagram



- 21.2 Die Cast Al construction
- 21.3 Extended 9 inch X ϕ 6.2mm(ID) long
- 21.4 aluminum tube 1/2 inch rubber tip
- 21.5 5m polyurethane coil Hose, Kink resistant &
- 21.6 lightweight Hose ID ϕ 5mm, Hose OD ϕ 8mm; 1/4 inch Threads
- 21.7 Hose material PUR –
- 21.8 Ester Hose Hardness 98
- 21.9 Shore 'A' Polyacetal
- 21.10 bend restrictors Burst Pressure 508PSI (35bar)
- 21.11 Crimped with solid brass swivel (360°) with quick change connector of Steel construction with standard seal material suitable for air application
- 21.12 Compressed air pressure less than 30 PSI when outlet
- 21.13 blocked Solid Brass swivel fittings at both ends offer
- 21.14 360° rotation Noise level should be <85dBA
- 21.15 Each gun should includes hanging hook and paddle-type air
- 21.16 control lever Variable flow trigger for precise air flow control
- 21.17 Six-outlet "star tip" delivers an even distribution of air
- 21.18 4" Full Flow tube and ergonomic handle for increased
- 21.19 comfort Triggers regulate airflow from partial to full
- 21.20 line pressure Maximum Working Pressure: 175 PSI (12 bar)
- 21.21 Should comply with OSHA safety
- 21.22 standards Valve should have no cutoff
- 21.23 and no restrictions Each tip should be side vented
- 21.24 Air Inlet: 1/4" NPT



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SPECIFICATION FOR ELECTRICAL AND ELECTRONICS TOOLS AND EQUIPMENTS GROUP ITEMS

22 Ammeter - MC - 300A, 60A with external shunt, Analog
As Per DVET, Maharashtra State SPECIFICATION FOR ELECTRICAL & ELECTRONICS TOOLS & EQUIPMENT –ITEM NO - 19

22.1 Basic Indicative Diagram



- 22.2 Range: Moving Coil, 0 - 300 A, Analog
- 22.3 Type: Moving Coil DC, Analog
- 22.4 Input: 75 mV,
- 22.5 Accuracy: Class 1.5
- 22.6 Should have linear scale
- 22.7 Should be easily replaceable glass and bezel
- 22.8 Scale should have interchangeability
- 22.9 Should be easy installation with swivel screws
- 22.10 Should have Glass filled polycarbonate housing (UL 94-V-0) Knife edge pointer.
- 22.11 Self lifting terminal clamp assembly
- 22.12 IP 52 protection
- 22.13 Wide measurement band: 10 to 100% of FSD
- 22.14 Movement
- 22.14.1 Moving coil movement should have pivots of very high hardness
- 22.14.2 Movement should have suspended between spring loaded Sapphire Jewels
- 22.14.3 Movement should have properly shielded & critically damped by eddy currents induced in coil former
- 22.15 Reference Standards:
- | | |
|--|----------------------|
| 22.15.1 Performance Standard: | IEC 60051 & IS 1248 |
| 22.15.2 Safety standard: | IEC 61010 |
| 22.15.3 Nominal case and cutout dimensions: | IS 2419 & DIN 43700 |
| 22.15.4 Scale and Pointer: | DIN 43802 |
| 22.15.5 Connection and Terminal markings: | DIN 43807 |
| 22.15.6 Terminal bolts / leads: | DIN 46200 / 46282 |
| 22.15.7 Safety requirements and protective measures: | IS 9249 - 1979 |
| 22.15.8 Front frames dimensions: | DIN 43718 |
| 22.15.9 Environmental conditions specifications: | IS 9000 part 5, 7, 8 |
- 22.16 Certifications:
- 22.16.1 ERDA Type tested
- 22.16.2 CE Certified
- 22.16.3 UL Approved
- 22.16.4 RoHS complied



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

23 Air ratchet with standard accessories

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

23.1 Basic indicative diagram



23.2 ½ Inch Sq. drive Wrench

23.3 Material: Alloy steel

23.4 No-load Speed: 1000 to 1500 RPM

23.5 Air Inlet Size: 1/4"

23.6 Air Pipe Size: 1/4"

23.7 High quality material with precision processing

23.8 Working Pressure: 4kg/cm² to 8 kg/cm²

23.9 Suitable Adapter to connect air hose



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

24 Air Impact Wrench with Impact Sockets

As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENT –ITEM NO - 19

24.1 Basic Indicative Diagram



- 24.2 ½ Inch Sq. drive Impact Wrench,
- 24.3 Handle Housing Material: Aluminum, Front case material:
- 24.4 SteelMax. Torque 745 Nm (@15s)
- 24.5 Air Inlet ¼ inch , Net Weight 2.3 kg max (±
- 24.6 10%)Air consumption 4 CFM max.
- 24.7 Twin hammer mechanism with front
- 24.8 Exhaust3 speed position control to adjust tool speed
- 24.9 ½ Inch 14 Piece Cr Mo impact socket set: 10mm, 11mm, 12mm, 13mm, 14mm, 15mm,16mm, 17mm, 18mm, 19mm, 21mm, 22mm, 24mm
- 24.10 Impact sockets in Blow Mould Case
- 24.11 Hardness of Impact sockets 38 - 55 HRC with Super Grip
- 24.12 ProfileBlack Oxide Finish
- 24.13 Torque: 1.5X ANSI/1.3X DIN
- 24.14 Brand & Size etched on each individual socket to ensure quick & convenient identification
- 24.15 ½ Inch (F) to 3/8 inch (M) impact reducer adaptor with same material construction asof impact sockets.



- 25 **Angle plate - Adjustable - 250 X 250 X 300 mm**
As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS
& EQUIPMENT VOLUME 03 –ITEM NO - 01

25.1 Basic Indicative Diagram



25.2 Dimensions

25.2.1 Length: 250 ± 4 mm

25.2.2 Width: 250 ± 4 mm

25.2.3 Height: 300 ± 4 mm

25.3 Body should be made of ductile Cast Iron.

25.4 Tilting Angle: 0 - 90 degree

25.5 Smooth tilting movement

25.6 Should be provided with swiveling face with machined "T" slots.

25.7 Working face flatness: 12 microns per 300 mm

25.8 Base of angle should be adjustable and with cutting slot for fixing.

25.9 "T" Slot of plate: M12



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

26 Angle plate 200X100X200 mm

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

26.1 Basic indicative diagram



26.2 Dimensions

Length: 200 ± 4 mm

Width: 100 ± 4 mm

Height: 200 ± 4 mm

26.3 Material: Body should be made of ductile Cast Iron.

26.4 Working face flatness: 12 microns per 300 mm

26.5 Angle: should be 90 degree



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

27 Anvil - 50 Kg with Stand

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 04

27.1 Basic Indicative Diagram



- 27.2 Total Length: 515 ± 2mm
- 27.3 Total Width: 155 ± 1 mm
- 27.4 Base Length: 265 ± 1 mm
- 27.5 Height: 240 ± 1 mm
- 27.6 Total Weight: 50 Kg
- 27.7 Material: Ductile Cast Iron
- 27.8 Suitable stand should be supplied for Anvil



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SPECIFICATION FOR ELECTRICAL AND ELECTRONICS TOOLS AND EQUIPMENTS GROUP ITEMS

28 Auto Electrical Work Bench

As Per DVET, Maharashtra State SPECIFICATION FOR ELECTRICAL & ELECTRONOCS TOOLS & EQUIPMENTS –ITEM NO -01

28.1 Basic Indicative Diagram



28.2 General Features:

- 28.2.1 The readings can be read through digital meters
- 28.2.2 5 HP, 3 Phase, 1440 RPM motor induction motor suitable for 50 Hz / 415 V AC Supply
- 28.2.3 Alternator loading up to 170 A / 14 V & 110 A / 24 V
- 28.2.4 Heavy duty transformer for starter testing with light run test
- 28.2.5 Poly V / V groove / small pulley for alternator checking
- 28.2.6 Battery charging ammeter to read the battery current
- 28.2.7 Heavy duty rugged frame for mounting alternator & starter
- 28.2.8 Three phase 4 pole isolator switch
- 28.2.9 All tripping MCB's available
- 28.2.10 PCB / bat excitation available
- 28.2.11 Accessories like bulbs / fuses / belts and cables for test of alternator / starter/continuity / battery along with manual & calibration certificates to be provided
- 28.2.12 Facility to check continuity test of excitation winding using 6 V - DC Output
- 28.2.13 Facility to check short circuit of starter / alternator- rotor using 40 / 80 V AC
- 28.2.14 Dimensions: Length X Width X Height: 800mm X 850mm X 650mm (Approx.)
- 28.2.15 Weight: 150 Kgs net (Approx.)
- 28.2.16 Facility to charge battery (Not in the scope of supply) using appropriate cableharness

28.3 Components of Auto Electrical Test Bench:

- | | |
|---|-------|
| 28.3.1 Volt Meter Digital, 0-30 V DC | 1 No |
| 28.3.2 Ammeter Digital, 0-30 A | 1 No |
| 28.3.3 Ammeter Digital, 0-200 A | 2 Nos |
| 28.3.4 Motor 5HP(3.7KW), 50 Hz, 415 Volt AC | 1 No |
| 28.3.5 Diode, 150 A, 400 V | 4 Nos |



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28.3.6	Transformer, 12V / 200 A, 24 V / 150 A	1 No
28.3.7	Transformer, 0-240 V Primary, 12-0-12 V Secondary	1 No
28.3.8	Transformer, 0-240 V Primary, 0-6V-40V-80V Secondary	1 No
28.3.9	Contactora, 25 A, 240V Coil	1 No
28.3.10	OLR, 9-14 A	1 No
28.3.11	Timer, Aux 240 V	1 No
28.3.12	Toggle Switch, Double Pole Double Throw 6 A 240 V	4 Nos
28.3.13	Shunt 30 A, 75 mV	1 No
28.3.14	Toggle Switch, Single Pole Single Throw 6 A 240 V	1 No
28.3.15	MCB Single Pole, 25 A 240 V, 50 Hz	2 Nos
28.3.16	Isolator Double Pole, 63 A 240 V, 50 Hz	1 No
28.3.17	40 A 4 Pole main switch isolator	1 No
28.3.18	Rotary Switch, 15 A, 220 V	8 Nos
28.3.19	Fuse Holder	2 Nos
28.3.20	Push Button, Green	2 Nos
28.3.21	Push Button, Red	1 No
28.3.22	Normally Open Element, Green 240 V, 10 A	3 Nos
28.3.23	Normally Closed Element, Red 240 V, 10 A	1 No
28.3.24	Indicator, 22.5 Mm R / Y / B	4 Nos
28.3.25	Reset Switch Pbs	1 No
28.3.26	Shunt, 200 A 75 Mv	2 Nos
28.3.27	Terminals: BTI-100, 100 A Red & Black	2 No E c h
28.3.28	Terminals: BTI -30, 30 A Red & Black	1 No E c h
28.3.29	Terminals: BS-5 Red	9 Nos
28.3.30	Terminals: BS-5 Black	6 Nos
28.3.31	Terminals: BS-5 Yellow	1 Nos
28.3.32	LED Holder / Led: 10 Mm	4 Nos
28.3.33	Resister: 2.7 Ohm / 350 W	2 No
28.3.34	Resister: 1.4 Ohm / 350 W	11 Nos
28.3.35	Solenoid Switch: 12 V DC	2 Nos
28.3.36	Fan: 240 v, 4" Cooling Fan	2 Nos
28.3.37	Relay: 12V DC, 250 Ohm, 10 A	1 No
28.3.38	Single Phase Preventer: 415 V, 50 Hz	1 No
28.3.39	Bridge: 35 A	1 No
28.3.40	Mounting Bushes	4 Nos
28.3.41	Wires	As Requi red
28.3.42	Metal Chassis	
28.3.43	Mounting Vice (X-Y directional movement and V block with clamping arrangement)	1 No
28.3.44	Pulley 3speed, 28 Bore	1 Set
28.3.45	Vacuum Kit With Tank	1 No
28.3.46	PCBs: Power / Control	2 Nos
28.3.47	V Belt / Poly V Belt: A-52 / A42 / 6pk 1345	1 Each
28.3.48	6 SQ MM Terminal Block	1 No
28.3.49	Hylams (Different sizes)	05 Size s
28.3.50	Front Plate	01 No

28.4 Voltmeter

- 28.4.1 Display Type Red LED Super Bright Display
- 28.4.2 Maximum Display 1999 Counts | Resolution 1 Count



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- 1.4.3 28.4.3 Polarity Indication “ - ” is indicated for Negative Input
- 1.4.4 28.4.4 Over Range Indication “ 1 ” or “ -1 ”
- 1.4.5 28.4.5 Red Antiglare
- 1.4.6 28.4.6 Faceplate with Annunciators
- 1.4.7 28.4.7 Case / Housing DIN Black ABS, Dimension as per DIN (48 x96)
- 1.4.8 28.4.8 Mounting Clamps Sturdy, Moulded ABS with suitable Hardware
- 1.4.9 28.4.9 Connectors Terminal Block
- 1.4.10 28.4.10 Brass Terminals | Display Stability Within ± 2 Digits
- 1.4.11 28.4.11 0- 199.9 V voltage measurement range

28.5 Ammeter

- 28.5.1 Display Type Red LED Super Bright Display
- 28.5.2 Maximum Display 1999 Counts | Resolution 1 Count
- 28.5.3 Polarity Indication “ - ” is indicated for Negative Input
- 28.5.4 Over Range Indication “ 1 ” or “ -1 ”
- 28.5.5 Faceplate Red Antiglare
- 28.5.6 Faceplate with Annunciators
- 28.5.7 Case Terminals
- 28.5.8 Case / Housing DIN Black ABS, Dimension as per DIN (48 x 96)
- 28.5.9 Mounting Clamps Sturdy, Moulded ABS with suitable Hardware
- 28.5.10 Connectors Terminal Block: Thermoplastic (UL 94V-0) with Tin Plated
- 28.5.11 Brass Terminals | Display Stability Within ± 2 Digits
- 28.5.12 50-1000 Amps current measurement range

28.6 Motor

- 28.6.1 TEFC Class F Insulation foot mounted induction motor
- 28.6.2 AC Supply Voltage 415 V+ / -10%, 50 Hz+ / -5% class F insulation
- 28.6.3 4 pole motor with foot mounting 1440 RPM max
- 28.6.4 Frame Size: 112 M 4pole

28.7 Diodes with Aluminium Heat Sink

- 28.7.1 Maximum Average forward current (T=130°): 150 A
- 28.7.2 Maximum Peak forward voltage drop: 1.4 V

28.8 Step Down Transformer

- 28.8.1 Copper wound foot mounted with CRNO core
- 28.8.2 Step down type of winding
- 28.8.3 2.8KVA rating
- 28.8.4 AC Supply Voltage: 240 V +/-10%, 50Hz +/-5%, Class F Insulation
- 28.8.5 Ambient Max Temperature of 120 deg
- 28.8.6 Output Voltage: 15 V +/- 10%
- 28.8.7 Output Current: 150 A max @ 15 V

28.9 / Overload Relays

- 28.9.1 Contactor application: Motor control
- 28.9.2 Poles description: 3P
- 28.9.3 Pole contact composition: 3 NO
- 28.9.4 Control Circuit Type: AC 50 Hz
- 28.9.5 Control Circuit Voltage: 240 V AC 50 Hz
- 28.9.6 Auxiliary contact composition: 1 NO + 1 NC



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SPECIFICATION FOR ELECTRICAL AND ELECTRONICS TOOLS AND EQUIPMENTS GROUP ITEMS

28.10 Timer

- 28.10.1 ON Delay
- 28.10.2 Dual supply voltage
- 28.10.3 LED status indicator: Power ON, Relay ON
- 28.10.4 DIN Rail / Back panel mount
- 28.10.5 Finger safe terminals
- 28.10.6 Supply Voltage 240V AC
- 28.10.7 Power Consumption 6VA max

28.11 Toggle Switch

- 28.11.1 Power Switch conforms to safety standards for electrical equipment
- 28.11.2 Compact with a good space factor
- 28.11.3 Item Standard Rating 6 A
- 28.11.4 Terminal Types

28.12

MCB

- 28.12.1 Rated current: 25 A
- 28.12.2 Number of poles: 1P
- 28.12.3 Rated operational AC Voltage: 240 V
- 28.12.4 Frequency: 50 Hz

28.13 Rotary Switch

- 28.13.1 DC switching: 5-40 A
- 28.13.2 Rear termination
- 28.13.3 Mountings: Standard Front Panel
- 28.13.4 Resistance loads application and Switching of resistive loads, including moderate overloads
- 28.13.5 Rated Operational Voltage: Max V DC 250

28.14 Fuse Holder with Fuse

- 28.14.1 Contact Finish: Silver Plated
- 28.14.2 Housing Material: Phenolic
- 28.14.3 Terminals: Copper
- 28.14.4 Mounting Type: Panel Mounting
- 28.14.5 Fuse Link Size (mm): 6.3 X 32
- 28.14.6 Panel Thickness Max (mm): 3
- 28.14.7 Current Rating: 10 A 240 V AC

28.15 Push Button / Indicator with Element Switches (Item 1.3.21 / 1.3.22 / 1.3.23 / 1.3.24 / 1.3.25 / 1.3.26)



- 28.15.1 Operating positions: All positions
- 28.15.2 Contact: Block
- 28.15.3 Contact Operation: Slow Break NO or NC



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SPECIFICATION FOR ELECTRICAL AND ELECTRONICS TOOLS AND EQUIPMENTS GROUP ITEMS

28.16 200 A / mV DC Shunt

- 28.16.1 Operating Temperature: -10°C to 55°C
- 28.16.2 Maximum load: The load should not exceed 0.1% of the nominal current rating for specified accuracy.

28.17 Terminals - Push Button / Indicator with Element Switches (Item No. 1.3.28 / 1.3.29 / 1.3.30)



- 28.17.1 Mounting Arrangement: Panel Mounting
- 28.17.2 Rating: 100 A / 60 A / 30 A 240 V AC
- 28.17.3 Contact Material: Brass Nickel Plated
- 28.17.4 Insulation Material: Phenolic (Bakelite)
- 28.17.5 Color: Red / Black

28.18 LED Holder with LED



- 28.18.1 Metal holder of housing 10mm LED
- 28.18.2 Supply voltage: 240V MAX
- 28.18.3 Dimensions (L X Di): 15 X 14 mm
- 28.18.4 Peak Forward Current: 120 mA
- 28.18.5 Continuous Forward Current: 30 mA

28.19 Resistors (Item 1.3.32 & 1.3.33)



- 28.19.1 Power Rating full power dissipation at 70°C to 350°C
- 28.19.2 Temperature Range -55°C to 350°C
- 28.19.3 Voltage Rating / Limiting Voltage / Max working Voltage $V = P \times R$
- 28.19.4 Voltage Proof / Dielectric Withstanding Voltage

28.20 Solenoid Switch

- 28.20.1 Inner Material: Copper and Steel
- 28.20.2 Outer Material: Copper and Steel
- 28.20.3 Voltage: 12 V



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28.21 Cooling Fan

- 28.21.1 Operating Voltage: 240 V (185 – 245 VAC)
- 28.21.2 Insulation: Class B

28.22 DC Relay

- 28.22.1 Contact resistance: 50 mΩ max
- 28.22.2 Operate Time: 25 ms max
- 28.22.3 Release Time: 25 ms max

28.23 Contactor / Overload Relays (Item 36)

- 28.23.1 Output Contact Rating: 5 A, 240 V AC (Resistive)
- 28.23.2 Unbalance Trip Setting: 50 V ± 10 VAC
- 28.23.3 Trip Time Delay for unbalance: 3.5 Second, ±1.5 Second
- 28.23.4 Resetting: Auto Reset
- 28.23.5 Enclosure: HIP molded

28.24 Bridge

- 28.24.1 Maximum Repetitive Peak Reverse Voltage: 400 V
- 28.24.2 Maximum RMS Voltage: 280 V
- 28.24.3 Maximum DC Blocking Voltage: 400 V
- 28.24.4 Maximum Average Forward: 35 A

28.25 Wires

- 28.25.1 Resistance as per: IS 8130
- 28.25.2 Tensile strength / annealing as per: IS 8130
- 28.25.3 Wrapping as per: IS 8130
- 28.25.4 Diameter as per: IS 8130

28.26 Chassis

- 28.26.1 Complete fabricated structure with laser cutting and Turret punching
- 28.26.2 Angles and CRCA sheets
- 28.26.3 Powder coated
- 28.26.4 Heavy duty mounting flats at the corners for base mounting bush

28.27 Standard Accessories

- 28.27.1 Accessories / Attachment Required for Auto Electrical Test bench
 - 28.27.1.1 Alternator cable
 - 28.27.1.2 Starter cable
 - 28.27.1.3 Battery cable
 - 28.27.1.4 Continuity Test cable 1
 - 28.27.1.5 Belts 3 sizes
 - 28.27.1.6 Bulbs / Fuses 1 each
- 28.27.2 Operation Manual: 01 Nos.
- 28.27.3 Maintenance Chart / Schedule: 01 Nos.

28.28 Other Features

- Safety requirements: Emergency stop button



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SPECIFICATION FOR ELECTRICAL AND ELECTRONICS TOOLS AND EQUIPMENTS GROUP ITEMS

28.29 Space Requirement for Installation

Floor arrangement in mm: 1000 mm X 1000 mm (Approx.)

28.30 Foundation / Installation Specification

Mechanical and electrical and civil Installation and commissioning, loading and unloading will be done by bidder at site.

28.31 Electric Supply Specification

Mains Supply: 415 V AC, 3 Phase, 50 Hz AC Power supply



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

29 Automotive Battery Charger

As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENT – ITEM NO - 15

29.1 Basic Indicative Diagram



- 29.2 Input: 230 V AC / 50 HZ
- 29.3 Charging Mode: Manual
- 29.4 Output: 6/12 V
- 29.5 Charging current: 2/10/40 A
- 29.6 Boost/Start: 200 A
- 29.7 Meter Display should be available
- 29.8 Adapter battery capacity range: 4-400 AH
- 29.9 Adapter battery: GEL/AGM/STD lead battery
- 29.10 2V FUL detection
- 29.10.1 GEL Model: Voltage > $13.8 \pm 0.2V$ & Current < $0.8 \pm 0.5A$, FUL
- 29.10.2 AGM Model: Voltage > $14.8 \pm 0.2V$ & Current < $0.8 \pm 0.5A$, FUL
- 29.10.3 STD Model: Voltage > $14.5 \pm 0.2V$ & Current < $0.8 \pm 0.5A$, FUL
- 29.11 6V FU 1L detection
- 29.11.1 GEL Model: Voltage > $6.9 \pm 0.3V$ & Current < $0.8 \pm 0.5A$, FUL
- 29.11.2 AGM Model: Voltage > $7.4 \pm 0.3V$ & Current < $0.8 \pm 0.5A$, FUL
- 29.11.2 STD Model: Voltage > $7.2 \pm 0.3V$ & Current < $0.8 \pm 0.5A$, FUL



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

30 Blow Lamp

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

30.1 Basic indicative diagram



30.2 Tank made of Brass

30.3 Tank capacity 01 litre

30.4 Pump Washer made of Leather or rubber

30.5 Stove burner Pin Number - 01

30.6 Fuel used Kerosene



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

31 Belt Tensioner Gauge

As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENT –ITEM NO - 28

31.1 Basic Indicative Diagram



31.2 Should be used to measure and set the tension of the cam belt

31.3 Should be used on vehicle belts where the manufacturer specifies the timing belt tension to be set at a specific location on the belt span between pulleys

31.4 Should have clear incremental markings with knurled knob for accurate measurement

31.5 Should speed up timing belt installation

31.6 Readings should be provided in Nm

31.7 Should be suitable for belts with a widths between 2 and

31.8 8 mm Should be supplied in a foam inlay box

31.9 Length: 95 mm (± 10%)

31.10 Width: 80 mm (± 10%)

31.11 Height: 40 mm (± 10%)

31.12 Weight: 0.35 Kg (± 10%)



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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

32

Caliper - Inside, Spring Type - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 01

1.1 32.1 Basic Indicative Diagram



32.2 Inside calipers with Size: 150 mm

32.3 Material for

32.3.1 Legs: Carbon & Alloy Steel

32.3.2 Spring: Spring Steel

32.3.3 Others: Free Cutting Steel

32.4 Finish for

32.4.1 Legs: Polished

32.4.2 Rest parts: Auto Black

32.5 Hardness for

32.5.1 Tip: 50 - 55 HRC

32.5.2 Spring: 45 - 50 HRC

32.6 Proper rust preventive packing



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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

33

Caliper - Outside, Spring Type - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 02

33.1 Basic Indicative Diagram



33.2 Outside Calipers with Size: 150 mm

33.3 Material for

33.2.1 Legs: Carbon & Alloy Steel

33.2.2 Spring: Spring Steel

33.2.3 Others: Free Cutting Steel

33.4 Finish for

33.4.1 Legs: Polished

33.4.2 Rest parts: Auto Black

33.5 Hardness for

33.5.1 Tip: 50 - 55 HRC

33.5.2 Spring: 45 - 50 HRC

33.6 Proper rust preventive packing



34 Car Jet washer with standard accessories

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

34.1 Basic indicative diagram



34.2 Power : Electric 1000 to 1500 watt

34.3 Operating Voltage: 220 - 240 volts,

34.4 Water outlet Pressure is 125 bar

34.5 Includes: Pressure washer, Hose pipe 5 meter, 2 nozzle and Pressure Gun

34.6 New 3 in 1 nozzle including fan jet, roto, and pencil jet & High pressure foam as standard

34.7 Self-priming: Actively supplies itself with water even without water pressure

34.8 Easier to move - Larger wheels for easy moving



35 Chain Pulley Block capacity with tripod stand

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

35.1 Basic indicative diagram



35.2 Load capacity 03 ton

35.3 Chain Hoist

35.4 High strength alloy steel chain with anti-corrosion, steel hook made of hot forging,

35.5 Hand-powered hoist should load-sharing gears which makes lifting heavy Loads easy. Requires two heavy duty steel hooks with safety latches should provides solid grips, so as to ensure the lift and load safety.

35.6 Tripod stand made of high quality pipe to lift load.

35.7 Should be tested as per ISI procedures for 50% over load capacity.

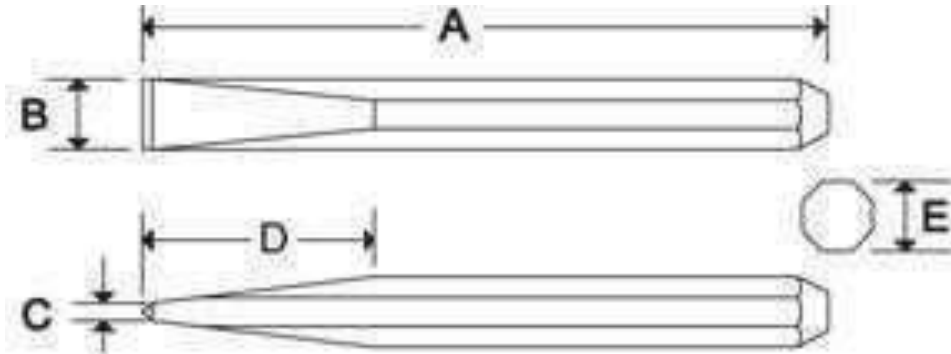


36

Chisel - Cold - 9 mm X 125 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 37

36.1 Basic Indicative Diagram



36.2 Generally Conform to I.S 402 - 1990

36.3 Dimensions in mm: A: 125, B: 9, C: 1.50, D: 40

36.4 Drop forged from high grade carbon Steel

36.5 Hardness

37.2.1 Cutting Portion: 55 - 57 HRC

37.5.2 Striking Portion: 35 - 45 HRC

36.6 Octagonal Body to facilitate comfortable holding while in use

36.7 Cutting edges should be ground accurately to appropriate angle for metal cutting

36.8 Should be phosphate & painted to provide anti rusting properties



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

- 37 Chisel - Cold - Cross Cut - 6 mm X 150 mm**
As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 38

37.1 Basic Indicative Diagram



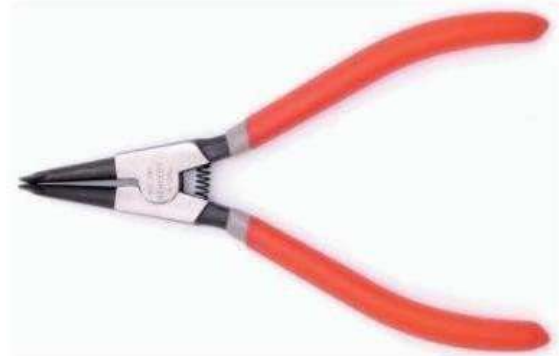
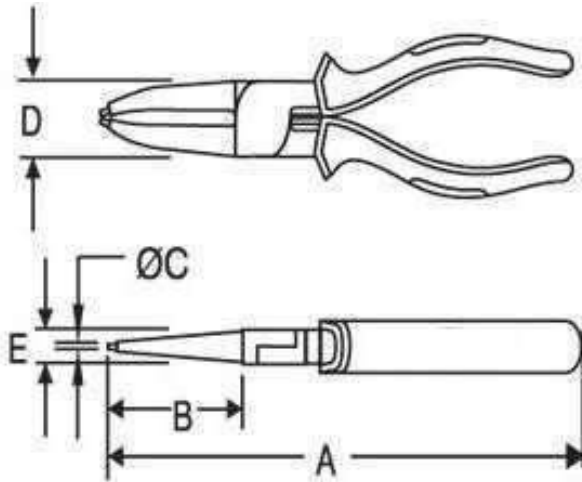
- 37.2 Size: 6mm X 150mm
37.3 Made from high carbon Steel 45#
37.4 Heat treated
37.5 Hardness
 37.5.1 Cutting Portion: 55 - 57 HRC
 37.5.2 Striking Portion: 35 - 45 HRC
37.6 Spraying Surface
37.7 Hardened and Tempered Edges to Cut Steel and Concrete easily



38 A Plier – Cir clip - External - Straight - 200 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 91,93

38.1 Basic Indicative Diagram



38.2 Generally conform to IS 7990 - 1976

38.3 External Straight

38.4 Capacity: 40 - 100 mm

38.5 Length: 200 mm

38.6 Tips should be precision machined with dimensions to available standards. Tips are bent and provided with serrations to prevent Circlip from "Flying away" during use.

38.7 Drop Forged from suitable High Grade Steel

38.8 Hardness: 43 - 48 HRC

38.9 Rivet should be hardened to prevent play after long use

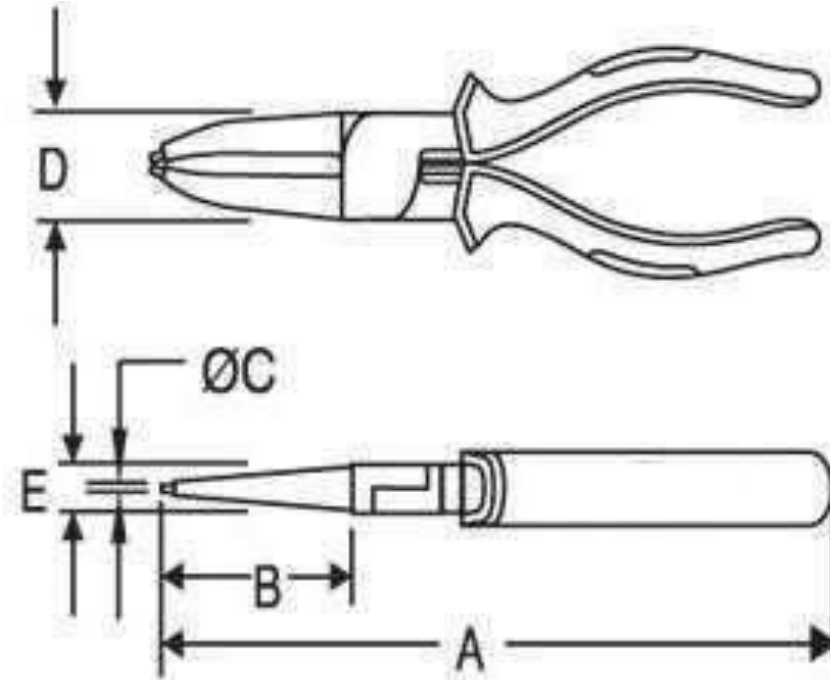
38.10 Pliers should be fitted with return spring between the shanks to facilitate smooth operation

38.11 PVC Dip coated sleeve



38 B Plier - Circlip - Internal - Straight - 200 mm
As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS &
EQUIPMENT VOLUME 03 –ITEM NO - 91,93

38.1 Basic Indicative Diagram



- 38.2 Generally conform to IS 7989 - 1976
- 38.3 Internal Straight
- 38.4 Capacity: 40 - 100 mm
- 38.5 Length: 200 mm
- 38.6 Tips should precision machined with dimensions to available standards. Tips are bent and provided with serrations to prevent Circlip from "Flying away" during use.
- 38.7 Drop Forged from suitable High Grade Steel
- 38.8 Hardness: 43 - 48 HRC
- 38.9 Rivet should be hardened to prevent play after long use
- 38.10 Pliers should be fitted with return spring between the shanks to facilitate smooth operation
- 38.11 PVC Dip coated sleeve

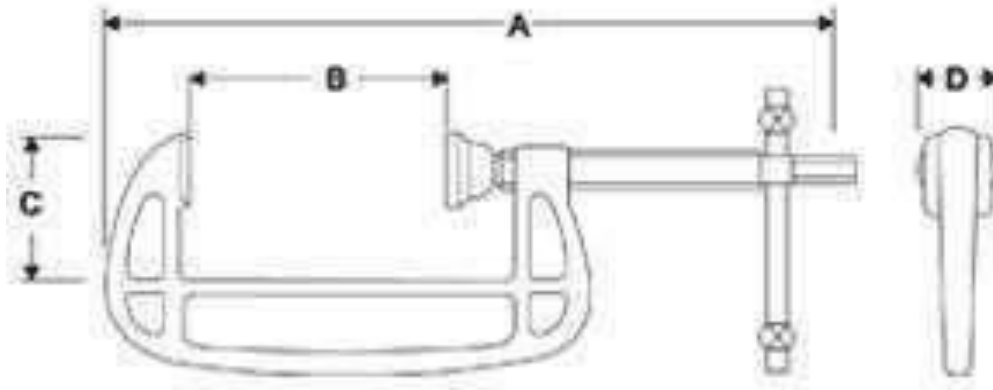


39

Clamp - C - 100 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 47

39.1 Basic Indicative Diagram



- 39.2 Generally conform to I.S 9181 - 1988
- 39.3 Capacity (B): 100 mm
- 39.4 Throat Depth (C): 75 mm
- 39.5 Body hot drop forged from high grade Steel
- 39.6 All parts fully heat treated and black phosphate for long free trouble service
- 39.7 Hardness: 27 - 38 HRC
- 39.8 I - section frame for strength and toughness
- 39.9 Swivel Head on ball end of operating screw to ensure good grip on angle workpieces
- 39.10 Acme thread on screw to provide higher, quicker, easier movement for clamping/ unclamping
- 39.11 Hex Head on screw to facilitate use of spanners for tightening as and when required
- 39.12 Serrations provided on PAD & C - clamp body for better gripping
- 39.13 Tension Load Test (Min): 2510 Kg

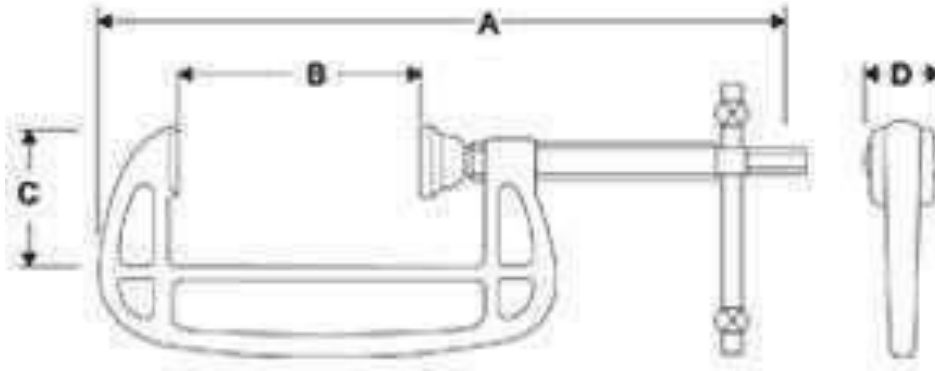


40

Clamp - C - 200 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 48

40.1 Basic Indicative Diagram



- 40.2 Generally conform to I.S 9181 - 1988
- 40.3 Capacity (B): 200 mm
- 40.4 Throat Depth (C): 106 mm
- 40.5 Body hot drop forged from high grade Steel
- 40.6 All parts fully heat treated and black phosphate for long free trouble service
- 40.7 Hardness: 27 - 38 HRC
- 40.8 I - section frame for strength and toughness
- 40.9 Swivel Head on ball end of operating screw to ensure good grip on angle work pieces
- 40.10 Acme thread on screw to provide higher, quicker, easier movement for clamping/unclamping
- 40.11 Hex Head on screw to facilitate use of spanners for tightening as and when required
- 40.12 Serrations provided on PAD & C - clamp body for better gripping
- 40.13 Tension Load Test (Min): 3525 Kg



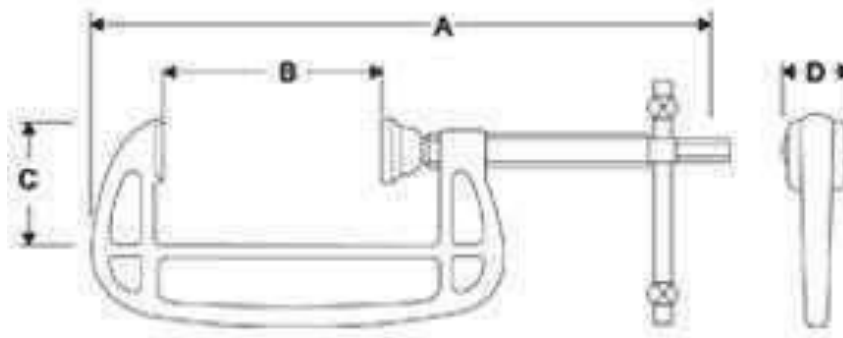
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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

41

Clamp - C - 300 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 49

41.1 Basic Indicative Diagram



- 41.2 Generally conform to I.S 9181 - 1988
- 41.3 Capacity (B): 300 mm
- 41.4 Throat Depth (C): 130 mm
- 41.5 Body hot drop forged from high grade Steel
- 41.6 All parts fully heat treated and black phosphate for long free trouble service
- 41.7 Hardness: 27 - 38 HRC
- 41.8 I - section frame for strength and toughness
- 41.9 Swivel Head on ball end of operating screw to ensure good grip on angle work pieces
- 41.10 Acme thread on screw to provide higher, quicker, easier movement for clamping/unclamping
- 41.11 Hex Head on screw to facilitate use of spanners for tightening as and when required
- 41.12 Serrations provided on PAD & C - clamp body for better gripping
- 41.13 Tension Load Test (Min): 4200 Kg



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

42 Cleaning tray

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

42.1 Basic indicative diagram



42.2 Dimensions

Length: $600 \pm 10\text{mm}$

Width: $300 \pm 10 \text{ mm}$

Height: $60 \pm 5 \text{ mm}$

42.3 Material : G.I. Sheet, 20/22 gauge

42.4 Tray have two handle shown as in figure.

42.5 Tray should be leak proof

42.6 Tray edges should be stiffened using wire notch.



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

43 Compression Testing Gauge - Suitable for Diesel Engine with Standard Accessories
As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS –ITEM NO -06

43.1 Basic indicative diagram



- 43.2 Quick-connect adapter Push pressure scale: 0 <> 1000 PSI, 0 <> 7000
- 43.3 KPA Reads pressure from 0 to 1000 PSI
- 43.4 2-9/16" diameter gauge
- 43.5 Thumb button air release
- 43.6 Should be supplied with adapters for Suzuki, Hyundai, GM, Ford, Isuzu, Mercedes, Toyota, Volkswagen & Peugeot.
- 43.7 All above items should be placed secured in a blow molded plastic box or metal box



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

44

Connecting Rod Alignment Fixture

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 16

44.1 Basic Indicative Diagram



44.2 Connecting Rod alignment fixture

44.3 Checking: Bent, Twist, Offset, Precision ground

44.4 surfaceShould be supplied with following accessories

44.5 Bent and Twist indicator, Bending Bar with

44.6 AlignerDial Indicator etc.



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SPECIFICATION FOR ELECTRICAL AND ELECTRONICS TOOLS AND EQUIPMENTS GROUP ITEMS

- 45 Soldering Iron - Copper Bit, 250gm, 250 W**
As Per DVET, Maharashtra State SPECIFICATION FOR ELECTRICAL & ELECTRONICS TOOLS & EQUIPMENTS –ITEM NO -101

45.1 Basic Indicative Diagram



- 45.2 Bit should be made of
45.3 CopperWeight: 250 grams
($\pm 10\%$)
45.4 250 Watts
45.5 Element Type:
45.6 RoundBit: Pointed



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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

46

Micrometer - Bore Gauge with Dial Indicator - 50 - 150 mm, LC = 0.01 mm
As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 45

46.1 Basic Indicative Diagram:



- 46.2 Compliance
- 46.2.1 Dial: Generally Conforming to JISB 7503 / 1997
 - 46.2.2 Stem: Generally Conforming to IS 7515 / 1982
- 46.3 Range: 50 mm -150 mm
- 46.4 Reading: 0.01 mm
- 46.5 Graduation: 0 - 50 - 0
- 46.6 Measuring Depth: 250 mm
- 46.7 Material: Stainless Steel / Alloy Steel
- 46.8 Standard Accessories:
- 46.8.1 Suitable spanner set
 - 46.8.2 Washers 0.5mm, 1mm, 2mm,3mm and extension Rods
 - 46.8.3 Wooden / Plastic Box with proper cushioning
 - 46.8.4 Operating Manual



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

47-A Cylinder Liner - Press Fit & Slide Fit

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 25,26

47.1 Basic Indicative Diagram



47.2 The model of Cylinder Liners is made out of original Used

47.3 Liners. The entire system is suitably painted and mounted on

47.4 wooden base. Press Fit Liner:

47.4.1 Inner Diameter: 107 mm

47.4.2 Outer Diameter: 111 mm

47.5 Slide Fit Liner:

47.5.1 Inner Diameter: 48 mm

47.5.2 Outer Diameter: 54 mm



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

47-B Cylinder Liner - Dry & Wet Liner

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 25,26

47.1 Basic Indicative Diagram



47.2 The model of Cylinder Liners is made out of original Used

47.3 Liners. The entire system is suitably painted and mounted on

47.4 wooden base. Dry Liner:

47.4.1 Inner Diameter: 107mm

47.4.2 Outer Diameter: 113mm

47.5 Wet Liner:

47.5.1 Inner Diameter: 96mm

47.5.2 Outer Diameter: 100.6mm



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SPECIFICATION FOR ELECTRICAL AND ELECTRONICS TOOLS AND EQUIPMENTS GROUP ITEMS

- 48 DC Ohmmeter 0 to 300 Ohms, mid scales at 0 Ohms, Analog Type**
As Per DVET, Maharashtra State SPECIFICATION FOR ELECTRICAL & ELECTRONICS TOOLS & EQUIPMENTS –ITEM NO -80

48.1 Basic Indicative Diagram



- 48.2 Should be useful for measuring the resistance value
48.3 The indicating instrument should be 100 mm
48.4 rectangular Moving Coil D.C. Meter.
48.5 Accuracy: $\pm 5\%$ of indicated value.

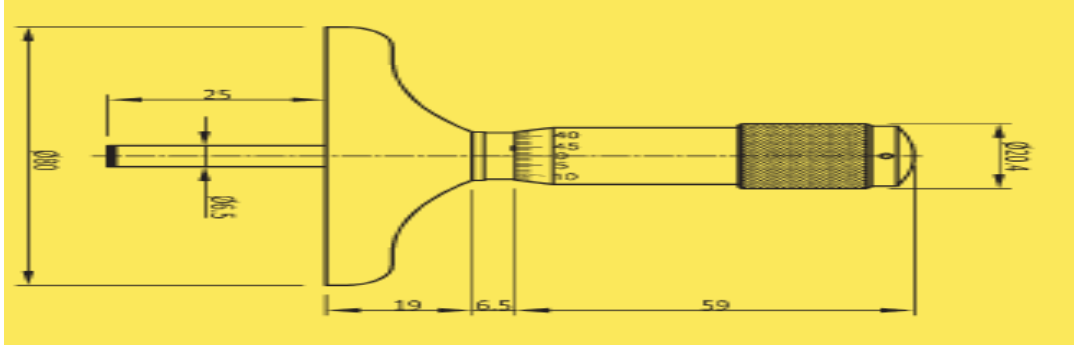


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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

49

Micrometer - Depth - 0 - 100 mm, LC = 0.01 mm with standard set of extension rods
As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 46

49.1 Basic Indicative Diagram:



- 49.2 Compliance: Generally Compliant to DIN 863
- 49.3 Range: 0 mm -100 mm
- 49.4 Reading: 0.01 mm
- 49.5 Accuracy: 10 μ m
- 49.6 Measuring Depth: 100 mm
- 49.7 Material: Stainless Steel / Alloy Steel
- 49.8 Standard Accessories:
- 49.8.1 Suitable spanner
 - 49.8.2 Interchangeable rods
 - 49.8.3 Wooden / Plastic Box with proper cushioning
 - 49.8.4 Operating Manual



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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

50 Universal Dial Test Indicator - Plunger Type - Range 0 - 10 mm, LC = 0.01 mm with revolution Counter complete with Clamping Devices and Magnetic Stand

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –
ITEM NO - 43

50.1 Basic Indicative Diagram:

Micrometer - Depth - 0 - 100 mm

50.2 Compliance

50.2.1 Dial: Generally Compliant to IS 2092 / 1983

50.3 Reading: 0.01 mm

50.4 Range: 0-10 mm

50.5 Graduation: 0-100

50.6 System of Measurement: Metric

50.7 Accuracy: 20 μ m

50.8 Magnetic force for stand: 600 N (Approx.)

50.9 Stand (L×W×H): 60 X 50 X 55 mm (Approx.)

50.10 Stand Weight: 1.5 Kg (Approx.)

50.11 Standard Accessories:

50.11.1 Spanner

50.11.2 Wooden / Plastic Box with proper cushioning for Plunger Type Dial Gauge and Corrugated Box with proper Cushioning for Magnetic Stand

50.11.3 3mm Diameter T.C. ball Anvil fitted to the gauge

50.11.4 Operating Manual



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

51 Engine Bearing Model Set

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL – ITEMNO - 39

51.1 Basic Indicative Diagram



51.2 Good working condition item should be used

51.3 Complete bearings of Engine assembly of following types

51.3.1 Needle Bearing

51.3.2 Roller Bearing

51.3.3 Taper Roller Bearing

51.3.4 Ball Bearing

51.3.5 Thrust Bearing

51.3.6 Main Bearing

51.3.7 Cam Shaft Bush Bearing

51.3.8 Connecting Rod Bearing

51.4 All the bearings should be displayed on to a suitable board with technical and constructional diagram details printed on to a colorful panel with details of applications



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

52 Piston Model Set

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-
CUT SECTION & WORKING MODEL –ITEMNO - 40

52.1 Basic Indicative Diagram



52.2 Complete Pistons of Car Engine assembly

52.3 The set should contain the following 5 types of pistons

52.3.1 Flat Head Piston: Carburettor engine (Brand-new item should be used)

52.3.2 Recessed Head: MPFI Engine (Brand-new item should be used)

52.3.2 Concave: Diesel Engine (Brand-new item should be used)

52.3.3 Bowl Type Piston: CRDI (Brand-new item should be used)

52.3.4 Dome Head: 2 stroke Bajaj scooter (Old item can be used)

52.4 All the pistons should be displayed on to a suitable board with technical and constructional diagram details printed on to a colourful panel with details of applications



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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

53

Divider Spring Type - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 03

53.1 Basic Indicative Diagram



53.2 Spring Divider Size(L): 150 mm

53.3 Material for

53.2.1 Legs: Carbon & Alloy Steel

53.2.2 Spring: Spring Steel

53.2.3 Others: Free Cutting Steel

53.4 Finish for

53.4.1 Legs: Polished

53.4.2 Rest parts: Auto Black

53.5 Hardness for

53.5.1 Tip: 50 - 55 HRC

53.5.2 Spring: 45 - 50 HRC

53.6 Proper rust preventive packing



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

54 Drift Punch Copper

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

54.1 Basic indicative diagram



54.2 Dimensions

Length: 200 ± 10 mm

Diameter: 20 ± 5 mm

Tapered drift length: 75 ± 5 mm

54.3 Shape : Body May be round / Hexagonal

54.4 Material : Copper

54.5 Useful in aligning bolt or rivet holes.



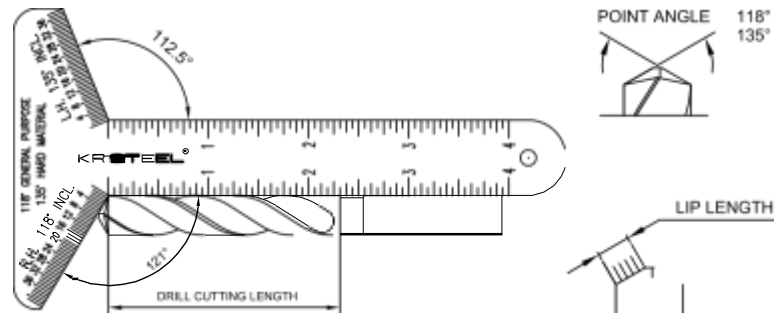
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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

55

Drill Point Angle Gauge

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 09

55.1 Basic Indicative Diagram



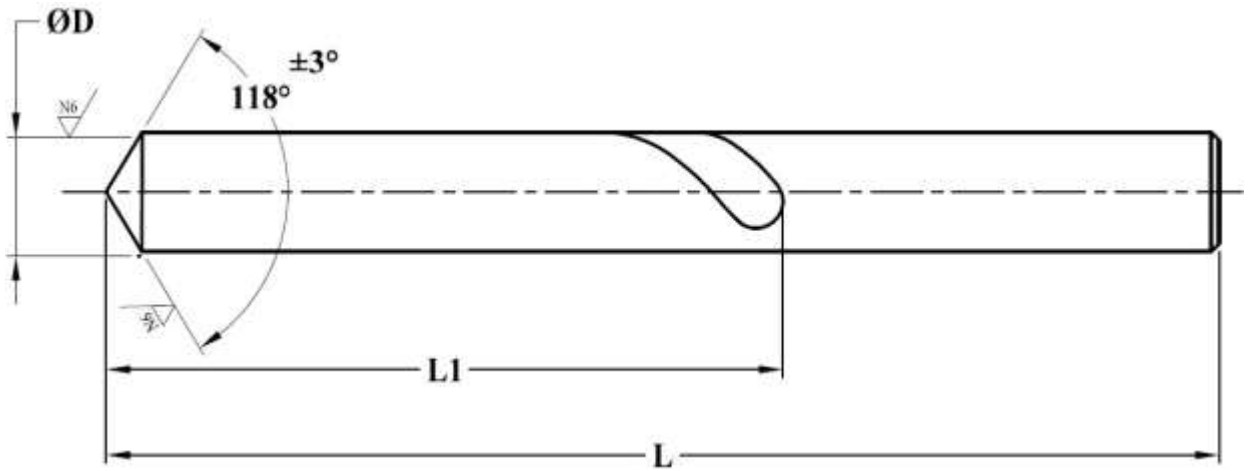
- 55.2 Material: 1.0 mm thick S.S.202
- 55.3 Range: 118° to 135° drill point angles
- 55.4 Least count: 1.0 mm lip length & 1 /16 inch drill length scale
- 55.5 Finish: Polished
- 55.6 Should be supplied in Wooden / Plastic Box with proper cushioning



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SPECIFICATION FOR CUTTING TOOLS

56 Drill Twist Set - Straight Shank, 1 mm to 13 mm by 0.5 mm
As Per DVET, Maharashtra State SPECIFICATION
FOR CUTTING TOOLS –ITEM NO - 17

56.1 Basic Indicative Diagram



56.2	Compliance:	Confirming to IS: 5101 - 1991
56.3	Drill Diameter 'ØD':	Ø1.0 mm to Ø13.0 mm
56.3	Shank:	Parallel
56.4	Material:	HSS-M2
56.5	Finish:	Milled / Ground
56.6	Hardness:	760 HV to 900 HV
56.7	Surface Treatment:	Bright finish
56.8	Suitable Wooden/ Plastic/ Metal Box for storage	



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SPECIFICATION FOR ELECTRICAL AND ELECTRONICS TOOLS AND EQUIPMENTS GROUP ITEMS

57 Soldering Iron - 65 Watt, 240 Volt

As Per DVET, Maharashtra State SPECIFICATION FOR ELECTRICAL & ELECTRONICS TOOLS & EQUIPMENTS –ITEM NO -98

57.1 Basic Indicative Diagram



57.2 65 Watts/ 240V Soldering Iron

57.3 Maximum Temperature: 500°C (

57.4 ±10%)

57.5 Should have comfortable slip free rubber coated

57.6 handleHigh temperature rating

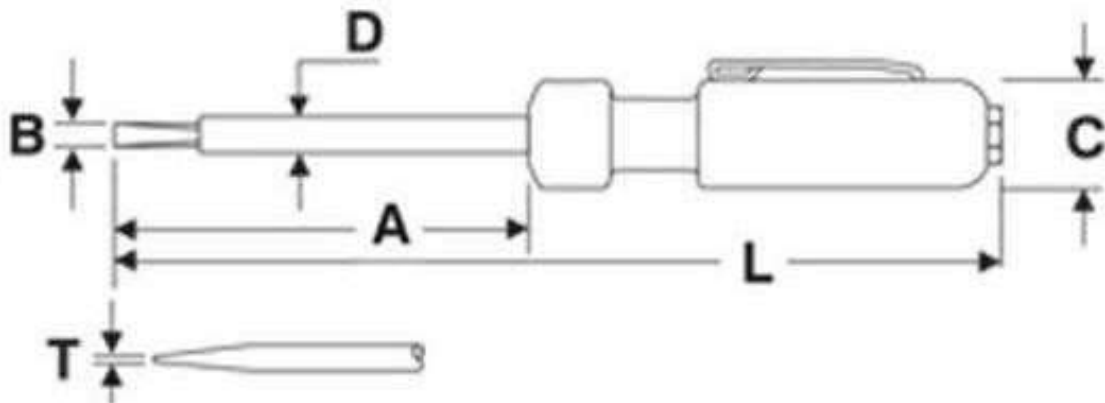


58

Neon Tester - 500 V

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 141

58.1 Basic Indicative Diagram



58.2 Generally conforming to IS 5579 - 1985

58.3 Dimension

58.2.1 A: 60 mm

58.2.2 D: 6 mm

58.2.3 Tip Size: $B \times T = 3.5 \text{ mm} \times 0.5 \text{ mm}$

58.3 Minimum Torque Value: 0.09 Kg.m

58.4 Generally conform to IS 5579 - 1985

58.5 Blade made of high grade Silicon - Manganese Steel (EN - 45A)

58.6 Blade should be differentially hardened & tempered to resist wear, bending & meet high torque requirement

58.7 Hardness on Tip: 55 - 57 HRC

58.8 Bright and Smooth Nickel Chrome plating finish to effectively protect blade against corrosion

58.9 Handle should be made of high grade CA Plastic, which is non - flammable & unaffected by oil, petrol, grease, water - practically anything

58.10 Suitable for checking at minimum 90 V DC and 60 AC voltage and maximum upto 500 V AC

58.11 Blade is provided with PVC insulation sleeve & resistance having 1 mega ohm for preventing the electric shock

58.12 NEON filled glow lamp should give a visible glow in normal day light

58.13 Maximum leakage current of 0.12 microampere ensures safe & shock free in use.

58.14 Tip should be precision - ground to 5 degree angle to ensure firm grip in the screw slot.



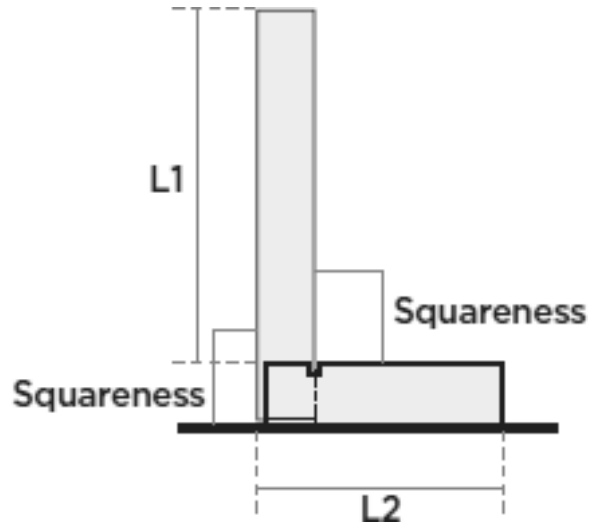
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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

59

Engineer's Square - 150 mm Blade

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 30

59.1 Basic Indicative Diagram



59.2	Blade length (L1):	150 mm
59.3	Stock length (L2):	100 mm
59.4	Squareness:	16 microns
59.5	Material for Blade:	Spring Steel
59.6	Stock:	MS
59.7	Hardness of Blade:	40 - 50 HRC
59.8	Groove on the inner corner of the stock	



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

60 Engineers Stethoscope

As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENT –ITEM NO - 20

60.1 Basic Indicative Diagram



- 60.2 Should be able to locate noises in engines or bearings and other moving
- 60.3 parts High quality surgical grade PVC and rubber parts for increased sound definition
- 60.4 Plastic ear pieces to minimize outside noise with aluminium alloy probe / needle for finding exact location of specific noises
- 60.5 Sensor clamp helps to detect noises during test drives that can not be duplicated in the work bay
- 60.6 Sensor tip mounted on 6" flexible shaft allows access to hard-to-reach
- 60.7 areas 5" inductive metal probe allows user to pinpoint source of noise
- 60.8 or vibration Ultra sensitive microphone provides a full range of sound
- 60.9 Rotary volume control allows easy adjustment
- 60.10 Ear-bud style earphones provide excellent sound quality



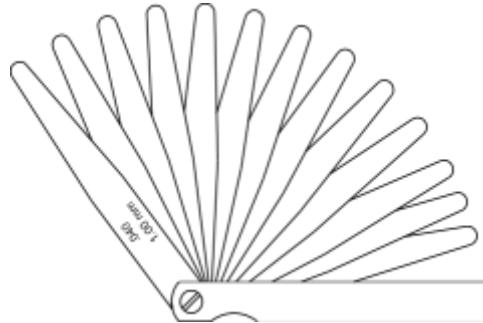
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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

61

Feeler Gauge - 0.3 mm to 1 mm, 25 Leaves

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 10

61.1 Basic Indicative Diagram



- 61.2 Material: Spring steel C-60
- 61.3 Hardness: 55 - 58 HRC
- 61.4 Range: 0.03 mm to 1.0 mm (0.001 inch to 0.39 inch)
- 61.5 Accuracy: As per T2 grade tolerances
- 61.6 No. of Blades: 25
- 61.7 Finish: Fine Polished
- 61.8 Uses: Feeler gauges each leaf should be made by fine blanking
- 61.9 Each leaf should have permanent marked leaf thickness in metric & English
- 61.10 Packing: Each assembly should be stacked with external cover duly marked with model size with tightening screw in plastic pouch



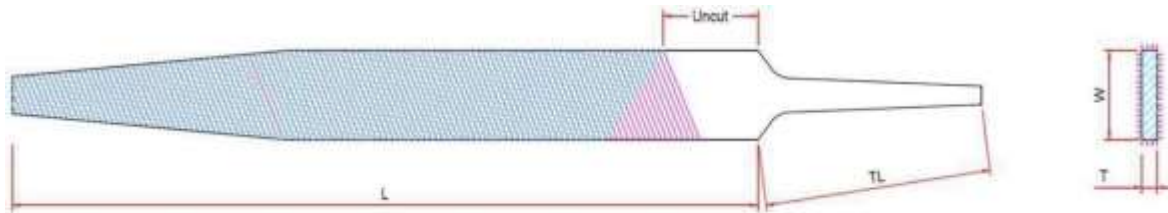
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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

62

File - Flat - Bastard - 200 mm with Handle

As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-
FILES –ITEM NO - 02

62.1 Basic Indicative Diagram



		Range (In MM)	
		From	To
62.2	Generally conforming to IS 1931-2000		
62.3	Body Length (L)	198	202
62.4	Tang Length (TL)	54	56
62.5	Width (W)	19.6	20.6
62.6	Thickness (T)	3.7	4.4
62.7	No. of Upcut / Inch	24	26
62.8	Upcut inclination	64 ⁰	66 ⁰
62.9	No. of Overcut / Inch	18	20
62.10	Overcut Inclination	44 ⁰	46 ⁰
62.11	No. of Edge cut / Inch	25	27
62.12	Edge cut Inclination	89 ⁰	91 ⁰
62.13	Hardness	60 HRC	64 HRC
62.14	Performance in 7500 strokes	15	15.5
62.15	Rake Angle	-7 ⁰	-12 ⁰



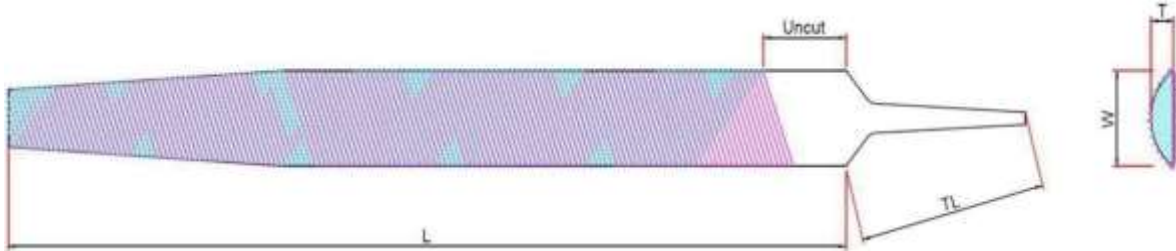
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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

63

File - Half Round - Second Cut - 250 mm with Handle

As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-FILES –ITEM NO - 13

63.1 Basic Indicative Diagram



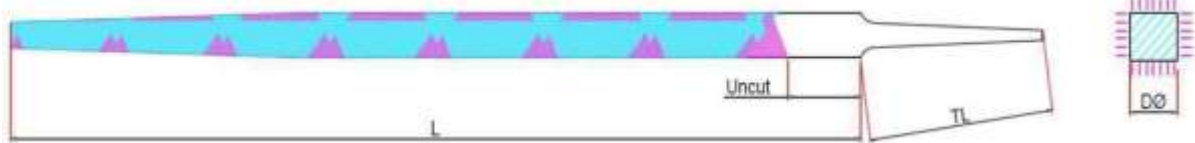
		Range (In MM)	
		From	To
63.2	Generally conforming to IS 1931-2000		
63.3	Body Length (L)	250	252
63.4	Tang Length (TL)	60	61
63.5	Width (W)	23.70	24.7
63.6	Thickness (T)	6.55	7.25
63.7	No. of Upcut / Inch	(29-30F/S)	(28-29R/S)
63.8	Upcut inclination	65°	65°
63.9	No. of Overcut / Inch	(24-25 F/S)	(24-25R/S)
63.10	Overcut Inclination	50°	50°
63.11	No. of Edge cut / Inch	28	29
63.12	Edge cut Inclination	65°	65°
63.13	Hardness	60 HRC	64 HRC
63.14	Rake Angle	-7°	-12°



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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

64 File - Square - Second Cut - 200 mm with Handle
As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-
FILES –ITEM NO - 25

64.1 Basic Indicative Diagram



		Range (In MM)	
		From	To
64.2	Generally conforming to IS 1931-2000		
64.3	Body Length (L)	198	202
64.4	Tang Length (TL)	55	56
64.5	Square Side	6.80	7.80
64.6	No. of Upcut / Inch	37	38
64.7	Upcut inclination	65 ⁰	65 ⁰
64.8	No. of Overcut / Inch	31	32
64.9	Overcut Inclination	50 ⁰	50 ⁰
64.10	Edge cut Inclination	89 ⁰	91 ⁰
64.11	Hardness	60 HRC	64 HRC
64.12	Rake Angle	-7 ⁰	-12 ⁰



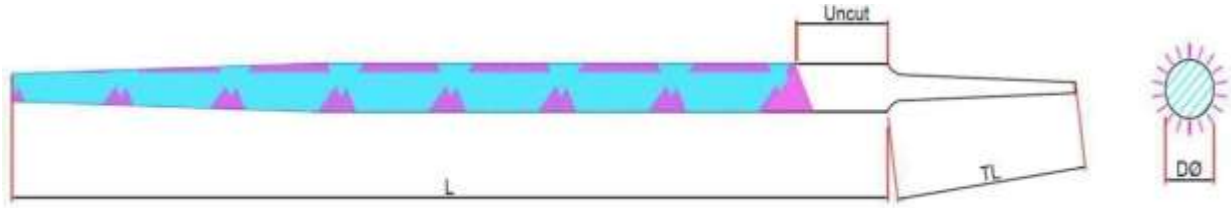
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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

65

File - Round - Bastard - 250 mm with Handle

As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-
FILES –ITEM NO - 17

65.1 Basic Indicative Diagram



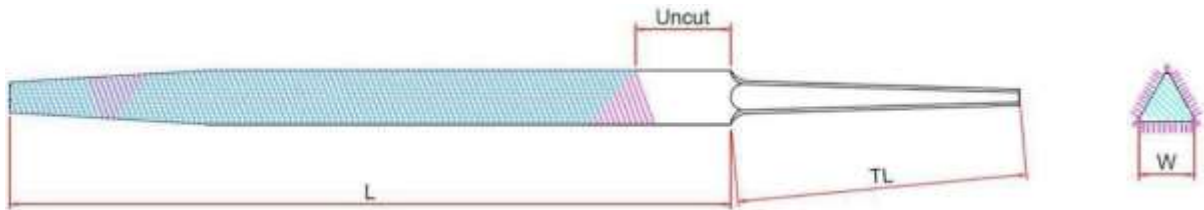
		Range (In MM)	
		From	To
65.2	Generally conforming to IS 1931-2000		
65.3	Body Length (L)	248	252
65.4	Tang Length (TL)	59	61
65.5	Diameter (Ø)	8.35	9.35
65.6	No. of Upcut / Inch	20	21
65.7	Upcut inclination	64 ⁰	66 ⁰
65.8	No. of Overcut / Inch	20	21
65.9	Overcut Inclination	49 ⁰	51 ⁰
65.10	Hardness	60 HRC	64 HRC
65.11	Rake Angle	-7 ⁰	-12 ⁰



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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

66 File - Triangular - Second Cut - 150 mm with Handle
 As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-
 FILES –ITEM NO - 29

66.1 Basic Indicative Diagram



		Range (In MM)	
		From	To
66.2	Generally conforming to IS 1931-2000		
66.3	Body Length (L)	148	152
66.4	Tang Length (TL)	58	59
66.5	Equilateral Triangle Side (W)	11.05	11.75
66.6	No. of Upcut / Inch	38	39
66.7	No. of Over cut / Inch	33	34
66.8	Upcut inclination	57°	63°
66.9	No. of Edge cut / Inch	44	45
66.10	Edge cut Inclination	76°	78°
66.11	Hardness	60 HRC	64 HRC
66.12	Rake Angle	-7°	-12°

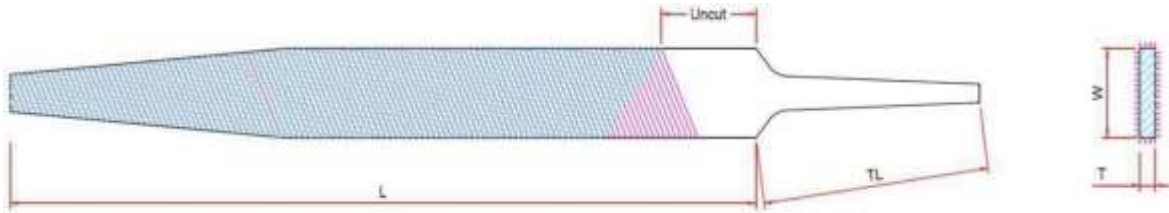


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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

67 -A File - Flat - Bastard - 200 mm with Handle

As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-
 FILES –ITEM NO - 2,5,7,8,12,16,18,21,24,28

67.1 Basic Indicative Diagram



		Range (In MM)	
		From	To
67.2	Generally conforming to IS 1931-2000		
67.3	Body Length (L)	198	202
67.4	Tang Length (TL)	54	56
67.5	Width (W)	19.6	20.6
67.6	Thickness (T)	3.7	4.4
67.7	No. of Upcut / Inch	24	26
67.8	Upcut inclination	64°	66°
67.9	No. of Overcut / Inch	18	20
67.10	Overcut Inclination	44°	46°
67.11	No. of Edge cut / Inch	25	27
67.12	Edge cut Inclination	89°	91°
67.13	Hardness	60 HRC	64 HRC
67.14	Performance in 7500 strokes	15	15.5
67.15	Rake Angle	-7°	-12°

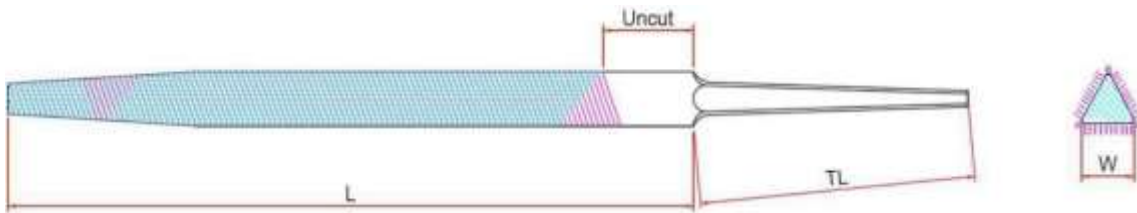


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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

67 – J File - Triangular - Bastard - 200 mm with Handle

As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-
 FILES –ITEM NO - 2,5,7,8,12,16,18,21,24,28

67.1 Basic Indicative Diagram



		Range (In MM)	
		From	To
67.2	Generally conforming to IS 1931-2000		
67.3	Body Length (L)	198	202
67.4	Tang Length (TL)	55	56
67.5	Equilateral Triangle Side (W)	14.25	14.95
67.6	No. of Upcut / Inch	25	27
67.7	Upcut Inclination	63°	67°
67.8	No. of Over cut / Inch	21	22
67.9	No. of Edge cut / Inch	31	32
67.10	Edge cut Inclination	89°	91°
67.11	Hardness	60 HRC	64 HRC
67.12	Rake Angle	-7°	-12°

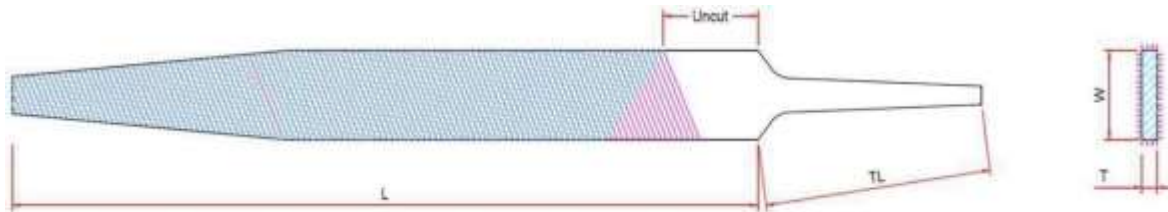


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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

67- B File - Flat - Second Cut - 150 mm with Handle

As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-
 FILES –ITEM NO - 2,5,7,8,12,16,18,21,24,28

67.1 Basic Indicative Diagram



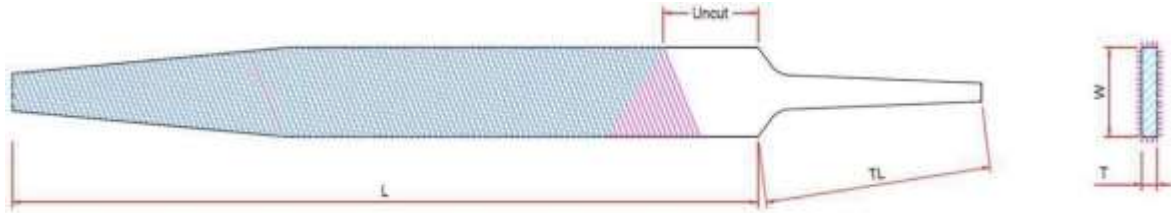
		Range (In MM)	
		From	To
67.2	Generally conforming to IS 1931-2000		
67.3	Body Length (L)	148	152
67.4	Tang Length (TL)	44	46
67.5	Width (W)	15.1	16.1
67.6	Thickness (T)	3.25	3.95
67.7	No. of Upcut / Inch	41	42
67.8	Upcut inclination	64°	66°
67.9	No. of Overcut / Inch	35	36
67.10	Overcut Inclination	44°	46°
67.11	No. of Edge cut / Inch	43	44
67.12	Edge cut Inclination	89°	91°
67.13	Hardness	60 HRC	64 HRC
67.14	Rake Angle	-7°	-12°



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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

67 – C File - Flat - Smooth - 150 mm with Handle

67.1 Basic Indicative Diagram



**As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-
 FILES –ITEM NO - 2,5,7,8,12,16,18,21,24,28**

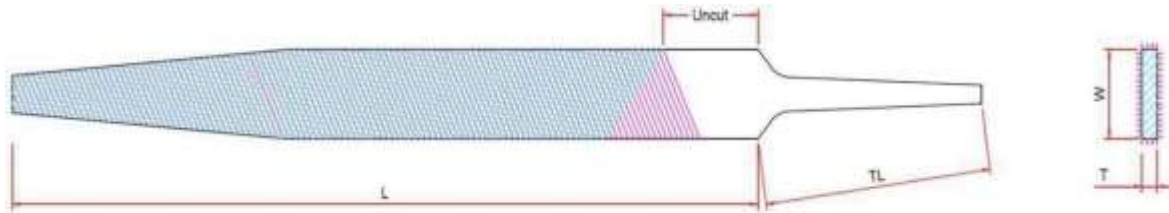
		Range (In MM)	
		From	To
67.2	Generally conforming to IS 1931-2000		
67.3	Body Length (L)	148	152
67.4	Tang Length (TL)	44	46
67.5	Width (W)	15.1	16.1
67.6	Thickness (T)	3.25	3.95
67.7	No. of Upcut / Inch	52	54
67.8	Upcut inclination	64°	66°
67.9	No. of Overcut / Inch	46	47
67.10	Overcut Inclination	44°	46°
67.11	No. of Edge cut / Inch	55	56
67.12	Edge cut Inclination	89°	91°
67.13	Hardness	60 HRC	64 HRC
67.14	Rake Angle	-7°	-12°



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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

67 – D File - Flat - Smooth - 250 mm with Handle

67.1 Basic Indicative Diagram



As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-
FILES –ITEM NO - 2,5,7,8,12,16,18,21,24,28

		Range (In MM)	
		From	To
67.2	Generally conforming to IS 1931-2000		
67.3	Body Length (L)	248	252
67.4	Tang Length (TL)	59	61
67.5	Width (W)	23.9	24.9
67.6	Thickness (T)	5.05	5.75
67.7	No. of Upcut / Inch	38	40
67.8	Upcut inclination	64 ⁰	66 ⁰
67.9	No. of Overcut / Inch	31	32
67.10	Overcut Inclination	44 ⁰	46 ⁰
67.11	No. of Edge cut / Inch	41	42
67.12	Edge cut Inclination	89 ⁰	91 ⁰
67.13	Hardness	60 HRC	64 HRC
67.14	Rake Angle	-7 ⁰	-12 ⁰

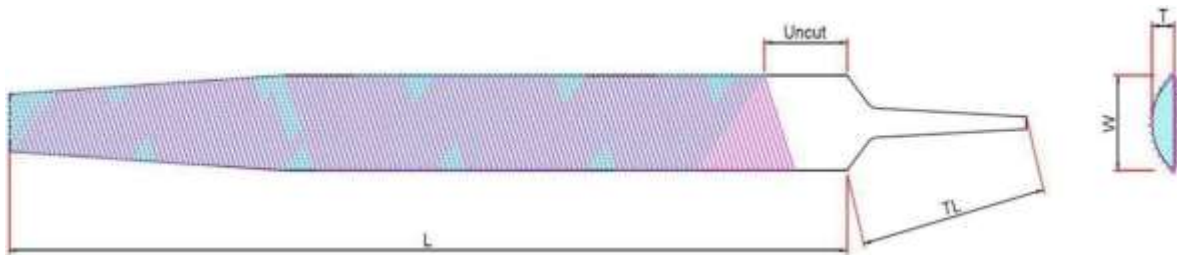


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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

67 – E File - Half Round - Second Cut - 150 mm with Handle

67.1 Basic Indicative Diagram

As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-FILES –ITEM NO - 2,5,7,8,12,16,18,21,24,28



		Range (In MM)	
		From	To
67.2	Generally conforming to IS 1931-2000		
67.3	Body Length (L)	148	152
67.4	Tang Length (TL)	49	51
67.5	Width (W)	15.20	16.20
67.6	Thickness (T)	3.95	4.65
67.7	No. of Upcut / Inch	(41-42 F/S)	(37-38 R/S)
67.8	Upcut inclination	65°	65°
67.9	No. of Overcut / Inch	(36-36 F/S)	(32-33 R/S)
67.10	Overcut Inclination	50°	50°
67.11	No. of Edge cut / Inch	37	38
67.12	Edge cut Inclination	65°	65°
67.13	Hardness	60 HRC	64 HRC
67.14	Rake Angle	-7°	-12°



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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

67 – F File - Knife Edge - 150 mm with Handle

67.1 Basic Indicative Diagram



As Per DVET, Maharashtra State SPECIFICATION FOR
GENERAL HAND TOOLS-

FILES –ITEM NO - 2,5,7,8,12,16,18,21,24,28

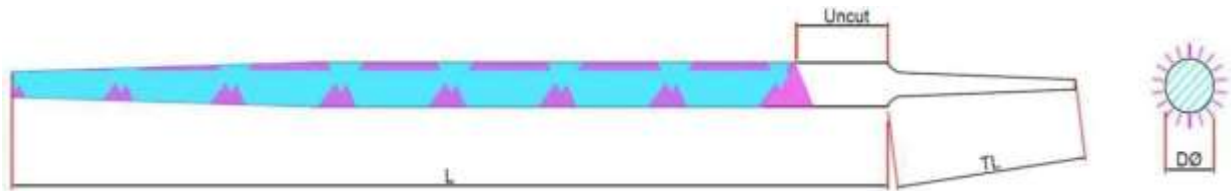
		Range (In MM)	
		From	To
67.2	Generally conforming to IS 1931-2000		
67.3	Body Length (L)	150	152
67.4	Tang Length (TL)	50	51
67.5	Width (W)	19	19.4
67.6	Thickness (T)	3	4
67.7	No. of Upcut / Inch	53	54
67.8	Upcut inclination	64 ⁰	66 ⁰
67.9	No. of Overcut / Inch	46	47
67.10	Overcut Inclination	49 ⁰	51 ⁰
67.11	No. of Edge cut / Inch	55	56
67.12	Edge cut Inclination	89 ⁰	91 ⁰
67.13	Hardness	60 HRC	64 HRC
67.14	Rake Angle	-7 ⁰	-12 ⁰



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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

67 - G File - Round - Second Cut - 200 mm with Handle

67.1 Basic Indicative Diagram



As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-FILES –ITEM NO - 2,5,7,8,12,16,18,21,24,28

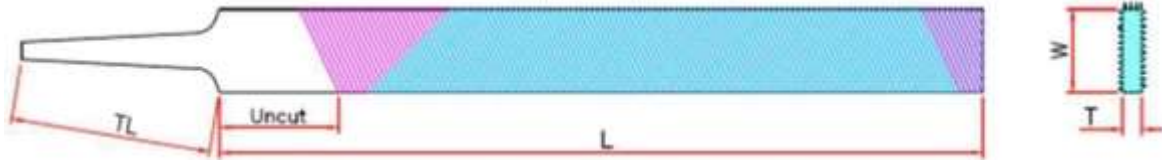
		Range (In MM)	
		From	To
67.2	Generally conforming to IS 1931-2000		
67.3	Body Length (L)	198	202
67.4	Tang Length (TL)	55	55
67.5	Diameter (Ø)	6.35	7.25
67.6	No. of Upcut / Inch	31	32
67.7	Upcut inclination	64 ⁰	66 ⁰
67.8	No. of Overcut / Inch	31	32
67.9	Overcut Inclination	49 ⁰	51 ⁰
67.10	Hardness	60 HRC	64 HRC
67.11	Rake Angle	-7 ⁰	-12 ⁰



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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

67 - H File - Safe Edge - Second Cut - 200 mm with Handle

67.1 Basic Indicative Diagram



As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-FILES –ITEM NO - 2,5,7,8,12,16,18,21,24,28

		Range (In MM)	
		From	To
67.2	Generally conforming to IS 1931-2000		
67.3	Body Length (L)	198	202
67.4	Tang Length (TL)	54	56
67.5	Width (W)	19.6	20.6
67.6	Thickness (T)	3.7	4.4
67.7	No. of Upcut / Inch	34	35
67.8	Upcut inclination	64°	66°
67.9	No. of Overcut / Inch	29	30
67.10	Overcut Inclination	44°	46°
67.11	No. of Edge cut / Inch	36	37
67.12	Edge cut Inclination	89°	91°
67.13	Hardness	60 HRC	64 HRC
67.14	Rake Angle	-7°	-12°

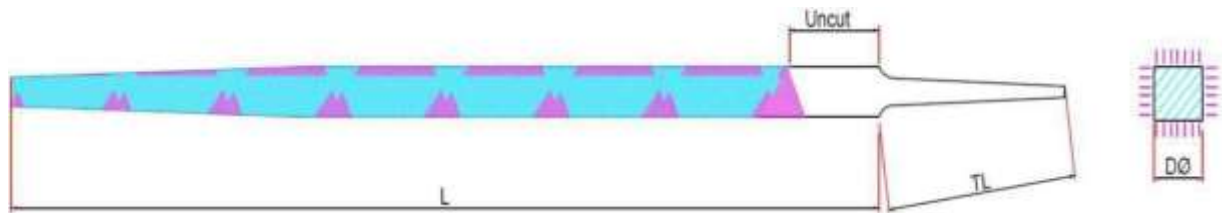


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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

67 – I File - Square - Bastard - 250 mm with Handle

67.1 Basic Indicative Diagram

As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-
FILES –ITEM NO - 2,5,7,8,12,16,18,21,24,28



		Range (In MM)	
		From	To
67.2	Generally conforming to IS 1931-2000		
67.3	Body Length (L)	248	252
67.4	Tang Length (TL)	59	61
67.5	Square Side	8	9
67.6	No. of Upcut / Inch	24	25
67.7	Upcut inclination	64 ⁰	66 ⁰
67.8	No. of Overcut / Inch	20	21
67.9	Overcut Inclination	49 ⁰	51 ⁰
67.10	Hardness	60 HRC	64 HRC
67.11	Rake Angle	-7 ⁰	-12 ⁰

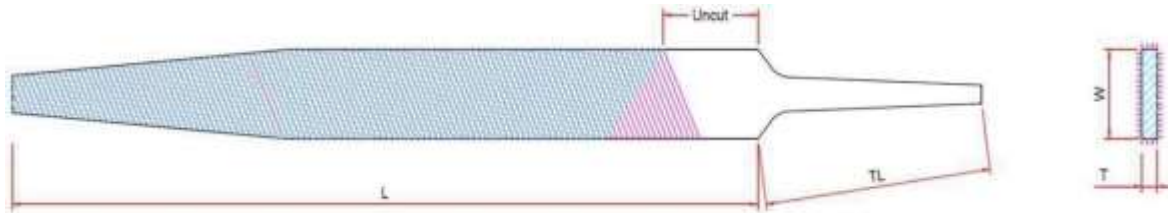


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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

68 File - Flat - Second Cut - 250 mm with Handle

68.1 Basic Indicative Diagram

As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-FILES-ITEM NO - 6



		Range (In MM)	
		From	To
68.2	Generally conforming to IS 1931-2000		
68.3	Body Length (L)	248	252
68.4	Tang Length (TL)	59	61
68.5	Width (W)	23.9	24.9
68.6	Thickness (T)	5.05	5.75
68.7	No. of Upcut / Inch	29	30
68.8	Upcut inclination	64°	66°
68.9	No. of Overcut / Inch	23	24
68.10	Overcut Inclination	44°	46°
68.11	No. of Edge cut / Inch	31	32
68.12	Edge cut Inclination	89°	91°
68.13	Hardness	60 HRC	64 HRC
68.14	Rake Angle	-7°	-12°



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SPECIFICATION FOR GENERAL HAND TOOLS – FILES

69 File - Flat - Bastard - 350 mm with Handle

69.1 Basic Indicative Diagram

As Per DVET, Maharashtra State SPECIFICATION FOR GENERAL HAND TOOLS-FILES-ITEM NO - 04



		Range (In MM)	
		From	To
69.2	Generally conforming to IS 1931-2000		
69.3	Body Length (L)	348	352
69.4	Tang Length (TL)	74	76
69.5	Width (W)	34.6	35.6
69.6	Thickness (T)	6.3	7.3
69.7	No. of Upcut / Inch	15	16
69.8	Upcut inclination	64°	66°
69.9	No. of Overcut / Inch	12	13
69.10	Overcut Inclination	44°	46°
69.11	No. of Edge cut / Inch	18	19
69.12	Edge cut Inclination	89°	91°
69.13	Hardness	60 HRC	64 HRC
69.14	Rake Angle	-7°	-12°



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

70 Fuel Feed Pump for Diesel

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-
CUT SECTION & WORKING MODEL –ITEMNO - 19

70.1 Basic Indicative Diagram



- 70.2 Brand-new item should be used
- 70.3 Suitable for Four/ six cylinder diesel engine manufactured by standard company.
- 70.4 The model is mounted on to a wooden base and it is suitably painted.
- 70.5 Feed pump have filter bowl as shown
- 70.6 Feed pump have hand primer
- 70.7 Feed pump in working condition so pump can lift Diesel.
- 70.8 Feed pump equipped with all parts such as inlet & outlet valve with return spring, plunger & return spring, spindle, pump body, Primer.
- 70.9 Parts catalogue suitable sketch on Vinyl Board



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

71 Fuel Injection Pump - Diesel - Inline

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 20

71.1 Basic Indicative Diagram



- 71.2 Good working condition item should be used
- 71.3 Suitable for Four /six cylinder diesel engine manufactured by standard company
- 71.4 RSV type governor
- 71.5 The model is mounted on to a wooden base and it is suitably painted.
- 71.6 F. I. pump in working condition so pump can deliver Diesel.
- 71.7 F.I. pump with all parts such as camshaft,plunger, barrel, control rack, toothed quadrant, holder, delivery valve & spring, pump body etc.
- 71.8 Parts catalogue suitable sketch on Vinyl Board
- 71.9 Control lever, overflow valve, idling adjusting nut with cap required.



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

72 Fuel Injection Pump - Dismantling Tool Kit

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 21

72.1 Basic Indicative Diagram



72.2 Contents following components:

- 72.2.1 Universal vice
- 72.2.2 Pre stroke setting attachment with gauge,
- 72.2.3 Pump couplings,
- 72.2.4 Control setting gauge with attachment,
- 72.2.5 Tappet adjusting spanner (thin),
- 72.2.6 Ring wrench,
- 72.2.7 Tappet lifter,
- 72.2.8 Mechanical finger (gripper),
- 72.2.9 Adapter capsule box for FIP,
- 72.2.10 Thread puller for fly weight,
- 72.2.11 Drift for bottom plug,
- 72.2.12 Impact screw driver,
- 72.2.13 Flower/Trox Allen key set,
- 72.2.14 Attachment for setting angle of accelerate lever,
- 72.2.15 Coupling for FIP cam, Coupling wrench,
- 72.2.16 Round nut spanner different type,
- 72.2.17 VE pump holding attachment,
- 72.2.18 Inline and rotary pump holding attachments,
- 72.2.19 Drift for installing and removing oil seal,
- 72.2.20 Holder spanner,
- 72.2.21 Spring locking plates,
- 72.2.22 Governor weight remover



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

73 - A Fuel Injection Pump - Distributor Fuel Rotary Pump with Standard Accessories

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 22, 23

73.1 Basic Indicative Diagram



- 73.2 As this item is not available in the market, old pump can be supplied. However the Item should be in good working condition.
- 73.3 Suitable for four cylinder diesel engine manufactured by standard Company
- 73.4 Attached with governor.
- 74.5 The model is mounted on to a wooden base and it is suitably painted.
- 74.6 Rotary pump in working condition so pump can deliver Diesel.
- 74.7 Rotary pump with all parts such as camshaft,plunger, barrel, control lever, Fuel cut off valve, holder, delivery valve & spring, pump body etc.
- 73.8 Parts catalogue suitable sketch on Vinyl Board



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

73 - C Fuel Injection Pump - VE Pump with Standard Accessories

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 22, 23

73.1 Basic Indicative Diagram



73.2 Good working condition item should be used

73.3 Suitable for four cylinder diesel engine manufactured by standard

73.4 Attached with governor.

73.5 The model is mounted on to a wooden base and it is suitably painted.

73.6 VE pump in working condition so pump can deliver Diesel.

73.7 VE pump with all parts such as camshaft, plunger, barrel, control lever,
Fuel cut off valve, holder, delivery valve & spring, pump body etc.

73.8 Company Parts catalogue suitable sketch on Vinyl Board



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SPECIFICATION FOR SAFETY EQUIPMENTS GROUP ITEMS

74 Gloves - Leather

As Per DVET, Maharashtra State SPECIFICATION FOR SAFETY EQUIPMENT –ITEM NO - 03

74 .1 Basic Indicative Diagram



- 74.1 Material - made from split or top leather
- 74.2 Brightly coloured for high visibility
- 74.3 Length: 13.5 to 14 inches
- 74.4 Lining inside



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

75 Glow Plug Tester

As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS –ITEM NO -09

75.1 Basic Indicative Diagram



75.2 Should enable fast diagnosis of glow plug failure or degradation without the need to disassemble the plug from the engine.

75.3 Suitable for any 12 Volt DC vehicle

75.4 system. Should connect directly to vehicle battery.



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

76 Surface Plate - Cast Iron - 1000 x 1000 mm with Stand and Cover

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
–ITEM NO - 178

76.1 Basic Indicative Diagram



- 76.2 Total Length: 1000 mm \pm 2 mm
- 76.3 Total Width: 1000 mm \pm 2 mm
- 76.4 Total Height: 700 mm \pm 2mm
- 76.5 Plate Thickness: 60 mm \pm 1mm
- 76.6 Surface Plate Material: Cast Iron
- 76.7 Surface Finish: Precision Lapped Finish.
- 76.8 Uniformity in Hardness, Low Porosity, Non Magnetic, Easy to Clean, Rust Proof, Noncorrosive
- 76.9 Should be useful for measuring area flatness.
- 76.10 Suitable plywood cover should provided



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

77 Grease Gun - 500 grams

As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENT –ITEM NO - 21

77.1 Basic Indicative Diagram



- 77.2 150 mm rigid Steel extension & 4 jaw coupler
- 77.3 Aluminium die Cast grease gun head with built - in
- 77.4 release wallSoft Rubber grip on lever handle
- 77.5 Powder Coated Body
- 77.6 Delivers: Upto 1 Gram/ Stroke
- 77.7 Develops: Upto 6,000 PSI
- 77.8 500 gms Bulk Capacity/ 400gms with Cartridge



78 Grease Gun heavy duty trolley type

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

78.1 Basic indicative diagram



78.2 Heavy duty 10 kg grease capacity

78.3 Grease Pump complete with handle operated/Air pressure operated

78.4 high pressure hose length should 2- 2.5 meter.

78.5 Grease bucket have 4 jaw coupler.

78.6 Pump should designed for quick effortless greasing in applications

78.7 Material : Made of hard steel

78.8 Trolley wheels made from hard rubber to withstand in load condition.

78.9 Soft Rubber grip on handle

78.10 Delivers: Upto 10 Gram/ Stroke



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

79 Growler

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

79.1 Basic indicative diagram



- 79.2 Used for testing insulation of a armature for shorted coils
- 79.3 Power input 220-240 volts A.C.
- 79.4 Power output 12 Volt D.C.
- 79.5 Growler Arms : Fixed Type
- 79.6 Growler contains
 - On/Off switch
 - Indicator lamp
 - Ammeter
 - Power cable with 3 pin top
- 79.7 Testable armature Dia: 80 mm to 100mm
- 79.8 Fuse Protection required
- 79.9 Portable table top Type, Easy to operate•

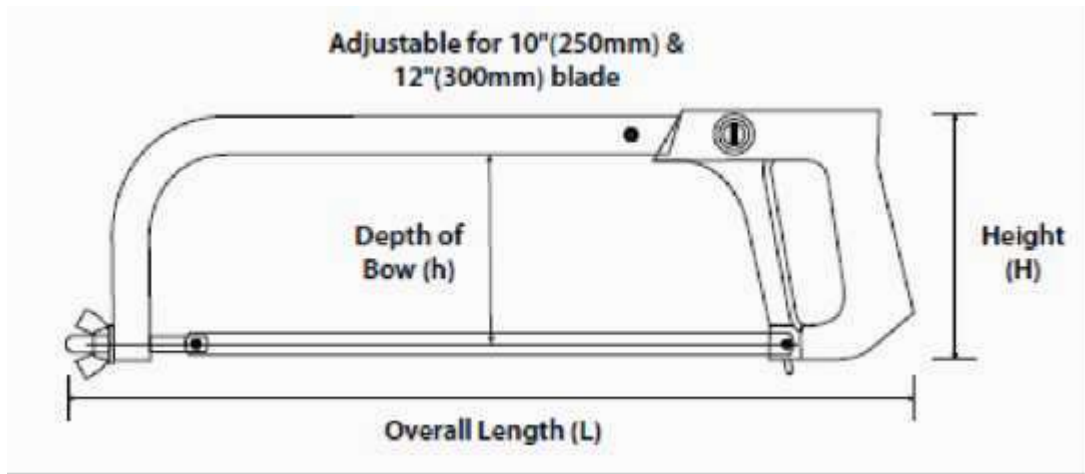


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

80 Hacksaw Frame - Adjustable - 250 To 300 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
-ITEM NO - 131

80.1 Basic Indicative Diagram



- 80.2 Adjustable for 10 inch (250mm) & 12 inch (300mm) blades
- 80.3 The blade can additionally be set for sawing at 90°
- 80.4 Storage compartment in the tubular bow should allow for storing spare blades
- 80.5 Should be Fitted with a 12" (300 mm) Steel hacksaw blade
- 80.6 Overall Length(L): 430mm \pm 10%
- 80.7 Height(H): 150 mm \pm 10%
- 80.8 Depth of Bow(H): 106mm \pm 10%
- 80.9 Strong Frame
- 80.10 Should have adjustable tension lever
- 80.11 Should be able to build 30000 PSI in 12 turns



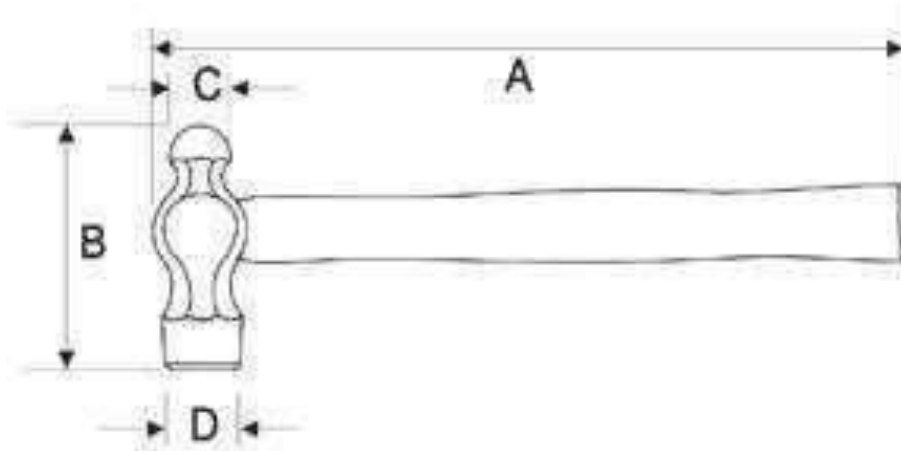
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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

81

Hammer - Ball Peen - 800 grams with Handle

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
-ITEM NO - 57

81.1 Basic Indicative Diagram



81.2 Generally conform to I.S. 841 - 1983

81.3 Ball Peen Hammer

81.4 Length: 300 mm + 10%

81.5 Weight: 800 grams

81.6 Drop forged from high grade carbon Steel

81.7 Material: EN - 9

81.8 Partially hardened upto 46 - 56 HRC on striking surface

81.9 Depth of Hardness: 6 mm

81.10 Phosphated and painted

81.11 Handle

81.11.1 Material: Hickory Wood/ Red Wood/ Babul Wood/ Indestructible Handle

81.11.2 Handle fixed firmly to hammer head so that it does not come out after long use



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

82 Hammer - Chipping - 250 grams with Handle

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
–ITEM NO - 59

82.1 Basic Indicative Diagram



82.2 Weight: 250 grams + 10%

82.3 High carbon Steel forged head

82.4 Hardened and tempered for high strength

82.5 Handle: Spiral metal Handle

82.6 Should be useful to clean and remove slag from welds



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

83 Hammer - Copper/ Brass - 1000 grams with Handle

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
–ITEM NO - 61

83.1 Basic Indicative Diagram



83.2 Brass Head

83.3 Weight: 1000 gram

83.4 12 inch Handle Hammer

83.5 Non Sparking

83.6 Handle

83.6.1 Material: Indestructible Handle

83.6.2 4 spring Steel bars running all the way through handle. Bars locked with hammer head using Steel locking plates

83.6.3 Ergonomic rubber grip to absorb shock & vibration

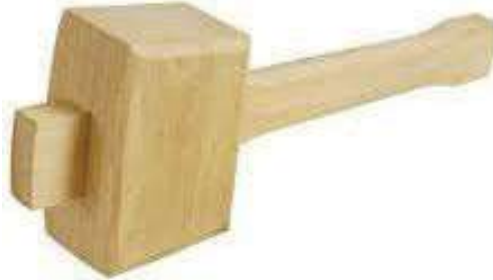


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

84 Hammer - Wooden Mallet

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
–ITEM NO - 68

84.1 Basic Indicative Diagram



84.2 Dimensions

84.2.1 Total Length: 325 mm \pm 3 mm

84.2.2 Max. Width.: 128 \pm 1 mm

84.2.3 Min. Width: 112 \pm 1 mm

84.2.4 Thickness: 60 mm \pm 1 mm

84.3 Wood material: Hard Wood

84.4 Handle grip is secured by a long taper

84.5 Should be light weight for fine working

84.6 Finishing: Fine finishing with body or chamfered.

84.7 Should easy to operate for operator during hammering.



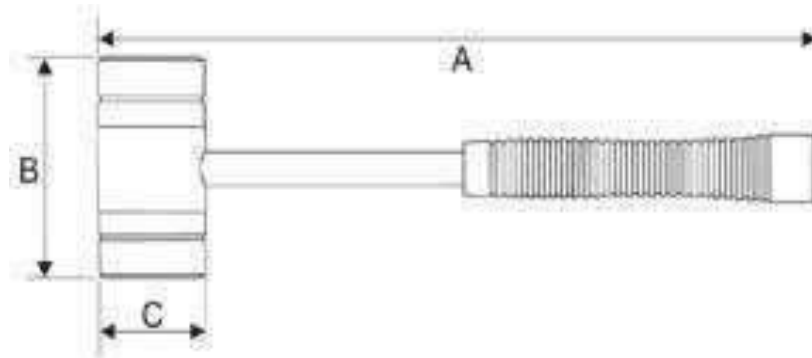
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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

85 Hammer - Nylon - 30 mm with Handle

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
–ITEM NO - 64

85.1 Basic Indicative Diagram

85.2 Generally conform to I.S. 10838 - 1984



85.3 Mallet Diameter: 30 mm

85.4 Mallet should be made of Cellular Acetate Material

85.5 Striking part (Head) should be replaceable

85.6 Handle

85.6.1 Material: Should be made of cold rolled mild Steel pipe and should be chromeplated

85.6.2 Handle should be fitted with rubber grip sleeves.

85.6.3 Handle fitted firmly to hammer head so that it does not come out after longuse



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

86 Crimping Tool - 5 in 1

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
–ITEM NO - 87

86.1 Basic Indicative Diagram



86.2 Should have the following 5 functions

- 86.2.1 Wire cutter
- 86.2.2 Wire stripper
- 86.2.3 Bolt cutter
- 86.2.4 Insulation crimping
- 86.2.5 Non insulation Crimping

86.3 Size: 225 mm

86.4 Induction hardened cutting edges

86.5 Finger Guard for Better Control & Added Safety

86.6 Bi - material Grip for comfort



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SPECIFICATION FOR CUTTING TOOLS

87 Hand Reamer Set - Adjustable - 6 - 27 mm, Set of 15 Pieces

As Per DVET, Maharashtra State SPECIFICATION FOR CUTTING TOOLS –ITEM NO - 100

87.1 Basic Indicative Diagram



- 87.2 Each reamer should expand to the smallest size of next larger size
- 87.3 Should be used for light cut, repair work, removing stock or simply for enlarging holes
- 87.4 Should be hand operated by use of wrenches. The size can be adjusted by moving the blades in tapered slots by means of loosening one nut and tightening the other
- 87.5 Blades should be Hardened and Ground
- 87.6 Range (in mm)
- | | | |
|---------|----------------|-------------------|
| 87.6.1 | 6.35 to 7.14 | No. of Blades - 4 |
| 87.6.2 | 7.14 to 7.94 | No. of Blades - 4 |
| 87.6.3 | 7.94 to 8.73 | No. of Blades - 4 |
| 87.6.4 | 8.73 to 9.52 | No. of Blades - 5 |
| 87.6.5 | 9.52 to 10.32 | No. of Blades - 6 |
| 87.6.6 | 10.32 to 11.11 | No. of Blades - 6 |
| 87.6.7 | 11.11 to 11.91 | No. of Blades - 6 |
| 87.6.8 | 11.91 to 13.49 | No. of Blades - 6 |
| 87.6.9 | 13.49 to 15.08 | No. of Blades - 6 |
| 87.6.10 | 15.08 to 16.67 | No. of Blades - 6 |
| 87.6.11 | 16.67 to 18.26 | No. of Blades - 6 |
| 87.6.12 | 18.26 to 19.84 | No. of Blades - 6 |
| 87.6.13 | 19.84 to 21.43 | No. of Blades - 6 |
| 87.6.14 | 21.43 to 23.81 | No. of Blades - 6 |
| 87.6.15 | 23.81 to 26.99 | No. of Blades - 6 |
- 87.7 Material: High Speed Steel
- 87.8 Hardness: 50 to 55 HRC
- 87.9 Suitable Wooden/ Plastic/ Metal Box for storage
- 87.10 Each box is clearly marked with different reamer sizes to facilitate convenient storages



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

88 Hand Shear universal

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

88.1 Basic indicative diagram



- 88.2 Hand operated (Manual) shearing
- 88.3 Cutting Blade made of high quality steel
- 88.4 Blade size with length 250mm to 300 mm
- 88.5 Cutting sheet capacity 24 gauge to 14 gauge
- 88.6 Attachment to fit on table or stand
- 88.7 Length of handle 600 mm to 800 mm



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

89 Hand Vice - 37 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 03 –ITEM NO -213

89.1 Basic Indicative Diagram



- | | | |
|------|--|-------------------|
| 89.2 | Total Length: | 153 mm ± 2 mm |
| 89.3 | Jaw Width: | 37 mm ± 2mm |
| 89.4 | Total Height: | 80 mm ± 2mm |
| 89.5 | Body material: | Ductile Cast Iron |
| 89.6 | Spring should easily go up & down | |
| 89.7 | Should be used during grinding, hammering etc. | |



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

90 Hollow Punch Set - 6mm to 16mm, Set of 7 Pieces

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 03 –ITEM NO -113

90.1 Basic Indicative Diagram



- 90.2 Generally conform to I.S. 7177 - 1974
- 90.3 Hollow Punch Set - 6 mm to 16 mm, Set of 7 Pieces
- 90.4 Cylindrical Hollow Punch
- 90.5 Hole Diameter (in mm): 6,8,10,11,12,13,16
- 90.6 Hardness
 - 90.6.1 Tip Hardness (Induction Hardened): 40 - 50 HRC
 - 90.6.2 Striking end Hardness: 15 - 20 HRC



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

91 Injector - Multi hole Pintle type

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 14

91.1 Basic Indicative Diagram



91.2 Should consists of two

91.3 injectorsMulti hole CRDI
(4 holes)

91.4 Single Hole Pintle Type

91.5 Set should consist of 4 Injector

91.6 Parts catalogue suitable sketch on Vinyl Board



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

92 Injector Cleaning Unit

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 17

92.1 Basic Indicative Diagram



92.2 Manual Cleaning

92.3 Suitable for cleaning Diesel 92.4 Engines

Brush Lengths:

- 92.4.1 3" long with flat head bristles
- 92.4.2 3" long with sharp head bristles
- 92.4.3 3' long with slim bristles
- 92.4.4 4" long with round head bristles
- 92.4.5 4" long with sharp head bristles
- 92.4.6 4' long with slim bristles
- 92.4.7 6" long with slip bristles
- 92.4.8 Handle for brush holder
- 92.4.9 Hand brush

92.5 Material MS

GI.

92.6 The entire items should be securely packed in wooden / plastic box.



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

93 Injector Testing Set - Hand Tester

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 18

93.1 Basic Indicative Diagram



93.2 Transparent fuel container with filter.

93.3 Manual Hand operating lever / Handle with grip. Along with

93.4 split pin. Three way shut off valve with valve spindle.

93.5 High quality Pressure Gauge Range: 0 - 400 BAR & 0 –

93.6 40 MPaAll type of Injector fuel pressure chart

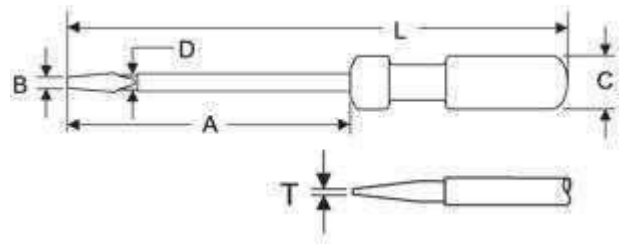
93.7 Suitable fuel pipes for all injector



94 Screw Driver - Insulated - 8 X 200 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
-ITEM NO - 155

94.1 Basic Indicative Diagram



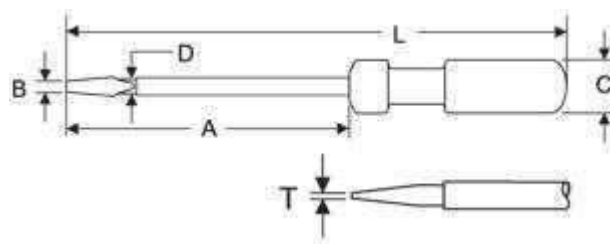
- 94.2 Generally conform to IS 844 - 1979
- 94.3 Insulated Blade
- 94.4 Dimensions:
 - 94.4.1 Size: 8 mm X 200 mm (A - 200 mm, D - 8 mm)
 - 94.4.2 Tip Bit Size: B X T : 8.0 mm X 1.2 mm
- 94.5 Blade:
 - 94.5.1 Blade made of high grade Silicon - Manganese Steel (EN 45 A)
 - 94.5.2 Blade should be differentially hardened & tempered to resist wear, bending & meet high torque requirement
 - 94.5.3 Hardness on Tip: 55 - 58 HRC
 - 94.5.4 Minimum Torque Value: 1.17 Kg.m
 - 94.5.5 Bright and Smooth Nickel Chrome plating finish to effectively protect blade against corrosion
- 94.6 Handle:
 - 94.6.1 Material of Handle: Cellulose Acetate
 - 94.6.2 Handle should be made of high grade CA Plastic, which is non-flammable & unaffected by oil, petrol, grease, water - practically anything
 - 94.6.3 Handle should withstand rough use including hammering
 - 94.6.4 Handle design should be such that it gives comfortable grip even at high torques
 - 94.6.5 Handle & blade assembly should be insert molded
- 94.7 Tip:
 - 94.7.1 Tip should be formed by Forging & Trimming
 - 94.7.2 Tip should be precision-ground to 10 degree angle to ensure firm grip in the screw slot.
 - 94.7.3 The Blade tip should be magnetized to lift small screw from confined places or to hold the screw in position
 - 94.7.4 Tip sides & faces should be well ground with good finish
 - 94.7.5 Double ear coining should be provided for the blade.



95 Screw Driver - Insulated - 8 X 300 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
-ITEM NO - 156

95.1 Basic Indicative Diagram



- 95.2 Generally conform to IS 844 - 1979
- 95.3 Insulated Blade
- 95.4 Dimensions:
- 95.4.1 Size: 8 mm X 300 mm (A - 300 mm, D - 8 mm)
 - 95.4.2 Tip Bit Size: B X T : 8.0 mm X 1.2 mm
- 95.5 Blade:
- 95.5.1 Blade made of high grade Silicon - Manganese Steel (EN 45 A)
 - 95.5.2 Blade should be differentially hardened & tempered to resist wear, bending & meet high torque requirement
 - 95.5.3 Hardness on Tip: 55 - 58 HRC
 - 95.5.4 Minimum Torque Value: 1.17 Kg.m
 - 95.5.5 Bright and Smooth Nickel Chrome plating finish to effectively protect blade against corrosion
- 95.6 Handle:
- 95.6.1 Material of Handle: Cellulose Acetate
 - 95.6.2 Handle should be made of high grade CA Plastic, which is non-flammable & unaffected by oil, petrol, grease, water - practically anything
 - 95.6.3 Handle should withstand rough use including hammering
 - 95.6.4 Handle design should be such that it gives comfortable grip even at high torques
 - 95.6.5 Handle & blade assembly should be insert moulded
- 95.7 Tip:
- 95.7.1 Tip should be formed by Forging & Trimming
 - 95.7.2 Tip should be precision-ground to 10 degree angle to ensure firm grip in the screw slot.
 - 95.7.3 The Blade tip should be magnetized to lift small screw from confined places or to hold the screw in position
 - 95.7.4 Tip sides & faces should be well ground with good finish
 - 95.7.5 Double ear coining should be provided for the blade.



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

96 Aviation Snips - Left Cut - 250 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
–ITEM NO - 83

96.1 Basic Indicative Diagram



- 96.2 Size: 250 mm
- 96.3 Left Cut
- 96.4 Made of durable Chrome Vanadium Steel
- 96.5 Hardened & Serrated Edges for controlled cutting
- 96.6 Cuts metal sheet upto 1.2 mm thickness & stainless Steel upto 0.7 mm thickness
- 96.7 Ergonomic Comfort Grip handle
- 96.8 One hand release mechanism



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

97 – A Lifting Jack Screw Type – 20 Ton

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
–ITEM NO - 81,82

97.1 Basic Indicative Diagram



- 97.2 Lifting Capacity: 20 Ton
- 97.3 Screw Diameter: 63.5 mm
- 97.4 Gear Worm Ratio: 8:1
- 97.5 Body Material: Ductile Cast Iron
- 97.6 Lifting Screw Material: Cold Drawn Steel
- 97.7 Provided with suitable Tommy Bar
- 97.8 It should hold load without back driving in absence of vibration.
- 97.9 Drive Sleeve should be supported on antifriction tapered roller



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

97 – B Lifting Jack Screw Type - 5 Ton

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
–ITEM NO - 81,82

97.1 Basic Indicative Diagram



- 97.2 Lifting Capacity: 5 Ton
- 97.3 Screw Diameter: 63.5 Mm
- 97.4 Gear Worm Ratio: 6:1
- 97.5 Body Material: Ductile Cast Iron
- 97.6 Lifting Screw Material: Cold Drawn Steel
- 97.7 Provided with suitable Tommy Bar
- 97.8 It should hold load without back driving in absence of vibration.
- 97.9 Drive Sleeve should be supported on antifriction tapered roller

97 – C Lifting Jack Screw Type - 3 Ton

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
–ITEM NO - 81,82

97.1 Basic Indicative Diagram



- 97.2 Lifting Capacity: 3 Ton
- 97.3 Type of lift: Double Lift
- 97.4 Lifting Height: 120-130 mm
- 97.5 Body Material: Ductile Cast Iron
- 97.6 Lifting Screw Material: Cold Drawn Steel
- 97.7 Provided with suitable Tommy Bar
- 97.8 It should hold load without back driving in absence of vibration.
- 97.9 Drive Sleeve should be supported on antifriction tapered roller



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

98 Magneto spanner set with 8 spanners

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

98.1 Basic indicative diagram



98.2

The set has eight spanner

98.3

The set of spanner that are stamped 1 to 8

98.4

Materials of spanner : forge steel

98.5

Set contains 01 screw driver, 01 feeler gauge

98.6

Produced for the motorcyclist to repair their bike out on the road



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

99 Magnifying glass 75 mm

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

99.1 Basic indicative diagram



99.2

Magnifying Glass 75mm

- 99.3 The magnifying lens comes with a plastic frame.
- 99.4 It should be durable, strong and easy to handle.
- 99.5 Weight upto 50 gm
- 99.6 Magnification Strength 5X



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL**

III)

100 Marking out table

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

100.1 Basic indicative diagram



100.2 Dimensions

Length: $900 \pm 10\text{mm}$

Width: $900 \pm 10\text{ mm}$

Height: $60 \pm 5\text{ mm}$

100.3 Material : Cast Iron and Granite

100.4 Grade of Accuracy - 0

100.5 Supplied with calibration certificate.

100.6 Very sturdy, heavy duty construction throughout.

100.7 Frame(Table) made with certified ISI M.S.angle 65x65x5 mm

100.8 Height of Table : 1200 - 1500 mm

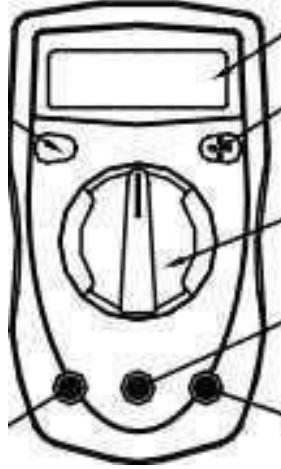


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SPECIFICATION FOR ELECTRICAL AND ELECTRONICS TOOLS AND EQUIPMENTS GROUP ITEMS

101 Multimeter - Digital - 3 ½ Digit

As Per DVET, Maharashtra State SPECIFICATION FOR ELECTRICAL & ELECTRONICS TOOLS & EQUIPMENTS –ITEM NO -65

101.1 Basic Indicative Diagram



101.2 Display Count:	4000
101.3 DC Voltage:	400mV-500V (Accuracy $\pm 0.8\% +1$)
101.4 AC Voltage:	400mV-500V (Accuracy $\pm 1.2\% +3$)
101.5 AC Current:	400 μ A -10A (Accuracy $\pm 1\% +2$)
101.6 DC Current:	400 μ A- 10A (Accuracy $\pm 1.5\% +5$)
101.7 Resistance:	400 Ω to 40M Ω (Accuracy $\pm 1\% +2$)
101.8 Capacitance	4nF to 100uF (Accuracy $\pm 4\% +3$)
101.9 Auto Range:	Should be available
101.10 Diode Measurement:	Should be available
101.11 Continuity Buzzer:	Should be available
101.12 Low Battery Indication:	Should be available
101.13 Input impedance for DCV should be available	
101.14 Protection:	Dual Fuse Protection
101.15 3.15 Size:	130 mm X 75 mm X 35mm ($\pm 10\%$)
101.16 Compliance:	CE Certificate, CAT II, ETL Certified
101.17 Accessories	
101.17.1 Test Lead	
101.17.2 Manual	
101.17.3 Required Batteries	
101.17.4 Calibration Certificate	
101.17.5 Plastic or Wooden Carrying Case with required cushioning	



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

102 Oil Can - 500 ml

As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENT –ITEM NO - 22

102.1 Basic Indicative Diagram



102.2 Metal Oil can with 500ml

102.3 Capacity 150 mm rigid

Steel spout

102.4 Tin coated Steel body with premium powder

coated 102.5 finish Steel pump with double ball

check

102.6 Discharge of 16 - 18 ml per 10 strokes with general Mobil oil



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

103 Oil pump for dismantling and assembling.

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

103.1 Basic indicative diagram



- 103.2 Oil pump type : Gear type / Rotor type /
- 103.3 Suitable for 4 / 6 cylinder engine
- 103.4 manufactured by standard company
- 103.5 Good working condition new item should be used.
- 103.6 Parts catalogue suitable sketch on Vinyl Board
- 103.7 Material – Iron, Cast iron
- 103.8 Smooth working, Fine finish
- 103.9 The oil pumps to deliver engine oil between
Pressure 2 to 4 kg/cm²
- 130.10 Diameter of gear & number of teeth on gear/ rotor may vary.
Drive gear, Idler gear, PRV, pump body etc.
- 130.11 Pressure relief valve in outlet should maintain oil pressure between
2 to 4 kg/cm²



104 Oil Stone - 150 mm X 50 mm X 25 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03
–ITEM NO - 72

104.1 Basic Indicative Diagram



104.2 Length: 150 mm

104.3 Width: 50 mm

104.4 Height H1: Course - 15 mm

104.5 Height H2: Fine - 10 mm

104.6 Material: SiC (Silicon Carbide)

104.7 Bond: Vitrified

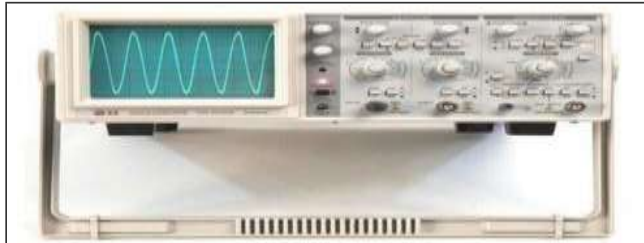


SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

105 Oscilloscope

Specifications prepared by committee.. Specification Trade mechanic diesel-2024

105.1 Basic indicative diagram



105.2 An automobile oscilloscope is a device designed for visual observation of processes occurring in automobile electrical circuits.

105.3 The oscilloscope is dual channel oscilloscope with frequency bandwidth 20 MHz.

105.4 CATHODE RAY TUBE- 6 inch diagonal, rectangular screen with internal graticule 8 x 10 DIV

VERTICAL DEFLECTION

105.5 Bandwidth: DC~20 MHz(-3dB)

105.6 Sensitivity: 1mV/DIV~1V/DIV(5MHz, -3dB), x5 gain selected
5mV/DIV~5V/DIV

105.7 Attenuator : 1-2-5 sequence, 10 step with variable control

105.8 Input Impedance: 1MΩ±2%, 25pF±10%

105.9 Max. Input Voltage: 400V (DC+AC peak)

105.10 Operation Mode: CH1, CH2, DUAL(ALT,CHOP)

105.11 Algebraic Addition: CH1+CH2, CH1-CH2

HORIZONTAL DEFLECTION

105.12 X-Y Mode: Switch selectable using X-Y switch CH 1= X axis. CH 2: Y axis

105.13 Accuracy: Y-Axis ±3% ; X-Axis ±6%

105.14 Bandwidth: DC-1MHz(-3dB)

105.15 X-Y Phase Difference: < 3°(50KHz)

MAIN TIME BASE

105.16 Sweep Speed:0.1μS/DIV~2.0S/DIV in 1-2-5 sequence, 23 steps

105.17 Variable time Control: 5:1,un-calibrated,continuously variable between steps

105.18 Sweep Magnification: X10, ±10%, extend sweep speed up to 10nS/DIV.

105.19 Trigger Coupling: AUTO, NORM, TV-V, TV-H

105.20 Trigger Source: CH1, CH2, ALT, LINE, EXT

105.21 Slope: + / -

OTHER SPECIFICATIONS

105.23 Power Source: 115V/230V±10%, AC 50/60Hz

105.24 Power Consumption: Approx.40 W atts.

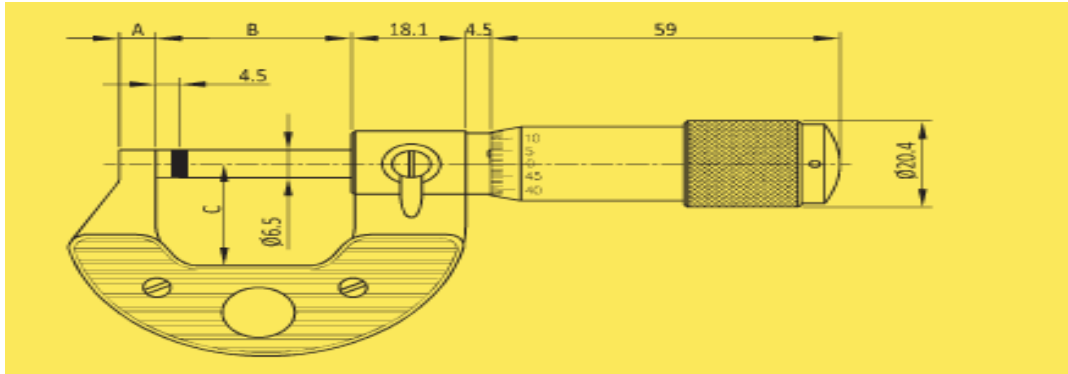


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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

106 Micrometer - Outside - 0 - 25 mm, LC = 0.01 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS – ITEM NO - 53

106.1 Basic Indicative Diagram:



106.2 Compliance: Generally Compliant to IS 2967 / 1938

106.3 Range: 0 mm -25 mm

106.4 Reading: 0.01 mm

106.5 Accuracy: 4 μ m

106.6 Spindle Material: Stainless Steel / Alloy steel

106.7 Standard Accessories:

106.8 Suitable spanner,

106.9 Wooden / Plastic Box with proper cushioning

106.10 Operating Manual

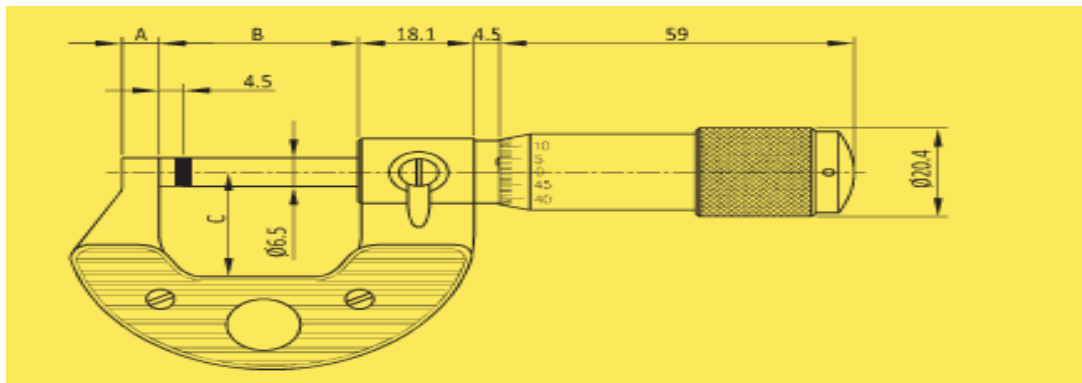


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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

107 Micrometer - Outside - 25 - 50 mm, LC = 0.01 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS – ITEM NO - 54

107.1 Basic Indicative Diagram:



- 107.2 Compliance: Generally Compliant to IS 2967 / 1938
- 107.3 Range: 25 mm -50 mm
- 107.4 Reading: 0.01 mm
- 107.5 Accuracy: 4 μ m
- 107.6 Spindle Material: Stainless Steel / Alloy Steel
- 107.7 Standard Accessories:
- 107.8 Suitable spanner
- 107.9 Distance Piece
- 107.10 Wooden / Plastic Box with proper cushioning
- 107.11 Operating Manual

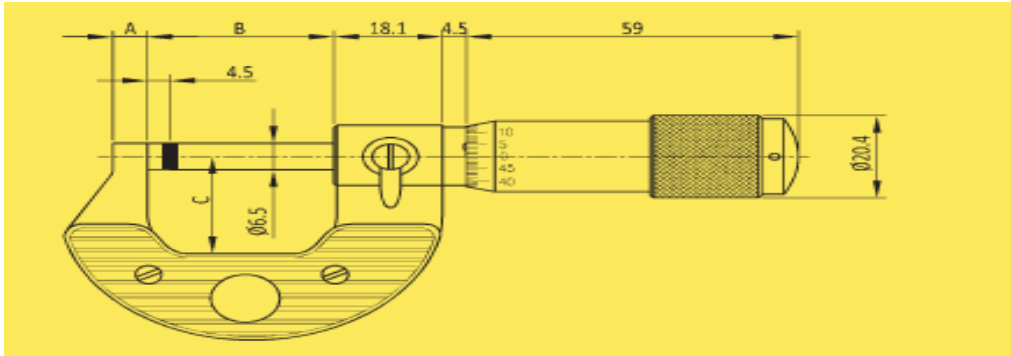


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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

108 Micrometer - Outside - 50 - 75 mm, LC = 0.01 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS – ITEM NO - 55

108.1 Basic Indicative Diagram:



- 108.2 Compliance: Generally Compliant to IS 2967 / 1938
- 108.3 Range: 50 mm -75 mm
- 108.4 Reading: 0.01 mm
- 108.5 Accuracy: 4 μ m
- 108.6 Spindle Material: Stainless Steel / Alloy Steel
- 108.7 Standard Accessories:
- 108.8 Suitable spanner
- 108.9 Distance Piece
- 108.10 Wooden / Plastic Box with proper cushioning
- 108.11 Operating Manual

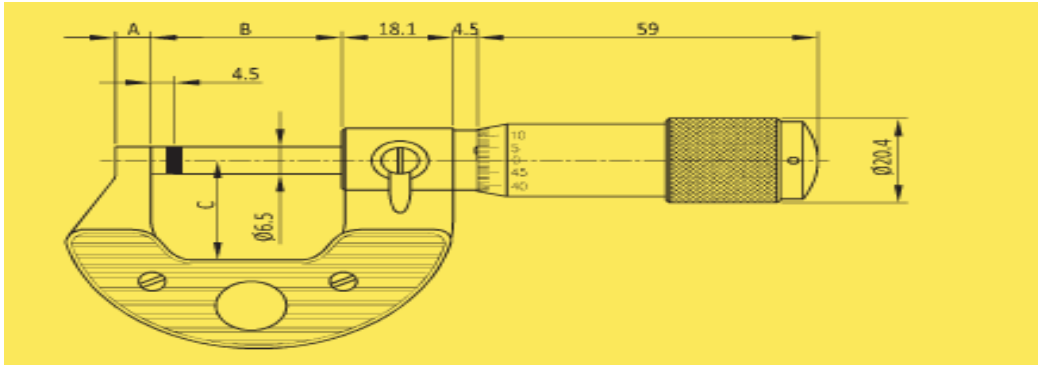


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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

109 Micrometer - Outside - 75 - 100 mm, LC = 0.01 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS – ITEM NO - 56

109.1 Basic Indicative Diagram:



- 109.2 Compliance: Generally Compliant to IS 2967 / 1938
- 109.3 Range: 75 mm - 100 mm
- 109.4 Reading: 0.01 mm
- 109.5 Accuracy: 4 μ m
- 109.6 Spindle Material: Stainless Steel / Alloy Steel
- 109.7 Standard Accessories:
- 109.8 Suitable spanner
- 109.9 Distance Piece
- 109.10 Wooden / Plastic Box with proper cushioning
- 109.11 Operating Manual

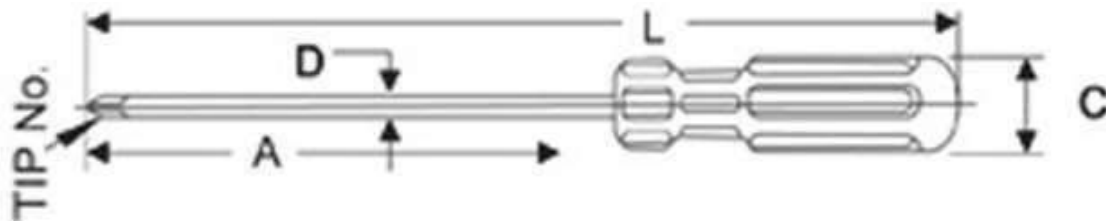


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

110 Screw Driver - Philips Set of 5 pieces (100 mm to 300 mm)

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 157

110.1 Basic Indicative Diagram



110.2 Generally conform to IS 844 - 1979

110.3 Sizes:

110.3.1	A: 50 mm	D: 3 mm	TIP SIZE: 00
110.3.2	A: 60 mm	D: 3 mm	TIP SIZE: 0
110.3.3	A: 75 mm	D: 3 mm	TIP SIZE: 1
110.3.4	A: 100 mm	D: 6 mm	TIP SIZE: 2
110.3.5	A: 200 mm	D: 8 mm	TIP SIZE: 3

110.4 Blade made of High Grade Silicon - Manganese Steel

110.5 Blade should be differentially hardened & tempered to resist wear, bending & meethigh torque requirement

110.6 Hardness on Tip: 55 - 58 HRC

110.7 The Blade tip should be magnetized to lift small screw from confined places or to holdthe screw in position

110.8 Bright and Smooth Nickel Chrome plating finish to effectively protect blade againstcorrosion

110.9 Handle should be made of high grade CAPlastic, which is non - flammable & unaffectedby oil, petrol, grease, water - practically anything

110.10 Handle should withstand rough use including hammering

110.11 Handle design should be such that it gives comfortable grip even at higher torques



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

111 Pipe Cutter - Wheel Type, 3mm to 30 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 108

111.1 Basic Indicative Diagram



- 111.2 Body material: Cast Iron
- 111.3 Fast and superior cutting
- 111.4 Should be provided with long shank



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

112 Pipe Flaring Tool Set - Tube Cutter = 1/8 to 1-1/8 inches, Flaring Block = 3/16 through 5/8inch and Flaring Yoke

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 110

112.1 Basic Indicative Diagram



- 112.2 Cutting size: 1/8 to 1 - 1/8 inch
- 112.3 Flaring block size: 3/16 to 5/8 inch
- 112.4 Cutting outside Diameter: 1/8 to 1 - 1/4 inch
- 112.5 Constructed of heat-treated steel,
- 112.6 This tube flaring tool kit should be designed for maximum strength and longevity
- 112.7 To reduce friction and resist rust and corrosion Chrome plating is essential.
- 112.8 Heavy duty plastic blow-molded carrying case with handle.
- 112.9 self-centering yoke for accurately flare tube.



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

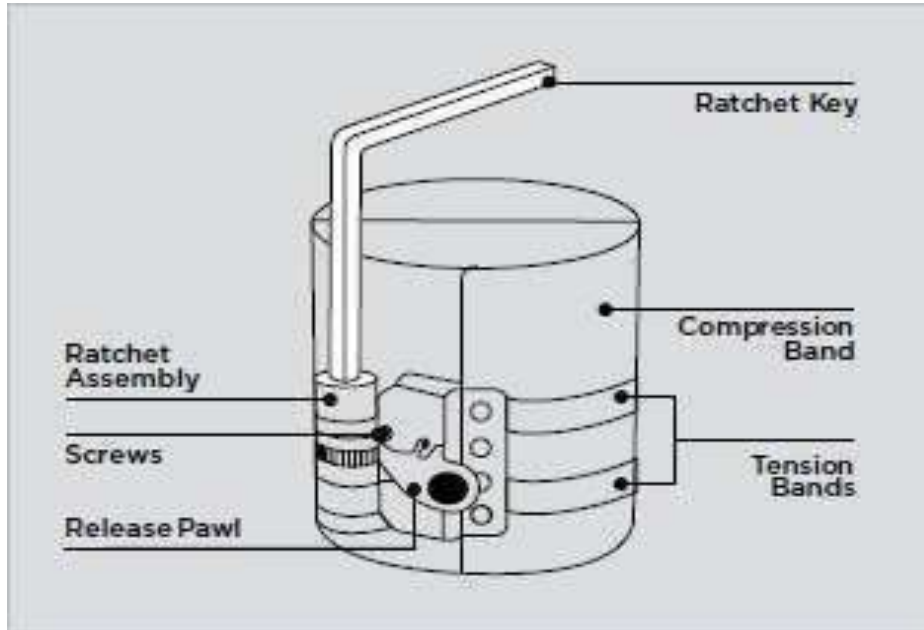
113 Piston Ring Compressor - 50 - 100 m

As Per DVET, Maharashtra State

SPECIFICATION FOR GARAGE

TOOLS & EQUIPMENT –ITEM NO - 24

113.1 Basic Indicative Diagram



113.2 Material: High Grade Spring Steel

113.3 Minimum Ring Diameter: 50 mm

113.4 Maximum Ring Diameter:
125 mm

113.5 Height: 75 mm

113.6 Comes with

113.7 Ratchet key
Friction proof
edges



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

114 Piston Ring Expander and Remover - 50 - 100 mm

As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENT –ITEM NO - 25

114.1 Basic Indicative Diagram



114.2 Capacity: \varnothing 50 - 100 mm

114.3 Overall Length: 215mm

114.4 Material: High Grade Special Tool Steel

114.5 Finish: Bright Nickel Plated



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

115 Piston Ring Groove Cleaner

As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENT –ITEM NO - 26

115.1 Basic Indicative Diagram



115.2 Handles pistons \varnothing 1 inch to 5 inch

115.3 For pistons with grooves of sizes i.e. cutter wheel sizes

115.3.1 5/64 inch

115.3.2 3/32 inch

115.3.3 1/8 inch

115.3.4 5/32 inch

115.3.5 3/16 inch

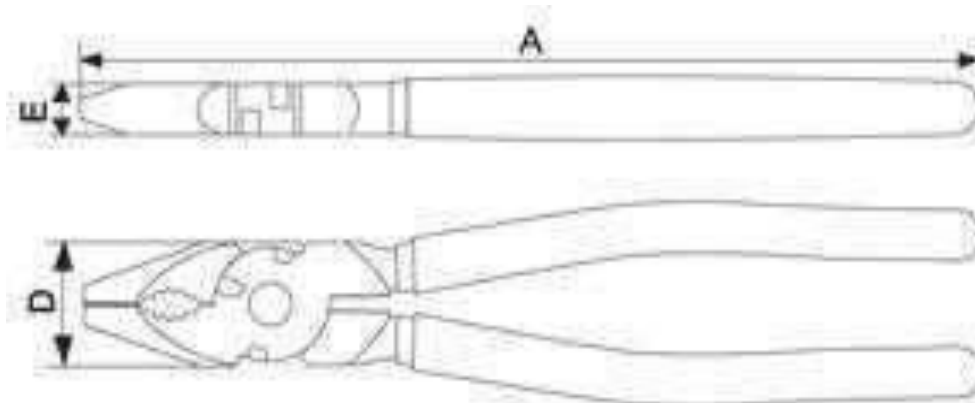


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

116 Plier - Combination - 200 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 94

116.1 Basic Indicative Diagram



- 116.2 Generally conform to IS 3650 - 1981
- 116.3 Material: C - 70
- 116.4 Finish: Polished / Chrome plated / Satin finish
- 116.5 Length (A): 200 mm
- 116.6 Drop forged, hardened tempered
- 116.7 Differential hardening
- 116.8 Radius Gap from front side: Upto 0.2 mm
- 116.9 Play between shanks: Upto 0.3 mm
- 116.10 Shank Material: C70 / EN9
- 116.11 Rivet material: SAE 1541 / 40Cr4
- 116.12 Cutting Edge Hardness: 60 - 62 HRC
- 116.13 Shank Hardness: 40 - 48 HRC
- 116.14 Rivet Hardness: 38 - 42 HRC
- 116.15 High Voltage Insulation: Should be able to withstand 4000 V DC or 2800 V AC
- 116.16 Insulation Sleeves made from High Quality CA Plastic
- 116.17 Thicker Sleeves for comfortable Grip
- 116.18 Special thumb protector for sleeves to minimize the risk of electric shock in case plierslips while in use.
- 116.19 Should be able to cut soft (74 to 84 Kg/mm²) & Hard (140 Kg/mm²) wires
- 116.20 Should be able to cut 2 mm of hardwire Diameter & 1 mm of soft wire Diameter

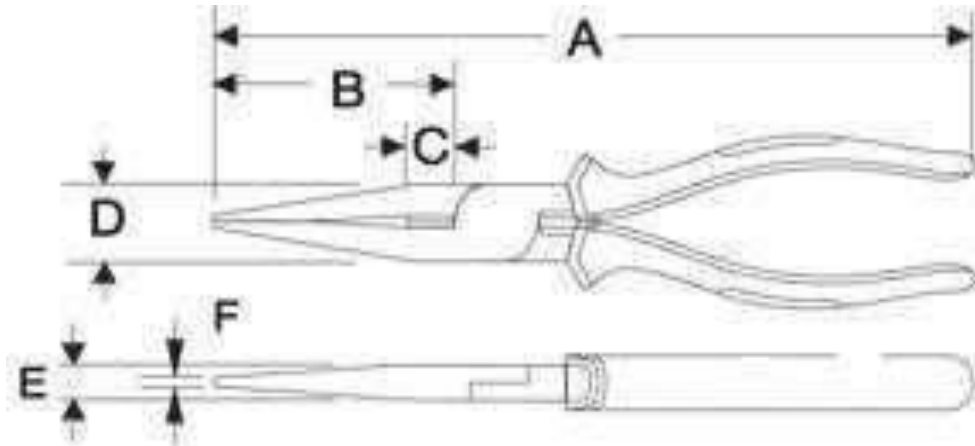


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

117 Plier - Flat Nose - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 95

117.1 Basic Indicative Diagram



117.2 Generally conform to IS 3552 - 1989

117.3 Length: 150 mm

117.4 Drop Forged from High Carbon Steel & scientifically treated to give tough body (45 -48 HRC)

117.5 Cutting edges should be induction hardened. Cutting edge Hardness 55 - 60 HRC.

117.6 Rivet should be hardened and made of carbon Steel

117.7 High Voltage Insulation: Should be able to withstand 4000 V DC or 2800 V AC

117.8 Minimum load value: 9.58 Kg

117.9 Insulation Sleeves made from High Quality CA Plastic which are long lasting and will not break or crack even if it falls from Height and ensures safe electrical working.

117.10 Thicker Sleeves for comfortable Grip

117.11 Special thumb protector for sleeves to minimize the risk of electric shock in case pliers slip while in use.

117.12 Should be able to cut soft (74 to 84 Kg/ mm²) & Hard (140 mm²) wires

117.13 Should be able to cut Hard wire of Diameter: 1.60 mm & Soft wire of Diameter: 1.0mm

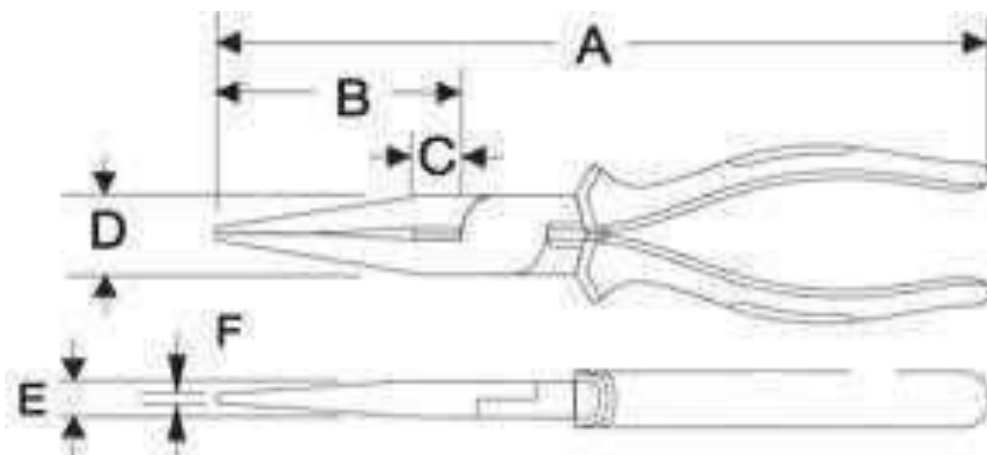
117.14 Cutting edges should be sharp and precision machined to appropriate angle to cut thick and thin wires with ease



118 Plier - Round Nose - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 97

118.1 Basic Indicative Diagram



118.2 Generally conform to IS 3552 - 1989

118.3 Length: 150 mm

118.4 Drop Forged from High Carbon Steel & scientifically treated to give tough body (45 -48 HRC)

118.5 Cutting edges should be induction hardened. Cutting edge Hardness 55 - 60 HRC.

118.6 Rivet should be hardened and made of carbon Steel

118.7 High Voltage Insulation: Should be able to withstand 4000 V DC or 2800 V AC

118.8 Insulation Sleeves made from High Quality CA Plastic which are long lasting and will not break or crack even if it falls from Height and ensures safe electrical working.

118.9 Thicker Sleeves for comfortable Grip

118.10 Special thumb protector for sleeves to minimize the risk of electric shock in case pliers slip while in use.

118.11 Should be able to cut soft (74 to 84 Kg/ mm²) & Hard (140 Kg/ mm²) wires

118.12 Should be able to cut Hard wire of Diameter: 1.60 mm & Soft wire of Diameter: 1.0mm

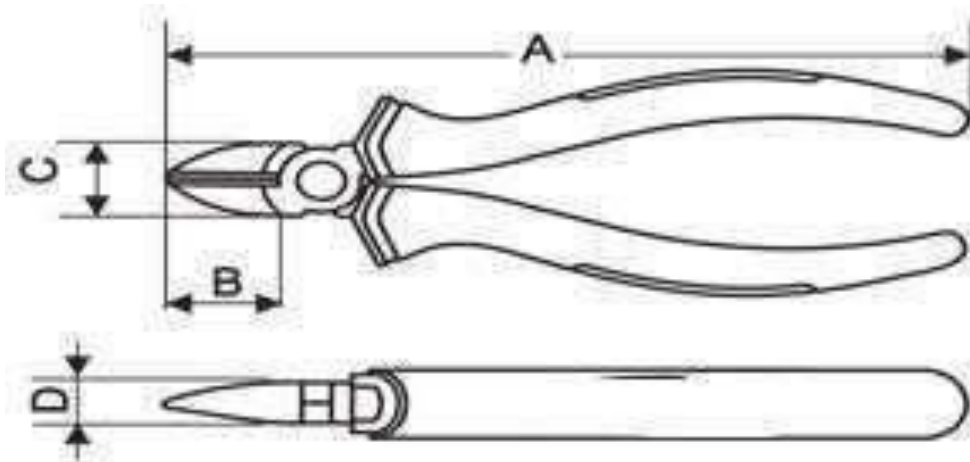
118.13 Cutting edges should be sharp and precision machined to appropriate angle to cut thick and thin wires with ease.



119 Plier - Side Cutting - 200 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 99

119.1 Basic Indicative Diagram



- 119.2 Generally conform to IS 4378 - 1990
- 119.3 Drop Forged from High Carbon Steel & scientifically treated to give tough body (45 -48 HRC)
- 119.4 Cutting edges should be induction hardened. Cutting edge Hardness 55 - 60 HRC.
- 119.5 Rivet should be hardened and made of carbon Steel
- 119.6 Length: 200 mm
- 119.7 High Voltage Insulation: Should be able to withstand 4000 V DC or 2800 V AC
- 119.8 Insulation Sleeves made from High Quality CA Plastic
- 119.9 Thicker Sleeves for comfortable Grip
- 119.10 Special thumb protector for sleeves to minimize the risk of electric shock in case plierslips while in use.
- 119.11 Should be able to cut soft (74 to 84 Kg/ mm²) & Hard (140 Kg/ mm²) wires
- 119.12 Should be able to cut 2.0 mm of hard wire Diameter & 1.5 mm of soft wire Diameter
- 119.13 Cutting edges should be sharp and precision machined to appropriate angle to cutthick and thin wires with ease.

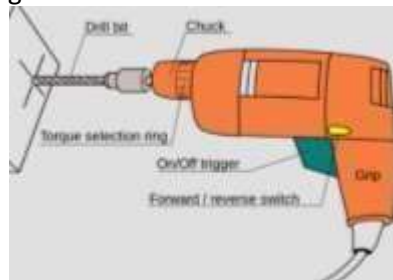


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 04

120 Portable Electric Impact Drill Machine

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 04 –ITEM NO - 02

120.1 Basic Indicative Diagram:



120.2 Drilling machine should generally conforming to IS 36501 - 1981.

120.3 Power input: 600 Watt (Min.)

120.4 Drilling diameter:

Concrete: 13 mm

Steel: 10 mm

Wood: 25 mm

120.5 No load speed: 0 – 2800 rpm

120.6 Impact rate: 25000 bpm

120.7 Should have soft in line grip for a secure hold

120.8 Should have Rotating brush plate for constant power in reverse and forward rotation

120.9 Should have Forward / Reverse rotation for inserting and removing screws

120.10 Should be able to have Easy and precise control of the RPM - variable speed

120.11 Should have double insulation – shock proof fiber body

120.12 Dimensions:

120.12.1 Overall Length in mm ($\pm 10\%$): 275 mm

120.12.2 Overall Height in mm ($\pm 10\%$): 180 mm

120.12.3 Net Weight (without cable & blade) ($\pm 10\%$): 1.7 kg

120.13 Protection Class: Double Insulation

120.14 Standard Accessories

120.14.1 Auxiliary handle = 01 no

120.14.2 Blow molded plastic case to securely fit all pieces for easy organization and convenient portability = 01 no

120.14.3 Depth gauge = 01 no

120.14.4 Spirit level (225 mm) with 3 spirit bulbs (for horizontal, vertical & angular level testing) = 01 no

120.14.5 Knife (Length - 150 mm, Blade width 15 mm) = 01 no

120.14.6 Claw Hammer (Weight 340 grams) = 01 no

120.14.7 Adjustable Wrench (Length 150 mm, Maximum jaw opening 19 mm) = 01 no

120.14.8 Combination Plier (Length 160 mm, Maximum jaw opening 25 mm) = 01 no

120.14.9 Measuring tape (Length 3 meter, 11 mm tape width) = 01 no

120.15 Drill bits

120.15.1 Masonry: 05 no

120.15.2 Wood: 04 no

120.15.3 HSS: 05 no

120.16 CRV Bit: 10 no

Magnetic Bit Holder: 01 no

Socket: 7 no

Socket Adaptor: 1 no

Assorted Screws: 30 no

Assorted Plastic Plugs: 30 no

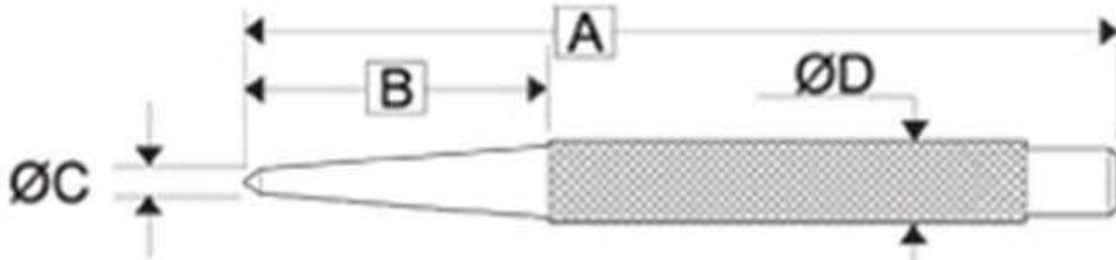


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

121 Prick Punch - 100 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 117

121.1 Basic Indicative Diagram



121.2 Generally conform to I.S. 7177 - 1974

121.3 Dimensions (in mm): A - 100, B - 33, Ø C - 3 mm, Ø D - 10 mm

121.4 Hardness: 55 to 60 HRC

121.5 Manufactured from carbon Steel

121.6 Single piece construction with round shank & round chamfered striking end

121.7 Induction hardened to ensure consistent Hardness with special tempering process to prevent the head from fracturing, thereby preventing accidents

121.8 Rust inhibiting black oxide finish

121.9 Point angle 30 degree



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

122 Letter and Number Punch - 4 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 114

122.1 Basic Indicative Diagram



122.2 Manufactured from select quality carbon Steel

122.3 Individual Punches should be induction hardened for durability and extended life

122.4 Hardness at Stamping end: 58 – 62 HRC

122.5 Hardness at Striking end: 38 – 42 HRC. This prevents splintering of the punch

122.6 Chamfered striking end to prevent breakage and accidents due to flying splinters

122.7 Number Punch Set should contain 9 pieces - '0' to '9'. Numbers '6' & '9' can be interchangeable

122.8 Letter Punch Set should contain 27 pieces, alphabets 'A' through 'Z' and ampersand '&'



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

123 Cut Section Model - Radiator - Cross Flow

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 07

123.1 Basic Indicative Diagram



123.2 Components:

- 123.2.1 Side Tank
- 123.2.2 Radiator Core
- 123.2.3 Radiator Cap

123.3 Radiator should be used for sectioning to show the cross flow and radiator core and (fins) construction.

123.4 Internal coloring to identify coolant path to be provided.

123.5 The model should be mounted on to a paint finished metal

123.6 stand/Vinyl Display Board displaying water flow with naming.



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

124 Cut Section Model - Radiator - Down Flow

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 08

124.1 Basic Indicative Diagram



124.2 Components:

124.2.1 Side Tank

124.2.2 Radiator Core

124.2.3 Radiator Cap

124.3 Radiator should be used for sectioning to show the down flow and radiator core and(fins) construction.

124.4 Internal coloring to identify coolant path to be provided.

124.5 The model should be mounted on to a paint finished

124.6 metal stand/Vinyl Display Board displaying water flow with naming.



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

125 Radiator Pressure Cap

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 27

125.1 Basic Indicative Diagram



125.2 Brand-new item should be

125.3 suppliedShould consists of

125.3.1 Upper Seal

125.3.2 Main Seal Spring

125.3.3 Main Rubber Seal

125.3.4 Low Pressure Valve

125.4 Parts catalogue suitable sketch on Vinyl Board



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

126 Aviation Snips - Right Cut - 250 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 84

126.1 Basic Indicative Diagram

126.2 Size: 250 mm



126.3 Right Cut

126.4 Made of durable Chrome Vanadium Steel

126.5 Hardened & Serrated Edges for controlled cutting

126.6 Cuts metal sheet upto 1.2 mm thickness & stainless Steel upto 0.7 mm thickness

126.7 Ergonomic Comfort Grip handle for better comfort

126.8 One hand release mechanism



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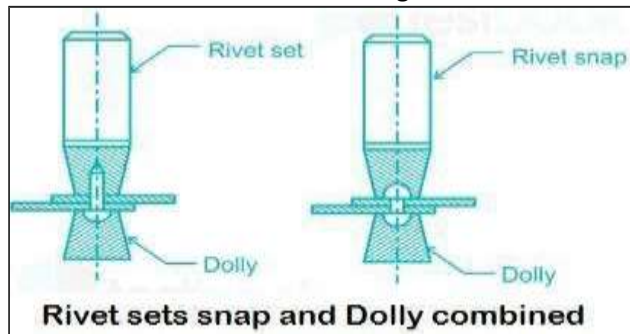
SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

127 Rivet sets snap and Dolly combined 3mm , 4 mm, 6 mm

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

127.1 Basic indicative diagram



127.2 Snap & Dolly tool required while rivetting thin sheet with small rivets

127.3 Snap tool should available to match different shapes of rivet heads

127.4 Dolly tool should prevent damage to shape of rivet head.

127.5 Material : Made from steel, knurling on body to easy grip.



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

128 Scraper - 200 mm, only Flat

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 140

128.1 Basic Indicative Diagram



128.2 Flat

Total Length: 330 mm \pm 2 mm

Blade Length: 200 mm \pm 1 mm

Blade Width: 25 mm \pm 1 mm

128.3 Blade Material: High Carbon Steel

128.4 Blade Hardness: 55 - 60 HRC



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

129 Scraper Set - 200 mm, only Half Round

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 140

129.1 Basic Indicative Diagram



129.2 Half round

Total Length: 330 mm \pm 2 mm

Blade Length: 200 mm \pm 1 mm

Blade Width: 20 mm \pm 1 mm

129.3 Blade Material: High Carbon Steel

129.4 Blade Hardness: 55 - 60 HRC



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

130 Scraper - 200 mm, Triangular

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 140

130.1 Basic Indicative Diagram



130.2 Triangular

Total Length: 330 mm \pm 2 mm

Blade Length: 200 mm \pm 1 mm

Blade Width: 16 mm \pm 1 mm

130.3 Blade Material: High Carbon Steel

130.4 Blade Hardness: 55 - 60 HRC



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

131 Scriber - Bend and Straight - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 74

131.1 Basic Indicative Diagram



131.2 Scriber with Min. Length 150

131.3 90 ° Bend and Straight

131.4 Both Point end Hardness 55 - 60 HRC

131.5 Should be of material EN - 9



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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

132 Universal Surface Gauge - Arm 300 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 28

132.1 Basic Indicative Diagram



132.2 Base should be made from case hardened steel, ground on bottom and at one end.

132.3 Should have provision for Fine adjustment. This adjustment should be made by knurled thumbscrew

132.4 Height: 450 mm

132.5 Base length: 100 mm

132.6 Width: 85 mm

132.7 Scriber: 150 mm

132.8 Should be supplied in Wooden / Plastic Box with proper cushioning



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

133 Tap and Die Set

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 187

133.1 Basic Indicative Diagram



133.2 Tap and Die Set - M3 to M18 Taps Set and Die Sets, Die Stock and Tap Wrench

133.3 Made of High Speed Steel

133.4 HRC 56 - 60

133.5 13 Hand Tap Set consisting of 3 Hand Taps viz. First, Second and Third of sizes specified below

133.6 13 Round Dies of sizes specified below

133.7 Hand Tap and Round

Dies Sizes:

133.7.1 3.00 - 0.50 mm

133.7.2 4.00 - 0.70 mm

133.7.3 5.00 - 0.80 mm

133.7.4 6.00 - 1.00 mm

133.7.5 7.00 - 1.00 mm

133.7.6 8.00 - 1.00 mm

133.7.7 9.00 - 1.25 mm

133.7.8 10.00 - 1.50 mm

133.7.9 12.00 - 1.75 mm

133.7.10 14.00 - 2.00 mm

133.7.11 16.00 - 2.00 mm

133.7.12 18.00 - 2.50 mm

133.7.13 1/8 inch - 28 BSP

133.8 T Handle Tap Wrench M2 - M6, M6 - M10

133.9 Adjustable Bar Type Tap wrench M1 - M12, M4 - M20(forged body)

133.10 Die Stock Holder for Round Dies 13/16 inch, 1 inch & 1.1/2 inch

133.11 Thread Pitch Gauge - 16 leaves 0.35mm - 3mm

60 Pieces Set

133.12 Provided with suitable Wooden/ Plastic/ Metal Box



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** .

134 Tinnman's Shear 450 mm

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

134.1 Basic indicative diagram



134.2 Cutting blade size 30 to 50 mm

134.3 Total length 450 mm

134.4 Material Hardened steel

134.5 Easy to operate & cutting

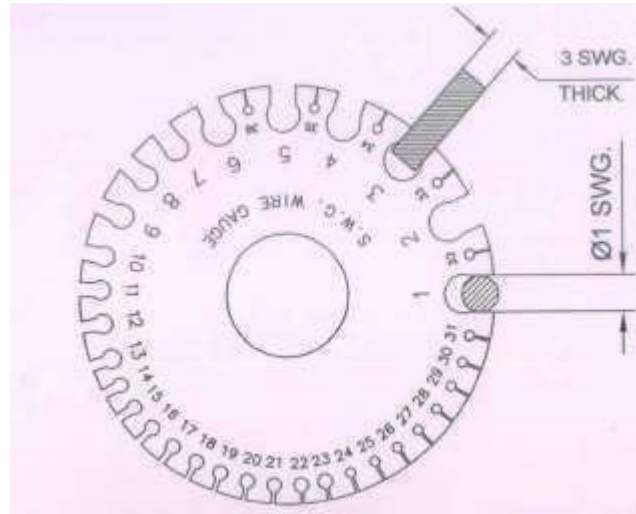


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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

135 Sheet Metal Gauge

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS – ITEM NO - 25

135.1 Basic Indicative Diagram



- 135.2 Material: Stainless - X12CrMnNiN18-9-5
- 135.3 Thickness: 1.0 mm
- 135.4 Hardness: 30-35 HRC (specially hardened)
- 135.5 Finish: Polished 2B / Antiglare Satin Chrome
- 135.6 Surface roughness: 0.6 microns max
- 135.7 Range: 0-36 SWG (incremental of 1 gauge)
- 135.8 Measuring least count: 36 swg (0.19 mm)
- 135.9 Accuracy: Within + 0.05 mm
- 135.10 Should be supplied in Wooden / Plastic Box with proper cushioning



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** .

136 Tinnman's Shear 300 mm

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

136.1 Basic indicative diagram



136.2 Cutting blade size 30 to 50 mm

136.3 Total length 200 to 300 mm

136.4 Material Hardened steel

136.5 Easy to operate & cutting



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SPECIFICATION FOR ELECTRICAL AND ELECTRONICS TOOLS AND EQUIPMENTS GROUP ITEMS

137 Soldering - Copper Hatchet Type

As Per DVET, Maharashtra State SPECIFICATION FOR ELECTRICAL & ELECTRONICS TOOLS & EQUIPMENTS –ITEM NO -94

137.1 Basic Indicative Diagram



137.2 Should have wooden

137.3 handle Length: 14

137.4 inches long ($\pm 10\%$)

137.5 Hatchet material

Copper Shape: Chisel
type

137.6 Should be suitable for soldering



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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

138 Parallel Blocks - Adjustable, 150 X 42 X 18 mm, Hardened and Ground

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 21

138.1 Basic Indicative Diagram



138.2 Material: Steel

138.3 Hardness: HRC55-62

138.4 Accuracy: $\pm 0.01\text{mm}$

138.5 Length: 150mm

138.6 Should be supplied in Wooden / Plastic Box with proper cushioning



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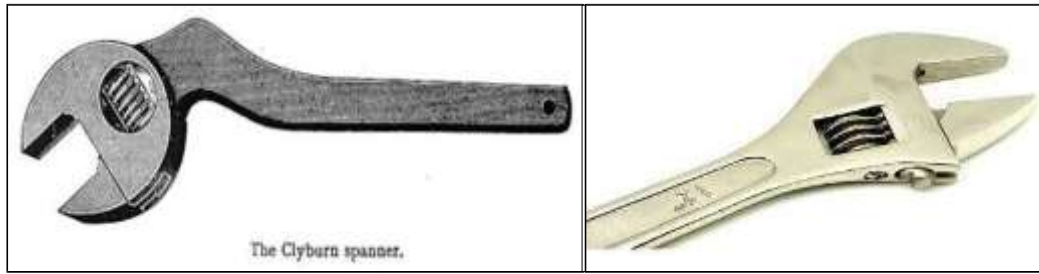
SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

139 Spanner Clyburn 300 mm

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

139.1 Basic indicative diagram



139.2 Length (L): 300 mm

139.3 Plain Carbon Steel/ Cr - V Steel

139.4 Knurl adjusting mechanism for quick & precise adjustment

139.5 Drop forged with high grade forging Steel

139.6 Maximum Opening (A): 35 mm

139.7 Made with 15 degree head angle to allow use in narrow spaces

139.8 having arc movement of only 30 degree

139.9 Light weight handle design

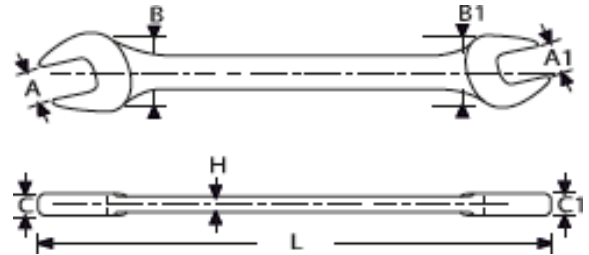


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

140 Spanner - Double Ended - Set - 6 - 32 mm Set of 12

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 165

140.1 Basic Indicative Diagram



140.2 Generally Conform to IS 2028 - 1998

140.3 Sizes: 6X7, 8X9, 10X11, 12X13, 14X15, 16X17, 18X19, 20X22, 21X23, 24X27, 25X28, 30X32 mm

140.4 Slightly Rounded handles - Sand Blasted

140.5 Non Damaging Grip on nut due to close wrench opening tolerances

140.6 I - section design of handle and heads to combine strength and low weight

140.7 Salt Spray Test should be conducted

140.8 Should not have Sharp Cuts, Pit Marks, Cutting Burs

140.9 Should have Anti - Slip design Feature

140.10 Thoroughly corrosion protected with Nickel chrome finish

140.11 Deep forged from Chrome vanadium Steel (31CrV3)

140.12 Hardness: 42 - 45 HRC

140.13 Head at each end are of different sizes and set at an angle of 15 degrees

140.14 Web should be provided in forging

140.15 Minimum Torque Values in Kg.m

140.15.1 Nominal Width A/F 6-0.6, 7-0.9, 8-1.3, 9-1.9, 10-2.5, 11-3.3, 12-4.2

140.15.2 Nominal Width A/F 13-5.3, 14-6.5, 15-7.8, 16-9.4, 17-10.9, 18-13.0

140.15.3 Nominal Width A/F 19-15.2, 20-17.50, 21-20.20, 22-22.9, 23-26.0, 24 - 29.3

140.15.4 Nominal Width A/F 25-32.8, 26-36.6, 27-40.7, 28-45.0, 30-54.6, 32-65.5



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

141 Spanner T. flocks for screwing up and up- screwing inaccessible

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

141.1 Basic indicative diagram



141.2 'T' shaped Design

141.3 Hexagonal socket allows access to nut & bolts

141.4 Material : Forged steel in silver tone

141.5 Rubber grip handle for comfortable hand grip.

141.6 Set of 04 spanner, 8 mm,10mm,12mm,13mm



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

142 Spanner - Adjustable - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 161

142.1 Basic Indicative Diagram



- 142.2 Generally Conform to IS 6149 - 1984 Grade II
- 142.3 Length (L): 150 mm
- 142.4 Plain Carbon Steel/ Cr - V Steel
- 142.5 Knurl adjusting mechanism for quick & precise adjustment
- 142.6 Built - in tension spring stabilizes movable jaw.
- 142.7 Laser - etched mm jaw scale for easy adjustment
- 142.8 Drop forged with high grade forging Steel
- 142.9 Play between jaws: 1.20 mm (maximum)
- 142.10 Hardness: 40 - 50 HRC
- 142.11 Minimum Torque Value: 8 Kg.m
- 142.12 Maximum Opening (A): 19 mm
- 142.13 Made with 15 degree head angle to allow use in narrow spaces having arc movement of only 30 degree
- 142.14 Jaw Shank should not protrude out even when fully opened. In full condition, movable jaw should align with outer radius of the handle.
- 142.15 Adjustable Wrenches Black Phosphate Finish
- 142.16 Light weight handle design

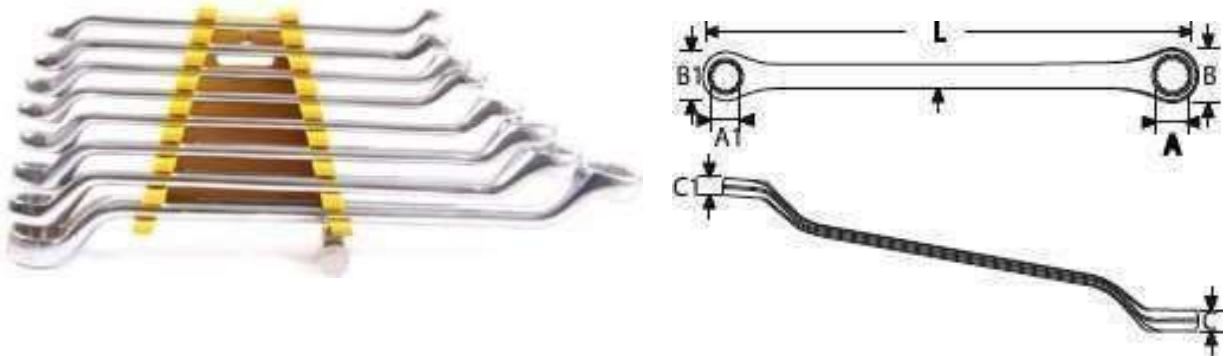


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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

143 Spanner - Ring - Set - 6 - 32 mm set of 12

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 167

143.1 Basic Indicative Diagram



143.2 Generally Conform to IS 2029 - 1998

143.3 Sizes: 6X7, 8X9, 10X11, 12X13, 14X15, 16X17, 18X19, 20X22, 21X23, 24X27, 25X28, 30X32 mm

143.4 Thin walled rings to provide accessibility in confined spaces

143.5 Slightly rounded handles - sand blasted to give comfortable grip

143.6 Non Damaging Grip on nut due to close wrench opening tolerances

143.7 I - section design of handle and heads to combine strength and low weight

143.8 Thoroughly corrosion protected with Nickel chrome finish

143.9 Deep forged from Chrome vanadium Steel (31CrV3)

143.10 Forging Finish: Should be free from forging defects such as pitted, unfilling, excess flash etc

143.11 A/F broaching finish should be good and should have flank bihex

143.12 Grinding finish: Partline flash is smooth & enough ground

143.13 Surface finish: Bright Ni - Cr plated

143.14 Plating thickness: Minimum 3.5 microns

143.15 Hardness: 42 - 48 HRC

143.16 Minimum Torque Values in Kg.m

143.16.1 Nominal Width A/F 6-1.8, 7-2.6, 8-3.50, 9-4.6, 10-5.90, 11-7.40, 12-9.10

143.16.2 Nominal Width A/F 13-10.90, 14-13.0, 15-15.30, 16-17.80, 17-20.50

143.16.3 Nominal Width A/F 18-23.4, 19-26.6, 20-30.0, 21-31.6, 22-37.5, 23-41.6

143.16.4 Nominal Width A/F 24-46.0, 25-50.6, 26-55.5, 27-60.6, 28-66.0, 30-77.5

143.16.5 Nominal Width A/F 32-90.10



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

144 1/2 Inch Socket Set

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 183

144.1 Basic Indicative Diagram



- 144.2 1/2 Inch Ratchet Socket Set, 2 Extension Bar, T - Bar, Universal Joint, Sockets = 8,9,10,11,12, 13,14,15,16,17,18,19,21,22,23,24, 26,27,28, 29,30 and 32 mm, in a Plastic Case Box
- 144.3 27 Pieces set which Includes 22 Pieces 1/2 inch Sockets: 8, 9, 10, 11, 12, 13, 14, 15,16, 17,18, 19, 21,22, 23, 24, 26, 27, 28, 29, 30, 32 mm, Extension Bar – 5 inch, 10 inch, Universal Joint, Sliding T - Bar, Ratchet Handle
- 144.4 Cold forging from high quality Chrome Vanadium Steel
- 144.5 Ultra Premium Finish to provide scratch proof surface with enhanced protection against corrosion. (Mirror Finish & Matt finish not acceptable)
- 144.6 Should provide a Non slip grip even in slippery applications (Knurled Band)
- 144.7 Teeth Gear Structure Ratchet with quick release push button & Head Should be repairable.
- 144.8 Universal Joint should be hinged through 180° in both directions
- 144.9 Profile should provide larger contact area between socket and fastener
- 144.10 Brand & Size etched on each individual socket to ensure quick & convenient identification
- 144.11 Blow moulded plastic case to securely fit all pieces for easy organization and convenient portability.



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 06

145 Spark Lighter

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 06 –ITEM NO - 23

145.1 Basic indicative diagram



- 145.2 Should provide the spark that is necessary to kick-start the torch for the welding job.
- 145.3 Size: 25.5 cm x 3 cm ($\pm 5\%$)
- 145.4 Should be provided with extra 5 Nos. of sparking Stones/ Flints



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

146 Spanner - Spark Plug - Set

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 168

146.1 Basic Indicative Diagram



- 146.2 Generally conforming to I.S 2030 - 1989
- 146.3 Made from tubular section of Steel
- 146.4 Heat treated to give maximum strength
- 146.5 Hardness: 29 to 34 HRC (carburizing depth minimum up to 0.3 mm)
- 146.6 Body and Hexagon should have good alignment and ends should be square with axis
- 146.7 Bright Zinc plating for rust protection
- 146.8 Sizes in mm: 14 X 15, 16 X 17, 18 X 19, 20 X 22, 21 X 23



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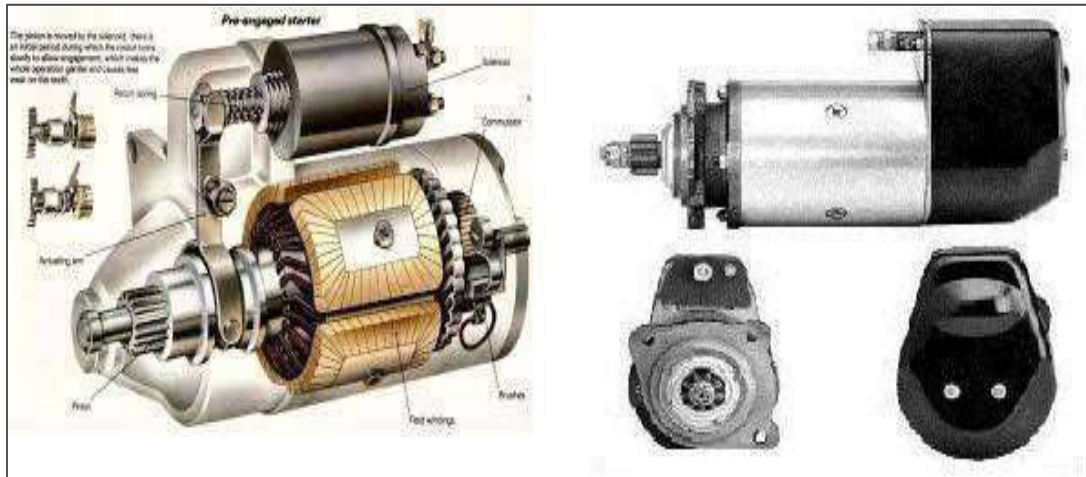
SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

147 Starter motor axial type, pre-engagement

Specifications prepared by Institute committee..

Specification Trade mechanic diesel-2024

147.1 Basic indicative diagram



146.2 Starter motor type : Axial type / Pre-engagement type

146.3 Suitable for 4/6 cylinder diesel engine

146.4 Voltage : 12 volt / 24 volt

146.5 Manufactured by standard company

146.6 Good working condition item should be used

146.7 Brand new item

146.8 Parts catalogue suitable sketch on Vinyl Board



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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

148 Measuring Steel Tape - 10 meter

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS – ITEM NO - 37

148.1 Basic Indicative Diagram



- 148.2 Tape length: 10 meters
- 148.3 Tape width: 9.5 mm
- 148.4 Tapes coated with Epoxy based scratch guard material to ensure longer life
- 148.5 Bold & Easy to read printing
- 148.6 Ensures Class II Accuracy at 20 Degree when subjected to tension of 50 Newton
- 148.7 Strong Copper Rivet to ensure stronger end hook

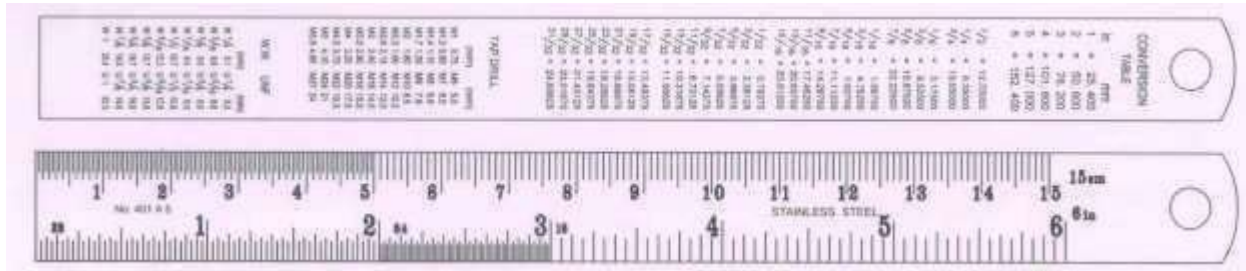


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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

149 Steel Rule - 150 mm, Graduated both in Metric and English Unit

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS – ITEM NO - 31

149.1 Basic Indicative Diagram



- 149.2 Material: Stainless Steel
- 149.3 Thickness: 0.5 mm
- 149.4 Hardness: 30 - 35 HRC (Specially Hardened)
- 149.5 Finish: Polished 2B / Anti-Glare Satin Chrome
- 149.6 Surface roughness: 0.6 Microns max
- 149.7 Range: 150 mm Scale
- 149.8 Measuring least count: Metric Graduation +0.5 mm and English graduation 1/64 inch
- 149.9 Accuracy: Metrology Standard EEC Class - I

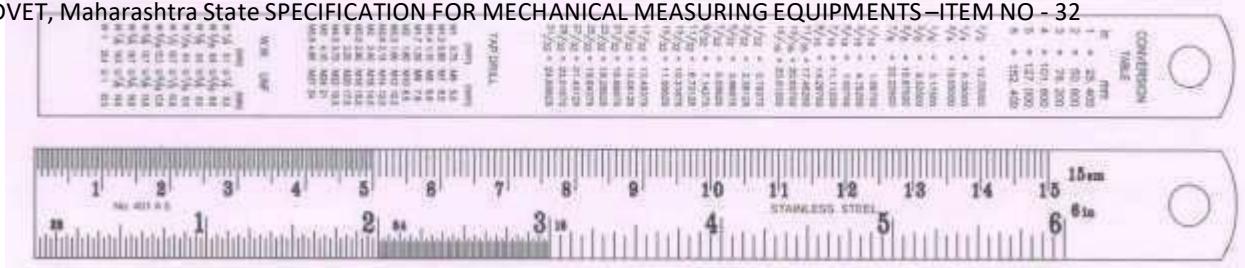


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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

150 Steel Rule - 300 mm, Graduated both in Metric and English Unit

150.1 Basic Indicative Diagram

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS—ITEM NO - 32



- 150.2 Material: Stainless Steel
- 150.3 Thickness: 0.5 mm
- 150.4 Hardness: 30 - 35 HRC (Specially Hardened)
- 150.5 Finish: Polished 2B / Anti-Glare Satin Chrome
- 150.6 Surface roughness: 0.6 Microns max
- 150.7 Range: 300 mm
- 150.8 Measuring least count: Metric Graduation +0.5 mm and English graduation 1/64 inch
- 150.9 Accuracy: Metrology Standard EEC Class - I



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

151 Straight Edge - Steel, 600 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 177

151.1 Basic Indicative Diagram



- 151.2 Total Length: 600 mm \pm 1 mm
- 151.3 Total Width: 22 mm \pm 1 mm
- 151.4 Total Thickness: 12 mm \pm 0.1 mm
- 151.5 Angle: 30 Degree
- 151.6 Hardness: 35 HRC
- 151.7 Material: Steel



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

152 Straight Edge - Steel, 1200 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 176

152.1 Basic Indicative Diagram



152.2 Length:	1200 mm \pm 1 mm
152.3 Width:	45 mm \pm 1 mm
152.4 Thickness:	9 mm \pm 0.1 mm
152.5 Angle:	30 Degree
152.6 Hardness:	35 HRC
152.7 Material:	Steel
152.8 Finishing	Precision Ground Tool Steel.



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

153 Stud extractor set of 5

Specifications prepared by committee.. Specification Trade mechanic diesel-2024

153.1 Basic indicative diagram



153.2 used for removing broken stud, bolts

153.3 Set of 05 piece

153.4 Size 4.5mm, 6.5mm, 7.5mm, 11mm

153.5 Material : High standard Alloy steel, Heat treated

153.6 Left hand thread & taper shape required

153.7 1/2" square drive head required for rotating extractor with the wrench

153.8 Provided with suitable Wooden/ Plastic/ Metal Box



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

154 Stud Extractor - Roller Type - for 5 to 20 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 78

154.1 Basic Indicative Diagram



154.2 Capacity: 20 mm

154.3 Material: Chrome vanadium Steel

154.4 Eccentric roller grips stud more firmly

154.5 Should be compatible to half inch square drive wrench

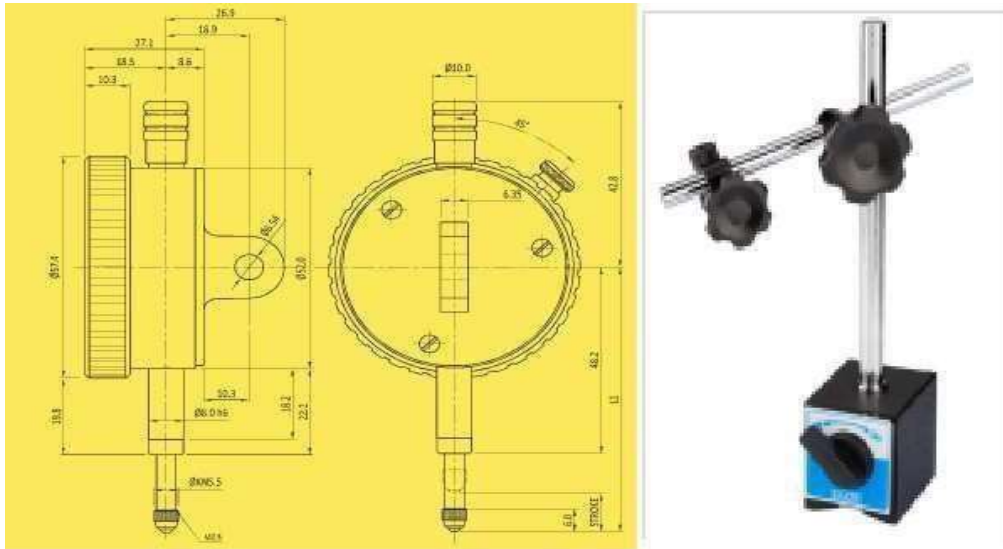


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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

155 Universal Dial Test Indicator - Plunger Type - Range 0 - 10 mm, LC = 0.01 mm with revolution counter complete with Clamping Devices and Magnetic Stand

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS – ITEM NO - 43

155.1 Basic Indicative Diagram:



155.2 Compliance

155.3 Dial:

Generally Compliant to IS 2092 / 1983

155.4 Reading:

0.01 mm

155.5 Range:

0-10 mm

155.6 Graduation:

0-100

155.7 System of Measurement: Metric

155.8 Accuracy:

20 μ m

155.9 Magnetic force for stand: 600 N (Approx.)

155.10 Stand (L×W×H): 60 X 50 X 55 mm (Approx.)

155.11 Stand Weight: 1.5 Kg (Approx.)

155.12 Standard Accessories:

155.12.1 Spanner

155.12.2 Wooden / Plastic Box with proper cushioning for Plunger Type Dial Gauge and Corrugated Box with proper Cushioning for Magnetic Stand

155.13 3mm Diameter T.C. ball Anvil fitted to the gauge

155.14 Operating Manual



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SPECIFICATION FOR ELECTRICAL AND ELECTRONICS TOOLS AND EQUIPMENTS GROUP ITEMS

156 Tachometer - Digital Type - Contact and Non Contact - 9999 RPM

As Per DVET, Maharashtra State SPECIFICATION FOR ELECTRICAL & ELECTRONICS TOOLS & EQUIPMENTS –ITEM NO -73

156.1 Basic Indicative Diagram



- 156.2 Display: 5 digits 18mm LCD White Backlight display
- 156.3 Sampling Time (internal design): 0.8 Sec (Over 120 RPM)
- 156.4 Test Range: Auto Ranging
- 156.5 Range I: Non contact: 2.5 to 99999 RPM
- 156.6 Range II: Contact: 0.5 to 19999 RPM (Surface speed 0.05 to 1999.9 m/min)
- 156.7 Accuracy: $\pm(0.05\% + 1\text{digits})$
- 156.8 Resolution: Non contact, 2.5 to 99999 RPM - 0.1 (2.5 ~ 999.9) / 1 RPM (over1000RPM)
- 156.9 Contact: 0.1 RPM(0.5 to 999.9 RPM) / 1 RPM over 1000 RPM
- 156.10 Surface speed: 0.01m/min (0.05 to 99.99m/min), 0.1m/min (over 1100m/min)
- 156.11 Memory: Last value, Max Value, Min Value
- 156.12 Detecting Distance: 50 to 500mm (photo)
- 156.13 Operating Temperature: 0 - 50 °C
- 156.14 Operating Humidity: Less than 80% RH
- 156.15 Power Consumption (Internal Design):
Approx. 65mA
- 156.16 Dimensions with Adaptor: 210 (L) X 70 (W) X 43 (H) mm ($\pm 10\%$)
- 156.17 Net Weight: Approx. 175 Grams excluding batteries ($\pm 10\%$)
- 156.18 Power Supply: 3 x 1.5 V AA Size
- 156.19 Battery Other Features
- 156.19.1 Photo Light Pointer
 - 156.19.2 Automatic Data Hold
 - 156.19.3 Auto Power Off
 - 156.19.4 Low Battery indication
- 156.20 Response Time 500ms
- 156.21 Accessories
- Carrying Case
 - Surface speed Test Wheel
 - RPM Adapter (Cone)
 - RPM Adapter (Funnel)
 - 2 Pieces of Reflecting Tape (350mm)
 - User Manual



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

157 Tandem master cylinder with booster

Specifications prepared by Institute committee.. Specification Trade mechanic diesel-2024

157.1 Basic indicative diagram



- 157.2 Master cylinder have two brake oil outlet pressure port.
- 157.3 have transparent brake oil reservoir .
- 157.4 brake oil reservoir with min. & max. marking visible.
- 157.5 brake oil reservoir have cap with strip
- 157.6 Master cylinder attached with booster.
- 157.7 Booster have connector with pipe, brake lever & related accessories
- 157.8 Suitable for 4/6 cylinder engine(Light/Heavy Vehicle)
- 157.9 Use in Hydraulic brake system
- 157.10 Manufactured by standard company
- 157.11 Good working condition item should be used
- 157.12 Brand new item
- 157.13 Parts catalogue suitable sketch on Vinyl Board



158 Tap and Die Set

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 187

158.1 Basic Indicative Diagram



158.2 Tap and Die Set - M3 to M18 Taps Set and Die Sets, Die Stock and Tap Wrench

158.3 Made of High Speed Steel

158.4 HRC 56 - 60

158.5 13 Hand Tap Set consisting of 3 Hand Taps viz. First, Second and Third of sizes specified below

158.6 13 Round Dies of sizes specified below

158.7 Sizes

Hand Tap and Round Dies Sizes:

158.7.1 3.00 - 0.50 mm

158.7.2 4.00 - 0.70 mm

158.7.3 5.00 - 0.80 mm

158.7.4 6.00 - 1.00 mm

158.7.5 7.00 - 1.00 mm

158.7.6 8.00 - 1.00 mm

158.7.7 9.00 - 1.25 mm

158.7.8 10.00 - 1.50 mm

158.7.9 12.00 - 1.75 mm

158.7.10 14.00 - 2.00 mm

158.7.11 16.00 - 2.00 mm

158.7.12 18.00 - 2.50 mm

158.7.13 1/8 inch - 28 BSP

158.8 T Handle Tap Wrench M2 - M6, M6 - M10

158.9 Adjustable Bar Type Tap wrench M1 - M12, M4 - M20(forged body)

158.10 Die Stock Holder for Round Dies 13/16 inch, 1 inch & 1.1/2 inch

158.11 Thread Pitch Gauge - 16 leaves 0.35mm - 3mm

158.12 60 Pieces Set

158.13 Provided with suitable Wooden/ Plastic/ Metal Box



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

159 Taps and wrenches – Metric

Specifications prepared by Institute committee.. Specification Trade mechanic diesel-2024

159.1 Basic indicative diagram



159.2 Tap Set - M6 to M18 Taps Set

159.3 Made of High Speed Steel

159.4 09 Hand Tap Set consisting of 3 Hand Taps viz. First, Second and Third of sizes specified

159.5 Adjustable Bar Type Tap wrench

159.6 Metric tap suitable for cutting thread on mild steel

159.7 Provided with suitable Wooden/ Plastic/ Metal Box



160

Gauge Telescopic Set - 8 - 150 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 16

160.1 Basic Indicative Diagram



160.2 Spring-loaded plunger should expand within the bore (or groove), allowing
160.3 determination of the internal diameter (or groove width).

160.4 Knurled clamp

160.5 Material: Alloy Steel

6 - Gage set - 8 - 150 mm consisting of

160.5.1 8 - 12.7 mm

160.5.2 12.7 - 19 mm

160.5.3 19 - 32 mm

160.5.4 32 - 54 mm

160.5.5 54 - 90 mm

160.5.6 90 - 150 mm

160.6 Should be supplied in Wooden / Plastic Box with proper cushioning



161 Temperature gauge with sensor
Specifications prepared by Institute committee..
Specification Trade mechanic diesel-2024

161.1 Basic indicative diagram



- 161.2 Water Temperature Gauge
- 161.3 Bi-metal Dial Thermometer
- 161.4 Dial Size 2 1/2" to 3"
- 161.5 Temperature Range 0 to 120 Deg C
- 161.6 Connection 1/2" BSP
- 161.7 6" Long Stem



162 Thermostat

Specifications prepared by Institute committee.. Specification Trade mechanic diesel-2024

162.1 indicative diagram



- 162.2 Thermostat type may Bi metal / Pellet .
- 162.3 Suitable for 4/6 cylinder engine
- 162.4 Use in water cooling system of engine
- 162.5 Manufactured by standard company
- 162.6 Good working condition item should be used
- 162.7 Brand new item
- 162.8 Opening temperature of valve should mention on thermostat.
- 162.9 Material of thermostat should anti-corrosive.
- 162.10 Thermostat should automatically open on Opening temperature & Close Below Opening temperature.

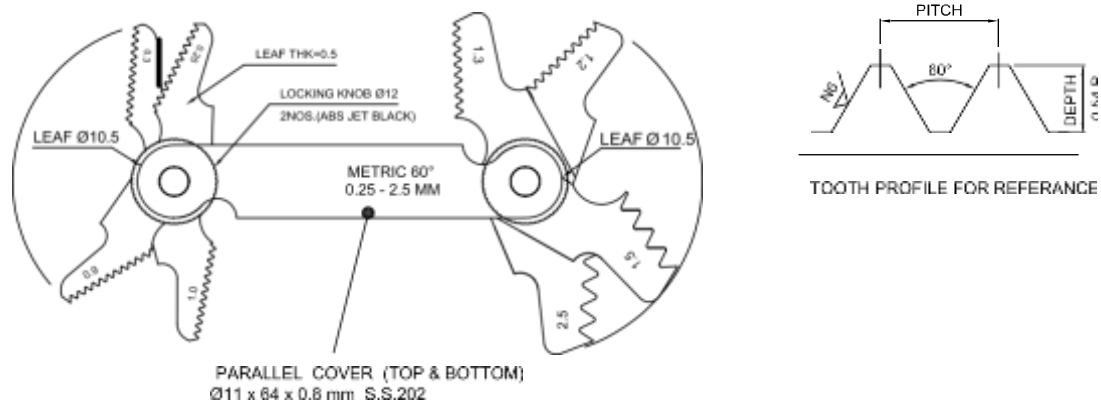


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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

163 Screw Pitch Gauge Set - Metric and British, 0.25 to 6 mm, 21 Leaves

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS – ITEM NO - 24

163.1 Basic Indicative Diagram



163.2 Material: Carbon Steel

163.3 Range: 21 Leaves 4 - 80 TPI (55°) and Metric 60°

163.4 Finish: Polished

163.5 Should be supplied in Wooden / Plastic Box with proper cushioning



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

164 Timing lighter

Specifications prepared by committee.. Specification Trade mechanic diesel-2024

164.1 Basic indicative diagram



164.2 Used for checking ignition timing of Petrol engine

164.3 Easily operate on 12V ignition systems.

164.4 12 volt battery operated

164.5 Focused lens should provide light for high visibility of timing mark.

164.6 Suitable for petrol cars, Two wheelers

164.7 Handle design be more comfortable & easy to operate.

164.8 Manufactured by standard company

164.9 Provided with suitable Wooden/ Plastic/ Metal Box



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

165 Torque Wrenches - Set of 3 Range 5 To 200 Nm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 03 –ITEM NO -170

165.1 Basic Indicative Diagram



- 165.2 48 teeth ratchet to allow engagement angle of $7 - 1/2^\circ$ (which is ideal) for precise adjustment & non slip use
- 165.3 Chrome - Molybdenum Steel Square Drive
- 165.4 Fully secure locking mechanism to avoid forced adjustment
- 165.5 Lens (Screen) for clear reading of torque value
- 165.6 Ratcheting Kind, click sound after achieving the torque
- 165.7 Each unit should be individually serial numbered & includes calibration certificate traceable to international standards
- 165.8 Accuracy: $\pm 4\%$
- 165.9 Torque Range 5 - 25 Nm
- 165.10 Fine scale 0.1 Nm
- 165.11 Length 325 mm
- 165.12 3/8 inch square drive
- 165.13 Torque Range 20 - 100 Nm
- 165.14 Fine scale 0.5Nm
- 165.15 Length 400 mm
- 165.16 1/2 inch square drive
- 165.17 Torque Range 40 - 200 Nm
- 165.18 Fine scale 0.5Nm
- 165.19 Length 515 mm
- 165.20 1/2 inch square drive



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

166 Trammel Points - with Beam 600 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 03 –ITEM NO -28

166.1 Basic Indicative Diagram



166.2 Beam size: 600 mm \pm 2 mm

166.3 Scribes circle Diameter: 900 mm \pm 2 mm

166.4 Should be useful instrument for draftsmen, tool makers and machinist with fineadjustment for accurate layout work.



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

167 Cut Section Model - Turbocharger

As Per DVET, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO - 11

167.1 Basic Indicative Diagram



167.2 Should be suitably sectioned to demonstrate the internal construction details showing the minute information,

167.3 The model is suitably sectioned to show the internal details such as turbine and compressor wheel, gun metal bushes, oil path etc

167.4 The model should be suitably painted and mounted on a suitable

167.5 wooden base. Suitable color painting to be done for different parts for

167.6 easy identification Vinyl Display Board displaying Turbo Charger with naming.



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

168 Tyre Pressure Gauge with Holding Nipple

As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS –ITEM NO -11

168.1 Basic Indicative Diagram



- 168.2 Easy change chuck
- 168.3 system1 button operation
- 168.4 Auto shut-off for increased battery life
- 168.5 Displays KgF, BAR, PSI, KPA measurements
- 168.6 Large face LCD digital read-out
- 168.7 Unit covered with rubber sleeve for extra comfort and durability
- 168.8 ON power Button, auto shut off in 90 seconds if not in use
- 168.9 LCD backlight
- 168.10 2-position lever – 1st position deflates, 2nd position inflates.
- 168.11 With 21” hose
- 168.12 2 AAA batteries



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

169 Universal Puller - 3 Leg, 200 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 03 –ITEM NO -173

169.1 Basic Indicative Diagram



169.2 Should generally conform to I.S 9193 - 1988

169.3 No of Jaws: 3

169.4 Minimum Spread: 35 mm

169.5 Maximum Spread: 200 mm

169.6 Drop forged jaws made of carbon Steel

169.7 Hardness: 35 - 45 HRC

169.8 Reversible Jaw design to enable inside and outside operation

169.9 Jaw Design should allow flexibility of use in shallow or deep spaces

169.10 Screw threads should be precision maintained

169.11 The Pulling force should be equally distributed evenly on the bearing or gear to facilitate smooth and fast operation without any damage to bearing or gear

169.12 Protective cap on screw end to increase life of screw tip. The center screw is provided with a special adjustable cap for better gripping.

169.13 Screws should be black anodized

169.14 Jaws, link plates, protective cap and connecting bolts should be plated



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 03

170

V Block - 75 x 40 X 40 mm with Clamp

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 03 –ITEM NO -206

170.1 Basic Indicative Diagram



- 170.2 Length: 75 mm \pm 1mm
- 170.3 Total Width.: 40 mm \pm 0.2 mm
- 170.4 Total Height: 40 mm \pm 0.2 mm
- 170.5 Angle: 90 Degree
- 170.6 Veerun out: 10 μ
- 170.7 Clamping capacity: 25 mm



171 Vacuum gauge

Specifications prepared by Institute committee..
Specification Trade mechanic diesel-2024

171.1 Basic indicative diagram



171.2 Use - checking vacuum in engine cylinder.

171.3 Material - mild steel

171.4 Measuring Range 0 to -760 mm Hg

171.5 Suitable leakproof rubber pipe connection to gauge

171.6 Manufactured by standard company

171.7 Provided with suitable Wooden/ Plastic/ Metal Box



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** Regional

Office, PUNE.

172 Valve Lifter

Specifications prepared by committee.. Specification Trade mechanic diesel-2024

172.1 Basic indicative diagram



172.2 Suitable for small/medium OHV engines

172.3 75mm to 165mm capacity

172.4 Material Alloy steel

172.5 Easy to operate

172.6 Rubber grip handle for comfortable hand grip.



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** Regional

Office, PUNE.

173 Valve spring compressor universal

Specifications prepared by committee. Specification Trade mechanic diesel-
2024

173.1 Basic indicative diagram



173.2 Suitable for small/medium OHV engines

173.3 70mm to 165mm capacity

173.4 Material Alloy steel

173.5 Easy to operate

173.6 Rubber grip handle for comfortable hand grip.

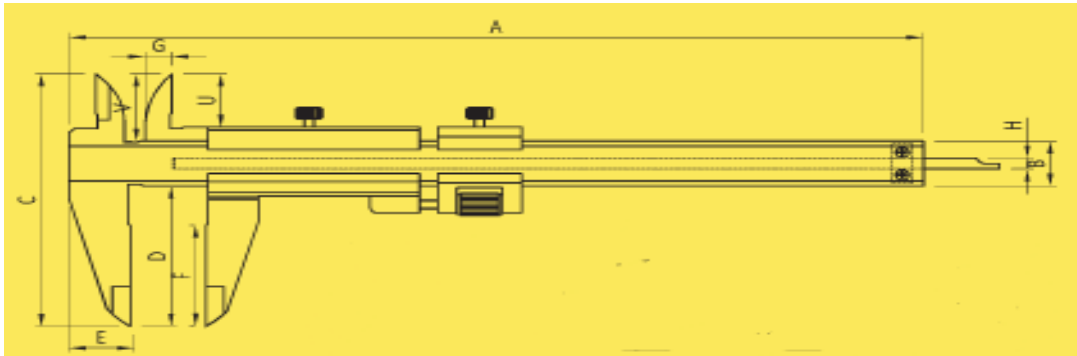


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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

174 Vernier Caliper - 0 - 280 mm, LC = 0.02 mm with fine adjustment

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS – ITEM NO - 59

174.1 Basic Indicative Diagram:



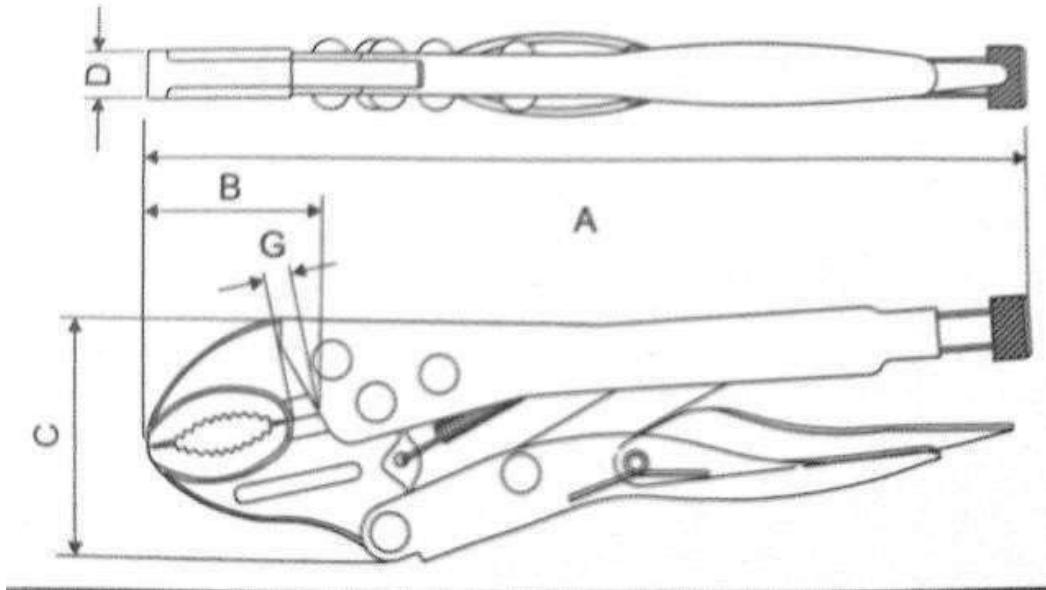
- 174.2 Compliance: Generally Compliant to DIN 862
- 174.3 Range: 0 mm - 280 mm
- 174.4 Overall Length: 400 mm
- 174.5 Lower jaw length: Min. 60 mm
- 174.6 Upper jaw length: Min. 25 mm
- 174.7 Graduation: 0.02 mm
- 174.8 Accuracy: ± 0.05 mm
- 174.9 Material: Stainless Steel / Alloy Steel
- 174.10 Standard Accessories:
- 174.11 Operating Manual
- 174.12 Wooden / Plastic Box with proper cushioning



175 Plier - Vice Grip - 250 mm

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENT VOLUME 03 –ITEM NO - 100

175.1 Basic Indicative Diagram



175.2 Generally conform to IS 10372 - 1982

175.3 Size: A: 250 mm, B: 45 mm, C: 65 mm, D: 12 mm

175.4 Curved jaw

175.5 Jaws should be forged from High grade Alloy Steel

175.6 Jaws should be specially hardened and tempered to give tough body

175.7 Handles should be made from good quality cold drawn Steel sheets

175.8 End Screw is provided with knurling for quick jaw adjustment

175.9 Smooth, Quick releasing mechanism helps in single handed operation

175.10 Nickel Plated for rust prevention



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** .

176 Water pump for dismantling and assembling

Specifications prepared by committee.. Specification Trade mechanic diesel-2024

176.1 Basic indicative diagram



- 176.2 Water pump type - Centrifugal type
- 176.3 Suitable for 4/6 cylinder engine
- 176.4 Use in water cooling system of engine
- 176.5 Manufactured by standard company
- 176.6 Good working condition item should be used
- 176.7 Brand new item
- 176.8 Parts catalogue suitable sketch on Vinyl Board
- 176.9 Water pump consists parts such as impeller, bearing, Pulley, water seal etc

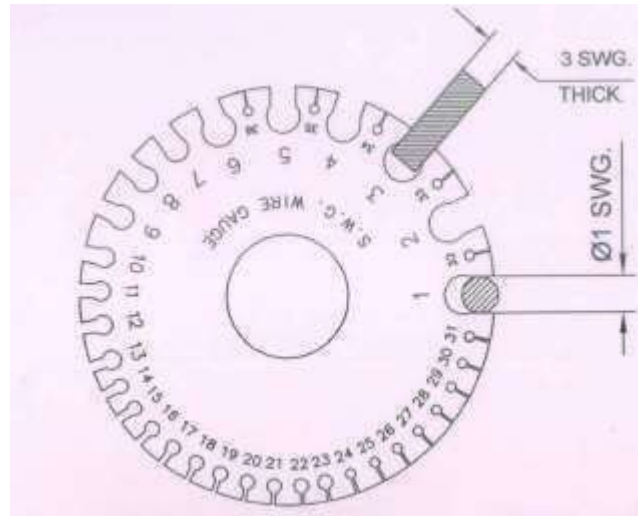


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SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS GROUP ITEMS

177 Sheet Metal Gauge

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL MEASURING EQUIPMENTS –ITEM NO - 25

177.1 Basic Indicative Diagram



- 177.2 Material: Stainless - X12CrMnNiN18-9-5
- 177.3 Thickness: 1.0 mm
- 177.4 Hardness: 30-35 HRC (specially hardened)
- 177.5 Finish: Polished 2B / Antiglare Satin Chrome
- 177.6 Surface roughness: 0.6 microns max
- 177.7 Range: 0-36 SWG (incremental of 1 gauge)
- 177.8 Measuring least count: 36 swg (0.19 mm)
- 177.9 Accuracy: Within + 0.05 mm
- 177.10 Should be supplied in Wooden / Plastic Box with proper cushioning



178 Work bench

Specifications prepared by committee.. Specification Trade
mechanic diesel-2024

178.1 Basic indicative diagram



178.2 Work bench size 250x120x60 cm.

178.3 work bench legs made of 75x75x5mm ISI/ISO Certified M.S angle

178.4 work bench frame made of 65x65x5mm ISI/ISO Certified M.S angle

178.5 Work bench Top made of size 62mm thickness, Length
240cm & width 200mm in M.S. frame

178.6 Work bench frame structure in Rigid, strong, durable.

178.7 Work bench have four locker on Left side & four locker on right side

Bench Vice

178.8 Four Bench vice fitted on work bench shown as in figure.

178.9 Total Length: 380 mm \pm 2 mm

178.10 Height: 155 mm \pm 2 mm

178.11 Jaw Width: 125 mm \pm 2 mm

178.12 Jaw depth: 70 mm \pm 2mm

178.13 Jaw opening: 145 mm \pm 2mm

178.14 Body should be made from shock resistant Cast Iron &
should be .free from sand holes

178.15 Malleable Steel nuts for extra tuff grip.

178.16 Jaw made of special carbon Steel (properly heat treated grinded).



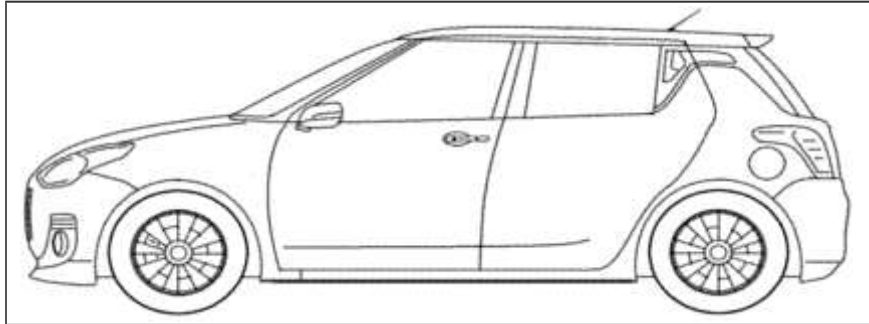
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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** .

179 Air conditioned CRDI Vehicle in running condition-LMV Specifications prepared by committee.. Specification Trade mechanic diesel-2024

179.1 Basic indicative diagram



- 179.2 Light motor vehicle like car
- 179.3 Fuel used - Diesel
- 179.4 Engine specification,
- 179.5 Four cylinder inline diesel
- 179.6 Engine Displacement 1200 - 1300 cc
- 179.7 BHP - 70 to 80
- 179.8 Torque 190 - 200 NM
- 179.10 Fuel system - CRDI
- 179.11 BS 6 engine
- 179.12 Transmission - Manual 5 forward, 1 reverse gear
- 179.13 Clutch – Hydraulically actuated single plate clutch
- 179.14 Brake - Hydraulic brake system with booster, equipped with
ABS Front wheel - Disc brake, Rear wheel - Drum brake
- 179.15 Vehicle must be Air conditioned
- 179.16 Front dual Air bag is essential
- 179.17 Mechanical hand brake(Parking brake)
- 179.18 Battery 12 volt with 2/ 4 year warranty
- 179.19 Steering system - Power steering
- 179.20 Electrical system 12 volt.
- 179.21 Spare wheel & tool kit



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** .

180 Arbor press hand operated 2 ton capacity

Specifications prepared by
committee. Specification Trade
mechanic diesel-2024

180.1 Basic indicative diagram



180.2 Manual - Hand operated press

180.3 Capacity 02 ton

180.4 Material - Cast iron

180.5 Arbor type - Square ram

180.6 Arbor size = 1. 1/4"

180.7 Arbor material - Alloy Steel

180.8 Press mechanism - Rack & pinion

180.9 Handle Size - 500mm - 700 mm



181 Automotive exhaust 5 gas analyser
(petrol & Diesel) or Diesel Smokemeter

Specifications prepared by committee.. Specification
Trade mechanic diesel-2024

181.1 Basic indicative diagram



181.2 Powered by - 12 volt battery / 220-240volt AC

181.3 Personal Computer compatible

181.4 Should analyse Analyse HC,CO, CO2, O2 and NOx gas

181.5 Serial Printer support, Probe

181.6 Testing steel probe & Hose pipe about 05 - 07 meter

181.7 Manufactured by standard company

181.8 Operating demo & service required by company

181.9 Warm up - 10 minute

181.10 Real time diagnosis of exhaust emissions – Lambda/Air

Fuel Ratio and Combustion
Efficiency.

182 Bench lever shears

Specifications prepared by committee.. Specification Trade mechanic diesel-2024

182.1 Basic indicative diagram



- 182.2 Hand operated (Manual) shearing
- 182.3 Cutting Blade made of high quality steel
- 182.4 Blade size with length 250mm to 300 mm
- 182.5 Cutting sheet capacity 24 gauge to 14 gauge
- 182.6 Attachment to fit on table or stand
- 182.7 Length of handle 600 mm to 800 mm
- 182.8 Body material : Cast iron.
- 182.9 Handle length 800 – 1000 mm

Max Shear Width	300mm
Blade Length	300mm
Cutting Capacity (Square) Rod	10 to 13 mm
Cutting Capacity (Sheet)	6 mm
Cutting Capacity (Flat)	70 X 6 mm
Usage/Application	Sheet Cutting
Automation	Manual Hand Operated

KEY FEATURES :- • Angle Iron Cutting Cap :- 25,32,40,50 deg.(thickness Up to 6mm.)

- Last Longer
- Interchangeability
- Tool Steel Hardened

Capacity of blade length :- 12"

183 Diesel Engine - CRDI - 4 stroke for Dismantling and Assembling with Swiveling Stand
As Per Directorate of Vocational Education and Training, Maharashtra State SPECIFICATION FOR
AUTOMOBILE ENGINES- WORKING MODEL –ITEMNO -02

183.1 Basic Indicative Diagram



- 183.2 The model should be made with two stand setup wherein one stand should be mounted with which can be rotated 360 degrees on the stand, so that slowly rotating the handle provided the engine can be rotated and lock and any position and angle to enable the students to assemble or dismantle the engine.
- 183.3 A large oil drip pan should be provided at the bottom to collect the small screws, parts and oil dripping.
- 183.4 The rotating stand is made from steel tube with gears for slow speed operation along with self-retention wheels.
- 183.5 The Paint finished rotating stand should be provided with heavy duty caster wheels with brakes.
- 183.6 The other stand should be fitted with cooling system, exhaust system with Catalytic converter, Fuel system and engine starting system.
- 183.7 By connecting the two stands together with all necessary connection such as radiator connection, fuel line, electrical connections etc. the engine can be started and made to work.
- 183.8 So that the students should understand the fitting and connections involved in the engine starting, also they can check and confirm the reassembling of the engine assembly.
- 183.9 By disconnecting the stands, the engine can be dismantled for practice.
- 183.10 First trolley should contain – Radiator assembly with contain Battery & Dash board fuel tank with wiring harness
- 183.11 trolley should contain – Engine with Swiveling stand.
- 183.12 Diesel Engine CRDI: 4 Cylinder, turbocharged diesel.
- 183.12.1 Aluminium engine head and cast
 - 183.12.2 iron block, Bore: 70 - 90 mm
 - 183.12.3 Stroke: 80 - 110 mm
 - 183.12.4 Displacement: 1186 - 1493 CC
 - 183.12.5 Compression Ratio: (16-22: 1)
 - 183.12.6 Power: 70 - 110 HP at 2200- 4000 RPM
 - 183.12.7 Valve Gear: 4 per Cylinder
 - 183.12.8 DOHC, Ignition & Fuel System: Common Rail Direct
 - 183.12.9 Injection Cooling System: Water Cooling
 - 183.12.10 Fuel Tank: 10 Liter including fuel gauge

- 183.12.11 Including engine assembly torque chart and suitable wiring diagram with colour code on Vinyl Board
- 183.13 On another stand the ECM (Electronic Control Module), Accelerator Pedal, Ignition Key, along with wiring connections are mounted.
- 183.14 The engine should be equipped with the electronically operated Exhaust gas recirculation system.
- 183.15 By assembling both the stands together the engine can be made functional.
- 183.16 The trainees should be able to dismantle the engine and reassemble by inter connecting the two stands.
- 183.17 The trainees should be able to learn the necessary connection for the engine starting and also test for the correctness of the engine after reassembling.



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** .

184 Diesel engine (Running condition) Stationary type Specifications prepared by committee.. Specification Trade mechanic diesel-2024

184.1 Basic indicative diagram



184.2 Stationary type

184.3 Number of cylinder - Single cylinder, vertical

184.4 Number of stroke - 4 stroke

184.5 Fuel used - Diesel

184.6 Ignition type - Compression ignition engine

184.7 Bore - 80 mm

184.8 Stroke - 110 mm

184.9 Rated speed 1500 RPM

184.10 Rated power 05 HP (3.72 kw)

184.11 Compression ratio - 16.5 : 1

184.12 Cooling system - Water cooling

184.13 Cold starting

184.14 Starting handle & related tool kit

184.15 Manufactured by standard company



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SPECIFICATION FOR ELECTRONICS TRAINERS

185 Discrete Components Trainer / Basic electronic trainer

As Per DVET, Maharashtra State SPECIFICATION FOR ELECTRONICS TRAINER –ITEMNO - 04

185.1 Basic Indicative Diagram



- 185.2 Flexibility of making circuit connections
- 185.3 Online learning material for step by step procedure to perform the experiment and other details related to theory and experiments.
- 185.4 Trainer should be RoHS compliant
- 185.5 Trainer should be compact, lightweight and housing should be made of ABS material.
- 185.6 DC Power Supplies: + 5V, 1 A (Fixed), + 12V, 500 mA (Fixed), -12V, 500 mA (Fixed), + 12V, 500 mA (Variable), -12V, 500 mA (Variable)
- 185.7 AC Supply: 9V-0V-9V, 500mA
- 185.8 Breadboard: Breadboard for making various circuits and testing them. External components/IC can be fitted conveniently.
- 185.9 Function Generator: Operating modes Sine, Square and Triangular. Frequency range 1 Hz to 100 KHz.
- 185.10 Volt/ Current/ Frequency Measurement: Voltage Range +12V to -12V DC, Current Range 0 to 500mA DC, Frequency Range DC to 100KHz (All with respect to Ground)
- 185.11 Display: LCD
- 185.12 Computer Interface:Acquisition from two Analog input channels (Max. input 1Volt, Frequency 300Hz to 3.4kHz)
- 185.13 Continuity Tester:For testing the continuity. Provided with beeper sound.
- 185.14 Power Supply: 110-220 V, 50Hz.
- 185.15 Ready to use experiment board should be fitted in place of bread board to perform following experiments on Diode Characteristics (Si, Zener, LED)
 - 185.15.1 Study of V-I characteristics of Silicon Diode
 - 185.15.2 Study of V-I characteristics of Zener Diode
 - 185.15.3 Study of V-I characteristics of Light Emitting Diode (LED)
- 185.16 The trainer should include online single user Classroom / laboratory teaching, learning and simulation software module on Analog Electronic with following key features:
 - 185.16.1 The content should designed by using platforms like Visual Basic, Dot Net, Flash etc. and should be useful to understand the basic concepts of various technologies in electronics including advance technologies, the software should comprises simulations, animations, videos, graphs, charts, along with mandatory rich content and theory to understand fundamental concepts, interactive learning objects, FAQ, MCQ etc. of Analog Electronic with following topics:



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SPECIFICATION FOR ELECTRONICS TRAINERS

185.16.2 Understand the fundamental concept of Electronic Components, Series and Parallel Circuits, Voltage Divider and Current Divider Circuit, Circuit Analysis: Ohm's Law, Kirchhoff's Law, Loop and Mesh Analysis, Star and Delta Network, Network Theorems: Thevenin's, Norton's, Superposition, Maximum Power Transfer, Millman's, Reciprocity, Magnetism, Electromagnetism, Alternating Current Circuits, Transformer, Rectifier, Filter, Semiconductor Devices: Diode, BJT, FET, Operational Amplifier, Power Amplifier, Thyristor Family, Measuring Instruments: Oscilloscope, Multimeter.



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** .

186 Drilling machine bench to drill up to 12mm
dia. Along with accessories

Specifications prepared by committee..Specification Trade
mechanic diesel-2024

186.1 Basic indicative diagram



186.2 Type - bench type

186.3 Electric motor 3 phase 0.5 HP

186.4 Drilling capacity - upto 12 mm

186.5 No. of spindle speed - 3 or 4 speed

186.6 Spindle travel - 100mm - 110 mm

186.7 Range of spindle speed - 500 to 3000 RPM

186.8 Square/round table height can be adjusted on column

186.9 Overall weight of machine - 50 to 60 kg

186.10 Electric starter should be provided with machine

186.11 Manufactured by standard company

186.12 Standard Accessories should provide with machine



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 06

187 Magnetic Particle Testing Kit / Dual Magnetization yoke

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 06 –ITEM NO - 17

187.1 Basic indicative diagram



- 187.2 Kit should contain
- 187.3 Magnetic crack detector,
- 187.4 One AC/HWDC Yoke,
- 187.5 One pair of Cables,
- 187.6 One pair of Prods, ASTM
- 187.7 Dry Powder Blower & Dry Powder
- 187.8 Cord length of Yoke: 6 Feet
- 187.9 Operating Voltage of Yoke: 230V AC, 50 HZ
- 187.10 Output Current of MPI: 1000 Amp
- 187.11 Operating Voltage of MPI: 230V AC
- 187.12 Lifting Capacity of Yoke: 0-5 Kg in AC
- 187.13 Leg Spacing: 0-30 Cm Across Poles
- 187.14 Lifting Capacity in DC of Yoke: 0-30 Kg
- 187.15 Field Indicator to be provided
- 187.16 Testing Block to be provided



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 06

188 Welding Table - 900 X 600 X 750 mm with Fire Bricks

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 06 –ITEM NO - 32

188.1 Basic Indicative Diagram



188.2 Length: 900 mm

188.3 Width: 600 mm

188.4 Height: 750 mm

188.5 Welding Table Top should have arrangement for keeping Fire Bricks.

188.6 Fire bricks of size 240 X 120 X 80 mm (Approx.) should be supplied to cover table top.

188.7 Should have arrangement for mounting Positioner on one side of table with TurnTable with slots to keep JIGs for clamping the Job as required for Welding.

188.8 Positioner should be motorized with Speed Controller and is operated by Foot Switch.

188.9 Should have suitable clamp to hold the job in various positions.

188.10 Clamp should be with Vertical and Horizontal pipe fixed with coupling to adjust Height and Length.

188.11 Water Tank should be made of stainless steel, fitted to one end of the Welding Table

188.12 Should have tool box fitted to the welding table to keep Gas Welding accessories

188.13 Suitable stand should be attached to the Welding Table for keeping Gas Welding Torch

188.14 Should have partition to keep all jobs and other items in the Table.

188.15 Minimum 6 number of Extra Bricks should be provided in addition to the Bricks required for Table TOP



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

189 Grinding machine (general purpose) D.E. pedestal with 300 mmdia. wheels rough and smooth

Specifications prepared by committee. Specification Trade mechanic diesel-2024

189.1 Basic indicative diagram



- 189.2 Power supply 220 volt - 240 volt
- 189.3 Phase - Three phase motor
- 189.4 Power Consumption 1200 - 1500 watt
- 189.5 Frequency 50 - 60 Hz
- 189.6 No Load Speed - 2000 to 3000 RPM
- 189.7 HP - 0.5HP to 2 HP
- 189.8 Grinding wheel diameter - 200mm to 300 mm
- 189.9 Material - Mild steel
- 189.10 Rough and smooth grinding wheels attached
- 189.11 Electric starter should be provided with machine
- 189.12 Manufactured by standard company
- 189.13 Standard Accessories should provide with machine
- 190.14 Wheel guard for both wheels
- 191.15 Eye shield for both wheels
- 191.16 Wheel 2 nos Course & fine



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

Regional Office, PUNE.

190 Heavy Commercial vehicle type (without body on frame) Specifications prepared by committee.. Specification Trade mechanic diesel-2024

190.1 Basic indicative diagram



190.2 Heavy Commercial vehicle like truck(without body on frame)

190.3 Fuel used - Diesel

190.4 Engine specification,

190.4.1 Six cylinder inline diesel engine

190.4.2 Displacement 5000 - 9000 cc

190.4.3 BHP -125 to 150

190.4.4 Torque 350 - 400 NM

190.4.5 Fuel system - CRDI / Rotary pump

190.4.6 BS 6 engine

190.4.7 Water cooled, Turbocharger- intercooler

190.5 Transmission - Manual 6 forward, 1 reverse gear

190.6 Clutch - Hydraulically actuated single plate clutch

190.7 Brake - Air brake system with vacuum brake

190.8 Front wheel - Drum brake, Rear wheel - Drum brake

190.9 Vehicle must be Turbo Charged

190.10 Driver seat required

190.11 Battery 24 volt with 2/ 4 year warranty

190.12 Steering system - Power steering

190.13 Load Capacity 10 to 20 ton

190.14 Number of wheels - 02 front wheel & 04 rear wheels

190.15 Electrical system 24 volt.

190.16 Spare wheel, jack & tool kit

190.17 Manufactured by standard company

190.18 Standard Accessories should provide with vehicle



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

Regional Office, PUNE.

- 191 Hydraulic jack HI-LIFT type -3 ton capacity, and 5 Ton capacity
Specifications prepared by committee.. Specification Trade
mechanic diesel-2024

191.1 Basic indicative diagram



- 191.2 Lifting Capacity: 3 Ton & 5 ton
- 191.3 Useful for - car / jeep
- 191.4 Cast iron / alloy steel lift arm
- 191.5 Sealed hydraulic pump
- 191.6 Required wide frame for stability
- 191.7 Required durable trolley wheels
- 191.8 Required trolley jack with handle
- 191.9 It should hold load



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

Regional Office, PUNE.

192 Liquid penetrate Inspection kit

Specifications prepared by committee.. Specification Trade mechanic diesel-2024

192.1 Basic indicative diagram



192.2 Usage/Application: welding testing, castings, leak testing

192.3 Can Capacity: 250ml to 400 ml

192.4 Chemical Type: liquid

192.5 Kit Contain: Developer, Penetrate, cleaner

192.6 Pack of 03 bottles

192.7 Essential wipe cloth

192.8 Manufactured by standard company



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SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS

193 Multi Scan Tool - Petrol and Diesel Engine

As Per DVET, Maharashtra State SPECIFICATION FOR GARAGE TOOLS & EQUIPMENTS –ITEM NO -04

193.1 Basic Indicative Diagram



- 193.2 Multi Scan Tool with Android based operating system. Should have display of minimum size 10" sunlight readable touch screen with CPU of 1.2 GHZ quad core and 2GB Ram. Memory capacity should be of min 16 GB to accommodate entire diagnostic software application and diagnostic data. At least 7000 mAH lithium polymer Battery.
- 193.3 Should have front and rear camera for taking photo of components.
- 193.4 Should have wireless Connectivity
- 193.5 with car. Should have solid and rigid design.
- 193.6 Should have demo mode to teach students diagnostic functionality without actually connecting car with scanner.
- 193.7 Should connect with wireless printer supplied with scanner to print the trouble
- 193.8 codes. Should have a function of recording live data streaming which can be played at any time.
- 193.9 Should have actuation test functionality to test component without running the engine.
- 193.10 Should support freeze frame data
- 193.11 function. Should allow access to
- 193.12 diagnostic community. Customer management for the workshop.
- 193.13 Special functions: key matching, key coding, key programming, battery reset, break reset
- 193.14 Remote diagnosis & maintenance.
- 193.15 4 channel oscilloscope to show result of vehicle's sensor or actuator circuits and visualizes the signals in the graphic waveforms in scanner's hardware itself.
- 193.16 Should have all diagnostic adaptor for all Asian, European and USA brands available in India
- 193.17 One click update online via Wi-Fi.
- 193.18 Built in car repair procedure data base and car repair tips application at least for Indian cars.
- 193.19 Should have digital multi meter function that performs the measurement of voltage, resistance, frequency and display it in scanner screen itself.
- 193.20 Should have function of sensor testing by sensor simulation test like manually drawn waveform simulation test, predefined sensor's waveform simulation test, DC voltage simulation test, frequency simulation test etc. to find engine sensor faults quickly.
- 193.21 Manual should be provided in English all Indian and Imports
- 193.22 vehicles. Fault finding manual all Indian and Imports vehicles.



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** Regional
Office, PUNE.

194 Pipe Bending Machine (Hydraulic type)

Specifications prepared by committee.. Specification Trade
mechanic diesel-2024

194.1 Basic indicative diagram



- 194.2 Operation Mode Semi-Automatic
- 194.3 Hydraulic type
- 194.4 Max Bending Radius(mm) 0-50
- 194.5 Capacity 10 ton to 20 ton pipe bender
- 194.6 Tripod type Manual Hydraulic Pipe Bender
- 194.7 Suitable cast dies for bending
- 194.8 Standard Accessories should provide with machine



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** Regional
Office, PUNE.

195 Pneumatic rivet gun with standard accessories

Specifications prepared by committee.. Specification Trade
mechanic diesel-2024

195.1 Basic indicative diagram



- 195.2 Air operated rivet gun
- 195.3 Air hose 1/2"
- 195.4 Suitable adapter to hose
- 195.5 Stroke: 20 mm
- 195.6 Air Pressure: @7.0 Kg/cm²
- 195.7 Material - steel
- 195.8 Should suitable for both aluminium and steel rivets
- 195.9 trigger operated gun with hardened steel jaw assembly
- 195.10 Standard Accessories should provide with gun
- 195.11 Manufactured by standard company
- 195.12 Provided with suitable Wooden/ Plastic/ Metal Box



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** Regional

Office, PUNE.

196 Spring tension tester

Specifications prepared by committee.. Specification Trade
mechanic diesel-2024

196.1 Basic indicative diagram



196.2 Material- steel/ cast iron

196.3 Range 5- 500 mm

196.4 Accuracy- 0.01 kg

196.5 Surface Finishing Hardcore

196.6 Quick and accurate measurement

196.7 Spring tension display on gauge

196.8 Standard Accessories should provide with tester



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

197 Tin smiths bench folder

Specifications prepared by committee.. Specification Trade mechanic diesel-2024

197.1 Basic indicative diagram



197.2 Bench folder frame Cast iron/ Mild steel

197.3 Size 600x1.6 mm

197.4 Operation - Manual

197.5 Sheet Material - Mild Steel, Stainless Steel, Iron

197.6 Max Bending Radius 610mm

197.7 Max Thickness 4mm

197.8 Usage For Sheet Bending



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 06

198 Air Compressor - Portable Trolley Type - Single Cylinder - 45 liters Capacity Air tank, Working Pressure 6.5 kg/ cm² with standard accessories

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 06 –ITEM NO - 02

198.1 Basic indicative diagram



- 198.2 Should have two pressure gauges, one for pressure setting in the receiver and one for regulating the outlet pressure from the receiver.
- 198.3 Should have pressure switch with overload protection keeps the compressor safe even in voltage fluctuations.
- 198.4 Should have oil dipstick with vent hole keeps a check on oil level in the oil sump and releases excess pressure.
- 198.5 Should have pressure regulator to regulate the outlet pressure from the tank.
- 198.6 Should have plastic shroud keeps the hot and moving parts safe and prevents any accidents.
- 198.7 Should have shock absorber pad effectively absorbs the vibration generated during operation and keeps the whole unit stable.
- 198.8 Should have large wheels (125 mm diameter) to enhance the portability of the compressor.
- 198.9 Should be supplied with Poly Urethane retractable hose for attaching any equipment
- 198.10 Cylinder block should be made up of cast iron that prevents wear & tear thus imparting longevity to the unit
- 198.11 Crankcase & cylinder head should be made from aluminium
- 198.12 Pump head should be directly coupled with the motor for reliable and quiet operation.
- 198.13 Motor Rating: 1.5 KW, 2 HP
- 198.14 Cylinder: 1 stage
- 198.15 Air receiver capacity: 50 litres
- 198.16 RPM: 2850 fad (free delivery) 170 lpm / 6 cfm max.
- 198.17 Pressure: 116 PSI / 8 Bar
- 198.18 Noise level: 80 db
- 198.19 Dimensions
- 198.19.1 Width: 600 to 650 mm
- 198.19.2 Depth: 300 to 350 mm
- 198.19.3 Height: 550 to 600 mm
- 198.20 Weight: Min 35 Kg
- 198.21 Electric Supply: 230V, 1 Phase, 50 Hz



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 06

199.1 Oxy Acetylene Gas Cutting Blow Pipe

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 06 –ITEM NO - 01,05,09,12,13,14,15

199.1.1 Basic indicative diagram



- 199.1.2 Should have ANM nozzle for use with Acetylene
- 199.1.3 Should have “positive suction” NM nozzles to safeguard the torch and operator from “sustained backfire” or “flashback”.
- 199.1.4 Maximum cutting thickness: 300 mm
- 199.1.5 Length of torch: 450 to 500 mm
- 199.1.6 Weight of torch: 1 to 1.5 Kgs
- 199.1.7 Standard: Generally conforming to IS: 7653 – 1975 and Certified by Bureau of Indian Standards.
- 199.1.8 Should be supplied with ISI certification license number



199.2 Cylinder trolley

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 06 –ITEM NO - 01,05,09,12,13,14,15

199.2.1 Basic indicative diagram



199.2.2 Should be suitable to be used with full size Oxygen & Acetylene Cylinders.

199.2.3 Should have robust Construction

199.2.4 Should have Solid wheels for easy movement

199.2.5 Should have Safety chain for securing cylinders

199.2.6 Wheel Size: 10 to 12 Inch



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199.3 Acetylene Gas Pressure Regulator Double Stage

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 06 –ITEM NO - 01,05,09,12,13,14,15

199.3.1 Basic indicative diagram



- 199.3.2 Compliance: generally conforming to IS: 6901 - 2009.
- 199.3.3 Should have stainless steel diaphragm in first stage to absorb shock of inlet pressure up to 230 bar.
- 199.3.4 Should have flexible rubber diaphragm in second stage for fine gas control.
- 199.3.5 Should have forged brass bonnet in first stage and die cast special alloy bonnet in second stage for higher strength.
- 199.3.6 Should have Teflon moulded valve at the heart of the regulator and stainless steel machined & ground valve spindle in the valve assembly capsule in both stages for leak-proof performance.
- 199.3.7 Should have distinctive colour for pressure adjusting knob labels.
- 199.3.8 Should have triple filter: one in inlet and two wire-mesh in the valve assembly protect the sensitive internal parts from any dust particles.
- 199.3.9 Weight: 2.40 Kg.
- 199.3.10 Should have self-adjusting safety valve, Double protection through separate safety valves in first and second stage.
- 199.3.11 Should have second stage plenum chamber volume is six times than first stage ensuring very stable flow characteristics.

Acetylene

Max Inlet Pressure: 25 BAR

Max Outlet Pressure: 1.5 BAR

Max Flow: 250 LPM

Inlet Connections: 5/8" BSP LH (Male)

Outer Connections: 3/8" BSP LH (Male)



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199.4 Oxygen Gas Pressure Regulator Double Stage

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 06 –ITEM NO - 01,05,09,12,13,14,15

199.4.1 Basic indicative diagram



- 199.4.2 Compliance: generally conforming to IS: 6901 - 2009
- 199.4.3 Should have stainless steel diaphragm in first stage to absorb shock of inlet pressure up to 230 bar.
- 199.4.4 Should have flexible rubber diaphragm in second stage for fine gas control.
- 199.4.5 Should have forged brass bonnet in first stage and die cast special alloy bonnet in second stage for higher strength.
- 199.4.6 Should have teflon moulded valve at the heart of the regulator and stainless steel machined & ground valve spindle in the valve assembly capsule in both stages for leak-proof performance.
- 199.4.7 Should have distinctive colour for pressure adjusting knob labels.
- 199.4.8 Should have triple filter: one in inlet and two wire-mesh in the valve assembly protect the sensitive internal parts from any dust particles.
- 199.4.9 Weight: 2.40 Kg.
- 199.4.10 Should have self-adjusting safety valve, Double protection through separate safety valves in first and second stage.
- 199.4.11 Should have second stage plenum chamber volume is six times than first stage ensuring very stable flow characteristics.

Oxygen (O)

Max Inlet Pressure:	230 BAR
Max Outlet Pressure:	10 BAR
Max Flow:	1000 LPM
Inlet Connections:	5/8" BSP RH (Male)
Outer Connections:	3/8" BSP RH (Male)



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199.5 Rubber Hose - Acetylene, Diameter = 8 mm, Length = 10 metres

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 06 –ITEM NO - 01,05,09,12,13,14,15

199.5.1 Basic indicative diagram



199.5.2 Should be manufactured as per IS 447

199.5.3 Diameter: 8 mm

199.5.4 Length: 10 Meters

199.5.5 Should be highly flexible and electrical resistant

199.5.6 Should be light in weight and abrasion resistant

199.5.7 Colour: RED

199.5.8 Core: Plasticized PVC

199.5.9 Reinforcement: High Tensile Polyester Yarn

199.5.10 Cover: Hyper Flame Retardant Thermo-compound

199.5.11 Temperature Range: -400C to +550C

199.5.12 Hose Inner Diameter (NOM.): 8.0 mm

199.5.13 Hose Outer Diameter (NOM.): 16.0 mm

199.5.14 Working Pressure: 200PSI / 15bar

199.5.15 Minimum Bursting Pressure: 800 PSI / 55bar

199.5.16 Minimum Bending Radius: 25mm



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199.6 Rubber Hose - Oxygen, Diameter = 8 mm, Length = 10 metres

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 06 –ITEM NO - 01,05,09,12,13,14,15

199.6.1 Basic indicative diagram



199.6.2 Should be manufactured as per IS 447

199.6.3 Diameter: 8 mm

199.6.4 Length: 10 Meters

199.6.5 Should be highly flexible and electrical resistant

199.6.6 Should be light in weight and abrasion resistant

199.6.7 Colour: BLACK/ BLUE

199.6.8 Core: Plasticized PVC

199.6.9 Reinforcement: High Tensile Polyester Yarn

199.6.10 Cover: Hyper Flame Retardant Thermo-compound

199.6.11 Temperature Range: -400C to +550C

199.6.12 Hose Inner Diameter (NOM.): 8.0 mm

199.6.13 Hose Outer Diameter (NOM.): 16.0 mm

199.6.14 Working Pressure: 200PSI / 15bar

199.6.15 Minimum Bursting Pressure: 800 PSI / 55bar

199.6.16 Minimum Bending Radius: 25mm



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199.7 Rubber Hose Clips - 1/2 inch

As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME 06 –ITEM NO - 01,05,09,12,13,14,15

199.7.1 Basic indicative diagram



199.7.2 Size: 1/2 Inch

199.7.3 Should be suitable for clamping hose pipe for welding purpose

199.7.4 Material: Stainless Steel



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SPECIFICATION FOR MECHANICAL TOOLS AND EQUIPMENTS GROUP ITEMS – VOLUME 06

200 **Welding Transformer - 300 A, OCV 60 - 100 V, 60% Duty Cycle with Standard Accessories**
As Per DVET, Maharashtra State SPECIFICATION FOR MECHANICAL TOOLS & EQUIPMENTS VOLUME
06 –ITEM NO - 28

200.1 Basic indicative diagram



- 200.2 Three phase Welding Transformer with 'Open-delta' design for conversion of three phase input into single phase output
- 200.3 Should have user friendly AC ARC Welder with Stepless, smooth and infinitely variable current regulation
- 200.4 Should have forced air cooled transformer – with less coil temperature rise resulting in longer service life
- 200.5 Should have stepless, smooth and infinitely variable current regulation by moving core magnetic shunt design
- 200.6 Should have adjustment of welding current possible even while welding is in progress
- 200.7 Should have one swivel front wheel and two rear wheel arrangement for easy manoeuvrability from job to job on the shop-floor
- 200.8 Should have ON-OFF switch control, current control and current indicator provided on the front panel
- 200.9 Input supply: 380 / 415 V AC, 3 phase, 50 Hz
- 200.10 Input KVA @ 415 V supply @ 100% Duty Cycle: 16.5
- 200.11 Input Switch Fuse Rating: 55 A
- 200.12 Recommended Capacitor rating for Power factor correction: 6 KVAR
- 200.13 Open circuit voltage @ 415 V input supply: 65 V AC or higher
- 200.14 Welding Current range: 40 – 300 A AC
- 200.15 Welding Voltage range: 22 – 32 V AC
- 200.16 Welding current at 40°C, 10 minute cycle, @ 60% duty cycle: 225 A AC
- 200.17 Welding current at 40°C, 10 minute cycle, @ 100% duty cycle: 175 A AC
- 200.18 Maximum intermittent hand welding current: 300 A AC
- 200.19 Applicable Electrode sizes: 2.5 – 5 mm
- 200.20 Cooling Type: Forced Air
- 200.21 Ambient temperature rating: 40°C
- 200.22 Class of insulation: A
- 200.23 Degree of protection: IP 23 S
- 200.24 Dimensions L X W X H in mm 720 X 500 X 800 (Approx.)
- 200.25 Weight: 125 Kg (Approx.)



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SPECIFICATION FOR AUTOMOBILE ENGINES - WORKING MODELS

201 Working Model - CRDI, 4 Stroke Diesel Engine Assembly with Fault Simulation Board

As Per Directorate of Vocational Education and Training, Maharashtra State SPECIFICATION FOR AUTOMOBILE ENGINES- WORKING MODEL –ITEMNO -05

201.1 Basic Indicative Diagram



- 201.2 The device should be designed based on latest technology diesel engines with Common rail direct fuel injection system.
- 201.3 The trainer should be able to simulate engine start up, speedup, slowdown and other actions so as to illustrate the structure and working principle of CRDI engines
- 201.4 The Engine should be 4 Cylinder, turbocharged with inter cooler diesel.
Aluminium engine head and cast iron block.
- 201.4.1 Displacement: 1500 - 2500 CC
- 201.4.2 Maximum Power: 70 - 110 HP
- 201.4.3 Ignition & Fuel System: Common Rail Direct
- 201.4.4 Injection Cooling System: Water Cooling
- 201.4.5 Fuel Tank: 10 Liter with fuel gauge
- 201.4.6 Engine Specification board – suitable for engine
- 201.5 Real and operating CRDI Diesel engine, illustrating the structure and working
- 201.6 process. Engine management circuit diagram with wiring colour code and internal diagram of the ECU with part listing and naming should be printed on to Colour printed board base.
- 201.7 Test points should be provided on the printed base so that different voltages/current, resistance values etc. can be tested/understood using a Multimeter.
- 201.8 Automobile meters should be fitted on to the training module along with the printed circuit diagram, to demonstrate engine speed, temperature, fuel pressure, charging light etc.,
- 201.9 The training module should be fitted with diagnostic socket (DLC) for universal automobile decoder (Scan tool) to read fault codes, clear fault codes and read data stream.
- 201.10 Fault setting switch bank should be provided to induce faults in the training module to Set, demonstrate and diagnosis the line break, grounding short circuit, improper contact or open circuit faults can be induced, user can adjust the number and type of faults.
- 201.11 Diagnostic reader should be attached to the model to display the error codes.
- 201.12 Good working condition engine should be provided with fuel tank and battery. Throttle control is provided on the module to accelerate.



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- 201.13 The training module should be fabricated using steel pipe frame with spray painted for good looks and the entire setup is provided with caster wheels with brakes for easy movement of the same.
- 201.14 The model should be equipped with colour circuit diagram of engine management system and its external connection and parts, so that the trainees can easily identify the wiring connections to different sensors and actuators.
- 201.15 The model should be mounted on to sturdy iron frame with caster wheels with brakes so that the model can be easy to carry from one place to another place
- 201.16 The CRDI engine should be equipped with DLC Socket, to connect the scan tool for diagnosis and fault codes, live data stream reading.
- 201.17 Fault setting switch bank is provided along with the engine so that the trainees can create troubles and check the reaction of the engine and diagnosis the problem and rectify.



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SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

202 Cut Section Model - 4 Cylinder Diesel Engine

As Per Directorate of Vocational Education and Training, Maharashtra State SPECIFICATION FOR AUTOMOBILE PARTS-CUT SECTION & WORKING MODEL –ITEMNO -03

202.1 Basic Indicative Diagram



- 202.2 The cutting should enable the moving parts like connecting rod, piston, valve & spring, pump, crankshaft, Timing gear / chain etc. are visible
- 202.3 Internal components - timing gears, chain, hardware (bolts & nuts), push rod should be chrome plated
- 202.4 Inlet Valve & Outlet Valves should be painted differently.
- 202.5 Cooling system in sectional - radiator, water pump, elbow, water jackets and Thermostat Valve.
- 202.6 Lubricating System in sectional - oil pump, oil filter, oil chamber.
- 202.7 Fuel Supply system in sectional - Fuel injection pump (CRDI), injector (only two injector cut), air cleaner, intake manifold.
- 202.8 Exhaust system in sectional - exhaust manifold, silencer catalytic converter.
- 202.9 Electrical system in sectional - starter & Alternator.
- 202.10 The following movable & stationary parts should be visible.
 - 202.10.1 Cylinder Head
 - 202.10.2 Engine Block
 - 202.10.3 Piston, Rings and Connecting Rod
 - 202.10.4 Rocker Shaft Assembly
 - 202.10.5 Crank Shaft
 - 202.10.6 Timing Gear
 - Fly Wheel
 - Valves
 - Cam Shaft, Tappet & Push Rod
 - Oil Pump
- 202.11 Suitable Electric motor drive with reduction gear to be provided to understand moving parts of engine.
- 202.12 RGB-LED lighting to show the working of four strokes (inlet in white, compression in blue, power in orange and exhaust in red) should be done for all cylinders.
- 202.13 Different color painting to be done for different systems (Intake- Dark blue, Exhaust-Red, Coolant- Light blue, Oil- Yellow, Cut area- Signal red)
- 202.14 Necessary parts of engine should be attractively coloured for better understanding.
- 202.15 Whole assembly should be mounted on suitable metal stand.
- 202.16 Vinyl Display Board displaying complete Engine specifications with engine torque and clearance



203 Fuel injection test bench for calibration of fuel pump

Specifications prepared by committee..
Specification Trade mechanic diesel-2024

203.1 Basic indicative diagram



203.2 Main Motor 5 HP, 3 Phase

203.3 Power supply - 440 V / 220 V

203.4 Testing of No of Cylinders from 2 cylinder to 8 Cylinders

203.5 Tachometer Electric Digital 0 to 9999 RPM with accuracy

203.6 Electronic Multi Strokes 100 - 1200 in steps of 100 strokes

203.7 Fuel Supply By Soundless gear Pump

203.8 Fuel Pump Motor 1 HP, 3 Phase 440 Volts

203.9 Speeds & Control Range 70 - 3200 RPM in both direction

203.10 Phasing Pressure Phasing recorded on digital dial

203.11 Fuel Tank 45 litre Capacity

203.12 RPM : Variable from 0 – 5000 RPM

203.13 Injector Nozzles at 175 kg/cm² pressure

203.14 Pump and Gallery Leakage Testing

203.15 Phasing the Pump

203.16 Calibrating (Flow Testing) the output of each element of the pump

203.17 Setting the Pump for Maximum Output

203.18 Complete Cut-off

203.19 Checking of Governor and Feed Pump Testing

203.20 Should user friendly & standard make

203.21 Along with essential tool kit & user manual.



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SPECIFICATION FOR ELECTRICAL AND ELECTRONICS TOOLS AND EQUIPMENTS GROUP ITEMS

204 Electrical - Electronics Work Bench

As Per DVET, Maharashtra State SPECIFICATION FOR ELECTRICAL & ELECTRONICS TOOLS & EQUIPMENTS –ITEM NO -02

204.1 Basic Indicative Diagram



204.2 Basic Item Specification

An integrated workbench consisting of instrument panel and working table should be suitable for students to learn and perform various experiments of electronics and electrical related subjects. Instruments should be internally electrically connected and should be fitted in the panel such that only front panel and necessary interfaces are easily accessible to use. Structure of workbench should be made up of 1.5 mm thick CRC powder coated pipes with top made up of good quality 19 mm thick plywood and covered with 1.8 mm off white colour mica. The bench working area should be covered by 2 mm thick antistatic mat which helps students to control static discharge as static causes interference or damage to students, equipment and circuitry. There should be demonstration / training at consignee end on how to use Workbench and utilization of this bench for various applications.

204.3 Structure and design of Workbench should follow the below specifications:

The basic structure should be made of 38 X 38 X 1.5 mm CRC powder coated pipes for sturdiness.

The overall dimensions of Workbench should be not less than Width = 1200 mm; Depth = 750 mm; Height = 1150 mm

MS drawers 03 numbers:

Width = 275 mm; Depth = 375 mm; Height = 100 mm and Thickness = 1.2mm with handle & separate lock on each drawer should be provided

For the panel section, raised back height of 1200mm from floor with matching height support from the side at a depth 500mm for instrument housing with a MS Panel strip below it for housing Electrical Sockets and Switches for external use.



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Two Pole MCB (32A – Havells / Siemens) to be provided for safety of Workbench

There should be provision to mount main / mother training and development platform on front panel along with the instruments for easy performing the experiments which should provide visibility for the students working in a group.

Workbench should work on Mains Supply - 240 V AC, 50 Hz

204.4 Technical specifications of instruments and facility to be installed on the Workbench should be as under:

50 MHz Four Channel Digital Storage Oscilloscope

10 MHz Function Generator with Counter (DDS Technology)

Dual DC Programmable Power Supply, 2 X 30 V, 2 A

Temperature controlled Soldering and De soldering station with soldering iron and de soldering gun

Multimeter cum LCR Meter

Transformer Induction

Coil Rheostat and

Dimmer

Various Meter assembly – Analog voltmeter, ammeter, wattmeter, multifunction meter, energy meter, power factor meter, frequency meter and flux meter

A set of training platform with experimental boards to cover experiments mentioned

204.5 50 MHz Digital Storage Oscilloscope:

50 MHz, 4 analog Channel Digital Storage Oscilloscope should have 1 GSa / s sampling and minimum 12 Mpts Memory Depth, Vertical range 1 mV / div -10V / div, Horizontal range 5ns / div to 50 s / div, PC interface USB Host and Device, LAN, Aux Output (Trig Output / passfail), it should also have automatic measurements and Frequency counter, advance and multi triggering like edge, slope, pulse, video, pattern facilities, 7 inches WVGA TFT Display.

204.6 10 MHz Function Generator with Frequency Counter (DDS Technology):

Direct Digital Synthesis based waveform generation technique, 3.5 Inch TFT True Color LCD, 10 MHz Sine, 4 MHz Square and 350 Khz Pulse, Ramp, Triangle and Arbitrary waveforms 5 MHz, Noise, and DC waveforms, More than 25 Arbitrary waveforms, 10 Bits, 100 MSa/s, 4 K points arbitrary waves, AM, FM and FSK modulation types, Sweep and Burst / ASK operation, 10 mVpp to 20 Vpp amplitude range, graphical interface for user to create and generate custom waveforms, display of many parameters on same screen, time mark generation, 50 MHz External Frequency Counter, serial interface.

204.7 30 V - 2 A Dual output DC Programmable Power Supply:

Dual DC 0-30 V, 0-2 A Power Supply with color LCD for Voltage and Current, Step increment for Voltage - Keypad, Cursor and Encoder for setting, Constant Voltage and Constant Current Source, Resolution Voltage 100 mV, Current 10 mA, Load and Line Regulation with standard parameter, indication of Over load, over voltage, over current and short circuit by beeper, Front panel control through state of art technology using microcontroller.



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204.8 Soldering / De soldering Station:

60 W Microcontroller based Temperature Controlled Soldering and De soldering Station with Set / Read of temperature with separate display for soldering and disordering, Menu keys to set temperature, Digital calibration to avoid analog components tolerances, Burn proof silicon cable with thermal resistance up to 600° C, Blower with 12V DC SMD Iron, de soldering pump diaphragm type, Input voltage for soldering and de soldering 170 to 270 V, temperature range for soldering 180 to 270°C and for de soldering 180° to 480°C. SMD Iron to solder and de solder SMD components.

204.9 Digital Multimeter cum LCR Meter:

Large 999 Counts LCD Display 3 ½ Digital Multimeter with LCR Tests AC / DC Voltage and Current, Resistance, auto ranging Frequency and Capacitance, Transistor (hFE) Check, duty cycle, Diode and Continuity measurement Data Hold and Display Back Light Safety DC voltage range 200 mV to 1000 V, DC current Range 20 mA to 10 A, AC Voltage 200 mV to 750 V, AC Current 20 mA to 10 A, Resistance 200 Ohm to 2000 M Ohm, Frequency 2 KHz - 15 MHz, Capacitance 2 nF to 200 microF, Inductance 2 mH to 20 H, Diode Test 1.0 mA ± 0.6 mA 3 Vmax, Duty Cycle Range 10% to 90%

204.10 1KVA Single Phase Transformer

Rating: 1KVA

Primary Voltage: 0-125V, 0-125V

Secondary Voltage: 0-125V, 0-125V with multi taping arrangement

Flexibility to configure step-up, step-down and Isolation Transformer.

Load Test and correspondingly determine the Efficiency and Voltage Regulation in a Single Phase Transformer

Study of Transformer

Study of Transformation Ratio in a Single Phase Transformer

Study of Polarity Test in a Single Phase Transformer

Study of Open Circuit Test in a Single Phase Transformer

Study of Short Circuit Test in a Single Phase Transformer

204.11 Inductor Coil:

3 Nos to Study Power Factor through inductive coil 0.8 mH, 500 mA, Input 240 v AC

204.12 Dimmer stat and Rheostat:

Single phase close type 10 A Dimmer stat with output range is 0-270 V AC and operating range is 240 V AC, Sliding type 220 Ohm, 2.8 A Rheostat with insulated wire copper carbon brush sliding contacts

204.13 Various Meter Assembly:

Digital Panel Meter:

Should be Microcontroller based, reliable and accurate designed with 3.5 Digit Seven Segment Display in following ranges:

AC Voltmeter - Voltage (02 Nos): 0 – 500V

DC Voltmeter - Voltage (02 Nos): 0 – 300V

AC Ammeter - Current (02 Nos): 0 – 10A

DC Ammeter - Current (02 Nos): 0 – 10A



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204.14 Analog Meters (1 each):

Analog voltmeter DC (0-10 V), (0-1 V) and Analog Ammeter (0 -1 A), (0-500 mA)

204.15 Single Phase Wattmeter:

Microcontroller based Accurate and Reliable design, 4 - Digit Seven Segment Display
Input voltage 0-250 V AC, Input Current: 0 – 5A AC, Watt : 10-1500 W

204.16 Single Phase Multifunction Meter:

Single phase multifunction meter to measure seven different parameters like Voltage : 10 – 240 Vrms, Current : 0.2 – 5 Arms, Active Power : 10-1200 Watt, Apparent Power : 10-1200 VA, Reactive Power: 10-1200 VAR, Frequency 45-55 Hz, Power Factor 0.50L – 0.50C with display on seven segment.

204.17 Digital Energy Meter:

Microcontroller based Accurate & Reliable design, CT is used as current transducer for better accuracy, 4-Digit High brightness Seven Segment Display.

204.18 Power Factor Meter:

Microcontroller based Accurate & Reliable design, 4-Digit High brightness Seven Segment Display, Frequency Accuracy 45 - 55 Hz.

204.19 Frequency Meter:

Accurate & reliable direct reading design, 4 Digit High brightness seven segment display, directly reads mains line frequency between 45 to 55 Hz.

204.20 Flux Meter:

Type: Digital 4 digit seven segment display; range: 0.1 to 10 Kilo Gauss; sensor probe with a protective cover; Mains operated.

204.21 A set of training platform with experiment boards to cover experiments mentioned:

The training platform should have functional blocks indicated on mimic, on board DC and AC power supplies, Function Generator 1Hz to 100KHz in 06 decades Sine / Square / Triangle waveforms and variable amplitude upto 5V, on board 16 bit data switches and 16 bit LED display, on board Speaker, and Potentiometers, BCD to Seven segment display and pulsar switch (push to on). The training platform must have on board 2 channel of voltage measurement v_1 , v_2 (0-15v), 2 channel of current measurement I_1 , I_2 (0-100 ma), both channel reading must be display on 16X2 LCD.

All experiment boards / modules and should have internally mounted active and passive components, test points, facility to measure signal and waveform at various stages in the circuit, block diagram of the circuit should be printed on mimic, should have an option to work with build in or external power supplies given with other instruments and with main training platform / workbench. The main training platform should have minimum size of 300mm X250mm and the experiment modules / boards should have minimum size of 125mm X 170mm. The complete solutions should comprise with following experimental boards:

Verification of Kirchhoff's Current Law and Voltage Law

Study of V-I characteristics of Silicon Diode, Zener Diode, Light Emitting Diode (LED)

CB, CE, CC configuration of PNP / NPN Transistor and to evaluate Input resistance, Output resistance and Current gain



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Study the characteristics of MOSFET, JFET, UJT, DIAC, TRIAC, SCR, IGBT, PUT
SCR triggering circuits, triggering techniques of SCR, Triggering of SCR using
UJT, using IC 555 and using IC 74121, application of SCR as a lamp flasher, SCR
Alarm Circuit
Study of Half-Wave Rectifier, Full-wave Center-tapped Rectifier, Full-wave
Bridge Rectifier
Study of Zener Diode as a Voltage Regulator, with line & load regulation,
Transistor Series Voltage Regulator, Transistor Shunt Voltage Regulator, Study
of Clipper (Positive / Negative, Series / Shunt) and Clamper Circuits Study of
design and functioning of Hartley Oscillator, Colpitt Oscillator, Wein Bridge
Oscillator, Voltage Controlled Oscillator, Phase shift Oscillator
To study the IC 555 as a Monostable (One-Shot) Multivibrator, Astable (Free-
Running) Multivibrator, Bistable Multivibrator
Study of Series & Parallel R-L-C Resonance
Study of single stage and multi stage RC-Coupled amplifier
Study of Logic gates AND, OR, NOT, NAND, NOR, XOR, XNOR and to verify its
truth table
Design of Logic gates using Universal gates NAND / NOR.
Methods of generating EX - OR function, Application of Ex-OR gate; Parity
Generator
To verify De-Morgan's theorem
Study of Binary Half Adder, Full Adder, Half Subtractor
Study of S-R Flip-Flop, J-K Flip-Flop, D Flip-Flop, T Flip-Flop and to verify its
Transition table
Study of 4-to-1 Line Multiplexer and 1-to-4 Line De-Multiplexer

204.22 Standard Accessories:

Operating manual of complete workbench installed in PC
4 no. 1 X 10 Switchable probe 50 MHz (with 10X), USB to Host cable, power
cord
BNC to BNC cable 01 no, BNC to test probe 01 No, DMM cord one set, 2mm
to 2mm patch cords 10 Nos, connecting patch cords, antistatic mat, soldering
/ de soldering stand, wrist band, power cord.

204.23 Space Requirement for Installation:

Overall Length:	1200 mm
Overall Width:	750 mm
Overall Height:	1150 mm
Net Weight:	200 Kg (Approx.)

204.24 Electric Supply Specification: 240V AC 50 HZ



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SPECIFICATION FOR AUTOMOBILE ENGINES - WORKING MODELS

205 Diesel Engine - 6 Cylinder - Running Condition

As Per Directorate of Vocational Education and Training, Maharashtra State SPECIFICATION FOR AUTOMOBILE ENGINES- WORKING MODEL –ITEMNO -01

205.1 Basic Indicative Diagram



- 205.2 Diesel Engine with all required accessories like Starting system, Fuel feed system, Cooling System with reserve tank, charging system, Lubrication system, Exhaust System with Catalytic converter including exhaust brake and Air intake 205.1system Should consists of Battery, Starter motor, Alternator, Fuel injection Pump (inline type), injector, fuel tank, water, separator, fuel filter, radiator, cooling fan, oil filter, oil pump etc. in working condition.
- 205.4 Engine should be mounted on M.S. Sturdy frame having four caster wheels for easy shifting and a panel board fitted on a frame having Fuel meter, Temp. Meter, Oil Pressure, Amp meter & RPM Meter (Digital) fitted in a panel board.
- 205.5 Acrylic Sheet should be provided at the back side of the panel board for easy view of wiring.
- 205.6 Engine should be start from panel board by ignition switch and it should be in a running condition with speed controlled from panel board with Engine full specification board with engine torque, including clearance.
- 205.7 Engine Specifications:
- 205.7.1 Type:4 Stroke cycle, turbo charged inter cooler, watercooled
 - 205.7.2 Piston Displacement: 4500 CC to 6000 CC
 - 205.7.3 No. of Cylinder: 6
 - 205.7.4 Max. Output (BHP): 100 to 150 KW at 2000 to 3000 RPM
 - 205.7.5 Torque: 450 to 600 NM at 1200 to 2000 RPM
 - 205.7.6 Fuel Tank Capacity: 30 Lit to 40 Lit
 - 205.7.7 Battery: 12 Volts.



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206.	Battery- SMF		As required	COSUMABLE ITEMS - SPECIFICATION NOT REQUIRED
207.	Brake fluids		As required	
208.	Chalk, Prussian blue		As required	
209.	Chemical compound for fasteners		As required	
210.	Diesel		As required	
211.	Different type gasket material		As required	
212.	Different type of oil seal		As required	
213.	Drill Twist (assorted)		As required	
214.	Emery paper - 36– 60 grit , 80–120		As required	
215.	Engine oil & Engine coolant		As required	
216.	Gear oils		As required	
217.	Gloves for Welding (Leather and Asbestos)		As required	
218.	Hacksaw blade (consumable)		As required	
219.	Hand rubber gloves tested for 5000 V		5 Pairs	
220.	Holder, lamp teakwood boards, plug sockets,		As required	
221.	Hydrometer		8 Nos.	
222.	Lapping abrasives		As required	
223.	Leather apron		5 Nos.	
224.	Petrol		As required	
225.	Power steering oil		As required	
226.	Radiator Coolants		As required	
227.	Safety glasses		As required	
228.	Steel wire Brush 50mmx150mm		5 Nos.	

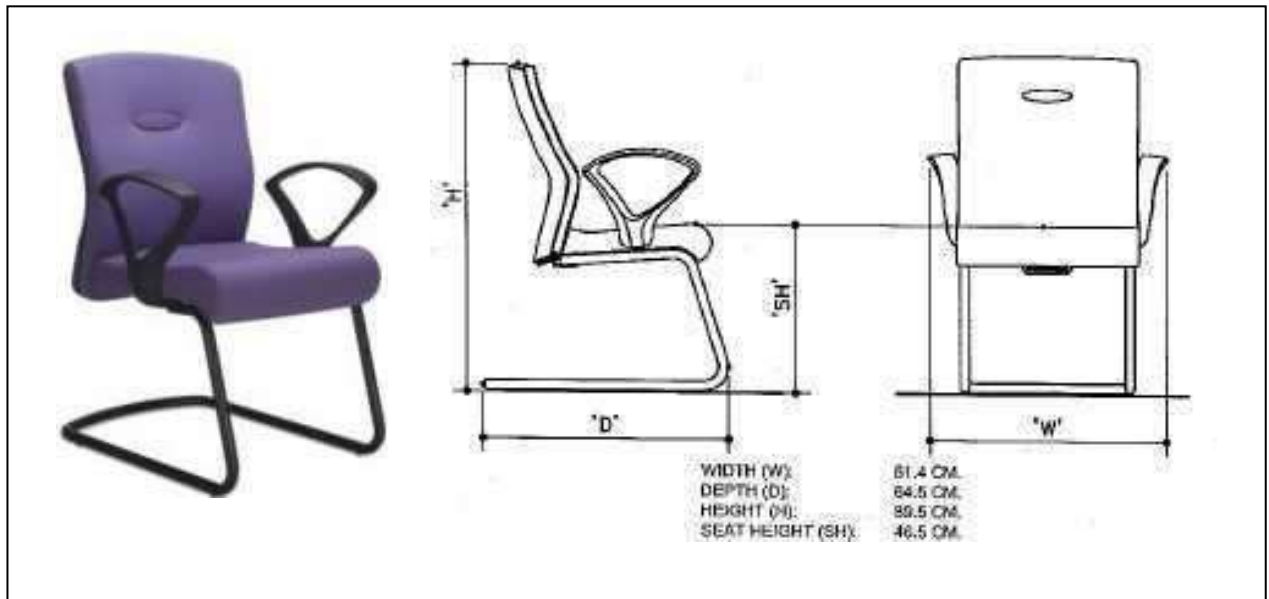


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SPECIFICATION FOR FURNITURE GROUP ITEMS

229 Instructor/ Office Chair

As Per DVET, Maharashtra State SPECIFICATION FOR FURNITURE GROUP ITEM –ITEM NO -03, 07

229.1 Basic Indicative Diagram:



229.2 Manufacturing, Supplying and Installation of Mid-back Tubular framed Chair for Instructor in the Classroom as per the following design, specification, manufacturing process and tests.

229.3 Dimensions:

229.3.1 Overall size of 610mm (W) X 640mm (D) X 850mm (H).

229.3.2 Seat Size: 470mm (W) x 480mm (D) X 450mm (H).

229.3.3 Mid Back size: 475mm (W) x 580mm (H).

229.4 Construction:

229.4.1 Seat and Back Assembly:

Seat and Back Assembly: Seat and back are made up of 12mm thick hot-pressed plywood, upholstered with fabric upholstery covers (Fabric colour shall be approved by DVET) and molded Polyurethane foam. The back foam is designed with contoured lumbar support for extra comfort. The seat has extra thick foam on front edge to give comfort to political area. The polyurethane foam shall be as per manufacturer's specification. Seat durability test (cyclic test) to perform 1,00,000 cycles for a load of 57 Kgs made to free fall on the seat from a height of 25mm.

229.4.2 High Resilience Polyurethane Foam:

The HR Polyurethane foam shall be moulded with density = 45 +/- 2 Kg/m³ and Hardness = 20 +/- 2 Kgs on Hampden machine complying to IS:7888 at 25% compression and it should be covered with fabric as per manufacturer's shade card. The polyurethane foam shall be as per manufacturer's specification.

229.4.3 Armrest:

The one-piece armrests shall be injection molded from black co-polymer Polypropylene. Tested to perform 60,000 cycles for a load of 40 Kgs applied at 10 Deg.



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229.4.4 Understructure Assembly

The understructure assembly is a cantilever type powder coated (DFT 50-60 microns) tubular mainframe made of dia 25 +/- 3mm X 2 +/- 1.6mm thk M.S. ERW Tube (IS: 7138).

229.5 Finish:

229.5.1 Epoxy Polyester Powder coated to the thickness of 50 – 60 microns (+/-10).

229.5.2 Process:

The body including tubular framework, support, etc. for Chair involves an 8 step powder coating process consisting of antirust surface treatment viz. Hot water rinse, Knock of degreasing, degreasing, cold water rinse, phosphating, cold water rinse, passivation, dry off oven treatment and finished with powder coating using epoxy polyester powder of 50 – 60 microns (+/-10). The material is then oven baked with a controlled temperature of 180 deg.C to 200 deg.C.

229.5.3 Tests:

The powder coating treatment shall strictly comply with IS:13871 (1993) inclusive of method of tests i.e. Dry film/ coating thickness, Finish, Gloss 60°, Colour retention, Scratch hardness, Impact resistance test, Conical Mandrel test, Erichsen cupping test, Pencil hardness, DFT measurement, Salt spray test, Adhesion Cross cut test, Rub test with MEK, Protection against humidity, Resistance to boiling water, lubricating oil, petrol, heat double bake, bleeding, detergents, acid/ alkali. The test reports shall be submitted along with the tender.

229.6 Colour:

229.6.1 The colour of the Fabric shall be Carbon Black, Milan Red, Copper Moon

229.6.2 Final colour scheme will be approved by DVET at the time of placement of order. Manufacturer to furnish various colour schemes available with them.

229.7 Manufacturing Process:

229.7.1 The complete unit shall be as per manufacturer's specifications and Flow chart of manufacturing process shall be submitted along with the tender.

229.7.2 Raw materials (Wood working): 1) Medium Density Fibre Board (MDF), 2) Plywood 3) Fabric.

Process (Wood working): Plywood from approved supplier -> Wood Cutting (cutting from 12mm thk. mother plywood 1200mm x 2400mm sheet to the desired size on Panel saw machine with no sharp edges, no glue marks, no scratches, no machine marks and no cracks at drill hole) -> Sizing/ Routing (fine sizing and setting curvilinear shapes) -> Fabric from approved supplier -> Inspection of fabric -> Fabric cutting to desired shape -> Ironing to cut piece of fabric -> Fabric stapling on the tile -> Fabric pasting to metal tile -> Fabric tile inspection -> Fabric tile plastic wrapping -> Assembly and Packaging (panel assembly, final inspection/ correction if required, packing and dispatch).

229.7.3 Raw materials (Metal working): 1) Stainless Steel (Nickel and Chromium added to prevent steel from rusting), 2) Mild steel and 3) Epoxy polyester powder (for powder coating).



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Process (Metal working): CRCA sheet from approved supplier -> Notching (cutting at the edge and punching holes, shearing, turret punching/ press operation, deburring of punched sheet) -> Metal forming (blending for the purpose of different applications, sheet bending) -> Assembly/ Sub-Assembly (for welded all components get assembled and for knock down sub-assembly takes place. CO2 welding and spot welding is done) -> Pre-treatment (8 step process including anti-rust surface treatment) -> Powder coating (surface coating applied in the form of powder and on curing produces a protective coating, examination of test coating specimen for blisters, flaking and corrosion) -> Assembly and Packaging (carcase/ panel assembly, final inspection/ correction if required, packing and dispatch).

229.7.4 Raw materials (Metal working): 1) Aluminium Extrusion.
Process (Metal working): Aluminium Extrusion from approved supplier -> Cutting of Aluminium extrusions to desired size -> Assembly and Packaging (carcase/ panel assembly, final inspection/ correction if required, packing and dispatch).

229.7.5 The manufacturing processes given are generalized. Need to consider wherever it is applicable as per the Specifications of the product.

229.7.6 All raw materials for manufacturing process shall be as per relevant IS code.

229.8 Size and Weight:

229.8.1 Overall Length: 610 mm

229.8.2 Overall Width: 640 mm

229.8.3 Overall Height: 850 mm

229.8.4 Net Weight: Minimum 6 to 8 Kg



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SPECIFICATION FOR FURNITURE GROUP ITEMS

229 Instructor/ Office Table

As Per DVET, Maharashtra State SPECIFICATION FOR FURNITURE GROUP ITEM –ITEM NO -03, 07

229.1 Basic Indicative Diagram



- 229.2 Manufacturing, Supplying and Installation of Pre-laminated Instructor Table as per the following design, specification, manufacturing processes and tests.
- 229.3 Dimensions: Overall size of 1200mm (W) X 600mm (D) X 735mm (H).
- 229.4 Construction:
- 229.4.1 Top Work surface:
18mm thick pre-laminated board as per IS:12823 of approved shade with 2mm thick PVC edge banding all over the work surface edges.
- 229.4.2 Understructure:
Rectangular Frame Fabricated component in 1.2mm thick CRCA (IS: 513).
- 229.4.3 Leg:
- 229.4.3.1 Fabricated component in 38mm x 25mm x 1.2mm thick CRCA ERW Tube (IS: 7138).
- 229.4.3.2 Plastic Cap for Cable travel- Injection Moulded Polypropylene.
- 229.4.3.3 Leveler glide for Leg- Nylon 6 and MS Bolt.
- 229.4.4 Storage Pedestal:
- 229.4.4.1 Out of 3 drawers (Box + Box + File), the bottom most will be the file drawer and top drawer shall have a pencil tray. The storage unit shall also have suitable sliding arrangement, handle locking facility, etc.
- 229.4.4.2 Shell- 0.6mm thick CRCA (IS: 513).
- 229.4.4.3 Drawer Tray- 0.6mm thick CRCA (IS: 513).
- 229.4.4.4 Drawer Front- 0.8mm thick CRCA (IS: 513).
- 229.4.4.5 Frame Assembly- 1.2mm thick CRCA (IS: 513).
- 229.4.4.6 Lock- 10 Lever Cam Lock central locking mechanism.
- 229.4.4.7 Handle- Injection Moulded Polypropylene.
- 229.4.4.8 Leveler- Nylon 6 and MS Bolt.
- 229.5 Wire Management:
- 229.5.1 Entry of wires into the Table shall be possible from the floor
- 229.5.2 Horizontal Wire Carrier- 0.7mm thick CRCA (IS: 513)
- 229.5.3 Vertical Wire Carrier- 0.8mm thick CRCA (IS: 513)



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- 229.5.4 (Only provision of carrier for electrical/ data slots below the work top shall be provided)
- 229.6 Finish:
- 229.6.1 Epoxy Polyester Powder to the thickness of minimum 50 – 60 microns (+/-10).
- 229.6.2 Process:
The body including understructure, framework, legs, storage pedestal including fittings involves an 8 step powder coating process consisting of antirust surface treatment viz. Hot water rinse, Knock of degreasing, degreasing, cold water rinse, phosphating, cold water rinse, passivation, dry off oven treatment and finished with powder coating using epoxy polyester powder of 50 – 60 microns (+/-10). The material is then oven baked with a controlled temperature of 180 deg.C to 200 deg.C.
- 229.6.3 Tests:
The powder coating treatment shall strictly comply with IS:13871 (1993) inclusive of method of tests i.e. Dry film/ coating thickness, Finish, Gloss 60°, Colour retention, Scratch hardness, Impact resistance test, Conical Mandrel test, Erichsen cupping test, Pencil hardness, DFT measurement, Salt spray test, Adhesion Cross cut test, Rub test with MEK, Protection against humidity, Resistance to boiling water, lubricating oil, petrol, heat double bake, bleeding, detergents, acid/ alkali. The test reports shall be submitted along with the tender.
- 229.7 Colour:
- 229.7.1 The colour of the PLB shall be Silver Grey / Teak and Core Ash/ Grey for framework.
- 229.7.2 Final colour scheme will be approved by DVET at the time of placement of order. Manufacturer to furnish various colour schemes available with them.
- 229.8 Manufacturing Process:
- 229.8.1 The complete unit shall be as per manufacturer's specifications and shall be submitted along with the tender.
- 229.8.2 Raw materials (Wood working): 1) Plain Particle Board (PPB), 2) Medium Density Fibre Board (MDF), 3) Pre-laminate Board (PLB), 4) Decorative Laminate (DL), 5) Fabric and 6) Lipping (PVC lipping).
Process (Wood working): MDF board from approved supplier -> Wood Cutting (cutting from mother board 600mm x 2400mm sheet to the desired size on Panel saw machine with no sharp edges, no glue marks, no scratches, no machine marks and no cracks at drill hole) -> Lamination (Hot lamination adhering Decorative laminate to MDF board using approved make adhesive) -> Sizing/ Routing (fine sizing and setting curvilinear shapes) -> Lipping/ Edge banding (adhering PVC lipping on MDF board using hot melt glue under heat and pressure) -> Finishing -> Assembly and Packaging (carcase/ panel assembly, final inspection/ correction if required, packing and dispatch).
- 229.8.3 Raw materials (Metal working): 1) Stainless Steel (Nickel and Chromium added to prevent steel from rusting), 2) Mild steel and 3) Epoxy polyester powder (for powder coating).



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Process (Metal working): CRCA sheet from approved supplier -> Notching (cutting at the edge and punching holes, shearing, turret punching/ press operation, deburring of punched sheet) -> Metal forming (blending for the purpose of different applications, sheet bending) -> Assembly/ Sub-Assembly (for welded all components get assembled and for knock down sub-assembly takes place. CO2 welding and spot welding is done) -> Pre-treatment (8 step process including anti-rust surface treatment) -> Powder coating (surface coating applied in the form of powder and on curing produces a protective coating, examination of test coating specimen for blisters, flaking and corrosion) -> Assembly and Packaging (carcase/ panel assembly, final inspection/ correction if required, packing and dispatch)

229.8.4 Raw materials (Metal working): 1) Aluminium Extrusion.

Process (Metal working): Aluminium Extrusion from approved supplier -> Cutting of Aluminium extrusions to desired size -> Assembly and Packaging (carcase/ panel assembly, final inspection/ correction if required, packing and dispatch).

229.8.5 The manufacturing processes given are generalized. Need to consider wherever it is applicable as per the Specifications of the product.

229.8.6 All raw materials for manufacturing process shall be as per relevant IS code.

229.9 Size and Weight:

229.9.1 Overall Length: 1200 mm

229.9.2 Overall Width: 600 mm

229.9.3 Overall Height: 735 mm

229.9.4 Net Weight: Minimum 40 - 50 Kg



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)** .

230 Students chairs with writing pads

Specifications prepared by committee.. Specification Trade
mechanic diesel-2024

230.1 Basic indicative diagram



230.2 Body material - Iron with black paint

230.3 Writing Pad Material Wooden

230.4 Back Type Medium Back

230.5 Arm Style Fixed Arms with full writing pad

230.6 Color Black

230.7 Usage/Application Schools, Colleges student

230.8 Heavy Density Pipe

230.9 Anti Skid bush on legs



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SPECIFICATION FOR FURNITURE GROUP ITEMS

231 White Board - 4 X 3 Feet

As Per DVET, Maharashtra State SPECIFICATION FOR FURNITURE GROUP ITEM –ITEM NO -20

231.1 Basic Indicative Diagram:



- 231.2 Manufacturing, and Installation of wall mounted Ceramic coated steel sheet top surface White Board with the following design, specifications, manufacturing process and tests.
- 231.3 Size of White Board: 4 X 3 feet.
- 231.4 Confirming to IS CODE – 3087, 733
- 231.5 White Board with Ceramic Coated Steel Sheet Top Surface:
Steel writing board for writing purpose mounted on wooden based particles board (as per IS: 3087) with electro galvanized backing steel sheet and frame anodized extruded Aluminium alloy hollow section.
- 231.6 Writing Surface:
The writing top surface shall be made of steel sheet of thickness 0.27 to 0.30 mm. It shall have vitreous enamel coating of 0.095mm min. thickness on top and 0.03 mm min. on the back. The top shall be free from waviness and shall show excellent erasability. Gloss of sheet shall be 60 deg @ Lead 60.
- 231.7 Core Materials:
The core material shall be 9mm thick wood Base plain particle board. (Supported with Test Certificates of the Manufacturers.)
- 231.8 Backing Materials:
The backing material sheet shall be minimum 0.25 mm thick electro galvanized steel sheet. Both the top and the backing sheet shall be properly fixed with particle board using rubber based adhesive to avoid any moisture absorption. (Supported with Test Certificates of the Manufacturers.)
- 231.9 Aluminium Frame:
The Board shall have all round framing of anodized extruded aluminium alloys hollow section. Designation 63400 as per IS: 733-1983 with Amendment No. 1 (Reaffirmed 2006) Edition 4.1. (Supported with Test Certificates of the manufacturer)
The Frame section shall be
- 231.9.1 Front: 25 mm,
- 231.9.2 Side: 18 mm
- 231.9.3 Wall thickness: 0.8 mm (+ 0.03 mm)



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- 231.10 Fitting Accessories:
The writing board shall be provided with suitable heavy duty wall mounting Brackets. The board should be provided with necessary fitting clamps. The clamps should be Mild steel with suitable corrosion free coating like chrome plating/ Powder coating material to sustain board weight. A set of 4 nos. of Screw and 4 nos for Rawal Plugs should be provided with each board for fitting on the wall.
- 231.11 Board Corners:
The corner of the board should be made up with 100 % virgin ABS material.
- 231.12 Packing:
The boards shall be packed in corrugated paper packing/box packing for local delivery and in wooden crate for dispatch by rail / road transport to withstand transit hazards.
- 231.13 Free Accessories:
1 No. Chalk Tray and 1 No. Magnetic Duster and 1 No. Marker should be provided free with each board.
- 231.14 Marking:
Each board shall be provided with indelible marking for: -
Name/Trade mark of the manufacturer
Type of board
Supply Order No. and date.
- 231.15 Weight: The weight of the Green board shall be 15-20 Kg



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SPECIFICATION FOR TRADE - **MECHANIC DIESEL (NSQF –LEVEL III)**

232. Instructors Lap top with latest configuration pre-loaded with operating system and MS Office package.

Specifications prepared by committee.. Specification
Trade

mechanic diesel-2024

232.1 Basic indicative diagram



- 232.2 Display size - 14" inches
- 232.3 Resolution 1920 x 1080 Pixels
- 232.4 Batteries 1 Lithium Polymer batteries required
- 232.5 Processor Brand Intel
- 232.6 Processor Type Core i7
- 232.7 Processor Speed 3.4 GHz
- 232.8 RAM Size 32 GB
- 232.9 Memory Technology DDR4
- 232.10 Graphics Coprocessor Intel integrated
- 232.11 Connectivity Type Wi-Fi
- 232.12 ROM: 512GB SSD
- 232.13 Hard Disk Description SSD
- 232.14 Power Source Battery Powered
- 232.15 Operating System Windows 10
- 232.16 Average Battery Standby Life (in hours) 10.5 Hours
- 232.17 Essential software should installed
- 232.18 Essential accessories
 - Power cord,
 - USB mouse
 - Key pad guard & laptop bag



233 LCD projector with screen
Specifications prepared by committee.. Specification Trade mechanic diesel-
2024

233.1 Basic indicative diagram



- 233.2 Projection System DLP Single 0.55" SVGA
- 233.3 Resolution 800 x 600 pixels
- 233.4 Brightness (ANSI lumens) 4000 ANSI Lumens
- 233.5 Contrast Ratio (FOFO)20000:1
- 233.6 Display Color 30 Bits (1,07 billion colors)
- 233.7 Native Aspect Ratio Native 4:3 (5 aspect ratio selectable)
- 233.8 Light Source Lamp
- 233.9 Resolution Support VGA(640 x 480) to WUXGA_RB(1920 x 1200)
- 233.10 Throw Ratio 1.96~2.15
- 233.11 Zoom Ratio 1.1X
- 233.12 Projection Size 60"~150"
- 233.13 Power Supply 100 ~ 240V AC
- 233.14 Power Consumption Max 280W, Normal 260W,
Eco 215W(Max/Normal/Eco)
- 233.15 **Connectivity**
- | | |
|------|-----------|
| HDMI | HDMI-1 x1 |
| | HDMI-2 x1 |
- 233.16 PC,Monitor out ,Audio in, Audio out, USB TypeA-1 1
- 233.17 **Accessories (Standard)**
- 233.18 Remote Control, Power cord, VGA Cable,
- 233.19 Screen,
- 233.19.1 Screen size 8 feet x 6 feet
- 233.19.2 Screen colour White
- 233.19.3 Stand Tripod stand
- 233.20 Black Coated Fabric from Back Side

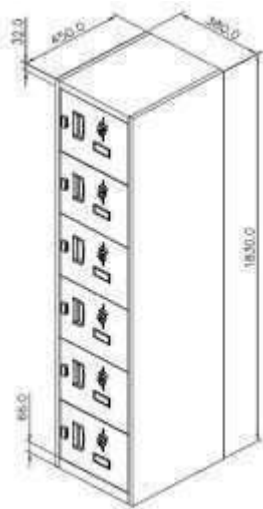


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SPECIFICATION FOR FURNITURE GROUP ITEMS

234 Steel Locker - 24 Compartment

As Per DVET, Maharashtra State SPECIFICATION FOR FURNITURE GROUP ITEM –ITEM NO -12

234.1 Basic Indicative Diagram:



234.2 Confirming to IS CODE – 513 (2008), 13871 (1993)

234.3 The overall size of the storage shall be 1520mm (W) x 450mm (D) x 1830mm (H).

234.4 There shall be 4 units of 6 Door Lockers of equal dimensions.

234.5 Combination:

234.5.1 6 Door Base Unit (Size-380mmW)- one number

234.5.2 6 Door Add On unit (Size-380mmW)- Three number

234.6 Construction:

234.6.1 The construction shall be Knock Down Construction.

234.6.2 Overall Construction shall be 0.6mm thick CRCA confirming to IS:513 -2008grade.

234.6.3 Shelf should have uniform load carrying capacity up to 35Kg.

234.6.4 Handle-Aesthetically appealing Snap fit ABS plastic handle.

234.6.5 Label Holder-Plastic label holder should be provided for identification.

234.7 The locking mechanism shall be provided for individual compartment. Lock should be 10 Lever cam lock with lock lever. Min. 03 keys for each compartment shall be provided.

234.8 Finish:

234.8.1 Epoxy Polyester Powder in fire retardant paint coated to the thickness of minimum 50 – 60 microns (+/-10).

234.8.2 Process:

The body including shelves, compartment, framework for door involves an 8 step powder coating process consisting of antirust surface treatment viz. Hot water rinse, Knock of degreasing, degreasing, cold water rinse, phosphating, cold water rinse, passivation, dry off oven treatment and finished with powder coating using epoxy polyester powder of minimum 50 – 60 microns (+/-10). The material is then oven baked with a controlled temperature of 180 deg.C to 200 deg.C.



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234.8.3 Tests:

The powder coating treatment shall strictly comply with IS:13871 (1993) inclusive of method of tests i.e. Dry film/ coating thickness, Finish, Gloss 60°, Colour retention, Scratch hardness, Impact resistance test, Conical Mandrel test, Erichsen cupping test, Pencil hardness, DFT measurement, Salt spray test, Adhesion Cross cut test, Rub test with MEK, Protection against humidity, Resistance to boiling water, lubricating oil, petrol, heat double bake, bleeding, detergents, acid/ alkali. The test reports shall be submitted along with the tender.

234.9 Colour:

234.9.1 The colour shall be Prince Grey / Snowbell Grey.

234.9.2 Final colour scheme will be approved by DVET at the time of placement of order. Manufacturer to furnish various colour schemes available with them

234.10 Manufacturing Process:

234.10.1 The complete unit shall be as per manufacturer's specifications and Flow chart of manufacturing process shall be submitted along with the tender.

234.10.2 Raw materials (Wood working): 1) Plain Particle Board (PPB), 2) Medium Density Fibre Board (MDF), 3) Pre-laminate Board (PLB), 4) Decorative Laminate (DL), 5) Fabric and 6) Lipping (PVC lipping).

Process (Wood working): MDF board from approved supplier -> Wood Cutting (cutting from mother board 600mm x 2400mm sheet to the desired size on Panel saw machine with no sharp edges, no glue marks, no scratches, no machine marks and no cracks at drill hole) -> Lamination (Hot lamination adhering Decorative laminate to MDF board using approved make adhesive) -> Sizing/ Routing (fine sizing and setting curvilinear shapes) -> Lipping/ Edge banding (adhering PVC lipping on MDF board using hot melt glue under heat and pressure) -> Finishing -> Assembly and Packaging (carcase/ panel assembly, final inspection/ correction if required, packing and dispatch).

234.10.3 Raw materials (Metal working): 1) Stainless Steel (Nickel and Chromium added to prevent steel from rusting), 2) Mild steel and 3) Epoxy polyester powder (for powder coating).

Process (Metal working): CRCA sheet from approved supplier -> Notching (cutting at the edge and punching holes, shearing, turret punching/ press operation, deburring of punched sheet) -> Metal forming (blending for the purpose of different applications, sheet bending) -> Assembly/ Sub-Assembly (for welded all components get assembled and for knock down sub-assembly takes place. CO2 welding and spot welding is done) -> Pre-treatment (8 step process including anti-rust surface treatment) -> Powder coating (surface coating applied in the form of powder and on curing produces a protective coating, examination of test coating specimen for blisters, flaking and corrosion) -> Assembly and Packaging (carcase/ panel assembly, final inspection/ correction if required, packing and dispatch).

234.10.4 Raw materials (Metal working): 1) Aluminium Extrusion.

Process (Metal working): Aluminium Extrusion from approved supplier -> Cutting of Aluminium extrusions to desired size -> Assembly and Packaging (carcase/ panel assembly, final inspection/ correction if required, packing and dispatch).

234.10.5 The manufacturing processes given are generalized. Need to consider wherever it is applicable as per the Specifications of the product.

234.10.6 All raw materials for manufacturing process shall be as per relevant IS code.

234.11 Size and Weight: Overall Length: Overall Depth: Overall Height NetWeight:

1520 mm 450mm