# SPECIFICATION FOR AUTOMOBILE PARTS - CUT SECTIONS & WORKING MODELS

## TABLE OF CONTENTS

## 1 Carburetor – Mikuny type for Dismantling and Assembling

1.1 Basic Indicative Diagram

1.2 Double barrel down draft carburetor
1.3 Carburetor should be of good quality
1.4 Type: Mikuny Type (any equivalent make)
1.5 Parts Catalogue

## 2 Carburetor – Solex type for Dismantling and Assembling

2.1 Basic Indicative Diagram

2.2 Single barrel side draft carburetor
2.3 Carburetor should be of good quality
2.4 Type: Solex Type (any equivalent make)
2.5 Parts Catalogue

## 3 Cut Section Model - 4 Cylinder Diesel Engine

3.1 Basic Indicative Diagram

3.2 The cutting should enable the moving parts like connecting rod, piston, valve & spring, pump, crankshaft, Timing gear / chain etc. are visible

3.3 Internal components - timing gears, chain, hardware (bolts & nuts), push rod should be chrome plated

3.4 Inlet Valve & Outlet Valves should be painted differently.

3.5 Cooling system in sectional - radiator, water pump, elbow, water jackets and Thermostat Valve.

3.6 Lubricating System in sectional - oil pump, oil filter, oil chamber.

3.7 Fuel Supply system in sectional - Fuel injection pump (CRDI), injector (only two injector cut), air cleaner, intake manifold.

3.8 Exhaust system in sectional - exhaust manifold, silencer catalytic converter.

3.9 Electrical system in sectional - starter & Alternator.

3.10 The following movable & stationary parts should be visible.

- 3.10.1 Cylinder Head
- 3.10.2 Engine Block
- 3.10.3 Piston, Rings and Connecting Rod
- 3.10.4 Rocker Shaft Assembly
- 3.10.5 Crank Shaft
- 3.10.6 Timing Gear
- 3.10.7 Fly Wheel
- 3.10.8 Valves
- 3.10.9 Cam Shaft, Tappet & Push Rod
- 3.10.10 Oil Pump

3.11 Suitable Electric motor drive with reduction gear to be provided to understand moving parts of engine.

3.12 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.

3.13 Different color painting to be done for different systems (Intake- Dark blue, Exhaust- Red, Coolant- Light blue, Oil- Yellow, Cut area- Signal red)

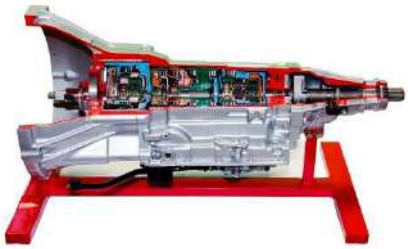
3.14 Necessary parts of engine should be attractively coloured for better understanding.

3.15 Whole assembly should be mounted on suitable metal stand.

3.16 Vinyl Display Board displaying complete Engine specifications with engine torque and clearance

## 4 Cut Section Model - Automatic Transmission Gear Box

4.1 Basic Indicative Diagram



4.2 For Rear Wheel Drive

4.3 Automatic Transmission with Aluminium body

4.4 Should contain the following components

- 4.4.1 Gears
- 4.4.2 Clutch Plate
- 4.4.3 Oil Seal
- 4.4.4 Hydraulic Valve
- 4.4.5 Sensors
- 4.4.6 Bearing
- 4.4.7 Torque Converter
- 4.4.8 Turbine
- 4.4.9 Impeller
- 4.4.10 Input Shaft
- 4.4.11 Ring Gear

4.5 The sectioning should be done such that the internal details such as different clutch plate set up for speed variation and reduction planetary gear setup etc. with its connectivity should be clearly displayed by sectioning

4.6 The painting should be carried out in such a way that different colours should be used for different components such as identification of sectioned area etc. according to the colours code for easy identification of different systems and mechanisms.

4.7 All the hardwares and gears should be suitably electroplated.

4.8 The entire model should be mounted on sturdy iron stand with lockable caster wheels.

4.9 Vinyl Display Board displaying complete Gear Box specifications with torque and clearance

## 5 Cut Section Model - Centrifugal Clutch Assembly

5.1 Basic Indicative Diagram

5.2 Centrifugal Clutch with Continuously Variable Transmission with following components
- 5.2.1 Gear box
- 5.2.2 Spring
- 5.2.3 Belt
- 5.2.4 Driven Pulley

5.3 The sectioning will be done such that the internal details such as different clutch plate set up for speed variation setup etc. with its connectivity will be clearly displayed by sectioning.

5.4 The painting will be carried out in such a way that different colours will be used for different components such as identification of sectioned area etc. according to the colours code for easy identification of different systems and mechanisms.

5.5 The model should be coupled with variable speed DC motor- 600 RPM(minimum).

5.6 By operating DC motor, the centrifugal clutch engagement and dis-engagement at high RPM & low RPM can be displayed.

5.7 Helical gear is used to shift the clutch and the V shaped gear has multiple ratios on it which keeps on changing and adjusting according to the slippage due to the higher RPM.

5.8 All the hardware's and gears will be suitably electroplated.

5.9 The entire model will be mounted on sturdy iron stand with lockable caster wheels

5.10 Vinyl Display Board displaying complete Gear Box specifications with torque and clearance

## 6 Cut Section Model - Diaphragm Clutch Assembly

6.1 Basic Indicative Diagram

6.2 Clutch system of Car Assembly with following components
- 6.2.1 Fly wheel
- 6.2.2 Pressure Plate
- 6.2.3 Clutch Disc
- 6.2.4 Release Bearing
- 6.2.5 Clutch Cable
- 6.2.6 Clutch Pedal

6.3 The model should be connected to a foot pedal through necessary cable circuit, so that by pressing the pedal the clutch engagement and dis engagement can be seen.

6.4 The clutch assembly should be sectioned to show the pressure plate, clutch plate releaser bearing etc. the sectioning should be done in such a way that the operation of the clutch is not hampered.

6.5 The entire model should be mounted on a sturdy iron frame

6.6 Suitable color painting to be done for different parts for easy identification with specific Vinyl Display Board.

## 7 Cut Section Model - Radiator - Cross Flow

7.1 Basic Indicative Diagram

7.2 Components:
- 7.2.1 Side Tank
- 7.2.2 Radiator Core
- 7.2.3 Radiator Cap

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

7.4 Internal coloring to identify coolant path to be provided.

7.5 The model should be mounted on to a paint finished metal stand

7.6 Vinyl Display Board displaying water flow with naming.

## 8 Cut Section Model - Radiator - Down Flow

8.1 Basic Indicative Diagram

8.2 Components:
- 8.2.1 Side Tank
- 8.2.2 Radiator Core
- 8.2.3 Radiator Cap

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

8.4 Internal coloring to identify coolant path to be provided.

8.5 The model should be mounted on to a paint finished metal stand

8.6 Vinyl Display Board displaying water flow with naming.

## 9 Cut Section Model - Shock Absorbers

9.1 Basic Indicative Diagram


9.2 Shock Absorber with metal body,

9.3 Component:

- 9.3.1 Damper
- 9.3.2 Hydraulic Oil Area
- 9.3.3 Rubber Seal
- 9.3.4 Fluid return valve

9.4 The shock absorber should be sectioned such a way that the fluid return valve and the connections should be shown

9.5 Coloured circuit/ Schematic diagram with labelling/naming to be printed on to Aluminium cladded Organic sun board

9.6 The Shock absorbers should be place on 25mm imported acrylic with metal frame for display of Technical details and schematics.

## 10 Cut Section Model - Single Plate Clutch Assembly

10.1 Basic Indicative Diagram

10.2 Clutch system of Car Assembly (Coil spring type) with following component
- 10.2.1 Fly wheel
- 10.2.2 Pressure Plate
- 10.2.3 Clutch Disc
- 10.2.4 Release Bearing
- 10.2.5 Clutch Cable
- 10.2.6 Clutch Spring
- 10.2.7 Clutch Pedal

10.3 The model should be connected to a foot pedal through necessary cable circuit, so that by pressing the pedal the clutch engagement and dis engagement can be seen.

10.4 The clutch assembly should be sectioned to show the pressure plate, clutch plate releaser bearing etc. the sectioning should be done in such a way that the operation of the clutch is not hampered.

10.5 The entire model should be mounted on a sturdy iron frame

10.6 Suitable color painting to be done for different parts for easy identification

10.7 Vinyl Display Board displaying Clutch Assembly with naming.

## 11 Cut Section Model - Turbocharger

11.1 Basic Indicative Diagram

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

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

11.4 The model should be suitably painted and mounted on a suitable wooden base.

11.5 Suitable color painting to be done for different parts for easy identification

11.6 Vinyl Display Board displaying Turbo Charger with naming.

## 12 Distributor – Dual Advance Type

12.1 Basic Indicative Diagram

12.2 Brand-new item should be used

12.3 Distributor Assembly Centrifugal weight with cam lob attaches vacuum diaphragm system with following components

12.3.1 CB point

12.3.2 Condenser

12.3.3 Rotor

12.3.4 Distributor cap and lead set with complete accessories

12.3.5 Centrifugal advance and vacuum advance with Diaphragm Assembly pipe

12.3.6 Parts catalogue suitable sketch on Vinyl Board

## 13 Distributor – Reluctance Type

13.1 Basic Indicative Diagram

13.2 Brand-new item should be used
13.3 Distributor Assembly reluctance inductive type pickup coil with cam lobe.
13.4 Distributor cap and lead set with complete accessories.
13.5 Centrifugal advance and vacuum advance with Diaphragm Assembly pipe.
13.6 Parts catalogue suitable sketch on Vinyl Board

## 14 Injector - Multi hole Pintle type

14.1 Basic Indicative Diagram

14.2 Should consists of two injectors
14.3 Multi hole CRDI (4 holes)
14.4 Single Hole Pintle Type
14.5 Set should consist of 4 Injector
14.6 Parts catalogue suitable sketch on Vinyl Board

## 15 Petrol Engine - 2 Stroke, Motor Cycle/ Scooter

15.1 Basic Indicative Diagram

15.2 The petrol engine setup should be supplied along with silencer, air filter
15.3 All mounted on to a sturdy iron frame with caster wheels (mobile trolley)
15.4 Suitably sectioned to show piston movement, inlet and exhaust port, carburetor, multiplate clutch, gear box and rear wheel assembly.
15.5 Different color painting to be done for different systems (Intake port - Dark blue, Exhaust port- Red, Oil- Yellow, Cut area- Signal red)
15.6 Necessary parts of engine should be attractively coloured for better understanding.
15.7 Parts catalogue suitable sketch on Vinyl Board with clearance and torque

## 16 Connecting Rod Alignment Fixture

16.1 Basic Indicative Diagram

16.2 Connecting Rod alignment fixture
16.3 Checking: Bent, Twist, Offset, Precision ground surface
16.4 Should be supplied with following accessories
16.5 Bent and Twist indicator, Bending Bar with Aligner
16.6 Dial Indicator etc.

## 17 Injector Cleaning Unit

17.1 Basic Indicative Diagram

17.2 Manual Cleaning Unit
17.3 Suitable for cleaning Diesel Engines
17.4 Brush Lengths:
- 17.4.1 3" long with flat head bristles
- 17.4.2 3" long with sharp head bristles
- 17.4.3 3' long with slim bristles
- 17.4.4 4" long with round head bristles
- 17.4.5 4" long with sharp head bristles
- 17.4.6 4' long with slim bristles
- 17.4.7 6" long with slip bristles
- 17.4.8 Handle for brush holder
- 17.4.9 Hand brush

17.5 Material MS GI.
17.6 The entire items should be securely packed in wooden / plastic box.

## 18 Injector Testing Set - Hand Tester

18.1 Basic Indicative Diagram

18.2 Transparent fuel container with filter.
18.3 Manual Hand operating lever / Handle with grip. Along with split pin.
18.4 Three way shut off valve with valve spindle.
18.5 High quality Pressure Gauge Range: 0 - 400 BAR & 0 - 40 MPa
18.6 All type of Injector fuel pressure chart
18.7 Suitable fuel pipes for all injector

## 19 Fuel Feed Pump for Diesel

19.1 Basic Indicative Diagram

19.2 Brand-new item should be used
19.3 Suitable for six cylinder diesel engine manufactured by standard company
19.4 The model is mounted on to a wooden base and it is suitably painted.
19.5 Parts catalogue suitable sketch on Vinyl Board

## 20 Fuel Injection Pump - Diesel - Inline

20.1 Basic Indicative Diagram

20.2 Good working condition item should be used
20.3 Suitable for six cylinder diesel engine manufactured by standard company
20.4 RSV type governor
20.5 Parts catalogue suitable sketch on Vinyl Board

## 21 Fuel Injection Pump - Dismantling Tool Kit

21.1 Basic Indicative Diagram

21.2 Contents following components:

21.2.1 Universal vice
21.2.2 Pre stroke setting attachment with gauge,
21.2.3 Pump couplings,
21.2.4 Control setting gauge with attachment,
21.2.5 Tappet adjusting spanner (thin),
21.2.6 Ring wrench,
21.2.7 Tappet lifter,
21.2.8 Mechanical finger (gripper),
21.2.9 Adapter capsule box for FIP,
21.2.10 Thread puller for fly weight,
21.2.11 Drift for bottom plug,
21.2.12 Impact screw driver,
21.2.13 Flower/Trox Allen key set,
21.2.14 Attachment for setting angle of accelerate lever,
21.2.15 Coupling for FIP cam, Coupling wrench,
21.2.16 Round nut spanner different type,
21.2.17 VE pump holding attachment,
21.2.18 Inline and rotary pump holding attachments,
21.2.19 Drift for installing and removing oil seal,
21.2.20 Holder spanner,
21.2.21 Spring locking plates,
21.2.22 Governor weight remover

## 22 Fuel Injection Pump - Distributor Fuel Rotary Pump with Standard Accessories

22.1 Basic Indicative Diagram

22.2 As this item is not available in the market, old pump can be supplied. However the Item should be in good working condition.

22.3 Suitable for four cylinder diesel engine manufactured by standard company

22.4 Parts catalogue suitable sketch on Vinyl Board

## 23 Fuel Injection Pump - VE Pump with Standard Accessories

23.1 Basic Indicative Diagram

23.2 Good working condition item should be used
23.3 Suitable for four cylinder diesel engine manufactured by standard company
23.4 Parts catalogue suitable sketch on Vinyl Board

## 24 Multi Point Fuel Injection Pump

24.1 Basic Indicative Diagram

24.2 Brand new item should be used
24.3 Contents following components
- 24.3.1 Electric Motor Armature
- 24.3.2 Motor Brushes
- 24.3.3 Turbine Impeller
- 24.3.4 One way Check valve
- 24.3.5 Filter

24.4 Body: Plastic
24.5 Parts catalogue suitable sketch on Vinyl Board

## 25 Cylinder Liner - Dry & Wet Liner

25.1 Basic Indicative Diagram

25.2 The model of Cylinder Liners is made out of original Used Liners.

25.3 The entire system is suitably painted and mounted on wooden base.

25.4 Dry Liner:

25.4.1 Inner Diameter: 107mm

25.4.2 Outer Diameter: 113mm

25.5 Wet Liner:

25.5.1 Inner Diameter: 96mm

25.5.2 Outer Diameter: 100.6mm

## 26 Cylinder Liner - Press Fit & Slide Fit

26.1 Basic Indicative Diagram

26.2 The model of Cylinder Liners is made out of original Used Liners.

26.3 The entire system is suitably painted and mounted on wooden base.

26.4 Press Fit Liner:

- 26.4.1 Inner Diameter: 107 mm
- 26.4.2 Outer Diameter: 111 mm

26.5 Slide Fit Liner:

- 26.5.1 Inner Diameter: 48 mm
- 26.5.2 Outer Diameter: 54 mm

## 27 Radiator Pressure Cap

27.1 Basic Indicative Diagram

27.2 Brand-new item should be supplied

27.3 Should consists of

- 27.3.1 Upper Seal
- 27.3.2 Main Seal Spring
- 27.3.3 Main Rubber Seal
- 27.3.4 Low Pressure Valve

27.4 Parts catalogue suitable sketch on Vinyl Board

## 28 Steering Assembly - Power Steering

28.1 Basic Indicative Diagram

28.2 Good working condition item should be used
28.3 Set of Two Power Steering (Hydraulic & Electronic)
28.4 Hydraulic Power Steering Assembly with stand
28.5 Hydraulic pumps assembly
- 28.5.1 Pressure pipe
- 28.5.2 Return pipe
- 28.5.3 Pump reservoir
- 28.5.4 Steering column
- 28.5.5 Rack assembly with control valve
- 28.5.6 Tie end rod

28.6 Electric Assisted Power Steering
- 28.6.1 Rack and pinion
- 28.6.2 Electric Motor
- 28.6.3 Motor Control Module

28.7 Both models should be mounted on independent sturdy iron frames
28.8 Suitable color painting to be done for different parts for easy identification.
28.9 Parts catalogue suitable sketch on Vinyl Board

## 29 Steering Assembly - Rack and Pinion

29.1 Basic Indicative Diagram

29.2 Good working condition item should be used

29.3 Should consist of

- 29.3.1 Rack & Pinion Steering assembly
- 29.3.2 Rack Shaft with Pinion
- 29.3.3 Steering Column
- 29.3.4 Tie End Rod

29.4 The entire model should be mounted on a sturdy iron frame

29.5 Suitable color painting to be done for different parts for easy identification.

29.6 Parts catalogue suitable sketch on Vinyl Board

## 30 Steering Assembly - Recirculating Ball

30.1 Basic Indicative Diagram

30.2 Good working condition item should be used

30.3 Should consist of

30.3.1 Re circulating Steering assembly-

30.3.2 Re- circulating ball with nut and sector cross shaft

30.3.3 Drop Arm steering column

30.4 The entire model should be mounted on a sturdy iron frame

30.5 Suitable color painting to be done for different parts for easy identification.

30.6 Parts catalogue suitable sketch on Vinyl Board

## 31 Steering Assembly - Worm and Roller

31.1 Basic Indicative Diagram

31.2 As this steering assembly is not available in the market, this part should be suitably reconditioned and supplied

31.3 Should consist of:

31.3.1 Steering column assembly,

31.3.2 Worm and roller

31.3.3 Drop arm

31.4 The entire model should be mounted on a sturdy iron frame

31.5 Suitable color painting to be done for different parts for easy identification.

31.6 Parts catalogue suitable sketch on Vinyl Board

## 32 Air Brake Assembly

32.1 Basic Indicative Diagram

32.2 Airbrake system of a truck
32.3 Foot valve
32.4 Two air reservoirs
32.5 Air dryer with unloader valve
32.6 Purge tank
32.7 Air filter
32.8 System protection valve
32.9 Air compressor
32.10 Rear spring brake chamber with hand brake chamber
32.11 Hand brake valve
32.12 Two Front wheel assembly with following components
- 32.12.1 Brake Drum
- 32.12.2 Brake Liner
- 32.12.3 Anchor Plate
- 32.12.4 Wheel Hub
- 32.12.5 Slake Adjuster
- 32.12.6 Brake Cam
- 32.12.7 Cam Roller
- 32.12.8 Front Brake Chamber
- 32.12.9 Return Springs

32.13 Air Pressure gauge for front and rear systems separately.
32.14 The entire air brake system should be made working using high air pressure compressor head connected to 3 HP single phase motor with double belt pulley system. The Air compressor head should be connected to the air tank by UHP hose pipe.
32.15 Sturdy iron frame with NC spray painting.
32.16 Pneumatic connections to be with flexible Polyethylene Tubing of 12mm Outer Diameter
32.17 Coloured circuit/ Schematic diagram with labelling/naming to be printed on to Aluminium cladded Organic sun board.

## 33 Alternator Assembly - LMV

33.1 Basic Indicative Diagram

33.2 Brand-new item
33.3 Alternator with Aluminium body.
33.4 12 V alternator with maximum output current of 65 Amps
33.5 Regulating Voltage: 14.2+0.5V
33.6 Approx. weight 5.0 Kg with external fan and pulley
33.7 Parts catalogue suitable sketch on Vinyl Board

## 34 Demonstration Board - Anti Theft Device – Car

34.1 Basic Indicative Diagram

34.2 The instruction board should incorporate the real components of central door locking system with anti-theft system to illustrate locking and safety system structure and working principle. The components should be rigged onto a colour circuit diagram. And made functional.

34.3 Real and operatable central door locking with antitheft system should be assembled onto a colour printed board to illustrate the structure and working process.

34.4 All the components of Central locking system/anti-theft alarm system should be assembled on to the printed board, necessary wiring will be done so that by connecting the system to a battery the central locking and antitheft alarm system should be demonstrated.

34.5 The training module should be fabricated using steel pipe frame with spray painted for good looks.

## 35 Automotive Safety Air Bag Simulator

35.1 Basic Indicative Diagram

35.2 The Instruction board should adopts the real components of Air bag system to illustrate Air bag safety system structure and working principle.

35.3 Real and operatable Air bag system should be assembled along with colour printed board to illustrating the structure and working process.

35.4 The model should be equipped with seat cart, seat belt for actual working principle of the system.

35.5 The Vehicle Crash should be Simulated by pushing and hitting the crash sensor along the seat cart provided to demonstrate the quick air bag inflation.

35.6 A person should be able to sit in the seat cart secured with seat belt.

35.7 By pushing the seat cart and colliding, the air bag should explode and a real feel of collision should be experienced with air bag safety.

35.8 The training module should be fabricated using steel pipe frame with spray painted.

35.9 Option for floor grouting should be provided.

## 36 Car Air Conditioner Trainer

36.1 Basic Indicative Diagram

36.2 This model should be made out of original New parts, and should be suitably Arranged on to a Metal frame with wooden base.

36.3 The details of Piping connections, wiring circuit, gas filling and recovery etc., can be demonstrated and studied.

36.4 All the accessories such as Cooling fan, compressor, evaporator, necessary hoses, condenser, expansion valve and dryer unit should be assembled as per original circuitry

36.5 The model should be made to work using a FHP motor coupled to the AC compressor, so that by operating the AC panel the operation and cooling effect of the same can be demonstrated.

36.6 The Model should be connected a SMPS for the operation of the blower and Magnetic clutch

36.7 The entire system should be suitably painted

36.8 The Model should be equipped with Printed circuit board with operation principle diagram and electrical connection diagram. And neatly arranged on to a sturdy iron frame.

36.9 The model should be assembled using original NEW parts in working condition.

36.10 The compressor should be coupled to a AC motor for operation so that the different service operations such as, vacuuming, charging of gas can be worked on.

36.11 AC –Refrigerant Flow line diagram, Parts catalogue suitable sketch on Vinyl Board

## 37 Demonstration Board - CRDI System

37.1 Basic Indicative Diagram

37.2 The Instruction board should adopt the real components of electronic fuel injection system (CRDI) to illustrate engine fuel system structure and working principle. The components should be rigged onto colour circuit diagram and made functional.

37.3 Real and operatable engine fuel injection system with partial engine block should be assembled onto a colour printed board to illustrate the structure and working process

37.4 Coloured circuit diagram on the training Module printed on to 6mm organic glass base, where in the students can compare the diagram and actual diagram.

37.5 Detection terminals for operator to detect various sensors, actuators, electrical signals for engine control unit, such as resistive, voltage, current, frequency and wave form signals should be provided on to the printed circuit diagram.

37.6 The training module should be fitted with diagnostic socket (DLC) along with Scan tool to read fault codes, clear fault codes and read data stream.

37.7 Fault setting switch bank will be provided to induce faults in the training module to demonstrate the fault and to diagnose faults.

37.8 User can adjust the number and type of faults- Set the line break, grounding short circuit, improper contact or open circuit faults can be induced

37.9 Good working condition Parts should be provided with fuel tank. The instruction board should be connected to 220V AC socket.

37.10 The training module should be fabricated using steel pipe frame with spray painted

37.11 The entire setup is provided with caster wheels with brakes for easy movement of the same.

## 38 Demonstration Board - Electronic Ignition System and Ignition Coil

38.1 Basic Indicative Diagram


38.2 The Electronic ignition system Module should be designed on the Good working condition Ignition system of an automobile four wheeler, where in the principle of operation and working of the same can be demonstrated.

38.3 The model should consist of the following

38.3.1 ECU (Electronic Control Unit)
38.3.2 Inductive Distributor
38.3.3 Ignition Coil
38.3.4 HT Wires
38.3.5 Spark Plugs
38.3.6 Suitable Battery

38.4 All parts and accessories should be arranged on to a Color printed board and the system should be made functional. The electrical circuit diagram with parts and its connection should be printed on to a color base.

38.5 This open demonstration working unit should be made from original parts such as Switches, Electronic ignition coil, Distributor, three spark plugs and a battery for Power source, with necessary wiring connections. By switching on the switch and by giving rotation to the Distributor, Sequential Sparks in the Spark Plugs can be demonstrated.

38.6 The above model should be fixed on Printed Circuit Sun Board with working Principle diagram.

## 39 Engine Bearing Model Set

39.1 Basic Indicative Diagram


39.2 Good working condition item should be used

39.3 Complete bearings of Engine assembly of following types

- 39.3.1 Needle Bearing
- 39.3.2 Roller Bearing
- 39.3.3 Taper Roller Bearing
- 39.3.4 Ball Bearing
- 39.3.5 Thrust Bearing
- 39.3.6 Main Bearing
- 39.3.7 Cam Shaft Bush Bearing
- 39.3.8 Connecting Rod Bearing

39.4 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

## 40 Piston Model Set

40.1 Basic Indicative Diagram

40.2 Complete Pistons of Car Engine assembly

40.3 The set should contain the following 5 types of pistons

- 40.3.1 Flat Head Piston: Carburettor engine (Brand-new item should be used)
- 40.3.2 Recessed Head: MPFI Engine (Brand-new item should be used)
- 40.3.3 Concave: Diesel Engine (Brand-new item should be used)
- 40.3.4 Bowl Type Piston: CRDI (Brand-new item should be used)
- 40.3.5 Dome Head: 2 stroke Bajaj scooter (Old item can be used)

40.4 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

## 41 Disk Brake Trainer

41.1 Basic Indicative Diagram

41.2 Good working condition item should be used

41.3 Complete front Disc brake system of Car contents following components

- 41.3.1 Calliper assembly
- 41.3.2 Master Cylinder
- 41.3.3 Brake Fluid Tank
- 41.3.4 High Pressure Pipe
- 41.3.5 Disc Pad
- 41.3.6 Brake Pedal

41.4 The model is made from two sets of Disc brake with caliper and master cylinder

41.5 The model is equipped with two discs with hubs, two master cylinder, two caliper assembly, etc.

41.6 One side is made working another side is sectioned to show the inner construction details

41.7 The entire model should be mounted on a sturdy iron frame

41.8 Suitable color painting to be done for different parts for easy identification.

41.9 Parts catalogue suitable sketch on Vinyl Board

## 42 Drum Brake Trainer

42.1 Basic Indicative Diagram

42.2 Good working condition item should be used

42.3 The assembly should consist of following components:

- 42.3.1 Brake system of Car
- 42.3.2 Hub Bearing Drum
- 42.3.3 Wheel Cylinder
- 42.3.4 Brake Shoe Brake self-adjusting system
- 42.3.5 Tandem Master Cylinder
- 42.3.6 Brake Fluid Tank
- 42.3.7 Brake Pedal
- 42.3.8 Metal flexible Pipeline

42.4 The model should be made from two sets of Drum brake and master cylinder

42.5 The model should be equipped with two drum brake with hubs, two master cylinder.

42.6 One side should be made working another side is sectioned to show the inner construction details.

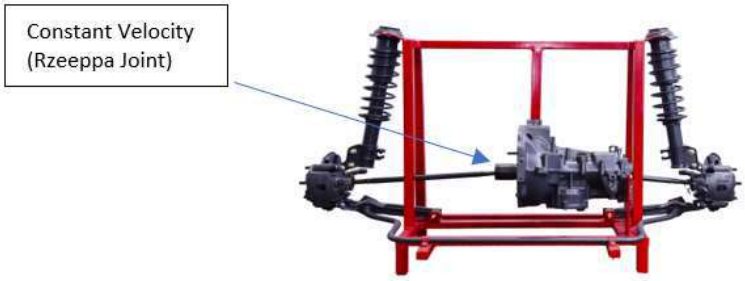
42.7 The entire model should be mounted on a sturdy iron frame

42.8 Suitable color painting to be done for different parts for easy identification.

42.9 Parts catalogue suitable sketch on Vinyl Board

## 43 Front Axle Assembly, Rzeeppa Joint with stand for Dismantling and Assembly

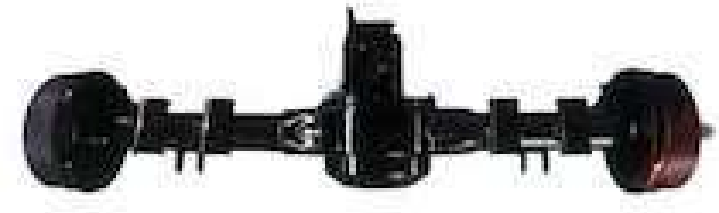
43.1 Basic Indicative Diagram




43.2 Good Working condition item will be used
43.3 Front wheel drive transmission
43.4 Rzeeppa Joint (Constant velocity joint)
43.5 Tire end rod
43.6 Front Suspension system
43.7 Disc brake
43.8 Caliper assembly
43.9 The above model should be mounted on paint finished metal stand with caster wheels.
43.10 Suitable color painting to be done for different parts for easy identification.
43.11 Parts catalogue suitable sketch on Vinyl Board

## 44 Full Floating Axle and Semi Floating Axle Assembly

44.1 Basic Indicative Diagram



44.2 Good Working Condition item should be used

44.3 Fully Floating assembly should consist of following components:

- 44.3.1 Banjo Housing
- 44.3.2 Differential Gear Box
- 44.3.3 Brake Drum Assembly
- 44.3.4 Brake Shoe
- 44.3.5 Brake shoe cam
- 44.3.6 Axel
- 44.3.7 Wheel Hub Assembly
- 44.3.8 Should be mounted on suitable metal frame, paint finish

44.4 Semi floating assembly should consist of following components:

- 44.4.1 Differential Gear Box
- 44.4.2 Brake Drum Assembly
- 44.4.3 Brake Shoe
- 44.4.4 Wheel Cylinder
- 44.4.5 Axle
- 44.4.6 Axle housing
- 44.4.7 Rear axle body
- 44.4.8 Should be mounted on suitable metal frame, paint finish

44.5 Parts catalogue suitable sketch on Vinyl Board

## 45 Wiper Motor Assembly

45.1 Basic Indicative Diagram

45.2 The wiper Motor should be mounted on sturdy frame with glass and wiper arm, SMPS, wiper switch and necessary connection for operating the wiper motor.

45.3 The models should be made should all NEW Parts.

45.4 Parts catalogue suitable sketch on Vinyl Board

## 46 Working Model - Power Windows

46.1 Basic Indicative Diagram

46.2 Should be the Driver side door assembly

46.3 The Door assembly should be suitably sectioned, to show the working of power window motor, glass plane, window lift mechanism etc.

46.4 A battery should be connected to the door assembly with suitable wiring and orginal door switch should be provided on the door pad and by operating the switch the model can be demonstrated.

46.5 The entire model should be mounted on a sturdy iron frame

46.6 Suitable color painting to be done for different parts for easy identification.

46.7 Parts catalogue suitable sketch on Vinyl Board

## 47 Working Model - Torque Converter

47.1 Basic Indicative Diagram


47.2 It should be supplied as a set of two pieces, Complete torque converter & cut section of converter. Both torque converters can be old but should be in good condition.

47.3 Complete torque converter

47.4 It should be sealed and mounted on paint finished sturdy iron frame with handle for rotating.

47.5 Cut section of converter

47.6 It should display the internal details such as the stator-turbine, rotor, Impeller, Torrington bearing (one side rotating) and spring loaded clutch plate.

47.7 By rotating the handle provided, stator, rotor, turbine, etc., can be operated and demonstrated

47.8 The entire model should be mounted on a suitable base.

47.9 Parts catalogue suitable sketch on Vinyl Board