



Participant Handbook

Sector
Automotive

Sub-Sector
Automotive Vehicle Service

Occupation
Technical Service Repair

Reference ID: **ASC/ Q 1411**
NSQF Level : 4



**Automotive Service
Technician
(2 & 3 Wheelers)**



Shri Narendra Modi
Prime Minister of India

**“ Skilling is building a better India.
If we have to move India towards
development then Skill Development
should be our mission. ”**



Certificate

COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

AUTOMOTIVE SKILLS DEVELOPMENT COUNCIL

for

SKILLING CONTENT : PARTICIPANT HANDBOOK

Complying to National Occupational Standards of

Job Role/Qualification Pack: 'Automotive Service Technician(Two and Three Wheelers)' QP No. 'ASC/Q 1411 NSQF Level 4'

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The content of this handbook is aligned to the curriculum of QP/NOS for Automotive Service Technician (Two and Three Wheelers).

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About this Guide

Indian Auto Industry is one of the largest in the world. The industry is expected to contribute 10% to India's GDP as per Automotive Mission Plan 2016-26 and create 65 million additional jobs. The sector offers big potential for jobs across the length and breadth of the country. In line with the rapid technological advancement in this field, there are exciting prospects for a fulfilling career in this industry.

This book is designed to enable a candidate to acquire skills that are required for employment. The content of this book is completely aligned to the National Occupation Standards QP/NOS and conform to the National Skills Qualification Framework (NSQF).

The Qualification pack of an Automotive Service Technician (2 & 3 Wheelers), Level-4 includes the following NOS's which have all been covered across the units:

1. **ASC/ N 1420: Carry out routine servicing and minor repairs of aggregates of two and three wheelers**
2. **ASC/ N 0001: Plan and organise work to meet expected outcomes**
3. **ASC/ N 0002: Work effectively in a team**
4. **ASC/ N 0003: Maintain a healthy, safe and secure working environment**

Key Learning Objectives for the specific NOS mark the beginning of the Unit/s for that NOS. The symbols used in this book are described below.

Happy learning !!

Symbols Used



Learning Outcomes



Steps



Time



Tips



Notes



Objectives



Exercise



Activity

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1. Introduction

Unit 1.1 – Introduction to Automobiles

Unit 1.2 – History of Two and Three Wheelers

Unit 1.3 – Classification of Automobiles

Unit 1.4 – Job Role of Auto Service Technician



Key Learning Outcomes

At the end of this module, you will be able to:

1. Acquire knowledge of two and three wheelers history
2. Describe different types of automobile
3. Classify automobile industry
4. Explain role of auto service technician in automobile service to meet required responsibilities

Unit 1.1: Introduction to Automobile

Unit Objectives

At the end of this unit, you will be able to:

1. Acquire required knowledge of automobile industry
2. Describe type of automobile

1.1.1: Introduction to Automobile

We all are familiar with the word Automobile. We do also understand the meaning of automobile; it could be a car, two wheeler, bus etc. having its own engine and move using wheels for goods transport or carry passengers.

The automobile word has been taken from ancient Greek word which combine auto means self and mobilis mean movable thus we can define automobile as a vehicle which can move itself.

Car which is also an alternative name of automobile also seems to be taken from Latin word carrum which means wheeled vehicle or from French word cart. Most of these words seem to be taken from Gallic Chariot.

Most of the definition of automobile tells us that it is designed for roads and should have seating capacity ranging from 1 to 8 people, may have minimum 2 wheels and is designed for the purpose of transporting people and goods.

1.1.2: We Know Automobile by Different Names Like

- | | | | |
|---------------|--------------------------|-----------------|----------------|
| • AutoRiksha | • Horseless carriage | • Automobile | • Quadri Cycle |
| • Auto car | • Moped | • Auto buggy | • Motor Cycle |
| • Car | • Scooter | • Motor | • Bus |
| • Motor car | • Truck | • Motor vehicle | • Tractor |
| • Motor coach | • Earth Moving Equipment | • Motor wagon | • Tumtum |

Unit 1.2: History of Two and Three Wheelers

Unit Objectives

At the end of this unit, you will be able to:

Explain the history of two and three wheelers

1.2.1: History of Two Wheelers

Two wheelers history in India was started in the year 1955. Indian government was in need of strong, rough and tough motorcycles for Army and police forces in western part of India due to rough and rocky ground.

In India, Royal Enfield from United Kingdom introduced 350 cc “Bullet” as first batch of motorcycle. These motorcycles were brought to India in Chennai and started the journey of two wheelers industry in India.

During the period 50s to 70s India has observed the appearance of two wheeler industry. Few companies like Bajaj Auto, Royal Enfield, Escort started their operation but with limited production capacity. Two wheelers Industry started with small establishment by early 50’s. The first two wheelers manufactured by Indian automobile industry was scoter. During initial stage of scoter production it was dominated by API but latter on taken over by Bajaj Auto. Enfield 350cc and escort 175cc bikes are the one who dominated Indian motorcycle segment.

Government of India decided location for setting up the plant the plants and issued license for manufacturing with restricted expansion. Two wheeler productions were under a lakh during the 70’s and iconic brands like Royal Enfield’ s bullet and Bajaj Auto’s Chetak, Escort’s Rajdoot won the hearts of Indian consumers. After almost decades of a monopoly for Bajaj Auto, things began to change.

During 70’s and 80’s new played was introduced in two wheelers manufacturing like Kinetic and LML scooters. During this period manufacturer got the best profit margin and the total production of two wheelers reached around 4 and half lakh units.

But the 80’s proved to be the transformational decade. As during this period Indian company Hero tied up with Honda as heroHonda, TVS from India with Suzuki and Escorts from India with Yamaha. Actually it was hero-Honda who bring a major revolution by moving the market from scoter to bikes with stylish product having better technology and fuel economy. Market leader Bajaj was caught off guard but managed to fight back.

To make the market more comparative, India opened two-wheelers industry for foreign competition in the middle of 80s. During this period Indian manufacturer Escorts and Enfield were not aware about four Indo-Jap-anese joint ventures in 100cc bikes segment. Due demand driven towards fuel efficient low power bikes hero-Honda became the only producer of 100cc bike category in in four stroke segment.

Post liberalization the focus was on technology, pollution control, emission norms, increased competition and segmentation. Two wheelers production grew to almost 38 lakh units. Major revolution in 2 wheelers history has been observed in this period as Indian companies decided to be separated from their foreign alliance such as TVS Suzuki, Yamaha Escorts, Kinetic Honda.

Presently in two wheelers segment India is tagged as the second largest producer and also in other segment of automobile we contributes largest volume with an annual growth of 30%.

1.2.2: History of Three Wheeler

World have huge need of 3 wheelers. 3 Wheelers segment has always assured its existence in the automobile world and considered as one of the promising product.

Three wheelers vehicle has three wheels “human or people-powered vehicles” or power driven vehicle in the form of motorcycle or all-terrain vehicle. Three wheelers vehicles are also called by some other names like trikes, tri-cars and cycle cars. Tri-cycle terminology is merely in use but three-wheelers terminology is much in use for this motor vehicles. We can classify three-wheelers as automobiles or motorcycles.



Fig: 1.2.2.1: Three Wheeler for Ferrying Passengers

Basically we can say three-wheelers are motorcycle-based machines having single wheel in front and using engine similar to motorcycle and having rear axle similar to car axle. Three-wheelers are constructed as rear engine and front engine. Other tri-rickshaw includes all-terrain vehicle concept and constructed for off road use. It is also possible that three-wheeled vehicles may have two wheels at rear side and one on front side or two wheels at front side and one at rear side.



Fig: 1.2.2.2: Three Wheeler to Ferry Goods

World has also witnessed three wheelers micro cars manufactured for economic reasons in the countries like USA and UK for taking advantage in tax or taking advantage of lower safety regulation and classified as motorcycle. Due to having light weight construction and better reformation these three wheeled cars are economic to run.

Three wheelers is a transport vehicle and also called as Auto Rickshaw. In many countries it is used for public transportation. Auto Rickshaws constitutes an important mode of transportation for urban areas in developing countries such as India, and a form of novelty transport in many Eastern countries

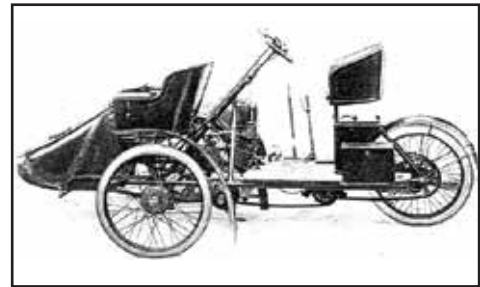


Fig: 1.2.2.3: Tri Car

Early car pioneer Karl Benz developed a number of three-wheeled models and one of the model called Benz patent Motor Wagen extensively considered as the first purpose-built automobile built in 1885.

In 1886 during great exhibition John Henry Knight presented a tri car.

But in the year 1897 butter petrol cycle was invented by Edward Butler in this segment.

It was further competed in 1907 by Conti 6hp tri car and a race called peeking to Paris was supported by Le Matin a French newspaper.

Auto rickshaw (Three Wheelers) – Called auto rickshaw in India, or rickshaw in Pakistan also known as a Bajay or Bajaj in Indonesia, three-wheeler or tuktuk in Sri Lanka, samosa, tempo, tuk-tuk in Thailand is a motorized development of the traditional pulled rickshaw or cycle rickshaw.

Auto rickshaw was introduced in India during 1959 by Bajaj auto. It was motivated from piaggio's ape c model which was itself based on the design of vespa two wheeler .the bajaj produced these under piaggio license. The government initially licensed the company to make 1000 autos a year.

Auto rickshaw in India is manufactured by various automotive companies like Mahindra & Mahindra, Bajaj Auto, TV Motors, Force Motors, Kerala Automobile, Kumar Motors etc.

Unit 1.3: Classification of Automobiles

Unit objectives

At the end of this unit, you will be able to:

1. Classify automobiles based on industry and other parameters
2. Describe recent development in automobile industry

1.3.1: Automobiles are Normally Classified into Two Categories

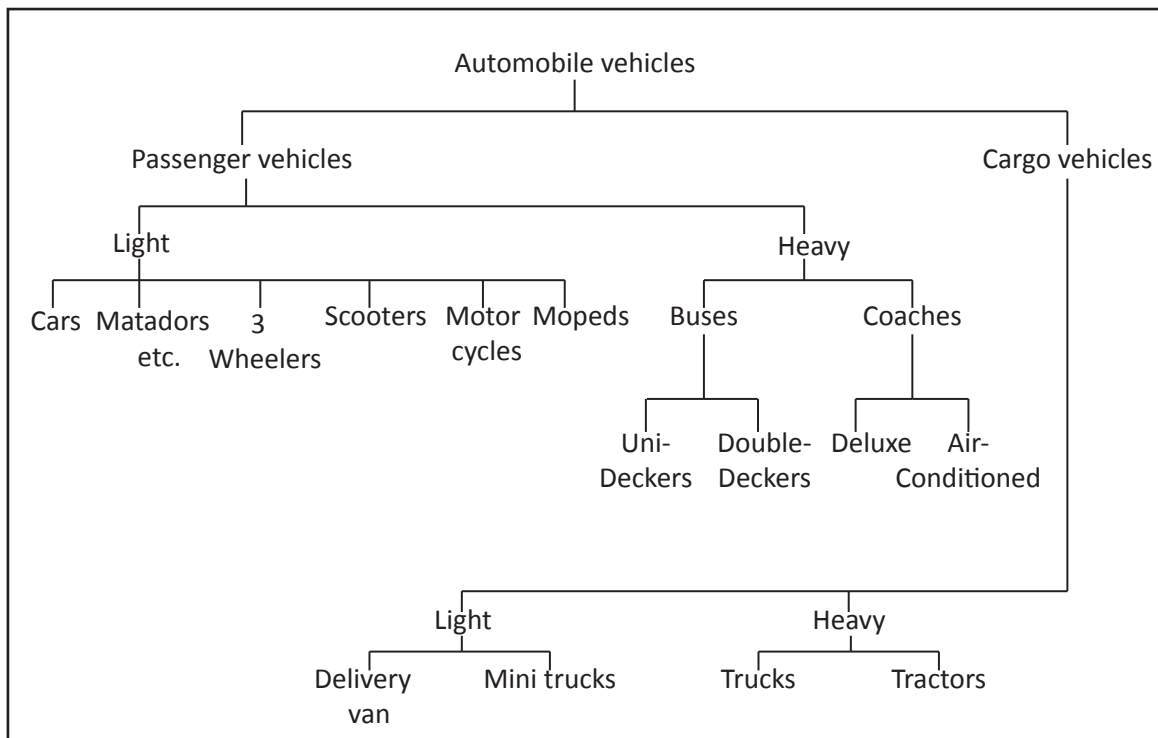


Fig: 1.3.1: Classification of Automobiles

1.3.2: Further the Automobiles can be Classified Based on Different Parameters

Purpose of Transportation:

- 1) Passenger vehicles — Car, Jeep, Bus
- 2) Goods vehicles — Truck

Capacity:

- 1) Light motor vehicles — Car, Motorcycle, Scooter
- 2) Heavy motor vehicles — Bus, Coach, Tractor

Fuel used:

- 1) Petrol vehicles — Car, Jeep, Motorcycle, Scooter
- 2) Diesel vehicles — Truck, Bus, Tractor, Bulldozer
- 3) Electric cabs — Battery truck, Forklift
- 4) Steam carriages — Steam road rollers

Number of wheels:

- 1) Two-wheeler
- 2) Three-wheeler
- 3) Four-wheeler
- 4) Six-wheeler

Drive of the vehicles:

- 1) Single-wheel drive vehicle
- 2) Two-wheel drive vehicle
- 3) Four-wheel drive vehicle
- 4) Six-wheel drive vehicle
- 5) Front wheel drive
- 6) Rear wheel drive
- 7) LHD : Left hand drive
- 8) RHD : Right hand drive

Normally automobile are specified as:

- **Type:** Car, truck, scooter, motorcycle, bus
- **Capacity:** 5 ton, 3 ton, 1 ton, 4-seater, 6- seater, 30-seater, 45-seater
- **Manufacturer or Make of the vehicle:** Tata, Maruti, Suzuki, Ashok Leyland, Mahindra, Honda, Hyundai, Toyota, Ford, Fiat, Chevrolet, Audi, Mercedes, Isuzu, Skoda, Volkswagen
- **Drive:** LHD: Left hand drive, RHD : Right and drive, Single wheel drive, Two wheel drive, Four wheel drive, Six wheel drive

- **Model:** Year of manufacturing or chassis code number

The vehicle identification number is the identification code (VIN) marked on each and every auto-mobile. The VIN number is unique in nature and two vehicles cannot have same VIN as it is used as unique identification mark for the vehicle. Usually VIN have 17 alpha numeric code.



Fig: 1.3.2: Sample VIN Number

1.3.3: Developments in Indian Automobile Industry

- In 1942 Hindustan Motors was established by CK Birla Group, in 1948 the Production of the iconic Ambassador was started.
- In 1947 Mahindra got the license to build jeep SUVs in India and thus introduced the utility Segment in India.
- In 1954 Indian Government ordered 800 motorcycles for security force on Pakistan's border
- In 1955 finally Bullet hits Indian ground and still its most lovable motorcycle of India
- In 1960's Bajaj introduced two wheelers scooters
- In 1972 Bajaj launches Bajaj chetak scooter. It's based Paggio Vespa
- In 1980's the Indian Auto Industry had limited supply of vehicles and most of them were outdated
- In 1983, Maruti Udyog Limited entered the Indian Automotive sector
- In 1983 the Escort group launches Rajdoot 350.
- In 1984 Yamaha lunched RX100 which is still bikers choice
- In 1985 Hero honda lunched CD 100 model in market with special feature like high fuel efficiency and low emission
- Around 1985 TVS group lunched ind-Suzuki Ax100 which does not make more success like others.
- In 1996-1998 Hyundai Motors entered the Indian Automobile Sector
- In 2010 Hero and Honda group separated for their joint venture and started operating independently with their individual brand name Honda & Hero

Unit 1.4: Job Role of Auto Service Technician

Unit Objectives

At the end of this unit, you will be able to:

1. Explain role of auto service technician at automobile service centre
2. Describe Key responsibilities of service technician

1.4.1: Role of an Auto Service Technician at Automobile Service Centre

Growing Importance of After Sales in Auto Industry:

- The role of the companies does not end with selling the product only. In fact, with the ever growing competitive market, it is completely important for every company to equally work hard in after sales.
- This includes product quality and sustains performance which leads to customer satisfaction
- After sales service should ensure that customers are happy and satisfied not with the product only but also the service the organization offers.

Role of After Sales in Auto Industry Ensures:

- Product and service meet or exceed the customer's expectation;
- Customer believes and trust in the brand;
- A strong bond between the organization and the customer;
- Earn more customers through reference from old ones;
- Earn more revenues and profits in the market.

The Technicians Play an Important Role for the Workshop Profitably:

- A productive Workforce of technically sound people will ensure / customer satisfaction and retention.
- A proper workshop has room for different work activities.
- An organization chart defines the reporting structure of the workshop.
- A well-defined service process ensures a smooth running of the workshop.

1.4.2: Service Process

- **Vehicle Booking:** In this process the appointment is taken by the service advisor from the customer for the service job. When the customer calls for an appointment to service his vehicle the SA will allot time and date for him to bring his vehicle to the workshop as per the work schedule.
- **Vehicle Receiving and job card opening:** the SA will receive booked vehicle and open a job order. A job order or a job card is a document which has details of the customers and the vehicle along with the job to be carried out on his vehicle. The customer has to ensure that his and his vehicle details are correctly entered and the jobs and his vehicles problems are correctly recorded on the job card before signing the JC.

- Job Allotment: The workshop Supervisor allots the jobs to the technicians as per the schedule and priority and delivery commitments.
- Work progress: The technician's carries out the work as prescribed in the job order. He will intimate the supervisor if any additional job has to be done on the vehicle. An estimate of the job if required is given. On completion of the job the vehicle is sent for final inspection.
- Final Inspection: The quality tester will perform the final inspection of the vehicle .He ensures that the job requested by the customer is carried out and the reported problems in the vehicle are solved. He sent the vehicle to washing after his inspection.

Exercise-1: Fill in the Blanks

1. The first batch of motorcycles in India was
A. Royal Enfield B. Rajdoot C. Yamaha D. Hero Honda
2. Two wheeler productions in India during 70's was.....
A. Around a lakh B. More than lakh C. Two lakh D. Three lakh
3. The name of automobile brand that moved the Indian market from scooters to bikes with the promise of fuel economy is
A. Escort B. Suzuki C. Bajaj D. Hero Honda
4. India is Largest producer of two wheelers
A. 2nd B. 3rd C. 4th D. 5th
5. Rare axle of three wheelers is similar to
A. Bus B. Truck C. Car D. Train
6. Autorickshaw was introduced in India by
A. Tata Motors B. Baja Auto C. Mahindra & Mahindra D. Force Motors
7. Unique number marked on each vehicle is called
A. Vehicle identification number B. Vehicle serial number C. Vehicle log number
D. Automobile serial number
8. Bajaj introduced two wheelers scooters in the year
A. 1950 B. 1940 C. 1960 D. 1970
9. Hero and Honda group separated for their joint venture in the year
A. 209 B. 2010 C. 2011 D. 2012
10. One of the important role, after sales in auto industry is
A. Ensure strong bond between the organization and the customer
B. Make customer happy
C. Earn revenues
D. Learn good practices

