



Model Curriculum

QP Name: CNG Kit Fitment Technician

QP Code: ASC/Q1430

QP Version: 1.0

NSQF Level: 4

Model Curriculum Version: 1.0

Automotive Skills Development Council | 153, Gr Floor, Okhla Industrial Area, Phase – III, Leela Building,
New Delhi – 110020

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Training Parameters

| | |
|---|---|
| Sector | Automotive |
| Sub-Sector | Automotive Vehicle Service |
| Occupation | Technical Service & Repair |
| Country | India |
| NSQF Level | 4 |
| Aligned to NCO/ISCO/ISIC Code | NCO-2015/3115.0602 |
| Minimum Educational Qualification and Experience | 10th Class with 3 Years of experience of relevant experience OR I.T.I (Mechanic Auto Electrical and Electronics/ Mechanic Diesel/ Mechanic Motor Vehicle (MMV)) with 1 Year of experience of relevant experience OR Certificate-NSQF (Two/Four-Wheeler Service Assistant Level 3) with 2 Years of experience of relevant experience |
| Pre-Requisite License or Training | Driving License and Basic Computer Skills |
| Minimum Job Entry Age | 18 years |
| Last Reviewed On | 30/12/2021 |
| Next Review Date | 30/12/2024 |
| NSQC Approval Date | 30/12/2021 |
| QP Version | 1.0 |
| Model Curriculum Creation Date | 30/12/2021 |
| Model Curriculum Valid Up to Date | 30/12/2024 |
| Model Curriculum Version | 1.0 |
| Minimum Duration of the Course | 400 Hours 00 Minutes |
| Maximum Duration of the Course | 400 Hours 00 Minutes |

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Perform preparatory activities such as inspection of tools and equipment, arranging CNG kit components etc.
- Perform various CNG kit fitting and installation activities.
- Perform post-assembly operations such as cleaning and testing of vehicle.
- Work effectively and efficiently as per schedules and timelines.
- Implement safety practices.
- Optimize the use of resources to ensure less wastage and maximum conservation.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

| NOS and Module Details | Theory Duration | Practical Duration | On-the-Job Training Duration (Mandatory) | On-the-Job Training Duration (Recommended) | Total Duration |
|--|-----------------|--------------------|--|--|----------------|
| Bridge Module | | | | | |
| Module 1: Introduction to the role of a CNG Kit Fitment Technician | 8:00 | 0:00 | | | 8:00 |
| ASC/N9801 - Organize Work and Resources (Service) NOS Version No. 1.0 NSQF Level 4 | 16:00 | 24:00 | - | - | 40:00 |
| Module 2: Work effectively and efficiently | 08:00 | 16:00 | - | - | 24:00 |
| Module 3: Optimize resource utilization | 08:00 | 08:00 | - | - | 16:00 |
| ASC/N9802 – Interact effectively with colleagues, customers and others NOS Version No. – 1.0 NSQF Level - 3 | 16:00 | 24:00 | - | - | 40:00 |
| Module 4: Communicate effectively and efficiently | 16:00 | 24:00 | - | - | 40:00 |
| ASC/N1448 – Install and fit CNG Kit in the vehicle NOS Version No. – 1.0 NSQF Level - 4 | 104:00 | 208:00 | | | 312:00 |
| Module 5: Prepare for CNG kit installation activities | 32:00 | 56:00 | | | 88:00 |
| Module 6: Perform CNG kit installation and post-installation activities | 72:00 | 152:00 | | | 224:00 |
| Total Duration | 144:00 | 256:00 | | | 400:00 |

Module Details

Module 1: Introduction to the role of a CNG Kit Fitment Technician

Bridge module

Terminal Outcomes:

- Discuss the role and responsibilities of a CNG Kit Fitment Technician.

| Duration: <08:00> | Duration: <00:00> |
|---|--|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • List the role and responsibilities of a CNG Kit Fitment Technician. • Discuss the job opportunities for a CNG Kit Fitment Technician in the automobile industry. • Explain about CNG vehicle manufacturing market. • Discuss the standard operating procedures (SOP) to be followed for detailing of vehicles and for using tools and equipment. • Outline the safety, health and environment policy to be followed for the automotive sector. • List the standard checklists and schedules recommended by OEM. • Discuss the documentation involved in the different processes such as job sheet, status report, etc. • Describe how to work as per organisational policies and professional code of conduct. | |
| Classroom Aids: | |
| Whiteboard, marker pen, projector, standard checklists and schedules samples | |
| Tools, Equipment and Other Requirements | |
| | |

Module 2: Work Effectively and Efficiently

Mapped to ASC/N9801, v1.0

Terminal Outcomes:

- Employ appropriate ways to maintain safe and secure working environment.
- Perform work as per the quality standards.

| Duration: <08:00> | Duration: <16:00> |
|--|--|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Outline the organizational structure to be followed to report about health, safety and security breaches to the concerned authorities. • List the potential workplace related risks and hazards, their causes and preventions. • State the methods to keep the work area clean and tidy. • Discuss how to complete the given work within the stipulated time period. • Explain how to maintain a proper balance between team and individual goals. • Discuss epidemics and pandemics and their impact on society at large. • Discuss the significance of conforming to basic hygiene practices such as washing hands, using alcohol-based hand sanitizers. • Discuss the use of proper PPE for maintaining health and hygiene at workplace and the process of wearing/discarding them. • Define self-quarantine or self-isolation. • Discuss the importance of identifying and reporting symptoms to the concerned authorities. • Explain the significance of following prescribed rules and guidelines during an epidemic or a pandemic. • Discuss organizational hygiene and sanitation guidelines and ways of reporting breaches/gaps if any. • Discuss the ways of dealing with stress and anxiety during an epidemic or a pandemic. | <ul style="list-style-type: none"> • Perform routine cleaning of tools, equipment and machines. • Employ various techniques for checking malfunctions in the equipment as per Standard Operating Procedure (SOP). • Apply basic housekeeping practices to ensure that the work area is clean, such as mopping spills and leaks, cleaning grease stains etc. • Demonstrate how to evacuate the workplace in case of an emergency. • Show how to sanitize and disinfect one's work area regularly. • Demonstrate the correct way of washing hands using soap and water. • Demonstrate the correct way of sanitizing hands using alcohol-based hand rubs. • Display the correct way of wearing and removing PPE such as face masks, hand gloves, face shields, PPE suits, etc. • Demonstrate appropriate social and behavioural etiquette (greeting and meeting people, spitting/ coughing/ sneezing, etc.). • Prepare a list of relevant hotline/ emergency numbers. |
| Classroom Aids: | |
| Whiteboard, marker pen, projector | |
| Tools, Equipment and Other Requirements | |
| <ul style="list-style-type: none"> • Personal Protection Equipment: safety glasses, head protection, rubber gloves, safety footwear, warning signs and tapes, fire extinguisher and first aid kit | |

- Sanitization kit, disinfectants, alcohol-based sanitizers, different types of face masks, shields, suits, etc.

Module 3: Optimize Resource Utilization

Mapped to ASC/N9801, v1.0

Terminal Outcomes:

- Use the resources efficiently.
- Apply conservation practices at the workplace.

| | |
|--|--|
| Duration: <08:00> | Duration: <08:00> |
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Explain the ways to optimize usage of resources. • Discuss various methods of waste management and its disposal. • List the different categories of waste for the purpose of segregation • Differentiate between recyclable and non-recyclable waste • State the importance of using appropriate colour dustbins for different types of waste. • Discuss the common sources of pollution and ways to minimize it. | <ul style="list-style-type: none"> • Perform basic checks to identify any spills and leaks and that need to be plugged /stopped. • Demonstrate different disposal techniques depending upon different types of waste. • Employ different ways to check if equipment/machines are functioning as per requirements and report malfunctioning, if observed. • Employ ways for efficient utilization of material and water • Use energy efficient electrical appliances and devices to ensure energy conservation |
| Classroom Aids: | |
| White board/black board marker/chalk, duster, computer or Laptop attached to LCD projector | |
| Tools, Equipment and Other Requirements | |
| Different type of waste bins to collect and segregate waste for disposal | |

Module 4: Communicate Effectively and Efficiently

Mapped to ASC/N9802, v1.0

Terminal Outcomes:

- Use effective communication and interpersonal skills.
- Apply sensitivity while interacting with different genders and people with disabilities.

| Duration: <16:00> | Duration: <24:00> |
|---|--|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Explain the organizational structure for communicating with colleagues, seniors and others. • Discuss the ways to adjust the communication styles to reflect sensitivity towards gender and persons with disability (PwD). • Explain the importance of respecting personal space of colleagues. • State the procedure to receive work instructions and report problems to the supervisor. • List the various organizational policies and procedures to be followed at the workplace. • Describe different ways to rectify commonly occurring errors. • Explain the importance of complying with the instructions/guidelines and procedures while performing tasks related to the job specifications. • Discuss the importance of PwD and gender sensitization. | <ul style="list-style-type: none"> • Employ different means of communication depending upon the requirement while interacting with others. • Demonstrate using new ways to maintain good relationships with colleagues and supervisor. • Prepare a sample report to send the work status to the supervisor. • Demonstrate how to communicate with different genders and persons with disability (PwD) in a sensitive manner. |
| Classroom Aids: | |
| Whiteboard, marker pen, projector | |
| Tools, Equipment and Other Requirements | |
| Sample of escalation matrix, organisation structure. | |

Module 5: Prepare for CNG kit installation activities

Mapped to ASC/N1448, v1.0

Terminal Outcomes:

- Identify tools and equipment required for CNG kit installation
- Perform the steps to carry out preparatory activities such as selection and inspection of tools and equipment, inspection of CNG kit components for defects etc.

| Duration: <32:00> | Duration: <56:00> |
|---|--|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Elaborate characteristics of CNG and advantages of using CNG as fuel. • Discuss difference in Petrol and CNG fitted vehicles. • List various CNG kit components specified by manufacturer suitable for different brand/vehicle type/model/engine type. • Describe basic technology used and functioning of various CNG kit components. • Discuss the information derived from the job card, CNG Kit manufacturer specifications etc. related to installation of CNG kit. • Describe the selection criteria of CNG kit components on the basis of brand/model/variant of the vehicle. • List tools, equipment and CNG kit component required during work. • Summarise the steps to be performed for checking the tools, equipment and CNG kit component before use. • Describe various methods of calibration, safety checks pre and post CNG kit fitment. | <ul style="list-style-type: none"> • Demonstrate the standard operating procedure to use tools and equipment required during work. • Demonstrate organisational procedure of collecting tools, equipment and CNG kit component required for work. • Apply appropriate ways to check the tools, equipment and CNG kit component for defects before use. • Apply appropriate ways to validate and diagnose faults in CNG kit components. • Demonstrate organisational procedure of reporting the defects/ malfunctions in the tools, equipment & CNG kit components to the concerned person. • Role play a situation on how to co-ordinate with the concerned vendor/supplier for arranging the required CNG kit and its components. |
| Classroom Aids: | |
| Whiteboard, marker pen, projector | |
| Tools, Equipment and Other Requirements | |
| <ul style="list-style-type: none"> • PPT's, teaching aids, job card, CNG kit components • Measuring and marking tools: Steel tape, steel rule, vernier calliper, micrometre, divider, scribe, T Square, bevel protractor etc. • Assembly tools and equipment: Riveting machine, drilling machine, rubber seals, soldering iron, adhesives etc. • Components: Bolts, nuts, screws, wires, fasteners, connectors, sealants etc. • Safety materials: Fire extinguisher, safety gloves, aprons, safety glasses, helmet, safety shoe and first-aid kit • Cleaning material: Tip cleaner, wire brush (M.S.), cleaning agents, cleaning cloth, waste container, dust pan and brush set, liquid soap, hand towel | |

Module 6: Perform CNG kit installation and post- installation activities

Mapped to ASC/N1448, v1.0

Terminal Outcomes:

- Demonstrate various activities for fitting and installation of CNG kit components.
- Perform steps to carry out post-installation activities.

| Duration: <72:00> | Duration: <152:00> |
|--|---|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Discuss the necessary precautions to be taken to avoid any hazard and accident during CNG kit installation activities. • Outline process of fitment and installation of the latest CNG kit components w.r.t a particular brand/vehicle model/engine type. • Discuss various provisions in vehicles to install CNG kit. • List the steps to be performed for fitting and installing the CNG kit in the vehicle. • Outline the process of assembly operations such as bolting, riveting, tightening, wire stripping, crimping, etc. • Discuss the impact of various assembly operations on the final output. • Discuss the need of appropriate calibration/ tuning of engine after installation of CNG kit. • Recall the tasks to be performed post-installation of CNG kit. • List the steps to be performed for checking that all CNG kit components installed, fitted and functioning properly. • Discuss maintenance requirement of CNG Kit components. • Recall organisational recommended procedure for returning leftover consumable/ parts, tools/ equipment etc after completion of work. • List different methods for disposing off packing wraps/ box/ covers and other material. • Summarise the documents and records needed to be prepared and maintained related to CNG kit installation. | <ul style="list-style-type: none"> • Employ appropriate fitting method for fitting the CNG kit in the vehicle. • Apply appropriate ways to make holes/cuts on metal sheet, plastic, fabric etc., for fitting CNG kit components. • Show how to remove dummy plugs, covers, old/damaged/defective parts and clean surrounding areas before starting installation work. • Demonstrate organizational specified procedure of fitting the electrical/ electronic components of CNG kit and making the wire connections as per WI. • Demonstrate organizational specified procedure of all assembly operations such as bolting, riveting, tightening, wire stripping, crimping, etc. • Employ appropriate assembly method for assembling all the components of the CNG Kit in vehicle in their correct positions. • Demonstrate the use of screws, nuts, clamps etc. to join the components. • Apply appropriate ways to check calibration/ tuning of engine after installation of CNG kit. • Apply appropriate ways to check that all CNG kit components installed, fitted and functioning properly. • Show how to assess the CNG kit functioning and engine performance on both petrol and CNG modes through road trial. • Apply appropriate ways to communicate features, functioning, precautions and maintenance requirements of CNG Kit to the customer. • Demonstrate the organisational procedure involved in returning leftover consumable/ parts, tools/ equipment etc. after completion of work. • Show how to dispose packing wraps/ box/ |

| | |
|---|---|
| | covers and other material as per organisational guidelines. |
| Classroom Aids: | |
| Whiteboard, marker pen, projector | |
| Tools, Equipment and Other Requirements | |
| <ul style="list-style-type: none"> • PPT's, teaching aids, job card, CNG kit components • Measuring and marking tools: Steel tape, steel rule, vernier calliper, micrometre, divider, scribe, T Square, bevel protractor etc. • Assembly tools and equipment: Riveting machine, drilling machine, rubber seals, soldering iron, adhesives etc. • Components: Bolts, nuts, screws, wires, fasteners, connectors, sealants etc. • Safety materials: Fire extinguisher, safety gloves, aprons, safety glasses, helmet, safety shoe and first-aid kit • Cleaning material: Tip cleaner, wire brush (M.S.), cleaning agents, cleaning cloth, waste container, dust pan and brush set, liquid soap, hand towel | |

Annexure

Trainer Requirements

| Trainer Prerequisites | | | | | | |
|-----------------------------------|---|------------------------------|--------------------|---------------------|--------------------|---------|
| Minimum Educational Qualification | Specialization | Relevant Industry Experience | | Training Experience | | Remarks |
| | | Years | Specialization | Years | Specialization | |
| ITI | Automobile Engineering/ Mechanical Engineering/ Motor Vehicle Mechanic | 3 | Automotive Service | 1 | Automotive Service | NA |
| ITI | Automobile Engineering/ Mechanical Engineering/ Motor Vehicle Mechanic | 4 | Automotive Service | 0 | Automotive Service | NA |
| Diploma | Automobile Engineering/ Mechanical Engineering/ Motor Vehicle Mechanic | 3 | Automotive Service | 1 | Automotive Service | NA |
| Diploma | Automobile Engineering/ Mechanical Engineering/ Motor Vehicle Mechanic | 4 | Automotive Service | 0 | Automotive Service | NA |
| Certificate- NSQF Level 6 | Four Wheeler Master Technician | 3 | Automotive Service | 1 | Automotive Service | NA |

| Trainer Certification | |
|--|--|
| Domain Certification | Platform Certification |
| "CNG Kit Fitment Technician, ASC/Q1430, version 1.0". Minimum accepted score is 80%. | "Trainer, MEP/Q2601 v1.0" Minimum accepted score is 80%. |

Assessor Requirements

| Assessor Prerequisites | | | | | | |
|-----------------------------------|---|------------------------------|--------------------|--------------------------------|--------------------|---------|
| Minimum Educational Qualification | Specialization | Relevant Industry Experience | | Training/Assessment Experience | | Remarks |
| | | Years | Specialization | Years | Specialization | |
| ITI | Automobile Engineering/ Mechanical Engineering/ Motor Vehicle Mechanic | 4 | Automotive Service | 1 | Automotive Service | NA |
| ITI | Automobile Engineering/ Mechanical Engineering/ Motor Vehicle Mechanic | 5 | Automotive Service | 0 | Automotive Service | NA |
| Diploma | Automobile Engineering/ Mechanical Engineering/ Motor Vehicle Mechanic | 4 | Automotive Service | 1 | Automotive Service | NA |
| Diploma | Automobile Engineering/ Mechanical Engineering/ Motor Vehicle Mechanic | 5 | Automotive Service | 0 | Automotive Service | NA |
| Certificate- NSQF Level 6 | Four Wheeler Master Technician | 4 | Automotive Service | 1 | Automotive Service | NA |

| Assessor Certification | |
|--|--|
| Domain Certification | Platform Certification |
| “CNG Kit Fitment Technician, ASC/Q1430, version 1.0”. Minimum accepted score is 80%. | “Assessor; MEP/Q2701 v1.0” Minimum accepted score is 80%. |

Assessment Strategy

1. Assessment System Overview:
 - Batches assigned to the assessment agencies for conducting the assessment on SDMS/SIP or email
 - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
 - Assessment agency deploys the ToA certified Assessor for executing the assessment
 - SSC monitors the assessment process & records
2. Testing Environment:
 - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
 - Check the duration of the training.
 - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
 - If the batch size is more than 30, then there should be 2 Assessors.
 - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
 - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
 - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
 - Check the availability of the Lab Equipment for the particular Job Role.
3. Assessment Quality Assurance levels / Framework:
 - Question papers created by the Subject Matter Experts (SME)
 - Question papers created by the SME verified by the other subject Matter Experts
 - Questions are mapped with NOS and PC
 - Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
 - Assessor must be ToA certified & trainer must be ToT Certified
 - Assessment agency must follow the assessment guidelines to conduct the assessment
4. Types of evidence or evidence-gathering protocol:
 - Time-stamped & geotagged reporting of the assessor from assessment location
 - Centre photographs with signboards and scheme specific branding
 - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
 - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos
5. Method of verification or validation:
 - Surprise visit to the assessment location
 - Random audit of the batch
 - Random audit of any candidate
6. Method for assessment documentation, archiving, and access
 - Hard copies of the documents are stored
 - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage

- Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

References

Glossary

| Term | Description |
|------------------------------|---|
| Declarative Knowledge | Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem. |
| Key Learning Outcome | Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application). |
| OJT (M) | On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site |
| OJT (R) | On-the-job training (Recommended); trainees are recommended the specified hours of training on site |
| Procedural Knowledge | Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills. |
| Training Outcome | Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training. |
| Terminal Outcome | Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome. |

Acronyms and Abbreviations

| | |
|-------------|---|
| NOS | National Occupational Standard(s) |
| NSQF | National Skills Qualifications Framework |
| QP | Qualifications Pack |
| TVET | Technical and Vocational Education and Training |
| SOP | Standard Operating Procedure |
| WI | Work Instructions |
| PPE | Personal Protective equipment |