# Automotive
# Skills Development Council

**NSDC** National Skill Development Corporation

## QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR AUTOMOTIVE INDUSTRY

## Contents

## What are Occupational Standards(OS)?

➢ OS describe what individuals need to do, know and understand in order to carry out a particular job role or function

➢ OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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## Introduction

## Qualifications Pack- QC Inspector Level 3

**SECTOR:** AUTOMOTIVE

**SUB-SECTOR:** MANUFACTURING SUPPORT

**OCCUPATION:** QUALITY ASSURANCE

**REFERENCE ID:** ASC/Q6301

**Brief Job Description:** Individuals at this job need to be responsible for the quality inspection of the manufactured products in order to deliver high quality to customers

**Personal Attributes:** This job requires the individual to be able to coordinate internally and externally within the organization. The individual should be result oriented, and possess strong quality management skills. The individual should also be able to demonstrate skills for mathematical reasoning, problem solving, relationship building and leadership.

**Job Details**

| Qualifications Pack Code | ASC/Q 6301 | | |
|---|---|---|---|
| Job Role | QC Inspector- L3 | | |
| Credits(NVEQF/NVQF/NSQF) [*OPTIONAL*] | TBD | Version number | 1.0 |
| Sector | Automotive | Drafted on | 13/08/13 |
| Sub-sector | Manufacturing Support | Last reviewed on | 27/08/13 |
| Occupation | Quality Assurance | Next review date | 30/07/15 |

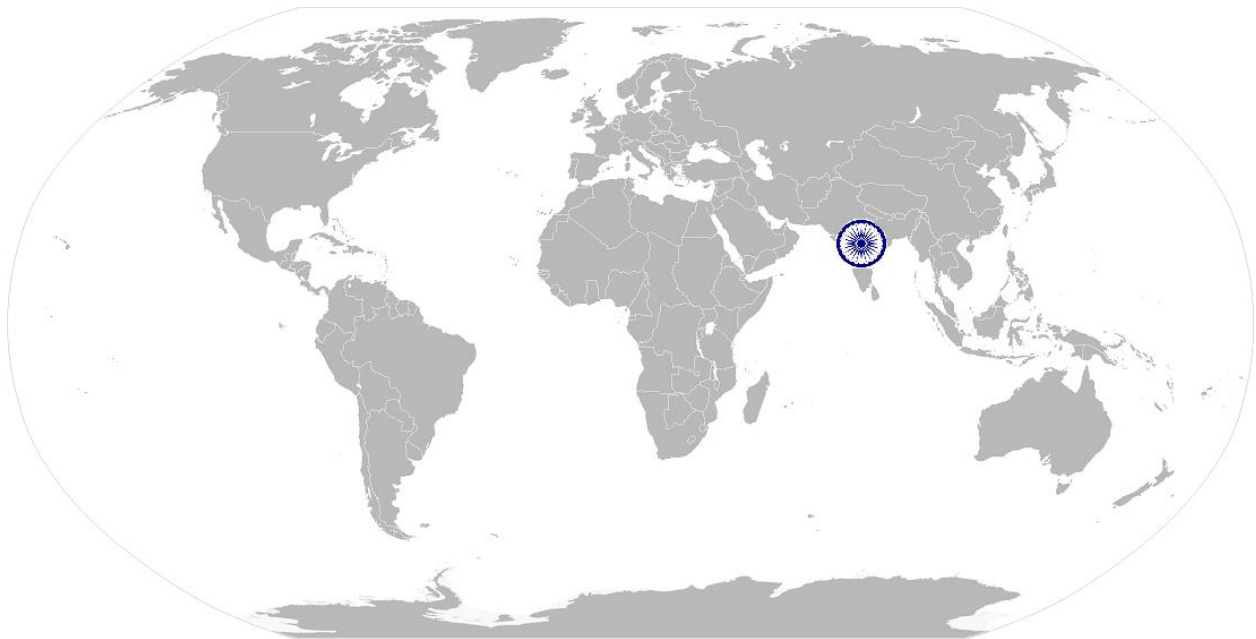| Job Role | QC Inspector- L3 |
|---|---|
| Role Description | inspecting the manufactured products as per the quality standards |
| NVEQF/NVQF level | 3 |
| Minimum Educational Qualifications* | ITI in Mechanical/Electrical/Electronics Engineering ( Product content based) |
| Maximum Educational Qualifications* | Not Applicable |
| Training (Suggested but not mandatory) | • Compulsory: APQP/CP, pre-delivery inspection techniques, handling Basic inspection equipment , Introduction to MSA / SPC, PFMEA etc. <br> • Voluntary: 7 QC tools, , problem solving techniques, Decision making hierarchy in organization |
| Experience | • minimum 1-3 years in Quality/ Manufacturing department |
| Applicable National Occupational Standards (NOS) | **Compulsory:** <br> ASC/N6301. Inspect and maintain the product quality <br> ASC/N0006. Maintaining a safe, clean and secure working environment <br><br> **Optional:** <br> N.A. |
| Performance Criteria | As described in the relevant OS units |

**Acronyms**

| Keywords /Terms | Description |
| --- | --- |
| Sector | Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests. |
| Sub-sector | Sub-sector is derived from a further breakdown based on the characteristics and interests of its components. |
| Occupation | Occupation is a set of job roles, which perform similar/ related set of functions in an industry. |
| Function | Function is an activity necessary for achieving the key purpose of the sector, occupation, or an area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS. |
| Sub-function | Sub-functions are sub-activities essential to fulfill the achieving the objectives of the function. |
| Job role | Job role defines a unique set of functions that together form a unique employment opportunity in an organisation. |
| Occupational Standards (OS) | OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts. |
| Performance Criteria | Performance criteria are statements that together specify the standard of performance required when carrying out a task. |
| National Occupational Standards (OS) | NOS are occupational standards which apply uniquely in the Indian context. |
| Qualifications Pack (QP) | QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code. |
| Unit Code | Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N' |
| Unit Title | Unit title gives a clear overall statement about what the incumbent should be able to do. |
| Description | Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for. |
| Scope | Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required. |
| Knowledge and Understanding | Knowledge and understanding are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard. |
| Organisational Context | Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility. |
| Technical Knowledge | Technical knowledge is the specific knowledge needed to accomplish |

| | specific designated responsibilities. |
|---|---|
| Core Skills/ Generic Skills | Core skills or generic skills are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles. |

| Keywords /Terms | Description |
|---|---|
| NOS | National Occupational Standard(s) |
| NVQF | National Vocational Qualifications Framework |
| NSQF | National Qualifications Framework |
| NVEQF | National Vocational Education Qualifications Framework |
| QP | Qualifications Pack |
| SAP- ERP | System Application and Products- Enterprise Resource Management software |
| PPC | Production Planning and Control |
| HSE | Health , Safety and Environment |
| PPAP | Production Part Approval Process |
| PO | Purchase Order |
| TS | TS 16949 system |
| APQP | Advanced Product Quality Planning |
| RCA | Root Cause Analysis |
| QMS | Quality Management System |
| MSA | Measurement System Analysis |
| PFMEA | Process failure Mode & Effects analysis |

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# National Occupational Standards



## Overview

**This unit is about inspection and maintenance of the quality standards for the products at various stages of Product Life**

**ASC/N6301.  Inspect and maintain the product quality**

National Occupational Standard

| Unit Code | ASC/N6301 |
|---|---|
| Unit Title (Task) | Inspect and maintain the  product quality |
| Description | This OS unit is about the individual monitoring and maintaining the quality of the products |
| Scope | The unit/ task covers the following for Receipt, In Process , Final Inspection:<br><br>• pre- delivery inspection of the  product<br><br>• dock audit / Development  batch of product<br><br>• coordinate with R&D QA for  failures, CAPA & CI issues |

| Performance Criteria(PC) w.r.t. the Scope | |
|---|---|
| **Element** | **Performance Criteria** |
| **Inspection of final product** | To  be competent, the user/individual on the job must be able to :<br>PC1.  conduct the process of Inspection at the stages :<br>   • complete dimensional /Layout Inspection at development stage & later as per the periodicity such as  annual for re- validation<br>   • in the Production phase as per the CP/ Quality plan/ sampling Plan/ stage inspection plans/ First off IR<br>PC2.  handle Inspection equipment and Instruments  such as<br>   • vernier, micrometers<br>   • height Gauge & surface plate<br>   • acceptance/ Combination Gauges<br>   • simple gauges – bore, air , profile<br>for safe storage, calibration at pre-decided frequency  and have an acceptable level of R & R as per SOP of the organization<br>PC3.  conduct a  inspection of the  product covering the following checkpoints:<br>   • visual Inspection of the part  for scratches, dents , damages, packing as per the norms etc.<br>   • special  inspection  co-ordinated  with  other  agencies  e.g.  Lab :Material, Lab: Standards Room, assembly / performance trials etc.<br>   • identification sticker/number/label placed on the product<br>   • functioning of the product and its components<br>   • documentation pertaining to the  Quality<br>PC4.  coordinate  with  the  respective  process  owners  /  seniors  in  QA  and implement CAPA for  discrepancies in the parameters identified in the report on immediate basis<br>PC5.  participate in checking the effectiveness of implementation and repeat the process till the discrepancies  are resolved<br>PC6.  document the observations of the inspection and maintain records of |

## ASC/N6301. Inspect and maintain the product quality

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| | PC7. IR, ERP-System record and special process capability index calculation/ charting as per the SOP raise a scrap note and dispose off the scrapped product in the scrap yard as per the defined procedure maintaining the HSE compliance<br>PC8. As is the case i.e. New product/process development / Production phase , the reports and Part Submission Warrant, PPAP are to be prepared.<br>PC9. based on the implementation of information flow system in organization like ERP/SAP , upload the reports |
| **Dock audit of the sample batch** | To be competent , the user/individual on the job must be able to:<br>PC10. conduct a dock audit of a sample batch from the production lot of the ready to dispatch final products covering the following checkpoints :<br>• product in good shape with no visible damage<br>• presence of sharp edges in the product<br>• wear and tear of the product<br>• presence of any physical defects<br>• packaging of product according to customer specification<br>• packaging boxes as per the requirement for preservation<br>• customer PO Number on the shipping labels<br>• boxes labeled correctly with packer name<br>• count on the Bill of Lading match the count on the pallet<br>• boxes stacked neatly in case of pallet arrangement<br>• damages of the pallet like nails sticking out, broken boards, etc.<br>PC11. coordinate with the respective process owners/Stores and implement CAPA for discrepancies identified in the dock audit on immediate basis<br>PC12. review the effectiveness of implementation and repeat the process till the discrepancies are resolved<br>PC13. document the observations of dock audit and maintain records<br>PC14. based on the implementation of information flow system in organization like ERP/SAP , upload the reports |
| **Coordination with R&D / Quality Manager CAPA , CI** | To be competent , the user/individual on the job must be able to:<br>PC15. work as a CFT member of the team formed for solving a problem pertaining to the products handled .Collect data regarding the problem as decided in the team discussions<br>PC16. participate for preparation of Fault tree, conducting simulation and implementation of actions<br>PC17. participate for updating relevant documentation<br>PC18. assist the NPD department in efficient development of the new product by sharing all the problems related to QCD observed in the existing products |
| **Knowledge and Understanding (K)** | |
| **A. Organizational Context** | The user/individual on the job needs to know and understand:<br>KA1. product portfolio of organization<br>KA2. the manufacturing processes of organization |

ASC/N6301.  **Inspect and maintain the product quality**

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|---|---|
| (Knowledge of the company / organization and its processes) | KA3.   material classification criteria followed by organization<br>KA4.   policies and procedures for storage and preservation of materials<br>KA5.   policies , compliances and systems followed for HSE<br>KA6.   TS-16949/any other QMS system guidelines followed in the organization<br>KA7.   New Process/Product development protocol and methodology |
| **B. Technical Knowledge** | The individual on the job needs to have elementary  knowledge of the following so as to interpret the Quality Requirements :<br>KB1.   manufacturing process being followed for each product<br>KB2.   inspection checkpoints  NPD, Production, Dock Audit etc.<br>KB3.   APQP procedures<br>KB4.   problem solving & analysis tools like 8Ds, five why analysis etc.<br>KB5.   RCA analysis techniques<br>KB6.   requirements for PPAP-PFMEA,CP<br>KB7.    requirements for TS-16949/QMS system followed<br>KB8.   rejection / Inspection  reports<br>KB9.   testing equipments operational knowledge<br>KB10.  resource & information systems like SAP, ERP etc. |
| **Skills (S) [Optional]** | |
| **A.   Core Skills/ Generic  Skills** | **Reading and Writing skills** |
| | The user/ individual on the job  needs to know and understand how to:<br>SA1.   document the  observations in the inspection format using precise terms for description of the defects , phenomenon etc.<br>SA2.   understand the contents mentioned on the identification sticker<br>SA3.   prepare reports/excel sheet/MIS for review of quality manager and senior management |
| | **Communication skills** |
| | The user/ individual on the job  needs to know and understand how to communicate with:<br>SA4.   the  concerned departments for  failures/any issues<br>SA5.   NPD department for new product development<br>SA6.   concerned departments for dock audit and resolution of the discrepancies observed<br>SA7.   senior management for updating the progress and seeking their support<br>SA8.   team members for reviewing the progress of day to day activities |
| | **Teamwork and multitasking** |
| | The user/ individual on the job  needs to know and understand how to:<br>SA9.   work as an effective team members ensuring smooth execution of the inspection of the product in an efficient and timely manner<br>SA10. coordinate with various departments like NPDCFT , Marketing, R&D etc. based on the requirement<br>SA11. share operation knowledge with colleagues |
| **B.   Professional Skills** | **Critical thinking** |

**ASC/N6301. Inspect and maintain the product quality**

|  | The user/ individual on the job needs to know and understand how to: |
| --- | --- |
|  | SB1. coordinate with the process owners and devise countermeasures for effective handling of the non-conformities observed in IR and dock audit |
|  | SB2. understand and analyze the inspection report for providing inputs to NPD department for new product development |
|  | SB3. interpret the customer ( Internal / external) feedback and translate it into the development of the new product in coordination with NPD department |
|  | SB4. identify problems (technical and non-technical), disruptions and delays |
|  | **Problem Solving** |
|  | The user/individual on the job needs to know and understand how to: |
|  | SB5. think through and devise the countermeasure for resolution for any quality related issue observed |
|  | SB6. work on actions to be taken on immediate basis in case of frequent rejections |
|  | SB7. devise and implement interim/permanent countermeasures for the non-conformities observed in the field failures/warranty issues using analysis tools like 4Ds , 8Ds etc. |
|  | **Reflective thinking** |
|  | The user/individual on the job needs to know how to: |
|  | SB8. analyze the interim countermeasures taken for the resolution of non-conformities observed in the product inspection and dock audit to accordingly devise the permanent countermeasures for prevention from re-occurrence |

**ASC/N6301.  Inspect and maintain the product quality**

## NOS Version Control

| NOS Code | ASC/N6301 | | |
|---|---|---|---|
| Credits(NVEQF/NVQF/NSQF) [*OPTIONAL*] | TBD | Version number | 1.0 |
| Industry | Automotive | Drafted on | 13/08/13 |
| Industry Sub-sector | Manufacturing Support | Last reviewed on | 27/08/13 |
| Occupation | Quality Assurance | Next review date | 30/07/15 |

# National Occupational Standards
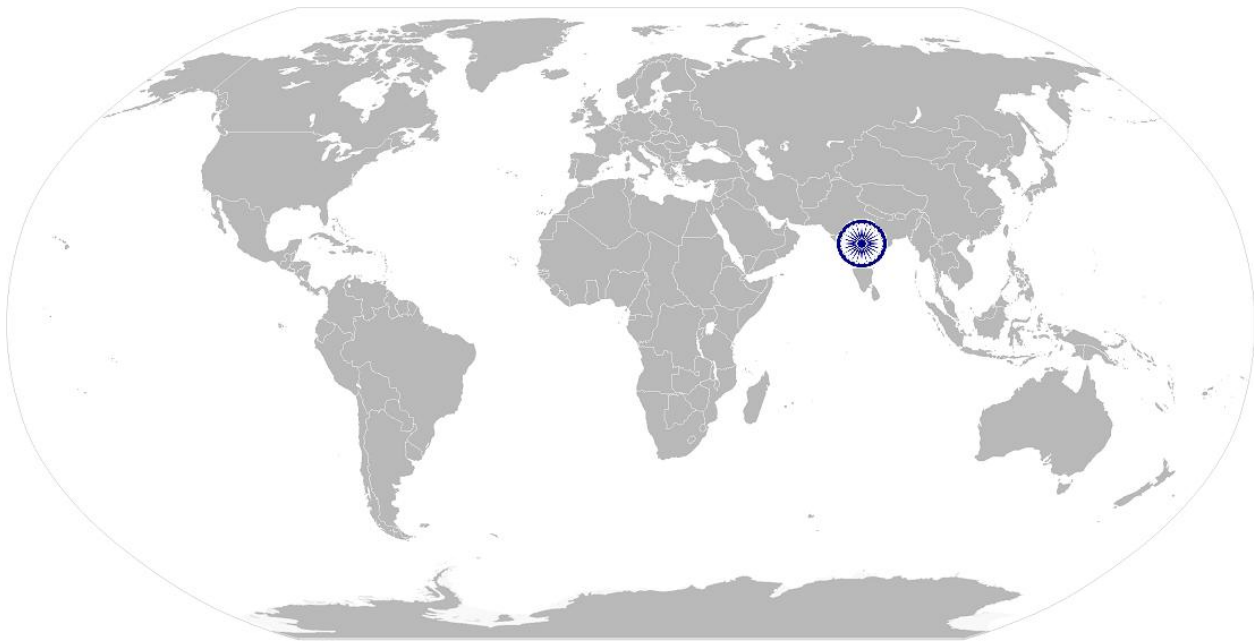


## <u>Overview</u>

**This unit is about establishing a Safe, Healthy and Environment friendly workplace at the organization and supplier's shop floor**

**ASC/N0006  Maintain a safe, clean and secure working environment**

| Unit Code | ASC/N0006 |
|---|---|
| **Unit Title (Task)** | **Maintain a healthy , safe and secure working environment** |
| **Description** | This OS unit is about creating a Safe and Healthy work place, adhering to the safety guidelines in the working area of the organization and vendor's shop floor, following practices which are not impacting the environment in a negative manner |
| **Scope** | This unit/task covers the following:<br>• identification and reporting of risks<br>• sustain a safe , clean and secure working environment |

| Performance Criteria (PC) w.r.t. the Scope | |
|---|---|
| **Element** | **Performance Criteria** |
| **Identify and report the risks identified** | To be competent , the user/individual on the job must be able to :<br><br>PC1.  identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals ,loud noise<br>PC2.  inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc<br>PC3.  inform the concerned authorities about damages which can potentially harm man/ machine during operations<br>PC4.  create awareness amongst other by sharing information on the identified risks |
| **Create and sustain a Safe, clean and environment friendly work place** | PC5.  follow the instructions given on the equipment manual describing the operating process of  the equipments<br>PC6.  follow the Safety, Health and Environment related practices developed by the organization<br>PC7.  operate the machine using the recommended Personal Protective Equipments (PPE)<br>PC8.  maintain a clean and safe working environment near the work place and ensure there is no spillage of chemicals, production waste, oil, solvents etc<br>PC9.  maintain high standards of personal hygiene at the work place<br>PC10. ensure that the waste disposal takes place in the designated area as per organization SOP<br>PC11. inform appropriately the medical officer/ HR in case of self or an employee's illness  of contagious nature so that preventive actions can be planned for others |

| Knowledge and Understanding (K) w.r.t. the scope | |
|---|---|
| **Element** | **Knowledge and Understanding** |

12

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National Occupational Standards

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## ASC/N0006  Maintain a safe, clean and secure working environment

| A. Organizational Context (Knowledge of the company / organization and its processes) | The user/individual on the job needs to know and understand:<br>KA1.  relevant standards, procedures and policies related to Health, Safety and Environment followed in the company |
|---|---|
| A.  Technical  Knowledge | The user/individual on the job needs to know and understand:<br>KB1.  basic knowledge of Safety procedures( fire fighting, first aid) within the organization<br>KB2.  basic knowledge of various types of PPEs and their usage<br>KB3.  basic knowledge of risks associated with each occupation in the organization<br>KB4.  knowledge of personal hygiene and how an individual can contribute towards creating a highly safe and clean working environment |

| Skills (S) w.r.t. the scope | |
|---|---|
| **Element** | **Skills** |
| A.  Core Skills/ Generic  Skills | **Writing Skills** |
| | The user/ individual on the job needs to know and understand how to:<br>SA1.  write basic level notes and observations |
| | **Reading Skills** |
| | The user/individual on the job needs to know and understand  how to:<br>SA2.  read safety instructions put up across the plant premises<br>SA3.  read safety precautions mentioned in equipment manuals and panels  to understand the potential risks associate with the equipment |
| | **Oral Communication (Listening and Speaking skills)** |
| | The user/individual on the job needs to know and understand how to:<br>SA4.  effectively communicate information to team members and Inform employees in the plant and concerned functions about potentials Safety, Health and Environment related risks observed<br>SA5.  question operator/ supervisor  in order to understand the safety related issues<br>SA6.  attentively listen with full attention and comprehend the information given by the speaker during safety drills and training programs |
| B.  Professional Skills | **Judgmental Thinking** |
| | The user/individual on the job needs to know and understand how to:<br>SB1.  use common sense and make judgments during day to day basis<br>SB2.  use reasoning skills to identify and resolve basic problems |

# NOS Version Control

| NOS Code | ASC/N0006 | | |
|---|---|---|---|
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| Industry | Automotive | Drafted on | 13/08/13 |
| Industry Sub-sector | Manufacturing Support | Last reviewed on | 23/08/13 |
| Occupation | Quality Assurance | Next review date | 30/07/15 |