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

Introduction

Qualifications Pack- Welding and Quality Technician

SECTOR: AUTOMOTIVE

SUB-SECTOR: Manufacturing

OCCUPATION: Welding

REFERENCE ID: ASC/Q3109

ALIGNED TO: NCO-2015/7212.0100, 7212.0200, 7212.0300, 2149.10

Brief Job Description: Welding and Quality Technician may also be called Assistant welder. The role primilary involves supporting senior welder in all types of Gas Discharge Arc Welding (MIG, MAG, and TIG), Resistance Welding (Spot Welding, Projection Welding, Butt Welding) and Automatic or Robotic Welding Process and in build quality inspection activities.

Personal Attributes: The individual should be able to read basic drawings, identify various tools and equipments, observe gauges, dials etc. Maintaining arm steadiness, ability to quickly move hand to grasp and assemble objects (dexterity), reading, writing and communication skills and sensitivity towards safety for self, others and equipment.

Job Details

Qualifications Pack Code	**ASC/Q3109**		
Job Role	**Welding and Quality Technician** (Applicable for national scenarios)		
Credits	**TBD**	**Version number**	**1.0**
Sector	**Automotive**	**Drafted on**	**18/10/16**
Sub-sector	**Manufacturing**	**Last reviewed on**	**18/10/16**
Occupation	**Welding**	**Next review date**	**20/10/18**
NSQC Clearance on			

Job Role	**Welding and Quality Technician**
Role Description	The Role requires the person to understand different welding processes and quality requirements and is expected to assist in giving quality output from a welding process in conformance to quality and design parameters.
NSQF level **Minimum Educational Qualifications** **Maximum Educational Qualifications**	3 10th Standard pass, preferably NA
Training (Suggested but not mandatory)	Training: to ASDC standards (ASC/Q 3101Welding Assistant Level-2 • Different Welding techniques used in organization, Reading and writing skills • 5S & Safety
Minimum Job Entry Age	1. ASDC recommends that candidates should seek full employment not before attaining an age of 18 years. 2. However, as per Factories Act 1948 and Shops & Establishment Act 1953: – No one can be employed before attaining age of 14. – A person between the age of 15 – 18 (both inclusive) could be employed only with employers who follow safety and security systems & processes and also that the employee in this bracket will be working under supervision. 3. Please note that under the Factories Act 1948, and Shops & Establishment Act 1953 different States may have slightly varying provision which need to be adhered to.
Experience	NIL if already certified to ASDC qualification : ASC/Q 3101 Welding Assistant Level-2

	OR 0 to 6 months or more in manufacturing environment
Applicable National Occupational Standards (NOS)	**Compulsory:** 1. ASC/N3103 Understand welding job requirements and related processes 2. ASC/N3104 Prepare the welding machine for the welding process 3. ASC/N3105 Support the welder in the welding process 4. ASC/N3106 Remove the finished goods and store them in the designated place 5. ASC/N6301 Inspect and maintain the product quality 6. ASC/N0006 Maintain a safe and healthy working environment 7. ASC/N0007 Conduct quality checks and inspection of the finished metal cast products 8. ASC/N0008 Conduct regular cleaning and maintenance of the equipment 9. ASC/N0021 Maintain 5S at the work premises **Optional:** NA
Performance Criteria	As described in the relevant OS units

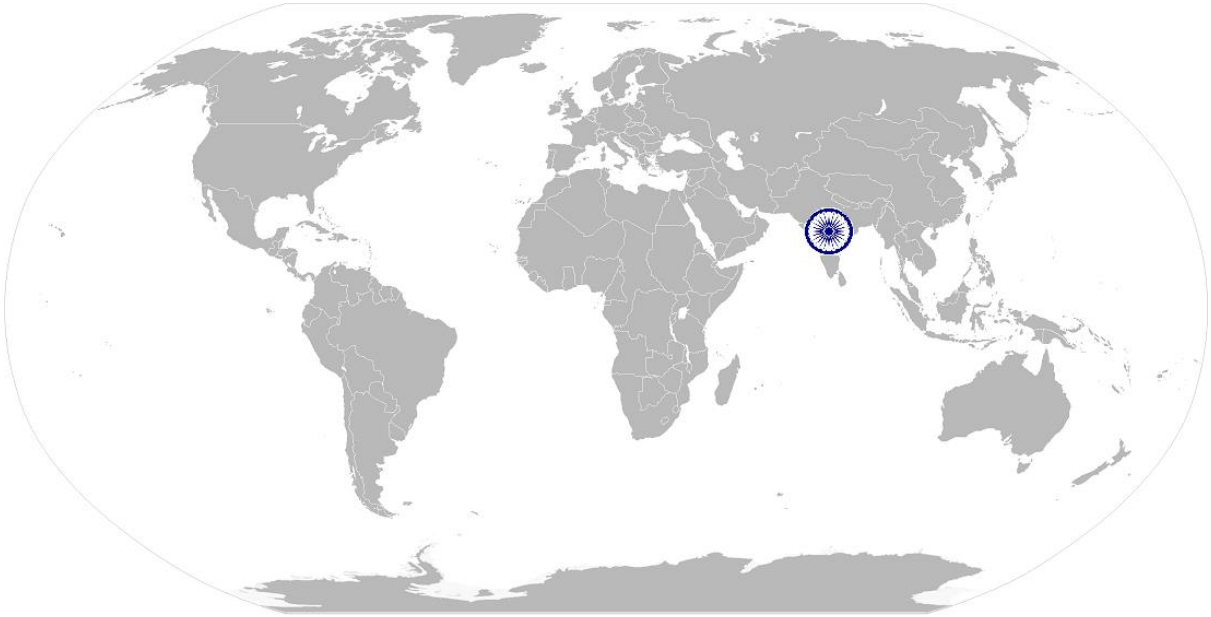
Definitions

Keywords/Terms	Description
Core Skills/Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the NOS, these include communication related skills that are applicable to most job roles.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or 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 NOS.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
National Occupational Standards (NOS)	NOS are Occupational Standards which apply uniquely in the Indian context.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Organisational Context	Organisational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
Qualifications Pack(QP)	Qualifications Pack comprises the set of NOS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Scope	Scope is the 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 the quality of performance required.
Sector	Sector is a conglomeration of different business operations having similar businesses 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.
Sub-functions	Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Unit Code	Unit Code is a unique identifier for a NOS unit, which can be denoted with an '**N**'
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.

Acronyms

Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.
Keywords/ Terms	**Description**
NOS	National Occupational Standard(s)
NSQF	National Standards Qualifications Framework
OEM	Original Equipment Manufacturer
OS	Occupational Standard(s)
QP	Qualifications Pack
MIG	Metal Inert Gas
TIG	Tungsten Inert Gas
MAG	Metal Active Gas

National Occupational Standard



Overview

This unit is about understanding the job requirement and the activities & equipment associated with the process to complete the job requirement.

ASC/N3103 Understand welding job requirements and related processes

National Occupational Standard

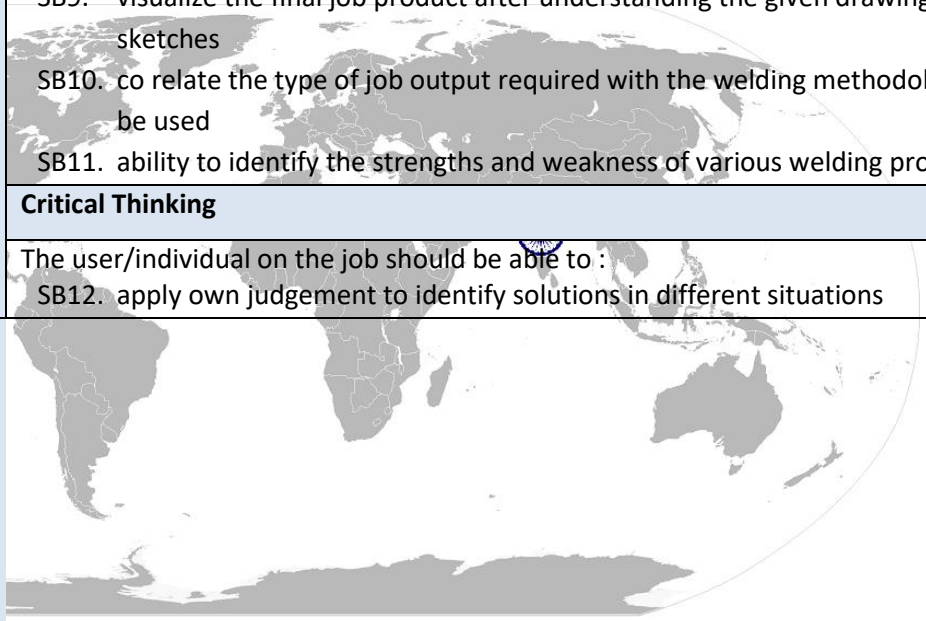
Unit Code	**ASC/N3103**
Unit Title (Task)	**Understand welding job requirements and related processes**
Description	This NOS is about understanding the welding job requirement, and the related materials/process/tools/equipment and standards.
Scope	This unit/ task covers the following: • understanding the engineering drawing, specification , sketches and work order • understanding about materials/process/tools/equipment in relation to welding
Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Understand the engineering drawings, sketches and work order	To be competent, the user/individual on the job must be able to: PC1. understand the work order (work output) required from the process and discuss the same with the operator PC2. refer all engineering drawings and sketches related to the work output to understand the measurement and shape of the required work output PC3. clearly understanding the does and don'ts of the manufacturing process as defined in SOPs/ Work Instructions or defined by supervisors
Escalations of queries on the given job	To be competent, the user/individual on the job must be able to: PC4. Refer the queries to the Operator/ Welder if they cannot be resolved by the assistant welder on own discuss and conclude. PC5. obtain help or advice from specialist if the problem is outside his/ her area of competence or experience
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. relevant standards and procedures followed in the company KA2. different types of products manufactured by the company KA3. functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. different types of welding processes and associated equipments KB2. different types of joints KB3. the method of reading and interpreting sketches and engineering drawings KB4. how to visualize the final product output

ASC/N3103 Understand welding job requirements and related processes

	KB5. the impact of various physical parameters like temperature, pressure, electrode distance on the properties of final output product like durability, ductility, surface feel etc. KB6. basic principles of geometry and drawing KB7. how to carry out visual and dimensional inspection
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/ individual on the job needs should have ability to : SA1. prepare draft level drawings and charts SA2. read equipment manuals and process documents to understand the equipments and processes better SA3. read internal information documents send by internal customers (other functions within the organization)
	Writing Skills
	The user/ individual on the job needs should have ability to : SA4. prepare draft drawings for the final output product and share the same with the Welder/ operator SA5. note down observations (if any) related to the welding process and share the same with welder and supervisor
	Oral Communication (Listening and Speaking skills)
	The user/ individual on the job should have ability to: SA6. discuss task lists and job requirements with team members SA7. discuss with operator/ supervisor in order to understand the nature of the problem SA8. attentively listen and comprehend the information given by the technician/team members
B. Professional Skills	**Decision Making**
	The user/individual on the job should be able to : SB1. analyses a given situation and decide on an appropriate action for completing the task within resources
	Plan and Organize
	The user/individual on the job should be able to : SB2. plan work assigned on a daily basis and provide estimates of time required for each piece of work SB3. prioritize actions to achieve required outcomes SB4. follow instructions and work on areas of improvement identified SB5. complete the assigned tasks with minimum supervision

ASC/N3103 Understand welding job requirements and related processes

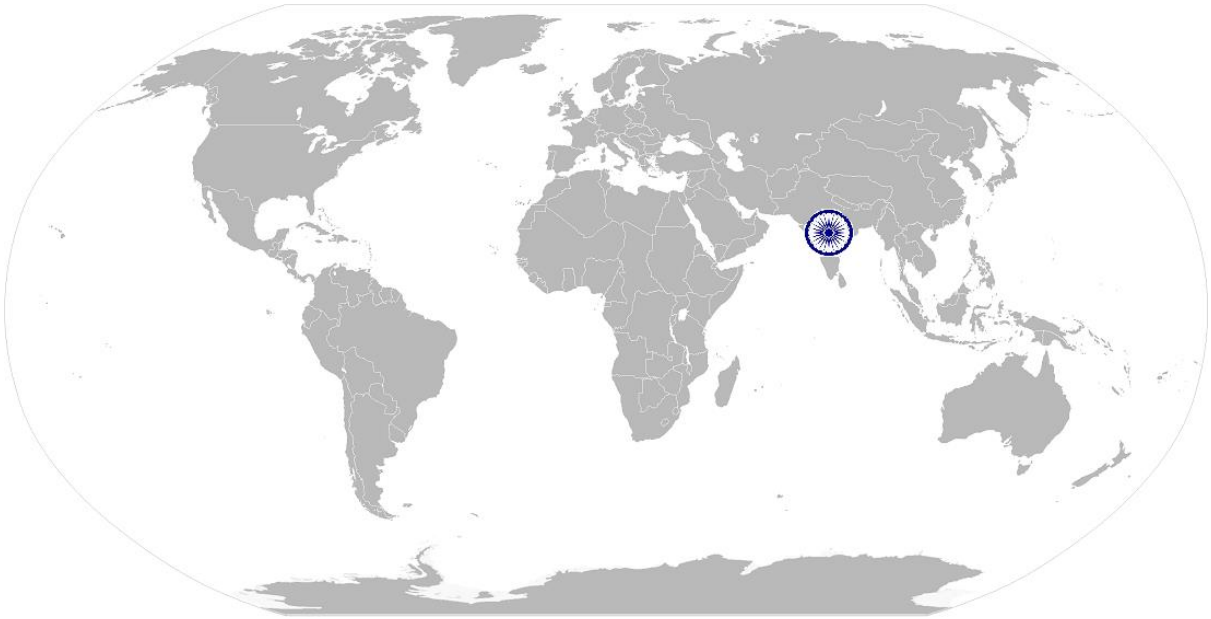
	SB6. complete the job defined by the supervisor within the timelines and quality norms
	CustomerCentricity
	The user/individual on the job should be able to : SB7. meet or exceed internal and external customer/team expectations
	Problem Solving
	The user/individual on the job should be able to : SB8. analyses a problem and attempt to find an acceptable solution and take help of concerned people if required
	Analytical Thinking
	The user/individual on the job should be able to : SB9. visualize the final job product after understanding the given drawing/ sketches SB10. co relate the type of job output required with the welding methodology to be used SB11. ability to identify the strengths and weakness of various welding process
	Critical Thinking
	The user/individual on the job should be able to : SB12. apply own judgement to identify solutions in different situations



ASC/N3103 Understand welding job requirements and related processes

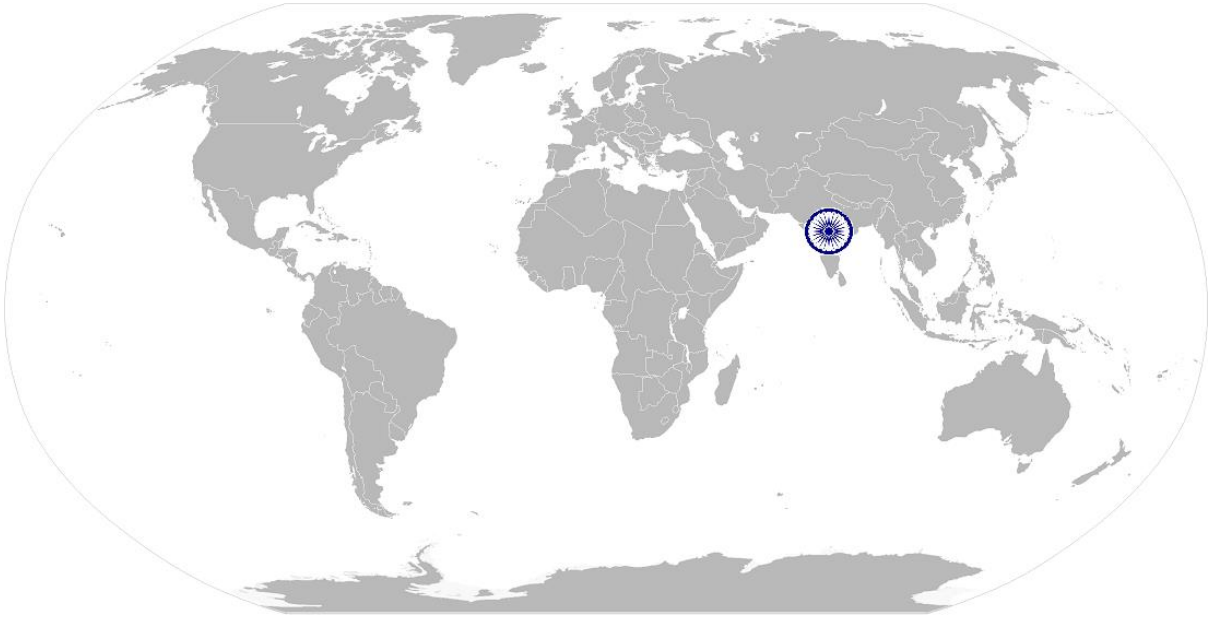
NOS Version Control

NOS Code	ASC/N3103		
Credits	TBD	Version number	1.0
Industry	Automotive	Drafted on	18/10/16
Industry Sub-sector	Manufacturing	Last reviewed on	18/10/16
Occupation	Welding	Next review date	20/10/18



ASC/N3104 Prepare the welding machine for the welding process

National Occupational Standard



Overview

This unit is about preparing the welding machine, auxiliary apparatus and metalwork pieces for the welding process.

ASC/N3104 Prepare the welding machine for the welding process

National Occupational Standard

Unit Code	ASC/N3104
Unit Title (Task)	Prepare the welding machine for the welding process
Description	The NOS is about selecting the appropriate electrode and filler material for the welding process, on basis of work order, preparing the surface of the metal parts by removing dust, moistures, rough edges, cleaning the welding apparatus and installing the metal part on the welding machine/assembly block.
Scope	This unit/ task covers the following: • Assistant Welder will be responsible for: – understand the engineering drawing, sketches and work order – arranging the electrodes and other material required for the welding process in the correct place – cleaning and maintaining the welding apparatus

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Arrange for the electrodes, flux, filler material as per the requirement of the welding process	To be competent, the user/individual on the job must be able to: PC1. discuss with the operator right welding methodology and process to be adopted for completing the work order PC2. discuss the various welding parameters like temperature, pressure, electrode type, electrode distance (gap), Welding current, voltage, process time etc. before starting the welding process PC3. discuss the material required and the equipment availability for executing the activity with the team members PC4. discuss with the operator on the type of electrode material and thickness, filler material and flux to be used for the welding process PC5. ensure that the required material is procured from the store before starting the welding process
Clean the welding equipment before executing the welding process and setup the equipment	To be competent, the user/individual on the job must be able to: PC6. clean the surface of the electrodes and the welding gun and remove dust or any other impurities PC7. clean other welding machine auxiliaries (welding transformer, gas discharge unit, flux wire) before the initiation of the welding process PC8. setup the welding apparatus as per process standardand the work instruction
Prepare the surface of the part (work pieces) on which welding needs to be conducted	To be competent, the user/individual on the job must be able to: PC9. clean the surface to the metal parts (work pieces) which need to be joint PC10. remove any extra material, sharp edges etc. which might impact the final welded product

ASC/N3104 Prepare the welding machine for the welding process

	PC11. ensure the work pieces available for welding is in line with the product drawing/ sketches available with the operator PC12. in case the parts are not as per the given measurements, remove extra material by using chippers, grinders etc.
Escalations of queries for the given job	To be competent, the user/individual on the job must be able to: PC13. immediately refer the queries to an operator and the supervisor
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. relevant standards and procedures followed in the company KA2. different types of products manufactured by the company
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. different types of welding processes and associated equipment KB2. Different cleaning methods for electrodes, metal surfaces etc. KB3. how to use measuring instruments like vernier, calipers, micrometer KB4. different types of joints KB5. how to read and interpret sketches and engineering drawings KB6. basic principles of geometry and drawing KB7. materials used in welding &their key properties
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/ individual on the job needs should have ability to: SA1. read and interpret engineering drawing and sketches SA2. read equipment manuals and process documents to understand the equipment and processes better SA3. read internal information documents send by internal customers (other functions within the organization)
	Writing Skills
	The user/ individual on the job needs should have ability to: SA4. prepare draft drawings for the final output product and share the same with the Welder/ operator SA5. note down observations (if any) related to the welding process and share the same with welder and supervisor
	Oral Communication (Listening and Speaking skills)
	The user/ individual on the job should have ability to: SA6. discuss task lists and job requirements with team members

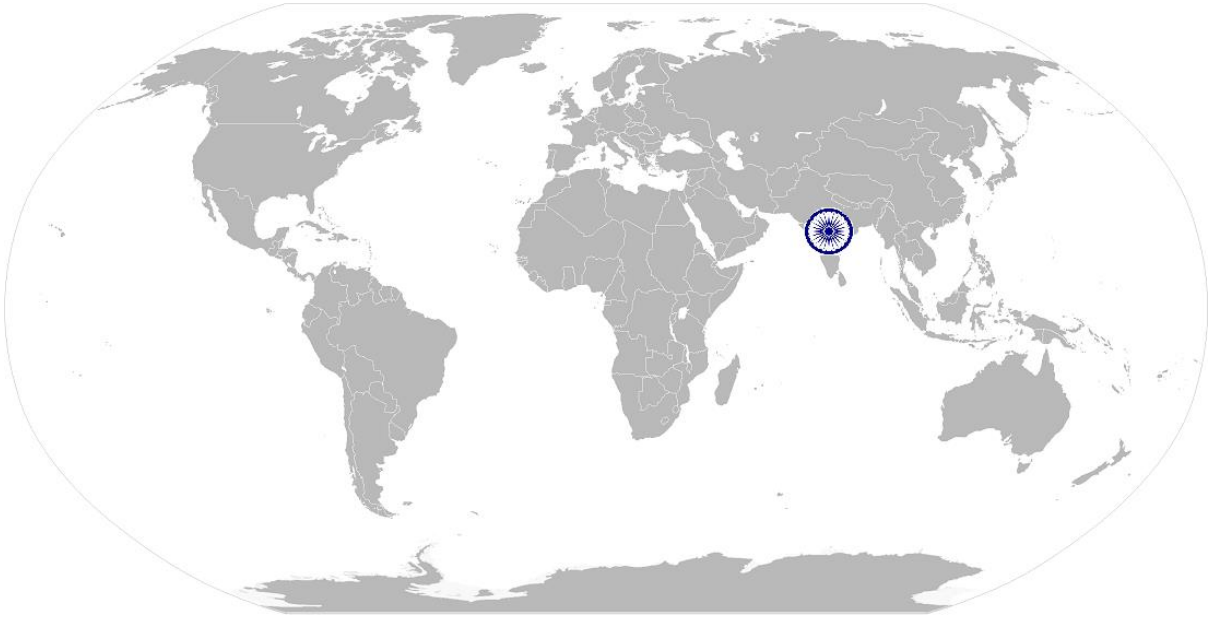
ASC/N3104 Prepare the welding machine for the welding process

	SA7. discuss with operator/ supervisor in order to understand the nature of the problem SA8. attentively listen and comprehend the information given by the technician/team members
B. Professional Skills	**Decision Making**
	The user/individual on the job should be able to : SB1. analyses a given situation and decide on an appropriate action for completing the task within resources
	Plan and Organize
	The user/individual on the job should be able to : SB2. plan work assigned on a daily basis and provide estimates of time required for each piece of work SB3. prioritize actions to achieve required outcomes SB4. follow instructions and work on areas of improvement identified SB5. complete the assigned tasks with minimum supervision SB6. complete the job defined by the supervisor within the timelines and quality norms
	CustomerCentricity
	The user/individual on the job should be able to : SB7. meet or exceed internal and external customer/team expectations
	Problem Solving
	The user/individual on the job should be able to : SB8. analyses a problem and attempt to find an acceptable solution and take help of concerned people if required
	Analytical Thinking
	The user/individual on the job should be able to : SB9. visualize the final job product after understanding the given drawing/ SB10. sketches SB11. co relate the type of job output required with the welding methodology to be used SB12. identify the strengths and weakness of various welding process
	Critical Thinking
	The user/individual on the job should be able to : SB13. apply own judgement to identify solutions in different situations

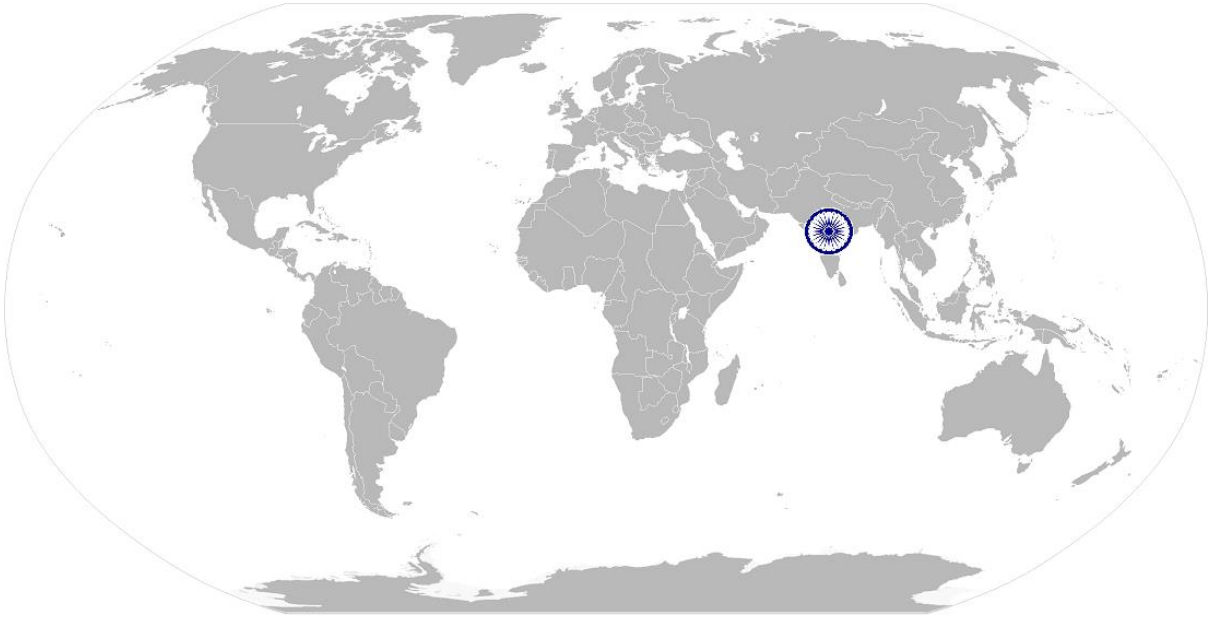
ASC/N3104 Prepare the welding machine for the welding process

NOS Version Control

NOS Code	ASC/N3104		
Credits	TBD	Version number	1.0
Industry	Automotive	Drafted on	18/10/16
Industry Sub-sector	Manufacturing	Last reviewed on	18/10/16
Occupation	Welding	Next review date	20/10/18



National Occupational Standard



Overview

This unit is about support the welder is conducting the actual welding process for the selected metal pieces as per the given work order and the standards specified by the organization.

ASC/N3105 Support the welder in the welding process

National Occupational Standard

Unit Code	ASC/N3105
Unit Title (Task)	Support the welder in the welding process
Description	This NOS is about supporting the operator and the manufacturing team in welding processes.
Scope	This unit/ task covers the following: – Assistant Welder will be responsible for: – installing the welding work pieces on the apparatus – check the operations of the machine and assist the welding process – recording the observations during the process – escalations of any queries regarding the job

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Installing the welding work pieces on the welding apparatus	To be competent, the user/individual on the job must be able to: PC1. hold the parts which need to be welded together using a clamp and align them with the electrodes as per the job requirement so that the work pieces do not fall down/ turn PC2. install the work pieces on the Welding apparatus keeping in mind the electrodes distance, contact area, pressure, temperature application etc. as specified in the Welding process/work instructions
Check the operations of the welding machines and auxiliaries and conduct a test process	To be competent, the user/individual on the job must be able to: PC3. check for operation of core welding equipment like welding gun, welding transformer, gas cylinders, gas discharge units as per welding process/work instructions PC4. support the operator in conducting destructive and non-destructive test activity
Conduct the actual welding process	To be competent, the user/individual on the job must be able to: PC5. support the operator in the Gas Discharge welding by holding thewelding gun and the filler material/ gas discharge
Check measurement instruments for monitoring welding process parameters	To be competent, the user/individual on the job must be able to: PC6. help the welder in monitoring the welding process parameters (Pressure, Temperature, gas discharge flow, electrode force, electrode distance etc.) by observing various instrument and gauges and correct if not within standards
Measure the two parts (work pieces) welded and remove welding inconsistency	To be competent, the user/individual on the job must be able to: PC7. measure the final welded piece and compare the dimensions as prescribed in the work order engineering drawing

ASC/N3105 Support the welder in the welding process

	PC8. in case the parts are not as per the given measurements, remove extra material by using chippers, grinders etc. PC9. if there are any bulges, then hammer the bulges and give the work pieces the desired shape PC10. keep the operator informed of any inconsistency in the welding process, quality issues etc. so that the same can be dealt immediately
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. relevant standards and procedures followed in the company KA2. different types of products manufactured by the company
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. different types of welding processes and associated equipment KB2. different cleaning methods for electrodes, metal surfaces etc. KB3. measuring instruments like Vernier calipers, micrometer KB4. different types of joints used in welding KB5. how to read and interpret sketches and engineering drawings KB6. how to visualize the final product output and hence decide on the key steps to be followed for welding safety precautions to be taken for welding activities
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/ individual on the job needs to know and understand how to: SA1. read and interpret engineering drawing and sketches SA2. read equipment manuals and process documents to understand the equipment and processes better SA3. read internal information documents send by internal customers (other functions within the organization)the equipment in the plant area SA4. read parameter reading on various types of monitoring panels
	Writing Skills
	The user/individual on the job needs to know and understand how to: SA5. document information from the sketches and engineering drawings SA6. note measurements, equipment panel readings for various process parameters in the required reporting formats
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA7. discuss task lists, schedules and activities with the operator and supervisor

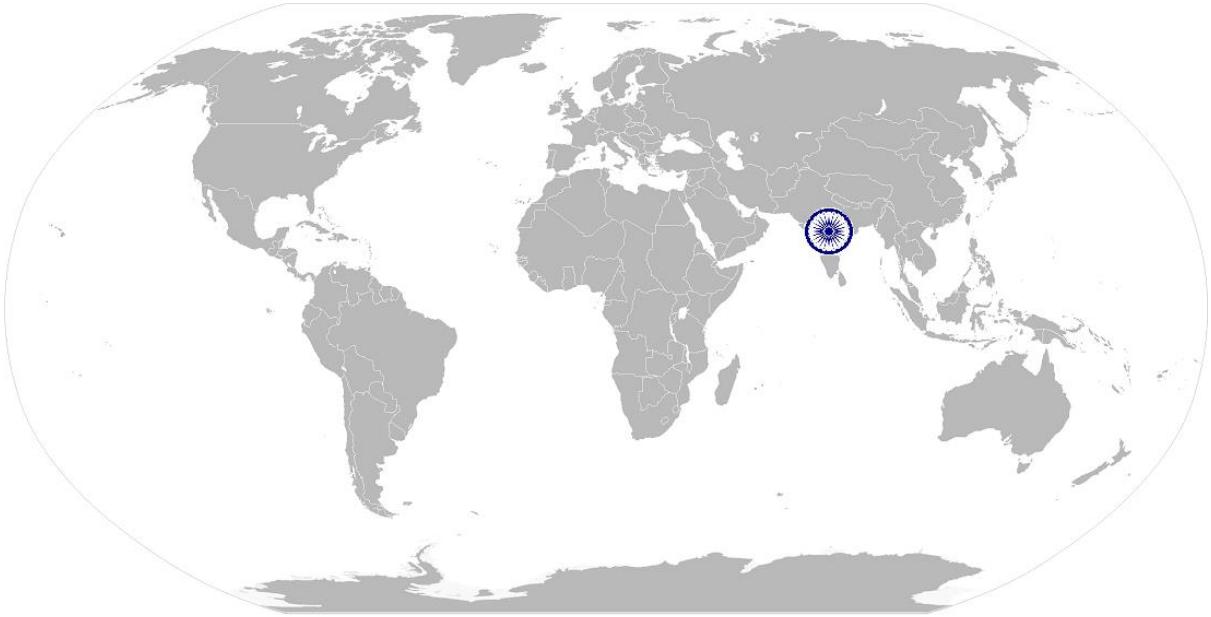
ASC/N3105 Support the welder in the welding process

	SA8. effectively communicate with the team members Question the operator/ welding shop supervisor in order to understand the nature of the problem and to clarify queries SA9. attentively listen with full attention and comprehend the information given by the speaker
B. Professional Skills	**Decision Making**
	The user/individual on the job should be able to : SB1. analyses a given situation and decide on an appropriate action for completing the task within resources
	Plan and Organize
	The user/individual on the job should be able to : SB2. plan work assigned on a daily basis and provide estimates of time required for each piece of work SB3. prioritize actions to achieve required outcomes SB4. follow instructions and work on areas of improvement identified SB5. complete the assigned tasks with minimum supervision SB6. complete the job defined by the supervisor within the timelines and quality norms
	CustomerCentricity
	The user/individual on the job should be able to : SB7. meet or exceed internal and external customer/team expectations
	Problem Solving
	The user/individual on the job should be able to : SB8. analyses a problem and attempt to find an acceptable solution and take help of concerned people if required
	Analytical Thinking
	The user/individual on the job should be able to : SB9. analyses the complexity of work to determine how it can be successfully carried out SB10. anticipate and analyses a given situation from all aspects
	Critical Thinking
	The user/individual on the job should be able to : SB11. apply own judgement to identify solutions in different situations

ASC/N3105 **Support the welder in the welding process**

NOS Version Control

NOS Code	ASC/N3105		
Credits	TBD	Version number	1.0
Industry	Automotive	Drafted on	18/10/16
Industry Sub-sector	Manufacturing	Last reviewed on	18/10/16
Occupation	Welding	Next review date	20/10/18



ASC/N3106 Remove the finished goods and store them in the designated place

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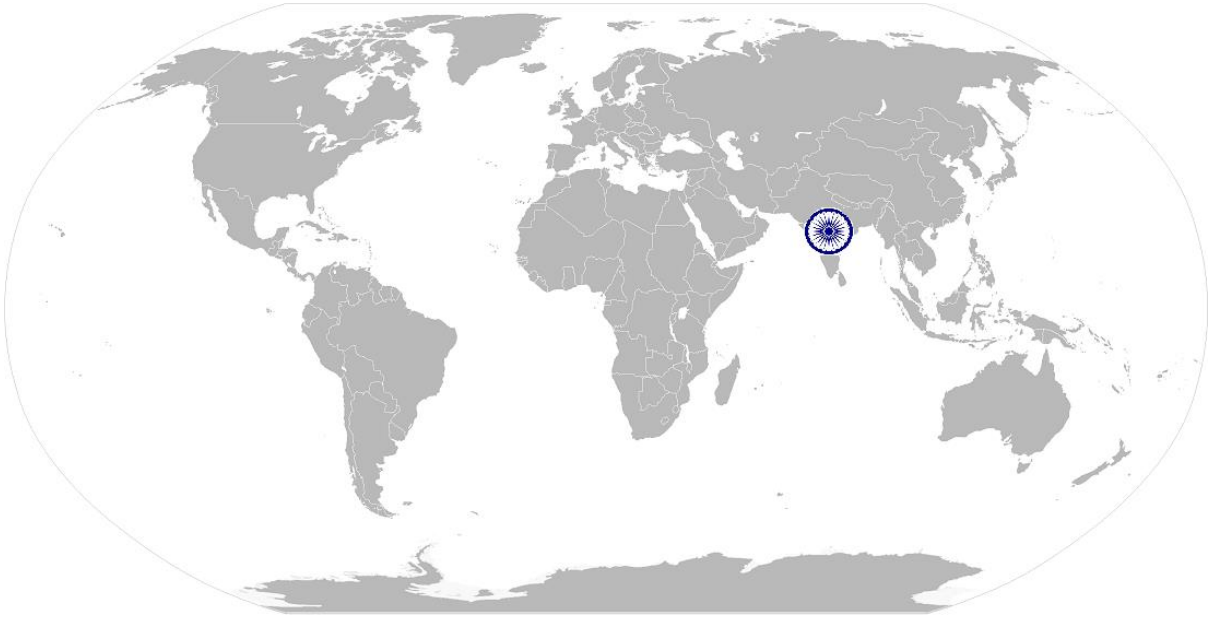
National Occupational Standard



Overview

This unit is about unloading the finished goods from the production line and store them properly in the designated area/ move the finished goods on subsequent platform on the assembly line.

ASC/N3106 Remove the finished goods and store them in the designated place

National Occupational Standard

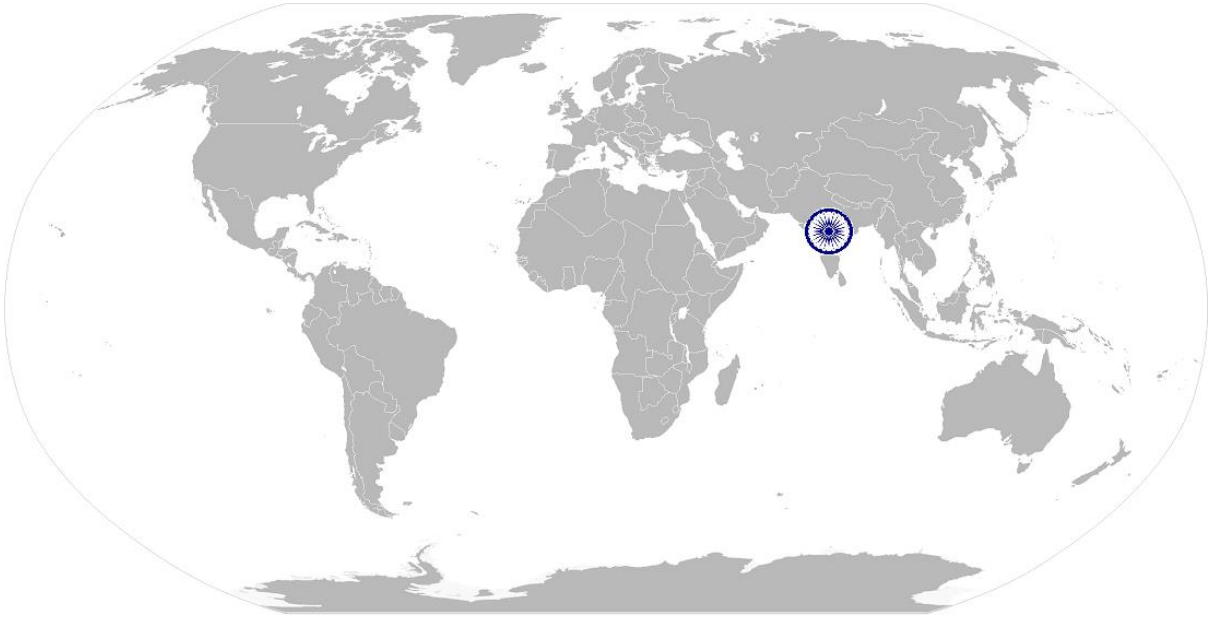
Unit Code	**ASC/N3106**
Unit Title (Task)	**Remove the finished goods and store them in the designated place**
Description	This unit is about unloading the finished goods from the production line and store them properly in the designated area for moving to the next operation
Scope	This unit/ task covers the following: • Assistant Welder will be responsible for: – unloading the finished goods from the bin/trolley – storing the finished goods in the proper designated location
Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Unload the Finished Goods	To be competent, the user/individual on the job must be able to: PC1. depending on the shape/weight of the output select a suitable method for movement PC2. clamp the product and lift the output object using suitable equipment like hoist, lifts, crane etc. PC3. ensure that there is no damage to the lifted work pieces PC4. carry the output product to the designated area using hangars, conveyor belts, cranes, forklifts etc.
Store the finished goods	To be competent, the user/individual on the job must be able to: PC5. post inspection process, tag the right quality pieces for future identification PC6. carry the tagged pieces to the storage areas using suitable method of movement means PC7. keep a record of the finished goods along with the storage identification numbers for easy sorting
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. relevant standards and procedures followed in the company KA2. functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. basic level operations of lifting equipment like hoists, cranes, Pulley etc. KB2. methods of storage and tagging of final product
Skills (S)	
	Reading Skills

ASC/N3106 Remove the finished goods and store them in the designated place

A. Core Skills/ Generic Skills	The user/ individual on the job should have ability to: SA1. read equipment manuals and process documents SA2. read safety instructions related to movement of goods
	Writing Skills
	The user/ individual on the job should have ability to: SA3. note equipment part codes, name tags etc. in the prescribed formats and records for the same SA4. note observations related to movement and storage of final product
	Oral Communication (Listening and Speaking skills)
	The user/ individual on the job should have ability to: SA5. discuss task lists and job requirements with team members SA6. listen and analyses any noise and vibrations in the equipment and report the same to the maintenance team for preventive action SA7. attentively listen and comprehend the information given by the technician and team members
A. Professional Skills	**Decision Making**
	The user/individual on the job should be able to : SB1. analyses a given situation and decide on an appropriate action for completing the task within resources
	Plan and Organize
	The user/individual on the job should be able to : SB2. plan work assigned on a daily basis and provide estimates of time required for each piece of work SB3. prioritize actions to achieve required outcomes SB4. follow instructions and work on areas of improvement identified SB5. complete the assigned tasks with minimum supervision SB6. complete the job defined by the supervisor within the timelines and quality norms
	CustomerCentricity
	The user/individual on the job should be able to : SB7. meet or exceed internal and external customer/team expectations
	Problem Solving
	The user/individual on the job should be able to : SB8. analyses a problem and attempt to find an acceptable solution and take help of concerned people if required
	Analytical Thinking
	The user/individual on the job should be able to :

ASC/N3106 Remove the finished goods and store them in the designated place

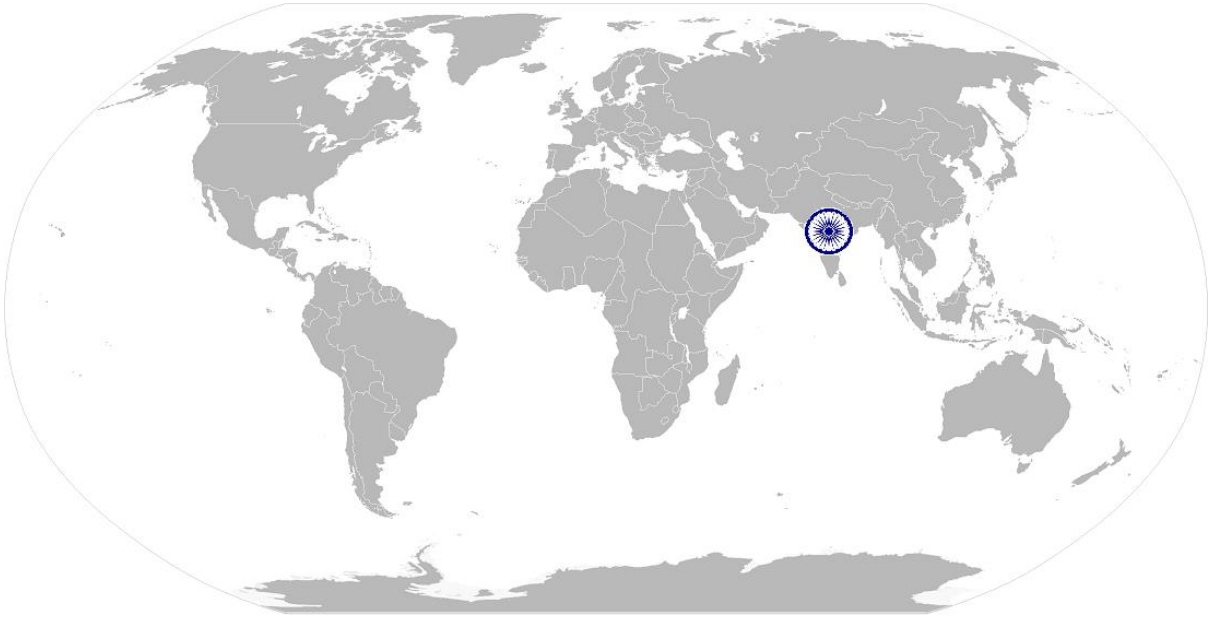
	SB9. analyses the complexity of work to determine how it can be successfully carried out SB10. anticipate and analyses a given situation from all aspects
	Critical Thinking
	The user/individual on the job should be able to : SB11. apply own judgement to identify solutions in different situations



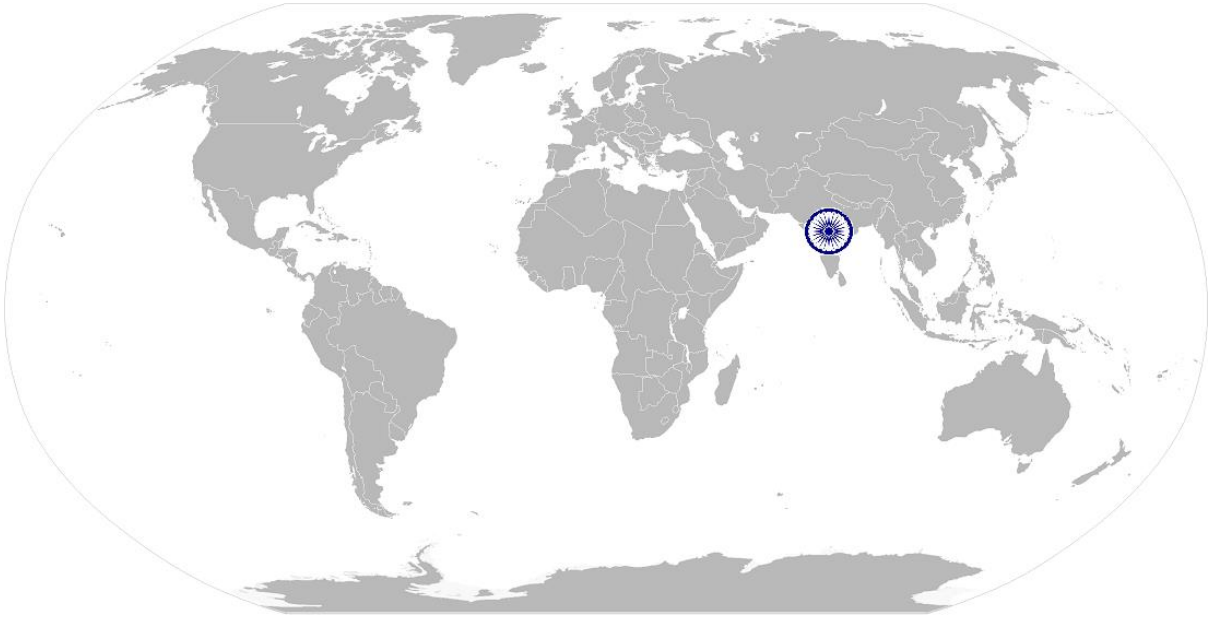
ASC/N3106 Remove the finished goods and store them in the designated place

NOS Version Control

NOS Code	ASC/N3106		
Credits	TBD	Version number	1.0
Industry	Automotive	Drafted on	18/10/16
Industry Sub-sector	Manufacturing	Last reviewed on	18/10/16
Occupation	Welding	Next review date	20/10/18



National Occupational Standard



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 skills relating to preliminary inspection/ quality control /audit of products/processes.
Scope	This unit/ task covers the following: Receipt, In- Process and Final Inspection: – pre- delivery inspection of the product – dock audit/ Development batch of product – 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: PC1. as per instructions/under supervision , carry out process of Inspection at various stages of manufacturing process: complete dimensional/ Layout Inspection at development stage & later as per the periodicity such as annual for re- validation; in the Production phase, as per the CP/ Quality plan/ sampling plan/ stage inspection plans/ First off IR PC2. as per instructions/under supervision handle Inspection equipment and Instruments: vernier, micrometers, height Gauge & surface plate; acceptance/ Combination Gauges, simple gauges - bore, air, profile for safe storage, calibration at pre-decided frequency and have an acceptable level of R & R as per SOP of the organization PC3. as per instructions/under supervision conduct an inspection of the product covering the following checkpoints:visual Inspection of the part for scratches, dents, damages, packing as per the norms etc. for special inspection co-ordinate with other agencies e.g.: Material Lab, Standards Room, assembly/ performance trials etc. put identification sticker/ number/label on the product for ok, rewok and rejected material. 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 PC5. participate in checking the effectiveness of implementation and repeat the process till the discrepancies are resolved PC6. document the observations of the inspection and maintain records PC7. where applicable maintain ERP-System records and special process capability index calculation/ charting as per the SOP. Raise a scrap note and dispose off

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

	the scrapped product in the scrap yard as per the defined procedure maintaining the HSE compliance PC8. As is the case i.e. New product/ process development/ Production phase, the reports and Part Submission Warrant, PPAP are to be prepared. 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: PC10. as per instructions/under supervision carry out dock audit of a sample batch from the production lot of the ready to dispatch final products covering the following checkpoints: Product to be in good shape with no visible damage, no presence of sharp edges in the product, part to be with specification as the drawing, packaging of product according to specification, packaging boxes as per the requirement for preservation and customer PO Number on the shipping labels. PC11. label the boxes correctly with packer name, count on the Bill of Lading match the count on the pallet, boxes stacked neatly in case of pallet arrangement. No damages of the pallet like nails sticking out, broken boards, etc should be there. PC12. coordinate with the respective process owners/Stores and implement CAPA for discrepancies identified in the dock audit on immediate basis PC13. under instruction/in discussion with superiors to review the effectiveness of implementation and repeat the process till the discrepancies are resolved PC14. document the observations of dock audit and maintain records PC15. where applicable, upload data in systems like ERP/ SAP.
Coordination with R&D/ Quality Manager CAPA, CI	To be competent, the user/individual on the job must be able to: PC16. work as a Cross Functional Team member for solving a problem pertaining to the products handled. Collect data regarding the problem as decided in the team discussions PC17. participate for preparation of Fault tree, conducting simulation and implementation of actions PC18. participate for updating relevant documentation PC19. assist the concerned department in efficient development of the new product by sharing all the observed problems related to QCD (quality cost and delivery)
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company /	The user/individual on the job needs to know and understand: KA1. product portfolio of organization KA2. the manufacturing processes of organization

ASC/N6301 Inspect and maintain the product quality

organization and its processes)	KA3. material classification criteria followed by organization KA4. policies and procedures for storage and preservation of materials KA5. policies, compliances and systems followed for HSE KA6. TS-16949/any other QMS system guidelines followed in the organization KA7. new process/ product development protocol and methodology
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. manufacturing process being followed for each product KB2. inspection checkpoints for Dock Audit etc. KB3. APQP (Advanced product quality planning) procedures KB4. problem solving &analysis tools like 8Ds, Five Why analysis etc. KB5. RCA (root cause analysis) techniques KB6. requirements for PPAP (Product planning and) -PFMEA, CP KB7. requirements for TS-16949/QMS system followed KB8. rejection / Inspection reports KB9. testing equipments operational knowledge KB10. resource &information systems like SAP, ERP etc..
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/individual on the job should have the ability to : SA1. read quality realtedstandards, sampling plans, drawining/specification, reports and material/component identification sticker etc.
	Writing Skills
	The user/individual on the job should have the ability to : SA2. document the observations in the inspection format using precise terms for description of the defects, phenomenon etc. SA3. prepare reports/ excel sheet/ MIS for review of quality manager and senior management
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job should have the ability to : SA4. the concerned departments for failures/ any issues SA5. NPD department for new product development SA6. concerned departments for dock audit and resolution of the discrepancies observed SA7. senior management for updating the progress and seeking their support SA8. team members for reviewing the progress of day to day activities
B. Professional Skills	**Decision Making**
	The user/individual on the job should be able to: SB1. judge when to ask for help from a supervisor

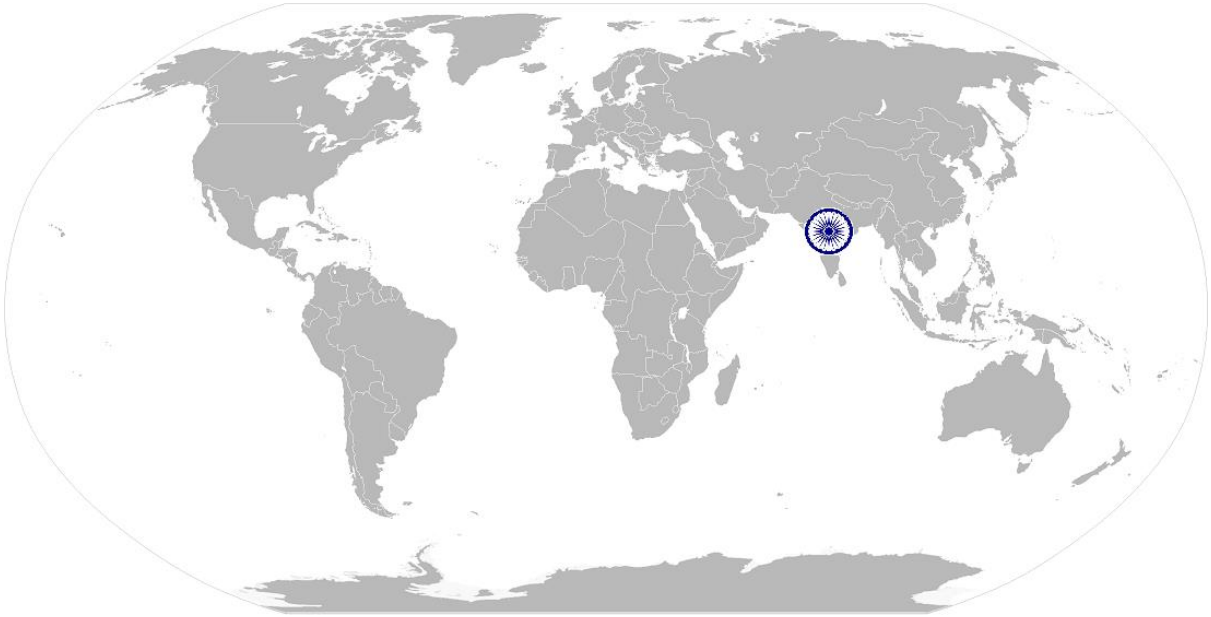
ASC/N6301 **Inspect and maintain the product quality**

	SB2. suggest options to operators in case any issue is observed during operations SB3. use reasoning skills to identify and resolve basic problems
	Plan and Organize
	The user/individual on the job should be able to: SB4. plan work assigned on a daily basis and provide estimates of time required for each piece of work SB5. prioritize actions to achieve required outcomes SB6. follow instructions and work on areas of improvement identified SB7. complete the assigned tasks with minimum supervision SB8. complete the job defined by the supervisor within the timelines and quality norms
	CustomerCentricity
	The user/individual on the job should be able to: SB9. meet or exceed internal/external customer/team expectations
	Problem Solving
	The user/individual on the job should be able to: SB10. think through and devise the countermeasure for resolution for any quality related issue observed SB11. work on actions to be taken on immediate basis in case of frequent rejections SB12. devise and implement interim/permanent countermeasures for the non-conformities observed in the field failures/warranty issues using analysis tools like 4Ds , 8Ds etc.
	Analytical Thinking
	The user/individual on the job should be able to: SB13. analyze the interim countermeasures taken for the resolution of non-conformities observed in the production section /audit report and to accordingly devise permanent, preventive measures
	Critical Thinking
	The user/individual on the job should be able to: SB14. coordinate with the process owners and devise countermeasures for effective handling of the non-conformities observed in IR and dock audit SB15. understand and analyze the inspection report for providing inputs to NPD department for new product development SB16. interpret the customer (Internal / external) feedback and translate it into the development of the new product in coordination with NPD department SB17. identify problems (technical and non-technical), disruptions and delays

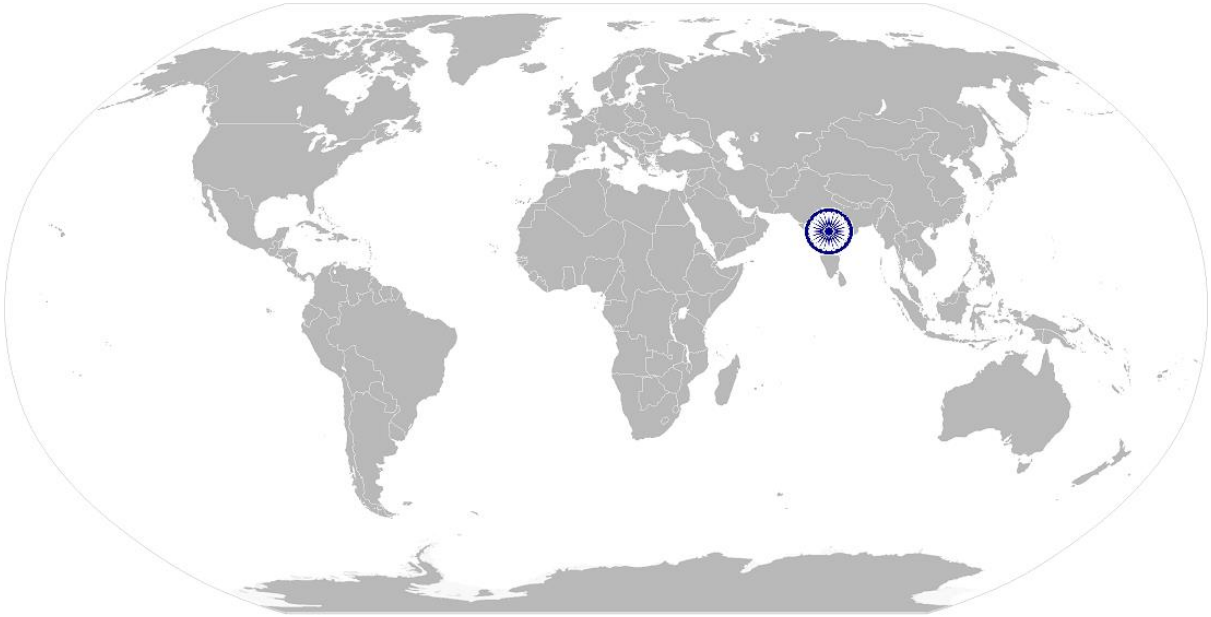
ASC/N6301 **Inspect and maintain the product quality**

NOS Version Control

NOS Code	ASC/N6301		
Credits	TBD	Version number	1.0
Industry	Automotive	Drafted on	18/10/16
Industry Sub-sector	Manufacturing	Last reviewed on	18/10/16
Occupation	Welding	Next review date	20/10/18



National Occupational Standard



Overview

This unit is about establishing a Safe, Healthy and Environment friendly workplace.

ASC/N0006 Maintain a safe and healthy working environment

National Occupational Standard

Unit Code	ASC/N0006
Unit Title (Task)	**Maintain a safe and healthy working environment**
Description	This NOS is about creating a Safe and Healthy work place, adhering to the safety guidelines in the working area, following practices which are not impacting the environment in a negative manner.
Scope	This unit/ task covers the following: • role holder will be responsible for: – identifying , reporting of risks – creating and sustaining a safe, clean and environment friendly work place This NOS will be applicable to all Automotive sector manufacturing job roles.

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
identifying , reporting of risks	To be competent, the user/individual on the job must be able to: PC1. identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals, loud noise PC2. inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc. PC3. inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations PC4. create awareness amongst other by sharing information on the identified risks
Create and sustain a Safe, clean and environment friendly work place	To be competent, the user/individual on the job must be able to: PC5. follow the instructions given on the equipment manual describing the operating process of the equipment PC6. follow the Safety, Health and Environment related practices developed by the organization PC7. operate the machine using the recommended personal protective equipment (PPE) 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. PC9. maintain high standards of personal hygiene at the work place PC10. ensure that the waste disposal is done in the designated area and manner as per organization SOP 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

ASC/N0006 Maintain a safe and healthy working environment

	planned for others
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes	The user/individual on the job should have the ability to understand: KA1. relevant standards, procedures and policies related to health, safety and environment followed in the company KA2. emergency handling procedures & hierarchy for escalation
B. Technical Knowledge	The user/individual on the job should have the ability to understand: KB1. basic knowledge of Safety procedures(firefighting, first aid) within the organization KB2. basic knowledge of various types of PPEs and their usage KB3. basic knowledge of risks/hazards associated with each occupation in the organization KB4. knowledge of personal hygiene and how an individual an contribute towards creating a highly safe and clean working environment
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/ individual on the job should have the ability to: SA1. read safety instructions put up across the plant premises SA2. read safety precautions mentioned in equipment manuals and panels to understand the potential risks associated
	Writing Skills
	The user/ individual on the job should have the ability to: SA3. write basic level notes and observations
	Oral Communication (Listening and Speaking skills)
	The user/ individual on the job should have the ability to: SA4. effectively communicate information to team members SA5. inform employees in the plant and concerned functions about events, incidents & potential risks observed related to safety, health and environment SA6. question operator/ supervisor in order to understand the safety related issues SA7. attentively listen with full attention and comprehend the information given by the speaker during safety drills and training programs
B. Professional Skills	**Decision Making**
	The user/individual on the job should be able to

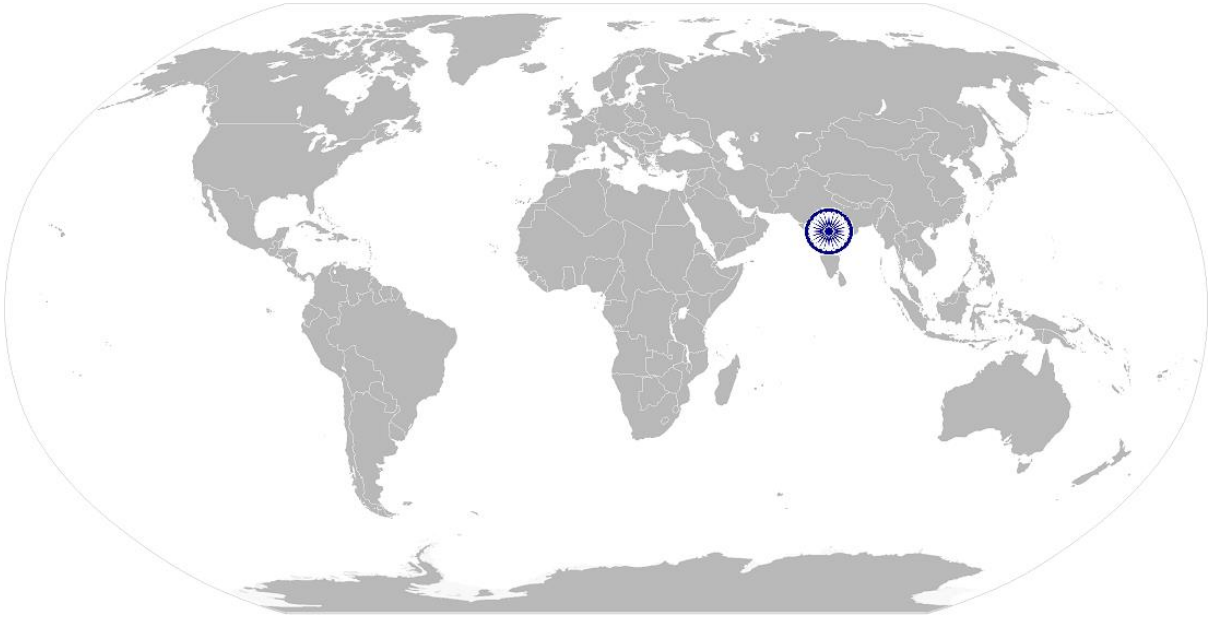
ASC/N0006 Maintain a safe and healthy working environment

	SB1. use reasoning skills to identify and resolve basic problems using 5S
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB2. ensure that the core team members understand and follow the importance of using 5 S tool SB3. follow shop floor rules & regulations and avoid deviations; make 5S an integral way of life SB4. maintain self-hygiene and work place cleanliness on a daily basis
	CustomerCentricity
	The user/individual on the job should be able to SB5. conform to organizational rules & regulations and also use innovative skills to ensure output and work place environment meets or exceeds expectations of colleagues
	Problem Solving
	The user/individual on the job should be able to : SB6. analyses a problem and attempt to find an acceptable solution and take help of concerned people if required
	Analytical Thinking
	The user/individual on the job should be able to SB7. exhibit inquisitive behavior to seek feedback and question on the existing set patterns of work
	Critical Thinking
	The user/individual on the job should be able to SB8. use reasoning skills to identify and resolve basic problems using 5S

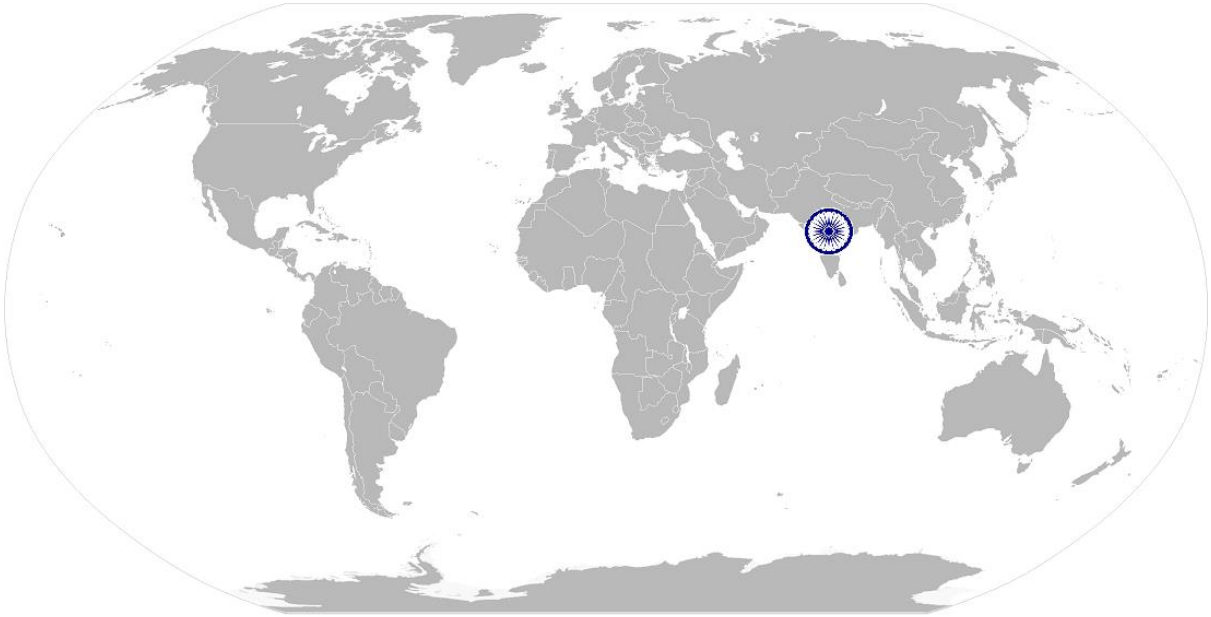
ASC/N0006 Maintain a safe and healthy working environment

NOS Version Control

NOS Code	ASC/N0006		
Credits	TBD	Version number	1.0
Industry	Automotive	Drafted on	18/10/16
Industry Sub-sector	Manufacturing	Last reviewed on	18/10/16
Occupation	Welding	Next review date	20/10/18



National Occupational Standard



Overview

This unit is about conducting Quality Checks and inspection of the finished products produced and repair the bad quality items produced in the manufacturing process.

ASC/N0007 Conduct quality checks and inspection of the finished metal cast products

National Occupational Standard

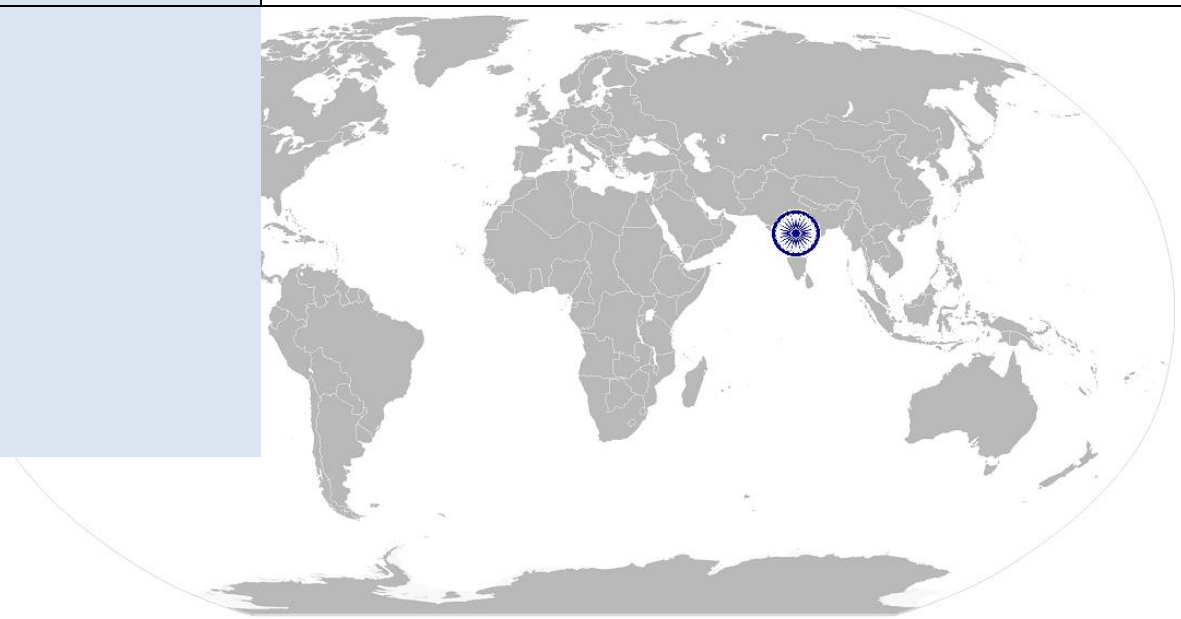
Unit Code	**ASC/N0007**
Unit Title (Task)	**Conduct quality checks and inspection of the finished metal cast products**
Description	This NOS is about inspecting the finished goods produced for any damages, deformities and further repairing the parts produced so that the damaged/ defective pieces can be corrected and right quality components are supplied to the customer/ end user, internal manufacturing team.
Scope	This unit/ task covers the following: • Assistant Welder will be responsible for: – inspection of finished goods – recording log of defective pieces and repairing minor defects
Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Inspection of finished goods to detect any deviations from the product design	To be competent, the user/individual on the job must be able to: PC1. measure the specifications of the finished product using devices like micrometers, vernier calipers, gauges, rulers, weighing scales and any other inspection equipment and compare with the parameters given in the work order PC2. compare texture, color, surface properties, hardness and strength with the given product specifications
Record log of defective products and discard defective pieces	To be competent, the user/individual on the job must be able to: PC3. note down the observations of the basic inspection process and identify pieces which are OK and also not meeting the specified standards PC4. separate the defective pieces into two categories – pieces which can be repaired/ modified and pieces which are beyond repair PC5. discard the pieces which are beyond repair and repair the ones which need minor modifications/ rework PC6. maintain records of each category of work outputs
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes	The user/individual on the job needs to know and understand: KA1. relevant standards specified for the manufacturing process KA2. basic process followed for inspection of the pieces KA3. basic knowledge about the Quality Management policy and manual of the organization
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. techniques of using measurement instruments like rulers, Vernier calipers,

ASC/N0007 Conduct quality checks and inspection of the finished metal cast products

	micrometer, weighing scale, gauges and other inspection equipment KB2. guidelines to identify quality defects in work pieces KB3. methods used for cutting, shearing, hammering, drilling which can repair pieces with minor defects
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/individual on the job should be able to : SA1. read process and equipment manuals to understand the working of the equipment SA2. read measuring instruments reading to identify any deviations from the dimensions given in the product engineering drawing
	Writing Skills
	The user/individual on the job should be able to : SA3. note the number of pieces with defects which can be repaired to number of pieces which will be discarded
	Oral Communication (Listening and Speaking skills)
	The user/ individual on the job should have ability to: SA4. discuss task lists and job requirements with team members SA5. discuss with operator/ supervisor in order to understand the nature of the problem SA6. attentively listen and comprehend the information given by the technician/team members
B. Professional Skills	**Decision Making**
	The user/individual on the job should be able to : SB1. analyses a given situation and decide on an appropriate action for completing the task within resources
	Plan and Organize
	The user/individual on the job should be able to : SB2. plan work assigned on a daily basis and provide estimates of time required for each piece of work SB3. prioritize actions to achieve required outcomes SB4. follow instructions and work on areas of improvement identified SB5. complete the assigned tasks with minimum supervision SB6. complete the job defined by the supervisor within the timelines and quality norms
	CustomerCentricity
	The user/individual on the job should be able to : SB7. meet or exceed internal and external customer/team expectations

ASC/N0007 Conduct quality checks and inspection of the finished metal cast products

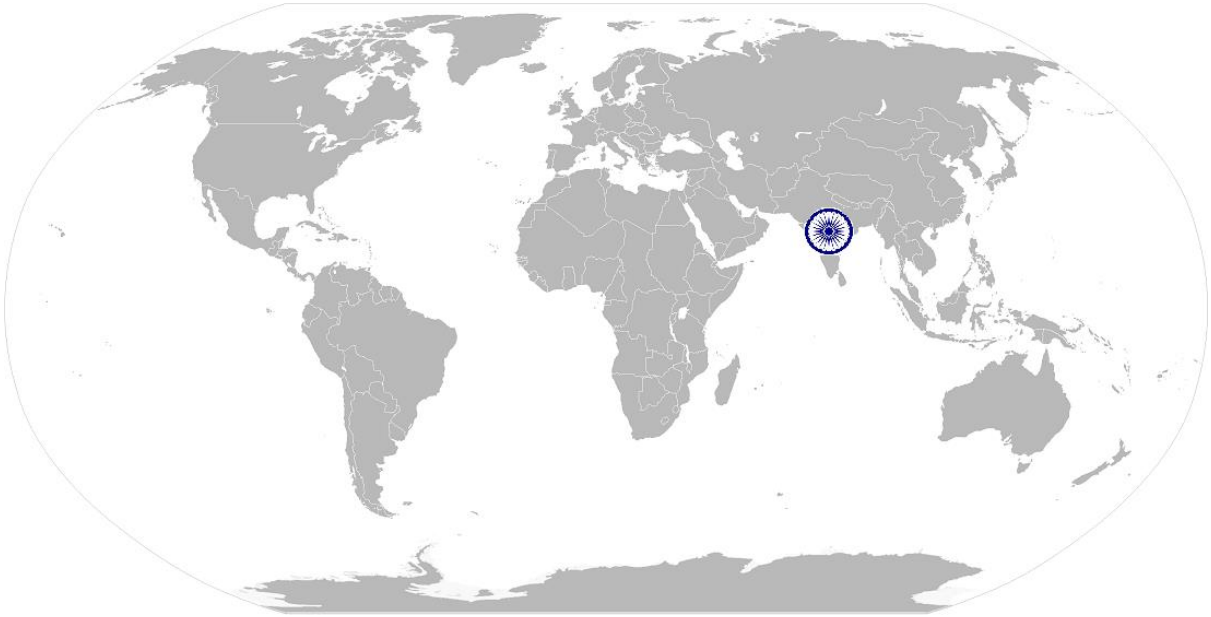
	Problem Solving
	The user/individual on the job should be able to : SB8. analyses a problem and attempt to find an acceptable solution and take help of concerned people if required
	Analytical Thinking
	The user/individual on the job should be able to : SB9. analyses the complexity of work to determine how it can be successfully carried out SB10. anticipate and analyses a given situation from all aspects
	Critical Thinking
	The user/individual on the job should be able to : SB11. apply own judgement to identify solutions in different situations



ASC/N0007 Conduct quality checks and inspection of the finished metal cast products

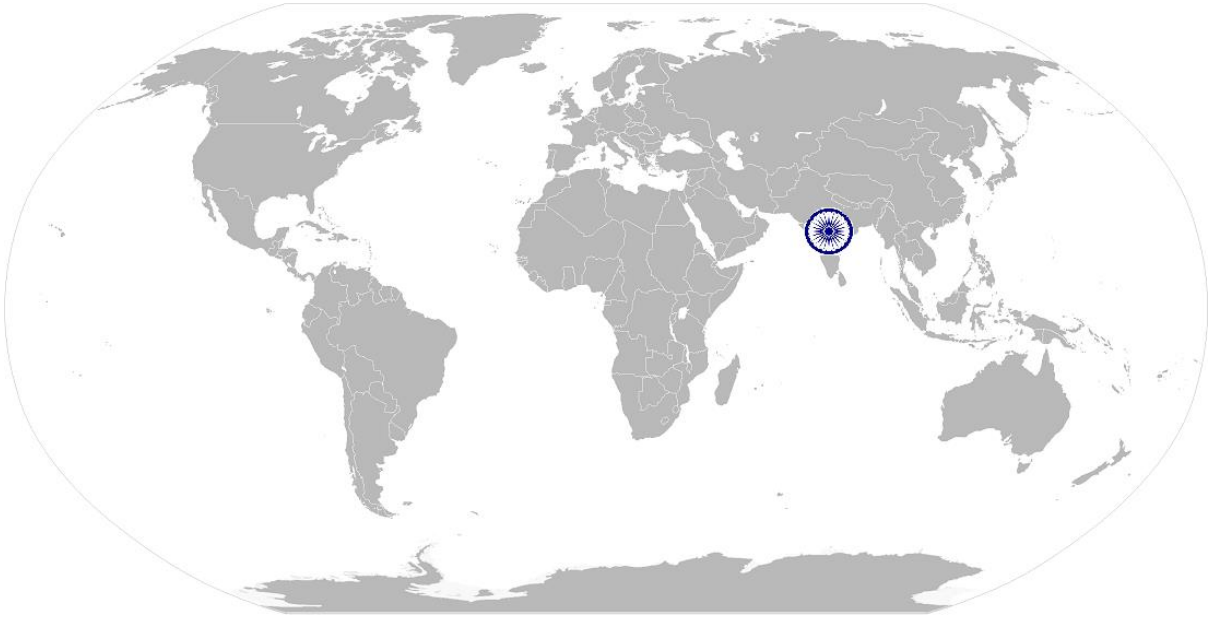
NOS Version Control

NOS Code	ASC/N0007		
Credits	TBD	Version number	1.0
Industry	Automotive	Drafted on	18/10/16
Industry Sub-sector	Manufacturing	Last reviewed on	18/10/16
Occupation	Welding	Next review date	20/10/18



ASC/N0008 Conduct regular cleaning and maintenance of the equipment

National Occupational Standard



Overview

This unit is about cleaning and maintaining the equipment on a regular basis to prevent any breakdown or improper quality of work output.

ASC/N0008 Conduct regular cleaning and maintenance of the equipment

National Occupational Standard

Unit Code	ASC/N0008
Unit Title (Task)	**Conduct regular cleaning and maintenance of the equipment**
Description	This NOS is about systematically arranging the equipment in proper area, cleaning the process equipment & auxiliaries on a regular basis and doing basic level maintenance of the equipment, recording any problems related to equipment working.
Scope	This unit/ task covers the following: • Assistant Welder will be responsible for: – storing of equipment in the proper location and cleaning and maintaining the same – recording logs and MIS
Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Storing equipment in proper condition	To be competent, the user/individual on the job must be able to: PC1. arrange all equipment in a proper order as indicated in the equipment manual PC2. store equipment auxiliaries and spare parts in proper designated areas PC3. clearly tag process related equipment parts/ spare parts as per part number or serial number so that sorting of equipment becomes easy PC4. cover equipment so that there is limited dust collection and moisture contact
Regular cleaning of the equipment and work area	To be competent, the user/individual on the job must be able to: PC5. regularly clean the equipment and process auxiliaries to remove any dust, moisture, waste material which would have got collected on the equipment PC6. regularly open the equipment and clean the internal parts of the equipment PC7. regularly clean the working area under the process and create ahealthy, clean and safe working environment
Conduct regular preventive maintenance of equipment	To be competent, the user/individual on the job must be able to: PC8. check the working of all bearing, rollers, shafts etc. and oil all moving parts of the equipment on a periodic basis PC9. check the working of non-moving parts and periodically conduct preventive maintenance to prevent machine failure PC10. periodically check the equipment calibration and report any errors to the maintenance teams for rectification

ASC/N0008 Conduct regular cleaning and maintenance of the equipment

Recording observations and preparing MIS	To be competent, the user/individual on the job must be able to: PC11. prepare periodic log sheets of equipment maintenance dates, maintenance schedules and maintenance activity conducted on the equipment
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes	The user/individual on the job needs to know and understand: KA1. relevant standards and procedures followed in the company for the process of maintenance and equipment storage KA2. functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. basic level maintenance and cleaning techniques KB2. various solvents, chemicals, lubricants etc. used during the maintenance processes KB3. procedure for arranging the equipment and spare parts in the prescribed manner including tagging and numbering of machine parts & spares KB4. safety precautions to be taken during cleaning and maintenance activities
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/individual on the job should be able to : SA1. read equipment manuals and process documents to understand the equipment and processes better SA2. read instructions especially safety instructions related to equipment cleaning and maintenance
	Writing Skills
	The user/individual on the job should be able to : SA3. note equipment part codes, name tags etc. in the prescribed formats and records for the same SA4. note observations related to equipment performance, breakdown, cleaning and maintenance schedules etc. in the prescribed MIS format
	Oral Communication (Listening and Speaking skills)
	The user/ individual on the job should have ability to: SA5. discuss task lists and job requirements with team members SA6. discuss with operator/ supervisor in order to understand the nature of the problem SA7. attentively listen and comprehend the information given by the technician/team members
	Decision Making

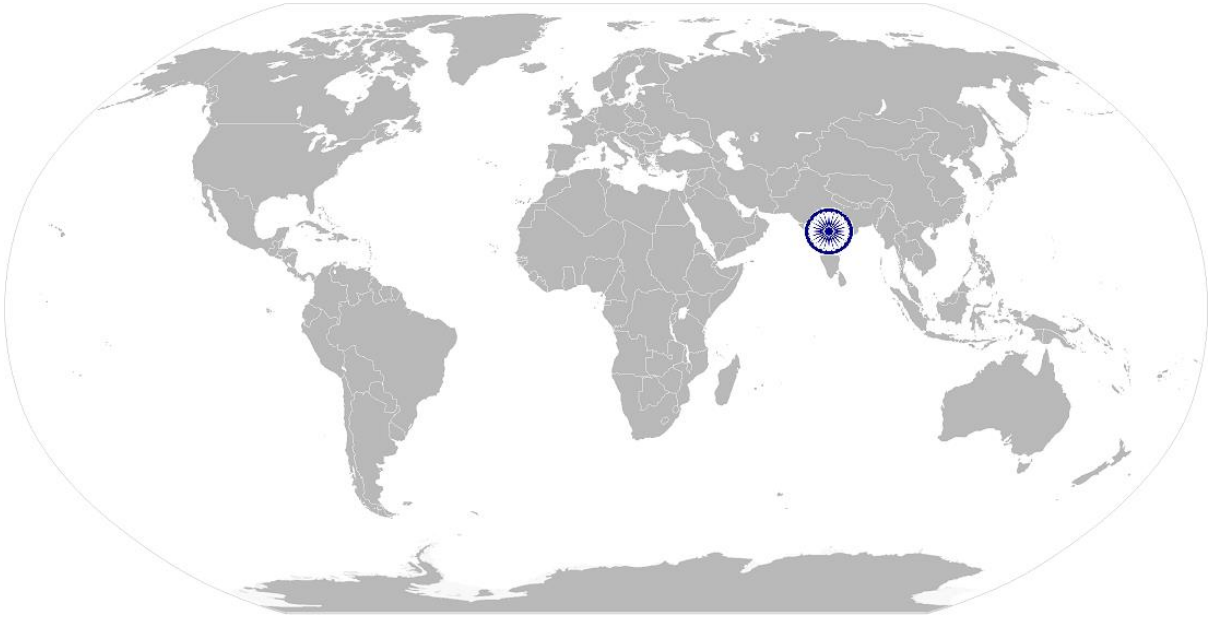
ASC/N0008 Conduct regular cleaning and maintenance of the equipment

B. Professional Skills	The user/individual on the job should be able to : SB1. analyses a given situation and decide on an appropriate action for completing the task within resources
	Plan and Organize
	The user/individual on the job should be able to : SB2. plan work assigned on a daily basis and provide estimates of time required for each piece of work SB3. prioritize actions to achieve required outcomes SB4. follow instructions and work on areas of improvement identified SB5. complete the assigned tasks with minimum supervision SB6. complete the job defined by the supervisor within the timelines and quality norms
	CustomerCentricity
	The user/individual on the job should be able to : SB7. meet or exceed internal and external customer/team expectations
	Problem Solving
	The user/individual on the job should be able to : SB8. analyses a problem and attempt to find an acceptable solution and take help of concerned people if required
	Analytical Thinking
	The user/individual on the job should be able to : SB9. analyses the complexity of work to determine how it can be successfully carried out SB10. anticipate and analyses a given situation from all aspects
	Critical Thinking
	The user/individual on the job should be able to : SB11. apply own judgement to identify solutions in different situations

ASC/N0008 Conduct regular cleaning and maintenance of the equipment

NOS Version Control

NOS Code	ASC/N0008		
Credits	TBD	Version number	1.0
Industry	Automotive	Drafted on	18/10/16
Industry Sub-sector	Manufacturing	Last reviewed on	18/10/16
Occupation	Welding	Next review date	20/10/18



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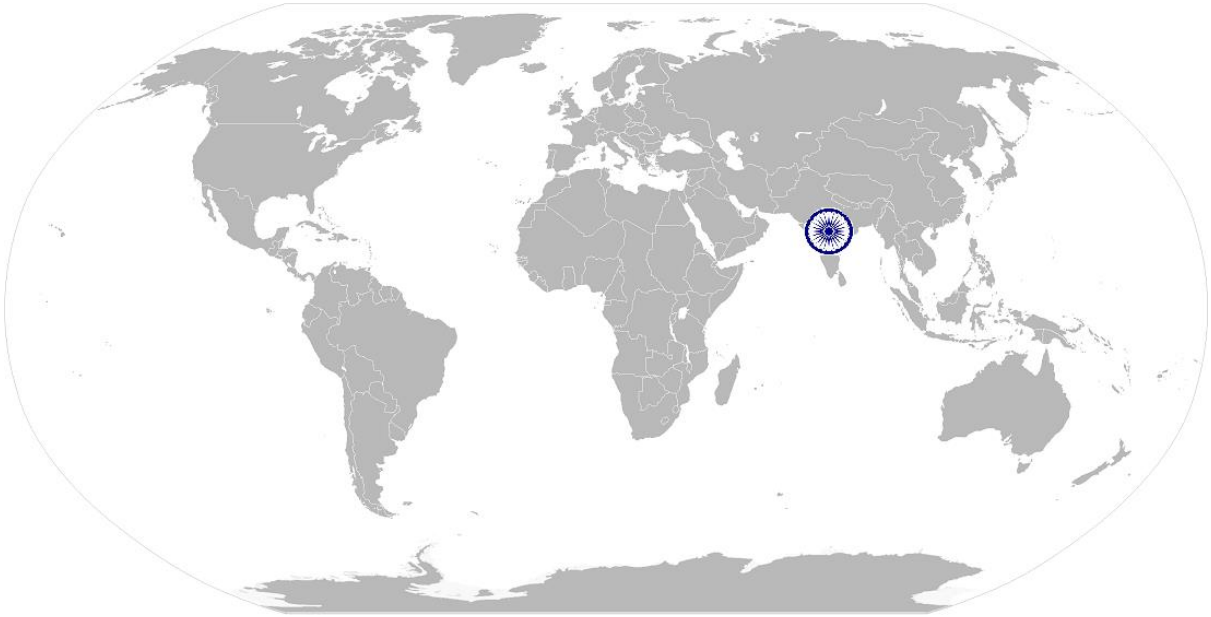

Overview

This unit is about the understanding all principles of 5S and follow the given guidelines to ensure a clean and efficient working environment in the organization.

ASC/N0021 **Maintain 5S at the work premises**

National Occupational Standard

Unit Code	ASC/N0021
Unit Title (Task)	**Maintain 5S at the work premises**
Description	This NOS is about ensuring all 5 S activities both at the shop floor and the office area to facilitate increase in work productivity.
Scope	This unit/ task covers the following: • Individual needs to – ensure sorting, streamlining & organizing; storage and documentation; cleaning, standardization and sustenance across the plant and office premises of the organization
Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Ensure sorting	To be competent, the user/individual on the job must be able to: PC1. follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and un-necessary items are not cluttering the workbenches or work surfaces PC2. ensure segregation of waste in hazardous/ non-Hazardous waste as per the sorting work instructions PC3. follow the technique of waste disposal and waste storage in the proper bins as per SOP PC4. segregate the items which are labelled as red tag items for the process area and keep them in the correct places PC5. sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions PC6. ensure that areas of material storage areas are not overflowing PC7. properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required PC8. return the extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area PC9. follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards
Ensure proper documentation and storage (organizing, streamlining)	To be competent, the user/individual on the job must be able to: PC10. follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists PC11. check that the items in the respective areas have been identified as broken

ASC/N0021 Maintain 5S at the work premises

	or damaged PC12. follow the given instructions and check for labeling of fluids, oils. lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc. PC13. make sure that all material and tools are stored in the designated places and in the manner indicated in the 5S instructions
Ensure cleaning of self and the work place	To be competent, the user/individual on the job must be able to: PC14. check whether safety glasses are clean and in good condition PC15. keep all outside surfaces of recycling containers are clean PC16. ensure that the area has floors swept, machinery clean and generally clean. in case of cleaning, ensure that proper displays are maintained on the floor which indicate potential safety hazards PC17. check whether all hoses, cabling & wires are clean, in good condition and clamped to avoid any mishap or mix up PC18. ensure workbenches and work surfaces are clean and in good condition PC19. follow the cleaning schedule for the lighting system to ensure proper illumination PC20. store the cleaning material and equipment in the correct location and in good condition PC21. ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene
Ensure sustenance	To be competent, the user/individual on the job must be able to: PC22. follow the daily cleaning standards and schedules to create a clean working environment PC23. attend all training programs for employees on 5 S PC24. support the team during the audit of 5 S PC25. participate actively in employee work groups on 5S and encourage team members for active participation PC26. follow the guidelines for What to do and What not to do to build sustainability in 5S as mentioned in the 5S check lists/ work instructions
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company/ organization and its processes	The user/individual on the job needs to know and understand: KA1. relevant standards, procedures and policies related to 5S followed in the company
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. have basic knowledge of 5S procedures KB2. know various types 5s practices followed in various areas

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	KB3. understand the 5S checklists provided in the department/ team KB4. have skills to identify useful & non useful items KB5. have knowledge of labels , signs & colors used as indicators KB6. have knowledge on how to sort and store various types of tools, equipment, material etc. KB7. know, how to identify various types of waste products KB8. understand the impact of waste/ dirt/ dust/ unwanted substances on the process/ environment/ machinery/ human body KB9. have knowledge of best ways of cleaning & waste disposal KB10. understand the importance of standardization in processes KB11. understand the importance of sustainability in 5S KB12. have knowledge of TQM process KB13. have knowledge of various materials and storage norms KB14. understand visual controls, symbols, graphs etc.
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/ individual on the job should have ability to : SA1. read 5S instructions put up across the plant premises
	Writing Skills
	The user/ individual on the job should have ability to : SA2. write simple sentences in local language and also preferably in Hindi/ English
	Oral Communication (Listening and Speaking skills)
	The user/ individual on the job should have ability to : SA3. effectively communicate information to team members inform employees in the plant and concerned functions about 5S SA4. listen effectively and orally communicate information SA5. attentively listen with full attention and comprehend the information given by the speaker during 5S training programs
B. Professional Skills	**Decision Making**
	The user/individual on the job should be able to : SB1. use reasoning skills to identify and resolve basic problems using 5S tools
	Plan and Organize
	The user/individual on the job should be able to : SB2. do what is right, not what is a popular practices SB3. follow shop floor rules & regulations and avoid deviations SB4. make 5S an integral way of life SB5. maintain self-hygiene and work place cleanliness on a continuous basis

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	SB6. persuade other colleagues also to follow 5 S
	CustomerCentricity
	The user/individual on the job should be able to : SB7. conform to organizational rules & regulations and also use innovative skills to ensure output and work place environment meets or exceeds expectations of colleagues
	Problem Solving
	The user/individual on the job should be able to : SB8. analyses a problem and attempt to find an acceptable solution and take help of concerned people if required
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB9. exhibit inquisitive behavior to seek feedback and question on the existing set patterns of work
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB10. use reasoning skills to identify and resolve basic problems using 5S

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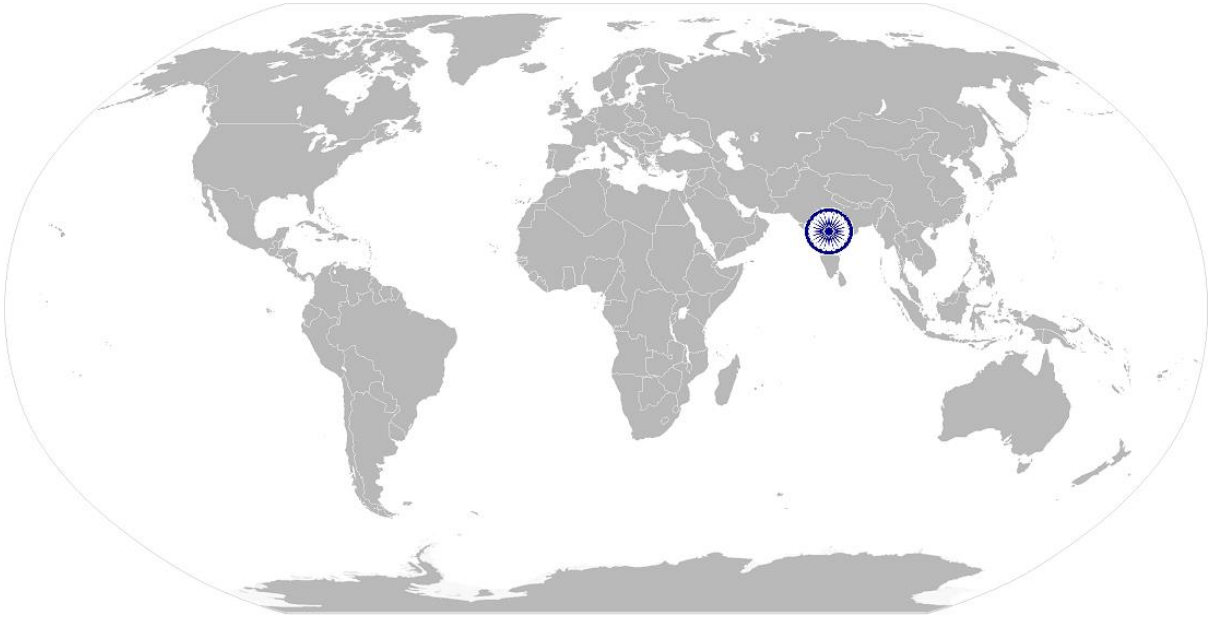
NOS Version Control

NOS Code	ASC/N0021		
Credits	TBD	Version number	1.0
Industry	Automotive	Drafted on	18/10/16
Industry Sub-sector	Manufacturing	Last reviewed on	18/10/16
Occupation	Welding	Next review date	20/10/18



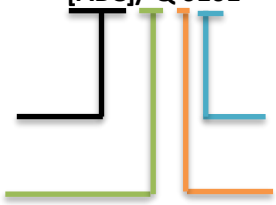
Annexure

Nomenclature for QP and NOS

Qualifications Pack

9 characters

[ABC]/ Q 0101



[Insert 3 letter codes for SSC]

Q denoting Qualifications Pack

QP number (2 numbers)

Occupation (2 numbers)

Occupational Standard

An example of NOS with 'N'

9 characters

[ABC] / N 0101

[Insert 3 letter codes for SSC]

N denoting National Occupational Standard

OS number (2 numbers)

Occupation (2 numbers)

The following acronyms/ codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Manufacturing	**31 - 45 & 61 - 68**
Research & Development	**81 - 84**
Sales & Service	**01 - 21**
Road Transportation	**96 - 97**

Sequence	Description	Example
Three letters	Automotive	ASC
Slash	/	/
Next letter	Whether **Q**P or **N**OS	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role: Welding and Quality Technician

Qualification Pack: ASC/Q3109

Sector Skill Council: Automotive Skills Development Council

Guidelines for Assessment:

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria.
5. To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS.
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

Assessable Outcome	Assessment Criteria	Marks Allocation			
		Total Marks	Out of	Theory	Practical Skills
1. ASC/N3103 Understand welding job requirements and related processes	PC1. Understand the work order (work output) required from the process and discuss the same with the operator	100	17	4	13
	PC2. refer all engineering drawings and sketches related to the work output to understand the measurement and shape of the required work output		17	4	13
	PC3. clearly understanding the does and don'ts of the manufacturing process as defined in SOPs/ Work Instructions or defined by supervisors		16	4	12
	PC4. refer the queries to the Operator/ Welder if they cannot be resolved by the Assistant Welder on own		16	4	12
	PC5. obtain help or advice from specialist if the problem is outside his/her area of competence or experience		17	4	13
	PC6. confirm self - understanding to the Operator once the query is		17	5	12

	resolved so that all doubts & queries can be resolved before the actual process execution				
		Total	**100**	**25**	**75**
2. ASC/N3104 Prepare the welding machine for the welding process	PC1. understand the right welding methodology and process to be adopted for completing the work order from the supervisor	**100**	8	2	6
	PC2. understand the various welding parameters like temperature, pressure, electrode type, electrode distance (gap), Welding current, voltage, process time etc. before starting the welding process		8	2	6
	PC3. understand the material required and the equipment availability for executing the activity		7	2	5
	PC4. correctly understand the type of electrode in terms of electrode material and thickness, filler material and flux which will be required for the selected welding process before the initiation of the welding process		8	2	6
	PC5. ensure that the required material is procured from the store before starting the welding process		6	1	5
	PC6. long with the helper, clean the surface of the electrodes and the welding gun to remove dust and any other impurities		6	1	5
	PC7. clean other welding machine auxiliaries(Welding Transformer, Gas Discharge unit, Flux wire) before the initiation of the welding process		7	2	5
	PC8. setup the welding apparatus as per the selected welding process and the internal Operating procedures and the setting standards for the machine		8	2	6
	PC9. clean the surface to the metal parts (work pieces) which need to be joint		6	1	5
	PC10. remove any extra material, sharp edges etc. which might impact the final welded product		7	2	5
	PC11. correctly compare the dimensions of the work pieces available on the welding line with		8	2	6

	the product drawing/ sketches available with the operator				
	PC12. in case the parts are not as per the given measurements, remove extra material by using chippers, grinders etc.		7	2	5
	PC13. immediately refer the queries to a operator and the supervisor		7	2	5
	PC14. confirm self-understanding to the operator once the query is resolved so that all doubts & queries can be resolved before the actual process execution		7	2	5
		Total	**100**	**25**	**75**
3. ASC/N3105 Support the welder in the welding process	PC1. hold the parts which need to be welded together using a clamp and align them with the electrodes as per the job requirement so that the work pieces do not fall down/ turn	100	11	2	9
	PC2. Install the work pieces on the Welding apparatus keeping in mind the electrodes distance, contact area, pressure, temperature application etc. as specified in the Welding SOP/ Control plan Documents/Work Instructions and instructed by the operator/ welder and the supervisor		11	3	8
	PC3. check for operation of core welding equipment like welding gun, welding transformer, gas cylinders, gas discharge units as per setup documentation		9	2	7
	PC4. Support the operator in conducting destructive and non-destructive test activity		9	2	7
	PC5. support the operator in the Gas Discharge welding by holding the Welding Gun and the Filler material/ Gas discharge		9	2	7
	PC6. help the welder in monitoring the welding process (Pressure, Temperature, gas discharge flow, electrode force, electrode distance etc.) by observing and communicating the readings on various panels/ meters at the right time to prevent any harm to the work pieces due to		10	2	8

	overheating, burning, over melting				
	PC7. measure the final welded piece and compare the dimensions as prescribed in the work order engineering drawing		11	3	8
	PC8. in case the parts are not as per the given measurements, remove extra material by using chippers, grinders etc.		10	3	7
	PC9. if there are any bulges, then hammer the bulges and give the work pieces the desired shape		10	3	7
	PC10. keep the operator informed of any inconsistency in the welding process, quality issues etc. so that the same can be dealt immediately		10	3	7
		Total	**100**	**25**	**75**
4. ASC/N3106 Remove the finished goods and store them in the designated place	PC1. understand the output product shape and decide the mechanism to lift the output	100	15	4	11
	PC2. clamp the product and lift the output object using suitable equipment like hoist, lifts, crane etc.		14	4	10
	PC3. ensure that there is no damage to the lifted work pieces		14	3	11
	PC4. carry the output product to the designated area using hangars, conveyor belts, cranes, forklifts etc.		14	3	11
	PC5. post inspection process, tag the right quality pieces for future identification		14	4	10
	PC6. carry the tagged pieces to the storage areas using manual/ automatic means		15	4	11
	PC7. keep a record of the finished goods along with the storage identification numbers for easy sorting		14	3	11
		Total	**100**	**25**	**75**
5. ASC/N6301 Inspect and maintain the product quality	PC1. conduct the process of Inspection at the stages: • complete dimensional /Layout Inspection at development stage & later as per the periodicity such as annual for re- validation	100	6	2	4

	• in the Production phase as per the CP/ Quality plan/ sampling Plan/ stage inspection plans/ First off IR				
	PC2. handle Inspection equipment and Instruments such as • vernier, micrometers • height Gauge & surface plate • acceptance/ Combination Gauges • simple gauges – bore, air , profile for safe storage, calibration at pre-decided frequency and have an acceptable level of R & R as per SOP of the organization		6	2	4
	PC3. conduct inspection of the product covering the following checkpoints: • visual Inspection of the part for scratches, dents , damages, packing as per the norms etc. • special inspection co-ordinate with other agencies e.g. Lab :Material, Lab: Standards Room, assembly / performance trials etc. • identification sticker/number/label placed on the product • functioning of the product and its components • documentation pertaining to the Quality		6	2	4
	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		6	2	4
	PC5. participate in checking the effectiveness of implementation and repeat the process till the discrepancies are resolved		5	1	4
	PC6. document the observations of the inspection and maintain records of		5	1	4
	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		6	1	5

	PC8. As is the case i.e. New product/process development / Production phase, the reports and Part Submission Warrant, PPAP are to be prepared.		5	1	4
	PC9. based on the implementation of information flow system in organization like ERP/SAP , upload the reports		6	1	5
	PC10. conduct a dock audit of a sample batch from the production lot of the ready to dispatch final products covering the following checkpoints: • product in good shape with no visible damage • presence of sharp edges in the product • wear and tear of the product • presence of any physical defects • packaging of product according to customer specification • packaging boxes as per the requirement for preservation • customer PO Number on the shipping labels • boxes labeled correctly with packer name • count on the Bill of Lading match the count on the pallet • boxes stacked neatly in case of pallet arrangement • Damages of the pallet like nails sticking out, broken boards, etc.		6	2	4
	PC11. coordinate with the respective process owners/Stores and implement CAPA for discrepancies identified in the dock audit on immediate basis		5	1	4
	PC12. review the effectiveness of implementation and repeat the process till the discrepancies are resolved		5	1	4
	PC13. document the observations of dock audit and maintain records		5	1	4
	PC14. based on the implementation of information flow system in organization like ERP/SAP , upload the reports		6	2	4

	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		6	1	5
	PC16. participate for preparation of Fault tree, conducting simulation and implementation of actions		5	1	4
	PC17. participate for updating relevant documentation		5	1	4
	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		6	2	4
		Total	**100**	**25**	**75**
6. ASC/N0006 Maintain a safe and healthy working environment	PC1. follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and un-necessary items are not cluttering the workbenches or work surfaces	100	4	1	3
	PC2. ensure segregation of waste in hazardous/ non Hazardous waste as per the sorting work instructions		4	1	3
	PC3. follow the technique of waste disposal and waste storage in the proper bins as per SOP		4	1	3
	PC4. segregate the items which are labeled as red tag items for the process area and keep them in the correct places		4	1	3
	PC5. sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions		4	1	3
	PC6. ensure that areas of material storage areas are not overflowing		3	1	2
	PC7. properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required		4	1	3
	PC8. return the extra material and tools to the designated sections and make sure that no additional		4	1	3

	material/ tool is lying near the work area				
	PC9. follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards		4	1	3
	PC10. follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists		4	1	3
	PC11. check that the items in the respective areas have been identified as broken or damaged		3	0	3
	PC12. follow the given instructions and check for labeling of fluids, oils. lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc.		4	1	3
	PC13. make sure that all material and tools are stored in the designated places and in the manner indicated in the 5S instructions		4	1	3
	PC14. check whether safety glasses are clean and in good condition		3	1	2
	PC15. keep all outside surfaces of recycling containers are clean		3	1	2
	PC16. ensure that the area has floors swept, machinery clean and generally clean. In case of cleaning, ensure that proper displays are maintained on the floor which indicate potential safety hazards		4	1	3
	PC17. check whether all hoses, cabling & wires are clean, in good condition and clamped to avoid any mishap or mix up		4	1	3
	PC18. ensure workbenches and work surfaces are clean and in good condition		3	1	2
	PC19. follow the cleaning schedule for the lighting system to ensure proper illumination		4	1	3
	PC20. store the cleaning material and equipment in the correct location and in good condition		4	1	3

	PC21. ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene		4	1	3
	PC22. follow the daily cleaning standards and schedules to create a clean working environment		4	1	3
	PC23. attend all training programs for employees on 5 S		4	1	3
	PC24. support the team during the audit of 5S		4	1	3
	PC25. participate actively in employee work groups on 5S and encourage team members for active participation		5	1	4
	PC26. follow the guidelines for What to do and What not to do to build sustainability in 5S as mentioned in the 5S check lists/ work instructions		4	1	3
		Total	**100**	**25**	**75**
7. ASC/N0007 Conduct quality checks and inspection of the finished metal cast products	PC1. measure the specifications of the finished product using devices like micrometers, vernier calipers, gauges, rulers, weighing scales and any other inspection equipment and compare with the parameters given in the work order	100	17	4	13
	PC2. compare texture, color, surface properties, hardness and strength with the given product specifications		17	4	13
	PC3. note down the observations of the basic inspection process and identify pieces which are OK and also not meeting the specified standards		17	4	13
	PC4. separate the defective pieces into two categories – pieces which can be repaired/ modified and pieces which are beyond repair		16	4	12
	PC5. discard the pieces which are beyond repair and repair the ones which need minor modifications/ rework		17	5	12
	PC6. maintain records of each category of work outputs		16	4	12
		Total	**100**	**25**	**75**
8. ASC/N0008 Conduct regular	PC1. arrange all equipment in a proper order as indicated in the equipment manual	100	9	2	7

cleaning and maintenance of the equipment	PC2. store equipment auxiliaries and spare parts in proper designated Areas		9	2	7
	PC3. clearly tag process related equipment parts/ spare parts as per part number or serial number so that sorting of equipment becomes easy		9	2	7
	PC4. cover equipment so that there is limited dust collection and moisture contact		9	2	7
	PC5. regularly clean the equipment and process auxiliaries to remove any dust, moisture, waste material which would have got collected on the equipment		9	3	6
	PC6. regularly open the equipment and clean the internal parts of the Equipment		9	3	6
	PC7. regularly clean the working area under the process and create a healthy, clean and safe working environment		9	3	6
	PC8. check the working of all bearing, rollers, shafts etc. and oil all moving parts of the equipment on a periodic basis		9	2	7
	PC9. check the working of non-moving parts and periodically conduct preventive maintenance to prevent machine failure		9	2	7
	PC10. periodically check the equipment calibration and report any errors to the maintenance teams for rectification		9	2	7
	PC11. prepare periodic log sheets of equipment maintenance dates, maintenance schedules and maintenance activity conducted on the equipment		10	2	8
		Total	**100**	**25**	**75**
9. ASC/N0021 Maintain 5S at the work premises	PC1. identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals ,loud noise	100	9	2	7
	PC2. inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc		9	2	7

	PC3. inform the concerned authorities about damages which can potentially harm man/ machine during operations		9	2	7
	PC4. create awareness amongst other by sharing information on the identified risks		9	2	7
	PC5. follow the instructions given on the equipment manual describing the operating process of the equipments		9	3	6
	PC6. follow the Safety, Health and Environment related practices developed by the organization		9	3	6
	PC7. operate the machine using the recommended Personal Protective Equipments (PPE)		10	3	7
	PC8. maintain a clean and safe working environment near the workplace and ensure there is no spillage of chemicals, production waste, oil, solvents etc		9	2	7
	PC9. maintain high standards of personal hygiene at the work place		9	2	7
	PC10. ensure that the waste disposal takes place in the designated area as per organization SOP		9	2	7
	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		9	2	7
		Total	**100**	**25**	**75**
	Grand Total	**900**	**900**	**225**	**675**
	Percentage Weightage (%)			**25**	**75**