

Casting Technician Level 3

QP Code: ASC/Q3202

NSQF Level: 3

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Qualification Pack

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ASC/Q3202: Casting Technician Level 3

Brief Job Description

Assistant Casting Technician will be involved in managing the specifications of the molten metal, setting up and operating the casting machinery and forming & finishing the metal cast.

Personal Attributes

Reading, writing and communication skills, ability to plan and prioritize, quality consciousness, safety orientation, Dexterity, Ability to use fingers, hands and feet with ease to complete the assigned task (Dexterity), high precision and sensitivity to problem solving and sensitivity towards safety for self and equipment.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [ASC/N0006: Maintain a safe and healthy working environment](#)
2. [ASC/N0007: Conduct quality checks and inspection of the finished product](#)
3. [ASC/N0008: Conduct regular cleaning and maintenance of the equipment](#)
4. [ASC/N0021: Maintain 5S at the work premises](#)
5. [ASC/N3205: Understand the Job requirement](#)
6. [ASC/N3206: Support the operator in conducting casting process](#)
7. [ASC/N3207: Perform fettling and post casting operations](#)

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Forming-Casting
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8121.3801

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Minimum Educational Qualification & Experience	10th Class with 2-3 years of experience Not applicable OR 10th Class OR 10th Class
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	Different Latest Casting, Trimming and cleaning techniques and methodologies used in organization Reading and writing skills 5S and Safety
Minimum Job Entry Age	18 Years
Last Reviewed On	24/07/2013
Next Review Date	31/03/2020
NSQC Approval Date	20/07/2015
Version	1.0

Qualification Pack

ASC/N0006: 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 and training team members on health and safety related issues

Scope

The role holder will be responsible for

- identifying and 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

Elements and Performance Criteria

Identify and report the risks identified

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 equipments
- PC6..** Follow the Safety, Health and Environment related practices developed by the organization
- PC7.** Operate the machine using the recommended Personal Protective Equipments (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 employees illness of contagious nature so that preventive actions can be planned for others

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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- KU1.** relevant standards, procedures and policies related to Health, Safety and Environment followed in the company
- KU2.** basic knowledge of Safety procedures(fire fighting, first aid) within the organization
- KU3.** knowledge of various types of PPEs and their usage
- KU4.** basic knowledge of risks/hazards associated with each occupation in the organization
- KU5.** how to safely operate various tools and machines and risks associated with the tools/ equipment
- KU6.** knowledge of personal hygiene and how an individual can contribute towards creating a highly safe and clean working environment

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write basic level notes and observations
- GS2.** read safety instructions put up across the plant premises
- GS3.** read safety precautions mentioned in equipment manuals and panels to understand the potential risks associated
- GS4.** effectively communicate information to team members
- GS5.** inform employees in the plant and concerned functions about events, incidents & potential risks observed related to Safety, Health and Environment.
- GS6.** question operator/ supervisor in order to understand the safety related issues
- GS7.** attentively listen with full attention and comprehend the information given by the speaker during safety drills and training programs
- GS8.** use common sense and make judgments during day to day basis
- GS9.** use reasoning skills to identify and resolve basic problems
- GS10.** use common sense and make judgments during day to day basis
- GS11.** use reasoning skills to identify and resolve basic problems

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identify and report the risks identified</i>	8	23	-	-
PC1.. Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals ,loud noise	3	6	-	-
PC2. Inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc	2	6	-	-
PC3. Inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations	2	6	-	-
PC4. Create awareness amongst other by sharing information on the identified risks	1	5	-	-
<i>Create and sustain a Safe, clean and environment friendly work place</i>	17	52	-	-
PC5.. Follow the instructions given on the equipment manual describing the operating process of the equipments	3	7	-	-
PC6.. Follow the Safety, Health and Environment related practices developed by the organization	3	8	-	-
PC7. Operate the machine using the recommended Personal Protective Equipments (PPE)	3	8	-	-
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	2	8	-	-
PC9. Maintain high standards of personal hygiene at the work place	2	7	-	-
PC10. Ensure that the waste disposal is done in the designated area and manner as per organization SOP.	3	8	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. Inform appropriately the medical officer/ HR in case of self or an employees illness of contagious nature so that preventive actions can be planned for others	1	6	-	-
NOS Total	25	75	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	ASC/N0006
NOS Name	Maintain a safe and healthy working environment
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	15/09/2013
Next Review Date	15/09/2015
NSQC Clearance Date	20/07/2015

Qualification Pack

ASC/N0007: Conduct quality checks and inspection of the finished product

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 1. The customer/ end user 2. Internal manufacturing team

Scope

The Assistant Welder will be responsible for

- Inspection of finished goods
- Recording log of defective pieces and repairing minor defects

Elements and 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 micrometer, 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

Repair the pieces with minor defects

To be competent, the user/individual on the job must be able to:

- PC7.** rectify minor defects like excess slag, shape deformation, sharp edges, rough surfaces, grooves, holes etc. by fettling, chipping, cutting, sawing, filling, shearing, hammering etc.
- PC8..** escalate all issues related to change in color, surface properties, hardness etc. so that the manufacturing equipment can be reset to achieve the specified output

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards specified for the manufacturing process

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- KU2.** basic process followed for inspection of the pieces
- KU3.** basic knowledge about the Quality Management policy and manual of the organization
- KU4.** techniques of using measurement instruments like rulers, Vernier calipers, micrometer, weighing scale, gauges and other inspection equipment
- KU5.** guidelines to identify quality defects in work pieces
- KU6.** used for cutting, shearing, hammering, drilling which can repair pieces with minor defects

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** note the number of pieces with defects which can be repaired to number of pieces which will be discarded
- GS2.** read process and equipment manuals to understand the working of the equipment
- GS3.** read measuring instruments reading to identify any deviations from the dimensions given in the product engineering drawing
- GS4.** discuss task lists and job requirements with co-workers
- GS5.** effectively communicate information to team members
- GS6.** question operator/ supervisor in order to understand the nature of the problem
- GS7.** attentively listen with full attention and comprehend the information given by the speaker
- GS8.** plan and organize the work order and jobs received from the operator
- GS9.** organize all process/ equipment manuals so that sorting/ accessing information is easy
- GS10.** visualize the final job product after understanding the given drawing/ sketches
- GS11.** co relate the type of job output required with the casting methodology to be used
- GS12.** use common sense and make judgments during day to day basis
- GS13.** use reasoning skills to identify and resolve basic problems

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Inspection of finished goods to detect any deviations from the product design</i>	7	19	-	-
PC1.. measure the specifications of the finished product using devices like micrometer, vernier calipers, gauges, rulers, weighing scales and any other inspection equipment and compare with the parameters given in the work order	3	9	-	-
PC2.. compare texture, color, surface properties, hardness and strength with the given product specifications	4	10	-	-
<i>Record log of defective products and discard defective pieces</i>	12	37	-	-
PC3. note down the observations of the basic inspection process and identify pieces which are ok and also not meeting the specified standards	3	8	-	-
PC4.. separate the defective pieces into two categories pieces which can be repaired/ modified and pieces which are beyond repair	3	10	-	-
PC5.. discard the pieces which are beyond repair and repair the ones which need minor modifications/ rework	3	10	-	-
PC6. maintain records of each category of work outputs	3	9	-	-
<i>Repair the pieces with minor defects</i>	6	19	-	-
PC7. rectify minor defects like excess slag, shape deformation, sharp edges, rough surfaces, grooves, holes etc. by fettling, chipping, cutting, sawing, filling, shearing, hammering etc.	3	10	-	-
PC8.. escalate all issues related to change in color, surface properties, hardness etc. so that the manufacturing equipment can be reset to achieve the specified output	3	9	-	-
NOS Total	25	75	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	ASC/N0007
NOS Name	Conduct quality checks and inspection of the finished product
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Welding
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	18/10/2016
Next Review Date	20/10/2018
NSQC Clearance Date	

Qualification Pack

ASC/N0008: 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

The role holder will be responsible for

- Storing the equipment in the proper condition
- Regular cleaning and maintenance of equipment and work area

Elements and 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 equipments 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 a healthy, clean and safe working environment

Conduct regular preventive maintenance of equipments

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

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

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Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards and procedures followed in the company for the process of maintenance and equipment storage
- KU2.** functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution
- KU3.** basic level maintenance and cleaning techniques
- KU4.** various solvents, chemicals, lubricants etc. used during the maintenance processes
- KU5.** procedure for arranging the equipment and spare parts in the prescribed manner including tagging and numbering of machine parts & spares
- KU6.** safety precautions to be taken during cleaning and maintenance activities

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** note equipment part codes, name tags etc. in the prescribed formats and records for the same
- GS2.** note observations related to equipment performance, breakdown, cleaning and maintenance schedules etc. in the prescribed MIS format
- GS3.** read equipment manuals and process documents to understand the equipment and processes better
- GS4.** read instructions especially safety instructions related to equipment cleaning and maintenance
- GS5.** discuss task lists and job requirements with co-workers
- GS6.** effectively communicate information to team members
- GS7.** listen and analyse any noise and vibrations in the equipment and report the same to the maintenance team for preventive action
- GS8.** attentively listen with full attention and comprehend the information given by the speaker
- GS9.** plan and organize the work order and jobs received from the Operator
- GS10.** organize all process/ equipment manuals so that sorting/ accessing information is easy as per the part/ machine number in the specified format in the designated area
- GS11.** use common sense and make judgments during day to day basis
- GS12.** use reasoning skills to identify and resolve basic problems

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Storing equipment in proper condition</i>	7	30	-	-
PC1.. arrange all equipment in a proper order as indicated in the equipment manual	2	8	-	-
PC2. . store equipment auxiliaries and spare parts in proper designated areas	2	8	-	-
PC3.. clearly tag process related equipment parts/ spare parts as per part number or serial number so that sorting of equipment becomes easy	2	7	-	-
PC4. cover equipment so that there is limited dust collection and moisture contact	1	7	-	-
<i>Regular cleaning of the equipments and work area</i>	6	22	-	-
PC5. regularly clean the equipment and process auxiliaries to remove any dust, moisture, waste material which would have got collected on the equipment	2	8	-	-
PC6. regularly open the equipment and clean the internal parts of the equipment	2	7	-	-
PC7. regularly clean the working area under the process and create a healthy, clean and safe working environment	2	7	-	-
<i>Conduct regular preventive maintenance of equipments</i>	6	21	-	-
PC8.. check the working of all bearing, rollers, shafts etc and oil all moving parts of the equipment on a periodic basis	2	7	-	-
PC9.. check the working of non moving parts and periodically conduct preventive maintenance to prevent machine failure	2	7	-	-
PC10. periodically check the equipment calibration and report any errors to the maintenance teams for rectification	2	7	-	-
<i>Recording observations and preparing MIS</i>	1	7	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. prepare periodic log sheets of equipment maintenance dates, maintenance schedules and maintenance activity conducted on the equipment	1	7	-	-
NOS Total	20	80	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	ASC/N0008
NOS Name	Conduct regular cleaning and maintenance of the equipment
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Welding
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	18/10/2016
Next Review Date	20/10/2018
NSQC Clearance Date	

Qualification Pack

ASC/N0021: 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

Elements and 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 unnecessary 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
- PC10.** follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists

Ensure proper documentation and storage (organizing , streamlining)

To be competent, the user/individual on the job must be able to:

- PC11.** check that the items in the respective areas have been identified as broken or damaged
- PC12.** follow the given instructions and check for labelling 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

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- 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 (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards, procedures and policies related to 5S followed in the company
- KU2.** have basic knowledge of 5S procedures
- KU3.** know various types 5s practices followed in various areas
- KU4.** understand the 5S checklists provided in the department/ team
- KU5.** have skills to identify useful & non useful items
- KU6.** have knowledge of labels , signs & colours used as indicators
- KU7.** knowledge on how to sort and store various types of tools, equipment, material etc.
- KU8.** know , how to identify various types of waste products
- KU9.** understand the impact of waste/ dirt/ dust/unwanted substances on the process/ environment/ machinery/ human body
- KU10.** have knowledge of best ways of cleaning & waste disposal
- KU11.** understand the importance of standardization in processes
- KU12.** understand the importance of sustainability in 5S
- KU13.** have knowledge of TQM process
- KU14.** have knowledge of various materials and storage norms
- KU15.** understand visual controls, symbols, graphs etc.

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write basic level notes and observations

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- GS2.** note down observations (if any) related to the process
- GS3.** read 5S instructions put up across the plant premises
- GS4.** effectively communicate information to team members inform employees in the plant and concerned functions about 5S
- GS5.** question the process head in order to understand the 5S related issues
- GS6.** attentively listen with full attention and comprehend the information given by the speaker during 5S training programs
- GS7.** use common sense and make judgments during day to day basis
- GS8.** use reasoning skills to identify and resolve basic problems using 5S
- GS9.** persuade co team members to follow 5 S
- GS10.** ensure that the co team members understand the importance of using 5 S tool
- GS11.** use innovative skills to perform and manage 5 S activities at the work desk and the shop floor
- GS12.** exhibit inquisitive behaviour to seek feedback and question on the existing set patterns of work
- GS13.** do what is right, not what is a popular practices
- GS14.** follow shop floor rules& regulations and avoid deviations; make 5S an integral way of life
- GS15.** ensure self-cleanliness on a daily basis
- GS16.** demonstrate the will to keep the work area in a clean and orderly manner

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure sorting</i>	10	30	-	-
PC1.. follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and unnecessary items are not cluttering the workbenches or work surfaces.	1	3	-	-
PC2.. ensure segregation of waste in hazardous/ non hazardous waste as per the sorting work instructions	1	3	-	-
PC3.. follow the technique of waste disposal and waste storage in the proper bins as per sop	1	3	-	-
PC4.. segregate the items which are labelled as red tag items for the process area and keep them in the correct places	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	1	3	-	-
PC6. . ensure that areas of material storage areas are not overflowing	1	3	-	-
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	1	3	-	-
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	1	3	-	-
PC9. follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards	1	3	-	-
PC10. follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists	1	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure proper documentation and storage (organizing , streamlining)</i>	3	9	-	-
PC11. check that the items in the respective areas have been identified as broken or damaged	1	3	-	-
PC12. follow the given instructions and check for labelling of fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc	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	1	3	-	-
<i>Ensure cleaning of self and the work place</i>	8	24	-	-
PC14. check whether safety glasses are clean and in good condition	1	3	-	-
PC15. keep all outside surfaces of recycling containers are clean	1	3	-	-
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	1	3	-	-
PC17.. check whether all hoses, cabling & wires are clean, in good condition and clamped to avoid any mishap or mix up	1	3	-	-
PC18.. ensure workbenches and work surfaces are clean and in good condition	1	3	-	-
PC19. follow the cleaning schedule for the lighting system to ensure proper illumination	1	3	-	-
PC20. store the cleaning material and equipment in the correct location and in good condition	1	3	-	-
PC21. ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene	1	3	-	-
<i>Ensure sustenance</i>	4	12	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. follow the daily cleaning standards and schedules to create a clean working environment	1	3	-	-
PC23. attend all training programs for employees on 5 s	0.5	2	-	-
PC24. support the team during the audit of 5 s	1	3	-	-
PC25. participate actively in employee work groups on 5s and encourage team members for active participation	0.5	2	-	-
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	1	2	-	-
NOS Total	25	75	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N0021
NOS Name	Maintain 5S at the work premises
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	15/03/2014
Next Review Date	15/03/2016
NSQC Clearance Date	

Qualification Pack

ASC/N3205: Understand the Job requirement

Description

This NOS is about understanding the job requirement, what processes need to be executed, what equipment will be used for the project and what is the required output considering the standards specified

Scope

The role holder will be responsible for Understanding the engineering drawings and sketches Escalation of queries to competent person in case of queries The job holder will cover different casting methods for manufacturing body components for auto components

- Understanding the engineering drawings and sketches
- Escalation of queries to competent person in case of queries

Elements and 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 donts 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/ caster if they cannot be resolved by the assistant caster on own
- PC5.** obtain help or advice from specialist if the problem is outside his/her area of competence or experience
- PC6.** confirm self-understanding to the operator once the query is resolved so that all doubts & queries can be resolved before the actual process execution

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards and procedures followed in the company
- KU2.** different types of products manufactured by the company
- KU3.** functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution
- KU4.** quality norms prescribed by the organization for casting jobs
- KU5.** different types of casting processes and associated equipment

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- KU6.** different parameters pertinent to casting process like Temperature, etc
- KU7.** measuring instruments like verniercalipers, micrometer and other measurement systems
- KU8.** geometry and dimensions
- KU9.** sketches and engineering drawings
- KU10.** safety precautions to be taken for all types of casting activities
- KU11.** mechanical, heat laws and working of casting machines etc

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** document, interpret information from the sketches and engineering drawings
- GS2.** measurements, equipment panel readings for various process parameters in the required reporting formats
- GS3.** read and interpret engineering drawing and sketches
- GS4.** equipment manuals and process documents to understand the equipment and processes better
- GS5.** read safety instructions especially symbols while using the equipment in the plant area
- GS6.** discuss task lists, schedules, and work-loads with co-worker
- GS7.** question internal customers/ Casting shop supervisor in order to understand the nature of the problem and make a diagnosis
- GS8.** plan and organize the work order and jobs received from the Operator
- GS9.** organize all process/ equipment manuals so that sorting/ accessing information is easy
- GS10.** ability to visualize the final job product after understanding the given drawing/ sketches
- GS11.** ability to identify the strengths and weakness of various casting process
- GS12.** use common sense and make judgments during day to day basis
- GS13.** use reasoning skills to identify and resolve basic problems
- GS14.** follow instructions and work on areas of improvement identified
- GS15.** complete the assigned tasks with minimum supervision
- GS16.** complete the job defined by the operator/supervisor within the timelines and quality norms

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Understand the engineering drawings, sketches and work order</i>	16	41	-	-
PC1. understand the work order (work output) required from the process and discuss the same with the operator	5	15	-	-
PC2.. refer all engineering drawings and sketches related to the work output to understand the measurement and shape of the required work output	6	13	-	-
PC3.. clearly understanding the does and donts of the manufacturing process as defined in sops/ work instructions or defined by supervisors	5	13	-	-
<i>Escalations of queries on the given job</i>	9	34	-	-
PC4.. refer the queries to the operator/ caster if they cannot be resolved by the assistant caster on own	3	12	-	-
PC5. obtain help or advice from specialist if the problem is outside his/her area of competence or experience	3	10	-	-
PC6. confirm self-understanding to the operator once the query is resolved so that all doubts & queries can be resolved before the actual process execution	3	12	-	-
NOS Total	25	75	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N3205
NOS Name	Understand the Job requirement
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Forming-casting
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	24/07/2013
Next Review Date	01/08/2015
NSQC Clearance Date	20/07/2015

Qualification Pack

ASC/N3206: Support the operator in conducting casting process

Description

This NOS is about supporting the operator in various casting operations as per the final output specifications and the standards specified by the organization

Scope

The role holder will be responsible for Supporting the operator in conducting actual casting process Check the measurement instruments for operations Conduct visual inspection of the output posting casting process The job holder will cover different casting methods for manufacturing body components for auto components

- Supporting the operator in conducting actual casting process
- Check the measurement instruments for operations
- Conduct visual inspection of the output posting casting process

Elements and Performance Criteria

Conduct the actual casting process

To be competent, the user/individual on the job must be able to:

- PC1..** ensure refractory ladles are preheated and in red hot condition, its pouring spout or lip is repaired and free from slag
- PC2..** ensure required ferro alloy or inoculants are added during tapping or transfer
- PC3..** confirm metal temperature as per given specifications
- PC4..** confirm the pouring is done within stipulated time span
- PC5.** maintain down spur is always full during pouring
- PC6.** ensure metal stream inoculation per each mould
- PC7.** record the pouring observations like parting leak, gas evolution, interrupted pouring or any abnormality
- PC8.** allow the poured to cool as per given instructions before knock out
- PC9..** obtain instructions from operator to adjust the temperature and other parameters as per the casting requirement
- PC10.** obtain instructions from operator to turn valves to circulate water through cores, or spray water on filled molds to cool and solidify metal (in case of manual solidification)

Check measurement instruments for monitoring casting process parameters

To be competent, the user/individual on the job must be able to:

- PC11.** help the operator in monitoring the casting process (parameters like temperature etc.) by observing and analyzing the readings on various panels/meters to prevent machine breakdown and deviations of the cast from desired specifications

Perform the visual inspection of the output to further finish the casting

To be competent, the user/individual on the job must be able to:

- PC12..** provide observations on final metal casting in terms of the dimensions as prescribed in the work order engineering drawing

Qualification Pack

PC13. perform further processing of cast in terms of chipping, fettling etc

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards and procedures followed in the company
- KU2.** different types of products manufactured by the company
- KU3.** functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution
- KU4.** quality norms prescribed by the organization for casting jobs
- KU5.** different types of casting processes and associated equipment
- KU6.** different parameters pertinent to casting process like Sand properties GCS, Compatibility, Clay and moisture %, Squeeze pressure, metal temperature, inoculation addition, cooling time, casting hardness, tensile strength, elongation and microstructure requirement etc
- KU7.** knowledge of casting defects and how they are generated, how they can be prevented, knowledge of different raw materials, ferro alloys and consumables used in the melt shop
- KU8.** knowledge of furnace operation, melting process, charging method and safety process of handling hot liquid iron, furnace lining process and control measuring instruments like vernier callipers, micrometer and other measurement systems
- KU9.** geometry and dimensions
- KU10.** sketches and engineering drawings
- KU11.** safety precautions to be taken for all types of casting activities
- KU12.** mechanical, heat laws and working of casting machines etc
- KU13.** set up instructions, trouble shooting and emergency handling, contingency planning
- KU14.** knowledge of pneumatic and hydraulics

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write a log book in terms of output number, set up parameters, machine setting parameters and loss details etc.
- GS2.** document, interpret information from the sketches and engineering drawings
- GS3.** note measurements, equipment panel readings for various process parameters in the required reporting formats
- GS4.** read and interpret engineering drawing and sketches
- GS5.** read equipment manuals and process documents to understand the equipment and processes better
- GS6.** read safety instructions especially symbols while using the equipment in the plant area
- GS7.** discuss task lists, schedules, and work-loads with co-workers
- GS8.** question internal customers/ Casting shop supervisor in order to understand the nature of the problem and make a diagnosis
- GS9.** organize all process/ equipment manuals so that sorting out information is fast

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- GS10.** organize apparatus etc. in an orderly manner at proper designated areas
- GS11.** visualize the final job product after understanding the given drawing/ sketches
- GS12.** think through the problem, evaluate the possible solution and suggest the best possible solution to the problem

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Conduct the actual casting process</i>	21	54	-	-
PC1.. ensure refractory ladles are preheated and in red hot condition, its pouring spout or lip is repaired and free from slag	4	10	-	-
PC2.. ensure required ferro alloy or inoculants are added during tapping or transfer	3	7	-	-
PC3.. confirm metal temperature as per given specifications	3	7	-	-
PC4.. confirm the pouring is done within stipulated time span	2	4	-	-
PC5. maintain down spur is always full during pouring	2	3	-	-
PC6. ensure metal stream inoculation per each mould	1	3	-	-
PC7. record the pouring observations like parting leak, gas evolution, interrupted pouring or any abnormality	1	5	-	-
PC8. allow the poured to cool as per given instructions before knock out	1	3	-	-
PC9.. obtain instructions from operator to adjust the temperature and other parameters as per the casting requirement	1	5	-	-
PC10. obtain instructions from operator to turn valves to circulate water through cores, or spray water on filled molds to cool and solidify metal (in case of manual solidification)	3	7	-	-
<i>Check measurement instruments for monitoring casting process parameters</i>	1	4	-	-
PC11. help the operator in monitoring the casting process (parameters like temperature etc.) by observing and analyzing the readings on various panels/meters to prevent machine breakdown and deviations of the cast from desired specifications	1	4	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform the visual inspection of the output to further finish the casting</i>	3	17	-	-
PC12.. provide observations on final metal casting in terms of the dimensions as prescribed in the work order engineering drawing	1	7	-	-
PC13. perform further processing of cast in terms of chipping, fettling etc	2	10	-	-
NOS Total	25	75	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N3206
NOS Name	Support the operator in conducting casting process
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Forming-casting
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	24/07/2013
Next Review Date	01/08/2015
NSQC Clearance Date	20/07/2015

Qualification Pack

ASC/N3207: Perform fettling and post casting operations

Description

This NOS is about removing the projections or extra metal from the surface of casting in line with the required specifications and industry standards

Scope

The role holder will be responsible for Performing the fettling operations Perform the visual inspection of the output to ensure conformity to quality standards The job holder will cover different casting methods for manufacturing body components for auto components

- Performing the fettling operations
- Perform the visual inspection of the output to ensure conformity to quality standards

Elements and Performance Criteria

Perform Fettling operation

To be competent, the user/individual on the job must be able to:

- PC1.** analyze the cast in terms of the geometrical dimensions as per the control charts defined and identify the sprues, projections, runners, risers etc. on the surface
- PC2.** trim the cast to remove fins, flashes and excess metal from the surface in order to provide accurate shape to the cast
- PC3.** finish and fine trim the cast to remove the excess metal from the surface with the aid of: a. swing frame or pedestal grinders, chipping tools, hammers, hand saws, pneumatic or electrical tools etc. for manual fettling b. gas cutting and flame cutting methods for semi manual fettling
- PC4.** modify the trimming and fettling process (if required) and ensure alignment with the prescribed standards
- PC5.** store the excess material (or runners/ risers etc.) in order to be reused
- PC6.** modify the trimming and fettling process (if required) and ensure alignment with the prescribed standards
- PC7.** store the excess material (or runners/ risers etc.) in order to be reused
- PC8.** measure the final metal casting and compare the dimensions as prescribed in the work order engineering drawing
- PC9..** in case the parts are not as per the given measurements, undertake further shaping of the metal casting

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant standards and procedures followed in the company
- KU2.** different types of products manufactured for customers by the company

Qualification Pack

- KU3.** functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution
- KU4.** quality norms prescribed by the organization for casting jobs
- KU5.** different types of casting processes and associated equipment
- KU6.** different mechanisms to perform fettling and trimming of the cast basis the size of cast and runners & risers on the surfaces
- KU7.** different types of tools being used for fettling and trimmin
- KU8.** measuring instruments like vernier callipers, micrometer
- KU9.** geometry and dimensions
- KU10.** sketches and engineering drawings
- KU11.** final product output and hence decide on the key steps to be followed
- KU12.** safety precautions to be taken for all types of casting activities

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** document information from the sketches and engineering drawings
- GS2.** sketches for the final output product in IOC etc.
- GS3.** sketches to internal customers on the requirement of casting metal, fettling and trimming toolsetc
- GS4.** note measurements, equipment panel readings for various process parameters in the required reporting formats
- GS5.** and interpret engineering drawing and sketches
- GS6.** equipment manuals and process documents to understand the equipment and processes better
- GS7.** safety instructions with symbols while using the equipment in the plant area
- GS8.** read internal information drawings sent by internal customers (other functions within the organization)
- GS9.** task lists, schedules, and work-loads with co-workers
- GS10.** internal customers/ Casting shop supervisor in order to understand the nature of the problem and make a diagnosis
- GS11.** plan and organize the work order and jobs received from the internal customers
- GS12.** plan and organize the design documents received from internal customers
- GS13.** organize all process/ equipment manuals so that sorting out information is fast
- GS14.** organize apparatus etc. in an orderly manner at proper designated areas
- GS15.** visualize the final job product after understanding the given drawing/sketches
- GS16.** measure the casting so in terms of the geometrical dimensions so that the final output is as pre the given drawing
- GS17.** finalize the optimum levels of physical parameters so that the job output meets the prescribed job standards
- GS18.** think through the problem, evaluate the possible solution and suggest the best possible solution to the problems

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform Fettling operation</i>				
PC1. analyze the cast in terms of the geometrical dimensions as per the control charts defined and identify the sprues, projections, runners, risers etc. on the surface	3	10	-	-
PC2. trim the cast to remove fins, flashes and excess metal from the surface in order to provide accurate shape to the cast	3	8	-	-
PC3. finish and fine trim the cast to remove the excess metal from the surface with the aid of: a. swing frame or pedestal grinders, chipping tools, hammers, hand saws, pneumatic or electrical tools etc. for manual fettling b. gas cutting and flame cutting methods for semi manual fettling	4	12	-	-
PC4. modify the trimming and fettling process (if required) and ensure alignment with the prescribed standards	3	15	-	-
PC5. store the excess material (or runners/ risers etc.) in order to be reused	2	10	-	-
PC6. modify the trimming and fettling process (if required) and ensure alignment with the prescribed standards	2	4	-	-
PC7. store the excess material (or runners/ risers etc.) in order to be reused	2	5	-	-
PC8. measure the final metal casting and compare the dimensions as prescribed in the work order engineering drawing	3	6	-	-
PC9. in case the parts are not as per the given measurements, undertake further shaping of the metal casting	3	5	-	-
NOS Total	25	75	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N3207
NOS Name	Perform fettling and post casting operations
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Forming-casting
NSQF Level	3
Credits	NA
Version	1.0
Last Reviewed Date	24/07/2013
Next Review Date	01/08/2015
NSQC Clearance Date	20/07/2015

Qualification Pack

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ 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 Element/ PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Recommended Pass % aggregate for QP : 65

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N0006.Maintain a safe and healthy working environment	25	75	-	-	100	20
ASC/N0007.Conduct quality checks and inspection of the finished product	25	75	-	-	100	15
ASC/N0008.Conduct regular cleaning and maintenance of the equipment	20	80	-	-	100	15

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National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N0021.Maintain 5S at the work premises	25	75	-	-	100	15
ASC/N3205.Understand the Job requirement	25	75	-	-	100	10
ASC/N3206.Support the operator in conducting casting process	25	75	-	-	100	15
ASC/N3207.Perform fettling and post casting operations	25	75	-	-	100	10
Total	170	530	-	-	700	100

Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Qualification Pack

Glossary

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.
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 (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	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.

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Knowledge and Understanding (KU)	Knowledge and Understanding (KU) 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 (GS)	Core skills or Generic Skills (GS) 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.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.