



What are Occupational Standards (OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding



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Introduction

Qualifications Pack - Fitter: Hydraulic & Pneumatic System

SECTOR: Iron & Steel

SUB-SECTOR: Steel, Sponge iron, Ferro Alloys, Re-Rollers, Refractory

REFERENCE ID: ISC/Q0903

ALIGNED TO: NCO -2004/NIL

Title of Job: The job is all about regular upkeep of hydraulic/pneumatic equipment/system, checking of hydraulic medium (hydraulic mineral oil), air under pressure and rectifying breakdowns including; identifying problems, dismantling equipment, cleaning parts, rectifying root causes , re assembling equipment, checking alignment, vibration, etc. to ensure fitness of equipment prior to handover and informing supervisor, operations, stores etc. as appropriate in a hydraulic and pneumatic system.

Personal Attributes: This job requires the individual to work independently as well as in teams. He should be physically fit, not having colour blindness , having analytical skills, problem solving attitude, high concentration levels and willingness to work in a factory environment.



Job Details	Qualifications Pack Code	ISC/Q0903		
	Job Role	Fitter: Hydraulic & Pneumatic System		
	Credits(NSQF)	TBD	Version number	1.0
	Industry	Iron & Steel	Drafted on	08/09/2014
	Sub-sector	Steel, Sponge iron, Ferro Alloys, Re-Rollers, Refractory	Last reviewed on	30/12/2014
	Occupation	Mechanical Maintenance	Next review date	30/12/2015
	NSQC Clearance on	18/06/2015		

Job Role	Fitter: Hydraulic & Pneumatic System
Role Description	The job holder is responsible for regular upkeep of hydraulic and pneumatic equipment, checking of hydraulic medium (hydraulic mineral oil), air under pressure and rectifying breakdowns including; identifying problems, trouble shooting, dismantling equipment, cleaning parts, rectifying root causes, re assembling equipment, checking alignment, vibration, etc. to ensure fitness of equipment prior to handover and informing supervisor, operations, stores etc. as appropriate in a hydraulic and pneumatic system.
NSQF level	4
Minimum Educational Qualifications	ITI Pass
Maximum Educational Qualifications	Diploma Pass
Training (Suggested but not mandatory)	<ul style="list-style-type: none"> • Reading and interpreting hydraulic circuit drawings • Trouble shooting in hydraulic circuit • Assembly of hydraulic components • Working of different hydraulic components • Machining, welding, gas cutting, assembling • Working knowledge of tools & fixtures • Concept of contamination • Factors affecting the oil contamination • Effect of oil temperature, pressure, on hydraulic performance • Hydraulic valves, seals, piston rings etc.



	<ul style="list-style-type: none"> • General awareness on motor pump vibration • Hazards of pressure (oil/air) • 2 weeks hands on training (mandatory) • 5S and safety practices • Working at heights, confined spaces & high temperatures
Minimum Job Entry Age	18 years
Experience	<ul style="list-style-type: none"> • 1-2 years of experience in similar function • In lieu of minimum qualification the incumbent should have 7-10 years of relevant work experience under an experienced supervisor
Occupational Standards (OS)	<p>Compulsory:</p> <p>ISC/N0918: Understand the assigned job of hydraulic and pneumatic equipments</p> <p>ISC/N0919: Prepare for operation of hydraulic and pneumatic equipments</p> <p>ISC/N0920: Carry out the assigned operation of hydraulic and pneumatic equipments</p> <p>ISC/N0921: Activities specific to hydraulic & pneumatic fitter</p> <p>ISC/N0008: Use basic health and safety practices at the workplace</p> <p>ISC/N0009: Works effectively with others</p> <p>Optional:</p> <p>N/A</p>
Performance Criteria	As described in the relevant NOS 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.
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 Skills Qualifications Framework
OEM	Original Equipment Manufacturer
OS	Occupational Standard(s)
QP	Qualifications Pack
5 S	Technique of maintaining orderliness –Japanese terminology
CP	Control Plan
WI	Work Instructions

Acronyms



ISC/N0918: Understand the assigned job of hydraulic and pneumatic equipments



Overview

This NOS is about understanding the job for hydraulic and pneumatic equipments in accordance with the checklist and get any clarifications on the same



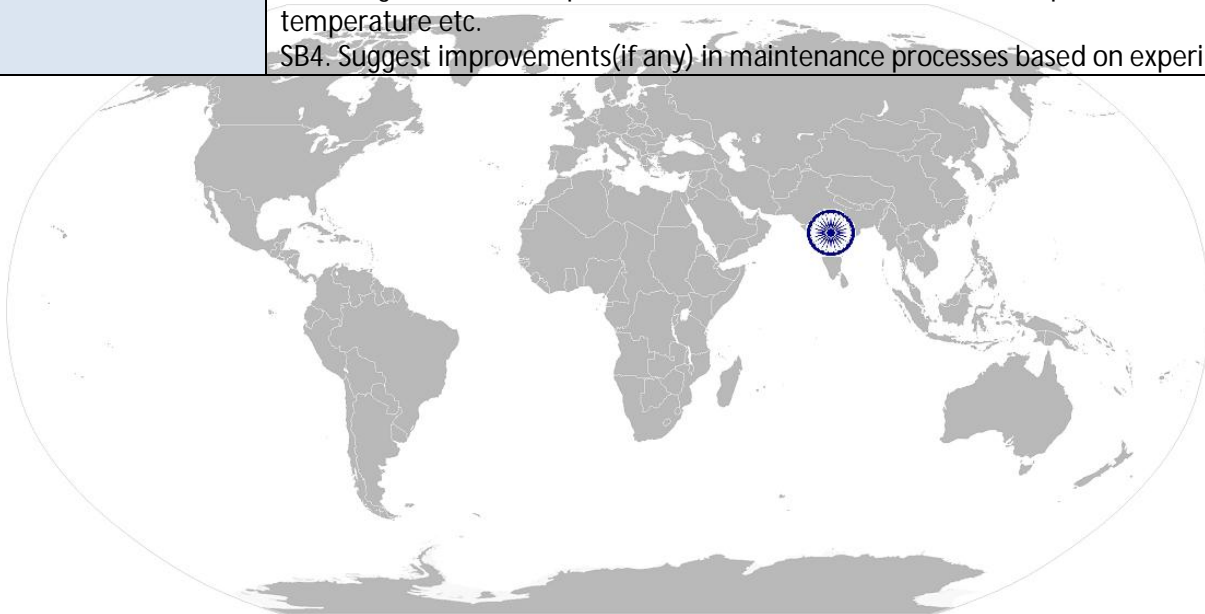
Unit Code	ISC/N0918
Unit Title (Task)	Understand the assigned job of hydraulic and pneumatic equipments
Description	This unit is about understanding the requirements of the job for hydraulic and pneumatic equipments after receiving the checklist from the supervisor, seek any clarifications on the requirements of the job and identify the tools and tackles that would be needed to carry out the job
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Understand the hydraulic and pneumatic job in accordance with the instructions / checklist Understand the hydraulic and pneumatic circuit drawings Seek clarifications with respect to the hydraulic and pneumatic equipment, circuit drawings, if any Identify the tools and tackles that are required to carry out hydraulic and pneumatic circuit job
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Understand the hydraulic and pneumatic job in accordance with the instructions / checklist	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Interpret the checklist and understand the job requirements PC2. Plan, as appropriate to carry out the job</p>
Understand the hydraulic and pneumatic circuit drawings	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC3. Understand the hydraulic and pneumatic circuit drawing PC4. Understand the type of movement</p> <ul style="list-style-type: none"> Linear motion (hydraulic and pneumatic cylinders) Rotary motion (electric motor, engine, hydraulic motor, turbine etc.) <p>PC5. Understand other specifications and identify the sequence of activities required to assemble and dismantle the hydraulic and pneumatic equipments PC6. Read and interpret circuit drawings to ensure proper system PC7: Able to decode component part no. to match the specification</p>
Seek clarifications with respect to the hydraulic and pneumatic equipment, circuit drawings, if any	<p>To be competent, the user/individual on the job must be able to</p> <p>PC8. Identify any clarifications that he/she wants to seek with respect to the given circuit drawing for the system PC9. Recognize whom to contact for clarifications on the circuit design PC10. Escalate the concern to the supervisor or shift-in-charge, if needed</p>



Identify the tools and tackles that are required to carry out hydraulic and pneumatic circuit job	To be competent, the user/individual on the job must be able to: PC11. Identify tools, tackles & equipment required to perform the hydraulic and pneumatic job PC12. Ask helper to carry tools and tackles required to the desired work site PC13. Report to stores / supervisor in case of non-availability of tools & tackles or stock-out
Element	Knowledge and Understanding
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	The user/individual on the job needs to know and understand: KA1. Quality and damage checks to be done and importance of the same KA2. Risk and impact of not following defined procedures/work instructions KA3. Escalation matrix for reporting identified issues
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Circuit drawings for hydraulic and pneumatic systems and power pack unit with accessories (prime mover, coupling with bell housing, reservoir, pump, suction and return line, suction strainer, oil level gauge, breather filter, vent plug, different types of valves etc.) KB2. Knowledge of tools & tackles to be used for the job KB3. Understanding the type of movement <ul style="list-style-type: none"> • Linear motion (hydraulic and pneumatic cylinders) • Rotary motion (electric motor, engine, hydraulic motor, turbine etc.) KB4. Understanding of normal running characteristics of relevant equipment KB5. Implications of not adhering to sequence of activities and operations
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company
	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to: SA3. Read and interpret engineering and machine drawings SA4. Read and understand manuals, health and safety instructions, memos, reports, job cards, etc.
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to:



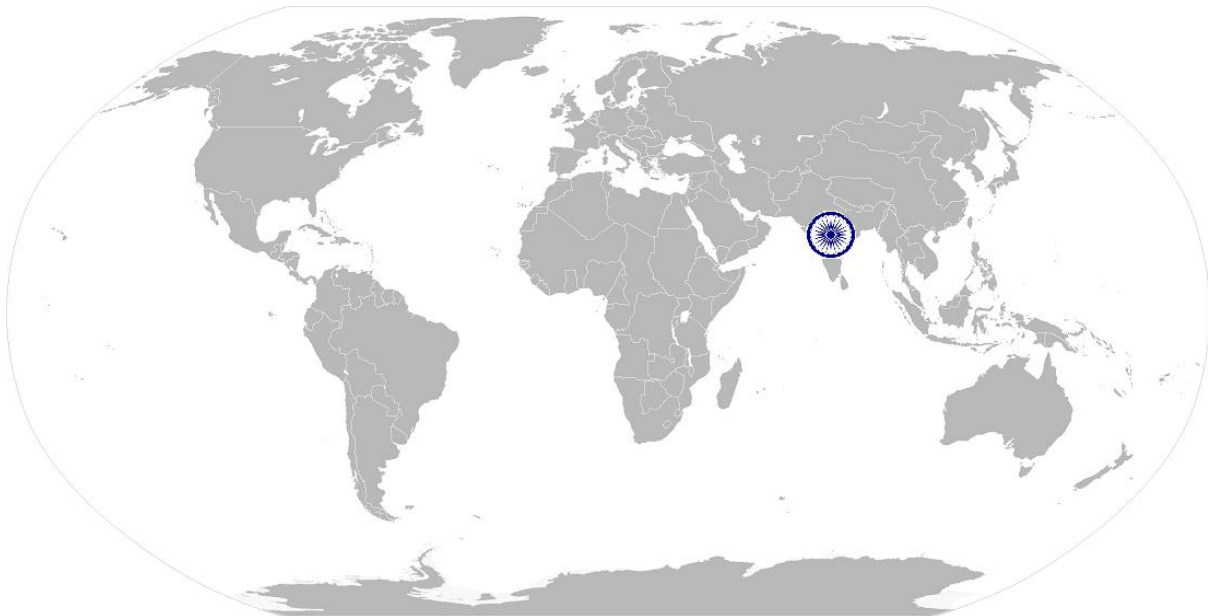
	<p>SA5. Express statements, opinions or information clearly so that others can hear and understand</p> <p>SA6. Respond appropriately to queries</p> <p>SA7. Communicate with supervisor</p> <p>SA8. Communicate with team members</p>
B. Professional Skills	Material and Equipment Handling
	The user/individual on the job needs to know and understand how to:
	<p>SB1. Handle different machines and tools wearing protective accessories</p> <p>SB2. Positioning mechanical components in machines according to design requirements</p>
	Analytical Thinking
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB3. Diagnose common problems in the tools based on visual inspection, sound, temperature etc.</p> <p>SB4. Suggest improvements(if any) in maintenance processes based on experience</p>





NOS Version Control

NOS Code	ISC/N0918		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and steel	Drafted on	08/09/2014
Industry Sub-sector	Steel, Sponge iron, Ferro Alloys, Re-Rollers, Refractory	Last reviewed on	30/12/2014
Occupation	Mechanical Maintenance	Next review date	30/12/2015





ISC/N0919: Prepare for operation of hydraulic and pneumatic equipments



Overview

This NOS is about inspecting the hydraulic and pneumatic equipment for scheduled maintenance or defects and preparing the hydraulic and pneumatic equipment for carrying out the operation



Unit Code	ISC/N0919
Unit Title (Task)	Prepare for operation of hydraulic and pneumatic equipments
Description	This unit is about inspecting the hydraulic and pneumatic equipment for scheduled maintenance or defects and preparing the hydraulic and pneumatic equipment for carrying out the operation
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Reach the site and inspect the hydraulic and pneumatic equipment for scheduled maintenance or defects and identify cause of problem Prepare spares, material with part number/specification required for hydraulic and pneumatic operation
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Reach the site and inspect the hydraulic and pneumatic equipment for scheduled maintenance or defects and identify cause of problem	<p>To be competent, the user/individual on the job must be able to</p> <p>PC1. Reach the site with desired tools, tackles for hydraulic and pneumatic equipment</p> <p>PC2. Identify the root cause of the problem for proper functioning of hydraulic and pneumatic equipment, if any</p>
Prepare spares, material with part number/specification required for hydraulic and pneumatic operation	<p>To be competent, the user/individual on the job must be able to</p> <p>PC3. Prepare the list of spares with part number/specification required for completion of job</p> <p>PC4. Ensure that tools match the desired specifications for working in hydraulic and pneumatic systems</p> <p>PC5. Ensure tools and equipment required for assembly are free from physical damage and ready for operation</p> <p>PC6. Report damaged / defective components with part number/specification of hydraulic and pneumatic equipment as per the escalation matrix</p>
Element	Knowledge and Understanding
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Quality and damage checks to be done and importance of the same</p> <p>KA2. Risk and impact of not following defined procedures/work instructions</p> <p>KA3. Escalation matrix for reporting identified issues</p> <p>KA4. Plant layout and location of various departments</p>
B. Technical Knowledge	The user/individual on the job needs to know and understand:

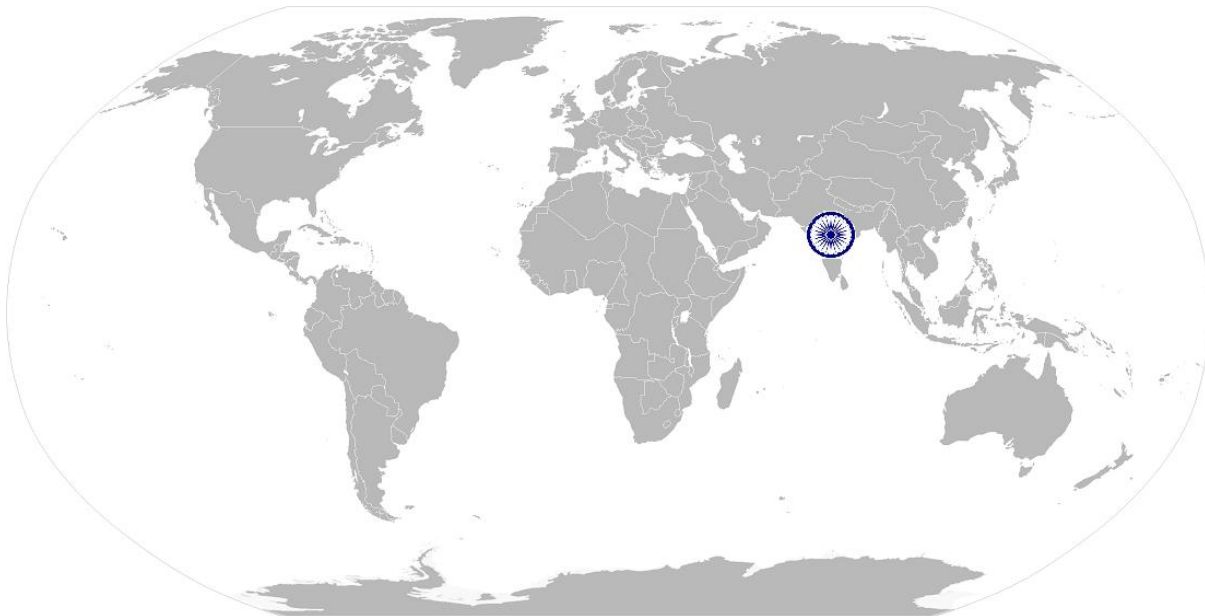


	<p>KB1. Understanding of normal running characteristics of relevant hydraulic and pneumatic equipment</p> <p>KB2. Possible causes of common problems during assembly & their remedies</p> <p>KB3. Knowledge of tools and tackles required for the hydraulic and pneumatic operation</p> <p>KB4. Standard specifications of spare parts with part number</p>
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to:
	SA1. Construct simple sentences and express ideas clearly through written communication
	SA2. Fill up appropriate technical forms, activity logs in required format of the company
	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to:
SA3. Read and understand manuals, health and safety instructions, memos, reports, job cards, specifications of spare parts etc.	
B. Professional Skills	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to:
	SA4. Express statements, opinions or information clearly so that others can hear and understand
	SA5. Respond appropriately to queries
	SA6. Communicate with supervisor, team members, other departments e.g. – stores, operations, etc.
	Material and Equipment Handling
The user/individual on the job needs to know and understand how to:	
SB1. Handle different machines and tools wearing protective accessories	
SB2. Positioning mechanical components in machines according to design requirements	
Analytical Thinking	
The user/individual on the job needs to know and understand how to:	
SB4. Diagnose common problems in the tools based on visual inspection, sound, temperature etc.	
SB5. Suggest improvements(if any) in assembly process based on experience	



NOS Version Control

NOS Code	ISC/N0919		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and steel	Drafted on	08/09/2014
Industry Sub-sector	Steel, Sponge iron, Ferro Alloys, Re-Rollers, Refractory	Last reviewed on	30/12/2014
Occupation	Mechanical Maintenance	Next review date	30/12/2015





ISC/N0920: Carry out the assigned operation of hydraulic and pneumatic equipments



Overview

This NOS is about carrying out the operations of hydraulic and pneumatic equipments in terms of rectifying the identified problem or carrying out scheduled maintenance



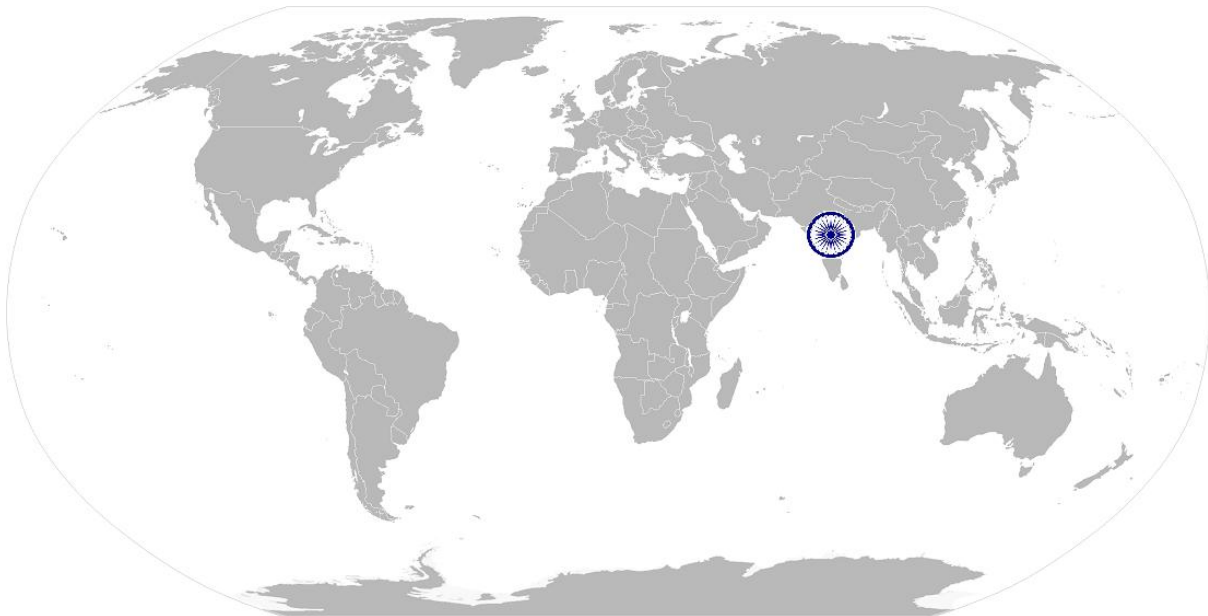
Unit Code	ISC/N0920
Unit Title (Task)	Carry out the assigned operation of hydraulic and pneumatic equipments
Description	This NOS is about carrying out the operations of hydraulic and pneumatic equipments/systems in terms of rectifying the identified problem or carrying out scheduled maintenance
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Conduct routine maintenance with parameters or rectify the problem, as appropriate • Conduct tests to ensure fitness • Communicate to supervisor about completion of work
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Conduct routine maintenance with parameters or rectify the problem, as appropriate	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Dismantle the of hydraulic and pneumatic equipments, as needed PC2. Replace the defective parts PC3. Assemble the parts according to the circuit drawings, as required PC4. Fasten mechanical components/ subassemblies together using fasteners with specified torquing PC5. Set and adjust flow, pressure, speed, level of hydraulic medium / air PC6. Re assemble the parts post correcting the defect</p>
Conduct tests to ensure fitness	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC7. Ensure compliance to parameters in line with the hydraulic and pneumatic circuit drawings PC8. Check abnormalities to ensure they are within desired limits (temperature, leakage, pressure, level, vibration, sound and RPM) PC9. Test the machine to ensure it is fit to use before handover P10. Record the test results in the prescribed format of the organization</p>
Communicate to supervisor about completion of work	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC11. Ensure all activities are complete according to checklist PC12. Communicate to supervisor on completion of given job in case of any deviations from checklist</p>
Element	Knowledge and Understanding
A. Organisational Context (Knowledge of the Company/ Organisation and	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Quality and damage checks to be done and importance of the same KA2. Contact person across departments for spare parts, information etc. KA3. Escalation matrix for reporting identified issues KA4. Risk and impact of not following defined procedures/work instructions</p>



its processes)	
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Assembling techniques such as aligning, bending, fixing of hydraulic and pneumatic components KB2. Steps required to assemble/ dismantle of hydraulic and pneumatic equipment with a given circuit design KB3. Checks that need to be made to ensure that hydraulic and pneumatic equipment is safe and ready to use KB4. Limits, fits and tolerances of the hydraulic and pneumatic equipment KB5. Cleaning process of hydraulic oil and different acceptable limit for hydraulic systems KB6. Possible causes of common problems during assembly & their remedies KB7. Units of measurement KB8. Response to emergencies e.g. Power failures ,fire and system failures KB9. Use of measuring instruments e.g.- Vernier, Micro meter, dial gauge, filler gauge, torque wrench, etc. KB10. Compilation of test results in prescribed format</p>
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company
	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to: SA3. Read and interpret engineering and machine drawings SA4. Read and understand manuals, memos, reports, job cards, etc.
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA5. Express statements, opinions or information clearly so that others can hear and understand SA6. Respond appropriately to queries SA7. Communicate with supervisor, team members, other departments e.g. – operations, stores etc.
B. Professional Skills	Material and Equipment Handling
	The user/individual on the job needs to know and understand how to: SB1. Handle different machines and tools wearing protective accessories SB2. Positioning mechanical components in machines according to design requirements



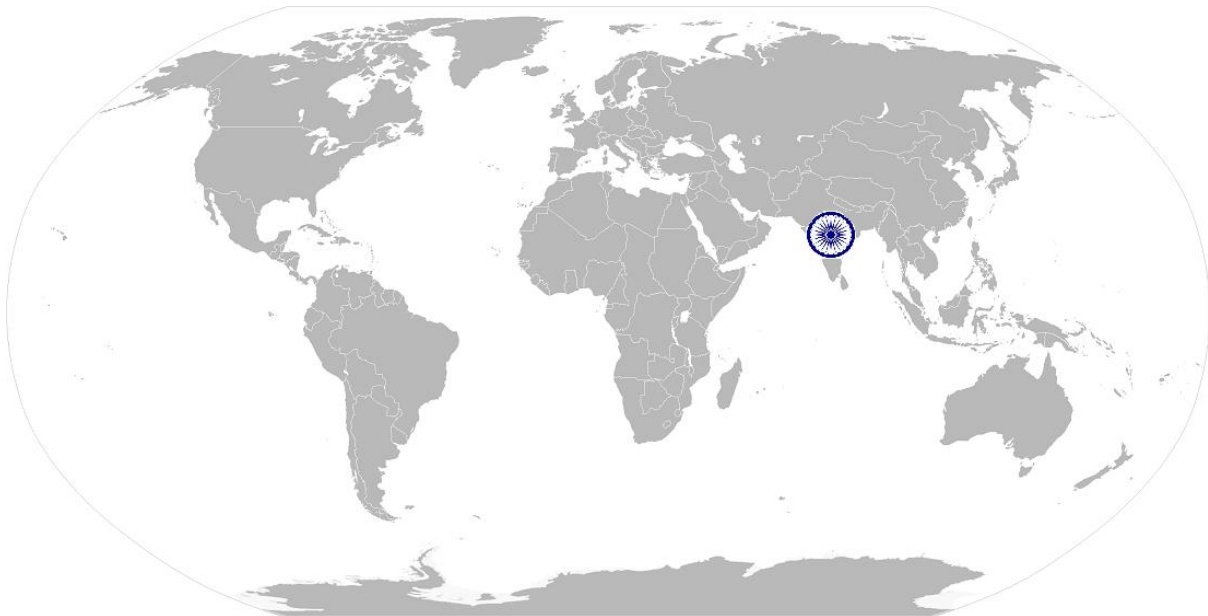
	Analytical Thinking
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB4. Diagnose common problems in the tools based on visual inspection, sound, temperature etc.</p> <p>SB5. Suggest improvements(if any) in process based on experience</p>





NOS Version Control

NOS Code	ISC/N0920		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and steel	Drafted on	08/09/2014
Industry Sub-sector	Steel, Sponge iron, Ferro Alloys, Re-Rollers, Refractory	Last reviewed on	30/12/2014
Occupation	Mechanical Maintenance	Next review date	30/12/2015





ISC/N0921: Activities specific to hydraulic & pneumatic fitter



National Occupational Standards

Overview

This NOS is about carrying out the operations that are specific to a fitter: hydraulic & pneumatic system



Unit Code	ISC/N0921
Unit Title (Task)	Activities specific to hydraulic & pneumatic fitter
Description	This unit is about carrying out the operations that are specific to a fitter: hydraulic & pneumatic system
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Understand hydraulic and pneumatic circuit and identify motion specifications • Understand component specific working principles of hydraulic and pneumatic equipments • Understand auxiliary process like cleaning, de-humidification • Assembling knowledge of hydraulic and pneumatic circuit and pipelines with accessories • Ensure the availability of specific spares with part no., compressor/hydraulic system, hydraulic oils and lubricants • Understand hydraulic fluid and characteristics
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Understand hydraulic and pneumatic circuit and identify motion specifications	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Understand the hydraulic system, flow, components of hydraulic and pneumatic power unit and their functions PC2. Identify whether the motion is linear or rotary PC3. Understand for linear motion and type of movement required for operation of hydraulic/ pneumatic cylinders/systems PC4. Understand for rotary motion the operation of hydraulic/ pneumatic motors, pumps/compressor and turbines PC5. Understand concept and factors affecting hydraulic oil contamination PC6. Understand effect of hydraulic oil temperature, pressure on hydraulic performance PC7. Understand Hydraulic /Pneumatic valves, seals etc. PC8. Understand and aware on prime movers vibration PC9. Understand Hazards of pressurised oil/air</p>
Understand component specific working principles of hydraulic and pneumatic equipments	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC10. Understand functioning of Hydraulic /Pneumatic power pack units with accessories PC11. Understand pumping theory PC12. Understand Air compression system PC13. Understand Principle of fluid power technology PC14. Understand operations of different valves and pressure gauges PC15. Understand the positive isolation process of hydraulic system</p>



	PC16. Understand trouble shooting techniques of hydraulic system
Understand auxiliary process like cleaning, de-humidification	To be competent, the user/individual on the job must be able to: PC17. Periodically clean the reservoir, suction strainer, return line filter, breather filter etc. PC18. Periodically cleaning the suction air filter of air compressor PC19. Clean suction/delivery valves of air compressor PC20. Change the hydraulic oil/compressor lube oil
Assembling knowledge of hydraulic and pneumatic circuit and pipelines with accessories	To be competent, the user/individual on the job must be able to: PC21. Identify the tools, tackles & spares with part no. required for the operation PC22. Check the availability of the spares as required PC23. Identify the lubricants and hydraulic oils that will be required for the operation PC24. Report to supervisor / stores in case material is not available or not appropriate
Ensure the availability of specific spares with part no., compressor/hydraulic system, hydraulic oils and lubricants	To be competent, the user/individual on the job must be able to: PC25. Identify specific accessories with part no. for hydraulic power pack PC26. Identify specific spares for compressor with part no. PC27. Identify specification of hydraulic oil and lubricants
Understand hydraulic fluid and characteristics	To be competent, the user/individual on the job must be able to: PC28: Identify proper hydraulic fluid with characteristic depending on the area of application
Element	Knowledge and Understanding
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	The user/individual on the job needs to know and understand: KA1. Quality and damage checks to be done and importance of the same KA2. Risk and impact of not following defined procedures/work instructions KA3. Escalation matrix for reporting identified issues
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Familiarity with all kinds of hydraulic media and circuit diagram KB2. Components of hydraulic power unit e.g. –reservoir, suction strainer, pipe lines, oil level gauge, pressure gauge, breather filter, isolator, pumps, all kinds of valves, compressor, dryer etc. KB3. Tools and tackles required (measuring instruments, torque wrench, spanner etc.) to perform operation KB4. Checks that need to be made to ensure that equipment is safe and ready to use KB5. Limits, fits and tolerances KB6. Troubleshooting of the entire hydraulic and pneumatic system
Skills (S) w.r.t. the scope	

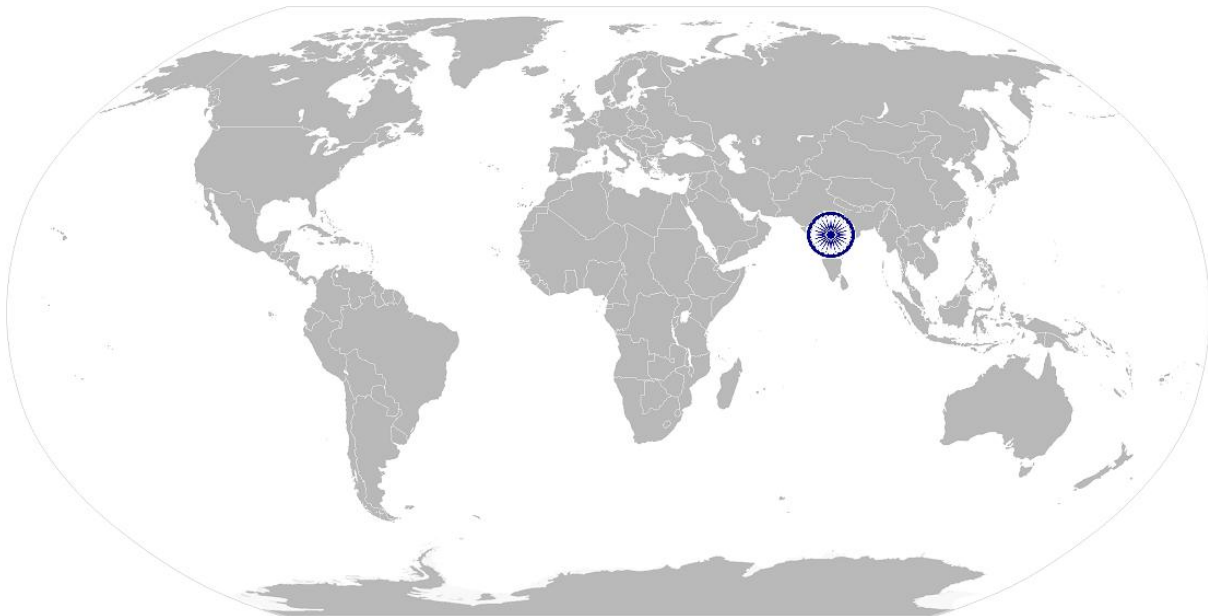


Element	Skills
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to:
	SA1. Construct simple sentences and express ideas clearly through written communication
	SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company
	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to:
	SA3. Read and interpret engineering and machine drawings
	SA4. Read and understand manuals, health and safety instructions, memos, reports, job cards, etc.
B. Professional Skills	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to:
	SA5. Express statements, opinions or information clearly so that others can hear and understand
	SA6. Respond appropriately to any queries
	SA7. Communicate with supervisor
	SA8. Communicate with team members
	Material and Equipment Handling
	The user/individual on the job needs to know and understand how to:
SB1. Handle different machines and tools wearing protective accessories	
SB2. Positioning mechanical components in machines according to design requirements	
B. Professional Skills	Analytical Thinking
	The user/individual on the job needs to know and understand how to:
	SB4. Identify what material will be needed specifically in which operation
SB5. Suggest improvements(if any) in process based on experience	



NOS Version Control

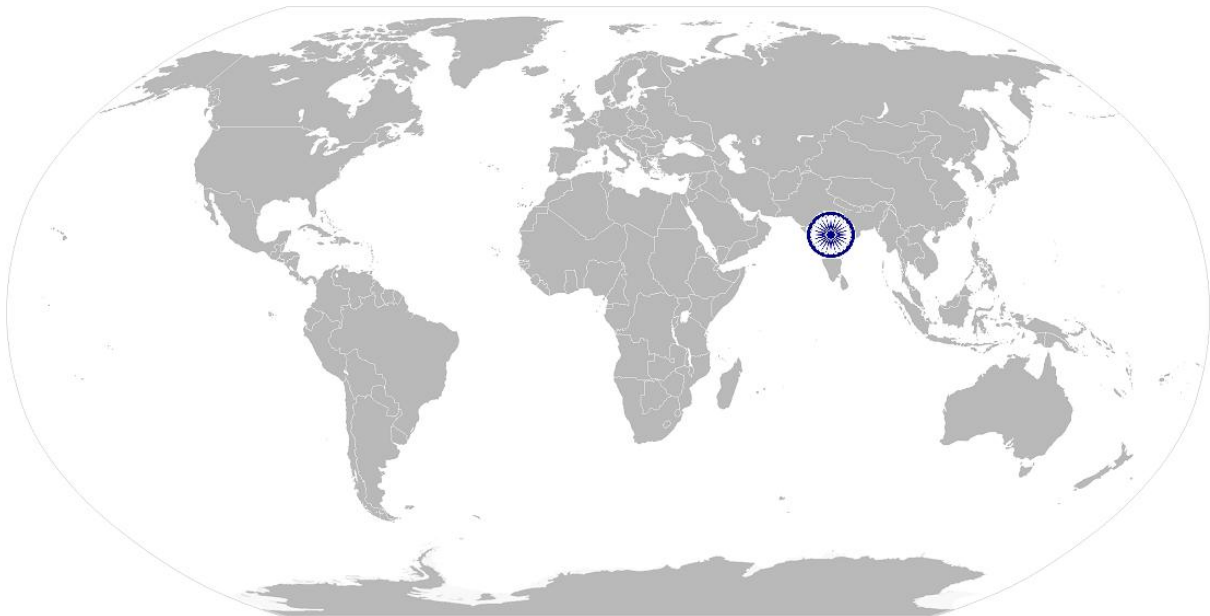
NOS Code	ISC/N0921		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and steel	Drafted on	08/09/2014
Industry Sub-sector	Steel, Sponge iron, Ferro Alloys, Re-Rollers, Refractory	Last reviewed on	30/12/2014
Occupation	Mechanical Maintenance	Next review date	30/12/2015





ISC/N0008: Use basic health and safety practices at the workplace

National Occupational Standards



Overview

This unit covers health, safety and security at the workplace. This includes procedures and practices that candidates need to follow to help maintain a healthy, safe and secure work environment.

Unit Code	ISC/N0008
Unit Title (Task)	Use basic health and safety practices at the workplace
Description	<p>This OS unit is about knowledge and practices relating to health, safety and security that candidates need to use in the workplace. It covers responsibilities towards self, others, assets and the environment.</p> <p>It includes understanding of risks and hazards in the workplace, along with common techniques to minimize risk, deal with accidents, emergencies, etc.</p>
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Health and safety procedures • Fire safety procedures • Emergencies, rescue and first aid procedures
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Health and safety procedures	<p>The user/individual on the job should be able to:</p> <p>PC1. Use protective clothing/equipment for specific tasks and work conditions</p> <p>Protective clothing includes:</p> <ul style="list-style-type: none"> • Leather or asbestos gloves • Flame proof aprons • Flame proof overalls buttoned to neck • Cuff less (without folds) trousers • Reinforced footwear • Helmets/hard hats • Cap and shoulder covers • Ear defenders/plugs • Safety boots • Knee pads • Particle masks • Glasses/gloves/visors <p>Equipment includes:</p> <ul style="list-style-type: none"> • Hand shields • Machine guards • Residual current devices • Shields • Dust sheets • Respirator <p>PC2. State the name and location of people responsible for health and safety in the</p>



	<p>workplace</p> <p>Various areas are listed below:</p> <ul style="list-style-type: none"> • On chemical containers • Equipment • Packages • Inside buildings • Open areas, public places etc. <p>PC3. State the names and location of documents that refer to health and safety in the workplace</p> <p>PC4. Identify job-site hazardous work and state possible causes of risk or accident in the workplace</p> <p>Hazards include:</p> <ul style="list-style-type: none"> • Working with electrical and thermal tools and equipment • Sharp edged and heavy tools • Heated metals • Oxyfuel and gas cylinders • Welding radiation • Surfaces: sharp, slippery, uneven, chipped, broken, etc. • Substances: chemicals, gas, oxy-fuel, fumes, dust, etc. • Physical: working at heights, large and heavy objects and machines, sharp and piercing objects, tolls and machines, intense light, load noise, obstructions in corridors, by doors, blind turns, noise, over stacked shelves and packages, etc. • Electrical: power supply and points, loose and naked cables and wires, electrical machines and appliances, etc. <p>PC5. Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role</p> <p>Safe working practices include:</p> <ul style="list-style-type: none"> • Using protective clothing and equipment • Putting up and reading safety signs • Handle tools in the correct manner and store and maintain them properly • Keep work area clear of clutter, spillage and unsafe object lying casually • While working with electricity take all electrical precautions like insulated clothing, adequate equipment insulation, use of control equipment, dry work area, switch off the power supply when not required, etc. • Safe lifting and carrying practices • Use equipment that is working properly and is well maintained • Take due measures for safety while working in confined places, trenches or at heights, etc. Including safety harness, fall arrestors etc. <p>Methods are:</p> <ul style="list-style-type: none"> • Training in health and safety procedures • Using health and safety procedures • Use of equipment and working practices (such as safe carrying procedures) • Safety notices, advice
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	<ul style="list-style-type: none"> • Instruction from colleagues and supervisors <p>PC6. State location of general health and safety equipment in the workplace</p> <p>PC7. Inspect for faults, set up and safely use steps and ladders in general use</p> <p>Faults :</p> <ul style="list-style-type: none"> • Corrosion of metal components • Deterioration • Splits and cracks timber components • Imbalance • Loose rungs • Nuts or bolts, etc. <p>Set up:</p> <ul style="list-style-type: none"> • Firm/level base • Clip/lash down • Leaning at the correct angle, etc. <p>PC8. Work safely in and around trenches, elevated places and confined areas</p> <p>PC9. Lift heavy objects safely using correct procedures</p> <p>PC10. Apply good housekeeping practices at all times. Good housekeeping practices:</p> <ul style="list-style-type: none"> • Clean/tidy work areas • Removal/disposal of waste products • Protect surfaces <p>PC11. Identify common hazard signs displayed in various areas</p> <p>PC12. Retrieve and/or point out documents that refer to health and safety in the workplace</p>
<p>Fire safety procedures</p>	<p>The user/individual on the job should be able to:</p> <p>PC13. Use the various appropriate fire extinguishers on different types of fires correctly.</p> <p>Fire extinguishers:</p> <ul style="list-style-type: none"> • Sand • Water • Foam • Co2 • Dry powder <p>Fires:</p> <ul style="list-style-type: none"> • Class A: Ordinary solid combustibles, e.g. wood, paper, cloth, plastic, charcoal etc. • Class B: Flammable liquids and gases, e.g. gasoline, propane, diesel fuel, tar, cooking oil and similar substances • Class C: Electrical equipment e.g. appliances, wiring, breaker panels etc. (these categories of fires become Class A, B, and D fires when the electrical equipment that initiated the fire is no longer receiving electricity) • Class D: Combustible metals such as magnesium, titanium, and sodium (these fires burn at extremely high temperatures and require special suppression agents) <p>Causes of fires:</p>



	<ul style="list-style-type: none"> • Heating of metal • Spontaneous ignition • Sparking, • Electrical heating • Loose fires (e.g. Smoking, welding, etc.) • Chemical fires, etc. <p>PC14. Demonstrate rescue techniques applied during fire hazard PC15. Demonstrate good housekeeping in order to prevent fire hazards PC16. Demonstrate the correct use of a fire extinguisher</p>
<p>Emergencies, rescue and first-aid procedures</p>	<p>The user/individual on the job should be able to:</p> <p>PC17. Demonstrate how to free a person from electrocution PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc. PC19. Demonstrate basic techniques of bandaging PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments. Few general health and safety equipment are mentioned below :</p> <ul style="list-style-type: none"> • Fire extinguishers • First aid equipment • Safety instruments and clothing • Safety installations, e.g. Fire exits, exhaust fans etc. <p>PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments PC22. Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases PC23. Demonstrate the artificial respiration and the CPR Process PC24. Participate in emergency procedures. Emergency procedures are:</p> <ul style="list-style-type: none"> • Raising alarm • Safe/efficient evacuation • Correct means of escape • Correct assembly point • Roll call • Correct return to work <p>PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible Incident Report should capture:</p> <ul style="list-style-type: none"> • Name • Date/time of incident • Date/time of report, • Location • Environment conditions • Persons involved • Sequence of events • Injuries sustained • Damage sustained • Actions taken



	<ul style="list-style-type: none"> • Witnesses • Supervisor/manager notified <p>Documents:</p> <ul style="list-style-type: none"> • Fire notices • Accident reports • Safety instructions for equipment and procedures • Company notices and documents • Legal documents (e.g. Government notices) <p>Job titles:</p> <ul style="list-style-type: none"> • Health and safety officer • First aid officer • Fire officer <p>PC26. Demonstrate correct method to move injured people and others during an emergency</p>
Element	Knowledge and Understanding
<p>A. Organisational Context (Knowledge of the Company/ Organisation and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. State the names (and job titles if applicable), and describe where to find, all the people responsible for health and safety in a workplace KA2. State the names and location of documents that refer to health and safety in the workplace</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB3. Meaning of “hazards” and “risks” KB4. Health and safety hazards commonly present in the work environment and related precautions KB5. Possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible KB6. Activities and causes of risk and accident KB7. Methods of accident prevention KB8. Safe working practices when working with tools and machines KB9. Safe working practices while working at various hazardous sites KB10. Where to find all the general health and safety equipment in the workplace KB11. Various dangers associated with the use of electrical equipment KB12. Preventative and remedial actions to be taken in the case of exposure to toxic materials</p> <ul style="list-style-type: none"> • Exposure: ingested, contact with skin, inhaled • Preventative action: ventilation, masks, protective clothing/equipment • Remedial action: immediate first aid, report to supervisor • Materials: solvents, flux, lead <p>KB13. Importance of using protective clothing/equipment while working KB14. Precautionary activities to prevent the fire accident</p> <p>Activities and causes:</p> <ul style="list-style-type: none"> • Physical actions • Reading



	<ul style="list-style-type: none"> • Listening to and giving instructions • Inattention • Sickness and incapacity (e.g. Drunkenness) • Health hazards (e.g. Untreated injuries and contagious illness) <p>KB15. Various causes of fire KB16. Techniques of using the different fire extinguishers KB17. Different methods of extinguishing fire KB18. Rescue techniques applied during a fire hazard KB19. Various types of safety signs and what they mean KB20. Appropriate basic first aid treatment relevant to the condition e.g. Shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries KB21. Content of written accident report KB22. Potential injuries and ill health associated with incorrect manual handling KB23. Safe lifting and carrying practices KB24. Personal safety, health and dignity issues relating to the movement of a person by others KB25. Potential impact to a person who is moved incorrectly</p>
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	<p>Reading and Writing Skills</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA1. Read and comprehend basic content to read labels, charts, signage's SA2. Read and comprehend basic English to read manuals of operations SA3. Read and write an accident/incident report in local language or English</p> <p>Oral Communication (Listening and Speaking skills)</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA4. Question co-workers appropriately in order to clarify instructions and other issues SA5. Give clear instructions to co-workers, subordinates others</p> <p>Decision Making</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. Make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down procedure and guidelines</p>
B. Professional Skills	<p>Plan and Organize</p> <p>The user/individual on the job needs to know and understand:</p> <p>SB1. Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity</p>

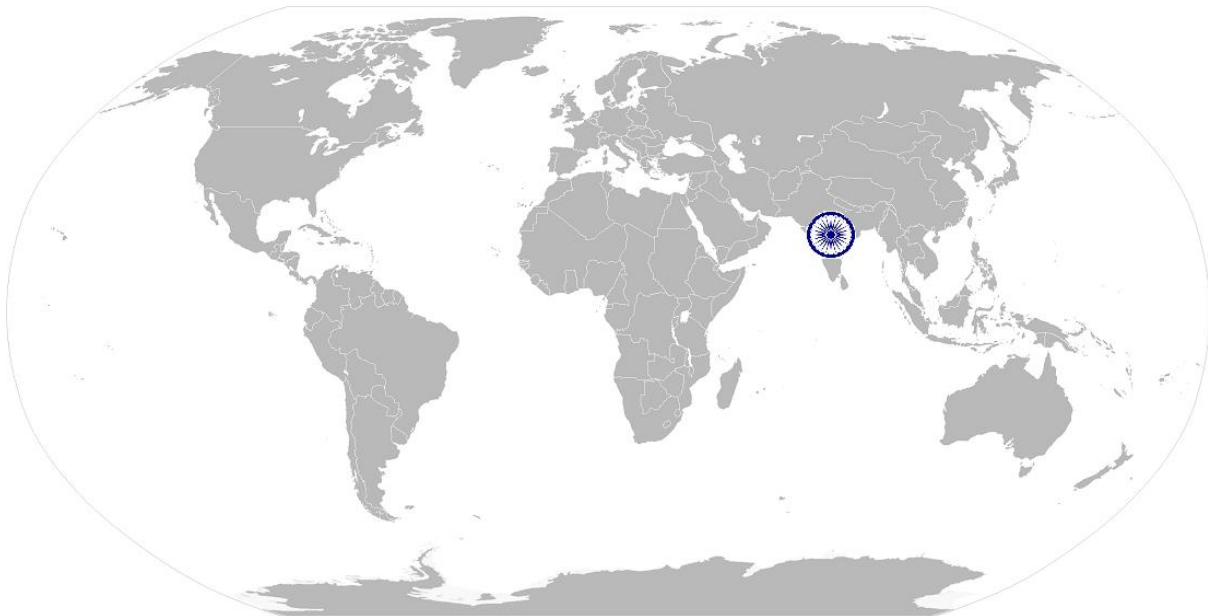


	Working with others
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB2. Remain congenial while discussing and debating issues with co-workers SB3. Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice SB4. Ask for, provide and receive required assistance where possible to ensure achievement of work related objectives SB5. Thank co-workers for any assistance received SB6. Offer appropriate respect based on mutuality and respect for fellow workmanship and authority</p>
	Problem Solving
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB7. Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB8. Identify immediate or temporary solutions to resolve delays SB9. Identify sources of support that can be availed of for problem solving for various kind of problems SB10. Seek appropriate assistance from other sources to resolve problems SB11. Report problems that you cannot resolve to appropriate authority</p>
	Analytical Thinking
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB12. Identify cause and effect relations in their area of work SB13. Use cause and effect relations to anticipate potential problems and their solution</p>



NOS Version Control

NOS Code	ISC/N0008		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and steel	Drafted on	23/07/2014
Industry Sub-sector	All departments	Last reviewed on	30/12/2014
Occupation	Mechanical Maintenance	Next review date	30/12/2015





ISC/N0009: Works effectively with others

National Occupational Standards



Overview

This unit covers basic practices that improve effectiveness of working with others in an organisational set-up.



Unit Code	ISC/N0009
Unit Title (Task)	Works effectively with others
Description	This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behaviour and interactions with others at the workplace.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Ensure appropriate communication with superiors, peers and others as applicable at work place Demonstrate appropriate behaviour and etiquette at work place
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Ensure appropriate communication with superiors, peers and others as applicable at work place	<p>The user/individual on the job should be able to:</p> <p>PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required</p> <p>PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt</p> <p>PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand</p>
Demonstrate appropriate behaviour and etiquette at work place	<p>The user/individual on the job should be able to:</p> <p>PC4. Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible</p> <p>PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks</p> <p>PC6. Display appropriate communication etiquette while working</p> <p>PC7. Display active listening skills while interacting with others at work</p> <p>PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism</p> <p>PC9. Demonstrate responsible and disciplined behaviours at the workplace</p> <p>PC10. Escalate grievances and problems to</p>
Element	Knowledge and Understanding
A. Organisational Context (Knowledge of the Company/ Organisation and	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions</p> <p>KA2. Reporting structure, inter-dependent functions, lines and procedures in the work area</p> <p>KA3. Relevant people and their responsibilities within the work area</p>

its processes)	KA4. Escalation matrix and procedures for reporting work and employment related issues
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Various categories of people that one is required to communicate and coordinate with in the organization</p> <p>KB2. Importance of effective communication in the workplace</p> <p>KB3. Importance of teamwork in organizational and individual success</p> <p>KB4. Various components of effective communication</p> <p>KB5. Key elements of active listening</p> <p>KB6. Value and importance of active listening and assertive communication</p> <p>KB7. Barriers to effective communication</p> <p>KB8. Importance of tone and pitch in effective communication</p> <p>KB9. Importance of avoiding casual expletives and unpleasant terms while communicating professional circles</p> <p>KB10. How poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer</p> <p>KB11. Importance of ethics for professional success</p> <p>KB12. Importance of discipline for professional success</p> <p>KB13. What constitutes disciplined behaviour for a working professional</p> <p>KB14. Common reasons for interpersonal conflict</p> <p>KB15. Importance of developing effective working relationships for professional success</p> <p>KB16. Expressing and addressing grievances appropriately and effectively</p> <p>KB17. Importance and ways of managing interpersonal conflict effectively</p>
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	Reading and Writing Skills
	The user/individual on the job needs to know and understand how to:
	SA1. Read and comprehend basic content to read labels, charts, signage's SA2. Read and comprehend basic English to read manuals of operations SA3. Read and write an accident/incident report in local language or English
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to:
	SA4. Question co-workers appropriately in order to clarify instructions and other issues SA5. Provide clear instructions to co-workers, subordinates others
	Decision Making
	The user/individual on the job needs to know and understand how to:

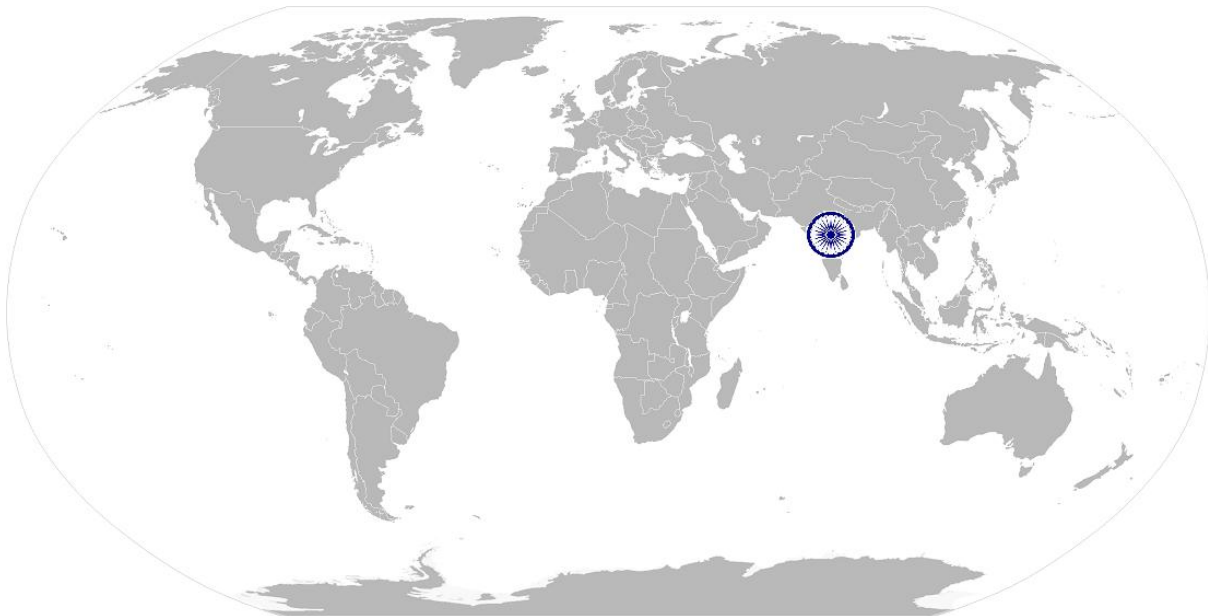


	SA6. Make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down procedure and guidelines
B. Professional Skills	Plan and Organize
	The user/individual on the job needs to know and understand: SB1. Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity
	Working with others
	The user/individual on the job needs to know and understand how to: SB2. Remain congenial while discussing and debating issues with co-workers SB3. Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice SB4. Ask for, provide and receive required assistance where possible to ensure achievement of work related objectives SB5. Thank co-workers for any assistance received SB6. Offer appropriate respect based on mutuality and respect for fellow workmanship and authority
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB7. Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB8. Identify immediate or temporary solutions to resolve delays SB9. Identify sources of support that can be availed of for problem solving for various kind of problems SB10. Seek appropriate assistance from other sources to resolve problems SB11. Report problems that you cannot resolve to appropriate authority
	Analytical Thinking
The user/individual on the job needs to know and understand how to: SB12. Identify cause and effect relations in their area of work SB13. Use cause and effect relations to anticipate potential problems and their solution	



NOS Version Control

NOS Code	ISC/N0009		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and steel	Drafted on	23/07/2014
Industry Sub-sector	All departments	Last reviewed on	30/12/2014
Occupation	Mechanical Maintenance	Next review date	30/12/2015





CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role: Fitter: Hydraulic & Pneumatic System

Qualification Pack: ISC/Q0903

Sector Skill Council: Indian Iron & Steel Sector Skill 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 60% 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.

NOSs	PCs	Marks Allocated			
		Total Marks 1000	Out Of	Theory	Practical
ISC/N0918: Understand the assigned job of hydraulic and pneumatic equipments	PC1. Interpret the checklist and understand the job requirements	150	10	5	5
	PC2. Plan, as appropriate to carry out the job		10	5	5
	PC3. Understand the hydraulic and pneumatic circuit drawing		15	10	5
	PC4. Understand the type of movement (a) Linear motion (hydraulic and pneumatic cylinders) (b) Rotary motion (electric motor, engine, hydraulic motor, turbine etc.)		15	5	10
	PC5. Understand other specifications and identify the sequence of activities required to assemble and dismantle the hydraulic and pneumatic equipments		15	5	10



	PC6. Read and interpret circuit drawings to ensure proper system		15	5	10
	PC7: Able to decode component part no. to match the specification		15	5	10
	PC8. Identify any clarifications that he/she wants to seek with respect to the given circuit drawing for the system		10	5	5
	PC9. Recognize whom to contact for clarifications on the circuit design		5	0	5
	PC10. Escalate the concern to the supervisor or shift-in-charge, if needed		5	0	5
	PC11. Identify tools, tackles & equipment required to perform the hydraulic and pneumatic job		15	5	10
	PC12. Ask helper to carry tools and tackles required to the desired work site		5	0	5
	PC13. Report to stores / supervisor in case of non-availability of tools & tackles or stock-out		15	5	10
		Total	150	50	100
ISC/N0919: Prepare for operation of hydraulic and pneumatic equipments	PC1. Reach the site with desired tools, tackles for hydraulic and pneumatic equipment	100	5	0	5
	PC2. Identify the root cause of the problem for proper functioning of hydraulic and pneumatic equipment, if any		15	5	10
	PC3. Prepare the list of spares with part number/specification required for completion of job		15	5	10
	PC4. Ensure that tools match the desired specifications for working in hydraulic and pneumatic systems		25	5	20
	PC5. Ensure tools and equipment required for assembly are free from physical damage and ready for operation		25	5	20
	PC6. Report damaged / defective components with part number/specification of hydraulic and pneumatic equipment as per the escalation matrix		15	5	10
		Total	100	25	75



ISC/N0920: Carry out the assigned operation of hydraulic and pneumatic equipments	PC1. Dismantle the of hydraulic and pneumatic equipments, as needed	150	15	5	10
	PC2. Replace the defective parts		10	0	10
	PC3. Assemble the parts according to the circuit drawings, as required		15	5	10
	PC4. Fasten mechanical components/ subassemblies together using fasteners with specified torquing		10	0	10
	PC5. Set and adjust flow, pressure, speed, level of hydraulic medium / air		15	5	10
	PC6. Re assemble the parts post correcting the defect		10	0	10
	PC7. Ensure compliance to parameters in line with the hydraulic and pneumatic circuit drawings		15	5	10
	PC8. Check abnormalities to ensure they are within desired limits (temperature, leakage, pressure, level, vibration, sound and RPM)		15	5	10
	PC9. Test the machine to ensure it is fit to use before handover		15	5	10
	P10. Record the test results in the prescribed format of the organization		15	5	10
	PC11. Ensure all activities are complete according to checklist		5	0	5
	PC12. Communicate to supervisor on completion of given job in case of any deviations from checklist		10	0	10
	Total		150	35	115
ISC/N0921: Activities specific to hydraulic & pneumatic fitter	PC1. Understand the hydraulic system, flow, components of hydraulic and pneumatic power unit and their functions	350	15	5	10
	PC2. Identify whether the motion is linear or rotary		15	5	10
	PC3. Understand for linear motion and type of movement required for operation of hydraulic/ pneumatic cylinders/systems		10	0	10
	PC4. Understand for rotary motion the operation of hydraulic/ pneumatic motors, pumps/compressor and turbines		10	0	10



PC5. Understand concept and factors affecting hydraulic oil contamination	15	5	10
PC6. Understand effect of hydraulic oil temperature, pressure on hydraulic performance	15	5	10
PC7. Understand Hydraulic /Pneumatic valves, seals etc.	15	5	10
PC8. Understand and aware on prime movers vibration	15	5	10
PC9. Understand Hazards of pressurised oil/air	15	5	10
PC10. Understand functioning of Hydraulic /Pneumatic power pack units with accessories	15	5	10
PC11. Understand pumping theory	5	0	5
PC12. Understand Air compression system	15	5	10
PC13. Understand Principle of fluid power technology	15	5	10
PC14. Understand operations of different valves and pressure gauges	10	0	10
PC15. Understand the positive isolation process of hydraulic system	15	5	10
PC16. Understand trouble shooting techniques of hydraulic system	15	5	10
PC17. Periodically clean the reservoir, suction strainer, return line filter, breather filter etc.	5	0	5
PC18. Periodically cleaning the suction air filter of air compressor	5	0	5
PC19. Clean suction/delivery valves of air compressor	5	0	5
PC20. Change the hydraulic oil/compressor lube oil	5	0	5
PC21. Identify the tools, tackles & spares with part no. required for the operation	15	5	10
PC22. Check the availability of the spares as required	15	5	10
PC23. Identify the lubricants and hydraulic oils that will be required for the operation	15	5	10



	PC24. Report to supervisor / stores in case material is not available or not appropriate		10	0	10
	PC25. Identify specific accessories with part no. for hydraulic power pack		15	5	10
	PC26. Identify specific spares for compressor with part no.		15	5	10
	PC27. Identify specification of hydraulic oil and lubricants		15	5	10
	PC28: Identify proper hydraulic fluid with characteristic depending on the area of application		15	5	10
		Total	350	95	255
ISC/N0008: Use basic health and safety practices at the workplace	PC1. Use protective clothing/equipment for specific tasks and work conditions	150	10	5	5
	PC2. State the name and location of people responsible for health and safety in the workplace		5	0	5
	PC3. State the names and location of documents that refer to health and safety in the workplace		1	0	1
	PC4. Identify job-site hazardous work and state possible causes of risk or accident in the workplace		9	5	4
	PC5. Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role		10	5	5
	PC6. State location of general health and safety equipment in the workplace		5	0	5
	PC7. Inspect for faults, set up and safely use steps and ladders in general use		5	0	5
	PC8. Work safely in and around trenches, elevated places and confined areas		5	0	5
	PC9. Lift heavy objects safely using correct procedures		5	0	5
	PC10. Apply good housekeeping practices at all times		1	0	1
	PC11. Identify common hazard signs displayed in various areas		6	5	1



PC12. Retrieve and/or point out documents that refer to health and safety in the workplace	4	0	4
PC13. Use the various appropriate fire extinguishers on different types of fires correctly	9	5	4
PC14. Demonstrate rescue techniques applied during fire hazard	10	5	5
PC15. Demonstrate good housekeeping in order to prevent fire hazards	1	0	1
PC16. Demonstrate the correct use of a fire extinguisher	4	0	4
PC17. Demonstrate how to free a person from electrocution	5	0	5
PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.	10	5	5
PC19. Demonstrate basic techniques of bandaging	5	0	5
PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments	10	5	5
PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments	5	0	5
PC22. Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases	5	0	5
PC23. Demonstrate the artificial respiration and the CPR Process	5	0	5
PC24. Participate in emergency procedures	5	0	5
PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible	9	5	4



	PC26. Demonstrate correct method to move injured people and others during an emergency		1	0	1
		Total	150	45	105
ISC/N0009: Works effectively with others	PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	100	10	5	5
	PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt		10	5	5
	PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand		10	0	10
	PC4. Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible		10	5	5
	PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	5	5
	PC6. Display appropriate communication etiquette while working		10	0	10
	PC7. Display active listening skills while interacting with others at work		10	0	10
	PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		10	5	5
	PC9. Demonstrate responsible and disciplined behaviours at the workplace		15	5	10
	PC10. Escalate grievances and problems to supervisor		5	0	5
		Total	100	30	70