

## QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR CAPITAL GOODS INDUSTRY

### 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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### Contents

1. Introduction and Contacts.....	1
2. Qualifications Pack.....	2
3. Glossary of Key Terms.....	4
4. OS Units.....	6
5. Annexure:Nomenclature for QP and OS.....	26
6. Assessment Criteria.....	28

### Introduction

## Qualifications Pack: Operator – Broaching Machine

**SECTOR:** CAPITAL GOODS

**SUB-SECTOR:**

- |                                    |                                   |
|------------------------------------|-----------------------------------|
| 1. Machine Tools                   | 4. Process Plant Machinery        |
| 2. Plastic Manufacturing Machinery | 5. Electrical and Power Machinery |
| 3. Textile Manufacturing Machinery | 6. Light Engineering Goods        |

**OCCUPATION:** Machining

**REFERENCE ID:** CSC/ Q 0114

**ALIGNED TO :** NCO-2004/NIL

**Operator – Broaching Machine:** Machine a range of metal components on broaching machines, in accordance with approved procedures.

**Brief Job Description:** Perform broaching operations to produce a range of components which require machining of features like keyways, square holes, hexagonal and octagonal holes, holes with a single flat side, splines, serrations and special forms.

**Personal Attributes:** Basic communication, numerical and computational abilities. Openness to learning, ability to plan and organize own work and identify and solve problems in the course of working. Understanding the need to take initiative and manage self and work to improve efficiency and effectiveness

<b>Job Details</b>	<b>Qualifications Pack Code</b>	<b>CSC/ Q 0114</b>		
	<b>Job Role</b>	<b>Operator – Broaching machine</b>		
	<b>Credits (NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
	<b>Sector</b>	<b>CAPITAL GOODS</b>	<b>Drafted on</b>	<b>10/04/14</b>
	<b>Sub-sector</b>	<ol style="list-style-type: none"> <li>1. Machine Tools</li> <li>2. Plastic Manufacturing Machinery</li> <li>3. Textile Manufacturing Machinery</li> <li>4. Process Plant Machinery</li> <li>5. Electrical and Power Machinery</li> <li>6. Light Engineering Goods</li> </ol>	<b>Last reviewed on</b>	<b>18/03/15</b>
	<b>Occupation</b>	<b>MACHINING</b>	<b>Next review date</b>	<b>30/08/16</b>
	<b>NSQC Clearance on</b>	<b>20/07/2015</b>		

Job Role	Operator – Broaching machine
Role Description	Machining a range of metal components on broaching machines, in accordance with approved procedures.
NSQF level	2
Minimum Educational Qualifications	10 <sup>th</sup> Standard
Maximum Educational Qualifications	N.A.
Training (Suggested but not mandatory)	No Previous Training Required
Minimum Job Entry Age	18 Years old
Experience	No Previous Experience Required
Applicable National Occupational Standards (NOS)	<p><b>Compulsory:</b></p> <ol style="list-style-type: none"> <li><a href="#">CSC/ N 0114 (Perform broaching operations to produce a range of metal components using broaching machines)</a></li> <li><a href="#">CSC/ N 1335 (Use basic health and safety practices at the workplace)</a></li> <li><a href="#">CSC/ N 1336 (Work effectively with others)</a></li> </ol> <p><b>Optional:</b> N.A.</p>
Performance Criteria	As described in the relevant OS units

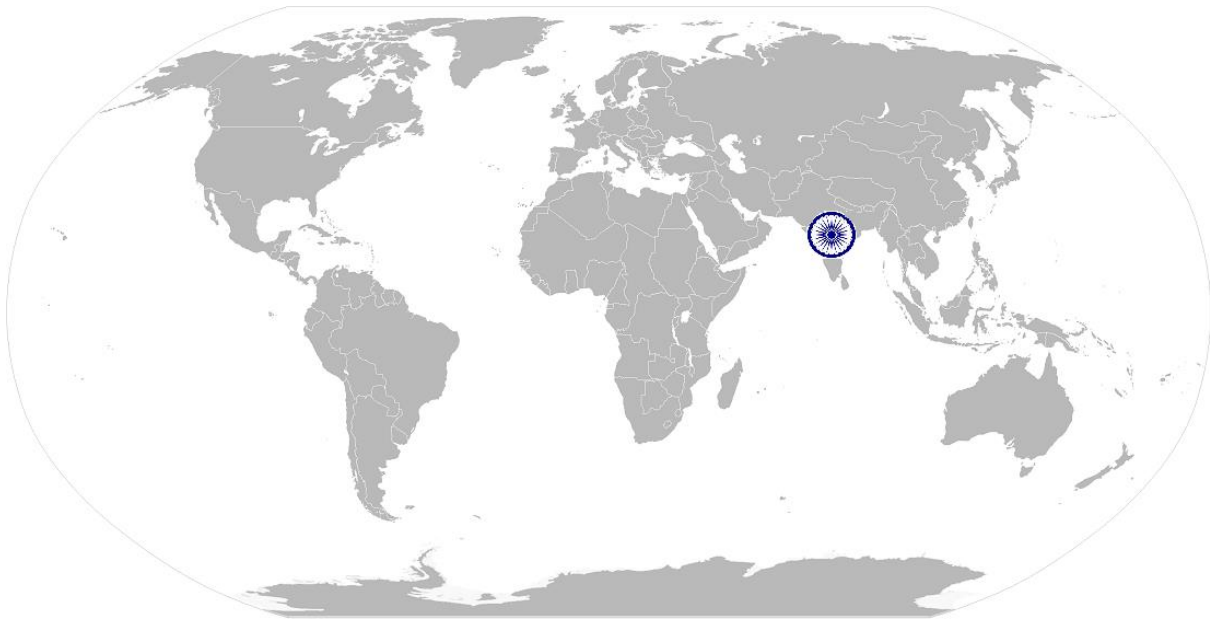
Definitions	Keywords /Terms	Description
	Core Skills/Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the NOS, these include communication related skills that are applicable to most job roles.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of NOS.	
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.	
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.	
National Occupational Standards (NOS)	NOS are Occupational Standards which apply uniquely in the Indian context	
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.	
Organisational Context	Organisational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.	
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.	
Qualifications Pack(QP)	Qualifications Pack comprises the set of NOS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.	
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.	
Scope	Scope is the set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on the quality of performance required.	
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.	
Sub-Sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.	
Sub-functions	Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.	
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.	
Unit Code	Unit Code is a unique identifier for a NOS unit, which can be denoted with an 'N'	
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.	
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.	

Acronyms	Keywords /Terms	Description
	CO2	Carbon dioxide
	CPR	Cardiac Pulmonary Resuscitation
	PPE	Personal Protective Equipment
	ISO	International Organization for Standardization

**CSC/ N 0114: Perform broaching operations to produce a range of metal components using broaching machines**

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# National Occupational Standard



## Overview

This unit covers performing of broaching operations to produce a range of metal components using broaching machines, as per specifications.

**CSC/ N 0114: Perform broaching operations to produce a range of metal components using broaching machines**

<b>Unit Code</b>	<b>CSC/ N 0114</b>
<b>Unit Title (Task)</b>	<b>Perform broaching operations to produce a range of metal components using broaching machines</b>
<b>Description</b>	<p>This unit covers performing broaching operations to produce a range of components which require machining of features like keyways, square holes, hexagonal and octagonal holes, holes with a single flat side, splines, serrations and special forms. This will involve carrying out broaching operations as per approved procedures, checking the quality of the workpiece using appropriate measuring equipment and check the tolerances achieved.</p> <p>The candidate will be expected to work under supervision and as per instructions given.</p>
<b>Scope</b>	<p>The unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Working safely</li> <li>• Preparing for Broaching Operation</li> <li>• Carrying out operations on broaching machine</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Working safely</b>	<p>The user/individual on the job should be able to:</p> <p>PC1. comply with health and safety, environmental and other relevant regulations and guidelines at work</p> <p>PC2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing broaching operations</p> <p>PC3. ensure work area is clean and safe from hazards</p> <p>PC4. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition</p> <p>PC5. ensure that machine guards are in place and are correctly adjusted</p>
<b>Preparing for Broaching Operation</b>	<p>The user/individual on the job should be able to:</p> <p>PC6. check that all measuring equipment is within calibration date</p> <p><b>Measuring equipment:</b> rules, micrometers (external, internal, depth), verniers (digital, dial; length, depth; protractors), gauges (slip, bore/hole, thread, plug, radius/profile)</p> <p>PC7. ensure availability of job specification from a valid source</p> <p><b>Job specifications:</b> instructions from supervisor/incharge, operational drawings; approved sketches/illustrations</p> <p><b>Valid sources:</b> job instruction sheet/job card; work drawings; supervisor/incharge</p> <p>PC8. read and establish job requirements from the job specification document</p> <p><b>Job specifications:</b> instructions from supervisor/incharge, operational drawings; approved sketches/illustrations</p> <p><b>Job requirements:</b> raw materials or components required (type, quality, quantity); dimensions; limits and tolerances; surface texture requirements; operations required (list, sequence and procedures where applicable); shape</p>

**CSC/ N 0114: Perform broaching operations to produce a range of metal components using broaching machines**

	<p>or profiles to be machined; tools to be used; interdependencies; timelines</p> <p>PC9. ensure that the components used are free from foreign objects, dirt or other contamination</p> <p>PC10. prepare and maintain the work area as per procedure or operation specification</p> <p>PC11. plan to carry out the required broaching activities and the sequence of operations as per specifications</p> <p>PC12. follow the defined operating procedures and apply safe working practices and procedures at all times</p> <p>PC13. obtain all the appropriate materials, tools and equipment required for the broaching operation</p> <p><b>Range of materials:</b> Ferrous: (eg. low, medium and high carbon steels; low alloy steels; stainless steels; cast irons); Non-ferrous: (eg, aluminium and aluminium alloys, bronze and bronze alloys)</p> <p>PC14. prepare for the broaching activities by mounting, positioning and correctly setting a range of workholding devices</p> <p><b>Positioning and holding devices and mechanisms:</b> clamping direct to machine table; pneumatic or magnetic table; machine vice (eg. plain, swivel, universal); angle plate; vee block and clamps; fixtures; chucks (eg. 3 or 4 jaw); ancillary indexing device; jigs</p> <p>PC15. fit and align the appropriate broaching tool</p> <p>PC16. align the workpiece in relationship to machine axis</p> <p>PC17. set the machine tool operating parameters to achieve the component specification</p> <p><b>Produced components specification:</b> keyways, flat sided holes, square holes, hexagonal holes, octagonal holes, splines, serrations, custom special forms</p> <p>PC18. set up machine in accordance with instructions and specifications</p> <p><b>Type of broaching machine:</b> Horizontal broaching machine, Vertical broaching machine</p> <p><b>Machine specifications:</b> stroke position and length mechanisms; machine guards/safety mechanisms; broach pulling pressure; cutting; fluid flow rate; stroke speed/feed</p> <p>PC19. set up the machine to produce internal and external profiles</p> <p>PC20. seek any necessary instruction/training on the operation of the machine, where required</p> <p>PC21. hold components securely, without distortion</p> <p>PC22. ensure that machine settings are adjusted as and when required to maintain the required accuracy</p>
<p><b>Carrying out operations on broaching machine</b></p>	<p>The user/individual on the job should be able to:</p> <p>PC23. obtain the component drawings, specifications and/or job instructions required for the components to be machined</p> <p>PC24. use and extract information from engineering drawings and related specifications (to include symbols and conventions to appropriate IS or ISO standards in relation to work undertaken)</p> <p>PC25. use and extract information from reference charts, tables, graphs and</p>



**CSC/ N 0114: Perform broaching operations to produce a range of metal components using broaching machines**

	<p>standards</p> <p><b>Information pertains:</b> tapping sizes and threads; feeds and speeds; component ratings; machining symbols and tolerances</p> <p>PC26. operate the machine tool controls safely and correctly, in line with operational procedures</p> <p>PC27. control the machine in both hand and power modes for normal operations</p> <p>PC28. stop the machine in both normal and emergency situations correctly, and follow safety mechanisms before restarting after an emergency</p> <p><b>Safety mechanisms:</b> emergency stop buttons, emergency brakes</p> <p>PC29. position and secure workholding devices to the machine spindle</p> <p>PC30. perform the technique of trial cut for checking dimensional accuracy</p> <p><b>Dimensional parameters:</b> dimensions, squareness, spline/serration fit, surface finish, keyway width, keyway position</p> <p>PC31. perform the checks to be carried out on the components before removing them from the machine, and the equipment needed for this activity</p> <p>PC32. ensure that the quality control procedures are used while operating the equipment</p> <p>PC33. ensure that the components produced meet the required specification for quality and accuracy</p> <p><b>Accuracy standards:</b> dimensional tolerance +/- 0.20 mm; surface finish 63 µm or 1.6µm; components to be free from false tool cuts, burrs and sharp edges</p>
<b>Knowledge and Understanding (K)</b>	
<p><b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)</p>	<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. relevant health and safety requirements applicable in the work place</p> <p>KA3. importance of working in clean and safe environment</p> <p>KA4. own job role and responsibilities and sources for information pertaining to employment terms, entitlements, job role and responsibilities</p> <p>KA5. reporting structure, inter-dependent functions, lines and procedures in the work area</p> <p>KA6. relevant people and their responsibilities within the work area</p> <p>KA7. escalation matrix and procedures for reporting work and employment related issues</p> <p>KA8. documentation and related procedures applicable in the context of employment and work</p> <p>KA9. importance and purpose of documentation in context of employment and work</p>
<p><b>B. Technical Knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. specific safety precautions to be taken while operating a broaching machine</p> <p><b>Safety precautions:</b> ensuring the correct isolation of the machine before mounting workholding devices and tooling; adhere to procedures or systems in place for risk assessment, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work; fitting and adjusting machine guards; ensuring that the workpiece is secure and that tooling is free from workpiece before starting the machine; ensuring</p>

**CSC/ N 0114: Perform broaching operations to produce a range of metal components using broaching machines**

	<p>personal protective equipment (PPE) to be worn for the broaching activities such as correctly fitting overalls and safety glasses; ensuring long hair is tied back or netted; jewellery or other items that can become entangled in the machinery are removed</p> <p>KB2. hazards associated with setting broaching machines and how to minimise them and reduce any risks <b>Hazards:</b> moving parts of machinery, handling broaching tools, handling cutting fluids, tool breakage, insecure components</p> <p>KB3. how to start and stop the machine in normal and emergency situations</p> <p>KB4. importance of wearing the appropriate protective clothing and equipment, and of keeping the work area clean and tidy</p> <p>KB5. basic principles of operation of the broaching machine and its accessories, and typical operations that they can perform <b>Type of broaching machine:</b> Horizontal broaching machine, Vertical broaching machine</p> <p>KB6. how to handle and store broaching tools safely and correctly</p> <p>KB7. how to extract and use information from engineering drawings and related specifications in relation to work undertaken</p> <p>KB8. how to interpret first and third angle drawings, imperial and metric systems of measurement, workpiece reference points and system of tolerancing</p> <p>KB9. terminology used in broaching in relation to the activities undertaken</p> <p>KB10. range of workholding methods and devices that are used on broaching machines</p> <p>KB11. different types of broaching tools that are used, and how they are selected</p> <p>KB12. factors which determine pulling pressure and feeds to be used <b>Factors:</b> material, type of tooling, machine condition, tolerance, finish required</p> <p>KB13. various types of materials will affect the feeds that can be used <b>Range of materials:</b> Ferrous: (eg. low, medium and high carbon steels; low alloy steels; stainless steels; cast irons); Non-ferrous: (e.g. aluminium and aluminium alloys, bronze and bronze alloys)</p> <p>KB14. types of cutting fluid that are used, and precautions to be taken when handling and using them</p> <p>KB15. need to conduct trial runs, and to check that the machine is set up and producing the components correctly</p> <p>KB16. problems that can occur with setting up the workholding devices, tooling and machine operating parameters, and what to do if problems occur</p> <p>KB17. extent of their own responsibility and whom to report to if any problem cannot be resolved</p>
<b>Skills (S) [Optional]</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Communication (Reading, Writing, Listening and Speaking)</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. read and interpret information correctly from various job specification documents, manuals, health and safety instructions, memos, etc. applicable to the job in English and/or local language</p> <p>SA2. fill up appropriate technical forms, process charts, activity logs as per organizational format in English and/or local language</p>

**CSC/ N 0114: Perform broaching operations to produce a range of metal components using broaching machines**

	<p>SA3. convey and share technical information clearly using appropriate language</p> <p>SA4. check and clarify task-related information</p> <p>SA5. liaise with appropriate authorities using correct protocol</p> <p>SA6. communicate with people in respectful form and manner in line with organizational protocol</p>
	<p><b>Numerical and computational skills</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA7. undertake numerical operations, and calculations/ formulae <b>Numerical computations:</b> addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages</p> <p>SA8. identify various basic, compound and solid shapes as per dimensions given <b>Basic shapes:</b> square, rectangle, triangle, circle <b>Compound shapes:</b> involving squares, rectangles, triangles, circles, semi-circles, quadrants of a circle <b>Solid shapes:</b> cube, rectangular prism, cylinder</p> <p>SA9. use appropriate measuring techniques and units of measurement</p> <p>SA10. use appropriate units and number systems to express degree of accuracy <b>Units and number systems representing degree of accuracy:</b> decimals places, significant figures, fractions as a decimal quantity</p>
<b>B. Professional Skills</b>	<p><b>Learning</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA11. participate in on-the-job and other learning, training and development interventions and assessments</p> <p>SA12. clarify task related information with appropriate personnel or technical adviser</p> <p>SA13. seek to improve and modify own work practices</p> <p>SA14. maintain current knowledge of application standards, legislation, codes of practice and product/process developments</p>
	<p><b>Problem Solving and Decision Making</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. identify problems with work planning, procedures, output and behavior and their implications</p> <p>SB2. prioritize and plan for problem solving</p> <p>SB3. communicate problems appropriately to others</p> <p>SB4. identify sources of information and support for problem solving</p> <p>SB5. seek assistance and support from other sources to solve problems</p> <p>SB6. identify effective resolution techniques</p> <p>SB7. select and apply resolution techniques</p> <p>SB8. seek evidence for problem resolution</p>
	<p><b>Plan and Organize</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB9. plan, prioritize and sequence work operations as per job requirements</p> <p>SB10. organize and analyze information relevant to work</p> <p>SB11. basic concepts of shop-floor work productivity including waste reduction,</p>

**CSC/ N 0114: Perform broaching operations to produce a range of metal components using broaching machines**

	efficient material usage and optimization of time
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB12. undertake and express new ideas and initiatives to others SB13. modify work plan to overcome unforeseen difficulties or developments that occur as work progresses SB14. participate in improvement procedures including process, quality and internal/external customer/supplier relationships SB15. one's competencies in new and different situations and contexts to achieve more
	<b>Customer Centricity</b>
	The user/individual on the job needs to know and understand how to: SB16. exercise restraint while expressing dissent and during conflict situations SB17. avoid and manage distractions to be disciplined at work SB18. manage own time for achieving better results
	<b>Teamwork</b>
	The user/individual on the job needs to know and understand how to: SB19. work in a team in order to achieve better results SB20. identify and clarify work roles within a team SB21. communicate and cooperate with others in the team for better results SB22. seek assistance from fellow team members

**CSC/ N 0114: Perform broaching operations to produce a range of metal components using broaching machines**

**NOS Version Control**

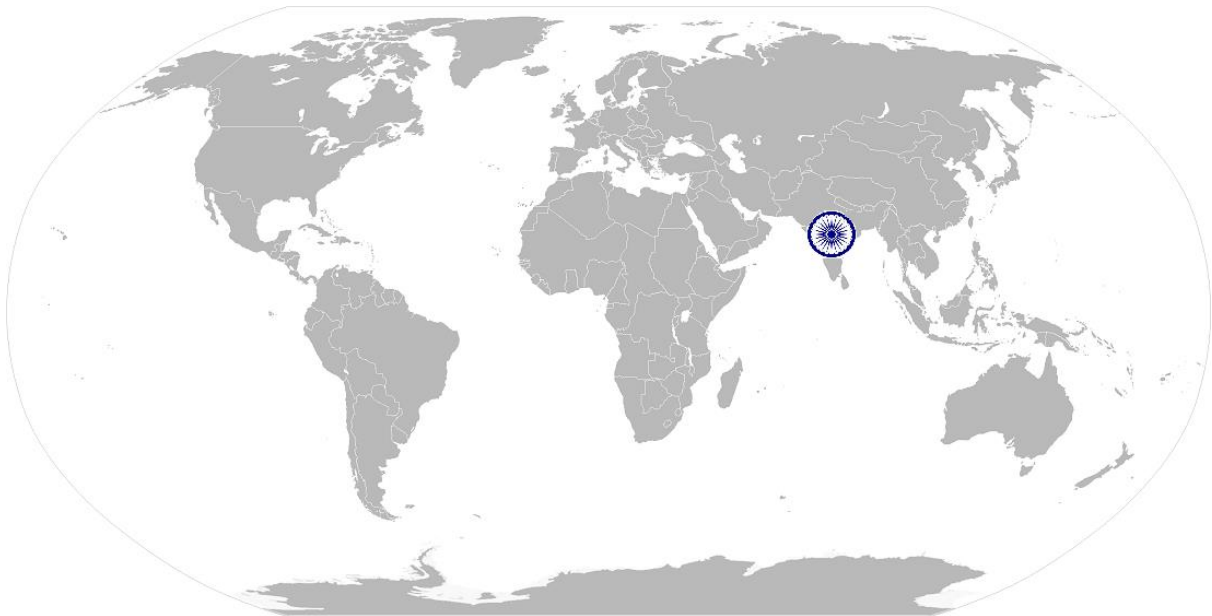
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<b>Industry</b>	<b>Capital Goods</b>	<b>Drafted on</b>	<b>10/04/14</b>
<b>Industry Sub-sector</b>	<ol style="list-style-type: none"> <li>1. Machine Tools</li> <li>2. Plastics Manufacturing Machinery</li> <li>3. Textile Manufacturing Machinery</li> <li>4. Process Plant Machinery</li> <li>5. Electrical and Power Machinery</li> <li>6. Light Engineering Goods</li> </ol>	<b>Last reviewed on</b>	<b>18/03/15</b>
<b>Occupation</b>	<b>Machining</b>	<b>Next review date</b>	<b>30/08/16</b>



CSC/ N 1335: Use basic health and safety practices at the workplace

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# National Occupational Standard



## 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.**

**CSC/ N 1335: Use basic health and safety practices at the workplace**

National Occupational Standard	<b>Unit Code</b>	<b>CSC / N 1335</b>
	<b>Unit Title (Task)</b>	<b>Use basic health and safety practices at the workplace</b>
	<b>Description</b>	<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> <p>It covers knowledge of fire safety, common first aid applications, safe practices and emergency procedures.</p>
	<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Health and safety</li> <li>• Fire safety</li> <li>• Emergencies, rescue and first-aid procedures</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>		
<b>Element</b>	<b>Performance Criteria</b>	
<b>Health and safety</b>	<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><b>Protective clothing:</b> leather or asbestos gloves, flame proof aprons, flame proof overalls buttoned to neck, cuffless (without folds), trousers, reinforced footwear, helmets/hard hats, cap and shoulder covers, ear defenders/plugs, safety boots, knee pads, particle masks, glasses/goggles/visors</p> <p><b>Equipment:</b> hand shields, machine guards, residual current devices, shields, dust sheets, respirator</p> <p>PC2. state the name and location of people responsible for health and safety in the workplace</p> <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><b>Hazards:</b> sharp edged and heavy tools; heated metals; oxyfuel and gas cylinders; welding radiation; hazardous surfaces(sharp, slippery, uneven, chipped, broken, etc.); hazardous substances(chemicals, gas, oxy-fuel, fumes, dust, etc.); physical hazards(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 hazards (power supply and points, loose and naked cables and wires, electrical machines and appliances, etc.)</p>	

**CSC/ N 1335: Use basic health and safety practices at the workplace**

	<p><b>Possible causes of risk and accident:</b> physical actions; reading; listening to and giving instructions; inattention; sickness and incapacity (such as drunkenness); health hazards (such as untreated injuries and contagious illness)</p> <p>PC5. carry out safe working practices while dealing with hazards to ensure the safety of self and others</p> <p><b>Safe working practices:</b> 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> <p>PC6. state methods of accident prevention in the work environment of the job role</p> <p><b>Methods of accident prevention:</b> 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; instruction from colleagues and supervisors</p> <p>PC7. state location of general health and safety equipment in the workplace</p> <p><b>General health and safety equipment:</b> fire extinguishers; first aid equipment; safety instruments and clothing; safety installations(eg fire exits, exhaust fans)</p> <p>PC8. inspect for faults, set up and safely use steps and ladders in general use</p> <p><b>Ladder faults:</b> corrosion of metal components, deterioration, splits and cracks timber components, imbalance, loose rungs, missing/unfixed nuts or bolts, etc.</p> <p><b>Ladders set up:</b> firm/level base, clip/lash down, leaning at the correct angle, etc.</p> <p>PC9. work safely in and around trenches, elevated places and confined areas</p> <p>PC10. lift heavy objects safely using correct procedures</p> <p>PC11. apply good housekeeping practices at all times</p> <p><b>Good housekeeping practices:</b> clean/tidy work areas, removal/disposal of waste products, protect surfaces</p> <p>PC12. identify common hazard signs displayed in various areas</p> <p><b>Various areas:</b> on chemical containers; equipment; packages; inside buildings; in open areas and public spaces, etc.</p> <p>PC13. retrieve and/or point out documents that refer to health and safety in the workplace</p>
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**CSC/ N 1335: Use basic health and safety practices at the workplace**

	<p><b>Documents:</b> fire notices, accident reports, safety instructions for equipment and procedures, company notices and documents, legal documents (eg government notices)</p>
<p><b>Fire safety</b></p>	<p>The user/individual on the job should be able to:</p> <p>PC14. use the various appropriate fire extinguishers on different types of fires correctly</p> <p><b>Types of fires:</b> Class A: eg. ordinary solid combustibles, such as wood, paper, cloth, plastic, charcoal, etc.; Class B: flammable liquids and gases, such as gasoline, propane, diesel fuel, tar, cooking oil, and similar substances; Class C: eg. electrical equipment such as 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> <p>PC15. demonstrate rescue techniques applied during fire hazard</p> <p>PC16. demonstrate good housekeeping in order to prevent fire hazards</p> <p>PC17. demonstrate the correct use of a fire extinguisher</p>
<p><b>Emergencies, rescue and first-aid procedures</b></p>	<p>The user/individual on the job should be able to:</p> <p>PC18. demonstrate how to free a person from electrocution</p> <p>PC19. administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.</p> <p>PC20. demonstrate basic techniques of bandaging</p> <p>PC21. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments</p> <p>PC22. perform and organize loss minimization or rescue activity during an accident in real or simulated environments</p> <p>PC23. 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</p> <p>PC24. demonstrate the artificial respiration and the CPR Process</p> <p>PC25. participate in emergency procedures</p> <p><b>Emergency procedures:</b> raising alarm, safe/efficient, evacuation, correct means of escape, correct assembly point, roll call, correct return to work</p> <p>PC26. complete a written accident/incident report or dictate a report to another person, and send report to person responsible</p> <p><b>Incident Report includes details of:</b> name, date/time of incident, date/time of report, location, environment conditions, persons involved, sequence of events, injuries sustained, damage sustained, actions taken, witnesses, supervisor/manager notified</p> <p>PC27. demonstrate correct method to move injured people and others during an emergency</p>
<p><b>Knowledge and Understanding (K)</b></p>	

**CSC/ N 1335: Use basic health and safety practices at the workplace**

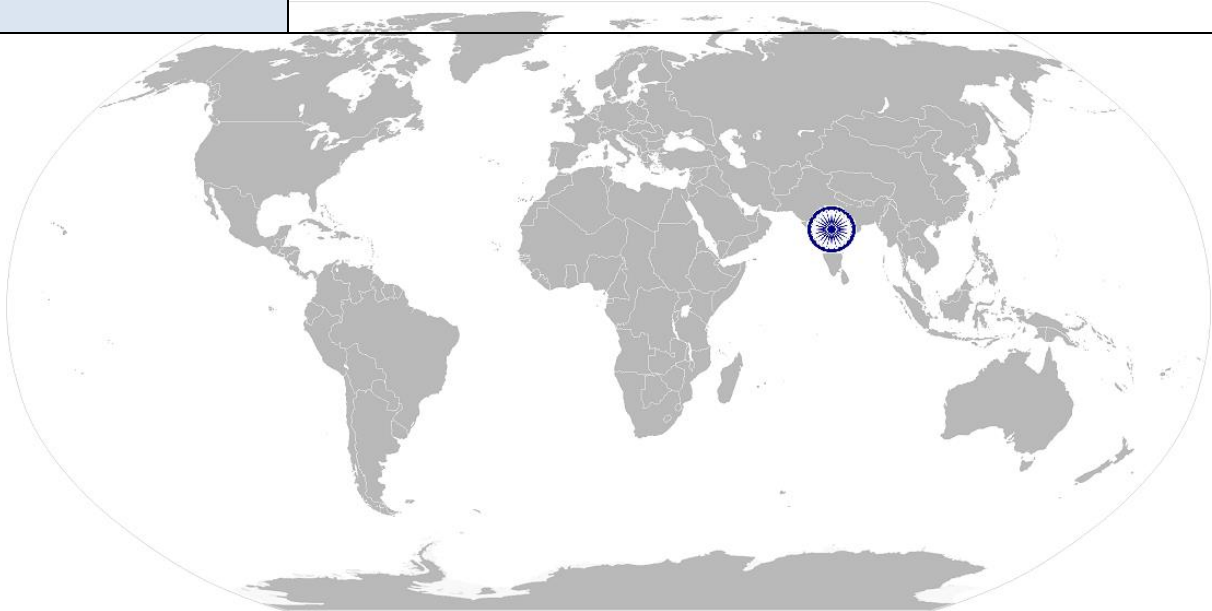
<p><b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. names (and job titles if applicable), and where to find, all the people responsible for health and safety in a workplace.</p> <p>KA2. names and location of documents that refer to health and safety in the workplace.</p>
<p><b>B. Technical Knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. meaning of “hazards” and “risks”</p> <p>KB2. health and safety hazards commonly present in the work environment and related precautions</p> <p>KB3. possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible</p> <p>KB4. possible causes of risk and accident <b>Possible causes of risk and accident:</b> physical actions; reading; listening to and giving instructions; inattention; sickness and incapacity (such as drunkenness); health hazards (such as untreated injuries and contagious illness)</p> <p>KB5. methods of accident prevention <b>Methods of accident prevention:</b> 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; instruction from colleagues and supervisors</p> <p>KB6. safe working practices when working with tools and machines</p> <p>KB7. safe working practices while working at various hazardous sites</p> <p>KB8. where to find all the general health and safety equipment in the workplace</p> <p>KB9. various dangers associated with the use of electrical equipment</p> <p>KB10. preventative and remedial actions to be taken in the case of exposure to toxic materials <b>Exposure:</b> ingested, contact with skin, inhaled <b>Preventative action:</b> ventilation, masks, protective clothing/ equipment); <b>Remedial action:</b> immediate first aid, report to supervisor <b>Toxic materials:</b> solvents, flux, lead</p> <p>KB11. importance of using protective clothing/equipment while working</p> <p>KB12. precautionary activities to prevent the fire accident</p> <p>KB13. various causes of fire <b>Causes of fires:</b> heating of metal; spontaneous ignition; sparking; electrical heating; loose fires (smoking, welding, etc.); chemical fires; etc.</p> <p>KB14. techniques of using the different fire extinguishers</p> <p>KB15. different methods of extinguishing fire</p> <p>KB16. different materials used for extinguishing fire <b>Materials:</b> sand, water, foam, CO<sub>2</sub>, dry powder</p> <p>KB17. rescue techniques applied during a fire hazard</p> <p>KB18. various types of safety signs and what they mean</p>

**CSC/ N 1335: Use basic health and safety practices at the workplace**

	<p>KB19. appropriate basic first aid treatment relevant to the condition eg. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries</p> <p>KB20. content of written accident report</p> <p>KB21. potential injuries and ill health associated with incorrect manual handling</p> <p>KB22. safe lifting and carrying practices</p> <p>KB23. personal safety, health and dignity issues relating to the movement of a person by others</p> <p>KB24. potential impact to a person who is moved incorrectly</p>
<b>Skills (S) [Optional]</b>	
<b>A. Core Skills/ Generic Skills</b>	<p><b>Reading and Writing Skills</b></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, signages</p> <p>SA2. read and comprehend basic English to read manuals of operations</p> <p>SA3. read and write an accident/incident report in local language or English</p> <p><b>Oral Communication (Listening and Speaking skills)</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA4. question coworkers appropriately in order to clarify instructions and other issues</p> <p>SA5. give clear instructions to coworkers, subordinates others</p> <p><b>Decision Making</b></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>B. Professional Skills</b>	<p><b>Plan and Organize</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity</p> <p><b>Working with others</b></p> <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</p> <p>SB3. follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice</p> <p>SB4. ask for, provide and receive required assistance where possible to ensure achievement of work related objectives</p> <p>SB5. thank coworkers for any assistance received</p> <p>SB6. offer appropriate respect based on mutuality and respect for fellow workmanship and authority</p>

**CSC/ N 1335: Use basic health and safety practices at the workplace**

	<b>Problem Solving</b>
	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
	<b>Analytical Thinking</b>
	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

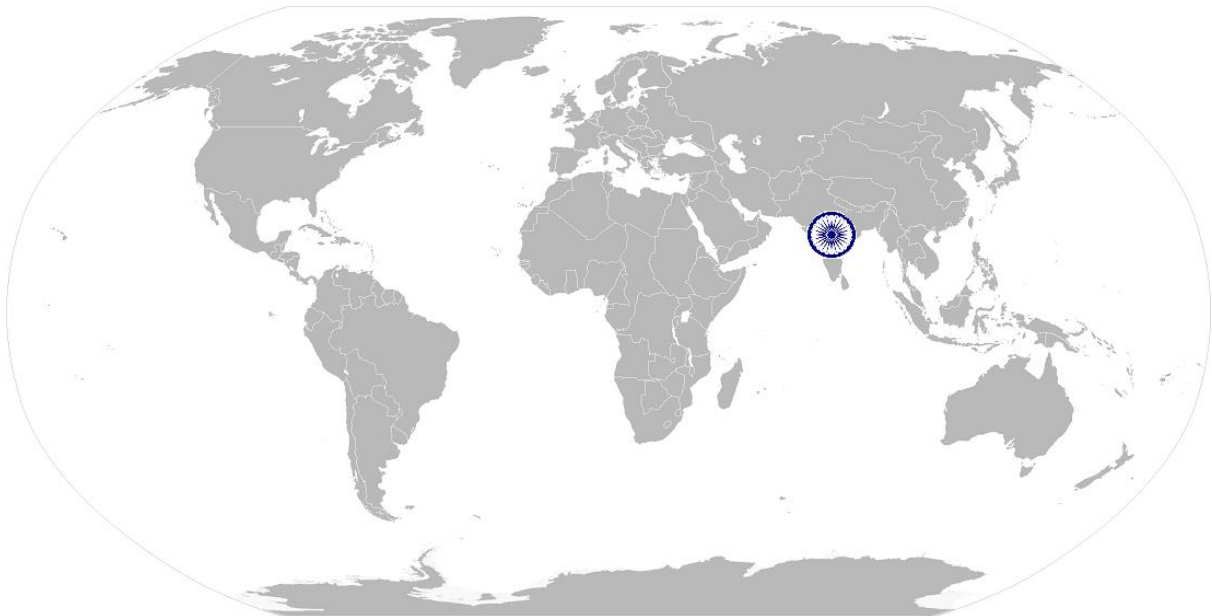


**CSC/ N 1335: Use basic health and safety practices at the workplace**

## NOS Version Control

<b>NOS Code</b>	<b>CSC / N 1335</b>		
<b>Credits (NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
<b>Industry</b>	<b>Capital Goods</b>	<b>Drafted on</b>	<b>10/04/14</b>
<b>Industry Sub-sector</b>	<ol style="list-style-type: none"> <li>1. Machine Tools</li> <li>2. Dies, Moulds And Press Tools</li> <li>3. Plastics Manufacturing Machinery</li> <li>4. Textile Manufacturing Machinery</li> <li>5. Process Plant Machinery</li> <li>6. Electrical and Power Generation Machinery</li> <li>7. Light Engineering Goods</li> </ol>	<b>Last reviewed on</b>	<b>18/03/15</b>
<b>Occupation</b>	<b>Machining</b>	<b>Next review date</b>	<b>30/08/16</b>

# National Occupational Standard



## Overview

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

**CSC/ N 1336:**

**Work effectively with others**

<b>Unit Code</b>	<b>CSC / N 1336</b>
<b>Unit Title (Task)</b>	<b>Work effectively with others</b>
<b>Description</b>	<p>This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behavior and interactions with others at the workplace.</p> <p>These cover areas such as communication etiquette, discipline, listening, handling conflict and grievances.</p>
<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>Working with others</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Working with others</b>	<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. give information to others clearly, at a pace and in a manner that helps them to understand</p> <p>PC4. display helpful behavior 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><b>Communication etiquette:</b> do not use abusive language; use appropriate titles and terms of respect; do not eat or chew while talking (vice versa)etc.</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 behaviors at the workplace</p> <p><b>Disciplined behaviors:</b> e.g. punctuality; completing tasks as per given time and standards; not gossiping and idling time; eliminating waste, honesty, etc.</p> <p>PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<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> <p>KA4. escalation matrix and procedures for reporting work and employment related issues</p>

**CSC/ N 1336:**

**Work effectively with others**

**B. Technical Knowledge**

The user/individual on the job needs to know and understand:

- KB1. various categories of people that one is required to communicate and co-ordinate with in the organization
- KB2. importance of effective communication in the workplace
- KB3. importance of teamwork in organizational and individual success
- KB4. various components of effective communication
- KB5. key elements of active listening
- KB6. value and importance of active listening and assertive communication
- KB7. barriers to effective communication
- KB8. importance of tone and pitch in effective communication
- KB9. importance of avoiding casual expletives and unpleasant terms while communicating professional circles
- KB10. how poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer
- KB11. importance of ethics for professional success
- KB12. importance of discipline for professional success
- KB13. what constitutes disciplined behavior for a working professional
- KB14. common reasons for interpersonal conflict
- KB15. importance of developing effective working relationships for professional success
- KB16. expressing and addressing grievances appropriately and effectively
- KB17. importance and ways of managing interpersonal conflict effectively

**Skills (S) [Optional]**





CSC/ N 1336:

Work effectively with others

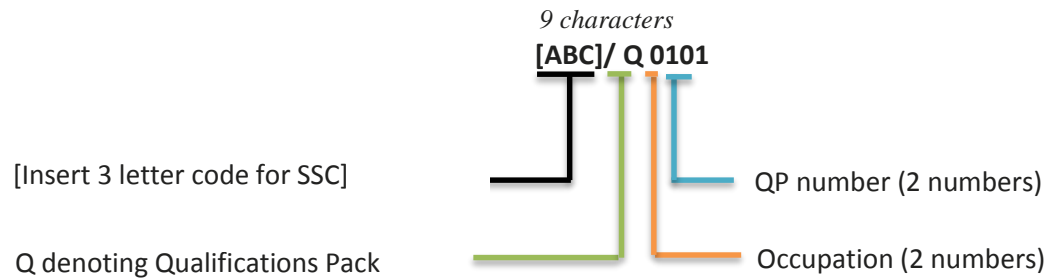
## NOS Version Control

NOS Code	CSC / N 1336		
Credits(NSQF)	TBD	Version number	1.0
Industry	Capital Goods	Drafted on	10/04/14
Industry Sub-sector	1. Machine Tools 2. Dies, Moulds And Press Tools 3. Plastics Manufacturing Machinery 4. Textile Manufacturing Machinery 5. Process Plant Machinery 6. Electrical and Power Machinery 7. Light Engineering Goods	Last reviewed on	18/03/15
Occupation	Machining	Next review date	30/08/16

## Annexure

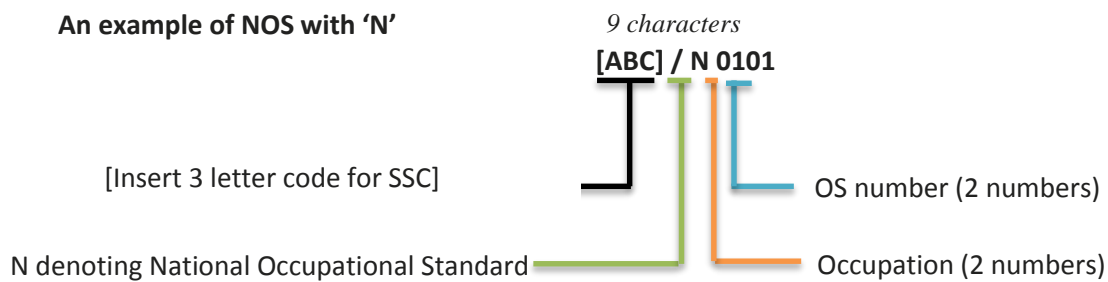
### Nomenclature for QP and NOS

#### Qualifications Pack



#### Occupational Standard

##### An example of NOS with 'N'



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

Sub-sector	Range of Occupation numbers
Machine Tools	01-13
Dies, Moulds and Press Tools	01-13
Process Plant Machinery	01-13
Plastic Manufacturing Machinery	01-13
Textile Manufacturing Machinery	01-13
Electrical and Power Machinery	01-13
Light Engineering Goods	01-13

Sequence	Description	Example
Three letters	Capital Goods	CSC
Slash	/	/
Next letter	Whether QP or NOS	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

**CRITERIA FOR ASSESSMENT OF TRAINEES**

**Job Role : Operator – Broaching Machine**

**Qualification Pack : CSC/ Q 0114**

**Sector Skill Council : Capital Goods 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 70% in every NOS
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

Assessable Outcomes	Assessment Criteria	Total Marks	Out Of	Theory	Practical Skills
CSC/ N 0114 : Perform broaching operations to produce a range of metal components using broaching machines	PC1. comply with health and safety, environmental and other relevant regulations and guidelines at work	100	3	1	2
	PC2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing broaching operations		4	1	3
	PC3. ensure work area is clean and safe from hazards		2	0	2
	PC4. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition		2	0	2
	PC5. ensure that machine guards are in place and are correctly adjusted		2	0	2
	PC6. check that all measuring equipment is within calibration date		2	0	2
	PC7. ensure availability of job specification from a valid source		2	0	2
	PC8. read and establish job requirements from the job specification document		2	0	2

PC9. ensure that the components used are free from foreign objects, dirt or other contamination		2	0	2
PC10. prepare and maintain the work area as per procedure or operation specification		3	1	2
PC11. plan to carry out the required broaching activities and the sequence of operations as per specifications		3	1	2
PC12. follow the defined operating procedures and apply safe working practices and procedures at all times		3	1	2
PC13. obtain all the appropriate materials, tools and equipment required for the broaching operation		2	0	2
PC14. prepare for the broaching activities by mounting, positioning and correctly setting a range of workholding devices		4	1	3
PC15. fit and align the appropriate broach		3	0	3
PC16. align the workpiece in relationship to machine axis		2	0	2
PC17. set the machine tool operating parameters to achieve the component specification		4	1	3
PC18. set up machine in accordance with instructions and specifications		4	1	3
PC19. set up the machine to produce internal and external profiles		4	1	3
PC20. seek any necessary instruction/training on the operation of the machine, where required		3	0	3
PC21. hold components securely, without distortion		3	0	3
PC22. ensure that machine settings are adjusted as and when required to maintain the required accuracy		2	0	2
PC23. obtain the component drawings, specifications and/or job instructions required for the components to be machined		3	1	2

	PC24. use and extract information from engineering drawings and related specifications (to include symbols and conventions to appropriate IS or ISO standards in relation to work undertaken)		3	1	2
	PC25. use and extract information from reference charts, tables, graphs and standards		2	1	1
	PC26. operate the machine tool controls safely and correctly, in line with operational procedures		6	2	4
	PC27. control the machine in both hand and power modes for normal operations		3	0	3
	PC28. stop the machine in both normal and emergency situations correctly, and follow right procedure for restarting after an emergency		4	1	3
	PC29. position and secure workholding devices to the machine spindle		4	1	3
	PC30. perform the technique of trial cut for checking dimensional accuracy		4	1	3
	PC31. perform the checks to be carried out on the components before removing them from the machine, and the equipment needed for this activity		4	0	4
	PC32. ensure that the quality control procedures are used while operating the equipment		3	1	2
	PC33. ensure that the components produced meet the required specification for quality and accuracy		3	1	2
		<b>Total</b>	<b>100</b>	<b>19</b>	<b>81</b>
CSC/ N 1335 : Use basic health and safety practices at the workplace	PC1. use protective clothing/equipment for specific tasks and work conditions	<b>100</b>	5	2	3
	PC2. state the name and location of people responsible for health and safety in the workplace		3	1	2
	PC3. state the names and location of documents that refer to health and safety in the workplace		3	1	2
	PC4. identify job-site hazardous work and state possible causes of risk or accident in the workplace		5	2	3

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	4	2	2
PC6. state location of general health and safety equipment in the workplace	3	2	1
PC7. inspect for faults, set up and safely use steps and ladders in general use	5	2	3
PC8. work safely in and around trenches, elevated places and confined areas	5	2	3
PC9. lift heavy objects safely using correct procedures	5	2	3
PC10. apply good housekeeping practices at all times	4	2	2
PC11. identify common hazard signs displayed in various areas	5	2	3
PC12. retrieve and/or point out documents that refer to health and safety in the workplace	3	1	2
PC13. use the various appropriate fire extinguishers on different types of fires correctly	4	1	3
PC14. demonstrate rescue techniques applied during fire hazard	4	1	3
PC15. demonstrate good housekeeping in order to prevent fire hazards	3	1	2
PC16. demonstrate the correct use of a fire extinguisher	4	1	3
PC17. demonstrate how to free a person from electrocution	4	1	3
PC18. administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.	4	1	3
PC19. demonstrate basic techniques of bandaging	3	1	2
PC20. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments	4	1	3

	PC21. perform and organize loss minimization or rescue activity during an accident in real or simulated environments		3	1	2
	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		3	1	2
	PC23. demonstrate the artificial respiration and the CPR Process		3	1	2
	PC24. participate in emergency procedures		3	2	1
	PC25. complete a written accident/incident report or dictate a report to another person, and send report to person responsible		4	1	3
	PC26. demonstrate correct method to move injured people and others during an emergency		4	1	3
	<b>Total</b>		<b>100</b>	<b>36</b>	<b>64</b>
CSC/ N 1336 : Work effectively with others	PC1. accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	<b>100</b>	10	3	7
	PC2. accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt		10	3	7
	PC3. give information to others clearly, at a pace and in a manner that helps them to understand		10	3	7
	PC4. display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible		10	3	7
	PC5. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	3	7
	PC6. display appropriate communication etiquette while working		10	3	7
	PC7. display active listening skills while interacting with others at work		10	3	7
	PC8. use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		10	3	7
	PC9. demonstrate responsible and disciplined behaviors at the workplace		10	3	7



	PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict		10	3	7
		<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>