QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR CAPITAL GOODS INDUSTRY

Contents

What are Occupational Standards(OS) ?

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

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Introduction

Qualifications Pack- Fitter- Fabrication

SECTOR/S: CAPITAL GOODS

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

OCCUPATION: Fitting and Assembly

REFERENCE ID: CSC/Q0303

ALIGNED TO: NCO-2004/7233.10, 7233.20

Brief Job Description: It involves identifying metals, tools; carrying out fitting and fabrication operations like measuring, marking out, sawing, grinding, drilling, chiseling, threading, tapping, scraping, manual lapping and inspecting of components in order to fit a component as per specifications. It also involves basic oxy-fuel gas cutting and basic manual arc welding as per given instructions and under supervision.

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

Job Details

Qualifications Pack Code	**CSC/Q0303**		
Job Role	**Fitter- Fabrication** **[Applicable for National Scenarios]**		
Credits	**TBD**	**Version number**	**1.0**
Sector	**Capital Goods**	**Drafted on**	**10/04/2014**
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**	**24/11/2017**
Occupation	**Fitting and Assembly**	**Next review date**	**24/11/2021**
NSQC Clearance on	**26/03/2015**		

Job Role	Fitter - Fabrication
Role Description	Performs fitting operations on metal components using hand tools and manually operated machines, as per specifications.
NSQF level	3
Minimum Educational Qualifications **Maximum Educational Qualifications**	10th Standard pass, preferably Not Applicable
Prerequisite License or Training	No Previous Training Required
Minimum Job Entry Age	18 Years
Experience	No Previous Experience Required
Applicable National Occupational Standards (NOS)	**Compulsory:** 1. CSC/N0303 Perform fitting operations on metal components using hand tools and manually operated machines 2. CSC/N0201 Perform simple manual cutting operations on carbon steels using oxy-fuel gas 3. CSC/N0202 Manually weld carbon steels in simple welding positions using Metal Arc Welding / Shielded Metal Arc Welding 4. CSC/N1335 Use basic health and safety practices at the workplace 5. CSC/N1336 Work effectively with others
Performance Criteria	As described in the relevant OS units

Definitions

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance criteria are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OSs, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding	Knowledge and understanding are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual need to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.

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

Acronyms

Keywords /Terms	Description
CO_2	Carbon Dioxide
CPR	Cardiac Pulmonary Resuscitation
PPE	Personal Protective Equipment

CSC/N0303 Perform fitting operations on metal components using hand tools and manually operated machines

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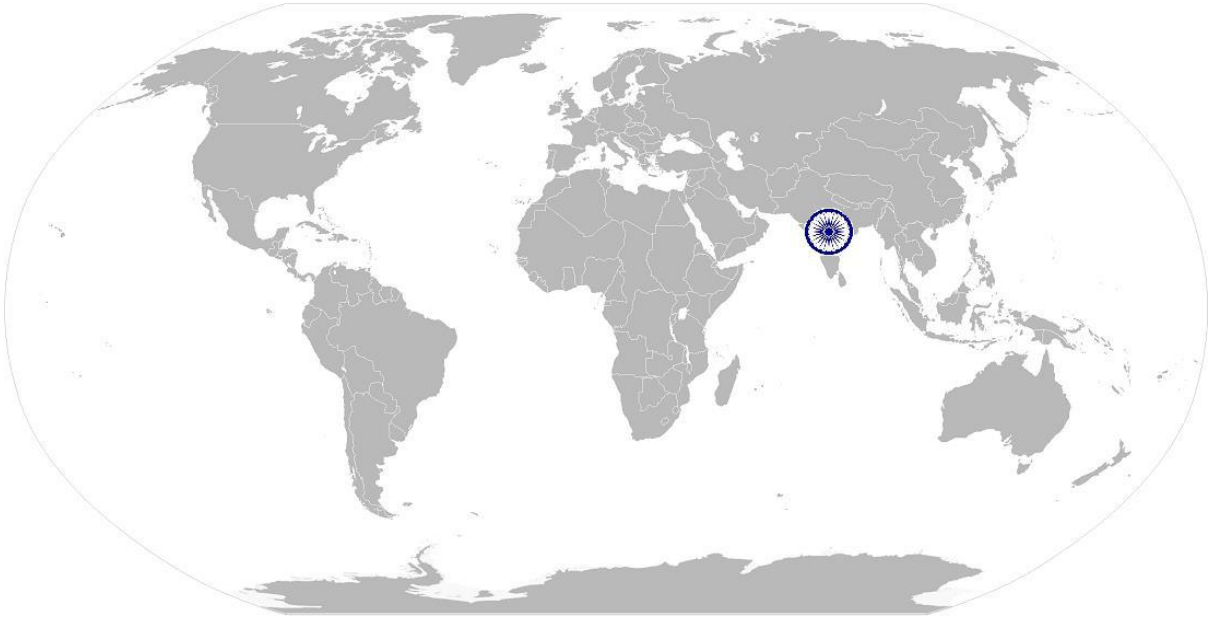
National Occupational Standard



Overview

This unit covers fabrication and fitting of metal products using hand tools and manually operated machines, to modify the shape of a component and/or generate components from raw material, as per given specifications.

National Occupational Standard

CSC/N0303 Perform fitting operations on metal components using hand tools and manually operated machines

Unit Code	CSC/N0303
Unit Title (Task)	**Perform fitting operations on metal components using hand tools and manually operated machines**
Description	This unit covers fabrication and fitting of metal products by using hand tools and/or manually operated machines, to modify the shape of a component or generate a component from raw material, as per given instructions.
Scope	This unit/task covers the following: • Work safely • Prepare for fabrication and fitting operations • Mark components • Perform fabrication and fitting operations

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Work safely	To be competent, the user/individual on the job must be able to: PC1. comply with health and safety, environmental and other relevant regulations and guidelines at work PC2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing fabrication and fitting operations PC3. work following laid down procedures and instructions PC4. ensure work area is clean and safe from hazards PC5. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition
Prepare for fabrication and fitting operations	To be competent, the user/individual on the job must be able to: PC6. obtain job specification from a valid and approved source Valid sources: job instruction sheet/job card; work drawings and instruction; operation sheets; process specifications; instructions from supervisor PC7. read and establish job requirements from the job specification document accurately Job specification documents: detailed component drawings; approved sketches/illustrations; fabrication/casting drawings; operational diagrams Job requirements: raw materials or components required (type, quality, quantity); dimensions; limits and tolerances; surface texture requirements; operations required (list, sequence and procedures where applicable); shape or profiles to be fabricated; cutting, bending and rolling allowances for fabricated forms; instruments and tools to be used; interdependencies; timelines

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	PC8. report and rectify incorrect and inconsistent information in job specification documents as per organization procedures PC9. prepare the work area for the fabrication and fitting operations as per procedure or operational specification Fabrication and fitting operations: forming, rolling, shearing, sawing (hand, band), manual grinding (eg. Ag4 grinding, wolf grinding, hand air grinding), filing, drilling, chiseling, threading, hand tapping, scraping, manual lapping PC10. ensure that all measuring equipment is calibrated and approved for usage PC11. ensure that the components used are free from foreign objects, dirt or other contamination PC12. obtain correct workpieces/raw materials and consumables as per job requirements PC13. obtain appropriate tools and equipment as per job requirements PC14. set work pieces as per job requirements using appropriate positioning and/or holding devices and support mechanisms Positioning and holding devices: belts; braces; clamps; jigs and fixtures; bolt straps; blocks and tables; manual lifts; ropes; jacks
Mark components	To be competent, the user/individual on the job must be able to: PC15. mark out specified features on the workpieces as per job specification using appropriate measuring and marking out tools and equipment Features: datum/centre lines, lines (perpendicular, parallel), circles, profiles (square/rectangular, radial, angles/angular), hole positions (radial, linear), allowances for bending, simple pattern development Measuring and marking tools: rules/tapes, dividers/trammels, scribers, punches, scribing blocks, squares, protractor, depth/internal/external micrometers, calipers (vernier, inside and outside, depth), gauges (height Vernier, feeler, bore/hole, slip, radius/profile, thread, plug), stick micrometers, dial stand and comparator, vee block with u-clamp, optical instruments PC16. mark out templates for tracing/transferring the specified features on the workpieces as per job specification PC17. trace/transfer the specified features from the templates onto the workpieces as per job specification
Perform fabrication and fitting operations	To be competent, the user/individual on the job must be able to: PC18. identify range of materials by colour, appearance, sparks Range of Materials: Ferrous metals: eg. carbon steels, stainless steels, cast iron, tool steel, hard metals; Non-ferrous metals: eg. bronze, bronze alloys, copper and copper alloys PC19. perform fabrication and fitting operations on various forms of metal

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	components using a range of fabrication hand tools and manually operated machines Forms of metal components: square/rectangular (eg. bar stock, sheet material, machined components), circular/cylindrical (eg. bar stock, tubes, turned components, flat discs), sections (eg. angles, channel, tee section, joists, extrusions), irregular shapes/profile (eg. castings, forgings, odd shaped components) Hand tools: hacksaws; hammers; punches; screwdrivers; sockets; wrenches; spanners; scrapers; chisels; gouges; files; taps; vices and clamps Manually operated machine tools: drills (power drills, pedestal drills), grinders (hand held power grinders, pedestal grinders), saws (jigsaws, cutting saws), shears (hand shear, mechanized shears), nibblers, press V-shape, punching machines, bending machines, threading machines PC20. follow the specified fabrication and fitting sequence and procedure as per job specifications PC21. check the fabricated and fitted products to ensure completeness of work PC22. check the quality of the components as per required standards using visual and dimensional parameters Dimensional parameters: linear dimensions; flatness; squareness; depths; angles; profiles; hole position; hole size/fit; thread size and fit; orientation and elevation Components quality standards: components to be free from damage, false tool cuts, burrs, scratches and non-specified sharp edges; general dimensional tolerance +/- 0.10mm; flatness and squareness 0.05mm; angles within +/- 1 degree; screw threads to fit as per standard; reamed and bored holes within interference: - 0.05mm (hole) + 0.05mm (shaft), transition: - 0.1mm (hole) + 0.1 (shaft), clearance: 50microns; radius: 0.5 r; ovality restriction PC23. produce components with various features as per standards applicable to the process Features of components produced: flat; square; parallel and angular faces; perpendicular plates; radii and curved profiles; drilled holes; internal and external threads; sliding or mating parts; counter bore, countersink or spot face; vessels; simple structures PC24. work to achieve production targets PC25. report conditions and seek appropriate assistance in a timely manner to address risk of failure to comply with necessary targets and specifications PC26. deal with finished components as per organizational guidelines PC27. complete documentation during and post operations as per organizational

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	procedures Documentation: job card, progress records, incident reports PC28. return all tools and equipment to the correct location on completion of the fitting activities PC29. leave the work area in a safe and tidy condition on completion of job activities
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions KA2. relevant health and safety requirements applicable in the work place KA3. importance of working in clean and safe environment KA4. own job role and responsibilities and sources for information pertaining to employment terms, entitlements, job role and responsibilities KA5. reporting structure, inter-dependent functions, lines and procedures in the work area KA6. relevant people and their responsibilities within the work area KA7. escalation matrix and procedures for reporting work and employment related issues KA8. documentation and related procedures applicable in the context of employment and work KA9. importance and purpose of documentation in context of employment and work
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. specific safe working practices, fabrication and fitting procedures and environmental regulations that must be observed KB2. hazards associated with carrying out the fabrication and fitting operations and how can they be minimized Fabrication and fitting operations: forming, rolling, shearing, sawing (hand, band), manual grinding (eg. Ag4 grinding, wolf grinding, hand air grinding), filing, drilling, chiseling, threading, hand tapping, scraping, manual lapping KB3. personal protective equipment to be used during the fabrication and fitting activities and where can it be obtained KB4. types and sources of appropriate job specifications KB5. common terminology used in fabrication and fitting KB6. how to read and interpret first and third angle component drawings KB7. how to extract information from engineering drawings or data and related specifications KB8. importance of following specified fabrication and fitting sequences and

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	procedures KB9. importance and procedures of ensuring suitability of workpieces/materials and consumables for the specified job KB10. suitability of workpieces/materials and consumables: e.g. correct type and code, correct form, correct dimensions, damage free, correctly issued, etc. KB11. tools and equipment used for the fabrication and fitting operations KB12. importance and procedures to ensure that tools and equipment are in a safe and usable condition KB13. correct techniques and procedures to carry out specific fabrication and fitting operations by hand tools and manually operated machines Hand tools: hacksaws; hammers; punches; screwdrivers; sockets; wrenches; spanners; scrapers; chisels; gouges; files; taps; vices and clamps Manually operated machine tools: drills (power drills, pedestal drills), grinders (hand held power grinders, pedestal grinders), saws (jigsaws, cutting saws), shears (hand shear, mechanized shears), nibblers, press V-shape, punching machines, bending machines, threading machines KB14. importance of securing the workpiece/raw material correctly using appropriate holding devices and mechanisms Positioning and holding devices: belts; braces; clamps; jigs and fixtures; bolt straps; blocks and tables; manual lifts; ropes; jacks KB15. common problems that can occur in the fabrication and fitting operations and their implications KB16. correct procedures to address problems commonly encountered during fitting and fabrication operations KB17. importance of reporting problems immediately and accurately KB18. meaning and importance of quality in relation to final and intermediate job output KB19. how to check the quality of the shaped components against the specified quality standards Components quality standards: components to be free from damage, false tool cuts, burrs, scratches and non-specified sharp edges; general dimensional tolerance +/- 0.10mm; flatness and squareness 0.05mm; angles within +/- 1 degree; screw threads to fit as per standard; reamed and bored holes within interference: - 0.05mm (hole) + 0.05mm (shaft), transition: - 0.1mm (hole) + 0.1 (shaft), clearance: 50microns; radius: 0.5 r; ovality restriction KB20. range of materials used in relevant fitting and fabrication applications Range of Materials: Ferrous metals: eg. carbon steels, stainless steels, cast iron, tool steel, hard metals; Non-ferrous metals: eg. bronze, bronze alloys,

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	copper and copper alloys KB21. the relevant mechanical properties of materials and implications for job Mechanical properties: tensile strength, toughness, hardness, elasticity, ductility, malleability KB22. importance of using correct procedures as per type and form of materials and metal components Forms of metal components: square/rectangular (eg. bar stock, sheet material, machined components), circular/cylindrical (eg. bar stock, tubes, turned components, flat discs), sections (eg. angles, channel, tee section, joists, extrusions), irregular shapes/profile (eg. castings, forgings, odd shaped components)
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/ individual on the job needs to know and understand how to: SA1. read and interpret information correctly from various job specification documents, health and safety instructions, memos, etc. applicable to the job in English and/or local language
	Writing Skills
	The user/individual on the job needs to know and understand how to: SA2. fill up appropriate technical forms, process charts, activity logs as per organizational format in English and/or local language SA3. undertake numerical operations, geometry and calculations/ formulae Numerical computations: addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages SA4. identify various basic, compound and solid shapes as per dimensions given Basic shapes: square, rectangle, triangle, circle Compound shapes: involving squares, rectangles, triangles, circles, semi-circles, quadrants of a circle Solid shapes: cube, rectangular prism, cylinder SA5. use appropriate measuring techniques and units of measurement SA6. use appropriate units and number systems to express degree of accuracy Units and number systems representing degree of accuracy: decimals places, significant figures, fractions as a decimal quantity SA7. use metric systems of measurement
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA8. convey and share technical information clearly using appropriate language

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	SA9. check and clarify task-related information SA10. liaise with appropriate authorities using correct protocol SA11. communicate with people in respectful form and manner in line with organizational protocol
B. Professional Skills	**Decision Making**
	NA
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB1. plan, prioritize and sequence work operations as per job requirements SB2. organize and analyze information relevant to work SB3. basic concepts of shop-floor work productivity including waste reduction, efficient material usage and optimization of time
	CustomerCentricity
	The user/individual on the job needs to know and understand how to: SB4. exercise restraint while expressing dissent and during conflict situations SB5. avoid and manage distractions to be disciplined at work SB6. manage own time for achieving better results SB7. work in a team in order to achieve better results SB8. identify and clarify work roles within a team SB9. communicate and cooperate with others in the team for better results SB10. seek assistance from fellow team members
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB11. identify problems with work planning, procedures, output and behavior and their implications SB12. prioritize and plan for problem solving SB13. communicate problems appropriately to others SB14. identify sources of information and support for problem solving SB15. seek assistance and support from other sources to solve problems SB16. identify effective resolution techniques SB17. select and apply resolution techniques SB18. seek evidence for problem resolution
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB19. undertake and express new ideas and initiatives to others SB20. modify work plan to overcome unforeseen difficulties or developments that occur as work progresses

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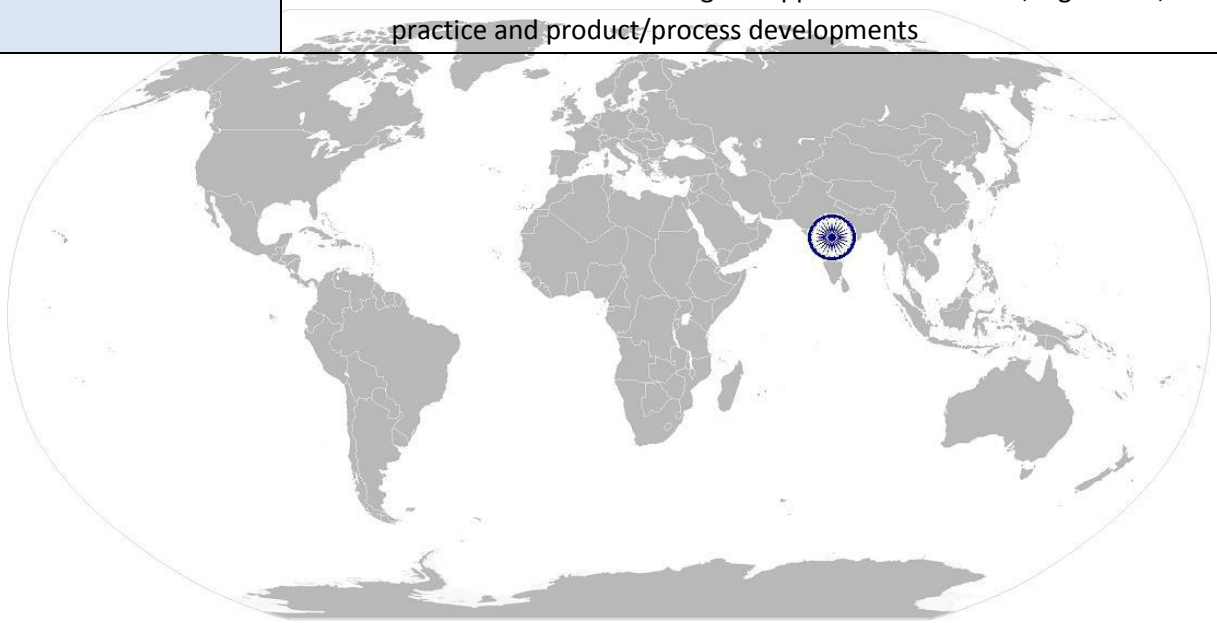
	SB21. participate in improvement procedures including process, quality and internal/external customer/supplier relationships SB22. enhance one's competencies in new and different situations and contexts to achieve more
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB23. participate in on-the-job and other learning, training and development interventions and assessments SB24. clarify task related information with appropriate personnel or technical adviser SB25. seek to improve and modify own work practices SB26. maintain current knowledge of application standards, legislation, codes of practice and product/process developments



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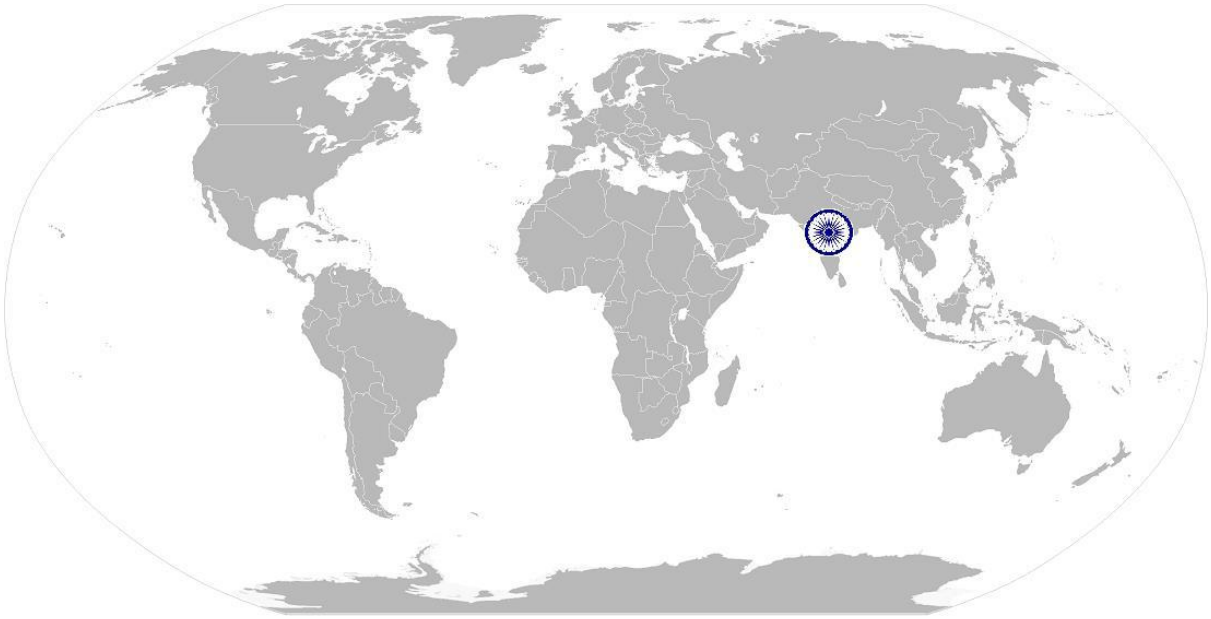
NOS Version Control

NOS Code	**CSC/N0303**		
Credits	**TBD**	**Version number**	**1.0**
Industry	**Capital Goods**	**Drafted on**	**10/04/2014**
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**	**24/11/2017**
Occupation	**Fitting and Assembly**	**Next review date**	**24/11/2021**

National Occupational Standard



Overview

This unit is about competencies required for manual cutting operations using oxy-fuel gas. The person would be able to carry out basic oxy-fuel gas cutting operations under constant supervision as per instructions received.

CSC/N0201 Perform simple manual cutting operations on carbon steels using oxy-fuel gas

National Occupational Standard

Unit Code	**CSC/N0201**
Unit Title (Task)	**Perform simple manual cutting operations on carbon steels using oxy-fuel gas**
Description	This unit is about competencies required for simple manual cutting operations on carbon steels using oxy-fuel gas such as oxy-acetylene. The person would be able to carry out simple oxy-fuel cutting operations on carbon steels as per specific instructions given.
Scope	This unit/task covers the following: • Work safely • Prepare for cutting operations • Carry out cutting operations • Test for accuracy • Deal with contingencies

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Work safely	To be competent, the user/individual on the job must be able to: PC1. work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines Safety precautions: general workshop safety, fire prevention, general hazards, manual lifting, overhead lifting, surface conditions, stability of surrounding structures, furniture, etc. PC2. take necessary safety precautions for gas cutting operations including equipment, processes and checks
Prepare for cutting operations	To be competent, the user/individual on the job must be able to: PC3. interpret cutting procedure data sheets specifications PC4. check regulators, hoses and check that valves are securely connected and free from leaks and damage PC5. check equipment is calibrated and approved for use PC6. check the correct size gas nozzle to the torch PC7. ensure preheat and oxygen holes on the tips are clean PC8. check that a flashback arrestor is fitted PC9. set appropriate gas pressures PC10. use the correct procedure for lighting, adjusting and extinguishing the flame Lighting and cutting procedures: lighting the cutting torch; adjusting gas controls to produce a neutral flame; methods of starting the cut and controlling the cutting speed; direction and angle of cut; procedure for extinguishing the flame

CSC/N0201 Perform simple manual cutting operations on carbon steels using oxy-fuel gas

	PC11. adjust torch valve for type of flame such as neutral, carburizing and oxidizing PC12. follow sequence of operations such as pre-heating material and initiating cut PC13. check if the locations for cutting have been marked out by authorised persons PC14. use appropriate and safe procedures for handling and storing of gas cylinders PC15. prepare the work area for the cutting activities PC16. obtain the appropriate tools and equipment for the oxy-fuel gas cutting operations, and check that they are in a safe and usable condition Equipment: hand-held oxy-fuel gas cutting equipment, simple, portable, track-driven cutting equipment (electrical or mechanical),fixed bench gas cutting equipment PC17. check that the oxy-fuel gas cutting equipment is set up for the operations to be performed PC18. adjust cylinder valves and adjust regulator for operating pressure to achieve specifications for required operations PC19. seek clarification where marking out is not done or is not clear from authorised person PC20. perform trial cut to check for cut defects
Carry out cutting Operations	To be competent, the user/individual on the job must be able to: PC21. operate the oxy-fuel gas cutting equipment to produce items/cut shapes to the dimensions and profiles as per instructions given PC22. use various oxy-fuel gas lighting and cutting procedures PC23. perform various cutting operations correctly Cutting operations: down-hand straight cuts (freehand), making straight cuts (track guided), cutting regular shapes, making angled cuts, bevelled edge – weld preparations PC24. produce thermal cuts in low carbon steel (1.5mm to 10mm thickness) PC25. produce cut profiles for various type of materials and forms Materials: carbon steels Forms: plate; sheet; pipe/tube; bars and rods PC26. produce thermally-cut components which meet specified quality criteria Quality criteria: dimensional accuracy is within the tolerances specified on the drawing/specification, or within +/- 2mm; angled/radial cuts are within specification requirements; cuts are clean and smooth and free from flutes; no drags PC27. recognize and correct burnback and flashback PC28. detect and correct defects in cut PC29. ensure the work area is left in a safe and tidy condition on completion of the cutting activities
Test for accuracy	To be competent, the user/individual on the job must be able to: PC30. check that the finished components meet the standard required

CSC/N0201 Perform simple manual cutting operations on carbon steels using oxy-fuel gas

	PC31. use appropriate methods and equipment to check the quality, and that all dimensional and geometrical aspects of the cut material are to the specification PC32. identify various cutting defects and follow organisation recommended procedures to address them Defects: distortion; grooved, fluted or ragged cuts; poor draglines; rounded edges; tightly adhering slag
Deal with contingencies	To be competent, the user/individual on the job must be able to: PC33. report any difficulties or problems that may arise with the cutting activities, and carry out any agreed actions PC34. detect equipment malfunctions and deal with them appropriately PC35. deal promptly and effectively with problems within their control, and seek help and guidance from the relevant people if they have problems that they cannot resolve PC36. shut down and make safe the cutting equipment on completion of the cutting activities PC37. follow standard emergency proceduresin case of emergencies Emergencies (safety procedures): sustained backfire in a blowpipe; close the oxygen valve of the blowpipe, followed by the fuel valve and then close both cylinder valves; investigate the cause and rectify the fault; re-light the blowpipe only after it is completely cooled down; flashback into the hose and equipment, or a hose fire or explosion, or a fire at the gas regulator connections; isolate the fuel gas and oxygen supplies by closing the cylinder valves only when this can be done safely: may attempt to control the fire by fire-fighting equipment only when there is no undue risk of personal injury; activate the fire alarm and call for the Fire Services Department as per organizational procedures; fires involving acetylene cylinders: always best dealt with by firemen from the Fire Services Department. However, the following initial response may be appropriate: cool the cylinder by spraying with water only if it is safe to do so; close the cylinder valve to control the fire only if it is safe to do so; evacuate the building by activating the fire alarm or by any other means; to avoid explosion never move an acetylene cylinder involved in a fire or which has been affected by heat from a nearby fire even if it seems cooled down
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company /	The user/individual on the job needs to know and understand: KA1. job relevant legislation, standards, policies, and procedures followed in the company KA2. key purpose of the organization KA3. department structure and hierarchy protocols

CSC/N0201 Perform simple manual cutting operations on carbon steels using oxy-fuel gas

organization and its processes)	KA4. work flow and own role in the workflow KA5. dependencies and interdependencies in the workflow KA6. support functions and types of support available for incumbents in this role
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. types of fire extinguishers and their suitable uses in case of gas cutting related fires KB2. specific safety precautions to be taken when working with oxy-fuel gas cutting equipment in a fabrication environment Safety precautions: safety from trailing hoses; safety from naked flames; appropriate fume and gases extraction/control measures; safety from explosive gas mixtures and oxygen enrichment; safety from spatter and hot metal (distance, PPE, proper handling and placement); protection from live and other electrical components, including insulation, proper earthing, proper loading, etc.; adequate lighting protection of self and others from the effects of the flame; safety measures for elevated and trench working; gas cylinder safety: right color coded; correctly labelled; no leakage; away from heat or ignition source; never use hose other than that designed for the specified gas; use ferrules or clamps designed for the hose (not ordinary wire or other substitute) to connect hoses to fittings; upright position (fuel gas); physical care to avoid damage and falls, throws and bumps; move on trolleys, cap closed and without regulators; valves closed on empty cylinders KB3. personal protective clothing and equipment (PPE) to be worn when working with gas cutting equipment Personal protective equipment: suitable aprons; gloves; safety boots; correctly fitting overalls; suitable eye shields/goggles; respirators KB4. hazards associated with carrying out gas cutting activities and how they can be minimized KB5. safe working practices and procedures for using thermal equipment KB6. principles of oxy-fuel gas cutting KB7. procedure for obtaining the required drawings, job instructions and other related specifications KB8. how to use and extract information from engineering drawings and related specifications, workpiece reference points and system of tolerances KB9. various types of gas cutting equipment available Equipment: hand-held oxy-fuel gas cutting equipment, simple, portable, track-driven cutting equipment (electrical or mechanical), fixed bench gas cutting equipment KB10. various components of the gas cutting equipment Components: color coded cylinder oxygen, color coded cylinder acetylene, cylinder valve, flashback arrestor, set of nozzles, gas lighter nozzle, cutting

CSC/N0201 Perform simple manual cutting operations on carbon steels using oxy-fuel gas

	tips, pressure regulator, pressure gauge, non-return valves, color coded flexible hose, trolleys, torches (rose-bud heating, cutting, others) KB11. construction of the heating and cutting torch KB12. types of oxy-fuel gases such as acetylene, natural gas and propane KB13. accessories that can be used with handheld gas cutting equipment to aid cutting operations (such as cutting guides, trammels, templates) Cutting operations: down-hand straight cuts (freehand), making straight cuts (track guided), cutting regular shapes, making angled cuts, beveled edge – weld preparations KB14. importance of correct marking procedure before a cut (eg. allowances for post-cut operations, punch marks, etc.) KB15. types of regulators such as low- and high-pressure, and single- and two-stage KB16. how to identify the gases used in the cutting process, and the color coding of gas cylinders KB17. type and thickness of base metals related to nozzle type KB18. preparations prior to cutting (including checking connections for leaks, setting gas pressures, setting up the material/workpiece, and checking the cleanliness of materials used) KB19. holding methods that are used to aid thermal cutting, and the equipment that can be used KB20. correct procedure for lighting, cutting and extinguishing the flame KB21. types of flames and their implication for cutting KB22. importance of following the correct procedure for lighting, cutting and extinguishing a flame Lighting and cutting procedures: lighting the cutting torch; adjusting gas controls to produce a neutral flame; methods of starting the cut and controlling the cutting speed; direction and angle of cut; procedure for extinguishing the flame KB23. problems that can occur with thermal cutting, and how they can be avoided (including causes of distortion during thermal cutting and methods of controlling distortion) KB24. effects of oil, grease, scale or dirt on the cutting process KB25. gas mixture ratio required to get various flames KB26. quality parameters for gas cut materials Quality parameters: shape and length of the dragline, smoothness of the sides, sharpness of the top edges, amount of slag adhering to the metal KB27. special grade materials used in industry and their behavior with oxy fuel gas KB28. causes of cutting defects, how to recognize them, and methods of correction and prevention KB29. importance of leaving the work area in a safe and clean condition on

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	completion of activities KB30. correct handling and storage of gas cylinders KB31. emergency procedures for backfires, flashback and other fires Emergencies (safety procedures): sustained backfire in a blowpipe; close the oxygen valve of the blowpipe, followed by the fuel valve and then close both cylinder valves; investigate the cause and rectify the fault; re-light the blowpipe only after it is completely cooled down; flashback into the hose and equipment, or a hose fire or explosion, or a fire at the gas regulator connections; isolate the fuel gas and oxygen supplies by closing the cylinder valves only when this can be done safely: may attempt to control the fire by fire-fighting equipment only when there is no undue risk of personal injury; activate the fire alarm and call for the Fire Services Department as per organizational procedures; fires involving acetylene cylinders: always best dealt with by firemen from the Fire Services Department. However, the following initial response may be appropriate: cool the cylinder by spraying with water only if it is safe to do so; close the cylinder valve to control the fire only if it is safe to do so; evacuate the building by activating the fire alarm or by any other means; to avoid explosion never move an acetylene cylinder involved in a fire or which has been affected by heat from a nearby fire even if it seems cooled down KB32. how to close down the cutting equipment safely and correctly KB33. purging tools and their function
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/ individual on the job needs to know and understand how to: SA1. read and interpret information correctly from various job specification documents, health and safety instructions, memos, etc. applicable to the job in English and/or local language
	Writing Skills
	The user/individual on the job needs to know and understand how to: SA2. fill up appropriate technical forms, process charts, activity logs as per organizational format in English and/or local language SA3. undertake numerical operations, geometry and calculations/ formulae Numerical computations: addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages SA4. identify various basic, compound and solid shapes as per dimensions given Basic shapes: square, rectangle, triangle, circle Compound shapes: involving squares, rectangles, triangles, circles, semi-

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	circles, quadrants of a circle Solid shapes: cube, rectangular prism, cylinder SA5. use appropriate measuring techniques and units of measurement SA6. use appropriate units and number systems to express degree of accuracy Units and number systems representing degree of accuracy: decimals places, significant figures, fractions as a decimal quantity SA7. use metric systems of measurement
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA8. convey and share technical information clearly using appropriate language SA9. check and clarify task-related information SA10. liaise with appropriate authorities using correct protocol SA11. communicate with people in respectful form and manner in line with organizational protocol
B. Professional Skills	**Decision Making**
	NA
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB1. plan, prioritize and sequence work operations as per job requirements SB2. organize and analyze information relevant to work SB3. basic concepts of shop-floor work productivity including waste reduction, efficient material usage and optimization of time
	CustomerCentricity
	The user/individual on the job needs to know and understand how to: SB4. exercise restraint while expressing dissent and during conflict situations SB5. avoid and manage distractions to be disciplined at work SB6. manage own time for achieving better results SB7. work in a team in order to achieve better results SB8. identify and clarify work roles within a team SB9. communicate and cooperate with others in the team for better results SB10. seek assistance from fellow team members
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB11. identify problems with work planning, procedures, output and behavior and their implications SB12. prioritize and plan for problem solving SB13. communicate problems appropriately to others SB14. identify sources of information and support for problem solving

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	SB15. seek assistance and support from other sources to solve problems SB16. identify effective resolution techniques SB17. select and apply resolution techniques SB18. seek evidence for problem resolution
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB19. undertake and express new ideas and initiatives to others SB20. modify work plan to overcome unforeseen difficulties or developments that occur as work progresses SB21. participate in improvement procedures including process, quality and internal/external customer/supplier relationships SB22. enhance one's competencies in new and different situations and contexts to achieve more
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB23. participate in on-the-job and other learning, training and development interventions and assessments SB24. clarify task related information with appropriate personnel or technical adviser SB25. seek to improve and modify own work practices SB26. maintain current knowledge of application standards, legislation, codes of practice and product/process developments

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NOS Version Control

NOS Code	CSC/N0201		
Credits	TBD	Version number	1.0
Industry	Capital Goods	Drafted on	10/04/2014
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	24/11/2017
Occupation	Fitting and Assembly	Next review date	24/11/2021

CSC/N0202 Manually weld carbon steels in simple welding positions using Metal Arc Welding/ Shielded Metal Arc Welding

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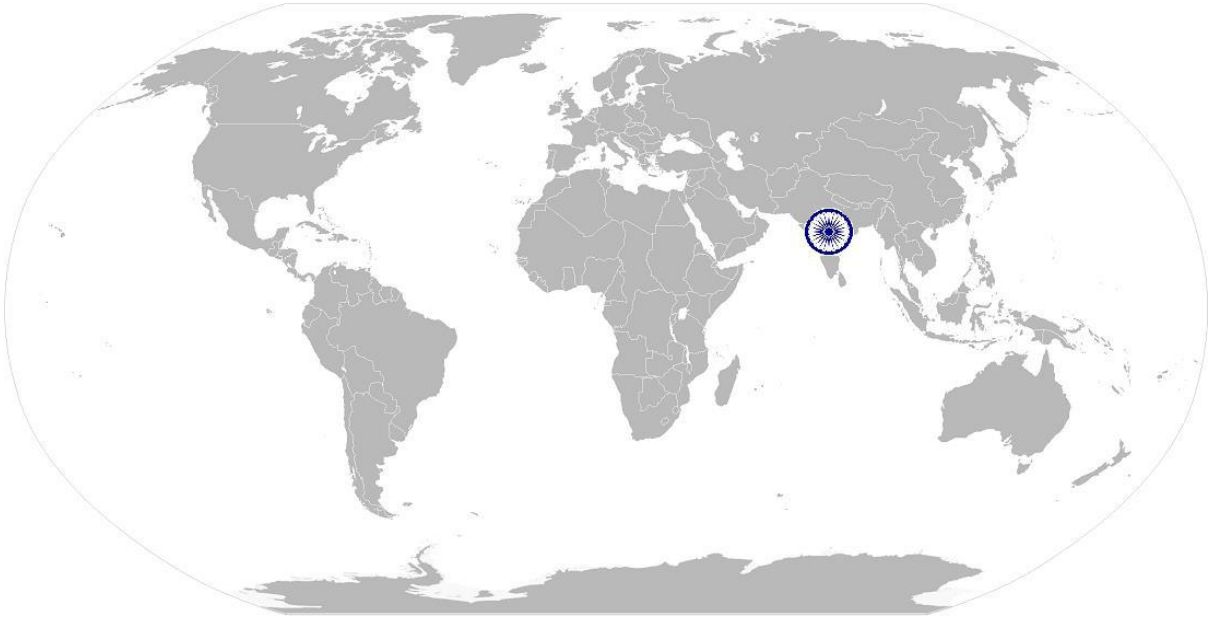
National Occupational Standard



Overview

This unit covers the performing of manual metal arc welding (MMAW) also known as shielded metal arc welding (SMAW) for producing fillet and groove welds on low carbon and low alloy steels in simple welding positions as per specific instructions given.

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CSC/N0202 Manually weld carbon steels in simple welding positions using Metal Arc Welding/ Shielded Metal Arc Welding

Unit Code	**CSC/N0202**
Unit Title (Task)	**Manually weld carbon steels in simple welding positions using Metal Arc Welding/ Shielded Metal Arc Welding**
Description	This OS unit is about performing manual metal arc welding (MMAW) welding also known as Shielded Metal Arc Welding (SMAW) for producing various types of joints on low carbon and low alloy steels in 1G/1F and 2G/2F welding positions as per specific instructions given and under close supervision.
Scope	This unit/task covers the following: • Work Safely • Prepare for welding operations • Carry out welding operations • Test for quality

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Work safely	To be competent, the user/individual on the job must be able to: PC1. work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines PC2. adhere to procedures or systems in place for health and safety, personal protective equipment (PPE) and other relevant safety regulations Safety precautions: general workshop safety; fire prevention; general hazards; manual lifting; overhead lifting; shopfloor housekeeping including surface conditions; waste disposal; stability of surrounding structures, furniture etc. PC3. check the condition of, welding leads, earthing arrangements and electrode holder PC4. report any faults or potential hazards to appropriate authority PC5. follow fume extraction safety procedures
Prepare for welding operations	To be competent, the user/individual on the job must be able to: PC6. read and interpret routine information on written job instructions and drawings PC7. identify welding machines eg. transformers, rectifiers, inverters and generators, according to the task PC8. prepare the work area for the welding activities PC9. prepare the raw materials and joint in readiness for welding PC10. perform measurements for joint preparation and routine MMAW Raw materials: low carbon steels, low alloy steels Form: plate(>1.5 mm, <24 mm), sheet (1.5mm)

CSC/N0202 Manually weld carbon steels in simple welding positions using Metal Arc Welding/ Shielded Metal Arc Welding

	PC11. prepare workpiece prior to welding Preparation: made rust free; cleaned – free from scaling, paint, oil/grease; made dry and free from moisture; edges to be welded prepared as per job requirement - such as flat, square or bevelled; use various machines and techniques for the above (eg. chamfering machine, grinding and stripping, gas or plasma cutting, etc.); correctly positioned; positioning: devices and techniques; jigs and fixtures; setting up the joint in the correct position and alignment PC12. tack weld the joint at appropriate intervals, and check the joint for accuracy before final welding PC13. receive the set up equipment and connect to power source PC14. use manual metal-arc welding and related equipment to include a. alternating current (AC) equipment b. direct current (DC) equipment MMAW equipment: transformers; rectifiers; generators; invertors; consumables – electrodes, dyes; welding accessories - holders, cables and accessories; ancillary equipment - (power saw, angle, pedestal and straight grinders, tong tester, etc.) PC15. verify set up by running test weld specimen (scrap plate) PC16. report any faults or problem to appropriate authority
Carry out welding operations	To be competent, the user/individual on the job must be able to: PC17. strike and maintain a stable arc PC18. stop and properly re-start arc to avoid welding defects (scratch start, tapping techniques) PC19. maintain constant puddle by using appropriate travel speed PC20. maintain proper bead sequence with respect to groove/fillet configurations and positions PC21. remove slag in an appropriate manner (eg. wire brush, hammer, etc.) PC22. produce fillet and groove joints in simple welding positions as per specific instructions given using single or multi-run welds(as instructed) Positions: flat (PA) IG/1F, horizontal vertical (PB) 2F, horizontal (PC) 2G PC23. produce joints on low carbon and low alloy steel materials using various methods Methods: drag, weave, whip PC24. weld the joint to the specified quality standards, dimensions and profile for sheets and plates from 1.5 mm – 24 mm Standards: required parameters for dimensional accuracy; weld finishes are built up to the full section of the weld; joins at stop/start positions merge smoothly; weld surface is: free from cracks; substantially free from porosity; free from any pronounced hump or crater; substantially free from shrinkage

CSC/N0202 Manually weld carbon steels in simple welding positions using Metal Arc Welding/ Shielded Metal Arc Welding

	cavities; substantially free from trapped slag; substantially free from arcing or chipping marks; fillet welds are: equal in leg length, slightly convex in profile (where applicable, size of the fillet equivalent to the thickness of the material welded: weld contour is: of linear and of uniform profile; smooth and free from excessive undulations; regular and has an even ripple formation; welds are adequately fused, and there is minimal undercut, overlap and surface inclusions; tack welds are blended in to form part of the finished weld, without excessive hump; corner joints have minimal burn through to the underside of the joint or, where appropriate PC25. ensure full penetration groove welds are back clipped prior to back welding PC26. deal promptly and effectively with problems within their control, and seek help and guidance from the relevant people if they have problems that they cannot resolve PC27. ensure welding is done according to welding parameter specified in WPS PC28. shut down and make safe the welding equipment on completion of the welding activities
Test for quality	To be competent, the user/individual on the job must be able to: PC29. measure and check that all dimensional and geometrical aspects of the weld are as per instructions PC30. identify various weld defects using visual inspection Weld defects: lack of continuity of the weld; uneven and irregular ripple formation; excessive spatter; incorrect weld size or profile; burn through; undercutting; overlap; inclusions; distortion; porosity; internal cracks; surface cracks; lack of fusion or incomplete fusion; lack of penetration; excessive penetration; gouges; stray arc strikes; sharp edges; excessive convexity Visual inspections: e.g. use of visual techniques, distance from workpiece, angle of observation, adequate lighting, low powered magnification, fillet Weld gauges, etc. PC31. detect and report surface imperfections to appropriate authority PC32. deal with defects in welding as per instructions given
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. relevant legislation, standards, policies, and procedures followed in the company KA2. department structure and hierarchy protocols KA3. work flow and own role in the workflow KA4. dependencies and interdependencies in the workflow KA5. support functions and types of support available for incumbents in this role

CSC/N0202 Manually weld carbon steels in simple welding positions using Metal Arc Welding/ Shielded Metal Arc Welding

B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. health and safety hazards associated with MMAW/SMAW welding Safety precautions: protection from live and other electrical components, including insulation, proper earthing, etc.; proper handling and placement of hot metal; taking account of spatter and related safe distance; adequate lighting; appropriate personal protective equipment (suitable aprons, welding gloves, respirators, safety boots, correctly fitting overalls, suitable eye shields/goggles, hard hat/helmet); protection of self and others from the effects of the welding arc; fume extraction/control measures; safety measures for elevated and trench workings (eg. harness, etc.) KB2. effects of exposure to the electric arc KB3. types of fire extinguishers and their suitable uses KB4. effects of exposure to welding fume KB5. methods of managing welding fume hazards KB6. personal protective equipment (PPE) and clothing to be worn during MMAW/SMAW welding KB7. various welding methods and specific equipment requirements for MMAW/SMAW welding MMAW equipment: transformers; rectifiers; generators; invertors; consumables – electrodes, dyes; welding accessories - holders, cables and accessories; ancillary equipment - (power saw, angle, pedestal and straight grinders, tong tester, etc.) Methods: drag, weave, whip KB8. main components and controls of welding equipment KB9. type of current used and implication KB10. types of consumables used for MMAW/SMAW welding KB11. various defects associated with the MMAW/SMAW welding process Weld defects: lack of continuity of the weld; uneven and irregular ripple formation; excessive spatter; incorrect weld size or profile; burn through; undercutting; overlap; inclusions; distortion; porosity; internal cracks; surface cracks; lack of fusion or incomplete fusion; lack of penetration; excessive penetration; gouges; stray arc strikes; sharp edges; excessive convexity KB12. magnetic arc blow or arc deflection, causes and methods to avoid or compensate KB13. types of joint configurations Joints: groove and fillet KB14. factors that determine weld bead shape Factors: electrode angles and welding technique (push, perpendicular, drag); arc length; thickness of base metal; travel speed (slow, normal, fast)

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	KB15. types of beads, their characteristics and uses (stringer, weave, weave patterns) Bead characteristics: spatter deposits, roughness, evenness, fill, crater, overlap KB16. factors that affect weld quality KB17. weld positions such as flat, horizontal, vertical and overhead Positions: flat (PA) IG/1F, horizontal vertical (PB) 2F, horizontal (PC) 2G KB18. types of equipment components such as electrode holders, work leads cables and ground clamps KB19. storage requirements for consumable electrodes KB20. welding process specification sheet, process qualification record (PQR) and related essential variables KB21. travel speed and heat inputs KB22. importance and implications of various diameters of electrodes KB23. purpose and importance of pre-heating requirements for base metals KB24. purpose and importance of post-heating in welding KB25. types of visual inspection indicators and methods Visual inspections: e.g. use of visual techniques, distance from workpiece, angle of observation, adequate lighting, low powered magnification, fillet weld gauges, etc.
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/ individual on the job needs to know and understand how to: SA1. read and interpret information correctly from various job specification documents, health and safety instructions, memos, etc. applicable to the job in English and/or local language
	Writing Skills
	The user/individual on the job needs to know and understand how to: SA2. fill up appropriate technical forms, process charts, activity logs as per organizational format in English and/or local language SA3. undertake numerical operations, geometry and calculations/ formulae Numerical computations: addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages SA4. identify various basic, compound and solid shapes as per dimensions given Basic shapes: square, rectangle, triangle, circle Compound shapes: involving squares, rectangles, triangles, circles, semi-circles, quadrants of a circle

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	Solid shapes: cube, rectangular prism, cylinder SA5. use appropriate measuring techniques and units of measurement SA6. use appropriate units and number systems to express degree of accuracy Units and number systems representing degree of accuracy: decimals places, significant figures, fractions as a decimal quantity SA7. use metric systems of measurement
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA8. convey and share technical information clearly using appropriate language SA9. check and clarify task-related information SA10. liaise with appropriate authorities using correct protocol SA11. communicate with people in respectful form and manner in line with organizational protocol
B. Professional Skills	**Decision Making**
	NA
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB1. plan, prioritize and sequence work operations as per job requirements SB2. organize and analyze information relevant to work SB3. basic concepts of shop-floor work productivity including waste reduction, efficient material usage and optimization of time
	CustomerCentricity
	The user/individual on the job needs to know and understand how to: SB4. exercise restraint while expressing dissent and during conflict situations SB5. avoid and manage distractions to be disciplined at work SB6. manage own time for achieving better results SB7. work in a team in order to achieve better results SB8. identify and clarify work roles within a team SB9. communicate and cooperate with others in the team for better results SB10. seek assistance from fellow team members
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB11. identify problems with work planning, procedures, output and behavior and their implications SB12. prioritize and plan for problem solving SB13. communicate problems appropriately to others SB14. identify sources of information and support for problem solving

CSC/N0202 Manually weld carbon steels in simple welding positions using Metal Arc Welding/ Shielded Metal Arc Welding

	SB15. seek assistance and support from other sources to solve problems SB16. identify effective resolution techniques SB17. select and apply resolution techniques SB18. seek evidence for problem resolution
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB19. undertake and express new ideas and initiatives to others SB20. modify work plan to overcome unforeseen difficulties or developments that occur as work progresses SB21. participate in improvement procedures including process, quality and internal/external customer/supplier relationships SB22. enhance one's competencies in new and different situations and contexts to achieve more
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB23. participate in on-the-job and other learning, training and development interventions and assessments SB24. clarify task related information with appropriate personnel or technical adviser SB25. seek to improve and modify own work practices SB26. maintain current knowledge of application standards, legislation, codes of practice and product/process developments

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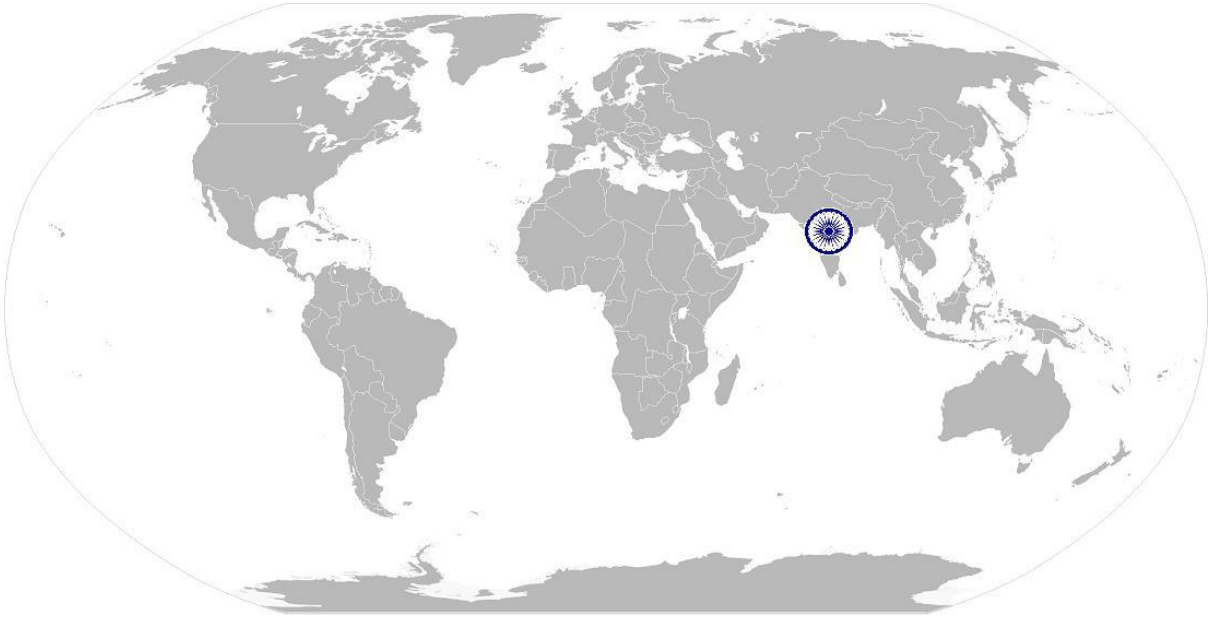
NOS Version Control

NOS Code	**CSC/N0202**		
Credits	**TBD**	**Version number**	**1.0**
Industry	**Capital Goods**	**Drafted on**	**10/04/2014**
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**	**24/11/2017**
Occupation	**Fitting and Assembly**	**Next review date**	**24/11/2021**

CSC/N1335 Use basic health and safety practices at the workplace

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/N1335 Use basic health and safety practices at the workplace

National Occupational Standard

Unit Code	CSC/N1335
Unit Title (Task)	Use basic health and safety practices at the workplace
Description	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.
Scope	This unit/task covers the following: • Health and safety • Fire safety • Emergencies, rescue and first-aid procedure

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Health and safety	To be competent, the user/individual on the job must be able to: PC1. use protective clothing/equipment for specific tasks and work conditions Protective clothing: 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 Equipment: hand shields, machine guards, residual current devices, shields, dust sheets, respirator PC2. state the name and location of people responsible for health and safety in the workplace PC3. state the names and location of documents that refer to health and safety in the workplace PC4. identify job-site hazardous work and state possible causes of risk or accident in the workplace Hazards: 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.) Possible causes of risk and accident: physical actions; reading; listening to and giving instructions; inattention; sickness and incapacity (such as

CSC/N1335 Use basic health and safety practices at the workplace

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

CSC/N1335 Use basic health and safety practices at the workplace

	Documents: fire notices, accident reports, safety instructions for equipment and procedures, company notices and documents, legal documents (eg government notices)
Fire safety	To be competent, the user/individual on the job must be able to: PC14. use the various appropriate fire extinguishers on different types of fires correctly Types of fires: 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) PC15. demonstrate rescue techniques applied during fire hazard PC16. demonstrate good housekeeping in order to prevent fire hazards PC17. demonstrate the correct use of a fire extinguisher
Emergencies, rescue and first-aid procedures	To be competent, the user/individual on the job must be able to: PC18. demonstrate how to free a person from electrocution PC19. administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc. PC20. demonstrate basic techniques of bandaging PC21. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments PC22. perform and organize loss minimization or rescue activity during an accident in real or simulated environments 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 PC24. demonstrate the artificial respiration and the CPR Process PC25. participate in emergency procedures Emergency procedures: raising alarm, safe/efficient, evacuation, correct means of escape, correct assembly point, roll call, correct return to work PC26. complete a written accident/incident report or dictate a report to another person, and send report to person responsible Incident Report includes details of: 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 PC27. demonstrate correct method to move injured people and others during an

CSC/N1335 Use basic health and safety practices at the workplace

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

CSC/N1335 Use basic health and safety practices at the workplace

	KB14. techniques of using the different fire extinguishers KB15. different methods of extinguishing fire KB16. different materials used for extinguishing fire Materials: sand, water, foam, CO_2, dry powder KB17. rescue techniques applied during a fire hazard KB18. various types of safety signs and what they mean KB19. appropriate basic first aid treatment relevant to the condition eg. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries KB20. content of written accident report KB21. potential injuries and ill health associated with incorrect manual handing KB22. safe lifting and carrying practices KB23. personal safety, health and dignity issues relating to the movement of a person by others KB24. potential impact to a person who is moved incorrectly
Skills (S)	
A. Core Skills/ Generic Skills	**Reading Skills**
	The user/ individual on the job needs to know and understand how to: SA1. read and comprehend basic content to read labels, charts, signages SA2. read and comprehend basic English to read manuals of operations SA3. read an accident/incident report in local language or English
	Writing Skills
	The user/individual on the job needs to know and understand how to: SA4. 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: SA5. question coworkers appropriately in order to clarify instructions and other issues SA6. give clear instructions to coworkers, subordinates others
B. Professional Skills	**Decision Making**
	The user/individual on the job needs to know and understand how to: SB1. 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
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB2. plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity

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	CustomerCentricity
	The user/individual on the job needs to know and understand how to: SB3. remain congenial while discussing and debating issues with co-workers SB4. follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice SB5. ask for, provide and receive required assistance where possible to ensure achievement of work related objectives SB6. thank coworkers for any assistance received SB7. 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: SB8. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB9. identify immediate or temporary solutions to resolve delays SB10. identify sources of support that can be availed of for problem solving for various kind of problems SB11. seek appropriate assistance from other sources to resolve problems SB12. report problems that you cannot resolve to appropriate authority
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB13. identify cause and effect relations in their area of work SB14. use cause and effect relations to anticipate potential problems and their solution
	Critical Thinking
	NA

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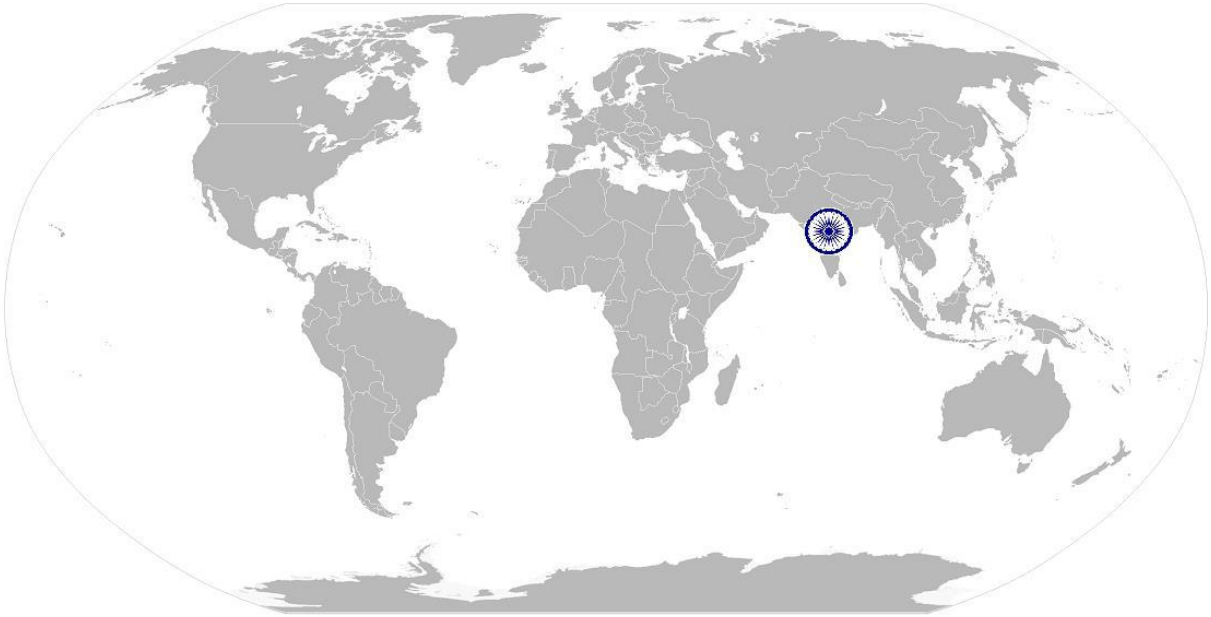
NOS Version Control

NOS Code	CSC/N1335		
Credits	TBD	Version number	1.0
Industry	Capital Goods	Drafted on	10/04/2014
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	24/11/2017
Occupation	Fitting and Assembly	Next review date	24/11/2021

CSC/N1336 **Work effectively with others**

National Occupational Standard



Overview

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

CSC/N1336 **Work effectively with others**

National Occupational Standard

Unit Code	**CSC/N1336**
Unit Title (Task)	**Work effectively with others**
Description	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. These cover areas such as communication etiquette, discipline, listening etc.
Scope	This unit/task covers the following: • Work effectively with others

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Work effectively with others	To be competent, the user/individual on the job must be able to: PC1. accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required PC2. accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt PC3. give information to others clearly, at a pace and in a manner that helps them to understand PC4. display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible PC5. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks PC6. display appropriate communication etiquette while working Communication etiquette: do not use abusive language; use appropriate titles and terms of respect; do not eat or chew while talking (vice versa)etc. PC7. display active listening skills while interacting with others at work PC8. use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism PC9. demonstrate responsible and disciplined behaviors at the workplace Disciplined behaviors: e.g. punctuality; completing tasks as per given time and standards; not gossiping and idling time; eliminating waste, honesty, etc. PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict

Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company /	The user/individual on the job needs to know and understand: KA1. legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions KA2. reporting structure, inter-dependent functions, lines and procedures in the

CSC/N1336 **Work effectively with others**

organization and its processes)	work area KA3. relevant people and their responsibilities within the work area KA4. escalation matrix and procedures for reporting work and employment related issues
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)	
A. Core Skills/ Generic Skills	**ReadingSkills**
	The user/ individual on the job needs to know and understand how to: SA1. read basic terms and terminologies to accurately interpret work related documents, labels, supervisor instructions in the local language SA2. read and interpret accurate information from various relevant work instructions and records
	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA3. write clear and legible notes to self, colleagues and seniors to pass messages, keep records, prepare to-do lists, take down instructions SA4. write basic numbers, quantities and work related terminology for operational requirements in the local language

CSC/N1336 **Work effectively with others**

	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA5. interact with the supervisor appropriately (correct protocol and manner of speaking) in order to understand the basic requirements of the product, production plans and other associated requirements SA6. give clear instructions to co-workers about the type of output required and answer queries SA7. display active listening skills while interacting with co-workers and other in the workplace
B. Professional Skills	**Decision Making**
	NA
	Plan and organize
	The user/individual on the job needs to know and understand how to: SB1. use appropriate planning to maintain a smooth relationship with fellow team members SB2. take steps within one's limits of authority to initiate modification in plan if the circumstances require it
	Customer centricity
	The user/individual on the job needs to know and understand how to: SB3. check that work meets customer requirements SB4. deliver consistent and reliable service to internal and external customers
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB5. work with co-workers and supervisor to resolve any issues that threaten disruption, increase risk, cause delays or under-achievement of quality and targets as per the planned schedule
	Analytical Thinking
	NA
	Critical Thinking
	NA

CSC/N1336 **Work effectively with others**

NOS Version Control

NOS Code	CSC/N1336		
Credits	TBD	Version number	1.0
Industry	Capital Goods	Drafted on	10/04/2014
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	24/11/2017
Occupation	Fitting and Assembly	Next review date	24/11/2021

Annexure

Nomenclature for QP and NOS

Qualifications Pack

9 characters

[ABC]/ Q 0101

[Insert 3 letter codes for SSC]

Q denoting Qualifications Pack

QP number (2 numbers)

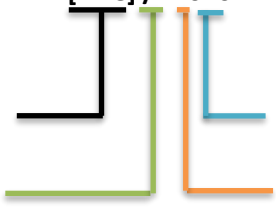
Occupation (2 numbers)

Occupational Standard

An example of NOS with 'N'

9 characters

[ABC] / N 0101



[Insert 3 letter codes for SSC]

N denoting National Occupational Standard

OS number (2 numbers)

Occupation (2 numbers)

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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
Plastic Manufacturing Machinery	01-13
Textile Manufacturing Machinery	01-13
Process Plant 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 **Q**P or **N**OS	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

Criteria For Assessment Of Trainees

Job Role: Fitter - Fabrication

Qualification Pack: CSC/Q0303

Sector Skill Council: Capital Goods 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. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
6. To pass the Qualification Pack , every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
7. In case of *unsuccessful completion*, the trainee may seek reassessment on the Qualification Pack.

Compulsory NOS **Total Marks: 500**				**Marks Allocation**	
Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out of**	**Theory**	**Skills Practical**
CSC/N0303 Perform fitting operations on metal components using hand tools and manually operated machines	PC1.comply with health and safety, environmental and other relevant regulations and guidelines at work	100	4	1	3
	PC2.adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing fabrication and fitting operations		4	1	3
	PC3.work following laid down procedures and instructions		2	0	2
	PC4.ensure work area is clean and safe from hazards		2	0	2
	PC5.ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition		3	0	3
	PC6.obtain job specification from a valid and approved source		2	0	2

	PC7.read and establish job requirements from the job specification document accurately		3	1	2
	PC8.report and rectify incorrect and inconsistent information in job specification documents as per organization procedures		5	2	3
	PC9.prepare the work area for the fabrication and fitting operations as per procedure or operational specification		4	1	3
	PC10.ensure that all measuring equipment is calibrated and approved for usage		3	0	3
	PC11.ensure that the components used are free from foreign objects, dirt or other contamination		2	0	2
	PC12.obtain correct workpieces/raw materials and consumables as per job requirements		3	1	2
	PC13.obtain appropriate tools and equipment as per job requirements		3	1	2
	PC14.set work pieces as per job requirements using appropriate positioning and/or holding devices and support mechanisms		4	0	4
	PC15.mark out specified features on the workpieces as per job specification using appropriate measuring and marking out tools and equipment		5	2	3
	PC16.mark out templates for tracing/transferring the specified features on the workpieces as per job specification		5	2	3
	PC17.trace/transfer the specified features from the templates onto the workpieces as per job specification		4	1	3
	PC18.identify range of materials by colour, appearance, sparks		3	1	2
	PC19.perform fabrication and fitting operations on various forms of metal components using a range of fabrication hand tools and manually operated machines		5	1	4
	PC20.follow the specified fabrication and fitting sequence and procedure as per job specifications		5	2	3
	PC21.check the fabricated and fitted products to ensure completeness of work		4	1	3
	PC22.check the quality of the components as per required standards using visual and dimensional parameters		5	2	3

	PC23.produce components with various features as per standards applicable to the process		5	2	3
	PC24.work to achieve production targets		2	0	2
	PC25.report conditions and seek appropriate assistance in a timely manner to address risk of failure to comply with necessary targets and specifications		3	1	2
	PC26.deal with finished components as per organizational guidelines		3	1	2
	PC27.complete documentation during and post operations as per organizational procedures		3	1	2
	PC28.return all tools and equipment to the correct location on completion of the fitting activities		2	0	2
	PC29.leave the work area in a safe and tidy condition on completion of job activities		2	0	2
		Total	**100**	**25**	**75**
CSC/N0201 Perform simple manual cutting operations on carbon steels using oxy-fuel gas	PC1.work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines	100	3	1	2
	PC2.take necessary safety precautions for gas cutting operations including equipment, processes and checks		3	1	2
	PC3.interpret cutting procedure data sheets specifications		3	1	2
	PC4.check regulators, hoses and check that valves are securely connected and free from leaks and damage		3	1	2
	PC5.check equipment is calibrated and approved for use		2	0	2
	PC6.check the correct size gas nozzle to the torch		3	1	2
	PC7.ensure preheat and oxygen holes on the tips are clean		2	0	2
	PC8.check that a flashback arrestor is fitted		2	0	2
	PC9.set appropriate gas pressures		3	1	2
	PC10.use the correct procedure for lighting, adjusting and extinguishing the flame		2	0	2
	PC11.adjust torch valve for type of flame such as neutral, carburizing and oxidizing		2	0	2
	PC12.follow sequence of operations such as pre-heating material and initiating cut		3	1	2
	PC13.check if the locations for cutting have been marked out by authorised persons		2	0	2
	PC14.use appropriate and safe procedures for handling and storing of gas cylinders		3	1	2
	PC15.prepare the work area for the cutting activities		2	0	2

	PC16.obtain the appropriate tools and equipment for the oxy-fuel gas cutting operations, and check that they are in a safe and usable condition		2	0	2
	PC17.check that the oxy-fuel gas cutting equipment is set up for the operations to be performed		2	0	2
	PC18.adjust cylinder valves and adjust regulator for operating pressure to achieve specifications for required operations		3	1	2
	PC19.seek clarification where marking out is not done or is not clear from authorised person		2	0	2
	PC20.perform trial cut to check for cut defects		2	0	2
	PC21.operate the oxy-fuel gas cutting equipment to produce items/cut shapes to the dimensions and profiles as per instructions given		5	1	4
	PC22.use various oxy-fuel gas lighting and cutting procedures		4	1	3
	PC23.perform various cutting operations correctly		4	1	3
	PC24.produce thermal cuts in low carbon steel (1.5mm to 10mm thickness)		3	1	2
	PC25.produce cut profiles for various type of materials and forms		4	1	3
	PC26.produce thermally-cut components which meet specified quality criteria		3	0	3
	PC27.recognize and correct burnback and flashback		3	1	2
	PC28.detect and correct defects in cut		3	1	2
	PC29.ensure the work area is left in a safe and tidy condition on completion of the cutting activities		2	0	2
	PC30.check that the finished components meet the standard required		3	1	2
	PC31.use appropriate methods and equipment to check the quality, and that all dimensional and geometrical aspects of the cut material are to the specification		3	1	2
	PC32.identify various cutting defects and follow organisation recommended procedures to address them		3	1	2
	PC33.report any difficulties or problems that may arise with the cutting activities, and carry out any agreed actions		2	0	2
	PC34.detect equipment malfunctions and deal with them appropriately		3	1	2

	PC35.deal promptly and effectively with problems within their control, and seek help and guidance from the relevant people if they have problems that theycannot resolve		2	0	2
	PC36.shut down and make safe the cutting equipment on completion of thecutting activities		2	0	2
	PC37.follow standard emergency proceduresin case of emergencies		2	0	2
		Total	**100**	**20**	**80**
CSC/N0202 Manually weld carbon steels in simple welding positions using Metal Arc Welding / Shielded Metal Arc Welding	PC1.work safely at all times, complying with health and safety legislation, regulations and other relevant guidelines	100	3	1	2
	PC2.adhere to procedures or systems in place for health and safety, personal protective equipment (PPE) and other relevant safety regulations		3	1	2
	PC3.check the condition of, welding leads, earthing arrangements and electrode holder		2	0	2
	PC4.report any faults or potential hazards to appropriate authority		3	0	3
	PC5.follow fume extraction safety procedures		4	1	3
	PC6.read and interpret routine information on written job instructions and drawings		4	1	3
	PC7.identify welding machines eg. transformers, rectifiers, inverters and generators, according to the task		4	1	3
	PC8.prepare the work area for the welding activities		3	0	3
	PC9.prepare the raw materials and joint in readiness for welding		3	1	2
	PC10.perform measurements for joint preparation and routine MMAW		4	1	3
	PC11.prepare workpiece prior to welding		3	0	3
	PC12.tack weld the joint at appropriate intervals, and check the joint for accuracy before final welding		4	1	3
	PC13.receive the set up equipment and connect to power source		3	1	2
	PC14.use manual metal-arc welding and related equipment to include a. alternating		3	1	2
	PC15.verify set up by running test weld specimen (scrap plate)		3	0	3
	PC16.report any faults or problem to appropriate authority		3	0	3
	PC17.strike and maintain a stable arc		3	0	3
	PC18.stop and properly re-start arc to avoid welding defects (scratch start, tapping techniques)		3	0	3

	PC19.maintain constant puddle by using appropriate travel speed		3	0	3
	PC20.maintain proper bead sequence with respect to groove/fillet configurationsand positions		3	0	3
	PC21.remove slag in an appropriate manner (eg. wire brush, hammer, etc.)		3	0	3
	PC22.produce fillet and groove joints in simple welding positions as per specific instructions given using single or multi-run welds(as instructed)		5	2	3
	PC23.produce joints on low carbon and low alloy steel materials using various methods		3	0	3
	PC24.weld the joint to the specified quality standards, dimensions and profile for sheets and plates from 1.5 mm – 24 mm		3	1	2
	PC25.ensure full penetration groove welds are back clipped prior to back welding		2	0	2
	PC26.deal promptly and effectively with problems within their control, and seek help and guidance from the relevant people if they have problems that they cannot resolve		3	0	3
	PC27.ensure welding is done according to welding parameter specified in WPS		2	0	2
	PC28.shut down and make safe the welding equipment on completion of the welding activities		2	0	2
	PC29.measure and check that all dimensional and geometrical aspects of the weld are as per instructions		4	1	3
	PC30.identify various weld defects using visual inspection		3	1	2
	PC31.detect and report surface imperfections to appropriate authority		3	1	2
	PC32.deal with defects in welding as per instructions given		3	1	2
		Total	**100**	**17**	**83**
CSC/N1335 Use basic health and safety practices at the workplace	PC1.use protective clothing/equipment for specific tasks and work conditions	100	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		4	2	2

	PC6.state methods of accident prevention in the work environment of the job role		3	2	1
	PC7.state location of general health and safety equipment in the workplace		5	2	3
	PC8.inspect for faults, set up and safely use steps and ladders in general use		5	2	3
	PC9.work safely in and around trenches, elevated places and confined areas		5	2	3
	PC10.lift heavy objects safely using correct procedures		4	2	2
	PC11.apply good housekeeping practices at all times		5	2	3
	PC12.identify common hazard signs displayed in various areas		3	1	2
	PC13.retrieve and/or point out documents that refer to health and safety in the workplace		4	1	3
	PC14.use the various appropriate fire extinguishers on different types of fires correctly		4	1	3
	PC15.demonstrate rescue techniques applied during fire hazard		3	1	2
	PC16.demonstrate good housekeeping in order to prevent fire hazards		4	1	3
	PC17.demonstrate the correct use of a fire extinguisher		4	1	3
	PC18.demonstrate how to free a person from electrocution		4	1	3
	PC19.administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.		3	1	2
	PC20.demonstrate basic techniques of bandaging		4	1	3
	PC21.respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		3	1	2
	PC22.perform and organize loss minimization or rescue activity during an accident in real or simulated environments		3	1	2
	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		3	1	2
	PC24.demonstrate the artificial respiration and the CPR Process		3	2	1
	PC25.participate in emergency procedures		2	1	1

	PC26.complete a written accident/incident report or dictate a report to another person, and send report to person responsible		3	1	2
	PC27.demonstrate correct method to move injured people and others during an emergency		3	1	2
		Total	**100**	**37**	**63**
CSC/N1336 Work effectively with others	PC1.accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	100	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
		Total	**100**	**30**	**70**