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

Introduction

Qualifications Pack- Fitter - Electrical and Electronic Assembly

SECTOR/S: CAPITAL GOODS

SUB-SECTOR:

1. Machine Tools
2. Plastics Manufacturing Machinery
3. Textile Manufacturing Machinery
4. Process Plant Machinery
5. Electrical and Power Machinery

OCCUPATION: Fitting and Assembly

REFERENCE ID: CSC/Q0305

ALIGNED TO:NCO-2004/7241.10, 7241.20, 7242.90, 7242.10

Brief Job Description: It involves the assembly of the electrical panels, equipment/systems and electronic products, inclusive of components, sub-assemblies, or completed equipment/systems. Along with soldering techniques and anti-static protection techniques assemble with the mechanical equipment.

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 work to improve efficiency and effectiveness.

Job Details

Qualifications Pack Code	**CSC/Q0305**		
Job Role	**Fitter - Electrical and Electronic Assembly [Applicable for National Scenarios]**		
Credits	**TBD**	**Version number**	**1.0**
Sector	**Capital Goods**	**Drafted on**	**10/04/2014**
Sub-sector	**1. Machine Tools 2. Plastics Manufacturing Machinery 3. Textile Manufacturing Machinery 4. Process Plant Machinery 5. Electrical and Power Machinery**	**Last reviewed on**	**24/11/2017**
Occupation	**Fitting and Assembly**	**Next review date**	**24/11/2021**
NSQC Clearance on	**19/05/2015**		

Job Role	Fitter - Electrical and Electronic Assembly
Role Description	Operations to assemble and wire up electrical panels/ components and equipments and systems to mechanical equipment.
NSQF level	3
Minimum Educational Qualifications **Maximum Educational Qualifications**	Diploma(10+) - Electrical or Electronics 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/N0305 Assemble and wire up electrical components to mechanical equipment 2. CSC/N0306 Assemble and wire up electronic equipment and systems to mechanical equipment 3. CSC/N1335 Use basic health and safety practices at the workplace 4. CSC/N1336 Work effectively with others
Performance Criteria	As described in the relevant OS units

Definitions

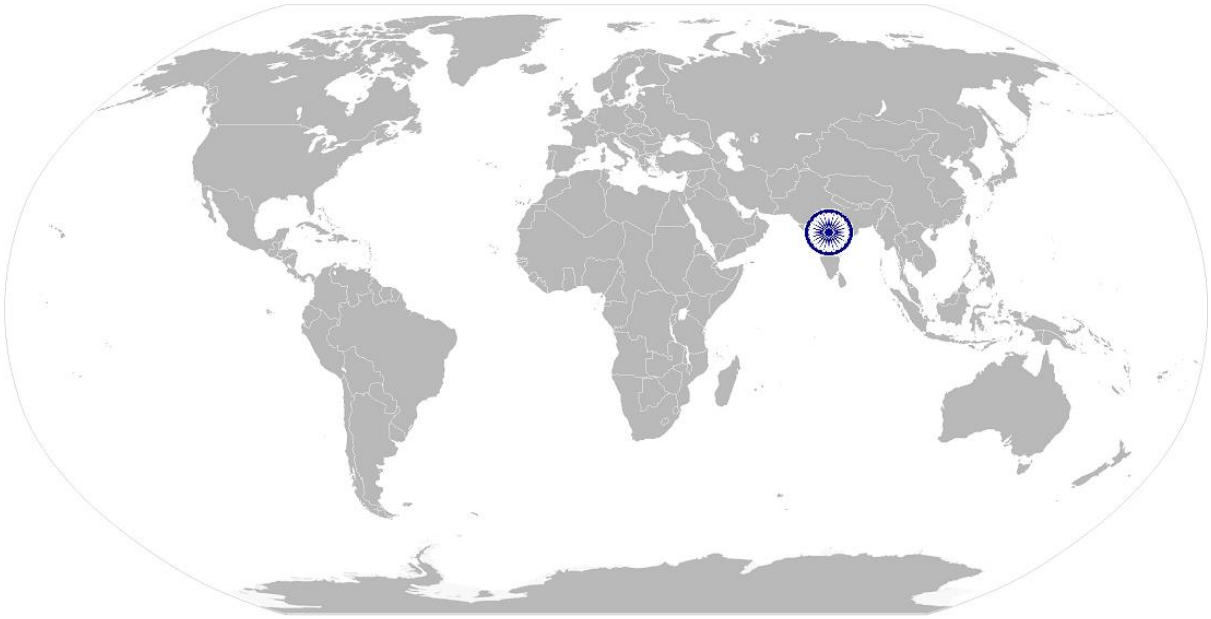
Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further 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
ESD	Electrostatic Discharge
PCB	Printed Circuit Board

National Occupational Standard



Overview

This unit covers operations to assemble and wire up electrical panels/ components to mechanical equipment.

CSC/N0305 Assemble and wire up electrical components to mechanical equipment

National Occupational Standard

Unit Code	CSC/N0305
Unit Title (Task)	**Assemble and wire up electrical components to mechanical equipment**
Description	This unit covers the skills and knowledge needed to assemble and wire up electrical products, inclusive of components, sub-assemblies, or completed equipment/systems mounted in enclosures or otherwise to mechanical equipment, in accordance with approved procedures.
Scope	This unit/task covers the following: • Work Safely • Assemble and wire up electrical components to mechanical equipment
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 calibration operations PC3. work following laid down procedures and instructions PC4. check that tools and equipment to be used are in a safe, tested, calibrated and usable condition PC5. where appropriate, apply procedures and precautions to eliminate electrostatic discharge (ESD) hazards (eg. the use of grounded wrist straps and mats)
Assemble and wire up electrical components to mechanical equipment	To be competent, the user/individual on the job must be able to: PC6. follow the relevant instructions, assembly drawings and any other specifications at all times PC7. assemble electrical components on panels or in enclosures, in compliance with national and international wiring regulations, standards and procedures, and company standards and procedures PC8. obtain the correct tools and equipment for the assembly and test operations, and check that they are in a safe and usable condition PC9. prepare the electrical components and panels/enclosures for the assembly operations PC10. use safe and approved techniques to mount the electrical components on the panels or in the enclosures PC11. use the appropriate methods and techniques to assemble the components in their correct positions

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	Methods and techniques: insulation stripping; securing wires and cables (eg. cable ties, clips, plastic strapping, lacing, harnessing); cable routing; cable forming/bending; adding cable protection (eg. sleeves or grommets); making screwed/clamped connections; installing and terminating pre-formed looms; making crimped connections (eg. spade end, loops, tags and pins); marking or colour coding wires/cables; applying sealants/adhesives; making soldered connections PC12. secure the components, using the specified connectors and securing devices PC13. wire and terminate cables to the appropriate connections on the components Cable types: single core, screened, twisted pair/ribbon, multicore, fibre-optic, data/communication, laminated copper, braided copper PC14. check the completed assembly to ensure that all operations have been completed, and that the finished assembly is secure and meets the required specification Checks: visual checks for completeness and freedom from damage to conductors or components; mechanical checks for security of components and connections; checks for electrical continuity and earth continuity PC15. report any difficulties or problems that may arise with the electrical assembly and wiring activities, and carry out any agreed actions PC16. leave the work area in a safe and tidy condition on completion of the electrical panel/equipment assembly activities PC17. return all tools and equipment to the correct location on completion of the assembly activities PC18. carry out electrical calculations for job operations using a range of variables
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 relevant to own employment and performance conditions KA2. relevant health and safety requirements applicable in the work place KA3. own job role and responsibilities and sources for information pertaining to employment terms, entitlements, job role and responsibilities KA4. reporting structure, inter-dependent functions, lines and procedures in the work area KA5. how to engage with specialists for support in order to resolve incidents and service requests KA6. importance of working in clean and safe environment practices and procedures KA7. relevant people and their responsibilities within the work area KA8. escalation matrix and procedures for reporting work and employment related

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	issues KA9. documentation and related procedures applicable in the context of employment and work
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. the specific safety practices and procedures that you need to observe when assembling and wiring electrical components mounted on panels or in enclosures (including any specific regulations or codes of practice for the activities, equipment or materials) Items on panels or in enclosures: e.g. drives and PLC; enclosure partitions; bases for plug-in devices; limit switches; component mounting plates; switches (push button, toggle); sensors; contactors; capacitors; plugs/sockets; overload and other relays; resistors; grommets/grommet strip; transformers/chokes; rectifiers; batteries; circuit breakers/fuses; power supplies; connector rails; panel meters (voltage, current); circuit boards; solenoids; terminal blocks/junction boxes; thermistors/thermocouples; isolators; safety interlocks; indicators (lamps, LEDs); other specific components; etc. KB2. the hazards associated with assembling and wiring electrical panels and how they can be minimized Hazards: e.g. using sharp instruments for stripping cable insulation, use of soldering equipment, etc. KB3. the importance of wearing appropriate protective clothing and equipment (PPE), and keeping the work area safe and tidy KB4. what constitutes hazardous voltage and how to recognize victims of electric shock KB5. how to reduce the risks of a phase to earth shock (eg. insulated tools, rubber matting and isolating transformers) KB6. precautions to be taken to prevent electrostatic discharge (ESD) damage to circuits and sensitive components (eg. use of earthed wrist straps, anti-static mats, special packaging and handling areas) KB7. how to interpret drawings, circuit and physical layouts, charts, specifications, graphical electrical symbols, national and international wiring regulations, and other documents needed for the electrical activities KB8. functionality of different types of components and sub-assemblies that are used in the assembly activities Functionality: contactors; relays/ SMPS (Switch Mode Power Supply); circuit breakers/fuses; solenoids; switches; transformers; ballast chokes; terminal blocks; sub-assemblies; measuring/ indicating electrical instruments (meters indication lamps); variable frequency drives (VFDs) and soft starters KB9. preparations to be undertaken on the components and enclosure, prior to

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	the mounting activities KB10. how the components are to be aligned and positioned prior to securing, and the tools and equipment that are used KB11. how to identify any orientation requirements, values or polarity for the components used in the electrical assembly and wiring activities KB12. types of cabling to be used in the assembly and wiring of the panels or enclosures Cable types: single core, screened, twisted pair/ribbon, multicore, fibre-optic, data/communication, laminated copper, braided copper KB13. why electrical bonding/earthing is critical, and why it must be both mechanically and electrically secure KB14. use of national and international wiring, and other regulations when selecting wires and cables KB15. assembly methods and techniques to be used when wiring electrical panels or components mounted in enclosures (eg. cable stripping, soldering, crimping, securing cables using cable ties, lacing/strapping of wires) Methods and techniques: insulation stripping; securing wires and cables (eg. cable ties, clips, plastic strapping, lacing, harnessing); cable routing; cable forming/bending; adding cable protection (eg. sleeves or grommets); making screwed/clamped connections; installing and terminating pre-formed looms; making crimped connections (eg. spade end, loops, tags and pins); marking or color coding wires/cables; applying sealants/adhesives; making soldered connections KB16. different types, applications, and methods of attaching identification markers/labels during the electrical wiring activities KB17. how to conduct any necessary checks to ensure the accuracy and quality of the assembly produced Checks: positional accuracy of all components; correct termination of all wires to components; correct orientation; security of all terminations; correct alignment; completeness; component security; ensuring freedom from damage; ensuring that the enclosure is free of debris (eg. cable offcuts/insulation, enclosure/trunking breakouts); continuity of cable/wiring connections (eg. battery and lamp checks) KB18. how to check that tools and equipment are free from damage or defects, are in a safe, tested, calibrated and usable condition KB19. importance of leaving the work area in a safe and clean condition on completion of the electrical assembly and wiring activities (eg. returning tools and equipment to the designated location, cleaning the work area, removing and disposing of waste) KB20. function of various electrical components

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	KB21. application of various electrical components KB22. current and voltage distribution in series and parallel circuits
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, and calculations/ formulae Numerical computations: addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages Electrical calculations: basic electron theory; Ohms' Law (Basics of electrical circuits theory); resistivity; resistors in series and parallel/ current; voltage and resistance in parallel circuits; power; calculation of power ratings for common components and equipment; energy as power x time SA4. identify and draw 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 Basic S.I. Units and derived units for: length, area and volume; force, energy, power, pressure & stress; electrical potential; capacitance, inductance; charge & flux, magnetic flux, flux density; electrical resistance; frequency; temperature; current 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 basic algebra to solve linear equations SA8. use basic calculations with positive, negative and fractional indices
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to:

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	SA9. convey and share technical information clearly using appropriate language SA10. check and clarify task-related information SA11. liaise with appropriate authorities using correct protocol SA12. 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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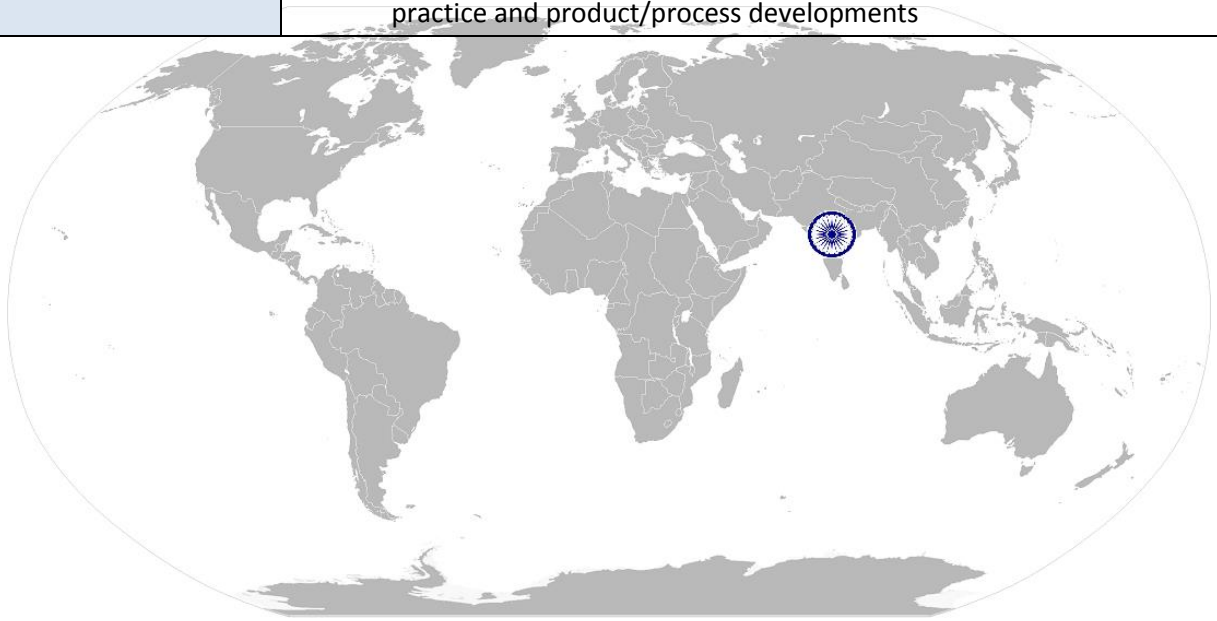
	SB21. participate in improvement procedures including process, quality and internal/external customer/supplier relationships SB22. enhance one's competencies in new and different situations and contexts to achieve more
	Critical Thinking
	The user/individual on the job needs to know and understand how 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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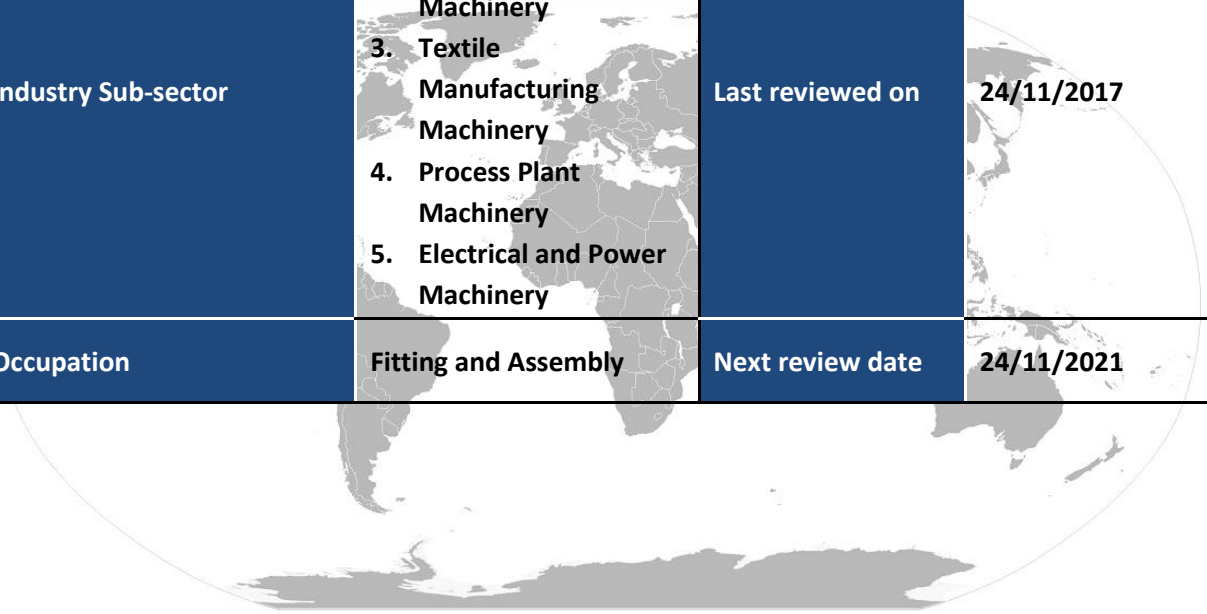
NOS Version Control

NOS Code	CSC/N0305		
Credits	TBD	Version number	1.0
Industry	Capital Goods	Drafted on	10/04/2014
Industry Sub-sector	1. Machine Tools 2. Plastics Manufacturing Machinery 3. Textile Manufacturing Machinery 4. Process Plant Machinery 5. Electrical and Power Machinery	Last reviewed on	24/11/2017
Occupation	Fitting and Assembly	Next review date	24/11/2021



CSC/N0306 Assemble and wire up electronic equipment and systems to mechanical equipment

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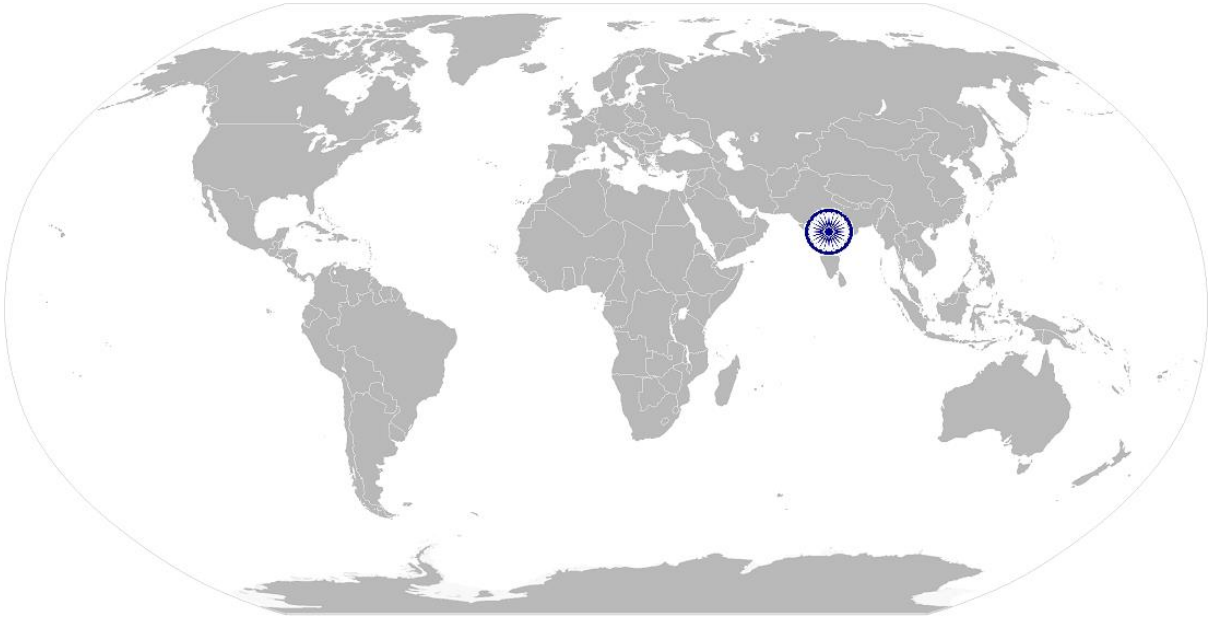
National Occupational Standard



Overview

This unit covers operations to assemble and wire up electronic equipment and systems to mechanical equipment.

CSC/N0306 Assemble and wire up electronic equipment and systems to mechanical equipment

National Occupational Standard

Unit Code	**CSC/N0306**
Unit Title (Task)	**Assemble and wire up electronic equipment and systems to mechanical equipment**
Description	This unit covers the skills and knowledge needed to assemble and wire up electronic products, inclusive of components, sub-assemblies, or completed equipment/systems to mechanical equipment, in accordance with approved procedures.
Scope	This unit/task covers the following: • Work safely • Assemble and wire up electronic equipment and systems to mechanical equipment

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 calibration operations PC3. work following laid down procedures and instructions PC4. check that tools and equipment to be used are in a safe, tested, calibrated and usable condition PC5. where appropriate, apply procedures and precautions to eliminate electrostatic discharge (ESD) hazards (eg. the use of grounded wrist straps and mats)
Assemble and wire up electronic equipment and systems to mechanical equipment	To be competent, the user/individual on the job must be able to: PC6. follow the relevant instructions, assembly drawings and any other specification documents Documents: assembly drawings and charts; interconnection net diagrams; schedules of specified components; wiring specifications; wire running lists PC7. ensure that the specified components are available and that they are in a usable condition PC8. obtain, check and prepare consumables and specialized tools to be used for the wiring and interconnections Check and prepare: solder and any associated fluxes (eg. sufficient quantity, right type, good condition and shelf life assessment); wire strippers and cutters (eg. right size, good condition); authorized crimp tooling and attachments (eg. checked for sizes, calibration and condition); cables and individual wiring/fibre optic links (eg. correct sizes and types, good condition);

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	cable strapping obtained and cut to nominal length (eg. right sizes and sufficient quantities) PC9. use the appropriate methods and techniques to assemble the components in their correct positions Range of methods: set up, programme and use automated wiring termination equipment (where appropriate); attach wire terminations by appropriate method/s (eg. soldering, crimping); set out/position interconnection wiring; bundle/strap/tie wiring looms and cables; cut wires to required length; set out and terminate any fibre optic links; strip insulation from ends of wires; termination identification (e.g. ferruling, transfer printing); tin/lead soldering; lead-free soldering systems; no-wash fluxing; crimping PC10. secure the components using the specified connectors and securing devices PC11. obtain, check and prepare components, and complete the preparatory assembly Preparatory assembly: use hand tools/automated tools for securing all fastenings; assemble sub-units to support housings/brackets; assemble connectors and allied devices PC12. check the completed assembly to ensure that all operations have been completed and the finished assembly meets the required specification Checks: security of all assembled and interconnected items; insulation resistance between housing assembly and interconnection wiring; continuity of all interconnections; unwanted short circuits between wires PC13. select the appropriate software as specified for use PC14. load appropriate software on electronic components in accordance with laid down procedures PC15. check the output of software as per procedure PC16. check the functionality of the completed electronic assembly PC17. leave the work area in a safe and tidy condition on completion of the electrical equipment assembly activities use the correct issue of drawings, job instructions and specifications PC18. follow risk assessment procedures and regulations PC19. keep the work area clean and follow hygienic and safe work practices PC20. carry out the assembling and wiring activities in line with organizational procedures Compliance: national and international wiring regulations; national and international standards and procedures; company standards and procedures PC21. create and store records of the activities, in accordance with appropriate procedures

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Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. relevant standards, policies, and procedures followed in the company KA2. relevant health and safety requirements of the work KA3. the organizational process or procedure for assembly and wiring KA4. responsibilities with regard to the reporting lines and procedures in the working area KA5. appropriate people and their responsibilities within the candidate's working area KA6. whom to report if they have problems that they cannot resolve KA7. the importance of leaving the work area in a safe and clean condition on completion of the electronic assembly and wiring activities (eg. returning tools and equipment to the designated location, cleaning the work area, removing and disposing of waste)
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. the specific safety precautions to be taken when working with soldering and crimping equipment/tools and wiring aids within an electronics assembly and wiring environment (eg. avoiding hot solder splashes and flying ends from cut wires) KB2. the personal protective equipment (PPE) to be worn whilst carrying out the electronic wiring activities concerned, for both personal protection and protection of the components and circuits Personal protective equipment: e.g. protective outer clothing, eye and hearing protection, anti-static devices, etc. KB3. regulations and standards that are relevant to electronic wiring and assembly being undertaken (SLD- single line diagram) KB4. how mechanical assembly instructions are represented and how to interpret them KB5. the range of methods used, and their key features Range of methods: set up, programme and use automated wiring termination equipment (where appropriate); attach wire terminations by appropriate method/s (eg. soldering, crimping); set out/position interconnection wiring; bundle/strap/tie wiring looms and cables; cut wires to required length; set out and terminate any fibre optic links; strip insulation from ends of wires; termination identification (e.g. ferruling, transfer printing); tin/lead soldering; lead-free soldering systems; no-wash fluxing; crimping KB6. how the different types of electronic wiring and insulation are coded and specified

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	KB7. how information on wiring interconnections is specified, with particular reference to the role of wiring schedules, wire-running lists, backplane net interconnect lists KB8. the various methods used for securing electronic wiring (eg. heat shrink sleeves, strapping, cable ties, p-clips) KB9. the care and selection of tools and aids used in wiring and assembly work (eg. soldering tools and equipment, crimp tools, testing and checking equipment for continuity, short circuit testing, joint/crimp `pull-off' security, insulation resistance) KB10. how to recognize wiring types and sizes, their identification, coding and range of termination methods KB11. how to identify the types and read the values of electronic components (eg. resistors, capacitors, diodes, integrated circuits) with particular reference to their polarity, orientation, color coding, value, tolerance, working voltage/current KB12. how to take anti-static precautions in relation to component handling during the wiring and assembly of electronic products, and when such precautions are needed KB13. the handling requirements and termination methods used for SMPS, high-levelprotective devices and fibre-optic links KB14. the range of checks and tests used within wiring and assembly work (eg. insulation resistance, flashover testing, continuity, short circuit testing) KB15. calibration requirements for tools and equipment used in wiring (eg. crimp tool test and selection for wire sizes, `pull-off' limits, meters for continuity and insulation resistance checks) KB16. importance of and maintain dust free environment for electronic assembly KB17. handling multilayered populated PCB's KB18. the documentation completion requirements for the work undertaken KB19. the problems that can occur with wiring and assembly work, and how they can be avoided KB20. basic units used in electro technology KB21. function of various electrical components KB22. application of various electrical components KB23. current and voltage distribution in series and parallel circuits KB24. magnetic fields for bar magnets in various configurations KB25. polarity of a solenoid KB26. construction of a typical capacitor KB27. sine wave as displayed on an oscilloscope KB28. determining input and output voltage of double wound transformers

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	KB29. how to construct a simple bridge rectifier circuit and its function
Skills (S)	
A. Core Skills/ GenericSkills	**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, and calculations/ formulae Numerical computations: addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages Electrical calculations: basic electron theory; Ohms' Law (Basics of electrical circuits theory); resistivity; resistors in series and parallel/ current; voltage and resistance in parallel circuits; power; calculation of power ratings for common components and equipment; energy as power x time SA4. identify and draw 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 Basic S.I. Units and derived units for: length, area and volume; force, energy, power, pressure & stress; electrical potential; capacitance, inductance; charge & flux, magnetic flux, flux density; electrical resistance; frequency; temperature; current 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 basic algebra to solve linear equations SA8. use basic calculations with positive, negative and fractional indices
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA9. convey and share technical information clearly using appropriate language

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	SA10. check and clarify task-related information SA11. liaise with appropriate authorities using correct protocol SA12. 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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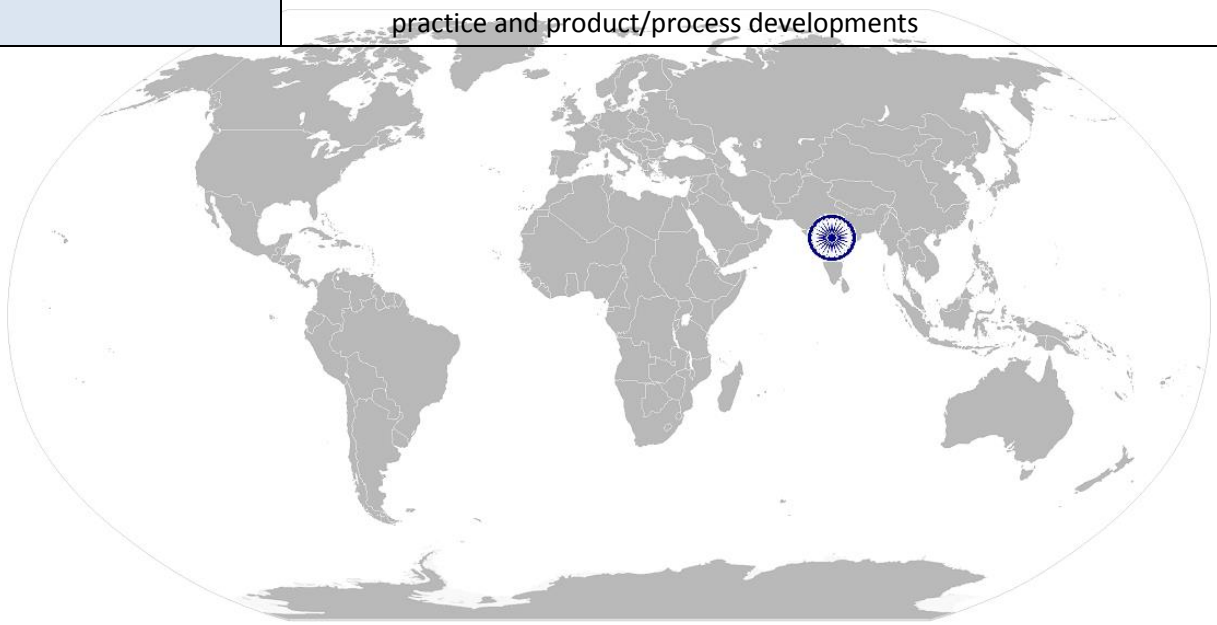
	SB21. participate in improvement procedures including process, quality and internal/external customer/supplier relationships SB22. enhance one's competencies in new and different situations and contexts to achieve more
	Critical Thinking
	The user/individual on the job needs to know and understand how 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

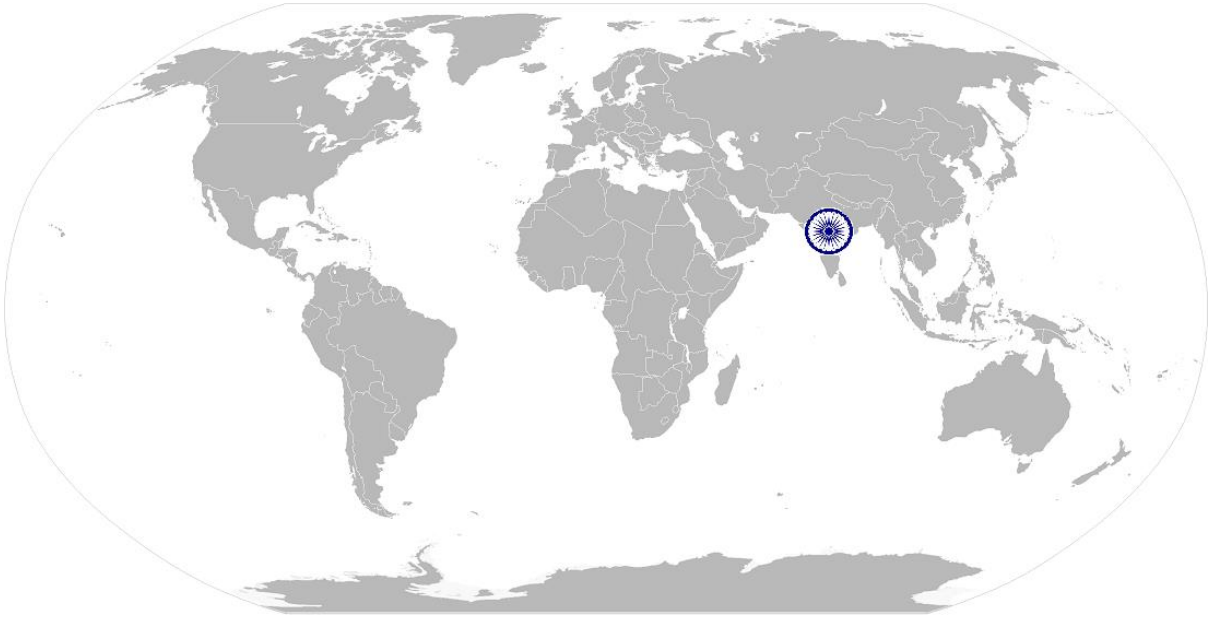


CSC/N0306 Assemble and wire up electronic equipment and systems to mechanical equipment

NOS Version Control

NOS Code	**CSC/N0306**		
Credits	**TBD**	**Version number**	**1.0**
Industry	**Capital Goods**	**Drafted on**	**10/04/2014**
Industry Sub-sector	**1. Machine Tools** **2. Plastics Manufacturing Machinery** **3. Textile Manufacturing Machinery** **4. Process Plant Machinery** **5. Electrical and Power Machinery**	**Last reviewed on**	**24/11/2017**
Occupation	**Fitting and Assembly**	**Next review date**	**24/11/2021**

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 Documents: fire notices, accident reports, safety instructions for equipment

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

	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 emergency

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

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. KB14. techniques of using the different fire extinguishers

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

	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
	CustomerCentricity

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

	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

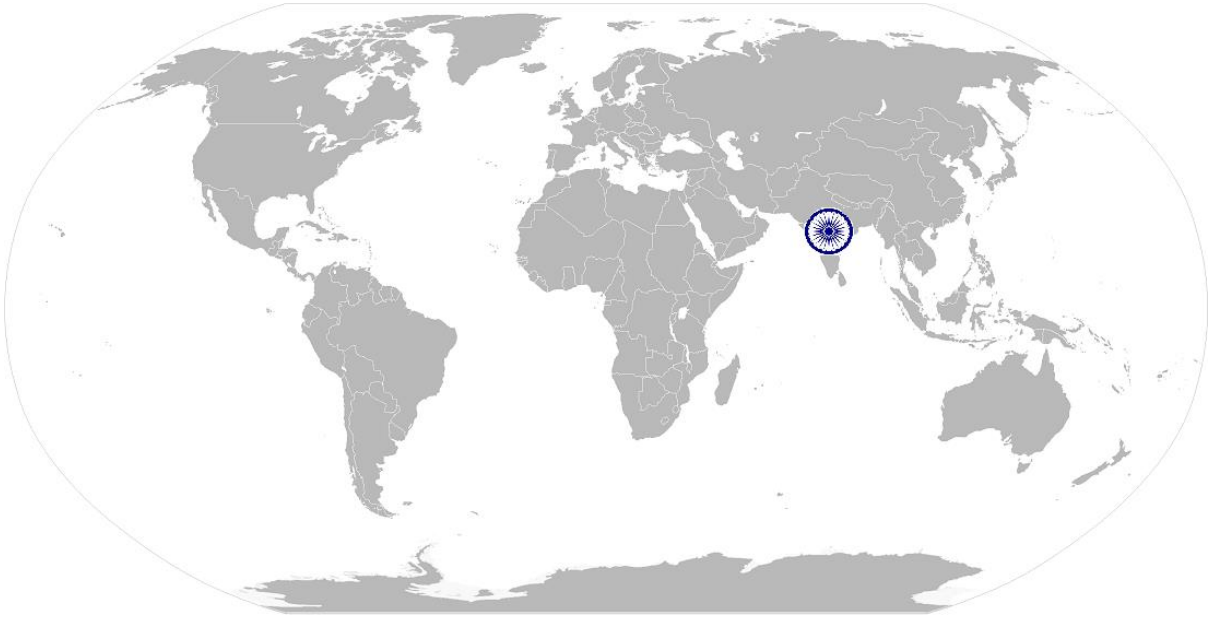
CSC/N1335 Use basic health and safety practices at the workplace

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. Plastics Manufacturing Machinery 3. Textile Manufacturing Machinery 4. Process Plant Machinery 5. Electrical and Power Machinery	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	**Reading Skills**
	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. Plastics Manufacturing Machinery 3. Textile Manufacturing Machinery 4. Process Plant Machinery 5. Electrical and Power Machinery**	**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)

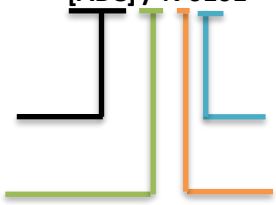
Occupation (2 numbers)

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)

Back to top…

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 - Electrical and Electronic Assembly
Qualification Pack: CSC/Q0305
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: 400**				**Marks Allocation**	
Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out of**	**Theory**	**Skills Practical**
CSC/N0305 Assemble and wire up electrical components to mechanical equipment	PC1. comply with health and safety, environmental and other relevant regulations and guidelines at work	100	5	2	3
	PC2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing calibration operations		5	2	3
	PC3. work following laid down procedures and instructions		3	0	3
	PC4. check that tools and equipment to be used are in a safe, tested, calibrated and usable condition		4	0	4
	PC5. where appropriate, apply procedures and precautions to eliminate electrostatic discharge (ESD) hazards (eg. the use of grounded wrist straps and mats)		6	2	4
	PC6. follow the relevant instructions, assembly drawings and any other specifications at all times		7	3	4
	PC7. assemble electrical components on panels or in enclosures, in compliance with national and international wiring regulations,		8	3	5

	standards and procedures, and company standards and procedures				
	PC8. obtain the correct tools and equipment for the assembly and test operations, and check that they are in a safe and usable condition		4	0	4
	PC9. prepare the electrical components and panels/enclosures for the assembly operations		5	0	5
	PC10. use safe and approved techniques to mount the electrical components on the panels or in the enclosures		7	2	5
	PC11. use the appropriate methods and techniques to assemble the components in their correct positions		7	2	5
	PC12. secure the components, using the specified connectors and securing devices		7	2	5
	PC13. wire and terminate cables to the appropriate connections on the components		5	0	5
	PC14. check the completed assembly to ensure that all operations have been completed, and that the finished assembly is secure and meets the required specification		8	3	5
	PC15. report any difficulties or problems that may arise with the electrical assembly and wiring activities, and carry out any agreed actions		7	2	5
	PC16. leave the work area in a safe and tidy condition on completion of the electrical panel/equipment assembly activities		4	0	4
	PC17. return all tools and equipment to the correct location on completion of the assembly activities		3	0	3
	PC18.carry out electrical calculations for job operations		5	0	5
		Total	**100**	**23**	**77**
CSC/N0306 Assemble and wire up electronic equipment and systems to mechanical equipment	PC1. comply with health and safety, environmental and other relevant regulations and guidelines at work		5	2	3
	PC2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing calibration operations		5	2	3
	PC3. work following laid down procedures and instructions		3	0	3
	PC4. check that tools and equipment to be used are in a safe, tested, calibrated and usable condition		4	0	4
	PC5. where appropriate, apply procedures and precautions to eliminate electrostatic discharge (ESD) hazards (eg. the use of grounded wrist straps and mats)		6	2	4
	PC6. follow the relevant instructions, assembly drawings and any other specifications	**100**	6	2	4

	PC7. ensure that the specified components are available and that they are in a usable condition		2	0	2
	PC8. obtain, check and prepare consumables and specialized tools to be used for the wiring and interconnections		3	0	3
	PC9. use the appropriate methods and techniques to assemble the components in their correct positions		6	2	4
	PC10. secure the components using the specified connectors and securing devices		6	2	4
	PC11. obtain, check and prepare components, and complete the preparatory assembly		4	0	4
	PC12. check the completed assembly to ensure that all operations have been completed and the finished assembly meets the required specification		7	2	5
	PC13. select the appropriate software		3	0	3
	PC14. load appropriate software on electronic components in accordance with laid down procedures		6	2	4
	PC15. check the output of software as per procedure		5	2	3
	PC16. check the functionality of the completed electronic assembly		5	0	5
	PC17. leave the work area in a safe and tidy condition on completion of the electrical equipment assembly activities use the correct issue of drawings, job instructions and specifications		3	0	3
	PC18. follow risk assessment procedures and regulations		4	1	3
	PC20. carry out the assembling and wiring activities in line with organizational procedures		6	2	4
	PC21. create and store records of the activities, in accordance with appropriate procedures		6	2	4
		Total	**100**	**25**	**75**
CSC/N1335 Use basic health and safety practices at the workplace	PC1. use protective clothing/equipment for specific tasks and work conditions		5	2	3
	PC2. state the name and location of people responsible for health and safety in the workplace		3	1	2
	PC3. state the names and location of documents that refer to health and safety in the workplace		3	1	2
	PC4. identify job-site hazardous work and state possible causes of risk or accident in the workplace		5	2	3
	PC5. carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role	**100**	4	2	2

	PC6. state location of general health and safety equipment in the workplace		3	2	1
	PC7. inspect for faults, set up and safely use steps and ladders in general use		5	2	3
	PC8. work safely in and around trenches, elevated places and confined areas		5	2	3
	PC9. lift heavy objects safely using correct procedures		5	2	3
	PC10. apply good housekeeping practices at all times		4	2	2
	PC11. identify common hazard signs displayed in various areas		5	2	3
	PC12. retrieve and/or point out documents that refer to health and safety in the workplace		3	1	2
	PC13. use the various appropriate fire extinguishers on different types of fires correctly		4	1	3
	PC14. demonstrate rescue techniques applied during fire hazard		4	1	3
	PC15. demonstrate good housekeeping in order to prevent fire hazards		3	1	2
	PC16. demonstrate the correct use of a fire extinguisher		4	1	3
	PC17. demonstrate how to free a person from electrocution		4	1	3
	PC18. administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.		4	1	3
	PC19. demonstrate basic techniques of bandaging		3	1	2
	PC20. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		4	1	3
	PC21. perform and organize loss minimization or rescue activity during an accident in real or simulated environments		3	1	2
	PC22. administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases		3	1	2
	PC23. demonstrate the artificial respiration and the CPR Process		3	1	2
	PC24. participate in emergency procedures		3	2	1
	PC25. complete a written accident/incident report or dictate a report to another person, and send report to person responsible		4	1	3

	PC26. demonstrate correct method to move injured people and others during an emergency		4	1	3
		Total	**100**	**36**	**64**
CSC/N1336 Work effectively with others	PC1. accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required		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	**100**	10	3	7
		Total	**100**	**30**	**70**