



Pipeline Fitter

QP Code: PSC/Q0107

Version: 2.0

NSQF Level: 3.5

Water Management and Plumbing Skill Council || Unit No-606, DLF Prime Tower
Okhla Phase-1 New Delhi-110020

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PSC/Q0107: Pipeline Fitter

Brief Job Description

A pipeline fitter is a skilled professional who specializes in the installation, repair, and maintenance of pipelines used for various purposes, such as transporting liquids, gases, or other substances. These pipelines are commonly found in industries such as oil and gas, water supply, chemical plants and construction.

Personal Attributes

The individual must be able to work independently and be comfortable in performing laborious work. The person should be good at following instructions and be a team player with a positive attitude. The individual must adhere technical skills, problem solving abilities, physical stamina safety consciousness, adaptability, flexibility and professionalism in the job.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [PSC/N0161: Install Internal and Basic External Pipes and Accessories for Internal and External Distribution Systems](#)
2. [PSC/N0162: Repair and Maintain all types of Pipelines](#)
3. [PSC/N0136: Apply Health and Safety Practices at the Workplace](#)
4. [PSC/N0137: Work Effectively with Others](#)
5. [DGT/VSQ/N0101: Employability Skills \(30 Hours\)](#)

Qualification Pack (QP) Parameters

| | |
|-------------------|---|
| Sector | Plumbing |
| Sub-Sector | Industrial / Non-Industrial Plumbing |
| Occupation | Plumbing Systems Installation and Maintenance |
| Country | India |
| NSQF Level | 3.5 |
| Credits | 13 |

| | |
|---|---|
| Aligned to NCO/ISCO/ISIC Code | NCO-2015/ 7126.0201, NCO-2015/ 7126.0301 |
| Minimum Educational Qualification & Experience | <p>11th grade pass OR 8th grade pass plus 2-year NTC plus 1 Year NAC OR 10th grade pass and pursuing continuous schooling OR 10th grade pass with 2 Years of experience Relevant OR Previous relevant Qualification of NSQF Level (3 as Assistant Plumber - General with minimum education as 5th Grade pass) with 2 Years of experience Relevant</p> |
| Minimum Level of Education for Training in School | 10th Class |
| Pre-Requisite License or Training | NA |
| Minimum Job Entry Age | 18 Years |
| Last Reviewed On | NA |
| Next Review Date | NA |
| NSQC Approval Date | |
| Version | 2.0 |

PSC/N0161: Install Internal and Basic External Pipes and Accessories for Internal and External Distribution Systems

Description

This unit deals in detail with laying and installing internal and basic external pipes for both, internal and external distribution systems and their accessories.

Scope

The scope covers the following :

- Prepare for installation
- Install the pipes
- Carry out post-installation activities

Elements and Performance Criteria

Prepare for installation

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

- PC1.** determine the fitting requirements to install the pipes
- PC2.** conduct a route survey
- PC3.** prepare the area for installation
- PC4.** transport and stack the pipes, fittings, and other materials at the site
- PC5.** assemble pipe sections, tubing and fittings, using couplings, clamps, screws, bolts, caulking, or cutting, threading and joining equipment
- PC6.** establish the sequence of internal and external pipe installations
- PC7.** plan installation in or around obstructions such as electrical wiring, pavements, etc.
- PC8.** locate and mark the position of pipe installations, connections, passage holes, and fixtures in structures, using measuring instruments such as rulers and levels
- PC9.** prepare trenches and ditches for housing the pipelines
- PC10.** cut openings in structures to accommodate pipes and pipe fittings, using hand and power tools (if required)
- PC11.** measure, cut, thread, and bend pipe to required angle, using hand and power tools or equipment such as cutting, threading and bending equipment

Install the pipeline

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

- PC12.** install horizontal and vertical supports to hold pipes in place
- PC13.** string pipes along the trench
- PC14.** bend pipes in the field to suit topography of the site
- PC15.** apply coating and wrapping to steel pipes.
- PC16.** join pipes together either before or after they are lowered into the trench
- PC17.** fix the valves
- PC18.** adhere to external levels and standard benchmarks with respect to sewerage and drainage

PC19. achieve quality finishing in repair of piping systems and fittings

PC20. ensure timely completion of work and minimal wastage of material and damage to other systems

Carry out post-installation activities

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

PC21. connect piping network with water supply and sewerage lines

PC22. examine the pipe for any welding flaws or leakage at the joints

PC23. cover the trenches by soil and restoration of the land to its original appearance

PC24. clear the work area and dispose waste

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. different types of pipelines classified on the basis of manufacturing material, transported substance, and function of the pipes

KU2. complete knowledge of establishing levels and slopes of drainage and sewerage piping

KU3. basic plumbing terminology

KU4. pipeline construction phases

KU5. route survey purpose and process

KU6. ditching or trenching process

KU7. distinguishing between levels and distances of water and sewer lines

KU8. service line networks such as water and sewer mains and its connection norms

KU9. techniques related to cutting, bending and joining of pipes and fittings

KU10. various types of defects such as leakages, improper alignment, etc.

KU11. considerations while transporting and stacking the pipes, fittings, and other materials

KU12. purpose and process for stringing the pipes along the trench

KU13. tools and techniques for bending pipes in the field to suit topography of the site

KU14. tools and techniques for joining pipes before or after lowering into the trench

KU15. coating and wrapping of pipes, the need, types, tools and materials

KU16. valve fixing process

KU17. horizontal and vertical pipe supporting systems

KU18. pipeline examination process for welding flaws or leakage at the joints

KU19. purpose and process of covering trenches by soil and restoration of the land to its original appearance

KU20. units and measurements

KU21. safety precautions

KU22. response to emergencies e.g., water supply failures, fire and system failures

KU23. use of measuring instruments e.g., steel scale, steel tape, micrometer, Vernier, etc.

KU24. compilation of pressure test results in prescribed format

Generic Skills (GS)

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

- GS1.** prepare checklists, reports and fill out forms in local language or Hindi/English
- GS2.** perform arithmetic calculations of addition, subtraction, multiplication and division processes
- GS3.** read and interpret information (symbols, dimensions, terminology, dates etc.) given in local language or Hindi
- GS4.** state information, doubts and concerns about work related matters in local language or Hindi/English
- GS5.** plan one's daily tasks to achieve maximum productivity
- GS6.** establish priorities and deadlines in consultation with others and record them
- GS7.** be punctual and work as per agreed priorities
- GS8.** manage distractions and maintain workplace discipline
- GS9.** listen to customer's concerns and doubts carefully and address them
- GS10.** be courteous
- GS11.** identify ways to increase productivity and reduce errors

Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <i>Prepare for installation</i> | 17 | 23 | - | 11 |
| PC1. determine the fitting requirements to install the pipes | 1 | 2 | - | 1 |
| PC2. conduct a route survey | 2 | 2 | - | 1 |
| PC3. prepare the area for installation | 1 | 2 | - | 1 |
| PC4. transport and stack the pipes, fittings, and other materials at the site | 1 | 2 | - | 1 |
| PC5. assemble pipe sections, tubing and fittings, using couplings, clamps, screws, bolts, caulking, or cutting, threading and joining equipment | 2 | 2 | - | 1 |
| PC6. establish the sequence of internal and external pipe installations | 1 | 2 | - | 1 |
| PC7. plan installation in or around obstructions such as electrical wiring, pavements, etc. | 2 | 2 | - | 1 |
| PC8. locate and mark the position of pipe installations, connections, passage holes, and fixtures in structures, using measuring instruments such as rulers and levels | 2 | 2 | - | 1 |
| PC9. prepare trenches and ditches for housing the pipelines | 1 | 2 | - | 1 |
| PC10. cut openings in structures to accommodate pipes and pipe fittings, using hand and power tools (if required) | 2 | 3 | - | 1 |
| PC11. measure, cut, thread, and bend pipe to required angle, using hand and power tools or equipment such as cutting, threading and bending equipment | 2 | 2 | - | 1 |
| <i>Install the pipeline</i> | 9 | 19 | - | 7 |
| PC12. install horizontal and vertical supports to hold pipes in place | 1 | 3 | - | 1 |
| PC13. string pipes along the trench | 1 | 2 | - | 1 |

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| PC14. bend pipes in the field to suit topography of the site | 1 | 2 | - | 1 |
| PC15. apply coating and wrapping to steel pipes. | 1 | 2 | - | 1 |
| PC16. join pipes together either before or after they are lowered into the trench | 1 | 2 | - | 1 |
| PC17. fix the valves | 1 | 2 | - | 0.5 |
| PC18. adhere to external levels and standard benchmarks with respect to sewerage and drainage | 1 | 2 | - | 0.5 |
| PC19. achieve quality finishing in repair of piping systems and fittings | 1 | 2 | - | 0.5 |
| PC20. ensure timely completion of work and minimal wastage of material and damage to other systems | 1 | 2 | - | 0.5 |
| <i>Carry out post-installation activities</i> | 4 | 8 | - | 2 |
| PC21. connect piping network with water supply and sewerage lines | 1 | 2 | - | 0.5 |
| PC22. examine the pipe for any welding flaws or leakage at the joints | 1 | 2 | - | 0.5 |
| PC23. cover the trenches by soil and restoration of the land to its original appearance | 1 | 2 | - | 0.5 |
| PC24. clear the work area and dispose waste | 1 | 2 | - | 0.5 |
| NOS Total | 30 | 50 | - | 20 |

National Occupational Standards (NOS) Parameters

| | |
|-------------------------|--|
| NOS Code | PSC/N0161 |
| NOS Name | Install Internal and Basic External Pipes and Accessories for Internal and External Distribution Systems |
| Sector | Plumbing |
| Sub-Sector | Industrial / Non-Industrial Plumbing |
| Occupation | Plumbing Systems Installation and Maintenance |
| NSQF Level | 3.5 |
| Credits | 6 |
| Version | 1.0 |
| Next Review Date | NA |

PSC/N0162: Repair and Maintain all types of Pipelines

Description

This unit is about the activities that involve the repair and maintenance of various types of pipelines.

Scope

The scope covers the following :

- Prepare for pipeline repair work
- Carry out the repair of the pipeline
- Carry out post-repair work
- Carry out maintenance of pipeline

Elements and Performance Criteria

Prepare for pipeline repair work

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

- PC1.** Interpret the pipeline layout drawing and identify the pipeline job requirements
- PC2.** identify the specifications of the pipeline from the layout drawings
- PC3.** identify the problem/fault in the system and its cause
- PC4.** diagnose the reason for failure
- PC5.** establish the sequence of repair/maintenance
- PC6.** assemble fittings, fixtures and tools required for the task

Carry out the repair of the pipeline

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

- PC7.** isolate the repair area
- PC8.** locate and mark the position of the component to be replaced/repared, using measuring instruments such as rulers and levels
- PC9.** cut openings in structures/trenches to remove defected pipes and pipe fittings, using hand and power tools
- PC10.** measure, cut, thread, and bend pipes to required angle, using hand and power tools or equipment such as cutting, threading and bending equipment
- PC11.** replace with new pipe assemblies and fittings
- PC12.** re-assemble the pipeline with fittings post correcting the defect
- PC13.** repair internal piping network connections with external service mains such as water and sewerage lines

Carry out post-repair work

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

- PC14.** test the pipe joints and fixtures for proper functioning
- PC15.** handover to authorities with detailed documentation of fault, it's cause, and the repair work carried out
- PC16.** clear the work area and waste disposal

Carry out maintenance of pipeline

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

- PC17.** dismantle the pipeline circuit, as needed
- PC18.** fasten mechanical components/ subassemblies together using pipe, pipe fittings using hand/ power tools
- PC19.** set and adjust the pipeline / fittings using pipe spanner and hand tools
- PC20.** ensure the layout of pipelines as per specified circuit drawings
- PC21.** check proper clamping to ensure the rigidity
- PC22.** perform pressure test of pipeline to ensure it is leak proof before handover
- PC23.** record the test results in the prescribed format of the organization
- PC24.** supervise tapping of pipeline by private plumbers for domestic, commercial/industrial connections
- PC25.** respond to emergencies with respect to pipelines as per standard operating procedures
- PC26.** ensure all activities are complete according to maintenance checklist
- PC27.** document maintenance carried out, deviation from checklist and observations about the given job

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** complete knowledge of establishing levels and slopes of drainage and sewerage piping
- KU2.** basic plumbing terminology
- KU3.** pipeline lay out / circuit drawings
- KU4.** distinguish between levels and distances of water and sewer lines
- KU5.** service line networks such as water and sewer mains and its connection norms
- KU6.** various types of pipelines and their specifications
- KU7.** techniques related to cutting, bending and joining of fittings and fixtures
- KU8.** various types of defects such as leakages, improper alignment, etc.
- KU9.** tools and tackles with specified fittings to be used for the job
- KU10.** common problems and faults that occur in pipelines
- KU11.** activities regarding repair of various pipeline faults
- KU12.** implications of not adhering to sequence of activities and operations
- KU13.** safety precautions to be taken while working on a particular gas/steam/high pressure lines etc.
- KU14.** assembling techniques such as aligning, bending, fixing, mechanical jointing,
- KU15.** threaded jointing, sealing etc.
- KU16.** steps required to assemble/ dismantle pipeline circuit as per pipeline lay out
- KU17.** checks that need to be made to ensure that the pipeline circuit is safe and ready
- KU18.** measurements that are performed pertaining to plumbing systems installation
- KU19.** relevant hand and power tools such as wrenches, plier, screwdriver, power drill, pipe cutter, crimping tool, pipe bender, threading tool, hacksaw, metal file, etc.
- KU20.** general response procedures to emergencies such as water supply failures, fire and system failures

- KU21.** purpose and process of tapping of pipeline by private plumbers for domestic, commercial/industrial connections
- KU22.** compilation of pressure test results in prescribed format
- KU23.** units of measurement
- KU24.** material disposal procedure, importance of appropriate disposal of material

Generic Skills (GS)

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

- GS1.** prepare checklists, reports and fill out forms in local language or Hindi/English
- GS2.** perform arithmetic calculations of addition, subtraction, multiplication and division processes
- GS3.** read and interpret information (symbols, dimensions, terminology, dates etc.) given in local language or Hindi
- GS4.** state information, doubts and concerns about work related matters in local language or Hindi/English
- GS5.** plan one's daily tasks to achieve maximum productivity
- GS6.** establish priorities and deadlines in consultation with others and record them
- GS7.** be punctual and work as per agreed priorities
- GS8.** manage distractions and maintain workplace discipline
- GS9.** listen to customer's concerns and doubts carefully and address them
- GS10.** be courteous
- GS11.** identify ways to increase productivity and reduce errors

Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <i>Prepare for pipeline repair work</i> | 7 | 9 | - | 6 |
| PC1. Interpret the pipeline layout drawing and identify the pipeline job requirements | 1 | 1 | - | 1 |
| PC2. identify the specifications of the pipeline from the layout drawings | 1 | 1 | - | 1 |
| PC3. identify the problem/fault in the system and its cause | 1 | 1 | - | 1 |
| PC4. diagnose the reason for failure | 1 | 2 | - | 1 |
| PC5. establish the sequence of repair/maintenance | 1 | 2 | - | 1 |
| PC6. assemble fittings, fixtures and tools required for the task | 2 | 2 | - | 1 |
| <i>Carry out the repair of the pipeline</i> | 9 | 14 | - | 6 |
| PC7. isolate the repair area | 1 | 2 | - | 1 |
| PC8. locate and mark the position of the component to be replaced/repared, using measuring instruments such as rulers and levels | 2 | 2 | - | 1 |
| PC9. cut openings in structures/trenches to remove defected pipes and pipe fittings, using hand and power tools | 2 | 2 | - | 1 |
| PC10. measure, cut, thread, and bend pipes to required angle, using hand and power tools or equipment such as cutting, threading and bending equipment | 1 | 2 | - | 1 |
| PC11. replace with new pipe assemblies and fittings | 1 | 2 | - | 1 |
| PC12. re-assemble the pipeline with fittings post correcting the defect | 1 | 2 | - | 0.5 |
| PC13. repair internal piping network connections with external service mains such as water and sewerage lines | 1 | 2 | - | 0.5 |
| <i>Carry out post-repair work</i> | 3 | 6 | - | 2 |

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| PC14. test the pipe joints and fixtures for proper functioning | 1 | 2 | - | 1 |
| PC15. handover to authorities with detailed documentation of fault, it's cause, and the repair work carried out | 1 | 2 | - | 0.5 |
| PC16. clear the work area and waste disposal | 1 | 2 | - | 0.5 |
| <i>Carry out maintenance of pipeline</i> | 11 | 21 | - | 6 |
| PC17. dismantle the pipeline circuit, as needed | 1 | 2 | - | 1 |
| PC18. fasten mechanical components/ subassemblies together using pipe, pipe fittings using hand/ power tools | 1 | 2 | - | 0.5 |
| PC19. set and adjust the pipeline / fittings using pipe spanner and hand tools | 1 | 2 | - | 0.5 |
| PC20. ensure the layout of pipelines as per specified circuit drawings | 1 | 2 | - | 0.5 |
| PC21. check proper clamping to ensure the rigidity | 1 | 2 | - | 0.5 |
| PC22. perform pressure test of pipeline to ensure it is leak proof before handover | 1 | 2 | - | 0.5 |
| PC23. record the test results in the prescribed format of the organization | 1 | 2 | - | 0.5 |
| PC24. supervise tapping of pipeline by private plumbers for domestic, commercial/industrial connections | 1 | 2 | - | 0.5 |
| PC25. respond to emergencies with respect to pipelines as per standard operating procedures | 1 | 2 | - | 0.5 |
| PC26. ensure all activities are complete according to maintenance checklist | 1 | 1 | - | 0.5 |
| PC27. document maintenance carried out, deviation from checklist and observations about the given job | 1 | 2 | - | 0.5 |
| NOS Total | 30 | 50 | - | 20 |

National Occupational Standards (NOS) Parameters

| | |
|-------------------------|---|
| NOS Code | PSC/N0162 |
| NOS Name | Repair and Maintain all types of Pipelines |
| Sector | Plumbing |
| Sub-Sector | Industrial / Non-Industrial Plumbing |
| Occupation | Plumbing Systems Installation and Maintenance |
| NSQF Level | 3.5 |
| Credits | 5 |
| Version | 1.0 |
| Next Review Date | NA |

PSC/N0136: Apply Health and Safety Practices at the Workplace

Description

This unit is about following safety procedures, communicating potential hazards and dangers of accidents on the job.

Scope

The scope covers the following :

- Follow safety measures to avoid accidents
- Daily inspection of tools and equipment
- Deal with emergencies

Elements and Performance Criteria

Follow safety measures to avoid accidents

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

- PC1.** identify risks and hazards at the workplace
- PC2.** wear personal protective equipment (PPE) as per the type of plumbing work
- PC3.** place protective barricades and signages around the pits and trenches
- PC4.** isolate the plumbing fittings and fixtures from electrical wiring to avoid accidents
- PC5.** adhere to organisational procedures for reporting hazards and incidents to relevant authorities
- PC6.** establish ventilation before entering underground work areas
- PC7.** work safely in and around trenches, elevated places and confined areas
- PC8.** ensure tools and hazardous materials are not left unattended
- PC9.** ensure good housekeeping in order to prevent hazards e.g. fire
- PC10.** dispose waste materials and used PPE according to regulations and codes of practice

Follow hygiene and sanitation practices

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

- PC11.** follow recommended personal hygiene and sanitation practices, for example, washing/sanitizing hands, covering face with a bent elbow while coughing/sneezing etc.
- PC12.** clean and disinfect work area, materials/supplies, equipment etc. before and after use.
- PC13.** report hygiene and sanitation issues to appropriate authority

Use tools, equipment and materials safely

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

- PC14.** check that the tools, equipment and materials are in good condition and as per industry standards before use
- PC15.** use power tools and machinery that are grounded
- PC16.** replace or repair split or loose tools before use
- PC17.** store and transport various plumbing materials safely

Deal with emergencies

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

- PC18.** follow workplace emergency and evacuation procedures
- PC19.** use a fire extinguisher correctly
- PC20.** use safe methods to free a person from electrocution
- PC21.** administer appropriate first aid (such as CPR etc.) to victims in case of cuts, bleeding, burns, choking, electric shock, poisoning etc.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** possible causes of risk, hazard or accident in the workplace
- KU2.** organisational procedures for upkeep of tools and plumbing materials, health and safety
- KU3.** location of all the general health and safety equipment in the workplace
- KU4.** meaning of hazards and risks
- KU5.** hazardous environment encountered during work such as underground areas, elevated areas, areas with water and electricity supply, presence of biological waste, under construction sites etc.
- KU6.** work practices and precautions to control and prevent risks, hazards and accidents
- KU7.** importance of each personal protective equipment used such as eye protection mask, hard hats, gloves, apron, rubber boots etc.
- KU8.** tools and plumbing equipment as per latest industry standards
- KU9.** preventative and remedial actions to be taken in case of exposure to toxic materials
- KU10.** specific safety and health related problems faced in domestic, commercial and institutional setups
- KU11.** various causes of fire and precautionary activities to prevent the fire accident
- KU12.** techniques of using the different fire extinguishers
- KU13.** rescue techniques applied during a fire hazard
- KU14.** various types of safety signs and meaning
- KU15.** appropriate basic first aid treatment relevant to the condition e.g. shock, electrical shock, bleeding, minor burns, poisoning, eye injuries etc.
- KU16.** potential injuries and ill health associated with incorrect handling of tools and equipment

Generic Skills (GS)

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

- GS1.** write an accident/incident report in local language or English
- GS2.** read and comprehend labels, charts, signages, manuals, plumbing symbols etc.
- GS3.** question coworkers appropriately in order to clarify instructions and other issues
- GS4.** plan and organize the work schedule, work area, tools, equipment and materials for improved productivity
- GS5.** determine key considerations and priorities when faced with problems



Qualification Pack



- GS6.** seek official and authorised sources of help and guidance to resolve problems that cannot be solved at one's level of authority

Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>Follow safety measures to avoid accidents</i> | 13 | 32 | - | 3 |
| PC1. identify risks and hazards at the workplace | 2 | 2 | - | 0.5 |
| PC2. wear personal protective equipment (PPE) as per the type of plumbing work | 2 | 2 | - | 0.5 |
| PC3. place protective barricades and signages around the pits and trenches | 1 | 4 | - | 0.5 |
| PC4. isolate the plumbing fittings and fixtures from electrical wiring to avoid accidents | 1 | 4 | - | - |
| PC5. adhere to organisational procedures for reporting hazards and incidents to relevant authorities | 2 | 4 | - | 0.5 |
| PC6. establish ventilation before entering underground work areas | 1 | 4 | - | - |
| PC7. work safely in and around trenches, elevated places and confined areas | 1 | 3 | - | - |
| PC8. ensure tools and hazardous materials are not left unattended | 1 | 3 | - | - |
| PC9. ensure good housekeeping in order to prevent hazards e.g. fire | 1 | 3 | - | 0.5 |
| PC10. dispose waste materials and used PPE according to regulations and codes of practice | 1 | 3 | - | 0.5 |
| <i>Follow hygiene and sanitation practices</i> | 3 | 8 | - | 1 |
| PC11. follow recommended personal hygiene and sanitation practices, for example, washing/sanitizing hands, covering face with a bent elbow while coughing/sneezing etc. | 1 | 3 | - | 0.5 |
| PC12. clean and disinfect work area, materials/supplies, equipment etc. before and after use. | 1 | 3 | - | 0.5 |
| PC13. report hygiene and sanitation issues to appropriate authority | 1 | 2 | - | - |
| <i>Use tools, equipment and materials safely</i> | 6 | 9 | - | 1 |

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| PC14. check that the tools, equipment and materials are in good condition and as per industry standards before use | 1 | 3 | - | 0.25 |
| PC15. use power tools and machinery that are grounded | 1 | 2 | - | 0.25 |
| PC16. replace or repair split or loose tools before use | 2 | 2 | - | 0.25 |
| PC17. store and transport various plumbing materials safely | 2 | 2 | - | 0.25 |
| <i>Deal with emergencies</i> | 8 | 14 | - | 2 |
| PC18. follow workplace emergency and evacuation procedures | 2 | 3 | - | 0.5 |
| PC19. use a fire extinguisher correctly | 2 | 4 | - | 0.5 |
| PC20. use safe methods to free a person from electrocution | 2 | 3 | - | 0.5 |
| PC21. administer appropriate first aid (such as CPR etc.) to victims in case of cuts, bleeding, burns, choking, electric shock, poisoning etc. | 2 | 4 | - | 0.5 |
| NOS Total | 30 | 63 | - | 7 |

National Occupational Standards (NOS) Parameters

| | |
|----------------------------|---|
| NOS Code | PSC/N0136 |
| NOS Name | Apply Health and Safety Practices at the Workplace |
| Sector | Plumbing |
| Sub-Sector | Industrial / Non-Industrial Plumbing, Water Supply & Water Treatment & Quality Control, Sewerage & Sewage Treatment, Drainage, Water Harvesting & Ground Recharging, Firefighting & Safety Systems, Gas & Piping (Industrial / Medical), HVAC & Steam, Manufacturing of Plumbing / Firefighting Products, Micro-Hydel Power |
| Occupation | Plumbing Systems Installation and Maintenance, Designing, Sales, Material Handling, Plumbing Servicing, Plumbing Plant Operations |
| NSQF Level | 4 |
| Credits | TBD |
| Version | 1.0 |
| Last Reviewed Date | 24/02/2022 |
| Next Review Date | 24/02/2025 |
| NSQC Clearance Date | 24/02/2022 |

PSC/N0137: Work Effectively with Others

Description

This unit covers basic etiquette and competencies required in behavior and interactions with others at the workplace.

Scope

The scope covers the following :

- Communicate effectively
- Work in a team effectively
- Respect diversity

Elements and Performance Criteria

Communicate effectively

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

- PC1.** obtain complete information and instructions
- PC2.** seek clarifications from appropriate source when required
- PC3.** provide information accurately and clearly
- PC4.** use inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive

Work in a team effectively

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

- PC5.** prioritize tasks as required
- PC6.** consult with and assist others to maximize effectiveness and efficiency in carrying out tasks
- PC7.** escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict
- PC8.** act upon constructive feedback from others

Respect diversity

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

- PC9.** transact with everyone without any personal bias based on gender, disability, caste, religion, colour, sexual orientation and culture
- PC10.** recognize indicators of harassment and discrimination based on gender, disability, caste, religion, colour, sexual orientation and culture at workplace
- PC11.** report incidents of harassment and discrimination to appropriate authority

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** legislation, standards, policies, and procedures followed in the company relevant to employment, behavior, harassment, discrimination and performance conditions
- KU2.** reporting structure, inter-dependent functions, lines and procedures in the work area

- KU3.** escalation matrix and procedures for reporting work and employment related issues
- KU4.** types of harassment and discrimination based on gender, disability, caste, religion and culture and how to recognize it.
- KU5.** importance of effective communication and the impact of poor communication on the employee, the employer and the customer
- KU6.** importance of teamwork in organizational and individual success
- KU7.** various components of effective communication such as tone and pitch
- KU8.** importance of ethics and discipline for professional success
- KU9.** how to express and address grievances appropriately and effectively
- KU10.** importance and ways of managing interpersonal conflict effectively
- KU11.** different types of disabilities and the challenges faced by persons with disability (PwD)
- KU12.** laws, acts and provisions defined for PwD by the statutory bodies
- KU13.** government and private schemes and benefits available for PwD
- KU14.** Importance of gender sensitivity and equality.
- KU15.** gender, disability and cultural biases, stereotypes and impact on others
- KU16.** gender and its concepts such as gender roles, gender spectrum, gender as an identity
- KU17.** legislations, grievance redressal mechanisms, and penalties against harassment in the workplace

Generic Skills (GS)

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

- GS1.** write clear and legible notes, keep records, prepare to-do lists and take down instructions
- GS2.** write basic numbers, quantities and basic work-related terminology for operational requirements in the local language and English
- GS3.** read basic terminologies to accurately interpret labels, supervisor's instructions in the local language and English
- GS4.** read and interpret accurate information from work-related documents and various relevant work instructions and records in local
- GS5.** interact with the concerned personnel appropriately (correct protocol and manner of speaking etc.)
- GS6.** display active listening skills while interacting with co-workers and others in the workplace
- GS7.** deliver consistent and reliable service to internal and external customers
- GS8.** work with co-workers and supervisor to resolve any issues that threaten work quality as per the planned schedule

Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>Communicate effectively</i> | 11 | 26 | - | 2 |
| PC1. obtain complete information and instructions | 3 | 8 | - | - |
| PC2. seek clarifications from appropriate source when required | 1 | 5 | - | - |
| PC3. provide information accurately and clearly | 3 | 7 | - | 1 |
| PC4. use inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive | 4 | 6 | - | 1 |
| <i>Work in a team effectively</i> | 11 | 25 | - | 3 |
| PC5. prioritize tasks as required | 3 | 8 | - | 1 |
| PC6. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks | 3 | 8 | - | 1 |
| PC7. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict | 3 | 4 | - | 1 |
| PC8. act upon constructive feedback from others | 2 | 5 | - | - |
| <i>Respect diversity</i> | 8 | 12 | - | 2 |
| PC9. transact with everyone without any personal bias based on gender, disability, caste, religion, colour, sexual orientation and culture | 3 | 5 | - | 1 |
| PC10. recognize indicators of harassment and discrimination based on gender, disability, caste, religion, colour, sexual orientation and culture at workplace | 3 | 5 | - | 1 |
| PC11. report incidents of harassment and discrimination to appropriate authority | 2 | 2 | - | - |
| NOS Total | 30 | 63 | - | 7 |

National Occupational Standards (NOS) Parameters

| | |
|----------------------------|---|
| NOS Code | PSC/N0137 |
| NOS Name | Work Effectively with Others |
| Sector | Plumbing |
| Sub-Sector | Industrial / Non-Industrial Plumbing, Water Supply & Water Treatment & Quality Control, Sewerage & Sewage Treatment, Drainage, Water Harvesting & Ground Recharging, Firefighting & Safety Systems, Gas & Piping (Industrial / Medical), HVAC & Steam, Manufacturing of Plumbing / Firefighting Products, Micro-Hydel Power |
| Occupation | Plumbing Systems Installation and Maintenance, Designing, Sales, Material Handling, Plumbing Servicing, Plumbing Plant Operations |
| NSQF Level | 4 |
| Credits | TBD |
| Version | 1.0 |
| Last Reviewed Date | 24/02/2022 |
| Next Review Date | 24/02/2025 |
| NSQC Clearance Date | 24/02/2022 |

DGT/VSQ/N0101: Employability Skills (30 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

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

PC1. understand the significance of employability skills in meeting the job requirements

Constitutional values – Citizenship

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

PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices

Becoming a Professional in the 21st Century

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

PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.

Basic English Skills

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

PC4. speak with others using some basic English phrases or sentences

Communication Skills

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

PC5. follow good manners while communicating with others

PC6. work with others in a team

Diversity & Inclusion

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

PC7. communicate and behave appropriately with all genders and PwD

PC8. report any issues related to sexual harassment

Financial and Legal Literacy

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

PC9. use various financial products and services safely and securely

PC10. calculate income, expenses, savings etc.

PC11. approach the concerned authorities for any exploitation as per legal rights and laws

Essential Digital Skills

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

PC12. operate digital devices and use its features and applications securely and safely

PC13. use internet and social media platforms securely and safely

Entrepreneurship

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

PC14. identify and assess opportunities for potential business

PC15. identify sources for arranging money and associated financial and legal challenges

Customer Service

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

PC16. identify different types of customers

PC17. identify customer needs and address them appropriately

PC18. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

PC19. create a basic biodata

PC20. search for suitable jobs and apply

PC21. identify and register apprenticeship opportunities as per requirement

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use basic spoken English language

KU6. Do and dont of effective communication

KU7. inclusivity and its importance

KU8. different types of disabilities and appropriate communication and behaviour towards PwD

KU9. different types of financial products and services

KU10. how to compute income and expenses

KU11. importance of maintaining safety and security in financial transactions

- KU12.** different legal rights and laws
- KU13.** how to operate digital devices and applications safely and securely
- KU14.** ways to identify business opportunities
- KU15.** types of customers and their needs
- KU16.** how to apply for a job and prepare for an interview
- KU17.** apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

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

- GS1.** communicate effectively using appropriate language
- GS2.** behave politely and appropriately with all
- GS3.** perform basic calculations
- GS4.** solve problems effectively
- GS5.** be careful and attentive at work
- GS6.** use time effectively
- GS7.** maintain hygiene and sanitisation to avoid infection

Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>Introduction to Employability Skills</i> | 1 | 1 | - | - |
| PC1. understand the significance of employability skills in meeting the job requirements | - | - | - | - |
| <i>Constitutional values – Citizenship</i> | 1 | 1 | - | - |
| PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices | - | - | - | - |
| <i>Becoming a Professional in the 21st Century</i> | 1 | 3 | - | - |
| PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc. | - | - | - | - |
| <i>Basic English Skills</i> | 2 | 3 | - | - |
| PC4. speak with others using some basic English phrases or sentences | - | - | - | - |
| <i>Communication Skills</i> | 1 | 1 | - | - |
| PC5. follow good manners while communicating with others | - | - | - | - |
| PC6. work with others in a team | - | - | - | - |
| <i>Diversity & Inclusion</i> | 1 | 1 | - | - |
| PC7. communicate and behave appropriately with all genders and PwD | - | - | - | - |
| PC8. report any issues related to sexual harassment | - | - | - | - |
| <i>Financial and Legal Literacy</i> | 3 | 4 | - | - |
| PC9. use various financial products and services safely and securely | - | - | - | - |
| PC10. calculate income, expenses, savings etc. | - | - | - | - |

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| PC11. approach the concerned authorities for any exploitation as per legal rights and laws | - | - | - | - |
| <i>Essential Digital Skills</i> | 4 | 6 | - | - |
| PC12. operate digital devices and use its features and applications securely and safely | - | - | - | - |
| PC13. use internet and social media platforms securely and safely | - | - | - | - |
| <i>Entrepreneurship</i> | 3 | 5 | - | - |
| PC14. identify and assess opportunities for potential business | - | - | - | - |
| PC15. identify sources for arranging money and associated financial and legal challenges | - | - | - | - |
| <i>Customer Service</i> | 2 | 2 | - | - |
| PC16. identify different types of customers | - | - | - | - |
| PC17. identify customer needs and address them appropriately | - | - | - | - |
| PC18. follow appropriate hygiene and grooming standards | - | - | - | - |
| <i>Getting ready for apprenticeship & Jobs</i> | 1 | 3 | - | - |
| PC19. create a basic biodata | - | - | - | - |
| PC20. search for suitable jobs and apply | - | - | - | - |
| PC21. identify and register apprenticeship opportunities as per requirement | - | - | - | - |
| NOS Total | 20 | 30 | - | - |

National Occupational Standards (NOS) Parameters

| | |
|----------------------------|---------------------------------|
| NOS Code | DGT/VSQ/N0101 |
| NOS Name | Employability Skills (30 Hours) |
| Sector | Cross Sectoral |
| Sub-Sector | Professional Skills |
| Occupation | Employability |
| NSQF Level | 2 |
| Credits | 1 |
| Version | 1.0 |
| Last Reviewed Date | NA |
| Next Review Date | 27/01/2025 |
| NSQC Clearance Date | 27/01/2022 |

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

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

Minimum Aggregate Passing % at QP Level : 70

(**Please note:** Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

| National Occupational Standards | Theory Marks | Practical Marks | Project Marks | Viva Marks | Total Marks | Weightage |
|--|--------------|-----------------|---------------|------------|-------------|------------|
| PSC/N0161.Install Internal and Basic External Pipes and Accessories for Internal and External Distribution Systems | 30 | 50 | 0 | 20 | 100 | 30 |
| PSC/N0162.Repair and Maintain all types of Pipelines | 30 | 50 | 0 | 20 | 100 | 30 |
| PSC/N0136.Apply Health and Safety Practices at the Workplace | 30 | 63 | - | 7 | 100 | 15 |
| PSC/N0137.Work Effectively with Others | 30 | 63 | - | 7 | 100 | 15 |
| DGT/VSQ/N0101.Employability Skills (30 Hours) | 20 | 30 | - | - | 50 | 10 |
| Total | 140 | 256 | 0 | 54 | 450 | 100 |

Acronyms

| | |
|--------------|--|
| NOS | National Occupational Standard(s) |
| NSQF | National Skills Qualifications Framework |
| QP | Qualifications Pack |
| TVET | Technical and Vocational Education and Training |
| NCVET | National Council for Vocational Education and Training |
| WMPSC | Water Management and Plumbing Skill Council |
| QP | Qualification Pack |
| MC | Model Curriculum |
| NSQF | National Skills Qualification Framework |
| NSQC | National Skills Qualification Committee |
| NOS | National Occupational Standards |
| NCO | National Classification of Occupations |
| ES | Employability Skills |

Glossary

| | |
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| Sector | Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests. |
| Sub-sector | Sub-sector is derived from a further breakdown based on the characteristics and interests of its components. |
| Occupation | Occupation is a set of job roles, which perform similar/ related set of functions in an industry. |
| Job role | Job role defines a unique set of functions that together form a unique employment opportunity in an organisation. |
| Occupational Standards (OS) | OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts. |
| Performance Criteria (PC) | Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task. |
| National Occupational Standards (NOS) | NOS are occupational standards which apply uniquely in the Indian context. |
| Qualifications Pack (QP) | QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code. |
| Unit Code | Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N' |
| Unit Title | Unit title gives a clear overall statement about what the incumbent should be able to do. |
| Description | Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for. |
| Scope | Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required. |
| Knowledge and Understanding (KU) | Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard. |

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|---|--|
| Organisational Context | Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility. |
| Technical Knowledge | Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities. |
| Core Skills/ Generic Skills (GS) | Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles. |
| Electives | Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives. |
| Options | Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options. |
| | |
| 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. |
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| Performance Criteria (PC) | Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task. |
| National Occupational Standard | NOS are occupational standards which apply uniquely in the Indian context. |

| | |
|------------------------------------|--|
| Qualifications Pack (QP) | QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code. |
| Unit Code | Unit code is a unique identifier for an Occupational Standard, which is denoted by 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 (KU) are statements that together specify the technical, generic, professional and organisational specific knowledge that an individual need in order to perform to the required standard. |
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| Options | Options are NOS or 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. |