

The Project of Capacity Building for Industry Demand-based TVET in Uganda

In-service Training Program (Manual) for Instructors

Plumbing

January, 2025



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Job Sheet 1

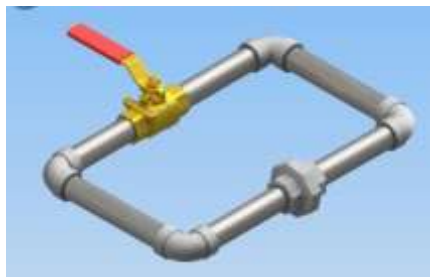
Day	1	Task No.	Plumbing-2-01	Time	8h
Title	Symbols of plumbing fittings 1				
Material	Name		Specification	Q'ty	
	Paper Sheet		A3	1 ea	
	Pencil		B1	1 ea	
	Steel Measure		300mm	1 ea	

1. Purpose

- After completing this practice, the student should be able to:
 - Understand the symbols of plumbing fittings, and make a pipe work plan.
 - Know how to use the fitting parts at a suitable place.
 - Can change the 3D piping drawings to 2D piping drawings
 - Can draw the piping drawings accurately.
 - Check the drawings.

2. Job Figures

(Draw the following three-dimensional plumbing works into a two-dimensional drawing)



- Information : Interpret the pipe works, Drawing according to piping symbols.

- Requirements : Check the drawings.

Job Sheet 2

Day	2	Task No.	Plumbing-2-02	Time	8h
Title	Symbols of plumbing fittings 2				
Material	Name	Spec	Q'ty		
	Paper Sheet	A3	1 ea		
	Pencil	B1	1 ea		
	Steel Measure	300mm	1 ea		

1. Purpose

- After completing this practice, the student should be able to:
 - Understand the symbols of plumbing fittings, and make a pipe work plan.
 - Know how to use the fitting parts at a suitable place.
 - Can change the 3D piping drawings to 2D piping drawings
 - Can draw the piping drawings accurately.
 - Check the drawings.

2. Job Figures

(Draw the following three-dimensional plumbing works into a two-dimensional drawing)



- Information : Interpret the pipe works, Drawing according to piping symbols.

- Requirements : Check the drawings.

Job Sheet 3

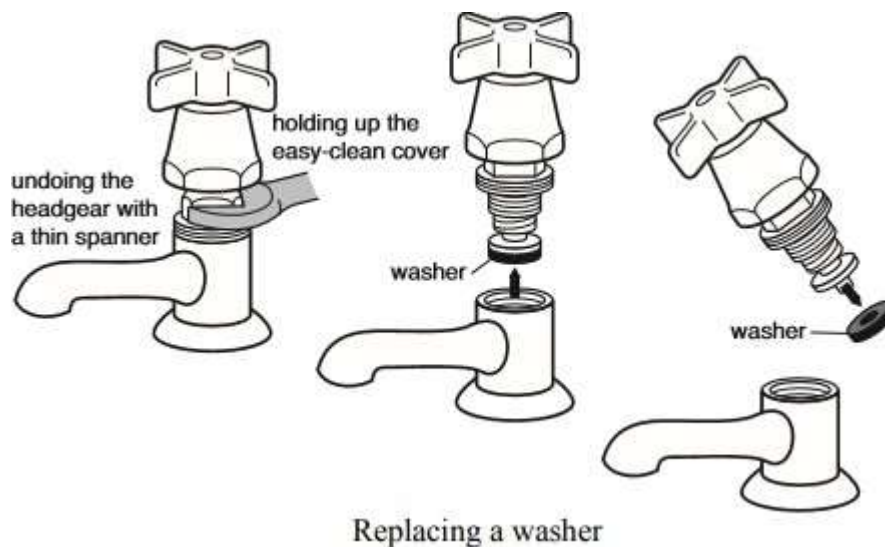
Day	3	Task No.	Plumbing-2-03	Time	8h
Title	Service taps and valves				
Material	Name	Spec	Q'ty		
	Plier	300mm	1ea		
	Adjustable spanner	250mm	1ea		
	Vice	120mm	1ea		

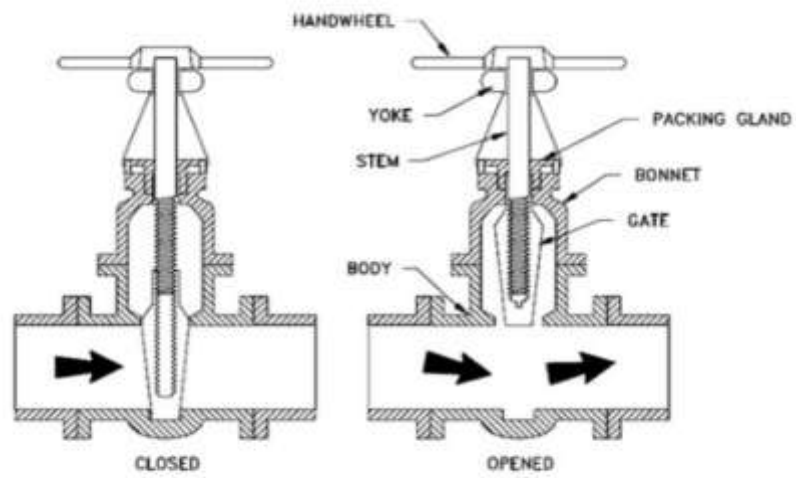
1. Purpose

- After completing this practice, the student should be able to:
 - Identify types of taps, valves and cocks
 - Identify a fault tap, valve and cocks
 - Service a fault tap, valve and cocks

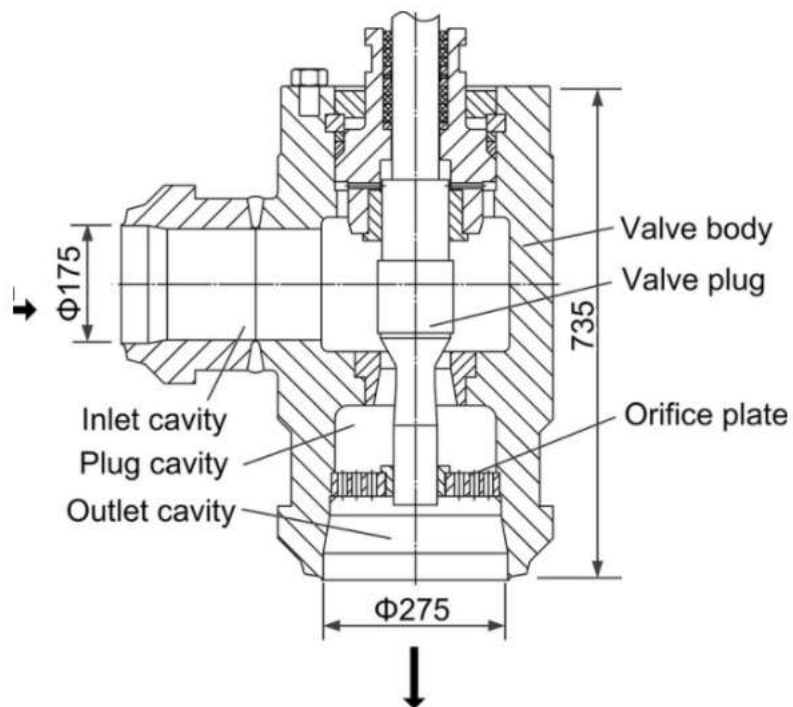
2. Job Figures

(Draw the following three-dimensional plumbing works into a two-dimensional drawing)

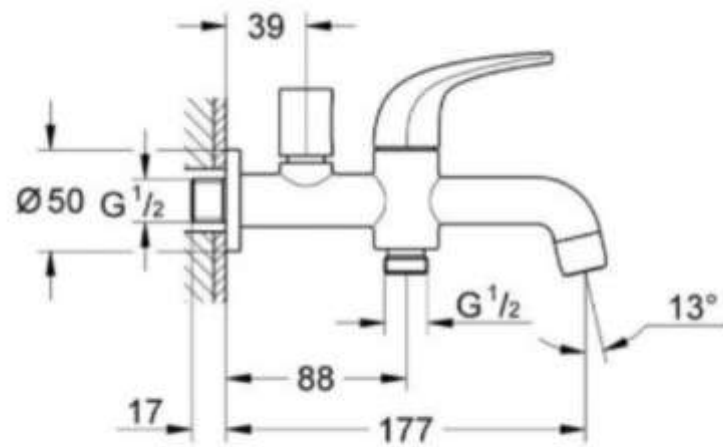




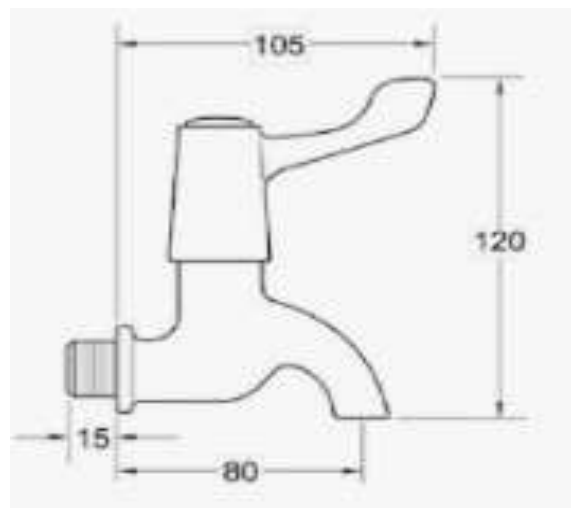
Gate valve



Angel valve



Cock



Tap

□ Information : Using a spanner, remove the headgear from the tap body.

□ Requirements : Reconnect water supply.

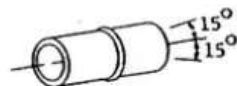
Job Sheet 4

Day	4	Task No.	Plumbing-2-04	Time	8h
Title	Pipe Welding				
Material	Name	Spec	Q'ty		
	Welder	220V, 120A	5		
	Electrod	E6013, 2.6Ø, 3.2Ø	2kg		
	Steel Pipe	15A, 20A, 25A, 32A	10ea/each size(100mm)		

1. Purpose

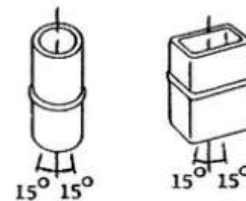
- After completing this practice, the student should be able to:
 - Use welding M/C.
 - Know how to weld pipes.

2. Job figure

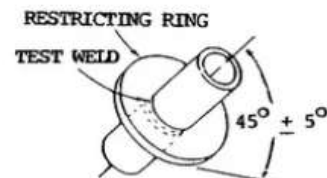
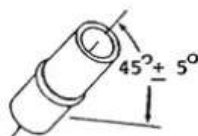
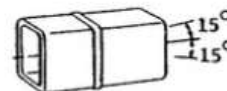


PIPE HORIZONTAL, AND ROTATED.
WELD FLAT ($\pm 15^\circ$). DEPOSIT FILLER
METAL AT OR NEAR THE TOP.

PIPE OR TUBE VERTICAL
AND NOT ROTATED DURING
WELDING. WELD HORIZONTAL
($\pm 15^\circ$).



PIPE OR TUBE HORIZONTAL FIXED ($\pm 15^\circ$).
WELD FLAT, VERTICAL, OVERHEAD



E TEST POSITION 6GR
(T, K, OR Y CONNECTIONS)

- Information : Check the welding safety gears.
- Requirements : Set welding conditions.

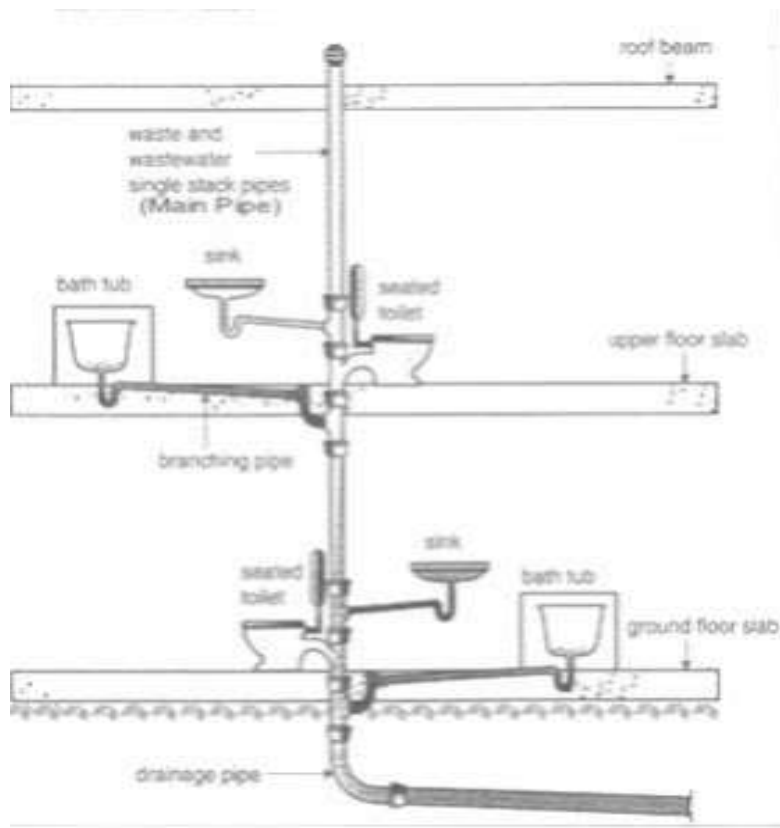
Job Sheet 5

Day	5	Task No.	Plumbing-2-05	Time	8h
Title	Install single stack system				
Material	Name	Spec	Q'ty		
	Tape measure	10m	1ea		
	Spirit level	250mm	1ea		
	Drill	220V	1ea		

1. Purpose

- After completing this practice, the student should be able to:
 - Install a single stack system

2. Install Figure



- Information : Interpret the pipe works, Join pipes and fittings

- Requirements : Test run system

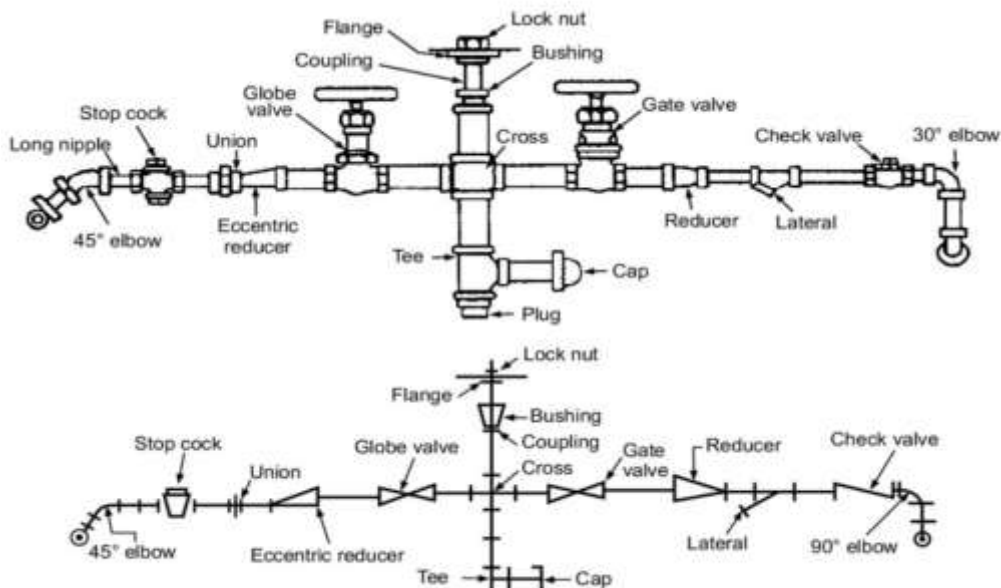
Job Sheet 6

Day	6	Task No.	Plumbing-2-06	Time	8h
Title	Creating a pipe drawing				
Material	Name	Spec	Q'ty		
	Paper Sheet	A3	1		
	Pencil	B1	1		
	Steel Measure	300mm	1		

1. Purpose

- After completing this practice, the student should be able to:
 - Understand the symbols of plumbing fittings, and make a pipe work plan.
 - Know how to use the fitting parts at a suitable place.
 - Can change the 3D piping drawings to 2D piping drawings
 - Can draw the piping drawings accurately.
 - Check the drawings.

2. Job Figure



Application of Symbols of Pipe Fitting and Valves

- Information : Interpret the pipe works, Drawing according to piping symbols.
- Requirements : Check the drawings.

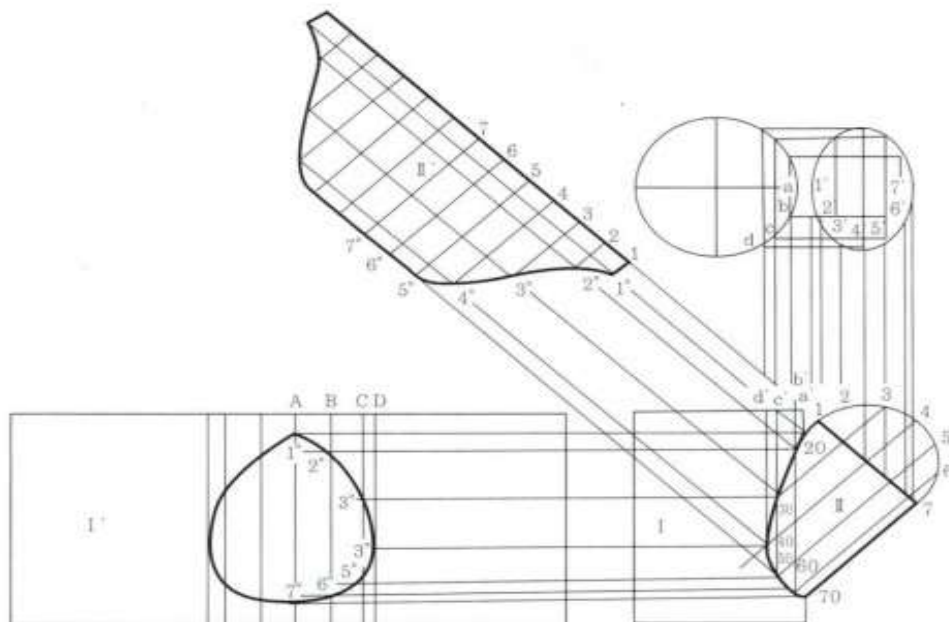
Job Sheet 7

Day	7	Task No.	Plumbing-2-07	Time	8h
Title	Fabricate water gutter 1				
Material	Name	Spec	Q'ty		
	Steel ruler	300mm	1ea		
	Sheet paper	A0	1ea		
	T ruler	1200mm	1ea		

1. Purpose

- After completing this practice, the student should be able to:
 - Fabricate a gutter
 - Fabricate rain water down pipe
 - Fabricate bends and other fitting
 - Join rain water gutter, pipes and other fittings
 - Lay rain water gutters
 - Harvest water, Fabricate water gutter

2. Job Figures



- Information : Interpret working drawing, Check the cylinders diameter.
- Requirements : Make the curve of the interpenetration.

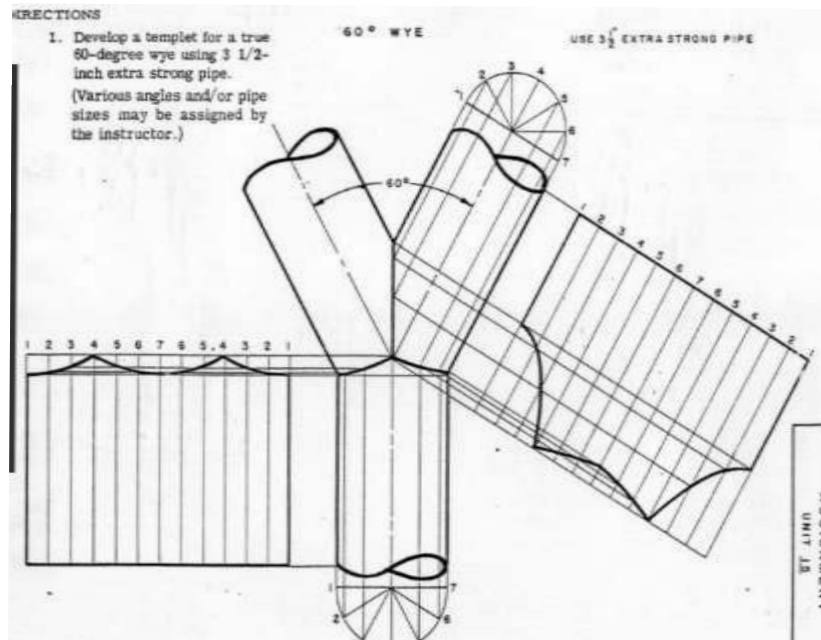
Job Sheet 8

Day	8	Task No.	Plumbing-2-08	Time	8h
Title	Fabricate water gutter 2				
Material	Name	Spec	Q'ty		
	Paper Sheet	A3	1		
	Pencil	B1	1		
	Steel Measure	300mm	1		

1. Purpose

- After completing this practice, the student should be able to:
 - Fabricate a gutter
 - Fabricate rain water down pipe
 - Fabricate bends and other fitting
 - Join rain water gutter, pipes and other fittings
 - Lay rain water gutters
 - Harvest water, Fabricate water gutter

2. Job Figure



- Information : Interpret working drawing, Check the cylinders diameter.
- Requirements : Make the curve of the interpenetration.

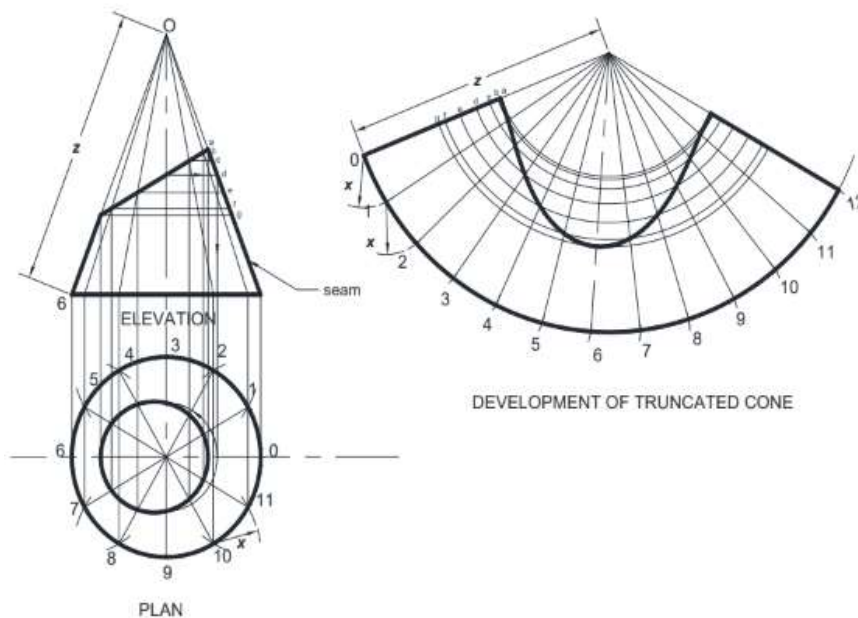
Job Sheet 9

Day	9	Task No.	Plumbing-2-09	Time	8h
Title	Fabricate water gutter 3				
Material	Name	Spec	Q'ty		
	Steel ruler	300mm	1ea		
	Sheet paper	A0	1ea		
	T ruler	1200mm	1ea		

1. Purpose

- ☐ After completing this practice, the student should be able to:
 - Fabricate a gutter
 - Fabricate rain water down pipe
 - Fabricate bends and other fitting
 - Join rain water gutter, pipes and other fittings
 - Lay rain water gutters
 - Harvest water, Fabricate water gutter

2. Job Figures



- ☐ Information : Interpret working drawing, Check the circle diameter.

- ☐ Requirements : Develop the truncated cone.

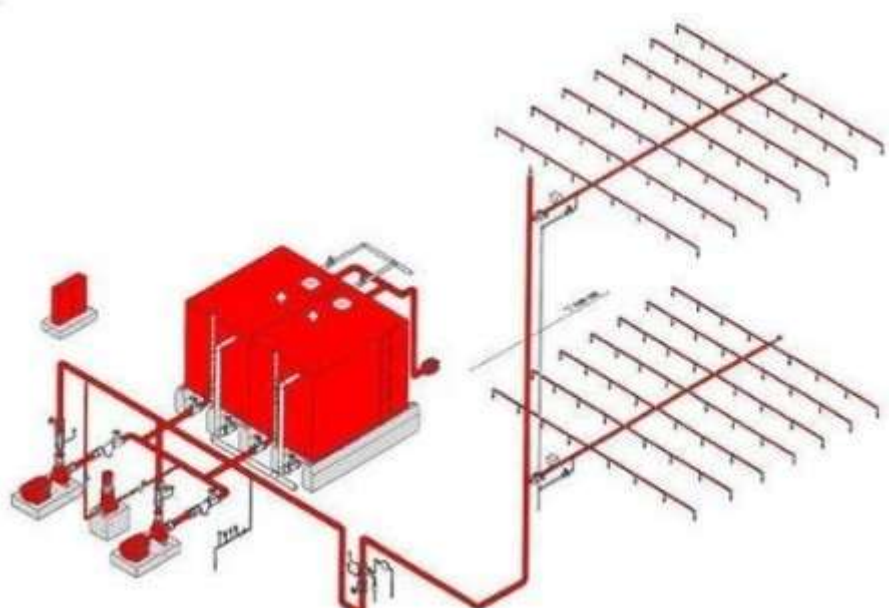
Job Sheet 10

Day	10	Task No.	Plumbing-2-10	Time	8h
Title	Install Fire-fighting systems				
Material	Name	Spec	Q'ty		
	Drilling M/C	220V	1ea		
	Spirit Level	450mm	1ea		
	Hacksaw	300mm	1ea		

1. Purpose

- After completing this practice, the student should be able to:
 - Understand the symbols of plumbing fittings, and make a pipe work plan.
 - Know how to use the fitting parts at a suitable place.
 - Can change the 3D piping drawings to 2D piping drawings
 - Can draw the piping drawings accurately.
 - Check the drawings.

2. Install Figure



□ Information : Installation of sprinkler head and accessories.
□ Requirements : Test leakage.