

SAQCC FIRE

D&GS TRAINING SUB COMMITTEE

COURSE CURRICULUM

COURSE	Pipes and pipe fittings - theory & practical	
ORIGINATOR	Brad Holley	
DATE	05th July 2014	
Amendment 1	17th September 2014	Committee changes
Amendment 2	26th January 2015	Committee changes
Amendment 3	03rd March 2015	Committee changes
Issued	02nd April 2015	Issued

EQUIVALENT TRAINING COURSES AVAILABLE		
TITLE	TRAINING SCHOOL	CONTACT DETAILS
None		

STATUS OF CURRICULUM - Issued

EQUIVALENT UNIT STANDARD

None known

PURPOSE OF TRAINING COURSE

This training course is for learners to gain practical knowledge in the safe installation of pipe work and gas cylinders for gaseous fire extinguishing systems.

Learners who complete this course will obtain the knowledge of how to install gas suppression pipes and cylinders.

LEARNING ASSUMED TO BE IN PLACE

This course assumes the learner is already proved competent in:
Workshop practice and hand tools.

OUTCOMES REQUIRED

Topics Covered:

1. Safety in handling pipes and cylinders
2. Understanding gas standards in relation to gas pipes and fittings
3. Understanding gas pipe hydraulic calculations
4. Installing of gas cylinders and racking
5. Identifying pipes and fittings suitable for gas suppression systems
6. Identifying pipe supports and hangers.
7. Preparing and installing pipes. Measuring, cutting and threading of gas pipes
8. Identifying gas cylinder hardware
9. Testing of gas pipe work

1. SAFETY

Outcome 1. Safe handling of pipes

Learning Outcomes:

The learner should be able to:

- Learn the PPE required for handling pipes
- Storage method of pipes
- Correct method of carrying pipes

Assessment:

The learner should be able to specify how to handle pipes

Outcome 2. Safe handling of gas cylinders

Learning Outcomes:

The learner should be able to:

- Correct method of transporting cylinders
- Understand the correct PPE for transporting cylinders
- Understanding the gas pressures and dangers of the gas pressure
- Securing cylinders on site

Assessment:

The learner should be able to identify:

- Correct method for transporting, storing and securing of cylinders

2. GAS STANDARDS

Outcome 1. Understanding SANS 14520 Pt 1, 6.2.3 & 6.3 and SANS 306 Pt 4, 18 &19 - 21

Learning Outcomes:

The learner should be able to understand:

- The positioning and installation of cylinders
- The requirement for dirt traps
- Pipes and installation
- Fittings types and installation
- Pipe supports

Assessment:

The learner should be able to display his understanding of:

The mounting and positioning of cylinders and the installation requirements for pipe as required by the national standards

3. HYDRAULIC GAS CALCULATIONS

Outcome 1. Gas Calculations

Learning Outcomes:

The learner should be able to :

- Interpret the pipe requirements from gas design documentation
- Interpret isometric drawings
- Assess required pipes and fittings
- Confirm nozzle insert sizes and placement
- Confirm correct manifolds for installation
- Confirm correct pressure reducing orifices for installation

Assessment:

The learner should be able to:

Understand all documentation and calculations required for a gas pipe work installation

4. INSTALLING GAS CYLINDERS

Outcome 1. Pre engineered gas cylinders

Learning Outcomes:

The learner should be able to :

- Identify the correct cylinder for the correct area
- Identify the correct orientation of the cylinder
- Identify the most optimum position for installation of the cylinder to achieve even dispersal of the gas taking into account all obstructions to the flow of gas
- Determining the correct fixing methods and hardware to mount the cylinders

Assessment:

The learner should be able to:

Understand the requirements for installing pre engineered gas cylinders.

Outcome 2. Engineered gas cylinders

Learning Outcomes:

The learner should be able to :

- Understanding manufacturers installation instructions
- Identify the correct positioning of the cylinders in accordance with design drawings
- Identify the correct fixing brackets for the cylinders
- Determining the correct fixing methods and hardware to mount the cylinders
- Ensure the cylinders orientation is correct for installation of the gas discharge hose
- Ensure the gas cylinder label is correct for the gas and is visible

Assessment:

The learner should be able to:

Understand the requirements for installing engineered gas cylinders

5. GAS SUPPRESSION PIPES AND FITTINGS

Outcome 1. Gas pipes

Learning Outcomes:

The learner should be able to :

- Identify different types of pipes and schedules. Identify correct pipe for gas suppression
- Identify the correct schedule of pipe in accordance with the design
- Understanding I/D and O/D
- Understanding pressure rating of pipes

Assessment:

The learner should be able to demonstrate by both written and practical exercises:

Understand the requirements for the correct pipe for the installation

Outcome 2. Gas pipe fittings

Learning Outcomes:

The learner should be able to :

- Identify different types of pipe fittings and the correct fittings for the installation
- Identify the correct pressure ratings of different fittings
- Understanding the different threads in each fitting

Assessment:

The learner should be able to demonstrate by both written and practical exercises:

Understand the requirements for the correct pipe fittings for the installation

6. GAS SUPPRESSION PIPE SUPPORTS AND FIXINGS

Outcome 1. Gas pipe supports and fixings

Learning Outcomes:

The learner should be able to :

- Identify different types of pipe supports
- Identify different types of building construction
- Determine the correct types of bolts and anchors for the construction
- Understanding the fitting of the pipes to the supports
- Know the spacing of pipe supports

Assessment:

The learner should be able to demonstrate by both written and practical exercises:

Identify the correct type of pipe supports and fixings.

7. PREPARING PIPE FOR AN INSTALLATION

Outcome 1. Measuring and cutting of pipes

Learning Outcomes:

The learner should be able to :

- Identify safe routes for the gas pipes in accordance with supplied isometric drawing
- Check physical pipe length against hydraulic design
- Select correct pipe and secure in the pipe vice
- Measuring the correct pipe length
- Use correct method for cutting of the pipe

Assessment:

The learner should be able to demonstrate by both written and practical exercises to:

Measure and cut the gas pipes.

Outcome 2. Threading of the pipes

Learning Outcomes:

The learner should be able to :

- Identify different types of pipe threads
- Determining the correct dye for threading of the pipe
- Use of the electrical threading machine and the hand threading tool
- Reaming of pipe
- Cleaning of the pipes

Assessment:

The learner should be able to demonstrate by both written and practical exercises to:

Thread pipes correctly

Outcome 3. Installing pipes and manifold

Learning Outcomes:

The learner should be able to :

- Measure and marking positions of pipe fixings
- Drilling holes for anchors using safe drilling methods and installing pipe supports
- Installing fittings to pipes / methods
- Safe methods of fixing pipes into position
- Correct selection, installation and positioning of gas discharge nozzles
- Determining correct mounting height of the manifold from the manufacturer's instructions
- Using correct fixings for the manifold

Assessment:

The learner should be able to demonstrate :

The processes and requirements for the correct installation of the gas system pipe network.

8. INSTALLING GAS SYSTEM HARDWARE

Outcome 1. Gas system hardware

These to include:

Discharge hoses, actuation hoses, detonators, solenoids, non return valves, pressure relief valves, pressure reducers, pressure gauges, pilot cylinders, Odourisers, pressure switches.

Learning Outcomes:

The learner should be able to :

- Identify various system components

Assessment:

The learner should be able to demonstrate by both written and practical exercises to:

Correctly identify all the gas system hardware.

9. TESTING OF GAS SYSTEM PIPE NETWORK

Outcome 1. Test gas pipe network

Learning Outcomes:

The learner should be able to :

- Understand the requirements of SANS 14520-1, 8.2.3 and SANS 306-4, 8.1.3.12
- Use of compressors
- Blanking off of pipe network
- Dangers of pressure testing

Assessment:

The learner should be able to demonstrate:

The requirements for testing pipe systems