Thread Awareness

- understanding how to correctly identify an end termination by following 8 steps
- use a range of measuring instruments and gauges in conjunction with tabulated data to positively identify a range of end terminations
- understand the main characteristics and geometry of the male and female end termination along with how it seals for a range of end terminations including BSP, (60° cone ‘O’ ring and non ‘O’ ring, elastomeric and metal to metal sealing), BSPT, JIC, SAE 45° flare, Flange, ORFS, Metric, (light and heavy), Metric port/stud end, French GAZ, NPT/NPTF, BSP – Japanese, SAE port/stud end, Metric – Komatsu and staple type connectors
- discuss the various positive and negative features (both technical and commercial) for each end termination

Hose Assembly

- understand the production equipment and their associated requirements (including calibration) for the successful production of quality hose assemblies
- selecting and cutting the hose to length – the importance of a good, clean cut
- the industry standard method of measuring hose assembly overall length
- coupling selection
- work through the theoretical and practical aspects of manufacturing hydraulic hose assemblies using a combination of verbal and written instructions
- skiving – internal and external
- preassembly of one piece and two piece couplings, pros and cons of each coupling type
- angular orientation and hose bias when the hose assembly has two angled connectors
- crimping/swaging – covering all aspects from correct die selection, machine setting, correct positioning of the hose assembly within the machine, measuring the crimp diameter, reducing the crimp diameter if necessary and ensuring that the operation has been completed correctly
- pressure testing of hose assemblies – ratios based on working pressure and application
- cleaning and protecting hose assemblies prior to supplying to the customer

Why Should You Attend the Course

“I just wanted to convey our thanks for a well received and incredibly informative most useful course for us. All attendees were extremely happy with the content & information gained in which will be applied in future when identifying, manufacturing, fitting & using hoses. Your knowledge & experience on the subject was clear. I simply want to extend our thanks to you for an excellent couple of days training.”

Mr David Quigley
Engineering Manager,
Hydac Technology Limited
CHAPTER THREE

Contamination

- cleanliness – why it is important?
- hose cutting
- visually compare samples of cut and cleaned hose
- cleaning a hose assembly by flushing
- using a projectile to clean a hose
- storage and handling to reduce contamination
- understand the 3 principle methods established by ISO to measure contamination levels

CHAPTER FOUR

Tightening of Connectors

- tightening of adjustable style adaptors
- tightening of hose connectors – straights and elbows
- understand some of the common methods used within the industry to ensure connectors are correctly tightened

CHAPTER FIVE

Hose Assembly Routing & Installation

- hose assembly routing, good and bad practice considering ISO and BFPA recommendations
- protecting hoses in service
- typical installation and application problems

CHAPTER SIX

Hose Management

- recommended storage life for bulk hose, hose assemblies and stored equipment
- understand how long a hose should last in service considering the application, the environment, damage, application history and hose management schemes
- maintenance and reworking of hose assemblies
- examples of actual failure resulting from improper use classifications, symptoms, mode of and cause of failure

The spiral bound course book is supported by a worksheet which is completed by the candidate. This worksheet forms the basis of the assessment.
Follow correct disposal procedures in the case of:

- Red
- Yellow

Check compatibility and specification of all hydraulic hoses before installation.

Follow manufacturers’ recommendations and guidelines when involved in installation, commissioning and testing.

Insignificant risk. No monitoring required unless there is a change to the use of:

- Yellow

Check to see that all pipe and hose connectors are compatible with their relevant pipe and hose accordingly.

Multiple

- Green

Ensure that the pressure gauge used to check the system pressure is of the correct range and connection.

- Green

Ensure that any portable lifting equipment used during maintenance activities have been tested and carry an up to date test certificate.

Familiarise yourself with the layout of the building in which you are working and the appropriate fire exits.

- Green

Check oil type before putting it into a system.

Follow set procedures when carrying out fault diagnosis and rectification.

- Black

Familiarise yourself with the layout of the building in which you are working and the appropriate fire exits.

- Yellow

Ensure all materials used to contain spillage are collected and removed.

- Green

Fit replacement hose and refill system as required with compatible oil and check for any further leaks.

- Yellow

Remove hose and plug/cap ends to contain oil.

- Green

Be aware that site conditions can change after you have started working.

- Yellow

Immediately reassess the environment you are working in and make changes accordingly. For your safety be aware of what is happening around you.

- Green

On arrival at site assess the extent of any oil spillage, and after completing your risk assessment, attempt to contain and minimise the loss of further fluid using: oil granules, oil pads, oil socks/booms etc.

- Yellow

Probability of failure: Insignificant. Risk is acceptable. Immediate risk.

- Green

Failure is not expected. Historic records support this probability of failure.

- Yellow

Analysing the results of the risk assessment should identify immediate risk reduction measures that should be implemented to reduce the consequences of failure and/or probability of damage. Additional engineering and/or operational control measures and/or procedures should be put in place to reduce the potential risk. Determine if a hose assembly is the best solution in this application.

- Yellow

Risk analysis principles, common installation and routing techniques.

- Yellow

The history of previous inspection and replacement frequencies.

- Yellow

The period recommended by the manufacturer/standards.

- Yellow

The environment which the hose assembly is operating in.

- Yellow

The criticalness of the application.

- Yellow

Examining the results of the risk assessment.

- Yellow

The measure of risk.

- Yellow

Health, Safety and Environmental issues.

- Yellow

Insignificant risk. No monitoring required unless there is a change to the use of:

- Yellow

EXTERNAL COURSES AVAILABLE:

**Foundation Course in Working Safely with Hydraulic Hose and Connectors**

This course has been developed to provide an introduction into hydraulic hose, connectors and the safe assembly of these components for industry use. The course is classroom based, during the day the attendee will gain a knowledge and understanding of safe hose assembly and if applied will only enhance the safety within the hydraulic industry and the attendee.

**Hose Integrity, Inspection and Management**

This is the third BFPA training course in the series with the key themes covered during the one-day course include: hose life expectancy; risk analysis; competence by way of a robust competence assurance system; identify, inspect & record; hose register – recording of a hose assembly prior to it going into service; and visual hose assembly (installation) inspection check list. The attendees will be assessed during the day with the appropriate level of pass certification being awarded, e.g. distinction, merit, or pass.

**Small Bore Tubing Integrity Course**

This course has been developed by BFPA technical experts to give candidates a valuable understanding of the complexity surrounding small bore tubing and compression fittings. The training course covers generic manufacturers twin ferrule compression fittings, thread awareness, tube and pipe differences and the preparation process, tube manipulation (bending) principles, common installation and routing techniques.

**Other Courses Available:**

[BFPA Small Bore Tubing Integrity Course]

[BFPA Hose Integrity, Inspection and Management]

[BFPA Foundation Course in Working Safely with Hydraulic Hose and Connectors]

**Course bookings can be made by telephone, email, fax or by using our on-line booking course enquiry form:**

**Tel** 01608 647900

**Fax** 01608 647919

**E-mail** enquiries@bfpa.co.uk

**www.bfpatrainingacademy.co.uk**

To ensure you obtain the course dates that meet your requirements, early bookings are recommended as many of our courses are in high demand.

**The British Fluid Power Association,**

Cheriton House, Cromwell Park, Chipping Norton OX7 5SR