

COURSE OVERVIEW

# Foundation Course in Working Safely with Hydraulic Hose and Connectors

## ABOUT THE COURSE

This is a one day course and is designed to show the correct practices needed to work safely with and around Hydraulics. Designed as either an excellent induction course for someone new to the industry or a superb Safety course for people who are not primarily Hydraulic or Fluid Power technicians but work from time to time on machinery containing Hydraulic components. The day contains video presentation examples of safe working practices involving associated dangers of fluid injection injuries and examples of hose being manufactured from the raw components. A high quality personalised course book, certification of attendance and registration on the BFPA National data

base, give both the attendee and employer confidence that the correct methods and culture are being adopted and used.

## WHY SHOULD YOU ATTEND THE COURSE

*"The recent training by the BFPA for KPM employees was excellent and I would recommend it to any company in the Hydraulic field, if you would like a testimonial at any time I am more than happy to do this for you, please pass on my thanks to the BFPA trainer for his excellent training and thank you for your support."*

### Mr Steve Wooding

Safety, Health & Environmental Manager,  
Kawasaki Precision Machinery (UK) Ltd

## CHAPTER ONE

### Basic Hydraulics

- understanding what is meant by the terms, 'pressure', 'force' and 'area' and how these 3 factors are important
- how to determine hose size, comparing how changing the 3 variables; flow rate, hose bore size and fluid velocity affect one another. The difference caused by a change of fluid temperature and fluid viscosity are also considered
- a basic hydraulic circuit diagram is used to show typical components used to make up a simple circuit
- contamination – why cleanliness is important to your customer and what steps can be taken to minimize contamination levels

## CHAPTER TWO

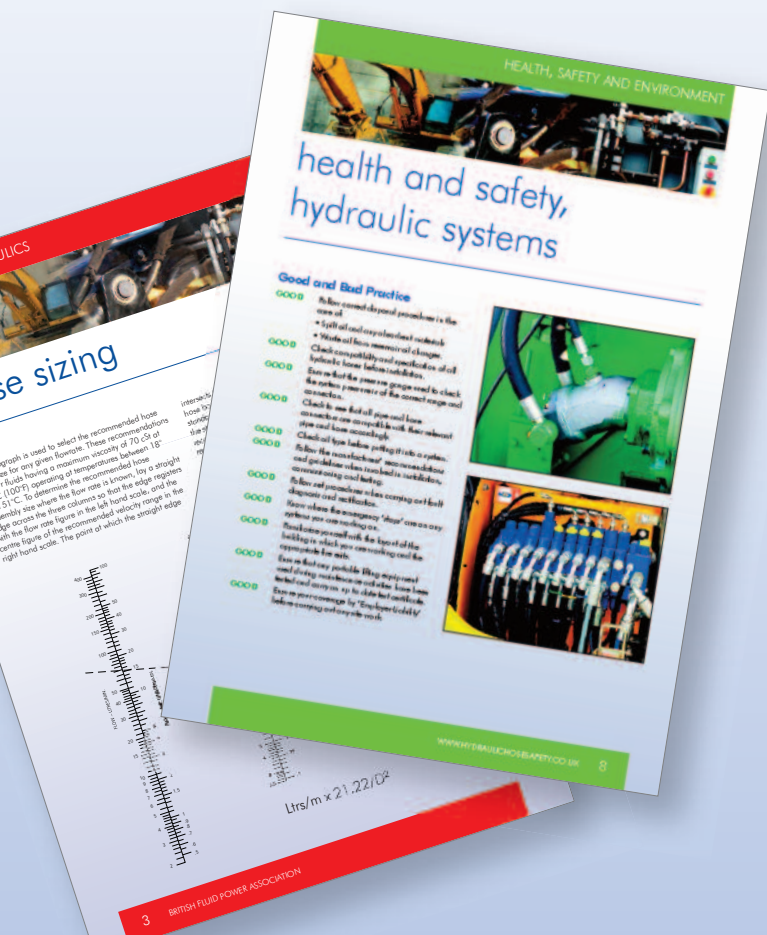
### Health, Safety & Environment

- health & safety legislation, duties of the employer and employee
- competency – how is it defined
- risk assessment – 5 steps to risk assessment
- hose assembly & installation safety consideration & the dangers of hose failure
- site/workshop safety
- good & bad practice for health & safety when working with hydraulic systems
- high pressure injection injuries – detecting pinhole leaks in a hydraulic system (this is supported by 3 short DVDs showing the dangers of injection injuries, the importance of correct and prompt diagnosis and subsequent treatment)
- how to avoid injection and burn injuries and what other safety matters should also be considered

## CHAPTER THREE

### Hose & Connector Identification

- the importance of understanding the application, useful factors to consider
- hose sizes
- industry standards for hose – EN, ISO & SAE
- hose selection
- hose end terminations, material types and end terminations commonly used in the fluid power industry
- hydraulic fluid types



## CHAPTER FOUR

### Hose Assembly

- the industry standard method of measuring hose assembly overall length
- cutting the hose to length – the importance of a good, clean cut
- skiving – internal and external
- preassembly of one piece and two piece couplings
- 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
- typical sample inspection plan for volume hose assembly manufacture
- pressure testing of hose assemblies – ratios based on working pressure and application
- cleaning and protecting of hose assemblies prior to supplying to the customer

## CHAPTER FIVE

### Installation

- correct installation of adaptors and hose assemblies
- environmental conditions which can cause hose and connector degradation
- good & bad practice when tightening up connectors
- good & bad practice for installation, considering issues such as bend radius, natural hose bias and reducing damaged caused by abrasion, heat, kinking and twisting

## CHAPTER SIX

### Hose and Connector Failure

- reasons for hose and connector failure. How to reduce/eliminate the likelihood of failure occurring
- re-ending hydraulic hose assemblies – DON'T & don't mix and match. The stance of the BFPFA and other bodies within the fluid power industry on these two important topics

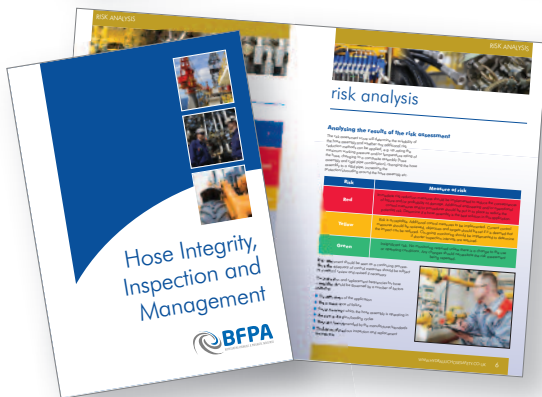


# Other Courses Available:



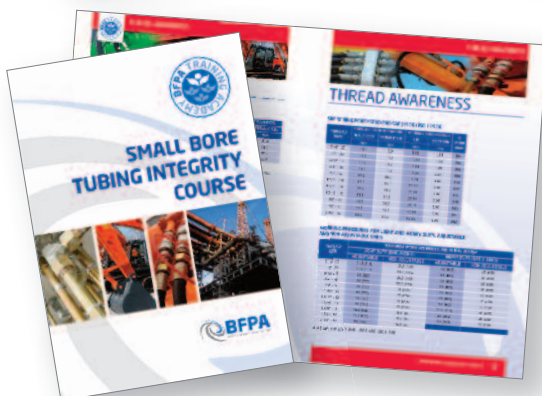
## BFPA Hose Assembly Skills Training Programme

The skills course will take the candidate through the many techniques and considerations essential for the safe production of a quality hose assembly and ultimately leading to installation. This two day course involves both the theoretical and practical elements in working with hose and connectors. During the 2 days the attendees will be trained and assessed to an industry level of ability in working with hose and connectors.



## 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.



Course bookings can be made by telephone, email, fax or by using our the 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,**  
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