

### Advice on Positioning of Sample Ports

Sampling must be carried out at a suitable location in the stack. Bends, branches, obstructions, fans and leaks can all cause undesirable variations in the velocity profiles, which may make the location unsuitable for sampling. Suitable flow conditions usually exist in sections of ductwork with constant shape and cross-sectional area, at least 5 hydraulic diameters upstream and 2 hydraulic diameters downstream of a disturbance (or 5 hydraulic diameters from the top of the stack). See Figure 1 below.

A hydraulic diameter is defined as: 
$$\frac{4 \times \text{area of sampling plane}}{\text{length of sample plane perimeter}}$$

In order to sample in accordance with the monitoring standards, two sampling points will be required on each sampling plane. If these are not already in place on the stack then they need to be installed prior to the monitoring visit. Sampling ports should preferably be 4" BSP sockets but 2" BSP sockets will be acceptable for the sampling of some pollutants. See figure 1 below

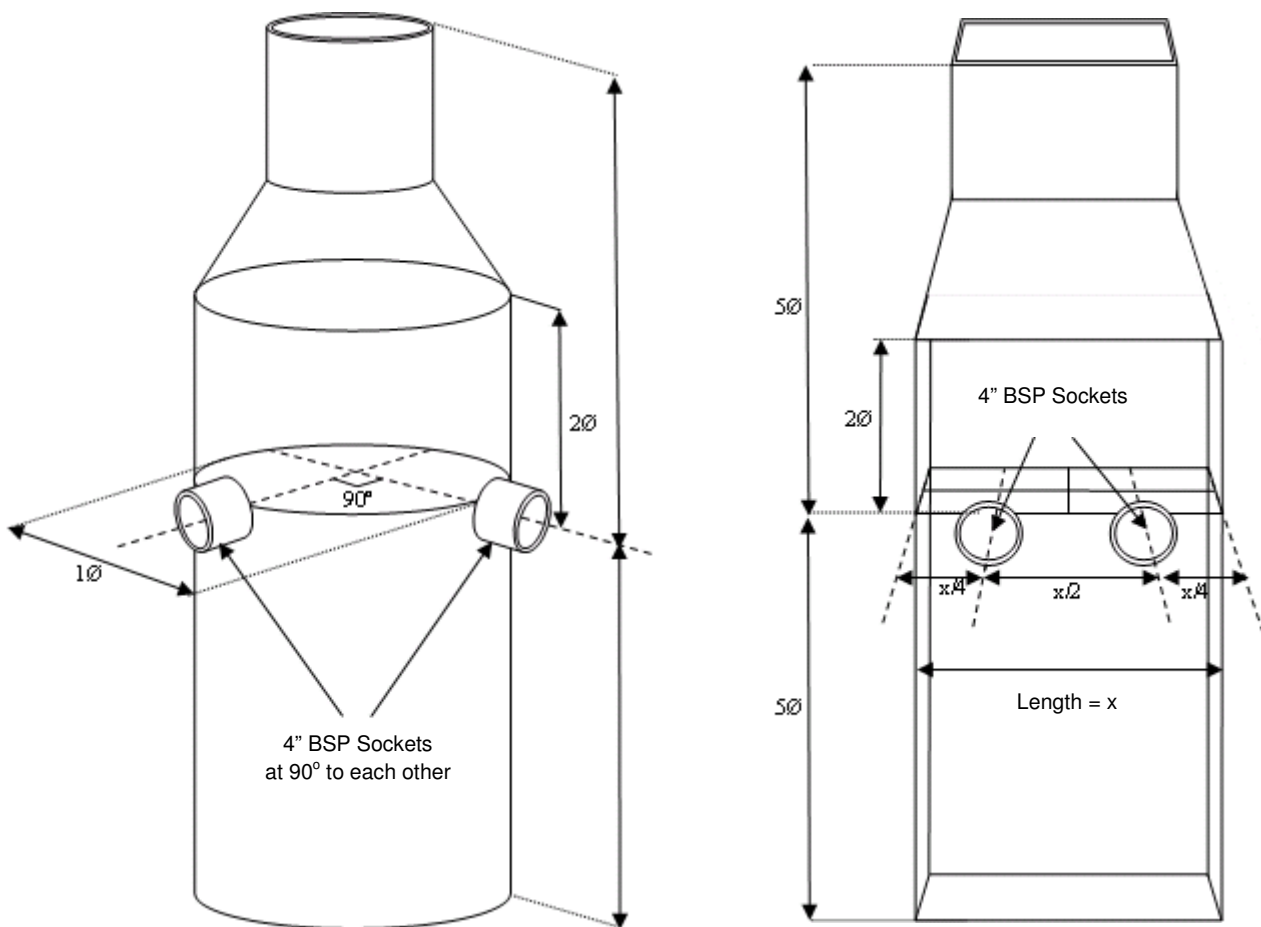
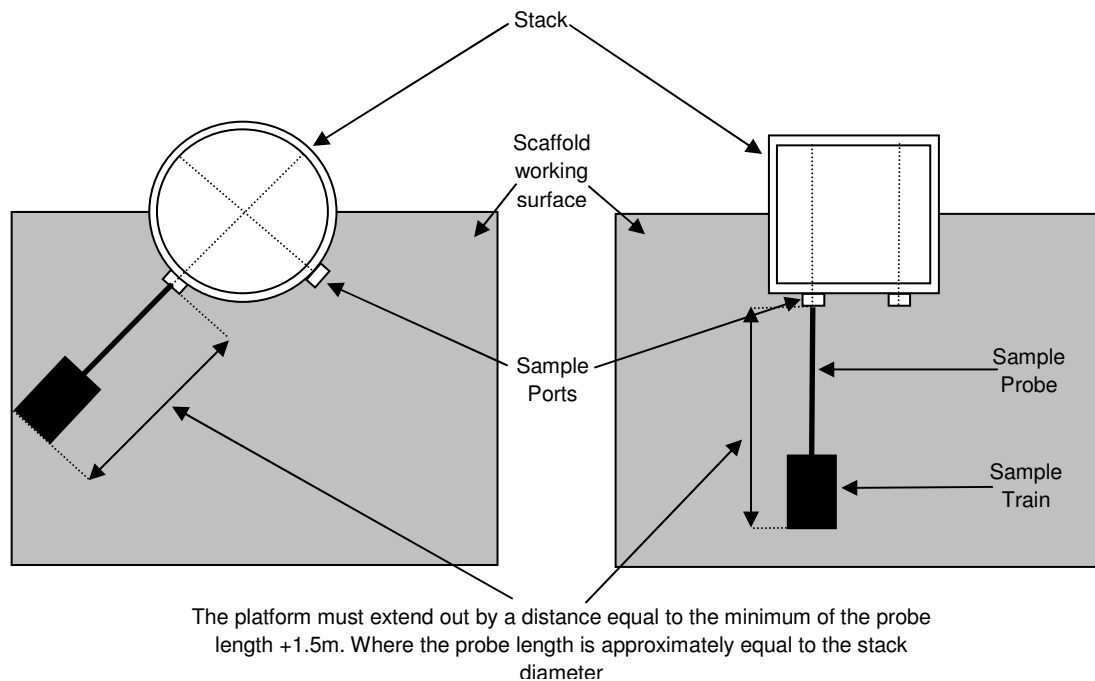


Figure 1 - Port Positions on Circular and Rectangular Ducts Stacks

### Access and Sampling Platform

Safe access will be required to each sample point. This should be by a suitable platform with a platform inspection record verifying it's safety or by scaffolding with a Scafftag verifying it's safety. Temporary scaffold platforms should be constructed to a specific minimum Scafftag® category of "heavy duty" or meet the requirements stated in the monitoring standard. Permanent platforms must be provided with handrails and kick-boards that meet the requirements of the Workplace (Health, Safety and Welfare) Regulations 1992, 9regulation 13) for permanent platforms and the Health and Safety in Construction Regulations (HS(G)150) for temporary platforms.



Platforms must have a sufficient working area to manipulate the sampling probe and operate the measuring instruments without equipment overhanging the guard rails. Protection from adverse weather may be desirable for an exposed sampling position; however it should be recognised that any protective cladding installed at high levels will affect wind loading on the stack and will be vulnerable to damage during high winds. At elevated positions it may be preferable to ensure sampling is only carried out during relatively calm weather.

Sampling from roofs or the tops of arrested equipment, vessels and ducts is unacceptable unless they have been assessed as being suitable by meeting the requirements for platforms described in The Work at Height Regulations 2005 (WAHR), Regulations 8 and Schedule.

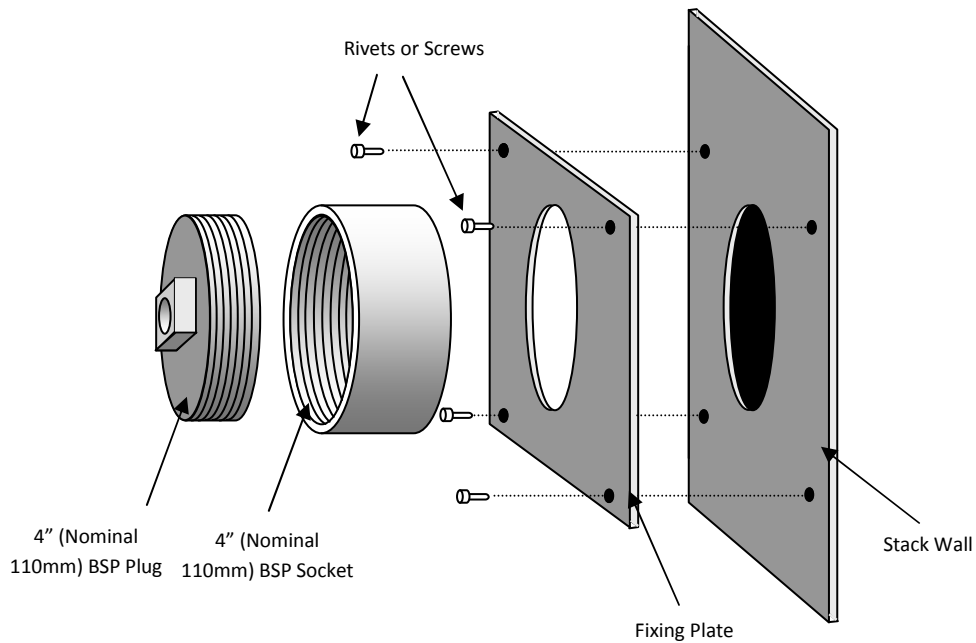
Due to the risk involved it is unacceptable to sample from ladders.

Sampling from a MEWP (Mobile Elevated Work Platform) is unacceptable for the vast majority of Stack Monitoring. Sampling from a MEWP is only considered acceptable if the majority of equipment is to be kept at ground level and Monitoring Staff only work from the MEWP for short periods of time i.e. less than half an hour. A MEWP may be used if it is decided that it is the best way to minimise the risk involved.

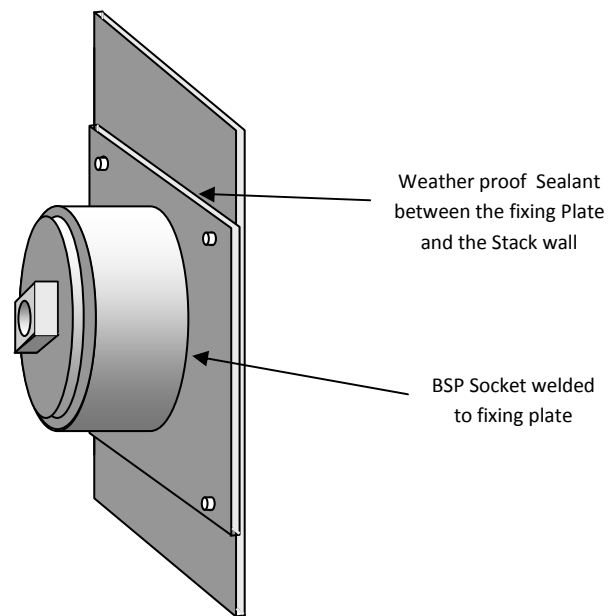
#### **Power**

Due to the nature of the sampling equipment used, an electricity supply will be required within 50 metres of each sampling point. The sampling equipment requires a single phase 110V supply. Environmental Evaluation Ltd will supply a 240V step down transformer if a 110V supply is not available.

### Recommended Method of Attachment of BSP Socket



### **"Exploded" BSP Socket Components**



**Attached BSP Socket**

**BSP Sockets can be obtained from Pipe Centre stores. The address of the nearest Pipe Centre can be obtained from the branch Locator on the website [www.pipecenter.co.uk/](http://www.pipecenter.co.uk/)**