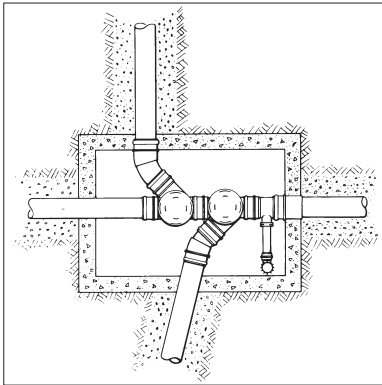


## Product



• THIS DETAIL SHEET RELATES TO THE USE OF MARLEY SEALED ACCESS FITTINGS IN TRADITIONALLY CONSTRUCTED MANHOLES AND SHALLOW INSPECTION CHAMBERS.

• Marley sealed access fittings in traditional manholes or shallow inspection chambers are for use in providing access to PVC-U drainage systems complying with BS 4660 : 1989, used in domestic underground drains, public and private sewers.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations and the Conditions of Certification, respectively.

## Technical Specification

### 1 Description

1.1 The sealed access fittings listed in Table 1 are available in 110 mm and 160 mm pipe diameters, each incorporating ring seal sockets and spigot outlets. The access fittings incorporate a profiled insert held in position by an injection moulded threaded cap, and are made watertight with a ring seal to BS 2494 : 1990. When the insert is removed, the fitting allows a 150 mm diameter access point to the drain. Dimensions are detailed in Marley Extrusions Ltd's product brochure, *Marley Extrusions, Technical Information, Underground Drainage Systems*.

Table 1 Sealed inspection fittings

Product	Manufacturer's Catalogue No		
	110 mm	160 mm	160 mm × 110 mm
110 mm × 32 mm boss branch	UW 415		
Straight access pipe	UF 42		
Left hand access branch	UY 471	UY 631	UY 661
Right hand access branch	UY 472	UY 632	UY 662
Double access branch	UY 404		

1.2 Associated components and fittings are listed in Table 2.

Table 2 Associated components/fittings

	Manufacturer's Catalogue No
32 mm pipe muPVC	WPP33G
32 mm 91½° bend polypropylene	WPB33G
32 mm access cap muPVC	WPA31G
32 mm clip PVC-U	WC3G
250 mm riser/1 m long	UAR 1
324 mm square cover frame	UAC 03
300 mm square concrete lid	UEC 12

1.3 The injection moulded PVC-U fittings comply with the quality and colour requirements of BS 4660 : 1989. Continuous quality control is exercised during manufacture including stress relief, tensile strength and dimensional accuracy.

1.4 The 110 mm diameter ring seals are Type D to BS 2494 : 1990.

1.5 The 110 mm by 32 mm boss branch (UW 415) incorporates a socket suitable for receiving a 32 mm pipe. A stand pipe assembly must be constructed to enable surface water to be drained from the manhole (see Figure 1).

1.6 The shallow inspection chamber incorporates:

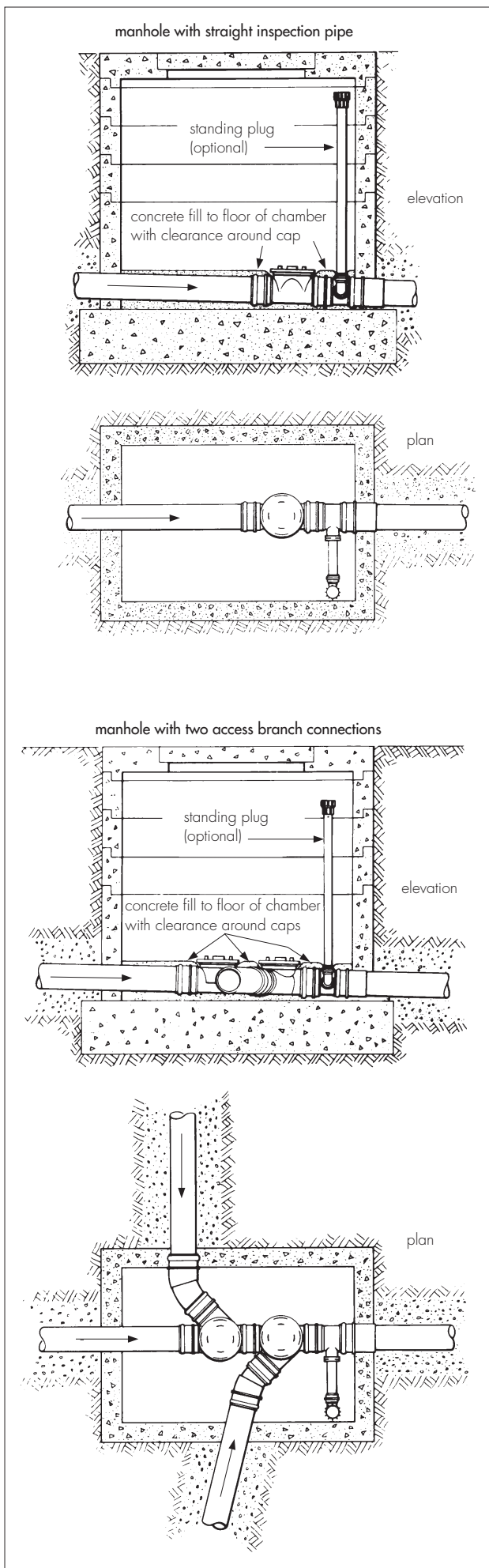
(a) a 110 mm sealed inspection fitting (references UF 42, UY 471 or UY 472, see Table 1).

(b) chamber body — 250 mm diameter PVC-U pipe to BS 5481 : 1977(1989) chamfered at both ends to fit the base section, the cover and the frame assembly. The risers are supplied in 375 mm lengths and have a minimum wall thickness of 4.9 mm.

(c) cover assembly — comprising an injection moulded PVC-U cover frame with a 250 mm solvent weld socket (UAC 03), and a concrete lid, (UEC 12) 300 by 300 by 50 mm, with a plastic insert to assist removal.

1.7 All fittings bear the manufacturer's identification mark, the nominal size and carry labels bearing the BBA identification mark incorporating the number of this Certificate. Where appropriate, components are marked with their respective BS Kitemark (see Detail Sheet 2 of this Certificate).

Figure 1 Manholes



## 2 Delivery and site handling

2.1 The components are delivered to site in boxes or plastic bags containing similar items. The packaging should be retained during storage to minimise the risk of loss or damage.

2.2 If long-term storage in the open is envisaged, the fittings should be shaded from direct sunlight.

## Design Data

### 3 General

3.1 The Marley sealed access fittings are suitable for use in domestic drains designed in accordance with BS 8301 : 1985 for the conveyance, by combined or separate systems, of surface water and domestic sewage as is permitted to be discharged into public sewers by the Water Industry Act 1991 and surface water and sewage as is permitted and defined by the Sewerage (Scotland) Act 1968, and the Water and Sewerage Services (Northern Ireland) Order 1973.

3.2 Fittings used in manholes and shallow inspection chambers provide a satisfactory means of access to the drainage system for the purposes of rodding, removal of debris, inspection and testing.

3.3 The fittings are suitable for use in place of traditional channels in manholes. In all other respects the manholes must be constructed in accordance with BS 8301 : 1985.

3.4 The standing plug is an optional extra and provides a method of draining surface water that may infiltrate the manhole. However, if left out, there is no detrimental effect on the performance of the drain.

### 4 Strength

The components have adequate strength to resist loads associated with installation and subsequent use.

### 5 Performance of joints

5.1 Joints between the sealed inspection fittings and the drainage system complying with BS 4660 : 1989 will remain watertight under conditions of deformation and pipeline deflection in excess of those expected to occur with normal good drainage practice.

5.2 The dimensions of sockets and sealing rings are such as to give satisfactory joints. The performance of the joints will not be affected by thermal movement when the system is correctly installed and limited to the conditions of use set out in this Detail Sheet.

### 6 Watertightness

The access fittings, when correctly fitted, will not allow seepage of water into or from surrounding soil. The covers are watertight at an internal pressure of 0.35 bar.

## 7 Flow characteristics



The sealed inspection fittings will have the flow and self-cleaning properties normally associated with PVC-U pipes and fittings to BS 4660 : 1989.

## 8 Resistance to chemicals



The products will be unaffected by those types and quantities of chemicals associated with domestic effluent.

## 9 Resistance to elevated temperatures



The products will have adequate resistance to the temperatures likely to be found in domestic sewage.

## 10 Rodding and testing



10.1 Sealed access fittings in traditional manholes allow cleaning of the drains to be carried out using conventional flexible drain rods. Use of a rodding head incorporating a guide roller will facilitate rodding.

10.2 When using a mechanical rodding system with PVC-U pipes and fittings, toothed root cutters must not be used as these may cause damage to the drain.

10.3 The drain can be sealed for test purposes using either screw-expanding or inflatable drain stoppers.

## 11 Practicability of installation

The products can be installed easily under normal site conditions.

## 12 Durability



In the opinion of the BBA, when used in the context of this Detail Sheet, the materials from which the components are manufactured will not significantly deteriorate, and the system will have a life in excess of 50 years.

## Installation

### 13 Sealed access fittings in manholes.

13.1 The design and spacing of the manholes must be in accordance with BS 8301 : 1985.

13.2 Sealed access fittings may be installed within traditionally constructed manholes using single or combinations of the access fittings listed in Table 1 (see Figure 1).

13.3 If the standing plug is required, a 110 mm by 36 mm boss branch must be installed within the manhole to accept the 36 mm standpipe.

13.4 A concrete manhole base must be constructed in accordance with BS 8301 : 1985.

13.5 The sealed access fitting or fittings are then positioned and the drain connections made.

13.6 Concrete is then placed below the fitting and the manhole haunched (see Figure 1).

13.7 The manhole is then built to the required level and the standing plug assembly constructed (if required).

### 14 Sealed access fittings in shallow inspection chambers

14.1 The design and spacing of the shallow inspection chambers must be in accordance with BS 8301 : 1985.

14.2 The bedding and sidefill required up to the crown of the pipes connected to the access fitting must be in accordance with Detail Sheet 3 of this Certificate.

14.3 Joints between an access fitting and drain runs are made in the normal manner for push-fit joints in PVC-U pipe systems. The pipe spigot must be chamfered, deburred, cleaned and lubricated using the recommended lubricant. The pipe is then pushed into the socket on the access fitting, allowing a clearance for subsequent expansion.

14.4 The 250 mm diameter riser that forms the chamber body must not transfer load to the access fitting.

14.5 When using the cover and frame assembly, the top end of the pipe must be chamfered, if necessary, cleaned and lubricated before the cover assembly is pressed into position.

14.6 The chamber must be surrounded with granular material as shown in Figure 2.

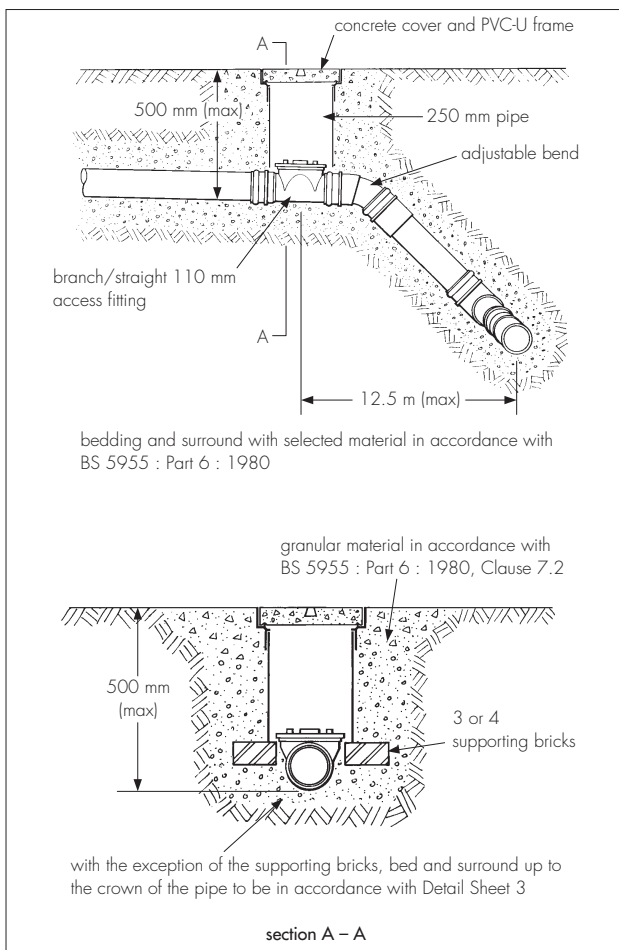
14.7 Shallow inspection chambers are not suitable for locations with high water tables.

14.8 The access fittings must not be used in chambers where the drain invert level is greater than 600 mm below ground level.

14.9 The products are for use in locations inaccessible to motor vehicles.

14.10 Precautions should be taken to protect the product from damage during construction.

Figure 2 Typical shallow access chamber installation



## Technical Investigations

The following is a summary of the technical investigations carried out on the Marley Sealed Access Fittings.

### 15 Tests

Tests were carried out to determine:

dimensional accuracy  
 Vicat softening point  
 impact resistance  
 practicability of installation  
 ease of rodding  
 resistance to an hydrostatic pressure of 0.35 bar.

### 16 Other investigations

16.1 An evaluation of existing data was made to assess the following:

resistance to chemicals  
 effect of temperature cycling  
 watertightness  
 suitability of materials  
 durability

16.2 The manufacturing process was examined including the methods adapted for quality control and details were obtained of the quality and composition of materials used.

16.3 An assessment was made of the flow characteristics.

## Bibliography

- BS 2494 : 1990 *Specification for elastomeric seals for joints in pipework and pipelines*  
 BS 4660 : 1989 *Specification for unplasticized polyvinyl chloride (PVC-U) pipes and plastics fittings of nominal sizes 110 and 160 for below ground gravity drainage and sewerage*  
 BS 5481 : 1977(1989) *Specification for unplasticized PVC pipe and fittings for gravity sewers*  
 BS 5955 *Plastics pipework (thermoplastics materials) Part 6 : 1980 Code of practice for the installation of unplasticized PVC pipework for gravity drains and sewers*  
 BS 8301 : 1985 *Code of practice for building drainage*



On behalf of the British Board of Agrément

Date of Third issue: 15th November 1996

*P. C. Newson*

Director

\*Original Detail Sheet 5 was issued on 20th January 1988. This amended version includes references to the manufacturer's revised code numbers, revised British Standards and the addition of the Bibliography.