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For BT people

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Blown Fibre Manual Introduction

About this document ...

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Content approval

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Version History

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Issue 10	09-May-2023	Steven Miles	Change of author and approver
Issue 9	07-Jun-2017	ISIS co-ordinator .	Change of approver
Issue 8	04-Mar-2015	Document Manager T	Document migrated onto new platform with no content change
Issue 8	5-Aug-2014	ISIS co-ordinator .	New Approver only. No content change. (340 AT)
Issue 7	7-Aug-2012	Chief Engineer's Office Technical Documentation team	Amendment to author contact details. (IG).
Issue 6	29-Aug-2010	Chief Engineer's Office Technical Documentation team	Document reviewedChange of author (DCC995PD)
Issue 5	15-Oct-2009	Chief Engineer AEI Technical Documentation Team	Change of Author & Approver DCC431
Issue 4	11-Nov-2008	Ian Gauntlett	Change of document owner. Reference to Mark 3 Blown Fibre Tubing included.
Issue 3	26-Sep-2006	Simon Jones	Simon Jones - Ownership change
Issue 2	28-Oct-2003	Carl Morrell	Ownership Change
Issue 1	1-Apr-96	Roger Smith	EDRS

Table of Content

1 Scope

The Blown Fibre Manual is designed as a reference document for use by Blown Fibre Technicians and their Field Managers (who will not normally have ready access to an ISIS library). The manual is divided into sections. Each section will contain ISIS practice documentation appropriate to a specific work area. A brief summary of the scope of each section is given in Section 6.

This set of ISIS (listed in Blown Fibre Manual Index EPT/COF/B019) lay down the working practices to be used during the installation of blown fibre and associated operations. The installation of blown fibre can only be carried out safely by being aware of, and following, the procedures detailed within this set of ISIS documentation.

Individual paragraphs of this document have not been marked as obligatory, but it is stressed that failure to comply with the practices laid down cannot be condoned.

2 Safety

Blown fibre installation should only be carried out by staff who have received appropriate training.

Specific safety requirements are included within the practices detailed in this document. These practices should be applied in conjunction with the safety requirements referenced in the Blown Fibre Manual Safety and Reference Documents EPT/COF/B021.

3 Issue Status

When an individual ISIS document within the Blown Fibre Manual is amended, it will be re-issued with a new issue number.

The Blown Fibre Manual Index (EPT/COF/B019) will be updated to reflect any changes to ISIS documents required in the Blown Fibre Manual.

4 Enquiries and Change Requests

4.1 Enquiries

All enquiries or change requests to the documents in this manual should, in the first instance, be directed to the author of this document – please see author contact details above.

4.2 Change Requests

Document Change Requests (DCR) should be carried out in accordance with ISIS QMS/GQU/A008.

Document Change Requests should be forwarded using Form DCR/GQU/003.

5 *Blown Fibre Background*

Blown fibre is a method of installing optical fibre “unit” or “bundle” into previously installed blown fibre tubing using a flow of air.

Blown Fibre tubing (Figures 1 and 2) consists of a number of polythene tubes, currently 1, 2, 4 or 7 tubes. External tubing is sheathed in polythene with an aluminium foil moisture barrier designed to facilitate sheath stripping and heat shrinkdown methods. Tubing for internal use has a PVC or RFH (Reduced Fire Hazard) sheath.

The tubing is installed prior to installing the fibre unit which may then be installed as and when required.

Fibre unit consists of individually coloured and buffered optical fibres, covered by a lightweight resin coating impregnated with glass spheres which facilitates the transportation of the fibre unit through the tube.

Fibre unit and tube technology changed from Mark 1 to Mark 2 at the beginning of 1995. Furthermore, tube technology changed again to Mark 3 technology during 1999. Since that time Mark 1 tube + fibre unit and Mark 2 tube has not been purchased.

The Blown Fibre Manual series of ISIS is based on Mark 2 fibre unit and Mark 3 tube technology; however installation of Mark 2 fibre into Mark 1 and Mark 2 tubing is covered as there will be a need to perform this operation until all existing Mark 1 and Mark 2 tubing becomes occupied. Mark 1 tubing can be identified as clear and of 8mm OD, Mark 2 tubing is of solid colours and of 8mm OD + 5mm OD, whilst Mark 3 tubing which is clear and 5mm OD.

The following table provides typical end to end maximum recommended blowing distances for the various combinations of tubes and fibre bundles, when using the techniques described in EPT/COF/B025.

Table 1 Typical Maximum Recommended Fibre Blowing Distances (Metres)

			4-Fibre Bundle	
			Mark 1	**Mark 2**
	Mark 1	**8 mm OD**	600	1000
BF Tubing	**Mark 2**	**8 mm OD**	600	1000
	Mark 2	**5 mm OD**	250	600

	Mark 3	**5 mm OD**	250	600

When the distances required between fibre joints is greater than those in the above table range extending techniques described in EPT/COF/B026 can be used.

Figure 1 Typical Mark 2 / Mark 3 BF Tubing

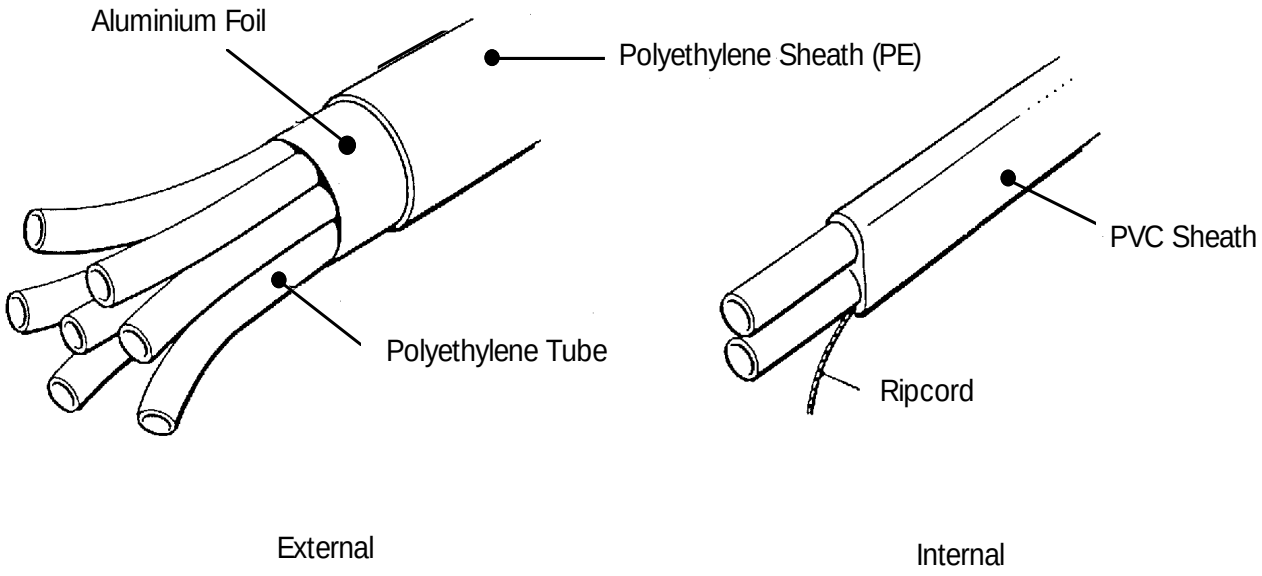
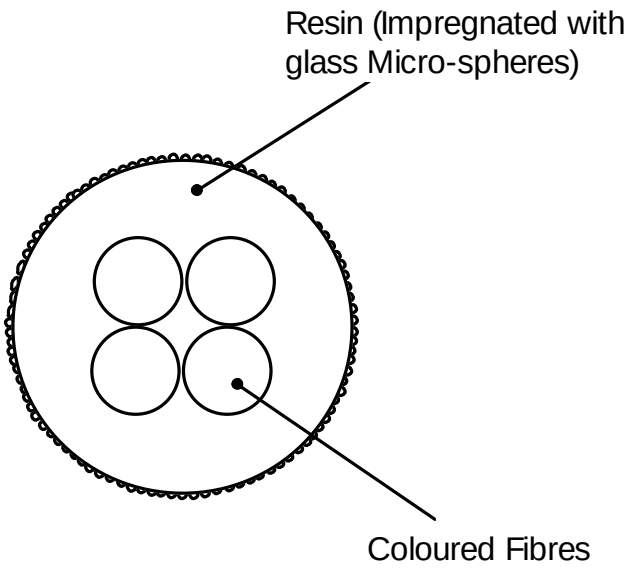


Figure 2 Typical Mark 2 Four Fibre Bundle



6 *Manual Structure and Summary of Contents*

The Blown Fibre Manual consists of a series of the following ISIS documents.

Blown Fibre Manual Index (EPT/COF/B019) presents the contents of the Blown Fibre Manual. All sections are relevant to those people involved in Blown Fibre Operations.

Note: Tube Installation

External Blown Fibre tube installation is covered in the cabling in Duct Handbook EPT/UGP/E031.

6.1 Safety and Reference Documents (EPT/COF/B021)

This ISIS covers the common safety requirements for the documents listed in the Index (EPT/COF/B019).

6.2 Tube Jointing (EPT/COF/B022)

This ISIS describes straight through jointing of blown fibre tubing within a Kit Joint Closure 2C and a Blown Closure 1A. It also covers the use of the Blown Fibre Kit 817B, to provide pressure relief for the Kit Joint Closure 2C.

Jointing arrangements for range extended techniques are covered under ISIS EPT/COF/B026, Blown Fibre Manual Range Extending Techniques.

6.3 Blown Fibre Cases 1B and 2B (EPT/COF/B023)

Before the introduction of OTIAN®, Blown Fibre Cases 1B and 2B provided the flexibility breakpoint in a building between the internal (PVC sheathed) and the external (polyethylene sheathed) blown fibre tubing, and a point for creating a gas/water block. These cases will remain in the network for customers' interface for many years although they will cease to be purchased once OTIAN® is established.

This ISIS contains the procedures for installing fibre through Blown Fibre Cases 1B and 2B.

6.4 Blowing Techniques (EPT/COF/B025)

This ISIS is intended for use in the field as a guide to techniques and procedures involved in end to end blowing of fibre units into previously installed tubes.

6.5 Range Extending Techniques (EPT/COF/B026)

Equipment and practices have been developed to increase the distance of blown fibre installations achievable without fibre joints.

This ISIS details two procedures to achieve extended range ie centre blowing and the use of the BF Coiler 1A to recoil fibre units to pans. As a result of these techniques, there is no limit to the distance which can be installed other than the capacity of the pans.

6.6 Restoration of Contaminated Tubes (EPT/COF/B027)

This ISIS covers the procedures to follow when tubes are contaminated with water. This will normally only become evident after blowing commences by water pouring out of the far end and/or the fibre stopping.

6.7 Compressors (EPT/COF/B028)

This ISIS covers the Operating and Maintenance procedures of the following compressors associated with Blown Fibre Techniques:

- For internal work, either the Blown Fibre Compressors 5A 240V, or 8A 110V
- For external work, Compressor 6A PED.

END OF DOCUMENT