



Technical Specification 43-126: Part 2

Issue 1 2011

FITTINGS FOR OVERHEAD LINE OPTICAL
CABLES - WRAPPED OPTICAL CABLES

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CONTENTS

FOREWORD & SCOPE	3
1 INTRODUCTION	3
2 REFERENCES	3
3 DEFINITIONS	4
4 REQUIREMENTS	4
4.1 GENERAL REQUIREMENTS	4
4.2 DESIGN LIFE	4
4.3 GALVANISING	5
4.4 GREASE	5
4.5 MARKING	5
4.6 MATERIALS	5
4.7 BOLTS AND FIXINGS	5
4.8 PACKAGING	6
4.9 FITTING FINISH	6
5 FITTING TYPES	6
5.1 BYPASS FITTINGS	6
5.2 SPAN-END CLAMPS	6
5.3 SPICE BOX (OVERHEAD)	6
5.4 SPLICE BOX (LOW LEVEL)	6
5.5 GROUND TO GROUND TERMINATION	6
5.6 PHASE TO GROUND TERMINATION	6

6	TYPE TESTING	7
6.1	GENERAL REQUIREMENTS	7
6.2	OPTICAL TESTING	7
6.3	BYPASS FITTING.....	8
6.4	SPAN END CLAMP	8
6.5	DOWN PIPE TOWER CLAMP	8
6.6	OVERHEAD AND LOW LEVEL SPLICE BOX	9
	APPENDIX A – WRAP SYSTEM QUALIFICATION TESTS	11
1	INTRODUCTION.....	11
2	SYSTEM QUALIFICATION TESTS	11
2.1	FAULT CURRENT	11
2.2	VIBRATION	11
2.3	LIGHTNING TEST	11
	APPENDIX B – PHASE WRAP	13
1	INTRODUCTION.....	13
2	PHASE TO GROUND INSULATOR TESTS.....	13
2.1	TRACKING AND EROSION	13
2.2	LEAKAGE CURRENT TEST.....	14
2.3	INSULATOR BIL/SWIL TEST	14
2.4	WATER IMMERSION	14
2.5	TENSILE STRENGTH	14
2.6	TEMPERATURE CYCLING.....	14

TABLES

Table 6.1 - Optical Measurement Requirements	7
Table A2.1 – Lightning Test Parameters	12

FITTINGS FOR OHL OPTICAL CABLE – PART 2 WRAPPED CABLE

FOREWORD & SCOPE

This specification sets down the requirements for the fittings used in conjunction with wrapped fibre optic cable system for installation on overhead power lines from 11kV up to 400kV. It includes down lead fittings and splice enclosures requirements where specific to wrapped cables.

1 INTRODUCTION

This document is part 2 of the specification for the requirements for overhead line optical cable fittings, and describes the requirements for wrapped cable fittings.

Wrapped cable is installed by helically wrapping around the conductor, (earthwire or phasewire). Fittings are required to secure the cable to the conductor at the ends of spans, to transfer the cable around support structures and to route the cable down the support structure to a splice location. In the case of cable installed on phasewires an insulator system is also required to transfer the cable from phase potential to ground potential.

Fittings in common use have been described in this specification, however they are not intended to be the only fittings that can be used on an installation. New fittings designs may from time to time become available that offer enhanced performance, simpler installation or are cheaper to manufacture. Any new designs however shall meet the general requirements in this specification.

2 REFERENCES

BS 3288	Insulator and conductor fittings for overhead power lines
BS 3643	ISO metric screw threads. Principles and basic data
BS3692	ISO metric precision hexagon bolts, screws and nuts - specification
BS 4190	ISO metric black hexagon bolts, screws and nuts. Specification
BS 5409 Part 2	Radio interference characteristics of overhead power lines and high-voltage equipment. Methods of measurement and procedure for determining limits
BS EN ISO 1461	Hot dip galvanized coatings on fabricated iron and steel articles
BS ISO 1891	Fastener Terminology
BS EN 60793	Optical fibres. Measurement methods and test procedures
BS EN 60794-1-1	Optical fibre cables - Part 1-2: Generic specification - Basic optical cable test procedures
BS EN 61284	Overhead lines. Requirements and tests for fittings
BS EN 61300-2-48	Fibre optic interconnecting devices and passive components. Basic test and measurement procedures. Tests. Temperature-humidity cycling
BS EN 61109	Insulators for overhead lines. Composite suspension and tension insulators for a.c. systems with a nominal voltage greater than 1000 V. Definitions, test methods and acceptance criteria
BS EN 60060	High-voltage test techniques. Measuring systems

IEC 60794-4-1	Optical fibre cables - Part 4-10: Aerial optical cables along electrical power lines
ENA TS 43-108	Suspension clamps for conductors
ENA TS 43-125	Design Guide and Technical Specification for Overhead Lines above 45kV
ENA TS 43-126 Part 1	Fittings for overhead line optical cables – OPGW

3 DEFINITIONS

For the purposes of this document the following definitions apply.

WRAPPED CABLE	A separate optical cable helically wrapped on to an existing overhead line conductor
FITTINGS	Any hardware attached to the wrapped cable or related to the interface between the wrapped cable and the tower.
BYPASS	A fitting used to guide the wrapped around a support structure from span to span
SPAN END CLAMP	A clamp used to secure the wrapped cable at the end of a span
ELASTOMER	A cross-linked polymer with the properties of elasticity, often used to reduce bending stress between OPGW and holding devices.
ATTENUATION	The reduction in optical power as it passes along a fibre, usually expressed in decibels (dB)

NOTE: Defined terms are capitalised where they are used in the main text of this report.

4 REQUIREMENTS

4.1 General requirements

The design of fittings shall be such as to minimise the number of parts and the possibility of incorrect assembly and installation. As far as possible small components (e.g. fasteners) should be captive.

All threaded fasteners shall be locked to ensure that slackening does not occur due to vibration in service (see also requirements for bolted clamps in Section 4.7).

Engineering drawings shall specify dimensional tolerances as required in BS 3288: Part 1 unless indicated otherwise. For dimensions where no special tolerances apply The tolerance shall be up to and including 35mm ± 0.7 mm, over 35mm $\pm 2\%$

Where the wrap cable is to be installed over an existing OPGW cable, qualification of the wrap fittings against the TS 43-126 Part 1 OPGW fittings, shall also be required.

4.2 Design Life

Fittings should be suitably designed for an operational life of at least 25 years. Additionally the design and manufacture of Wrap cable fittings shall ensure that the conductor (which may be more than 30 years old) is unaffected by installation of the fitting, either immediately, or in service. To this end the fitting shall not cause opening or damage to the conductor strands when first installed and shall not cause fretting, fatigue or corrosion of the strands in service.