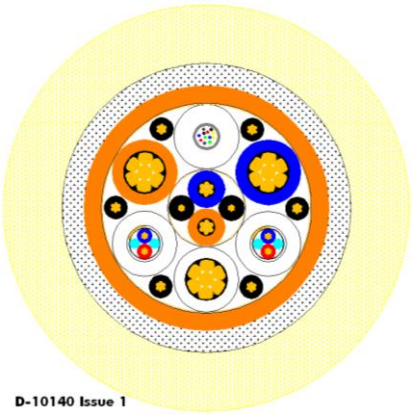
Technical Description

ROV TETHER

Document no.: RT566

Unit content:

UNIT-P8	Power conductor, 8mm^2, 4.5kV	3 off
UNIT-P1	Power conductor, 1mm^2, 4.5kV	2 off
UNIT-FO	Fibre optic element, 12SM	1 off
UNIT-SP	Screened pair, 0.22mm^2	2 off



Material description:
Gs(12)+3x8mm^2+2x1mm^2+A2-0.22mm^2 FEAW

Material no.:
10243607

Tender no.: KI-331/13

Contract no.:

Issue no.	Date	Document status	Prepared by	Approved by	Released by
02E	03.12.13	Approved for Construction	LOM	JLU	IJV
01T	11.11.13	Issued for Tender	JHH	JLU	LOM

Revision / Status coding:

Issued for Tender	XXT	Issued for Company Comment (Review)	XXR
Issued for DIC / IDC (Draft)	XXD	Approved for Construction	XXE
		As-Built	XXA

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1. SCOPE

This document describes an ROV tether.

NOTE: Cable handling and installation shall be performed in accordance with latest revision of Nexans guidelines (see section 2. REFERENCES).

2. REFERENCES

Document:	Document title:
TR-055-12	*Control activity plan for inline manufacturing of subsea cables.*
TR-088-12	*Control activity description for inline manufacturing of specialized subsea cables.*
TR-01-01	*Handling / Installation guidelines for dynamic cables.*

3. CABLE DESIGN

3.1 Element details

Process/ Material		Nom. thickness (mm)	Nom. outer diameter (mm)
UNIT-FO	**Fibre Optic element**		
Optical fibre	12SM (9/125µm)		0.25
Tube	Steel tube with filling compound	0.2	2.3
Sheath	Polypropylene, natural		5.6
UNIT-SP	**Screened Pair, 0.22mm^2**		
Conductor	Cu, 0.22mm^2	7x0.2	0.6
Insulation	Polypropylene, colour coded		1.28
Filling	Solid filler and petroleum jelly		
Wrapping	Polyester tape		2.7
Screen	Drain wires + Al/polyester laminate	8x0.2	3.0
Sheath	Polypropylene, natural		5.6
UNIT-P1	**Power conductor, 1mm^2, 4.5kV**		
Conductor	Cu, 1mm^2	7x0.43	1.3
Insulation	Semiconducting polypropylene Insulating polypropylene, colour coded		3.2

Process/ Material		Nom. thickness (mm)	Nom. outer diameter (mm)
UNIT-P8	**Power conductor, 8mm^2, 4.5kV**		
Conductor	Cu, 8mm^2	7x1.26	3.45
Insulation	Semiconducting polypropylene Insulating polypropylene, colour coded		 5.6

3.2 Element lay-up

Process/ Material		Nom. thickness (mm)	Nom. outer diameter (mm)
1st-layer			
UNIT-P1	Power conductor, 1mm^2, 2 off	3.2	6.5
Interstices	Filling compound		
Screen	Screen wires (0.22mm^2), 2 off Screen tape	2.2	 6.7
2nd-layer			
UNIT-P8	Power conductor, 8mm^2, 3 off	5.6	17.9
UNIT-FO	Fibre optic element, 1 off	5.6	17.9
UNIT-SP	Screened pair, 0.22mm^2, 2 off	5.6	17.9
Interstices	Filling compound		
Screen	Screen wires (0.5mm^2), 6 off Screen tape	2.0	 18.1
Inner sheath	Polyethylene, orange		21.1
Armouring	Reinforcement yarns, 2 layers (+offset yarns embedded in outer sheath)		24.0
Outer sheath	TPR, yellow		35.0

3.3 Characteristics

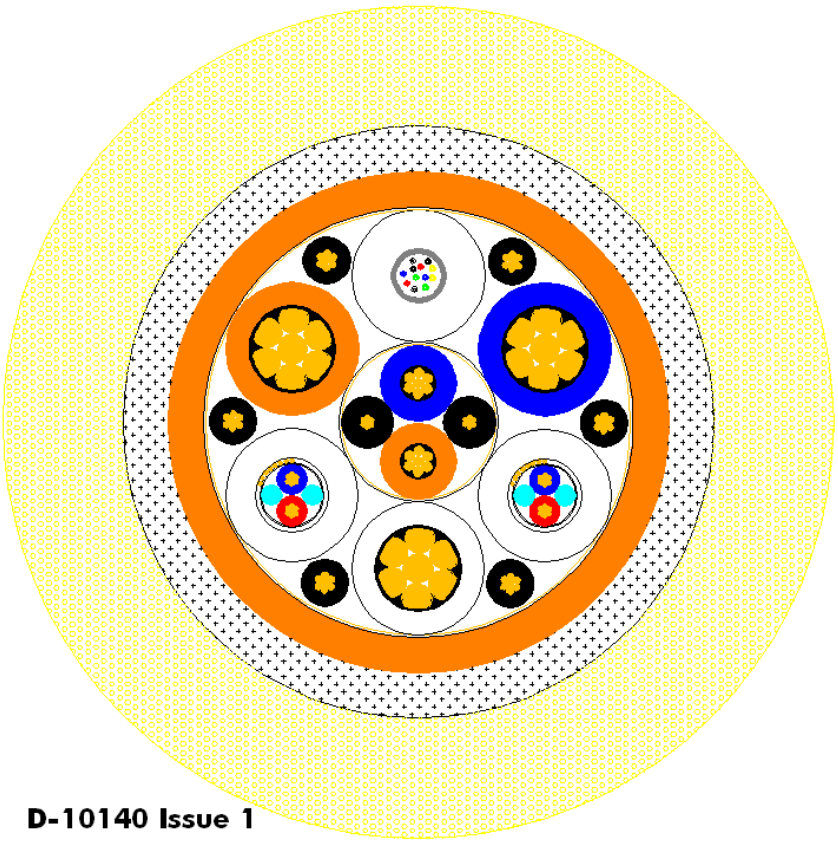
Physical characteristics	**Unit**	**Nominal value**	±
Cable outer diameter	mm	35.0	1
Weight in air, approx.	kg/km	1150	
Weight in seawater, approx.	kg/km	130	
Minimum dynamic bending diameter	m	1.0	
Armouring breaking strength	kN	90	
Tension at conductor yield	kN	15	

Electrical / Optical Characteristics (target values)	**Unit**	**Nominal value**	±
UNIT-FO Fibre Optic element			
SINGLEMODE FIBRE:			
Attenuation @ 1310nm	dB/km	<0.6	
Attenuation @ 1550nm	dB/km	<0.4	
UNIT-SP Screened Pair, 0.22mm²			
DC loop resistance, max	Ω/km	190	
UNIT-P1 Power conductor, 1mm², 4.5kV			
DC resistance, max	Ω/km	20	
Voltage rating, U_0/U (U_m)	kV	2.4/4.2(4.5)	
UNIT-P8 Power conductor, 8mm², 4.5kV			
DC resistance, max	Ω/km	2.4	
Voltage rating, U_0/U (U_m)	kV	2.4/4.2(4.5)	

3.4 Cable marking

Element	Marking
UNIT-P8	Conductor #1-#3: Blue, white, orange
UNIT-P1	Conductor #1-#2: Blue, orange
UNIT-SP	Conductor #1-#2: Blue, red Each pair identified with longitudinal numbering tape.
UNIT-FO	SM fibre #1-#6: Red, green, blue, yellow, white, natural (each fibre with rings every 25mm) SM fibre #7-#12: Red, green, blue, yellow, white, natural (each fibre with rings every 50mm)
SHEATHS	<Production order no.> Nexans Norway High Voltage <year>, <meter>

4. CROSS-SECTIONAL DRAWING



D-10140 Issue 1

5. AMENDMENT LIST

Issue no.	Date	Amendments
02E	03.12.13	Updated document status to “Approved for Construction”.
01T	11.11.13	First edition.