



ETA-Danmark A/S
Göteborg Plads 1
DK-2150 Nordhavn
Tel. +45 72 24 59 00
Fax +45 72 24 59 04
Internet [ww.etadanmark.dk](http://www.etadanmark.dk)

Authorised and notified according
to Article 29 of the Regulation (EU)
No 305/2011 of the European
Parliament and of the Council of 9
March 2011

MEMBER OF EOTA



European Technical Assessment ETA-22/0613 of 2023/03/03

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:

CELO cable and pipe fixings

Product family to which the above construction product belongs:

Power-actuated fastener for multiple use in concrete for non-structural applications

Manufacturer:

CELO FIJACIONES S.L.
C/Rosselló, 7
08211 Castellar del Vallès (Barcelona) SPAIN
Internet: www.celofixings.com

Manufacturing plant:

Plant 19

This European Technical Assessment contains:

21 pages including 17 annexes which form an integral part of the document

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:

EAD 330083-02-0601

This version replaces:

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (except the confidential Annexes referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 25(3) of Regulation (EU) No 305/2011.

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product

The CELO cable and pipe fixings consists of the power-actuated fastener (CELO nails XHA) made of zinc plated steel and the fixture according to Annex A1 made of zinc plated steel, polyamide or HDPE. The power-actuated fasteners are driven in the concrete by using a gas-actuated fastening tool (CELO FORCE ONE). They are anchored in the concrete by sintering and mechanical interlock. The product description is given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD)

The performances given in Section 3 are only valid if the fastener is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this EAD is based lead to the assumption of a working life of the fastener of at least 50 years.

Technical Assessments are based on an assumed intended working life of the anchor of 50 years.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Maximum service loads in non-cracked and cracked concrete	See Annex C1 to C6
Number of fixing points – n_1	$10 \leq n_1 \leq 100$
Uniform span between the fixing points	$\leq 1\text{m}$
Acceptable gaps (number of failure next to each other) for local failure	See Annex C1 to C6
Acceptable gaps (number of failure next to each other) for serviceability limit state	See Annex C1 to C6
Durability	Durability is ensured if the specifications of intended use according to Annex B are taken into account

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire of fasteners and fixtures made of metal	Class A1
Reaction to fire of fixtures made of polyamide or HDPE	No performance assessed
Resistance to fire	No performance assessed

4 Assessment and verification of constancy of performance (AVCP)

In accordance with EAD 33083-02-0601, the applicable European legal act is: 1997/463/EC.
The system to be applied is: 2+

5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

Issued in Copenhagen on 2023-03-03 by



Thomas Bruun
Managing Director, ETA-Danmark

CELO cable and pipe fixings: description

Table A1: Fixtures made of plastics















ABT	UT	TBB
		
WSC		WDC
		
FP	FPD	TBBL
		

Table A2: Fixtures made of steel

PFT	DFT	AAT
		
ATR		CHS
		
ATV		
		

CELO cable and pipe fixings

Product description
View and profile of the product

Annex A1

CELO nail XHA22, XHA27, XHA32 and XHA38



CELO cable and pipe fixings: dimensions and materials

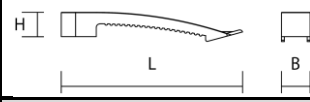
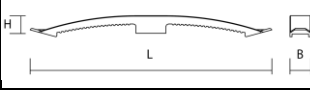
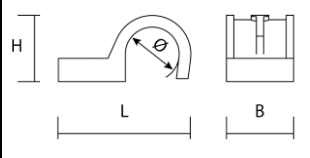
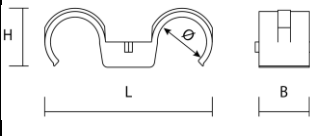
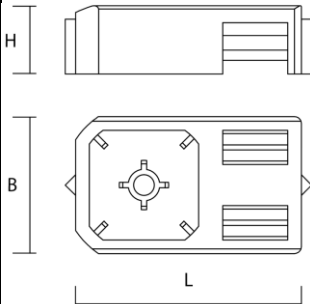
Table A3: Fixtures made of plastic

Cable and pipe fixings						
	Designation	Dimensions and material				
ABT		L	H	B	Ø	Material
	ABT 14-18	24	35,6	20	14,5	PA6
	ABT 20-25	29	45,5	20	45,5	
	ABT 26-32	36	53,6	20	53,6	
	ABT 35-42	45	66,4	20	66,4	
UT		L	H	B	Ø	Material
	UT16	23	25,5	16	15,5	HDPE
	UT20	25	29,5	16	19,5	
	UT25	30,5	34	16	24,5	
	UT32	38	42	16	31	
	UT40	46	50	16	39	
TBB		L		H		Material
	TBB	27,5		13		PA6

CELO cable and pipe fixings

Product description
Dimensions and materials

Annex A2

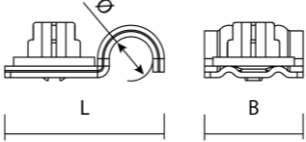
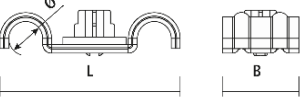
Cable and pipe fixings						
	Designation	Dimensions and material				
WSC		L	H	B	Material	
	WSC	127	17	20	PA6	
WDC		L	H	B	Material	
	WDC	234	17	20	PA6	
FP		L	H	B	Ø	Material
	FP-16	41,5	18,5	23	14,5	HDPE
	FP-18	43,5	20,5		16,5	
	FP-20	45,5	22,5		18,5	
	FP-22	47,5	24,5		20,5	
	FP-25	50,5	27,5		23,5	
	FP-28	53,5	30,5		26,5	
	FP-32	57,5	24,5		30,5	
FPD		L	H	B	Ø	Material
	FPD-16-19	59	19,5	20	15,5	PP
	FPD-20-23	68	23,75		19,5	
	FPD-25-28	81	29		24,5	
	FPD-32-35	96,5	36,25		31,5	
TBBL		L	H	B	Material	
	TBBL	33	10	20	PA6	

CELO cable and pipe fixings

Product description
Dimensions and materials

Annex A3

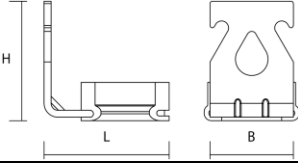
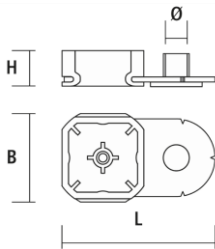
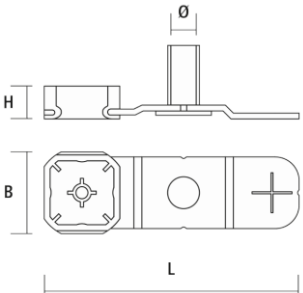
Table A4: Fixtures made of steel

Cable and pipe fixings					
	Designation	Dimensions and material			
PFT		L	B	Ø	Material
	PFT-5	24	17	4,5	Steel
	PFT-6	26		6	
	PFT-7	26,5		6,5	
	PFT-8	27,5		7,5	
	PFT-10	29,5		9,5	
	PFT-12	31,5		11,5	
	PFT-14	33,5		13,5	
	PFT-16	34,5		15,5	
	PFT-18	36,5		17,5	
	PFT-20	38,5		19,5	
	PFT-22	40,5		21,5	
	PFT-25	43,5		24,5	
	PFT-28	46,5		27,5	
	PFT-32	52		31,5	
	PFT-40	60		39,5	
	PFT-50	70		49,5	
DFT		L	B	Ø	Material
	DFT-5	33	17	4,5	Steel
	DFT-6	37		6	
	DFT-7	38		6,5	
	DFT-8	40		7,5	
	DFT-10	44		9,5	
	DFT-12	48		11,5	
	DFT-16	56		15,5	
	DFT-18	60		17,5	
	DFT-20	64		19,5	
	DFT-22	68		21,5	
	DFT-25	74		24,5	
	DFT-28	80		27,5	
	DFT-32	88		31,5	

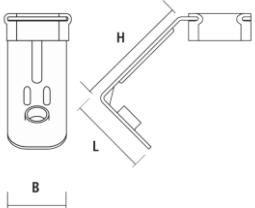
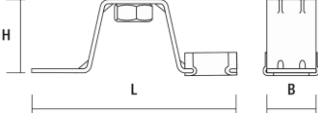
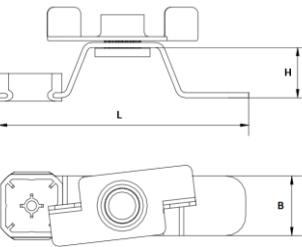
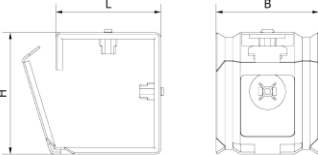
CELO cable and pipe fixings

Product description
Dimensions and materials

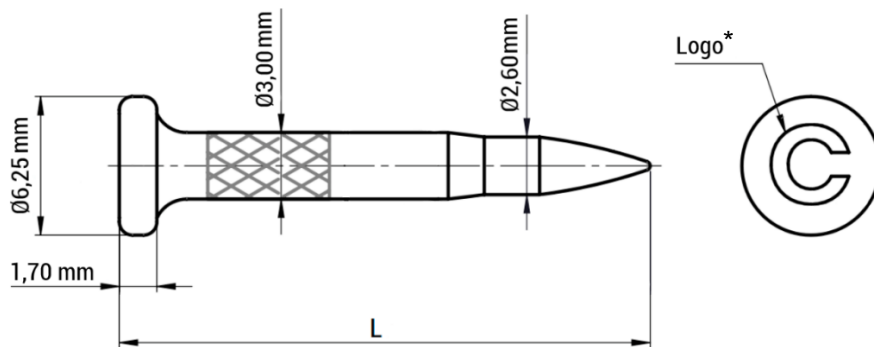
Annex A4

Cable and pipe fixings						
	Designation	Dimensions and material				
AAT		L	H	B	Material	
	AAT	26	26	18	Steel	
ATR		L	H	B	Ø	Material
	ATR-M6	35	8,5	18	M6X6	Steel
	ATR-M8C	64	8,5	18	M8X9	Steel
	ATR-M8L				M8X18	

CELO cable and pipe fixings	Annex A5
Product description Dimensions and materials	

ATV		L	H	B	Ø	Material
	ATV-M4	20	32	18	M4	Steel
	ATV-M5				M5	
	ATV-M6				M6	
	ATVS-M8	75	25	18	M8	Steel
	ATV-M8	75	15	18	M8	
CHS		L	H	B	Material	
	CHS	47	41	40	Steel	
		35	87	40		

CELO XHA nail: dimensions and material



*Brand marking is optional

Table A5: Power-actuated fastener

XHA nail	XHA22	XHA27	XHA32	XHA38
L (mm)	22	27	32	38
Material	Hardened carbon steel, hardness 53-57 HRC			

CELO cable and pipe fixings	Annex A6
Product description Dimensions and materials	

Specification of intended use

Anchorage subject to

- Dead-loads of uniaxially spanned flexible or rigid cables and pipes.
- Static or quasi-static loading in reinforced or unreinforced concrete.
- Multiple fixing of non-structural application.

Base materials

- Strength classes C20/25 to C50/60 according to EN 206-1.
- Cracked and non-cracked concrete.

Use conditions

- Structures subject to dry internal conditions.
- Temperature range:
Fixtures made of steel: between -40°C to +80°C,
Fixtures made of plastic: maximum long-term temperature +24°C, maximum short-term temperature +40°C;
for plastic fixtures made of polyamide minimum long-term temperature -20°C and for plastic fixtures made of polyethylene minimum long-term temperature 0°C.
- The fixtures made of PE cannot be exposed to UV-radiation for more than 6 weeks.

Design

- Conditions: Both ends of the chain are fixed supports (e.g. fixation in a cable-terminal box or where cables are led through interior rigid walls).
- Design: $F = g \cdot l \leq F_{s,max}$

With:

F = dead load of the cable or conduit acting on the fixture made of plastic or steel in N.
g = dead load of the cable or conduit in N/m.
l = spacing of the fasteners in m.
F_{s,max} = maximum service load (maximum possible loads) N_{s,max} or V_{s,max} in N according to Annex C1 to C6.

Notes:

- A potential influence of an eccentric load introduction into the power-actuated nail is taken into consideration in corresponding published loads shown in Annex C1 to C6.
- For fixtures made of plastic, the long-term effect due to creep is taken into consideration according to EN ISO 899-1.
- The loads given in Annexes C1 to C6 include the required safety against total failure of the global system according to EN 1990:2002 + A1:2005 + A1:2005/AC:2010 (Reliability class RC2, ultimate limit state, $\beta \geq 1.5$).

The corresponding maximum service loads are valid for potential gaps due to single or maximum 3 fastener failures next to each other (see Annex C1 to C6). The fastener may be used if the cable sagging due to the given gaps have not bad appearance and the designer/user accepts these gaps.

CELO cable and pipe fixings

Intended use

Specification of intended use

Annex B1

- The loads given in Annexes C1 to C6 include the required safety against local failure according to EN 1990:2002 + A1:2005/AC:2010 (Reliability class RC1, ultimate limit state, $\beta \geq 3.3$).

The corresponding maximum service loads are valid for potential gaps due to single or maximum 4 fastener failure next to each other (see Annex C1 to C6). The fastener may be used if the cable sagging due to the given gaps do not lead to a risk of use and the designer/user accepts these gaps.

Installation

- Fastener installation carried out by appropriately qualified personnel.
- Fastener installation in accordance with the manufacturer's specifications and drawings and using the specified installation device.
- Fasteners to be installed ensuring not less than the minimum effective anchorage depth of 11mm. If the embedment depth is smaller than the minimum effective anchorage depth the nail must be assumed as a setting defect.
- Use of setting tool according to Annex B5.

CELO cable and pipe fixings	Annex B2
Intended use Specification of intended use	

Table B1: Concrete and installation parameters

Power-actuated fastener		XHA22	XHA27	XHA32	XHA38
Minimum concrete strength class	[-]	C20/25			
Maximum concrete strength class	[-]	C50/60			
Minimum spacing s_{min}	[mm]	200			
Minimum edge distance c_{min}	[mm]	150			
Minimum thickness of concrete member h_{min}	[mm]	80			
Effective embedment depth	[mm]	≥ 11			

CELO cable and pipe fixings

Intended use
Concrete strength class and installation parameters

Annex B3

Power-actuated fastening tool

Table B3: Power-actuated fastening tool

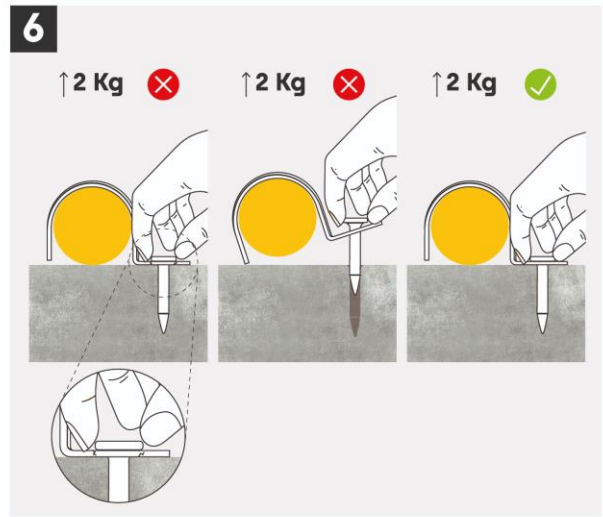
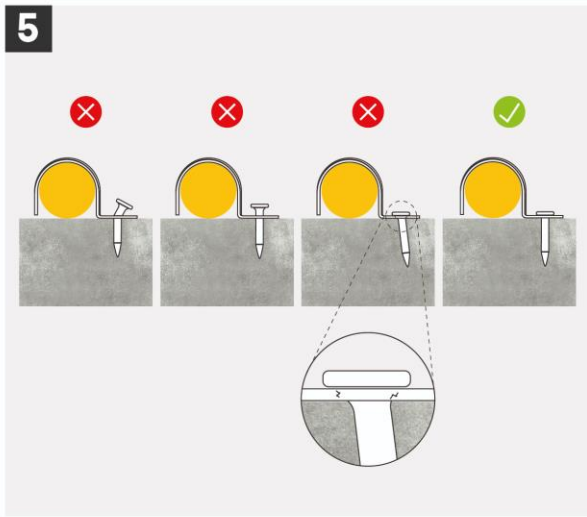
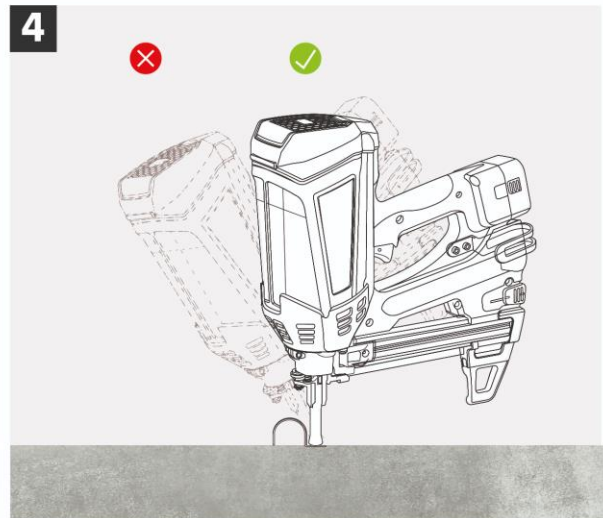
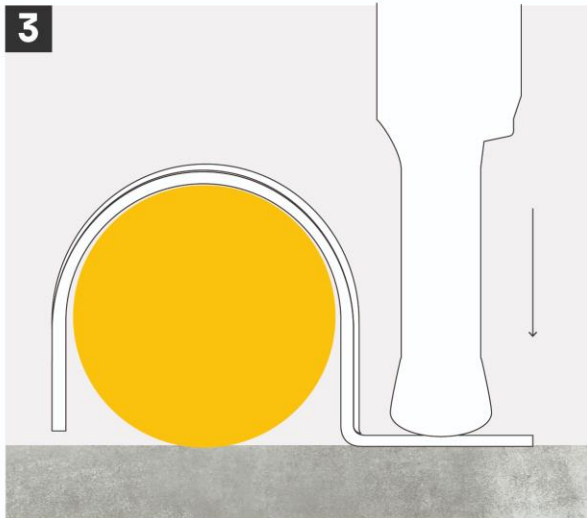
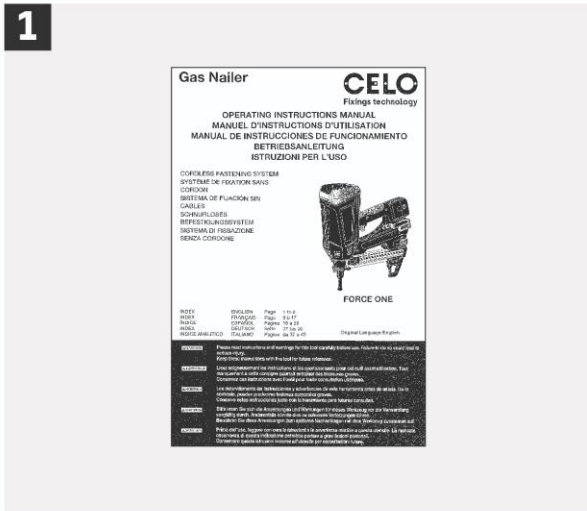
Fastening tool	
FORCE ONE by CELO with nails XHA	
	
Fastening tool FONE: gas driven	

CELO cable and pipe fixings

Intended use
Power-actuated fastening tool

Annex B4

Installation instruction



CELO cable and pipe fixings

Intended use
 Installation instruction

Annex B5

Table C1: Maximum service loads $N_{s,max}$ and $V_{s,max}$

The acceptable gap corresponds to the number of failures next to each other.

ABT with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,3	1,7	4,3	5,6
	2	15,0	19,5	45,0	58,5
	3	30,8	40,0	78,0	101,4
Acceptable gap for local failure $\beta \geq 3.3$	2	2,0	2,6	8,5	11,0
	3	8,0	10,4	25,6	33,3
	4	14,7	19,1	48,3	62,8

UT with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,0	1,3	2,0	2,6
	2	7,5	9,7	18,5	24,0
	3	13,2	17,1	37,6	48,9
Acceptable gap for local failure $\beta \geq 3.3$	2	1,3	1,7	4,0	5,2
	3	5,2	6,7	13,2	17,1
	4	8,3	10,8	20,0	26,0

TBB with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,3	1,7	2,0	2,6
	2	15,0	19,5	18,5	24,0
	3	30,8	40,0	60,0	78,0
Acceptable gap for local failure $\beta \geq 3.3$	2	2,0	2,6	3,3	4,3
	3	6,0	7,8	13,2	17,1
	4	11,0	14,3	17,7	23,0

CELO cable and pipe fixings

Performances
Service loads

Annex C1

WSC with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,0	1,3	-	-
	2	11,0	14,3		
	3	14,8	19,2		
Acceptable gap for local failure $\beta \geq 3.3$	2	1,5	1,9		
	3	6,0	7,8		
	4	8,3	10,8		

WDC with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,3	1,7	-	-
	2	12,5	16,2		
	3	11,6	15,1		
Acceptable gap for local failure $\beta \geq 3.3$	2	2,0	2,6		
	3	6,0	7,8		
	4	8,3	10,8		

FP with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,3	1,7	4,3	5,6
	2	13,5	17,5	23,5	30,5
	3	24,0	31,2	6,8	8,8
Acceptable gap for local failure $\beta \geq 3.3$	2	1,5	1,9	23,5	30,5
	3	6,4	8,3	6,8	8,8
	4	12,3	16,0	15,7	20,4

CELO cable and pipe fixings

Performances
Service loads

Annex C2

FPD with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,0	1,3	4,3	5,6
	2	12,9	16,8	21,0	27,3
	3	26,0	33,8	16,8	21,8
Acceptable gap for local failure $\beta \geq 3.3$	2	1,3	1,7	8,5	11,0
	3	5,2	6,7	18,0	23,4
	4	11,0	14,3	17,7	23,0

TBBL with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	0,6	0,8	1,7	2,2
	2	8,0	10,4	11,5	14,9
	3	18,0	23,4	12,4	16,1
Acceptable gap for local failure $\beta \geq 3.3$	2	1,0	1,3	2,5	3,2
	3	3,2	4,1	8,0	10,4
	4	7,3	9,5	10,0	13,0

PFT with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,3	1,7	3,7	4,8
	2	13,5	17,5	32,5	42,2
	3	29,6	38,5	60,0	78,0
Acceptable gap for local failure $\beta \geq 3.3$	2	1,5	1,9	6,5	8,4
	3	6,8	8,8	21,2	27,5
	4	11,0	14,3	33,3	43,3

CELO cable and pipe fixings

Performances
Service loads

Annex C3

DFT with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	0,3	0,4	4,3	5,6
	2	6,5	8,4	45,0	58,5
	3	14,8	19,2	84,0	109,2
Acceptable gap for local failure $\beta \geq 3.3$	2	1,0	1,3	8,5	11,0
	3	3,2	4,1	26,0	33,8
	4	5,7	7,4	50,0	65,0

AAT with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,0	1,3		
	2	10,5	13,6		
	3	21,2	27,5		
Acceptable gap for local failure $\beta \geq 3.3$	2	1,3	1,7	-	-
	3	4,8	6,2		
	4	10,0	13,0		

ATR with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	0,3	0,4	4,3	5,6
	2	6,5	8,4	45,0	58,5
	3	13,2	17,1	86,0	111,8
Acceptable gap for local failure $\beta \geq 3.3$	2	1,0	1,3	8,5	11,0
	3	3,2	4,1	30,0	39,0
	4	7,0	9,1	50,0	65,0

CELO cable and pipe fixings

Performances
Service loads

Annex C4

ATV-M4, M5 and M6 with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,0	1,3	-	-
	2	13,5	17,5		
	3	28,8	37,4		
Acceptable gap for local failure $\beta \geq 3.3$	2	1,5	1,9		
	3	6,8	8,8		
	4	12,3	16,0		

ATVS-M8 with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,3	1,7	-	-
	2	15,0	19,5		
	3	30,8	40,0		
Acceptable gap for local failure $\beta \geq 3.3$	2	1,5	1,9		
	3	6,4	8,3		
	4	12,3	16,0		

ATV-M8 with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,3	1,7	-	-
	2	15,0	19,5		
	3	28,8	37,4		
Acceptable gap for local failure $\beta \geq 3.3$	2	1,5	1,9		
	3	6,8	8,8		
	4	12,3	16,0		

CELO cable and pipe fixings

Performances
Service loads

Annex C5

CHS 41x47 with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,3	1,7	5,3	6,9
	2	15,0	19,5	40,0	52,0
	3	29,6	38,5	76,0	98,8
Acceptable gap for local failure $\beta \geq 3.3$	2	1,8	2,3	6,5	8,4
	3	6,8	8,8	24,0	31,2
	4	11,0	14,3	43,0	55,9

CHS 87x35 with XHA					
Number of fixing points $n_1 = 100$		Maximum tension service load $N_{s,max}$ [N]		Maximum shear service load $V_{s,max}$ [N]	
		C20/25	C50/60	C20/25	C50/60
Acceptable gap for serviceability limit state $\beta \geq 1.5$	1	1,0	1,3	0,0	0,0
	2	14,0	18,2	4,0	5,2
	3	28,4	36,9	8,0	10,4
Acceptable gap for local failure $\beta \geq 3.3$	2	1,8	2,3	0,8	1,0
	3	6,4	8,3	2,6	3,4
	4	12,3	16,0	4,5	5,8

CELO cable and pipe fixings

Performances
Service loads

Annex C6