



# Certificates

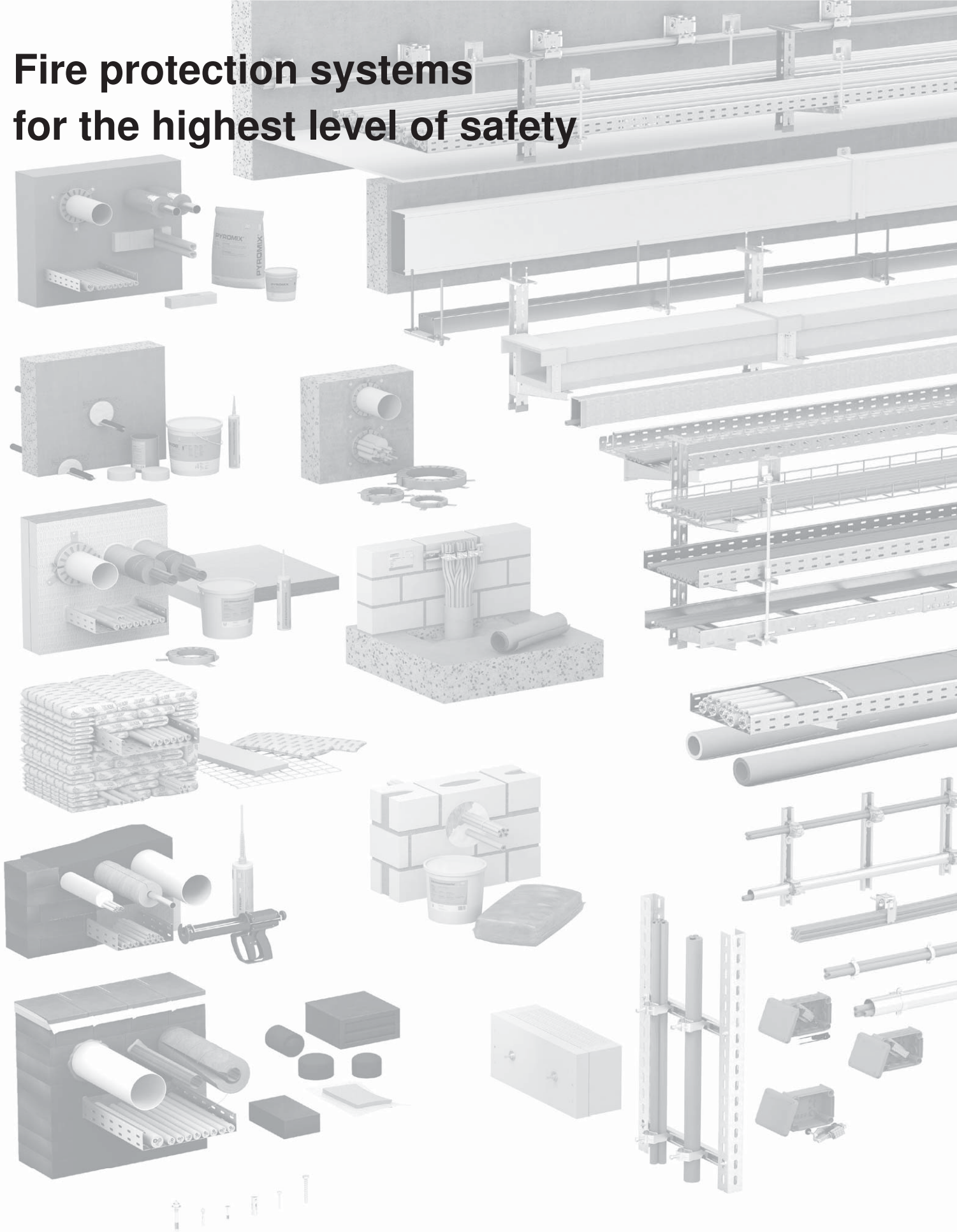


**Insulation**

**PYROCOMB® TCX**

European Technical Assessment No. ETA-12/0182 issued 07-07-2017

# Fire protection systems for the highest level of safety



Be it in a residential building or an industrial complex – OBO has the appropriate solution for fireproof electrical installations. Our tested and certified fire protection systems cover all the relevant fire protection guidelines and provide you with an electrical installation that really serves its purpose. We will be happy to provide you with more details – on our website or personally.

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

ETA-12/0182  
of 7 July 2017

English translation prepared by DIBt - Original version in German language

### General Part

Technical Assessment Body issuing the  
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

TCX / TCX-L

Product family  
to which the construction product belongs

pipe collar

Manufacturer

OBO BETTERMANN GmbH & Co. KG  
Hüingser Ring 52  
58710 Menden  
DEUTSCHLAND

Manufacturing plant

Herstellwerk K

This European Technical Assessment  
contains

12 pages including 8 annexes which form an integral part  
of this assessment

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

Guideline for European technical approval of "Fire  
Stopping and Fire Sealing Products", ETAG 026 Part 2:  
"Penetration Seals",  
used as European Assessment Document (EAD)  
according to Article 66 Paragraph 3 of Regulation (EU)  
No 305/2011.

This version replaces

ETA-12/0182 issued on 24 April 2012



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## Specific Part

### 1 Technical description of the product

"TCX / TCX-L" is a pipe collar consisting of a pipe collar enclosure and a fire-protective inlay.

The pipe collar enclosure shall be made of steel sheet and be sufficiently protected against corrosion. The fire-protective inlay shall be made of an intumescent material which expands under heat exposure.

The pipe collar shall have the dimensions stated in Annexes 2 to 4.

Detailed specifications and fire safety related performance criteria for the construction products are given in Annex 1.

NOTE:

The characteristics listed are suitable both for identifying the construction products as well as for performing the manufacturer's factory production control.

### 2 Specification of the intended use in accordance with the applicable European Assessment Document

"TCX / TCX-L" is designed to form part of a pipe penetration seal for plastic pipes.

Pipe penetration seals are used to seal openings in fire resistant walls and floors, which are penetrated by pipes. Their aim is to preserve the walls' or floors' fire resistance in the area of the penetrations.

Within the scope of this ETA the fire resistance of a pipe seal was demonstrated that consisted of two pipes collars (for wall installations) or one pipe collar (for floor installations) and a joint sealing.

The fire-protective inlay of "TCX / TCX-L" fulfils the requirements of use category X (see EOTA TR 024); that means that the materials can be exposed to the conditions in interiors with and without moisture loads and external weathering, without expecting significant changes in fire protection characteristics.

More detailed information and data on the verified penetration seals are given in Annexes 5 to 8. The performances given in Section 3 relate exclusively to these penetration seals (e.g. with respect to the design and arrangement of the penetration seals' components and the type and position of the services).

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

#### 3.1 Intended use: use in penetration seals

Essential characteristic (BWR 2)	Performance
Reaction to fire	Pipe collar enclosure: class A1 in accordance with commission decision 96/603/EC (of the current version) Intumescent Inlay: class E in accordance with EN 13501-1
Fire resistance of a penetration seal incorporating the product	The fire resistance depends on the construction/ installation of the penetration seal and on the other components incorporated in the penetration seal. Details on the verified penetration seals and the related fire resistance classes are given in Annexes 1 to 8.

**4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base**

In accordance with the guideline for European technical approval of "Fire Stopping and Fire Sealing Products", ETAG 026 Part 2: "Penetration Seals", August 2011, used as European Assessment Document (EAD), the applicable European legal act is: 1999/454/EC.

The system to be applied is: 1

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 7 July 2017 by Deutsches Institut für Bautechnik

Prof. Gunter Hoppe  
Head of Department

*beglaubigt:*  
Nadja Bisemeier

The factory manufactured construction product pipe collar "TCX / TCX-L" consists of a pipe collar steel housing and an insert of an intumescent building material which is incorporated in multiple layers in the pipe collar housing.

Properties and performance criteria of the components of the construction products

Component	Description
"Pipe collar housing"	Dimensions: See Annexes 2 to 4 Material: Sheet steel Classification of fire behavior: Class A1 according to the commission decision 96/603/EC (of the current version)
"Insert"	Dimensions: See Annexes 2 to 4 Material: Intumescent building material according to ETA-10/0117 Classification of the fire behavior according to EN 13501-1: Class E

The properties listed can be used both for the identification of the construction product and for the implementation of the factory production control of the manufacturer.

Implementation details for the factory production control are included in the inspection plan.

**Performances of penetration seals, comprising the construction product "TCX / TCX-L"**

	Essential requirement	Test method	Construction of the sample	Performance acc. to EN-13501-2
1	Resistance to fire	EN 1366-3	100 mm thick rigid wall; design and layout of the penetration seal according to Annex 5*	EI 240-U/C
2	Resistance to fire	EN 1366-3	100 mm thick flexible wall; design and layout of the penetration seal according to Annex 6*	EI 120-U/C
3	Resistance to fire	EN 1366-3	300 mm thick rigid floor; design and layout of the penetration seal according to Annex 7*	EI 180-U/C bzw. E 240 U/C
4	Resistance to fire	EN 1366-3	150 mm thick rigid floor; design and layout of the penetration seal according to Annex 8*	EI 120-U/U

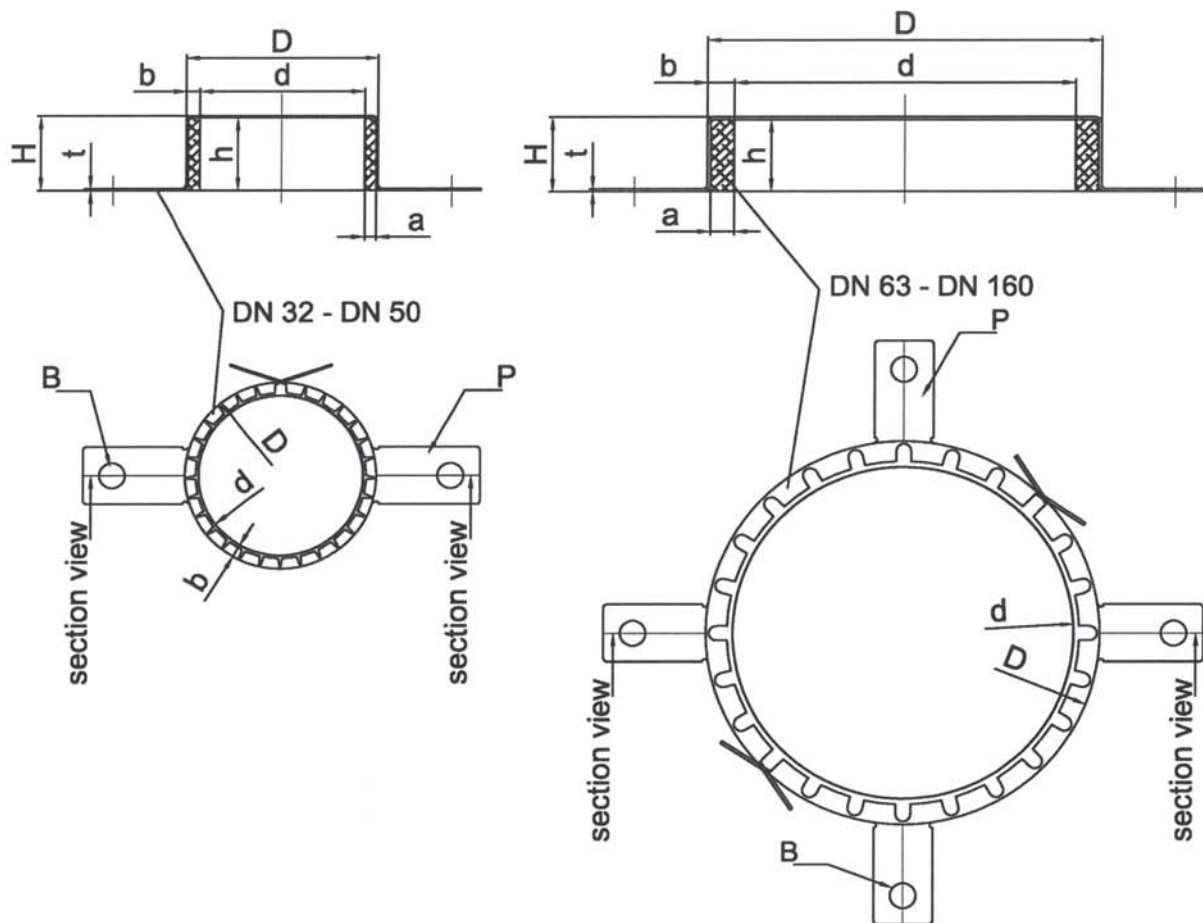
\* The illustrations are without guarantee for completeness.

The use of the construction product "TCX / TCX-L" in penetration seals shall be in accordance with national requirements for planning, design and execution and in accordance with the installation instruction of the manufacturer.

The tested/ illustrated seals are only examples for the use.

TCX / TCX-L	Annex 1
Description of the construction products, properties and performances	





Pipe collar "TCX / TCX-L"  
in the dimensions TCX-L

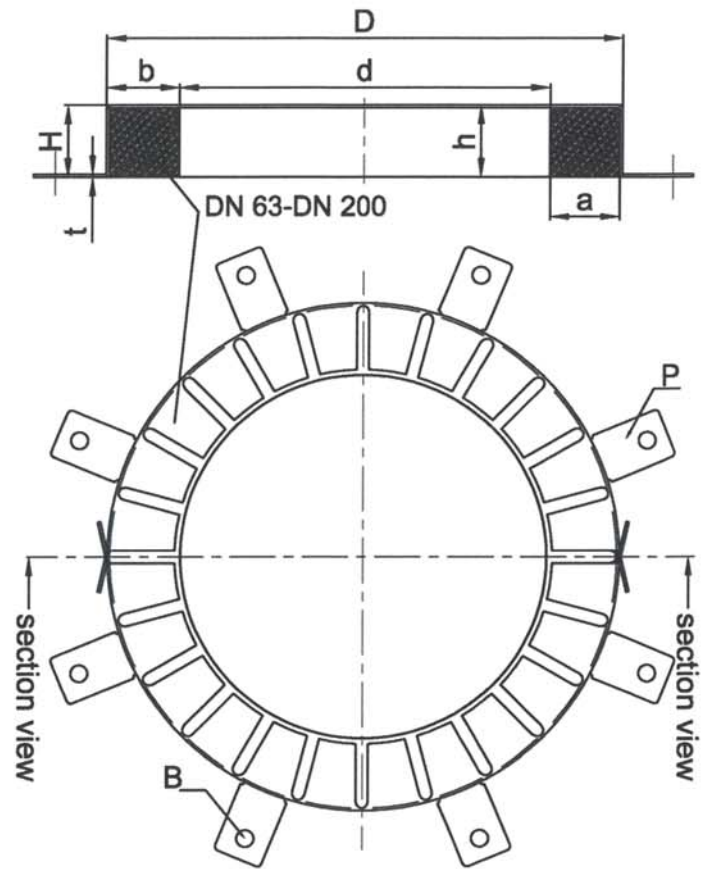
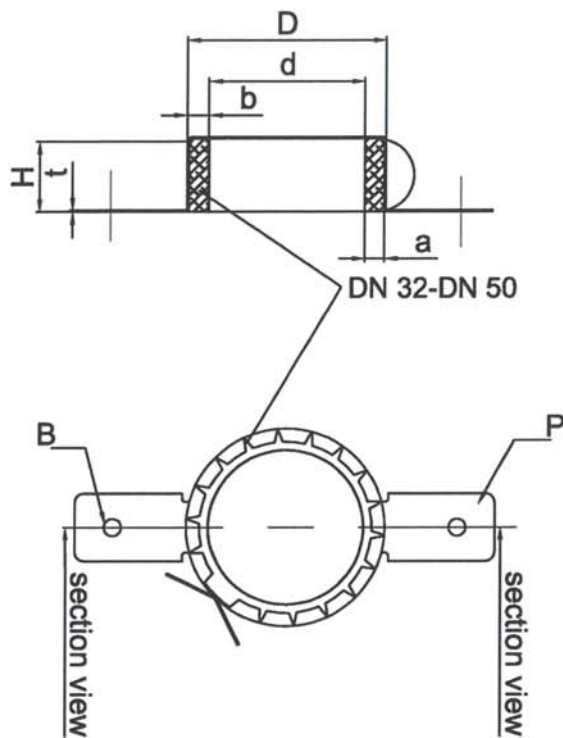
dA [mm]	d [mm]	D [mm]	b [mm]	t [mm]	H [mm]	P [Stck]	h [mm]	a [mm]	B [mm]
32	38	47	4,6	0,6	26,0	2	25,0	4,0 -0/+0,8	9,0
40	46	55	4,6	0,6	26,0	2	25,0	4,0 -0/+0,8	9,0
50	56	65	4,6	0,6	26,0	2	25,0	4,0 -0/+0,8	9,0
63	69	82	6,6	0,6	26,0	4	25,4	6,0 -0/+1,0	9,0
75	81	94	6,6	0,6	26,0	4	25,4	6,0 -0/+1,0	9,0
90	96	114	9,0	1,0	26,6	4	25,4	8,0 -0/+1,5	9,0
110	116	134	9,0	1,0	26,6	4	25,4	8,0 -0/+1,5	9,0
125	132	150	9,0	1,0	26,6	4	38,0	10 -0/+2,0	9,0
140	144	168	12	1,0	40,0	4	38,0	10 -0/+2,0	9,0
160	164	188	12	1,0	40	4	38,0	10 -0/+2,0	9,0

TCX / TCX-L

Design of the pipe collar in the size TCX-L

Annex 2





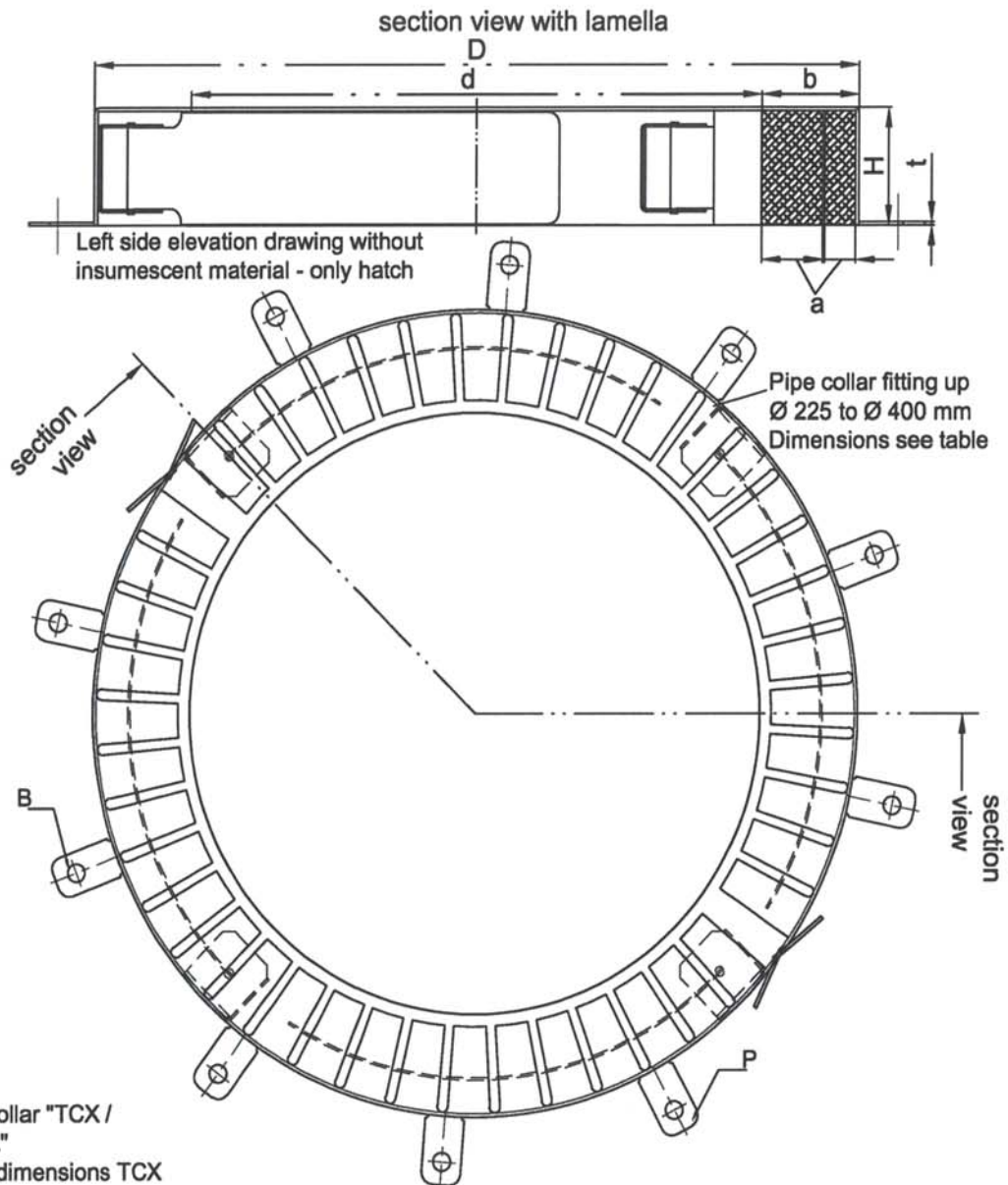
Pipe collar "TCX /  
TCX-L"  
in the dimensions TCX

dA [mm]	d [mm]	D [mm]	b [mm]	t [mm]	H [mm]	P [Stck]	h [mm]	a [mm]	B [mm]
32	36	50	7,0	0,6	26,0	2	25,4	6,4 $\pm$ 0,5	6,0
40	44	58	7,0	0,6	26,0	2	25,4	6,4 $\pm$ 0,5	6,0
50	54	68	7,0	0,6	26,0	2	25,4	6,4 $\pm$ 0,5	6,0
63	67	94	13,5	0,6	26,0	4	25,4	12,8 $\pm$ 1,0	6,0
75	79	106	13,5	0,6	26,0	4	25,4	12,8 $\pm$ 1,0	6,0
90	94	132	18,3	1,1	26,6	4	25,4	17,1 $\pm$ 1,0	9,0
110	114	155	20,5	1,1	26,6	4	25,4	19,2 $\pm$ 1,5	9,0
125	129	172	20,5	1,1	40,0	4	38,1	19,2 -0/+1,5	9,0
140	144	200	28,0	1,1	40,0	4	38,1	25,6 -0/+2,0	9,0
160	164	220	28,0	1,1	40,0	4	38,1	25,6 -0/+2,0	9,0
180	184	264	40,0	1,5	40,0	8	38,1	38,4 $\pm$ 3,0	9,0
200	204	284	40,0	1,5	40,0	8	38,1	38,4 $\pm$ 3,0	9,0

TCX / TCX-L

Design of the pipe collar in the size TCX

Annex 3



dA [mm]	d [mm]	D [mm]	b [mm]	t [mm]	H [mm]	P [Stck]	h [mm]	a [mm]	B [mm]
225	239	328	44,5	1,5 / 1,0	51,5	10	50	42,0 ± 3,0	8,0
250	264	353	44,5	1,5 / 1,0	51,5	10	50	42,0 ± 3,0	8,0
280	289	378	44,5	1,5 / 1,0	51,5	12	50	42,0 ± 3,0	8,0
300	314	403	44,5	1,5 / 1,0	51,5	12	50	42,0 ± 3,0	8,0
315	328	417	44,5	1,5 / 1,0	51,5	12	50	42,0 ± 3,0	8,0
355	370	459	44,5	1,5 / 1,0	51,5	12	50	42,0 ± 3,0	8,0
400	415	504	44,5	1,5 / 1,0	51,5	12	50	42,0 ± 3,0	8,0

TCX / TCX-L

Design of the pipe collar in the size TCX

Annex 4

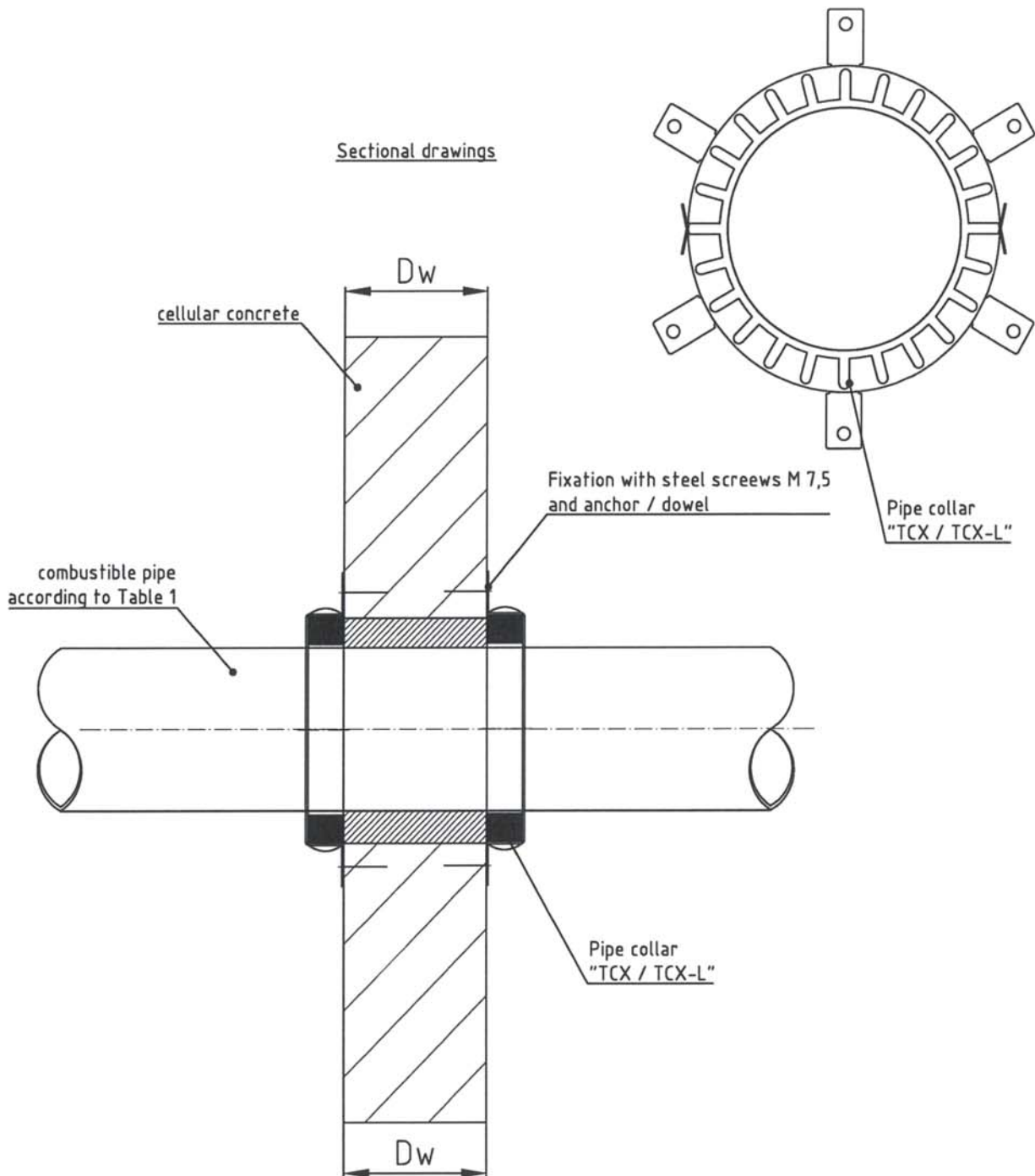


Table 1

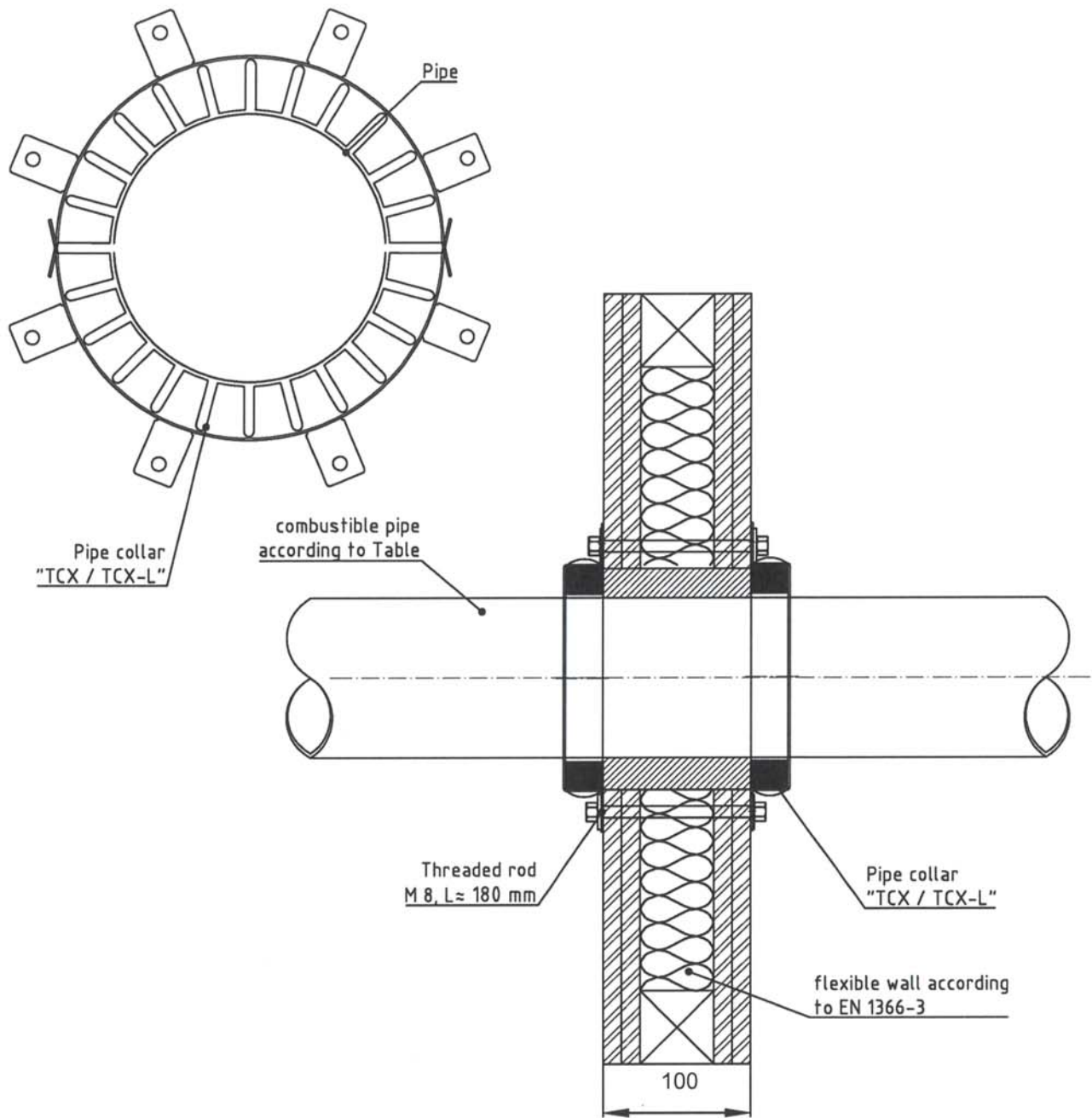
Type of pipe	Ø [mm]	s [mm]	Pipe collar size	ρ Wand	Dw [mm]	Classification
PVC	200	9,6	TCX 200	550 kg/m <sup>3</sup>	100	EI 240-U/C

TCX / TCX-L

Example for a pipe sealing of fire resistance class EI 240-U/C, using pipe collar "TCX / TCX-L", in the size of TCX, ø 200

Annex 5





**Flexible wall**

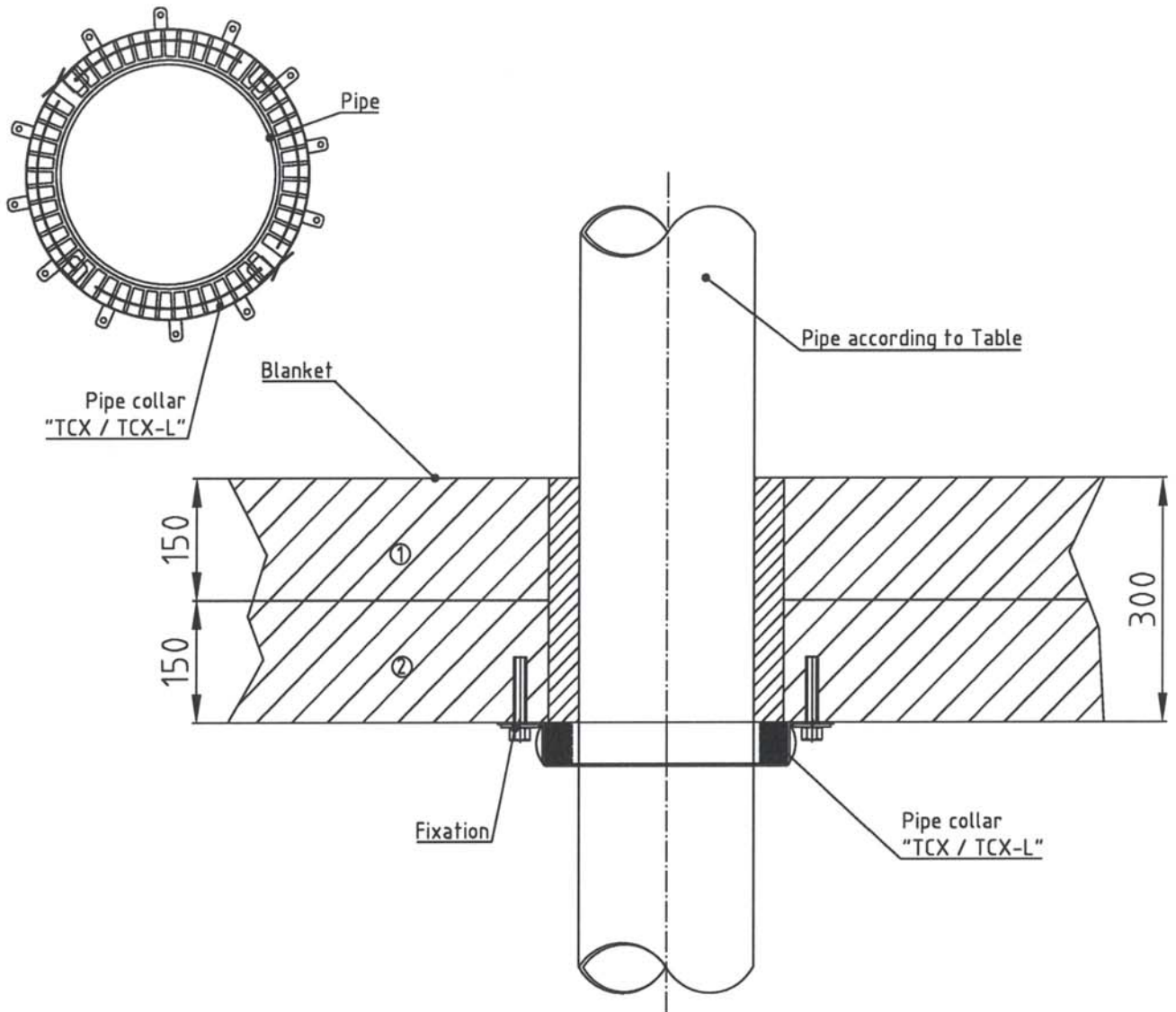
CW 50x50x0,6 and UW 50x40x0,6 according to DIN 18182-01  
2 x 12,5 mm gypsum board F / EN 520-G25/2,5 according to EN 520 two layers on both sides  
40 mm mineral wool insulation,  $\rho$  100kg/m<sup>3</sup>, melting point  $\geq$  1000° C, A1 according to EN 13501-1

Pipe			
Type of pipe	Ø [mm]	s [mm]	Pipe collar size
Coolfit	180	/	TCX 180

TCX / TCX-L

Example for a pipe sealing of fire resistance class EI 120-U/C, using pipe collar "TCX / TCX-L", in the size of TCX, Ø 180

Annex 6



**Blanket**

- 1 Aerated concrete blocks  $d = 150 \text{ mm}$ ;  $600 - 650 \text{ kg/m}^3$
- 2 Aerated concrete panels  $d = 150 \text{ mm}$ ;  $450 - 500 \text{ kg/m}^3$

Pipe			
Type of pipe	$\varnothing$ [mm]	s [mm]	Pipe collar size
PVC	400	11,7	TCX 400

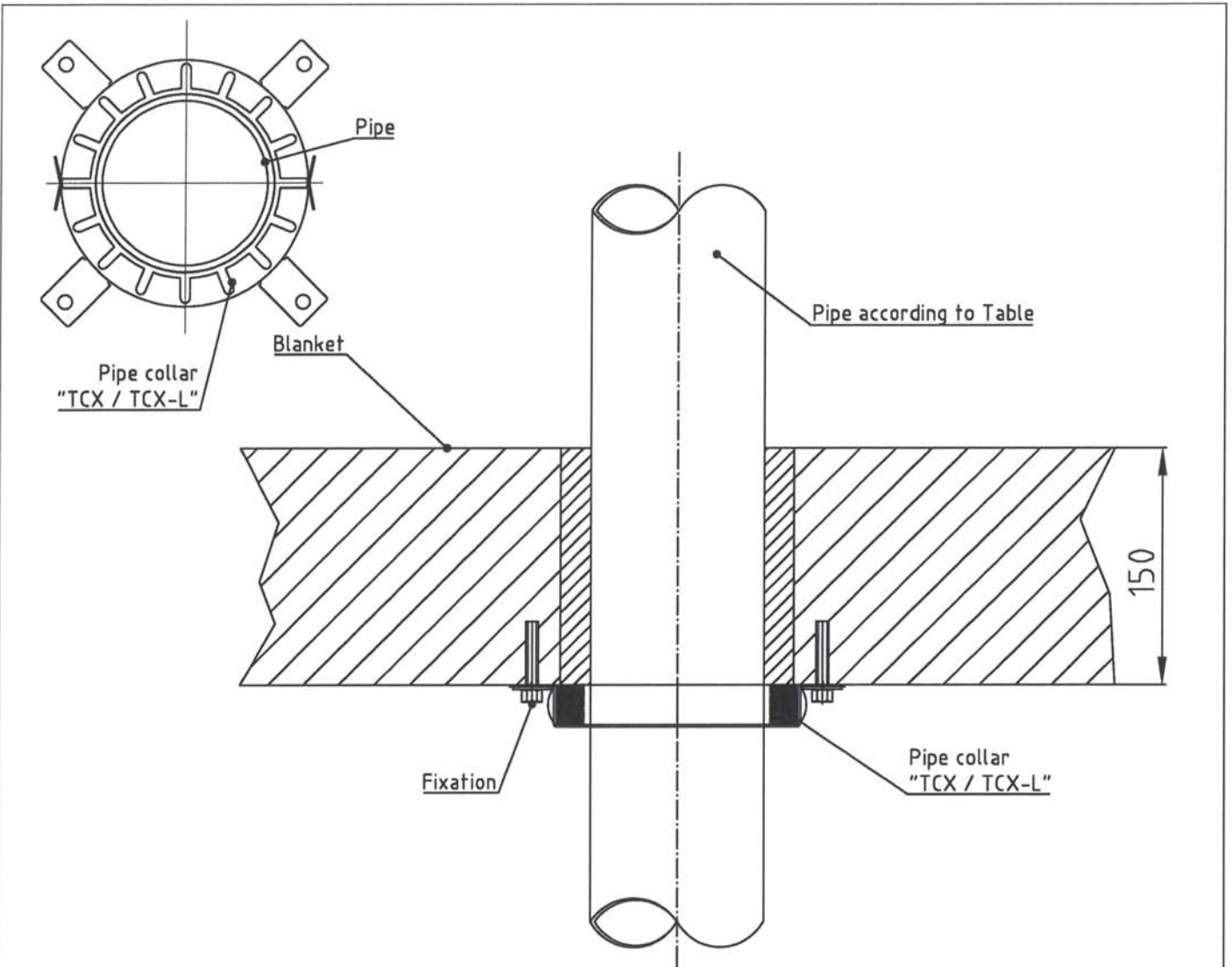
**Fixation:**

- Screws MMS-P 7,5 x 45
- or
- metal multipurpose anchors 8 x 38

TCX / TCX-L

Example for a pipe sealing of fire resistance class EI 180-U/C or E 240-U/C, using pipe collar "TCX / TCX-L", in the size of TCX,  $\varnothing$  400

Annex 7



**Blanket**

Aerated concrete according to EN 1366-3

Pipe			
Type of pipe	Ø [mm]	s [mm]	Pipe collar size
PP	110	2,7	TCX-L 110

**Fixation:**

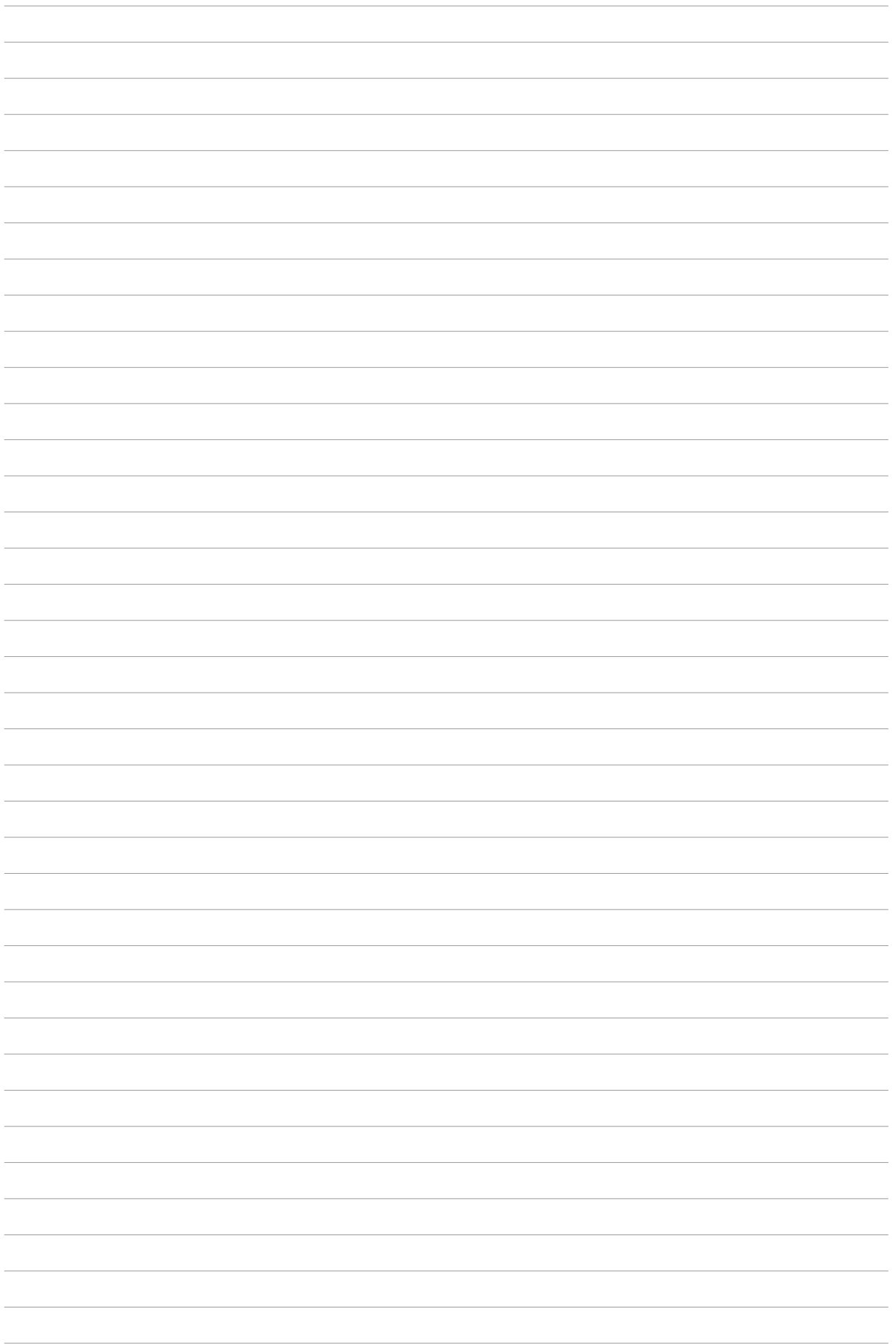
Screws MMS-P 7,5 x 45  
or  
metal multipurpose anchors 8 x 38

TCX / TCX-L

Example for a pipe sealing of fire resistance class EI 120-U/U, using pipe collar "TCX / TCX-L", in the size of TCX-L, Ø 110

Annex 8





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