

# FUNCTION IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION IN FIRES-JR-063-16-NURE

Cable bearing system VERGOKAN with cables PRYSMIAN, FABER and PRAKAB

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# FUNCTION IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION IN ACCORDANCE WITH DIN 4102-12: 1998-11

# FIRES-JR-063-16-NURE

Name of the product:	Cable bearing system VERGOKAN with cables PRYSMIAN, FABER and PRAKAB
Sponsor:	VERGOKAN Meersbloem Melden 16 9700 Oudenaarde Belgium
Prepared by:	FIRES, s.r.o. Approved Body No. SK01 Osloboditeľov 282 059 35 Batizovce Slovak Republic
Task No.:	PR-16-0102
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# 1. INTRODUCTION

This expert judgement report with classification defines the function in fire classification assigned to element "Cable bearing system VERGOKAN with cables PRYSMIAN, FABER and PRAKAB" in accordance with the classes given in DIN 4102-12: 1998-11.

This expert judgement report defines field of application which is outside the field of direct application according test standard or outside the field of extended application according to relevant extended application standard. This expert judgement expresses the opinion of the FIRES and is based on the experience or internal rules of FIRES.

This products have already been classified by FIRES, s.r.o. and number of previous fire resistance expert judgement report with classification is FIRES-JR-061-12-NURE, issued on 10. 07. 2012 with validity until 06. 07. 2016. Document FIRES-JR-063-16-NURE replaces expert judgement report with classification FIRES-JR-061-12-NURE.

# 2. DETAILS OF CLASSIFIED PRODUCT

# 2.1 GENERAL

The element, Cable bearing system VERGOKAN with cables PRYSMIAN, FABER and PRAKAB, is defined as a cable bearing system for power and communication halogen free cables with circuit integrity maintenance in fire.

# 2.2 PRODUCT DESCRIPTION

The element comprise of cable bearing system VERGOKAN – cable trays with accessories (consoles, brackets, screws etc.) with power and communication halogen free cables PRYSMIAN, FABER and PRAKAB with circuit integrity maintenance in fire.

# Cable trays KBSI

Cable trays are made of steel sheet 1,0 mm thick. Height of side wall is 60 mm. Width of tray is 400 mm. The trays are perforated on the sides and on the bottom. Cable tray is equipped with integrated junction. Trays are jointed together with 5 pcs of screws VMK 6x10 (new trademark is <u>VMK6.10</u>). Maximum load of trays is 20 kg.m<sup>-1</sup>. Tested trays were KBSI 60x400x1,00 (new trademark is <u>KBSI60.400.100</u>).

#### Brackets WKM

Brackets are made of steel sheet 2,5 mm thick. Dimensions of the base steel sheet is (70x175) mm and 8,0 mm thick and is equipped by holes for installation. Holes for installation of trays are in upper part of the brackets.

Tested brackets were WKM 400 (new trademark is <u>HDWKM400</u>).

# **Consoles HSMU**

Consoles are made from steel sheet and are composed of a head plate and the U 50 profile. Dimensions of the base head is (123x123) mm and 4,0 mm thick or (135x135) mm and 5,0 mm thick and is equipped by holes for installation. Dimensions of the U profile is (50x50) mm and 2,5 mm thick and is equipped by holes for installation of brackets. Tested consoles were HSMU 50x1000 (new trademark is HDHSMU50.1000).

# SPACER TSU50 and HDTSU50

Spacers are made of steel sheet 1,0 mm thick (TSU50) or 1,5 mm thick (HDTSU50).

#### Cables

Power and communication free halogen cables are specified for stationary distribution of electrical energy in dry and damp premises. Since they are free from halogens and exhibit enhanced fire performance, these cables are used in those applications where in the event of fire, the negative effect on concentrations of people and valuable material goods must be minimized. Suitable for hotels, hospitals, underground railways, airport etc. to protect people and technical building equipment in the event of fire where there is requirement for maintaining the functional integrity all cable installation in the event of fire. The cables develop in case of fire low heat released rate and smoke and no burning particles drop away



during fire accident. Functional integrity all cable installation in the event of fire is guaranteed only with use specified supporting member and cables grips.

# Used cables by test:

PRYSMIAN cables (producer Prysmian, Viale Sarca 222, IT-20126 Milano, Italy)

- cable (N)HXH-J E30 4x50 RM (2x); - cable (N)HXH-J E30 4x1,5 RE (2x); - cable (N)HXCH E30 4x50 RM/25 (2x); - cable (N)HXCH E30 4x1,5 RE/1,5 (2x); - cable (N)HXHX-J E90 4x50 RM (2x); - cable (N)HXHX-J E90 4x1,5 RE (2x); - cable (N)HXCHX E90 4x50 RM/25 (2x); - cable (N)HXCHX E90 4x2,5 RE/2,5 (2x); - cable JE-H(St)H E30 2x2x0.8 (2x).

FABER cables (producer Klaus Faber AG, Lebacher Str. 152-156, D-66009 Saarbrücken, Germany)

(2x):

- cable (N)HXH FE180 E90 4x50 RM FACAB
- cable (N)HXH FE180 E90 4x1,5 RE FACAB (2x):
- cable (N)HXCH FE180 E30 4x50 RM/25 FACAB (2x); (2x);
- cable (N)HXCH FE180 E30 4x1,5 RE/1,5 FACAB (2x);
- cable (N)HXH FE180 E30 4x50 RM FACAB
- cable (N)HXH FE180 E30 4x1,5 RE FACAB (2x);
- cable (N)HXCH FE180 E90 4x50 RM/25 FACAB (2x);
- cable (N)HXCH FE180 E90 4x1,5 RE/1,5 FACAB (2x);

PRAKAB cables (producer PRAKAB PRAŽSKÁ KABELOVNA, s.r.o., Ke Kablu 278, 102 09 Praha 15, Czech Republic) - cable JE-H(St)H FE180 E90 2x2x0,8 (2x).

The length of supporting constructions and cables was 5,5 m, 4 m from that was exposed to fire. Power and communication cables were fixed to the steel sheet trays in the points of allowed bending radius by steel clamps according to the cable diameter.

More detailed information about product construction is shown in the drawings which form an integral part of test report [1]. Drawings were delivered by sponsor.

# IN SUPPORT OF CLASSIFICATION

# 3.1 TEST REPORTS AND EXTENDED APPLICATION REPORTS

No.	Name of laboratory	Name of sponsors	Test report No.	Date of the test	Test method
[1]	FIRES, s.r.o., Batizovce, SK	VERGOKAN, Meersbloem Melden 16, 9700 Oudenaarde, Belgium	FIRES-FR- 119-11-AUNE	02. 06. 2011	DIN 4102 – 12:1998-11

# 3.2 TEST RESULTS

Test report No. /Test method	Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
	S1	cable (N)HXH-J E30 4x50 RM - Prysmian	X2-J	91 minutes
[1]	S2	cable (N)HXH-J E30 4x50 RM - Prysmian	X2-J	91 minutes
DIN 4102-12	S3	cable (N)HXH-J E30 4x1,5 RE - Prysmian	X2-J	31 minutes
	S4	cable (N)HXH-J E30 4x1,5 RE - Prysmian	X2-J	39 minutes
	S5	cable (N)HXCH E30 4x50 RM/25 - Prysmian	X2-K	83 minutes
	S6	cable (N)HXCH E30 4x50 RM/25 - Prysmian	X2-K	93 minutes
	S7	cable (N)HXCH E30 4x1,5 RE/1,5 - Prysmian	X2-K	39 minutes

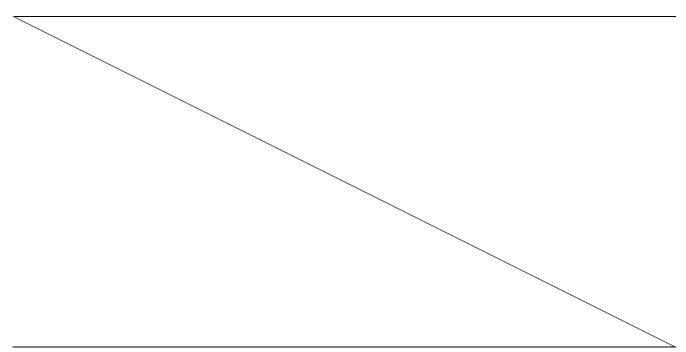
#### FIRES-JR-063-16-NURE



Test report No. /Test method	Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
	S8	cable (N)HXCH E30 4x1,5 RE/1,5 - Prysmian	X2-K	93 minutes no failure / interruption
[1]	S9	cable (N)HXHX-J E90 4x50 RM - Prysmian	X2-L	93 minutes no failure / interruption
DIN 4102-12	S10	cable (N)HXHX-J E90 4x50 RM - Prysmian	X2-L	93 minutes no failure / interruption
	S11	cable (N)HXHX-J E90 4x1,5 RE - Prysmian	X2-L	93 minutes no failure / interruption
	S12	cable (N)HXHX-J E90 4x1,5 RE - Prysmian	X2-L	93 minutes no failure / interruption
	S13	cable (N)HXCHX E90 4x50 RM/25 - Prysmian	Y2-M	93 minutes no failure / interruption
	S14	cable (N)HXCHX E90 4x50 RM/25 - Prysmian	Y2-M	93 minutes no failure / interruption
	S15	cable (N)HXCHX E90 4x2,5 RE/2,5 - Prysmian	Y2-M	93 minutes no failure / interruption
	S16	cable (N)HXCHX E90 4x2,5 RE/2,5 - Prysmian	Y2-M	93 minutes no failure / interruption
	S17	cable (N)HXH FE180 E90 4x50 RM FACAB - Faber	Y2-N	93 minutes no failure / interruption
	S18	cable (N)HXH FE180 E90 4x50 RM FACAB - Faber	Y2-N	76 minutes
	S19	cable (N)HXH FE180 E90 4x1,5 RE FACAB - Faber	Y2-N	93 minutes no failure / interruption
	S20	cable (N)HXH FE180 E90 4x1,5 RE FACAB - Faber	Y2-N	93 minutes no failure / interruption
	S21	cable (N)HXCH FE180 E30 4x50 RM/25 FACAB - Faber	Z2-0	79 minutes
	S22	cable (N)HXCH FE180 E30 4x50 RM/25 FACAB - Faber	Z2-0	93 minutes no failure / interruption
	S23	cable (N)HXCH FE180 E30 4x1,5 RE/1,5 FACAB - Faber	Z2-0	88 minutes
	S24	cable (N)HXCH FE180 E30 4x1,5 RE/1,5 FACAB - Faber	Z2-0	93 minutes no failure / interruption
	S25	cable (N)HXH FE180 E30 4x50 RM FACAB - Faber	Z2-P	86 minutes
	S26	cable (N)HXH FE180 E30 4x50 RM FACAB - Faber	Z2-P	93 minutes no failure / interruption
	S27	cable (N)HXH FE180 E30 4x1,5 RE FACAB - Faber	Z2-P	93 minutes no failure / interruption
	S28	cable (N)HXH FE180 E30 4x1,5 RE FACAB - Faber	Z2-P	93 minutes no failure / interruption
	S29	cable (N)HXCH FE180 E90 4x50 RM/25 FACAB - Faber	Z2-Q	73 minutes
	S30	cable (N)HXCH FE180 E90 4x50 RM/25 FACAB - Faber	Z2-Q	93 minutes
	S31	cable (N)HXCH FE180 E90 4x1,5 RE/1,5 FACAB - Faber	Z2-Q	83 minutes
	S32	cable (N)HXCH FE180 E90 4x1,5 RE/1,5 FACAB - Faber	Z2-Q	93 minutes no failure / interruption
	S52	cable JE-H(St)H E30 2x2x0,8 – Prysmian	X2-J	93 minutes no failure / interruption
	S53	cable JE-H(St)H E30 2x2x0,8 - Prysmian	X2-K	65 minutes
	S54	cable JE-H(St)H FE180 E90 2x2x0,8 – Prakab	Y2-N	66 minutes
	S55	cable JE-H(St)H FE180 E90 2x2x0,8 - Prakab	Z2-Q	56 minutes

[1] The fire test was discontinued in 94<sup>th</sup> minute at the request of test sponsor.

Specimens S1 – S32 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W. Specimens S52 – S55 were tested by one-phase voltage supply 1 x 110V with LED diodes 3V /0,03W. Circuit breakers with rating 3 A and performance characteristics B(gL) were used.





# 4. CLASSIFICATION AND FIELD OF APPLICATION

# 4.1 CLASSIFICATION ACCORDING TO DIN 4102-12: 1998-11

The element, cable bearing system VERGOKAN – cable trays with accessories (consoles, brackets, screws etc.) with power and communication halogen free cables PRYSMIAN, FABER and PRAKAB with circuit integrity maintenance in fire is classified according to the following combinations of performance parameters and classes as appropriate.

Cables PRYSMIAN used by the test are classified as follows:

Cable	Type of tested cable, single cross- sections and number of conductors	Arrangement	Classification for type of tested cable (by cross-sections and number of conductors)	Classification for cable
(N)HXH	(N)HXH-J E30 4x1,5 RE	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400.	E 30	n x ≥ 1,5 mm <sup>2</sup> n ≥ 2
È30	(N)HXH-J E30 4x50 RM	Loading 20 kg.m <sup>-1</sup> . Consoles in spacing of 1500 mm. Non-standard track X2-J.	E 90	E 30
<b>JE-H(St)H</b> E30	JE-H(St)H E30 2x2x0,8	Non-standard track X2-J and X2-K.	E 60	n x 2 x ≥ 0,8 mm n ≥ 2 <b>E 60</b>
<b>(N)HXCH</b> E30	(N)HXCH E30 4x1,5 RE/1,5	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400.	E 30	n x ≥ 1,5/1,5 mm <sup>2</sup> n ≥ 2
	(N)HXCH E30 4x50 RM/25	Loading 20 kg.m <sup>-1</sup> . Consoles in spacing of 1500 mm. Non-standard track X2-K.	E 60	E 30
(N)НХНХ	(N)HXHX-J E90 4x1,5 RE	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400.	E 90	n x ≥ 1,5 mm <sup>2</sup> n ≥ 2
E90		E 90	E 90	
(N)НХСНХ	(N)HXCHX E90 4x2,5 RE/2,5	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400.	E 90	n x ≥ 2,5/2,5 mm <sup>2</sup> n ≥ 2
E90	(N)HXCHX E90 4x50 RM/25	Loading 20 kg.m <sup>-1</sup> . Consoles in spacing of 1500 mm. Non-standard track Y2-M.	E 90	E 90



Cables FABER used by the test are classified as follows:

Cable	Type of tested cable, single cross- sections and number of conductors	Arrangement	Classification for type of tested cable (by cross-sections and number of conductors)	Classification for cable	
<b>(N)HXH</b> FE180 E90	(N)HXH FE180 E90 4x1,5 RE FACAB	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400.	E 90	n x ≥ 1,5 mm <sup>2</sup>	
FACAB	(N)HXH FE180 E90 4x50 RM FACAB	Loading 20 kg.m <sup>-1</sup> . Consoles in spacing of 1500 mm. Non-standard track Y2-N.	E 60	n ≥ 2 E 60	
(N)HXCH	(N)HXCH FE180 E30 4x1,5 RE/1,5 FACAB	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400.	E 60	n x ≥ 1,5/1,5 mm <sup>2</sup>	
FE180 E30 FACAB	(N)HXCH FE180 E30 4x50 RM/25 FACAB	Loading 20 kg.m <sup>-1</sup> . Consoles in spacing of 1500 mm. Non-standard track Z2-O.	E 60	n ≥ 2 <b>E 60</b>	
(N)HXH	(N)HXH FE180 E30 4x1,5 RE FACAB	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400.	E 90	n x ≥ 1,5 mm <sup>2</sup> n ≥ 2	
FE180 E30 FACAB	(N)HXH FE180 E30 4x50 RM FACAB	Loading 20 kg.m <sup>-1</sup> . Consoles in spacing of 1500 mm. Non-standard track Z2-P.	E 60	E 60	
(N)HXCH	Wits brackets HDWKM400.		E 60	n x ≥ 1,5/1,5 mm <sup>2</sup> - n ≥ 2	
FE180 E90 FACAB	(N)HXCH FE180 E90 4x50 RM/25 FACAB	Loading 20 kg.m <sup>-1</sup> . Consoles in spacing of 1500 mm. Non-standard track Y2-M.	E 60	E 60	

Cables PRAKAB used by the test are classified as follows:

Cable	Type of tested cable, single cross- sections and number of conductors	Arrangement	Classification for type of tested cable (by cross-sections and number of conductors)	Classification for cable
<b>JE-H(St)H</b> FE180 E90	JE-H(St)H FE180 E90 2x2x0,8	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400. Loading 20 kg.m <sup>-1</sup> . Consoles in spacing of 1500 mm. Non-standard track Y2-N and Z2-Q.	E 30	n x 2 x ≥ 0,8 mm n ≥ 2 <b>E 30</b>

The element, cable bearing system VERGOKAN – cable trays with accessories (consoles, brackets, screws etc.) with power and communication halogen free cables PRYSMIAN, FABER and PRAKAB with circuit integrity maintenance in fire are classified to classes according to achieved test results of tested cables at tracks. Other classification is not allowed.



# 4.2 FIELD OF APPLICATION

This classification is valid for the following end use applications:

- test results are applicable only for tested bearing systems VERGOKAN with cables PRYSMIAN, FABER and PRAKAB;
- throughout the period during which circuit integrity is to be maintained, neighboring building components shall not have a negative effect on circuit integrity;
- although testing is only carried out on cables arranged horizontally, test results also apply to cables arranged either diagonally or vertically (e.g. risers), as long as the cable system is supported in transitional areas (i.e. where it switches from a horizontal to a vertical arrangement) in such a manner that the cables will not slip or kink at corners;
- test results of function in fire test of cables tested at standard supporting construction are also applicable for tested standard supporting construction of other producers;
- test results of function in fire test of cables tested at standard supporting construction are also applicable for cables of other producers tested at standard supporting construction;
- results of testing bunched cables on a ladder or tray also apply to support construction attached to a wall. However, such constructions required proof of suitability by means of a test certificate or other document issued by an accredited testing laboratory;
- test result is applicable to cable without connecting elements (e.g. sleeves and junction boxes);
- test result is applicable to welded head plate to steel U-shaped ceiling profiles;
- heavy joined steel brackets WKM... shall be fixed to steel U-shaped ceiling profiles HSMU from one or from two sides, providing the maximum loading of U-shaped ceiling profiles is not more than during the fire test and only if sufficient type of fixation of the head plates to ceiling is provided;
- use the new type of spacer TSU50 instead of spacer HDTSU50;
- change the construction of tested console (base of console) type HDHSMU in accordance with drawings in annex.

# 5. LIMITATIONS

Load-bearing construction elements for fixing of cable systems must be proved for at least the same fire resistance compare to classified function in fire of cable system.

The construction contractor is solely responsible for proper preparation.

This classification document does not represent type approval or certification of the product.

The classification is valid until 14. 06. 2021 provided that the product, field of application and standards and regulations are not changed.

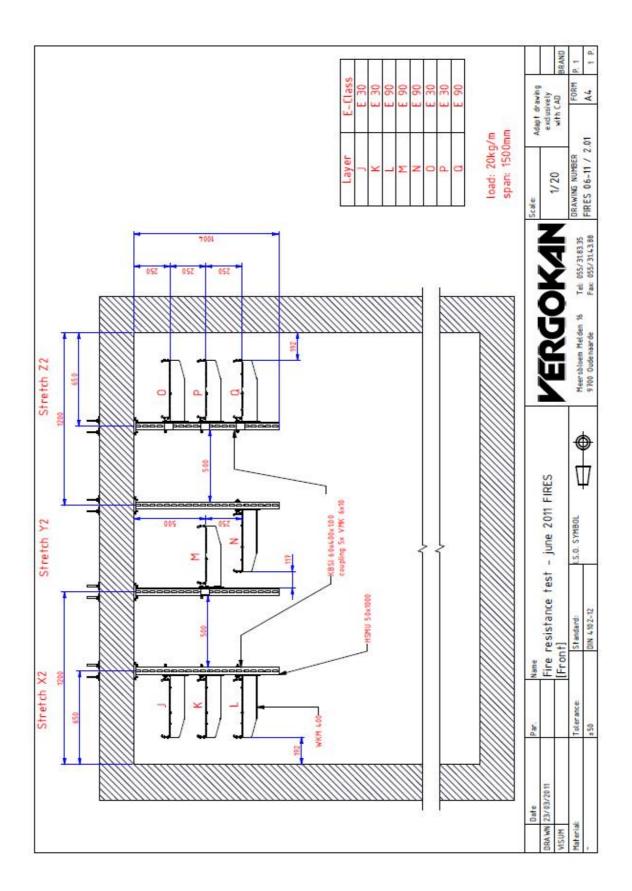
Approved:

Ing. Štefan Rástocký leader of the testing laboratory



Signed:

Miroslav Hudák technician of the testing laboratory

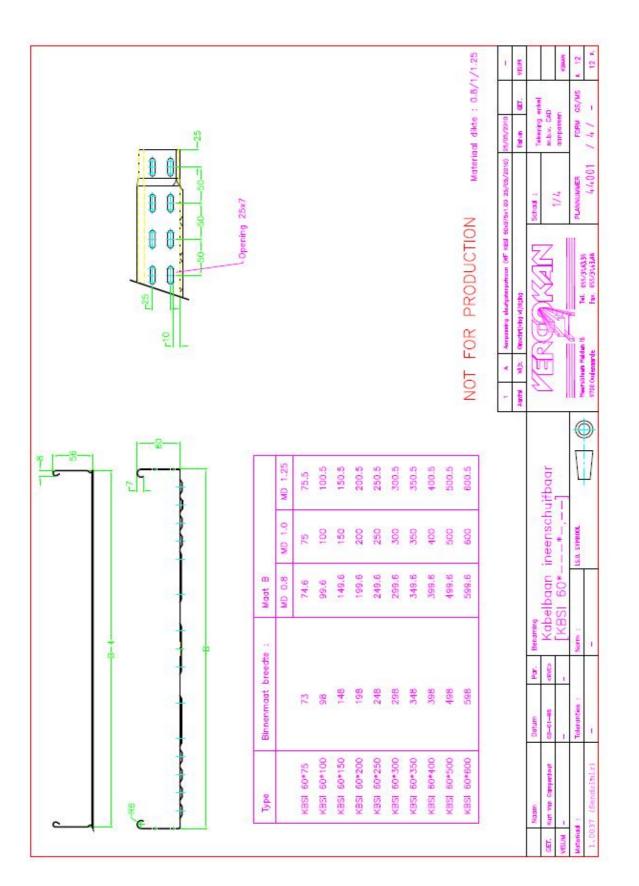




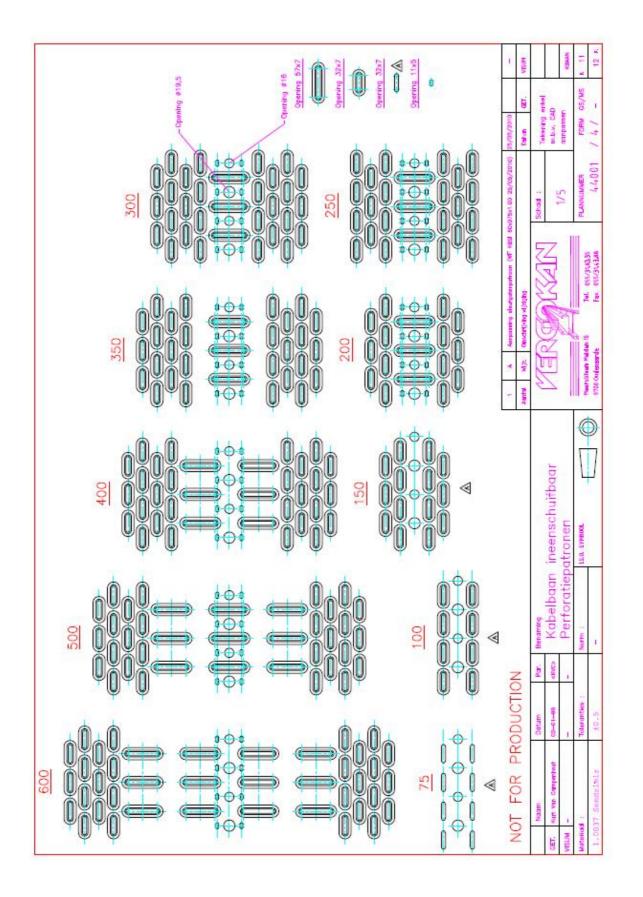
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S VMK 6x10 in the coupling S VMK 6x10 in the coupling S S M S S M S S S M S S S S S S S S S S S S S	oking ends oft/hut} description	Scale 1/10 BRAWING NUMBER 4386 FIRES 06-11
	Cable Fray with intertocking Toothed round head bolt/nut Bolt Spacer Spacer Celling profile U-shaped Fire resistant plug Fire resistant plug Rist gant washer Nut dig froed bracket Keavy joined bracket	VERROOKAN Meersbloen Melden 16 Tet 055/316335 9700 Oudenaarde Fax 055/314388
	3 44001 11 VMK 6x10 3 810x60 (0M 933) 3 15U PR010_01 1 H5MU PR010_03 2 - 2 - 6 CR0 10 (0N 934) 3 4547 4 M 10 (0N 934) 3 45547 4 M 10 (0N 934)	
		Name Fire resistance - june 2011 FIRES Without threaded rod, with KBSI 60xx1.00 Istandard: ts.o. stymB0L
		Name Fire resistance - Without threaded Standard: DIN 4:92-12
load: 20kg/m span: 1,5m no of layers:		Par, 011 Par, Tolerance: ±50
		DRA WN 23/ 03/2011 VISUM Material:



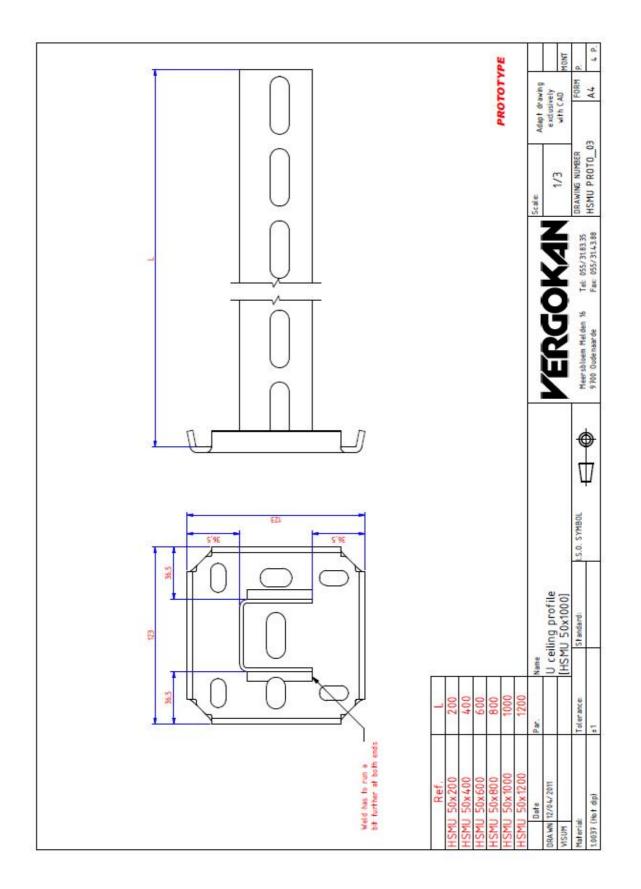




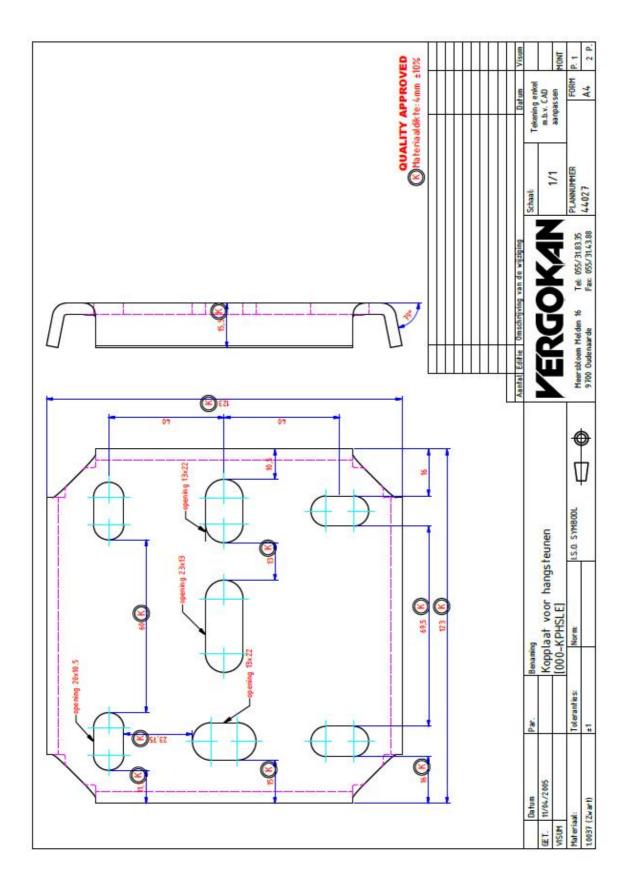




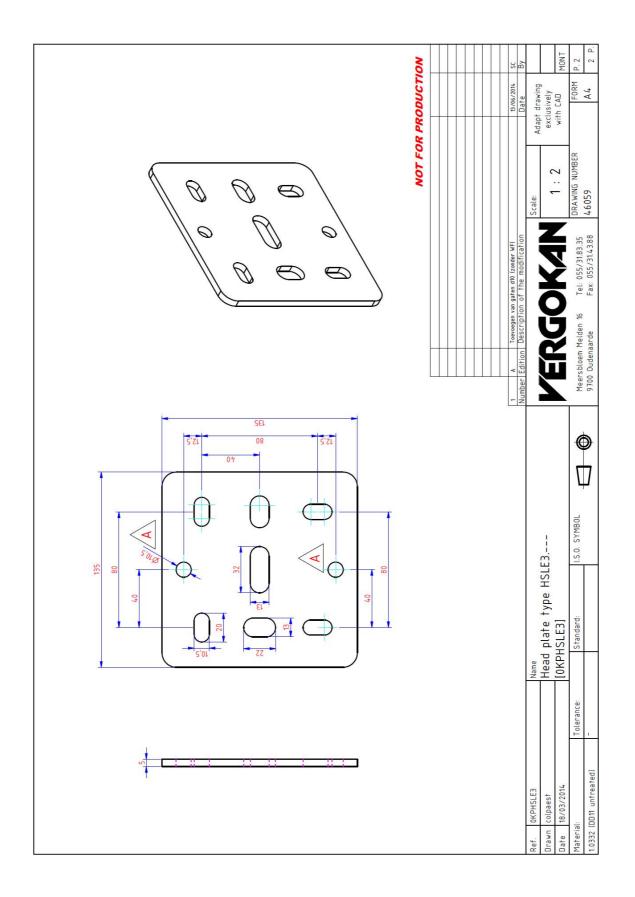




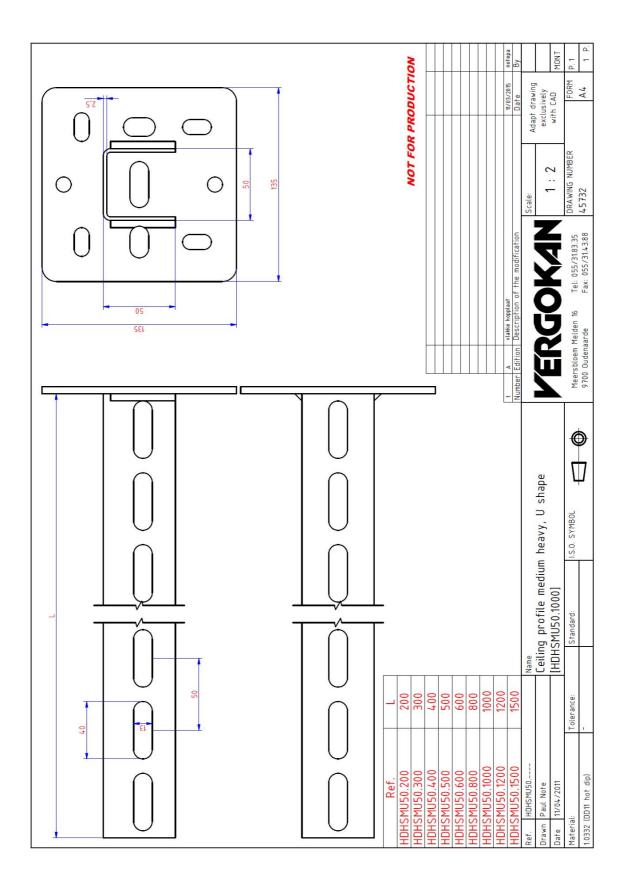




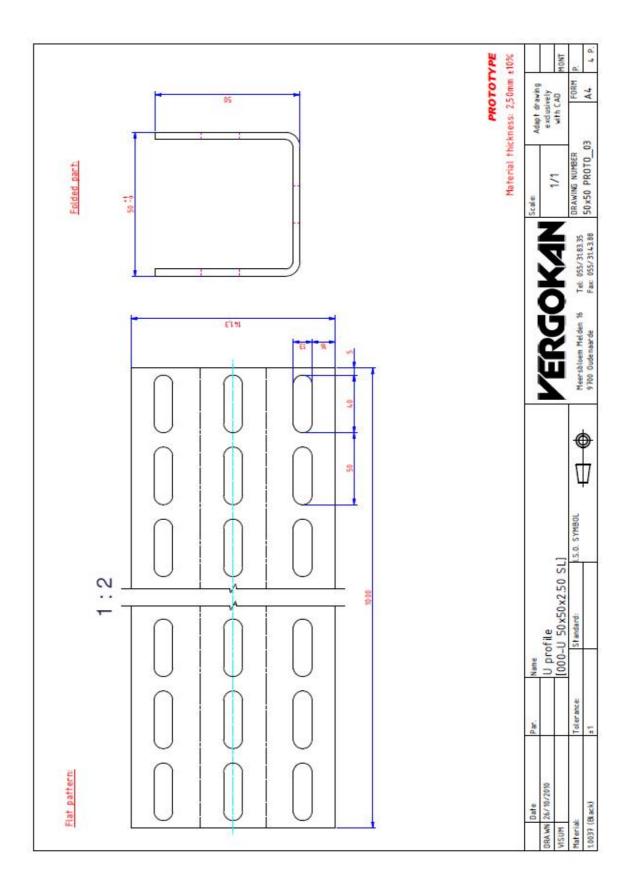












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ndsel D (HD) description	Number Fettion of the modification Of the modification I I I I I I I I I I I I I I I I I I I	VERGOKA	Meersbloem Melden 16 Tel: 055/3183.35 9700 Oudenaarde Fax: 055/314.388
TSU verzinkt HD Zeskantbout HD Carosserierondsel Zeskantmoer M10 (HD) Parts list			
] reference		50	I.S.O. SYMBOL
[275U50] [HDB10.80] [HDCR0 10] [HDM10]	$( \bigcirc )$ $( \bigcirc )$ $( \bigcirc )$	Name Spacer HDHSMU 50 [HDTSU50]	Standard:
45729 B 10x80 (DIN 933) CRO 10 (DIN 9021) M 10 (DIN 934) drawing		Name Spac	Tolerance: -
1 1 1 2 3 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Ref. HDTSU Drawn Paul Note Date 15/06/2011	Material: 1.0037 (Hot-dip)





