

FUNCTION IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION FIRES-JR-049-16-NURE

Cable bearing system VERGOKAN with cables DÄTWYLER

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FUNCTION IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION IN ACCORDANCE WITH STN 92 0205

FIRES-JR-049-16-NURE

Name of the product: Cable bearing system VERGOKAN with cables DÄTWYLER

Sponsor: VERGOKAN
Meersbloem Melden 16
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Belgium

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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 DÄTWYLER” in accordance with the classes given in STN 92 0205:2014.

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-037-11-NURE Issue 2, issued on 14. 12. 2011 with validity until 06. 07. 2016. Document FIRES-JR-049-16-NURE replaces expert judgement report with classification FIRES-JR-037-11-NURE Issue 2.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element, Cable bearing system VERGOKAN with cables DÄTWYLER, 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 DÄTWYLER 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 VMK6.10). Maximum load of trays is 20 kg.m⁻¹. Tested trays were KBSI 60x400x1,00 (new trademark is KBSI60.400.100).

Cable trays KBSTI

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 3 pcs of screws VMK 6x10 (new trademark is VMK6.10). Maximum load of trays is 20 kg.m⁻¹. Tested trays were KBSTI 60x400x1,00 (new trademark is KBSTI60.400.100).

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 HDWKM400).

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: (producer Dätwyler AG, Gotthardstrasse 31, CH-6460 Altdorf, Switzerland)

- type (N)HXH FE180 E30-E60 4x50 RM (4x);
- type (N)HXH FE180 E30-E60 4x1,5 RE (4x);
- type (N)HXCH FE180 E30-E60 4x50 RM/25 (4x);
- type (N)HXCH FE180 E30-E60 4x1,5 RE/1,5 (4x);
- type (N)HXH FE180 E90 4x50 RM (4x);
- type (N)HXH FE180 E90 4x1,5 RE (4x);
- type (N)HXCH FE180 E90 4x50 RM/25 (4x);
- type (N)HXCH FE180 E90 4x1,5 RE/1,5 (4x);
- type JE-H(St)H...Bd FE180 E30-E90 2x2x0,8 (4x);
- type JE-H(St)HRH...Bd FE180 E30-E90 2x2x0,8 (4x).

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.

3. TEST REPORTS AND EXTENDED APPLICATION REPORTS 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- 118-11-AUNE	01. 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
[1] DIN 4102-12	S1	cable (N)HXH FE180 E30-E60 4x50 RM	X1-A	93 minutes no failure / interruption
	S2	cable (N)HXH FE180 E30-E60 4x50 RM	X1-A	93 minutes no failure / interruption
	S3	cable (N)HXH FE180 E30-E60 4x1,5 RE	X1-A	93 minutes no failure / interruption
	S4	cable (N)HXH FE180 E30-E60 4x1,5 RE	X1-A	93 minutes no failure / interruption
	S5	cable (N)HXCH FE180 E30-E60 4x50 RM/25	X1-B	93 minutes no failure / interruption
	S6	cable (N)HXCH FE180 E30-E60 4x50 RM/25	X1-B	93 minutes no failure / interruption
	S7	cable (N)HXCH FE180 E30-E60 4x1,5 RE/1,5	X1-B	93 minutes no failure / interruption
	S8	cable (N)HXCH FE180 E30-E60 4x1,5 RE/1,5	X1-B	93 minutes no failure / interruption
	S9	cable (N)HXH FE180 E90 4x50 RM	X1-C	93 minutes no failure / interruption
	S10	cable (N)HXH FE180 E90 4x50 RM	X1-C	93 minutes no failure / interruption
	S11	cable (N)HXH FE180 E90 4x1,5 RE	X1-C	93 minutes no failure / interruption
	S12	cable (N)HXH FE180 E90 4x1,5 RE	X1-C	93 minutes no failure / interruption
	S13	cable (N)HXCH FE180 E90 4x50 RM/25	Y1-D	93 minutes no failure / interruption
	S14	cable (N)HXCH FE180 E90 4x50 RM/25	Y1-D	93 minutes no failure / interruption
	S15	cable (N)HXCH FE180 E90 4x1,5 RE/1,5	Y1-D	93 minutes no failure / interruption
	S16	cable (N)HXCH FE180 E90 4x1,5 RE/1,5	Y1-D	93 minutes no failure / interruption



Test report No. /Test method	Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
[1] DIN 4102-12	S17	cable (N)HXH FE180 E90 4x50 RM	Y1-E	93 minutes no failure / interruption
	S18	cable (N)HXH FE180 E90 4x50 RM	Y1-E	93 minutes no failure / interruption
	S19	cable (N)HXH FE180 E90 4x1,5 RE	Y1-E	93 minutes no failure / interruption
	S20	cable (N)HXH FE180 E90 4x1,5 RE	Y1-E	93 minutes no failure / interruption
	S21	cable (N)HXCH FE180 E30-E60 4x50 RM/25	Z1-F	93 minutes no failure / interruption
	S22	cable (N)HXCH FE180 E30-E60 4x50 RM/25	Z1-F	93 minutes no failure / interruption
	S23	cable (N)HXCH FE180 E30-E60 4x1,5 RE/1,5	Z1-F	93 minutes no failure / interruption
	S24	cable (N)HXCH FE180 E30-E60 4x1,5 RE/1,5	Z1-F	93 minutes no failure / interruption
	S25	cable (N)HXH FE180 E30-E60 4x50 RM	Z1-G	93 minutes no failure / interruption
	S26	cable (N)HXH FE180 E30-E60 4x50 RM	Z1-G	93 minutes no failure / interruption
	S27	cable (N)HXH FE180 E30-E60 4x1,5 RE	Z1-G	93 minutes no failure / interruption
	S28	cable (N)HXH FE180 E30-E60 4x1,5 RE	Z1-G	93 minutes no failure / interruption
	S29	cable (N)HXCH FE180 E90 4x50 RM/25	Z1-H	93 minutes no failure / interruption
	S30	cable (N)HXCH FE180 E90 4x50 RM/25	Z1-H	93 minutes no failure / interruption
	S31	cable (N)HXCH FE180 E90 4x1,5 RE/1,5	Z1-H	93 minutes no failure / interruption
	S32	cable (N)HXCH FE180 E90 4x1,5 RE/1,5	Z1-H	93 minutes no failure / interruption
	S52	cable JE-H(St)H...Bd FE180 E30-E90 2x2x0,8	X1-A	49 minutes
	S53	cable JE-H(St)HRH...Bd FE180 E30-E90 2x2x0,8	X1-B	46 minutes
	S54	cable JE-H(St)H...Bd FE180 E30-E90 2x2x0,8	X1-C	51 minutes
	S55	cable JE-H(St)HRH...Bd FE180 E30-E90 2x2x0,8	Y1-D	54 minutes
	S56	cable JE-H(St)H...Bd FE180 E30-E90 2x2x0,8	Y1-E	23 minutes
	S57	cable JE-H(St)HRH...Bd FE180 E30-E90 2x2x0,8	Z1-F	72 minutes
	S58	cable JE-H(St)H...Bd FE180 E30-E90 2x2x0,8	Z1-G	74 minutes
	S59	cable JE-H(St)HRH...Bd FE180 E30-E90 2x2x0,8	Z1-H	48 minutes

[1] The fire test was discontinued in 94th 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 – S59 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 STN 92 0205:2014

The element, cable bearing system VERGOKAN – cable trays with accessories (consoles, brackets, screws etc.) with power and communication halogen free cables by company DÄTWYLER is classified according to the following combinations of performance parameters and classes as appropriate.

Used cables by 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 FE180 E30-E60	(N)HXH FE180 E30-E60 4x1,5 RE	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track X1-A.	PS 90	n x ≥ 1,5 mm ² n ≥ 2 PS 90
	(N)HXH FE180 E30-E60 4x50 RM		PS 90	
JE-H(St)H...Bd FE180 E30-E90	JE-H(St)H...Bd FE180 E30-E90 2x2x0,8	Non-standard track X1-A and X1-C.	PS 45	n x 2 x ≥ 0,8 mm n ≥ 2 PS 45



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)HXCH FE180 E30-E60	(N)HXCH FE180 E30-E60 4x1,5 RE/1,5	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track X1-B.	PS 90	n x ≥ 1,5/1,5 mm ² n ≥ 2 PS 90
	(N)HXCH FE180 E30-E60 4x50 RM/25		PS 90	
JE-H(St)HRH... Bd FE180 E30-E90	JE-H(St)HRH...Bd FE180 E30-E90	Non-standard track X1-B and Y1-D.	PS 45	n x 2 x ≥ 0,8 mm n ≥ 2 PS 45
(N)HXH FE180 E90	(N)HXH FE180 E90 4x1,5 RE	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track X1-C.	PS 90	n x ≥ 1,5 mm ² n ≥ 2 PS 90
	(N)HXH FE180 E90 4x50 RM		PS 90	
(N)HXCH FE180 E90	(N)HXCH FE180 E90 4x1,5 RE/1,5	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track Y1-D.	PS 90	n x ≥ 1,5/1,5 mm ² n ≥ 2 PS 90
	(N)HXCH FE180 E90 4x50 RM/25		PS 90	
(N)HXH FE180 E90	(N)HXH FE180 E90 4x1,5 RE	In cable trays KBSTI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track Y1-E.	PS 90	n x ≥ 1,5 mm ² n ≥ 2 PS 90
	(N)HXH FE180 E90 4x50 RM		PS 90	
JE-H(St)H...Bd FE180 E30-E90	JE-H(St)H...Bd FE180 E30-E90 2x2x0,8	Non-standard track Y1-E and Z1-G.	PS 15	n x 2 x ≥ 0,8 mm n ≥ 2 PS 15
(N)HXCH FE180 E30-E60	(N)HXCH FE180 E30-E60 4x1,5 RE/1,5	In cable trays KBSTI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track Z1-F.	PS 90	n x ≥ 1,5/1,5 mm ² n ≥ 2 PS 90
	(N)HXCH FE180 E30-E60 4x50 RM/25		PS 90	
JE-H(St)HRH... Bd FE180 E30-E90	JE-H(St)HRH...Bd FE180 E30-E90	Non-standard track Z1-F and Z1-H.	PS 45	n x 2 x ≥ 0,8 mm n ≥ 2 PS 45



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 FE180 E30-E60	(N)HXH FE180 E30-E60 4x1,5 RE	In cable trays KBSTI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track Z1-G.	PS 90	n x ≥ 1,5 mm ² n ≥ 2 PS 90
	(N)HXH FE180 E30-E60 4x50 RM		PS 90	
(N)HXCH FE180 E90	(N)HXCH FE180 E90 4x1,5 RE/1,5	In cable trays KBSTI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track Z1-H.	PS 90	n x ≥ 1,5/1,5 mm ² n ≥ 2 PS 90
	(N)HXCH FE180 E90 4x50 RM/25		PS 90	

The element, cable bearing system **VERGOKAN** – cable trays with accessories (consoles, brackets, screws etc.) with power and communication halogen free cables by company **DÄTWYLER** 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 DÄTWYLER;**
- condition for the validity of direct application of the test results is that the supporting and fixing structure is fixed only to the building structure, which allows the statically required time of fire resistance, i.e. fulfils the criterion R;
- throughout the period during which circuit integrity is to be maintained, neighbouring 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 cables tested in cable trays are applicable also for cable trays with cover ensured against movement by appropriate means;
- classification for type of cable (by cross-sections and number of conductors) is valid only for tested cable types, number and cross-sections of conductors;
- classification for cable is valid for all numbers and cross-sections of tested cable type;
- 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;
- test results of function in fire test of cables at nonstandard supporting construction are valid only for tested construction with particular tested cable type and are also applicable for supporting construction with smaller spacing of consoles and smaller loading;
- test results of cables tested in cable trays or ladders are applicable also for cable trays and ladders with particular construction with smaller width as tested with particular smaller loading;
- test results of cables tested in bearing system made from steel acc. to STN EN 61537 are applicable also for bearing system made from stainless steel, but not conversely;
- test results of cables with five or four conductors are applicable also for cables with less number of conductors apart from cables with one conductor;



- if only cables with the smallest or largest cross-section achieve the required function in fire classification, the test results are valid only for the particular cross-section and way of installation
- test results of communication cables are applicable also for all numbers and cross-sections of conductors bigger than tested cable type;
- test results of cables at ladders or in trays attached at ceiling are applicable also for cables placed in bearing system fixed to wall;
- test results of cables tested at cable trays or ladders are applicable also for another products trays and ladders (cross, elbow, T-bend, bends and etc.);
- test results of cables tested at cable trays or ladders are applicable also for bearing system with surface treatment (colour paint) with maximum thickness 1 mm;
- 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.

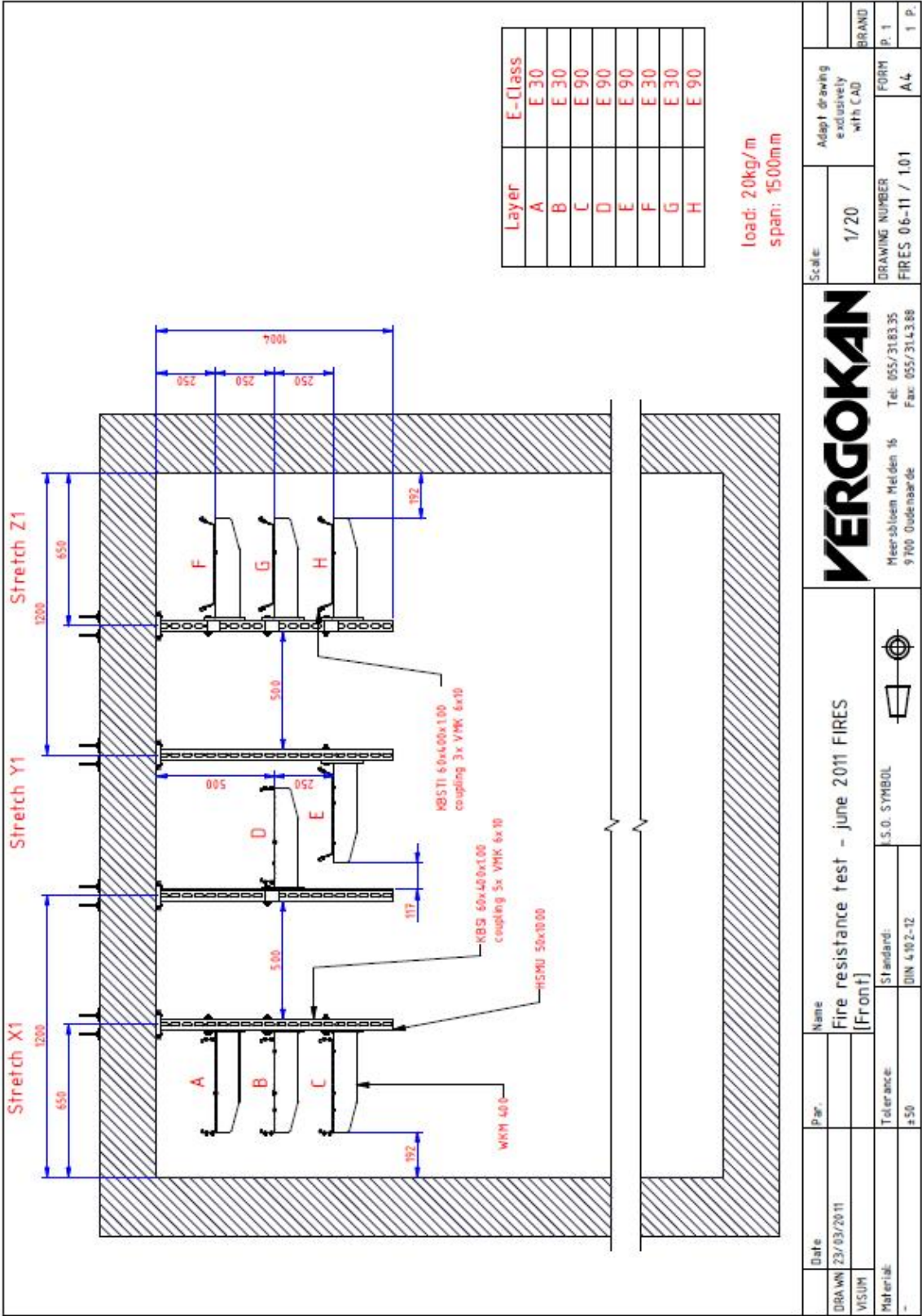
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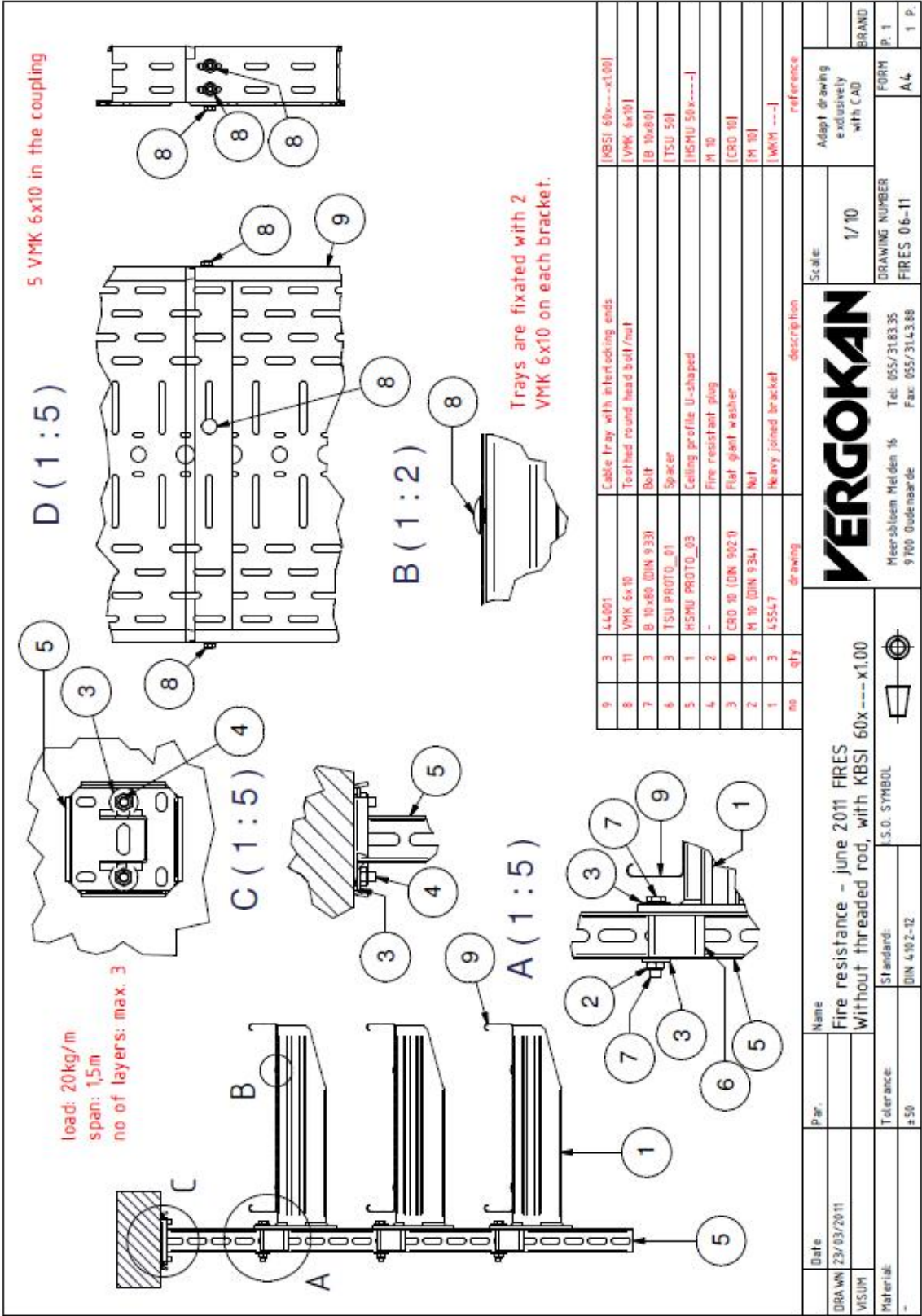
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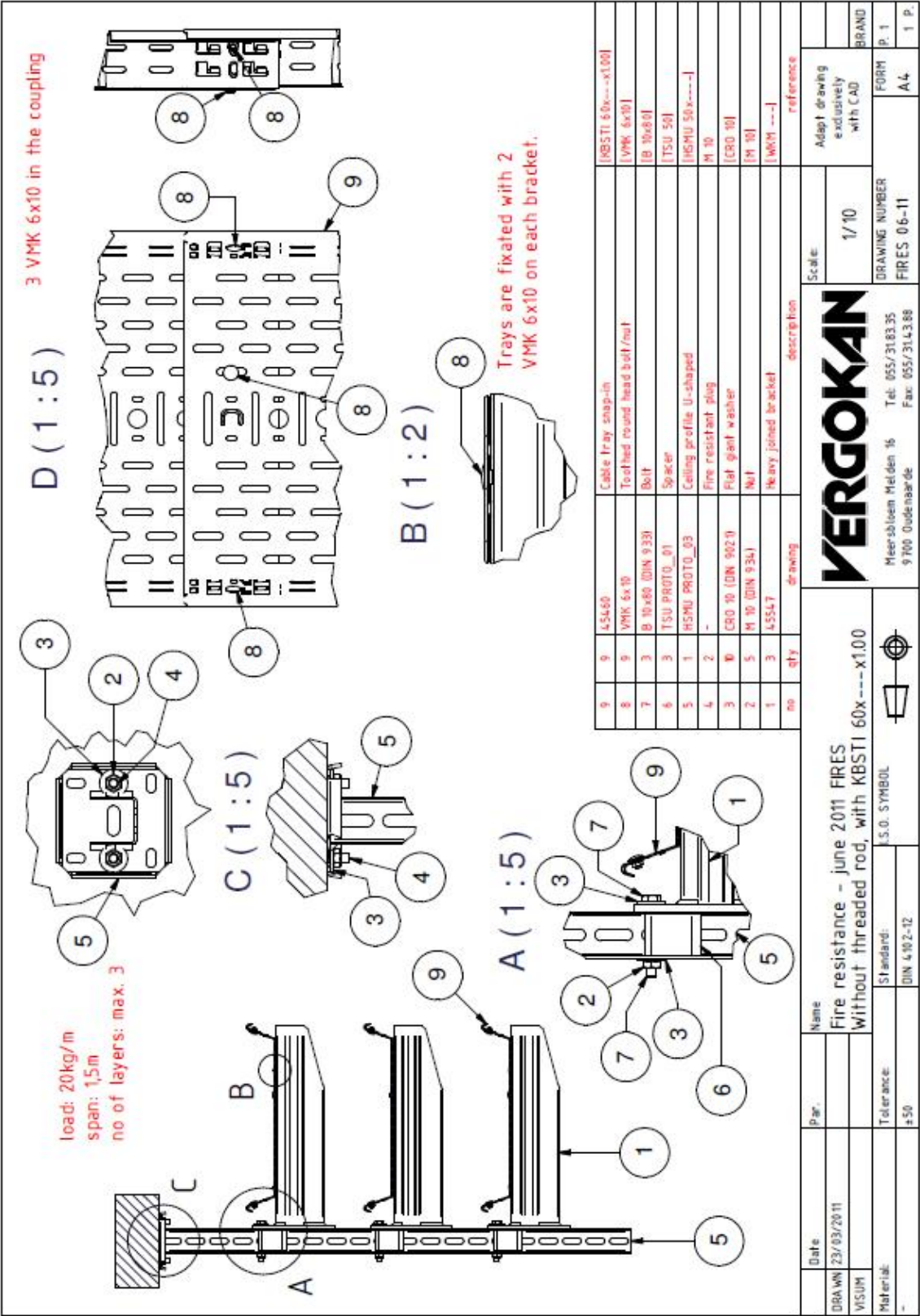
Ing. Štefan Rástocký
leader of the testing laboratory



Miroslav Hudák
technician of the testing laboratory










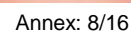
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KBSI 60*100	98	99.6	100	100.5
KBSI 60*150	148	149.6	150	150.5
KBSI 60*200	198	199.6	200	200.5
KBSI 60*250	248	249.6	250	250.5
KBSI 60*300	298	299.6	300	300.5
KBSI 60*350	348	349.6	350	350.5
KBSI 60*400	398	399.6	400	400.5
KBSI 60*500	498	499.6	500	500.5
KBSI 60*600	598	599.6	600	600.5

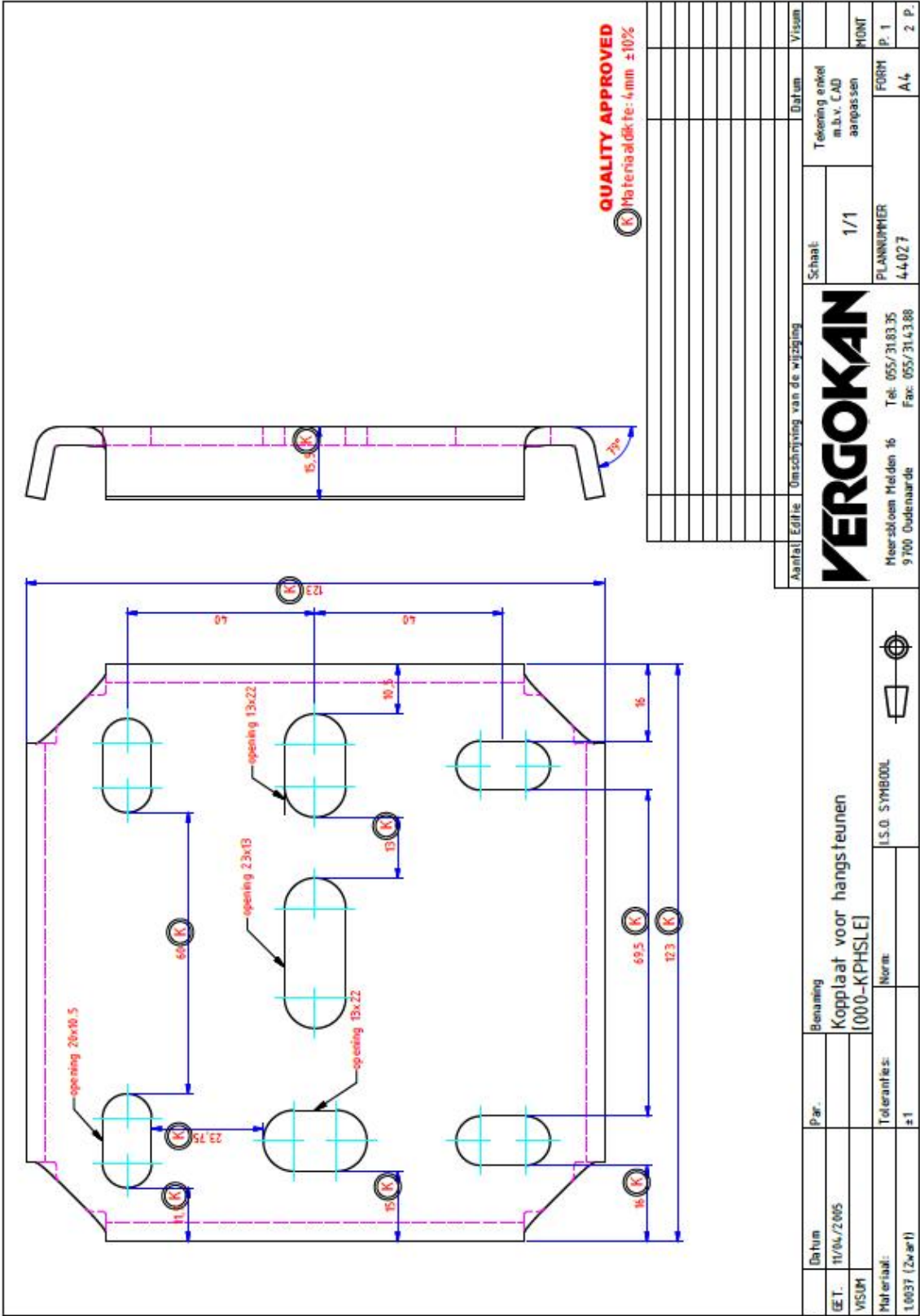
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VERBOD		Tekeningen :		Normen :		1. 00.037 / Eendaals (n.a.)	

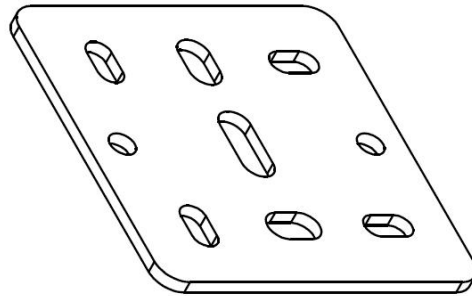






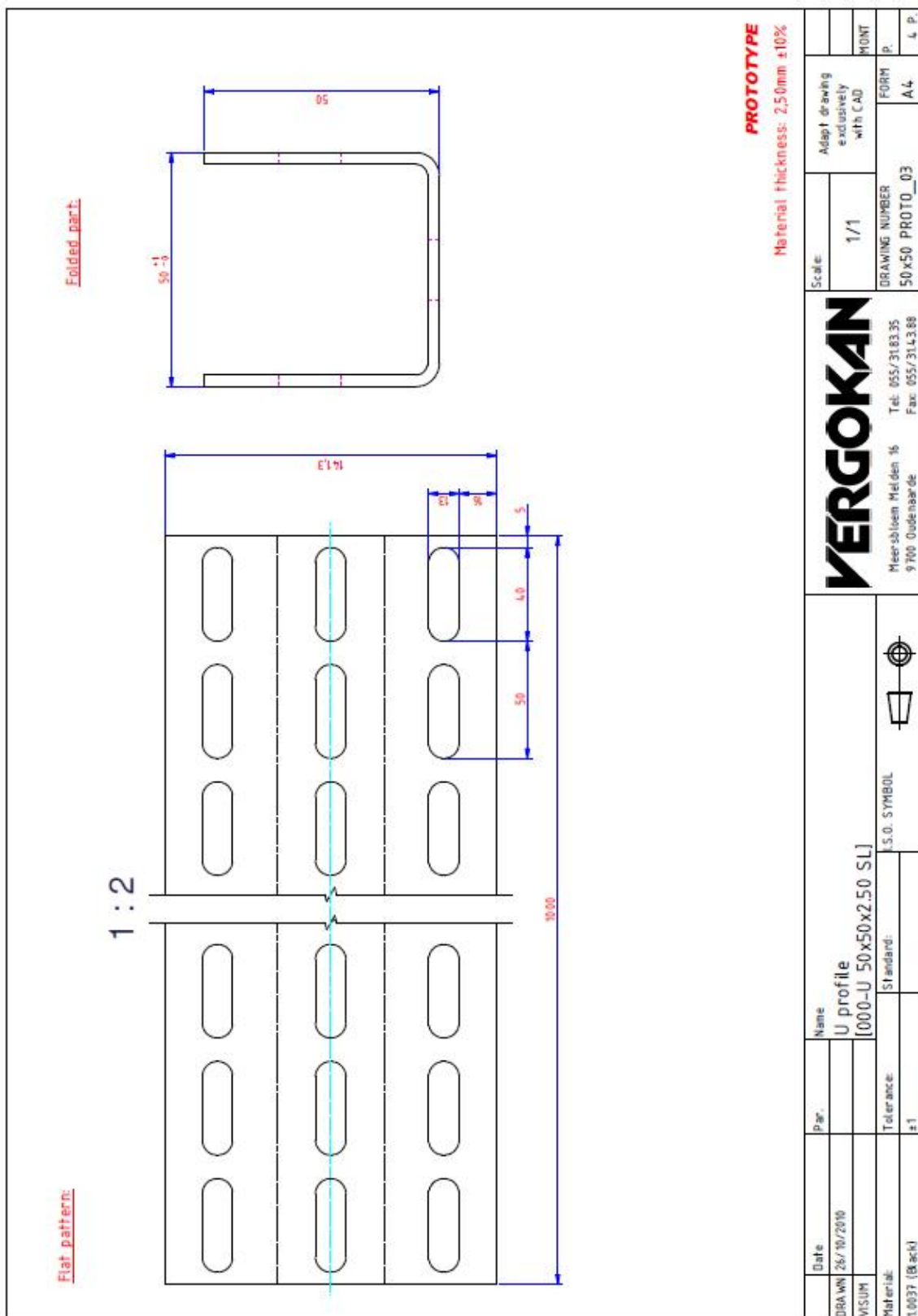




[illegible]

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Ref.	Name		Scale:		Adapt drawing exclusively with CAD		
Drawn	colpaest		1 : 2				
Date	18/03/2014						
Material:	Tolerance:		DRAWING NUMBER		FORM		
10332 (D011 untreated)	-				A4		
					2 p.		







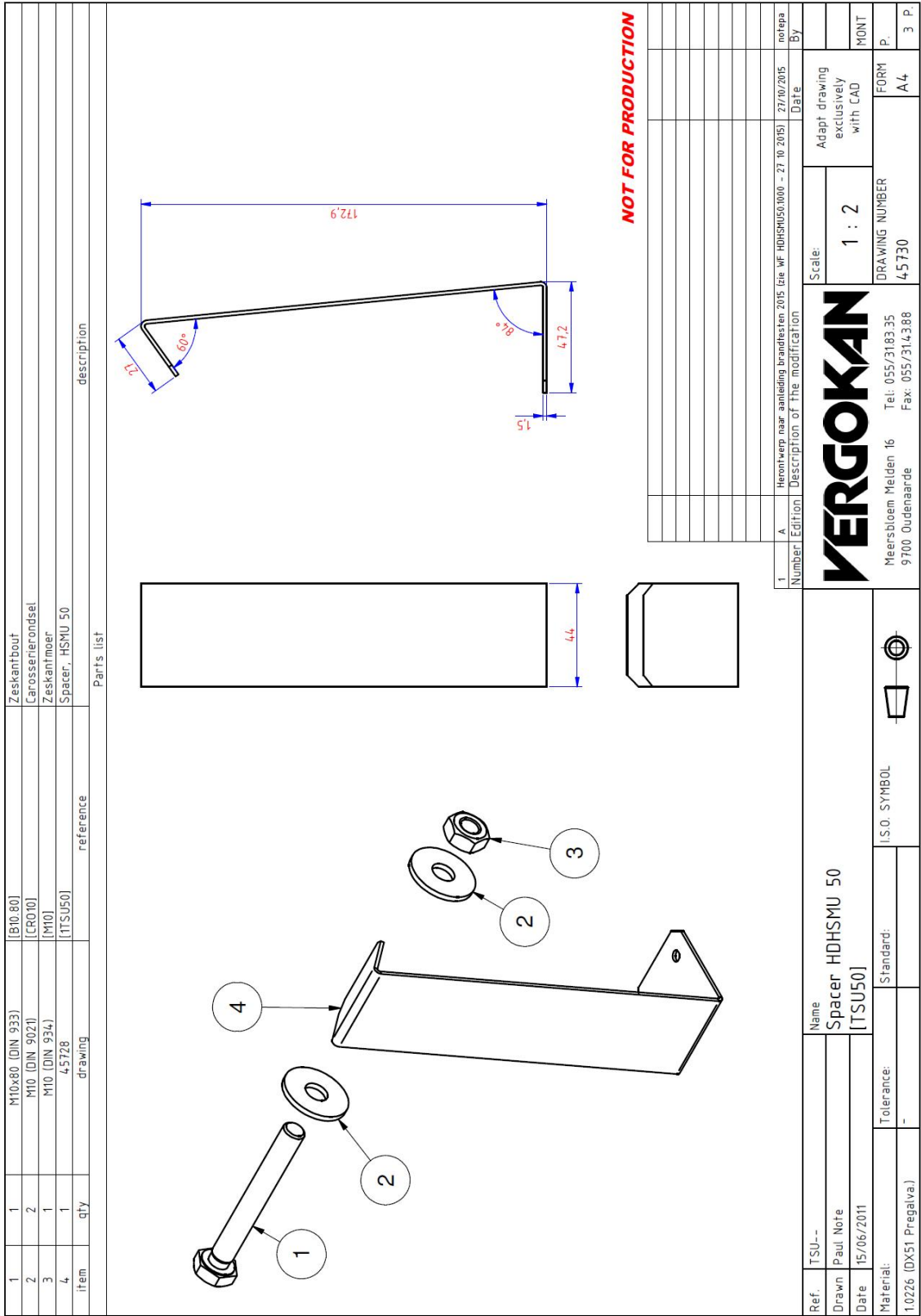
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2	1	B 10x80 (DIN 933)	[HDB10.80]	HD Zeskantbout
3	2	CRO 10 (DIN 9021)	[HDCRO 10]	HD Carosserierondsel
4	1	M 10 (DIN 934)	[HDM10]	Zeskantmoer M10 (HD)
item	qty	drawing	reference	description

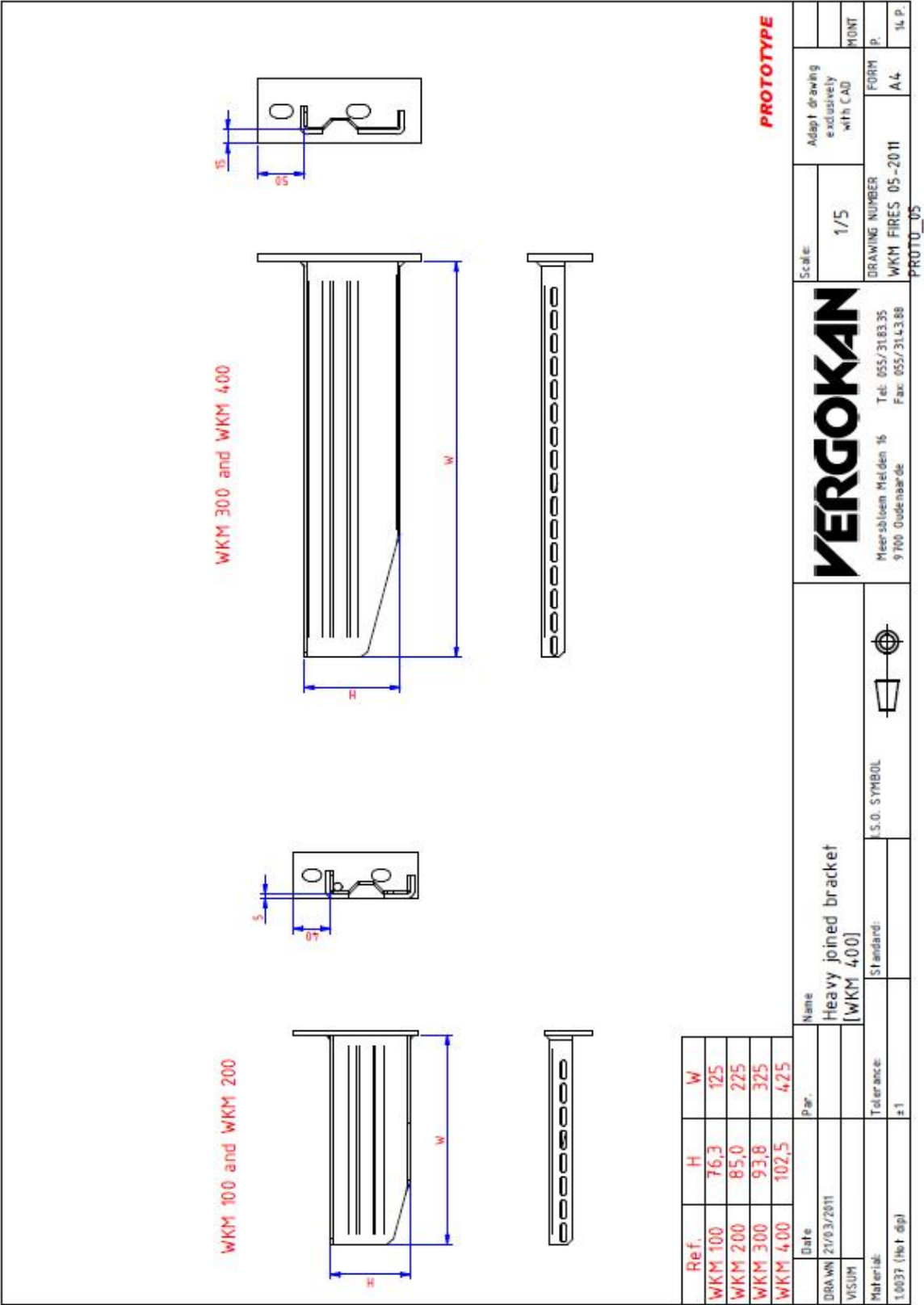
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Ref.	HDTSU--	Name	Spacer HDHSMU 50
Drawn	Paul Note		
Date	15/06/2011		
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		Standard:	
		I.S.O. SYMBOL	

Number	1	Scale:	1 : 1	Adapt drawing exclusively with CAD	By	
Edition					Date	
Description of the modification				DRAWING NUMBER	FORM	
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					P.	3 P.

VERGOKAN		Meersbloem Melden 16 9700 Oudenaarde	
Tel: 055/3183.35		Fax: 055/314388	





PROTOTYPE