

FUNCTION IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION IN FIRES-JR-058-16-NURE

Cable bearing system VERGOKAN with cables DÄTWYLER and PRAKAB

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

FIRES-JR-058-16-NURE

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

Sponsor: VERGOKAN

Meersbloem Melden 16 9700 Oudenaarde

Belgium

Prepared by: FIRES, s.r.o.

Approved Body No. SK01

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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 and PRAKAB" 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-052-11-NURE Issue 2, issued on 14. 12. 2011 with validity until 31. 08. 2016. Document FIRES-JR-058-16-NURE replaces expert judgement report with classification FIRES-JR-052-11-NURE Issue 2.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element, Cable bearing system VERGOKAN with cables DÄTWYLER 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 DÄTWYLER and PRAKAB with circuit integrity maintenance in fire.

Cable travs 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⁻¹. Tested trays were KBSI 60x400x1,00 (new trademark is <u>KBSI60.400.100</u>).

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 300 mm or 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 60x300x0,75 (new trademark is KBSTI60.300.075) and KBSTI 60x400x1,00 (new trademark is KBSTI60.400.100).

Brackets WKM

Brackets are made of steel sheet 2,5 mm thick. Dimensions of the head plate 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 300 (new trademark is <u>HDWKM300</u>) and 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,

FIRES 149/S-10/08/2015-E Page: 2/7



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:

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<u>DÄTWYLER cables</u> (producer Dätwyler AG, Gotthardstrasse 31, CH-6460 Altdorf, Switzerland)
cable (N)HXH FE180 E30-E60 4x50 RM
                                                  (2x);
cable (N)HXH FE180 E30-E60 4x1.5 RE
                                                  (2x);
cable (N)HXCH FE180 E30-E60 4x50 RM/25
                                                  (2x);
cable (N)HXCH FE180 E30-E60 4x1,5 RE/1,5
                                                  (2x):
cable (N)HXH FE180 E90 4x50 RM
                                                  (2x);
cable (N)HXH FE180 E90 4x1,5 RE
                                                  (2x);
cable (N)HXCH FE180 E90 4x50 RM/25
                                                  (2x);
cable (N)HXCH FE180 E90 4x2,5 RE/2,5
                                                  (2x);
cable JE-H(St)H...Bd FE180 E30-E90 2x2x0,8
                                                  (6x);
cable JE-H(St)HRH...Bd FE180 E30-E90 2x2x0,8
                                                  (6x).
PRAKAB cables (producer PRAKAB PRAŽSKÁ KABELOVNA, s.r.o., Ke Kablu 278, 102 09 Praha 15, Czech Republic)
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cable (N)HXCH FE 180 E90 4x50 RM/25 (2x); cable (N)HXCH FE 180 E90 4x1,5 RE/1,5 (2x); 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.

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- 172-11-AUNE	18. 08. 2011	DIN 4102 – 12:1998-11

3.2 TEST RESULTS

Test report No. /Test method	st No. Cables		Track No.	Time to first failure / interruption of conductor	
	S1	cable (N)HXH FE180 E30-E60 4x50 RM - Dätwyler	X2 - M	93 minutes no failure / interruption	
[1]	S2	cable (N)HXH FE180 E30-E60 4x50 RM - Dätwyler	X2 - M	93 minutes no failure / interruption	
DIN 4102-12 S3 cable (N)HXH FE180 E9		cable (N)HXH FE180 E90 4x50 RM - Dätwyler	X2 - N	93 minutes no failure / interruption	
S4 cable (N)HXH FE18		cable (N)HXH FE180 E90 4x50 RM - Dätwyler	X2 - N	93 minutes no failure / interruption	
	S5 cable (N)HXCH FE180 E90 4x50 RM/25 - Dätwyler		X2 - O	93 minutes no failure / interruption	
S6 cable (N)H		cable (N)HXCH FE180 E90 4x50 RM/25 - Dätwyler	X2 - O	93 minutes no failure / interruption	
	S7	cable (N)HXCH FE180 E30-E60 4x50 RM/25 - Dätwyler	Y2 - P	93 minutes no failure / interruption	
	S8	cable (N)HXCH FE180 E30-E60 4x50 RM/25 - Dätwyler	Y2 - P	93 minutes no failure / interruption	
	S9	cable (N)HXCH FE180 E30-E60 4x1,5 RE/1,5 - Dätwyler	Y2 - Q	93 minutes no failure / interruption	

FIRES 149/S-10/08/2015-E Page: 3/7



Test report No. /Test method	Specimen No.	Cables		Time to first failure / interruption of conductor
	S10	cable (N)HXCH FE180 E30-E60 4x1,5 RE/1,5 - Dätwyler	Y2 - Q	93 minutes no failure / interruption
[1]	S11	cable (N)HXH FE180 E30-E60 4x1,5 RE - Dätwyler	Y2 - Q	93 minutes no failure / interruption
DIN 4102-12	S12	cable (N)HXH FE180 E30-E60 4x1,5 RE - Dätwyler	Y2 - Q	73 minutes
	S13	cable (N)HXCH FE180 E90 4x2,5 RE/2,5 - Dätwyler	Y2 - R	93 minutes no failure / interruption
	S14	cable (N)HXCH FE180 E90 4x2,5 RE/2,5 - Dätwyler	Y2 - R	93 minutes no failure / interruption
	S15	cable (N)HXH FE180 E90 4x1,5 RE - Dätwyler	Y2 - R	93 minutes no failure / interruption
	S16	cable (N)HXH FE180 E90 4x1,5 RE - Dätwyler	Y2 - R	93 minutes no failure / interruption
	S17	cable (N)HXCH FE 180 E90 4x50 RM/25 - Prakab	Z2 - U	93 minutes no failure / interruption
	S18	cable (N)HXCH FE 180 E90 4x50 RM/25 - Prakab	Z2 - U	81 minutes
	S19	cable (N)HXCH FE 180 E90 4x1,5 RE/1,5 - Prakab	Z2 - U	93 minutes no failure / interruption
	S20	cable (N)HXCH FE 180 E90 4x1,5 RE/1,5 - Prakab	Z2 - U	93 minutes no failure / interruption
	S52	cable JE-H(St)HBd FE180 E30-E90 2x2x0,8 - Dätwyler	X2 - M	35 minutes
	S53	cable JE-H(St)HBd FE180 E30-E90 2x2x0,8 - Dätwyler	X2 - N	24 minutes
	S54	cable JE-H(St)HRHBd FE180 E30-E90 2x2x0,8 -Dätwyler	X2 - O	23 minutes
	S55	cable JE-H(St)HRHBd FE180 E30-E90 2x2x0,8 -Dätwyler	Y2 - P	29 minutes
	S56	cable JE-H(St)HRHBd FE180 E30-E90 2x2x0,8 -Dätwyler	Z2 - S	33 minutes
	S57	cable JE-H(St)HRHBd FE180 E30-E90 2x2x0,8 -Dätwyler	Z2 - S	93 minutes no failure / interruption
	S58	cable JE-H(St)HBd FE180 E30-E90 2x2x0,8 - Dätwyler	Z2 - S	30 minutes
	S59	cable JE-H(St)HBd FE180 E30-E90 2x2x0,8 - Dätwyler	Z2 - S	93 minutes no failure / interruption
	S60	cable JE-H(St)HRHBd FE180 E30-E90 2x2x0,8 -Dätwyler	Z2 - T	41 minutes
	S61	cable JE-H(St)HRHBd FE180 E30-E90 2x2x0,8 -Dätwyler	Z2 - T	51 minutes
	S62	cable JE-H(St)HBd FE180 E30-E90 2x2x0,8 - Dätwyler	Z2 - T	35 minutes
	S63	cable JE-H(St)HBd FE180 E30-E90 2x2x0,8 - Dätwyler	Z2 - T	93 minutes no failure / interruption
	S64	cable JE-H(St)H FE180 E90 2x2x0,8 - Prakab	Z2 - U	93 minutes no failure / interruption
	S65	cable JE-H(St)H FE180 E90 2x2x0,8 - Prakab	Z2 - U	12 minutes

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

Specimens S1 - S20 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W. Specimens S52 - S65 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 and PRAKAB is classified according to the following combinations of performance parameters and classes as appropriate.

Cables DÄTWYLER 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 FE180 E30-E60 4x1,5 RE	In cable trays KBSTI60.300.075. Ceiling consoles HDHSMU50.1000	PS 60	n x ≥ 1,5 mm ² n ≥ 2 PS 60
FE180 E30-E60	(N)HXH FE180 E30-E60 4x50 RM	wits brackets HDWKM300. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track X2-M and Y2-Q.	PS 90	
JE-H(St)H Bd FE180 E30-E90	JE-H(St)HBd FE180 E30-E90 2x2x0,8	Non-standard track X2-M and X2-N.	PS 15	n x 2 x ≥ 0,8 mm n ≥ 2 PS 15

FIRES 149/S-10/08/2015-E Page: 4/7



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	(N)HXCH FE180 E30-E60 4x1,5 RE/1,5	In cable trays KBSTI60.300.075. Ceiling consoles HDHSMU50.1000 wits brackets WKM 300. Loading 20 kg.m ⁻¹ .	PS 90	n x ≥ 1,5/1,5 mm ² n ≥ 2 PS 90
E30-E60	(N)HXCH FE180 E30-E60 4x50 RM/25	Consoles in spacing of 1500 mm. Non-standard track Y2-P and Y2-Q.	PS 90	
(и)нхн	(N)HXH FE180 E90 4x1,5 RE	In cable trays KBSTI60.300.075. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM300.	PS 90	n x ≥ 1,5 mm ² n ≥ 2
FE180 E90	(N)HXH FE180 E90 4x50 RM	Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track X2-N and Y2-R.	PS 90	PS 90
(N)HXCH FE180	(N)HXCH FE180 E90 4x2,5 RE/2,5	In cable trays KBSTI60.300.075. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM300. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track X2-O and Y2-R.	PS 90	n x ≥ 2,5/2,5 mm ² n ≥ 2
E90	(N)HXCH FE180 E90 4x50 RM/25		PS 90	PS 90
JE-H(St)HRH Bd FE180 E30-E90	JE-H(St)HRHBd FE180 E30-E90 2x2x0,8	Non-standard track X2-O and Y2-P.	PS 15	n x 2 x ≥ 0,8 mm n ≥ 2 PS 15
JE-H(St)H Bd FE180 E30-E90	JE-H(St)HBd FE180 E30-E90 2x2x0,8	In cable trays KBSTI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400.	PS 30	n x 2 x ≥ 0,8 mm n ≥ 2 PS 30
JE-H(St)HRH Bd FE180 E30-E90	JE-H(St)HRHBd FE180 E30-E90 2x2x0,8	Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track Z2-S.	PS 30	n x 2 x ≥ 0,8 mm n ≥ 2 PS 30
JE-H(St)H Bd FE180 E30-E90	JE-H(St)HBd FE180 E30-E90 2x2x0,8	In cable trays KBSI60.400.100. Ceiling consoles HDHSMU50.1000 wits brackets HDWKM400.	PS 30	n x 2 x ≥ 0,8 mm n ≥ 2 PS 30
JE-H(St)HRH Bd FE180 E30-E90	JE-H(St)HRHBd FE180 E30-E90 2x2x0,8	Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm. Non-standard track Z2-T.	PS 30	n x 2 x ≥ 0,8 mm n ≥ 2 PS 30

FIRES 149/S-10/08/2015-E Page: 5/7



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
(N)HXCH FE 180	(N)HXCH FE 180 E90 4x1,5 RE/1,5	In cable trays KBSI60.400.100.	PS 90	n x ≥ 1,5 mm ² n ≥ 2 PS 60
E90	(N)HXCH FE 180 E90 4x50 RM/25	Ceiling consoles HDHSMU50.1000 wits brackets WKM 400. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm.	PS 60	
JE-H(St)H FE180 E90	JE-H(St)H FE180 E90 2x2x0,8	Non-standard track Z2-U.	Without classification	Without classification

The element, cable bearing system VERGOKAN – cable trays with accessories (consoles, brackets, screws etc.) with power and communication halogen free cables by company DÄTWYLER and PRAKAB 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 and PRAKAB;
- 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;

FIRES 149/S-10/08/2015-E Page: 6/7



- 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
- 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:

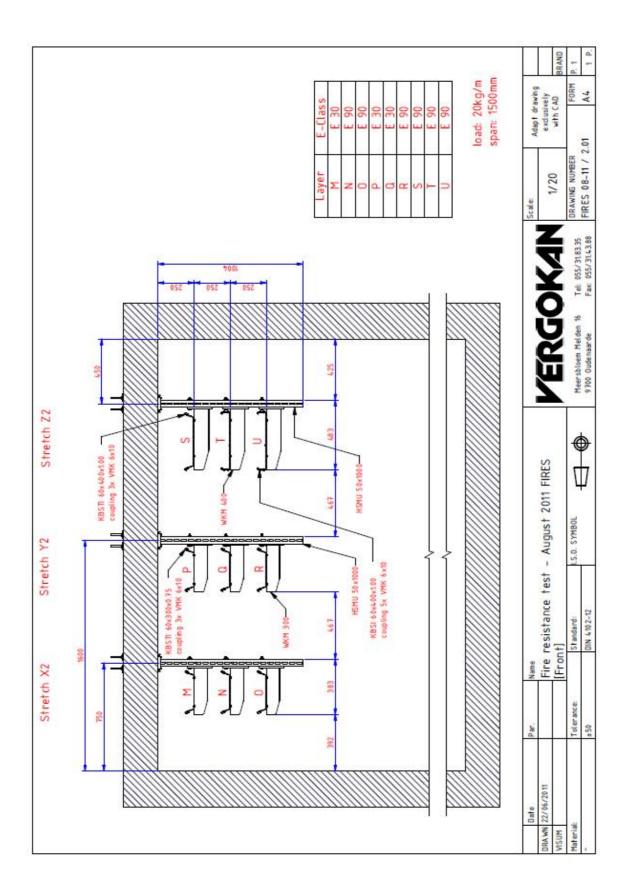
Signed:

Ing. Štefan Rástocký leader of the testing laboratory

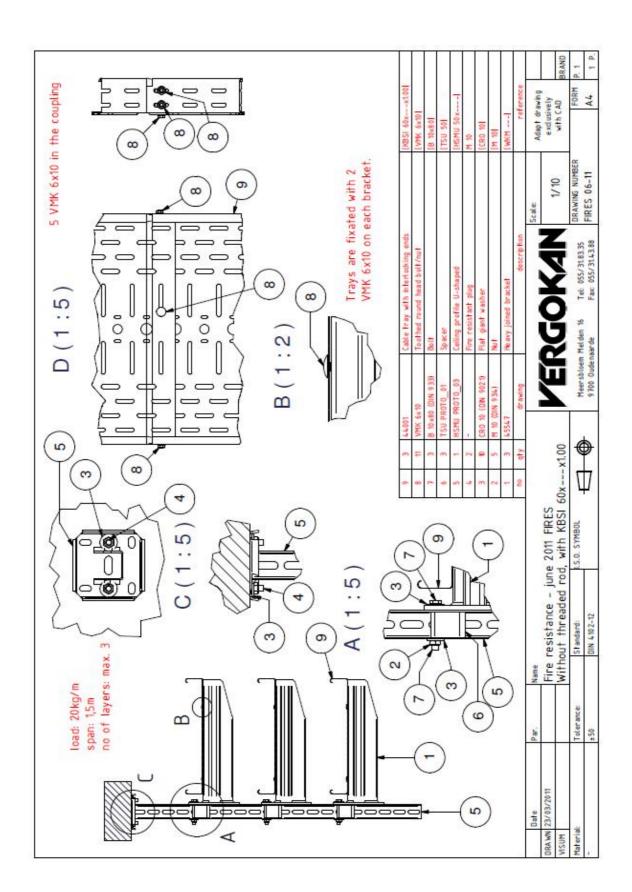
Miroslav Hudák

technician of the testing laboratory

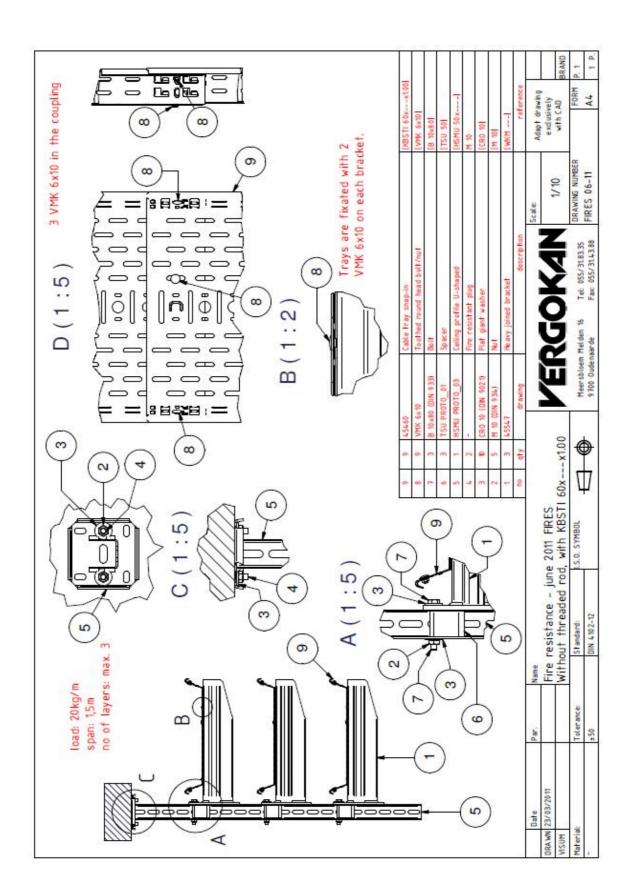
FIRES 149/S-10/08/2015-E Page: 7/7



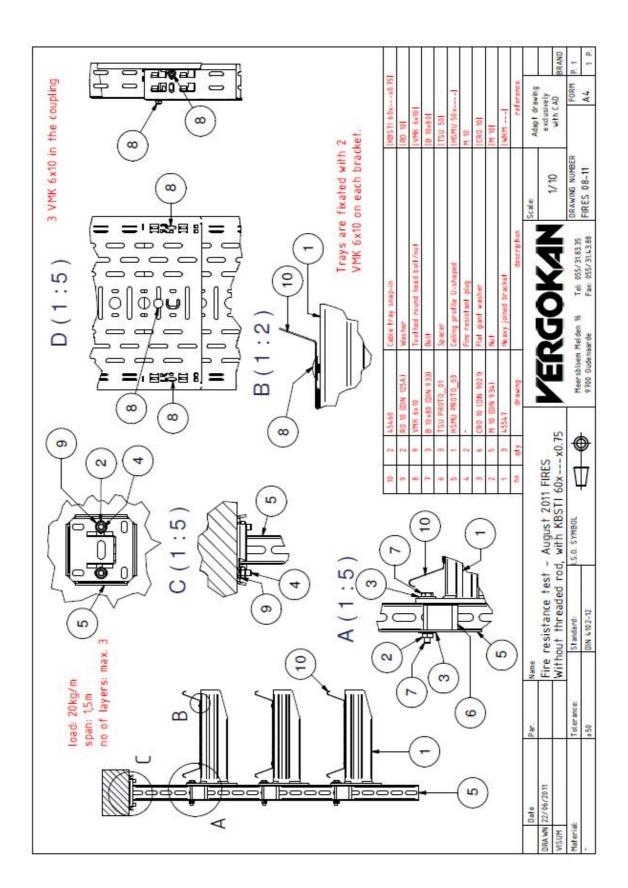
FIRES 149/S-10/08/2015-E Annex: 1/17



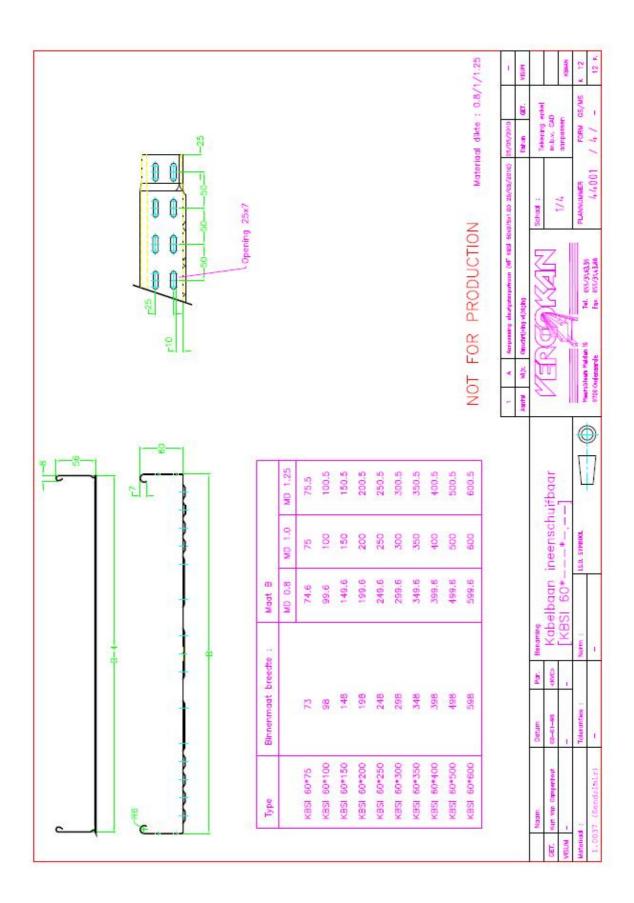
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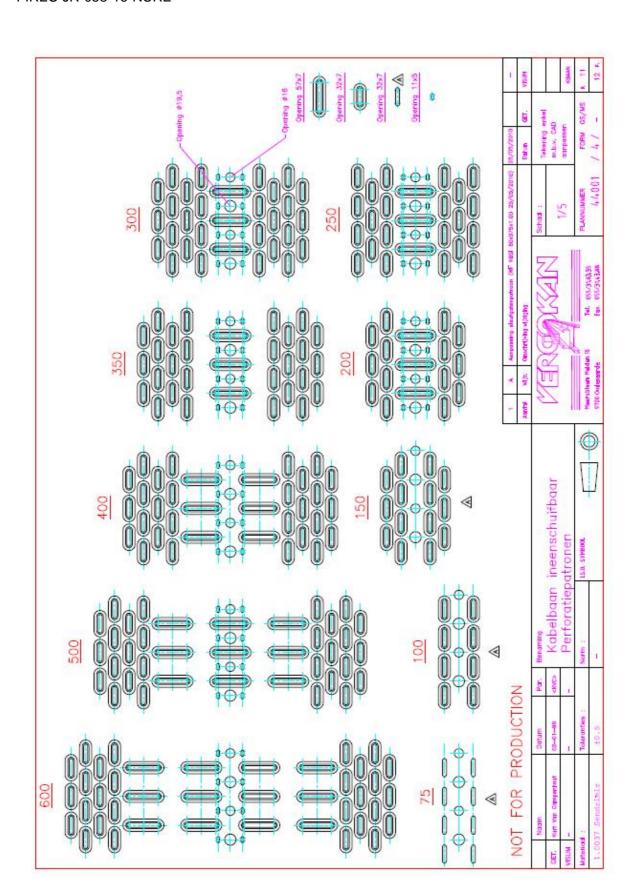
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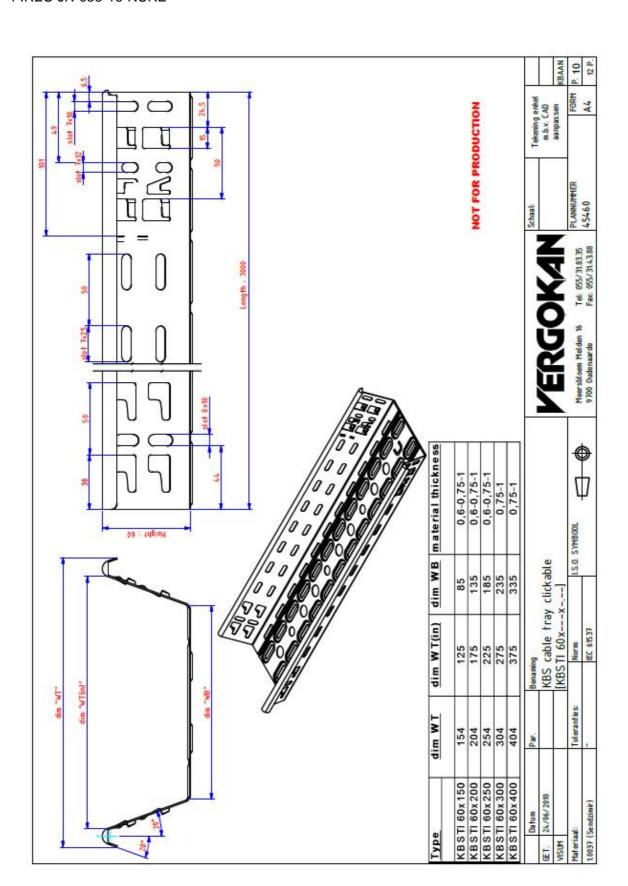
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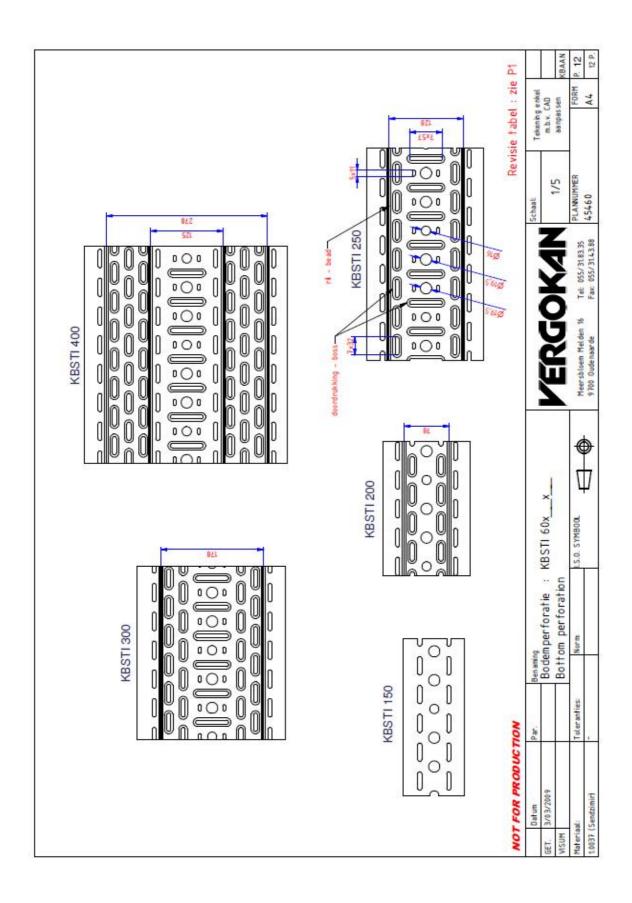
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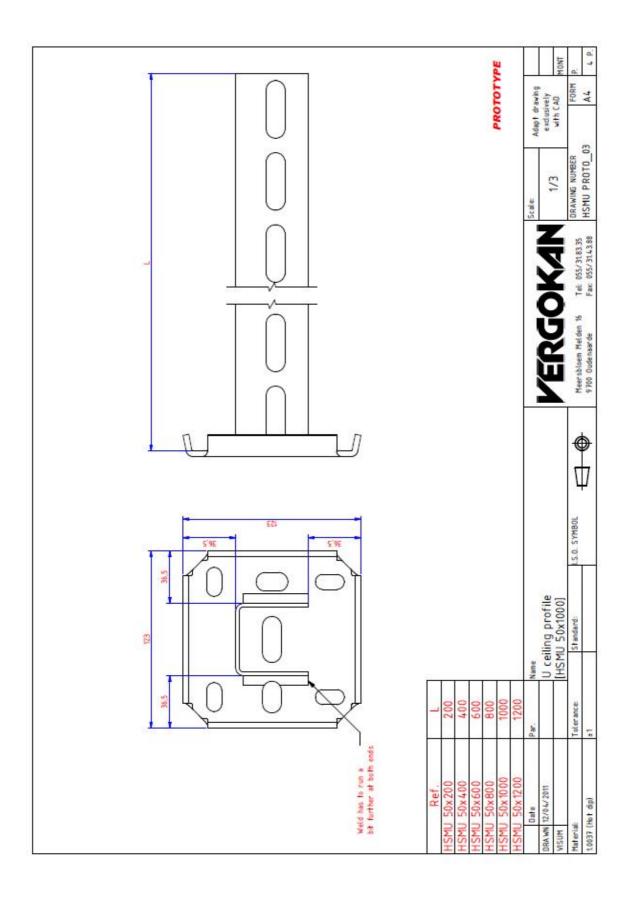
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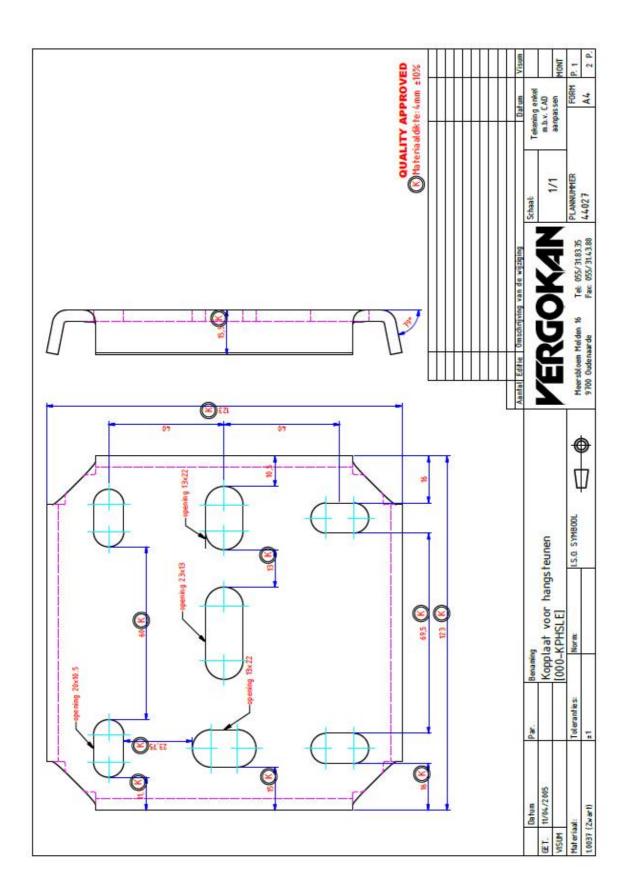
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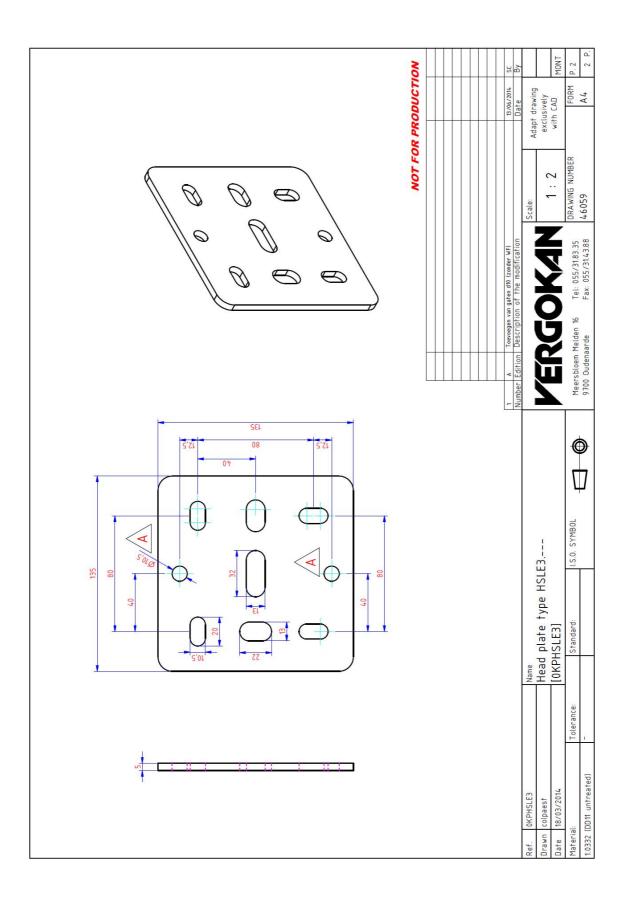
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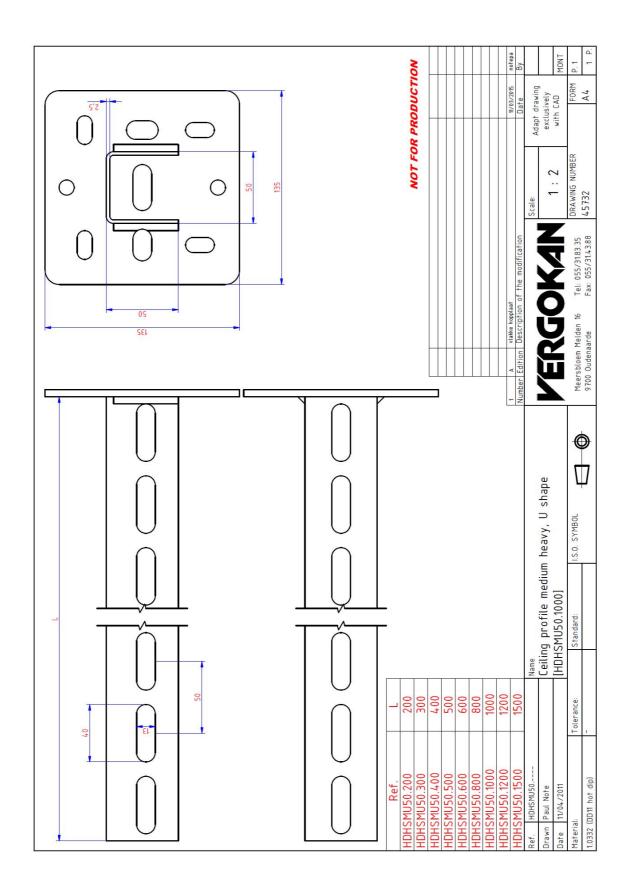
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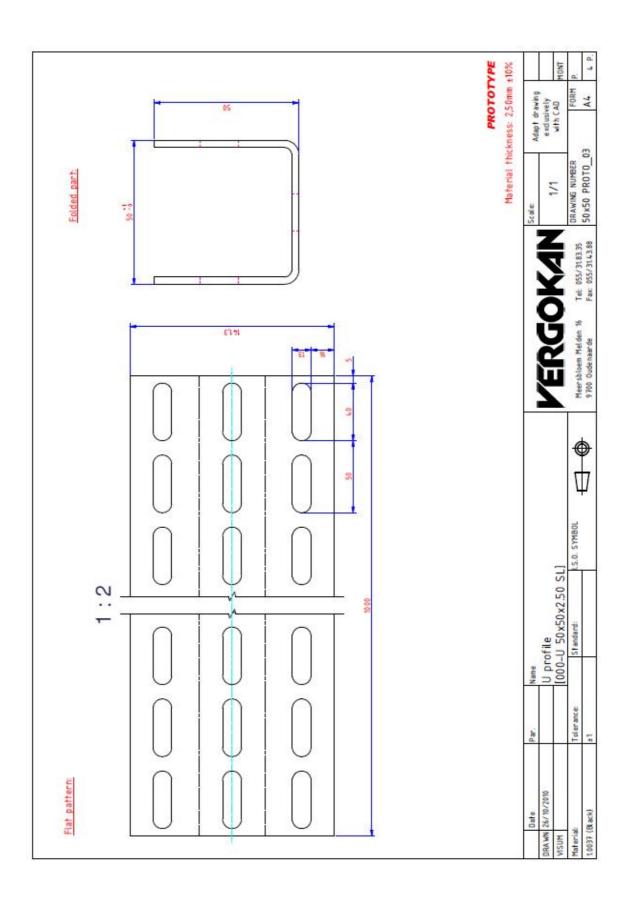
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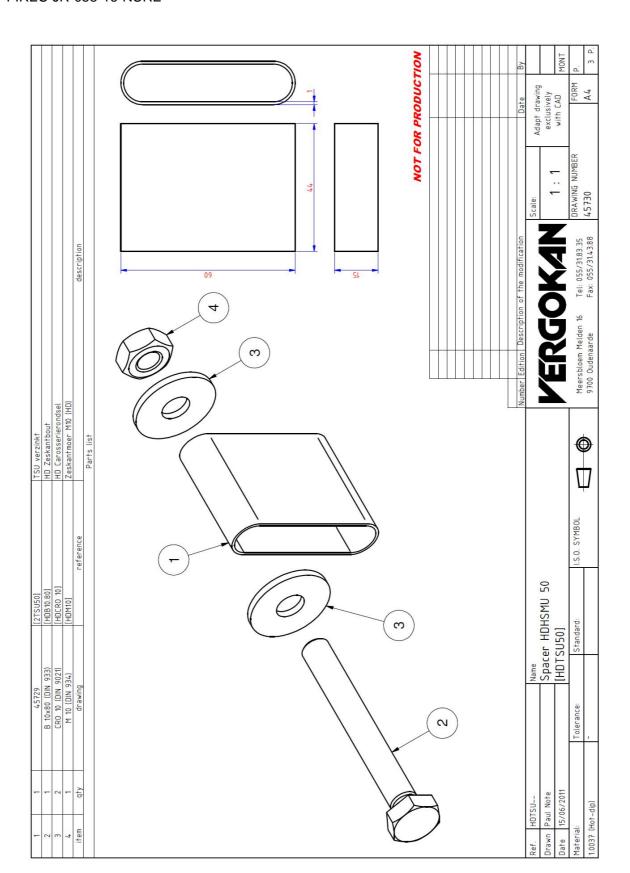
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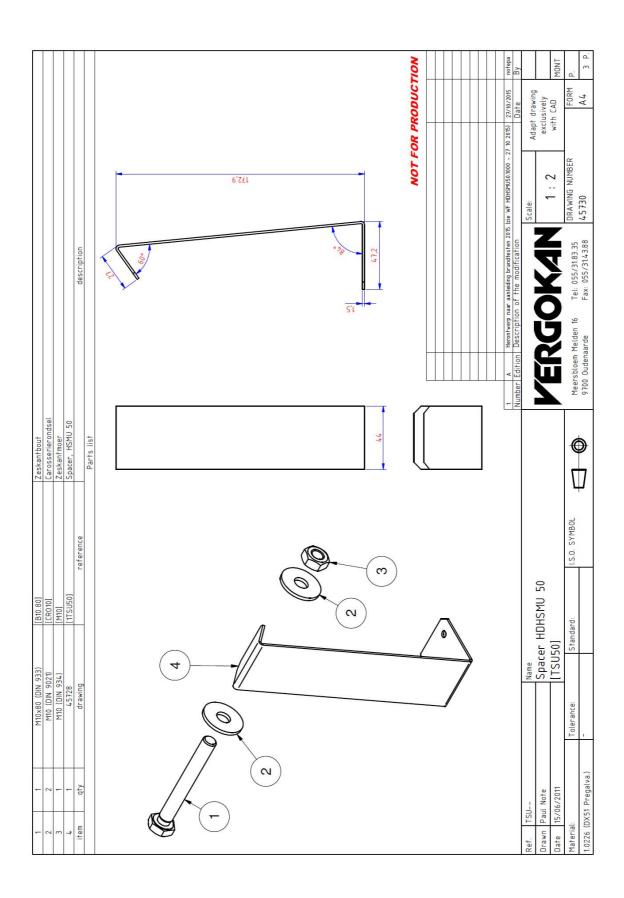
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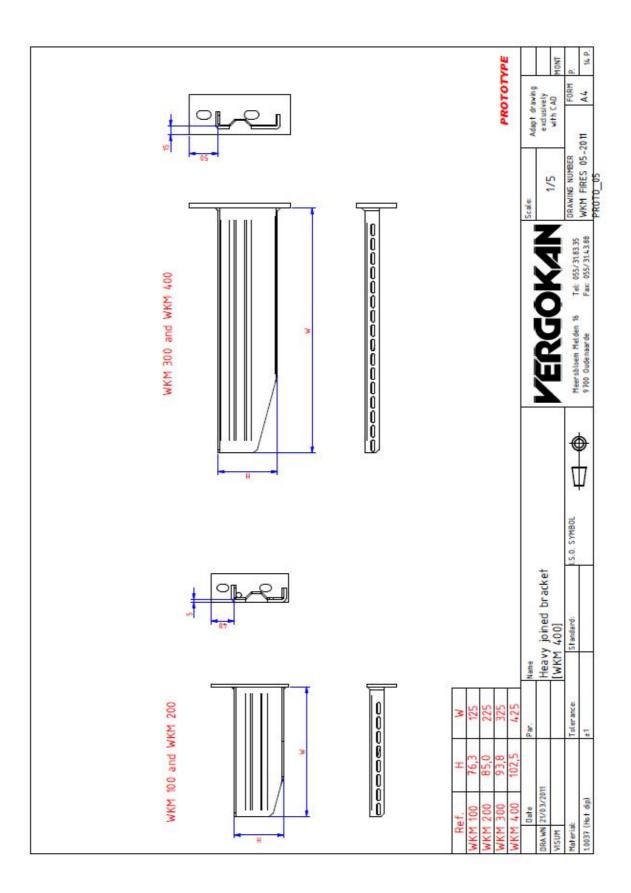
FIRES 149/S-10/08/2015-E Annex: 13/17



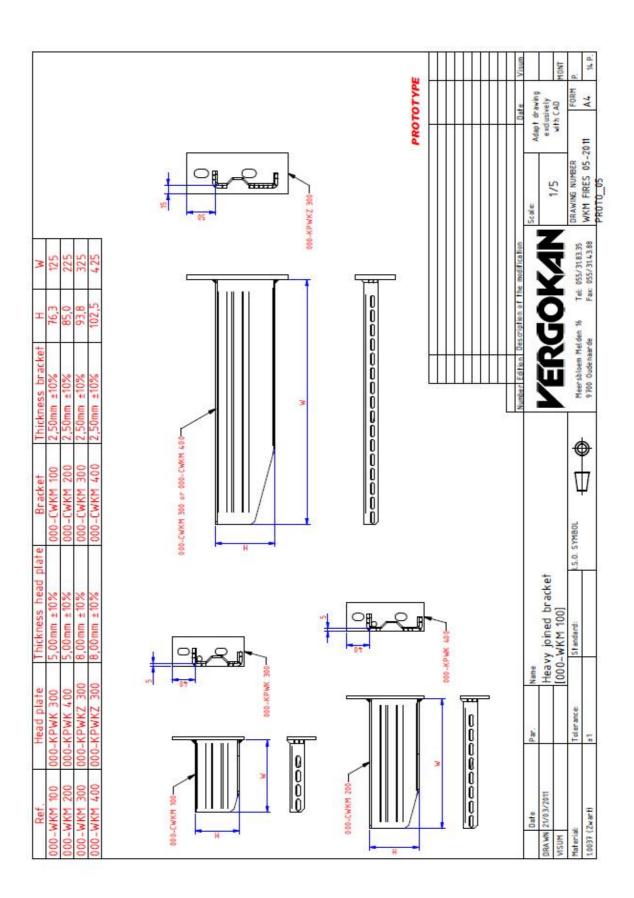
FIRES 149/S-10/08/2015-E Annex: 14/17



FIRES 149/S-10/08/2015-E Annex: 15/17



FIRES 149/S-10/08/2015-E Annex: 16/17



FIRES 149/S-10/08/2015-E Annex: 17/17