

TEST REPORT FIRES-FR-224-13-AUNE

Power cables of nkt cables at cable bearing system BAKS

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TEST REPORT

FIRES-FR-224-13-AUNE

Tested property: Function in fire
Test method: STN 92 0205: 2012 (ZP-27/2008, DIN 4102-12: 1998-11)
Type of test: Accredited
Date of issue: 02. 12. 2013

Name of the product: Power cables of nkt cables at cable bearing system BAKS

Manufacturer: Producers of cables (production places):
nkt cables a/s, Toftegårdsvej 25, DK-4550 Asnaæs, Denmark
nkt cables s.r.o., Průmyslová 1130, 272 01 Kladno, Czech Republic
nkt cables s.r.o., Českých bratří 509, 543 14 Vrchlabí, Czech Republic

BAKS Kazimierz Sielski, ul. Jagodne 5, 05 - 480 Karczew, Poland –
producer of cable bearing system

Sponsor: nkt cables s.r.o., Průmyslová 1130, 272 01 Kladno, Czech Republic

Test carried out: Fires, s.r.o., Testing laboratory
Task No.: PR-13-0471
Specimens received: 25. 11. 2013
Date of the test: 28. 11. 2013

Technician responsible for the technical side of this report: Bc. Dávid Šubert

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1. INTRODUCTION

This test report contains the results of test carried out by laboratory of FIRES, s.r.o. in Batizovce, accredited by SNAS for testing. Certificate of accreditation No.: S-159. The purpose of the test was to gain information for product classification.

Test of function in fire was carried out according to standard STN 92 0205: 2012. Similar standards and regulations for tests of function in fire are ZP-27/2008 PAVUS and DIN 4102-12: 1998-11.

Deviations from standard at the test according to ZP-27/2008: This test was carried out according to standard STN 92 0205: 2012 and meets also all requirements of ZP-27/2008 and test results can be directly used for classification of tested cables according to ZP-27/2008. There are no deviations identified in process and carrying out of test.

Deviations from standard at the test according to DIN 4102-12: 1998-11: This test was carried out according to standard STN 92 0205: 2012 and meets requirements of DIN 4102-12: 1998-11. Basic deviation in process and carrying out of test between these standards is in measuring and in control of temperature in the test furnace. According to STN 92 0205: 2012, plate thermometers according to EN 1363-1 are used. According to DIN 4102-12: 1998-11, common thermocouples of construction which was used for this measurement till issue of EN 1363-1 are used. Measurement by plate thermometers acc. to EN 1363-1 can be considered as stricter method of temperature control in test furnace in compare with thermocouples used till issue of EN 1363-1. Therefore, it is possible to use results of test according to STN 92 025: 2012 for classification of tested cables according to DIN 4102-12: 1998-11, but not conversely. Identified deviation results in stricter course of test and it can lead to reduced classification of tested cables what is accepted as enhanced security in practice.

Representatives from the sponsor's side witnessing the test:

Mr. Jan Musil	nkt cables, s.r.o., Czech Republic
Mr. Tomasz Żukowski	BAKS Kazimierz Sielski
Mr. Dariusz Gowronski	BAKS Kazimierz Sielski

test directed by	Ing. Marek Gorlický
test carried out by	Bc. Dávid Šubert
operator	Miroslav Hudák

2. MEASURING EQUIPMENT

Identification number	Measuring equipment	Note
F 90 004	Vertical test furnace for fire resistance testing	-
F 69 010	PLC system for data acquisition and control TECOMAT TC 700	-
F 40 017	Control and communication software to PLC TECOMAT TC 700	-
F 40 018	SW Reliance	-
F 40 019	Visual and calculating software to PLC TECOMAT TC 700	-
F 40 020	Driver Tecomat – Reliance (SW)	-
F 69 009	PLC system for data acquisition and climate control TECOMAT TC 604	-
F 60 001 - F 60 009	Sensors of temperature and relative air humidity	climatic conditions measuring
F 71 008, F 71 009	Transducer of differential pressure (-50 to + 150) Pa	pressure inside the test furnace
F 10 521 - F 10 528	Plate thermometers	temperature inside the test furnace, according to EN 1363-1



Identification number	Measuring equipment	Note
F 10 701	Sheathed thermocouple type K Ø 3 mm	ambient temperature
F 54 020	Digital calliper (0 to 200) mm	-
F 54 056	Racking meter	-
F 57 007	Digital stop-watch	-
F 96 015	Test signal panel	-

3. PREPARATION OF THE SPECIMENS

Testing laboratory didn't take off individual components of the specimens. Components take-off and its delivering to the testing laboratory were carried out by the test sponsor. Assembling of the supporting system into the test furnace and mounting of cables and weights into the supporting system was carried out by workers of nkt cables, s.r.o., Czech Republic and BAKS Kazimierz Sielski under supervision of laboratory technician.

4. PREPARATION OF THE TEST

4.1 DESCRIPTION OF THE SPECIMENS STRUCTURE

Test specimen comprised from power halogen free cables of companies nkt cables a/s, Denmark and nkt cables, s.r.o., Czech Republic at cable bearing system BAKS Kazimierz Sielski company – cable trays, ladders, mesh trays and cable clips with accessories (consoles, supports, hangers etc.).

Cables

Used cables by test:

NOPOVIC NHXH 4x1,5 E30 Asneas	(4x)
NOPOVIC NHXH 4x10 E90 Asneas	(6x)
NOPOVIC NHXH 4x10 E30 Asneas	(6x)
NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)	(8x)
NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)	(8x)
NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)	(8x)
NOPOVIC 1-CXKH-V 4x50 E90 Kladno	(2x)
NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)	(8x)
NOPOVIC 1-CXKH-V 4x10 E90 Kladno	(2x)
NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi	(12x)
NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi	(10x)

The length of cables was 5,0 m and 3,5 m from that was exposed to fire.

Cable bearing systems were made of following constructions:

Suspension tracks No. 1 - 4

Tracks are made of three consoles (WPCW/WPCO700) fixed to ceiling by threaded rods (PG M10) in spacing of 1200 mm. Brackets (WMC/WMCO300) are fixed to consoles by screws (SM M10x30). Holders (UPW/UPWO) are fixed at the end of brackets with screws (SGN M8x14). Brackets are fixed through these holders by threaded rods (PG M10) with washer and nuts (M10) to ceiling holders (USV/USOV).

Cable trays (KCP/KCOP300H60/B300, steel sheet thickness 1,5 mm) fixed together by two junctions (LPP/LPOP H60N) and screws (SGN M8x14) on sides and by junction (BL/BLO400N) and screws (SGN M6x12) on the bottom. Trays are fixed to brackets by screws (type SGN M6x12) and loaded with 10kg.m⁻¹. Cables are fixed by cable clips (UDF).

**Suspension tracks No. 5 - 8**

Tracks are made of three consoles (WPCW/WPCO700) fixed to ceiling by threaded rods (PG M10) in spacing of 1200 mm. Brackets (WMC/WMCO400) are fixed to consoles by screws (SM M10x30). Holders (UPW/UPWO) are fixed at the end of brackets with screws (SGN M8x14). Brackets are fixed through these holders by threaded rods (PG M10) with washer and nuts (M10) to ceiling holders (USV/USOV).

Cable ladders (DGOP400H60/B400, steel sheet thickness 1,5 mm, spacing of transoms 150 mm) fixed together by two junctions (LDC/LDOCH60N) and screws (SGN M8x14) on sides. Ladders are fixed to brackets by junctions (ZM/ZMO) and by screws (SGN M8x14) and loaded with 20kg.m⁻¹. Cables are fixed by cable hangers (UK/UKO1).

Suspension tracks No. 9 and 10

Tracks are made of three consoles combined of horizontal supports (CWP/CWOP40H40/05) and two threaded rods (PG M10) fixed to ceiling in spacing of 1500 mm.

Cable mesh trays (KDS/KDSO400H60/3, steel wire Ø 4,5 mm) fixed together by junctions (USSN/USSO). Mesh trays are fixed to supports by junctions (ZS/ZSO) and loaded with 20kg.m⁻¹. Cables are fixed by plastic stripes only.

Ceiling tracks No. 11 and 12

Tracks are made of ceiling profiles (SDOP 400) fixed to ceiling in spacing of 300 mm or 600 mm. Cables are fixed to ceiling profiles by cable hangers (UK/UKO1).

Ceiling tracks No. 13 and 14

Tracks are made of cable clips (UDF) fixed to ceiling by anchors (MKR 6 – FMD 6 FISCHER) in spacing of 300 mm or 600 mm.

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

All the information about technical specifications of used materials and semi-products, information about their type sign were delivered by sponsor. This information was not subject of the inspection of specimens. Parameters which were checked are quoted in paragraph 4.3.

4.2 DESCRIPTION OF SPECIMENS FIXATION

The test specimens were fixed on the ceiling of the test furnace which was created from aerated concrete panels with dimensions (4000 x 600 x 240) mm – 6 pieces and fixed to side walls made of aerated concrete blocks YTONG, 250 mm thick. Ceiling panels were jointed by beam which provides balance deflection of the ceiling.

The type of specimen's fixation into the test furnace is shown in drawing documentation and it was selected by the sponsor.

4.3 INSPECTION OF SPECIMENS

Before and after the function in fire test, conformity of drawings and test specimens was checked. Specimens corresponded to the drawings which are part of this test report. Inspection of specimens consisted of visual review of the test specimens, used materials as well as size verification (number and cross sections of conductors, thickness, measurements of cables and trays) and also the way of specimens fixation to supporting construction was subject of inspection.



4.4 CLIMATIC CONDITIONING OF SPECIMENS

Test specimens were stored in the hall of testing laboratory under the following climatic conditions:

Ambient air temperature [°C]

mean	18,2
standard deviation	0,9

Relative air humidity [%]

mean	43,7
standard deviation	1,8

The humidity equilibrium state of test specimens was not determined. Test specimens did not comprise hygroscopic materials.

5. CARRYING OUT OF THE TEST

5.1 TEST GENERALLY

The test was carried out in horizontal test furnace with dimensions of (3500 x 3000 x 2750) mm (length x width x height).

5.2 CONDITIONS OF THE TEST

Conditions in the test furnace (temperature – standard temperature/time curve, pressure, content of O₂) as well as in the testing room (ambient temperature) corresponded to EN 1363-1 during the test. Detailed information is part of this test report, or in Quality records of the testing laboratory.

Values characterizing environment in the testing room directly before the test:

Date of the test	Relative air humidity [%]	Ambient air temperature [°C]
28. 11. 2013	46,5	12,0

5.3 RESULTS OF THE TEST

Measured values are stated in this test report.

During the test there was no failure or damage of tracks – even during cooling down of the tracks after termination of the test.

6. CLOSING

Evaluation of the test:

Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
1	2 cables NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi	8	69 minutes
2	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)		90 minutes no failure / interruption
3	2 cables NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi	6	74 minutes
4	2 cables NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi		90 minutes no failure / interruption
5	2 cables NOPOVIC NHXH 4x10 E90 Asneas		90 minutes no failure / interruption
6	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)	14	90 minutes no failure / interruption
7	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)		90 minutes no failure / interruption
8	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)		90 minutes no failure / interruption
9	2 cables NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi	7	23 minutes
10	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)		90 minutes no failure / interruption



Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
11	2 cables NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)	5	90 minutes no failure / interruption
12	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)		90 minutes no failure / interruption
13	2 cables NOPOVIC 1-CXKH-V 4x10 E90 Kladno	14	90 minutes no failure / interruption
14	2 cables NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi		87 minutes
15	2 cables NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi		84 minutes
16	2 cables NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi	10	75 minutes
17	2 cables NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)		85 minutes
18	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno		90 minutes no failure / interruption
19	2 cables NOPOVIC NHXH 4x1,5 E30 Asneas	9	70 minutes
20	2 cables NOPOVIC NHXH 4x10 E90 Asneas		84 minutes
21	2 cables NOPOVIC NHXH 4x10 E30 Asneas		55 minutes
22	2 cables NOPOVIC NHXH 4x10 E30 Asneas	12	72 minutes
23	2 cables NOPOVIC NHXH 4x10 E90 Asneas	11	90 minutes no failure / interruption
24	cable NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi	13	90 minutes no failure / interruption
25	cable NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi		90 minutes no failure / interruption
26	cable NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi	4	28 minutes
27	cable NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi		23 minutes
28	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)		90 minutes no failure / interruption
29	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)		90 minutes no failure / interruption
30	cable NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)	2	90 minutes no failure / interruption
31	cable NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)		90 minutes no failure / interruption
32	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)		90 minutes no failure / interruption
33	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)		90 minutes no failure / interruption
34	cable NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi	13	88 minutes
35	cable NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi		90 minutes no failure / interruption
36	cable NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)		90 minutes no failure / interruption
37	cable NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)		90 minutes no failure / interruption
38	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)		90 minutes no failure / interruption
39	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)		90 minutes no failure / interruption
40	cable NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi	3	90 minutes no failure / interruption
41	cable NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi		24 minutes
42	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)		90 minutes no failure / interruption
43	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)		90 minutes no failure / interruption
44	cable NOPOVIC NHXH 4x1,5 E30 Asneas	1	90 minutes no failure / interruption
45	cable NOPOVIC NHXH 4x1,5 E30 Asneas		90 minutes no failure / interruption
46	cable NOPOVIC NHXH 4x10 E30 Asneas		90 minutes no failure / interruption
47	cable NOPOVIC NHXH 4x10 E30 Asneas		90 minutes no failure / interruption
48	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)	13	90 minutes no failure / interruption
49	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)		90 minutes no failure / interruption
50	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)		90 minutes no failure / interruption
51	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)		90 minutes no failure / interruption

The fire test was discontinued in 96th minute at the request of test sponsor.

Specimens S1 – S51 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W. Circuit breakers with rating 3 A were used.



Measured values inside the test furnace

Time t [min]	Temperature [°C]											Deviation d _e [%]	Pressure p [Pa]
	Td1	Td2	Td3	Td4	Td5	Td6	Td7	Td8	Tave	Tn	To		
0	17,9	18,8	17,7	18,3	20,2	20,9	20,0	20,1	19,2	20,0	12,0	0,0	0,4
5	545,7	589,0	585,7	505,4	514,7	563,0	571,3	483,6	544,8	576,0	12,2	-5,5	18,6
10	676,2	726,5	738,3	670,1	670,0	732,5	739,5	659,7	701,6	678,0	12,4	-1,5	17,8
15	704,0	757,2	780,6	749,2	723,4	767,5	780,7	734,5	749,6	739,0	12,4	-0,2	17,9
20	769,7	814,1	826,4	783,4	789,3	816,2	824,2	781,0	800,5	781,0	12,2	0,3	19,5
25	763,8	819,7	850,8	863,6	759,5	804,9	862,0	856,6	822,6	815,0	11,9	0,5	17,9
30	814,6	859,6	866,9	845,9	797,8	830,8	847,8	833,0	837,1	842,0	11,8	0,5	17,5
35	844,0	849,4	827,8	811,0	860,7	862,9	839,0	817,8	839,1	865,0	12,3	-0,1	17,6
40	855,5	857,9	845,2	831,5	884,2	886,5	857,2	830,2	856,0	885,0	12,9	-0,4	18,5
45	875,6	865,7	881,5	885,9	886,1	889,8	901,8	895,1	885,2	902,0	13,4	-0,7	17,2
50	903,5	901,6	913,4	910,4	916,1	919,5	922,3	914,7	912,7	918,0	13,9	-0,8	17,1
55	920,1	918,8	926,7	920,7	935,1	937,8	929,2	915,7	925,5	932,0	13,5	-0,8	17,6
60	934,4	931,8	938,9	934,4	949,4	953,0	944,5	930,2	939,6	945,0	13,4	-0,8	18,8
65	947,3	948,5	952,1	946,8	967,4	968,0	955,7	942,1	953,5	957,0	12,8	-0,8	18,0
70	961,1	961,5	965,5	960,5	979,1	982,6	971,7	954,9	967,1	968,0	13,0	-0,7	18,6
75	975,4	973,4	978,4	973,8	992,6	992,3	987,3	969,4	980,3	979,0	12,9	-0,7	17,7
80	986,4	986,7	989,2	988,1	1006,2	1005,8	994,1	978,3	991,9	988,0	12,9	-0,6	18,4
85	1000,7	999,3	1002,1	996,2	1014,3	1014,2	1004,4	990,8	1002,8	997,0	11,9	-0,5	18,3
90	1009,8	1010,0	1011,1	1005,3	1023,7	1024,6	1013,5	997,1	1011,9	1006,0	11,6	-0,4	19,3
91	1010,5	1011,5	1013,0	1008,0	1025,9	1025,0	1015,8	999,6	1013,7	1008,0	11,7	-0,4	19,2
92	1011,5	1014,2	1013,3	1008,3	1026,0	1029,4	1015,5	1001,3	1014,9	1009,0	11,9	-0,4	19,7
93	1013,2	1016,2	1016,8	1011,4	1027,9	1030,6	1018,2	1002,8	1017,1	1011,0	12,1	-0,4	18,2
94	1016,5	1017,0	1018,7	1014,1	1029,2	1031,2	1021,8	1006,7	1019,4	1012,0	12,2	-0,4	17,5
95	1019,6	1017,5	1018,2	1013,0	1032,5	1031,6	1020,8	1004,7	1019,7	1014,0	12,3	-0,4	19,6

Tave Average temperature in the test furnace calculated from plate thermometers

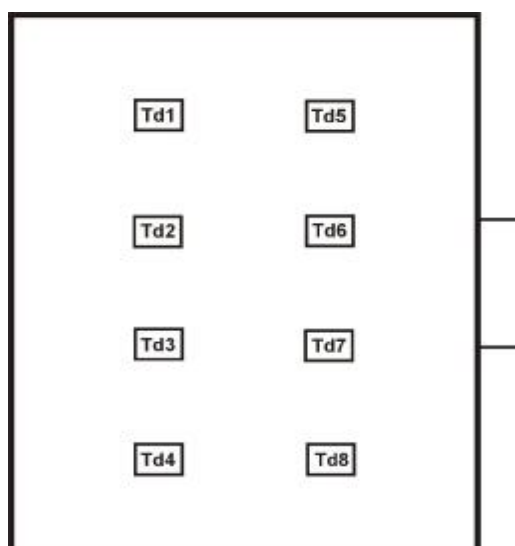
Tn Standard temperature in the test furnace laid down to test guideline

To Ambient temperature

d_e Deviation of the average temperature from the standard temperature calculated according to test guideline

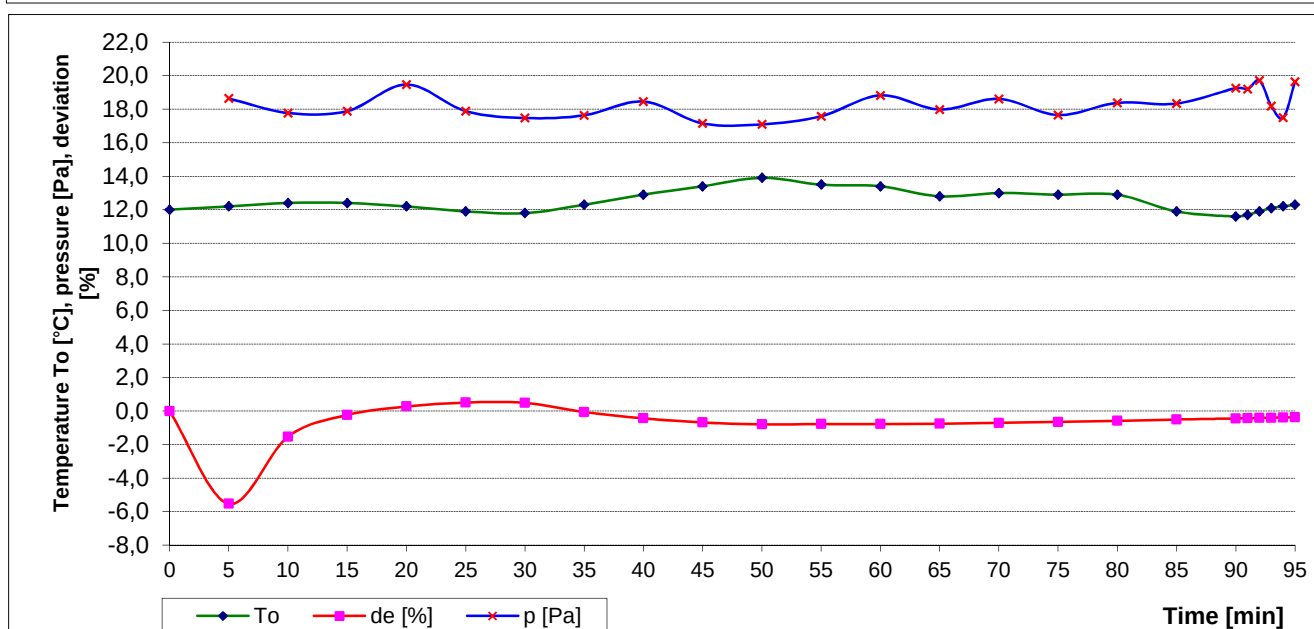
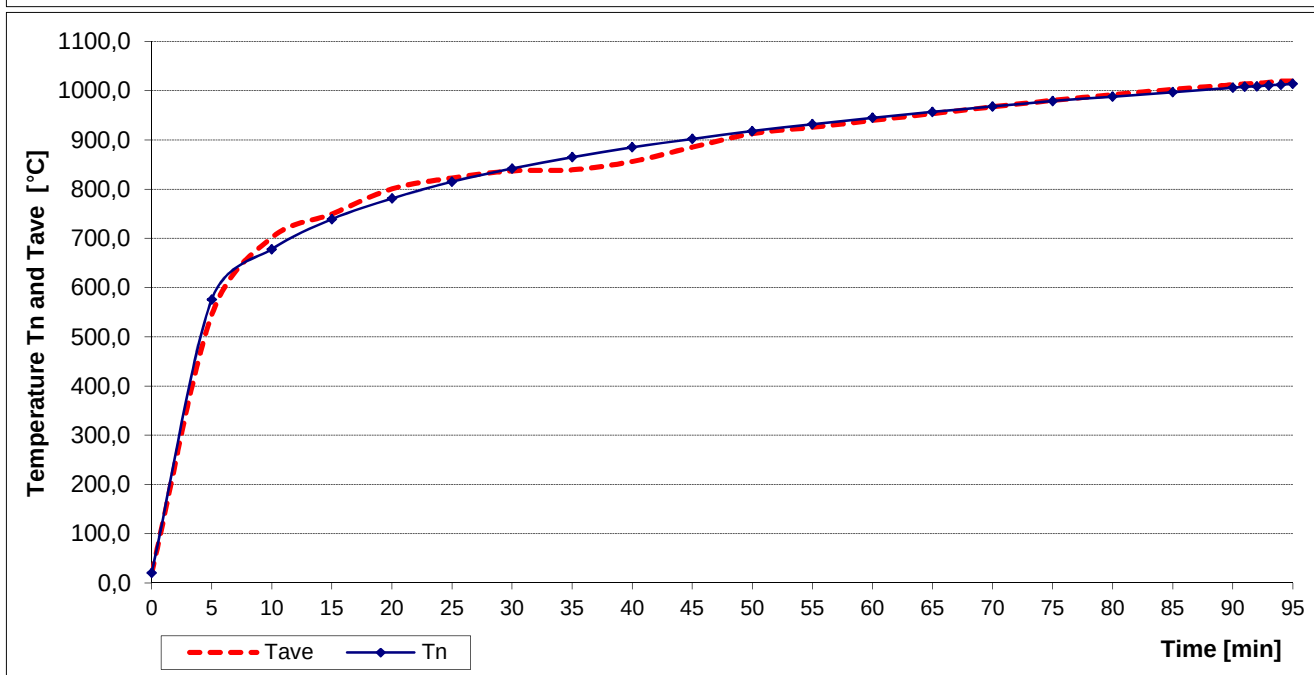
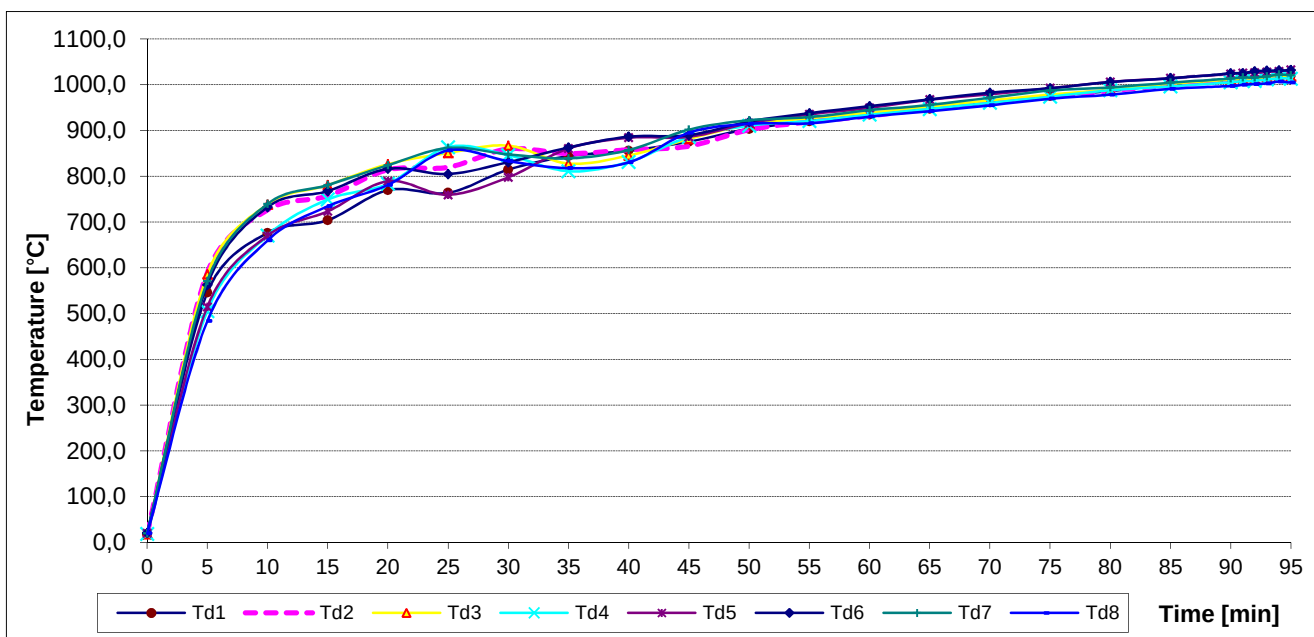
p Pressure inside the test furnace measured under the ceiling of the test furnace

Layout of measuring points inside the test furnace:





Measured values inside the test furnace /graph




Measured time of tested specimens from S1 to S10 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S1	1-L1	69:49
	2-L2	69:49
	3-L3	69:49
	4-PEN	x
S2	5-L1	no failure / interruption
	6-L2	no failure / interruption
	7-L3	no failure / interruption
	8-PEN	no failure / interruption
S3	9-L1	74:02
	10-L2	74:02
	11-L3	74:02
	12-PEN	x
S4	13-L1	no failure / interruption
	14-L2	no failure / interruption
	15-L3	no failure / interruption
	16-PEN	no failure / interruption
S5	17-L1	no failure / interruption
	18-L2	no failure / interruption
	19-L3	no failure / interruption
	20-PEN	no failure / interruption
S6	21-L1	no failure / interruption
	22-L2	no failure / interruption
	23-L3	no failure / interruption
	24-PEN	no failure / interruption
S7	25-L1	no failure / interruption
	26-L2	no failure / interruption
	27-L3	no failure / interruption
	28-PEN	no failure / interruption
S8	29-L1	no failure / interruption
	30-L2	no failure / interruption
	31-L3	no failure / interruption
	32-PEN	no failure / interruption
S9	33-L1	23:51
	34-L2	23:51
	35-L3	23:51
	36-PEN	x
S10	37-L1	no failure / interruption
	38-L2	no failure / interruption
	39-L3	no failure / interruption
	40-PEN	no failure / interruption

Specimen No.	Cables
1	2 cables NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi
2	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)
3	2 cables NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi
4	2 cables NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi
5	2 cables NOPOVIC NHXH 4x10 E90 Asneas
6	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)
7	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)
8	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)
9	2 cables NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi
10	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)

- x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
 Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
 Circuit breakers with rating 3 A were used.


Measured time of tested specimens from S11 to S20 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S11	41-L1	no failure / interruption
	42-L2	no failure / interruption
	43-L3	no failure / interruption
	44-PEN	no failure / interruption
S12	45-L1	no failure / interruption
	46-L2	no failure / interruption
	47-L3	no failure / interruption
	48-PEN	no failure / interruption
S13	49-L1	no failure / interruption
	50-L2	no failure / interruption
	51-L3	no failure / interruption
	52-PEN	no failure / interruption
S14	53-L1	x
	54-L2	87:58
	55-L3	87:58
	56-PEN	x
S15	57-L1	x
	58-L2	84:00
	59-L3	84:00
	60-PEN	x
S16	61-L1	75:58
	62-L2	75:58
	63-L3	75:58
	64-PEN	x
S17	65-L1	85:59
	66-L2	x
	67-L3	x
	68-PEN	x
S18	69-L1	no failure / interruption
	70-L2	no failure / interruption
	71-L3	no failure / interruption
	72-PEN	no failure / interruption
S19	73-L1	70:04
	74-L2	70:04
	75-L3	70:04
	76-PEN	x
S20	77-L1	x
	78-L2	84:45
	79-L3	x
	80-PEN	x

Specimen No.	Cables
11	2 cables NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)
12	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)
13	2 cables NOPOVIC 1-CXKH-V 4x10 E90 Kladno
14	2 cables NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlaby
15	2 cables NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlaby
16	2 cables NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlaby
17	2 cables NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)
18	2 cables NOPOVIC 1-CXKH-V 4x50 E90 Kladno
19	2 cables NOPOVIC NHXH 4x1,5 E30 Asneas
20	2 cables NOPOVIC NHXH 4x10 E90 Asneas

- x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
 Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
 Circuit breakers with rating 3 A were used.


Measured time of tested specimens from S21 to S30 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S21	81-L1	55:31
	82-L2	55:31
	83-L3	55:31
	84-PEN	x
S22	85-L1	72:40
	86-L2	72:40
	87-L3	72:40
	88-PEN	x
S23	89-L1	no failure / interruption
	90-L2	no failure / interruption
	91-L3	no failure / interruption
	92-PEN	no failure / interruption
S24	93-L1	no failure / interruption
	94-L2	no failure / interruption
	95-L3	no failure / interruption
	96-PEN	no failure / interruption
S25	97-L1	no failure / interruption
	98-L2	no failure / interruption
	99-L3	no failure / interruption
	100-PEN	no failure / interruption
S26	101-L1	28:02
	102-L2	28:02
	103-L3	28:02
	104-PEN	x
S27	105-L1	23:48
	106-L2	x
	107-L3	x
	108-PEN	x
S28	109-L1	no failure / interruption
	110-L2	no failure / interruption
	111-L3	no failure / interruption
	112-PEN	no failure / interruption
S29	113-L1	no failure / interruption
	114-L2	no failure / interruption
	115-L3	no failure / interruption
	116-PEN	no failure / interruption
S30	117-L1	no failure / interruption
	118-L2	no failure / interruption
	119-L3	no failure / interruption
	120-PEN	no failure / interruption

Specimen No.	Cables
21	2 cables NOPOVIC NHXH 4x10 E30 Asneas
22	2 cables NOPOVIC NHXH 4x10 E30 Asneas
23	2 cables NOPOVIC NHXH 4x10 E90 Asneas
24	cable NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi
25	cable NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi
26	cable NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi
27	cable NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi
28	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)
29	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)
30	cable NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)

- x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
 Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
 Circuit breakers with rating 3 A were used.


Measured time of tested specimens from S31 to S40 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S31	121-L1	no failure / interruption
	122-L2	no failure / interruption
	123-L3	no failure / interruption
	124-PEN	no failure / interruption
S32	125-L1	no failure / interruption
	126-L2	no failure / interruption
	127-L3	no failure / interruption
	128-PEN	no failure / interruption
S33	129-L1	no failure / interruption
	130-L2	no failure / interruption
	131-L3	no failure / interruption
	132-PEN	no failure / interruption
S34	133-L1	88:51
	134-L2	88:51
	135-L3	88:51
	136-PEN	x
S35	137-L1	no failure / interruption
	138-L2	no failure / interruption
	139-L3	no failure / interruption
	140-PEN	no failure / interruption
S36	141-L1	no failure / interruption
	142-L2	no failure / interruption
	143-L3	no failure / interruption
	144-PEN	no failure / interruption
S37	145-L1	no failure / interruption
	146-L2	no failure / interruption
	147-L3	no failure / interruption
	148-PEN	no failure / interruption
S38	149-L1	no failure / interruption
	150-L2	no failure / interruption
	151-L3	no failure / interruption
	152-PEN	no failure / interruption
S39	153-L1	no failure / interruption
	154-L2	no failure / interruption
	155-L3	no failure / interruption
	156-PEN	no failure / interruption
S40	157-L1	no failure / interruption
	158-L2	no failure / interruption
	159-L3	no failure / interruption
	160-PEN	no failure / interruption

Specimen No.	Cables
31	cable NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)
32	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)
33	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)
34	cable NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi
35	cable NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi
36	cable NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)
37	cable NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)
38	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)
39	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)
40	cable NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi

- x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
 Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
 Circuit breakers with rating 3 A were used.


Measured time of tested specimens from S41 to S50 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S41	161-L1	x
	162-L2	x
	163-L3	24:47
	164-PEN	x
S42	165-L1	no failure / interruption
	166-L2	no failure / interruption
	167-L3	no failure / interruption
	168-PEN	no failure / interruption
S43	169-L1	no failure / interruption
	170-L2	no failure / interruption
	171-L3	no failure / interruption
	172-PEN	no failure / interruption
S44	173-L1	no failure / interruption
	174-L2	no failure / interruption
	175-L3	no failure / interruption
	176-PEN	no failure / interruption
S45	177-L1	no failure / interruption
	178-L2	no failure / interruption
	179-L3	no failure / interruption
	180-PEN	no failure / interruption
S46	181-L1	no failure / interruption
	182-L2	no failure / interruption
	183-L3	no failure / interruption
	184-PEN	no failure / interruption
S47	185-L1	no failure / interruption
	186-L2	no failure / interruption
	187-L3	no failure / interruption
	188-PEN	no failure / interruption
S48	189-L1	no failure / interruption
	190-L2	no failure / interruption
	191-L3	no failure / interruption
	192-PEN	no failure / interruption
S49	193-L1	no failure / interruption
	194-L2	no failure / interruption
	195-L3	no failure / interruption
	196-PEN	no failure / interruption
S50	197-L1	no failure / interruption
	198-L2	no failure / interruption
	199-L3	no failure / interruption
	200-PEN	no failure / interruption

Specimen No.	Cables
41	cable NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlaby
42	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)
43	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)
44	cable NOPOVIC NHXH 4x1,5 E30 Asneas
45	cable NOPOVIC NHXH 4x1,5 E30 Asneas
46	cable NOPOVIC NHXH 4x10 E30 Asneas
47	cable NOPOVIC NHXH 4x10 E30 Asneas
48	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)
49	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)
50	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)

- x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
 Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
 Circuit breakers with rating 3 A were used.


Measured time of tested specimen S51 - power cable

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S51	201-L1	no failure / interruption
	202-L2	no failure / interruption
	203-L3	no failure / interruption
	204-PEN	no failure / interruption

Specimen No.	Cables
51	cable NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)

Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Circuit breakers with rating 3 A were used.



PHOTOS



Photo taken before the test.



Photo taken before the test.

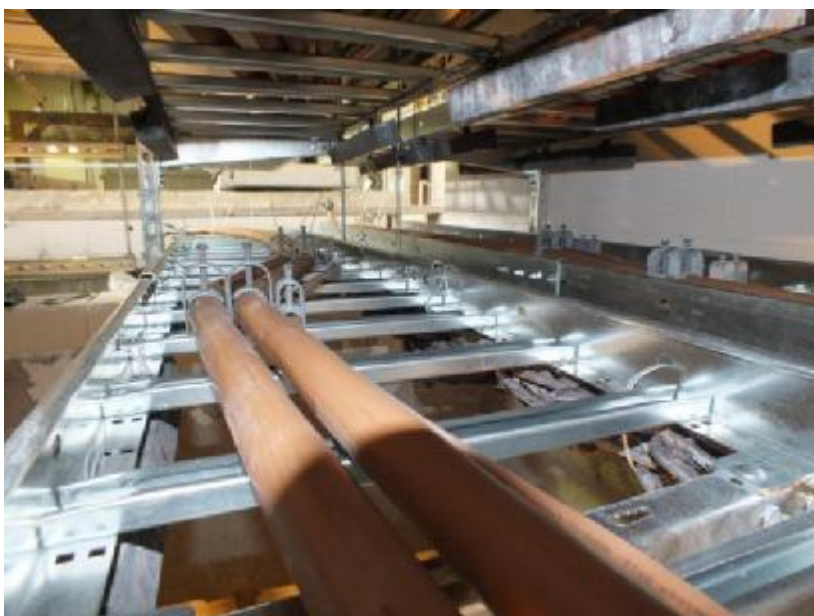


Photo taken before the test.



PHOTOS



Photo taken before the test.



Photo taken before the test.



Photo taken before the test.



PHOTOS



Photo taken during the test.



Photo taken during the test.

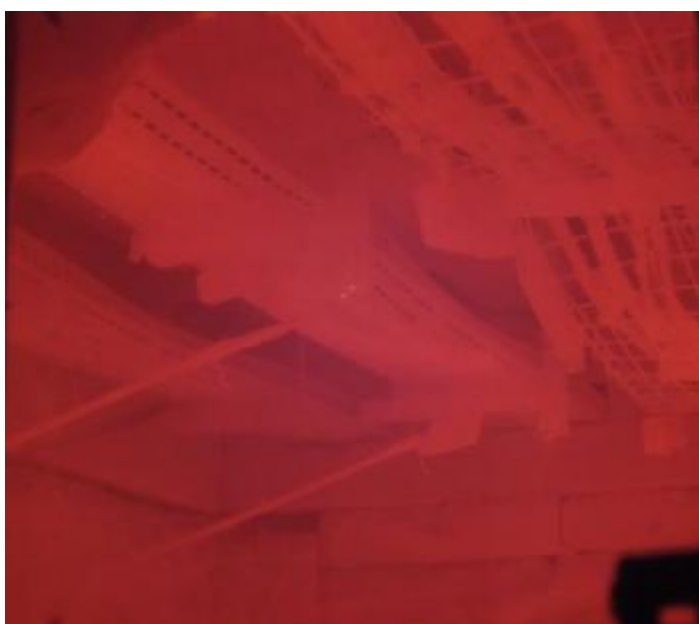


Photo taken during the test.



PHOTOS



Photo taken after the test.



Photo taken after the test.



Photo taken after the test.



PHOTOS



Photo taken after the test.



Photo taken after the test.



Photo taken after the test.



Fire resistant, Halogen-free Power Cable Type NHXH E30

Conductor:	Circular solid (cl. 1) or stranded (cl. 2) copper conductor IEC 60228	
Tape over conductor:	1 layer of Mica tape	
Insulation:	XLPE	
Colour marking of cores:	With protecting earth (G) 1-core: Green/yellow 3-core: Green/yellow, blue, brown 4-core: Green/yellow, blue, brown, black 5-core: Green/yellow, blue, brown, black, grey 7-core: Green/yellow, blue, brown, black, grey - red and white > 7-leader: White with black numbers, green/yellow Without protecting earth (X) 4-core: Blue, brown, black, grey > 5-core: White with black numbers	
Filler:	HFFR - Thermoplastic compound	
Outer sheath:	HFFR - Thermoplastic compound, UV resistant	
Tested according to:	Fire conditions:	IEC 60332-3
	Smoke density:	IEC 61034
	Emission of corrosive gases:	IEC 60754-1
	Conductivity-pH changes:	IEC 60754-2
	Insulation integrity:	IEC 60331
Colour of sheath:	Orange	
Rated voltage:	1 kV	
Test voltage:	4 kV AC	

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Fire resistant, Halogen-free Power Cable Type NHXH E30

Maximum
conductor temperature: 90°C

Maximum
short circuit temperature: 250°C

Minimum laying
temperature: - 15°C

Minimum bending radius: Single core cables - 12 x cable diameter
Multi core cables - 10 x cable diameter

Standard: According to VDE 0266

Number of cores and cross section mm²	Conductor Type Cl.	Insulation thickness Nom. mm	Thickness of sheath Nom. mm	Outer diameter		Approx weight per km kg
				Nom. mm	Max. mm	
1x1,5	1	0,7	1,8	7,8	10,0	
2x1,5	1	0,7	1,8	11,0	13,0	
3x1,5	1	0,7	1,8	11,5	14,0	
4x1,5	1	0,7	1,8	12,3	14,5	
5x1,5	1	0,7	1,8	13,2	15,0	
1x2,5	1	0,7	1,8	8,2	10,0	
2x2,5	1	0,7	1,8	11,8	14,0	
3x2,5	1	0,7	1,8	12,4	14,5	
4x2,5	1	0,7	1,8	13,3	15,5	
5x2,5	1	0,7	1,8	14,3	16,5	
1x4	1	0,7	1,8	8,7	11,0	
2x4	1	0,7	1,8	12,8	15,0	
3x4	1	0,7	1,8	13,5	15,5	
4x4	1	0,7	1,8	14,5	16,5	
5x4	1	0,7	1,8	15,7	18,0	

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Fire resistant, Halogen-free Power Cable Type NHXH E30

Number of cores and cross section mm ²	Conductor Type Cl.	Insulation thickness Nom. mm	Thickness of sheath Nom. mm	Outer diameter		Approx weight per km kg
				Nom. mm	Max. mm	
1x6	1	0,7	1,8	9,6	11,5	
2x6	1	0,7	1,8	14,5	16,5	
3x6	1	0,7	1,8	15,3	17,0	
4x6	1	0,7	1,8	16,6	18,5	
5x6	1	0,7	1,8	18,0	20,0	
1x10	1	0,7	1,8	10,5	12,5	
2x10	1	0,7	1,8	16,3	18,0	
3x10	1	0,7	1,8	17,3	19,0	
4x10	1	0,7	1,8	18,8	21,0	
5x10	1	0,7	1,8	20,4	22,5	

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Fire resistant, Halogen-free Power Cable Type NHXH E90

Conductor:	Circular solid (cl. 1) or stranded (cl. 2) copper conductor IEC 60228	
Tape over conductor:	4 layer of Mica tape	
Insulation:	XLPE	
Colour marking of cores:	With protecting earth (G) 1-core: Green/yellow 3-core: Green/yellow, blue, brown 4-core: Green/yellow, blue, brown, black 5-core: Green/yellow, blue, brown, black, grey 7-core: Green/yellow, blue, brown, black, grey - red and white > 7-leader: White with black numbers, green/yellow Without protecting earth (X) 4-core: Blue, brown, black, grey > 5-core: White with black numbers	
Filler:	HFFR - Thermoplastic compound	
Outer sheath:	HFFR - Thermoplastic compound, UV resistant	
Tested according to:	Fire conditions:	IEC 60332-3
	Smoke density:	IEC 61034
	Emission of corrosive gases:	IEC 60754-1
	Conductivity-pH changes:	IEC 60754-2
	Insulation integrity:	IEC 60331
Colour of sheath:	Orange	
Rated voltage:	1 kV	
Test voltage:	4 kV AC	
Maximum conductor temperature:	90°C	

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Fire resistant, Halogen-free Power Cable Type NHXH E90

Maximum
short circuit temperature: 250°C

Minimum laying
temperature: - 15°C

Minimum bending radius: Single core cables - 12 x cable diameter
Multi core cables - 10 x cable diameter

Standard: According to VDE 0266

Number of cores and cross section mm²	Conductor Type Cl.	Insulation thickness Nom. mm	Thickness of sheath Nom. mm	Outer diameter		Approx weight per km kg
				Nom. mm	Max. mm	
1x1,5	1	0,7	1,8	8,2	10,0	
2x1,5	1	0,7	1,8	11,9	14,0	
3x1,5	1	0,7	1,8	12,5	14,5	
4x1,5	1	0,7	1,8	13,4	15,5	
5x1,5	1	0,7	1,8	14,4	16,5	
1x2,5	1	0,7	1,8	8,6	10,5	
2x2,5	1	0,7	1,8	12,7	15,0	
3x2,5	1	0,7	1,8	13,3	15,5	
4x2,5	1	0,7	1,8	14,4	16,5	
5x2,5	1	0,7	1,8	15,5	17,5	
1x4	1	0,7	1,8	9,1	11,0	
2x4	1	0,7	1,8	13,7	16,0	
3x4	1	0,7	1,8	14,4	16,5	
4x4	1	0,7	1,8	15,6	17,5	
5x4	1	0,7	1,8	16,9	19,0	

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Fire resistant, Halogen-free Power Cable Type NHXH E90

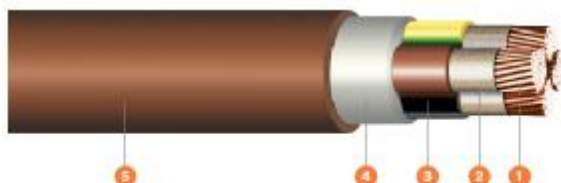
Number of cores and cross section mm ²	Conductor Type Cl.	Insulation thickness Nom. mm	Thickness of sheath Nom. mm	Outer diameter		Approx weight per km kg
				Nom. mm	Max. mm	
1x6	1	0,7	1,8	10,0	12,0	
2x6	1	0,7	1,8	15,4	17,5	
3x6	1	0,7	1,8	16,3	18,5	
4x6	1	0,7	1,8	17,7	19,5	
5x6	1	0,7	1,8	19,2	21,0	
1x10	1	0,7	1,8	10,9	13,0	
2x10	1	0,7	1,8	17,2	19,0	
3x10	1	0,7	1,8	18,2	20,0	
4x10	1	0,7	1,8	19,9	22,0	
5x10	1	0,7	1,8	21,6	23,5	

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NOPOVIC® 1-CXKH-V B2_{ca}S1d0 a1 FE180 E90 P90-R PS90

Kabely se sníženým požárním nebezpečím (LFHC kabely)
se zachováním funkční integrity systému kabelové trasy P90-R

Low fire-hazard cables (LFHC cables) with system integrity in case of fire E90



Standard

TP-NKT-04/09

Konstrukce:

Design:

- | | | | |
|--|---|--|--|
| <p>1 Měděné jádro tř. 1 nebo 2
<i>Copper conductor class 1 or 2</i></p> | <p>2 Přídavná izolace ze sklosíťových pásek
<i>Supplementary insulation of glass/mica tape</i></p> | <p>3 Sesíťená bezhalogení izolace
<i>Cross-linked halogen free insulation</i></p> | <p>4 HFFR výplň
<i>HFFR bedding</i></p> |
| | | | <p>5 HFFR plášť
<i>HFFR sheath</i></p> |

Požárně technické charakteristiky:

Fire technical characteristics:

Kabel má třídu reakce na oheň B2_{ca} s1 d0 a splňuje tedy požadavky pro jeho použití dle Vyhlášky MV č.23/2008 novelizované Vyhláškou MV č.268/2011. Může být tedy použit jako volně vedený kabel v prostorech, kde je vyžadována zvýšená ochrana osob, zvířat a majetku (zdravotnická zařízení, stavby s vnitřními shromažďovacími prostory, apod.) a také zajištění funkce a ovládání požárně bezpečnostních zařízení. The cable is in accordance with EN 50399 (Construction product regulation - CPR) and matches the requirements of improve safety during fire acc. to the category B2_{ca}, s1, d0.

Použití:

Application:

Kabely jsou určeny pro pevné uložení na kabelové nosné systémy (žebříky, žlaby, rošty, háky, apod.) v prostředí suchém nebo vlhkém. Přípustné je krátkodobé mělké ponoření do vody s pH 3 až 11. Pokud je nutné kabely uložit do země, musí být zamezeno trvalému vlivu vlhkosti na kabel. Instalace elektrického vedení musí být v souladu s požadavky ČSN 332000-5-52. Kabely by neměly být dlouhodobě vystaveny přímému slunečnímu záření. Vzhledem k chování kabelů při požáru jsou kabely vhodné zejména pro instalace v místech s velkou koncentrací lidí (metro, letiště, obchodního centra, nemocnice, apod.) nebo k ochraně technického vybavení budov v případě požáru.

Cables are designed for fixed installation in ordinary or possibly damp environments. Value of water pH in short-term shallow immersion is 3-11. They are suitable, in particular, for use on an inflammable surface and in environments with fire hazards where maintenance of circuit integrity during a fire is required. If it is necessary to lay the cable in the ground, it has to be provided with a protection tube, and has to be laid in bed of sand. The cables could not be exposed to long-term direct sun radiation. They are suitable for places with high concentration of people such as underground, airports, and hospitals, or for protection of high-tech equipment in buildings in case of fire.


Vlastnosti:
Properties:

Jmenovité napětí U ₀ /U (kV) <i>Rated voltage</i>	0.6/1	Samozhášivost jednoho kabelu <i>Self-extinguishing of one cable</i>	ČSN EN 60332-1-2 IEC 60332-1-2, DIN VDE 0482-332-1-2
Zkušební napětí (kV) <i>Test voltage</i>	4	Samozhášivost ve svazku <i>Self-extinguishing of bunched cables</i>	ČSN EN 60332-3-22 IEC 60332-3-22 (cat.A), DIN VDE 0472-332-3-22
Maximální provoz. teplota při zkratu (°C) <i>Maximal short-circuit temperature</i>	+250	Propustnost světla <i>Light transmittance</i>	ČSN EN 61034-2 IEC 61034-2, DIN VDE 0482-1034-2
Rozsah teplot při provozu (°C) <i>Operating temperature range</i>	-40 až +90 <i>from -40 up to +90</i>	Celistvost obvodu v případě požáru dle ČSN IEC 60331-21 <i>Circuit integrity in case of fire acc. IEC 60331-21</i>	FE 180
Min. teplota pokládky (°C) <i>Minimal temperature for laying</i>	-5	Třída funkčnosti kabelové trasy dle ZP 27/2008 Třída funkčnosti kabelové trasy dle STN 92 0205 <i>System integrity in case of fire acc. DIN 4102-12</i>	P90-R PS90 E90
Min. teplota skladování (°C) <i>Minimal storage temperature</i>	-40	Korozivita zplodin <i>Corrosivity of emitted gases</i>	ČSN EN 50267-2-3 IEC 60754-2, DIN VDE 0482-267-2-3
Barva izolace <i>Color of insulation</i>	HD 308 S2	Třída reakce na oheň dle EN 50399 (požadavek vyhlášky MV č.23/2008, č.268/2011) <i>Class of reaction-to-fire acc. EN 50399</i>	B2 _{cs} s1 d0
Barva pláště <i>Color of sheath</i>	hnědá <i>brown</i>	Balení <i>Packaging</i>	kabelové bubny <i>cable drums</i>

Rozměry kabelu a elektrické parametry:

Technical details for order:

Počet x průřez žil/stránění	Tvar jádra	Vnější průměr inf.	Hmotnost inf.	Poloměr ohybu	Činný odpor při 20°C	Ekvivalentní zkratový proud	Časová otevlovací konstanta	Proudová zatížitelnost na vzduchu	Indukčnost
No. of cores and cross-section	Conductor shape	Outer diameter approx.	Cable mass approx.	Bending radius	DC resistance at 20°C (mΩ)	Short circuit current - equiv.	Time heating constant	Current ratings of cable on air	Cable inductance
(mm²)		(mm)	(kg/km)	(mm)	(Ω/km)	(kA)	(s)	(A)	(mH/km)
1x10	RE	9	162	135	1.83	1.429	87	102	-
1x16	RE	10	225	150	1.15	2.286	127	135	-
1x25	RMV / RF	12	326	180	0.727	3.572	170	183	-
1x35	RMV / RF	13	426	195	0.524	5.001	218	226	-
1x50	RMV / RF	14	553	210	0.387	7.114	304	273	-
1x70	RMV / RF	16	784	240	0.268	10.001	369	347	-
1x95	RMV / RF	18	1025	270	0.193	13.573	449	428	-
1x120	RMV / RF	19	1265	285	0.153	17.145	530	497	-
1x150	RMV / RF	22	1553	330	0.124	21.431	620	574	-
1x185	RMV / RF	24	1931	360	0.0991	26.432	700	667	-
1x240	RMV / RF	26	2481	390	0.0754	34.290	829	795	-
1x300	RMV / RF	29	3081	435	0.0601	42.862	955	926	-
1x400	RMV / RF	32	3896	480	0.0470	57.150	1236	1085	-
1x500	RMV	36	4954	540	0.0366	71.437	1364	1291	-
2x1.5	RE	10	133	115	12.1	0.21	24	29	-
2x2.5	RE	10	166	125	7.41	0.36	39	38	-
2x4	RE	11	216	137	4.61	0.57	56	51	-
3x1.5	RE	10	150	121	12.1	0.21	36	24	-
3x2.5	RE	11	191	132	7.41	0.36	55	32	-
3x4	RE	12	255	144	4.61	0.57	82	42	-
3x6	RE	13	333	158	3.08	0.86	117	53	-
3x10	RE	17	560	204	1.83	1.429	148	78	0.265
3x16	RE	19	785	228	1.15	2.286	216	104	0.251
3x25	RMV	23	1196	276	0.727	3.527	283	142	0.248
3x35	RMV	26	1568	312	0.524	5.001	362	175	0.239
3x50	SM	27	1835	324	0.387	7.114	544	204	0.206

Rozměry kabelu a elektrické parametry:

Technical details for order:

Počet x průřez žil/stínění	Tvar žádra	Vnější průměr int.	Hmotnost int.	Pořadí otýbu	Činný odpor při 20°C	Ekvivalentní zkratový proud	Časová otevovací konstanta	Proudová zátěžnost na vzduchu	Indukčnost
No. of cores and cross-section	Conductor shape	Outer diameter approx.	Cable mass approx.	Bending radius	DC resistance at 20°C (mΩ)	Short circuit current - equiv.	Time heating constant	Current ratings of cable on air	Cable inductance
(mm²)		(mm)	(kg/km)	(mm)	(Ω/km)	(kA)	(s)	(A)	(mH/km)
3x70	SM	30	2501	360	0.268	10.001	662	259	0.201
3x95	SM	34	3299	408	0.193	13.573	811	318	0.194
3x120	SM	37	4129	444	0.153	17.145	956	370	0.193
3x150	SM	41	5024	492	0.124	21.431	1115	428	0.193
3x185	SM	46	6250	552	0.0991	26.432	1270	495	0.193
3x240	SM	50	7995	600	0.0754	34.290	1519	587	0.189
3x35+16	SM	28	1654	312	0.524	5.001	366	175	0.236
3x50+25	SM	30	2232	360	0.387	7.144	500	213	0.232
3x70+35	SM	33	2938	396	0.268	10.001	622	268	0.228
3x70+50	SM	33	3074	396	0.268	10.001	623	267	0.228
3x95+50	SM	37	3886	444	0.193	13.573	756	329	0.219
3x120+70	SM	40	4924	480	0.153	17.145	903	381	0.217
3x150+70	SM	45	5880	540	0.124	21.431	1057	440	0.215
3x185+95	SM	50	7350	600	0.0991	26.432	1224	504	0.213
3x240+120	SM	55	9382	660	0.0754	34.290	1475	596	0.204
4x1.5	RE	11	178	132	12.100	0.21	36	24	-
4x2.5	RE	12	227	143	7.410	0.36	55	32	-
4x4	RE	13	309	158	4.610	0.57	82	42	-
4x6	RE	14	405	173	3.080	0.86	117	53	-
4x10	RE	18	603	216	1.83	1.429	138	81	0.286
4x16	RE	21	981	252	1.15	2.286	200	108	0.273
4x25	RMV	28	1513	312	0.727	3.572	263	147	0.270
4x35	SM	28	1817	312	0.524	5.001	366	175	0.236
4x50	SM	30	2405	360	0.387	7.144	500	213	0.232
4x70	SM	33	3279	396	0.268	10.001	616	269	0.227
4x95	SM	37	4355	444	0.193	13.573	748	331	0.218

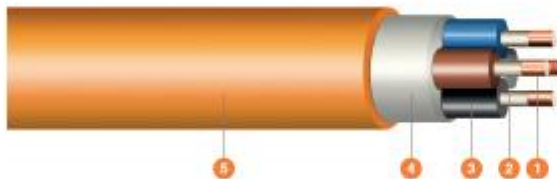
Rozměry kabelu a elektrické parametry:

Technical details for order:

Počet x průřez žil/stínění	Tvar jádra	Vnější průměr int.	Hmotnost int.	Poloměr ohybu	Činný odpor při 20°C	Ekvivalentní zkratový proud	Časová otevovací konstanta	Proudová zátížitelnost na vzduchu	Indukčnost
Nbr. of cores and cross-section	Conductor shape	Outer diameter approx.	Cable mass approx.	Bending radius	DC resistance at 20°C (min.)	Short circuit current - equiv.	Time heating constant	Current ratings of cable on air	Cable inductance
(mm²)		(mm)	(kg/km)	(mm)	(Ω/km)	(kA)	(s)	(A)	(mH/km)
4x120	SM	41	5414	492	0.153	17.145	890	383	0.216
4x150	SM	46	6619	552	0.124	21.431	1047	442	0.214
4x185	SM	51	8229	612	0.0991	26.432	1193	511	0.211
4x240	SM	57	10551	684	0.0754	34.290	1449	601	0.202
5x1.5	RE	12	202	142	12.100	0.21	36	24	-
5x2.5	RE	13	267	156	7.410	0.36	55	32	-
5x4	RE	14	364	173	4.610	0.57	82	42	-
5x6	RE	16	485	190	3.080	0.86	117	53	-
5x10	RE	20	847	240	1.83	1.429	129	84	0.296
5x16	RE	23	1195	276	1.15	2.286	186	112	0.282
5x25	RMV	28	1838	336	0.727	3.572	243	153	0.279
5x35	RMV	32	2426	384	0.524	5.001	311	189	0.269
5x50	SM	33	3025	396	0.387	7.144	455	224	0.238
5x70	SM	39	4140	468	0.268	10.001	546	286	0.229
5x95	SM	42	5455	504	0.193	13.573	688	345	0.220
5x120	SM	47	6838	564	0.153	17.145	807	403	0.224
7x1.5	RE	13	96	155	12.100	0.21	93	16	-
7x2.5	RE	14	155	169	7.410	0.36	129	21	-
12x1.5	RE	17	165	199	12.100	0.21	-	13	-
12x2.5	RE	18	267	221	7.410	0.36	-	17	-
19x1.5	RE	18	261	221	12.100	0.21	-	11	-
19.2.5	RE	22	421	258	7.410	0.36	-	16	-
24x1.5	RE	23	335	271	12.100	0.21	-	10	-
24x2.5	RE	25	541	301	7.410	0.36	-	13	-

Kabely se sníženým požárním nebezpečím (LFHC kabely) se zachováním funkční integrity systému kabelové trasy E90

Low fire-hazard cables (LFHC cables) with system integrity in case of fire E90



Standard

DIN VDE 0266

Konstrukce:

Design:

- | | | | |
|--|---|--|--|
| <p>1 Měděné jádro tř. 1, 2 a 5
<i>Copper conductor class 1, 2 and 5</i></p> | <p>2 Přídavná izolace ze sklosíťových pásek
<i>Supplementary insulation of glass/mica tape</i></p> | <p>3 Sesíťená bezhalogení izolace
<i>Cross-linked halogen free insulation</i></p> | <p>4 HFFR výplň
<i>HFFR bedding</i></p> |
| | | | <p>5 HFFR plášť
<i>HFFR sheath</i></p> |

Požárně technické charakteristiky:

Fire technical characteristics:

Kabel má třídu reakce na oheň B2_{ca} s1 d0 a splňuje tedy požadavky pro jeho použití dle Vyhlášky MV č.23/2008 novelizované Vyhláškou MV č.268/2011. Může být tedy použit jako volně vedený kabel v prostorech, kde je vyžadována zvýšená ochrana osob, zvířat a majetku (zdravotnická zařízení, stavby s vnitřními shromažďovacími prostory, apod.) a také zajištění funkce a ovládání požárně bezpečnostních zařízení. The cable is in accordance with EN 50399 (Construction product regulation - CPR) and matches the requirements of improve safety during fire acc. to the category B2_{ca} s1, d0.

Použití:

Application:

Kabely jsou určeny pro pevné uložení na kabelové nosné systémy (žebříky, žlaby, rošty, háky, apod.) v prostředí suchém nebo vlhkém. Přípustné je krátkodobé mělké ponoření do vody s pH 3 až 11. Pokud je nutné kabely uložit do země, musí být zamezeno trvalému vlivu vlhkosti na kabel. Instalace elektrického vedení musí být v souladu s požadavky ČSN 332000-5-52. Kabely by neměly být dlouhodobě vystaveny přímému slunečnímu záření. Vzhledem k chování kabelů při požáru jsou kabely vhodné zejména pro instalace v místech s velkou koncentrací lidí (metro, letiště, obchodní centra, nemocnice, apod.) nebo k ochraně technického vybavení budov v případě požáru.

Cables are designed for fixed installation in ordinary or possibly damp environments. Value of water pH in short-term shallow immersion is 3-11. They are suitable, in particular, for use on an inflammable surface and in environments with fire hazards where maintenance of circuit integrity during a fire is required. If it is necessary to lay the cable in the ground, it has to be provided with a protection tube, and has to be laid in bed of sand. The cables could not be exposed to long-term direct sun radiation. They are suitable for places with high concentration of people such as underground, airports, and hospitals, or for protection of high-tech equipment in buildings in case of fire.



Vlastnosti:

Properties:

Jmenovité napětí U ₀ /U (kV) <i>Rated voltage</i>	0,6/1	Samozhášivost jednoho kabelu <i>Self-extinguishing of one cable</i>	ČSN EN 60332-1-2 IEC 60332-1-2, DIN VDE 0482-332-1-2
Zkušební napětí (kV) <i>Test voltage</i>	4	Samozhášivost ve svazku <i>Self-extinguishing of bunched cables</i>	ČSN EN 60332-3-22 IEC 60332-3-22 (catLA), DIN VDE 0472-332-3-22
Maximální provoz. teplota při zkratu (°C) <i>Maximal short-circuit temperature</i>	+250	Hustota dýmu při hoření kabelu <i>Smoke density in case of fire</i>	ČSN EN 61034-2 IEC 61034-2, DIN VDE 0482-1034-2
Rozsah teplot při provozu (°C) <i>Operating temperature range</i>	-40 až +90 <i>from -40 up to +90</i>	Celistvost obvodu v případě požáru dle ČSN IEC 60331-21 <i>Circuit integrity in case of fire acc. IEC 60331-21</i>	FE 180
Min. teplota pokládky (°C) <i>Minimal temperature for laying</i>	-5	Třída funkčnosti kabelové trasy dle ZP 27/2008 <i>System integrity in case of fire acc. DIN 4102-12</i>	P90-R E90
Min. teplota skladování (°C) <i>Minimal storage temperature</i>	-30	Korozivita zplodin <i>Corrosivity of emitted gases</i>	ČSN EN 50267-2-3 IEC 60754-2, DIN VDE 0482-267-2-3
Barva izolace <i>Color of insulation</i>	HD 308 S2	Třída reakce na oheň dle EN 50399 (požadavek vyhlášky MV č.23/2008, č.268/2011) <i>Class of reaction-to-fire acc. EN 50399</i>	B2 _{ca} s1 d0
Barva pláště <i>Color of sheath</i>	oranžová <i>orange</i>	Balení <i>Packaging</i>	kabelové bubny <i>cable drums</i>

Rozměry kabelu a elektrické parametry:

Technical details for order:

Počet x průřez žil/stínění	Tvar jádra	Vnější průměr int.	Hmotnost int.	Poloměr ohybu	Činný odpor při 20°C	Ekvivalentní zkratový proud	Časová ohřevací konstanta	Proudová zatížitelnost na vzduchu	Induktivnost
No. of cores and cross-section	Conductor shape	Outer diameter approx.	Cable mass approx.	Bending radius	DC resistance at 20°C (min.)	Short circuit current - equiv.	Time heating constant	Current ratings of cable on air	Cable inductance
(mm²)		(mm)	(kg/km)	(mm)	(Ω/km)	(kA)	(s)	(A)	(mH/km)
1x10	RE	10	187	150	1.83	1.429	84	104	-
1x16	RE	11	252	165	1.15	2.286	123	138	-
1x25	RMV / RF	13	364	195	0.727	3.572	166	186	-
1x35	RMV / RF	14	468	210	0.524	5.001	214	228	-
1x50	RMV / RF	15	599	225	0.387	7.144	299	276	*
1x70	RMV / RF	17	816	255	0.268	10.001	365	349	-
1x95	RMV / RF	19	1073	285	0.193	13.573	444	430	-
1x120	RMV / RF	20	1318	300	0.153	17.145	528	496	-
1x150	RMV / RF	23	1611	345	0.124	21.431	620	574	-
1x185	RMV / RF	25	1984	375	0.0991	26.432	700	667	-
1x240	RMV / RF	27	2539	405	0.0754	34.290	829	796	-
1x300	RMV / RF	30	3130	450	0.0601	42.862	955	926	-
1x400	RMV / RF	33	3968	495	0.0470	57.150	1236	1085	-
1x500	RMV	37	5034	555	0.0366	71.437	1364	1291	-
2x1.5	RE	12	174	144	12.1	0.21	24	29	-
2x2.5	RE	13	206	156	7.41	0.36	39	38	-
2x4	RE	14	260	168	4.61	0.57	56	51	-
2x6	RE	15	321	180	3.08	0.86	80	64	-
2x10	RE	17	509	204	1.83	1.429	109	91	-
2x16	RE	19	680	228	1.15	2.286	158	121	-
2x25	RMV	23	1031	276	0.727	3.572	211	164	-
2x35	RMV	25	1316	300	0.524	5.001	270	203	-
3x1.5	RE	12	195	144	12.1	0.21	36	24	-
3x2.5	RE	13	240	156	7.41	0.36	55	32	*
3x4	RE	14	302	168	4.61	0.57	82	42	-
3x6	RE	15	381	180	3.08	0.86	117	53	-

Rozměry kabelu a elektrické parametry:

Technical details for order:

Počet x průřez žádrů No. of cores and cross-section (mm²)	Tvar jádra Conductor shape	Vnější průměr int. Outer diameter approx. (mm)	Hmotnost int. Cable mass approx. (kg/km)	Poloměr ohybu Bending radius (mm)	Činný odpor při 20°C DC resistance at 20°C (mV.) (Ω/km)	Ekvivalentní zkratový proud Short circuit current - equiv. (kA)	Časová otopovací konstanta Time heating constant (s)	Proudová zatížitelnost na vzduchu Current ratings of cable on air (A)	Induktivita Cable inductance (mH/km)
3x10	RE	18	611	216	1.83	1.429	147	79	0.265
3x16	RE	20	832	240	1.15	2.286	214	104	0.251
3x25	RMV	24	1265	288	0.727	3.572	282	142	0.248
3x35	RMV	27	1632	324	0.524	5.001	363	175	0.239
3x50	RMV	30	2128	360	0.387	7.144	500	213	0.237
3x70	RMV	35	2923	420	0.268	10.001	602	272	0.233
3x95	RMV	38	3833	456	0.193	13.573	732	335	0.227
3x120	RMV	42	4770	504	0.153	17.145	866	389	0.226
3x150	RMV	47	5904	564	0.124	21.431	1006	451	0.227
3x185	RMV	53	7366	636	0.0991	26.432	1190	525	0.226
3x240	RMV	58	9383	696	0.0754	34.290	1361	620	0.223
3x25+16	RMV	25	1453	300	0.727	3.572	274	144	0.270
3x35+16	RMV	28	1829	336	0.524	5.001	363	178	0.261
3x50+25	RMV	31	2421	372	0.387	7.144	487	216	0.258
3x70+35	RMV	36	3312	432	0.268	10.001	587	275	0.253
3x95+50	RMV	40	4359	480	0.193	13.573	719	338	0.246
3x120+70	RMV	44	5500	528	0.153	17.145	853	392	0.244
3x150+70	RMV	49	6612	588	0.124	21.431	1002	452	0.243
3x185+95	RMV	55	8350	660	0.0991	26.432	1141	522	0.240
3x240+120	RMV	61	10603	732	0.0754	34.290	1370	618	0.233
4x1.5	RE	13	227	160	12.100	0.21	36	24	-
4x2.5	RE	14	279	170	7.410	0.36	55	32	-
4x4	RE	16	363	186	4.610	0.57	82	42	-
4x6	RE	17	462	200	3.080	0.86	117	53	-
4x10	RE	20	739	240	1.83	1.429	137	81	0.266
4x16	RE	22	1032	264	1.15	2.286	200	108	0.273



Rozměry kabelu a elektrické parametry:

Technical details for order:

Počet x průřez žlístků No. of cores and cross-section (mm²)	Tvar jádra Conductor shape	Vnější průměr int. Outer diameter approx. (mm)	Hmotnost int. Cable mass approx. (kg/km)	Poloměr ohybu Bending radius (mm)	Činný odpor při 20°C DC resistance at 20°C (min.) (Ω/km)	Ekvivalentní zkratový proud Short circuit current - equiv. (kA)	Časová teplovodní konstanta Time heating constant (s)	Proudová zátěžnost na vzduchu Current ratings of cable on air (A)	Indukčnost Cable inductance (mH/km)
4x16	RMV	22	1058	264	1.15	2.286	190	111	0.269
4x25	RMV	27	1576	324	0.727	3.572	263	147	0.270
4x35	RMV	30	2039	360	0.524	5.001	337	182	0.261
4x50	RMV	33	2689	396	0.387	7.144	466	221	0.258
4x70	RMV	38	3708	456	0.268	10.001	561	282	0.253
4x95	RMV	42	4868	504	0.193	13.573	685	346	0.246
4x120	RMV	47	6078	564	0.153	17.145	814	401	0.244
4x150	RMV	52	7495	624	0.124	21.431	951	464	0.243
4x185	RMV	59	9369	708	0.0991	26.432	10084	536	0.240
4x240	RMV	65	11967	780	0.0754	34.290	1309	632	0.233
5x1.5	RE	14	261	173	12.100	0.21	36	24	-
5x2.5	RE	16	328	186	7.410	0.36	55	32	-
5x4	RE	17	425	202	4.610	0.57	62	42	-
5x6	RE	18	549	220	3.080	0.86	117	53	-
5x10	RE	21	897	252	1.83	1.429	128	84	0.296
5x16	RE	24	1251	288	1.15	2.286	186	112	0.282
5x25	RMV	29	1907	348	0.727	3.572	244	153	0.279
5x35	RMV	32	2488	384	0.524	5.001	312	189	0.269
5x50	RMV	37	3295	444	0.387	7.144	431	230	0.266
5x70	RMV	42	4565	504	0.268	10.001	520	293	0.260
5x95	RMV	47	6034	564	0.193	13.573	640	358	0.251
5x120	RMV	52	7491	624	0.153	17.145	764	414	0.246
7x1.5	RE	16	317	186	12.100	0.21	93	16	-
7x2.5	RE	17	402	200	7.410	0.36	129	21	-
12x1.5	RE	20	472	236	12.100	0.21	-	13	-
12x2.5	RE	22	622	259	7.410	0.36	-	17	-



Rozměry kabelu a elektrické parametry:

Technical details for order:

Počet x průřez žil/stínění	Tvar jádra	Vnější průměr int.	Hmotnost int.	Poloměr ohybu	Činný odpor při 20°C	Ekvivalentní zkratový proud	Časová odstřevací konstanta	Proudová zatížitelnost na vzduchu	Induktivnost
No. of cores and cross-section	Conductor shape	Outer diameter approx.	Cable mass approx.	Bending radius	DC resistance at 20°C (min.)	Short circuit current - equiv.	Time heating constant	Current ratings of cable on air	Cable inductance
(mm²)		(mm)	(kg/km)	(mm)	(Ω/km)	(kA)	(s)	(A)	(mH/km)
19x1.5	RE	23	674	277	12.100	0.21	-	11	-
19x2.5	RE	25	886	301	7.410	0.36	-	16	-
24x1.5	RE	27	835	322	12.100	0.21	-	10	-
24x2.5	RE	29	1118	350	7.410	0.36	-	13	-



DRAWINGS

No.	FIRES no.	Time	Type of cable	Track no.	Construction details	
1	47		NOPOVIC NHXH 4x10 E30 Asneas	1	Cable trays KCP/KCOP300H60/B300, consoles WPCW/WPCO700, brackets WMC/WMCO300, threaded rods PG M10 with ceiling holder USOV. Loading 10 kg.m ⁻¹ . Consoles in spacing of 1200 mm.	
2	46		NOPOVIC NHXH 4x10 E30 Asneas			
3	45		NOPOVIC NHXH 4x1,5 E30 Asneas			
4	44		NOPOVIC NHXH 4x1,5 E30 Asneas			
5	33		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)	2		
6	32		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)			
7	31		NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)			
8	30		NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)			
9	43		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)	3		
10	42		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)			
11	41		NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi			
12	40		NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi			
13	29		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)	4		
14	28		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)			
15	27		NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi			
16	26		NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi			
17	12		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)	5	Cable ladders DGOP400H60/B400, consoles WPCW/WPCO700, brackets WMC/WMCO300, threaded rods PG M10 with ceiling holder USOV. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1200 mm.	
18			NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)			
19	11		NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)			
20			NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)			
21	5		NOPOVIC NHXH 4x10 E90 Asneas	6		
22			NOPOVIC NHXH 4x10 E90 Asneas			
23	4		NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi			
24			NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi			
25	3		NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi	7		
26			NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi			
27	10		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)			
28			NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)			
29	9		NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi	8		
30			NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi			
31	2		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)			8
32			NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)			
33	1		NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi			
34			NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi			
35	21		NOPOVIC NHXH 4x10 E30 Asneas	9	Cable mesh trays KDS/KDSO400H60/3, horizontal supports CWP/CWOP40H40/05, threaded rods PG M10. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm.	
36			NOPOVIC NHXH 4x10 E30 Asneas			
37	20		NOPOVIC NHXH 4x10 E90 Asneas			
38			NOPOVIC NHXH 4x10 E90 Asneas			
39	19		NOPOVIC NHXH 4x1,5 E30 Asneas			
40			NOPOVIC NHXH 4x1,5 E30 Asneas			

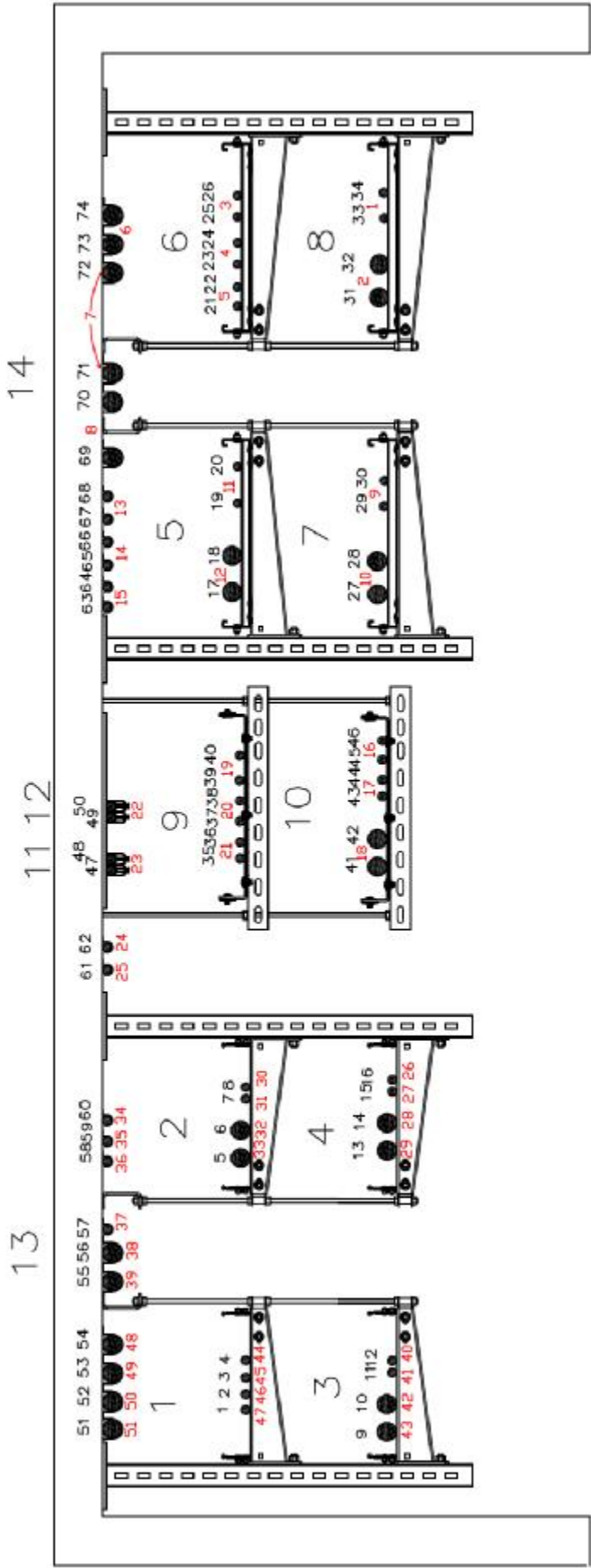


DRAWINGS

No.	FIRES no.	Time	Type of cable	Track no.	Construction details
41	18		NOPOVIC 1-CXKH-V 4x50 E90 Kladno	10	Cable mesh trays KDS/KDSO400H60/3, horizontal supports CWP/CWOP40H40/05, threaded rods PG M10. Loading 20 kg.m ⁻¹ . Consoles in spacing of 1500 mm.
42			NOPOVIC 1-CXKH-V 4x50 E90 Kladno		
43	17		NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)		
44			NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)		
45	16		NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi		
46			NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi		
47	23		NOPOVIC NHXH 4x10 E90 Asneas	11	Ceiling profiles SDOP 400, cable hangers UK/UKO1. Profiles in spacing of 300 mm.
48			NOPOVIC NHXH 4x10 E90 Asneas		
49	22		NOPOVIC NHXH 4x10 E30 Asneas	12	Ceiling profiles SDOP 400, cable hangers UK/UKO1. Profiles in spacing of 600 mm.
50			NOPOVIC NHXH 4x10 E30 Asneas		
51	51		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)	13	Cable clips UDF fixed to ceiling in spacing of 300 mm.
52	50		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)		
53	49		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)		
54	48		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)		
55	39		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)		
56	38		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)		
57	37		NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)		
58	36		NOPOVIC 1-CXKH-V 4x10 E60 Kladno (1)		
59	35		NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi		
60	34		NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi		
61	25		NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi		
62	24		NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi		
63	15		NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi	14	Cable clips UDF fixed to ceiling in spacing of 600 mm.
64			NOPOVIC 1-CXKH-V 4x1,5 E90 Vrchlabi		
65	14		NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi		
66			NOPOVIC 1-CXKH-V 4x1,5 E60 Vrchlabi		
67	13		NOPOVIC 1-CXKH-V 4x10 E90 Kladno		
68			NOPOVIC 1-CXKH-V 4x10 E90 Kladno		
69	8		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)		
70			NOPOVIC 1-CXKH-V 4x50 E90 Kladno (3)		
71	7		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)		
72			NOPOVIC 1-CXKH-V 4x50 E90 Kladno (2)		
73	6		NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)		
74			NOPOVIC 1-CXKH-V 4x50 E90 Kladno (1)		

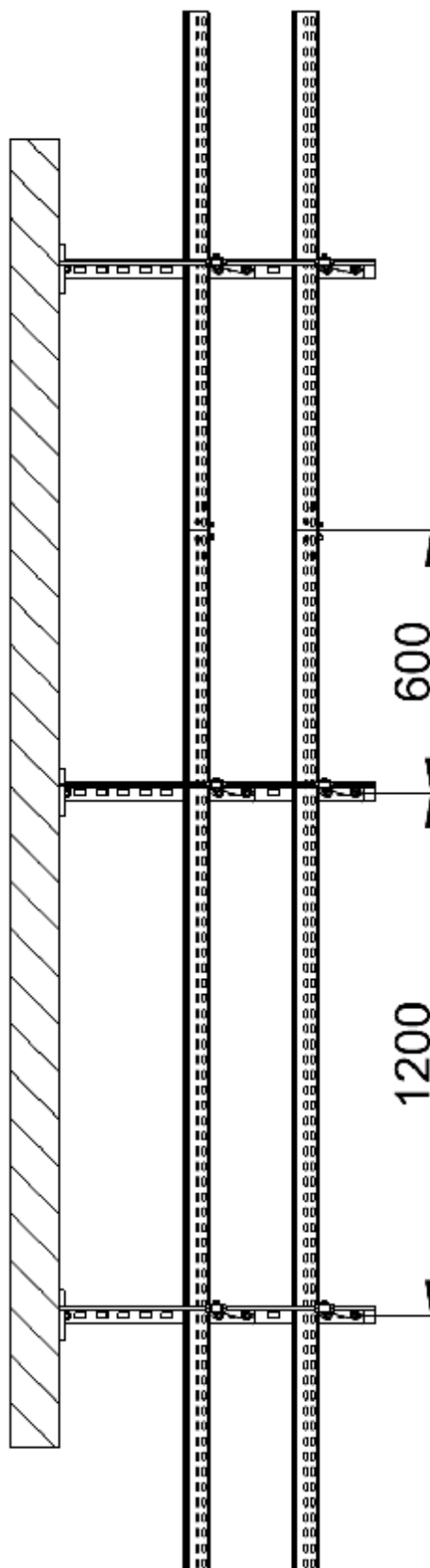


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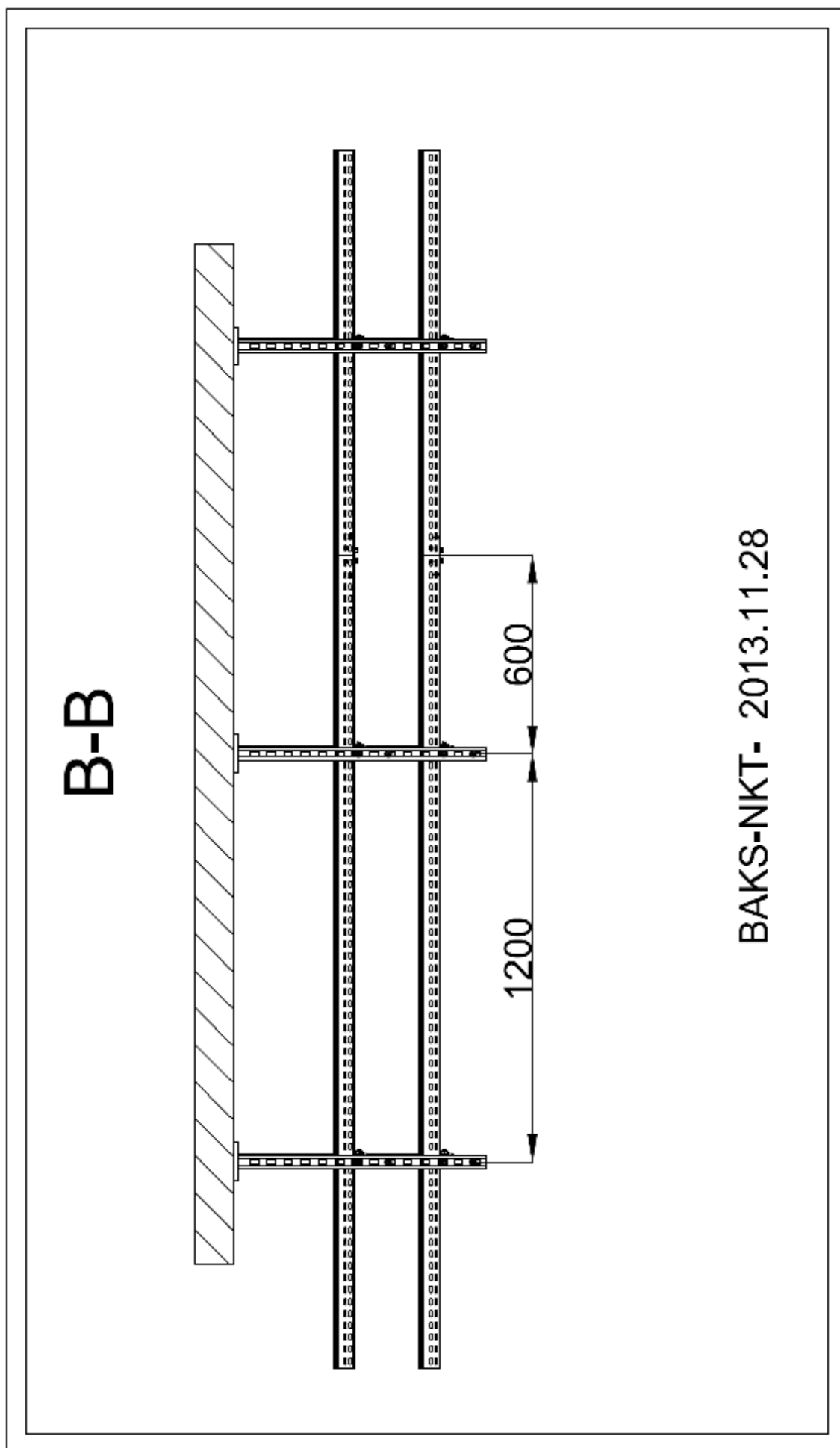
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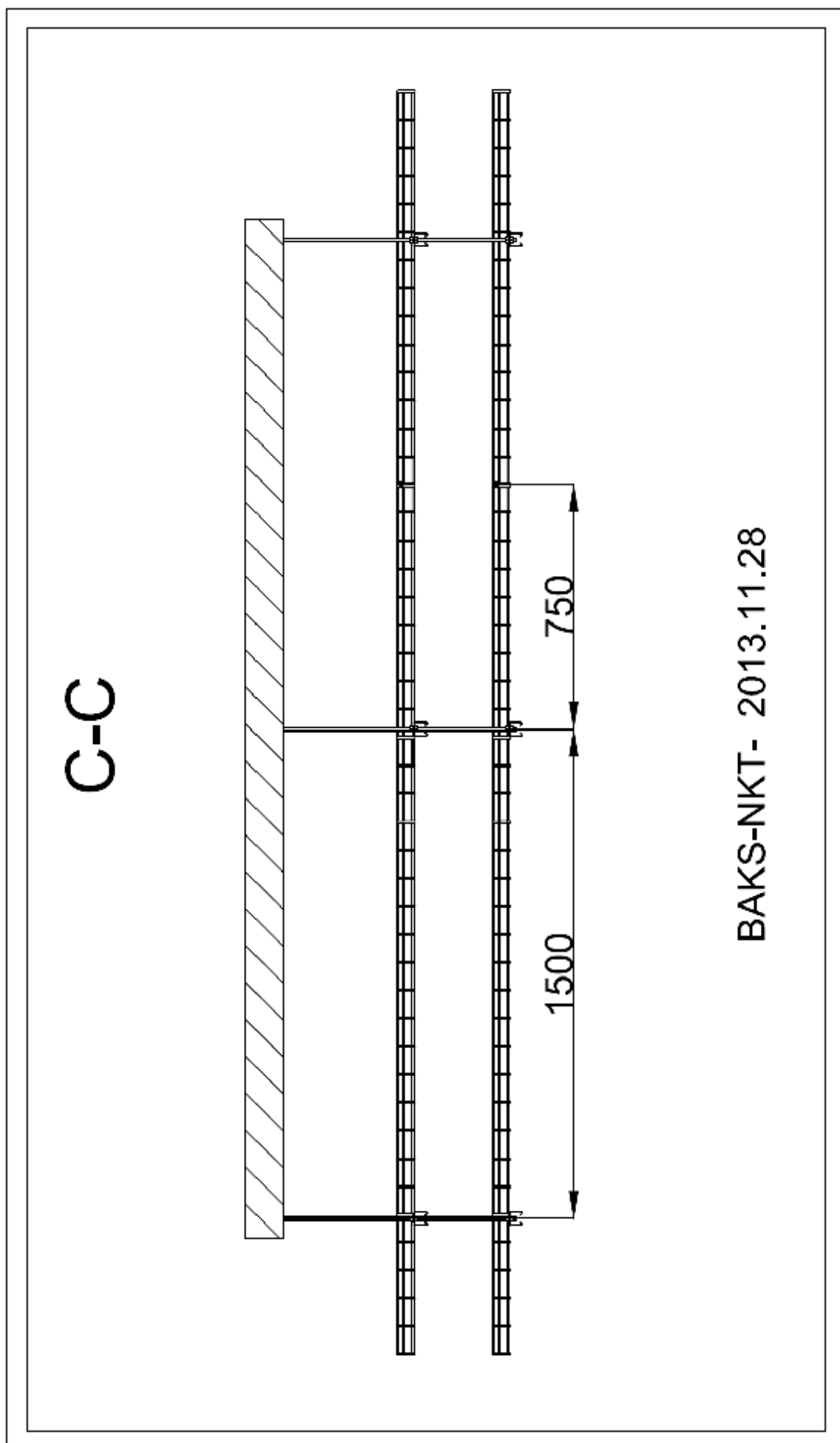


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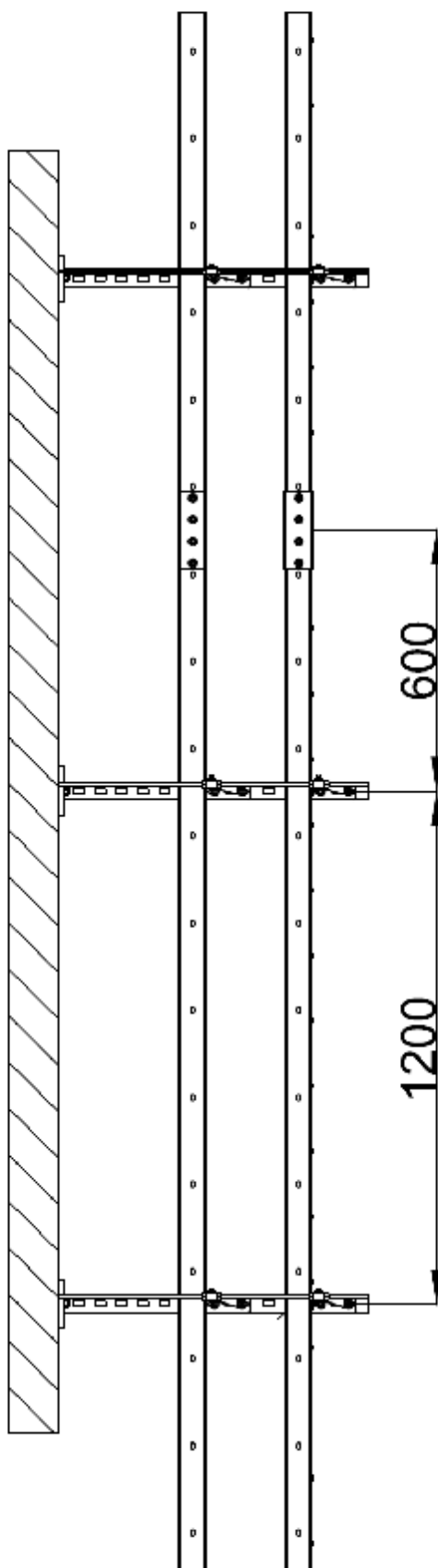
DRAWINGS



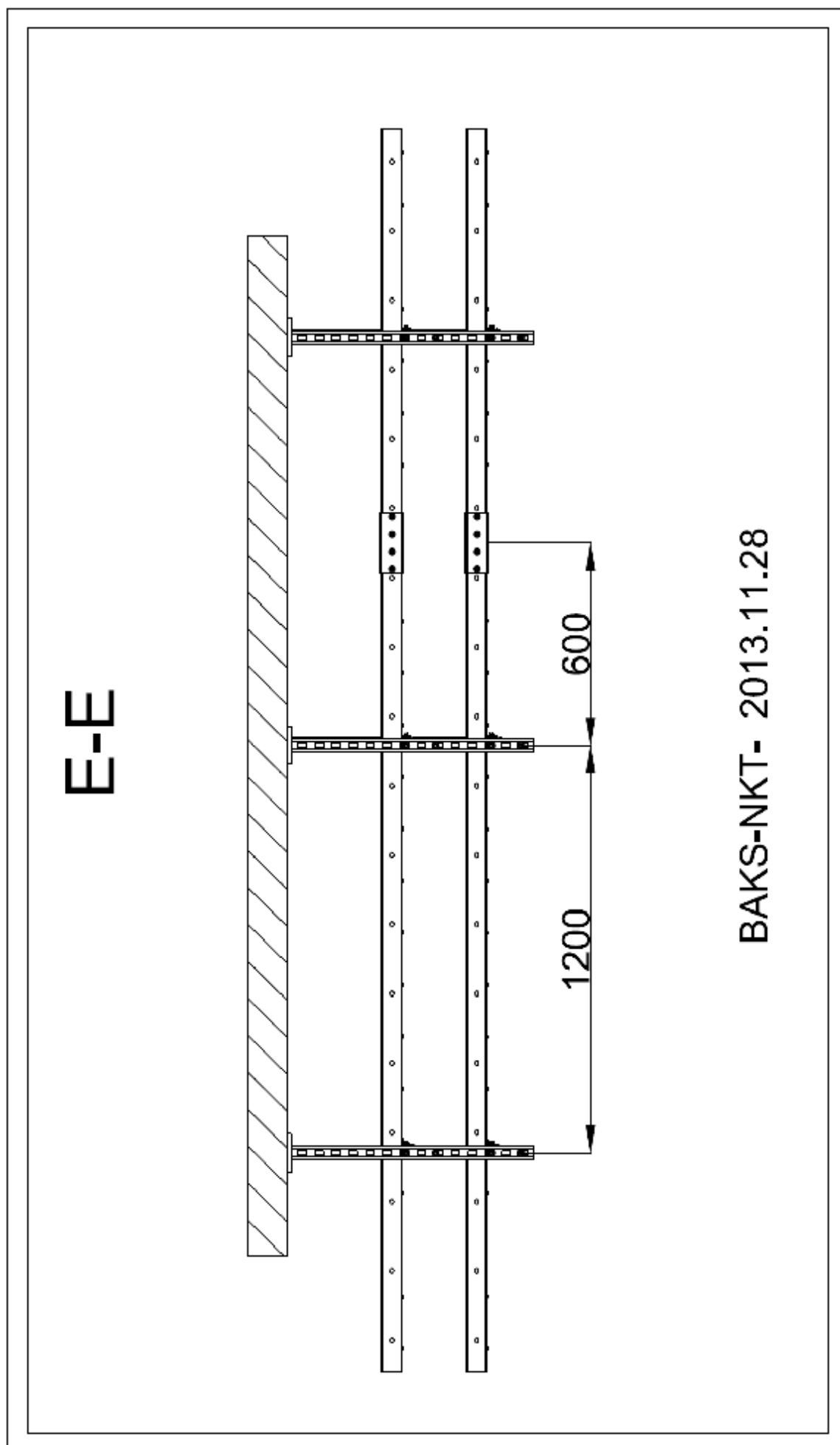




D-D

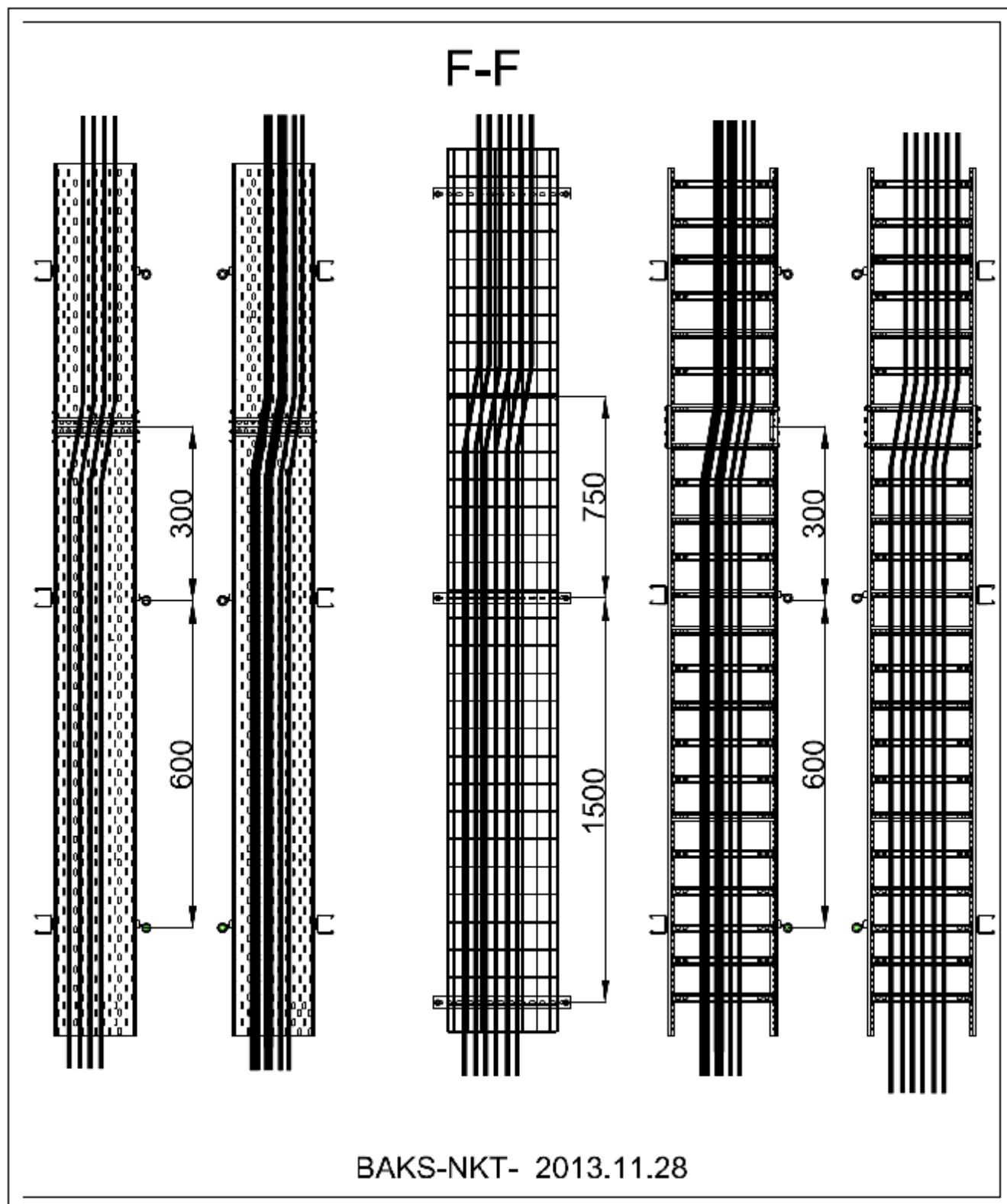


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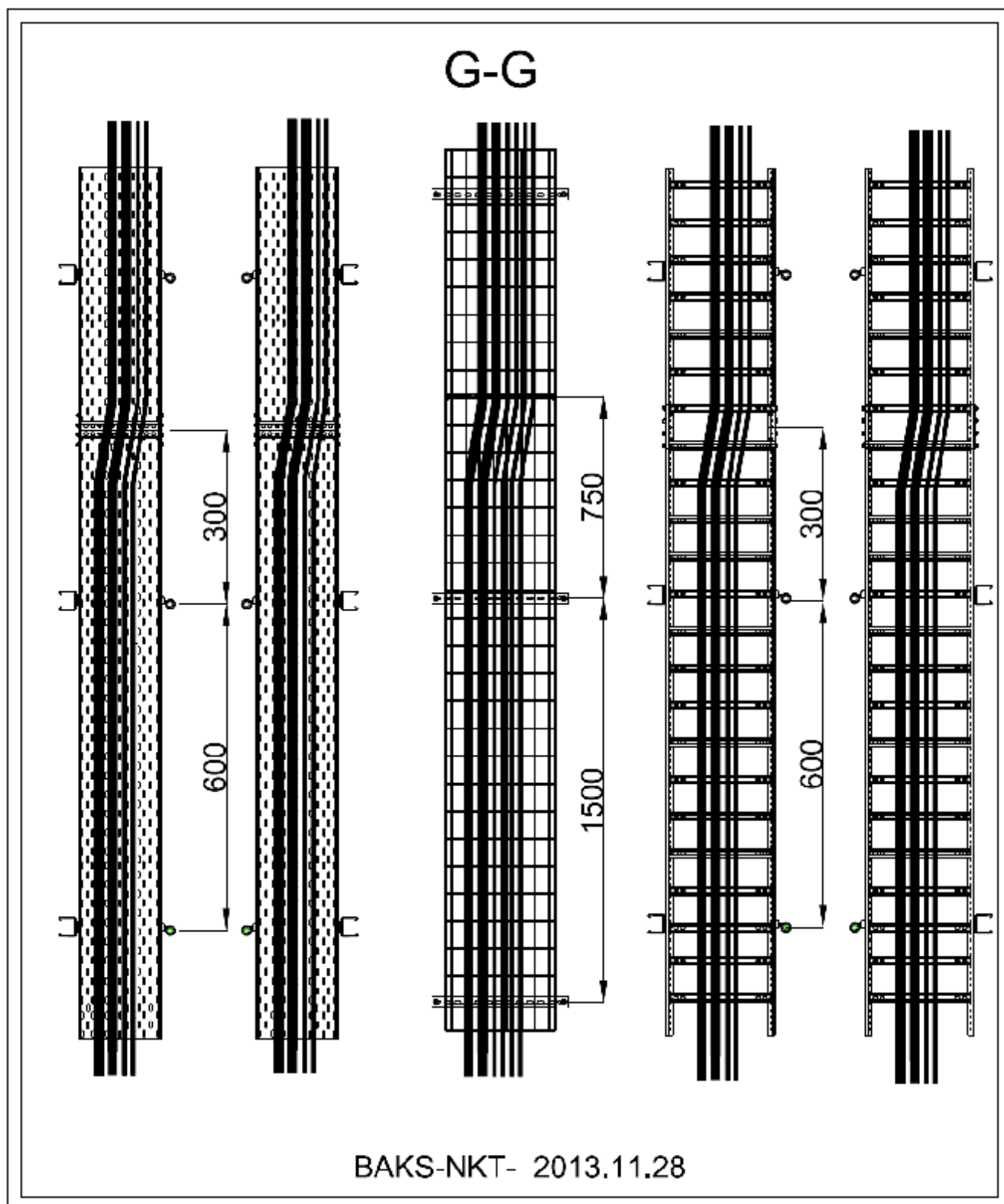


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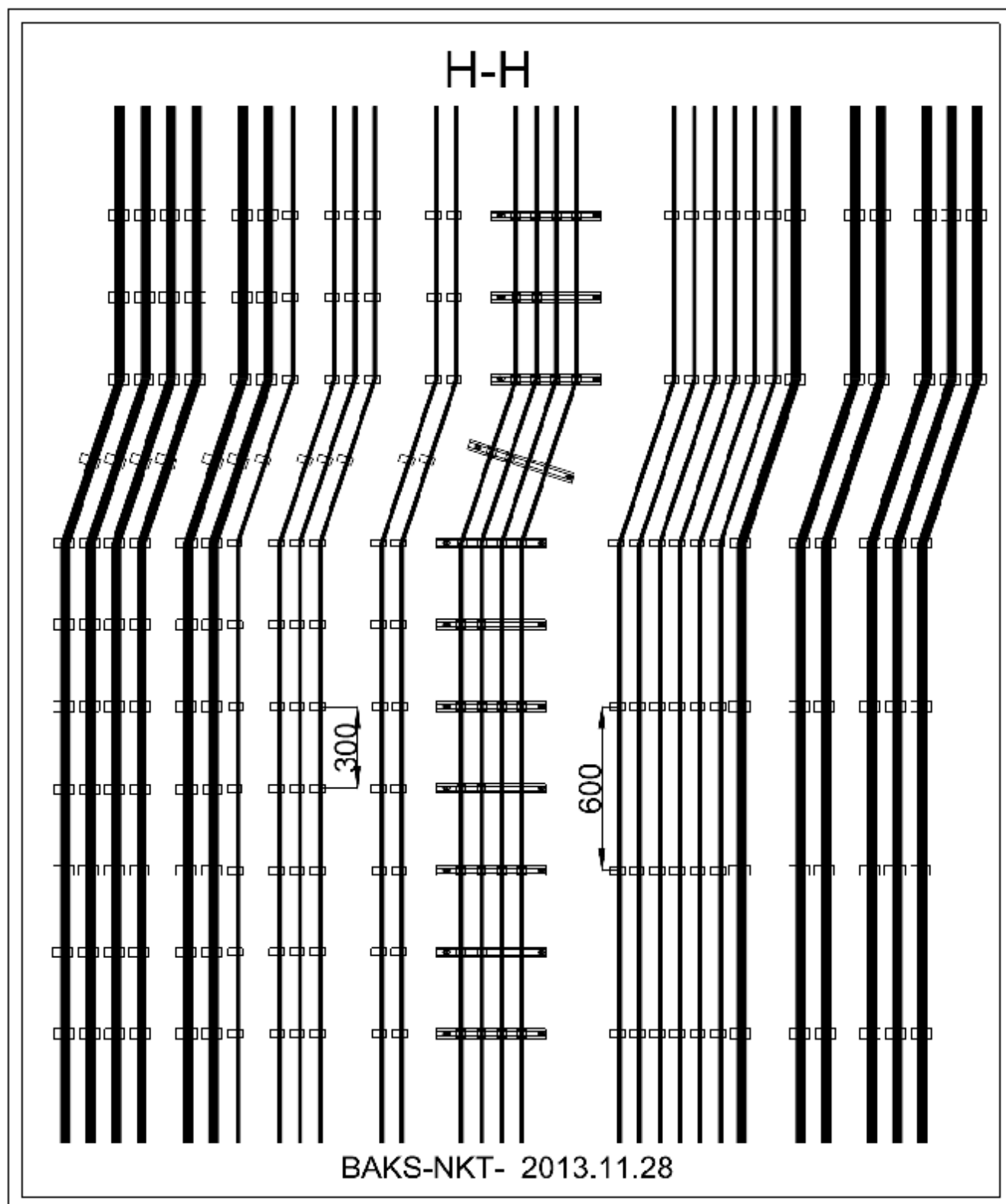


DRAWINGS





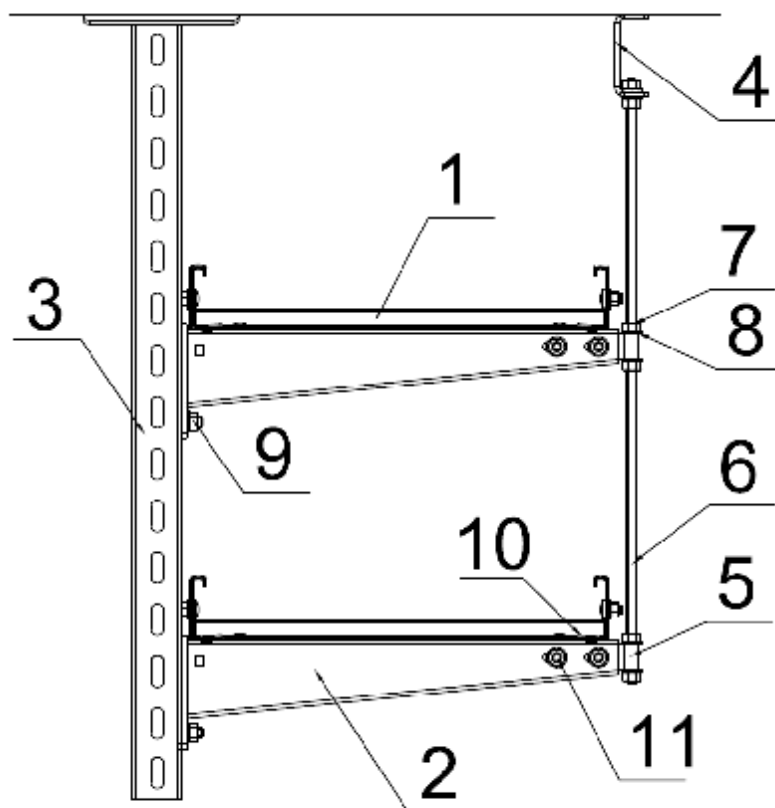
DRAWINGS



1	Śruba	SGN M8x14	4
2	Śruba	SGN M6x12	4
3	Śruba	SM M10x30	4
4	Podkładka	PP 10	6
5	Nakrętka	NS M10	6
6	Pręt gwintowany	PGM10/...	1
7	Uchwy:	UPWO	2
8	Uchwyt sufitowy	USOV	1
9	Wspornik sufitowy	WPCW/WPCO700	1
10	Wysięgrik	WMC/WMC0360	2
11	Korytko	KCOP300H60	2
12	Nazwa	Symbol	Szt.



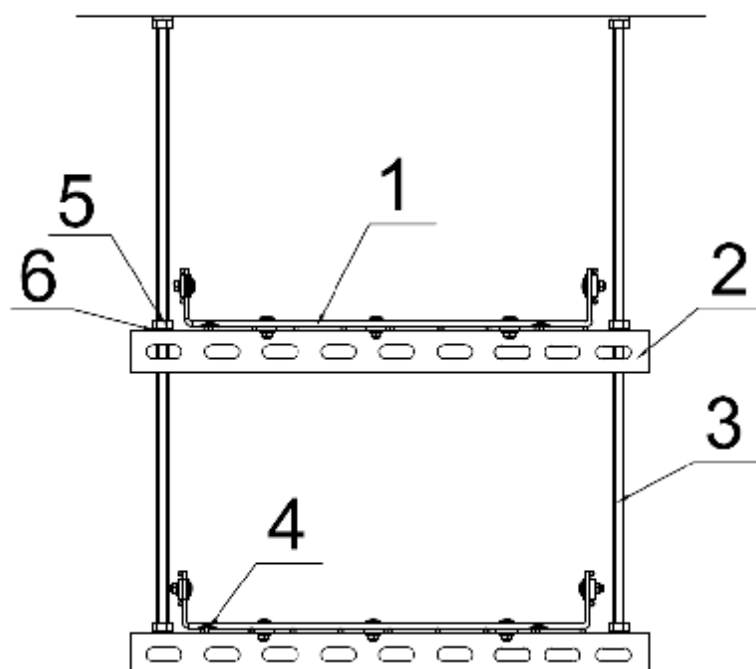
DRAWINGS



11	Śruba	SGN M8x14	8
10	Zacisk mocujący	ZMO	4
8	Śruba	SM M10x30	4
6	Podkładka	PP 10	6
7	Nakrętka	NS M10	6
9	Pręt gwintowany	PGM10/...	1
5	Uchwyt	UPWO	2
4	Uchwyt sufitowy	USOV	1
3	Wspornik sufitowy	WPCW/WPCO700	1
2	Wysięgnik	WMC/WMCO400	2
1	Drabinka	DGOP400H60	2
11	Nazwa	Symbol	Szt.

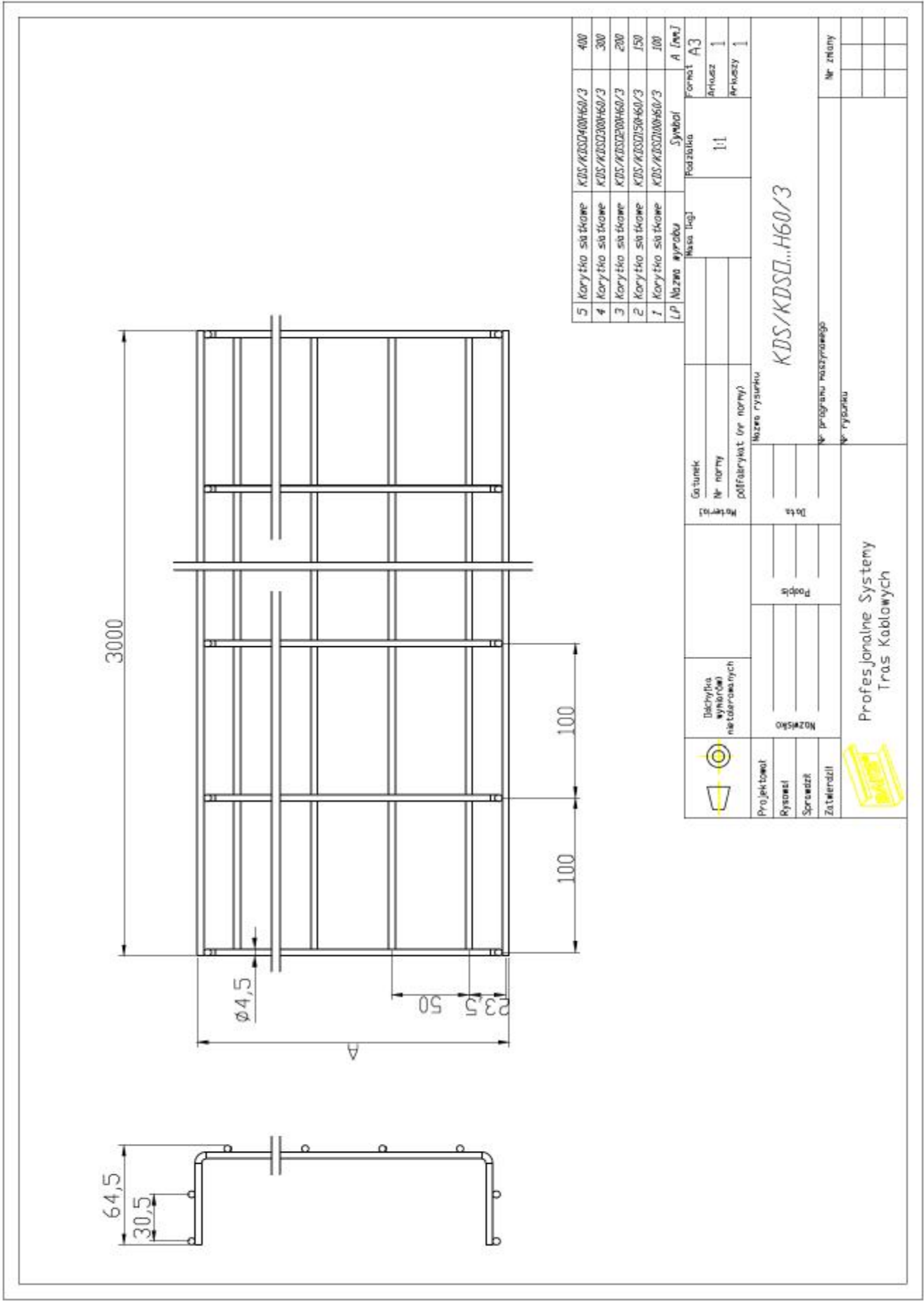


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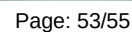
6	Podkładka	PP 10	10
5	Nakrętka	NS M10	10
4	Zacisk śrubowy	ZS/ZSO	4
3	Pręt gwintowany	PGM10/...	2
2	Ceownik	CWOP40/H40	2
1	Korytka siatkowe	KDS/KDSO400H60	2
L.p.	Nazwa	Symbol	Szt.

DRAWINGS

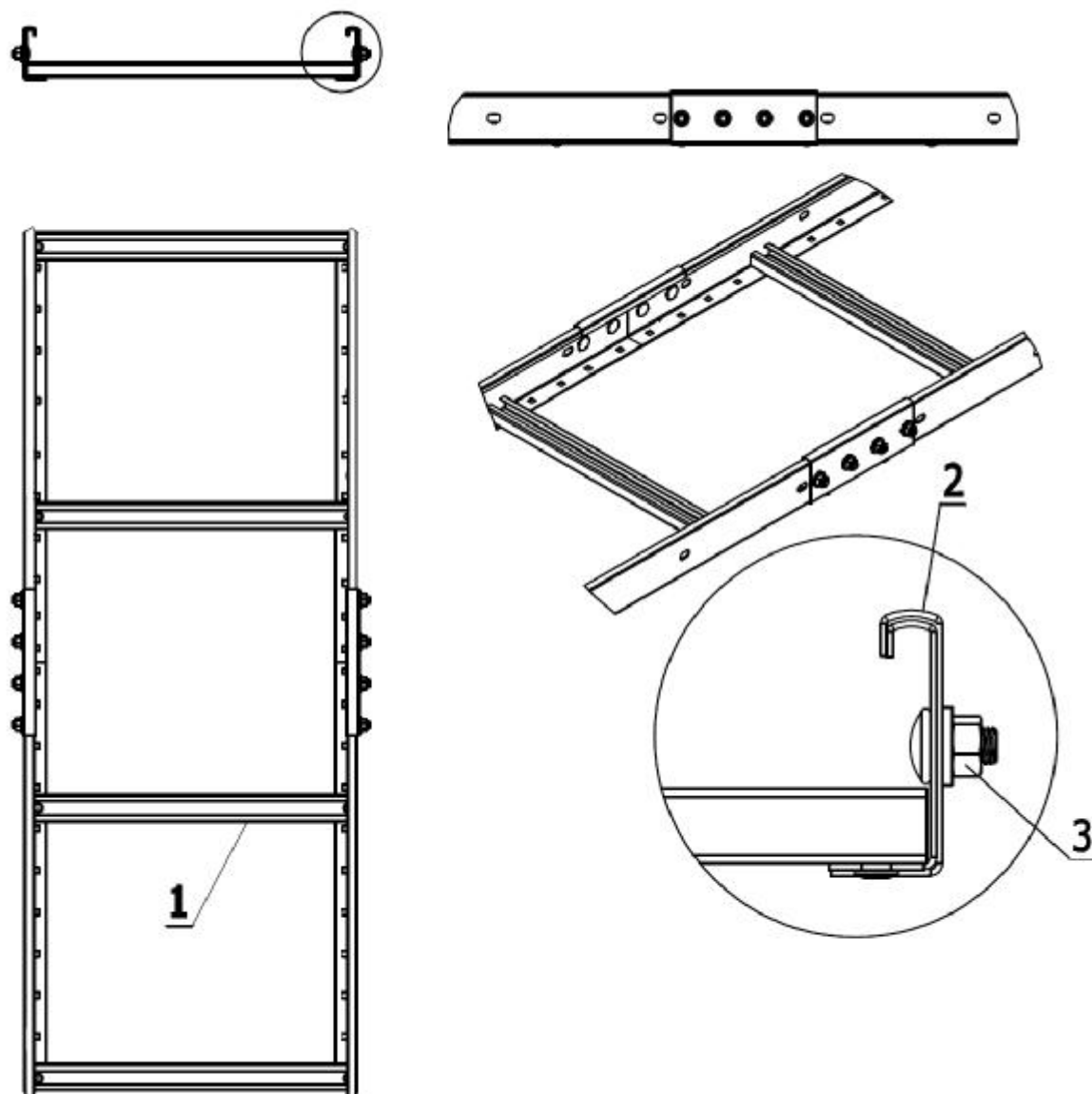


Lip.	Symbol	Ilość szt.	KDSZ400H60/... 2
	Dobrych wypracowań nietolerancyjnych		
Projektant	Nazwa rysunku	Materiał:	Gatunki Nr normy polifunkcyjność (co norma)
Rysował	Data	Popełn	Podpiszka l.i.) format A3
Sprawdził	Nazwisko		Aktualizacja 1
Zakreślił			Wskazywanie 1
Tytuł projektu			
Profesjonalne Systemy Trasy Kabinowe		KDS/KDSD400H60/3	
Nr programu maszyny		Nr zwoły	
Nr rysunku			

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DRAWINGS



3	Sruba	SGN MBx14		8	
2	Łącznik	L.DDCH60N		2	
1	Drabinka	DGDP600H60/3N		2	
Pos.	Benennung	Zeichnung-Nr	Material	Stck.	Katalogs Nr.
	Doktryka wykłada metalizowanych		Główny	Masa (kg)	Podziałka
			Nr normy		
			poFabrykat (nr normy)		
Projektował	Nazwisko	Podpis	Data	Nazwa rysunku	
Rysował				DGDP600H60/3N	
Sprawdził					
Zatwierdził				Nr programu maszynowego Nr rysunku	
	Profesjonalne Systemy Tras Kablowych			Nr złoży	



7. FINAL PROVISION

- § This report details the method of construction, the test conditions and results obtained when the specific element of construction described herein was following the procedure outlined in EN 1363-1, and where appropriate STN 92 0205:2012. Any significant deviation with respect to size, constructional details, loads, stresses, edge or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.
- § Because of the nature of the fire resistance testing and consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.
- § The test results refer only to the tested subjects. This test report is not an approval of the tested product by the test laboratory or the accreditation body overseeing the laboratory's activities. The test was carried out on testing equipment that is the property of FIRES, s.r.o., Batizovce. Without the written permission of the test laboratory this test report may be copied and/or distributed only as the whole. Any modifications of the test report can be made only by the fire resistance test laboratory FIRES, s.r.o., Batizovce.

Approved by:

Prepared by:

Ing. Štefan Rástocký
leader of the testing laboratory



Bc. Dávid Šubert
technician of the testing laboratory

8. NORMATIVE REFERENCES

EN 1363-1: 2012	Fire resistance tests. Part 1: General requirements
STN 92 0205:2012	Fire behaviour of construction products and building constructions. Circuit integrity maintenance of cable systems. Requirements, testing and classification.
DIN 4102 – 2:1977-09	Fire behaviour of building materials and elements - requirements and testing
DIN 4102 – 12:1998-11	Fire resistance of electric cable systems required to maintain circuit integrity
ZP-27/2008 PAVUS	Test method for determination of functionality class of cables and cable loadbearing constructions - cable circuits in case of fire

THE END OF THE TEST REPORT