FIRES
The Experts On Fire Safety

TEST REPORT FIRES-FR-044-11-AUNE

Cable bearing system BAKS with cables business BITNER

Reg. No. 041/S-159

The Experts on Fire Safety

TEST REPORT

FIRES-FR-044-11-AUNE

Tested property:	Function in fire
Test method:	DIN 4102 – 12:1998-11
Date of issue:	20. 05. 2011
Name of the product:	Cable bearing system BAKS with cables business BITNER
Manufacturer:	BAKS Kazimierz Sielski, ul. Jagodne 5, 05-480 Karczew, Poland - producer of construction Zaklady kablowe BITNER Celina Bitner, ul. Friedleina 3/3 30-009 Krakow, Poland – producer of cables
Sponsor:	BAKS Kazimierz Sielski, ul. Jagodne 5, 05-480 Karczew, Poland Zaklady kablowe BITNER Celina Bitner, ul. Friedleina 3/3 30-009 Krakow, Poland
Task No.:	PR-11-0031
Specimens received:	07. 03. 2011
Date of the test:	10. 03. 2011

Technician responsible for the technical side of this report: Miroslav Hudák

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1. INTRODUCTION

This test report contains the results of test carried out by testing laboratory of FIRES, s.r.o. in Batizovce. The purpose of the test was acquirement of information for product classification.

Representatives from the sponsor's side witnessing the test:

Mr. Jacek Kliczek	BAKS Kazimierz Sielski
Mr. Jan Chomiuk	BAKS Kazimierz Sielski
Mr. Marcin Tokaj	ZAKLADY KABLOWE BITNER
Mr. Tomasz Latacz	ZAKLADY KABLOWE BITNER
Mr. Andrey Stelmakh	TEST LIMITED LIABILITY COMPANY, Kiev region, Ukraine

test directed by	Bc. Marek Gorlický
test carried out by	Miroslav Hudák
operator	Alexander Reľovský

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 40 018	SW Reliance	-
F 40 017	Control and communication software to PLC TECOMAT TC 700	-
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 08 521 - F 08 528	Plate thermometers	temperature inside the test furnace, according to EN 1363-1
F 08 701	Sheathed thermocouple type K Ø 3 mm	ambient temperature
F 54 020	Digital calliper (0 to 200) mm	-
F 54 059	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 BAKS Kazimierz Sielski and Zaklady kablowe BITNER Celina Bitner under supervision of laboratory technician.

4. PREPARATION OF THE TEST

4.1 DESCRIPTION OF THE SPECIMENS STRUCTURE

Test specimen comprised from cable bearing system BAKS Kazimierz Sielski – cable trays, cable mesh trays, cable ladders, cable clips UKO1 and UDF with accessories and power and communication non-halogen cables of Zaklady kablowe BITNER Celina Bitner company.

Cables

Used cables by test:	NHXH FE180/E90 4x1,5 RE	(10 x)
	NHXH FE180/E90 4x1,5 RE / test 1	(4 x)
	NHXH FE180/E90 4x50 RM	(10 x)
	NHXCH FE180/E90 4x1,5 /1,5 RE	(10 x)
	NHXCH FE180/E90 4x50/25 RM	(10 x)
	(N)HXH FE180/E90 4x1,5 RE	(10 x)
	(N)HXH FE180/E90 4x50 RM	(10 x)
	(N)HXCH FE180/E90 4x1,5/1,5 RE	(8 x)
	(N)HXCH FE180/E90 4x50/25 RM	(8 x)
	HDGs FE180/E90 2x1,0	(6 x)
	HDGsekwf FE180/E90 2x1,0	(10 x)
	HLGsekwf FE180/E90 2x1,0	(6 x)
	JE-H(St)H FE180/E90 2x2x0,8	(10 x)
	HTKSH FE180/E90 1x2x0,8	(4 x)
	HTKSHekw FE180/E90 1x2x0,8	(10 x)
	PGI-H FE180/E30 2x1,5	(6 x)

The length of cables was 4,5 m, 3 m from that was exposed to fire. Power and communication cables were fixed to the steel sheet bearing systems in the points of allowed bending radius by steel clips according to the cable diameter.

Cable bearing systems were made of following constructions:

Suspension tracks No. 1, 2, 3, 4, 9 and 10
Suspension was made by three consoles (type WPCO 1000) which were fixed to ceiling by two dowels (type PSRO M10x80) in spacing of 1200 mm. Six booms (type WMCO 400) were fixed by screws (type SMM10x80) at each console. Holders (type UPWO) were fixed at the end of booms with screws (type SGM8x14). Booms were fixed through these holders by threaded bar (type PGM10/1x1000) with washers and nuts M10 to ceiling holder (type USOV) which was fixed to ceiling by dowel (type PSRO M10x80). Trays (type KCOP 400H60/3N, steel sheet thickness 1,5 mm) were fixed at upper booms and right under booms and jointed together by two junctions (type LPOPH60N) and by sheet (type BLO 400N) with screws (type SGN M6x12).
Ladders (type DGOP 400H60/3N, steel sheet thickness 1,5 mm, spacing of transoms 150 mm) were fixed at central booms and left under booms by clips (type ZMO) and jointed together by junction (type LDOCH60N) with screws (type SGN M8x14).
Trays were loaded with 10 kg/m and ladders were loaded with 20 kg/m.

Suspension tracks No. 5, 6 and 11
Suspension was made of three consoles combined of three horizontal supports (type CWOP40H40/05) and two threaded bar (type PGM10/1x1000) with washers and nuts M10 which were fixed to ceiling by dowels (type TRSO M10x40) in spacing of 1200 mm.
Mesh trays (type KDSO 400H60/3, steel wire Ø 4,5 mm) were fixed at each horizontal supports and jointed together by five junctions (type USSO).
Mesh trays were loaded with 15 kg/m.

Suspension tracks No. 7 and 8
Suspension was made by three consoles (type WPCO 700) which were fixed to ceiling by two dowels (type PSRO M10x80) in spacing of 1200 mm. Two booms (type WMCO 400) were fixed by screws (type SMM10x20) at each console. Holders (type UPWO) were fixed at the end of booms with screws (type SGM8x14). Booms were fixed through these holders by threaded bar (type PGM10/1x700) with washers and nuts M10 to ceiling holder (type USOV) which was fixed to ceiling by dowel (type PSRO M10x80).

Trays (type KCOP 400H60/3N, steel sheet thickness 1,5 mm) were fixed at upper booms and right under booms and jointed together by two junctions (type LPOPH60N) and by sheet (type BLO 400N) with screws (type SGN M6x12).
Ladders (type DGOP 400H60/3N, steel sheet thickness 1,5 mm, spacing of transoms 150 mm) were fixed at central booms and left under booms by clips (type ZMO) and jointed together by junction (type LDOCH60N) with screws (type SGN M8x14).
Trays were loaded with 10 kg/m and ladders were loaded with 20 kg/m.

Suspension tracks No. 12 and 14
Clips (type UDF) were fixed to ceiling by dowels (type SRO 6x30) in spacing of 300 mm. Cable clips were depending on the diameter of cables.

Suspension track No. 13
Ceiling ledges (type SDOP 1200) were fixed to ceiling by dowels (type SRO M6x30) in spacing of 300 mm, cables were fixed to ledges by clips (type UKO1) in spacing of 600 mm.

All bearing systems were from galvanized or stainless steel.
Cable penetration through the wall of test furnace was sealed by mineral wool Rockwool.
Loading with steel chain and line steel weight with length 400 mm was used as the equivalent load.

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 concrete panels made of common shocked concrete of class B 20, 150 mm thick.
The type of specimens 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 climatic hall of testing laboratory and were conditioned according to EN 1363-1 under the following climatic conditions:

Ambient air temperature [°C]

mean	22,7
standard deviation	0,5

Relative air humidity [%]

mean	47,5
standard deviation	1,4

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 (3000 x 3000 x 3000) 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 O_2) 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]
10. 03. 2011	52,3	12,1

5.3 RESULTS OF THE TEST

Measured values are stated in this test report.

6. CLOSING

Evaluation of the test:

Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
1	2 cables (N)HXCH FE180/E90 4x50/25 RM	8	90 minutes no failure / interruption
2	2 cables (N)HXCH FE180/E90 4x1,5/1,5 RE	8	90 minutes no failure / interruption
3	2 cables (N)HXCH FE180/E90 4x50/25 RM	7	90 minutes no failure / interruption
4	2 cables (N)HXCH FE180/E90 4x1,5/1,5 RE	7	63 minutes
5	2 cables (N)HXH FE180/E90 4x1,5 RE	14	90 minutes no failure / interruption
6	2 cables (N)HXH FE180/E90 4x50 RM	14	90 minutes no failure / interruption
7	2 cables (N)HXCH FE180/E90 4x1,5/1,5 RE	11	90 minutes no failure / interruption
8	2 cables (N)HXH FE180/E90 4x1,5 RE	11	90 minutes no failure / interruption
9	2 cables (N)HXCH FE180/E90 4x50/25 RM	6	90 minutes no failure / interruption
10	2 cables (N)HXH FE180/E90 4x50 RM	6	90 minutes no failure / interruption
11	2 cables NHXCH FE180/E90 4x1,5 /1,5 RE	6	90 minutes no failure / interruption
12	2 cables NHXCH FE180/E90 4x50/25 RM	5	90 minutes no failure / interruption
13	2 cables NHXH FE180/E90 4x50 RM	5	90 minutes no failure / interruption
14	2 cables NHXH FE180/E90 4x1,5 RE	5	90 minutes no failure / interruption
15	2 cables (N)HXCH FE180/E90 4x1,5/1,5 RE	13	74 minutes
16	2 cables (N)HXH FE180/E90 4x1,5 RE	13	90 minutes no failure / interruption
17	2 cables NHXCH FE180/E90 4x1,5 /1,5 RE	13	90 minutes no failure / interruption
18	2 cables NHXH FE180/E90 4x1,5 RE	13	90 minutes no failure / interruption
19	2 cables (N)HXCH FE180/E90 4x50/25 RM	13	90 minutes no failure / interruption
20	2 cables (N)HXH FE180/E90 4x50 RM	13	66 minutes
21	2 cables NHXCH FE180/E90 4x50/25 RM	13	90 minutes no failure / interruption
22	2 cables NHXH FE180/E90 4x50 RM	13	90 minutes no failure / interruption
23	2 cables NHXH FE180/E90 4x1,5 RE / test 1	10	42 minutes
24	2 cables (N)HXH FE180/E90 4x50 RM	10	90 minutes no failure / interruption
25	2 cables (N)HXH FE180/E90 4x1,5 RE	10	90 minutes no failure / interruption
26	2 cables NHXH FE180/E90 4x1,5 RE / test 1	9	52 minutes
27	2 cables (N)HXH FE180/E90 4x50 RM	9	90 minutes no failure / interruption
28	2 cables (N)HXH FE180/E90 4x1,5 RE	9	90 minutes no failure / interruption

Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
29	2 cables NHXCH FE180/E90 4x50/25 RM	4	90 minutes no failure / interruption
30	cable NHXCH FE180/E90 4x1,5 /1,5 RE	4	90 minutes no failure / interruption
31	cable NHXCH FE180/E90 4x1,5 /1,5 RE	4	90 minutes no failure / interruption
32	cable NHXH FE180/E90 4x50 RM	2	90 minutes no failure / interruption
33	cable NHXH FE180/E90 4x50 RM	2	90 minutes no failure / interruption
34	cable NHXH FE180/E90 4x1,5 RE	2	90 minutes no failure / interruption
35	cable NHXH FE180/E90 4x1,5 RE	2	90 minutes no failure / interruption
36	cable NHXCH FE180/E90 4x50/25 RM	3	90 minutes no failure / interruption
37	cable NHXCH FE180/E90 4x50/25 RM	3	90 minutes no failure / interruption
38	cable NHXCH FE180/E90 4x1,5 /1,5 RE	3	90 minutes no failure / interruption
39	cable NHXCH FE180/E90 4x1,5 /1,5 RE	3	90 minutes no failure / interruption
40	cable NHXH FE180/E90 4x50 RM	1	90 minutes no failure / interruption
41	cable NHXH FE180/E90 4x50 RM	1	90 minutes no failure / interruption
42	cable NHXH FE180/E90 4x1,5 RE	1	90 minutes no failure / interruption
43	cable NHXH FE180/E90 4x1,5 RE	1	90 minutes no failure / interruption
44	cable NHXCH FE180/E90 4x1,5 /1,5 RE	12	90 minutes no failure / interruption
45	cable NHXCH FE180/E90 4x1,5 /1,5 RE	12	90 minutes no failure / interruption
46	cable NHXH FE180/E90 4x1,5 RE	12	90 minutes no failure / interruption
47	cable NHXH FE180/E90 4x1,5 RE	12	90 minutes no failure / interruption
48	cable NHXCH FE180/E90 4x50/25 RM	12	90 minutes no failure / interruption
49	cable NHXCH FE180/E90 4x50/25 RM	12	90 minutes no failure / interruption
50	cable NHXH FE180/E90 4x50 RM	12	90 minutes no failure / interruption
51	cable NHXH FE180/E90 4x50 RM	12	90 minutes no failure / interruption
52A	2 cables HTKSH FE180/E90 1x2x0,8	8	90 minutes no failure / interruption
52B	2 cables PGI-H FE180/E30 2x1,5	8	71 minutes
53A	2 cables HTKSH FE180/E90 1x2x0,8	7	90 minutes no failure / interruption
53B	2 cables PGI-H FE180/E30 2x1,5	7	90 minutes no failure / interruption
54A	2 cables HDGsekwf FE180/E90 2x1,0	14	90 minutes no failure / interruption
54B	2 cables PGI-H FE180/E30 2x1,5	14	90 minutes no failure / interruption
55A	cable HTKSHekw FE180/E90 1x2x0,8	14	90 minutes no failure / interruption
55B	cable HTKSHekw FE180/E90 1x2x0,8	14	90 minutes no failure / interruption
56A	2 cables HLGsekwf FE180/E90 2x1,0	13	35 minutes
56B	2 cables HDGsekwf FE180/E90 2x1,0	13	90 minutes no failure / interruption
57A	2 cables HDGs FE180/E90 2x1,0	13	90 minutes no failure / interruption
57B	2 cables HTKSHekw FE180/E90 1x2x0,8	13	90 minutes no failure / interruption
58	cable JE-H(St)H FE180/E90 2x2x0,8	13	90 minutes no failure / interruption
59	cable JE-H(St)H FE180/E90 2x2x0,8	13	90 minutes no failure / interruption
60A	2 cables HDGsekwf FE180/E90 2x1,0	11	24 minutes
60B	2 cables HTKSHekw FE180/E90 1x2x0,8	11	90 minutes no failure / interruption
61	cable JE-H(St)H FE180/E90 2x2x0,8	11	90 minutes no failure / interruption
62	cable JE-H(St)H FE180/E90 2x2x0,8	11	90 minutes no failure / interruption
63A	cable HLGsekwf FE180/E90 2x1,0	10	64 minutes
63B	cable HLGsekwf FE180/E90 2x1,0	10	90 minutes no failure / interruption
64A	cable HLGsekwf FE180/E90 2x1,0	9	54 minutes
64B	cable HLGsekwf FE180/E90 2x1,0	9	77 minutes
65A	2 cables HDGsekwf FE180/E90 2x1,0	4	90 minutes no failure / interruption
65B	2 cables HDGs FE180/E90 2x1,0	4	90 minutes no failure / interruption
66A	cable HTKSHekw FE180/E90 1x2x0,8	2	90 minutes no failure / interruption
66B	cable HTKSHekw FE180/E90 1x2x0,8	2	90 minutes no failure / interruption
67	cable JE-H(St)H FE180/E90 2x2x0,8	2	90 minutes no failure / interruption
68	cable JE-H(St)H FE180/E90 2x2x0,8	2	90 minutes no failure / interruption
69A	cable HDGsekwf FE180/E90 2x1,0	3	90 minutes no failure / interruption
69B	cable HDGsekwf FE180/E90 2x1,0	3	90 minutes no failure / interruption
70A	cable HDGs FE180/E90 2x1,0	3	90 minutes no failure / interruption

Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
70B	cable HDGs FE180/E90 2x1,0	3	90 minutes no failure / interruption
71A	cable HTKSHekw FE180/E90 1x2x0,8	1	90 minutes no failure / interruption
71B	cable HTKSHekw FE180/E90 1x2x0,8	1	90 minutes no failure / interruption
72	cable JE-H(St)H FE180/E90 2x2x0,8	1	90 minutes no failure / interruption
73	cable JE-H(St)H FE180/E90 2x2x0,8	1	90 minutes no failure / interruption
74	cable JE-H(St)H FE180/E90 2x2x0,8	12	90 minutes no failure / interruption
75	cable JE-H(St)H FE180/E90 2x2x0,8	12	90 minutes no failure / interruption

The fire test was discontinued in 93rd minute at the request of test sponsor.

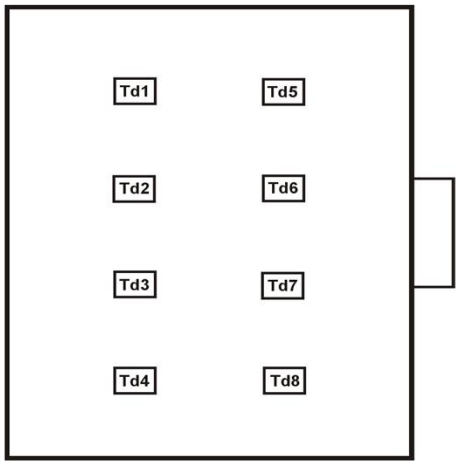
Specimens S1 – S51 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Specimens S52 – S75 were tested by one-phase voltage supply 1 x 110V with LED diodes 3V /0,03W.
Circuit breakers with rating 3 A were used.

Measured values inside the test furnace

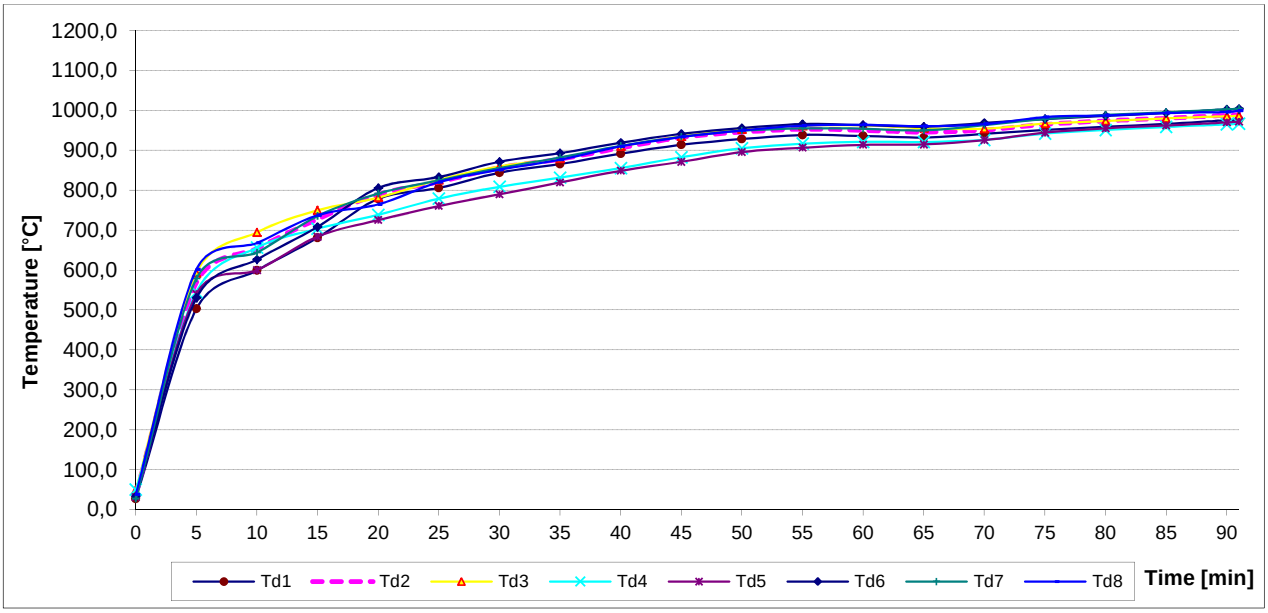
Time	Temperature [°C]											Deviation	Pressure
t [min]	Td1	Td2	Td3	Td4	Td5	Td6	Td7	Td8	Tave	Tn	To	d_e [%]	p [Pa]
0	27,6	39,4	48,7	50,3	31,3	33,7	27,8	38,3	37,1	20,0	10,9	0,0	1,5
5	503,2	568,7	593,2	545,2	540,3	530,5	579,2	601,8	557,8	576,2	11,0	-12,8	18,0
10	599,2	654,3	694,6	656,2	599,8	626,5	644,2	668,0	642,9	678,3	10,7	-6,2	16,7
15	681,2	727,8	750,0	703,9	684,1	708,5	735,5	737,5	716,1	738,5	10,8	-5,4	16,7
20	778,6	789,7	781,6	738,8	725,4	805,9	791,8	764,8	772,1	781,3	10,9	-4,2	18,0
25	806,0	821,0	826,2	779,1	760,7	833,3	824,9	820,4	809,0	814,6	10,8	-3,4	18,3
30	844,1	856,5	859,9	808,7	789,9	871,4	855,8	851,5	842,2	841,8	11,0	-2,8	19,4
35	865,8	878,2	879,9	831,9	819,6	893,1	882,2	876,7	865,9	864,8	11,5	-2,3	18,2
40	891,7	906,4	910,3	855,8	848,9	919,0	911,5	910,0	894,2	884,7	12,0	-1,9	16,2
45	914,0	932,5	935,2	882,8	871,4	941,3	934,0	933,3	918,1	902,3	12,3	-1,5	15,1
50	928,4	945,8	953,0	905,4	895,8	955,7	949,3	950,0	935,4	918,1	12,6	-1,1	14,2
55	938,6	953,1	961,9	916,5	906,6	965,9	954,9	961,9	944,9	932,3	12,2	-0,8	15,4
60	936,1	950,4	963,1	921,4	913,8	963,4	954,4	964,2	945,9	945,3	11,5	-0,6	15,1
65	932,3	945,8	955,6	921,0	914,9	959,6	950,1	960,6	942,5	957,3	11,9	-0,7	14,3
70	941,3	951,0	954,2	926,5	925,6	968,6	963,1	965,7	949,5	968,4	12,3	-0,8	15,5
75	951,4	965,0	967,1	942,0	944,6	978,7	978,8	983,4	963,9	978,7	12,4	-0,8	17,6
80	959,3	973,9	973,8	951,1	955,4	986,6	988,5	987,4	972,0	988,4	12,6	-0,9	16,5
85	966,4	980,5	980,4	958,7	962,2	993,7	995,4	993,4	978,8	997,4	13,0	-1,0	18,2
90	975,5	988,0	985,6	965,1	970,0	1002,8	1002,9	996,1	985,7	1005,9	12,6	-1,0	17,8
91	976,5	988,9	986,5	967,0	972,0	1003,8	1004,4	999,3	987,3	1007,6	12,6	-1,0	17,2
92	978,1	990,6	989,4	968,2	974,4	1005,4	1006,3	1001,4	989,2	1009,2	12,6	-1,1	16,0

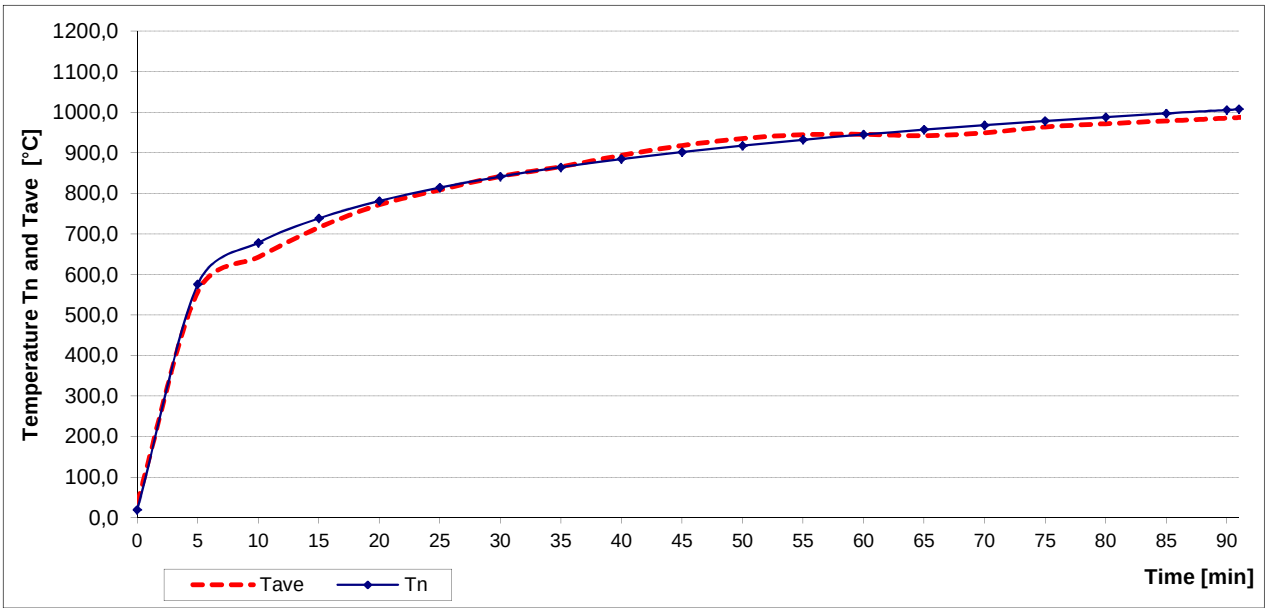
Tave Average temperature in the test furnace calculated from plate thermometers
Tn Standard temperature in the test furnace laid down to test guideline
To Ambient temperature
d_e Deviation of the average temperature from the standard temperature calculated according to test guideline
p Pressure inside the test furnace measured under the ceiling of the test furnace

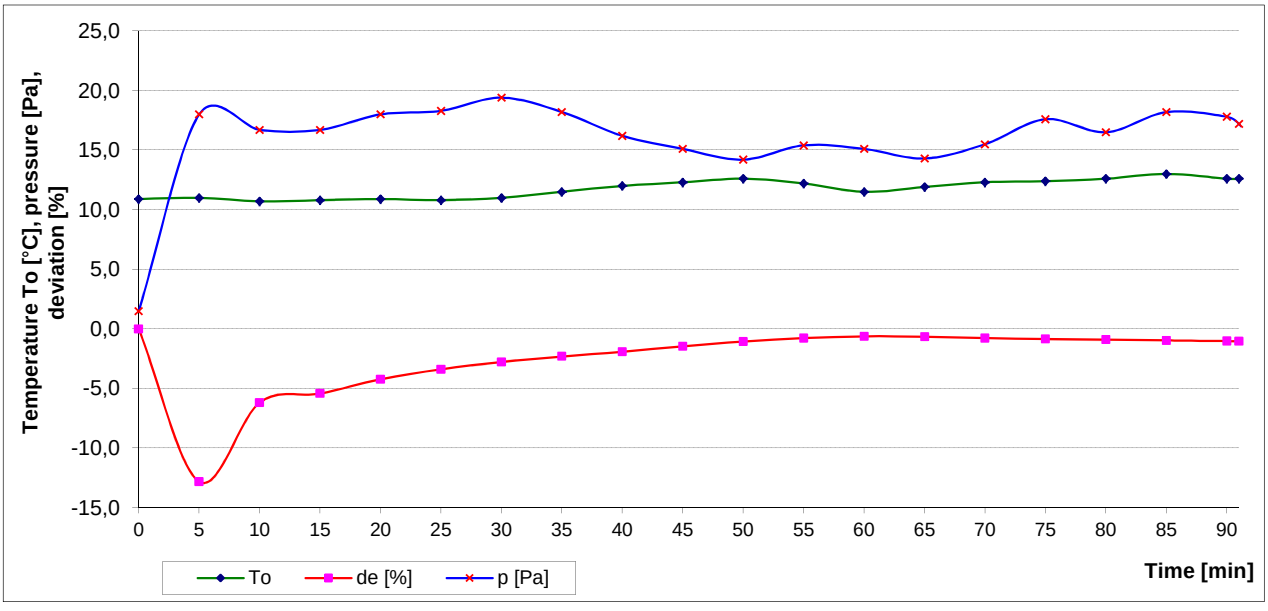
Layout of measuring points inside the test furnace:



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	no failure / interruption
	2-L2	no failure / interruption
	3-L3	no failure / interruption
	4-PEN	no failure / interruption
S2	5-L1	no failure / interruption
	6-L2	no failure / interruption
	7-L3	no failure / interruption
	8-PEN	no failure / interruption
S3	9-L1	no failure / interruption
	10-L2	no failure / interruption
	11-L3	no failure / interruption
	12-PEN	no failure / interruption
S4	13-L1	x
	14-L2	63:23
	15-L3	63:23
	16-PEN	x
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	no failure / interruption
	34-L2	no failure / interruption
	35-L3	no failure / interruption
	36-PEN	no failure / interruption
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 (N)HXCH FE180/E90 4x50/25 RM
2	2 cables (N)HXCH FE180/E90 4x1,5/1,5 RE
3	2 cables (N)HXCH FE180/E90 4x50/25 RM
4	2 cables (N)HXCH FE180/E90 4x1,5/1,5 RE
5	2 cables (N)HXH FE180/E90 4x1,5 RE
6	2 cables (N)HXH FE180/E90 4x50 RM
7	2 cables (N)HXCH FE180/E90 4x1,5/1,5 RE
8	2 cables (N)HXH FE180/E90 4x1,5 RE
9	2 cables (N)HXCH FE180/E90 4x50/25 RM
10	2 cables (N)HXH FE180/E90 4x50 RM

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	no failure / interruption
	54-L2	no failure / interruption
	55-L3	no failure / interruption
	56-PEN	no failure / interruption
S15	57-L1	74:23
	58-L2	74:23
	59-L3	74:23
	60-PEN	x
S16	61-L1	no failure / interruption
	62-L2	no failure / interruption
	63-L3	no failure / interruption
	64-PEN	no failure / interruption
S17	65-L1	no failure / interruption
	66-L2	no failure / interruption
	67-L3	no failure / interruption
	68-PEN	no failure / interruption
S18	69-L1	no failure / interruption
	70-L2	no failure / interruption
	71-L3	no failure / interruption
	72-PEN	no failure / interruption
S19	73-L1	no failure / interruption
	74-L2	no failure / interruption
	75-L3	no failure / interruption
	76-PEN	no failure / interruption
S20	77-L1	x
	78-L2	66:01
	79-L3	x
	80-PEN	x

Specimen No.	Cables
11	2 cables NHXCH FE180/E90 4x1,5 /1,5 RE
12	2 cables NHXCH FE180/E90 4x50/25 RM
13	2 cables NHXH FE180/E90 4x50 RM
14	2 cables NHXH FE180/E90 4x1,5 RE
15	2 cables (N)HXCH FE180/E90 4x1,5/1,5 RE
16	2 cables (N)HXH FE180/E90 4x1,5 RE
17	2 cables NHXCH FE180/E90 4x1,5 /1,5 RE
18	2 cables NHXH FE180/E90 4x1,5 RE
19	2 cables (N)HXCH FE180/E90 4x50/25 RM
20	2 cables (N)HXH FE180/E90 4x50 RM

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	no failure / interruption
	82-L2	no failure / interruption
	83-L3	no failure / interruption
	84-PEN	no failure / interruption
S22	85-L1	no failure / interruption
	86-L2	no failure / interruption
	87-L3	no failure / interruption
	88-PEN	no failure / interruption
S23	89-L1	x
	90-L2	x
	91-L3	x
	92-PEN	42:37
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	x
	102-L2	x
	103-L3	52:34
	104-PEN	x
S27	105-L1	no failure / interruption
	106-L2	no failure / interruption
	107-L3	no failure / interruption
	108-PEN	no failure / interruption
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 NHXCH FE180/E90 4x50/25 RM
22	2 cables NHXH FE180/E90 4x50 RM
23	2 cables NHXH FE180/E90 4x1,5 RE / test 1
24	2 cables (N)HXH FE180/E90 4x50 RM
25	2 cables (N)HXH FE180/E90 4x1,5 RE
26	2 cables NHXH FE180/E90 4x1,5 RE / test 1
27	2 cables (N)HXH FE180/E90 4x50 RM
28	2 cables (N)HXH FE180/E90 4x1,5 RE
29	2 cables NHXCH FE180/E90 4x50/25 RM
30	cable NHXCH FE180/E90 4x1,5 /1,5 RE

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	no failure / interruption
	134-L2	no failure / interruption
	135-L3	no failure / interruption
	136-PEN	no failure / interruption
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 NHXCH FE180/E90 4x1,5 /1,5 RE
32	cable NHXH FE180/E90 4x50 RM
33	cable NHXH FE180/E90 4x50 RM
34	cable NHXH FE180/E90 4x1,5 RE
35	cable NHXH FE180/E90 4x1,5 RE
36	cable NHXCH FE180/E90 4x50/25 RM
37	cable NHXCH FE180/E90 4x50/25 RM
38	cable NHXCH FE180/E90 4x1,5 /1,5 RE
39	cable NHXCH FE180/E90 4x1,5 /1,5 RE
40	cable NHXH FE180/E90 4x50 RM

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 S51 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S41	161-L1	no failure / interruption
	162-L2	no failure / interruption
	163-L3	no failure / interruption
	164-PEN	no failure / interruption
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
S51	201-L1	no failure / interruption
	202-L2	no failure / interruption
	203-L3	no failure / interruption
	204-PEN	no failure / interruption

Specimen No.	Cables
41	cable NHXH FE180/E90 4x50 RM
42, 43	2 cables NHXH FE180/E90 4x1,5 RE
44, 45	2 cables NHXCH FE180/E90 4x1,5 /1,5 RE
46, 47	2 cables NHXH FE180/E90 4x1,5 RE
48, 49	2 cables NHXCH FE180/E90 4x50/25 RM
50, 51	2 cables NHXH FE180/E90 4x50 RM

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 S52 to S61 - communication cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S52A	209-L	no failure / interruption
	210-PEN	no failure / interruption
S52B	211-L	x
	212-PEN	71:02
S53A	213-L	no failure / interruption
	214-PEN	no failure / interruption
S53B	215-L	no failure / interruption
	216-PEN	no failure / interruption
S54A	217-L	no failure / interruption
	218-PEN	no failure / interruption
S54B	219-L	no failure / interruption
	220-PEN	no failure / interruption
S55A	221-L	no failure / interruption
	222-PEN	no failure / interruption
S55B	223-L	no failure / interruption
	224-PEN	no failure / interruption
S56A	225-L	35:28
	226-PEN	x
S56B	227-L	no failure / interruption
	228-PEN	no failure / interruption
S57A	229-L	no failure / interruption
	230-PEN	no failure / interruption
S57B	231-L	no failure / interruption
	232-PEN	no failure / interruption
S58	233-L	no failure / interruption
	234-PEN	no failure / interruption
	235-L	no failure / interruption
	236-PEN	no failure / interruption
S59	237-L	no failure / interruption
	238-PEN	no failure / interruption
	239-L	no failure / interruption
	240-PEN	no failure / interruption
S60A	241-L	24:30
	242-PEN	x
S60B	243-L	no failure / interruption
	244-PEN	no failure / interruption
S61	245-L	no failure / interruption
	246-PEN	no failure / interruption
	247-L	no failure / interruption
	248-PEN	no failure / interruption

Specimen No.	Cables
52A, 53A	4 cables HTKSH FE180/E90 1x2x0,8
52B, 53B, 54B	6 cables PGI-H FE180/E30 2x1,5
54A	2 cables HDGsekwf FE180/E90 2x1,0
55	2 cables HTKSHekw FE180/E90 1x2x0,8
56A	2 cables HLGsekwf FE180/E90 2x1,0
56B	2 cables HDGsekwf FE180/E90 2x1,0
57A	2 cables HDGs FE180/E90 2x1,0
57B	2 cables HTKSHekw FE180/E90 1x2x0,8
58, 59, 61	3 cables JE-H(St)H FE180/E90 2x2x0,8
60A	2 cables HDGsekwf FE180/E90 2x1,0
60B	2 cables HTKSHekw FE180/E90 1x2x0,8

x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
Signal cables were tested by three-phase voltage supply 1 x 110V with LED diods 3V / 0,03W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens from S62 to S71 - communication cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S62	249-L	no failure / interruption
	250-PEN	no failure / interruption
	251-L	no failure / interruption
	252-PEN	no failure / interruption
S63A	253-L	64:56
	254-PEN	x
S63B	255-L	no failure / interruption
	256-PEN	no failure / interruption
S64A	257-L	54:43
	258-PEN	x
S64B	259-L	x
	260-PEN	77:55
S65A	261-L	no failure / interruption
	262-PEN	no failure / interruption
S65B	263-L	no failure / interruption
	264-PEN	no failure / interruption
S66A	265-L	no failure / interruption
	266-PEN	no failure / interruption
S66B	267-L	no failure / interruption
	268-PEN	no failure / interruption
S67	269-L	no failure / interruption
	270-PEN	no failure / interruption
	271-L	no failure / interruption
	272-PEN	no failure / interruption
S68	273-L	no failure / interruption
	274-PEN	no failure / interruption
	275-L	no failure / interruption
	276-PEN	no failure / interruption
S69A	277-L	no failure / interruption
	278-PEN	no failure / interruption
S69B	279-L	no failure / interruption
	280-PEN	no failure / interruption
S70A	281-L	no failure / interruption
	282-PEN	no failure / interruption
S70B	283-L	no failure / interruption
	284-PEN	no failure / interruption
S71A	285-L	no failure / interruption
	286-PEN	no failure / interruption
S71B	287-L	no failure / interruption
	288-PEN	no failure / interruption

Specimen No.	Cables
62	cable JE-H(St)H FE180/E90 2x2x0,8
63	2 cables HLGsekwf FE180/E90 2x1,0
64	2 cables HLGsekwf FE180/E90 2x1,0
65A	2 cables HDGsekwf FE180/E90 2x1,0
65B	2 cables HDGs FE180/E90 2x1,0
66	2 cables HTKSHekw FE180/E90 1x2x0,8
67, 68	2 cables JE-H(St)H FE180/E90 2x2x0,8
69	2 cables HDGsekwf FE180/E90 2x1,0
70	2 cables HDGs FE180/E90 2x1,0
71	2 cables HTKSHekw FE180/E90 1x2x0,8

x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
Signal cables were tested by three-phase voltage supply 1 x 110V with LED diods 3V / 0,03W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens from S72 to S75 - communication cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S72	289-L	no failure / interruption
	290-PEN	no failure / interruption
	291-L	no failure / interruption
	292-PEN	no failure / interruption
S73	293-L	no failure / interruption
	294-PEN	no failure / interruption
	295-L	no failure / interruption
	296-PEN	no failure / interruption
S74	297-L	no failure / interruption
	298-PEN	no failure / interruption
	299-L	no failure / interruption
	300-PEN	no failure / interruption
S75	301-L	no failure / interruption
	302-PEN	no failure / interruption
	303-L	no failure / interruption
	304-PEN	no failure / interruption

Specimen No.	Cables
72	cable JE-H(St)H FE180/E90 2x2x0,8
73	cable JE-H(St)H FE180/E90 2x2x0,8
74	cable JE-H(St)H FE180/E90 2x2x0,8
75	cable JE-H(St)H FE180/E90 2x2x0,8

x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
Signal cables were tested by three-phase voltage supply 1 x 110V with LED diods 3V / 0,03W.
Circuit breakers with rating 3 A were used.

PHOTOS

Photo taken before the test.

Photo taken before the test.

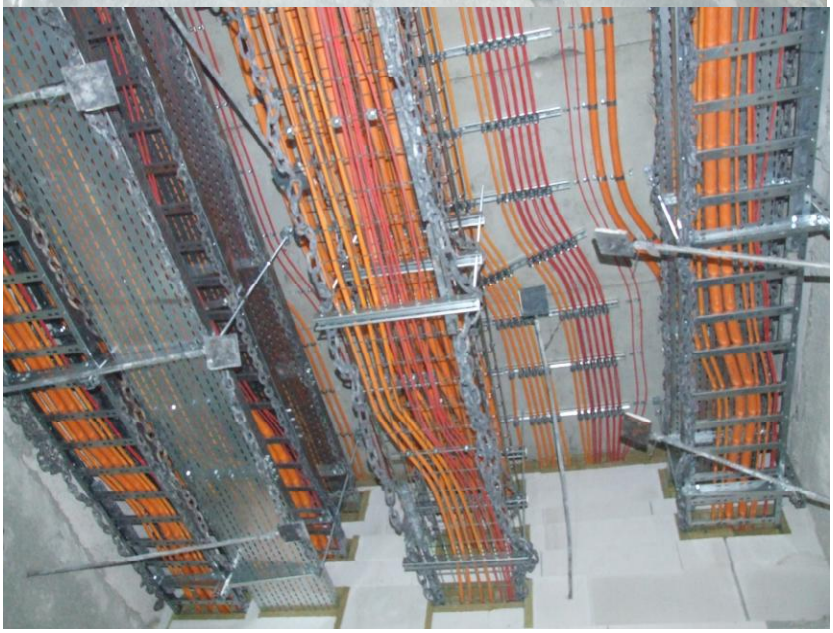


Photo taken before the test.

PHOTOS

Photo taken before the test.

Photo taken before the test.

Photo taken before the test.

PHOTOS

Photo taken after the test.

Photo taken after the test.

Photo taken after the test.

PHOTOS

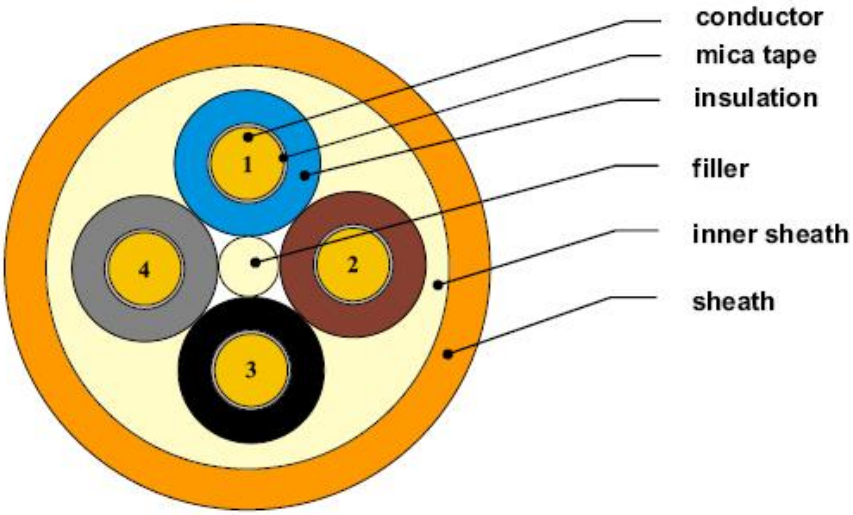
Photo taken after the test.

Photo taken after the test.

Photo taken after the test.

NHXH FE180/E90

FIRE RESISTANT HALOGEN FREE POWER CABLES



APPLICATIONS

Safety cables are used in all locations where a special protection against fire and fire damage is necessary for human life and equipment and where strict safety regulations have to be met and where large emergency running time is necessary. They may be used indoor and outdoor, but not directly in earth and water. They are considered as protectively insulated.

CONSTRUCTION

conductor - bare copper, solid or stranded acc. to DIN VDE 0295

insulation - mica tape and cross-linked halogen free forming polymer compound acc. to DIN VDE 0266

filler - flame resistant, halogen free polymer compound

inner sheath - flame resistant, halogen free polymer compound

sheath - flame resistant, halogen free polymer compound acc. to DIN VDE 0276-604

CHARACTERISTICS

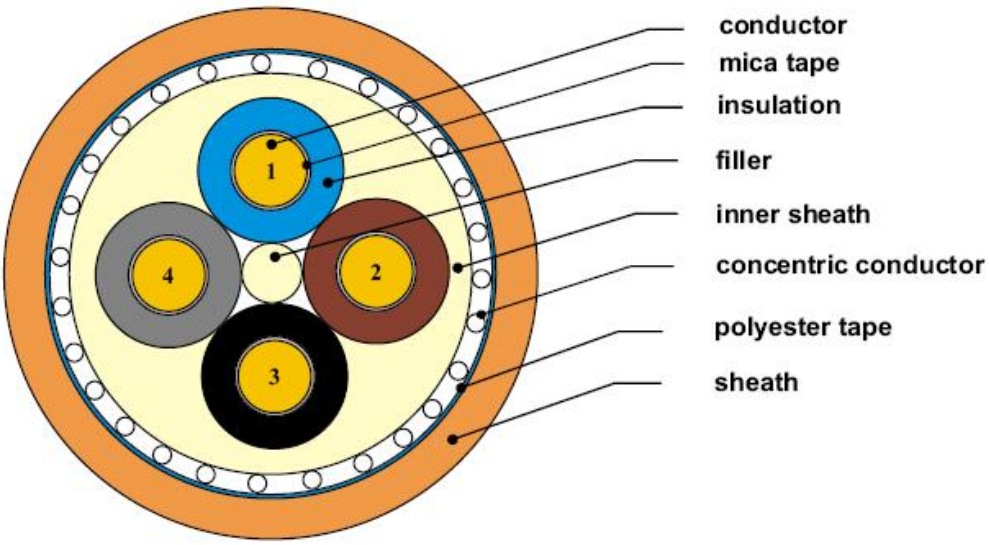
Conductor cross-section	
Number of conductors	Nominal conductor cross-section
n	mm^2
1 ÷ 5	1,5 ÷ 300
7 ÷ 10	1,5 ÷ 10
10 ÷ 48	1,5 ÷ 2,5

Operating voltage	0,6/1kV
Voltage test	4000 V, 50 Hz
Insulation resistivity at 90°C, minimum	10^{12}

Operating temperature range during operation during installation	 -25°C up to +90°C -5°C up to +50°C
Minimum bending radius	15 x D single core 12 x D multi core D = outer diameter
Cable combustibility	
Fire resistance	E90
Combustibility tests	PN-EN 50226:2006, IEC 60332-3
Reference standards	DIN VDE 0266

NHXCH FE180/E90

FIRE RESISTANT HALOGEN FREE POWER CABLES



APPLICATIONS

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CONSTRUCTION

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insulation - mica tape and cross-linked halogen free forming polymer compound acc. to DIN VDE 0266

filler - flame resistant, halogen free polymer compound

inner sheath - flame resistant, halogen free polymer compound

concentric conductor - formed by bare coper wires with counter copper tape

polyester tape

sheath - flame resistant, halogen free polymer compound acc. to DIN VDE 0276-604

CHARACTERISTICS

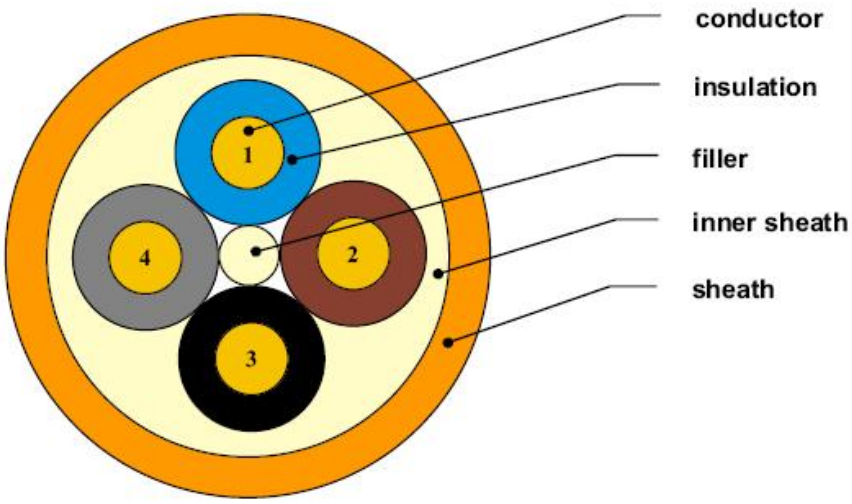
Conductor cross-section	
Number of conductors	Nominal conductor cross-section
n	mm^2
1 ÷ 4	1,5/1,5 ÷ 240/120
7	1,5/1,5 ÷ 4/4
10 ÷ 30	1,5/2,5 ÷ 2,5/10

Operating voltage	0,6/1 kV
Voltage test	4000 V, 50 Hz
Insulation resistivity at 90 °C, minimum	10^{12}

Operating temperature range during operation during installation	 -25°C up to +90°C -5°C up to +50°C
Minimum bending radius	15 x D single core 12 x D multi core D = outer diameter
Cable combustibility	
Fire resistance	E90
Combustibility tests	PN-EN 50226:2006, IEC 60332-3
Reference standards	DIN VDE 0266

(N)HXH FE180/E90

FIRE RESISTANT HALOGEN FREE POWER CABLES



APPLICATIONS

Safety cables are used in all locations where a special protection against fire and fire damage is necessary for human life and equipment and where strict safety regulations have to be met and where large emergency running time is necessary. They may be used indoor and outdoor, but not directly in earth and water. They are considered as protectively insulated.

CONSTRUCTION

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insulation - cross-linked halogen free ceramic forming polymer compound acc. to DIN VDE 0266

filler - flame resistant, halogen free polymer compound

inner sheath - flame resistant, halogen free polymer compound

sheath - flame resistant, halogen free polymer compound acc. to DIN VDE 0276-604

CHARACTERISTICS

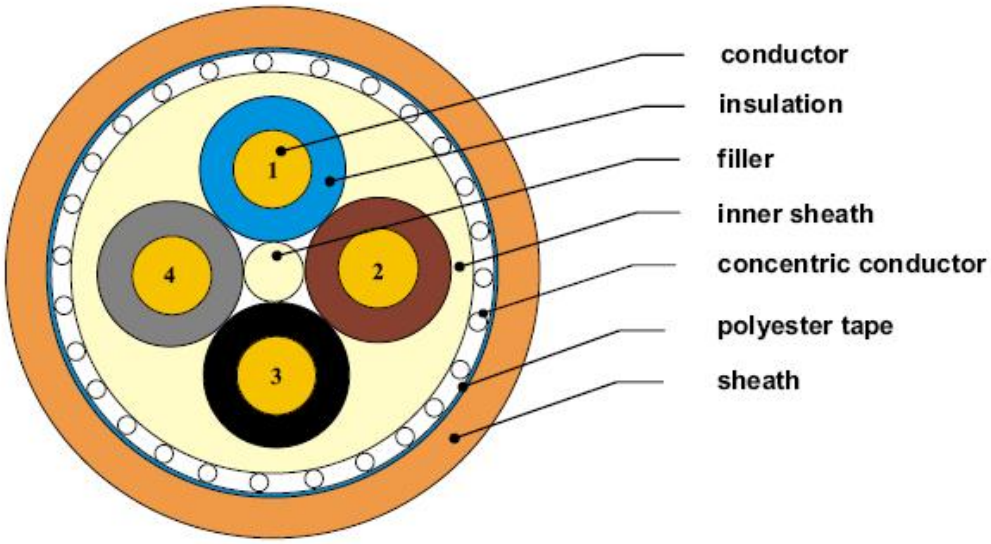
Conductor cross-section	
Number of conductors	Nominal conductor cross-section
n	mm^2
1 ÷ 5	1,5 ÷ 240
7 ÷ 10	1,5 ÷ 10
10 ÷ 48	1,5 ÷ 2,5

Operating voltage	0,6/1kV
Voltage test	4000 V, 50 Hz
Insulation resistivity at 90°C, minimum	10^{12}

Operating temperature range during operation during installation	 -25°C up to +90°C -5°C up to +50°C
Minimum bending radius	15 x D single core 12 x D multi core D = outer diameter
Cable combustibility	
Fire resistance	E90
Combustibility tests	PN-EN 50226:2006, IEC 60332-3
Reference standards	DIN VDE 0266

(N)HXCH FE180/E90

FIRE RESISTANT HALOGEN FREE POWER CABLES



APPLICATIONS

Safety cables are used in all locations where a special protection against firhhe and fire damage is necessary for human life and equipment and where strict safety regulations have to be met and where large emergency running time is necessary. They may be used indoor and outdoor, but not directly in earth and water. They are considered as protectively insulated.

CONSTRUCTION

conductor - bare copper, solid or stranded acc. to DIN VDE 0295
insulation - cross-linked halogen free ceramic forming polymer compound acc. to DIN VDE 0266
filler - flame resistant, halogen free polymer compound
inner sheath - flame resistant, halogen free polymer compound
concentric conductor - formed by bare coper wires with counter copper tape
polyester tape
sheath - flame resistant, halogen free polymer compound acc. to DIN VDE 0276-604

CHARACTERISTICS

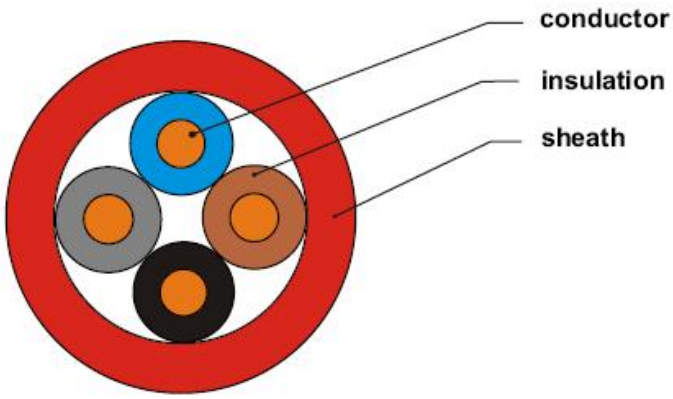
Conductor cross-section	
Number of conductors	Nominal conductor cross-section
n	mm^2
1 ÷ 4	1,5/1,5 ÷ 240/120
7	1,5/1,5 ÷ 4/4
10 ÷ 30	1,5/2,5 ÷ 2,5/10

Operating voltage	0,6/1 kV
Voltage test	4000 V, 50 Hz
Insulation resistivity at 90°C, minimum	10^{12}

Operating temperature range during operation during installation	 -25°C up to +90°C -5°C up to +50°C
Minimum bending radius	15 x D single core 12 x D multi core D = outer diameter
Cable combustibility	
Fire resistance	E90
Combustibility tests	PN-EN 50226:2006, IEC 60332-3
Reference standards	DIN VDE 0266

HDGs FE180/E90

FIRE RESISTANT HALOGEN FREE POWER AND CONTROL CABLE



APPLICATIONS

Halogen-free fire resistant cables are designed for instalation in places where it is necessary to ensure operation of devices under fire conditions.There are recommended for emergency lighting instalations, smoke extraction systems, alarm systems, signalling systems, sound warning and control systems, fire alarm signaling and automation and other safety ensuring circuits.

CONSTRUCTION

conductor - bare copper, solid acc. to PN-EN 60228
insulation - cross-linked halogen free ceramic forming polymer compound
sheath - flame resistant, halogen free polymer compound

CHARACTERISTICS

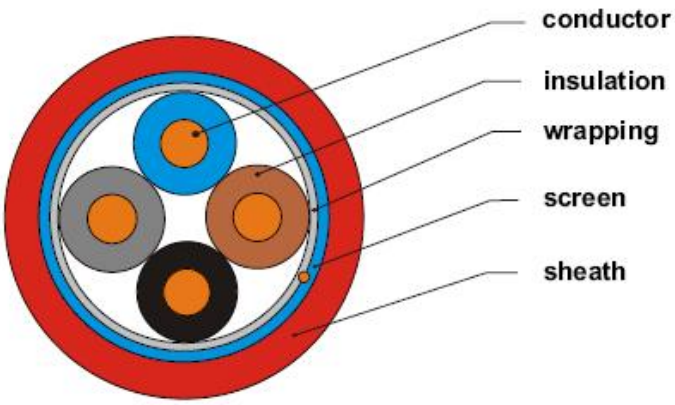
Conductor cross-section	
Number of conductors	Nominal conductor cross-section
n	mm^2
2 ÷ 5	1 ÷ 10
6 ÷ 37	1 ÷ 2,5

Operating voltage	300/500 V
Voltage test	
core/core	2000 V, 50 Hz
core/screen	2000 V, 50 Hz
Insulation resistivity at 90°C, minimum	10^{11}

Operating temperature range	
during operation	-25°C up to +70°C
during installation	-10°C up to +50°C
Minimum bending radius	10 x D single core D = outer diameter
Cable combustibility	
Fire resistance	E90
Combustibility tests	PN-EN 50200, PN-EN 50226:2006 IEC 60332-3
Reference standards	ZN-CB-03-2002

HDGsekwf FE180/E90

FIRE RESISTANT HALOGEN FREE POWER AND CONTROL CABLE



APPLICATIONS

Halogen-free fire resistant cables are designed for instalation in places where it is necessary to ensure operation of devices under fire conditions.There are recommended for emergency lighting instalations, smoke extraction systems, alarm systems, signalling systems, sound warning and control systems, fire alarm signaling and automation and other safety ensuring circuits.

CONSTRUCTION

conductor - bare copper, solid acc. to PN-EN 60228
insulation - cross-linked halogen free ceramic forming polymer compound
wrapping - polyester tape
screen - static screen of plastic coated metal foil with tinned copper drain wire
sheath - flame resistant, halogen free polymer compound

CHARACTERISTICS

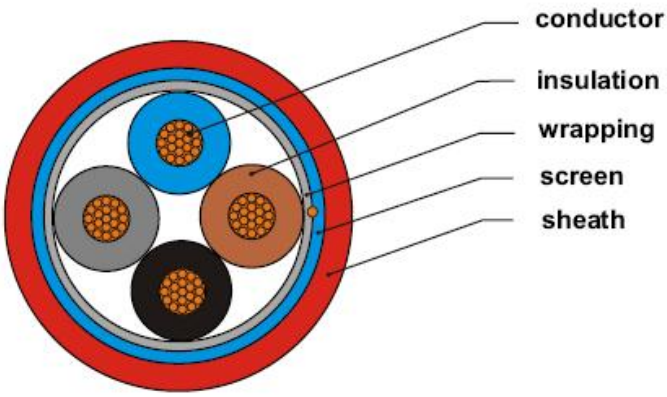
Conductor cross-section	
Number of conductors	Nominal conductor cross-section
n	mm^2
2 ÷ 5	1 ÷ 10
6 ÷ 37	1 ÷ 2,5

Operating voltage	300/500 V
Voltage test	
core/core	2000 V, 50 Hz
core/screen	2000 V, 50 Hz
Insulation resistivity at 90°C, minimum	10^{11}

Operating temperature range	
during operation	-25°C up to +70°C
during installation	-10°C up to +50°C
Minimum bending radius	10 x D single core D = outer diameter
Cable combustibility	
Fire resistance	E90
Combustibility tests	PN-EN 50200, PN-EN 50226:2006 IEC 60332-3
Reference standards	ZN-CB-03-2002

HLGsekwf FE180/E90

FIRE RESISTANT HALOGEN FREE POWER AND CONTROL CABLE



APPLICATIONS

Halogen-free fire resistant cables are designed for instalation in places where it is necessary to ensure operation of devices under fire conditions.There are recommended for emergency lighting instalations, smoke extraction systems, alarm systems, signalling systems, sound warning and control systems, fire alarm signaling and automation and other safety ensuring circuits.

CONSTRUCTION

conductor - multistranded copper conductor, class 5 acc. to: PN-EN 60228
insulation - cross-linked halogen free ceramic forming polymer compound
wrapping - polyester tape
screen - static screen of plastic coated metal foil with a tinned drain wire
sheath - flame resistant, halogen free polymer compound

CHARACTERISTICS

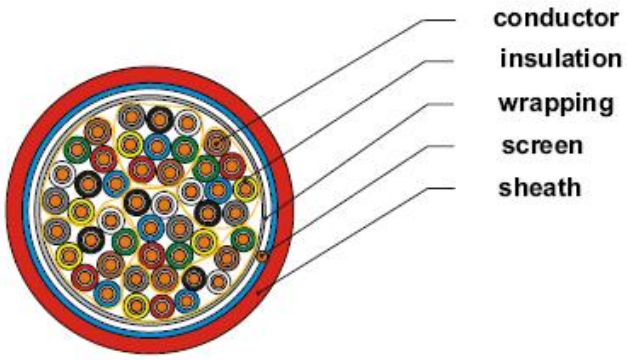
Conductor cross-section	
Number of conductors	Nominal conductor cross-section
n	mm^2
2 ÷ 5	1 ÷ 4
6 ÷ 37	1 ÷ 2,5

Operating voltage	300/500 V
Voltage test	
core/core	2000 V, 50 Hz
core/screen	2000 V, 50 Hz
Insulation resistivity at 90 °C, minimum	10^{11}

Operating temperature range	
during operation	-25°C up to +70°C
during installation	-10°C up to +50°C
Minimum bending radius	6 x D single core D = outer diameter
Cable combustibility	
Fire resistance	E90
Combustibility tests	PN-EN 50200, PN-EN 50226:2006 IEC 60332-3
Reference standards	ZN-CB-03-2002

JE-H(St)H MIKA FE180/E90

FIRE RESISTANT HALOGEN FREE ELECTRONIC AND TELECOMUNICATIONS CABLE



APPLICATIONS

Safety installations cables are used for the transmission od signals and measuring data in control circuits, in locations where a particular protection against fire and fire damage for human life and equipment is necessary.
Installation cables are not admissible for power installation purposes and direct burial.

CONSTRUCTION

conductor - bare copper, solid acc. to DIN VDE 0295
insulation - mica tape and cross-linked halogen free forming polymer compound acc. to DIN VDE 0207-23
wrapping - polyester and glass-fibre tape
screen - static screen of plastic coated metal foil with a soild, tinned drain wire
sheath - flame resistant, halogen free polymer compound acc. to DIN VDE 0207-5

CHARACTERISTICS

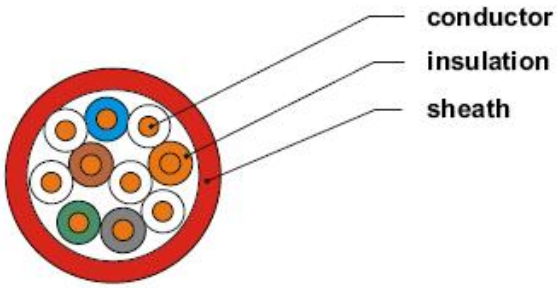
Conductor diameter	
Number of conductors	Nominal conductor diameter
n	mm
1 x 2 x .... 80 x 2 x	0,8
1 x 2 x .... 80 x 2 x	1,0

Operating voltage	225V
Voltage test core/core core/screen	 500 V, 50 Hz 2000 V, 50 Hz
Insulation resistivity at 90°C, minimum	10^{12}

Operating temperature range during operation during installation	 -25°C up to +80°C -5°C up to +50°C
Minimum bending radius	8 x D single core D = outer diameter
Cable combustibility	
Fire resistance	E90
Combustibility tests	PN-EN 50226:2006, IEC 60332-3
Reference standards	DIN VDE 0815

HTKSH FE180/E90

FIRE RESISTANT HALOGEN FREE ELECTRONIC AND TELECOMUNICATIONS CABLE



APPLICATIONS

Safety installations cables are used for the transmission signals and measuring data in control circuits, in locations where a particular protection against fire and fire damage for human life and equipment is necessary.
Installation cables are not admissible for power installation purposes and direct burial.

CONSTRUCTION

conductor - bare copper, solid acc. to PN-EN 60228

insulation - mica tape and halogen free forming polymer compound

sheath - flame resistant, halogen free polymer compound

CHARACTERISTICS

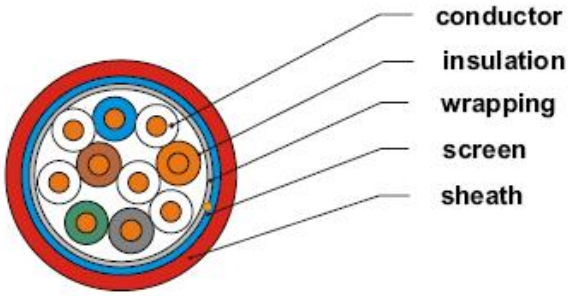
Conductor cross-section	
Number of conductors	Nominal conductor diameter
n	mm
1 x 2 x .... 20 x 2 x	0,8
1 x 2 x .... 10 x 2 x	1,0
1 x 2 x .... 10 x 2 x	1,4
1 x 2 x .... 10 x 2 x	1,8
1 x 2 x .... 10 x 2 x	2,3

Operating voltage	225V
Voltage test core/core	1500 V, 50 Hz
Insulation resistivity at 90°C, minimum	10^{11}

Operating temperature range during operation during installation	 -25°C up to +70°C -5°C up to +50°C
Minimum bending radius	10 x D single core D = outer diameter
Cable combustibility	
Fire resistance	E90
Combustibility tests	PN-EN 50200, PN-EN 50226:2006 IEC 60332-3
Reference standards	ZN-CB-25-2005

HTKSH(ekw) FE180/E90

FIRE RESISTANT HALOGEN FREE ELECTRONIC AND TELECOMUNICATIONS CABLE



APPLICATIONS

Safety installations cables are used for the transmission signals and measuring data in control circuits, in locations where a particular protection against fire and fire damage for human life and equipment is necessary.
Installation cables are not admissible for power installation purposes and direct burial.

CONSTRUCTION

conductor - bare copper, solid acc. to PN-EN 60228

insulation - mica tape and halogen free forming polymer compound

wrapping - polyester tape

screen - static screen of plastic coated metal foil with a soild, tinned drain wire

sheath - flame resistant, halogen free polymer compound

CHARACTERISTICS

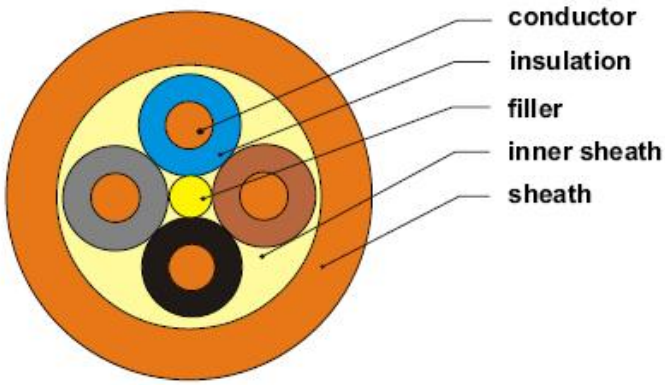
Conductor cross-section	
Number of conductors	Nominal conductor diameter
n	mm
1 x 2 x .... 20 x 2 x	0,8
1 x 2 x .... 10 x 2 x	1,0
1 x 2 x .... 10 x 2 x	1,4
1 x 2 x .... 10 x 2 x	1,8
1 x 2 x .... 10 x 2 x	2,3

Operating voltage	225V
Voltage test	
core/core	1500 V, 50 Hz
core/screen	1500 V, 50 Hz
Insulation resistivity at 90°C, minimum	10^{11}

Operating temperature range	
during operation	-25°C up to +70°C
during installation	-5°C up to +50°C
Minimum bending radius	10 x D single core D = outer diameter
Cable combustibility	
Fire resistance	E90
Combustibility tests	PN-EN 50200, PN-EN 50226:2006 IEC 60332-3
Reference standards	ZN-CB-25-2005

PGI-H FE180/E30

FIRE RESISTANT HALOGEN FREE SPEAKER CABLE



APPLICATIONS

Halogen-free speaker cables ensuring functionality under fire conditions for at least 30 minutes. Cables are used in sound distribution systems of large venues like sport stadiums, amphitheaters, cinemas; inside, outside or in cable ducts.

CONSTRUCTION

conductor - multistranded copper conductor, class 5 acc. to: PN-EN 60228
insulation - cross-linked halogen free ceramic forming polymer compound
filler - flame resistant, halogen free polymer compound
inner sheath - flame resistant, halogen free polymer compound
sheath - flame resistant, halogen free polymer compound

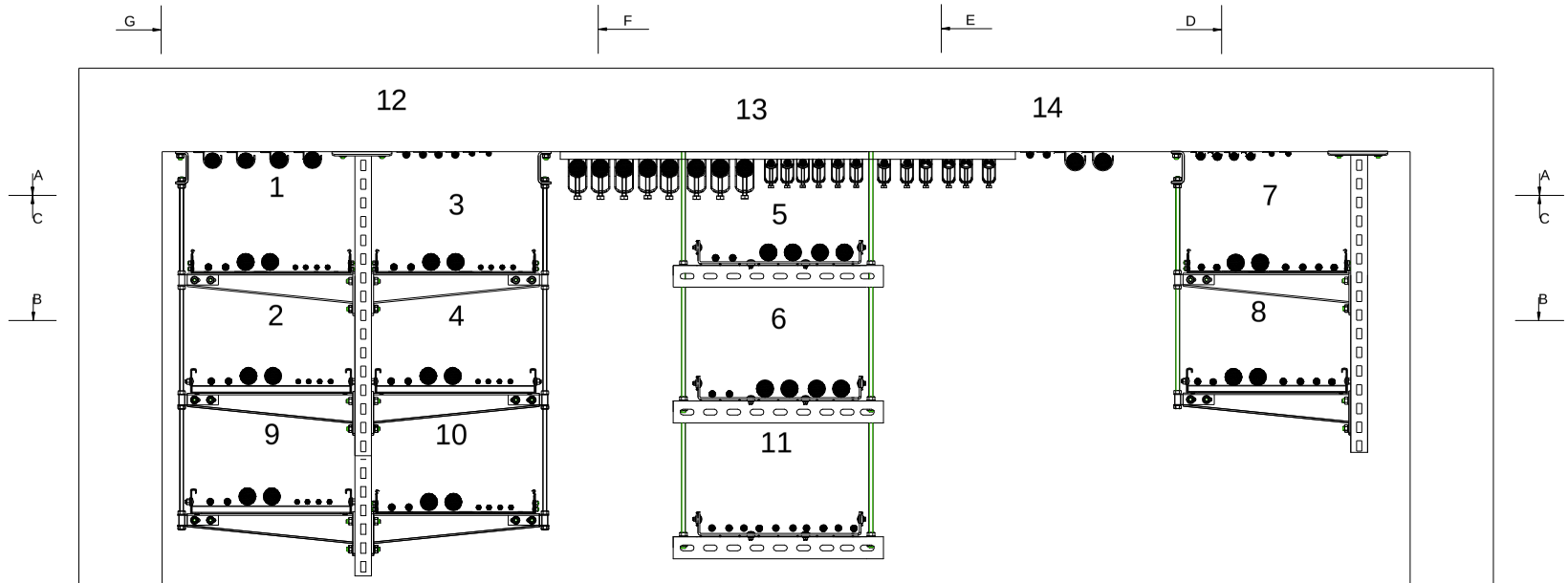
CHARACTERISTICS

Conductor cross-section	
Number of conductors	Nominal conductor cross-section
n	mm^2
2 ÷ 4	1 ÷ 16

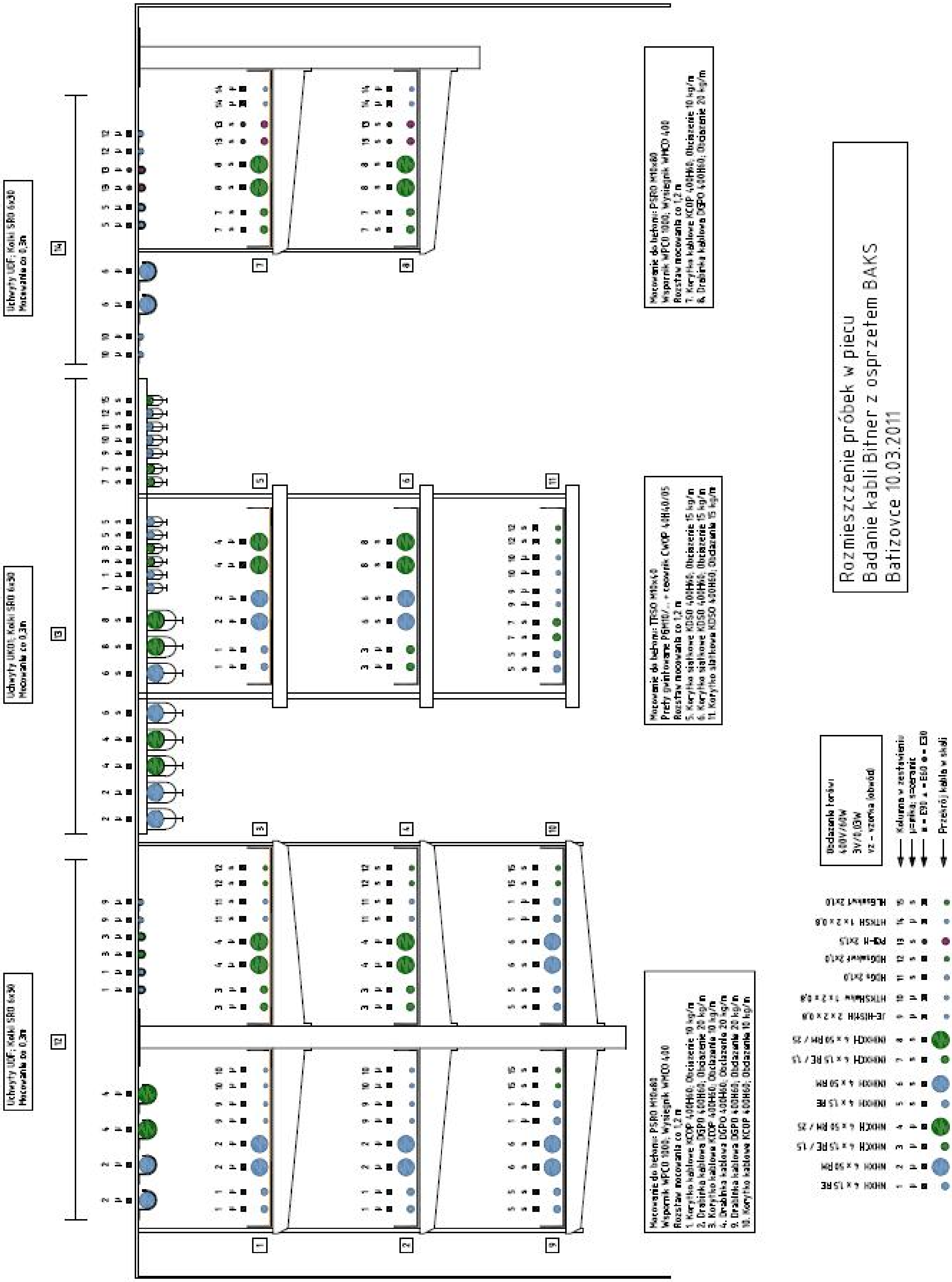
Operating voltage	300 V
Voltage test	3500 V, 50 Hz
Insulation resistivity at 90°C, minimum	10^{12}

Operating temperature range during operation during installation	 -30°C up to +70°C -10°C up to +50°C
Minimum bending radius	6 x D single core D = outer diameter
Cable combustibility	
Fire resistance	E30
Combustibility tests	PN-EN 50200, PN-EN 50226:2006 IEC 60332-3
Reference standards	ZN-CB-55-2010

Badanie 7-11.03.2011



1- Korytko kablowe KCOP 400H60 NHXH 4x1,5 - 2 szt, 4x50 - 2szt, JE-H(st)H 2x2x0,8 - 2szt, HTKSHekw1x2x0,8-2szt
2- Drabinka kablowa DGOP400H60 NHXH 4x1,5 - 2 szt, 4x50 - 2szt JE-H(st)H 2x2x0,8 - 2szt, HTKSHekw1x2x0,8-2szt
3- Korytko kablowe KCOP 400H60 NHXCH 4x1,5/1,5 - 2 szt, 4x50/25 - 2 szt, HDGs2x1,0- 2szt, HDGsekwf2x1,0-2 szt;
4- Drabinka kablowa DGOP400H60 NHXCH 4x1,5/1,5 - 2 szt, 4x50/25 - 2 szt, HDGs2x1,0- 2szt, HDGsekwf2x1,0-2 szt;
5- Korytko siatkowe KDSO400H60 NHXH 4x1,5 - 2 szt, 4x50 - 2szt, NHXCH 4x50/25 - 2 szt
6- Korytko siatkowe KDSO400H60 (N)HXH 4x1,5 - 2 szt, (N)HXCH 4x50 - 2szt, 4x50/25 - 2 szt
7- Korytko kablowe KCOP 400H60 (N)HXCH 4x1,5/1,5 - 2 szt, 4x50/25 - 2 szt, PGI-H2x1,5-2szt, HTKSH1x2x0,8- 2szt
8- Drabinka kablowa DGOP400H60 (N)HXCH 4x1,5/1,5 - 2 szt, 4x50/25 - 2 szt, PGI-H2x1,5-2szt, HTKSH1x2x0,8- 2szt
9- Drabinka kablowa DGOP400H60 (N)HXH 4x1,5 - 2 szt, 4x50 - 2szt, NHXH 4x1,5 - 2 szt, HLGsekwf 2x1,0 - 2szt;
10-Korytko kablowe KCOP 400H60 (N)HXH 4x1,5 - 2 szt, 4x50 - 2szt, NHXH 4x1,5 - 2 szt, HLGsekwf 2x1,0 - 2szt;
11-Korytko siatkowe KDSO400H60 NHXCH 4x1,5 - 2 szt, (N)HXH 4x1,5/1,5 - 2szt, JE-H(st)H 2x2x0,8 - 2szt, HTKSHekw1x2x0,8-2szt, HDGs 2x1,0- 2szt;
12- Uchwyty UDF NHXH 4x50 - 2szt, NHXCH 4x50/25 - 2 szt, NHXH 4x1,5 - 2 szt, NHXCH 4x1,5/1,5 - 2 szt, JE-H(st)H 2x2x0,8 - 2szt;
13-Uchwyt UKO1 NHXH 4x50 - 2szt, NHXCH 4x50/25 - 2 szt, (N)HXCH 4x50 - 2 szt, (N)HXCH 4x50/25 - 2 szt,NHXH 4x1,5 - 2szt, NHXH 4x1,5x1,5 - 2 szt, (N)HXCH 4x1,5 - 2 szt,(N)HXCH 4x1,5/1,5 - 2 szt, JE-H(st)H 2x2x0,8 -2szt,HTKSHekw1x2x0,8-2szt, HDGs2x1,0- 2szt,HDGsekwf 2x1,0 - 2szt HLGsekwf 2x1,0 - 2szt,
14-Uchwyt UDF HTKSHekw1x2x0,8-2szt,(N)HXH 4x50 - 2szt, (N)HXH 4x1,5 - 2szt,PGI-H2x1,5-2szt,HDGsekwf 2x1,0-2szt;


Uchwyty UDF; Kołki SRO 6x30
Mocowanie co 0,3m
Uchwyty UK01; Kołki SRO 6x30
Mocowanie co 0,3m
Uchwyty UDF; Kołki SRO 6x30
Mocowanie co 0,3m
Mocowanie do betonu: PSRO M10x60
Wspornik WPCO 1000; Wysięgnik WMCO 400
Rozstaw mocowania co 1,2 m
1. Korytko kablowe KCOP 400H60; Obciazenie 10 kg/m
2. Drabinka kablowa DGPO 400H60; Obciazenie 20 kg/m
3. Korytko kablowe KCOP 400H60; Obciazenie 10 kg/m
4. Drabinka kablowa DGPO 400H60; Obciazenie 20 kg/m
9. Drabinka kablowa DGPO 400H60; Obciazenie 20 kg/m
10. Korytko kablowe KCOP 400H60; Obciazenie 10 kg/m
Mocowanie do betonu: TRSO M10x60
Prety gwintowane PGM10/... + ceownik CWOP 40H40/05
Rozstaw mocowania co 1,2 m
5. Korytko siatkowe KDSO 400H60; Obciazenie 15 kg/m
6. Korytko siatkowe KDSO 400H60; Obciazenie 15 kg/m
11. Korytko siatkowe KDSO 400H60; Obciazenie 15 kg/m
Mocowanie do betonu: PSRO M10x60
Wspornik WPCO 1000; Wysięgnik WMCO 400
Rozstaw mocowania co 1,2 m
7. Korytko kablowe KCOP 400H60; Obciazenie 10 kg/m
8. Drabinka kablowa DGPO 400H60; Obciazenie 20 kg/m
NHXH 4 x 1,5 RE
NHXH 4 x 50 RM
NHXCH 4 x 1,5 RE / 1,5
NHXCH 4 x 50 RM / 25
(N)HXH 4 x 1,5 RE
(N)HXH 4 x 50 RM
(N)HXCH 4 x 1,5 RE / 1,5
(N)HXCH 4 x 50 RM / 25
JE-H(St)H 2 x 2 x 0,8
HTKSHekw 1 x 2 x 0,8
HDGs 2x1,0
HDGsekw 2x1,0
PH-H 2x1,5
HTKSH 1 x 2 x 0,8
HLGsekw 2x1,0
Obciazenia torów:
400V/60W
3V/0,03W
vz – vzorka (obwód)
Kolumna w zestawieniu
μ=mika; s=ceramic
■ = E90 ▲ = E60 ● = E30
Przekrój kabla w skali
Rozmieszczenie próbek w piecu
Badanie kabli Bitner z osprzetem BAKS
Batizovce 10.03.2011

Badanie trasy kablowej BAKS - BITNER
Badanie w FIRES Słowacja Data 10.03.2011

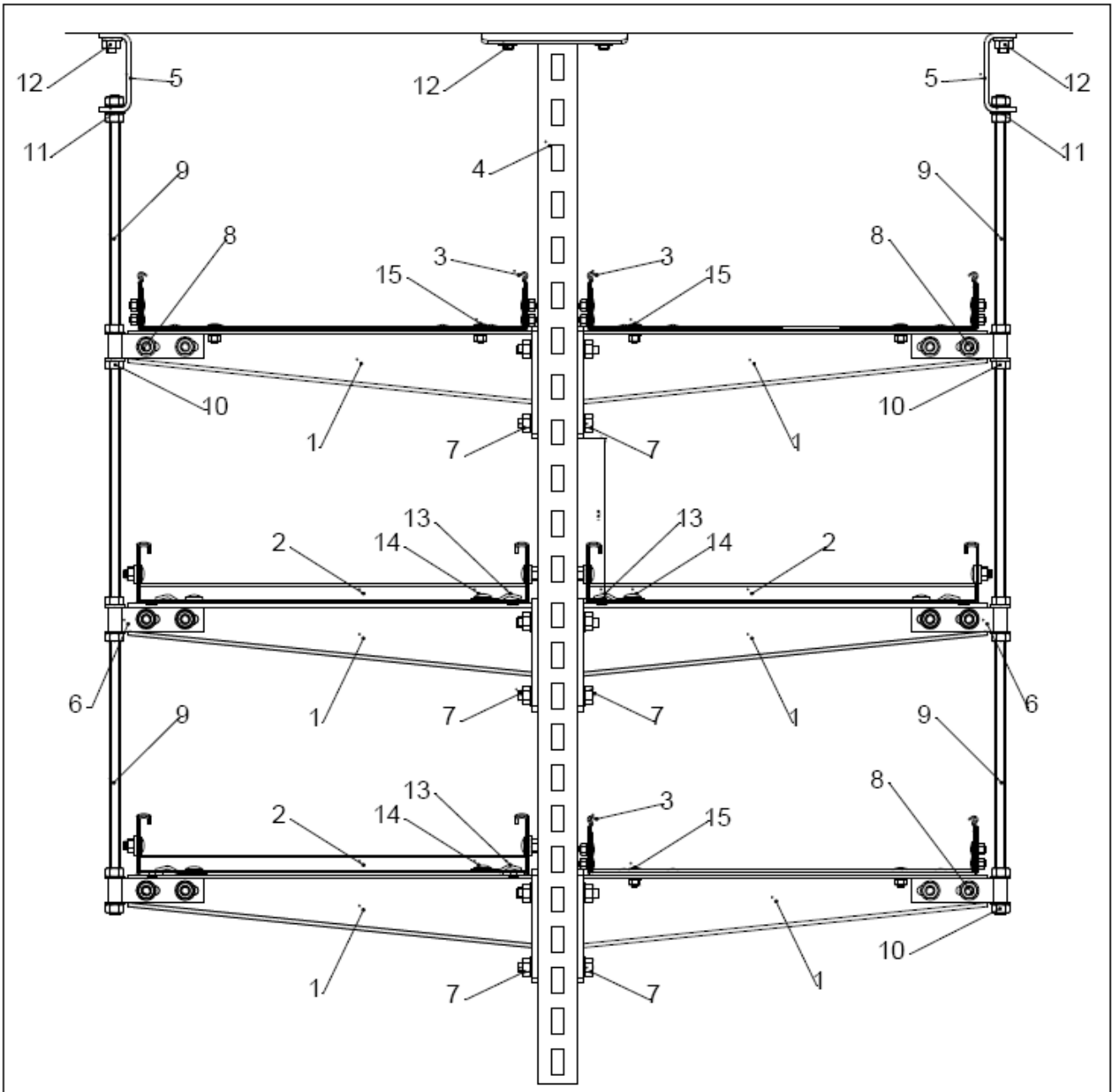
Nr	Nr FIRES	Symbol kaba (napięcie)	Pozycja	Konstrukcja mocowania, odległość, obciążenie
1	**43**	NHXH FE180/E90 4x1,5 RE 0,6/1kV	**1**	Korytko kablowe KCOP 400H60/... B-400 1.2 m /10kg/m / grubość blachy 1,5 mm Mocowanie : Wspornik WPCO1000, Wysięgnik WMCO400 , do betonu za pomocą śruby rozporowej PSRO M10x80
2	**42**	NHXH FE180/E90 4x1,5 RE 0,6/1kV		
3	**41**	NHXH FE180/E90 4x50 RM 0,6/1kV		
4	**40**	NHXH FE180/E90 4x50 RM 0,6/1kV		
5	**73**	JE-H(St)H.. RE FE180/E90 2x2x 0.8		
6	**72**	JE-H(St)H.. RE FE180/E90 2x2x 0.8		
7	**71B**	HTKSHekw FE180/E90 1x2x0,8		
8	**71A**	HTKSHekw FE180/E90 1x2x0,8		
9	**35**	NHXH FE180/E90 4x1,5 RE 0,6/1kV	**2**	Drabina kablowa DGOP400H60/... B-400 1.2 m /20kg/m / grubość blachy 1,5 mm Mocowanie : Wspornik WPCO1000, Wysięgnik WMCO400 , do betonu za pomocą śruby rozporowej PSRO M10x80
10	**34**	NHXH FE180/E90 4x1,5 RE 0,6/1kV		
11	**33**	NHXH FE180/E90 4x50 RM 0,6/1kV		
12	**32**	NHXH FE180/E90 4x50 RM 0,6/1kV		
13	**68**	JE-H(St)H.. RE FE180/E90 2x2x 0.8		
14	**67**	JE-H(St)H.. RE FE180/E90 2x2x 0.8		
15	**66B**	HTKSHekw FE180/E90 1x2x0,8		
16	**66A**	HTKSHekw FE180/E90 1x2x0,8		
17	**39**	NHXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV	**3**	Korytko kablowe KCOP 400H60/... B-400 1.2 m /10kg/m / grubość blachy 1,5 mm Mocowanie : Wspornik WPCO1000, Wysięgnik WMCO400 , do betonu za pomocą śruby rozporowej PSRO M10x80
18	**38**	NHXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
19	**37**	NHXCH FE180/E90 4x50/25 RM 0,6/1kV		
20	**36**	NHXCH FE180/E90 4x50/25 RM 0,6/1kV		
21	**70B**	HDGs FE180/E90 2x1,0 300/500V		
22	**70A**	HDGs FE180/E90 2x1,0 300/500V		
23	**69B**	HDGsekwf FE180/E90 2x1,0 300/500V		
24	**69A**	HDGsekwf FE180/E90 2x1,0 300/500V		
25	**31**	NHXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV	**4**	Drabina kablowa DGOP400H60/... B-400 1.2 m /20kg/m / grubość blachy 1,5 mm Mocowanie : Wspornik WPCO1000, Wysięgnik WMCO400 , do betonu za pomocą śruby rozporowej PSRO M10x80
26	**30**	NHXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
27	**29**	NHXCH FE180/E90 4x50/25 RM 0,6/1kV		
28		NHXCH FE180/E90 4x50/25 RM 0,6/1kV		
29	**65B**	HDGs FE180/E90 2x1,0 300/500V		
30		HDGs FE180/E90 2x1,0 300/500V		
31	**65A**	HDGsekwf FE180/E90 2x1,0 300/500V		
32		HDGsekwf FE180/E90 2x1,0 300/500V		
33	**14**	NHXH FE180/E90 4x1,5 RE 0,6/1kV	**5**	Korytko kablowe KDSO 400H60/... B-400 1.2 m /10kg/m / grubość pręta 4,5 mm Mocowanie : Ceownik CWOP40H40/05, pręt gwintowany PGM10/..., do betonu za pomocą tulei stalowej TRSO M10x40
34		NHXH FE180/E90 4x1,5 RE 0,6/1kV		
35	**13**	NHXH FE180/E90 4x50 RM 0,6/1kV		
36		NHXH FE180/E90 4x50 RM 0,6/1kV		
37	**12**	NHXCH FE180/E90 4x50/25 RM 0,6/1kV		
38		NHXCH FE180/E90 4x50/25 RM 0,6/1kV		
39	**11**	NHXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV	**6**	Korytko kablowe KDSO 400H60/... B-400 1.2 m /10kg/m / grubość pręta 4,5 mm Mocowanie : Ceownik CWOP40H40/05, pręt gwintowany PGM10/..., do betonu za pomocą tulei stalowej TRSO M10x40
40		NHXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
41	**10**	(N)HXH FE180/E90 4x50 RM 0,6/1kV		
42		(N)HXH FE180/E90 4x50 RM 0,6/1kV		
43	**9**	(N)HXCH FE180/E90 4x50/25 RM 0,6/1kV		
44		(N)HXCH FE180/E90 4x50/25 RM 0,6/1kV		
45	**4**	(N)HXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV	**7**	Korytko kablowe KCOP 400H60/... B-400 1.2 m /10kg/m / grubość blachy 1,5 mm Mocowanie : Wspornik WPCO1000, Wysięgnik WMCO400 , do betonu za pomocą śruby rozporowej PSRO M10x80
46		(N)HXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
47	**3**	(N)HXCH FE180/E90 4x50/25 RM 0,6/1kV		
48		(N)HXCH FE180/E90 4x50/25 RM 0,6/1kV		
49	**53B**	*PGI-H* FE180/E30 *2x1,5*		
50		*PGI-H* FE180/E30 *2x1,5*		

Nr	Nr FIRES	Symbol kaba (napięcie)	Pozycja	Konstrukcja mocowania, odległość, obciążenie
51	53A	*HTKSH FE180/E90 1x2x0,8*		
52		*HTKSH FE180/E90 1x2x0,8*		
53	2	(N)HXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV	8	Drabina kablowa DGOP400H60/... B-400 1.2 m /20kg/m / grubość blachy 1,5 mm Mocowanie : Wspornik WPCO1000, Wysięgnik WMCO400 , do betonu za pomocą śruby rozporowej PSRO M10x80
54		(N)HXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
55	1	(N)HXCH FE180/E90 4x50/25 RM 0,6/1kV		
56		(N)HXCH FE180/E90 4x50/25 RM 0,6/1kV		
57	52B	*PGI-H* FE180/E30 *2x1,5*		
58		*PGI-H* FE180/E30 *2x1,5*		
59	52A	*HTKSH FE180/E90 1x2x0,8*		
60		*HTKSH FE180/E90 1x2x0,8*		
61	28	(N)HXH FE180/E90 4x1,5 RE 0,6/1kV	9	Drabina kablowa DGOP400H60/... B-400 1.2 m /20kg/m / grubość blachy 1,5 mm Mocowanie : Wspornik WPCO1000, Wysięgnik WMCO400 , do betonu za pomocą śruby rozporowej PSRO M10x80
62		(N)HXH FE180/E90 4x1,5 RE 0,6/1kV		
63	27	(N)HXH FE180/E90 4x50 RM 0,6/1kV		
64		(N)HXH FE180/E90 4x50 RM 0,6/1kV		
65	26	NHXH FE180/E90 4x1,5 RE / test 1 0,6/1kV		
66		NHXH FE180/E90 4x1,5 RE / test 1 0,6/1kV		
67	64B	HLGsekwf FE180/E90 2x1 300/500V		
68	64A	HLGsekwf FE180/E90 2x1 300/500V		
69	25	(N)HXH FE180/E90 4x1,5 RE 0,6/1kV	10	Korytko kablowe KCOP 400H60/... B-400 1.2 m /10kg/m / grubość blachy 1,5 mm Mocowanie : Wspornik WPCO1000, Wysięgnik WMCO400 , do betonu za pomocą śruby rozporowej PSRO M10x80
70		(N)HXH FE180/E90 4x1,5 RE 0,6/1kV		
71	24	(N)HXH FE180/E90 4x50 RM 0,6/1kV		
72		(N)HXH FE180/E90 4x50 RM 0,6/1kV		
73	23	NHXH FE180/E90 4x1,5 RE / test 1 0,6/1kV		
74		NHXH FE180/E90 4x1,5 RE / test 1 0,6/1kV		
75	63B	HLGsekwf FE180/E90 2x1 300/500V		
76	63A	HLGsekwf FE180/E90 2x1 300/500V		
77	8	(N)HXH FE180/E90 4x1,5 RE 0,6/1kV	11	Korytko kablowe KDSO 400H60/... B-400 1.2 m /10kg/m / grubość pręta 4,5 mm Mocowanie : Ceownik CWOP40H40/05, pręt gwintowany PGM10/..., do betonu za pomocą tulei stalowej TRSO M10x40
78		(N)HXH FE180/E90 4x1,5 RE 0,6/1kV		
79	7	(N)HXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
80		(N)HXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
81	62	JE-H(St)H.. RE FE180/E90 2x2x 0.8		
82	61	JE-H(St)H.. RE FE180/E90 2x2x 0.8		
83	60B	HTKSHekw FE180/E90 1x2x0,8		
84		HTKSHekw FE180/E90 1x2x0,8		
85	60A	HDGsekwf FE180/E90 2x1,0 300/500V		
86		HDGsekwf FE180/E90 2x1,0 300/500V		
87	51	NHXH FE180/E90 4x50 RM 0,6/1kV	12	Uchwyty kablowe UDF. Mocowanie do betonu co 300mm za pomocą kołka SRO 6x30
88	50	NHXH FE180/E90 4x50 RM 0,6/1kV		
89	49	NHXCH FE180/E90 4x50/25 RM 0,6/1kV		
90	48	NHXCH FE180/E90 4x50/25 RM 0,6/1kV		
91	47	NHXH FE180/E90 4x1,5 RE 0,6/1kV		
92	46	NHXH FE180/E90 4x1,5 RE 0,6/1kV		
93	45	NHXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
94	44	NHXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
95	75	JE-H(St)H.. RE FE180/E90 2x2x 0.8		
96	74	JE-H(St)H.. RE FE180/E90 2x2x 0.8		
97	22	NHXH FE180/E90 4x50 RM 0,6/1kV	13	Uchwyty kablowe UKO1 + Szczebel SDOP 2x 600 Mocowanie do betonu co 300 mm za pomocą śruby rozporowej SRO
98		NHXH FE180/E90 4x50 RM 0,6/1kV		
99	21	NHXCH FE180/E90 4x50/25 RM 0,6/1kV		
100		NHXCH FE180/E90 4x50/25 RM 0,6/1kV		
101	20	(N)HXH FE180/E90 4x50 RM 0,6/1kV		
102		(N)HXH FE180/E90 4x50 RM 0,6/1kV		

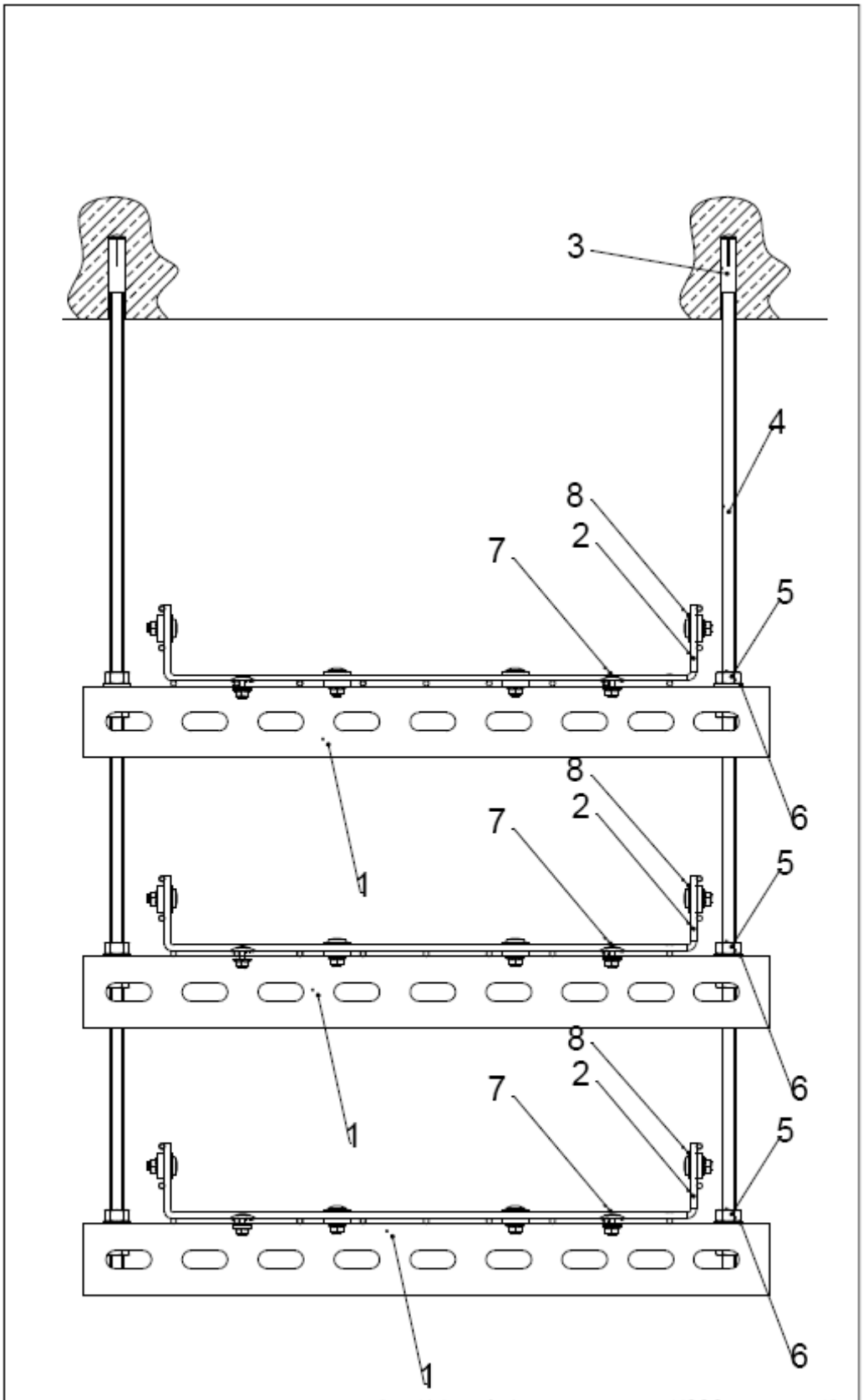
Nr	Nr FIRES	Symbol kaba (napięcie)	Pozycja	Konstrukcja mocowania, odległość, obciążenie
103	**19**	(N)HXCH FE180/E90 4x50/25 RM 0,6/1kV		
104		(N)HXCH FE180/E90 4x50/25 RM 0,6/1kV		
105	**18**	NHXH FE180/E90 4x1,5 RE 0,6/1kV		
106		NHXH FE180/E90 4x1,5 RE 0,6/1kV		
107	**17**	NHXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
108		NHXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
109	**16**	(N)HXH FE180/E90 4x1,5 RE 0,6/1kV		
110		(N)HXH FE180/E90 4x1,5 RE 0,6/1kV		
111	**15**	(N)HXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
112		(N)HXCH FE180/E90 4x1,5/1,5 RE 0,6/1kV		
115	**59**	JE-H(St)H.. RE FE180/E90 2x2x 0.8		
116	**58**	JE-H(St)H.. RE FE180/E90 2x2x 0.8		
117	**57B**	HTKSHekw FE180/E90 1x2x0,8		
118		HTKSHekw FE180/E90 1x2x0,8		
119	**57A**	HDGs FE180/E90 2x1,0 300/500V		
120		HDGs FE180/E90 2x1,0 300/500V		
121	**56B**	HDGsekwf FE180/E90 2x1,0 300/500V		
122		HDGsekwf FE180/E90 2x1,0 300/500V		
123	**56A**	HLGsekwf FE180/E90 2x1 300/500V		
124		HLGsekwf FE180/E90 2x1 300/500V		
125	**55B**	HTKSHekw FE180/E90 1x2x0,8	**14**	Uchwyty kablowe UDF. Mocowanie do betonu co 300mm za pomocą kołka SRO 6x30
126	**55A**	HTKSHekw FE180/E90 1x2x0,8		
127	**6**	(N)HXH FE180/E90 4x50 RM 0,6/1kV		
128		(N)HXH FE180/E90 4x50 RM 0,6/1kV		
129	**5**	(N)HXH FE180/E90 4x1,5 RE 0,6/1kV		
130		(N)HXH FE180/E90 4x1,5 RE 0,6/1kV		
131	**54B**	*PGI-H* FE180/E30 *2x1,5*		
132		*PGI-H* FE180/E30 *2x1,5*		
133	**54A**	HDGsekwf FE180/E90 2x1,0 300/500V		
134		HDGsekwf FE180/E90 2x1,0 300/500V		

Zestawienie kabli BITNER:

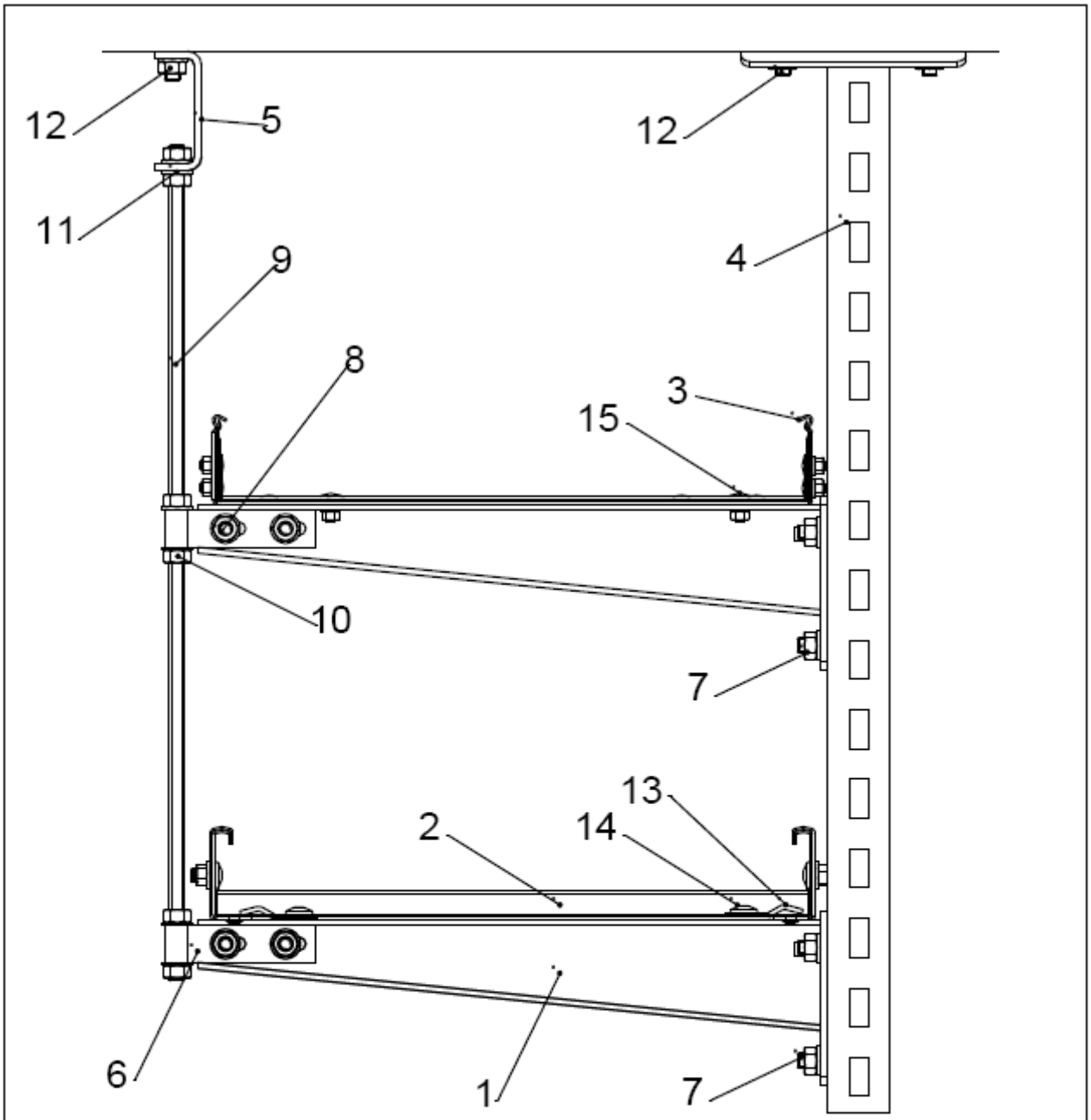
Lp.	Symbol kabla	Średnica [mm]	Ciężar kabla [kg/m]
1	NHXH FE180/E90 4x1,5RE	14,8	0,32
2	NHXH FE180/E90 4x1,5RE / test 1	14,8	0,32
3	NHXH FE180/E90 4x50RM	36,2	3,00
4	NHXCH FE180/E90 4x1,5RE/1,5	16,2	0,35
5	NHXCH FE180/E90 4x50RM/25	38,3	3,30
6	(N)HXH FE180/E90 4x1,5RE	14,6	0,30
7	(N)HXH FE180/E90 4x50RM	35,4	2,90
8	(N)HXCH FE180/E90 4x1,5RE/1,5	16,2	0,35
9	(N)HXCH FE180/E90 4x50RM/25	37,0	3,10
10	JE-H(St)H FE180/E90 2x2x0,8	10,0	0,14
11	HTKSHekw FE180/E90 1x2x0,8	7,0	0,07
12	HDGs FE180/E90 2x1,0RE	7,2	0,07
13	HDGsekwf FE180/E90 2x1,0RE	7,5	0,08
14	PGI-H FE180/E30 2x1,5	9,6	0,12
15	HTKSH FE180/E90 1x2x0,8	6,9	0,06
16	HLGsekwf FE180/E90 2x1,0	7,3	0,08



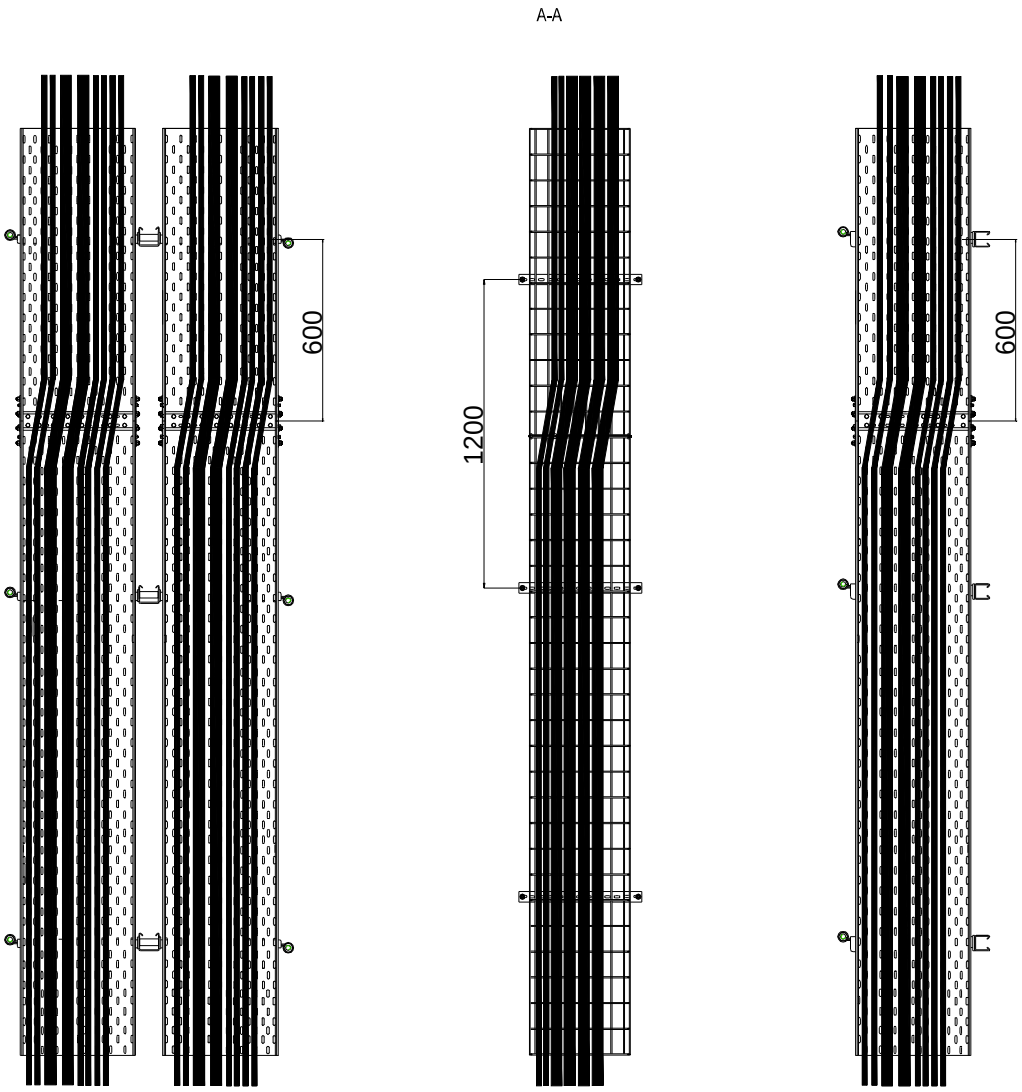
LP.	NAZWA	SYMBOL	szt.
15	Śruba z łbem grzybkowym	SGNM6x12	6
14	Śruba z łbem grzybkowym	SGNM8x14	6
13	Zacisk mocujący	ZMO	6
12	śruba tulejowa rozporowa	TSROM10x80	4
11	podkładka	PP10	18
10	nakrętka	NSM10	16
9	pręt gwintowany	PGM10	2
8	śruba z łbem grzybkowym kpl.	SGM8x14	12
7	śruba komplet	SMM10x20	6
6	uchwyt	UPWO	2
5	uchwyt sufitowy	USOV	2
4	wspornik sufitowy	WPCO700	1
3	korytko	KCOP400H60/3N	3
2	drabinka	DGOP400H80/3N	3
1	wysięgnik	WMCO400	6



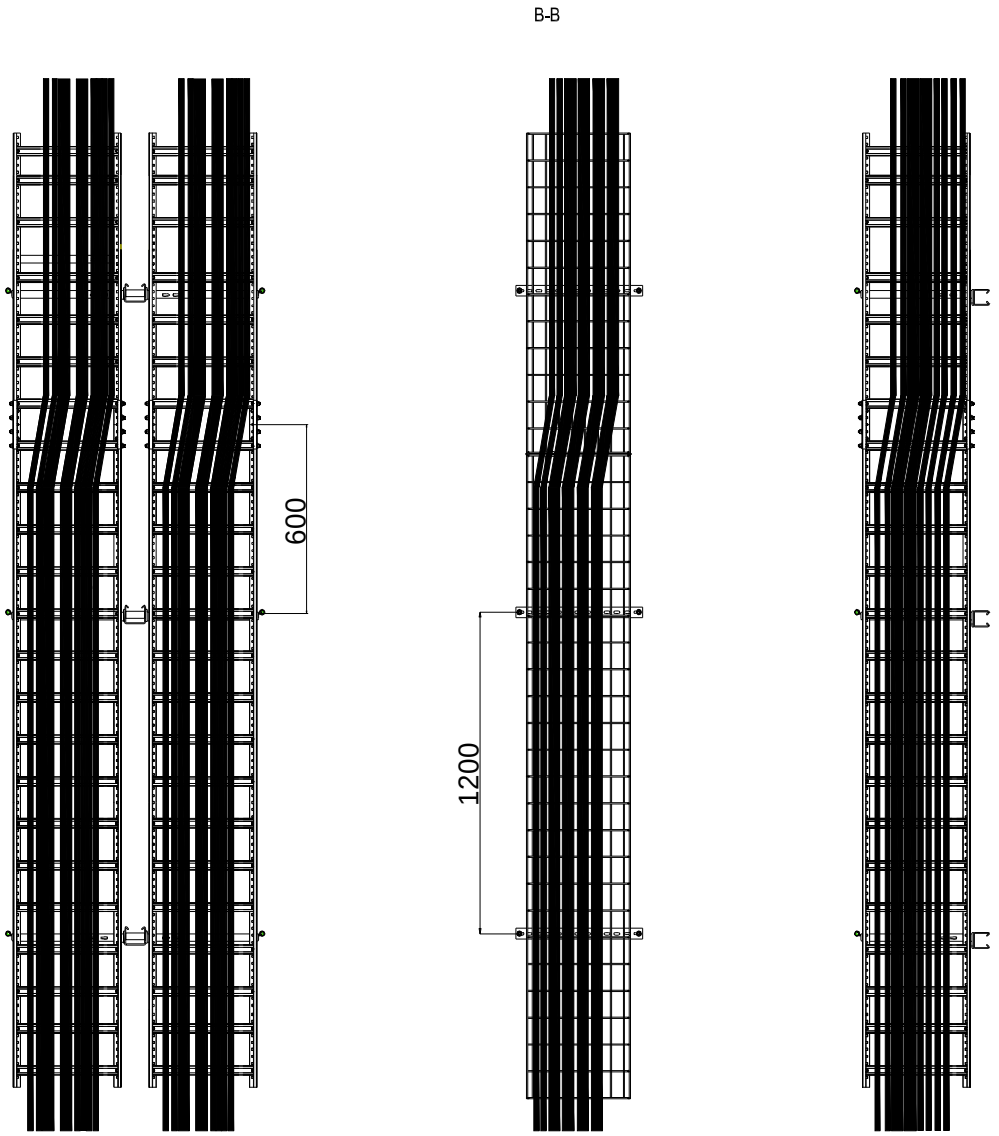
LP.	NAZWA	SYMBOL	szt.
8	Uchwyt śrubowy	USSO	12
7	Zacisk śrubowy	ZSO	6
6	podkładka	PP10	12
5	nakrętka	NSM10	12
4	pręt gwintowany	PGM10	2
3	tuleja rozporowa stalowa	TRSOM10	2
2	korytko siatkowe	KDSO400H60/3	3
1	ceownik wzmocniony	CWOP40H40/05	3



LP.	NAZWA	SYMBOL	szt.
15	Śruba z łbem grzybkowym	SGNM6x12	2
14	Śruba z łbem grzybkowym	SGNM8x14	2
13	Zacisk mocujący	ZMO	2
12	śruba tulejowa rozporowa	PSROM10x80	3
11	podkładka	PP10	6
10	nakrętka	NSM10	6
9	pręt gwintowany	PGM10	1
8	śruba z łbem grzybkowym kpl.	SGM8x14	4
7	śruba komplet	SMM10x20	4
6	uchwyt	UPWO	2
5	uchwyt sufitowy	USOV	1
4	wspornik sufitowy	WPCO700	1
3	korytko	KCOP400H60/3N	1
2	drabinka	DGOP400H80/3N	1
1	wysięgnik	WMCO400	2



BAKS-BITNER- FIRES
08.03. 2011rok



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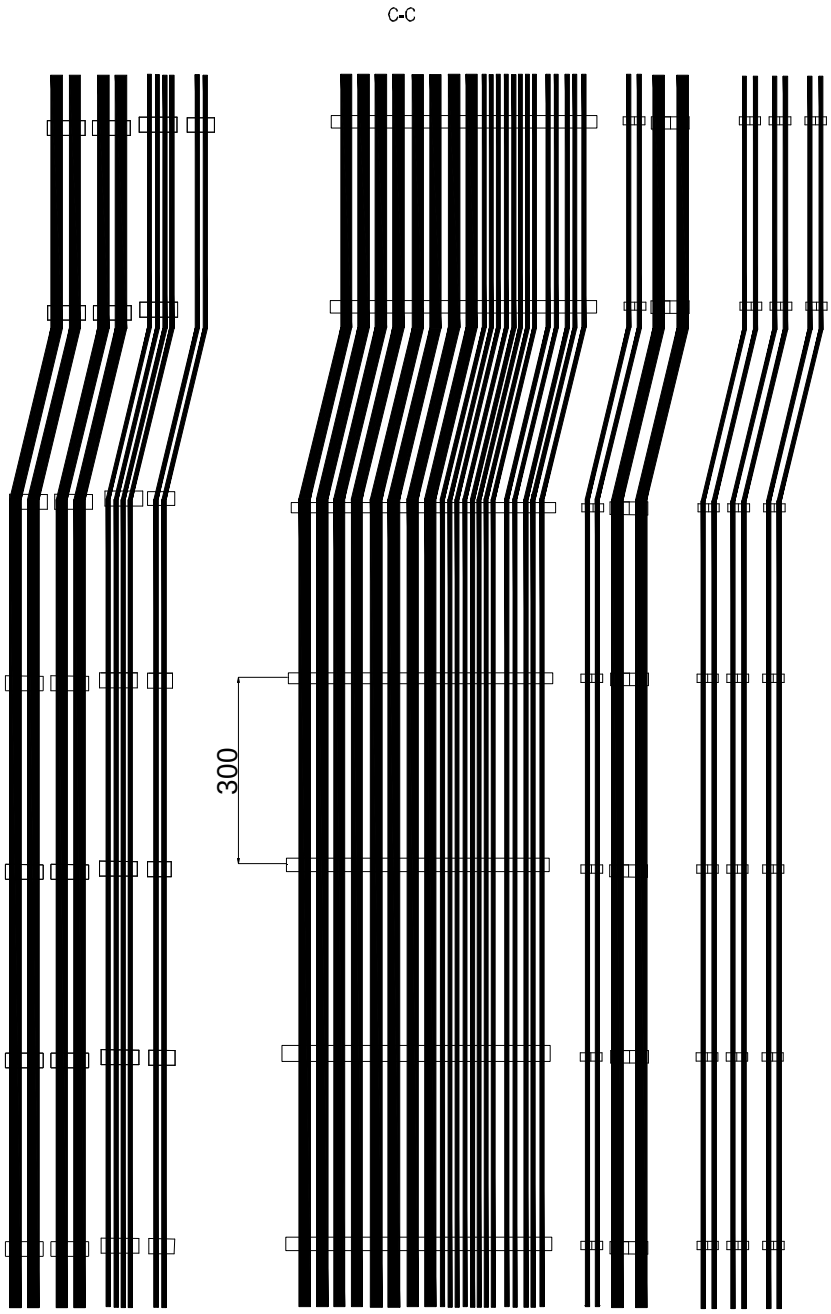

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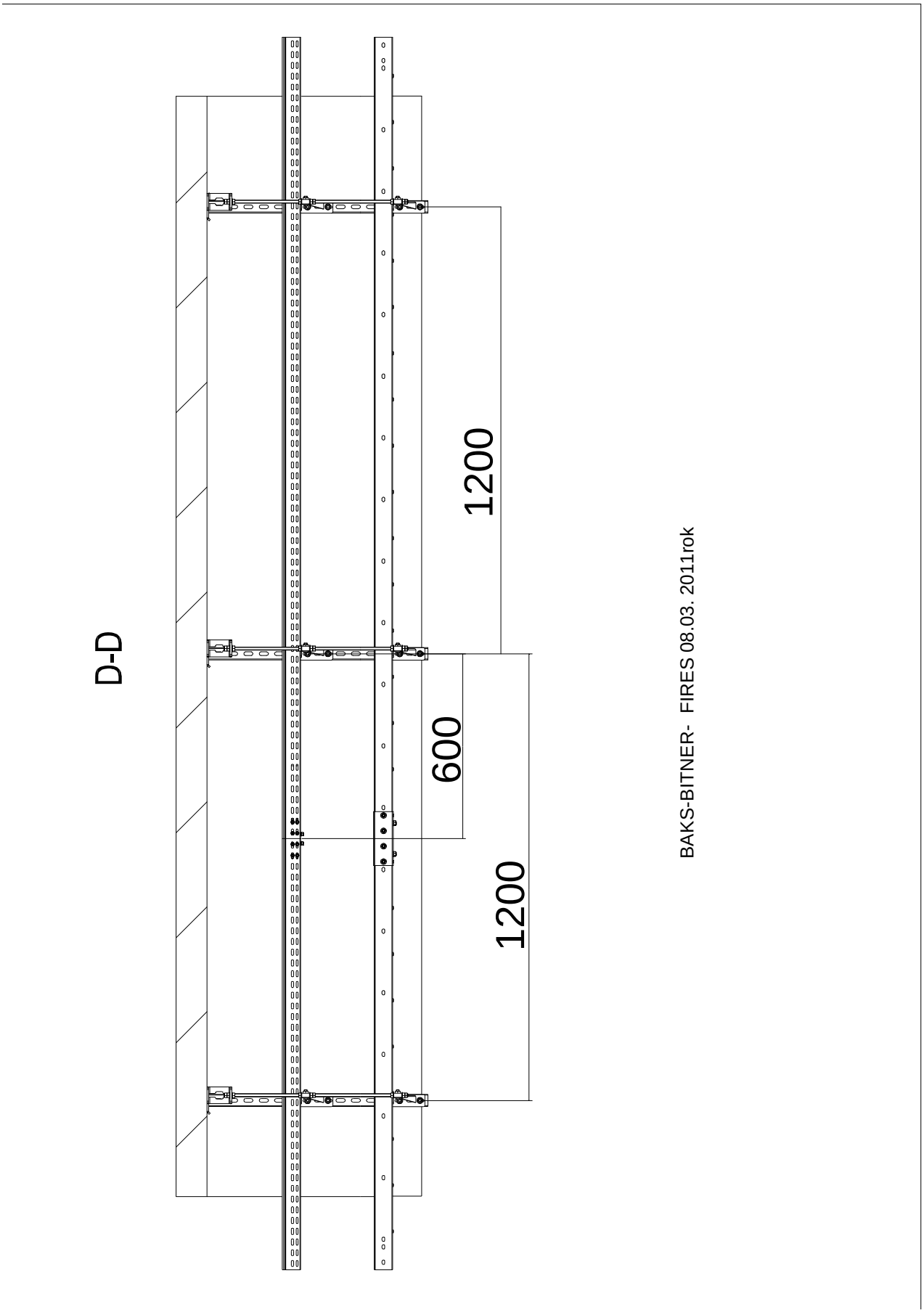
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600
1200
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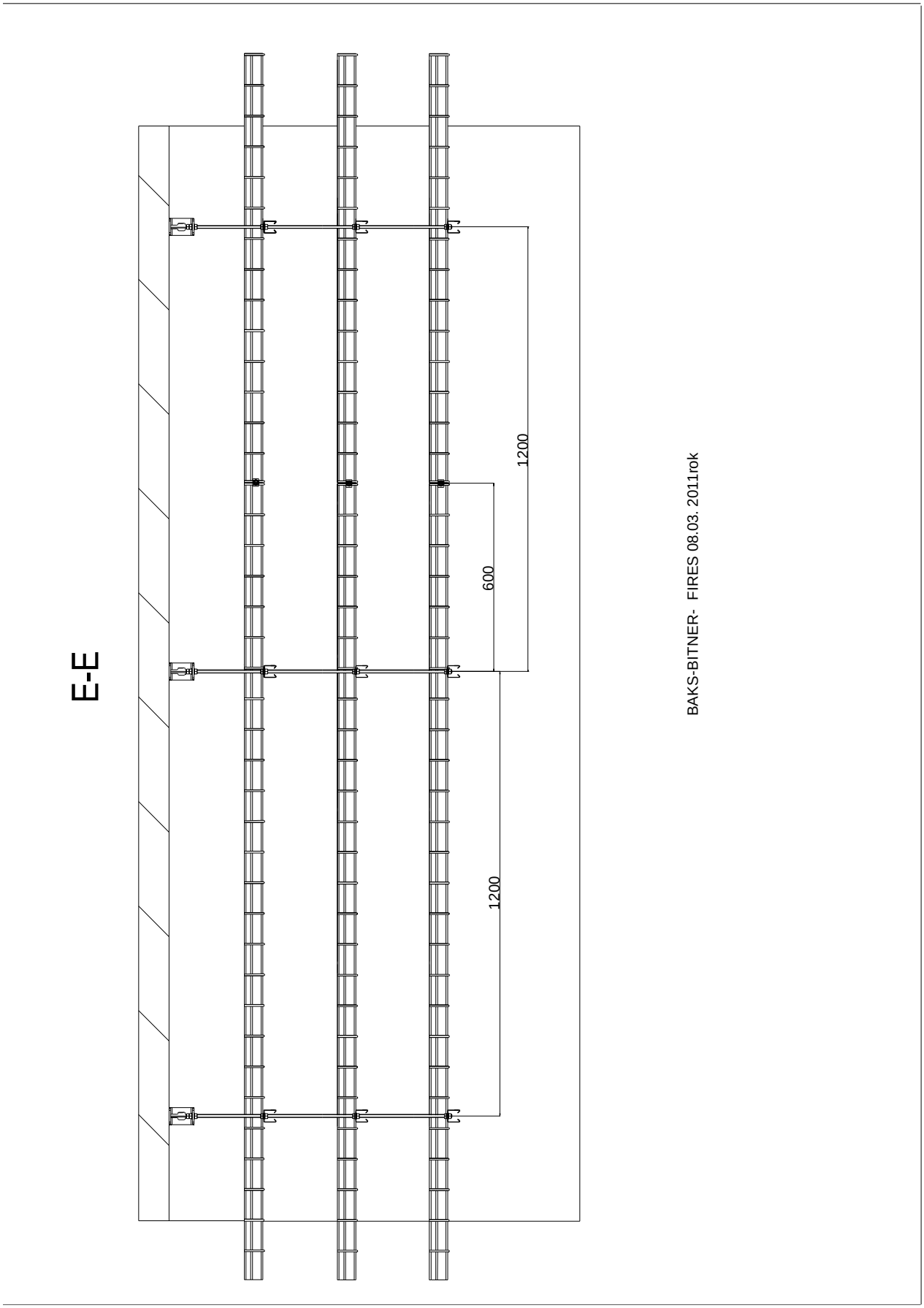
E-E
1200
600
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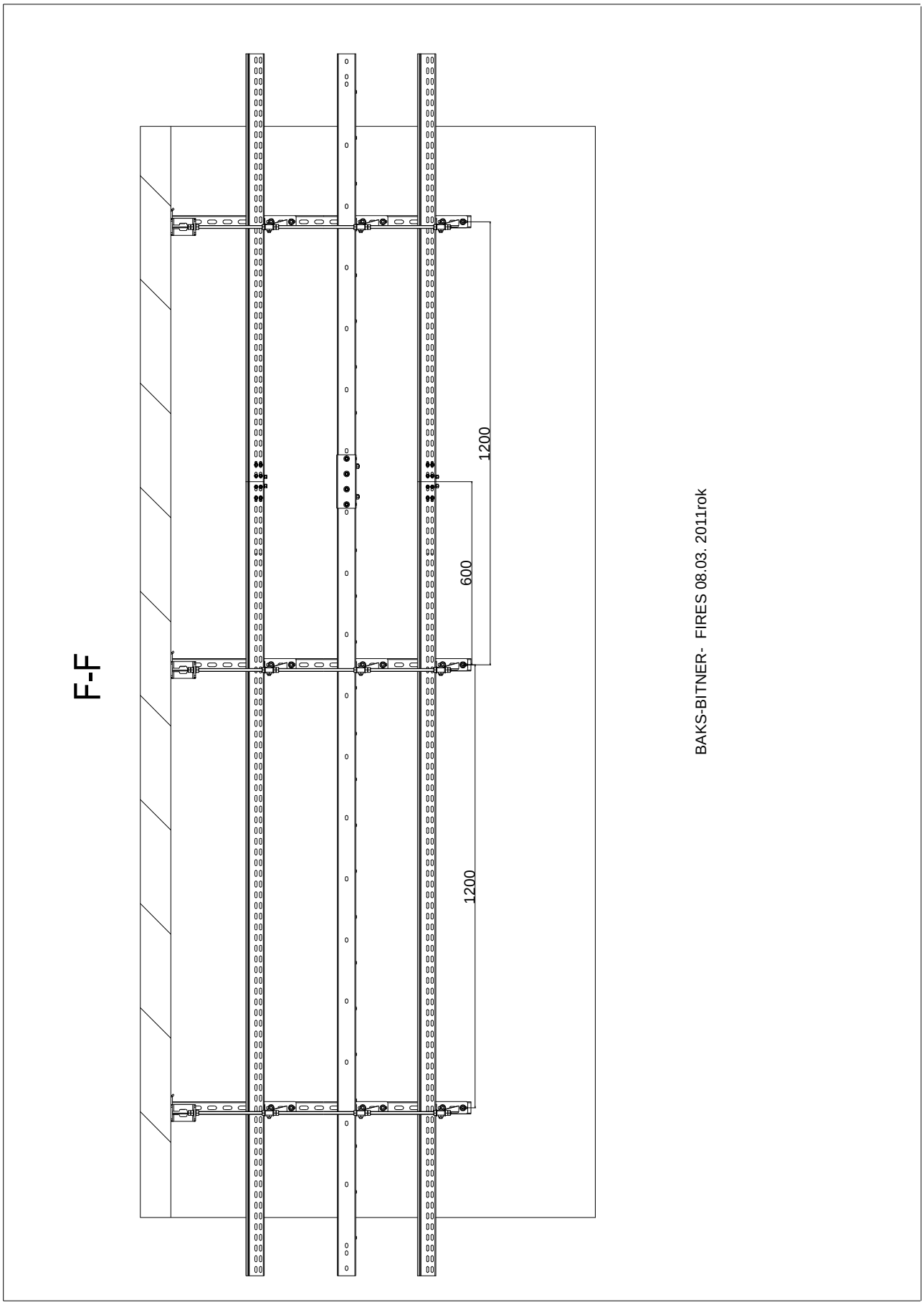
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600
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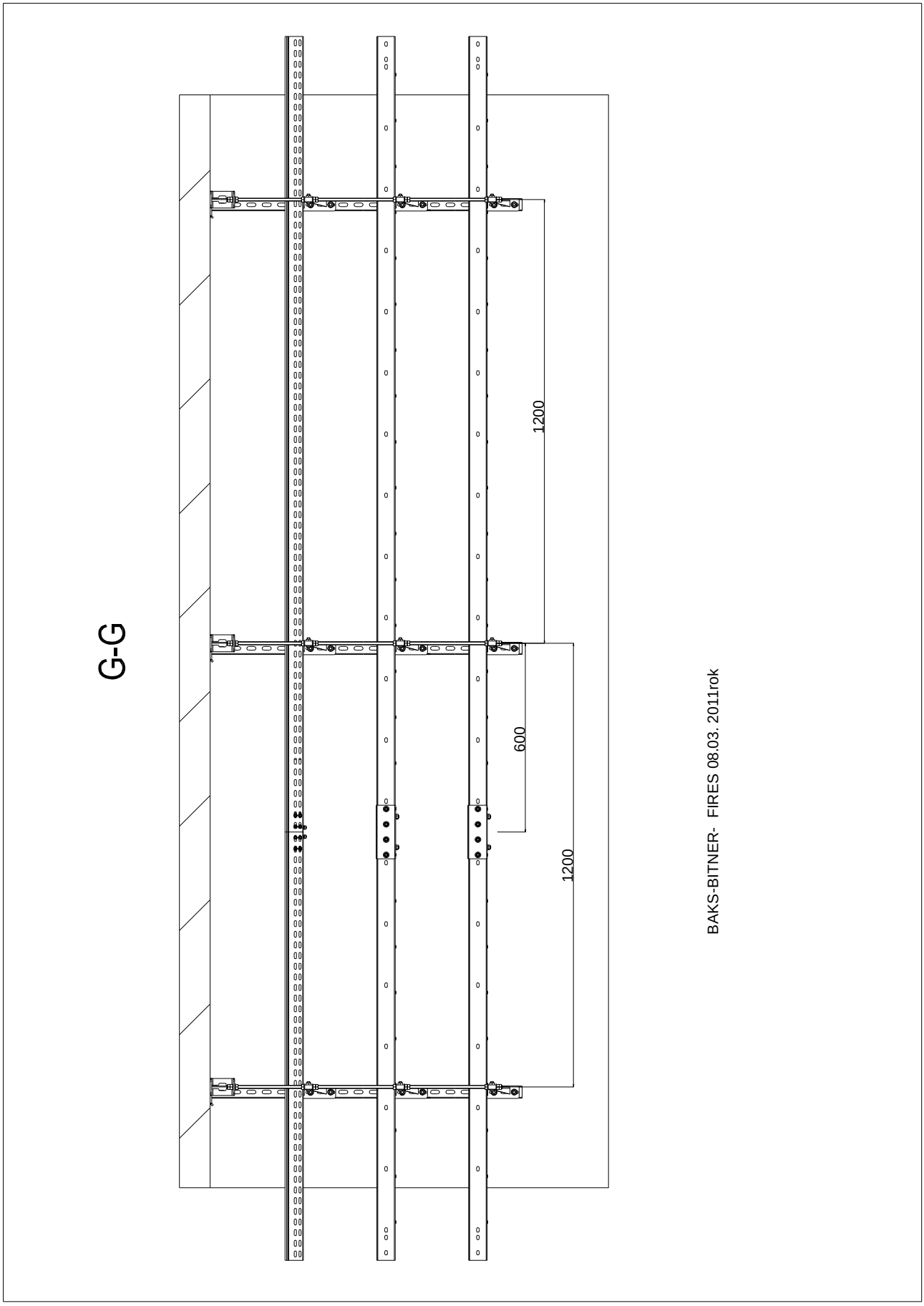
G-G
1200
600
1200
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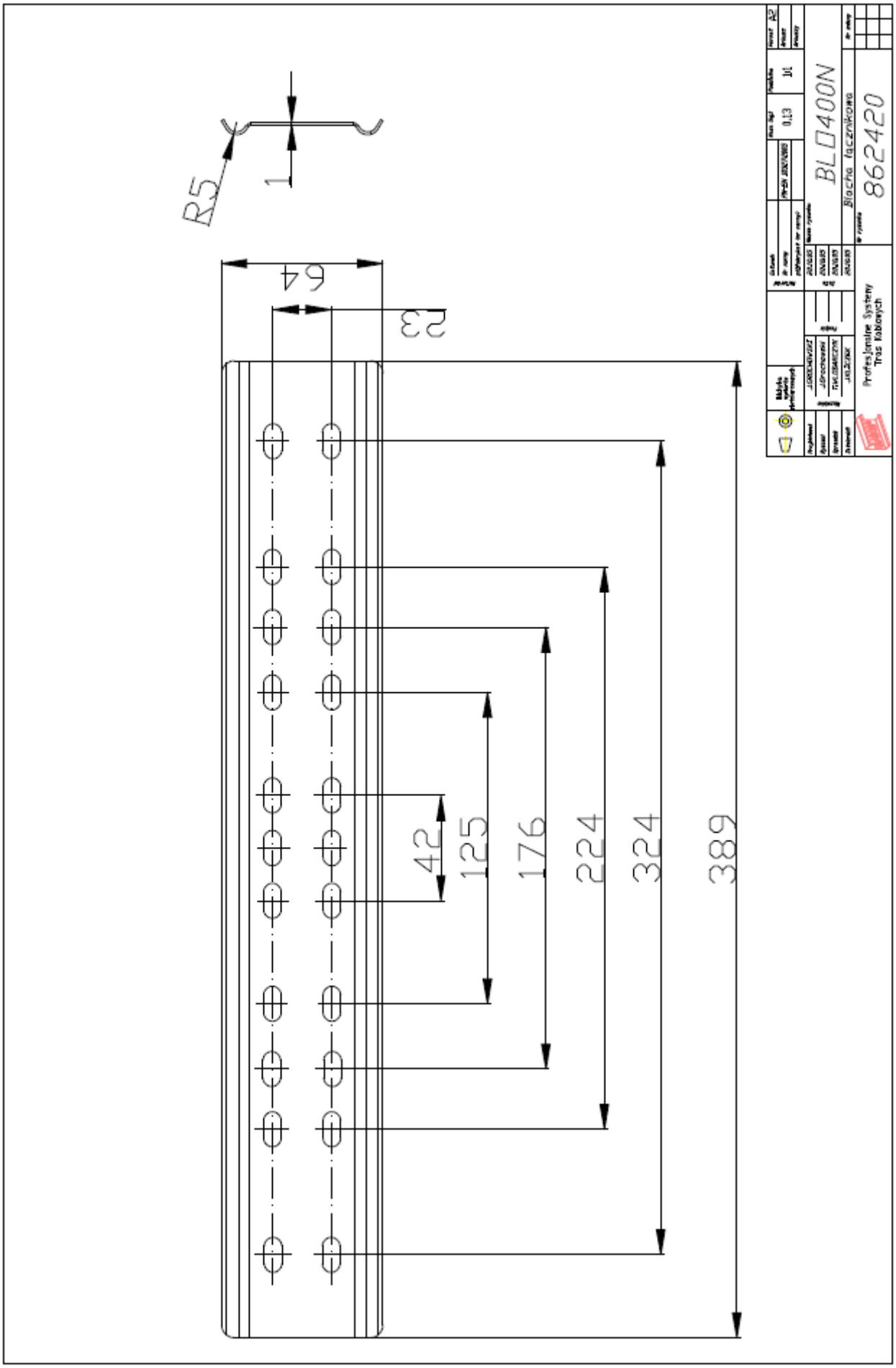
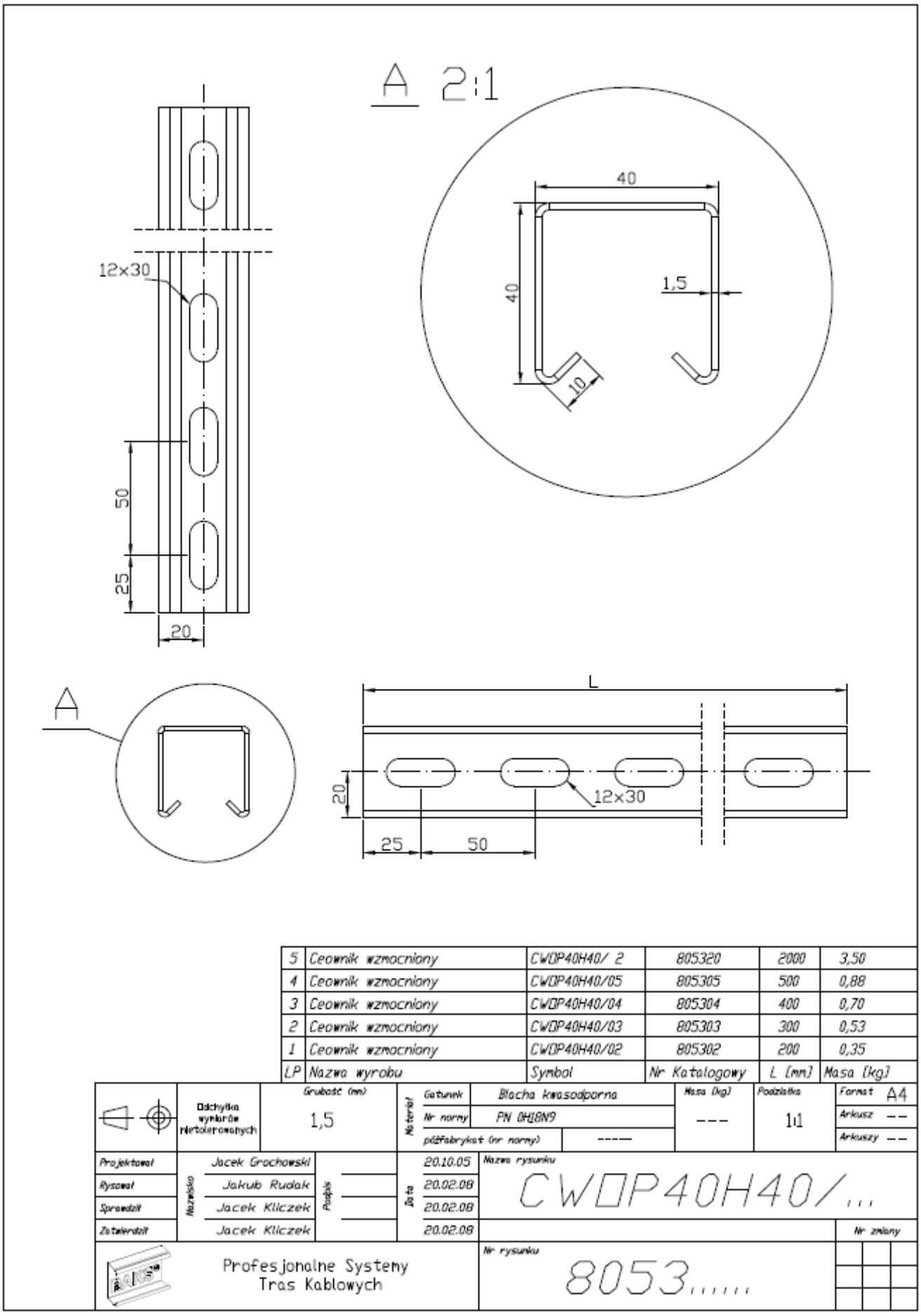

R5
1
64
23
42
125
176
224
324
389
BLD400N
862420
Blacha łączeniowa
Profesjonalne Systemy Tras Kablowych



LP	Nazwa wyrobu	Symbol	Nr Katalogowy	L [mm]	Masa [kg]
5	Ceownik wzmocniony	CWOP40H40/ 2	805320	2000	3,50
4	Ceownik wzmocniony	CWOP40H40/05	805305	500	0,88
3	Ceownik wzmocniony	CWOP40H40/04	805304	400	0,70
2	Ceownik wzmocniony	CWOP40H40/03	805303	300	0,53
1	Ceownik wzmocniony	CWOP40H40/02	805302	200	0,35

Odchyłka wymiarów nietolerowanych	Grubość (mm) 1,5	Materiał: Gatunek	Blacha kwasoodporna	Masa (kg) ---	Podziałka 1:1	Format A4
		Nr normy	PN 0H18N9			Arkusz --
		półfabrykat (nr normy)	----			Arkuszy --

Projektował	Jacek Grochowski		20.10.05
Rysował	Jakub Rudak		20.02.08
Sprawdził	Jacek Kliczek		20.02.08
Zatwierdził	Jacek Kliczek		20.02.08

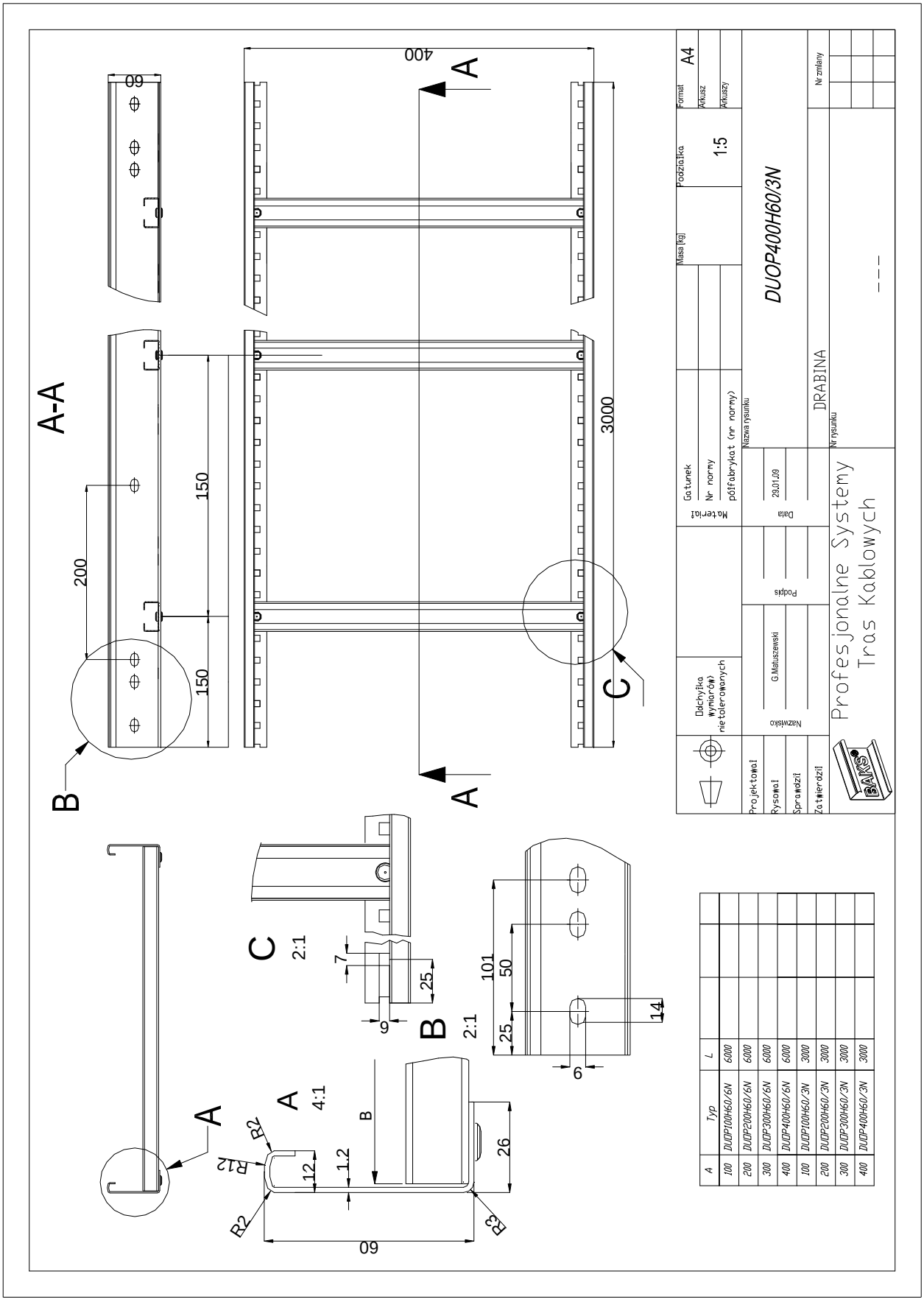
Nazwisko / Podpis / Data

Nazwa rysunku: CWOP40H40/...

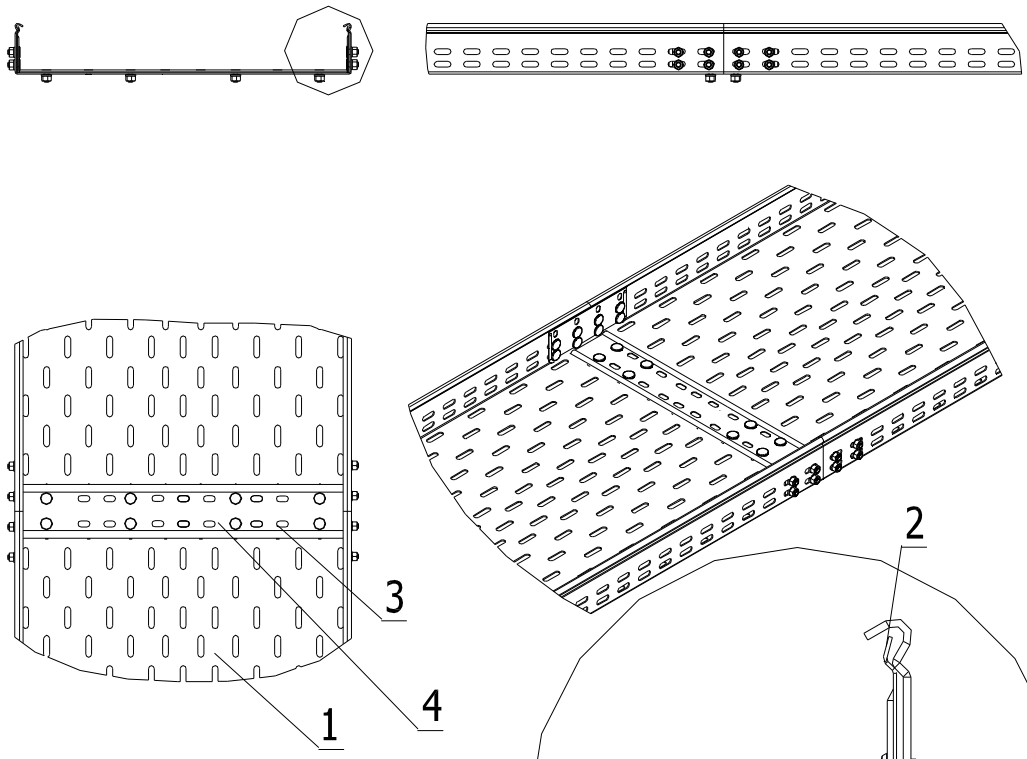
Nr zmiany

Profesjonalne Systemy Tras Kablowych

Nr rysunku: 8053.....



A	Typ	L
100	DUOP100H60/6N	6000
200	DUOP200H60/6N	6000
300	DUOP300H60/6N	6000
400	DUOP400H60/6N	6000
100	DUOP100H60/3N	3000
200	DUOP200H60/3N	3000
300	DUOP300H60/3N	3000
400	DUOP400H60/3N	3000



Poz.1		Poz.4
A	Typ	Typ
100	KC□P100H60/3N	BL□100N
200	KC□P200H60/3N	BL□200N
300	KC□P300H60/3N	BL□300N
400	KC□P400H60/3N	BL□400N

Pos.	Nazwa	symbol	Materiał	sztuki	
4	Blacha łącznikowa	BL□400N		1	
3	śruba	SGN M6x12		24	
2	łącznik	LP□NPH60N		2	
1	koryto	KC□NP400H60/3N		1	

Odchylka wymiarów nietolerowanych

Materiał: Gatunek; Nr normy; półfabrykat (nr normy)

Masa [kg]

Podziałka 7:50

Format A4; Arkusz 1; Arkuszy 1

	Nazwisko	Podpis	Data
Projektował			
Rysował	J.Grochowski		09.04.2010
Sprawdził			
Zatwierdził			

Nazwa rysunku: KC□P400H60/3 N

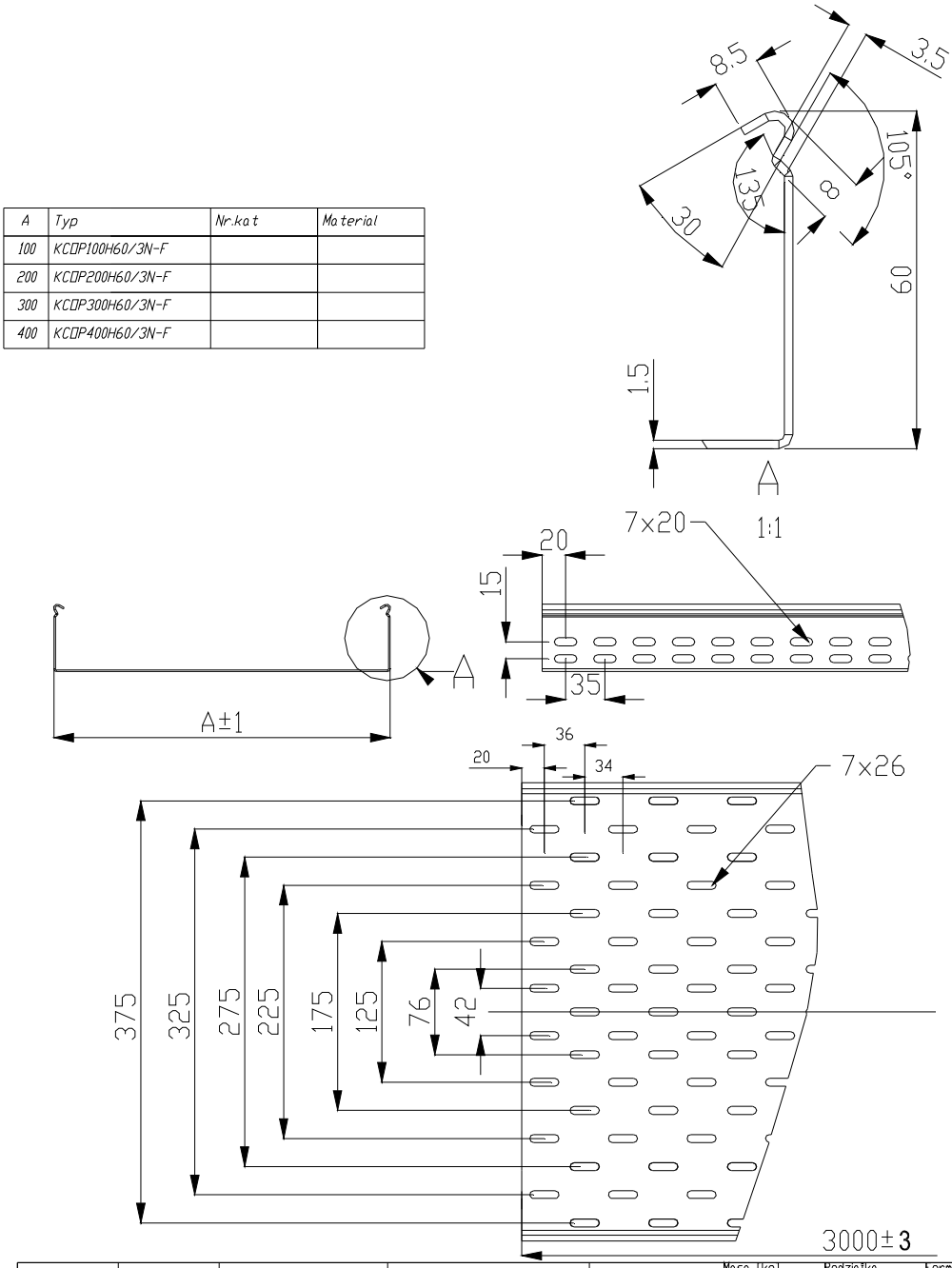
Nr programu maszynowego

Nr zmiany

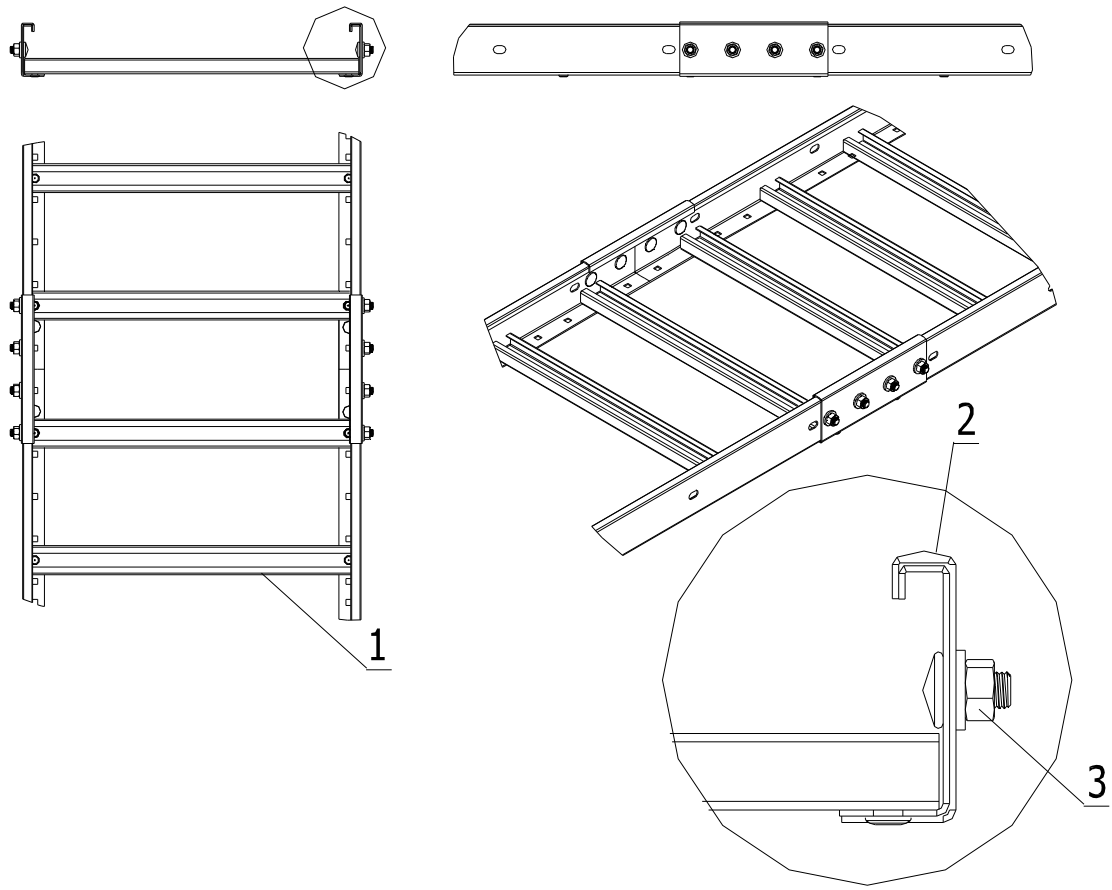
Nr rysunku

Profesjonalne Systemy Tras Kablowych

A	Typ	Nr.kat	Material
100	KCNP100H60/3N-F		
200	KCNP200H60/3N-F		
300	KCNP300H60/3N-F		
400	KCNP400H60/3N-F		



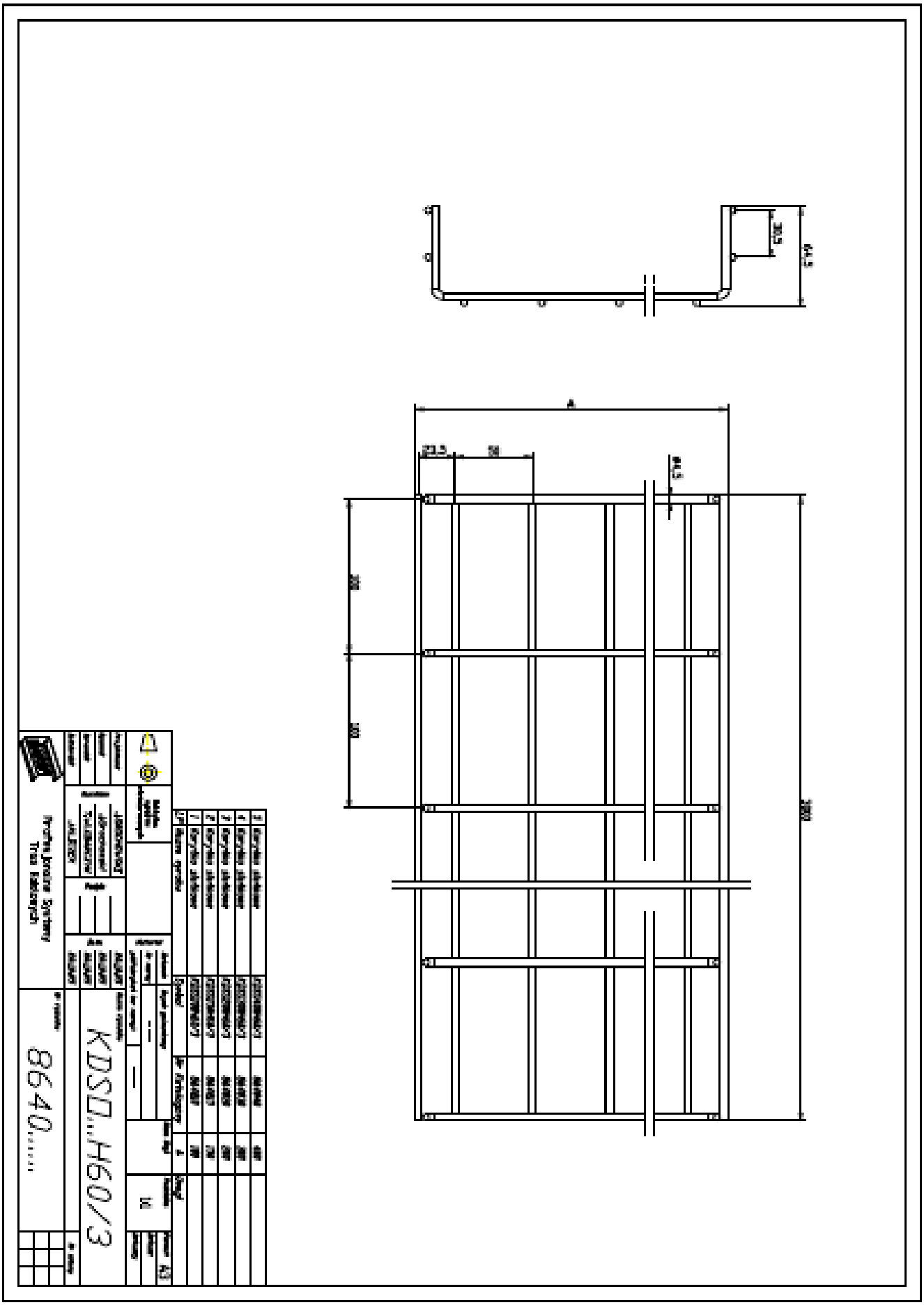
Odchyłka wymiarów nietolerowanych		Materiał	Gatunek		Masa [kg]	Podziałka	Format A4
			Nr normy			1:5	Arkusz
			półfabrykat (nr normy)				Arkuszy
Projektował	J.GRONOWSKI		20.10.05	Nazwa rysunku			
Rysował	J.Grochowski		20.10.05	KCNP400H60/3N-F			
Sprawdził	T.WLODARCZYK		20.10.05				
Zatwierdził	J.KLICZEK		20.10.05	Nr programu			Nr zmiany
Profesjonalne Systemy Tras Kablowych				Nr rysunku			

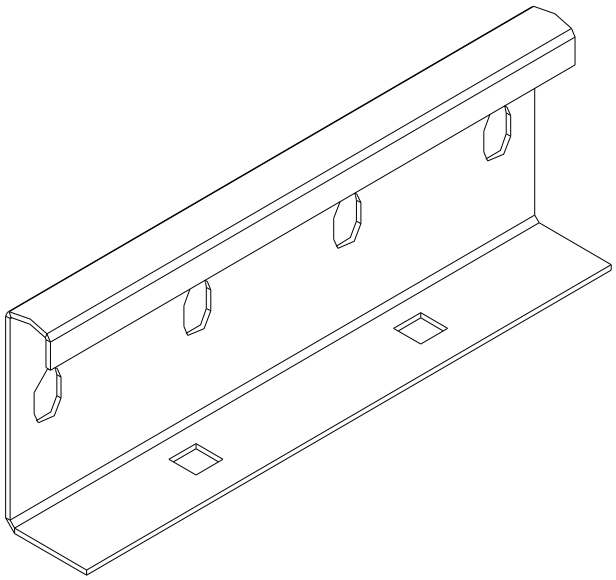


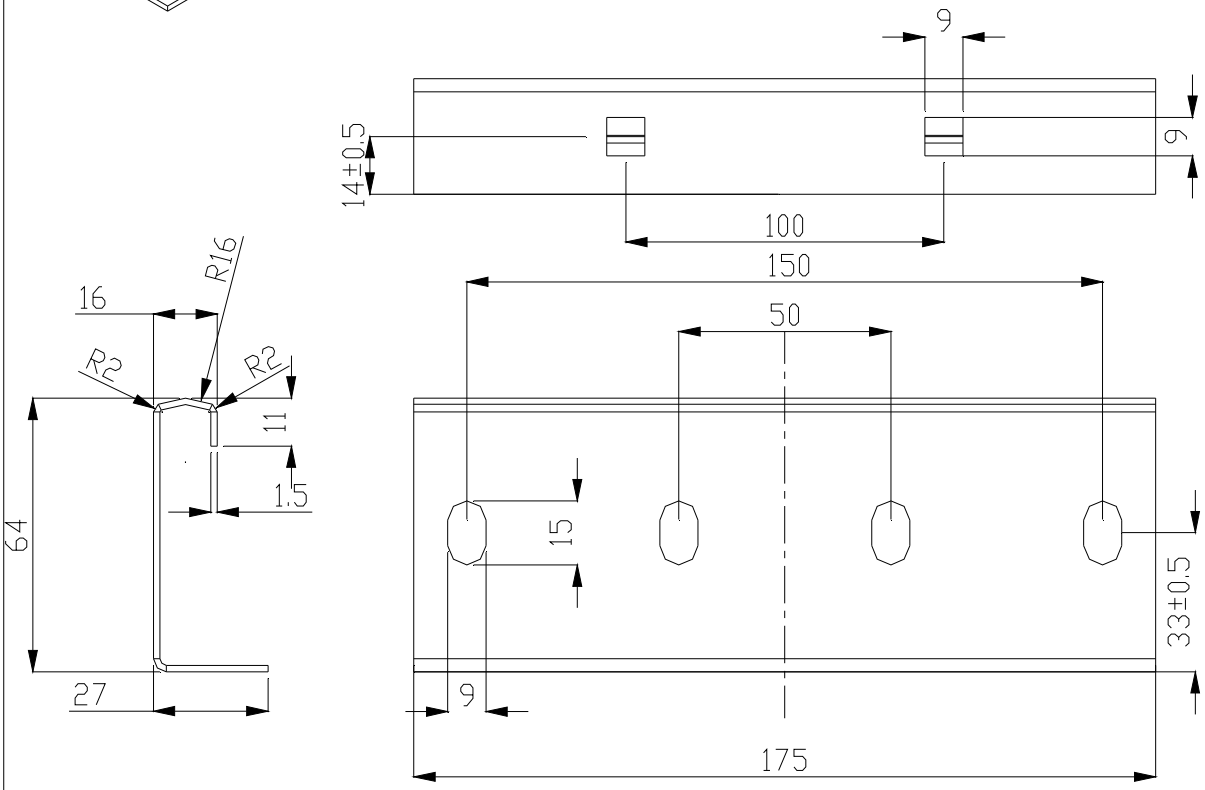
Nr.	Element	Oznaczenie-Nr	Materiał	Sztuk	Nr Katalogowy
3	śruba	SGN M8x14		8	
2	łącznik	LDONCH60N		2	
1	DRABINA	DGOP400H60/3N		2	

Odchylka wymiarów nietolerowanych		Materiał: Gatunek		Masa [kg]	Podziałka	Format	A4
		Nr normy				Arkusz	1
		półfabrykat (nr normy)				Arkuszy	1

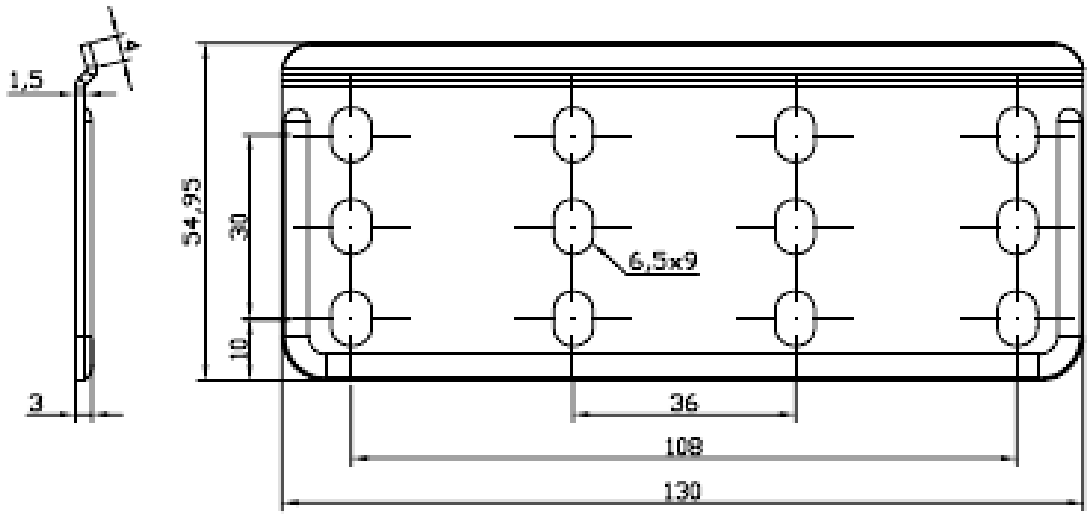
Projektował	Nazwisko	Podpis	Data	Nazwa rysunku	
Rysował	P. Okniński		30-06-09	DGOP400H60/3N	
Sprawdził					
Zatwierdził				Nr programu maszynowego	Nr zmiany
BAKS® Profesjonalne Systemy Tras Kablowych				Nr rysunku	







	Odchyłka wymiarów nietolerowanych		Materiał	Gatunek		Masa [kg]	Podziałka	Format A4
				Nr normy				Arkusz
				półfabrykat (nr normy)				Arkuszy
Projektował	Nazwisko: J.GROCHOWSKI	Podpis	Data	20.10.05	Nazwa rysunku	LDONCH60N		
Rysował	J.Grochowski			20.10.05				
Sprawdził	T.WŁODARCZYK			20.10.05				
Zatwierdził	J.KLICZEK			20.10.05	Nr programu			Nr zmiany
Profesjonalne Systemy Tras Kablowych					Naszyswego	863000		

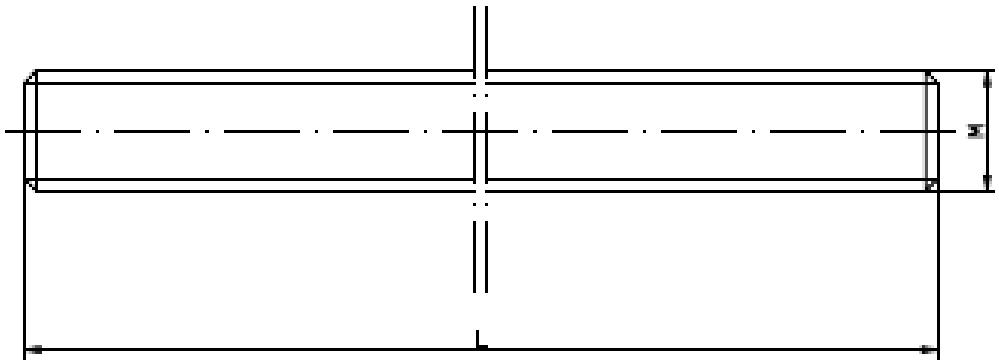


	Zakłady wyrobów metalowych		Gatunek		Masa [kg]	Podziałka 1:1	Format A4	
			Nr normy	PN-EN 10327:2005			Arkuszy	
			pdfFabrykat bez normy				Arkusz	

Projektował	JGROCHOWSKI		20.10.05	Nazwa rysunku	LPOPH60N
Rysował	J.Grochowski		20.10.05		
Sprawdził	T.WŁODARCZYK		20.10.05		
Zatwierdził	J.KLICZEK		20.10.05		Nr zeszy

Profesjonalne Systemy Tras Kablowych

Nr rysunku 860700



Symbol	Gwint M (mm)	Długość L (mm)	Masa (kg)	Nr katalogowy
PGM12/1	12	1000	0,72	651201
PGM10/1	10	1000	0,49	651001
PGM6/1	6	1000	0,16	650301

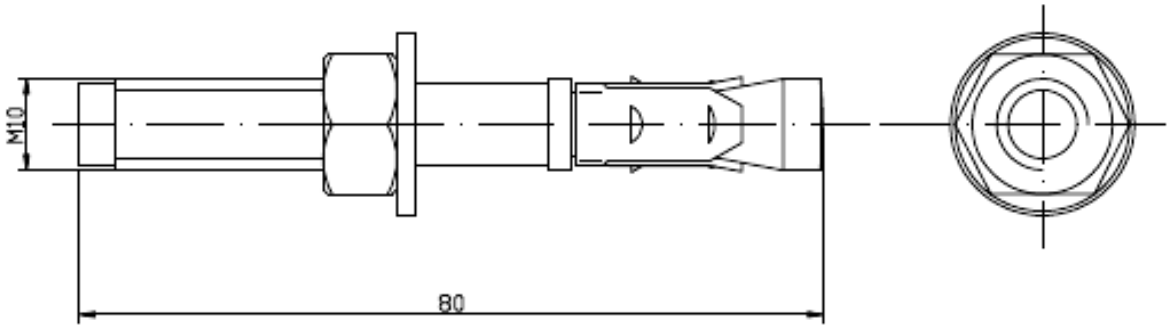
Półka systemu kablowego — Grubość (mm): – — Materiał: Stal cynkowana galwanicznie — Masa (kg): — Podziałka: 2:1 — Format: A4

Projektował: J.GRODKOWSKI — Rysował: J.Grodkowski — Sprawdził: T.WŁODARCZYK — Zatwierdził: J.KOLSZEK — Data: 28.10.05

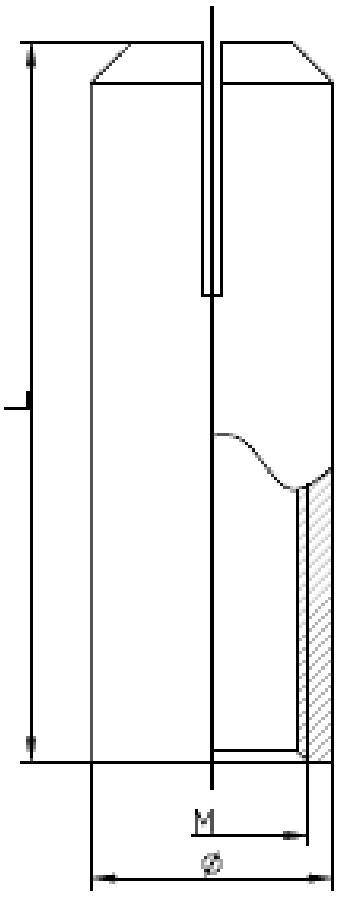
Nazwa rysunku: PGM..../1

Profesjonalne Systemy Tras Kablowych

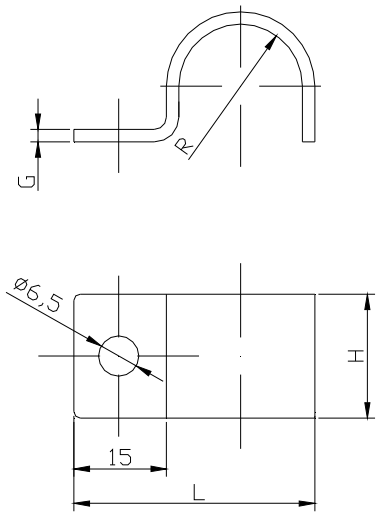
Nr rysunku:



	Obchyłka wymiarów nietolerowanych		Materiał: Gatunek	Stal cynkowana galwanicznie	Masa [kg]	Podziałka 1:1	Format A4
			Nr normy				Arkusz
			półfabrykat (nr normy)				Arkuszy
Projektował	Nazwisko: J.GRZECHOWSKI	Podpis	Data: 20.10.05	Nazwa rysunku: PSRO M10x80			
Rysował	J.Grzechowski		20.10.05				
Sprawdził	T.WŁODARCZYK		20.10.05				
Zatwierdził	J.KLICZEK		20.10.05				Nr zmiany
	Profesjonalne Systemy Tras Kablowych			Nr rysunku: 804100			



TRSDM...



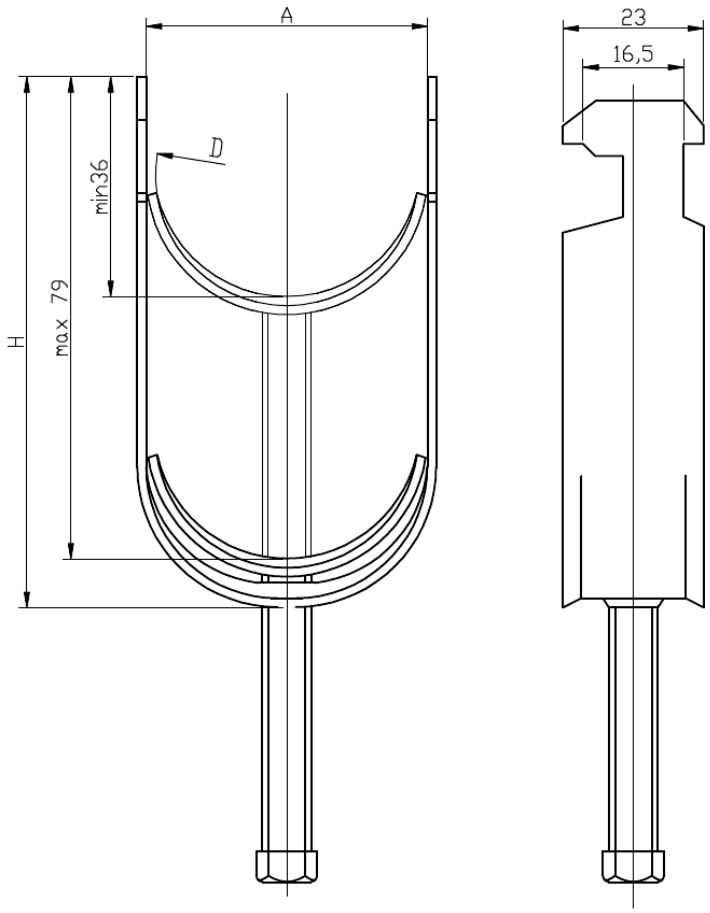
LP	Nazwa wyrobu	Symbol	Nr Katalogowy	R [mm]	L [mm]	H [mm]	G [mm]
20	Uchwyt kabla	UDFE 43	405543	21,5	60,0	20,0	2,0
19	Uchwyt kabla	UDFE 40	405540	20,0	57,0	20,0	2,0
18	Uchwyt kabla	UDFE 37	405537	18,5	54,0	20,0	2,0
17	Uchwyt kabla	UDFE 34	405534	17,0	51,0	20,0	2,0
16	Uchwyt kabla	UDFE 31	405531	15,5	48,0	20,0	2,0
15	Uchwyt kabla	UDFE 28	405528	14,0	45,0	20,0	2,0
14	Uchwyt kabla	UDFE 25	405525	12,5	44,0	20,0	2,0
13	Uchwyt kabla	UDFE 22	405522	11,0	41,0	14,0	2,0
12	Uchwyt kabla	UDFE 20	405520	10,0	39,0	14,0	2,0
11	Uchwyt kabla	UDFE 18	405518	9,0	37,0	14,0	2,0
10	Uchwyt kabla	UDFE 16	405516	8,0	35,0	14,0	2,0
9	Uchwyt kabla	UDFE 15	405515	7,5	34,0	14,0	2,0
8	Uchwyt kabla	UDFE 14	405514	7,0	33,0	14,0	1,2
7	Uchwyt kabla	UDFE 12	405512	6,0	30,0	14,0	1,2
6	Uchwyt kabla	UDFE 10	405510	5,0	28,0	14,0	1,2
5	Uchwyt kabla	UDFE 9	405509	4,5	27,0	14,0	1,2
4	Uchwyt kabla	UDFE 8	405508	4,0	26,0	14,0	1,2
3	Uchwyt kabla	UDFE 7	405507	3,5	25,0	14,0	1,2
2	Uchwyt kabla	UDFE 6	405506	3,0	24,0	14,0	1,2
1	Uchwyt kabla	UDFE 5	405505	2,5	23,0	14,0	1,2

Odchyłka wymiarów nietolerowanych	±0,5	Materiał: Gatunek		Masa [kg]	Podziałka	Format A4
		Nr normy	PN-EN 10327:2005	---	1:1	Arkusz --
		półfabrykat (nr normy)	-----			Arkuszy --

Projektował	Nazwisko	Podpis	Data	Nazwa rysunku
Rysował	G. Matuszewski		28.01.09	UDFE 5-43
Sprawdził				
Zatwierdził				Nr zmiany

Profesjonalne Systemy Tras Kablowych

Nr rysunku 4055.....



UK□1/58-64	66	103	64
UK□1/46-52	54	97	52
UK□1/40-46	48	86	46
UK□1/34-40	42	78	40
UK□1/28-34	36	71	34
UK□1/22-28	30	61	28
UK□1/16-22	24	57	22
SYMBOL	A	H	ØD

□dchyłka wymiarów) nietolerowanych

Materiał: Gatunek; Nr normy; półfabrykat (nr normy)

Masa [kg]: ---

Podziałka: 1:1

Format: A4

Arkusz: 1

Arkuszy: 1

	Nazwisko	Podpis	Data
Projektował	T.Grudniewski		2004.12.29
Rysował	J.Jasiński		2004.12.29
Sprawdził	J.Kliczek		2004.12.29
Zatwierdził	J.Kliczek		2004.12.29

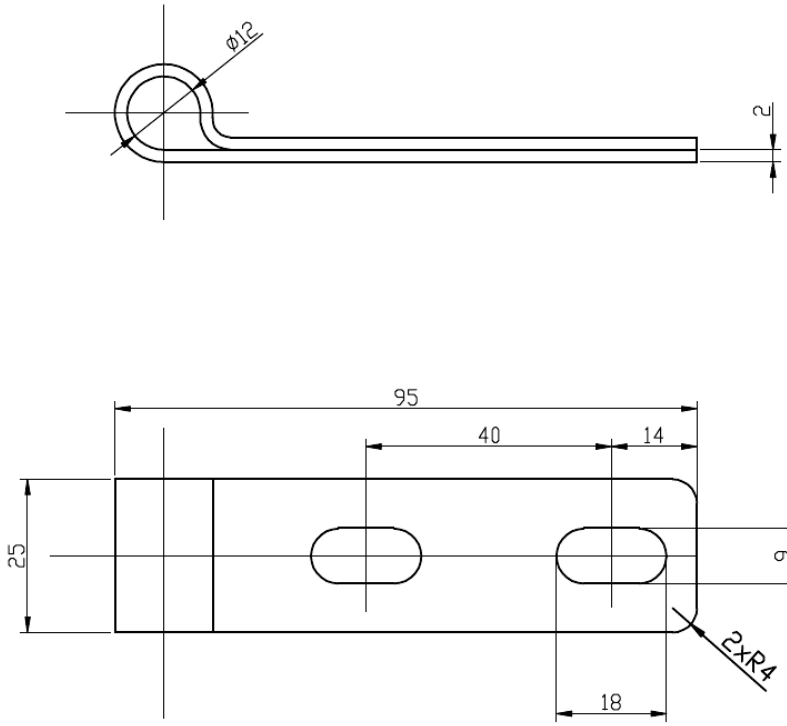
Nazwa rysunku: UK□1/40-46

Nr programu maszynowego: ---

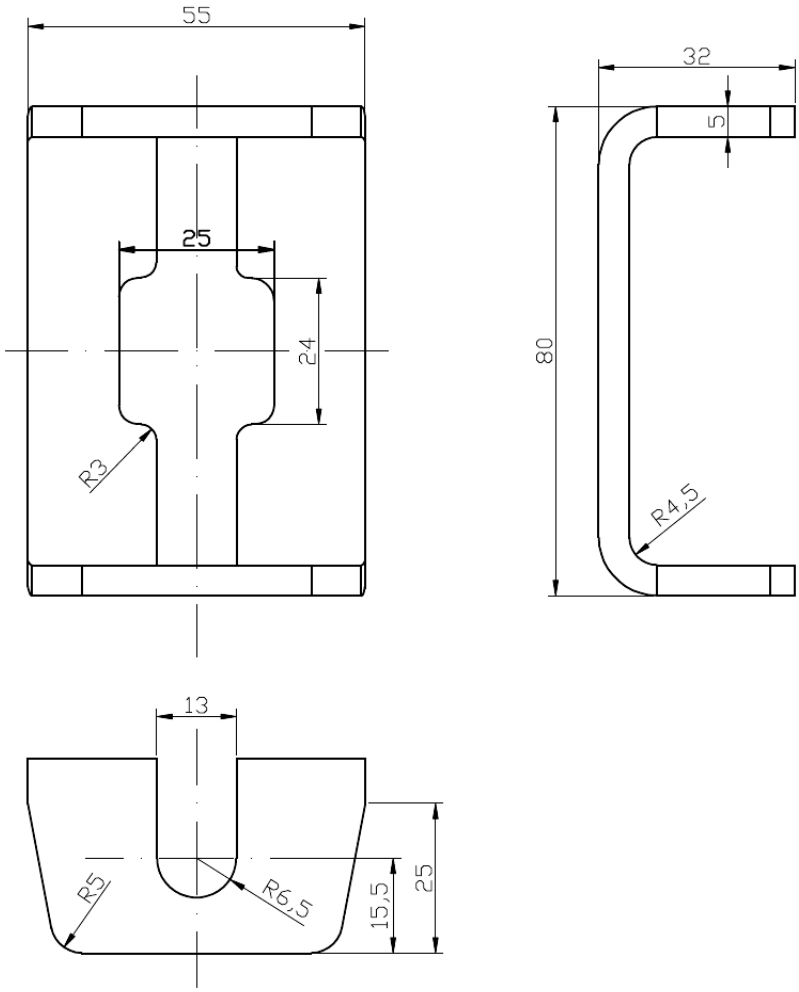
Nr zmiany

Nr rysunku

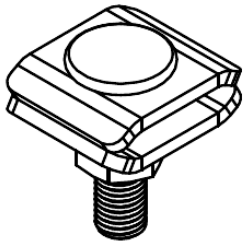
Profesjonalne Systemy Tras Kablowych

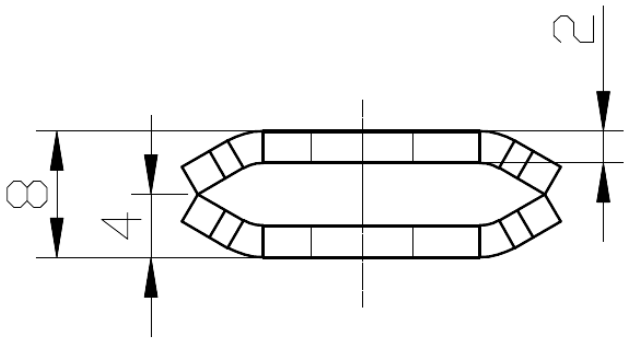


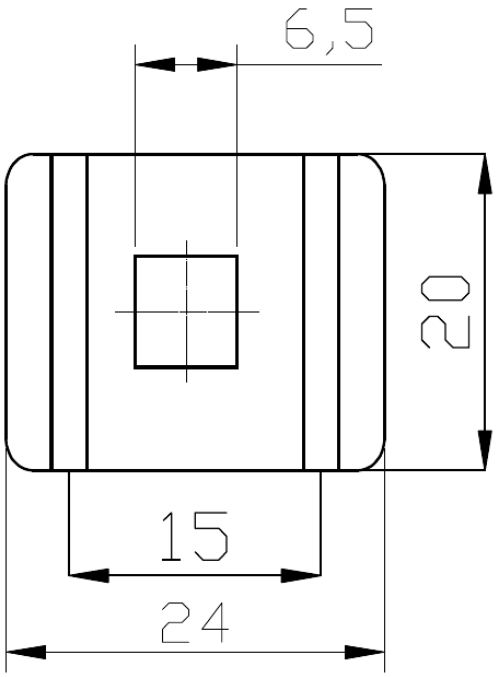
	Odchyłka wymiarów nietolerowanych		Materiał	Gatunek		Masa [kg]	Podziałka	Format A4
				Nr normy	----------	---	1:1	Arkusz 1
				półfabrykat (nr normy)				Arkuszy 1
Projektował	Nazwisko J.Grochowski	Podpis	Data	--------	Nazwa rysunku			
Rysował	J.Grochowski			------	UPW□			
Sprawdził	J.Kliczek			------				
Zatwierdził	J.Kliczek			--------	Nr programu maszynowego ---			Nr zmiany
BAKS Profesjonalne Systemy Tras Kablowych					Nr rysunku 803300			



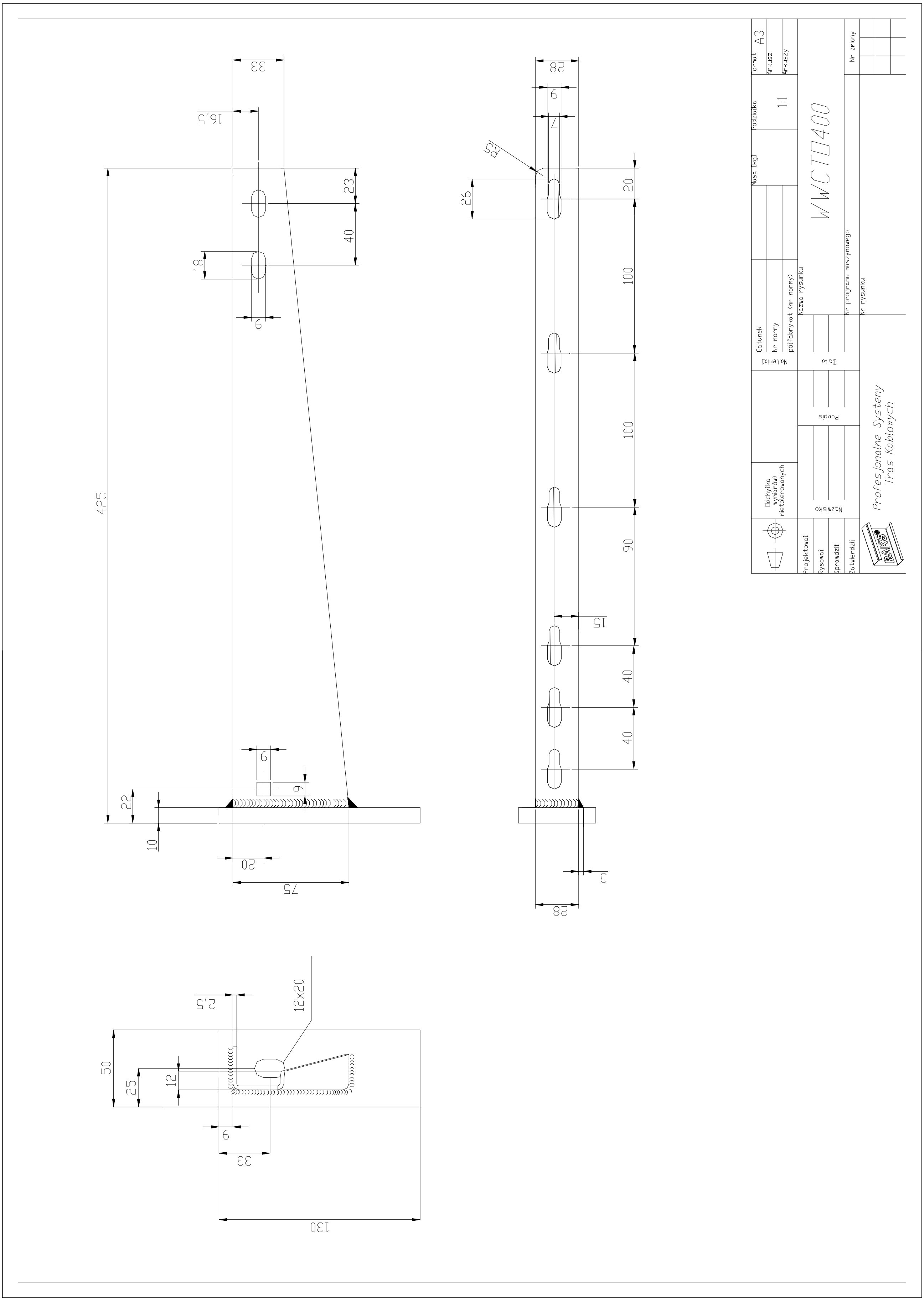
	Odchyłka wymiarów nietolerowanych	Grubość [mm] 5	Materiał	Gatunek: Blacha stal. cynk. met. zanurz.	Masa [kg] 0,21	Podziałka 1:1	Format A4	
				Nr normy: PN-EN ISO 1461:2000			Arkusz	
				półfabrykat (nr normy):			Arkuszy	
Projektował	Nazwisko: J.GROCHOWSKI	Podpis	Data: 20.10.05	Nazwa rysunku: USOV				
Rysował	J.Grochowski		20.10.05					
Sprawdził	T.WLODARCZYK		20.10.05					
Zatwierdził	J.KLICZEK		20.10.05				Nr zmiany	
BAKS® Profesjonalne Systemy Tras Kablowych				Nr rysunku: 803700				

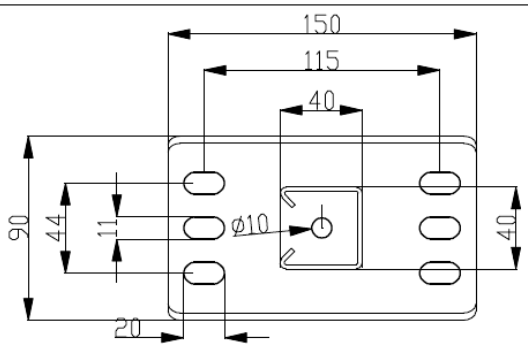


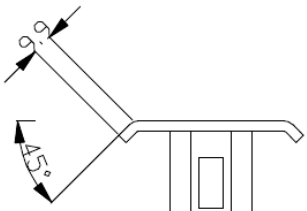


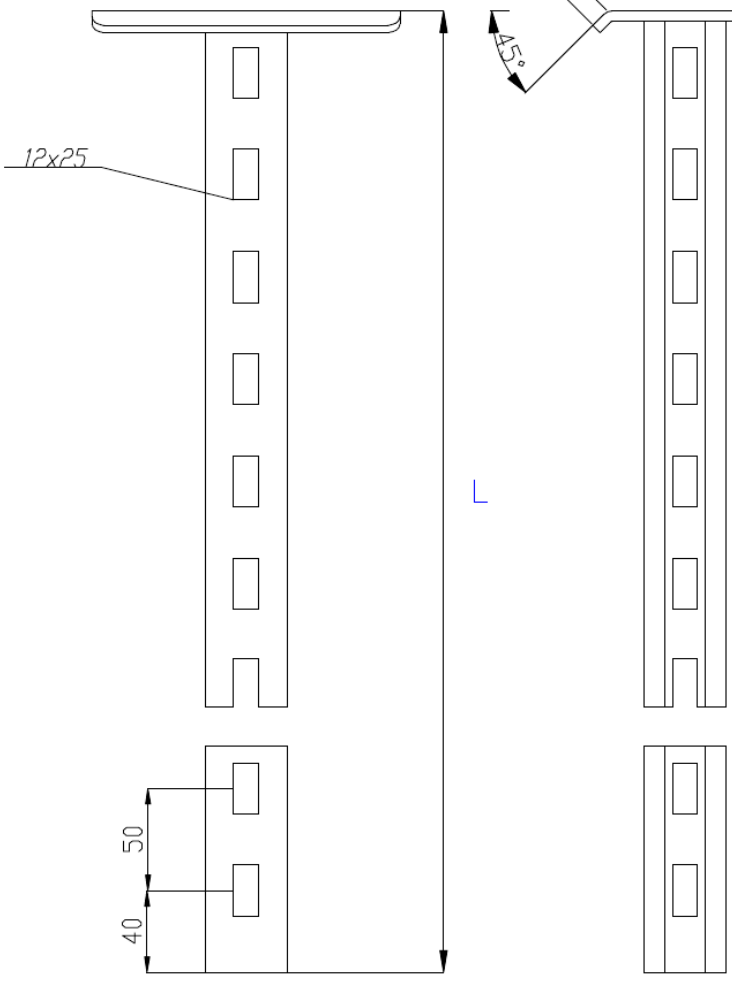


	Odchyłka wymiarów) nietolerowanych		Materiał	Gatunek: Blacha stal. cynk. met. Sędzimira	Masa [kg]: 0,03	Podziałka: 1:1	Format: A4
				Nr normy: PN-EN 10327:2005			Arkusz: 1
				półfabrykat (nr normy):			Arkuszy: 1
Projektował:	Nazwisko: M.Stawikowski	Podpis:	Data: 10.12.2007	Nazwa rysunku: Uchwyt śrubowy USS□			
Rysował:	M.Stawikowski						
Sprawdził:							
Zatwierdził:				Nr programu maszynowego: ---			Nr zmiany
BAKS Profesjonalne Systemy Tras Kablowych				Nr rysunku: 806000			


WWCT□400
Profesjonalne Systemy
Tras Kablowych
Format A3
Podziałka 1:1
Masa [kg]
Arkusz
Arkuszy
Materiał
Gatunek
Nr normy
półfabrykat (nr normy)
Nazwa rysunku
Nr programu maszynowego
Nr rysunku
Nr zmiany
Odchyłka wymiarów nietolerowanych
Projektował
Rysował
Sprawdził
Zatwierdził
Data
Podpis
Nazwisko
425
75
20
130
12x20







L	Typ	Nr.kat
200	WPCO200N	
300	WPCO300N	
400	WPCO400N	
500	WPCO500N	
600	WPCO600N	
700	WPCO700N	
800	WPCO800N	
900	WPCO900N	
1000	WPCO1000N	

	Odchyłka wymiarów) nietolerowanych		Materiał	Gatunek		Masa [kg]	Podziałka
				Nr normy		--	1:3
				półfabrykat (nr normy)			

Format A4, Arkusz 1, Arkuszy 1

Projektował	Nazwisko	Piotr Okniński	Podpis	25.03.09
Rysował		Piotr Okniński		25.03.09
Sprawdził		J.Kilczek		25.03.09
Zatwierdził		J.Kilczek		25.03.09

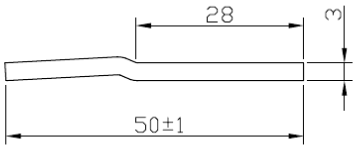
Nazwa rysunku: WPCO.....N

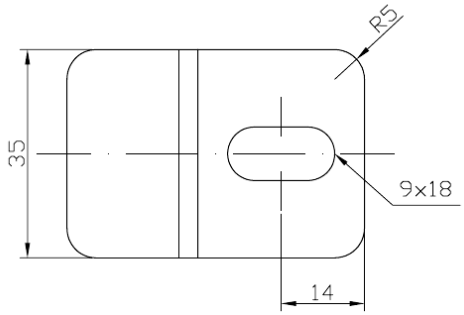
Nr programu maszynowego: ---

Nr zmiany

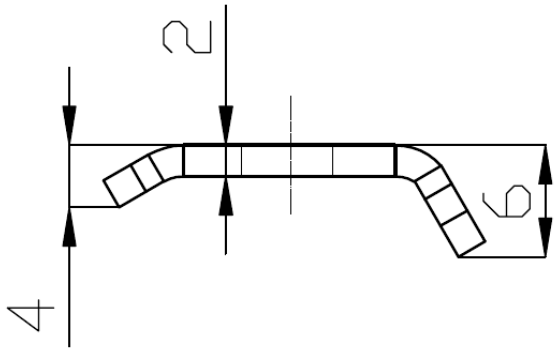
Profesjonalne Systemy Tras Kablowych

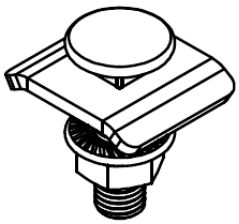
Nr rysunku

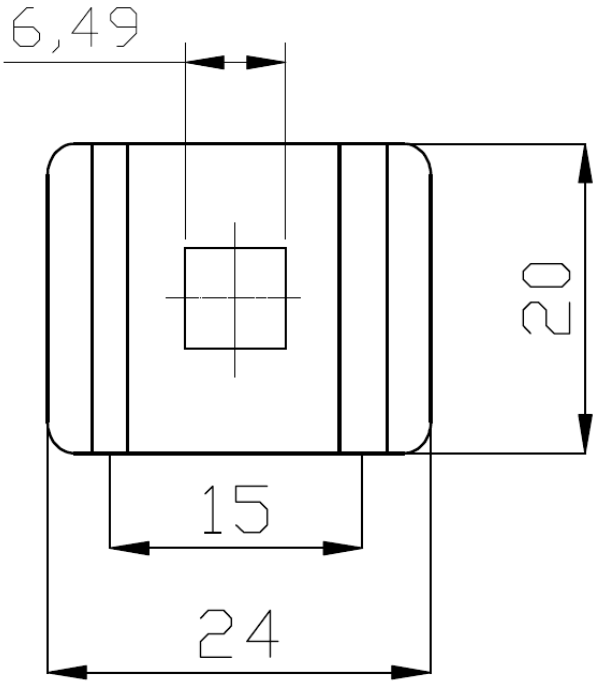




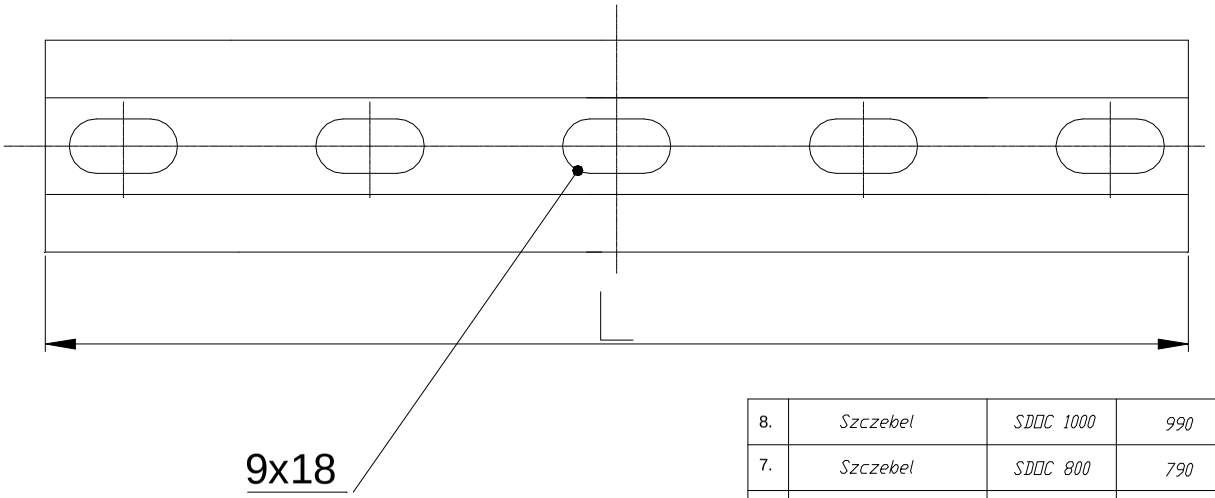
	Odchyłka wymiarów nietolerowanych	±0,5	Materiał	Gatunek	-----	Masa [kg]	Podziałka	Format A4
				Nr normy	PN-EN 10327:2005	0,025	1:1	Arkusz --
				półfabrykat (nr normy)	-----			Arkuszy --
Projektował	Nazwisko: Tomasz Grudniewski	Podpis	Data	29.12.04	Nazwa rysunku			
Rysował	Jakub Rudak			20.02.08	ZMOE			
Sprawdził	Jacek Kliczek			20.02.08				
Zatwierdził	Jacek Kliczek			20.02.08				Nr zmiany
BAKS® Profesjonalne Systemy Tras Kablowych					Nr rysunku 802900			

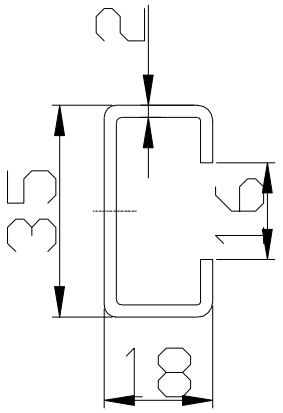






	Dachyłka wymiarów nietolerowanych		Materiał: Gatunek	Blach.stal.cynk.met.Sendzimira	Masa [kg] 0,07	Podziałka 1:1	Format A4
			Nr normy	PN-EN 10327:2005			Arkusz
			półfabrykat (nr normy)				Arkuszy
Projektował	M.Stawikowski		Data 20.10.05	Nazwa rysunku: Zacisk śrubowy ZSD			
Rysował	M.Stawikowski		20.10.05				
Sprawdził			20.10.05				
Zatwierdził			20.10.05				Nr zmiany
BAKS® Profesjonalne Systemy Tras Kablowych				Nr rysunku: 806100			





L.p.	Nazwa wyrobu	Symbol	Długość L (mm)	Masa (kg)/szt.	Materiał	Nr katalogowy
8.	Szczebel	SD□C 1000	990	1,30		
7.	Szczebel	SD□C 800	790	1,04		
6.	Szczebel	SD□C 600	590	0,78		
5.	Szczebel	SD□C 500	490	0,65		
4.	Szczebel	SD□C 400	390	0,52		
3.	Szczebel	SD□C 300	290	0,39		
2.	Szczebel	SD□C 200	190	0,26		
1.	Szczebel	SD□C 100	90	0,13		

Odchyłka wymiarów nietolerowanych

Materiał: Gatunek ------ | Nr normy ------ | półfabrykat (nr normy) ------

Masa [kg] -----

Podziałka 1:1

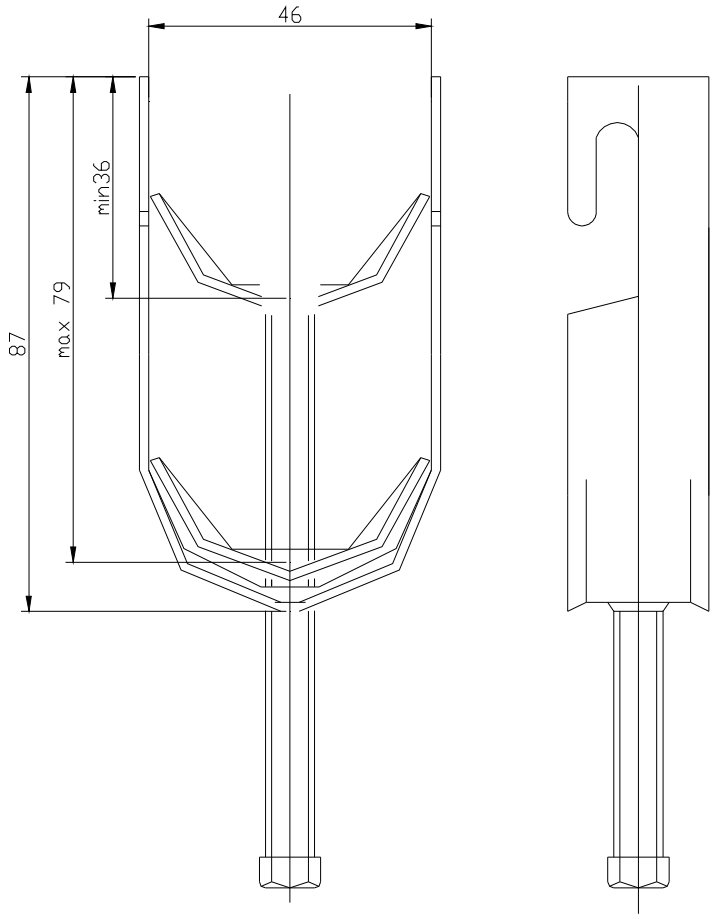
Format A2 | Arkusz | Arkuszy

	Nazwisko	Podpis	Data
Projektował			
Rysował	G.Matuszewski		28.01.09
Sprawdził			
Zatwierdził			

Nazwa rysunku: SZCZEBEL SD□P

Profesjonalne Systemy Tras Kablowych

Nr katalogu



	Odchyłka wymiarów nietolerowanych		Materiał	Gatunek		Masa [kg]	Podziałka	Format A4
				Nr normy	PN-EN 10142 + A1 : 1997	------	1:1	Arkusz 1
				półfabrykat (nr normy)				Arkuszy 1
Projektował	T.Grudniewski		Data	2004.12.29	Nazwa rysunku			
Rysował	J.Jasiński	Podpis		2004.12.29	UKZ□1/40-46			
Sprawdził	J.Kliczek			2004.12.29				
Zatwierdził	J.Kliczek			2004.12.29	Nr programu maszynowego ---			Nr zmiany
BAKS Profesjonalne Systemy Tras Kablowych					Nr rysunku 800500			

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 DIN 4102-2 and DIN 4102-12. 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:

Ing. Štefan Rástocký
leader of the testing laboratory

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FIRES
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-1-

Prepared by:

Miroslav Hudák
technician of the testing laboratory

8. NORMATIVE REFERENCES

STN EN 1363-1: 2001	Fire resistance tests. Part 1: General requirements
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

THE END OF THE TEST REPORT