INSULATORS

ALCE
TRANSFORMING
SUPPORTING

INSULATORS

CONTENTS

> INDOOR INSULATORS

GENERAL INFORMATION ON INSULATORS

Rated insulation levels for post insulators

Um [kV]	Dry power frequency withstand voltage acc. to IEC 60273 [kV]	Lightning impulse withstand voltage acc. to IEC 60273 [kV]
3,6	10	40
7,2	28	60
12	38	75
17,5	50	95
24	50	125
36	70	170

Tightening torques

The table below applies when the length of the screw within the threaded insert is at least 1,4 x screw diameter.

Screw	Max.torque [Nm]	Max.hole diameter in busbar [mm]
M6	7	8
M8	12	10
M10	28	12
M12	45	15
M16	110	19
M20	150	24
M24	250	28

Um: Highest voltage for equipment

Specifications and product designs are subject to change without prior notice in view of continuous improvements.

01

INDOOR POST INSULATORS

APPLICATION

Epoxy cast resin indoor post insulators can be used for all indoor applications.
For tropical conditions same types (with special fixing parts) are available.
They are suitable for temperatures from -25°C up to +90°C

CONSTRUCTION

Epoxy cast resin indoor post insulators are cylindrical solid insulators, with proper creepage and number of ripples.
The main dimensions are in accordance with IEC 60273 - 1990.
Auxiliary inserts are connected with main insert electrically.

TESTS

The following tests, according to IEC 60660 - 1999 are performed:

ROUTINE TESTS

- Visual inspection
- Testing of conductive connection of fixing inserts for post insulators type B (IEC 60660 - 1999)
- Power-frequency withstand voltage (dry)
- Partial discharge measurement

SAMPLE TESTS

- Testing of minimum failing load for bending

ADDITIONAL TESTS

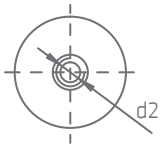
- Lightning impulse withstand voltage test (on request)
- Testing of minimum failing loads (nominal loads) for bending

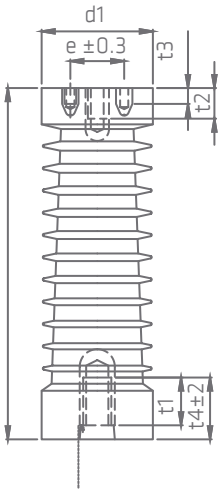
INDOOR POST INSULATORS

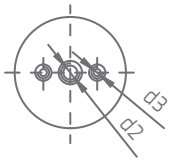
Acc.to VDE 0674 -(1993), VDE 0111 - (1980)

Part No	Type	Um [kV]	Min. Creepage [mm]	Ripples	Min. Bending [N]	h	e	d1	Dimensions [mm] d2	d3	d4	t1	t2	t3	t4	Weight [kg]	PCS/Box
1000142	A10S-500	7,2	130	2	5000	95	36	58	M16	M6	M10	26	15	9	38	0,39	16
1000145	B10S-1000		128	2	10000		46	71	M16	M10	M16	26	26	12	35	0,65	9
1000137	A10N-500	12	165	4	5000	130	36	56	M16	M6	M10	30	15	9	45	0,52	16
1000141	B10N-1000		184	5	10000		46	76	M20	M10	M16	35	26	12	47	1,00	9
1000165	A20S-500	17,5	242	6	5000	175	36	70	M16	M6	M10	30	15	9	42	1,00	16
1000169	B20S-1000		237	6	10000		46	83	M20	M10	M16	35	26	12	47	1,50	9
1000178	A20N-500	24	303	6	5000	210	36	70	M16	M6	M10	30	15	9	45	1,10	16
1000181	B20N-1000		300	8	10000		46	85	M20	M10	M16	35	26	12	47	1,90	9
1000197	A30N-500	36	520	11	5000	300	36	80	M16	M6	M10	35	15	9	47	2,10	9
1000201	B30N-1000		488	11	10000		46	95	M24	M10	M16	45	26	12	57	3,00	6
1000204	C30N-1600		453	11	16000		66	115	M30	M10	M16	45	26	12	68	4,80	6

Um: Highest voltage for equipment







Acc.to IEC 60273 - (1990), IEC 60660 - (1999)

Part No	Type	Um [kV]	Min. Creepage [mm]	Ripples	Min. Bending [N]	h	e	d1	Dimensions [mm] d2	d3	d4	t1	t2	t3	t4	Weight [kg]	PCS/Box
1000217	J06-60	7,2	130	2	6000	95	-	58	M16	-	M12	26	18	-	38	0,38	32
1000218	J06-60		130	2	6000		36	58	M16	M6	M12	26	18	9	38	0,38	32
1000219	J010-60		128	2	10000		-	71	M16	-	M16	26	26	-	35	0,65	9
1000220	J010-60		128	2	10000		46	71	M16	M10	M16	26	26	12	35	0,65	9
1000138	J06-75	12	165	4	6000	130	-	56	M16	-	M12	30	18	-	45	0,49	16
1000139	J06-75		165	4	6000		36	56	M16	M6	M12	30	18	9	45	0,49	16
1000140	J010-75		184	5	10000		-	76	M20	-	M16	35	26	-	47	1,00	9
1000150	J010-75		184	5	10000		46	76	M20	M10	M16	35	26	12	47	1,00	9
1000166	J06-95	17,5	242	6	6000	175	-	70	M16	-	M12	30	18	-	42	1,00	16
1000167	J06-95		242	6	6000		36	70	M16	M6	M12	30	18	9	42	1,00	16
1000168	J010-95		237	6	10000		-	83	M20	-	M16	35	26	-	47	1,40	9
1000170	J010-95		237	6	10000		46	83	M20	M10	M16	35	26	12	47	1,40	9
1000177	J06-125	24	303	6	6000	210	-	70	M16	-	M12	30	18	-	45	1,10	16
1000179	J06-125		303	6	6000		36	70	M16	M6	M12	30	18	9	45	1,10	16
1000180	J010-125		300	8	10000		-	85	M20	-	M16	35	26	-	47	1,82	9
1000185	J010-125		300	8	10000		46	85	M20	M10	M16	35	26	12	47	1,82	9
1000198	J06-170	36	520	11	6000	300	-	80	M16	-	M12	35	18	-	47	2,10	9
1000199	J06-170		520	11	6000		36	80	M16	M6	M12	35	18	9	47	2,10	9
1000200	J010-170		488	11	10000		-	95	M24	-	M16	45	26	-	57	3,00	6
1000210	J010-170		488	11	10000		46	95	M24	M10	M16	45	26	12	57	3,00	6
1000202	J016-170		453	11	16000		-	115	M24	-	M16	45	26	-	68	4,80	6
1000203	J016-170		453	11	16000		66	115	M24	M10	M16	45	26	12	68	4,80	6

03 CAPACITIVE DIVIDER INSULATORS

NECESSARY INFORMATION FOR ORDERING:

1- Voltage detecting system: HR or LRM system.

2- Nominal voltage, Un (if different from Um).

3- Length of the coaxial cable for connection.

4- If the capacitance of the indicator is different from IEC 61243-5, please inform us about the capacitance of the indicator.

APPLICATION

Indoor voltage divider insulators are used for the detection of the presence of voltage on phase lines.
The basic operation principle is on the capacitive division of phase voltage. The voltage divider insulators are used with capacitance coupled voltage indicating system.
They are suitable for temperatures from -25°C up to +90°C.

CONSTRUCTION

Indoor voltage divider insulators are epoxy cast resin.
The main dimensions and mechanical requirements are in accordance with DIN 48136.

TESTS

In addition to the tests applied to the standard insulators according to VDE 0441 part 3 (1984),

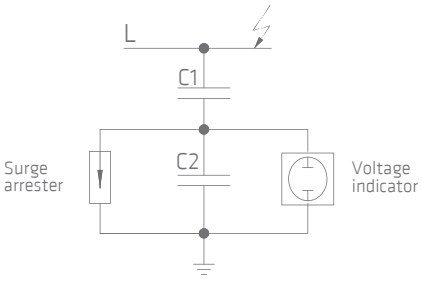
IEC 60660-1999 FOLLOWING ROUTINE TESTS ARE PERFORMED:

- Power-frequency withstand voltage test [dry]
- Partial discharge measurement
- Capacitance test

Capacitive voltage indicating system for medium voltage

Capacitance-coupled voltage indication system

The voltage indication system consists essentially of a capacitive voltage divider between a conductor L and earth. Moreover, the system includes an indicator for the detection of voltage and a surge arrester for protection purposes.

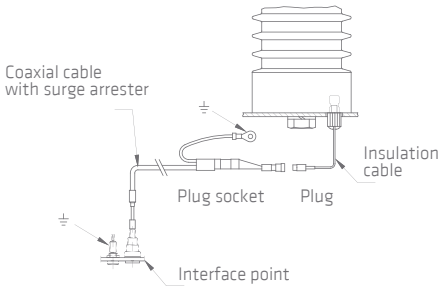


Function

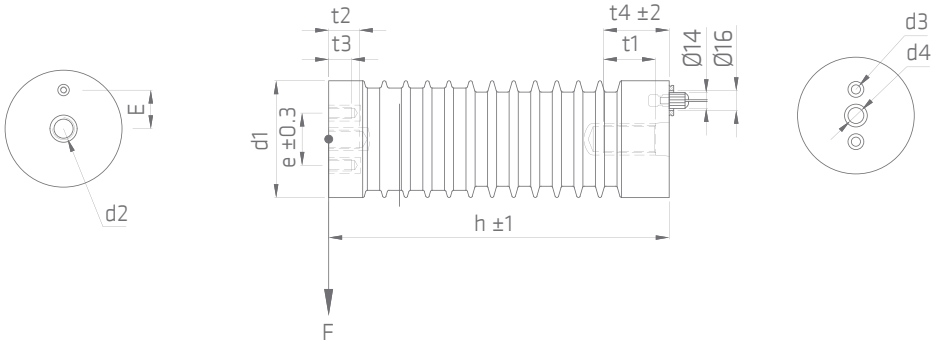
Voltage division occurs due to the capacitive values of C1 and C2.
According to IEC 61243-5 the indication should start in between 10% of the read voltage of the system. For that reason, the capacitance values are adjusted in accordance within this range so that the indication starts.
Up to 10% of the rated voltage, there shall be no indication. Under any circumstance above 45% of the rated voltage the indication shall be “ON”.
The presence of voltage is indicated separately and independently for each phase conductor. The system operates without a battery or auxiliary supply.
The energy required for the system is being drawn from the high voltage system (CAPDIS system may require auxiliary power for some additional functions depending on the application).

Shock hazard protection

Voltage indication system does not present any risk during normal or disturbed operation. During normal operation, the voltage divider capacitance CI limits the currents to less than 100µ±A.



CAPACITIVE DIVIDER INSULATORS (FOR INDICATION AND STATIC LOADS)



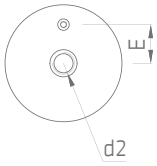
Part No	Type	Um (kV)	Min. Creepage [mm]	Ripples	Capacitance (LCR meter)	Min. Bending [N] (Static)	h	Dimensions [mm]										Weight [kg]	PCS/Box
								E	e	d1	d2	d3	d4	t1	t2	t3	t4		
1000523	DKA-10S	7.2	184	5	18,5±10%	5000	130	30	36	76	M16	M6	M10	25	20	12	37	0,9	9
1000524	DKB-10S		184	5		10000		30	46	76	M20	M10	M16	24	20	15	36	1,0	9
1000514	DKA-10N	12	184	5	18±10%	5000	130	30	36	76	M16	M6	M10	25	20	12	37	0,9	9
1000515	DKB-10N		184	5		10000		30	46	76	M20	M10	M16	24	20	15	36	1,1	9
1000516	DKA-20S	17.5	237	6	15±10%	5000	175	30	36	83	M16	M6	M10	35	20	14	47	1,3	9
1000517	DKB-20S		237	6		10000		30	46	83	M20	M10	M16	35	27	20	47	1,4	9
1000518	DKA-20N	24	300	8	9,5±10%	5000	210	30	36	85	M16	M6	M10	35	20	14	47	1,8	9
1000519	DKB-20N		300	8		10000		30	46	85	M20	M10	M16	35	27	20	47	1,9	9
1000520	DKA-30N	36	438	11	7,5±10%	5000	300	34	36	103	M16	M6	M10	36	20	14	48	3,8	6
1000521	DKB-30N		438	11		10000		34	46	103	M24	M10	M16	45	27	20	57	3,7	6

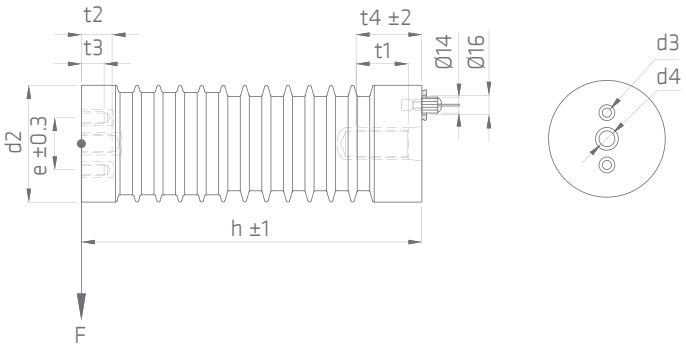
Um: Highest voltage for equipment

ATTENTION!

The insulators should be used for indication purposes and should not be exposed to excessive dynamic loads.

05 CAPACITIVE DIVIDER INSULATORS (FOR INDICATION AND STATIC LOADS)





Part No	Type	Um (kV)	Min. Creepage [mm]	Ripples	Capacitance (LCR meter) [pF]	Min. Bending [N] (static)	h	Dimensions [mm] E	e	d1	d2	d3	d4	t1	t2	t3	t4	Weight [kg]	PCS/ Box
1000508	KA-20S	17,5	237	6	100+20%/-10%	5000		30	36	83	M16	M6	M10	33	20	10	45	1,3	9
1000509	KB-20S		237	6		10000		30	46	83	M20	M10	M16	35	20	20	47	1,4	9
1000510	KA-20N	24	300			5000		30	36		M16	M6	M10	33	20	10	45	1,8	9
1000511	KB-20N		300	8		10000		30	46	85	M20	M10	M16	38	20	12	50	1,9	9
1000443	EK30N-400	36	520	11	60+20%/-10%	4000		30	36	80	M12	M6	M10	23	20	9	33	2,15	9
1000512	KA-30N		488	11		5000		34	36	95	M16	M6	M10	33	20	10	45	3,00	6
1000513	KB-30N (DKB-30N/E)		488	11		10000		34	46	95	M24	M10	M16	48	30	12	60	3,18	6

Um: Highest voltage for equipment

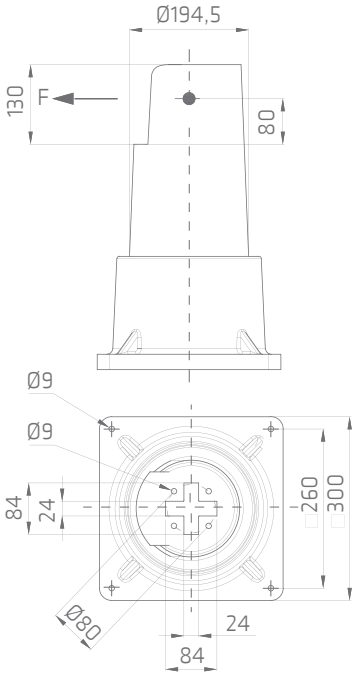
ATTENTION!

The insulators should be used only for indication purposes and should not be exposed to dynamic loads .
High voltage connection for indication shall be flexible cable.

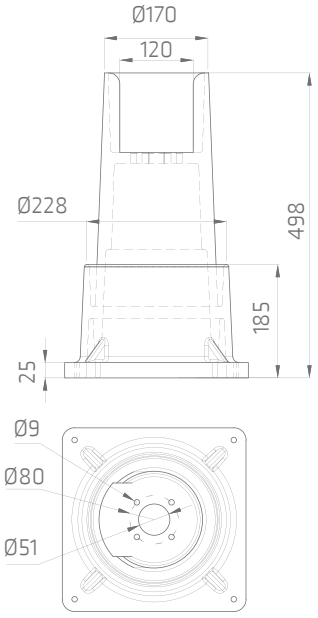
WALL BUSHING TYPE GKB

GKB-36

Dimensions and shape of the hole in the center (will be used for the assembly of fixed part) can change according to customer requirements.

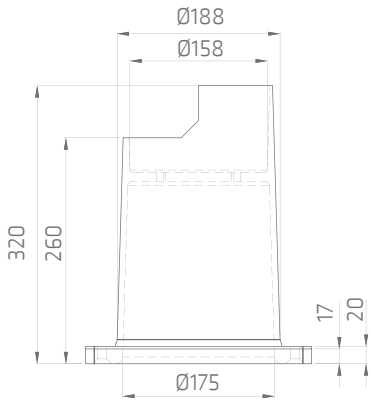


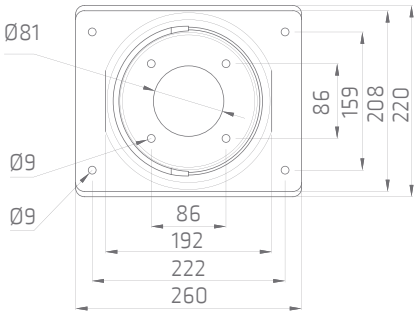
Part no:
1000120



Part no:
1000347

GKB-12

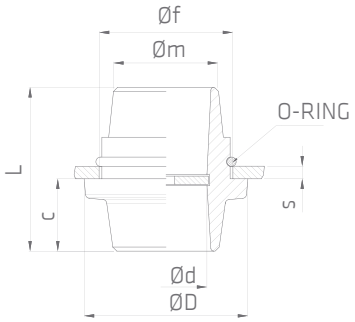


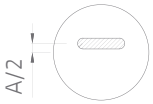


Part No	Type	Rated Voltage Um [kV]	Insulation Voltage [kV]	Lightning impulse voltage [kV]	Min. Bending [N]	Busbar [mm]	Weight [kg]	Pcs/Box
1000120	GKB-36	36	70	170	3750	80X24	12.0	1
1000347	GKB-36	36	70	170	3750	Ø50	12.0	1
1000319	GKB-12	12	38	75	4000	Ø80	3.45	1

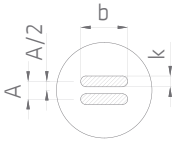
Um: Highest voltage for equipment

WALL BUSHING TYPE GKR





for 1 busbar

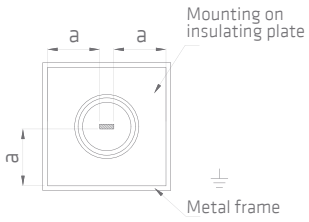


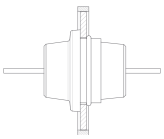
for 2 busbar

Spacers for busbars made of EPDM

Part No	Type	Rated voltage [kV]	Dimensions [mm]							Bar dimensions [mm]	A	b x k [mm]	Weight [kg]	Pcs/Box
			L	c	ØD	Ød	Øm	Øf	s					
1000125	GKR 6/60	12 kV insulating plate; 7,2 kV in sheet of metal	120	55	120	62	77	96	10	1x(50x10)	-	1x(50,5x10,5)	1,00	10
1000110 1000111	GKR 12/75	12 kV insulating plate; 7,2 kV in sheet of metal	120	53	130	75	98	115	6	1x(60x10) 2x(60x10)	20	1x(65x14) 2x(65x14)	1,24	10
1000117 1000118	GKR 24/75	24-36 kV insulating plate; 12 kV in sheet of metal	150	65	140	75	114	125	6	1x(60x10) 2x(60x10)	20	1x(65x14) 2x(65x14)	1,58	10

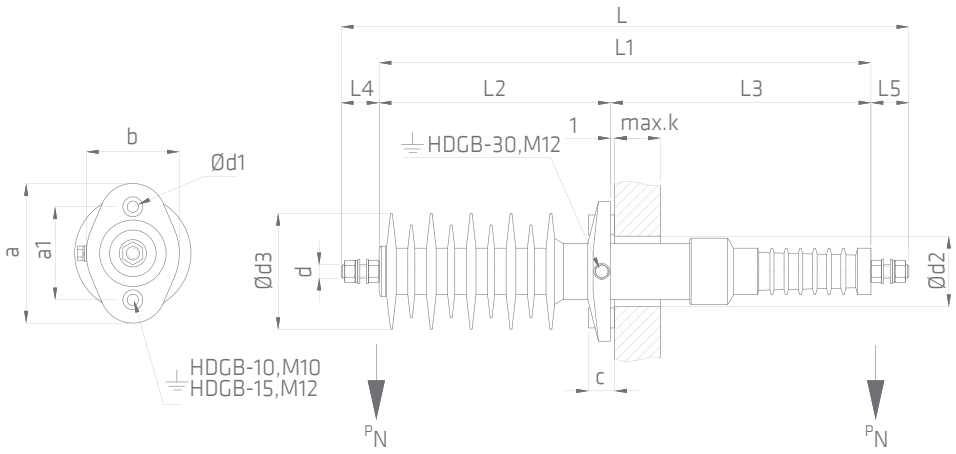
Urn [kV]	Lightning Impulse voltage [kV]	Min.distance "a" at impulse voltage [mm]	Dry power frequency withstand voltage at distance "a" [kV]
12	75	60	42
24	125	178	75
36	170	260	95





Um: Highest voltage for equipment

OUTDOOR TO INDOOR BOLT BUSHING TYPE HDGB

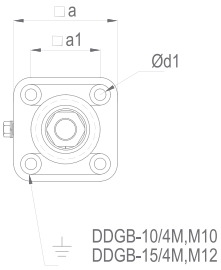


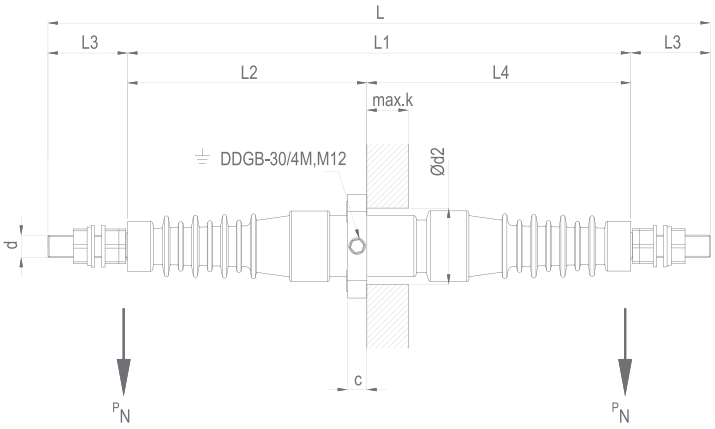
- Test load shall be applied to each end of the bushing separately
- Assembly should be done according to the assembly instructions that are given with the product.

Part No	Type	Um [kV]	Rated Current [A]	Min. Bending [N]	Dimensions [mm]															Weight [kg]	Pcs/ Box
					L	L1	L2	L3	L4	L5	a	a1	b	c	d	Ød1	Ød2	Ød3	k		
1000027	HDGB-10	12	100-250	3750	450	345	180	165	55	50	135	100	80	21	M12	11	75	135	50	3,06	1
1000028			400		470				65	60					M16					3,50	
1000029			630		490				75	70					M20					4,32	
1000030			800		530				95	90					M24X2					4,58	
1000031			1000		560				110	105					M30X1,5					6,89	
1000032			1250		580				120	115					M32X1,5					8,07	
1000033	HDGB-15	17,5	100-250	3750	560	455	245	210	55	50	160	120	90	27	M12	13	90	155	55	4,16	1
1000062			400		580				65	60					M16					4,70	
1000064			630		600				75	70					M20					5,58	
1000066			800		640				95	90					M24X2					6,00	
1000068			1000		670				110	105					M30X1,5					8,56	
1000070			1250		690				120	115					M32X1,5					9,80	
1000099	HDGB-30	36	100-250	3750	845	740	348	392	55	50	210	140	140	33	M12	17	110	175	60	9,40	1
1000101			400		865				65	60					M16					10,13	
1000103			630		885				75	70					M20					11,35	
1000104			800		925				95	90					M24X2					12,05	
1000105			1000		955				110	105					M30X1,5					15,22	
1000107			1250		975				120	115					M32X1,5					16,74	

Um: Highest voltage for equipment

INDOOR TO INDOOR BOLT BUSHING TYPE DDGB





- Test load shall be applied to each end of the bushing separately.
- Assembly should be done according to the assembly instructions that are given with the product.

Part No	Type	Um [kV]	Rated Current [A]	Min. Bending [N]	Dimensions [mm]												Weight [kg]	Pcs/ Box
					L	L1	L2	L3	L4	a	a1	c	d	Ød1	Ød2	k		
1000016	DDGB-10/4M	12	100-250	3750	385	287	131	50	156	135	100	21	M12	11	80	50	2,18	1
1000018			400		405			60					M16				2,62	
1000020			630		425			70					M20				3,18	
1000022			800		465			90					M24X2				3,97	
1000024			1000		495			105					M30X1,5				5,31	
1000026			1250		515			115					M32X1,5				5,98	
1000048	DDGB-15/4M	17,5	100-250	3750	535	439	217	50	222	140	100	20	M12	13	80	55	3,43	1
1000050			400		555			60					M16				3,99	
1000052			630		575			70					M20				4,71	
1000054			800		615			90					M24X2				5,68	
1000056			1000		645			105					M30X1,5				7,36	
1000058			1250		665			115					M32X1,5				8,16	
1000086	DDGB-30/4M	36	100-250	3750	825	725	343.5	50	381,5	150	100	28	M12	17	110	60	7,10	1
1000087			400		845			60					M16				8,00	
1000088			630		865			70					M20				9,20	
1000089			800		905			90					M24X2				1,00	
1000090			1000		935			105					M30X1,5				13,60	
1000091			1250		955			115					M32X1,5				14,85	

Um: Highest voltage for equipment

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