

Bus bar isolators / Bus bar supports

DB/P Spacing isolators
C0/P
CS/P
CT/P
CPE

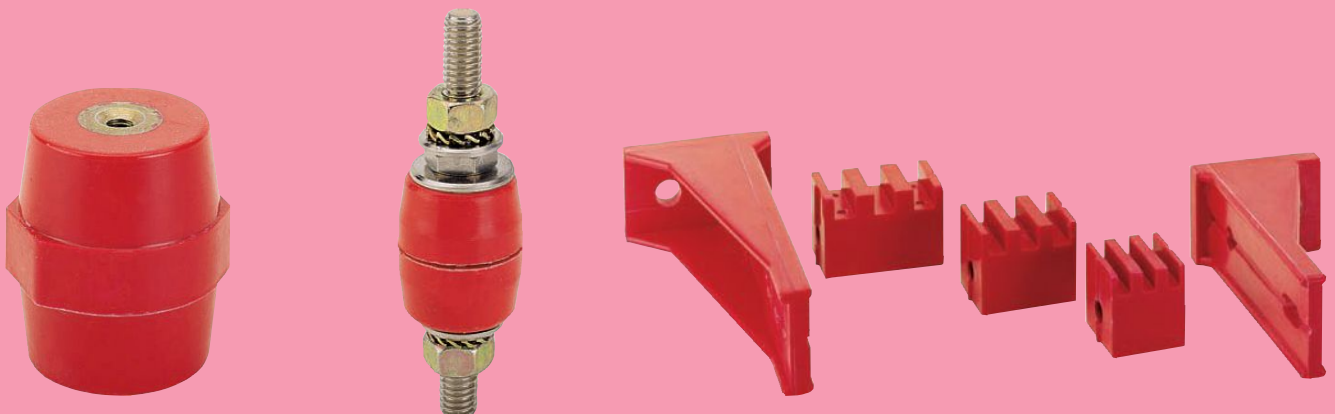
PI/P Passing isolators

PSB Vertical bus bar supports

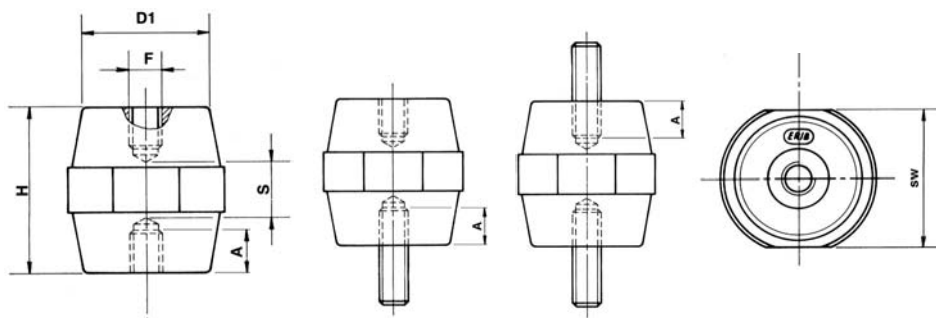
GB Mounting material
Threaded bolts

SK Hexagon spacers in brass

Bus bar supports
Bus bar supports L-profile
Bus bar supports Z-profile



Spacing isolator type DB/P



art.-no. XXXXX
e.g. 90015

art.-no. XXXXX-1
e.g. 90015-1

art.-no. XXXXX-2
e.g. 90015-2

DB/P

Made of Polyglas-polyester material, reinforced with fibreglass, colour red, self extinguishing. The isolators of type DB are unbreakable and have excellent electrical and mechanical characteristics and can be used under extreme working conditions such as high room temperatures, also when in contact with corrosive substances, vibrations, etc. The hexagon, arranged middle layer with two facing sides, facilitates the connection and locking in place the isolator. Upon request, the isolators can be supplied as follows:

- The isolator can be equipped with a thread which is not standard
- The isolator can be supplied with one or two threaded bolts "GB"

Operating temperature:
-40 °C to +130 °C

Fire resistance:
class: UL94-VO

Art.-no.	Packaging-unit	Article-group	Article	H (mm)	sw* (mm)	D1 (mm)	Operating voltage	M (thread)	A (mm)	Colour
90015	100	DB	12/P	12	11	10	220	M3	3	■
90018	100	DB	12/P	12	11	10	220	M4	3	■
90022	100	DB	16/P	16	14	13	380	M4	4	■
90025	100	DB	20/P	20	17	15	500	M4	6	■
90026	100	DB	20/P	20	17	15	500	M6	6	■
90028	250	DB	25/P	25	19	15	600	M6	7	■
90029	250	DB	25/P	25	19	15	600	M5	7	■
90030	250	DB	25/P	25	19	15	600	M6	7	■
90033	80	DB	30/P	30	30	26	600	M6	8	■
90034	80	DB	30/P	30	30	26	600	M8	7	■
90035	64	DB	34/P	35	32	28	1000	M6	9	■
90036	64	DB	34/P	35	32	28	1000	M8	10	■
90037	64	DB	34/P	35	32	28	1000	M10	10	■
90038	36	DB	35/P	35	41	35	1000	M6	9	■
90039	36	DB	35/P	35	41	35	1000	M8	9	■
90040	36	DB	35/P	35	41	35	1000	M10	10	■
90438	100	DB	40/P	40	40	30	1000	M8	11	■
90439	100	DB	40/P	40	40	30	1000	M10	12	■
90440	100	DB	40/P	40	40	30	1000	M12	10	■
90041	27	DB	45/P	45	41	35	1500	M6	12	■
90042	27	DB	45/P	45	41	35	1500	M8	12	■
90043	27	DB	45/P	45	41	35	1500	M10	12	■
90044	27	DB	45/P	45	41	35	1500	M12	12	■
90046	36	DB	50/P	50	36	29	2000	M8	12	■
90047	36	DB	50/P	50	36	29	2000	M10	12	■
90048	36	DB	50/P	50	36	29	2000	M12	13	■
90441	25	DB	60/P	60	55	40	2000	M8	20	■
90442	25	DB	60/P	60	55	40	2000	M10	21	■
90443	25	DB	60/P	60	55	40	2000	M12	20	■
90050	22	DB	65/P	63.5	41	35	3000	M8	17	■
90051	22	DB	65/P	63.5	41	35	3000	M10	19	■
90052	22	DB	65/P	63.5	41	35	3000	M12	19	■
90053	12	DB	75/P	76	50	36	5000	M8	19	■
90054	12	DB	75/P	76	50	36	5000	M10	19	■
90055	12	DB	75/P	76	50	36	5000	M12	19	■
90057	8	DB	750/P	75	65	52	5000	M12	18	■
90058	8	DB	750/P	75	65	52	5000	M16	23	■

* sw = screw wide

For mounting and assembly material see page 217.

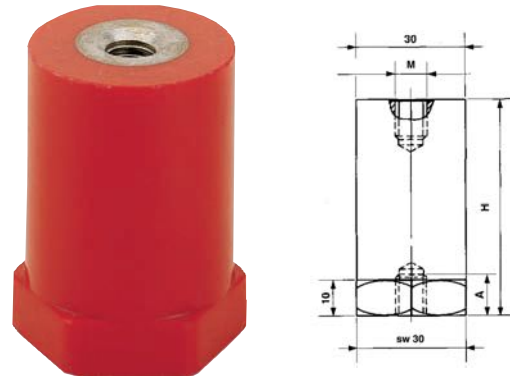
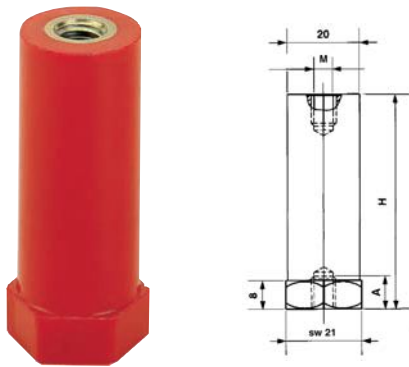
Spacing isolator type DB/P

	DB16P	DB 20/P	DB 25/P	DB 30/P	DB 34/P	DB 35/P	DB45/P	DB 50/P	DB 65/P	DB 75/P	DB 750/P
resistance voltage tracking [kV]	3	4	7	8	10	10	12	12	15	25	25
discharge voltage [kV]	8	15	20	23	30	30	40	40	40	50	50
max. tensile load fz [kIM]	1	1.5	3	5	8	11	12	8.5	15	23	28
max. bending load fb [kIM]	0.5	0.6	1.8	2.5	4.5	8	8	4.5	7	9	15
max. compression load fd [kIM]	5	6	21	44	65	80	80	68	83	100	150
max. starting torque md [Nm]	0.4	0.4	3	3	5	9	10	5	6	10	13

The types DB ..., CO/P..., CS/P..., CT/P... and CPE ... have been tested for insulating material (discharge voltage, discharge strength and arking) according to the regulations covering VDE 0303 part 2 blueprint march 1987. Appraisal of the discharge voltage or arking between two unequal electrodes/diameter (25 mm or 75 mm). The test was made for the norm climate 23/50, ambient temperature (23 ± 2) °C and (50 ± 5) % relative humidity.

Spacing isolator type CO/P – 20 mm dia.

Spacing isolator type CS/P – 30 mm dia.



CO/P – diameter 20 mm

Made of Polyglass-Polyester material, reinforced fibre glass, colour red, self extinguishing. Upon request the isolators type CO/P, can be supplied with 1 or 2 mounting materials, type GB, fitted and secured with lock tide.

CS/P – diameter 30 mm

Made of Polyglass-Polyester material, reinforced fibre glass, colour red, self extinguishing.

Art.-no.	Packaging-unit	Article group	Article	H (mm)	D (mm)	Operating voltage	M (thread)	A (mm)
90061	200	CO/P	16	16	20	220	M4	4
90062	200	CO/P	16	16	20	220	M5	4
90063	100	CO/P	16	16	20	220	M6	4
90064	150	CO/P	16	16	20	220	M8	4
90065	200	CO/P	20	20	20	400	M5	5
90066	100	CO/P	20	20	20	400	M6	5
90067	200	CO/P	20	20	20	400	M8	5
90068	150	CO/P	25	25	20	500	M5	6
90069	150	CO/P	25	25	20	500	M6	6
90070	150	CO/P	25	25	20	500	M8	6
90071	140	CO/P	30	30	20	600	M5	7
90072	140	CO/P	30	30	20	600	M6	7
90073	140	CO/P	30	30	20	600	M8	7
90075	120	CO/P	35	35	20	600	M6	7
90077	110	CO/P	40	40	20	600	M6	9
90078	110	CO/P	40	40	20	600	M8	10
90079	100	CO/P	45	45	20	750	M6	9
90080	100	CO/P	45	45	20	750	M8	10
90081	80	CO/P	50	50	20	750	M6	10
90082	80	CO/P	50	50	20	750	M8	10
90083	70	CO/P	60	60	20	750	M6	9
90084	70	CO/P	60	60	20	750	M8	9

Art.-no.	Packaging-unit	Article group	Article	H (mm)	D (mm)	Operating voltage	M (thread)	A (mm)
90087	80	CS/P	30	30	30	750	M6	9
90088	80	CS/P	30	30	30	750	M8	9
90089	80	CS/P	30	30	30	750	M10	9
90090	64	CS/P	35	35	30	1000	M6	9
90091	64	CS/P	35	35	30	1000	M8	9
90092	64	CS/P	35	35	30	1000	M10	9
90093	60	CS/P	40	40	30	1000	M6	12
90094	60	CS/P	40	40	30	1000	M8	12
90095	60	CS/P	40	40	30	1000	M10	12
90096	48	CS/P	45	45	30	1000	M6	12
90097	48	CS/P	45	45	30	1000	M8	12
90098	48	CS/P	45	45	30	1000	M10	13
90099	48	CS/P	50	50	30	1500	M6	12
90100	48	CS/P	50	50	30	1500	M8	13
90101	48	CS/P	50	50	30	1500	M10	12
90102	40	CS/P	55	55	30	1500	M6	12
90103	40	CS/P	55	55	30	1500	M8	11
90105	40	CS/P	60	60	30	1500	M6	12
90106	40	CS/P	60	60	30	1500	M8	16
90107	40	CS/P	60	60	30	1500	M10	20
90109	32	CS/P	65	65	30	1500	M8	18
90111	32	CS/P	70	70	30	1500	M6	14
90112	32	CS/P	70	70	30	1500	M8	18
90113	32	CS/P	70	70	30	1500	M10	18

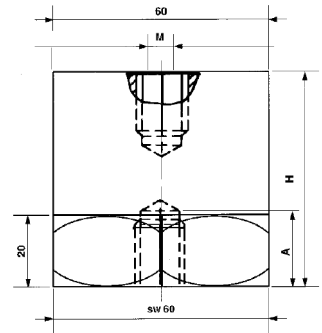
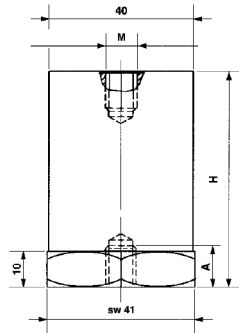
Spacing isolators type CO/P, CS/P, CT/P, CPE

Operating temperature -40 °C up to +130 °C

Fire resistance class UL94-VO

Spacing isolator type CT/P – 40 mm dia.

Spacing isolator type CPE – 60 mm dia.



CT/P – diameter 40 mm

Made of Polyglass-Polyester material, reinforced fibre glass, colour red, self extinguishing.

CPE – diameter 60 mm

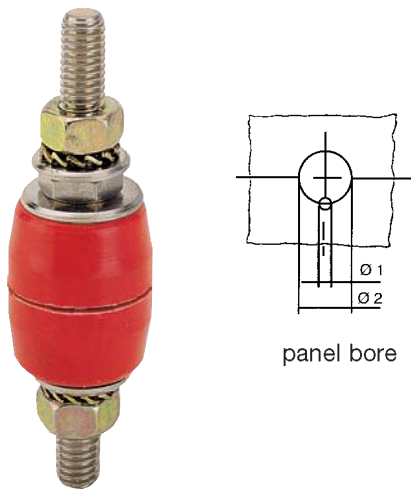
Made of Polyglass-Polyester material, reinforced fibre glass, colour red, self extinguishing.

Art.-no.	Packaging-unit	Article group	Article	H (mm)	D (mm)	Operating voltage	M (thread)	A (mm)
90118	45	CT/P	30	30	40	750	M8	8
90119	45	CT/P	30	30	40	750	M10	9
90120	36	CT/P	35	35	40	750	M8	9
90121	36	CT/P	35	35	40	750	M10	9
90122	27	CT/P	40	40	40	1000	M8	12
90123	27	CT/P	40	40	40	1000	M10	12
90123M12	27	CT/P	40	40	40	1000	M12	12
90124	27	CT/P	45	45	40	1000	M8	13
90125	27	CT/P	45	45	40	1000	M10	12
90126	27	CT/P	50	50	40	1500	M8	12
90127	27	CT/P	50	50	40	1500	M10	13
90127M12	27	CT/P	50	50	40	1500	M12	11
90129	18	CT/P	55	55	40	1500	M10	12
90130	18	CT/P	60	60	40	1500	M8	18
90131	18	CT/P	60	60	40	1500	M10	18
90131M12	18	CT/P	60	60	40	1500	M12	18
90133	18	CT/P	65	65	40	1500	M10	18
90134	18	CT/P	70	70	40	1500	M8	18
90135	18	CT/P	70	70	40	1500	M10	18

Art.-no.	Packaging-unit	Article group	Article	H (mm)	D (mm)	Operating voltage	M (thread)	A (mm)
90140	12	CPE	40	40	60	1500	M10	11
90141	12	CPE	40	40	60	1500	M12	11
90142	12	CPE	40	40	60	1500	M16	12
90143	10	CPE	60	60	60	3000	M10	18
90144	10	CPE	60	60	60	3000	M12	18
90145	10	CPE	60	60	60	3000	M16	19
90146	8	CPE	80	80	60	5000	M10	19
90147	8	CPE	80	80	60	5000	M12	19
90148	8	CPE	80	80	60	5000	M16	23
90149	5	CPE	100	100	60	8000	M10	19
90150	5	CPE	100	100	60	8000	M12	19
90151	5	CPE	100	100	60	8000	M16	23

	CS/P 30	CS/P 40	CS/P 50	CS/P 60	CT/P 30	CT/P 40	CT/P 50	CT/P 60	CPE 40	CPE 60	CPE 80	CPE 100	CO/P 30	CO/P 40	CO/P 50	CO/P 60
resistance voltage tracking [kV]	8	8	10	15	8	10	10	10	10	20	25	30	5	8	10	10
discharge voltage [kV]	20	25	35	35	20	25	35	35	25	50	50	50	15	20	25	30
max. tensile load FZ [kN]	9	9	9	9	10	10	10	10	11	15	23	30	4	4	4	4
max. bending load FB [kN]	4.5	3	2	1.5	7.5	7	5	3.7	7	5	9	15	2	1.5	1	1
max. compression load FD [kN]	40	40	40	40	80	80	80	80	100	100	120	150	21	21	21	21
max. starting torque MD [Nm]	1.3...2.6	1.3...2.6	1.3...2.6	1.3...2.6	3.0...6.0	3.0...6.0	3.0...6.0	3.0...6.0	6	8	10	15	1.0...2.0	1.0...2.0	1.0...2.0	1.0...2.0

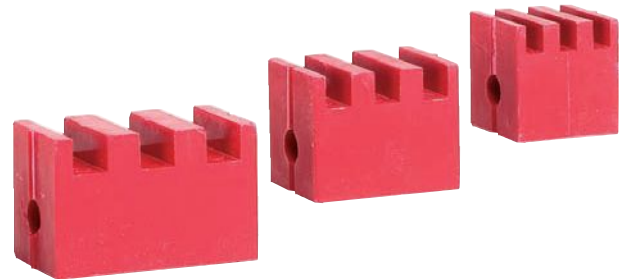
Passing isolators type PI/P



panel bore

Art.-no.	Packaging-unit	Article group	Article	H (mm)	D (mm)	Operating voltage	M (thread)
90166	60	PI/P	4	50	15	600	M4
90167	40	PI/P	6	65	22	1000	M6
90168	25	PI/P	8	80	25	1000	M8
90169	20	PI/P	10	95	30	1000	M10
90170	15	PI/P	12	105	35	1000	M12
90171	8	PI/P	16	135	43	2000	M16
90172	4	PI/P	20	155	54	2000	M20

Vertical bus bar support type PSB

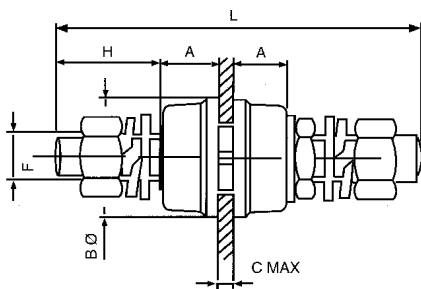


Easy to assemble vertical bus bar support in Polyester material with reinforced fibre glass, red, suitable for bus bars with dimensions between 40 x 60 mm and 120 x 10 mm.

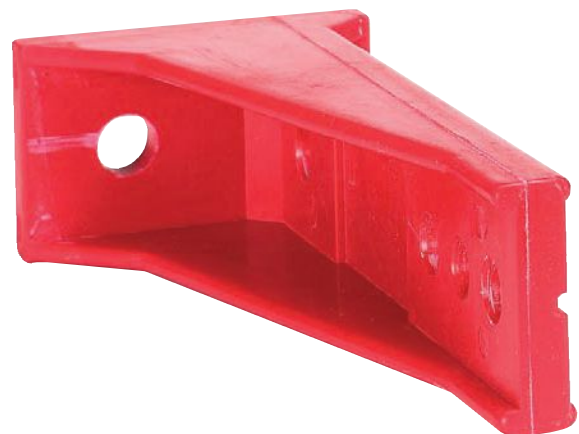
Due to its construction characteristics this bus bar support is suitable for special isolating and mechanical requirements.

For the assembly of a bus bar support the following parts are required:

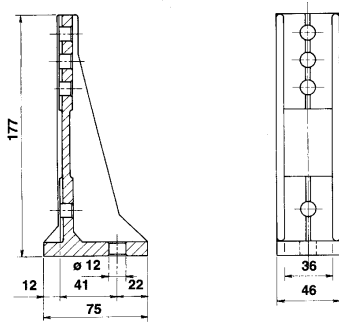
1 or 2 lateral supports, 2 mounting screws and the necessary block number to clamp into place the required bus bars.



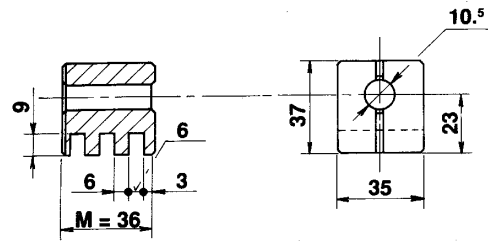
Passing isolator type PI/P
Polyester material, red



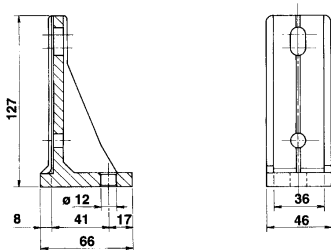
PSB/1
lateral support



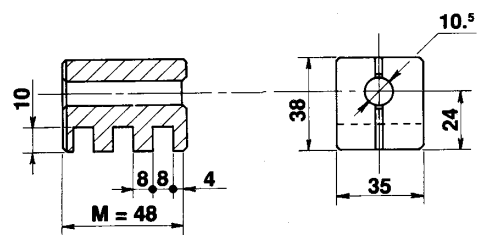
PSB/6
block for 6 mm bus bar



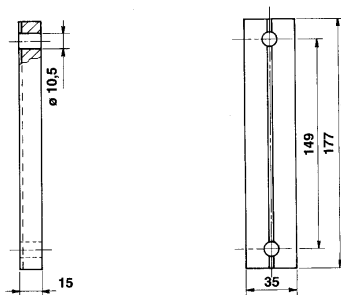
PSB/2
lateral support



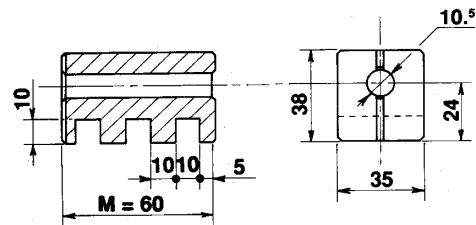
PSB/8
block for 8 mm bus bar



PSB/120
lateral support



PSB/10
block for 10 mm bus bar



Lateral support	Blocks	Bus bars	Art.-no.
PSB/1	PSB 6	60 x 6	80 x 6
	PSB 8	60 x 8	80 x 8
	PSB 10	60 x 10	80 x 10
PSB/2	PSB 6	40 x 6	50 x 6
	PSB 8	40 x 8	50 x 8
	PSB 10	40 x 10	50 x 10
PSB/120	PSB 6	120 x 6	
	PSB 8	120 x 8	
	PSB 10	120 x 10	

Elastic deviation of the teeth with signs of rupture	Pack.	Art.-no.
PSB/6	kg	950
PSB/8	kg	1130
PSB/10	kg	1375

* = storage parts

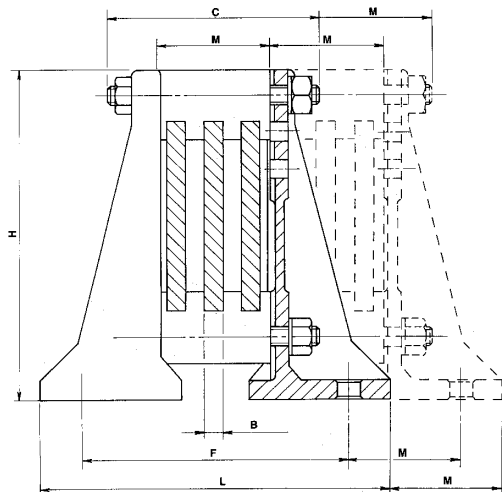
Operating voltage 1000 V AC

Operating temperature $-40\text{ °C} \leq \vartheta \leq +130\text{ °C}$

Fire resistance class UL94-V0

Vertical bus bar support PSB

illustration 1
example of a unipolar bus bar support with 3 parallel bus bar support holders

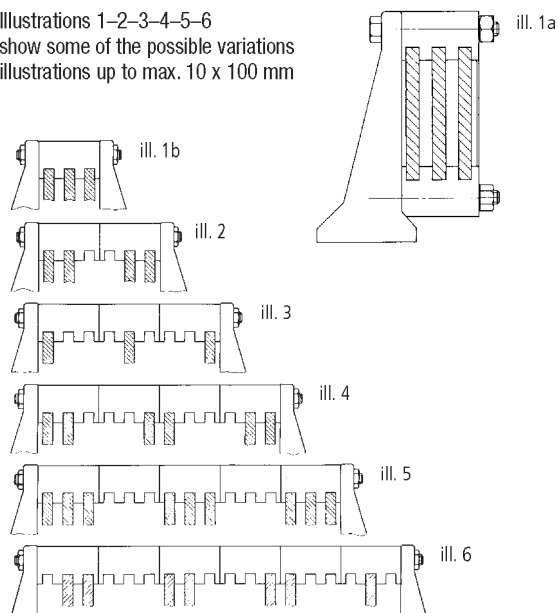


A = number of blocks
B = bus bar thickness
C = length of mounting screw
L = external space requirement
H = height
M = module

Art.-no.	Packaging-unit	Article group	H (mm)	D (mm)	Operating voltage	For thread
90175	96	PSB/1	177	46	1000	M10
90176	144	PSB/2	127	46	1000	M10
90177	244	PSB/120	177	35	1000	M10
90178	36	PSB/6	37	36	1000	M10
90179	30	PSB/8	38	48	1000	M10
90180	24	PSB/10	38	60	1000	M10

Art.-no.	Packaging-unit	Article group	Illustration	H (mm)	L (mm)	Operating voltage	For thread	B
90187		PSB	ill. 1A	177		1000	M10	6
90188		PSB	ill. 1A	177		1000	M10	8
90189		PSB	ill. 1A	177		1000	M10	10
90190		PSB	ill. 1B	177	162	1000	M10	6
90191		PSB	ill. 1B	177	174	1000	M10	8
90192		PSB	ill. 1B	177	186	1000	M10	10
90193		PSB	ill. 2	177	198	1000	M10	6
90194		PSB	ill. 2	177	222	1000	M10	8
90195		PSB	ill. 2	177	246	1000	M10	10
90196		PSB	ill. 3	177	234	1000	M10	6
90197		PSB	ill. 3	177	270	1000	M10	8
90198		PSB	ill. 3	177	306	1000	M10	10
90199		PSB	ill. 4	177	270	1000	M10	6
90200		PSB	ill. 4	177	318	1000	M10	8
90201		PSB	ill. 4	177	366	1000	M10	10
90202		PSB	ill. 5	177	306	1000	M10	6
90203		PSB	ill. 5	177	366	1000	M10	8
90204		PSB	ill. 5	177	426	1000	M10	10
90205		PSB	ill. 5	177	342	1000	M10	6
90206		PSB	ill. 5	177	414	1000	M10	8
90207		PSB	ill. 5	177	486	1000	M10	10
90211		PSB	ill. 1A	127		1000	M10	6
90212		PSB	ill. 1A	127		1000	M10	8
90213		PSB	ill. 1A	127		1000	M10	10
90214		PSB	ill. 1B	127	152	1000	M10	6
90215		PSB	ill. 1B	127	164	1000	M10	8
90216		PSB	ill. 1B	127	176	1000	M10	10
90217		PSB	ill. 2	127	188	1000	M10	6
90218		PSB	ill. 2	127	212	1000	M10	8
90219		PSB	ill. 2	127	236	1000	M10	10
90220		PSB	ill. 3	127	224	1000	M10	6
90221		PSB	ill. 3	127	260	1000	M10	8
90222		PSB	ill. 3	127	296	1000	M10	10
90223		PSB	ill. 4	127	260	1000	M10	6
90224		PSB	ill. 4	127	308	1000	M10	8
90225		PSB	ill. 4	127	356	1000	M10	10
90226		PSB	ill. 5	127	296	1000	M10	6
90227		PSB	ill. 5	127	356	1000	M10	8
90228		PSB	ill. 5	127	416	1000	M10	10
90229		PSB	ill. 6	127	332	1000	M10	6
90230		PSB	ill. 6	127	404	1000	M10	8
90231		PSB	ill. 6	127	476	1000	M10	10

Illustrations 1–2–3–4–5–6
show some of the possible variations
illustrations up to max. 10 x 100 mm



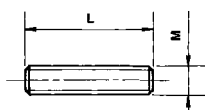
H. with lateral support PSB/1 = 177 mm
PSB/2 = 127 mm
M. with block PSB/6 = 36 mm
PSB/8 = 48 mm
PSB/10 = 60 mm

The above mentioned data are only for information purposes and are without a guarantee. The customer is required to check from time to time if the product is suitable for the required application.

Upon request milled bus bar supports and other from GPO-3 extracted details can be supplied. In this instance drawings are to be submitted.

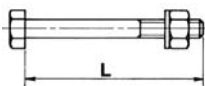
Mounting material / threaded bolts

GB threaded bolt



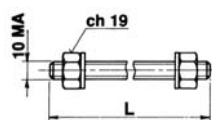
Art.-no.	Packaging-unit	Article group	Thread M	Length L (mm)
90270	100	GB	M3	12
90271	100	GB	M3	15
90272	100	GB	M4	15
90273	100	GB	M4	16
90274	100	GB	M4	18
90275	100	GB	M4	20
90276	100	GB	M5	20
90277	100	GB	M5	22
90278	100	GB	M5	27
90279	100	GB	M5	30
90280	100	GB	M6	18
90281	100	GB	M6	20
90282	100	GB	M6	25
90283	100	GB	M6	27
90284	100	GB	M6	33
90285	100	GB	M6	35
90286	100	GB	M8	20
90287	100	GB	M8	23
90288	100	GB	M8	25
90289	100	GB	M8	30
90290	100	GB	M8	33
90291	100	GB	M8	35
90292	100	GB	M8	38
90293	100	GB	M8	50
90294	100	GB	M10	30
90295	100	GB	M10	35
90296	100	GB	M10	38
90297	100	GB	M10	40
90298	100	GB	M10	45
90299	100	GB	M10	50
90300	100	GB	M12	30
90301	100	GB	M12	50
90326	100	GB	M16	40
90327	100	GB	M16	60

hexagon screw M10 with nut and washer



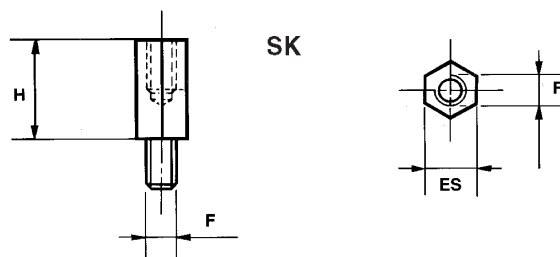
Art.-no.	Packaging-unit	Article group	Thread M	Length L (mm)
90309	100	SKS	M10	60
90310	100	SKS	M10	80
90311	100	SKS	M10	70
90312	100	SKS	M10	90
90313	100	SKS	M10	100
90314	100	SKS	M10	110
90315	100	SKS	M10	140
90316	100	SKS	M10	150
90317	100	SKS	M10	160

threaded bolt M10 complete with nut and washer



Art.-no.	Packaging-unit	Article group	Thread M	Length L (mm)
90318	100	GB	M10	194
90319	100	GB	M10	230
90320	100	GB	M10	242
90321	100	GB	M10	270
90322	100	GB	M10	290
90323	100	GB	M10	350
90324	100	GB	M10	410
90325	100	GB	M10	1000

Hexagon spacer in brass



Art.-no.	Packaging-unit	Thread M	Height H mm	Wrench opening SW*
90330	100	M4	15	7
90331	100	M4	20	7
90332	100	M4	25	7
90333	100	M4	30	7
90334	100	M4	50	7
90335	100	M4	70	7
90336	100	M4	90	7
90337	100	M5	15	8
90338	100	M5	20	8
90339	100	M5	25	8
90340	100	M5	30	8
90341	100	M5	50	8
90342	100	M5	70	8
90343	100	M5	90	8
90344	100	M6	15	10
90345	100	M6	20	10
90346	100	M6	25	10
90347	100	M6	30	10
90348	100	M6	50	10
90349	100	M6	70	10
90350	100	M6	90	10
90351	100	M8	15	13
90352	100	M8	20	13
90353	100	M8	25	13
90354	100	M8	30	13
90355	100	M8	50	13
90356	100	M8	70	13
90357	100	M8	90	13

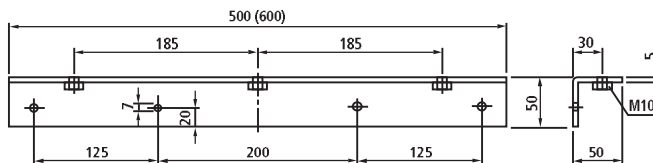
* SW = Screw Width



Bus bar support L

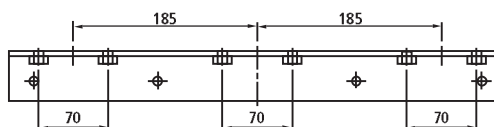
support L185/1

Art.-no. 90392



support L185/2 (2 x M10 each phase)

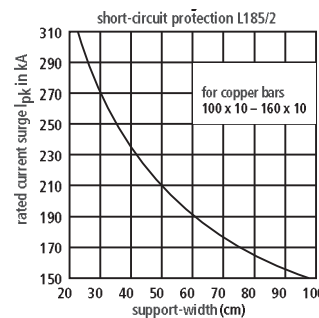
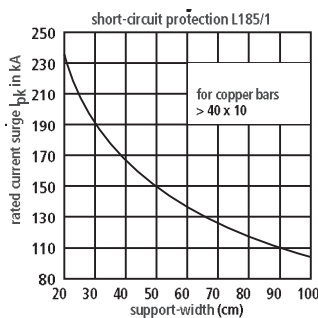
Art.-no. 90395



Bus bar supports in general

Characteristics of the raw materials (GFK-profile, hot hardened)

■ temperature range	-40 °C up to +130 °C
■ operating AC voltage	1000 Volt
■ continuous current	L/Z 280 mm 2500 A L/Z 500 mm 4000 A
■ phase clearance	L/Z 280 mm 100 mm L/Z 500 mm 185 mm
■ form stability	DIN 53462 °C > 200
■ natural density	DIN 53479 gr/cm ² approx.1.7
■ fire resistance	UL 94 HB
■ discharge resistance	DIN 53481 kV/cm 10
■ resistance voltage tracking	DIN IEC 112 CTI 600
■ specific flow resistance	DIN 53482 Ohm x cm 1012

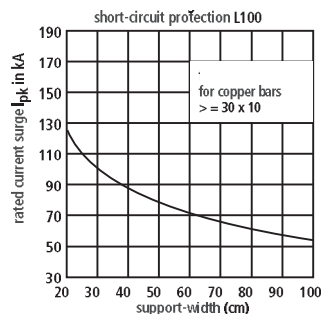
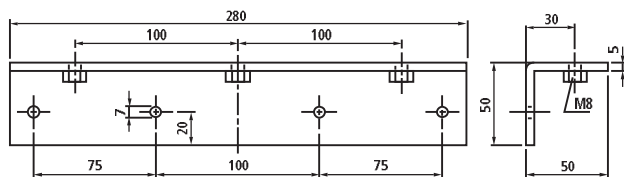


All bus bars are type tested acc. to VDE 0660 part 500

- torque for M10 approx. 4.5 Nm
- copper bus bar 10 mm thick made of copper F30 not nickle-plated

support L100

Art.-no. 90392



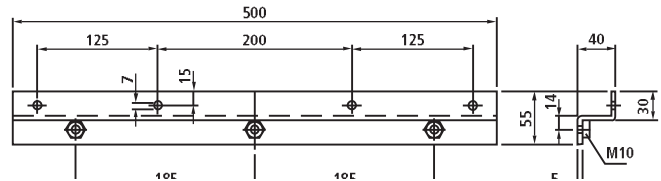
Type	Art.-no.	Packaging-unit	Article group	Length (mm)	Profile (mm)	Bore (mm)	Thread M	Colour
L100	90391	1	L	280	50/50	7	M8	■
L185/1	90392	1	L	500	50/50	7	M10	■
L185/2	90395	1	L	500	50/50	7	M10	■



Bus bar support Z

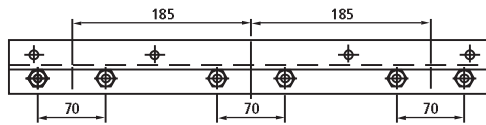
support Z185/1

Art.-no. 90382



support Z185/2 (2 x M10 each phase)

Art.-no. 90385



Bus bar supports in general

Characteristics of the raw materials (GFK-profile, hot hardened)

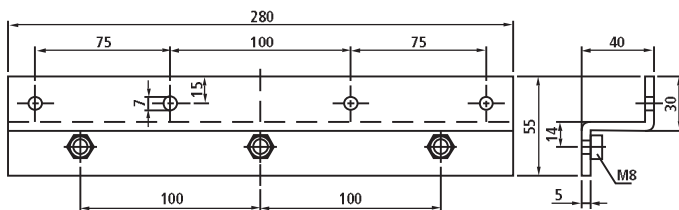
■ temperature range	-40 °C up to +130 °C	
■ operating AC voltage	1000 Volt	
■ continuous current	L/Z 280 mm	2500 A
	L/Z 500 mm	4000 A
■ phase clearance	L/Z 280 mm	100 mm
	L/Z 500 mm	185 mm
■ form stability	DIN 53462	°C > 200
■ natural density	DIN 53479	gr/cm ² approx.1.7
■ fire resistance	UL 94	HB
■ discharge resistance	DIN 53481	kV/cm 10
■ resistance voltage tracking	DIN IEC 112	CTI 600
■ specific flow resistance	DIN 53482	Ohm x cm 1012

All bus bars are type tested acc. to VDE 0660 part 500

- torque for M10 approx. 4.5 Nm
- copper bus bar 10 mm thick made of copper F30 not nickle-plated

support Z100

Art.-no. 90381



Type	Art.-no	Packaging-unit	Article group	Length (mm)	Profile (mm)	Bore (mm)	Thread M	Colour
Z100	90381	1	Z	280	30/40/30	7	M8	■
Z185/1	90382	1	Z	500	30/40/30	7	M10	■
Z185/2	90385	1	Z	500	30/40/30	7	M10	■