

Cast iron resistors

Data sheet

System description

- Cast iron elements with and without reinforcement, mounted on insulated support brackets
- Elements contacted at the head by means of screw-type connections, direct parallel switching of elements possible
- Connections can be moved retroactively

Designs

- Open banks for installation, free support bracket ends, protection class IP 00
- Open banks with longitudinal rail for inserting into housing, protection class IP 00
- Banks with side panels, open, prot. IP00
- Housed resistors, protection IP20 and IP23
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Special designs with cable box, metallurgical plant design

Surface protection

Base coat and synthetic resin top coat RAL 7032 light gray, alternatively hot-dip galv., w/o painting.

The number of elements in the units depends on the requirements. This allows for an optimum customized design that cannot be obtained with standard banks. After selection of the elements as a function of the ohm value and load, the required size is selected depending on the required no. of elements.

GINO offers the dimensioning of the units as a free service. To this effect, only the technical data of the intended application are needed:

Examples for applications and data needed:

Braking resistors for frequency converter drives

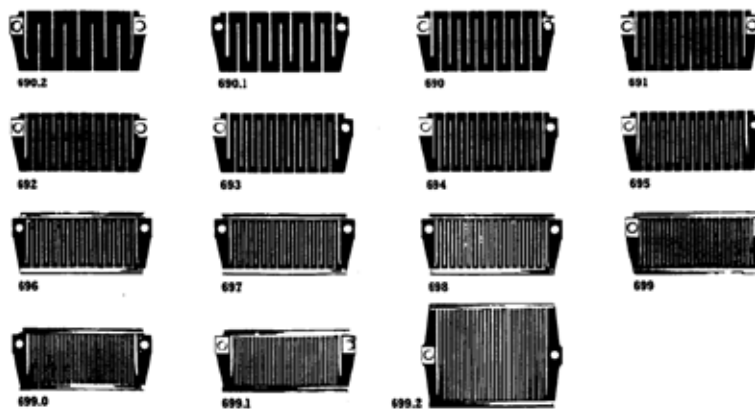
Ohm value, intermediate circuit voltage, braking capacity, duration and frequency

Resistors for slip-ring conductors:

Motor rating, rotor standstill voltage, nominal rotor current.

Type of resistor:

- Slip resistor: Slip at nominal load [%]
- Starter resistor: starting load factor, starting frequency and duration, type of machine, where required, load and inertia moment, speed
- Control resistor: Like starter resistor, additionally speed reduction and torque curve of the machine.
- Crane resistor: type of drive (hoisting/driving), switchgear.



Technical data of the cast iron system GINO

Description		Resistance value		Admissible current at duty factor in % Cycle time 120 s						Current-time integral
Code	Element-No.	cold Ω	hot Ω	100%	60%	40%	25%	10%	5%	I^2t [kA ² s]
GWE12	690.2	0,012	0,016	215	265	316	392	608	854	10,42
GWE18	690.1	0,018	0,023	178	220	264	328	509	716	8,10
GWE25	690	0,025	0,033	157	195	234	292	454	638	7,00
GWE35	691	0,035	0,045	128	159	190	236	367	517	4,26
GWE45	692	0,045	0,058	107	133	160	199	310	436	3,27
GWE60	693	0,060	0,078	89	110	131	163	252	354	1,84
GWE75	694	0,075	0,097	74	91	108	134	207	291	1,12
GWE85	695	0,085	0,110	68	84	100	124	192	269	1,03
GWE100	696	0,100	0,130	64	79	94	116	180	253	0,89
GWE130	697	0,130	0,169	53	64	76	93	143	201	0,46
GWE150	698	0,150	0,195	50	62	74	91	141	199	0,55
GWE200	699	0,200	0,260	44	54	64	79	122	171	0,36
GWE320	699.0	0,320	0,420	36	44	52	64	98	138	0,23
GWE400	699.1	0,400	0,520	32	39	46	57	87	122	0,16
GWE750	699.2	0,750	0,970	29	35	41	50	77	108	0,13
Special elements with high storage capacity / high current time integral										
GWE11,7 ¹⁾	690.1RBW	0,0117	0,0156	235	296	358	449	703	991	25,85
GWE15,4 ¹⁾	690.RBW	0,0154	0,0205	193	243	294	368	576	813	16,83
GWE20 ¹⁾	690.0	0,020	0,027	177	222	268	334	522	736	11,63
GWE29,7 ¹⁾	692.RBW	0,0297	0,040	136	171	206	258	403	567	7,27
GWE40 ²⁾	692.0	0,040	0,053	136	170	205	257	401	565	6,82
GWE52	691.0	0,052	0,070	128	159	190	236	367	517	4,26
GWE90	698.1	0,090	0,120	88	110	132	164	256	361	2,52 ²⁾
GWE140	698.0	0,140	0,187	68	84	100	124	192	270	1,04 ²⁾

The load values are mean values for a final temperature rise of ca. 400°C. They apply for resistors in housings.

The values in the table are valid for the thermal equilibrium reached after ca. 20 minutes intermittent or continuous operation.

To optimally adjust the units to the intended application, the number of elements installed will follow the requirements based on ohm values, loads and duty factor.

For short-term operation, a larger load value can be calculated in view of the heat storage capacity. For operation times ≥ 3 s, the current-time integral indicated in the table (i^2t) can be used as a basis for load calculation.

Example:

Short-term operation
Load 570 A – 10 s
 $i^2t = 0.57^2 \times 10 = 3.25$ kA²s
Selection: element GWE 45

- 1) Elements cannot be fitted with stiffener, max. current peak 1 kA
2) for 450 K temperature rise

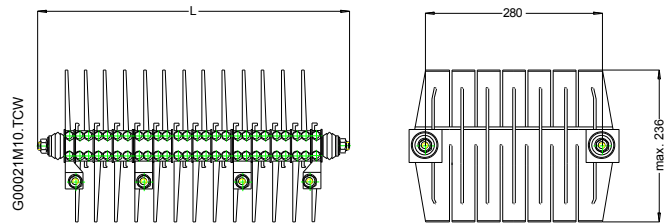
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Resistor banks IP00

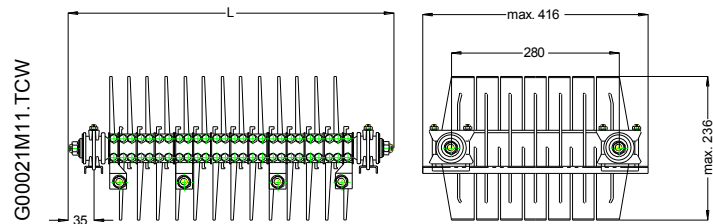
Free support bracket ends

Type	No. of elements	Code	Dim. L	Weight Kg
0/369.400	10	GWP110	230	11
0/369.410	14	GWP120	280	15
0/369.420	18	GWP130	340	19



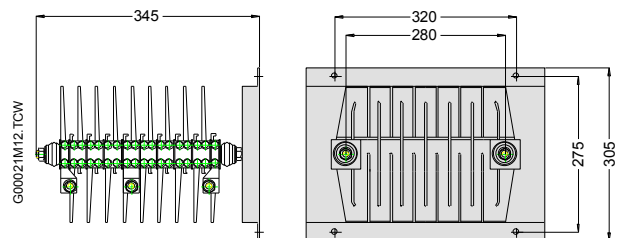
With support rail

Type	No. of elements	Code	Dim. L	Weight Kg
0/369.0	24	GWP140	470	33
0/369.1	36	GWP150	620	45
0/369.2	48	GWP160	770	59



With bracket for wall mounting

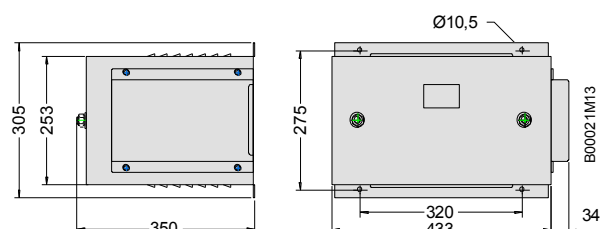
Type	No. of elements	Code	Weight kg
369.400	10	GWG110	15.2
369.410	14	GWG120	19.2
369.420	18	GWG130	23.2



Resistors in small housings

- Protection class IP20: wall mounting
- Protection class IP23: upright mounting

Type	No. of elements	Code	Weight kg
369.402	10	GWG114	23
369.412	14	GWG124	26
369.422	18	GWG134	30



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Protection IP00: Bank with side panels

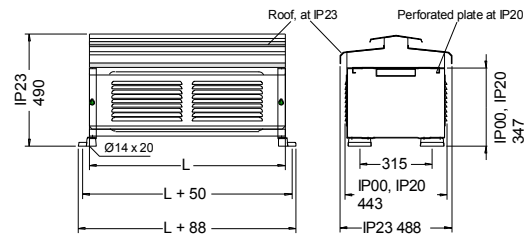
Protection IP20: Housing with perforated sheet cover, bottom open

Protection IP23: Housing with louvered sheet and roof, bottom open

Size	No. of elements	Dim. L
4	24	550
5	36	700
6	48	850

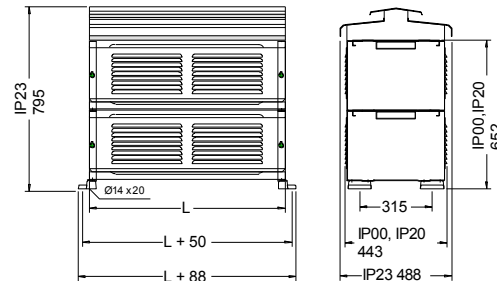
Housed resistors individual housings

Type	No. of elements	Protection	Code	Weight kg
1/369.00	24	IP00	GWG140	48
1/369.01	24	IP20	GWG142	53
1/369.02	24	IP23	GWG144	59
1/369.10	36	IP00	GWG150	61
1/369.11	36	IP20	GWG152	67
1/369.12	36	IP23	GWG154	75
1/369.20	48	IP00	GWG160	76
1/369.21	48	IP20	GWG162	83
1/369.22	48	IP23	GWG164	91



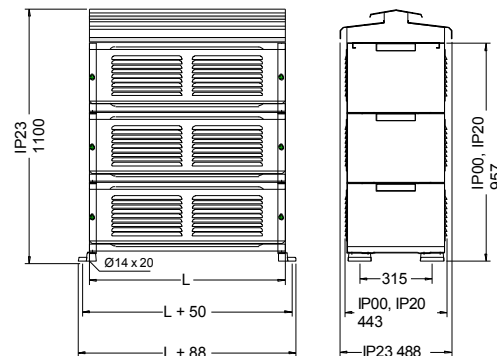
Housed resistors 2 stacked boxes

Type	No. of elements	Protection	Code	Weight kg
2/369.00	2 x 24	IP00	GWG240	93
2/369.01	2 x 24	IP20	GWG242	101
2/369.02	2 x 24	IP23	GWG244	107
2/369.10	2 x 36	IP00	GWG250	118
2/369.11	2 x 36	IP20	GWG252	128
2/369.12	2 x 36	IP23	GWG254	136
2/369.20	2 x 48	IP00	GWG260	147
2/369.21	2 x 48	IP20	GWG262	159
2/369.22	2 x 48	IP23	GWG264	171



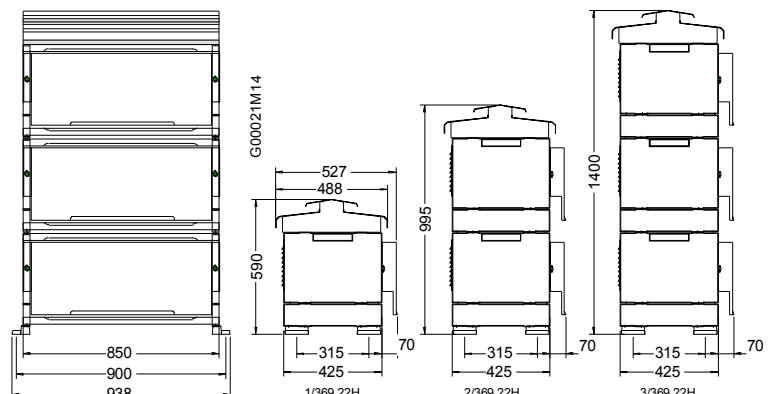
Housed resistors 3 stacked boxes

Type	No. of elements	Protection	Code	Weight kg
3/369.00	3 x 24	IP00	GWG340	138
3/369.01	3 x 24	IP20	GWG342	148
3/369.02	3 x 24	IP23	GWG344	154
3/369.10	3 x 36	IP00	GWG350	175
3/369.11	3 x 36	IP20	GWG352	189
3/369.12	3 x 36	IP23	GWG354	197
3/369.20	3 x 48	IP00	GWG360	219
3/369.21	3 x 48	IP20	GWG362	236
3/369.22	3 x 48	IP23	GWG364	244



Housed resistors, metallurgical plant design 1 to 3 stacked boxes

Type	No. of elements	Protection	Code	Weight kg
1/369.22H	1 x 48	IP23	GWG169	99
2/369.22H	2 x 48	IP23	GWG269	178
3/369.22H	3 x 48	IP23	GWG369	263



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Item	Description	DK No.	Code
1	Support rails		
1.1	Plug-in support rail, complete	166.311.0	GWM001
1.2	Plug-in rail, complete	166.311.1	GWM002
1.3	Screw rail, complete	166.311.2	GWM003
2	Resistor element	690 – 699.2	GWE12-750
3	Support bracket		
3.1	M14x470 for size 4	152.607.0	GWM004
3.2	M14x620 for size 5	152.607.1	GWM005
3.3	M14x770 for size 6	152.607.2	GWM006
4	Insulating tube		
4.1	Laminated paper size 4	156.114.3	GWM007
4.2	Laminated paper size 5	156.114.4	GWM008
4.3	Laminated paper size 6	156.114.5	GWM009
4.4	Mica paper size 4	156.130	GWM010
4.5	Mica paper size 5	156.131	GWM011
4.6	Mica paper size 6	156.132	GWM012
5	Mica disc		
5.1	0.5 mm	135.000.0	GWM038
5.2	1.0 mm	135.000.1	GWM039
6	Laminated paper disc	132.481	GWZ030
7	Insulator for phase separation	131.220	GWZ024
8	Sheet washer for item (2x erf.)	166.910.0	GWZ026
9	Connecting plates		
9.2.1	for 2 elements, copper	154.302	GWZ004
9.2.2	for 2 elements, galvanized steel	151.302	GWZ005
9.3.1	for 3 elements, copper	154.303	GWZ006
9.3.2	for 3 elements, galvanized steel	151.303	GWZ007
9.4.1	for 4 elements, copper	154.304	GWZ008
9.4.2	for 4 elements, galvanized steel	151.304	GWZ009
9.5.1	for 5 elements, copper	154.305	GWZ010
9.5.2	for 5 elements, galvanized steel	151.305	GWZ011
9.6.1	for 6 elements, copper	154.306	GWZ012
9.6.2	for 6 elements, galvanized steel	151.306	GWZ013
9.7.1	for 7 elements, copper	154.307	GWZ014
9.7.2	for 7 elements, galvanized steel	151.307	GWZ015

Item	Description	DK No.	Code
9.8.1	for 8 elements, copper	154.308	GWZ016
9.8.2	for 8 elements, copper	151.308	GWZ017
10	Cap screw for connecting plate, DIN 912-M6x10	-	NSZ912-0051
11	Terminals		
11.1	Terminal M8 right	166.810	GWZ018
11.2	Terminal M8 left	166.811	GWZ019
11.3	Terminal M12 right	166.810.1	GWZ020
11.4	Terminal M12 left	166.811.1	GWZ021
12	Double terminals		
12.1	Double terminal M8	166.812	GWZ022
12.2	Double terminal M12	166.812.1	GWZ023
13	Cap screw for connection, DIN 912-M6x15	-	NSZ912-0052
14	Insulator for bearing rail	131.219.1	GWZ025
15	Plain washer 35 x 14.2 x 2.5	151.320	GWZ031
16.1	Hexagonal screw DIN933-M8 x 20	-	NSS933-0095
16.2	Hexagonal screw DIN933-M12 x 25	-	NSS933-0153
17.1	Hexagonal nut DIN 934-M8	-	NMS934-0051
17.2	Hexagonal nut DIN 934-M12	-	NMS934-0071
18.1	Serrated lock washer DIN 6798-A 8.4	-	NSF6798-0025
18.2	Serrated lock washer DIN 6798-A 12.5	-	NSF6798-0041
19.1	Plain washer DIN 125-A 8.4	-	NSS125-0053
19.2	Plain washer DIN 125-A 13	-	NSS125-0073
20	Hexagonal nut DIN 934-M14	-	NMS934-0081
21	Spring washer DIN 137-B14	-	NSF137-0081

