

Selenium Rectifiers

GD Rectifiers supply replacements for selenium (metal plate) rectifiers once manufactured by STC but which are now obsolete. These replacements use modern plates and have electrical ratings which are generally higher than the originals due to present day technology, coupled with the need to meet already existing mounting and connecting arrangements.

In general, all rectifiers consisting of plates mounted on spindles are matched quite readily, with the exception of size 17 stacks which require additional mounting parts to reach the original fixing centres.

Early stacks calling for fins or cooling funnels can be replaced by assemblies without these aids. Nevertheless, ratings and fixing centres are maintained without difficulty.

Equivalents to the following standard stacks will be supplied upon provision of the original type references:

Stacks made with plate sizes 17, 18, 25, 35, 40, 45, 67, 84, 112 and 125.

Series 400

Series 800

Series HC (high current density)

RM4 and SM5

900 Series SafeTstaCs

FSP Series SafeTstaCs

280/LU

FAB, FAG, FAW, FSB, FSG, FSW, etc.

Non-standard variants of any of the above are supplied, but in some cases a sample of the original type may be required.

Replacements for wire ended types, contact cooled units, click suppressors etc, may be possible with alternative devices such as silicon diodes, silicon bridges, varistors or specifically fabricated assemblies (e.g. high voltage rectifiers).

Usually, immediate answers are given upon receipt of enquiries for standard types, for others, a day or so may be required for research or assessment of the application.

Delivery is from two days for breakdown service to 7-10 days' normal delivery. Units requiring the manufacture of special parts will take a few days more.

OTHER GD PRODUCTS

- Selenium rectifiers for new equipment and replacements for other manufacturers products (Westinghouse, Automat, Salford Electric, International Rectifier, Semikron, AEG and Siemens)
- Selenium Surge Suppressors (L-SELS)
- Silicon Diodes
- Thyristors
- Varistors (SiC and MOV)
- Silicon Rectifier Assemblies, all configurations and ratings
- Thyristor firing units
- Custom-built assemblies (e.g. high voltage rectifiers for radio transmitters; replacements for valve rectifiers)

Sizes of Plates and Admissible Load for 25 and 30 V Reverse Voltage plates

Supply	Single-phase			Three-phase			
Circuit	Single-phase half-wave	Single-phase centre-tap	Single-phase bridge	Three-phase half-wave	Three-phase bridge	Six phase star	Six phase star with interphase transformer
Diagrams and code letters							
Number of arms	1	2	4	3	6	6	6
Maximum reverse voltage of the rectifier plates (admissible a.c. input voltage V_2)	25V 30V 12.5V 15V	25V 30V 25V 30V	25V 30V 25V 30V	25V 30V 25V 30V	25V 30V 25V 30V	25V 30V 25V 30V	25V 30V 25V 30V
D.C. output voltage at rated current approx. value	10V 12V 12.5V 15V	10V 12V 12.5V 15V	20V 24V 25V 28V	15V 18V 15V 18V	30V 36V 30V 36V	15V 18V 15V 18V	13V 15V 13V 15V
Dimensions of plates mm x mm	Rated mean direct current (A) for natural cooling and 35°C ambient temperature*						
20 x 20	0.35 0.3	0.7 0.55	0.7 0.55	1 0.8	1 0.8	1.7 1.5	2 1.8
25 x 25	0.6 0.5	1.2 1	1.2 1	1.7 1.5	1.7 1.5	3 2.5	3.6 3
33 x 33	1.2 1	2.4 2	2.4 2	3.6 3	3.6 3	6 5	7 6
33 x 50	1.7 1.4	3.4 2.8	3.4 2.8	5 4	5 4	8.5 7	10 8.5
50 x 50	2.5 2	5 4	5 4	7.5 6	7.5 6	12 10	15 12
50 x 83	4 3.2	8 6.4	8 6.4	12 10	12 10	20 16	24 20
50 x 100	5 4	10 8	10 8	15 12	15 12	25 20	30 24
63 x 100	6 5	12 10	12 10	18 15	18 15	30 25	36 30
83 x 100	7.5 6	15 12	15 12	22.5 18	22.5 18	36 30	45 36
100 x 100	9 7.5	18 15	18 15	27 22.5	27 22.5	45 36	54 45
100 x 125	12 10	24 20	24 20	36 30	36 30	55 45	72 60
100 x 200	18 15	36 30	36 30	54 45	54 45	90 72	108 90
100 x 250	24 20	48 40	48 40	72 60	72 60	110 90	144 120
100 x 300	27 22.5	54 45	54 45	81 67	81 67	130 100	160 130
100 x 375	36 30	72 60	72 60	108 90	108 90	165 135	216 180
100 x 400	36 29	72 58	72 58	100 80	100 80	175 140	200 160
100 x 500	48 40	96 80	96 80	145 120	145 120	225 170	280 230

Code-Designation of Selenium Rectifiers

G selenium rectifier stacks are designated according to the following example.

This designation indicates circuit, rated a.c. voltage, nominal d.c. voltage and direct current rating of the stack.

Example: code letter for circuit*

	rated a.c. voltage in V
	nominal d.c. voltage in V
	rated direct current in A
	code letter for assisted cooling
	F forced air cooling
	UP oil cooling
	(omitted for standard arrangement)
B 150/120-12	
S 400/224-90 F	

- E — Single-phase half-wave
- V — Voltage doubler
- M — Single-phase centre-tap
- B — Single-phase bridge
- S — Three-phase star
- DB — Three-phase bridge
- DS — Six-phase star
- DSS — Six-phase star circuit with interphase transformer

A stack with the designation B 150/120-12, for example, consists of $4 \times 6 = 24$ plates 63×100 mm (25V).

Stacks incorporating parallel paths, i.e. two or more plates in parallel in each arm, are designated by a figure for the number of parallel paths at the beginning of the type code, e.g. 3B25/20—54, the figure 3 indicating three parallel paths in each arm. The total output current is given in the code. Thus in the example, the bridge total output current is 54A, (i.e. 3×18 A).

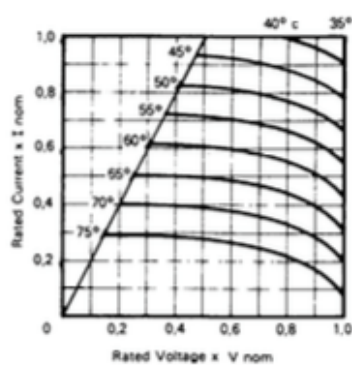
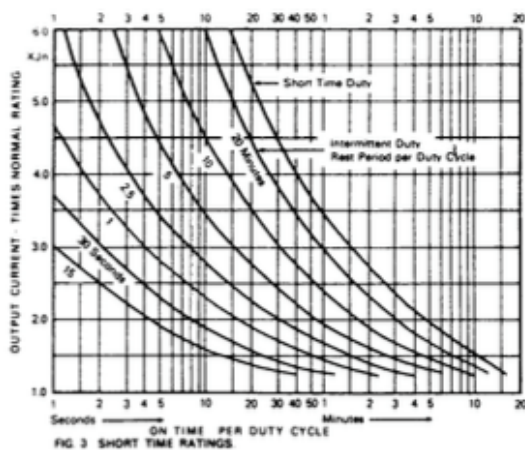
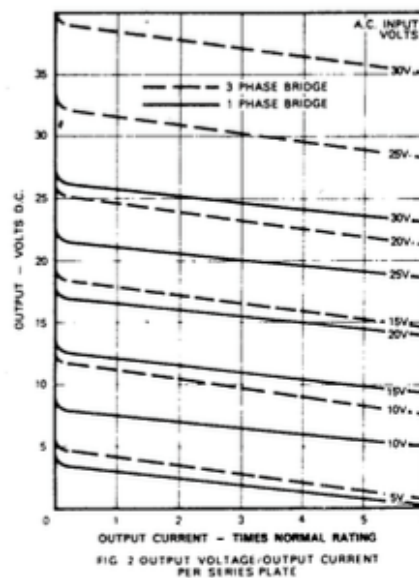
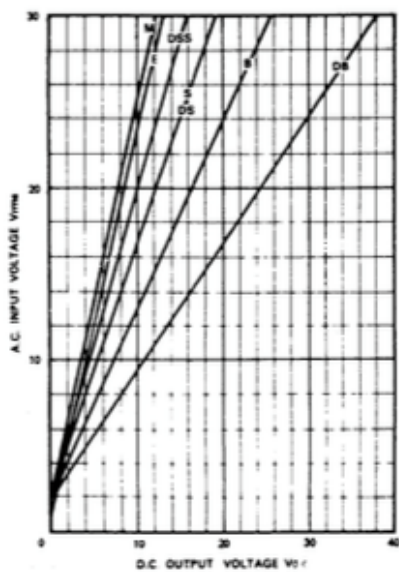
If a selenium assembly consists of more than one stack, each stack is designated by the code for the complete assembly but prefixed with the relevant fraction e.g.: $1/2$ B 150/120-12

Stacks with code letter UP remain unpainted.

Stacks coated with a special varnish for use under tropical conditions can be supplied at an extra charge.

The terminals of the rectifier stacks are distinctively marked:

yellow or ~	indicates a.c. input
red or +	indicates positive d.c. output terminal
blue or -	indicates negative d.c. output terminal



When operating the rectifiers at altitudes of more than 1000 metres above sea level, the cooling efficiency is reduced because of the rarified atmosphere. The current should be derated as follows.

Altitude M	Output % of Rated Current
Up to 1000	100
2000	91
3000	87
4000	82
5000	79

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