

RECTIFIERS

Selenium Rectifier Stacks

Series 400 and 800

Dimensions and Weights

INTRODUCTION

This information sheet gives the outline drawings, dimensions, weights, terminal positions and identification of all Series 400 and Series 800 selenium rectifier stacks. Mechanically a Series 800 stack assembly is identical to a Series 400 stack with the same number of plates and circuit configuration.

Table 1 below gives the reference numbers of the tables and figures for each series of rectifier.

TABLE 1

Series		Outline Drawing		Terminal Identification Table
400	800	Fig. No.	Dim. Table	
420	820	1	2	15
430	830	2	3	15
440	840	2	4	15
450	850	2	5	15
460	860	2	6	15
420F	820F	3	7	16
430F	830F	3	8	16
440F	840F	3	9	16
450F	850F	4	10	15
460F	860F	5	11	15
470	870	6	12	15
470H	870H	7	13	15
470F	870F	8	14	16

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C O M P O N E N T S G R O U P

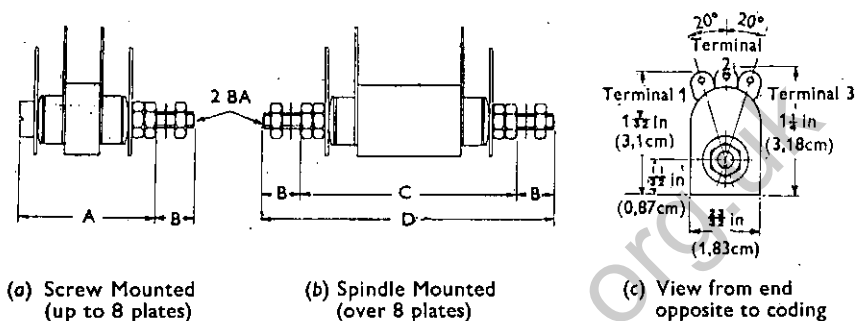
Selenium Rectifier Stacks

Dimensions and Weights

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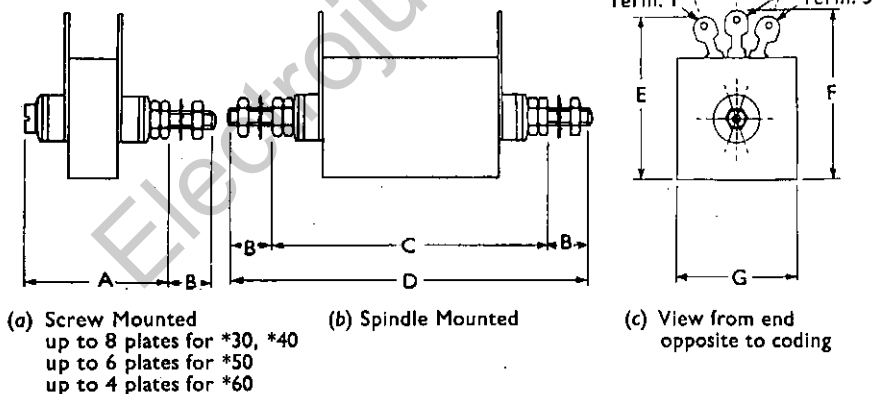
OUTLINE DRAWINGS

Fig. 1 Series 420/820



For dimensions see Table 2.

For identification of terminals see Table 15.

Fig. 2. Series 430, 440, 450, 460,
830, 840, 850, 860

For dimensions see Tables 3, 4, 5 and 6.

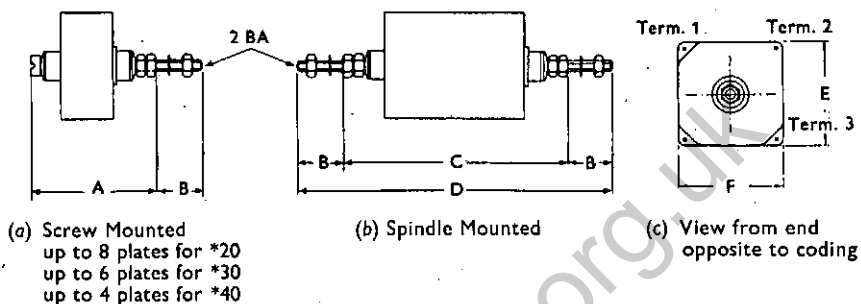
For identification of terminals see Table 15.

* 430 or 830, etc., as appropriate.

Selenium Rectifier Stacks

Dimensions and Weights

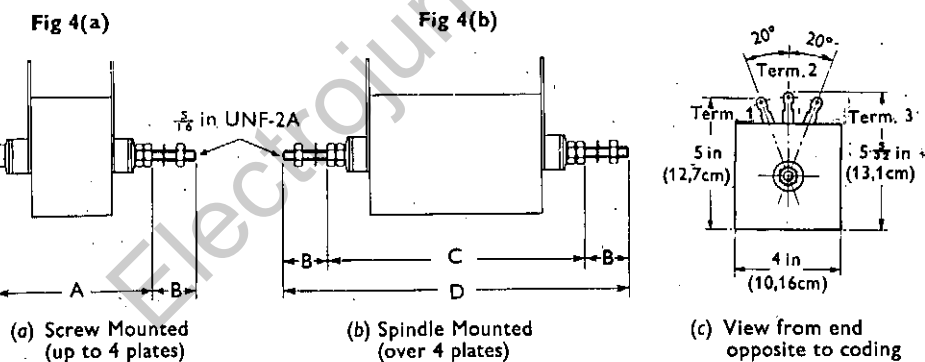
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Fig. 3. Series 420F, 430F, 440F,
820F, 830F, 840F

For dimensions see Tables 7, 8 and 9.

For identification of terminals see Table 16.

Fig. 4. Series 450F/850F



For dimensions see Table 10.

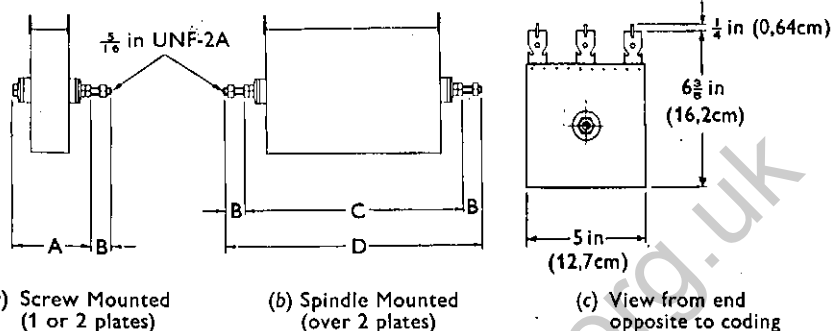
For identification of terminals see Table 15.

Selenium Rectifier Stacks

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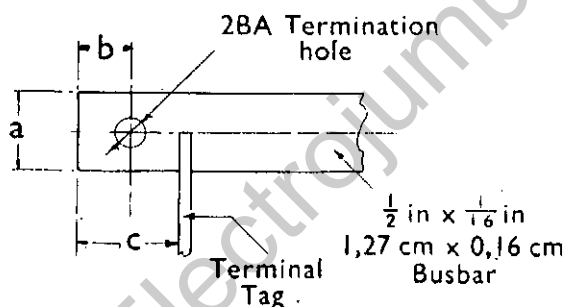
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Fig. 5. Series 460F/860F



For dimensions see Table 11.

For identification of terminals see Table 15.



	in	cm
a	$\frac{1}{2}$	1,27
b	$\frac{1}{16}$	0,8
c	$\frac{5}{8}$	1,59

(d) BUSBARS

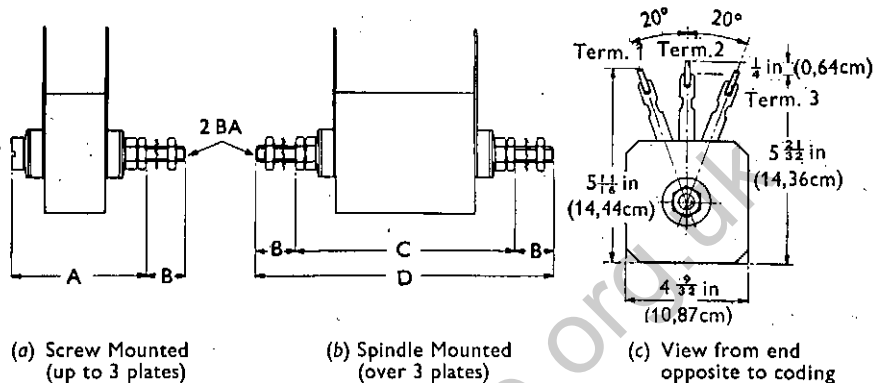
End-view drawing shows tags fitted with busbars. Busbars are fitted to 460F stacks having five or more parallel paths, but stacks with less than five parallel paths are wire connected.

Selenium Rectifier Stacks

Dimensions and Weights

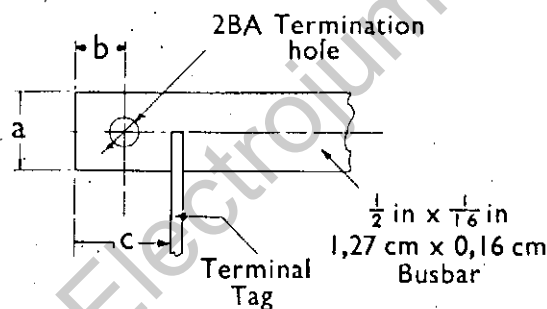
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Fig. 6. Series 470/870

(a) Screw Mounted
(up to 3 plates)(b) Spindle Mounted
(over 3 plates)(c) View from end
opposite to coding

For dimensions see Table 12.

For identification of terminals see Table 15.



(d) BUSBARS

End-view drawing shows tags fitted with busbars. Busbars are fitted to 470 stacks having five or more parallel paths, but stacks with less than five parallel paths are wire connected.

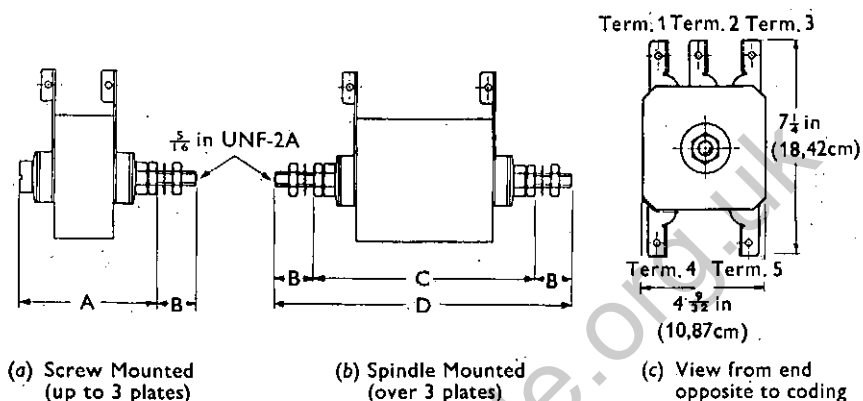
	in	cm
a	$\frac{1}{2}$	1,27
b	$\frac{7}{8}$	0,8
c	$\frac{3}{8}$	1,59

Selenium Rectifier Stacks

Dimensions and Weights

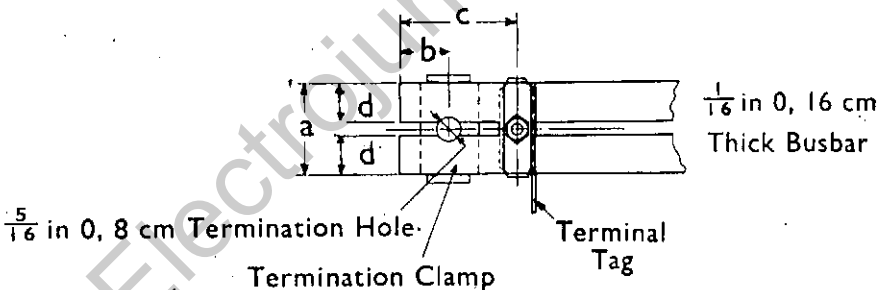
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Fig. 7. Series 470H/870H



For dimensions see Table 13.

For identification of terminals see Table 15.



(d) BUSBARS

Rectifier circuit connections on size 470H stacks are made with copper busbars which, in general, terminate at the coded ends of the stacks.

Busbar termination clamps are supplied loose with each stack.

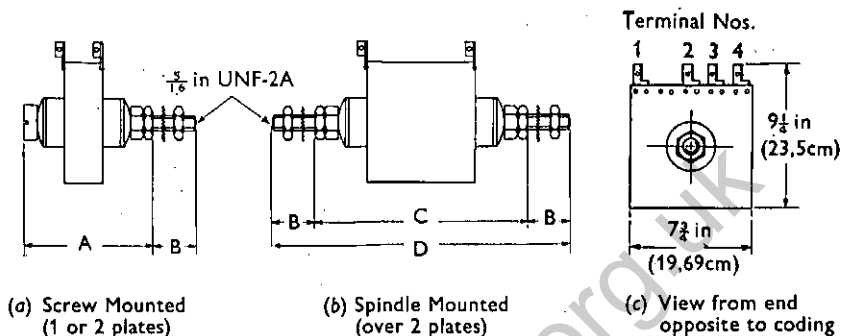
	in	cm
a	$1\frac{3}{8}$	3,02
b	$\frac{11}{8}$	1,51
c	$1\frac{1}{2}$	3,81
d	$\frac{1}{2}$	1,27

Selenium Rectifier Stacks

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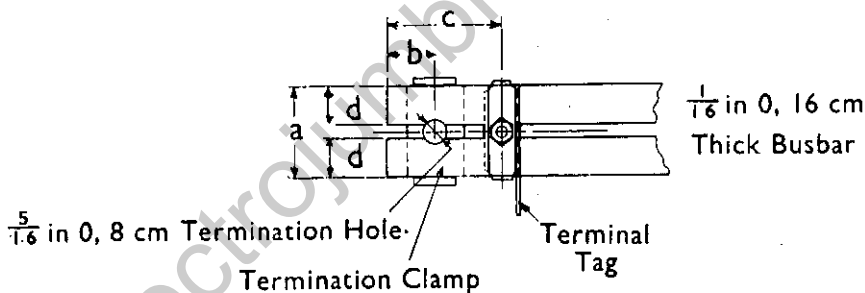
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Fig. 8. Series 470F/870F



For dimensions see Table 14.

For identification of terminals see Table 15.



(d) BUSBARS

Rectifier circuit connections on size 470F stacks are made with copper busbars which, in general, terminate at the coded ends of the stacks.

Busbar thickness varies in accordance with the number of parallel paths. For one to twenty paths, thickness is $\frac{1}{8}$ in. and for twenty-one to twenty-four paths, thickness is $\frac{1}{4}$ in.

Detail and dimensions of busbar terminations are given in the drawing above.

	in	cm
a	$1\frac{3}{16}$	3,02
b	$\frac{1}{2}$	1,51
c	$1\frac{1}{2}$	3,81
d	$\frac{1}{2}$	1,27

Selenium Rectifier Stacks

Dimensions and Weights

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DIMENSION TABLES

Table 2. Series 420/820 (see Fig. 1)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	g
1	$1\frac{5}{32}$	2,94	$\frac{5}{16}$	0,79						1	28
2	$1\frac{9}{32}$	3,25	$\frac{5}{16}$	0,79						1	28
3	$1\frac{11}{32}$	3,41	$\frac{3}{8}$	0,95						$1\frac{1}{8}$	32
4	$1\frac{13}{32}$	3,57	$\frac{3}{8}$	0,79						$1\frac{1}{4}$	35
5	$1\frac{17}{32}$	3,89	$\frac{5}{16}$	0,79						$1\frac{1}{4}$	35
6	$1\frac{17}{32}$	4,05	$\frac{5}{16}$	0,64						$1\frac{3}{8}$	39
7	$1\frac{19}{32}$	4,37	$\frac{3}{8}$	0,95						$1\frac{1}{2}$	42
8	$1\frac{19}{32}$	4,52	$\frac{5}{16}$	0,79						$1\frac{1}{2}$	42
9			$\frac{5}{16}$	0,79	$1\frac{3}{32}$	5,00	$2\frac{3}{4}$	6,99		$1\frac{3}{4}$	49
10			$\frac{5}{16}$	0,64	$2\frac{3}{32}$	5,32	$2\frac{3}{4}$	6,99		$1\frac{7}{8}$	53
11			$\frac{3}{8}$	0,87	$2\frac{5}{32}$	5,48	3	7,62		2	57
12			$\frac{3}{8}$	0,71	$2\frac{9}{32}$	5,79	3	7,62		2	57
13			$\frac{3}{8}$	0,64	$2\frac{11}{32}$	5,95	3	7,62		$2\frac{1}{8}$	61
14			$\frac{11}{32}$	0,87	$2\frac{13}{32}$	6,11	$3\frac{1}{4}$	8,26		$2\frac{1}{4}$	64
15			$\frac{9}{32}$	0,71	$2\frac{13}{32}$	6,42	$3\frac{1}{4}$	8,26		$2\frac{1}{4}$	64
16			$\frac{1}{2}$	0,64	$2\frac{15}{32}$	6,59	$3\frac{1}{4}$	8,26		$2\frac{3}{8}$	68
17			$\frac{5}{16}$	0,79	$2\frac{15}{32}$	6,91	$3\frac{1}{2}$	8,89		$2\frac{3}{8}$	68
18			$\frac{9}{32}$	0,71	$2\frac{15}{32}$	7,06	$3\frac{1}{2}$	8,89		$2\frac{1}{2}$	71
19			$\frac{11}{32}$	0,87	$2\frac{19}{32}$	7,38	$3\frac{3}{4}$	9,53		$2\frac{5}{8}$	75
20			$\frac{11}{32}$	0,79	$2\frac{19}{32}$	7,54	$3\frac{3}{4}$	9,53		$2\frac{5}{8}$	75
21			$\frac{11}{32}$	0,71	$3\frac{1}{32}$	7,70	$3\frac{3}{4}$	9,53		$2\frac{5}{8}$	78
22			$\frac{9}{32}$	0,87	$3\frac{3}{32}$	8,02	4	10,16		$2\frac{7}{8}$	81
23			$\frac{5}{16}$	0,79	$3\frac{7}{32}$	8,18	4	10,16		$2\frac{7}{8}$	81
24			$\frac{1}{2}$	0,64	$3\frac{11}{32}$	8,49	4	10,16		3	84
25			$\frac{11}{32}$	0,87	$3\frac{13}{32}$	8,65	$4\frac{1}{4}$	10,80		$3\frac{1}{8}$	88
26			$\frac{9}{32}$	0,71	$3\frac{13}{32}$	8,97	$4\frac{1}{4}$	10,80		$3\frac{1}{8}$	88
27			$\frac{1}{2}$	0,64	$3\frac{15}{32}$	9,13	$4\frac{1}{4}$	10,80		$3\frac{1}{8}$	91
28			$\frac{11}{32}$	0,87	$3\frac{17}{32}$	9,29	$4\frac{1}{2}$	11,43		$3\frac{3}{8}$	95
29			$\frac{9}{32}$	0,71	$3\frac{17}{32}$	9,60	$4\frac{1}{2}$	11,43		$3\frac{3}{8}$	95
30			$\frac{1}{2}$	0,64	$3\frac{17}{32}$	9,76	$4\frac{1}{2}$	11,43		$3\frac{1}{2}$	98
31			$\frac{5}{16}$	0,79	$3\frac{19}{32}$	10,08	$4\frac{3}{4}$	12,07		$3\frac{3}{8}$	102
32			$\frac{9}{32}$	0,71	$4\frac{1}{32}$	10,24	$4\frac{3}{4}$	12,07		$3\frac{3}{8}$	102
33			$\frac{11}{32}$	0,64	$4\frac{3}{32}$	10,40	$4\frac{3}{4}$	12,07		$3\frac{3}{8}$	105
34			$\frac{5}{16}$	0,79	$4\frac{7}{32}$	10,72	5	12,70		$3\frac{3}{4}$	105
35			$\frac{9}{32}$	0,71	$4\frac{9}{32}$	10,87	5	12,70		$3\frac{3}{4}$	109
36			$\frac{11}{32}$	0,87	$4\frac{13}{32}$	11,19	$5\frac{1}{4}$	13,34		4	113

Selenium Rectifier Stacks

Dimensions and Weights

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Table 2. Series 420/820 (continued)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	g
37			$\frac{5}{16}$	0,79	$4\frac{1}{2}$	11,35	$5\frac{1}{4}$	13,34	4		113
38			$\frac{1}{4}$	0,64	$4\frac{1}{2}$	11,37	$5\frac{1}{4}$	13,34	$4\frac{1}{8}$		117
39			$\frac{1}{2}$	0,79	$4\frac{1}{2}$	11,83	$5\frac{1}{2}$	13,97	$4\frac{1}{4}$		120
40			$\frac{3}{8}$	0,71	$4\frac{1}{2}$	12,14	$5\frac{1}{2}$	13,97	$4\frac{1}{4}$		120
41			$\frac{1}{4}$	0,64	$4\frac{1}{2}$	12,30	$5\frac{1}{2}$	13,97	$4\frac{3}{8}$		124
42			$\frac{1}{2}$	0,87	$4\frac{3}{8}$	12,46	$5\frac{3}{4}$	14,61	$4\frac{1}{2}$		127
43			$\frac{3}{8}$	0,71	$5\frac{1}{8}$	12,78	$5\frac{3}{4}$	14,61	$4\frac{1}{2}$		127
44			$\frac{1}{4}$	0,64	$5\frac{3}{8}$	12,94	$5\frac{3}{4}$	14,61	$4\frac{5}{8}$		131
45			$\frac{1}{16}$	0,79	$5\frac{3}{8}$	13,26	6	15,24	$4\frac{3}{4}$		131
46			$\frac{3}{8}$	0,71	$5\frac{9}{16}$	13,41	6	15,24	$4\frac{3}{4}$		134
47			$\frac{1}{4}$	0,64	$5\frac{3}{8}$	13,57	6	15,24	$4\frac{3}{8}$		138
48			$\frac{1}{16}$	0,79	$5\frac{1}{2}$	13,89	$6\frac{1}{4}$	15,88	5		142
49			$\frac{3}{8}$	0,71	$5\frac{1}{2}$	14,04	$6\frac{1}{4}$	15,88	5		142
50			$\frac{1}{2}$	0,87	$5\frac{1}{2}$	14,36	$6\frac{1}{2}$	16,51	$5\frac{1}{8}$		146
51			$\frac{1}{16}$	0,79	$5\frac{1}{2}$	14,53	$6\frac{1}{2}$	16,51	$5\frac{1}{4}$		149
52			$\frac{1}{4}$	0,64	$5\frac{1}{2}$	14,84	$6\frac{1}{2}$	16,51	$5\frac{1}{2}$		149
53			$\frac{1}{32}$	0,87	$5\frac{3}{8}$	15,00	$6\frac{3}{4}$	17,15	$5\frac{3}{8}$		153
54			$\frac{1}{16}$	0,79	$5\frac{3}{8}$	15,16	$6\frac{3}{4}$	17,15	$5\frac{3}{8}$		153
55			$\frac{1}{4}$	0,64	$6\frac{1}{8}$	15,48	$6\frac{3}{4}$	17,15	$5\frac{1}{2}$		156
56			$\frac{1}{32}$	0,87	$6\frac{1}{8}$	15,64	7	17,78	$5\frac{5}{8}$		160
57			$\frac{3}{8}$	0,71	$6\frac{9}{16}$	15,95	7	17,78	$5\frac{5}{8}$		160
58			$\frac{1}{4}$	0,64	$6\frac{1}{2}$	16,11	7	17,78	$5\frac{3}{4}$		163
59			$\frac{1}{16}$	0,87	$6\frac{1}{2}$	16,27	$7\frac{1}{4}$	18,42	$5\frac{7}{8}$		167
60			$\frac{1}{2}$	0,71	$6\frac{1}{2}$	16,59	$7\frac{1}{4}$	18,42	$5\frac{7}{8}$		167
61			$\frac{3}{8}$	0,64	$6\frac{1}{2}$	16,75	$7\frac{1}{4}$	18,42	6		170
62			$\frac{1}{4}$	0,79	$6\frac{3}{8}$	17,07	$7\frac{1}{2}$	19,05	$6\frac{1}{8}$		174
63			$\frac{3}{8}$	0,71	$6\frac{3}{8}$	17,22	$7\frac{1}{2}$	19,05	$6\frac{1}{8}$		174
64			$\frac{1}{2}$	0,87	$6\frac{3}{8}$	17,54	$7\frac{3}{4}$	19,69	$6\frac{3}{4}$		177
65			$\frac{1}{16}$	0,79	$6\frac{3}{8}$	17,70	$7\frac{3}{4}$	19,69	$6\frac{1}{4}$		181
66			$\frac{3}{8}$	0,71	$7\frac{1}{8}$	17,86	$7\frac{3}{4}$	19,69	$6\frac{3}{8}$		184
67			$\frac{1}{32}$	0,87	$7\frac{5}{16}$	18,18	8	20,32	$6\frac{1}{2}$		188
68			$\frac{1}{16}$	0,79	$7\frac{5}{16}$	18,34	8	20,32	$6\frac{1}{2}$		191
69			$\frac{1}{4}$	0,64	$7\frac{1}{2}$	18,65	8	20,32	$6\frac{5}{8}$		191
70			$\frac{3}{8}$	0,87	$7\frac{1}{2}$	18,81	$8\frac{1}{4}$	20,96	$6\frac{3}{4}$		195
71			$\frac{1}{2}$	0,71	$7\frac{1}{2}$	19,12	$8\frac{1}{4}$	20,96	$6\frac{3}{4}$		195
72			$\frac{3}{8}$	0,64	$7\frac{3}{8}$	19,29	$8\frac{1}{4}$	20,96	$6\frac{7}{8}$		198

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Dimensions and Weights

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Table 3. Series 430/830 (see Fig. 2)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	g
1	1 $\frac{3}{32}$	2,78	$\frac{3}{8}$	0,95						$\frac{3}{8}$	21
2	1 $\frac{7}{32}$	3,10	$\frac{3}{8}$	0,95						1	28
3	1 $\frac{11}{32}$	3,41	$\frac{3}{8}$	0,95						1	28
4	1 $\frac{15}{32}$	3,73	$\frac{3}{8}$	0,95						1 $\frac{1}{4}$	35
5	1 $\frac{19}{32}$	4,05	$\frac{3}{8}$	0,64						1 $\frac{1}{4}$	35
6	1 $\frac{23}{32}$	4,37	$\frac{3}{8}$	0,95						1 $\frac{1}{2}$	42
7	1 $\frac{27}{32}$	4,68	$\frac{3}{8}$	0,95						1 $\frac{1}{2}$	42
8	1 $\frac{31}{32}$	5,00	$\frac{3}{8}$	0,95						1 $\frac{3}{4}$	49
9			$\frac{5}{16}$	0,79	2 $\frac{7}{32}$	5,64	3	7,62		2	57
10			$\frac{1}{4}$	0,64	2 $\frac{11}{32}$	5,95	3	7,62		2 $\frac{1}{4}$	64
11			$\frac{1}{4}$	0,79	2 $\frac{15}{32}$	6,27	3 $\frac{1}{4}$	8,26		2 $\frac{1}{4}$	64
12			$\frac{1}{2}$	0,64	2 $\frac{19}{32}$	6,59	3 $\frac{1}{2}$	8,26		2 $\frac{1}{2}$	71
13			$\frac{1}{2}$	0,79	2 $\frac{23}{32}$	6,91	3 $\frac{1}{2}$	8,89		2 $\frac{3}{4}$	78
14			$\frac{1}{2}$	0,71	2 $\frac{27}{32}$	7,06	3 $\frac{3}{4}$	8,89		2 $\frac{3}{4}$	78
15			$\frac{1}{2}$	0,87	2 $\frac{31}{32}$	7,38	3 $\frac{3}{4}$	9,53		3	85
16			$\frac{1}{2}$	0,71	3 $\frac{1}{32}$	7,70	3 $\frac{3}{4}$	9,53		3	85
17			$\frac{1}{2}$	0,87	3 $\frac{5}{32}$	8,02	4	10,16		3 $\frac{1}{4}$	92
18			$\frac{1}{2}$	0,71	3 $\frac{9}{32}$	8,33	4	10,16		3 $\frac{1}{2}$	99
19			$\frac{1}{2}$	0,87	3 $\frac{13}{32}$	8,65	4 $\frac{1}{4}$	10,80		3 $\frac{1}{2}$	99
20			$\frac{1}{2}$	0,71	3 $\frac{17}{32}$	8,96	4 $\frac{1}{4}$	10,80		3 $\frac{3}{4}$	106
21			$\frac{1}{2}$	0,87	3 $\frac{21}{32}$	9,29	4 $\frac{1}{2}$	11,43		3 $\frac{3}{4}$	106
22			$\frac{1}{2}$	0,71	3 $\frac{25}{32}$	9,60	4 $\frac{1}{2}$	11,43		4	113
23			$\frac{1}{2}$	0,87	3 $\frac{29}{32}$	9,92	4 $\frac{3}{4}$	12,07		4	113
24			$\frac{1}{2}$	0,71	4 $\frac{1}{32}$	10,24	4 $\frac{3}{4}$	12,07		4 $\frac{1}{2}$	127
25			$\frac{1}{2}$	0,87	4 $\frac{5}{32}$	10,56	5	12,70		4 $\frac{1}{2}$	127
26			$\frac{1}{2}$	0,71	4 $\frac{9}{32}$	10,87	5	12,70		4 $\frac{1}{2}$	127
27			$\frac{1}{2}$	0,87	4 $\frac{13}{32}$	11,19	5 $\frac{1}{4}$	13,34		4 $\frac{1}{4}$	134
28			$\frac{1}{2}$	0,71	4 $\frac{17}{32}$	11,51	5 $\frac{1}{4}$	13,34		4 $\frac{3}{4}$	134
29			$\frac{1}{2}$	0,87	4 $\frac{21}{32}$	11,83	5 $\frac{1}{2}$	13,97		5	142
30			$\frac{1}{2}$	0,71	4 $\frac{25}{32}$	12,14	5 $\frac{1}{2}$	13,97		5	142
31			$\frac{1}{2}$	0,87	4 $\frac{29}{32}$	12,46	5 $\frac{3}{4}$	14,61		5 $\frac{1}{4}$	149
32			$\frac{1}{2}$	0,71	5 $\frac{1}{32}$	12,78	5 $\frac{3}{4}$	14,61		5 $\frac{1}{2}$	156
33			$\frac{1}{2}$	0,87	5 $\frac{5}{32}$	13,10	6	15,24		5 $\frac{1}{2}$	156
34			$\frac{1}{2}$	0,71	5 $\frac{9}{32}$	14,41	6	15,24		5 $\frac{3}{4}$	163
35			$\frac{1}{4}$	0,64	5 $\frac{13}{32}$	14,57	6	15,24		5 $\frac{3}{4}$	163
36			$\frac{1}{4}$	0,79	5 $\frac{17}{32}$	14,89	6 $\frac{1}{4}$	15,88		6	170
37			$\frac{1}{4}$	0,64	5 $\frac{21}{32}$	14,21	6 $\frac{1}{4}$	15,88		6	170
38			$\frac{1}{4}$	0,79	5 $\frac{25}{32}$	14,53	6 $\frac{1}{2}$	16,52		6 $\frac{1}{4}$	177
39			$\frac{1}{4}$	0,64	5 $\frac{29}{32}$	14,84	6 $\frac{1}{2}$	16,52		6 $\frac{1}{2}$	184
40			$\frac{1}{4}$	0,79	5 $\frac{33}{32}$	15,16	6 $\frac{3}{4}$	17,15		6 $\frac{1}{2}$	184
41			$\frac{1}{4}$	0,64	6 $\frac{1}{32}$	15,48	6 $\frac{3}{4}$	17,15		6 $\frac{3}{4}$	191
42			$\frac{1}{4}$	0,79	6 $\frac{5}{32}$	15,80	7	17,78		6 $\frac{3}{4}$	191

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 3. Series 430/830 (continued)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	g
43			$\frac{1}{4}$	0,64	$6\frac{1}{2}$	16,11	7	17,78	7		198
44			$\frac{1}{8}$	0,79	$6\frac{1}{2}$	16,43	$7\frac{1}{2}$	18,42	7		198
45			$\frac{1}{4}$	0,64	$6\frac{1}{2}$	16,75	$7\frac{1}{2}$	18,42	$7\frac{1}{2}$		205
46			$\frac{1}{8}$	0,79	$6\frac{1}{2}$	17,07	$7\frac{1}{2}$	19,05	$7\frac{1}{2}$		212
47			$\frac{1}{4}$	0,64	$6\frac{1}{2}$	17,38	$7\frac{1}{2}$	19,05	$7\frac{1}{2}$		212
48			$\frac{1}{8}$	0,79	$6\frac{1}{2}$	17,70	$7\frac{1}{2}$	19,69	$7\frac{1}{2}$		219
49			$\frac{1}{4}$	0,64	$7\frac{1}{2}$	18,02	$7\frac{1}{2}$	19,69	$7\frac{1}{2}$		219
50			$\frac{1}{8}$	0,79	$7\frac{1}{2}$	18,34	8	20,32	8		227
51			$\frac{1}{4}$	0,64	$7\frac{1}{2}$	18,65	8	20,32	8		227
52			$\frac{1}{8}$	0,79	$7\frac{1}{2}$	18,97	$8\frac{1}{2}$	20,96	$8\frac{1}{2}$		234
53			$\frac{1}{4}$	0,64	$7\frac{1}{2}$	19,29	$8\frac{1}{2}$	20,96	$8\frac{1}{2}$		241
54			$\frac{1}{8}$	0,79	$7\frac{1}{2}$	19,61	$8\frac{1}{2}$	21,59	$8\frac{1}{2}$		241
55			$\frac{1}{4}$	0,64	$7\frac{1}{2}$	19,92	$8\frac{1}{2}$	21,59	$8\frac{1}{2}$		248
56			$\frac{1}{8}$	0,79	$7\frac{1}{2}$	20,24	$8\frac{1}{2}$	22,23	$8\frac{1}{2}$		248
57			$\frac{1}{4}$	0,71	$8\frac{1}{2}$	20,40	$8\frac{1}{2}$	22,23	9		255
58			$\frac{1}{8}$	0,87	$8\frac{1}{2}$	20,72	9	22,86	9		255
59			$\frac{1}{4}$	0,71	$8\frac{1}{2}$	21,03	9	22,86	$9\frac{1}{4}$		262
60			$\frac{1}{8}$	0,87	$8\frac{1}{2}$	21,35	$9\frac{1}{4}$	23,50	$9\frac{1}{4}$		269
61			$\frac{1}{4}$	0,71	$8\frac{1}{2}$	21,67	$9\frac{1}{4}$	23,50	$9\frac{1}{4}$		269
62			$\frac{1}{8}$	0,87	$8\frac{1}{2}$	21,99	$9\frac{1}{4}$	24,13	$9\frac{1}{4}$		276
63			$\frac{1}{4}$	0,71	$8\frac{1}{2}$	22,30	$9\frac{1}{4}$	24,13	$9\frac{1}{4}$		276
64			$\frac{1}{8}$	0,87	$8\frac{1}{2}$	22,62	$9\frac{1}{4}$	24,77	10		284
65			$\frac{1}{4}$	0,71	$9\frac{1}{2}$	22,94	$9\frac{1}{4}$	24,77	10		284
66			$\frac{1}{8}$	0,87	$9\frac{1}{2}$	23,26	10	25,40	$10\frac{1}{4}$		291
67			$\frac{1}{4}$	0,71	$9\frac{1}{2}$	23,57	10	25,40	$10\frac{1}{4}$		298
68			$\frac{1}{8}$	0,87	$9\frac{1}{2}$	23,89	$10\frac{1}{4}$	26,04	$10\frac{1}{4}$		298
69			$\frac{1}{4}$	0,71	$9\frac{1}{2}$	24,21	$10\frac{1}{4}$	26,04	$10\frac{1}{4}$		305
70			$\frac{1}{8}$	0,87	$9\frac{1}{2}$	24,53	$10\frac{1}{4}$	26,67	$10\frac{1}{4}$		305
71			$\frac{1}{4}$	0,71	$9\frac{1}{2}$	24,84	$10\frac{1}{4}$	26,67	11		312
72			$\frac{1}{8}$	0,87	$9\frac{1}{2}$	25,16	$10\frac{1}{4}$	27,31	$11\frac{1}{4}$		319

Dimensions common to all above stacks				E		F		G		Screw Thread
				Overall Double Tags		Height Triple Tags		Overall Width		
				in	cm	in	cm	in	cm	
				$1\frac{1}{2}$	3,73	$1\frac{1}{2}$	3,89	1	2,54	2BA

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 4. Series 440/840 (see Fig. 2)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	g
1	1 $\frac{5}{32}$	2,94	$\frac{5}{16}$	0,79						1	28
2	1 $\frac{11}{32}$	3,41	$\frac{5}{16}$	0,95						1 $\frac{1}{4}$	35
3	1 $\frac{17}{32}$	3,73	$\frac{5}{16}$	0,95						1 $\frac{1}{2}$	42
4	1 $\frac{23}{32}$	4,21	$\frac{7}{16}$	1,11						1 $\frac{3}{4}$	49
5	1 $\frac{29}{32}$	4,68	$\frac{7}{16}$	0,95						2	57
6	1 $\frac{35}{32}$	5,00	$\frac{7}{16}$	0,95						2 $\frac{1}{4}$	64
7	2 $\frac{1}{32}$	5,48	$\frac{7}{16}$	1,11						2 $\frac{1}{2}$	71
8	2 $\frac{7}{32}$	5,79	$\frac{7}{16}$	0,79						2 $\frac{3}{4}$	78
9			$\frac{1}{4}$	0,64	2 $\frac{1}{32}$	6,59	3 $\frac{1}{4}$	8,26		3	85
10			$\frac{1}{4}$	0,79	2 $\frac{7}{32}$	6,91	3 $\frac{1}{2}$	8,89		3 $\frac{1}{4}$	92
11			$\frac{1}{4}$	0,87	2 $\frac{13}{32}$	7,38	3 $\frac{3}{4}$	9,53		3 $\frac{1}{2}$	99
12			$\frac{3}{32}$	0,71	3 $\frac{1}{32}$	7,70	3 $\frac{3}{4}$	9,53		3 $\frac{3}{4}$	106
13			$\frac{3}{32}$	0,79	3 $\frac{7}{32}$	8,18	4	10,16		4	113
14			$\frac{1}{4}$	0,64	3 $\frac{11}{32}$	8,49	4	10,16		4 $\frac{1}{4}$	120
15			$\frac{9}{32}$	0,71	3 $\frac{17}{32}$	8,97	4 $\frac{1}{4}$	10,80		4 $\frac{1}{2}$	127
16			$\frac{9}{32}$	0,87	3 $\frac{23}{32}$	9,29	4 $\frac{1}{2}$	11,43		4 $\frac{3}{4}$	134
17			$\frac{1}{4}$	0,64	3 $\frac{29}{32}$	9,76	4 $\frac{1}{2}$	11,43		5	142
18			$\frac{5}{32}$	0,71	4 $\frac{1}{32}$	10,24	4 $\frac{3}{4}$	12,07		5 $\frac{1}{2}$	149
19			$\frac{5}{32}$	0,87	4 $\frac{7}{32}$	10,56	5	12,70		5 $\frac{1}{2}$	156
20			$\frac{1}{4}$	0,64	4 $\frac{13}{32}$	11,03	5	12,70		5 $\frac{3}{4}$	163
21			$\frac{5}{16}$	0,79	4 $\frac{19}{32}$	11,35	5 $\frac{1}{4}$	13,34		6	170
22			$\frac{5}{16}$	0,87	4 $\frac{25}{32}$	11,83	5 $\frac{1}{2}$	13,97		6 $\frac{1}{4}$	177
23			$\frac{1}{4}$	0,64	4 $\frac{31}{32}$	12,30	5 $\frac{1}{2}$	13,97		6 $\frac{1}{2}$	184
24			$\frac{3}{8}$	0,79	4 $\frac{37}{32}$	12,62	5 $\frac{3}{4}$	14,61		6 $\frac{3}{4}$	191
25			$\frac{1}{6}$	0,87	5 $\frac{1}{32}$	13,10	6	15,24		7	198
26			$\frac{1}{6}$	0,71	5 $\frac{7}{32}$	13,41	6	15,24		7 $\frac{1}{4}$	205
27			$\frac{1}{6}$	0,79	5 $\frac{13}{32}$	13,89	6 $\frac{1}{4}$	15,88		7 $\frac{1}{2}$	212
28			$\frac{1}{4}$	0,64	5 $\frac{19}{32}$	14,21	6 $\frac{1}{2}$	15,88		7 $\frac{3}{4}$	219
29			$\frac{1}{4}$	0,71	5 $\frac{25}{32}$	14,68	6 $\frac{1}{2}$	16,51		8	227
30			$\frac{5}{16}$	0,79	5 $\frac{31}{32}$	15,16	6 $\frac{3}{4}$	17,15		8 $\frac{1}{4}$	234

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 4. Series 440/840 (continued)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight			
	in	cm	in	cm	in	cm	in	cm	lb	oz	g	
31			$\frac{1}{4}$	0,64	$6\frac{3}{32}$	15,48	$6\frac{3}{4}$	17,15		$8\frac{1}{4}$	241	
32			$\frac{3}{32}$	0,71	$6\frac{9}{32}$	15,95	7	17,78		$8\frac{3}{4}$	248	
33			$\frac{1}{2}$	0,87	$6\frac{15}{32}$	16,27	$7\frac{1}{4}$	18,42		9	255	
34			$\frac{3}{4}$	0,64	$6\frac{19}{32}$	16,75	$7\frac{1}{2}$	18,42		$9\frac{1}{4}$	262	
35			$\frac{7}{8}$	0,71	$6\frac{23}{32}$	17,22	$7\frac{3}{4}$	19,05		$9\frac{1}{2}$	269	
36			$1\frac{1}{32}$	0,87	$6\frac{27}{32}$	17,54	$7\frac{7}{8}$	19,69		$9\frac{3}{4}$	276	
37			$1\frac{1}{4}$	0,64	$7\frac{3}{32}$	18,02	$7\frac{7}{8}$	19,69	10		284	
38			$1\frac{5}{16}$	0,79	$7\frac{7}{32}$	18,34	8	20,32		$10\frac{1}{4}$	291	
39			$1\frac{1}{2}$	0,87	$7\frac{11}{32}$	18,81	$8\frac{1}{4}$	20,96		$10\frac{1}{2}$	298	
40			$1\frac{3}{32}$	0,71	$7\frac{15}{32}$	19,12	$8\frac{1}{2}$	20,96		$10\frac{3}{4}$	298	
41			$1\frac{7}{16}$	0,79	$7\frac{19}{32}$	19,61	$8\frac{3}{4}$	21,59		$10\frac{3}{4}$	305	
42			$1\frac{1}{4}$	0,64	$7\frac{23}{32}$	19,92	$8\frac{1}{2}$	21,59	11		312	
43			$1\frac{3}{32}$	0,71	$8\frac{1}{32}$	20,40	$8\frac{3}{4}$	22,23		$11\frac{1}{4}$	319	
44			$1\frac{5}{16}$	0,79	$8\frac{5}{32}$	20,88	9	22,86		$11\frac{1}{2}$	326	
45			$1\frac{1}{2}$	0,64	$8\frac{9}{32}$	21,19	9	22,86		$11\frac{3}{4}$	333	
46			$1\frac{3}{32}$	0,71	$8\frac{13}{32}$	21,66	$9\frac{1}{4}$	23,50	12		341	
47			$1\frac{1}{2}$	0,87	$8\frac{17}{32}$	21,99	$9\frac{1}{2}$	24,13		$12\frac{1}{4}$	348	
48			$1\frac{3}{4}$	0,64	$8\frac{21}{32}$	22,46	$9\frac{3}{4}$	24,77		$12\frac{1}{2}$	355	
49			$1\frac{7}{8}$	0,71	$9\frac{1}{32}$	22,94	$9\frac{3}{4}$	24,77		$12\frac{3}{4}$	362	
50			$1\frac{1}{2}$	0,87	$9\frac{5}{32}$	23,26	10	25,40	13		369	
51			$1\frac{1}{4}$	0,64	$9\frac{9}{32}$	23,73	10	25,40		$13\frac{1}{4}$	376	
52			$1\frac{3}{32}$	0,71	$9\frac{13}{32}$	24,21	$10\frac{1}{4}$	26,04		$13\frac{1}{2}$	383	
53			$1\frac{1}{2}$	0,87	$9\frac{17}{32}$	24,53	$10\frac{1}{2}$	26,67		$13\frac{3}{4}$	390	
54			$1\frac{3}{32}$	0,71	$9\frac{21}{32}$	24,84	$10\frac{3}{4}$	26,67		14	397	
Dimensions common to all above stacks					E		F		G		Screw Thread	
					Overall Double Tags		Height Triple Tags		Overall Width			
					in	cm	in	cm	in	cm		
					$1\frac{1}{8}$	4,44	$1\frac{1}{8}$	4,60	$1\frac{5}{16}$	3,38	2BA	

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 5. Series 450/850 (see Fig. 2)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	g
1	1 $\frac{1}{4}$	3,18	1 $\frac{1}{32}$	0,87						1 $\frac{1}{2}$	42
2	1 $\frac{1}{32}$	3,73	1 $\frac{1}{8}$	0,64						2	57
3	1 $\frac{2}{32}$	4,37	1 $\frac{3}{8}$	0,95						2 $\frac{1}{2}$	71
4	1 $\frac{1}{2}$	4,92	1 $\frac{3}{8}$	0,71						3 $\frac{1}{2}$	99
5	2 $\frac{1}{32}$	5,48	1 $\frac{7}{8}$	1,11						4	113
6	2 $\frac{1}{8}$	6,03	1 $\frac{7}{8}$	0,56						4 $\frac{1}{2}$	127
7			1 $\frac{5}{8}$	0,79	2 $\frac{1}{32}$	6,91	3 $\frac{1}{2}$	8,89		5 $\frac{1}{4}$	149
8			1 $\frac{5}{8}$	0,79	2 $\frac{1}{32}$	7,54	3 $\frac{3}{4}$	9,53		6	170
9			1 $\frac{11}{32}$	0,87	3 $\frac{1}{32}$	8,02	4	10,16		6 $\frac{1}{2}$	184
10			1 $\frac{11}{32}$	0,87	3 $\frac{1}{32}$	8,65	4 $\frac{1}{4}$	10,80		7 $\frac{1}{4}$	205
11			1 $\frac{1}{4}$	0,64	3 $\frac{1}{8}$	9,13	4 $\frac{1}{4}$	10,80		7 $\frac{3}{4}$	219
12			1 $\frac{1}{4}$	0,64	3 $\frac{1}{8}$	9,76	4 $\frac{1}{2}$	11,43		8 $\frac{1}{4}$	234
13			1 $\frac{1}{4}$	0,64	4 $\frac{1}{32}$	10,40	4 $\frac{1}{2}$	12,07		9	255
14			1 $\frac{3}{8}$	0,71	4 $\frac{1}{32}$	10,87	5	12,70		9 $\frac{1}{2}$	269
15			1 $\frac{3}{8}$	0,71	4 $\frac{1}{32}$	11,51	5 $\frac{1}{4}$	13,34		10	284
16			1 $\frac{5}{8}$	0,79	4 $\frac{1}{32}$	11,99	5 $\frac{1}{2}$	13,97		10 $\frac{1}{2}$	305
17			1 $\frac{5}{8}$	0,79	4 $\frac{1}{32}$	12,62	5 $\frac{3}{4}$	14,61		11 $\frac{1}{4}$	319
18			1 $\frac{11}{32}$	0,87	5 $\frac{1}{32}$	13,10	6	15,24		11 $\frac{3}{4}$	333
19			1 $\frac{11}{32}$	0,87	5 $\frac{1}{32}$	13,73	6 $\frac{1}{4}$	15,88		12 $\frac{1}{2}$	355
20			1 $\frac{1}{2}$	0,87	5 $\frac{1}{32}$	14,37	6 $\frac{1}{2}$	16,51		13	369
21			1 $\frac{1}{2}$	0,64	5 $\frac{1}{32}$	14,84	6 $\frac{1}{2}$	16,51		13 $\frac{1}{2}$	383
22			1 $\frac{1}{2}$	0,64	6 $\frac{1}{32}$	15,48	6 $\frac{3}{4}$	17,15		14 $\frac{1}{4}$	404
23			1 $\frac{3}{4}$	0,71	6 $\frac{1}{32}$	15,95	7	17,78		14 $\frac{3}{4}$	418
24			1 $\frac{3}{4}$	0,71	6 $\frac{1}{32}$	16,59	7 $\frac{1}{4}$	18,42		15 $\frac{1}{2}$	440

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 5. Series 450/850 (continued)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	g
25			$\frac{3}{32}$	0,71	$6\frac{1}{2}$	17,22	$7\frac{1}{2}$	19,05	1	0	454
26			$\frac{1}{16}$	0,79	$6\frac{1}{2}$	17,70	$7\frac{3}{4}$	19,69	1	0 $\frac{1}{2}$	468
27			$\frac{1}{16}$	0,79	$7\frac{1}{2}$	18,34	8	20,32	1	1 $\frac{1}{2}$	489
28			$\frac{1}{16}$	0,87	$7\frac{1}{2}$	18,81	$8\frac{1}{4}$	20,96	1	1 $\frac{3}{4}$	503
29			$\frac{1}{16}$	0,87	$7\frac{3}{4}$	19,45	$8\frac{1}{2}$	21,59	1	2 $\frac{1}{2}$	525
30			$\frac{1}{8}$	0,64	$7\frac{3}{4}$	19,92	$8\frac{1}{2}$	21,59	1	3	539
31			$\frac{1}{8}$	0,64	$8\frac{1}{2}$	20,56	$8\frac{3}{4}$	22,23	1	3 $\frac{1}{2}$	553
32			$\frac{1}{8}$	0,64	$8\frac{1}{2}$	21,19	9	22,86	1	4	568
33			$\frac{3}{32}$	0,71	$8\frac{1}{2}$	21,67	$9\frac{1}{4}$	23,50	1	4 $\frac{1}{2}$	582
34			$\frac{3}{32}$	0,71	$8\frac{3}{4}$	22,30	$9\frac{1}{2}$	24,13	1	5 $\frac{1}{4}$	603
35			$\frac{1}{16}$	0,79	$8\frac{3}{4}$	22,78	$9\frac{3}{4}$	24,77	1	6	625
36			$\frac{1}{16}$	0,79	$9\frac{1}{2}$	23,42	10	25,40	1	6 $\frac{1}{2}$	639
37			$\frac{1}{16}$	0,79	$9\frac{1}{2}$	24,05	$10\frac{1}{4}$	26,04	1	7	653
38			$\frac{1}{16}$	0,87	$9\frac{3}{4}$	24,53	$10\frac{1}{2}$	26,67	1	7 $\frac{1}{2}$	667
39			$\frac{1}{16}$	0,87	$9\frac{3}{4}$	25,16	$10\frac{3}{4}$	27,31	1	8 $\frac{1}{4}$	688
40			$\frac{1}{8}$	0,64	$10\frac{1}{2}$	25,64	$10\frac{3}{4}$	27,31	1	8 $\frac{3}{4}$	702
41			$\frac{1}{8}$	0,64	$10\frac{1}{2}$	26,67	11	27,94	1	9 $\frac{1}{2}$	724
42			$\frac{3}{32}$	0,71	$10\frac{1}{2}$	26,75	$11\frac{1}{4}$	28,58	1	10	738

Dimensions common to all above stacks	E		F		G		Screw Thread
	Overall Double Tags	in	Height Triple Tags	in	Overall Width	in	
	cm	cm	cm	cm	cm		
	$2\frac{1}{2}$	6,35	$2\frac{1}{2}$	6,59	$1\frac{1}{2}$	5,00	2BA

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 6. Series 460/860 (see Fig. 2)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	kg
1	2	5,08	1 1/16	1,75						6	0,170
2	2 1/4	5,72	1 1/8	1,75						8	0,227
3	2 3/8	6,03	1 1/8	1,43						10	0,284
4	2 5/8	6,67	1 1/8	1,43						12	0,341
5			1 1/8	1,51	3 5/16	8,02	4 1/4	11,43	1	15	0,426
6			1 1/8	1,51	3 1/2	8,65	4 3/4	12,07	1	1	0,482
7			1 1/8	1,51	3 3/4	9,29	5	12,70	1	3	0,539
8			1 1/8	1,51	3 7/8	9,92	5 1/4	13,34	1	5	0,596
9			1 1/8	1,67	4 1/2	10,24	5 1/2	13,97	1	7	0,653
10			1 1/8	1,67	4 5/8	10,87	5 3/4	14,61	1	9	0,710
11			1 1/8	1,67	4 7/8	11,51	6	15,24	1	11	0,766
12			1 1/8	1,67	4 3/4	12,14	6 1/4	15,88	1	13	0,823
13			1 1/8	1,67	5 1/8	12,78	6 1/2	16,51	1	15	0,878
14			1 1/8	1,67	5 1/4	13,51	6 3/4	17,15	2	1	0,935
15			1 1/8	1,67	5 3/8	14,05	7	17,78	2	3	0,992
16			1 1/8	1,67	5 1/2	14,68	7 1/4	18,42	2	5	1,048
17			1 1/8	1,67	6 1/8	15,32	7 1/2	19,05	2	7	1,105
18			1 1/8	1,67	6 1/4	15,95	7 3/4	19,69	2	9	1,162
19			1 1/8	1,67	6 3/8	16,59	8	20,32	2	11	1,219
20			1 1/8	1,67	6 1/2	17,22	8 1/4	20,96	2	13	1,276
21			1 1/8	1,67	7 1/8	17,86	8 1/2	21,59	2	15	1,332
22			1 1/8	1,67	7 1/4	18,49	8 3/4	22,23	3	1	1,389
23			1 1/8	1,67	7 3/8	19,13	9	22,86	3	3	1,446
24			1 1/8	1,67	7 1/2	19,76	9 1/4	23,50	3	5	1,503

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 6. Series 460/860 (continued)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	kg
25			$7\frac{1}{2}$	1,67	$8\frac{1}{2}$	20,40	$9\frac{1}{2}$	24,13	3	7	1,559
26			$7\frac{1}{2}$	1,67	$8\frac{1}{2}$	21,03	$9\frac{1}{2}$	24,77	3	9	1,616
27			$7\frac{1}{2}$	1,67	$8\frac{1}{2}$	21,67	10	25,40	3	11	1,673
28			$7\frac{1}{2}$	1,51	$8\frac{1}{2}$	21,99	10	25,40	3	13	1,730
29			$7\frac{1}{2}$	1,51	$8\frac{1}{2}$	22,62	$10\frac{1}{2}$	26,04	3	14	1,759
30			$7\frac{1}{2}$	1,51	$9\frac{1}{2}$	23,26	$10\frac{1}{2}$	26,67	4	0	1,816
31			$7\frac{1}{2}$	1,51	$9\frac{1}{2}$	23,89	$10\frac{1}{2}$	27,31	4	2	1,873
32			$7\frac{1}{2}$	1,51	$9\frac{1}{2}$	24,53	11	27,94	4	4	1,930
33			$7\frac{1}{2}$	1,51	$9\frac{1}{2}$	25,16	$11\frac{1}{2}$	28,58	4	6	1,987
34			$7\frac{1}{2}$	1,51	$10\frac{1}{2}$	25,80	$11\frac{1}{2}$	29,21	4	8	2,034
35			$7\frac{1}{2}$	1,51	$10\frac{1}{2}$	26,43	$11\frac{1}{2}$	29,85	4	10	2,091
36			$7\frac{1}{2}$	1,51	$10\frac{1}{2}$	27,07	12	30,48	4	12	2,143
37			$7\frac{1}{2}$	1,51	$10\frac{1}{2}$	27,70	$12\frac{1}{2}$	31,12	4	14	2,213
38			$7\frac{1}{2}$	1,51	$11\frac{1}{2}$	28,34	$12\frac{1}{2}$	31,75	5	0	2,268
39			$7\frac{1}{2}$	1,51	$11\frac{1}{2}$	28,97	$12\frac{3}{4}$	32,39	5	2	2,325
40			$7\frac{1}{2}$	1,51	$11\frac{1}{2}$	29,61	13	33,02	5	4	2,381
41			$7\frac{1}{2}$	1,51	$11\frac{1}{2}$	30,24	$13\frac{1}{4}$	33,66	5	6	2,438
42			$7\frac{1}{2}$	1,51	$12\frac{1}{2}$	30,88	$13\frac{1}{2}$	34,29	5	8	2,495
43			$7\frac{1}{2}$	1,51	$12\frac{1}{2}$	31,51	$13\frac{3}{4}$	34,93	5	10	2,552
44			$7\frac{1}{2}$	1,67	$12\frac{1}{2}$	31,83	14	35,56	5	12	2,608
45			$7\frac{1}{2}$	1,67	$12\frac{3}{4}$	32,78	$14\frac{1}{2}$	36,20	5	14	2,665
46			$7\frac{1}{2}$	1,67	$13\frac{1}{4}$	33,10	$14\frac{3}{4}$	36,83	6	0	2,722
47			$7\frac{1}{2}$	1,67	$13\frac{3}{4}$	33,73	$14\frac{3}{4}$	37,47	6	2	2,778
48			$7\frac{1}{2}$	1,67	$13\frac{1}{2}$	34,37	15	38,10	6	4	2,836

Dimensions common to all above stacks	E		F		G		Screw Thread
	Overall Double Tags	in	Height Triple Tags	in	Overall Width	in	
	cm		cm		cm		
	$3\frac{3}{8}$	9,92	$4\frac{1}{8}$	11,75	$2\frac{3}{4}$	7,54	$\frac{5}{16}$ - UNF

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 7. Series 420F/820F (see Fig. 3)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	g
1	1 $\frac{3}{8}$	3,02	$\frac{9}{32}$	0,71					1		28
2	1 $\frac{5}{8}$	3,33	$\frac{9}{32}$	0,71					1 $\frac{1}{4}$		35
3	1 $\frac{7}{8}$	3,73	$\frac{1}{4}$	0,64					1 $\frac{1}{2}$		42
4	1 $\frac{3}{4}$	4,05	$\frac{1}{4}$	0,64					1 $\frac{3}{4}$		49
5	1 $\frac{1}{2}$	4,45	$\frac{1}{4}$	0,87					2		57
6	1 $\frac{1}{8}$	4,76	$\frac{1}{4}$	0,87					2 $\frac{1}{4}$		64
7	2	5,08	$\frac{1}{4}$	0,87					2 $\frac{1}{2}$		71
8	2 $\frac{1}{2}$	5,48	$\frac{1}{4}$	1,11					2 $\frac{3}{4}$		78
9			$\frac{1}{4}$	0,87	2 $\frac{1}{2}$	6,11	3 $\frac{1}{4}$	8,26	3 $\frac{1}{4}$		92
10			$\frac{1}{4}$	0,71	2 $\frac{1}{2}$	6,42	3 $\frac{1}{4}$	8,26	3 $\frac{1}{2}$		99
11			$\frac{1}{4}$	0,87	2 $\frac{1}{2}$	6,74	3 $\frac{1}{2}$	8,89	3 $\frac{3}{4}$		106
12			$\frac{1}{4}$	0,71	2 $\frac{1}{2}$	7,06	3 $\frac{1}{2}$	8,89	4		113
13			$\frac{1}{4}$	0,87	2 $\frac{1}{2}$	7,38	3 $\frac{3}{4}$	9,53	4 $\frac{1}{4}$		120
14			$\frac{1}{4}$	0,71	3 $\frac{1}{2}$	7,70	3 $\frac{3}{4}$	9,53	4 $\frac{1}{2}$		129
15			$\frac{1}{4}$	0,79	3 $\frac{1}{2}$	8,18	4	10,16	4 $\frac{3}{4}$		134
16			$\frac{1}{4}$	0,64	3 $\frac{1}{2}$	8,49	4	10,16	4 $\frac{3}{4}$		134
17			$\frac{1}{4}$	0,79	3 $\frac{1}{2}$	8,81	4 $\frac{1}{4}$	10,80	5		142
18			$\frac{1}{4}$	0,64	3 $\frac{1}{2}$	9,13	4 $\frac{1}{4}$	10,80	5 $\frac{1}{4}$		149
19			$\frac{1}{4}$	0,71	3 $\frac{1}{2}$	9,60	4 $\frac{1}{2}$	11,43	5 $\frac{1}{2}$		156
20			$\frac{1}{4}$	0,87	3 $\frac{1}{2}$	9,92	4 $\frac{3}{4}$	12,07	5 $\frac{3}{4}$		163
21			$\frac{1}{4}$	0,71	4 $\frac{1}{2}$	10,24	4 $\frac{3}{4}$	12,07	6		170
22			$\frac{1}{4}$	0,87	4 $\frac{1}{2}$	10,56	5	12,70	6 $\frac{1}{4}$		177
23			$\frac{1}{4}$	0,71	4 $\frac{1}{2}$	10,87	5	12,70	6 $\frac{1}{2}$		184
24			$\frac{1}{4}$	0,87	4 $\frac{1}{2}$	11,19	5 $\frac{1}{4}$	13,34	6 $\frac{3}{4}$		191
25			$\frac{1}{4}$	0,64	4 $\frac{1}{2}$	11,67	5 $\frac{1}{4}$	13,34	7		198
26			$\frac{1}{4}$	0,79	4 $\frac{1}{2}$	11,99	5 $\frac{1}{2}$	13,97	7 $\frac{1}{4}$		205
27			$\frac{1}{4}$	0,64	4 $\frac{1}{2}$	12,30	5 $\frac{1}{2}$	13,97	7 $\frac{1}{2}$		212
28			$\frac{1}{4}$	0,79	4 $\frac{1}{2}$	12,62	5 $\frac{3}{4}$	14,61	7 $\frac{3}{4}$		219
29			$\frac{1}{4}$	0,64	5 $\frac{1}{2}$	12,94	5 $\frac{3}{4}$	14,61	8		227
30			$\frac{1}{4}$	0,71	5 $\frac{1}{2}$	13,41	6	15,24	8 $\frac{1}{4}$		234

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 7. Series 420F/820F (continued)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	g
31			$1\frac{1}{8}$	0,87	$5\frac{3}{8}$	13,73	$6\frac{1}{4}$	15,88	$8\frac{1}{2}$		241
32			$1\frac{1}{8}$	0,71	$5\frac{1}{2}$	14,05	$6\frac{1}{4}$	15,88	$8\frac{3}{4}$		248
33			$1\frac{1}{8}$	0,87	$5\frac{1}{2}$	14,37	$6\frac{1}{2}$	16,51	9		255
34			$1\frac{1}{8}$	0,64	$5\frac{3}{4}$	14,84	$6\frac{1}{2}$	16,51	$9\frac{1}{4}$		262
35			$1\frac{5}{16}$	0,79	$5\frac{3}{4}$	15,16	$6\frac{3}{4}$	17,15	$9\frac{1}{2}$		269
36			$1\frac{1}{4}$	0,64	$6\frac{1}{2}$	15,48	$6\frac{3}{4}$	17,15	$9\frac{3}{4}$		276
37			$1\frac{5}{16}$	0,79	$6\frac{7}{8}$	15,80	7	17,78	10		284
38			$1\frac{1}{4}$	0,64	$6\frac{1}{2}$	16,11	7	17,78	$10\frac{1}{4}$		291
39			$1\frac{5}{16}$	0,79	$6\frac{3}{4}$	16,43	$7\frac{1}{4}$	18,42	$10\frac{1}{2}$		298
40			$1\frac{1}{4}$	0,64	$6\frac{1}{2}$	16,75	$7\frac{1}{4}$	18,42	$10\frac{3}{4}$		305
41			$1\frac{1}{4}$	0,71	$6\frac{3}{4}$	17,22	$7\frac{1}{2}$	19,05	$10\frac{3}{4}$		305
42			$1\frac{1}{8}$	0,87	$6\frac{3}{4}$	17,54	$7\frac{3}{4}$	19,69	11		312
43			$1\frac{1}{8}$	0,71	$7\frac{1}{8}$	17,86	$7\frac{3}{4}$	19,69	$11\frac{1}{4}$		319
44			$1\frac{1}{8}$	0,87	$7\frac{3}{8}$	18,18	8	20,32	$11\frac{1}{2}$		326
45			$1\frac{1}{4}$	0,64	$7\frac{1}{2}$	18,65	8	20,32	$11\frac{3}{4}$		333
46			$1\frac{5}{16}$	0,79	$7\frac{1}{2}$	18,97	$8\frac{1}{4}$	20,96	12		341
47			$1\frac{1}{4}$	0,64	$7\frac{1}{2}$	19,29	$8\frac{1}{4}$	20,96	$12\frac{1}{4}$		348
48			$1\frac{5}{16}$	0,79	$7\frac{3}{8}$	19,61	$8\frac{1}{2}$	21,59	$12\frac{1}{2}$		355
49			$1\frac{1}{4}$	0,64	$7\frac{3}{8}$	19,92	$8\frac{1}{2}$	21,59	$12\frac{3}{4}$		362
50			$1\frac{9}{16}$	0,71	$8\frac{1}{8}$	20,40	$8\frac{3}{4}$	22,23	13		368
51			$1\frac{9}{16}$	0,87	$8\frac{5}{8}$	20,72	9	22,86	$13\frac{1}{4}$		376
52			$1\frac{1}{2}$	0,71	$8\frac{9}{8}$	21,03	9	22,86	$13\frac{1}{2}$		383
53			$1\frac{1}{2}$	0,87	$8\frac{3}{4}$	21,35	$9\frac{1}{4}$	23,50	$13\frac{3}{4}$		390
54			$1\frac{1}{2}$	0,71	$8\frac{7}{8}$	21,67	$9\frac{1}{4}$	23,50	14		397
55			$1\frac{1}{2}$	0,87	$8\frac{7}{8}$	21,99	$9\frac{1}{2}$	24,13	$14\frac{1}{4}$		404
56			$1\frac{1}{2}$	0,71	$8\frac{3}{4}$	22,30	$9\frac{1}{2}$	24,13	$14\frac{1}{2}$		411
57			$1\frac{5}{16}$	0,79	$8\frac{3}{4}$	22,78	$9\frac{3}{4}$	24,77	$14\frac{3}{4}$		419
58			$1\frac{1}{4}$	0,64	$9\frac{1}{8}$	23,10	$9\frac{3}{4}$	24,77	15		426
59			$1\frac{5}{16}$	0,79	$9\frac{1}{8}$	23,42	10	25,40	$15\frac{1}{2}$		433
60			$1\frac{1}{4}$	0,64	$9\frac{1}{8}$	23,73	10	25,40	$15\frac{1}{2}$		440
Dimensions common to all above stacks					E		F				
					Overall Height		Overall Width				
					in	cm	in	cm	cm		
					$1\frac{1}{2}$	3,81	$1\frac{1}{2}$	3,81			

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 8. Series 430F/830F (see Fig. 3)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	g
1	1 $\frac{7}{32}$	3,10	$\frac{1}{4}$	0,64						1	28
2	1 $\frac{8}{8}$	3,49	$\frac{1}{2}$	0,87						1 $\frac{1}{2}$	42
3	1 $\frac{9}{16}$	3,96	$\frac{3}{32}$	0,71						2	57
4	1 $\frac{11}{16}$	4,37	$\frac{1}{8}$	0,95						2 $\frac{1}{2}$	71
5	1 $\frac{13}{32}$	4,84	$\frac{3}{16}$	0,79						3	85
6	2 $\frac{1}{32}$	5,32	$\frac{1}{4}$	0,64						3 $\frac{1}{2}$	99
7			$\frac{1}{4}$	0,64	2 $\frac{1}{16}$	5,95	3	7,62		4	113
8			$\frac{3}{32}$	0,71	2 $\frac{1}{16}$	6,43	3 $\frac{1}{4}$	8,26		4 $\frac{1}{2}$	127
9			$\frac{1}{16}$	0,79	2 $\frac{1}{16}$	6,91	3 $\frac{1}{2}$	8,89		5	142
10			$\frac{1}{16}$	0,87	2 $\frac{1}{16}$	7,38	3 $\frac{3}{4}$	9,53		5 $\frac{1}{2}$	156
11			$\frac{1}{4}$	0,64	3 $\frac{1}{32}$	7,86	3 $\frac{3}{4}$	9,53		5 $\frac{1}{2}$	163
12			$\frac{3}{32}$	0,71	3 $\frac{3}{32}$	8,33	4	10,16		6	170
13			$\frac{1}{16}$	0,87	3 $\frac{1}{16}$	8,65	4 $\frac{1}{4}$	10,80		6 $\frac{1}{2}$	184
14			$\frac{1}{4}$	0,64	3 $\frac{1}{16}$	9,13	4 $\frac{1}{4}$	10,80		7	198
15			$\frac{3}{32}$	0,71	3 $\frac{1}{16}$	9,60	4 $\frac{1}{2}$	11,43		7 $\frac{1}{2}$	212
16			$\frac{1}{16}$	0,79	3 $\frac{1}{16}$	10,08	4 $\frac{3}{4}$	12,07		8	227
17			$\frac{1}{16}$	0,87	4 $\frac{3}{32}$	10,56	5	12,70		8 $\frac{1}{2}$	241
18			$\frac{3}{32}$	0,71	4 $\frac{1}{16}$	10,87	5	12,70		8 $\frac{3}{4}$	248
19			$\frac{1}{16}$	0,79	4 $\frac{1}{16}$	11,35	5 $\frac{1}{4}$	13,34		9	255
20			$\frac{1}{16}$	0,87	4 $\frac{1}{16}$	11,83	5 $\frac{1}{2}$	13,97		9 $\frac{1}{2}$	269
21			$\frac{1}{4}$	0,64	4 $\frac{3}{32}$	12,30	5 $\frac{1}{2}$	13,97		10	284
22			$\frac{3}{32}$	0,71	5 $\frac{1}{32}$	12,78	5 $\frac{3}{4}$	14,61		10 $\frac{1}{2}$	298
23			$\frac{1}{16}$	0,79	5 $\frac{1}{32}$	13,20	6	15,24		11	312
24			$\frac{1}{4}$	0,64	5 $\frac{1}{16}$	13,57	6	15,24		11 $\frac{1}{4}$	319

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 8. Series 430F/830F (continued)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight			
	in	cm	in	cm	in	cm	in	cm	lb	oz	g	
25			$\frac{9}{32}$	0,71	$5\frac{17}{32}$	14,05	$6\frac{1}{4}$	15,88		$11\frac{3}{4}$	333	
26			$\frac{1}{16}$	0,79	$5\frac{23}{32}$	14,53	$6\frac{1}{2}$	16,51		$12\frac{1}{4}$	347	
27			$\frac{1}{8}$	0,87	$5\frac{29}{32}$	15,00	$6\frac{3}{4}$	17,15		$12\frac{1}{2}$	354	
28			$\frac{1}{4}$	0,64	$6\frac{1}{32}$	15,48	$6\frac{3}{4}$	17,15		13	369	
29			$\frac{9}{32}$	0,71	$6\frac{7}{32}$	15,95	7	17,78		$13\frac{1}{2}$	383	
30			$\frac{1}{8}$	0,87	$6\frac{13}{32}$	16,27	$7\frac{1}{4}$	18,42		14	397	
31			$\frac{1}{4}$	0,64	$6\frac{19}{32}$	16,75	$7\frac{1}{4}$	18,42		$14\frac{1}{2}$	411	
32			$\frac{9}{32}$	0,71	$6\frac{25}{32}$	17,22	$7\frac{1}{2}$	19,05		$14\frac{3}{4}$	418	
33			$\frac{1}{16}$	0,79	$6\frac{31}{32}$	17,70	$7\frac{3}{4}$	19,69		$15\frac{1}{4}$	432	
34			$\frac{1}{8}$	0,64	$7\frac{3}{32}$	18,02	$7\frac{3}{4}$	19,69		$15\frac{1}{2}$	439	
35			$\frac{9}{32}$	0,71	$7\frac{9}{32}$	18,49	8	20,32	1	0	454	
36			$\frac{1}{16}$	0,79	$7\frac{15}{32}$	18,97	$8\frac{1}{4}$	20,96	1	$0\frac{1}{2}$	468	
37			$\frac{1}{8}$	0,87	$7\frac{21}{32}$	19,45	$8\frac{1}{2}$	21,59	1	1	482	
38			$\frac{1}{4}$	0,64	$7\frac{27}{32}$	19,92	$8\frac{1}{2}$	21,59	1	$1\frac{1}{4}$	489	
39			$\frac{9}{32}$	0,71	$8\frac{3}{32}$	20,40	$8\frac{3}{4}$	22,23	1	$1\frac{1}{2}$	496	
40			$\frac{1}{8}$	0,87	$8\frac{9}{32}$	20,72	9	22,86	1	2	511	
41			$\frac{1}{4}$	0,64	$8\frac{15}{32}$	21,19	9	22,86	1	$2\frac{1}{2}$	525	
42			$\frac{9}{32}$	0,71	$8\frac{21}{32}$	21,66	$9\frac{1}{4}$	23,50	1	3	539	
43			$\frac{1}{16}$	0,79	$8\frac{27}{32}$	22,14	$9\frac{1}{2}$	24,13	1	$3\frac{1}{2}$	553	
44			$\frac{1}{8}$	0,87	$8\frac{33}{32}$	22,62	$9\frac{3}{4}$	24,77	1	4	568	
45			$\frac{1}{4}$	0,71	$9\frac{1}{32}$	22,94	$9\frac{3}{4}$	24,77	1	$4\frac{1}{4}$	575	
46			$\frac{9}{32}$	0,79	$9\frac{7}{32}$	23,42	10	25,40	1	$4\frac{1}{2}$	582	
47			$\frac{1}{16}$	0,87	$9\frac{13}{32}$	23,89	$10\frac{1}{4}$	26,04	1	5	596	
48			$\frac{1}{8}$	0,64	$9\frac{19}{32}$	24,37	$10\frac{1}{4}$	26,04	1	$5\frac{1}{2}$	610	
Dimensions common to all above stacks					E				F			
					Overall Height		Overall Width					
					in	cm	in	cm				
		2	5,08	2	5,08							

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 9. Series 440F/840F (see Fig. 3)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight					
	in	cm	in	cm	in	cm	in	cm	lb	oz	g			
1	1 $\frac{0}{32}$	3,25	$\frac{5}{16}$	0,79						2 $\frac{1}{4}$	64			
2	1 $\frac{17}{32}$	3,89	$\frac{5}{16}$	0,79						3	85			
3	1 $\frac{3}{4}$	4,45	$\frac{5}{16}$	0,87						4	113			
4		5,08	$\frac{5}{16}$	1,03						4 $\frac{3}{4}$	134			
5	2		$\frac{5}{16}$	0,64	2 $\frac{1}{4}$	5,95	3	7,62		5 $\frac{1}{2}$	163			
6			$\frac{5}{16}$	0,64	2 $\frac{1}{4}$	6,59	3 $\frac{1}{4}$	8,26		6 $\frac{1}{2}$	184			
7			$\frac{5}{16}$	0,64	2 $\frac{1}{4}$	7,22	3 $\frac{1}{2}$	8,89		7 $\frac{1}{2}$	212			
8			$\frac{5}{16}$	0,64	3 $\frac{1}{2}$	7,86	3 $\frac{3}{4}$	9,53		8	234			
9			$\frac{5}{16}$	0,64	3 $\frac{1}{2}$	8,49	4	10,16		9 $\frac{1}{4}$	262			
10			$\frac{5}{16}$	0,64	3 $\frac{1}{2}$	9,13	4 $\frac{1}{4}$	10,80		10	284			
11			$\frac{5}{16}$	0,71	3 $\frac{3}{4}$	9,60	4 $\frac{1}{2}$	11,43		10 $\frac{3}{4}$	305			
12			$\frac{5}{16}$	0,71	4 $\frac{1}{2}$	10,24	4 $\frac{3}{4}$	12,07		11 $\frac{1}{2}$	326			
13			$\frac{5}{16}$	0,71	4 $\frac{3}{4}$	10,87	5	12,70		12 $\frac{1}{2}$	355			
14			$\frac{5}{16}$	0,71	4 $\frac{3}{4}$	11,51	5 $\frac{1}{4}$	13,34		13 $\frac{1}{2}$	376			
15			$\frac{5}{16}$	0,71	4 $\frac{3}{4}$	12,14	5 $\frac{1}{2}$	13,97		14 $\frac{1}{4}$	404			
16			$\frac{5}{16}$	0,71	5 $\frac{1}{2}$	12,62	5 $\frac{3}{4}$	14,61		15	426			
17			$\frac{5}{16}$	0,71	5 $\frac{1}{2}$	13,51	6	15,24		15 $\frac{3}{4}$	447			
18			$\frac{5}{16}$	0,71	5 $\frac{1}{2}$	14,05	6 $\frac{1}{4}$	15,88	1	0 $\frac{3}{4}$	475			
19			$\frac{5}{16}$	0,79	5 $\frac{3}{4}$	14,53	6 $\frac{1}{2}$	16,51	1	1 $\frac{1}{2}$	496			
20			$\frac{5}{16}$	0,79	5 $\frac{3}{4}$	15,16	6 $\frac{3}{4}$	17,15	1	2 $\frac{1}{2}$	525			
21			$\frac{5}{16}$	0,79	6 $\frac{1}{2}$	15,80	7	17,78	1	3 $\frac{1}{2}$	546			
22			$\frac{5}{16}$	0,79	6 $\frac{1}{2}$	16,43	7 $\frac{1}{4}$	18,42	1	4	568			
23			$\frac{5}{16}$	0,79	6 $\frac{3}{4}$	17,07	7 $\frac{1}{2}$	19,05	1	5	596			
24			$\frac{5}{16}$	0,79	6 $\frac{3}{4}$	17,70	7 $\frac{3}{4}$	19,69	1	5 $\frac{3}{4}$	617			
25			$\frac{5}{16}$	0,79	7 $\frac{1}{2}$	18,34	8	20,32	1	6 $\frac{3}{4}$	646			
26			$\frac{5}{16}$	0,87	7 $\frac{1}{2}$	18,81	8 $\frac{1}{4}$	20,96	1	7 $\frac{1}{2}$	667			
27			$\frac{5}{16}$	0,87	7 $\frac{3}{4}$	19,45	8 $\frac{1}{2}$	21,59	1	8 $\frac{1}{2}$	695			
28			$\frac{5}{16}$	0,87	7 $\frac{3}{4}$	20,08	8 $\frac{3}{4}$	22,23	1	9 $\frac{1}{4}$	717			
29			$\frac{5}{16}$	0,87	8 $\frac{1}{2}$	20,72	9	22,86	1	10	738			
30			$\frac{5}{16}$	0,87	8 $\frac{1}{2}$	21,35	9 $\frac{1}{4}$	23,50	1	10 $\frac{3}{4}$	759			
31			$\frac{5}{16}$	0,87	8 $\frac{3}{4}$	21,99	9 $\frac{1}{2}$	24,13	1	11 $\frac{3}{4}$	787			
32			$\frac{5}{16}$	0,87	8 $\frac{3}{4}$	22,62	9 $\frac{3}{4}$	24,77	1	12 $\frac{1}{2}$	809			
33			$\frac{5}{16}$	0,87	9 $\frac{1}{2}$	23,26	10	25,40	1	13 $\frac{1}{2}$	837			
34			$\frac{5}{16}$	0,64	9 $\frac{1}{2}$	23,73	10	25,40	1	14 $\frac{1}{4}$	857			
35			$\frac{5}{16}$	0,64	9 $\frac{3}{4}$	24,37	10 $\frac{1}{2}$	26,04	1	15 $\frac{1}{4}$	885			
36			$\frac{5}{16}$	0,64	9 $\frac{3}{4}$	25,00	10 $\frac{3}{4}$	26,67	2	0	907			
Dimensions common to all above stacks					E				F					
					Overall Height		Overall Width							
					in		cm		in		cm			
					3		7,62		3		7,62			

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 10. Series 450F/850F (see Fig. 4)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	kg
1	1 $\frac{1}{2}$	3,41	3 $\frac{1}{8}$	0,95						2 $\frac{1}{2}$	0,071
2	1 $\frac{1}{8}$	4,29	3 $\frac{1}{2}$	1,03						4	0,113
3	1 $\frac{3}{4}$	5,00	3 $\frac{3}{8}$	0,95						5 $\frac{1}{2}$	0,156
4	2 $\frac{1}{2}$	5,79	3 $\frac{5}{8}$	0,79						7 $\frac{1}{2}$	0,212
5			3 $\frac{7}{8}$	0,79	2 $\frac{1}{2}$	6,90	3 $\frac{1}{2}$	8,89		9 $\frac{1}{2}$	0,262
6			3 $\frac{7}{8}$	0,71	3 $\frac{1}{2}$	7,70	3 $\frac{3}{4}$	9,53		10 $\frac{1}{2}$	0,305
7			3 $\frac{1}{2}$	0,64	3 $\frac{1}{2}$	8,49	4	10,16		12 $\frac{1}{2}$	0,348
8			3 $\frac{1}{2}$	0,87	3 $\frac{1}{2}$	9,29	4 $\frac{1}{2}$	11,43		13 $\frac{3}{4}$	0,390
9			3 $\frac{1}{2}$	0,79	3 $\frac{1}{2}$	10,08	4 $\frac{1}{2}$	13,07		15	0,426
10			3 $\frac{1}{2}$	0,71	4 $\frac{1}{2}$	10,87	5	12,70	1	0 $\frac{1}{2}$	0,468
11			3 $\frac{1}{2}$	0,64	4 $\frac{1}{2}$	11,67	5 $\frac{1}{2}$	13,34	1	2	0,511
12			3 $\frac{1}{2}$	0,87	4 $\frac{1}{2}$	12,46	5 $\frac{3}{4}$	14,61	1	3 $\frac{1}{2}$	0,553
13			3 $\frac{1}{2}$	0,79	5 $\frac{1}{2}$	13,26	6	15,24	1	5	0,596
14			3 $\frac{1}{2}$	0,71	5 $\frac{1}{2}$	14,05	6 $\frac{1}{2}$	15,88	1	6 $\frac{1}{2}$	0,639
15			3 $\frac{1}{2}$	0,64	5 $\frac{3}{4}$	14,84	6 $\frac{1}{2}$	16,51	1	8	0,681
16			3 $\frac{1}{2}$	0,87	6 $\frac{1}{2}$	15,64	7	17,78	1	9 $\frac{1}{2}$	0,724
17			3 $\frac{1}{2}$	0,79	6 $\frac{1}{2}$	16,43	7 $\frac{1}{4}$	18,42	1	10 $\frac{1}{2}$	0,752
18			3 $\frac{1}{2}$	0,71	6 $\frac{3}{4}$	17,22	7 $\frac{1}{2}$	19,05	1	12	0,795
19			3 $\frac{1}{2}$	0,64	7 $\frac{1}{2}$	18,02	7 $\frac{3}{4}$	19,69	1	13 $\frac{1}{2}$	0,837
20			3 $\frac{1}{2}$	0,87	7 $\frac{1}{2}$	18,81	8 $\frac{1}{4}$	20,96	1	15	0,878
21			3 $\frac{1}{2}$	0,79	7 $\frac{3}{4}$	19,61	8 $\frac{1}{2}$	21,59	2	0 $\frac{1}{2}$	0,921
22			3 $\frac{1}{2}$	0,71	8 $\frac{1}{2}$	20,40	8 $\frac{3}{4}$	22,23	2	2	0,963
23			3 $\frac{1}{2}$	0,64	8 $\frac{1}{2}$	21,19	9	22,86	2	3 $\frac{1}{2}$	1,006
24			3 $\frac{1}{2}$	0,87	8 $\frac{3}{4}$	21,99	9 $\frac{1}{2}$	24,13	2	5	1,048
25			3 $\frac{1}{2}$	0,79	8 $\frac{3}{4}$	22,78	9 $\frac{3}{4}$	24,77	2	6 $\frac{1}{2}$	1,091
26			3 $\frac{1}{2}$	0,64	9 $\frac{1}{2}$	23,73	10	25,40	2	8	1,134
27			3 $\frac{1}{2}$	0,87	9 $\frac{1}{2}$	24,53	10 $\frac{1}{2}$	26,67	2	9	1,162
28			3 $\frac{1}{2}$	0,79	9 $\frac{3}{4}$	25,32	10 $\frac{3}{4}$	27,31	2	10 $\frac{1}{2}$	1,205
29			3 $\frac{1}{2}$	0,71	10 $\frac{1}{2}$	26,11	11	27,94	2	12	1,247
30			3 $\frac{1}{2}$	0,64	10 $\frac{1}{2}$	26,91	11 $\frac{1}{2}$	28,58	2	13 $\frac{1}{2}$	1,290

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 11. Series 460F/860F (see Fig. 5)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	kg
1	1 $\frac{7}{8}$	4,76	$\frac{9}{16}$	1,43						8	0,227
2	2 $\frac{3}{8}$	5,87	$\frac{9}{16}$	1,59						13	0,369
3			$\frac{9}{16}$	1,51	2 $\frac{3}{8}$	7,38	4 $\frac{1}{4}$	10,80	1	5	0,596
4			$\frac{9}{16}$	1,51	3 $\frac{1}{8}$	8,65	4 $\frac{3}{8}$	12,07	1	10	0,738
5			$\frac{9}{16}$	1,67	3 $\frac{5}{8}$	9,60	5 $\frac{1}{4}$	13,34	1	15	0,878
6			$\frac{9}{16}$	1,67	4 $\frac{1}{2}$	10,87	5 $\frac{3}{4}$	14,61	2	4	1,020
7			$\frac{9}{16}$	1,51	4 $\frac{3}{4}$	11,83	6	15,24	2	9	1,162
8			$\frac{9}{16}$	1,67	5 $\frac{1}{2}$	12,78	6 $\frac{1}{2}$	16,51	2	13	1,276
9			$\frac{9}{16}$	1,67	5 $\frac{3}{4}$	14,05	7	17,78	3	2	1,418
10			$\frac{9}{16}$	1,51	5 $\frac{5}{8}$	15,00	7 $\frac{1}{4}$	18,42	3	7	1,559
11			$\frac{9}{16}$	1,51	6 $\frac{1}{8}$	16,27	7 $\frac{3}{4}$	19,69	3	11	1,672
12			$\frac{9}{16}$	1,67	6 $\frac{3}{8}$	17,22	8 $\frac{1}{4}$	20,96	4	0	1,814
13			$\frac{9}{16}$	1,51	7 $\frac{1}{8}$	18,18	8 $\frac{1}{2}$	21,59	4	5	1,956
14			$\frac{9}{16}$	1,51	7 $\frac{3}{8}$	19,45	9	22,86	4	10	2,099
15			$\frac{9}{16}$	1,67	8 $\frac{1}{8}$	20,40	9 $\frac{1}{2}$	24,13	4	14	2,212
16			$\frac{9}{16}$	1,67	8 $\frac{1}{4}$	21,67	10	25,40	5	3	2,354
17			$\frac{9}{16}$	1,51	8 $\frac{3}{8}$	22,62	10 $\frac{1}{4}$	26,04	5	8	2,496
18			$\frac{9}{16}$	1,51	9 $\frac{1}{8}$	23,89	10 $\frac{3}{8}$	27,31	5	12	2,609
19			$\frac{9}{16}$	1,67	9 $\frac{3}{8}$	24,84	11 $\frac{1}{4}$	28,58	6	1	2,741
20			$\frac{9}{16}$	1,51	10 $\frac{1}{8}$	25,80	11 $\frac{1}{2}$	29,21	6	5	2,864
21			$\frac{9}{16}$	1,51	10 $\frac{3}{8}$	27,07	12	30,48	6	11	3,034
22			$\frac{9}{16}$	1,67	11 $\frac{1}{8}$	28,02	12 $\frac{1}{2}$	31,75	6	15	3,147
23			$\frac{9}{16}$	1,67	11 $\frac{3}{8}$	29,29	13	33,02	7	4	3,289
24			$\frac{9}{16}$	1,51	11 $\frac{5}{8}$	30,24	13 $\frac{1}{4}$	33,66	7	8	3,402
25			$\frac{9}{16}$	1,67	12 $\frac{1}{8}$	31,19	13 $\frac{3}{8}$	34,93	7	12	3,515
26			$\frac{9}{16}$	1,67	12 $\frac{3}{8}$	32,46	14 $\frac{1}{4}$	36,20	8	1	3,657

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 12. Series 470/870 (see Fig. 6)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	kg.
1	17 $\frac{1}{8}$	4,76	7 $\frac{1}{16}$	1,43						7	0,198
2	21 $\frac{1}{2}$	5,72	7 $\frac{1}{16}$	1,75						11	0,312
3	21 $\frac{1}{2}$	6,35	7 $\frac{1}{16}$	1,75						14	0,397
4			7 $\frac{1}{16}$	1,67	3 $\frac{1}{32}$	7,70	4 $\frac{1}{2}$	11,43	1	4	0,568
5			7 $\frac{1}{16}$	1,67	3 $\frac{9}{32}$	8,33	4 $\frac{3}{4}$	12,07	1	7	0,653
6			7 $\frac{1}{16}$	1,51	3 $\frac{11}{32}$	9,29	5	12,70	1	11	0,766
7			7 $\frac{1}{16}$	1,51	3 $\frac{13}{32}$	9,92	5 $\frac{1}{4}$	13,34	1	14	0,850
8			7 $\frac{1}{16}$	1,67	4 $\frac{1}{32}$	10,87	5 $\frac{3}{4}$	14,61	2	2	0,963
9			7 $\frac{1}{16}$	1,67	4 $\frac{1}{16}$	11,51	6	15,24	2	5	1,048
10			7 $\frac{1}{16}$	1,67	4 $\frac{1}{8}$	12,14	6 $\frac{1}{4}$	15,88	2	8	1,134
11			7 $\frac{1}{16}$	1,51	5 $\frac{1}{32}$	13,10	6 $\frac{1}{2}$	16,51	2	12	1,247
12			7 $\frac{1}{16}$	1,51	5 $\frac{1}{16}$	13,73	6 $\frac{3}{4}$	17,15	2	15	1,332
13			7 $\frac{1}{16}$	1,67	5 $\frac{1}{8}$	14,68	7 $\frac{1}{4}$	18,42	3	3	1,446
14			7 $\frac{1}{16}$	1,67	6 $\frac{1}{32}$	15,32	7 $\frac{1}{2}$	19,05	3	6	1,531
15			7 $\frac{1}{16}$	1,51	6 $\frac{1}{16}$	16,27	7 $\frac{3}{4}$	19,69	3	9	1,616
16			7 $\frac{1}{16}$	1,51	6 $\frac{1}{8}$	16,91	8	20,32	3	13	1,729
17			7 $\frac{1}{16}$	1,51	6 $\frac{3}{32}$	17,54	8 $\frac{1}{4}$	20,96	4	0	1,814
18			7 $\frac{1}{16}$	1,67	7 $\frac{1}{32}$	18,49	8 $\frac{3}{4}$	22,23	4	4	1,927
19			7 $\frac{1}{16}$	1,67	7 $\frac{1}{16}$	19,13	9	22,86	4	7	2,012
20			7 $\frac{1}{16}$	1,51	7 $\frac{1}{8}$	20,08	9 $\frac{1}{4}$	23,50	4	10	2,097
21			7 $\frac{1}{16}$	1,51	8 $\frac{1}{32}$	20,72	9 $\frac{1}{2}$	24,13	4	14	2,210
22			7 $\frac{1}{16}$	1,51	8 $\frac{1}{16}$	21,35	9 $\frac{3}{4}$	24,77	5	1	2,304
23			7 $\frac{1}{16}$	1,67	8 $\frac{3}{32}$	22,30	10 $\frac{1}{4}$	26,04	5	5	2,417
24			7 $\frac{1}{16}$	1,67	9 $\frac{1}{32}$	22,94	10 $\frac{1}{2}$	26,67	5	8	2,502
25			7 $\frac{1}{16}$	1,51	9 $\frac{1}{16}$	23,89	10 $\frac{3}{4}$	27,31	5	12	2,615
26			7 $\frac{1}{16}$	1,51	9 $\frac{1}{8}$	24,53	11	27,94	5	15	2,700
27			7 $\frac{1}{16}$	1,67	10 $\frac{1}{32}$	25,48	11 $\frac{1}{2}$	29,21	6	2	2,779
28			7 $\frac{1}{16}$	1,67	10 $\frac{1}{16}$	26,11	11 $\frac{3}{4}$	29,85	6	6	2,892
29			7 $\frac{1}{16}$	1,67	10 $\frac{1}{8}$	26,75	12	30,48	6	9	2,977
30			7 $\frac{1}{16}$	1,51	10 $\frac{3}{32}$	27,70	12 $\frac{1}{4}$	31,12	6	13	3,090
31			7 $\frac{1}{16}$	1,51	11 $\frac{1}{32}$	28,34	12 $\frac{1}{2}$	31,75	7	0	3,175
32			7 $\frac{1}{16}$	1,67	11 $\frac{1}{16}$	29,29	13	33,02	7	3	3,260
33			7 $\frac{1}{16}$	1,67	11 $\frac{1}{8}$	29,92	13 $\frac{1}{4}$	33,66	7	7	3,373
34			7 $\frac{1}{16}$	1,67	12 $\frac{1}{32}$	30,56	13 $\frac{1}{2}$	34,29	7	10	3,458
35			7 $\frac{1}{16}$	1,51	12 $\frac{1}{16}$	31,51	13 $\frac{3}{4}$	34,93	7	14	3,571
36			7 $\frac{1}{16}$	1,51	12 $\frac{1}{8}$	32,15	14	35,56	8	1	3,656

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 13. Series 470H/870H (see Fig. 7)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	kg
1	1 $\frac{7}{8}$	4,76	$\frac{9}{16}$	1,43						10	0,284
2	2 $\frac{1}{4}$	5,72	$\frac{1}{4}$	1,75					1	0	0,454
3	2 $\frac{1}{2}$	6,35	$\frac{1}{4}$	1,75					1	4	0,568
4			$\frac{1}{4}$	1,67	3 $\frac{1}{8}$	7,70	4 $\frac{1}{2}$	11,43	1	10	0,738
5			$\frac{1}{4}$	1,67	3 $\frac{3}{8}$	8,33	4 $\frac{3}{4}$	12,07	1	14	0,850
6			$\frac{1}{4}$	1,51	3 $\frac{5}{8}$	9,29	5	12,70	2	3	0,992
7			$\frac{1}{4}$	1,51	3 $\frac{7}{8}$	9,92	5 $\frac{1}{2}$	13,34	2	7	1,105
8			$\frac{1}{4}$	1,67	4 $\frac{1}{8}$	10,87	5 $\frac{3}{4}$	14,61	2	12	1,241
9			$\frac{1}{4}$	1,67	4 $\frac{1}{4}$	11,51	6	15,24	3	1	1,389
10			$\frac{1}{4}$	1,67	4 $\frac{3}{8}$	12,14	6 $\frac{1}{4}$	15,88	3	5	1,503
11			$\frac{1}{4}$	1,51	5	13,10	6 $\frac{1}{2}$	16,51	3	10	1,645
12			$\frac{1}{4}$	1,51	5 $\frac{1}{8}$	13,73	6 $\frac{3}{8}$	17,15	3	14	1,758
13			$\frac{1}{4}$	1,67	5 $\frac{1}{4}$	14,68	7	18,42	4	3	1,899
14			$\frac{1}{4}$	1,67	5 $\frac{3}{8}$	15,32	7 $\frac{1}{4}$	19,05	4	8	2,041
15			$\frac{1}{4}$	1,51	6	16,27	7 $\frac{1}{2}$	19,69	4	12	2,154
16			$\frac{1}{4}$	1,51	6 $\frac{1}{8}$	16,91	8	20,32	5	1	2,304
17			$\frac{1}{4}$	1,51	6 $\frac{3}{8}$	17,54	8 $\frac{1}{4}$	20,96	5	6	2,446
18			$\frac{1}{4}$	1,67	7	18,49	8 $\frac{3}{4}$	22,23	5	10	2,559
19			$\frac{1}{4}$	1,67	7 $\frac{1}{8}$	19,13	9	22,86	5	15	2,701
20			$\frac{1}{4}$	1,51	7 $\frac{1}{4}$	20,08	9 $\frac{1}{4}$	23,50	6	3	2,807
21			$\frac{1}{4}$	1,51	7 $\frac{3}{8}$	20,72	9 $\frac{3}{8}$	24,13	6	8	2,949
22			$\frac{1}{4}$	1,51	8	21,35	9 $\frac{1}{2}$	24,77	6	13	3,091
23			$\frac{1}{4}$	1,67	8 $\frac{1}{8}$	22,30	10 $\frac{1}{4}$	26,04	7	1	3,203
24			$\frac{1}{4}$	1,67	8 $\frac{3}{8}$	22,94	10 $\frac{1}{2}$	26,67	7	6	3,345
25			$\frac{1}{4}$	1,51	9	23,89	10 $\frac{3}{4}$	27,31	7	11	3,487
26			$\frac{1}{4}$	1,51	9 $\frac{1}{8}$	24,53	11	27,94	7	15	3,600
27			$\frac{1}{4}$	1,67	10	25,48	11 $\frac{1}{2}$	29,21	8	4	3,743
28			$\frac{1}{4}$	1,67	10 $\frac{1}{8}$	26,11	11 $\frac{3}{4}$	29,85	8	8	3,856
29			$\frac{1}{4}$	1,67	10 $\frac{1}{4}$	26,75	12	30,48	8	13	3,998
30			$\frac{1}{4}$	1,51	10 $\frac{3}{8}$	27,70	12 $\frac{1}{4}$	31,12	9	2	4,139
31			$\frac{1}{4}$	1,51	11	28,34	12 $\frac{1}{2}$	31,75	9	6	4,252
32			$\frac{1}{4}$	1,67	11 $\frac{1}{8}$	29,29	13	33,02	9	11	4,394
33			$\frac{1}{4}$	1,67	11 $\frac{1}{4}$	29,92	13 $\frac{1}{4}$	33,66	10	0	4,536
34			$\frac{1}{4}$	1,67	12	30,56	13 $\frac{3}{8}$	34,29	10	4	4,649
35			$\frac{1}{4}$	1,51	12 $\frac{1}{8}$	31,51	13 $\frac{1}{2}$	34,93	10	9	4,791
36			$\frac{1}{4}$	1,51	12 $\frac{1}{4}$	32,15	14	35,56	10	13	4,904

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

Table 14. Series 470F/870F (see Fig. 8)

Number of Plates per stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	cm	in	cm	in	cm	in	cm	lb	oz	kg
1	1 $\frac{7}{8}$	4,76	$\frac{9}{16}$	1,43						14	0,397
2	2 $\frac{1}{8}$	5,87	$\frac{5}{8}$	1,59					1	10	0,738
3			$\frac{11}{16}$	1,51	2 $\frac{1}{2}$	7,38	4 $\frac{1}{4}$	10,80	2	7	1,105
4			$\frac{13}{16}$	1,51	3 $\frac{1}{2}$	8,65	4 $\frac{3}{4}$	12,07	3	3	1,446
5			$\frac{15}{16}$	1,67	3 $\frac{3}{4}$	9,60	5 $\frac{1}{2}$	13,34	3	15	1,787
6			$\frac{17}{16}$	1,67	4 $\frac{1}{2}$	10,87	5 $\frac{3}{4}$	14,61	4	11	2,126
7			$\frac{19}{16}$	1,51	4 $\frac{3}{4}$	11,83	6	15,24	5	6	2,446
8			$\frac{21}{16}$	1,67	5 $\frac{1}{2}$	12,78	6 $\frac{1}{2}$	16,51	6	2	2,779
9			$\frac{23}{16}$	1,67	5 $\frac{3}{4}$	14,05	7	17,78	6	14	3,120
10			$\frac{25}{16}$	1,51	5 $\frac{5}{8}$	15,00	7 $\frac{1}{4}$	18,42	7	10	3,459
11			$\frac{27}{16}$	1,51	6 $\frac{1}{8}$	16,27	7 $\frac{3}{4}$	19,69	8	5	3,772
12			$\frac{29}{16}$	1,67	6 $\frac{3}{8}$	17,22	8 $\frac{1}{4}$	20,96	9	1	4,110
13			$\frac{31}{16}$	1,51	7 $\frac{1}{8}$	18,18	8 $\frac{3}{8}$	21,59	9	13	4,451
14			$\frac{33}{16}$	1,51	7 $\frac{3}{8}$	19,45	9	22,86	10	9	4,791
15			$\frac{35}{16}$	1,67	8 $\frac{1}{8}$	20,40	9 $\frac{1}{4}$	23,13	11	5	5,132
16			$\frac{37}{16}$	1,67	8 $\frac{3}{8}$	21,67	10	25,40	12	0	5,443
17			$\frac{39}{16}$	1,51	8 $\frac{5}{8}$	22,62	10 $\frac{1}{4}$	26,04	12	12	5,784
18			$\frac{41}{16}$	1,51	9 $\frac{1}{8}$	23,89	10 $\frac{3}{4}$	27,31	13	8	6,124
19			$\frac{43}{16}$	1,67	9 $\frac{3}{8}$	24,84	11 $\frac{1}{4}$	28,58	14	4	6,463
20			$\frac{45}{16}$	1,51	10 $\frac{1}{8}$	25,80	11 $\frac{3}{8}$	29,21	14	15	6,775
21			$\frac{47}{16}$	1,51	10 $\frac{3}{8}$	27,07	12	30,48	15	11	7,114
22			$\frac{49}{16}$	1,67	11 $\frac{1}{8}$	28,02	12 $\frac{1}{2}$	31,75	16	7	7,456
23			$\frac{51}{16}$	1,67	11 $\frac{3}{8}$	29,29	13	33,02	17	3	7,796
24			$\frac{53}{16}$	1,51	11 $\frac{5}{8}$	30,24	13 $\frac{1}{4}$	33,66	17	14	8,108

Selenium Rectifier Stacks

Dimensions and Weights

CONTINUED

IDENTIFICATION OF TERMINALS

Table 15. Series 420, 430, 440, 450, 450F, 460, 460F, 470, 470H
820, 830, 840, 850, 850F, 860, 860F, 870, 870H

Stack Configuration	Code Letter	Terminal Position*				
		1	2	3	4	5
Single phase half-wave	H	+		-		
„ „ bridge	B	}				
„ „ voltage doubler	D		+	-	~	
Three phase bridge	PB					
„ „ „ with parallel paths	PB	+		-	~	~
„ „ half-wave	PH	}				
Single phase push-pull	V		+	~	~	
„ „ „ „ + ve outer	VP		-	~	~	

Table 16. Series 420F, 430F, 440F, 470F
820F, 830F, 840F, 870F

Stack Configuration	Code Letter	Terminal Position*				
		1	2	3	4	
Single phase half-wave	H	+		-		
„ „ bridge	B	}				
„ „ voltage doubler	D		+	-	~	
Three phase bridge	PB					
„ „ „ with parallel paths	PB	+		-	~	~
„ „ half-wave	PH	}				
Single phase push-pull	V		+	~	~	
„ „ „ „ + ve outer	VP		-	~	~	

COLOUR CODE

Terminal DC positive	Symbol +	Colour Red.
Terminal DC negative	Symbol -	Colour Blue.
Terminal AC input	Symbol ~	Colour Yellow.

* Terminal tags are provided only in the positions marked in the table.

RECTIFIERS

Series 400

Selenium Rectifiers

RECTIFIER TERMINOLOGY

It is necessary to understand the three basic definitions used to describe the make-up of a selenium rectifier. These are:

- Plate the basic rectifier element.
- Stack an assembly of one or more plates.
- Arm that part of a stack between adjacent connections from the external circuit.

RECTIFIER PLATES

There are six sizes of rectifier plate in the Series 400 range. All the plates are square in shape, but the right-angle corners are removed from the largest size plates (Size 470). The plates are available in two voltage grades: Grade C plates—20 volts; Grade D plates—25 volts.

RECTIFIER STACKS

Rectifier stacks are made by assembling an appropriate number of plates of one of six sizes on to an insulated spindle. Connections to stacks are made by means of tags, and connections between plates are made with metal spacing washers.

SenTerCel rectifier stacks are supplied with the internal connections already made so that it is only necessary to complete the external circuit when the stacks have to be fitted into an equipment. The connecting tags are clearly marked to indicate output polarity and a.c. input connections.

If required, assembled stacks are given a damp-proof finish to protect them from deleterious atmospheres and are finally subjected to a series of tests to ensure that the electrical and mechanical characteristics rest within closely defined limits. Alternatively stacks can be supplied with a tropical finish for particularly unfavourable atmospheres.

The method of construction enables an extremely wide range of stacks to be produced from standardised component parts. This has considerable practical advantages, for not only can the most economical rectifier be designed for the output required but stacks can be speedily provided to meet customer's special requirements.

Since SenTerCel rectifier stacks are intended for use in equipment having long life with little maintenance, great care is taken in their mechanical construction and finish to ensure that the life of the rectifier is at least equal to that of the equipment. It is most important that no attempt be made to dismantle any stack, or to move connecting tags from their original positions, as this would damage the damp-proof or tropical finish and lead to subsequent breakdown.

May 1965

S400—1

Standard Telephones and Cables Limited

COMPONENTS GROUP
SEMICONDUCTOR DIVISION (RECTIFIERS), EDINBURGH WAY, HARLOW, ESSEX
Tel.: Harlow 26811

Series 400

Selenium Rectifiers

CONTINUED

PLATE RATINGS IN AC CIRCUITS

These ratings apply to rectifier stacks used with the plates mounted in a vertical plane in an ambient temperature not exceeding 35°C.

CURRENT RATINGS

CIRCUIT	SINGLE PHASE						THREE PHASE		
	Half-wave		Push-pull		Bridge		Voltage Doubler	Half-wave or Bridge	Push-pull
LOAD	Inductive or Resistive	Battery or Capacitive	Inductive or Resistive	Battery or Capacitive	Inductive or Resistive	Battery or Capacitive	Any Load	Any Load	Any Load
PLATE SIZE	NOMINAL OUTPUT CURRENT AMPERES MEAN PER PATH								
420	0.05	0.04	0.10	0.08	0.10	0.08	0.04	0.15	0.20
420F	0.10	0.08	0.20	0.17	0.20	0.17	0.08	0.28	—
430	0.15	0.125	0.30	0.25	0.30	0.25	0.125	0.40	0.65
430F	0.30	0.25	0.60	0.50	0.60	0.50	0.25	0.80	—
440	0.30	0.25	0.60	0.50	0.60	0.50	0.25	0.85	1.3
440F	0.60	0.50	1.20	1.0	1.20	1.0	0.50	1.7	—
450	0.75	0.625	1.5	1.25	1.50	1.25	—	2.0	3.0
450F	1.50	1.25	3.0	2.50	3.0	2.50	—	4.0	—
460	1.25	1.05	2.5	2.1	2.5	2.1	—	3.25	5.0
460F	2.75	2.3	5.5	4.5	5.5	4.5	—	6.5	—
470	3.0	2.5	6.0	5.0	6.0	5.0	—	8.5	13.5
470F	6.0	5.0	12.0	10.0	12.0	10.0	—	17.0	—

F = Plates with cooling fins

REVERSE VOLTAGE RATINGS

GRADE OF PLATE	Nominal Reverse Voltage (V _{rms})	Absolute Max. On-load Reverse Voltage (V _{rms})	Absolute Max. Open Circuit Voltage (V _{rms})	Max. Peak Inverse Voltage (V)
C	20.0	22.5	24.0	34.0
D	25.0	28.0	29.5	42.0

Series 400

Selenium Rectifiers

CONTINUED

PLATE RATINGS IN DC CIRCUITS

These ratings apply to rectifier stacks used with the platos mounted in a vertical plane in an ambient temperature not exceeding 35°C.

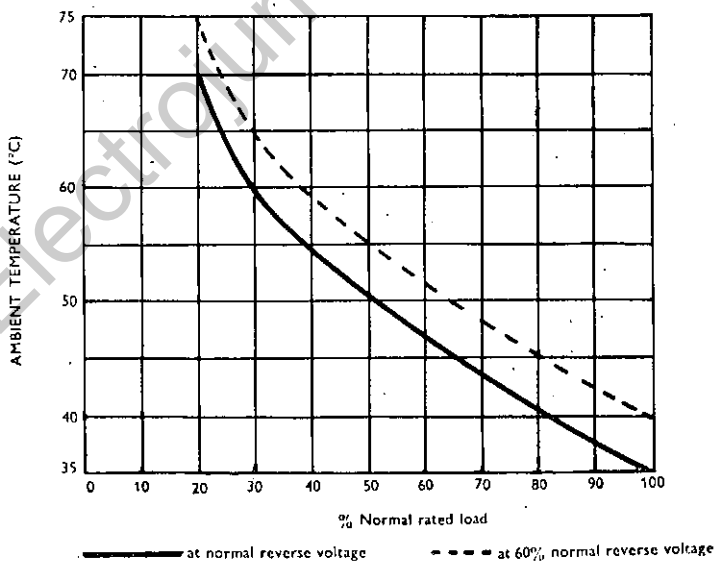
PLATE SIZE	Nominal Forward Current per path (A)	PLATE SIZE	Nominal Forward Current per path (A)
420	0.085	450	1.10
420F	0.20	450F	2.3
430	0.23	460	2.0
430F	0.46	460F	4.2
440	0.46	470	4.6
440F	0.92	470F	9.2

F = plates with cooling fins. Nominal reverse voltage per plate = 12 volts (all plate sizes)

PERMISSIBLE RATINGS IN AMBIENT TEMPERATURES EXCEEDING 35°C

The derating curve below shows the amount of reduction in current which is necessary when the rectifiers are used in ambient temperatures higher than 35°C.

Graph 1. Derating Curve



Series 400
Selenium Rectifiers
 CONTINUED

SERIES 400 RECTIFIER STACKS: GENERAL

Connections Between Tags:

All Series 400 stacks are supplied with the connections made between tags as required by the circuit arrangement. These connections are made either by wire covered with sleeving or, in the case of the larger plate rectifiers, with busbars as warranted by the current to be carried.

Polarity Markings:

The following markings are used to show the polarity of connecting tags:

Positive:	Red or +
Negative:	Blue or —
AC:	Green or ~

Insulation:

Insulation is provided between rectifier plates and spindle to withstand a 2,000-volt r.m.s. flash test. If the potential of the rectifier to earth exceeds 750 volts, peak, the spindles of the stacks should be mounted on insulators.

Tropical "Z" Finish:

This finish complies with R.C.S.C. Specifications, Class H2, for tropical exposure, and is necessary on rectifiers destined for humid or tropical climates.

STANDARD STACKS

Picture Code:

All Series 400 rectifier stacks are marked with the appropriate code which provides a concise description of the electrical and mechanical make-up of the stack. This code is a convenient reference for ordering or re-ordering rectifiers.

The Picture Code is in three parts as shown in the following example:

430SDF—4B3—Z
 (a)—(b)—(c)

Part (a) of the code gives either three or four items of information in the following order: PLATE SERIES AND SIZE, base plate MATERIAL, "S" (only steel is used for standard stacks) and the GRADE (i.e. voltage) of the plates, followed by "F" for COOLING FINS when applicable.

Series 400

Selenium Rectifiers

CONTINUED

Part (b) gives three items of information in the following order: number of PLATES IN SERIES, CIRCUIT ARRANGEMENT and the number of ELECTRICAL PATHS. The circuit arrangement is described in letter-form from the list below:

H	single-phase half-wave.
V	single-phase push-pull.
VP	single-phase push-pull with positive outers.
B	single-phase bridge.
D	single-phase voltage-doubler.
PH	three-phase half-wave.
PB	three-phase bridge.

Part (c) is normally a single letter denoting the type of FINISH, but this letter may be preceded by one further letter for special mechanical or electrical features. Finish and special features are described from the letters listed below:

H	denotes heavy duty type tags. (Applies to 470 plate which alone has alternative types of tags.)
J	denotes no finish.
S	denotes damp-proof finish.
Z	denotes tropical finish.

A summary of the information given in the typical example just quoted in the coding explanation is therefore as follows:

430SDF—4B3—Z.

Plate size	430
Base plate material	S—steel
Plate grade	D—25 volts.
Fitted with cooling fins	F
Plates in series	4
Circuit	B—single-phase bridge
Electrical paths	3
Type of finish	Z—tropical

Maximum Number of Plates per Stack

The following table gives the maximum number of plates that can be incorporated into a single stack assembly.

Plate size	Max. No. of plates	Plate size	Max. No. of plates
420	72	450	42
420F	60	450F	30
430	72	460	48
430F	48	460F	26
440	54	470	36
440F	36	470F	24
		470H	36

Series 400

Selenium Rectifiers

CONTINUED

Number of Plates per Stack

The product of the two numbers in section (b) of the stack code and a number corresponding to the letter between them gives the total number of plates in a rectifier stack arrangement. The numbers corresponding to the "circuit arrangement" code letters in section (b) are: H = 1, V = 2, VP = 2, B = 4, D = 2, PH = 3, and PB = 6.

Thus, in the previous example, 4B3 in section (b) of the code = $4 \times 4 \times 3 = 48$ plates.

It should be noted that where the total number of plates in a stack arrangement exceed the maximum permitted number of plates shown in the above table, the stack arrangement must consist of two or more rectifier stacks.

Example:

460SCF—6PB2—J.

Size 460 plates, steel baseplates, 20-volt plates with cooling fins—6 plates in series per arm, three-phase bridge circuit, 2 electrical paths per arm—no finish.

Total number of 460SCF plates = $6 \times 6 \times 2 = 72$ (note PB = 6).

Reference to the table shows that the maximum number of size 460 plates with cooling fins that may be assembled as one rectifier stack is 26. The rectifier stack arrangement 460SCF—6PB2—J would, therefore, be supplied as three voltage doubler rectifier stacks type 460SCF—6D2—J for connection as a three-phase bridge.

Dimensional drawings of the standard range of Series 400 stack assemblies are given in publication S400/800 Gen which will be sent free on request.

SPECIAL STACKS

Where it is necessary to depart from the standard assembly to meet special electrical or mechanical requirements, even if such a departure be merely to include a customer's reference number, a special code having the prefix "F....." is used for identification. It is sometimes convenient to indicate the standard stack from which a special one is derived by using a picture code in conjunction with the special code, but in all such cases the picture code is subordinate to the special code which should always be quoted.

Special Stack Code

The special code consists of four sections arranged thus:

FS	D	4327	B
(a)	(b)	(c)	(d)

Section (a) The letter FS.

Section (b) Type of plate. D = 25-volt plates.

Section (c) A serial number.

Section (d) A letter indicating electrical or mechanical variations.

Series 400**Selenium Rectifiers**CONTINUED

ORDERING RECTIFIER STACKS

Rectifier stacks should always be ordered by quoting the picture code. If a particular arrangement cannot be accommodated on a single stack, it will be sufficient to quote the picture code of the complete rectifier assembly. The most convenient arrangement will then be advised by us when the order is acknowledged.

When a rectifier stack is known to have an "F....." code it is essential that this code is quoted on all orders and correspondence.

GENERAL OPERATING INFORMATION**Ambient Temperature:**

The ambient temperature stated refers to the temperature of the air in which the rectifier is situated. As the air temperature inside a normally ventilated equipment may be 10°C higher than the room temperature, a suitable allowance should be made.

Maximum Plate Temperature:

The normal maximum temperature to which plates may be allowed to rise is 75°C. Under conditions of reduced reverse voltage, plate temperatures of 80°C are permissible. (See ambient temperature derating curve Graph 1, page 3.)

Maximum Reverse Voltage:

When considering the reverse voltage applied to a rectifier plate it is essential to take into account the rectifier arrangement being used and the type of load.

Ventilation and Mounting:

Rectifiers should be provided with unrestricted ventilation and should be placed so that they do not receive pre-heated air from other components.

Rectifiers must be mounted with the screw or spindle horizontal.

Forced Draught Cooling of Rectifiers:

As the current carrying capacity of a rectifier is limited only by its operating temperature an increase in rating can be achieved by increasing the cooling.

A forced draught enables the current rating of rectifiers without cooling fins to be increased up to twice the normal rating provided that the plate temperature is kept below the maximum of 75°C (80°C with reduced voltage rating).

Series 400
Selenium Rectifiers
CONTINUED

Oil Immersed Rectifiers:

Rectifiers may be immersed in oil to provide additional insulation, protection against corrosive atmospheres, or to give improved heat conduction.

When oil immersed, provided that the oil is adequately cooled, the current rating of rectifiers without cooling fins may be increased to twice the normal rating.

Intermittent Operation:

When required to give periodic repeated outputs of short duration a rectifier may be rated up to several times its normal current rating. The extent of the permissible increase will depend on the duty cycle and can only be calculated for individual cases.

Calculation of AC Input Voltage and Current for a given DC Output:

When rectifiers are connected to a load that is substantially resistive or inductive, the instructions given below permit the calculation of the required a.c. input voltage for a given d.c. output voltage and current. It should be noted that no allowance for ageing need be made when estimating the number of plates in series as this allowance has already been made in the plate ratings listed on page 2.

1 RECTIFIER CIRCUIT	2 CIRCUIT FACTORS			5 APPROX. r.m.s. INPUT VOLTS	
	3 k_1	4 k_2	5 k_3	6 Normal load current	7 Twice normal load current
SINGLE-PHASE SUPPLY					
Half-wave	2.3	1	1	2.5 V_c	2.6 V_c
Bridge	1.15	2	1	1.25 V_c	1.3 V_c
Centre-tap*	1.15	1	2	1.25 V_c	1.3 V_c
THREE-PHASE SUPPLY					
Half-wave*	0.855	1	$\sqrt{3}$	0.91 V_c	0.93 V_c
Bridge**	0.74	2	1	0.80 V_c	0.82 V_c
Six-phase diametric*	0.74	1	2	0.85 V_c	0.87 V_c
Double star with interphase transformer*	0.855	1	2	0.92 V_c	0.94 V_c

* Input voltage is from outer to centre tap or neutral.

V_c = dc output voltage.

** Input voltage is line voltage.

- (1) Select the appropriate rectifier circuit from column 1 and, reading across to the in-line figure in column 5 or 6, estimate the approximate r.m.s. input voltage. (V_c = known dc output voltage).

Series 400

Selenium Rectifiers

CONTINUED

- (2) Calculate the number of plates in series in one arm of the rectifier (n) by using the formula below. k_3 is given in column 4 of the table.

$$n = \frac{\text{Approximate r.m.s. input voltage} \times k_3}{\text{Nominal reverse voltage per plate (see page 2)}}$$

- (3) Using the value just calculated for n (or the next highest whole number if n contains a fraction) calculate the correct r.m.s. input voltage from the formula:

$$V = (k_1 V_c) + (k_2 n \cdot \Delta V)$$

where V = r.m.s. input voltage

V_c = dc output voltage

k_1 and k_2 = circuit factors (columns 2 and 3 in the table),

ΔV = r.m.s. voltage drop per plate at a current equal to:

$$\frac{\text{Mean load current}}{\text{Number of parallel paths per arm of the rectifier}}$$

and is read from the appropriate plate curve on Graph 2, 3 or 4.

For the single-phase half-wave case, ΔV is read from the single-phase bridge curves for a current equal to:

$$\frac{\text{Twice mean load current}}{\text{Number of parallel paths per arm of the rectifier}}$$

- (4) Check that $\frac{k_3 \cdot V}{n}$ does not exceed the allowable voltage per plate.

If it does, increase n and repeat calculations 3 and 4.

Input Current

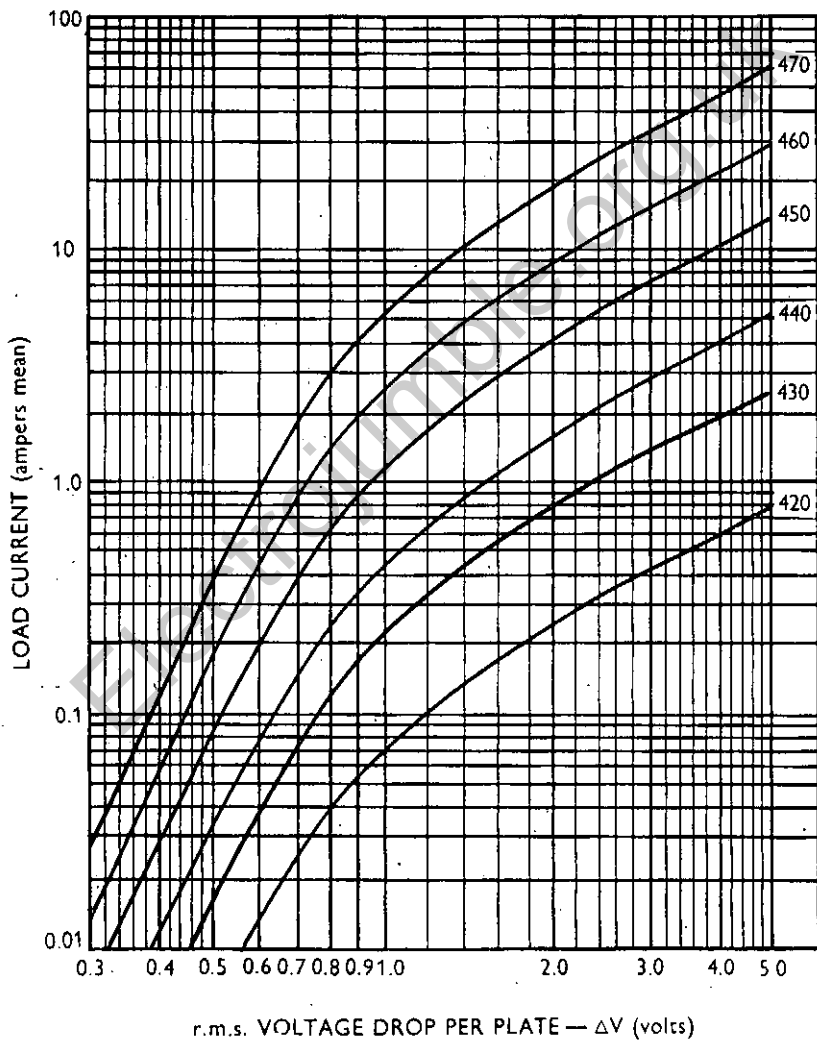
The table of factors given below permits a simple calculation of the ac current taken by a rectifier supplying a known dc output current. The dc output current multiplied by the factor in the table appropriate to the circuit used will give the secondary line current of the supply transformer.

Single-phase supply Circuit	Factor
Half-wave	1.65
Bridge	1.2
Centre-tap	0.86

Three-phase supply Circuit	Factor
Half-wave	0.62
Bridge	0.83
Six-phase diametric	0.44
Double-star with interphase transformer	0.31

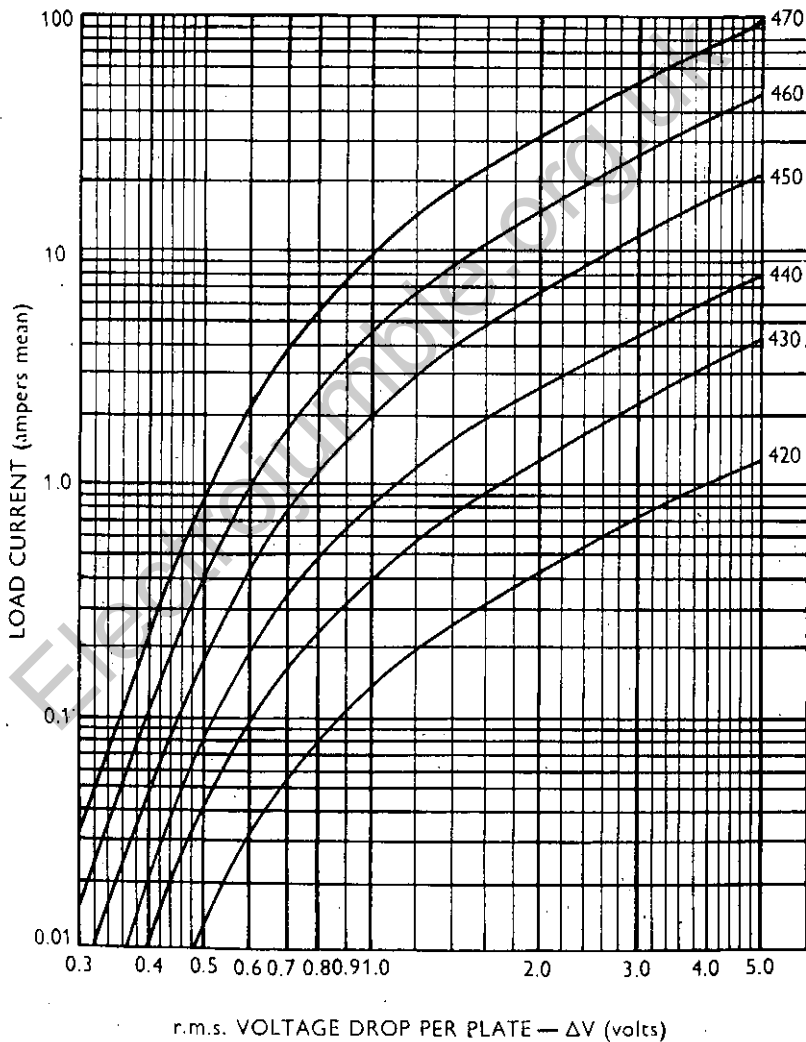
Series 400
Selenium Rectifiers
 CONTINUED

Graph 2. AC Forward Characteristics
 Single-phase Bridge Circuit
 Limits of ΔV for single plates are $\pm 15\%$
 -10%



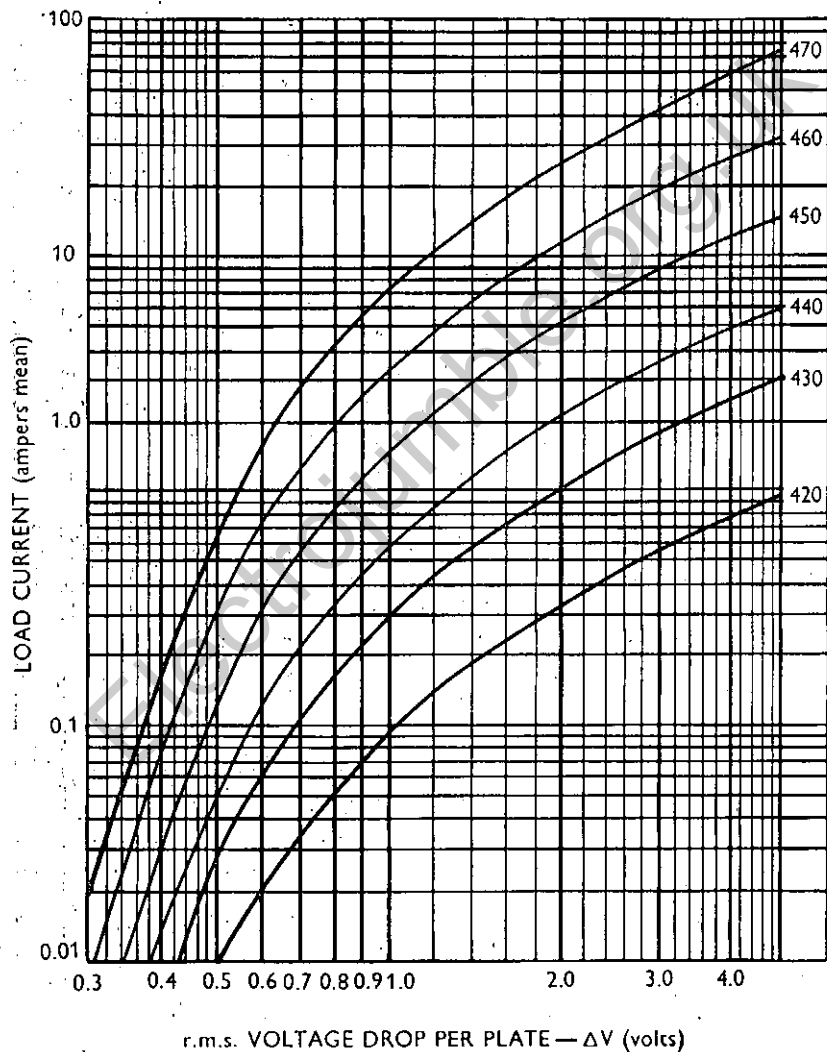
Series 400
Selenium Rectifiers
CONTINUED

Graph 3. AC Forward Characteristics
Three-phase Bridge Circuit
Limits of ΔV for single plates are $+15\%$
 -10%



Series 400
Selenium Rectifiers
 CONTINUED

Graph 4. AC Forward Characteristics
 Three-phase Half-wave Circuit
 Limits of ΔV for single plates are +15%
 -10%



RECTIFIERS

Series 800

Selenium Rectifiers

RECTIFIER TERMINOLOGY

It is necessary to understand the three basic definitions used to describe the make-up of a selenium rectifier. These are:

- Plate the basic rectifier element.
- Stack an assembly of one or more plates.
- Arm that part of a stack between adjacent connections from the external circuit.

RECTIFIER PLATES

There are six sizes of rectifier plate in the Series 800 range. All the plates are square in shape, but the right-angle corners are removed from the largest size plates (Size 870). The plates are available in two voltage grades: Grade K plates—15 volts; Grade L plates—18 volts.

RECTIFIER STACKS

Rectifier stacks are made by assembling an appropriate number of plates of one of six sizes on to an insulated spindle. Connections to stacks are made by means of tags, and connections between plates are made with metal spacing washers.

SenTerCel rectifier stacks are supplied with the internal connections already made so that it is only necessary to complete the external circuit when the stacks have to be fitted into an equipment. The connecting tags are clearly marked to indicate output polarity and a.c. input connections.

If required, assembled stacks are given a damp-proof finish to protect them from deleterious atmospheres and are finally subjected to a series of tests to ensure that the electrical and mechanical characteristics rest within closely defined limits. Alternatively stacks can be supplied with a tropical finish for particularly unfavourable atmospheres.

The method of construction enables an extremely wide range of stacks to be produced from standardised component parts. This has considerable practical advantages, for not only can the most economical rectifier be designed for the output required but stacks can be speedily provided to meet customer's special requirements.

Since SenTerCel rectifier stacks are intended for use in equipment having long life with little maintenance, great care is taken in their mechanical construction and finish to ensure that the life of the rectifier is at least equal to that of the equipment. It is most important that no attempt be made to dismantle any stack, or to move connecting tags from their original positions, as this would damage the damp-proof or tropical finish and lead to subsequent breakdown.

Standard Telephones and Cables Limited

Series 800

Selenium Rectifiers

CONTINUED

PLATE RATINGS IN AC CIRCUITS

These ratings apply to rectifier stacks used with the plates mounted in a vertical plane in an ambient temperature not exceeding 35°C.

CURRENT RATINGS

CIRCUIT	SINGLE PHASE						THREE PHASE		
	Half-wave		Push-pull		Bridge		Voltage Doubler	Half-wave or Bridge	Push-pull
LOAD	Inductive or Resistive	Battery or Capacitive	Inductive or Resistive	Battery or Capacitive	Inductive or Resistive	Battery or Capacitive	Any Load	Any Load	Any Load
PLATE SIZE	NOMINAL OUTPUT CURRENT AMPERES MEAN PER PATH								
820	0-075	0-060	0-15	0-120	0-15	0-120	0-060	0-225	0-30
820F	0-15	0-125	0-30	0-25	0-30	0-25	0-125	0-45	0-675
830	0-225	0-185	0-45	0-37	0-45	0-37	0-185	0-675	1-0
830F	0-425	0-35	0-85	0-70	0-85	0-70	0-35	1-275	1-9
840	0-40	0-33	0-80	0-66	0-80	0-66	0-33	1-20	1-8
840F	0-80	0-65	1-60	1-30	1-60	1-30	0-65	2-40	3-6
850	1-10	0-90	2-2	1-80	2-2	1-80	0-90	3-3	5-0
850F	2-5	2-05	5-0	4-15	5-0	4-10	2-05	7-5	11-0
860	1-65	1-35	3-3	2-75	3-3	2-75	1-35	4-95	7-4
860F	4-25	3-50	8-5	7-00	8-5	7-00	3-50	12-5	19-0
870	4-0	3-30	8-0	6-60	8-0	6-60	3-30	12-0	18-0
870F	9-25	7-65	18-5	15-3	18-5	15-3	7-65	27-5	41-5

F = Plates with cooling fins

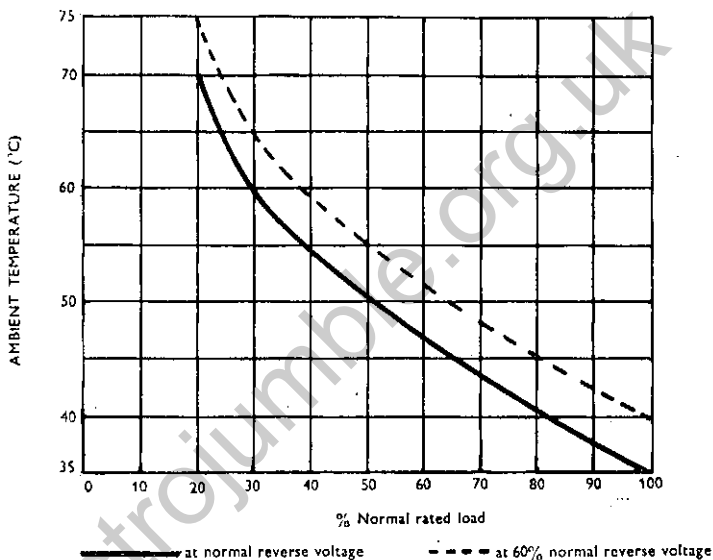
REVERSE VOLTAGE RATINGS

GRADE OF PLATE	Nominal Reverse Voltage (V _{rms})	Absolute Max. On-load Reverse Voltage (V _{rms})	Absolute Max. Open Circuit Voltage (V _{rms})	Max. Peak Inverse Voltage (V)
K	15-0	17-0	18-0	25-0
L	18-0	20-5	22-0	31-0

Series 800
Selenium Rectifiers
CONTINUED

PERMISSIBLE RATINGS IN AMBIENT TEMPERATURES EXCEEDING 35°C

The derating curve below shows the amount of reduction in current which is necessary when the rectifiers are used in ambient temperatures higher than 35°C.

Graph 1. Derating Curve

Series 800

Selenium Rectifiers

CONTINUED

SERIES 800 RECTIFIER STACKS: GENERAL**Connections Between Tags:**

All Series 800 stacks are supplied with the connections made between tags as required by the circuit arrangement. These connections are made either by wire covered with sleeving or, in the case of the larger plate rectifiers, with busbars as warranted by the current to be carried.

Polarity Markings:

The following markings are used to show the polarity of connecting tags:

Positive:	Red or +
Negative:	Blue or —
AC:	Green or ~

Insulation:

Insulation is provided between rectifier plates and spindle to withstand a 2,000-volt r.m.s. flash test. If the potential of the rectifier to earth exceeds 750 volts, peak, the spindles of the stacks should be mounted on insulators.

Tropical "Z" Finish:

This finish complies with R.C.S.C. Specifications, Class H2, for tropical exposure, and is necessary on rectifiers destined for humid or tropical climates.

STANDARD STACKS**Picture Code:**

All Series 800 rectifier stacks are marked with the appropriate code which provides a concise description of the electrical and mechanical make-up of the stack. This code is a convenient reference for ordering or re-ordering rectifiers.

The Picture Code is in three parts as shown in the following example:

830SKF—4B3—Z
(a)—(b)—(c)

Part (a) of the code gives either three or four items of information in the following order: PLATE SERIES AND SIZE, base plate MATERIAL, "S" (only steel is used for standard stacks) and the GRADE (i.e. voltage) of the plates, followed by "F" for COOLING FINS when applicable.

Series 800

Selenium Rectifiers

CONTINUED

Part (b) gives three items of information in the following order: number of PLATES IN SERIES, CIRCUIT ARRANGEMENT and the number of ELECTRICAL PATHS. The circuit arrangement is described in letter-form from the list below:

H	single-phase half-wave.
V	single-phase push-pull.
VP	single-phase push-pull with positive outers.
B	single-phase bridge.
D	single-phase voltage-doubler.
PH	three-phase half-wave.
PB	three-phase bridge.

Part (c) is normally a single letter denoting the type of FINISH, but this letter may be preceded by one further letter for special mechanical or electrical features. Finish and special features are described from the letters listed below:

H	denotes heavy duty type tags. (Applies to 870 plate which alone has alternative types of tags.)
J	denotes no finish.
S	denotes damp-proof finish.
Z	denotes tropical finish.

A summary of the information given in the typical example just quoted in the coding explanation is therefore as follows:

830SKF—4B3—Z.

Plate size	830
Base plate material	S—steel
Plate grade	K—15 volts.
Fitted with cooling fins	F
Plates in series	4
Circuit	B—single-phase bridge
Electrical paths	3
Type of finish	Z—tropical

Maximum Number of Plates per Stack

The following table gives the maximum number of plates that can be incorporated into a single stack assembly.

Plate size	Max. No. of plates	Plate size	Max. No. of plates
820	72	850	42
820F	60	850F	30
830	72	860	48
830F	48	860F	26
840	54	870	36
840F	36	870F	24
		870H	36

Series 800

Selenium Rectifiers

CONTINUED

Number of Plates per Stack

The product of the two numbers in section (b) of the stack code and a number corresponding to the letter between them gives the total number of plates in a rectifier stack arrangement. The numbers corresponding to the "circuit arrangement" code letters in section (b) are: H = 1, V = 2, VP = 2, B = 4, D = 2, PH = 3, and PB = 6.

Thus, in the previous example, 4B3 in section (b) of the code = $4 \times 4 \times 3 = 48$ plates.

It should be noted that where the total number of plates in a stack arrangement exceed the maximum permitted number of plates shown in the above table, the stack arrangement must consist of two or more rectifier stacks.

Example:

860SLF—6PB2—J.

Size 860 plates, steel baseplates, 18-volt plates with cooling fins—6 plates in series per arm, three-phase bridge circuit, 2 electrical paths per arm—no finish.

Total number of 860SLF plates = $6 \times 6 \times 2 = 72$ (note PB = 6).

Reference to the table shows that the maximum number of size 860 plates with cooling fins that may be assembled as one rectifier stack is 26. The rectifier stack arrangement 860SLF—6PB2—J would, therefore, be supplied as three voltage doubler rectifier stacks type 860SLF—6D2—J for connection as a three-phase bridge.

Dimensional drawings of the standard range of Series 800 stack assemblies are given in publication S400/800 Gen which will be sent free on request.

SPECIAL STACKS

Where it is necessary to depart from the standard assembly to meet special electrical or mechanical requirements, even if such a departure be merely to include a customer's reference number, a special code having the prefix "F....." is used for identification. It is sometimes convenient to indicate the standard stack from which a special one is derived by using a picture code in conjunction with the special code, but in all such cases the picture code is subordinate to the special code which should always be quoted.

Special Stack Code

The special code consists of four sections arranged thus:

FS	L	4327	B
(a)	(b)	(c)	(d)

Section (a) The letter FS.

Section (b) Type of plate. L = 18-volt plates.

Section (c) A serial number.

Section (d) A letter indicating electrical or mechanical variations.

Series 800

Selenium Rectifiers

CONTINUED

ORDERING RECTIFIER STACKS

Rectifier stacks should always be ordered by quoting the picture code. If a particular arrangement cannot be accommodated on a single stack, it will be sufficient to quote the picture code of the complete rectifier assembly. The most convenient arrangement will then be advised by us when the order is acknowledged.

When a rectifier stack is known to have an "F....." code it is essential that this code is quoted on all orders and correspondence.

GENERAL OPERATING INFORMATION**Ambient Temperature:**

The ambient temperature stated refers to the temperature of the air in which the rectifier is situated. As the air temperature inside a normally ventilated equipment may be 10°C higher than the room temperature, a suitable allowance should be made.

Maximum Plate Temperature:

The normal maximum temperature to which plates may be allowed to rise is 75°C. Under conditions of reduced reverse voltage, plate temperatures of 80°C are permissible. (See ambient temperature derating curve Graph 1, page 3.)

Maximum Reverse Voltage:

When considering the reverse voltage applied to a rectifier plate it is essential to take into account the rectifier arrangement being used and the type of load.

Ventilation and Mounting:

Rectifiers should be provided with unrestricted ventilation and should be placed so that they do not receive pre-heated air from other components.

Rectifiers must be mounted with the screw or spindle horizontal.

Forced Draught Cooling of Rectifiers:

As the current carrying capacity of a rectifier is limited only by its operating temperature an increase in rating can be achieved by increasing the cooling.

A forced draught enables the current rating of rectifiers without cooling fins to be increased up to twice the normal rating provided that the plate temperature is kept below the maximum of 75°C (80°C with reduced voltage rating).

Series 800
Selenium Rectifiers
CONTINUED

Oil Immersed Rectifiers:

Rectifiers may be immersed in oil to provide additional insulation, protection against corrosive atmospheres, or to give improved heat conduction.

When oil immersed, provided that the oil is adequately cooled, the current rating of rectifiers without cooling fins may be increased to twice the normal rating.

Intermittent Operation:

When required to give periodic repeated outputs of short duration a rectifier may be rated up to several times its normal current rating. The extent of the permissible increase will depend on the duty cycle and can only be calculated for individual cases.

Calculation of AC Input Voltage and Current for a given DC Output:

When rectifiers are connected to a load that is substantially resistive or inductive, the instructions given below permit the calculation of the required a.c. input voltage for a given d.c. output voltage and current. It should be noted that no allowance for ageing need be made when estimating the number of plates in series as this allowance has already been made in the plate ratings listed on page 2.

1 RECTIFIER CIRCUIT	2 3 4 CIRCUIT FACTORS			5 6 APPROX. r.m.s. INPUT VOLTS	
	k_1	k_2	k_3	Normal load current	Twice normal load current
SINGLE-PHASE SUPPLY					
Half-wave	2.3	1	1	2.5 V_c	2.6 V_c
Bridge**	1.15	2	1	1.25 V_c	1.3 V_c
Centre-tap*	1.15	1	2	1.25 V_c	1.3 V_c
THREE-PHASE SUPPLY					
Half-wave*	0.855	1	$\sqrt{3}$	0.91 V_c	0.93 V_c
Bridge	0.74	2	1	0.80 V_c	0.82 V_c
Six-phase diametric*	0.74	1	2	0.85 V_c	0.87 V_c
Double star with interphase transformer*	0.855	1	2	0.92 V_c	0.94 V_c

* Input voltage is from outer to centre tap or neutral.

V_c = dc output voltage.

** Input voltage is line voltage.

- (1) Select the appropriate rectifier circuit from column 1 and, reading across to the in-line figure in column 5 or 6, estimate the approximate r.m.s. input voltage. (V_c = known d.c. output voltage).

Series 800

Selenium Rectifiers

CONTINUED

- (2) Calculate the number of plates in series in one arm of the rectifier (n) by using the formula below. k_3 is given in column 4 of the table.

$$n = \frac{\text{Approximate r.m.s. input voltage} \times k_3}{\text{Nominal reverse voltage per plate (see page 2)}}$$

- (3) Using the value just calculated for n (or the next highest whole number if n contains a fraction) calculate the correct r.m.s. input voltage from the formula:

$$V = (k_1 V_c) + (k_2 \cdot \Delta V)$$

where V = r.m.s. input voltage

V_c = dc output voltage

k_1 and k_2 = circuit factors (columns 2 and 3 in the table),

ΔV = r.m.s. voltage drop per plate at a current equal to:

$$\frac{\text{Mean load current}}{\text{Number of parallel paths per arm of the rectifier}}$$

and is read from the appropriate plate curve on Graph 2, 3 or 4.

For the single-phase half-wave case, ΔV is read from the single-phase bridge curves for a current equal to:

$$\frac{\text{Twice mean load current}}{\text{Number of parallel paths per arm of the rectifier}}$$

- (4) Check that $\frac{k_3 \cdot V}{n}$ does not exceed the allowable voltage per plate.

If it does, increase n and repeat calculations 3 and 4.

Input Current

The table of factors given below permits a simple calculation of the ac current taken by a rectifier supplying a known dc output current. The dc output current multiplied by the factor in the table appropriate to the circuit used will give the secondary line current of the supply transformer.

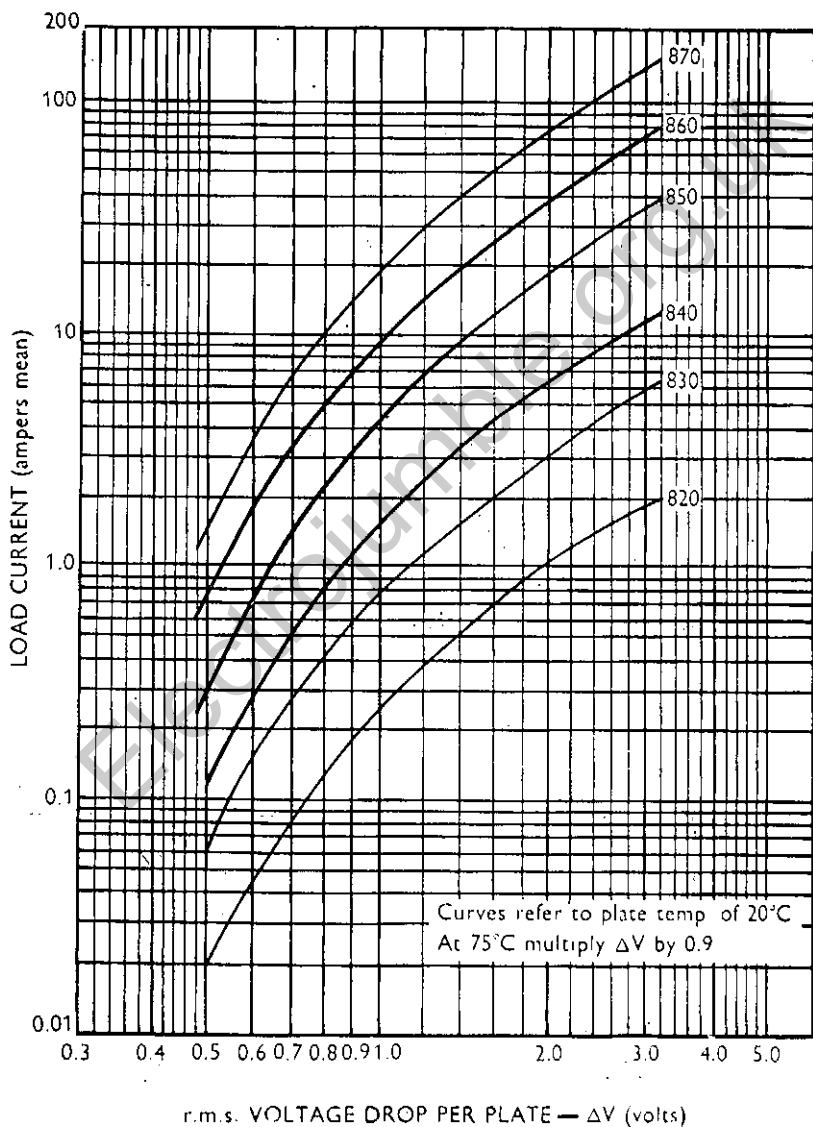
Single-phase supply Circuit	Factor
Half-wave	1.65
Bridge	1.2
Centre-tap	0.86

Three-phase supply Circuit	Factor
Half-wave	0.62
Bridge	0.83
Six-phase diametric	0.44
Double-star with interphase transformer	0.31

Series 800
Selenium Rectifiers
 CONTINUED

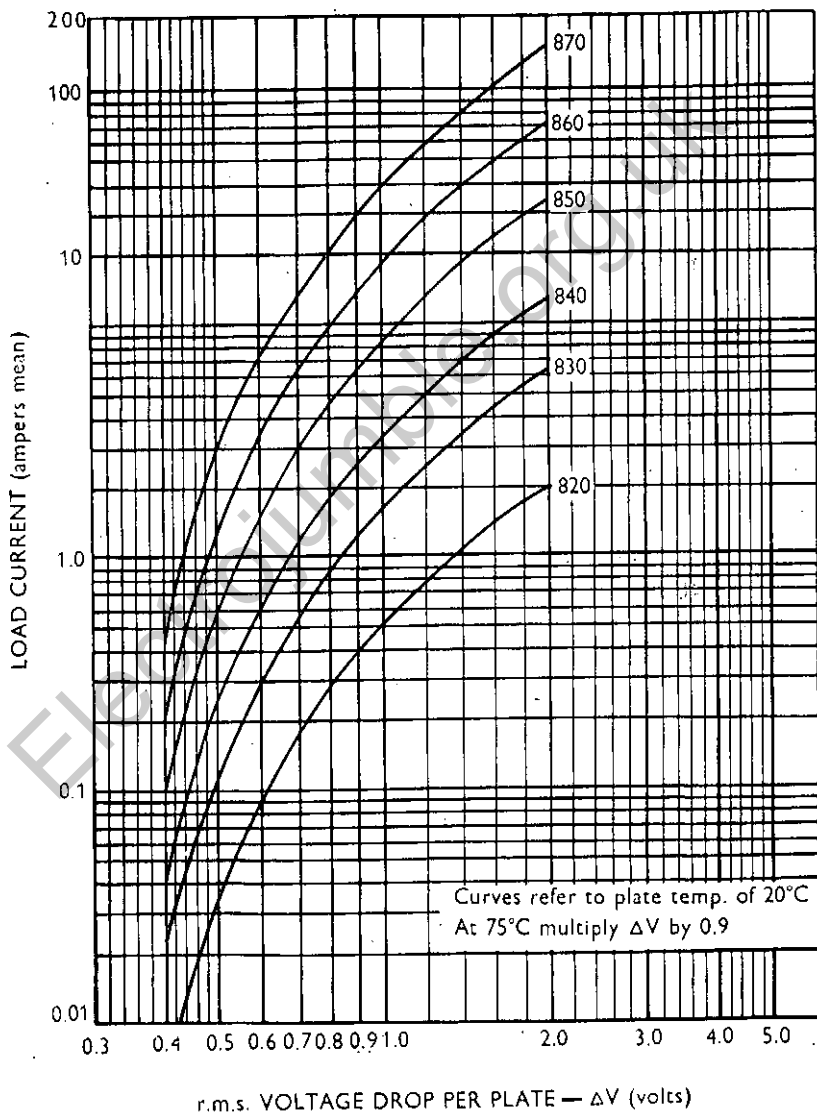
Graph 2. AC Forward Characteristics

Single-phase Bridge Circuit

Limits of ΔV for single plates are +15%
-10%

Series 800
Selenium Rectifiers
 CONTINUED

Graph 3. AC Forward Characteristics
 Three-phase Bridge Circuit
 Limits of ΔV for single plates are +15%
 -10%

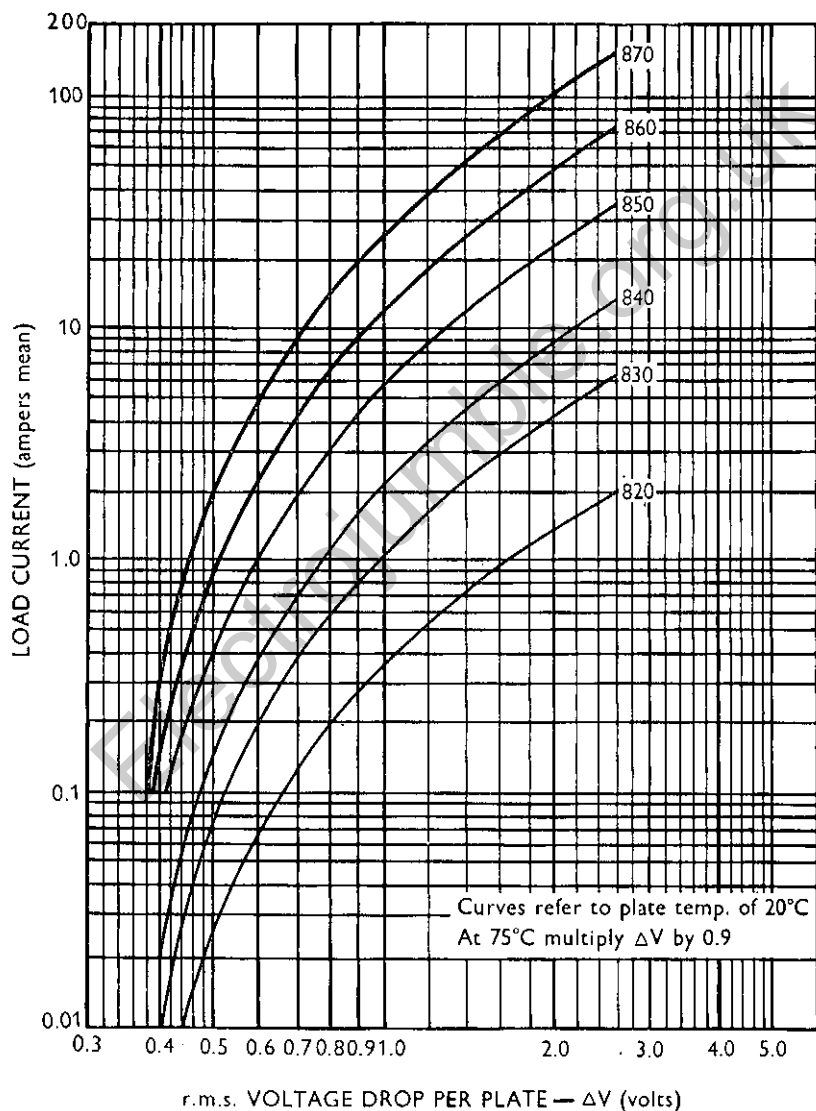


Series 800
Selenium Rectifiers
 CONTINUED

Graph 4. AC Forward Characteristics

Three-phase Half-wave Circuit

Limits of ΔV for single plates are +15%
 -10%



Selenium Surge Suppressors

900 Series SafeTstaCs

INTRODUCTION

For many years the non-linear reverse characteristic of selenium plates has been used to suppress transient voltages, e.g. spark suppression on relays, click suppressors on telephone hand-sets.

The ability of the selenium plates to absorb current overloads of short duration, in such applications as dynamic braking, has also been used to advantage.

In these applications, however, no efforts were made to control, with any precision, the value to which the transient voltages were reduced, and although electrically unformed plates were used in some instances, and plates of selected reverse voltage (usually lower than normal) in others, the plates were basically standard selenium rectifier plates.

The SafeTstaC uses specially processed selenium plates which are stable under continuous working conditions and have a well-defined knee in their reverse voltage/current characteristics with a steep slope beyond the knee, necessary features for voltage limiting units.

Transient energy is dissipated as a current in the plates and the transient voltage is limited to a value determined by the turnover of the reverse characteristic of the plates and the number of plates in series. Connected to provide a shunt path for transients, the SafeTstaC will protect other devices such as silicon rectifiers and thyristors, which, unlike selenium plates, have a strictly limited ability to withstand voltages in excess of their peak inverse voltage ratings.

The use of SafeTstaCs limits transient voltages to a known value, increases the circuit reliability and generally allows the use of silicon devices with lower peak reverse voltage ratings than would otherwise be necessary.

An entirely new range of SafeTstaCs has been designed, using four different sizes of selenium plates. The picture code system of describing the new series follows established STC procedure, with additional letters to cover stack configurations peculiar to SafeTstaCs (see pages 6 and 7).

Standard Telephones and Cables Limited

Rectifier Division, Edinburgh Way, Harlow, Essex

Telephone: Harlow (STD code: OBS 96) 26811 Telex: 81146

C O M P O N E N T S G R O U P

900 Series SafeTstaCs

CONTINUED

Table 1 Plate Ratings

		920	930	950	970†
r.m.s. input voltage	(V)	25	25	25	25
Max. peak input voltage	(V)	35	35	35	35
Max. leakage current at normal rated voltage	(mA)	2	4	15	50
Max. voltage peak at max. discharge current	(V)	50	50	50	50
Max. discharge current—amps	(A)	2	8	25	100
Max. ambient temperature	(°C)	60	60	60	50
Max. forward current rating of device being protected	(A)	25	100	300	500

† See also *Heavy-Duty Stacks*, page 6.**WAVE SHAPE**

The above ratings presume a sinusoidal wave shape. If this is departed from, i.e. is peaky, as on a constant voltage alternator, it may be necessary to increase the number of plates in series per arm.

For all wave forms neither r.m.s. nor peak input voltage ratings should be exceeded.

PARALLEL OPERATION

The parallel operation of SafeTstaCs is not recommended. It requires close matching of the actual breakdown characteristics of all the paralleled plates to ensure equal division of the surge current, and that this should be maintained under varying conditions of temperature, current loading, etc.

INTERMITTENT SURGE RATINGS

Surge currents considerably higher than those shown in Graph 1, or listed in Table 1, can be safely dissipated if the duration of the pulse and the rate of repetition are properly limited (see Graph 2). At these higher currents, however, due allowance should be made in case the rated suppression voltages are exceeded.

LOCATION

The SafeTstaC should be placed as physically close as is possible to the devices being protected, keeping the leads short, direct and sufficiently heavy to carry the peak surge current.

900 Series SafeTstaCs

CONTINUED

INSULATION

Insulation is provided between SafeTstaC plates and spindle to withstand a 2000 V r.m.s. flash test.

Selection of SafeTstaCs

To select a SafeTstaC for optimum performance the following parameters must be known:

- (a) Peak surge discharge current.
- (b) Maximum applied r.m.s. voltage, steady state condition.
- (c) Voltage at maximum discharge current.

If all the above details are not available the design factors in the following tables may be used to estimate a suitable SafeTstaC. This method has proved generally satisfactory for design purposes and requires only the minimum of information, i.e. d.c. load current and r.m.s. input voltage.

SafeTstaC DESIGN FACTORS**Table 2** **CIRCUIT FACTORS K_1**

Circuit	Maximum* Load Current (A)	Factor K_1	
		Resistive or Inductive Load	Capacitive, Battery or Motor Load
Single phase			
Half-wave	100	0.08	0.04
Bridge	100	0.04	0.03
Push-pull	100	0.04	0.03
Three phase			
Half-wave	300	0.02	0.02
Bridge	300	0.03	0.03
Double star	300	0.01	0.01
Six phase			
Star	300	0.015	0.015

* If the maximum load current exceeds this value the design factor K_1 should be taken as 50% of the value given in the Table.

900 Series SafeTstaCs

CONTINUED

Table 3 PLATE FACTORS K_2

Plate size	920	930	950	970
Plate K_2	2.0	8.0	25	100

The maximum d.c. output current when multiplied by the design factor K_1 gives the plate factor K_2 , which is the figure that should be used in selecting the size of plate to be used in the SafeTstaC.

The plate factors in Table 3 are absolute maximum values. If the calculated plate factor approaches the maximum value for a given plate size, the next larger size of plate should be used or 100 V added to the calculated peak inverse voltage rating of the device being protected.

EXAMPLE

A single-phase full-wave bridge rectifier supplying a full load current of 200 A d.c. from a 200 V r.m.s. input, the input transformer having a magnetizing current 4.0 A (referred to the secondary).

METHOD 1

As the power source is a transformer assume that the peak surge current will not exceed the magnetizing current, i.e. 4.0 A.

From Graph 1 or the maximum discharge current rating (Table 1) it can be seen that plate size 930 will suffice.

$$\text{Maximum applied r.m.s. voltage} = 200 \text{ V}$$

$$\text{r.m.s. voltage per plate} = 25 \text{ V}$$

$$\text{Number of plates in series per arm} = \frac{200}{25} = 8$$

(Make up any fraction to the next whole number.)

As the maximum voltage per plate at the peak discharge current is 50 V* the rated peak inverse voltage of the devices being protected should not be less than $8 \times 50 \text{ V} = 400 \text{ V}$.

For this application, therefore, the bridge rectifier should contain four rectifiers rated above 400 V protected by SafeTstaCs containing eight size 930 plates.

* At 4.0 A surge current with a 930 plate, graph 1 shows the suppressed voltage as 47.5 V but the maximum figure of 50 V should always be used when calculating the crest working voltage of the devices to be protected.

900 Series SafeTstaCs

CONTINUED

METHOD 2

If only the following were known:

Maximum input voltage 200 V r.m.s.

Full load output current 200 A d.c.

The calculation of the required number of plates in series is as in Method 1.

$$\frac{\text{Maximum input voltage}}{\text{Voltage per plate}} = \frac{200}{25} = 8$$

From the design factor chart the circuit factor K_1 for a single-phase bridge with a full load output of 200 A is given as 0.02.

Multiply K_1 by the output current to obtain the plate factor K_2 .

$$\text{Plate factor } K_2 = 0.02 \times 200 = 4.$$

From Table 3 it is seen that the smallest plate that could be used is the 930.

The rating of the rectifier being protected would be at least 400 V, as in the previous method.

As it is a single-phase bridge rectifier there are at least two methods of using SafeTstaCs for its protection:

- (1) By a non-polarized SafeTstaC across the input to the equipment. This gives protection against surges originating in the a.c. supply only.

The required stack for our example would have eight 930 plates per arm in a "back-to-back" configuration. Code 930JP-8L1-P. 1 off.

- (2) By polarized SafeTstaCs, one in shunt across each arm of the rectifier bridge. This will give protection against surges originating on both a.c. and d.c. sides.

The required stacks for the example would have eight 930 plates in a half-wave configuration. Code 930JP-8H1-P. 4 off.

Alternatively two such stacks can be mounted on a common spindle:
Code 930JP-8D1-P. 2 off.

or 1 off Code 930JP-8M1-P could be used.

A non-polarized SafeTstaC could be fitted across the primary of the transformer, but the stack requirements would need recalculating for the primary voltage and surge current conditions; it would, of course, protect only against transients originating in the a.c. supply.

900 Series SafeTstaCs

CONTINUED

Heavy-Duty Stacks

As previously stated, the parallel operation of SafeTstaCs should be avoided and use of the next larger plate is recommended.

Where the lowest possible suppression voltage is not essential the peak current rating of the largest plate, 970, can be increased by the use of plates with a lower working voltage.

Two grades of these special 970 plates are available, for use at 15 V r.m.s. or 21 V r.m.s., and with peak current ratings of 1000 A and 600 A respectively compared to 400 A for the standard plate (see Graph 2).

The number of plates required in series for a given a.c. r.m.s. voltage will be obtained as before by dividing this figure by 15 or 21 respectively and correcting to the nearest whole number upwards.

The SafeTstaC suppression voltage will be the number of plates multiplied by 50 V and the minimum rated p.i.v. of the device being protected must not be below this figure.

Using these high-duty plates, therefore, on, say, 250 V mains, where the standard stack would protect devices rated at 500 V p.i.v., by using the 970 plates with 21 V and 15 V rating, devices with 600 V and 900 V p.i.v. respectively would be required.

Picture Code

An explanation of the picture code used for the standard range of SafeTstaCs is given below. All SafeTstaCs are marked with the appropriate code numbers and letters which provide a complete description of the electrical and mechanical make-up of the stacks. The picture code is a convenient reference for ordering or reordering SafeTstaCs.

The picture code has three parts arranged thus:

950JP — 10H1 — P
(a) (b) (c)

Part (a) of the code gives two items of information in the following order: **PLATE SIZE** and **VOLTAGE GRADE** of the plates.

Voltage Grade (V)	Code Letters
25	JP
21	EP
15	BP

} 970 plates only





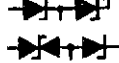
900 Series SafeTstaCs

CONTINUED

Part (b) gives three items of information in the following order: NUMBER OF PLATES IN SERIES, CIRCUIT ARRANGEMENT and the numeral 1 indicating a single electrical path. The circuit arrangement is described in letter form as shown in Table 4.

Table 4

CIRCUIT CODES

Circuit	Symbol	Code Letter
Single-phase polarized arrangement		H
Single-phase polarized with centre tap		D
Unpolarized arrangement		L
Single-phase bridge without negative busbar		M
Single-phase unpolarized arrangement plus single-phase polarized arrangement (i.e. L plus H)		R

Part (c) is always the letter P, which denotes the finish; this is preceded by the letter H for size 970 plates only, indicating that heavy-duty tags are fitted.

A summary of the information given in the above example would be as follows:

950JP — 10H1 — P

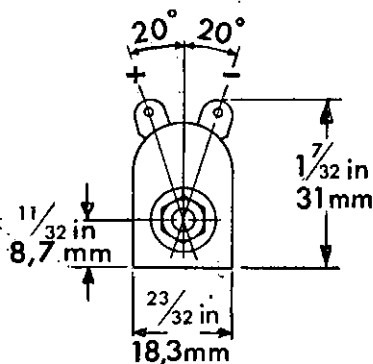
950 Plate size
 JP Plate grade—25 V
 10 Plates in series
 H Circuit arrangement—single-phase polarized
 1 One electrical path
 P SafeTstaC finish

900 Series SafeTstaCs

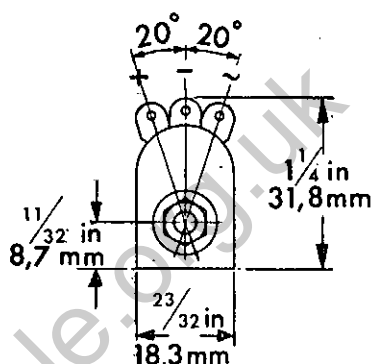
CONTINUED

Mechanical Data

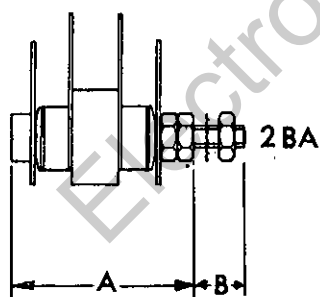
SERIES 920



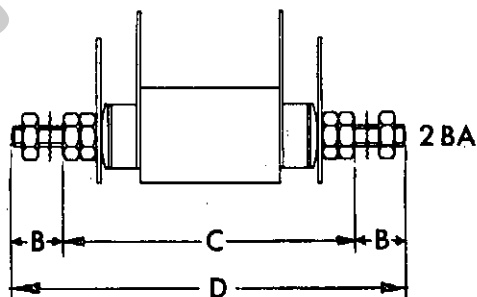
Type H Polarized (as shown)
Type L Unpolarized



Type D,
Type M,
Type R



Screw Mounted
(up to 8 plates)



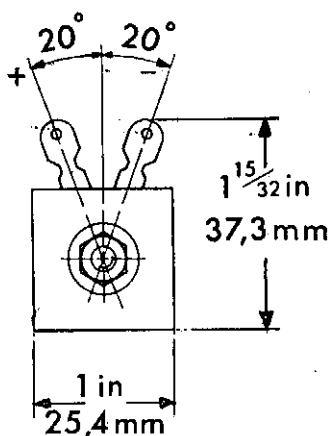
Spindle Mounted
(over 8 plates)

For axial dimensions see Table 5

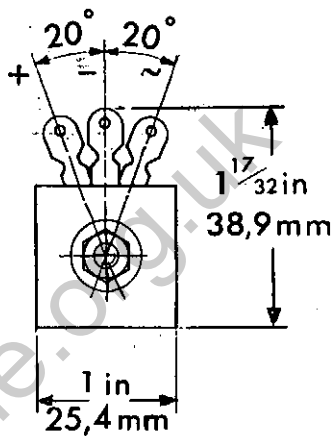
900 Series SafeTstaCs

CONTINUED

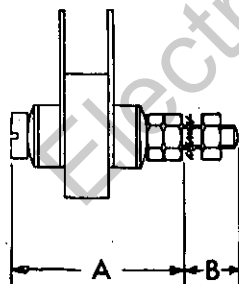
SERIES 930



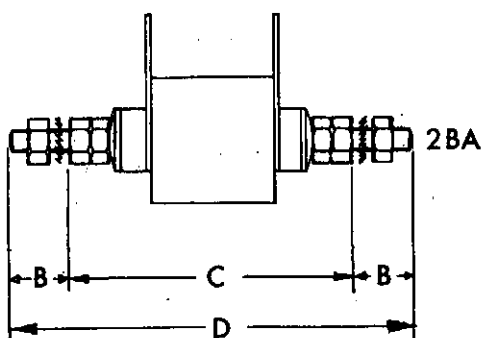
Type H Polarized (as shown)
Type L Unpolarized



Type D,
Type M,
Type R



Screw Mounted
(up to 8 plates)



Spindle Mounted
(over 8 plates)

For axial dimensions see Table 5

900 Series SafeTstaCs

CONTINUED

Table 5

SERIES 920 and 930 DIMENSIONS

Number of Plates per Stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight			
	in	mm	in	mm	in	mm	in	mm	920		930	
									oz	g	oz	g
1	1 $\frac{5}{16}$	29,4	$\frac{5}{16}$	7,9					1	28	$\frac{1}{2}$	21
2	1 $\frac{9}{16}$	32,5	$\frac{9}{16}$	7,9					1	28	1	28
3	1 $\frac{13}{16}$	34,1	$\frac{13}{16}$	9,5					1 $\frac{1}{8}$	32	1	28
4	1 $\frac{13}{16}$	35,7	$\frac{13}{16}$	7,9					1 $\frac{1}{4}$	35	1 $\frac{1}{4}$	35
5	1 $\frac{13}{16}$	38,9	$\frac{13}{16}$	7,9					1 $\frac{1}{4}$	35	1 $\frac{1}{4}$	35
6	1 $\frac{13}{16}$	40,5	$\frac{13}{16}$	6,4					1 $\frac{1}{8}$	39	1 $\frac{1}{8}$	42
7	1 $\frac{13}{16}$	43,7	$\frac{13}{16}$	9,5					1 $\frac{1}{8}$	42	1 $\frac{1}{8}$	42
8	1 $\frac{13}{16}$	45,2	$\frac{13}{16}$	7,9					1 $\frac{1}{4}$	42	1 $\frac{1}{4}$	49
9			$\frac{13}{16}$	7,9	1 $\frac{1}{4}$	50,0	2 $\frac{1}{4}$	69,9	1 $\frac{1}{4}$	49	2	57
10			$\frac{13}{16}$	6,4	2 $\frac{1}{4}$	53,2	2 $\frac{1}{4}$	69,9	1 $\frac{1}{8}$	53	2 $\frac{1}{4}$	64
11			$\frac{13}{16}$	8,7	2 $\frac{1}{4}$	54,8	3	76,2	2	57	2 $\frac{1}{4}$	64
12			$\frac{13}{16}$	7,1	2 $\frac{1}{4}$	57,9	3	76,2	2	57	2 $\frac{1}{4}$	71
13			$\frac{13}{16}$	6,4	2 $\frac{1}{4}$	59,5	3	76,2	2 $\frac{1}{8}$	61	2 $\frac{1}{8}$	78
14			$\frac{13}{16}$	8,7	2 $\frac{1}{4}$	61,1	3 $\frac{1}{4}$	82,6	2 $\frac{1}{4}$	64	2 $\frac{1}{4}$	78
15			$\frac{13}{16}$	7,1	2 $\frac{1}{4}$	64,2	3 $\frac{1}{4}$	82,6	2 $\frac{1}{4}$	64	3	85
16			$\frac{13}{16}$	6,4	2 $\frac{1}{4}$	65,9	3 $\frac{1}{4}$	82,6	3 $\frac{1}{8}$	68	3	85
17			$\frac{13}{16}$	7,9	2 $\frac{1}{4}$	69,1	3 $\frac{1}{8}$	88,9	2 $\frac{1}{8}$	68	3 $\frac{1}{4}$	92
18			$\frac{13}{16}$	7,1	2 $\frac{1}{4}$	70,6	3 $\frac{1}{8}$	88,9	2 $\frac{1}{8}$	71	3 $\frac{1}{4}$	99
19			$\frac{13}{16}$	8,7	2 $\frac{1}{4}$	73,8	3 $\frac{1}{8}$	95,3	2 $\frac{1}{8}$	75	3 $\frac{1}{4}$	99
20			$\frac{13}{16}$	7,9	2 $\frac{1}{4}$	75,4	3 $\frac{1}{8}$	95,3	2 $\frac{1}{8}$	75	3 $\frac{1}{4}$	106
21			$\frac{13}{16}$	7,1	3 $\frac{1}{4}$	77,0	3 $\frac{1}{8}$	95,3	2 $\frac{1}{8}$	78	3 $\frac{1}{4}$	106
22			$\frac{13}{16}$	8,7	3 $\frac{1}{4}$	80,2	4	101,6	2 $\frac{1}{8}$	81	4	113
23			$\frac{13}{16}$	7,9	3 $\frac{1}{4}$	81,8	4	101,6	2 $\frac{1}{8}$	81	4	113
24			$\frac{13}{16}$	6,4	3 $\frac{1}{4}$	84,9	4	101,6	3	84	4 $\frac{1}{4}$	127
25			$\frac{13}{16}$	8,7	3 $\frac{1}{4}$	86,5	4 $\frac{1}{4}$	108,0	3 $\frac{1}{8}$	88	4 $\frac{1}{4}$	127
26			$\frac{13}{16}$	7,1	3 $\frac{1}{4}$	89,7	4 $\frac{1}{4}$	108,0	3 $\frac{1}{8}$	88	4 $\frac{1}{4}$	127
27			$\frac{13}{16}$	6,4	3 $\frac{1}{4}$	91,3	4 $\frac{1}{4}$	108,0	3 $\frac{1}{4}$	91	4 $\frac{1}{4}$	134
28			$\frac{13}{16}$	8,7	3 $\frac{1}{4}$	92,9	4 $\frac{1}{4}$	114,3	3 $\frac{1}{4}$	95	4 $\frac{1}{4}$	134
29			$\frac{13}{16}$	7,1	3 $\frac{1}{4}$	96,0	4 $\frac{1}{4}$	114,3	3 $\frac{1}{8}$	95	5	142
30			$\frac{13}{16}$	6,4	3 $\frac{1}{4}$	97,6	4 $\frac{1}{4}$	114,3	3 $\frac{1}{8}$	98	5	142
31			$\frac{13}{16}$	7,9	3 $\frac{1}{4}$	100,8	4 $\frac{1}{4}$	120,7	3 $\frac{1}{8}$	102	5 $\frac{1}{4}$	149
32			$\frac{13}{16}$	7,1	4 $\frac{1}{4}$	102,4	4 $\frac{1}{4}$	120,7	3 $\frac{1}{8}$	102	5 $\frac{1}{4}$	156
33			$\frac{13}{16}$	6,4	4 $\frac{1}{4}$	104,0	4 $\frac{1}{4}$	120,7	3 $\frac{1}{8}$	105	5 $\frac{1}{4}$	156
34			$\frac{13}{16}$	7,9	4 $\frac{1}{4}$	107,2	5	127,0	3 $\frac{1}{4}$	105	5 $\frac{1}{4}$	163
35			$\frac{13}{16}$	7,1	4 $\frac{1}{4}$	108,7	5	127,0	3 $\frac{1}{4}$	109	5 $\frac{1}{4}$	163
36			$\frac{13}{16}$	8,7	4 $\frac{1}{4}$	111,9	5 $\frac{1}{4}$	133,4	4	113	6	170

900 Series SafeTstaCs

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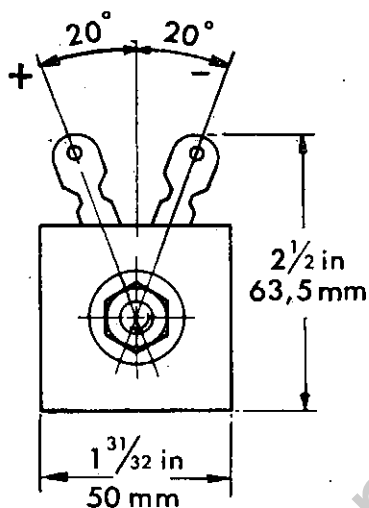
Table 5 continued.

Number of Plates per Stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight			
	in	mm	in	mm	in	mm	in	mm	920		930	
									oz	g	oz	g
37			7,9	4	113,5	5	133,4	4	113	6	170	
38			6,4	4	113,7	5	133,4	4	117	6	177	
39			7,9	4	118,3	5	139,7	4	120	6	184	
40			7,1	4	121,4	5	139,7	4	120	6	184	
41			6,4	4	123,0	5	139,7	4	124	6	191	
42			8,7	4	124,6	5	146,1	4	127	6	191	
43			7,1	5	127,8	5	146,1	4	127	7	198	
44			6,4	5	129,4	5	146,1	4	131	7	198	
45			7,9	5	132,6	6	152,4	4	131	7	205	
46			7,1	5	134,1	6	152,4	4	134	7	212	
47			6,4	5	135,7	6	152,4	4	138	7	212	
48			7,9	5	138,9	6	158,8	5	142	7	219	
49			7,1	5	140,4	6	158,8	5	142	7	219	
50			8,7	5	143,6	6	165,1	5	146	8	227	
51			7,9	5	145,3	6	165,1	5	149	8	227	
52			6,4	5	148,4	6	165,1	5	149	8	234	
53			8,7	5	150,0	6	171,5	5	153	8	241	
54			7,9	5	151,6	6	171,5	5	153	8	241	
55			6,4	6	154,8	6	171,5	5	156	8	248	
56			8,7	6	156,4	7	177,8	5	160	8	248	
57			7,1	6	159,5	7	177,8	5	160	9	255	
58			6,4	6	161,1	7	177,8	5	163	9	255	
59			8,7	6	162,7	7	184,2	5	167	9	262	
60			7,1	6	165,9	7	184,2	5	167	9	269	
61			6,4	6	167,5	7	184,2	6	170	9	269	
62			7,9	6	170,7	7	190,5	6	174	9	276	
63			7,1	6	172,2	7	190,5	6	174	9	276	
64			8,7	6	175,4	7	196,9	6	177	10	284	
65			7,9	6	177,0	7	196,9	6	181	10	284	
66			7,1	7	178,6	7	196,9	6	184	10	291	
67			8,7	7	181,8	8	203,2	6	188	10	298	
68			7,9	7	183,4	8	203,2	6	191	10	298	
69			6,4	7	186,5	8	203,2	6	191	10	305	
70			8,7	7	188,1	8	209,6	6	195	10	305	
71			7,1	7	191,2	8	209,6	6	195	11	312	
72			6,4	7	192,9	8	209,6	6	198	11	319	

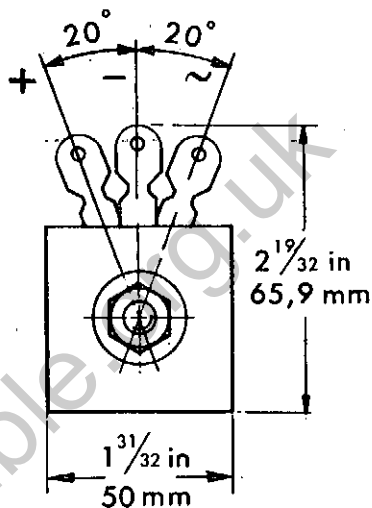
900 Series SafeTstaCs

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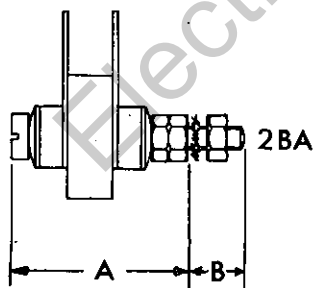
SERIES 950



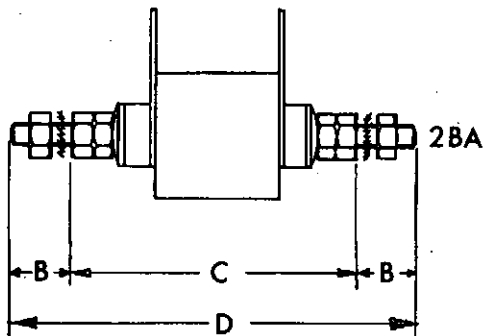
Type H Polarized (as shown)
Type L Unpolarized



Type D,
Type M,
Type R



Screw Mounted
(up to 6 plates)



Spindle Mounted
(over 6 plates)

900 Series SafeTstaCs

CONTINUED

Table 6

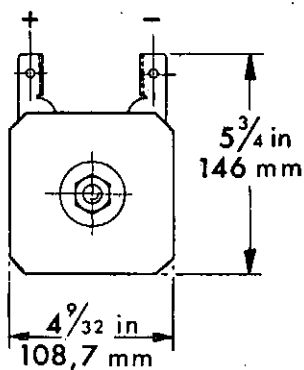
SERIES 950 DIMENSIONS

Number of Plates per Stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight	
	in	mm	in	mm	in	mm	in	mm	lb oz	g
1	1 1/4	31,8	1 1/2	8,7					1 1/2	42
2	1 1/2	37,3	1 3/4	6,4					2	57
3	1 3/4	43,7	1 7/8	9,5					2 1/2	71
4	1 7/8	49,2	2	7,1					3 1/2	99
5	2	54,8	2 1/8	11,1					4	113
6	2 1/8	60,3	2 1/4	5,6					4 1/2	127
7			2 3/8	7,9	2 3/8	69,1	3 1/2	88,9	5 1/2	149
8			2 5/8	7,9	2 5/8	75,4	3 3/4	95,3	6	170
9			2 7/8	8,7	3	80,2	4	101,6	6 1/2	184
10			3	8,7	3 1/8	86,5	4 1/4	108,0	7 1/4	205
11			3 1/8	6,4	3 1/4	91,3	4 1/2	108,0	7 3/4	219
12			3 1/4	6,4	3 3/8	97,6	4 3/4	114,3	8 1/4	234
13			3 3/8	6,4	3 5/8	104,0	4 7/8	120,7	9	255
14			3 5/8	7,1	4	108,7	5	127,0	9 1/2	269
15			4	7,1	4 1/8	115,1	5 1/4	133,4	10	284
16			4 1/8	7,9	4 1/4	119,9	5 1/2	139,7	10 1/2	305
17			4 1/4	7,9	4 3/8	126,2	5 3/4	146,1	11 1/4	319
18			4 3/8	8,7	5	131,0	6	152,4	11 3/4	333
19			4 5/8	8,7	5 1/8	137,3	6 1/4	158,8	12 1/2	355
20			4 7/8	8,7	5 3/8	143,7	6 1/2	165,1	13	369
21			5	6,4	5 5/8	148,4	6 3/4	165,1	13 1/2	383
22			5 1/8	6,4	6	154,8	6 7/8	171,5	14 1/4	404
23			5 3/8	7,1	6 1/8	159,5	7	177,8	14 3/4	418
24			5 5/8	7,1	6 3/8	165,9	7 1/4	184,2	15 1/2	440
25			5 7/8	7,1	6 5/8	172,2	7 3/8	190,5	1	0
26			6	7,9	7	177,0	7 1/2	196,9	1	0 1/2
27			6 1/8	7,9	7 1/8	183,4	8	203,2	1	1 1/4
28			6 3/8	8,7	7 3/8	188,1	8 1/4	209,6	1	1 3/4
29			6 5/8	8,7	7 5/8	194,5	8 3/8	215,9	1	2 1/2
30			6 7/8	6,4	8	199,2	8 1/2	215,9	1	3
31			7	6,4	8 1/8	205,6	8 3/4	222,3	1	3 1/2
32			7 1/8	6,4	8 3/8	211,9	9	228,6	1	4
33			7 3/8	7,1	8 5/8	216,7	9 1/4	235,0	1	4 1/2
34			7 5/8	7,1	8 7/8	223,0	9 3/8	241,3	1	5 1/4
35			7 7/8	7,9	9	227,8	9 3/4	247,7	1	6
36			8	7,9	9 1/8	234,2	10	254,0	1	6 1/2
37			8 1/8	7,9	9 3/8	240,5	10 1/4	260,4	1	7
38			8 3/8	8,7	9 5/8	245,3	10 3/8	266,7	1	7 1/2
39			8 5/8	8,7	9 7/8	251,6	10 3/4	273,1	1	8 1/4
40			8 7/8	6,4	10	256,4	10 7/8	273,1	1	8 3/4
41			9	6,4	10 1/8	266,7	11	279,4	1	9 1/2
42			9 1/8	7,1	10 3/8	267,5	11 1/4	285,8	1	10

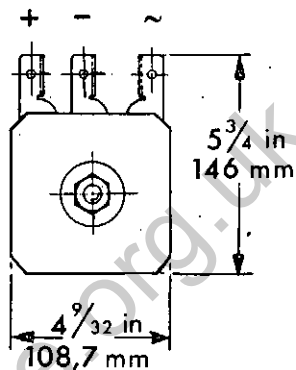
900 Series SafeTstaCs

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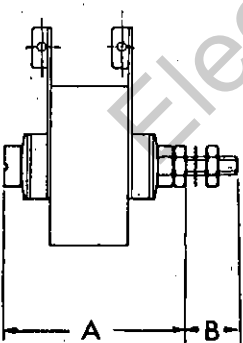
SERIES 970



Type H Polarized (as shown)
Type L Unpolarized

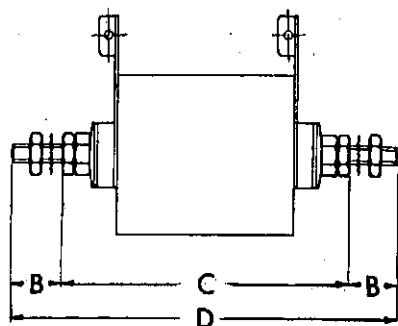


Type D,
Type M,
Type R



Screw Mounted
(up to 3 plates)

$\frac{5}{16}$ in. UNF. - 2A



Spindle Mounted
(over 3 plates)

900 Series SafeTstaCs

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Table 7

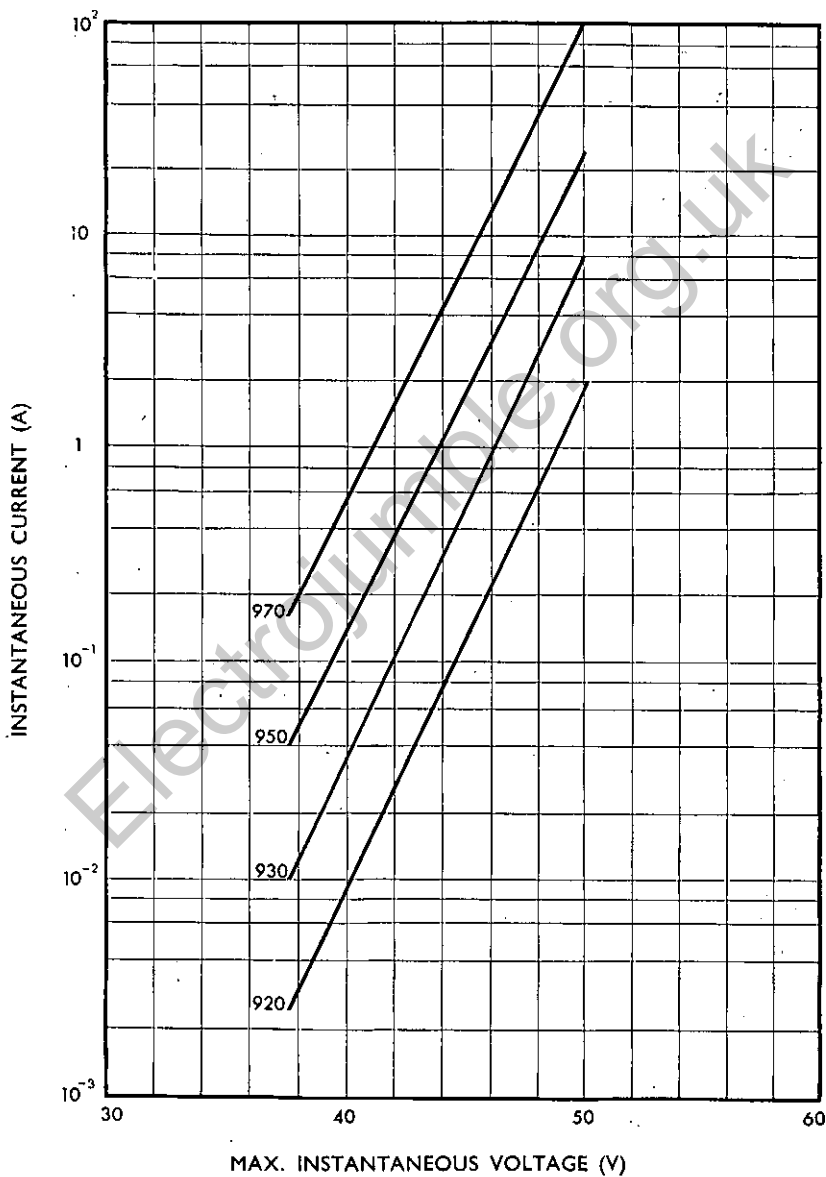
SERIES 970 DIMENSIONS

Number of Plates per Stack	A Maximum Effective Length		B Minimum Exposed Thread		C Maximum Fixing Centres		D Nominal Overall Length		Approximate Weight		
	in	mm	in	mm	in	mm	in	mm	lb oz	kg	
1	1 $\frac{7}{8}$	47,6	$\frac{9}{16}$	14,3						7	0,198
2	2 $\frac{1}{4}$	57,2	$\frac{11}{16}$	17,5						11	0,312
3	2 $\frac{1}{2}$	63,5	$\frac{13}{16}$	17,5						14	0,397
4			$\frac{15}{16}$	16,7	3 $\frac{1}{4}$	77,0	4 $\frac{1}{2}$	114,3	1 4		0,568
5			$\frac{17}{16}$	16,7	3 $\frac{3}{8}$	83,3	4 $\frac{3}{4}$	120,7	1 7		0,653
6			$\frac{19}{16}$	15,1	3 $\frac{5}{8}$	92,9	5	127,0	1 11		0,766
7			$\frac{21}{16}$	15,1	3 $\frac{7}{8}$	99,2	5 $\frac{1}{4}$	133,4	1 14		0,850
8			$\frac{23}{16}$	16,7	4 $\frac{1}{8}$	108,7	5 $\frac{3}{4}$	146,1	2 2		0,963
9			$\frac{25}{16}$	16,7	4 $\frac{3}{8}$	115,1	6	152,4	2 5		1,048
10			$\frac{27}{16}$	16,7	4 $\frac{5}{8}$	121,4	6 $\frac{1}{4}$	158,8	2 8		1,134
11			$\frac{29}{16}$	15,1	5 $\frac{1}{8}$	131,0	6 $\frac{3}{4}$	165,1	2 12		1,247
12			$\frac{31}{16}$	15,1	5 $\frac{3}{8}$	137,3	6 $\frac{5}{8}$	171,5	2 15		1,332
13			$\frac{33}{16}$	16,7	5 $\frac{5}{8}$	146,8	7 $\frac{1}{4}$	184,2	3 3		1,446
14			$\frac{35}{16}$	16,7	6 $\frac{1}{8}$	153,2	7 $\frac{3}{8}$	190,5	3 6		1,531
15			$\frac{37}{16}$	15,1	6 $\frac{3}{8}$	162,7	7 $\frac{7}{8}$	196,9	3 9		1,616
16			$\frac{39}{16}$	15,1	6 $\frac{5}{8}$	169,1	8	203,2	3 13		1,729
17			$\frac{41}{16}$	15,1	6 $\frac{7}{8}$	175,4	8 $\frac{1}{4}$	209,6	4 0		1,814
18			$\frac{43}{16}$	16,7	7 $\frac{1}{8}$	184,9	8 $\frac{3}{4}$	222,3	4 4		1,927
19			$\frac{45}{16}$	16,7	7 $\frac{3}{8}$	191,3	9	228,6	4 7		2,012
20			$\frac{47}{16}$	15,1	7 $\frac{5}{8}$	200,8	9 $\frac{1}{4}$	235,0	4 10		2,097
21			$\frac{49}{16}$	15,1	8 $\frac{1}{8}$	207,2	9 $\frac{3}{4}$	241,3	4 14		2,210
22			$\frac{51}{16}$	15,1	8 $\frac{3}{8}$	213,5	9 $\frac{7}{8}$	247,7	5 1		2,304
23			$\frac{53}{16}$	16,7	8 $\frac{5}{8}$	223,0	10 $\frac{1}{4}$	260,4	5 5		2,417
24			$\frac{55}{16}$	16,7	9 $\frac{1}{8}$	229,4	10 $\frac{3}{4}$	266,7	5 8		2,502
25			$\frac{57}{16}$	15,1	9 $\frac{3}{8}$	238,9	10 $\frac{7}{8}$	273,1	5 12		2,615
26			$\frac{59}{16}$	15,1	9 $\frac{5}{8}$	245,3	11	279,4	5 15		2,700
27			$\frac{61}{16}$	16,7	10 $\frac{1}{8}$	254,8	11 $\frac{1}{4}$	292,1	6 2		2,779
28			$\frac{63}{16}$	16,7	10 $\frac{3}{8}$	261,1	11 $\frac{3}{4}$	298,5	6 6		2,892
29			$\frac{65}{16}$	16,7	10 $\frac{5}{8}$	267,5	12	304,8	6 9		2,977
30			$\frac{67}{16}$	15,1	10 $\frac{7}{8}$	277,0	12 $\frac{1}{4}$	311,2	6 13		3,090
31			$\frac{69}{16}$	15,1	11 $\frac{1}{8}$	283,4	12 $\frac{3}{4}$	317,5	7 0		3,175
32			$\frac{71}{16}$	16,7	11 $\frac{3}{8}$	292,9	13	330,2	7 3		3,260
33			$\frac{73}{16}$	16,7	11 $\frac{5}{8}$	299,2	13 $\frac{1}{4}$	336,6	7 7		3,373
34			$\frac{75}{16}$	16,7	12 $\frac{1}{8}$	305,6	13 $\frac{3}{8}$	342,9	7 10		3,458
35			$\frac{77}{16}$	15,1	12 $\frac{3}{8}$	315,1	13 $\frac{7}{8}$	349,3	7 14		3,571
36			$\frac{79}{16}$	15,1	12 $\frac{5}{8}$	321,5	14	355,6	8 1		3,656

900 Series SafeTstaCs

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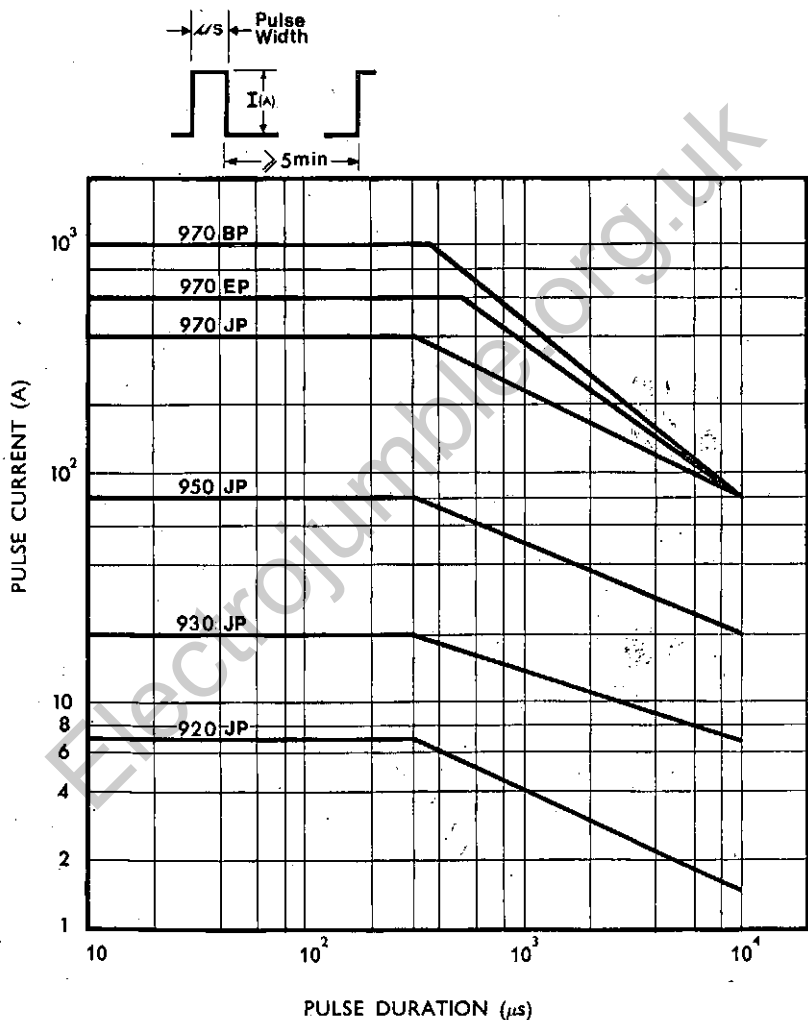
Graph 1. Dynamic Characteristics



900 Series SafeTstaCs

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Graph 2. Intermittent Rating Curves



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