

Ref: T121 – Rev 15 – March 02

SCALE DESIGNATIONS

Scales are designated by a three digit code, the product of which indicated the total number of divisions:

- a) The first number specifies the major division into which the complete scale is divided.
- b) The second number specifies the intermediate divisions into each major division a) is divided.
- c) The third number specifies the minor divisions into which each intermediate division b) is divided. This coding also applies to non-linear, centre zero, suppressed zero and expanded scales. The minor divisions c) may be reduced or omitted over the compressed portion of a scale but the product of three digits describes the scale as it would be if all sub-divisions were marked.

Moving iron scales have divisions down to one fifth full scale value only. Motor overload scales may have an additional intermediate division mark at 2 to 6 times rated full scale value.

EXAMPLES

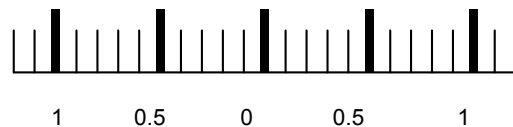
1. Type 016-05 scaled 0-1.5 *Example 1*
 Listed designation = $3 \times 5 \times 2 = 30$ divisions
 Listed figuring = 0-0.5-1-1.5



2. Type 243-012 scaled 1.2-0-1.2
 Listed designation = $2 + (4 \times 5 \times 1) + 2 = 24$ divisions

Example 2 0 0.5 1 1.5

Listed figuring = 1-0.5-0-0.5-1



NOTE. Count the spaces not the marks.

OFF-SET ZERO SCALES

These may be provided where the sum of the scale end values is a listed scale value. Zero must be on a major division and scale divisions must be in steps of 1, 2 or 5.

Example: Required scale 2-0-6. Codes 8x2x1 and 8x5x1 are suitable, but 4x5x1 is not.

NON-STANDARD SCALE END VALUES

When a non-listed scale is required, divisions and figures generally as the next lower listed scale are used with calibration extended to the required full scale value.



FIGURING AND CAPTIONS

Type Faces

The type face used for New World is Univers 59 & Grotesque 7, for Edgewise Grotesque 7 (figures only) for 239 American Market Microgramma Medium Extended, and Quadratic DIN style. All other instruments use Futura Medium typeface, which is nearest standard typeface to that recommended in BS3693.

Sizes

Model	083		084		239-30 BS.89		239-30 ANSI		016 087	056 078	057		057		058		128		242	243	244	246
	Pt	mm	Pt	mm	Pt	mm	Pt	mm	Pt	mm	Pt	mm	Pt	mm	Pt	mm	Pt	mm	mm	mm	mm	mm
Figures	8	2	10	2.5	12	2.9	12	3.8	20	5	20	5	28	7	36	9	24	5.5	3	4	6	8
Captions	16	4	20	5	20	5	12	3.8	28	7	36	9	36	9	48	12	various		4	5	8	10

Captions

Standard caption abbreviations with the exception of New World are taken from BS EN 60051 and DIN 57410 as listed in T120. New World captions are not abbreviated unless specified so.

Figuring

Major divisions are figured in steps of 1,2 and 5 units.

Figures may contain 1,2 or 3 digits (and end scale maximum 1000). Higher values use captions "K" (x1000) and "M" or scale factor "x100 and x1000" as appropriate. (Unless fully figured is expressed when ordering) Scales to ANSI C39.1 may use up to 4 digits. Generally the figure beyond the cardinal point of the range is not figured. An exception would be where this figure is not part of the graduated scale.

This statement also applied to the lower end (20%) of A.C. instruments.

DRG No. 28380.01 revision 14

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Project Dial

Scale	Model								MOVEMENT CODE				
	016			077 MR		242 243	246 244			01X 21X	16X	02X 07X	
	056 082 083 084	128	057 057 MR			244-16 244-DUAL 244-QUADRA 246-16				31X 41X 75X 80X		75X	
			016 056 084 085	077 078 (N AMERICAN) 079	057 087 058 078 (UK)	242	243 244	246		03X 08X 21X 41X	05X 11X 31X	03X 08X	
END VALUE x1 x10 x100	DESIGNATION CODE								STD INSTS	RATED CURRENT INSTS x 2 (x6) Figuring x1 x10 x 100			
0-1	2x5x2					2x5x2				0-0.5-1		0-0.5-1/2*(6*)	
"		10x2x1	10x2x1	5x5x5	10x5x1		10x5x1	10x5x1		0-0.2-0.4-0.6-0.8-1		0-0.2-0.4-0.6-0.8-1/2*(6*)	
0-1.2#	(2x5x2)+4					(2x5x2)+4				0-0.5-1		0-0.5-1/2.4 (7.2*)	
"		12x2x1	12x2x1	6x2x2	12x2x1		12x5x1	12x5x1		0-0.2-0.4-0.6-0.8-1-1.2		0-0.4-0.6-0.8-1-1.2/2.4* (7.2*)	
0-1.5	3x5x1	3x5x1	3x5x2		3x5x2	3x5x2	3x5x2			0-0.5-1-1.5		0-0.5-1-1.5/3* (9*)	
"				5x3x2						0-0.3-0.6-0.9-1.2-1.5		0-0.3-0.6-0.9-1.2-1.5/3* (9*)	
" #								15x5x1		0-0.2-0.4-0.6-0.8-1-1.2-1.4		0-0.2-0.4-0.6-0.8-1-1.2-1.4/3* (9*)	
0-2	2x2x5									0-1-2		0-1-2/4* (12*)	
"		4x5x1	4x5x2	4x5x2	4x5x2	4x5x1	4x5x2	4x5x2	4x5x2	0-0.5-1-1.5-2		0-0.5-1-1.5-2/4* (12*)	
0-2.5#	(2x2x5)+5					(2x2x5)+5				0-1-2		0-0.5*-1-2/5* (15*)	
"		5x5x1	5x5x1	5x5x2	5x5x2		5x5x2	5x5x2	5x5x2	0-0.5-1-1.5-2-2.5		0-0.5-1-1.5-2-2.5/5* (15*)	
0-3	3x5x1	3x5x1	3x2x5		3x2x5	3x2x5	3x2x5			0-1-2-3		0-0.6-1-2-3/6* (18*)	
"				6x5x1						0-0.5-1-1.5-2-2.5-3		0-0.6-1-1.5-2-2.5-3/6* (18*)	
0-4	4x5x1				4x2x5	4x5x1	4x2x5	4x2x5	4x2x5	0-2-4		0-2-4/8* (24*)	
"		4x5x1	4x2x5	4x2x5						0-1-2-3-4		0-1-2-3-4/8* (24*)	
0-5#	5x5x1					5x5x1				0-2-4		0-2-4/10* (30*)	
"		5x5x1	5x5x1	5x2x5	5x2x5		5x2x5	5x2x5	5x2x5	0-1-2-3-4-5		0-1-2-3-4-5/10* (30*)	
0-6	6x5x1**	6x5x1	6x5x1	6x5x1	6x5x1	6x5x1	6x2x5	6x2x5	6x2x5	0-2-4-6		0-1*-2-4-6/12* (36*)	
"										0-1-2-3-4-5-6		0-1*-2-4-6/12* (36*)	
0-7#	7x5x1	7x5x1	7x5x1	7x5x1	7x5x1	7x5x1	7x5x1	7x5x1	7x5x1	0-2-4-6		0-1.4*-2-4-6/14* (42*)	
0-7.5#	(6x2x1)+3	(6x2x1)+3	(6x2x1)+3		(6x5x1)+7.5	(7x2x1)+1	(7x5x1)+2.5			0-2-4-6		0-2-4-6-7.5*/15* (45*)	
"				5x3x5						0-1.5-3-4.5-6-7.5		0-1.5-3-4.5-6-7.5/15 (45*)	
" #								(7x2x5)+5		0-1-2-3-4-5-6-7		0-1-2-3-4-5-6-7/15* (45*)	
0-8	8x2x1	8x2x1	8x5x1	4x2x5	8x5x1	8x2x1	8x5x1	8x5x1	8x5x1	0-2-4-6-8		0-2-4-6-8/16* (48*)	
1-0-1	2x2x5									1-0-1			
"		4x5x1	4x5x1	4x5x2	4x5x2	4x5x1	4x5x2	4x5x2	4x5x2	1-0.5-0-0.5-1			
1.2-0-1.2#	2+(2x2x5)+2					2+(4x5x1)+2				1-0-1			
" #		2+(4x5x1)+2	2+(4x5x1)+2	4+(4x5x1)+2	4+(4x5x2)+4		4+(4x5x2)+4	4+(4x5x2)+4	4+(4x5x2)+4	1-0.5-0-0.5-1			

* = Small figures ** = Code becomes 6x2x1 for 6x overload scale # = With additional unfigured divisions to make end scale value

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Project Dial

Scale	Model								MOVEMENT CODE	
	016				077 MR		242 243	246 244		01X 02X 21X 30X 80X
	056 082 083 084	128		057 057 MR			244-DUAL 244-QUADRA			31X 41X
			016 056 084 085	077 078 (N AMERICAN) 079	058 078(UK)	57 242	243	246 244		03X 05X 08X 11X 21X 31X 41X
END VALUE x1 x10 x100	DESIGNATION CODE								Figuring x1 x10 x 100	
1.5-0-1.5# " #	5+(2x5x2)+5						5+(2x5x2)+5			1-0-1 1.5-1-0.5-0-0.5-1-1.5 2-1-0-1-2
2-0-2 " #	4x5x1	6x5x1 4x5x1	6x5x1 4x5x1	6x5x1 4x5x1	6x5x1 4x5x1	6x5x1 4x2x5	4x5x1	6x5x1 4x2x5	6x5x2 4x2x5	
2.5-0-2.5# " #	2.5+(4x5x1)+2.5						2.5+(4x5x1)+2.5			2-0-2 2-1-0-1-2 2-0-2 3-2-1-0-1-2-3-
3-0-3# " #	6x5x1	6x5x1	6x5x1	6x5x1	6x5x1	6x5x1	6x5x1	6x2x5	6x2x5	
4-0-4 5-0-5 " #	8x2x1 2x5x2	8x2x1x 10x2x1	8x5x1 10x2x1	4x5x2 5+(4x2x5)+5	8x5x1 10x5x1	8x2x1 2x5x2	8x5x1 10x5x1	8x5x1 10x5x1	8x5x1 10x5x1	4-2-0-2-4 5-0-5 4-2-0-2-4
6-0-6# " #	2+(2x5x2)+2						2+(2x5x2)+2			5-0-5 6-4-2-0-2-4-6 5-0-5 6-4-2-0-2-4-6
7.5-0-7.5 # " #	5+(2x5x1)+3	12x2x1 3+(12x2x1)+3	12x2x1 3+(12x2x1)+3	6x2x2 3+(6x2x2)+3	12x2x1 3+(12x2x1)+3	12x2x1	5+(2x5x2)+5	12x5x1 5+(2x5x2)+5	12x5x1 2.5+(14x5x1)+2.5	
8-0-8 # " #	3+(2x5x1)+3	4x4x1	16x2x1	4x4x2	16x2x1	16x2x1	6+(2x5x2)+6	6+(2x5x2)+6	16x5x1	5-0-5 8-4-0-4-8 8-6-4-2-0-2-4-6-8
45-55Hz " #	2+(4x2x2)+2	2+(4x2x2)+2	2+(4x2x2)+2	5+(4x2x5)+5	5+(4x2x5)+5	10x2x1	10x2x1	10x2x1	10x2x1	45*-46-48-50-52-54-55* 46-48-50-52-54
55-65Hz " #	2+(4x2x2)+2	2+(4x2x2)+2	2+(4x2x2)+2	5+(4x2x5)+5	5+(4x2x5)+5	10x2x1	10x2x1	10x2x1	10x2x1	55*-56-58-60-62-64-65* 56-58-60-62-64
45-65Hz 360-440Hz	4x5x1 8x2x1	4x5x1 8x2x1	4x5x2 8x5x1	4x5x2 4x2x5	4x5x2 8x5x1	4x5x1 8x2x1	4x5x2 8x5x1	4x5x2 8x5x1	4x5x2 8x5x1	45-50-55-60-65 360-380-400-420-440

* = Small figures # = With additional unfigured divisions to make end scale value.

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016 Shortscale – for North America Only

Scale 	Model 016	Movement Code					
		01x	02x	41x			
End scale value x1 x10 x100	Designation Code	Figuring STD	x1	x2	x10	x100	Rated Current x6
0-1	5x2x5	0, 0.2, 0.4, 0.6, 0.8, 1					0, 0.2, 0.4, 0.6, 0.8, 1/6*
0-1.2	6x2x5	0, 0.2, 0.4, 0.6, 0.8, 1, 1.2					
"	4x3x2						0, 0.3, 0.6, 0.9, 1.2, /7.2*
0-1.5	5x3x2	0, 0.3, 0.6, 0.9, 1.2, 1.5					
0-1.5	3x2x5						0, 0.5, 1, 1.5, /9*
0-1.6	4x4x2	0, 0.4, 0.8, 1.2, 1.6					0, 0.4, 0.8, 1.2, 1.6, /9.6*
0-2	4x2x5	0, 0.5, 1, 1.5, 2					0, 0.5, 1, 1.5, 2 /12*
0-2.5	5x2x5	0, 0.5, 1, 1.5, 2, 2.5					0, 1, 1.5, 2, 2.5 /15*
0-3	3x5x2	0, 1, 2, 3					
"	3x2x5						0, 1, 2, 3 /18*
0-4	4x2x5	0, 1, 2, 3, 4					0, 1, 2, 3, 4 /24*
0-5	5x2x5	0, 1, 2, 3, 4, 5					0, 1, 2, 3, 4, 5 /30*
0-6	6x2x5	0, 1, 2, 3, 4, 5, 6					
"	3x2x5						0, 2, 4, 6 / 36*
0-7.5	5x3x2	0, 1.5, 3, 4.5, 6, 7.5					
"	7x5x1+2.5						0, 2, 4, 6, 7.5 /45*
0-8	4x2x5	0, 2, 4, 6, 8					0, 2, 4, 6, 8, /48*
1-0-1	4x5x2	1, 0.5, 0, 0.5, 1					
1.2-0-1.2#	2+(4x2x5)+2	1, 0.5, 0, 0.5, 1					
1.5-0-1.5	6x5x1	1.5, 1, 0.5, 0, 0.5, 1, 1.5					
2-0-2	4x2x5	2, 1, 0, 1, 2					
2.5-0-2.5#	5+(4x2x5)+5	2, 1, 0, 1, 2					
3-0-3	6x5x1	3, 2, 1, 0, 1, 2, 3					
4-0-4	8x5x1	4, 2, 0, 2, 4					
5-0-5#	10x5x1	4, 2, 0, 2, 4					
6-0-6	12x2x1	6, 4, 2, 0, 2, 4, 6					
7.5-0-7.5#	3+(12x2x1)+5	6, 4, 2, 0, 2, 4, 6					
8-0-8	16x2x1	8, 4, 0, 4, 8					
45-55Hz	5+(4x2x5)+5	46, 48, 50, 52, 54 small figs at 45 & 55					
55-65Hz	5+(4x2x5)+5	56, 58, 60, 62, 64 small figs at 55 & 65					
45-65Hz	4x5x2	45, 50, 55, 60, 65					
360-440Hz	8x5x1	360, 380, 400, 420, 440					

* = Small figures

= With additional divisions to make end scale value

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Ref:

Scale Divisions and Figuring

239 Meter Relay – For American Market

End Value x1 x10 x100	Designation Code	Figuring x1 x10 x100
0-1.0	10x5x1	0-0.2-0.4-0.6-0.8-1.0
0-1.2	12x5x1	0-0.3-0.6-0.9-1.2
0-1.5	15x5x1	0-0.3-0.6-0.9-1.2-1.5
0-2.0	4x5x2	0-0.5-1.0-1.5-2.0
0-2.5	25x2x1	0-0.5-1.0-1.5-2.0-2.5
0-3.0	6x2x5	0-0.5-1.0-1.5-2.0-2.5-3.0
0-4.0	4x2x5	0-1.0-2.0-3.0-4.0
0-5.0	5x2x5	0-1.0-2.0-3.0-4.0-5.0
0-6.0	6x2x5	0-1.0-2.0-3.0-4.0-5.0-6.0
0-7.5	5x3x5	0-1.5-3.0-4.5-6.0-7.5
0-8.0	8x5x1	0-2.0-4.0-6.0-8.0
1.0-0-1.0	4x5x2	1.0-0.5-0-0.5-1.0
1.2-0-1.2	2+(4x5x2)+2*	1.0-0.5-0-0.5-1.0
1.5-0-1.5	6x5x2	1.5-1.0-0.5-0-0.5-1.0-1.5
2.0-0-2.0	4x2x5	2.0-1.0-0-1.0-2.0
2.5-0-2.5	5+(4x2x5)+5*	2.0-1.0-0-1.0-2.0
3.0-0-3.0	6x2x5	3.0-2.0-1.0-0-1.0-2.0-3.0
4.0-0-4.0	8x5x1	4.0-2.0-0-2.0-4.0
5.0-0-5.0	10x5x1*	4.0-2.0-0-2.0-4.0
6.0-0-6.0	12x5x1	6.0-3.0-0-3.0-6.0
7.5-0-7.5	14x5x1*	6.0-3.0-0-3.0-6.0
8.0-0-8.0	16x5x2	8.0-4.0-0-4.0-8.0

NOTE * with additional unfigured divisions to make end scale value

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Ref:

Scale Divisions and Figuring

239 Meter Relay – For European Market

End Value x1 x10 x100	Designation Code	Figuring x1 x10 x100
0-10	10x5x1	0-2-4-6-8-10
0-12	12x5x1	0-4-8-12
0-15	3x5x5	0-5-10-15
0-20	4x5x2	0-5-10-15-20
0-25	5x5x2	0-5-10-15-20-25
0-30	6x5x2	0-10-20-30
0-40	4x2x5	0-10-20-30-40
0-50	5x2x5	0-10-20-30-40-50
0-60	6x2x5	0-10-20-30-40-50-60
0-75	(7x2x5)+5*	0-10-20-30-40-50-60-70
0-80	8x5x1	0-20-40-60-80
10-0-10	4x5x2	10-5-0-5-10
12-0-12	4+(4x5x2)+2*	10-5-0-5-10
15-0-15	6x5x2	15-10-5-0-5-10-15
20-0-20	4x2x5	20-10-0-10-20
25-0-25	5+(4x2x5)+5*	20-10-0-10-20
30-0-30	6x2x5	30-20-10-0-10-20-30
40-0-40	8x5x1	40-20-0-20-40
50-0-50	10x5x1*	40-20-0-20-40
60-0-60	12x5x1	60-40-20-0-20-40-60
75-0-75	14x5x1*	60-40-20-0-20-40-60
80-0-80	16x5x1	80-40-0-40-80

NOTE * with additional unfigured divisions to make end scale value

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