

Chapter 4

Preferred Numbers

SUMMARY

The preferred numbering system has played a major role in the development of metric standards. This is a geometrical series of numbers adopted worldwide. Its first known application was in the 1870's by Charles Renard, a French army captain who reduced the different diameters of rope for military balloons from 425 to 17. The R5, R10 and R20 series refers to the Renard 5 (first-choice sizes 60 % increments), Renard 10 (second-choice sizes 25 % increments) and Renard 20 (third-choice sizes 12 % increments) series of preferred numbers standardized in ISO 3. Preferred sizes are shown in ANSI B4.2 and ISO 497.

You might want to extend the preferred metric size range, which, is shown from 4 to 40, simply by multiplying or dividing the numbers shown in Table 4-1 by 10 or multiples of 10.

The preferred metric sizes are used for nominal sizes in countries where the metric system has been in use for several years. Here is how the preferred metric nominal sizes were developed and how these chosen sizes reflect preferred metric standard sizes for threaded fasteners, steel plates, sheets, bars, etc already in use throughout the world.

How do the preferred metric sizes relate to the inch sizes and the preferred numbers are shown in Table 4-1.

TABLE 4-1 PREFERRED SIZES (ANSI B4.2)

Preferred Size mm (ISO 497)			Preferred Size Inch			Preferred Numbers (ISO 3)		
R5'	R10'	R20'	mm	Fractions	Decimals	R5	R10	R20
4	4	4	3.97	5/32	0.156	4	4	4
		4.5	4.37	11/64	0.172			4.5
6	6	5	4.76	3/16	0.188	6.3	6.3	5
		5.5	5.56	7/32	0.219			5.6
		6	6.35	1/4	0.25			6.3
		7	7.14	9/32	0.281			7.1
		8	7.94	5/16	0.313			8
10	10	9	8.73	11/32	0.344	10	10	9
		10	9.53	3/8	0.375			10
		11	11.11	7/16	0.438			11.2
		12	12.7	1/2	0.5			12.5
16	16	14	14.29	9/16	0.563	16	16	14
		16	15.88	5/8	0.625			16
		18	17.46	11/16	0.688			18
		20	19.05	3/4	0.75			20
		22	22.23	7/8	0.875			22.4
25	25	25	25.4	1		25	25	25
		28	28.58	1 1/8	1.125			28
		30	30.16	1 3/16	1.188			31.5
		35	34.93	1 3/8	1.375			35.5
40	40	40	39.69	1 9/16	1.563	40	40	40
GO			STOP			CAUTION		