No.055

The difference between Rc and PT

Pipe Taps

【Question】

I do not understand all of Taper Pipe Threads that can be produced. Please explain as easily as possible the difference in these Pipe Taps. It seems there are three types of Taper Pipe Threads: "PT", "R" and "Rc" . Also, it seems that there are "PT", "S-PT" and "Rc" in tap offerings. Are dies offered in the same specifications as the mating taps?

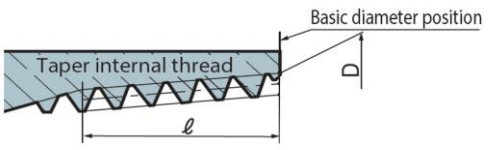
【Answer】

The relationship between taper pipe threads, taps and dies was changed about 20 years ago after the JIS standard changed. However, the market is still in the process of switching. It is in a transitional period, and it's very difficult to understand because old and new standards are mixed. First of all, let me explain about Internal Pipe Threads and taps as easy as possible. Let's start.

The relationship between external thread and the die is as follows. Edition R and PT is Listed.

【Description】

In the old JIS standard, the symbol "PT" such as "PT1/2-14 is used " for "Internal Taper Pipe Threads". The current JIS standard uses the symbol "Rc" such as "Rc1/2-14". However, the actual dimensions of the Internal Threads are the same for both "PT1/2-14" and "Rc1/2-14". Please refer to the example of a nominal size "1/2-14" below. Did you understand so far?



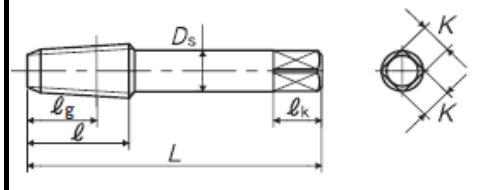
Schematic of internal thread

Unit (mm)

Standard	Size	Basic major diameter (D)	Effective thread length (min) (ℓ)
Old JIS standard	PT 1/2-14	20.955	12.7
New JIS standard	Rc 1/2-14	20.955	12.7

*** Both "PT 1/2-14" and "Rc 1/2-14" are also available as "Thread Plug Gauge for Taper Pipe Threads" in the marketplace for checking Internal Taper Pipe Threads, but they are practically the same. (with a slight difference in shape).**
So, if you understand and use it properly, you can use either the "PT" or "Rc" Thread Plug Gauge to check both PT and Rc Internal Taper Pipe Threads.

The old JIS standard specified two types of taps for Taper Pipe Threads; PT1/2-14 (long thread) and S-PT1/2-14 (short thread). However, the new JIS standard specifies only one type of tap which is "Rc1/2-14".
If the bored hole length is deep enough (meaning the tap does not bottom out), any of the "PT", "S-PT" and "Rc" taps can be used to make the Internal Taper Pipe Threads that are confirmed by checking with any of the "PT", "S-PT" or "Rc" Thread Plug Gauge.
The only basic difference between the "PT", "S-PT" and "Rc" taps is the insertion depth (position to the basic diameter) "ℓg" when tapping.



Unit (mm)

Product	Size	overall length (L)	Thread Length (ℓ)	Basic major dia (mm)	Basic diameter position (ℓg)	Shank diameter (Ds)	Size of square (K)	Length of square (ℓk)
Hand Tap	PT1/2-14	80	35	20.955	25	18	14	17
	S-PT1/2-14	80	27	20.955	17	18	14	17
Hand Tap	Rc1/2-14	87	26	20.955	20.5	18	14	17