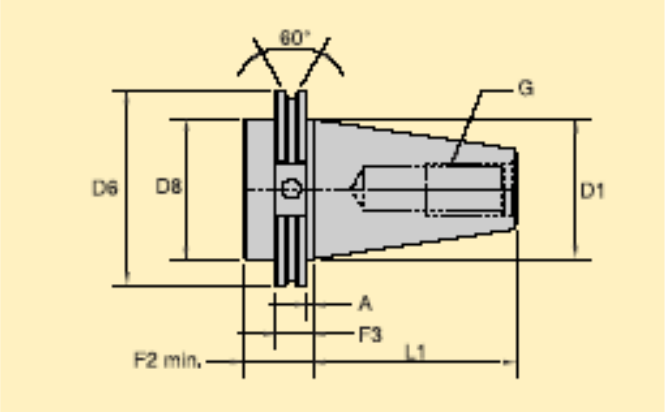
KENNAMETAL®
Engineering Your Competitive Edge

Technical Tip #128 – CV, DV, and BT Toolholders

CV, DV and BT tapers are all identical and known as 7/24 tapers. These tapers are commonly referred to as a "self-releasing" or "fast tapers." The primary differences between the toolholders are the flange design and retention knob threads.

CV Toolholders
CV is often referred to as "CAT" or Caterpillar V-flange tooling as described under ANSI B5.50, and typically has inch threads for the retention knob. Some CV holders have a counter bore for a piloted retention knob. This is typically used in higher spindle speed applications.

Caterpillar (inch) CV – ANSI B5.50

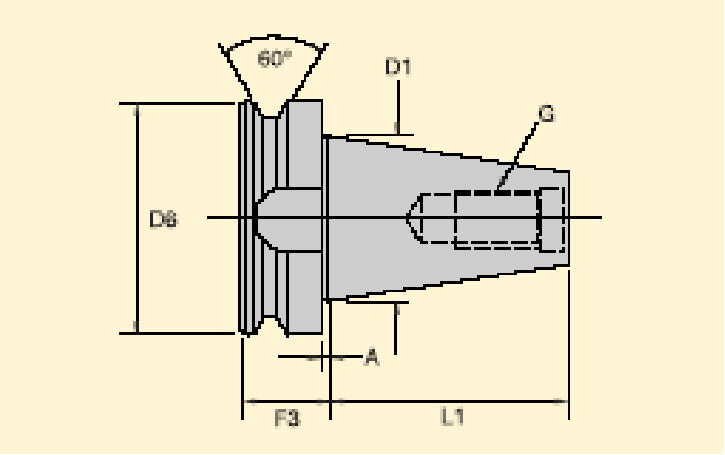


	D1	D6	D8	L1	F2	F3	A	G
30	1.250 (31,75)	1.812 (46,02)	1.250 (31,75)	1.875 (47,63)	1.375 (35,00)	.750 (19,05)	.125 (3,18)	1/2-13 thread
40	1.750 (44,45)	2.500 (63,05)	1.750 (44,45)	2.687 (68,25)	1.375 (35,00)	.750 (19,05)	.125 (3,18)	5/8-11 thread
45	2.250 (57,15)	3.250 (82,50)	2.250 (57,15)	3.250 (82,55)	1.375 (35,00)	.750 (19,05)	.125 (3,18)	3/4-10 thread
50	2.750 (69,85)	3.875 (98,41)	2.750 (69,85)	4.000 (101,60)	1.375 (35,00)	.750 (19,05)	.125 (3,18)	1-8 thread
60	4.250 (107,95)	5.500 (139,70)	4.250 (107,95)	6.375 (161,93)	1.500 (38,10)	.750 (19,05)	.125 (3,18)	1 1/4-7 thread

BT Toolholders

The BT taper is a JIS B6339 specification (Japan Industrial Standard). BT tooling carries a wider flange than a CV or DV tool and contains metric retention knob threads.

Tooling Standard Dimensions – JIS B6339

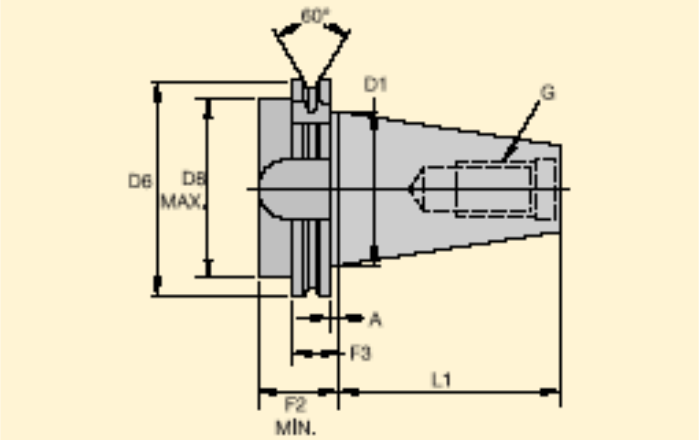


	D1	D6	L1	F3	A	G
30	1.250 (31,75)	1.811 (46,00)	1.906 (48,40)	.866 (22,00)	.079 (2,00)	M12 thread
35*	1.500 (38,10)	2.087 (53,00)	2.224 (56,50)	.945 (24,00)	.079 (2,00)	M12 thread
40	1.750 (44,45)	2.480 (63,00)	2.575 (65,40)	1.063 (27,00)	.079 (2,00)	M16 thread
45	2.250 (57,15)	3.346 (85,00)	3.260 (82,80)	1.299 (33,00)	.118 (3,00)	M20 thread
50	2.750 (69,85)	3.937 (100,00)	4.008 (101,80)	1.496 (38,00)	.118 (3,00)	M24 thread

*Manufactured to MAS-403-1972 standards.

DV Toolholders
The DV taper is specified under DIN69871 (Duetch Institute of Normalcy). The DV tool is very similar to a CV toolholder, but has a V-shaped orientation notch that is perpendicular to the groove that is machined in the diameter of the flange. DV toolholders also contain metric retention knob threads.

DIN 69871
DV Form A



	D1	D6	D8 max.	L1	F2 min.	F3	A	G
30	1.250 (31,75)	1.967 (49,95)	1.772 (45,00)	1.876 (47,65)	1.378 (35,00)	.750 (19,05)	.126 (3,20)	M12 thread
40	1.750 (44,45)	2.480 (63,00)	1.969 (50,00)	2.687 (68,25)	1.378 (35,00)	.750 (19,05)	.126 (3,20)	M16 thread
45	2.250 (57,15)	3.228 (82,00)	2.480 (63,00)	3.250 (82,55)	1.378 (35,00)	.750 (19,05)	.126 (3,20)	M20 thread
50	2.750 (69,85)	3.837 (97,45)	3.150 (80,00)	4.000 (101,60)	1.378 (35,00)	.750 (19,05)	.126 (3,20)	M24 thread

CV tooling is the most utilized tooling in North America, but machine builders globally generally build their equipment based on the specification of the country of origin.

Although the tapers are identical between the CV, DV, and BT tooholders, they are not interchangeable with one another because of the variations in flange dimensioning. Because he tool changer arm uses the flange to grab onto to index the tool, therefore damage could occur if you tried to interchange the tools.