



# STANDARD CUTTING CONDITIONS

## DSW-DE (External supply)

ISO	Workpiece material	Brinell hardness (HB)	Cutting speed: Vc (sfm)			Feed: f (ipr)		
			ø0.118 ~ ø0.236	ø0.236 ~ ø0.394	ø0.394 ~ ø0.630	ø0.118 ~ ø0.236	ø0.236 ~ ø0.394	ø0.394 ~ ø0.630
<b>P</b>	Low carbon steels (C < 0.3) 1018, 1020, 1026, etc.	~ 180	131 - 328	197 - 394	197 - 427	0.006 - 0.012	0.006 - 0.014	0.008 - 0.020
	Carbon steels (C > 0.3) 1045, 1055, etc.	180 ~ 300	131 - 295	164 - 394	197 - 427	0.006 - 0.012	0.006 - 0.014	0.008 - 0.016
	High alloy steels 4140, 8620, etc.	250 ~ 350	131 - 262	164 - 328	164 - 328	0.004 - 0.008	0.006 - 0.012	0.006 - 0.014
<b>M</b>	Stainless steels 304SS, 316SS, 17-4 PH, etc.	~ 200	66 - 131	98 - 164	98 - 197	0.002 - 0.008	0.004 - 0.010	0.004 - 0.012
<b>K</b>	Gray cast irons Class 25, Class 30, etc.	~ 200	131 - 295	164 - 312	164 - 328	0.006 - 0.012	0.008 - 0.016	0.008 - 0.020
	Ductile cast irons 65-40-18, 60-55-06, etc.	~ 300	98 - 262	131 - 295	148 - 295	0.004 - 0.012	0.008 - 0.016	0.008 - 0.016
<b>N</b>	Aluminum alloys 6061, 7075, etc.	-	131 - 295	164 - 328	164 - 328	0.006 - 0.012	0.008 - 0.016	0.008 - 0.020
<b>S</b>	Titanium alloys Ti-6Al-4V, etc	-	66 - 131	66 - 131	66 - 131	0.004 - 0.008	0.006 - 0.010	0.006 - 0.016
	Heat-resistant alloys, Inconel Inconel 718, etc.	250 ~	33 - 98	33 - 98	33 - 98	0.001 - 0.003	0.002 - 0.004	0.003 - 0.005
<b>H</b>	High hardened steels	~ 40HRC	66 - 131	66 - 131	66 - 131	0.002 - 0.006	0.002 - 0.006	0.002 - 0.008

The cutting parameters shown in the table are merely a starting guideline for general machining. Values should be varied depending on the power or rigidity of the machine to be used. Optimum conditions should be selected depending on the actual chip control or damage on edges. When using the smaller diameter tools in each range, set the feed "f" to the lower recommended values.

The coolant supply is critical for the provision of stable machining conditions and enhanced tool life. A large coolant volume should be supplied, especially when drilling difficult-to-cut materials.

When drilling stainless steel with low machinability such as austenitic stainless steel with a depth deeper than L/D = 3, a pecking cycle or internal coolant supply is recommended.

## DSW-DI (Internal supply)

ISO	Workpiece material	Brinell hardness (HB)	Cutting speed: Vc (sfm)			Feed: f (ipr)		
			ø0.118 ~ ø0.236	ø0.236 ~ ø0.394	ø0.394 ~ ø0.630	ø0.118 ~ ø0.236	ø0.236 ~ ø0.394	ø0.394 ~ ø0.630
<b>P</b>	Low carbon steels (C < 0.3) 1018, 1020, 1026, etc.	~ 180	230 - 459	262 - 525	295 - 623	0.006 - 0.012	0.006 - 0.014	0.008 - 0.020
	Carbon steels (C > 0.3) 1045, 1055, etc.	180 ~ 300	164 - 427	230 - 525	262 - 558	0.006 - 0.012	0.006 - 0.014	0.008 - 0.016
	High alloy steels 4140, 8620, etc.	250 ~ 350	131 - 328	197 - 459	197 - 525	0.004 - 0.008	0.006 - 0.012	0.006 - 0.014
<b>M</b>	Stainless steels 304SS, 316SS, 17-4 PH, etc.	~ 200	82 - 246	164 - 328	164 - 394	0.002 - 0.008	0.004 - 0.010	0.004 - 0.012
<b>K</b>	Gray cast irons Class 25, Class 30, etc.	~ 200	262 - 459	328 - 525	328 - 591	0.006 - 0.012	0.008 - 0.016	0.008 - 0.020
	Ductile cast irons 65-40-18, 60-55-06, etc.	~ 300	230 - 459	262 - 492	262 - 558	0.004 - 0.012	0.008 - 0.016	0.008 - 0.018
<b>N</b>	Aluminum alloys 6061, 7075, etc.	-	197 - 656	197 - 656	197 - 656	0.006 - 0.012	0.008 - 0.016	0.008 - 0.020
<b>S</b>	Titanium alloys Ti-6Al-4V, etc	-	66 - 197	98 - 262	98 - 262	0.004 - 0.008	0.004 - 0.010	0.006 - 0.016
	Heat-resistant alloys, Inconel Inconel 718, etc.	250 ~	33 - 98	33 - 131	33 - 131	0.001 - 0.003	0.002 - 0.004	0.003 - 0.006
<b>H</b>	High hardened steels	~ 40HRC	66 - 164	98 - 197	98 - 197	0.002 - 0.006	0.002 - 0.006	0.002 - 0.008

The cutting parameters shown in the table are merely a starting guideline for general machining. Values should be varied depending on the power or rigidity of the machine to be used. Optimum conditions should be selected depending on the actual chip control or damage on edges.

When using the smaller diameter tools in each range, set the feed "f" to the lower recommended values.  
Oil holes that become blocked may cause drill breakages. A filter to prevent the circulation of chips must be used on the coolant supply system.

