

RECOMMENDED CUTTING CONDITIONS**● MPS DRILL (3xD, 5xD, 8xD, 12xD)**

Work Material	Drill Diameter Conditions Hardness	$\phi 3.0 - \phi 6.0$		$\phi 6.0 - \phi 10.0$		$\phi 10.0 - \phi 14.0$		$\phi 14.0 - \phi 20.0$	
		Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)
P Mild Steel	$\leq 180\text{HB}$	110 (50–120)	0.20 (0.15–0.25)	130 (80–140)	0.25 (0.20–0.35)	150 (90–170)	0.30 (0.20–0.40)	160 (100–180)	0.35 (0.20–0.40)
	180–280HB	90 (50–100)	0.20 (0.15–0.25)	110 (70–120)	0.25 (0.20–0.35)	130 (80–140)	0.25 (0.20–0.40)	140 (100–150)	0.30 (0.20–0.40)
	280–350HB	80 (40–90)	0.20 (0.15–0.30)	90 (60–110)	0.25 (0.15–0.30)	110 (70–130)	0.25 (0.15–0.40)	120 (90–140)	0.30 (0.20–0.40)
M Stainless Steel	$\leq 200\text{HB}$	50 (20–100)	0.10 (0.05–0.15)	60 (40–120)	0.20 (0.10–0.25)	70 (50–120)	0.25 (0.15–0.30)	80 (60–120)	0.25 (0.15–0.30)
K Cast Iron	Tensile Strength $\leq 350\text{MPa}$	100 (70–120)	0.25 (0.15–0.30)	130 (100–140)	0.30 (0.20–0.35)	150 (110–160)	0.35 (0.25–0.40)	160 (120–170)	0.35 (0.25–0.40)
	Ductile Cast Iron Tensile Strength $\leq 450\text{MPa}$	60 (30–80)	0.20 (0.15–0.25)	70 (40–90)	0.20 (0.15–0.30)	90 (50–110)	0.25 (0.20–0.40)	100 (60–110)	0.3 (0.20–0.40)
S Heat Resistant Alloy	—	20 (10–25)	0.10 (0.05–0.15)	25 (15–30)	0.12 (0.05–0.15)	25 (15–30)	0.15 (0.10–0.20)	30 (25–35)	0.15 (0.10–0.20)

● MPS DRILL (l/d=15–30), MSL DRILL (l/d=20–30)

Work Material	Drill Diameter Conditions Hardness	$\phi 3.0 - \phi 6.0$		$\phi 6.0 - \phi 10.0$		$\phi 10.0 - \phi 14.0$	
		Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)
P Mild Steel	$\leq 180\text{HB}$	85 (35–100)	0.20 (0.15–0.25)	85 (45–120)	0.25 (0.15–0.35)	90 (55–120)	0.30 (0.20–0.35)
	180–280HB	80 (40–95)	0.20 (0.15–0.25)	90 (50–120)	0.25 (0.20–0.35)	90 (60–130)	0.30 (0.15–0.35)
	280–350HB	75 (35–80)	0.15 (0.15–0.20)	80 (45–115)	0.20 (0.15–0.25)	85 (55–115)	0.25 (0.15–0.30)
M Stainless Steel	$\leq 200\text{HB}$	50 (20–80)	0.10 (0.05–0.15)	60 (20–90)	0.12 (0.05–0.15)	70 (20–90)	0.15 (0.10–0.20)
K Cast Iron	Tensile Strength $\leq 350\text{MPa}$	70 (40–85)	0.25 (0.15–0.30)	75 (50–90)	0.30 (0.20–0.35)	80 (50–95)	0.35 (0.20–0.40)
	Ductile Cast Iron Tensile Strength $\leq 450\text{MPa}$	65 (35–80)	0.20 (0.15–0.25)	70 (45–85)	0.25 (0.15–0.30)	75 (45–90)	0.30 (0.20–0.35)
S Heat Resistant Alloy	—	20 (10–25)	0.10 (0.05–0.15)	25 (15–30)	0.12 (0.05–0.15)	25 (15–30)	0.15 (0.10–0.20)

● MPS DRILL (l/d=35–40)

Work Material	Drill Diameter Conditions Hardness	$\phi 3.0 - \phi 4.0$		$\phi 5.0 - \phi 6.0$		$\phi 6.0 - \phi 9.0$	
		Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)
P Mild Steel	$\leq 180\text{HB}$	60 (50–70)	0.18 (0.13–0.20)	70 (55–80)	0.20 (0.15–0.23)	75 (60–85)	0.25 (0.18–0.28)
	180–280HB	55 (40–65)	0.15 (0.10–0.18)	65 (45–75)	0.18 (0.13–0.22)	70 (55–80)	0.23 (0.15–0.25)
	280–350HB	50 (40–60)	0.12 (0.08–0.15)	55 (40–65)	0.17 (0.13–0.20)	60 (40–75)	0.20 (0.15–0.23)
M Stainless Steel	$\leq 200\text{HB}$	35 (30–45)	0.10 (0.07–0.15)	40 (30–50)	0.12 (0.08–0.15)	45 (30–60)	0.15 (0.13–0.20)
K Cast Iron	Tensile Strength $\leq 350\text{MPa}$	55 (35–70)	0.15 (0.10–0.20)	60 (40–65)	0.20 (0.15–0.23)	60 (45–70)	0.23 (0.18–0.28)
	Ductile Cast Iron Tensile Strength $\leq 450\text{MPa}$	45 (30–60)	0.12 (0.08–0.15)	50 (40–60)	0.17 (0.13–0.20)	55 (40–65)	0.20 (0.15–0.23)
S Heat Resistant Alloy	—	15 (10–25)	0.07 (0.05–0.10)	20 (10–25)	0.07 (0.05–0.10)	20 (10–25)	0.10 (0.06–0.12)

Machining conditions can vary greatly, please use the above tables as a reference starting point only and adjust the values according to the conditions. For drill lengths greater than l/d=10 it is recommended to drill a pilot hole.