HSS

Material	Material Hardness (BHN)	Tool Steel Grade	GEN2 T-A AM200® M/min	TiN M/min	TiAlN M/min	TiCN M/min	Drilling Parameters for Port Contour Cutters Feed Rates (mm/rev) for Drill Insert Series					
							Tube No. 4-5	Tube No. 6-8	Tube No. 10	Tube No. 12-16	Tube No. 20-24	Tube No. 32
							T-A® Series Y – Z	T-A® Series 0	T-A® Series 1	T-A® Series 2	T-A® Series 3	T-A® Series 4
Free Machining Steel	100 – 150	HSS	92	61	85	79	0.18	0.25	0.33	0.41	0.51	0.58
	150 – 200	HSS	87	55	79	72	0.18	0.25	0.33	0.41	0.51	0.58
	200 – 250	HSS	81	49	73	64	0.15	0.25	0.33	0.41	0.51	0.58
Low Carbon Steel	85 - 125	HSS	84	52	76	67	0.15	0.23	0.30	0.38	0.48	0.58
	125 – 175	HSS	81	49	73	64	0.15	0.23	0.30	0.38	0.48	0.58
	175 – 225	HSS	76	46	69	59	0.13	0.20	0.25	0.36	0.46	0.53
	225 – 275	HSS	70	43	64	55	0.13	0.20	0.25	0.36	0.46	0.53
Medium Carbon Steel	125 – 175	HSS	79	49	73	64	0.15	0.23	0.30	0.38	0.48	0.58
	175 – 225	HSS	75	46	69	59	0.13	0.20	0.25	0.36	0.46	0.53
	225 – 275	HSS	70	43	64	55	0.13	0.20	0.25	0.36	0.46	0.53
	275 – 325	SC, PC	66	40	59	52	0.10	0.18	0.23	0.30	0.41	0.48
Alloy Steel	125 – 175	HSS	69	46	64	59	0.15	0.20	0.25	0.36	0.43	0.48
	175 – 225	HSS	66	43	59	55	0.13	0.20	0.25	0.36	0.43	0.48
	225 – 275	HSS	60	40	55	52	0.13	0.18	0.25	0.36	0.43	0.48
	275 – 325	SC, PC	56	37	52	47	0.10	0.15	0.23	0.30	0.38	0.43
	325 – 375	SC, PC	55	34	47	44	0.08	0.15	0.23	0.30	0.38	0.43
High Strength Alloy	225 – 300	SC, PC	37	24	34	30	0.13	0.18	0.23	0.25	0.36	0.43
	300 – 350	SC, PC	27	18	26	24	0.10	0.18	0.23	0.25	0.36	0.43
	350 – 400	PC	23	15	21	20	0.08	0.15	0.20	0.23	0.30	0.38
Structural Steel	100 – 150	HSS	67	43	61	55	0.15	0.25	0.30	0.36	0.46	0.53
	150 – 250	HSS	56	37	52	47	0.13	0.23	0.25	0.30	0.41	0.48
	250 – 350	SC, PC	47	30	43	40	0.10	0.20	0.23	0.25	0.36	0.43
High Temp. Alloy	140 – 220	SC	14	9	12	11	0.08	0.18	0.20	0.25	0.30	0.38
	220 - 310	SC, PC	12	8	11	9	0.08	0.15	0.18	0.20	0.25	0.30
Stainless Steel	135 – 185	HSS	33	23	32	29	0.15	0.20	0.23	0.28	0.36	0.41
	185 - 275	HSS	29	18	27	24	0.13	0.18	0.20	0.25	0.30	0.36
Tool Steel	150 – 200	SC	37	24	34	32	0.10	0.15	0.20	0.25	0.30	0.38
	200 - 250	SC, PC	31	18	27	26	0.10	0.15	0.20	0.25	0.30	0.38
Aluminium	30	HSS	-	183	259	229	0.20	0.33	0.41	0.51	0.56	0.64
	180	HSS	-	91	137	122	0.20	0.33	0.41	0.46	0.56	0.64
Cast Iron	120 – 150	HSS	82	52	76	67	0.18	0.30	0.41	0.51	0.61	0.69
	150 – 200	HSS	75	46	69	59	0.15	0.28	0.36	0.46	0.56	0.64
	200 – 220	HSS	66	40	59	52	0.15	0.23	0.30	0.41	0.46	0.53
	220 – 260	SC, PC	55	34	50	44	0.13	0.18	0.23	0.30	0.36	0.43
	260 - 320	SC, PC	44	27	41	37	0.10	0.15	0.18	0.23	0.30	0.36

* Parameters shown are only starting points. Speed should be calculated using the drill diameter.
Due to the short drill distance required, speed and feed rates can possibly be elevated.
Coolant through the cutter is preferred. Flood, Mist or Air coolant can also be used.
No spot drilling, pre-drilling, or dwell required.

Formulae: **mm/min = RPM • mm/rev** **M/min = RPM • 0.003 • DIA** **RPM = M/min • 318.47/DIA**

AccuPort 432®

Recommended Speeds and Feeds Carbide – Metric

Carbide

Material	Material Hardness (BHN)	Carbide Grade	GEN2 TA™ AM200® M/min	TiN M/min	TiAlN M/min	Drilling Parameters for Port Contour Cutters Feed Rates (mm/rev) for Drill Insert Series				
						Tube No. 4-5	Tube No. 6-8	Tube No. 10	Tube No. 12-16	Tube No. 20-24
						T-A® Series Y – Z	T-A® Series 0	T-A® Series 1	T-A® Series 2	T-A® Series 3
Free Machining Steel	100 – 150	K35, P40	146	98	128	0.20	0.30	0.38	0.46	0.53
	150 – 200	K35, P40	126	85	110	0.18	0.28	0.36	0.41	0.48
	200 - 250	K35, P40	119	79	104	0.15	0.25	0.33	0.38	0.43
Low Carbon Steel	85 – 125	K35, P40	137	91	119	0.20	0.25	0.33	0.43	0.48
	125 – 175	K35, P40	119	79	104	0.18	0.25	0.33	0.41	0.46
	175 – 225	K35, P40	108	73	94	0.15	0.23	0.30	0.38	0.43
	225 - 275	K35, P40	94	64	82	0.13	0.23	0.30	0.38	0.43
Medium Carbon Steel	125 – 175	K35, P40	119	79	104	0.18	0.25	0.33	0.41	0.46
	175 – 225	K35, P40	108	73	94	0.15	0.23	0.30	0.38	0.43
	225 – 275	K35, P40	94	64	82	0.15	0.23	0.30	0.38	0.43
	275 – 325	K35, P40	81	55	70	0.13	0.20	0.28	0.36	0.41
Alloy Steel	125 – 175	K35, P40	114	76	99	0.18	0.25	0.33	0.41	0.46
	175 – 225	K35, P40	105	70	91	0.15	0.23	0.30	0.38	0.43
	225 – 275	K35, P40	94	64	82	0.15	0.23	0.30	0.38	0.43
	275 – 325	K35, P40	87	61	76	0.13	0.20	0.28	0.36	0.41
	325 - 375	K35, P40	78	52	67	0.10	0.18	0.25	0.33	0.38
High Strength Alloy	225 – 300	K35, P40	73	49	61	0.15	0.23	0.25	0.30	0.38
	300 – 350	K35, P40	62	43	55	0.13	0.20	0.23	0.28	0.36
	350 - 400	K35, P40	56	37	49	0.10	0.18	0.20	0.25	0.30
Structural Steel	100 – 150	K35, P40	108	73	94	0.20	0.28	0.36	0.41	0.46
	150 – 250	K35, P40	87	61	76	0.15	0.25	0.30	0.36	0.41
	250 - 350	K35, P40	81	55	70	0.13	0.23	0.28	0.30	0.36
High Temp. Alloy	140 – 220	K20	36	24	32	0.10	0.18	0.23	0.28	0.33
	220 - 310	K20	29	18	26	0.10	0.15	0.20	0.25	0.30
Stainless Steel	138 – 185	K20	73	49	64	0.18	0.23	0.30	0.36	0.41
	185 – 275	K20	56	37	49	0.15	0.20	0.28	0.30	0.36
Tool Steel	150 – 200	K35, P40	78	49	67	0.10	0.18	0.23	0.28	0.33
	200 - 250	K35, P40	59	37	52	0.10	0.18	0.23	0.28	0.33
Aluminium	30	K20	-	366	457	0.25	0.38	0.46	0.51	0.56
	180	K20	-	244	305	0.23	0.33	0.41	0.46	0.51
Cast Iron	120 – 150	K20, K10	152	98	140	0.20	0.30	0.38	0.48	0.58
	150 – 200	K20, K10	146	82	122	0.18	0.28	0.33	0.43	0.53
	200 – 220	K20, K10	131	73	110	0.15	0.23	0.30	0.38	0.46
	220 – 260	K20, K10	113	64	94	0.13	0.20	0.28	0.33	0.38
	260 – 320	K20, K10	102	55	82	0.13	0.18	0.25	0.28	0.33

* Parameters shown are only starting points. Speed should be calculated using the drill diameter.
Due to the short drill distance required, speed and feed rates can possibly be elevated.
Coolant through the cutter is preferred. Flood, Mist or Air coolant can also be used.
No spot drilling, pre-drilling, or dwell required.

Formulae: **mm/min = RPM • mm/rev** **M/min = RPM • 0.003 • DIA** **RPM = M/min • 318.47/DIA**

Coolant through the cutter is preferred. Flood, Mist, Air coolant can also be used.

HSS

Material	Material Hardness (BHN)	Drilling Parameters for Port Contour Cutters Coolant Pressure (Bar) Coolant Volumetric Flowrate (LPM)					
		Tube No. 4-5	Tube No. 6-8	Tube No. 10	Tube No. 12-16	Tube No. 20-24	Tube No. 32
		T-A® Series Y – Z	T-A® Series 0	T-A® Series 1	T-A® Series 2	T-A® Series 3	T-A® Series 4
Free Machining Steel	100 – 250	12.0 – 12.7 9.5 – 9.8	6.9 – 8.3 10.6 – 11.4	7.2 – 9.6 16.7 – 19.7	5.5 – 7.9 26.5 – 30.3	5.2 – 6.9 45.4 – 53.0	2.7 – 3.4 114 – 125
Low Carbon Steel	85 – 275	11.4 – 11.7 9.1 – 9.5	5.2- 6.2 9.1 – 9.8	5.2 – 6.5 14.0 – 15.9	4.1 – 5.5 22.7 – 26.5	3.8 – 5.2 41.6 – 45.4	2.0 – 2.7 98 – 114
Medium Carbon Steel	125 – 325	11.0 – 11.4 8.7 – 9.1	4.8 – 5.8 9.1 – 9.8	4.8 – 6.2 14.0 – 15.9	3.8 – 5.2 22.7 – 26.5	3.4 – 4.8 41.6 – 45.4	2.0 – 2.7 98 – 114
Alloy Steel	125 – 375	11.0 – 11.4 8.7 – 9.1	4.5 – 5.2 8.3 – 9.1	4.5 – 5.5 13.2 – 14.8	3.4 – 4.8 18.9 – 22.7	3.1 – 4.1 34.1 – 37.9	2.0 – 2.4 87 – 98
High Strength Alloy	225 - 400	10.3 – 10.7 8.7 – 9.1	4.1 – 4.5 7.9 – 8.3	3.4 – 3.8 11.0 – 11.7	2.0 – 2.4 15.1 – 18.9	1.7 – 2.0 26.5 – 30.3	1.7 – 2.0 79 – 87
Structural Steel	100 – 350	11.0 – 11.4 8.7 – 9.1	5.2 – 5.8 9.1 – 9.8	4.5 – 5.5 13.2 – 14.8	2.7 – 3.8 18.9 – 22.7	2.7 – 3.4 34.1 – 37.9	1.7 – 2.0 87 – 93
High Temp. Alloy	140 – 310	10.3 – 10.7 8.7 – 9.1	4.1 – 4.5 8.3 – 8.7	3.4 – 3.8 11.7 – 12.1	2.0 – 2.4 15.1 – 18.9	1.7 – 2.0 26.5 – 30.3	1.7 – 2.0 87 – 98
Stainless Steel	135 – 275	11.4 – 11.7 9.1 – 9.5	4.8 – 5.8 8.7 – 9.8	4.5 – 5.2 13.2 – 14.0	2.7 – 3.8 18.9 – 22.7	2.7 – 3.4 34.1 – 37.9	1.7 – 2.0 87 – 98
Tool Steel	150 – 250	10.3 – 10.7 8.7 – 9.1	3.8 – 4.1 7.9 – 8.3	3.1 – 3.4 11.0 – 11.7	1.7 – 2.0 15.1 – 18.9	1.7 – 2.0 26.5 – 30.3	1.4 – 1.7 79 – 87
Aluminium	30 – 180	13.1 – 14.5 9.8 – 10.2	9.6 – 12.4 12.5 – 14.0	10.3 – 15.8 20.1 – 23.1	7.9 – 11.0 30.3 – 34.1	6.2 – 8.6 53.0 – 60.6	2.7 – 3.4 114 – 125
Cast Iron	120 – 320	10.7 – 11.0 8.7 – 9.1	4.1 – 4.5 8.3 – 8.7	3.4 – 4.1 11.7 – 12.5	2.0 – 2.7 15.1 – 18.9	2.0 – 2.4 30.3 – 34.1	1.7 – 2.0 87 - 98

Carbide

Material	Material Hardness (BHN)	Drilling Parameters for Port Contour Cutters Coolant Pressure (Bar) Coolant Volumetric Flowrate (LPM)				
		Tube No. 4-5	Tube No. 6-8	Tube No. 10	Tube No. 12-16	Tube No. 20-24
		T-A® Series Y – Z	T-A® Series 0	T-A® Series 1	T-A® Series 2	T-A® Series 3
Free Machining Steel	100 – 250	20.0 12.2	15.5 16.3	16.5 25.3	15.2 41.5	12.0 71.9
Low Carbon Steel	85 – 275	17.5 11.4	11.0 13.3	11.0 20.6	11.8 36.5	9.0 62.0
Medium Carbon Steel	125 – 325	17.2 11.3	9.6 12.5	10.4 20.0	10.4 33.8	7.5 57.0
Alloy Steel	125 – 375	16.5 11.1	9.3 12.3	9.6 19.3	7.9 30.0	7.2 55.8
High Strength Alloy	225 - 400	14.5 10.4	5.2 9.1	4.1 12.6	3.1 18.8	2.7 33.6
Structural Steel	100 – 350	15.8 10.8	9.0 12.0	7.9 17.5	6.9 27.8	5.2 47.1
High Temp. Alloy	140 – 310	16.5 11.1	11.4 13.5	12.4 21.9	11.0 35.4	9.0 62.0
Stainless Steel	135 – 275	22.7 13.0	16.5 16.3	17.9 26.3	17.2 44.2	13.1 75.0
Tool Steel	150 – 250	14.5 10.4	5.2 9.1	4.8 13.6	3.4 19.7	3.1 36.5
Aluminium	30 – 180	24.1 13.4	22.0 18.8	21.7 29.0	19.6 47.2	13.8 77.0
Cast Iron	120 – 320	15.5 10.7	7.2 10.8	6.2 15.4	6.2 26.5	5.5 48.7