

List Number: L7570P, L7571P

Standard Drilling Conditions

Workpiece Material			Structural Steels Carbon Steels		Alloy Steels		Die Steels Steels (35-45HRc) 400 Series, Stainless Steel		Cast Irons		Aluminum Alloys Copper Alloys Nonferrous Alloys	
Speed (SFM)			115 - 135 SFM		95 - 105 SFM		40 - 50 SFM		130 - 150 SFM		200 - 230 SFM	
Drill Diameter												
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	2.000	0.0787	4600	0.002	4600	0.002	1800	0.001	6300	0.003	9700	0.003
3/32	2.381	0.0938	4000	0.003	4100	0.002	1500	0.002	4600	0.003	8500	0.003
—	3.000	0.1181	3400	0.004	3400	0.003	1100	0.002	4700	0.004	7200	0.004
1/8	3.175	0.1250	3200	0.004	3300	0.003	1100	0.002	4500	0.005	6900	0.005
5/32	3.969	0.1563	2600	0.005	2600	0.004	900	0.003	3600	0.006	5500	0.006
3/16	4.762	0.1875	2200	0.005	2200	0.005	790	0.004	3000	0.007	4600	0.007
—	5.000	0.1969	2000	0.006	2000	0.005	760	0.004	2800	0.007	4300	0.007
1/4	6.350	0.2500	1600	0.007	1700	0.006	610	0.005	2300	0.008	3400	0.008
5/16	7.938	0.3125	1400	0.008	1400	0.006	490	0.007	1900	0.010	2800	0.010
—	8.000	0.3150	1300	0.008	1300	0.006	480	0.007	1800	0.010	2700	0.010
3/8	9.525	0.3750	1200	0.008	1100	0.007	400	0.008	1500	0.011	2300	0.011
—	10.000	0.3937	1100	0.008	1000	0.007	380	0.008	1400	0.011	2200	0.011
—	12.000	0.4724	880	0.009	850	0.008	320	0.010	1200	0.012	1800	0.012
1/2	12.700	0.5000	880	0.010	810	0.009	310	0.010	1200	0.012	1800	0.013
—	16.000	0.6299	640	0.012	640	0.010	240	0.011	880	0.015	1400	0.014
—	20.000	0.7874	520	0.014	510	0.012	190	0.012	700	0.017	1100	0.016
—	25.000	0.9843	410	0.015	410	0.013	150	0.013	560	0.019	870	0.019
—	32.000	1.2598	320	0.015	320	0.014	120	0.015	440	0.019	680	0.019

- SG-ES is not recommended for 300-Series Stainless Steels.
- SG-ES is suitable drilling into 400-Series Stainless Steels.

Formulas:

$$RPM = \frac{SFM \times 3.82}{\text{Drill Diam.}}$$

$$\text{Feed Rate (in/min)} = RPM \times IPR$$

1) The above values apply when coolant is used in vertical machine & horizontal machine. When drilling in stainless steel and hard to cut material using pecking.

2) Adjust drilling condition when unusual vibration or different sound occurs.

3) Recommended feeds & speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used and coolant.

List Number: L6596P, L6594P, L6595P

Standard Drilling Conditions

List No. 6596P

List No. 6594P, 6595P

Workpiece Material			Austenitic Stainless Steels 304, 316		Austenitic Stainless Steels 304N		Martensitic Stainless Steels 420, 440		Ferritic Stainless Steels 405, 430		Low Carbon Steels	
Speed (SFM)			40 - 50 SFM		30 - 40 SFM		50 - 60 SFM		50 - 65 SFM		100 - 115 SFM	
Drill Diameter												
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	1	0.0394	4,300	0.001	3,300	0.001	5,300	0.001	5,300	0.001	10,600	0.001
—	2	0.0787	2,100	0.003	1,700	0.002	2,650	0.002	2,650	0.001	5,300	0.003
3/32	2.381	0.0938	1,800	0.003	1,400	0.003	2,240	0.003	2,240	0.001	4,450	0.004
—	3	0.1181	1,400	0.004	1,100	0.004	1,770	0.004	1,750	0.001	3,500	0.005
1/8	3.175	0.1250	1,300	0.005	1,000	0.004	1,680	0.004	1,650	0.002	3,300	0.006
5/32	3.969	0.1563	1,100	0.006	850	0.005	1,340	0.004	1,340	0.002	2,650	0.007
3/16	4.763	0.1875	900	0.007	700	0.005	1,120	0.004	1,120	0.002	2,250	0.008
—	5	0.1969	850	0.007	670	0.006	1,050	0.004	1,060	0.002	2,100	0.008
1/4	6.35	0.2500	650	0.008	530	0.007	840	0.005	840	0.003	1,680	0.010
5/16	7.938	0.3125	550	0.009	420	0.008	670	0.007	650	0.003	1,350	0.012
—	8	0.3150	550	0.009	400	0.008	650	0.007	650	0.003	1,300	0.012
3/8	9.525	0.3750	450	0.010	350	0.009	560	0.008	560	0.004	1,100	0.012
—	10	0.3937	430	0.010	340	0.009	530	0.008	500	0.004	1,000	0.013
—	12	0.4724	360	0.011	280	0.010	440	0.009	450	0.005	850	0.014
1/2	12.7	0.5000	340	0.011	260	0.010	420	0.009	420	0.005	800	0.015
—	16	0.6299	270	0.014	210	0.012	330	0.011	330	0.007	650	0.017
3/4	19.05	0.7500	220	0.016	200	0.015	280	0.016	280	0.016	550	0.015
—	20	0.7874	210	0.016	170	0.014	260	0.012	250	0.008	500	0.020

- 1) The above values apply when coolant is used in vertical machine & horizontal machine.
- 2) Adjust drilling condition when unusual vibration or different sound occurs.
- 3) Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used and coolant.

Formulas: $RPM = \frac{SFM \times 3.82}{\text{Drill dia.}}$ Feed Rate (in/min) = RPM x IPR

List Number: L6540P, L6541P

Standard Drilling Conditions

List No. 6540P, 6541P

Workpiece Material			Structural Steels, Carbon Steels		Alloy Steels		Hardened Steels, (-40 HRC), Tool Steels		Stainless Steels 300-400 Series		Cast Irons	
Speed (SFM)			40 - 80 SFM		25 - 50 SFM		16 - 35 SFM		30 - 40 SFM		42 - 82 SFM	
Drill Diameter												
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	1	0.0394	5,800	0.0007	3,300	0.0007	2,400	0.0005	2,900	0.0006	6,000	0.0008
—	2	0.0787	2,900	0.002	1,600	0.002	1,200	0.002	1,400	0.0015	3,000	0.002
—	3	0.1181	1,950	0.003	1,100	0.003	800	0.002	950	0.002	2,000	0.003
1/8	3.175	0.1250	1,800	0.003	1,000	0.003	750	0.002	900	0.002	1,800	0.003
3/16	4.763	0.1875	1,200	0.005	700	0.005	500	0.004	600	0.003	1,200	0.005
—	5	0.1969	1,100	0.005	650	0.005	480	0.004	550	0.004	1,200	0.006
—	6	0.2362	970	0.006	550	0.006	400	0.005	450	0.004	1,000	0.007
1/4	6.350	0.2500	900	0.006	500	0.006	350	0.005	450	0.004	950	0.008
9/32	7.144	0.2813	800	0.007	450	0.007	350	0.005	400	0.005	850	0.009
5/16	7.938	0.3125	700	0.008	400	0.008	300	0.006	350	0.006	800	0.010
—	8	0.3150	700	0.008	400	0.008	300	0.006	350	0.006	750	0.009
23/64	9	0.3594	650	0.009	350	0.009	250	0.007	300	0.007	700	0.010
—	10	0.3937	600	0.010	350	0.009	250	0.008	300	0.007	650	0.013
—	13	0.5118	550	0.009	300	0.009	200	0.008	250	0.008	600	0.011

- 1) Pilot Hole is required. It is recommended to use same diameter or up to 0.1mm larger than diameter of the long drill. The depth of cut of the pilot hole is 1 to 2 times diameter of the drill diameter.
- 2) Above drilling table is applied to Series 1 & 2. In case of series 3 & 4, reduce the RPM and feed to 80% of table values.
- 3) Use pecking when drilling in Stainless Steel & Hardened Steels.
- 4) Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used and coolant.

Formulas: $RPM = \frac{SFM \times 3.82}{\text{Drill dia.}}$ Feed Rate (in/min) = RPM x IPR