STANDARD DRILLING CONDITION

SG-ES Drills List No. 7570P, 7571P

Workpiece Material / Speed (SFM) / Drill Diameter			Structural Steels, Carbon Steels		Alloy Steels		Die Steels Steels(35-45HRc) 400 Series Stainless Steel		Cast Irons		Aluminum Alloys, Copper Alloys, Nonferrous Alloys	
			115 - 135 SFM		95 - 105 SFM		40 - 50 SFM		130 - 150 SFM		200 - 230 SFM	
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	2	0.0787	6,000	0.003	4,800	0.002	2,200	0.002	6,800	0.003	10,400	0.003
3/32	2.381	0.0938	5,100	0.003	4,000	0.003	1,800	0.003	5,700	0.004	8,700	0.004
—	3	0.1181	4,100	0.004	3,200	0.004	1,450	0.004	4,500	0.005	6,900	0.005
1/8	3.175	0.1250	3,800	0.005	3,100	0.004	1,375	0.004	4,300	0.006	6,570	0.006
5/32	3.969	0.1563	3,100	0.006	2,450	0.005	1,100	0.004	3,450	0.007	5,300	0.007
3/16	4.763	0.1875	2,550	0.007	2,000	0.005	900	0.004	2,900	0.008	4,400	0.008
—	5	0.1969	2,400	0.007	1,900	0.006	870	0.004	2,700	0.008	4,200	0.008
1/4	6.35	0.2500	1,900	0.008	1,500	0.007	700	0.005	2,100	0.010	3,300	0.009
5/16	7.938	0.3125	1,500	0.009	1,200	0.008	550	0.007	1,750	0.012	2,700	0.011
—	8	0.3150	1,500	0.009	1,200	0.008	550	0.007	1,700	0.012	2,600	0.012
3/8	9.525	0.3750	1,300	0.010	1,000	0.009	500	0.008	1,500	0.012	2,200	0.013
—	10	0.3937	1,200	0.010	950	0.009	450	0.008	1,400	0.013	2,100	0.013
—	12	0.4724	1,000	0.011	800	0.010	400	0.009	1,100	0.014	1,750	0.015
1/2	12.7	0.5000	950	0.011	750	0.010	350	0.009	1,050	0.015	1,650	0.015
—	16	0.6299	750	0.014	600	0.012	300	0.011	850	0.017	1,300	0.017
—	20	0.7874	600	0.016	500	0.014	250	0.012	700	0.020	1,050	0.020
—	25	0.9843	500	0.019	400	0.015	200	0.014	550	0.023	850	0.023
—	32	1.2598	400	0.018	300	0.015	150	0.016	450	0.022	650	0.022

1) SG-ES is not recommended for 300-series Stainless Steels.
2) SG-ES is suitable for driling into 400-series Stainless Steels.
3) Pilot hole required for deep hole drilling applications. It is recommended to use same diameter pilot drill.
The depth of cut for pilot hole is 1 to 2 times drill diameter.
4) Use pecking in hard-to-cut materials.
5) 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

SG Drills with Oil Hole List No. 7596P, 7591P

Workpiece Material / Speed (SFM) / Drill Diameter			Structural Steels, Carbon Steels		Alloy Steels		Die Steels Hardened Steels (35-45HRc)		Stainless Steels		Cast Irons		Aluminum Alloys, Copper Alloys, Nonferrous Alloys	
			120 - 130 SFM		105 - 110 SFM		40 - 50 SFM		60 - 70 SFM		130 - 150 SFM		200 - 230 SFM	
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	5	0.1969	2,400	0.007	1,900	0.006	850	0.005	1,200	0.005	2,700	0.009	4,100	0.009
1/4	6.35	0.2500	1,900	0.008	1,500	0.008	650	0.006	1,000	0.006	2,100	0.011	3,300	0.011
5/16	7.938	0.3125	1,500	0.009	1,250	0.008	550	0.007	800	0.007	1,700	0.013	2,650	0.013
—	8	0.3150	1,500	0.009	1,200	0.009	550	0.009	750	0.008	1,700	0.014	2,600	0.014
3/8	9.525	0.3750	1,250	0.010	1,000	0.010	500	0.009	700	0.009	1,500	0.014	2,200	0.014
—	10	0.3937	1,200	0.010	950	0.011	450	0.010	650	0.010	1,400	0.016	2,000	0.016
—	12	0.4724	1,000	0.011	800	0.011	400	0.010	550	0.010	1,200	0.016	1,700	0.016
1/2	12.7	0.5000	950	0.011	750	0.013	350	0.012	500	0.013	1,100	0.019	1,600	0.019
—	16	0.6299	750	0.014	600	0.014	250	0.014	400	0.015	850	0.021	1,300	0.021
—	20	0.7874	600	0.016	450	0.015	200	0.014	300	0.015	650	0.022	1,000	0.021

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 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