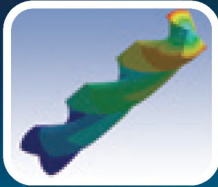


1588SL series

Deep Hole Twist Drills

Optimized tool structure achieved through cutting analysis simulations.

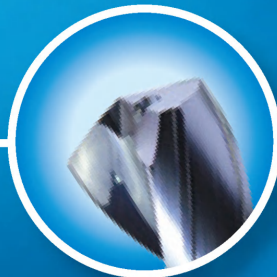


Modified parameter design of the the helical flute, provide good rigidity and chip removal capabilities.

Unique cutting edge design provide high versatility for the tool. Great chip breaking capability for sticky and softer materials.



Unique double guiding margin achieves more stable and reliable machining.



Special nano structure coating with improved self lubricating capability and superb wear resistance.



1588SL Series Deep Hole Twist Drills

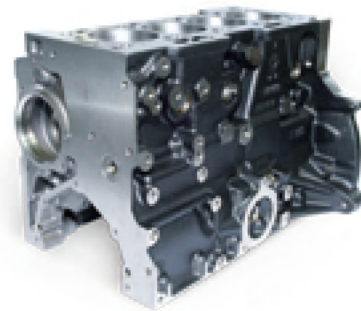
1588SL Series Deep Hole Twist Drills

Outstanding chip breaking capability



Work piece: crank shaft
 Work piece material: 5140
 Machining area: inclined oil hole
 Tool type: 1588SL20C-0690/KDG303
 Cutting parameters: SFM=260~395f/min
 $f_r=0.007874\text{in/r}$
 Cooling system: water-soluble liquid
 Drilling depth: 4.134in

Extremely high efficiency and long tool life

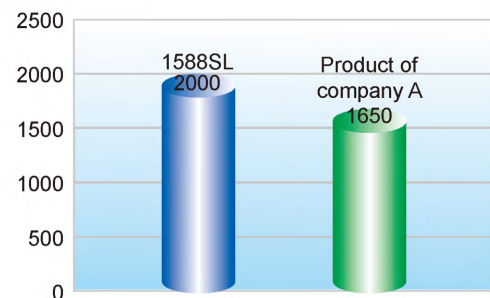


Work piece: cylinder
 Work material: NO.45
 Machined area: crank shaft joint surface drilling
 Drilling depth: 1.181in
 Tool type: 1588SL12C-0850/KDG303
 Recommend parameters: SFM=260f/min
 $f_r=0.011811\text{in/r}$
 Cooling system: water-soluble liquid



Good chip breaking capability and stable machining with different cutting speed and feed rate.

Comparison of tool life(number of machined holes)



Comparison of tool life(tool wear)



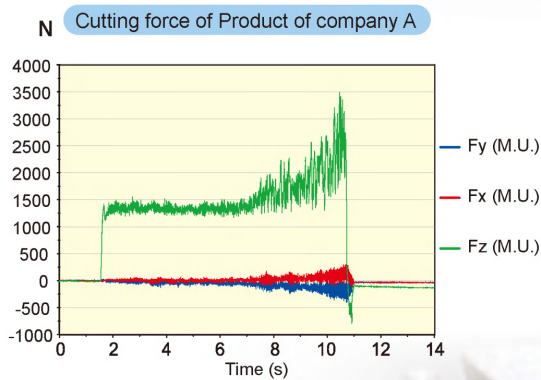
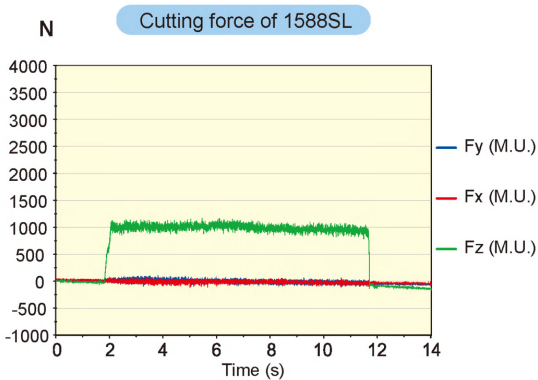
1588SL(regular wear)



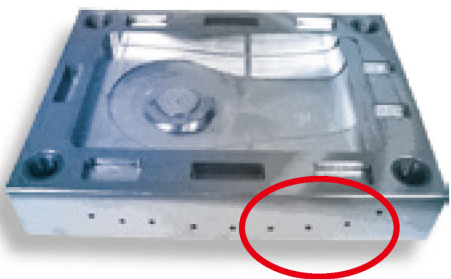
Product of company A(falling)

Superior cutting performance

Tool type: 1588SL12C-0850/KDG303
 Feed rate: 0.007874in/r Drilling depth: 2.835in
 Work material: 4140
 Cooling system: emulsified liquid
 Cutting speed: 260f/min
 Machine equipment: vertical machining center

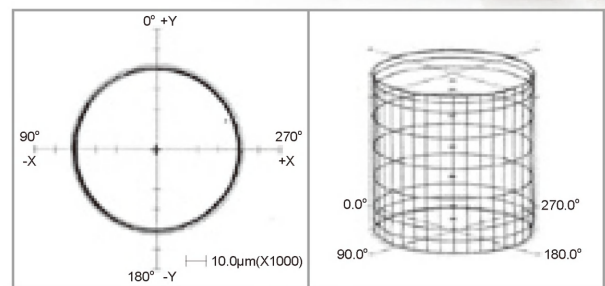


Machining precision stability

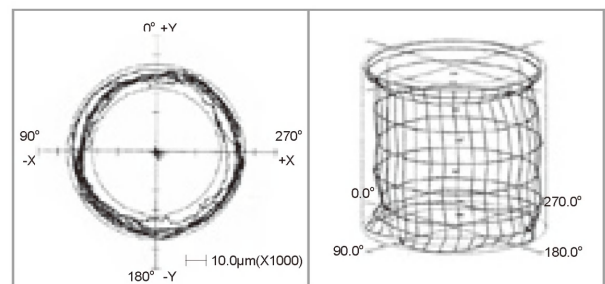


Workpiece: die
 Machined materials: P20
 Machined area: hole of sidewall
 Drilling depth: 2.756in
 Tool type: 1588SL12C-0600/KDG303
 Recommended parameters: SFM=280f/min, f=0.007874in/r
 Cooling system: water-soluble liquid

Comparison of Machined Hole's Accuracy

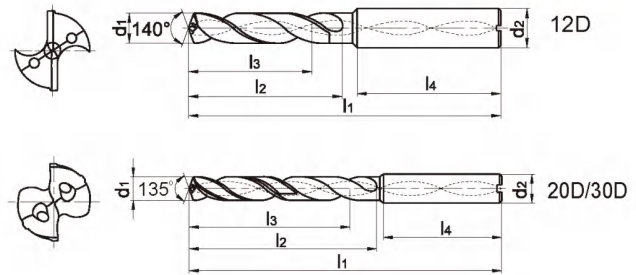


1588SL



Product of company A

SL Series Deep Hole Machining

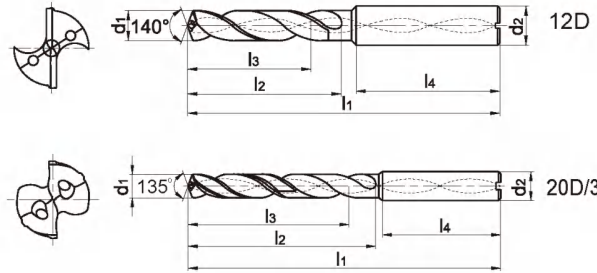


- d₁ tolerance 12D m7
d₁ tolerance 20D/30D h7
- Suitable for deep-hole drilling of steel, cast iron etc.

Drill diameter				Drilling depth (l/d)	Type	Basic dimension(mm)					Drill diameter				Drilling depth (l/d)	Type	Basic dimension(mm)				
mm	inch	Fraction	d ₂ (h ₈)			l ₁	l ₂	l ₃	l ₄	mm	inch	Fraction	d ₂ (h ₈)	l ₁			l ₂	l ₃	l ₄		
3.0	.1181	--	12	1588SL12C-0300	6	90	50	40	36	3.970	.1563	5/32	12	1588SL12C-03970	6	90	50	46	36		
		--	20	1588SL20C-0300	6	110	70	62	36			5/32	20	1588SL20C-03970	6	136	96	84	36		
		--	30	1588SL30C-0300	6	140	100	92	36			5/32	30	1588SL30C-03970	6	176	136	124	36		
3.1	.1220	--	12	1588SL12C-0310	6	90	50	40	36	4.0	.1575	--	12	1588SL12C-0400	6	102	64	56	36		
		--	20	1588SL20C-0310	6	123	83	72	36			--	20	1588SL20C-0400	6	136	96	84	36		
		--	30	1588SL30C-0310	6	160	120	108	36			--	30	1588SL30C-0400	6	176	136	124	36		
3.175	.1250	1/8	12	1588SL12C-03175	6	90	50	40	36	4.1	.1614	--	12	1588SL12C-0410	6	102	64	56	36		
		1/8	20	1588SL20C-03175	6	123	83	72	36			--	20	1588SL20C-0410	6	148	108	96	36		
		1/8	30	1588SL30C-03175	6	160	120	108	36			--	30	1588SL30C-0410	6	192	152	140	36		
3.2	.1260	--	12	1588SL12C-0320	6	90	50	40	36	4.2	.1654	--	12	1588SL12C-0420	6	102	64	56	36		
		--	20	1588SL20C-0320	6	123	83	72	36			--	20	1588SL20C-0420	6	148	108	96	36		
		--	30	1588SL30C-0320	6	160	120	108	36			--	30	1588SL30C-0420	6	192	152	140	36		
3.3	.1299	--	12	1588SL12C-0330	6	90	50	40	36	4.3	.1693	--	12	1588SL12C-0430	6	102	64	56	36		
		--	20	1588SL20C-0330	6	123	83	72	36			--	20	1588SL20C-0430	6	148	108	96	36		
		--	30	1588SL30C-0330	6	160	120	108	36			--	30	1588SL30C-0430	6	192	152	140	36		
3.4	.1339	--	12	1588SL12C-0340	6	90	50	40	36	4.4	.1732	--	12	1588SL12C-0440	6	102	64	56	36		
		--	20	1588SL20C-0340	6	123	83	72	36			--	20	1588SL20C-0440	6	148	108	96	36		
		--	30	1588SL30C-0340	6	160	120	108	36			--	30	1588SL30C-0440	6	192	152	140	36		
3.5	.1378	--	12	1588SL12C-0350	6	90	50	40	36	4.5	.1772	--	12	1588SL12C-0450	6	102	64	56	36		
		--	20	1588SL20C-0350	6	123	83	72	36			--	20	1588SL20C-0450	6	148	108	96	36		
		--	30	1588SL30C-0350	6	160	120	108	36			--	30	1588SL30C-0450	6	192	152	140	36		
3.6	.1417	--	12	1588SL12C-0360	6	90	50	40	36	4.6	.1811	--	12	1588SL12C-0460	6	102	64	56	36		
		--	20	1588SL20C-0360	6	136	96	84	36			--	20	1588SL20C-0460	6	158	118	106	36		
		--	30	1588SL30C-0360	6	176	136	124	36			--	30	1588SL30C-0460	6	208	168	156	36		
3.7	.1457	--	12	1588SL12C-0370	6	90	50	46	36	4.7	.1850	--	12	1588SL12C-0470	6	102	64	56	36		
		--	20	1588SL20C-0370	6	136	96	84	36			--	20	1588SL20C-0470	6	158	118	106	36		
		--	30	1588SL30C-0370	6	176	136	124	36			--	30	1588SL30C-0470	6	208	168	156	36		
3.8	.1496	--	12	1588SL12C-0380	6	90	50	46	36	4.763	.1875	3/16	12	1588SL12C-04763	6	102	64	56	36		
		--	20	1588SL20C-0380	6	136	96	84	36			3/16	20	1588SL20C-04763	6	158	118	106	36		
		--	30	1588SL30C-0380	6	176	136	124	36			3/16	30	1588SL30C-04763	6	208	168	156	36		
3.9	.1535	--	12	1588SL12C-0390	6	90	50	46	36	4.8	.1890	--	12	1588SL12C-0480	6	102	64	56	36		
		--	20	1588SL20C-0390	6	136	96	84	36			--	20	1588SL20C-0480	6	158	118	106	36		
		--	30	1588SL30C-0390	6	176	136	124	36			--	30	1588SL30C-0480	6	208	168	156	36		



SL Series Deep Hole Machining



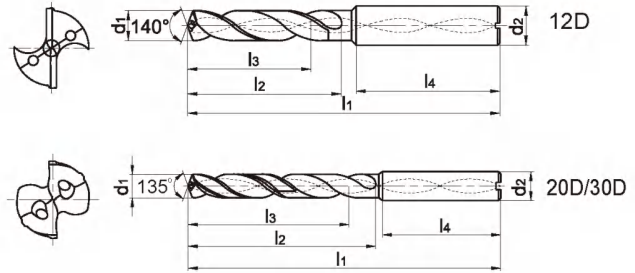
- d₁ tolerance 12D m7
d₁ tolerance 20D/30D h7
- Suitable for deep-hole drilling of steel, cast iron etc.

Drill diameter			Drilling depth (l/d)	Type	Basic dimension(mm)					Drill diameter			Drilling depth (l/d)	Type	Basic dimension(mm)				
mm	inch	Fraction			d ₂ (h ₈)	l ₁	l ₂	l ₃	l ₄	mm	inch	Fraction			d ₂ (h ₈)	l ₁	l ₂	l ₃	l ₄
4.9	.1929	--	12	1588SL12C-0490	6	102	64	56	36	5.9	.2323	--	12	1588SL12C-0590	6	116	78	72	36
		--	20	1588SL20C-0490	6	158	118	106	36			--	20	1588SL20C-0590	6	180	140	126	36
		--	30	1588SL30C-0490	6	208	168	156	36			--	30	1588SL30C-0590	6	240	200	182	36
5.0	.1969	--	12	1588SL12C-0500	6	116	78	72	36	6.0	.2362	--	12	1588SL12C-0600	6	116	78	72	36
		--	20	1588SL20C-0500	6	158	118	106	36			--	20	1588SL20C-0600	6	180	140	126	36
		--	30	1588SL30C-0500	6	208	168	156	36			--	30	1588SL30C-0600	6	240	200	182	36
5.1	.2008	--	12	1588SL12C-0510	6	116	78	72	36	6.1	.2402	--	12	1588SL12C-0610	8	131	93	84	36
		--	20	1588SL20C-0510	6	168	128	116	36			--	20	1588SL20C-0610	8	192	150	132	36
		--	30	1588SL30C-0510	6	228	188	170	36			--	30	1588SL30C-0610	8	260	220	202	36
5.2	.2047	--	12	1588SL12C-0520	6	116	78	72	36	6.2	.2441	--	12	1588SL12C-0620	8	131	93	84	36
		--	20	1588SL20C-0520	6	168	128	116	36			--	20	1588SL20C-0620	8	192	150	132	36
		--	30	1588SL30C-0520	6	228	188	170	36			--	30	1588SL30C-0620	8	260	220	202	36
5.3	.2087	--	12	1588SL12C-0530	6	116	78	72	36	6.3	.2480	--	12	1588SL12C-0630	8	131	93	84	36
		--	20	1588SL20C-0530	6	168	128	116	36			--	20	1588SL20C-0630	8	192	150	132	36
		--	30	1588SL30C-0530	6	228	188	170	36			--	30	1588SL30C-0630	8	260	220	202	36
5.4	.2126	--	12	1588SL12C-0540	6	116	78	72	36	6.350	.2500	1/4	12	1588SL12C-06350	8	131	93	84	36
		--	20	1588SL20C-0540	6	168	128	116	36			1/4	20	1588SL20C-06350	8	192	150	132	36
		--	30	1588SL30C-0540	6	228	188	170	36			1/4	30	1588SL30C-06350	8	260	220	202	36
5.5	.2165	--	12	1588SL12C-0550	6	116	78	72	36	6.4	.2520	--	12	1588SL12C-0640	8	131	93	84	36
		--	20	1588SL20C-0550	6	168	128	116	36			--	20	1588SL20C-0640	8	192	150	132	36
		--	30	1588SL30C-0550	6	228	188	170	36			--	30	1588SL30C-0640	8	260	220	202	36
5.558	.2188	7/32	12	1588SL12C-05558	6	116	78	72	36	6.5	.2559	--	12	1588SL12C-0650	8	131	93	84	36
		7/32	20	1588SL20C-05558	6	180	140	126	36			--	20	1588SL20C-0650	8	192	150	132	36
		7/32	30	1588SL30C-05558	6	240	200	182	36			--	30	1588SL30C-0650	8	260	220	202	36
5.6	.2205	--	12	1588SL12C-0560	6	116	78	72	36	6.6	.2598	--	12	1588SL12C-0660	8	131	93	84	36
		--	20	1588SL20C-0560	6	180	140	126	36			--	20	1588SL20C-0660	8	202	162	144	36
		--	30	1588SL30C-0560	6	240	200	182	36			--	30	1588SL30C-0660	8	272	232	214	36
5.7	.2244	--	12	1588SL12C-0570	6	116	78	72	36	6.7	.2638	--	12	1588SL12C-0670	8	131	93	84	36
		--	20	1588SL20C-0570	6	180	140	126	36			--	20	1588SL20C-0670	8	202	162	144	36
		--	30	1588SL30C-0570	6	240	200	182	36			--	30	1588SL30C-0670	8	272	232	214	36
5.8	.2283	--	12	1588SL12C-0580	6	116	78	72	36	6.746	.2656	17/64	12	1588SL12C-06746	8	131	93	84	36
		--	20	1588SL20C-0580	6	180	140	126	36			17/64	20	1588SL20C-06746	8	202	162	144	36
		--	30	1588SL30C-0580	6	240	200	182	36			17/64	30	1588SL30C-06746	8	272	232	214	36

Drill diameter			Drilling depth (l/d)	Type	Basic dimension(mm)					Drill diameter			Drilling depth (l/d)	Type	Basic dimension(mm)				
mm	inch	Fraction			d2(h5)	l1	l2	l3	l4	mm	inch	Fraction			d2(h5)	l1	l2	l3	l4
6.8	.2677	--	12	1588SL12C-0680	8	131	93	84	36	7.938	.3125	5/16	12	1588SL12C-07938	8	146	108	96	36
		--	20	1588SL20C-0680	8	202	162	144	36			5/16	20	1588SL20C-07938	8	223	183	165	36
		--	30	1588SL30C-0680	8	272	232	214	36			5/16	30	1588SL30C-07938	8	305	265	246	36
6.9	.2717	--	12	1588SL12C-0690	8	131	93	84	36	8.0	.3150	--	12	1588SL12C-0800	8	146	108	96	36
		--	20	1588SL20C-0690	8	202	162	144	36			--	20	1588SL20C-0800	8	223	183	165	36
		--	30	1588SL30C-0690	8	272	232	214	36			--	30	1588SL30C-0800	8	305	265	246	36
7.0	.2756	--	12	1588SL12C-0700	8	131	93	84	36	8.1	.3189	--	12	1588SL12C-0810	10	162	120	108	40
		--	20	1588SL20C-0700	8	202	162	144	36			--	20	1588SL20C-0810	10	239	195	176	40
		--	30	1588SL30C-0700	8	272	232	214	36			--	30	1588SL30C-0810	10	330	285	265	40
7.1	.2795	--	12	1588SL12C-0710	8	146	108	96	36	8.2	.3228	--	12	1588SL12C-0820	10	162	120	108	40
		--	20	1588SL20C-0710	8	213	173	155	36			--	20	1588SL20C-0820	10	239	195	176	40
		--	30	1588SL30C-0710	8	290	250	232	36			--	30	1588SL30C-0820	10	330	285	265	40
7.145	.2813	9/32	12	1588SL12C-07145	8	146	108	96	36	8.3	.3268	--	12	1588SL12C-0830	10	162	120	108	40
		9/32	20	1588SL20C-07145	8	213	173	155	36			--	20	1588SL20C-0830	10	239	195	176	40
		9/32	30	1588SL30C-07145	8	290	250	232	36			--	30	1588SL30C-0830	10	330	285	265	40
7.2	.2835	--	12	1588SL12C-0720	8	146	108	96	36	8.334	.3281	21/64	12	1588SL12C-08334	10	162	120	108	40
		--	20	1588SL20C-0720	8	213	173	155	36			21/64	20	1588SL20C-08334	10	239	195	176	40
		--	30	1588SL30C-0720	8	290	250	232	36			21/64	30	1588SL30C-08334	10	330	285	265	40
7.3	.2874	--	12	1588SL12C-0730	8	146	108	96	36	8.4	.3307	--	12	1588SL12C-0840	10	162	120	108	40
		--	20	1588SL20C-0730	8	213	173	155	36			--	20	1588SL20C-0840	10	239	195	176	40
		--	30	1588SL30C-0730	8	290	250	232	36			--	30	1588SL30C-0840	10	330	285	265	40
7.4	.2913	--	12	1588SL12C-0740	8	146	108	96	36	8.5	.3346	--	12	1588SL12C-0850	10	162	120	108	40
		--	20	1588SL20C-0740	8	213	173	155	36			--	20	1588SL20C-0850	10	239	195	176	40
		--	30	1588SL30C-0740	8	290	250	232	36			--	30	1588SL30C-0850	10	330	285	265	40
7.5	.2953	--	12	1588SL12C-0750	8	146	108	96	36	8.6	.3386	--	12	1588SL12C-0860	10	162	120	108	40
		--	20	1588SL20C-0750	8	213	173	155	36			--	20	1588SL20C-0860	10	249	205	186	40
		--	30	1588SL30C-0750	8	290	250	232	36			--	30	1588SL30C-0860	10	340	295	275	40
7.541	.2969	19/64	12	1588SL12C-07541	8	146	108	96	36	8.7	.3425	--	12	1588SL12C-0870	10	162	120	108	40
		19/64	20	1588SL20C-07541	8	223	183	165	36			--	20	1588SL20C-0870	10	249	205	186	40
		19/64	30	1588SL30C-07541	8	305	265	246	36			--	30	1588SL30C-0870	10	340	295	275	40
7.6	.2992	--	12	1588SL12C-0760	8	146	108	96	36	8.733	.3438	11/32	12	1588SL12C-08733	10	162	120	108	40
		--	20	1588SL20C-0760	8	223	183	165	36			11/32	20	1588SL20C-08733	10	249	205	186	40
		--	30	1588SL30C-0760	8	305	265	246	36			11/32	30	1588SL30C-08733	10	340	295	275	40
7.7	.3031	--	12	1588SL12C-0770	8	146	108	96	36	8.8	.3465	--	12	1588SL12C-0880	10	162	120	108	40
		--	20	1588SL20C-0770	8	223	183	165	36			--	20	1588SL20C-0880	10	249	205	186	40
		--	30	1588SL30C-0770	8	305	265	246	36			--	30	1588SL30C-0880	10	340	295	275	40
7.8	.3071	--	12	1588SL12C-0780	8	146	108	96	36	8.9	.3504	--	12	1588SL12C-0890	10	162	120	108	40
		--	20	1588SL20C-0780	8	223	183	165	36			--	20	1588SL20C-0890	10	249	205	186	40
		--	30	1588SL30C-0780	8	305	265	246	36			--	30	1588SL30C-0890	10	340	295	275	40
7.9	.3110	--	12	1588SL12C-0790	8	146	108	96	36	9.0	.3543	--	12	1588SL12C-0900	10	162	120	108	40
		--	20	1588SL20C-0790	8	223	183	165	36			--	20	1588SL20C-0900	10	249	205	186	40
		--	30	1588SL30C-0790	8	305	265	246	36			--	30	1588SL30C-0900	10	340	295	275	40



SL Series Deep Hole Machining



- d₁ tolerance 12D m7
d₁ tolerance 20D/30D h7
- Suitable for deep-hole drilling of steel, cast iron etc.

Drill diameter				Drilling depth (l/d)	Type	Basic dimension(mm)				Drill diameter				Drilling depth (l/d)	Type	Basic dimension(mm)			
mm	inch	Fraction	d ₂ (h ₈)			l ₁	l ₂	l ₃	l ₄	mm	inch	Fraction	d ₂ (h ₈)			l ₁	l ₂	l ₃	l ₄
9.1	.3583	--	12	1588SL12C-0910	10	174	132	120	40	9.921	.3906	25/64	12	1588SL12C-09921	10	174	132	120	40
		--	20	1588SL20C-0910	10	262	218	196	40			25/64	20	1588SL20C-09921	10	272	228	206	40
		--	30	1588SL30C-0910	10	360	315	292	40			25/64	30	1588SL30C-09921	10	372	328	305	40
9.129	.3594	23/64	12	1588SL12C-09129	10	174	132	120	40	10.0	.3937	--	12	1588SL12C-1000	10	174	132	120	40
		23/64	20	1588SL20C-09129	10	262	218	196	40			--	20	1588SL20C-1000	10	272	228	206	40
		23/64	30	1588SL30C-09129	10	360	315	292	40			--	30	1588SL30C-1000	10	372	328	305	40
9.2	.3622	--	12	1588SL12C-0920	10	174	132	120	40	10.1	.3976	--	12	1588SL12C-1010	12	204	156	144	45
		--	20	1588SL20C-0920	10	262	218	196	40			--	20	1588SL20C-1010	12	292	242	220	45
		--	30	1588SL30C-0920	10	360	315	292	40			--	30	1588SL30C-1010	10	372	328	305	40
9.3	.3661	--	12	1588SL12C-0930	10	174	132	120	40	10.2	.4016	--	12	1588SL12C-1020	12	204	156	144	45
		--	20	1588SL20C-0930	10	262	218	196	40			--	20	1588SL20C-1020	12	292	242	220	45
		--	30	1588SL30C-0930	10	360	315	292	40			--	30	1588SL30C-1020	10	372	328	305	40
9.4	.3701	--	12	1588SL12C-0940	10	174	132	120	40	10.3	.4055	--	12	1588SL12C-1030	12	204	156	144	45
		--	20	1588SL20C-0940	10	262	218	196	40			--	20	1588SL20C-1030	12	292	242	220	45
		--	30	1588SL30C-0940	10	360	315	292	40			--	30	1588SL30C-1030	10	372	328	305	40
9.5	.3740	--	12	1588SL12C-0950	10	174	132	120	40	10.320	.4063	13/32	12	1588SL12C-10320	12	204	156	144	45
		--	20	1588SL20C-0950	10	262	218	196	40			13/32	20	1588SL20C-10320	12	292	242	220	45
		--	30	1588SL30C-0950	10	360	315	292	40			--	30	1588SL30C-10320	10	372	328	305	40
9.525	.3750	3/8	12	1588SL12C-09525	10	174	132	120	40	10.4	.4094	--	12	1588SL12C-1040	12	204	156	144	45
		3/8	20	1588SL20C-09525	10	272	228	206	40			--	20	1588SL20C-1040	12	292	242	220	45
		3/8	30	1588SL30C-09525	10	372	328	305	40			--	30	1588SL30C-1040	10	372	328	305	40
9.6	.3780	--	12	1588SL12C-0960	10	174	132	120	40	10.5	.4134	--	12	1588SL12C-1050	12	204	156	144	45
		--	20	1588SL20C-0960	10	272	228	206	40			--	20	1588SL20C-1050	12	292	242	220	45
		--	30	1588SL30C-0960	10	372	328	305	40			--	30	1588SL30C-1050	10	372	328	305	40
9.7	.3819	--	12	1588SL12C-0970	10	174	132	120	40	10.6	.4173	--	12	1588SL12C-1060	12	204	156	144	45
		--	20	1588SL20C-0970	10	272	228	206	40			--	20	1588SL20C-1060	12	300	250	228	45
		--	30	1588SL30C-0970	10	372	328	305	40			--	30	1588SL30C-1060	10	372	328	305	40
9.8	.3858	--	12	1588SL12C-0980	10	174	132	120	40	10.7	.4213	--	12	1588SL12C-1070	12	204	156	144	45
		--	20	1588SL20C-0980	10	272	228	206	40			--	20	1588SL20C-1070	12	300	250	228	45
		--	30	1588SL30C-0980	10	372	328	305	40			--	30	1588SL30C-1070	10	372	328	305	40
9.9	.3898	--	12	1588SL12C-0990	10	174	132	120	40	10.716	.4219	27/64	12	1588SL12C-10716	12	204	156	144	45
		--	20	1588SL20C-0990	10	272	228	206	40			27/64	20	1588SL20C-10716	12	300	250	228	45
		--	30	1588SL30C-0990	10	372	328	305	40			--	30	1588SL30C-10716	10	372	328	305	40
11.0	.4331	--	12	1588SL12C-1100	10	174	132	120	40	10.8	.4252	--	12	1588SL12C-1080	12	204	156	144	45
		--	20	1588SL20C-1100	10	272	228	206	40			--	20	1588SL20C-1080	12	300	250	228	45
		--	30	1588SL30C-1100	10	372	328	305	40			--	30	1588SL30C-1080	10	372	328	305	40
11.1	.4370	--	12	1588SL12C-1110	10	174	132	120	40	10.9	.4291	--	12	1588SL12C-1090	12	204	156	144	45
		--	20	1588SL20C-1110	10	272	228	206	40			--	20	1588SL20C-1090	12	300	250	228	45
		--	30	1588SL30C-1110	10	372	328	305	40			--	30	1588SL30C-1090	10	372	328	305	40
11.113	.4375	7/16	12	1588SL12C-11113	12	204	156	144	45										

Drill diameter			Drilling depth (l/d)	Type	Basic dimension(mm)					Drill diameter			Drilling depth (l/d)	Type	Basic dimension(mm)				
mm	inch	Fraction			d ₂ (h ₅)	l ₁	l ₂	l ₃	l ₄	mm	inch	Fraction			d ₂ (h ₅)	l ₁	l ₂	l ₃	l ₄
11.113	.4375	7/16	20	1588SL20C-11113	12	315	265	240	45	12.8	.5039	--	12	1588SL12C-1280	14	230	182	168	45
11.2	.4409	--	12	1588SL12C-1120	12	204	156	144	45	13.0	.5118	--	12	1588SL12C-1300	14	230	182	168	45
		--	20	1588SL20C-1120	12	315	265	240	45			--	20	1588SL20C-1300	14	338	290	265	45
11.3	.4449	--	12	1588SL12C-1130	12	204	156	144	45	13.5	.5315	--	12	1588SL12C-1350	14	230	182	168	45
		--	20	1588SL20C-1130	12	315	265	240	45			--	20	1588SL20C-1350	14	338	290	265	45
11.4	.4488	--	12	1588SL12C-1140	12	204	156	144	45	14.0	.5512	--	12	1588SL12C-1400	14	230	182	168	45
		--	20	1588SL20C-1140	12	315	265	240	45			--	20	1588SL20C-1400	14	367	318	290	45
11.5	.4528	--	12	1588SL12C-1150	12	204	156	144	45	14.288	.5625	9/16	12	1588SL12C-14288	16	260	208	194	48
		--	20	1588SL20C-1150	12	315	265	240	45	14.5	.5709	--	12	1588SL12C-1450	16	260	208	194	48
11.6	.4567	--	12	1588SL12C-1160	12	204	156	144	45	14.684	.5781	37/64	12	1588SL12C-14684	16	260	208	194	48
		--	20	1588SL20C-1160	12	325	275	250	45	15.0	.5906	--	12	1588SL12C-1500	16	260	208	194	48
11.7	.4606	--	12	1588SL12C-1170	12	204	156	144	45	15.5	.6102	--	12	1588SL12C-1550	16	260	208	194	48
		--	20	1588SL20C-1170	12	325	275	250	45	15.875	.6250	5/8	12	1588SL12C-15875	16	260	208	194	48
11.8	.4646	--	12	1588SL12C-1180	12	204	156	144	45	16.0	.6299	--	12	1588SL12C-1600	16	260	208	194	48
		--	20	1588SL20C-1180	12	325	275	250	45	16.5	.6496	--	12	1588SL12C-1650	18	286	234	218	48
11.9	.4685	--	12	1588SL12C-1190	12	204	156	144	45	17.0	.6693	--	12	1588SL12C-1700	18	286	234	218	48
		--	20	1588SL20C-1190	12	325	275	250	45	17.463	.6875	11/16	12	1588SL12C-17463	18	286	234	218	48
12.0	.4724	--	12	1588SL12C-1200	12	204	156	144	45	17.5	.6890	--	12	1588SL12C-1750	18	286	234	218	48
		--	20	1588SL20C-1200	12	325	275	250	45	18.0	.7087	--	12	1588SL12C-1800	18	286	234	218	48
12.304	.4844	31/64	12	1588SL12C-12304	14	230	182	168	45	18.5	.7283	--	12	1588SL12C-1850	20	310	258	240	48
		31/64	20	1588SL20C-12304	14	325	275	250	45	19.0	.7480	--	12	1588SL12C-1900	20	310	258	240	48
12.5	.4921	--	12	1588SL12C-1250	14	230	182	168	45	19.050	.7500	3/4	12	1588SL12C-19050	20	310	258	240	48
		--	20	1588SL20C-1250	14	325	275	250	45	19.5	.7677	--	12	1588SL12C-1950	20	310	258	240	48
12.7	.5000	1/2	12	1588SL12C-1270	14	230	182	168	45	20.0	.7874	--	12	1588SL12C-2000	20	310	258	240	48
		1/2	20	1588SL20C-1270	14	338	290	265	45										

➤ Applicable Material Table

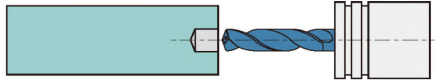
⊙ Very suitable ○ Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303	○	⊙	⊙			○	⊙	⊙	○		○



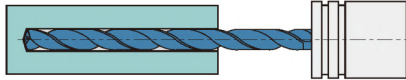
Recommended Machining Method for SL Series Deep Hole Drills

1. Hole-guided Machining



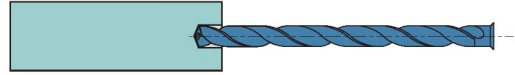
- ◆ The apex angle of drills used for hole-guided machining has to be greater than the apex angle of deep-hole drills.
- ◆ Diameter of drills used for hole-guided machining has to be respectively greater than the diameter of deep-hole drills. Generally the diameter range of deep-hole drills is between 0 and positive 0.1.
- ◆ Generally the depth of pre-drilling hole is 1-3D (D is the diameter of pre-drilling holes). Also, it basically needs to ensure the accuracy of pre-drilling holes at the same time.

3. Deep Hole Machining (Start to Finish)



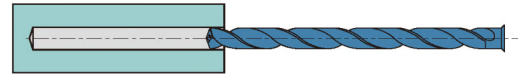
- ◆ Uninterrupted machining with fixed speed and feed rates. (Complete machining in one go, not a "Step-by-Step" machining).

2. Deep Hole Machining (Inserting into the Pre-drilling Holes)



- ◆ Lower speed should be applied in the process of inserting deep-hole drills into the pre-drilling holes.
- ◆ Insert deep hole drill to the location 1-3mm away from the bottom of pre-drilling holes (Please make sure that the parts of drilling point are entirely inserted).

4. Deep Hole Machining (Retract from hole)



- ◆ At the end of machining, reduce drill speed 1-2mm away from drilled hole's opening.
- ◆ Quickly secedes drill back to the location where machining first started.
- ◆ Apply retraction under the same conditions when inserting pre-drilling holes.

GD series twist drills(external coolant)

3D

5D

workpiece material	Mild steel HB≤180		Carbon steel, alloy steel ~30HRC		Pre-hardened steel ~40HRC		Stainless steel		Cast iron		Nodular cast iron		Heat resistant alloy	
Cutting speed	200~395SFPM		200~395SFPM		135~230SFPM		85~135SFPM		200~395SFPM		165~330SFPM		50~85SFPM	
Diameter (mm)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)
2	14000	0.0024~0.0031	14000	0.0024~0.0031	9500	0.0024~0.0031	5500	0.0008~0.002	14000	0.0024~0.0031	11000	0.0024~0.0031	3200	0.0008~0.0016
3	9500	0.0035~0.0047	9500	0.0035~0.0047	6300	0.0035~0.0047	3700	0.0012~0.0028	9500	0.0035~0.0047	7400	0.0035~0.0047	2100	0.0012~0.0024
4	7000	0.0039~0.0059	7000	0.0039~0.0059	4700	0.0039~0.0059	2700	0.0016~0.0031	7000	0.0039~0.0059	5600	0.0039~0.0059	1600	0.0016~0.0028
5	5700	0.0047~0.0071	5700	0.0047~0.0071	3800	0.0047~0.0071	2200	0.002~0.0039	5700	0.0047~0.0071	4500	0.0047~0.0071	1250	0.002~0.0035
6	4700	0.0055~0.0079	4700	0.0055~0.0079	3100	0.0055~0.0079	1850	0.0024~0.0047	4700	0.0055~0.0079	3700	0.0055~0.0079	1050	0.0024~0.0043
8	3600	0.0063~0.0094	3600	0.0063~0.0094	2400	0.0063~0.0094	1400	0.0031~0.0063	3600	0.0063~0.0094	2800	0.0063~0.0094	800	0.0031~0.0055
10	2800	0.0071~0.0106	2800	0.0071~0.0106	1900	0.0071~0.0106	1100	0.0039~0.0071	2800	0.0071~0.0106	2200	0.0071~0.0106	600	0.0039~0.0063
12	2400	0.0079~0.0118	2400	0.0079~0.0118	1600	0.0079~0.0118	930	0.0047~0.0079	2400	0.0079~0.0118	1900	0.0079~0.0118	500	0.0047~0.0071
14	2100	0.0087~0.0138	2100	0.0087~0.0138	1400	0.0087~0.0138	800	0.0051~0.0087	2100	0.0087~0.0138	1600	0.0087~0.0138	450	0.0051~0.0079
16	1800	0.0098~0.0142	1800	0.0098~0.0142	1200	0.0098~0.0142	700	0.0055~0.0098	1800	0.0098~0.0142	1400	0.0098~0.0142	400	0.0055~0.0091
18	1600	0.0110~0.0150	1600	0.0110~0.0150	1100	0.0110~0.0150	620	0.0059~0.011	1600	0.0110~0.0150	1200	0.0110~0.0150	350	0.0059~0.0098
20	1400	0.0118~0.0157	1400	0.0118~0.0157	950	0.0118~0.0157	550	0.0063~0.0118	1400	0.0118~0.0157	1100	0.0118~0.0157	320	0.0063~0.011

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 5D.

GD series twist drills(internal coolant)

3D

5D

workpiece material	Mild steel HB≤180		Carbon steel, alloy steel ~30HRC		Pre-hardened steel ~40HRC		Stainless steel		Cast iron		Nodular cast iron		Heat resistant alloy	
	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)
3	12700	0.0035-0.0047	12700	0.0035-0.0047	7400	0.0035-0.0047	6300	0.0012-0.0028	12700	0.0035-0.0047	9500	0.0035-0.0047	2100	0.0012-0.0024
4	9600	0.0039-0.0059	9600	0.0039-0.0059	5600	0.0039-0.0059	4700	0.0016-0.0031	9600	0.0039-0.0059	7000	0.0039-0.0059	1600	0.0016-0.0028
5	7600	0.0047-0.0071	7600	0.0047-0.0071	4500	0.0047-0.0071	3800	0.002-0.0039	7600	0.0047-0.0071	5700	0.0047-0.0071	1250	0.002-0.0035
6	6400	0.0055-0.0079	6400	0.0055-0.0079	3700	0.0055-0.0079	3200	0.0024-0.0047	6400	0.0055-0.0079	4700	0.0055-0.0079	1050	0.0024-0.0043
8	4800	0.0063-0.0094	4800	0.0063-0.0094	2800	0.0063-0.0094	2400	0.0031-0.0063	4800	0.0063-0.0094	3600	0.0063-0.0094	800	0.0031-0.0055
10	3800	0.0071-0.0106	3800	0.0071-0.0106	2200	0.0071-0.0106	1900	0.0039-0.0071	3800	0.0071-0.0106	2800	0.0071-0.0106	600	0.0039-0.0063
12	3200	0.0079-0.0118	3200	0.0079-0.0118	1900	0.0079-0.0118	1600	0.0047-0.0079	3200	0.0079-0.0118	2400	0.0079-0.0118	500	0.0047-0.0071
14	2700	0.0087-0.0138	2700	0.0087-0.0138	1600	0.0087-0.0138	1350	0.0051-0.0087	2700	0.0087-0.0138	2100	0.0087-0.0138	450	0.0051-0.0079
16	2400	0.0098-0.0142	2400	0.0098-0.0142	1400	0.0098-0.0142	1200	0.0055-0.0098	2400	0.0098-0.0142	1800	0.0098-0.0142	400	0.0055-0.0091
18	2100	0.011-0.015	2100	0.011-0.015	1200	0.011-0.015	1050	0.0059-0.011	2100	0.011-0.015	1600	0.011-0.015	350	0.0059-0.0098
20	1900	0.0118-0.0157	1900	0.0118-0.0157	1100	0.0118-0.0157	950	0.0063-0.0118	1900	0.0118-0.0157	1400	0.0118-0.0157	320	0.0063-0.011

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 5D.

GD series twist drills(internal coolant)

8D

workpiece material	Mild steel HB≤180		Carbon steel, alloy steel ~30HRC		Pre-hardened steel ~40HRC		Stainless steel		Cast iron		Nodular cast iron		Heat resistant alloy	
Cutting speed	265~500SFPM		265~500SFPM		165~265SFPM		135~200SFPM		265~500SFPM		200~395SFPM		50~85SFPM	
Diameter (mm)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)
3	12700	0.0024-0.0039	12700	0.0024-0.0039	7400	0.0024-0.0039	5300	0.0012-0.0028	12700	0.0024-0.0039	9500	0.0024-0.0039	2100	0.0012-0.0024
4	9600	0.0031-0.0047	9600	0.0031-0.0047	5600	0.0031-0.0047	4000	0.0016-0.0031	9600	0.0031-0.0047	7000	0.0031-0.0047	1600	0.0016-0.0028
5	7600	0.0039-0.0055	7600	0.0039-0.0055	4500	0.0039-0.0055	3200	0.002-0.0039	7600	0.0039-0.0055	5700	0.0039-0.0055	1250	0.002-0.0035
6	6400	0.0043-0.0063	6400	0.0043-0.0063	3700	0.0043-0.0063	2700	0.0024-0.0047	6400	0.0043-0.0063	4700	0.0043-0.0063	1050	0.0024-0.0043
8	4800	0.0051-0.0075	4800	0.0051-0.0075	2800	0.0051-0.0075	2000	0.0031-0.0063	4800	0.0051-0.0075	3600	0.0051-0.0075	800	0.0031-0.0055
10	3800	0.0055-0.0087	3800	0.0055-0.0087	2200	0.0055-0.0087	1600	0.0039-0.0071	3800	0.0055-0.0087	2800	0.0055-0.0087	600	0.0039-0.0063
12	3200	0.0063-0.0094	3200	0.0063-0.0094	1900	0.0063-0.0094	1300	0.0047-0.0079	3200	0.0063-0.0094	2400	0.0063-0.0094	500	0.0047-0.0071
14	2700	0.0071-0.011	2700	0.0071-0.011	1600	0.0071-0.011	1100	0.0051-0.0087	2700	0.0071-0.011	2100	0.0071-0.011	450	0.0051-0.0079
16	2400	0.0079-0.0114	2400	0.0079-0.0114	1400	0.0079-0.0114	1000	0.0055-0.0098	2400	0.0079-0.0114	1800	0.0079-0.0114	400	0.0055-0.0091
18	2100	0.0094-0.0126	2100	0.0094-0.0126	1200	0.0094-0.0126	880	0.0059-0.011	2100	0.0094-0.0126	1600	0.0094-0.0126	350	0.0059-0.0098

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 8D.

SL series deep twist drills(internal coolant)

12D

workpiece material	Mild steel HB≤180		Carbon steel, alloy steel ~30HRC		Pre-hardened steel ~40HRC		Stainless steel		Cast iron		Nodular cast iron		Aluminum alloy		Heat resistant alloy	
Cutting speed	200~395SFPM		200~395SFPM		165~265SFPM		135~200SFPM		265~500SFPM		200~395SFPM		330~590SFPM		35~70SFPM	
Diameter (mm)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)
3	10600	0.0024-0.0039	10600	0.0024-0.0039	7400	0.0024-0.0039	5300	0.0012-0.0028	12700	0.0024-0.0039	9500	0.0024-0.0039	15000	0.0035-0.0047	2100	0.0012-0.0024
4	8000	0.0031-0.0047	8000	0.0031-0.0047	5600	0.0031-0.0047	4000	0.0016-0.0031	96000	0.0031-0.0047	7000	0.0031-0.0047	11000	0.0039-0.0059	1600	0.0016-0.0028
5	6400	0.0039-0.0055	6400	0.0039-0.0055	4500	0.0039-0.0055	3200	0.002-0.0039	7600	0.0039-0.0055	5700	0.0039-0.0055	9000	0.0039-0.0059	1250	0.002-0.0035
6	5300	0.0043-0.0063	5300	0.0043-0.0063	3700	0.0043-0.0063	2700	0.0024-0.0047	6400	0.0043-0.0063	4700	0.0043-0.0063	7400	0.0043-0.0063	1050	0.0024-0.0043
8	4000	0.0051-0.0075	4000	0.0051-0.0075	2800	0.0051-0.0075	2000	0.0031-0.0063	4800	0.0051-0.0075	3600	0.0051-0.0075	5600	0.0051-0.0075	800	0.0031-0.0055
10	3200	0.0055-0.0087	3200	0.0055-0.0087	2200	0.0055-0.0087	1600	0.0039-0.0071	3800	0.0055-0.0087	2800	0.0055-0.0087	4500	0.0055-0.0087	600	0.0039-0.0063
12	2700	0.0063-0.0094	2700	0.0063-0.0094	1900	0.0063-0.0094	1300	0.0047-0.0079	3200	0.0063-0.0094	2400	0.0063-0.0094	3700	0.0063-0.0094	500	0.0047-0.0071
14	2300	0.0071-0.011	2300	0.0071-0.011	1600	0.0071-0.011	1100	0.0051-0.0087	2700	0.0071-0.011	2100	0.0071-0.011	3200	0.0071-0.011	450	0.0051-0.0079
16	2100	0.0079-0.0118	2100	0.0079-0.0118	1400	0.0079-0.0118	1050	0.0055-0.0098	2100	0.0079-0.0118	1800	0.0079-0.0118	2800	0.0098-0.0142	400	0.0055-0.0091
18	1800	0.0087-0.0126	1800	0.0087-0.0126	1200	0.0087-0.0126	950	0.0059-0.011	1800	0.0087-0.0126	1600	0.0087-0.0126	2500	0.011-0.015	350	0.0059-0.0098
20	1600	0.0098-0.0138	1600	0.0098-0.0138	1100	0.0098-0.0138	800	0.0063-0.0118	1600	0.0098-0.0138	1400	0.0098-0.0138	2300	0.0118-0.0157	320	0.0063-0.011

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.

SL series deep twist drills(internal coolant)

20D 30D

workpiece material	Mild steel HB≤180		Carbon steel, alloy steel ~30HRC		Pre-hardened steel ~40HRC		Stainless steel		Cast iron		Nodular cast iron		Aluminum alloy		Heat resistant alloy	
Cutting speed	200~395SFPM		200~395SFPM		165~265SFPM		135~200SFPM		265~500SFPM		200~395SFPM		330~590SFPM		35~75SFPM	
Diameter (mm)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)	Rotating speed (r/min)	Feed rate (in/rev)
3	10600	0.0024-0.0039	10600	0.0024-0.0039	7400	0.0024-0.0039	5300	0.0012-0.0028	12700	0.0024-0.0039	9500	0.0024-0.0039	15000	0.0035-0.0047	2100	0.0012-0.0024
4	8000	0.0031-0.0047	8000	0.0031-0.0047	5600	0.0031-0.0047	4000	0.0016-0.0031	96000	0.0031-0.0047	7000	0.0031-0.0047	11000	0.0039-0.0059	1600	0.0016-0.0028
5	6400	0.0039-0.0055	6400	0.0039-0.0055	4500	0.0039-0.0055	3200	0.002-0.0039	7600	0.0039-0.0055	5700	0.0039-0.0055	9000	0.0039-0.0059	1250	0.002-0.0035
6	5300	0.0043-0.0063	5300	0.0043-0.0063	3700	0.0043-0.0063	2700	0.0024-0.0047	6400	0.0043-0.0063	4700	0.0043-0.0063	7400	0.0043-0.0063	1050	0.0024-0.0043
8	4000	0.0051-0.0075	4000	0.0051-0.0075	2800	0.0051-0.0075	2000	0.0031-0.0063	4800	0.0051-0.0075	3600	0.0051-0.0075	5600	0.0051-0.0075	800	0.0031-0.0055
10	3200	0.0055-0.0087	3200	0.0055-0.0087	2200	0.0055-0.0087	1600	0.0039-0.0071	3800	0.0055-0.0087	2800	0.0055-0.0087	4500	0.0055-0.0087	600	0.0039-0.0063
12	2700	0.0063-0.0094	2700	0.0063-0.0094	1900	0.0063-0.0094	1300	0.0047-0.0079	3200	0.0063-0.0094	2400	0.0063-0.0094	3700	0.0063-0.0094	500	0.0047-0.0071
14	2300	0.0071-0.011	2300	0.0071-0.011	1600	0.0071-0.011	1100	0.0051-0.0087	2700	0.0071-0.011	2100	0.0071-0.011	3200	0.0071-0.011	450	0.0051-0.0079

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.