GOLD TWIST
DRILL LINE

Deeper Hole Drilling Solution: 12xD Expansion

Diameters:
12.0 mm to 22.0 mm

Bodies:
Cylindrical Shank Only

Tips:
12.0 mm to 22.9 mm
(.4724" to .9016")

Geometries:
TPA - Steel
TMA - Stainless & Exotics
TKA - Cast Iron
TPF - Flat Bottom - General Purpose

Ingersoll's remarkable high performance GOLD TWIST line has expanded with a 12xD drill body for deeper hole drilling, with a diameter range of 12.0 mm - 22.9 mm (.4724" - .9016").

The polished flutes and twisted coolant channel enables smooth chip evacuation and improved chip control due to the deeper chip gullet design. The 12xD body characterized by high stiffness guarantees stable performance without deviation or chattering during machining.

Furthermore, the 12xD expansion offers higher productivity for deep hole drilling applications without the need for pecking cycles.

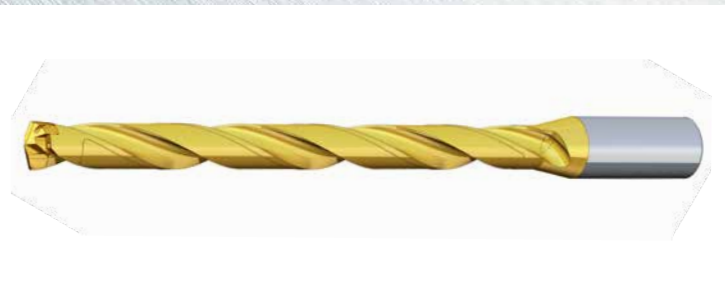
Features:
- Smooth chip evacuation
  -Twisted through coolant channel enables a deeper gullet design
  -Drill body's polished flute
- High accuracy: Cylindrical shank for good run-out
- High productivity: Deep hole drilling without pecking cycles

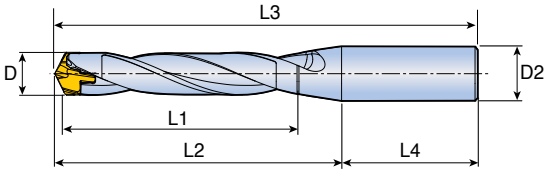
*Note: Prior to using the 12xD drill, it is recommended to drill a pilot hole using a TD 1.5xD drill with same tip for stable machining. See page 4 for complete details.

NEW PRODUCT ANNOUNCEMENT •2014•

Member IMC Group
Ingersoll Cutting Tools

HOLDERS - 12xD





Description	D Diameter (mm)	D Diameter (inch)	L1 DOC	D2 Shank Diameter	L2 Extension Length	L3 Overall Length	L4 Shank Length	Pocket Size	Locking Key
TD1200144S6R01	12.0-12.4	0.4724 - 0.4882	5.67	0.625	6.34	8.23	1.89	12	KTD10.0-19.9
TD1250150S6R01	12.5-12.9	0.4921 - 0.5079	5.91	0.625	6.57	8.46	1.89	12.5	KTD10.0-19.9
TD1300156S6R01	13.0-13.4	0.5118 - 0.5276	6.14	0.625	6.81	8.70	1.89	13	KTD10.0-19.9
TD1350162S6R01	13.5-13.9	0.5315 - 0.5472	6.38	0.625	7.05	8.94	1.89	13.5	KTD10.0-19.9
TD1400168S6R01	14.0-14.4	0.5512 - 0.5669	6.61	0.625	7.40	9.29	1.89	14	KTD10.0-19.9
TD1450174S6R01	14.5-14.9	0.5709 - 0.5866	6.85	0.625	7.64	9.53	1.89	14.5	KTD10.0-19.9
TD1500180S7R01	15.0-15.9	0.5906 - 0.6260	7.09	0.750	8.27	10.24	1.97	15	KTD10.0-19.9
TD1600192S7R01	16.0-16.9	0.6299 - 0.6654	7.56	0.750	8.82	10.79	1.97	16	KTD10.0-19.9
TD1700204S7R01	17.0-17.9	0.6693 - 0.7047	8.03	0.750	9.37	11.34	1.97	17	KTD10.0-19.9
TD1800216S1R01	18.0-18.9	0.7087 - 0.7441	8.50	1.000	9.92	12.13	2.20	18	KTD10.0-19.9
TD1900228S1R01	19.0-19.9	0.7480 - 0.7835	8.98	1.000	10.47	12.68	2.20	19	KTD10.0-19.9
TD2000240S1R01	20.0-20.9	0.7874 - 0.8228	9.45	1.000	11.02	13.23	2.20	20	KTD20.0-26.9
TD2100252S1R01	21.0-21.9	0.8268 - 0.8622	9.92	1.000	11.57	13.78	2.20	21	KTD20.0-26.9
TD2200264S1R01	22.0-22.9	0.8661 - 0.9016	10.39	1.000	12.13	14.33	2.20	22	KTD20.0-26.9
TD2300276S9R01 *	23.0-23.9	0.9055 - 0.9409	10.87	1.250	12.68	15.04	2.36	23	KTD20.0-26.9
TD2400288S9R01 *	24.0-24.9	0.9449 - 0.9803	11.34	1.250	13.23	15.59	2.36	24	KTD20.0-26.9
TD2500300S9R01 *	25.0-25.9	0.9843 - 1.0197	11.81	1.250	13.78	16.14	2.36	25	KTD20.0-26.9

* Available by End of 2014.

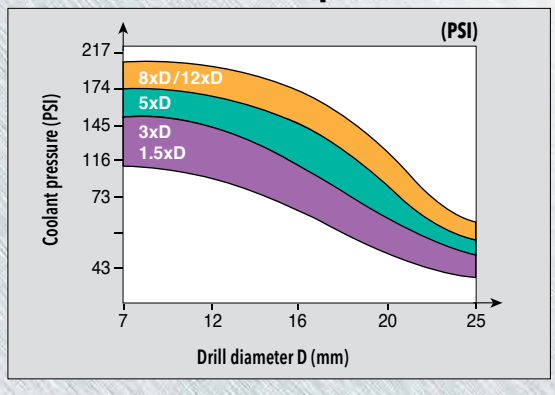
OPERATING GUIDELINES

ISO	Material	Condition	Tensile Strength Rm (N/mm²)	Hardness (HB)	Matl No.	Cutting Speed Vc (SFM)	Feed vs Drill Diameter					
							D= 7-9.9mm (.275-.390")	D= 10-11.9mm (.394-.469")	D= 12-13.9mm (.472-.547")	D= 14-15.9mm (.551-.626")	D= 16-19.9mm (.630-.783")	D= 20-25.9mm (.787-1.019")
							IPR (inches/rev)					
P	Non-alloy steel <0.25% C & cast steel, > = 0.25% C free cutting steel <0.55% C > = 0.55% C	Annealed	420	125	1	260-360-460	.005 .007 .009	.006 .008 .011	.007 .009 .012	.008 .011 .014	.010 .014 .018	.010 .014 .018
		Annealed	650	190	2	260-345-430						
		Quenched & Tempered	850	250	3	260-330-400						
		Annealed	750	220	4	230-295-360						
		Quenched & Tempered	1000	300	5	165-230-300						
	Low alloy steel & cast steek (less than 5% alloying elements)	Annealed	600	200	6	230-315-400	.005 .007 .010	.006 .008 .011	.006 .009 .013	.007 .010 .014	.009 .012 .016	.010 .014 .018
		Quenched & Tempered	930	275	7	230-295-360						
			1000	300	8	165-230-300						
			1200	350	9	135-180-230						
	High alloy steel, cast steel, & tool steel	Annealed	680	200	10	165-230-300	.005 .006 .008	.005 .006 .007	.006 .008 .010	.007 .009 .011	.008 .010 .012	.009 .011 .013
		Quenched & Tempered	1100	325	11	130-200-265						
M	Stainless steel & cast stainless steel	Ferritic/martensitic	680	200	12	130-180-230	.004 .005 .006	.005 .006 .007	.006 .007 .008	.006 .008 .009	.006 .008 .010	.007 .009 .012
		Martensitic	820	240	13	130-180-230						
		Austenitic	600	180	14	100-165-230						
K	GreyCast Iron (GG)	Ferritic		160	15	300-410-525	.006 .009 .012	.008 .011 .014	.010 .013 .016	.012 .015 .018	.014 .018 .022	.014 .018 .024
		Pearlitic		250	16	265-360-460						
	Cast Iron Nodular (GGG)	Ferritic		180	17	300-450-600						
		Pearlitic		260	18	265-360-460						
	Malleable Cast Iron	Ferritic		130	19	300-410-525						
		Pearlitic		230	20	265-360-460						
N	Aluminum - wrought alloy	Not cureable		60	21	300-510-725	.008 .011 .014	.010 .013 .016	.012 .015 .018	.014 .017 .020	.016 .020 .024	.018 .022 .028
		Cured		100	22	300-510-725						
	Aluminum - cast, alloyed <=12% Si / >12% Si	Not cureable		75	23	300-510-725						
		Cured		90	24	300-510-725						
		High temperature		130	25	265-400-525						
	Copper alloys > 1% Pb	Free cutting		110	26	300-510-725						
		Brass		90	27	300-510-725						
		Electrolitic copper		100	28	300-510-725						
	Non-metallic	Duro & fiber plastics			29	-	- -	- -	- -	- -	- -	
		Hard rubber			30	-						
S	High temp alloys Fe based / Ni or Co based	Annealed		200	31	100-150-200	.002 .003 .004	.003 .004 .005	.004 .005 .006	.005 .006 .007	.005 .006 .008	.006 .007 .009
		Cured		280	32	70-115-165						
		Annealed		250	33	70-115-165						
		Cured		350	34	70-115-165						
		Cast		320	35	70-115-165						
	Titanium, Ti alloys		Rm 400		36	70-115-165	.002 .004 .005	.003 .004 .006	.004 .006 .007	.005 .007 .008	.006 .007 .009	.006 .008 .010
		Alpha+beta alloys cured	Rm 1050		37	70-115-165						
H	Hardened steel	Hardened		55 HRC	38	70-115-165	.002 .004 .005	.003 .004 .006	.004 .006 .007	.005 .007 .008	.006 .007 .009	.006 .008 .010
		Hardened		60 HRC	39	70-115-165						
	Chilled cast iron	Cast		400	40	-	-	-	-	-	-	
	Cast iron nodular	Hardened		55 HRC	41	-	-	-	-	-	-	

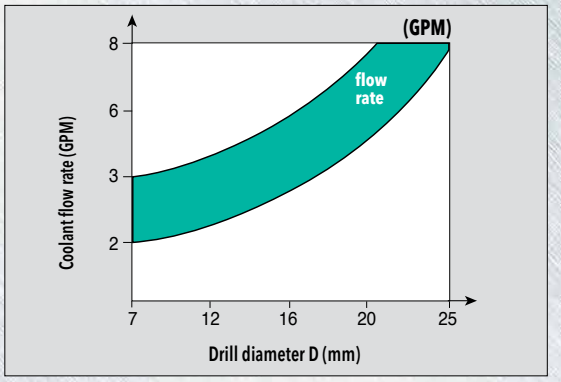
* Feed Rates are based on Two Effective - DO NOT DOUBLE.

TECHNICAL INFORMATION

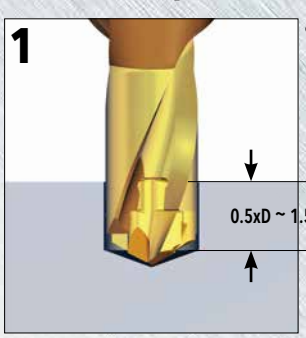
Recommended coolant pressure (min)



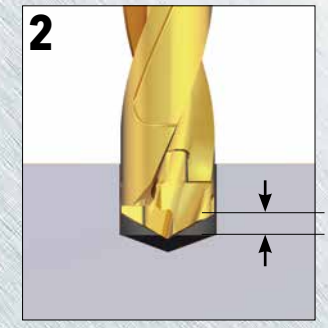
Recommended coolant flow rate



Recommended procedure for using 8xD, 12xD holder

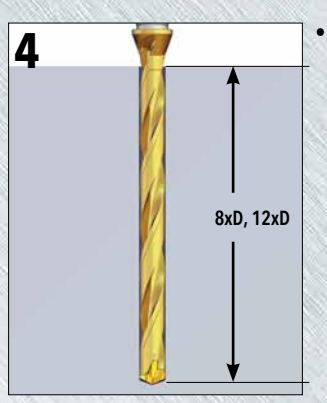


- Pre-hole drilling
  - diameter(D) X 0.5 depth for 8xD
  diameter(D) X 1.5 depth for 12xD
  - using standard 1.5xD holder



- Approach the pre-hole at reduced speed and feed

- Activate the cooling system
  - Dwell for 2~3 seconds

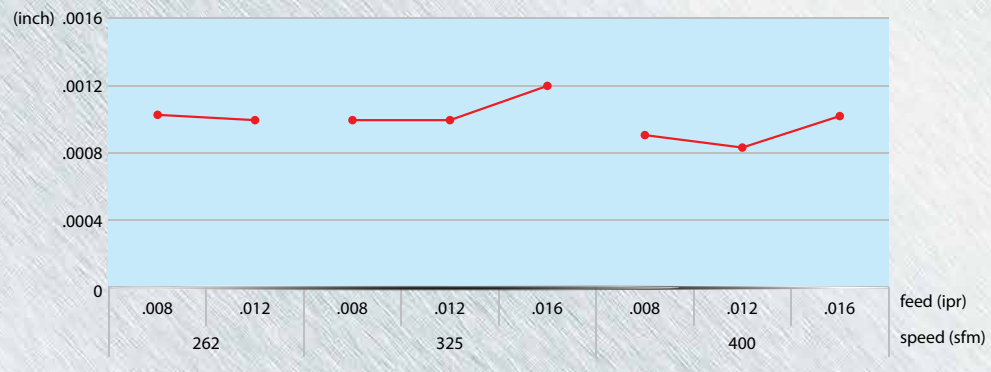


- After drilling, exit from hole at reduced speed and feed

CASE STUDY

Machine		Machining center (Spindle : Vertical type / BT50)
Cutting conditions	Speed (V)	262 / 328 / 393 (sfm)
	Feed (f)	.008 / .012 / .016 (ipr)
Coolant		Internal (290 psi)
Material		Alloy steel (AISI 4140 / 42CrMo4)
Body		TD1200144S6R01
Head		TPA1200R01 IN2505 (12.0mm)

Hole Enlargement



COOLANT PLUG FOR STATIONARY MACHINES

Ingersoll supplies special plugs with an internal thread for coolant connections used on lathes that can be pressed into the cavity on the back end of the shank. Order separately. For use in 1.5xD, 3xD, 5xD, 8xD & 12xD GoldTwist bodies.

Item no.	Description	Shank diameter	Internal thread
7005198	DL-12	.500"	1/16-27
7005199	DL-16	.625"	1/16-27
7005200	DL-20	.750"	1/8-27
7005201	DL-25	1.000"	1/8-27
7005607	DL-32	1.250"	1/8-27