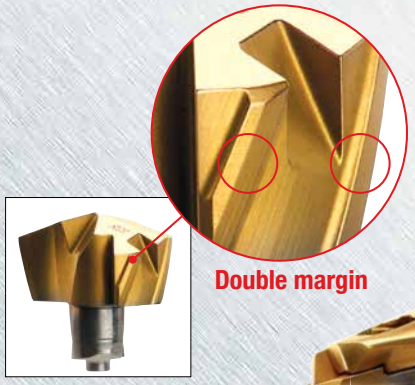
GOLD TWIST
DRILL LINE

8.0-19.5mm Diameter Range
Double Margin Indexable Drill Heads



Tip Sizes:
8.0 mm to 19.5 mm
(.5mm increments)
See table for common inch sizes.

Grade:
IN2505
Specific for ISO "P" Steels

Designation:
TPA....R01-M2

Ingersoll has expanded the application range of its GOLD TWIST drilling line with the introduction of our new double margin, quick change drill tips for steel drilling, ISO "P" materials, with a diameter range of 8.0mm to 19.5mm (.5mm increments) and common inch sizes. See dimension tables for specifics.

With two margins per cutting edge, and two cutting edges, the new double margin GOLD TWIST tip ensures high quality holes in relation to the concentricity and straightness during machining, including close hole tolerance, excellent surface finish and production reliability. In addition, the double margin GOLD TWIST tips are available in our proven IN2505 grade and are interchangeable with our standard GOLD TWIST bodies.

The new GOLD TWIST double margin drill tips open the door to excellent surface finishes and high precision drilling applications expanding Ingersoll's reach into the drilling market.

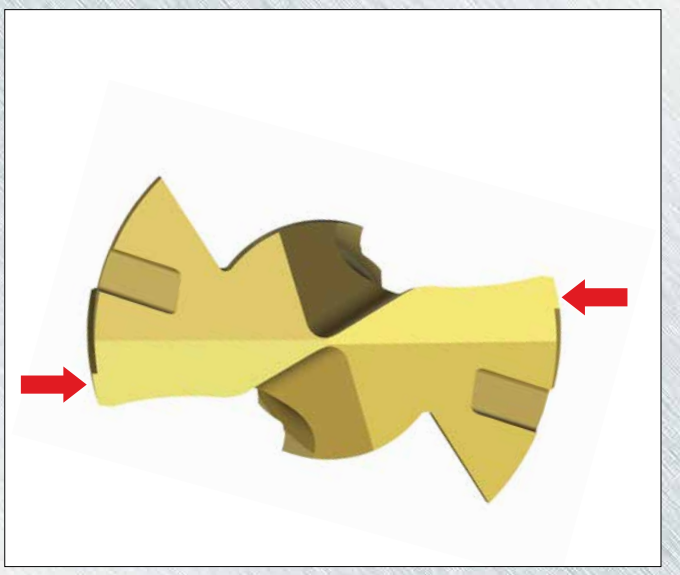
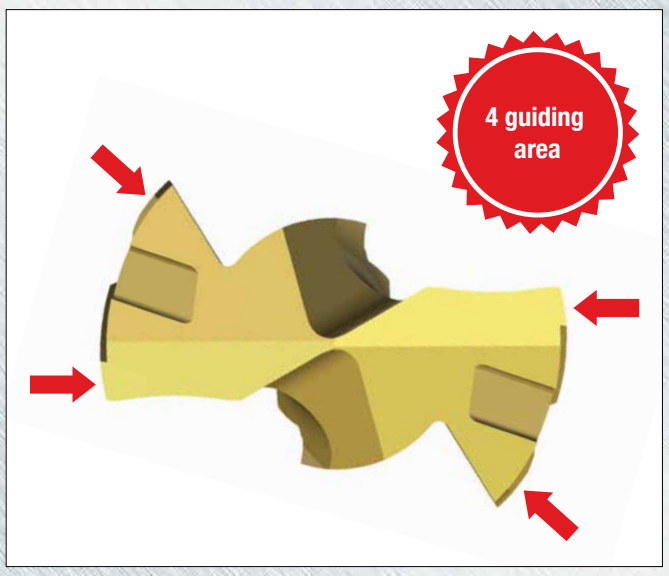
FEATURES

- Excellent surface finish, hole concentricity and straightness.
  -Finishes under 63µin
  -Concentricity and straightness under .002".
  -Hole tolerance +.002/-.000.
- ISO "P" materials, specifically alloy steels.
- Interchangeable with our standard GOLD TWIST bodies.
- Double margin drill tips use the same recommended cutting speeds and feeds as our standard single margin tips.

NEW PRODUCT ANNOUNCEMENT *2015*

Member IMC Group
Ingersoll Cutting Tools

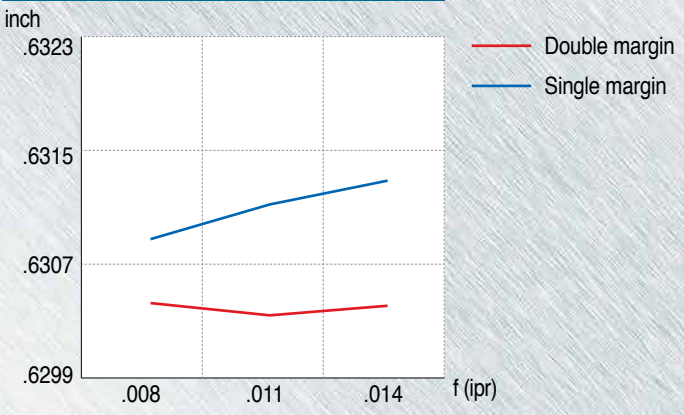
COMPARISON

Standard single margin head	Double margin head new
	

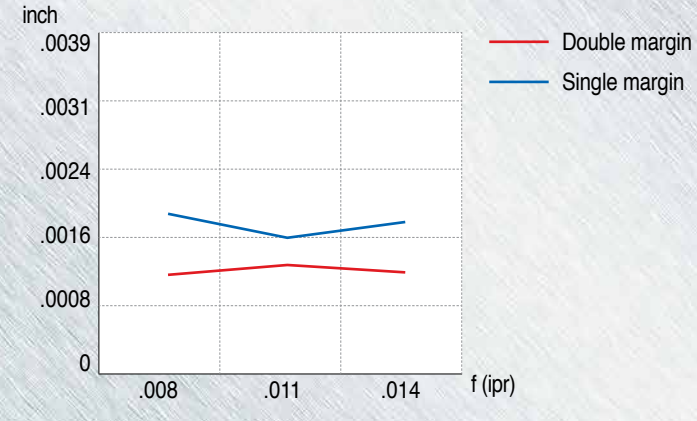
CASE STUDY

Machine		Vertical machining center (Spindle: BT 50)
Coolant		Internal (145psi)
Material		Alloy steel (AISI 4140, 42CrMo4)
Drill		TD160008018R01
Head		TPA1600R01 IN2505 / TPA1600R01-2M IN2505
Cutting speed	V (sfm)	394
Feed rate	f (ipr)	.008 / .011 / .014

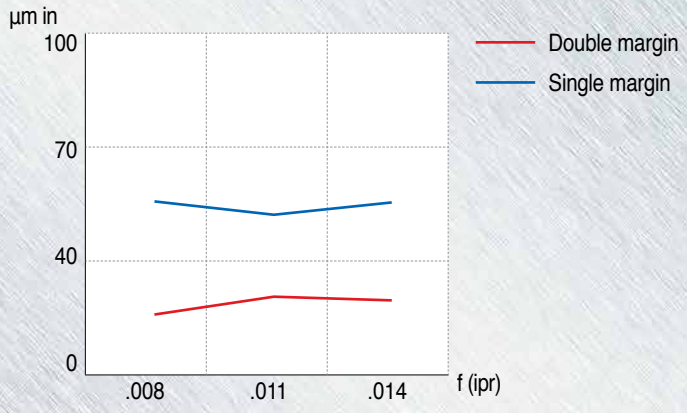
Hole size



Cylindricity



Surface roughness (Ra)

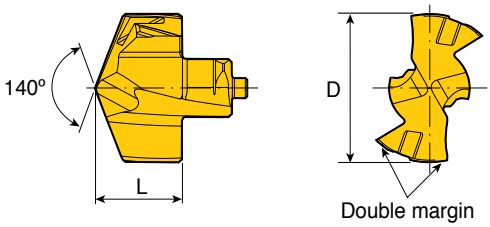


Surface roughness

Single margin Double margin

* Results may vary according to machine and cutting conditions.

TPA...M2 Double margin drill head



Description	Diameter D (mm)	Diameter D (inch)	Tip Length L (inch)	Pocket Size	Grade
TPA0800R01-M2	8	0.3150	0.213	8	IN2505
TPA0850R01-M2	8.5	0.3346	0.213	8.5	IN2505
TPA0873R01-M2	8.73	0.3437	0.213	8.5	IN2505
TPA0900R01-M2	9	0.3543	0.228	9	IN2505
TPA0950R01-M2	9.5	0.3740	0.228	9.5	IN2505
TPA1000R01-M2	10	0.3937	0.244	10	IN2505
TPA1032R01-M2	10.32	0.4062	0.244	10	IN2505
TPA1050R01-M2	10.5	0.4134	0.244	10.5	IN2505
TPA1100R01-M2	11	0.4331	0.260	11	IN2505
TPA1111R01-M2	11.11	0.4375	0.260	11	IN2505
TPA1150R01-M2	11.5	0.4528	0.260	11.5	IN2505
TPA1191R01-M2	11.91	0.4685	0.260	11.5	IN2505
TPA1200R01-M2	12	0.4724	0.276	12	IN2505
TPA1250R01-M2	12.5	0.4921	0.276	12.5	IN2505
TPA1270R01-M2	12.7	0.5000	0.276	12.5	IN2505
TPA1290R01-M2	12.9	0.5079	0.276	12.5	IN2505
TPA1300R01-M2	13	0.5118	0.299	13	IN2505
TPA1350R01-M2	13.5	0.5315	0.299	13.5	IN2505
TPA1400R01-M2	14	0.5512	0.321	14	IN2505
TPA1429R01-M2	14.29	0.5625	0.321	14	IN2505
TPA1450R01-M2	14.5	0.5709	0.321	14.5	IN2505
TPA1500R01-M2	15	0.5906	0.344	15	IN2505
TPA1550R01-M2	15.5	0.6102	0.344	15	IN2505
TPA1588R01-M2	15.88	0.6250	0.344	15	IN2505
TPA1600R01-M2	16	0.6299	0.366	16	IN2505
TPA1650R01-M2	16.5	0.6496	0.366	16	IN2505
TPA1700R01-M2	17	0.6693	0.390	17	IN2505
TPA1750R01-M2	17.5	0.6890	0.390	17	IN2505
TPA1800R01-M2	18	0.7087	0.413	18	IN2505
TPA1850R01-M2	18.5	0.7283	0.413	18	IN2505
TPA1900R01-M2	19	0.7480	0.433	19	IN2505
TPA1905R01-M2	19.05	0.7500	0.433	19	IN2505
TPA1926R01-M2	19.26	0.7583	0.433	19	IN2505
TPA1930R01-M2	19.3	0.7598	0.433	19	IN2505
TPA1950R01-M2	19.5	0.7677	0.433	19	IN2505

RECOMMENDED CUTTING CONDITIONS

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")
							IPR (inches/rev)				
P	Non-alloy steel <0.25% C & cast steel, > = 0.25% C free cutting <0.55% C steel > = 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
		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
		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
		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
		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
		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
		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
		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
		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
		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