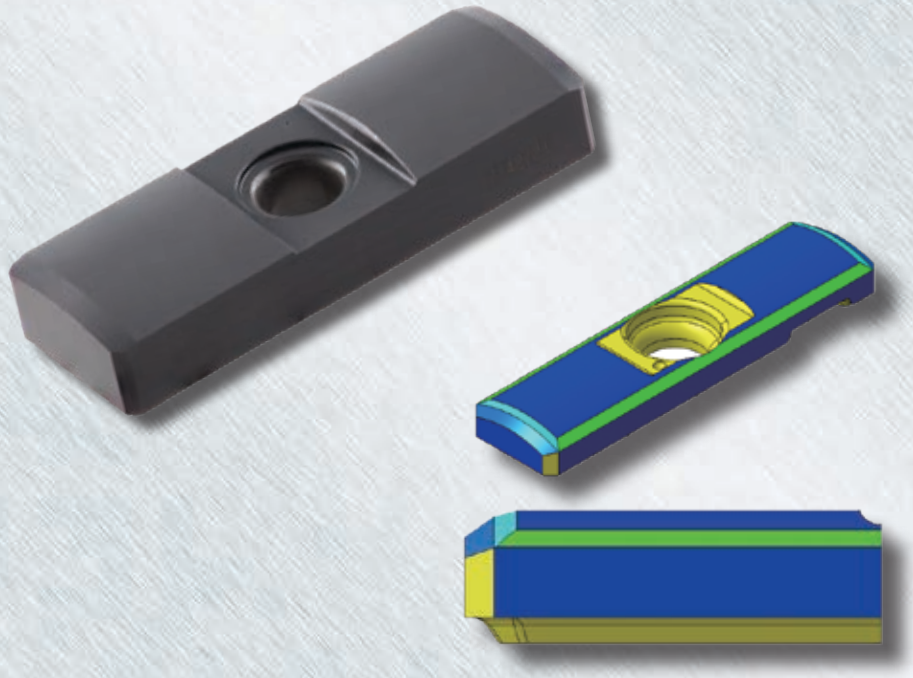
DEEP DRILL

Product Range
Deep Trio
TBTA-H
Indexable Cartridge Heads

Grades
CD: Brazed Carbide Pad - being phased out
IN2040: Solid Carbide - High Wear Resistance
IN2005: Solid Carbide - Combo of Wear & Toughness
IN2030: Solid Carbide - Higher Toughness



DC - "Double Chamfer" Guide Pad

Solid Carbide Guide Pads NEW Names, Grades & Features

Ingersoll is pleased to introduce changes to the solid guide pads used across eight of its deep-hole drilling product lines, including Deep Trio and BTA Heads.

New Grade IN2030 is a very tough grade for difficult applications, including those in water-soluble coolant environments.

New double-chamfer solid carbide guide pads provide a smoother entry into the pilot or bushing, reducing chipping and in many cases extending pad life more than two times. These pads are available in grades IN2005 and IN2030, making them an ideal choice for virtually all applications. As a result, Ingersoll will eventually phase out the comparable single-chamfer guide pads.

These new guide pad developments have created a need to use a new naming convention which is described on page 2.

PRODUCT ANNOUNCEMENT UPDATE 2020

Member IMC Group Ingersoll Cutting Tools

SOLID CARBIDE GUIDE PADS - DESIGNATION CODE KEY

The addition of the new guide pad grade and double chamfer has made it necessary to rename the guide pads to account for the various features. The new descriptions will be as follows;

New description: **PAD-GP06-020-120 IN2040** Old description: PAD-GO06-SB

In the above example, the components of the description represent the following;

PAD - GP06 - 020 - 120DC IN2040

PAD-GP = All guide pads for all BTA product lines will now have PAD-GP for the prefix as they are one family of solid carbide guide pads. Pads for each style of tool will be listed with that style of tool in the NPA's and the BTA catalog. Older brazed guide pads and the plus guide pads will not be updated to the new description at this time.

06 = width in mm

020 = length in mm

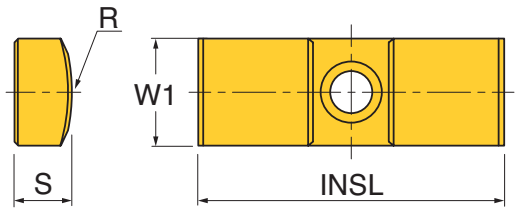
120 = radius in mm

DC = Double Chamfer. Pads with the single chamfer will have no designation.

The grade is also included now in the description. Options are as follows;

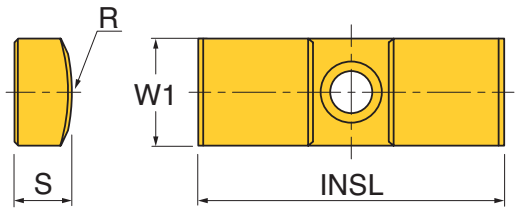
IN2040 (formerly SA): High Wear Resistance
IN2005 (formerly SB): Combination of Wear & Toughness
IN2030 (formerly SC): High Toughness

SOLID CARBIDE GUIDE PADS - DEEP TRIO & TBTA-DT SERIES BTA HEADS



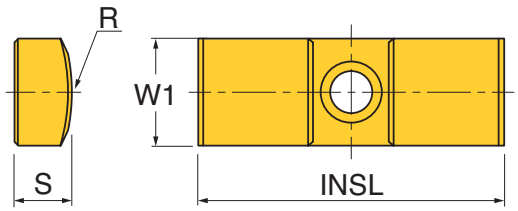
New Description	Old Deescription	W1 Width	S Thickness	INSL Length	R Radius
PAD-GP04-016-055 IN2040	PAD-GO04-055CD-SA	0.157	0.079	0.630	0.217
PAD-GP04-016-055 IN2005	PAD-GO04-055CD-SB				
NEW PAD-GP04-016-055-DC IN2005	-				
NEW PAD-GP04-016-055-DC IN2030	-				
PAD-GP05-018-060 IN2005	PAD-GO05-060CD-SB	0.197	0.098	0.709	0.236
NEW PAD-GP05-018-060-DC IN2005	-				
NEW PAD-GP05-018-060-DC IN2030	-				
PAD-GP05-018-075 IN2005	PAD-GO05-075CD-SB	0.197	0.098	0.709	0.295
NEW PAD-GP05-018-075-DC IN2005	-				
NEW PAD-GP05-018-075-DC IN2030	-				
PAD-GP06-020-075 IN2040	PAD-GO06-075CD-SA	0.236	0.118	0.787	0.295
PAD-GP06-020-075 IN2005	PAD-GO06-075CD-SB				
NEW PAD-GP06-020-075-DC IN2005	-				
NEW PAD-GP06-020-075-DC IN2030	-				
PAD-GP06-020-085 IN2040	PAD-GO06-085CD-SA	0.236	0.118	0.787	0.346
PAD-GP06-020-085 IN2005	PAD-GO06-085CD-SB				
NEW PAD-GP06-020-085-DC IN2005	-				
NEW PAD-GP06-020-085-DC IN2030	-				
PAD-GP06-020-100 IN2040	PAD-GO06-100CD-SA	0.236	0.118	0.787	0.394
PAD-GP06-020-100 IN2005	PAD-GO06-100CD-SB				
NEW PAD-GP06-020-100-DC IN2005	-				
NEW PAD-GP06-020-100-DC IN2030	-				
PAD-GP06-020-120 IN2040	PAD-GO06CD-SA	0.236	0.118	0.787	0.472
PAD-GP06-020-120 IN2005	PAD-GO06CD-SB				
NEW PAD-GP06-020-120-DC IN2005	-				
NEW PAD-GP06-020-120-DC IN2030	-				

SOLID CARBIDE GUIDE PADS - TBTA-H SERIES BTA HEADS



New Description	Old Deescription	W1 Width	S Thickness	INSL Length	R Radius
PAD-GP06-020-120 IN2040	PAD-GO06CD-SA	0.236	0.118	0.787	0.472
PAD-GP06-020-120 IN2005	PAD-GO06CD-SB				
NEW PAD-GP06-020-120-DC IN2005	-				
NEW PAD-GP06-020-120-DC IN2030	-				
PAD-GP07-020-120 IN2040	PAD-GO07CD-SA	0.276	0.138	0.787	0.472
PAD-GP07-020-120 IN2005	PAD-GO07CD-SB				
NEW PAD-GP07-020-120-DC IN2005	-				
NEW PAD-GP07-020-120-DC IN2030	-				
PAD-GP08-025-155 IN2040	PAD-GO08CD-SA	0.315	0.177	0.984	0.610
PAD-GP08-025-155 IN2005	PAD-GO08CD-SB				
NEW PAD-GP08-025-155-DC IN2005	-				
NEW PAD-GP08-025-155-DC IN2030	-				
PAD-GP10-030-200 IN2040	PAD-GO10CD-SA	0.394	0.177	1.181	0.787
PAD-GP10-030-200 IN2005	PAD-GO10CD-SB				
NEW PAD-GP10-030-200-DC IN2005	-				
NEW PAD-GP10-030-200-DC IN2030	-				
PAD-GP12-035-250 IN2040	PAD-GO12CD-SA	0.236	0.118	0.787	0.984
PAD-GP12-035-250 IN2005	PAD-GO12CD-SB				
NEW PAD-GP12-035-250-DC IN2005	-				
NEW PAD-GP12-035-250-DC IN2030	-				

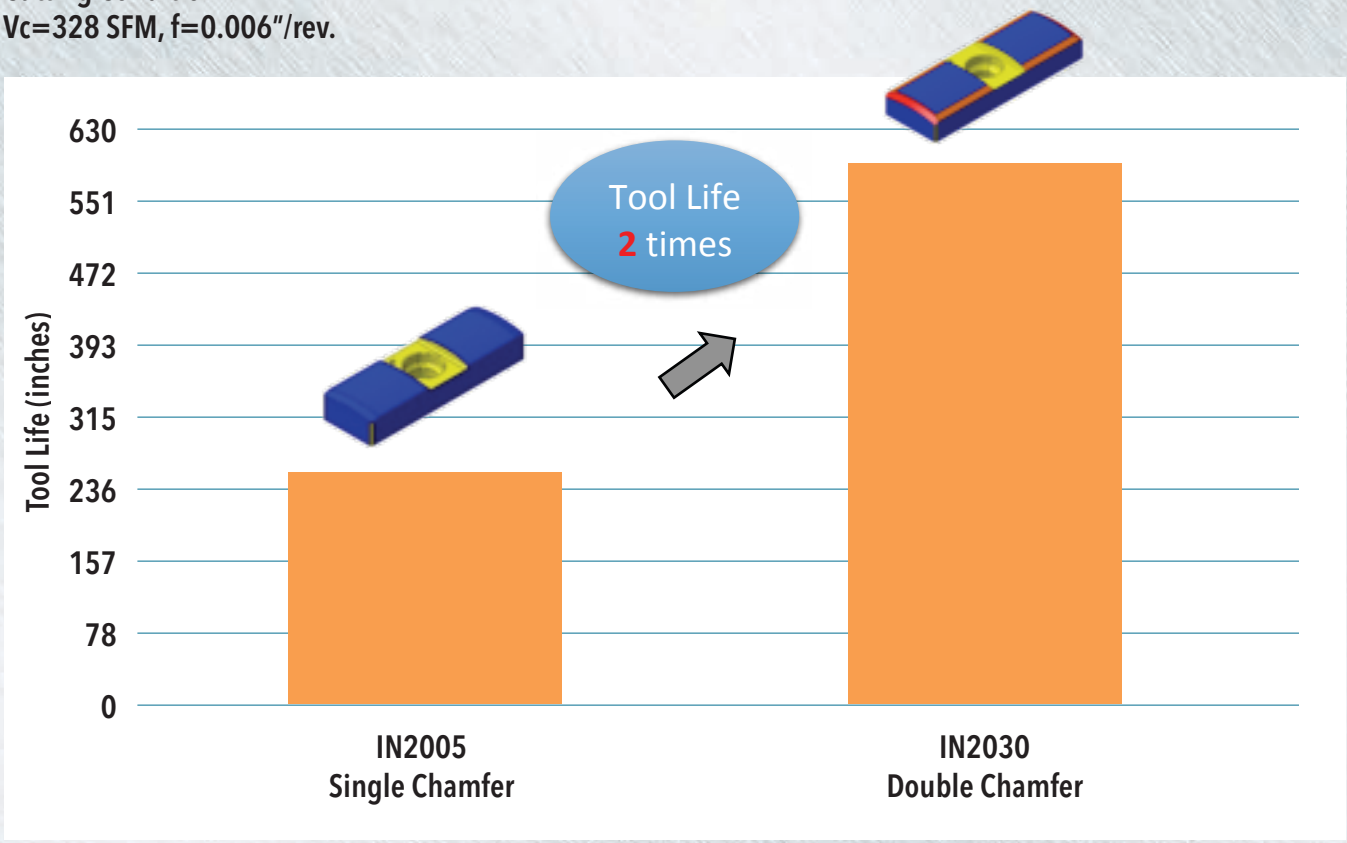
SOLID CARBIDE GUIDE PADS - TBTA3, TBTA5, TBTA7, TBTA-R & TBTA-T SERIES BTA HEADS



New Description	Old Deescription	W1 Width	S Thickness	INSL Length	R Radius
PAD-GP10-035-200 IN2040	PAD-GC10CD-SA	0.157	0.079	0.630	0.217
PAD-GP10-035-200 IN2005	PAD-GC10CD-SB				
NEW PAD-GP10-035-200-DC IN2005	-				
NEW PAD-GP10-035-200-DC IN2030	-				
PAD-GP14-040-250 IN2040	PAD-GC14CD-SA	0.197	0.098	0.709	0.236
PAD-GP14-040-250 IN2005	PAD-GC14CD-SB				
NEW PAD-GP14-040-250-DC IN2005	-				
NEW PAD-GP14-040-250-DC IN2030	-				
PAD-GP18-040-300 IN2005	PAD-GC14CD-SB	0.197	0.098	0.709	0.295
NEW PAD-GP18-040-300-DC IN2005	-				
NEW PAD-GP18-040-300-DC IN2030	-				

DOUBLE CHAMFER CUTTING PERFORMANCE

Tool: GT2001200
Material: 4340 steel
Cutting Condition:
Vc=328 SFM, f=0.006"/rev.

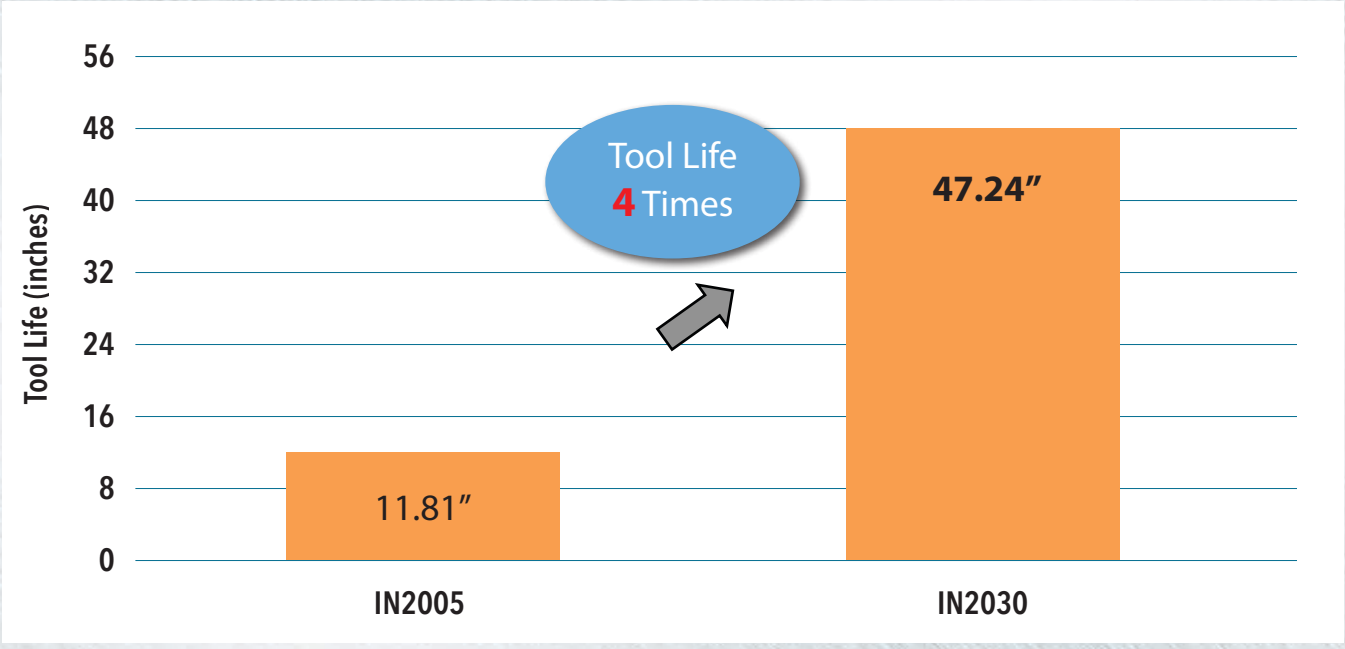


Double chamfer significantly improved fracture resistance and has increased tool life by 2 times more than single chamfer.

NEW GRADE CUTTING PERFORMANCE FIELD TEST

Drill Head: GT25400381
Guide Pad: GP06-20-100-DC
Material: 15-5 PH Stainless
Cutting Conditions:
- Hole Dia.: 1.0″
- Hole Depth: 305″
- Cutting Speed: 1.02 ipm
- Spindle Speed: 510 rpm
- Feed: .002 in/rev
- Coolant: Water Soluble

Tool Life per Corner:



New Guide Pad grade IN2030 significantly improved fracture resistance and has increased tool life by 4 times over our previous grade.