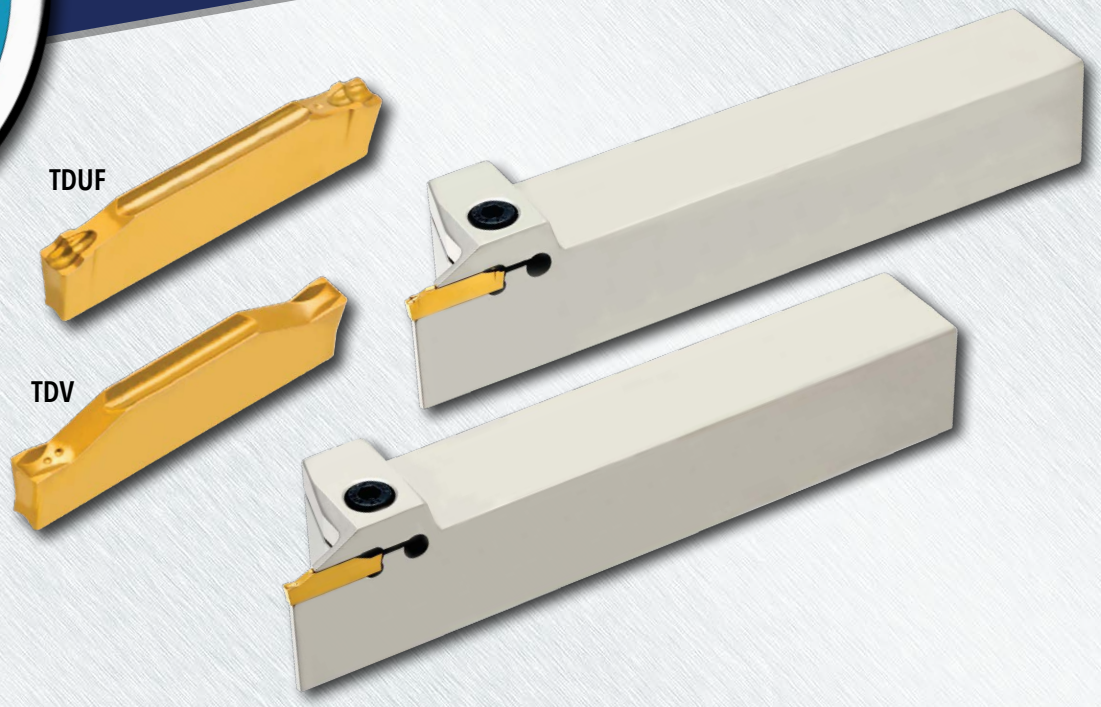
INDUSTRY 4.0
NEW PRODUCT ANNOUNCEMENT
2022

# T-CLAMP ULTRA+

PARTING AND GROOVING PRODUCTS




**TDUF**

**Insert Widths: 2 mm and 3 mm (.079" and .118")**

**Feed Rates: .0012–.005 ipr**

**Double-Ended**

**Overall Length: 20 mm (.787")**

**Grade: TT9080**

**TDV**

**Insert Widths: 2 mm, 3 mm, 4 mm (.079", .118", .157")**

**Feed Rate: .0016–.008 ipr**

**Double-Ended**

**Overall Length: 20 mm (.787")**

**Grades: TT9080 and TT8020**

**Compatible with all T-Clamp Ultra+ holders**

## New Specialized Chip Breakers

**New parting & grooving chip breakers focused on specific work piece materials.**

The **TDUF** chip breaker is designed with a unique shape suitable for parting and grooving of low carbon steel, chrome-nickel alloy steel and bearing steel. Exceptional chip control performance is achieved in these materials during low feed rate cutting conditions.

The **TDV** chip breaker features a sharp cutting edge and wide chip grooves that generate low cutting forces during machining. The straight cutting edge produces a true flat bottom groove. Targeted materials for this geometry include mild steel and stainless steel where built-up-edge can create premature insert failure. This chip breaker is the perfect solution for small diameter work pieces and tubes, particularly at low feed rates.

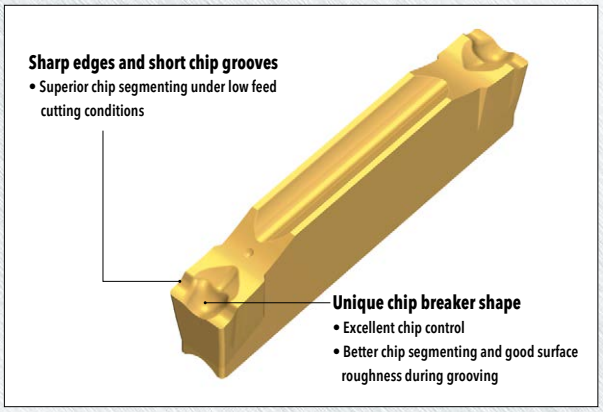
**TDUF Insert Features**:
- Suitable for the machining of chrome-nickel alloy steel and low carbon steel
- Exceptional performance in bearing steel machining
- Specialized for low feed cutting conditions
- Excellent chip control

**TDV Insert Features:**
- Sharp cutting edges and a wide chip groove that generates low cutting load during operations
- Superior chip segmenting power, which reduces built-up-edges
- Excellent performance in stainless steel and mild steel machining
- Optimally designed for small size workpieces and tubes in low feed cutting conditions
- Capable of precision flat surfaces during grooving

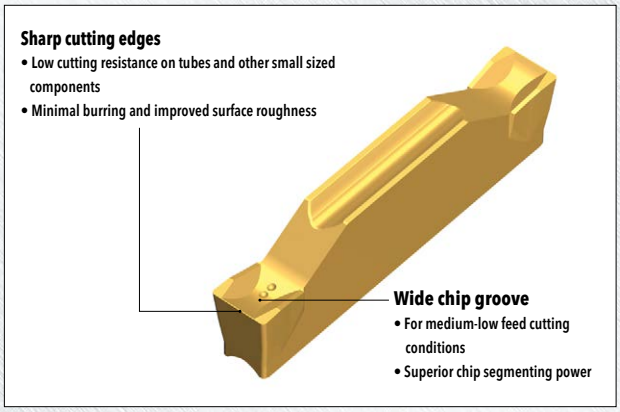
Member IMC Group Ingersoll Cutting Tools

## TOCLAMP ULTRA+

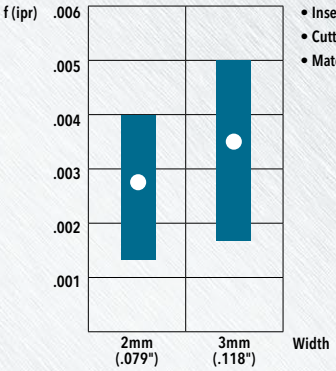
### TDUF Insert




### TDV Insert

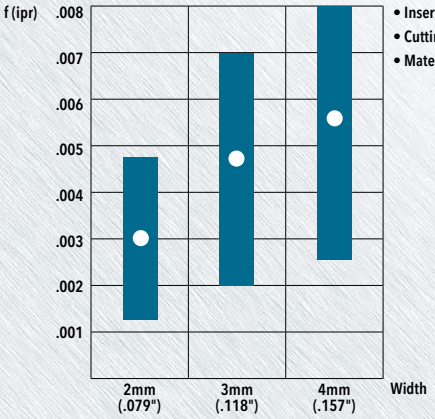



### TDUF Insert Recommended Feed Range



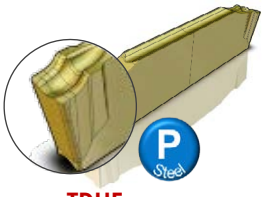
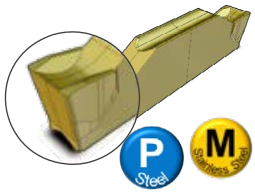
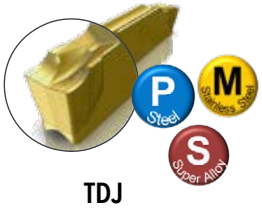

• Insert: TDUF
• Cutting speed (V): 400 sfm
• Material: DIN 1.3505 (HB 150 ~ 180)

### TDV Insert Recommended Feed Range




• Insert: TDV
• Cutting speed (V): 330 sfm
• Material: AISI 304 (HB 150 ~ 180)

### Chip Breakers for Parting & Grooving line

| Low Feed | Sharp cutting edges | Positive cutting edge | Tough edge for High feed |
|---|---|---|---|
|  |  |  |  |
| **TDUF**<br>Bearing steel & Cr base steel | **TDV**<br>Pipe & Stainless steel | **TDJ**<br>Light cut, low and Medium feed | **TDC**<br>General, Medium and High feed |

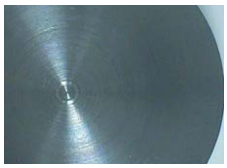
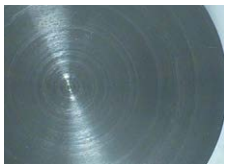
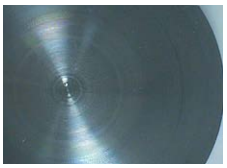
LOW ← Feed → HIGH

**TDUF** : Excellent chip breaking under low feed rate for bearing or mild steels and recommended for feed rate under 0.004 ipr. If you have chip control problems please select this chip breaker.

## TOCLAMP ULTRA+ TEST RESULTS

### TDUF chip segmenting and surface roughness comparison test 1

Bearing steel (DIN 1.3505), cutting speed=400 sfm

| | TDUF 2 | | Competitor A | | Competitor B | |
|---|---|---|---|---|---|---|
| feed (ipr) | .001 | .002 | .001 | .002 | .001 | .002 |
| Chip |  |  |  |  |  |  |
| Surface | feed=.001(ipr)  | | feed=.001(ipr)  | | feed=.001(ipr)  | |

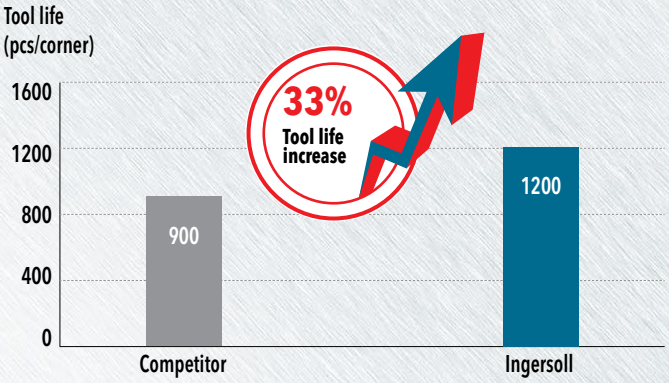
### TDUF chip segmenting comparison test 2

Low carbon steel (AISI 1020), cutting speed=500 sfm

| | TDUF 2 | | | Competitor A | | | Competitor B | | |
|---|---|---|---|---|---|---|---|---|---|
| feed (ipr) | .001 | .002 | .003 | .001 | .002 | .003 | .001 | .002 | .003 |
| Chip |  |  |  |  |  |  |  |  |  |

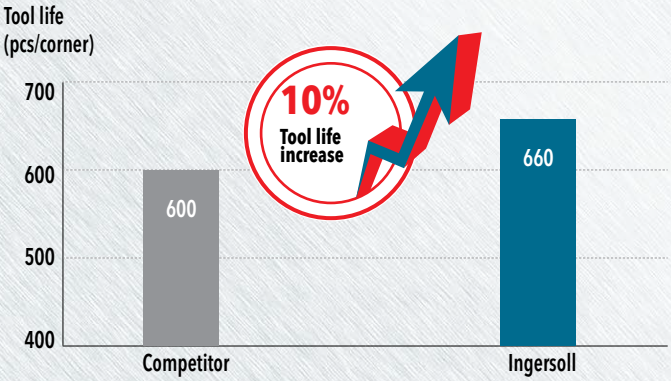
## TOOLCLAMP ULTRA+ CASE STUDY 1 - TDUF

| | | Competitor | Ingersoll |
|---|---|---|---|
| Material | | Bearing steel (DIN 1.3505) | |
| Operation | | Parting | |
| Insert | | Double ended insert for parting and grooving | TDUF 2 TT9080 |
| Cutting speed | V (sfm) | 425 | 425 |
| Feed rate | f ipr) | .003 | .003 |
| Depth of cut | ap (inch) | 590 | .590 |
| Coolant | | Wet | Wet |
| Tool life (pcs/corner) | | 900 | 1200 |



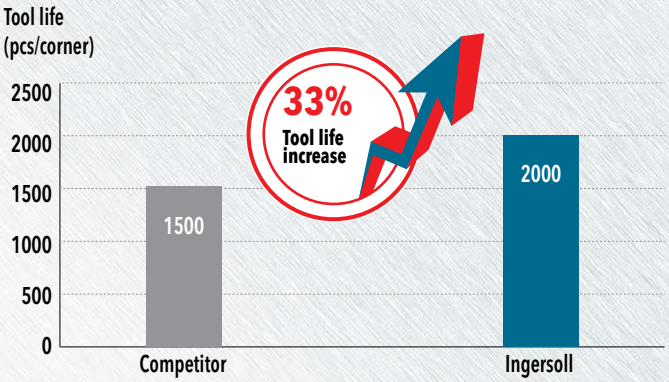

## TOOLCLAMP ULTRA+ CASE STUDY 2 - TDUF

| | | Competitor | Ingersoll |
|---|---|---|---|
| Material | | Bearing steel (DIN 1.3505) | |
| Operation | | Parting | |
| Insert | | Double ended insert for parting and grooving | TDUF 2 TT9080 |
| Cutting speed | V (sfm) | 425 | 425 |
| Feed rate | f ipr) | .004 | .004 |
| Depth of cut | ap (inch) | .118 | .118 |
| Coolant | | Wet | Wet |
| Tool life (pcs/corner) | | 600 | 660 |



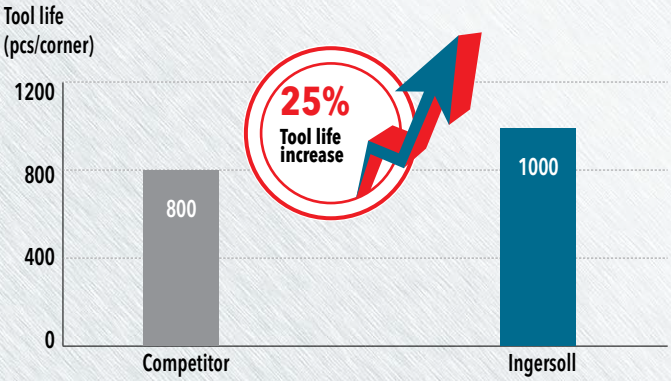
## TOOLCLAMP ULTRA+ CASE STUDY 3 - TDV

| | | Competitor | Ingersoll |
|---|---|---|---|
| Material | | Stainless steel (AISI 304) | |
| Machine | | Sliding head machine | |
| Operation | | Parting | |
| Insert | | Double ended insert for parting and grooving | TDV 2 TT9080 |
| Cutting speed | V (sfm) | 530 | 530 |
| Feed rate | f ipr) | .0012 | .0012 |
| Depth of cut | ap (inch) | .118 | .118 |
| Coolant | | Wet | Wet |
| Tool life (pcs/corner) | | 1500 | 2000 |



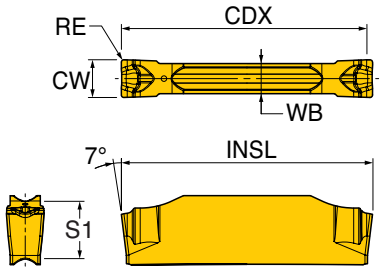

## TOOLCLAMP ULTRA+ CASE STUDY 4 - TDV

| | | Competitor | Ingersoll |
|---|---|---|---|
| Material | | Alloy steel | |
| Machine | | Sliding head machine | |
| Operation | | Parting | |
| Insert | | Double ended insert for parting and grooving | TDV 2 TT9080 |
| Cutting speed | V (sfm) | 310 | 310 |
| Feed rate | f ipr) | .0047 | .0047 |
| Depth of cut | ap (inch) | .230 | .230 |
| Coolant | | Wet | Wet |
| Tool life (pcs/corner) | | 800 | 1000 |



## TOCLAMP ULTRA+ TDUF

### DOUBLE-ENDED INSERTS FOR PARTING AND GROOVING WITH UF TYPE CHIP BRAKER



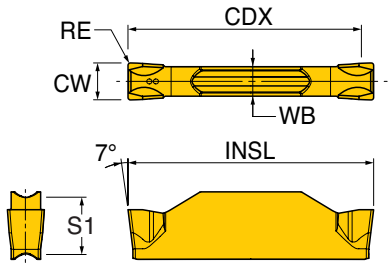

| Size | Dimensions (inch) | | | | |
|---|---|---|---|---|---|
| | CW | RE Corner Radius | WB | INSL | CDX |
| 2 | .079" (2mm) | .008 | .060 | .787 | .748 |
| 3 | .118" (3mm) | .008 | .095 | .787 | .748 |

| Insert | Designation ANSI (ISO) | Insert Seat Size | Feed (ipr) | Coated |
|---|---|---|---|---|
| | | | | TT9080 |
|  | TDUF 2 | 2 | .0012" - .0043" | • |
| | TDUF 3 | 3 | .0016" - .0051" | • |

•: Standard items

## TOCLAMP ULTRA+ TDV

### DOUBLE-ENDED INSERTS FOR PARTING AND GROOVING WITH V TYPE CHIP BRAKER




| Size | Dimensions (inch) | | | | |
|---|---|---|---|---|---|
| | CW | RE Corner Radius | WB | INSL | CDX |
| 2 | .079" (2mm) | .008 | .067 | .787 | .748 |
| 3 | .118" (3mm) | .008 | .095 | .787 | .748 |
| 4 | .157" (4mm) | .012 | .118 | .787 | .748 |

| Insert | Designation ANSI (ISO) | Insert Seat Sizr | Feed (ipr) | Coated | |
|---|---|---|---|---|---|
| | | | | TT9080 | TT8020 |
|  | TDV 2 | 2 | .0016" - .0047" | • | • |
| | TDV 3 | 3 | .0024" - .007" | • | • |
| | TDV 4 | 4 | .0031" - .008" | • | • |

• : Standard items