

Ingersoll



CUTTING TOOLS

TAEGUTHREAD

Cutting Tools



TAEГУTHREAD

THREA

TAE

| TaeguThread Inserts | |
|----------------------------|------|
| Inserts Designation System | T207 |
| Partial Profile 55° | T208 |
| Partial Profile 60° | T209 |
| ISO Metric Full Profile | T210 |
| American UN Full Profile | T215 |
| Whitworth Full Profile | T219 |
| NPT Full Profile | T223 |
| NPTF Full Profile | T224 |
| BSPT Full Profile | T225 |
| STUB ACME | T226 |
| ACME | T227 |
| UNJ | T228 |
| Trapeze DIN 103 | T229 |
| SAGE DIN 513 | T230 |
| American Buttress | T231 |
| API - Oil Threads | T232 |
| Round DIN 405 | T233 |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

THREADING INSERTS

Main Inserts Types



M-Type Inserts



High Profile Accuracy

Indexability on the toolholder of $\pm .0006"$ is guaranteed in all inserts.



Cost Advantage

Advanced technology guarantees economical production, high accuracy and improved performance.



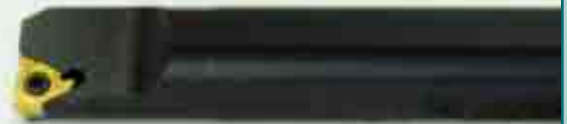
Excellent Chip Control

A unique chipbreaker gives excellent performance.



Clear and Easy Identification

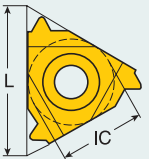
The designation clearly inscribed on the insert surface defines application, thread standard and pitch.



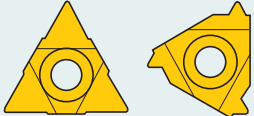
Standard Toolholders

Inserts can be mounted with a standard torx screw on most toolholders used in the threading industry.

| 1 Insert Size | |
|---------------|-------|
| L (inch) | IC |
| 06 | 5/32" |
| 08 | 3/16" |
| 11 | 1/4" |
| 16 | 3/8" |
| 22 | 1/2" |
| 27 | 5/8" |



| 2 Application | |
|---------------|---------------------------------|
| E | - External |
| I | - Internal |
| UE | - U-Type, External |
| UI | - U-Type, Internal |
| UEI | - U-Type, External and Internal |



U-Type Regular Type

| 3 Hand of Tool | |
|----------------|---------------------------|
| R | - Right-hand |
| L | - Left-hand |
| RL | - Right-hand Left-hand |

| 4 Type | |
|--------------------------|---------------------------------|
| M | - Pressed chipbreaker |
| <input type="checkbox"/> | - No indication regular type |

| | | | | | | |
|-----------|----------|----------|----------|-------------|------------|---------------|
| 16 | E | R | M | 1.50 | ISO | TT9030 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

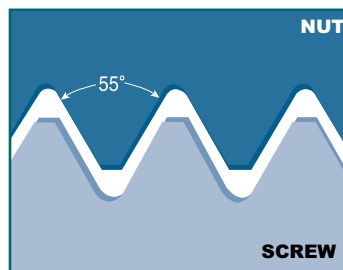
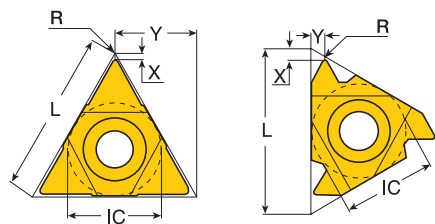
| 5 Pitch | |
|------------------------|-------------------------|
| Full Profile | |
| (Value by number) | |
| 0.35 - 9.0 | mm |
| 72 - 2 | TPI |
| Partial Profile | |
| (Range by letter) | |
| | mm TPI |
| A | 0.5 - 1.5 48 - 16 |
| AG | 0.5 - 3.0 48 - 8 |
| G | 1.75 - 3.0 14 - 8 |
| N | 3.5 - 5.0 7 - 5 |
| U | 5.5 - 9.0 4.5 - 2.75 |
| Q | 5.5 - 6.0 4.5 - 4 |






| 6 Thread Standard | |
|-------------------|-----------------------|
| 60 | - Partial Profile 60° |
| 55 | - Partial Profile 55° |
| ISO | - ISO Metric |
| UN | - American UN |
| W | - Whitworth |
| BSPT | - British BSPT |
| RND | - Round DIN 405 |
| TR | - Trapeze DIN 103 |
| ACME | - ACME |
| STACME | - Stub ACME |
| ABUT | - American Buttress |
| UNJ | - UNJ |
| NPT | - NPT |
| API RD | - API Round |
| BUT | - API Buttress Casing |
| VAM | - VAM |
| API | - API |
| H90 | - H-90 |
| EL | - Extreme Line Casing |

| 7 Grade | |
|---|--------------------|
| Coated | |
| | TT7010 |
| | TT8010 |
| | TT9030 |
| Uncoated | |
| | CT3000 (Cermet) |
| | P30 |
| | UF10 |
| | K10 |
| For more grade information see page T207 | |

THREADING INSERTS

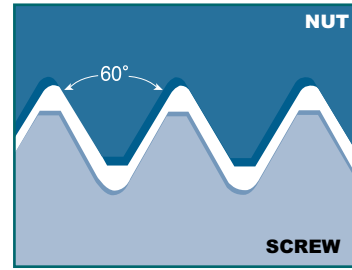
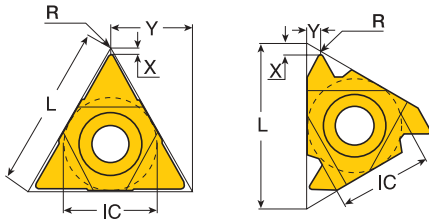
Partial Profile 55°








| Thread Form | IC | Pitch Range | | Designation | | Dimension | | | | |
|---|---|-------------|------------|---------------------|---------------------|-------------|-------|------|------|------|
| | | mm | TPI | Right Hand | Left Hand | L | R | X | Y | |
| External Regular Type  | 1/4" | .05-1.5 | 48 - 16 | 11 ER A 55 | 11 EL A 55 | .433 | .002 | .031 | .035 | |
| | | .05-1.5 | 48 - 16 | 16 ER A 55 | 16 EL A 55 | .630 | .002 | .031 | .035 | |
| | 3/8" | 1.75-3.0 | 14 - 8 | 16 ER G 55 | 16 EL G 55 | .630 | .008 | .047 | .067 | |
| | | 1.75-3.0 | 14 - 8 | 16 ERM G 55 | | .630 | .009 | .047 | .067 | |
| | | 0.5-3.0 | 48 - 8 | 16 ER AG 55 | 16 EL AG 55 | .630 | .002 | .047 | .067 | |
| | | 0.5-3.0 | 48 - 8 | 16 ERM AG 55 | | .630 | .002 | .047 | .067 | |
| M - Type  | 1/2" | 3.5-5.0 | 7 - 5 | 22 ER N 55 | 22 EL N 55 | .866 | .002 | .067 | .098 | |
| | 5/8" | 5.5-6.0 | 4.5 - 4 | 27 ER Q 55 | 27 EL Q 55 | 1.063 | .017 | .079 | .114 | |
| Internal Regular Type  | 5/32" | 0.5-1.25 | 48 - 20 | 06 IR A 55 | 06 IL A 55 | .236 | .002 | .024 | .024 | |
| | 3/16" | .05-1.5 | 48 - 16 | 08 IR A 55 | 08 IL A 55 | .315 | .002 | .024 | .028 | |
| | 1/4" | .05-1.5 | 48 - 16 | 11 IR A 55 | 11 IL A 55 | .433 | .002 | .031 | .035 | |
| | | .05-1.5 | 48 - 16 | 16 IR A 55 | 16 IL A 55 | .630 | .002 | .031 | .035 | |
| | | 1.75-3.0 | 14 - 8 | 16 IR G 55 | 16 IL G 55 | .630 | .008 | .047 | .067 | |
| | | 1.75-3.0 | 14 - 8 | 16 IRM G 55 | | .630 | .009 | .047 | .067 | |
| | M - Type  | 3/8" | 0.5-3.0 | 48 - 8 | 16 IR AG 55 | 16 IL AG 55 | .630 | .002 | .047 | .067 |
| | | | 0.5-3.0 | 48 - 8 | 16 IRM AG 55 | | .630 | .003 | .047 | .067 |
| | | 1/2" | 3.5-5.0 | 7 - 5 | 22 IR N 55 | 22 IL N 55 | .866 | .017 | .067 | .098 |
| | | 5/8" | 5.5-6.0 | 4.5 - 4 | 27 IR Q 55 | 27 IL Q 55 | 1.063 | .024 | .079 | .114 |
| U - Type  | 3/16" | 1.75-2.0 | 14 - 11 | 08 U IRL U 55 | | .315 | .004 | .035 | .157 | |
| | 1/2" | 5.5-8.0 | 4.5 - 3.25 | 22 U EIRL U 55 | | .866 | .024 | .035 | .433 | |
| | 5/8" | 6.5-9.0 | 4 - 2.75 | 27 U EIRL U 55 | | 1.063 | .032 | .047 | .539 | |

- ERM/IRM with pressed chipbreaker
- Available grades, see page B5

Partial Profile 60°

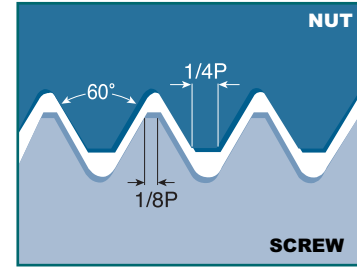
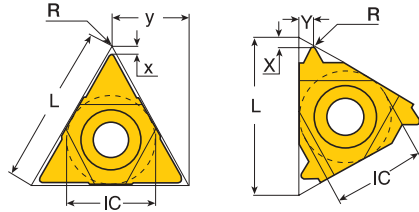




| Thread Form | IC | Pitch Range | | Designation | | Dimension | | | |
|---|---------|-------------|-------------|----------------|-------------|-----------|------|------|------|
| | | mm | TPI | Right Hand | Left Hand | L | R | X | Y |
| External Regular Type  M - Type  | 1/4" | 0.5-1.5 | 48 - 16 | 11 ER A 60 | 11 EL A 60 | .433 | .002 | .031 | .035 |
| | 3/8" | 0.5-1.5 | 48 - 16 | 16 ER A 60 | 16 EL A 60 | .630 | .002 | .031 | .035 |
| | | 0.5-1.5 | 48 - 16 | 16 ERM A 60 | | .630 | .002 | .031 | .035 |
| | | 1.75-3.0 | 14 - 8 | 16 ER G 60 | 16 EL G 60 | .630 | .007 | .047 | .067 |
| | | 1.75-3.0 | 14 - 8 | 16 ERM G 60 | | .630 | .007 | .047 | .067 |
| | | 0.5-3.0 | 48 - 8 | 16 ER AG 60 | 16 EL AG 60 | .630 | .002 | .047 | .067 |
| | | 0.5-3.0 | 48 - 8 | 16 ERM AG 60 | | .630 | .002 | .047 | .067 |
| | 1/2" | 3.5-5.0 | 7 - 5 | 22 ER N 60 | 22 EL N 60 | .866 | .013 | .067 | .098 |
| | | 3.5-5.0 | 7 - 5 | 22 ERM N 60 | | .866 | .013 | .067 | .098 |
| | 5/8" | 5.5-6.0 | 4.5 - 4 | 27 ER Q 60 | 27 EL Q 60 | 1.063 | .025 | .083 | .122 |
| Internal Regular Type  M - Type  | 5/32" | 0.5-1.25 | 48 - 20 | 06 IR A 60 | 06 IL A 60 | .236 | .002 | .020 | .024 |
| | | 0.5-1.25 | 48 - 20 | 06 IRM A 60 | | .236 | .002 | .020 | .024 |
| | 3/16" | 0.5-1.5 | 48 - 16 | 08 IR A 60 | 08 IL A 60 | .315 | .002 | .024 | .028 |
| | | 0.5-1.5 | 48 - 16 | 08 IRM A 60 | | .315 | .002 | .024 | .028 |
| | 1/4" | 0.5-1.5 | 48 - 16 | 11 IR A 60 | 11 IL A 60 | .433 | .002 | .031 | .035 |
| | | 0.5-1.5 | 48 - 16 | 11 IRM A 60 | | .433 | .002 | .031 | .035 |
| | 3/8" | 0.5-1.5 | 48 - 16 | 16 IR A 60 | 16 IL A 60 | .630 | .002 | .031 | .035 |
| | | 0.5-1.5 | 48 - 16 | 16 IRM A 60 | | .630 | .002 | .031 | .035 |
| | | 1.75-3.0 | 14 - 8 | 16 IR G 60 | 16 IL G 60 | .630 | .005 | .047 | .067 |
| | | 1.75-3.0 | 14 - 8 | 16 IRM G 60 | | .630 | .004 | .047 | .067 |
| | | 0.5-3.0 | 48 - 8 | 16 IR AG 60 | 16 IL AG 60 | .630 | .002 | .047 | .067 |
| | | 0.5-3.0 | 48 - 8 | 16 IRM AG 60 | | .630 | .002 | .047 | .067 |
| | 1/2" | 3.5-5.0 | 7 - 5 | 22 IR N 60 | 22 IL N 60 | .866 | .009 | .067 | .098 |
| 3.5-5.0 | | 7 - 5 | 22 IRM N 60 | | .866 | .007 | .067 | .098 | |
| 5/8" | 5.5-6.0 | 4.5 - 4 | 27 IR Q 60 | 27 IL Q 60 | 1.063 | .012 | .071 | .106 | |
| U - Type  | 3/16" | 1.75-2.0 | 14 - 11 | 08 U IRL U 60 | | .315 | .004 | .031 | .157 |
| | 1/2" | 5.5-8.0 | 4.5 - 3.25 | 22 U EIRL U 60 | | .866 | .011 | .024 | .433 |
| | 5/8" | 6.5-9.0 | 4 - 2.75 | 27 U EIRL U 60 | | 1.063 | .011 | .039 | .539 |

• ERM/IRM with pressed chipbreaker

THREADING INSERTS

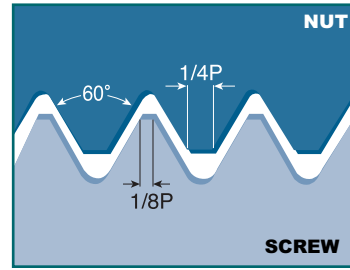
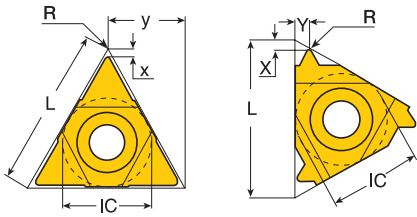
ISO METRIC Full Profile DIN13 12-1986 Class: 6G



| Thread Form | IC | Pitch mm | Designation | | Dimension | | | | |
|---|-----------------|-----------------|-----------------|----------------|----------------|------|------|------|------|
| | | | Right Hand | Left Hand | L | R | X | Y | |
| External Regular Type  M - Type  | 1/4" | 0.35 | 11 ER 0.35 ISO | 11 EL 0.35 ISO | .433 | .002 | .031 | .016 | |
| | | 0.40 | 11 ER 0.40 ISO | 11 EL 0.40 ISO | .433 | .002 | .028 | .016 | |
| | | 0.45 | 11 ER 0.45 ISO | 11 EL 0.45 ISO | .433 | .002 | .028 | .016 | |
| | | 0.50 | 11 ER 0.50 ISO | 11 EL 0.50 ISO | .433 | .002 | .024 | .024 | |
| | | 0.60 | 11 ER 0.60 ISO | 11 EL 0.60 ISO | .433 | .003 | .024 | .024 | |
| | | 0.70 | 11 ER 0.70 ISO | 11 EL 0.70 ISO | .433 | .003 | .024 | .024 | |
| | | 0.75 | 11 ER 0.75 ISO | 11 EL 0.75 ISO | .433 | .003 | .024 | .024 | |
| | | 0.80 | 11 ER 0.80 ISO | 11 EL 0.80 ISO | .433 | .004 | .024 | .024 | |
| | | 1.00 | 11 ER 1.00 ISO | 11 EL 1.00 ISO | .433 | .005 | .028 | .028 | |
| | | 1.25 | 11 ER 1.25 ISO | 11 EL 1.25 ISO | .433 | .006 | .031 | .035 | |
| | | 1.50 | 11 ER 1.50 ISO | 11 EL 1.50 ISO | .433 | .007 | .031 | .039 | |
| | | 1.75 | 11 ER 1.75 ISO | 11 EL 1.75 ISO | .433 | .008 | .031 | .043 | |
| | | 3/8" | 0.35 | 16 ER 0.35 ISO | 16 EL 0.35 ISO | .630 | .002 | .031 | .016 |
| | | | 0.40 | 16 ER 0.40 ISO | 16 EL 0.40 ISO | .630 | .002 | .028 | .016 |
| | 0.45 | | 16 ER 0.45 ISO | 16 EL 0.45 ISO | .630 | .002 | .028 | .016 | |
| | 0.50 | | 16 ER 0.50 ISO | 16 EL 0.50 ISO | .630 | .002 | .024 | .024 | |
| | 0.60 | | 16 ER 0.60 ISO | 16 EL 0.60 ISO | .630 | .003 | .024 | .024 | |
| | 0.70 | | 16 ER 0.70 ISO | 16 EL 0.70 ISO | .630 | .003 | .024 | .024 | |
| | 0.75 | | 16 ER 0.75 ISO | 16 EL 0.75 ISO | .630 | .003 | .024 | .024 | |
| | 0.80 | | 16 ER 0.80 ISO | 16 EL 0.80 ISO | .630 | .004 | .024 | .024 | |
| | 1.00 | | 16 ER 1.00 ISO | 16 EL 1.00 ISO | .630 | .004 | .028 | .028 | |
| | 1.00 | | 16 ERM 1.00 ISO | | .630 | .005 | .028 | .028 | |
| | 1.25 | | 16 ER 1.25 ISO | 16 EL 1.25 ISO | .630 | .004 | .031 | .035 | |
| | 1.25 | | 16 ERM 1.25 ISO | | .630 | .006 | .031 | .035 | |
| | 1.50 | | 16 ER 1.50 ISO | 16 EL 1.50 ISO | .630 | .006 | .031 | .039 | |
| | 1.50 | | 16 ERM 1.50 ISO | | .630 | .007 | .031 | .039 | |
| | 1.75 | 16 ER 1.75 ISO | 16 EL 1.75 ISO | .630 | .007 | .035 | .047 | | |
| | 1.75 | 16 ERM 1.75 ISO | | .630 | .008 | .035 | .047 | | |
| 2.00 | 16 ER 2.00 ISO | 16 EL 2.00 ISO | .630 | .008 | .039 | .051 | | | |
| 2.00 | 16 ERM 2.00 ISO | | .630 | .010 | .039 | .051 | | | |
| 2.50 | 16 ER 2.50 ISO | 16 EL 2.50 ISO | .630 | .012 | .043 | .059 | | | |
| 2.50 | 16 ERM 2.50 ISO | | .630 | .012 | .043 | .059 | | | |
| 3.00 | 16 ER 3.00 ISO | 16 EL 3.00 ISO | .630 | .015 | .047 | .063 | | | |
| 3.00 | 16 ERM 3.00 ISO | | .630 | .015 | .047 | .063 | | | |

- ERM/IRM with pressed chipbreaker

**ISO METRIC Full Profile
DIN13 12-1986 Class: 6G**

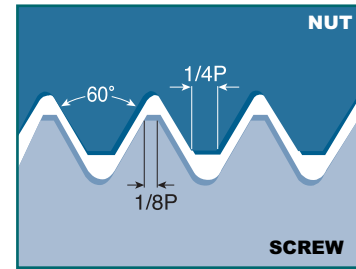
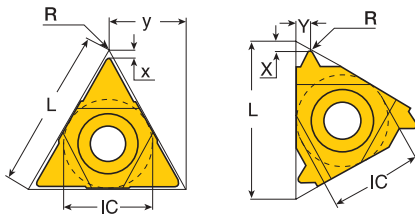




| Thread Form | IC | Pitch mm | Designation | | Dimension | | | |
|---|------|-------------|-------------------|----------------|-----------|------|------|------|
| | | | Right Hand | Left Hand | L | R | X | Y |
| External Regular Type  | 1/2" | 3.50 | 22 ER 3.50 ISO | 22 EL 3.50 ISO | .866 | .017 | .063 | .091 |
| | | 4.00 | 22 ER 4.00 ISO | 22 EL 4.00 ISO | .866 | .020 | .063 | .091 |
| | | 4.50 | 22 ER 4.50 ISO | 22 EL 4.50 ISO | .866 | .023 | .067 | .094 |
| | | 5.00 | 22 ER 5.00 ISO | 22 EL 5.00 ISO | .866 | .025 | .067 | .098 |
| | 5/8" | 5.50 | 27 ER 5.50 ISO | 27 EL 5.50 ISO | 1.063 | .028 | .075 | .106 |
| | | 6.00 | 27 ER 6.00 ISO | 27 EL 6.00 ISO | 1.063 | .031 | .079 | .114 |
| U - Type  | 1/2" | 5.50 | 22 U ERL 5.50 ISO | | .866 | .028 | .091 | .433 |
| | | 6.00 | 22 U ERL 6.00 ISO | | .866 | .031 | .102 | .433 |
| | 5/8" | 8.00 | 27 U ERL 8.00 ISO | | 1.063 | .043 | .094 | .539 |

- ERM/IRM with pressed chipbreaker

THREADING INSERTS

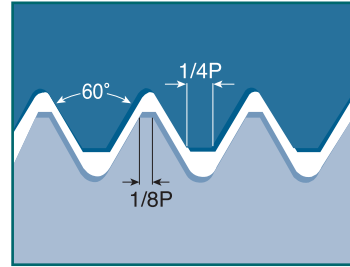
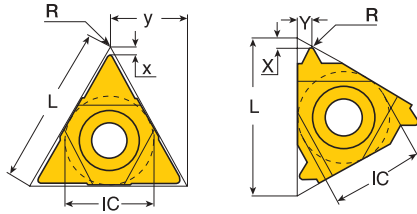
ISO METRIC Full Profile DIN13 12-1986 Class: 6H





| Thread Form | IC | Pitch | Designation | | Dimension | | | |
|---|-------|------------------------|----------------|----------------|-----------|------|------|------|
| | | mm | Right Hand | Left Hand | L | R | X | Y |
| Internal Regular Type  | 5/32" | 0.50 | 06 IR 0.50 ISO | 06 IL 0.50 ISO | .236 | .001 | .020 | .020 |
| | | 0.75 | 06 IR 0.75 ISO | 06 IL 0.75 ISO | .236 | .002 | .020 | .020 |
| 1.00 | | 06 IR 1.00 ISO | 06 IL 1.00 ISO | .236 | .002 | .020 | .024 | |
| 1.25 | | 06 IR 1.25 ISO | 06 IL 1.25 ISO | .236 | .003 | .024 | .024 | |
| M - Type  | 3/16" | 0.50 | 08 IR 0.50 ISO | 08 IL 0.50 ISO | .315 | .002 | .024 | .020 |
| | | 0.75 | 08 IR 0.75 ISO | 08 IL 0.75 ISO | .315 | .002 | .024 | .020 |
| | | 1.00 | 08 IR 1.00 ISO | 08 IL 1.00 ISO | .315 | .002 | .024 | .024 |
| | | 1.25 | 08 IR 1.25 ISO | 08 IL 1.25 ISO | .315 | .003 | .024 | .028 |
| | | 1.50 | 08 IR 1.50 ISO | 08 IL 1.50 ISO | .315 | .003 | .024 | .028 |
| | | 1.75 | 08 IR 1.75 ISO | 08 IL 1.75 ISO | .315 | .004 | .024 | .031 |
| | 2.00 | 08 UIRL 2.00 ISO | | .315 | .005 | .039 | .157 | |
| 1/4" | 0.35 | 11 IR 0.35 ISO | 11 IL 0.35 ISO | .433 | .001 | .031 | .012 | |
| | 0.40 | 11 IR 0.40 ISO | 11 IR 0.40 ISO | .433 | .001 | .031 | .016 | |
| | 0.45 | 11 IR 0.45 ISO | 11 IR 0.45 ISO | .433 | .001 | .031 | .016 | |
| | 0.50 | 11 IR 0.50 ISO | 11 IR 0.50 ISO | .433 | .001 | .024 | .024 | |
| | 0.60 | 11 IR 0.60 ISO | 11 IR 0.60 ISO | .433 | .001 | .024 | .024 | |
| | 0.70 | 11 IR 0.70 ISO | 11 IR 0.70 ISO | .433 | .002 | .024 | .024 | |
| | 0.75 | 11 IR 0.75 ISO | 11 IR 0.75 ISO | .433 | .002 | .024 | .024 | |
| | 0.80 | 11 IR 0.80 ISO | 11 IR 0.80 ISO | .433 | .002 | .024 | .024 | |
| | 1.00 | 11 IR 1.00 ISO | 11 IR 1.00 ISO | .433 | .002 | .024 | .028 | |
| | 1.25 | 11 IR 1.25 ISO | 11 IR 1.25 ISO | .433 | .003 | .031 | .035 | |
| | 1.50 | 11 IR 1.50 ISO | 11 IR 1.50 ISO | .433 | .003 | .031 | .039 | |
| | 1.50 | 11 IRM 1.50 ISO | | .433 | .003 | .031 | .039 | |
| | 1.75 | 11 IR 1.75 ISO | 11 IR 1.75 ISO | .433 | .004 | .035 | .043 | |
| | 2.00 | 11 IR 2.00 ISO | 11 IR 2.00 ISO | .433 | .005 | .031 | .035 | |

- IRM with pressed chipbreaker

**ISO METRIC Full Profile
DIN13 12-1986 Class: 6H**

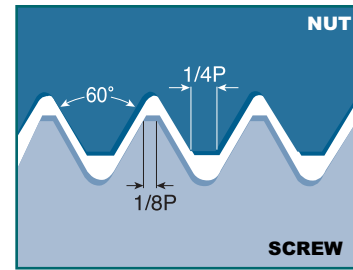
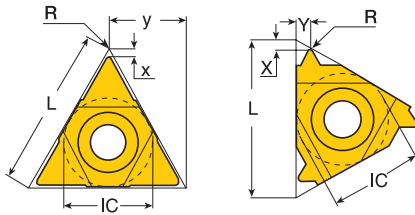


| Thread Form | IC | Pitch | Designation | | Dimension | | | |
|--|------------------------|----------------|------------------------|----------------|-----------|------|------|------|
| | | mm | Right Hand | Left Hand | L | R | X | Y |
| Internal Regular Type  M - Type  | 3/8" | 0.35 | 16 IR 0.35 ISO | 16 IL 0.35 ISO | .630 | .001 | .031 | .012 |
| | | 0.40 | 16 IR 0.40 ISO | 16 IL 0.40 ISO | .630 | .001 | .031 | .016 |
| | | 0.45 | 16 IR 0.45 ISO | 16 IL 0.45 ISO | .630 | .001 | .031 | .016 |
| | | 0.50 | 16 IR 0.50 ISO | 16 IL 0.50 ISO | .630 | .001 | .024 | .024 |
| | | 0.60 | 16 IR 0.60 ISO | 16 IL 0.60 ISO | .630 | .001 | .024 | .024 |
| | | 0.70 | 16 IR 0.70 ISO | 16 IL 0.70 ISO | .630 | .002 | .024 | .024 |
| | | 0.75 | 16 IR 0.75 ISO | 16 IL 0.75 ISO | .630 | .002 | .024 | .024 |
| | | 0.80 | 16 IR 0.80 ISO | 16 IL 0.80 ISO | .630 | .002 | .024 | .024 |
| | | 1.00 | 16 IR 1.00 ISO | 16 IL 1.00 ISO | .630 | .002 | .024 | .028 |
| | | 1.00 | 16 IRM 1.00 ISO | | .630 | .002 | .024 | .028 |
| | | 1.25 | 16 IR 1.25 ISO | 16 IL 1.25 ISO | .630 | .003 | .031 | .035 |
| | | 1.25 | 16 IRM 1.25 ISO | | .630 | .002 | .031 | .035 |
| | | 1.50 | 16 IR 1.50 ISO | 16 IL 1.50 ISO | .630 | .003 | .031 | .039 |
| | | 1.50 | 16 IRM 1.50 ISO | | .630 | .003 | .031 | .039 |
| | | 1.75 | 16 IR 1.75 ISO | 16 IL 1.75 ISO | .630 | .004 | .035 | .047 |
| | | 1.75 | 16 IRM 1.75 ISO | | .630 | .004 | .035 | .047 |
| | | 2.00 | 16 IR 2.00 ISO | 16 IL 2.00 ISO | .630 | .005 | .039 | .051 |
| | | 2.00 | 16 IRM 2.00 ISO | | .630 | .004 | .039 | .051 |
| | | 2.50 | 16 IR 2.50 ISO | 16 IL 2.50 ISO | .630 | .006 | .043 | .059 |
| | | 2.50 | 16 IRM 2.50 ISO | | .630 | .006 | .043 | .059 |
| 3.00 | 16 IR 3.00 ISO | 16 IL 3.00 ISO | .630 | .007 | .043 | .059 | | |
| 3.00 | 16 IRM 3.00 ISO | | .630 | .007 | .043 | .059 | | |

- IRM with pressed chipbreaker

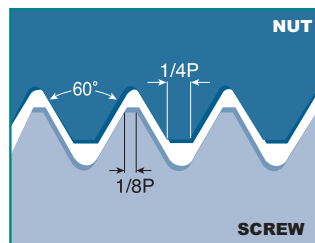
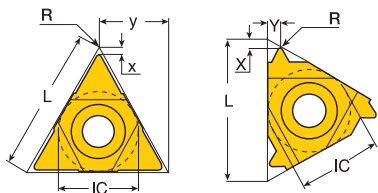
■ THREADING INSERTS


ISO METRIC Full Profile DIN13 12-1986 Class: 6H



| Thread Form | IC | Pitch mm | Designation | | Dimension | | | |
|---|------|-------------|-------------------|----------------|-----------|------|------|------|
| | | | Right Hand | Left Hand | L | R | X | Y |
| Internal Regular Type  | 1/2" | 3.50 | 22 IR 3.50 ISO | 22 IL 3.50 ISO | .866 | .009 | .063 | .091 |
| | | 4.00 | 22 IR 4.00 ISO | 22 IL 4.00 ISO | .866 | .010 | .063 | .091 |
| | | 4.50 | 22 IR 4.50 ISO | 22 IL 4.50 ISO | .866 | .011 | .063 | .094 |
| | | 5.00 | 22 IR 5.00 ISO | 22 IL 5.00 ISO | .866 | .013 | .063 | .091 |
| | 5/8" | 5.50 | 27 IR 5.50 ISO | 27 IL 5.50 ISO | 1.063 | .014 | .063 | .091 |
| | | 6.00 | 27 IR 6.00 ISO | 27 IL 6.00 ISO | 1.063 | .015 | .071 | .098 |
| U - Type  | 1/2" | 5.50 | 22 U IRL 5.50 ISO | | .866 | .014 | .094 | .433 |
| | | 6.00 | 22 U IRL 6.00 ISO | | .866 | .015 | .083 | .433 |
| | 5/8" | 8.00 | 27 U IRL 8.00 ISO | | 1.063 | .021 | .094 | .539 |

AMERICAN UN Full Profile (UN, UNC, UNF, UNEF, ANSI B1, 3M-1986 Class: 2A)

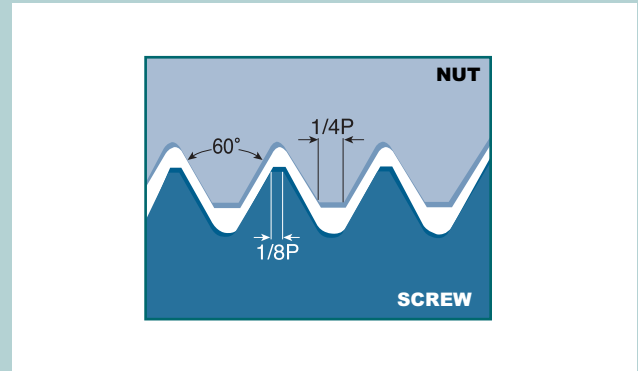
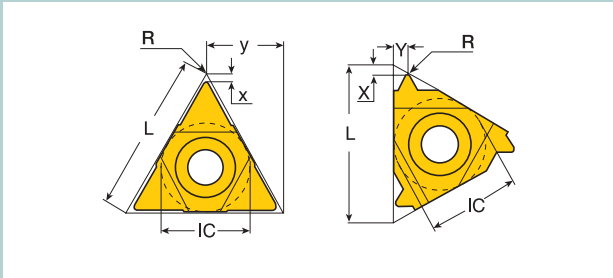




| Thread Form | IC | Pitch | Designation | | Dimension | | | | |
|--|------|---------------|---------------|-------------|-------------|------|------|------|------|
| | | TPI | Right Hand | Left Hand | L | R | X | Y | |
| External Regular Type  M - Type  | 1/4" | 56 | 11 ER 56 UN | 11 EL 56 UN | .433 | .002 | .028 | .016 | |
| | | 48 | 11 ER 48 UN | 11 EL 48 UN | .433 | .002 | .024 | .024 | |
| 44 | | 11 ER 44 UN | 11 EL 44 UN | .433 | .002 | .024 | .024 | | |
| 40 | | 11 ER 40 UN | 11 EL 40 UN | .433 | .002 | .024 | .024 | | |
| 36 | | 11 ER 36 UN | 11 EL 36 UN | .433 | .003 | .024 | .024 | | |
| 32 | | 11 ER 32 UN | 11 EL 32 UN | .433 | .004 | .024 | .024 | | |
| 28 | | 11 ER 28 UN | 11 EL 28 UN | .433 | .004 | .024 | .028 | | |
| 24 | | 11 ER 24 UN | 11 EL 24 UN | .433 | .005 | .028 | .031 | | |
| 20 | | 11 ER 20 UN | 11 EL 20 UN | .433 | .006 | .031 | .035 | | |
| 18 | | 11 ER 18 UN | 11 EL 18 UN | .433 | .007 | .031 | .039 | | |
| 16 | | 11 ER 16 UN | 11 EL 16 UN | .433 | .007 | .035 | .043 | | |
| | | 3/8" | 56 | 16 ER 56 UN | 16 EL 56 UN | .630 | .002 | .028 | .016 |
| | | | 48 | 16 ER 48 UN | 16 EL 48 UN | .630 | .002 | .024 | .024 |
| | | | 40 | 16 ER 40 UN | 16 EL 40 UN | .630 | .002 | .024 | .024 |
| | 36 | | 16 ER 36 UN | 16 EL 36 UN | .630 | .003 | .024 | .024 | |
| | 32 | | 16 ER 32 UN | 16 EL 32 UN | .630 | .004 | .024 | .024 | |
| | 28 | | 16 ER 28 UN | 16 EL 28 UN | .630 | .004 | .024 | .028 | |
| | 24 | | 16 ER 24 UN | 16 EL 24 UN | .630 | .005 | .028 | .031 | |
| | 24 | | 16 ERM 24 UN | 16 EL 24 UN | .630 | .004 | .028 | .031 | |
| | 20 | | 16 ER 20 UN | 16 EL 20 UN | .630 | .006 | .031 | .035 | |
| | 20 | | 16 ERM 20 UN | 16 EL 20 UN | .630 | .006 | .031 | .035 | |
| | 18 | | 16 ER 18 UN | 16 EL 18 UN | .630 | .007 | .031 | .039 | |
| | 18 | | 16 ERM 18 UN | 16 EL 18 UN | .630 | .006 | .031 | .039 | |
| | 16 | | 16 ER 16 UN | 16 EL 16 UN | .630 | .007 | .035 | .043 | |
| | 16 | | 16 ERM 16 UN | 16 EL 16 UN | .630 | .007 | .035 | .043 | |
| | 14 | 16 ER 14 UN | 16 EL 14 UN | .630 | .009 | .039 | .047 | | |
| | 14 | 16 ERM 14 UN | 16 EL 14 UN | .630 | .009 | .039 | .047 | | |
| | 13 | 16 ER 13 UN | 16 EL 13 UN | .630 | .009 | .039 | .051 | | |
| | 13 | 16 ERM 13 UN | 16 EL 13 UN | .630 | .009 | .039 | .051 | | |
| | 12 | 16 ER 12 UN | 16 EL 12 UN | .630 | .010 | .043 | .055 | | |
| | 12 | 16 ERM 12 UN | 16 EL 12 UN | .630 | .010 | .043 | .055 | | |
| | 11.5 | 16 ER 11.5 UN | 16 EL 11.5 UN | .630 | .011 | .043 | .059 | | |
| | 11 | 16 ER 11 UN | 16 EL 11 UN | .630 | .011 | .043 | .059 | | |
| | 10 | 16 ER 10 UN | 16 EL 10 UN | .630 | .013 | .043 | .059 | | |
| | 9 | 16 ER 9 UN | 16 EL 9 UN | .630 | .014 | .047 | .067 | | |
| | 8 | 16 ER 8 UN | 16 EL 8 UN | .630 | .016 | .047 | .063 | | |
| | 8 | 16 ERM 8 UN | 16 EL 8 UN | .630 | .016 | .047 | .063 | | |

• IRM with pressed chipbreaker

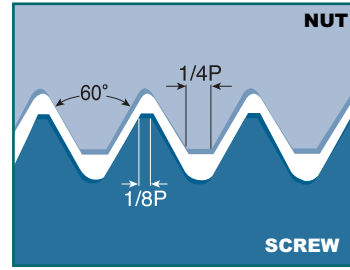
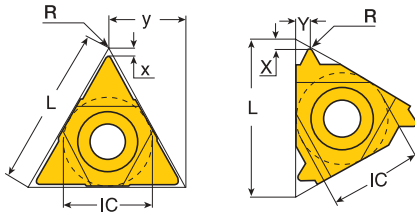
THREADING INSERTS


AMERICAN UN Full Profile (UN, UNC, UNF, UNEF, ANSI B1, 3M-1986 Class: 2A)



| Thread Form | IC | Pitch | Designation | | Dimension | | | |
|--|------|-------|-----------------|--------------|-----------|------|------|------|
| | | TPI | Right Hand | Left Hand | L | R | X | Y |
| External Regular Type  | 1/2" | 7 | 22 ER 7 UN | 22 EL 7 UN | .866 | .019 | .063 | .091 |
| | | 6 | 22 ER 6 UN | 22 EL 6 UN | .866 | .022 | .063 | .091 |
| | | 5 | 22 ER 5 UN | 22 EL 5 UN | .866 | .026 | .067 | .098 |
| | 5/8" | 4.5 | 27 ER 4.5 UN | 22 EL 4.5 UN | 1.063 | .030 | .075 | .106 |
| | | 4 | 27 ER 4 UN | 27 EL 4 UN | 1.063 | .033 | .083 | .118 |
| | | | | | | | | |
| U - Type  | 1/2" | 4.5 | 22 U ERL 4.5 UN | | .866 | .030 | .079 | .433 |
| | | 4 | 22 U ERL 4 UN | | .866 | .033 | .079 | .433 |
| | 5/8" | 3 | 27 U ERL 3 UN | | 1.063 | .045 | .098 | .539 |

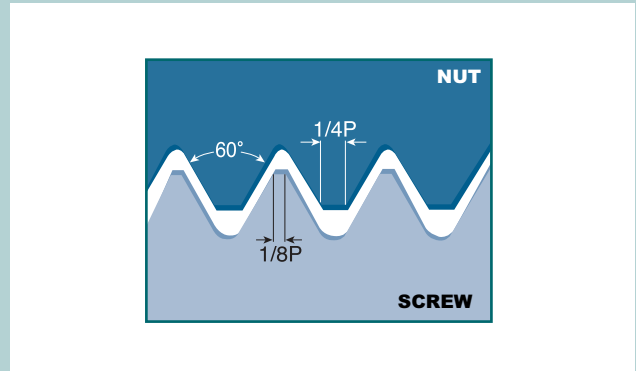
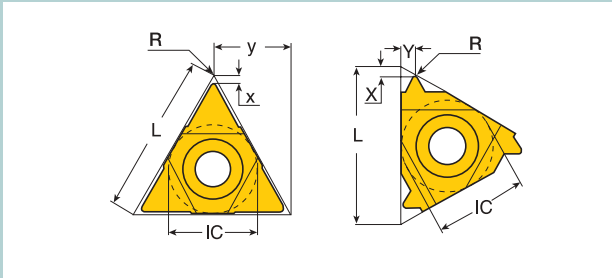
AMERICAN UN Full Profile
(UN, UNC, UNF, UNEF, ANSI B1, 3M-1986 Class: 2B)






| Thread Form | IC | Pitch | Designation | | Dimension | | | |
|--|-------|----------------|----------------|-------------|-----------|------|------|------|
| | | TPI | Right Hand | Left Hand | L | R | X | Y |
| Internal  | 5/32" | 32 | 06 IR 32 UN | 06 IL 32 UN | .236 | .002 | .020 | .020 |
| | | 28 | 06 IR 28 UN | 06 IL 28 UN | .236 | .002 | .020 | .020 |
| | | 24 | 06 IR 24 UN | 06 IL 24 UN | .236 | .002 | .020 | .024 |
| | | 20 | 06 IR 20 UN | 06 IL 20 UN | .236 | .002 | .024 | .024 |
| | | 18 | 06 IR 18 UN | 06 IL 18 UN | .236 | .003 | .024 | .024 |
| | 3/16" | 32 | 08 IR 32 UN | 08 IL 32 UN | .315 | .002 | .024 | .020 |
| | | 28 | 08 IR 28 UN | 08 IL 28 UN | .315 | .002 | .024 | .024 |
| | | 24 | 08 IR 24 UN | 08 IL 24 UN | .315 | .002 | .024 | .024 |
| | | 20 | 08 IR 20 UN | 08 IL 20 UN | .315 | .002 | .024 | .028 |
| | | 18 | 08 IR 18 UN | 08 IL 18 UN | .315 | .003 | .024 | .028 |
| | | 16 | 08 IR 16 UN | 08 IL 16 UN | .315 | .004 | .024 | .028 |
| | | 14 | 08 IR 14 UN | 08 IL 14 UN | .315 | .004 | .024 | .031 |
| | | 13 | 08 U IRL 13 UN | | .315 | .004 | .039 | .157 |
| | | 12 | 08 U IRL 12 UN | | .315 | .005 | .035 | .157 |
| | 11 | 08 U IRL 11 UN | | .315 | .006 | .035 | .157 | |
| | 1/4" | 72 | 11 IR 72 UN | 11 IL 72 UN | .433 | .001 | .031 | .012 |
| | | 64 | 11 IR 64 UN | 11 IL 64 UN | .433 | .001 | .031 | .016 |
| | | 56 | 11 IR 56 UN | 11 IL 56 UN | .433 | .001 | .028 | .016 |
| | | 48 | 11 IR 48 UN | 11 IL 48 UN | .433 | .001 | .024 | .024 |
| | | 40 | 11 IR 40 UN | 11 IL 40 UN | .433 | .001 | .024 | .024 |
| | | 36 | 11 IR 36 UN | 11 IL 36 UN | .433 | .002 | .024 | .024 |
| | | 32 | 11 IR 32 UN | 11 IL 32 UN | .433 | .002 | .024 | .024 |
| | | 28 | 11 IR 28 UN | 11 IL 28 UN | .433 | .002 | .024 | .028 |
| | | 24 | 11 IR 24 UN | 11 IL 24 UN | .433 | .002 | .028 | .031 |
| | | 20 | 11 IR 20 UN | 11 IL 20 UN | .433 | .002 | .031 | .035 |
| | | 18 | 11 IR 18 UN | 11 IL 18 UN | .433 | .003 | .031 | .039 |
| | | 16 | 11 IR 16 UN | 11 IL 16 UN | .433 | .004 | .035 | .043 |
| | 14 | 11 IR 14 UN | 11 IL 14 UN | .433 | .004 | .035 | .043 | |

THREADING INSERTS

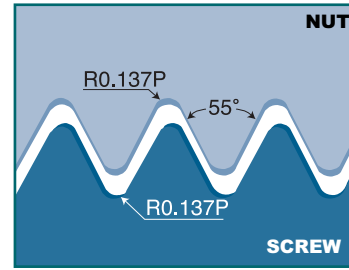
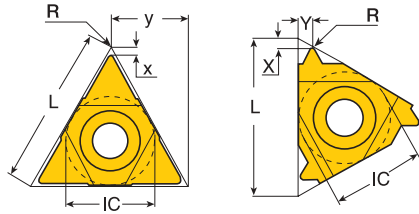
AMERICAN UN Full Profile (UN, UNC, UNF, UNEF, ANSI B1, 3M-1986 Class: 2B)





| Thread Form | IC | Pitch | Designation | | Dimension | | | |
|--|--------------------|-------------|---------------------|---------------|-----------|------|------|------|
| | | TPI | Right Hand | Left Hand | L | R | X | Y |
| Internal Regular Type  M - Type  | 3/8" | 56 | 16 IR 56 UN | 16 IL 56 UN | .630 | .001 | .028 | .016 |
| | | 44 | 16 IR 44 UN | 16 IL 44 UN | .630 | .001 | .024 | .024 |
| | | 40 | 16 IR 40 UN | 16 IL 40 UN | .630 | .001 | .024 | .024 |
| | | 36 | 16 IR 36 UN | 16 IL 36 UN | .630 | .002 | .024 | .024 |
| | | 32 | 16 IR 32 UN | 16 IL 32 UN | .630 | .002 | .024 | .024 |
| | | 28 | 16 IR 28 UN | 16 IL 28 UN | .630 | .002 | .024 | .028 |
| | | 24 | 16 IR 24 UN | 16 IL 24 UN | .630 | .002 | .028 | .031 |
| | | 20 | 16 IR 20 UN | 16 IL 20 UN | .630 | .002 | .031 | .035 |
| | | 20 | 16 IRM 20 UN | | .630 | .002 | .031 | .035 |
| | | 18 | 16 IR 18 UN | 16 IL 18 UN | .630 | .003 | .031 | .039 |
| | | 18 | 16 IRM 18 UN | | .630 | .003 | .031 | .039 |
| | | 16 | 16 IR 16 UN | 16 IL 16 UN | .630 | .004 | .035 | .043 |
| | | 16 | 16 IRM 16 UN | | .630 | .004 | .035 | .043 |
| | | 14 | 16 IR 14 UN | 16 IL 14 UN | .630 | .004 | .035 | .047 |
| | | 14 | 16 IRM 14 UN | | .630 | .004 | .035 | .047 |
| | | 13 | 16 IR 13 UN | 16 IL 13 UN | .630 | .004 | .039 | .051 |
| | | 12 | 16 IR 12 UN | 16 IL 12 UN | .630 | .005 | .043 | .055 |
| | | 12 | 16 IRM 12 UN | | .630 | .005 | .043 | .055 |
| | | 11.5 | 16 IR 11.5 UN | 16 IL 11.5 UN | .630 | .005 | .043 | .059 |
| | | 11 | 16 IR 11 UN | 16 IL 11 UN | .630 | .006 | .043 | .059 |
| 10 | 16 IR 10 UN | 16 IL 10 UN | .630 | .006 | .043 | .059 | | |
| 9 | 16 IR 9 UN | 16 IL 9 UN | .630 | .007 | .047 | .067 | | |
| 8 | 16 IR 8 UN | 16 IL 8 UN | .630 | .007 | .043 | .059 | | |
| 8 | 16 IRM 8 UN | | .630 | .008 | .043 | .059 | | |
| | 1/2" | 7 | 22 IR 7 UN | 22 IL 7 UN | .866 | .009 | .063 | .091 |
| | | 6 | 22 IR 6 UN | 22 IL 6 UN | .866 | .010 | .063 | .091 |
| | | 5 | 22 IR 5 UN | 22 IL 5 UN | .866 | .013 | .063 | .091 |
| | 5/8" | 4.5 | 27 IR 4.5 UN | 27 IL 4.5 UN | 1.063 | .014 | .067 | .094 |
| | | 4 | 27 IR 4 UN | 27 IL 4 UN | 1.063 | .016 | .071 | .106 |
| U - Type  | 1/2" | 4.5 | 22 U IRL 4.5 UN | | .866 | .014 | .094 | .433 |
| | | 4 | 22 U IRL 4 UN | | .866 | .016 | .094 | .433 |
| | | 3 | 27 U IRL 3 UN | | 1.063 | .022 | .106 | .539 |

• IRM with pressed chipbreaker

WHITWORTH Full Profile (BSW, BSF, BSP, B.5.84-1956 DIN 259 Medium Class)

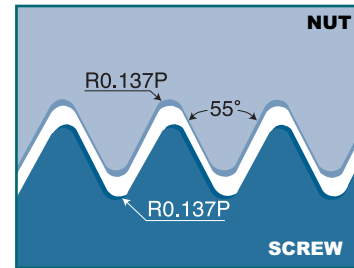
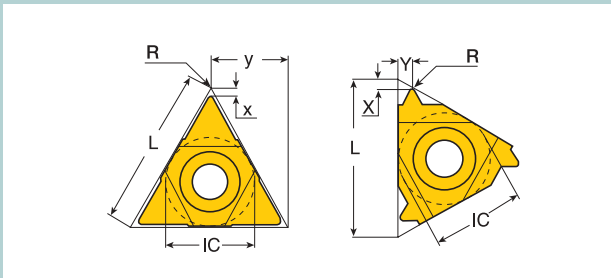


| Thread Form | IC | Pitch TPI | Designation | | Dimension | | | |
|---|-------------|--------------|-------------|------------|-----------|------|------|------|
| | | | Right Hand | Left Hand | L | R | X | Y |
| External Regular Type M-Type   | 1/4" | 48 | 11 ER 48 W | 11 EL 48 W | .433 | .002 | .024 | .024 |
| | | 36 | 11 ER 36 W | 11 EL 36 W | .433 | .003 | .024 | .024 |
| | | 32 | 11 ER 32 W | 11 EL 32 W | .433 | .004 | .024 | .024 |
| | | 28 | 11 ER 28 W | 11 EL 28 W | .433 | .004 | .024 | .028 |
| | | 26 | 11 ER 26 W | 11 EL 26 W | .433 | .004 | .028 | .031 |
| | | 24 | 11 ER 24 W | 11 EL 24 W | .433 | .004 | .028 | .031 |
| | | 22 | 11 ER 22 W | 11 EL 22 W | .433 | .005 | .031 | .035 |
| | | 20 | 11 ER 20 W | 11 EL 20 W | .433 | .006 | .031 | .035 |
| | | 19 | 11 ER 19 W | 11 EL 19 W | .433 | .006 | .031 | .039 |
| | | 18 | 11 ER 18 W | 11 EL 18 W | .433 | .006 | .031 | .039 |
| | 16 | 11 ER 16 W | 11 EL 16 W | .433 | .007 | .035 | .043 | |
| | 14 | 11 ER 14 W | 11 EL 14 W | .433 | .008 | .039 | .047 | |
| | 3/8" | 56 | 16 ER 56 W | 16 EL 56 W | .630 | .002 | .028 | .016 |
| | | 40 | 16 ER 40 W | 16 EL 40 W | .630 | .002 | .024 | .024 |
| | | 32 | 16 ER 32 W | 16 EL 32 W | .630 | .004 | .024 | .024 |
| | | 28 | 16 ER 28 W | 16 EL 28 W | .630 | .004 | .024 | .028 |
| | | 26 | 16 ER 26 W | 16 EL 26 W | .630 | .004 | .028 | .031 |
| | | 24 | 16 ER 24 W | 16 EL 24 W | .630 | .004 | .028 | .031 |
| | | 22 | 16 ER 22 W | 16 EL 22 W | .630 | .005 | .031 | .035 |
| | | 20 | 16 ER 20 W | 16 EL 20 W | .630 | .006 | .031 | .035 |
| 19 | | 16 ER 19 W | 16 EL 19 W | .630 | .006 | .031 | .039 | |
| 19 | | 16 ERM 19 W | | .630 | .003 | .031 | .039 | |
| 18 | | 16 ER 18 W | 16 EL 18 W | .630 | .006 | .031 | .039 | |
| 16 | | 16 ER 16 W | 16 EL 16 W | .630 | .007 | .035 | .043 | |
| 16 | | 16 ERM 16 W | | .630 | .008 | .035 | .043 | |
| 14 | | 16 ER 14 W | 16 EL 14 W | .630 | .008 | .039 | .047 | |
| 14 | | 16 ERM 14 W | | .630 | .009 | .039 | .047 | |
| 12 | | 16 ER 12 W | 16 EL 12 W | .630 | .010 | .043 | .055 | |
| 11 | 16 ER 11 W | 16 EL 11 W | .630 | .011 | .043 | .059 | | |
| 11 | 16 ERM 11 W | | .630 | .012 | .043 | .059 | | |
| 10 | 16 ER 10 W | 16 EL 10 W | .630 | .012 | .043 | .059 | | |
| 9 | 16 ER 9 W | 16 EL 9 W | .630 | .013 | .047 | .067 | | |
| 8 | 16 ER 8 W | 16 EL 8 W | .630 | .015 | .047 | .059 | | |

• ERM with pressed chipbreaker

THREADING INSERTS

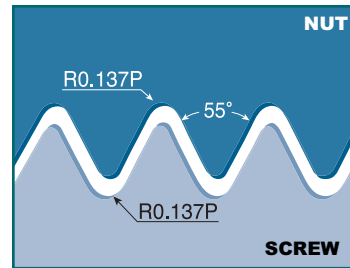
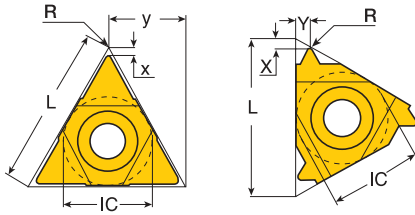
WHITWORTH Full Profile (BSW, BSF, BSP, B.S.84-1956 DIN 259 Medium Class)





Application: Fittings and Pipe Couplings

| Thread Form | IC | Pitch | Designation | | Dimension | | | |
|--|------|-------|------------------|-------------|-----------|------|------|------|
| | | TPI | Right Hand | Left Hand | L | R | X | Y |
| External Regular Type  | 1/2" | 7 | 22 ER 7 W | 22 EL 7 W | .866 | .018 | .063 | .091 |
| | | 6 | 22 ER 6 W | 22 EL 6 W | .866 | .020 | .063 | .091 |
| | | 5 | 22 ER 5 W | 22 EL 5 W | .866 | .026 | .067 | .094 |
| | 5/8" | 4.5 | 27 ER 4.5 W | 27 EL 4.5 W | 1.063 | .029 | .071 | .102 |
| | | 4 | 27 ER 4 W | 27 EL 4 W | 1.063 | .032 | .079 | .114 |
| | | | | | | | | |
| U - Type  | 1/2" | 4.5 | 22 U EIRL 4.5 W | | .866 | .029 | .091 | .433 |
| | | 4 | 22 U EIRL 4 W | | .866 | .032 | .071 | .433 |
| | 5/8" | 3.5 | 27 U EIRL 3.50 W | | 1.063 | .037 | .083 | .539 |
| | | 3.25 | 27 U EIRL 3.25 W | | 1.063 | .041 | .079 | .539 |
| | | 3 | 27 U EIRL 3.00 W | | 1.063 | .044 | .091 | .539 |
| | | 2.75 | 27 U EIRL 2.75 W | | 1.063 | .048 | .094 | .539 |

WHITWORTH Full Profile
(BSW, BSF, BSP, B.S.84-1956 DIN 259 Medium Class)

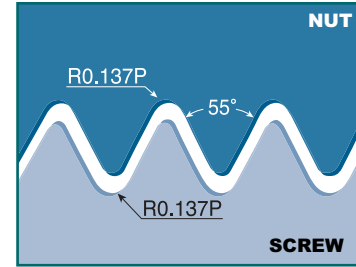
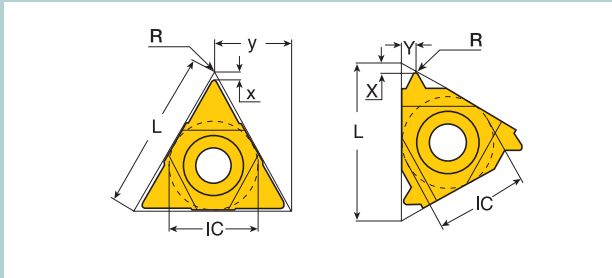


Application: Fittings and Pipe Couplings



| Thread Form | IC | Pitch | Designation | | Dimension | | | | |
|---|---|----------------|-------------|------------|------------|------|------|------|------|
| | | TPI | Right Hand | Left Hand | L | R | X | Y | |
| Internal Regular Type  | 5/32" | 26 | 06 IR 26 W | 06 IL 26 W | .236 | .004 | .028 | .024 | |
| | | 22 | 06 IR 22 W | 06 IL 22 W | .236 | .005 | .024 | .024 | |
| | | 20 | 06 IR 20 W | 06 IL 20 W | .236 | .006 | .024 | .028 | |
| | | 18 | 06 IR 18 W | 06 IL 18 W | .236 | .006 | .024 | .028 | |
| | M - Type  | 3/16" | 28 | 08 IR 28 W | 06 IL 28 W | .315 | .004 | .024 | .024 |
| | | | 24 | 08 IR 24 W | 08 IL 24 W | .315 | .004 | .024 | .024 |
| | | | 20 | 08 IR 20 W | 08 IL 20 W | .315 | .006 | .024 | .028 |
| | | | 19 | 08 IR 19 W | 08 IL 19 W | .315 | .006 | .024 | .028 |
| | | | 18 | 08 IR 18 W | 08 IL 18 W | .315 | .006 | .024 | .028 |
| | | | 16 | 08 IR 16 W | 08 IL 16 W | .315 | .007 | .024 | .028 |
| 3/16" | 14 | 08 U IRL 14 UN | | .315 | .008 | .039 | .157 | | |
| | 12 | 08 U IRL 12 UN | | .315 | .010 | .035 | .157 | | |
| | 11 | 08 U IRL 11 UN | | .315 | .011 | .035 | .157 | | |
| 1/4" | 1/4" | 48 | 11 IR 48 W | 11 IL 48 W | .433 | .002 | .024 | .024 | |
| | | 36 | 11 IR 36 W | 11 IL 36 W | .433 | .003 | .024 | .024 | |
| | | 32 | 11 IR 32 W | 11 IL 32 W | .433 | .004 | .024 | .024 | |
| | | 28 | 11 IR 28 W | 11 IL 28 W | .433 | .004 | .024 | .028 | |
| | | 26 | 11 IR 26 W | 11 IL 26 W | .433 | .004 | .028 | .031 | |
| | | 24 | 11 IR 24 W | 11 IL 24 W | .433 | .004 | .028 | .031 | |
| | | 22 | 11 IR 22 W | 11 IL 22 W | .433 | .005 | .031 | .035 | |
| | | 20 | 11 IR 20 W | 11 IL 20 W | .433 | .006 | .031 | .035 | |
| | | 19 | 11 IR 19 W | 11 IL 19 W | .433 | .006 | .031 | .039 | |
| | | 18 | 11 IR 18 W | 11 IL 18 W | .433 | .006 | .031 | .039 | |
| | | 16 | 11 IR 16 W | 11 IL 16 W | .433 | .007 | .035 | .043 | |
| | | 14 | 11 IR 14 W | 11 IL 14 W | .433 | .008 | .035 | .043 | |

THREADING INSERTS

WHITWORTH Full Profile (BSW, BSF, BSP, B.S.84-1956 DIN 259 Medium Class)

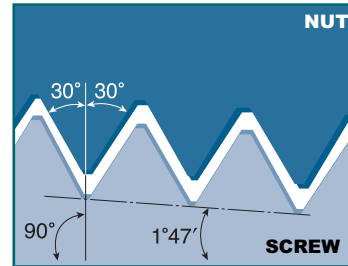
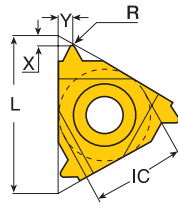


Application: Fittings and Pipe Couplings





| Thread Form | IC | Pitch | Designation | | Dimension | | | | | | |
|--|-------|-------|------------------|--------------------|-----------|-------|-------|-------|-------|------|------|
| | | TPI | Right Hand | | Left Hand | | L | R | X | Y | |
| Internal Regular Type  | 3/8" | 56 | 16 IR | 56 W | 16 IL | 56 W | .630 | .0016 | .028 | .016 | |
| | | 40 | 16 IR | 40 W | 16 IL | 40 W | .630 | .0024 | .024 | .024 | |
| | | 32 | 16 IR | 32 W | 16 IL | 32 W | .630 | .0035 | .024 | .024 | |
| | | 28 | 16 IR | 28 W | 16 IL | 28 W | .630 | .0035 | .024 | .028 | |
| | | 26 | 16 IR | 26 W | 16 IL | 26 W | .630 | .0039 | .028 | .031 | |
| | | 24 | 16 IR | 24 W | 16 IL | 24 W | .630 | .0043 | .028 | .031 | |
| | | 22 | 16 IR | 22 W | 16 IL | 22 W | .630 | .0051 | .031 | .035 | |
| | | 20 | 16 IR | 20 W | 16 IL | 20 W | .630 | .0055 | .031 | .035 | |
| | | 19 | 16 IR | 19 W | 16 IL | 19 W | .630 | .0059 | .031 | .039 | |
| | | 19 | 16 IR | 16 IRM 19 W | | | | .630 | .0031 | .031 | .039 |
| | | 18 | 16 IR | 18 W | 16 IL | 18 W | .630 | .0063 | .031 | .039 | |
| | | 16 | 16 IR | 16 W | 16 IL | 16 W | .630 | .0071 | .035 | .043 | |
| | | 16 | 16 IR | 16 IRM 16 W | | | | .630 | .0079 | .035 | .043 |
| | | 14 | 16 IR | 14 W | 16 IL | 14 W | .630 | .0083 | .039 | .047 | |
| | | 14 | 16 IR | 16 IRM 14 W | | | | .630 | .0091 | .039 | .047 |
| | | 12 | 16 IR | 12 W | 16 IL | 12 W | .630 | .0098 | .043 | .055 | |
| | | 11 | 16 IR | 11 W | 16 IL | 11 W | .630 | .0106 | .043 | .059 | |
| | | 11 | 16 IR | 16 IRM 11 W | | | | .630 | .0118 | .043 | .059 |
| | | 10 | 16 IR | 10 W | 16 IL | 10 W | .630 | .0122 | .043 | .059 | |
| | | 9 | 16 IR | 9 W | 16 IL | 9 W | .630 | .0134 | .047 | .067 | |
| 8 | 16 IR | 8 W | 16 IL | 8 W | .630 | .0154 | .047 | .059 | | | |
| | 1/2" | 7 | 22 IR | 7 W | 22 IL | 7 W | .866 | .0177 | .063 | .091 | |
| | | 6 | 22 IR | 6 W | 22 IL | 6 W | .866 | .0205 | .063 | .091 | |
| | | 5 | 22 IR | 5 W | 22 IL | 5 W | .866 | .0256 | .067 | .094 | |
| | 5/8" | 4.5 | 27 IR | 4.5 W | 27 IL | 4.5 W | 1.063 | .0287 | .071 | .102 | |
| | | 4 | 27 IR | 4 W | 27 IL | 4 W | 1.063 | .0323 | .079 | .114 | |
| U - Type  | 1/2" | 4.5 | 22 U EIRL 4.5 W | | .866 | .0287 | .091 | .439 | | | |
| | | 4 | 22 U EIRL 4 W | | .866 | .0323 | .071 | .439 | | | |
| | 5/8" | 3.5 | 27 U EIRL 3.50 W | | 1.063 | .0374 | .083 | .539 | | | |
| | | 3.25 | 27 U EIRL 3.25 W | | 1.063 | .0409 | .079 | .539 | | | |
| | | 3 | 27 U EIRL 3.00 W | | 1.063 | .0441 | .091 | .539 | | | |
| | | 2.75 | 27 U EIRL 2.75 W | | 1.063 | .0476 | .094 | .539 | | | |

• IRM with pressed chipbreaker

NPT (NATIONAL PIPE THREADS) Full Profile ANSI/ASME B1.20.1-1983



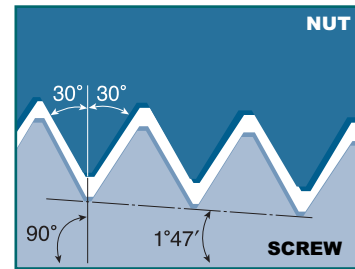
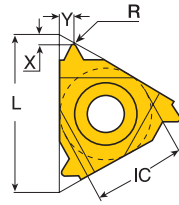
Application: Steam, gas
and water pipes

| Thread Form | IC | Pitch | Designation | | Dimension | | | |
|---|--------------|-------------|-----------------|----------------|-----------|------|------|------|
| | | TPI | Right Hand | Left Hand | L | R | X | Y |
| External Regular Type  M - Type  | 3/8" | 27 | 16 ER 27 NPT | 16 EL 27 NPT | .630 | .002 | .028 | .031 |
| | | 18 | 16 ER 18 NPT | 16 EL 18 NPT | .630 | .002 | .031 | .039 |
| | | 18 | 16 ERM 18 NPT | | .630 | .002 | .031 | .039 |
| | | 14 | 16 ER 14 NPT | 16 EL 14 NPT | .630 | .003 | .035 | .047 |
| | | 14 | 16 ERM 14 NPT | | .630 | .002 | .035 | .047 |
| | | 11.5 | 16 ER 11.5 NPT | 16 EL 11.5 NPT | .630 | .004 | .043 | .059 |
| | | 11.5 | 16 ERM 11.5 NPT | | .630 | .004 | .043 | .059 |
| | | 8 | 16 ER 8 NPT | 16 EL 8 NPT | .630 | .005 | .051 | .071 |
| 8 | 16 ERM 8 NPT | | .630 | .006 | .047 | .071 | | |
| Internal Regular Type  M - Type  | 5/32" | 27 | 06 IR 27 NPT | 06 IL 27 NPT | .236 | .002 | .024 | .024 |
| | 3/16" | 27 | 08 IR 27 NPT | 08 IL 27 NPT | .315 | .002 | .024 | .024 |
| | | 18 | 08 IR 18 NPT | 08 IL 18 NPT | .315 | .002 | .024 | .024 |
| | 1/4" | 27 | 11 IR 27 NPT | 11 IL 27 NPT | .433 | .002 | .028 | .031 |
| | | 18 | 11 IR 18 NPT | 11 IL 18 NPT | .433 | .002 | .031 | .039 |
| | | 14 | 11 IR 14 NPT | 11 IL 14 NPT | .433 | .002 | .031 | .039 |
| | 3/8" | 27 | 16 IR 27 NPT | 16 IL 27 NPT | .630 | .002 | .028 | .031 |
| | | 18 | 16 IR 18 NPT | 16 IL 18 NPT | .630 | .002 | .031 | .039 |
| | | 14 | 16 IR 14 NPT | 16 IL 14 NPT | .630 | .003 | .035 | .047 |
| | | 14 | 16 IRM 14 NPT | | .630 | .002 | .035 | .047 |
| | | 11.5 | 16 IR 11.5 NPT | 16 IL 11.5 NPT | .630 | .004 | .043 | .059 |
| | | 11.5 | 16 IRM 11.5 NPT | | .630 | .004 | .043 | .059 |
| 8 | 16 IR 8 NPT | 16 IL 8 NPT | .630 | .005 | .047 | .071 | | |
| 8 | 16 IRM 8 NPT | | .630 | .006 | .047 | .071 | | |



• ERM/IRM with pressed chipbreaker

THREADING INSERTS

NPTF (NATIONAL PIPE THREADS-DRYSEAL) Full Profile ANSI/ASME B1.20.1-1976

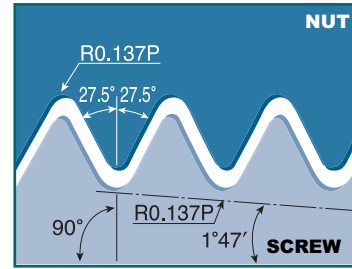
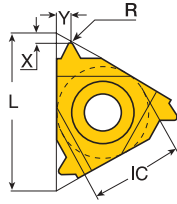


Application: Steam, gas
and water pipes

| Thread Form | IC | Pitch TPI | Designation | | Dimension | | | |
|--|--|--------------|-----------------|-----------------|---------------|------|------|------|
| | | | Right Hand | Left Hand | L | X | Y | |
| External Regular Type  | 1/4" | 27 | 11 ER 27 NPTF | 11 EL 27 NPTF | .433 | .028 | .028 | |
| | | 18 | 11 ER 18 NPTF | 11 EL 18 NPTF | .433 | .031 | .039 | |
| | | 14 | 11 ER 14 NPTF | 11 EL 14 NPTF | .433 | .031 | .039 | |
| | 3/8" | 27 | 16 ER 27 NPTF | 16 EL 27 NPTF | .630 | .028 | .028 | |
| | | 18 | 16 ER 18 NPTF | 16 EL 18 NPTF | .630 | .031 | .039 | |
| | | 14 | 16 ER 14 NPTF | 16 EL 14 NPTF | .630 | .035 | .047 | |
| | | 11.5 | 16 ER 11.5 NPTF | 16 EL 11.5 NPTF | .630 | .043 | .059 | |
| | | 8 | 16 ER 8 NPTF | 16 EL 8 NPTF | .630 | .051 | .071 | |
| | Internal Regular Type  | 5/32" | 27 | 06 IR 27 NPTF | 06 IL 27 NPTF | .236 | .028 | .024 |
| | | | 27 | 08 IR 27 NPTF | 08 IL 27 NPTF | .315 | .024 | .024 |
| 3/16" | | 18 | 08 IR 18 NPTF | 08 IL 18 NPTF | .315 | .024 | .024 | |
| | | 27 | 11 IR 27 NPTF | 11 IL 27 NPTF | .433 | .028 | .028 | |
| 1/4" | | 18 | 11 IR 18 NPTF | 11 IL 18 NPTF | .433 | .031 | .039 | |
| | | 14 | 11 IR 14 NPTF | 11 IL 14 NPTF | .433 | .031 | .039 | |
| | | 27 | 16 IR 27 NPTF | 16 IL 27 NPTF | .630 | .028 | .028 | |
| 3/8" | | 18 | 16 IR 18 NPTF | 16 IL 18 NPTF | .630 | .031 | .039 | |
| | | 14 | 16 IR 14 NPTF | 16 IL 14 NPTF | .630 | .035 | .047 | |
| | | 11.5 | 16 IR 11.5 NPTF | 16 IL 11.5 NPTF | .630 | .043 | .059 | |
| | | 8 | 16 IR 8 NPTF | 16 IL 8 NPTF | .630 | .051 | .071 | |

- ERM/IRM with pressed chipbreaker

BSPT (BRITISH STANDARD PIPE) Full Profile B.S.21-1957



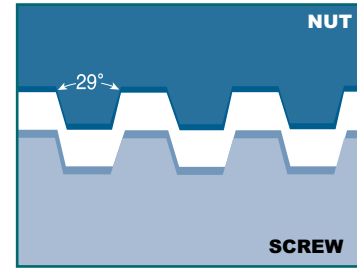
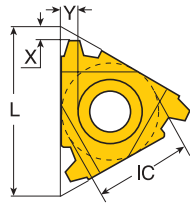
Application: Steam, gas
and water pipes

| Thread Form | IC | Pitch | Designation | | Dimension | | | |
|---|-------|-------|---------------|---------------|-----------|------|------|------|
| | | TPI | Right Hand | Left Hand | L | R | X | Y |
| External  | 3/8" | 28 | 16 ER 28 BSPT | 16 EL 28 BSPT | .630 | .004 | .024 | .024 |
| | | 19 | 16 ER 19 BSPT | 16 EL 19 BSPT | .630 | .006 | .031 | .035 |
| | | 14 | 16 ER 14 BSPT | 16 EL 14 BSPT | .630 | .008 | .039 | .047 |
| | | 11 | 16 ER 11 BSPT | 16 EL 11 BSPT | .630 | .011 | .043 | .059 |
| Internal  | 5/32" | 27 | 06 IR 27 BSPT | 06 IL 27 BSPT | .236 | .004 | .028 | .024 |
| | | 28 | 11 IR 28 BSPT | 11 IL 28 BSPT | .433 | .004 | .024 | .024 |
| | 1/4" | 19 | 11 IR 19 BSPT | 11 IL 19 BSPT | .433 | .006 | .031 | .035 |
| | | 14 | 11 IR 14 BSPT | 11 IL 14 BSPT | .433 | .008 | .035 | .039 |
| | 3/8" | 28 | 16 IR 28 BSPT | 16 IL 28 BSPT | .630 | .004 | .024 | .024 |
| | | 19 | 16 IR 19 BSPT | 16 IL 19 BSPT | .630 | .006 | .031 | .035 |
| | | 14 | 16 IR 14 BSPT | 16 IL 14 BSPT | .630 | .008 | .039 | .047 |
| | | 11 | 16 IR 11 BSPT | 16 IL 11 BSPT | .630 | .011 | .043 | .059 |



- ERM/IRM with pressed chipbreaker

THREADING INSERTS

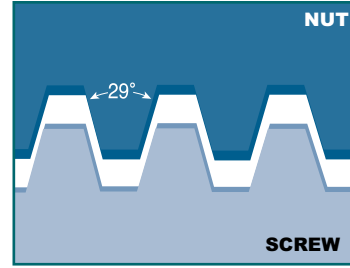
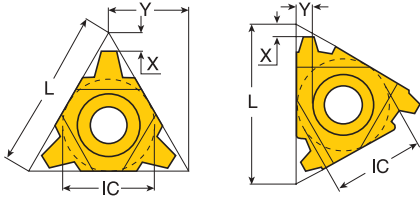
STUB ACME ASME/ANSI B1.5-1988 Class: 2G



Application: Control Valves and modified ACME thread forms

| Thread Form | IC | Pitch | Designation | | Dimension | | | |
|--|-----------------|--|-----------------|-----------------|-----------------|-----------------|------|------|
| | | TPI | Right Hand | Left Hand | L | X | Y | |
| External  | 3/8" | 16 | 16 ER 16 STACME | 16 EL 16 STACME | .630 | .039 | .039 | |
| | | 14 | 16 ER 14 STACME | 16 EL 14 STACME | .630 | .043 | .043 | |
| | | 12 | 16 ER 12 STACME | 16 EL 12 STACME | .630 | .047 | .047 | |
| | | 10 | 16 ER 10 STACME | 16 EL 10 STACME | .630 | .047 | .051 | |
| | | 8 | 16 ER 8 STACME | 16 EL 8 STACME | .630 | .055 | .059 | |
| | | 6 | 16 ER 6 STACME | 16 EL 6 STACME | .630 | .067 | .071 | |
| | 1/2" | 5 | 22 ER 5 STACME | 22 EL 5 STACME | .866 | .083 | .091 | |
| | 5/8" | 4 | 27 ER 4 STACME | 27 EL 4 STACME | 1.063 | .091 | .095 | |
| | | 3 | 27 ER 3 STACME | 27 EL 3 STACME | 1.063 | .114 | .114 | |
| | | Internal  | 3/8" | 16 | 16 IR 16 STACME | 16 IL 16 STACME | .630 | .039 |
| 14 | | | | 16 IR 14 STACME | 16 IL 14 STACME | .630 | .043 | .043 |
| 12 | 16 IR 12 STACME | | | 16 IL 12 STACME | .630 | .043 | .047 | |
| 10 | 16 IR 10 STACME | | | 16 IL 10 STACME | .630 | .047 | .051 | |
| 8 | 16 IR 8 STACME | | | 16 IL 8 STACME | .630 | .055 | .059 | |
| 6 | 16 IR 6 STACME | | | 16 IL 6 STACME | .630 | .067 | .071 | |
| 1/2" | 5 | 22 IR 5 STACME | 22 IL 5 STACME | .866 | .083 | .091 | | |
| 5/8" | 4 | 27 IR 4 STACME | 27 IL 4 STACME | 1.063 | .091 | .095 | | |
| | 3 | 27 IR 3 STACME | 27 IL 3 STACME | 1.063 | .114 | .114 | | |

**ACME
ASME/ANSI B1.5-1988 Class: 3G**

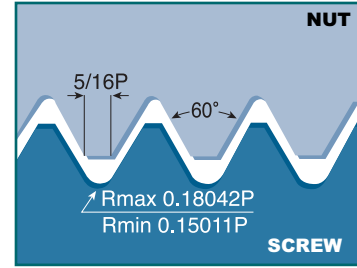
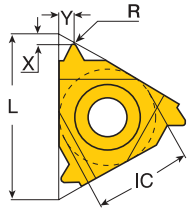


Application: Feed Screws


| Thread Form | IC | Pitch | Designation | | Dimension | | | |
|--|--|-------|---------------|-----------------|---------------|-------|------|------|
| | | TPI | Right Hand | Left Hand | L | X | Y | |
| External  | 3/8" | 16 | 16 ER 16 ACME | 16 EL 16 ACME | .630 | .039 | .043 | |
| | | 14 | 16 ER 14 ACME | 16 EL 14 ACME | .630 | .039 | .047 | |
| | | 12 | 16 ER 12 ACME | 16 EL 12 ACME | .630 | .043 | .047 | |
| | | 10 | 16 ER 10 ACME | 16 EL 10 ACME | .630 | .051 | .051 | |
| | | 8 | 16 ER 8 ACME | 16 EL 8 ACME | .630 | .055 | .059 | |
| | 1/2" | 6 | 22 ER 6 ACME | 22 EL 6 ACME | .866 | .071 | .083 | |
| | | 5 | 22 ER 5 ACME | 22 EL 5 ACME | .866 | .079 | .091 | |
| | | 4 | 27 ER 4 ACME | 27 EL 4 ACME | 1.063 | .094 | .106 | |
| | Internal  | 3/8" | 16 | 16 IR 16 ACME | 16 IL 16 ACME | .630 | .039 | .043 |
| | | | 14 | 16 IR 14 ACME | 16 IL 14 ACME | .630 | .043 | .047 |
| 12 | | | 16 IR 12 ACME | 16 IL 12 ACME | .630 | .047 | .047 | |
| 10 | | | 16 IR 10 ACME | 16 IL 10 ACME | .630 | .047 | .051 | |
| 8 | | | 16 IR 8 ACME | 16 IL 8 ACME | .630 | .055 | .059 | |
| 1/2" | | 6 | 22 IR 6 ACME | 22 IL 6 ACME | .866 | .071 | .083 | |
| | | 5 | 22 IR 5 ACME | 22 IL 5 ACME | .866 | .079 | .091 | |
| | | 4 | 27 IR 4 ACME | 27 IL 4 ACME | 1.063 | .091 | .106 | |
| External U - Type  | | 5/8" | 3 | 27 U ERL 3 ACME | | 1.063 | .118 | .539 |
| Internal U - Type  | | 5/8" | 3 | 27 U IRL 3 ACME | | 1.063 | .114 | .539 |

THREADING INSERTS

UNJ
S-8879C 9-1992 Class: 3A (External) Class: 3B (Internal)



Application: Aerospace Industry

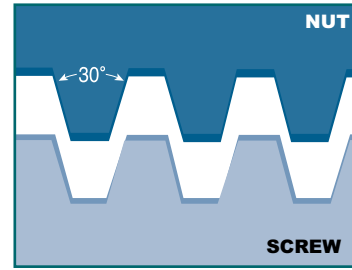
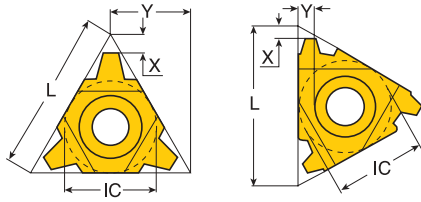
| Thread Form | IC | Pitch | Designation | | Dimension | | | |
|--|------|-------|---------------|---------------|--------------|------|------|------|
| | | TPI | Right Hand | Left Hand | L | R | X | Y |
| External Regular Type  | 1/4" | 48 | 11 ER 48 UNJ | 11 EL 48 UNJ | .433 | .003 | .024 | .020 |
| | | 44 | 11 ER 44 UNJ | 11 EL 44 UNJ | .433 | .004 | .024 | .024 |
| | | 40 | 11 ER 40 UNJ | 11 EL 40 UNJ | .433 | .004 | .024 | .024 |
| | | 36 | 11 ER 36 UNJ | 11 EL 36 UNJ | .433 | .004 | .024 | .024 |
| | | 32 | 11 ER 32 UNJ | 11 EL 32 UNJ | .433 | .005 | .024 | .028 |
| | | 28 | 11 ER 28 UNJ | 11 EL 28 UNJ | .433 | .006 | .028 | .028 |
| | | 24 | 11 ER 24 UNJ | 11 EL 24 UNJ | .433 | .007 | .028 | .031 |
| | | 20 | 11 ER 20 UNJ | 11 EL 20 UNJ | .433 | .008 | .031 | .035 |
| | | 18 | 11 ER 18 UNJ | 11 EL 18 UNJ | .433 | .009 | .031 | .039 |
| | | 16 | 11 ER 16 UNJ | 11 EL 16 UNJ | .433 | .010 | .035 | .043 |
| | | 14 | 11 ER 14 UNJ | 11 EL 14 UNJ | .433 | .011 | .039 | .047 |
| | | 3/8" | 48 | 16 ER 48 UNJ | 16 EL 48 UNJ | .630 | .003 | .024 |
| | 44 | | 16 ER 44 UNJ | 16 EL 44 UNJ | .630 | .004 | .024 | .024 |
| | 40 | | 16 ER 40 UNJ | 16 EL 40 UNJ | .630 | .004 | .024 | .024 |
| | 36 | | 16 ER 36 UNJ | 16 EL 36 UNJ | .630 | .004 | .024 | .024 |
| | 32 | | 16 ER 32 UNJ | 16 EL 32 UNJ | .630 | .005 | .024 | .028 |
| | 28 | | 16 ER 28 UNJ | 16 EL 28 UNJ | .630 | .006 | .028 | .028 |
| | 24 | | 16 ER 24 UNJ | 16 EL 24 UNJ | .630 | .007 | .028 | .031 |
| | 20 | | 16 ER 20 UNJ | 16 EL 20 UNJ | .630 | .008 | .031 | .035 |
| | 18 | | 16 ER 18 UNJ | 16 EL 18 UNJ | .630 | .009 | .031 | .039 |
| | 16 | | 16 ER 16 UNJ | 16 EL 16 UNJ | .630 | .010 | .035 | .043 |
| | 14 | | 16 ER 14 UNJ | 16 EL 14 UNJ | .630 | .011 | .039 | .047 |
| | 13 | | 16 ER 13 UNJ | 16 EL 13 UNJ | .630 | .012 | .039 | .051 |
| | 12 | | 16 ER 12 UNJ | 16 EL 12 UNJ | .630 | .013 | .043 | .051 |
| | 11 | | 16 ER 11 UNJ | 16 EL 11 UNJ | .630 | .014 | .047 | .059 |
| | 1/2" | 10 | 16 ER 10 UNJ | 16 EL 10 UNJ | .630 | .016 | .047 | .059 |
| | | 9 | 16 ER 9 UNJ | 16 EL 9 UNJ | .630 | .017 | .051 | .067 |
| | | 8 | 16 ER 8 UNJ | 16 EL 8 UNJ | .630 | .020 | .047 | .063 |
| | 5/8" | 7 | 22 ER 7 UNJ | 22 EL 7 UNJ | .866 | | .067 | .091 |
| | | 6 | 22 ER 6 UNJ | 22 EL 6 UNJ | .866 | | .067 | .091 |
| | | 5 | 22 ER 5 UNJ | 22 EL 5 UNJ | .866 | | .071 | .098 |
| | 5/8" | 4.5 | 27 ER 4.5 UNJ | 27 EL 4.5 UNJ | 1.063 | | .079 | .106 |
| | | 4 | 27 ER 4 UNJ | 27 EL 4 UNJ | 1.063 | | .087 | .118 |

Internal





- For internal UNJ inserts, specify IR instead of ER in the order designation.
- The standard internal UN insert can be used as a partial UNJ profile insert. See page B13 - B14

TRAPEZE DIN 103

DIN 103 04/1977, 1502901/1977 Class 7H (External) Class 7E (Internal)

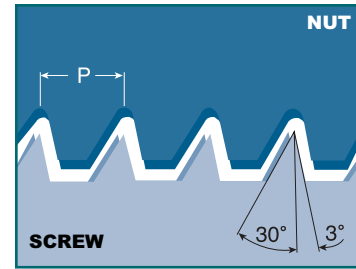
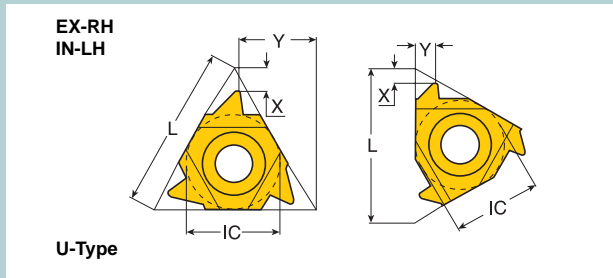


Application: Feed Screws





| Thread Form | IC | Pitch mm | Designation | | Dimension | | |
|---|---|---|--------------|--------------|--------------|------|------|
| | | | Right Hand | Left Hand | L | X | Y |
| External  | 3/8" | 1.50 | 16 ER 1.5 TR | 16 EL 1.5 TR | .630 | .039 | .043 |
| | | 2.00 | 16 ER 2 TR | 16 EL 2 TR | .630 | .043 | .051 |
| | | 3.00 | 16 ER 3 TR | 16 EL 3 TR | .630 | .051 | .059 |
| | 1/2" | 4.00 | 22 ER 4 TR | 22 EL 4 TR | .866 | .067 | .075 |
| | | 5.00 | 22 ER 5 TR | 22 EL 5 TR | .866 | .083 | .098 |
| | 5/8" | 6.00 | 27 ER 6 TR | 27 EL 6 TR | 1.063 | .091 | .106 |
| | | 7.00 | 27 ER 7 TR | 27 EL 7 TR | 1.063 | .087 | .102 |
| | Internal  | 3/16" | 1.50 | 08 IR 1.5 TR | 08 IL 1.5 TR | .315 | .024 |
| 2.00 | | | 16 IR 2 TR | 16 IL 2 TR | .630 | .043 | .051 |
| 3/8" | | 3.00 | 16 IR 3 TR | 16 IL 3 TR | .630 | .051 | .059 |
| | | 4.00 | 22 IR 4 TR | 22 IL 4 TR | .866 | .067 | .075 |
| 1/2" | | 5.00 | 22 IR 5 TR | 22 IL 5 TR | .866 | .083 | .098 |
| | | 6.00 | 27 IR 6 TR | 27 IL 6 TR | 1.063 | .091 | .106 |
| 5/8" | | 7.00 | 27 IR 7 TR | 27 IL 7 TR | 1.063 | .087 | .102 |
| | | External U - Type  | 1/2" | 6.00 | 22U ERL 6 TR | .866 | .079 |
| 7.00 | 22U ERL 7 TR | | | .866 | .091 | .433 | |
| 5/8" | 8.00 | | 27U ERL 8 TR | 1.063 | .102 | .539 | |
| | 9.00 | | 27U ERL 9 TR | 1.063 | .118 | .539 | |
| Internal U - Type  | 3/16" | 2.00 | 08U IRL 2 TR | .315 | .035 | .157 | |
| | 1/2" | 6.00 | 22U IRL 6 TR | .866 | .079 | .433 | |
| | | 7.00 | 22U IRL 7 TR | .866 | .091 | .433 | |
| | 5/8" | 8.00 | 27U IRL 8 TR | 1.063 | .102 | .539 | |
| | | 9.00 | 27U IRL 9 TR | 1.063 | .118 | .539 | |

THREADING INSERTS

SAGENGENWINDE DIN 513 DIN 513 04-1985

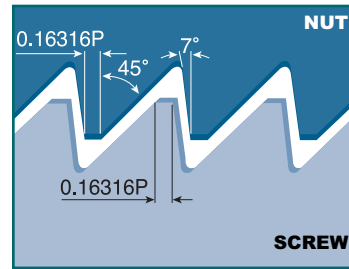
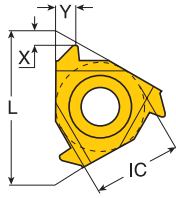


Application: For high forces
in one direction





| Thread Form | IC | Pitch mm | Designation | | Dimension | | |
|---|------|-------------|----------------|----------------|-----------|------|------|
| | | | Right Hand | Left Hand | L | X | Y |
| External  | 3/8" | 2.00 | 16 ER 2 SAGE | 16 EL 2 SAGE | .630 | .043 | .063 |
| | 1/2" | 3.00 | 22 ER 3 SAGE | 22 EL 3 SAGE | .866 | .059 | .094 |
| | | 4.00 | 22 ER 4 SAGE | 22 EL 4 SAGE | .866 | .075 | .122 |
| Internal  | 1/2" | 5.00* | 22 U ER 5 SAGE | 22 U EL 5 SAGE | .866 | .047 | .457 |
| | | 6.00* | 22 U ER 6 SAGE | 22 U EL 6 SAGE | .866 | .047 | .461 |
| External U - Type  | 3/8" | 2.00 | 16 IR 2 SAGE | 16 IL 2 SAGE | .630 | .047 | .067 |
| | 1/2" | 3.00 | 22 IR 3 SAGE | 22 IL 3 SAGE | .866 | .075 | .114 |
| | | 4.00 | 22 IR 4 SAGE | 22 IL 4 SAGE | .866 | .091 | .138 |
| Internal U - Type  | 1/2" | 5.00* | 22 U IR 5 SAGE | 22 U IL 5 SAGE | .866 | .075 | .461 |
| | | 6.00* | 22 U IR 6 SAGE | 22 U IL 6 SAGE | .866 | .083 | .469 |

* Requires special anvil

AMERICAN BUTTRESS ANSI B1.9-1973 Class 2

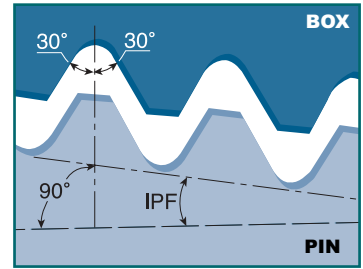
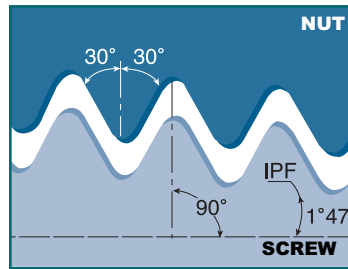
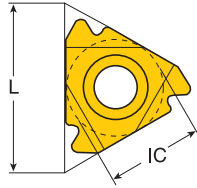


Application: For high forces
in one direction

| Thread Form | IC | Pitch | Designation | | Dimension | | | |
|--|--|-------|----------------|----------------|----------------|-------|------|------|
| | | TPI | Right Hand | Left Hand | L | X | Y | |
| External  | 1/4" | 20 | 11 ER 20 ABUT | 11 EL 20 ABUT | .433 | .039 | .055 | |
| | | 16 | 11 ER 16 ABUT | 11 EL 16 ABUT | .433 | .051 | .075 | |
| | 3/8" | 20 | 16 ER 20 ABUT | 16 EL 20 ABUT | .630 | .039 | .055 | |
| | | 16 | 16 ER 16 ABUT | 16 EL 16 ABUT | .630 | .051 | .075 | |
| | | 12 | 16 ER 12 ABUT | 16 EL 12 ABUT | .630 | .055 | .079 | |
| | | 10 | 16 ER 10 ABUT | 16 EL 10 ABUT | .630 | .059 | .091 | |
| | 1/2" | 8 | 22 ER 8 ABUT | 22 EL 8 ABUT | .866 | .079 | .126 | |
| | | 6 | 22 ER 6 ABUT | 22 EL 6 ABUT | .866 | .087 | .138 | |
| | Internal  | 1/4" | 20 | 11 IR 20 ABUT | 11 IL 20 ABUT | .433 | .039 | .055 |
| | | | 16 | 11 IR 16 ABUT | 11 IL 16 ABUT | .433 | .051 | .075 |
| 3/8" | | 20 | 16 IR 20 ABUT | 16 IL 20 ABUT | .630 | .039 | .055 | |
| | | 16 | 16 IR 16 ABUT | 16 IL 16 ABUT | .630 | .051 | .075 | |
| | | 12 | 16 IR 12 ABUT | 16 IL 12 ABUT | .630 | .055 | .079 | |
| | | 10 | 16 IR 10 ABUT | 16 IL 10 ABUT | .630 | .059 | .091 | |
| 1/2" | | 8 | 22 IR 8 ABUT | 22 IL 8 ABUT | .866 | .079 | .126 | |
| | | 6 | 22 IR 6 ABUT | 22 IL 6 ABUT | .866 | .087 | .138 | |
| External U - Type  | | 1/2" | 4 | 22 U ER 4 ABUT | 22 U EL 4 ABUT | .866 | .094 | .386 |
| | | 5/8" | 3 | 27 U ER 3 ABUT | 27 U EL 3 ABUT | 1.063 | .122 | .476 |
| Internal U - Type  | 1/2" | 4 | 22 U IR 4 ABUT | 22 U IL 4 ABUT | .866 | .094 | .386 | |
| | 5/8" | 3 | 27 U IR 3 ABUT | 27 U IL 3 ABUT | 1.063 | .122 | .476 | |



THREADING INSERTS

API - Oil Threads API Spec 5B8-1996, API Spec 74-1994

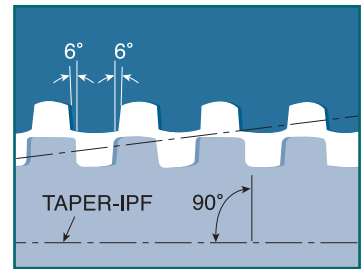
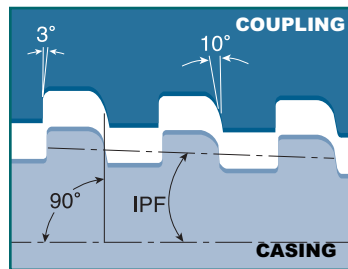
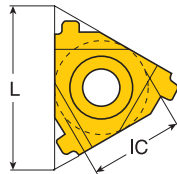


API Round
Application: Oil & Gas Industry

V 0.038



| Thread Form | IC | Pitch | Designation | | Dimension | | |
|---|------|-------|-----------------|-----------------|-----------|-----------|-----------------------------|
| | | TPI | External | Internal | L | Taper IPF | Connection No. or Size |
|  API Round | 3/8" | 10 | 16 ER 10 API RD | 16 IR 10 API RD | .630 | 0.75 | - |
| | | 8 | 16 ER 8 API RD | 16 IR 8 API RD | .630 | 0.75 | - |
|  V-0.040 V-0.038R V-0.038R V-0.050 V-0.050 | 1/2" | 5 | 22 ER 5 API 403 | 22 IR 5 API 403 | .866 | 3 | 2-3/8" ÷ 4-1/2" REG |
| | | 4 | 27 ER 4 API 382 | 27 IR 4 API 382 | 1.063 | 2 | NC23 ÷ NC50 |
| | 5/8" | 4 | 27 ER 4 API 383 | 27 IR 4 API 383 | 1.063 | 3 | NC56 ÷ NC77 |
| | | 4 | 27 ER 4 API 502 | 27 IR 4 API 502 | 1.063 | 2 | 6-5/8" REG |
| | | 4 | 27 ER 4 API 503 | 27 IR 4 API 503 | 1.063 | 3 | 5-1/2" 7-5/8" 8-5/8" REG |

API - Oil Threads ANSI B1.9.1973 Class 2

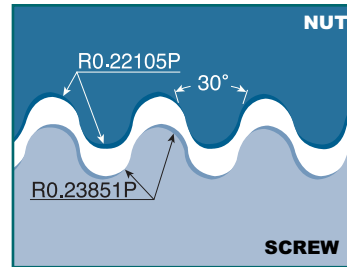
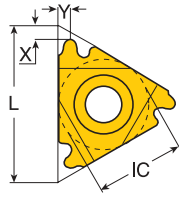


Buttress Casing
Application: Oil & Gas Industry

Extreme Line Casing

| Thread Form | IC | Pitch | Designation | | Dimension | | |
|--|------|-------|------------------|------------------|-----------|-----------|------------------------|
| | | TPI | External | Internal | L | Taper IPF | Connection No. or Size |
|  Buttress | 1/2" | 5 | 22 ER 5 BUT 0.75 | 22 IR 5 BUT 0.75 | .866 | 0.75 | 4-1/2" ÷ 13-3/8" |
| | | 5 | 22 ER 5 BUT 1.0 | 22 IR 5 BUT 1.0 | .866 | 1.0 | 16" ÷ 20" |
|  Extreme Line Casing | 1/2" | 6 | 22 ER 6 EL 1.5 | 22 IR 6 EL 1.5 | .866 | 1.5 | 5" ÷ 7-5/8" |
| | | 5 | 22 ER 5 EL 1.25 | 22 IR 5 EL 1.25 | .866 | 1.25 | 8-5/8" ÷ 10-3/4" |

**ROUND DIN 405
API Spec 5B-8-1996**



Application: Pipe Couplings for Fire Fighting and Food Industries

| Thread Form | IC | Pitch TPI | Designation | | Dimension | | | |
|--|--|--------------|--------------|--------------|--------------|------|------|------|
| | | | Right Hand | Left Hand | L | X | Y | |
| External  | 3/8" | 10 | 16 ER 10 RND | 16 EL 10 RND | .630 | .043 | .047 | |
| | | 8 | 16 ER 8 RND | 16 EL 8 RND | .630 | .055 | .051 | |
| | | 6 | 16 ER 6 RND | 16 EL 6 RND | .630 | .059 | .067 | |
| | | 6 | 16 ERM 6 RND | | .630 | .059 | .067 | |
| | 1/2" | 6 | 22 ER 6 RND | 22 EL 6 RND | .866 | .059 | .067 | |
| | | 4 | 22 ER 4 RND | 22 EL 4 RND | .866 | .087 | .091 | |
| | 5/8" | 4 | 27 ER 4 RND | 27 EL 4 RND | 1.063 | .087 | .091 | |
| | Internal  | 3/8" | 10 | 16 IR 10 RND | 16 IL 10 RND | .630 | .043 | .047 |
| | | | 8 | 16 IR 8 RND | 16 IL 8 RND | .630 | .055 | .055 |
| 6 | | | 16 IR 6 RND | 16 IL 6 RND | .630 | .055 | .059 | |
| 6 | | | 16 IRM 6 RND | | .630 | .055 | .059 | |
| 1/2" | | 6 | 22 IR 6 RND | 22 IL 6 RND | .866 | .059 | .067 | |
| | | 4 | 22 IR 4 RND | 22 IL 4 RND | .866 | .087 | .091 | |
| 5/8" | | 4 | 27 IR 4 RND | 27 IL 4 RND | 1.063 | .087 | .091 | |

- ERM/IRM with pressed chipbreaker

THREADING TOOLHOLDERS DESTINATION SYSTEM

1 Clamping System

S - Screw Clamping


2 Application

E - External
I - Internal

5 Tool Length

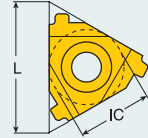
inch

D - 2.5
F - 3.25
H - 4.0
K - 5.0
L - 5.5
M - 6.0
P - 7.0
R - 8.0
S - 10.0
T - 12.0
U - 14.0
V - 16.0



6 Insert Size

| L (mm) | IC |
|--------|-------|
| 06 | 5/32" |
| 08 | 3/16" |
| 08U | 3/16" |
| 11 | 1/4" |
| 16 | 3/8" |
| 22 | 1/2" |
| 22U | 1/2" |
| 27 | 5/8" |
| 27U | 5/8" |



S
1

E
2

R
3

0750
4

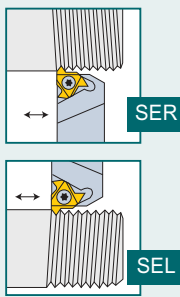
K
5

16
6


7

3 Hand of Tool

R - Right-hand
L - Left-hand



4 Shank Size

External Toolholders
Shank: h x b

0750: .75" x .75"

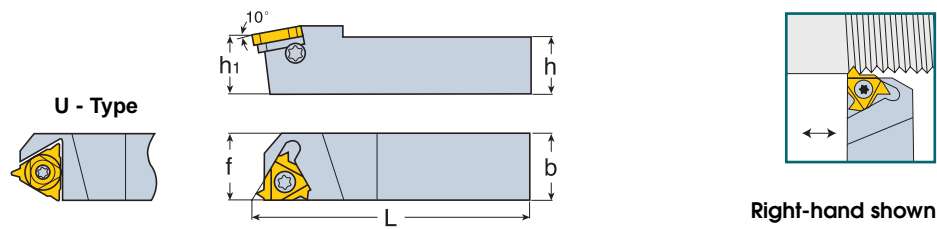
Internal Toolholders
Shank: Diameter d

0750: Diameter .75"

7 Optional Specifications

U - For U-type inserts
B - Bore for coolant
C - Carbide shank
O - Offset style
SP - Special
A - API (oil)

THREADING TOOLHOLDERS EXTERNAL

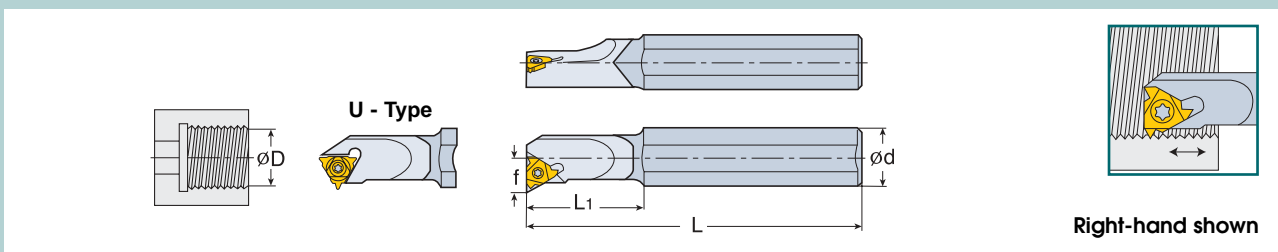


SER/L

| Designation | Dimension (inch) | | | | Insert ⁽²⁾ |
|-------------------------------|------------------|-------|------|------|-----------------------|
| | h=h ₁ | b | L | f | |
| SER/L 0310 H11 ⁽¹⁾ | .310 | .310 | 4.00 | .43 | 11 ER/L... |
| SER/L 0375 H11 ⁽¹⁾ | .375 | .375 | 4.00 | .43 | |
| SER/L 0375 D16 | .375 | .375 | 2.50 | .63 | 16 ER/L... |
| SER/L 0500 F16 | .500 | .500 | 3.25 | .63 | |
| SER/L 0625 H16 | .625 | .625 | 4.00 | .63 | |
| SER/L 0750 K16 | .750 | .750 | 5.00 | .75 | |
| SER/L 1000 M16 | 1.000 | 1.000 | 6.00 | 1.00 | |
| SER/L 1250 P16 | 1.250 | 1.250 | 7.00 | 1.25 | |
| SER/L 1000 M22 | 1.000 | 1.000 | 6.00 | 1.00 | 22 ER/L... |
| SER/L 1250 P22 | 1.250 | 1.250 | 7.00 | 1.25 | |
| SER/L 1500 R22 | 1.500 | 1.500 | 8.00 | 1.50 | |
| SER/L 1250 P22U | 1.250 | 1.250 | 7.00 | 1.25 | 22 UERL... |
| SER/L 1500 R22U | 1.500 | 1.500 | 8.00 | 1.50 | |
| SER/L 1000 M27 | 1.000 | 1.000 | 6.00 | 1.00 | 27 ER/L... |
| SER/L 1250 P27 | 1.250 | 1.250 | 7.00 | 1.25 | |
| SER/L 1500 R27 | 1.500 | 1.500 | 8.00 | 1.50 | |
| SER/L 1250 P27U | 1.250 | 1.250 | 7.00 | 1.25 | 27 UERL... |
| SER/L 1500 R27U | 1.500 | 1.500 | 8.00 | 1.50 | |

- ⁽¹⁾ Toolholders without anvil ⁽²⁾ Right-hand inserts (ER) for right-hand tools (SER)
- All toolholders are made with 1.5° helix angle
- For other helix angles, please see ANVIL SELECTION TABLE, page T242 - T243
- For spare parts see page T238

THREADING TOOLHOLDERS INTERNAL



SIR/L

| Designation | Dimension (inch) | | | | | Insert ⁽²⁾ |
|-------------------------------|------------------|------|----------------|-------|------|-----------------------|
| | d | L | L ₁ | Dmin | f | |
| SIR 0205 H06 ⁽¹⁾ | .500 | 4.0 | .500 | .250 | .17 | 06 IR... |
| SIL 0205 H06 ⁽¹⁾ | .500 | 4.0 | .500 | .250 | .17 | 06 IL... |
| SIR 0265 K08 ⁽¹⁾ | .625 | 5.0 | .710 | .315 | .21 | 08 IR... |
| SIL 0265 K08 ⁽¹⁾ | .625 | 5.0 | .710 | .315 | .21 | 08 IL... |
| SIR 0310 K08U ⁽¹⁾ | .625 | 5.0 | .825 | .355 | .25 | 08 UIRL... |
| SIL 0310 K08U ⁽¹⁾ | .625 | 5.0 | .825 | .355 | .25 | 08 UIRL... |
| SIR/L 0375 H11 ⁽¹⁾ | .375 | 4.0 | - | .470 | .29 | 11 IR/L... |
| SIR/L 0375 K11 ⁽¹⁾ | .625 | 5.0 | 1.000 | .470 | .26 | |
| SIR/L 0500 L11 ⁽¹⁾ | .625 | 5.5 | 1.250 | .630 | .32 | |
| SIR/L 0500 M16 ⁽¹⁾ | .625 | 6.0 | 1.250 | .640 | .39 | 16 IR/L... |
| SIR/L 0625 P16 ⁽¹⁾ | .750 | 7.0 | 1.500 | .750 | .45 | |
| SIR/L 0750 P16 | .750 | 7.0 | - | 1.000 | .51 | 16 IR/L... |
| SIR/L 1000 R16 | 1.000 | 8.0 | - | 1.200 | .65 | |
| SIR/L 1250 S16 | 1.250 | 10.0 | - | 1.420 | .77 | |
| SIR/L 1500 T16 | 1.500 | 12.0 | - | 1.650 | .90 | |
| SIR/L 0750 P22 ⁽¹⁾ | .750 | 7.0 | - | .950 | .51 | |
| SIR/L 1000 R22 | 1.000 | 8.0 | - | 1.200 | .71 | |
| SIR/L 1250 S22 | 1.250 | 10.0 | - | 1.500 | .85 | |
| SIR/L 1500 T22 | 1.500 | 12.0 | - | 1.750 | .98 | |
| SIR/L 1250 S22U | 1.250 | 10.0 | - | 1.500 | 1.01 | 22 UIRL... |
| SIR/L 1500 T22U | 1.500 | 12.0 | - | 1.850 | 1.12 | |
| SIR/L 1250 S27 | 1.250 | 10.0 | - | 1.560 | .88 | 27 IR/L... |
| SIR/L 1500 T27 | 1.500 | 12.0 | - | 1.800 | 1.00 | |
| SIR/L 2000 U27 | 2.000 | 14.0 | - | 2.300 | 1.25 | |
| SIR/L 2500 V27 | 2.500 | 16.0 | - | 2.700 | 1.50 | |
| SIR/L 1250 S27U | 1.250 | 10.0 | - | 1.560 | .98 | 27 UIRL... |
| SIR/L 1500 T27U | 1.500 | 12.0 | - | 1.850 | 1.13 | |
| SIR/L 2000 U27U | 2.000 | 14.0 | - | 2.300 | 1.37 | |
| SIR/L 2500 V27U | 2.500 | 16.0 | - | 2.700 | 1.61 | |

• ⁽¹⁾ Toolholders without anvil

• ⁽²⁾ Right-hand inserts (IR) for right-hand tools (SIR)

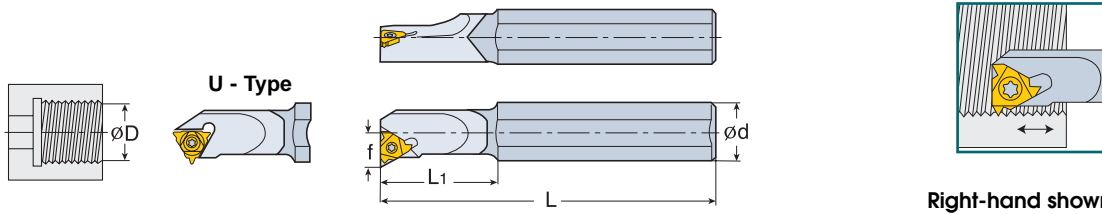
• For RH bars use LH inserts

• All toolholders are made with 1.5° helix angle

• For additional helix angles, please see ANVIL SELECTION TABLE, page T242 - T243

• For spare parts see page T238

THREADING TOOLHOLDERS SOLID CARBIDE THREADING BARS FOR HIGH RIGIDITY

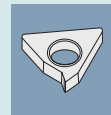
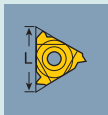


SIR/L

| Designation | Dimension (inch) | | | | | Insert ⁽¹⁾ |
|------------------|------------------|------|----------------|-------|------|-----------------------|
| | d | L | L ₁ | Dmin | f | |
| SIR/L 0205 H06C | .236 | 4.0 | 1.0 | .250 | .170 | 06 IR... |
| SIR/L 0265 K08C | .315 | 5.0 | 1.2 | .315 | .210 | 08 IR... |
| SIR/L 0310 K08UC | .315 | 5.0 | 1.4 | .355 | .250 | 08 UIRL... |
| SIR/L 0375 M11C | .380 | 6.0 | - | .500 | .290 | 11 IR/L... |
| SIR/L 0500 P11C | .500 | 7.0 | - | .600 | .330 | |
| SIR/L 0625 R16C | .630 | 8.0 | - | .750 | .460 | 16 IR/L... |
| SIR/L 0020 S16C | .630 | 9.84 | - | .906 | .54 | 16 IR/L... |
| SIR/L 0025 S16C | .630 | 9.84 | - | 1.102 | .64 | 16 IR/L... |

- All carbide shank toolholders are without anvil
- All toolholders are made with 1.5° helix angle
- Right-hand inserts (IR) for right-hand tools (SIR)
- For spare parts see page T238

■ THREADING TOOLHOLDERS SPARE PARTS



External Toolholder

| Insert Size | Insert Screw | Anvil Screw | Torx Key | Anvil EX. Right | Anvil EX. Left |
|-------------|--------------|-------------|-----------|-----------------|----------------|
| 11 | S11 | - | T-8/5 | - | - |
| 16 | S16 | A16 | T-10/5 | AE16 | AI16 |
| 22 | S22 | A22 | T-20/5 | AE22 | AI22 |
| 22U | S22 | A22 | T-20/5 | AE22U | AI22U |
| 27 | S27 | A27 | K27(T-25) | AE27 | AI27 |
| 27U | S27 | A27 | K27(T-25) | AE27U | AI27U |

Internal Toolholder

| Insert Size | Insert Screw | Anvil Screw | Torx Key | Anvil IN. Right | Anvil IN. Left |
|-------------|--------------|-------------|-----------|-----------------|----------------|
| 06 | SR-14-552 | - | T-6/5 | - | - |
| 08 | SR-14-558 | - | T-6/5 | - | - |
| 11 | S11 | - | T-8/5 | - | - |
| 16 | S16S | - | T-10/5 | - | - |
| 16 | S16 | A16 | T-10/5 | AI16 | AE16 |
| 22 | S22S | - | T-20/5 | - | - |
| 22 | S22 | A22 | T-20/5 | AI22 | AE22 |
| 22U | S22 | A22 | T-20/5 | AI22U | AE22U |
| 27 | S27 | A27 | K27(T-25) | AI27 | AE27 |
| 27U | S27 | A27 | K27(T-25) | AI27U | AE27U |

- Torx Key: use only flag type

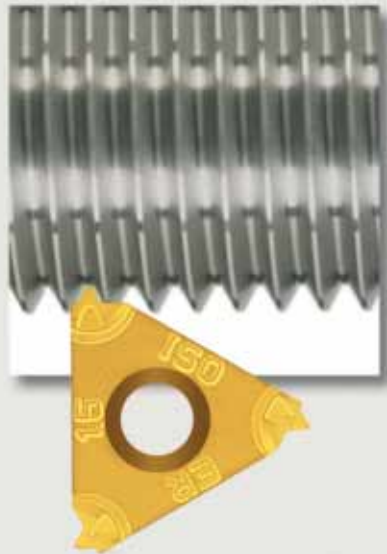
Threading Inserts - Types and Profiles

Partial Profile



- Suitable for a wide range of pitches with a common angle (60° or 55°)
- Inserts with small root-corner radius suitable for the smallest pitch range.
- Additional operations to complete the outer/internal diameter is necessary.
- Not recommended for mass production.
- Eliminates the need for different inserts.

Full Profile

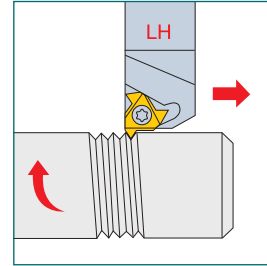
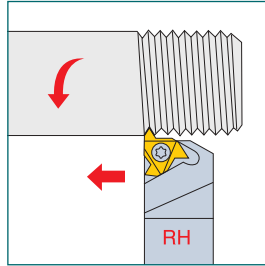


- Performs complete thread profile.
- Root corner radius is suitable only for the relevant pitch.
- Recommended for mass production.
- Suitable for one profile only.

Thread Turning Methods

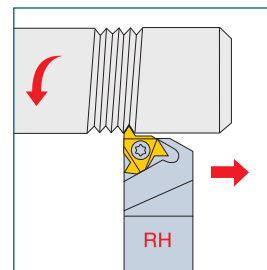
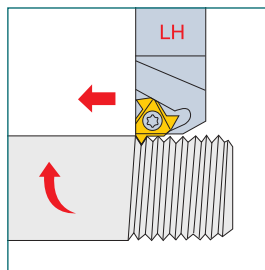
External Thread

Right-Hand Thread



Change anvil to negative⁽¹⁾

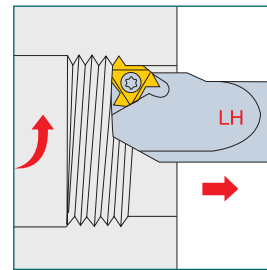
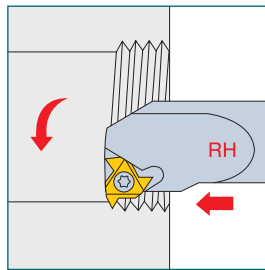
Left-Hand Thread



Change anvil to negative⁽¹⁾

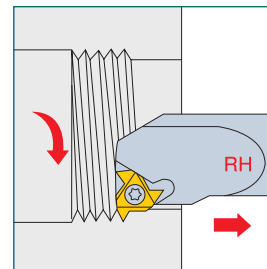
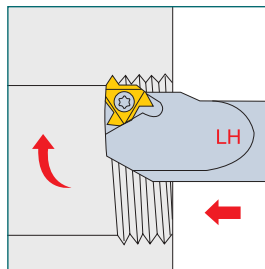
Internal Thread

Right-Hand Thread



Change anvil to negative⁽¹⁾

Left-Hand Thread



Change anvil to negative⁽¹⁾

⁽¹⁾See page T242 - T243

Mini - Tool Features

(1) $\varnothing D \geq M8$; 5/16"-UN; 1/16"-NPT

(2) 4H:8H/1B:3B

(3)

| | | |
|--|---|-----|
| | A | .00 |
|--|---|-----|

(1) Smallest possible thread
 (2) All tolerances
 (3) Minimum run-out
 (4) High surface quality

M-Type Threading Insert - Accuracy

$\theta \pm 20^\circ$

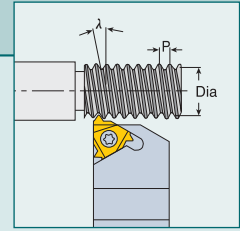
$IC \pm 0.02$

$S \pm 0.02$

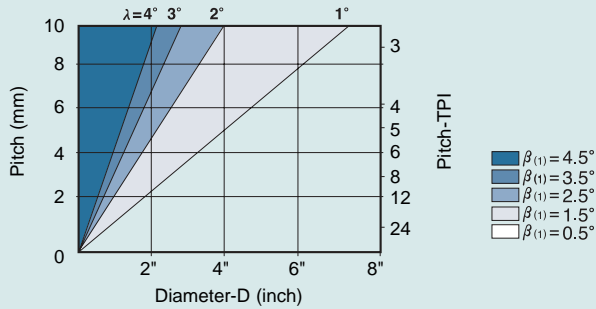
Indexability: ⁽¹⁾ $\pm .001''$

⁽¹⁾ Insert indexability accuracy: $\pm .0006''$

Thread Helix Angle and Anvil Selection



Helix Angle λ Evaluation



⁽¹⁾β -Effective inclination angle.

$$\text{tg } \lambda = \frac{1 \times P}{3.14 \cdot D}$$

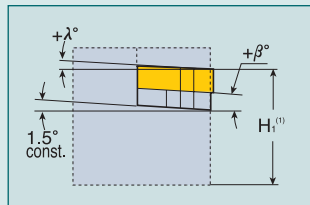
P - Pitch (TPI)
D - Effective diameter of thread (inch)

$$\lambda^\circ = \frac{20 \times P}{D}$$

λ - Angle of inclination

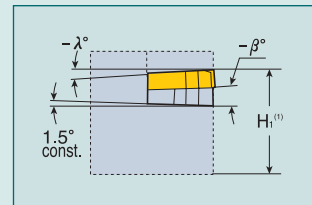
Anvil Selection According to Thread Helix Angle λ

| | | Standard | | | | | | | |
|----------------------|----------------|-------------------|-------------|-------------|---------|-------------|-----------------|-------------|--|
| Thread Helix Angle λ | | >4° | 3° - 4° | 2° - 3° | 1° - 2° | 0° - 1° | Negative Anvils | | |
| Inclination Angle β | | 4.5° | 3.5° | 2.5° | 1.5° | 0.5° | -0.5° | -1.5° | |
| I(IC) | Toolholder | Anvil Designation | | | | | | | |
| 16 (3/8) | EX RH OR IN LH | AE 16 +4.5 | AE 16 +3.5 | AE 16 +2.5 | AE 16 | AI 16 +0.5 | AE 16 -0.5 | AE 16 -1.5 | |
| | EX LH OR IN RH | AI 16 +4.5 | AI 16 +3.5 | AI 16 +2.5 | AI 16 | AI 16 +0.5 | AI 16 -0.5 | AI 16 -1.5 | |
| 22 (1/2) | EX RH OR IN LH | AE 22 +4.5 | AE 22 +3.5 | AE 22 +2.5 | AE 22 | AE 22 +0.5 | AE 22 -0.5 | AE 22 -1.5 | |
| | EX LH OR IN RH | AI 22 +4.5 | AI 22 +3.5 | AI 22 +2.5 | AI 22 | AI 22 +0.5 | AI 22 -0.5 | AI 22 -1.5 | |
| 27 (5/8) | EX RH OR IN LH | AE 27 +4.5 | AE 27 +3.5 | AE 27 +2.5 | AE 27 | AE 27 +0.5 | AE 27 -0.5 | AE 27 -1.5 | |
| | EX LH OR IN RH | AI 27 +4.5 | AI 27 +3.5 | AI 27 +2.5 | AI 27 | AI 27 +0.5 | AI 27 -0.5 | AI 27 -1.5 | |
| 22U (1/2U) | EX RH OR IN LH | AE 22U +4.5 | AE 22U +3.5 | AE 22U +2.5 | AE 22U | AE 22U +0.5 | AE 22U -0.5 | AE 22U -1.5 | |
| | EX LH OR IN RH | AI 22U +4.5 | AI 22U +3.5 | AI 22U +2.5 | AI 22U | AI 22U +0.5 | AI 22U -0.5 | AI 22U -1.5 | |
| 27U (5/8U) | EX RH OR IN LH | AE 27U +4.5 | AE 27U +3.5 | AE 27U +2.5 | AE 27U | AE 27U +0.5 | AE 27U -0.5 | AE 27U -1.5 | |
| | EX LH OR IN RH | AI 27U +4.5 | AI 27U +3.5 | AI 27U +2.5 | AI 27U | AI 27U +0.5 | AI 27U -0.5 | AI 27U -1.5 | |



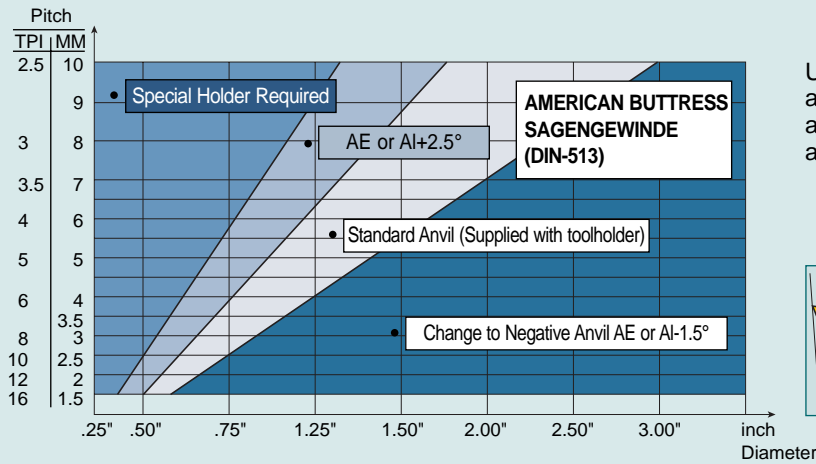
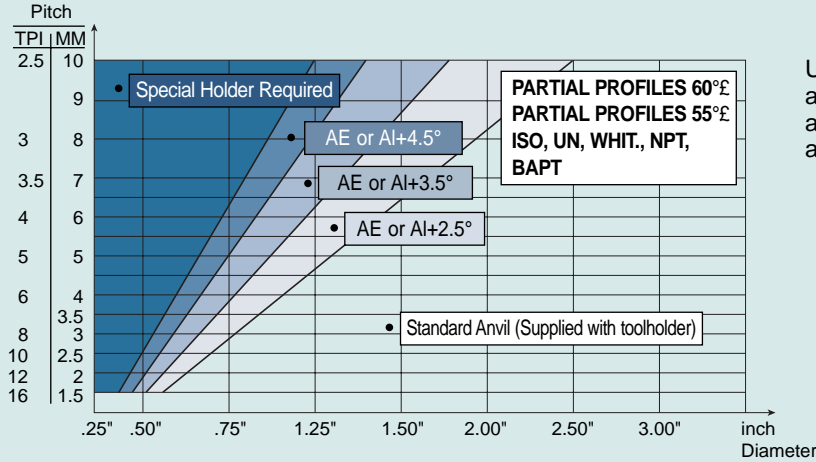
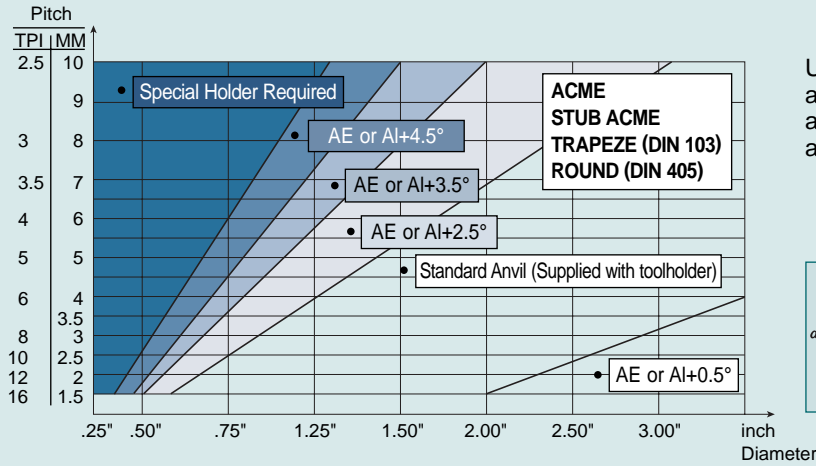
Anvils for positive inclination angle β applicable when turning **RH** thread with **RH** holder or **LH** thread with **LH** holders.

⁽¹⁾H₁ remains constant for every anvil combination.



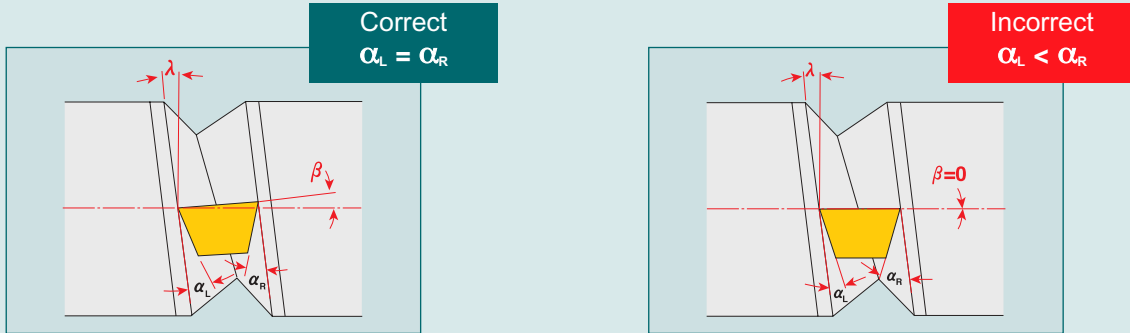
Anvils for negative inclination angle β used when turning **RH** thread with **LH** holder or **LH** thread with **RH** holder.

Thread Helix Angle and Anvil Selection



Flank Clearance and Effective Inclination Angle

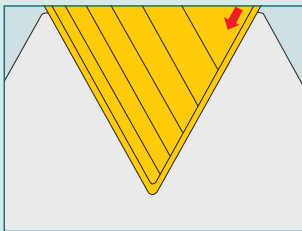
Inclination angle β of the cutting edges correspond to a specific thread helix angle λ and insures equal clearance angle on both sides of insert.



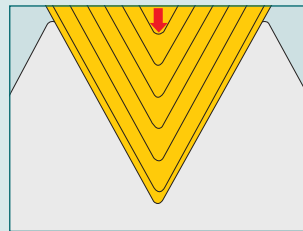
- α - Flank clearance angle
- λ - Helix angle
- β - Effective inclination angle is achieved by selecting the suitable anvil

Infeed Methods for Threading Operations

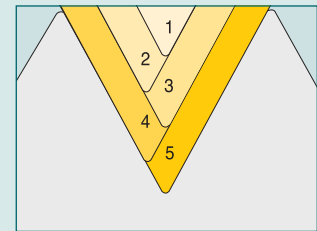
Flank Infeed



Radial Infeed

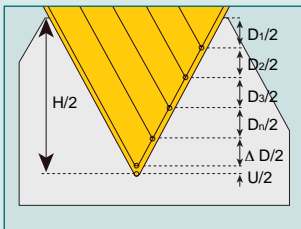


Alternating Flank Infeed



Flank Equal

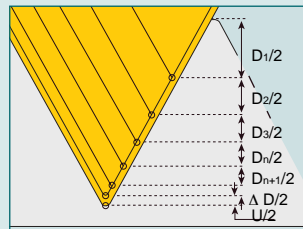
Equal depth of cut for each pass



$$\frac{D_1}{2} = \frac{D_2}{2} = \frac{D_3}{2} = \frac{D_n}{2}$$

Flank Diminishing

Diminished depth of cut for each pass



$$\frac{D_1}{2} > \frac{D_2}{2} > \frac{D_3}{2} > \frac{D_n}{2} > \frac{D_{n+1}}{2}$$

- H - Depth of thread profile (on \varnothing)
- D - Depth of pass (on \varnothing)
- U - Depth of finishing pass (on \varnothing)

Cutting Data

Number of Cutting Passes for Regular Type Inserts

| Pitch | mm | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 4.0 | 6.0 |
|------------------|-----|-----|-----|------|------|------|------|-------|-------|
| | TPI | 48 | 24 | 16 | 12 | 10 | 8 | 6 | 4 |
| Number of Passes | | 4-6 | 5-9 | 5-12 | 6-14 | 7-15 | 8-17 | 10-20 | 11-22 |

- For mini-tools (061R or 081R) add 1 - 3 passes. Increase for hard materials.

Maximum depth of first cut for CNC control External Threading - M-Type Inserts

| Full Profile | Pitch | TPI | Insert Designation | No. of passes Min. Max. | | Max. Depth for First Pass (D ₁) mm | | | | | | | | | |
|------------------------|-----------|-------------|--------------------|----------------------------|------|--|------------|-----------------------|------------|-----------------|------------|---------------------|------------|-------------------------|---------------|
| | | | | | | Low Carbon Steel Eq. | Steel Dim. | High Carbon Steel Eq. | Steel Dim. | Alloy Steel Eq. | Steel Dim. | Stainless Steel Eq. | Steel Dim. | Nonferrous Aluminum Eq. | Aluminum Dim. |
| ISO Metric | 1.00 | | 16 ERM 1.00 ISO | 5 | 9 | .013 | .020 | .012 | .018 | .011 | .016 | .009 | .013 | .019 | .028 |
| | 1.25 | | 16 ERM 1.25 ISO | 6 | 11 | .017 | .025 | .015 | .022 | .013 | .020 | .011 | .016 | .023 | .035 |
| | 1.50 | | 16 ERM 1.50 ISO | 6 | 12 | .018 | .027 | .016 | .024 | .015 | .022 | .012 | .018 | .025 | .038 |
| | 1.75 | | 16 ERM 1.75 ISO | 8 | 13 | .019 | .028 | .017 | .026 | .015 | .023 | .012 | .019 | .026 | .040 |
| | 2.00 | | 16 ERM 2.00 ISO | 8 | 14 | .020 | .030 | .018 | .027 | .016 | .024 | .013 | .019 | .028 | .041 |
| | 2.50 | | 16 ERM 2.50 ISO | 10 | 15 | .021 | .031 | .019 | .028 | .017 | .025 | .013 | .020 | .029 | .044 |
| | 3.00 | | 16 ERM 3.00 ISO | 12 | 17 | .022 | .033 | .020 | .030 | .018 | .026 | .014 | .022 | .031 | .046 |
| American UN | | 24 | 16 ERM 24 UN | 5 | 9 | .013 | .020 | .012 | .018 | .011 | .016 | .009 | .013 | .019 | .028 |
| | | 20 | 16 ERM 20 UN | 6 | 10 | .017 | .025 | .015 | .022 | .013 | .020 | .011 | .016 | .023 | .035 |
| | | 18 | 16 ERM 18 UN | 6 | 11 | .018 | .027 | .016 | .024 | .015 | .022 | .012 | .018 | .025 | .038 |
| | | 16 | 16 ERM 16 UN | 7 | 12 | .019 | .028 | .017 | .025 | .015 | .022 | .012 | .018 | .026 | .039 |
| | | 14 | 16 ERM 14 UN | 7 | 13 | .018 | .027 | .016 | .024 | .015 | .022 | .011 | .016 | .025 | .038 |
| | | 12 | 16 ERM 12 UN | 8 | 14 | .022 | .033 | .018 | .027 | .016 | .024 | .013 | .019 | .028 | .041 |
| | 8 | 16 ERM 8 UN | 12 | 17 | .019 | .028 | .020 | .030 | .018 | .026 | .014 | .022 | .031 | .046 | |
| British BSW | | 19 | 16 ERM 19 W | 6 | 11 | .014 | .020 | .013 | .018 | .011 | .016 | .008 | .012 | .019 | .029 |
| | | 16 | 16 ERM 16 W | 7 | 12 | .019 | .028 | .017 | .025 | .015 | .022 | .012 | .018 | .026 | .039 |
| | | 14 | 16 ERM 14 W | 8 | 13 | .020 | .030 | .018 | .027 | .016 | .024 | .013 | .019 | .028 | .041 |
| | | 11 | 16 ERM 11 W | 9 | 14 | .017 | .025 | .016 | .023 | .014 | .021 | .011 | .017 | .024 | .036 |
| NPT | | 18 | 16 ERM 18 NPT | 10 | 20 | .009 | .014 | .009 | .013 | .007 | .011 | .006 | .009 | .013 | .020 |
| | | 14 | 16 ERM 14 NPT | 13 | 26 | .009 | .014 | .009 | .013 | .007 | .011 | .005 | .009 | .013 | .020 |
| | | 11.5 | 16 ERM 11.5 NPT | 15 | 24 | .011 | .016 | .009 | .014 | .009 | .013 | .007 | .010 | .015 | .022 |
| | | 8 | 16 ERM 8 NPT | 17 | 30 | .012 | .018 | .011 | .016 | .010 | .015 | .008 | .012 | .017 | .025 |
| Round | | 6 | 16 ERM 6 RND | 9 | 20 | .017 | .025 | .015 | .022 | .013 | .020 | .011 | .016 | .023 | .035 |
| Partial Profile 60° | 0.50-1.50 | 48-16 | 16 ERM A 60 | | (1) | .009 | .013 | .008 | .012 | .007 | .010 | .006 | .008 | .012 | .018 |
| | 1.75-3.00 | 14-8 | 16 ERM G 60 | | | .020 | .030 | .018 | .027 | .016 | .024 | .013 | .019 | .028 | .041 |
| | 0.50-3.00 | 48-8 | 16 ERM AG 60 | | | .009 | .014 | .009 | .013 | .007 | .011 | .006 | .009 | .013 | .020 |
| | 3.50-5.00 | 7-5 | 22 ERM N 60 | | | .016 | .024 | .015 | .022 | .013 | .020 | .011 | .016 | .022 | .034 |
| Partial Profile 55° | 1.75-3.00 | 14-8 | 16 ERM G 55 | | | .020 | .030 | .018 | .027 | .016 | .024 | .013 | .019 | .028 | .041 |
| | 0.50-3.00 | 48-8 | 16 ERM AG 55 | | | .009 | .013 | .008 | .012 | .007 | .010 | .006 | .008 | .012 | .018 |

⁽¹⁾ As per the number of passes for the relevant pitch.
For CT3000, TT6010 and K10, reduce depth of first cut by 30%.

Cutting Data

Maximum depth of first cut for CNC control Internal Threading - M-Type Inserts

| Full Profile | Pitch (mm) | TPI | Insert Designation | No. of passes Min. Max. | | Max. Depth for First Pass (D ₁) inch | | | | | | | | | |
|------------------------|-------------|-----------------|--------------------|----------------------------|------|--|------------|-----------------------|------------|-----------------|------------|---------------------|------|-------------------------|------|
| | | | | | | Low Carbon Steel Eq. | Steel Dim. | High Carbon Steel Eq. | Steel Dim. | Alloy Steel Eq. | Steel Dim. | Stainless Steel Eq. | Dim. | Nonferrous Aluminum Eq. | Dim. |
| ISO Metric | 1.50 | | 11 IRM 1.50 ISO | 10 | 20 | .008 | .012 | .007 | .011 | .006 | .009 | .005 | .007 | .011 | .019 |
| | 1.00 | | 16 IRM 1.00 ISO | 9 | 16 | .006 | .008 | .005 | .007 | .004 | .006 | .004 | .005 | .008 | .011 |
| | 1.25 | | 16 IRM 1.25 ISO | 9 | 16 | .007 | .011 | .007 | .010 | .006 | .009 | .005 | .007 | .011 | .015 |
| | 1.50 | | 16 IRM 1.50 ISO | 10 | 20 | .008 | .012 | .007 | .011 | .006 | .009 | .005 | .008 | .011 | .019 |
| | 1.75 | | 16 IRM 1.75 ISO | 11 | 18 | .008 | .013 | .007 | .011 | .007 | .010 | .006 | .008 | .011 | .018 |
| | 2.00 | | 16 IRM 2.00 ISO | 12 | 21 | .009 | .013 | .008 | .012 | .007 | .010 | .006 | .008 | .012 | .018 |
| | 2.50 | | 16 IRM 2.50 ISO | 14 | 21 | .009 | .013 | .008 | .012 | .007 | .011 | .006 | .009 | .013 | .019 |
| 3.00 | | 16 IRM 3.00 ISO | 16 | 22 | .009 | .014 | .009 | .013 | .007 | .011 | .006 | .009 | .013 | .020 | |
| American UN | | 20 | 16 IRM 20 UN | 7 | 13 | .008 | .012 | .007 | .011 | .006 | .009 | .005 | .008 | .011 | .017 |
| | | 18 | 16 IRM 18 UN | 8 | 15 | .008 | .012 | .007 | .011 | .006 | .009 | .005 | .008 | .011 | .017 |
| | | 16 | 16 IRM 16 UN | 11 | 19 | .008 | .012 | .007 | .011 | .006 | .009 | .005 | .008 | .011 | .017 |
| | | 14 | 16 IRM 14 UN | 11 | 20 | .008 | .012 | .007 | .011 | .007 | .010 | .005 | .007 | .011 | .017 |
| | | 12 | 16 IRM 12 UN | 12 | 21 | .009 | .013 | .008 | .012 | .007 | .011 | .006 | .009 | .013 | .019 |
| | | 8 | 16 IRM 8 UN | 14 | 20 | .009 | .014 | .009 | .013 | .007 | .011 | .006 | .009 | .013 | .020 |
| British BSW | | 19 | 16 IRM 19 W | 7 | 12 | .011 | .016 | .010 | .015 | .009 | .013 | .007 | .010 | .015 | .023 |
| | | 16 | 16 IRM 16 W | 9 | 14 | .010 | .015 | .009 | .014 | .008 | .012 | .007 | .010 | .014 | .022 |
| | | 14 | 16 IRM 14 W | 10 | 16 | .011 | .016 | .009 | .015 | .009 | .013 | .007 | .011 | .015 | .022 |
| | | 11 | 16 IRM 11 W | 12 | 19 | .012 | .018 | .011 | .016 | .010 | .015 | .008 | .012 | .017 | .025 |
| NPT | | 14 | 16 IRM 14 NPT | 21 | 35 | .005 | .008 | .005 | .007 | .004 | .006 | .003 | .005 | .007 | .011 |
| | | 11.5 | 16 IRM 11.5 NPT | 21 | 33 | .007 | .010 | .006 | .009 | .006 | .008 | .004 | .006 | .009 | .014 |
| | | 8 | 16 IRM 8 NPT | 20 | 34 | .009 | .013 | .008 | .012 | .007 | .010 | .006 | .008 | .012 | .018 |
| Round | | 6 | 16 IRM 6 RND | 12 | 24 | .012 | .018 | .011 | .016 | .009 | .015 | .008 | .012 | .017 | .025 |
| Partial Profile 60° | 0.50 - 1.25 | 48-16 | 06 IRM A 60 | | | .009 | .013 | .008 | .012 | .007 | .010 | .006 | .008 | .012 | .018 |
| | 0.50 - 1.50 | 48-16 | 08 IRM A 60 | | (1) | .005 | .008 | .005 | .007 | .004 | .006 | .003 | .005 | .007 | .011 |
| | 0.50 - 1.50 | 48-16 | 11 IRM A 60 | | | .005 | .008 | .005 | .007 | .004 | .006 | .003 | .005 | .007 | .011 |
| | 0.50 - 1.50 | 48-16 | 16 IRM A 60 | | | .005 | .008 | .005 | .007 | .004 | .006 | .003 | .005 | .007 | .011 |
| | 1.75 - 3.00 | 14-8 | 16 IRM G 60 | | | .009 | .013 | .008 | .012 | .007 | .010 | .006 | .008 | .012 | .018 |
| | 0.50 - 3.00 | 48-8 | 16 IRM AG 60 | | | .006 | .008 | .005 | .007 | .004 | .007 | .004 | .006 | .008 | .011 |
| | 3.50 - 5.00 | 7-5 | 22 IRM N 60 | | | .009 | .013 | .008 | .012 | .007 | .011 | .006 | .009 | .013 | .019 |
| Partial Profile 55° | 1.75 - 3.00 | 14-8 | 16 IRM G 55 | | | .013 | .020 | .012 | .018 | .011 | .016 | .009 | .013 | .019 | .028 |
| | 0.50 - 3.00 | 48-8 | 16 IRM AG 55 | | | .006 | .008 | .007 | .007 | .004 | .006 | .004 | .005 | .008 | .011 |

(1) As per the number of passes for the relevant pitch.
For CT3000, TT6010 and K10, reduce depth of first cut by 30%.

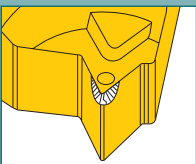
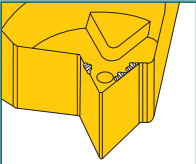
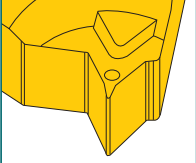
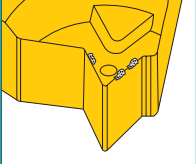
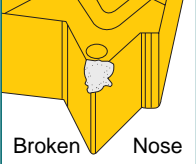
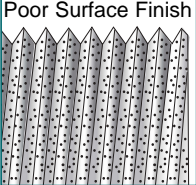
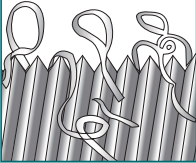
Cutting Data

Cutting Speed Range by Workpiece Material and Carbide Grades

| | Brinell HB | Coated | | | Uncoated | | | |
|-----------------------|-----------------|----------------------------|--------|--------|----------|---------------|----------|-----|
| | | TT7010 | TT9030 | TT8010 | P30 | Cermet CT3000 | UF10/K10 | |
| MATERIAL | Hardness | Cutting Speed (SFM) | | | | | | |
| Carbon Steel | 0.2 %C | 150 | 525 | 590 | 341 | 341 | 614 | |
| | 0.45%C | 190 | 490 | 525 | 322 | 322 | 577 | |
| | 0.83%C | 250 | 426 | 459 | 279 | 279 | 499 | |
| Alloy Steel | <200 | | 426 | 426 | 279 | 279 | 499 | |
| | 200 - 250 | | 393 | 393 | 256 | 256 | 459 | |
| | 275 - 325 | | 312 | 328 | 203 | 203 | 364 | |
| | 325 - 375 | | 262 | 262 | 171 | 171 | 308 | |
| | 375 - 425 | | 197 | 197 | 128 | 128 | 230 | |
| Stainless Steel | Mart. | 175 - 225 | 490 | 525 | 322 | 322 | 577 | 344 |
| | | 275 - 325 | 344 | 360 | 171 | 171 | 308 | 180 |
| | | 135 - 175 | 262 | 328 | 223 | 223 | 404 | 230 |
| | Aust. | 375 - 425 | 230 | 262 | 151 | 151 | 269 | 164 |
| Cast Steel | Carbon | <150 | 490 | 558 | 322 | 322 | 577 | |
| | | 150 - 200 | 360 | 360 | 236 | 236 | 423 | |
| | Alloyed | 200 - 250 | 328 | 328 | 213 | 213 | 384 | |
| | | 250-300 | 262 | 164 | 171 | 171 | 308 | |
| Malleable Iron | Short chip | 110 - 145 | | 262 | | | | 180 |
| | Long chip | 200 - 250 | | 328 | | | | 164 |
| Cast Iron | Low tensile | 180 | | 426 | | | | 328 |
| | High tensile | 250 | | 328 | | | | 230 |
| Nodular Iron | Ferritic | 160 | | 426 | | | | 246 |
| | Pearlitic | 250 | | 328 | | | | 230 |
| Chilled Cast Iron | | 400 | | 66 | | | | |
| Bronze Alloy | | 120 - 200 | | 393 | | | | 279 |
| Lead Alloy | | 80 - 150 | | 490 | | | | 377 |
| Brass & Red | | 60 - 110 | | 393 | | | | 279 |
| Phosphor Bronze | | 85 - 110 | | 328 | | | | 197 |
| Aluminum Alloys | | 150 - 200 | | 820 | | | | 558 |
| Aluminum Alloys, Cast | | | | 984 | | | | 787 |

| ISO CLASS | GRADE NAME | GRADE DESCRIPTION |
|-----------|-------------|---|
| P20-P30 | P30 | Carbide grade for carbon and cast steels. Works well at medium to low cutting speeds |
| K10-K30 | K10 or UF10 | Carbide grade for nonferrous metals, aluminum and cast iron |
| K10-K20 | TT6010 | PVD TiN coated micrograin for free cutting untreated alloy steels (below 30 HRc), for stainless steels and cast iron |
| P10-P25 | | |
| P15-P35 | TT7010 | PVD TiN coated grade for treated and hard alloy steels (25 HRc & up) at medium to low cutting speeds |
| P30-P50 | TT8010 | PVD TiN coated grade for low cutting speed. Works well with wide range of stainless steels |
| K25-K40 | | |
| P20-P40 | TT9030 | PVD TiAlN coated sub-micrograin grade for a variety of materials. First choice grade. Works well in stainless steels and exotic materials at medium to high cutting speeds. |
| K20-K30 | | |

Trouble Shooting

| Problem | Caused by | Solution |
|--|--|--|
|  <p>Premature Wear</p> | <ul style="list-style-type: none"> ● Cutting speed too high ● Infeed depth too small ● Highly abrasive material ● Inadequate coolant supply ● Wrong inclination anvil ● Wrong turned dia. prior to threading ● Insert is above center line | <ul style="list-style-type: none"> ● Reduce RPM ● Increase depth of cut ● Modify flank infeed ● Use coated grade ● Apply coolant ● Reselect anvil ● Check turned dia. ● Check center height |
|  <p>Chipped Edge</p> | <ul style="list-style-type: none"> ● Cutting speed too high ● Depth of cut too large ● Wrong grade ● Poor chip control ● Inadequate coolant supply ● Center height incorrect | <ul style="list-style-type: none"> ● Reduce RPM ● Reduce depth of cut ● Use coated grade ● Use tougher grade ● Modify flank infeed ● Apply coolant ● Adjust center height |
|  <p>Plastic Deformation</p> | <ul style="list-style-type: none"> ● Excessive heat in cutting zone ● Wrong grade ● Inadequate coolant supply | <ul style="list-style-type: none"> ● Reduce RPM ● Reduce depth of cut ● Check turned dia. ● Use coated grade ● Use harder grade ● Apply more coolant |
|  <p>Built-Up Edge</p> | <ul style="list-style-type: none"> ● Cutting edge too cold ● Wrong grade ● Inadequate coolant supply | <ul style="list-style-type: none"> ● Increase RPM ● Increase depth of cut ● Use coated grade ● Apply coolant |
|  <p>Broken Nose during 1st Pass</p> | <ul style="list-style-type: none"> ● Cutting edge too cold ● Depth of cut too large ● Wrong grade ● Wrong turned dia. prior to threading ● Corner height incorrect ● Infeed depth too shallow ● Wrong inclination anvil ● Tool overhang too long | <ul style="list-style-type: none"> ● Increase RPM ● Reduce depth of cut ● Increase number of infeed passes ● Use tougher grade ● Check turned dia. ● Adjust center height ● Modify flank infeed ● Reselect anvil ● Reduce tool overhang |
|  <p>Poor Surface Finish</p> | <ul style="list-style-type: none"> ● Wrong cutting speed ● Excessive heat in cutting zone ● Poor chip control ● Inadequate coolant supply ● Wrong inclination anvil ● Tool overhang too long ● Center height incorrect | <ul style="list-style-type: none"> ● Increase RPM ● Reduce RPM ● Reduce depth of cut ● Modify flank infeed ● Apply coolant ● Reselect anvil ● Reduce tool overhang ● Check center height |
|  <p>Poor Chip Control</p> | <ul style="list-style-type: none"> ● Excessive heat in cutting zone ● Wrong grade ● Inadequate coolant supply ● Wrong turned dia. prior to threading | <ul style="list-style-type: none"> ● Reduce RPM ● Change depth of cut ● Check turned dia. ● Use coated grade ● Check turned dia. ● Use M-type insert ● Apply coolant ● Check turned dia. |

Ingersoll



T249

TAEGLline