

A close-up photograph of a carbide tool bit cutting a metal workpiece. The tool bit is positioned at an angle, and a small chip of metal is being removed from the workpiece. The background is a blurred, light-colored surface.

CarbideProTM

**Indexable
Tooling Systems**

Our Story

For nearly 30 years, the professionals at AmeriServ Supply have been providing quality products and memorable customer experiences. And now, they proudly offer the CarbidePro™ brand of indexable inserts and tooling to the metalworking industry.



Available exclusively through AmeriServ Supply, the broad offering includes indexable inserts for turning, boring, milling, threading, and grooving applications, as well as toolholders, boring bars, high-feed milling cutters, and associated hardware and accessories. Employing state-of-the-art innovations in PVD nano-coating and micro-grain, cobalt-enriched substrate technology, our indexable inserts offer unique chip control configurations for finishing, roughing, and general purpose machining of materials spanning the entire ISO application range.

At Your Service

More than just another carbide distributor. AmeriServ Supply sources its materials from a host of domestic and global manufacturers, ensuring the most economical, highest quality products available.

We are committed to providing exceptional customer care. Our friendly and experienced team is available 24/7 for service and technical support. Whether it's product selection, process optimization, or troubleshooting, our decades of manufacturing expertise and industry knowledge are at your service.

Recycling Has Never Been Easier

Our sustainability initiative allows our customers to become part of the effort by recycling scrap tungsten carbide materials. Our sister company, Tungsten Carbide Recycling LLC, arranges freight, sorts and weighs your material, and provides detailed settlement reports along with prompt payment.



It couldn't be easier to convert your scrap to cash and do your part to preserve and protect our environment.

Visit www.tungstencarbiderecycling.com for more information.

AmeriServ Supply, LLC
12900 Preston Road, Suite 620
Dallas, TX 75230
www.ameriservsupply.com
281-734-1746 281-734-1839

Toolholders

Clamp lock, screw lock, multi-lock

4

Boring Bars

Steel, carbide, heavy metal

26

Shims and Chipbreakers

Negative and positive rake shims

36

Spare Parts

Screws, lock pins, clamps, wrenches

42

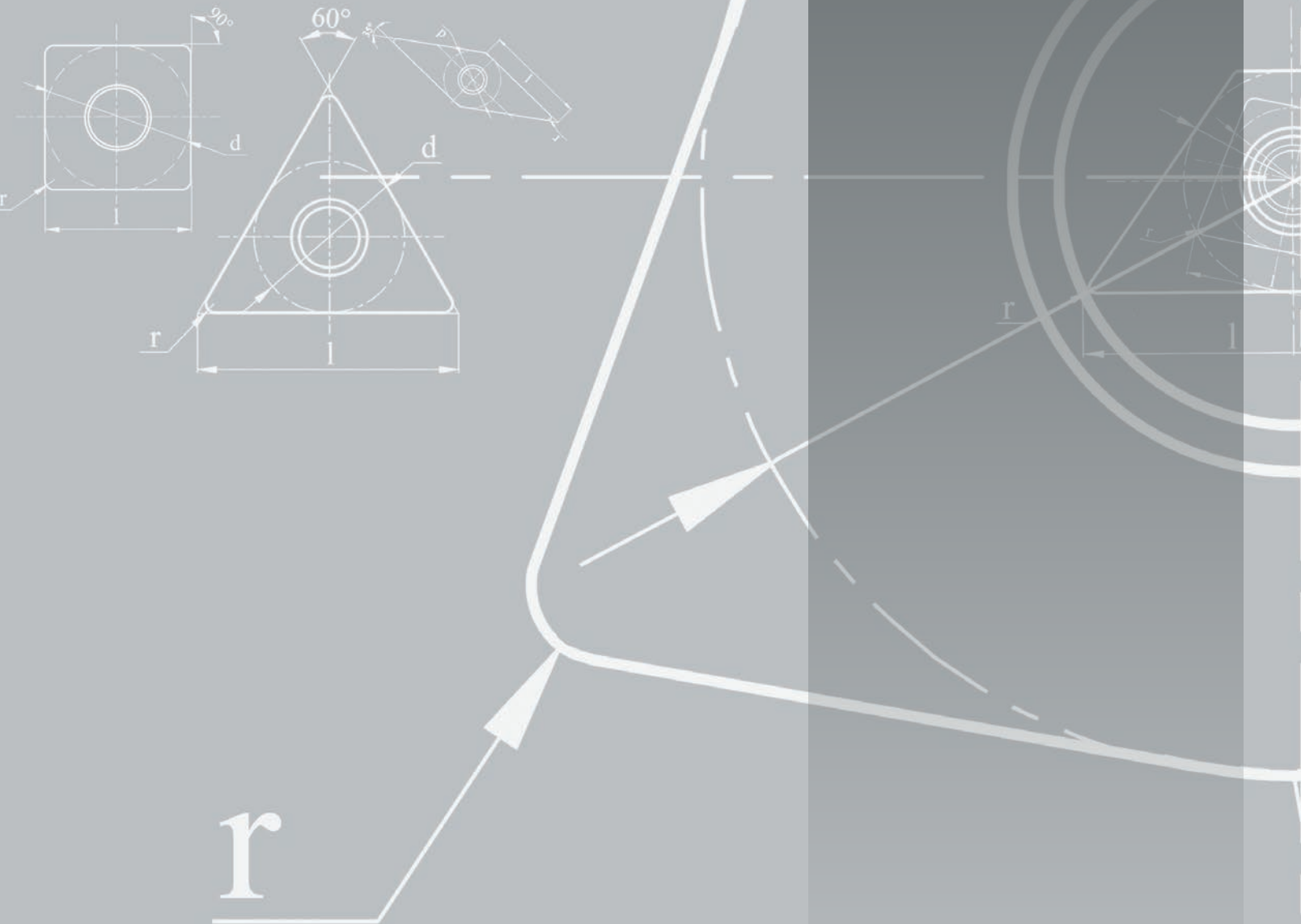
Technical Information

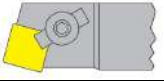
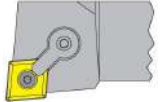

Machining parameters for turning operations







46

TOOLHOLDERS

ANSI / ISO STANDARD
TOOLHOLDERS FOR EXTERNAL
TURNING OPERATIONS

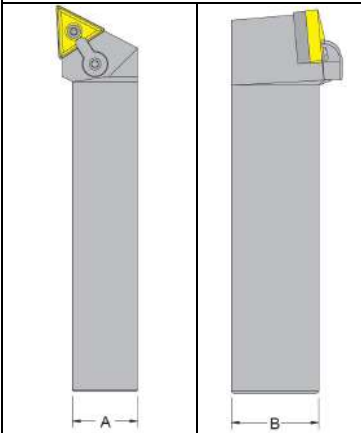


| | |
|--|-----------------------|
|  | C – Clamp Lock |
|  | M – Multi-Lock |
|  | S – Screw Lock |
| 1 – HOLDING METHOD | |

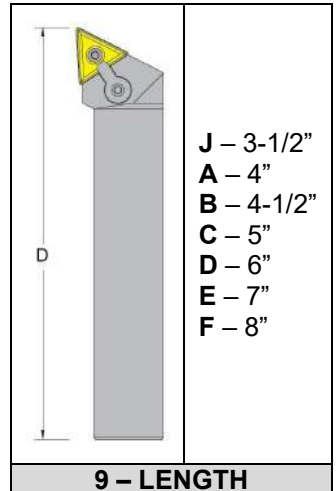
| | |
|---|----------|
| 0°  | N |
| 5°  | B |
| 7°  | C |
| 11°  | P |
| 15°  | D |
| 25°  | F |
| 4 – INSERT CLEARANCE ANGLE | |








For a square shank holder, where "A" and "B" are equal, this figure is expressed in 1/16" increments (e.g., 16 x 1/16" = 1" square shank). For shanks 1/2" square and below, position 6 will be a "0."

For rectangle shank holders, "A" is expressed in 1/8" increments and "B" is expressed in 1/4" increments (e.g., 64 [6 x 1/8"] & [4 x 1/4"] = 3/4" x 1" shank).

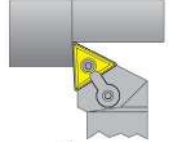
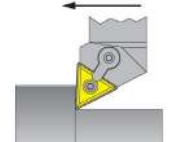
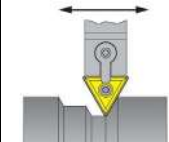


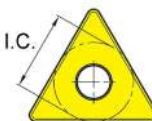
6, 7 – SHANK DIMENSIONS


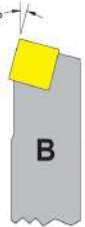







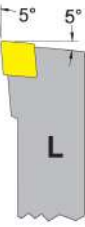

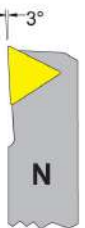
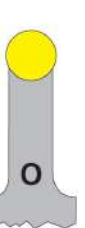
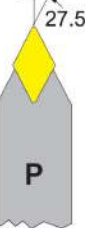




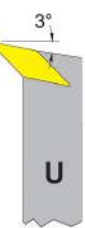





| | |
|---|----------|
|  | C |
|  | D |
|  | R |
|  | S |
|  | T |
|  | V |
|  | W |
| 2 – INSERT SHAPE | |

| | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| M | T | G | N | R | 1 | 6 | 4 | D |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

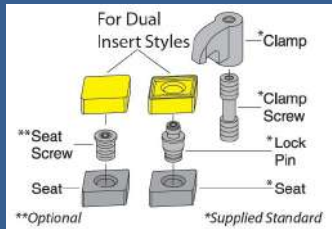
| 5 – HAND OF TOOL | | |
|---|---|---|
| R - Right | L - Left | N - Neutral |
|  |  |  |

| 8 – INSERT SIZE |
|---|
| Insert I.C. in 1/8" increments (e.g., 4 = 1/2" I.C.) |
|  |

| 3 – TOOL STYLE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|--|
|  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  | |

Multi-lock toolholders offer the option of using both lock pin and clamp style inserts. If clamp style inserts are used, an optional seat screw must be ordered. Using lock pin style inserts with the dual clamping system provided by these toolholders minimizes vibration and ensures maximum rigidity. A wide variety of insert shapes and sizes can be used with this style of toolholder.

Unless the holder is neutral, in all depictions below, a right hand holder is shown; left hand will be opposite.



Multi-Lock Style Toolholders - Negative Rake Inserts

| MCFNR/L 0° End Cutting Edge Angle for Negative 80° Diamond CNMx and CNx Inserts | | | | | | | | | | | |
|--|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MCFNR/L 12-4B | .750 | .750 | 4.500 | 1.250 | 1.000 | CNMx-43x | ICSN-43x | NL-46 | CL-20 | XNS-47 | S-46 |
| MCFNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.250 | 1.250 | | | | | XNS-48 | |
| MCFNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.250 | 1.250 | | | | | | |
| MCFNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.375 | 1.250 | CNMx-54x | ICSN-53x | NL-58 | CL-12 | XNS-510 | S-58 |
| MCFNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.375 | 1.500 | | | | | | |
| MCFNR/L 16-6D | 1.000 | 1.000 | 6.000 | 1.500 | 1.250 | CNMx-64x | ICSN-63x | NL-68 | CL-12 | XNS-510 | S-68 |
| MCFNR/L 20-6D | 1.250 | 1.250 | 6.000 | 1.500 | 1.500 | | | | | | |
| MCFNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.500 | 2.000 | | | | | | |

| MCGNR/L 0° Side Cutting Edge Angle for Negative 80° Diamond CNMx and CNx Inserts | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MCGNR/L 12-4B | .750 | .750 | 4.500 | 1.250 | 1.000 | CNMx-43x | ICSN-43x | NL-46 | CL-20 | XNS-47 | S-46 |
| MCGNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.250 | 1.250 | | | | | XNS-48 | |
| MCGNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.250 | 1.250 | | | | | | |
| MCGNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.310 | 1.250 | CNMx-54x | ICSN-53x | NL-58 | CL-12 | XNS-510 | S-58 |
| MCGNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.310 | 1.500 | | | | | | |
| MCGNR/L 16-6D | 1.000 | 1.000 | 6.000 | 1.625 | 1.250 | CNMx-64x | ICSN-63x | NL-68 | CL-9 | XNS-510 | S-68 |
| MCGNR/L 85-6D | 1.000 | 1.250 | 6.000 | 1.625 | 1.250 | | | | | | |

| MCKNR/L 15° End Cutting Edge Angle for Negative 80° Diamond CNMx and CNx Inserts | | | | | | | | | | | |
|--|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MCKNR/L 12-4B | .750 | .750 | 4.500 | 1.250 | 1.000 | CNMx-43x | ICSN-43x | NL-46 | CL-20 | XNS-47 | S-46 |
| MCKNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.250 | 1.250 | | | | | XNS-48 | |
| MCKNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.250 | 1.250 | | | | | | |
| MCKNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.250 | 1.500 | CNMx-54x | ICSN-53x | NL-58 | CL-12 | XNS-510 | S-58 |
| MCKNR/L 20-4E | 1.250 | 1.250 | 7.000 | 1.250 | 1.500 | | | | | | |
| MCKNR/L 16-5C | 1.000 | 1.000 | 5.000 | 1.375 | 1.250 | | | | | | |
| MCKNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.375 | 1.250 | CNMx-64x | ICSN-63x | NL-68 | CL-12 | XNS-510 | S-68 |
| MCKNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.375 | 1.500 | | | | | | |
| MCKNR/L 85-5D | 1.000 | 1.250 | 6.000 | 1.375 | 1.250 | | | | | | |
| MCKNR/L 16-6D | 1.000 | 1.000 | 6.000 | 1.500 | 1.250 | CNMx-64x | ICSN-63x | NL-68 | CL-12 | XNS-510 | S-68 |
| MCKNR/L 20-6D | 1.250 | 1.250 | 6.000 | 1.500 | 1.500 | | | | | | |
| MCKNR/L 20-6E | 1.250 | 1.250 | 7.000 | 1.500 | 1.500 | | | | | | |
| MCKNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.500 | 2.000 | CNMx-64x | ICSN-63x | NL-68 | CL-12 | XNS-510 | S-68 |
| MCKNR/L 86-6E | 1.000 | 1.500 | 7.000 | 1.500 | 1.250 | | | | | | |

| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw | | | | | | |
|--|-------|-------|-------|-------|-------|--------------------|--------------------|----------|----------|-------------|---------------------|--------|---------|-------|---------|------|------|
| | | | | | | | | | | | | | | | | | |
| MCLNR/L Negative 5° End or Side Cutting Edge Angle for Negative 80° Diamond CNMx and CNx Inserts | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| MCLNR/L 08-3A | .500 | .500 | 4.000 | 1.000 | .750 | CNMx-32x | - | NL-33 | CL-7 | XNS-36 | - | | | | | | |
| MCLNR/L 10-3A | .625 | .625 | 4.000 | 1.000 | .875 | | ICSN-32x | NL-34 | | | S-34 | | | | | | |
| MCLNR/L 12-3B | .750 | .750 | 4.500 | 1.200 | 1.000 | | | CNMx-43x | ICSN-43x | NL-46 | CL-20 | XNS-47 | S-46 | | | | |
| MCLNR/L 16-3D | 1.000 | 1.000 | 6.000 | 1.200 | 1.250 | | | | | | | | | | | | |
| MCLNR/L 10-4A | .625 | .625 | 4.000 | 1.200 | .875 | | | | | | | | | | | | |
| MCLNR/L 12-4B | .750 | .750 | 4.500 | 1.200 | 1.000 | | | | | | | | | | | | |
| MCLNR/L 12-4D | .750 | .750 | 6.000 | 1.200 | 1.000 | | | | | | | | | | | | |
| MCLNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.200 | 1.250 | | | | | | | | | | | | |
| MCLNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.200 | 1.250 | | | | | | | | | | | | |
| MCLNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.200 | 1.500 | | | | | | | | | | | | |
| MCLNR/L 20-4E | 1.250 | 1.250 | 7.000 | 1.200 | 1.500 | | | | | | | | | | | | |
| MCLNR/L 24-4D | 1.500 | 1.500 | 6.000 | 1.200 | 2.000 | | | | | | | | | | | | |
| MCLNR/L 24-4E | 1.500 | 1.500 | 7.000 | 1.200 | 2.000 | | | | | | | | | | | | |
| MCLNR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.200 | 1.250 | CNMx-54x | ICSN-53x | | | | | NL-58 | | CL-12 | XNS-510 | S-58 | |
| MCLNR/L 16-5C | 1.000 | 1.000 | 5.000 | 1.400 | 1.250 | | | | | | | | | | | | |
| MCLNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.400 | 1.250 | | | | | | | | | | | | |
| MCLNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.400 | 1.500 | | | | | | | | | | | | |
| MCLNR/L 20-5E | 1.250 | 1.250 | 7.000 | 1.400 | 1.500 | | | | | | | | | | | | |
| MCLNR/L 24-5D | 1.500 | 1.500 | 6.000 | 1.400 | 2.000 | | | | | | | | | | | | |
| MCLNR/L 24-5E | 1.500 | 1.500 | 7.000 | 1.400 | 2.000 | | | | | | | | | | | | |
| MCLNR/L 86-5E | 1.000 | 1.500 | 7.000 | 1.400 | 1.250 | | | | | | | | | | | | |
| MCLNR/L 16-6C | 1.000 | 1.000 | 5.000 | 1.500 | 1.250 | | | CNMx-64x | ICSN-63x | NL-68 | CL-12 | | XNS-510 | | | | S-68 |
| MCLNR/L 16-6D | 1.000 | 1.000 | 6.000 | 1.500 | 1.250 | | | | | | | | | | | | |
| MCLNR/L 20-6D | 1.250 | 1.250 | 6.000 | 1.500 | 1.500 | | | | | | | | | | | | |
| MCLNR/L 20-6E | 1.250 | 1.250 | 7.000 | 1.500 | 1.500 | | | | | | | | | | | | |
| MCLNR/L 24-6D | 1.500 | 1.500 | 6.000 | 1.500 | 2.000 | | | | | | | | | | | | |
| MCLNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.500 | 2.000 | | | | | | | | | | | | |
| MCLNR/L 85-6D | 1.000 | 1.250 | 6.000 | 1.500 | 1.250 | | | | | | | | | | | | |
| MCLNR/L 86-6E | 1.000 | 1.500 | 7.000 | 1.500 | 1.250 | | | | | | | | | | | | |

| Catalog # | A | B | C | E | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
|---|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | | |
| MCMNN 40° Side Cutting Edge Angle for Negative 80° Diamond CNMx and CNx Inserts | | | | | | | | | | |
| | | | | | | | | | | |
| MCMNN 12-4B | .750 | .750 | 4.500 | 1.500 | CNMx-43x | ICSN-43x | NL-46 | CL-20 | XNS-48 | S-46 |
| MCMNN 16-4D | 1.000 | 1.000 | 6.000 | 1.500 | | | | | | |
| MCMNN 20-4D | 1.250 | 1.250 | 6.000 | 1.500 | | | | | | |
| MCMNN 20-4E | 1.250 | 1.250 | 7.000 | 1.500 | | | | | | |
| MCMNN 16-5D | 1.000 | 1.000 | 6.000 | 1.800 | CNMx-54x | ICSN-53x | NL-58 | CL-9 | XNS-510 | S-58 |
| MCMNN 20-5D | 1.250 | 1.250 | 6.000 | 1.800 | | | | | | |
| MCMNN 20-5E | 1.250 | 1.250 | 7.000 | 1.800 | CNMx-64x | ICSN-63x | NL-68 | CL-30 | XNS-510 | S-68 |
| MCMNN 16-6D | 1.000 | 1.000 | 6.000 | 1.800 | | | | | | |
| MCMNN 20-6D | 1.250 | 1.250 | 6.000 | 1.800 | | | | | | |
| MCMNN 20-6E | 1.250 | 1.250 | 7.000 | 1.800 | | | | | | |
| MCMNN 24-6E | 1.500 | 1.500 | 7.000 | 1.800 | | | | | | |

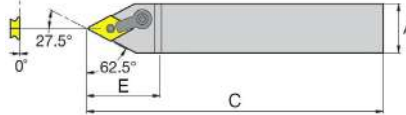
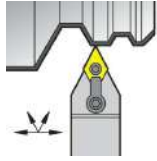
| MCRNR/L 15° Side Cutting Edge Angle for Negative 80° Diamond CNMx and CNx Inserts | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MCRNR/L 12-3B | .750 | .750 | 4.500 | .875 | .800 | CNMx-32x | ICSN-33x | NL-34 | CL-6 | XNS-37 | S-34 |
| MCRNR/L 12-4B | .750 | .750 | 4.500 | 1.250 | 1.000 | | | | | XNS-47 | |
| MCRNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.250 | 1.250 | CNMx-43x | ICSN-43x | NL-46 | CL-20 | XNS-48 | S-46 |
| MCRNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.250 | 1.250 | | | | | | |
| MCRNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.250 | 1.500 | | | | | | |
| MCRNR/L 24-4D | 1.500 | 1.500 | 6.000 | 1.250 | 2.000 | | | | | | |
| MCRNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.334 | 1.250 | CNMx-54x | ICSN-53x | NL-58 | CL-9 | XNS-510 | S-58 |
| MCRNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.334 | 1.500 | | | | | | |
| MCRNR/L 24-5E | 1.500 | 1.500 | 7.000 | 1.334 | 2.000 | | | | | | |
| MCRNR/L 85-5D | 1.000 | 1.250 | 6.000 | 1.334 | 1.250 | | | | | | |
| MCRNR/L 16-6D | 1.000 | 1.000 | 6.000 | 1.500 | 1.250 | CNMx-64x | ICSN-63x | NL-68 | CL-12 | XNS-510 | S-68 |
| MCRNR/L 20-6D | 1.250 | 1.250 | 6.000 | 1.500 | 1.500 | | | | | | |
| MCRNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.500 | 2.000 | | | | | | |
| MCRNR/L 86-6E | 1.000 | 1.500 | 7.000 | 1.500 | 1.250 | | | | | | |

| MCYNN 50° Side Cutting Edge Angle for Negative 80° Diamond CNMx and CNx Inserts | | | | | | | | | | | |
|---|-------|-------|-------|-------|---|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MCYNN 12-4B | .750 | .750 | 4.500 | 1.500 | | CNMx-43x | ICSN-43x | NL-46 | CL-20 | XNS-48 | S-46 |
| MCYNN 16-4D | 1.000 | 1.000 | 6.000 | 1.500 | | | | | | | |
| MCYNN 85-4D | 1.000 | 1.250 | 6.000 | 1.500 | | CNMx-54x | ICSN-53x | NL-58 | CL-12 | XNS-510 | S-58 |
| MCYNN 16-5D | 1.000 | 1.000 | 6.000 | 1.625 | | | | | | | |
| MCYNN 20-5D | 1.250 | 1.250 | 6.000 | 1.625 | | CNMx-64x | ICSN-63x | NL-68 | CL-30 | XNS-510 | S-68 |
| MCYNN 16-6D | 1.000 | 1.000 | 6.000 | 1.700 | | | | | | | |
| MCYNN 20-6E | 1.250 | 1.250 | 7.000 | 1.700 | | | | | | | |
| MCYNN 24-6E | 1.500 | 1.500 | 7.000 | 1.700 | | | | | | | |

| MDJNR/L 3° Side Cutting Edge Angle for Negative 55° Diamond DNMx and DNx Inserts | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MDJNR/L 08-3A | .500 | .500 | 4.000 | 1.250 | .750 | DNMx-33x | - | NL-33 | CL-7 | XNS-36 | - |
| MDJNR/L 10-3B | .625 | .625 | 4.500 | 1.250 | .875 | | | | | | |
| MDJNR/L 12-3B | .750 | .750 | 4.500 | 1.250 | 1.000 | DNMx-43x | IDSN-32x | NL-34L | CL-7 | XNS-36 | S-34 |
| MDJNR/L 16-3D | 1.000 | 1.000 | 6.000 | 1.250 | 1.250 | | | | | | |
| MDJNR/L 12-4B | .750 | .750 | 4.500 | 1.250 | 1.000 | | | | | | |
| MDJNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.250 | 1.250 | | | | | | |
| MDJNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.250 | 1.250 | DNMx-54x | IDSN-43x | NL-46L | CL-20 | XNS-48 | S-46 |
| MDJNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.250 | 1.500 | | | | | | |
| MDJNR/L 24-4D | 1.500 | 1.500 | 6.000 | 1.250 | 2.000 | | | | | | |
| MDJNR/L 24-4E | 1.500 | 1.500 | 7.000 | 1.250 | 2.000 | | | | | | |
| MDJNR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.250 | 1.250 | DNMx-54x | IDSN-53x | NL-58 | CL-12 | XNS-510 | S-58 |
| MDJNR/L 16-5C | 1.000 | 1.000 | 5.000 | 1.470 | 1.250 | | | | | | |
| MDJNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.470 | 1.250 | | | | | | |
| MDJNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.470 | 1.500 | | | | | | |
| MDJNR/L 24-5D | 1.500 | 1.500 | 6.000 | 1.470 | 2.000 | | | | | | |
| MDJNR/L 24-5E | 1.500 | 1.500 | 7.000 | 1.470 | 2.000 | | | | | | |
| MDJNR/L 86-5E | 1.000 | 1.500 | 7.000 | 1.470 | 1.250 | | | | | | |

MDPNN

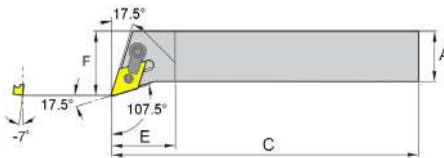
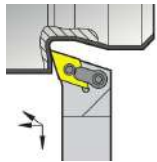
27.5° Side Cutting Edge Angle for Negative 55° Diamond DNMx and DNx Inserts



| Catalog # | A | B | C | E | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
|-------------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| MDPNN 12-3B | .750 | .750 | 4.500 | 1.500 | DNMx-33x | IDSN-32x | NL34L | CL-7 | XNS-36 | S-34 |
| MDPNN 16-3D | 1.000 | 1.000 | 6.000 | 1.500 | | | | | | |
| MDPNN 12-4B | .750 | .750 | 4.500 | 1.630 | | | | | | |
| MDPNN 16-4D | 1.000 | 1.000 | 6.000 | 1.630 | DNMx-43x | IDSN-43x | NL-46L | CL-12 | XNS-510 | S-46 |
| MDPNN 20-4D | 1.250 | 1.250 | 6.000 | 1.630 | | | | | | |
| MDPNN 24-4D | 1.500 | 1.500 | 6.000 | 1.630 | | | | | | |
| MDPNN 16-5D | 1.000 | 1.000 | 6.000 | 1.920 | DNMx-54x | IDSN-53x | NL-58 | CL-12 | XNS-510 | S-58 |
| MDPNN 20-5D | 1.250 | 1.250 | 6.000 | 1.920 | | | | | | |
| MDPNN 24-5D | 1.500 | 1.500 | 6.000 | 1.920 | | | | | | |
| MDPNN 24-5E | 1.500 | 1.500 | 7.000 | 1.920 | | | | | | |
| MDPNN 85-5D | 1.000 | 1.250 | 6.000 | 1.920 | | | | | | |
| MDPNN 86-5D | 1.000 | 1.500 | 6.000 | 1.920 | | | | | | |

MDQNR/L

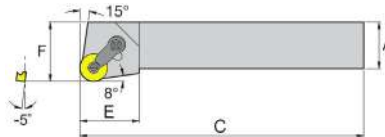
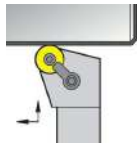
17.5° Side Cutting Edge Angle for Negative 55° Diamond DNMx and DNx Inserts



| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
|---------------|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| MDQNR/L 12-4B | .750 | .750 | 4.500 | 1.375 | 1.000 | DNMx-43x | IDSN-43x | NL-46L | CL-20 | XNS-47 | S-46 |
| MDQNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.375 | 1.250 | | | | | | |
| MDQNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.375 | 1.250 | | | | | | |
| MDQNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.375 | 1.500 | | | | | | |
| MDQNR/L 24-4D | 1.500 | 1.500 | 6.000 | 1.375 | 2.000 | | | | | | |
| MDQNR/L 24-4E | 1.500 | 1.500 | 7.000 | 1.375 | 2.000 | | | | | | |
| MDQNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.475 | 1.500 | DNMx-53x | IDSN-53x | NL-58 | CL-12 | XNS-510 | S-58 |
| MDQNR/L 24-5D | 1.500 | 1.500 | 6.000 | 1.475 | 2.000 | | | | | | |
| MDQNR/L 24-5E | 1.500 | 1.500 | 7.000 | 1.475 | 2.000 | | | | | | |

MRGNR/L

0° Side Cutting Edge Angle for Negative Round RNMx and RNx Inserts



| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
|---------------|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| MRGNR/L 08-3B | .500 | .500 | 4.500 | .940 | .750 | RNMx-3x | IRSN-3x | NL-34 | CL-6 | XNS-36 | S-34 |
| MRGNR/L 10-3B | .625 | .625 | 4.500 | .940 | .875 | | | | | | |
| MRGNR/L 12-3B | .750 | .750 | 4.500 | .940 | 1.000 | | | | | | |
| MRGNR/L 16-3D | 1.000 | 1.000 | 6.000 | .940 | 1.250 | RNMx-4x | IRSN-4x | NL-46 | CL-9 | XNS-59 | S-46 |
| MRGNR/L 10-4B | .625 | .625 | 4.500 | 1.190 | .875 | | | | | | |
| MRGNR/L 12-4B | .750 | .750 | 4.500 | 1.190 | 1.000 | | | | | | |
| MRGNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.190 | 1.250 | | | | | | |
| MRGNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.190 | 1.250 | | | | | | |
| MRGNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.190 | 1.500 | | | | | | |
| MRGNR/L 24-4E | 1.500 | 1.500 | 7.000 | 1.190 | 2.000 | | | | | | |
| MRGNR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.190 | 1.250 | | | | | | |
| MRGNR/L 86-4E | 1.000 | 1.500 | 7.000 | 1.190 | 1.250 | | | | | | |
| MRGNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.190 | 1.250 | | | | | | |
| MRGNR/L 20-6D | 1.250 | 1.250 | 6.000 | 1.130 | 1.500 | RNMx-6x | IRSN-6x | NL-68 | CL-12 | XNS-510 | S-68 |
| MRGNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.130 | 2.000 | | | | | | |

| MSDNN 45° Side Cutting Edge Angle for Negative Square SNMx and SNx Inserts | | | | | | | | | | |
|---|-------|-------|-------|-------|--------------------------|--------------------------|----------|-------|----------------|---------------------------|
| | A | B | C | E | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MSDNN 08-3A | .500 | .500 | 4.000 | 1.000 | SNMx-32x | ISSN-32x | NL-34 | CL-6 | XNS-36 | S-34 |
| MSDNN 08-3B | .500 | .500 | 4.500 | 1.000 | | | | | | |
| MSDNN 10-3B | .625 | .625 | 4.500 | 1.000 | | | | | | |
| MSDNN 12-3B | .750 | .750 | 4.500 | 1.000 | | | | | | |
| MSDNN 12-4B | .750 | .750 | 4.500 | 1.375 | SNMx-43x | ISSN-43x | NL-46 | CL-9 | XNS-58 | S-46 |
| MSDNN 16-4D | 1.000 | 1.000 | 6.000 | 1.375 | | | | | | |
| MSDNN 85-4D | 1.000 | 1.250 | 6.000 | 1.375 | | | | | | |
| MSDNN 16-5D | 1.000 | 1.000 | 6.000 | 1.625 | SNMx-54x | ISSN-53x | NL-58 | CL-12 | XNS-510 | S-58 |
| MSDNN 20-5D | 1.250 | 1.250 | 6.000 | 1.625 | | | | | | |
| MSDNN 85-5D | 1.000 | 1.250 | 6.000 | 1.625 | | | | | | |
| MSDNN 86-5E | 1.000 | 1.500 | 7.000 | 1.625 | | | | | | |
| MSDNN 16-6D | 1.000 | 1.000 | 6.000 | 1.625 | SNMx-64x | ISSN-63x | NL-68 | CL-12 | XNS-510 | S-68 |
| MSDNN 20-6D | 1.250 | 1.250 | 6.000 | 1.625 | | | | | | |
| MSDNN 20-6E | 1.250 | 1.250 | 7.000 | 1.625 | | | | | | |
| MSDNN 24-6E | 1.500 | 1.500 | 7.000 | 1.625 | | | | | | |
| MSDNN 85-6D | 1.000 | 1.250 | 6.000 | 1.625 | | | | | | |
| MSDNN 86-6E | 1.000 | 1.500 | 7.000 | 1.625 | | | | | | |
| MSDNN 24-8E | 1.500 | 1.500 | 7.000 | 2.000 | SNMx-86x | ISSN-84x | NL-810 | CL-24 | XNS-610 | S-810 |

| MSKNR/L 15° End Cutting Edge Angle for Negative Square SNMx and SNx Inserts | | | | | | | | | | | | |
|--|-------|-------|-------|-------|-------|------|--------------------------|--------------------------|----------|-------|----------------|---------------------------|
| | A | B | C | E | F | U | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MSKNR/L 08-3A | .500 | .500 | 4.000 | 1.000 | .625 | .900 | SNMx-32x | ISSN-32x | NL-34 | CL-6 | XNS-36 | S-34 |
| MSKNR/L 08-3B | .500 | .500 | 4.500 | 1.000 | .625 | .900 | | | | | | |
| MSKNR/L 10-3B | .625 | .625 | 4.500 | 1.000 | .750 | .900 | | | | | | |
| MSKNR/L 12-3B | .750 | .750 | 4.500 | 1.000 | .875 | .900 | | | | | | |
| MSKNR/L 12-4B | .750 | .750 | 4.500 | 1.220 | 1.000 | .122 | SNMx-43x | ISSN-43x | NL-46 | CL-9 | XNS-58 | S-46 |
| MSKNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.220 | 1.250 | .122 | | | | | | |
| MSKNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.220 | 1.250 | .122 | | | | | | |
| MSKNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.330 | 1.250 | .151 | SNMx-54x | ISSN-53x | NL-58 | CL-12 | XNS-510 | S-58 |
| MSKNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.330 | 1.500 | .151 | | | | | | |
| MSKNR/L 85-5D | 1.000 | 1.250 | 6.000 | 1.330 | 1.250 | .151 | | | | | | |
| MSKNR/L 20-6D | 1.250 | 1.250 | 6.000 | 1.500 | 1.500 | .183 | | | | | | |
| MSKNR/L 24-6D | 1.500 | 1.500 | 6.000 | 1.500 | 2.000 | .183 | SNMx-64x | ISSN-63x | NL-68 | CL-12 | XNS-510 | S-68 |
| MSKNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.500 | 2.000 | .183 | | | | | | |
| MSKNR/L 24-8E | 1.500 | 1.500 | 7.000 | 1.600 | 2.000 | .247 | | | | | | |
| MSKNR/L 24-8E | 1.500 | 1.500 | 7.000 | 1.600 | 2.000 | .247 | SNMx-86x | ISSN-84x | NL-810 | CL-24 | XNS-610 | S-810 |

| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
|---------------|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | | | |
| MSRNR/L 08-3A | .500 | .500 | 4.000 | 1.060 | .658 | SNMx-32x | ISSN-32x | NL-34 | CL-6 | XNS-36 | S-34 |
| MSRNR/L 08-3B | .500 | .500 | 4.500 | 1.060 | .658 | | | | | | |
| MSRNR/L 10-3B | .625 | .625 | 4.500 | 1.060 | .783 | | | | | | |
| MSRNR/L 12-3B | .750 | .750 | 4.500 | 1.060 | .908 | | | | | | |
| MSRNR/L 12-4B | .750 | .750 | 4.500 | 1.230 | .878 | SNMx-43x | ISSN-43x | NL-46 | CL-9 | XNS-58 | S-46 |
| MSRNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.300 | 1.128 | | | | | XNS-59 | |
| MSRNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.300 | 1.128 | | | | | | |
| MSRNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.300 | 1.380 | | | | | | |
| MSRNR/L 85-4D | 1.000 | 1.000 | 6.000 | 1.300 | 1.128 | SNMx-54x | ISSN-53x | NL-58 | CL-12 | XNS-510 | S-58 |
| MSRNR/L 16-5C | 1.000 | 1.000 | 5.000 | 1.500 | 1.100 | | | | | | |
| MSRNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.500 | 1.100 | | | | | | |
| MSRNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.500 | 1.350 | | | | | | |
| MSRNR/L 85-5D | 1.000 | 1.250 | 6.000 | 1.500 | 1.100 | SNMx-64x | ISSN-63x | NL-68 | CL-12 | XNS-510 | S-68 |
| MSRNR/L 16-6D | 1.000 | 1.000 | 6.000 | 1.600 | 1.068 | | | | | | |
| MSRNR/L 20-6D | 1.250 | 1.250 | 6.000 | 1.600 | 1.312 | | | | | | |
| MSRNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.600 | 1.818 | | | | | | |
| MSRNR/L 85-6D | 1.000 | 1.250 | 6.000 | 1.600 | 1.062 | SNMx-86x | ISSN-84x | NL-810 | CL-24 | XNS-610 | S-810 |
| MSRNR/L 24-8E | 1.500 | 1.500 | 7.000 | 2.000 | 1.768 | | | | | | |
| MSRNR/L 32-8E | 2.000 | 2.000 | 7.000 | 2.000 | 1.768 | | | | | | |

| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
|---------------|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | | | |
| MSSNR/L 08-3A | .500 | .500 | 4.000 | 1.060 | .391 | SNMx-32x | ISSN-32x | NL-34 | CL-6 | XNS-36 | S-34 |
| MSSNR/L 08-3B | .500 | .500 | 4.500 | 1.060 | .391 | | | | | | |
| MSSNR/L 12-4B | .750 | .750 | 4.500 | 1.230 | .662 | | | | | | |
| MSSNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.230 | .912 | | | | | | |
| MSSNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.230 | .912 | SNMx-43x | ISSN-43x | NL-46 | CL-9 | XNS-58 | S-46 |
| MSSNR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.230 | .912 | | | | | XNS-59 | |
| MSSNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.400 | .830 | | | | | | |
| MSSNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.400 | 1.078 | | | | | | |
| MSSNR/L 20-5E | 1.250 | 1.250 | 7.000 | 1.400 | 1.078 | SNMx-54x | ISSN-53x | NL-58 | CL-9 | XNS-510 | S-58 |
| MSSNR/L 20-6D | 1.250 | 1.250 | 6.000 | 1.500 | .992 | | | | | | |
| MSSNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.500 | 1.500 | | | | | | |

| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
|---------------|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | | | |
| MTANR/L 08-2A | .500 | .500 | 4.000 | .875 | .500 | TNMx-22x | - | NL-23 | CL-19 | XNS-36 | - |
| MTANR/L 10-2B | .625 | .625 | 4.500 | .875 | .625 | | | | | | |
| MTANR/L 10-3B | .625 | .625 | 4.500 | 1.000 | .625 | | | | | | |
| MTANR/L 12-3B | .750 | .750 | 4.500 | 1.000 | .750 | TNMx-32x | ITSN-33x | NL-34L | CL-6 | XNS-36 | S-34 |
| MTANR/L 16-3D | 1.000 | 1.000 | 6.000 | 1.000 | 1.000 | | | | | | |
| MTANR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.210 | 1.000 | | | | | | |
| MTANR/L 20-4E | 1.250 | 1.250 | 7.000 | 1.210 | 1.250 | | | | | | |
| MTANR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.210 | 1.000 | TNMx-43x | ITSN-43x | NL-46 | CL-9 | XNS-59 | S-46 |
| MTANR/L 86-4E | 1.000 | 1.500 | 7.000 | 1.210 | 1.000 | | | | | | |
| MTANR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.375 | 1.000 | | | | | | |
| MTANR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.375 | 1.250 | | | | | | |
| MTANR/L 20-5E | 1.250 | 1.250 | 7.000 | 1.375 | 1.250 | TNMx-54x | ITSN-53x | NL-58 | CL-9 | XNS-510 | S-58 |
| MTANR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.480 | 1.500 | | | | | | |
| MTANR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.480 | 1.500 | | | | | | |

| MTCNN 0° End Cutting Edge Angle for Negative Triangle TNMx and TNx Inserts | | | | | | | | | | | |
|--|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|--|
| | | | | | | | | | | | |
| Catalog # | A | B | C | E | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw | |
| MTCNN 08-3A | .500 | .500 | 4.000 | 1.000 | TNMx-32x | ITSN-33x | NL-34L | CL-7 | XNS-36 | S-34 | |
| MTCNN 08-3B | .500 | .500 | 4.500 | 1.000 | | | | | | | |
| MTCNN 44-3D | .500 | 1.000 | 6.000 | 1.000 | | | | | | | |
| MTCNN 44-3F | .500 | 1.000 | 8.000 | 1.000 | | | | | | | |
| MTCNN 12-4B | .750 | .750 | 4.500 | 1.500 | TNMx-43x | ITSN-43x | NL-46 | CL-12 | XNS-59 | S-46 | |
| MTCNN 16-4D | 1.000 | 1.000 | 6.000 | 1.500 | | | | | | | |
| MTCNN 64-4E | .750 | 1.000 | 7.000 | 1.500 | | | | | | | |
| MTCNN 64-4F | .750 | 1.000 | 8.000 | 1.500 | | | | | | | |
| MTCNN 66-4E | .750 | 1.500 | 7.000 | 1.500 | | | | | | | |
| MTCNN 66-4F | .750 | 1.500 | 8.000 | 1.500 | | | | | | | |

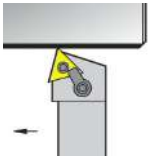
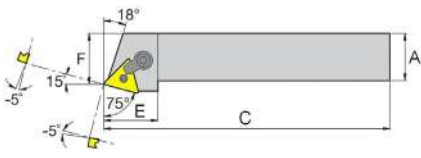

| MTENN 30° Side Cutting Edge Angle for Negative Triangle TNMx Inserts | | | | | | | | | | | |
|--|-------|-------|-------|-------|------|--------------------|--------------------|----------|----------|-------------|--------|
| | | | | | | | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | |
| MTENN 08-2B | .500 | .500 | 4.500 | 1.000 | .500 | TNMx-22x | - | NL-23 | CL-6 | XNS-35 | |
| MTENN 10-3B | .625 | .625 | 4.500 | 1.160 | .312 | TNMx-32x | ITSN-33x | NL-34L | CL-6 | XNS-35 | |
| MTENN 12-3B | .750 | .750 | 4.500 | 1.160 | .375 | TNMx-33x | ITSN-32x | NL-46 | CL-9 | XNS-58 | |
| MTENN 12-4B | .750 | .750 | 4.500 | 1.500 | .375 | TNMx-43x | ITSN-43x | | | CL-9 | XNS-59 |
| MTENN 16-4D | 1.000 | 1.000 | 6.000 | 1.500 | .500 | | | XNS-510 | | | |
| MTENN 20-4E | 1.250 | 1.250 | 7.000 | 1.500 | .625 | | | | | | |
| MTENN 24-4D | 1.500 | 1.500 | 6.000 | 1.500 | .750 | | | TNMx-54x | ITSN-53x | | NL-58 |
| MTENN 85-4D | 1.000 | 1.250 | 6.000 | 1.500 | .500 | XNS-510 | | | | | |
| MTENN 16-5D | 1.000 | 1.000 | 6.000 | 1.620 | .500 | | | | | | |
| MTENN 20-5D | 1.250 | 1.250 | 6.000 | 1.620 | .625 | | | | | | |
| MTENN 20-5E | 1.250 | 1.250 | 7.000 | 1.620 | .625 | | | | | | |

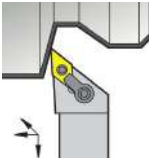
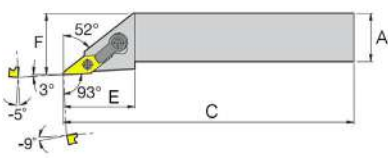

| MTFNR/L 0° End Cutting Edge Angle for Negative Triangle TNMx and TNx Inserts | | | | | | | | | | | |
|--|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MTFNR/L 08-2B | .500 | .500 | 4.500 | .810 | .750 | TNMx-22x | - | NL-23 | CL-19 | XNS-35 | - |
| MTFNR/L 10-2B | .625 | .625 | 4.500 | .810 | .875 | | | | | | |
| MTFNR/L 12-2B | .750 | .750 | 4.500 | .810 | 1.000 | TNMx-32x | ITSN-33x | NL-34L | CL-6 | XNS-35 | S-34 |
| MTFNR/L 12-3B | .625 | .625 | 4.500 | .880 | .875 | | | | | | |
| MTFNR/L 16-3C | 1.000 | 1.000 | 5.000 | .880 | 1.250 | TNMx-33x | ITSN-32x | NL-46 | CL-9 | XNS-36 | S-46 |
| MTFNR/L 16-3D | 1.000 | 1.000 | 6.000 | .880 | 1.250 | | | | | | |
| MTFNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.220 | 1.250 | TNMx-43x | ITSN-43x | NL-46 | CL-9 | XNS-59 | S-46 |
| MTFNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.220 | 1.250 | | | | | | |
| MTFNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.220 | 1.500 | | | | | | |
| MTFNR/L 24-4E | 1.500 | 1.500 | 7.000 | 1.220 | 2.000 | | | | | | |
| MTFNR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.220 | 1.250 | TNMx-54x | ITSN-53x | NL-58 | CL-12 | XNS-510 | S-46 |
| MTFNR/L 86-4E | 1.000 | 1.500 | 7.000 | 1.220 | 1.250 | | | | | | |
| MTFNR/L 16-5C | 1.000 | 1.000 | 5.000 | 1.375 | 1.250 | TNMx-54x | ITSN-53x | NL-58 | CL-12 | XNS-59 | S-58 |
| MTFNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.375 | 1.250 | | | | | | |
| MTFNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.375 | 1.500 | | | | | | |
| MTFNR/L 24-5E | 1.500 | 1.500 | 7.000 | 1.375 | 2.000 | | | | | | |
| MTFNR/L 85-5D | 1.000 | 1.250 | 6.000 | 1.375 | 1.250 | TNMx-66x | ITSN-63x | NL-68 | CL-12 | XNS-510 | S-68 |
| MTFNR/L 86-5E | 1.000 | 1.500 | 7.000 | 1.375 | 1.250 | | | | | | |
| MTFNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.500 | 2.000 | | | | | | |

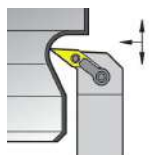
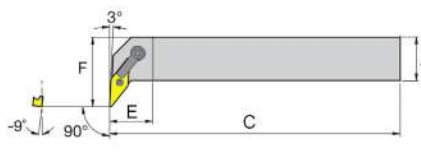

| MTGNR/L 0° Side Cutting Edge Angle for Negative Triangle TNMx and TNx Inserts | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MTGNR/L 08-2A | .500 | .500 | 4.000 | .900 | .625 | TNMx-22x | - | NL-23 | CL-6 | XNS-35 | - |
| MTGNR/L 10-2B | .625 | .625 | 4.500 | .900 | .750 | | | | | | |
| MTGNR/L 12-2B | .750 | .750 | 4.500 | .900 | .875 | | | | | | |
| MTGNR/L 10-3B | .625 | .625 | 4.500 | .940 | .875 | TNMx-32x | ITSN-33x | NL-34L | CL-6 | XNS-35 | S-34 |
| MTGNR/L 12-3B | .750 | .750 | 4.500 | .940 | 1.000 | | | | | XNS-36 | |
| MTGNR/L 16-3C | 1.000 | 1.000 | 5.000 | .940 | 1.250 | TNMx-33x | ITSN-32x | NL-34L | CL-6 | XNS-35 | S-46 |
| MTGNR/L 16-3D | 1.000 | 1.000 | 6.000 | .940 | 1.250 | | | | | XNS-36 | |
| MTGNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.190 | 1.250 | TNMx-43x | ITSN-43x | NL-46 | CL-9 | XNS-59 | S-46 |
| MTGNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.190 | 1.250 | | | | | XNS-510 | |
| MTGNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.190 | 1.500 | | | | | XNS-510 | |
| MTGNR/L 24-4D | 1.500 | 1.500 | 6.000 | 1.375 | 2.000 | | | | | XNS-510 | |
| MTGNR/L 24-4E | 1.500 | 1.500 | 7.000 | 1.375 | 2.000 | | | | | XNS-510 | |
| MTGNR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.190 | 1.250 | | | | | XNS-510 | |
| MTGNR/L 86-4E | 1.000 | 1.500 | 7.000 | 1.375 | 1.250 | TNMx-54x | ITSN-53x | NL-58 | CL-12 | XNS-59 | S-58 |
| MTGNR/L 16-5C | 1.000 | 1.000 | 5.000 | 1.375 | 1.250 | | | | | XNS-510 | |
| MTGNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.375 | 1.250 | | | | | XNS-510 | |
| MTGNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.375 | 1.500 | | | | | XNS-510 | |
| MTGNR/L 24-5E | 1.500 | 1.500 | 7.000 | 1.375 | 2.000 | | | | | XNS-510 | |
| MTGNR/L 85-5D | 1.000 | 1.250 | 6.000 | 1.375 | 1.250 | | | | | XNS-510 | |
| MTGNR/L 86-5E | 1.000 | 1.500 | 7.000 | 1.375 | 1.250 | TNMx-66x | ITSN-63x | NL-68 | CL-12 | XNS-510 | S-68 |
| MTGNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.500 | 2.000 | | | | | XNS-510 | |

| MTJNR/L 3° Side Cutting Edge Angle for Negative Triangle TNMx Inserts | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|--|
| | | | | | | | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | |
| MTJNR/L 08-2A | .500 | .500 | 4.000 | 1.000 | .625 | TNMx-22x | - | NL-23 | CL-6 | XNS-35 | |
| MTJNR/L 10-2B | .625 | .625 | 4.500 | 1.000 | .750 | | | | | | |
| MTJNR/L 10-3B | .625 | .625 | 4.500 | 1.000 | .875 | | | | | | |
| MTJNR/L 12-3B | .750 | .750 | 4.500 | 1.000 | 1.000 | TNMx-32x | ITSN-33x | NL-34L | CL-6 | XNS-36 | |
| MTJNR/L 16-3D | 1.000 | 1.000 | 6.000 | 1.000 | 1.250 | | | | | | |
| MTJNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.200 | 1.250 | TNMx-43x | ITSN-43x | NL-46 | CL-9 | XNS-510 | |
| MTJNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.200 | 1.500 | | | | | | |
| MTJNR/L 20-4E | 1.250 | 1.250 | 7.000 | 1.200 | 1.500 | | | | | | |
| MTJNR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.200 | 1.250 | | | | | | |
| MTJNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.500 | 1.250 | | | | | | |
| MTJNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.500 | 1.500 | | | | | | |
| MTJNR/L 24-5E | 1.500 | 1.500 | 7.000 | 1.500 | 2.000 | TNMx-54x | ITSN-53x | NL-58 | CL-9 | XNS-510 | |
| MTJNR/L 85-5D | 1.000 | 1.250 | 6.000 | 1.500 | 1.250 | | | | | | |
| MTJNR/L 86-5E | 1.000 | 1.500 | 7.000 | 1.500 | 1.250 | | | | | | |
| MTJNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.625 | 2.000 | | | | | | |
| MTJNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.625 | 2.000 | TNMx-66x | ITSN-63x | NL-68L | CL-12 | XNS-510 | |

| MTJNR/LS 3° Side Cutting Edge Angle for Negative Triangle TNMx Inserts | | | | | | | | | | | |
|--|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|--|
| | | | | | | | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | |
| MTJNR/LS 12-3B | .750 | .750 | 4.500 | 1.000 | 1.000 | TNMx-32x | ITSN-33x | NL-34L | CL-6 | XNS-36 | |
| MTJNR/LS 16-3D | 1.000 | 1.000 | 6.000 | 1.000 | 1.250 | TNMx-33x | ITSN-32x | NL-34L | CL-6 | XNS-36 | |
| MTJNR/LS 16-4D | 1.000 | 1.000 | 6.000 | 1.190 | 1.250 | TNMx-43x | ITSN-43x | NL-46 | CL-9 | XNS-59 | |
| MTJNR/LS 20-4E | 1.250 | 1.250 | 7.000 | 1.190 | 1.500 | | | | | XNS-510 | |
| MTJNR/LS 16-5D | 1.000 | 1.000 | 6.000 | 1.375 | 1.250 | TNMx-54x | ITSN-53x | NL-58 | CL-9 | XNS-59 | |
| MTJNR/LS 20-5E | 1.250 | 1.250 | 6.000 | 1.375 | 1.500 | | | | | XNS-510 | |
| MTJNR/LS 24-5E | 1.500 | 1.500 | 7.000 | 1.375 | 2.000 | | | | | XNS-510 | |
| MTJNR/LS 24-6E | 1.500 | 1.500 | 7.000 | 1.375 | 2.000 | | | | | XNS-510 | |
| MTJNR/LS 24-6E | 1.500 | 1.500 | 7.000 | 1.375 | 2.000 | TNMx-66x | ITSN-63x | NL-68 | CL-12 | XNS-510 | |

| MTRNR/L 15° Side Cutting Edge Angle for Negative Triangle TNMx and TNx Inserts | | | | | | | | | | | |
|--|-------|--|-------|-------|-------|---|--------------------|----------|-------|-------------|---------------------|
|  | |  | | | |  | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MTRNR/L 08-2A | .500 | .500 | 4.000 | .875 | .651 | TNMx-22x | - | NL-23 | CL-6 | XNS-36 | - |
| MTRNR/L 10-2B | .625 | .625 | 4.500 | .875 | .776 | | | | | | |
| MTRNR/L 10-3B | .625 | .625 | 4.500 | 1.200 | .730 | TNMx-32x | ITSN-33x | NL-34L | CL-6 | XNS-36 | S-34 |
| MTRNR/L 12-3B | .750 | .750 | 4.500 | 1.200 | .843 | | | | | | |
| MTRNR/L 16-3D | 1.000 | 1.000 | 6.000 | 1.200 | 1.031 | TNMx-33x | ITSN-32x | | | XNS-59 | S-46 |
| MTRNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.400 | 1.031 | | | | | | |
| MTRNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.400 | 1.281 | TNMx-43x | ITSN-43x | NL-46 | CL-9 | XNS-510 | S-46 |
| MTRNR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.400 | 1.031 | | | | | | |
| MTRNR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.500 | 1.002 | TNMx-54x | ITSN-53x | NL-58 | CL-9 | XNS-59 | S-58 |
| MTRNR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.500 | 1.252 | | | | | | |
| MTRNR/L 24-5E | 1.500 | 1.500 | 7.000 | 1.500 | 1.502 | | | | | | |
| MTRNR/L 85-5D | 1.000 | 1.250 | 6.000 | 1.500 | 1.002 | | | | | | |
| MTRNR/L 86-5E | 1.000 | 1.500 | 7.000 | 1.500 | 1.002 | | | | | | |
| MTRNR/L 24-6E | 1.500 | 1.500 | 7.000 | 1.750 | 1.697 | | | | | | |
| | | | | | | TNMx-66x | ITSN-63x | NL-68L | CL-12 | XNS-510 | S-68 |

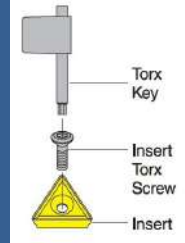
| MVJNR/L Negative 3° Side Cutting Edge Angle for Negative 35° Diamond VNMx Inserts | | | | | | | | | | | |
|---|-------|--|-------|-------|-------|---|--------------------|----------|-------|-------------|---------------------|
|  | |  | | | |  | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MVJNR/L 12-3B | .750 | .750 | 4.500 | 1.690 | 1.000 | VNMx-33x | IVSN-32x | NL-34L | CL-30 | XNS-58 | S-34 |
| MVJNR/L 16-3C | 1.000 | 1.000 | 5.000 | 1.690 | 1.250 | | | | | | |
| MVJNR/L 16-3D | 1.000 | 1.000 | 6.000 | 1.690 | 1.250 | | | | | | |
| MVJNR/L 20-3D | 1.250 | 1.250 | 6.000 | 1.690 | 1.500 | | | | | | |
| MVJNR/L 12-4B | .750 | .750 | 4.500 | 2.000 | 1.000 | VNMx-43x | IVSN-43x | NL-46 | CL-30 | XNS-510 | S-46 |
| MVJNR/L 16-4C | 1.000 | 1.000 | 5.000 | 2.000 | 1.250 | | | | | | |
| MVJNR/L 16-4D | 1.000 | 1.000 | 6.000 | 2.000 | 1.250 | | | | | | |
| MVJNR/L 20-4D | 1.250 | 1.250 | 6.000 | 2.000 | 1.500 | | | | | | |
| MVJNR/L 24-4E | 1.500 | 1.500 | 7.000 | 2.000 | 2.000 | | | | | | |

| MVUNR/L Negative 3° End Cutting Edge Angle for Negative 35° Diamond VNMx Inserts | | | | | | | | | | | |
|--|-------|--|-------|-------|-------|---|--------------------|----------|-------|-------------|---------------------|
|  | |  | | | |  | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| MVUNR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.500 | 1.750 | VNMx-43x | IVSN-43x | NL-46 | CL-30 | XNS-510 | S-46 |
| MVUNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.500 | 1.750 | | | | | | |
| MVUNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.500 | 2.000 | | | | | | |
| MVUNR/L 24-4D | 1.500 | 1.500 | 6.000 | 1.500 | 2.250 | | | | | | |
| MVUNR/L 24-4E | 1.500 | 1.500 | 7.000 | 1.500 | 2.250 | | | | | | |

| Catalog # | A | B | C | E | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
|-------------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | XNS-58 | S-34 |
| MVVNN 12-3B | .750 | .750 | 4.500 | 1.750 | VNMx-33x | IVSN-32x | NL-34L | CL-12 | XNS-58 | S-34 |
| MVVNN 16-3C | 1.000 | 1.000 | 5.000 | 1.750 | | | | | XNS-510 | |
| MVVNN 16-3D | 1.000 | 1.000 | 6.000 | 1.750 | | | | | | |
| MVVNN 16-4C | 1.250 | 1.250 | 5.000 | 2.250 | VNMx-43x | IVSN-43x | NL-46 | CL-30 | XNS-510 | S-46 |
| MVVNN 16-4D | 1.500 | 1.500 | 6.000 | 2.250 | | | | | | |

| Catalog # | A | B | C | E | F | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
|---------------|-------|-------|-------|-------|-------|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | | XNS-36 | S-34 |
| MWLNR/L 12-3B | .750 | .750 | 4.500 | 1.000 | 1.000 | WNMx-33x | IWSN-32x | NL-34 | CL-7 | XNS-36 | S-34 |
| MWLNR/L 16-3C | 1.000 | 1.000 | 5.000 | 1.190 | 1.250 | | | | | | |
| MWLNR/L 12-4B | .750 | .750 | 4.500 | 1.000 | 1.000 | | | | | | |
| MWLNR/L 12-4D | .750 | .750 | 6.000 | 1.190 | 1.000 | WNMx-43x | IWSN-43x | NL-46 | CL-20 | XNS-48 | S-46 |
| MWLNR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.190 | 1.250 | | | | | | |
| MWLNR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.190 | 1.500 | | | | | | |
| MWLNR/L 20-4E | 1.250 | 1.250 | 7.000 | 1.190 | 1.500 | | | | | | |
| MWLNR/L 24-4D | 1.500 | 1.500 | 6.000 | 1.190 | 2.000 | | | | | | |
| MWLNR/L 85-4E | 1.000 | 1.250 | 7.000 | 1.190 | 1.250 | | | | | | |

Screw lock style toolholders offer both ease of indexing and security. With the Torx screw locking method, positive rake inserts can be locked down with more force and stay rigid in the pocket, ensuring stability throughout the machining operation.



Unless the holder is neutral, in all depictions below, a right hand holder is shown; left hand will be opposite.

Screw Lock Style Toolholders - 5° Positive Rake Inserts

| SVABR/L 0° Side and End Cutting Edge Angle for 5° Positive 35° Diamond VBxT Inserts | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-----------|-------|-------|------|--------------------|-------------------|--------------------|-------------------|----------|---------------|------|------|-------|------|------|----------|-------|-----|---------------|------|------|-------|------|------|---------------|------|------|-------|-------|------|----------|------|
| | <table border="1"> <thead> <tr> <th>Catalog #</th> <th>A</th> <th>B</th> <th>C</th> <th>E</th> <th>F</th> <th>Sample Gage Insert</th> <th>Insert Torx Screw</th> <th>Torx Key</th> </tr> </thead> <tbody> <tr> <td>SVABR/L 06-2D</td> <td>.375</td> <td>.375</td> <td>6.000</td> <td>.875</td> <td>.375</td> <td rowspan="2">VBxT-22x</td> <td rowspan="2">TS-25</td> <td rowspan="2">T-8</td> </tr> <tr> <td>SVABR/L 08-2D</td> <td>.500</td> <td>.500</td> <td>6.000</td> <td>.875</td> <td>.500</td> </tr> <tr> <td>SVABR/L 10-3D</td> <td>.625</td> <td>.625</td> <td>6.000</td> <td>1.375</td> <td>.625</td> <td>VBxT-33x</td> <td>TS-4</td> <td>T-15</td> </tr> </tbody> </table> | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key | SVABR/L 06-2D | .375 | .375 | 6.000 | .875 | .375 | VBxT-22x | TS-25 | T-8 | SVABR/L 08-2D | .500 | .500 | 6.000 | .875 | .500 | SVABR/L 10-3D | .625 | .625 | 6.000 | 1.375 | .625 | VBxT-33x | TS-4 |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key | | | | | | | | | | | | | | | | | | | | | | | | | |
| SVABR/L 06-2D | .375 | .375 | 6.000 | .875 | .375 | VBxT-22x | TS-25 | T-8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| SVABR/L 08-2D | .500 | .500 | 6.000 | .875 | .500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SVABR/L 10-3D | .625 | .625 | 6.000 | 1.375 | .625 | VBxT-33x | TS-4 | T-15 | | | | | | | | | | | | | | | | | | | | | | | | | |

| SVJBR/L Negative 3° Side Cutting Edge Angle for 5° Positive 35° Diamond VBxT Inserts | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|-----------|-------|-------|-------|--------------------|-------------------|--------------------|-------------------|----------|--------------|------|------|-------|------|------|----------|-------|-----|---------------|------|------|-------|------|------|---------------|------|------|-------|------|------|---------------|------|------|-------|-------|-------|----------|------|------|---------------|-------|-------|-------|-------|-------|---------------|-------|-------|-------|-------|-------|---------------|-------|-------|-------|-------|
| | <table border="1"> <thead> <tr> <th>Catalog #</th> <th>A</th> <th>B</th> <th>C</th> <th>E</th> <th>F</th> <th>Sample Gage Insert</th> <th>Insert Torx Screw</th> <th>Torx Key</th> </tr> </thead> <tbody> <tr> <td>SVJBR/L 06-2</td> <td>.375</td> <td>.375</td> <td>2.500</td> <td>.875</td> <td>.500</td> <td rowspan="3">VBxT-22x</td> <td rowspan="3">TS-25</td> <td rowspan="3">T-8</td> </tr> <tr> <td>SVJBR/L 08-2J</td> <td>.500</td> <td>.500</td> <td>3.500</td> <td>.875</td> <td>.625</td> </tr> <tr> <td>SVJBR/L 10-2A</td> <td>.625</td> <td>.625</td> <td>4.000</td> <td>.875</td> <td>.750</td> </tr> <tr> <td>SVJBR/L 12-3B</td> <td>.750</td> <td>.750</td> <td>4.500</td> <td>1.250</td> <td>1.000</td> <td rowspan="4">VBxT-33x</td> <td rowspan="4">TS-4</td> <td rowspan="4">T-15</td> </tr> <tr> <td>SVJBR/L 16-3C</td> <td>1.000</td> <td>1.000</td> <td>5.000</td> <td>1.250</td> <td>1.250</td> </tr> <tr> <td>SVJBR/L 16-3D</td> <td>1.000</td> <td>1.000</td> <td>6.000</td> <td>1.250</td> <td>1.250</td> </tr> <tr> <td>SVJBR/L 20-3D</td> <td>1.250</td> <td>1.250</td> <td>6.000</td> <td>1.250</td> <td>1.500</td> </tr> </tbody> </table> | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key | SVJBR/L 06-2 | .375 | .375 | 2.500 | .875 | .500 | VBxT-22x | TS-25 | T-8 | SVJBR/L 08-2J | .500 | .500 | 3.500 | .875 | .625 | SVJBR/L 10-2A | .625 | .625 | 4.000 | .875 | .750 | SVJBR/L 12-3B | .750 | .750 | 4.500 | 1.250 | 1.000 | VBxT-33x | TS-4 | T-15 | SVJBR/L 16-3C | 1.000 | 1.000 | 5.000 | 1.250 | 1.250 | SVJBR/L 16-3D | 1.000 | 1.000 | 6.000 | 1.250 | 1.250 | SVJBR/L 20-3D | 1.250 | 1.250 | 6.000 | 1.250 |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SVJBR/L 06-2 | .375 | .375 | 2.500 | .875 | .500 | VBxT-22x | TS-25 | T-8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SVJBR/L 08-2J | .500 | .500 | 3.500 | .875 | .625 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SVJBR/L 10-2A | .625 | .625 | 4.000 | .875 | .750 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SVJBR/L 12-3B | .750 | .750 | 4.500 | 1.250 | 1.000 | VBxT-33x | TS-4 | T-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SVJBR/L 16-3C | 1.000 | 1.000 | 5.000 | 1.250 | 1.250 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SVJBR/L 16-3D | 1.000 | 1.000 | 6.000 | 1.250 | 1.250 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SVJBR/L 20-3D | 1.250 | 1.250 | 6.000 | 1.250 | 1.500 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

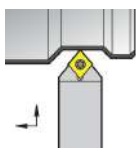
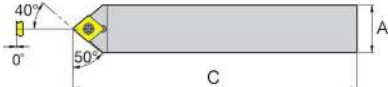

| SVUBR/L 3° End Cutting Edge Angle for 5° Positive 35° Diamond VBxT Inserts | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|-----------|-------|------|------|--------------------|-------------------|--------------------|-------------------|----------|---------------|------|------|-------|------|------|----------|-------|-----|---------------|------|------|-------|------|
| | <table border="1"> <thead> <tr> <th>Catalog #</th> <th>A</th> <th>B</th> <th>C</th> <th>E</th> <th>F</th> <th>Sample Gage Insert</th> <th>Insert Torx Screw</th> <th>Torx Key</th> </tr> </thead> <tbody> <tr> <td>SVUBR/L 08-2J</td> <td>.500</td> <td>.500</td> <td>3.500</td> <td>.500</td> <td>.830</td> <td rowspan="2">VBxT-22x</td> <td rowspan="2">TS-25</td> <td rowspan="2">T-8</td> </tr> <tr> <td>SVUBR/L 10-2A</td> <td>.625</td> <td>.625</td> <td>4.000</td> <td>.500</td> <td>.955</td> </tr> </tbody> </table> | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key | SVUBR/L 08-2J | .500 | .500 | 3.500 | .500 | .830 | VBxT-22x | TS-25 | T-8 | SVUBR/L 10-2A | .625 | .625 | 4.000 | .500 |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key | | | | | | | | | | | | | | | | |
| SVUBR/L 08-2J | .500 | .500 | 3.500 | .500 | .830 | VBxT-22x | TS-25 | T-8 | | | | | | | | | | | | | | | | |
| SVUBR/L 10-2A | .625 | .625 | 4.000 | .500 | .955 | | | | | | | | | | | | | | | | | | | |

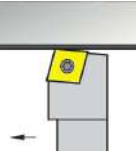
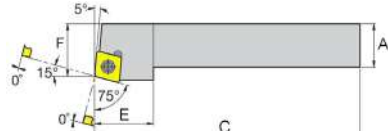

Screw Lock Style Toolholders - 7° Positive Rake Inserts

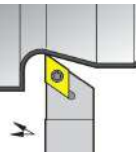
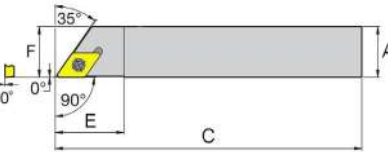

| | | | | | | | | |
|---|-----------|------|-------|------|------|------------|--------------------|-------------------|
| SCFCR/L 0° End Cutting Edge Angle for 7° Positive 80° Diamond CCxT Inserts | | | | | | | | |
| | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw |
| SCFCR/L 08-2J | .500 | .500 | 3.500 | .500 | .625 | CCxT-21.5x | TS-25 | T-8 |

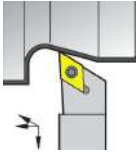
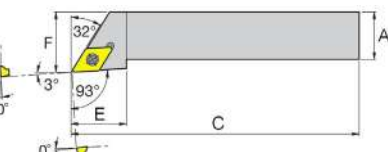

| | | | | | | | | |
|--|-----------|-------|-------|------|-------|------------|--------------------|-------------------|
| SCGCR/L 0° Side Cutting Edge Angle for 7° Positive 80° Diamond CCxT Inserts | | | | | | | | |
| | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw |
| SCGCR/L 4.5-2 | .281 | .281 | 2.500 | .500 | .312 | CCxT-21.5x | TS-25 | T-8 |
| SCGCR/L 05-2 | .312 | .312 | 2.500 | .500 | .375 | | | |
| SCGCR/L 06-2 | .375 | .375 | 2.500 | .500 | .500 | | | |
| SCGCR/L 08-2J | .500 | .500 | 3.500 | .500 | .625 | | | |
| SCGCR/L 10-3A | .625 | .625 | 4.000 | .625 | .750 | CCxT-32.5x | TS-4 | T-15 |
| SCGCR/L 12-3B | .750 | .750 | 4.500 | .625 | 1.000 | | | |
| SCGCR/L 16-3D | 1.000 | 1.000 | 6.000 | .625 | 1.250 | | | |

| | | | | | | | | |
|---|-----------|-------|-------|------|-------|------------|--------------------|-------------------|
| SCLCR/L Negative 5° End or Side Cutting Edge Angle for 7° Positive 80° Diamond CCxT Inserts | | | | | | | | |
| | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw |
| SCLCR/L 05-2 | .312 | .312 | 2.500 | .500 | .375 | CCxT-21.5x | TS-25 | T-8 |
| SCLCR/L 06-2 | .375 | .375 | 2.500 | .500 | .500 | | | |
| SCLCR/L 06-2J | .375 | .375 | 3.500 | .500 | .500 | | | |
| SCLCR/L 08-2J | .500 | .500 | 3.500 | .500 | .625 | | | |
| SCLCR/L 10-2A | .625 | .625 | 4.000 | .500 | .750 | CCxT-32.5x | TS-4 | T-15 |
| SCLCR/L 08-3J | .500 | .500 | 3.500 | .625 | .625 | | | |
| SCLCR/L 10-3A | .625 | .625 | 4.000 | .625 | .750 | | | |
| SCLCR/L 10-3B | .625 | .625 | 4.500 | .625 | .750 | | | |
| SCLCR/L 12-3B | .750 | .750 | 4.500 | .625 | 1.000 | | | |
| SCLCR/L 16-3D | 1.000 | 1.000 | 6.000 | .625 | 1.250 | | | |
| SCLCR/L 12-4B | .750 | .750 | 4.500 | .830 | 1.000 | CCxT-43x | TS-5 | T-25 |
| SCLCR/L 16-4D | 1.000 | 1.000 | 6.000 | .830 | 1.250 | | | |
| SCLCR/L 20-4D | 1.250 | 1.250 | 6.000 | .830 | 1.500 | | | |

| SCMCN 40° Side Cutting Edge Angle for 7° Positive 80° Diamond CCxT Inserts | |  |  |  | Catalog # | A | B | C | Sample Gage Insert | Insert Torx Screw | Torx Key |
|--|-------|---|--|---|-----------|------|---|---|--------------------|-------------------|----------|
| SCMCN 06-2 | .375 | .375 | 2.500 | CCxT-21.5x | TS-25 | T-8 | | | | | |
| SCMCN 06-2J | .375 | .375 | 3.500 | | | | | | | | |
| SCMCN 08-2J | .500 | .500 | 3.500 | | | | | | | | |
| SCMCN 10-2A | .625 | .625 | 4.000 | CCxT-32.5x | TS-4 | T-15 | | | | | |
| SCMCN 08-3J | .500 | .500 | 3.500 | | | | | | | | |
| SCMCN 08-3A | .500 | .500 | 4.000 | | | | | | | | |
| SCMCN 10-3A | .625 | .625 | 4.000 | | | | | | | | |
| SCMCN 10-3B | .625 | .625 | 4.500 | | | | | | | | |
| SCMCN 12-3B | .750 | .750 | 4.500 | CCxT-43x | TS-5 | T-25 | | | | | |
| SCMCN 16-3D | 1.000 | 1.000 | 6.000 | | | | | | | | |
| SCMCN 12-4B | .750 | .750 | 4.500 | | | | | | | | |
| SCMCN 16-4D | 1.000 | 1.000 | 6.000 | | | | | | | | |

| SCRCL/L 15° Side Cutting Edge Angle for 7° Positive 80° Diamond CCxT Inserts | |  |  |  | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key |
|--|------|---|--|---|-----------|------------|-------|------|---|---|--------------------|-------------------|----------|
| SCRCL/L 06-2 | .375 | .375 | 2.500 | .500 | .439 | CCxT-21.5x | TS-25 | T-8 | | | | | |
| SCRCL/L 08-2J | .500 | .500 | 3.500 | .500 | .564 | | | | | | | | |
| SCRCL/L 08-3J | .500 | .500 | 3.500 | .625 | .548 | CCxT-32.5x | TS-4 | T-15 | | | | | |
| SCRCL/L 10-3A | .625 | .625 | 4.000 | .625 | .673 | | | | | | | | |

| SDACR/L 0° Side and End Cutting Edge Angle for 7° Positive 55° Diamond DCxT Inserts | |  |  |  | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key |
|---|------|---|--|---|-----------|------------|-------|------|---|---|--------------------|-------------------|----------|
| SDACR/L 06-2D | .375 | .375 | 6.000 | .625 | .375 | DCxT-21.5x | TS-25 | T-8 | | | | | |
| SDACR/L 08-2D | .500 | .500 | 6.000 | .625 | .500 | | | | | | | | |
| SDACR/L 08-3D | .500 | .500 | 6.000 | .875 | .500 | DCxT-32.5x | TS-4 | T-15 | | | | | |
| SDACR/L 10-3D | .625 | .625 | 6.000 | .875 | .625 | | | | | | | | |

| SDJCR/L Negative 3° Side Cutting Edge Angle for 7° Positive 55° Diamond DCxT Inserts | |  |  |  | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key |
|--|-------|---|--|---|-----------|------------|-------|------|---|---|--------------------|-------------------|----------|
| SDJCR/L 06-2 | .375 | .375 | 2.500 | .625 | .500 | DCxT-21.5x | TS-25 | T-8 | | | | | |
| SDJCR/L 08-2J | .500 | .500 | 3.500 | .625 | .625 | | | | | | | | |
| SDJCR/L 10-2A | .625 | .625 | 4.000 | .625 | .750 | | | | | | | | |
| SDJCR/L 08-3J | .500 | .500 | 3.500 | .875 | .625 | DCxT-32.5x | TS-4 | T-15 | | | | | |
| SDJCR/L 10-3A | .625 | .625 | 4.000 | .875 | .750 | | | | | | | | |
| SDJCR/L 12-3B | .750 | .750 | 4.500 | .875 | 1.000 | | | | | | | | |
| SDJCR/L 16-3D | 1.000 | 1.000 | 6.000 | .875 | 1.250 | | | | | | | | |
| SDJCR/L 12-4B | .750 | .750 | 4.500 | 1.250 | 1.000 | | | | | | | | |
| SDJCR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.250 | 1.250 | DCxT-43x | TS-5 | T-25 | | | | | |

| SDPCN 27.5° Side Cutting Edge Angle for 7° Positive 55° Diamond DCxT Inserts | | | | Catalog # | A | B | C | Sample Gage Insert | Insert Torx Screw | Torx Key | | | |
|---|-------|-------|-------|-------------|-------|------|-------------|--------------------|-------------------|-------------|------|------|-------|
| SDPCN 06-2J | .375 | .375 | 3.500 | DCxT-21.5x | TS-25 | T-8 | SDPCN 06-2D | .375 | .375 | 6.000 | | | |
| SDPCN 08-2A | .500 | .500 | 4.000 | | | | SDPCN 08-2D | .500 | .500 | 6.000 | | | |
| SDPCN 08-3D | .500 | .500 | 6.000 | | | | DCxT-32.5x | TS-4 | T-15 | SDPCN 10-3B | .625 | .625 | 4.500 |
| SDPCN 10-3D | .625 | .625 | 6.000 | | | | | | | SDPCN 12-3B | .750 | .750 | 4.500 |
| SDPCN 16-3D | 1.000 | 1.000 | 6.000 | SDPCN 12-4B | .750 | .750 | | | | 4.500 | | | |
| SDPCN 16-4D | 1.000 | 1.000 | 6.000 | DCxT-43x | TS-5 | T-25 | | | | | | | |

| SDUCR/L 3° End Cutting Edge Angle for 7° Positive 55° Diamond DCxT Inserts | | | | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key | | |
|---|------|------|-------|-----------|------|------------|-------|-----|---------------|--------------------|-------------------|---------------|------|------|
| SDUCR/L 08-2J | .500 | .500 | 3.500 | .500 | .670 | DCxT-21.5x | TS-25 | T-8 | SDUCR/L 10-2A | .625 | .625 | 4.000 | .500 | .795 |
| SDUCR/L 08-3J | .500 | .500 | 3.500 | .625 | .746 | | | | DCxT-32.5x | TS-4 | T-15 | SDUCR/L 10-3A | .625 | .625 |

| SRACR/L Profiling, Plunging and Turning for 7° Positive Round RCxT Inserts | | | | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key | | | | | |
|---|-------|-------|-------|-----------|-------|-------------|-------|-----|----------------|--------------------|-------------------|----------------|-------|-------|----------------|-------|-------|
| SRACR/L 16-06D | 1.000 | 1.000 | 6.000 | 1.000 | 1.020 | RCxT-0602M0 | TS-25 | T-8 | SRACR/L 20-06D | 1.250 | 1.250 | 6.000 | 1.000 | 1.270 | | | |
| SRACR/L 16-10D | 1.000 | 1.000 | 6.000 | 1.000 | 1.020 | | | | RCxT-1003M0 | TS-32 | T-15 | SRACR/L 20-10D | 1.250 | 1.250 | 6.000 | 1.000 | 1.270 |
| SRACR/L 16-12D | 1.000 | 1.000 | 6.000 | 1.000 | 1.020 | | | | | | | RCxT-1204M0 | TS-5 | T-25 | SRACR/L 20-12D | 1.250 | 1.250 |
| SRACR/L 24-12D | 1.500 | 1.500 | 6.000 | 1.000 | 1.520 | | | | | | | | | | | | |

| SRCCR/L Profiling, Plunging and Turning for 7° Positive Round RCxT Inserts | | | | Catalog # | A | B | C | E1 | E2 | F | Sample Gage Insert | Insert Torx Screw | Torx Key | | | | | | |
|---|-------|-------|-------|-----------|-------|-------|-------------|-------|-----|----------------|--------------------|-------------------|----------------|-------|-------|-------|-------|-------|-------|
| SRCCR/L 10-06A | .625 | .625 | 4.000 | .810 | 1.435 | .743 | RCxT-0602M0 | TS-25 | T-8 | SRCCR/L 12-06B | .750 | .750 | 4.500 | .810 | 1.560 | .868 | | | |
| SRCCR/L 16-06D | 1.000 | 1.000 | 6.000 | .810 | 1.810 | 1.118 | | | | RCxT-1003M0 | TS-32 | T-15 | SRCCR/L 20-06D | 1.250 | 1.250 | 6.000 | .810 | 2.060 | 1.368 |
| SRCCR/L 12-10B | .750 | .750 | 4.500 | 1.230 | 1.980 | .947 | | | | | | | SRCCR/L 16-10D | 1.000 | 1.000 | 6.000 | 1.230 | 2.230 | 1.197 |
| SRCCR/L 20-10D | 1.250 | 1.250 | 6.000 | 1.230 | 2.480 | 1.447 | | | | | | | | | | | | | |

| SRGCR/L Profiling, Plunging and Turning for 7° Positive Round RCxT Inserts | | | | | | | | |
|--|-------|-------|-------|------|-------|--------------------|-------------------|----------|
| Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key |
| SRGCR/L 10-06A | .625 | .625 | 4.000 | .400 | .750 | RCxT-0602M0 | TS-25 | T-8 |
| SRGCR/L 12-06B | .750 | .750 | 4.500 | .400 | 1.000 | | | |
| SRGCR/L 16-06D | 1.000 | 1.000 | 6.000 | .400 | 1.250 | | | |
| SRGCR/L 20-06D | 1.250 | 1.250 | 6.000 | .420 | 1.500 | | | |
| SRGCR/L 12-10B | .750 | .750 | 4.500 | .410 | 1.000 | | | |
| SRGCR/L 16-10D | 1.000 | 1.000 | 6.000 | .410 | 1.250 | RCxT-1003M0 | TS-32 | T-15 |
| SRGCR/L 20-10D | 1.250 | 1.250 | 6.000 | .430 | 1.500 | | | |

| SROCN Profiling, Plunging and Turning for 7° Positive Round RCxT Inserts | | | | | | | | |
|--|-------|-------|-------|-------|-------|--------------------|-------------------|----------|
| Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key |
| SROCN 10-06A | .625 | .625 | 4.000 | .625 | .750 | RCxT-0602M0 | TS-25 | T-8 |
| SROCN 12-06B | .750 | .750 | 4.500 | .750 | 1.000 | | | |
| SROCN 16-06D | 1.000 | 1.000 | 6.000 | 1.000 | 1.250 | | | |
| SROCN 20-06D | 1.250 | 1.250 | 6.000 | 1.250 | 1.500 | | | |
| SROCN 12-10B | .750 | .750 | 4.500 | .750 | 1.000 | | | |
| SROCN 16-10D | 1.000 | 1.000 | 6.000 | 1.000 | 1.250 | RCxT-1003M0 | TS-32 | T-15 |
| SROCN 20-10D | 1.250 | 1.250 | 6.000 | 1.250 | 1.500 | | | |

| STACR/L 0° Side Cutting Edge Angle for 7° Positive Triangle TCxT Inserts | | | | | | | | |
|--|-------|-------|-------|-------|-------|--------------------|-------------------|----------|
| Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key |
| STACR/L 06-2 | .375 | .375 | 2.500 | .625 | .375 | TCxT-2xx | TS-25 | T-8 |
| STACR/L 08-2J | .500 | .500 | 3.500 | .625 | .500 | | | |
| STACR/L 10-2A | .625 | .625 | 4.000 | .625 | .625 | | | |
| STACR/L 10-3B | .625 | .625 | 4.500 | .750 | .625 | TCxT-3xx | TS-4 | T-15 |
| STACR/L 12-3B | .750 | .750 | 4.500 | 1.125 | .750 | | | |
| STACR/L 64-3D | .750 | 1.000 | 6.000 | 1.125 | .750 | | | |
| STACR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.250 | 1.000 | TCxT-43x | TS-5 | T-25 |
| STACR/L 106-4D | 1.250 | 1.500 | 6.000 | 1.250 | 1.250 | | | |

| STFCR/L 0° End Cutting Edge Angle for 7° Positive Triangle TCxT Inserts | | | | | | | | |
|---|-------|-------|-------|-------|-------|--------------------|-------------------|----------|
| Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw | Torx Key |
| STFCR/L 06-2 | .375 | .375 | 2.500 | .550 | .500 | TCxT-21.5x | TS-25 | T-8 |
| STFCR/L 08-2J | .500 | .500 | 3.500 | .550 | .625 | | | |
| STFCR/L 10-2A | .625 | .625 | 4.000 | .800 | .875 | | | |
| STFCR/L 10-3A | .625 | .625 | 4.000 | .800 | .875 | TCxT-32.5x | TS-4 | T-15 |
| STFCR/L 12-3B | .750 | .750 | 4.500 | .800 | 1.000 | | | |
| STFCR/L 16-3D | 1.000 | 1.000 | 6.000 | .800 | 1.250 | | | |
| STFCR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.250 | 1.500 | | | |
| | | | | | | TCxT-43x | TS-5 | T-25 |

| Catalog # | STGCR/L | | Dimensions | | | Sample Gage Insert | Insert Torx Screw | Torx Key |
|---------------|---------|-------|------------|-------|-------|--------------------|-------------------|----------|
| | A | B | C | E | F | | | |
| STGCR/L 06-2 | .375 | .375 | 2.500 | .550 | .500 | TCxT-21.5x | TS-25 | T-8 |
| STGCR/L 08-2J | .500 | .500 | 3.500 | .550 | .625 | | | |
| STGCR/L 10-2A | .625 | .625 | 4.000 | .550 | .875 | | | |
| STGCR/L 12-2B | .750 | .750 | 4.500 | .800 | .875 | TCxT-32.5x | TS-4 | T-15 |
| STGCR/L 10-3A | .625 | .625 | 4.000 | .800 | .875 | | | |
| STGCR/L 12-3B | .750 | .750 | 4.500 | .800 | 1.000 | | | |
| STGCR/L 16-3D | 1.000 | 1.000 | 6.000 | .800 | 1.250 | TCxT-43x | TS-5 | T-25 |
| STGCR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.000 | 1.250 | | | |
| STGCR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.250 | 1.500 | | | |

Screw Lock Style Toolholders - 11° Positive Rake Inserts

| Catalog # | SCFPR/L | | Dimensions | | | Sample Gage Insert | Insert Torx Screw | Torx Key |
|---------------|---------|------|------------|------|-------|--------------------|-------------------|----------|
| | A | B | C | E | F | | | |
| SCFPR/L 06-2 | .375 | .375 | 2.500 | .500 | .500 | CPxT-21.5x | TS-25 | T-8 |
| SCFPR/L 08-3J | .500 | .500 | 3.500 | .625 | .625 | | | |
| SCFPR/L 12-3B | .750 | .750 | 4.500 | .625 | 1.000 | CPxT-32.5x | TS-4 | T-15 |

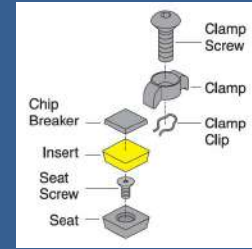
| Catalog # | SCGPR/L | | Dimensions | | | Sample Gage Insert | Insert Torx Screw | Torx Key |
|---------------|---------|------|------------|------|-------|--------------------|-------------------|----------|
| | A | B | C | E | F | | | |
| SCGPR/L 06-2 | .375 | .375 | 2.500 | .500 | .500 | CPxT-21.5x | TS-25 | T-8 |
| SCGPR/L 08-3J | .500 | .500 | 3.500 | .625 | .625 | | | |
| SCGPR/L 12-3B | .750 | .750 | 4.500 | .625 | 1.000 | CPxT-32.5x | TS-4 | T-15 |

| Catalog # | SCLPR/L | | Dimensions | | | Sample Gage Insert | Insert Torx Screw | Torx Key |
|---------------|---------|------|------------|------|-------|--------------------|-------------------|----------|
| | A | B | C | E | F | | | |
| SCLPR/L 06-2 | .375 | .375 | 2.500 | .500 | .500 | CPxT-21.5x | TS-25 | T-8 |
| SCLPR/L 08-2J | .500 | .500 | 3.500 | .500 | .625 | | | |
| SCLPR/L 10-2A | .625 | .625 | 4.000 | .500 | .750 | | | |
| SCLPR/L 12-2B | .750 | .750 | 4.500 | .500 | .875 | CPxT-32.5x | TS-4 | T-15 |
| SCLPR/L 08-3J | .500 | .500 | 3.500 | .625 | .625 | | | |
| SCLPR/L 10-3A | .625 | .625 | 4.000 | .625 | .875 | | | |
| SCLPR/L 12-3B | .750 | .750 | 4.500 | .625 | 1.000 | | | |

| | | | | | | | | |
|---|-----------|------|-------|------|------|----------|--------------------|-------------------|
| STFPR/L 0° End Cutting Edge Angle for 11° Positive Triangle TPxT Inserts | | | | | | | | |
| | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw |
| STFPR/L 06-2 | .375 | .375 | 2.500 | .500 | .500 | TPxT-2xx | TS-25 | T-8 |
| STFPR/L 08-2J | .500 | .500 | 3.500 | .500 | .625 | | | |

| | | | | | | | | |
|--|-----------|------|-------|------|-------|----------|--------------------|-------------------|
| STGPR/L 0° Side Cutting Edge Angle for 11° Positive Triangle TPxT Inserts | | | | | | | | |
| | Catalog # | A | B | C | E | F | Sample Gage Insert | Insert Torx Screw |
| STGPR/L 06-2 | .375 | .375 | 2.500 | .625 | .500 | TPxT-2xx | TS-25 | T-8 |
| STGPR/L 08-2J | .500 | .500 | 3.500 | .625 | .625 | | | |
| STGPR/L 10-2A | .625 | .625 | 4.000 | .625 | .750 | | | |
| STGPR/L 12-2B | .750 | .750 | 4.500 | .625 | .875 | | | |
| STGPR/L 10-3A | .625 | .625 | 4.000 | .750 | .875 | TPxT-3xx | TS-4 | T-15 |
| STGPR/L 12-3B | .750 | .750 | 4.500 | .750 | 1.000 | | | |

Quick changes are the norm with clamp lock style toolholders, which provide an easy-to-index option for positive rake inserts with no hole. An optional chip breaker can be ordered to sit on top of the insert, as shown in the diagram at right.



Unless the holder is neutral, in all depictions below, a right hand holder is shown; left hand will be opposite.

Clamp Lock Style Toolholders - 11° Positive Rake Inserts

| CSDPN 45° Side Cutting Edge Angle for 11° Positive Square SPx Inserts | | | | | | | | | | | | |
|---|-------|-------|-------|-------|--------------------|-------------|------------|-------|------------|-------------|-----------------------|--|
| | | | | | | | | | | | | |
| Catalog # | A | B | C | E | Sample Gage Insert | Shim (Seat) | Seat Screw | Clamp | Clamp Clip | Clamp Screw | Optional Chip Breaker | |
| CSDPN 08-3J | .500 | .500 | 3.500 | 1.000 | SPx-32x | - | - | HC-9 | CLIP-9 | CS-96 | S32BC | |
| CSDPN 10-3B | .625 | .625 | 4.500 | 1.000 | | | | | | | | |
| CSDPN 12-3B | .750 | .750 | 4.500 | 1.000 | | | | | | | | |
| CSDPN 12-4B | .750 | .750 | 4.500 | 1.375 | | | | | | | | |
| CSDPN 16-4D | 1.000 | 1.000 | 6.000 | 1.375 | SPG-4xx | PSQ-3 | TS-4 | HC-12 | CLIP-12 | CS-126 | S43BE | |
| CSDPN 64-4D | .750 | 1.000 | 6.000 | 1.375 | | | | | | | | |
| CSDPN 65-4D | .750 | 1.250 | 6.000 | 1.375 | | | | | | | | |
| CSDPN 85-4D | 1.000 | 1.250 | 6.000 | 1.375 | | | | | | | | |
| CSDPN 16-6D | 1.000 | 1.000 | 6.000 | 1.625 | SPG-6xx | PSQ-4 | TS-6 | HC-12 | CLIP-12 | CS-126 | CBS24D | |
| CSDPN 85-6D | 1.000 | 1.250 | 6.000 | 1.625 | | | | | | | | |
| CSDPN 86-6E | 1.000 | 1.500 | 7.000 | 1.625 | | | | | | | | |

| CSKPR/L 15° Side Cutting Edge Angle for 11° Positive Triangle SPx Inserts | | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|--------------------|-------------|------------|-------|------------|-------------|-----------------------|
| | | | | | | | | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Shim (Seat) | Seat Screw | Clamp | Clamp Clip | Clamp Screw | Optional Chip Breaker |
| CSKPR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.125 | 1.250 | SPx-4xx | PSQ-3 | TS-4 | HC-12 | CLIP-12 | CS-126 | S43BE |

| CSRPR/L 15° Side Cutting Edge Angle for 11° Positive Square SPx Inserts | | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|--------------------|-------------|------------|-------|------------|-------------|-----------------------|
| | | | | | | | | | | | | |
| Catalog # | A | B | C | E | F | Sample Gage Insert | Shim (Seat) | Seat Screw | Clamp | Clamp Clip | Clamp Screw | Optional Chip Breaker |
| CSRPR/L 06-3J | .375 | .375 | 3.500 | 1.000 | .533 | SPx-32x | - | - | HC-9 | CLIP-9 | CS-94 | S32BC |
| CSRPR/L 08-3J | .500 | .500 | 3.500 | 1.000 | .533 | | | | | | | |
| CSRPR/L 16-6D | 1.000 | 1.000 | 6.000 | 1.500 | 1.003 | | | | | | | |
| CSRPR/L 85-6D | 1.000 | 1.250 | 6.000 | 1.500 | 1.003 | SPx-6xx | PSQ-4 | TS-6 | HC-12 | CLIP-12 | CS-126 | S63AD |
| CSRPR/L 86-6E | 1.000 | 1.500 | 7.000 | 1.500 | 1.003 | | | | | | | |

| Catalog # | A | B | C | E | F | Sample Gage Insert | Shim (Seat) | Seat Screw | Clamp | Clamp Clip | Clamp Screw | Optional Chip Breaker |
|---|-------|-------|-------|-------|-------|--------------------|-------------|------------|-------|------------|-------------|-----------------------|
| | | | | | | | | | | | | T22AC |
| CTAPR/L 0° Side Cutting Edge Angle for 11° Positive Triangle TPx Inserts | | | | | | | | | | | | |
| CTAPR/L 06-2J | .375 | .375 | 3.500 | .875 | .515 | TPx-22x | - | - | HC-9 | CLIP-9 | CS-94 | T22AC |
| CTAPR/L 08-2J | .500 | .500 | 3.500 | .875 | .515 | | | | | | | |
| CTAPR/L 10-2B | .625 | .625 | 4.500 | .875 | .640 | | | | | | | |
| CTAPR/L 55-2D | .625 | 1.250 | 6.000 | .875 | .640 | | | | | | | |
| CTAPR/L 12-3B | .750 | .750 | 4.500 | 1.250 | .765 | | | | | | | |
| CTAPR/L 16-3D | 1.000 | 1.000 | 6.000 | 1.250 | 1.015 | TPx-32x | PTP-3 | TS-4 | HC-12 | CLIP-12 | CS-126 | T33AD |
| CTAPR/L 65-3D | .750 | 1.250 | 6.000 | 1.250 | .765 | TPx-43x | PTP-4 | TS-6 | HC-12 | CLIP-12 | CS-126 | T43AE |
| CTAPR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.250 | 1.015 | | | | | | | |
| CTAPR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.250 | 1.015 | | | | | | | |

| Catalog # | A | B | C | E | F | Sample Gage Insert | Shim (Seat) | Seat Screw | Clamp | Clamp Clip | Clamp Screw | Optional Chip Breaker |
|--|-------|-------|-------|-------|-------|--------------------|-------------|------------|-------|------------|-------------|-----------------------|
| | | | | | | | | | | | | T22AC |
| CTBPR/L 15° Side Cutting Edge Angle for 11° Positive Triangle TPx Inserts | | | | | | | | | | | | |
| CTBPR/L 10-2B | .625 | .625 | 4.500 | 1.000 | .776 | TPx-22x | - | - | HC-9 | CLIP-9 | CS-96 | T22AC |
| CTBPR/L 12-3B | .750 | .750 | 4.500 | 1.250 | .855 | TPx-32x | PTP-3 | TS-4 | HC-12 | CLIP-12 | CS-126 | T33AD |
| CTBPR/L 16-3D | 1.000 | 1.000 | 6.000 | 1.250 | 1.105 | TPx-43x | PTP-4 | TS-6 | HC-12 | CLIP-12 | CS-126 | T43AE |
| CTBPR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.375 | 1.048 | | | | | | | |

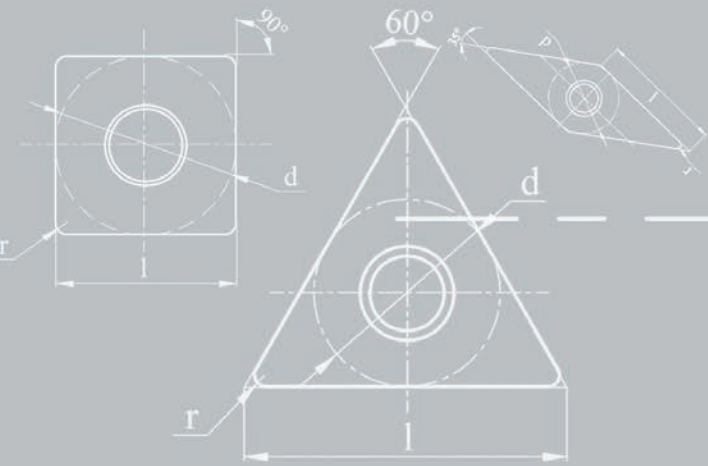
| Catalog # | A | B | C | E | Sample Gage Insert | Shim (Seat) | Seat Screw | Clamp | Clamp Clip | Clamp Screw | Optional Chip Breaker |
|--|------|-------|-------|-------|--------------------|-------------|------------|-------|------------|-------------|-----------------------|
| | | | | | | | | | | | T33AD |
| CTCPN 0° End Cutting Edge Angle for 11° Positive Triangle TPx Inserts | | | | | | | | | | | |
| CTCPN 08-3J | .500 | .500 | 3.500 | 1.125 | TPx-32x | - | - | HC-9 | CLIP-9 | CS-96 | T33AD |
| CTCPN 44-3F | .500 | 1.000 | 8.000 | 1.125 | | | | | | | |
| CTCPN 12-4B | .750 | .750 | 4.500 | 1.375 | | | | | | | |
| CTCPN 64-4F | .750 | 1.000 | 8.000 | 1.375 | TPG-43x | PTP-4 | TS-6 | HC-12 | CLIP-12 | CS-126 | T43AE |
| CTCPN 66-4F | .750 | 1.500 | 8.000 | 1.375 | | | | | | | |

| Catalog # | A | B | C | E | F | Sample Gage Insert | Shim (Seat) | Seat Screw | Clamp | Clamp Clip | Clamp Screw | Optional Chip Breaker |
|--|-------|-------|-------|-------|-------|--------------------|-------------|------------|-------|------------|-------------|-----------------------|
| | | | | | | | | | | | | T33AD |
| CTFPR/L 0° End Cutting Edge Angle for 11° Positive Triangle TPx Inserts | | | | | | | | | | | | |
| CTFPR/L 10-3B | .625 | .625 | 4.500 | 1.125 | .875 | TPx-32x | PTP-3 | TS-4 | HC-12 | CLIP-12 | CS-126 | T33AD |
| CTFPR/L 12-3B | .750 | .750 | 4.500 | 1.125 | 1.000 | | | | | | | |
| CTFPR/L 16-3D | 1.000 | 1.000 | 6.000 | 1.125 | 1.250 | | | | | | | |
| CTFPR/L 12-4B | .750 | .750 | 4.500 | 1.125 | 1.000 | | | | | | | |
| CTFPR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.000 | 1.250 | | | | | | | |
| CTFPR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.000 | 1.250 | TPx-43x | PTP-4 | TS-6 | HC-12 | CLIP-12 | CS-126 | T43AE |
| CTFPR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.000 | 1.500 | | | | | | | |
| CTFPR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.000 | 1.250 | | | | | | | |
| CTFPR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.125 | 1.250 | TPx-54x | PTP-5 | TS-10 | HC-12 | CLIP-12 | CS-126 | T53AG |
| CTFPR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.125 | 1.500 | | | | | | | |
| CTFPR/L 24-5E | 1.500 | 1.500 | 7.000 | 1.125 | 2.000 | | | | | | | |

| Catalog # | Diagram 1 | | Diagram 2 | | | Diagram 3 | | | | | | |
|---------------|-----------|-------|-----------|-------|-------|--------------------|-------------|------------|-------|------------|-------------|-----------------------|
| | A | B | C | E | F | Sample Gage Insert | Shim (Seat) | Seat Screw | Clamp | Clamp Clip | Clamp Screw | Optional Chip Breaker |
| CTGPR/L 10-3B | .625 | .625 | 4.500 | 1.000 | .875 | TPx-32x | PTP-3 | TS-4 | HC-12 | CLIP-12 | CS-126 | T33AD |
| CTGPR/L 12-3B | .750 | .750 | 4.500 | 1.000 | 1.000 | | | | | | | |
| CTGPR/L 16-4C | 1.000 | 1.000 | 5.000 | 1.250 | 1.250 | | | | | | | |
| CTGPR/L 16-4D | 1.000 | 1.000 | 6.000 | 1.250 | 1.250 | TPx-43x | PTP-4 | TS-6 | HC-12 | CLIP-12 | CS-126 | T43AE |
| CTGPR/L 20-4D | 1.250 | 1.250 | 6.000 | 1.250 | 1.500 | | | | | | | |
| CTGPR/L 85-4D | 1.000 | 1.250 | 6.000 | 1.250 | 1.250 | | | | | | | |
| CTGPR/L 16-5D | 1.000 | 1.000 | 6.000 | 1.375 | 1.250 | TPx-54x | PTP-5 | TS-10 | HC-12 | CLIP-12 | CS-126 | T53AG |
| CTGPR/L 20-5D | 1.250 | 1.250 | 6.000 | 1.375 | 1.500 | | | | | | | |
| CTGPR/L 24-5E | 1.500 | 1.500 | 7.000 | 1.375 | 2.000 | | | | | | | |

BORING BARS

ANSI / ISO STANDARD BORING BARS FOR INTERNAL TURNING OPERATIONS



r



Bar diameter in 1/16" increments (e.g., 16 x 1/16" = 1")

2 - DIAMETER

H - 4"
J - 4-1/2"
K - 5"
M - 6"
R - 8"
S - 10"

T - 12"
U - 14"
V - 16"
W - 18"
Y - 20"

3 - LENGTH

C - Clamp Lock

M - Multi-Lock

S - Screw Lock

4 - HOLDING METHOD

A - Steel with coolant
C - Carbide
E - Carbide with coolant
J - Heavy metal with coolant
M - Heavy metal
S - Steel

1 - BAR TYPE

| | | | | | | | | |
|----------|-----------|----------|----------|----------|----------|----------|----------|----------|
| S | 16 | T | M | T | F | N | R | 4 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

5 - INSERT SHAPE

| | |
|--|----------|
| | C |
| | D |
| | R |
| | S |
| | T |
| | V |
| | W |

7 - INSERT CLEARANCE ANGLE

| | | |
|-----|--|----------|
| 0° | | N |
| 5° | | B |
| 7° | | C |
| 11° | | P |

9 - INSERT SIZE

Insert I.C. in 1/8" increments (e.g., 4 x 1/8" = 1/2" I.C.)

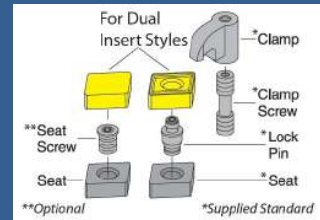
8 - HAND OF TOOL

| | |
|------------------|-----------------|
| R - Right | L - Left |
| | |

6 - TOOL STYLE

F (0°)
K (15°)
L (5°)
M (50°)
P (27.5°)
Q (17.5°)
U (3°)
X (5°)

Multi-lock boring bars offer the option of using both lock pin and clamp style inserts. If clamp style inserts are used, an optional seat screw must be ordered. Using lock pin style inserts with the dual clamping system provided by these boring bars minimizes vibration and ensures maximum rigidity. A wide variety of insert shapes and sizes can be used with this style of boring bar. Unless the bar is neutral, in all depictions below, a right hand bar is shown; left hand will be opposite. The “*” in the catalog numbers listed below indicates the type of bar and should be specified when ordering – choose from steel, carbide, or heavy metal, with or without coolant.



Multi-Lock Style Boring Bars - Negative Rake Inserts

| MCKNR/L Negative 15° End Cutting Edge Angle for Negative 80° Diamond CNMx Inserts | | | | | | | | | | | |
|---|-------------|------|-------|-------|----|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | | | |
| Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| *16T-MCKNR/L-4 | 1.280 | 12.0 | 1.000 | .640 | 14 | CNMx-43x | - | NL-44 | CL-20 | XNS-47 | - |
| *20T-MCKNR/L-4 | 1.530 | 12.0 | 1.250 | .765 | 14 | | - | NL-46 | | XNS-48 | - |
| *24U-MCKNR/L-4 | 1.780 | 14.0 | 1.500 | .890 | 12 | | ICSN-43x | NL-46 | CL-20 | XNS-48 | S-46 |
| *28U-MCKNR/L-4 | 2.030 | 14.0 | 1.750 | 1.015 | 12 | | | | | | |
| *32V-MCKNR/L-4 | 2.400 | 16.0 | 2.000 | 1.281 | 12 | | | | | | |
| *24U-MCKNR/L-5 | 1.780 | 14.0 | 1.500 | .890 | 12 | CNMx-54x | ICSN-53x | NL-58 | CL-12 | XNS-510 | S-58 |
| *32V-MCKNR/L-5 | 2.400 | 16.0 | 2.000 | 1.281 | 12 | | | | | | |
| *32V-MCKNR/L-6 | 2.400 | 16.0 | 2.000 | 1.281 | 12 | CNMx-64x | ICSN-63x | NL-68 | CL-12 | XNS-510 | S-68 |

| MCLNR/L Negative 5° End or Side Cutting Edge Angle for Negative 80° Diamond CNMx Inserts | | | | | | | | | | | |
|--|-------------|------|-------|-------|----|--------------------|--------------------|----------|-------|-------------|---------------------|
| | | | | | | | | | | | |
| Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| *12S-MCLNR/L-3 | 1.000 | 10.0 | .750 | .500 | 14 | CNMx-32x | - | NL-33 | CL-7 | XNS-36 | - |
| *16T-MCLNR/L-3 | 1.280 | 12.0 | 1.000 | .640 | 14 | | | | | | |
| *12S-MCLNR/L-4 | 1.000 | 10.0 | .750 | .500 | 14 | CNMx-43x | - | NL-44 | CL-20 | XNS-47 | - |
| *16T-MCLNR/L-4 | 1.280 | 12.0 | 1.000 | .640 | 14 | | - | NL-44 | CL-20 | XNS-47 | - |
| *20U-MCLNR/L-4 | 1.530 | 14.0 | 1.250 | .765 | 14 | | ICSN-43x | NL-46 | CL-20 | XNS-48 | S-46 |
| *24U-MCLNR/L-4 | 1.780 | 14.0 | 1.500 | .890 | 12 | | | | | | |
| *28U-MCLNR/L-4 | 2.030 | 14.0 | 1.750 | 1.015 | 12 | | | | | | |
| *32V-MCLNR/L-4 | 2.562 | 16.0 | 2.000 | 1.281 | 12 | | | | | | |
| *24U-MCLNR/L-5 | 2.374 | 14.0 | 1.500 | 1.187 | 12 | | | | | | |
| *32V-MCLNR/L-5 | 2.562 | 16.0 | 2.000 | 1.281 | 12 | CNMx-54x | ICSN-53x | NL-58 | CL-12 | XNS-510 | S-58 |
| *40V-MCLNR/L-5 | 3.062 | 16.0 | 2.500 | 1.531 | 12 | | | | | | |
| *48Y-MCLNR/L-5 | 3.562 | 18.0 | 3.000 | 1.781 | 12 | | | | | | |
| *32V-MCLNR/L-6 | 2.562 | 16.0 | 2.000 | 1.281 | 10 | | | | | | |
| *36V-MCLNR/L-6 | 2.812 | 16.0 | 2.250 | 1.406 | 10 | CNMx-64x | ICSN-63x | NL-68 | CL-12 | XNS-510 | S-68 |
| *40V-MCLNR/L-6 | 3.062 | 16.0 | 2.500 | 1.531 | 10 | | | | | | |

| MDPNR/L Negative 27.5° End Cutting Edge Angle for Negative 55° Diamond DNMx Inserts | | | | | | | | | | | | |
|---|----------------|-------------|-------|-------|-------|----|--------------------|--------------------|----------|-------|-------------|---------------------|
| | Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| | *20U-MDPNR/L-4 | 1.705 | 14.0 | 1.250 | 1.000 | 13 | DNMx-43x | IDSN-43x | NL-46 | CL-20 | XNS-47 | S-46 |
| *24U-MDPNR/L-4 | 2.000 | 14.0 | 1.500 | 1.125 | 10 | | | | | | | |

| MDQNR/L Negative 17.5° End Cutting Edge Angle for Negative 55° Diamond DNMx Inserts | | | | | | | | | | | | |
|---|----------------|-------------|-------|-------|-------|----|--------------------|--------------------|----------|-------|-------------|---------------------|
| | Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| | *20T-MDQNR/L-4 | 1.705 | 12.0 | 1.250 | 1.000 | 12 | DNMx-43x | IDSN-43x | NL-46L | CL-12 | XNS-59 | S-46 |
| *24U-MDQNR/L-4 | 2.000 | 14.0 | 1.500 | 1.125 | 8 | | | | | | | |

| MDUNR/L Negative 3° End Cutting Edge Angle for Negative 55° Diamond DNMx Inserts | | | | | | | | | | | | |
|--|----------------|-------------|-------|-------|------|----------|--------------------|--------------------|----------|---------|-------------|---------------------|
| | Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| | *16T-MDUNR/L-3 | 1.300 | 12.0 | 1.000 | .750 | 12 | DNMx-3xx | - | NL-33 | CL-7 | XNS-36 | - |
| *20T-MDUNR/L-4 | 2.000 | 12.0 | 1.250 | 1.000 | 10 | DNMx-43x | IDSN-43x | NL-46L | CL-12 | XNS-59 | S-46 | |
| *24U-MDUNR/L-4 | 2.250 | 14.0 | 1.500 | 1.125 | 10 | | | | | | | |
| *28U-MDUNR/L-4 | 2.500 | 14.0 | 1.750 | 1.250 | 10 | | | | | | | |
| *32V-MDUNR/L-4 | 3.000 | 16.0 | 2.000 | 1.375 | 10 | | | | | | | |
| *28U-MDUNR/L-5 | 2.750 | 14.0 | 1.750 | 1.375 | 10 | DNMx-54x | IDSN-53x | NL-58 | CL-30 | XNS-510 | S-58 | |
| *32V-MDUNR/L-5 | 3.000 | 16.0 | 2.000 | 1.500 | 10 | | | | | | | |
| *36V-MDUNR/L-5 | 3.250 | 16.0 | 2.250 | 1.625 | 10 | | | | | | | |
| *40V-MDUNR/L-5 | 3.500 | 16.0 | 2.500 | 1.750 | 10 | | | | | | | |

| MSKNR/L 15° End Cutting Edge Angle for Negative Square SNMx Inserts | | | | | | | | | | | | |
|---|----------------|-------------|-------|-------|------|----------|--------------------|--------------------|----------|--------|-------------|---------------------|
| | Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
| | *20T-MSKNR/L-4 | 1.530 | 12.0 | 1.250 | .765 | 14 | SNMx-43x | ISSN-43x | NL-46 | CL-9 | XNS-59 | S-46 |
| *24U-MSKNR/L-4 | 1.780 | 14.0 | 1.500 | .890 | 14 | | | | | | | |
| *28U-MSKNR/L-4 | 2.030 | 14.0 | 1.750 | 1.015 | 12 | | | | | | | |
| *32V-MSKNR/L-4 | 2.562 | 16.0 | 2.000 | 1.281 | 12 | | | | | | | |
| *36V-MSKNR/L-6 | 2.650 | 16.0 | 2.250 | 1.406 | 10 | SNMx-64x | ISSN-63x | NL-68 | CL-12 | XNS-59 | S-68 | |
| *40V-MSKNR/L-6 | 3.030 | 16.0 | 2.500 | 1.531 | 10 | | | | | | | |

MTFNR/L
0° End Cutting Edge Angle for Negative Triangle TNMx Inserts

| Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
|----------------|-------------|------|-------|-------|----|--------------------|--------------------|----------|-------|-------------|---------------------|
| *12S-MTFNR/L-3 | 1.000 | 10.0 | .750 | .500 | 15 | TNMx-32x | - | NL-33 | CL-7 | XNS-35 | S-34 |
| *16T-MTFNR/L-3 | 1.280 | 12.0 | 1.000 | .640 | 15 | TNMx-32x | ITSN-33x | NL-34L | | | |
| *20T-MTFNR/L-3 | 1.530 | 12.0 | 1.250 | .765 | 12 | TNMx-33x | ITSN-32x | | | | |
| *24U-MTFNR/L-3 | 1.780 | 14.0 | 1.500 | .890 | 10 | | | | | | |
| *28U-MTFNR/L-3 | 2.030 | 14.0 | 1.750 | 1.015 | 10 | | | | | | |
| *20U-MTFNR/L-4 | 1.530 | 14.0 | 1.250 | .765 | 14 | TNMx-43x | ITSN-43x | NL-46 | CL-9 | XNS-59 | S-46 |
| *24U-MTFNR/L-4 | 2.062 | 14.0 | 1.500 | 1.031 | 10 | | | | | | |
| *28U-MTFNR/L-4 | 2.312 | 14.0 | 1.750 | 1.156 | 8 | | | | | | |
| *32V-MTFNR/L-4 | 2.562 | 16.0 | 2.000 | 1.281 | 8 | | | | | | |
| *36V-MTFNR/L-4 | 2.650 | 16.0 | 2.250 | 1.406 | 8 | | | | | | |
| *40V-MTFNR/L-4 | 3.030 | 16.0 | 2.500 | 1.531 | 6 | | | | | | |
| *48Y-MTFNR/L-4 | 3.562 | 18.0 | 3.000 | 1.781 | 6 | | | | | | |

MVUNR/L
Negative 3° End Cutting Edge Angle for Negative 35° Diamond VNMx Inserts

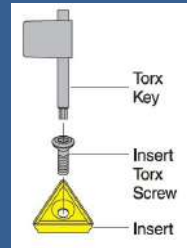
| Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw | Optional Seat Screw |
|----------------|-------------|------|-------|-------|----|--------------------|--------------------|----------|-------|-------------|---------------------|
| *16T-MVUNR/L-3 | 2.000 | 12.0 | 1.000 | 1.000 | 12 | VNMx-33x | IVSN-32x | NL-34L | CL-12 | XNS-58 | S-34 |
| *20T-MVUNR/L-3 | 2.250 | 12.0 | 1.250 | 1.125 | 12 | | | | | | |
| *24U-MVUNR/L-3 | 2.500 | 14.0 | 1.500 | 1.250 | 12 | | | | | | |
| *28U-MVUNR/L-4 | 3.000 | 14.0 | 1.750 | 1.500 | 12 | | | | | | |
| *32U-MVUNR/L-4 | 3.250 | 16.0 | 2.000 | 1.625 | 12 | VNMx-43x | IVSN-43x | NL-46 | CL-12 | XNS-59 | S-46 |
| *36V-MVUNR/L-4 | 3.500 | 16.0 | 2.250 | 1.750 | 12 | | | | | | |
| *40V-MVUNR/L-4 | 3.750 | 16.0 | 2.500 | 1.875 | 12 | | | | | | |

MWLNR/L
Negative 5° End or Side Cutting Edge Angle for Negative Trigon WNMx Inserts

| Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Sample Shim (Seat) | Lock Pin | Clamp | Clamp Screw |
|----------------|-------------|------|-------|-------|----|--------------------|--------------------|----------|----------|-------------|
| *12S-MWLNR/L-3 | 1.000 | 10.0 | .750 | .500 | 14 | WNMx-33x | - | NL-33 | CL-7 | XNS-36 |
| *16T-MWLNR/L-3 | 1.280 | 12.0 | 1.000 | .640 | 14 | | | NL-44 | | |
| *20T-MWLNR/L-4 | 1.530 | 12.0 | 1.250 | .765 | 14 | | | WNMx-43x | IWSN-43x | NL-46 |
| *24U-MWLNR/L-4 | 1.780 | 14.0 | 1.500 | .890 | 14 | | | | | |
| *28U-MWLNR/L-4 | 2.030 | 14.0 | 1.750 | 1.015 | 12 | | | | | |
| *32V-MWLNR/L-4 | 2.400 | 16.0 | 2.000 | 1.281 | 12 | | | | | |

Screw lock style boring bars offer both ease of indexing and security. With the Torx screw locking method, positive rake inserts can be locked down with more force and stay rigid in the pocket ensuring stability throughout the machining operation.

Unless the bar is neutral, in all depictions below, a right hand bar is shown; left hand will be opposite. The "*" in the catalog numbers listed below indicates the type of bar and should be specified when ordering – choose from steel, carbide, or heavy metal, with or without coolant.



Screw Lock Style Boring Bars - 5° Positive Rake Inserts

| SVQBR/L Negative 17.5° Side Cutting Edge Angle for 5° Positive 35° Diamond VBxT Inserts | | | | | | | | |
|---|-----------|-------------|-------|------|---|----------|--------------------|-------------------|
| | Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw |
| *10R-SVQBR/L-2 | .850 | 8.0 | .675 | .500 | 6 | VBxT-22x | TS-25 | T-8 |
| *12S-SVQBR/L-2 | .980 | 10.0 | .750 | .562 | 5 | VBxT-33x | TS-4 | T-15 |
| *16T-SVQBR/L-3 | 1.300 | 12.0 | 1.000 | .750 | 5 | | | |

| SVUBR/L Negative 3° Side Cutting Edge Angle for 5° Positive 35° Diamond VBxT Inserts | | | | | | | | |
|---|-----------|-------------|-------|-------|---|----------|--------------------|-------------------|
| | Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw |
| *12S-SVUBR/L-2 | .980 | 10.0 | .750 | .562 | 6 | VBxT-22x | TS-25 | T-8 |
| *16T-SVUBR/L-3 | 1.300 | 12.0 | 1.000 | .750 | 6 | VBxT-33x | TS-4 | T-15 |
| *20T-SVUBR/L-3 | 2.000 | 12.0 | 1.250 | 1.000 | 6 | | | |
| *24U-SVUBR/L-3 | 2.250 | 14.0 | 1.500 | 1.250 | 6 | | | |
| *32V-SVUBR/L-3 | 2.375 | 16.0 | 2.000 | 1.375 | 4 | | | |

Screw Lock Style Boring Bars - 7° Positive Rake Inserts

| SCFCR/L 0° End Cutting Edge Angle for 7° Positive 80° Diamond CCxT Inserts | | | | | | | | |
|---|-----------|-------------|-------|------|---|------------|--------------------|-------------------|
| | Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw |
| *06M-SCFCR/L-2 | .480 | 6.0 | .375 | .250 | 4 | CCxT-21.5x | TS-25 | T-8 |
| *08R-SCFCR/L-2 | .600 | 8.0 | .500 | .312 | 2 | | | |
| *10S-SCFCR/L-2 | .770 | 10.0 | .625 | .406 | 0 | | | |
| *12S-SCFCR/L-3 | .930 | 10.0 | .750 | .500 | 0 | CCxT-32.5x | TS-4 | T-15 |
| *16T-SCFCR/L-3 | 1.200 | 12.0 | 1.000 | .640 | 0 | | | |

SCLCR/L
Negative 5° End or Side Cutting Edge Angle for 7° Positive 80° Diamond CCxT Inserts

| Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw | Torx Key |
|----------------|-------------|------|-------|------|----|--------------------|-------------------|----------|
| *06M-SCLCR/L-2 | .500 | 6.0 | .375 | .250 | 15 | CCxT-21.5x | TS-25 | T-8 |
| *08M-SCLCR/L-2 | .625 | 6.0 | .500 | .312 | 13 | | | |
| *10R-SCLCR/L-2 | .812 | 8.0 | .625 | .406 | 10 | | | |
| *08M-SCLCR/L-3 | .625 | 6.0 | .500 | .312 | 13 | CCxT-32.5x | TS-4 | T-15 |
| *10R-SCLCR/L-3 | .750 | 8.0 | .625 | .406 | 10 | | | |
| *12S-SCLCR/L-3 | 1.000 | 10.0 | .750 | .500 | 8 | | | |
| *16T-SCLCR/L-3 | 1.280 | 12.0 | 1.000 | .640 | 7 | CCxT-43x | TS-5 | T-25 |
| *16T-SCLCR/L-4 | 1.280 | 12.0 | 1.000 | .640 | 7 | | | |
| *20U-SCLCR/L-4 | 1.530 | 14.0 | 1.250 | .765 | 5 | | | |
| *24U-SCLCR/L-4 | 1.780 | 14.0 | 1.500 | .890 | 4 | | | |

SDUCR/L
Negative 3° End Cutting Edge Angle for 7° Positive 55° Diamond DCxT Inserts

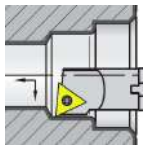
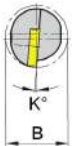
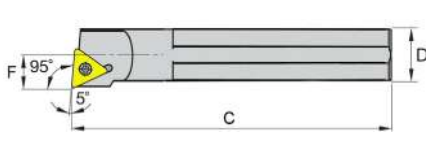
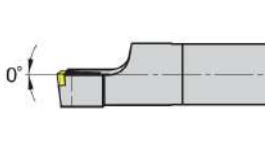
| Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw | Torx Key |
|----------------|-------------|------|-------|-------|----|--------------------|-------------------|----------|
| *06M-SDUCR/L-2 | .624 | 6.0 | .375 | .375 | 7 | DCxT-21.5x | TS-25 | T-8 |
| *08M-SDUCR/L-2 | .750 | 6.0 | .500 | .437 | 7 | | | |
| *10R-SDUCR/L-2 | .937 | 8.0 | .625 | .500 | 7 | | | |
| *12S-SDUCR/L-3 | 1.000 | 10.0 | .750 | .562 | 7 | DCxT-32.5x | TS-4 | T-15 |
| *16T-SDUCR/L-3 | 1.250 | 12.0 | 1.000 | .750 | 5 | | | |
| *20T-SDUCR/L-3 | 1.625 | 12.0 | 1.125 | 1.000 | 5 | | | |

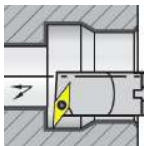
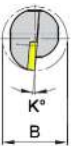
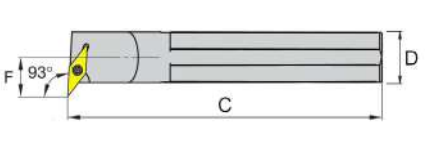
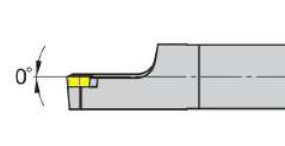
SDXCR/L
Negative 5° Back Boring Cutting Edge Angle for 7° Positive 55° Diamond DCxT Inserts

| Catalog # | Min. Bore B | C | D | E | F | K° | Sample Gage Insert | Insert Torx Screw | Torx Key |
|----------------|-------------|------|-------|-------|------|----|--------------------|-------------------|----------|
| *08R-SDXCR/L-2 | .730 | 8.0 | .500 | .875 | .437 | 0 | DCxT-21.5x | TS-25 | T-8 |
| *10S-SDXCR/L-2 | .850 | 10.0 | .625 | 1.000 | .500 | 0 | | | |
| *12S-SDXCR/L-3 | .980 | 10.0 | .750 | 1.250 | .562 | 2 | DCxT-32.5x | TS-4 | T-15 |
| *16T-SDXCR/L-3 | 1.300 | 12.0 | 1.000 | 1.500 | .750 | 0 | | | |

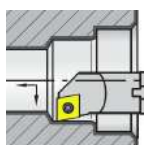

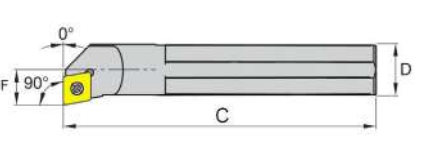
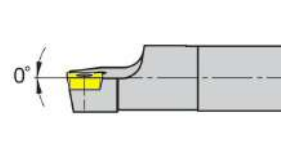
STFCR/L
0° End Cutting Edge Angle for 7° Positive Triangle TCxT Inserts

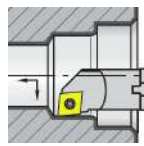

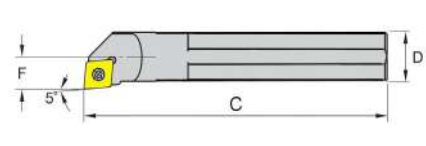
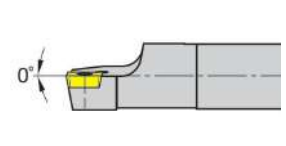
| Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw | Torx Key |
|----------------|-------------|------|-------|------|----|--------------------|-------------------|----------|
| *06M-STFCR/L-2 | .500 | 6.0 | .375 | .250 | 15 | TCxT-21.5x | TS-25 | T-8 |
| *08M-STFCR/L-2 | .625 | 6.0 | .500 | .312 | 13 | | | |
| *10R-STFCR/L-2 | .750 | 8.0 | .625 | .406 | 10 | | | |
| *12S-STFCR/L-2 | 1.000 | 10.0 | .750 | .500 | 8 | TCxT-32.5x | TS-4 | T-15 |
| *12S-STFCR/L-3 | 1.000 | 10.0 | .750 | .500 | 8 | | | |
| *16T-STFCR/L-3 | 1.280 | 12.0 | 1.000 | .640 | 7 | | | |
| *20T-STFCR/L-3 | 1.530 | 12.0 | 1.250 | .765 | 5 | TCxT-43x | TS-5 | T-25 |
| *24U-STFCR/L-3 | 1.760 | 14.0 | 1.500 | .890 | 4 | | | |
| *20T-STFCR/L-4 | 1.530 | 12.0 | 1.250 | .765 | 5 | | | |
| *24U-STFCR/L-4 | 1.760 | 14.0 | 1.500 | .890 | 4 | | | |

| STLCR/L 5° Side Cutting Edge Angle for 7° Positive Triangle TCxT Inserts | |  | |  | |  | |  | |
|--|-------------|---|-------|---|----|--|-------------------|---|--|
| Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw | Torx Key | |
| *06M-STLCR/L-2 | .480 | 6.0 | .375 | .250 | 8 | TCxT-2xx | TS-25 | T-8 | |
| *08R-STLCR/L-2 | .600 | 8.0 | .500 | .312 | 7 | | | | |
| *10S-STLCR/L-2 | .770 | 10.0 | .625 | .406 | 5 | | | | |
| *12S-STLCR/L-3 | .930 | 10.0 | .750 | .500 | 5 | TCxT-3xx | TS-4 | T-15 | |
| *16T-STLCR/L-3 | 1.200 | 12.0 | 1.000 | .640 | 4 | | | | |

| SVUCR/L Negative 3° Side Cutting Edge Angle for 7° Positive 35° Diamond VCxT Inserts | |  | |  | |  | |  | |
|--|-------------|---|-------|---|----|--|-------------------|---|--|
| Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw | Torx Key | |
| *12S-SVUCR/L-2 | .875 | 10.0 | .750 | .500 | 7 | VCxT-22x | TS-25 | T-8 | |
| *16T-SVUCR/L-3 | 1.140 | 12.0 | 1.000 | .640 | 6 | VCxT-33x | TS-4 | T-15 | |

Screw Lock Style Boring Bars - 11° Positive Rake Inserts

| SCFPR/L 0° End Cutting Edge Angle for 11° Positive 80° Diamond CPxx Inserts | |  | |  | |  | |  | |
|---|-------------|--|-------|--|----|---|-------------------|--|--|
| Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw | Torx Key | |
| *06M-SCFPR/L-2 | .480 | 6.0 | .375 | .250 | 4 | CPxT-21.5x | TS-25 | T-8 | |
| *08R-SCFPR/L-2 | .600 | 8.0 | .500 | .312 | 2 | | | | |
| *10S-SCFPR/L-2 | .770 | 10.0 | .625 | .406 | 0 | | | | |
| *12S-SCFPR/L-3 | .930 | 10.0 | .750 | .500 | 0 | CPxT-32.5x | TS-4 | T-15 | |
| *16T-SCFPR/L-3 | 1.200 | 12.0 | 1.000 | .640 | 0 | | | | |

| SCLPR/L Negative 5° End or Side Cutting Edge Angle for 11° Positive 80° Diamond CPxx Inserts | |  | |  | |  | |  | |
|---|-------------|---|-------|---|----|--|-------------------|---|--|
| Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw | Torx Key | |
| *06M-SCLPR/L-2 | .500 | 6.0 | .375 | .250 | 6 | CPxT-21.5x | TS-25 | T-8 | |
| *08R-SCLPR/L-2 | .625 | 8.0 | .500 | .312 | 3 | | | | |
| *10S-SCLPR/L-2 | .750 | 10.0 | .625 | .406 | 2 | | | | |
| *10S-SCLPR/L-3 | .750 | 10.0 | .625 | .406 | 2 | CPxT-32.5x | TS-4 | T-15 | |
| *12S-SCLPR/L-3 | 1.000 | 10.0 | .750 | .500 | 2 | | | | |
| *16T-SCLPR/L-3 | 1.280 | 12.0 | 1.000 | .640 | 0 | | | | |

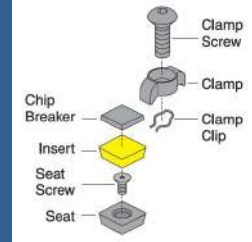
| | | | | | | | | |
|--|-----------|-------------|-------|------|---|------------|--------------------|-------------------|
| SDUPR/L Negative 3° End Cutting Edge Angle for 11° Positive 55° Diamond DPxx Inserts | | | | | | | | |
| | Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw |
| *06M-SDUPR/L-2 | .600 | 6.0 | .375 | .375 | 3 | DPxT-21.5x | TS-25 | T-8 |
| *08R-SDUPR/L-2 | .730 | 8.0 | .500 | .437 | 2 | | | |
| *10S-SDUPR/L-2 | .850 | 10.0 | .625 | .500 | 0 | | | |
| *12S-SDUPR/L-3 | .980 | 10.0 | .750 | .562 | 2 | DPxT-32.5x | TS-4 | T-15 |
| *16T-SDUPR/L-3 | 1.300 | 12.0 | 1.000 | .750 | 0 | | | |

| | | | | | | | | | |
|--|-----------|-------------|-------|-------|------|---|------------|--------------------|-------------------|
| SDXPR/L Negative 5° Back Boring Cutting Edge Angle for 11° Positive 55° Diamond DPxx Inserts | | | | | | | | | |
| | Catalog # | Min. Bore B | C | D | E | F | K° | Sample Gage Insert | Insert Torx Screw |
| *08R-SDXPR/L-2 | .730 | 8.0 | .500 | .875 | .437 | 0 | DPxT-21.5x | TS-25 | T-8 |
| *10S-SDXPR/L-2 | .850 | 10.0 | .625 | 1.000 | .500 | 0 | | | |
| *12S-SDXPR/L-3 | .980 | 10.0 | .750 | 1.250 | .562 | 2 | | | |
| *16T-SDXPR/L-3 | 1.300 | 12.0 | 1.000 | 1.500 | .750 | 0 | DPxT-32.5x | TS-4 | T-15 |

| | | | | | | | | |
|--|-----------|-------------|-------|------|---|------------|--------------------|-------------------|
| STFPR/L 0° End Cutting Edge Angle for 11° Positive Triangle TPxx Inserts | | | | | | | | |
| | Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw |
| *06M-STFPR/L-2 | .480 | 6.0 | .375 | .250 | 4 | TPGx-21.5x | TS-25 | T-8 |
| *08R-STFPR/L-2 | .600 | 8.0 | .500 | .312 | 2 | | | |
| *10S-STFPR/L-2 | .770 | 10.0 | .625 | .406 | 0 | | | |
| *12S-STFPR/L-3 | .930 | 10.0 | .750 | .500 | 2 | TPxT-32.5x | TS-4 | T-15 |
| *16T-STFPR/L-3 | 1.200 | 12.0 | 1.000 | .640 | 0 | | | |
| *20T-STFPR/L-3 | 1.530 | 12.0 | 1.250 | .765 | 5 | | | |
| *24U-STFPR/L-3 | 1.760 | 14.0 | 1.500 | .890 | 4 | TPxT-43x | TS-5 | T-25 |
| *20T-STFPR/L-4 | 1.530 | 12.0 | 1.250 | .765 | 5 | | | |
| *24U-STFPR/L-4 | 1.760 | 14.0 | 1.500 | .890 | 4 | | | |

| | | | | | | | | |
|---|-----------|-------------|-------|------|---|----------|--------------------|-------------------|
| STLPR/L Negative 5° End Cutting Edge Angle for 11° Positive Triangle TPxx Inserts | | | | | | | | |
| | Catalog # | Min. Bore B | C | D | F | K° | Sample Gage Insert | Insert Torx Screw |
| *06M-STLPR/L-2 | .480 | 6.0 | .375 | .250 | 4 | TPGx-2xx | TS-25 | T-8 |
| *08R-STLPR/L-2 | .600 | 8.0 | .500 | .312 | 2 | | | |
| *10S-STLPR/L-2 | .770 | 10.0 | .625 | .406 | 0 | | | |
| *12S-STLPR/L-3 | .930 | 10.0 | .750 | .500 | 2 | TPGx-3xx | TS-4 | T-15 |
| *16T-STLPR/L-3 | 1.200 | 12.0 | 1.000 | .640 | 0 | | | |

Quick changes are the norm with clamp lock style boring bars, which provide an easy-to-index option for positive rake inserts with no hole. An optional chip breaker can be ordered to sit top of the insert, as shown in the diagram at right. Unless the bar is neutral, in all depictions below, a right hand bar is shown; left hand will be opposite. The "*" in the catalog numbers listed below indicates the type of bar and should be specified when ordering – choose from steel, carbide, or heavy metal, with or without coolant.

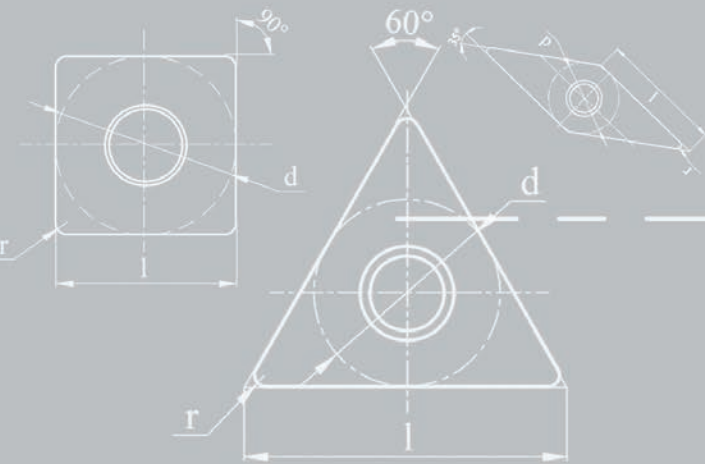


Clamp Lock Style Boring Bars - 11° Positive Rake Inserts

| Catalog # | Min. Bore B | C | D | F | K° | Diagram Labels | | | | | | |
|----------------|-------------|------|-------|-------|----|--------------------|-------------|------------|-------|------------|-------------|-----------------------|
| | | | | | | Sample Gage Insert | Shim (Seat) | Seat Screw | Clamp | Clamp Clip | Clamp Screw | Optional Chip Breaker |
| *08R-CTFPR/L-2 | .600 | 8.0 | .500 | .312 | 3 | TPx-22x | - | - | HC-7 | - | SHC-7 | - |
| *10S-CTFPR/L-2 | .770 | 10.0 | .625 | .406 | 4 | | | | | | | |
| *12S-CTFPR/L-3 | 1.125 | 10.0 | .750 | .500 | 0 | TPx-32x | PTP-3 | TS-4 | HC-12 | CLIP-12 | CS-126 | T33AD |
| *16T-CTFPR/L-3 | 1.280 | 12.0 | 1.000 | .640 | 0 | | | | | | | |
| *20U-CTFPR/L-3 | 1.530 | 14.0 | 1.250 | .765 | 3 | | | | | | | |
| *24U-CTFPR/L-3 | 1.840 | 14.0 | 1.500 | .890 | 3 | | | | | | | |
| *28U-CTFPR/L-3 | 2.100 | 14.0 | 1.750 | 1.015 | 3 | TPx-43x | PTP-4 | TS-6 | HC-12 | CLIP-12 | CS-126 | T43AE |
| *20U-CTFPR/L-4 | 1.530 | 14.0 | 1.250 | .765 | 3 | | | | | | | |
| *24U-CTFPR/L-4 | 2.060 | 14.0 | 1.500 | .890 | 3 | | | | | | | |
| *28U-CTFPR/L-4 | 2.380 | 14.0 | 1.750 | 1.156 | 3 | | | | | | | |
| *32V-CTFPR/L-4 | 2.562 | 16.0 | 2.000 | 1.281 | 3 | | | | | | | |
| *36V-CTFPR/L-4 | 2.880 | 16.0 | 2.250 | 1.406 | 3 | | | | | | | |
| *40V-CTFPR/L-4 | 3.062 | 16.0 | 2.500 | 1.531 | 3 | | | | | | | |
| *48Y-CTFPR/L-4 | 3.562 | 18.0 | 3.000 | 1.781 | 3 | | | | | | | |

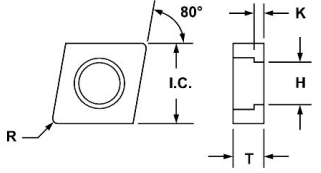
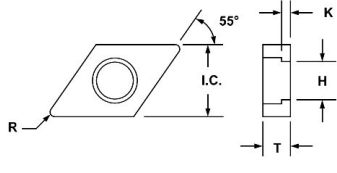
SHIMS AND CHIPBREAKERS

ANSI / ISO STANDARD SHIMS
AND CHIPBREAKERS



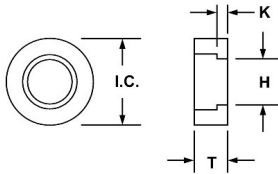
r

We manufacture an extensive line of ISO- and ANSI-standard, industry-standard and special shims (seats) and chipbreakers. Shims are offered in a tough, impact-resistant grade designed to provide the required support for metalworking applications, while chipbreakers are supplied in a general purpose grade formulated to withstand the heat and shearing action of breaking chips. All shims and chipbreakers are surface ground for optimum flatness and parallelism, so reliable performance is ensured.

| SHIMS Negative rake | Catalog # | Dimensions (inches) | | | | | |
|---|---|---------------------|------|------|------|------|------|
| | | Insert I.C. | T | R | K | H | |
| 80° Diamond  | ICSN 322 | 3/8 | 1/8 | 1/32 | .055 | .227 | |
| | ICSN 332 | | 3/16 | 1/32 | .055 | .227 | |
| | ICSN 422 | 1/2 | 1/8 | 1/32 | .055 | .289 | |
| | ICSN 423 | | 1/8 | 3/64 | .055 | .289 | |
| | SCN 43 | | 3/16 | 1/32 | .039 | .255 | |
| | ICSN 432 | | 3/16 | 1/32 | .088 | .289 | |
| | SM 303 | | 3/16 | 1/32 | .090 | .266 | |
| | CSN 432 | | 3/16 | 1/32 | .091 | .254 | |
| | ICSN 433 | | 3/16 | 3/64 | .088 | .289 | |
| | CSN 433 | | 3/16 | 3/64 | .091 | .254 | |
| | SM 390 | | 5/8 | 3/16 | 3/64 | .084 | .313 |
| | ICSN 533 | | | 3/16 | 3/64 | .088 | .380 |
| | ICSN 543 | 1/4 | | 3/64 | .088 | .380 | |
| | SCN 54C | 1/4 | | 3/64 | .098 | .313 | |
| | SM 304 | 3/4 | 3/16 | 3/64 | .091 | .339 | |
| | ICSN 633 | | 3/16 | 3/64 | .096 | .443 | |
| | ICSN 643 | | 1/4 | 3/64 | .096 | .443 | |
| | SM 305 | | 1/4 | 3/64 | .125 | .333 | |
| | SM 385 | | 1/4 | 3/64 | .154 | .339 | |
| | ICSN 846 | 1 | 1/4 | 3/32 | .122 | .580 | |
| | SM 319 | | 1/4 | 3/32 | .125 | .373 | |
| | SM 396 | 1/2 | 3/16 | 1/32 | - | .128 | |
| | 55° Diamond  | IDSN 322 | 3/8 | 1/8 | 1/32 | .055 | .227 |
| | | IDSN 423 | 1/2 | 1/8 | 3/64 | .055 | .289 |
| SDNA 43T | | 1/8 | | 3/64 | .057 | .198 | |
| IDSN 432 | | 3/16 | | 1/32 | .088 | .289 | |
| SM 306 | | 3/16 | | 1/32 | .090 | .253 | |
| IDSN 433 | | 3/16 | | 3/64 | .088 | .289 | |
| IDSN 436 | | 3/16 | | 3/32 | .088 | .289 | |
| IDSN 443 | | 1/4 | | 3/64 | .088 | .289 | |
| IDSN 533 | | 5/8 | | 3/16 | 3/64 | .088 | .380 |
| SM 307 | | | 3/16 | 3/64 | .092 | .312 | |
| SM 308 | | | 1/4 | 1/32 | .088 | .312 | |
| IDSN 543 | | | 1/4 | 3/64 | .088 | .380 | |

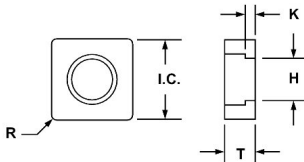
SHIMS Negative rake

Round



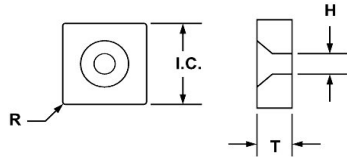
| Catalog # | Dimensions (inches) | | | | | |
|-----------|---------------------|------|------|------|------|------|
| | Insert I.C. | T | R | K | H | |
| SRN 33 | 3/8 | 1/8 | - | .045 | .188 | |
| IRSN 32 | | 1/8 | - | .055 | .227 | |
| SRN 33CH | | 3/16 | - | .045 | .188 | |
| IRSN 33 | | 3/16 | - | .055 | .227 | |
| SRN 33C | | 3/16 | - | .108 | .188 | |
| SRN 44 | | 1/2 | 1/8 | - | .045 | .255 |
| IRSN 42 | 1/8 | | - | .055 | .289 | |
| SRN 44CH | 3/16 | | - | .045 | .255 | |
| IRSN 43 | 3/16 | | - | .055 | .289 | |
| RS 43P | 3/16 | | - | .084 | .289 | |
| SM 312 | 3/16 | | - | .090 | .264 | |
| RSN 43 | 3/4 | 3/16 | - | .104 | .255 | |
| SRN 44C | | 3/16 | - | .108 | .255 | |
| IRSN 44 | | 1/4 | - | .055 | .289 | |
| RS 53P | | 5/8 | 3/16 | - | .084 | .380 |
| SM 313 | | | 3/16 | - | .092 | .315 |
| IRSN 53 | | | 3/16 | - | .096 | .380 |
| IRSN 62 | 1 | 1/8 | - | .065 | .443 | |
| SRN 65 | | 1/8 | - | .082 | .380 | |
| SRN 65C | | 3/16 | - | .082 | .380 | |
| RS 63P | | 3/16 | - | .084 | .440 | |
| IRSN 63 | 1-1/4 | 3/16 | - | .096 | .443 | |
| RS 83P | | 1/4 | - | .084 | .444 | |
| IRSN 84 | | 1/4 | - | .123 | .572 | |
| RS 104P | | 1/4 | - | .116 | .696 | |
| SRN 108 | 1 | 1/4 | - | .215 | .568 | |
| SRN 108C | | 3/8 | - | .215 | .568 | |
| SM 45 | 1/2 | 1/8 | - | - | .130 | |
| SM 218 | | 3/16 | - | - | .130 | |
| SM 404 | | 1/4 | - | - | .130 | |
| SM 403 | | 5/16 | - | - | .130 | |
| BR 20-3 | 5/8 | 1/8 | - | - | .127 | |
| RSN 52 | | 1/8 | - | - | .127 | |
| ISSN 322 | 3/8 | 1/8 | 1/32 | .055 | .227 | |
| ISSN 323 | | 1/8 | 3/64 | .055 | .227 | |
| ISSN 332 | | 3/16 | 1/32 | .055 | .227 | |
| ISSN 333 | | 3/16 | 3/64 | .055 | .227 | |
| SSN 43 | 1/2 | 1/8 | 3/64 | .045 | .253 | |
| ISSN 432 | | 3/16 | 1/32 | .088 | .289 | |
| SSN 432 | | 3/16 | 1/32 | .091 | .254 | |
| SM 297 | | 3/16 | 1/32 | .098 | .264 | |
| ISSN 433 | | 5/8 | 3/16 | 3/64 | .088 | .289 |
| ISSN 434 | | | 3/16 | 1/16 | .088 | .289 |
| ISSN 443 | 1/4 | | 3/64 | .088 | .289 | |
| SSN 54 | 1 | 1/8 | 3/64 | .038 | .320 | |
| ISSN 533 | | 3/16 | 3/64 | .088 | .380 | |
| SM 298 | | 3/16 | 3/64 | .090 | .307 | |
| SSN 54C | | 3/16 | 3/64 | .101 | .320 | |
| ISSN 543 | 3/4 | 1/4 | 3/64 | .088 | .380 | |
| SM 299 | | 3/16 | 3/64 | .088 | .336 | |
| ISSN 633 | | 3/16 | 3/64 | .088 | .443 | |
| ISSN 634 | | 3/16 | 1/16 | .088 | .443 | |
| SM 300 | | 1/4 | 3/64 | .088 | .336 | |
| ISSN 643 | | 1/4 | 3/64 | .088 | .443 | |
| ISSN 644 | 1 | 1/4 | 1/16 | .088 | .443 | |
| ISSN 846 | | 1/4 | 3/32 | .120 | .580 | |

Square

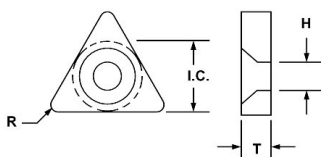
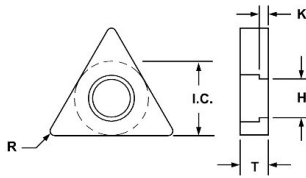


SHIMS Negative rake

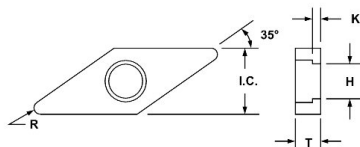
Square



Triangle



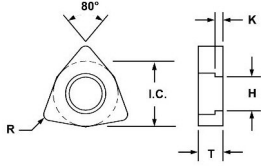
35° Diamond



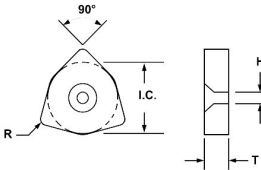
| Catalog # | Dimensions (inches) | | | | |
|-----------|---------------------|------|------|------|------|
| | Insert I.C. | T | R | K | H |
| SM 43 | 1/2 | 1/8 | 1/16 | - | .122 |
| SM 47 | | 3/16 | 1/16 | - | .122 |
| SS 4 | 3/4 | 1/8 | 3/64 | - | .180 |
| SM 27 | | 1/8 | 3/64 | - | .180 |
| SM 216 | | 3/16 | 3/64 | - | .180 |
| ITSN 322 | 3/8 | 1/8 | 1/32 | .055 | .227 |
| SM 290 | | 1/8 | 1/32 | .060 | .233 |
| STN 32 | | 1/8 | 3/64 | .050 | .192 |
| ITSN 323 | | 1/8 | 3/64 | .055 | .227 |
| ITSN 324 | | 1/8 | 1/16 | .055 | .227 |
| SM 291 | | 3/16 | 1/32 | .092 | .233 |
| ITSN 332 | | 3/16 | 1/32 | .055 | .227 |
| STN 32C | | 3/16 | 3/64 | .050 | .192 |
| ITSN 333 | | 3/16 | 3/64 | .055 | .227 |
| ITSN 334 | | 3/16 | 1/16 | .055 | .227 |
| ITSN 423 | 1/2 | 1/8 | 3/64 | .055 | .289 |
| STN 43 | | 1/8 | 1/16 | .039 | .255 |
| ITSN 432 | | 3/16 | 1/32 | .088 | .289 |
| ITSN 433 | | 3/16 | 3/64 | .088 | .289 |
| SM 292 | | 3/16 | 3/64 | .090 | .262 |
| STN 43C | | 3/16 | 1/16 | .039 | .255 |
| ITSN 434 | | 3/16 | 1/16 | .088 | .289 |
| TSN 434 | | 3/16 | 1/16 | .098 | .254 |
| ITSN 438 | | 3/16 | 1/8 | .088 | .289 |
| SM 391 | | 1/4 | 3/64 | .152 | .262 |
| STN 54 | 5/8 | 1/8 | 1/16 | .042 | .320 |
| ITSN 533 | | 3/16 | 3/64 | .088 | .380 |
| STN 54C | | 3/16 | 1/16 | .084 | .320 |
| ITSN 534 | | 3/16 | 1/16 | .088 | .380 |
| SM 293 | | 3/16 | 1/16 | .090 | .317 |
| ITSN 535 | | 3/16 | 5/64 | .088 | .380 |
| ITSN 538 | | 3/16 | 1/8 | .088 | .380 |
| TSN 539 | | 3/16 | 9/64 | .088 | .380 |
| ITSN 543 | | 1/4 | 3/64 | .088 | .380 |
| ITSN 633 | | 3/4 | 3/16 | 3/64 | .088 |
| STN 66 | 3/16 | | 3/32 | .073 | .380 |
| ITSN 636 | 3/16 | | 3/32 | .088 | .443 |
| SM 294 | 3/16 | | 3/32 | .090 | .334 |
| ITSN 637 | 3/16 | | 7/64 | .088 | .443 |
| STN 66C | 1/4 | | 3/32 | .073 | .380 |
| SM 42 | 3/8 | 1/8 | 1/32 | - | .130 |
| SM 48 | 3/8 | 3/16 | 1/32 | - | .130 |
| SM 26 | 1/2 | 1/8 | 3/64 | - | .180 |
| SM 72 | 5/8 | 3/16 | 3/64 | - | .210 |
| SM 310 | 3/8 | 1/8 | 1/32 | .050 | .210 |
| IVSN 322 | | 1/8 | 1/32 | .055 | .227 |
| IVSN 324 | | 1/8 | 1/16 | .055 | .227 |
| SM 386 | 1/2 | 1/8 | 1/32 | .090 | .250 |
| IVSN 432 | | 3/16 | 1/32 | .088 | .289 |
| IVSN 433 | | 3/16 | 3/64 | .088 | .289 |
| IVSN 436 | | 3/16 | 3/32 | .088 | .289 |

SHIMS Negative rake

Trigon

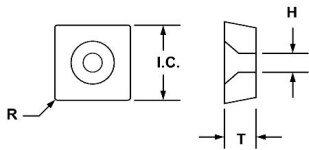


| Part Number | Dimensions (inches) | | | | |
|-------------|---------------------|------|------|------|------|
| | Insert I.C. | T | R | K | H |
| IWSN 322 | 3/8 | 1/8 | 1/32 | .055 | .227 |
| IWSN 433 | 1/2 | 3/16 | 3/64 | .088 | .289 |
| IWSN 533 | 5/8 | 3/16 | 3/64 | .088 | .380 |
| IWSN 635 | 3/4 | 3/16 | 5/64 | .088 | .443 |
| SHM WNMF 93 | 7/8 | 3/16 | 3/64 | - | .190 |



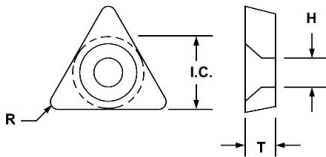
SHIMS Positive rake

Square



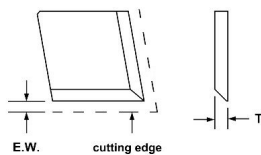
| Part Number | Dimensions (inches) | | | | |
|-------------|---------------------|------|------|---|------|
| | Insert I.C. | T | R | K | H |
| PSQ 3 | 1/2 | 1/8 | 1/64 | - | .122 |
| PSQ 4 | 3/4 | 1/8 | 3/64 | - | .175 |
| PTP 3 | 3/8 | 1/8 | 1/64 | - | .122 |
| PTP 4S | 1/2 | 1/8 | 1/32 | - | .185 |
| PTP 4 | | 1/8 | 3/64 | - | .185 |
| PTP 5 | 5/8 | 3/16 | 1/32 | - | .215 |

Triangle

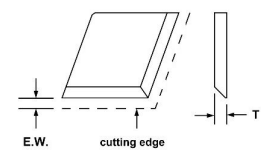


CHIPBREAKERS Industry standard chipbreakers

80° Diamond



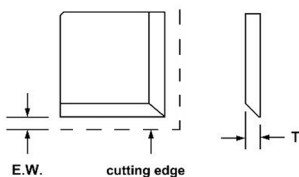
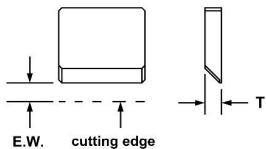
| Part Number | Dimensions (inches) | | |
|-------------|---------------------|------|------|
| | Insert I.C. | T | E.W. |
| CBD 6N | 3/4 | .094 | .115 |
| CBD 6C | 3/4 | .094 | .125 |



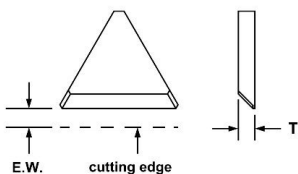
CHIPBREAKERS

Industry standard chipbreakers

Square



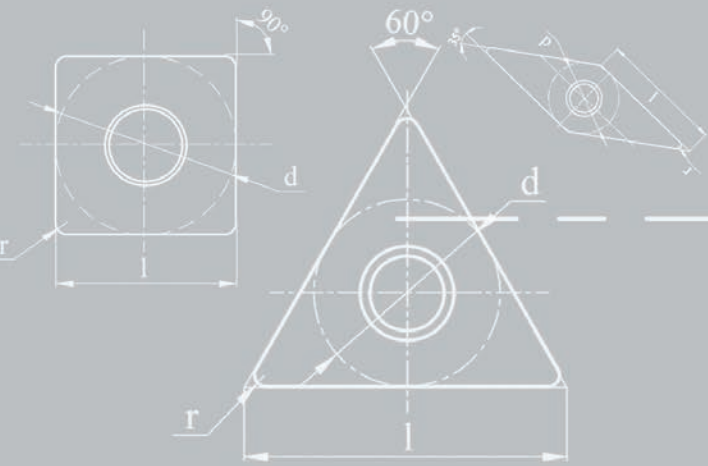
Triangle



| Part Number | Dimensions (inches) | | | |
|-------------|---------------------|------|------|------|
| | Insert I.C. | T | E.W. | |
| CBS 4LM | 1/2 | .085 | .060 | |
| S43 MOD | | .094 | .060 | |
| S43 AD | | .094 | .078 | |
| CBS 4G | | .094 | .094 | |
| CBS 16N | | .094 | .101 | |
| S43 AG | | .094 | .124 | |
| CBS 4H | | .094 | .156 | |
| S43 AI | | .094 | .171 | |
| CBS 5LM | | 5/8 | .085 | .060 |
| CBS 6LM | | 3/4 | .085 | .060 |
| CBS 24F | .094 | | .062 | |
| S63 AD | .094 | | .071 | |
| CBS 24N | .094 | | .101 | |
| CBS 6G | .094 | | .125 | |
| S63 AG | .094 | | .141 | |
| CBS 6H | .094 | | .188 | |
| S63 AK | .094 | | .203 | |
| S32 BC | 3/8 | .094 | .060 | |
| S43 BE | 1/2 | .094 | .060 | |
| CBS 24D | 3/4 | .094 | .125 | |
| T22 AC | 1/4 | .062 | .061 | |
| CBT 12F | 3/8 | .094 | .057 | |
| T33 AD | | .094 | .071 | |
| CBT 12N | | .094 | .081 | |
| T33 AF | | .094 | .108 | |
| CBT 12 | | .094 | .129 | |
| T33 AH | | .094 | .155 | |
| CBT 16F | 1/2 | .094 | .054 | |
| CBT 4L | | .094 | .063 | |
| T43 AE | | .094 | .093 | |
| CBT 16N | | .094 | .101 | |
| T43 AG | | .094 | .131 | |
| CBT 4H | | .094 | .156 | |
| T43 AK | | .094 | .217 | |
| CBT 20N | 5/8 | .094 | .101 | |
| T53 AG | | .094 | .123 | |
| T53 AH | | .094 | .151 | |
| CBT 6L | 3/4 | .125 | .156 | |
| CBT 24 | | .125 | .312 | |
| CBT 6H | | .125 | .345 | |

SPARE PARTS

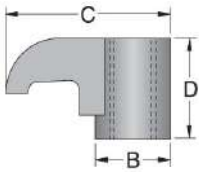
INDUSTRY STANDARD
CLAMPS, SCREWS, LOCK PINS,
AND WRENCHES FOR
TOOLING SYSTEMS



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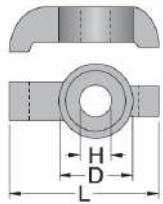
CLAMPS

Finger Clamps



| Part Number | Dimensions (inches) | | | |
|-------------|---------------------|-------|------|---------|
| | B | C | D | Thread |
| CL-6 | .310 | .580 | .440 | 10-32 |
| CL-7 | .310 | .640 | .310 | 10-32 |
| CL-9 | .430 | .750 | .660 | 5/16-24 |
| CL-12 | .430 | .880 | .660 | 5/16-24 |
| CL-19 | .310 | .550 | .310 | 10-32 |
| CL-20 | .375 | .730 | .380 | 1/4-28 |
| CL-21 | .375 | .730 | .530 | 1/4-28 |
| CL-22 | .375 | .850 | .530 | 1/4-28 |
| CL-30 | .430 | 1.000 | .660 | 5/16-24 |
| CL-41 | .430 | .750 | .660 | 5/16-24 |

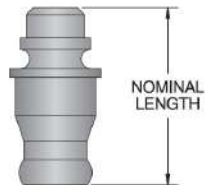
Bridge Clamps



| Part Number | Dimensions (inches) | | |
|-------------|---------------------|------|------|
| | L | D | H |
| HC-7 | .469 | .313 | .172 |
| HC-9 | .625 | .375 | .203 |
| HC-12 | .812 | .500 | .266 |

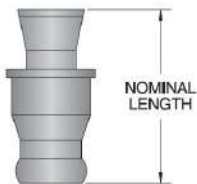
LOCK PINS

Negative Lock Pins



| Part Number | Dimensions (inches) | | | |
|-------------|---------------------|----------------|---------|-----------------|
| | Insert I.C. | Nominal Length | Thread | Hex Wrench Size |
| NL-23 | .250 | .328 | 8-32 | 1/16 |
| NL-33 | .375 | .344 | 10-32 | 5/64 |
| NL-33L | .375 | .406 | 10-32 | 5/64 |
| NL-34 | .375 | .453 | 10-32 | 5/64 |
| NL-34L | .375 | .516 | 10-32 | 5/64 |
| NL-44 | .500 | .516 | 1/4-28 | 3/32 |
| NL-46 | .500 | .672 | 1/4-28 | 3/32 |
| NL-46L | .500 | .730 | 1/4-28 | 3/32 |
| NL-58 | .625 | .859 | 5/16-24 | 1/8 |
| NL-68 | .750 | .859 | 3/8-24 | 9/64 |
| NL-68L | .750 | .953 | 3/8-24 | 9/64 |

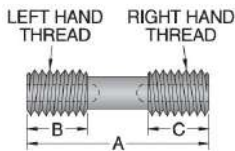
Positive Lock Pins



| Part Number | Dimensions (inches) | | |
|-------------|---------------------|----------------|-----------------|
| | Insert I.C. | Nominal Length | Hex Wrench Size |
| PL-46 | .500 | .672 | 3/32 |
| PL-68 | .750 | .859 | 9/64 |

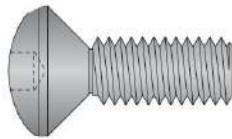
SCREWS

Finger Clamp Screws



| Part Number | Dimensions (inches) | | | | |
|-------------|---------------------|------|------|---------|-----------------|
| | A | B | C | Thread | Hex Wrench Size |
| XNS-36 | .750 | .250 | .250 | 10-32 | 3/32 |
| XNS-37 | .840 | .310 | .310 | 10-32 | 3/32 |
| XNS-47 | .875 | .280 | .280 | 1/4-28 | 1/8 |
| XNS-48 | 1.000 | .370 | .370 | 1/4-28 | 1/8 |
| XNS-58 | 1.000 | .500 | .280 | 5/16-24 | 5/32 |
| XNS-59 | 1.125 | .470 | .410 | 5/16-24 | 5/32 |
| XNS-510 | 1.250 | .500 | .500 | 5/16-24 | 5/32 |
| XNS-610 | 1.250 | .500 | .500 | 3/8-24 | 3/16 |

Bridge Clamp Screws



| Part Number | Dimensions (inches) | | |
|-------------|---------------------|--------|-----------------|
| | Length | Thread | Hex Wrench Size |
| SHC-7 | .375 | 8-32 | 3/32 |
| CS-94 | .580 | 10-32 | 1/8 |
| CS-96 | .840 | 10-32 | 1/8 |
| CS-126 | .860 | 1/4-28 | 5/32 |

Insert Torx Screws



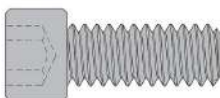
| Part Number | Dimensions (inches) | |
|-------------|---------------------|----------|
| | Insert I.C. | Torx Key |
| TS-25 | .250 | T-8 |
| TS-4 | .375 | T-15 |
| TS-32 | .375 | T-15 |
| TS-5 | .500 | T-25 |

Positive Seat Screws



| Part Number | Dimensions (inches) | |
|-------------|---------------------|----------|
| | Insert I.C. | Torx Key |
| TS-4 | .375 or .500 | T-15 |
| TS-6 | .500 or .750 | T-20 |
| TS-10 | .625 | T-25 |

Interchangeable Head Screws



| Part Number | Dimensions (inches) | |
|-------------|---------------------|---------|
| | Length | Thread |
| S319 | .750 | 8-32 |
| S322 | 1.250 | 8-32 |
| S327 | .750 | 10-24 |
| S330 | 1.250 | 10-24 |
| S337 | .750 | 1/4-20 |
| S340 | 1.250 | 1/4-20 |
| S350 | .750 | 5/16-18 |
| S353 | 1.250 | 5/16-18 |

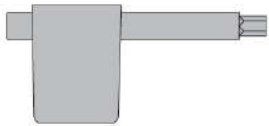
Seat Screws



| Part Number | Dimensions (inches) | | |
|-------------|---------------------|---------|-----------------|
| | Insert I.C. | Thread | Hex Wrench Size |
| S-34 | .375 | 10-32 | 5/64 |
| S-46 | .500 | 1/4-28 | 3/32 |
| S-58 | .625 | 5/16-24 | 1/8 |
| S-68 | .750 | 3/8-24 | 9/64 |
| S-810 | 1.000 | 7/16-20 | 5/32 |

TORX KEYS AND WRENCHES

Torx Keys



| Part Number | Screw Compatibility |
|-------------|--------------------------------------|
| TK-8 | TS-25.45-6M2 |
| TK-10 | TS-4, TS-44-3M, TS-44-4M |
| TK-15 | TS-4.7-8M1, TS-4.7-10M1, TS-35.6-9M1 |
| TK-20 | TS-6, TS-83-4M1, TS-5.8-10M1 |
| TK-25 | TS-10 |

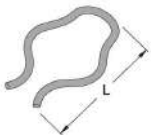
Torx Wrenches



| Part Number | Screw Compatibility |
|-------------|--------------------------------------|
| TW-8 | TS-25.45-6M2 |
| TW-10 | TS-4, TS-44-3M, TS-44-4M |
| TW-15 | TS-4.7-8M1, TS-4.7-10M1, TS-35.6-9M1 |
| TW-20 | TS-6, TS-83-4M1, TS-5.8-10M1 |
| TW-25 | TS-10 |

CLIPS

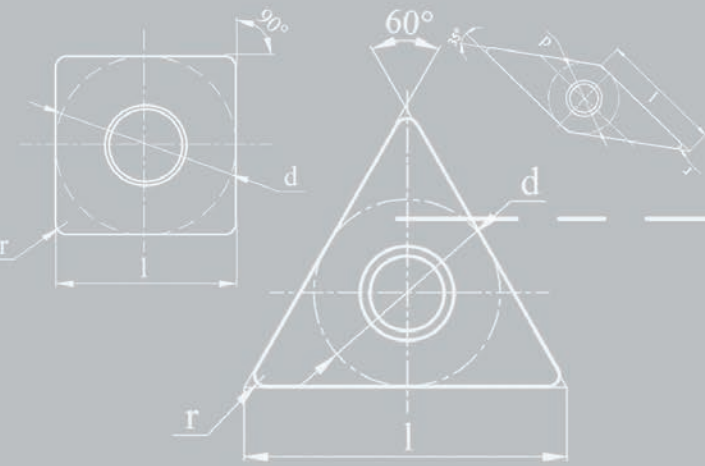
Bridge Clamp Screw Clips



| Part Number | Dimensions (inches) |
|-------------|---------------------|
| | Length (L) |
| CLIP-9 | .312 |
| CLIP-12 | .422 |

TECHNICAL INFORMATION

MACHINING PARAMETERS FOR TURNING OPERATIONS



r



Spindle speed, n (rpm)

$$n = \frac{3.82 \times v_c}{D}$$

Cutting speed, v_c (ft / min)

$$v_c = .262 \times D \times n$$

Feed rate, v_f (in / min)

$$v_f = n \times f_n$$

Machining time, t (min)

$$t = \frac{l_m}{v_f}$$

Metal removal rate, Q (in³ / min)

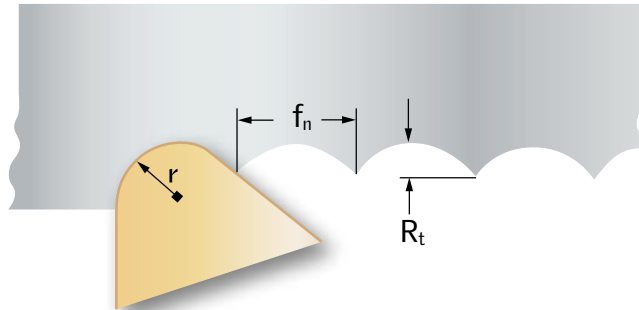
$$Q = v_c \times a_p \times f_n \times 12$$

| | | |
|----------------|---------------------|--------------------------|
| a _p | depth of cut | inches |
| D | workpiece diameter | inches |
| f _n | feed per revolution | inches |
| l _m | machined length | inches |
| n | spindle speed | rev/min |
| Q | metal removal rate | inches ³ /min |
| t | machining time | minutes |
| v _c | cutting speed | feet/min |
| v _f | feed rate | inches/min |

The machined surface and tolerances achieved on components are directly affected by both the insert nose radius and the feed rate.

From a strictly theoretical perspective, surface roughness can be calculated from the following formula:

$$R_t = \frac{f_n^2 \times 10^6}{8 \times r}$$



Where R_t = Theoretical Profile Depth, μ inches
 f_n = feed / rev, inches
 r = insert nose radius, inches

The following table presents feed values for common insert nose radius sizes and surface roughness requirements:

| R_t , μ inch | feed f_n , inches / rev | | | | |
|--------------------|---------------------------|--------------|--------------|--------------|--------------|
| | $r = 1/64''$ | $r = 1/32''$ | $r = 3/64''$ | $r = 1/16''$ | $r = 3/32''$ |
| 16 | .0015 | .002 | .0025 | .003 | .0035 |
| 32 | .002 | .003 | .0035 | .004 | .005 |
| 63 | .003 | .004 | .005 | .0055 | .007 |
| 125 | .004 | .0055 | .007 | .008 | .010 |
| 250 | .0055 | .008 | .010 | .011 | .014 |
| 500 | .008 | .011 | .014 | .016 | .019 |

The maximum feed per rev can be determined from the table by selecting the nose radius and specified surface roughness requirement.

For example, **Surface roughness requirement $R_t = 63 \mu$ inches**

Insert nose radius $r = 1/32''$

Theoretical starting point for feed $f_n \Rightarrow .004$ inches / rev

When selecting the feed for finishing to a specified level of surface roughness, the feed values provided in the table should not be exceeded. In general the feed in a finishing operation should be kept low in order to produce an acceptable component finish.

| TENSILE STRENGTH | HARDNESS | | |
|------------------|----------|------------|------------|
| | MPa | Brinell HB | Vickers HV |
| 530 | 156 | 165 | |
| 560 | 166 | 175 | |
| 595 | 176 | 185 | |
| 625 | 185 | 195 | |
| 660 | 195 | 205 | |
| 690 | 204 | 215 | |
| 720 | 214 | 225 | |
| 740 | 219 | 230 | |
| 755 | 223 | 235 | |
| 770 | 228 | 240 | 20.3 |
| 785 | 233 | 245 | 21.3 |
| 800 | 238 | 250 | 22.2 |
| 820 | 242 | 255 | 23.1 |
| 835 | 247 | 260 | 24.0 |
| 850 | 252 | 265 | 24.8 |
| 865 | 257 | 270 | 25.6 |
| 880 | 261 | 275 | 26.4 |
| 900 | 266 | 280 | 27.1 |
| 915 | 271 | 285 | 27.8 |
| 930 | 276 | 290 | 28.5 |
| 950 | 280 | 295 | 29.2 |
| 965 | 285 | 300 | 29.8 |
| 995 | 295 | 310 | 31.0 |
| 1030 | 304 | 320 | 32.2 |
| 1060 | 314 | 330 | 33.3 |
| 1095 | 323 | 340 | 34.4 |
| 1125 | 333 | 350 | 35.5 |
| 1155 | 342 | 360 | 36.6 |
| 1190 | 352 | 370 | 37.7 |
| 1220 | 361 | 380 | 38.8 |
| 1255 | 371 | 390 | 39.8 |
| 1290 | 380 | 400 | 40.8 |
| 1320 | 390 | 410 | 41.8 |
| 1350 | 399 | 420 | 42.7 |
| 1385 | 409 | 430 | 43.6 |
| 1420 | 418 | 440 | 44.5 |
| 1455 | 428 | 450 | 45.3 |

| TENSILE STRENGTH | HARDNESS | | |
|------------------|----------|------------|------------|
| | MPa | Brinell HB | Vickers HV |
| 1485 | 437 | 460 | 46.1 |
| 1520 | 447 | 470 | 46.9 |
| 1555 | 456 | 480 | 47.7 |
| 1595 | 466 | 490 | 48.4 |
| 1630 | 475 | 500 | 49.1 |
| 1665 | 485 | 510 | 49.8 |
| 1700 | 494 | 520 | 50.5 |
| 1740 | 504 | 530 | 51.1 |
| 1775 | 513 | 540 | 51.7 |
| 1810 | 523 | 550 | 52.3 |
| 1845 | 532 | 560 | 53.0 |
| 1880 | 542 | 570 | 53.6 |
| 1920 | 551 | 580 | 54.1 |
| 1955 | 561 | 590 | 54.7 |
| 1995 | 570 | 600 | 55.2 |
| 2030 | 580 | 610 | 55.7 |
| 2070 | 589 | 620 | 56.3 |
| 2105 | 599 | 630 | 56.8 |
| 2145 | 608 | 640 | 57.3 |
| 2180 | 618 | 650 | 57.8 |
| | | 660 | 58.3 |
| | | 670 | 58.8 |
| | | 680 | 59.2 |
| | | 690 | 59.7 |
| | | 700 | 60.1 |
| | | 720 | 61.0 |
| | | 740 | 61.8 |
| | | 760 | 62.5 |
| | | 780 | 63.3 |
| | | 800 | 64.0 |
| | | 820 | 64.7 |
| | | 840 | 65.3 |
| | | 860 | 65.9 |
| | | 880 | 66.4 |
| | | 900 | 67.0 |
| | | 920 | 67.5 |
| | | 940 | 68.0 |

Metalcutting Safety

Read before using the tools in this catalog!

Projectile and Fragmentation Hazards:

Modern metalcutting operations involve high spindle and cutter speeds and high temperatures and cutting forces. Hot metal chips may fly off the workpiece during metalcutting. Although cutting tools are designed and manufactured to withstand high cutting forces and temperatures, they can sometimes fragment, particularly if they are subjected to over-stress, severe impact, or other abuse. Many variables affect machining operations. It is impossible to cover every specific situation. The technical information included in this catalog and recommendations on machining practices may not apply to your particular operation. As sold and under normal conditions of use, hardmetal products and tools do not present inhalation, ingestion or other chemical hazards. The health hazards relate only to hardmetal powder. Under normal conditions of use, operations involving hardmetal products and tools do not result in the release of hardmetal powder (either in the form of dusts or fumes) and do not present inhalation, ingestion or other chemical hazards.

To avoid injury:

- Always wear appropriate personal protective equipment, including safety goggles, when operating metalcutting machines or working nearby.
- Always make sure all machine guards are in place.

Breathing and Skin Contact Hazards:

Grinding carbide or other advanced cutting tool materials produces dust or mist containing metallic particles.

To avoid injury:

- If grinding, read the applicable Material Safety Data Sheet and consult General Industry Safety and Health Regulations, Part 1910, Title 29 of the Code of Federal Regulations. These safety instructions are general guidelines.

Although we have attempted to provide current and accurate information herein, we make no representations regarding the accuracy or the completeness of the information and assume no liability for any loss, damage, or injury of any kind which may result from or arise out of the use of or reliance on the information by any person.

What we offer

- Competitively priced, high-quality American-made carbide products
- Stocking programs for high-volume items and specials
- Friendly 24/7 service from a knowledgeable team
- Carbide recycling via our sister company, Tungsten Carbide Recycling, LLC
- Commitment to improving the lives of our active military, veterans, and first responders through local and national charities

Our mission

We have a lifelong respect for the sacrifices our nation's military and first responders make to keep our country safe and free. It is the mission of AmeriServ Supply to support these heroes by donating a portion of our profits to charities benefiting these elite groups. Every dollar we earn means we're helping the lives of these incredible people.

