DORIAN INTERNATIONAL TOOL

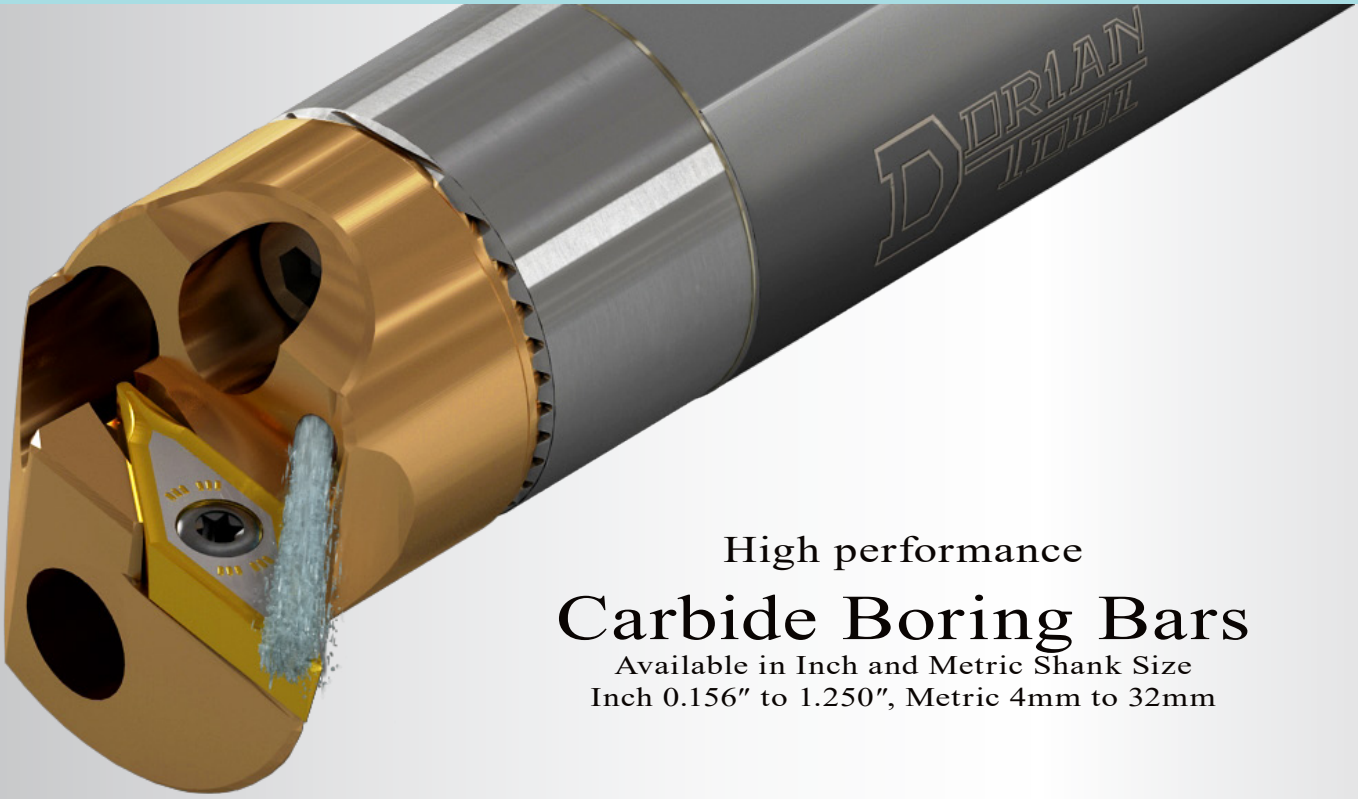
The First Choice TECHNOLOGY

Solution Tool!™

No! Vibration Tunable Boring Bars
& High Performance Carbide Boring Bars

Solution Tool !™

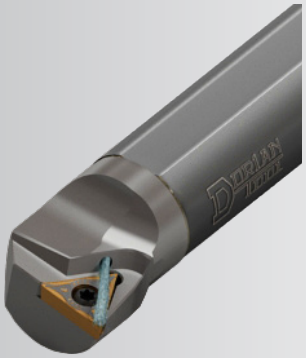
Makes Deep Hole Boring Simple!



High performance

Carbide Boring Bars

Available in Inch and Metric Shank Size
Inch 0.156″ to 1.250″, Metric 4mm to 32mm



Thru Coolant Integral Carbide Boring System
Shank Size 0.156″ to 1.250″
& (4mm to 32mm)

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Thru Coolant Integral Jet-Stream™ Carbide Boring System
Shank Size 1.000″ to 1.250″
& (25mm to 32mm)

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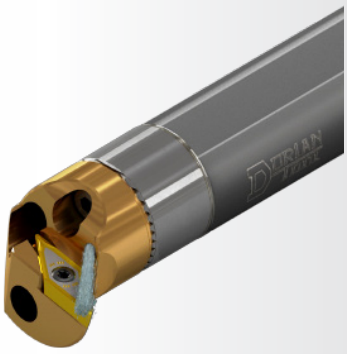

Quick Change Modular Carbide Boring System
Shank Size 0.750″ to 1.250″
& (20mm to 32mm)

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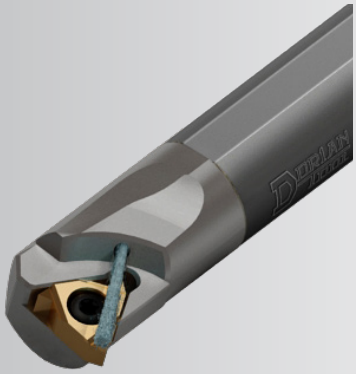

Thru Coolant Integral Carbide Threading System
Shank Size 0.218 to 0.750″
& (6mm to 20mm)

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Thru Coolant Integral Jet-Stream™ Carbide Threading System
Shank Size 0.750″ to 1.250″
& (20mm to 32mm)

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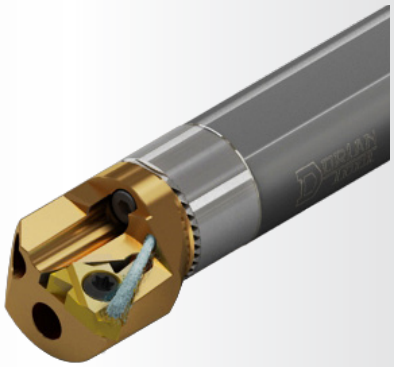

Quick Change Modular Carbide Threading System
Shank Size 0.750″ to 1.250″
& (20mm to 32mm)

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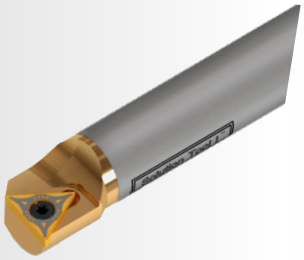
Solution Tool!™
The NO! Vibration Tunable Boring Bars

Available in Inch and Metric Shank Size
Inch 0.25" to 4.00″, Metric 6mm to 100mm



Solution Tool!™ Integral
The NO! Vibration Tunable Boring System
Shank Size 0.25 to 0.625″
& (6mm to 16mm)

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Solution Tool!™ Quick Change Modular
The NO! Vibration Tunable Boring System
Shank Size 0.750″ to 1.250″
& (20mm to 32mm)

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Solution Tool!™ Modular Jet-Stream™
The NO! Vibration Tunable Boring System
Shank Size 1.500″ to 4.00″
& (40mm to 100mm)

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Solution Tool!™ Quick Change Modular
The NO! Vibration Tunable Threading System
Shank Size 0.750″ to 1.250″
& (20mm to 32mm)

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Solution Tool!™ Modular Jet-Stream™
The NO! Vibration Tunable Threading System
Shank Size 1.500″ to 4.00″
& (32mm to 100mm)

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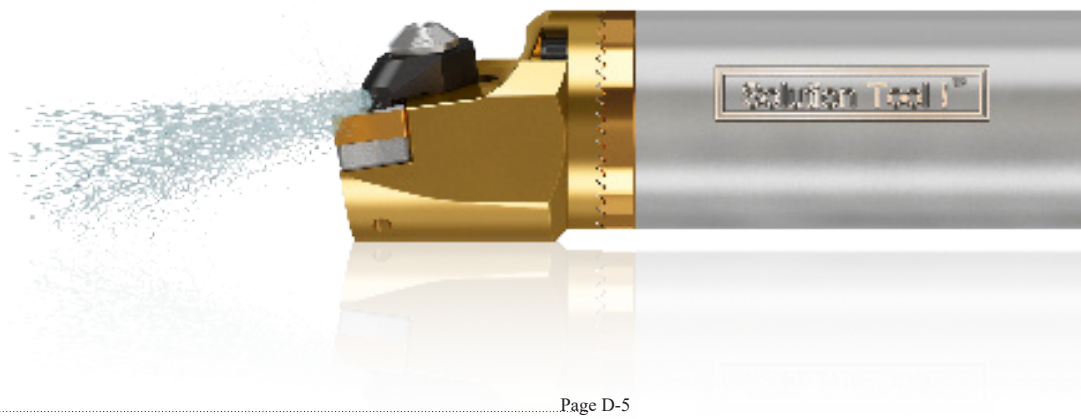
Technical Support for Deep Hole Boring

Solution Tool!™ The NO! Vibration Tunable Bars & High Performance Carbide Bars

For Multi Boring &
Threading Operations



Technical Support

Deep Hole Boring Application Form ..... Page D-5

Deep Hole Boring Operation ..... Page D-6 - D-7

Deep Hole Boring Solutions ..... Page D-8 - D-14, D-48

Carbide Boring & Threading Bar Technology

Integral Thru Coolant Carbide
Boring Bar System ..... 6 x Dia. Boring Ratio ..... Page D-15 - D-29

Integral Thru Coolant Carbide
Threading Bar System ..... 6 x Dia. Threading Ratio ..... Page D-30 - D-31

Integral Jet-Stream™ Thru Coolant Carbide
Boring Bar System ..... 6 x Dia. Boring Ratio ..... Page D-33 - D-36

Integral Jet-Stream™ Thru Coolant Carbide
Threading Bar System ..... 6 x Dia. Threading Ratio ..... Page D-37 - D-38

Quick Change Modular Carbide
Boring & Threading Bar System ..... 6 x Dia. Boring Ratio ..... Page D-39 - D-46

Solution Tool!™ The NO! Vibration Tunable Boring & Threading Bars

Solution Tool!™ Integral
The NO! Vibration Tunable Boring System ..... 8 x Dia., 10 x Dia., 12 x Dia., 14 x Dia. Boring Ratio ..... Page D-49 - D-67

Solution Tool!™ Quick Change
The NO! Vibration Tunable Boring & Threading Bar System ..... 8 x Dia., 10 x Dia., 12 x Dia., 14 x Dia. Boring Ratio ..... Page D-68 - D-79

Solution Tool!™ Modular Jet-Stream™
The NO! Vibration Tunable Boring & Threading Bar System ..... 8 x Dia., 10 x Dia., 12 x Dia., 14 x Dia. Boring Ratio ..... Page D-80 - D-92

High Pressure Coolant System Spare Parts

High Pressure Coolant System Spare Parts ..... Page D-93

Deep Hole Boring Application Form for Carbide & Solution Tool! ™ Boring Bars

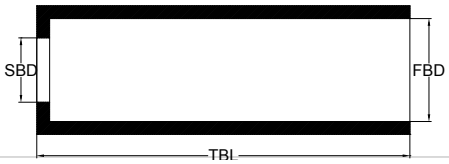
When selecting a cutting tool & insert you must check the appropriate boxes below and fax to 979-282-2951 or e-mail: sales@doriantool.com

Select Your Deep Hole Boring Operation:					
1. Boring			4. Back Face		
2. Under-Cut			5. Grooving		
3. Profiling			6. Threading		

Select Your Material:	
P	Carbon & Alloy Steel
M	Stainless Steel
K	Cast Iron
N	Al. and non Ferrous Materials
S	High Temp Super Alloy
H	Hardened Material

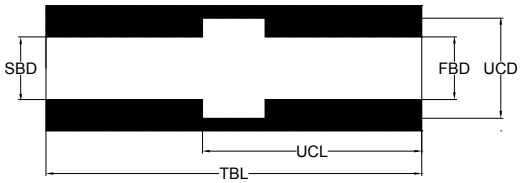
Company Name:	**Contact Name:**
Phone No: ( )	**E-mail:**

1. Straight — Boring Specification



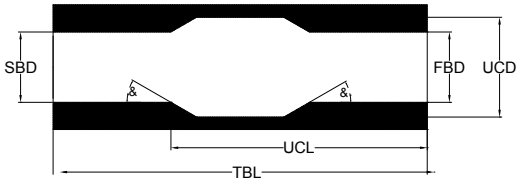
Boring Description		Inch	Metric
SBD	Starting Bore Diameter		
FBD	Finished Bore Diameter		
TBL	Total Bore Length		
Recommended Boring Bars and Tools		**Description**	**UPC 733101-**
	Boring Bar		
	Boring Bar Head		
	Insert		

2. Under-Cut — Boring Specification



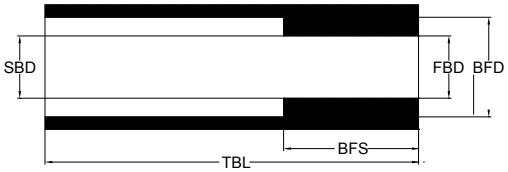
Boring Description		Inch	Metric
SBD	Starting Bore Diameter		
FBD	Finished Bore Diameter		
TBL	Total Bore Length		
UCD	Under-Cut Diameter		
UCL	Under-Cut Distance		
Recommended Boring Bars and Tools		**Description**	**UPC 733101-**
	Boring Bar		
	Boring Bar Head		
	Insert		

3. Profiling — Boring Specification



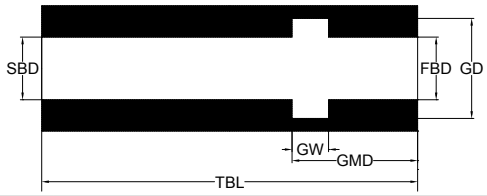
Boring Description		Inch	Metric
SBD	Starting Bore Diameter		
FBD	Finished Bore Diameter		
TBL	Total Bore Length		
UCD	Under-Cut Diameter		
UCL	Under-Cut Distance		
&°	Angle Profile		
Recommended Boring Bars and Tools		**Description**	**UPC 733101-**
	Boring Bar		
	Boring Bar Head		
	Insert		

4. Back Face — Boring Specification



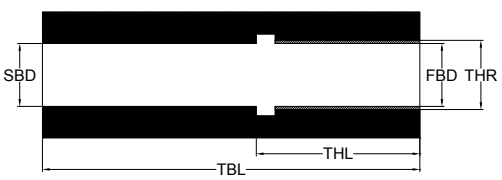
Boring Description		Inch	Metric
SBD	Starting Bore Diameter		
FBD	Finished Bore Diameter		
TBL	Total Bore Length		
BFD	Back Face Diameter		
BFS	Back Face Shoulder		
Recommended Boring Bars and Tools		**Description**	**UPC 733101-**
	Boring Bar		
	Boring Bar Head		
	Insert		

5. Grooving — Boring Specification



Boring Description		Inch	Metric
SBD	Starting Bore Diameter		
FBD	Finished Bore Diameter		
TBL	Total Bore Length		
GD	Groove Diameter		
GW	Groove Width		
GMD	Groove Max. distance		
Recommended Boring Bars and Tools		**Description**	**UPC 733101-**
	Boring Bar		
	Boring Bar Head		
	Insert		

6. Threading — Boring Specification



Boring Description		Inch	Metric
SBD	Starting Bore Diameter		
FBD	Finished Bore Diameter		
TBL	Total Bore Length		
THR	Thread Dimension		
THL	Thread Length		
Recommended Boring Bars and Tools		**Description**	**UPC 733101-**
	Boring Bar		
	Boring Bar Head		
	Insert		

Deep Hole Boring Operation

1. Workholding

Use the proper chuck and jaws to hold the work-piece, to assure that the part is held with maximum rigidity and stability under cutting force.

2. Steady Rest

When boring a long part, it is necessary to have extra support from the steady rest to eliminate any deflection of the part under the cutting force that causes vibration and poor surface finish.

3. Boring Bar Size

Choose a boring bar with the largest diameter to clear the bore, maximizing rigidity. Make sure to provide enough clearance between the bore and the bar for chip evacuation so damaging does not occur on the bore wall. Also choose the shortest overhang to reduce vibration.

4. Boring Bar Holding

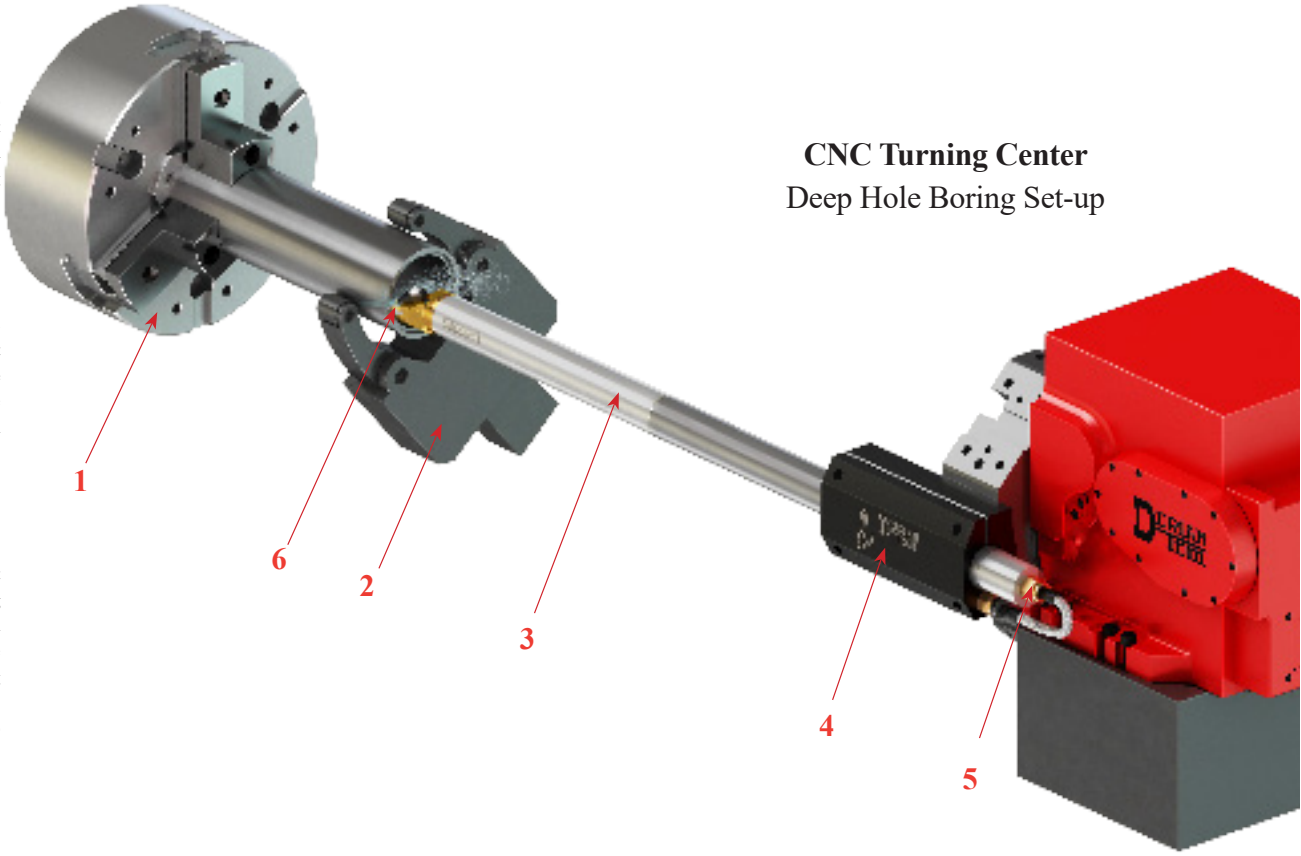
For best results, hold the bar 4 x Dia. & choose a split collar boring bar holder. The 360° locking system offers the largest surface contact between the boring bar and the holder, maximizing bar rigidity and minimizing vibration.

5. Coolant System

It is very important that the bore is kept clean and free of chips while cutting to avoid surface damage and insert to breakage. Use high pressure coolant with the boring bar to flush the chips out while cutting.

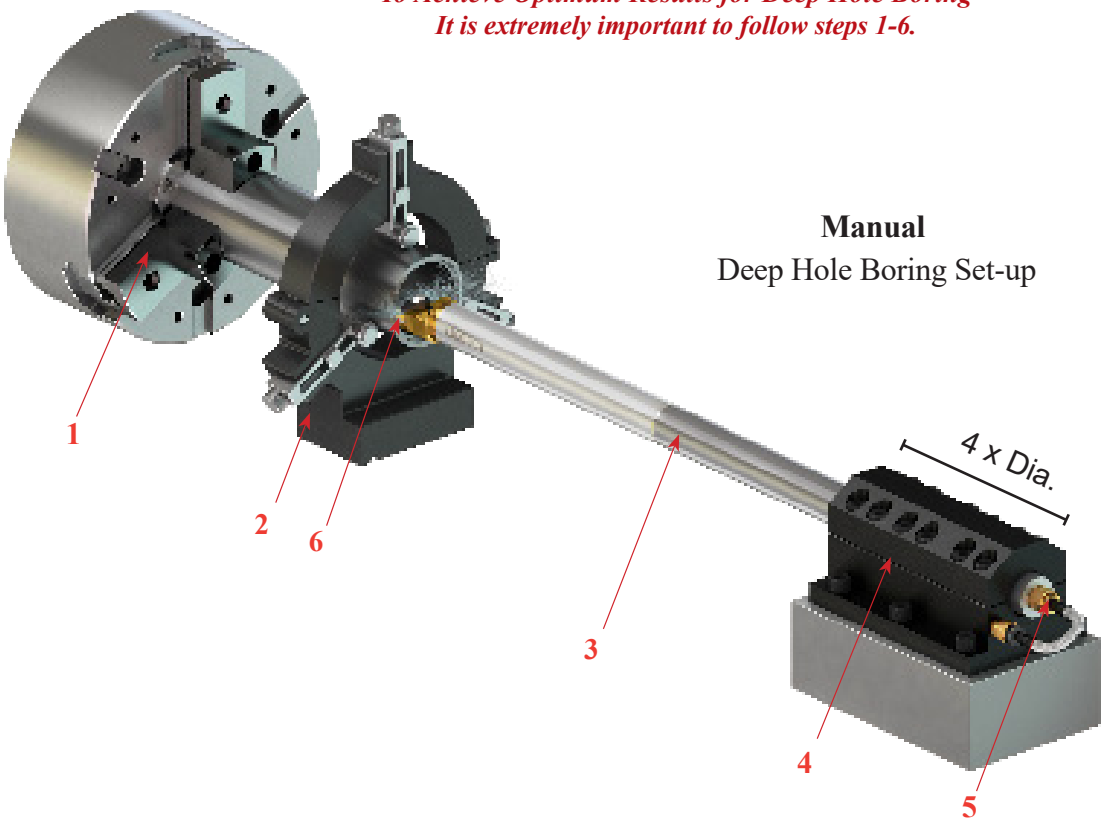
6. Insert

To avoid and reduce vibration of the bar, that causes chattering. Use the insert with the as small of an angle geometry possible, small nose radius, high positive rake angle and sharp cutting edge.



CNC Turning Center
Deep Hole Boring Set-up

To Achieve Optimum Results for Deep Hole Boring
It is extremely important to follow steps 1-6.



Manual
Deep Hole Boring Set-up

Deep Hole Boring Operation

IN A DEEP HOLE BORING OPERATION:

- The diameter size of the boring bar is limited from the size of the hole diameter to be bored.
- The boring bar should have the largest diameter possible for maximum cutting rigidity, but small enough to clear the hole for chip evacuation.
- The Boring Bar has to be held with the maximum rigidity and the shortest overhang possible to maximize cutting stability and minimize vibration.
- The selection and use of the right insert grade, geometry, nose radius and rake angle will be critical for a good surface finish and close working tolerance.
- The cutting parameter is to be correct for the material machined in accordance of the insert manufacturing cutting data.
- The hole, while machined has to be kept clear from chips to avoid tool breakage, boring bar vibration and the walls of the work piece undamaged.

THE COMMON DEEP HOLE BORING OPERATION PROBLEMS:
Poor Surface Finish, Poor Machining Tolerance & Poor Insert Life

THE COMMON CAUSE:

1) Boring Bar Cutting Ratio:
If the incorrect boring bar cutting ratio is used, the boring bar will not perform.

2) Boring Bar Holding System:
When boring bar is not held properly and rigid on to the boring bar holder, vibration will develop when cutting.

3) Boring Bar Diameter:
To small boring bar diameter will deflect under pressure and vibrate, to large boring bar diameter, will obstruct the evacuation of the chips.

4) Boring Overhang:
The boring bar is over extended (Steel 4 x Dia., Carbide 6 x Dia.,Solution Tool!™ (The NO! Vibration Tunable Boring Bar) 8 x Dia., and over).

5) Incorrect Insert:
Incorrect insert grade geometry for the boring operation with incorrect nose radius, rake angle, chip break, and clearance angle.

6) Cutting Parameter:
Wrong cutting parameters are used for the specific work piece material to be cut, and for the operation to be executed.

7) Chip Clogging:
Chips are clogged in to the work piece bore jamming the insert, wrapping around the boring bar, and thrown against the wall.

1) Bar Cutting Ratio Deep Hole Boring Solution:

Problem

Boring Bar Cutting Ratio: If the incorrect boring bar cutting ratio is used, the boring bar will not perform.

Solution: Choose the correct boring bar cutting Ratio for optimum performance

Boring Depth: The depth of the machining bore determines on the style and the type material of the boring bar.
The general rule for boring bar depth is steel bar boring have a short depth, carbide bars have a medium depth, and anti vibration tunable boring bars have a long depth.

The Max. Boring Bar Overhangs: The maximum extended length of the boring bar before loss of rigidity and the start of vibration with poor cutting performance.

Boring Bar Overhangs: Is the distance measured from the face of the Boring Bar Holder to the Insert Cutting Edge,

Boring Bar Cutting Ratio: Maximum cutting length of the boring bar in relation to it own body diameter.
Ex.: 1" (25mm) Boring Bar with 10 x Dia. Ratio, Maximum cutting length is 10" (250mm)

Threading Bar Cutting Ratio: When threading the radial force is higher then boring, the threading Ratio is reduced considerably over boring.

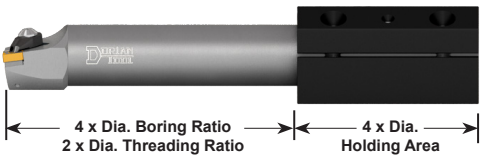
If the incorrect boring bar cutting ratio is used, the boring bar will not perform.

Maximum Boring & Threading Ratio According to Steel or Carbide Bar Material

Steel Bar

4 x Dia. Boring Ratio
2 x Dia. Threading Ratio

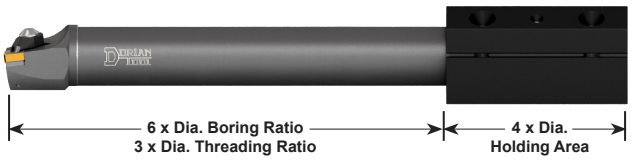
- General boring bar applications
- Roughing to finishing
- Stable for high material removal
- Poor for small bores



Carbide Bar

6 x Dia. Boring Ratio
3 x Dia. Threading Ratio

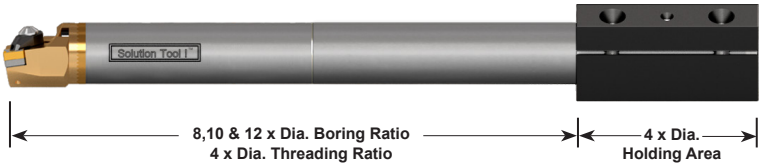
- Best for boring small holes
- Rigid for close tolerance and furnace finish
- Rigid for heavy material removal at high ap and fn



Steel Body (Solution Tool!™)

8 x Dia., 10 x Dia., 12 x Dia. Boring Ratio
4 x Dia. Threading Ratio

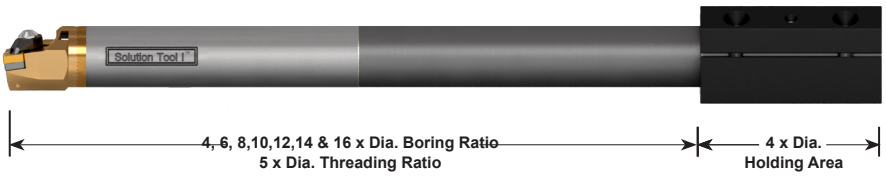
- For deep hole boring applications



Carbide Body (Solution Tool!™)

8 x Dia., 10 x Dia., 12 x Dia., 14 x Dia. Boring Ratio
5 x Dia. Threading Ratio

- For high performance deep hole boring applications



2) Bar Holding System Deep Hole Boring Solution:

Problem

Boring Bar Holding System: When boring bar is not held properly and rigid on to the boring bar holder, vibration will develop when cutting with poor surface finish, tolerance, and insert life.

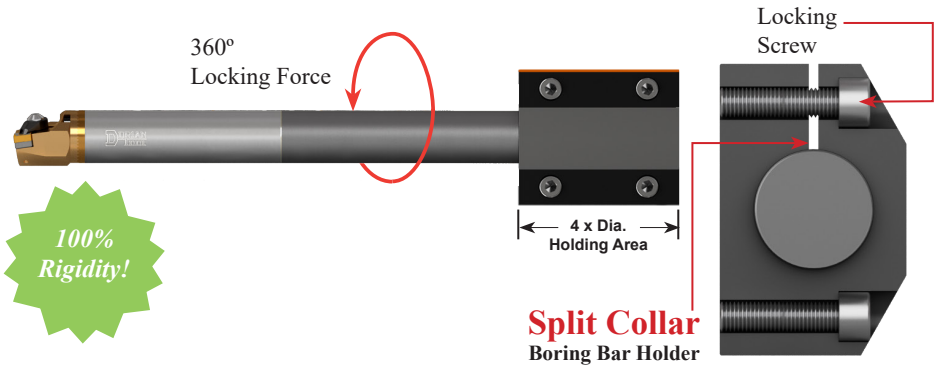
Solution: When holding the boring bar, the boring bar holder must:

1. Have a Precise and smooth bore
2. Use the most rigid holding system of the boring bar
3. Have a holding length of the boring bar at 4 x boring bar diameter

BEST

Split Collar Holding System
Boring Bar Holding System

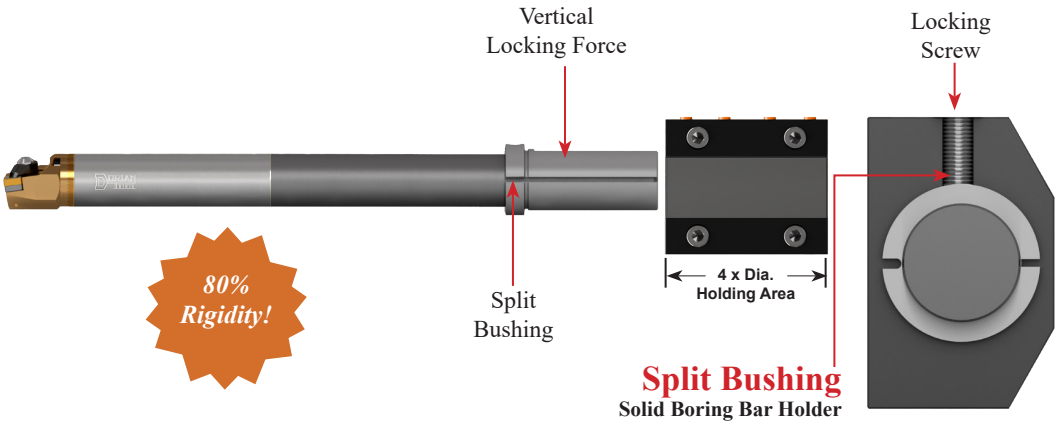
Locks the boring bar at 360º on the diameter, assuring the most rigidity and precise boring bar positioning ***Without scarring or damaging the bar surface.***



GOOD

Split Bushing Holding System
With a solid boring bar holder

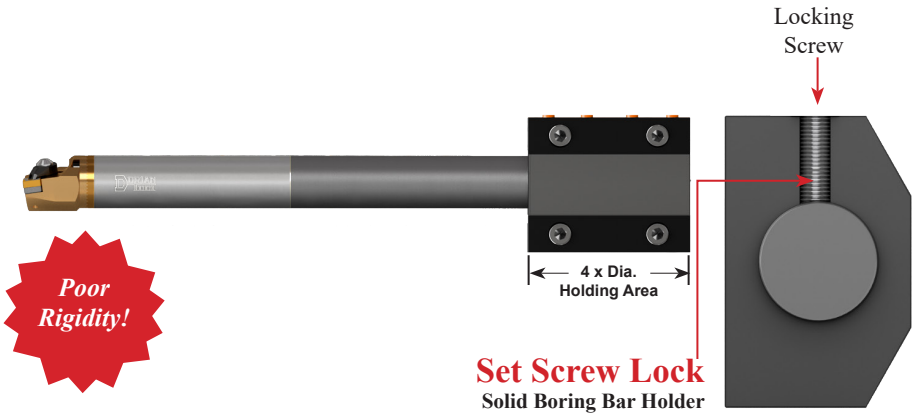
The split bushing embraces the boring bar at 360º on the diameter. The screw will squeeze the bushing around the boring bar ***Without scarring or damaging the bar surface with precise positioning.***



STOP Do Not Use It

Set Screw Lock Holding System
Solid boring bar holder
Without bushing

Never lock the screw over the boring bar. Locking a screw over the boring bar will create only one point of contact causing very poor rigidity. Additionally, the ***screw will damage the boring bar surface and make positioning difficult.***



3) Bar Diameter Deep Hole Boring Solution:

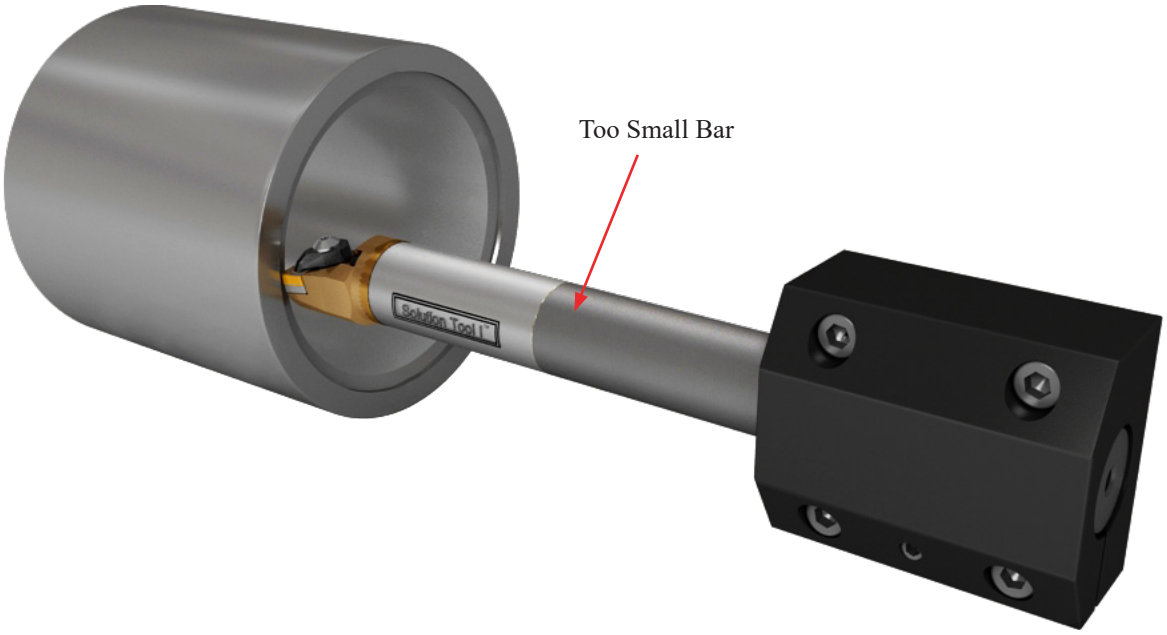
Problem

Boring Bar Diameter: To small boring bar diameter will deflect under pressure and vibrate, Too large boring bar diameter, will obstruct the evacuation of the chips

Solution: Use the largest boring bar for rigidity and performance, but small enough for the chips to evacuate

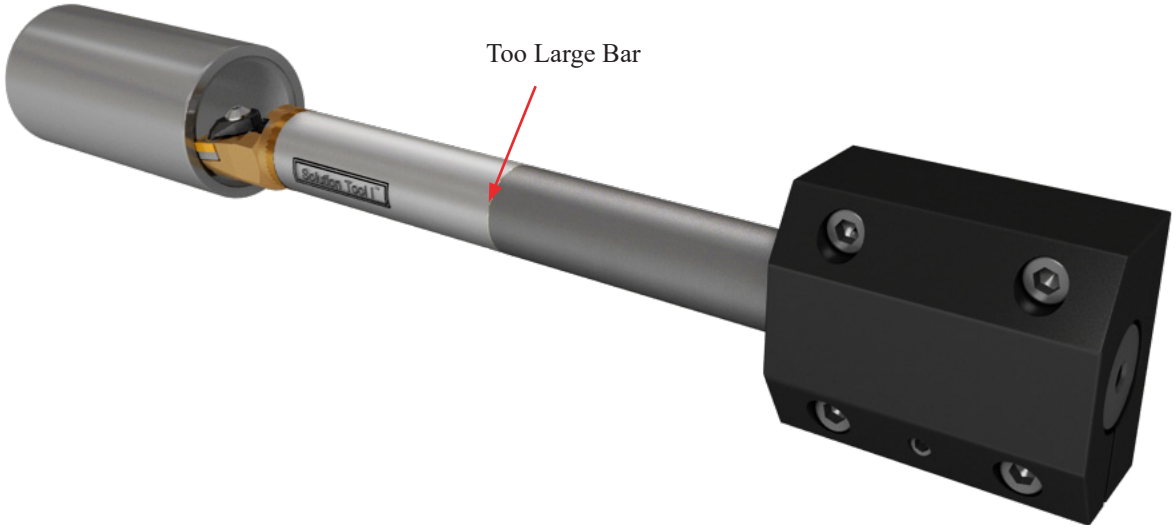
Small Boring Bar Diameter: If the diameter of the boring is to small, it has no rigidity to Withstand the tangential and radial forces that generate under the cutting pressure. The bar will be easily pushed down below the center line, and deflect away from the cutting wall. When this occurs, the boring bar is not any more in control of the boring operation to a point that the boring bar will vibrate with poor surface finish, poor machining tolerance, and short insert life.

Use the largest boring bar possible that clears the bore diameter and allows chips evacuation



Large Boring Bar Diameter: If the diameter of the boring is to large, there will be no clearance between the bore diameter and the boring bar body, making impossible for the chips to evacuate. The chips will be jammed against the wall of the hole and the boring bar, damaging the work piece wall destroying the insert.

Use a smaller boring bar Without losing rigidity and to allow the chips to evacuate.



4) Bar Overhang and Deflection Deep Hole Boring Solution:

Problem

Boring Overhang: The boring bar is over extended, exceeding the overhang limit built for.

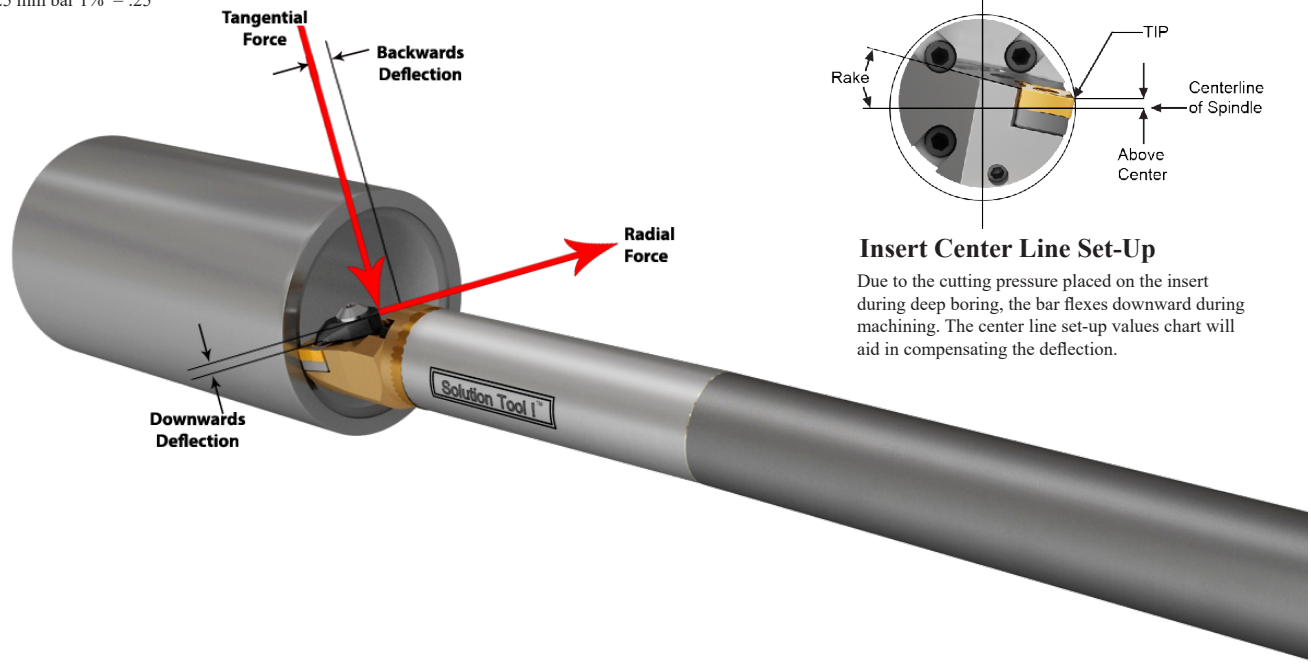
Boring Bar Deflection: The bar under the Cutting Pressure will deflect.

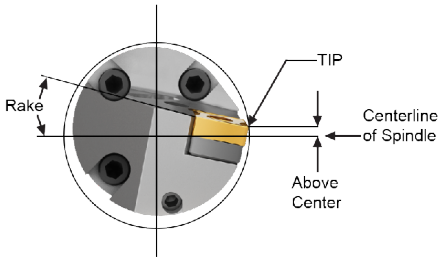
Overhang Solution: Use and set the boring bar to the correct overhang that is built for; Steel Boring bar 4 x Dia., Carbide 6 x Dia., Solution Tool!™ NO! Vibration Tunable Boring Bar Steel Body 8 x Dia.,10 x Dia., Carbide 12 x Dia., and 14 x Dia..

Deflection Solution: Place the insert cutting edge above the center line. 10% diameter of bar.

Example: 1" inch bar 1% = .010

25 mm bar 1% = .25





Insert Center Line Set-Up

Due to the cutting pressure placed on the insert during deep boring, the bar flexes downward during machining. The center line set-up values chart will aid in compensating the deflection.

In the Boring Operation, the Boring Bar is to Withstand all the stress derived from the cutting force. In a long depth of cut, the stress is multiplied with a long overhang of the boring bar. The boring bar becomes unstable and very flexible under the cutting force.

When the Boring Bar is cutting, the Tangential and the Radial cutting force applied over the cutting edge of the insert will push the Boring Bar below the center line and away from the cutting wall. The Tangential Force generate under the cutting operation will increase with the depth of cut and feed rate in pushing the insert below the center line.

The insert clearance angle will be reduce, and the body of the insert will make contact with the cutting wall creating interference and friction with poor cutting results.

The Radial Force will push the insert away from the cutting surface creating an harmonic or weaving reaction.

The insert cutting edge, will be moving in and out from the cutting wall surface. The deflection of the boring bar is direct related to the overhang of the boring bar and the depth of cut and feed rate.

Use the shortest overhang boring bar possible to minimize deflection and maximize cutting performance.

Solution Tool! ™ Center line Set-up Values Chart (Inch)

Bar Size	Nominal	Insert Set-Up Above Center Line*			Depth of Cut	
Dia. (in.)	Center (in.)	Finish	Rough	Rough/Finish	Finishing	Roughing
0.500	0.250	.005	.010	.0075	.001"	.020"
0.625	0.3125	.006	.012	.009	.001"	.030"
0.750	0.3750	.007	.014	.021	.001"	.050"
1.000	0.500	.010	.020	.015	.001"	.070"
1.250	0.625	.012	.024	.018	.001"	.075"
1.500	0.750	.015	.030	.0225	.002"	.080"
1.750	0.8750	.0175	.035	.026	.002"	.085"
2.000	1.000	.020	.040	.030	.002"	.090"
2.500	1.250	.025	.050	.0375	.002"	.095"
3.000	1.500	.030	.060	.045	.003"	.100"
4.000	2.000	.040	.080	.060	.003"	.120"

Solution Tool! ™ Center line Set-up Values Chart (Metric)

Bar Size	Nominal	Insert Set-Up Above Center Line*			Depth of Cut	
Dia. (mm)	Center (mm)	Finish	Rough	Rough/Finish	Finishing	Roughing
12	6	.2	.4	.3	.025	.50
16	8	.25	.5	.375	.025	.75
20	10	.3	.6	.45	.025	1.2
25	12.5	.35	.7	.5	.025	1.7
32	16	.4	.8	.6	.025	1.8
40	20	.45	.9	.7	.050	2.0
N/A	N/A	N/A	N/A	N/A	N/A	N/A
50	25	.5	.10	.75	.050	2.1
60	30	.6	.12	.9	.050	2.3
80	40	.8	.16	.12	.075	2.5
100	50	1.0	2.0	1.5	.075	3.0

The above values can change depending on different aspects of machining.
For example a sharper insert will deflect less. Use table as reference only, as actual values may need to be adjusted as necessary.

5) Incorrect Insert Deep Hole Boring Solution:

Problem

Use of Incorrect Insert: Incorrect insert grade and geometry for material or operation excited and/or any other insert characteristics of the insert, such as nose radius, rake angle, chip break clearance angle, and cutting leading angle, can contribute to the cutting problems.

Solution: Use the correct insert grade, geometry and characteristics for the material to be machined and the operation to be executed.

For a **Finishing** operation and small depth of cut, use a wear resistant grade insert with a positive rake angle, small nose radius,sharp cutting edge, large chip break, and clearance angle. If the insert is to hard, it will chip and break under the cutting pressure, and vibration will develop. Switch to a softer grade.

For a **Roughing** operation and large depth of cut, use an impact resistant insert with a positive rake angle, medium to large nose radius, honed cutting edge, large chip break, and clearance angle. If the insert is to soft it will wear prematurely, and friction will develop loosing tolerance and good surface finish, switch to a harder grade.

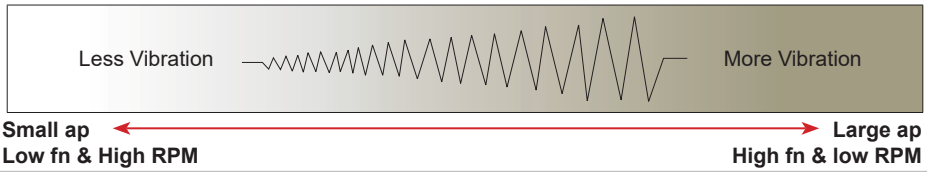
Minimum depth of cut is 1/2 of the insert radius. Maximum feed rate is 1/2 of the insert radius.

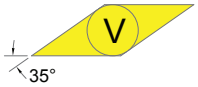
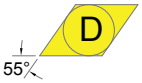
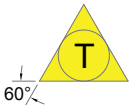
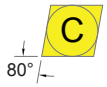
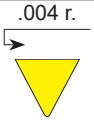
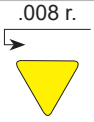
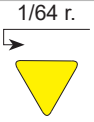
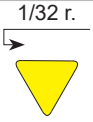
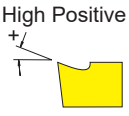
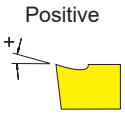
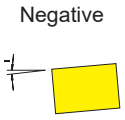
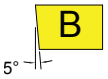
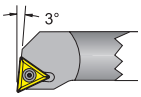
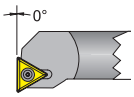
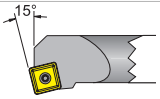
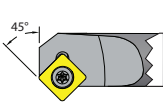
For a **Deep Boring** operation, always use a Solution Tool!™ boring bar with a high positive and sharp cutting edge insert.

Use the smallest insert angle geometry for the operation, like;
"V" for profiling and finishing
"D" for general application
"T" For light roughing and finishing
"C" For heavy roughing

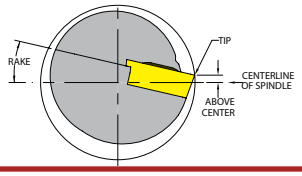
Use the correct insert grade for the material and operation. Use a small angle geometry, **like the "V","D" and "T" style** insert, small nose radius, sharp cutting edge, high positive rake angle, large chip breaker and high clearance angle.

INSERT VIBRATION



INSERT GEOMETRY				
INSERT RADIUS Use a smaller radius to limit vibration				
INSERT CUTTING RAKE Use a positive cutting rake to limit vibration.				
INSERT RELIEF ANGLE				
INSERT EDGE PREP				
INSERT CUTTING EDGE ANGLE Use a cutting edge angle as close to 90º as possible.				

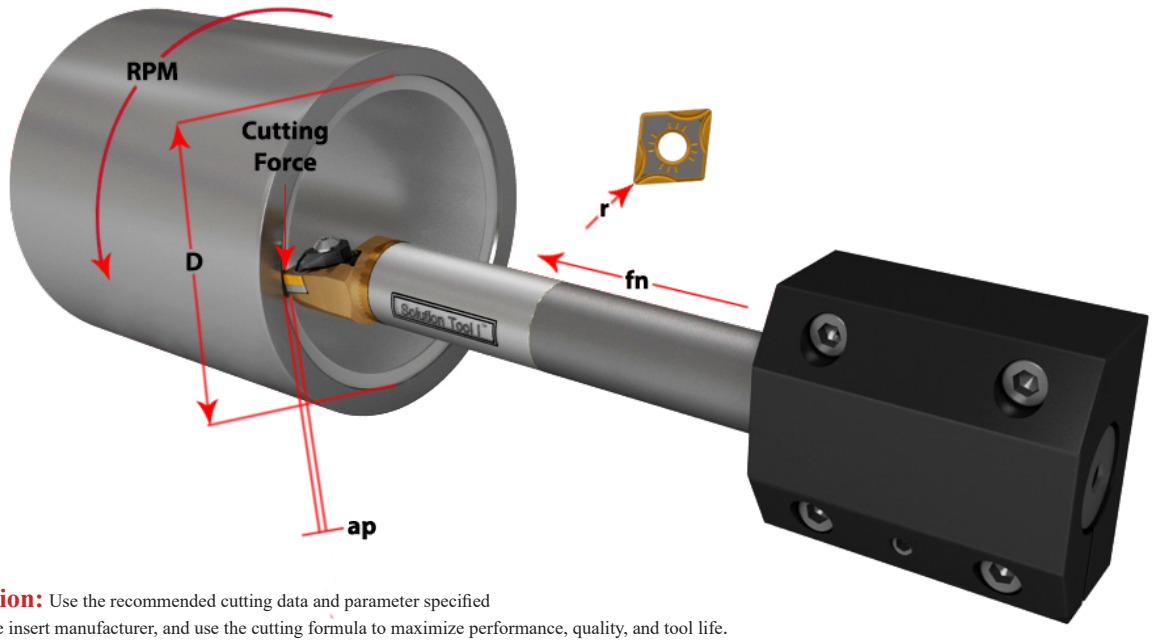
INSERT CENTER LINE
Insert Center Line, .002 to .025" [.050 to .635mm] above center line, to compensate for bar deflection and reduce vibration.



6) Cutting Parameter Deep Hole Boring Solution:

Problem

Cutting Parameter: If the cutting parameters are not correct for the specific material chattering and insert breakage will occur.



Solution: Use the recommended cutting data and parameter specified from the insert manufacturer, and use the cutting formula to maximize performance, quality, and tool life.

For a **Roughing** operation with a large depth of cut and a high feed rate, low RPM is recommended.

For a **Finishing** operation with a small depth of cut and a low feed rate, high RPM is recommended.

Minimum depth of cut is 1/2 of the insert radius. Maximum feed rate is 1/2 of the insert radius.

Inch Formulas for Turning and Boring

a_p= Depth of cut (DOC)	Inch	k_c= Specific cutting force	Lb/Inch^2
D_m= Diameter of part (DIA)	Inch	n= Spindle speed (RPM)	Rev/Min
f_n= Feed per revolution (FEED)	Inch/Rev	v_c= Cutting speed (SFM)	Feet/Min
l_m= Machined length (LEN)	Inch	T_c= Cutting time (TIM)	Min
Q= Metal removal rate (MMR)	Inch^3/ Min	R_{max}= Profile depth	µInch
P_c= Power requirements (POW)	Hp	r_ε= Insert nose radius	Inch

Cutting Speed Surface Feet Per Minute:

$$vc = \frac{\pi \times Dm \times n}{12}$$

EX: Determine the cutting speed (v_c) required for turning a 2-1/2" diameter part with a spindle speed of 600 RPM.

$$v_c = \frac{\pi \times 2.5 \times 600}{12} = 392.70 \text{ Feet/Min}$$

Spindle Speed Revolution Per Minute:

$$n = \frac{Vc \times 12}{\pi \times Dm}$$

EX: Determine the spindle speed (n) required for turning a 2-1/2" diameter part with a cutting speed of 400 SFM.

$$n = \frac{400 \times 12}{\pi \times 2.5} = 611.15 \text{ Rev/Min}$$

Metal Removal Rate Inch^3/Min:

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

EX: Determine the metal removal rate (Q) required for cutting with a depth of .062 with a cutting speed of 400 SFM and feed rate of .015 IPR.

$Q = 400 \times .062 \times .015 \times 12 = 4.464$ inch^3/min

Power Requirement Horsepower:

$$P_c = \frac{v_c \times a_p \times f_n \times k_c}{33{,}000}$$

EX: Determine the power requirement (P_c) for turning a material with a cutting force of 181,750, a depth of .062, a cutting speed of 400 SFM, and feed rate of .015 IPR.

$$P_c = \frac{400 \times .062 \times .015 \times 181{,}750}{33{,}000} = 2.05 \text{ HP}$$

Cutting Time Minute:

$$T_c = \frac{l_m}{f_n \times n}$$

EX: Determine the amount of time required to machine a 6" long part with a spindle speed of 600 RPM and feed rate of .015 IPR.

$$T_c = \frac{6}{.015 \times 600} = .67 \text{ Min (40 Sec)}$$

Profile Depth (µInch)

$$R_{max} = \frac{f_n^2 \times 10^6}{8r_\varepsilon}$$

EX: Determine the profile depth (R_{max}) of a surface machined using an insert with a nose radius of .032 and a feed rate of .015 IPR.

$$R_{max} = \frac{.015^2 \times 10^6}{8 \times .032} = 879 \text{ µinch}$$

Metric Formulas for Turning and Boring

a_p= Depth of cut (DOC)	mm	k_c= Specific cutting force	Nm
D_m= Diameter of part (DIA)	mm	n= Spindle speed (RPM)	Rev/Min
f_n= Feed per revolution (FEED)	mm/Rev	v_c= Cutting speed (SFM)	m/Min
l_m= Machined length (LEN)	mm	T_c= Cutting time (TIM)	Min
Q= Metal removal rate (MMR)	mm^3/ Min	R_{max}= Profile depth	µm
P_c= Power requirements (POW)	kW	r_ε= Insert nose radius	mm

Cutting Speed Surface Meters Per Minute

$$vc = \frac{\pi \times Dm \times n}{1000}$$

EX: Determine the cutting speed (v_c) required for turning a 50mm diameter part with a spindle speed of 600 RPM.

$$v_c = \frac{\pi \times 50 \times 600}{1000} = 94{,}25 \text{ m/Min}$$

Spindle Speed Revolution Per Minute

$$n = \frac{Vc \times 1000}{\pi \times Dm}$$

EX: Determine the spindle speed (n) required for turning a 32mm diameter part with a cutting speed of 100 m/Min.

$$n = \frac{100 \times 1000}{\pi \times 32} = 994{,}72 \text{ Rev/Min}$$

Metal Removal Rate mm^3/Min

$$Q = v_c \times a_p \times f_n \times 1000$$

EX: Determine the metal removal rate (Q) required for cutting with a depth of 1,5 with a cutting speed of 200 m/Min and feed rate of 0,4 mmPR.

$Q = 200 \times 1{,}5 \times 0{,}4 \times 1000 = 120.000$ mm^3/min

Power Requirement Kilowatts

$$P_c = \frac{v_c \times a_p \times f_n \times k_c}{1.460.000}$$

EX: Determine the power requirement (P_c) for turning a material with a specific cutting force of 20.500, a depth of 1,5, a cutting speed of 200 m/Min, and feed rate of 0,4 mmPR.

$$P_c = \frac{200 \times 1{,}5 \times 0{,}4 \times 20.500}{1.460.000} = 1{,}68 \text{ kW}$$

Cutting Time Minute

$$T_c = \frac{l_m}{f_n \times n}$$

EX: Determine the amount of time required to machine a 200mm long part with a spindle speed of 600 RPM and feed rate of 0,4 mmPR.

$$T_c = \frac{200}{0{,}4 \times 600} = {,}83 \text{ Min (50 Sec)}$$

Profile Depth (µm)

$$R_{max} = \frac{f_n^2 \times 10^6}{8r_\varepsilon}$$

EX: Determine the profile depth (R_{max}) of a surface machined using an insert with a nose radius of 0,8 and a feed rate of 0,4 mmPR.

$$R_{max} = \frac{0{,}4^2 \times 10^6}{8 \times 0{,}8} = 25 \text{ µm}$$

7) Chip Clogging Deep Hole Boring Solution:

Problem

Chip Clogging: Chips are clogged into the work piece bore jamming the insert, wrapping around the boring bar, and thrown against the wall.

Solution: Change the cutting length of the chips and use high pressure coolant or air to flush the chips out the bore.

Chip evacuation

Chip clogging during the boring operation creates a major machining problem effecting quality, performance and tooling life. Chips are to be removed from the bore as quickly as they are made to avoid and minimize the tooling insert damage, and poor surface finish. Evacuating chips from a bore is not always easy, and is more difficult when machining small diameters and deep bores. If the chips are very short and thick, a lot pressure is placed over the insert cutting edge making the boring bar vibrate. More tangential force is developed, requiring more horsepower (Kilowatts) for the boring operation.

In high speed rotation, the centrifugal force will push the chips against the wall surface making it difficult to remove out from the bore. It is more difficult when boring a small, blind, and deep hole. The chips will pack on the end of the bore.

If chips are long and stringy they are easy to machine.

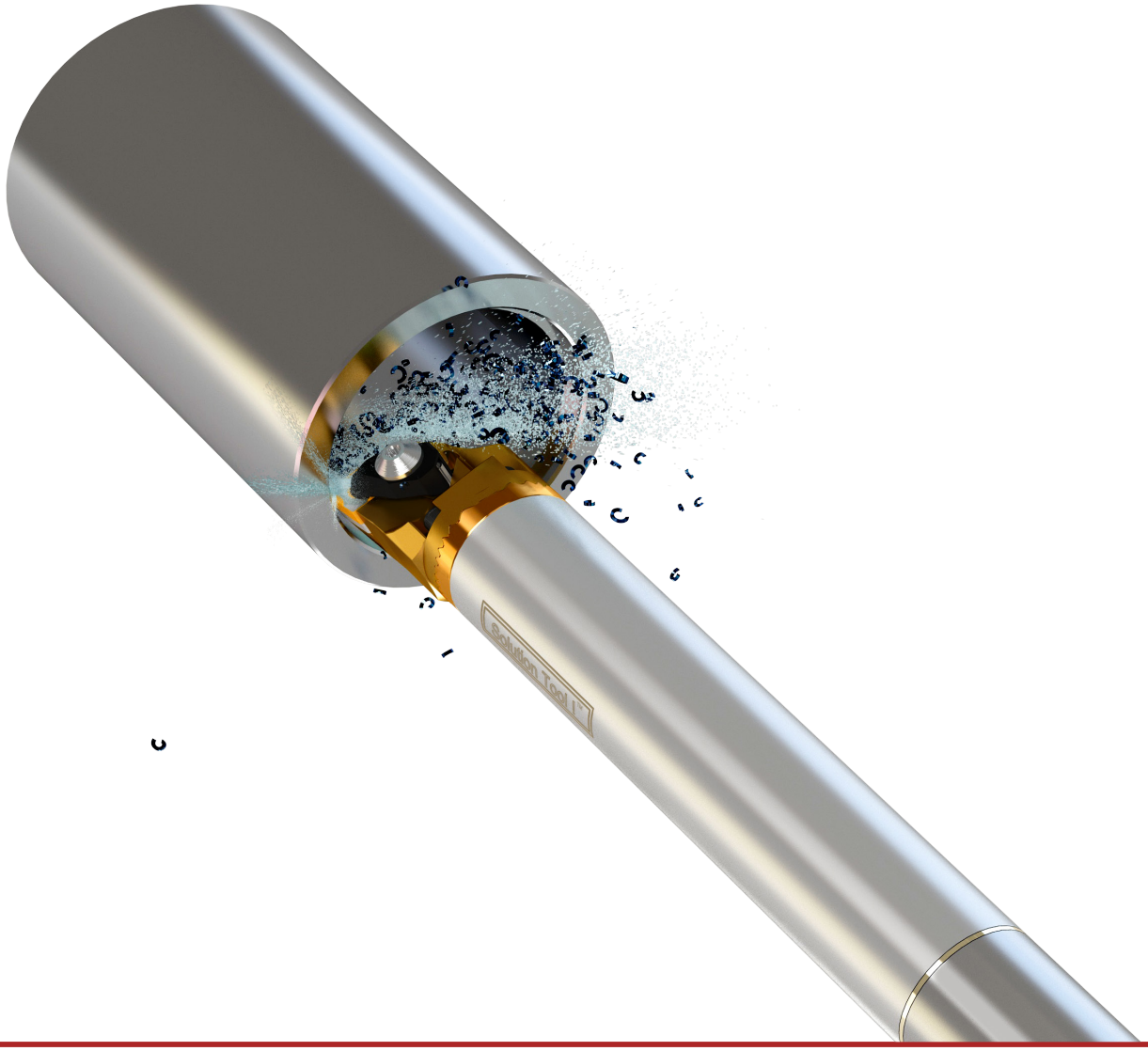
Little tangential force is developed requiring less horsepower (Kilowatts) for the boring operation, but the chips will wrap around the boring bar and jam the inside of bore, or to the end of the blind hole making it impossible to evacuate from the bore. When this occurs the operation must be stopped, and the chips have to be manually removed from the bore.

To control the chips from clogging and to evacuate them easily from the bore, the chips are to be cut the right length. Not too short to minimize insert damage and cutting force, not too long to prevent them from wrapping around the boring bar.

The insert rake angle and chip break, depth of cut, feed rate, and RPM will control the length of the chips.
High Pressure Coolant and or Air will remove chips from the bore.

Use a Thru Coolant Boring Bar.

It is best if a Dorian Jet Stream Thru Coolant Boring Bar combined with high pressure coolant system is used. The coolant is aimed directly over the cutting edge of the insert at a high velocity blowing the chips away from the insert and flushing them out the bore.

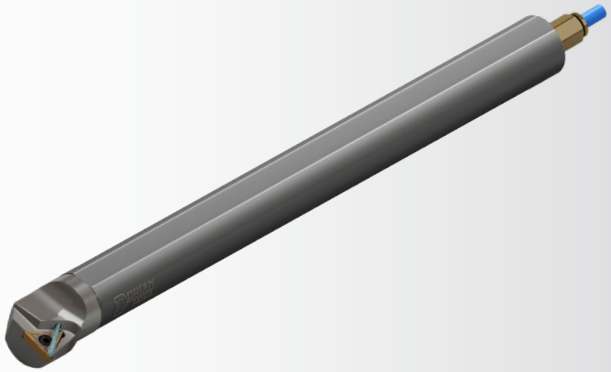


High Performance Carbide Bars

Thru Coolant Carbide Boring Bar

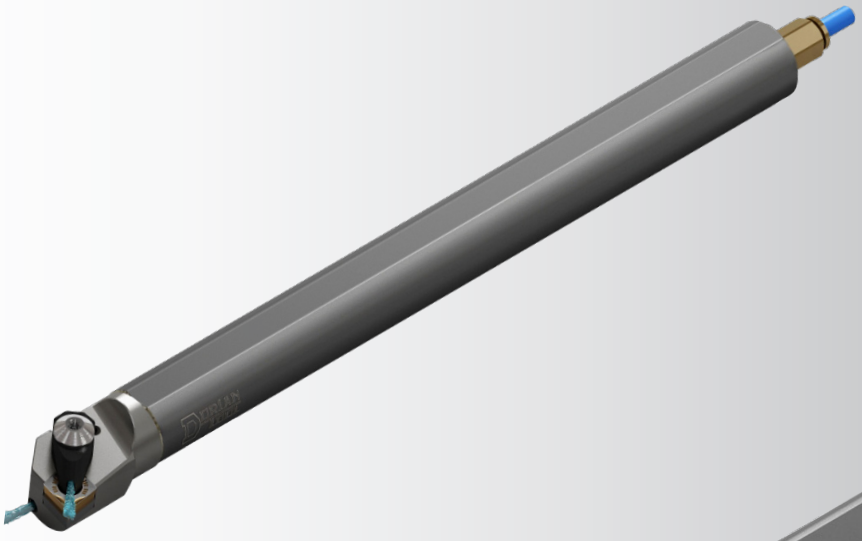
Best Application for:

- Boring and Threading
- Heavy Roughing and Finishing Operation
- Close working tolerances
- Boring Ratio 6 x Bar Dia.
- Threading Ratio 3 x Bar Dia.



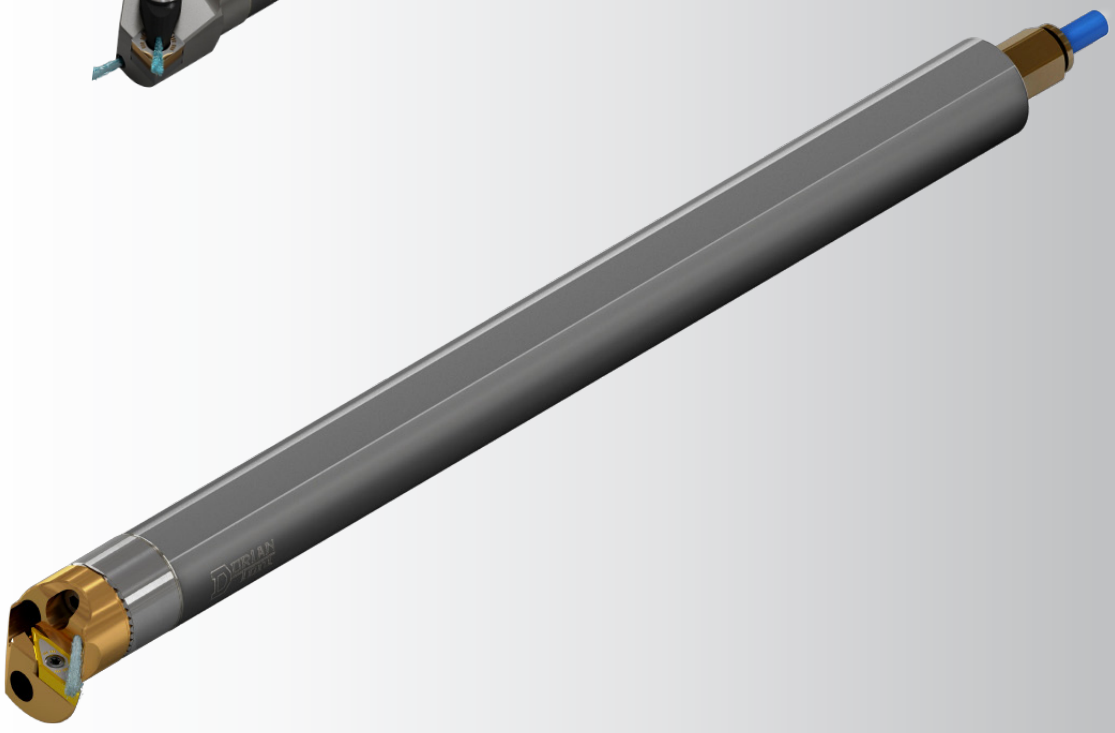
High Performance Carbide
Integral Thru Coolant Bars

- For small bores
- Carbide Body
- Boring System Shank Size
  - Inch 0.156″ to 1.250″
  - Metric 4mm to 32mm
- Threading System Shank Size
  - Inch 0.218" to 0.750″
  - Metric 6mm to 20mm



High Performance Carbide
Integral Jet-Stream™
Thru Coolant Bars

- For medium bores
- Carbide Body
- Boring System Shank Size
  - Inch 1.000″ to 1.250″
  - Metric 25mm to 32mm
- Threading System Shank Size
  - Inch 0.750" to 1.250″
  - Metric 20mm to 32mm



High Performance Carbide
Quick Change Modular
Thru Coolant Bars

- For large bores
- Carbide Body
- Boring System Shank Size
  - Inch 0.750″ to 1.250″
  - Metric 20mm to 32mm
- Threading System Shank Size
  - Inch 0.750" to 1.250″
  - Metric 20mm to 20mm

High Performance Carbide Integral Boring Bars

Thru Coolant Carbide Boring Bar System

Best Application for:

- **Boring and Threading small bore**
- **Roughing and Finishing Operation**
- **Close working tolerances**
- **Deep Boring 6 x Bar Dia.**

Better Machining Performance

Higher Workmanship Quality

Longer Cutting Inserts Life

The technology behind the "Carbide Boring Bar System"
The rigidity of the carbide boring bar, will make boring and threading simple and precise, from heavy roughing to precision finishing, with close tolerance and high surface finish.

- **Boring Ratio 6 x Bar Dia.**
- **Threading Ratio 3 x Bar Dia.**

Boring Bar Sizes

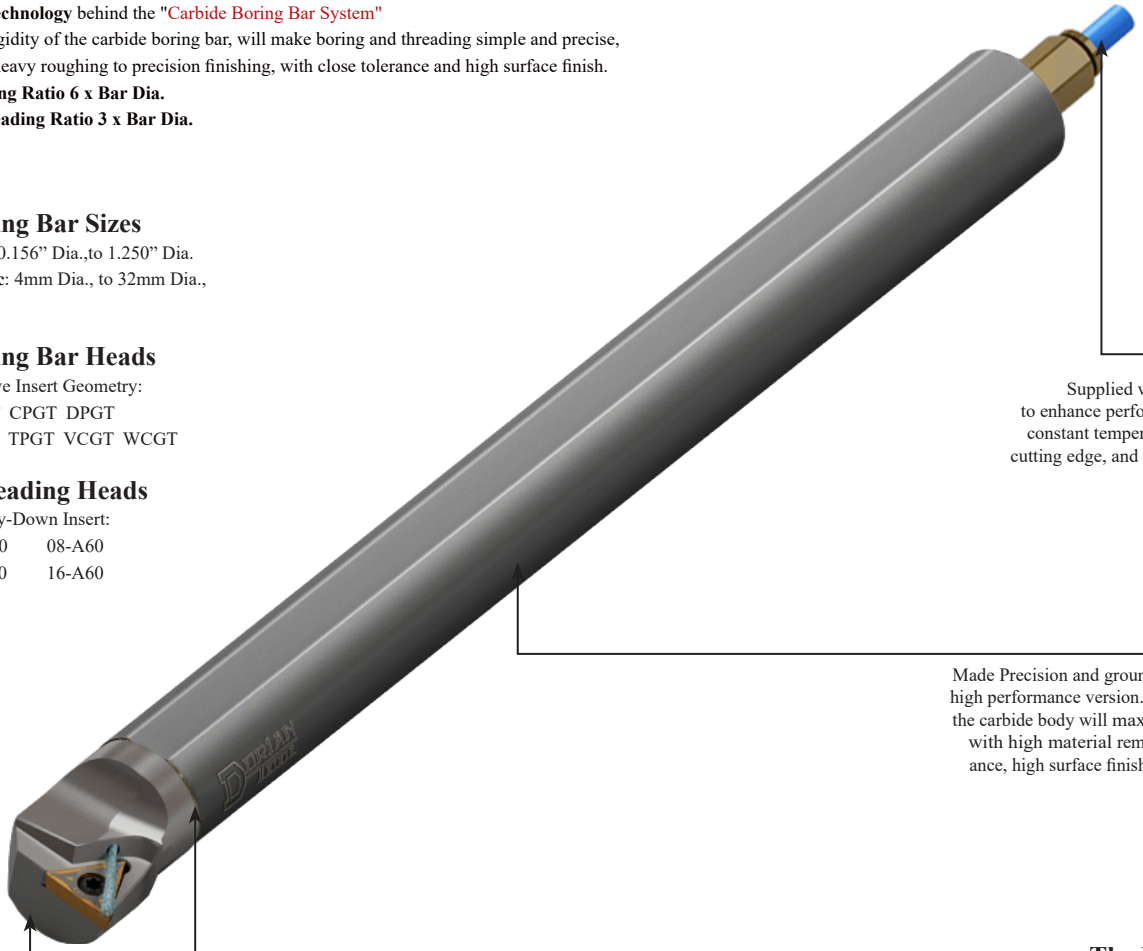
Inch: 0.156" Dia.,to 1.250" Dia.
Metric: 4mm Dia., to 32mm Dia.,

Boring Bar Heads

Positive Insert Geometry:
CCGT CPGT DPGT
TCGT TPGT VCGT WCGT

Threading Heads

for Lay-Down Insert:
06-A60 08-A60
11-A60 16-A60



Thru Coolant

Supplied with the thru coolant system to enhance performance, keep the insert at a constant temperature clean and undamaged cutting edge, and remove chips from the bore while machining.

Carbide Body

Made Precision and ground solid Alloyed Carbide for high performance version. The rigidity and stability of the carbide body will maximize boring performance with high material removal, close machining tolerance, high surface finish and deep boring (6 x Dia.)

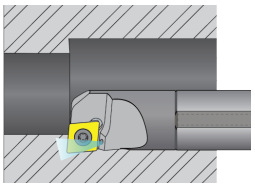
The Insert Head Braze

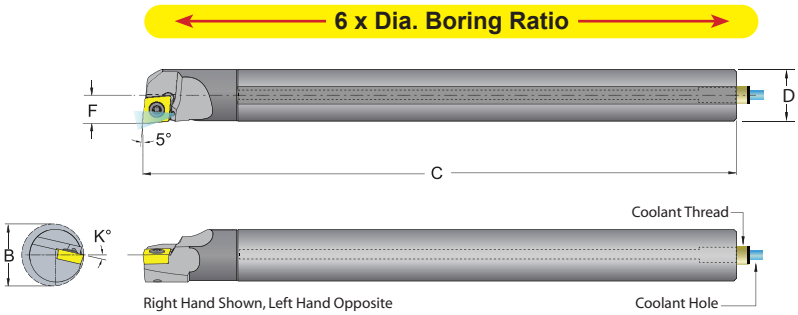
Brazed on to the Carbide Bar with triple silver alloys. The combination of the correct alloy and the thickness of the braze makes brazing strong and unbreakable but flexible under cutting pressure and interrupt cuts.

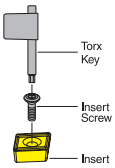
The Insert Heads

Made of heat treated alloy steel, and precisely machined on the body after brazing. Thru Coolant System to improve performance, precision and insert life.

E_SCLD R/L Thru Coolant Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 15° positive 80° diamond CD__inserts







INCH

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	CDGB Gage Insert	Insert Torx Screw	Torx Key
E02.5H-SCLDR/L-1.2	59575	59576		0.175	4.00	0.156	0.093	12°	.040	None	1.20.60.2	TS-18.35-1M1	T-6
E03.0H-SCLDR/L-1.2	59579	59580		0.205	4.00	0.187	0.103	9°	.040	None	1.20.60.2	TS-18.35-3M1	T-6
E03.5H-SCLDR/L-1.2	59583	59584	6 x Dia.	0.245	4.00	0.218	0.123	7°	.040	None			
E04H-SCLDR/L-1.5	59587	59588		0.270	4.00	0.250	0.135	7°	.040	None	1.510.5	TS-18.35-3M1	T-6
E05K-SCLDR/L-1.5	59591	59592		0.335	5.00	0.312	0.167	7°	.040	None			

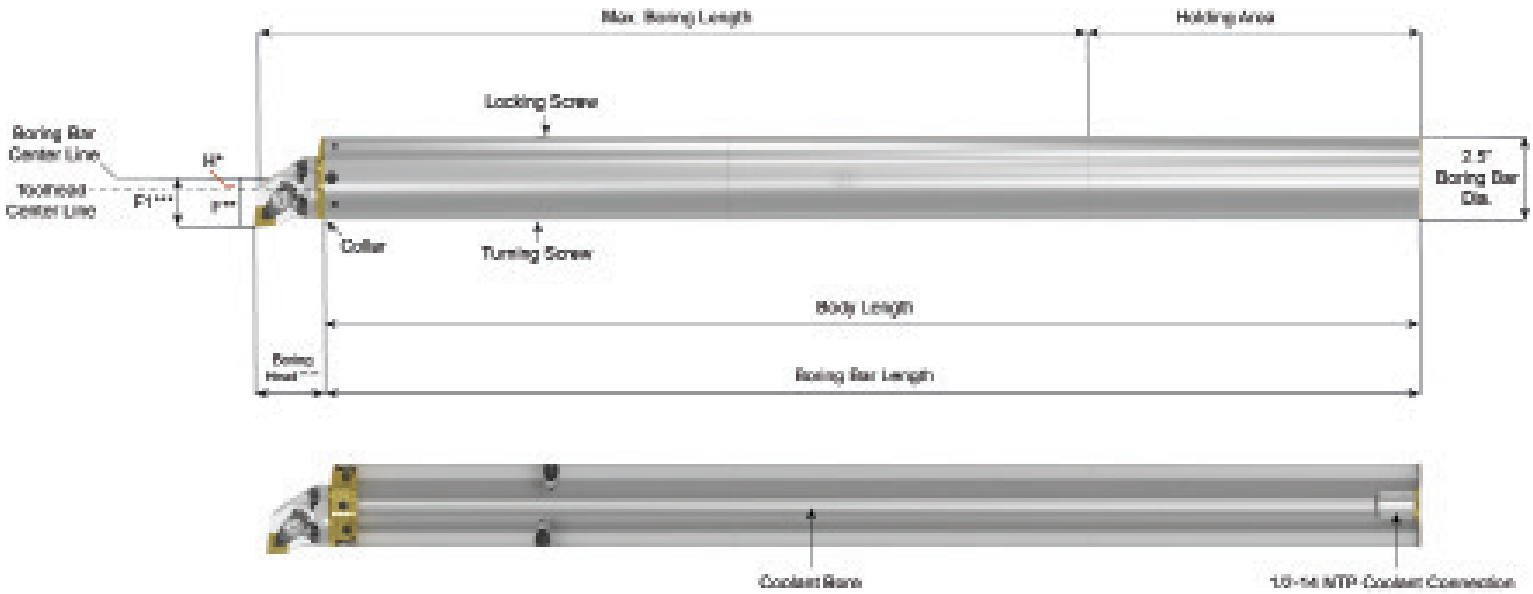
METRIC

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	CDGB Gage Insert	Insert Torx Screw	Torx Key
E04M-H-SCLDR/L-03	59577	59578		4.45	100	4	2.36	12°	1.0	None	S4T001	TS-18.35-1M1	T-6
E05M-H-SCLDR/L-03	59581	59582		5.21	100	5	2.62	9°	1.0	None	S4T001	TS-18.35-3M1	T-6
E06M-H-SCLDR/L-03	59585	59586	6 x Dia.	6.22	100	6	3.12	7°	1.0	None			
E07M-H-SCLDR/L-04	59589	59590		6.86	100	7	3.43	7°	1.0	None	040102	TS-18.35-3M1	T-6
E08M-K-SCLDR/L-04	59593	59594		8.51	125	8	4.24	7°	1.0	None			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

Anti Vibration-Boring & Threading Bar

2.500"-V2 Solution Tool!-Alloy Steel Body



Part Number	UPC Number	Description	Bar Dia.	Boring Ratio	Max Boring Length	Boring Head	Holding Ratio	Holding Area	Bar Length	Body Length	F1	H	F
DST BTI40 04 10.00-DSB-M	73310161436	2.500" x 04 V2 Solution Tool! Boring & Threading Bar, Steel Body	2.500	4	10.000	1.493	4	10.000	20.000	18.507	F1 = H + F	0.500	See Boring Head Chart
DST BTI40 06 15.00-DSB-M	73310160392	2.500" x 06 V2 Solution Tool! Boring & Threading Bar, Steel Body	2.500	6	15.000	1.493	4	10.000	25.000	23.507			
DST BTI40 08 20.00-DSB-M	73310159324	2.500" x 08 V2 Solution Tool! Boring & Threading Bar, Steel Body	2.500	8	20.000	1.493	4	10.000	30.000	28.507			
DST BTI40 10 25.00-DSB-M	73310159436	2.500" x 10 V2 Solution Tool! Boring & Threading Bar, Steel Body	2.500	10	25.000	1.493	4	10.000	35.000	33.507			
DST BTI40 12 30.00-DSB-M	73310159449	2.500" x 12 V2 Solution Tool! Boring & Threading Bar, Steel Body	2.500	12	30.000	1.493	4	10.000	40.000	38.507			

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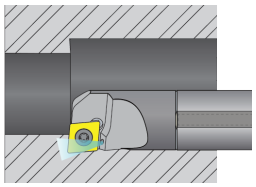
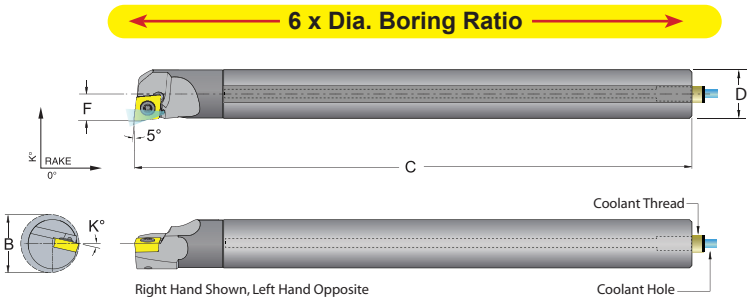
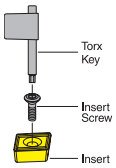
E_SCLC R/L Thru Coolant Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 7° positive 80° diamond CC__ inserts







INCH

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	CCGW Gage Insert	Insert Torx Screw	Torx Key
E06M-SCLCR/L-2	59595	59596	6 x Dia.	0.396	6.00	0.375	0.198	15°	.060	None	21.51	TS-25.45-6M2	T-8
E08K-SCLCR/L-2	59599	59600		0.550	5.00	0.500	0.275	13°	.080	6 X 1mm			
E08R-SCLCR/L-2	59603	59604		0.550	8.00	0.500	0.275	13°	.080	6 X 1mm			
E10M-SCLCR/L-2	59607	59608		0.740	6.00	0.625	0.395	10°	.125	6 X 1mm			
E10S-SCLCR/L-2	59611	59612		0.740	10.00	0.625	0.395	10°	.125	6 X 1mm			
E08K-SCLCR/L-3	59615	59616		0.550	5.00	0.500	0.275	13°	.080	6 X 1mm	32.52	TS-35.6-7M1	T-15
E08R-SCLCR/L-3	59619	59620		0.550	8.00	0.500	0.275	13°	.080	6 X 1mm			
E10M-SCLCR/L-3	59623	59624		0.740	6.00	0.625	0.395	10°	.125	6 X 1mm			
E10S-SCLCR/L-3	59627	59628		0.740	10.00	0.625	0.395	10°	.125	6 X 1mm			
E12Q-SCLCR/L-3	59967	59968		0.930	7.000	0.750	0.500	8°	0.157	1/8"-27			
E12S-SCLCR/L-3	59969	59970		0.930	10.00	0.750	0.500	8°	0.157	1/8"-27			
E16R-SCLCR/L-3	59971	59972		1.200	8.000	1.000	0.625	7°	0.197	1/8"-27			
E16T-SCLCR/L-3	59973	59974		1.200	12.00	1.000	0.625	7°	0.197	1/8"-27			
E20U-SCLCR/L-4	59975	59976		1.470	14.00	1.250	0.765	5°	0.197	1/8"-27	432	TS-5.8-10M1	T-20

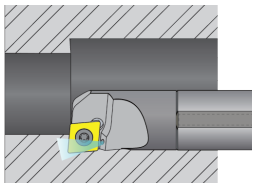
METRIC

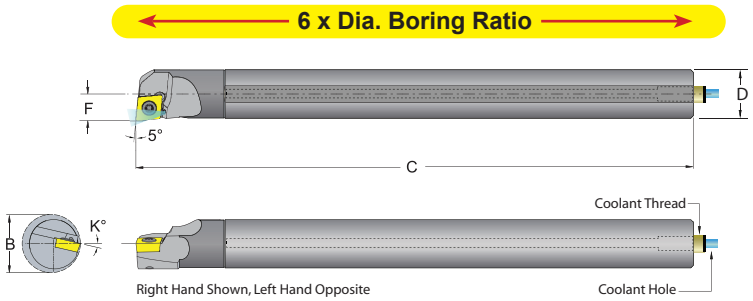
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	CCGW Gage Insert	Insert Torx Screw	Torx Key
E10M-M-SCLCR/L-06	59597	59598	6 x Dia.	10.06	150	10	5.03	15°	1.5	None	060204	TS-25.45-6M2	T-8
E12M-K-SCLCR/L-06	59601	59602		13.97	125	12	6.99	13°	2	6 X 1mm			
E12M-R-SCLCR/L-06	59605	59606		13.97	200	12	6.99	13°	2	6 X 1mm			
E16M-M-SCLCR/L-06	59609	59610		18.80	150	16	10.03	10°	3	6 X 1mm			
E16M-S-SCLCR/L-06	59613	59614		18.80	250	16	10.03	10°	3	6 X 1mm			
E12M-K-SCLCR/L-09	59617	59618		13.97	125	12	6.99	13°	2	6 X 1mm	09T308	TS-35.6-7M1	T-15
E12M-R-SCLCR/L-09	59621	59622		13.97	200	12	6.99	13°	2	6 X 1mm			
E16M-M-SCLCR/L-09	59625	59626		18.80	150	16	10.03	10°	3	6 X 1mm			
E16M-S-SCLCR/L-09	59629	59630		18.80	250	16	10.03	10°	3	6 X 1mm			
E20M-Q-SCLCR/L-09	59977	59978		23.6	180	20	12.70	8°	4	1/8"-27			
E20M-S-SCLCR/L-09	59979	59980		23.6	250	20	12.70	8°	4	1/8"-27			
E25M-R-SCLCR/L-09	59981	59982		30.5	200	25	15.88	7°	5	1/8"-27			
E25M-T-SCLCR/L-09	59983	59984		30.5	300	25	15.88	7°	5	1/8"-27			
E32M-U-SCLCR/L-12	59985	59986		37.3	350	32	19.43	5°	5	1/8"-27	120408	TS-5.8-10M1	T-20

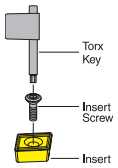
*8 x Dia. Boring Ratio can be achieved under favorable conditions.

Anti Vibration-Boring & Threading Bar

E_SCLP R/L Thru Coolant Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 11° positive 80° diamond CP___ inserts





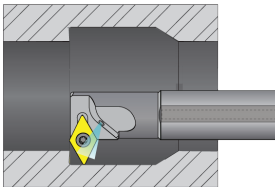


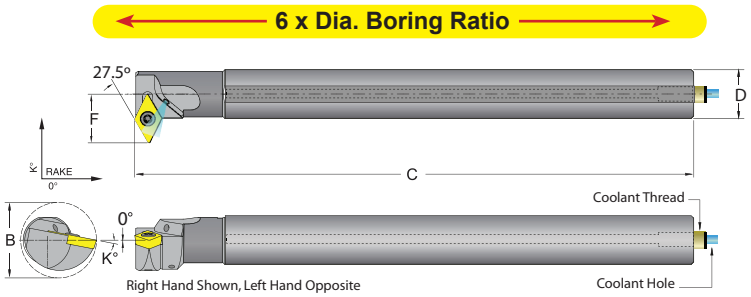
INCH												
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	CPGW Gage Insert	Insert Torx Screw	Torx Key
E05K-SCLPR/L-1.8	59631	59632	6 x Dia.	0.335	5.00	0.312	0.167	7°	.040	None	1.81.20.5	TS-22.45-4M1	T-7
E06M-SCLPR/L-2	59635	59636		0.396	6.00	0.375	0.198	6°	.060	None	21.51	TS-25.45-6M2	T-8
E08K-SCLPR/L-2	59639	59640		0.550	5.00	0.500	0.275	3°	.080	6 X 1mm			
E08R-SCLPR/L-2	59643	59644		0.550	8.00	0.500	0.275	3°	.080	6 X 1mm			
E10M-SCLPR/L-2	59647	59648		0.740	6.00	0.625	0.395	2°	.125	6 X 1mm			
E10S-SCLPR/L-2	59651	59652		0.740	10.00	0.625	0.395	2°	.125	6 X 1mm			
E08K-SCLPR/L-3	59655	59656		0.550	5.00	0.500	0.280	9°	.080	6 X 1mm	32.52	TS-35.6-7M1	T-15
E08R-SCLPR/L-3	59659	59660		0.550	8.00	0.500	0.280	9°	.080	6 X 1mm			
E10M-SCLPR/L-3	59663	59664		0.740	6.00	0.625	0.395	5°	.125	6 X 1mm			
E10S-SCLPR/L-3	59667	59668		0.740	10.00	0.625	0.395	5°	.125	6 X 1mm			

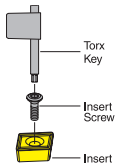
METRIC												
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	CPGW Gage Insert	Insert Torx Screw	Torx Key
E10M-M-SCLPR/L-06	59637	59638	6 x Dia.	10.06	150	10	5.03	6°	1.5	None	060204	TS-25.45-6M2	T-8
E12M-K-SCLPR/L-06	59641	59642		13.97	125	12	6.99	3°	2	6 X 1mm			
E12M-R-SCLPR/L-06	59645	59646		13.97	200	12	6.99	3°	2	6 X 1mm			
E16M-M-SCLPR/L-06	59649	59650		18.80	150	16	10.03	2°	3	6 X 1mm			
E16M-S-SCLPR/L-06	59653	59654		18.80	250	16	10.03	2°	3	6 X 1mm			
E12M-K-SCLPR/L-09	59657	59658		13.97	125	12	7.11	9°	2	6 X 1mm	09T308	TS-35.6-7M1	T-15
E12M-R-SCLPR/L-09	59661	59662		13.97	200	12	7.11	9°	2	6 X 1mm			
E16M-M-SCLPR/L-09	59665	59666		18.80	150	16	10.03	5°	3	6 X 1mm			
E16M-S-SCLPR/L-09	59669	59670		18.80	250	16	10.03	5°	3	6 X 1mm			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_SDNC R/L Thru Coolant Integral Carbide Boring Bar Style N - Negative 27.5° End & Side Cutting Edge Angle for 7° positive 55° diamond DC__ inserts







INCH

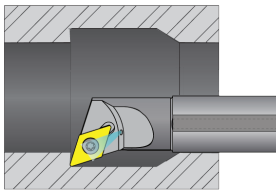
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	DCMT Gage Insert	Insert Torx Screw	Torx Key
E06M-SDNCR/L-2	59671	59672		0.581	6.00	0.375	0.375	11°	.060	none			
E08K-SDNCR/L-2	59675	59676		0.775	5.00	0.500	0.500	11°	.080	6 X 1mm			
E08R-SDNCR/L-2	59679	59680	6 x Dia.	0.775	8.00	0.500	0.500	11°	.080	6 X 1mm	21.51	TS-25.45-6M2	T-8
E10M-SDNCR/L-2	59683	59684		0.969	6.00	0.625	0.625	7°	.125	6 X 1mm			
E10S-SDNCR/L-2	59687	59688		0.969	10.00	0.625	0.625	7°	.125	6 X 1mm			

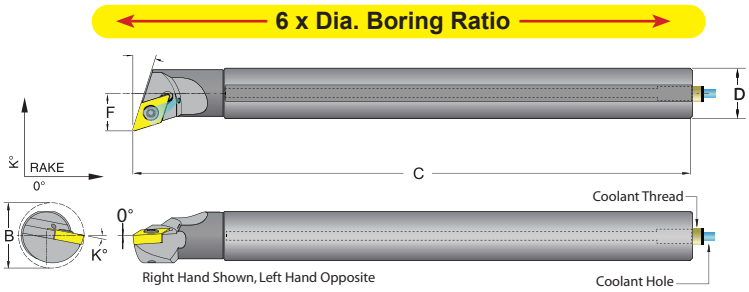
METRIC

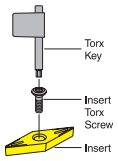
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	DCMT Gage Insert	Insert Torx Screw	Torx Key
E10M-M-SDNCR/L-07	59673	59674		14.76	150	10	9.53	11°	1.5	None			
E12M-K-SDNCR/L-07	59677	59678		19.69	125	12	12.70	11°	2	6 X 1mm			
E12M-R-SDNCR/L-07	59681	59682	6 x Dia.	19.69	200	12	12.70	11°	2	6 X 1mm	070204	TS-25.45-6M2	T-8
E16M-M-SDNCR/L-07	59685	59686		24.61	150	16	15.88	7°	3	6 X 1mm			
E16M-S-SDNCR/L-07	59689	59690		24.61	250	16	15.88	7°	3	6 X 1mm			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_SDQC R/L Thru Coolant Integral Carbide Boring Bar Style Q - Negative 17.5° End Cutting Edge Angle for 7° positive 55° diamond DC__ inserts







INCH

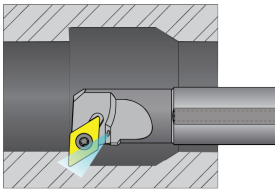
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	DCMT Gage Insert	Insert Torx Screw	Torx Key
E06M-SDQCR/L-2	59691	59692		0.487	6.00	0.375	0.281	11°	.060	None			
E08K-SDQCR/L-2	59695	59696		0.650	5.00	0.500	0.375	11°	.080	6 X 1mm			
E08R-SDQCR/L-2	59699	59700	6 x Dia.	0.650	8.00	0.500	0.375	11°	.080	6 X 1mm	21.51	TS-25.45-6M2	T-8
E10M-SDQCR/L-2	59703	59704		0.781	6.00	0.625	0.437	7°	.125	6 X 1mm			
E10S-SDQCR/L-2	59707	59708		0.781	10.00	0.625	0.437	7°	.125	6 X 1mm			

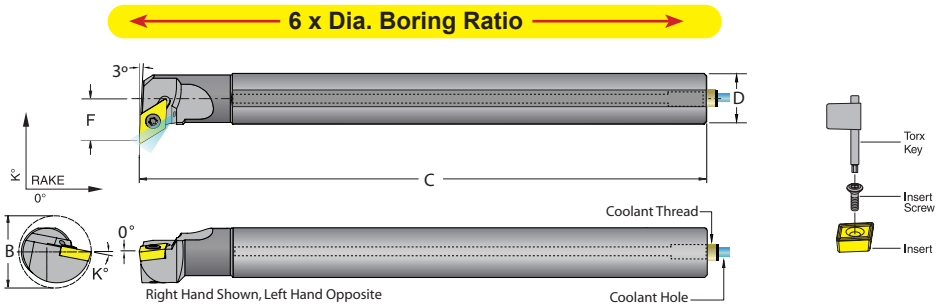
METRIC

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	DCMT Gage Insert	Insert Torx Screw	Torx Key
E10M-M-SDQCR/L-07	59693	59694		12.38	150	10	7.14	11°	1.5	None			
E12M-K-SDQCR/L-07	59697	59698		16.51	125	12	9.53	11°	2	6 X 1mm			
E12M-R-SDQCR/L-07	59701	59702	6 x Dia.	16.51	200	12	9.53	11°	2	6 X 1mm	070204	TS-25.45-6M2	T-8
E16M-M-SDQCR/L-07	59705	59706		19.83	150	16	11.10	7°	3	6 X 1mm			
E16M-S-SDQCR/L-07	59709	59710		19.83	250	16	11.10	7°	3	6 X 1mm			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_SDUC R/L Thru Coolant Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





INCH

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	DCMT Gage Insert	Insert Torx Screw	Torx Key
E06M-SDUCR/L-2	59711	59712	6 x Dia.	0.581	6.00	0.375	0.375	11°	.060	None	21.51	TS-25.45-6M2	T-8
E08K-SDUCR/L-2	59715	59716		0.712	5.00	0.500	0.437	11°	.080	6 X 1mm			
E08R-SDUCR/L-2	59719	59720		0.712	8.00	0.500	0.437	11°	.080	6 X 1mm			
E10M-SDUCR/L-2	59723	59724		0.844	6.00	0.625	0.500	7°	.125	6 X 1mm			
E10S-SDUCR/L-2	59727	59728		0.844	10.00	0.625	0.500	7°	.125	6 X 1mm			
E12Q-SDUCR/L-3	59987	59988		1.050	7.000	0.750	0.562	6°	0.157	1/8"-27	32.52	TS-35.6-9M1	T-15
E12S-SDUCR/L-3	59989	59990		1.050	10.00	0.750	0.562	6°	0.157	1/8"-27			
E16R-SDUCR/L-3	59991	59992		1.300	8.000	1.000	0.750	4°	0.197	1/8"-27			
E16T-SDUCR/L-3	59993	59994		1.300	12.00	1.000	0.750	4°	0.197	1/8"-27			
E20U-SDUCR/L-3	59995	59996		1.750	14.00	1.250	0.875	4°	0.197	1/8"-27			

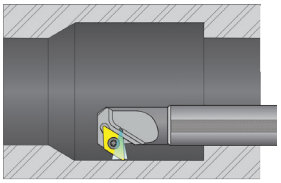
METRIC

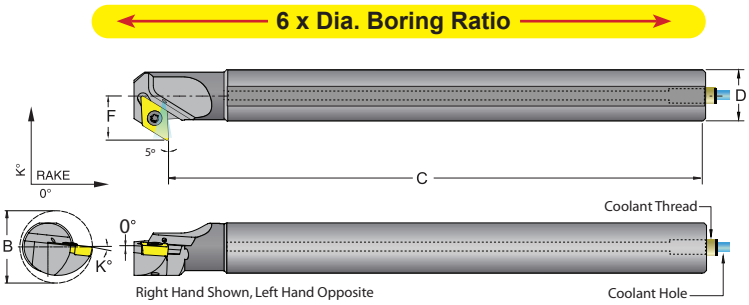
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	DCMT Gage Insert	Insert Torx Screw	Torx Key
E10M-M-SDUCR/L-07	59713	59714	6 x Dia.	14.76	150	10	9.53	11°	1.5	None	070204	TS-25.45-6M2	T-8
E12M-K-SDUCR/L-07	59717	59718		18.08	125	12	11.10	11°	2	6 X 1mm			
E12M-R-SDUCR/L-07	59721	59722		18.08	200	12	11.10	11°	2	6 X 1mm			
E16M-M-SDUCR/L-07	59725	59726		21.43	150	16	12.70	7°	3	6 X 1mm			
E16M-S-SDUCR/L-07	59729	59730		21.43	250	16	12.70	7°	3	6 X 1mm			
E20M-Q-SDUCR/L-11	59997	59998		26.7	180	20	14.27	6°	4	1/8"-27	11T308	TS-35.6-9M1	T-15
E20M-S-SDUCR/L-11	59999	60000		26.7	250	20	14.27	6°	4	1/8"-27			
E25M-R-SDUCR/L-11	60001	60002		33.0	200	25	19.05	4°	5	1/8"-27			
E25M-T-SDUCR/L-11	60003	60004		33.0	300	25	19.05	4°	5	1/8"-27			
E32M-U-SDUCR/L-11	60005	60006		44.5	350	32	22.23	4°	5	1/8"-27			

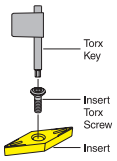
*8 x Dia. Boring Ratio can be achieved under favorable conditions.

Anti Vibration-Boring & Threading Bar

E_SDXC R/L Thru Coolant Integral Carbide Boring Bar Style X - Negative 5° Back Boring Cutting Edge Angle for 7° positive 55° diamond DC__ inserts







INCH

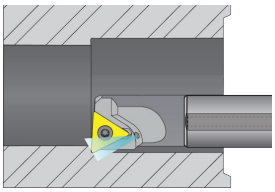
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	DCMT Gage Insert	Insert Torx Screw	Torx Key
E06M-SDXCR/L-2	59731	59732	6 x Dia.	0.581	5.66	0.375	0.375	8°	.060	None	21.51	TS-25.45-6M2	T-8
E08K-SDXCR/L-2	59735	59736		0.712	4.66	0.500	0.437	6°	.080	6 X 1mm			
E08R-SDXCR/L-2	59739	59740		0.712	7.66	0.500	0.437	6°	.080	6 X 1mm			
E10M-SDXCR/L-2	59743	59744		0.844	5.66	0.625	0.500	5°	.125	6 X 1mm			
E10S-SDXCR/L-2	59747	59748		0.844	9.66	0.625	0.500	5°	.125	6 X 1mm			
E12Q-SDXCR/L-3	60007	60008		0.980	7.000	0.750	0.562	5°	0.157	1/8"-27			
E12S-SDXCR/L-3	60009	60010		0.980	10.00	0.750	0.562	5°	0.157	1/8"-27			
E16R-SDXCR/L-3	60011	60012		1.300	8.000	1.000	0.750	3°	0.197	1/8"-27	32.52	TS-35.6-9M1	T-15
E16T-SDXCR/L-3	60013	60014		1.300	12.00	1.000	0.750	3°	0.197	1/8"-27			
E20U-SDXCR/L-3	60015	60016		1.600	14.00	1.250	1.000	3°	0.197	1/8"-27			

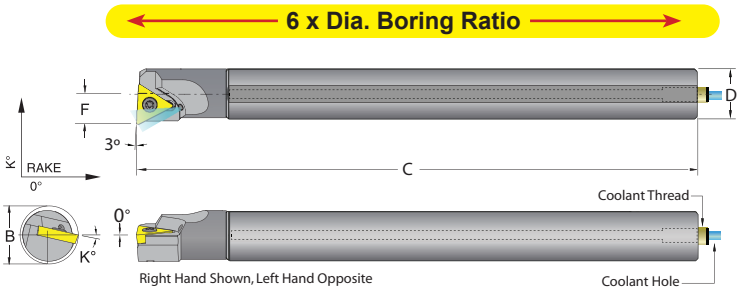
METRIC

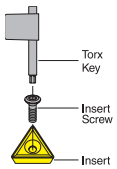
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	DCMT Gage Insert	Insert Torx Screw	Torx Key
E10M-M-SDXCR/L-07	59733	59734	6 x Dia.	14.76	141.36	10	9.53	8°	1.5	None	070204	TS-25.45-6M2	T-8
E12M-K-SDXCR/L-07	59737	59738		18.08	116.36	12	11.10	6°	2	6 X 1mm			
E12M-R-SDXCR/L-07	59741	59742		18.08	191.36	12	11.10	6°	2	6 X 1mm			
E16M-M-SDXCR/L-07	59745	59746		21.43	141.36	16	12.70	5°	3	6 X 1mm			
E16M-S-SDXCR/L-07	59749	59750		21.43	241.36	16	12.70	5°	3	6 X 1mm			
E20M-Q-SDXCR/L-11	60017	60018		24.9	180	20	14.27	5°	4	1/8"-27	11T308	TS-35.6-9M1	T-15
E20M-S-SDXCR/L-11	60019	60020		24.9	250	20	14.27	5°	4	1/8"-27			
E25M-R-SDXCR/L-11	60021	60022		33.0	200	25	19.05	3°	5	1/8"-27			
E25M-T-SDXCR/L-11	60023	60024		33.0	300	25	19.05	3°	5	1/8"-27			
E32M-U-SDXCR/L-11	60025	60026		40.6	350	32	25.40	3°	5	1/8"-27			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_STUC R/L Thru Coolant Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive triangle TC__ inserts







INCH

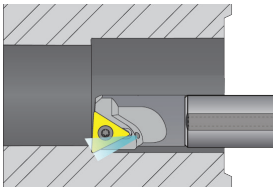
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	TCMT Gage Insert	Insert Torx Screw	Torx Key
E04H-STUCR/L-1.2	59751	59752		0.281	4.00	0.250	0.143	11°	.060	None			
E05K-STUCR/L-1.2	59755	59756		0.339	5.00	0.312	0.167	8°	.060	None	1.21.20.2	TS-06	T-6
E06M-STUCR/L-1.2	59759	59760		0.409	6.00	0.375	0.203	7°	.060	None			
E06M-STUCR/L-2	59763	59764		0.456	6.00	0.375	0.250	15°	.060	None			
E08K-STUCR/L-2	59767	59768		0.587	5.00	0.500	0.312	13°	.080	6 X 1mm			
E08R-STUCR/L-2	59771	59772		0.587	8.00	0.500	0.312	13°	.080	6 X 1mm	21.51	TS-25.45-6M2	T-8
E10M-STUCR/L-2	59775	59776	6 x Dia.	0.750	6.00	0.625	0.406	10°	.125	6 X 1mm			
E10S-STUCR/L-2	59779	59780		0.750	10.00	0.625	0.406	10°	.125	6 X 1mm			
E12Q-STUCR/L-3	60027	60028		0.930	7.000	0.750	0.500	8°	0.157	1/8"-27			
E12S-STUCR/L-3	60029	60030		0.930	10.00	0.750	0.500	8°	0.157	1/8"-27			
E16R-STUCR/L-3	60031	60032		1.200	8.000	1.000	0.625	7°	0.197	1/8"-27	32.52	TS-35.6-9M1	T-15
E16T-STUCR/L-3	60033	60034		1.200	12.00	1.000	0.625	7°	0.197	1/8"-27			
E20U-STUCR/L-3	60035	60036		1.470	14.00	1.250	0.875	7°	0.197	1/8"-27			

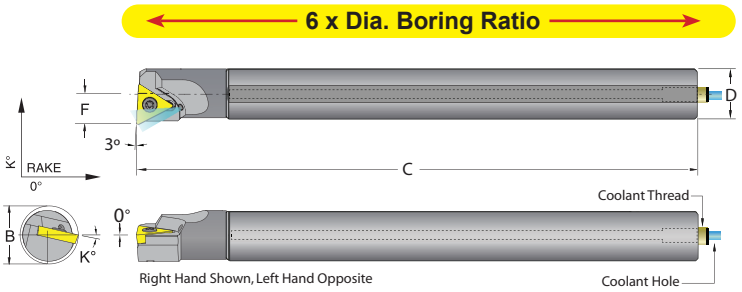
METRIC

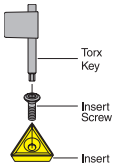
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	TCMT Gage Insert	Insert Torx Screw	Torx Key
E07M-H-STUCR/L-06	59753	59754		7.14	100	7	3.63	11°	1.5	None			
E08M-K-STUCR/L-06	59757	59758		8.60	125	8	4.24	8°	1.5	None	06T101	TS-06	T-6
E10M-M-STUCR/L-06	59761	59762		10.39	150	10	5.16	7°	1.5	None			
E10M-M-STUCR/L-11	59765	59766		11.59	150	10	6.35	15°	1.5	None			
E12M-K-STUCR/L-11	59769	59770		14.91	125	12	7.92	13°	2	6 X 1mm			
E12M-R-STUCR/L-11	59773	59774		14.91	200	12	7.92	13°	2	6 X 1mm	110204	TS-25.45-6M2	T-8
E16M-M-STUCR/L-11	59777	59778	6 x Dia.	19.04	150	16	10.31	10°	3	6 X 1mm			
E16M-S-STUCR/L-11	59781	59782		19.04	250	16	10.31	10°	3	6 X 1mm			
E20M-Q-STUCR/L-16	60037	60038		23.6	180	20	12.70	8°	4	1/8"-27			
E20M-S-STUCR/L-16	60039	60040		23.6	250	20	12.70	8°	4	1/8"-27			
E25M-R-STUCR/L-16	60041	60042		30.5	200	25	15.88	7°	5	1/8"-27	06T308	TS-35.6-9M1	T-15
E25M-T-STUCR/L-16	60043	60044		30.5	300	25	15.88	7°	5	1/8"-27			
E32M-U-STUCR/L-16	60045	60046		37.3	350	32	22.23	7°	5	1/8"-27			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_STUP R/L Thru Coolant Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 11° positive triangle TP___ inserts





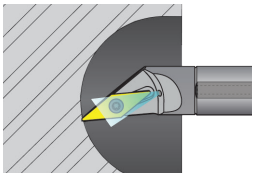


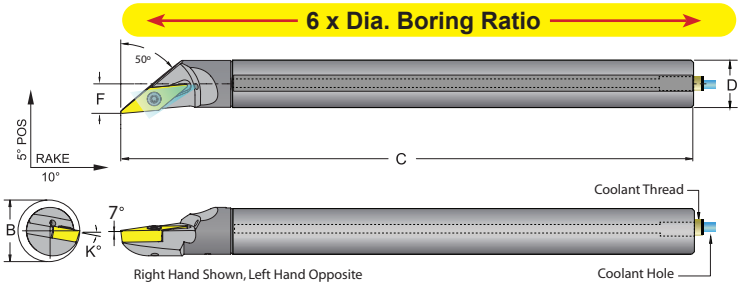
Inch Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	TPMT Gage Insert	Insert Torx Screw	Torx Key
E06M-STUPR/L-2	59783	59784	6 x Dia.	0.456	6.00	0.375	0.250	4°	.060	None	21.51	TS-25.45-6M2	T-8
E08K-STUPR/L-2	59787	59788		0.587	5.00	0.500	0.312	2°	.080	6 X 1mm			
E08R-STUPR/L-2	59791	59792		0.587	8.00	0.500	0.312	2°	.080	6 X 1mm			
E10M-STUPR/L-2	59795	59796		0.750	6.00	0.625	0.406	0°	.125	6 X 1mm			
E10S-STUPR/L-2	59799	59800		0.750	10.00	0.625	0.406	0°	.125	6 X 1mm			

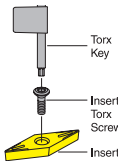
Metric Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	TPMT Gage Insert	Insert Torx Screw	Torx Key
E10M-M-STUPR/L-11	59785	59786	6 x Dia.	11.59	150	10	6.35	4°	1.5	None	110204	TS-25.45-6M2	T-8
E12M-K-STUPR/L-11	59789	59790		14.91	125	12	7.92	2°	2	6 X 1mm			
E12M-R-STUPR/L-11	59793	59794		14.91	200	12	7.92	2°	2	6 X 1mm			
E16M-M-STUPR/L-11	59797	59798		19.04	150	16	10.31	0°	3	6 X 1mm			
E16M-S-STUPR/L-11	59801	59802		19.04	250	16	10.31	0°	3	6 X 1mm			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_SVMC R/L Thru Coolant Integral Carbide Boring Bar Style M - Negative 50° Side Cutting Edge Angle for 7° positive 35° diamond VC__ inserts





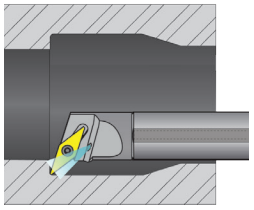


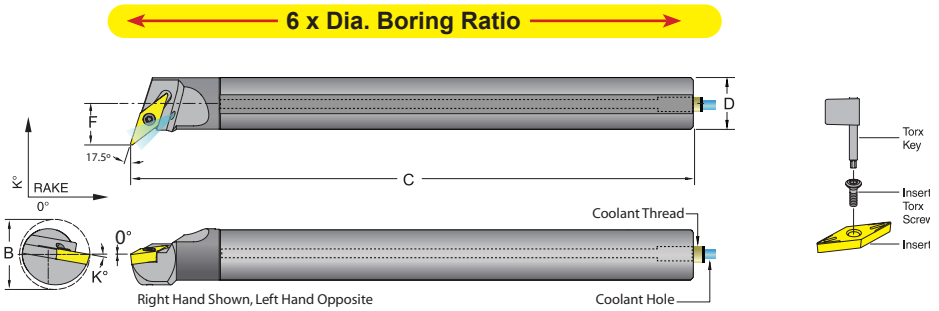
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VCMT Gage Insert	Insert Torx Screw	Torx Key
INCH													
E08K-SVMCR/L-2	59803	59804	6 x Dia.	0.587	5.23	0.500	0.312	8°	.080	6 X 1mm	221	TS-25.45-8M2	T-8
E08R-SVMCR/L-2	59807	59808		0.587	8.23	0.500	0.312	8°	.080	6 X 1mm			
E10M-SVMCR/L-2	59811	59812		0.750	6.16	0.625	0.406	8°	.125	6 X 1mm			
E10S-SVMCR/L-2	59815	59816		0.750	10.16	0.625	0.406	8°	.125	6 X 1mm			

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VCMT Gage Insert	Insert Torx Screw	Torx Key
METRIC													
E12M-K-SVMCR/L-11	59805	59806	6 x Dia.	14.910	130.84	12	7.925	8°	2	6 X 1mm	110304	TS-25.45-8M2	T-8
E12M-R-SVMCR/L-11	59809	59810		14.910	205.84	12	7.925	8°	2	6 X 1mm			
E16M-M-SVMCR/L-11	59813	59814		19.044	154.06	16	10.312	8°	3	6 X 1mm			
E16M-S-SVMCR/L-11	59817	59818		19.044	254.06	16	10.312	8°	3	6 X 1mm			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_SVQC R/L Thru Coolant Integral Carbide Boring Bar Style Q - Negative 17.5° End Cutting Edge Angle for 7° positive 35° diamond VC__ inserts





INCH

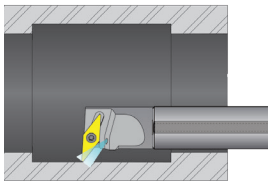
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VCMT Gage Insert	Insert Torx Screw	Torx Key
E10M-SVQCR/L-2	59819	59820	6 x Dia.	0.844	6.00	0.625	0.500	10°	.125	6 X 1mm	221	TS-25.45-8M2	T-8
E10S-SVQCR/L-2	59823	59824		0.844	10.00	0.625	0.500	10°	.125	6 X 1mm			

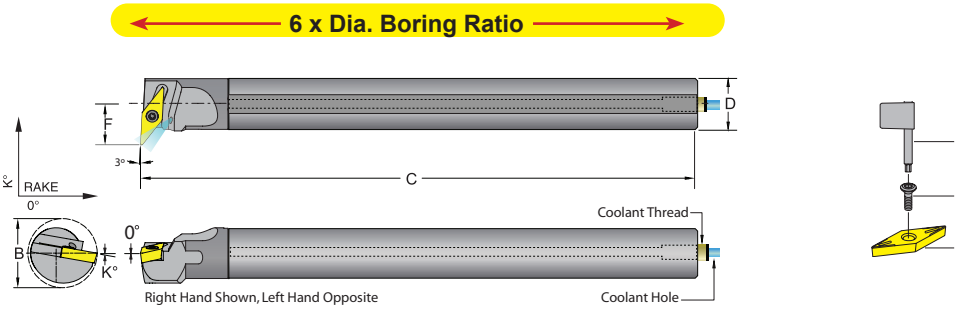
METRIC

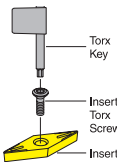
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VCMT Gage Insert	Insert Torx Screw	Torx Key
E16M-M-SVQCR/L-11	59821	59822	6 x Dia.	21.43	150	16	12.70	10°	3	6 X 1mm	110304	TS-25.45-8M2	T-8
E16M-S-SVQCR/L-11	59825	59826		21.43	250	16	12.70	10°	3	6 X 1mm			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_SVUC R/L Thru Coolant Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive 35° diamond VC__ inserts







INCH

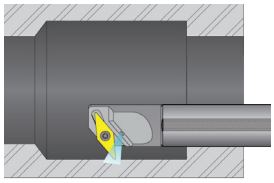
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VCMT Gage Insert	Insert Torx Screw	Torx Key
E10M-SVUCR/L-2	59827	59828	6 x Dia.	0.844	6.00	0.625	0.500	10°	.125	6 X 1mm	221	TS-25.45-8M2	T-8
E10S-SVUCR/L-2	59831	59832		0.844	10.00	0.625	0.500	10°	.125	6 X 1mm			

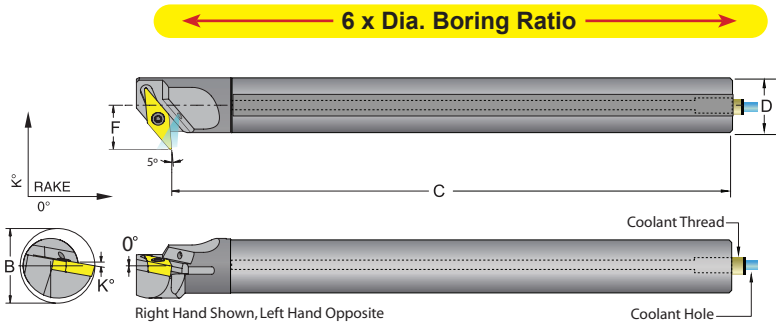
METRIC

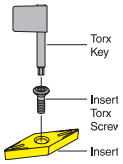
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VCMT Gage Insert	Insert Torx Screw	Torx Key
E16M-M-SVUCR/L-11	59829	59830	6 x Dia.	21.43	150	16	12.70	10°	3	6 X 1mm	110304	TS-25.45-8M2	T-8
E16M-S-SVUCR/L-11	59833	59834		21.43	250	16	12.70	10°	3	6 X 1mm			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_SVXC R/L Thru Coolant Integral Carbide Boring Bar Style X - Negative 5° Back Boring Cutting Edge Angle for 7° positive 35° diamond VC__ inserts







INCH

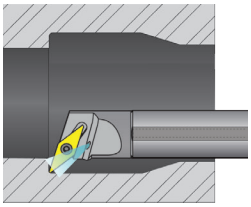
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VCMT Gage Insert	Insert Torx Screw	Torx Key
E10M-SVXCR/L-2	59835	59836	6 x Dia.	1.0	5.76	0.625	.625	10°	.125	6 X 1mm	221	TS-25.45-8M2	T-8
E10S-SVXCR/L-2	59839	59840		1.0	9.76	0.625	.625	10°	.125	6 X 1mm			

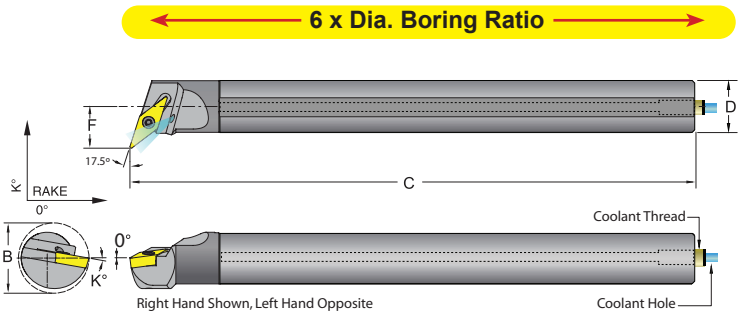
METRIC

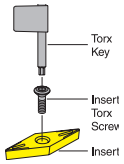
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VCMT Gage Insert	Insert Torx Screw	Torx Key
E16M-M-SVXCR/L-11	59837	59838	6 x Dia.	25.40	143.90	16	15.88	10°	3	6 X 1mm	110304	TS-25.45-8M2	T-8
E16M-S-SVXCR/L-11	59841	59842	6 x Dia.	25.40	243.90	16	15.88	10°	3	6 X 1mm			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_SVQP R/L Thru Coolant Integral Carbide Boring Bar Style Q - Negative 17.5° End Cutting Edge Angle for 11° positive 35° diamond VP__ inserts







INCH

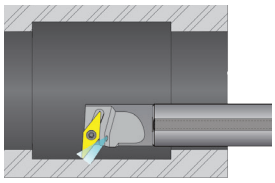
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VPMT Gage Insert	Insert Torx Screw	Torx Key
E10M-SVQPR/L-2	59843	59844	6 x Dia.	0.844	6.00	0.625	0.500	6°	.125	6 X 1mm	221	TS-25.45-8M2	T-8
E10S-SVQPR/L-2	59847	59848		0.844	10.00	0.625	0.500	6°	.125	6 X 1mm			

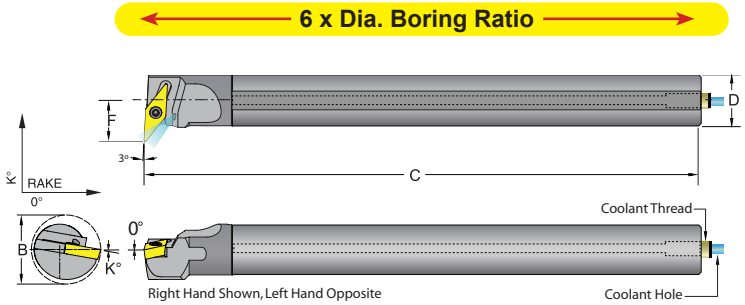
METRIC

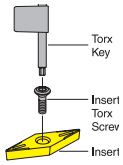
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VPMT Gage Insert	Insert Torx Screw	Torx Key
E16M-M-SVQPR/L-11	59845	59846	6 x Dia.	21.43	150	16	12.70	6°	3	6 X 1mm	110304	TS-25.45-8M2	T-8
E16M-S-SVQPR/L-11	59849	59850		21.43	250	16	12.70	6°	3	6 X 1mm			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_SVUP R/L Thru Coolant Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 11° positive 35° diamond VP__ inserts







INCH

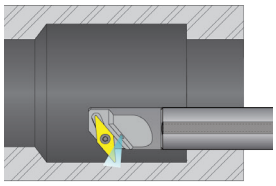
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VPMT Gage Insert	Insert Torx Screw	Torx Key
E10M-SVUPR/L-2	59851	59852	6 x Dia.	0.844	6.00	0.625	0.500	6°	.125	6 X 1mm	221	TS-25.45-8M2	T-8
E10S-SVUPR/L-2	59855	59856		0.844	10.00	0.625	0.500	6°	.125	6 X 1mm			

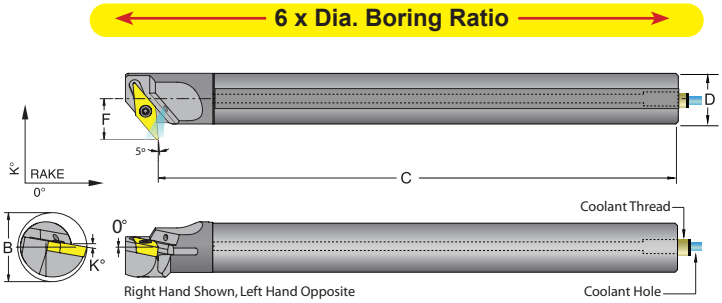
METRIC

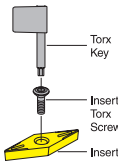
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VPMT Gage Insert	Insert Torx Screw	Torx Key
E16M-M-SVUPR/L-11	59853	59854	6 x Dia.	21.43	150	16	12.70	6°	3	6 X 1mm	110304	TS-25.45-8M2	T-8
E16M-S-SVUPR/L-11	59857	59858		21.43	250	16	12.70	6°	3	6 X 1mm			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_SVXP R/L Thru Coolant Integral Carbide Boring Bar Style X - Negative 5° Back Boring Cutting Edge Angle for 11° positive 35° diamond VP__ inserts







INCH

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VPMT Gage Insert	Insert Torx Screw	Torx Key
E10M-SVXPR/L-2	59859	59860	6 x Dia.	1.00	5.76	0.625	.625	6°	.125	6 X 1mm	221	TS-25.45-8M2	T-8
E10S-SVXPR/L-2	59863	59864		1.00	9.76	0.625	.625	6°	.125	6 X 1mm			

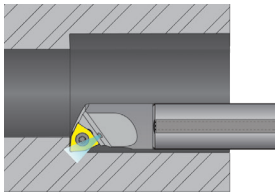
METRIC

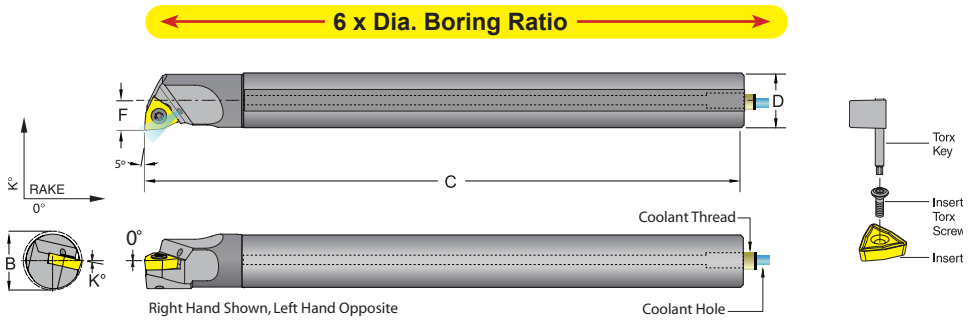
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	VPMT Gage Insert	Insert Torx Screw	Torx Key
E16M-M-SVXPR/L-11	59861	59862	6 x Dia.	25.4	143.90	16	15.88	6°	3	6 X 1mm	110304	TS-25.45-8M2	T-8
E16M-S-SVXPR/L-11	59865	59866		25.4	243.90	16	15.88	6°	3	6 X 1mm			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

Anti Vibration-Boring & Threading Bar

E_SWLC R/L Thru Coolant Integral Carbide Boring Bar Style L - Negative 5° End Cutting Edge Angle for 7° positive 80° trigon WC__ inserts





INCH

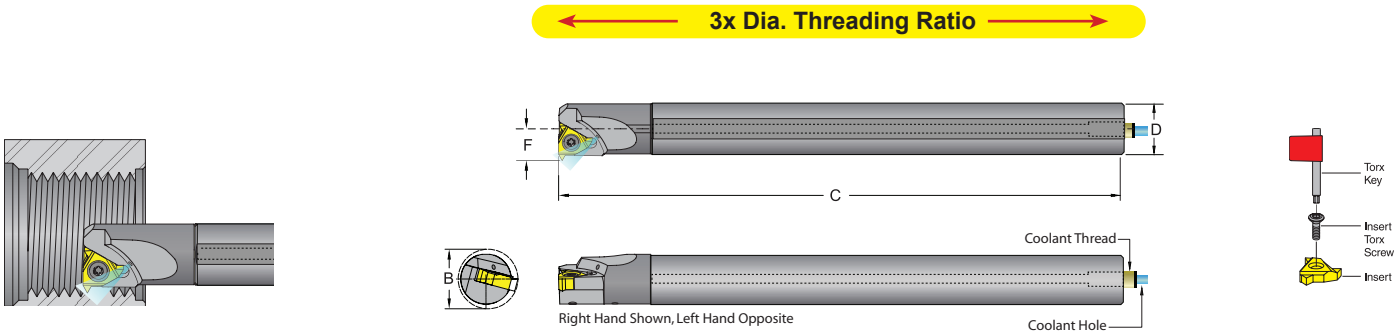
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	WCMT Gage Insert	Insert Torx Screw	Torx Key
E03.0H-SWLCR/L-1.2	59867	59868	6 x Dia.	0.205	4.00	0.187	0.103	13°	.040	None	1.210.2	TS-18.35-1M1	T-6
E03.5H-SWLCR/L-1.2	59871	59872		0.245	4.00	0.218	0.125	11°	.040	None			
E04H-SWLCR/L-1.2	59875	59876		0.270	4.00	0.250	0.135	9°	.040	None			
E05K-SWLCR/L-1.2	59879	59880		0.335	5.00	0.312	0.167	7°	.040	None			
E06M-SWLCR/L-2	59883	59884		0.396	6.00	0.375	0.198	15°	.060	None	21.51	TS-25.45-6M2	T-8
E08K-SWLCR/L-2	59887	59888		0.550	5.00	0.500	0.275	13°	.080	6 X 1mm			
E08R-SWLCR/L-2	59891	59892		0.550	8.00	0.500	0.275	13°	.080	6 X 1mm			
E10M-SWLCR/L-2	59895	59896		0.740	6.00	0.625	0.395	10°	.125	6 X 1mm			
E10S-SWLCR/L-2	59899	59900		0.740	10.00	0.625	0.395	10°	.125	6 X 1mm			
E08K-SWLCR/L-3	59903	59904		0.550	5.00	0.500	0.275	13°	.080	6 X 1mm	32.52	TS-35.6-9M1	T-15
E08R-SWLCR/L-3	59907	59908		0.550	8.00	0.500	0.275	13°	.080	6 X 1mm			
E10M-SWLCR/L-3	59911	59912		0.740	6.00	0.625	0.395	10°	.125	6 X 1mm			
E10S-SWLCR/L-3	59915	59916		0.740	10.00	0.625	0.395	10°	.125	6 X 1mm			
E12Q-SWLCR/L-3	60047	60048		0.930	7.000	0.750	0.500	10°	0.157	1/8"-27			
E12S-SWLCR/L-3	60049	60050		0.930	10.00	0.750	0.500	10°	0.157	1/8"-27			
E16R-SWLCR/L-3	60051	60052		1.200	8.000	1.000	0.625	5°	0.197	1/8"-27			
E16T-SWLCR/L-3	60053	60054		1.200	12.00	1.000	0.625	5°	0.197	1/8"-27			
E20U-SWLCR/L-4	60055	60056		1.530	14.00	1.250	0.765	5°	0.197	1/8"-27	432	TS-5.8-10M1	T-20

METRIC

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	WCMT Gage Insert	Insert Torx Screw	Torx Key
E05M-H-SWLCR/L-02	59869	59870	6 x Dia.	5.21	100	5	2.62	13°	1	None	S20101	TS-18.35-1M1	T-6
E06M-H-SWLCR/L-02	59873	59874		6.22	100	6	3.18	11°	1	None			
E07M-H-SWLCR/L-02	59877	59878		6.86	100	7	3.43	9°	1	None			
E08M-K-SWLCR/L-02	59881	59882		8.51	125	8	4.24	7°	1	None			
E10M-M-SWLCR/L-04	59885	59886		10.06	150	10	5.03	15°	1.5	None	040204	TS-25.45-6M2	T-8
E12M-K-SWLCR/L-04	59889	59890		13.97	125	12	6.99	13°	2	6 X 1mm			
E12M-R-SWLCR/L-04	59893	59894		13.97	200	12	6.99	13°	2	6 X 1mm			
E16M-M-SWLCR/L-04	59897	59898		18.80	150	16	10.03	10°	3	6 X 1mm			
E16M-S-SWLCR/L-04	59901	59902		18.80	250	16	10.03	10°	3	6 X 1mm			
E12M-K-SWLCR/L-06	59905	59906		13.97	125	12	6.99	13°	2	6 X 1mm	06T308	TS-35.6-9M1	T-15
E12M-R-SWLCR/L-06	59909	59910		13.97	200	12	6.99	13°	2	6 X 1mm			
E16M-M-SWLCR/L-06	59913	59914		18.80	150	16	10.03	10°	3	6 X 1mm			
E16M-S-SWLCR/L-06	59917	59918		18.80	250	16	10.03	10°	3	6 X 1mm			
E20M-Q-SWLCR/L-06	60057	60058		23.6	180	20	12.70	10°	4	1/8"-27			
E20M-S-SWLCR/L-06	60059	60060		23.6	250	20	12.70	10°	4	1/8"-27			
E25M-R-SWLCR/L-06	60061	60062		30.5	200	25	15.88	5°	5	1/8"-27			
E25M-T-SWLCR/L-06	60063	60064		30.5	300	25	15.88	5°	5	1/8"-27			
E32M-U-SWLCR/L-08	60065	60066		38.9	350	32	19.43	5°	5	1/8"-27	080408	TS-5.8-10M1	T-20

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_SN R/L Thru Coolant Integral Carbide Threading Bar Internal Laydown Bar for Laydown Inserts



INCH											
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	Coolant Hole	Coolant Thread	Laydown Gage Insert	Insert Torx Screw	Torx Key
E03.5H-SNR/L-06	59919	59920	6 x Dia.	0.249	4.00	0.218	0.129	.040	None	06-A60	TS-06	T-6
E04H-SNR/L-06	59923	59924		0.307	4.00	0.250	0.165	.040	None			
E05K-SNR/L-08	59927	59928		0.378	5.00	0.312	0.215	.040	None	08-A60	TS-08	T-8
E06M-SNR/L-H11	59931	59932		0.500	6.00	0.375	0.250	.060	None	11-A60	TS-25.45-6M2	T-8
E08K-SNR/L-H11	59935	59936		0.590	5.00	0.500	0.315	.080	6 X 1mm			
E08R-SNR/L-H11	59939	59940		0.590	8.00	0.500	0.315	.080	6 X 1mm			
E10M-SNR/L-H16	59943	59944		0.750	6.00	0.625	0.406	.125	6 X 1mm	16-A60	TS-35.6-9M1	T-15
E10S-SNR/L-H16	59947	59948		0.750	10.00	0.625	0.406	.125	6 X 1mm			

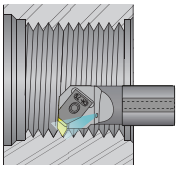
METRIC											
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	Coolant Hole	Coolant Thread	Laydown Gage Insert	Insert Torx Screw	Torx Key
E06M-H-SNR/L-06	59921	59922	6 x Dia.	6.32	100	6	3.28	1	None	06-A60	TS-06	T-6
E07M-H-SNR/L-06	59925	59926		7.80	100	7	4.19	1	None			
E08M-K-SNR/L-08	59929	59930		9.60	125	8	5.46	1	None	08-A60	TS-08	T-8
E10M-M-SNR/L-H11	59933	59934		12.70	150	10	6.35	1.5	None	11-A60	TS-25.45-6M2	T-8
E12M-K-SNR/L-H11	59937	59938		14.99	125	12	8.00	2	6 X 1mm			
E12M-R-SNR/L-H11	59941	59942		14.99	200	12	8.00	2	6 X 1mm			
E16M-M-SNR/L-H16	59945	59946		19.04	150	16	10.31	3	6 X 1mm	16-A60	TS-35.6-9M1	T-15
E16M-S-SNR/L-H16	59949	59950		19.04	250	16	10.31	3	6 X 1mm			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

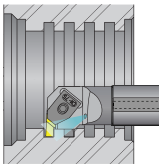
Anti Vibration-Boring & Threading Bar

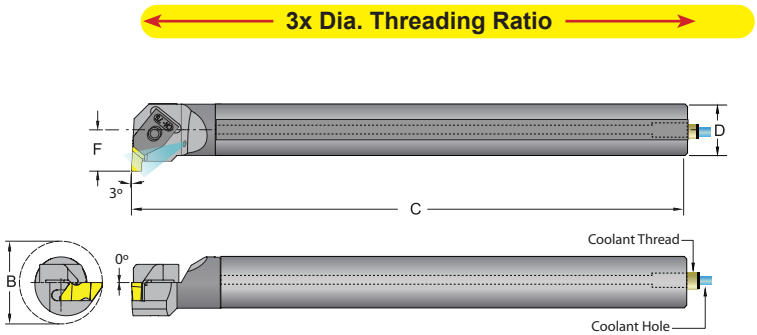
E_NE R/L Thru Coolant Integral Carbide Threading & Grooving Bar Style E- Internal DorNotch Bar for threading and grooving Dor-Notch inserts

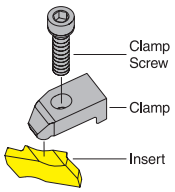
Threading



Grooving







INCH

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	Coolant Hole	Coolant Thread	DorNotch Gage Insert	Insert Torx Screw	Torx Key
E08K-NER/L-2	59951	59952	6 x Dia.	0.830	5.12	0.500	0.470	.080	6 X 1mm	*NG-2L **NG-2R	*CM-75 **CM-74	S-310M
E08R-NER/L-2	59955	59956		0.830	8.12	0.500	0.470	.080	6 X 1mm			
E10M-NER/L-2	59959	59960		1.000	6.00	0.625	0.500	.125	6 X 1mm	*NG-2L **NG-2R	*CM-75 **CM-74	S-310M
E10S-NER/L-2	59963	59964		1.000	10.00	0.625	0.500	.125	6 X 1mm			
E12Q-NER/L-2	60169	60170		1.125	6.875	0.750	0.530	0.157	1/8"-27	*NG-2L **NG-2R	*CM-75 **CM-74	S-310M
E12S-NER/L-2	60171	60172		1.125	9.875	0.750	0.530	0.157	1/8"-27			

METRIC

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	Coolant Hole	Coolant Thread	DorNotch Gage Insert	Insert Torx Screw	Torx Key
E12M-K-NER/L-2	59953	59954	6 x Dia.	21.08	128.05	12	11.94	2	6 X 1mm	*NG-2L **NG-2R	*CM-75 **CM-74	S-310M
E12M-R-NER/L-2	59957	59958		21.08	203.05	12	11.94	2	6 X 1mm			
E16M-M-NER/L-2	59961	59962		25.40	150	16	12.70	3	6 X 1mm	*NG-2L **NG-2R	*CM-75 **CM-74	S-310M
E16M-S-NER/L-2	59965	59966		25.40	250	16	12.70	3	6 X 1mm			
E20M-Q-NER/L-2	60179	60180		28.6	180	20	14.27	4	1/8"-27	*NG-2L **NG-2R	*CM-75 **CM-74	S-310M
E20M-S-NER/L-2	60181	60182		28.6	250	20	14.27	4	1/8"-27			

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

*For right hand tool. ** For left hand tool

NOTES:

High Performance Jet-Stream™ Carbide Bars

Thru Coolant Carbide Boring & Threading Bars

200% More Insert Life with High Pressure Jet-Stream™!

Better Machining Performance

Higher Workmanship Quality

Longer Cutting Inserts Life

The technology behind the "Carbide Boring Bar System"
the rigidity of the carbide boring bar, will make boring and threading simple and precise, from heavy roughing to precision finishing, with close tolerance and high surface finish.

- **Boring Ratio 6 x Bar Dia.**
- **Threading Ratio 3 x Bar Dia.**

Boring Bar Sizes

Inch: .750" Dia., 1"Dia., 1.250" Dia.
Metric: 20mm Dia., 25mm Dia., 32mm Dia.

Boring Bar Heads

Negative Insert Geometry:
CNMG DNMG TNMG
VNMG WNMG

Threading Heads

for Lay-Down Insert:
16-A60 22-N60
for DorNotch Insert:
NG-3

The Insert Head Braze

Brazed on to the Carbide Bar with triple silver alloys. The combination of the correct alloy and the thickness of the braze makes brazing strong and unbreakable but flexible under cutting pressure and interrupt cuts.

Jet-Stream™ Thru Coolant System

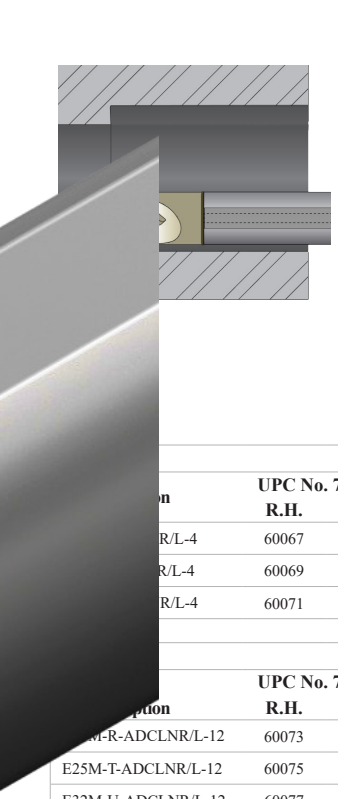
At a close range of 1/4" (6mm) the Jet-Stream™ coolant system aims the coolant precisely onto the cutting edge of the insert **at a very high velocity.** The controlled Jet-Stream™ coolant will lubricate the cutting edge of the insert reducing the coefficient of friction, stopping the chip from adhering to the insert. The physical combination of high velocity and high pressure forces the hot chip to hydroplane away from the cutting edge of the insert.

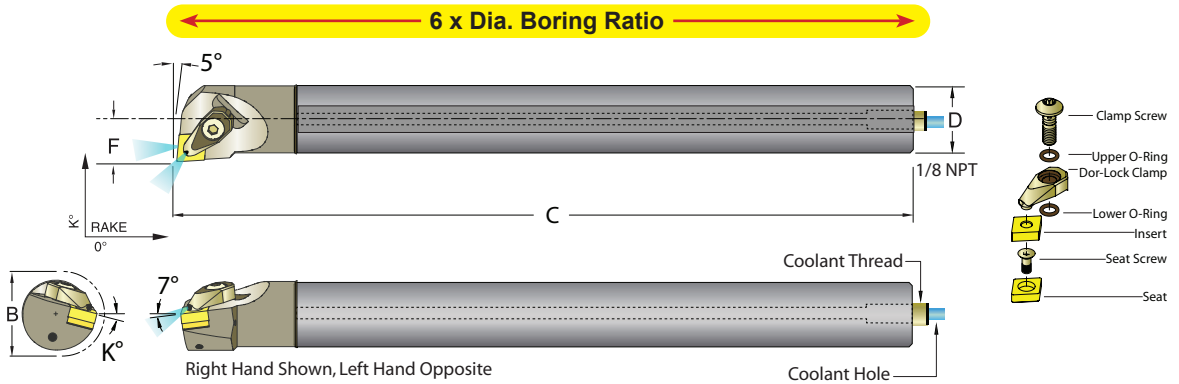
As a result, the insert will operate at a constant low temperature, With a clean and undamaged cutting edge, changing the way metal is cut!

The Insert Heads

Made of heat treated alloy steel, and precisely machined on the body after brazing. Thru Coolant System to improve performance, precision and insert life

E_ADCLN R/L Thru Coolant Jet-Stream™ Carbide Boring Bar Style L - Negative 5° side & end cutting lead angle for negative 80° diamond CN__inserts





INCH

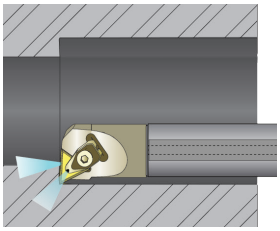
Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	CNMG Gage Insert	Seat	Seat Screw	Dor-Lock Clamp
R/L-4	60067	60068		1.280	8.000	1.000	0.640	14°	0.197	1/8"-27				
R/L-4	60069	60070	6 x Dia.	1.280	12.00	1.000	0.640	14°	0.197	1/8"-27	432	ICSN-433	SM-S4	JSLC-HPCTW-4N
R/L-4	60071	60072		1.530	14.00	1.250	0.765	14°	0.197	1/8"-27				

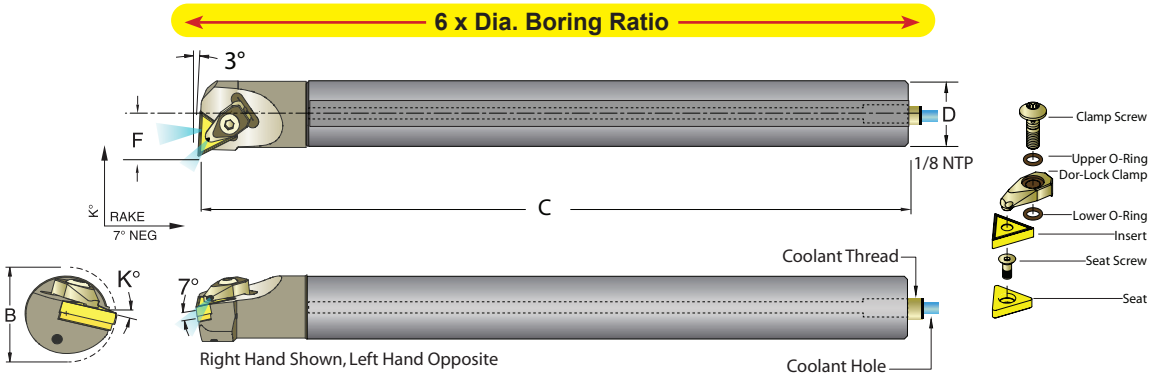
METRIC

Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	CNMG Gage Insert	Seat	Seat Screw	Dor-Lock Clamp
M-R-ADCLNR/L-12	60073	60074		32.5	200	25	16.26	14°	5	1/8"-27				
E25M-T-ADCLNR/L-12	60075	60076	6 x Dia.	32.5	300	25	16.26	14°	5	1/8"-27	120408	ICSN-433	SM-S4	JSLC-HPCTW-4N
E32M-U-ADCLNR/L-12	60077	60078		38.9	350	32	19.43	14°	5	1/8"-27				

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_ADTUN R/L Thru Coolant Jet-Stream™ Carbide Boring Bar Style U - Negative 3° end cutting lead angle for negative triangle TN__ inserts





INCH

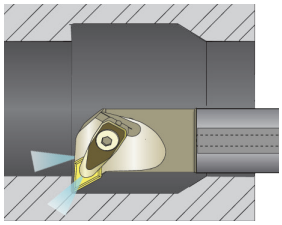
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	TNMG Gage Insert	Seat	Seat Screw	Dor-Lock Clamp
E16R-ADTUNR/L-3	60079	60080		1.280	8.000	1.000	0.640	14°	0.197	1/8"-27				
E16T-ADTUNR/L-3	60081	60082	6 x Dia.	1.280	12.00	1.000	0.640	14°	0.197	1/8"-27	332	ITSN-322	SM-S3	JSLC-HPDT3-BR/L
E20U-ADTUNR/L-3	60083	60084		1.530	14.00	1.250	0.765	14°	0.197	1/8"-27				

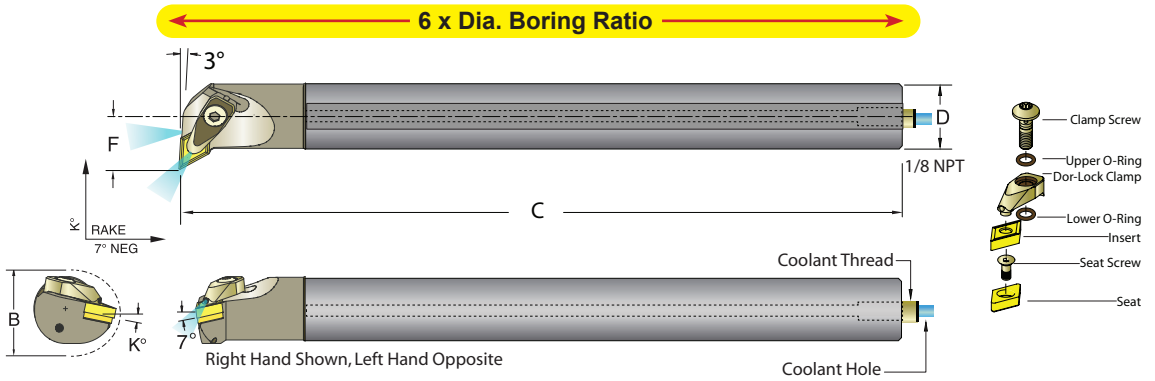
METRIC

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	TNMG Gage Insert	Seat	Seat Screw	Dor-Lock Clamp
E25M-R-ADTUNR/L-16	60085	60086		32.5	200	25	16.26	14°	5	1/8"-27				
E25M-T-ADTUNR/L-16	60087	60088	6 x Dia.	32.5	300	25	16.26	14°	5	1/8"-27	160408	ITSN-322	SM-S3	JSLC-HPDT3-BR/L
E32M-U-ADTUNR/L-16	60089	60090		38.9	350	32	19.43	14°	5	1/8"-27				

*8 x Dia. Boring Ratio can be achieved under favorable conditions. *Right clamp for right hand toolholder. Left clamp for left hand toolholder

E_ADDUN R/L Thru Coolant Jet-Stream™ Carbide Boring Bar Style U Negative 3° end cutting lead angle for negative 55° diamond DN__inserts





INCH

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	DNMG Gage Insert	Seat	Seat Screw	Dor-Lock Clamp
E16R-ADDUNR/L-3	60093	60094		1.300	8.000	1.000	0.750	14°	0.197	1/8"-27	332	DD-32.52	TS-35.6-9M1	JSLC-HPDT3-BR/L
E16T-ADDUNR/L-3	60095	60096	6 x Dia.	1.300	12.00	1.000	0.750	14°	0.197	1/8"-27				
E20U-ADDUNR/L-4	60097	60098		2.000	14.00	1.250	1.000	11°	0.197	1/8"-27	432	DD-432	TS-5.8-10M1	JSLC-HPD4

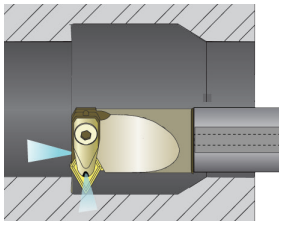
MERIC

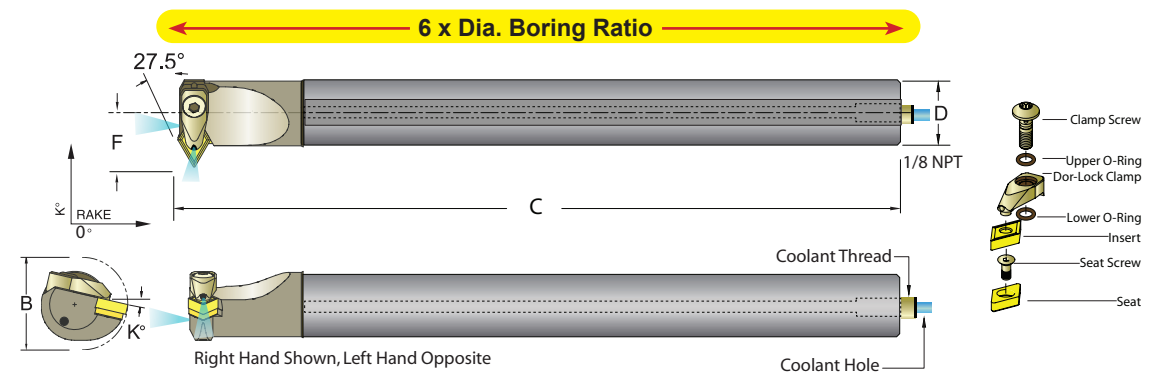
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	DNMG Gage Insert	Seat	Seat Screw	Dor-Lock Clamp
E25M-R-ADDUNR/L-11	60099	60100		33.0	200	25	19.05	14°	5	1/8"-27	110408	DD-32.52	TS-35.6-9M1	JSLC-HPDT3-BR/L
E25M-T-ADDUNR/L-11	60101	60102	6 x Dia.	33.0	300	25	19.05	14°	5	1/8"-27				
E32M-U-ADDUNR/L-15	60107	60108		50.8	350	32	25.40	11°	5	1/8"-27	150602	DD-432	TS-5.8-10M1	JSLC-HPD4

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

*Right clamp for right hand toolholder. Left clamp for left hand toolholder

E_ADDPN R/L Thru Coolant Jet-Stream™ Carbide Boring Bar Style P- Negative 27.5 end cutting lead angle for negative 55° diamond DN__inserts





INCH

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	DNMG Gage Insert	Seat	Seat Screw	Dor-Lock Clamp
E16R-ADDPNR/L-3	60109	60110		1.500	8.000	1.000	0.750	13°	0.197	1/8"-27	332	DD-32.52	TS-35.6-9M1	JSLC-HPDT3-BR/L
E16T-ADDPNR/L-3	60111	60112	6 x Dia.	1.500	12.00	1.000	0.750	13°	0.197	1/8"-27				
E20U-ADDPNR/L-4	60113	60114		1.750	14.00	1.250	1.000	13°	0.197	1/8"-27	432	DD-432	TS-5.8-10M1	JSLC-HPD4

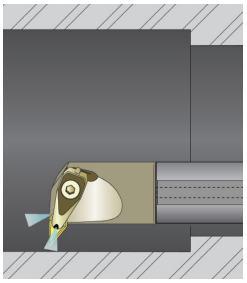
METRIC

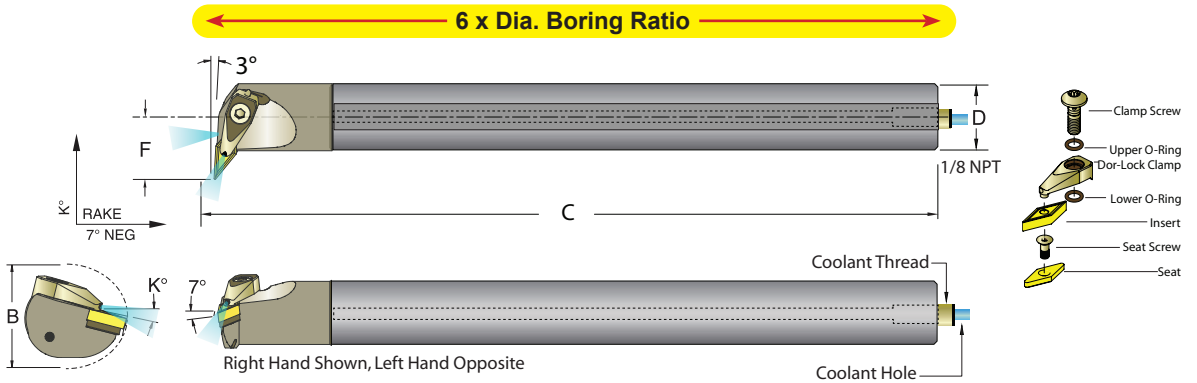
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	DNMG Gage Insert	Seat	Seat Screw	Dor-Lock Clamp
E25M-R-ADDPNR/L-11	60115	60116		38.1	200	25	19.05	13°	5	1/8"-27	110408	DD-32.52	TS-35.6-9M1	JSLC-HPDT3-BR/L
E25M-T-ADDPNR/L-11	60117	60118	6 x Dia.	38.1	300	25	19.05	13°	5	1/8"-27				
E32M-U-ADDPNR/L-15	60119	60120		44.5	350	32	25.40	13°	5	1/8"-27	150602	DD-432	TS-5.8-10M1	JSLC-HPD4

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

*Right clamp for right hand toolholder. Left clamp for left hand toolholder

E_ADVUN R/L Thru Coolant Jet-Stream™ Carbide Boring Bar Style U - Negative 3° side cutting lead angle for negative 35° diamond VN__ inserts



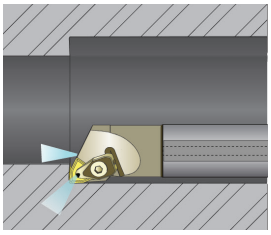


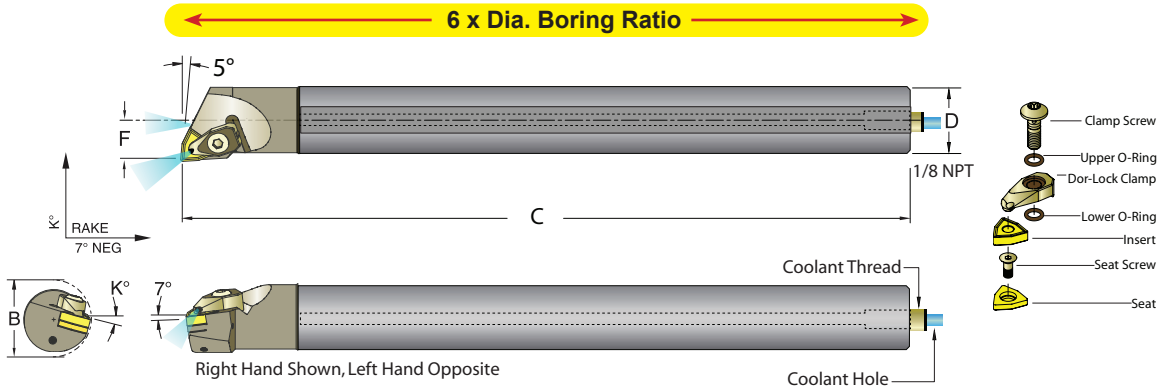
Inch	UPC No. 733101-		Boring	Min. Bore					Coolant	Coolant	VNMG			Dor-Lock
Bar Description	R.H.	L.H.	Ratio*	B	C	D	F	K°	Hole	Thread	Gage Insert	Seat	Seat Screw	Clamp
E20U-ADVUNR/L-3	60121	60122	6 x Dia.	2.250	14.00	1.250	1.125	14°	0.197	1/8"-27	332	IVSN-322	SM-M3-V	JSLC-HPV3

Metric	UPC No. 733101-		Boring	Min. Bore					Coolant	Coolant	VNMG			Dor-Lock
Bar Description	R.H.	L.H.	Ratio*	B	C	D	F	K°	Hole	Thread	Gage Insert	Seat	Seat Screw	Clamp
E32M-U-ADVUNR/L-16	60123	60124	6 x Dia.	45.0	350	32	28.58	14°	5	1/8"-27	160408	IVSN-322	SM-M3-V	JSLC-HPV3

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

E_ADWLN R/L Thru Coolant Jet-Stream™ Carbide Boring Bar Style L - Negative 5° end & side cutting lead angle for negative 80° trigon WN__inserts





INCH														
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	WNMG Gage Insert	Seat	Seat Screw	Dor-Lock Clamp
E16R-ADWLNR/L-4	60125	60126		1.450	8.000	1.000	0.640	14°	0.197	1/8"-27				
E16T-ADWLNR/L-4	60127	60128	6 x Dia.	1.450	12.00	1.000	0.640	14°	0.197	1/8"-27	432	IWSN-433	SM-S4	*JSLC-HPCTW-4R **JSLC-HPCTW-4L
E20U-ADWLNR/L-4	60129	60130		1.530	14.00	1.250	0.765	14°	0.197	1/8"-27				

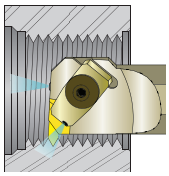
METRIC														
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	K°	Coolant Hole	Coolant Thread	WNMG Gage Insert	Seat	Seat Screw	Dor-Lock Clamp
E25M-R-ADWLNR/L-08	60131	60132		32.5	200	25	16.26	14°	5	1/8"-27				
E25M-T-ADWLNR/L-08	60133	60134	6 x Dia.	32.5	300	25	16.26	14°	5	1/8"-27	080408	IWSN-433	SM-S4	*JSLC-HPCTW-4R **JSLC-HPCTW-4L
E32M-U-ADWLNR/L-08	60135	60136		38.9	350	32	19.43	14°	5	1/8"-27				

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

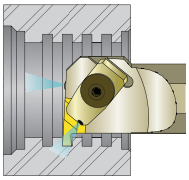
*Right clamp for right hand toolholder. **Left clamp for left hand toolholder

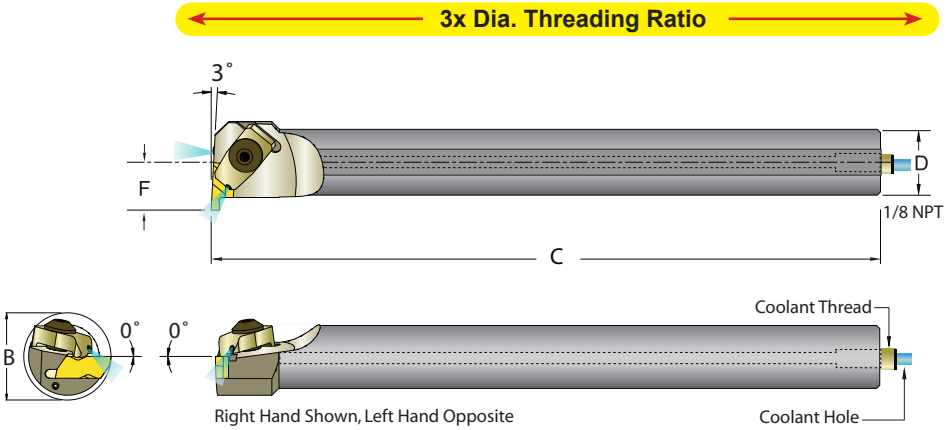
E-ADNE R/L Thru Coolant Jet-Stream™ Carbide Threading Bar Style E- For DorNotch Threading Inserts

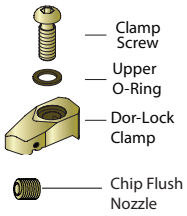
Threading



Grooving







INCH

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	Coolant Hole	Coolant Thread	DorNotch Gage Insert	Seat	Dor-Lock Clamp	Clamp Screw	Chip Flush Nozzle
E16R-ADNER/L-3	60173	60174	6 x Dia.	1.380	8.000	1.000	0.690	0.197	1/8"-27	NG-3L* NG-3R**	none	JSLC-HP73* JSLC-HP72**	JSCS-04	JSPN-M6
E16T-ADNER/L-3	60175	60176		1.380	12.000	1.000	0.690	0.197	1/8"-27					
E20U-ADNER/L-3	60177	60178		1.750	14.000	1.250	0.880	0.197	1/8"-27					

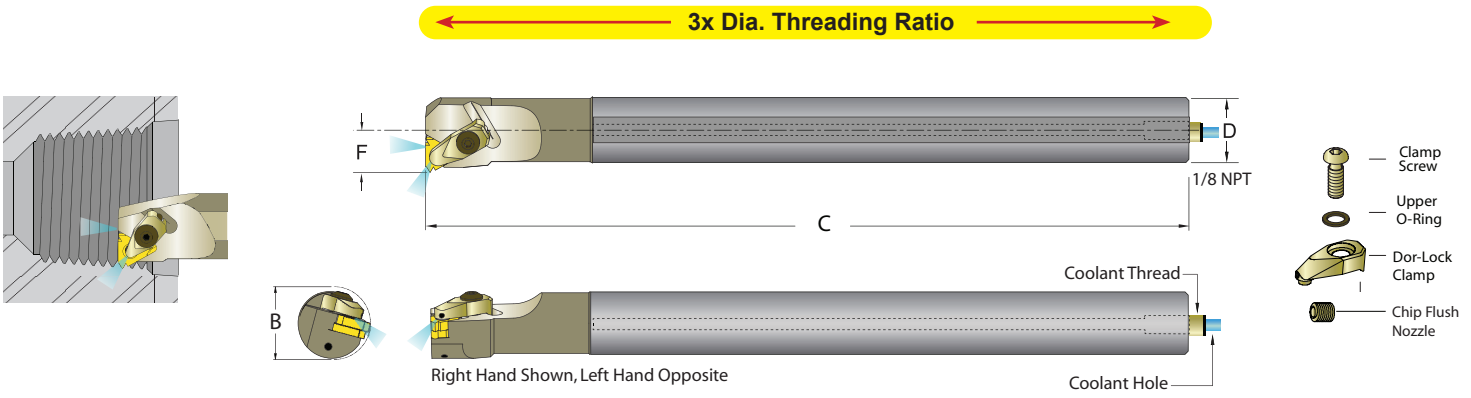
METRIC

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	Coolant Hole	Coolant Thread	DorNotch Gage Insert	Seat	Dor-Lock Clamp	Clamp Screw	Chip Flush Nozzle
E25M-R-ADNER/L-3	60183	60184	6 x Dia.	35.1	200	25	17.53	5	1/8"-27	NG-3L* NG-3R**	none	JSLC-HP73* JSLC-HP72**	JSCS-04	JSPN-M6
E25M-T-ADNER/L-3	60185	60186		35.1	300	25	17.53	5	1/8"-27					
E32M-U-ADNER/L-3	60187	60188		44.5	350	32	22.35	5	1/8"-27					

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

* For right hand holder ** For left hand holder

E-ADLN R/L Thru Coolant Jet-Stream™ Carbide Threading Bar Style N-for LayDown Threading Inserts



INCH

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	Coolant Hole	Coolant Thread	LayDown Gage Insert	Seat	Insert or Seat Screw	Dor-Lock Clamp	Clamp Screw	Chip Flush Nozzle
E12Q-ADLNR-16	60145	60146	6 x Dia.	1.120	7.000	0.750	0.520	0.157	1/8"-27	16-G60	GXE/I-16	TS-3.5-7M1	JSLC-HP16L* JSLC-HP16R**	JSCS-03	JSPN-M6
E12S-ADLNR-16	60147	60148		1.120	10.00	0.750	0.520	0.157	1/8"-27						
E16R-ADLNR-16	60149	60150		1.375	8.000	1.000	0.650	0.197	1/8"-27						
E16T-ADLNR-16	60151	60152		1.375	12.00	1.000	0.650	0.197	1/8"-27						
E20U-ADLNR-16	60153	60154		1.620	14.00	1.250	0.780	0.197	1/8"-27						
E20U-ADLNR-22	60155	60156		1.750	14.00	1.250	0.840	0.197	1/8"-27	22-N60	NXE/I-22	TS-45.75-15M1	JSLC-HPD4	JSCS-04	JSPN-M6

METRIC

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio*	Min. Bore B	C	D	F	Coolant Hole	Coolant Thread	LayDown Gage Insert	Seat	Insert or Seat Screw	Dor-Lock Clamp	Clamp Screw	Chip Flush Nozzle
E20M-Q-ADLNR-16	60157	60158	6 x Dia.	28.4	180	20	13.2	4	1/8"-27	16-G60	GXE/I-16	TS-3.5-7M1	JSLC-HP16L* JSLC-HP16R**	JSCS-03	JSPN-M6
E20M-S-ADLNR-16	60159	60160		28.4	250	20	13.2	4	1/8"-27						
E25M-R-ADLNR-16	60161	60162		34.9	200	25	16.5	5	1/8"-27						
E25M-T-ADLNR-16	60163	60164		34.9	300	25	16.5	5	1/8"-27						
E32M-U-ADLNR-16	60165	60166		41.1	350	32	19.8	5	1/8"-27						
E32M-U-ADLNR-22	60167	60168		44.5	350	32	21.3	5	1/8"-27	22-N60	NXE/I-22	TS-45.75-15M1	JSLC-HPD4	JSCS-04	JSPN-M6

*8 x Dia. Boring Ratio can be achieved under favorable conditions.

* For right hand holder ** For left hand holder

High Performance Quick Change Modular Carbide Boring Bars Body

for Multi Boring and Threading Operation

QUICK - PRECISE - RIGID

Better Machining Performance

Higher Workmanship Quality

Longer Cutting Insert Life

The technology behind the "Quick Change Modular Carbide Boring Bar System" the rigidity of the carbide boring bar, the interchangeability of the Modular Heads with thru coolant allows a multi boring and threading operation, quick, simple and precise, from heavy roughing to precision finishing, with close tolerance and high surface finish.

- **Boring Ratio 6 x Bar Dia.**
- **Threading Ratio 3 x Bar Dia.**

Boring Bar Sizes

Inch: .750" Dia., 1"Dia., 1.250" Dia.
Metric: 20mm Dia., 25mm Dia., 32mm Dia.

Boring Bar Heads

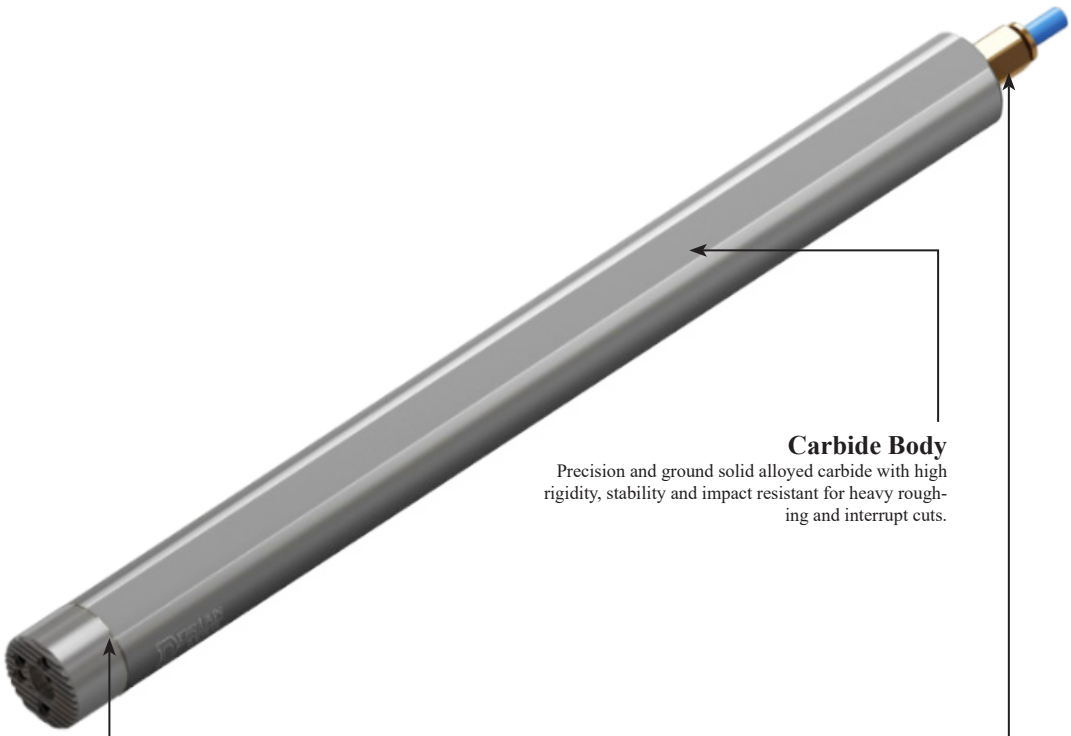
Positive Insert Geometry:

CCGT	CPGT	DPGT	
TCGT	TPGT	VCGT	WCGT

Threading Heads

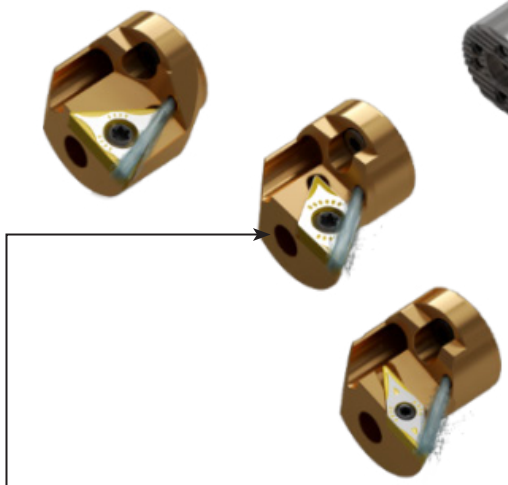
for Lay-Down Insert:

16-A60 22-N60



Carbide Body

Precision and ground solid alloyed carbide with high rigidity, stability and impact resistant for heavy roughing and interrupt cuts.



Quick Change Modular Head Collar

Brazed on to the Carbide Bar with triple silver alloys. The combination of the correct alloy and the thickness of the braze makes brazing strong and unbreakable but flexible under cutting pressure and interrupt cuts.

Quick Change Modular Head

Made of heat treated alloy steel TiN coated, locks into Quick Change Modular Head Collar with a 60° serrate grooves to expand surface contact, and locked with 3 cup set screws to for maximum locking rigidity and precise interchangeability.

Thru Coolant

Will enhances performance, precision and increase insert life. Chips are removed from the bore, the insert is kept clean and at a constant temperature to minimize cutting edge damage.

High Performance Quick Change Modular Carbide Boring Bars Body & Heads

for Multi Boring and Threading Operation

1 SCLC
R/L Quick Change
Boring Bar Head
With Thru Coolant

2 SDNC
R/L Quick Change
Boring Bar Head
With Thru Coolant

3 SDQC
R/L Quick Change
Boring Bar Head
With Thru Coolant

4 SDUC
R/L Quick Change
Boring Bar Head
With Thru Coolant

5 SDXC
R/L Quick Change
Boring Bar Head
With Thru Coolant

One Quick Change Modular
Carbide Body

Nine
Interchangeable Heads

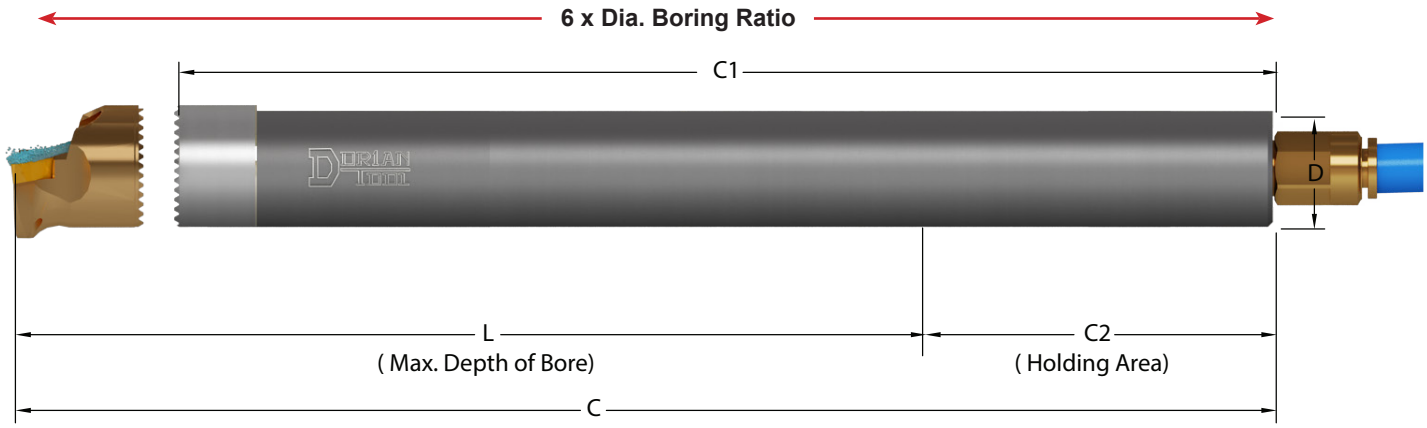
6 STUC
R/L Quick Change
Boring Bar Head
With Thru Coolant

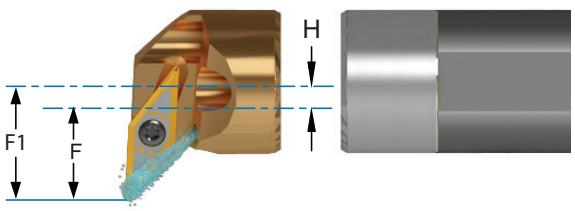
7 SVUC
R/L Quick Change
Boring Bar Head
With Thru Coolant

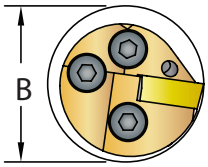
8 SWLC
R/L Quick Change
Boring Bar Head
With Thru Coolant

9 SN
R/L Quick Change
Threading Bar Head
With Thru Coolant

Thru Coolant Quick Change Modular Carbide Boring Bar Body







F1* = F + H
Min Bore = B + (H x 2)*

INCH

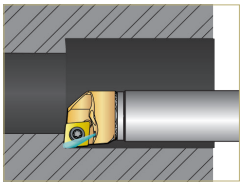
Carbide Bar Description	UPC No. 733101- Neutral	Boring Ratio	Carbide Body D	C	C1	L	C2	H	F1*	Min. Bore B*	Modular Head CBBB	Coolant Bore Dia.	Coolant Attachment Thread
AE12I-Q-QCCBB	60195	4x Dia.	0.750	7.000	6.200	4.00	3.00	0	F1=F+H	See head specifications	DBOMH-12/20M	0.157	1/8"-27NTP
AE16I-R-QCCBB	60197		1.000	8.000	7.200	4.00	4.00	0.125				0.197	
AE12I-S-QCCBB	60196	6x Dia.	0.750	10.000	9.200	7.00	3.00	0	F1=F+H	See head specifications	DBOMH-12/20M	0.157	1/8"-27NTP
AE16I-T-QCCBB	60198		1.000	12.00	11.200	8.00	4.00	0.125				0.197	
AE20I-U-QCCBB	60199		1.250	12.80	13.000	8.00	5.00	0.250				0.197	

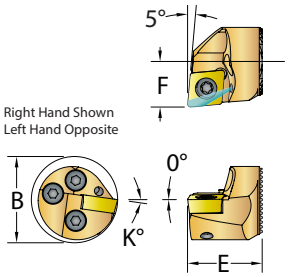
METRIC

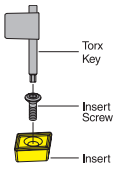
Carbide Bar Description	UPC No. 733101- Neutral	Boring Ratio	Carbide Body D	C	C1	L	C2	H	F1*	Min. Bore B*	Modular Head CBBB	Coolant Bore Dia.	Coolant Attachment Thread
AE20M-Q-QCCBB	60581	4 x Dia.	20	176	156	96	80	0	F1=F+H	See head specifications	DBOMH-12/20M	4	1/8"-27NTP
AE25M-R-QCCBB	60583		25	197	177	97	100	2.5				5	
AE20M-S-QCCBB	60582	6 x Dia.	20	246	226	166	80	0	F1=F+H	See head specifications	DBOMH-12/20M	4	1/8"-27NTP
AE25M-T-QCCBB	60584		25	297	277	197	100	2.5				5	
AE32M-U-QCCBB	60585		32	345	325	217	128	6				5	

8 x Dia. Boring Ratio can be achieved under favorable conditions.

SCLC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style L- Negative 5° End & Side Cutting Edge Angle for 7° positive 80° diamond CC__ inserts





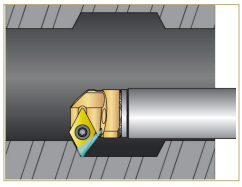


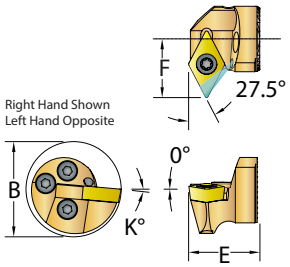
Thru Coolant

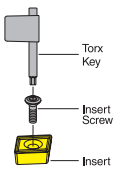
Head Description	UPC No. 733101- R.H.	UPC No. 733101- L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	CCMT Gage Insert Inch	CCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SCLCR/L-3	60225	60226	1.000	26	0.820	20.83	0.500	12.70	8°	0.750	20	32.52	09T308	TS-4.7-10M1	T-15
			1.250	31	0.820	20.83	0.500	12.70	8°	1.000	25				
			1.500	38	0.820	20.83	0.500	12.70	8°	1.250	32				

Heads will fit both inch and metric boring bar shanks

SDNC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style N - Negative 27.5° End & Side Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





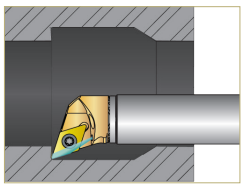


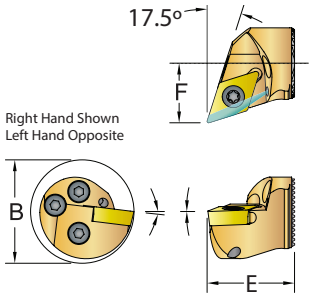
Thru Coolant

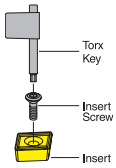
Head Description	UPC No. 733101- R.H.	UPC No. 733101- L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	DCMT Gage Insert Inch	DCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SDNCR/L-3	60229	60230	1.160	30	0.820	20.83	0.660	16.76	5°	0.750	20	32.52	11T308	TS-4.7-10M1	T-15
			1.410	35	0.820	20.83	0.660	16.76	5°	1.000	25				
			1.660	42	0.820	20.83	0.660	16.76	5°	1.250	32				

Heads will fit both inch and metric boring bar shanks

SDQC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style Q - Negative 17.5° End & Side Cutting Edge Angle for 7° positive 55° diamond DC___ inserts





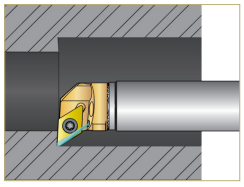


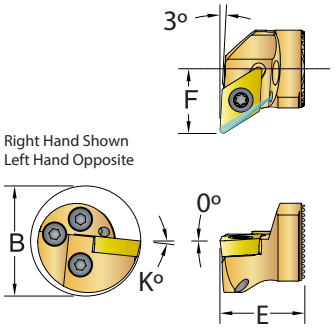
Thru Coolant

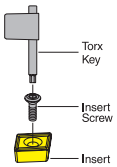
Head Description	UPC No. 733101-		B		E		F		K°	Reference Bars Dia.		DCMT Gage Insert		Insert Torx Screw	Torx Key
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric		
DBOMH-12/20M-SDQCR/L-3	60231	60232	1.125	29	0.820	20.83	0.625	15.88	7°	0.750	20	32.52	11T308	TS-4.7-10M1	T-15
			1.375	34	0.820	20.83	0.625	15.88	7°	1.000	25				
			1.625	41	0.820	20.83	0.625	15.88	7°	1.250	32				

Heads will fit both inch and metric boring bar shanks

SDUC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style U - Negative 3° End & Side Cutting Edge Angle for 7° positive 55° diamond DC___ inserts





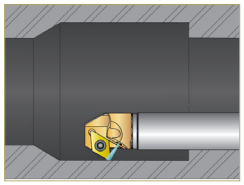


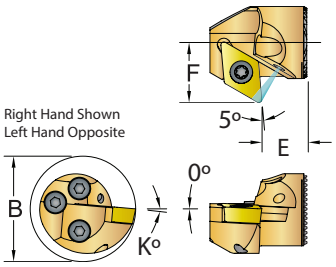
Thru Coolant

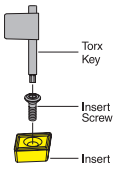
Head Description	UPC No. 733101-		B		E		F		K°	Reference Bars Dia.		DCMT Gage Insert		Insert Torx Screw	Torx Key
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric		
DBOMH-12/20M-SDUCR/L-2	60247	60248	1.025	26	0.820	20.83	0.525	13.34	6°	0.750	20	21.51	070204	TS-25.45-6M2	T-8
			1.275	27	0.820	20.83	0.525	13.34	6°	1.000	25				
			1.525	38	0.820	20.83	0.525	13.34	6°	1.250	32				
DBOMH-12/20M-SDUCR/L-3	60227	60228	1.038	26.37	0.820	20.83	0.625	15.88	6°	0.750	20	32.52	11T308	TS-4.7-10M1	T-15
			1.278	32.46	0.820	20.83	0.745	18.92	6°	1.000	25				
			1.538	39.07	0.820	20.83	0.880	22.35	6°	1.250	32				

Heads will fit both inch and metric boring bar shanks

SDXC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style X - Negative 5° Back Boring Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





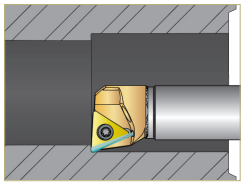


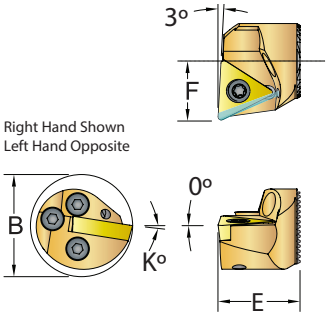
Thru Coolant

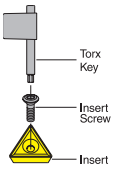
Head Description	UPC No. 733101- R.H.	UPC No. 733101- L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	DCMT Gage Insert Inch	DCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SDXCR/L-3	60233	60234	1.025	26	0.820	20.83	0.525	13.34	5°	0.750	20	32.52	11T308	TS-4.7-10M1	T-15
			1.275	27	0.820	20.83	0.525	13.34	5°	1.000	25				
			1.525	38	0.820	20.83	0.525	13.34	5°	1.250	32				

Heads will fit both inch and metric boring bar shanks

STUC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style U - Negative 3° End Cutting Edge Angle for 7° positive triangle TC__ inserts





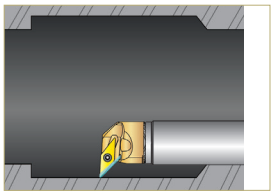


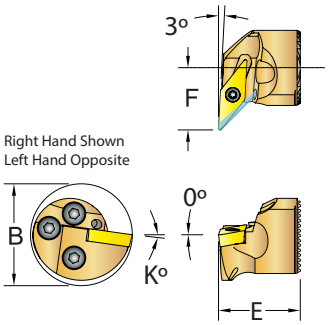
Thru Coolant

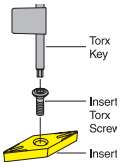
Head Description	UPC No. 733101- R.H.	UPC No. 733101- L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	TCMT Gage Insert Inch	TCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-STUCR/L-2	60255	60256	1.000	26	0.820	20.83	0.500	12.70	6°	0.750	20	21.51	110204	TS-25.45-6M2	T-8
			1.250	31	0.820	20.83	0.500	12.70	6°	1.000	25				
			1.500	38	0.820	20.83	0.500	12.70	6°	1.250	32				
DBOMH-12/20M-STUCR/L-3	60235	60236	1.090	28	0.820	20.83	0.590	14.99	9°	0.750	20	32.52	16T308	TS-4.7-10M1	T-15
			1.340	33	0.820	20.83	0.590	14.99	9°	1.000	25				
			1.590	40	0.820	20.83	0.590	14.99	9°	1.250	32				

Heads will fit both inch and metric boring bar shanks

SVUC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style U - Negative 3° End Cutting Edge Angle for 7° positive 35° diamond VC___ inserts





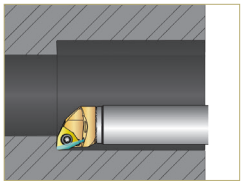


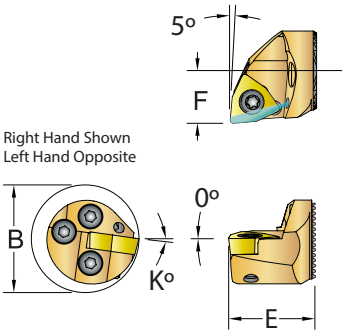
Thru Coolant

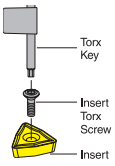
Head Description	UPC No. 733101- R.H.	UPC No. 733101- L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	VCMT Gage Insert Inch	VCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SVUCR/L-2	60237	60238	1.125	29	0.820	20.83	0.625	15.88	8°	0.750	20	221	110304	TS-25.45-8M2	T-8
			1.375	34	0.820	20.83	0.625	15.88	8°	1.000	25				
			1.625	41	0.820	20.83	0.625	15.88	8°	1.250	32				

Heads will fit both inch and metric boring bar shanks

SWLC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style L - Negative 5° End Cutting Edge Angle for 7° positive 80° trigon WC__ inserts





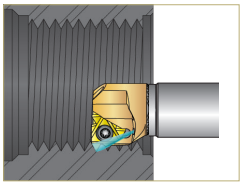


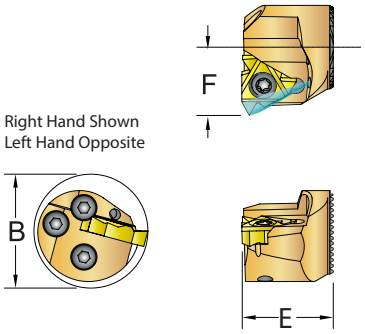
Thru Coolant

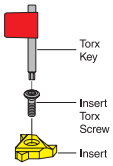
Head Description	UPC No. 733101- R.H.	UPC No. 733101- L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	WCMT Gage Insert Inch	WCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SWLCR/L-3	60241	60242	1.000	26	0.820	20.83	0.500	12.70	8°	0.750	20	32.52	06T308	TS-4.7-10M1	T-15
			1.250	31	0.820	20.83	0.500	12.70	8°	1.000	25				
			1.500	38	0.820	20.83	0.500	12.70	8°	1.250	32				

Heads will fit both inch and metric boring bar shanks

SN R/L Solution Tool!™ Thru Coolant Quick Change Modular Threading Head for Laydown Inserts







Thru Coolant

Head Description	UPC No. 733101-		B		E		F		Reference Bars Dia.		Laydown Gage Insert		Insert Torx Screw	Torx Key
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric		
DBOMH-12/20M-SNR/L-16	60243	60244	1.125	29	0.820	20.83	0.625	15.88	0.750	20	16-A60	16-A60	TS-35.6-9M1	T-15
			1.375	34	0.820	20.83	0.625	15.88	1.000	25				
			1.625	41	0.820	20.83	0.625	15.88	1.250	32				

Heads will fit both inch and metric boring bar shanks

NOTES:

Solution Tool!™

Solutions for Common Deep Hole Boring Problems

Problem	Cause	Solution
Vibrations Surface Finish Chattering	Boring Bar over extended, Incorrect Cutting Ratio, Boring Bar not rigid for the cutting pressure	Do not over extend the Boring Bar above the described cutting ratio; Steel Boring Bar: 4 x Dia. cutting ratio Carbide Boring Bar: 6 x Dia. cutting ratio Solution Tool!™ NO! Vibration Tunable Boring Bar; 8 x Dia., 10 x Dia., 12 x Dia., 14 x Dia.. cutting ratio
	Insert Angle Geometry to large	Reduce the Insert Angle Geometry; 80° Geometry, for roughing application 60° Geometry, for general application 55° Geometry, for finishing application 35° Geometry, for profiling application
	Insert Cutting Radius to Large; to large contact area of the insert with the cutting surface	Reduce the cutting radius until vibration disappears and or increase cutting feed
	Insert Cutting Rake Angle to small; to much cutting pressure	Change to a large cutting rake angle
	Insert Relief Angle to small; cutting pressure pushes the insert down and the bottom will touch the cutting wall, pushing the insert up and down from the center line.	Change to a large relief angle, and place the insert cutting edge above the center line
	Insert Edge Prep. the insert cutting edge has to large of honing surface, this will effect more in small depth of cut and low cutting feed	Change to a sharp cutting edge and or increase cutting feed
	To Low RPM., at low RPM, the cutting edge of the insert moves very slow over the cutting surface, no friction, no heat and little cutting force is developed, resulting a poor and dull surface finish	Increase the RPM
	To High RPM. at to high RPM, the cutting edge of the insert moves very fast over the cutting surface, generating friction, heat and premature wear of the insert cutting edge, resulting a shine and uneven surface finish	Decrease the RPM
Not Holding Dimension and Tolerances	Boring Bar Deflection; under the cutting force the boring bar will deflect radially and axially, dimensions and tolerances are difficult to be held	Use a larger diameter boring bar to maximize rigidity & minimize deflection
	Large depth of Cut; with a large depth of cut a lot of cutting force is placed over the boring bar, deflecting radially and axially, and d dimensions and tolerances are difficult to be held	1) Reduce the depth of cut to control and maintain dimensions & tolerances 2) For roughing operation, by trial and error calculate the bar deflection to establish the relation of the finish dimension, boring bar deflection and the depth of cut. 3) For finishing operation, reduce the depth of cut, use an insert with a small angle geometry, and or a small cutting radius and sharp cutting edge.
	Insert Wear; if the insert cutting edge is wearing prematurely, dimensions and tolerances are lost. The RPM is to high and or the insert grade is to soft.	Decrease the RPM and or change to a harder insert grade.
	Insert Cutting Radius to Large; in a small depth of cut a large insert cutting radius will not have enough engagement depth in to cutting surface. The insert will be tearing rather than cutting with a poor surface finish, dimensions and tolerances.	Increase the depth of cut; minimum depth of cut should be not less then 1/2 the size of the insert radius, i.c. .016" (.4mm) depth of cut .008" (.2mm). Increase the depth of cut and or change to a small insert cutting radius.
Whistling Cutting Sound	Insert Cutting Edge Dull Insert Cutting Radius to Large To Small depth of Cut To High RPM	Replace the insert with a harder grade Replace the insert with a smaller cutting radius Increase the depth of cut Change to low RPM
Insert Breaks	RPM to Low Feed Rate to Fast Depth of Cut to Large Insert to Hard	Increase RPM Slow feed rate Change to a small depth of cut Change to a tougher and impact resistant insert
Chattering	Wrong Insert Wrong Boring Bar Wrong Cutting Parameter	The smallest insert angle geometry, high positive with a small cutting radius The largest boring bar possible with shorts overhang The optimum cutting parameter for the specific operation

How to Remove Chattering;

Slow the RPM, cut under the chattered surface, find the correct feed rate for the operation. Resume in normal cutting condition once chatter is removed.

Solution Tool!™

The NO! Vibration Tunable Boring Bar

Makes Deep Hole Boring Simple!

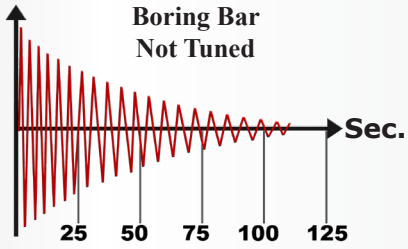
Solution Tool!™ The NO! Vibration Tunable Boring Bar, ***will suppress the natural vibration*** of the boring bar body, developed when the insert comes in contact with the working piece in the cutting operation.
The internally tuned mechanical dampener system provides the optimum dynamic stability in deep hole boring operation, for a Better Machining Performance, Smooth Surface Finish, Precise Tolerance and Long Insert Life.

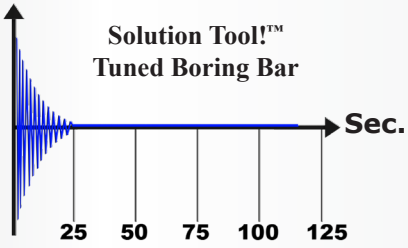
Solution Tool!™ The NO! Vibration Tunable Boring Bar
will perform where no other types of boring bars, steel or carbide will not perform!

To maximize performance in deep boring operation, Solution Tool!™ is offered in 2 versions;

Steel Body,
The steel body for boring depth up to 12 x Boring Bar Diameter

Carbide Body,
The carbide body rigidity and stability, allows to bore at higher cutting rate and material removal, and longer depth of cut.





How The Solution Tool!™ The NO! Vibration Tunable Boring Bar Works

The Solution Tool!™ The NO! Vibration Tunable Boring Bar contains a **mechanical floating dampener system dynamically tuned to suppress the natural boring bar vibration** that generates machining chatters. The tuning process establishes the frequency rate per second of the boring bar.

The **mechanical dampener** locate inside the boring bar **housing**, is moved forward or backward until all of the boring bar frequencies are nullified with **zero vibration**. At this point, the **mechanical dampener** is locked in position, restricting the longitudinal movement, but free to move in a radial directions.

In essence, the energy in the Solution Tool!™ is absorbed by the mechanical dampener, and not released to the boring bar in form of vibrations that causes the chatters in the boring operation.

The Solution Tool!™ is dynamically tuned, tested and certified to meet Dorian Tool Quality control standards.

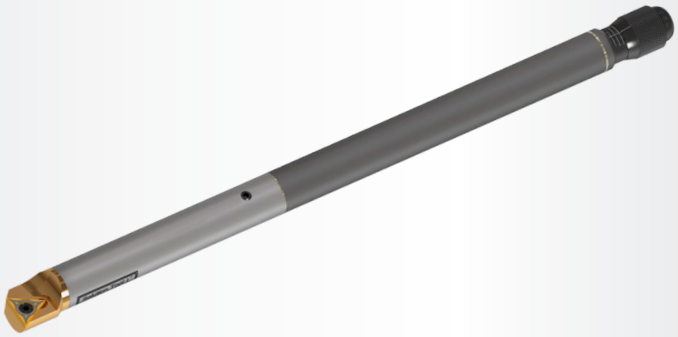
The Solution Tool!™ can be retuned on the machine to optimize the boring bar performance when;

- Extreme and exotic materials change from very soft to very hard.
- Changing the boring depth. Ex: a boring bar with a 12 x Dia. boring Ratio will be used for a shorter boring Ratio like 6 x Dia..
- Improving performance for specific machining operations such as finishing, roughing boring, threading, and grooving.

Solution Tool!™

The NO! Vibration Tunable Boring Bar

Makes Deep Hole Boring Simple!



Solution Tool!™
Integral Bars

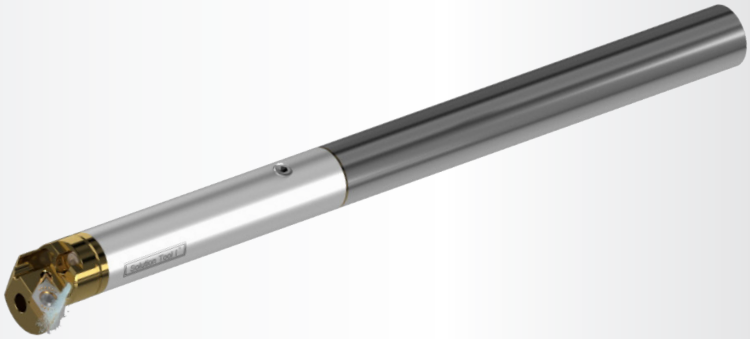
The NO! Vibration Tunable Boring Bar

- **Carbide Body**
- **For Small Boring Operation**
- **Multi Insert Geometry**
- **Inch and Metric Sizes**

  Inch, 1/4" Dia., 5/16" Dia., 3/8"., 1/2" Dia., 5/8" Dia.

  Metric, 6mm, 8mm, 10mm, 12mm, 16mm
- **Multi Boring Ratio**

  8 x Dia., 10 x Dia., 12 x Dia., 14 x Dia.



Solution Tool!™
Quick Change Modular Bars

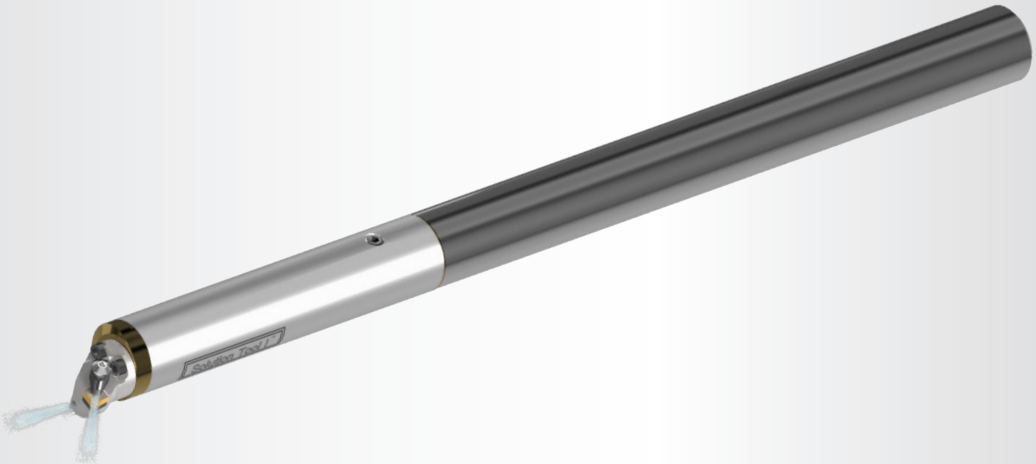
The NO! Vibration Tunable Boring Bar

- **Steel Body**
- **Carbide Body**
- **For Medium Boring Operation**
- **Quick Change Modular Heads with Multi Insert Geometry**
- **Thru Coolant System**
- **Inch and Metric Sizes**

  Inch, 3/4" Dia., 1" Dia., 1 1/4" Dia.

  Metric, 20mm, 25mm, 32mm
- **Multi Boring Ratio**

  8 x Dia., 10 x Dia., 12 x Dia., 14 x Dia.



Solution Tool!™
Modular Jet-Stream™ Bars

The NO! Vibration Tunable Boring Bar

- **Steel Body**
- **Carbide Body**
- **For Large Boring Operation**
- **Interchangeable Modular Heads with Multi Insert Geometry**
- **Jet-Stream Thru Coolant System**
- **Inch and Metric Sizes**

  Inch, 1 1/2" Dia., 1 3/4" Dia., 2" Dia., 2 1/2" Dia.' 3' Dia., 4 Dia.

  Metric, 40mm, 50mm, 60mm, 80mm, 100mm.
- **Multi Boring Ratio**

  8 x Dia., 10 x Dia., 12 x Dia., 14 x Dia..

Solution Tool!™

The NO! Vibration Tunable Boring Bar

Makes Deep Hole Boring Simple!

SIMPLE - PRECISE - RIGID

Integral

the NO! Vibration Tunable Boring Bar for Small Boring Operation
Engineered to bore small diameter holes, and cutting depth to 14 x Boring Bar Diameter

Better Machining Performance

Higher Workmanship Quality

Longer Cutting Insert Life

The Technology behind Solution Tool!™ the "Integral" NO! Vibration Tunable Boring Bars, is to perform simple and reliable when deep boring small size holes, with close machining tolerance and high surface finish.

The "Integral" NO! Vibration Tunable Boring Bars, is a two part construction, the body where the boring bar is held, made of alloy carbide for rigidity, stability and strength, holds the dampener, made of heat treated alloy steel, and brazed together with Silver Alloy Braze. The braze is the buffer zone where the frequencies generate from the cutting operation are stopped.

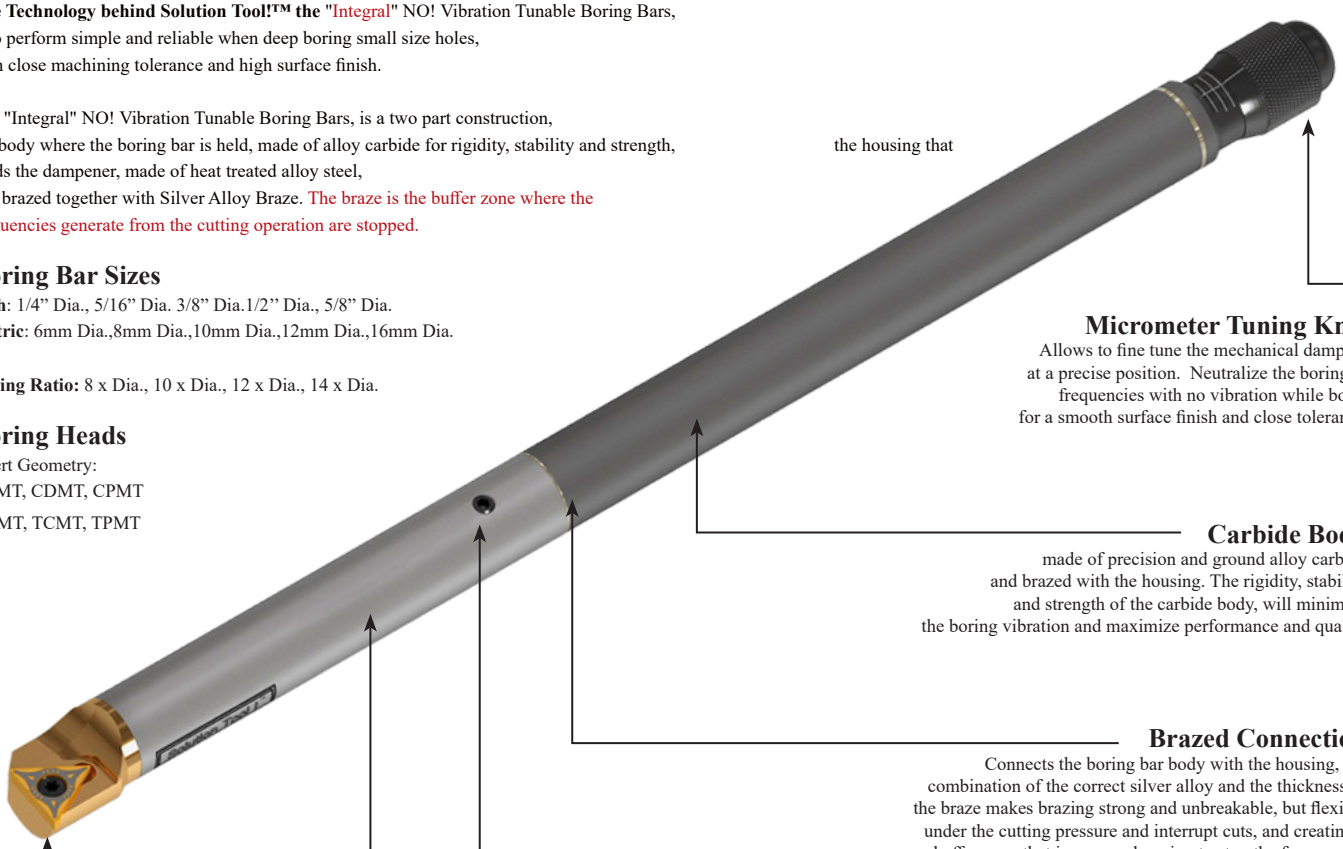
Boring Bar Sizes

Inch: 1/4" Dia., 5/16" Dia. 3/8" Dia.1/2" Dia., 5/8" Dia.
Metric: 6mm Dia.,8mm Dia.,10mm Dia.,12mm Dia.,16mm Dia.

Boring Ratio: 8 x Dia., 10 x Dia., 12 x Dia., 14 x Dia.

Boring Heads

Insert Geometry:
CCMT, CDMT, CPMT
DCMT, TCMT, TPMT



the housing that

Micrometer Tuning Knob

Allows to fine tune the mechanical dampener at a precise position. Neutralize the boring bar frequencies with no vibration while boring for a smooth surface finish and close tolerances.

Carbide Body

made of precision and ground alloy carbide and brazed with the housing. The rigidity, stability and strength of the carbide body, will minimize the boring vibration and maximize performance and quality

Brazed Connection

Connects the boring bar body with the housing, the combination of the correct silver alloy and the thickness of the braze makes brazing strong and unbreakable, but flexible under the cutting pressure and interrupt cuts, and creating a buffer zone that increases damping to stop the frequencies developed in the boring operation.

Dampener Position Locking Screw

The screw is released before re-tuning and locked after tuning is complete

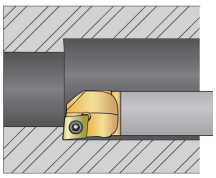
Housing

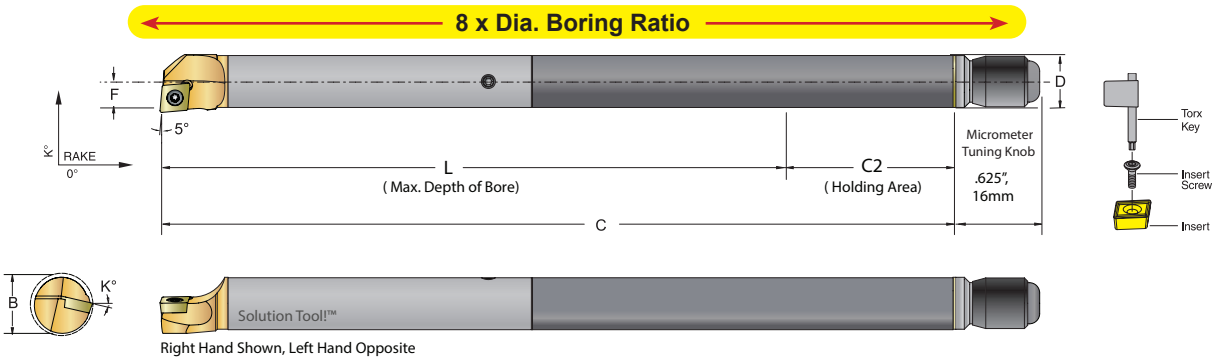
Made of heat treated alloy steel, brazed with the body, the inside of the housing holds the mechanical dampener and on the face is attached the Quick Change Modular Collar Head.

Boring Head

Made of heat treated alloy steel and TiN Coated.
with precise is rigidity attached on to the housing face.

SCLC R/L Solution Tool!™ Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 7° positive 80° diamond CC__ inserts





Right Hand Shown, Left Hand Opposite

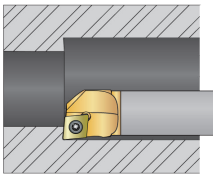
INCH

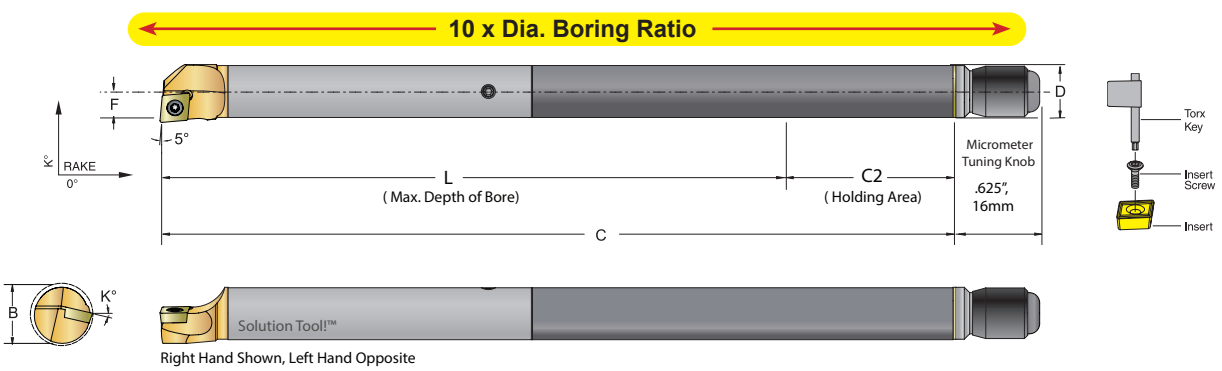
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CCGW Gage Insert	Insert Screw	Torx key
DVI08X-08-SCLCR/L-2-CB	59400	59401	8 x Dia.	.625	0.500	7.00	4.00	3.00	.275	13°	21.51	TS-25-45-6M2	T-8
DVI10X-08-SCLCR/L-2-CB	59402	59403		.781	0.625	8.13	5.00	3.13	.395	10°	21.51	TS-25-45-6M2	T-8
DVI10X-08-SCLCR/L-3-CB	59404	59405		.781	0.625	8.13	5.00	3.13	.395	10°	32.51	TS-4.7-8M1	T-15

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CCGW Gage Insert	Insert Screw	Torx key
DVM12X-08-SCLCR/L-06-CB	59414	59415	8 x Dia.	14.50	12	168	96	72	6.99	13°	60204	TS-25-45-6M2	T-8
DVM16X-08-SCLCR/L-06-CB	59416	59417		19.50	16	208	128	80	10.03	10°	60204	TS-25-45-6M2	T-8
DVM16X-08-SCLCR/L-09-CB	59418	59419		19.50	16	208	128	80	10.03	10°	09T304	TS-4.7-8M1	T-15

SCLC R/L Solution Tool!™ Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 7° positive 80° diamond CC__ inserts





Right Hand Shown, Left Hand Opposite

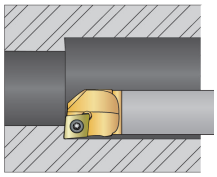
INCH

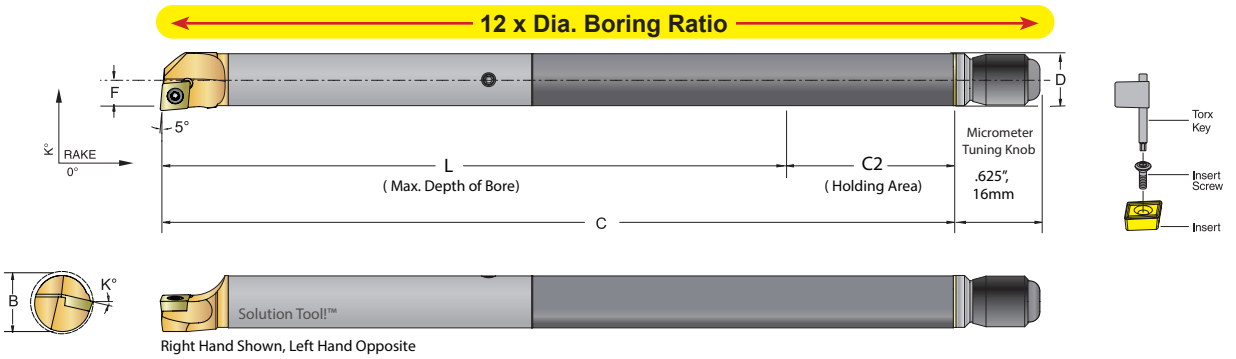
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CCGW Gage Insert	Insert Screw	Torx key
DVI08X-10-SCLCR/L-2-CB	59034	59035	10 x Dia.	.625	0.500	8.00	5.000	3.00	.275	13°	21.51	TS-25-45-6M2	T-8
DVI10X-10-SCLCR/L-2-CB	59040	59041		.781	0.625	9.38	6.25	3.13	.395	10°	21.51	TS-25-45-6M2	T-8
DVI10X-10-SCLCR/L-3-CB	59046	59047		.781	0.625	9.38	6.25	3.13	.395	10°	32.51	TS-4.7-8M1	T-15

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CCGW Gage Insert	Insert Screw	Torx key
DVM12X-10-SCLCR/L-06-CB	59076	59077	10 x Dia.	14.50	12	192	120	72	6.99	13°	60204	TS-25-45-6M2	T-8
DVM16X-10-SCLCR/L-06-CB	59082	59083		19.50	16	240	160	80	10.03	10°	60204	TS-25-45-6M2	T-8
DVM16X-10-SCLCR/L-09-CB	59088	59089		19.50	16	240	160	80	10.03	10°	09T304	TS-4.7-8M1	T-15

SCLC R/L Solution Tool!™ Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 7° positive 80° diamond CC___ inserts





Right Hand Shown, Left Hand Opposite

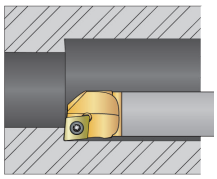
INCH

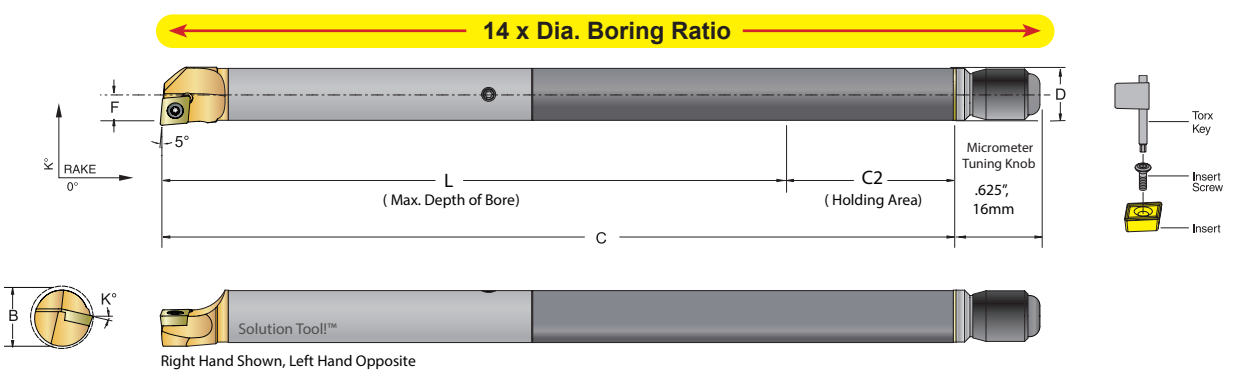
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CCGW Gage Insert	Insert Screw	Torx key
DVI08X-12-SCLCR/L-2-CB	59036	59037	12 x Dia.	.625	0.500	9.00	6.00	3.00	.275	13°	21.51	TS-25-45-6M2	T-8
DVI10X-12-SCLCR/L-2-CB	59042	59043		.781	0.625	10.63	7.50	3.13	.395	10°	21.51	TS-25-45-6M2	T-8
DVI10X-12-SCLCR/L-3-CB	59048	59049		.781	0.625	10.63	7.50	3.13	.395	10°	32.51	TS-4.7-8M1	T-15

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CCGW Gage Insert	Insert Screw	Torx key
DVM12X-12-SCLCR/L-06-CB	59078	59079	12 x Dia.	14.50	12	216	144	72	6.99	13°	60204	TS-25-45-6M2	T-8
DVM16X-12-SCLCR/L-06-CB	59084	59085		19.50	16	272	192	80	10.03	10°	60204	TS-25-45-6M2	T-8
DVM16X-12-SCLCR/L-09-CB	59090	59091		19.50	16	272	192	80	10.03	10°	09T304	TS-4.7-8M1	T-15

SCLC R/L Solution Tool!™ Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 7° positive 80° diamond CC___ inserts





Right Hand Shown, Left Hand Opposite

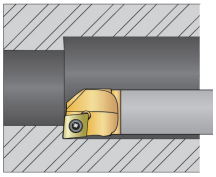
INCH

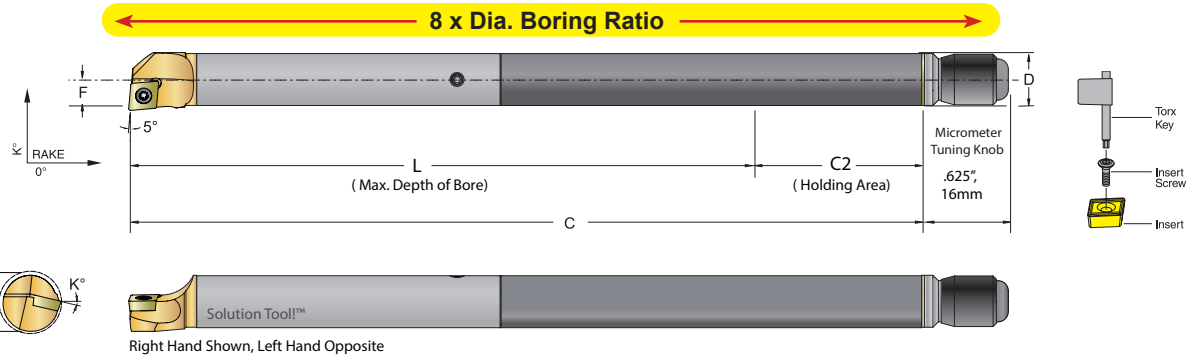
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CCGW Gage Insert	Insert Screw	Torx key
DVI08X-14-SCLCR/L-2-CB	59038	59039	14 x Dia.	.625	0.500	10.00	7.000	3.00	.275	13°	21.51	TS-25-45-6M2	T-8
DVI10X-14-SCLCR/L-2-CB	59044	59045		.781	0.625	11.88	8.75	3.13	.395	10°	21.51	TS-25-45-6M2	T-8
DVI10X-14-SCLCR/L-3-CB	59050	59051		.781	0.625	11.88	8.75	3.13	.395	10°	32.51	TS-4.7-8M1	T-15

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CCGW Gage Insert	Insert Screw	Torx key
DVM12X-14-SCLCR/L-06-CB	59080	59081	14 x Dia.	14.50	12	240	168	72	6.99	13°	60204	TS-25-45-6M2	T-8
DVM16X-14-SCLCR/L-06-CB	59086	59087		19.50	16	304	224	80	10.03	10°	60204	TS-25-45-6M2	T-8
DVM16X-14-SCLCR/L-09-CB	59092	59093		19.50	16	304	224	80	10.03	10°	09T304	TS-4.7-8M1	T-15

SCLD R/L Solution Tool!™ Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 15° positive 80° diamond CD__ inserts





Right Hand Shown, Left Hand Opposite

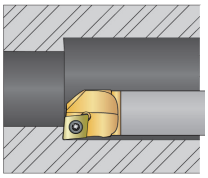
INCH

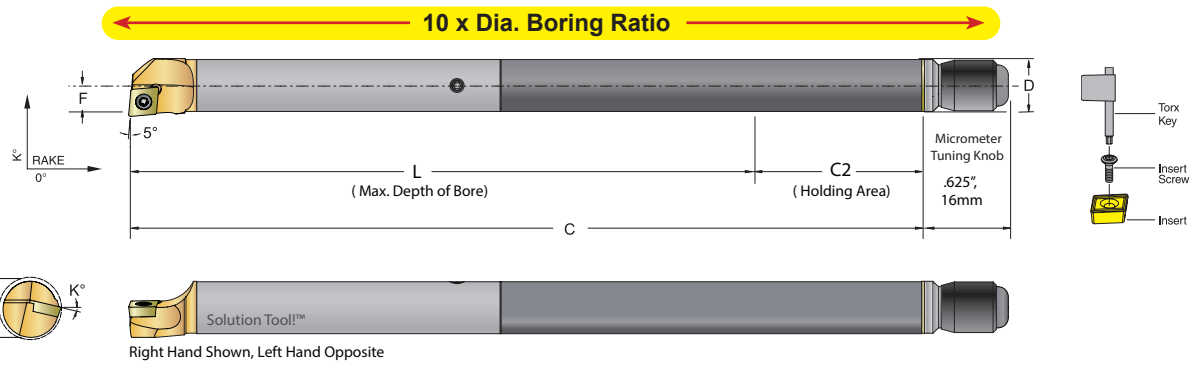
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CDGW Gage Insert	Insert Screw	Torx key
DVI04X-08-SCLDR/L-1.5-CB	59010	59011	8 x Dia.	.312	0.250	4.000	2.000	2.000	.143	7°	1.510.5	TS-06	T-6
DVI05X-08-SCLDR/L-1.5-CB	59018	59019		.382	0.312	5.00	2.50	2.50	.176	7°			
DVI06X-08-SCLDR/L-1.5-CB	59026	59027		.470	0.375	5.63	3.00	2.63	.220	5°			

METRIC

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CDGW Gage Insert	Insert Screw	Torx key
DVM06X-08-SCLDR/L-04-CB	59052	59053	8 x Dia.	8	6	96.0	48.0	48.0	3.63	7°	40102	TS-06	T-6
DVM08X-08-SCLDR/L-04-CB	59060	59061		10	8	128	64	64	4.47	7°			
DVM10X-08-SCLDR/L-04-CB	59068	59069		12	10	150	80	70	5.59	5°			

SCLD R/L Solution Tool!™ Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 15° positive 80° diamond CD__ inserts





Right Hand Shown, Left Hand Opposite

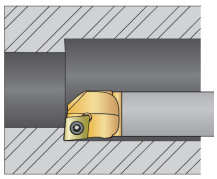
INCH

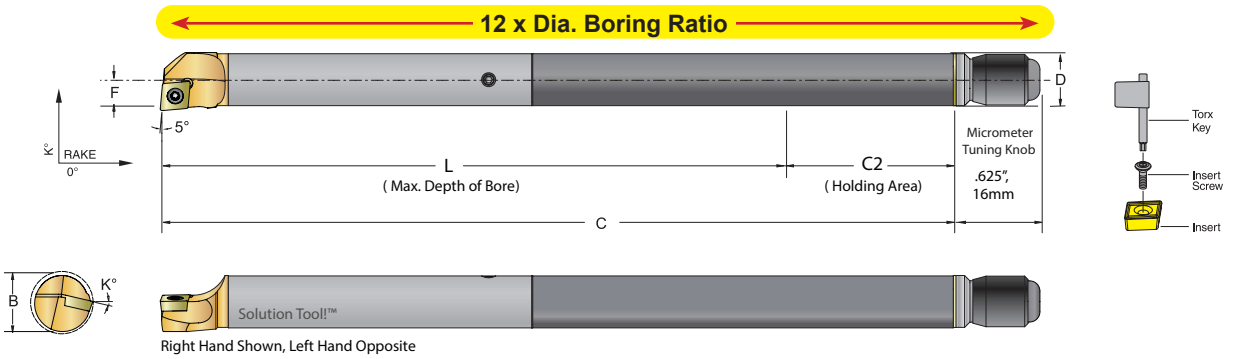
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CDGW Gage Insert	Insert Screw	Torx key
DVI04X-10-SCLDR/L-1.5-CB	59012	59013	10 x Dia.	.312	0.250	4.50	2.50	2.00	.143	7°	1.510.5	TS-06	T-6
DVI05X-10-SCLDR/L-1.5-CB	59020	59021		.399	0.312	5.62	3.12	2.50	.176	7°			
DVI06X-10-SCLDR/L-1.5-CB	59028	59029		.470	0.375	6.38	3.75	2.63	.220	5°			

METRIC

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CDGW Gage Insert	Insert Screw	Torx key
DVM06X-10-SCLDR/L-04-CB	59054	59055	10 x Dia.	8	6	108	60	48	3.63	7°	40102	TS-06	T-6
DVM08X-10-SCLDR/L-04-CB	59062	59063		10	8	144	80	64	4.47	7°			
DVM10X-10-SCLDR/L-04-CB	59070	59071		12	10	170	100	70	5.59	5°			

SCLD R/L Solution Tool!™ Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 15° positive 80° diamond CD__ inserts





Right Hand Shown, Left Hand Opposite

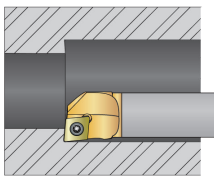
INCH

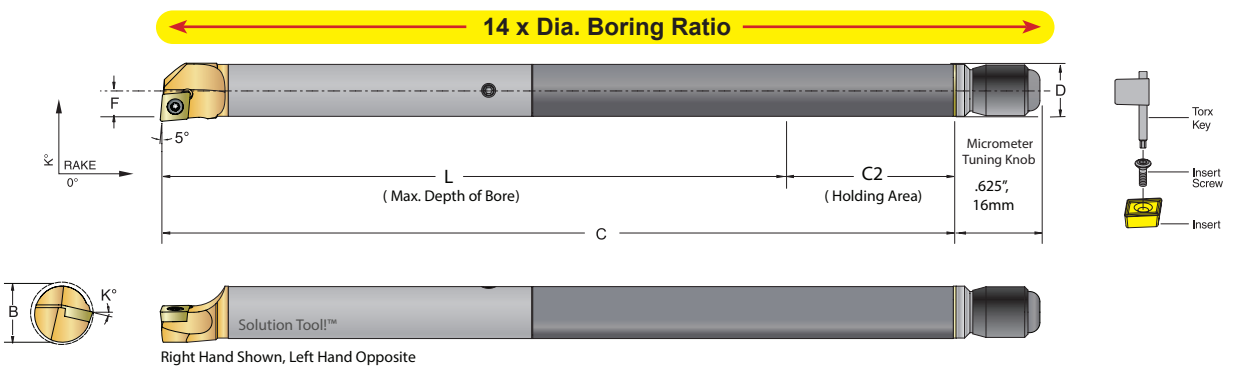
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CDGW Gage Insert	Insert Screw	Torx key
DVI04X-12-SCLDR/L-1.5-CB	59014	59015	12 x Dia.	.312	0.250	5.000	3.000	2.000	.143	7°	1.510.5	TS-06	T-6
DVI05X-12-SCLDR/L-1.5-CB	59022	59023		.399	0.312	6.24	3.74	2.50	.176	7°			
DVI06X-12-SCLDR/L-1.5-CB	59030	59031		.470	0.375	7.13	4.50	2.63	.220	5°			

METRIC

Metric Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CDGW Gage Insert	Insert Screw	Torx key
DVM06X-12-SCLDR/L-04-CB	59056	59057	12 x Dia.	8	6	120	72	48	3.63	7°	40102	TS-06	T-6
DVM08X-12-SCLDR/L-04-CB	59064	59065		10	8	160	96	64	4.47	7°			
DVM10X-12-SCLDR/L-04-CB	59072	59073		12	10	190	120	70	5.59	5°			

SCLD R/L Solution Tool!™ Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 7° positive 80° diamond CD__ inserts





Right Hand Shown, Left Hand Opposite

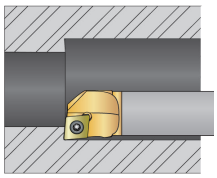
INCH

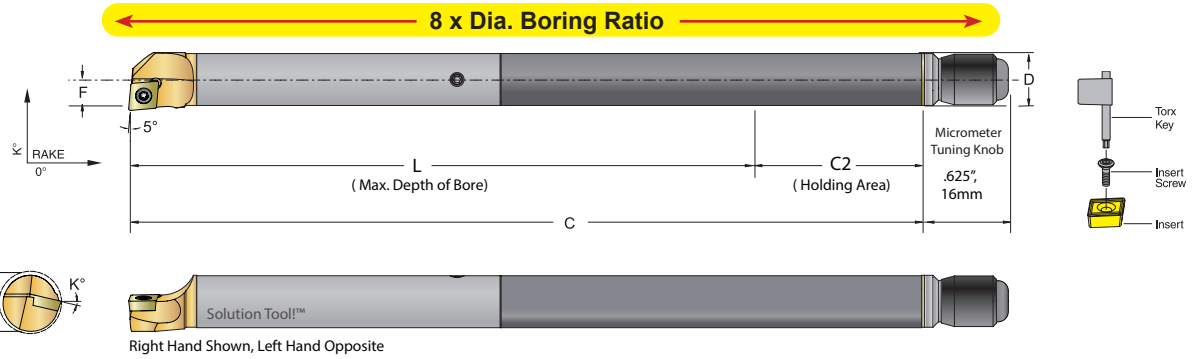
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CDGW Gage Insert	Insert Screw	Torx key
DVI04X-14-SCLDR/L-1.5-CB	59016	59017	14 x Dia.	.312	0.250	5.50	3.50	2.00	.143	7°	1.510.5	TS-06	T-6
DVI05X-14-SCLDR/L-1.5-CB	59024	59025		.399	0.312	6.87	4.37	2.50	.176	7°			
DVI06X-14-SCLDR/L-1.5-CB	59032	59033		.470	0.375	7.88	5.25	2.63	.220	5°			

METRIC

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CDGW Gage Insert	Insert Screw	Torx key
DVM06X-14-SCLDR/L-04-CB	59058	59059	14 x Dia.	8	6	132	84	48	3.63	7°	40102	TS-06	T-6
DVM08X-14-SCLDR/L-04-CB	59066	59067		10	8	176	112	64	4.47	7°			
DVM10X-14-SCLDR/L-04-CB	59074	59075		12	10	210	140	70	5.59	5°			

SCLP R/L Solution Tool!™ Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 110° positive 80° diamond CP__ inserts





Right Hand Shown, Left Hand Opposite

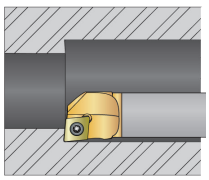
INCH

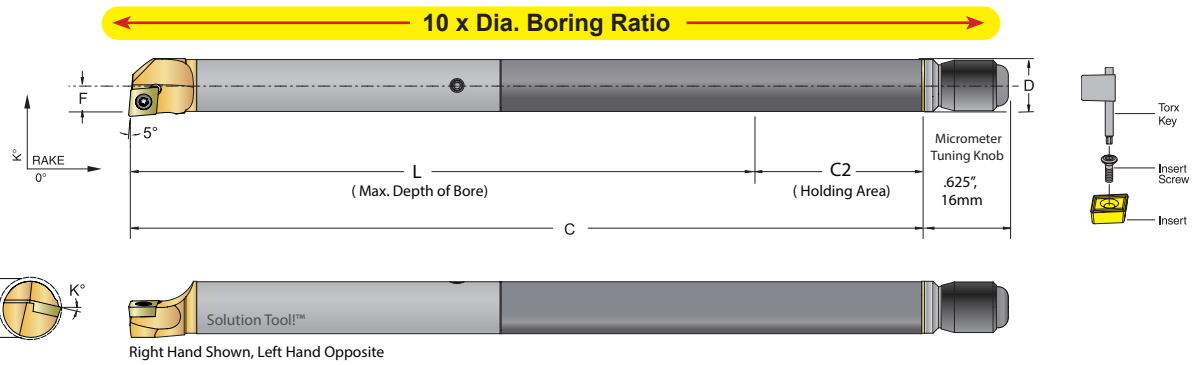
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CPGW Gage Insert	Insert Screw	Torx key
DVI08X-08-SCLPR/L-2-CB	60301	60302	8 x Dia.	.625	0.500	7.00	4.00	3.00	0.275	3°	21.51	TS-25-45-6M2	T-8
DVI10X-08-SCLPR/L-2-CB	60309	60310		.750	0.625	8.13	5.00	3.13	0.395	2°	21.51	TS-25-45-6M2	T-8
DVI10X-08-SCLPR/L-3-CB	60317	60318		.750	0.625	8.13	5.00	3.13	0.395	2°	32.51	TS-4.7-8M1	T-15

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CPGW Gage Insert	Insert Screw	Torx key
DVM12X-08-SCLPR/L-06-CB	60325	60326	8 x Dia.	15	12	168	96	72	6.99	3°	60204	TS-25-45-6M2	T-8
DVM16X-08-SCLPR/L-06-CB	60333	60334		20	16	208	128	80	10.03	2°	60204	TS-25-45-6M2	T-8
DVM16X-08-SCLPR/L-09-CB	60341	60342		20	16	208	128	80	10.03	2°	09T304	TS-4.7-8M1	T-15

SCLP R/L Solution Tool!™ Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 7° positive 80° diamond CP__ inserts





Right Hand Shown, Left Hand Opposite

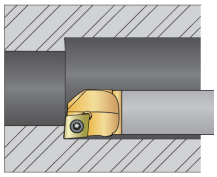
INCH

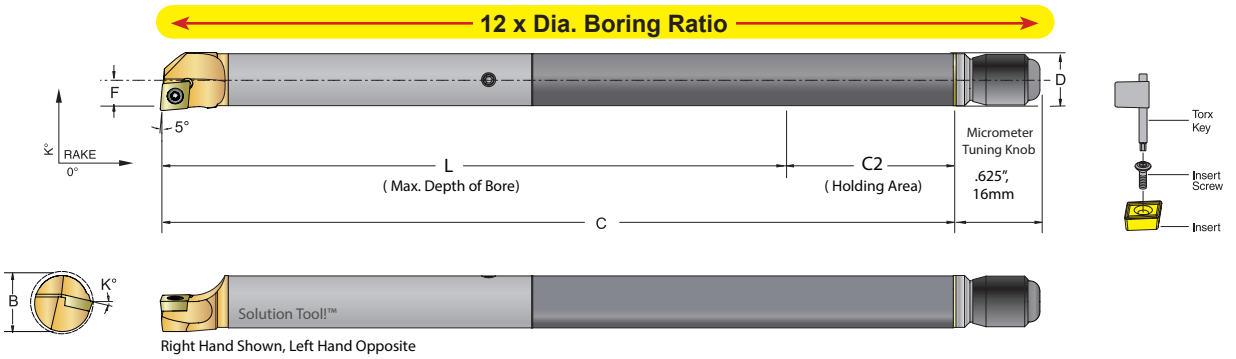
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CPGW Gage Insert	Insert Screw	Torx key
DVI08X-10-SCLPR/L-2-CB	60303	60304	10 x Dia.	.625	0.500	8.00	5.00	3.00	0.275	3°	21.51	TS-25-45-6M2	T-8
DVI10X-10-SCLPR/L-2-CB	60311	60312		.750	0.625	9.38	6.25	3.13	0.395	2°	21.51	TS-25-45-6M2	T-8
DVI10X-10-SCLPR/L-3-CB	60319	60320		.750	0.625	9.38	6.25	3.13	0.395	2°	32.51	TS-4.7-8M1	T-15

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CPGW Gage Insert	Insert Screw	Torx key
DVM12X-10-SCLPR/L-06-CB	60327	60328	10 x Dia.	15	12	192	120	72	6.99	3°	60204	TS-25-45-6M2	T-8
DVM16X-10-SCLPR/L-06-CB	60335	60336		20	16	240	160	80	10.03	2°	60204	TS-25-45-6M2	T-8
DVM16X-10-SCLPR/L-09-CB	60343	60344		20	16	240	160	80	10.03	2°	09T304	TS-4.7-8M1	T-15

SCLP R/L Solution Tool!™ Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 110° positive 80° diamond CP__ inserts





Right Hand Shown, Left Hand Opposite

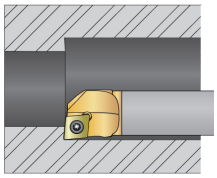
INCH

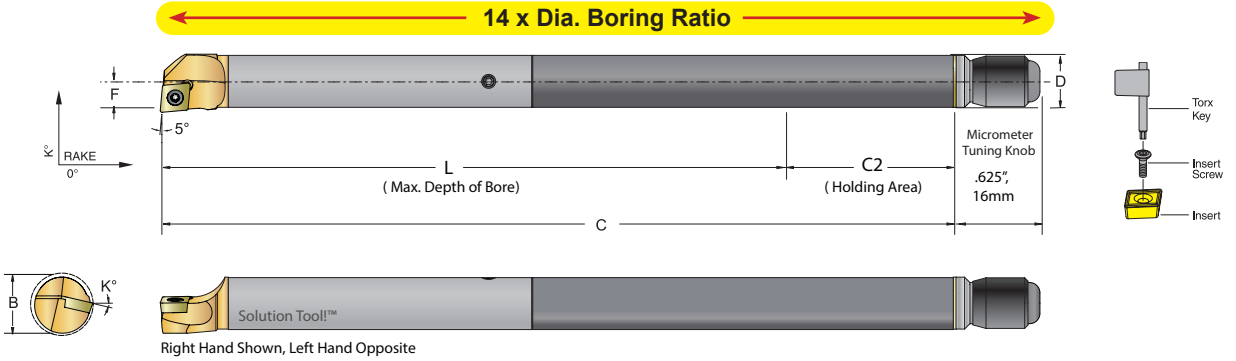
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CCGW Gage Insert	Insert Screw	Torx key
DVI08X-12-SCLPR/L-2-CB	60305	60306	12 x Dia.	.625	0.500	9.00	6.00	3.00	0.275	3°	21.51	TS-25-45-6M2	T-8
DVI10X-12-SCLPR/L-2-CB	60313	60314		.750	0.625	10.63	7.50	3.13	0.395	2°	21.51	TS-25-45-6M2	T-8
DVI10X-12-SCLPR/L-3-CB	60321	60322		.750	0.625	10.63	7.50	3.13	0.395	2°	32.51	TS-4.7-8M1	T-15

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CPGW Gage Insert	Insert Screw	Torx key
DVM12X-12-SCLPR/L-06-CB	60329	60330	12 x Dia.	15	12	216	144	72	6.99	3°	60204	TS-25-45-6M2	T-8
DVM16X-12-SCLPR/L-06-CB	60337	60338		20	16	272	192	80	10.03	2°	60204	TS-25-45-6M2	T-8
DVM16X-12-SCLPR/L-09-CB	60345	60346		20	16	272	192	80	10.03	2°	09T304	TS-4.7-8M1	T-15

SCLP R/L Solution Tool!™ Integral Carbide Boring Bar Style L - Negative 5° End & Side Cutting Edge Angle for 7° positive 80° diamond CP__ inserts



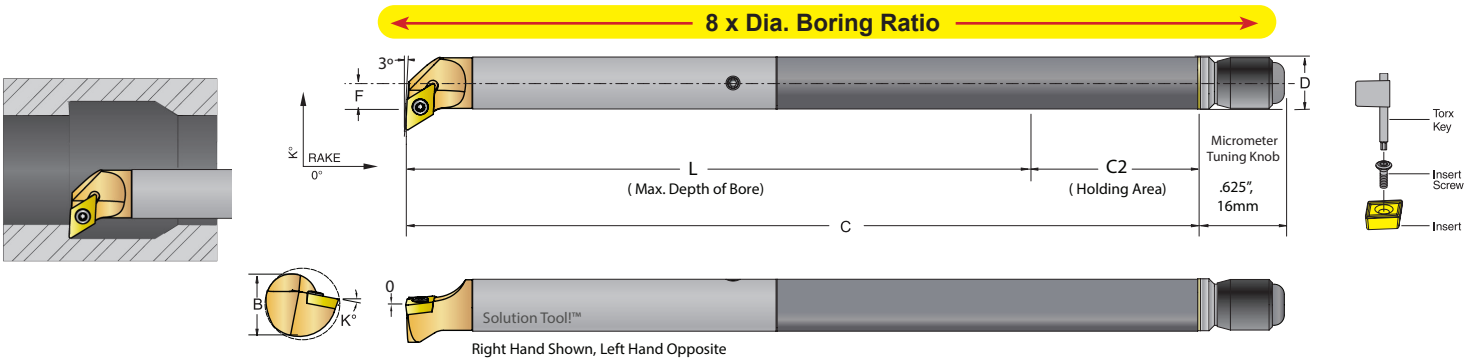


Right Hand Shown, Left Hand Opposite

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CPGW Gage Insert	Insert Screw	Torx key
DVI08X-14-SCLPR/L-2-CB	60307	60308	14 x Dia.	.625	0.500	10.00	7.00	3.00	0.275	3°	21.51	TS-25-45-6M2	T-8
DVI12X-14-SCLPR/L-2-CB	60315	60316		.750	0.625	11.88	8.75	3.13	0.395	2°	21.51	TS-25-45-6M2	T-8
DVI12X-14-SCLPR/L-3-CB	60323	60324		.750	0.625	11.88	8.75	3.13	0.395	2°	32.51	TS-4.7-8M1	T-15

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	CPGW Gage Insert	Insert Screw	Torx key
DVM12X-14-SCLPR/L-06-CB	60331	60332	14 x Dia.	15	12	240	168	72	6.99	3°	60204	TS-25-45-6M2	T-8
DVM16X-14-SCLPR/L-06-CB	60339	60340		20	16	304	224	80	10.03	2°	60204	TS-25-45-6M2	T-8
DVM16X-14-SCLPR/L-09-CB	60347	60348		20	16	304	224	80	10.03	2°	09T304	TS-4.7-8M1	T-15

SDUC R/L Solution Tool!™ Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive 55° diamond DC___ inserts



Right Hand Shown, Left Hand Opposite

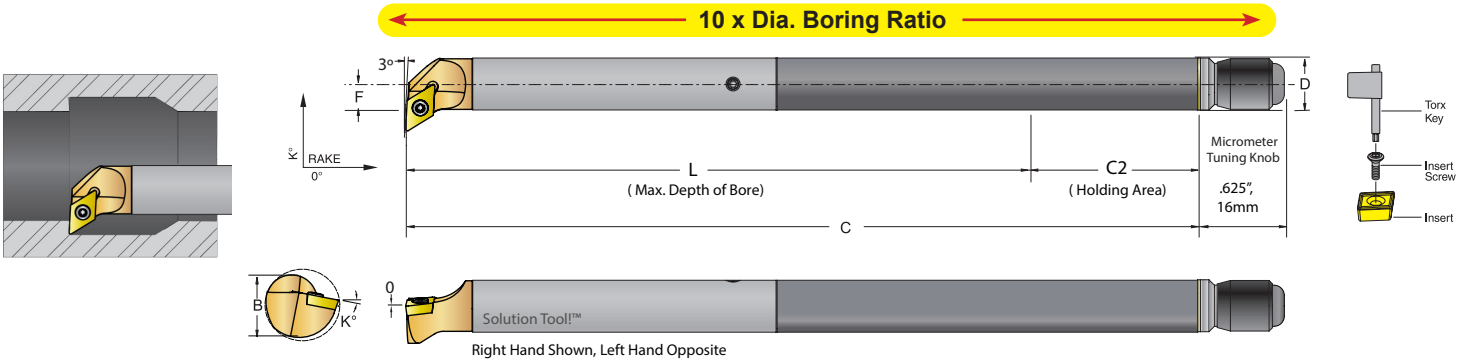
INCH

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
DVI06X-08-SDUCR/L-2-CB	59142	59143	8 x Dia.	.625	0.375	5.63	3.00	2.63	0.375	11°	21.51	TS-25-45-6M2	T-8
DVI08X-08-SDUCR/L-2-CB	59406	59407		.750	0.500	7.00	4.00	3.00	0.437	11°			
DVI10X-08-SDUCR/L-2-CB	59408	59409		.875	0.625	8.13	5.00	3.13	0.500	7°			

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
DVM10X-08-SDUCR/L-07-CB	59162	59163	8 x Dia.	16	10	150	80	70	9.53	11°	070204	TS-25-45-6M2	T-8
DVM12X-08-SDUCR/L-07-CB	59420	59421		19	12	168	96	72	11.10	11°			
DVM16X-08-SDUCR/L-07-CB	59422	59423		22	16	208	128	80	12.70	7°			

SDUC R/L Solution Tool!™ Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive 55° diamond DC___ inserts



Right Hand Shown, Left Hand Opposite

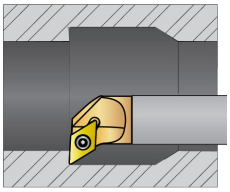
METRIC

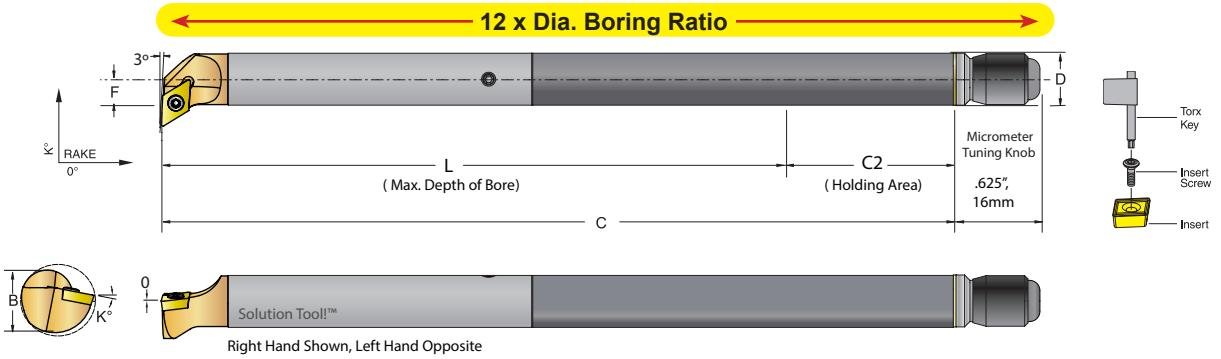
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
DVI06X-10-SDUCR/L-2-CB	59144	59145	10 x Dia.	.625	0.375	6.38	3.75	2.63	0.375	11°	21.51	TS-25-45-6M2	T-8
DVI08X-10-SDUCR/L-2-CB	59150	59151		.750	0.500	8.00	5.00	3.00	0.437	11°			
DVI10X-10-SDUCR/L-2-CB	60297	60298		.875	0.625	9.38	6.25	3.13	0.500	7°			

INCH

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
DVM10X-10-SDUCR/L-07-CB	59170	59171	10 x Dia.	16	10	170	100	70	9.53	11°	070204	TS-25-45-6M2	T-8
DVM12X-10-SDUCR/L-07-CB	59164	59165		19	12	192	120	72	11.10	11°			
DVM16X-10-SDUCR/L-07-CB	59176	59177		22	16	240	160	80	12.70	7°			

SDUC R/L Solution Tool!™ Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





Right Hand Shown, Left Hand Opposite

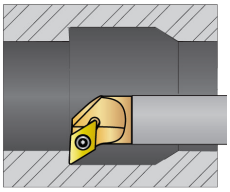
INCH

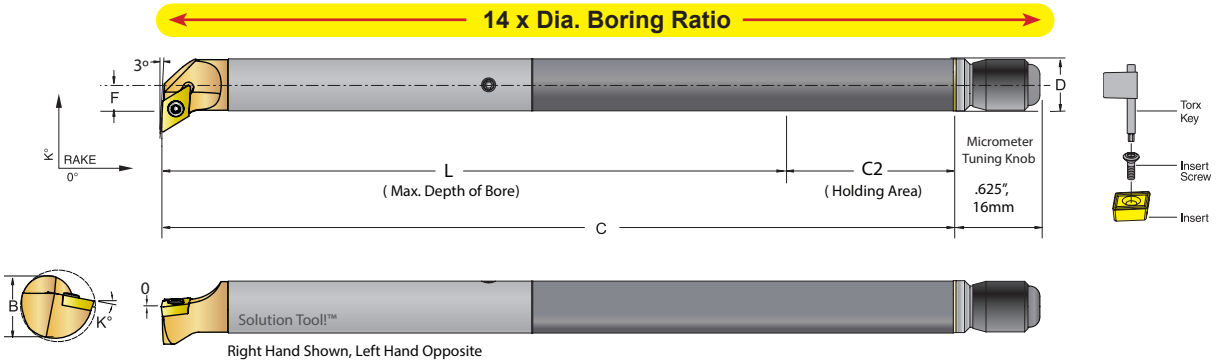
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
DVI06X-12-SDUCR/L-2-CB	59146	59147	12 x Dia.	.625	0.375	7.13	4.50	2.63	0.375	11°	21.51	TS-25-45-6M2	T-8
DVI08X-12-SDUCR/L-2-CB	59152	59153		.750	0.500	9.00	6.00	3.00	0.437	11°			
DVI10X-12-SDUCR/L-2-CB	59158	59159		.875	0.625	10.63	7.50	3.13	0.500	7°			

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
DVM10X-12-SDUCR/L-07-CB	59172	59173	12 x Dia.	16	10	190	120	70	9.53	11°	070204	TS-25-45-6M2	T-8
DVM12X-12-SDUCR/L-07-CB	59166	59167		19	12	216	144	72	11.10	11°			
DVM16X-12-SDUCR/L-07-CB	59178	59179		22	16	272	192	80	12.70	7°			

SDUC R/L Solution Tool!™ Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





Right Hand Shown, Left Hand Opposite

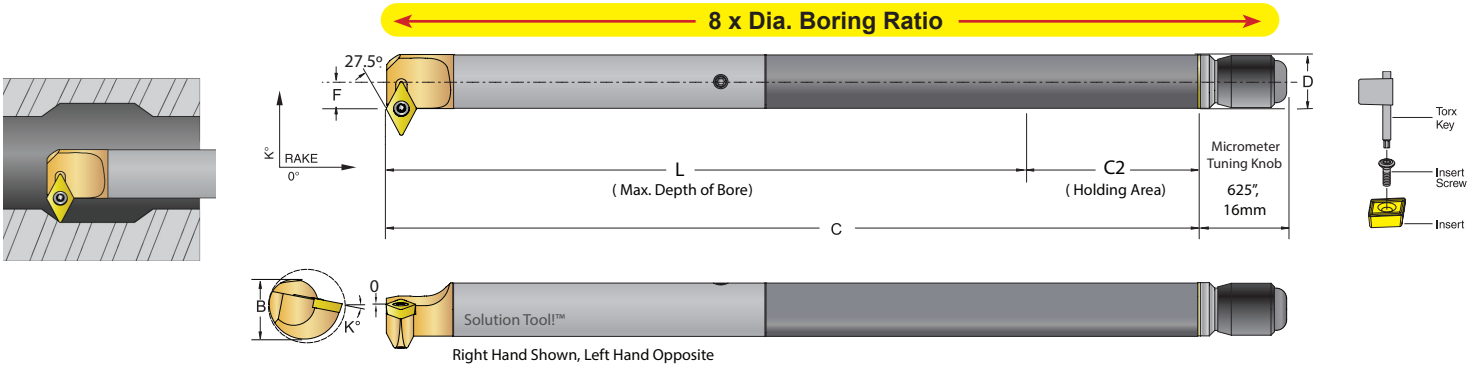
INCH

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
DVI06X-14-SDUCR/L-2-CB	59148	59149	14 x Dia.	.625	0.375	7.88	5.25	2.63	0.375	11°	21.51	TS-25-45-6M2	T-8
DVI08X-14-SDUCR/L-2-CB	59154	59155		.750	0.500	10.00	7.00	3.00	0.437	11°			
DVI10X-14-SDUCR/L-2-CB	59160	59161		.875	0.625	11.88	8.75	3.13	0.500	7°			

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
DVM10X-14-SDUCR/L-07-CB	59174	59175	14 x Dia.	16	10	210	140	70	9.53	11°	070204	TS-25-45-6M2	T-8
DVM12X-14-SDUCR/L-07-CB	59168	59169		19	12	240	168	72	11.10	11°			
DVM16X-14-SDUCR/L-07-CB	59180	59181		22	16	304	224	80	12.70	7°			

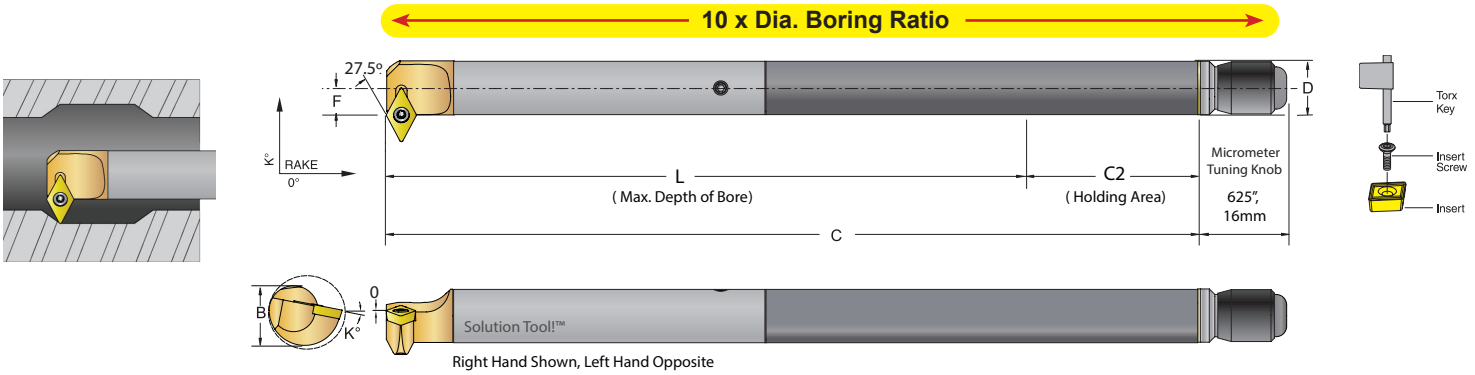
SDNC R/L Solution Tool!™ Integral Carbide Boring Bar Style N - Negative 27.5° End & Side Cutting Edge Angle for 7° positive 55° diamond DC__inserts



Right Hand Shown, Left Hand Opposite

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
					INCH								
DVI06X-08-SDNCR/L-2-CB	59094	59095		0.581	.375	5.63	3.00	2.63	0.375	11°			
DVI08X-08-SDNCR/L-2-CB	59102	59103	8 x Dia.	0.813	.500	7.00	4.00	3.00	0.500	11°	21.51	TS-25-45-6M2	T-8
DVI10X-08-SDNCR/L-2-CB	59110	59111		0.938	.625	8.13	5.00	3.13	0.562	7°			
					METRIC								
DVM10X-08-SDNCR/L-07-CB	59118	59119		16	10	150	80	70	9.5	11°			
DVM12X-08-SDNCR/L-07-CB	59126	59127	8 x Dia.	20	10	150	80	70	12.7	11°	070204	TS-25-45-6M2	T-8
DVM16X-08-SDNCR/L-07-CB	59134	59135		24	16	208	128	80	14.3	7°			

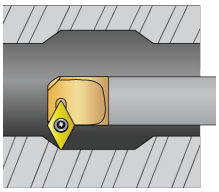
SDNC R/L Solution Tool!™ Integral Carbide Boring Bar Style N - Negative 27.5° End & Side Cutting Edge Angle for 7° positive 55° diamond DC___ inserts

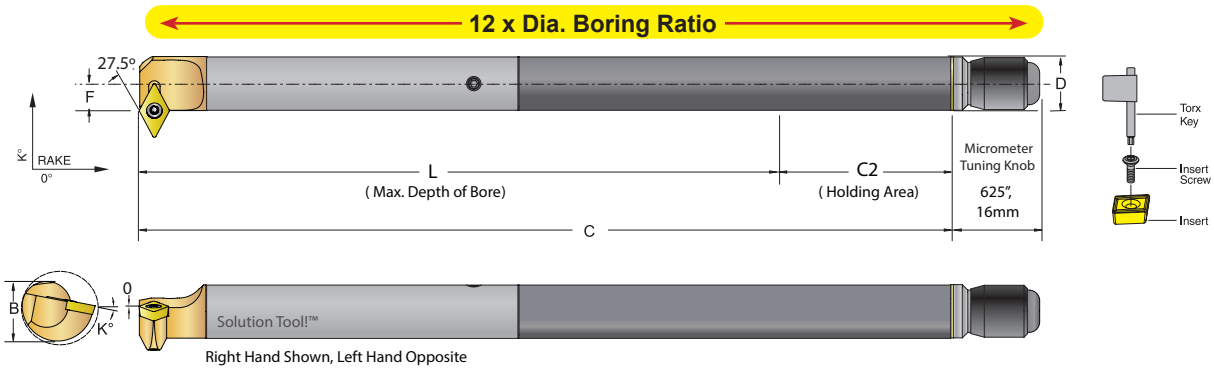


Right Hand Shown, Left Hand Opposite

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
					INCH								
DVI06X-10-SDNCR/L-2-CB	59096	59097		0.581	0.375	6.38	3.75	2.63	0.375	11°			
DVI08X-10-SDNCR/L-2-CB	59104	59105	10 x Dia.	0.813	0.500	8.00	5.00	3.00	0.500	11°	21.51	TS-25-45-6M2	T-8
DVI10X-10-SDNCR/L-2-CB	59112	59113		0.938	0.625	9.38	6.25	3.13	0.562	7°			
					METRIC								
DVM10X-10-SDNCR/L-07-CB	59120	59121		16	10	170	100	70	9.5	11°			
DVM12X-10-SDNCR/L-07-CB	59128	59129	10 x Dia.	20	12	192	120	72	12.7	11°	070204	TS-25-45-6M2	T-8
DVM16X-10-SDNCR/L-07-CB	59136	59137		24	16	240	160	80	14.3	7°			

SDNC R/L Solution Tool!™ Integral Carbide Boring Bar Style N - Negative 27.5° End & Side Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





Right Hand Shown, Left Hand Opposite

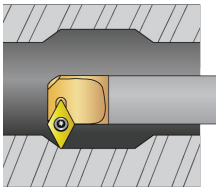
INCH

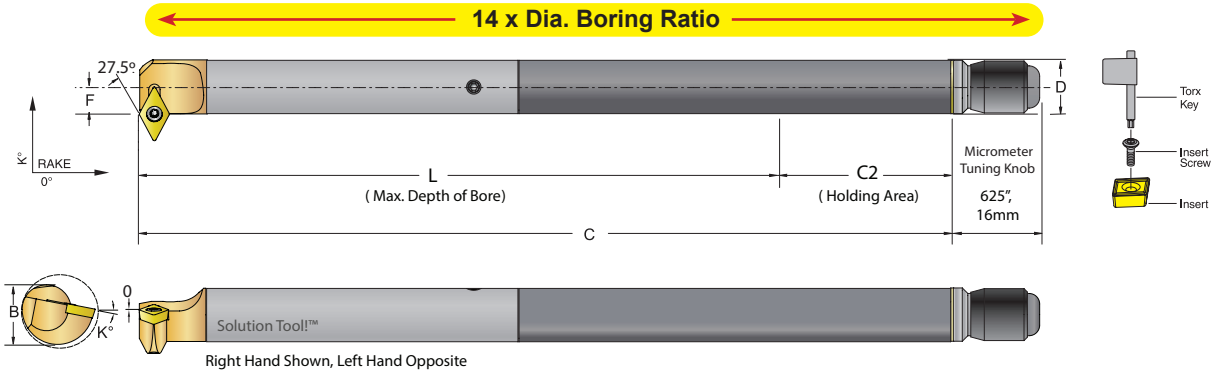
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
DVI06X-12-SDNCR/L-2-CB	59098	59099	12 x Dia.	0.581	0.375	7.13	4.50	2.63	0.375	11°	21.51	TS-25-45-6M2	T-8
DVI08X-12-SDNCR/L-2-CB	59106	59107		0.813	0.500	9.00	6.00	3.00	0.500	11°			
DVI10X-12-SDNCR/L-2-CB	59114	59115		0.938	0.625	10.63	7.50	3.13	0.562	7°			

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
DVM10X-12-SDNCR/L-07-CB	59122	59123	12 x Dia.	16	10	190	120	70	9.5	11°	070204	TS-25-45-6M2	T-8
DVM12X-12-SDNCR/L-07-CB	59130	59131		20	10	190	120	70	12.7	11°			
DVM16X-12-SDNCR/L-07-CB	59138	59139		24	16	272	192	80	14.3	7°			

SDNC R/L Solution Tool!™ Integral Carbide Boring Bar Style N - Negative 27.5° End & Side Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





Right Hand Shown, Left Hand Opposite

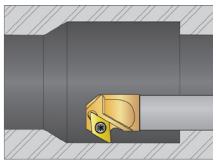
INCH

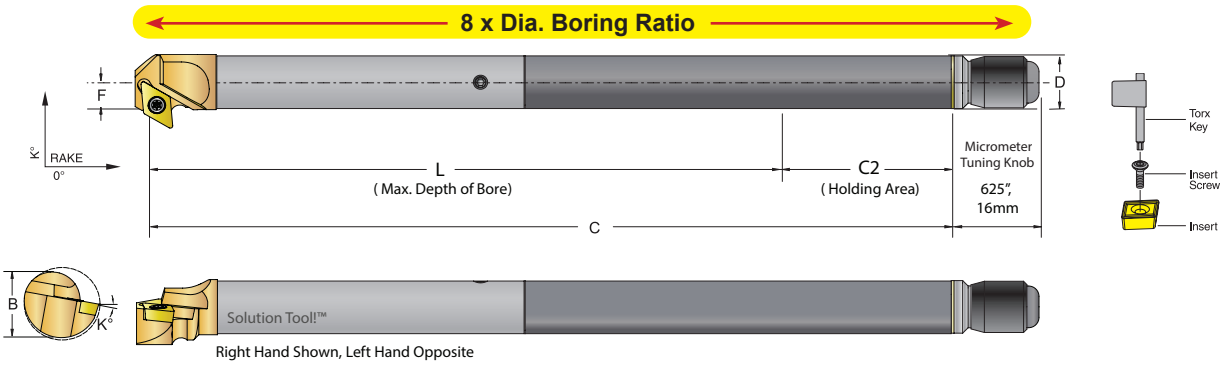
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
DVI06X-14-SDNCR/L-2-CB	59100	59101	14 x Dia.	0.581	0.375	7.88	5.25	2.63	0.375	11°	21.51	TS-25-45-6M2	T-8
DVI08X-14-SDNCR/L-2-CB	59108	59109		0.813	0.500	10.00	7.00	3.00	0.500	11°			
DVI10X-14-SDNCR/L-2-CB	59116	59117		0.938	0.625	11.88	8.75	3.13	0.562	7°			

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCGW Gage Insert	Insert Screw	Torx key
DVM10X-14-SDNCR/L-07-CB	59124	59125	14 x Dia.	16	10	210	140	70	9.5	11°	070204	TS-25-45-6M2	T-8
DVM12X-14-SDNCR/L-07-CB	59132	59133		20	12	240	168	72	12.7	11°			
DVM16X-14-SDNCR/L-07-CB	59140	59141		24	16	304	224	80	14.3	7°			

SDXC R/L Solution Tool!™ Integral Carbide Boring Bar Style X - Negative 5° Back Boring Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





Right Hand Shown, Left Hand Opposite

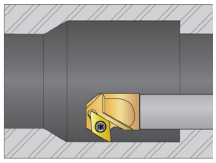
INCH

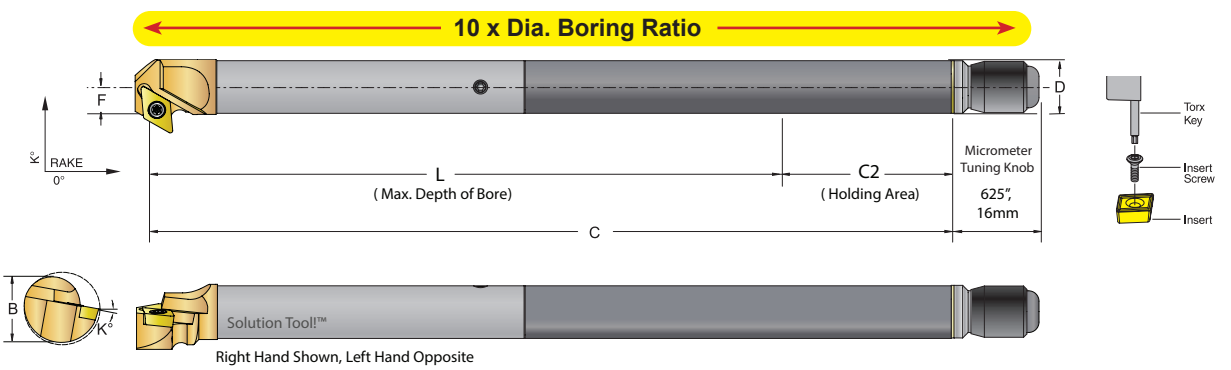
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCMT Gage Insert	Insert Screw	Torx key
DVI06X-08-SDXCR/L-2-CB	59182	59183		0.625	0.375	5.63	3.00	2.63	0.375	8°			
DVI08X-08-SDXCR/L-2-CB	59190	59191	8 x Dia.	0.750	0.500	7.00	4.00	3.00	0.437	6°	21.51	TS-25-45-6M2	T-8
DVI10X-08-SDXCR/L-2-CB	59198	59199		1.275	0.625	8.13	5.00	3.13	0.500	5°			

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCMT Gage Insert	Insert Screw	Torx key
DVM10X-08-SDXCR/L-07-CB	59206	59207		17	10	150	80	70	9.53	8°			
DVM12X-08-SDXCR/L-07-CB	59214	59215	8 x Dia.	21	12	168	96	72	11.10	6°	070204	TS-25-45-6M2	T-8
DVM16X-08-SDXCR/L-07-CB	59222	59223		22	16	208	128	80	12.70	5°			

SDXC R/L Solution Tool!™ Integral Carbide Boring Bar Style X - Negative 5° Back Boring Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





Right Hand Shown, Left Hand Opposite

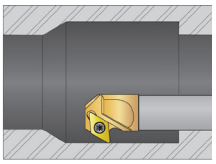
INCH

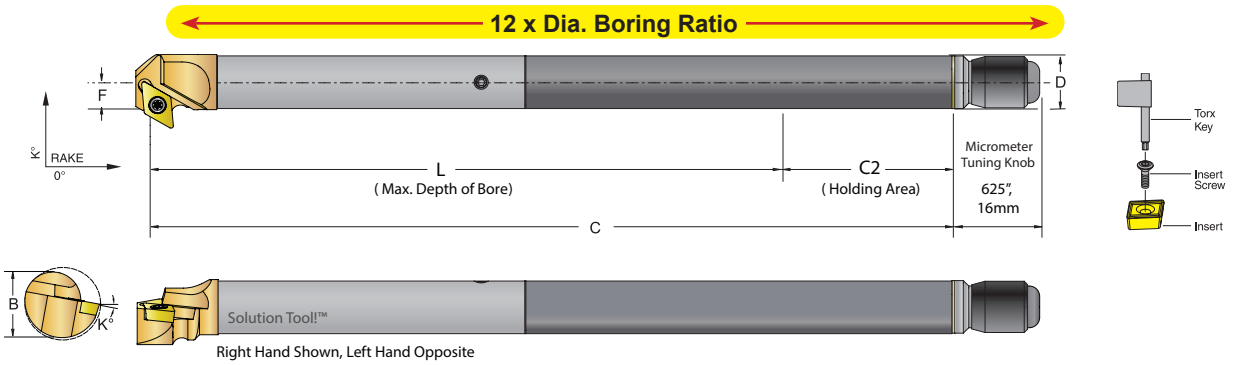
Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCMT Gage Insert	Insert Screw	Torx key
DVI06X-10-SDXCR/L-2-CB	59184	59185		0.625	0.375	6.38	3.75	2.63	0.375	8°			
DVI08X-10-SDXCR/L-2-CB	59192	59193	10 x Dia.	0.750	0.500	8.00	5.00	3.00	0.437	6°	21.51	TS-25-45-6M2	T-8
DVI10X-10-SDXCR/L-2-CB	59200	59201		0.875	0.625	9.38	6.25	3.13	0.500	5°			

METRIC

Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCMT Gage Insert	Insert Screw	Torx key
DVM10X-10-SDXCR/L-07-CB	59208	59209		17	10	170	100	70	9.53	8°			
DVM12X-10-SDXCR/L-07-CB	59216	59217	10 x Dia.	21	12	192	120	72	11.10	6°	070204	TS-25-45-6M2	T-8
DVM16X-10-SDXCR/L-07-CB	59224	59225		22	16	240	160	80	12.70	5°			

SDXC R/L Solution Tool!™ Integral Carbide Boring Bar Style X - Negative 5° Back Boring Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





Right Hand Shown, Left Hand Opposite

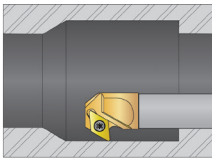
INCH

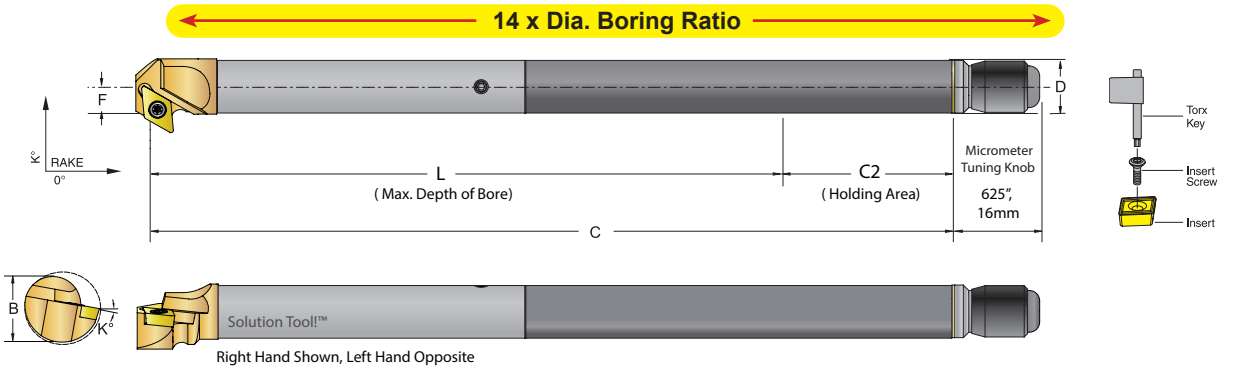
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCMT Gage Insert	Insert Screw	Torx key
DVI06X-12-SDXCR/L-2-CB	59186	59187	12 x Dia.	0.625	0.375	7.13	4.50	2.63	0.375	8°	21.51	TS-25-45-6M2	T-8
DVI08X-12-SDXCR/L-2-CB	59194	59195		0.750	0.500	9.00	6.00	3.00	0.437	6°			
DVI10X-12-SDXCR/L-2-CB	59202	59203		0.875	0.625	10.63	7.50	3.13	0.500	5°			

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCMT Gage Insert	Insert Screw	Torx key
DVM10X-12-SDXCR/L-07-CB	59210	59211	12 x Dia.	17	10	190	120	70	9.53	8°	070204	TS-25-45-6M2	T-8
DVM12X-12-SDXCR/L-07-CB	59218	59219		21	12	216	144	72	11.10	6°			
DVM16X-12-SDXCR/L-07-CB	59226	59227		22	16	272	192	80	12.70	5°			

SDXC R/L Solution Tool!™ Integral Carbide Boring Bar Style X - Negative 5° Back Boring Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





Right Hand Shown, Left Hand Opposite

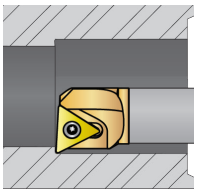
INCH

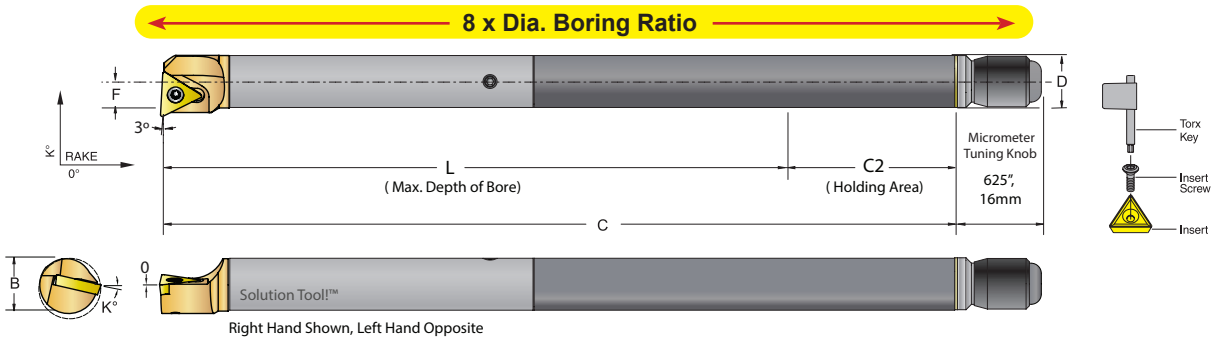
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCMT Gage Insert	Insert Screw	Torx key
DVI06X-14-SDXCR/L-2-CB	59188	59189	14 x Dia.	0.625	0.375	7.88	5.25	2.63	0.375	7°	21.51	TS-25-45-6M2	T-8
DVI08X-14-SDXCR/L-2-CB	59196	59197		0.750	0.500	10.00	7.00	3.00	0.437	15°			
DVI10X-14-SDXCR/L-2-CB	59204	59205		0.875	0.625	11.88	8.75	3.13	0.500	10°			

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	DCMT Gage Insert	Insert Screw	Torx key
DVM10X-14-SDXCR/L-07-CB	59212	59213	14 x Dia.	17	10	210	140	70	9.53	8°	070204	TS-25-45-6M2	T-8
DVM12X-14-SDXCR/L-07-CB	59220	59221		21	12	240	168	72	11.10	6°			
DVM16X-14-SDXCR/L-07-CB	59228	59229		22	16	304	224	80	12.70	5°			

STUC R/L Solution Tool!™ Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive triangle TC___ inserts





Right Hand Shown, Left Hand Opposite

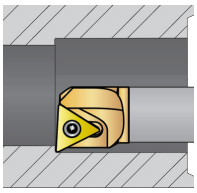
INCH

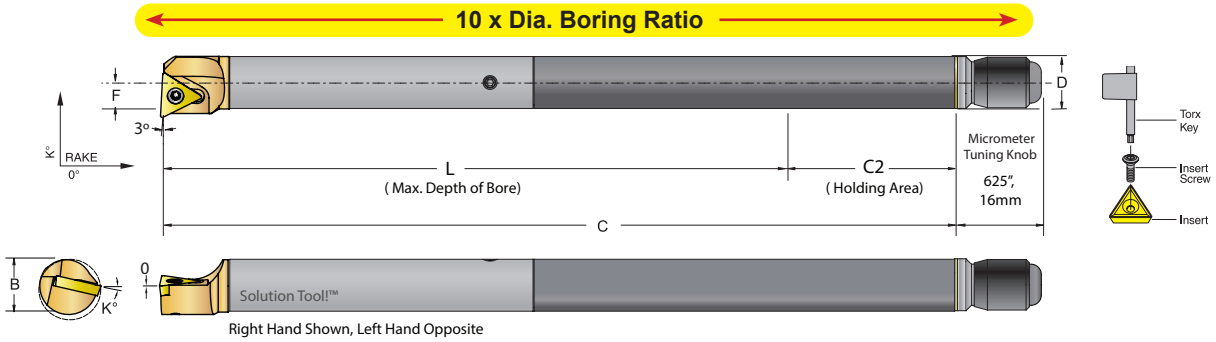
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	TCMT Gage Insert	Insert Screw	Torx key
DVI08X-08-STUCR/L-2-CB	59410	59411	8 x Dia.	0.625	0.500	7.00	4.00	3.00	.312	13°	21.51	TS-25-45-6M2	T-8
DVI10X-08-STUCR/L-2-CB	59412	59413		0.781	0.625	8.13	5.00	3.13	.406	10°			

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	TCMT Gage Insert	Insert Screw	Torx key
DVM12X-08-STUCR/L-11-CB	59424	59425	8 x Dia.	16	12	168	96	72	7.92	13°	110204	TS-25-45-6M2	T-8
DVM16X-08-STUCR/L-16-CB	59426	59427		20	16	208	128	80	10.31	10°			

STUC R/L Solution Tool!™ Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive triangle TC___ inserts





Right Hand Shown, Left Hand Opposite

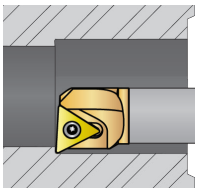
INCH

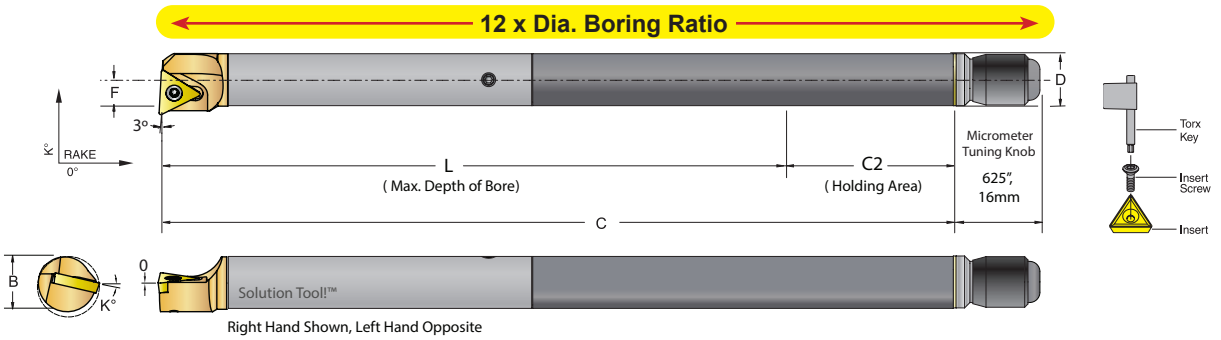
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	TCMT Gage Insert	Insert Screw	Torx key
DVI08X-10-STUCR/L-2-CB	59262	59263	10 x Dia.	0.625	0.500	8.00	5.00	3.00	.312	13°	21.51	TS-25-45-6M2	T-8
DVI10X-10-STUCR/L-2-CB	59268	59269		0.781	0.625	9.38	6.25	3.13	.406	10°			

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	TCMT Gage Insert	Insert Screw	Torx key
DVM12X-10-STUCR/L-11-CB	59306	59307	10 x Dia.	16	12	192	120	72	7.92	13°	110204	TS-25-45-6M2	T-8
DVM16X-10-STUCR/L-16-CB	59312	59313		20	16	240	160	80	10.31	10°			

STUC R/L Solution Tool!™ Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive triangle TC___ inserts





Right Hand Shown, Left Hand Opposite

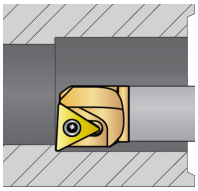
INCH

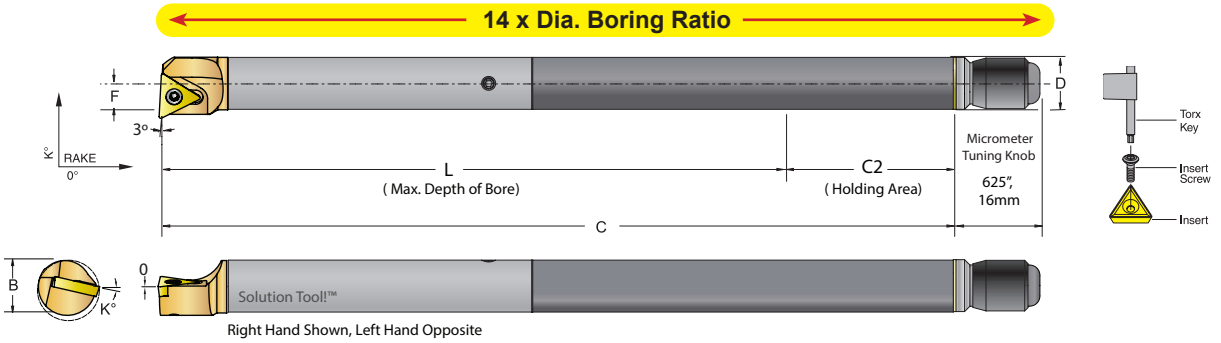
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	TCMT Gage Insert	Insert Screw	Torx key
DVI08X-12-STUCR/L-2-CB	59264	59265	12 x Dia.	0.625	0.500	9.00	6.00	3.00	.312	13°	21.51	TS-25-45-6M2	T-8
DVI10X-12-STUCR/L-2-CB	59270	59271		0.781	0.625	10.63	7.50	3.13	.406	10°			

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	TCMT Gage Insert	Insert Screw	Torx key
DVM12X-12-STUCR/L-11-CB	59308	59309	12 x Dia.	16	12	216	144	72	7.92	13°	110204	TS-25-45-6M2	T-8
DVM16X-12-STUCR/L-16-CB	59314	59315		20	16	272	192	80	10.31	10°			

STUC R/L Solution Tool!™ Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive triangle TC___ inserts





Right Hand Shown, Left Hand Opposite

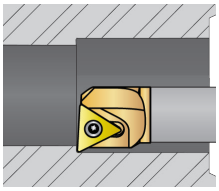
INCH

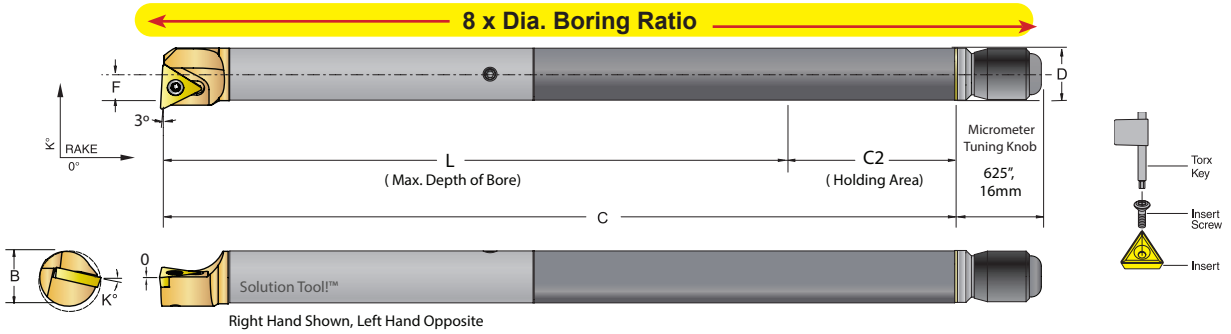
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	TCMT Gage Insert	Insert Screw	Torx key
DVI08X-14-STUCR/L-2-CB	59266	59267	14 x Dia.	0.625	0.500	10.00	7.00	3.00	.312	13°	21.51	TS-25-45-6M2	T-8
DVI10X-14-STUCR/L-2-CB	59272	59273		0.781	0.625	11.78	8.75	3.13	.406	10°			

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	TCMT Gage Insert	Insert Screw	Torx key
DVM12X-14-STUCR/L-11-CB	59310	59311	14 x Dia.	16	12	240	168	72	7.92	13°	110204	TS-25-45-6M2	T-8
DVM16X-14-STUCR/L-16-CB	59316	59317		20	16	304	224	80	10.31	10°			

STUP R/L Solution Tool!™ Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive triangle TP__ inserts





Right Hand Shown, Left Hand Opposite

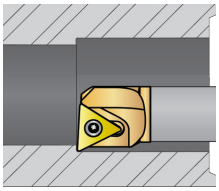
INCH

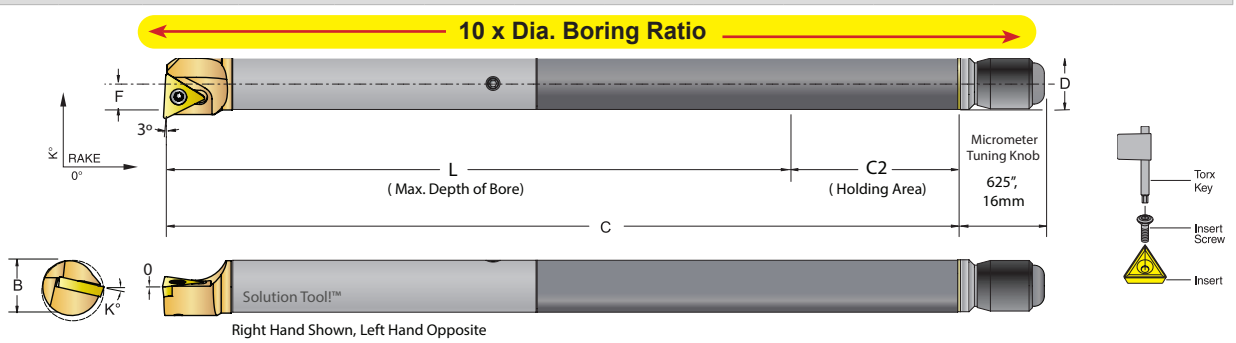
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	TPGW Gage Insert	Insert Screw	Torx key
DVI04X-08-STUPR/L-1.2-CB	59230	59231		0.312	0.250	4.00	2.00	2.00	.143	11°	1.21.20.2	TS-06	T-6
DVI05X-08-STUPR/L-1.2-CB	59238	59239		0.383	0.312	5.00	2.50	2.50	.177	8°	1.21.20.2	TS-06	T-6
DVI06X-08-STUPR/L-1.2-CB	59246	59247	8 x Dia.	0.447	0.375	5.63	3.00	2.63	.220	4°	1.21.20.2	TS-06	T-6
DVI08X-08-STUPR/L-2-CB	60265	60266		0.625	0.500	7.00	4.00	3.00	.312	2°	21.51	TS-25-45-6M2	T-8
DVI10X-08-STUPR/L-2-CB	60273	60274		0.781	0.625	8.13	5.00	3.13	.406	0°	21.51	TS-25-45-6M2	T-8

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	TPGW Gage Insert	Insert Screw	Torx key
DVM06X-08-STUPR/L-06-CB	59274	59275		8	6	96	48	48	3.63	11°	06T101	TS-06	T-6
DVM08X-08-STUPR/L-06-CB	59282	59283		10	8	128	64	64	4.50	8°	06T101	TS-06	T-6
DVM10X-08-STUPR/L-06-CB	59290	59291	8 x Dia.	12	10	150	80	70	5.59	4°	06T101	TS-06	T-6
DVM12X-08-STUPR/L-11-CB	60281	60282		16	12	168	96	72	7.92	2°	110204	TS-25-45-6M2	T-8
DVM16X-08-STUPR/L-11-CB	60289	60290		20	16	208	128	80	10.31	0°	110204	TS-25-45-6M2	T-8

STUP R/LSolution Tool!™ Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive triangle TP__ inserts





Right Hand Shown, Left Hand Opposite

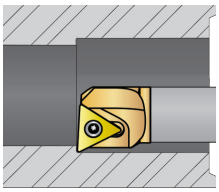
INCH

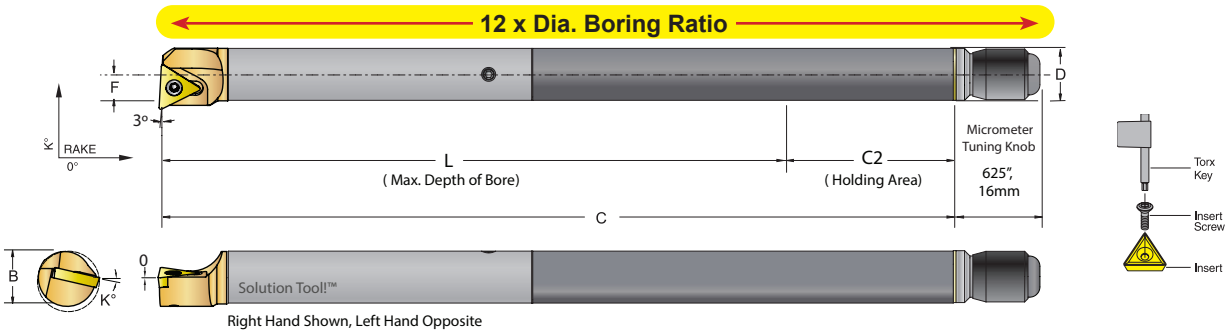
Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	TPGW Gage Insert	Insert Screw	Torx key
DVI04X-10-STUPR/L-1.2-CB	59232	59233		0.312	0.250	4.50	2.50	2.00	.143	11°	1.21.20.2	TS-06	T-6
DVI05X-10-STUPR/L-1.2-CB	59240	59241		0.383	0.312	5.62	3.12	2.50	.177	8°	1.21.20.2	TS-06	T-6
DVI06X-10-STUPR/L-1.2-CB	59248	59249	10 x Dia.	0.447	0.375	6.38	3.75	2.63	.220	4°	1.21.20.2	TS-06	T-6
DVI08X-10-STUPR/L-2-CB	60267	60268		0.625	0.500	8.00	5.00	3.00	.312	2°	21.51	TS-25-45-6M2	T-8
DVI10X-10-STUPR/L-2-CB	60275	60276		0.781	0.625	9.38	6.25	3.13	.406	0°	21.51	TS-25-45-6M2	T-8

METRIC

Carbide Bar Description	UPC No. 733101- R.H.	L.H.	Boring Ratio	Min. Bore B	Carbide Body D	C	L	C2	F	K°	TPGW Gage Insert	Insert Screw	Torx key
DVM06X-10-STUPR/L-06-CB	59276	59277		8	6	108	60	48	3.63	11°	06T101	TS-06	T-6
DVM08X-10-STUPR/L-06-CB	59284	59285		10	8	144	80	64	4.50	8°	06T101	TS-06	T-6
DVM10X-10-STUPR/L-06-CB	59292	59293	10 x Dia.	12	10	170	100	70	5.59	4°	06T101	TS-06	T-6
DVM12X-10-STUPR/L-11-CB	60283	60284		16	12	192	120	72	7.92	2°	110204	TS-25-45-6M2	T-8
DVM16X-10-STUPR/L-11-CB	60291	60292		20	16	240	160	80	10.31	0°	110204	TS-25-45-6M2	T-8

STUP R/L Solution Tool!™ Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive triangle TP__ inserts



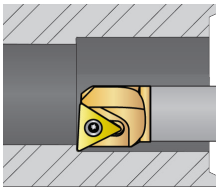


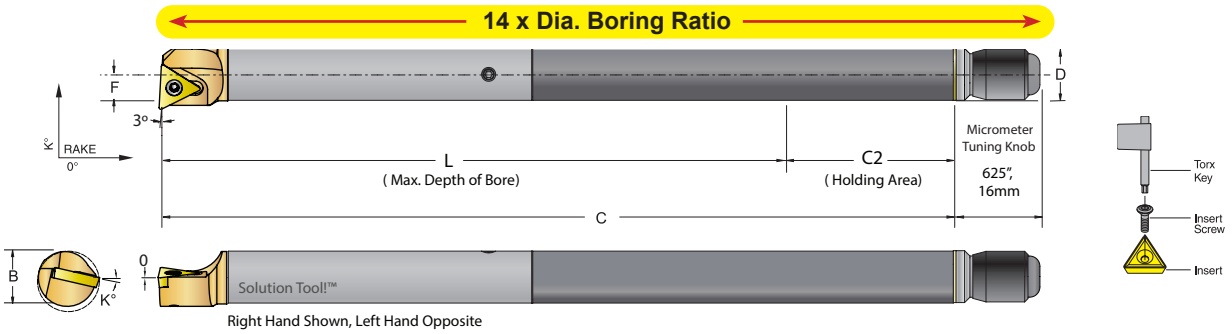
Right Hand Shown, Left Hand Opposite

Inch	UPC No. 733101-		Boring	Min. Bore	Carbide Body						TPGW		
Carbide Bar Description	R.H.	L.H.	Ratio	B	D	C	L	C2	F	K°	Gage Insert	Insert Screw	Torx key
DVI04X-12-STUPR/L-1.2-CB	59234	59235		0.312	0.250	5.00	3.00	2.00	.143	11°	1.21.20.2	TS-06	T-6
DVI05X-12-STUPR/L-1.2-CB	59242	59243		0.383	0.312	6.24	3.74	2.50	.177	8°	1.21.20.2	TS-06	T-6
DVI06X-12-STUPR/L-1.2-CB	59250	59251	12 x Dia.	0.447	0.375	7.13	4.50	2.63	.220	4°	1.21.20.2	TS-06	T-6
DVI08X-12-STUPR/L-2-CB	60269	60270		0.625	0.500	9.00	6.00	3.00	.312	2°	21.51	TS-25-45-6M2	T-8
DVI10X-12-STUPR/L-2-CB	60277	60278		0.781	0.625	10.63	7.50	3.13	.406	0°	21.51	TS-25-45-6M2	T-8

Metric	UPC No. 733101-		Boring	Min. Bore	Carbide Body						TPGW		
Carbide Bar Description	R.H.	L.H.	Ratio	B	D	C	L	C2	F	K°	Gage Insert	Insert Screw	Torx key
DVM06X-12-STUPR/L-06-CB	59278	59279		8	6	120	72	48	3.63	11°	06T101	TS-06	T-6
DVM08X-12-STUPR/L-06-CB	59286	59287		10	8	160	96	64	4.50	8°	06T101	TS-06	T-6
DVM10X-12-STUPR/L-06-CB	59294	59295	12 x Dia.	12	10	190	120	70	5.59	4°	06T101	TS-06	T-6
DVM12X-12-STUPR/L-11-CB	60285	60286		16	12	216	144	72	7.92	2°	110204	TS-25-45-6M2	T-8
DVM16X-12-STUPR/L-11-CB	60293	60294		20	16	272	192	80	10.31	0°	110204	TS-25-45-6M2	T-8

STUP R/L Solution Tool!™ Integral Carbide Boring Bar Style U - Negative 3° End Cutting Edge Angle for 7° positive triangle TP___ inserts





Right Hand Shown, Left Hand Opposite

INCH

Carbide Bar Description	UPC No. 733101-		Boring	Min. Bore	Carbide Body						TPGW		
	R.H.	L.H.	Ratio	B	D	C	L	C2	F	K°	Gage Insert	Insert Screw	Torx key
DVI04X-14-STUPR/L-1.2-CB	59236	59237		0.312	0.250	5.50	3.50	2.00	.143	11°	1.21.20.2	TS-06	T-6
DVI05X-14-STUPR/L-1.2-CB	59244	59245		0.383	0.312	6.86	4.37	2.50	.177	8°	1.21.20.2	TS-06	T-6
DVI06X-14-STUPR/L-1.2-CB	59252	59253	14 x Dia.	0.447	0.375	7.88	5.25	2.63	.220	4°	1.21.20.2	TS-06	T-6
DVI08X-14-STUPR/L-2-CB	60271	60272		0.625	0.500	10.00	7.00	3.00	.312	2°	21.51	TS-25-45-6M2	T-8
DVI10X-14-STUPR/L-2-CB	60279	60280		0.781	0.625	11.88	8.75	3.13	.406	0°	21.51	TS-25-45-6M2	T-8

METRIC

Carbide Bar Description	UPC No. 733101-		Boring	Min. Bore	Carbide Body						TPGW		
	R.H.	L.H.	Ratio	B	D	C	L	C2	F	K°	Gage Insert	Insert Screw	Torx key
DVM06X-14-STUPR/L-06-CB	59280	59281		8	6	132	84	48	3.63	11°	06T101	TS-06	T-6
DVM08X-14-STUPR/L-06-CB	59288	59289		10	8	176	112	64	4.50	8°	06T101	TS-06	T-6
DVM10X-14-STUPR/L-06-CB	59296	59297	14 x Dia.	12	10	210	140	70	5.59	4°	06T101	TS-06	T-6
DVM12X-14-STUPR/L-11-CB	60287	60288		16	12	240	168	72	7.92	2°	110204	TS-25-45-6M2	T-8
DVM16X-14-STUPR/L-11-CB	60295	60296		20	16	304	224	80	10.31	0°	110204	TS-25-45-6M2	T-8

Solution Tool!™

The NO! Vibration Tunable Boring Bar

Makes Deep Hole Boring Simple!

SIMPLE - PRECISE - QUICK - RIGID

Quick Change Modular

The NO! Vibration Tunable Boring Bar for Medium Boring Operation
Engineered for multi boring and threading applications on medium diameter holes, and cutting depth to 14 x Boring Bar Diameter.

Multi Boring and Threading Applications

Better Machining Performance

Higher Workmanship Quality

Longer Cutting Insert Life

The technology behind the Solution Tool!™ the "Quick Change Modular" NO! Vibration Tunable Boring Bars, is to perform simple, precise and reliable when deep boring medium sizes holes, with close machining tolerance and high surface finish, in multi boring and threading applications.

The "Quick Change Modular" NO! Vibration Tunable Boring Bars, is a two part construction. The body where the boring bar is held, and the housing that holds the dampener, and brazed together with Silver Alloy. The braze is the buffer zone where the frequencies generate from the cutting operation are stopped.

To maximize performance in deep boring operation, the "Quick Change Modular Body" is Offered in two versions;

Steel Body
The steel body for boring depth up to 12 x Boring Bar Diameter

Carbide Body
The carbide body rigidity, stability, and strength, allows to bore at higher cutting rate, heavier material removal,longer depth of cut, close working tolerances and higher surface finish.

Boring Bar Sizes

Inch: 3/4" Dia., 1" Dia. 1 1/" Dia.
Metric: 20mm Dia., 25mm Dia.,32mm Dia.,

Boring Ratio: 8 x Dia., 10 x Dia., 12 x Dia., 14 x Dia.

Positive Inserts Geometry:

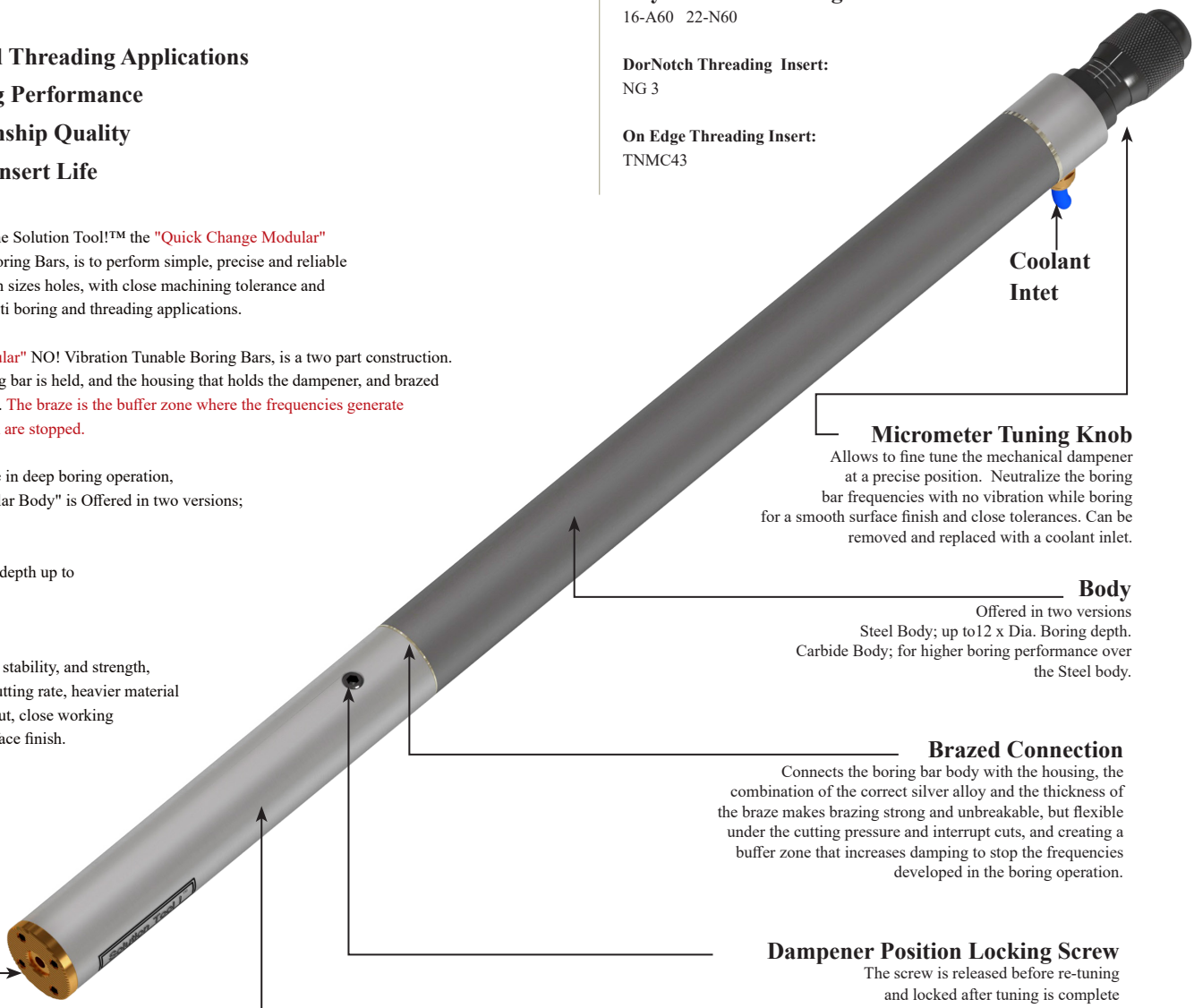
for Quick Change Modular Head:
CCMT CPMT DCMT
TCMT TPMT VCMT WCMT

Lay-Down Threading Insert:

16-A60 22-N60

DorNotch Threading Insert:
NG 3

On Edge Threading Insert:
TNMC43



Coolant Intet

Micrometer Tuning Knob

Allows to fine tune the mechanical dampener at a precise position. Neutralize the boring bar frequencies with no vibration while boring for a smooth surface finish and close tolerances. Can be removed and replaced with a coolant inlet.

Body

Offered in two versions
Steel Body; up to12 x Dia. Boring depth.
Carbide Body; for higher boring performance over the Steel body.

Brazed Connection

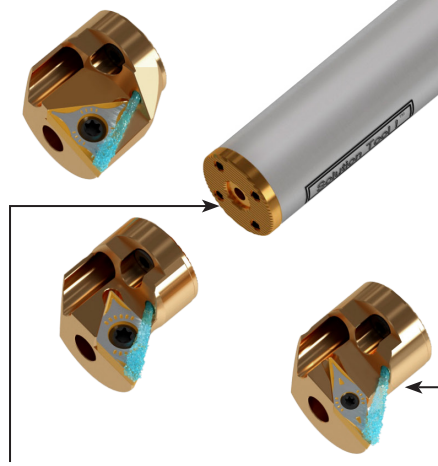
Connects the boring bar body with the housing, the combination of the correct silver alloy and the thickness of the braze makes brazing strong and unbreakable, but flexible under the cutting pressure and interrupt cuts, and creating a buffer zone that increases damping to stop the frequencies developed in the boring operation.

Dampener Position Locking Screw

The screw is released before re-tuning and locked after tuning is complete

Housing

Made of heat treated alloy steel, brazed with the body, the inside of the housing holds the mechanical dampener and on the face is attached the Quick Change Modular Collar Head.



Quick Change Modular Head Collar

Made of heat treated alloy steel and TiN Coated.
Precisely and rigid attaches on to the housing face.
The face of the Collar, has a 60° serrated groove to expend the surface contact with the Quick Change Heads, for maximum locking rigidity and precise interchangeability.

Quick Change Modular Head

Made of heat treated alloy steel and TiN Coated. Locks onto 60° serrated face of the collar face with three cup screws precisely and rigid, making interchangeability easy and quick. The Thru Coolant System enhances boring performance, quality and longer insert life. The insert is kept at constant temperature clean and undamaged cutting edge, and removes chips from the bore while machining.

Solution Tool!™ Quick Change Modular Boring Bar Body & Heads

The NO! Vibration Tunable Boring Bar for Multi boring and Threading Applications on Medium Diameter Holes

Makes Deep Hole Boring Simple!

1 SCLC
R/L Quick Change
Boring Bar Head
With Thru Coolant

2 SDNC
R/L Quick Change
Boring Bar Head
With Thru Coolant

3 SDQC
R/L Quick Change
Boring Bar Head
With Thru Coolant

4 SDUC
R/L Quick Change
Boring Bar Head
With Thru Coolant

5 SDXC
R/L Quick Change
Boring Bar Head
With Thru Coolant

One Solution Tool!™
Modular Carbide & Steel Body

Nine
Interchangeable Heads

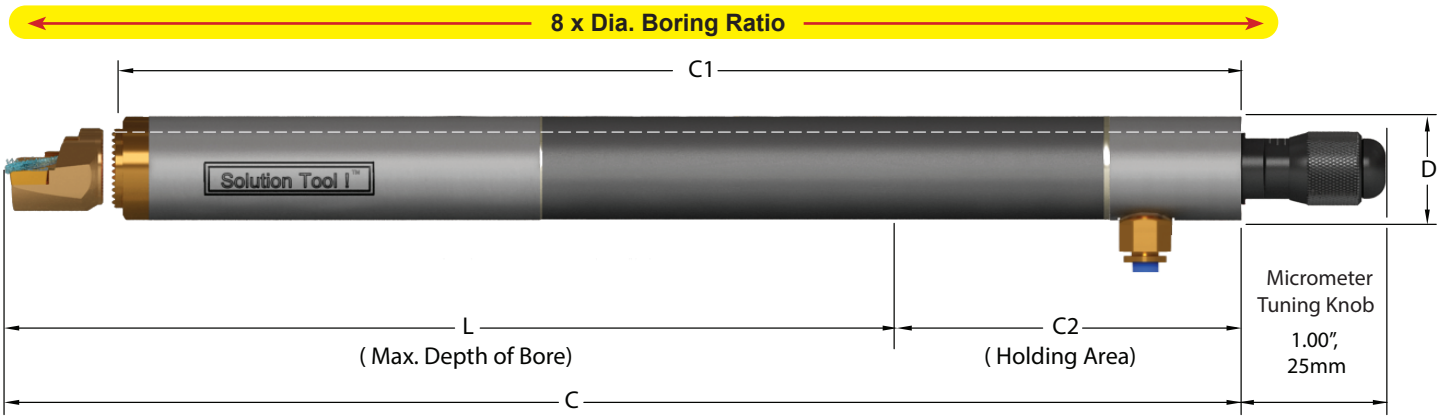
6 STUC
R/L Quick Change
Boring Bar Head
With Thru Coolant

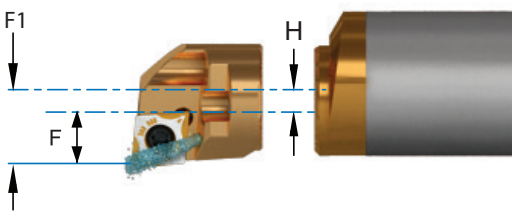
7 SVUC
R/L Quick Change
Boring Bar Head
With Thru Coolant

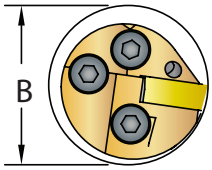
8 SWLC
R/L Quick Change
Boring Bar Head
With Thru Coolant

9 SN
R/L Quick Change
Threading Bar Head
With Thru Coolant

DV_08_MQBBN_ Solution Tool!™ Thru Coolant Quick Change Modular Boring Bar Body

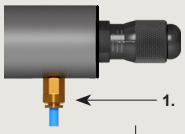




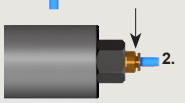


F1* = F + H
Min Bore = B + (H x 2)*

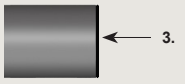
1. Coolant Inlet when Micrometer Tuning knob is connected to the Bar



2. 1/8" NTP Coolant Attachment when Micrometer Tuning knob is removed from the Bar



3. For blind boring bar, remove Micrometer Tuning knob and Coolant Attachment



Inch	UPC No. 733101-	Boring Ratio	Steel Body							Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
Steel Bar Description	Neutral		D	C	C1	L	C2	H	F1*				
DVI12X-08-MQBBN-10-SB	59428	8 x Dia.	0.750	9.00	8.20	6.00	3.00	0	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	0.157	1/8"-27NTP
DVI16X-08-MQBBN-12-SB	59340		1.000	12.00	11.20	8.00	4.00	0.125				0.157	
DVI20X-08-MQBBN-15-SB	59341		1.250	15.00	14.20	10.00	5.00	0.250				0.195	

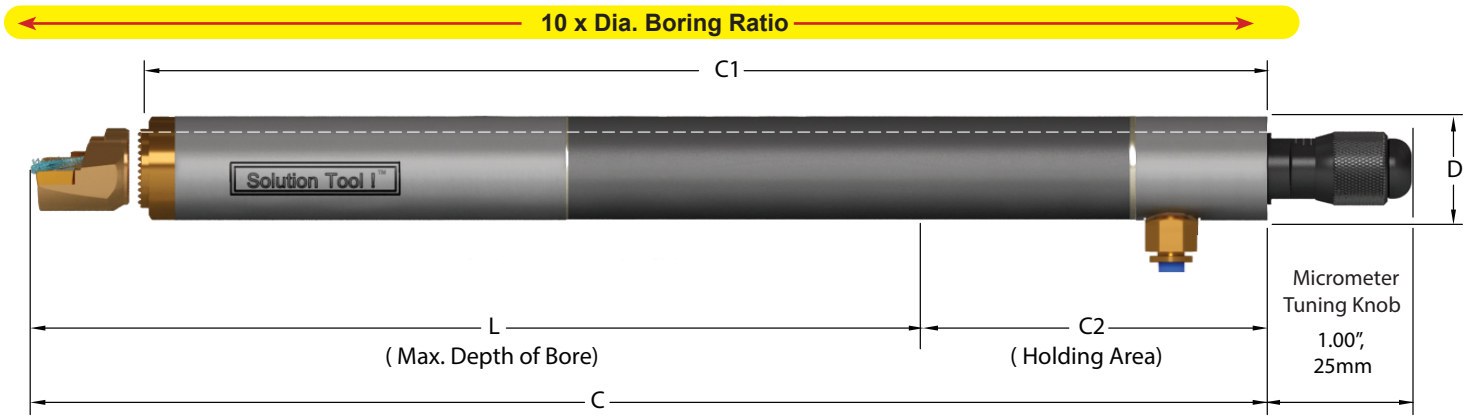
Metric	UPC No. 733101-	Boring Ratio	Steel Body							Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
Steel Bar Description	Neutral		D	C	C1	L	C2	H	F1*				
DVM20X-08-MQBBN-0240-SB	59430	8 x Dia.	20	240	219.68	160	80	0	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	4	1/8"-27NTP
DVM25X-08-MQBBN-0300-SB	59345		25	300	279.68	200	100	2.5				4	
DVM32X-08-MQBBN-0384-SB	59346		32	384	363.68	256	128	6				5	

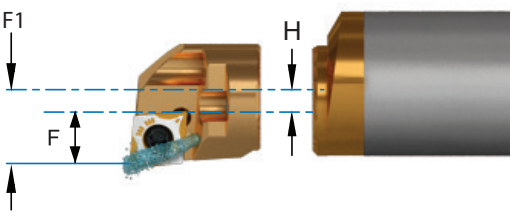
Inch	UPC No. 733101-	Boring Ratio	Carbide Body							Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
Carbide Bar Description	Neutral		D	C	C1	L	C2	H	F1*				
DVI12X-08-MQBBN-10-CB	60360	8 x Dia.	0.750	9.00	8.20	6.00	3.00	0	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	0.157	1/8"-27NTP
DVI16X-08-MQBBN-12-CB	60362		1.000	12.00	11.20	8.00	4.00	0.125				0.157	
DVI20X-08-MQBBN-15-CB	60364		1.250	15.00	14.20	10.00	5.00	0.250				0.195	

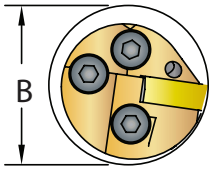
Metric	UPC No. 733101-	Boring Ratio	Carbide Body							Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
Carbide Bar Description	Neutral		D	C	C1	L	C2	H	F1*				
DVM20X-08-MQBBN-0240-CB	60366	8 x Dia.	20	240	219.68	160	80	0	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	4	1/8"-27NTP
DVM25X-08-MQBBN-0300-CB	60368		25	300	279.68	200	100	2.5				4	
DVM32X-08-MQBBN-0384-CB	60370		32	384	363.68	256	128	6				5	

*Modular heads sold separately, see pages D-70- D-77 for specifications.

DV_10_MQBBN_ Solution Tool!™ Thru Coolant Quick Change Modular Boring Bar Body

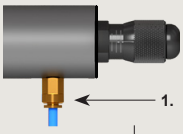




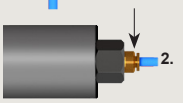


F1* = F + H
Min Bore = B + (H x 2)*

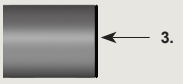
1. Coolant Inlet when Micrometer Tuning knob is connected to the Bar



2. 1/8" NTP Coolant Attachment when Micrometer Tuning knob is removed from the Bar



3. For blind boring bar, remove Micrometer Tuning knob and Coolant Attachment



Inch	UPC No. 733101-	Boring Ratio	Steel Body							Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
Steel Bar Description	Neutral		D	C	C1	L	C2	H	F1*				
DVI12X-10-MQBBN-11-SB	59342		0.750	10.50	9.70	7.50	3.00	0				0.157	
DVI16X-10-MQBBN-14-SB	59429	10 x Dia.	1.000	14.00	13.20	10.00	4.00	0.125	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	0.157	1/8"-27NTP
DVI20X-10-MQBBN-18-SB	59471		1.250	17.50	16.70	12.50	5.00	0.250				0.195	

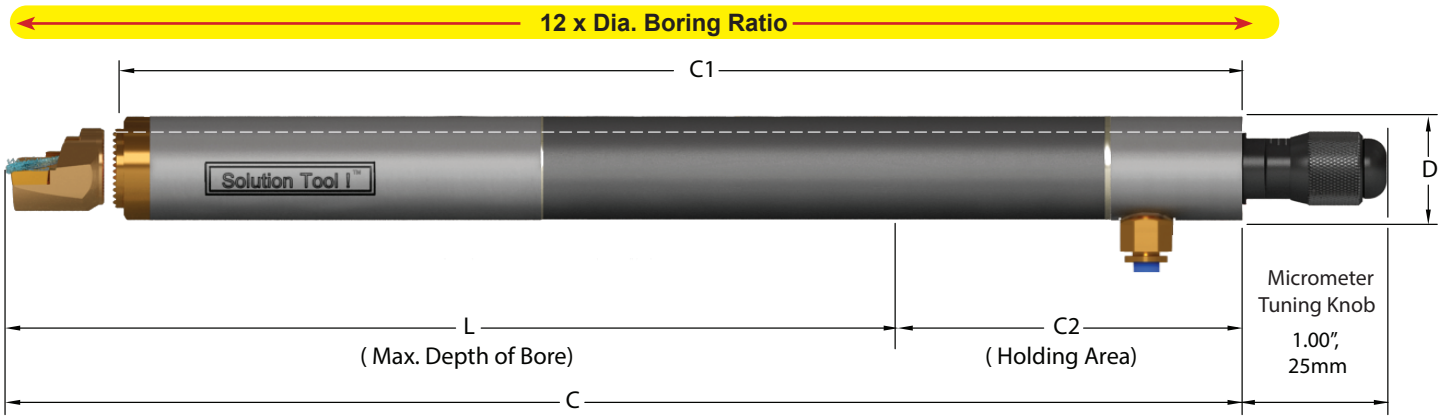
Metric	UPC No. 733101-	Boring Ratio	Steel Body							Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
Steel Bar Description	Neutral		D	C	C1	L	C2	H	F1*				
DVM20X-10-MQBBN-0280-SB	59347		20	280	259.68	200	80	0				4	
DVM25X-10-MQBBN-0350-SB	59431	10 x Dia.	25	350	329.68	250	100	2.5	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	4	1/8"-27NTP
DVM32X-10-MQBBN-0448-SB	59472		32	448	427.68	320	128	6				5	

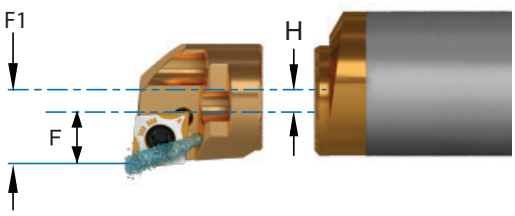
Inch	UPC No. 733101-	Boring Ratio	Carbide Body							Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
Carbide Bar Description	Neutral		D	C	C1	L	C2	H	F1*				
DVI12X-10-MQBBN-11-CB	60361		0.750	10.50	9.70	7.50	3.00	0				0.157	
DVI16X-10-MQBBN-14-CB	60363	10 x Dia.	1.000	14.00	13.20	10.00	4.00	0.125	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	0.157	1/8"-27NTP
DVI20X-10-MQBBN-18-CB	60365		1.250	17.50	16.70	12.50	5.00	0.250				0.195	

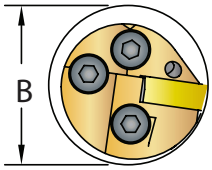
Metric	UPC No. 733101-	Boring Ratio	Carbide Body							Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
Carbide Bar Description	Neutral		D	C	C1	L	C2	H	F1*				
DVM20X-10-MQBBN-0280-CB	60367		20	280	259.68	200	80	0				4	
DVM25X-10-MQBBN-0350-CB	60369	10 x Dia.	25	350	329.68	250	100	2.5	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	4	1/8"-27NTP
DVM32X-10-MQBBN-0448-CB	60371		32	448	427.68	320	128	6				5	

*Modular heads sold separately, see pages D-70- D-77 for specifications.

DV_12_MQBBN_ Solution Tool!™ Thru Coolant Quick Change Modular Boring Bar Body

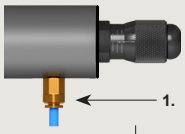




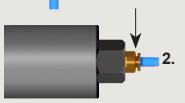


F1* = F + H
Min Bore = B + (H x 2)*

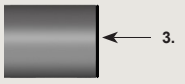
1. Coolant Inlet when Micrometer Tuning knob is connected to the Bar



2. 1/8" NTP Coolant Attachment when Micrometer Tuning knob is removed from the Bar



3. For blind boring bar, remove Micrometer Tuning knob and Coolant Attachment



Inch	UPC No. 733101-	Boring	Steel Body							Min. Bore	Modular Head*	Coolant Bore	Coolant Attachment
Carbide Bar Description	Neutral	Ratio	D	C	C1	L	C2	H	F1*	B**	CBBB	Dia.	Thread
DVI12X-12-MQBBN-12-SB	59360		0.750	12.00	11.20	9.00	3.00	0				0.157	
DVI16X-12-MQBBN-16-SB	59361	12 x Dia.	1.000	16.00	15.20	12.00	4.00	0.125	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	0.157	1/8"-27NTP
DVI20X-12-MQBBN-20-SB	59362		1.250	20.00	19.20	15.00	5.00	0.250				0.195	

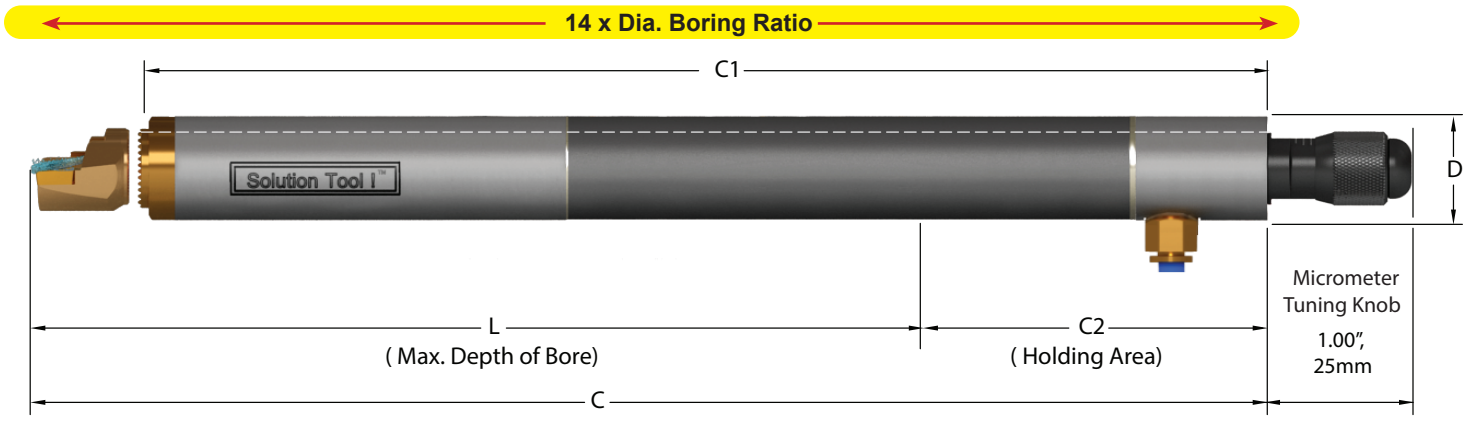
Metric	UPC No. 733101-	Boring	Steel Body							Min. Bore	Modular Head*	Coolant Bore	Coolant Attachment
Carbide Bar Description	Neutral	Ratio	D	C	C1	L	C2	H	F1*	B**	CBBB	Dia.	Thread
DVM20X-12-MQBBN-0320-SB	59363		20	320	299.68	240	80	0				4	
DVM25X-12-MQBBN-0400-SB	59364	12 x Dia.	25	400	379.68	300	100	2.5	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	4	1/8"-27NTP
DVM32X-12-MQBBN-0512-SB	59365		32	512	491.68	384	128	6				5	

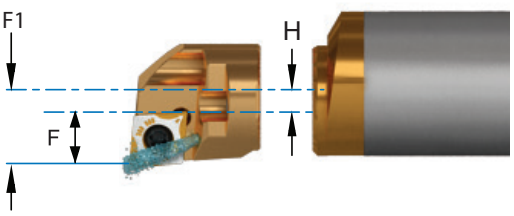
Inch	UPC No. 733101-	Boring	Carbide Body							Min. Bore	Modular Head*	Coolant Bore	Coolant Attachment
Carbide Bar Description	Neutral	Ratio	D	C	C1	L	C2	H	F1*	B**	CBBB	Dia.	Thread
DVI12X-12-MQBBN-12-CB	59343		0.750	12.00	11.20	9.00	3.00	0				0.157	
DVI16X-12-MQBBN-16-CB	59391	12 x Dia.	1.000	16.00	15.20	12.00	4.00	0.125	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	0.157	1/8"-27NTP
DVI20X-12-MQBBN-20-CB	59393		1.250	20.00	19.20	15.00	5.00	0.250				0.195	

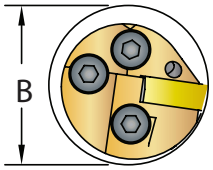
Metric	UPC No. 733101-	Boring	Carbide Body							Min. Bore	Modular Head*	Coolant Bore	Coolant Attachment
Carbide Bar Description	Neutral	Ratio	D	C	C1	L	C2	H	F1*	B**	CBBB	Dia.	Thread
DVM20X-12-MQBBN-0320-CB	59348		20	320	299.68	240	80	0				4	
DVM25X-12-MQBBN-0400-CB	59395	12 x Dia.	25	400	379.68	300	100	2.5	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	4	1/8"-27NTP
DVM32X-12-MQBBN-0512-CB	59397		32	512	491.68	384	128	6				5	

*Modular heads sold separately, see pages D-70- D-77 for specifications.

DV_14_MQBBN_ Solution Tool!™ Thru Coolant Quick Change Modular Boring Bar Body

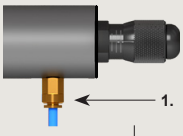




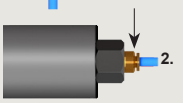


F1* = F + H
Min Bore = B + (H x 2)*

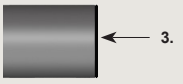
1. Coolant Inlet when Micrometer Tuning knob is connected to the Bar



2. 1/8" NTP Coolant Attachment when Micrometer Tuning knob is removed from the Bar



3. For blind boring bar, remove Micrometer Tuning knob and Coolant Attachment

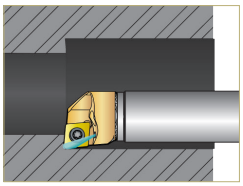


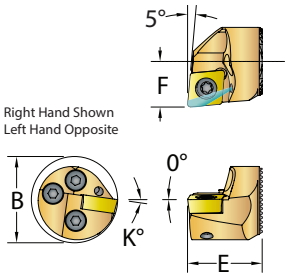
Inch	UPC No. 733101-	Boring Ratio	Carbide Body							Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
Carbide Bar Description	Neutral		D	C	C1	L	C2	H	F1*				
DVI12X-14-MQBBN-14-CB	59344		0.750	13.50	12.70	10.50	3.00	0				0.157	
DVI16X-14-MQBBN-18-CB	59392	14 x Dia.	1.000	18.00	17.20	14.00	4.00	0.125	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	0.157	1/8"-27NTP
DVI20X-14-MQBBN-23-CB	59394		1.250	22.50	21.70	17.50	5.00	0.250				0.195	

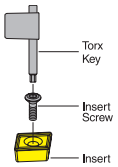
Metric	UPC No. 733101-	Boring Ratio	Carbide Body							Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
Carbide Bar Description	Neutral		D	C	C1	L	C2	H	F1*				
DVM20X-14-MQBBN-0360-CB	59349		20	360	339.68	280	80	0				4	
DVM25X-14-MQBBN-0450-CB	59396	14 x Dia.	25	450	429.68	350	100	2.5	F1=F+H	MB+B+(Hx2)	DBOMH-12/20M	4	1/8"-27NTP
DVM32X-14-MQBBN-0576-CB	59398		32	576	555.68	448	128	6				5	

*Modular heads sold separately, see pages D-70- D-77 for specifications. One high pressure coolant connection kit supplied, see Page D-72 for details.

SCLC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style L- Negative 5° End & Side Cutting Edge Angle for 7° positive 80° diamond CC__ inserts





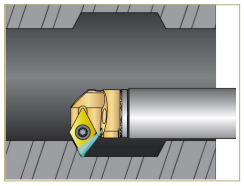


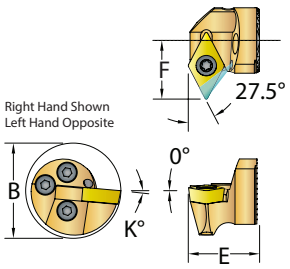
Thru Coolant

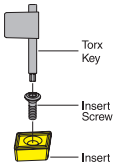
Head Description	UPC No. 733101- R.H.	L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	CCMT Gage Insert Inch	CCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SCLCR/L-3	60225	60226	1.000	26	0.820	20.83	0.500	12.70	8°	0.750	20	32.52	09T308	TS-4.7-10M1	T-15
			1.250	31	0.820	20.83	0.500	12.70	8°	1.000	25				
			1.500	38	0.820	20.83	0.500	12.70	8°	1.250	32				

Heads will fit both inch and metric boring bar shanks

SDNC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style N - Negative 27.5° End & Side Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





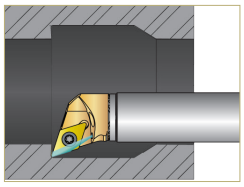


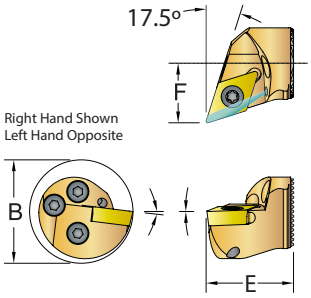
Thru Coolant

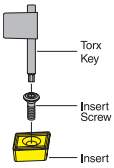
Head Description	UPC No. 733101- R.H.	L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	DCMT Gage Insert Inch	DCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SDNCR/L-3	60229	60230	1.160	30	0.820	20.83	0.660	16.76	5°	0.750	20	32.52	11T308	TS-4.7-10M1	T-15
			1.410	35	0.820	20.83	0.660	16.76	5°	1.000	25				
			1.660	42	0.820	20.83	0.660	16.76	5°	1.250	32				

Heads will fit both inch and metric boring bar shanks

SDQC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style Q - Negative 17.5° End & Side Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





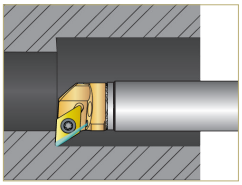


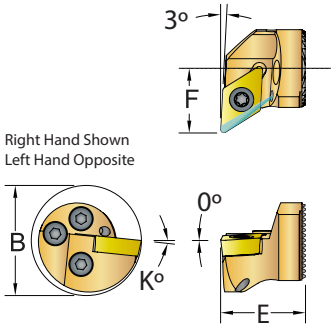
Thru Coolant

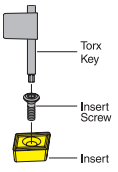
Head Description	UPC No. 733101- R.H.	L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	DCMT Gage Insert Inch	DCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SDQCR/L-3	60231	60232	1.125	29	0.820	20.83	0.625	15.88	7°	0.750	20	32.52	11T308	TS-4.7-10M1	T-15
			1.375	34	0.820	20.83	0.625	15.88	7°	1.000	25				
			1.625	41	0.820	20.83	0.625	15.88	7°	1.250	32				

Heads will fit both inch and metric boring bar shanks

SDUC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style U - Negative 3° End & Side Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





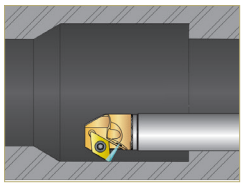


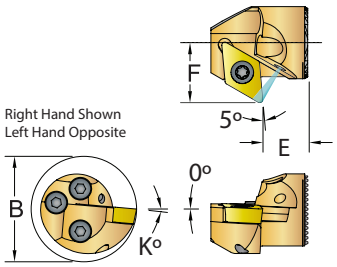
Thru Coolant

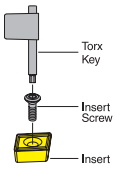
Head Description	UPC No. 733101- R.H.	L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	DCMT Gage Insert Inch	DCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SDUCR/L-2	60247	60248	1.025	26	0.820	20.83	0.525	13.34	6°	0.750	20	21.51	070204	TS-25.45-6M2	T-8
			1.275	27	0.820	20.83	0.525	13.34	6°	1.000	25				
			1.525	38	0.820	20.83	0.525	13.34	6°	1.250	32				
DBOMH-12/20M-SDUCR/L-3	60227	60228	1.038	26.37	0.820	20.83	0.625	15.88	6°	0.750	20	32.52	11T308	TS-4.7-10M1	T-15
			1.278	32.46	0.820	20.83	0.745	18.92	6°	1.000	25				
			1.538	39.07	0.820	20.83	0.880	22.35	6°	1.250	32				

Heads will fit both inch and metric boring bar shanks

SDXC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style X - Negative 5° Back Boring Cutting Edge Angle for 7° positive 55° diamond DC__ inserts





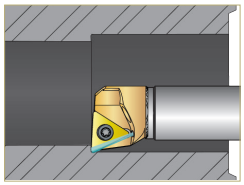


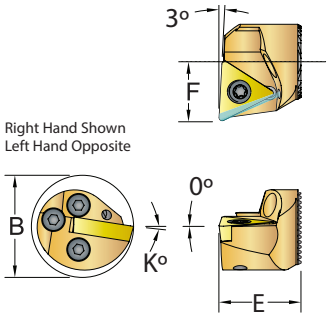
Thru Coolant

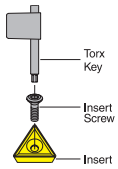
Head Description	UPC No. 733101- R.H.	L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	DCMT Gage Insert Inch	DCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SDXCR/L-3	60233	60234	1.025	26	0.820	20.83	0.525	13.34	5º	0.750	20	32.52	11T308	TS-4.7-10M1	T-15
			1.275	27	0.820	20.83	0.525	13.34	5º	1.000	25				
			1.525	38	0.820	20.83	0.525	13.34	5º	1.250	32				

Heads will fit both inch and metric boring bar shanks

STUC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style U - Negative 3° End Cutting Edge Angle for 7° positive triangle TC__ inserts





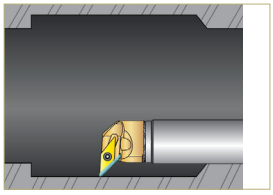


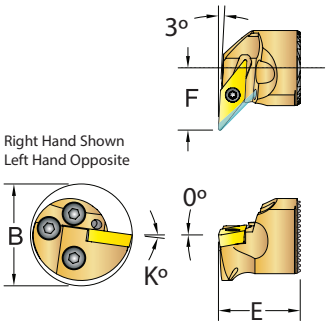
Thru Coolant

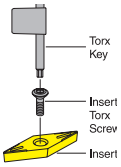
Head Description	UPC No. 733101- R.H.	L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	TCMT Gage Insert Inch	TCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-STUCR/L-2	60255	60256	1.000	26	0.820	20.83	0.500	12.70	6º	0.750	20	21.51	110204	TS-25.45-6M2	T-8
			1.250	31	0.820	20.83	0.500	12.70	6º	1.000	25				
			1.500	38	0.820	20.83	0.500	12.70	6º	1.250	32				
DBOMH-12/20M-STUCR/L-3	60235	60236	1.090	28	0.820	20.83	0.590	14.99	9º	0.750	20	32.52	16T308	TS-4.7-10M1	T-15
			1.340	33	0.820	20.83	0.590	14.99	9º	1.000	25				
			1.590	40	0.820	20.83	0.590	14.99	9º	1.250	32				

Heads will fit both inch and metric boring bar shanks

SVUC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style U - Negative 3° End Cutting Edge Angle for 7° positive 35° diamond VC__ inserts





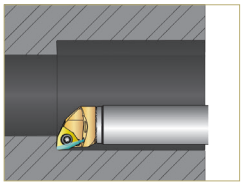


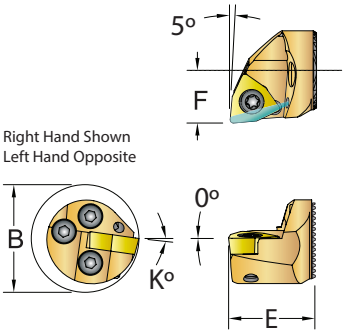
Thru Coolant

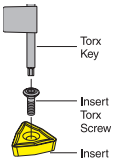
Head Description	UPC No. 733101- R.H.	L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	VCMT Gage Insert Inch	VCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SVUCR/L-2	60237	60238	1.125	29	0.820	20.83	0.625	15.88	8°	0.750	20	221	110304	TS-25.45-8M2	T-8
			1.375	34	0.820	20.83	0.625	15.88	8°	1.000	25				
			1.625	41	0.820	20.83	0.625	15.88	8°	1.250	32				

Heads will fit both inch and metric boring bar shanks

SWLC R/L Solution Tool!™ Thru Coolant Quick Change Modular Boring Head Style L - Negative 5° End Cutting Edge Angle for 7° positive 80° trigon WC__ inserts





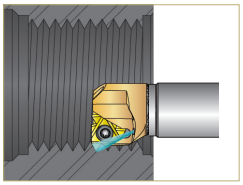


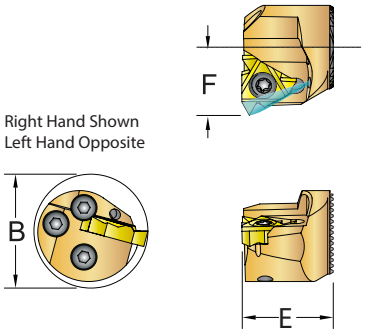
Thru Coolant

Head Description	UPC No. 733101- R.H.	L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	K°	Reference Bars Dia. Inch	Reference Bars Dia. Metric	WCMT Gage Insert Inch	WCMT Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SWLCR/L-3	60241	60242	1.000	26	0.820	20.83	0.500	12.70	8°	0.750	20	32.52	06T308	TS-4.7-10M1	T-15
			1.250	31	0.820	20.83	0.500	12.70	8°	1.000	25				
			1.500	38	0.820	20.83	0.500	12.70	8°	1.250	32				

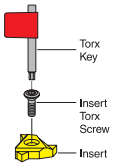
Heads will fit both inch and metric boring bar shanks

SN R/L Solution Tool!™ Thru Coolant Quick Change Modular Threading Head for Laydown Inserts





Thru Coolant



Head Description	UPC No. 733101- R.H.	L.H.	B Inch	B Metric	E Inch	E Metric	F Inch	F Metric	Reference Bars Dia. Inch	Reference Bars Dia. Metric	Laydown Gage Insert Inch	Laydown Gage Insert Metric	Insert Torx Screw	Torx Key
DBOMH-12/20M-SNR/L-16	60243	60244	1.125	29	0.820	20.83	0.625	15.88	0.750	20	16-A60	16-A60	TS-35.6-9M1	T-15
			1.375	34	0.820	20.83	0.625	15.88	1.000	25				
			1.625	41	0.820	20.83	0.625	15.88	1.250	32				

Heads will fit both inch and metric boring bar shanks

Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Bars

The NO! Vibration Tunable Boring Bar for Multi Boring and Threading Applications on Large Diameter Holes

Makes Deep Hole Boring Simple!

The Modular Jet-Stream™ Bar is Supplied with the Jet-Stream™ Thru Coolant System

To Improve Performance!

At a close range of 1/4" (6mm) the Jet-Stream™ coolant system aims the coolant precisely onto the cutting edge of the insert at a very high velocity.
The controlled Jet-Stream™ coolant will lubricate the cutting edge of the insert reducing the coefficient of friction, stopping the chip from adhering to the insert.
The physical combination of high velocity and high pressure forces the hot chip to hydroplane away from the cutting edge of the insert.

As a result, the insert will operate at a constant low temperature, With a clean and undamaged cutting edge, changing the way metal is cut!

- Chips are Flushed Out of the Bore
- Extreme Lubrication At The Cutting Edge
- Extreme Heat Dissipation At The Cutting Edge
- Constant Low Cutting Edge Temperature
- Greater Chip Control and Evacuation
- Chip Breakage at High Pressures
- Smooth Cutting Action and Surface Finish
- Increased Speeds and Feeds
- Close Working Tolerance

Solution Tool!™

The NO! Vibration Tunable Boring Bar

Makes Deep Hole Boring Simple!

SIMPLE - PRECISE - RIGID - POWERFUL

Thru Coolant Jet-Stream™ Modular Boring Bars
The NO! Vibration Tunable Boring Bar for Large Boring Operation.
Engineered for multi boring and threading applications on large diameter holes, and cutting depth to 14 x Boring Bar Diameter

Multi Boring and Threading Applications

Better Machining Performance

Higher Workmanship Quality

Longer Cutting Insert Life

The technology behind the Solution Tool!™ the "Modular" NO! Vibration Tunable Boring Bars, is to perform simple, precise and reliable when deep boring large sizes holes, with close machining tolerance and high surface finish, in multi boring and threading applications.

The "Modular" NO! Vibration Tunable Boring Bars, is a two part construction. The body where the boring bar is held, and the housing that holds the dampener, and brazed together with Silver Alloy. The braze is the buffer zone where the frequencies generate from the cutting operation are stopped.

To maximize performance in deep boring operation, the "Modular Body" is Offered in two versions;

Steel Body
The steel body for boring depth up to 12 x Boring Bar Diameter

Carbide Body
The carbide body rigidity, stability, and strength, allows to bore at higher cutting rate, heavier material removal, longer depth of cut, close working tolerances and higher surface finish.

Boring Bar Sizes

Inch: 1 1/2" Dia., 1 1/3" Dia. 2" Dia., 2 1/2" Dia., 3" Dia., 4" Dia.,
Metric: 40mm Dia., 50mm Dia.,60mm Dia., 80mm Dia.,100mm Dia.,

Boring Ratio: 8 x Dia., 10 x Dia., 12 x Dia., 14 x Dia.

Positive Insert Geometry:

for Modular Head:
CCMT DCMT TCMT VCCT

Threading Lay-Down Insert:

16-A60 22-N60

Micrometer Tuning Knob

Allows to fine tune the mechanical dampener at a precise position. Neutralize the boring bar frequencies with no vibration while boring for a smooth surface finish and close tolerances. Can be removed and replaced with a coolant inlet.

Body

Offered in two versions
Steel Body; up to12 x Dia. Boring depth.
Carbide Body; for higher boring performance over the Steel body.

Brazed Connection

Connects the boring bar body with the housing, the combination of the correct silver alloy and the thickness of the braze makes brazing strong and unbreakable, but flexible under the cutting pressure and interrupt cuts, and creating a buffer zone that increases damping to stop the frequencies developed in the boring operation.

Dampener Position Locking Screw

The screw is released before re-tuning and locked after tuning is complete.

Housing

Made of heat treated alloy steel, brazed with the body, the inside of the housing holds the mechanical dampener and on the face is attached the Quick Change Modular Collar Head.

Modular Head Collar

Made of heat treated alloy steel and TiN Coated.
Precisely and rigid attaches on to the housing face.
The face of the Collar, has a 60° serrated groove to expend the surface contact with the Quick Change Heads, for maximum locking rigidity and precise interchangeability.

Modular Head

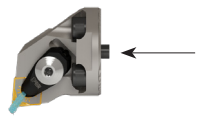
Made of heat treated alloy steel and TiN Coated. Locks onto 60° serrated face of the collar face with three cup screws precisely and rigid, making interchangeability easy and quick. The Thru Coolant System enhances boring performance, quality and longer insert life. The insert is kept at constant temperature clean and undamaged cutting edge, and removes chips from the bore while machining.

Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Body & Head

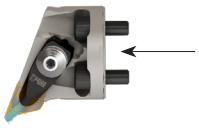
The NO! Vibration Tunable Boring Bar for Multi Boring and Threading Applications on Large Diameter Holes

Makes Deep Hole Boring Simple!

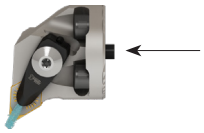
1 ADCLN
R/L Modular
Boring Bar Head
With Thru Coolant



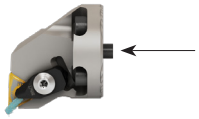
2 ADDQN
R/L Modular
Boring Bar Head
With Thru Coolant



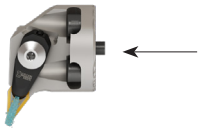
3 ADDUN
R/L Modular
Boring Bar Head
With Thru Coolant



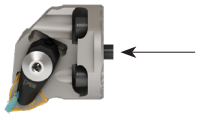
4 ADTUN
R/L Modular
Boring Bar Head
With Thru Coolant

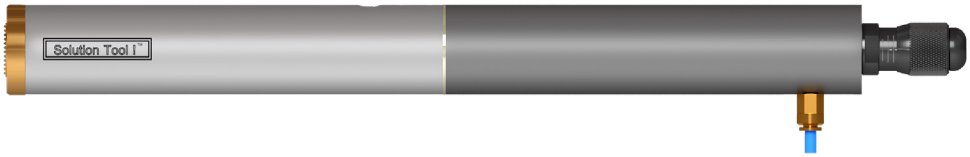


5 ADVUN
R/L Modular
Boring Bar Head
With Thru Coolant

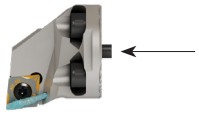


6 ADWLN
R/L Modular
Boring Bar Head
With Thru Coolant

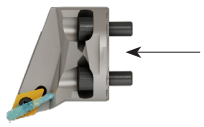




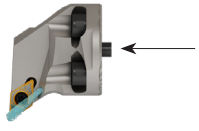
7 ASCLC
R/L Modular
Boring Bar Head
With Thru Coolant



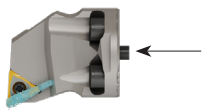
8 ASDQC
R/L Modular
Boring Bar Head
With Thru Coolant



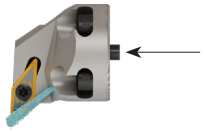
9 ASDUC
R/L Modular
Boring Bar Head
With Thru Coolant



10 ASTUC
R/L Modular
Boring Bar Head
With Thru Coolant



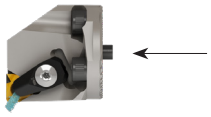
11 ASVUC
R/L Modular
Boring Bar Head
With Thru Coolant



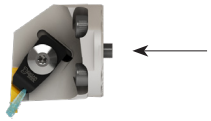
One Modular
Carbide or Steel Body

Fourteen
Interchangeable Heads

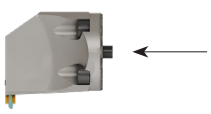
12 ADLN
R/L Modular
Threading Bar Head
With Thru Coolant



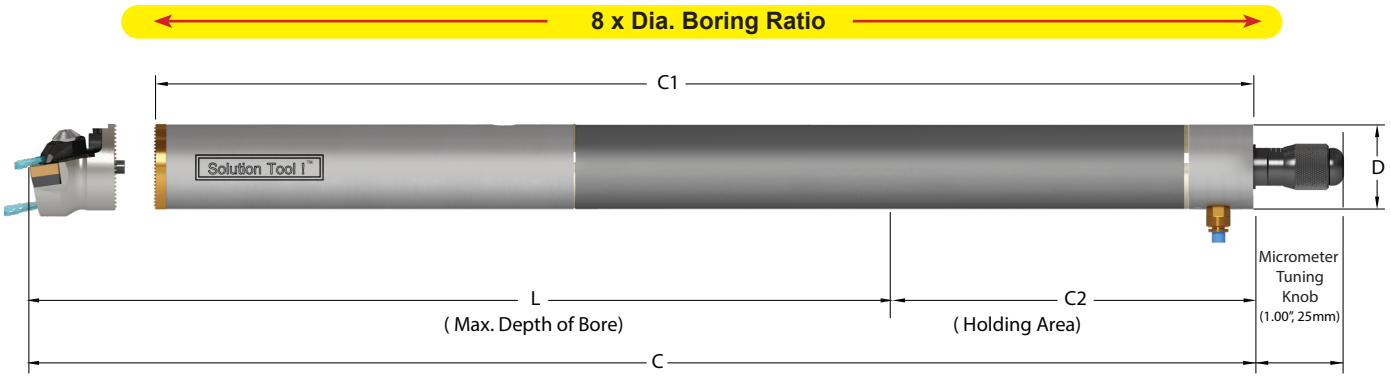
13 ADNE
R/L Modular
Threading Bar Head
With Thru Coolant

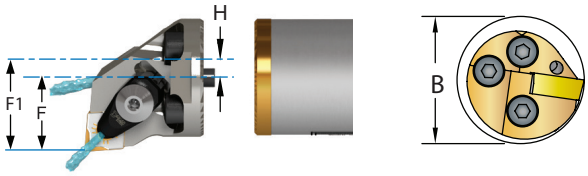


14 ADTHO
R/L Modular
Threading Bar Head
With Thru Coolant



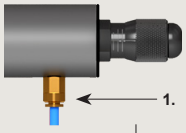
Thru Coolant Jet-Stream™ Modular Boring Bar Body



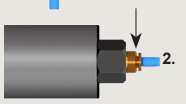


F1* = F + H
Min Bore = B + (H x 2)*

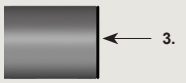
1. Coolant Inlet when Micrometer Tuning knob is connected to the Bar



2. 1/8" NTP Coolant Attachment when Micrometer Tuning knob is removed from the Bar



3. For blind boring bar, remove Micrometer Tuning knob and Coolant Attachment

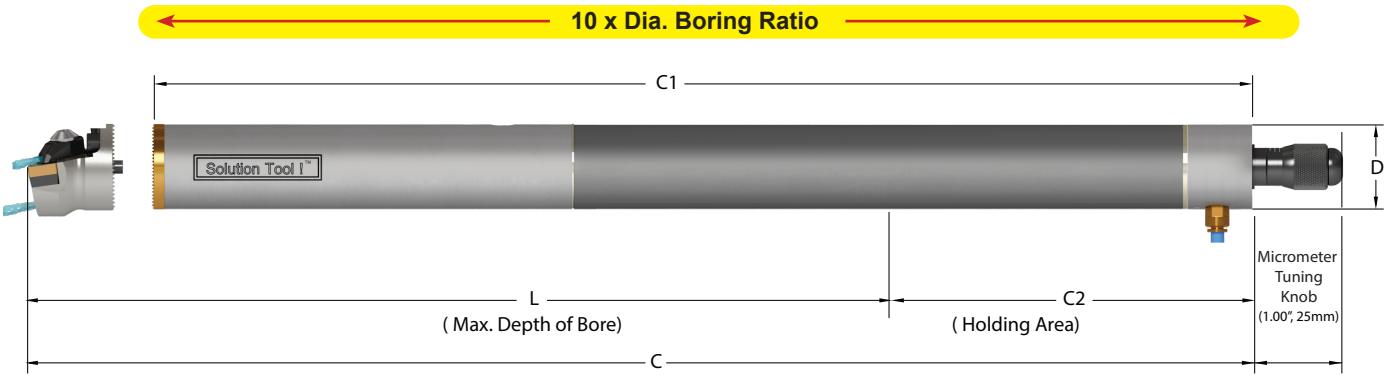


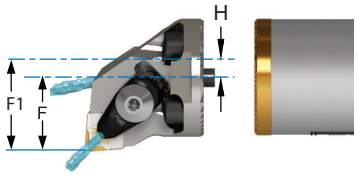
Inch	UPC No. 733101-	Boring	Steel Body							Min. Bore	Modular Head*	Coolant	Coolant Attachment
Bar Description	Neutral	Ratio	D	C	C1	L	C2	H	F1*	B**	CBBB	Bore Dia.	Thread
ASI24X-8-DVI-MBBB-18-SB	59321		1.500	18.000	16.500	12.000	6.000	0				0.250	
ASI28X-8-DVI-MBBB-21-SB	59322		1.750	21.000	19.500	14.000	7.000	0.125				0.250	1/4"-18NTP
ASI32X-8-DVI-MBBB-24-SB	59323		2.000	24.000	22.500	16.000	8.000	0.250				0.312	
ASI40X-8-DVI-MBBB-30-SB	59324	8 x Dia.	2.500	30.000	28.500	20.000	10.000	0.500	F1=F+H	MB+B+(Hx2)	DBOMH24/40_A_R/L	0.375	
ASI48X-8-DVI-MBBB-36-SB	59325		3.000	36.000	34.500	24.000	12.000	0.750				0.375	1/4"-18NTP
ASI64X-8-DVI-MBBB-48-SB	59326		4.000	48.000	46.500	32.000	16.000	1.250				0.375	

Metric	UPC No. 733101-	Boring	Steel Body							Min. Bore	Modular Head*	Coolant	Coolant Attachment
Bar Description	Neutral	Ratio	D	C	C1	L	C2	H	F1*	B**	CBBB	Bore Dia.	Thread
ASM40X-8-DVI-MBBB-0480-SB	59328		40	480	442	320	160	0				6	
ASM50X-8-DVI-MBBB-0600-SB	59329		50	600	562	400	200	5				6	1/4"-18NTP
ASM60X-8-DVI-MBBB-0720-SB	59330	8 x Dia.	60	720	682	480	240	10	F1=F+H	MB+B+(Hx2)	DBOMH24/40_A_R/L	8	
ASM80X-8-DVI-MBBB-0960-SB	59331		80	960	922	640	320	20				10	
ASM100X-8-DVI-MBBB-1200-SB	59332		100	1200	1162	800	400	30				10	1/4"-18NTP

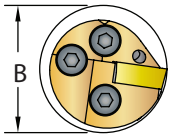
One high pressure coolant connection kit supplied, see Page D-94 for details.

Thru Coolant Jet-Stream™ Modular Boring Bar Body

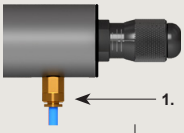




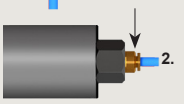
F1* = F + H
Min Bore = B + (H x 2)*



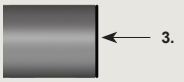
1. Coolant Inlet when Micrometer Tuning knob is connected to the Bar



2. 1/8" NTP Coolant Attachment when Micrometer Tuning knob is removed from the Bar



3. For blind boring bar, remove Micrometer Tuning knob and Coolant Attachment

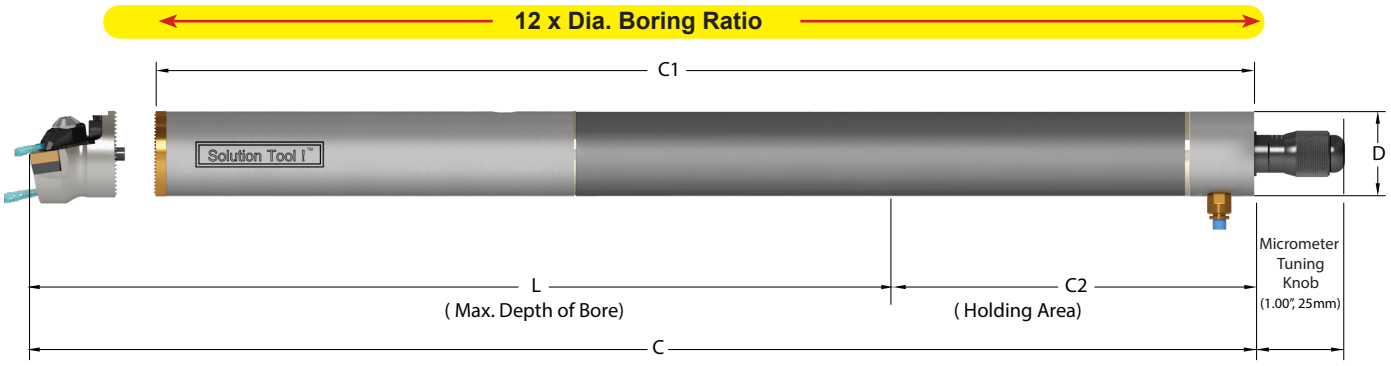


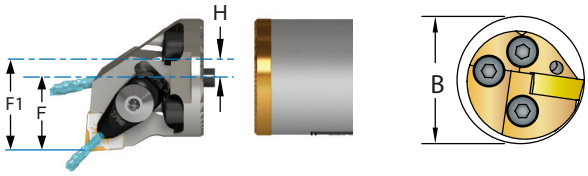
Inch	UPC No. 733101-	Boring	Steel Body							Min. Bore	Modular Head*	Coolant	Coolant Attachment
Bar Description	Neutral	Ratio	D	C	C1	L	C2	H	F1*	B**	CBBB	Bore Dia.	Thread
ASI24X-10-DVI-MBBB-21-SB	59433	10 x Dia.	1.500	21.000	19.500	15.000	6.000	0	F1=F+H	MB+B+(Hx2)	DBOMH24/40_A_R/L	0.250	
ASI28X-10-DVI-MBBB-25-SB	59434		1.750	24.500	23.000	17.500	7.000	0.125				0.250	1/4"-18NTP
ASI32X-10-DVI-MBBB-28-SB	59435		2.000	28.000	26.500	20.000	8.000	0.250				0.312	
ASI40X-10-DVI-MBBB-35-SB	59436		2.500	35.000	33.500	25.000	10.000	0.500				0.375	
ASI48X-10-DVI-MBBB-42-SB	59437		3.000	42.000	40.500	30.000	12.000	0.750				0.375	1/4"-18NTP
ASI64X-10-DVI-MBBB-56-SB	59438		4.000	56.000	54.500	40.000	16.000	1.250				0.375	

Metric	UPC No. 733101-	Boring	Steel Body							Min. Bore	Modular Head*	Coolant	Coolant Attachment
Bar Description	Neutral	Ratio	D	C	C1	L	C2	H	F1*	B**	CBBB	Bore Dia.	Thread
ASM40X-10-DVI-MBBB-0560-SB	59440	10 x Dia.	40	560	522	400	160	0	F1=F+H	MB+B+(Hx2)	DBOMH24/40_A_R/L	6	
ASM50X-10-DVI-MBBB-0700-SB	59441		50	700	662	500	200	5				6	1/4"-18NTP
ASM60X-10-DVI-MBBB-0840-SB	59442		60	840	802	600	240	10				8	
ASM80X-10-DVI-MBBB-1120-SB	59443		80	1120	1082	800	320	20				10	1/4"-18NTP
ASM100X-10-DVI-MBBB-1400-SB	59444		100	1400	1362	1000	400	30				10	

One high pressure coolant connection kit supplied, see Page D-94 for details.

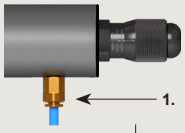
Thru Coolant Jet-Stream™ Modular Boring Bar Body



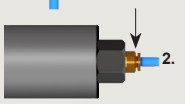


F1* = F + H
Min Bore = B + (H x 2)*

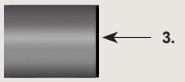
1. Coolant Inlet when Micrometer Tuning knob is connected to the Bar



2. 1/8" NTP Coolant Attachment when Micrometer Tuning knob is removed from the Bar



3. For blind boring bar, remove Micrometer Tuning knob and Coolant Attachment



Inch Bar Description	UPC No. 733101- Neutral	Boring Ratio	Steel Body D	C	C1	L	C2	H	F1*	Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
ASI24X-12-DVI-MBBB-24-SB	59446	12 x Dia.	1.500	24.000	22.500	18.000	6.000	0	F1=F+H	MB+B+(Hx2)	DBOMH24/40_A_R/L	0.250	1/4"-18NTP
ASI28X-12-DVI-MBBB-28-SB	59447		1.750	28.000	26.500	21.000	7.000	0.125				0.250	
ASI32X-12-DVI-MBBB-32-SB	59448		2.000	32.000	30.500	24.000	8.000	0.250				0.312	
ASI40X-12-DVI-MBBB-40-SB	59449		2.500	40.000	38.500	30.000	10.000	0.500				0.375	1/4"-18NTP
ASI48X-12-DVI-MBBB-48-SB	59450		3.000	48.000	46.500	36.000	12.000	0.750				0.375	
ASI64X-12-DVI-MBBB-64-SB	59451		4.000	64.000	62.500	48.000	16.000	1.250				0.375	

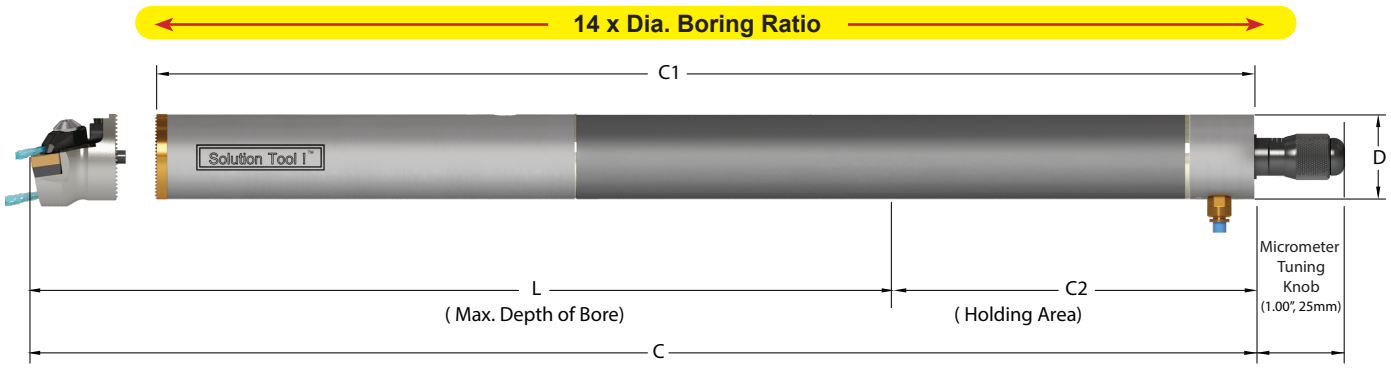
Metric Bar Description	UPC No. 733101- Neutral	Boring Ratio	Steel Body D	C	C1	L	C2	H	F1*	Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
ASM40X-12-DVI-MBBB-0640-SB	59453	12 x Dia.	40	640	602	480	160	0	F1=F+H	MB+B+(Hx2)	DBOMH24/40_A_R/L	6	1/4"-18NTP
ASM50X-12-DVI-MBBB-0800-SB	59454		50	800	762	600	200	5				6	
ASM60X-12-DVI-MBBB-0960-SB	59455		60	960	922	720	240	10				8	
ASM80X-12-DVI-MBBB-1280-SB	59456		80	1280	1242	960	320	20				10	1/4"-18NTP
ASM100X-12-DVI-MBBB-1600-SB	59457		100	1600	1562	1200	400	30				10	

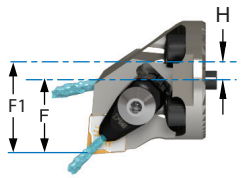
Inch Bar Description	UPC No. 733101- Neutral	Boring Ratio	Carbide Body D	C	C1	L	C2	H	F1*	Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
ASI24X-12-DVI-MBBB-24-CB	60349	12 x Dia.	1.500	24.000	22.500	18.000	6.000	0	F1=F+H	MB+B+(Hx2)	DBOMH24/40_A_R/L	0.250	1/4"-18NTP
ASI28X-12-DVI-MBBB-28-CB	60350		1.750	28.000	26.500	21.000	7.000	0.125				0.250	
ASI32X-12-DVI-MBBB-32-CB	60351		2.000	32.000	30.500	24.000	8.000	0.250				0.312	
ASI40X-12-DVI-MBBB-40-CB	60352		2.500	40.000	38.500	30.000	10.000	0.500				0.375	1/4"-18NTP
ASI48X-12-DVI-MBBB-48-CB	60353		3.000	48.000	46.500	36.000	12.000	0.750				0.375	
ASI64X-12-DVI-MBBB-64-CB	60354		4.000	64.000	62.500	48.000	16.000	1.250				0.375	

Metric Bar Description	UPC No. 733101- Neutral	Boring Ratio	Carbide Body D	C	C1	L	C2	H	F1*	Min. Bore B**	Modular Head* CBBB	Coolant Bore Dia.	Coolant Attachment Thread
ASM40X-12-DVI-MBBB-0640-CB	60355	12 x Dia.	40	640	602	480	160	0	F1=F+H	MB+B+(Hx2)	DBOMH24/40_A_R/L	6	1/4"-18NTP
ASM50X-12-DVI-MBBB-0800-CB	60356		50	800	762	600	200	5				6	
ASM60X-12-DVI-MBBB-0960-CB	60357		60	960	922	720	240	10				8	
ASM80X-12-DVI-MBBB-1280-CB	60358		80	1280	1242	960	320	20				10	1/4"-18NTP
ASM100X-12-DVI-MBBB-1600-CB	60359		100	1600	1562	1200	400	30				10	

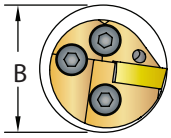
One high pressure coolant connection kit supplied, see Page D-94 for details.

Thru Coolant Jet-Stream™ Modular Boring Bar Body





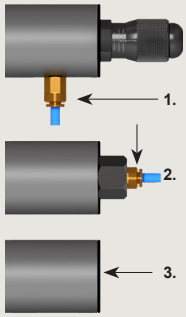
F1* = F + H
Min Bore = B + (H x 2)*



1. Coolant Inlet when Micrometer Tuning knob is connected to the Bar

2. 1/8" NTP Coolant Attachment when Micrometer Tuning knob is removed from the Bar

3. For blind boring bar, remove Micrometer Tuning knob and Coolant Attachment



Inch	UPC No. 733101-	Boring	Carbide Body							Min. Bore	Modular Head	Coolant	Coolant Attachment
Bar Description	Neutral	Ratio	D	C	C1	L	C2	H	F1*	B*	CBBB	Bore Dia.	Thread
ASI24X-14-DVI-MBBB-27-CB	59459	14 x Dia.	1.500	27.000	25.500	21.000	6.000	0	F1=F+H	See head specifications	DBOMH24/40_A_R/L	0.250	1/4"-18NTP
ASI28X-14-DVI-MBBB-32-CB	59460		1.750	31.500	30.000	24.500	7.000	0.125				0.250	
ASI32X-14-DVI-MBBB-36-CB	59461		2.000	36.000	34.500	28.000	8.000	0.250				0.312	
ASI40X-14-DVI-MBBB-45-CB	59462		2.500	45.000	43.500	35.000	10.000	0.500				0.375	1/4"-18NTP
ASI48X-14-DVI-MBBB-54-CB	59463		3.000	54.000	52.500	42.000	12.000	0.750				0.375	
ASI64X-14-DVI-MBBB-72-CB	59464		4.000	72.000	70.500	56.000	16.000	1.250				0.375	

Metric	UPC No. 733101-	Boring	Carbide Body							Min. Bore	Modular Head	Coolant	Coolant Attachment
Bar Description	Neutral	Ratio	D	C	C1	L	C2	H	F1*	B*	CBBB	Bore Dia.	Thread
ASM40X-14-DVI-MBBB-0720-CB	59466	14 x Dia.	40	720	682	560	160	0	F1=F+H	See head specifications	DBOMH24/40_A_R/L	6	1/4"-18NTP
ASM50X-14-DVI-MBBB-0900-CB	59467		50	900	862	700	200	5				6	
ASM60X-14-DVI-MBBB-1080-CB	59468		60	1080	1042	840	240	10				6	
ASM80X-14-DVI-MBBB-1440-CB	59469		80	1440	1402	1120	320	20				8	
ASM100X-14-DVI-MBBB-1800-CB	59470		100	1800	1762	1400	400	30				10	1/4"-18NTP

One high pressure coolant connection kit supplied, see Page D-94 for details.

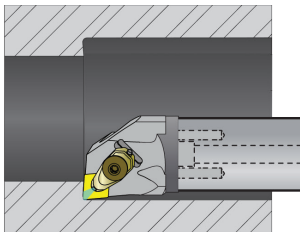
UPC No.	Solution Tool! Boring Bar Part Number	UPC No.	Boring Ratio	D	F1	MB	Lenght of Cut	C2	C	Boring Head Part No.	Inserg Gage	Insert Torx Screw	Insert Torx Key
SolutionTool! ™	Solution Tool! Steel Boring Bar ™		SCLCR-3 Boring CCMT-32.52 Insert							Inch Size			
73310159428	STI12X-08-QCBB-9-SB-SCLCR-3	50000	8	0.750	0.500	1.125	6.00	3.00	9.00	DBOMH-12/20M-SCLCR-3	CCMT-32.52	TS-4.7-10M1	T-15
73310159342	STI12X-10-QCBB-11-SB-SCLCR-3	50001	10	0.750	0.500	1.125	7.50	3.00	10.50				
73310159360	STI12X-12-QCBB-13-SB-SCLCR-3	50002	12	0.750	0.500	1.125	9.00	3.00	12.00				
73310159340	STI16X-08-QCBB-12-SB-SCLCR-3	50003	8	1.000	0.625	1.375	8.00	4.00	12.00	DBOMH-12/20M-SCLCR-3	CCMT-32.52	TS-4.7-10M1	T-15
73310159429	STI16X-10-QCBB-14-SB-SCLCR-3	50004	10	1.000	0.625	1.375	10.00	4.00	14.00				
73310159361	STI16X-12-QCBB-16-SB-SCLCR-3	50005	12	1.000	0.625	1.375	12.00	4.00	16.00				
73310159341	STI20X-08-QCBB-15-SB-SCLCR-3	50006	8	1.250	0.750	1.625	10.00	5.00	15.00	DBOMH-12/20M-SCLCR-3	CCMT-32.52	TS-4.7-10M1	T-15
73310159471	STI20X-10-QCBB-18-SB-SCLCR-3	50007	10	1.250	0.750	1.625	12.50	5.00	17.50				
73310159362	STI20X-12-QCBB-20-SB-SCLCR-3	50008	12	1.250	0.750	1.625	15.00	5.00	20.00				

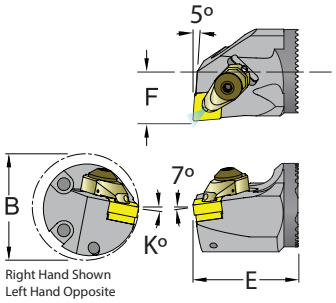
UPC No.	Solution Tool! Boring Bar Part Number	UPC No.	Boring Ratio	D	F1	MB	Lenght of Cut	C2	C	Boring Head Part No.	Inserg Gage	Insert Torx Screw	Insert Torx Key
SolutionTool! ™	Solution Tool! Steel Boring Bar ™		SCLCR-3 Boring CCMT-32.52 Insert							Inch Size			
73310159428	STI12X-08-QCBB-9-SB-SDUCR-2	50009	8	0.750	0.525	1.175	6.00	3.00	9.00	DBOMH-12/20M-SDUCR2	DCMT-21.51	TS-25.45.6M2	T-8
73310159342	STI12X-10-QCBB-11-SB-SDUCR-2	50010	10	0.750	0.525	1.175	7.50	3.00	10.50				
73310159360	STI12X-12-QCBB-13-SB-SDUCR-2	50011	12	0.750	0.525	1.175	9.00	3.00	12.00				
73310159340	STI16X-08-QCBB-12-SB-SDUCL-3	50012	8	1.000	0.650	1.425	8.00	4.00	12.00	DBOMH-12/20M-SDLCR-3	DCMT-32.52	TS-4.7-10M1	T-15
73310159429	STI16X-10-QCBB-14-SB-SDUCR-3	50013	10	1.000	0.650	1.425	10.00	4.00	14.00				
73310159361	STI16X-12-QCBB-16-SB-SDUCR-3	50014	12	1.000	0.650	1.425	12.00	4.00	16.00				
73310159341	STI20X-08-QCBB-15-SB-SDUCR-3	50015	8	1.250	0.775	1.675	10.00	5.00	15.00	DBOMH-12/20M-SDLCR-3	DCMT-32.52	TS-4.7-10M1	T-15
73310159471	STI20X-10-QCBB-18-SB-SDUCR3	50016	10	1.250	0.775	1.675	12.50	5.00	17.50				
73310159362	STI20X-12-QCBB-20-SB-SDUCR-3	50017	12	1.250	0.775	1.675	15.00	5.00	20.00				

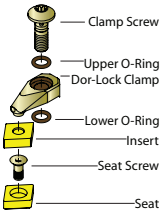
UPC No.	Solution Tool! Boring Bar Part Number	UPC No.	Boring Ratio	D	F1	MB	Lenght of Cut	C2	C	Boring Head Part No.	Inserg Gage	Insert Torx Screw	Insert Torx Key
SolutionTool! ™	Solution Tool! Steel Boring Bar ™		SCLCR-3 Boring CCMT-32.52 Insert							Inch Size			
73310159428	STI12X-08-QCBB-9-SB-STUCR-3	50018	8	0.750	0.590	1.305	6.00	3.00	9.00	DBOMH-12/20M-STUCR3	TCMT-32.52	TS-4.7-10M1	T-15
73310159342	STI12X-10-QCBB-11-SB-STUCR-3	50019	10	0.750	0.590	1.305	7.50	3.00	10.50				
73310159360	STI12X-12-QCBB-13--STUCR-3	50020	12	0.750	0.590	1.305	9.00	3.00	12.00				
73310159340	STI16X-08-QCBB-12-SB-STUCR-3	50021	8	1.000	0.715	1.555	8.00	4.00	12.00	DBOMH-12/20M-STUCR3	TCMT-32.52	TS-4.7-10M1	T-15
73310159429	STI16X-10-QCBB-14-SB-STUCR-3	50022	10	1.000	0.715	1.555	10.00	4.00	14.00				
73310159361	STI16X-12-QCBB-16-SB-STUCR-3	50023	12	1.000	0.715	1.555	12.00	4.00	16.00				
73310159341	STI20X-08-QCBB-15-SB-STUCR-3	50024	8	1.250	0.840	1.805	10.00	5.00	15.00	DBOMH-12/20M-STUCR3	TCMT-32.52	TS-4.7-10M1	T-15
73310159471	STI20X-10-QCBB-18-SB-STUCR-3	50025	10	1.250	0.840	1.805	12.50	5.00	17.50				
73310159362	STI20X-12-QCBB-20-SB-STUCR-3	50026	12	1.250	0.840	1.805	15.00	5.00	20.00				

UPC No.	Solution Tool! Boring Bar Part Number	UPC No.	Boring Ratio	D	F1	MB	Lenght of Cut	C2	C	Boring Head Part No.	Inserg Gage	Insert Torx Screw	Insert Torx Key
SolutionTool! ™	Solution Tool! Steel Boring Bar ™		SCLCR-3 Boring CCMT-32.52 Insert							Inch Size			
73310159428	STI12X-08-QCBB-9-SB-STUCR-3	50027	8	0.750	0.625	1.375	6.00	3.00	9.00	DBOMH-12/20M-SVUCR-2	VCMT-221	TS-25.45.6M2	T-8
73310159342	STI12X-10-QCBB-11-SB-STUCR-3	50028	10	0.750	0.625	1.375	7.50	3.00	10.50				
73310159360	STI12X-12-QCBB-13--STUCR-3	50029	12	0.750	0.625	1.375	9.00	3.00	12.00				
73310159340	STI16X-08-QCBB-12-SB-STUCR-3	50030	8	1.000	0.750	1.625	8.00	4.00	12.00	DBOMH-12/20M-SVUCR-3	VCMT-332	TS-4.7-10M1	T-15
73310159429	STI16X-10-QCBB-14-SB-STUCR-3	50031	10	1.000	0.750	1.625	10.00	4.00	14.00				
73310159361	STI16X-12-QCBB-16-SB-STUCR-3	50032	12	1.000	0.750	1.625	12.00	4.00	16.00				
73310159341	STI20X-08-QCBB-15-SB-STUCR-3	50033	8	1.250	0.875	1.875	10.00	5.00	15.00	DBOMH-12/20M-SVUCR-3	VCMT-332	TS-4.7-10M1	T-15
73310159471	STI20X-10-QCBB-18-SB-STUCR-3	50034	10	1.250	0.875	1.875	12.50	5.00	17.50				
73310159362	STI20X-12-QCBB-20-SB-STUCR-3	50035	12	1.250	0.875	1.875	15.00	5.00	20.00				

ADCLN R/L Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Head Style L - Negative 5° End & Side Cutting Edge Angle for negative 80° diamond CN__ inserts



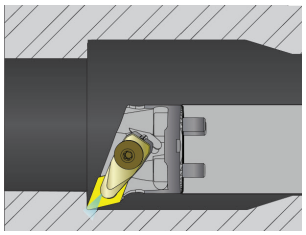


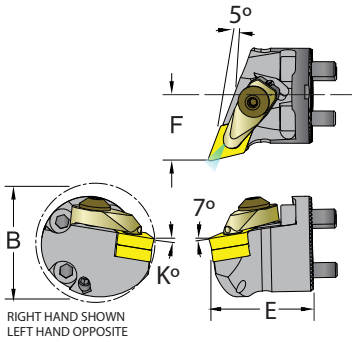


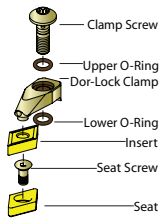
Thru Coolant

Head Description	UPC No. 733101-		B		E		F		K°	Bars Dia.		CNMG Gage Insert		Seat	Seat Screw	Dor-Lock Clamp	Clamp Screw
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric				
DBOMH-24/40M-ADCLNR/L-4	59507	59508	1.780	45.21	1.575	40	1.125	25.580	11°	1.5"/4.0"	40/100	432	120408	DC-432	TS-5.8-10M1	JSLC-HPCTW-4N	JSCS-04
DBOMH-24/40M-ADCLNR/L-5	59509	59510	1.780	45.21	1.575	40	1.125	25.580	11°	1.5"/4.0"	40/100	543	160612	DC-533	TS-5.8-10M1	JSLC-HPC-5	JSCS-04

ADDQN R/L Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Head Style Q-Negative 17. 5° End Cutting Edge Angle for 7° positive 55° diamond DN_inserts



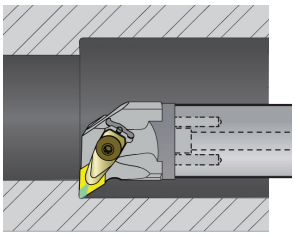


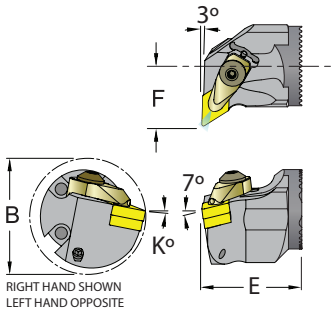


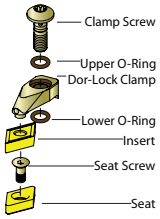
Thru Coolant

Head Description	UPC No. 733101-		B		E		F		K°	Bars Dia.		DNMG Gage Insert		Seat	Seat Screw	Dor-Lock Clamp	Clamp Screw
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric				
DBOMH-24/40M-ADDQNR/L-4	59476	59477	1.88	47.752	1.625	41.275	1.032	26.2128	11°	1.5"/4.0"	40/100	432	150408	DD-432	TS-5.8-10M1	JSLC-HPD4	JSCS-04
DBOMH-24/40M-ADDQNR/L-15	59478	59479	1.88	47.752	1.625	41.275	1.032	26.2128	11°	1.5"/4.0"	40/100	442	150608	DD-422	TS-5.8-10M2	JSLC-HPD4	JSCS-04

ADDUN R/L Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Head Style U - Negative 3° End Cutting Edge Angle for negative 55º diamond DN__ inserts



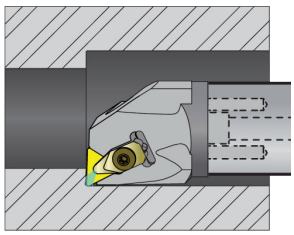


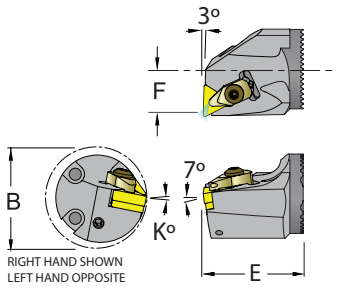


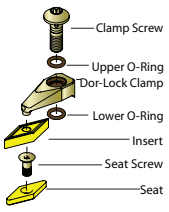
Thru Coolant

Head Description	UPC No. 733101-		B		E		F		K°	Bars Dia.		DNMG Gage Insert		Seat	Seat Screw	Dor-Lock Clamp	Clamp Screw
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric				
DBOMH-24/40M-ADDUNR/L-4	59387	59388	2.25	57.15	1.575	40.005	1.125	28.58	11	1.5	40	432	150408	DD-432	TS-5.8-10M1	JSLC-HPD4	JSCS-04
DBOMH-24/40M-ADDUNR/L-15	59511	59512	2.25	57.15	1.575	40.005	1.125	28.58	11	1.5	40	442	150608	DD-422	TS-5.8-10M\2	JSLC-HPD4	JSCS-04

ADTUN R/L Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Head Style U - Negative 3° End & Side Cutting Edge Angle for negative 60º triangle TN__ inserts



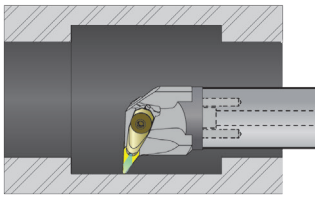


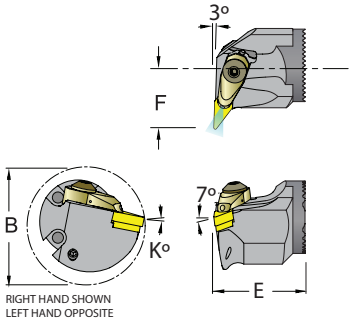


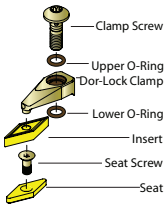
Thru Coolant

Head Description	UPC No. 733101-		B		E		F		K°	Bars Dia.		TNMG Gage Insert		Seat	Seat Screw	Dor-Lock Clamp	Clamp Screw
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric				
DBOMH-24/40M-ADTUNR/L-3	59515	59516	2.060	52.32	1.575	40	1.125	25.580	11°	1.5"/4.0"	40/100	332	160408	DT-322	TS-4.7-10M1	JSLC-HPDT3-BR/L	JSCS-03
DBOMH-24/40M-ADTUNR/L-4	59517	59518	2.060	52.32	1.575	40	1.125	25.580	11°	1.5"/4.0"	40/100	432	220408	DT-432	TS-5.8-10M1	JSLC-HPTW-4R/L	JSCS-04

ADVUN R/L Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Head Style U - Negative 3° End Cutting Edge Angle for negative 35º diamond VN__ inserts



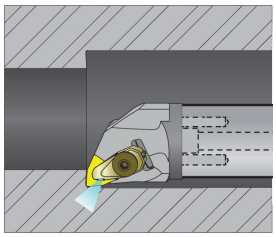


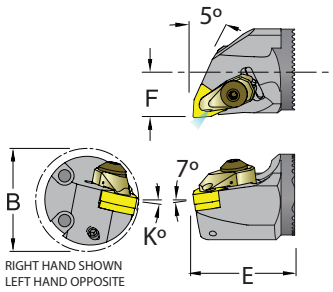


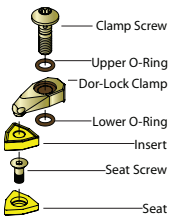
Thru Coolant

Head Description	UPC No. 733101-		B		E		F		K°	Bars Dia.		VNMG Gage Insert		Seat	Seat Screw	Dor-Lock Clamp	Clamp Screw
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric				
DBOMH-24/40M-ADVUNR/L-3	59521	59522	2.500	63.50	1.575	40	1.125	25.580	11°	1.5"/4.0"	40/100	332	160408	DV-322	TS-35.6-9M1	JSLC-HPV3	JSCS-04

ADWLN R/L Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Head Style L - Negative 5° End & Side Cutting Edge Angle for negative 80º trigon WN__ inserts



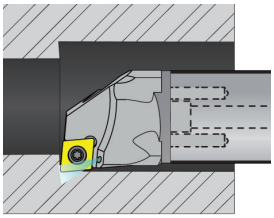


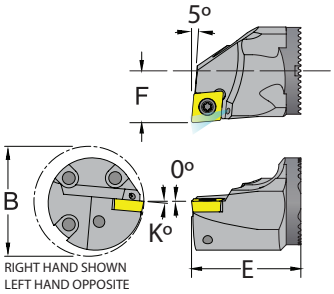


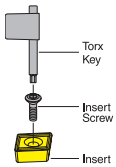
Thru Coolant

Head Description	UPC No. 733101-		B		E		F		K°	Bars Dia.		WNMG Gage Insert		Seat	Seat Screw	Dor-Lock Clamp	Clamp Screw
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric				
DBOMH-24/40M-ADWLNR/L-4	59525	59526	1.900	48.26	1.575	40	1.125	25.580	11°	1.5"/4.0"	40/100	432	080408	DW-432	TS-5.8-10M1	JSLC-HPTW-4RT/L	JSCS-04

ASCLC R/L Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Head Style L - Negative 5° End & Side Cutting Edge Angle for 7° positive 80° diamond CC__ inserts



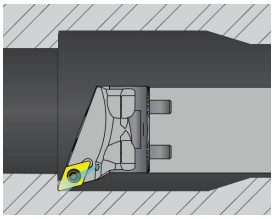


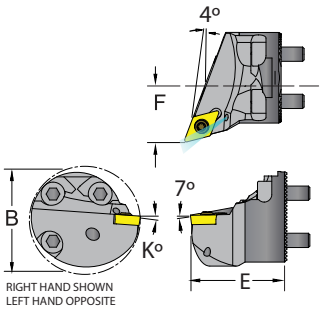


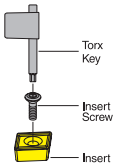
Thru Coolant

Head Description	UPC No. 733101-		B		E		F		K°	Bars Dia.		CCGW Gage Insert		Insert Screw	Torx Key
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric		
DBOMH-24/40M-ASCLNR/L-4	59529	59530	1.780	45.21	1.575	40	1.125	25.580	5°	1.5"/4.0"	40/100	432	120408	TS-5.8-10M1	T-20

ASDQC R/L Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Head Style Q - Negative 17.5° End & Side Cutting Edge Angle for 7° positive 55° diamond DC__ inserts



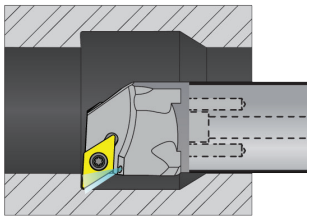


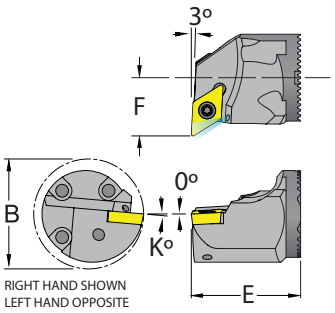


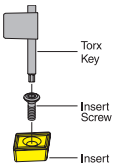
Thru Coolant

Head Description	UPC No. 733101-		B		E		F		K°	Bars Dia.		DCMT Gage Insert		Insert Screw	Torx Key
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric		
DBOMH-24/40M-ASDQNR/L-3	59474	59475	2.125	53.975	1.595	40.513	1.06	26.924	4°	1.5"/4.0"	40/100	32.52	11T308	TS-4.7-8M1	T-15
DBOMH-24/40M-ADSQNR/L-4	59389	59390	2.125	53.975	1.595	40.513	1.06	26.924	4°	1.5"/4.0"	40/100	432	150408	TS-5.8-10M1	T-20

ASDUC R/L Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Head Style U - Negative 3° End Cutting Edge Angle for 7° positive 55° diamond DC__ inserts



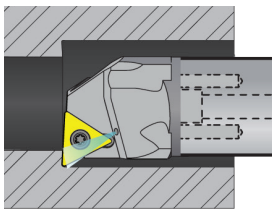


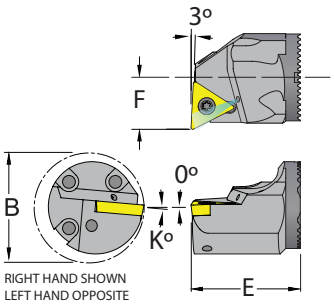


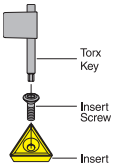
Thru Coolant

Head Description	UPC No. 733101-		B		E		F		K°	Bars Dia.		DCGW Gage Insert		Insert Screw	Torx Key
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric		
DBOMH-24/40M-ASDUCR/L-3	59533	59534	2.250	57.15	1.575	40	1.125	25.580	4°	1.5"/4.0"	40/100	32.52	11T308	TS-4.7-8M1	T-15
DBOMH-24/40M-ASDUCR/L-4	59535	59536	2.250	57.15	1.575	40	1.125	25.580	4°	1.5"/4.0"	40/100	432	150408	TS-5.8-10M1	T-20

ASTUC R/L Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Head Style U - Negative 3° End Cutting Edge Angle for 7° positive triangle TC__ inserts



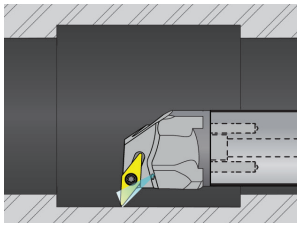


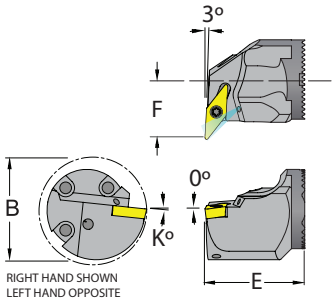


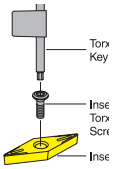
Thru Coolant

Head Description	UPC No. 733101-		B		E		F		K°	Bars Dia.		TCGW Gage Insert		Insert Screw	Torx Key
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric		
DBOMH-24/40M-ASTUCR/L-3	59539	59540	1.780	57.15	1.575	40	1.125	25.580	5°	1.5"/4.0"	40/100	32.52	16T308	TS-4.7-8M1	T-15
DBOMH-24/40M-ASTUCR/L-4	59541	59542	1.780	57.15	1.575	40	1.125	25.580	5°	1.5"/4.0"	40/100	432	220408	TS-5.8-10M1	T-20

ASVUC R/L Solution Tool!™ Thru Coolant Jet-Stream™ Modular Boring Head Style U - Negative 3° End Cutting Edge Angle for 7° positive 35° diamond VC__ inserts



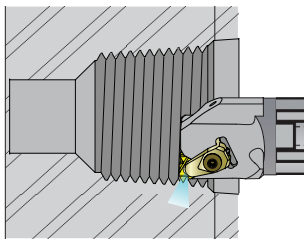


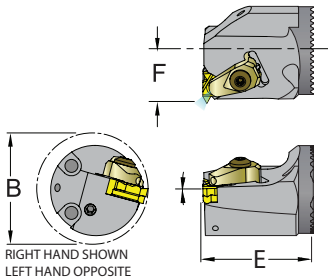


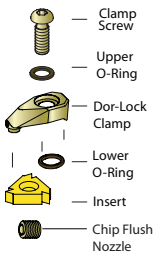
Thru Coolant

Head Description	UPC No. 733101-		B		E		F		K°	Bars Dia.		VCGW Gage Insert		Insert Screw	Torx Key
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric		Inch	Metric	Inch	Metric		
DBOMH-24/40M-ASVUCR/L-3	59545	59546	2.500	63.50	1.575	40	1.125	25.580	6°	1.5"/4.0"	40/100	332	160408	TS-4.7-8M1	T-15

ADLN R/L Solution Tool!™ Thru Coolant Jet-Stream™ Threading Modular Head Style N for laydown 16-G60 & 22-N60 inserts





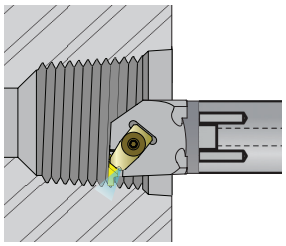


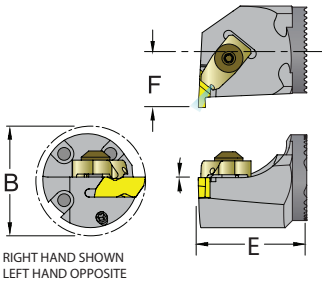
Thru Coolant

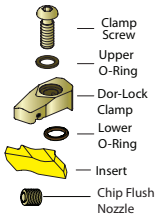
Head Description	UPC No. 733101-		B		E		F		Bars Dia.		Laydown Gage Insert	Seat	Seat Screw	Dor-Lock Clamp	Clamp Screw	Chip Flush Nozzle
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric						
DBOMH-24/40M-ADLNR/L-16	59549	59550	1.870	47.50	1.575	40	1.125	25.580	1.5"/4.0"	40/100	16-G60	GXE-I16	TS-35.6-14M1	JSLC-HP16L-N JSLC-HP16R-N	JSCS-03	JSPN-M6
DBOMH-24/40M-ADLNR/L-22	59553	59554	2.000	50.80	1.575	40	1.125	25.580	1.5"/32"	32/100	22-N60	NXE-I22	TS-45.75-15M1	JSLC-HP22N	JSCS-04	JSPN-M6

*For right hand tool. **For left hand tool.

ADNE R/L Solution Tool!™ Thru Coolant Jet-Stream™ Threading Modular Head Style E - for DorNotch NG__3 inserts





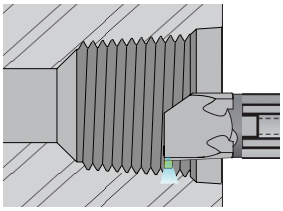


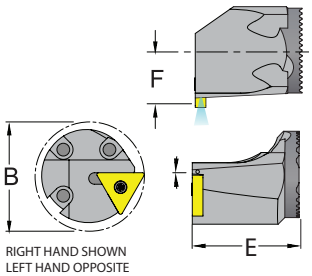
Thru Coolant

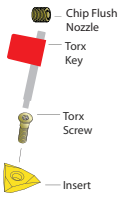
Head Description	UPC No. 733101-		B		E		F		Bars Dia.		DorNotch Gage Insert	Dor-Lock Clamp	Clamp Screw	Chip Flush Nozzle
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric				
DBOMH-24/40M-ADNER/L-3	59557	59558	2.000	50.80	1.575	40	1.125	25.580	1.5"/4.0"	40/100	NG-3L* NG-3R**	JSLC-HP73* JSLC-HP72**	JSCS-08	JSPN-M6

*For right hand tool. **For left hand tool.

ADTHO R/L Solution Tool!™ Thru Coolant Jet-Stream™ Threading Modular Head Style Head for triangle TNMC 432__inserts







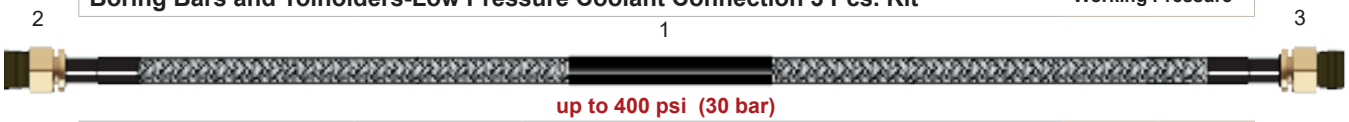
Thru Coolant

Head Description	UPC No. 733101-		B		E		F		Bars Dia.		TNMC Gage Insert		Insert Seat Screw	Tork Key	Chip Flush Nozzle
	R.H.	L.H.	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric			
DBOMH-24/40M-ADTHOR/L-4	59561	59562	2.250	57.15	1.575	40	1.125	25.580	1.5"/4.0"	40/100	432	220408	GTS-2	T-20	JSPN-M6

Note: For machines that have turrets with 1/8 NTP tapped coolant holes, you do not need a ball type coolant nozzle . Ball type coolant nozzles are sold separately.

Boring Bars and Tolholders-Low Pressure Coolant Connection 3 Pcs. Kit

Working Pressure



up to 400 psi (30 bar)

	Part Number	UPC No 733101-	Description	Bar	PSI
Item	**JSPLPCK-062-250**	**53303**	**1/6" NPT Low Pressure Quick Release Coolant 3 pcs Kit**	**30**	**400**
1	JS-T250-1200	53349	1/4" OD, 12" Low High Pressure Long Tubing		
2	JS-MC062-250	53346	1/16" NPT-1/4" Bore, Straight Low Pressure Quick Release Connector		
3	JS-MC125-250	53347	1/8" NPT-1/4" Bore, Straight Low Pressure Quick Release Connector		
Item	**JSPLPCK-125-250**	**53304**	**1/8" NPT Low Pressure Quick Release Coolant 3 pcs Kit**	**30**	**400**
1	JS-T250-1200	53349	1/4" OD, 12" Low High Pressure Long Tubing		
2	JS-MC125-250	53347	1/8" NPT-1/4" Bore, Straight Low Pressure Quick Release Connector		
3	JS-MC125-250	53347	1/8" NPT-1/4" Bore, Straight Low Pressure Quick Release Connector		
Item	**JSPLPCK-250-250**	**53305**	**1/4" NPT Low Pressure Quick Release Coolant 3 pcs Kit**	**30**	**400**
1	JS-T250-1200	53349	1/4" OD, 12" Low High Pressure Long Tubing		
2	JS-MC125-250	53347	1/8" NPT-1/4" Bore, Straight Low Pressure Quick Release Connector		
3	JS-MC250-250	53348	1/4" NPT-1/4" Bore, Straight Low Pressure Quick Release Connector		

Boring Bars and Tolholders-High Pressure Coolant Connection 5 Pcs. Kit

Working Pressure

over 400 psi (30 bar)

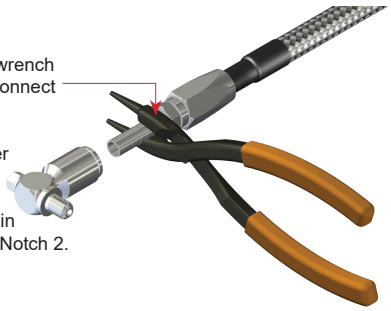
	Part Number	UPC No 733101-	Description	Bar	PSI
Item	**DT-1/8 HP-QRCK**	**60473**	**1/8" NPT High Pressure Quick Release Coolant 5 pcs Kit**	**200**	**2800**
1	DT-HPTU-8X4	60477	8mm High Pressure 8mm Coolant Tubing Only		
2	DT-HP90C-1/8x6	60479	High Pressure Quick Release Straight Intec		
3	DT-HP90C-1/8x6	60479	High Pressure Quick Release Straight Intec		
4	DT-HP90C-1/8x6	60490	1/8" NPT Straight High Pressure Quick Release Connector		
5	DT-HP90C-1/8x6	60489	1/8" NPT 90° Elbow High Pressure Quick Release Connector		
Item	**DT-1/4 HP-QRCK**	**60474**	**1/4" NPT High Pressure Quick Release Coolant 5 pcs Kit**	**200**	**2800**
1	DT-HPTU-8X4	60477	8mm High Pressure 8mm Coolant Tubing Only		
2	DT-HP90C-1/8x6	60479	High Pressure Quick Release Straight Intec		
3	DT-HP90C-1/8x6	60479	High Pressure Quick Release Straight Intec		
4	DT-HPOSC-1/4x6	60478	1/4" NPT Straight High Pressure Quick Release Connector		
5	DT-HP90C-1/8x6	60489	1/8" NPT 90° Elbow High Pressure Quick Release Connector		

	Part Number	UPC No 733101-	Description
Item	**TD-HP-WRENCH**	**60076**	**High Pressure Disconecting Player**

To Disconnect the Hydraulic Coolant Hose Follow 2 Safe & Easy Steps:

1. Place the thinner section of the wrench-nose between the coolant hose and the connector.

2. Close the wrench and it will disconnect Notch 1 of the coolant hose. Use the thicker section of the wrench-nose and close again to disconnect Notch 2.



Ball-Type Coolant Nozzles Sold Seperately

Acetal Material	Brass Material	Ball-Type Coolant Nozzles Size	Acetal Material		Brass Material	
			Desc.	UPC NO. 733101-	Desc.	UPC NO. 733101-
		12mm OD, 1/8NPT ID	JSCNA-12	53354	JSCNB-12	53365
		14mm OD, 1/8NPT ID	JSCNA-14	53355	JSCNB-14	53366
		15mm OD, 1/8NPT ID	JSCNA-15	53356	JSCNB-15	53367
		22mm OD, 1/8NPT ID	JSCNA-22	53357	JSCNB-22	53368
		1/2" OD, 1/8NPT ID	JSCNA-50	53358	JSCNB-50	53369
		5/8" OD, 1/8NPT ID	JSCNA-62	53359	JSCNB-62	53370

Note: For machines that have turrets with 1/8 NPT tapped coolant holes, you do not need a ball type coolant nozzle . Ball type coolant nozzles are sold seperately.