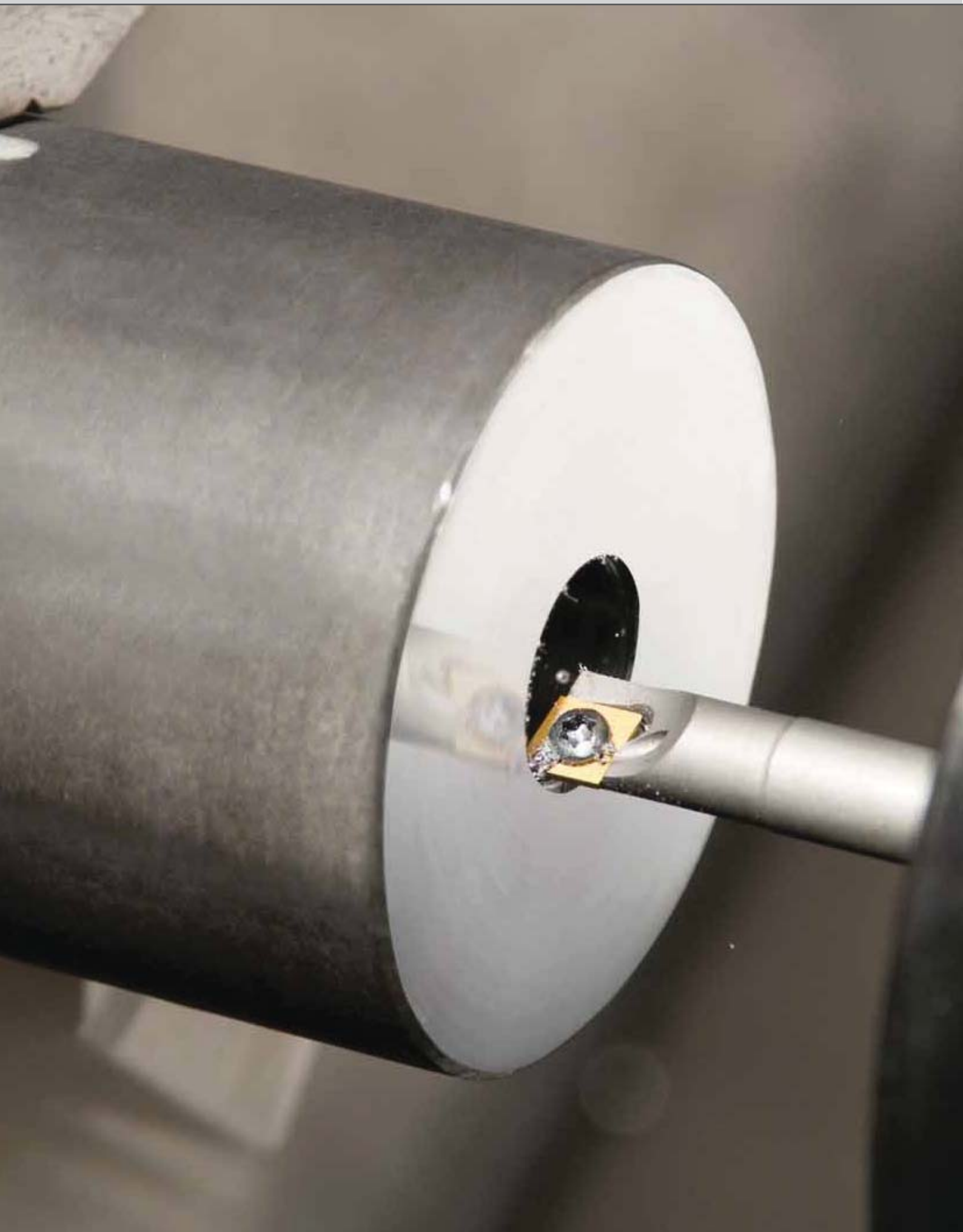




# **2017** Master Catalog

**WIDIA**  <sup>TM</sup>



## A/B Series Small Hole Tooling

Available in steel and carbide shanks, the WIDIA™ line of micro boring bars is an excellent, economical choice for a wide range of applications — from creating small holes in small parts to precision micro boring typically found in large workpieces — manufactured in the aerospace, heavy equipment, and automotive industries.

# A/B Series



## A/B Series Micro Boring Bar

### Features

- .062–.156" (1,56–3,96mm) diameter boring range.
- Unique locking system enables quick, accurate insert changes.
- Insert repeatability guaranteed within  $\pm 0.0005"$  ( $\pm 0,013\text{mm}$ ).

### Benefits

- Quick, accurate insert setups.
- Available in multiple styles for machining a wide range of materials.
- Elliptical, ground insert shanks for maximum strength and rigidity.

### ABD Type

Replaceable boring insert with coolant slot.



### ABD Type

Replaceable boring insert available in coated and uncoated carbide, CBN, and PCD tip. A series has a coolant slot.



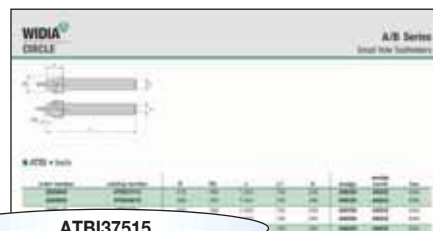
### BB Type

Replaceable boring insert.



## A/B Series Boring Bar Identification System

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



**AT**

Series Style and Bar Type  
*Construction Features  
of the Boring Bar*

>.187" (4,75mm) Bore Diameter

**AT** = Through Coolant

**BS** = No Coolant

**B**

Boring  
Bar

**I**

Type

**I** = Inch

**M** = Metric

**375**

Shank Diameter  
*shown as "D"*

**Inch**

**375** = .375"

**500** = .500"

**625** = .625"

**750** = .750"

**1000** = 1.000"

**Metric**

**8** = 8,00mm

**10** = 10,00mm

**12** = 12,00mm

**16** = 16,00mm

**20** = 20,00mm

**15**

Length  
*shown as "L"*

**Inch**

**15** = 1.50"

**4** = 4.00"

**6** = 6.00"

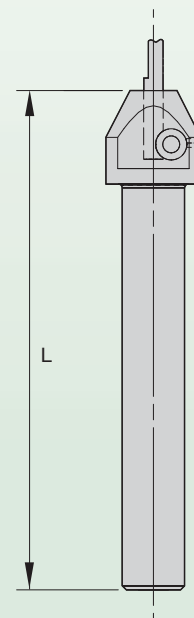
**Metric**

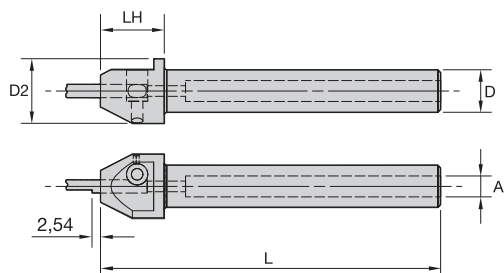
**38** = 38,0mm

**100** = 100,0mm

**102** = 102,0mm

**152** = 152,0mm

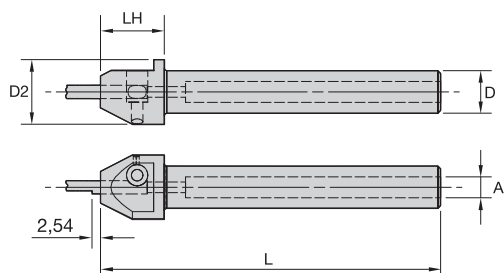




■ **ATBI**

| order number | catalog number | D     | D2   | L     | LH   | A    | wedge        | wedge screw   | hex  |
|--------------|----------------|-------|------|-------|------|------|--------------|---------------|------|
| 2839848      | ATBI37515      | .375  | .760 | 1.500 | .750 | .250 | AW250/AW-250 | AS832/AS-8-32 | 5/64 |
| 2839842      | ATBI50015      | .500  | .760 | 1.500 | .750 | .250 | AW250/AW-250 | AS832/AS-8-32 | 5/64 |
| 3896119      | ATBI5004       | .500  | .760 | 4.000 | .750 | .250 | AW250/AW-250 | AS832/AS-8-32 | 5/64 |
| 2839830      | ATBI6254       | .625  | .760 | 4.000 | .750 | .250 | AW250/AW-250 | AS832/AS-8-32 | 5/64 |
| 2839826      | ATBI7504       | .750  | .760 | 4.000 | .750 | .250 | AW250/AW-250 | AS832/AS-8-32 | 5/64 |
| 2839821      | ATBI10004      | 1.000 | .760 | 4.000 | .750 | .250 | AW250/AW-250 | AS832/AS-8-32 | 5/64 |

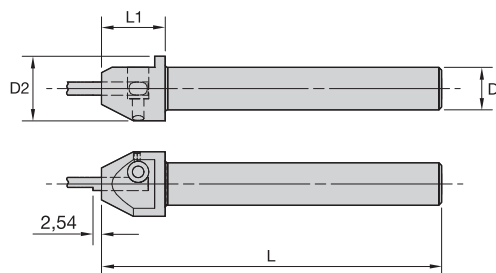
NOTE: These tools will accept any A-Series solid carbide insert (ABD, ABD-M, AGD, APD, and ATD).



■ **ATBM**

| order number | catalog number | D     | D2    | L   | LH | A    | wedge        | hex  |
|--------------|----------------|-------|-------|-----|----|------|--------------|------|
| 3896121      | ATBM12100      | 12,00 | 19,30 | 102 | 19 | 6,35 | AW250/AW-250 | 5/64 |
| 2839192      | ATBM1638       | 16,00 | 19,30 | 38  | 19 | 6,35 | AW250/AW-250 | 5/64 |
| 3896193      | ATBM16100      | 16,00 | 19,30 | 102 | 19 | 6,35 | AW250/AW-250 | 5/64 |
| 3896194      | ATBM20102      | 20,00 | 19,30 | 102 | 19 | 6,35 | AW250/AW-250 | 5/64 |
| 3896195      | ATBM25102      | 25,00 | 19,30 | 102 | 19 | 6,35 | AW250/AW-250 | 5/64 |

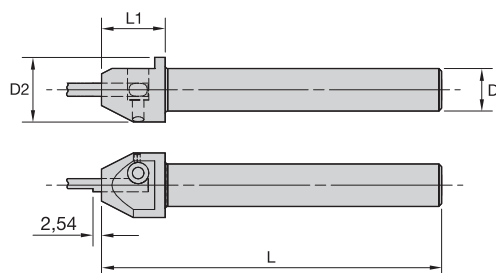
NOTE: These tools will accept any A-Series solid carbide insert (ABD, ABD-M, AGD, APD, and ATD).



### ■ BSBI

| order number | catalog number | D     | D2    | L     | L1    | wedge | wedge screw | hex  |
|--------------|----------------|-------|-------|-------|-------|-------|-------------|------|
| 2832989      | BSBI5006       | .500  | 1.010 | 6.000 | 1.150 | BW312 | BS832       | 5/64 |
| 2832984      | BSBI6256       | .625  | 1.010 | 6.000 | 1.150 | BW312 | BS832       | 5/64 |
| 2832980      | BSBI7506       | .750  | 1.010 | 6.000 | 1.150 | BW312 | BS832       | 5/64 |
| 2832974      | BSBI10006      | 1.000 | 1.010 | 6.000 | 1.150 | BW312 | BS832       | 5/64 |

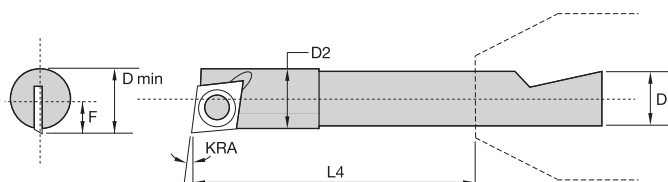
NOTE: These tools will accept any B-Series solid carbide insert (BB and BP).



### ■ BSBM

| order number | catalog number | D     | D2    | L   | L1 | wedge | wedge screw | hex  |
|--------------|----------------|-------|-------|-----|----|-------|-------------|------|
| 3896196      | BSBM20152      | 20,00 | 25,65 | 152 | 29 | BW312 | BS832       | 5/64 |

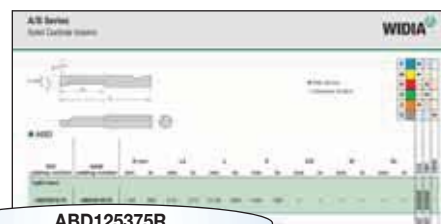
NOTE: These tools will accept any B-Series solid carbide insert (BB and BP).



## Tools for Small Hole Boring

|              |                |     |      |      |       |      |      |      |      |      |       |       |             |              |      |  |
|--------------|----------------|-----|------|------|-------|------|------|------|------|------|-------|-------|-------------|--------------|------|-------------------------------------------------------------------------------------|
| order number | catalog number | KRA | D    |      | D min |      | D2   |      | F    |      | L4    |       | gage insert | insert screw | Torx |                                                                                     |
|              |                |     | mm   | in   | mm    | in   | mm   | in   | mm   | in   | mm    | in    |             |              |      |                                                                                     |
| right hand   |                |     |      |      |       |      |      |      |      |      |       |       |             |              |      |                                                                                     |
| 2836656      | ABC1000R       | -7  | 3,96 | .156 | 4,57  | .180 | 4,16 | .164 | 2,41 | .095 | 25,40 | 1.000 | CD..120605  | CC09         | T6   |                                                                                     |
| 2836651      | ABC1250R       | -7  | 3,96 | .156 | 4,57  | .180 | 4,16 | .164 | 2,41 | .095 | 31,75 | 1.250 | CD..120605  | CC09         | T6   |                                                                                     |
| 2836645      | ABC1500R       | -7  | 3,96 | .156 | 4,57  | .180 | 4,16 | .164 | 2,41 | .095 | 38,10 | 1.500 | CD..120605  | CC09         | T6   |                                                                                     |
| 2836667      | ABC500R        | -7  | 3,96 | .156 | 4,57  | .180 | 4,16 | .164 | 2,41 | .095 | 12,70 | .500  | CD..120605  | CC09         | T6   |                                                                                     |
| 2836660      | ABC750R        | -7  | 3,96 | .156 | 4,57  | .180 | 4,16 | .164 | 2,41 | .095 | 19,05 | .750  | CD..120605  | CC09         | T6   |                                                                                     |

## A/B Series Boring Bar Identification System



ABD125375R

### ABD

Insert Style

**A Series = Through Coolant**

**ABC** = Indexable Boring  
**ABD** = Boring  
**AGD** = Grooving  
**APD** = Profiling  
**ATD** = Threading

**B Series = Without coolant**

**BB** = Boring  
**BP** = Profiling

### 125

Minimum Bore  
shown as "D min"

**Inch**

**A Series**

**06** = .062"  
**09** = .094"  
**125** = .125"  
**156** = .156"

**(AGD style only)**

**095** = .110"  
**125** = .140"  
**156** = .175"

**(ATD style only)**

**095** = .100"  
**125** = .130"  
**156** = .160"

**B Series**

**187** = .187"  
**250** = .250"  
**312** = .312"

**Metric**

**A Series**

**06** = 1,58mm  
**09** = 2,39mm  
**125** = 3,18mm  
**156** = 3,96mm

**(AGD style only)**

**095** = 2,79mm  
**125** = 3,56mm  
**156** = 4,45mm

**(ATD style only)**

**095** = 2,79mm  
**125** = 3,56mm  
**156** = 4,45mm

**B Series**

**187** = 4,75mm  
**250** = 6,35mm  
**312** = 7,93mm

### 375

Bore Depth, Groove Width,  
Flat on Thread  
shown as "L4, W"

**Inch**

**Bore Depth**

**187** = .187"  
**281** = .281"  
**312** = .312"  
**375** = .375"  
**500** = .500"  
**600** = .600"  
**625** = .625"  
**750** = .750"  
**825** = .825"  
**875** = .875"  
**1000** = 1.000"  
**1250** = 1.250"  
**1500** = 1.500"  
**1750** = 1.750"  
**2125** = 2.125"

**Metric**

**Bore Depth**

**187** = 4,75mm  
**281** = 7,14mm  
**312** = 7,93mm  
**375** = 9,53mm  
**500** = 12,70mm  
**600** = 15,24mm  
**625** = 15,88mm  
**750** = 19,05mm  
**825** = 20,96mm  
**875** = 22,23mm  
**1000** = 25,40mm  
**1250** = 31,75mm  
**1500** = 38,10mm  
**1750** = 44,45mm  
**2125** = 53,98mm

**Inch**

**A Series**

**Groove Width  
(AGD style only)**

**03** = .030"  
**04** = .040"  
**05** = .050"

**Thread  
(ATD style only)**

**F2** = .002"  
Flat on thread

**Metric**

**A Series**

**Groove Width  
(AGD style only)**

**03** = 0,76mm  
**04** = 1,02mm  
**05** = 1,27mm

**Thread  
(ATD style only)**

**F2** = 0,05mm  
Flat on thread

### R

Hand  
of Tool

**R** =

Right hand

**L** =

Left hand

Tip Style  
(optional)

**Symbol**  
M

**Usage**  
Mini tip

# Victory™ Turning



## EXTREME CHALLENGES. EXTREME RESULTS.

Specifically engineered multilayer coating provides high-speed capability for finishing to roughing operations. New geometries enhance chip control for better tool life and superior surface finishes.

### A Complete High-Performance Turning Portfolio

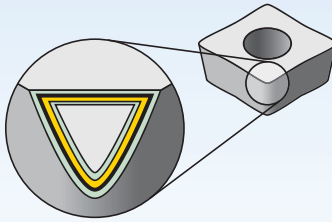
- Market-leading technology.
- Longer tool life.
- Higher productivity through increased speed capability.

### Steel and Stainless Steel Grades

- Reduce cycle times — high speed and feed capability.
- Long tool life — new multilayer coating provides better wear resistance.
- ZrCN top layer with post-coat treatment provides improved edge toughness and wear detection.
- Outer layer is bronze-colored for easier wear detection.

To learn more, contact your local Authorized  
Distributor or visit [widia.com](http://widia.com).

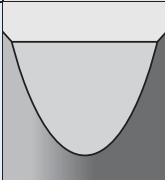
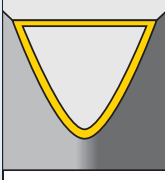
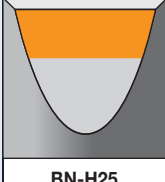




Coatings provide high-speed capability and are engineered for finishing to light roughing.

|   |                    |
|---|--------------------|
| P | Steel              |
| M | Stainless Steel    |
| K | Cast Iron          |
| N | Non-Ferrous        |
| S | High-Temp Alloys   |
| H | Hardened Materials |

wear resistance ← → toughness

| Coating |                                                                                    | Grade Description                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                            | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|----|----|----|----|
| Grade   | CM1                                                                                |                                                                                                                                                                                                                  | <p>Uncoated carbide. A very tough, ultra-fine grain unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates. Use when C2, C3, or C25 fail due to chipping or breaking.</p> | P  |    |    |    |    |    |    |    |    |
|         |                                                                                    |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            | M  |    |    |    |    |    |    |    |    |
|         | K                                                                                  |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            |    |    |    |    |    |    |    |    |    |
|         | N                                                                                  |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            |    |    |    |    |    |    |    |    |    |
|         | S                                                                                  |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            |    |    |    |    |    |    |    |    |    |
|         | HW-S25                                                                             |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            |    |    |    |    |    |    |    |    |    |
| CG5     |   | <p>A PVD-TiN-coated grade. Straight 9.5% Co substrate. Submicron grain. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates.</p>   | P                                                                                                                                                                                                                                                                                                                                                          |    |    |    |    |    |    |    |    |    |
|         |                                                                                    |                                                                                                                                                                                                                                                                                                   | M                                                                                                                                                                                                                                                                                                                                                          |    |    |    |    |    |    |    |    |    |
|         |                                                                                    |                                                                                                                                                                                                                                                                                                   | K                                                                                                                                                                                                                                                                                                                                                          |    |    |    |    |    |    |    |    |    |
|         |                                                                                    |                                                                                                                                                                                                                                                                                                   | N                                                                                                                                                                                                                                                                                                                                                          |    |    |    |    |    |    |    |    |    |
|         |                                                                                    |                                                                                                                                                                                                                                                                                                   | S                                                                                                                                                                                                                                                                                                                                                          |    |    |    |    |    |    |    |    |    |
|         | HC-S25                                                                             |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            |    |    |    |    |    |    |    |    |    |
| CBN6    |  | <p>PcBN tip brazed onto a carbide insert. Recommended for machining hardened steel (45–65 HRC). Use on bearing steel, hot and cold work tool steels, high-speed steels, die steels, case-hardened steels, carburized and nitrided irons, and some hard coatings. Can be run both dry and wet.</p> |                                                                                                                                                                                                                                                                                                                                                            |    |    |    |    |    |    |    |    |    |
|         |                                                                                    |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            |    |    |    |    |    |    |    |    |    |
|         |                                                                                    |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            |    |    |    |    |    |    |    |    |    |
|         |                                                                                    |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            |    |    |    |    |    |    |    |    |    |
|         |                                                                                    |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            |    |    |    |    |    |    |    |    |    |
|         | BN-H25                                                                             |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                            |    |    |    |    |    |    |    |    |    |



# Speed and Feed Chart

A/B Series Inserts • Inch

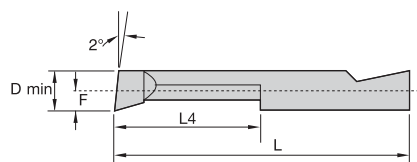


| Cutting Speed — vc<br>SFM |           |        |       |       |        |       |       |        |       |       |
|---------------------------|-----------|--------|-------|-------|--------|-------|-------|--------|-------|-------|
| Material<br>Group         |           | CG5    |       |       | CM1    |       |       | CBN6   |       |       |
|                           |           | min    | Start | max   | min    | Start | max   | min    | Start | max   |
| P                         | ap [inch] | 0.001  | -     | 0.008 | 0.001  | -     | 0.008 | —      | —     | —     |
|                           | f [inch]  | 0.0005 | -     | 0.007 | 0.0005 | -     | 0.007 | —      | —     | —     |
|                           | 0/1       | 305    | 380   | 460   | 180    | 220   | 265   | —      | —     | —     |
|                           | 2         | 200    | 245   | 300   | 115    | 140   | 170   | —      | —     | —     |
|                           | 3         | 200    | 245   | 300   | 115    | 140   | 170   | —      | —     | —     |
|                           | 4         | 155    | 195   | 235   | 90     | 110   | 135   | —      | —     | —     |
|                           | 5         | 200    | 250   | 300   | 115    | 145   | 175   | —      | —     | —     |
|                           | 6         | 135    | 165   | 200   | 80     | 95    | 115   | —      | —     | —     |
| M                         | ap [inch] | 0.001  | -     | 0.008 | 0.001  | -     | 0.008 | —      | —     | —     |
|                           | f [inch]  | 0.0005 | -     | 0.007 | 0.0005 | -     | 0.007 | —      | —     | —     |
|                           | 1         | 240    | 300   | 360   | 180    | 220   | 265   | —      | —     | —     |
|                           | 2         | 220    | 270   | 325   | 160    | 200   | 240   | —      | —     | —     |
|                           | 3         | 165    | 200   | 245   | 120    | 150   | 180   | —      | —     | —     |
| K                         | ap [inch] | 0.001  | -     | 0.010 | 0.001  | -     | 0.010 | —      | —     | —     |
|                           | f [inch]  | 0.0005 | -     | 0.007 | 0.0005 | -     | 0.007 | —      | —     | —     |
|                           | 1         | 195    | 245   | 295   | 155    | 190   | 230   | —      | —     | —     |
|                           | 2         | 250    | 310   | 375   | 190    | 240   | 290   | —      | —     | —     |
|                           | 3         | 180    | 225   | 270   | 140    | 175   | 210   | —      | —     | —     |
| N                         | ap [inch] | 0.001  | —     | 0.025 | 0.001  | —     | 0.025 | —      | —     | —     |
|                           | f [inch]  | 0.0005 | —     | 0.007 | 0.0005 | —     | 0.007 | —      | —     | —     |
|                           | 1         | 1320   | 1650  | 1980  | 1320   | 1650  | 1980  | —      | —     | —     |
|                           | 2         | 970    | 1215  | 1455  | 970    | 1215  | 1455  | —      | —     | —     |
|                           | 3         | 240    | 300   | 360   | 225    | 280   | 340   | —      | —     | —     |
|                           | 4         | 455    | 570   | 685   | 325    | 405   | 490   | —      | —     | —     |
|                           | 5         | 320    | 400   | 480   | 260    | 320   | 385   | —      | —     | —     |
|                           | 6         | 320    | 400   | 480   | 260    | 320   | 385   | —      | —     | —     |
|                           | 7         | 785    | 985   | 1180  | 780    | 975   | 1175  | —      | —     | —     |
| S                         | ap [inch] | 0.001  | -     | 0.008 | 0.001  | -     | 0.008 | —      | —     | —     |
|                           | f [inch]  | 0.001  | -     | 0.007 | 0.001  | -     | 0.007 | —      | —     | —     |
|                           | 1         | 90     | 105   | 130   | 175    | 215   | 260   | —      | —     | —     |
|                           | 2         | 65     | 80    | 100   | 135    | 170   | 205   | —      | —     | —     |
|                           | 3         | 105    | 130   | 160   | 90     | 110   | 135   | —      | —     | —     |
| H                         | 4         | —      | —     | —     | —      | —     | —     | —      | —     | —     |
|                           | ap [inch] | —      | —     | —     | —      | —     | —     | 0.0005 | —     | 0.003 |
|                           | f [inch]  | —      | —     | —     | —      | —     | —     | 0.0005 | —     | 0.004 |
|                           | 1         | —      | —     | —     | —      | —     | —     | 360    | 450   | 540   |
|                           | 2         | —      | —     | —     | —      | —     | —     | 340    | 420   | 505   |
|                           | 3         | —      | —     | —     | —      | —     | —     | 320    | 400   | 480   |
|                           | 4         | —      | —     | —     | —      | —     | —     | 320    | 400   | 480   |

NOTE: Speed and feed rates and depth of cut may vary depending on materials and machining conditions including, but not limited to, tool overhang, tool size, and finished surface requirements.

| Material Group |            | Cutting Speed — vc<br>m/min |       |       |        |       |       |        |       |       |
|----------------|------------|-----------------------------|-------|-------|--------|-------|-------|--------|-------|-------|
|                |            | CG5                         |       |       | CM1    |       |       | CBN6   |       |       |
|                |            | min                         | Start | max   | min    | Start | max   | min    | Start | max   |
| P              | ap [mm]    | 0,025                       | -     | 0,200 | 0,025  | -     | 0,203 | -      | -     | -     |
|                | f [mm/rev] | 0,013                       | -     | 0,178 | 0,013  | -     | 0,178 | -      | -     | -     |
|                | 0/1        | 95                          | 120   | 145   | 55     | 70    | 85    | -      | -     | -     |
|                | 2          | 65                          | 80    | 90    | 40     | 45    | 55    | -      | -     | -     |
|                | 3          | 65                          | 80    | 90    | 40     | 45    | 55    | -      | -     | -     |
|                | 4          | 50                          | 60    | 75    | 30     | 35    | 45    | -      | -     | -     |
|                | 5          | 65                          | 80    | 95    | 40     | 45    | 55    | -      | -     | -     |
|                | 6          | 45                          | 55    | 65    | 25     | 30    | 40    | -      | -     | -     |
| M              | ap [mm]    | 0,025                       | -     | 0,200 | 0,025  | -     | 0,200 | -      | -     | -     |
|                | f [mm/rev] | 0,013                       | -     | 0,178 | 0,013  | -     | 0,178 | -      | -     | -     |
|                | 1          | 75                          | 95    | 110   | 55     | 70    | 85    | -      | -     | -     |
|                | 2          | 70                          | 85    | 100   | 50     | 65    | 75    | -      | -     | -     |
|                | 3          | 55                          | 65    | 80    | 40     | 50    | 55    | -      | -     | -     |
| K              | ap [mm]    | 0,001                       | -     | 0,010 | 0,001  | -     | 0,010 | -      | -     | -     |
|                | f [mm/rev] | 0,0005                      | -     | 0,007 | 0,0005 | -     | 0,007 | -      | -     | -     |
|                | 1          | 65                          | 80    | 95    | 50     | 60    | 75    | -      | -     | -     |
|                | 2          | 80                          | 95    | 115   | 60     | 75    | 90    | -      | -     | -     |
|                | 3          | 55                          | 70    | 85    | 45     | 55    | 65    | -      | -     | -     |
| N              | ap [mm]    | 0,025                       | -     | 0,640 | 0,025  | -     | 0,640 | -      | -     | -     |
|                | f [mm/rev] | 0,013                       | -     | 0,178 | 0,013  | -     | 0,178 | -      | -     | -     |
|                | 1          | 405                         | 505   | 605   | 405    | 505   | 605   | -      | -     | -     |
|                | 2          | 300                         | 370   | 445   | 300    | 370   | 445   | -      | -     | -     |
|                | 3          | 75                          | 95    | 110   | 70     | 90    | 105   | -      | -     | -     |
|                | 4          | 140                         | 175   | 210   | 105    | 125   | 155   | -      | -     | -     |
|                | 5          | 100                         | 125   | 150   | 80     | 100   | 120   | -      | -     | -     |
|                | 6          | 100                         | 125   | 150   | 80     | 100   | 120   | -      | -     | -     |
|                | 7          | 240                         | 300   | 360   | 240    | 300   | 360   | -      | -     | -     |
| S              | ap [mm]    | 0,025                       | -     | 0,200 | 0,025  | -     | 0,200 | -      | -     | -     |
|                | f [mm/rev] | 0,013                       | -     | 0,178 | 0,013  | -     | 0,178 | -      | -     | -     |
|                | 1          | 30                          | 35    | 40    | 55     | 70    | 85    | -      | -     | -     |
|                | 2          | 20                          | 30    | 35    | 45     | 55    | 65    | -      | -     | -     |
|                | 3          | 35                          | 40    | 50    | 30     | 35    | 45    | -      | -     | -     |
|                | 4          | -                           | -     | -     | -      | -     | -     | -      | -     | -     |
| H              | ap [mm]    | -                           | -     | -     | -      | -     | -     | 0,025  | -     | 0,200 |
|                | f [mm/rev] | -                           | -     | -     | -      | -     | -     | 0,0005 | -     | 0,004 |
|                | 1          | -                           | -     | -     | -      | -     | -     | 110    | 140   | 165   |
|                | 2          | -                           | -     | -     | -      | -     | -     | 105    | 130   | 155   |
|                | 3          | -                           | -     | -     | -      | -     | -     | 100    | 125   | 150   |
|                | 4          | -                           | -     | -     | -      | -     | -     | 100    | 125   | 150   |

NOTE: Speed and feed rates and depth of cut may vary depending on materials and machining conditions including, but not limited to, tool overhang, tool size, and finished surface requirements.

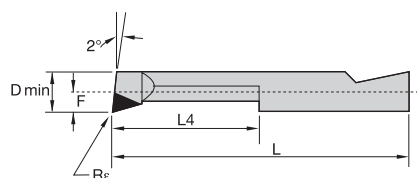


● first choice  
○ alternate choice

|   |   |   |
|---|---|---|
| P | ● | ○ |
| M | ● | ○ |
| K | ○ | ● |
| N | ○ | ● |
| S | ● | ○ |
| H | ● | ○ |

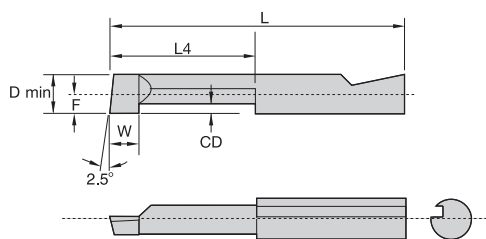
■ **ABD**

| ISO<br>catalog number | ANSI<br>catalog number | D min |      | L4    |      | L     |       | F    |      | CG5     | CM1     | CBN6 |
|-----------------------|------------------------|-------|------|-------|------|-------|-------|------|------|---------|---------|------|
|                       |                        | mm    | in   | mm    | in   | mm    | in    | mm   | in   |         |         |      |
| right hand            |                        |       |      |       |      |       |       |      |      | 2836639 | 2836632 |      |
| ABD06187R             | ABD06187R              | 1,58  | .062 | 5,41  | .213 | 21,92 | .863  | 0,66 | .026 | 2836627 | 2836621 |      |
| ABD06312R             | ABD06312R              | 1,58  | .062 | 7,93  | .312 | 24,44 | .962  | 0,66 | .026 | 2836614 | 2836608 |      |
| ABD09281R             | ABD09281R              | 2,39  | .094 | 7,14  | .281 | 23,65 | .931  | 1,04 | .041 | 2836604 | 2836599 |      |
| ABD09500R             | ABD09500R              | 2,39  | .094 | 12,70 | .500 | 29,21 | 1.150 | 1,04 | .041 | 2836593 | 2836588 |      |
| ABD125375R            | ABD125375R             | 3,18  | .125 | 9,53  | .375 | 26,04 | 1.025 | 1,45 | .057 | 2836582 | 2836579 |      |
| ABD125625R            | ABD125625R             | 3,18  | .125 | 15,88 | .625 | 32,39 | 1.275 | 1,45 | .057 | 2836573 | 2836561 |      |
| ABD156500R            | ABD156500R             | 3,96  | .156 | 12,70 | .500 | 29,21 | 1.150 | 1,85 | .073 | 2836561 | 2836556 |      |
| ABD156875R            | ABD156875R             | 3,96  | .156 | 22,23 | .875 | 38,74 | 1.525 | 1,85 | .073 | 2836556 | 2836551 |      |



■ **ABD-M**

| ISO<br>catalog number | ANSI<br>catalog number | D min |      | L4    |      | L     |       | F    |      | Rε   |      | CG5 | CM1 | CBN6    |
|-----------------------|------------------------|-------|------|-------|------|-------|-------|------|------|------|------|-----|-----|---------|
|                       |                        | mm    | in   | mm    | in   | mm    | in    | mm   | in   | mm   | in   |     |     |         |
| right hand            |                        |       |      |       |      |       |       |      |      |      |      |     |     |         |
| ABD156875RM           | ABD156875RM            | 3,96  | .156 | 22,23 | .875 | 38,74 | 1.525 | 1,85 | .073 | 0,18 | .007 | 1   | 1   | 0000070 |

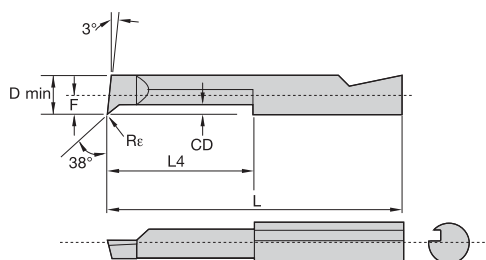


● first choice  
○ alternate choice

|   |   |   |
|---|---|---|
| P | ● | ○ |
| M | ● | ○ |
| K | ○ | ● |
| N | ○ | ● |
| S | ● | ○ |
| H | ● | ○ |

### AGD

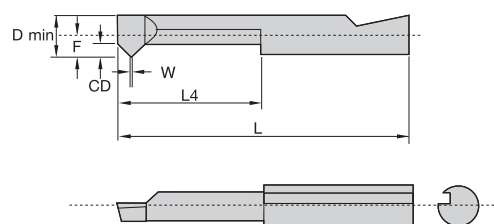
| ISO catalog number | ANSI catalog number | D min<br>mm in | L4<br>mm in | L<br>mm in  | F<br>mm in | CD<br>mm in | W<br>mm in | CG5     | CM1     | CBN6 |
|--------------------|---------------------|----------------|-------------|-------------|------------|-------------|------------|---------|---------|------|
| right hand         |                     |                |             |             |            |             |            |         |         |      |
| AGD09503           | AGD09503            | 2,79 .110      | 7,93 .312   | 24,44 .962  | 1,17 .046  | 0,76 .030   | 0,76 .030  | 2836550 | 2836545 | ■    |
| AGD12504           | AGD12504            | 3,56 .140      | 9,53 .375   | 26,04 1.025 | 1,55 .061  | 0,89 .035   | 1,02 .040  | 2836537 | ■       | ■    |
| AGD15605           | AGD15605            | 4,45 .175      | 12,70 .500  | 29,21 1.150 | 1,93 .076  | 1,27 .050   | 1,27 .050  | 2836524 | ■       | ■    |



### APD

| ISO catalog number | ANSI catalog number | D min<br>mm in | L4<br>mm in | L<br>mm in  | F<br>mm in | CD<br>mm in | Re<br>mm in | CG5     | CM1     | CBN6 |
|--------------------|---------------------|----------------|-------------|-------------|------------|-------------|-------------|---------|---------|------|
| right hand         |                     |                |             |             |            |             |             |         |         |      |
| APD06187R          | APD06187R           | 1,58 .062      | 4,75 .187   | 21,26 .837  | 0,66 .026  | 0,43 .017   | 0,18 .007   | 2836511 | ■       | ■    |
| APD09281R          | APD09281R           | 2,39 .094      | 7,14 .281   | 23,65 .931  | 1,07 .042  | 0,71 .028   | 0,18 .007   | 2836489 | 2836495 | ■    |
| APD125375R         | APD125375R          | 3,18 .125      | 9,53 .375   | 26,04 1.025 | 1,45 .057  | 1,02 .040   | 0,18 .007   | ■       | ■       | ■    |
| APD156500R         | APD156500R          | 3,96 .156      | 12,70 .500  | 29,21 1.150 | 1,85 .073  | 1,27 .050   | 0,18 .007   | 2836473 | ■       | ■    |

Tools for Small Hole Boring

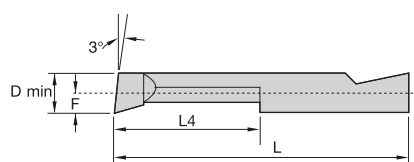


● first choice  
○ alternate choice

|   |   |   |
|---|---|---|
| P | ● | ○ |
| M | ● | ○ |
| K | ○ | ● |
| N | ○ | ● |
| S | ● | ○ |
| H | ● | ○ |

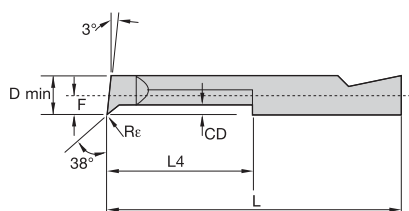
## ■ ATD

| ISO catalog number | ANSI catalog number | D min |      | L4    |      | L     |       | F    |      | CD   |      | W    |      | TP min | TP max | TPI min | TPI max | CG5     | CM1     | CBN6    |
|--------------------|---------------------|-------|------|-------|------|-------|-------|------|------|------|------|------|------|--------|--------|---------|---------|---------|---------|---------|
|                    |                     | mm    | in   | mm    | in   | mm    | in    | mm   | in   | mm   | in   | mm   | in   |        |        |         |         |         |         |         |
| right hand         |                     |       |      |       |      |       |       |      |      |      |      |      |      |        |        |         |         |         |         |         |
| ATD12560F2         | ATD12560F2          | 3,56  | .140 | 9,53  | .375 | 26,04 | 1.025 | 1,55 | .061 | 0,69 | .027 | 0,05 | .002 | 1,06   | 0,53   | 24      | 48      | 2836443 | 2836450 | 2836450 |
| ATD15660F2         | ATD15660F2          | 4,45  | .175 | 12,70 | .500 | 29,21 | 1.150 | 1,93 | .076 | 0,81 | .032 | 0,05 | .002 | 1,27   | 0,53   | 20      | 48      | 2836443 | 2836436 | 2836436 |



## ■ BB

| ISO catalog number | ANSI catalog number | D min |      | L4    |       | L     |       | F    |      | CG5     | CM1     | CBN6    |
|--------------------|---------------------|-------|------|-------|-------|-------|-------|------|------|---------|---------|---------|
|                    |                     | mm    | in   | mm    | in    | mm    | in    | mm   | in   |         |         |         |
| right hand         |                     |       |      |       |       |       |       |      |      |         |         |         |
| BB187750R          | BB187750R           | 4,75  | .187 | 19,05 | .750  | 45,72 | 1.800 | 2,24 | .088 | 2832769 | 2832769 | 2832769 |
| BB1871250R         | BB1871250R          | 4,75  | .187 | 31,75 | 1.250 | 58,42 | 2.300 | 2,24 | .088 | 2832758 | 2832758 | 2832758 |
| BB2501000R         | BB2501000R          | 6,35  | .250 | 25,40 | 1.000 | 52,07 | 2.050 | 3,05 | .120 | 2832747 | 2832742 | 2832742 |
| BB3121250R         | BB3121250R          | 7,93  | .312 | 53,98 | 2.125 | 80,65 | 3.175 | 3,84 | .151 | 2832724 | 2832719 | 2832719 |



● first choice  
○ alternate choice

|   |   |   |   |  |
|---|---|---|---|--|
| P | ● | ○ |   |  |
| M | ● | ○ |   |  |
| K | ○ | ● |   |  |
| N | ○ | ● |   |  |
| S | ● | ○ | ● |  |
| H |   |   |   |  |

■ BP

| ISO<br>catalog<br>number | ANSI<br>catalog<br>number | D min |      | L4    |      | L     |       | F    |      | CD   |      | Rε   |      | CG5     | CM1 | CBN6 |
|--------------------------|---------------------------|-------|------|-------|------|-------|-------|------|------|------|------|------|------|---------|-----|------|
|                          |                           | mm    | in   | mm    | in   | mm    | in    | mm   | in   | mm   | in   | mm   | in   |         |     |      |
| right hand               |                           |       |      |       |      |       |       |      |      |      |      |      |      | 2832702 | ■   | ■    |
| BP187600R                | BP187600R                 | 4,75  | .187 | 15,24 | .600 | 41,91 | 1.650 | 2,24 | .088 | 1,58 | .062 | 0,18 | .007 | 2832702 | ■   | ■    |
| BP250825R                | BP250825R                 | 6,35  | .250 | 20,96 | .825 | 47,63 | 1.875 | 3,05 | .120 | 1,98 | .078 | 0,18 | .007 | 2832689 | ■   | ■    |

Tools for Small Hole Boring

## ■ Insert Screws

| order number | ISO catalog number | ANSI catalog number | Torx/hex | internal thread |
|--------------|--------------------|---------------------|----------|-----------------|
| 2840098      | MSM46              | MSM46               | 2 mm     | M4X0.7          |
| 2840186      | AS832/AS-8-32      | AS832/AS-8-32       | 5/64     | #8-32           |
| 2892513      | BS832              | BS832               | 5/64     | —               |
| 2820981      | LTM16              | LTM16               | T5       | M2X0.4          |
| 2832647      | CC11               | CC11                | T6       | #1-72           |
| 2832635      | CT11               | CT11                | T6       | #1-72           |
| 2830477      | FC11               | FC11                | T7       | —               |
| 2828337      | GT21               | GT21                | T7       | #2-56           |
| 2825941      | QTM20              | QTM20               | T7       | M2.5X0.45       |
| 2825948      | QTM26              | QTM26               | T7       | M2.5X0.45       |
| 2826005      | QC15               | QC15                | T8       | #3-48           |
| 2826038      | QC21               | QC21                | T9       | #4-40           |
| 2823227      | SC30               | SC30                | T10      | #4-40           |
| 2823203      | STM31              | STM31               | T15      | M3.5 X 0.6      |
| 2832641      | CT15               | CT15                | T16      | #1-72           |

## ■ Wrenches

| order number | ISO catalog number | ANSI catalog number | Torx/hex |
|--------------|--------------------|---------------------|----------|
| 2840094      | MKEY               | MKEY                | 2.0 mm   |
| 2840174      | AKEY               | AKEY                | 5/64     |
| 2828318      | GTKEY              | GTKEY               | T5       |
| 2832628      | CKEY               | CKEY                | T6       |
| 2830492      | FKEY               | FKEY                | T7       |
| 2825973      | Q8KEY              | Q8KEY               | T8       |
| 2825982      | QKEY               | QKEY                | T9       |
| 2823182      | SKEY               | SKEY                | T10      |

## ■ Drive Bits

| order number | ISO catalog number | ANSI catalog number | Torx/hex |
|--------------|--------------------|---------------------|----------|
| 2840089      | MBIT               | MBIT                | 2 mm     |
| 2832661      | CBIT               | CBIT                | T6       |
| 2830497      | FBIT               | FBIT                | T7       |
| 2825963      | QTBIT              | QTBIT               | T7       |
| 2825964      | Q8BIT              | Q8BIT               | T8       |
| 2826045      | QBIT               | QBIT                | T9       |
| 2823236      | SBIT               | SBIT                | T10      |
| 2823196      | STBIT              | STBIT               | T15      |

## ■ Wedges

| order number | ISO catalog number | ANSI catalog number |
|--------------|--------------------|---------------------|
| 2840192      | AW250/AW-250       | AW250/AW-250        |
| 2836024      | BW312              | BW312               |