



**ALLIED MACHINE
& ENGINEERING**

Holemaking Solutions for Today's Manufacturing



Boring



Reaming



Burnishing



Threading



Specials



BT-A Drill

▶ *DRILLING*

BTA-STS (Single Tube System)
Deep Hole Machining

SECTION

A93

BT-A Drill

BT-A Drill

BTA (STS) Deep Hole Machining System

► **Diameter Range:** 0.5110" - 1.8829" (12.98 mm - 47.82 mm)



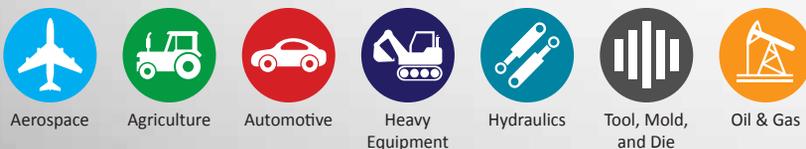
Material Ejection with Efficiency

The BT-A drill (using the single tube system or STS) conquers deep hole applications in ways other drills simply cannot. The internal ejection system flushes chips and debris from the hole with no interference to the cutting process.

By utilizing the countless advantages of the T-A® drill insert, the BT-A design significantly increases penetration rates over brazed heads and traditional gun drills. A specific BT geometry has also been developed to increase productivity in these types of drilling applications.

| | | |
|---------------------------------|----------------------------|----------------------------------------------------------------|
| Excellent hole size and finish. | Optimizes chip evacuation. | Up to 2x the penetration rate of traditional BTA heads. |
|---------------------------------|----------------------------|----------------------------------------------------------------|

Applicable Industries



Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

WARNING

WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

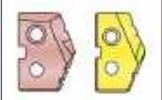
NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



T-A® Inserts

Refers to the range of inserts that connect with the corresponding holders

Introduction Information

System Overview 2
 Product Nomenclature 3

T-A Drill Series

0 Series 4
 1 Series 5
 2 Series 6
 3 Series 7

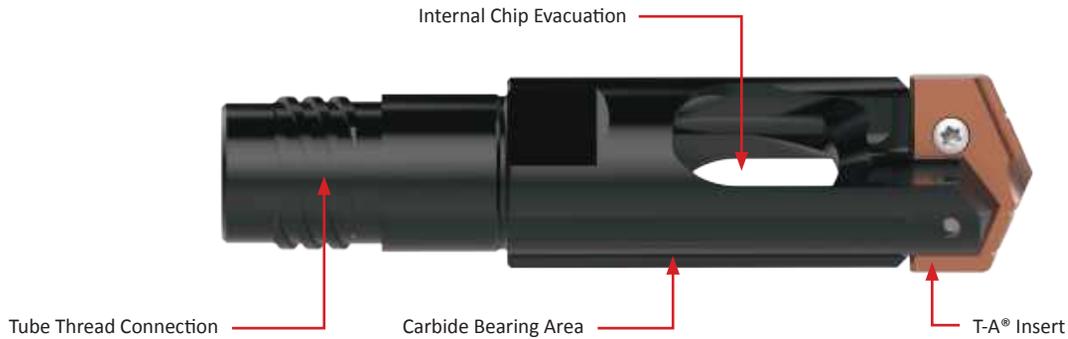
| Series | Diameter Range | |
|--------|-----------------|---------------|
| | Imperial (inch) | Metric (mm) |
| 0 | 0.5110 - 0.6959 | 12.98 - 17.67 |
| 1 | 0.6900 - 0.9609 | 17.53 - 24.40 |
| 2 | 0.9610 - 1.3809 | 24.41 - 35.06 |
| 3 | 1.3530 - 1.8829 | 34.37 - 47.82 |



System Overview

BTA Machining

BTA machining is the reverse of typical gun drilling systems. The BT-A drill is a drill head consisting of a holder body and a replaceable tip T-A® insert. The drill head threads into an STS (single tube system) cylindrical tube with a diameter smaller than the drill head. The difference in diameter forms an annular area between the hole and the tube OD. This allows high-volume coolant to be directed to the cutting edge.

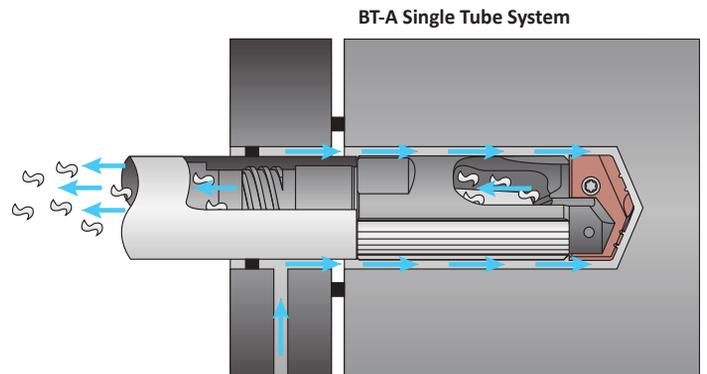


- ✓ **Improve hole straightness**
with the laser clad bearing area
- ✓ **Eliminate the need for resharpener**
with replaceable cutting edges
- ✓ **Reduce your inventory**
with the replaceable T-A® feature
- ✓ **Compatibility**
heads are compatible with standard BTA-STS systems
- ✓ **Balanced cutting forces**
- ✓ **Patented design**

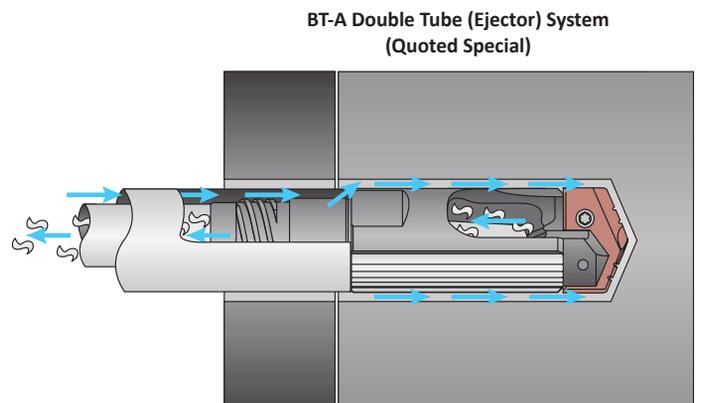
T-A Insert: BT-A Geometry (-BT)

- Low thrust web geometry reduces Z-axis requirements.
- Lip geometry identical to the tiny chip (-TC) for improved chip formation.
- Polished cutting surface eliminates material buildup.





2x INCREASE in penetration rates over traditional BTA heads

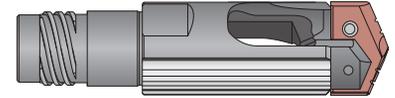


A DRILLING B BORING C REAMING D BURNISHING E THREADING X SPECIALS

Product Nomenclature

BT-A Drill Holders

| | | | |
|-------------|------------|---|---------------|
| BTA2 | 804 | - | 1.1299 |
| 1 | 2 | | 3 |



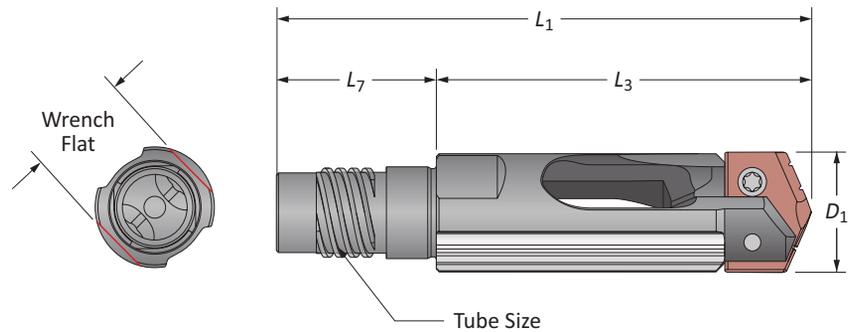
| 1. BT-A Drill T-A® Insert Series |
|-----------------------------------|
| BTA0 = 0 series T-A insert |
| BTA1 = 1 series T-A insert |
| BTA2 = 2 series T-A insert |
| BTA3 = 3 series T-A insert |

| 2. Tube Size | | |
|--------------|-----|-----|
| 794 | 800 | 806 |
| 795 | 801 | 807 |
| 796 | 802 | 808 |
| 797 | 803 | 809 |
| 798 | 804 | 810 |
| 799 | 805 | 811 |

| 3. Diameter |
|-----------------------|
| 0.7344 = Inch |
| 25.00 = Metric |

Reference Key

| Symbol | Attribute |
|--------|-------------------------|
| D_1 | Drill insert range |
| L_1 | Overall length |
| L_3 | Holder reference length |
| L_7 | Shank length |



BT-A Drill Tubes

| | | | | |
|-------------|---|------------|---|-----------|
| BTAT | - | 804 | - | 63 |
| 1 | | 2 | | 3 |

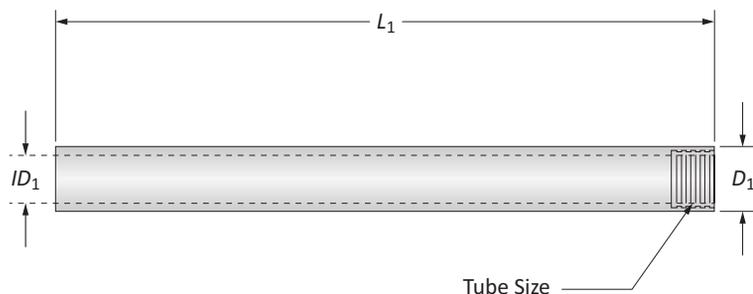
| 1. BT-A Drill T-A Insert Series |
|---------------------------------|
| BTAT = BT-A Tube |

| 2. Tube Size | | |
|--------------|-----|-----|
| 794 | 800 | 806 |
| 795 | 801 | 807 |
| 796 | 802 | 808 |
| 797 | 803 | 809 |
| 798 | 804 | 810 |
| 799 | 805 | 811 |

| 3. Length |
|----------------------|
| 63 = Standard |
| 102 = Long |

Reference Key

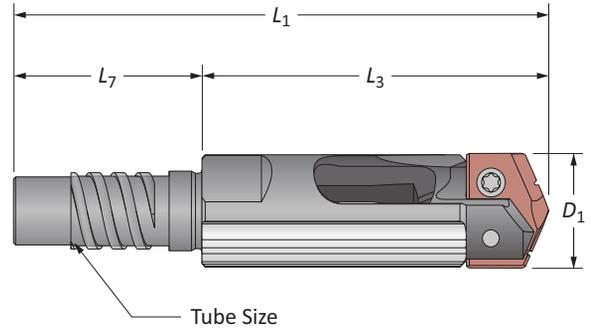
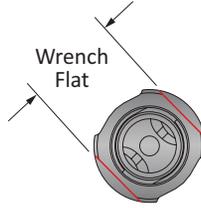
| Symbol | Attribute |
|--------|-------------------|
| D_1 | Body diameter |
| ID_1 | Internal diameter |
| L_1 | Overall length |



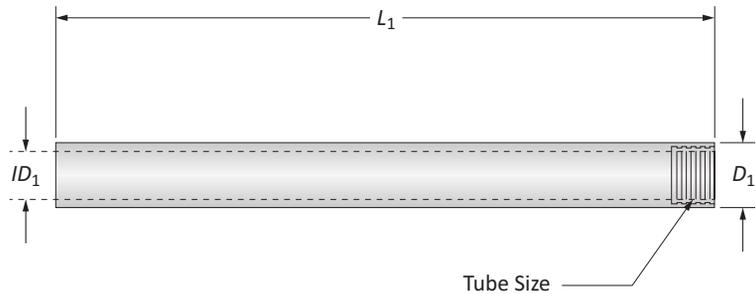


BT-A Drill Holders

0 Series | Diameter Range: 0.5110" - 0.6959" (12.98 mm - 17.67 mm)

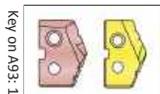


| Tube Size | D_1 | Holder | | | | Part No. |  T-A® Insert | Wrench Flat (mm) |
|-----------|-------|-----------------|---------|---------|-------|------------------------|-------------------------------------------------------------------------------------------------|------------------|
| | | L_3 | L_1 | L_7 | | | | |
| i | 794 | 0.5110 - 0.5359 | 1-45/64 | 2-39/64 | 29/32 | BTA0-794-X.XXXX | 1C10H-XXXX-BT | 11 |
| | 795 | 0.5360 - 0.5759 | 1-3/4 | 2-21/32 | 29/32 | BTA0-795-X.XXXX | 1C10H-XXXX-BT | 12 |
| | 796 | 0.5760 - 0.6149 | 1-13/16 | 2-3/4 | 61/64 | BTA0-796-X.XXXX | 1C10H-XXXX-BT | 13 |
| | 797 | 0.6150 - 0.6579 | 1-13/16 | 2-3/4 | 61/64 | BTA0-797-X.XXXX | 1C10H-XXXX-BT | 14 |
| | 798 | 0.6580 - 0.6959 | 1-25/32 | 2-47/64 | 61/64 | BTA0-798-X.XXXX | 1C10H-XXXX-BT | 15 |
| m | 794 | 12.98 - 13.61 | 43.4 | 66.4 | 23 | BTA0-794-XX.XX | 1C10H-XXXX-BT | 11 |
| | 795 | 13.62 - 14.63 | 44.6 | 67.6 | 23 | BTA0-795-XX.XX | 1C10H-XXXX-BT | 12 |
| | 796 | 14.64 - 15.62 | 45.9 | 69.9 | 24 | BTA0-796-XX.XX | 1C10H-XXXX-BT | 13 |
| | 797 | 15.63 - 16.71 | 45.9 | 69.9 | 24 | BTA0-797-XX.XX | 1C10H-XXXX-BT | 14 |
| | 798 | 16.72 - 17.67 | 45.3 | 69.3 | 24 | BTA0-798-XX.XX | 1C10H-XXXX-BT | 15 |



| Tube Size | Tube | | | Part No. | |
|-----------|-------|--------|-------|----------|--------------------|
| | D_1 | ID_1 | L_1 | | |
| i | 794 | 0.433 | 0.276 | 63 | BTAT794-63 |
| | 794 | 0.433 | 0.276 | 102 | BTAT794-102 |
| | 795 | 0.472 | 0.315 | 63 | BTAT795-63 |
| | 795 | 0.472 | 0.315 | 102 | BTAT795-102 |
| | 796 | 0.512 | 0.335 | 63 | BTAT796-63 |
| | 796 | 0.512 | 0.335 | 102 | BTAT796-102 |
| | 797 | 0.551 | 0.354 | 63 | BTAT797-63 |
| | 797 | 0.551 | 0.354 | 102 | BTAT797-102 |
| | 798 | 0.591 | 0.394 | 63 | BTAT798-63 |
| | 798 | 0.591 | 0.394 | 102 | BTAT798-102 |

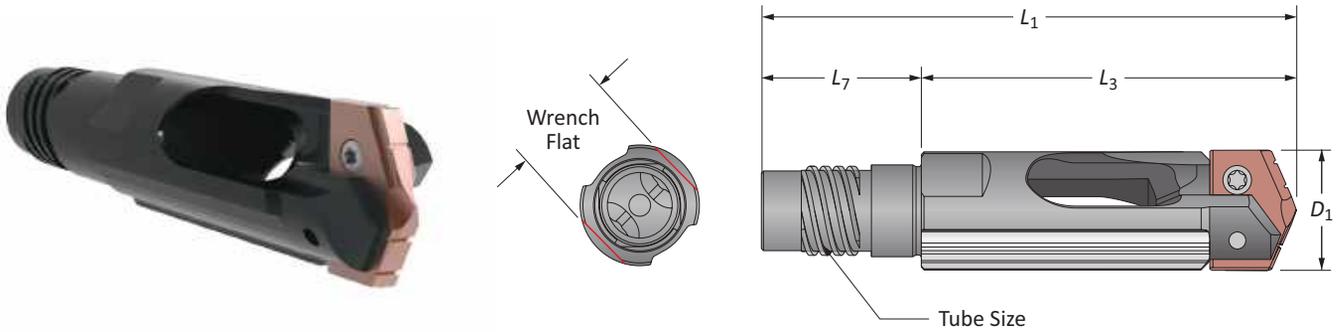
Section A30



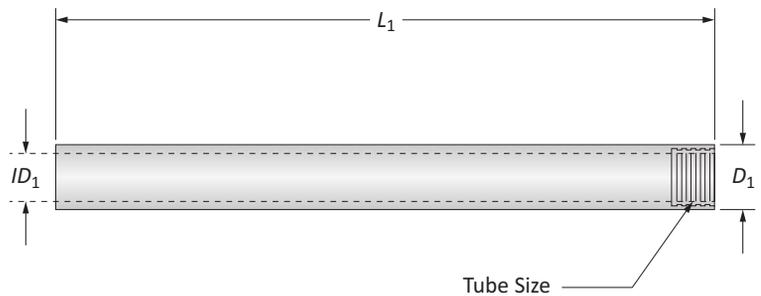
i = Imperial (in)
m = Metric (mm)

BT-A Drill Holders

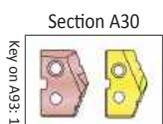
1 Series | Diameter Range: 0.6900" - 0.9609" (17.53 mm - 24.40 mm)



| | Tube Size | D_1 | Holder | | | Part No. |  T-A® Insert | Wrench Flat (mm) |
|----------|-----------|-----------------|---------|---------|---------|------------------------|-------------------------------------------------------------------------------------------------|------------------|
| | | | L_3 | L_1 | L_7 | | | |
| i | 799 | 0.6900 - 0.7449 | 2-15/64 | 3-9/32 | 63/64 | BTA1-799-X.XXXX | 1C11H-XXXX-BT | 16 |
| | 800 | 0.7450 - 0.7879 | 2-5/16 | 3-27/64 | 1-7/64 | BTA1-800-X.XXXX | 1C11H-XXXX-BT | 17 |
| | 801 | 0.7880 - 0.8589 | 2-11/32 | 3-35/64 | 1-13/64 | BTA1-801-X.XXXX | 1C11H-XXXX-BT | 18 |
| | 802 | 0.8590 - 0.9489 | 2-25/64 | 3-11/16 | 1-19/64 | BTA1-802-X.XXXX | 1C11H-XXXX-BT | 19 |
| | 803 | 0.9490 - 0.9609 | 2-33/64 | 3-13/16 | 1-19/64 | BTA1-803-X.XXXX | 1C11H-XXXX-BT | 21 |
| m | 799 | 17.53 - 18.92 | 58.2 | 83.2 | 25 | BTA1-799-XX.XX | 1C11H-XXXX-BT | 16 |
| | 800 | 18.93 - 20.01 | 58.8 | 86.8 | 28 | BTA1-800-XX.XX | 1C11H-XXXX-BT | 17 |
| | 801 | 20.02 - 21.81 | 59.4 | 89.9 | 30.5 | BTA1-801-XX.XX | 1C11H-XXXX-BT | 18 |
| | 802 | 21.82 - 24.10 | 60.7 | 93.7 | 33 | BTA1-802-XX.XX | 1C11H-XXXX-BT | 19 |
| | 803 | 24.11 - 24.40 | 63.9 | 96.9 | 33 | BTA1-803-XX.XX | 1C11H-XXXX-BT | 21 |



| | Tube Size | Tube | | | Part No. |
|----------|-----------|-------|--------|-------|--------------------|
| | | D_1 | ID_1 | L_1 | |
| i | 799 | 0.630 | 0.413 | 63 | BTAT799-63 |
| | 799 | 0.630 | 0.413 | 102 | BTAT799-102 |
| | 800 | 0.669 | 0.453 | 63 | BTAT800-63 |
| | 800 | 0.669 | 0.453 | 102 | BTAT800-102 |
| | 801 | 0.709 | 0.472 | 63 | BTAT801-63 |
| | 801 | 0.709 | 0.472 | 102 | BTAT801-102 |
| | 802 | 0.787 | 0.512 | 63 | BTAT802-63 |
| | 802 | 0.787 | 0.512 | 102 | BTAT802-102 |
| | 803 | 0.866 | 0.551 | 63 | BTAT803-63 |
| | 803 | 0.866 | 0.551 | 102 | BTAT803-102 |

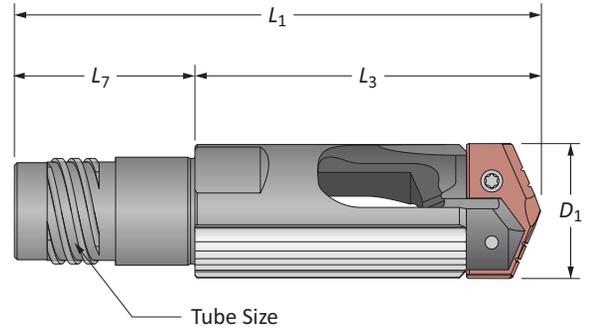
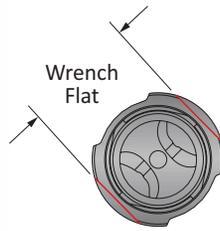


i = Imperial (in)
m = Metric (mm)

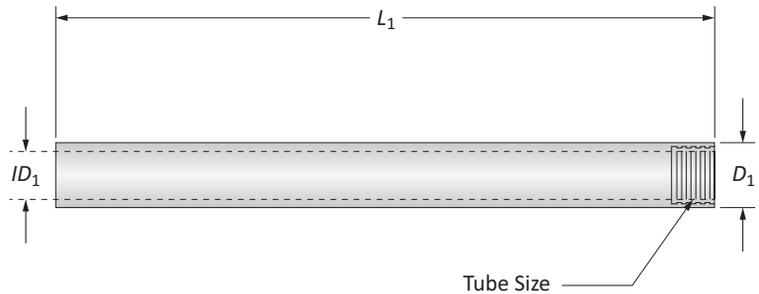


BT-A Drill Holders

2 Series | Diameter Range: 0.9610" - 1.3809" (24.41 mm - 35.06 mm)

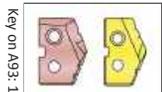


| Tube Size | Holder | | | | Part No. | T-A® Insert | Wrench Flat (mm) | |
|-----------|--------|-----------------|---------|---------|----------|------------------------|------------------|----|
| | D_1 | L_3 | L_1 | L_7 | | | | |
| i | 803 | 0.9610 - 1.0399 | 3-3/32 | 4-25/64 | 1-19/64 | BTA2-803-X.XXXX | 1C12H-XXXX-BT | 21 |
| | 804 | 1.0400 - 1.1299 | 3 | 4-3/32 | 1-7/64 | BTA2-804-X.XXXX | 1C12H-XXXX-BT | 22 |
| | 805 | 1.1300 - 1.2209 | 2-31/32 | 4-25/64 | 1-27/64 | BTA2-805-X.XXXX | 1C12H-XXXX-BT | 25 |
| | 806 | 1.2210 - 1.3119 | 3-1/16 | 4-31/64 | 1-27/64 | BTA2-806-X.XXXX | 1C12H-XXXX-BT | 27 |
| | 807 | 1.3120 - 1.3809 | 3-1/16 | 4-31/64 | 1-27/64 | BTA2-807-X.XXXX | 1C12H-XXXX-BT | 30 |
| m | 803 | 24.41 - 26.41 | 78.5 | 111.5 | 33 | BTA2-803-XX.XX | 1C12H-XXXX-BT | 21 |
| | 804 | 26.42 - 28.70 | 75.9 | 103.9 | 28 | BTA2-804-XX.XX | 1C12H-XXXX-BT | 22 |
| | 805 | 28.71 - 31.01 | 75.4 | 111.4 | 36 | BTA2-805-XX.XX | 1C12H-XXXX-BT | 25 |
| | 806 | 31.02 - 33.32 | 77.9 | 113.8 | 36 | BTA2-806-XX.XX | 1C12H-XXXX-BT | 27 |
| | 807 | 33.33 - 35.06 | 77.9 | 113.8 | 36 | BTA2-807-XX.XX | 1C12H-XXXX-BT | 30 |



| Tube Size | Tube | | | Part No. | |
|-----------|-------|--------|-------|----------|--------------------|
| | D_1 | ID_1 | L_1 | | |
| i | 803 | 0.866 | 0.551 | 63 | BTAT803-63 |
| | 803 | 0.866 | 0.551 | 102 | BTAT803-102 |
| | 804 | 0.945 | 0.610 | 63 | BTAT804-63 |
| | 804 | 0.945 | 0.610 | 102 | BTAT804-102 |
| | 805 | 1.024 | 0.669 | 63 | BTAT805-63 |
| | 805 | 1.024 | 0.669 | 102 | BTAT805-102 |
| | 806 | 1.102 | 0.728 | 102 | BTAT806-102 |
| | 807 | 1.181 | 0.787 | 102 | BTAT807-102 |

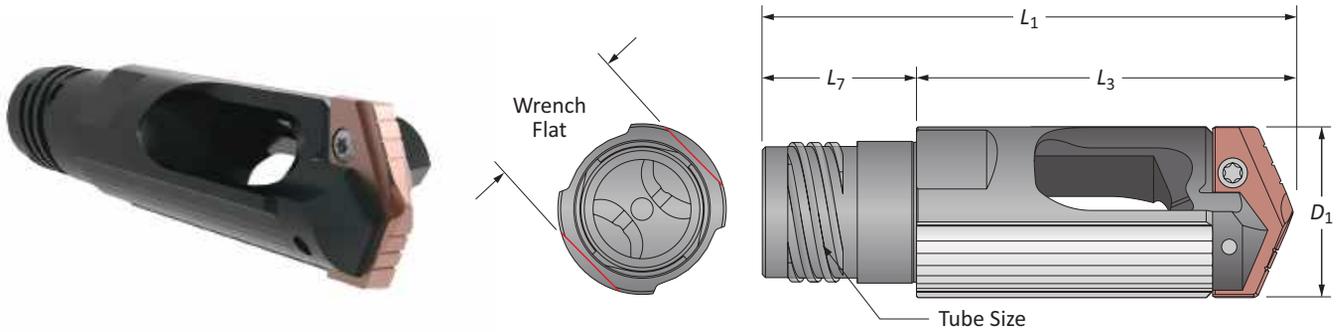
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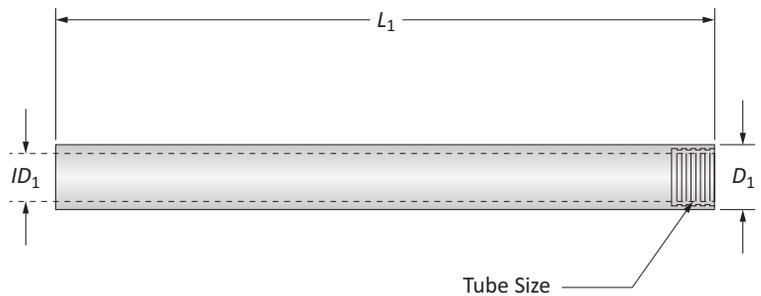
i = Imperial (in)
m = Metric (mm)

BT-A Drill Holders

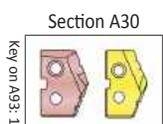
3 Series | Diameter Range: 1.3530" - 1.8829" (34.37 mm - 47.82 mm)



| Tube Size | D_1 | Holder | | | Part No. |  T-A® Insert | Wrench Flat (mm) | |
|-----------|-------|-----------------|---------|---------|----------|-------------------------------------------------------------------------------------------------|------------------|----|
| | | L_3 | L_1 | L_7 | | | | |
| i | 807 | 1.3530 - 1.4259 | 3-13/16 | 5-15/64 | 1-27/64 | BTA3-807-X.XXXX | 1C13H-XXXX-BT | 30 |
| | 808 | 1.4260 - 1.5599 | 3-15/16 | 5-11/16 | 1-3/4 | BTA3-808-X.XXXX | 1C13H-XXXX-BT | 32 |
| | 809 | 1.5600 - 1.6929 | 4-1/16 | 5-3/4 | 1-11/16 | BTA3-809-X.XXXX | 1C13H-XXXX-BT | 36 |
| | 810 | 1.6930 - 1.8509 | 4-1/64 | 5-45/64 | 1-11/16 | BTA3-810-X.XXXX | 1C13H-XXXX-BT | 41 |
| | 811 | 1.8510 - 1.8829 | 4-1/16 | 5-3/4 | 1-11/16 | BTA3-811-X.XXXX | 1C13H-XXXX-BT | 41 |
| m | 807 | 34.37 - 36.22 | 96.8 | 132.8 | 36 | BTA3-807-XX.XX | 1C13H-XXXX-BT | 30 |
| | 808 | 36.23 - 39.62 | 100.0 | 144.4 | 44.5 | BTA3-808-XX.XX | 1C13H-XXXX-BT | 32 |
| | 809 | 39.63 - 43.00 | 103.1 | 146.2 | 43 | BTA3-809-XX.XX | 1C13H-XXXX-BT | 36 |
| | 810 | 43.01 - 47.01 | 101.9 | 144.9 | 43 | BTA3-810-XX.XX | 1C13H-XXXX-BT | 41 |
| | 811 | 47.02 - 47.82 | 103.2 | 146.2 | 43 | BTA3-811-XX.XX | 1C13H-XXXX-BT | 41 |



| Tube Size | Tube | | | Part No. | |
|-----------|-------|--------|-------|----------|--------------------|
| | D_1 | ID_1 | L_1 | | |
| i | 807 | 1.181 | 0.787 | 102 | BTAT807-102 |
| | 808 | 1.299 | 0.906 | 102 | BTAT808-102 |
| | 809 | 1.417 | 0.984 | 102 | BTAT809-102 |
| | 810 | 1.535 | 1.102 | 102 | BTAT810-102 |
| | 811 | 1.693 | 1.220 | 102 | BTAT811-102 |



i = Imperial (in)
m = Metric (mm)

Guaranteed Test / Demo Application Form

Distributor PO #

The following must be filled out completely before your test will be considered.

IMPORTANT: For processing, send purchase order to your Allied Field Sales Engineer (FSE). Please clearly mark the paperwork as "Test Order."

Distributor Information

Company Name: _____
Contact: _____
Account Number: _____
Phone: _____
Email: _____

End User Information

Company Name: _____
Contact: _____
Industry: _____
Phone: _____
Email: _____

Current Process List all tooling, coatings, substrates, speeds and feeds, tool life, and any problems you are experiencing.

Test Objective List what would make this a successful test (i.e. penetration rate, finish, tool life, hole size, etc.).

Application Information

Hole Diameter: _____ in/mm Tolerance: _____ Material: _____
(4150, A36, cast iron, etc.)
Preexisting Diameter: _____ in/mm Depth of Cut: _____ in/mm Hardness: _____
(BHN, Rc)
Required Finish: _____ RMS State: _____
(Casting, hot rolled, forging)

Machine Information

Machine Type: _____ Builder: _____ Model #: _____
(Lathe, screw machine, machine center, etc.) (Haas, Mori Seiki, etc.)
Shank Required: _____ Power: _____ HP/KW
(CAT50, Morse taper, etc.)
Rigidity: Orientation: Tool Rotating: Thrust: _____ lbs/N
 Excellent Vertical Yes
 Good Horizontal No
 Poor

Coolant Information

Coolant Delivery: _____ Coolant Pressure: _____ PSI / bar
(Through tool, flood)
Coolant Type: _____ Coolant Volume: _____ GPM / LPM
(Air mist, oil, synthetic, water soluble, etc.)

Requested Tooling

| QTY | Item Number |
|-----|-------------|
| | |
| | |
| | |
| | |
| | |

| QTY | Item Number |
|-----|-------------|
| | |
| | |
| | |
| | |
| | |



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Warranty Information



Allied Machine & Engineering ("Allied Machine") warrants to original equipment manufacturers, distributors, industrial and commercial users of its products for one year from the original date of sale that each new product manufactured or supplied by Allied Machine shall be free from defects in material and workmanship.

Allied Machine's sole and exclusive obligation under this warranty is limited to, at its option, without additional charge, replacing or repairing this product or issuing a credit. For this warranty to be applied, the product must be returned freight prepaid to the plant designated by an Allied Machine representative and which, upon inspection, is determined by Allied Machine to be defective in material and workmanship.

Complete information as to operating conditions, machine, setup, and the application of cutting fluid should accompany any product returned for inspection. This warranty shall not apply to any Allied Machine products which have been subjected to misuse, abuse, improper operating conditions, improper machine setup or improper application of cutting fluid or which have been repaired or altered if such repair or alteration, in the judgement of Allied Machine, would adversely affect the performance of the product.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Allied Machine shall have no liability or responsibility for any claim, whether in contract, tort or otherwise, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery or use of any product sold hereunder, in excess of the cost of replacement or repair as provided herein.

Allied Machine shall not be liable in contract or in tort (including, without limitation, negligence, strict liability or otherwise) for economic losses of any kind or for any special, incidental, indirect, consequential, punitive or exemplary damages arising in any way out of the performance of, or failure to perform this agreement.

ALL PRICES, DELIVERIES, DESIGNS, AND MATERIALS ARE SUBJECT TO CHANGE WITHOUT NOTICE.



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