Member IMC Group

Ingersoll Cutting Tools

BTA DRILLS

Ingersoll BORE line

Ingersoll Cutting Tools

YOUR ROADMAP TO HIGHER PRODUCTIVITY

Ingersoll Cutting Tools and the Ingersoll Bore Line team are proud to introduce this new line of BTA-type deep hole drilling product. Within these pages you will find complete modular systems designed for the most difficult deep hole applications.

Brazed or indexable heads for drilling, boring and reaming are available for both the Single Tube System (STS) and the Double Tube System (DTS). Both the brazed style and indexable style heads utilize Ingersoll's high performance drilling carbide grades.

Ingersoll's BTA drills range in diameter from .315" to 10" (and larger upon request) with drilling depths up to 100 x diameter. Combined with our already successful line of gun drills Ingersoll has positioned itself in the market to be your single source for deep hole drilling solutions.

Ingersoll
CUTTINGTOOLS

Cutting Tools

Indexable Page 6

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User Guide Page 98

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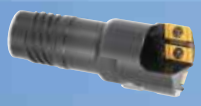
Ingersoll Cutting Tools

BTA DRILLS

Indexable Drill

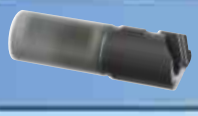
	Drill Dia. (mm)	Drill Dia. (in)	Surface Finish	Drilling Depth (Max)	Series	Page
	38.00-106.99	1.496-4.212	3um	100 x D	TBTA3	14
	107.00-168.99	4.213-6.653	3um	100 x D	TBTA5	20
	169.00-232.99 245.99*	6.654-9.173 9.685*	3um	100 x D	TBTA7	25
	29.00-37.99	1.142-1.496	3um	100 x D	TBTA-A	33
	16.01-28.50	.630-1.122	3um	100 x D	TBTA-B	39
	25.00-53.20	.984-2.094	3um	100 x D	TBTA-C	45
	30.00-65.00	1.181-2.559	3um	100 x D	TBTA-D	51
	62.00-183.99	2.441-7.244	3um	100 x D	TBTA-L	58

Brazed Drill

	Drill Dia. (mm)	Drill Dia. (in)	Surface Finish	Drilling Depth (Max)	Series	Page
	12.60-65.00	.496-2.559	2um	100 x D	BTA-SE4	64

*In case of inner single thread connection.

Brazed Drill

	Drill Dia. (mm)	Drill Dia. (in)	Surface Finish	Drilling Depth (Max)	Series	Page
	18.41-65.00	.725-2.559	2um	100 x D	BTA-DE4	66
	12.60-20.00	.496-.787	2um	100 x D	BTS-SE4	68
	8.00-14.49	.315-.570	2um	100 x D	BTS-SE1	69
	14.51-65.00	.571-2.559	2um	100 x D	BTS-SI1	70

Reamer

	Reamer Dia. (mm)	Reamer Dia. (in)	Surface Finish	Drilling Depth (Max)	Series	Page
	25.00-110.99	.984-4.370	1-2um	100 x D	TBTA-R	76
	14.51-65.00	.571-2.559	1-2um	100 x D	BTA-R	83
	6.00-24.99	.236-.984	1-2um	Dependant on Shank Type	BTRS	87
	6.00-24.99	.236-.984	1-2um	Dependant on Shank Type	BTRW	88
	6.00-24.99	.236-.984	1-2um	Dependant on Shank Type	BTRM	89

Ingersoll

BTA DRILLS

BTA Indexable

Tolerance – Exceptional Hole Tolerance of H7 available in just one pass with optimum cutting conditions.

Exceptional Surface Finish – Surface finish of 3.2S with optimum cutting conditions.

Excellent Hole Straightness – 0.1mm/meter in workpiece rotating application.

Superior Concentricity – Bore roundness.

Cost Effective solutions in Deep Hole Drilling

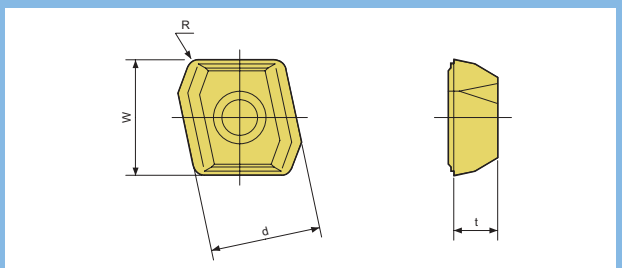
- Fully Adjustable – A diameter change of up to +0.3mm by adjusting the two outer cartridge screws. (adjustment varies according to head diameter)
- An Innovative approach to Deep Hole Drilling with ***Dia plus kits.*** By exchanging only the outer cartridge and guide pads the original head diameter can be increased up to 5mm.
- Multipurpose Inserts – Newly designed geometry and coating for deep hole drilling applications Excellent for drilling high temp. nickel alloys and Inconel.

Sub Guide Pad – For stable machining conditions.

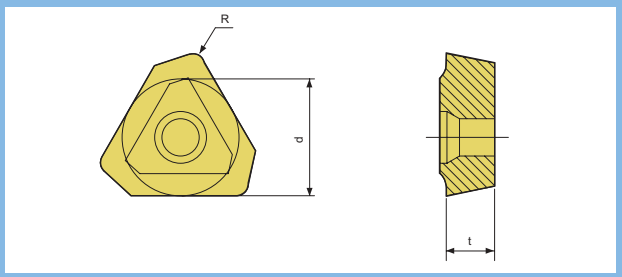
Guide Pad Protectors – To prevent damage during rapid traverse.

Guide Pads – Precision made guide pads fit accurately with no adjustment. Pockets are back tapered for reversible guide pads.

*Ceramic Guide Pads-Averaging 200 meters per pad at 50mm dia drill trials available.
-Improved guide pad life extends the life of the inserts on steel, alloy steel, and stainless steel applications.
*Note - Not for titanium or water soluble oil

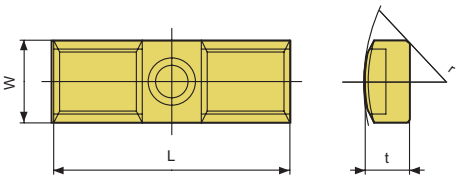


Designation	Dimension				Pocket			Grade	Screw
	d	t	R	W	Center	Inner	Outer	IN2005	
NPMX 0803RB	0.315	0.125	0.031	0.329	○	○	○		**CSTB2.2**
NPMX 0803RG	0.315	0.125	0.031	0.329	○	○	○		**CSTB2.2**

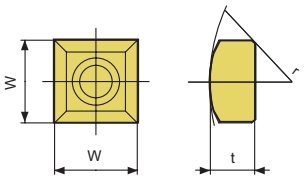


Designation	Dimension			Pocket			Grade	Screw
	d	t	R	Center	Inner	Outer	IN2005	
TPMX 1403RB	0.333	0.138	0.016	○	○	○		**CSTB2.5**
TPMX 1403RG	0.333	0.138	0.031	○	○	○		**CSTB2.5**
TPMX 1704RB	0.406	0.157	0.016	○	○	○		**CSTB3.5D**
TPMX 1704RG	0.406	0.157	0.031	○	○	○		**CSTB3.5D**
TPMX 2405RB	0.559	0.217	0.016	○	○	○		**CSTB4M**
TPMX 2405RG	0.559	0.217	0.047	○	○	○		**CSTB4M**
TPMX 2807RB	0.669	0.295	0.031	○	○	○		**CSTB5**
TPMX 2807RG	0.669	0.295	0.063	○	○	○		**CSTB5**

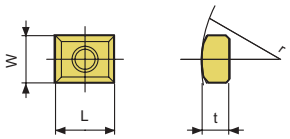
BTA INDEXABLE PAD FOR TBTA 3.../5.../7...



Guide Pad



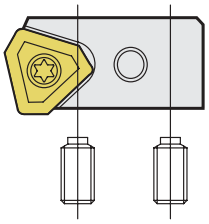
Guide Pad Protector



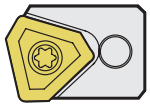
Sub Pad

Type	Designation	Dimension				Screw
		W	t	L	r	
Guide Pad	**PAD-GC08**	0.315	0.177	0.984	0.689	**CSTB3S**
	PAD-GC10	0.394	0.236	1.378	0.787	**CSTB4S**
	PAD-GC14	0.551	0.295	1.575	0.984	**CSTA5S**
	PAD-GC18	0.709	0.354	1.575	1.181	**LS1206S**
Guide Pad Protector	**PAD-P08**	0.315	0.177	0.315	0.689	**CSTB3S**
	PAD-P10	0.394	0.236	0.394	0.787	**CSTB4S**
	PAD-P14	0.551	0.295	0.551	0.984	**CSTA5S**
	PAD-P18	0.709	0.354	0.709	1.181	**LS1206S**
Sub Pad	**PAD-S08**	0.315	0.177	0.394	0.689	**CSTB3S**
	PAD-S10	0.394	0.197	0.394	1.142	**CSTB3S**
	PAD-S14	0.551	0.276	0.787	1.772	**CCSTA5S**

Outer



Inner & Center



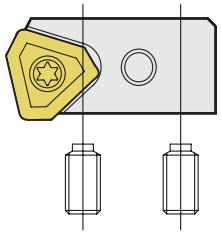
Designation		Adjust Screw	Wrench	Lock Screw	Wrench	Insert
Outer	**PERC05R**	AS0003-5	H1.5	LS1803RH	H2	NPMX0803..
	PERC402-04	AS0004-8	H2	LS1803.5RH	H2.5	NPMX1403..
	PERC402-32	AS0005-10	H2.5	LS1805RH	H3	NPMX1704..
	PERC402-43	AS0005-15	H2.5	L1806RH	H4	NPMX2405..
	PERC402-63	AS0006-15	H3	L1806RH	H4	NPMX2807..
Inner & Center	**CENC05R**	-	-	CSTB3	T9	NPMX0803..
	CENC402-04	-	-	CSTB3.5	T15	NPMX1403..
	CENC402-32	-	-	CSTA5	T15	NPMX1704..
	CENC402-43	-	-	LS1206	H3	NPMX2405..
	CENC402-63	-	-	LS1206	H3	NPMX2807..

BTA INDEXABLE DIA PLUS KITS FOR TBTA 3.../ 5.../ 7...

With Dia Plus kits, BTA indexable drill can increase hole size by up to 0.197 beyond target drill diameter.

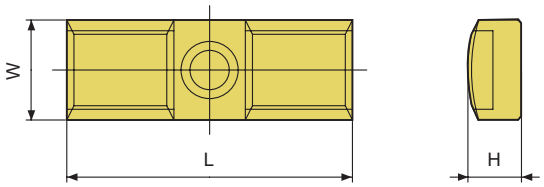
Dia plus kits are composed of +cartridge and +guide pad.

+Cartridge



Cartridge	Dimension				
	D+0.039	D+0.079	D+0.118	D+0.157	D+0.197
PERC05	PERC05R+0.039	PERC05R+0.079			
PERC402-04	PERC402-04+0.039	PERC402-04+0.079	PERC402-04+0.118		
PERC402-32	PERC402-32+0.039	PERC402-32+0.079	PERC402-32+0.118	PERC402-32+0.157	
PERC402-43	PERC402-43+0.039	PERC402-43+0.079	PERC402-43+0.118	PERC402-43+0.157	PERC402-43+0.197
PERC402-63	PERC402-63+0.039	PERC402-63+0.079	PERC402-63+0.118	PERC402-63+0.157	PERC402-63+0.197

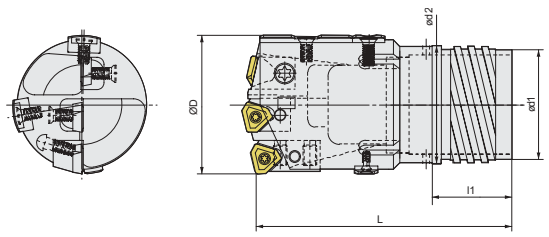
+Guide Pad



Guide Pad	Dimension									
	D+0.039	H	D+0.079	H	D+0.118	H	D+0.157	H	D+0.197	H
PAD-GC08	PAD-GC08+0.039	0.197	PAD-GC08+0.079	0.217	PAD-GC08+0.118	0.236				
PAD-GC10	PAD-GC10+0.039	0.256	PAD-GC10+0.079	0.276	PAD-GC10+0.118	0.295	PAD-GC10+0.157	0.315		
PAD-GC14	PAD-GC14+0.039	0.315	PAD-GC14+0.079	0.335	PAD-GC14+0.118	0.354	PAD-GC14+0.157	0.374	PAD-GC14+0.197	0.394
PAD-GC18	PAD-GC18+0.039	0.374	PAD-GC18+0.079	0.394	PAD-GC18+0.118	0.413	PAD-GC18+0.157	0.433	PAD-GC18+0.197	0.453

BTA INDEXABLE - 3 CARTRIDGE SYSTEM SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
1.496 - 4.212

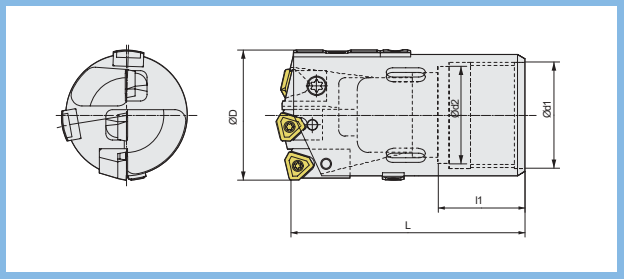


Designation	Diameter	Dimension				Tube	
		L	l1	d1	d2	Part	Diameter
TBTA3-xx.xxxSE4-33	**1.496 - 1.559**	3.35	1.20	1.063	1.181	BTSI 033	1.299
TBTA3-xx.xxxSE4-36	**1.559 - 1.693**	3.35	1.20	1.181	1.299	BTSI 036	1.417
TBTA3-xx.xxxSE4-39	**1.693 - 1.850**	3.74	1.20	1.299	1.417	BTSI 039	1.535
TBTA3-xx.xxxSE4-43	**1.851 - 2.035**	3.74	1.20	1.417	1.535	BTSI 043	1.693
TBTA3-xx.xxxSE4-47	**2.036 - 2.213**	3.94	1.36	1.555	1.693	BTSI 047	1.850
TBTA3-xx.xxxSE4-51	**2.213 - 2.386**	4.33	1.36	1.713	1.850	BTSI 051	2.008
TBTA3-xx.xxxSE4-56	**2.386 - 2.559**	4.33	1.36	1.870	2.008	BTSI 056A	2.205
TBTA3-xx.xxxSE4-56	**2.559 - 2.637**	5.91	2.44	1.850	2.047	BTSI 056B	2.205
TBTA3-xx.xxxSE4-62	**2.638 - 2.874**	5.91	2.44	2.087	2.283	BTSI 062	2.441
TBTA3-xx.xxxSE4-68	**2.874 - 3.149**	5.91	2.44	2.283	2.480	BTSI 068	2.677
TBTA3-xx.xxxSE4-75	**3.150 - 3.425**	7.09	3.23	2.520	2.756	BTSI 075	2.953
TBTA3-xx.xxxSE4-82	**3.425 - 3.937**	7.09	3.23	2.795	3.031	BTSI 082	3.228
TBTA3-xx.xxxSE4-94	**3.937 - 4.212**	7.09	3.23	3.268	3.504	BTSI 094	3.701

BTA INDEXABLE - 3 CARTRIDGE SYSTEM

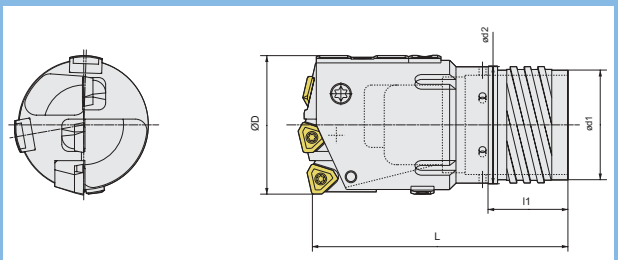
SINGLE TUBE SYSTEM - INNER SINGLE START THREAD

Diameters
1.496 - 4.212



Designation	Diameter	Dimension				Tube	
		L	l1	d1	d2	Part	Diameter
TBTA3-xx.xxxSI1-33	**1.496 - 1.574**	3.15	1.57	1.181	1.063	BTSE 033	1.299
TBTA3-xx.xxxSI1-36	**1.575 - 1.732**	3.15	1.57	1.299	1.181	BTSE 036	1.417
TBTA3-xx.xxxSI1-39	**1.732 - 1.850**	3.54	1.57	1.457	1.339	BTSE 039	1.535
TBTA3-xx.xxxSI1-43	**1.850 - 2.047**	3.54	1.57	1.614	1.457	BTSE 043	1.693
TBTA3-xx.xxxSI1-47	**2.047 - 2.244**	3.94	1.57	1.732	1.575	BTSE 047	1.850
TBTA3-xx.xxxSI1-51	**2.244 - 2.401**	4.33	1.57	1.929	1.772	BTSE 051	2.008
TBTA3-xx.xxxSI1-56	**2.402 - 2.677**	4.33	1.57	2.087	1.929	BTSE 056	2.205
TBTA3-xx.xxxSI1-62	**2.677 - 2.952**	4.72	1.57	2.323	2.126	BTSE 062	2.441
TBTA3-xx.xxxSI1-68	**2.953 - 3.189**	5.91	2.76	2.559	2.362	BTSE 068	2.677
TBTA3-xx.xxxSv1-75	**3.189 - 3.582**	5.91	2.76	2.795	2.598	BTSE 075	2.953
TBTA3-xx.xxxSI1-82	**3.583 - 3.897**	5.91	2.76	3.110	2.913	BTSE 082	3.228
TBTA3-xx.xxxSI1-94	**3.898 - 4.212**	5.91	2.76	3.543	3.346	BTSE 094	3.701

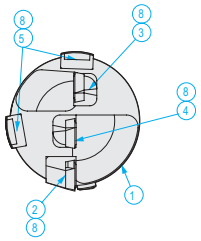
Diameters
1.496 - 4.212

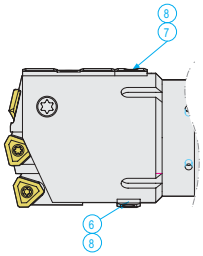


Designation	Diameter	Dimension				Tube		
		L	l1	d1	d2	Outer Tube	Inner Tube	Dia
TBTA3-xx.xxxDE4-35.5	**1.496 - 1.559**	3.35	1.20	1.181	1.299	BTDO 035.5	BTDI 026	1.398
TBTA3-xx.xxxDE4-39	**1.559 - 1.693**	3.35	1.20	1.299	1.417	BTDO 039	BTDI 029	1.535
TBTA3-xx.xxxDE4-42.5	**1.693 - 1.850**	3.74	1.20	1.417	1.535	BTDO 042.5	BTDI 032	1.673
TBTA3-xx.xxxDE4-46.5	**1.851 - 2.035**	3.74	1.36	1.555	1.693	BTDO 046.5	BTDI 035	1.831
TBTA3-xx.xxxDE4-51	**2.036 - 2.213**	3.94	1.36	1.713	1.850	BTDO 051	BTDI 039	2.008
TBTA3-xx.xxxDE4-55.5	**2.213 - 2.559**	4.33	1.36	1.870	2.008	BTDO 055.5	BTDI 043A	2.185
TBTA3-xx.xxxDE4-56	**2.559 - 2.637**	5.91	2.44	1.850	2.047	BTDO 056	BTDI 043B	2.205
TBTA3-xx.xxxDE4-62	**2.638 - 2.874**	5.91	2.44	2.087	2.283	BTDO 062	BTDI 048	2.441
TBTA3-xx.xxxDE4-68	**2.874 - 3.149**	5.91	2.44	2.283	2.480	BTDO 068	BTDI 053	2.677
TBTA3-xx.xxxDE4-75	**3.150 - 3.425**	7.09	3.23	2.520	2.756	BTDO 075	BTDI 059	2.953
TBTA3-xx.xxxDE4-82	**3.425 - 3.937**	7.09	3.23	2.795	3.031	BTDO 082	BTDI 066	3.228
TBTA3-xx.xxxDE4-94	**3.937 - 4.212**	7.09	3.23	3.268	3.504	BTDO 094	BTDI 078	3.701

BTA INDEXABLE - 3 CARTRIDGE SYSTEM ASSEMBLY OF TBTA3 SERIES

Diameters
1.496 - 2.165



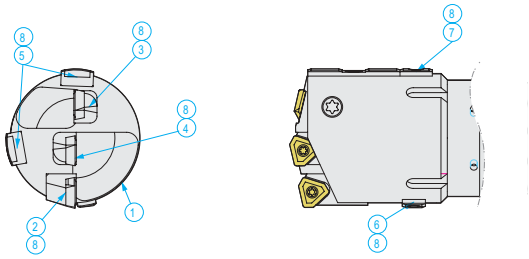


1. Head Shank
2. Outer Cartridge
3. Inner Cartridge
4. Center Cartridge
5. Guide Pad
6. Sub Guide Pad
7. Guide Pad Protector
8. Lock Screw

Parts		Diameter				
		1.496 - 1.574	1.575 - 1.771	1.772 - 1.889	1.890 - 2.047	2.047 - 2.165
Cartridge	Outer	PERC 05R	PERC 4002-04	PERC 402-04	PERC 402-04	PERC 402-32
	Adjust Screw	AS0003-5	AS0004-8	AS0004-8	AS0004-8	AS0005-10
	Wrench	H1.5	H2	H2	H2	H2.5
	Screw	LS1803RH	LS1803.5RH	LS1803.5RH	LS1803.5RH	LS1805RH
	Wrench	H2	H2.5	H2.5	H2.5	H3
	Inner	CENC 05R	CENC 05R	CENC 05R	CENC 402-04	CENC 402-04
	Screw	CSTB3	CSTB3	CSTB3	CSTB3.5	CSTB3.5
	Wrench	T9	T9	T9	T15	T15
	Center	CENC 05R	CENC 05R	CENC 402-04	CENC 402-04	CENC 402-04
	Screw	CSTB3	CSTB3	CSTB3.5	CSTB3.5	CSTB3.5
	Wrench	T9	T9	T15	T15	T15
Insert	Outer	NPMX 0803RG	TPMX 1403RG	TPMX 1403RG	TPMX 1403RG	TPMX 1704RG
	Screw	CSTB2.2	CSTB2.5	CSTB2.5	CSTB2.5	CSTB3.5D
	Wrench	T7	T8	T8	T8	T9
	Inner	NPMX 0803RG	NPMX 0803RG	NPMX 0803RG	TPMX 1403RG	TPMX 1403RG
	Screw	CSTB2.2	CSTB2.2	CSTB2.2	CSTB2.5	CSTB2.5
	Wrench	T7	T7	T7	T8	T8
	Center	NPMX 0803RG	NPMX 0803RG	TPMX 1403RG	TPMX 1403RG	TPMX 1403RG
	Screw	CSTB2.2	CSTB2.2	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T7	T7	T8	T8	T8
Pad	Guide Pad	PAD-GC08	PAD-GC08	PAD-GC10	PAD-GC10	PAD-GC10
	Screw	CSTB3S	CSTB3S	CSTB4S	CSTB4S	CSTB4S
	Wrench	T9	T9	T15	T15	T15
	Guide Pad Protector	PAD-P08	PAD-P08	PAD-P10	PAD-P10	PAD-P10
	Screw	CSTB3S	CSTB3S	CSTB4S	CSTB4S	CSTB4S
	Wrench	T9	T9	T15	T15	T15
	Sub Guide Pad	PAD-S08	PAD-S08	PAD-S08	PAD-S08	PAD-S08
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	CSTB3S
	Wrench	T9	T9	T9	T9	T9

BTA INDEXABLE - 3 CARTRIDGE SYSTEM ASSEMBLY OF TBTA3 SERIES

Diameters
2.165 - 3.070

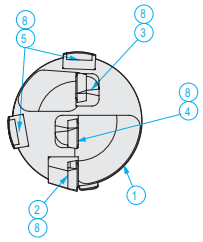


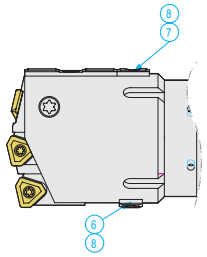
1. Head Shank
2. Outer Cartridge
3. Inner Cartridge
4. Center Cartridge
5. Guide Pad
6. Sub Guide Pad
7. Guide Pad Protector
8. Lock Screw

Parts		Diameter				
		2.165 - 2.283	2.283 - 2.362	2.362 - 2.519	2.520 - 2.677	2.677 - 3.070
Cartridge	Outer	PERC 402-32	PERC 402-32	PERC 402-32	PERC 402-43	PERC 402-32
	Adjust Screw	AS0005-10	AS0005-10	AS0005-10	AS0005-15	AS0005-10
	Wrench	H2.5	H2.5	H2.5	H2.5	H2.5
	Screw	LS1805RH	LS1805RH	LS1805RH	LS1806RH	LS1806RH
	Wrench	H3	H3	H3	H4	H4
	Inner	CENC 402-04	CENC 402-32	CENC 402-32	CENC 402-32	CENC 402-43
	Screw	CSTB3.5	CSTA5	CSTA5	CSTA5	LS1206
	Wrench	T15	T15	T15	T15	H3
	Center	CENC 402-32	CENC 402-32	CENC 402-32	CENC 402-32	CENC 402-43
	Screw	CSTA5	CSTA5	CSTA5	CSTA5	LS1206
	Wrench	T15	T15	T15	T15	H3
Insert	Outer	TPMX 1704RG	TPMX 1704RG	TPMX 1704RG	TPMX 2405RG	TPMX 1704RG
	Screw	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M	CSTB3.5D
	Wrench	T9	T9	T9	T15	T9
	Inner	TPMX 1403RG	TPMX 1704RG	TPMX 1704RG	TPMX 1704RG	TPMX 2405RG
	Screw	CSTB2.5	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M
	Wrench	T8	T9	T9	T9	T15
	Center	TPMX 1704RG	TPMX 1704RG	TPMX 1704RG	TPMX 1704RG	TPMX 2405RG
	Screw	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M
	Wrench	T9	T9	T9	T9	T15
Pad	Guide Pad	PAD-GC10	PAD-GC10	PAD-GC14	PAD-GC14	PAD-GC14
	Screw	CSTB4S	CSTB4S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T15	T15	T15	T15	T15
	Guide Pad Protector	PAD-P10	PAD-P10	PAD-P14	PAD-P14	PAD-P14
	Screw	CSTB4S	CSTB4S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T15	T15	T15	T15	T15
	Sub Guide Pad	PAD-S08	PAD-S08	PAD-S08	PAD-S10	PAD-S10
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	CSTB3S
	Wrench	T9	T9	T9	T9	T9

BTA INDEXABLE - 3 CARTRIDGE SYSTEM ASSEMBLY OF TBTA3 SERIES

Diameters
3.071 - 4.212



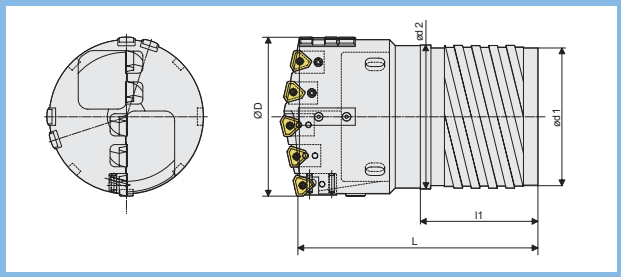


1. Head Shank
2. Outer Cartridge
3. Inner Cartridge
4. Center Cartridge
5. Guide Pad
6. Sub Guide Pad
7. Guide Pad Protector
8. Lock Screw

Parts		Diameter			
		3.071 - 3.346	3.346 - 3.622	3.622 - 3.897	3.898 - 4.212
Cartridge	Outer	PERC 402-43	PERC 402-63	PERC 402-43	PERC 402-63
	Adjust Screw	AS0005-15	AS0006-15	AS0005-15	AS0006-15
	Wrench	H2.5	H3	H2.5	H3
	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3	H3
	Center	CENC 402-43	CENC 402-43	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3	H3
Insert	Outer	TPMX 2405RG	TPMX 2807RG	TPMX 2405RG	TPMX 2807RG
	Screw	CSTB4M	CSTB5	CSTB4M	CSTB5
	Wrench	T15	T20	T15	T20
	Inner	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB4M	CSTB4M	CSTB5	CSTB5
	Wrench	T15	T15	T20	T20
	Center	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB4M	CSTB4M	CSTB5	CSTB5
	Wrench	T15	T15	T20	T20
Pad	Guide Pad	PAD-GC14	PAD-GC14	PAD-GC14	PAD-GC18
	Screw	CSTA5S	CSTA5S	CSTA5S	LS1206S
	Wrench	T15	T15	T15	H3
	Guide Pad Protector	PAD-P14	PAD-P14	PAD-P14	PAD-P18
	Screw	CSTB5S	CSTB5S	CSTA5S	LS1206S
	Wrench	T15	T15	T15	H3
	Sub Guide Pad	PAD-S10	PAD-S10	PAD-S10	PAD-S14
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTA5S
	Wrench	T9	T9	T9	T15

BTA INDEXABLE - 5 CARTRIDGE SYSTEM SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
4.213 - 6.653



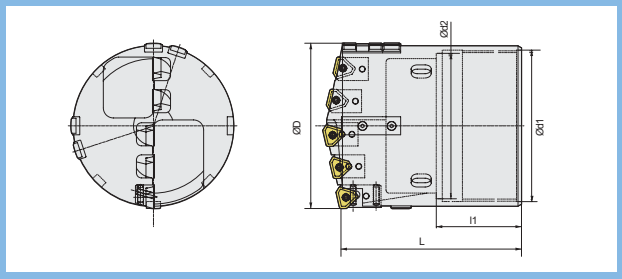
Designation	Diameter	Dimension				Tube	
		L	l1	d1	d2	Part	Diameter
TBTA5-xx.xxxSE4-094	**4.213 - 4.409**	7.09	3.23	3.268	3.504	BTSI 094	3.701
TBTA5-xx.xxxSE4-106	**4.409 - 4.881**	8.07	4.02	3.740	3.976	BTSI 106	4.173
TBTA5-xx.xxxSE4-118	**4.882 - 5.354**	8.07	4.02	4.213	4.449	BTSI 118	4.646
TBTA5-xx.xxxSE4-130	**5.354 - 5.826**	8.07	4.02	4.685	4.921	BTSI 130	5.118
TBTA5-xx.xxxSE4-142	**5.827 - 6.299**	8.86	4.80	5.157	5.394	BTSI 142	5.591
TBTA5-xx.xxxSE4-154	**6.299 - 6.653**	8.86	4.80	5.630	5.866	BTSI 154	6.063

Ingersoll

BTA INDEXABLE - 5 CARTRIDGE SYSTEM

SINGLE TUBE SYSTEM - INNER SINGLE START THREAD

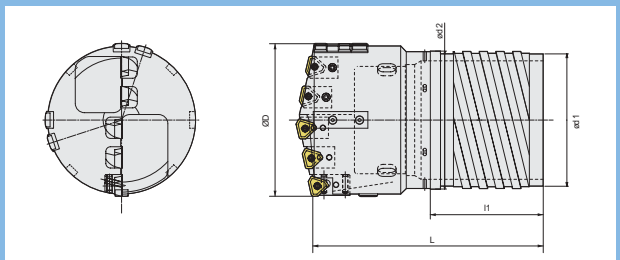
Diameters
4.213 - 6.653



Designation	Diameter	Dimension				Tube	
		L	l1	d1	d2	Part	Diameter
TBTA5-xx.xxxSI1-094	**4.213 - 4.370**	5.91	2.76	3.543	3.346	BTSE 094	3.701
TBTA5-xx.xxxSI1-106	**4.370 - 4.842**	5.91	2.76	4.016	3.819	BTSE 106	4.173
TBTA5-xx.xxxSI1-118	**4.843 - 5.315**	5.91	2.76	4.488	4.291	BTSE 118	4.646
TBTA5-xx.xxxSI1-130	**5.315 - 5.866**	5.91	2.76	4.961	4.764	BTSE 130	5.118
TBTA5-xx.xxxSI1-142	**5.866 - 6.378**	5.91	2.76	5.472	5.276	BTSE 142	5.591
TBTA5-xx.xxxSI1-154	**6.378 - 6.653**	7.48	3.35	5.945	5.709	BTSE 154	6.063

BTA INDEXABLE - 5 CARTRIDGE SYSTEM DOUBLE TUBE SYSTEM - OUTER FOUR START THREAD

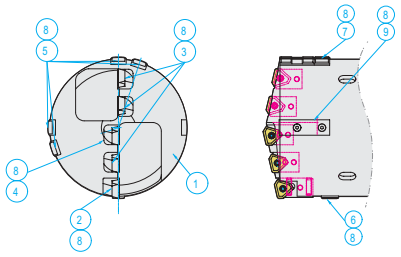
Diameters
4.213 - 6.653



Designation	Diameter	Dimension				Tube		
		L	l1	d1	d2	Outer Tube	Inner Tube	Diameter
TBTA5-xx.xxxDE4-094	**4.213 - 4.409**	7.09	3.23	3.268	3.504	BTDO 094	BTDI 078	3.701
TBTA5-xx.xxxDE4-106	**4.409 - 4.881**	8.07	4.02	3.740	3.976	BTDO 106	BTDI 090	4.173
TBTA5-xx.xxxDE4-118	**4.882 - 5.354**	8.07	4.02	4.213	4.449	BTDO 118	BTDI 092	4.646
TBTA5-xx.xxxDE4-130	**5.354 - 5.826**	8.07	4.02	4.685	4.921	BTDO 130	BTDI 093	5.118
TBTA5-xx.xxxDE4-142	**5.827 - 6.299**	8.86	4.80	5.157	5.394	BTDO 142	BTDI 094	5.591
TBTA5-xx.xxxDE4-154	**6.299 - 6.653**	8.86	4.80	5.630	5.866	BTDO 154	BTDI 095	6.063

BTA INDEXABLE - 5 CARTRIDGE SYSTEM ASSEMBLY OF TBTA5 SERIES

Diameters
4.213 - 5.944



1. Head Shank
2. Outer Cartridge
3. Inner Cartridge
4. Center Cartridge
5. Guide Pad
6. Sub Guide Pad
7. Guide Pad Protector
8. Lock Screw
9. Filler

Parts		Diameter			
		4.213 - 4.645	4.646 - 5.354	5.354 - 5.708	5.709 - 5.944
Cartridge	Outer	PERC 402-43	PERC 402-43	PERC 402-43	PERC 402-43
	Adjust Screw	AS0005-15	AS0005-15	AS0005-15	AS0005-15
	Wrench	H2.5	H2.5	H2.5	H2.5
	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-32	CENC 402-43	CENC 402-43	CENC 402-43
	Screw	CSTA5	LS1206	LS1206	LS1206
	Wrench	T15	H3	H3	H3
	Center	CENC 402-43	CENC 402-43	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3	H3
Insert	Outer	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T15	T15	T15	T15
	Inner	TPMX 1704RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
	Screw	CSTB3.5D	CSTB4M	CSTB4M	CSTB4M
	Wrench	T9	T15	T15	T15
	Center	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB4M	CSTB4M	CSTB5	CSTB5
	Wrench	T15	T15	T20	T20
Pad	Guide Pad	PAD-GC18	PAD-GC18	PAD-GC18	PAD-GC18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Guide Pad Protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Sub Guide Pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T15	T15	T15	T15

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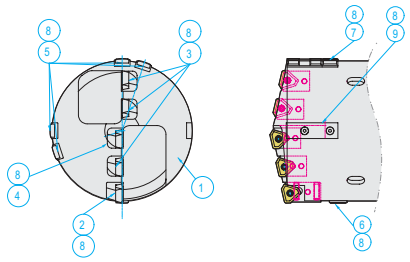
BTA INDEXABLE - 5 CARTRIDGE SYSTEM ASSEMBLY OF TBTA5 SERIES

Diameters
5.945 - 6.653

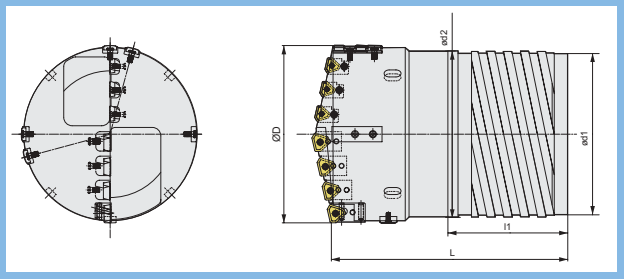


1. Head Shank
2. Outer Cartridge
3. Inner Cartridge
4. Center Cartridge
5. Guide Pad
6. Sub Guide Pad
7. Guide Pad Protector
8. Lock Screw
9. Filler

Parts		Diameter		
		5.945 - 6.181	6.181 - 6.417	6.417 - 6.653
Cartridge	Outer	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust Screw	AS0006-15	AS0006-15	AS0006-15
	Wrench	H3	H3	H3
	Screw	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-63
	Screw	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3
	Center	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3
Insert	Outer	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB5	CSTB5	CSTB5
	Wrench	T20	T20	T20
	Inner	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG
	Screw	CSTB4M	CSTB4M	CSTB5
	Wrench	T15	T15	T20
	Center	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB5	CSTB5	CSTB5
	Wrench	T20	T20	T20
Pad	Guide Pad	PAD-GC18	PAD-GC18	PAD-GC18
	Screw	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3
	Guide Pad Protector	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3
	Sub Guide Pad	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S
	Wrench	T15	T15	T15

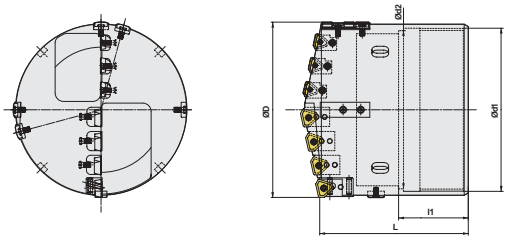
BTA INDEXABLE - 7 CARTRIDGE SYSTEM SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
6.654 - 9.173



Designation	Diameter	Dimension				Tube	
		L	l1	d1	d2	Part	Diameter
TBTA7-xx.xxxSE4-154	**6.654 - 6.771**	9.06	4.80	5.630	5.866	BTSI 154	6.063
TBTA7-xx.xxxSE4-166	**6.772 - 7.244**	9.06	4.80	6.102	6.339	BTSI 166	6.535
TBTA7-xx.xxxSE4-178	**7.244 - 7.716**	9.84	5.59	6.575	6.811	BTSI 178	7.008
TBTA7-xx.xxxSE4-190	**7.717 - 8.189**	9.84	5.59	7.047	7.283	BTSI 190	7.480
TBTA7-xx.xxxSE4-202	**8.189 - 8.661**	9.84	5.59	7.520	7.756	BTSI 202	7.953
TBTA7-xx.xxxSE4-214	**8.661 - 9.133**	10.63	6.38	7.913	8.189	BTSI 214	8.425
TBTA7-xx.xxxSE4-226	**9.134 - 9.173**	10.63	6.38	8.386	8.661	BTSI 226	8.898

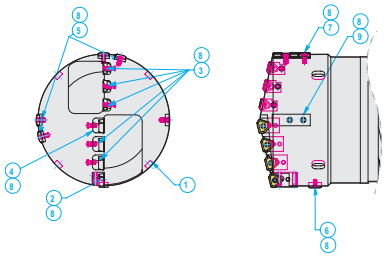
Diameters
6.654 - 9.685



Designation	Diameter	Dimension				Tube	
		L	l1	d1	d2	Part	Diameter
TBTA7-xx.xxxSI1-154	**6.654 - 6.850**	7.48	3.35	5.709	5.945	BTSE 154	6.063
TBTA7-xx.xxxSI1-166	**6.850 - 7.322**	7.48	3.35	6.181	6.417	BTSE 166	6.535
TBTA7-xx.xxxSI1-178	**7.323 - 7.795**	7.48	3.35	6.654	6.890	BTSE 178	7.008
TBTA7-xx.xxxSI1-190	**7.795 - 8.267**	7.48	3.35	7.126	7.362	BTSE 190	7.480
TBTA7-xx.xxxSI1-202	**8.268 - 8.740**	7.48	3.35	7.598	7.835	BTSE 202	7.953
TBTA7-xx.xxxSI1-214	**8.740 - 9.212**	7.48	3.35	8.071	8.307	BTSE 214	8.425
TBTA7-xx.xxxSI1-226	**9.213 - 9.685**	7.48	3.35	8.543	8.780	BTSE 226	8.898

BTA INDEXABLE - 7 CARTRIDGE SYSTEM ASSEMBLY OF TBTA7 SERIES

Diameters
6.654 - 8.228

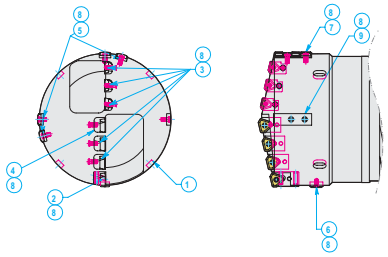


1. Head Shank
2. Outer Cartridge
3. Inner Cartridge
4. Center Cartridge
5. Guide Pad
6. Sub Guide Pad
7. Guide Pad Protector
8. Lock Screw
9. Filler

Parts		Diameter			
		6.654 - 7.441	7.441 - 7.756	7.756 - 7.992	7.992 - 8.228
Cartridge	Outer	PERC 402-43	PERC 402-43	PERC 402-43	PERC 402-43
	Adjust Screw	AS0005-15	AS0005-15	AS0005-15	AS0005-15
	Wrench	H2.5	H2.5	H2.5	H2.5
	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-43	CENC 402-43
	Screw	LS1206	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3	H3
	Center	CENC 402-43	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3	H3
Insert	Outer	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T15	T15	T15	T15
	Inner	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T15	T15	T15	T15
	Center	TPMX 2405RG	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB4M	CSTB5	CSTB5	CSTB5
	Wrench	T15	T20	T20	T20
Pad	Guide Pad	PAD-GC18	PAD-GC18	PAD-GC18	PAD-GC18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Guide Pad Protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Sub Guide Pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T15	T15	T15	T15

BTA INDEXABLE - 7 CARTRIDGE SYSTEM ASSEMBLY OF TBTA7 SERIES

Diameters
8.228 - 8.937



1. Head Shank
2. Outer Cartridge
3. Inner Cartridge
4. Center Cartridge
5. Guide Pad
6. Sub Guide Pad
7. Guide Pad Protector
8. Lock Screw
9. Filler

Parts		Diameter		
		8.228 - 8.464	8.465 - 8.700	8.701 - 8.937
Cartridge	Outer	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust Screw	AS0006-15	AS0006-15	AS0006-15
	Wrench	H3	H3	H3
	Screw	L1806RH	L1806RH	L1806RH
	Wrench	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-43
	Screw	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3
	Center	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3
Insert	Outer	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB5	CSTB5	CSTB5
	Wrench	T20	T20	T20
	Inner	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
	Screw	CSTB4M	CSTB4M	CSTB4M
	Wrench	T15	T15	T15
	Center	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB5	CSTB5	CSTB5
	Wrench	T20	T20	T20
Pad	Guide Pad	PAD-GC18	PAD-GC18	PAD-GC18
	Screw	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3
	Guide Pad Protector	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3
	Sub Guide Pad	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S
	Wrench	T15	T15	T15

Ingersoll

BTA DRILLS

BTA Indexable - Small Diameter

TBTA-A Type

TBTA-A... is an improved solution compared to brazed BTA drills because it uses replaceable inserts.

Available Range: Dia. 29.00mm - 37.99mm.

The diameter can be adjusted for precise holes with enhanced surface finish.

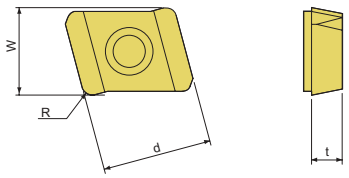
Cartridges protect head shank.

Can obtain more precise holes than TBTA-C.. or TBTA-D..

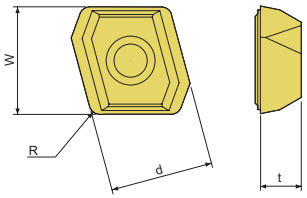
Single tube system is available.

Insert for TBTA-A

Inner, Center & Outer Insert

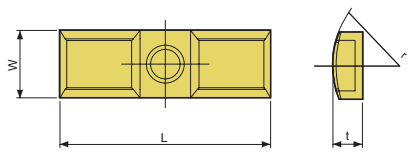


Inner & Outer Insert

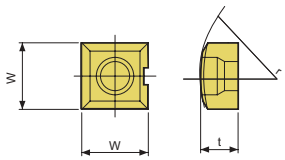


Designation	Dimension				Pocket			Grade	Screw
	d	t	R	W	Center	Inner	Outer	IN2005	
NPMX 0802RG	0.335	0.094	0.031	0.256	○	○	○		**CSTB 2.2**
NPMX 0803RG	0.315	0.125	0.031	0.329		○	○		**CSTB 2.2**

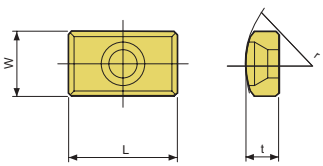
Pad



Guide Pad



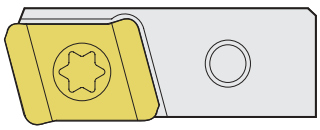
Guide Pad Protector



Sub Pad

Type	Designation	Dimension				Screw
		W	t	L	r	
Guide Pad	**PAD-GC08-140**	0.315	0.138	0.984	0.551	**CSTB 3S**
Guide Pad Protector	**PAD-P08-140**	0.315	0.138	0.315	0.551	**CSTB 3S**
Sub Pad	**PAD-S06**	0.236	0.118	0.394	0.315	**CSTB 2.2S**

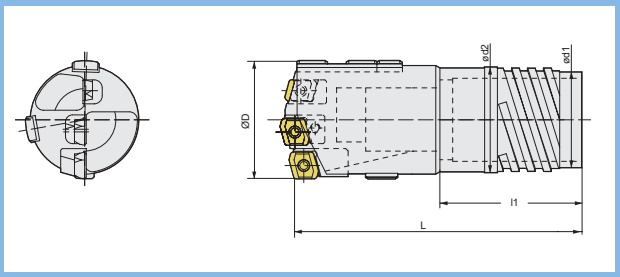
Cartridge for TBTA-A



Designation		Adjust Screw	Wrench	Lock Screw	Wrench	Insert
Outer	**PERC05R**	AS0003-5	H1.5	LS1803RH	H2	NPMX0803..
	PERC06R	AS0002.5-5	H1.27	CSTB2.5	H8	NPMX0802..
Inner & Center	**CENC05R**	-	-	CSTB3	T9	NPMX0803..
	CENC06R	-	-	CSTB2.5	T8	NPMX0802..

BTA INDEXABLE FOR SMALL DIAMETER SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

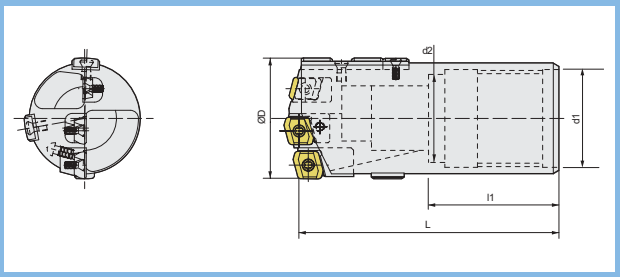
Diameters
1.142 - 1.496



Designation	Diameter	Dimension				Tube	
		L	l1	d1	d2	Part	Diameter
TBTA-Axx.xxxSE4-26	**1.142 - 1.220**	2.72	0.96	0.827	0.925	BTSI 026	1.024
TBTA-Axx.xxxSE4-28	**1.221 - 1.311**	2.72	0.96	0.906	1.004	BTSI 028	1.102
TBTA-Axx.xxxSE4-30	**1.311 - 1.425**	2.72	0.96	1.004	1.102	BTSI 030	1.181
TBTA-Axx.xxxSE4-33	**1.426 - 1.496**	2.95	1.20	1.063	1.181	BTSI 033	1.299

BTA INDEXABLE FOR SMALL DIAMETER SINGLE TUBE SYSTEM - INNER SINGLE START THREAD

Diameters
1.142 - 1.496

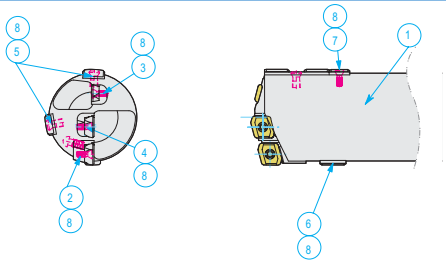


Designation	Diameter	Dimension				Tube	
		L	l1	d1	d2	Part	Diameter
TBTA-Axx.xxxSI1-24	**1.142 - 1.181**	2.95	0.98	0.866	0.748	BTSE 024	0.945
TBTA-Axx.xxxSI1-26	**1.181 - 1.259**	2.95	0.98	0.945	0.827	BTSE 026	1.024
TBTA-Axx.xxxSI1-28	**1.260 - 1.338**	2.95	0.98	1.024	0.906	BTSE 028	1.102
TBTA-Axx.xxxSI1-30	**1.339 - 1.456**	3.54	1.57	1.063	0.945	BTSE 030	1.181
TBTA-Axx.xxxSI1-33	**1.457 - 1.496**	3.54	1.57	1.181	1.063	BTSE 033	1.299

Ingersoll

BTA INDEXABLE FOR SMALL DIAMETER ASSEMBLY OF TBTA-A SERIES

Diameters
1.142 - 1.496



1. Head Shank
2. Outer Cartridge
3. Inner Cartridge
4. Center Cartridge
5. Guide Pad
6. Sub Guide Pad
7. Guide Pad Protector
8. Lock Screw

Parts		Diameter		
		1.142 - 1.338	1.339 - 1.378	1.378 - 1.496
Cartridge	Outer	PERC 06R	PERC 06R	PERC 05R
	Adjust Screw	AS0002.5-5	AS0002.5-5	AS0003-5
	Wrench	H1.27	H1.27	H1.5
	Screw	CSTB2.5	CSTB2.5	LS1803RH
	Wrench	T8	T8	H2
	Inner	CENC 06R	CENC 06R	CENC 06R
	Screw	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8
	Center	CENC 06R	CENC 05R	CENC 05R
	Screw	CSTB2.5	CSTB3	CSTB3
	Wrench	T8	T9	T9
Insert	Outer	NPMX 0802RG	NPMX 0802RG	NPMX 0803RG
	Screw	CSTB2.2	CSTB2.2	CSTB2.2
	Wrench	T7	T7	T7
	Inner	NPMX 0802RG	NPMX 0803RG	NPMX 0803RG
	Screw	CSTB2.2	CSTB2.2	CSTB2.2
	Wrench	T7	T7	T7
	Center	NPMX 0802RG	NPMX 0802RG	NPMX 0802RG
	Screw	CSTB2.2	CSTB2.2	CSTB2.2
	Wrench	T7	T7	T7
Pad	Guide Pad	PAD-GC08-140	PAD-GC08-140	PAD-GC08-140
	Screw	CSTB3S	CSTB3S	CSTB3S
	Wrench	T9	T9	T9
	Guide Pad Protector	PAD-P08-140	PAD-P08-140	PAD-P08-140
	Screw	CSTB3S	CSTB3S	CSTB3S
	Wrench	T9	T9	T9
	Sub Guide Pad	PAD-S06	PAD-S06	PAD-S06
	Screw	CSTB2.2S	CSTB2.2S	CSTB2.2S
	Wrench	T7	T7	T7

Ingersoll

BTA DRILLS

BTA Indexable - Small Diameter

TBTA-B Type

TBTA-B... do not need cartridges so it is a cost effective solution as only insert and pad inventory is required.

Available Range: Dia. 16.01mm - 28.50mm.

Three stepped staggered cutting edge for improved chip removal.

Precise holes and high quality surface finish.

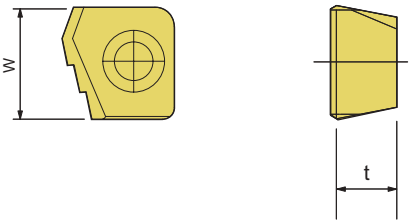
Easy diameter setting with ball and adjustment screw.

Ensure machine has good safety equipment.

Ingersoll Cutting Tools

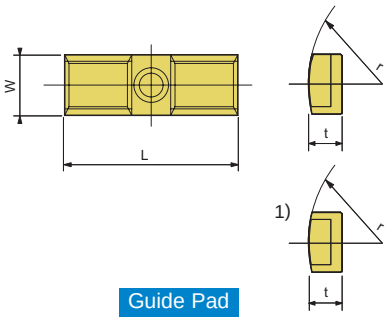
BTA INDEXABLE FOR SMALL DIAMETER

Insert for TBTA-B

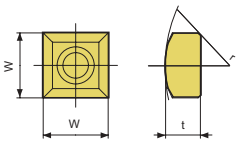


Designation	Dimension		Pocket			Grade	Screw
	t	W	Center	Inner	Outer	IN2005	
XPMT 16002UB	0.110	0.374			○		CSTANO3-4.5
XPMT 18003UB	0.120	0.433			○		CSTANO5-5.5
XPMT 21003UB	0.140	0.512			○		CSTANO5-6.5
XPMT 25003UB	0.134	0.571			○		CSTA4-7.5

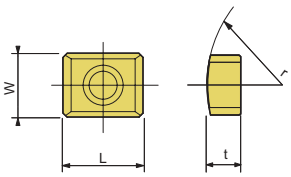
Pad



Guide Pad



Guide Pad Protector

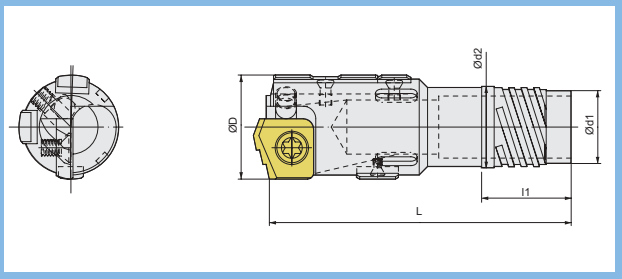


Sub Guide Pad

Type	Designation	Dimension				Screw
		W	t	L	r	
Guide Pad	PAD-GC06-075	0.236	0.128	0.787	0.295	CSTB2.2S
	PAD-GC06-085	0.236	0.150	0.787	0.335	CSTB2.2S
	PAD-GC06-100	0.236	0.154	0.787	0.394	CSTB2.2S
	PAD-GC08-120 1)	0.315	0.173	0.984	0.472	CSTB3S
Guide Pad Protector	PAD-P06-075	0.236	0.128	0.236	0.295	CSTB2.2S
	PAD-P06-085	0.236	0.150	0.236	0.335	CSTB2.2S
	PAD-P06-100	0.236	0.154	0.236	0.394	CSTB2.2S
	PAD-P08-120	0.236	0.173	0.236	0.472	CSTB3S
Sub Guide Pad	PAD-S06	0.236	0.118	0.394	0.315	CSTB2.2S

BTA INDEXABLE FOR SMALL DIAMETER SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

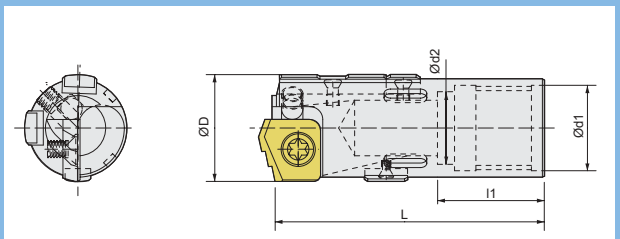
Diameters
0.630 - 1.122



Designation	Diameter	Dimension				Tube	
		L	l1	d1	d2	Part	Diameter
TBTA-Bxx.xxxSE4-14	**0.630 - 0.657**	2.44	0.79	0.425	0.496	BTSI 014	0.551
TBTA-Bxx.xxxSE4-15	**0.658 - 0.697**	2.44	0.79	0.465	0.535	BTSI 015	0.591
TBTA-Bxx.xxxSE4-16	**0.697 - 0.744**	2.44	0.85	0.492	0.571	BTSI 016	0.630
TBTA-Bxx.xxxSE4-17	**0.744 - 0.787**	2.44	0.85	0.531	0.610	BTSI 017	0.669
TBTA-Bxx.xxxSE4-18	**0.788 - 0.858**	2.66	0.85	0.551	0.630	BTSI 018	0.709
TBTA-Bxx.xxxSE4-20	**0.859 - 0.949**	2.66	0.85	0.630	0.709	BTSI 020	0.787
TBTA-Bxx.xxxSE4-22	**0.949 - 1.039**	2.85	0.85	0.689	0.768	BTSI 022	0.866
TBTA-Bxx.xxxSE4-24	**1.040 - 1.122**	2.85	0.85	0.748	0.827	BTSI 024	0.945

BTA INDEXABLE FOR SMALL DIAMETER SINGLE TUBE SYSTEM - INNER SINGLE START THREAD

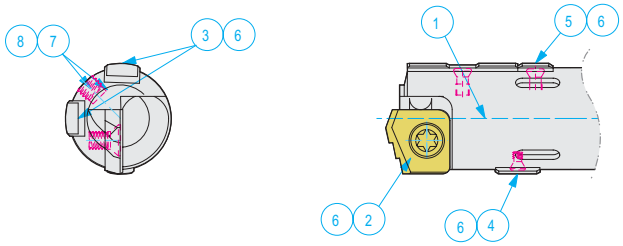
Diameters
0.630 - 1.122



Designation	Diameter	Dimension				Tube	
		L	l1	d1	d2	Part	Diameter
TBTA-Bxx.xxxSI1-13	**0.630 - 0.650**	1.97	0.91	0.500	0.437	BTSE 013B	0.512
TBTA-Bxx.xxxSI1-14	**0.650 - 0.679**	1.97	0.91	0.528	0.465	BTSE 014A	0.551
TBTA-Bxx.xxxSI1-14	**0.680 - 0.709**	1.97	0.91	0.539	0.476	BTSE 014B	0.551
TBTA-Bxx.xxxSI1-15	**0.709 - 0.748**	1.97	0.91	0.567	0.504	BTSE 015	0.591
TBTA-Bxx.xxxSI1-16.5	**0.748 - 0.787**	1.97	0.91	0.606	0.543	BTSE 016.5	0.650
TBTA-Bxx.xxxSI1-18	**0.787 - 0.866**	2.17	0.98	0.650	0.571	BTSE 018	0.709
TBTA-Bxx.xxxSI1-20	**0.866 - 0.984**	2.17	0.98	0.748	0.630	BTSE 020	0.787
TBTA-Bxx.xxxSI1-22	**0.984 - 1.063**	2.36	0.98	0.787	0.669	BTSE 022	0.866
TBTA-Bxx.xxxSI1-24	**1.063 - 1.122**	2.36	0.98	0.866	0.748	BTSE 024	0.945

BTA INDEXABLE FOR SMALL DIAMETER ASSEMBLY OF TBTA-B SERIES

Diameters
0.630 - 1.122



1. Head Shank
2. Indexable Insert
3. Guide Pad
4. Sub Guide
5. Guide Pad Protector
6. Lock Screw
7. Adjust Ball
8. Adjust Screw

Parts		Diameter			
		0.630 - 0.709	0.709 - 0.827	0.827 - 0.984	0.984 - 1.122
Insert	Insert	XPMT 16002UB	XPMT 18003UB	XPMT 21003UB	XPMT 25003UB
	Screw	CSTANO5-5.5	CSTANO5-5.5	CSTANO5-5.5	CSTANO5-5.5
	Wrench	T9	T9	T9	T9
	Adjust Screw	B2.5	B3	B4	B5
	Wrench	AS0003-3.5	AS0003-3.5	AS0003-3.5	AS0003-3.5
	Adjust Ball	H1.5	H1.5	H1.5	H1.5
Pad	Guide Pad	PAD-GC06-075	PAD-GC06-085	PAD-GC06-100	PAD-GC08-120
	Screw	CSTB2.2S	CSTB2.2S	CSTB2.2S	CSTB2.2S
	Wrench	T7	T7	T7	T7
	Guide Pad Protector	PAD-P06-075	PAD-P06-085	PAD-P06-100	PAD-P08-120
	Screw	CSTB2.2S	CSTB2.2S	CSTB2.2S	CSTB2.2S
	Wrench	T7	T7	T7	T7
	Sub Guide Pad	PAD-S06	PAD-S06	PAD-S06	PAD-S06
	Screw	CSTB2.2S	CSTB2.2S	CSTB2.2S	CSTB2.2S
	Wrench	T7	T7	T7	T7

Ingersoll

BTA DRILLS

BTA Indexable
Cost effective solution for standard tolerance applications

TBTA-C Type

TBTA-C... can contribute to your productivity by utilising its thick inserts to improve high feed capability.

Available Range: Dia. 25.00 mm - 53.20 mm.

Cartridges not required - Cost effective solution.

Minimum down time to change inserts as precise setting is not required.

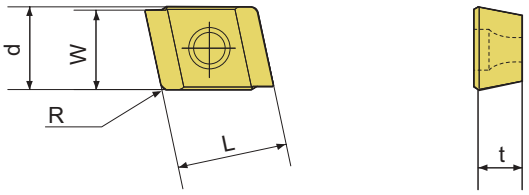
Large chip evacuation design for improved chip removal.

Only 4 inserts for whole range.

Single & Double tube systems are available.

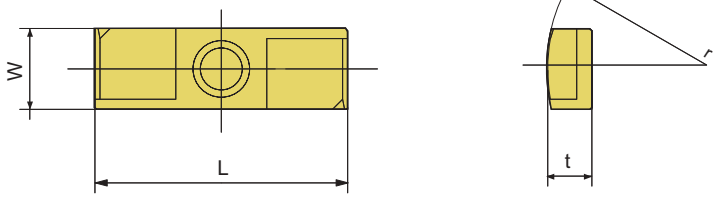
Ingersoll Cutting Tools

Insert for TBTA-C



Designation	Dimension					Pocket			Grade	Screw
	d	t	L	W	R	Center	Inner	Outer	IN2005	
NPMT 05504R1	0.217	0.157	0.394	0.205	0.024	○	○	○		**CSTB 2.5**
NPMT 06504R1	0.256	0.157	0.394	0.244	0.024	○	○	○		
NPMT 07504R1	0.295	0.157	0.394	0.283	0.024	○	○	○		
NPMT 09504R1	0.374	0.157	0.394	0.362	0.024	○	○	○		

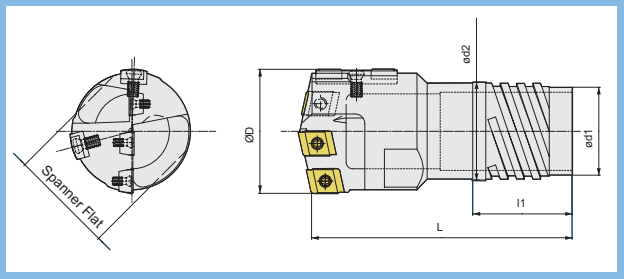
Pad



Type	Designation	Dimension				Screw
		W	t	L	r	
Guide Pad	**PAD-GO-07**	0.276	0.138	0.787	0.472	**CSTB 3S**
	PAD-GO-08	0.315	0.177	0.984	0.610	**CSTB 3.5S**
	PAD-GO-10	0.394	0.177	1.181	0.787	**CSTB 3.5S**

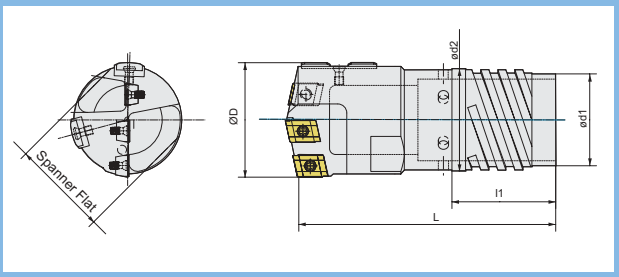
BTA INDEXABLE SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
0.984 - 2.094



Designation	Diameter	Dimension				Spanner Flat	Tube	
		L	l1	d1	d2		Part	Diameter
TBTA-Cxx.xxxSE4-22	**0.984 - 1.039**	2.56	0.85	0.689	0.768	0.75	BTSI 022	0.866
TBTA-Cxx.xxxSE4-24	**1.040 - 1.130**	2.56	0.85	0.748	0.827	0.83	BTSI 024	0.945
TBTA-Cxx.xxxSE4-26	**1.130 - 1.220**	2.76	0.96	0.827	0.925	0.94	BTSI 026	1.024
TBTA-Cxx.xxxSE4-28	**1.221 - 1.311**	2.76	0.96	0.906	1.004	1.02	BTSI 028	1.102
TBTA-Cxx.xxxSE4-30	**1.311 - 1.425**	2.76	0.96	1.004	1.102	1.10	BTSI 030	1.181
TBTA-Cxx.xxxSE4-33	**1.426 - 1.559**	2.95	1.20	1.063	1.181	1.18	BTSI 033	1.299
TBTA-Cxx.xxxSE4-36	**1.559 - 1.693**	3.15	1.20	1.181	1.299	1.26	BTSI 036	1.417
TBTA-Cxx.xxxSE4-39	**1.693 - 1.850**	3.54	1.20	1.299	1.417	1.42	BTSI 039	1.535
TBTA-Cxx.xxxSE4-43	**1.851 - 2.035**	3.54	1.20	1.417	1.535	1.50	BTSI 043	1.693
TBTA-Cxx.xxxSE4-47	**2.036 - 2.094**	3.54	1.36	1.555	1.693	1.81	BTSI 047	1.850

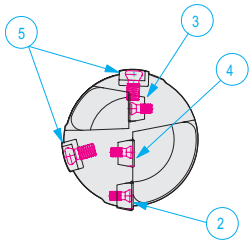
Diameters
0.984 - 2.094

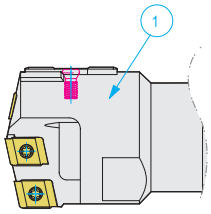


Designation	Diameter	Dimension				Spanner Flat	Tube		
		L	l1	d1	d2		Outer Tube	Inner Tube	Diameter
TBTA-Cxx.xxxDE4-23.5	**0.984 - 1.039**	2.56	0.85	0.748	0.827	0.75	BTDO 023.5	BTDI 016	0.925
TBTA-Cxx.xxxDE4-26	**1.040 - 1.130**	2.76	0.96	0.827	0.925	0.83	BTDO 026	BTDI 018	1.024
TBTA-Cxx.xxxDE4-28	**1.130 - 1.220**	2.76	0.96	0.906	1.004	0.94	BTDO 028	BTDI 020	1.102
TBTA-Cxx.xxxDE4-30.5	**1.221 - 1.311**	2.76	0.96	1.004	1.122	1.02	BTDO 030.5	BTDI 022	1.201
TBTA-Cxx.xxxDE4-33	**1.311 - 1.425**	2.95	1.20	1.063	1.181	1.10	BTDO 033	BTDI 024	1.299
TBTA-Cxx.xxxDE4-35.5	**1.426 - 1.512**	2.95	1.20	1.181	1.299	1.18	BTDO 035.5	BTDI 026	1.398
TBTA-Cxx.xxxDE4-35.5	**1.512 - 1.559**	2.95	1.20	1.181	1.299	1.18	BTDO 035.5	BTDI 026	1.398
TBTA-Cxx.xxxDE4-39	**1.559 - 1.646**	3.15	1.20	1.299	1.417	1.26	BTDO 039	BTDI 029	1.535
TBTA-Cxx.xxxDE4-39	**1.646 - 1.693**	3.15	1.20	1.299	1.417	1.26	BTDO 039	BTDI 029	1.535
TBTA-Cxx.xxxDE4-42.5	**1.693 - 1.795**	3.54	1.20	1.417	1.535	1.42	BTDO 042.5	BTDI 032	1.673
TBTA-Cxx.xxxDE4-42.5	**1.796 - 1.850**	3.54	1.20	1.417	1.535	1.42	BTDO 042.5	BTDI 032	1.673
TBTA-Cxx.xxxDE4-46.5	**1.851 - 2.035**	3.54	1.36	1.555	1.693	1.50	BTDO 046.5	BTDI 035	1.831
TBTA-Cxx.xxxDE4-51	**2.036 - 2.094**	3.54	1.36	1.713	1.850	1.50	BTDO 051	BTDI 039	2.008

BTA INDEXABLE ASSEMBLY OF TBTA-C SERIES

Diameters
0.984 - 2.094





1. Head Shank
2. Outer Insert
3. Inner Insert
4. Center Insert
5. Guide Pad

Parts		Diameter						
		0.984 - 1.039	1.040 - 1.130	1.130 - 1.220	1.221 - 1.311	1.311 - 1.425	1.426 - 1.512	1.512 - 1.559
Insert	Outer	NPMT 05504R1	NPMT 05504R1	NPMT 06504R1	NPMT 06504R1	NPMT 06504R1	NPMT 07504R1	NPMT 07504R1
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8	T8	T8	T8	T8
	Inner	NPMT 05504R1	NPMT 05504R1	NPMT 05504R1	NPMT 05504R1	NPMT 06504R1	NPMT 06504R1	NPMT 06504R1
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8	T8	T8	T8	T8
	Center	NPMT 05504R1	NPMT 05504R1	NPMT 05504R1	NPMT 06504R1	NPMT 06504R1	NPMT 06504R1	NPMT 07504R1
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8	T8	T8	T8	T8
Pad	Guide Pad	PAD-GO07	PAD-GO07	PAD-GO07	PAD-GO07	PAD-GO07	PAD-GO07	PAD-GO08
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	CSTB3S	CSTB3S	CSTB3.5
	Wrench	T9	T9	T9	T9	T9	T9	T9

Parts		Diameter					
		1.559 - 1.646	1.646 - 1.693	1.693 - 1.795	1.796 - 1.850	1.851 - 2.035	2.036 - 2.094
Insert	Outer	NPMT 07504R1	NPMT 09504R1	NPMT 09504R1	NPMT 09504R1	NPMT 09504R1	NPMT 09504R1
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8	T8	T8	T8
	Inner	NPMT 07504R1	NPMT 07504R1	NPMT 07504R1	NPMT 07504R1	NPMT 09504R1	NPMT 09504R1
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8	T8	T8	T8
	Center	NPMT 07504R1	NPMT 07504R1	NPMT 09504R1	NPMT 09504R1	NPMT 09504R1	NPMT 09504R1
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8	T8	T8	T8
Pad	Guide Pad	PAD-GO08	PAD-GO08	PAD-GO08	PAD-GO10	PAD-GO10	PAD-GO10
	Screw	CSTB3.5	CSTB3.5	CSTB3.5	CSTB3.5	CSTB3.5	CSTB3.5
	Wrench	T9	T9	T9	T9	T9	T9

Ingersoll

BTA DRILLS

BTA Indexable for high productivity

TBTA-D type

TBTA-D... is designed for heavy duty machining.

Available Range: Dia. 30.00mm - 65.00mm.

No cartridge required - economical solution.

Thick inserts allow feed to be increase by x 1.5.

Minimum down time to change insert as precise setting is not required.

Wide chip evacuation area to assist with chip exhaust.

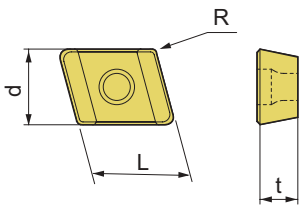
12 inserts for whole range.

Single & Double tube systems are available.

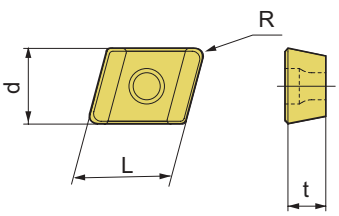
BTA INDEXABLE FOR HIGH PRODUCTIVITY

Insert for TBTA-D

Inner & Outer Insert

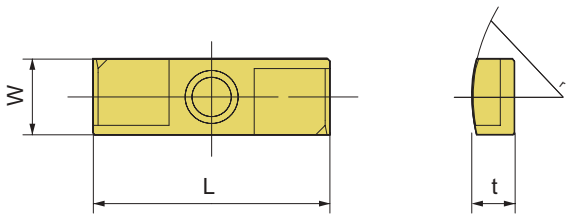


Center Insert



Designation	Dimension				Pocket			Grade	Screw
	d	t	L	R	Center	Inner	Outer	IN2005	
NPMT 06504L2	0.256	0.157	0.394	0.031	○				**CSTB 2.5**
NPMT 0804L2	0.315	0.157	0.394	0.031	○				
NPMT 09504L2	0.374	0.157	0.394	0.031	○				
NPMT 12504L2	0.492	0.157	0.394	0.031	○				
NPMT 06504R2	0.256	0.157	0.394	0.016		○	○		**CSTB 2.5**
NPMT 0804R2	0.315	0.157	0.394	0.016		○	○		
NPMT 09504R2	0.374	0.157	0.394	0.016		○	○		
NPMT 12504R2	0.492	0.157	0.394	0.016		○	○		

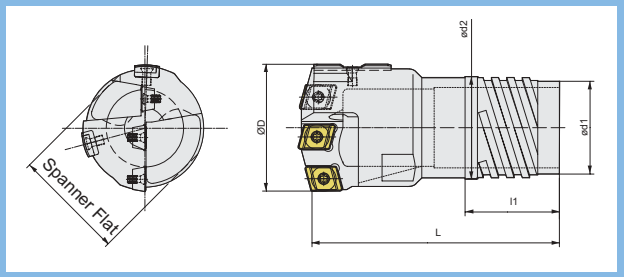
Pad



Type	Designation	Dimension				Screw
		W	t	L	r	
Guide Pad	**PAD-GO-07**	0.276	0.138	0.787	0.472	**CSTB3S**
	PAD-GO-08	0.315	0.177	0.984	0.610	**CSTB3.5S**
	PAD-GO-10	0.394	0.177	1.181	0.787	**CSTB3.5S**
	PAD-GO-12	0.472	0.217	1.378	0.984	**CSTB3.5S**

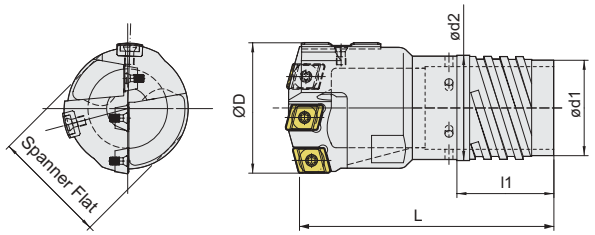
BTA INDEXABLE FOR HIGH PRODUCTIVITY SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
1.181 - 2.559



Designation	Diameter	Dimension				Spanner Flat	Tube	
		L	l1	d1	d2		Part	Diameter
TBTA-Dxx.xxxSE4-26	**1.181 - 1.220**	2.76	0.96	0.827	0.925	0.75	BTSI 026	1.024
TBTA-Dxx.xxxSE4-28	**1.221 - 1.311**	2.76	0.96	0.906	1.004	0.83	BTSI 028	1.102
TBTA-Dxx.xxxSE4-30	**1.311 - 1.425**	2.76	0.96	1.004	1.102	0.94	BTSI 030	1.181
TBTA-Dxx.xxxSE4-33	**1.426 - 1.559**	2.95	1.20	1.063	1.181	1.02	BTSI 033	1.299
TBTA-Dxx.xxxSE4-36	**1.559 - 1.693**	3.15	1.20	1.181	1.299	1.10	BTSI 036	1.417
TBTA-Dxx.xxxSE4-39	**1.693 - 1.850**	3.54	1.20	1.299	1.417	1.18	BTSI 039	1.535
TBTA-Dxx.xxxSE4-43	**1.851 - 2.035**	3.54	1.20	1.417	1.535	1.26	BTSI 043	1.693
TBTA-Dxx.xxxSE4-47	**2.036 - 2.213**	3.54	1.36	1.555	1.693	1.42	BTSI 047	1.850
TBTA-Dxx.xxxSE4-51	**2.213 - 2.386**	3.54	1.36	1.713	1.870	1.50	BTSI 051	2.008
TBTA-Dxx.xxxSE4-56	**2.386 - 2.559**	3.54	1.36	1.870	2.008	1.81	BTSI 056	2.205

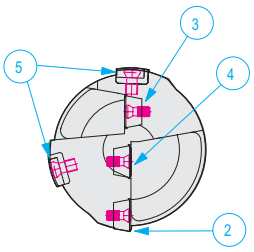
Diameters
1.181 - 2.559

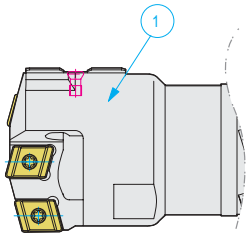


Designation	Diameter	Dimension				Spanner Flat	Tube		
		L	l1	d1	d2		Outer Tube	Inner Tube	Diameter
TBTA-Dxx.xxxDE4-28	**1.181 - 1.220**	2.76	0.96	0.906	1.004	1.02	BTDO 028	BTDI 020	1.102
TBTA-Dxx.xxxDE4-30.5	**1.221 - 1.311**	2.76	0.96	1.004	1.102	1.10	BTDO 030.5	BTDI 022	1.201
TBTA-Dxx.xxxDE4-33	**1.311 - 1.425**	2.95	1.20	1.063	1.181	1.18	BTDO 033	BTDI 024	1.299
TBTA-Dxx.xxxDE4-35.5	**1.426 - 1.559**	3.15	1.20	1.181	1.299	1.26	BTDO 035.5	BTDI 026	1.398
TBTA-Dxx.xxxDE4-39	**1.559 - 1.693**	3.15	1.20	1.299	1.417	1.42	BTDO 039	BTDI 029	1.535
TBTA-Dxx.xxxDE4-42.5	**1.693 - 1.850**	3.54	1.20	1.417	1.535	1.50	BTDO 042.5	BTDI 032	1.673
TBTA-Dxx.xxxDE4-46.5	**1.851 - 2.035**	3.54	1.36	1.555	1.693	1.57	BTDO 046.5	BTDI 035	1.831
TBTA-Dxx.xxxDE4-51	**2.036 - 2.213**	3.54	1.36	1.713	1.870	1.97	BTDO 051	BTDI 039	2.008
TBTA-Dxx.xxxDE4-55.5	**2.213 - 2.559**	3.54	1.36	1.870	2.008	1.97	BTDO 055.5	BTDI 043	2.185

BTA INDEXABLE FOR HIGH PRODUCTIVITY ASSEMBLY OF TBTA-D SERIES

Diameters
1.181 - 2.559





1. Head Shank
2. Outer Insert
3. Inner Insert
4. Center Insert
5. Guide Pad

Parts		Diameter				
		1.181 - 1.299	1.300 - 1.417	1.418 - 1.535	1.536 - 1.654	1.654 - 1.772
Insert	Outer	NPMT 06504R2	NPMT 06504R2	NPMT 0804R2	NPMT 0804R2	NPMT 0804R2
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8	T8	T8
	Inner	NPMT 06504R2	NPMT 06504R2	NPMT 06504R2	NPMT 0804R2	NPMT 0804R2
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8	T8	T8
	Center	NPMT 06504LH2	NPMT 0804LH2	NPMT 0804LH2	NPMT 0804LH2	NPMT 09504LH2
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8	T8	T8
Pad	Guide Pad	PAD-GO07	PAD-GO07	PAD-GO08	PAD-GO08	PAD-GO08
	Screw	CSTB3S	CSTB3S	CSTB3.5	CSTB3.5	CSTB3.5
	Wrench	T9	T9	T9	T9	T9

Parts		Diameter				
		1.772 - 1.890	1.890 - 2.008	2.008 - 2.244	2.244 - 2.480	2.481 - 2.559
Insert	Outer	NPMT 09504R2	NPMT 09504R2	NPMT 09504R2	NPMT 12504R2	NPMT 12504R2
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8	T8	T8
	Inner	NPMT 0804R2	NPMT 09504R2	NPMT 09504R2	NPMT 09504R2	NPMT 12504R2
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8	T8	T8
	Center	NPMT 09504LH2	NPMT 09504LH2	NPMT 12504LH2	NPMT 12504LH2	NPMT 12504LH2
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T8	T8	T8	T8	T8
Pad	Guide Pad	PAD-GO10	PAD-GO10	PAD-GO10	PAD-GO12	PAD-GO12
	Screw	CSTB3.5	CSTB3.5	CSTB3.5	CSTB3.5	CSTB3.5
	Wrench	T9	T9	T9	T9	T9

* Wrench for all Inserts: T8
* Wrench for all guide pads: T9

Ingersoll

BTA DRILLS

BTA Indexable for large diameter

TBTA-L Type

TBTA-L... is designed with four-start OD thread to fit all standard single tubes.

Available Range: Dia. 62.00mm - 183.99mm.

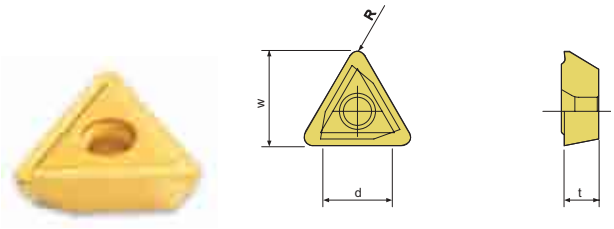
Larger diameters are available upon request.

Ingersoll Cutting Tools

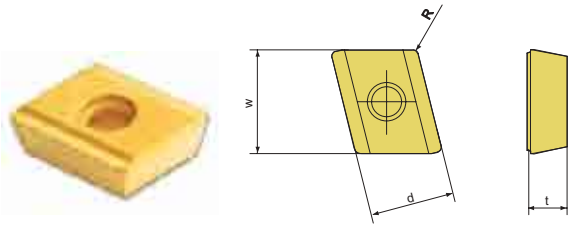
BTA INDEXABLE FOR LARGE DIAMETER

Insert for TBTA-L

Center & Inner & Outer Insert



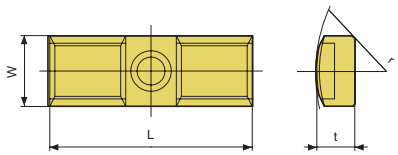
Outer Insert



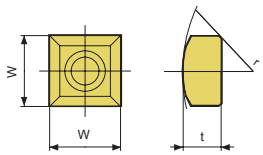
Designation	Dimension				Pocket			Grade	Screw
	d	W	R	t	Center	Inner	Outer	IN2005	
TPMX 16-TDM	0.375	0.515	0.047	0.187	○	○	○		**CSTB3.5D**
TPMX 22-TDM	0.500	0.703	0.047	0.250	○	○	○		**CSTB4M**
NPMT 13-TDMR	0.433	0.531	0.031	0.187			○*		**CSTB3.5D**
NPMT 19-TDMR	0.472	0.768	0.024	0.250			○*		**CSTB4M**

* NPMX type insert is available for outer pocket on request.

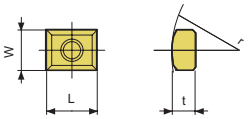
Pad



Guide Pad



Guide Pad Protector



Sub Pad

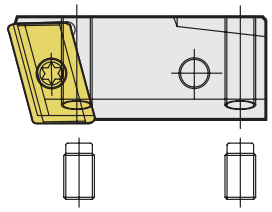
Type	Designation	Dimension				Screw
		W	T	L	R	
Guide Pad	**PAD-GC14**	0.551	0.295	1.575	0.984	**CSTA5S**
	PAD-GC18	0.709	0.354	1.575	1.181	**LS1206S**
	PAD-GC22	0.866	0.591	1.969	2.953	**LS1206**
Guide Pad Protector	**PAD-P14**	0.551	0.295	0.551	0.984	**CSTA5S**
	PAD-P18	0.709	0.354	0.709	1.181	**LS1206S**
	PAD-P22	0.866	0.591	0.866	2.953	**LS1206**
Sub Pad	**PAD-S10**	0.394	0.197	0.394	1.142	**CSTB3S**
	PAD-S14	0.551	0.276	0.787	1.772	**CSTB5S**

Ingersoll

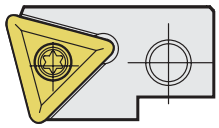
BTA INDEXABLE FOR LARGE DIAMETER

Cartridge for TBTA-L

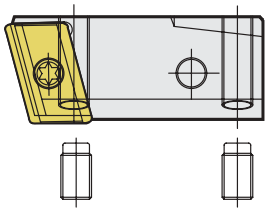
Outer



Inner



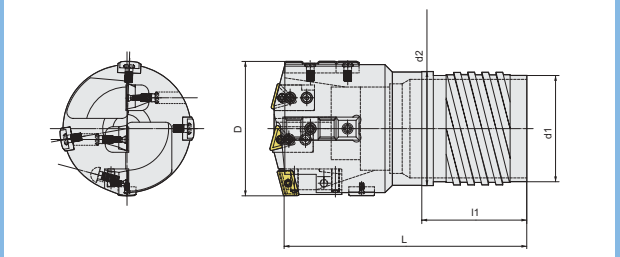
Center



Designation		Adjust Screw	Wrench	Lock Screw	Wrench	Insert
Outer	PERC310-13QRA	AS0006-10	H3	LS1805RH	H4	NPMX13-TDMR
	PERC310-19QRA	AS0006-15	H3	LS1806RH	H4	NPMX19-TDMR
Inner	CENC310-16TRB	-	-	LS1206	H3	TPMX16-TDM
	CENC310-22TRB	-	-	LS1206	H3	TPMX22-TDM
Center	CENC310-16TLB	-	-	LS1206	H3	TPMX16-TDM
	CENC310-12TLB	-	-	LS1206	H3	TPMX22-TDM

BTA INDEXABLE FOR LARGE DIAMETER SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
2.441 - 7.244



Designation	Diameter	Dimension				Tube	
		L	l1	d1	d2	Part	Diameter
TBTA-Lxx.xxxSE4-56A	2.441 - 2.559	4.72	1.36	1.870	2.008	BTSI 056A	2.205
TBTA-Lxx.xxxSE4-56B	2.559 - 2.637	6.30	2.44	1.850	2.047	BTSI 056B	2.205
TBTA-Lxx.xxxSE4-62	2.638 - 2.874	6.30	2.44	2.087	2.283	BTSI 062	2.441
TBTA-Lxx.xxxSE4-68	2.874 - 3.149	6.30	2.44	2.283	2.480	BTSI 068	2.677
TBTA-Lxx.xxxSE4-75	3.150 - 3.425	7.48	3.23	2.520	2.756	BTSI 075	2.953
TBTA-Lxx.xxxSE4-82	3.425 - 3.937	7.48	3.23	2.795	3.031	BTSI 082	3.228
TBTA-Lxx.xxxSE4-94	3.937 - 4.409	7.48	3.23	3.268	3.504	BTSI 094	3.701
TBTA-Lxx.xxxSE4-106	4.409 - 4.881	8.27	4.02	3.740	3.976	BTSI 106	4.173
TBTA-Lxx.xxxSE4-118	4.882 - 5.354	8.27	4.02	4.213	4.449	BTSI 118	4.646
TBTA-Lxx.xxxSE4-130	5.354 - 5.826	8.66	4.02	4.685	4.921	BTSI 130	5.118
TBTA-Lxx.xxxSE4-142	5.827 - 6.299	8.66	4.80	5.157	5.394	BTSI 142	5.591
TBTA-Lxx.xxxSE4-154	6.299 - 6.771	8.66	4.80	5.630	5.630	BTSI 154	6.063
TBTA-Lxx.xxxSE4-166	6.772 - 7.244	8.66	4.80	6.102	6.339	BTSI 166	6.535

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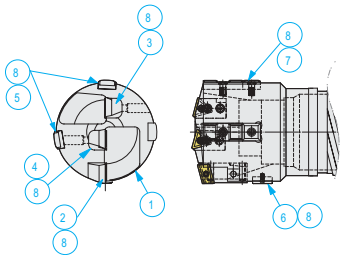
BTA INDEXABLE FOR LARGE DIAMETER ASSEMBLY OF TBTA-L SERIES

Diameters
2.441 - 5.118



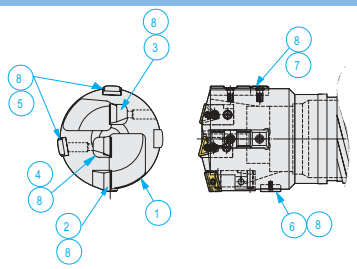
1. Head Shank
2. Outer Cartridge
3. Inner Cartridge
4. Center Cartridge
5. Guide Pad
6. Sub Guide Pad
7. Guide Pad Protector
8. Lock Screw

Parts		Diameter						
		2.441 - 2.913	2.913 - 3.267	3.268 - 3.700	3.701 - 3.937	3.937 - 4.173	4.173 - 4.724	4.724 - 5.118
Cartridge	Outer	PERC310-13QRA	PERC310-19QRA	PERC310-19QRA	PERC310-19QRA	PERC310-19QRA	PERC310-13QRA	PERC310-19QRA
	Adjust Screw	AS0006-10	AS0006-15	AS0006-15	AS0006-15	AS0006-15	AS0006-10	AS0006-15
	Wrench	H3	H3	H3	H3	H3	H3	H3
	Screw	LS1805RH	LS1806RH	LS1806RH	LS1806RH	LS1806RH	LS1805RH	LS1806RH
	Wrench	H4	H4	H4	H4	H4	H4	H4
	Inner	CENC310-16TRB	CENC310-16TRB	CENC310-16TRB	CENC310-22TRB	CENC310-22TRB	CT310-16TRB	CT310-16TRB
	Screw	LS1206	LS1206	LS1206	LS1206	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3	H3	H3	H3	H3
	Center	CENC310-16TLB	CENC310-16TLB	CENC310-22TLB	CENC310-22TLB	CENC310-22TLB	CT310-16TLB	CT310-16TLB
	Screw	LS1206	LS1206	LS1206	LS1206	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3	H3	H3	H3	H3
Insert	Outer	NPMT 13-TDMR	NPMT 19-TDMR	NPMT 19-TDMR	NPMT 19-TDMR	NPMT 19-TDMR	NPMT 13-TDMR	NPMT 19-TDMR
	Screw	CSTB3.5D	CSTB4M	CSTB4M	CSTB4M	CSTB4M	CSTB3.5D	CSTB4M
	Wrench	T9	T15	T15	T15	T15	T9	T15
	Inner	TPMX 16-TDM	TPMX 16-TDM	TPMX 16-TDM	TPMX 22-TDM	TPMX 22-TDM	TPMX 16-TDM	TPMX 16-TDM
	Screw	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M	CSTB4M	CSTB3.5D	CSTB3.5D
	Wrench	T9	T9	T9	T15	T15	T9	T9
	Center	TPMX 16-TDM	TPMX 16-TDM	TPMX 22-TDM	TPMX 22-TDM	TPMX 22-TDM	TPMX 16-TDM	TPMX 16-TDM
	Screw	CSTB3.5D	CSTB3.5D	CSTB4M	CSTB4M	CSTB4M	CSTB3.5D	CSTB3.5D
	Wrench	T9	T9	T15	T15	T15	T9	T9
Pad	Guide Pad	PAD-GC14	PAD-GC14	PAD-GC14	PAD-GC18	PAD-GC18	PAD-GC18	PAD-GC18
	Screw	CSTA5S	CSTA5S	CSTA5S	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	T15	T15	T15	H3	H3	H3	H3
	Guide Pad Protector	PAD-P14	PAD-P14	PAD-P14	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	CSTA5S	CSTA5S	CSTA5S	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	T15	T15	T15	H3	H3	H3	H3
	Sub Guide Pad	PAD-S10	PAD-S10	PAD-S10	PAD-S14	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTA5S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T9	T9	T9	T15	T15	T15	T15

BOREline

BTA INDEXABLE FOR LARGE DIAMETER ASSEMBLY OF TBTA-L SERIES

Diameters
5.118 - 7.401



1. Head Shank
2. Outer Cartridge
3. Inner Cartridge
4. Center Cartridge
5. Guide Pad
6. Sub Guide Pad
7. Guide Pad Protector
8. Lock Screw

Parts		Diameter					
		5.118 - 5.551	5.551 - 5.944	5.945 - 6.378	6.378 - 6.811	6.811 - 7.007	7.008 - 7.401
Cartridge	Outer	PERC310-19QRA	PERC310-19QRA	PERC310-19QRA	PERC310-190QRA	PERC310-13QRA	PERC310-13QRA
	Adjust Screw	AS0006-15	AS0006-15	AS0006-15	AS0006-15	AS0006-10	AS0006-10
	Wrench	H3	H3	H3	H3	H3	H3
	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH	LS1805RH	LS1805RH
	Wrench	H4	H4	H4	H4	H4	H4
	Inner	CENC310-16TRB	CENC310-16TRB	CENC310-16TRB	CENC310-22TRB	CENC310-16TRB	CENC310-16TRB
	Screw	LS1206	LS1206	LS1206	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3	H3	H3	H3
	Center	CENC310-22TLB	CENC310-22TLB	CENC310-22TLB	CENC310-22TLB	CENC310-22TLB	CENC310-22TLB
	Screw	LS1206	LS1206	LS1206	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3	H3	H3	H3
Insert	Outer	NPMT 19-TDMR	NPMT 19-TDMR	NPMT 19-TDMR	NPMT 19-TDMR	NPMT 13-TDMR	NPMT 13-TDMR
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M	CSTB3.5D	CSTB3.5D
	Wrench	T15	T15	T15	T15	T9	T9
	Inner	TPMX 16-TDM	TPMX 16-TDM	TPMX 16-TDM	TPMX 22-TDM	TPMX 16-TDM	TPMX 16-TDM
	Screw	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M	CSTB3.5D	CSTB3.5D
	Wrench	T9	T9	T9	T15	T9	T9
	Center	TPMX 22-TDM	TPMX 22-TDM	TPMX 22-TDM	TPMX 22-TDM	TPMX 22-TDM	TPMX 22-TDM
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T15	T15	T15	T15	T15	T15
Pad	Guide Pad	PAD-GC18	PAD-GC18	PAD-GC18	PAD-GC18	PAD-GC22	PAD-GC22
	Screw	LS1206S	LS1206S	LS1206S	LS1206S	LS1206	LS1206
	Wrench	H3	H3	H3	H3	H3	H3
	Guide Pad Protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18	PAD-P22	PAD-P22
	Screw	LS1206S	LS1206S	LS1206S	LS1206S	LS1206	LS1206
	Wrench	H3	H3	H3	H3	H3	H3
	Sub Guide Pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T15	T15	T15	T15	T15	T15

Ingersoll

BTA DRILLS

BTA Brazed

Tolerance
Exceptional Hole Tolerance of H7 available in just one pass with optimum cutting conditions.

Exceptional Surface Finish
Surface finish of 3.2S with optimum cutting conditions.

Excellent Hole Straightness
0.1mm/meter in workpiece rotating application.

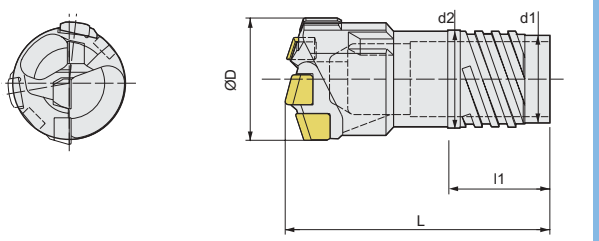
Superior Concentricity
Bore roundness.

Cost Effective solutions in Deep Hole Drilling

- Brazed Drills
  Provide an alternative economical solution
  BTA can be reground several times before discarding.
- Economical alternative for small diameters.

BTA BRAZED SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
0.496 - 1.559



Designation	Diameter	Dimension				Tube		Grade					
		L	l1	d1	d2	Part No.	Diameter	TB103	TB203	TB253	TB293	TB200	TB290
BTA xx.xxx SE2-11*	0.496 - 0.516	1.69	0.93	0.323	0.378	BTSI011	0.433	●	●	●	●	●	●
BTA xx.xxx SE2-11*	0.516 - 0.535	1.69	0.93	0.323	0.378	BTSI011	0.433	●	●	●	●	●	●
BTA xx.xxx SE2-12*	0.536 - 0.555	1.69	0.93	0.362	0.417	BTSI012	0.472	●	●	●	●	●	●
BTA xx.xxx SE2-12*	0.556 - 0.575	1.69	0.93	0.362	0.417	BTSI012	0.472	●	●	●	●	●	●
BTA xx.xxx SE2-13*	0.575 - 0.594	1.69	0.93	0.402	0.457	BTSI013	0.512	●	●	●	●	●	●
BTA xx.xxx SE2-13*	0.595 - 0.614	1.69	0.93	0.402	0.457	BTSI013	0.512	●	●	●	●	●	●
BTA xx.xxx SE4-14	0.614 - 0.638	1.69	0.79	0.425	0.496	BTSI014	0.551	●	●	●	●	●	●
BTA xx.xxx SE4-14	0.638 - 0.657	1.69	0.79	0.425	0.496	BTSI014	0.551	●	●	●	●	●	●
BTA xx.xxx SE4-15	0.658 - 0.677	1.69	0.79	0.465	0.535	BTSI015	0.591	●	●	●	●	●	●
BTA xx.xxx SE4-15	0.678 - 0.697	1.69	0.79	0.465	0.535	BTSI015	0.591	●	●	●	●	●	●
BTA xx.xxx SE4-16	0.697 - 0.724	1.85	0.85	0.492	0.571	BTSI016	0.630	●	●	●	●	●	●
BTA xx.xxx SE4-16	0.725 - 0.744	1.85	0.85	0.492	0.571	BTSI016	0.630	●	●	●	●	●	●
BTA xx.xxx SE4-17	0.744 - 0.756	1.85	0.85	0.531	0.610	BTSI017	0.669	●	●	●	●	●	●
BTA xx.xxx SE4-17	0.756 - 0.787	1.85	0.85	0.531	0.610	BTSI017	0.669	●	●	●	●	●	●
BTA xx.xxx SE4-18	0.788 - 0.823	2.07	0.85	0.551	0.630	BTSI018	0.709	●	●	●	●	●	●
BTA xx.xxx SE4-18	0.823 - 0.858	2.07	0.85	0.551	0.630	BTSI018	0.709	●	●	●	●	●	●
BTA xx.xxx SE4-20	0.859 - 0.902	2.20	0.85	0.630	0.709	BTSI020	0.787	●	●	●	●	●	●
BTA xx.xxx SE4-20	0.902 - 0.949	2.20	0.85	0.630	0.709	BTSI020	0.787	●	●	●	●	●	●
BTA xx.xxx SE4-22	0.949 - 0.992	2.26	0.85	0.689	0.768	BTSI022	0.866	●	●	●	●	●	●
BTA xx.xxx SE4-22	0.993 - 1.039	2.26	0.85	0.689	0.768	BTSI022	0.866	●	●	●	●	●	●
BTA xx.xxx SE4-24	1.040 - 1.083	2.26	0.85	0.748	0.827	BTSI024	0.945	○	○	○	○	○	○
BTA xx.xxx SE4-24	1.083 - 1.130	2.26	0.85	0.748	0.827	BTSI024	0.945	○	○	○	○	○	○
BTA xx.xxx SE4-26	1.130 - 1.173	2.50	0.96	0.827	0.925	BTSI026	1.024	○	○	○	○	○	○
BTA xx.xxx SE4-26	1.174 - 1.220	2.50	0.96	0.827	0.925	BTSI026	1.024	○	○	○	○	○	○
BTA xx.xxx SE4-28	1.221 - 1.264	2.50	0.96	0.906	1.004	BTSI028	1.102	○	○	○	○	○	○
BTA xx.xxx SE4-28	1.264 - 1.311	2.50	0.96	0.906	1.004	BTSI028	1.102	○	○	○	○	○	○
BTA xx.xxx SE4-30	1.311 - 1.370	2.50	0.96	1.004	1.102	BTSI030	1.181	○	○	○	○	○	○
BTA xx.xxx SE4-30	1.370 - 1.425	2.50	0.96	1.004	1.102	BTSI030	1.181	○	○	○	○	○	○
BTA xx.xxx SE4-33	1.426 - 1.469	2.89	1.20	1.063	1.181	BTSI033	1.299	○	○	○	○	○	○
BTA xx.xxx SE4-33	1.469 - 1.512	2.89	1.20	1.063	1.181	BTSI033	1.299	○	○	○	○	○	○
BTA xx.xxx SE4-33	1.512 - 1.559	2.89	1.20	1.063	1.181	BTSI033	1.299	○	○	○	○	○	○

●Standard
○Semi-Standard
* two start outer thread

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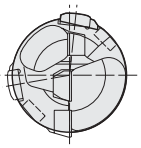
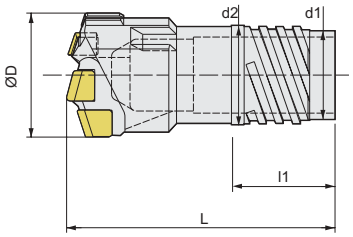
BTA BRAZED SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
1.559 - 2.559





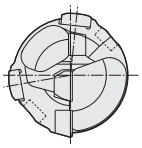
Designation	Diameter	Dimension				Tube		Grade					
		L	l1	d1	d2	Part No.	Diameter	TB103	TB203	TB253	TB293	TB200	TB290
BTA xx.xxx SE4-36	1.559 - 1.598	2.89	1.20	1.181	1.299	BTSI036	1.417	○	○	○	○	●	●
BTA xx.xxx SE4-36	1.599 - 1.646	2.89	1.20	1.181	1.299	BTSI036	1.417	○	○	○	○	●	●
BTA xx.xxx SE4-36	1.646 - 1.693	2.89	1.20	1.181	1.299	BTSI036	1.417	○	○	○	○	●	●
BTA xx.xxx SE4-39	1.693 - 1.744	2.95	1.20	1.299	1.417	BTSI039	1.535	○	○	○	○	●	●
BTA xx.xxx SE4-39	1.744 - 1.795	2.95	1.20	1.299	1.417	BTSI039	1.535	○	○	○	○	●	●
BTA xx.xxx SE4-39	1.796 - 1.850	2.95	1.20	1.299	1.417	BTSI039	1.535	○	○	○	○	●	●
BTA xx.xxx SE4-43	1.851 - 1.909	2.95	1.20	1.417	1.535	BTSI043	1.693	○	○	○	○	●	●
BTA xx.xxx SE4-43	1.910 - 1.972	2.95	1.20	1.417	1.535	BTSI043	1.693	○	○	○	○	●	●
BTA xx.xxx SE4-43	1.973 - 2.035	2.95	1.20	1.417	1.535	BTSI043	1.693	○	○	○	○	●	●
BTA xx.xxx SE4-47	2.036 - 2.094	3.23	1.36	1.555	1.693	BTSI047	1.850	○	○	○	○	●	●
BTA xx.xxx SE4-47	2.095 - 2.154	3.23	1.36	1.555	1.693	BTSI047	1.850	○	○	○	○	●	●
BTA xx.xxx SE4-47	2.154 - 2.213	3.23	1.36	1.555	1.693	BTSI047	1.850	○	○	○	○	●	●
BTA xx.xxx SE4-51	2.213 - 2.299	3.31	1.36	1.713	1.850	BTSI051	2.008	○	○	○	○	●	●
BTA xx.xxx SE4-51	2.300 - 2.386	3.31	1.36	1.713	1.850	BTSI051	2.008	○	○	○	○	●	●
BTA xx.xxx SE4-51	2.386 - 2.472	3.31	1.36	1.713	1.850	BTSI051	2.008	○	○	○	○	●	●
BTA xx.xxx SE4-51	2.473 - 2.559	3.31	1.36	1.713	1.850	BTSI051	2.008	○	○	○	○	●	●
BTA xx.xxx SE4-56	2.386 - 2.472	3.31	1.36	1.870	2.008	BTSI056	2.205	○	○	○	○	●	●
BTA xx.xxx SE4-56	2.473 - 2.559	3.31	1.36	1.870	2.008	BTSI056	2.205	○	○	○	○	●	●

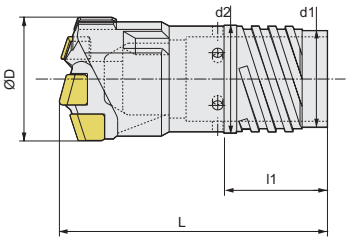
●Standard
○Semi-Standard

BOREline

BTA BRAZED DOUBLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
0.725 - 1.559



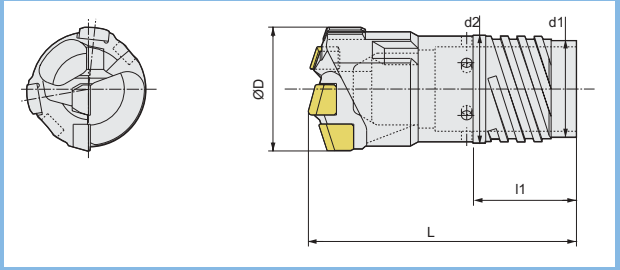


Designation	Diameter	Dimension				Tube			Grade					
		L	l1	d1	d2	Outer Tube	Inner Tube	Diameter	TB103	TB203	TB253	TB293	TB200	TB290
BTA xx.xxx DE4-18	0.725 - 0.756	1.97	0.85	0.551	0.630	BTDO018	BTDI012	0.709	●	●	●	●	●	●
BTA xx.xxx DE4-18	0.756 - 0.787	1.97	0.85	0.551	0.630	BTDO018	BTDI012	0.709	●	●	●	●	●	●
BTA xx.xxx DE4-19.5	0.788 - 0.823	2.20	0.85	0.630	0.709	BTDO019.5	BTDI014	0.768	●	●	●	●	●	●
BTA xx.xxx DE4-19.5	0.823 - 0.858	2.20	0.85	0.630	0.709	BTDO019.5	BTDI014	0.768	●	●	●	●	●	●
BTA xx.xxx DE4-21.5	0.859 - 0.902	2.20	0.85	0.689	0.768	BTDO021.5	BTDI015	0.846	●	●	●	●	●	●
BTA xx.xxx DE4-21.5	0.902 - 0.949	2.20	0.85	0.689	0.768	BTDO021.5	BTDI015	0.846	●	●	●	●	●	●
BTA xx.xxx DE4-23.5	0.949 - 0.992	2.26	0.85	0.748	0.827	BTDO023.5	BTDI016	0.925	●	●	●	●	●	●
BTA xx.xxx DE4-23.5	0.993 - 1.039	2.26	0.85	0.748	0.827	BTDO023.5	BTDI016	0.925	●	●	●	●	●	●
BTA xx.xxx DE4-26	1.040 - 1.083	2.38	0.96	0.827	0.925	BTDO026	BTDI018	1.024	○	○	○	○	○	○
BTA xx.xxx DE4-26	1.083 - 1.130	2.38	0.96	0.827	0.925	BTDO026	BTDI018	1.024	○	○	○	○	○	○
BTA xx.xxx DE4-28	1.130 - 1.173	2.50	0.96	0.906	1.004	BTDO028	BTDI020	1.102	○	○	○	○	○	○
BTA xx.xxx DE4-28	1.174 - 1.220	2.50	0.96	0.906	1.004	BTDO028	BTDI020	1.102	○	○	○	○	○	○
BTA xx.xxx DE4-30.5	1.221 - 1.264	2.50	0.96	1.004	1.102	BTDO030.5	BTDI022	1.201	○	○	○	○	○	○
BTA xx.xxx DE4-30.5	1.264 - 1.311	2.50	0.96	1.004	1.102	BTDO030.5	BTDI022	1.201	○	○	○	○	○	○
BTA xx.xxx DE4-33	1.311 - 1.370	2.78	1.20	1.063	1.181	BTDO033.0	BTDI024	1.299	○	○	○	○	○	○
BTA xx.xxx DE4-33	1.370 - 1.425	2.78	1.20	1.063	1.181	BTDO033.0	BTDI024	1.299	○	○	○	○	○	○
BTA xx.xxx DE4-35.5	1.426 - 1.469	2.89	1.20	1.181	1.299	BTDO035.5	BTDI026	1.398	○	○	○	○	○	○
BTA xx.xxx DE4-35.5	1.469 - 1.512	2.89	1.20	1.181	1.299	BTDO035.5	BTDI026	1.398	○	○	○	○	○	○
BTA xx.xxx DE4-35.5	1.512 - 1.559	2.89	1.20	1.181	1.299	BTDO035.5	BTDI026	1.398	○	○	○	○	○	○

●Standard
○Semi-Standard

BTA BRAZED DOUBLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
1.559 - 2.559

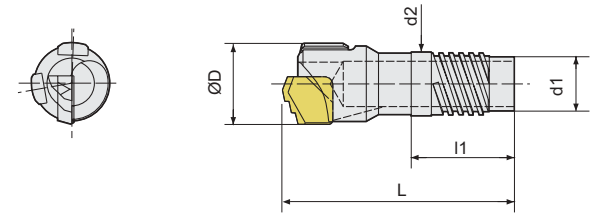


Designation	Diameter	Dimension				Tube			Grade					
		L	l1	d1	d2	Outer Tube	Inner Tube	Diameter	TB103	TB203	TB253	TB293	TB200	TB290
BTA xx.xxx DE4-39	**1.559 - 1.598**	2.89	1.20	1.299	1.417	BTDO039	BTDI029	1.535	○	○	○	○	●	●
BTA xx.xxx DE4-39	**1.599 - 1.646**	2.89	1.20	1.299	1.417	BTDO039	BTDI029	1.535	○	○	○	○	●	●
BTA xx.xxx DE4-39	**1.646 - 1.693**	2.89	1.20	1.299	1.417	BTDO039	BTDI029	1.535	○	○	○	○	●	●
BTA xx.xxx DE4-42.5	**1.693 - 1.744**	2.95	1.20	1.417	1.535	BTDO042.5	BTDI032	1.673	○	○	○	○	●	●
BTA xx.xxx DE4-42.5	**1.744 - 1.795**	2.95	1.20	1.417	1.535	BTDO042.5	BTDI032	1.673	○	○	○	○	●	●
BTA xx.xxx DE4-42.5	**1.796 - 1.850**	2.95	1.20	1.417	1.535	BTDO042.5	BTDI032	1.673	○	○	○	○	●	●
BTA xx.xxx DE4-46.5	**1.851 - 1.909**	3.11	1.36	1.555	1.693	BTDO046.5	BTDI035	1.831	○	○	○	○	●	●
BTA xx.xxx DE4-46.5	**1.910 - 1.972**	3.11	1.36	1.555	1.693	BTDO046.5	BTDI035	1.831	○	○	○	○	●	●
BTA xx.xxx DE4-46.5	**1.973 - 2.035**	3.11	1.36	1.555	1.693	BTDO046.5	BTDI035	1.831	○	○	○	○	●	●
BTA xx.xxx DE4-51	**2.036 - 2.094**	3.23	1.36	1.713	1.850	BTDO051	BTDI039	2.008	○	○	○	○	●	●
BTA xx.xxx DE4-51	**2.095 - 2.154**	3.23	1.36	1.713	1.850	BTDO051	BTDI039	2.008	○	○	○	○	●	●
BTA xx.xxx DE4-51	**2.154 - 2.213**	3.23	1.36	1.713	1.850	BTDO051	BTDI039	2.008	○	○	○	○	●	●
BTA xx.xxx DE4-55.5	**2.213 - 2.299**	3.31	1.36	1.870	2.008	BTDO055.5	BTDI043A	2.185	○	○	○	○	●	●
BTA xx.xxx DE4-55.5	**2.300 - 2.386**	3.31	1.36	1.870	2.008	BTDO055.5	BTDI043A	2.185	○	○	○	○	●	●
BTA xx.xxx DE4-55.5	**2.386 - 2.472**	3.31	1.36	1.870	2.008	BTDO055.5	BTDI043A	2.185	○	○	○	○	●	●
BTA xx.xxx DE4-55.5	**2.473 - 2.559**	3.31	1.36	1.870	2.008	BTDO055.5	BTDI043A	2.185	○	○	○	○	●	●

●Standard
○Semi-Standard

BTA BRAZED SINGLE TUBE SYSTEM - OUTER TWO START AND FOUR START THREAD

Diameters
0.496 - 0.787



Designation	Diameter	Dimension				Tube		Grade
		L	l1	d1	d2	Part No.	Diameter	TB203
BTS xx.xxx SE2-11*	**0.496 - 0.535**	1.68	0.81	0.323	0.378	BTSI011	0.433	
BTS xx.xxx SE2-12*	**0.536 - 0.575**	1.68	0.89	0.362	0.417	BTSI012	0.472	
BTS xx.xxx SE2-13*	**0.575 - 0.614**	1.68	0.89	0.402	0.457	BTSI013	0.512	
BTS xx.xxx SE4-14	**0.615 - 0.657**	1.70	0.89	0.425	0.496	BTSI014	0.551	
BTS xx.xxx SE4-15	**0.658 - 0.697**	1.70	0.89	0.465	0.535	BTSI015	0.591	
BTS xx.xxx SE4-16	**0.697 - 0.744**	1.72	0.89	0.492	0.571	BTSI016	0.630	
BTS xx.xxx SE4-17	**0.744 - 0.787**	1.72	0.89	0.531	0.610	BTSI017	0.669	

***** Marks are outer two start thread

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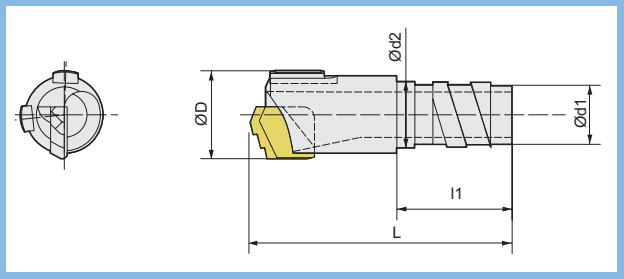
BTA BRAZED SINGLE TUBE SYSTEM - OUTER ONE START THREAD

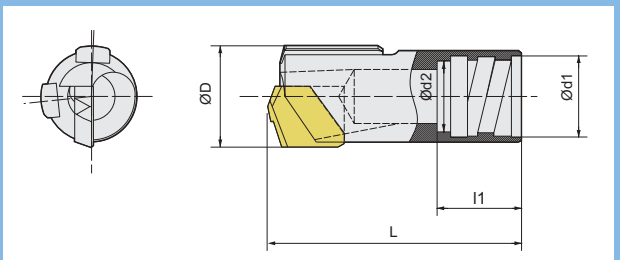
Diameters
0.315 - 0.570



Designation	Diameter	Dimension				Drill Tube		Grade
		L	l1	d1	d2	Part No.	Diameter	TB203
BTS xx.xxx SE1-7.1	**0.315 - 0.354**	1.40	0.63	0.213	0.236	BTSO071	0.280	
BTS xx.xxx SE1-8.3	**0.354 - 0.393**	1.40	0.63	0.248	0.283	BTSO083	0.327	
BTS xx.xxx SE1-9	**0.394 - 0.433**	1.41	0.63	0.264	0.299	BTSO090	0.354	
BTS xx.xxx SE1-10	**0.433 - 0.472**	1.41	0.63	0.303	0.339	BTSO100	0.394	
BTS xx.xxx SE1-11	**0.472 - 0.531**	1.41	0.63	0.323	0.358	BTSO110	0.433	
BTS xx.xxx SE1-12	**0.531 - 0.570**	1.42	0.63	0.370	0.425	BTSO120	0.472	

BOREline

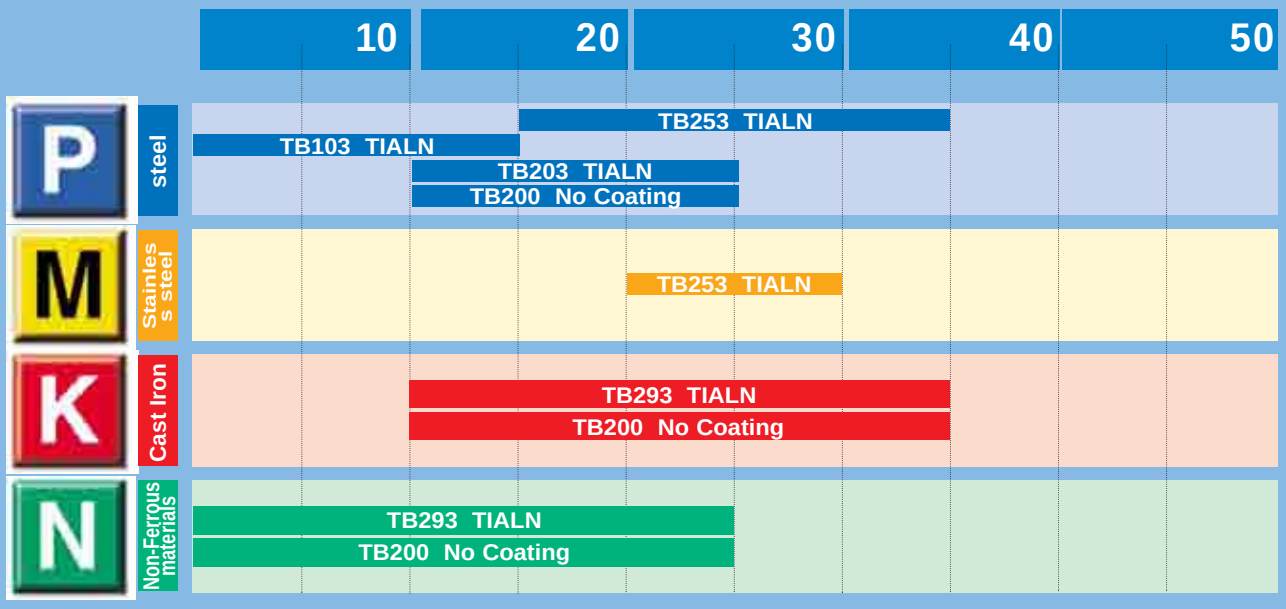
Diameters
0.571 - 2.559



Designation	Diameter	Dimension				Drill Tube		Grade
		L	l1	d1	d2	Part No.	Diameter	TB203
BTS xx.xxx SI1-12	**0.571 - 0.591**	2.06	0.91	0.453	0.390	BTSE012A	0.472	
BTS xx.xxx SI1-12	**0.591 - 0.610**	2.06	0.91	0.465	0.402	BTSE012B	0.472	
BTS xx.xxx SI1-13	**0.611 - 0.630**	2.06	0.91	0.488	0.425	BTSE013A	0.512	
BTS xx.xxx SI1-13	**0.630 - 0.650**	2.06	0.91	0.500	0.437	BTSE013B	0.512	
BTS xx.xxx SI1-14	**0.650 - 0.679**	2.07	0.91	0.528	0.465	BTSE014A	0.551	
BTS xx.xxx SI1-14	**0.680 - 0.709**	2.07	0.91	0.539	0.476	BTSE014B	0.551	
BTS xx.xxx SI1-15	**0.709 - 0.748**	2.08	0.91	0.567	0.504	BTSE015	0.591	
BTS xx.xxx SI1-16.5	**0.748 - 0.787**	2.08	0.91	0.606	0.543	BTSE016.5	0.650	
BTS xx.xxx SI1-18	**0.787 - 0.866**	2.44	0.98	0.650	0.571	BTSE018	0.709	
BTS xx.xxx SI1-20	**0.866 - 0.984**	2.46	0.98	0.748	0.630	BTSE020	0.787	
BTS xx.xxx SI1-22	**0.984 - 1.063**	2.74	0.98	0.787	0.669	BTSE022	0.866	
BTS xx.xxx SI1-24	**1.063 - 1.181**	2.76	0.98	0.866	0.748	BTSE024	0.945	
BTS xx.xxx SI1-26	**1.181 - 1.259**	2.97	0.98	0.945	0.827	BTSE026	1.024	
BTS xx.xxx SI1-28	**1.260 - 1.338**	3.37	0.98	1.024	0.906	BTSE028	1.102	
BTS xx.xxx SI1-30	**1.339 - 1.456**	3.39	1.57	1.063	0.945	BTSE030	1.181	
BTS xx.xxx SI1-32	**1.457 - 1.574**	3.39	1.57	1.181	1.063	BTSE032	1.260	
BTS xx.xxx SI1-36	**1.575 - 1.732**	3.41	1.57	1.299	1.181	BTSE036	1.417	
BTS xx.xxx SI1-39	**1.732 - 1.850**	3.82	1.57	1.457	1.339	BTSE039	1.535	
BTS xx.xxx SI1-43	**1.850 - 2.047**	3.83	1.57	1.614	1.457	BTSE043	1.693	
BTS xx.xxx SI1-47	**2.047 - 2.244**	3.85	1.57	1.732	1.575	BTSE047	1.850	
BTS xx.xxx SI1-51	**2.244 - 2.401**	3.87	1.57	1.929	1.772	BTSE051	2.008	
BTS xx.xxx SI1-56	**2.402 - 2.559**	3.89	1.57	2.087	1.929	BTSE056	2.205	

BTA BRAZED

Grade Combination per ISO application



1) TiN coating can be supplied upon request.

Application of grade combinations

Machine & working condition	Poor	Medium	Good
Recommended Grade Combination	TB253	TB203	TB103

Itemised grade combinations

Item	Standard Grade	Semi-Standard Grades	Special Grades
BTA	TB253	TB103 TB203	TB293
BTS	TB203		

Ingersoll

BTA DRILLS

BTA Reamer

Ingersoll BTA Reamer produces very high tolerance and excellent surface finish in deep hole applications.

TBTA-R... insert indexable reamers

- Available Range: Dia. 25.00mm - 110.99mm.
- Larger sizes are available upon request.

BTA-R... head exchangable reamers

- Available Range: Dia. 14.51mm - 65.00mm.
- Chip foward reamer is used for through hole only.
- Chip backward reamer can be used for both blind and through hole reaming

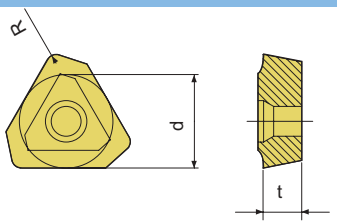
BTR... head exchangable reamers

- Available Range: Dia. 6.00mm - 24.99mm.
- Single and multiple culting edges are available.
- Insert indexable type on BTR... heads are available upon request.

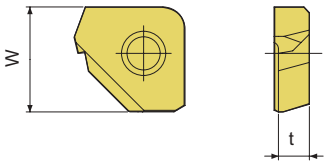
BTA INDEXABLE REAMER

Insert

TPMX,,



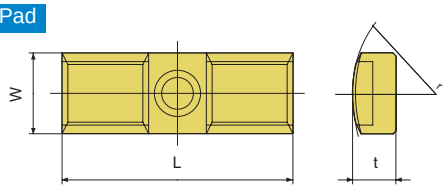
XPMT,,



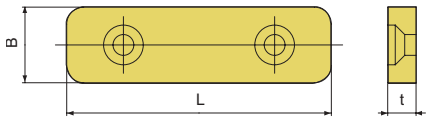
Designation	Dimension				Pocket			Grade	Screw
	d	t	R	W	Center	Inner	Outer	IN2005	
TPMX 1403LG	0.333	0.138	0.031	-			○		**CSTB2.5**
TPMX 1704LG	0.406	0.157	0.031	-			○		**CSTB3.5D**
TPMX 2405LG	0.559	0.217	0.047	-			○		**CSTB4M**
XPMT 16002-45	-	0.106	-	0.374			○		**CSTA3**

Pad

Guide Pad



Resin Guide Pad

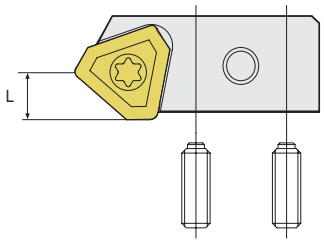


Type	Designation	Dimension				Screw
		W	t	L	r	
Guide Pad	**PAD-GC08-120**	0.315	0.173	0.984	0.689	**CSTB3S**
	PAD-GC08	0.315	0.177	0.984	0.689	**CSTB3S**
	PAD-GC10	0.394	0.236	1.378	0.787	**CSTB4S**
	PAD-GC14	0.551	0.295	1.575	0.984	**CSTA5S**
	PAD-GC18	0.709	0.354	1.575	1.181	**LS1206S**
Resin Guide Pad	**PAD-R10**	0.394	0.157	1.575	-	**LS0902.5-6**
	PAD-R12	0.472	0.197	1.772	-	**LS0903-8**
	PAD-R15	0.591	0.228	1.969	-	**LS0904-10**
	PAD-R20	0.787	0.295	2.756	-	**LS0905-12**
	PAD-R30	1.181	0.492	3.150	-	**LS0906-15**
	PAD-R35	1.378	0.610	3.937	-	**LS0906-15**

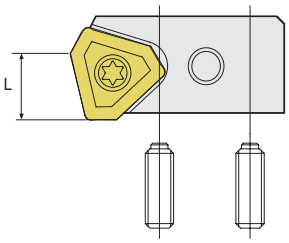
BTA INDEXABLE REAMER

Cartridge

Accurate Applications



Open Tolerance Applications

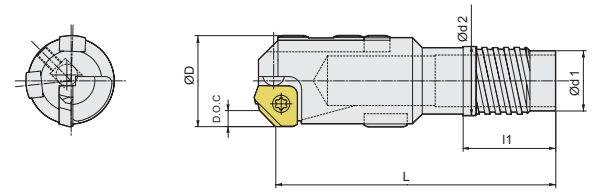


Designation		L	Adjust Screw	Wrench	Lock Screw	Wrench	Insert
Accurate Tolerance Applications	PERC-P04R	0.197	AS0004-8	H2	LS1803.5RH	H2.5	TPMX1403
	PERC-P32R	0.236	AS0005-10	H2.5	LS1805RH	H3	TPMX1704
	PERC-P43R	0.315	AS0005-15	H2.5	LS1806RH	H4	TPMX2405
Open Tolerance Applications	PERC-N04	0.315	AS0004-8	H2	LS1803.5RH	H2.5	TPMX1403
	PERC-N32	0.354	AS0005-10	H2.5	LS1805RH	H3	TPMX1704
	PERC-N43	0.512	AS0005-15	H2.5	LS1806RH	H4	TPMX2405

* PERC-P and PERC-N cartridges are interchangable in the same pocket.

BTA INDEXABLE REAMER SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
0.984 - 1.574



Designation	Diameter	D.O.C	Dimension				Tube	
			L	l1	d1	d2	Type	Diameter
TBTA-R-xx.xxxSE4-22	**0.984 - 1.039**	0.14	2.76	0.85	0.689	0.768	BTSI 022	0.866
TBTA-R-xx.xxxSE4-24	**1.040 - 1.130**	0.14	2.76	0.85	0.748	0.827	BTSI 024	0.945
TBTA-R-xx.xxxSE4-26	**1.130 - 1.220**	0.14	2.95	0.96	0.827	0.925	BTSI 026	1.024
TBTA-R-xx.xxxSE4-28	**1.221 - 1.311**	0.14	2.95	0.96	0.906	1.004	BTSI 028	1.102
TBTA-R-xx.xxxSE4-30	**1.311 - 1.425**	0.14	2.95	0.96	1.004	1.102	BTSI 030	1.181
TBTA-R-xx.xxxSE4-33	**1.426 - 1.559**	0.14	3.54	1.20	1.063	1.181	BTSI 033	1.299
TBTA-R-xx.xxxSE4-36	**1.559 - 1.574**	0.14	3.54	1.20	1.181	1.299	BTSI 036	1.417

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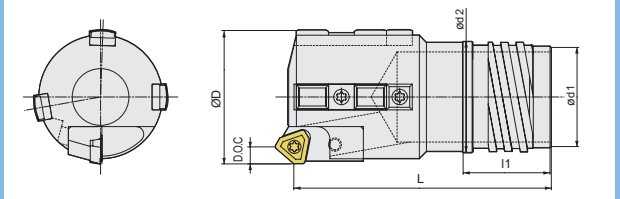
BTA INDEXABLE REAMER SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

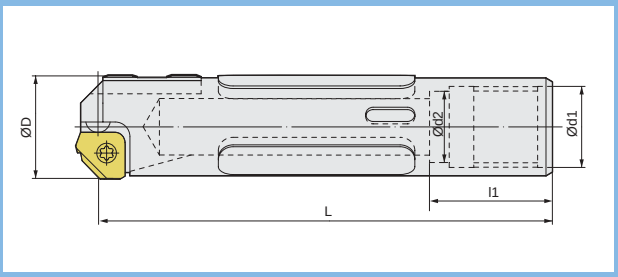
Diameters
1.575 - 3.898



Designation	Diameter	D.O.C	Dimension				Tube	
			L	l1	d1	d2	Type	Diameter
TBTA-R-xx.xxxSE4-36	**1.575 - 1.693**	0.20	3.54	1.20	1.181	1.299	BTSI 036	1.417
TBTA-R-xx.xxxSE4-39	**1.693 - 1.850**	0.20	3.74	1.20	1.299	1.417	BTSI 039	1.535
TBTA-R-xx.xxxSE4-43	**1.851 - 2.035**	0.20	3.94	1.20	1.417	1.535	BTSI 043	1.693
TBTA-R-xx.xxxSE4-47	**2.036 - 2.213**	0.20	3.94	1.36	1.555	1.693	BTSI 047	1.850
TBTA-R-xx.xxxSE4-51	**2.213 - 2.386**	0.24	4.13	1.36	1.713	1.850	BTSI 051	2.008
TBTA-R-xx.xxxSE4-56	**2.386 - 2.559**	0.24	4.33	1.36	1.870	2.008	BTSI 056A	2.205
TBTA-R-xx.xxxSE4-56	**2.559 - 2.637**	0.24	5.91	2.44	1.850	2.047	BTSI 056B	2.205
TBTA-R-xx.xxxSE4-62	**2.638 - 2.874**	0.31	5.91	2.44	2.087	2.283	BTSI 062	2.441
TBTA-R-xx.xxxSE4-68	**2.874 - 3.149**	0.31	5.91	2.44	2.283	2.480	BTSI 068	2.677
TBTA-R-xx.xxxSE4-75	**3.150 - 3.425**	0.31	7.09	3.23	2.520	2.756	BTSI 075	2.953
TBTA-R-xx.xxxSE4-82	**3.425 - 3.937**	0.31	7.09	3.23	2.795	3.031	BTSI 082	3.228

BTA INDEXABLE REAMER SINGLE TUBE SYSTEM - INNER SINGLE START THREAD

Diameters
0.984 - 1.574



Designation	Diameter	D.O.C	Dimension				Tube	
			L	l1	d1	d2	Type	Diameter
TBTA-R-xx.xxxSI1-22	**0.984 - 1.063**	0.14	4.33	0.98	0.787	0.669	BTSE 022	0.866
TBTA-R-xx.xxxSI1-24	**1.063 - 1.181**	0.14	4.33	0.98	0.866	0.748	BTSE 024	0.945
TBTA-R-xx.xxxSI1-26	**1.181 - 1.259**	0.14	4.33	0.98	0.945	0.827	BTSE 026	1.024
TBTA-R-xx.xxxSI1-28	**1.260 - 1.338**	0.14	4.33	0.98	1.024	0.906	BTSE 028	1.102
TBTA-R-xx.xxxSI1-30	**1.339 - 1.456**	0.14	5.31	1.57	1.063	0.945	BTSE 030	1.181
TBTA-R-xx.xxxSI1-33	**1.457 - 1.574**	0.14	5.31	1.57	1.181	1.063	BTSE 033	1.299

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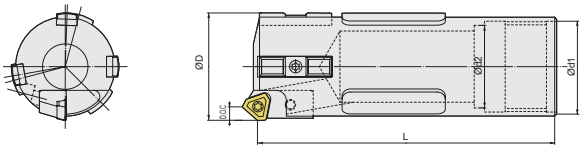
BTA INDEXABLE REAMER SINGLE TUBE SYSTEM - INNER SINGLE START THREAD

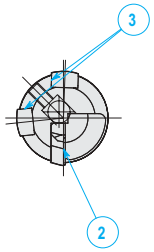
Diameters
1.575 - 4.370

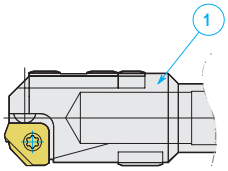


Designation	Diameter	D.O.C	Dimension				Tube	
			L	l1	d1	d2	Type	Diameter
TBTA-R-xx.xxxSI1-36	**1.575 - 1.732**	0.10	5.31	1.57	1.299	1.181	BTSE 036	1.417
TBTA-R-xx.xxxSI1-39	**1.732 - 1.850**	0.10	5.31	1.57	1.457	1.339	BTSE 039	1.535
TBTA-R-xx.xxxSI1-43	**1.850 - 2.047**	0.10	5.71	1.57	1.614	1.457	BTSE 043	1.693
TBTA-R-xx.xxxSI1-47	**2.047 - 2.244**	0.16	5.71	1.57	1.732	1.575	BTSE 047	1.850
TBTA-R-xx.xxxSI1-51	**2.244 - 2.401**	0.16	6.69	1.57	1.929	1.772	BTSE 051	2.008
TBTA-R-xx.xxxSI1-56	**2.402 - 2.677**	0.16	6.69	1.57	2.087	1.929	BTSE 056	2.205
TBTA-R-xx.xxxSI1-62	**2.677 - 2.952**	0.20	6.69	1.57	2.323	2.126	BTSE 062	2.441
TBTA-R-xx.xxxSI1-68	**2.953 - 3.189**	0.20	8.07	2.76	2.559	2.362	BTSE 068	2.677
TBTA-R-xx.xxxSI1-75	**3.189 - 3.582**	0.20	8.07	2.76	2.795	2.598	BTSE 075	2.953
TBTA-R-xx.xxxSI1-82	**3.583 - 3.897**	0.20	8.46	2.76	3.110	2.913	BTSE 082	3.228
TBTA-R-xx.xxxSI1-94	**3.898 - 4.370**	0.20	8.46	2.76	3.543	3.346	BTSE 094	3.701

BTA INDEXABLE REAMER ASSEMBLY OF TBTA-R SERIES

Diameters
0.984 - 1.574





1. Head Shank
2. Cartridge & Lock Screw
3. Guide Pad

Parts			Diameter			
			0.984 - 1.102	1.102 - 1.181	1.181 - 1.496	1.496 - 1.574
Close Tolerance	Cartridge	Cartridge	-	-	-	-
		Adjust Screw	-	-	-	-
		Wrench	-	-	-	-
		Screw	-	-	-	-
		Wrench	-	-	-	-
	Insert	Insert	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45
		Screw	CSTANO3	CSTANO3	CSTANO3	CSTANO3
		Wrench	T9	T9	T9	T9
Normal Tolerance	Cartridge	Outer	-	-	-	-
		Adjust Screw	-	-	-	-
		Wrench	-	-	-	-
		Screw	-	-	-	-
		Wrench	-	-	-	-
	Insert	Inner	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45
		Screw	CSTANO3	CSTANO3	CSTANO3	CSTANO3
		Wrench	T9	T9	T9	T9
Pad		Guide Pad (A)	PAD-GC08-120	PAD-GC08-120	PAD-GC08-140	PAD-GC08
		Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S
		Wrench	T9	T9	T9	T9
		Guide Pad Protector (B)	PAD-P08-120	PAD-P08-120	PAD-P08-140	PAD-P08
		Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S
		Wrench	T9	T9	T9	T9
		Resin Guide Pad (C)	PAD-R10	PAD-R10	PAD-R12	PAD-R15
		Screw	LS0902	LS0902	LS0903	LS0904
		Wrench	+	+	+	+

A + B is for outer four start thread connection type.
A + C is for inner single start thread connection type.

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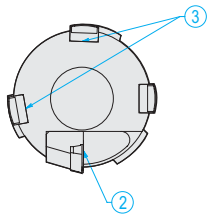
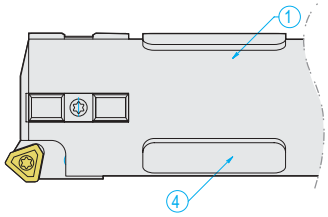
BTA INDEXABLE REAMER ASSEMBLY OF TBTA-R SERIES

Diameters
1.575 - 2.637





1. Head Shank
2. Cartridge & Lock Screw
3. Guide Pad
4. Resin Guide Pad & Lock Screw

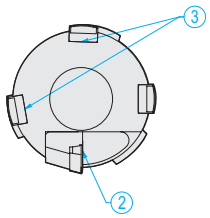
Parts			Diameter			
			1.575 - 1.811	1.811 - 2.047	2.047 - 2.362	2.362 - 2.637
Close Tolerance	Cartridge	Cartridge	PERC-P 04R	PERC-P 04R	PERC-P 32R	PERC-P 32R
		Adjust Screw	AS0004-8	AS0004-8	AS0005-10	AS0005-10
		Wrench	H2	H2	H2.5	H2.5
		Screw	LS1803.5RH	LS1803.5RH	LS1805RH	LS1805RH
		Wrench	H2.5	H2.5	H3	H3
	Insert	Insert	TPMX 1403LG	TPMX 1403LG	TPMX 1704LG	TPMX 1704LG
		Screw	CSTB2.5	CSTB2.5	CSTB3.5D	CSTB3.5D
		Wrench	T8	T8	T9	T9
Normal Tolerance	Cartridge	Outer	PERC 402-04	PERC 402-04	PERC 402-32	PERC 402-32
		Adjust Screw	AS0004-8	AS0004-8	AS0005-10	AS0005-10
		Wrench	H2	H2	H2.5	H2.5
		Screw	LS1803.5RH	LS1803.5RH	LS1805RH	LS1805RH
		Wrench	H2.5	H2.5	H3	H3
	Insert	Inner	TPMX 1403RG	TPMX 1403RG	TPMX 1704RG	TPMX 1704RG
		Screw	CSTB2.5	CSTB2.5	CSTB3.5D	CSTB3.5D
		Wrench	T8	T8	T9	T9
Pad		Guide Pad (A)	PAD-GC08	PAD-GC10	PAD-GC10	PAD-GC14
		Screw	CSTB3S	CSTB3S	CSTB3S	CSTA5S
		Wrench	T9	T9	T9	T15
		Guide Pad Protector (B)	PAD-P08	PAD-P10	PAD-P10	PAD-P14
		Screw	CSTB3S	CSTB4S	CSTB4S	CSTA5S
		Wrench	T9	T15	T15	T15
		Resin Guide Pad (C)	PAD-R15	PAD-R15	PAD-R15	PAD-R20
		Screw	LS0904	LS0904	LS0904	LS0905
		Wrench	+	+	+	+

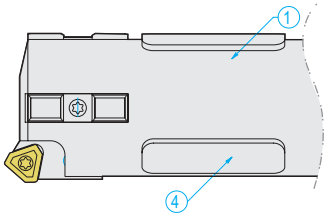
A + B is for outer four start thread connection type.
A + C is for inner single start thread connection type.

BOREline

BTA INDEXABLE REAMER ASSEMBLY OF TBTA-R SERIES

Diameters
2.638 - 4.842





1. Head Shank
2. Cartridge & Lock Screw
3. Guide Pad
4. Resin Guide Pad & Lock Screw

Parts			Diameter			
			2.638 - 3.189	3.189 - 3.582	3.583 - 3.937	3.937 - 4.842
Close Tolerance	Cartridge	Cartridge	PERC-P 43R	PERC-P 43R	PERC-P 43R	PERC-P 43R
		Adjust Screw	AS0005-15	AS0005-15	AS0005-15	AS0005-15
		Wrench	H2.5	H2.5	H2.5	H2.5
		Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
		Wrench	H4	H4	H4	H4
	Insert	Insert	TPMX 2405LG	TPMX 2405LG	TPMX 2405LG	TPMX 2405LG
		Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
		Wrench	T15	T15	T15	T15
Normal Tolerance	Cartridge	Outer	PERC 402-43	PERC 402-43	PERC 402-43	PERC 402-43
		Adjust Screw	AS0005-15	AS0005-15	AS0005-15	AS0005-15
		Wrench	H2.5	H2.5	H2.5	H2.5
		Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
		Wrench	H4	H4	H4	H4
	Insert	Inner	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
		Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
		Wrench	T15	T15	T15	T15
Pad		Guide Pad (A)	PAD-GC14	PAD-GC14	PAD-GC14	PAD-GC18
		Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S
		Wrench	T15	T15	T15	T15
		Guide Pad Protector (B)	PAD-P14	PAD-P14	PAD-P14	PAD-P18
		Screw	CSTA5S	CSTA5S	CSTA5S	LS1206S
		Wrench	T15	T15	T15	H3
		Resin Guide Pad (C)	PAD-R20	PAD-R30	PAD-R35	PAD-R35
		Screw	LS0905	LS0906	LS0906	LS0906
		Wrench	+	+	+	+

A + B is for outer four start thread connection type.
A + C is for inner single start thread connection type.

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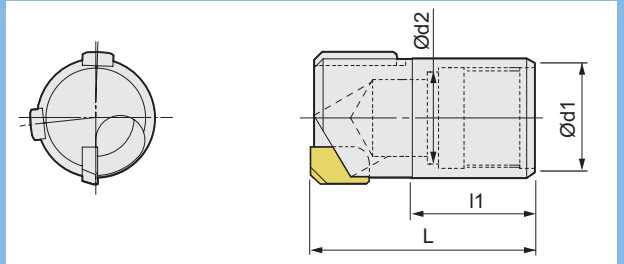
HEAD CHANGE REAMER SINGLE TUBE SYSTEM - INNER SINGLE START THREAD

Diameters
0.571- 2.559



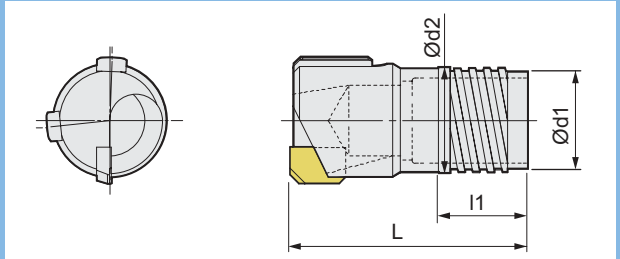
Designation	Diameter	Dimension				Tube		Grade
		L	l1	d1	d2	Part No.	Diameter	TB103
BTA-Rxx.xxxSI1-12-□□□	0.571 - 0.591	2.05	0.91	0.453	0.390	BTSE012A	0.472	
BTA-Rxx.xxxSI1-12-□□□	0.591 - 0.610	2.05	0.91	0.465	0.402	BTSE012B	0.472	
BTA-Rxx.xxxSI1-13-□□□	0.611 - 0.630	2.05	0.91	0.488	0.425	BTSE013A	0.512	
BTA-Rxx.xxxSI1-13-□□□	0.630 - 0.650	2.05	0.91	0.500	0.437	BTSE013B	0.512	
BTA-Rxx.xxxSI1-14-□□□	0.650 - 67.913	2.05	0.91	0.528	0.465	BTSE014A	0.551	
BTA-Rxx.xxxSI1-14-□□□	0.680 - 0.709	2.05	0.91	0.539	0.476	BTSE014B	0.551	
BTA-Rxx.xxxSI1-15-□□□	0.709 - 0.748	2.05	0.91	0.567	0.504	BTSE015	0.591	
BTA-Rxx.xxxSI1-16.5-□□□	0.748 - 0.787	2.24	0.91	0.606	0.543	BTSE016.5	0.650	
BTA-Rxx.xxxSI1-18-□□□	0.787 - 0.866	2.24	0.98	0.650	0.571	BTSE018	0.709	
BTA-Rxx.xxxSI1-20-□□□	0.866 - 0.984	2.24	0.98	0.748	0.630	BTSE020	0.787	
BTA-Rxx.xxxSI1-22-□□□	0.984 - 1.063	2.64	0.98	0.787	0.669	BTSE022	0.866	
BTA-Rxx.xxxSI1-24-□□□	1.063 - 1.181	2.64	0.98	0.866	0.748	BTSE024	0.945	
BTA-Rxx.xxxSI1-26-□□□	1.181 - 1.259	2.64	0.98	0.945	0.827	BTSE026	1.024	
BTA-Rxx.xxxSI1-28-□□□	1.260 - 1.338	3.15	0.98	1.024	0.906	BTSE028	1.102	
BTA-Rxx.xxxSI1-30-□□□	1.339 - 1.456	3.15	1.57	1.063	0.945	BTSE030	1.181	
BTA-Rxx.xxxSI1-32-□□□	1.457 - 1.574	3.15	1.57	1.181	1.063	BTSE032	1.260	
BTA-Rxx.xxxSI1-36-□□□	1.575 - 1.732	3.54	1.57	1.299	1.181	BTSE036	1.417	
BTA-Rxx.xxxSI1-39-□□□	1.732 - 1.850	3.54	1.57	1.457	1.339	BTSE039	1.535	
BTA-Rxx.xxxSI1-43-□□□	1.850 - 2.047	3.54	1.57	1.614	1.457	BTSE043	1.693	
BTA-Rxx.xxxSI1-47-□□□	2.047 - 2.244	3.54	1.57	1.732	1.575	BTSE047	1.850	
BTA-Rxx.xxxSI1-51-□□□	2.244 - 2.401	3.54	1.57	1.929	1.772	BTSE051	2.008	
BTA-Rxx.xxxSI1-56-□□□	2.402 - 2.559	3.54	1.57	2.087	1.929	BTSE056	2.205	

Ordering example: BTA-R00.571SI1-12-B45
•Reamer diameter: 0.571
•Chip backward style (Chip forward style is available for through hole)
•Entering angle: 45degree

BOREline

HEAD CHANGE REAMER SINGLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
0.744 - 2.559



Designation	Diameter	Dimension				Tube		Grade
		L	l1	d1	d2	Part No.	Diameter	TB103
BTA-Rxx.xxxSE4-17-□□□	0.744 - 0.756	2.24	1.74	0.531	0.610	BTSI017	0.669	
BTA-Rxx.xxxSE4-17-□□□	0.756 - 0.787	2.24	1.73	0.531	0.610	BTSI017	0.669	
BTA-Rxx.xxxSE4-18-□□□	0.788 - 0.823	2.56	1.94	0.551	0.630	BTSI018	0.709	
BTA-Rxx.xxxSE4-18-□□□	0.823 - 0.858	2.56	1.94	0.551	0.630	BTSI018	0.709	
BTA-Rxx.xxxSE4-20-□□□	0.859 - 0.902	2.56	2.08	0.630	0.709	BTSI020	0.787	
BTA-Rxx.xxxSE4-20-□□□	0.902 - 0.949	2.56	2.07	0.630	0.709	BTSI020	0.787	
BTA-Rxx.xxxSE4-22-□□□	0.949 - 0.992	2.56	2.13	0.689	0.768	BTSI022	0.866	
BTA-Rxx.xxxSE4-22-□□□	0.993 - 1.039	2.56	2.13	0.689	0.768	BTSI022	0.866	
BTA-Rxx.xxxSE4-24-□□□	1.040 - 1.083	2.56	2.12	0.748	0.827	BTSI024	0.945	
BTA-Rxx.xxxSE4-24-□□□	1.083 - 1.130	2.56	2.12	0.748	0.827	BTSI024	0.945	
BTA-Rxx.xxxSE4-26-□□□	1.130 - 1.173	2.76	2.34	0.827	0.925	BTSI026	1.024	
BTA-Rxx.xxxSE4-26-□□□	1.174 - 1.220	2.76	2.33	0.827	0.925	BTSI026	1.024	
BTA-Rxx.xxxSE4-28-□□□	1.221 - 1.264	2.76	2.34	0.906	1.004	BTSI028	1.102	
BTA-Rxx.xxxSE4-28-□□□	1.264 - 1.311	2.76	2.33	0.906	1.004	BTSI028	1.102	
BTA-Rxx.xxxSE4-30-□□□	1.311 - 1.370	2.76	2.32	1.004	1.102	BTSI030	1.181	
BTA-Rxx.xxxSE4-30-□□□	1.370 - 1.425	2.76	2.32	1.004	1.102	BTSI030	1.181	
BTA-Rxx.xxxSE4-33-□□□	1.426 - 1.469	3.23	2.70	1.063	1.181	BTSI033	1.299	
BTA-Rxx.xxxSE4-33-□□□	1.469 - 1.512	3.23	2.70	1.063	1.181	BTSI033	1.299	
BTA-Rxx.xxxSE4-33-□□□	1.512 - 1.559	3.23	2.69	1.063	1.181	BTSI033	1.299	
BTA-Rxx.xxxSE4-36-□□□	1.559 - 1.598	3.23	2.69	1.181	1.299	BTSI036	1.417	
BTA-Rxx.xxxSE4-36-□□□	1.599 - 1.646	3.23	2.68	1.181	1.299	BTSI036	1.417	
BTA-Rxx.xxxSE4-36-□□□	1.646 - 1.693	3.23	2.67	1.181	1.299	BTSI036	1.417	
BTA-Rxx.xxxSE4-39-□□□	1.693 - 1.744	3.23	2.74	1.299	1.417	BTSI039	1.535	
BTA-Rxx.xxxSE4-39-□□□	1.744 - 1.795	3.23	2.73	1.299	1.417	BTSI039	1.535	
BTA-Rxx.xxxSE4-39-□□□	1.796 - 1.850	3.23	2.72	1.299	1.417	BTSI039	1.535	
BTA-Rxx.xxxSE4-43-□□□	1.851 - 1.909	3.23	2.71	1.417	1.535	BTSI043	1.693	
BTA-Rxx.xxxSE4-43-□□□	1.910 - 1.972	3.23	2.70	1.417	1.535	BTSI043	1.693	
BTA-Rxx.xxxSE4-43-□□□	1.973 - 2.035	3.23	2.70	1.417	1.535	BTSI043	1.693	
BTA-Rxx.xxxSE4-47-□□□	2.036 - 2.094	3.66	2.96	1.555	1.693	BTSI047	1.850	
BTA-Rxx.xxxSE4-47-□□□	2.095 - 2.154	3.66	2.96	1.555	1.693	BTSI047	1.850	
BTA-Rxx.xxxSE4-47-□□□	2.154 - 2.213	3.66	2.96	1.555	1.693	BTSI047	1.850	
BTA-Rxx.xxxSE4-51-□□□	2.213 - 2.299	3.66	3.05	1.713	1.850	BTSI051	2.008	
BTA-Rxx.xxxSE4-51-□□□	2.300 - 2.386	3.66	3.03	1.713	1.850	BTSI051	2.008	
BTA-Rxx.xxxSE4-56-□□□	2.386 - 2.472	3.66	3.02	1.870	2.008	BTSI056	2.205	
BTA-Rxx.xxxSE4-56-□□□	2.473 - 2.559	3.66	3.01	1.870	2.008	BTSI056	2.205	

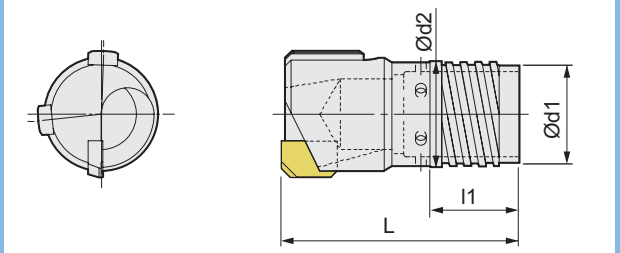
Ordering example: BTA-R00.571SE4-12-B45
•Reamer diameter: 0.571
•Chip backward style (Chip forward style is available for through hole)
•Entering angle: 45degree

BOREline

Ingersoll

HEAD CHANGE REAMER DOUBLE TUBE SYSTEM - OUTER FOUR START THREAD

Diameters
0.725 - 2.559

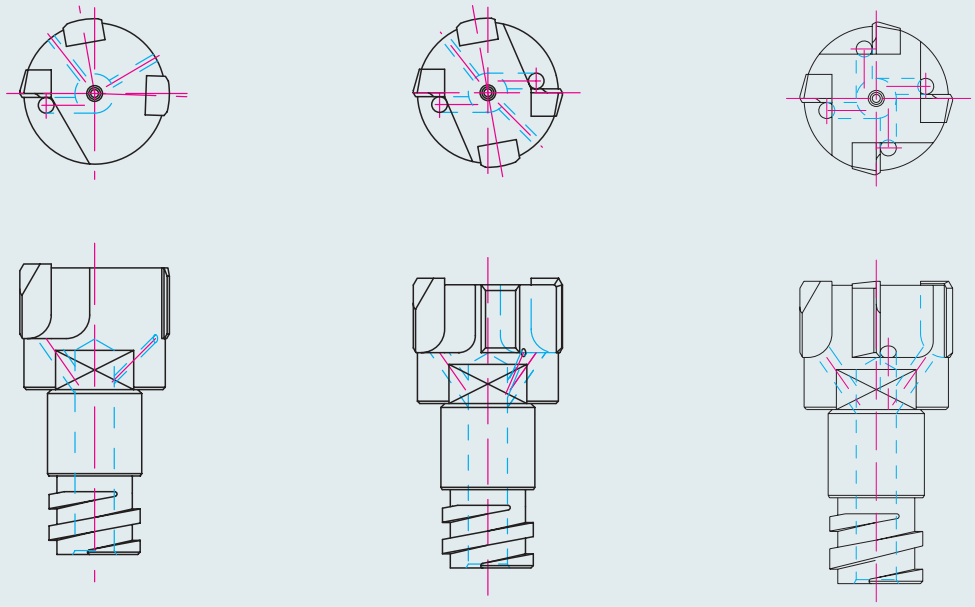


Designation	Diameter	Dimension				Tube			Grade
		L	l1	d1	d2	Outer Tube	Inner Tube	Diameter	TB103
BTA-Rxx.xxxDE4-18-□□□	0.725 - 0.756	2.24	0.85	0.551	0.630	BTDO018	BTDI012	0.709	
BTA-Rxx.xxxDE4-18-□□□	0.756 - 0.787	2.24	0.85	0.551	0.630	BTDO018	BTDI012	0.709	
BTA-Rxx.xxxDE4-19.5-□□□	0.796 - 0.823	2.56	0.85	0.630	0.709	BTDO019.5	BTDI014	0.768	
BTA-Rxx.xxxDE4-19.5-□□□	0.823 - 0.858	2.56	0.85	0.630	0.709	BTDO019.5	BTDI014	0.768	
BTA-Rxx.xxxDE4-21.5-□□□	0.859 - 0.902	2.56	0.85	0.689	0.768	BTDO021.5	BTDI015	0.846	
BTA-Rxx.xxxDE4-21.5-□□□	0.902 - 0.949	2.56	0.85	0.689	0.768	BTDO021.5	BTDI015	0.846	
BTA-Rxx.xxxDE4-23.5-□□□	0.949 - 0.992	2.56	0.85	0.748	0.827	BTDO023.5	BTDI016	0.925	
BTA-Rxx.xxxDE4-23.5-□□□	0.993 - 1.039	2.56	0.85	0.748	0.827	BTDO023.5	BTDI016	0.925	
BTA-Rxx.xxxDE4-26-□□□	1.040 - 1.083	2.56	0.96	0.827	0.925	BTDO026	BTDI018	1.024	
BTA-Rxx.xxxDE4-26-□□□	1.083 - 1.130	2.56	0.96	0.827	0.925	BTDO026	BTDI018	1.024	
BTA-Rxx.xxxDE4-28-□□□	1.130 - 1.173	2.76	0.96	0.906	1.004	BTDO028	BTDI020	1.102	
BTA-Rxx.xxxDE4-28-□□□	1.174 - 1.220	2.76	0.96	0.906	1.004	BTDO028	BTDI020	1.102	
BTA-Rxx.xxxDE4-30.5-□□□	1.221 - 1.264	2.76	0.96	1.004	1.102	BTDO030.5	BTDI022	1.201	
BTA-Rxx.xxxDE4-30.5-□□□	1.264 - 1.311	2.76	0.96	1.004	1.102	BTDO030.5	BTDI022	1.201	
BTA-Rxx.xxxDE4-33-□□□	1.311 - 1.370	2.76	1.20	1.063	1.181	BTDO033.0	BTDI024	1.299	
BTA-Rxx.xxxDE4-33-□□□	1.370 - 1.425	2.76	1.20	1.063	1.181	BTDO033.0	BTDI024	1.299	
BTA-Rxx.xxxDE4-35.5-□□□	1.426 - 1.469	3.23	1.20	1.181	1.299	BTDO035.5	BTDI026	1.398	
BTA-Rxx.xxxDE4-35.5-□□□	1.469 - 1.512	3.23	1.20	1.181	1.299	BTDO035.5	BTDI026	1.398	
BTA-Rxx.xxxDE4-35.5-□□□	1.512 - 1.559	3.23	1.20	1.181	1.299	BTDO035.5	BTDI026	1.398	
BTA-Rxx.xxxDE4-39-□□□	1.559 - 1.598	3.23	1.20	1.299	1.417	BTDO039	BTDI029	1.535	
BTA-Rxx.xxxDE4-39-□□□	1.599 - 1.646	3.23	1.20	1.299	1.417	BTDO039	BTDI029	1.535	
BTA-Rxx.xxxDE4-39-□□□	1.646 - 1.693	3.23	1.20	1.299	1.417	BTDO039	BTDI029	1.535	
BTA-Rxx.xxxDE4-42.5-□□□	1.693 - 1.744	3.23	1.20	1.417	1.535	BTDO042.5	BTDI032	1.673	
BTA-Rxx.xxxDE4-42.5-□□□	1.744 - 1.795	3.23	1.20	1.417	1.535	BTDO042.5	BTDI032	1.673	
BTA-Rxx.xxxDE4-42.5-□□□	1.796 - 1.850	3.23	1.20	1.417	1.535	BTDO042.5	BTDI032	1.673	
BTA-Rxx.xxxDE4-46.5-□□□	1.851 - 1.909	3.23	1.36	1.555	1.693	BTDO046.5	BTDI035	1.831	
BTA-Rxx.xxxDE4-46.5-□□□	1.910 - 1.972	3.23	1.36	1.555	1.693	BTDO046.5	BTDI035	1.831	
BTA-Rxx.xxxDE4-46.5-□□□	1.973 - 2.035	3.23	1.36	1.555	1.693	BTDO046.5	BTDI035	1.831	
BTA-Rxx.xxxDE4-51-□□□	2.036 - 2.094	3.66	1.36	1.713	1.850	BTDO051	BTDI039	2.008	
BTA-Rxx.xxxDE4-51-□□□	2.095 - 2.154	3.66	1.36	1.713	1.850	BTDO051	BTDI039	2.008	
BTA-Rxx.xxxDE4-51-□□□	2.154 - 2.213	3.66	1.36	1.713	1.850	BTDO051	BTDI039	2.008	
BTA-Rxx.xxxDE4-55.5-□□□	2.213 - 2.299	3.66	1.36	1.870	2.008	BTDO055.5	BTDI043A	2.185	
BTA-Rxx.xxxDE4-55.5-□□□	2.300 - 2.386	3.66	1.36	1.870	2.008	BTDO055.5	BTDI043A	2.185	
BTA-Rxx.xxxDE4-55.5-□□□	2.386 - 2.472	3.66	1.36	1.870	2.008	BTDO055.5	BTDI043A	2.185	
BTA-Rxx.xxxDE4-55.5-□□□	2.473 - 2.559	3.66	1.36	1.870	2.008	BTDO055.5	BTDI043A	2.185	

Ordering example: BTA-R00.726DE4-18-B30
•Reamer diameter: 0.726
•Chip backward style (Chip forward style is available for through hole)
•Entering angle: 30degree

BOREline

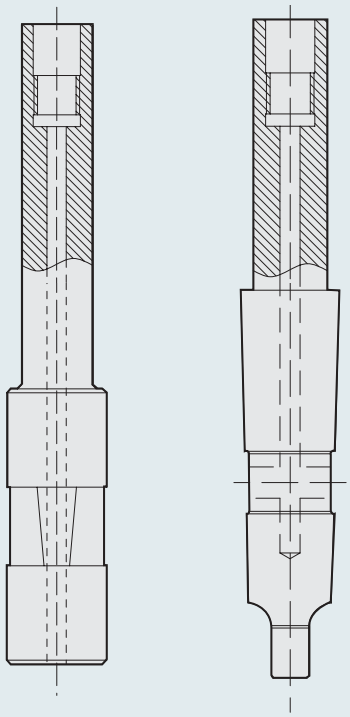
HEAD



BTRS
SINGLE CUTTING EDGE, DISPOSABLE

BTRW
TWO CUTTING EDGES, DISPOSABLE

BTRM
MULTI CUTTING EDGES, DISPOSABLE



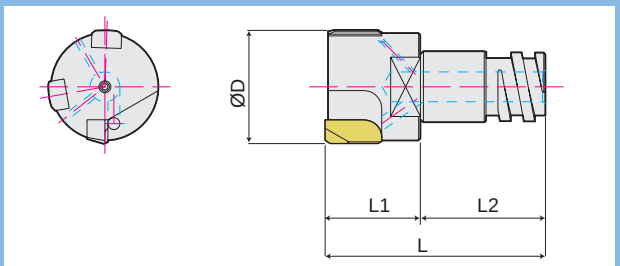
ST Shank

MT Shank

Ingersoll

BTA REAMER HEAD - SHANK SYSTEM BTRS

Diameters
0.236 - 0.984

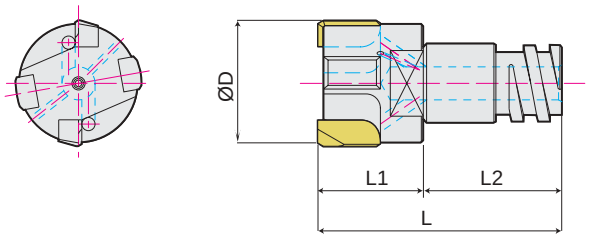


Designation	Diameter	L	L1	L2	Bar
BTRS xx.xxx 041	**0.236 - 0.305**	0.94	0.51	0.43	BTR04-...
BTRS xx.xxx 051	**0.305 - 0.344**	0.98	0.51	0.47	BTR05-...
BTRS xx.xxx 061	**0.344 - 0.383**	1.06	0.55	0.51	BTR06-...
BTRS xx.xxx 071	**0.384 - 0.433**	1.14	0.59	0.55	BTR07-...
BTRS xx.xxx 081	**0.433 - 0.472**	1.14	0.59	0.55	BTR08-...
BTRS xx.xxx 091	**0.472 - 0.511**	1.18	0.59	0.59	BTR09-...
BTRS xx.xxx 092	**0.512 - 0.590**	1.18	0.59	0.59	BTR09-...
BTRS xx.xxx 101	**0.591 - 0.630**	1.26	0.63	0.63	BTR10-...
BTRS xx.xxx 102	**0.630 - 0.669**	1.26	0.63	0.63	BTR10-...
BTRS xx.xxx 103	**0.669 - 0.708**	1.26	0.63	0.63	BTR10-...
BTRS xx.xxx 104	**0.709 - 0.748**	1.26	0.63	0.63	BTR10-...
BTRS xx.xxx 121	**0.748 - 0.787**	1.46	0.63	0.83	BTR12-...
BTRS xx.xxx 122	**0.787 - 0.866**	1.46	0.63	0.83	BTR12-...
BTRS xx.xxx 123	**0.866 - 0.944**	1.46	0.63	0.83	BTR12-...
BTRS xx.xxx 124	**0.945 - 0.984**	1.46	0.63	0.83	BTR12-...

* For high speed machinining, ceramic guide is available on request.

BTA REAMER HEAD - SHANK SYSTEM BTRW

Diameters
0.236 - 0.984



Designation	Diameter	L	L1	L2	Bar
BTRW xx.xxx 041	**0.236 - 0.305**	0.94	0.51	0.43	BTR04-...
BTRW xx.xxx 051	**0.305 - 0.344**	0.98	0.51	0.47	BTR05-...
BTRW xx.xxx 061	**0.344 - 0.383**	1.06	0.55	0.51	BTR06-...
BTRW xx.xxx 071	**0.384 - 0.433**	1.14	0.59	0.55	BTR07-...
BTRW xx.xxx 081	**0.433 - 0.472**	1.14	0.59	0.55	BTR08-...
BTRW xx.xxx 091	**0.472 - 0.511**	1.18	0.59	0.59	BTR09-...
BTRW xx.xxx 092	**0.512 - 0.590**	1.18	0.59	0.59	BTR09-...
BTRW xx.xxx 101	**0.591 - 0.630**	1.26	0.63	0.63	BTR10-...
BTRW xx.xxx 102	**0.630 - 0.669**	1.26	0.63	0.63	BTR10-...
BTRW xx.xxx 103	**0.669 - 0.708**	1.26	0.63	0.63	BTR10-...
BTRW xx.xxx 104	**0.709 - 0.748**	1.26	0.63	0.63	BTR10-...
BTRW xx.xxx 121	**0.748 - 0.787**	1.46	0.63	0.83	BTR12-...
BTRW xx.xxx 122	**0.787 - 0.866**	1.46	0.63	0.83	BTR12-...
BTRW xx.xxx 123	**0.866 - 0.944**	1.46	0.63	0.83	BTR12-...
BTRW xx.xxx 124	**0.945 - 0.984**	1.46	0.63	0.83	BTR12-...

* For high speed machinining, ceramic guide is available on request.

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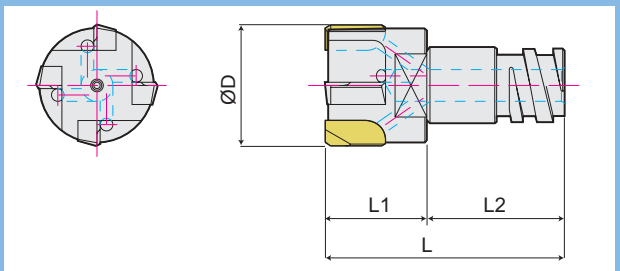
BTA REAMER HEAD - SHANK SYSTEM BTRM

Diameters
0.236 - 0.984

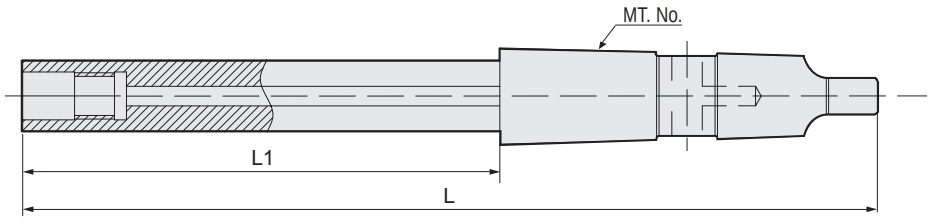


Designation	Diameter	L	L1	L2	Bar
BTRM xx.xxx 041	**0.236 - 0.305**	0.94	0.51	0.43	BTR04-...
BTRM xx.xxx 051	**0.305 - 0.344**	0.98	0.51	0.47	BTR05-...
BTRM xx.xxx 061	**0.344 - 0.383**	1.06	0.55	0.51	BTR06-...
BTRM xx.xxx 071	**0.384 - 0.433**	1.14	0.59	0.55	BTR07-...
BTRM xx.xxx 081	**0.433 - 0.472**	1.14	0.59	0.55	BTR08-...
BTRM xx.xxx 091	**0.472 - 0.511**	1.18	0.59	0.59	BTR09-...
BTRM xx.xxx 092	**0.512 - 0.590**	1.18	0.59	0.59	BTR09-...
BTRM xx.xxx 101	**0.591 - 0.630**	1.26	0.63	0.63	BTR10-...
BTRM xx.xxx 102	**0.630 - 0.669**	1.26	0.63	0.63	BTR10-...
BTRM xx.xxx 103	**0.669 - 0.708**	1.26	0.63	0.63	BTR10-...
BTRM xx.xxx 104	**0.709 - 0.748**	1.26	0.63	0.63	BTR10-...
BTRM xx.xxx 121	**0.748 - 0.787**	1.46	0.63	0.83	BTR12-...
BTRM xx.xxx 122	**0.787 - 0.866**	1.46	0.63	0.83	BTR12-...
BTRM xx.xxx 123	**0.866 - 0.944**	1.46	0.63	0.83	BTR12-...
BTRM xx.xxx 124	**0.945 - 0.984**	1.46	0.63	0.83	BTR12-...

* For high speed machinining, ceramic guide is available on request.

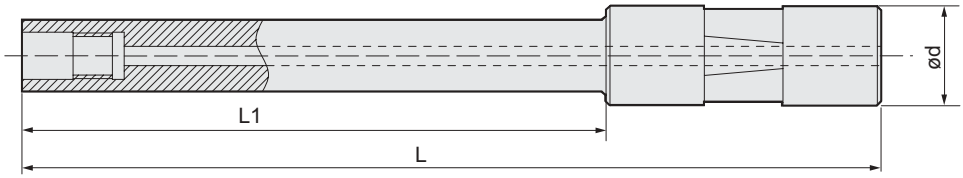
Diameters
0.260 - 0.984

MT Shank



Part No.	Diameter	L	L1	MT. No.	Corresponding Reaming Head
BTR04-090-MT1	**0.236 - 0.305**	6.12	3.54	1	BTRW/S/M XX.XxX 041
BTR05-100-MT1	**0.305 - 0.344**	6.52	3.94	1	BTRW/S/M XX.XxX 051
BTR06-100-MT1	**0.344 - 0.383**	6.52	3.94	1	BTRW/S/M XX.XxX 061
BTR07-120-MT2	**0.384 - 0.433**	7.87	4.72	2	BTRW/S/M XX.XxX 071
BTR08-120-MT2	**0.433 - 0.472**	7.87	4.72	2	BTRW/S/M XX.XxX 081
BTR09-120-MT2	**0.472 - 0.590**	7.87	4.72	2	BTRW/S/M XX.XxX 091,092
BTR10-150-MT3	**0.591 - 0.748**	9.06	5.91	2	BTRW/S/M XX.XxX 101,102,103,104
BTR12-150-MT3	**0.748 - 0.984**	9.80	5.91	3	BTRW/S/M XX.XxX 121,122,123,124

ST Shank



Part No.	Diameter	L	L1	d	Corresponding Reaming Head
BTR04-040-ST20	**0.236 - 0.305**	4.33	1.57	0.787	BTRW/S/M XX.XxX 041
BTR05-050-ST20	**0.305 - 0.344**	4.72	1.97	0.787	BTRW/S/M XX.XxX 051
BTR06-050-ST20	**0.344 - 0.383**	4.72	1.97	0.787	BTRW/S/M XX.XxX 061
BTR07-060-ST20	**0.384 - 0.433**	5.12	2.36	0.787	BTRW/S/M XX.XxX 071
BTR08-060-ST20	**0.433 - 0.472**	5.12	2.36	0.787	BTRW/S/M XX.XxX 081
BTR09-060-ST20	**0.472 - 0.590**	5.12	2.36	0.787	BTRW/S/M XX.XxX 091,092
BTR10-080-ST25	**0.591 - 0.748**	5.91	3.15	0.984	BTRW/S/M XX.XxX 101,102,103,104
BTR12-100-ST25	**0.748 - 0.984**	6.69	3.94	0.984	BTRW/S/M XX.XxX 121,122,123,124

Ingersoll

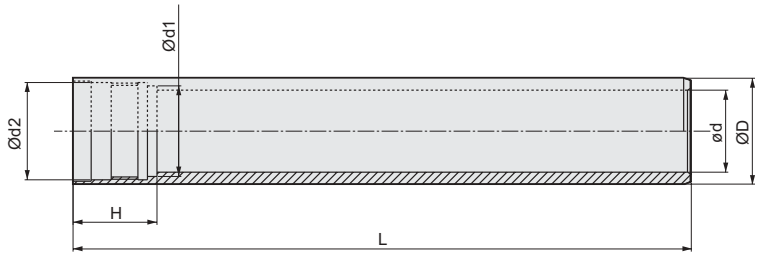
BTA DRILLS

Drill Tubes

Single Tube System (STS)

Double Tube System (DTS)

Drill Range
0.496 - 9.606

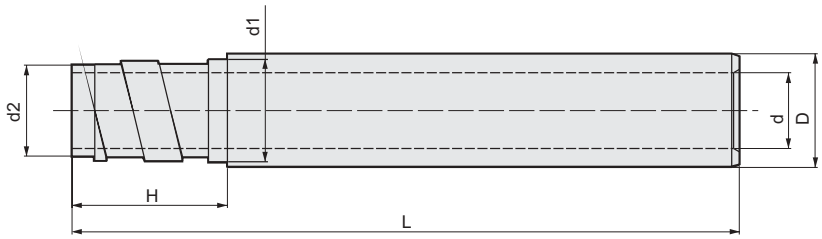


Drill Range	Designation	Dimension					
		D	d	d1	d2	H	S
0.496 - 0.535	BTSI 011*	0.433	0.276	0.323	0.378	0.87	0.24
0.536 - 0.575	BTSI 012*	0.472	0.315	0.362	0.417	0.87	0.24
0.575 - 0.614	BTSI 013*	0.512	0.335	0.402	0.457	0.87	0.24
0.614 - 0.657	BTSI 014	0.551	0.354	0.425	0.496	0.83	0.31
0.658 - 0.697	BTSI 015	0.591	0.394	0.465	0.535	0.83	0.31
0.697 - 0.744	BTSI 016	0.630	0.413	0.492	0.571	0.87	0.31
0.744 - 0.787	BTSI 017	0.669	0.453	0.531	0.610	0.87	0.31
0.788 - 0.858	BTSI 018	0.709	0.472	0.551	0.630	1.08	0.39
0.859 - 0.949	BTSI 020	0.787	0.512	0.630	0.709	1.18	0.47
0.949 - 1.039	BTSI 022	0.866	0.551	0.689	0.768	1.18	0.47
1.040 - 1.130	BTSI 024	0.945	0.610	0.748	0.827	1.18	0.47
1.130 - 1.220	BTSI 026	1.024	0.669	0.827	0.925	1.30	0.63
1.221 - 1.311	BTSI 028	1.102	0.728	0.906	1.004	1.30	0.63
1.311 - 1.425	BTSI 030	1.181	0.787	1.004	1.102	1.30	0.63
1.426 - 1.559	BTSI 033	1.299	0.906	1.063	1.181	1.57	0.79
1.559 - 1.693	BTSI 036	1.417	1.004	1.181	1.299	1.57	0.79
1.693 - 1.850	BTSI 039	1.535	1.102	1.299	1.417	1.57	0.79
1.851 - 2.035	BTSI 043	1.693	1.220	1.417	1.535	1.57	0.79
2.036 - 2.213	BTSI 047	1.850	1.378	1.555	1.693	1.73	0.94
2.213 - 2.386	BTSI 051	2.008	1.535	1.713	1.850	1.73	0.94
2.386 - 2.559	BTSI 056A	2.205	1.693	1.870	2.008	1.73	0.94
2.559 - 2.637	BTSI 056B	2.205	1.693	1.850	2.047	2.95	1.26
2.638 - 2.874	BTSI 062	2.441	1.890	2.087	2.283	2.95	1.26
2.874 - 3.149	BTSI 068	2.677	2.087	2.283	2.480	2.95	1.26
3.150 - 3.425	BTSI 075	2.953	2.323	2.520	2.756	3.82	1.73
3.425 - 3.937	BTSI 082	3.228	2.598	2.795	3.031	3.82	1.73
3.937 - 4.409	BTSI 094	3.701	3.071	3.268	3.504	3.82	1.73
4.409 - 4.881	BTSI 106	4.173	3.543	3.740	3.976	4.65	2.36
4.882 - 5.354	BTSI 118	4.646	3.622	4.213	4.449	4.65	2.36
5.354 - 5.826	BTSI 130	5.118	4.094	4.685	4.921	4.65	2.36
5.827 - 6.299	BTSI 142	5.591	4.567	5.157	5.394	5.47	2.83
6.299 - 6.771	BTSI 154	6.063	5.039	5.630	5.866	5.47	2.83
6.772 - 7.244	BTSI 166	6.535	5.512	6.102	6.339	5.47	2.83
7.244 - 7.716	BTSI 178	7.008	5.984	6.575	6.811	5.67	3.15
7.717 - 8.189	BTSI 190	7.480	6.063	7.047	7.283	5.67	3.15
8.189 - 8.661	BTSI 202	7.953	6.535	7.520	7.756	5.67	3.15
8.661 - 9.133	BTSI 214	8.425	7.008	7.913	8.189	6.46	3.62
9.134 - 9.606	BTSI 226	8.898	7.480	8.386	8.661	6.46	3.62

1) Please indicate overall length (L) when ordering.

* Indicates parts are outer two start thread

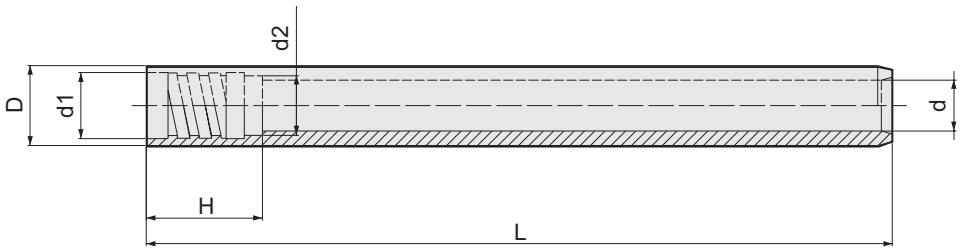
Drill Range
0.571 - 9.685



Drill Range	Designation	Dimension					
		D	d	H	d1	d2	S
0.571 - 0.591	**BTSE 012A**	0.472	0.315	0.91	0.453	0.390	0.24
0.591 - 0.610	**BTSE 012B**	0.472	0.315	0.91	0.465	0.402	0.24
0.611 - 0.630	**BTSE 013A**	0.512	0.335	0.91	0.488	0.425	0.24
0.630 - 0.650	**BTSE 013B**	0.512	0.335	0.91	0.500	0.437	0.24
0.650 - 0.679	**BTSE 014A**	0.551	0.354	0.91	0.528	0.465	0.24
0.680 - 0.709	**BTSE 014B**	0.551	0.354	0.91	0.539	0.476	0.24
0.709 - 0.748	**BTSE 015**	0.591	0.394	0.91	0.567	0.504	0.24
0.748 - 0.787	**BTSE 016.5**	0.650	0.433	0.91	0.606	0.543	0.24
0.787 - 0.866	**BTSE 018**	0.709	0.472	1.02	0.650	0.571	0.39
0.866 - 0.984	**BTSE 020**	0.787	0.512	1.02	0.748	0.630	0.39
0.984 - 1.063	**BTSE 022**	0.866	0.551	1.02	0.787	0.669	0.39
1.063 - 1.181	**BTSE 024**	0.945	0.610	1.02	0.866	0.748	0.39
1.181 - 1.259	**BTSE 026**	1.024	0.669	1.02	0.945	0.827	0.39
1.260 - 1.338	**BTSE 028**	1.102	0.728	1.02	1.024	0.906	0.39
1.339 - 1.456	**BTSE 030**	1.181	0.787	1.61	1.063	0.945	0.79
1.457 - 1.574	**BTSE 033**	1.299	0.906	1.61	1.181	1.063	0.79
1.575 - 1.732	**BTSE 036**	1.417	1.004	1.61	1.299	1.181	0.79
1.732 - 1.850	**BTSE 039**	1.535	1.102	1.61	1.457	1.339	0.79
1.850 - 2.047	**BTSE 043**	1.693	1.220	1.61	1.614	1.457	0.79
2.047 - 2.244	**BTSE 047**	1.850	1.378	1.61	1.732	1.575	0.79
2.244 - 2.401	**BTSE 051**	2.008	1.535	1.61	1.929	1.772	0.79
2.402 - 2.677	**BTSE 056**	2.205	1.693	1.61	2.087	1.929	0.79
2.677 - 2.952	**BTSE 062**	2.441	1.890	1.61	2.323	2.126	0.79
2.953 - 3.189	**BTSE 068**	2.677	2.087	2.80	2.559	2.362	1.57
3.189 - 3.582	**BTSE 075**	2.953	2.323	2.80	2.795	2.598	1.57
3.583 - 3.897	**BTSE 082**	3.228	2.598	2.80	3.110	2.913	1.57
3.898 - 4.370	**BTSE 094**	3.701	3.071	2.80	3.543	3.346	1.57
4.370 - 4.842	**BTSE 106**	4.173	3.543	2.80	4.016	3.819	1.57
4.843 - 5.315	**BTSE 118**	4.646	4.016	2.80	4.488	4.291	1.57
5.315 - 5.866	**BTSE 130**	5.118	4.488	2.80	4.961	4.764	1.57
5.866 - 6.378	**BTSE 142**	5.591	4.961	2.80	5.472	5.276	1.57
6.378 - 6.850	**BTSE 154**	6.063	5.433	3.39	5.945	5.709	2.20
6.850 - 7.322	**BTSE 166**	6.535	5.906	3.39	6.417	6.181	2.20
7.323 - 7.795	**BTSE 178**	7.008	6.378	3.39	6.890	6.654	2.20
7.795 - 8.267	**BTSE 190**	7.480	6.850	3.39	7.362	7.126	2.20
8.268 - 8.740	**BTSE 202**	7.953	7.323	3.39	7.835	7.598	2.20
8.740 - 9.212	**BTSE 214**	8.425	7.795	3.39	8.307	8.071	2.20
9.213 - 9.685	**BTSE 226**	8.898	8.268	3.39	8.780	8.543	2.20

1) Please indicate overall length (L) when ordering.

Drill Range
0.315 - 0.570

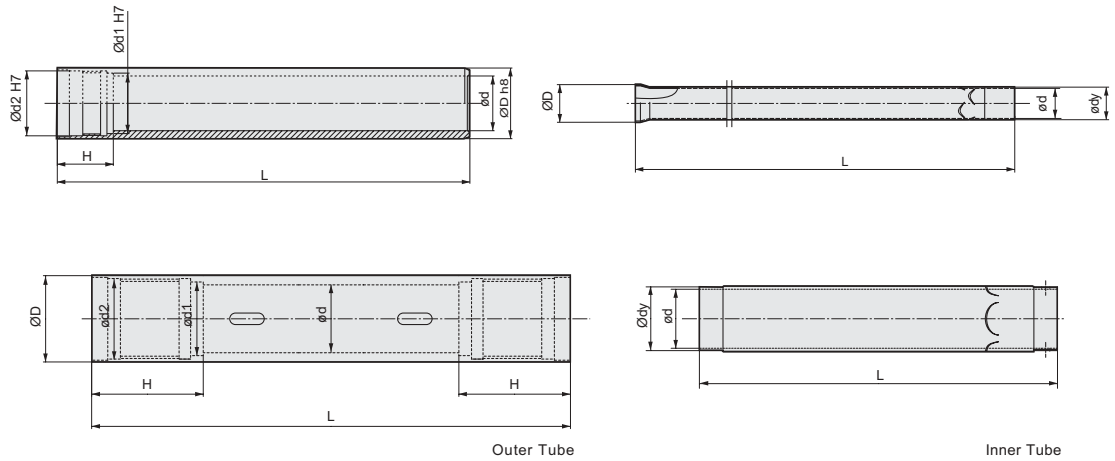


Drill Range	Designation	Dimension					
		D	d	d1	d2	H	S
0.315 - 0.350	**BTSO 071**	0.280	0.177	0.236	0.213	0.63	0.16
0.354 - 0.393	**BTSO 083**	0.327	0.197	0.283	0.248	0.63	0.16
0.394 - 0.433	**BTSO 090**	0.354	0.217	0.299	0.264	0.63	0.16
0.433 - 0.472	**BTSO 100**	0.394	0.256	0.339	0.303	0.63	0.16
0.472 - 0.531	**BTSO 110**	0.433	0.276	0.358	0.323	0.63	0.24
0.531 - 0.570	**BTSO 120**	0.472	0.315	0.425	0.370	0.63	0.24

1) Please indicate overall length (L) when ordering.

TUBE DOUBLE TUBE SYSTEM - INNER FOUR START THREAD

Drill Range
0.725 - 6.771



Outer Tube

Inner Tube

Drill Range	Outer Tube	Dimension						Inner Tube	Dimension		
		D	d	d1	d2	H	S		D	dy	d
0.725 - 0.787	**BTDO 018**	0.709	0.472	0.551	0.630	1.08	0.39	**BTDI 012**	0.472	0.394	0.354
0.788 - 0.858	**BTDO 019.5**	0.768	0.551	0.630	0.709	1.18	0.47	**BTDI 014**	0.551	0.472	0.433
0.859 - 0.949	**BTDO 021.5**	0.846	0.591	0.689	0.768	1.18	0.47	**BTDI 015**	0.591	0.512	0.472
0.949 - 1.039	**BTDO 023.5**	0.925	0.630	0.748	0.827	1.18	0.47	**BTDI 016**	0.630	0.551	0.512
1.040 - 1.130	**BTDO 026**	1.024	0.709	0.827	0.925	1.30	0.63	**BTDI 018**	0.709	0.630	0.551
1.130 - 1.220	**BTDO 028**	1.102	0.787	0.906	1.004	1.30	0.63	**BTDI 020**	0.787	0.709	0.630
1.221 - 1.311	**BTDO 030.5**	1.201	0.866	1.004	1.102	1.30	0.63	**BTDI 022**	0.866	0.787	0.709
1.311 - 1.425	**BTDO 033**	1.299	0.945	1.063	1.181	1.57	0.79	**BTDI 024**	0.945	0.866	0.787
1.426 - 1.559	**BTDO 035.5**	1.398	1.024	1.181	1.299	1.57	0.79	**BTDI 026**	1.024	0.945	0.866
1.559 - 1.693	**BTDO 039**	1.535	1.142	1.299	1.417	1.57	0.79	**BTDI 029**	1.142	1.063	0.984
1.693 - 1.850	**BTDO 042.5**	1.673	1.260	1.417	1.535	1.57	0.79	**BTDI 032**	1.260	1.181	1.102
1.851 - 2.035	**BTDO 046.5**	1.831	1.378	1.555	1.693	1.73	0.94	**BTDI 035**	1.378	1.260	1.181
2.036 - 2.213	**BTDO 051**	2.008	1.535	1.713	1.850	1.73	0.94	**BTDI 039**	1.535	1.417	1.339
2.213 - 2.559	**BTDO 055.5**	2.185	1.693	1.870	2.008	1.73	0.94	**BTDI 043A**	1.693	1.575	1.496
2.559 - 2.756	**BTDO 056**	2.205	1.693	1.850	2.047	2.95	1.26	**BTDI 043B**	-	1.575	1.496
2.756 - 2.874	**BTDO 062**	2.441	1.890	2.087	2.283	2.95	1.26	**BTDI 048**	-	1.732	1.614
2.874 - 3.149	**BTDO 068**	2.677	2.087	2.283	2.480	2.95	1.26	**BTDI 053**	-	1.890	1.772
3.150 - 3.425	**BTDO 075**	2.953	2.323	2.520	2.756	3.82	1.73	**BTDI 059**	-	2.126	1.969
3.425 - 3.937	**BTDO 082**	3.228	2.598	2.795	3.031	3.82	1.73	**BTDI 066**	-	2.362	2.205
3.937 - 4.409	**BTDO 094**	3.701	3.071	3.228	3.504	3.82	1.73	**BTDI 078**	-	2.756	2.598
4.409 - 4.881	**BTDO 106**	4.173	3.543	3.740	3.976	4.65	2.36	**BTDI 090**	-	3.150	2.992
4.882 - 5.354	**BTDO 118**	4.646	3.622	4.213	4.449	4.65	2.36	**BTDI 092**	-	3.150	2.992
5.354 - 5.826	**BTDO 130**	5.118	4.094	4.685	4.921	4.65	2.36	**BTDI104**	-	3.740	3.583
5.827 - 6.299	**BTDO 142**	5.591	4.567	5.157	5.394	5.47	2.83	**BTDI 116**	-	3.937	3.780
6.299 - 6.771	**BTDO 154**	6.063	6.220	5.630	5.866	5.47	2.83	**BTDI 128**	-	4.724	4.567

1) Please indicate overall length(L) when ordering.
*For diameter range 0.725- 2.559 (OT13) the inner tube should be ordered 1.181 longer than the outer tube.
*For diameter range 2.559- 4.881 (OT14 - OT20) the inner tube should be ordered 7.480 longer than outer tube.
*For diameter range 4.882- 7.244 (OT21 - OT25) the inner tube should be ordered 8.661 longer than the outer tube.

BOREline

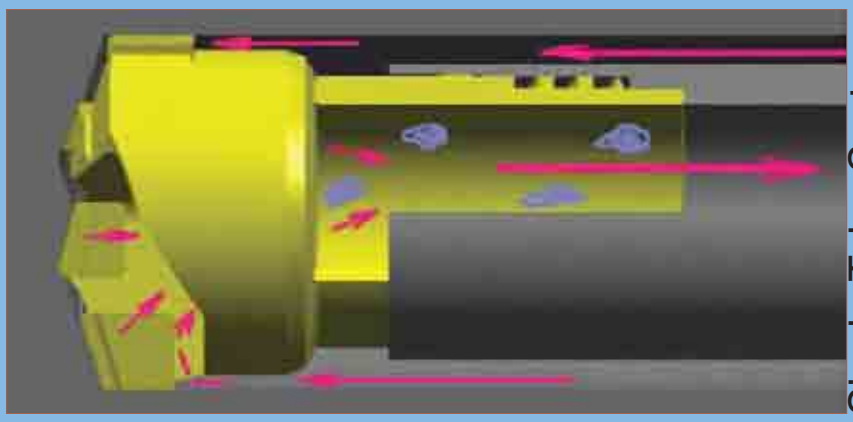
Ingersoll

USERS GUIDE

Cutting Tools

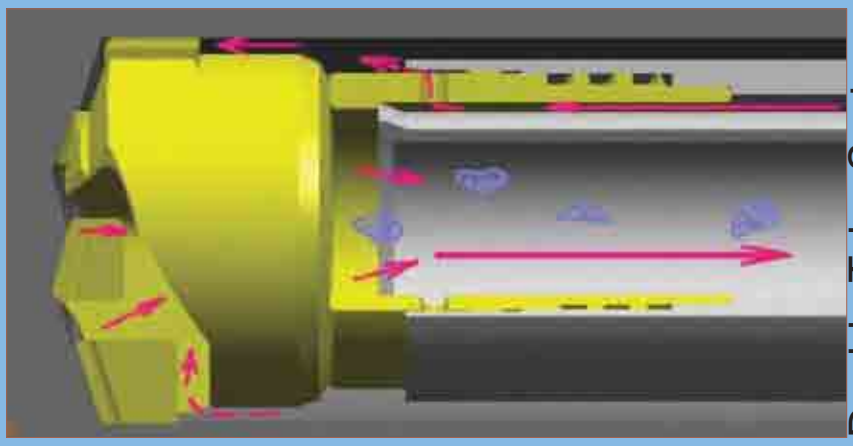
Member IMC Group
Ingersoll Cutting Tools

Single Tube System



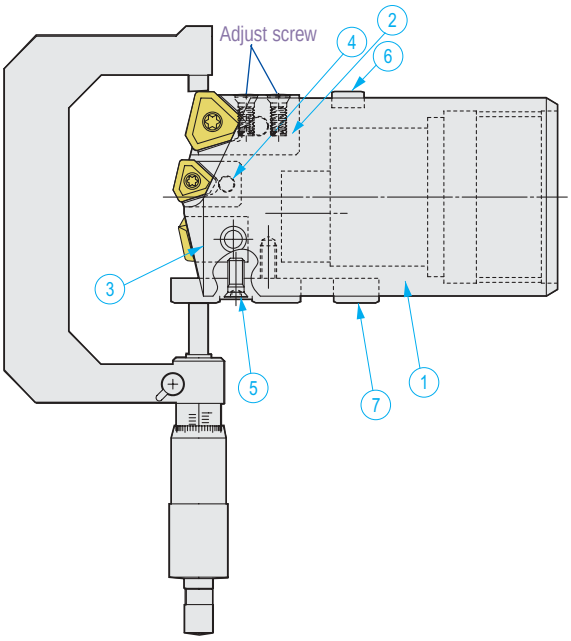
Single Tube System

Double Tube System



Double Tube System

Setting the diameter when indexing and replacing inserts



1. Head Shank
2. Outer Cartridge & Lock Screw
3. Inner Cartridge & Lock Screw
4. Center Cartridge & Lock Screw
5. Guide pad & Lock Screw
6. Sub Guide Pad & Lock Screw
7. Guide Pad Protector & Lock Screw

STEP 1: Slide the Guide Pad (5) forward as shown in the diagram
- locate the lock screw (5) as shown and tighten
STEP 2: Loosen the adjust screws and the lock screw of the outer cartridge (2)
STEP 3: Firmly push the outer cartridge toward the center of the head.
STEP 4: Slightly tighten the lock screw (2) and adjust the diameter with the two adjust screws.
STEP 5: When adjustment is completed, firmly tighten the lock screw (2).

Replacing Inserts:

Clean insert pockets carefully and remove even the smallest foreign particles from insert pocket.
Fasten insert securely in the cartridge and ensure it is completely seated.

Replacing Guide Pad:

Guide pad pockets are precisely produced and are back tapered, therefore the guide pads may be reversed and used again when excessive wear occurs on the corner.

Guide pads are ground to size for immediate use.

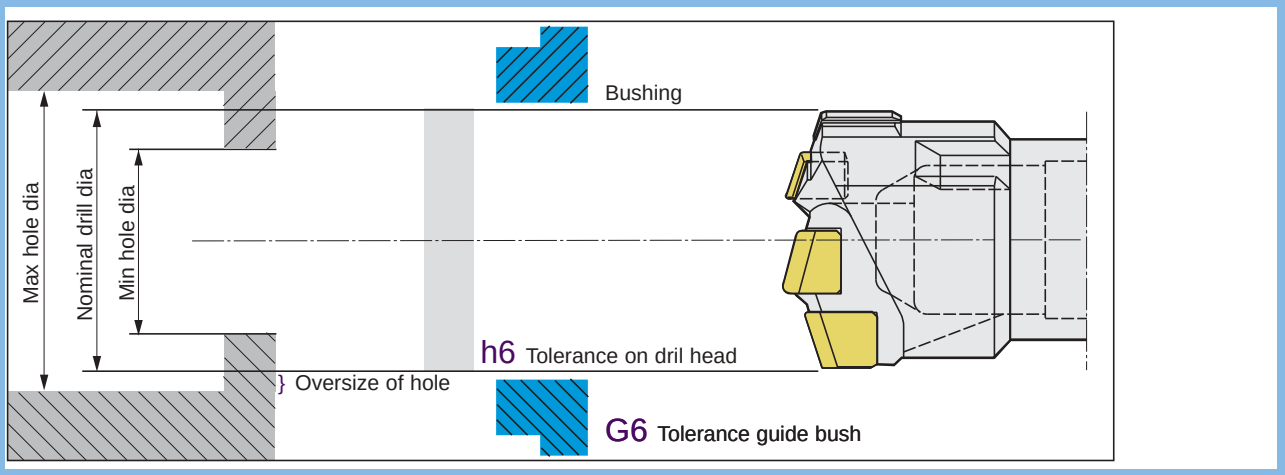
Special precaution:

Use the correct spanner when attaching or detaching the drill head from boring bar.
Use of a pipe wrench or other improper equipment will permanently damage the drill head shank, threading and boring bar threads.

Note:

Although lock screws have been treated with an anti-friction lubricant, please re-apply a suitable anti-friction lubricant regularly to avoid "lock-up".

Applicaton: BTA & BTS Type
Drill dia: 0.496 - 2.559
Hole Tolerance: IT9
Surface finish: Ra 2µm
Coolant: Neat or soluble oil



Nominal drill dia = Min hole dia + 2/3 X (Max hole dia - Min hole dia)
Max hole dia - Tool dia>0.002
Finish ground to the desired diameter to tolerance ISO h6.

*Nomally the drill diameter set at the lower limit plus(+) two third(2/3) of tolerance.
It is important to set the drill diameter -0.002 below the upper limit of the hole diameter

G6 Tolerance (for Guide bush)

Guide bush dia (ø in)	Tolerance (in)
0.394 - 0.709	+0.00024 - +0.00067
0.709 - 1.181	+0.00028 - +0.00079
1.181 - 1.969	+0.00035 - +0.00098
1.969 - 2.559	+0.00039 - +0.00114

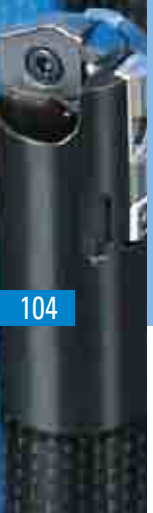
h6 Tolerance (for Drill dia)

Drill dia (ø in)	Tolerance (in)
0.394 - 0.709	-0.00024 - 0
0.709 - 1.181	-0.00051 - 0
1.181 - 1.969	-0.00063 - 0
1.969 - 2.559	-0.00075 - 0

USER GUIDE RECOMMENDED CUTTING CONDITION - FOR BTA BRAZED & TBTA INDEXABLE

ISO	Material		Condition	Tensile Strength Rm(N/mm2)	Hardness HB	Ground Brazed Solid Drill Heads BTA(ø0.496 - ø2.559) , BTS(ø0.315 - ø0.787) Cutting Speed	Feed Rate f (in/rev)					Ajustable Solid Drill Heads TBTA-B(ø0.630 - ø1.122) No Cartridge Cutting Speed	Feed Rate f (in/rev)	
						SFM	0.31 - 0.79 *1	0.22 - 0.79	0.79 - 1.22	1.22 - 1.69	1.69 - 2.56	SFM	0.63 - 0.87	0.87 - 1.12
P		0.1 - 0.25 %C	Annealed	420	125	230-394	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.006
	Non-alloy steel,	0.25 - 0.25 %C	Annealed	650	190	230-394	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.006
	cast steel, free	0.25 - 0.25 %C	Quenched and tempered	850	250	131-230	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.006
	cutting steel	0.55 - 0.80 %C	Annealed	750	220	230-394	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.006
		0.55 - 0.80 %C	Quenched and tempered	1000	300	180-328	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.011	164-328	0.003 - 0.004	0.004- 0.005
	Low alloy steel		Annealed	600	200	230-328	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	164-328	0.003 - 0.004	0.004- 0.006
	and cast steel			930	275	180-328	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.011	164-328	0.003 - 0.004	0.004- 0.005
	(less than 5%		Quenched and tempered	1000	300	180-328	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.011	164-328	0.003 - 0.004	0.004- 0.005
	alloying elements)			1200	350	180-328	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.011	164-328	0.003 - 0.004	0.004- 0.005
	High alloy steel, cast steel and		Annealed	680	200	164-279	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.006
	tool steel.		Quenched and tempered	1100	325	180-328	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.011	164-328	0.003 - 0.004	0.004- 0.005
M	Stainless steel		Ferritic/martensitic	680	200	197-328	0.002 - 0.005	0.003 - 0.006	0.004 - 0.011	0.005 - 0.012	0.006 - 0.014	131-262	0.003 - 0.005	0.004- 0.006
	and cast steel		Martensitic	820	240	197-328	0.002 - 0.005	0.003 - 0.006	0.004 - 0.011	0.005 - 0.012	0.006 - 0.014	131-262	0.003 - 0.005	0.004- 0.006
			Austenitic	600	180	197-328	0.002 - 0.005	0.002 - 0.005	0.003 - 0.010	0.004 - 0.011	0.006 - 0.013	98-197	0.002 - 0.004	0.003- 0.006
K	Cast iron nodular		Ferritic/pearlitic		180	262-328	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	230-328	0.003 - 0.005	0.004- 0.006
	(GGG)		Pearlitic		260	262-328	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	230-328	0.003 - 0.005	0.004- 0.006
	Gray cast iron		Ferritic		160	197-328	0.002 - 0.005	0.002 - 0.005	0.003 - 0.007	0.004 - 0.008	0.006 - 0.010	164-295	0.002 - 0.005	0.003- 0.006
	(GG)		Pearlitic		250	197-328	0.002 - 0.005	0.002 - 0.005	0.003 - 0.007	0.004 - 0.008	0.006 - 0.010	164-262	0.002 - 0.005	0.003- 0.006
	Malleable cast iron		Ferritic		130	164-328	0.002 - 0.005	0.002 - 0.005	0.003 - 0.007	0.004 - 0.008	0.006 - 0.010	164-295	0.002 - 0.005	0.003- 0.006
			Pearlitic		230	164-328	0.002 - 0.005	0.002 - 0.005	0.003 - 0.007	0.004 - 0.008	0.006 - 0.010	164-295	0.002 - 0.005	0.003- 0.006
N	Aluminum-		Not cureable		60	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
	wrought alloy		Cured		100	213-328	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-295	0.003 - 0.005	0.004- 0.007
	Aluminum-	<=12% Si	Not cureable		75	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
	cast, alloyed		Cured		90	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
		>12% Si	High temp.		130	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
		>1% Pb	Free cutting		110	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
	Copper alloys		Brass		90	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
			Electrolitic copper		100	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
S	High temp. alloys	Fe based	Annealed		200	33-164	0.002 - 0.005	0.002 - 0.005	0.003 - 0.006	0.005 - 0.007	0.006 - 0.010	66-164	0.002 - 0.004	0.003- 0.006
			Cured		280	33-164	0.002 - 0.005	0.002 - 0.005	0.003 - 0.006	0.005 - 0.007	0.006 - 0.010	66-164	0.002 - 0.004	0.003- 0.006
	Super alloys	Ni or	Annealed		250	33-164	0.002 - 0.005	0.002 - 0.005	0.003 - 0.006	0.005 - 0.007	0.006 - 0.010	66-164	0.002 - 0.004	0.003- 0.006
		Co based	Cured		350	33-164	0.002 - 0.005	0.002 - 0.005	0.003 - 0.006	0.005 - 0.007	0.006 - 0.010	66-164	0.002 - 0.004	0.003- 0.006
			Cast		320	33-164	0.002 - 0.005	0.002 - 0.005	0.003 - 0.006	0.005 - 0.007	0.006 - 0.010	66-164	0.002 - 0.004	0.003- 0.006
	Titanium,			Rm 400		98-164	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.079	66-164	0.002 - 0.004	0.003- 0.004
	Ti alloys	Alpha+beta alloys cured		Rm 1050		98-164	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.008	66-164	0.002 - 0.004	0.003- 0.004
H	Hardened steel		Hardened		55 HRc									
			Hardened		60 HRc									
	Chilled cast iron		Cast		400									
	Cast iron		Hardened		55 HRc									

BOREline



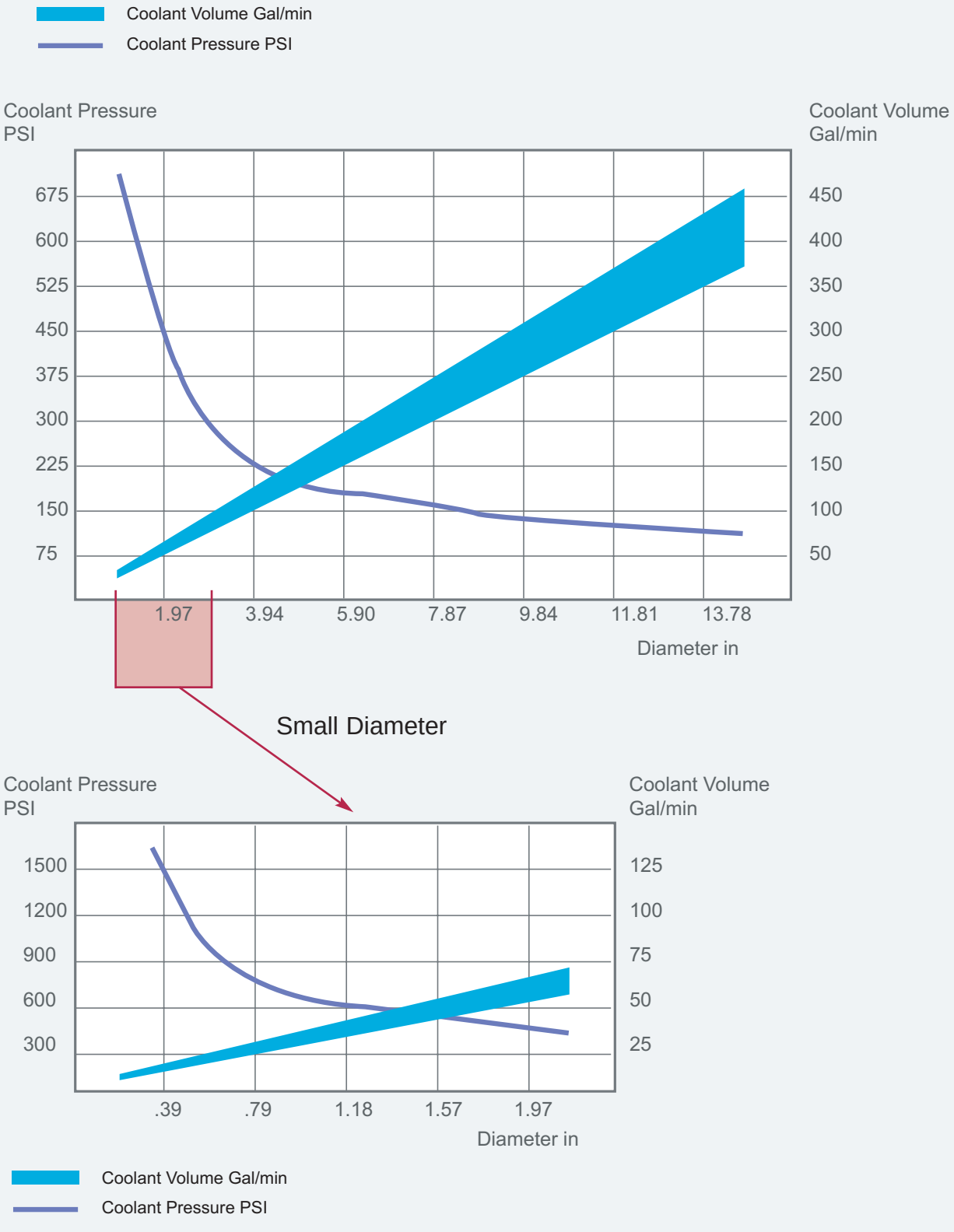
USER GUIDE RECOMMENDED CUTTING CONDITION – FOR BTA BRAZED & TBTA INDEXABLE

ISO	Material		Condition	Tensile Strength Rm(N/mm2)	Hardness HB	No Cartridge Solid Drill Heads					Ajustable Solid Drill Heads					
							TBTA-C(ø0.984- ø2.094)		TBTA-D(ø1.181- ø2.559)			TBTA3/5/7(ø1.496 - ø9.685)					
						Cutting Speed	Feed Rate f (in/rev)		Feed Rate f (in/rev)		Cutting Speed	Feed Rate f (in/rev)				
						SFM	0.98 - 1.56	1.56 - 2.09	1.18 - 1.69	1.69 - 2.56	SFM	1.50 - 1.57	1.57 - 2.05	2.05 - 2.52	2.52 - 3.35	3.35-
P		0.1 - 0.25 %C	Annealed	420	125	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	Non-alloy steel,	0.25 - 0.25 %C	Annealed	650	190	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	cast steel, free	0.25 - 0.25 %C	Quenched and tempered	850	250	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	cutting steel	0.55 - 0.80 %C	Annealed	750	220	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
		0.55 - 0.80 %C	Quenched and tempered	1000	300	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	Low alloy steel		Annealed	600	200	230-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	and cast steel			930	275	197-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	(less than 5%		Quenched and tempered	1000	300	197-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	164-328	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	alloying elements)			1200	350	197-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	168-328	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	High alloy steel, cast steel and		Annealed	680	200	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	tool steel.		Quenched and tempered	1100	325	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
M	Stainless steel		Ferritic/martensitic	680	200	131-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-361	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	and cast steel		Martensitic	820	240	131-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-361	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
			Austenitic	600	180	131-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-361	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
K	Cast iron nodular		Ferritic/pearlitic		180	164-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.008	0.007 - 0.009
	(GGG)		Pearlitic		260	164-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.008	0.007 - 0.009
	Gray cast iron		Ferritic		160	197-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.008	0.007 - 0.009
	(GG)		Pearlitic		250	197-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.008	0.007 - 0.009
	Malleable cast iron		Ferritic		130	230-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.008	0.007 - 0.009
			Pearlitic		230	230-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.008	0.007 - 0.009
N	Aluminum-		Not cureable		60	213-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
	wrought alloy		Cured		100	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
	Aluminum-	<=12% Si	Not cureable		75	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
	cast, alloyed		Cured		90	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
		>12% Si	High temp.		130	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
		>1% Pb	Free cutting		110	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
	Copper alloys		Brass		90	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
			Electrolitic copper		100	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
S	High temp. alloys	Fe based	Annealed		200	66-164	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	66-213	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
			Cured		280	66-164	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	66-213	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	Super alloys	Ni or	Annealed		250	66-164	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	66-213	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
		Co based	Cured		350	66-164	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	66-213	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
			Cast		320	66-164	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	66-213	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	Titanium,			Rm 400		98-197	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	98-328	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	Ti alloys	Alpha+beta alloys cured		Rm 1050		98-197	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	98-328	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
H	Hardened steel		Hardened		55 HRc											
			Hardened		60 HRc											
	Chilled cast iron		Cast		400											
	Cast iron		Hardened		55 HRc											

BORE line

No.	Problem	Causes	Solutions
1	Chips too small	improper cutting conditions	adjust speed and feed
		chipbreaker or CB radius too small and deep	amend chip breaker
		faulty tool geometry	use correct geometry
		misalignment of shank and spindle	correct misalignment
		material variation	try to adjust by altering speeds and feeds
		loose or oversize guide bushes	change bushing
		poor starting conditions (workpiece not centered)	center workpiece
2	Chips too large	improper cutting conditions	adjust speed and feed
		chipbreaker or CB radius too large and shallow	amend chip breaker
		oversized guide bush or guide bush misalignment	correct misalignment or change bush
3	Erratic chip pattern	lack of uniformity in workpiece material	adjust speeds & feeds or amend CB
		faulty feed mechanism (likely to occur with hydraulic feed system)	consult machine builder or sales engineer
		inncorrect carbide grade	check grade charts for guidelines
		chips jamming because of inadequate coolant supply	increase coolant supply
		pressure or incorrect tool geometry	correct tool geometry
		misalignment of shank and spindle	correct misalignment
		excessive vibration due to insufficient workpiece/tool rigidity	contact machine builder or tool manufacturer
		wrong choice of coolant	consult with tool manufacturer
		under or oversized guide bushing	change bushing
4	Stringy chips	incorrect tip geometry	amend chip breaker
		lack of uniformity in workpiece material	adjust with speed & feed or amend CB
		faulty feed mechanism (likely to occur with hydraulic feed system)	consult with machine builder or sales engineer
		cooling contaminated with fines	clean coolant
		chemical affinity between workpiece and carbide	check possibility of changing grade
		chipped cutting edge	replace drill
		feedrate too low	increase feed

No.	Problem	Causes	Solutions
5	Carbide tip breakage	dull tool	hone cutting edges if required
		inadequate coolant	check volume and pressure
		contaminated coolant	check coolant
		guide bush tolerance too tight	replace if necessary or undersize drill
		misalignment of shank and spindle	correct misalignment
		tool geometry error	correct geometry
		material variation	try to adjust by altering speeds and feeds
6	Short tool life	improper speed or feed	adjust accordingly
		incorrect carbide grade	choose proper grade for material
		worn guide bushes	replace guide bush
		excessively warm coolant	check coolant temperature & system
		incorrect cutting fluid	replace if possible
		misalignment of shank and spindle	correct misalignment
		tool geometry error	correct geometry
		material variation	try to adjust by altering speeds and feeds
7	Poor surface finish	misalignment	check and adjust
		inadequate dampening of shank causing vibration	provide vibration dampers
		CB too far above or below center line	correct chip breaker
		faulty cutter or guide pad geometry	correct geometry
		misalignment between workpiece and drill	correct misalignment
		workpiece deflection	improve clampiing and rigidity
		excessive vibration	contact tool or machine manufacturer
		tool geometry error	correct geometry
		cutting speed too low	increase cutting speed
		feed too light especially in hardened material	increase feed
		uneven feed	correct feed mechanism
		none of above or unsolved problems	contact tool manufacturer


Coolant Volume Gal/min
Coolant Pressure PSI
Coolant Pressure PSI
Coolant Volume Gal/min
675
600
525
450
375
300
225
150
75
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400
350
300
250
200
150
100
50
1.97
3.94
5.90
7.87
9.84
11.81
13.78
Diameter in
Small Diameter
Coolant Pressure PSI
Coolant Volume Gal/min
1500
1200
900
600
300
125
100
75
50
25
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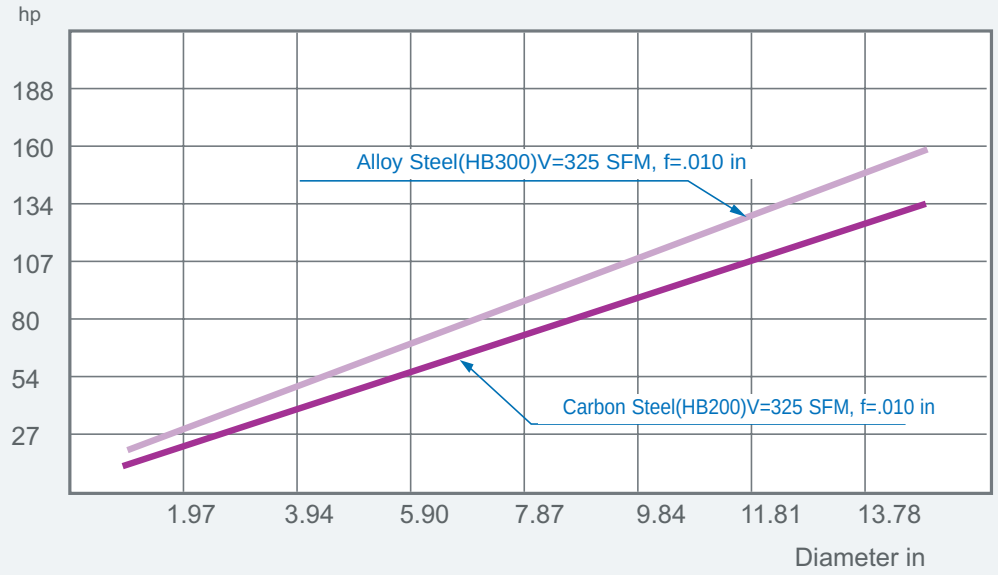
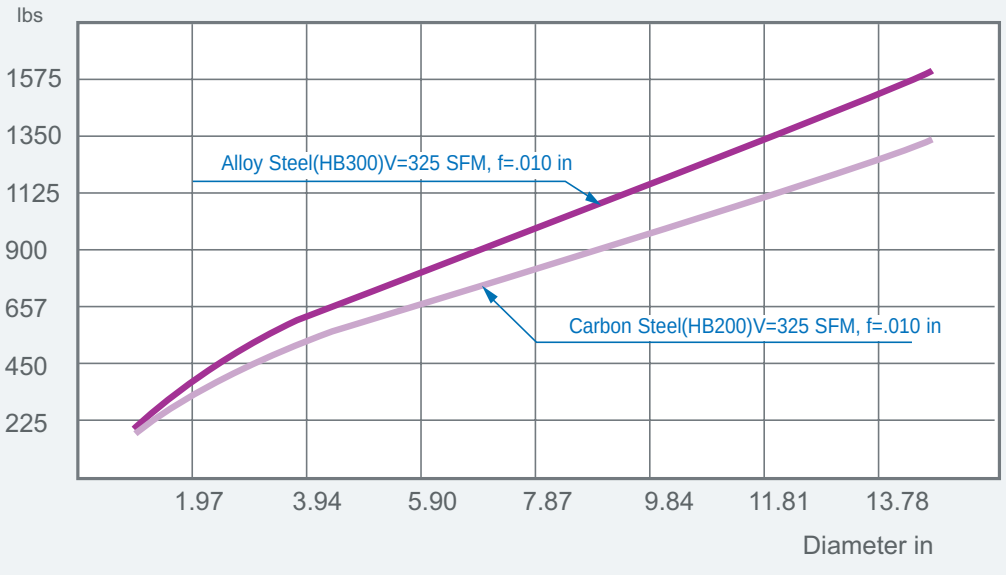
.79
1.18
1.57
1.97
Diameter in
Coolant Volume Gal/min
Coolant Pressure PSI

Power



Thrust Force



DEEP HOLE DRILLING QUESTIONNAIRE

Campany Name	Inquiry Number
Address	Inquiry Date
Contact person	Customer No

WORKPIECE
(If possible,please attach a drawing)

Product Name		
Hole diameter(ø)		(in)
Hole depth(drilling length)		(in)
No. of holes		
Tolerance(of hole)		
Surface finish(Rz,Ra...)		
Deviation(mm/100)		
Straightness(mm/100)		

Material

Material(DIN,AISI,JIS...)		
Hardness(HB,HS,HRC...)		
Condition *	☐Annealed ☐Quenched ☐Tempered	
	☐Cast	☐
	☐Other	☐

MACHINE

Machine supplier name	
Machine type/model	
Rigidity	☐Good ☐Normal ☐Bad
Date of manufacture	
Retrofitted	☐NC lathe ☐M/C ☐Other
Double rotation(TR/WR)	☐Tool and Workpiece
Rotating workpiece(WR)	☐
Rotating tool(TR)	☐
Safety devices	
Motors power	

TYPE OF COOLANT

Coolant supplier name		
Water based	☐Soluble ☐Emulsion	%
Oil based	☐	
Coolant Pressure		
Coolant Volume		

TOOL

Drill Head

Drill diameter(ø)		(in)	
Thread	☐Inner	☐Outer	
Brazed	☐		
Indexable	☐Adjustable	☐Direct mount	☐
Coating	☐Coated	☐Uncoated	
Coating type	☐TiN	☐TiAlN	☐Other
• Solid drilling	☐		
• Counterboring	☐		
Cutting angle* brazed	☐ 20˚	☐ 45˚	☐
Cutting angle* indexable	☐nomal angle	☐ close angle	
Pre-bored size(per side)		(in)	
Bottom finishing *	☐Fullball R	☐Flatbottom R	☐Corner R
	☐Compound R		
• Trepanning	☐		
Core size(ø)		(in)	☐
Tube inner dia(ø)		(in)	
Tube outer dia(ø)		(in)	

Tube

Outside Dia(ø)		(in)	
Total Length(L)		(in)	
Internal Thread		☐	
External Thread	☐ 4 Starts	☐ 2 Starts	☐ 1 Start
Tube thread	☐ 1 end	☐ Both ends	
Inner Tube Length		(in)	
Inner Tube Slit	☐ 1 End	☐ Both ends	

DRILLING SYSTEM

Single tube system	☐	STS
Double tube system	☐	DTS

BORING CONDITIONS

Through hole drilling	☐
Blind hole drilling	☐
Cross hole drilling*	☐

GENERAL INFORMATION

Production

Quantity per year:				
Present Performance Status:				
grade,tool life,etc:				
Cutting Data:	Vc=	SFM,	N=	rpm
	f=	in/re,	F=	in/min

BOREline

Member IMC Group
Ingersoll Cutting Tools

Ingersoll Cutting Tools for the Americas

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