RENUKA TOOLS®

MICRO BORE UNITS

MAKE IN INDIA

Redefining Cutting Technology

www.renukatools.in

Company Profile

Renuka Tools® was founded in the year 2000 in Aurangabad, India with its vision to be the preferred special cutting tools provider. We now successfully cater to both domestic and international markets with our wide range of solutions. We ensure that we remain nimble and agile by continually investing in technology & R&D to stay ahead of time & keep pace with the changing technology in the industry.

Renuka Tools® with its state-of-the-art manufacturing unit manufactures high quality special indexable cutting tools with utmost precision using the latest technology and highly skilled and technical manpower. All cutting tools manufactured at our unit come with a Zoller Report, ensuring that the global export quality standards are met, guaranteeing complete customer satisfaction.

At Renuka Tools®, our core expertise is in manufacturing special customized cutting tools. With over 20 years of technical expertise and continual R&D efforts, we manufacture products such as:

- Micro Bore Unit
- Adjustable Boring Tools
- Fine Boring Tools
- Eccentric Boring Tools
- Large diameter Boring Tools
- Anti-vibration Boring Tools
- Large Diameter Milling Cutters
- Spot Face Cutters
- Side & Face Milling Cutters
- Chamfer Tools

Why Us - What Differentiates us from Competition

- **We use the best-in-class technology in our state-of-the-art manufacturing facility.**
- **We ensure best quality products adhering to global standards.**
- **We provide a QC Report along with our tools to certify the quality of the product, which is accepted world-wide.**
- **We ensure shortest lead times in manufacturing.**
- **All of the above is ensured at lowest possible price.**

This catalogue will give you further insights and details about our Micro Bore Units. For more details of our other standard offerings, please refer to our website (www.renukatools.in).

Facts & Advantages

- Precision Finish Boring Unit with high accuracy & repeatability.
- Used for machining close tolerances.
- Facilitates precision adjustment with least count of 1 micron (0.001mm) .
- Can be mounted in blind holes with provision of adjustment from the top.
- Self-clamping / Self-locking units i.e. no tightening & loosening of screws involved.
- Pre-loaded (pre-tensioned) assembly guaranteeing almost zero backlash.
- Adjustment can be done directly while the tool is on the machine, thus reducing downtime or setting time.
- Available in a wide range of variants and inserts enabling high degree of flexibility & a variety of precision boring applications.
- Directly interchangeable in the same tools as R/L148C or T-Max U fine boring unit or equivalent.

SAMPLE IMAGE

Nomenclature Code Key For Ordering MBU

RT MBU	A/S	L/R	T/TP/C/ D/W/DU	02/04/06/0601/07/ 09/11/1103/12/16	NULL/ 14/20/22
Family Name of Micro Bore Units	Mounting Type: Angular (A) & Straight (S)	Cutting Hand: Left Hand (L) & Right Hand (R)	Insert Name: TC..(T), TP..(TP), CC..(C), DC..(D), WC..(W) & DC.. for Undercut Application (DU)	Insert Size	Bush Diameter: - applicable only in case if same insert is used in different sizes of MBU, else NULL

Ordering Example:
1 piece
RTMBU ALT09

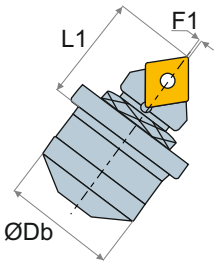
Nomenclature Code Key For Ordering Fine Boring Bar with MBU

RT FBB	Dia Range	BT 40 / BT 50
Family Name of Fine Boring Bars with Micro Bore Units	Diameter Range of the Fine Boring Bar	Adaptation System BT40 / BT50

Ordering Example:
1 piece
RTFBB 20-22 BT 40

MBU - Angular Mounting Type

CC..TYPE



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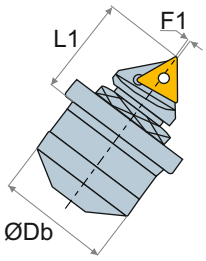

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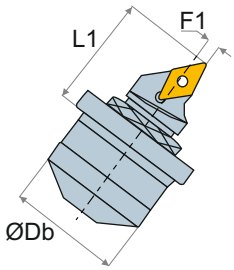
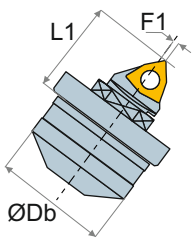


WC..TYPE



SAMPLE IMAGE

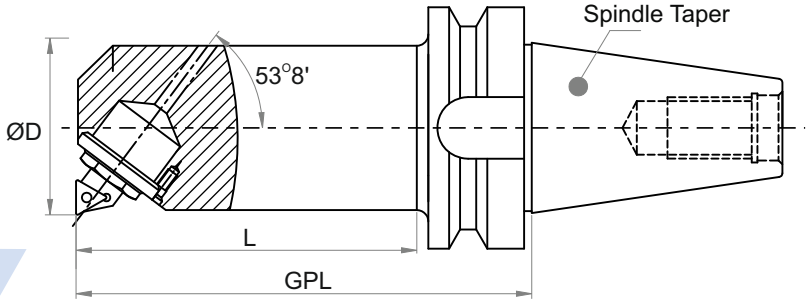
All Left - Hand variants shown above.
All dimensions are in mm.

Sr. No	Item Code		Insert	D_b	L1	F1	D_{min}	Mounting Screw	Insert Screw	Torx / Allen Key	Spanner	Stock	
	LH	RH										LH	RH
1	RT MBU ALW 02	RT MBU ARW 02	WC..0201..	14	11.5	1.00	20.0	RTMS14	M2.0	T6/T8	RTS14	◆	◆
2	RT MBU ALC 04	RT MBU ARC 04	CC..04T0..	14	11.5	1.00	20.0	RTMS14	M2.0	T6/T8	RTS14	◆	◆
3	RT MBU ALT 06 14	RT MBU ART 06 14	TC..06T1..	14	11.5	1.00	20.0	RTMS14	M2.0	T6/T8	RTS14	★	◆
4	RT MBU ALT 0601 14	RT MBU ART 0601 14	TC..0601..	14	11.5	1.00	20.0	RTMS14	M2.0	T6/T8	RTS14	◆	◆
5	RT MBU ALC 06	RT MBU ARC 06	CC..0602..	16	14.3	0.45	25.9	RTMS16	M2.5	T8/T10	RTS16	★	◆
6	RT MBU ALT 06	RT MBU ART 06	TC..06T1..	16	14.3	0.20	25.4	RTMS16	M2.0	T6/T10	RTS16	★	◆
7	RT MBU ALT 0601	RT MBU ART 0601	TC..0601..	16	14.3	0.20	25.4	RTMS16	M2.0	T6/T10	RTS16	★	◆
8	RT MBU ALC 09	RT MBU ARC 09	CC..09T3..	20	19.1	1.00	33.1	RTMS20	M3.5	T15/T10	RTS20	★	◆
9	RT MBU ALT 09	RT MBU ART 09	TC..0902..	20	19.1	1.00	33.1	RTMS20	M2.2	T7/T10	RTS20	★	◆
10	RT MBU ALTP 09	RT MBU ARTP 09	TP..0902..	20	19.1	1.00	33.1	RTMS20	M2.5	T8/T10	RTS20	◆	◆
11	RT MBU ALD 07 20	RT MBU ARD 07 20	DC..0702..	20	19.1	1.00	33.1	RTMS20	M2.5	T8/T10	RTS20	◆	◆
12	RT MBU ALC 09 22	RT MBU ARC 09 22	CC..09T3..	22	23.0	1.10	42.6	RTMS22	M3.5	T15	RTS22	◆	◆
13	RT MBU ALT 11	RT MBU ART 11	TC..1102..	22	23.0	1.10	42.6	RTMS22	M2.5	T8/T15	RTS22	★	◆
14	RT MBU ALT 1103	RT MBU ART 1103	TC..1103..	22	23.0	1.10	42.6	RTMS22	M2.5	T8/T15	RTS22	◆	◆
15	RT MBU ALTP 11	RT MBU ARTP 11	TP..1103..	22	23.0	1.10	42.6	RTMS22	M3.0	T10/T15	RTS22	◆	◆
16	RT MBU ALD 07 22	RT MBU ARD 07 22	DC..0702..	22	25.0	2.30	42.6	RTMS22	M2.5	T8/T15	RTS22	◆	◆
17	RT MBU ALC 12	RT MBU ARC 12	CC..1204..	32	33.3	1.00	60.6	RTMS32	M4.5	T20/3MM	RTS32	◆	◆
18	RT MBU ALT 16	RT MBU ART 16	TC..16T3..	32	33.3	1.20	60.6	RTMS32	M3.5	T15/3MM	RTS32	◆	◆
19	RT MBU ALTP 16	RT MBU ARTP 16	TP..16T3..	32	33.3	1.20	60.6	RTMS32	M3.5	T15/3MM	RTS32	◆	◆

Notes:

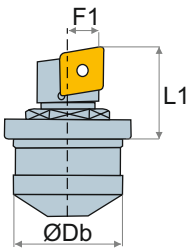
- Micro Bore Units are delivered with all required spares such as insert screw, mounting screws, spanner, torx keys & allen keys.
- Inserts are not included with Micro Bore Units.
- Spares sold separately as well and can be ordered as per the ordering code shown in above table.
- In the above table, ★ denotes ready in stock & ◆ denotes lead time of one week.
- Minimum diameter (Dmin) calculated based on 0.4mm insert nose radius.
- MBU variants AL/RD 07 are specially designed for close tolerance undercut applications.
- Maximum recommended material removal is 0.5mm diametrically.
- Customized MBU for special requirements can also be provided but will be made to order with a lead time of 3-6 weeks.

Illustration to show angular mounting of MBU on a finish boring bar

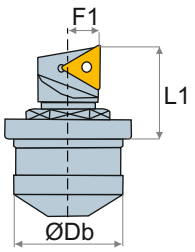


MBU - Straight Mounting Type

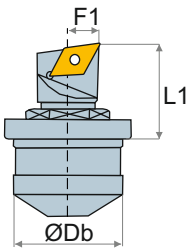
CC..TYPE



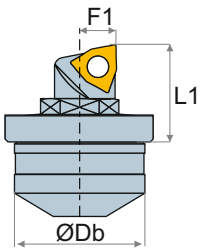
TC../TP..TYPE



DC..TYPE



WC..TYPE



SAMPLE IMAGE

All Left - Hand variants shown above.
All dimensions are in mm.

Sr. No	Item Code		Insert	D_b	L1	F1	D_{min}	Mounting Screw	Insert Screw	Torx / Allen Key	Spanner	Stock	
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1	RT MBU SLW 02	RT MBU SRW 02	WC..0201..	14	11.0	4.1	22.0	RTMS14	M2.0	T6/T8	RTS14	◆	◆
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3	RT MBU SLT 06 14	RT MBU SRT 06 14	TC..06T1..	14	11.0	4.1	22.0	RTMS14	M2.0	T6/T8	RTS14	◆	◆
4	RT MBU SLT 0601 14	RT MBU SRT 0601 14	TC..0601..	14	11.0	4.1	22.0	RTMS14	M2.0	T6/T8	RTS14	◆	◆
5	RT MBU SLC 06	RT MBU SRC 06	CC..0602..	16	13.3	5.1	27.6	RTMS16	M2.5	T8/T10	RTS16	◆	★
6	RT MBU SLT 06	RT MBU SRT 06	TC..06T1..	16	13.3	4.1	26.1	RTMS16	M2.0	T6/T10	RTS16	◆	★
7	RT MBU SLT 0601	RT MBU SRT 0601	TC..0601..	16	13.3	4.1	26.1	RTMS16	M2.0	T6/T10	RTS16	◆	★
8	RT MBU SLC 09	RT MBU SRC 09	CC..09T3..	20	18.3	7.2	37.1	RTMS20	M3.5	T15/T10	RTS20	◆	◆
9	RT MBU SLT 09	RT MBU SRT 09	TC..0902..	20	18.3	6.3	37.1	RTMS20	M2.2	T7/T10	RTS20	◆	★
10	RT MBU SLTP 09	RT MBU SRTP 09	TP..0902..	20	18.3	6.3	37.1	RTMS20	M2.5	T8/T10	RTS20	◆	◆
11	RT MBU SLDU 07 20	RT MBU SRDU 07 20	DC..0702..	20	18.3	6.3	37.1	RTMS20	M2.5	T8/T10	RTS20	◆	◆
12	RT MBU SLC 09 22	RT MBU SRC 09 22	CC..09T3..	22	22.1	7.2	49.1	RTMS22	M3.5	T15	RTS22	◆	◆
13	RT MBU SLT 11	RT MBU SRT 11	TC..1102..	22	22.1	7.2	49.1	RTMS22	M2.5	T8/T15	RTS22	◆	★
14	RT MBU SLT 1103	RT MBU SRT 1103	TC..1103..	22	22.1	7.2	49.1	RTMS22	M2.5	T8/T15	RTS22	◆	◆
15	RT MBU SLTP 11	RT MBU SRTP 11	TP..1103..	22	22.1	7.2	49.1	RTMS22	M3.0	T10/T15	RTS22	◆	◆
16	RT MBU SLDU 07 22	RT MBU SRDU 07 22	DC..0702..	22	22.1	7.2	49.1	RTMS22	M2.5	T8/T15	RTS22	◆	◆
17	RT MBU SLC 12	RT MBU SRC 12	CC..1204..	32	32	10.3	69.6	RTMS32	M4.5	T20/3MM	RTS32	◆	◆
18	RT MBU SLT 16	RT MBU SRT 16	TC..16T3..	32	32	10.3	69.6	RTMS32	M3.5	T15/3MM	RTS32	◆	◆
19	RT MBU SLTP16	RT MBU SRTP 16	TP..16T3..	32	32	10.3	69.6	RTMS32	M3.5	T15/3MM	RTS32	◆	◆

Notes:

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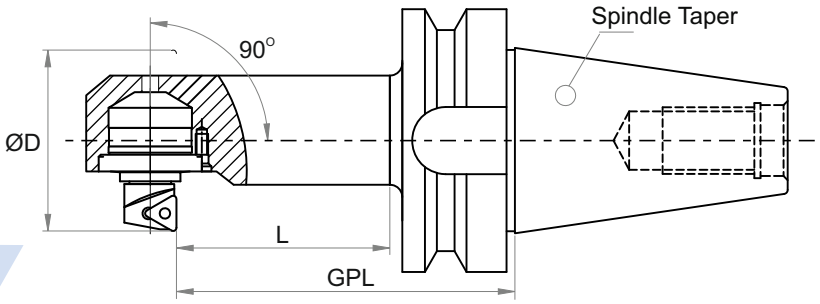
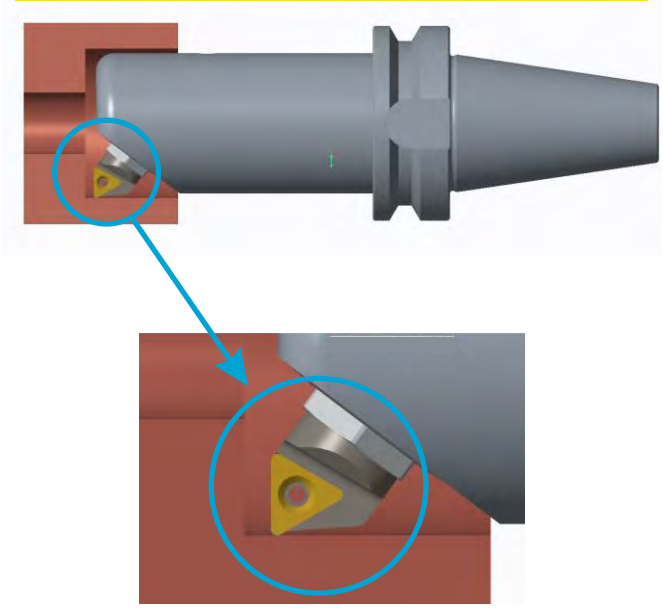
Illustration to show straight mounting of MBU on a finish boring bar



Illustrative Applications of Fine Boring using Micro Bore Units

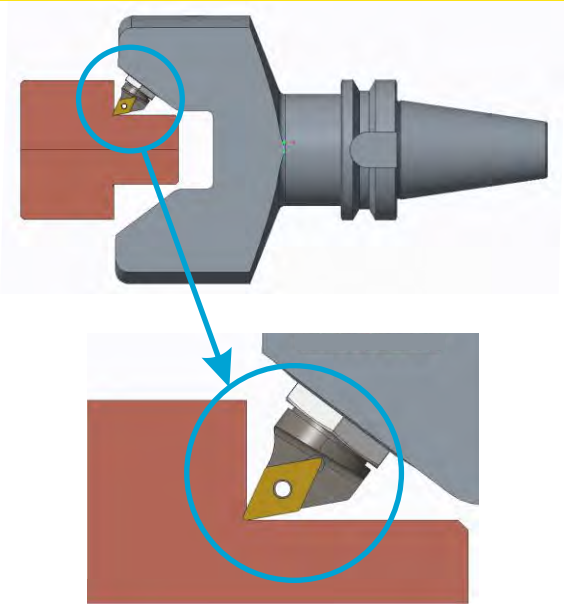
RENUKA TOOLS®

ID Boring



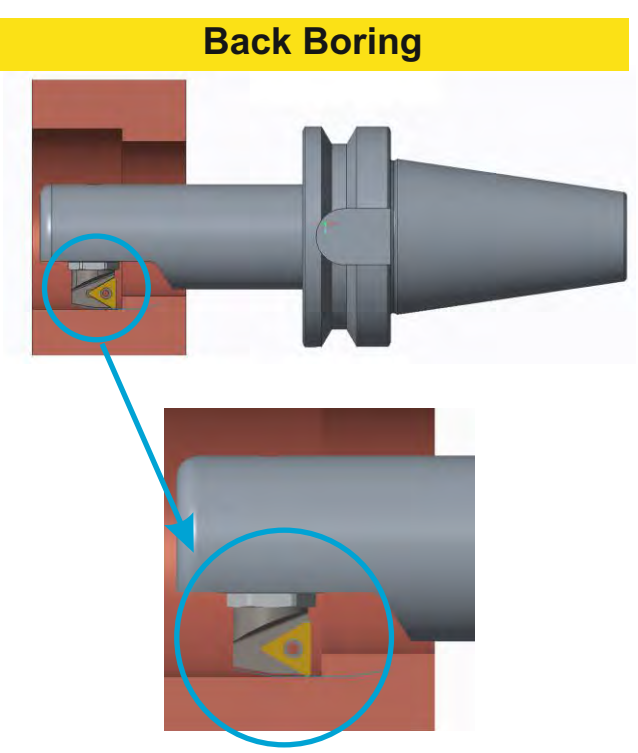
- Minimum Diameter ØD = Ø20.0mm

OD Turning & Undercut



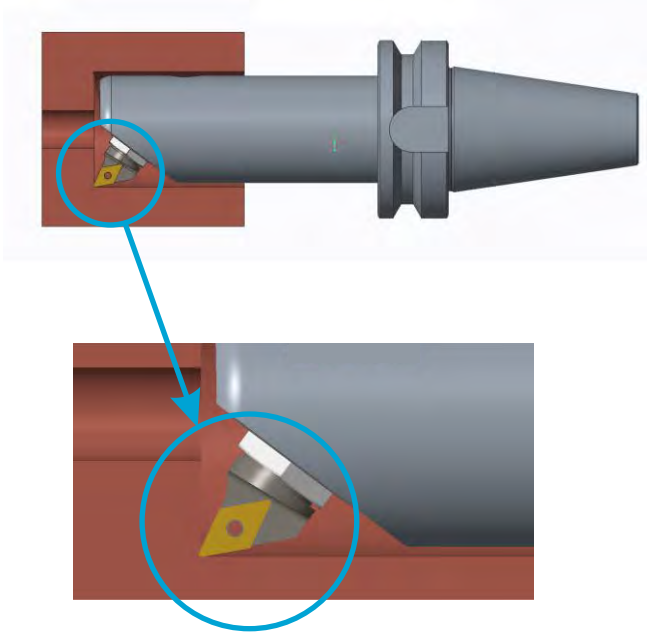
- Minimum Diameter ØD = Ø12.0mm

Back Boring



- Minimum Diameter ØD = Ø22.0mm

ID Boring & Undercut



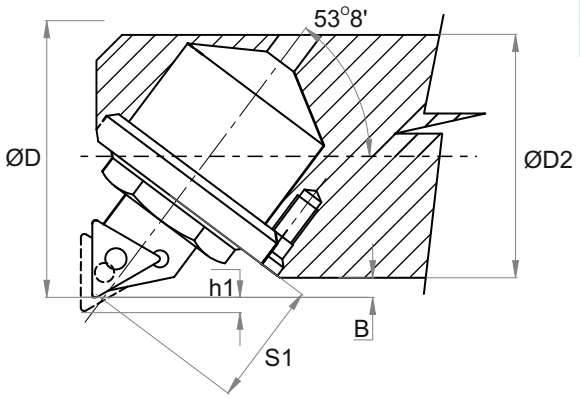
- Minimum Diameter ØD = Ø37.1mm

- **Standard range for Fine Boring Tools for ID boring application (LH) are available.**
- **Please refer to catalogue of "Fine Boring Tools with Micro Bore Units".**
- **Catalogue is available for download on www.renukatools.in**

MBU - Angular Mounting Type

All dimensions are in mm.

Sr. No	RT MBU Item Code	Insert	D_{min}	D2	B_{min}	$h1_{max}$	$S1_{min}$
1	AL/RW 02	WC.. 020104	20.0	19.0	0.50	1.5	8.3
2	AL/RC 04	CC.. 04T004	20.0	19.0	0.50	1.5	8.3
3	AL/RT 06 14	TC.. 06T104	20.0	19.0	0.50	1.5	8.3
4	AL/RT 0601 14	TC.. 060104	20.0	19.0	0.50	1.5	8.3
5	AL/RC 06	CC.. 060204	25.9	22.0	1.65	2.0	10.7
6	AL/RT 06	TC.. 06T104	25.4	22.0	1.45	2.0	10.6
7	AL/RT 0601	TC.. 060104	25.4	22.0	1.45	2.0	10.6
8	AL/RC 09	CC.. 09T304	33.1	28.5	2.30	2.8	14.5
9	AL/RT 09	TC.. 090204	33.1	28.5	2.30	2.8	14.5
10	AL/RTP 09	TP.. 090204	33.1	28.5	2.30	2.8	14.5
11	AL/RD 07 20	DC.. 070204	33.1	28.5	2.30	2.8	14.5
12	AL/RC 09 22	CC.. 09T304	42.6	38.0	2.30	4.8	17.2
13	AL/RT 11	TC.. 110204	42.6	38.0	2.30	4.8	17.2
14	AL/RT 1103	TC.. 110304	42.6	38.0	2.30	4.8	17.2
15	AL/RTP 11	TP.. 110304	42.6	38.0	2.30	4.8	17.2
16	AL/RD 07 22	DC.. 070204	42.6	38.0	2.30	4.8	17.2
17	AL/RC 12	CC..120404	60.6	55.0	2.80	8.0	26.2
18	AL/RT 16	TC.. 16T304	60.6	55.0	2.80	8.0	26.2
19	AL/RTP 16	TP.. 16T304	60.6	55.0	2.80	8.0	26.2

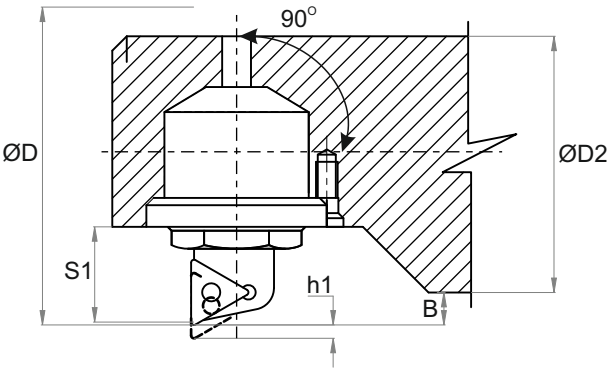


Approach Angle = 90°

MBU - Straight Mounting Type

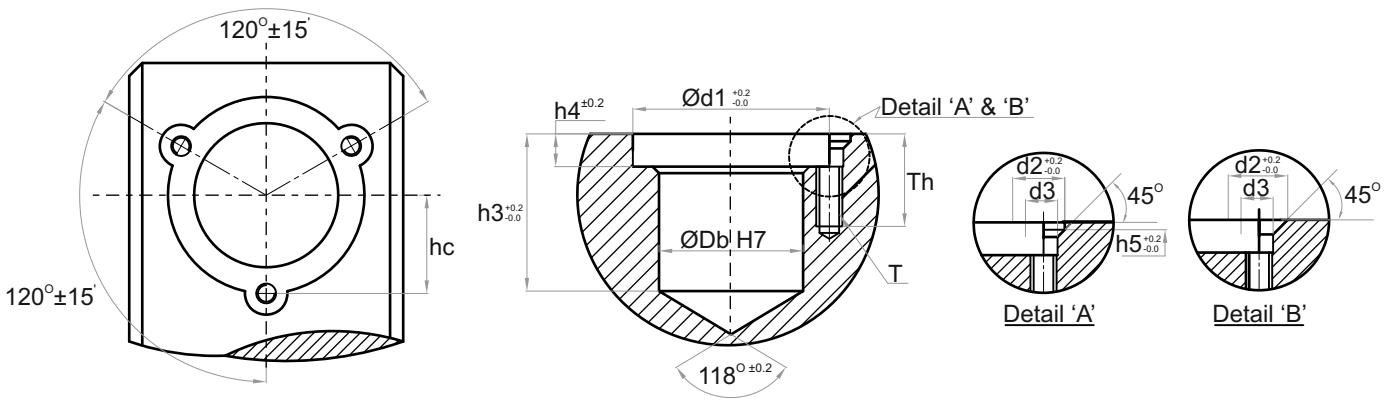
All dimensions are in mm.

Sr. No	RT MBU Item Code	Insert	D_{min}	D2	B_{min}	$h1_{max}$	$S1_{min}$
1	SL/RW 02	WC.. 020104	22.0	21.0	0.50	2.0	10.3
2	SL/RC 04	CC.. 04T004	22.0	21.0	0.50	2.0	10.3
3	SL/RT 06 14	TC.. 06T104	22.0	21.0	0.50	2.0	10.3
4	SL/RT 0601 14	TC.. 060104	22.0	21.0	0.50	2.0	10.3
5	SL/RC 06	CC.. 060204	27.6	26.0	0.55	2.5	9.6
6	SL/RT 06	TC.. 06T104	26.1	25.0	0.5	1.8	9.0
7	SL/RT 0601	TC.. 060104	26.1	25.0	0.5	1.8	9.0
8	SL/RC 09	CC.. 09T304	37.1	34.5	1.30	3.5	13.6
9	SL/RT 09	TC.. 090204	37.1	34.5	1.30	3.5	13.6
10	SL/RTP 09	TP.. 090204	37.1	34.5	1.30	3.5	13.6
11	SL/RDU 07 20	DC.. 070204	37.1	34.5	1.30	3.5	13.6
12	SL/RC 09 22	CC.. 09T304	49.1	46.5	1.30	6.0	16.4
13	SL/RT 11	TC.. 110204	49.1	46.5	1.30	6.0	16.4
14	SL/RT 1103	TC.. 110304	49.1	46.5	1.30	6.0	16.4
15	SL/RTP 11	TP.. 110304	49.1	46.5	1.30	6.0	16.4
16	SL/RDU 07 22	DC.. 070204	49.1	46.5	1.30	6.0	16.4
17	SL/RC 12	CC..120404	69.6	67.0	1.30	10.0	25.0
18	SL/RT 16	TC.. 16T304	69.6	67.0	1.30	10.0	25.0
19	SL/RTP16	TP.. 16T304	69.6	67.0	1.30	10.0	25.0



Approach Angle = 90°

Mounting Dimensions for Micro Bore Units



All dimensions are in mm.

Detail	Sr. No	D_b H7	d1	d2	d3	h3	h4	h5	Th	hc	T
A	1	14.0	16.0	3.7	2.7	9.3	2.8	1.2	8.0	8.65 ±0.02	M2.5
	2	16.0	19.0	4.6	3.2	11.5	2.8	1.6	9.0	9.65 ±0.02	M3.0
	3	20.0	25.0	4.6	3.2	15.5	4.0	1.6	9.0	12.50 ±0.05	M3.0
	4	22.0	30.0	6.5	4.3	24.0	5.0	1.8	13.0	15.40 ±0.05	M4.0
B	5	32.0	46.0	11.9	5.4	33.0	6.3	-	16.0	23.00 ±0.05	M5.0

Notes:

- Mounting details mentioned in the above table depend on the bush diameter (Db) of the Micro Bore Unit.
- Please refer to tables on page no. 4 & 5 to find the Bush Diameter (Db) of your selected Micro Bore Unit.

Customized Micro Bore Units

- **Customized Micro Bore Unit designed and manufactured at Renuka Tools® for grooving application.**
- **Customized boring bar also designed and manufactured at Renuka Tools® for this special application.**

Operating Instructions for Micro Bore Units

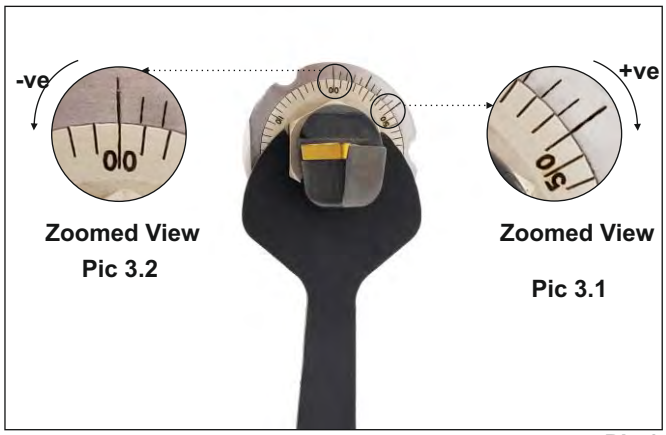
- Mount the Micro Bore Unit properly in the finish boring tool supplied by Renuka Tools®. This can be easily done by simply tightening the mounting screws in a proper manner (Pic1).In case the tool is of any other brand ensure that the manufacturer adheres to the mounting instructions provided by Renuka Tools®. Else, it might result in non-efficient working or even tool failure.

Pic 1

- Set the required diameter before clamping the tool on the machine, ideally on a tool pre-setter, or else with the help of a precise dial indicator (Pic2). During this setting, ensure that any one scale marking on the MBU inner scale coincides exactly with the extreme end marking on the outer vernier scale. This will automatically match some other inner scale marking with the other extreme end of the outer vernier scale (Pic3). This will help the user to quickly adjust after initial trial of tool.

Pic 2

- See if the desired results obtained by running the tool on the machine. In case of any deviation in the desired results, kindly use the spanner for adjustment. For increasing the diameter, rotate in clockwise direction and for decreasing, rotate in counter-clockwise direction. The least count of the inner MBU scale is 20microns on diameter (i.e. 10 microns radially). Now use the vernier scale for adjustment. If the diameter reading has to be increased, kindly match the adjacent marking (of left side) with the nearest vernier scale marking. This will result in increase of 2 microns on the diameter (i.e. 1 micron radially) (Pic 3.1 Zoomed). For reduction of diameter, follow the same procedure in the opposite direction (Pic 3.2 Zoomed).



Zoomed View
Pic 3.2

Zoomed View
Pic 3.1

Pic 3

- Maximum diameter adjustment can be checked from the rear end of the spanner (Pic4). Do not exceed the maximum limit as it may cause permanent damage to the unit.

Pic 4

Precautionary measures while using Micro Bore Units

- Due to constraints in the assembly tolerances, it is recommended that units, if damaged, are returned to Renuka Tools® for assessment/repair in a controlled environment. Commercials for repair can only be determined after detailed assessment of the damaged unit.
- Renuka Tools® Micro Bore Unit cannot be adjusted beyond its range and the maximum range can be checked from the thickness of the end portion of the spanner provided along with the unit. Exceeding the range might result in permanent damage to the unit.
- Kindly change the mounting screws and insert screws ahead in time to avoid accidents.
- In case of any observed decrease in accuracy over the time of usage, kindly request Renuka Tools® for servicing the unit.

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