

MICRO BORING UNIT

Unique Solution for Fine Boring



- ▶ **Wide range of Boring solutions**
- ▶ **Ideal for challenging applications**
- ▶ **High productivity**
- ▶ **Optimised cost of operation**



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▶ MICRO BORING UNIT

We are manufacturer of micro boring units. we offers more units in more sizes in more angles .it gives maximum rigidity to the cutting edge of the tool that is necessary to obtain high accuracy , high stock removal and longer tool life. this is used for finish component machining close tolerance. precision micro boring unit is high accuracy with least account of 20 micron.all most standard units are available in the both right and left hand cutting.

▶ Advantages of Micro Boring Unit

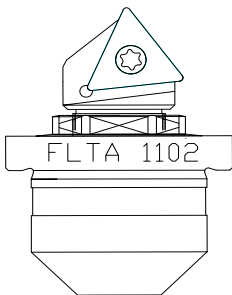
- ▶ Minimum adjustment of 0.002mm .
- ▶ Least count of +/-0.01mm radially.
- ▶ 1-2 micron repeatability .
- ▶ Easy adjustment from the top of MBU.
- ▶ Self locking MBU.
- ▶ Clear indication on the top of unit to adjust the size of boring bar in the machine itself.



▶ Nomenclature of MBU

▶ ORDER CODE : FLTA 1102

F **L** **T** **A** **11** **02**

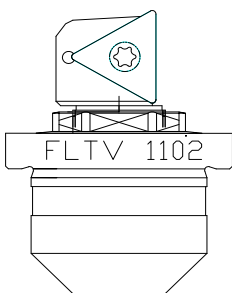


Where ;

- F : Indicate tool belongs to fine boring series.
- L : Indicate type of cutting MBU hand . L indicate left hand MBU.
- T : Indicate type of insert shape .T indicate triangular type of insert used in MBU.
- A : Indicate type of MBU mounting .A indicate angular mounting MBU.
- 11 : Indicate size of insert used in MBU.
- 02 : Indicate thickness of insert used in MBU.

▶ ORDER CODE : FLTV 1102

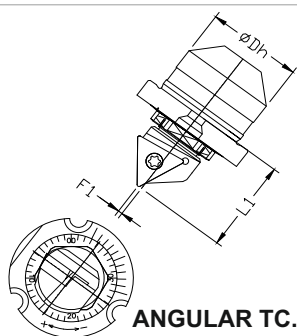
F **L** **T** **V** **11** **02**



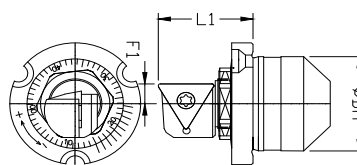
Where ;

- F : Indicate tool belongs to fine boring series.
- L : Indicate type of cutting MBU hand . L indicate left hand MBU.
- T : Indicate type of insert shape .T indicate triangular type of insert used in MBU.
- V : Indicate type of MBU mounting .A indicate angular mounting MBU.
- 11 : Indicate size of insert used in MBU.
- 02 : Indicate thickness of insert used in MBU.

S SERIES MICRO BORING UNIT IN TC..INSERTS



ANGULAR TC..MBU



VERTICAL TC..TYPE

S SERIES ANGULAR MOUNTING MBU IN TC..INSERTS

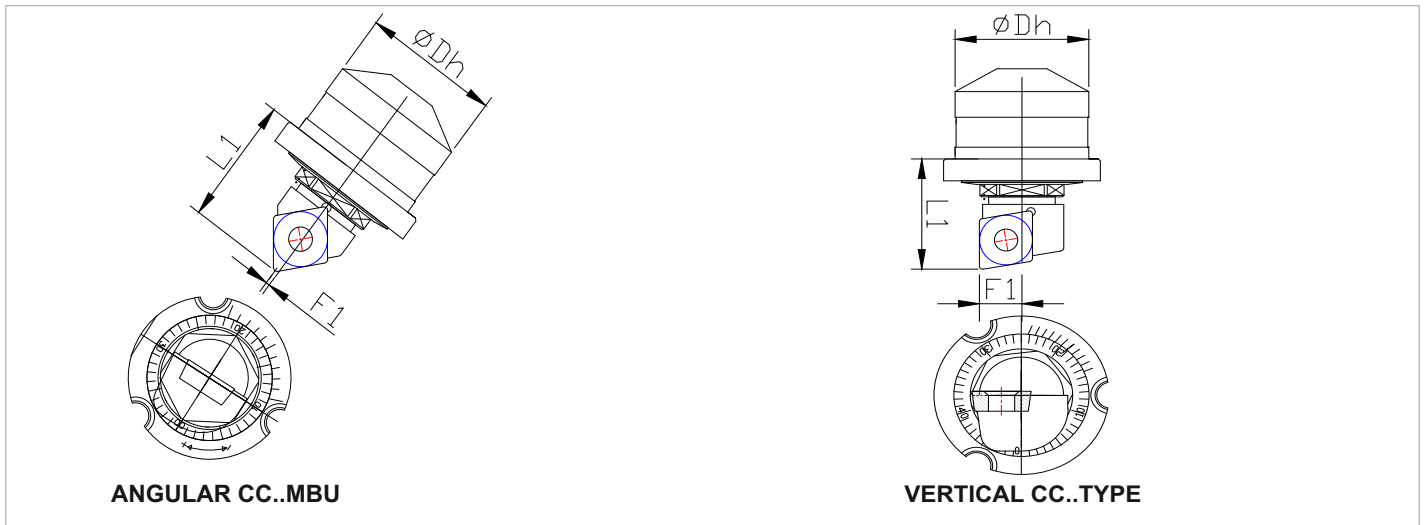
ENTRY VIEW	UNIT CODE & HAND		SUITABLE INSERT	DIMENSION			
	LH	RH		Dh	L1	F1	Dmin
	FLTA 06T1	FRTA 06T1	TC..06T1	16.0	14.3	0.2	Ø25.0
	FLTA 0902	FRTA 0902	TC..0902	20.0	19.1	1.0	Ø33.1
	FLTA 1102	FRTA 1102	TC..1102	22.0	23.0	1.2	Ø42.6
	FLTA 1103	FRTA 1103	TC..1103	22.0	23.0	1.2	Ø42.6
	FLTA 16T3	FRTA 16T3	TC..16T3	32.0	33.3	1.2	Ø60.0

S SERIES STRAIGHT MOUNTING MBU IN TC..INSERTS

ENTRY VIEW	UNIT CODE & HAND		SUITABLE INSERT	DIMENSION			
	LH	RH		Dh	L1	F1	Dmin
	FLTV 0902	FRTV 0902	TC..0902	20.0	18.3	6.30	Ø37.1
	FLTV 1102	FRTV 1102	TC..1102	22.0	22.1	7.20	Ø49.1
	FLTV 1103	FRTV 1103	TC..1103	22.0	22.1	7.20	Ø49.1
	FLTV 16T3	FRTV 16T3	TC..1103	32.0	32.0	10.3	Ø69.0

SPARE LIST

UNIT CODE & HAND		SUITABLE INSERT	SPARES FOR UNITS				
LH	RH		INSERT SCREW	TROX	MOUNTING SCREW	TROX	SPANNER
FLTA 06T1	FRTA 06T1	TC..06T1	402005	T6	403008-M	T9	SIG-10
FLTA 0902	FRTA 0902	TC..0902	402206	T7	403008-M	T9	SIG-13
FLTA 1102	FRTA 1102	TC..1102	402506	T8	404011-M	T15	SIG-15
FLTA 1103	FRTA 1103	TC..1103	402506	T8	404011-M	T15	SIG-15
FLTA 16T3	FRTA 16T3	TC..16T3	403509	T15	SCCST-5	T20	SIG-22
FLTV 0902	FRTV 0902	TC..0902	402206	T7	403008-M	T9	SIG-13
FLTV 1102	FRTV 1102	TC..1102	402506	T8	404011-M	T15	SIG-15
FLTV 1103	FRTV 1103	TC..1103	402506	T8	404011-M	T15	SIG-15
FLTV 16T3	FRTV 16T3	TC..16T3	403509	T15	SCCST-5	T20	SIG-22



S SERIES ANGULAR MOUNTING MBU IN CC..INSERTS

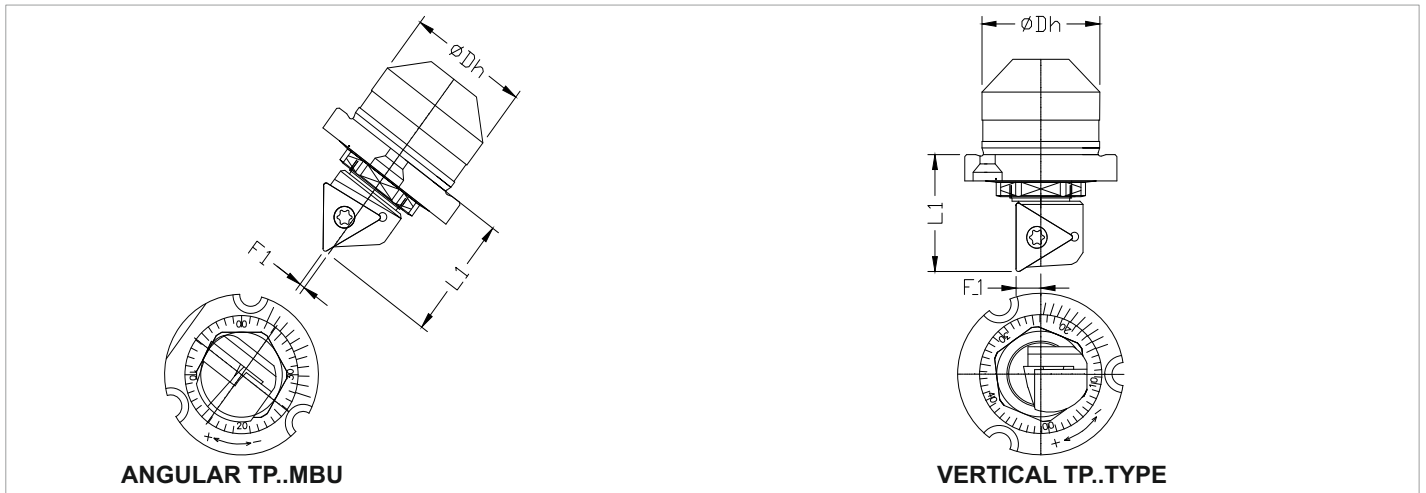
ENTRY VIEW	UNIT CODE & HAND		SUITABLE INSERT	DIMENSION			
	LH	RH		Dh	L1	F1	Dmin
	FLCA 0602	FRCA 0602	CC..0602	16.0	14.3	0.45	ø26.0
	FLCA 09T3	FRCA 09T3	CC..09T3	22.0	22.1	1.20	ø42.6

S SERIES STRAIGHT MOUNTING MBU IN CC..INSERTS

ENTRY VIEW	UNIT CODE & HAND		SUITABLE INSERT	DIMENSION			
	LH	RH		Dh	L1	F1	Dmin
	FLCV 0602	FRCV 0602	CC..0602	16.0	13.3	5.1	ø27.6
	FLCV 09T3	FRCV 09T3	CC..09T3	22.0	22.1	7.2	ø49.1

SPARE LIST

UNIT CODE & HAND		SUITABLE INSERT	SPARES FOR UNITS				
LH	RH		INSERT SCREW	TROX	MOUNTING SCREW	TROX	SPANNER
FLCA 0602	FRCA 0602	CC..0602	402506	T8	403008-M	T9	SIG-10
FLCA 09T3	FRCA 09T3	CC..09T3	403509	T15	404011-M	T15	SIG-15
FLCV 0602	FRCV 0602	CC..0602	402506	T8	403008-M	T9	SIG-10
FLCV 09T3	FRCV 09T3	CC..09T3	403509	T15	404011-M	T15	SIG-15



ANGULAR TP..MBU

VERTICAL TP..TYPE

S SERIES ANGULAR MOUNTING MBU IN TP..INSERTS

ENTRY VIEW	UNIT CODE & HAND		SUITABLE INSERT	DIMENSION			
	LH	RH		Dh	L1	F1	Dmin
	FLTA 0902 P	FRTA 0902 P	TP..0902	20.0	19.1	1.0	Ø33.1
	FLTA 1103 P	FRTA 1103 P	TP..1103	22.0	23.0	1.2	Ø42.6
	FLTA 16T3 P	FRTA 16T3 P	TP..16T3	32.0	33.3	1.2	Ø60.0

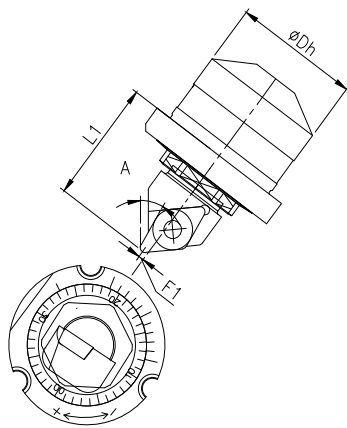
S SERIES STRAIGHT MOUNTING MBU IN TP..INSERTS

ENTRY VIEW	UNIT CODE & HAND		SUITABLE INSERT	DIMENSION			
	LH	RH		Dh	L1	F1	Dmin
	FLTV 0902 P	FRTV 0902 P	TP..0902	20.0	18.3	6.30	Ø37.1
	FLTV 1103 P	FRTV 1103 P	TP..1103	22.0	22.1	7.20	Ø49.1
	FLTV 16T3 P	FRTV 16T3 P	TP..16T3	32.0	32.0	10.3	Ø69.0

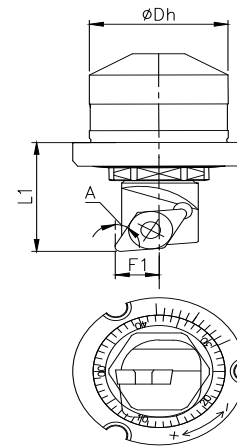
SPARE LIST

UNIT CODE & HAND		SUITABLE INSERT	SPARES FOR UNITS				
LH	RH		INSERT SCREW	TROX	MOUNTING SCREW	TROX	SPANNER
FLTA 0902 P	FRTA 0902 P	TP..0902	402506	T8	403008-M	T9	SIG-13
FLTA 1103 P	FRTA 1103 P	TP..1103	403008-M	T9	404011-M	T15	SIG-15
FLTA 16T3 P	FRTA 16T3 P	TP..16T3	404010	T15	SCCST-5	T20	SIG-22
FLTV 0902 P	FRTV 0902 P	TP..0902	402506	T9	403008-M	T9	SIG-13
FLTV 1103 P	FRTV 1103 P	TP..1103	403008-M	T9	404011-M	T15	SIG-15
FLTV 16T3 P	FRTV 16T3 P	TP..6T3	404010	T15	SCCST-5	T20	SIG-22

S SERIES MICRO BORING UNIT IN DC..INSERTS



ANGULAR DC..TYPE



VERTICAL DC..TYPE

▶▶ S SERIES ANGULAR MOUNTING MBU IN DC..INSERTS

ENTRY VIEW	UNIT CODE & HAND		SUITABLE INSERT	DIMENSION				
	LH	RH		Dh	L1	F1	Dmin	A
	FLDA 0702(30°)	FRDA 0702(30°)	DC..0702	20.0	19.1	1.0	Ø33.1	30°
	FLDA 0702(25°)	FRDA 0702(25°)	DC..0702	20.0	19.1	1.0	Ø33.1	25°

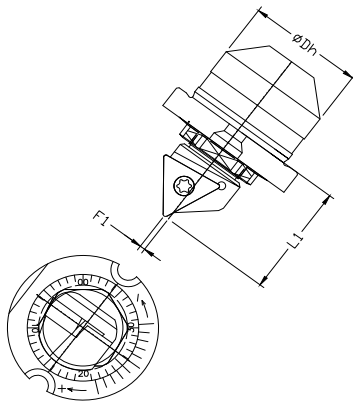
▶▶ S SERIES STRAIGHT MOUNTING MBU IN DC..INSERTS

ENTRY VIEW	UNIT CODE & HAND		SUITABLE INSERT	DIMENSION				
	LH	RH		Dh	L1	F1	Dmin	A
	FLDV 0702(30°)	FRDV 0702(30°)	DC..0702	20.0	18.3	6.3	Ø37.1	30°
	FLDV 0702(25°)	FRDV 0702(25°)	DC..0702	20.0	18.3	6.3	Ø49.1	25°
	FLDV 11T3(30°)	FRDV 11T3(30°)	DC..11T3	22.0	22.1	7.2	Ø49.1	30°

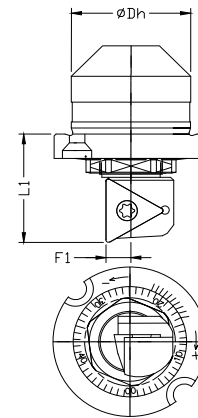
▶▶ SPARE LIST

UNIT CODE & HAND		SUITABLE INSERT	SPARES FOR UNITS				
LH	RH		INSERT SCREW	TROX	MOUNTING SCREW	TROX	SPANNER
FLDA 0702(30°)	FRDA 0702(30°)	DC..0702	402506	T8	403008-M	T9	SIG-13
FLDA 0702(25°)	FRDA 0702(25°)	DC..0702	402506	T8	403008-M	T9	SIG-13
FLDV 0702(30°)	FRDV 0702(30°)	DC..0702	402506	T8	403008-M	T9	SIG-13
FLDV 0702(25°)	FRDV 0702(25°)	DC..0702	402506	T8	403008-M	T9	SIG-13
FLDV 11T3(30°)	FRDV 11T3(30°)	DC..11T3	403509	T15	404011-M	T15	SIG-15

M SERIES MICRO BORING UNIT IN TP..INSERTS



ANGULAR TP.. TYPE



VERTICAL TP.. TYPE

M SERIES ANGULAR MOUNTING MBU IN TP.. INSERTS

ENTRY VIEW	UNIT CODE & HAND		SUITABLE INSERT	DIMENSION			
	LH	RH		Dh	L1	F1	Dmin
	M2LTA 1103	M2RTA 1103	TP..1103	19.05	18.4	0.80	$\varnothing 36$
	M3LTA 1103	M3RTA 1103	TP..1103	22.225	22.5	0.65	$\varnothing 47$
	M4LTA 16T3	M4RTA 16T3	TP..16T3	31.75	33.5	1.00	$\varnothing 73$

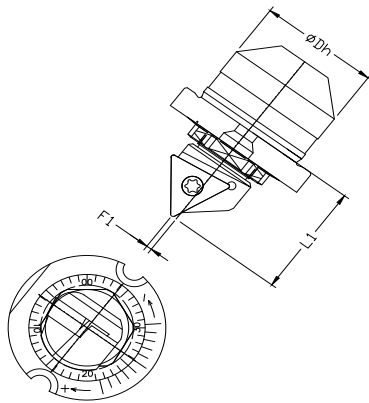
M SERIES STRAIGHT MOUNTING MBU IN TP..INSERTS

ENTRY VIEW	UNIT CODE & HAND		SUITABLE INSERT	DIMENSION			
	LH	RH		Dh	L1	F1	Dmin
	M2LTV 1103	M2RTV 1103	TP..1103	19.05	17.8	4.0	$\varnothing 36$
	M3LTV 1103	M3RTV 1103	TP..1103	22.225	21.5	4.8	$\varnothing 47$
	M4LTV 16T3	M4RTV 16T3	TP..16T3	31.75	31.4	7.1	$\varnothing 73$

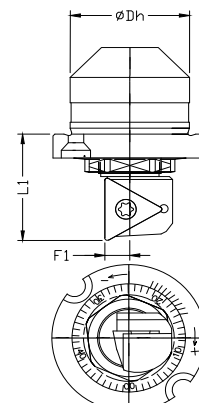
SPARE LIST

UNIT CODE & HAND		SUITABLE INSERT	SPARES FOR UNITS				
LH	RH		INSERT SCREW	TROX	MOUNTING SCREW	ALLEN KEY	SPANNER
M2LTA 1103	M2RTA 1103	TP..1103	403008-M	T9	SY 3.0	AK 2	S13
M3LTA 1103	M3RTA 1103	TP..1103	403008-M	T9	SY 3.5	AK 2	S15
M4LTA 16T3	M4RTA 16T3	TP..16T3	404010	T15	SY 5.0	AK 3	S22
M2LTV 1103	M2RTV 1103	TP..1103	403008-M	T9	SY 3.0	AK 2	S13
M3LTV 1103	M3RTV 1103	TP..1103	403008-M	T9	SY 3.5	AK 2	S15
M4LTV 16T3	M4RTV 16T3	TP..16T3	404010	T15	SY 5.0	AK 3	S22

M SERIES MICRO BORING UNIT IN TC..INSERTS



ANGULAR TC.. TYPE



VERTICAL TC.. TYPE

M SERIES ANGULAR MOUNTING MBU IN TC.. INSERTS

ENTRY VIEW	UNIT CODE & HAND		SUITABLE INSERT	DIMENSION			
	LH	RH		Dh	L1	F1	Dmin
	M2LTA 1102	M2RTA 1102	TC..1102	19.05	18.4	0.80	Ø36
	M3LTA 1102	M3RTA 1102	TC..1102	22.225	22.5	0.65	Ø47
	M4LTA 16T3C	M4RTA 16T3C	TC..16T3	31.75	33.5	1.00	Ø73

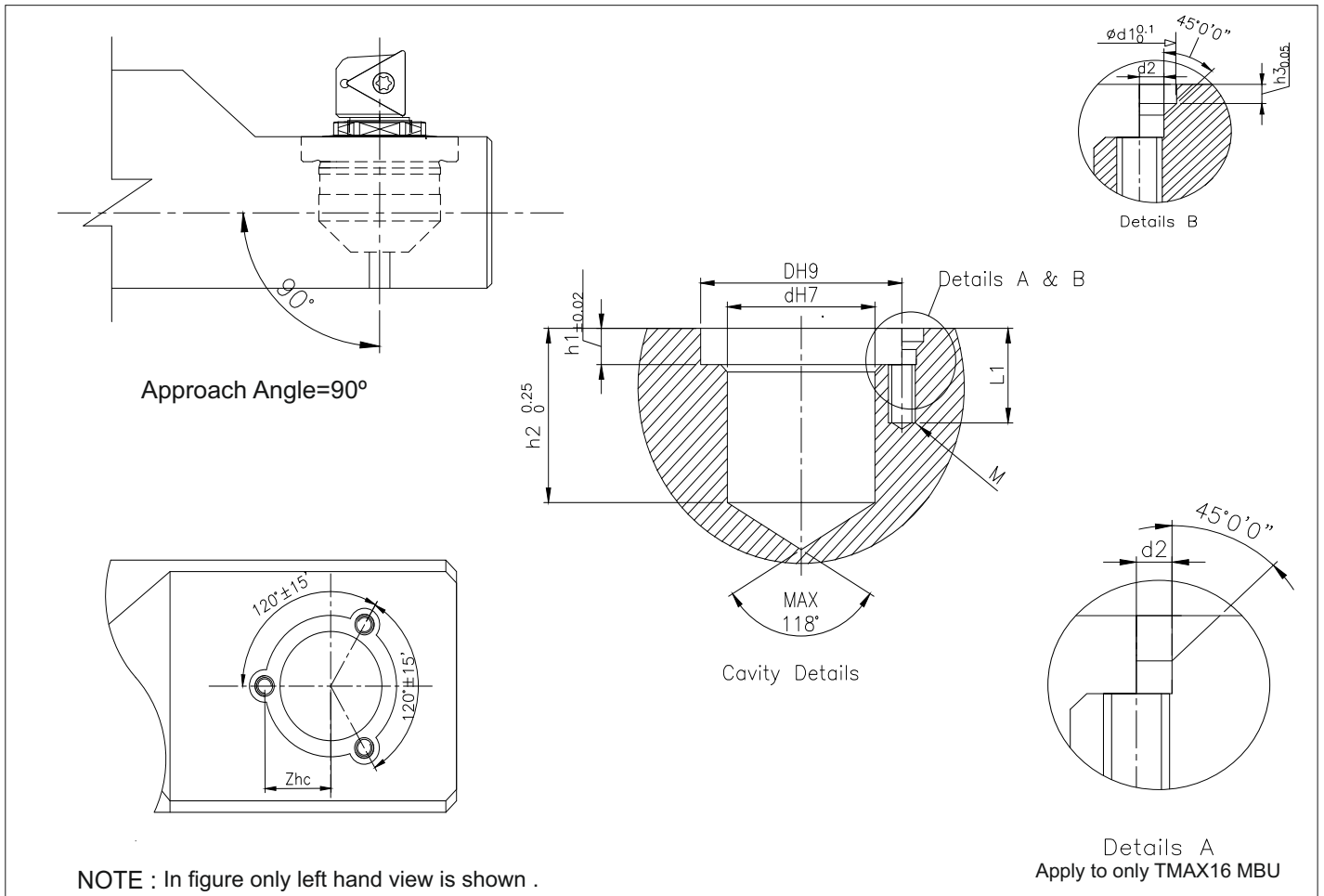
M SERIES STRAIGHT MOUNTING MBU IN TC..INSERTS

ENTRY VIEW	UNIT CODE & HAND		SUITABLE INSERT	DIMENSION			
	LH	RH		Dh	L1	F1	Dmin
	M2LTV 1102	M2RTV 1102	TC..1102	19.05	17.8	4.0	Ø36
	M3LTV 1102	M3RTV 1102	TC..1102	22.225	21.5	4.8	Ø47
	M4LTV 16T3C	M4RTV 16T3C	TC..16T3	31.75	31.4	7.1	Ø73

SPARE LIST

UNIT CODE & HAND		SUITABLE INSERT	SPARES FOR UNITS				
LH	RH		INSERT SCREW	TROX	MOUNTING SCREW	ALLEN KEY	SPANNER
M2LTA 1102	M2RTA 1102	TC..1102	402506	T8	SY 3.0	AK 2	S13
M3LTA 1102	M3RTA 1102	TC..1102	402506	T8	SY 3.5	AK 2	S15
M4LTA 16T3C	M4RTA 16T3C	TC..16T3	403509	T15	SY 5.0	AK 3	S22
M2LTV 1102	M2RTV 1102	TC..1102	402506	T8	SY 3.0	AK 2	S13
M3LTV 1102	M3RTV 1102	TC..1102	402506	T8	SY 3.5	AK 2	S15
M4LTV 16T3C	M4RTV 16T3C	TC..16T3	403509	T15	SY 5.0	AK 3	S22

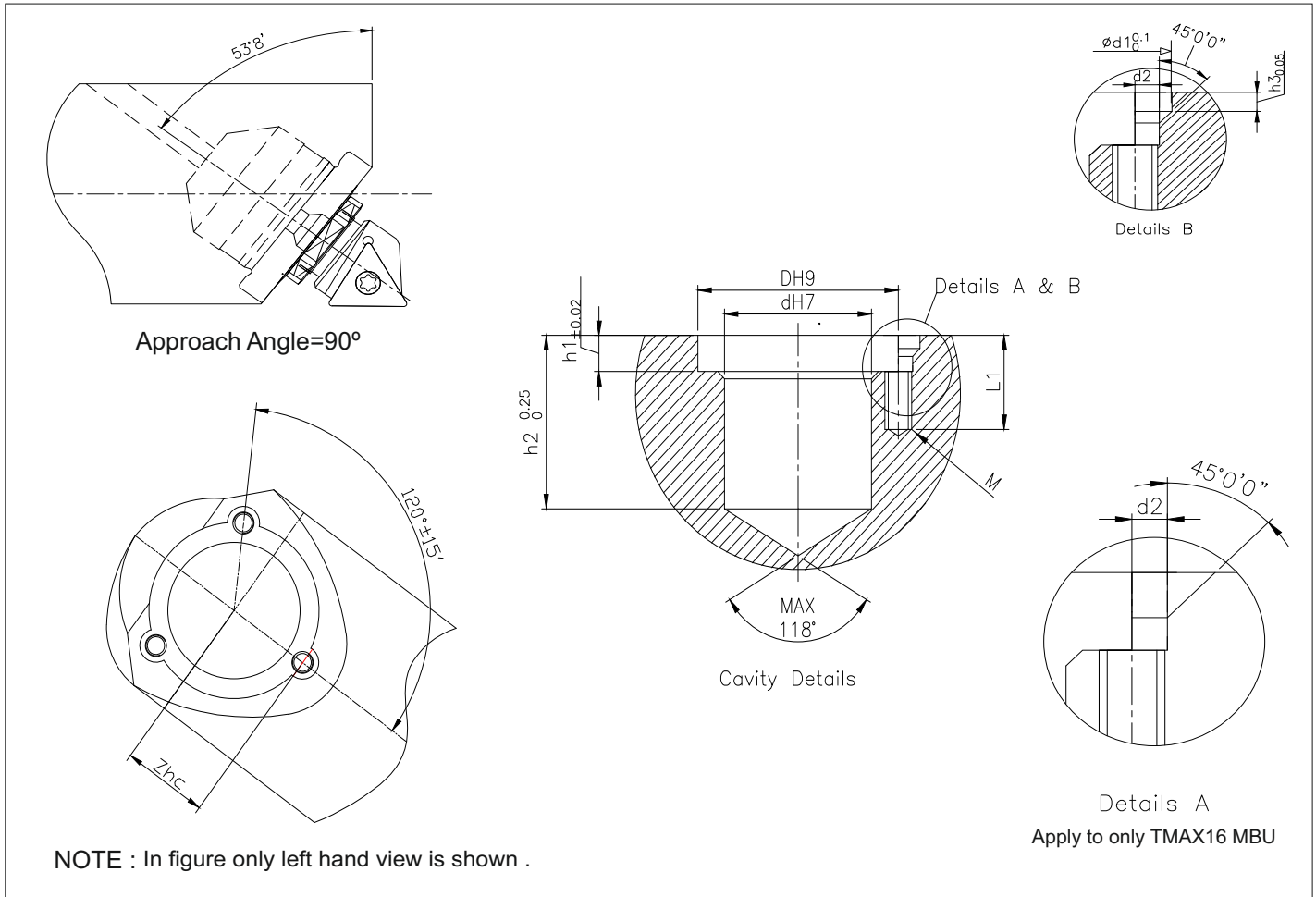
▶ STRAIGHT MOUNTING S SERIES MBU DETAILS



▶ STRAIGHT MOUNTING S SERIES MBU DIMENSIONS

DIMENSIONS										
MBU SIZE	d (H7)	D	d1	d2	h2	h1	h3	L1	Zhc	M
06	16	19	4.6	3.2	11.5	2.8	1.6	9	9.65	M3
09	20	25	4.6	3.2	15.5	4.0	1.6	9	12.50	M3
11	22	30	6.5	4.3	24.0	5.0	1.8	13	15.40	M4
16	32	46	11.9	5.4	33.0	6.3	-	16	23.00	M5

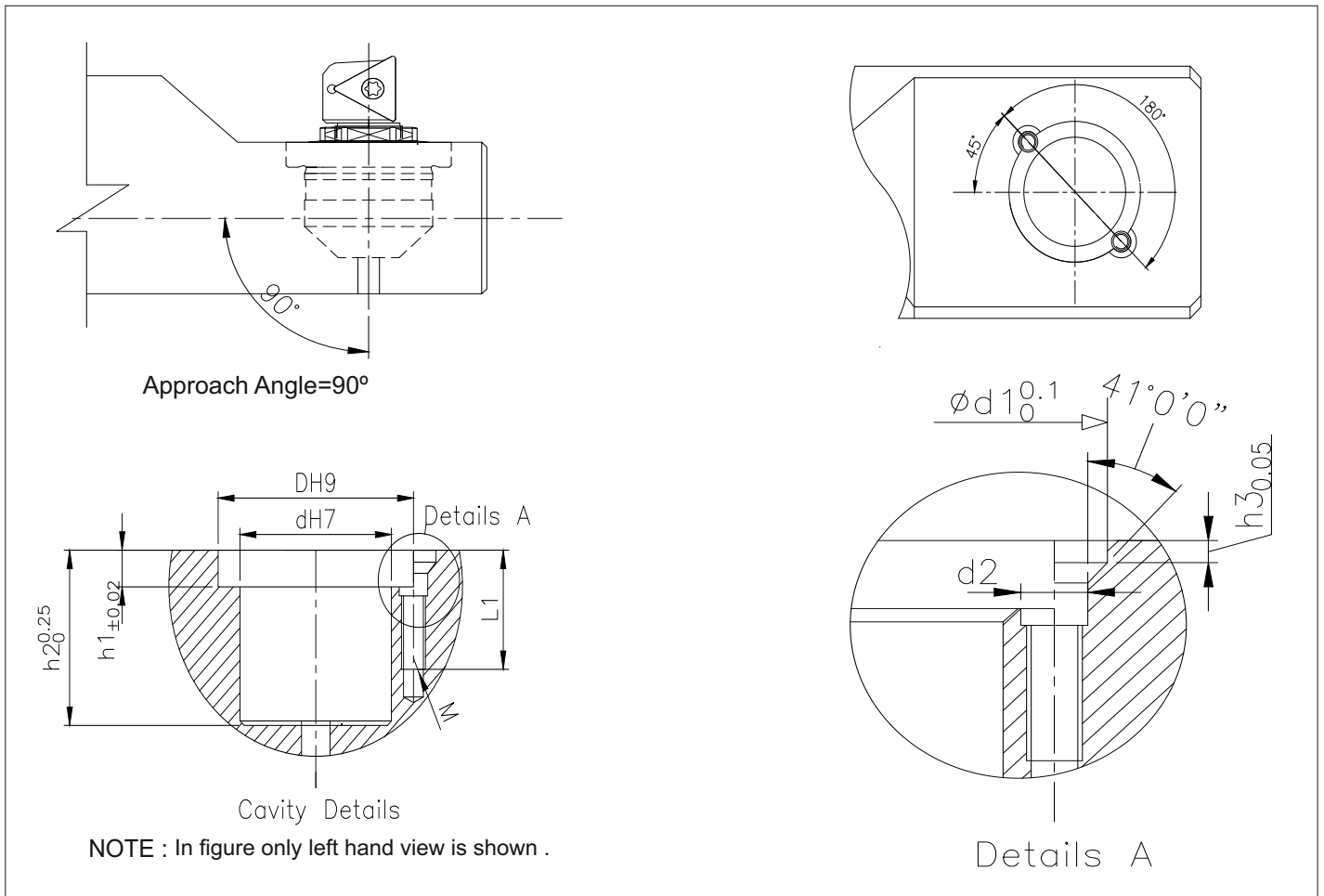
▶ ANGULAR MOUNTING S SERIES MBU DETAILS



▶ ANGULAR MOUNTING S SERIES MBU DIMENSIONS

DIMENSIONS										
MBU SIZE	d (H7)	D	d1	d2	h2	h1	h3	L1	Zhc	M
06	16	19	4.6	3.2	11.5	2.8	1.6	9	9.65	M3
09	20	25	4.6	3.2	15.5	4.0	1.6	9	12.50	M3
11	22	30	6.5	4.3	24.0	5.0	1.8	13	15.40	M4
16	32	46	11.9	5.4	33.0	6.3	-	16	23.00	M5

► STRAIGHT MOUNTING M SERIES MBU DETAILS

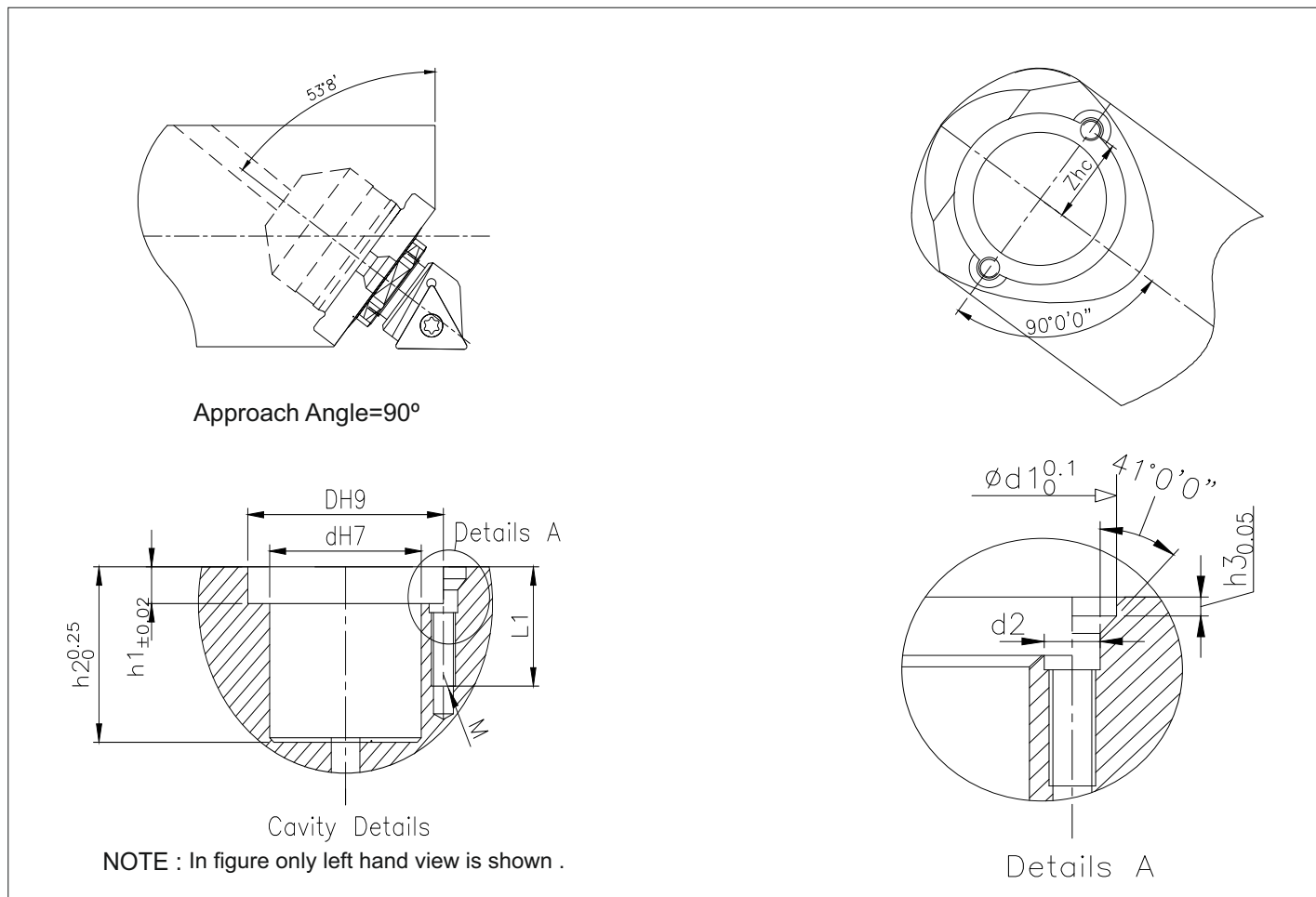


► STRAIGHT MOUNTING M SERIES MBU DIMENSIONS

DIMENSIONS										
MBU SIZE	d (H7)	D	d1	d2	h2	h1	h3	L1	Zhc	M
M2	19.05	24.59	5.7	3.6	19.1	4.0	1.30	13	12.29	M3.0
M3	22.225	31.75	7.2	3.8	25.4	4.8	1.10	16	15.88	M3.5
M4	31.75	46.03	9.5	5.2	38.1	6.4	1.15	19	23.01	M5.0



▶ ANGULAR MOUNTING M SERIES MBU DETAILS



▶ ANGULAR MOUNTING M SERIES MBU DIMENSIONS

DIMENSIONS										
MBU SIZE	d (H7)	D	d1	d2	h2	h1	h3	L1	Zhc	M
M2	19.05	24.59	5.7	3.6	19.1	4.0	1.30	13	12.29	M3.0
M3	22.225	31.75	7.2	3.8	25.4	4.8	1.10	16	15.88	M3.5
M4	31.75	46.03	9.5	5.2	38.1	6.4	1.15	19	23.01	M5.0

ADJUSTMENT OF SIGMA MICRO BORING UNIT

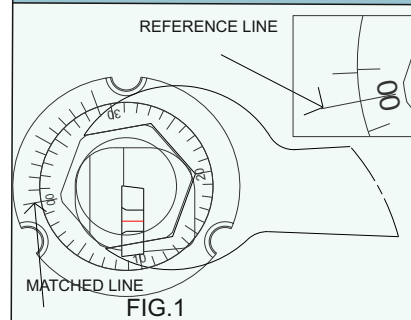


FIG.1

SETTING OF PRE BORE DIAMETER

- Set the required diameter of MBU on tool inspection machine or with the help of dial by using spanner.
- Set the cutting diameter of micro boring unit at lower side of tolerance.
- Example : if required cutting diameter is $\varnothing 30.02\text{mm}$ / $\varnothing 29.99\text{mm}$ then set the micro bore at $\varnothing 29.99\text{mm}$.
- Load the tool into machine spindle and start manufacturing operation.
- After completing operation , check output cutting diameter of workpiece.
- In the case of deviation of measured output diameter , please follow below instructions for setting of microbore :

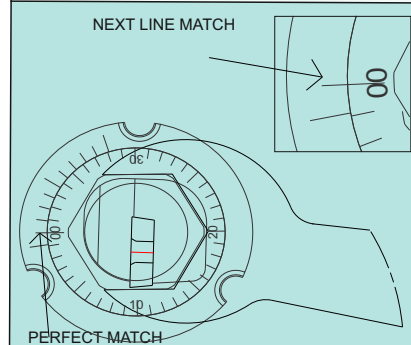


FIG.2

SETTING OF 0.02MM ADJUSTMENT

- If the output diameter is $\varnothing 29.99\text{mm}$.If we want to increase cutting diameter by 0.02mm follow below mention steps :
- Find the line on the vernier scale which do exactly match with the line on the main scale as shown in FIG.1.
- Rotate the nut of MBU in clockwise direction still next line on the vernier scale exactly match with the reference line on main scale of micro bore as shown in FIG.2...
- If the output diameter is $\varnothing 30.03\text{mm}$. If we want to decrease cutting diameter by 0.02mm follow below mention steps :
- Find the line on the vernier scale which do exactly match with the line on the main scale as shown in FIG.1..
- Rotate the nut of MBU in anticlockwise direction still next line on the vernier scale exactly match with the reference line on main scale of micro bore .

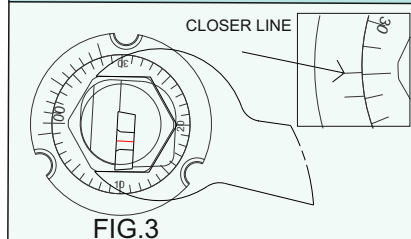


FIG.3

SETTING OF 0.002MM ADJUSTMENT

- Now to increase diameter again by 0.002mm follow below steps:
- check the line on the vernier scale which is very closer with line on the main scale as shown in FIG.3..
- After checking closer line on the vernier scale rotate nut of the MBU match closer line with reference line on the main scale as shown in FIG.4

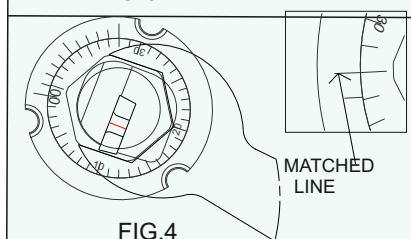


FIG.4

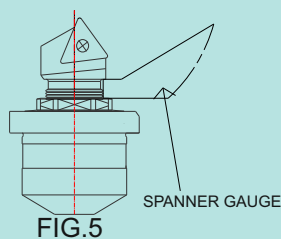
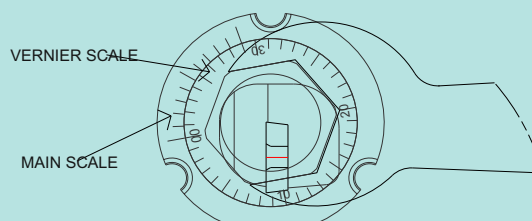
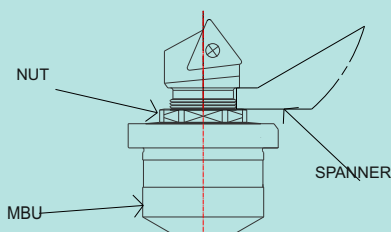
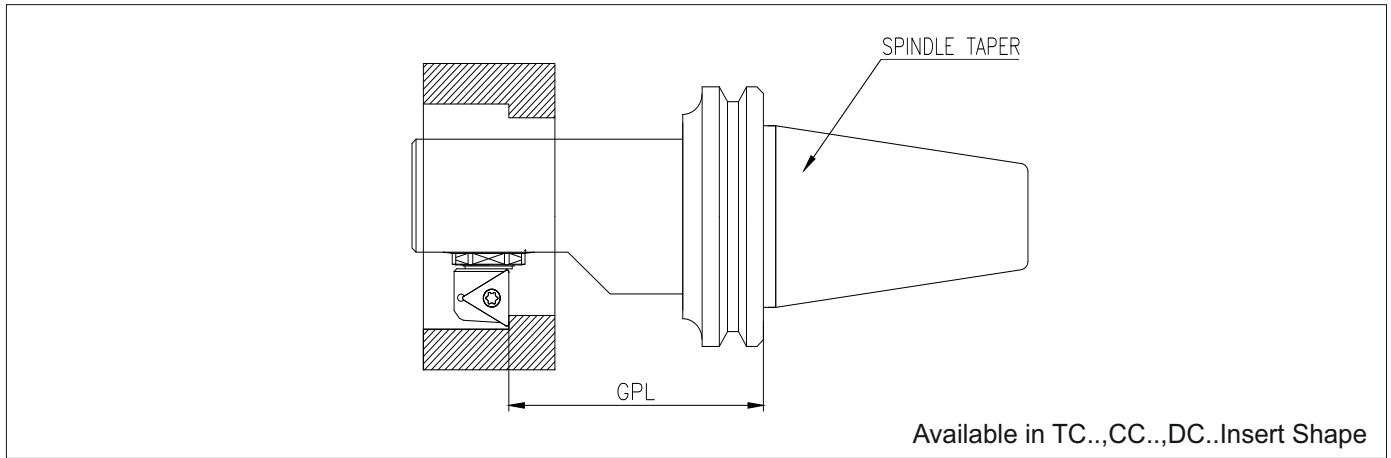
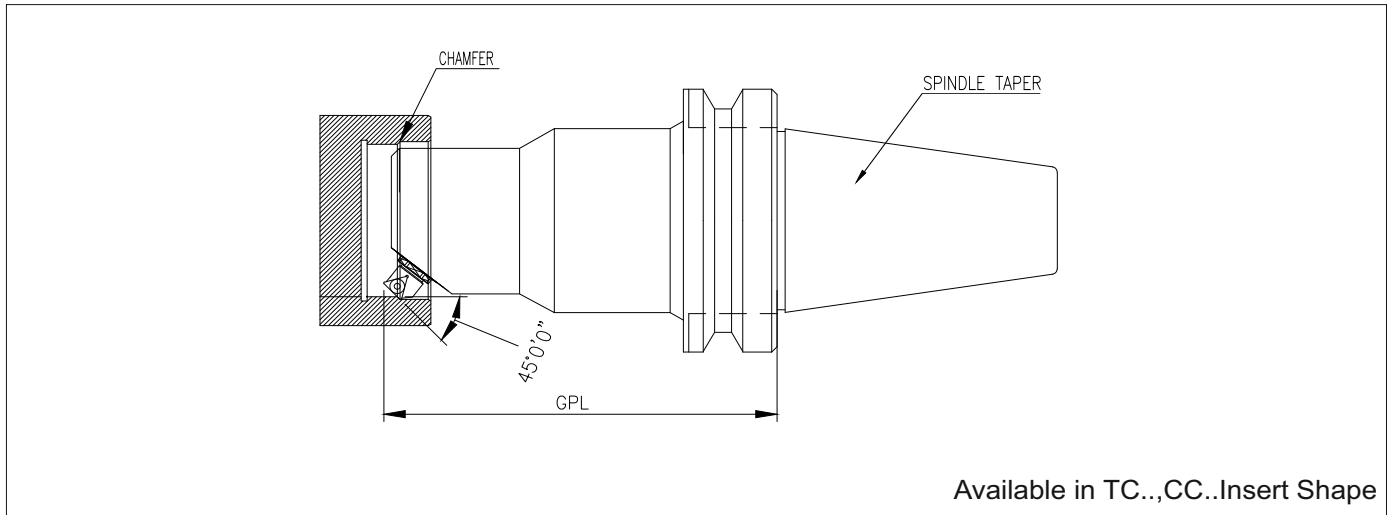
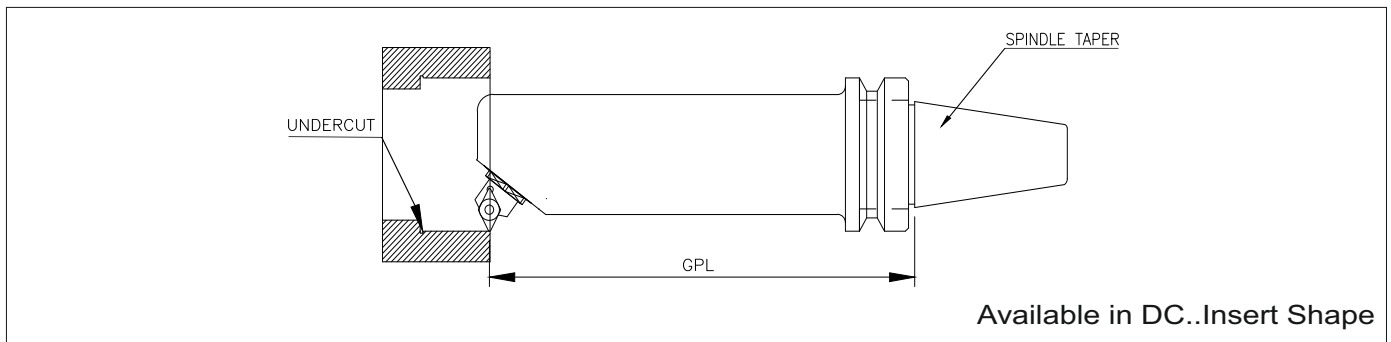


FIG.5

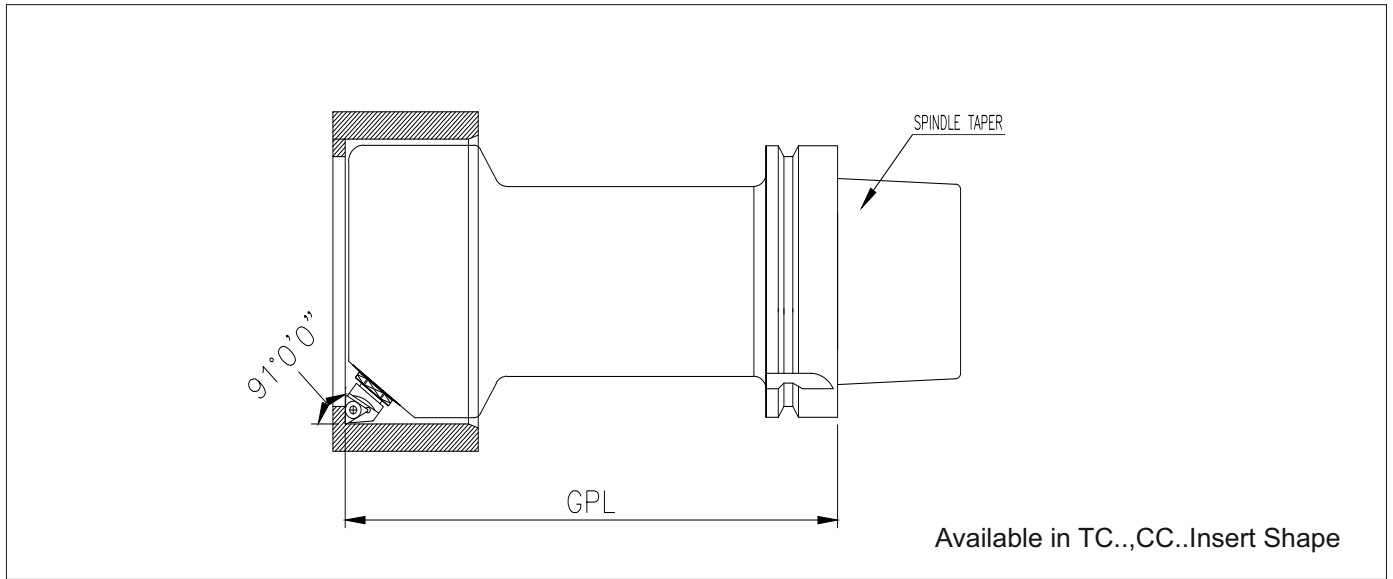
- Maximum adjustment of MBU we can check by using spanner gauge as shown in a FIG.5...
- Do not exceed the given adjustment limit to avoid damage to MBU.



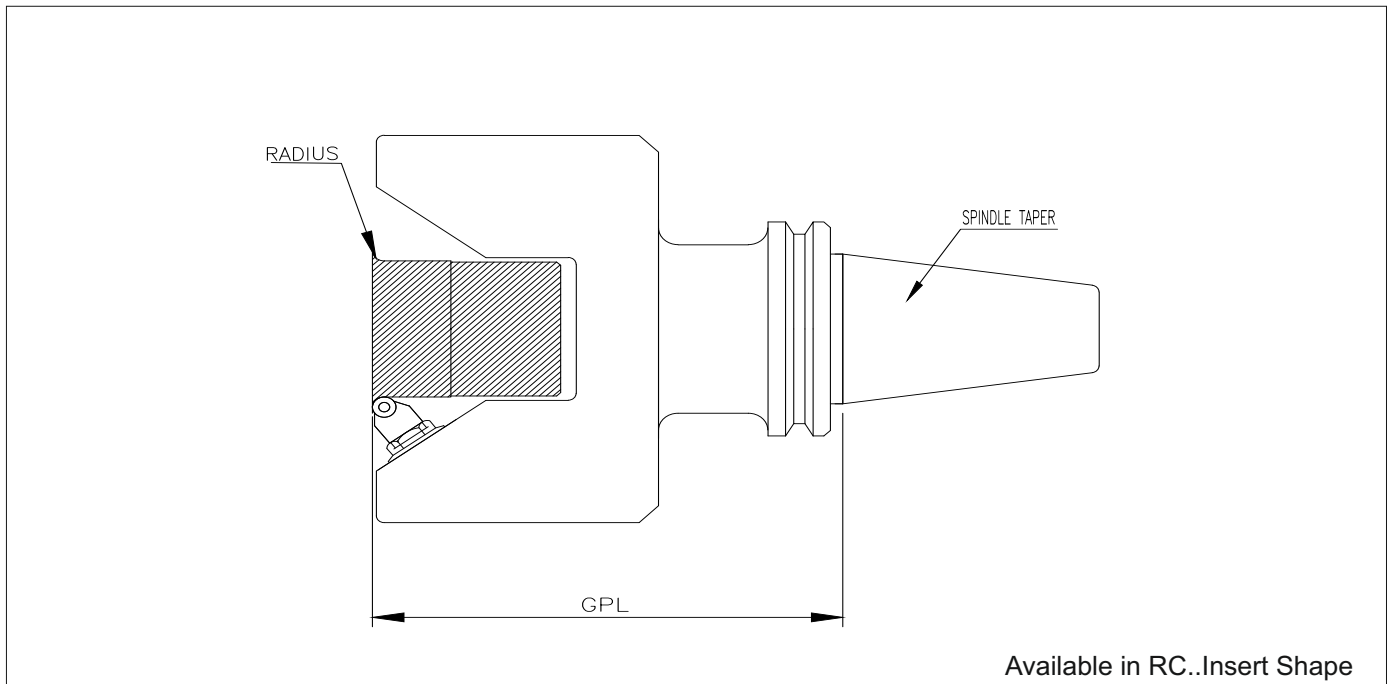
▶ **BACK BORING USING MICRO BORING UNIT**▶ **BORING PLUS CHAMFER USING MICRO BORING UNIT**▶ **BORING PLUS UNDERCUT USING MICRO BORING UNIT**

scan to view handling instruction

▶ ID BORING USING MICRO BORING UNIT



▶ OD TURNING & RADIUS USING MICRO BORING UNIT





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