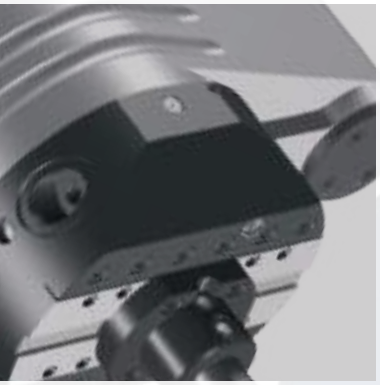
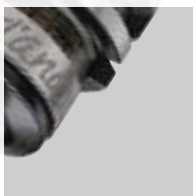
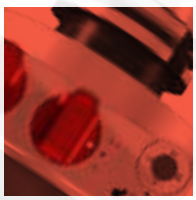
TOOLS HEADS 2026

D'ANDREA®
THE ART OF PRECISION



Golden Compass
award for industrial design





D'ANDREA 75th ANNIVERSARY

D'ANDREA®

THE ART OF PRECISION

TOOLS HEADS 2026

made in italy

Golden Compass
award for industrial design

D'ANDREA®
THE ART OF PRECISION

PRECISION THAT EVOLVES INNOVATION THAT LEADS

D'ANDREA S.p.A. is an Italian company, world leader in the production of high precision accessories for machine tools. D'Andrea was founded in 1951 by Marino D'Andrea, who started the business with the industry's first facing and boring head.

/ **D'ANDREA** S.p.A. è un'azienda italiana leader mondiale nella produzione di accessori di alta precisione per macchine utensili, fondata nel 1951 da Marino D'Andrea, che iniziò l'attività con la prima testa a sfacciare e barenare (TA).

The hall of D'Andrea S.p.A Lainate.
/ L'ingresso della D'Andrea S.p.A. Lainate.

made in italy

THighT™

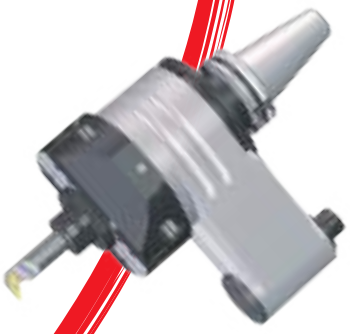
MHD'

EVOLUTION OF A LONG TRADITION

/L'EVOLUZIONE DI UNA LUNGA TRADIZIONE

U-TRONIC

Ermanno with his sons Amedeo and Marino, and his daughter Maria Pina
/Ermanno con i figli Amedeo, Marino e Maria Pina.



TA-CENTER

TA-SENSITIV

TA - 1951 The first HEAD for Boring and Facing. Designed by the founder **Marino D'Andrea.**
/**TA - 1951** La prima Testa per Alesare e Sfacciare. Progettata dal fondatore Marino D'Andrea

D'ANDREA®

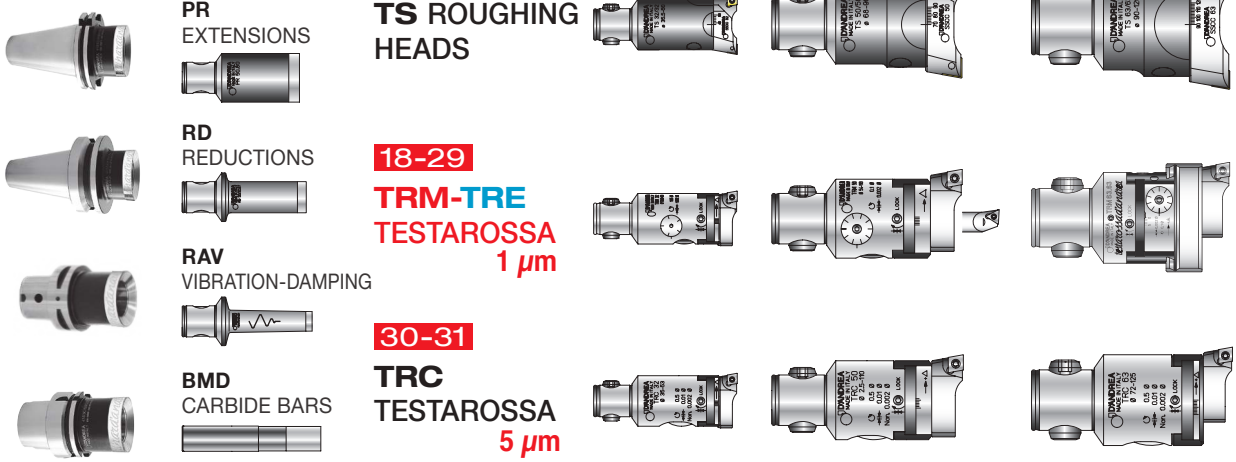
THE ART OF

TOOLS

MHD'

MODULAR BORING SYSTEM

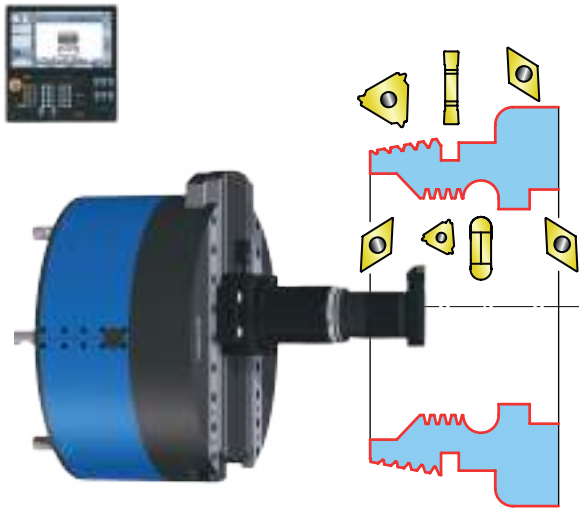
ARBORS **PR-RD-RAV-BMD**



HEADS

U-TRONIC NC HEADS

MEDIUM AND LARGE HEADS

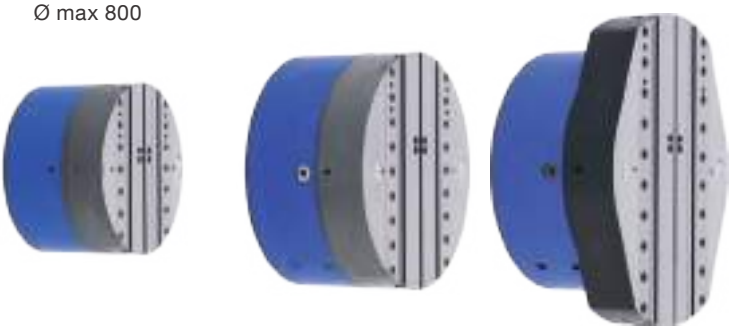


UT 3-360
Ø max 800

UT 5-500
Ø max 1000

UT 5-630
Ø max 1250

UT 5-800
Ø max 1600



TA-CENTER NC HEADS

TA-C110
Ø max 250

TA-C170
Ø max 460

U-DRIVE

TA-TRONIC NC HEADS

TA-T110
Ø max 250

TA-T170
Ø max 460

SERVOMOTOR

PRECISION

made in italy

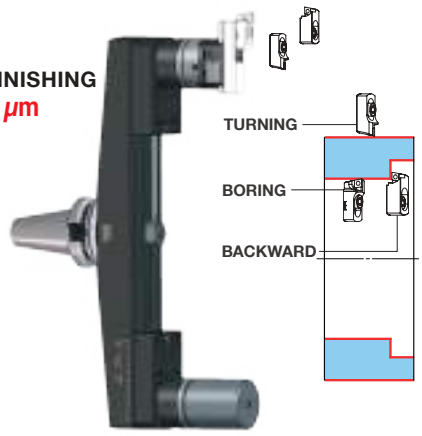
Golden Compass award for industrial design

BHighT CROSS BARS BORING - TURNING

BHT 250 - 500 -750 UP TO Ø 1000 36-39

ROUGHING

FINISHING
1 μm



MEDIUM AND LARGE SIZE MACHINES

PSC TOOLHOLDERS

46-49

MONOforce POWER MILLING CHUCKS

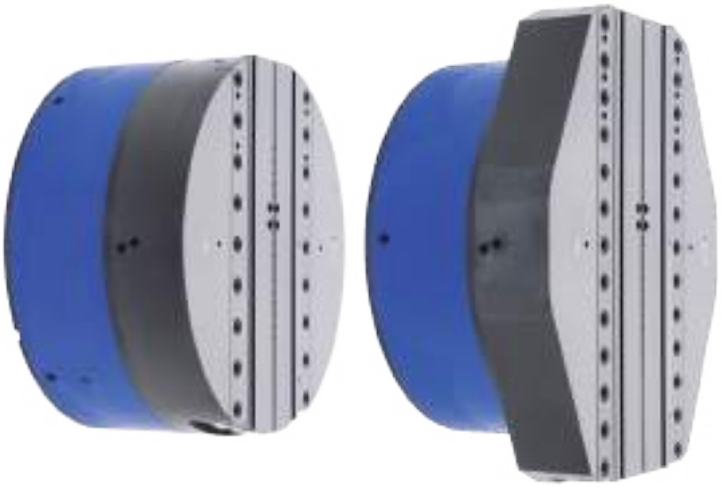
50-51

MONOd' MONOLITHIC TOOLHOLDERS

52

U-TRONIC SPECIALS

UT 8-800 Ø max 1600
UT 8-1000 Ø max 2000
UT 8-1250 Ø max 2500
UT 8-1600 Ø max 3200



EXTENDED

ANGULAR

GEARBOX

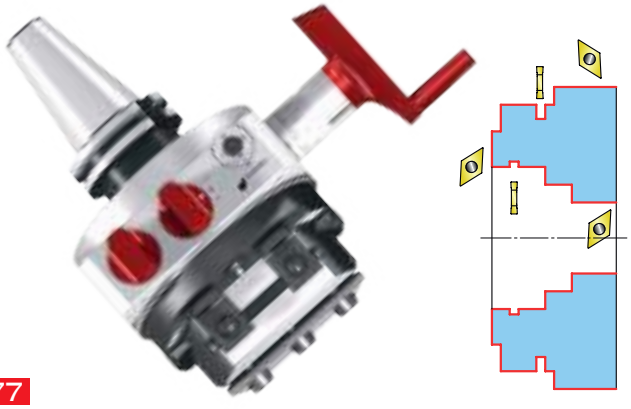
HOLE

DOUBLE SLIDE

HIGH SPEED

TA-SENSITIV FACING AND BORING HEADS

TA-S120 Ø max 250
TA-S170 Ø max 400



76-77

MILLING-BORING
AND CONVENTIONAL MACHINES

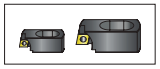
HEADS SPECIALS

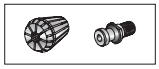
AUTORADIAL 78-79

AUTOMATIC FACING HEADS

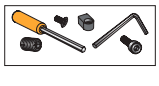
U-COMAX 80-81

NC HEADS


BACKWARD 32-33


ACCESSORIES 53

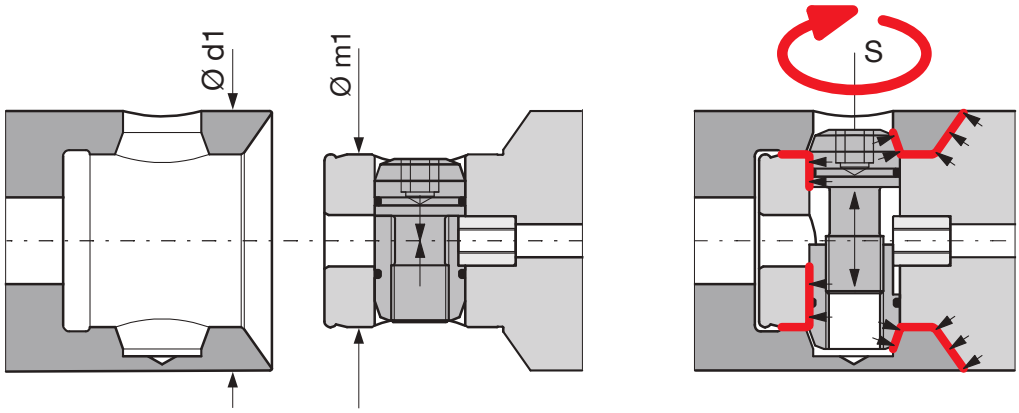

INSERTS 40-41


SPARE PARTS 54-57

TECHNICAL DATA 42-45

High-precision modular toolholders for boring, milling and drilling operations with extreme flexibility and rigidity.

È una linea di portautensili modulari di alta precisione che consente di eseguire con estrema flessibilità e rigidità operazioni di alesatura, fresatura, foratura.



MHD'	Ø d1	Ø m1	⬡ S	N·m
16	16	10	2,5	2 - 2,5
20	20	13	3	4 - 4,5
25	25	16	3	6,5 - 7,5
32	32	20	4	7 - 8

MHD'	Ø d1	Ø m1	⬡ S	N·m
40	40	25	5	16 - 18
50	50	32	6	30 - 35
63	63	42	8	70 - 80
80	80	42	8	70 - 80

The MHD' coupling is the heart of the Modulhard'andrea tool system.

Rigidity and torque ensured by the cylindrical-conical coupling with expandable locking pin, delivering excellent performance, precision, and finished surface quality.

Available in 8 sizes, it guarantees the interchangeability of all the elements of the system, which includes arbors, extensions, reductions and toolholder adapters.

L'attacco MHD' è il punto di forza del Modulhard'andrea.

Rigidità e coppia garantite dall'innesto cilindrico-conico con perno di bloccaggio espandibile, per prestazioni eccellenti, precisione e qualità della superficie finita.

Disponibile in otto grandezze, garantisce l'intercambiabilità di tutti gli elementi del sistema, che include attacchi base, prolunghe, riduzioni e adattatori portautensili.

ARBORS Manufactured according to DIN 69871, MAS 403 BT, DIN 69893, DIN 2080 and ANSI/CAT standards, made in case-hardened, tempered and grinded steel. BALANCING UP TO 8000 RPM.

ATTACCHI BASE Realizzati secondo normative DIN 69871, MAS 403 BT, DIN 69893, DIN 2080 e ANSI/CAT costruiti in acciaio cementato, temprato e rettificato BILANCIATURA 8000 RPM.

PR For each MHD' size there are extensions of different lengths that can be used to achieve the desired machining depths.

PR Per ogni grandezza MHD' esistono prolunghe di diverse lunghezze che consentono di raggiungere le profondità di lavorazione desiderate.

RD The reductions allow the use of MHD components of a smaller size thereby optimising the composition of the tool according to the overall dimensions.

RD Le riduzioni permettono di utilizzare componenti MHD' di una grandezza più piccola e quindi ottimizzare la composizione dell'utensile in funzione degli ingombri.

RAV Anti-vibration reductions for deep or heavy-duty machining.

RAV Riduzioni antivibranti per lavorazioni profonde o gravose.

TS Simple and extremely rigid roughing heads, thanks to the serrated surfaces between the head body and the bit holders. The constant distance between the bit holder clamping screw and the cutting edge guarantees the stability of the system.

TS Teste di sgrossatura semplici ed estremamente rigide grazie alle superfici di contatto dentellate tra il corpo testa e i seggi portainserto. La distanza costante tra la vite di serraggio del seggio ed il tagliente garantisce la stabilità del sistema.

TRM heads allow high precision machining and excellent surface finish in the **IT6** tolerance class.
The adjustment sensitivity of **1 micron on the radius** is easily readable on the vernier scale and can also be performed in the machine spindle.

TRM Le testine consentono lavorazioni di alta precisione e ottima finitura superficiale in tolleranze di grado **IT6**. La sensibilità di regolazione di **1 micron sul raggio** è facilmente leggibile sul nonio ed eseguibile anche in macchina.

TRE TRE heads allow high precision machining and excellent surface finish in the **IT6** tolerance class.
The adjustment of **1 micron on the radius** is fast, accurate and easily readable on the integrated display.
The **TRE 50** is resistant to coolant & dust infiltrations according to the IP69K class.

TRE 50 La testina consente lavorazioni di alta precisione e ottima finitura superficiale in tolleranze di grado **IT6**.
La sensibilità di regolazione di **1 micron sul raggio** è veloce e precisa, facilmente visualizzabile sul display integrato.
La **TRE 50** è resistente alle infiltrazioni secondo il grado IP69K.

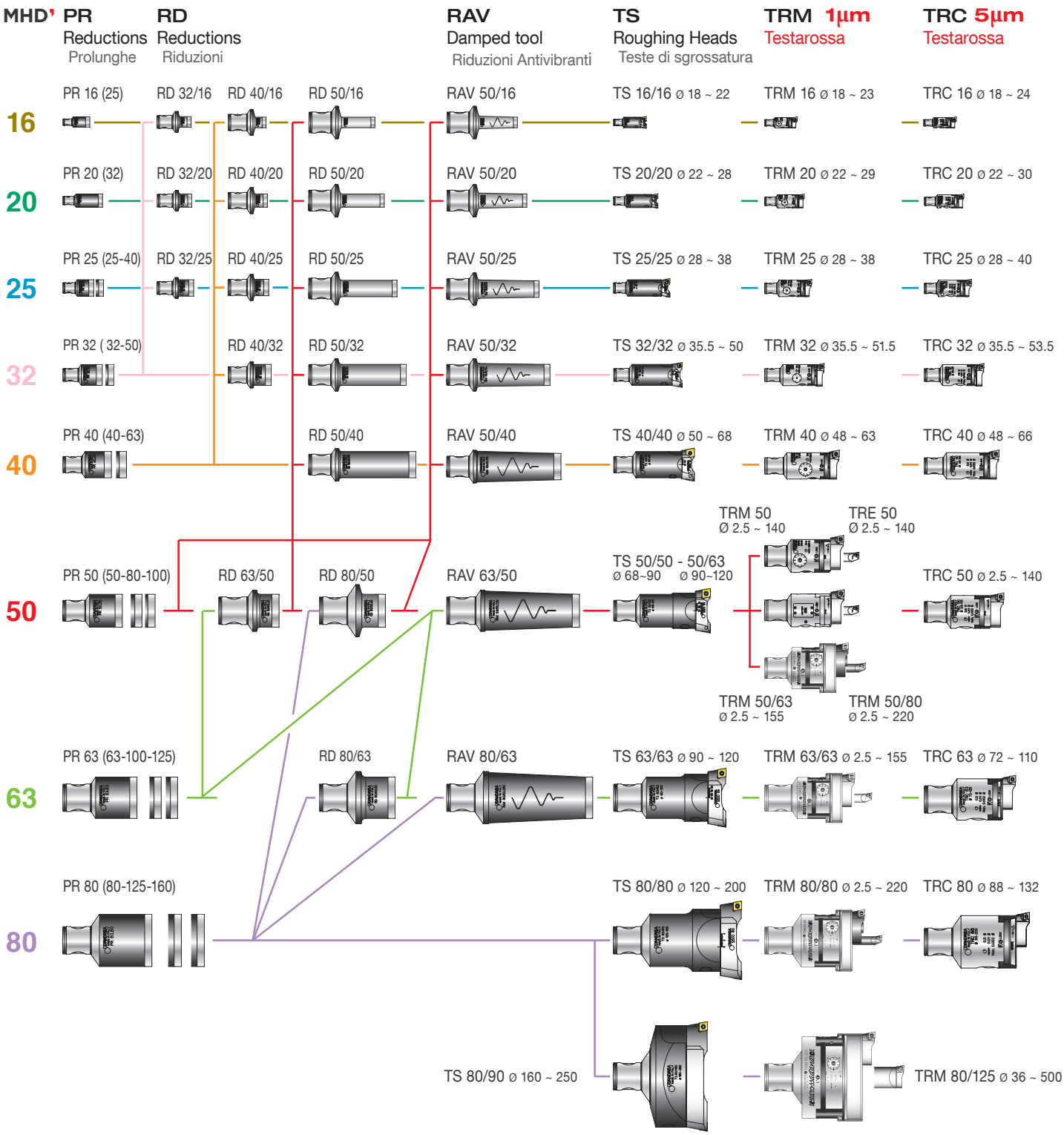
TRC Heads allow high precision machining and excellent surface finishes in the **IT7** tolerance class.
The adjustment of **5 micron on the radius** is easily readable on the vernier scale, 1 micron through counter-dial.

TRC Le testine **TRC** consentono lavorazioni di alta precisione e ottima finitura superficiale in tolleranze di grado **IT7**.
La sensibilità di regolazione di **5 micron sul raggio** è facilmente leggibile sul nonio, 1 micron tramite contrononio.

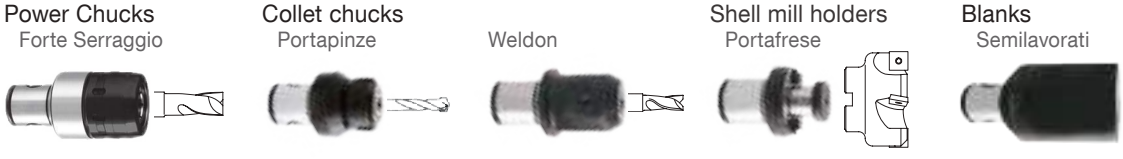
CHUCKING TOOLS The complete program of D'Andrea modular adapters with MHD coupling, which satisfies a variety of machining needs for milling and drilling.

ADATTATORI Il completo programma di adattatori modulari D'Andrea con attacco MHD', che soddisfa svariate esigenze di lavorazione in fresatura e foratura.

ARBORS MHD'
ATTACCHI

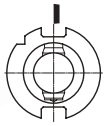


CHUCKING TOOLS
ADATTATORI

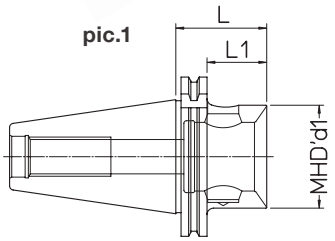


DIN 69871 AD

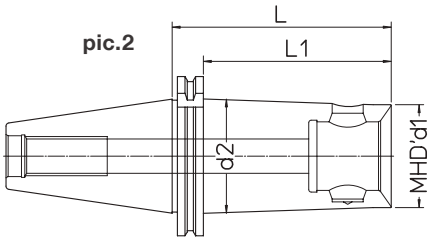
Cutting edge
Tagliente



pic.1



pic.2



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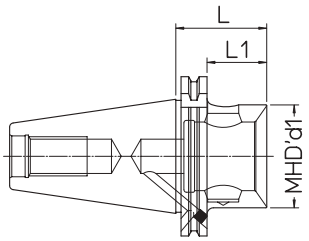
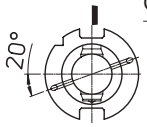
30	DIN69871-AD30 MHD'50.60	416500103020	50		60		0.6	1
40	DIN69871-AD40 MHD'16.40	416160414020	16		40	21	0.7	1
40	DIN69871-AD40 MHD'16.63	416160614020	16	18.5	63	44	0.8	2
40	DIN69871-AD40 MHD'16.100	416161014020	16	21.5	100	81	0.9	2
40	DIN69871-AD40 MHD'20.50	416200514020	20		50	31	0.8	1
40	DIN69871-AD40 MHD'20.80	416200814020	20	22.5	80	61	0.9	2
40	DIN69871-AD40 MHD'20.125	416201214020	20	26	125	106	1	2
40	DIN69871-AD40 MHD'25.50	416250514020	25		50	31	0.9	1
40	DIN69871-AD40 MHD'25.80	416250814020	25	28	80	61	1	2
40	DIN69871-AD40 MHD'25.125	416251214020	25	31	125	106	1.1	2
40	DIN69871-AD40 MHD'32.50	416320514020	32		50	31	1	1
40	DIN69871-AD40 MHD'32.80	416320814020	32	34.5	80	61	1.1	2
40	DIN69871-AD40 MHD'32.125	416321214020	32	39	125	106	1.2	2
40	DIN69871-AD40 MHD'40.45	416400104020	40		45	26	0.5	1
40	DIN69871-AD40 MHD'40.120	416401214020	40	44.5	120	101	1.4	2
40	DIN69871-AD40 MHD'50.48	416500104020	50		48	29	0.9	1
40	DIN69871-AD40 MHD'50.120	416501214020	50		120	101	1.7	1
40	DIN69871-AD40 MHD'63.80	416630104020	63		80		1.5	1
50	DIN69871-AD50 MHD'50.48	416500105020	50		48	29	2.5	1
50	DIN69871-AD50 MHD'50.120	416501215020	50	60	120	101	3.5	2
50	DIN69871-AD50 MHD'63.56	416630105020	63		56	37	2.8	1
50	DIN69871-AD50 MHD'63.150	416631515020	63	70	150	131	5	2
50	DIN69871-AD50 MHD'80.62	416800105020	80		62	43	3.4	1
50	DIN69871-AD50 MHD'80.180	416801815020	80		180	161	7.6	1

DIN 69871 B

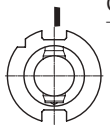




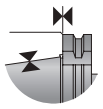
Cutting edge
Tagliente

DIN	REF.	CODE	MHD' d1	L	L1	kg
40	DIN69871-B50 MHD'50.48	416500104021	50	48	29	0.9
50	DIN69871-B50 MHD'63.56	416630105021	63	56	37	2.8
50	DIN69871-B50 MHD'80.62	416800105021	80	62	43	3.4

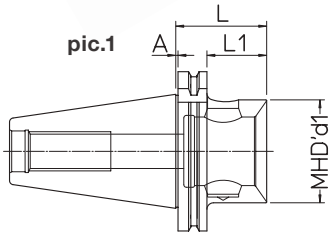
DIN 69871 FC AD FACE CONTACT



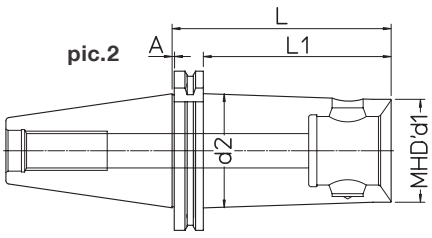
Cutting edge
Tagliente



pic.1



pic.2

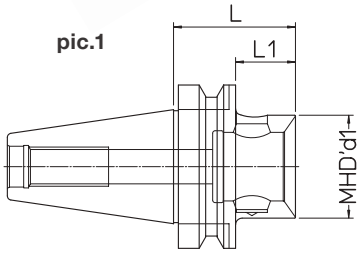


DIN	REF.	CODE	MHD' d1	d2	A	L	L1	kg	pic.
40	DIN69871-AD40 FC MHD'50.48	416500104020F	50		1	48	29	0.9	1
40	DIN69871-AD40 FC MHD'50.120	416501214020F	50		1	120	101	1.7	1
40	DIN69871-AD40 FC MHD'63.80	416630104020F	63		1	80		1.5	1
50	DIN69871-AD50 FC MHD'50.48	416500105020F	50		1.5	48	29	2.5	1
50	DIN69871-AD50 FC MHD'50.120	416501215020F	50	59	1.5	120	101	3.5	2
50	DIN69871-AD50 FC MHD'50.200	416502015020F	50	68	1.5	200	181	6.1	2
50	DIN69871-AD50 FC MHD'63.56	416630105020F	63		1.5	56	37	2.8	1
50	DIN69871-AD50 FC MHD'63.150	416631515020F	63	75.5	1.5	150	131	5.2	2
50	DIN69871-AD50 FC MHD'63.250	416632515020F	63	80	1.5	250	231	7.1	2
50	DIN69871-AD50 FC MHD'80.62	416800105020F	80		1.5	62	43	3.4	1
50	DIN69871-AD50 FC MHD'80.180	416801815020F	80		1.5	180	161	6.9	1
50	DIN69871-AD50 FC MHD'80.300	416803015020F	80		1.5	300	281	9.2	1

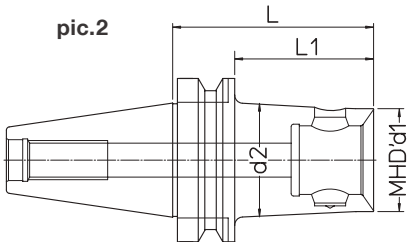
MAS 403 BT AD

Cutting edge
Tagliente

pic.1

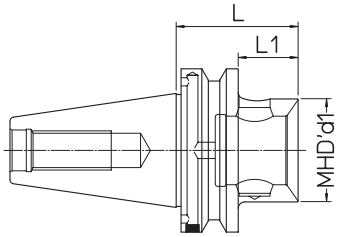


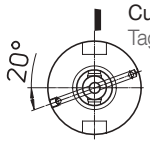
pic.2



BT	REF.	CODE	MHD' d1	d2	L	L1	kg	pic.
30	MAS403 BT30-AD MHD'50.60	416500103030	50		60		0.7	1
40	MAS403 BT40-AD MHD'16.45	416160414030	16		45	18	0.8	1
40	MAS403 BT40-AD MHD'16.63	416160614030	16	17	63	36	0.9	2
40	MAS403 BT40-AD MHD'16.100	416161014030	16	19.5	100	73	1	2
40	MAS403 BT40-AD MHD'20.50	416200514030	20		50	23	0.9	1
40	MAS403 BT40-AD MHD'20.80	416200814030	20	22	80	53	1	2
40	MAS403 BT40-AD MHD'20.125	416201214030	20	25	125	98	1.1	2
40	MAS403 BT40-AD MHD'25.50	416250514030	25		50	23	1	1
40	MAS403 BT40-AD MHD'25.80	416250814030	25	26.5	80	53	1.1	2
40	MAS403 BT40-AD MHD'25.125	416251214030	25	29.5	125	98	1.2	2
40	MAS403 BT40-AD MHD'32.50	416320514030	32			23	1.1	1
40	MAS403 BT40-AD MHD'32.80	416320814030	32	33	80	53	1.2	2
40	MAS403 BT40-AD MHD'32.125	416321214030	32	36	125	98	1.4	2
40	MAS403 BT40 AD MHD'40.45	416400104030	40		45	18	0.6	1
40	MAS403 BT40-AD MHD'40.120	416401214030	40	44.5	120	93	0.9	2
40	MAS403 BT40-AD MHD'50.48	416500104030	50		48	21	0.9	1
40	MAS403 BT40-AD MHD'50.120	416501214030	50		120	93	1.9	2
40	MAS403 BT40-AD MHD'63.66	416630104030	63		66		1.2	1
50	MAS403 BT50-AD MHD'50.66	416500105030	50		66	28	3.3	1
50	MAS403 BT50-AD MHD'50.120	416501215030	50	60	120	82	4.2	2
50	MAS403 BT50-AD MHD'63.75	416630105030	63		75	37	3.7	1
50	MAS403 BT50-AD MHD'63.150	416631515030	63	70	150	112	5.8	2
50	MAS403 BT50-AD MHD'80.75	416800105030	80		75	37	4	1
50	MAS403 BT50-AD MHD'80.180	416801815030	80		180	142	7.5	2

MAS 403 BT B





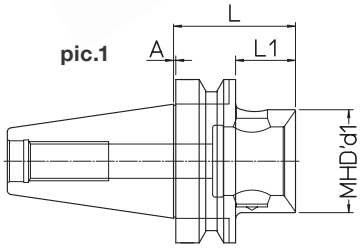
Cutting edge
Tagliente

BT	REF.	CODE	MHD' d1	L	L1	kg
40	MAS403 BT40B MHD'50.48	416500104031	50	48	21	0.9
50	MAS403 BT50B MHD'63.75	416630105031	63	75	37	3.7
50	MAS403 BT50B MHD'80.75	416800105031	80	75	37	4

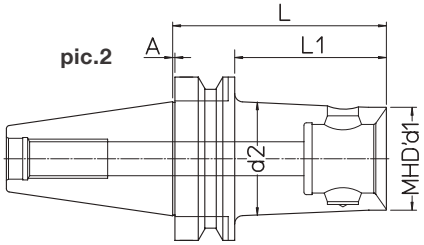
MAS 403 BT FC AD FACE CONTACT

Cutting edge
Tagliente

pic.1

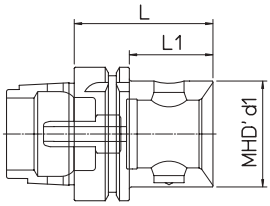


pic.2

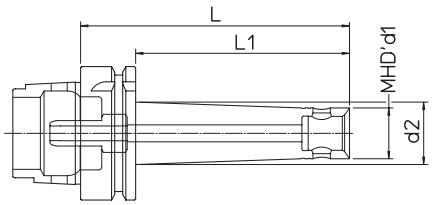


BT	REF.	CODE	MHD' d1	d2	A	L	L1	kg	pic.
40	MAS403 BT40-AD FC MHD'50.48	416500104030F	50		1	48	21	0.9	1
40	MAS403 BT40-AD FC MHD'50.120	416501214030F	50		1	120	93	1.9	1
40	MAS403 BT40-AD FC MHD'63.66	416630104030F	63		1	66		1.2	1
50	MAS403 BT50-AD FC MHD'50.66	416500105030F	50		1.5	66	28	3.2	1
50	MAS403 BT50-AD FC MHD'50.120	416501215030F	50	57.5	1.5	120	82	4.2	2
50	MAS403 BT50-AD FC MHD'50.200	416502015030F	50	66	1.5	200	162	4.5	2
50	MAS403 BT50-AD FC MHD'63.75	416630105030F	63		1.5	75	37	3.7	1
50	MAS403 BT50-AD FC MHD'63.150	416631515030F	63	73.5	1.5	150	112	5.8	2
50	MAS403 BT50-AD FC MHD'63.250	416632515030F	63	84	1.5	250	212	6.1	2
50	MAS403 BT50-AD FC MHD'80.75	416800105030F	80		1.5	75	37	4	1
50	MAS403 BT50-AD FC MHD'80.180	416801815030F	80		1.5	180	142	7.5	1
50	MAS403 BT50-AD FC MHD'80.300	416803015030F	80		1.5	300	262	9.2	1

DIN 69893 HSK-A



pic.1

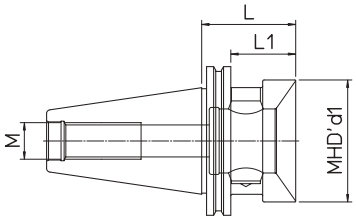


pic.2

Supplied with coolant tube - Completo di raccordo per il refrigerante

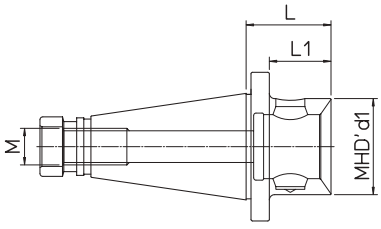
HSK-A	REF.	CODE	MHD'd1	d2	L	L1	kg	pic.
50	HSK-A50 MHD'50.66	416501505020	50		66		0.6	1
63	HSK-A63 MHD'16.100	416161056320	16	19.5	100	74	0.8	2
63	HSK-A63 MHD'20.125	416201256320	20	25	125	99	0.9	2
63	HSK-A63 MHD'25.125	416251256320	25	29.5	125	99	1	2
63	HSK-A63 MHD'32.90	416320956320	32	33.5	90	64	1	2
63	HSK-A63 MHD'32.125	416321256320	32	36	125	99	1.2	2
63	HSK-A63 MHD'40.60	416401506320	40		60	34	0.7	1
63	HSK-A63 MHD'40.120	416401506328	40	46	120	94	1.4	2
63	HSK-A63 MHD'50.66	416501506320	50		66	40	0.9	1
63	HSK-A63 MHD'50.120	416501506328	50		120	94	1.7	1
63	HSK-A63 MHD'63.75	416631506320	63		75		1.1	1
80	HSK-A80 MHD'50.70	416501508020	50		70	44	1.5	1
80	HSK-A80 MHD'63.80	416631508020	63		80	54	1.8	1
100	HSK-A100 MHD'50.72	416501510020	50		72	43	2.4	1
100	HSK-A100 MHD'50.120	416501510028	50	60	120	91	3.2	2
100	HSK-A100 MHD'63.82	416631510020	63		82	53	2.7	1
100	HSK-A100 MHD'63.150	416631510028	63	70	150	121	4.5	2
100	HSK-A100 MHD'80.88	416801510020	80		88	59	3	1
100	HSK-A100 MHD'80.180	416801510028	80		180	151	6.5	1

ANSI/CAT AD



ANSI/CAT	REF.	CODE	MHD'd1	L	L1	M	kg
40	ANSI/CAT40 MHD'50.66	416500104040	50	66	47	M16	1.1
40	ANSI/CAT40 MHD'63.100	416630104040	63	100		M16	1.9
50	ANSI/CAT50 MHD'50.48	416500105040	50	48	29	M24	2.4
50	ANSI/CAT50 MHD'63.56	416630105040	63	56	37	M24	2.9
50	ANSI/CAT50 MHD'80.62	416800105040	80	62	43	M24	3.2

DIN 2080-A 'OTT'

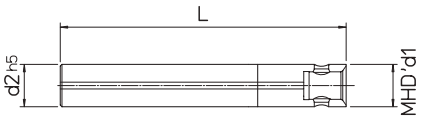


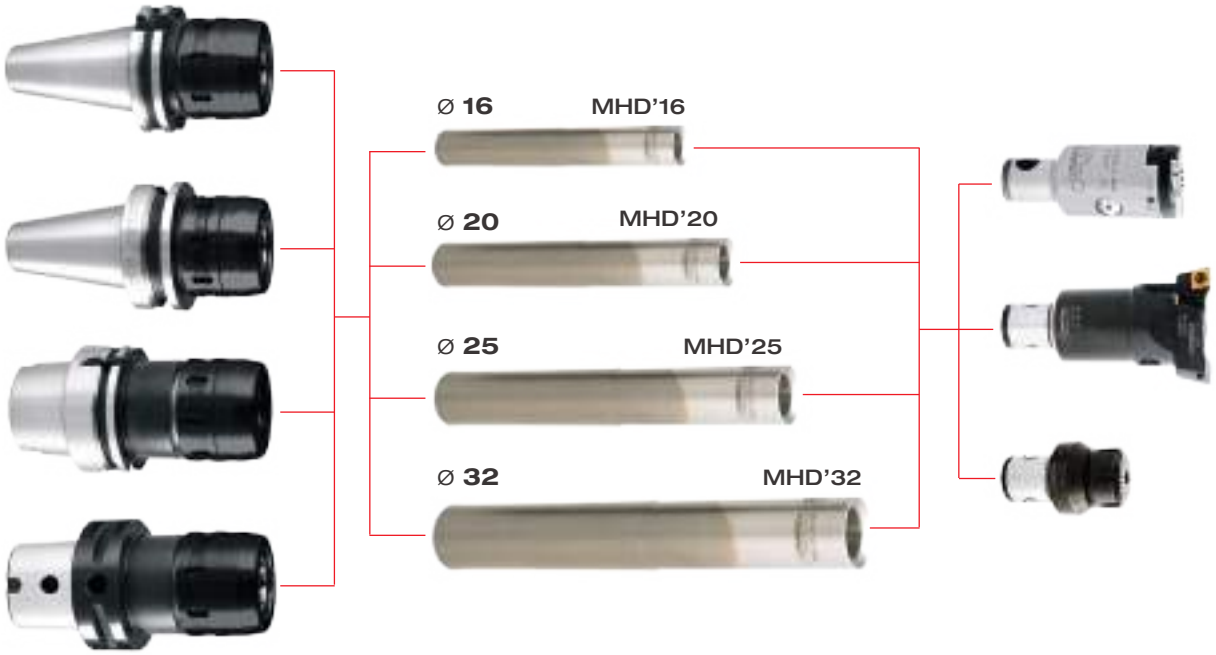
DIN	REF.	CODE	MHD'd1	L	L1	M	kg
30	DIN2080-A30 MHD'50.58	416500103000	50	58		M12	0.6
40	DIN2080-A40 MHD'50.48	416500104000	50	48	36.5	M16	0.9
40	DIN2080-A40 MHD'63.60	416630104000	63	60		M16	1.2
50	DIN2080-A50 MHD'50.48	416500105000	50	48	33	M24	2.6
50	DIN2080-A50 MHD'63.56	416630105000	63	56	41	M24	2.7
50	DIN2080-A50 MHD'80.60	416800105000	80	60	45	M24	3.2

PSC - MHD' see / vedere p.48

BMD CARBIDE BARS
BARRE IN METALLO DURO

MONOforce
see / vedere p.50-51





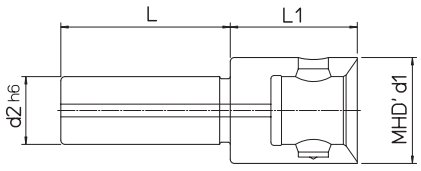
REF.	CODE	MHD' d1	d2	L	kg	
BMD 16/16.110	657081601105	16	16	110	0.3	
BMD 16/16.140	657081601405	16	16	140	0.4	
BMD 16/16.170	657081601705	16	16	170	0.5	
BMD 20/20.135	657082001355	20	20	135	0.6	
BMD 20/20.170	657082001705	20	20	170	0.75	
BMD 20/20.210	657082002105	20	20	210	0.9	
BMD 25/25.160	657082501605	25	25	160	1	
BMD 25/25.205	657082502055	25	25	205	1.3	
BMD 25/25.255	657082502555	25	25	255	1.6	
BMD 32/32.195	657083201955	32	32	195	2.1	
BMD 32/32.250	657083202505	32	32	250	2.8	
BMD 32/32.315	657083203155	32	32	315	3.5	

BR STEEL BARS
BARRE IN ACCIAIO

MHD'16
MHD'20

pic.1

MHD'32
MHD'50



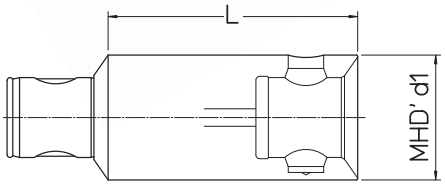
pic.2

REF.	CODE	MHD' d1	L	L1	d2	kg	pic.	
BR 16/16.100	657081601001	16	100		16	0.15	**1**	
BR 20/20.125	657082001251	20	125		20	0.3	**1**	
BR 25/32.35	416320802500	32	65	35	25	0.7	**2**	
BR 32/50.60	416500803200	50	80	60	32	1	**2**	

EXTENSIONS - REDUCTIONS - VIBRATION-DAMPING

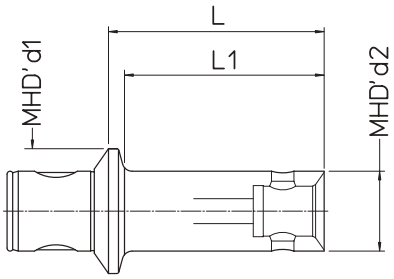
PROLUNGHE - RIDUZIONI - ANTIVIBRANTI

PR EXTENSIONS - PROLUNGHE



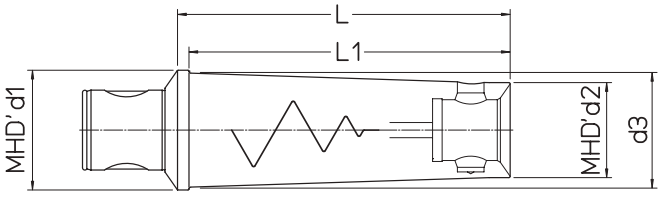
REF.	CODE	MHD' d1	L	kg
PR 16.25	656901600250	16	25	0.04
PR 20.32	656902000320	20	32	0.07
PR 25.25	656902500250	25	25	0.09
PR 25.40	656902500400	25	40	0.15
PR 32.32	656903200320	32	32	0.2
PR 32.50	656903200500	32	50	0.3
PR 40.40	656904000400	40	40	0.4
PR 40.63	656904000630	40	63	0.6
PR 50.50	656905000500	50	50	0.7
PR 50.80	656905000800	50	80	1.1
PR 50.100	656905001000	50	100	1.5
PR 63.63	656906300630	63	63	1.4
PR 63.100	656906301000	63	100	2.2
PR 63.125	656906301250	63	125	2.9
PR 80.80	656908000800	80	80	3
PR 80.125	656908001250	80	125	4.6
PR 80.160	656908001600	80	160	6.1

RD REDUCTIONS - RIDUZIONI



REF.	CODE	MHD' d1	MHD' d2	L	L1	kg
RD 20/16.20	657002000160	20	16	20	16	0.05
RD 25/16.20	657002500160	25	16	20	15	0.07
RD 25/20.25	657002500200	25	20	25	20	0.08
RD 32/16.24	657003200160	32	16	24	18	0.10
RD 32/20.25	657003200200	32	20	25	20	0.12
RD 32/25.28	657003200250	32	25	28	23	0.14
RD 40/16.24	657004000160	40	16	24	17	0.18
RD 40/20.26	657004000200	40	20	26	20	0.2
RD 40/25.28	657004000250	40	25	28	22	0.25
RD 40/32.32	657004000320	40	32	32	27	0.3
RD 50/16.24	657005000160	50	16	24	15	0.34
RD 50/16.40	657005000162	50	16	40	32	0.2
RD 50/16.74	657005000163	50	16	74	65	0.25
RD 50/20.26	657005000200	50	20	26	18	0.37
RD 50/20.70	657005000202	50	20	70	62	0.3
RD 50/20.93	657005000203	50	20	93	85	0.35
RD 50/25.28	657005000250	50	25	28	21	0.4
RD 50/25.87	657005000252	50	25	87	80	0.6
RD 50/25.117	657005000253	50	25	117	110	0.65
RD 50/32.32	657005000320	50	32	32	25	0.45
RD 50/32.87	657005000322	50	32	87	80	0.75
RD 50/32.144	657005000323	50	32	144	137	1
RD 50/40.36	657005000400	50	40	36	30	0.5
RD 50/40.87	657005000402	50	40	87	80	0.9
RD 50/40.176	657005000403	50	40	176	170	1.8
RD 63/50.40	657006300500	63	50	40	34	0.9
RD 80/50.45	657008000500	80	50	45	36	1.2
RD 80/63.60	657008000630	80	63	60	52	1.7

RAV VIBRATION-DAMPING - ANTIVIBRANTI

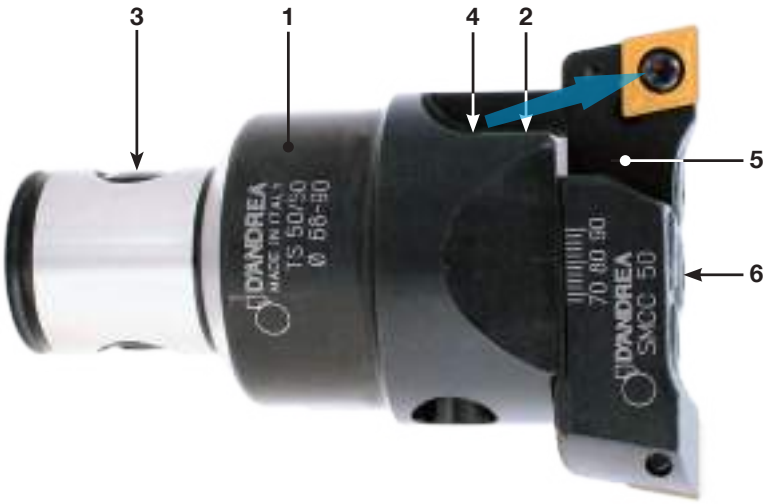


REF.	CODE	MHD' d1	MHD' d2	d3	L	L1	kg
RAV 50/16.74	657005000165	50	16	17.5	74	65	0.4
RAV 50/20.93	657005000205	50	20	21.5	93	85	0.5
RAV 50/25.117	657005000255	50	25	27	117	110	0.8
RAV 50/32.144	657005000325	50	32	35	144	138	1.4
RAV 50/40.176	657005000405	50	40	47	176	170	2.5
RAV 63/50.220	657006300505	63	50	60	220	214	5.2
RAV 80/63.280	657008000635	80	63	77	280	272	10.6

TS 16 ~ 80 Ø 18 ~ 250

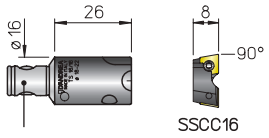
Simple and extremely rigid roughing heads, thanks to the serrated surfaces between the head body and the bit holders.
The constant distance between the bit holder clamping screw and the cutting edge guarantees the stability of the system.

Teste di sgrossatura semplici ed estremamente rigide grazie alle superfici di contatto dentellate tra il corpo testa e i seggi portainserto.
La distanza costante tra la vite di serraggio del seggio ed il tagliente garantisce la stabilità del sistema.

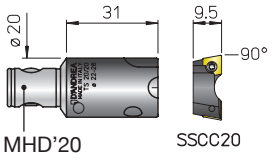


1. Body	**1.** Corpo
2. Setting screws	**2.** Vite di regolazione
3. Expanding pin	**3.** Perno radiale espandibile
4. Coolant outlets Max BAR 40	**4.** Fori uscita refrigerante Max BAR 40
5. Bit holders	**5.** Seggio portainserti
6. Tools clamp screws	**6.** Viti bloccaggio utensile

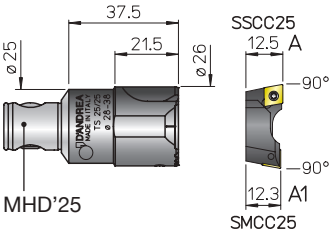
TS 16/16 Ø 18 ~ 22



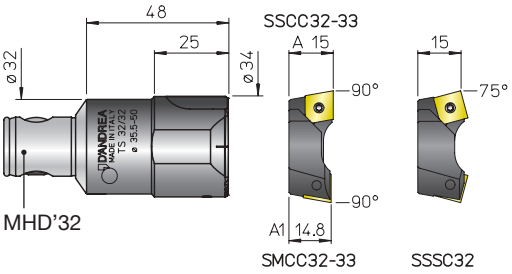
TS 20/20 Ø 22 ~ 28



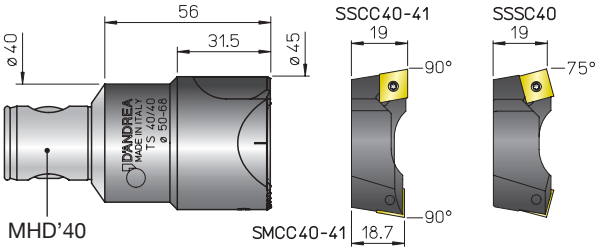
TS 25/25 Ø 28 ~ 38



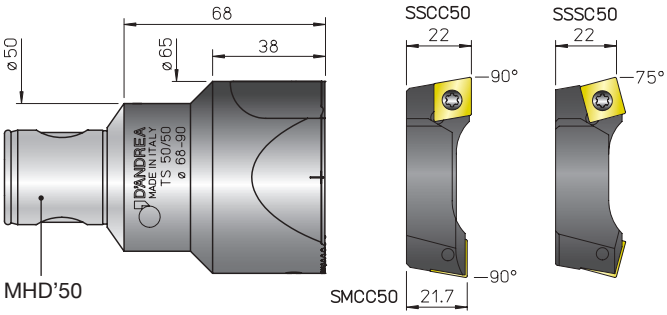
TS 32/32 Ø 35.5 ~ 50



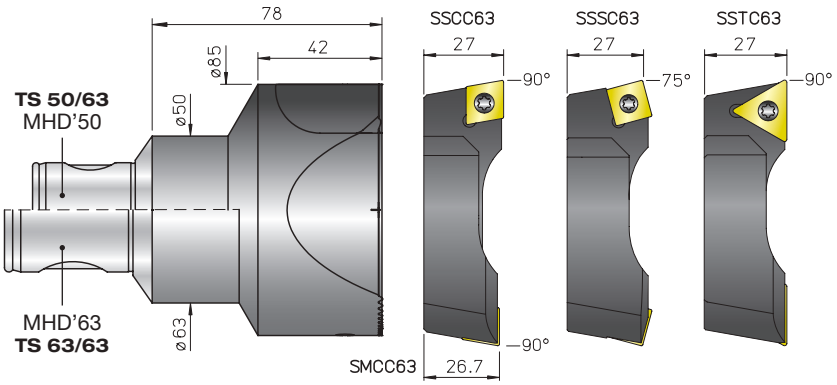
TS 40/40 Ø 50 ~ 68



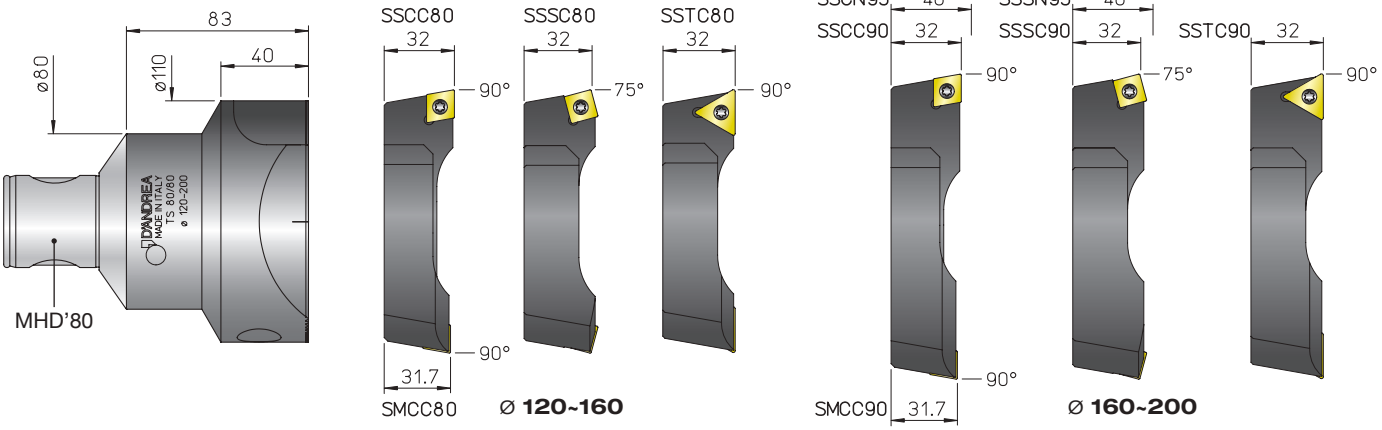
TS 50/50 Ø 68 ~ 90



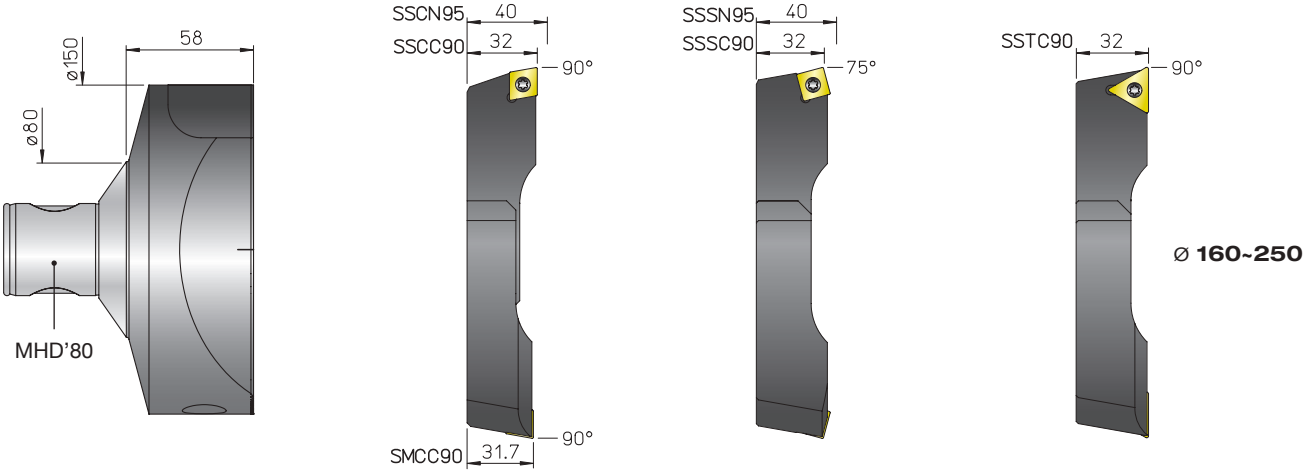
TS 50/63 - TS 63/63 Ø 90 ~ 120



TS 80/80 Ø 120 ~ 200



TS 80/90 Ø 160 ~ 250



TS 16 ~ 80 Ø 18 ~ 250

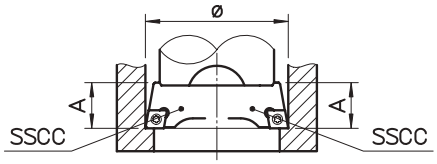
REF.	CODE	kg	
TS 16/16	455501600340	0.05	
TS 20/20	455502000400	0.09	
TS 25/25	455502500510	0.2	
TS 32/32	455503200638	0.35	
TS 40/40	455504040070	0.7	
TS 50/50	455505050090	1.5	
TS 50/63	455505063100	2	
TS 63/63	455506363100	3	
TS 80/80	455508080110	5.3	
TS 80/90	455508090090	6.3	

USE TS for **ROUGHING** end **SEMI-FINISHING** operations

Cutting edges might be adjusted on a pre-setting bench and TS heads can be used in three different configurations, with a single cutting edge **(pic. 3)** or misaligned ones **(pic.2)** half the feed.

IMPIEGO TS per operazioni di **SGROSSATURA** e **SEMI-FINITURA**

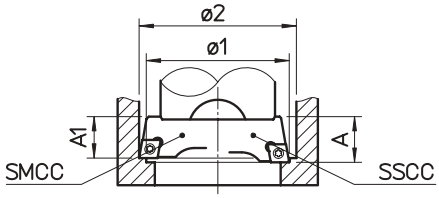
La regolazione dei taglienti va eseguita su un banco di presetting e le testine **TS** possono essere utilizzate in tre diverse configurazioni. Per lavorazioni con un solo tagliente **(pic. 3)** o seggi disallinetati **(pic.2)** si deve dimezzare l'avanzamento.



pic.1

pic.1 with two **SSCC** bit holders aligned and on the same diameter for roughing operations with high feedrate.

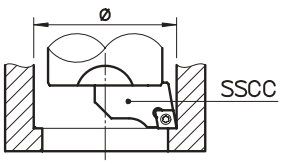
pic.1 con due seggi **SSCC** allineati e sullo stesso diametro per operazioni di sgrossatura con forti avanzamenti.



pic.2

pic. 2 with one **SSCC** bit holder and one **SMCC** bit holder staggered and on a different diameter for roughing operations with high depth of cut.

pic. 2 con un seggio **SSCC** ed un seggio **SMCC** disallineato e su un diverso diametro per operazioni di sgrossatura con alte profondità di passata.



pic.3

pic.3 with a single bit holder for roughing or semi-finishing operations.

pic.3 con un solo seggio per operazioni di sgrossatura leggera o semifinitura.

REF.	CODE			TS	TORX T	kg
SSCC 16	470500516201	CCMT 0602..		25	08	0.003
SSCC 20	470500520201	CCMT 0602..		25	08	0.006
SSCC 25	470500525201	CCMT 0602..	⊙	25	08	0.1
SSCC 32	470500532201	CCMT 0602..		25	08	0.02
SSCC 33	470500532204	CCMT 09T3..		4	15	0.025
SSCC 40	470500540201	CCMT 09T3..	⊙	4	15	0.06
SSCC 41	470500540204	CCMT 1204..		5	25	0.06
SSCC 50	470500550204	CCMT 1204..		5	25	0.1
SSCC 63	470500563201	CCMT 1204..	⊙	5	25	0.2
SSCC 80	470500580201	CCMT 1204..		5	25	0.5
SSCC 90	470500590201	CCMT 1204..		5	25	0.7
SSCN 95	470500595201	CNM. 1906..				0.9
SSTC 63	470500563206	TCMT 2204..		5	25	0.2
SSTC 80	470500580206	TCMT 2204..	△	5	25	0.5
SSTC 90	470500590206	TCMT 2204..		5	25	0.7

REF.	CODE			TS	TORX T	kg
SMCC 25	470500525203	CCMT 0602..	⊙	25	08	0.01
SMCC 32	470500532203	CCMT 0602..		25	08	0.02
SMCC 33	470500532205	CCMT 09T3..		4	15	0.025
SMCC 40	470500540203	CCMT 09T3..	⊙	4	15	0.06
SMCC 41	470500540205	CCMT 1204..		5	25	0.06
SMCC 50	470500550205	CCMT 1204..		5	25	0.1
SMCC 63	470500563203	CCMT 1204..	⊙	5	25	0.2
SMCC 80	470500580203	CCMT 1204..		5	25	0.5
SMCC 90	470500590203	CCMT 1204..		5	25	0.7
SSSC 32	470500532202	SCMT 09T3..		4	15	0.02
SSSC 40	470500540202	SCMT 09T3..	⊙	4	15	0.06
SSSC 50	470500550202	SCMT 1204..		5	25	0.1
SSSC 63	470500563202	SCMT 1204..	⊙	5	25	0.2
SSSC 80	470500580202	SCMT 1204..		5	25	0.5
SSSC 90	470500590202	SCMT 1204..		5	25	0.7
SSSN 95	470500595202	SNM. 1906..	⊙		p.57	0.9

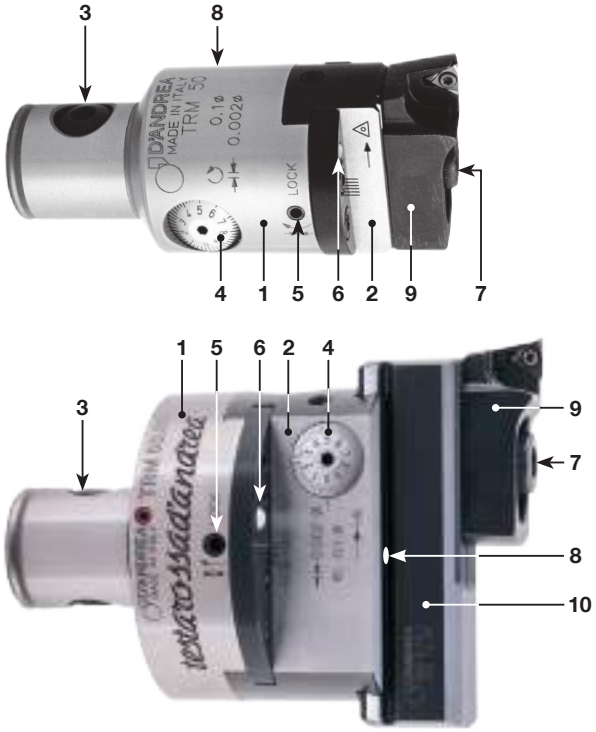
• For back-facing machining see p.32 • Per lavorazioni sottosquadra vedere p.32 SSQC

TRM 16 ~ 125 — MICROMETRIC FINE BORING HEADS

Ø 2.5 ~ 500 — TESTE MICROMETRICHE DI FINITURA

TRM heads allow high precision machining and excellent surface finish in the **IT6** tolerance class. The adjustment sensitivity of **1 micron on the radius** is easily readable on the vernier scale and can also be performed in the machine spindle.

Le testine **TRM** consentono lavorazioni di alta precisione e ottima finitura superficiale in tolleranze di grado **IT6**. La sensibilità di regolazione di **1 micron sul raggio** è facilmente leggibile sul nonio ed eseguibile anche in macchina.



1 µm

1. Body
2. Slide toolholder
3. Expanding radial pin
4. Micrometric vernier scale
5. Slide clamp screw
6. Coolant outlet Max BAR 40
7. Tools clamp screws
8. Oiler
9. Bit holder
10. Tool holder

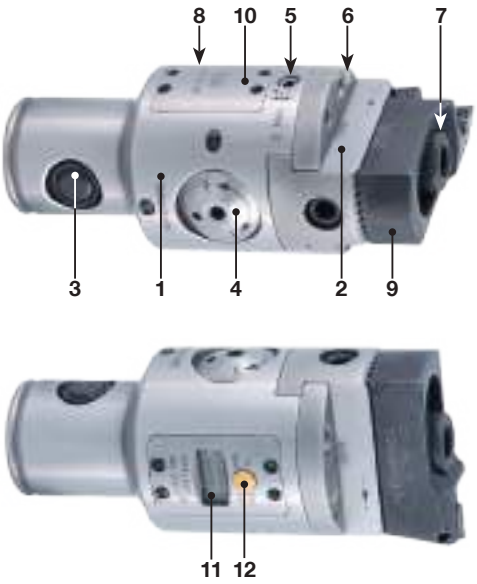
1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Uscita refrigerante Max BAR 40
7. Viti bloccaggio utensili
8. Oliatore
9. Seggio portainserti
10. Porta utensile

TRE 50 IP69K — MICROMETRIC FINE BORING HEADS DIGITAL

Ø 2.5 ~ 140 — TESTE MICROMETRICHE DI FINITURA DIGITALE

TRE 50 heads allow high precision machining and excellent surface finish in the **IT6** tolerance class. The adjustment of **1 micron on the radius** is fast, accurate and easily readable on the integrated display. The **TRE 50** is resistant to coolant & dust infiltrations according to the IP69K class..

La testina **TRE 50** consente lavorazioni di alta precisione e ottima finitura superficiale in tolleranze di grado **IT6**. La sensibilità di regolazione di **1 micron sul raggio** è veloce e precisa, facilmente visualizzabile sul display integrato. La **TRE 50** è resistente alle infiltrazioni secondo il grado IP69K.



1 µm

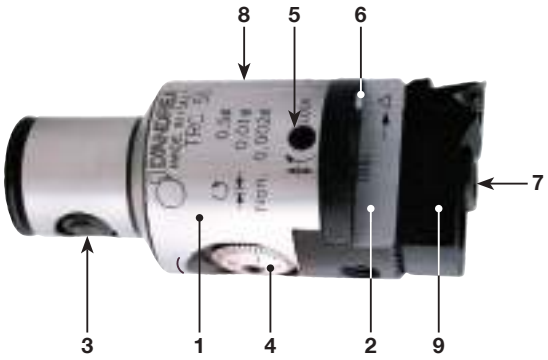
1. Body
2. Slide toolholder
3. Expanding radial pin
4. Set screw
5. Slide clamp screw
6. Coolant outlet Max BAR 40
7. Tools clamp screws
8. Oiler
9. Bit holder
10. Battery compartment cover
11. Digital display
12. Selection button

1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Vite di regolazione
5. Vite bloccaggio slitta
6. Ugello uscita refrigerante Max BAR 40
7. Vite bloccaggio utensili
8. Oliatore
9. Seggio portainserti
10. Coperchio vano pile
11. Display digitale
12. Pulsante di selezione

TRC heads allow high precision machining and excellent surface finishes in the **IT7** tolerance class. The adjustment of **5 micron on the radius** is easily readable on the vernier scale, 1 micron through counter-dial.

Le testine **TRC** consentono lavorazioni di alta precisione e ottima finitura superficiale in tolleranze di grado **IT7**. La sensibilità di regolazione di **5 micron sul raggio** è facilmente leggibile sul nonio, 1 micron tramite contrononio.

5 µm



1. Body
2. Slide toolholder
3. Expanding radial pin
4. Vernier scale
5. Slide clamp screw
6. Coolant outlet Max BAR 40
7. Tools clamp screws
8. Oiler
9. Bit holder

1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio
5. Vite bloccaggio slitta
6. Uscita refrigerante Max BAR 40
7. Viti bloccaggio utensile
8. Oliatore
9. Seggio portainserti

TRM MICROMETRIC FINE BORING HEADS

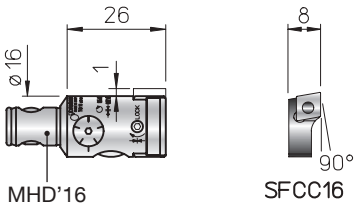
TESTE MICROMETRICHE DI FINITURA

1 µm

TRM 16

Ø 18 ~ 23

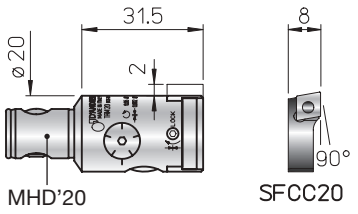
RPM 12.000



TRM 20

Ø 22 ~ 29

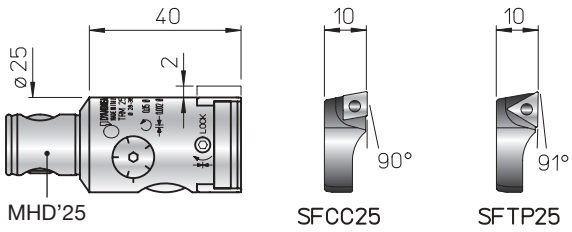
RPM 12.000



TRM 25

Ø 28 ~ 38

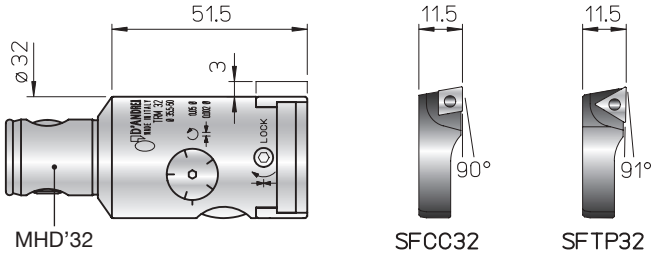
RPM 10.000



TRM 32

Ø 35.5 ~ 51.5

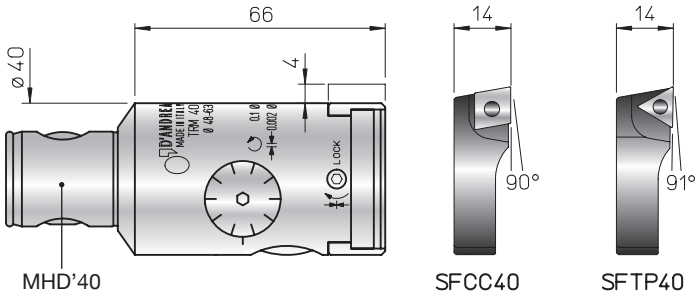
RPM 10.000



TRM 40

Ø 48 ~ 63

RPM 10.000



TRM 50

Ø 2.5 ~ 140

RPM 8.000

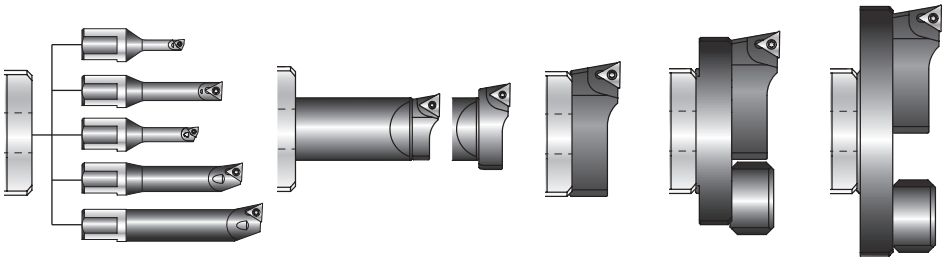
TRE 50 IP69K

Ø 2.5 ~ 140

RPM 20.000

TRM 50

TRE 50



ø 2.5~30 ø 28~56 ø 54~86 ø 80~110 ø 110~140

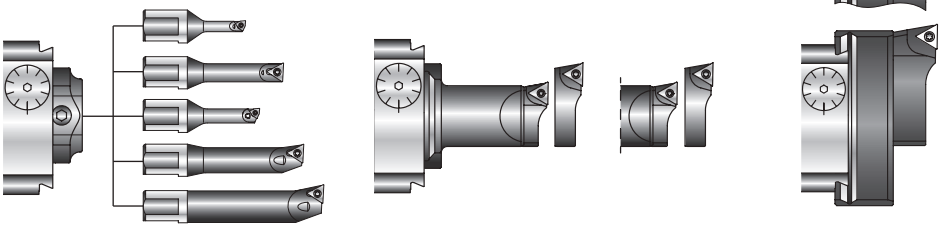
TRM MICROMETRIC FINE BORING HEADS

TESTE MICROMETRICHE DI FINITURA

1 µm

TRM 50/63 - TRM 63/63

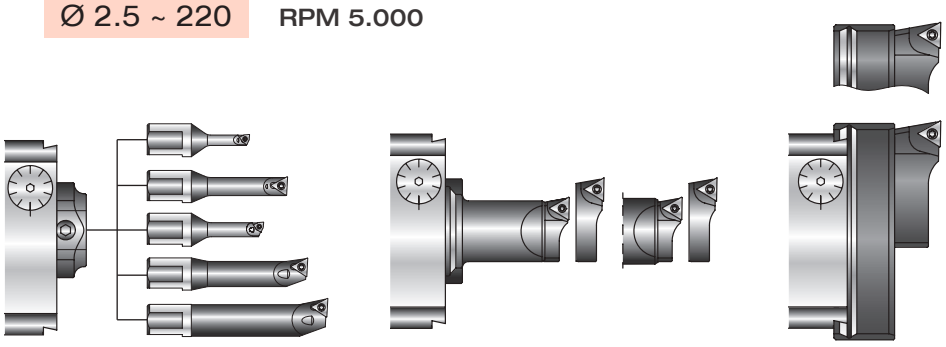
Ø 2.5 ~ 155 RPM 6.000



ø 2.5~30 ø 30~77 ø 77~160

TRM 50/80 - TRM 80/80

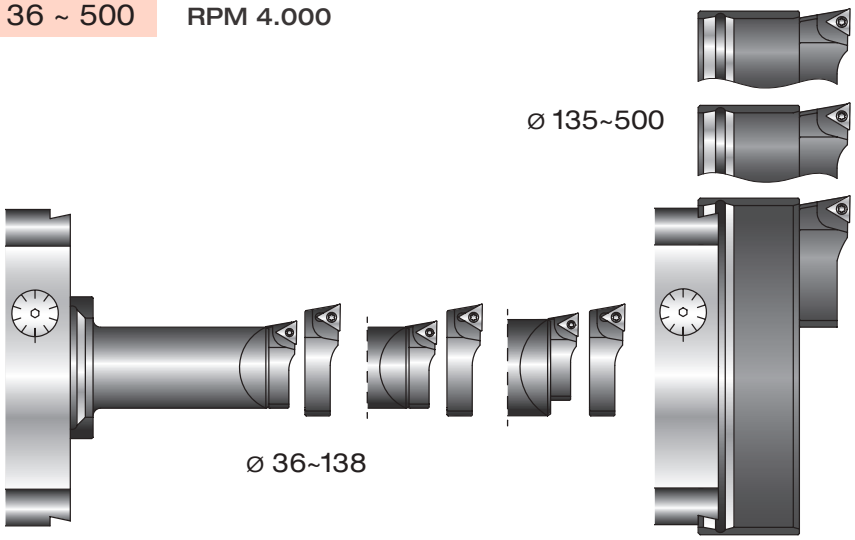
Ø 2.5 ~ 220 RPM 5.000



ø 2.5~30 ø 30~95 ø 95~220

TRM 80/125

Ø 36 ~ 500 RPM 4.000



ø 135~500

ø 36~138

REF.	CODE	kg	
TRM 16	455001600341	0.05	
TRM 20	455002000401	0.1	
TRM 25	455002500500	0.2	
TRM 32	455003200630	0.35	

REF.	CODE	kg	
TRM 40	455004000800	0.7	
TRM 50	455005000500	1	
TRE 50	455200500501	1.1	
TRM 50/63	455005000631	1.1	

REF.	CODE	kg	
TRM 63/63	455006300631	1.5	
TRM 50/80	455005000801	2	
TRM 80/80	455008000801	2.5	
TRM 80/125	455008001251	5.5	

Kits & Accessories see p.22-29 - Kit & Accsessori vedere p.22-29

REF.	CODE			TORX T	kg
SFCC 16	470500516002	CCGT 0602..	TS 25	08	0.003
SFCC 20	470500520002	CCGT 0602..	TS 25	08	0.005
SFCC 25	470500525002	CCGT 0602..	TS 25	08	0.01
SFCC 32	470500532002	CCGT 0602..	TS 25	08	0.02

REF.	CODE			TORX T	kg
SFCC 40	470500540002	CCGT 09T3..	TS 4	15	0.04
SFTP 25	470500525001	TPGX 0902..	CS 250T	08	0.01
SFTP 32	470500532001	TPGX 0902..	CS 250T	08	0.02
SFTP 40	470500540001	TPGX 1103..	CS 300890T	08	0.04

• For back-facing machining see p.33 • Per lavorazioni sottosquadra vedere p.33 SFQC

TRM MICROMETRIC FINE BORING HEADS

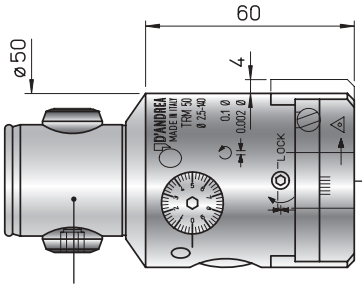
TESTE MICROMETRICHE DI FINITURA

TRM 50 Ø 2.5 ~ 140

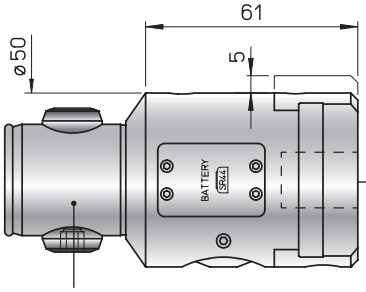
1 µm

TRE 50 IP69K Ø 2.5 ~ 140

TRM 50 Ø 2.5 ~ 140



TRE 50 Ø 2.5 ~ 140

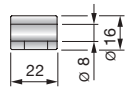


Tools
Utensili

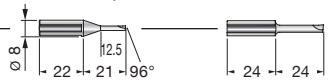
Vibration-damping
Antivibranti

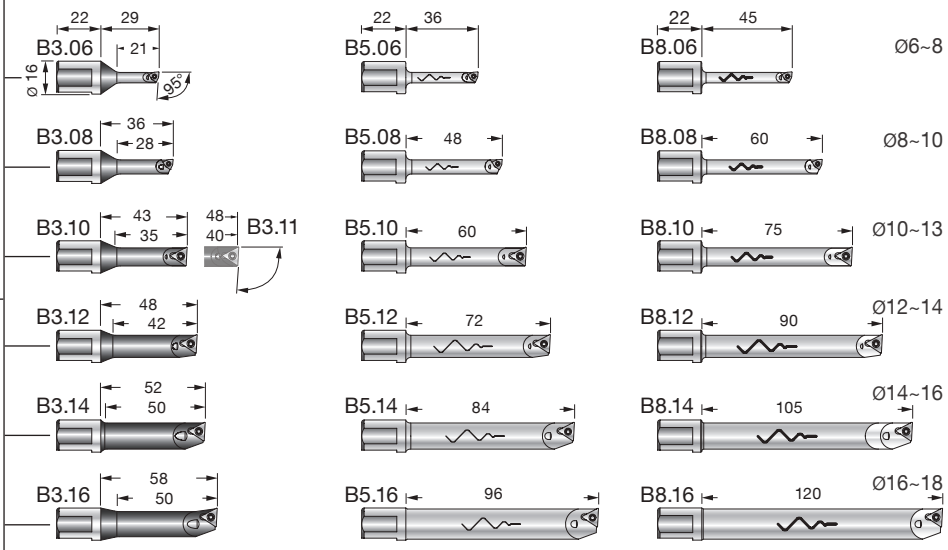
Carbide
Metallo duro

RDC D08.16

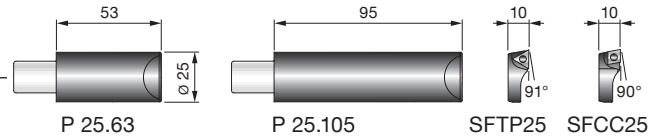


B1.02 Ø2,5~4 B1.04 Ø4~6



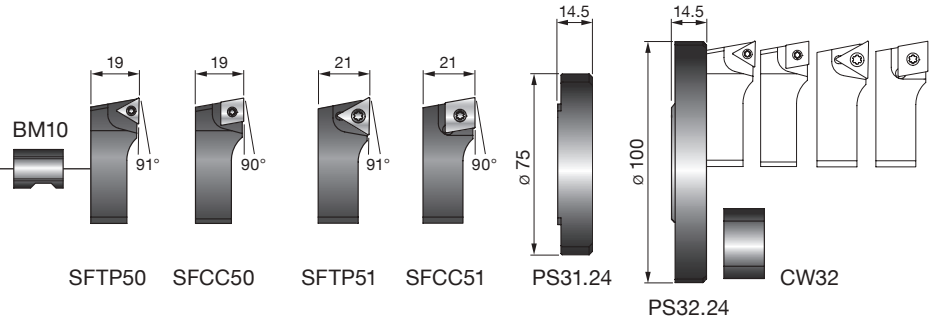


Ø 28~42 **Ø 36~54**



P 25.63 P 25.105 SFTP25 SFCC25 SFTP32 SFCC32

Ø 54~84 **Ø 80~108** **Ø 105~140**



SFTP50 SFCC50 SFTP51 SFCC51 PS31.24 PS32.24 CW32

KIT K01 TRM 50 - KIT K01 TRE 50 IP69K

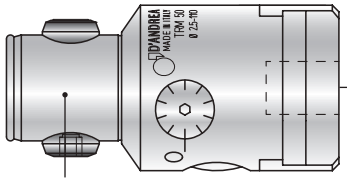
Ø 6 ~ 140

TRM 50

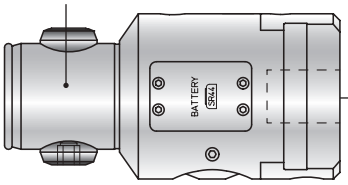
TRE 50

1 B3.06 1 SFTP25
1 B3.08 1 SFTP32
1 B3.11 1 SFTP50
1 B3.16 1 P 25.63
1 B3.22 1 PS 31.24
1 CW 32 1 PS 32.24
5 TPGX 090202L DC100
1 TPGX 110302L DC100
2 WCGT 020102L DC100

TRM 50



MHD'50



TRE 50 IP69K

Ø 6~30	Ø 28~42	Ø 36~54	Ø 54~84	Ø 80~108	Ø 105~140
B3.06 Ø 6~8	SFTP25	SFTP32	SFTP50	SFTP50	SFTP50
B3.08 Ø 8~12					
B3.11 Ø 11~17					
B3.16 Ø 16~23	P25.63			PS31.24 CW32	PS32.24 CW32
B3.22 Ø 22~30					

REF.	CODE	kg
TRM 50	455005000500	1
TRE 50 IP69K	455200500501	1.1
KIT K01 TRM 50	655005010510	3.1
KIT K01 TRE 50 IP69K	655200500504	3.1

REF.	CODE	kg
D08.16	200560116082	0.02
P25.63	435116250631	0.5
P25.105	435116251051	0.8
PS 31.24	433024140751	0.19
PS 32.24	433024141001	0.2
CW 32	392011003201	0.07

REF.	CODE			TORX T	kg
B1.02	572010502001				0.02
B1.04	572010504001				0.02
B3.06	572010506001	WCGT0201..	TS 21	06	0.035
B3.08	572010508001	WCGT0201..	TS 211	06	0.4
B3.10	572010510001	TPGX0902..	CS 250 T	08	0.05
B3.11	572010511001	TPGX0902..	CS 250 T	08	0.055
B3.12	572010512001	TPGX0902..	CS 250 T	08	0.06
B3.14	572010514001	TPGX0902..	CS 250 T	08	0.07
B3.16	572010516001	TPGX0902..	CS 250 T	08	0.07
B3.18	572010518001	TPGX0902..	CS 250 T	08	0.1
B3.22	572010522001	TPGX0902..	CS 250 T	08	0.1

REF.	CODE			TORX T	kg
B5.06	572010506105	WCGT0201..	TS 21	06	0.075
B5.08	572010508105	WCGT0201..	TS 211	06	0.09
B5.10	572010510105	TPGX0902..	CS 250 T	08	0.1
B5.12	572010512105	TPGX0902..	CS 250 T	08	0.1
B5.14	572010514105	TPGX0902..	CS 250 T	08	0.2
B5.16	572010516105	TPGX0902..	CS 250 T	08	0.3
B8.06	572010506108	WCGT0201..	TS 21	06	0.065
B8.08	572010508108	WCGT0201..	TS 211	06	0.08
B8.10	572010510108	TPGX0902..	CS 250 T	08	0.1
B8.12	572010512108	TPGX0902..	CS 250 T	08	0.2
B8.14	572010514108	TPGX0902..	CS 250 T	08	0.2
B8.16	572010516108	TPGX0902..	CS 250 T	08	0.3

REF.	CODE			TORX T	kg
SFTP25	470500525001	TPGX0902..	CS 250T	08	0.01
SFTP32	470500532001	TPGX0902..	CS 250T	08	0.02
SFTP50	470500550001	TPGX1103..	CS300890T	08	0.08
SFTP51	470500550003	TCMT16T3..	TS 4	15	0.09

REF.	CODE			TORX T	kg
SFCC25	470500525002	CCGT0602..	TS 25	08	0.01
SFCC32	470500532002	CCGT0602..	TS 25	08	0.02
SFCC50	470500550002	CCGT09T3..	TS 4	15	0.08
SFCC51	470500550004	CCMT1204..	TS 5	25	0.09

• For back-facing machining see p.32-33 • Per lavorazioni sottosquadra vedere p.32-33

SFQC

TRM MICROMETRIC FINE BORING HEADS

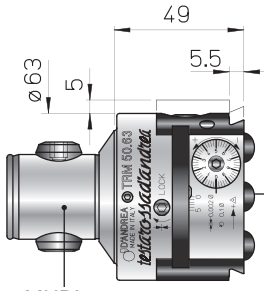
TESTE MICROMETRICHE DI FINITURA

TRM 50/63 Ø 2.5 ~ 160

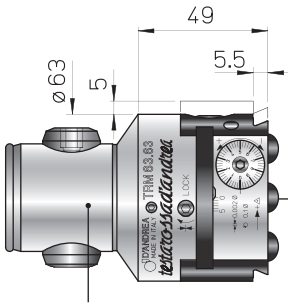
1 µm

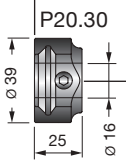
TRM 63/63 Ø 2.5 ~ 160

TRM 50/63
Ø 2.5 ~ 160

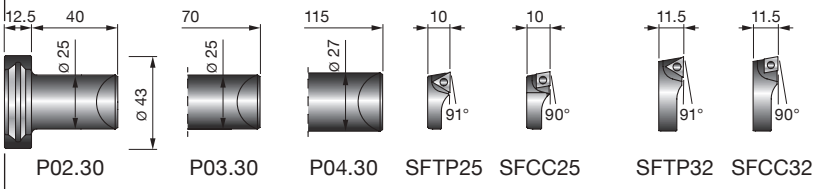


TRM 63/63
Ø 2.5 ~ 160



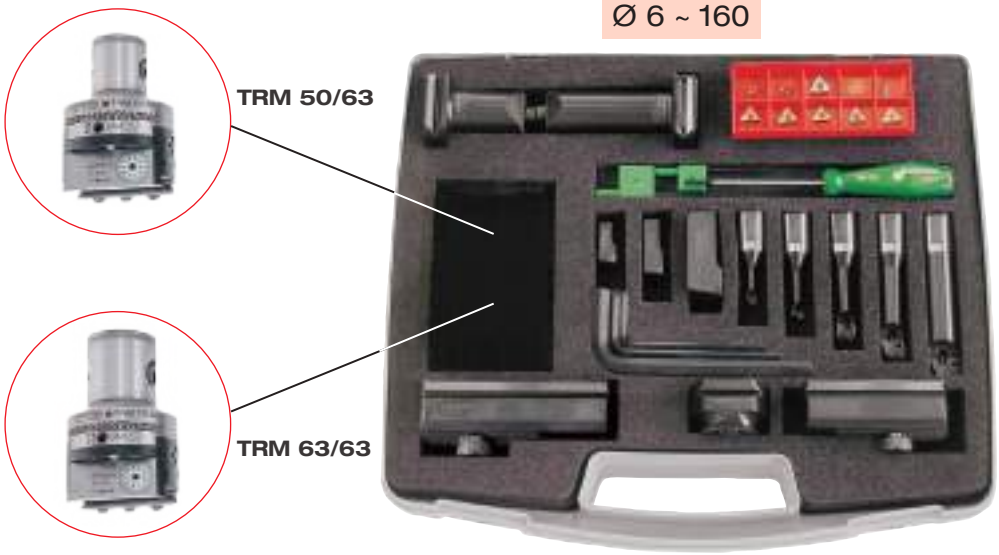


Tools Utensili	Vibration-damping Antivibranti	Carbide Metallo duro
RDC D08.16		B1.02 Ø2,5~4 — B1.04 Ø4~6
B3.06	B5.06	B8.06 Ø6~8
B3.08	B5.08	B8.08 Ø8~10
B3.10 — B3.11	B5.10	B8.10 Ø10~13
B3.12	B5.12	B8.12 Ø12~14
B3.14	B5.14	B8.14 Ø14~16
B3.16	B5.16	B8.16 Ø16~18
B3.18 Ø18~22		
B3.22 Ø22~30		



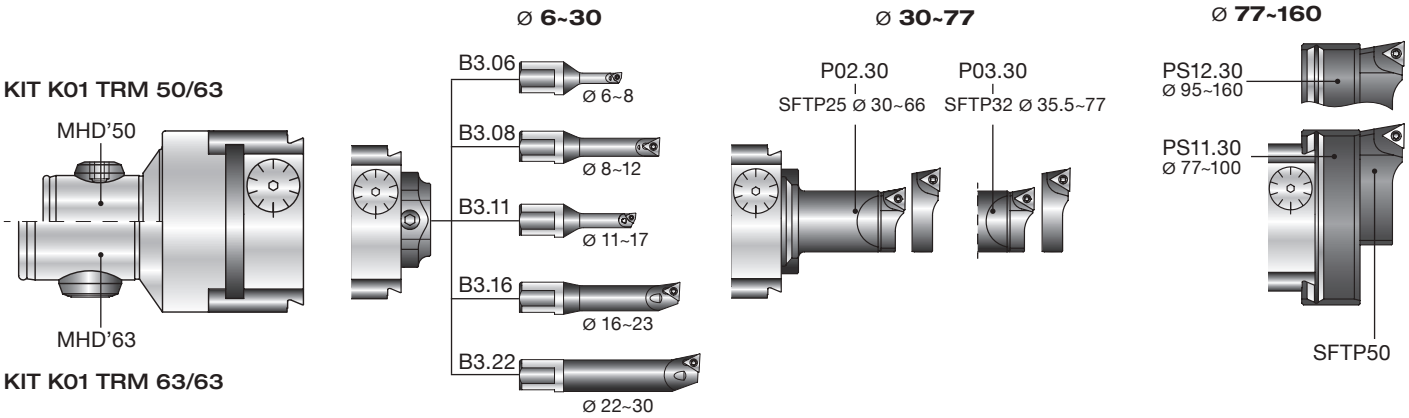
KIT K01 TRM 50/63 - KIT K01 TRM 63/63

Ø 6 ~ 160



1 P20.30
1 PS11.30
1 PS12.30
1 P02.30
1 P03.30
1 B3.06
1 B3.08
1 B3.11
1 B3.16
1 B3.22
1 SFTP25
1 SFTP32
1 SFTP50

5 TPGX 090202L DC100
1 TPGX 110302L DC100
2 WCGT 020102L DC100



REF.	CODE	kg
TRM 50/63	455005000631	1.1
TRM 63/63	455006300631	1.5

REF.	CODE	kg
KIT K01 TRM50/63	655005010633	3.9
KIT K01 TRM63/63	655006310633	4.2

REF.	CODE	kg
D08.16	200560116082	0.02
P20.30	431030160300	0.2
P02.30	431030250400	0.3
P03.30	431030250700	0.4
P04.30	431030251150	0.7
PS 11.30	433030260750	0.4
PS 12.30	433030260950	0.5

REF.	CODE			TORX T	kg
B1.02	572010502001				0.02
B1.04	572010504001				0.02
B3.06	572010506001	WCGT0201..	TS 21	06	0.035
B3.08	572010508001	WCGT0201..	TS 211	06	0.4
B3.10	572010510001	TPGX0902..	CS 250 T	08	0.05
B3.11	572010511001	TPGX0902..	CS 250 T	08	0.055
B3.12	572010512001	TPGX0902..	CS 250 T	08	0.06
B3.14	572010514001	TPGX0902..	CS 250 T	08	0.07
B3.16	572010516001	TPGX0902..	CS 250 T	08	0.07
B3.18	572010518001	TPGX0902..	CS 250 T	08	0.1
B3.22	572010522001	TPGX0902..	CS 250 T	08	0.1

REF.	CODE			TORX T	kg
B5.06	572010506105	WCGT0201..	TS 21	06	0.075
B5.08	572010508105	WCGT0201..	TS 211	06	0.09
B5.10	572010510105	TPGX0902..	CS 250 T	08	0.1
B5.12	572010512105	TPGX0902..	CS 250 T	08	0.1
B5.14	572010514105	TPGX0902..	CS 250 T	08	0.2
B5.16	572010516105	TPGX0902..	CS 250 T	08	0.3
B8.06	572010506108	WCGT0201..	TS 21	06	0.065
B8.08	572010508108	WCGT0201..	TS 211	06	0.08
B8.10	572010510108	TPGX0902..	CS 250 T	08	0.1
B8.12	572010512108	TPGX0902..	CS 250 T	08	0.2
B8.14	572010514108	TPGX0902..	CS 250 T	08	0.2
B8.16	572010516108	TPGX0902..	CS 250 T	08	0.3

REF.	CODE			TORX T	kg
SFTP25	470500525001	TPGX0902..	CS 250T	08	0.01
SFTP32	470500532001	TPGX0902..	CS 250T	08	0.02
SFTP50	470500550001	TPGX1103..	CS300890T	08	0.08
SFTP51	470500550003	TCMT16T3..	TS 4	15	0.09

REF.	CODE			TORX T	kg
SFCC25	470500525002	CCGT0602..	TS 25	08	0.01
SFCC32	470500532002	CCGT0602..	TS 25	08	0.02
SFCC50	470500550002	CCGT09T3..	TS 4	15	0.08
SFCC51	470500550004	CCMT1204..	TS 5	25	0.09

• For back-facing machining see p.33 • Per lavorazioni sottosquadra vedere p.33 SFQC

TRM MICROMETRIC FINE BORING HEADS

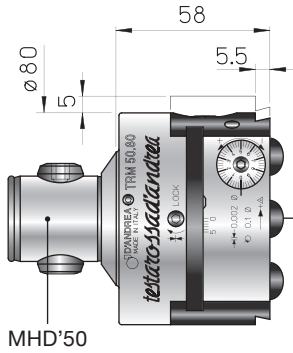
TESTE MICROMETRICHE DI FINITURA

TRM 50/80 Ø 2.5 ~ 220

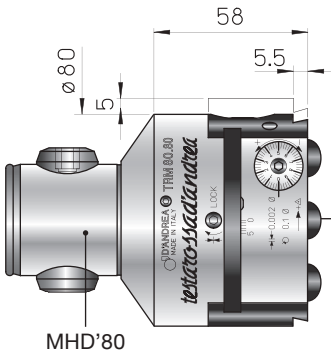
1 µm

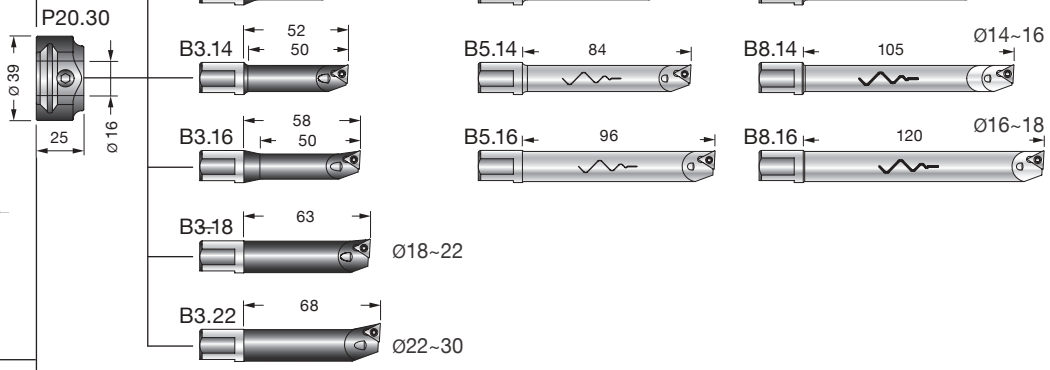
TRM 80/80 Ø 2.5 ~ 220

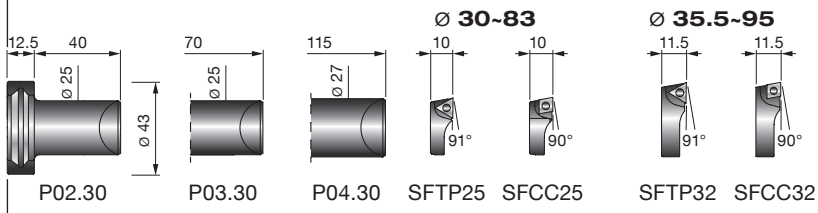
TRM 50/80
Ø 2.5 ~ 220

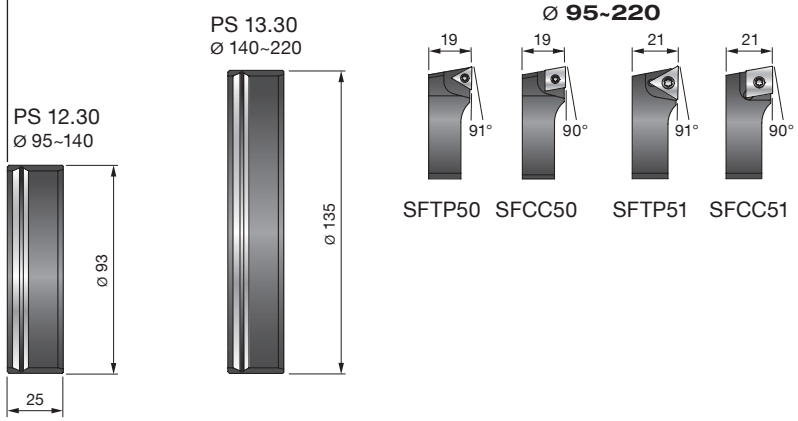


TRM 80/80
Ø 2.5 ~ 220

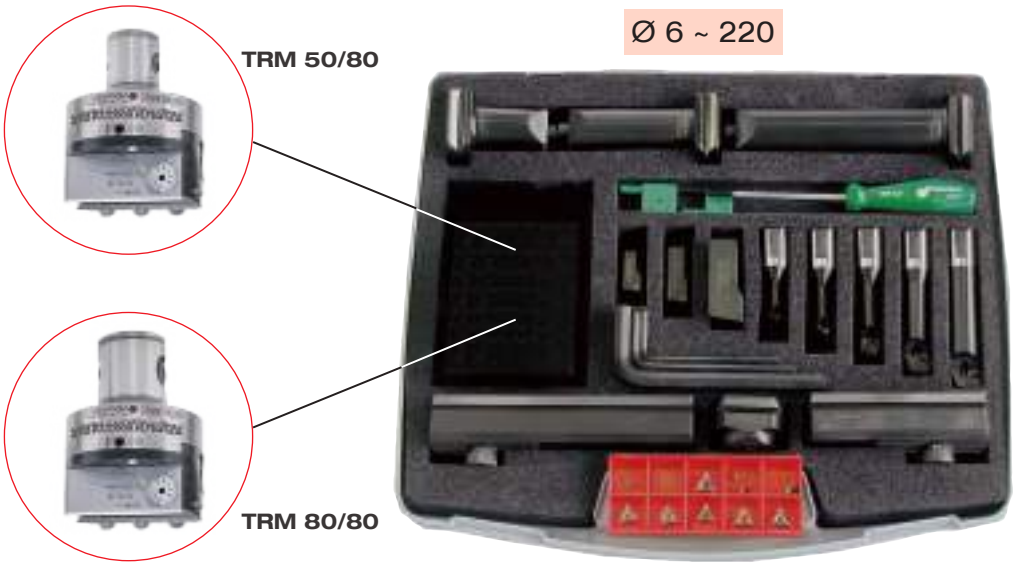






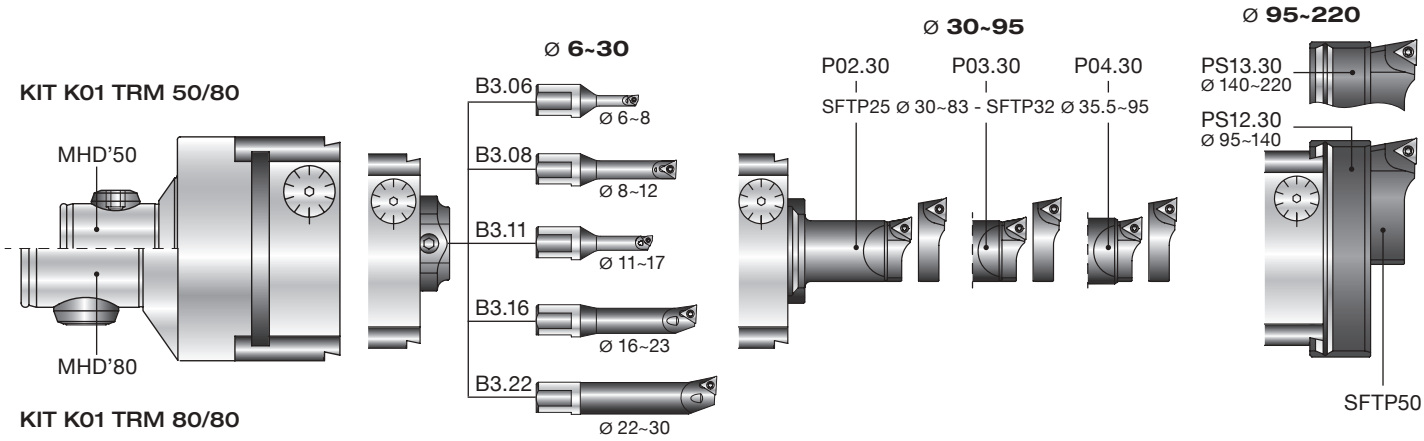


KIT K01 TRM 50/80 - KIT K01 TRM 80/80



1 P20.30
1 PS12.30
1 PS13.30
1 P02.30
1 P03.30
1 P04.30
1 B3.06
1 B3.08
1 B3.11
1 B3.16
1 B3.22
1 SFTP25
1 SFTP32
1 SFTP50

5 TPGX 090202L DC100
1 TPGX 110302L DC100
2 WCGT 020102L DC100



REF.	CODE	kg
TRM 50/80	455005000801	2
TRM 80/80	455008000801	2.5

REF.	CODE	kg
KIT K01 TRM50/80	655005010802	6.2
KIT K01 TRM80/80	655008010802	6.6

REF.	CODE	kg
D08.16	200560116082	0.02
P20.30	431030160300	0.2
P02.30	431030250400	0.3
P03.30	431030250700	0.4
P04.30	431030251150	0.7
PS 12.30	433030260950	0.5
PS 13.30	433030261400	0.7

REF.	CODE			TORX T	kg
B1.02	572010502001				0.02
B1.04	572010504001				0.02
B3.06	572010506001	WCGT0201..	TS 21	06	0.035
B3.08	572010508001	WCGT0201..	TS 211	06	0.4
B3.10	572010510001	TPGX0902..	CS 250 T	08	0.05
B3.11	572010511001	TPGX0902..	CS 250 T	08	0.055
B3.12	572010512001	TPGX0902..	CS 250 T	08	0.06
B3.14	572010514001	TPGX0902..	CS 250 T	08	0.07
B3.16	572010516001	TPGX0902..	CS 250 T	08	0.07
B3.18	572010518001	TPGX0902..	CS 250 T	08	0.1
B3.22	572010522001	TPGX0902..	CS 250 T	08	0.1

REF.	CODE			TORX T	kg
B5.06	572010506105	WCGT0201..	TS 21	06	0.075
B5.08	572010508105	WCGT0201..	TS 211	06	0.09
B5.10	572010510105	TPGX0902..	CS 250 T	08	0.1
B5.12	572010512105	TPGX0902..	CS 250 T	08	0.1
B5.14	572010514105	TPGX0902..	CS 250 T	08	0.2
B5.16	572010516105	TPGX0902..	CS 250 T	08	0.3
B8.06	572010506108	WCGT0201..	TS 21	06	0.065
B8.08	572010508108	WCGT0201..	TS 211	06	0.08
B8.10	572010510108	TPGX0902..	CS 250 T	08	0.1
B8.12	572010512108	TPGX0902..	CS 250 T	08	0.2
B8.14	572010514108	TPGX0902..	CS 250 T	08	0.2
B8.16	572010516108	TPGX0902..	CS 250 T	08	0.3

REF.	CODE			TORX T	kg
SFTP25	470500525001	TPGX0902..	CS 250T	08	0.01
SFTP32	470500532001	TPGX0902..	CS 250T	08	0.02
SFTP50	470500550001	TPGX1103..	CS300890T	08	0.08
SFTP51	470500550003	TCMT16T3..	TS 4	15	0.09

REF.	CODE			TORX T	kg
SFCC25	470500525002	CCGT0602..	TS 25	08	0.01
SFCC32	470500532002	CCGT0602..	TS 25	08	0.02
SFCC50	470500550002	CCGT09T3..	TS 4	15	0.08
SFCC51	470500550004	CCMT1204..	TS 5	25	0.09

• For back-facing machining see p.33 • Per lavorazioni sottosquadra vedere p.33 SFQC

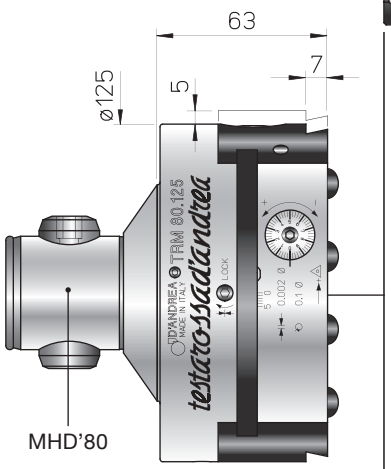
TRM MICROMETRIC FINE BORING HEAD

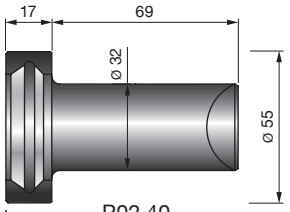
TESTE MICROMETRICHE DI FINITURA

TRM 80/125

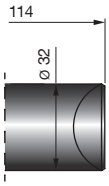
Ø 36 ~ 500

1 µm

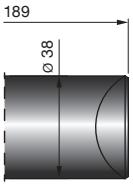




P02.40



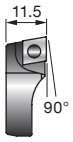
P03.40



P04.40

Ø 36~125

SFTP32



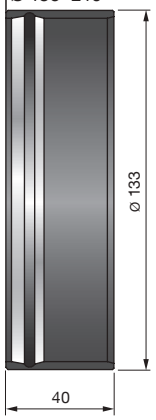
SFCC32

SFTP40

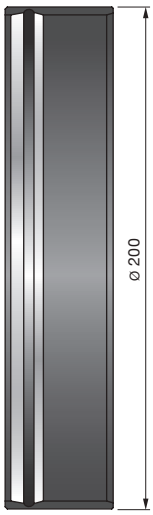
SFCC40

Ø 50~138

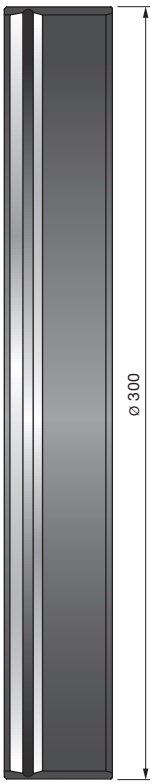
PS 11.40
Ø 135~210



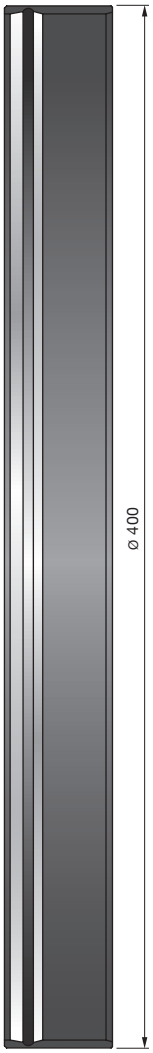
PS 12.40
Ø 205~310

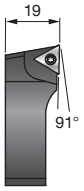


PS 13.40
Ø 305~410

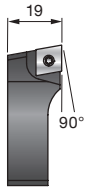


PS 14.40
Ø 405~500



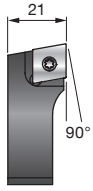


SFTP50



SFCC50

SFTP51



SFCC51

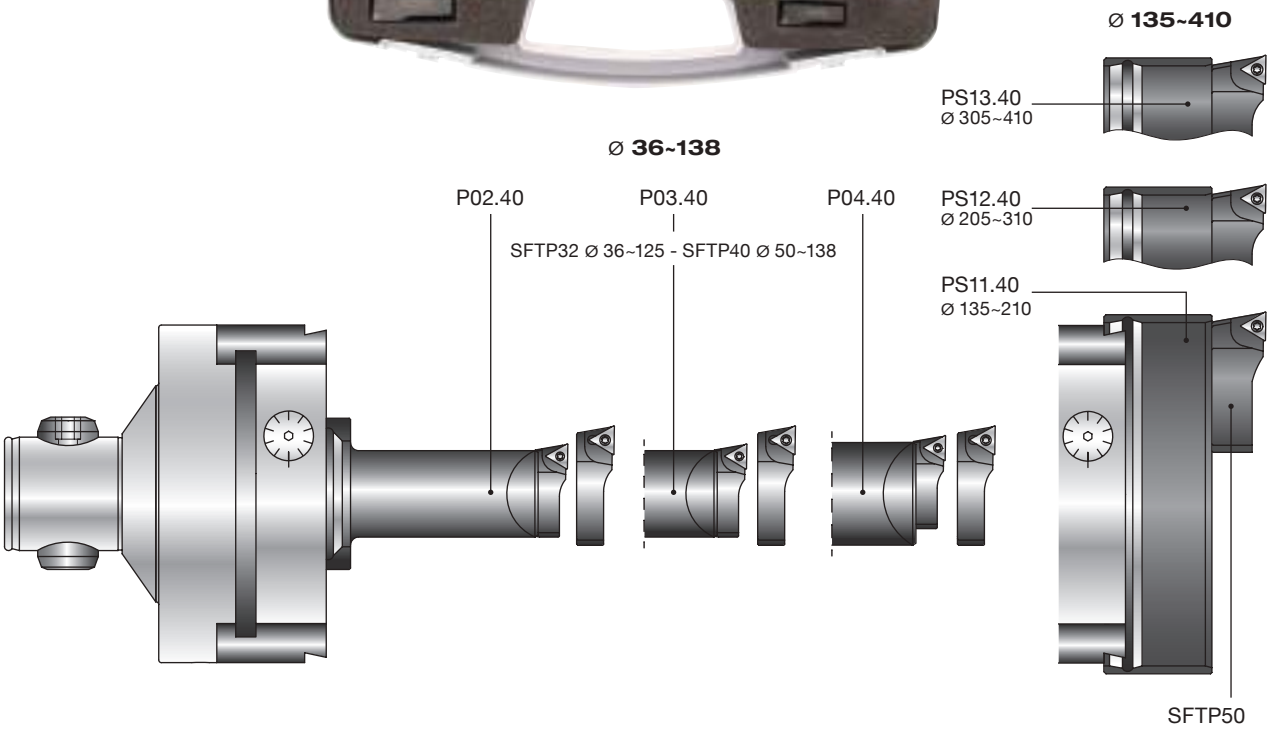
Ø 135~500

KIT K03 TRM 80/125

Ø 36 ~ 410

EXCLUDED
ESCLUSA
TRM 80/125

1 PS11.40
1 PS12.40
1 PS13.40
1 P02.40
1 P03.40
1 P04.40
1 SFTP32
1 SFTP40
1 SFTP50



REF.	CODE	kg	
TRM 80/125	455008001251	5.5	

REF.	CODE	kg	
KIT K03 TRM 80/125	655012500030	11.2	

REF.	CODE	kg	
P02.40	431040320700	0.7	
P03.40	431040321150	1	
P04.40	431040321900	2	
PS 11.40	433040351500	1.5	
PS 12.40	433040352300	2.4	
PS 13.40	433040353300	3.5	
PS 14.40	433040354000	4.6	

REF.	CODE			TORX T	kg	
SFCC32	470500532002	CCGT 0602..	TS 25	08	0.02	
SFCC40	470500540002	CCGT 09T3..	TS 4	15	0.04	
SFCC50	470500550002	CCGT 09T3..	TS 4	15	0.08	
SFCC51	470500550004	CCMT 1204..	TS 5	25	0.09	
SFTP32	470500532001	TPGX 0902..	CS 250T	08	0.02	
SFTP40	470500540001	TPGX 1103..	CS300890T	08	0.04	
SFTP50	470500550001	TPGX 1103..	CS300890T	08	0.08	
SFTP51	470500550003	TCMT 16T3..	TS 4	15	0.09	

• For back-facing machining see p.33 • Per lavorazioni sottosquadra vedere p.33 SFQC

TRC CENTESIMAL FINE BORING HEADS

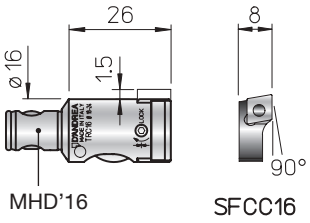
TESTE CENTESIMALI DI FINITURA

5 µm

TRC 16

Ø 18 ~ 24

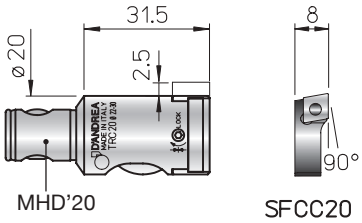
RPM 12.000



TRC 20

Ø 22 ~ 30

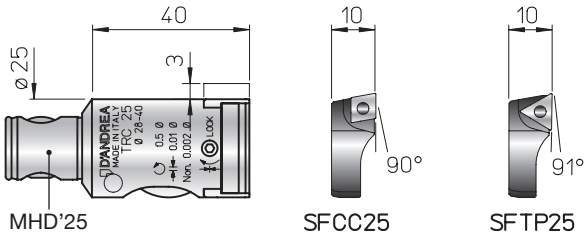
RPM 12.000



TRC 25

Ø 28 ~ 40

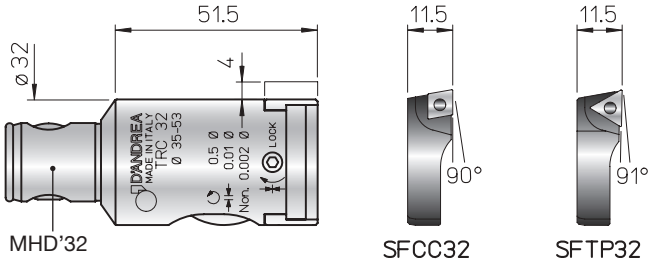
RPM 10.000



TRC 32

Ø 35.5 ~ 53.5

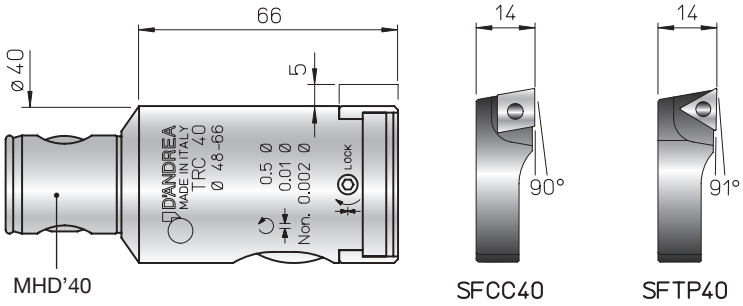
RPM 10.000



TRC 40

Ø 48 ~ 66

RPM 8.000



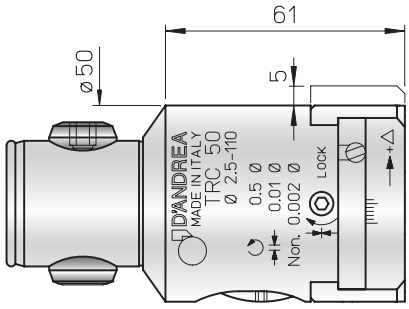
TRC CENTESIMAL FINE BORING HEADS

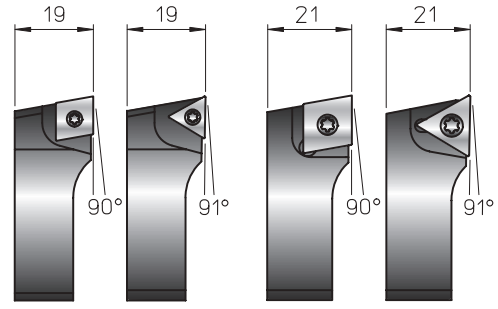
TESTE CENTESIMALI DI FINITURA

5 µm

TRC 50 — Ø 54 ~ 84 — RPM 8.000

MHD'50





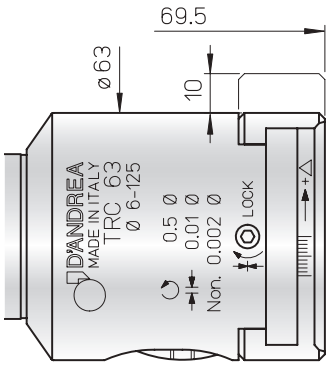
SFCC50 SFTP50 SFCC51 SFTP51

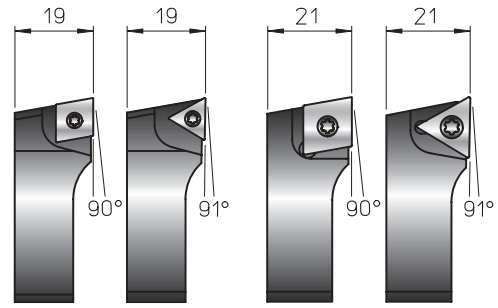
THE TRC50 USES ALL THE TOOLS SUPPLIED WITH TRM50 (p.22-23)

LA TRC 50 UTILIZZA TUTTI GLI UTENSILI A CORREDO DELLA TRM 50 (p.22-23)

TRC 63 — Ø 72 ~ 110 — RPM 6.000

MHD'63

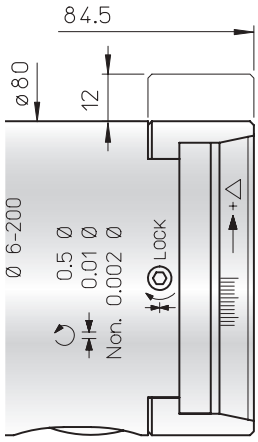


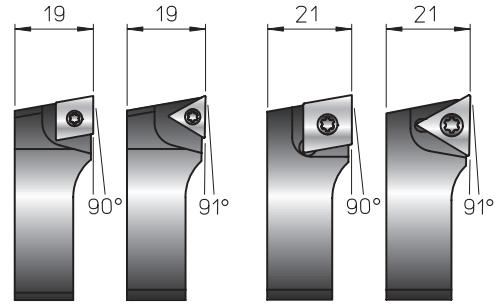


SFCC50 SFTP50 SFCC51 SFTP51

TRC 80 — Ø 88 ~ 132 — RPM 5.000

MHD'80





SFCC50 SFTP50 SFCC51 SFTP51

REF.	CODE	kg	
TRC 16	455011600341	0.05	
TRC 20	455012000401	0.1	
TRC 25	455012500501	0.2	
TRC 32	455013200631	0.35	
TRC 40	455014000801	0.7	
TRC 50	455015000801	1	
TRC 63	455016301001	2	
TRC 80	455018001201	3.8	

REF.	CODE			TORX T	kg
SFCC16	470500516002	CCGT 0602..	TS 25	08	0.003
SFCC20	470500520002	CCGT 0602..	TS 25	08	0.005
SFCC25	470500525002	CCGT 0602..	TS 25	08	0.01
SFCC32	470500532002	CCGT 0602..	TS 25	08	0.02
SFCC40	470500540002	CCGT 09T3..	TS 4	15	0.04
SFCC50	470500550002	CCGT 09T3..	TS 4	15	0.08
SFCC51	470500550004	CCMT 1204..	TS 5	25	0.09
SFTP25	470500525001	TPGX 0902..	CS 250T	08	0.01
SFTP32	470500532001	TPGX 0902..	CS 250T	08	0.02
SFTP40	470500540001	TPGX 1103..	CS300890T	08	0.04
SFTP50	470500550001	TPGX 1103..	CS300890T	08	0.08
SFTP51	470500550003	TCMT 16T3..	TS 4	15	0.09

- For back-facing machining see p.33
- Per lavorazioni sottosquadra vedere p.33

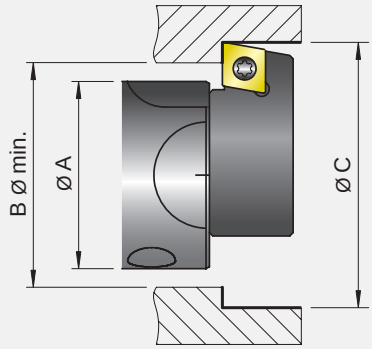
SFQC . .

BACK-FACING CARTRIDGES SSQC

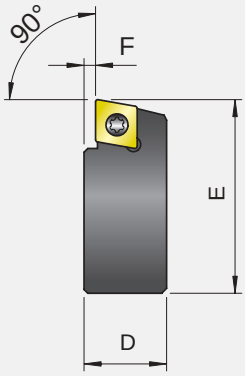
SEGGI SOTTOSQUADRA SSQC

CALCULATION FOR MINIMUM ENTERING Ø
CALCOLO MINIMO Ø INGRESSO

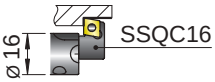
B ø min = (ø C + ø A + 1) : 2



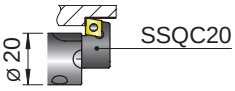
CARTRIDGE DIMENSIONS
QUOTE SEGGI



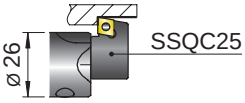
TS



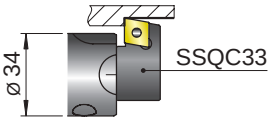
TS 16/16
Ø 20~24



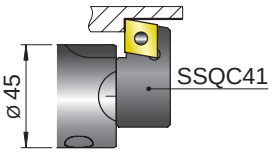
TS 20/20
Ø 23.5~30



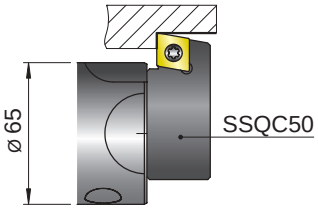
TS 25/25
Ø 29.5~40



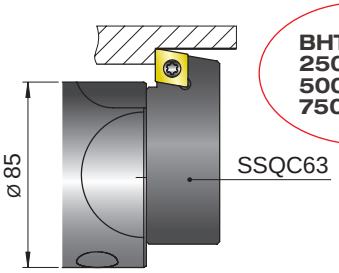
TS 32/32
Ø 39~52



TS 40/40
Ø 51~70

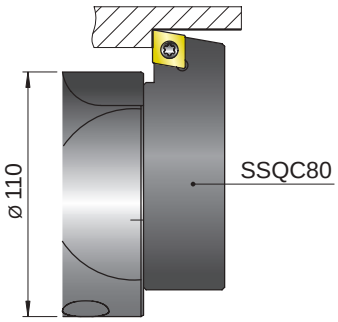


TS 50/50
Ø 69~92

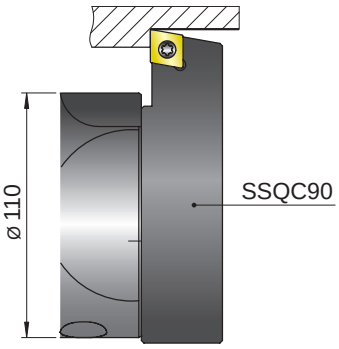


BHT
250 Ø 273~414
500 Ø 523~664
750 Ø 773~914

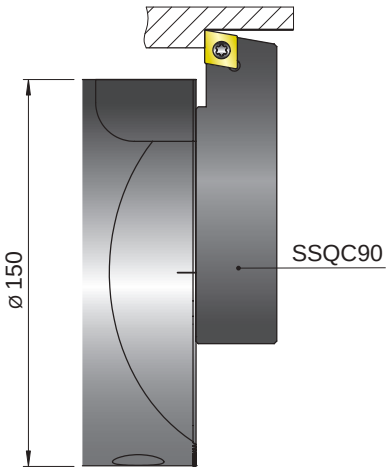
TS 50/63 - TS 63/63
Ø 91~122



TS 80/80
Ø 121~162



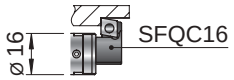
TS 80/80
Ø 161~202



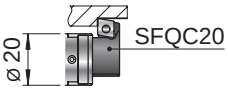
TS 80/90
Ø 161~252

REF.	CODE	D	E	F			
SSQC 16	470500516261	10	16	2	CCMT 0602..	TS 25	TORX T 08
SSQC 20	470500520261	11	19.5	1.5	CCMT 0602..	TS 25	TORX T 08
SSQC 25	470500525261	14.5	24	2.5	CCMT 0602..	TS 25	TORX T 08
SSQC 33	470500533261	17	32	3	CCMT 09T3..	TS 4	TORX T 15
SSQC 41	470500541261	21	42	3.5	CCMT 1204..	TS 5	TORX T 25
SSQC 50	470500550261	24.5	57	3.5	CCMT 1204..	TS 5	TORX T 25
SSQC 63	470500563261	28.5	76	3.5	CCMT 1204..	TS 5	TORX T 25
SSQC 80	470500580261	31.5	101	3.5	CCMT 1204..	TS 5	TORX T 25
SSQC 90	470500590261	31.5	122	3.5	CCMT 1204..	TS 5	TORX T 25

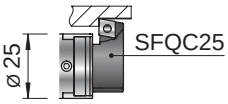
TRM - TRC



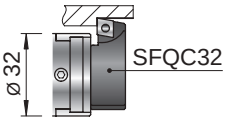
TRM 16 - TRC 16
ø 20~25



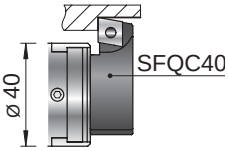
TRM 20 - TRC 20
ø 24.5~32



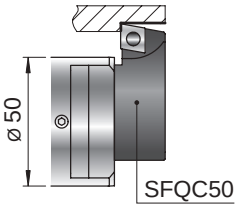
TRM 25 - TRC 25
ø 31.5~40.5



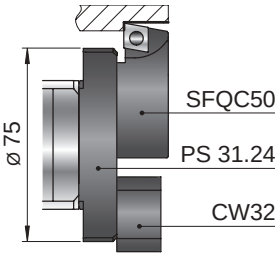
TRM 32 - TRC 32
ø 38.5~51.5



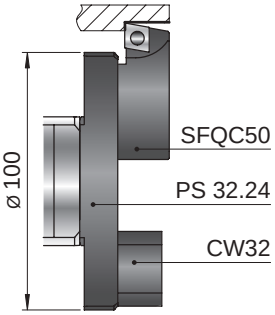
TRM 40 - TRC 40
ø 50.5~65



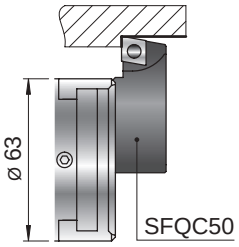
TRM 50 ø 56~88
TRE 50 ø 56~88
TRC 50 ø 56~88



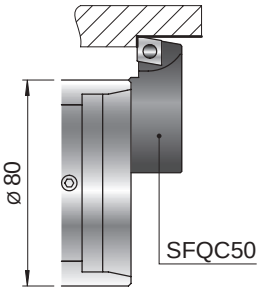
TRM 50 ø 82~112
TRE 50 ø 82~112
TRC 50 ø 82~112



TRM 50 ø 82~142
TRE 50 ø 82~142
TRC 50 ø 82~142



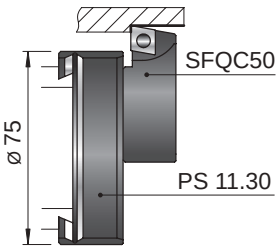
TRC 63
ø 72.5~115



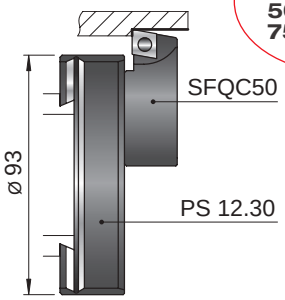
TRC 80
ø 88.5~135.5

TRM

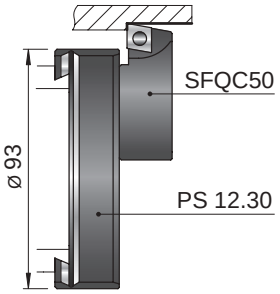
BHT
250 ø 253~505
500 ø 503~755
750 ø 753~1005



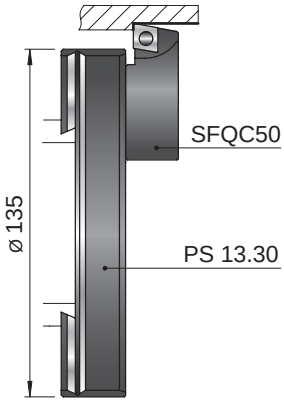
TRM 50/63
TRM 63/63
ø 82~102



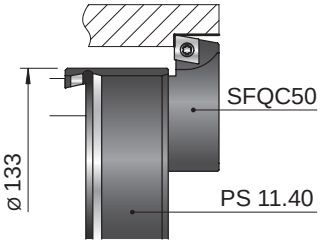
TRM 50/63
TRM 63/63
ø 100~157



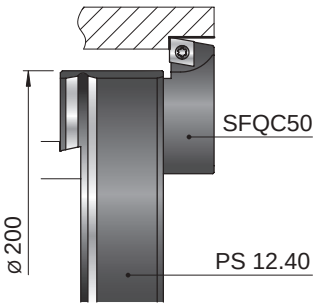
TRM 50/80
TRM 80/80
ø 100~142



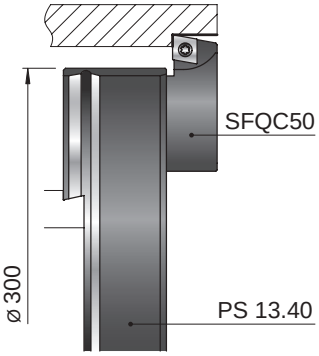
TRM 50/80
TRM 80/80
ø 142~222



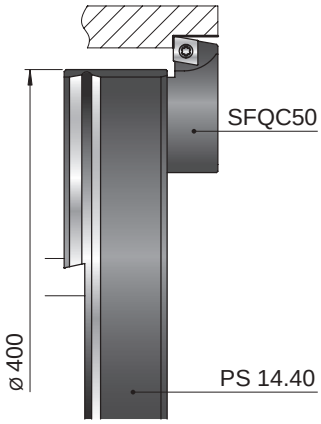
TRM 80/125
ø 140~212



TRM 80/125
ø 210~312



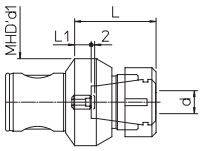
TRM 80/125
ø 310~412



TRM 80/125
ø 410~502

REF.	CODE	D	E	F			
SFQC 16	470500516062	10	18	2	CCMT 0602..	TS 25	TORX T 08
SFQC 20	470500520062	10.5	22.5	2	CCMT 0602..	TS 25	TORX T 08
SFQC 25	470500525062	12	28.5	2.5	CCMT 0602..	TS 25	TORX T 08
SFQC 32	470500532062	13.5	35.5	2.5	CCMT 0602..	TS 25	TORX T 08
SFQC 40	470500540062	16.5	46	3	CCMT 09T3..	TS 4	TORX T 15
SFQC 50	470500550062	20.5	53	3	CCMT 09T3..	TS 4	TORX T 15

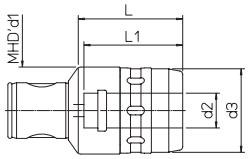
PE COLLETS CHUCKING TOOLS / ADATTATORI PER PINZE ELASTICHE



Supplied without collets and clamping wrenches / Pinze elastiche e chiavi di serraggio escluse

REF.	CODE	MHD' d1	d	L	L1	kg			N·m
PE 20 / ER16M	655702000160	20	0.5-10	32	1	0.06	ER-16M	E16M	40
PE 32 / ER25M	655703200250	32	1-16	42	1.5	0.25	ER-25M	E25M	160
PE 40 / ER25	655704000250	40	1-16	45	5	0.4	UM/ER25	E25	200
PE 50 / ER25	655705000250	50	1-16	48	7	0.7	UM/ER25	E25	200
PE 50 / ER32	655705000320	50	2-20	55	8	1	UM/ER32	E32	220
PE 63 / ER32	655706300320	63	2-20	59	12	1.3	UM/ER32	E32	220

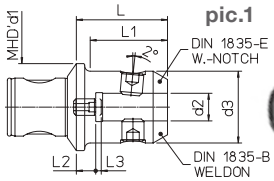
FORCE MILLING POWER CHUCK / ADATTATORI A FORTE SERRAGGIO

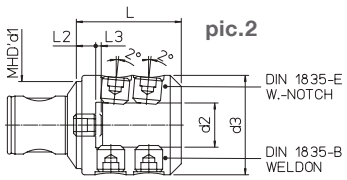


Supplied without collets and clamping wrenches / Chiave di serraggio escluse

REF.	CODE	MHD' d1	d2	d3	L	L1	kg
FORCE 50/20	656305000200	50	20	48	60	60	1
FORCE 63/32	656306300320	63	32	66	80	80	2

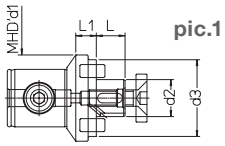
AW WELDON WHISTLE NOTCH CHUCKING TOOLS / ADATTATORI WELDON WHISTLE NOTCH

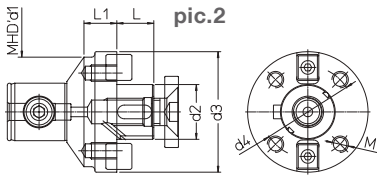




REF.	CODE	MHD' d1	d2 H5	d3	L	L1	L2	L3	kg	pic.
AW 50/6	655805000060	50	6	25	44	32.5	7	2	0.5	1
AW 50/8	655805000080	50	8	28	44	33	7	2	0.5	1
AW 50/10	655805000100	50	10	35	52	42	11	3	0.7	1
AW 50/12	655805000120	50	12	42	57	48	11	3	0.8	1
AW 50/14	655805000140	50	14	42	57	48	11	3	0.8	1
AW 50/16	655805000160	50	16	48	67	61	17	4	1.1	1
AW 50/20	655805000200	50	20	51	67		16	4	1.2	1
AW 50/25	655805000250	50	25	63	80		22	4	1.8	2
AW 63/16	655806300160	63	16	48	64	53	14	4	1.4	1
AW 63/20	655806300200	63	20	52	66	56	14	4	1.5	1
AW 63/25	655806300250	63	25	64	74		16	4	2.1	2
AW 63/32	655806300320	63	32	72	76		14	4	2.5	2
AW 80/40	655808000400	80	40	80	83		12	4	3.2	2

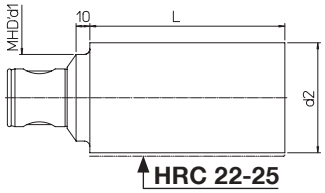
PF DISC AND FACING CUTTER HOLDERS / ADATTATORI PER FRESE A DISCO E A SPIANARE





REF.	CODE	MHD' d1	d2	d3	d4	M	L	L1	kg	pic.
PF 40/16	655904020165	40	16	32			17	15	0.3	1
PF 40/22	655904020225	40	22	40			19	13	0.4	1
PF 50/16	655905000160	50	16	32			17	15	0.5	1
PF 50/22	655905000220	50	22	40			19	15	0.5	1
PF 50/27	655905000270	50	27	50			21	15	0.6	1
PF 50/32	655905000320	50	32	60			24	15	0.7	1
PF 63/22	655906300220	63	22	60			19	15	0.9	1
PF 63/27	655906300270	63	27	60			21	15	1.1	1
PF 63/32	655906300320	63	32	63			24	15	1.2	1
PF 80/32	655908000320	80	32	80			24	24	1.7	1
PF 80/40	655908000400	80	40	84	66.7	M12	27	24	1.9	2
PF 80/50	655908000500	80	50	90			30	24	2.0	1
PF 80/60	655908000600	80	60	128.5	101.6	M16	40	31.5	3.5	2

NS SEMIFINISHED CHUCK HOLDERS / ADATTATORI SEMILAVORATI



ON REQUEST
SPECIALI A RICHIESTA

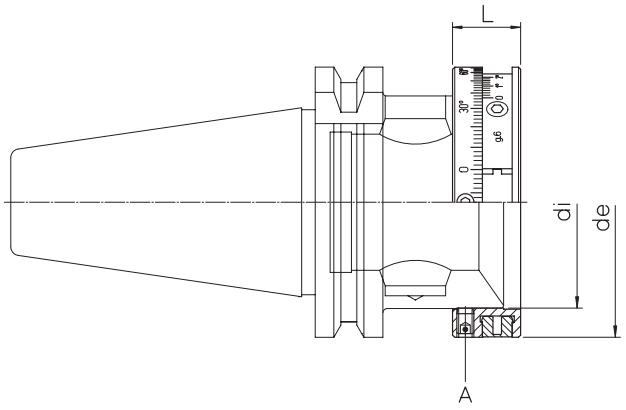
REF.	CODE	MHD' d1	d2	L	kg
NS 50	657205001600	50	63	160	4.2
NS 63	657206302000	63	80	200	8.7
NS 80	657208002500	80	100	250	16

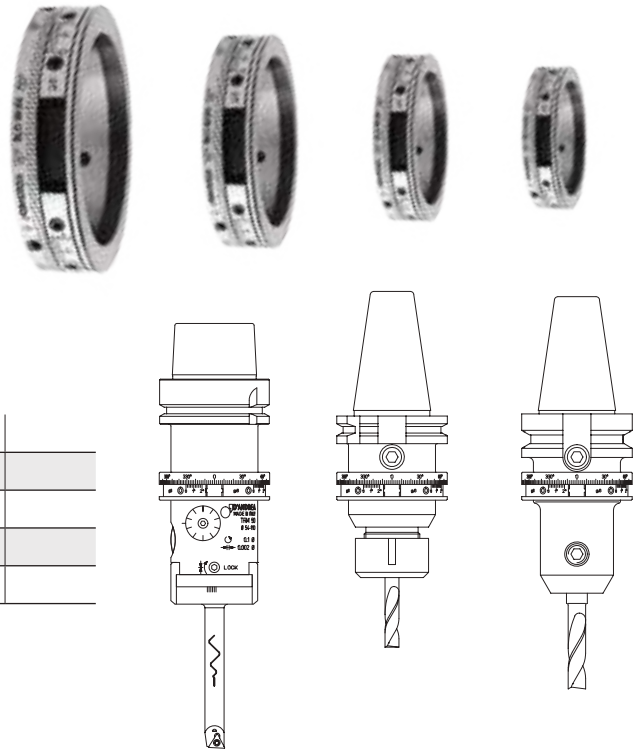
The **BLC** balancing ring, only by setting the two incorporated graduated counterweights, allows to balance, in an accurate and economical way, the toolholder on which it is mounted. The use of the **BLC** ring provides the following advantages: improved accuracy and surface finish; considerable extension of tool life; considerable extension of spindle bearings life; drastic reduction of vibrations and noise level in the machining centre.

ASSEMBLY: Remove the plastic guard ring; insert the **BLC** ring and lock the **A** screws.

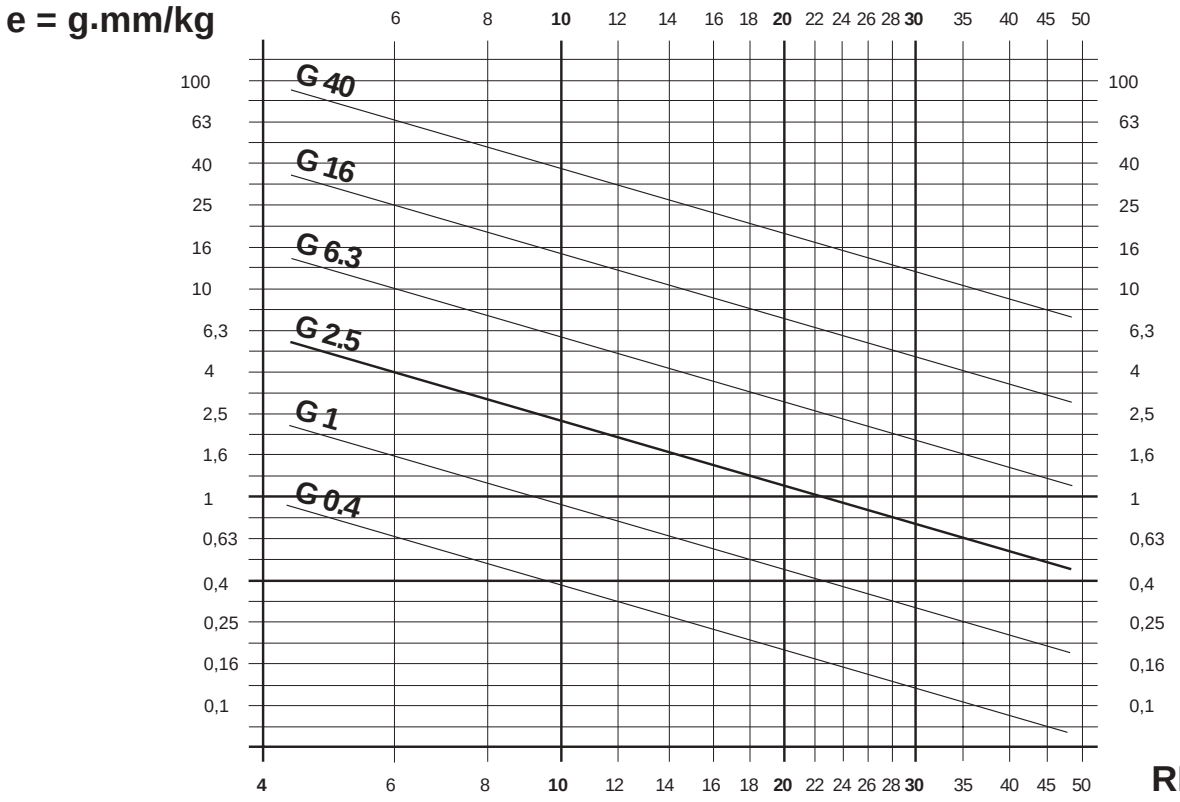
L'anello di bilanciatura **BLC**, con il semplice posizionamento dei due tasselli graduati incorporati, permette di equilibrare, in modo preciso ed economico, il portautensile nel quale lo stesso viene montato. L'utilizzo dell'anello **BLC** dà i seguenti vantaggi: migliora la precisione e la qualità delle superfici lavorate; aumenta la durata dell'utensile; allunga la vita del mandrino del centro di lavoro; riduce le vibrazioni e la rumorosità del centro di lavoro.

MONTAGGIO: Togliere l'anello di protezione in plastica; inserire l'anello **BLC** e bloccare le viti **A**.





REF.	CODE	MHD'	de	di	L
BLC 42.32	381725032001	32	42	31.5	14
BLC 50.40	381725040001	40	50	39.5	15
BLC 63.50	381725050001	50	63.5	49.8	16
BLC 80.63	381725063001	63	80	62.8	18



CROSS BARS BHT 250 - 500 -750

Ø 250 ~ 1000

BARRE MODULARI

The BHT modular cross bars for large-diame**te**r machining feature the HT base coupling, ensuring perfect fit, high torsional strength and compatibility with various machine connections.
The bars cover a working range from Ø 250 to Ø 1000 mm, suitable for both roughing and finishing boring operations.
The wide range of accessories includes adjustable ISO-CA roughing cartridges and micrometric finishing heads capable of carrying out boring, chamfering, back-boring, and turning operations. In finishing configuration, the system can be balanced using counterweights, ensuring optimal performance and precision.

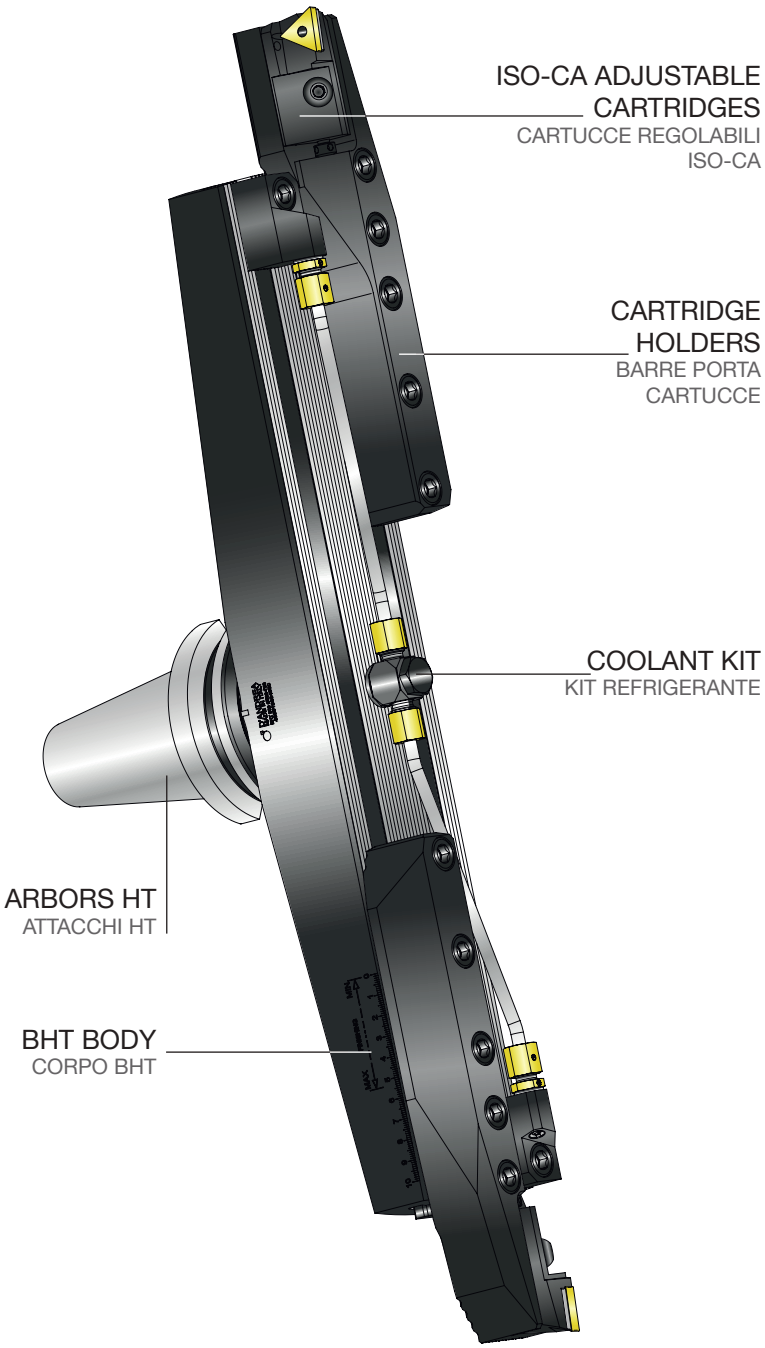
Le barre modular**i** BHT per lavorazioni di grandi dia**me**tri sono caratterizzate dall'attacco base HT che ne assicura un perfetto accoppiamento ed una elevata resistenza alla torsione oltre che adattabilità a diversi attacchi macchina.
Le barre coprono un campo di lavoro da Ø 250 a Ø 1000 mm, sia in sgrossatura che in finitura.
L'ampia gamma di accessori comprende cartucce ISO-CA regolabili di sgrossatura e testine micrometriche di finitura in grado di eseguire operazioni di alesatura, smussi, lavorazioni in sottosquadra e tornitura.
Il sistema in configurazione di finitura è bilanciabile mediante utilizzo di contrappesi.

ROUGHING SGROSSATURA

FINISHING FINITURA

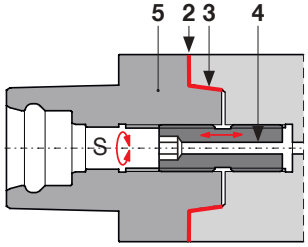
TURNING TORNITURA

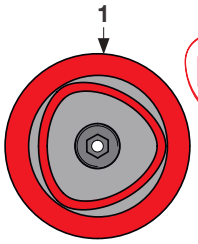
ROUGHING SGROSSATURA



COUPLING HighT

The **THT** system features the new **HT** trilobed tapered coupling which ensures perfect coupling and high resistance to torsional loads.





HT	S ⬡	Nm
8	12	80 - 90

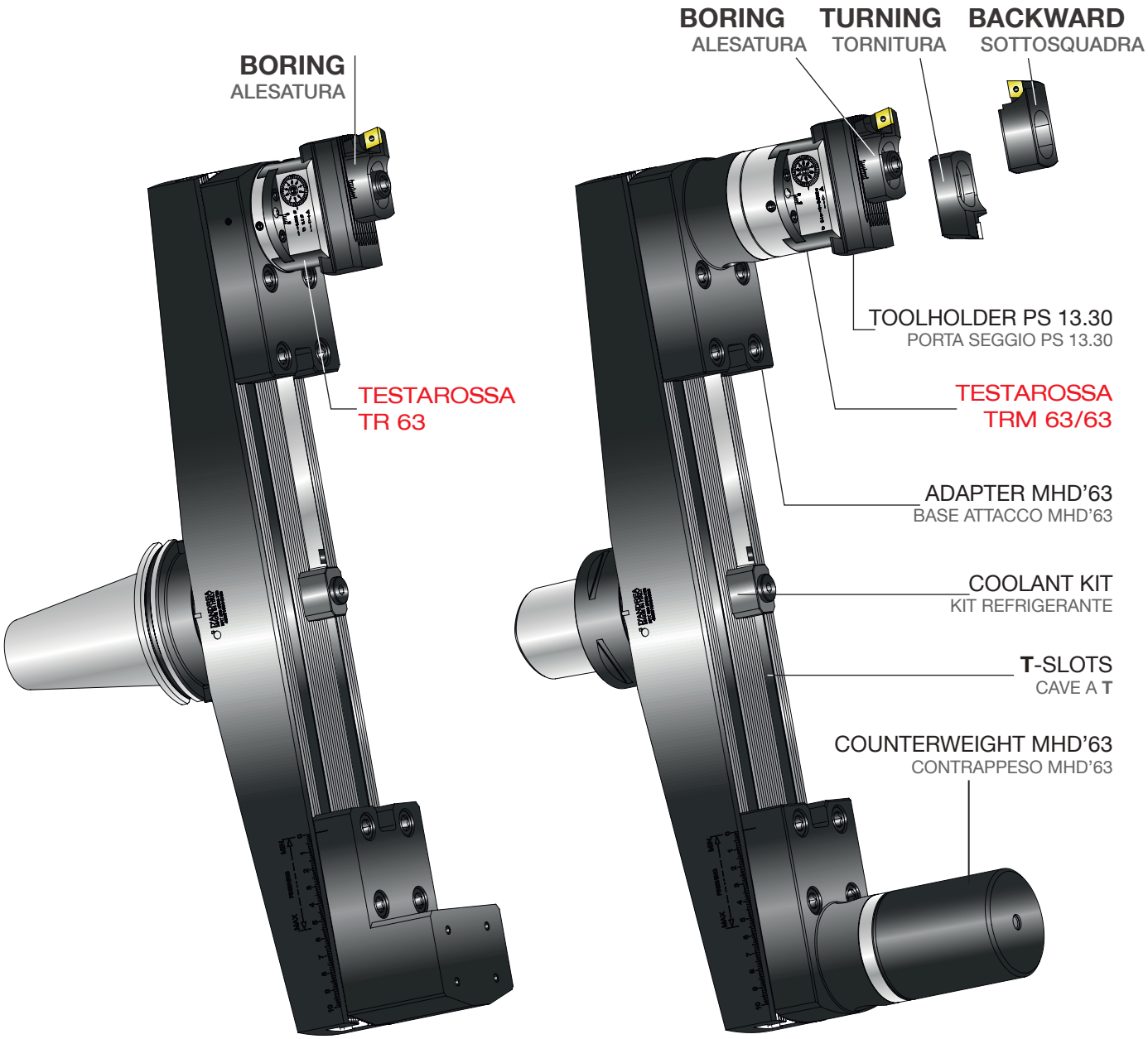
1. Suitable for medium-heavy turning machining operations when high torsional components are involved.
2. Zero backlash, thanks to the pulling force of the central tie rod.
3. Significantly reduced dimensions.
4. Proper axial coolant way.
5. Arbors are made with hardness HRc 55-60.

ATTACCO HighT

Il sistema **THT** è caratterizzato dal nuovo attacco conico trilobato **HT** che assicura un perfetto accoppiamento ed un'elevata resistenza alla torsione.

1. Adatto a lavorazioni di tornitura anche pesanti, caratterizzate da notevoli componenti torsionali.
2. Totale assenza di gioco, grazie alla forza di trazione esercitata dal tirante centrale.
3. Dimensioni ridotte.
4. Passaggio centrale del refrigerante facilitato.
5. Cono macchina realizzato con durezza di 55-60 HRC.

FINISHING FINITURA 2µm



CROSS BARS BHT 250 - 500 -750

Ø 250 ~ 1000

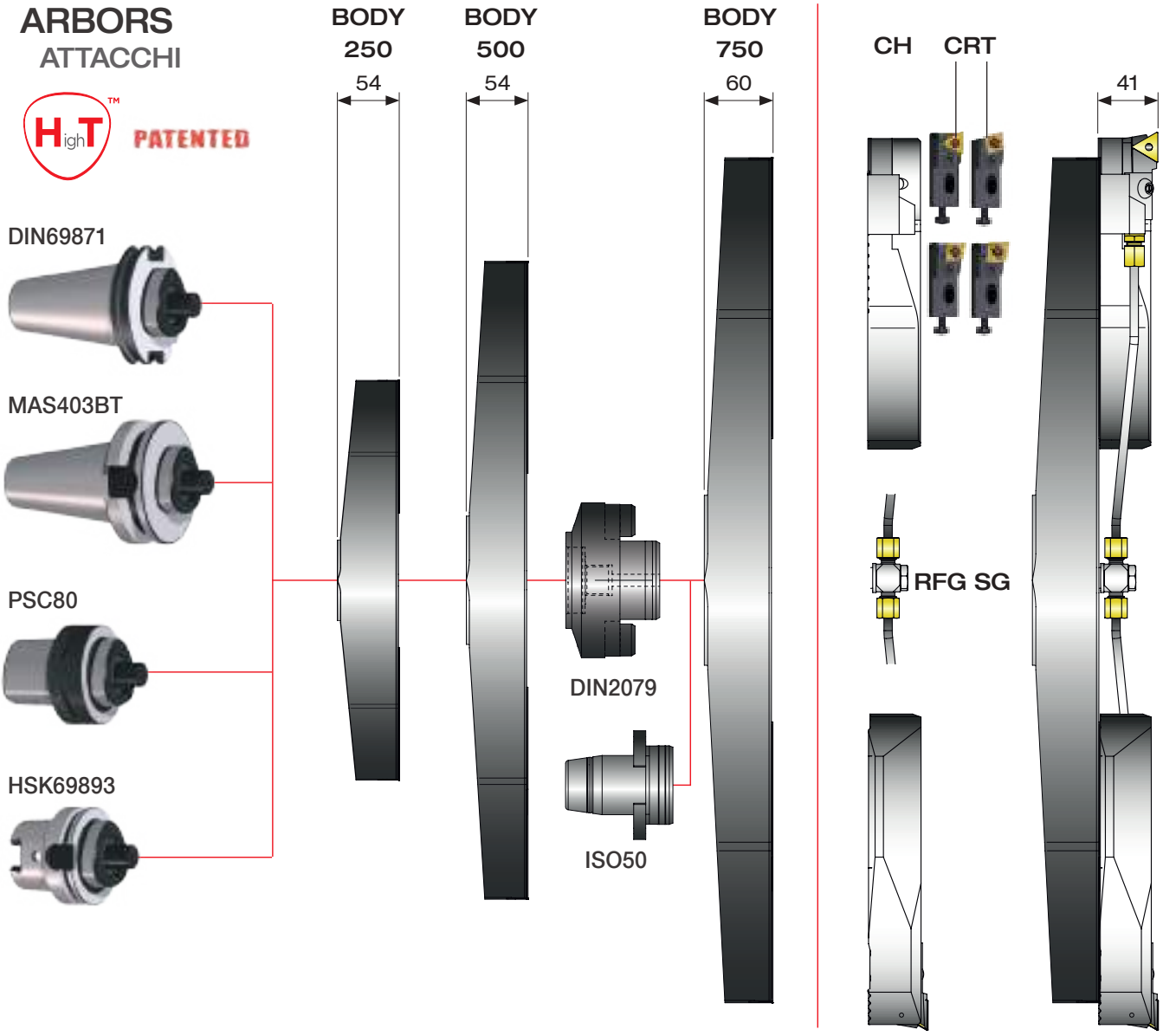
BARRE MODULARI

BHT 250 Ø 250 - 500 | **BHT 500** Ø 500 - 750 | **BHT 750** Ø 750 - 1000

ROUGHING
SGROSSATURA

ARBORS
ATTACCHI

HighT™ PATENTED



ROUGHING - SGROSSATURA

ARBORS HT - ATTACCHI BASE HT

REF.		CODE	kg	
DIN 69871-AD50	HT8 .36.5	41HT18025000	3.4	
CAT 50 UNC	HT8 .50.5	41HT18055000	3.9	
MAS403BT-AD50	HT8 .38.5	41HT18035000	3.7	
PSC 80	HT8 .30	41HT18018000	2	
HSK 100	HT8 .76.5	41HT18041000	4	
DIN2079	HT8 .48.5	657HT91280899	4.3	
ISO 50		382090075002	1.7	

BODY BHT - CORPO BHT

REF.	CODE	Ø ROUGHING Ø FINISHING	Ø TURNING	kg	
BODY BHT 250	435518882460	250 ~ 500	max 250	4.0	
BODY BHT 500	435518884960	500 ~ 750	max 470	7.2	
BODY BHT 750	435508887469	750 ~ 1000	max 720	23.3	

CH CARTRIDGE HOLDERS - BARRA PORTA CARTUCCE

	CODE	
CH BHT 250-500-750	382090024000	kg 2.5

CRT CARTRIDGES - CARTUCCE 20CA ISO 5611

	CODE		
PTGNL20CA-22	483010201001	TNM2204	
PCGNL20CA-16	483010201002	CNM1606	
SCGCL20CA-12	483010201003	CCM1204	
PSRNL20CA-15	483010201004	SNM1506	

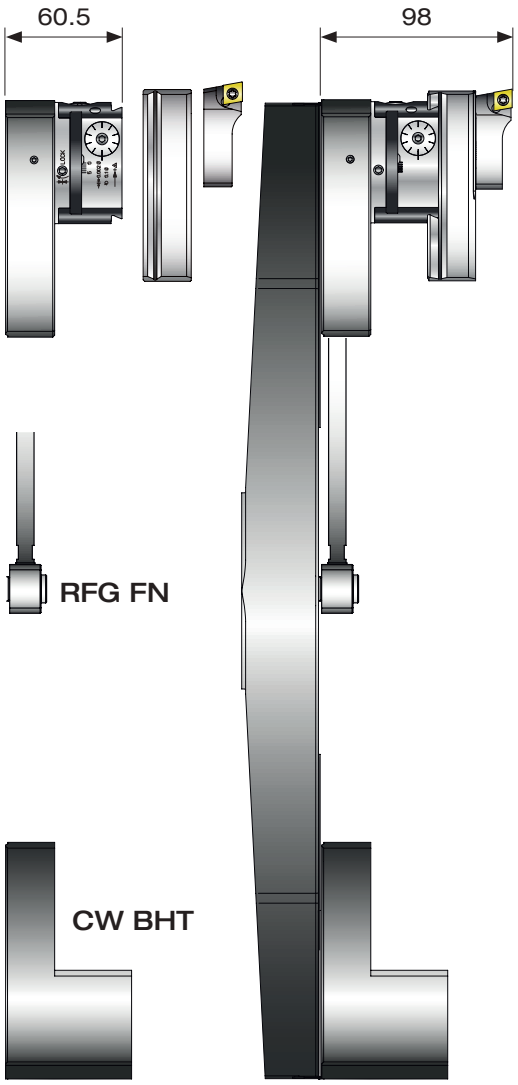
RFG SG COOLANT KIT - KIT REFRIGERANTE

	CODE
RFG BHT 250 SG	382090025000
RFG BHT 500 SG	382090050003
RFG BHT 750 SG	382090075000

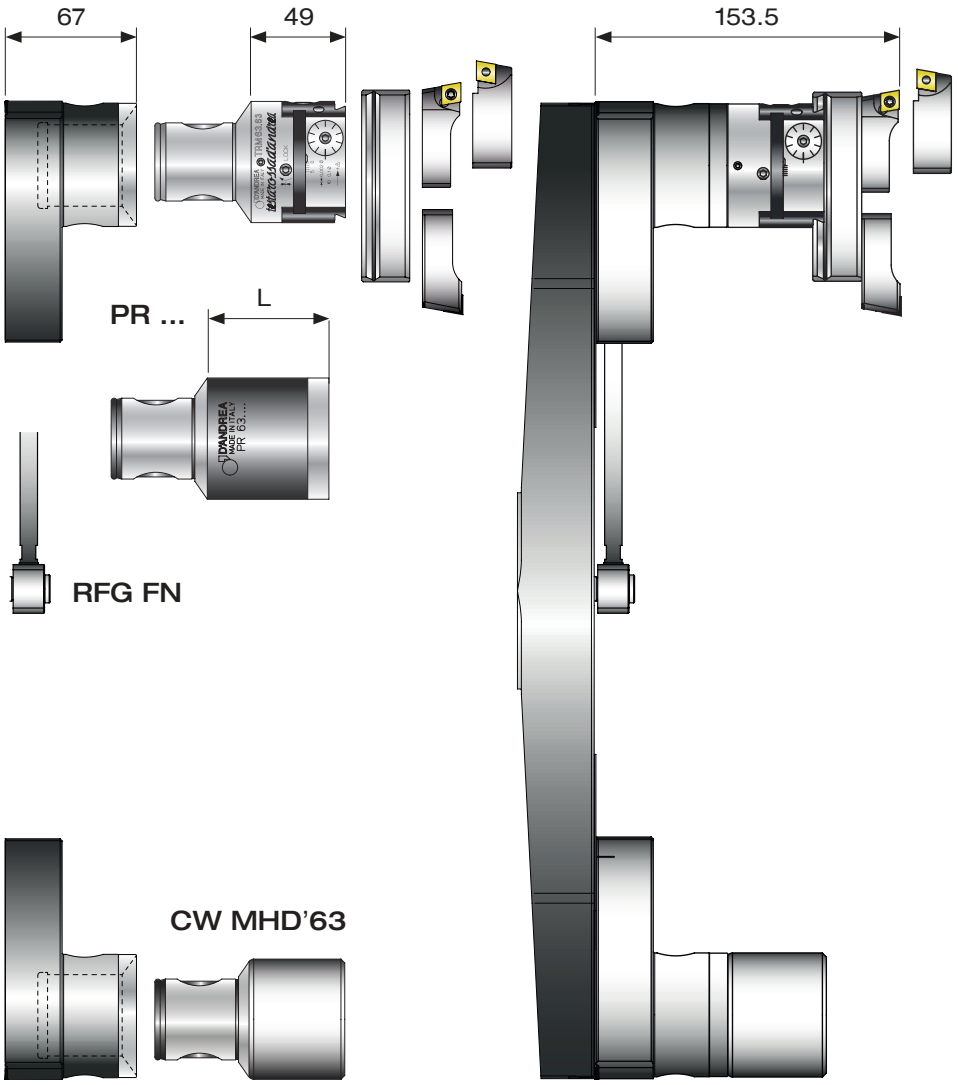
FINISHING FINITURA 2µm

BORING ALESATURA | **BORING** ALESATURA | **TURNING** TORNITURA | **BACKWARD** SOTTOSQUADRA

TR 63 PS SF..



ADAPTOR TRM 63/63 PS SF..



- **Upon request BHT 1000**
- A richiesta BHT 1000

FINISHING - FINITURA

TESTAROSSA 2µm

REF.		CODE	kg	
TRM 63/63	BHT 250-500-750	455006300631	1.5	
TR 63	BHT 250-500-750	455006380630	3	

ADAPTER MHD'63 - BASE ATTACCO

REF.		CODE	kg	
MHD'63 ADAPTER	BHT 250-500-750	382090006301	2.4	

PR EXTENSIONS - PROLUNGHE

REF.		CODE	L	kg	
PR 63.63	BHT 250-500-750	656906300630	63	1.4	
PR 63.100	BHT 250-500-750	656906301000	100	2.2	
PR 63.125	BHT 250-500-750	656906301250	125	2.9	

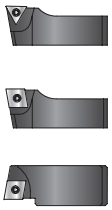
PR TOOLHOLDER - PORTASEGGIO

REF.		CODE	kg	
PS 13.30	BHT 250-500-750	433030261400	0.7	

CW COUNTERWEIGHT - CONTRAPPESO

REF.		CODE	kg	
CW MHD'63	BHT 250-500-750	392011006300	1.5	
CW BHT	BHT 250-500-750	392011006302	3.3	

SF.. BIT-HOLDERS - SF.. SEGGI



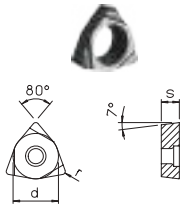
REF.	CODE 6			TORX
SFTP50	470500550001	TPGX 1103..	CS300890T	08
SFTP51	470500550003	TCMT 16T3..	TS 4	15
SFCC50	470500550002	CCGT 09T3..	TS 4	15
SFCC51	470500550004	CCMT 1204..	TS 5	25
SFQC50	470500550062	CCMT 09T3..	TS 4	15

RFG FN COOLANT KIT - KIT REFRIGERANTE

	CODE
RFG BHT 250 FN	382090025001
RFG BHT 500 FN	382090050004
RFG BHT 750 FN	382090075001

WCGT ○○○○○○L

FINISHING
FINITURA

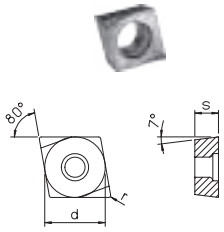


REF.		CODE	d	s	r		
WCGT 020102L DC 100	CERMET	WCGT020102LC100	3.97	1.59	0.2	TS 21*-TS 211*	TORX T06
WCGT 020102L DC 100T	COATED CERMET - CERMET RIVESTITO	WCGT020102LC10T	3.97	1.59	0.2	TS 21*-TS 211*	TORX T06
WCGT 020102L DK 100	CARBIDE - METALLO DURO	WCGT020102LK100	3.97	1.59	0.2	TS 21*-TS 211*	TORX T06
WCGT 020102L DP 300	CARBIDE - METALLO DURO	WCGT020102LP300	3.97	1.59	0.2	TS 21*-TS 211*	TORX T06
WCGT 020104L DC 100	CERMET	WCGT020104LC100	3.97	1.59	0.4	TS 21*-TS 211*	TORX T06
WCGT 020104L DC 100T	COATED CERMET - CERMET RIVESTITO	WCGT020104LC10T	3.97	1.59	0.4	TS 21*-TS 211*	TORX T06
WCGT 020104L DK 100	CARBIDE - METALLO DURO	WCGT020104LK100	3.97	1.59	0.4	TS 21*-TS 211*	TORX T06
WCGT 020104L DP 300	CARBIDE - METALLO DURO	WCGT020104LP300	3.97	1.59	0.4	TS 21*-TS 211*	TORX T06

* TS21 : B...06 / * TS211 : B...08

CCGT ○○○○○○L

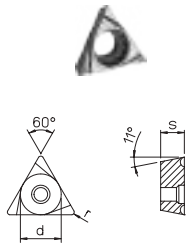
FINISHING
FINITURA



REF.		CODE	d	s	r		
CCGT 060200L DC 100	CERMET	CCGT060200LC100	6.35	2.38	0	TS 25	TORX T08
CCGT 060200L DC 100T	COATED CERMET - CERMET RIVESTITO	CCGT060200LC10T	6.35	2.38	0	TS 25	TORX T08
CCGT 060200L DK 100	CARBIDE - METALLO DURO	CCGT060200LK100	6.35	2.38	0	TS 25	TORX T08
CCGT 060200L DP 300	CARBIDE - METALLO DURO	CCGT060200LP300	6.35	2.38	0	TS 25	TORX T08
CCGT 060202L DC 100	CERMET	CCGT060202LC100	6.35	2.38	0.2	TS 25	TORX T08
CCGT 060202L DC 100T	COATED CERMET - CERMET RIVESTITO	CCGT060202LC10T	6.35	2.38	0.2	TS 25	TORX T08
CCGT 060202L DK 100	CARBIDE - METALLO DURO	CCGT060202LK100	6.35	2.38	0.2	TS 25	TORX T08
CCGT 060202L DP 300	CARBIDE - METALLO DURO	CCGT060202LP300	6.35	2.38	0.2	TS 25	TORX T08
CCGT 060204L DC 100	CERMET	CCGT060204LC100	6.35	2.38	0.4	TS 25	TORX T08
CCGT 060204L DC 100T	COATED CERMET - CERMET RIVESTITO	CCGT060204LC10T	6.35	2.38	0.4	TS 25	TORX T08
CCGT 060204L DK 100	CARBIDE - METALLO DURO	CCGT060204LK100	6.35	2.38	0.4	TS 25	TORX T08
CCGT 060204L DP 300	CARBIDE - METALLO DURO	CCGT060204LP300	6.35	2.38	0.4	TS 25	TORX T08
CCGT 09T302L DC 100	CERMET	CCGT09T302LC100	9.525	3.97	0.2	TS 4	TORX T15
CCGT 09T302L DC 100T	COATED CERMET - CERMET RIVESTITO	CCGT09T302LC10T	9.525	3.97	0.2	TS 4	TORX T15
CCGT 09T302L DK 100	CARBIDE - METALLO DURO	CCGT09T302LK100	9.525	3.97	0.2	TS 4	TORX T15
CCGT 09T302L DP 300	CARBIDE - METALLO DURO	CCGT09T302LP300	9.525	3.97	0.2	TS 4	TORX T15
CCGT 09T304L DC 100	CERMET	CCGT09T304LC100	9.525	3.97	0.4	TS 4	TORX T15
CCGT 09T304L DC 100T	COATED CERMET - CERMET RIVESTITO	CCGT09T304LC10T	9.525	3.97	0.4	TS 4	TORX T15
CCGT 09T304L DK 100	CARBIDE - METALLO DURO	CCGT09T304LK100	9.525	3.97	0.4	TS 4	TORX T15
CCGT 09T304L DP 300	CARBIDE - METALLO DURO	CCGT09T304LP300	9.525	3.97	0.4	TS 4	TORX T15

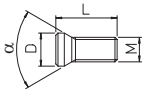
TPGX ○○○○○○L

FINISHING
FINITURA

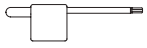


REF.		CODE	d	s	r		
TPGX 090200L DC 100	CERMET	TPGX090200LC100	5.56	2.38	0	CS250T	TORX T08
TPGX 090200L DC 100T	COATED CERMET - CERMET RIVESTITO	TPGX090200LC10T	5.56	2.38	0	CS250T	TORX T08
TPGX 090200L DK 100	CARBIDE - METALLO DURO	TPGX090200LK100	5.56	2.38	0	CS250T	TORX T08
TPGX 090200L DP 300	CARBIDE - METALLO DURO	TPGX090200LP300	5.56	2.38	0	CS250T	TORX T08
TPGX 090202L DC 100	CERMET	TPGX090202LC100	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090202L DC 100T	COATED CERMET - CERMET RIVESTITO	TPGX090202LC10T	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090202L DK 100	CARBIDE - METALLO DURO	TPGX090202LK100	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090202L DP 300	CARBIDE - METALLO DURO	TPGX090202LP300	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090204L DC 100	CERMET	TPGX090204LC100	5.56	2.38	0.4	CS250T	TORX T08
TPGX 090204L DC 100T	COATED CERMET - CERMET RIVESTITO	TPGX090204LC10T	5.56	2.38	0.4	CS250T	TORX T08
TPGX 090204L DK 100	CARBIDE - METALLO DURO	TPGX090204LK100	5.56	2.38	0.4	CS250T	TORX T08
TPGX 090204L DP 300	CARBIDE - METALLO DURO	TPGX090204LP300	5.56	2.38	0.4	CS250T	TORX T08
TPGX 110300L DC 100	CERMET	TPGX110300LC100	6.35	3.18	0	CS300890T	TORX T08
TPGX 110300L DC 100T	COATED CERMET - CERMET RIVESTITO	TPGX110300LC10T	6.35	3.18	0	CS300890T	TORX T08
TPGX 110300L DK 100	CARBIDE - METALLO DURO	TPGX110300LK100	6.35	3.18	0	CS300890T	TORX T08
TPGX 110300L DP 300	CARBIDE - METALLO DURO	TPGX110300LP300	6.35	3.18	0	CS300890T	TORX T08
TPGX 110302L DC 100	CERMET	TPGX110302LC100	6.35	3.18	0.2	CS300890T	TORX T08
TPGX 110302L DC 100T	COATED CERMET - CERMET RIVESTITO	TPGX110302LC10T	6.35	3.18	0.2	CS300890T	TORX T08
TPGX 110302L DK 100	CARBIDE - METALLO DURO	TPGX110302LK100	6.35	3.18	0.2	CS300890T	TORX T08
TPGX 110302L DP 300	CARBIDE - METALLO DURO	TPGX110302LP300	6.35	3.18	0.2	CS300890T	TORX T08
TPGX 110304L DC 100	CERMET	TPGX110304LC100	6.35	3.18	0.4	CS300890T	TORX T08
TPGX 110304L DC 100T	COATED CERMET - CERMET RIVESTITO	TPGX110304LC10T	6.35	3.18	0.4	CS300890T	TORX T08
TPGX 110304L DK 100	CARBIDE - METALLO DURO	TPGX110304LK100	6.35	3.18	0.4	CS300890T	TORX T08
TPGX 110304L DP 300	CARBIDE - METALLO DURO	TPGX110304LP300	6.35	3.18	0.4	CS300890T	TORX T08

INSERT CLAMPING SCREWS
VITE BLOCCAGGIO INSERTI

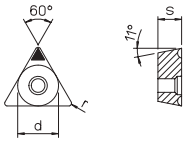


TORX WRENCH
CHIAVE TORX



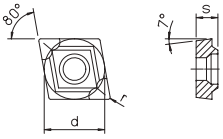
REF.	CODE		M	L	D	α	N·m	REF.	CODE
TS 21	494010002034		M 2x0.4	3.7	2.7	60°	0,5	**TORX T06**	101500900600
TS 211	494010002040		M 2x0.4	4	2.7	60°	0,5	**TORX T06**	101500900600
CS 250 T	494010002565		M 2.5x0.45	6	3.7	90°	1,0	**TORX T08**	101500900800
CS 300890 T	494010003008		M 3x0.5	8	4.1	90°	1,0	**TORX T08**	101500900800
TS 25	494010002555		M 2.5x0.45	5.7	3.45	60°	1,0	**TORX T08**	101500900800
TS 4	494010004008		M 4x0.7	10	5.5	60°	3,0	**TORX T15**	101500901500
TS 5	494010005009		M 5x0.8	11.5	7	60°	7,5	**TORX T25**	101500902500

TPGX ⬡⬡⬡⬡⬡⬡
FINISHING
FINITURA



REF.		CODE	d	s	r		
TPGX 090202 D20 MDC	SINTERED DIAMOND DIAMANTE POLICRISTALLINO	TPGX090202MDC20	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090204 D20 MDC		TPGX090204MDC20	5.56	2.38	0.4	CS250T	TORX T08
TPGX 110302 D20 MDC		TPGX110302MDC20	6.35	3.18	0.2	CS300890T	TORX T08
TPGX 110304 D20 MDC		TPGX110304MDC20	6.35	3.18	0.4	CS300890T	TORX T08
TPGX 090202 D20 CBN	CUBIC BORON NITRIDE NITRURO CUBICO DI BORO	TPGX090202CBN20	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090202 D25 CBN		TPGX090202CBN25	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090204 D20 CBN		TPGX090204CBN20	5.56	2.38	0.4	CS250T	TORX T08
TPGX 090204 D25 CBN		TPGX090204CBN25	5.56	2.38	0.4	CS250T	TORX T08
TPGX 110302 D25 CBN		TPGX110302CBN25	6.35	3.18	0.2	CS300890T	TORX T08
TPGX 110304 D20 CBN		TPGX110304CBN20	6.35	3.18	0.4	CS300890T	TORX T08
TPGX 110304 D25 CBN		TPGX110304CBN25	6.35	3.18	0.4	CS300890T	TORX T08

CCMT ⬡⬡⬡⬡⬡⬡
ROUGHING
SGROSSATURA



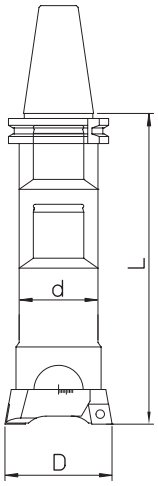
REF.		CODE	d	s	r		
CCMT 060202 DP 100R	CVD COATED CARBIDE - METALLO DURO RIVESTITO	CCMT060202P100R	6.35	2.38	0.2	TS 25	TORX T08
CCMT 060202 DP 300	CARBIDE - METALLO DURO	CCMT060202P300	6.35	2.38	0.2	TS 25	TORX T08
CCMT 060204 DP 100R	CVD COATED CARBIDE - METALLO DURO RIVESTITO	CCMT060204P100R	6.35	2.38	0.4	TS 25	TORX T08
CCMT 060204 DP 300	CARBIDE - METALLO DURO	CCMT060204P300	6.35	2.38	0.4	TS 25	TORX T08
CCMT 09T304 DP 100R	CVD COATED CARBIDE - METALLO DURO RIVESTITO	CCMT09T304P100R	9.525	3.97	0.4	TS 4	TORX T15
CCMT 09T304 DP 300	CARBIDE - METALLO DURO	CCMT09T304P300	9.525	3.97	0.4	TS 4	TORX T15
CCMT 09T308 DP 100R	CVD COATED CARBIDE - METALLO DURO RIVESTITO	CCMT09T308P100R	9.525	3.97	0.8	TS 4	TORX T15
CCMT 09T308 DP 300	CARBIDE - METALLO DURO	CCMT09T308P300	9.525	3.97	0.8	TS 4	TORX T15
CCMT 120404 DP 100R	CVD COATED CARBIDE - METALLO DURO RIVESTITO	CCMT120404P100R	12.7	4.76	0.4	TS 5	TORX T25
CCMT 120404 DP 300	CARBIDE - METALLO DURO	CCMT120404P300	12.7	4.76	0.4	TS 5	TORX T25
CCMT 120408 DP 100R	CVD COATED CARBIDE - METALLO DURO RIVESTITO	CCMT120408P100R	12.7	4.76	0.8	TS 5	TORX T25
CCMT 120408 DP 300	CARBIDE - METALLO DURO	CCMT120408P300	12.7	4.76	0.8	TS 5	TORX T25

BORING GRADE
QUALITÀ DI BARENATURA

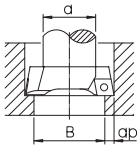
ISO	CARBIDE METALLO DURO	CERMET CERMET	COATED CERMET CERMET RIVESTITO	CVD COATED CARBIDE METALLO DURO RIVESTITO CVD
P01				
P10		DC100	DC100T	DP100R
P20				
P30	DP300			
P40				
K01				
K10	DK100	DC100	DC100T	DP100R
K20	DP300			
K30				

DP300	Roughing and finishing. Low carbon steel - stainless steels Sgrossatura e finitura. Acciai a basso tenore di carbonio - acciai inox
DK100	Roughing and finishing. Aluminium alloy cast iron Sgrossatura e finitura. Leghe di alluminio Ghise
DP100R	Roughing. Steels, alloy steels and cast iron Sgrossatura. Acciai, acciai legati e ghise
DC100	Finishing. Alloy steels and cast iron Finitura. Acciai legati in genere e ghise sferoidali
DC100T	Finishing. Alloy steels, stainless steels and cast iron Finitura. Acciai legati in genere, acciai inox e ghise sferoidali
D20MDC	Finishing. Aluminium alloys, non-ferrous materials and non-metals Finitura. Leghe di alluminio, materiali non-ferrosi e non-metalli
D20CBN	Finishing. High hardness steels (over 50 HRC) (it may replace the grinding) Finitura. Acciai con elevata durezza superiore 50 HRC (può sostituire la rettifica)
D25CBN	Finishing. High hardness steels (over 50 HRC) and interrupted cutting (it may replace the grinding) Finitura. Acciai con elevata durezza superiore 50 HRC e taglio interrotto (può sostituire la rettifica)

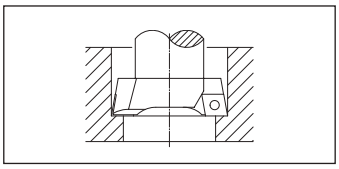
RECOMMENDED CUTTING CONDITIONS FOR ROUGHING OPERATIONS **WITH DOUBLE-BIT HEADS TS**
DATI DI TAGLIO CONSIGLIATI PER SGROSSATURA DI FORI CON **TESTINE BITAGLIENTI TS**



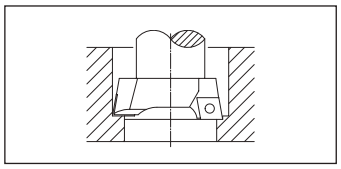
material materiale	boring bar dimensions dimensioni bareno	working conditions condizioni di lavoro	cutting speed Vc = m/min. velocità di taglio diameter - diametro			feed fn = mm/rev (twin cutters) avanzamento f=mm/giro (due taglienti) insert radius - raggio inserto		
			D < 38	D = 38~120	D > 120	R = 0.2	R = 0.4	R = 0.8
carbon steel acciaio al carbonio HB ≤ 200	L / d = 2.5	good - buona	120 - 180	140 - 200	160 - 250		0.2 - 0.4	0.3 - 0.5
	L / d = 4	normal - normale	100 - 160	120 - 180	140 - 200		0.2 - 0.4	0.3 - 0.5
	L / d = 6.3	difficult - difficile	70 - 100	70 - 100	70 - 100	0.15 - 0.3	0.2 - 0.4	
carbon steel acciaio al carbonio HB > 200	L / d = 2.5	good - buona	100 - 160	120 - 180	140 - 200		0.2 - 0.4	0.3 - 0.5
	L / d = 4	normal - normale	80 - 140	100 - 160	120 - 180		0.2 - 0.4	0.3 - 0.5
	L / d = 6.3	difficult - difficile	60 - 90	70 - 100	70 - 100	0.15 - 0.3	0.2 - 0.4	
stainless steel acciaio inox AISI 304 - 316	L / d = 2.5	good - buona	80 - 110	90 - 120	100 - 140		0.2 - 0.4	0.3 - 0.5
	L / d = 4	normal - normale	70 - 100	80 - 110	90 - 120		0.2 - 0.4	0.3 - 0.5
	L / d = 6.3	difficult - difficile	60 - 90	60 - 90	60 - 90	0.15 - 0.3	0.2 - 0.4	
cast iron ghisa	L / d = 2.5	good - buona	90 - 120	100 - 140	120 - 160		0.2 - 0.4	0.3 - 0.5
	L / d = 4	normal - normale	70 - 100	90 - 120	100 - 140		0.2 - 0.4	0.3 - 0.5
	L / d = 6.3	difficult - difficile	60 - 90	60 - 90	60 - 90	0.15 - 0.3	0.2 - 0.4	
aluminium alluminio	L / d = 2.5	good - buona	160 - 250	200 - 300	250 - 350		0.3 - 0.5	0.4 - 0.6
	L / d = 4	normal - normale	140 - 200	160 - 250	200 - 300		0.3 - 0.5	0.4 - 0.6
	L / d = 6.3	difficult - difficile	100 - 150	100 - 150	100 - 150	0.2 - 0.4	0.3 - 0.5	

cutting depth profondità di passata ap = mm	working range campo di lavoro Ø = mm	max. cutting depth max. profondità di passata steel acciaio	 cast iron, aluminium ghisa, alluminio
	18 - 28	1.5 - 2	2 - 2.5
	28 - 50	2 - 3	2.5 - 3.5
	50 - 68	3 - 4	3.5 - 5
	68 - 200	4 - 5	5 - 7
	200 - 500	5 - 6	6 - 8

It's advisable to start with B hole ≥ the boring bar diameter d.
È consigliabile che il preforo B sia ≥ al diametro del bareno d.



Twin cutters at the same cutting diameter
Due taglienti sullo stesso diametro

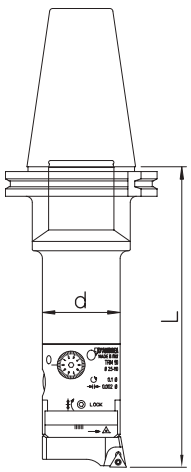


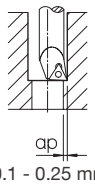
Twin cutters at different cutting diameters
Due taglienti su diametri diversi

ATTENTION: For boring operations at different diameters, reduce to a half the feed indicated on the above table.

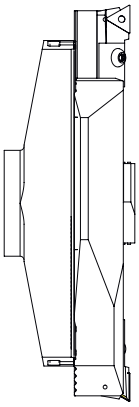
ATTENZIONE: Per lavorare con un solo tagliente o con differenti diametri di taglio, dimezzare l'avanzamento indicato in tabella.

RECOMMENDED CUTTING CONDITIONS FOR BORING OPERATIONS **WITH TESTAROSSA TRM / TRC / TR-E**
DATI DI TAGLIO CONSIGLIATI PER L'ALESATURA CON **TESTAROSSA TRM / TRC / TR-E**

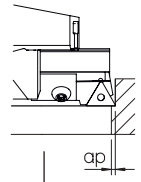


material materiale	boring bar dimensions dimensioni bareno	working conditions condizioni di lavoro	cutting speed velocità di taglio Vc= m/min.	feed fn = mm/rev avanzamento fn= mm/giro insert radius - raggio inserto R = 0.0	 R = 0.2	 R = 0.4	quality insert qualità inserto	cutting depth profondità di passata
carbon steel acciaio al carbonio HB ≤ 200	L / d = 2.5	good - buona	200 - 300		0.05 - 0.08	0.07 - 0.1	DC100 DP300	 ap 0.1 - 0.25 mm
	L / d = 4	normal - normale	160 - 250		0.05 - 0.08	0.07 - 0.1		
	L / d = 6.3	difficult - difficile	70 - 100	0.05 - 0.08	0.05 - 0.08			
carbon steel acciaio al carbonio HB > 200	L / d = 2.5	good - buona	160 - 250		0.05 - 0.08	0.07 - 0.1	DC100	
	L / d = 4	normal - normale	150 - 200		0.05 - 0.08	0.07 - 0.1		
	L / d = 6.3	difficult - difficile	70 - 100	0.05 - 0.08	0.05 - 0.08			
stainless steel AISI 304 - 316	L / d = 2.5	good - buona	120 - 160		0.05 - 0.08	0.07 - 0.1	DP300	
	L / d = 4	normal - normale	100 - 140		0.05 - 0.08	0.07 - 0.1		
	L / d = 6.3	difficult - difficile	70 - 100	0.05 - 0.08	0.05 - 0.08			
cast iron ghisa	L / d = 2.5	good - buona	120 - 160		0.05 - 0.08	0.07 - 0.1	DK100 DP100	
	L / d = 4	normal - normale	100 - 140		0.05 - 0.08	0.07 - 0.1		
	L / d = 6.3	difficult - difficile	70 - 100	0.05 - 0.08	0.05 - 0.08			
aluminium alluminio	L / d = 2.5	good - buona	300 - 400		0.05 - 0.08	0.07 - 0.1	DK100	
	L / d = 4	normal - normale	250 - 350		0.05 - 0.08	0.07 - 0.1		
	L / d = 6.3	difficult - difficile	100 - 150	0.05 - 0.08	0.05 - 0.08			
steel - acciaio HB > 200	L / d = 2.5	good - buona	80 - 100		0.04 - 0.06	0.05 - 0.07	D20CBN	
	L / d = 4	normal - normale	80 - 100		0.04 - 0.06	0.05 - 0.07		

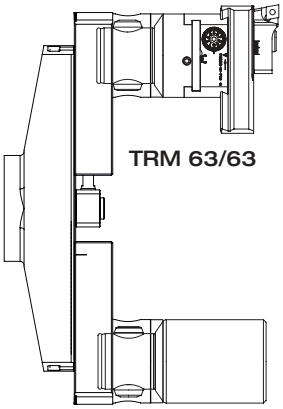
RECOMMENDED CUTTING CONDITIONS FOR ROUGHING OPERATIONS **BHT 250-500-750**
DATI DI TAGLIO CONSIGLIATI PER SGROSSATURA DI FORI CON BHT 250-500-750

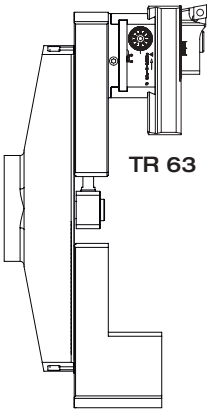


material materiale	boring bar dimensions dimensioni bareno	working conditions condizioni di lavoro	cutting speed velocità di taglio Vc= m/min.	feed fn = mm/rev (twin cutters) avanzamento f=mm/giro (due taglienti) insert radius raggio inserto R = 0.4	R = 0.8	cutting depth profondità di passata steel acciaio	cast iron aluminium ghisa alluminio
carbon steel acciaio al carbonio HB ≤ 200	L / d = 2.5	good - buona	160 - 250	0.2 - 0.4	0.3 - 0.5	1.5 - 8 mm	1.5 - 10 mm
	L / d = 4	normal - normale	140 - 200	0.2 - 0.4	0.3 - 0.5		
carbon steel HB > 200	L / d = 2.5	good - buona	140 - 200	0.2 - 0.4	0.3 - 0.5		
	L / d = 4	normal - normale	120 - 180	0.2 - 0.4	0.3 - 0.5		
stainless steel acciaio inox AISI 304 - 316	L / d = 2.5	good - buona	100 - 140	0.2 - 0.4	0.3 - 0.5		
	L / d = 4	normal - normale	80 - 120	0.2 - 0.4	0.3 - 0.5		
cast iron ghisa	L / d = 2.5	good - buona	120 - 160	0.2 - 0.4	0.3 - 0.5		
	L / d = 4	normal - normale	100 - 140	0.2 - 0.4	0.3 - 0.5		
aluminium alluminio	L / d = 2.5	good - buona	250 - 350	0.3 - 0.5	0.4 - 0.6		
	L / d = 4	normal - normale	200 - 300	0.3 - 0.5	0.4 - 0.6		

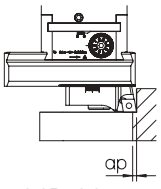


RECOMMENDED CUTTING CONDITIONS FOR FINISHING OPERATIONS CON **BHT 250-500-750**
DATI DI TAGLIO CONSIGLIATI PER FINITURA DI FORI CON **BHT 250-500-750**





material materiale	boring bar dimensions dimensioni bareno	working conditions condizioni di lavoro	cutting speed velocità di taglio Vc= m/min.	feed fn = mm/rev avanzamento fn= mm/giro insert radius raggio inserto R = 0.2	R = 0.4	cutting depth profondità di passata	quality insert qualità inserto
carbon steel acciaio al carbonio HB ≤ 200	L / d = 2.5	good - buona	200 - 300	0.05 - 0.08	0.07 - 0.1	0.15 - 0.3 mm	DC100 DP300
	L / d = 4	normal - normale	150 - 250	0.05 - 0.08	0.07 - 0.1		
carbon steel HB > 200	L / d = 2.5	good - buona	160 - 250	0.05 - 0.08	0.07 - 0.1		DC100 DC100T
	L / d = 4	normal - normale	140 - 200	0.05 - 0.08	0.07 - 0.1		
stainless steel acciaio inox AISI 304 - 316	L / d = 2.5	good - buona	90 - 140	0.05 - 0.08	0.07 - 0.1		DP300
	L / d = 4	normal - normale	80 - 120	0.05 - 0.08	0.07 - 0.1		
cast iron ghisa	L / d = 2.5	good - buona	120 - 180	0.05 - 0.08	0.07 - 0.1		DK100 DC100
	L / d = 4	normal - normale	100 - 140	0.05 - 0.08	0.07 - 0.1		
aluminium alluminio	L / d = 2.5	good - buona	250 - 400	0.05 - 0.08	0.07 - 0.1		DK100
	L / d = 4	normal - normale	200 - 350	0.05 - 0.08	0.07 - 0.1		
Hardened steel acciaio legato	L / d = 2.5	good	60 - 100	0.05 - 0.08	0.07 - 0.1		D20CBN
	L / d = 4	normal	60 - 100	0.05 - 0.08	0.07 - 0.1		



CALCULATION FORMULAS FOR BORING
FORMULA DI CALCOLO PER ALESATURA

Vc cutting speed (m/min.) - velocità di taglio (m/min.)
D diameter of workpiece (mm) - diametro del pezzo da lavorare (mm)
n number of revolutions / min' (rev./min) - numero di giri al minuto (giri/min.)
Vf feed rate (mm/min.) - velocità avanzamento (mm/min.)
fn feed / rev. (mm/rev) - avanzamento al giro (mm/giro)
π 3.14

$$Vc = \frac{\pi \cdot D \cdot n}{1000}$$

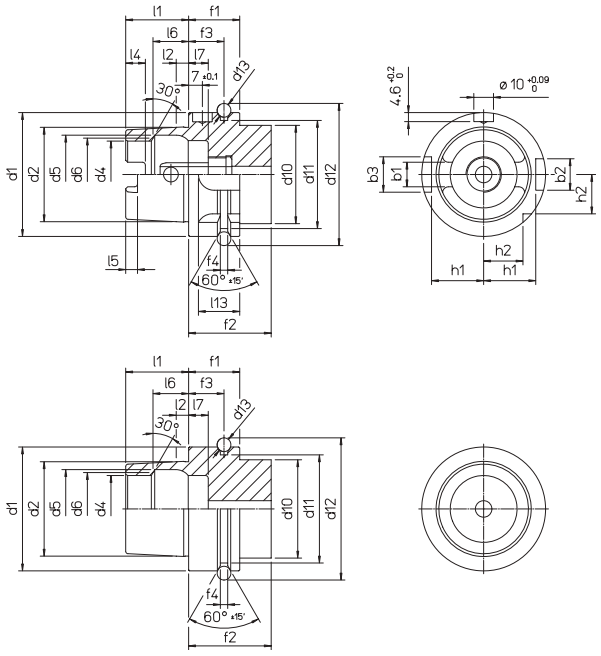
$$n = \frac{Vc \cdot 1000}{\pi \cdot D}$$

$$Vf = n \cdot fn$$

TECHNICAL DATA ARBORS STANDARDS

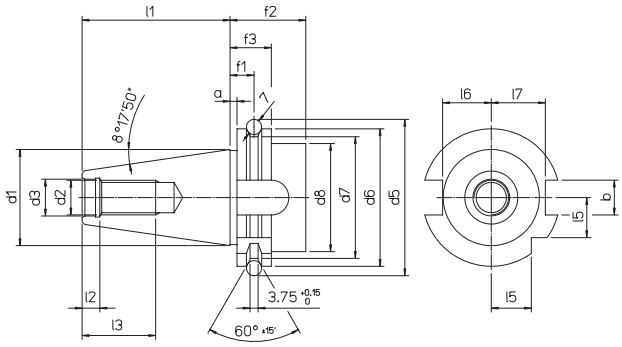
DATI TECNICI NORME ATTACCHI BASE

HSK-A



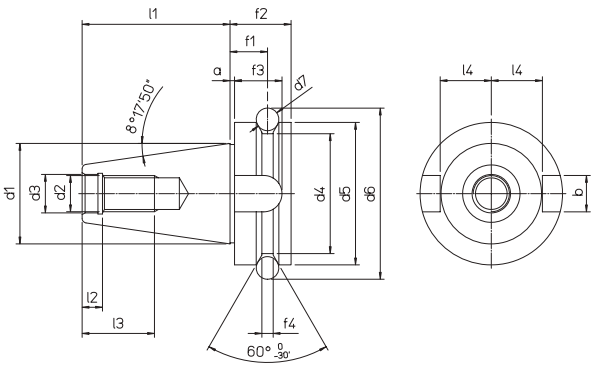
HSK	32	40	50	63	80	100
b1 + 0.04 - 0.04	7.05	8.05	10.54	12.54	16.04	20.02
b2 H10	7	9	12	16	18	20
b3 H10	9	11	14	18	20	22
d1 h10	32	40	50	63	80	100
d2	24.007	30.007	38.009	48.010	60.012	75.013
d4 H10	17	21	26	34	42	53
d5 H11	20.5	25.5	32	40	50	63
d6	19	23	29	37	46	58
d10 max.	26	34	42	53	68	88
d11 0 -0.1	26.5	34.8	43	55	70	92
d12 0 -0.1	37	45	59.3	72.3	88.8	109.75
d13	4		7			
f1 0 -0.1	20		26			29
f2 min.	35		42			45
f3 ± 0.1	16		18			20
f4 + 0.15 0	2		3.75			
h1 0 -0.2	13	17	21	26.5	34	44
h2 0 -0.3	9.5	12	15.5	20	25	31.5
l1 0 -0.2	16	20	25	32	40	50
l2	3.2	4	5	6.3	8	10
l4 + 0.2 0	5	6	7.5	10	12	15
l5 + 0.2 0	3	3.5	4.5	6	8	10
l6 JS10	8.92	11.42	14.13	18.13	22.85	28.56
l7 0 -0.1	8		10	10	12.5	12.5
l13	12		19	21	22	24

DIN 69871 A (ISO 7388-1)



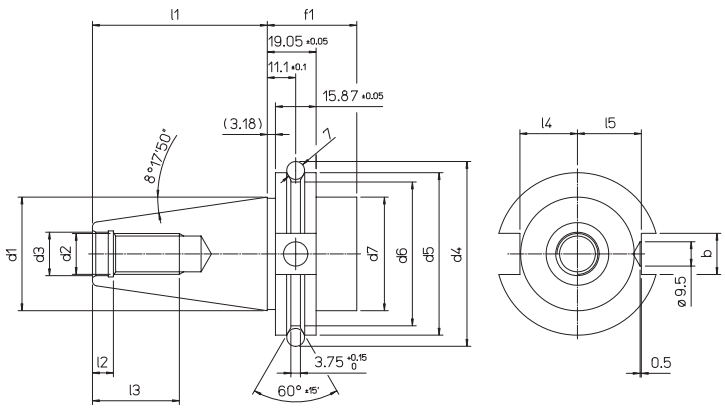
ISO	30	40	45	50	60
a ± 0.1	3.2				
b +0.5 / 0	16.1		19.3	25.7	
d1	31.75	44.45	57.15	69.85	107,95
d2 6H	M12	M16	M20	M24	M30
d3 H7	13	17	21	25	32
d5 ± 0.05	59.3	72.3	91.35	107.25	164,75
d6 0 / -0.1	50	63.55	82.55	97.50	155
d7 0 / -0.5	44.3	56.25	75.25	91.25	147,70
d8 max.	45	50	63	80	130
f1 ± 0.1	11.1				
f2 min.	35				38
f3 0 / -0.1	19.1				
l1 0 / -0.3	47.8	68.4	82.7	101.75	161,90
l2 +0.5 / 0	5.5	8.2	10	11.5	14
l3 min.	24	32	40	47	59
l5 0 / -0.3	15	18.5	24	30	49
l6 0 / -0.3	16.4	22.8	29.1	35.5	54,5
l7 0 / -0.3	19	25	31.3	37.7	59,3

MAS 403 BT A



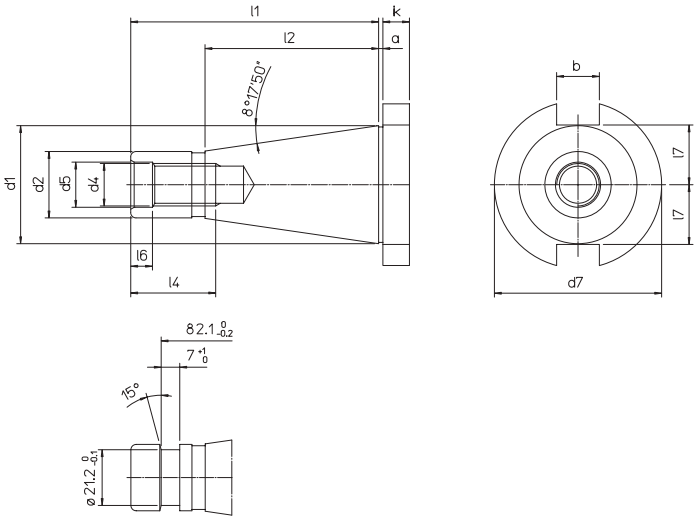
ISO	30	35	40	45	50	60
a ± 0.4	2			3		
b +0.2 / 0	16.1			19.3	25.7	25,7
d1	31.75	38.10	44.45	57.15	69.85	107,95
d2 6H	M 12		M 16	M 20	M 24	M30
d3 H8	12.5		17	21	25	31
d4 0 / -0.5	38	43	53	73	85	135
d5 h8	46	53	63	85	100	155
d6 ± 0.05	56.03	65.68	75.56	100.09	118.89	180.22
d7	8	10		12	15	20
f1 ± 0.1	13.6	14.6	16.6	21.2	23.2	28,2
f2	22	24	27	33	38	48
f3 min.	17	20	21	26	31	34
f4	4	5		6	7	11
l1 ± 0.2	48.4	56.4	65.4	82.8	101.8	161,8
l2 +0.5 / 0	7		9	11	13	16
l3 min.	24		30	36	45	56
l4 0 / -0.3	16.3	19.6	22.6	29.1	35.4	60,1

ANSI/CAT



ISO	40	45	50
b +0.2 / 0	16.1	19.3	25.7
d1 6H	44.45	57.15	69.85
d2	M 16	M 20	M 24
d3 H7	17	21	25
d4 ±0.05	72.3	91.35	108.25
d5 0 / -0.1	63.55	82.55	98.5
d6 0 / -0.5	56.25	75.25	91.25
d7 ±0.15	44.45	57.15	69.95
f1 min	35		38
l1 0 / -0.3	68.4	82.7	101.75
l2 +0.5 / 0	8.2	10	11.5
l3 min.	32	40	47
l4 0 / -0.3	22.8	29.10	35.50
l5 0 / -0.3	25	31.3	37.7

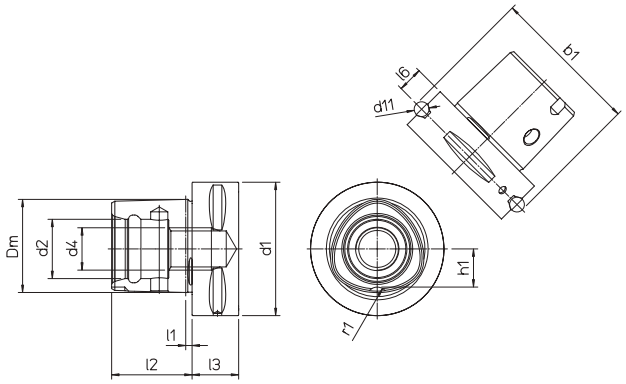
DIN 2080



ISO 40 OTT

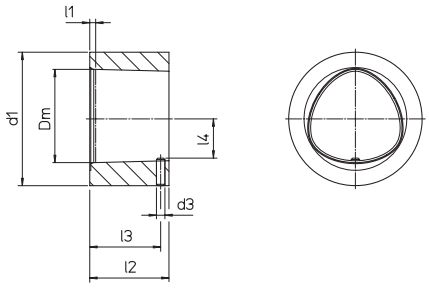
ISO	30	40	45	50
a ±0.2	1.6		3.2	
b H12	16.1		19.3	25.7
d1	31.75	44.45	57.15	69.85
d2 a10	17.4	25.3	32.4	39.6
d4 ±0.05	M 12	M 16	M 20	M 24
d5	13	17	21	26
d7 0 / -0.4	50	63	80	97.5
k ±0.15	8	10	12	12
l1	68.4	93.4	106.8	126.8
l2	48.4	65.4	82.8	101.8
l4	24	32	40	47
l6 +0.5/ 0	5.5	8.2	10	11.5
l7 max.	16.2	22.5	29	35.3

ISO 26623-1



PSC	40	50	63	80
b1 ±0.1	46	59.3	70.7	86
Dm	28	35	44	55
d1 ±0.1	40	50	63	80
d2 +0.1 -0.05	18	21	28	32
d4	M14x1.5	M16x1.5	M20x2	
d11	5	7		
l1	2.5	3		
l2 ±0.1	24	30	38	48
l3 min	20		22	30
l6 ±0.15	8	10	12	
h1 ±0.1	11	14	18	22.2
r1 ±0.3	4	5	6	7

ISO 26623-2



PSC	40	50	63	80
Dm	28	35	44	55
d1 min	40	50	63	80
d3	2.5	3	4	5
l1	2.3	2.8	2.8	2.8
l2 ±0.1	23.4	29.4	37.4	47.4
l3 ±0.2	21	26	33.5	43
l4	11.5±0.2	14.5±0.2	18.5±0.2	22.8±0.2

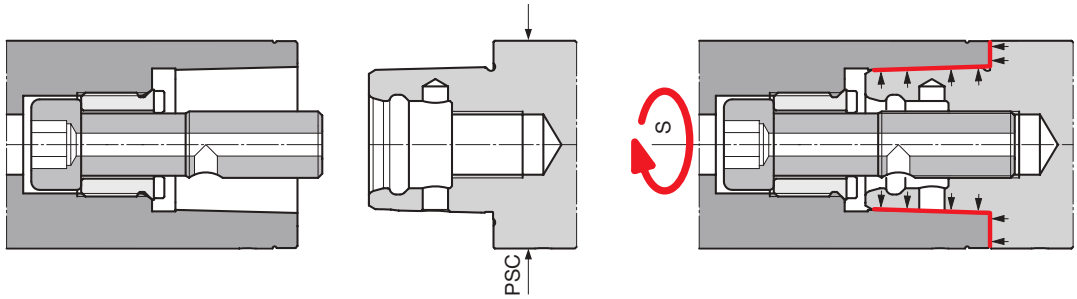
MODULAR AND MONOLITHIC TOOLHOLDERS

PORTAUTENSILI MONOLITICI E MODULARI

Offering of high-precision monolithic and modular tool holders to perform various different operations on machine-tools.The strong point of the **PSC** system is the ISO 26623 polygonal-conical connection which guarantees extreme rigidity even in the most demanding process.
The system allows the use of the entire **MHD'** line.

Linea di portautensili monolitici e modulari di alta precisione che consente di eseguire differenti operazioni di asportazione di truciolo sulle più moderne macchine utensili. Il punto di forza del sistema **PSC** è l'attacco poligonale-conico ISO 26623 che garantisce estrema rigidità anche nelle operazioni più gravose.
Il sistema permette l'impiego di tutta la linea **MHD'.**

PSC COUPLING - ATTACCO PSC ISO 26623-1/2



PSC	S ⬡	N·m
40	8	55
50	10	95
63-80	14	170

The **PSC coupling**, compliant with the ISO 26623 standard, is available in four sizes. The system is complete with arbors, extensions, reductions, adapters, roughing and finishing heads. The range includes ER collet chucks and MONOFORCE power chucks.

L'**attacco PSC,** conforme alla normativa ISO 26623, è disponibile in quattro grandezze. Il sistema è completo di attacchi base, prolunghe, riduzioni, adattatori, testine di sgrossatura e di finitura. La gamma, prevede anche portapinze ER e mandrini a forte serraggio MONOFORCE.

ARBORS, manufactured in 4 different sizes **PSC 40-50-63 and 80**, are made of case-hardened, tempered and subsequently ground steel.

ATTACCHI BASE realizzati in 4 differenti grandezze **PSC 40-50-63 e 80**, sono prodotti In acciaio cementato, temprato e successivamente rettificato.

PSC - PR e RD for each size of PSC, extensions and reductions are available in different lengths which allow to achieve the required working depths.

PSC - PR e RD per ogni grandezza di PSC sono disponibili prolunghe e riduzioni in differenti lunghezze che consentono di raggiungere le profondità di lavoro richieste.

MONOforce line of high precision power milling chucks ideal for machining where precision and high clamping forces for the cutting tool are required.

MONOforce linea di portautensili a forte serraggio ideale per lavorazioni ove sussistano esigenze di precisione e necessità di serraggio utensili sollecitati ad elevati carichi torsionali.

PSC - ER collet holders made for the use of ER standard collets.

PSC - ER portapinze ER realizzati per l'impiego di pinze standard ER.

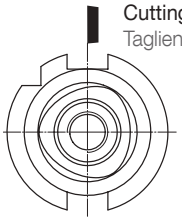
PF adapters for side and face milling cutters.

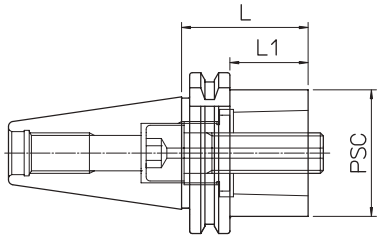
PF adattatori per frese a disco e a spianare.

PSC - MHD' adapters to integrate the entire MHD' system boring line into the PSC program.

PSC - ER portapinze ER realizzati per l'impiego di pinze standard ER.

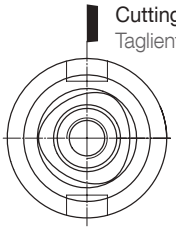
DIN-AD - PSC DIN 69871 / ISO 26623-2

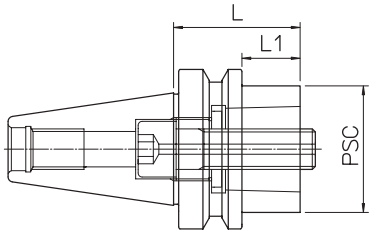




DIN	REF.	CODE	PSC	L	L1	kg
40	**DIN69871-AD40 PSC 50.40**	41PS05014028	50	40	21	0.9
50	**DIN69871-AD50 PSC 50.30**	41PS05015020	50	30	11	2.7
50	**DIN69871-AD50 PSC 63.30**	41PS06315028	63	30	11	2.8
50	**DIN69871-AD50 PSC 80.70**	41PS08015020	80	70	51	3.7

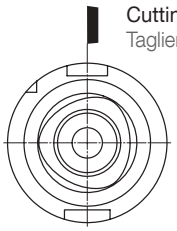
MAS BT-AD - PSC MAS 403 BT / ISO 26623-2

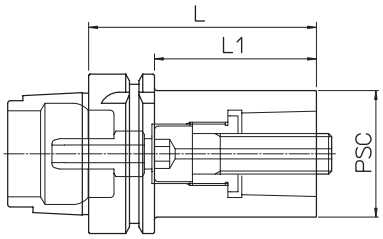




BT	REF.	CODE	PSC	L	L1	kg
40	**MAS403 BT40-AD PSC 50.50**	41PS05014032	50	50	23	1.2
50	**MAS403 BT50-AD PSC 50.40**	41PS05015030	50	40	2	3.4
50	**MAS403 BT50-AD PSC 63.50**	41PS06315032	63	50	12	3.5
50	**MAS403 BT50-AD PSC 80.70**	41PS08015030	80	70	32	4

HSK-T - PSC DIN 69893 / ISO 26623-2

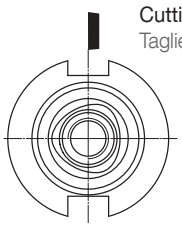


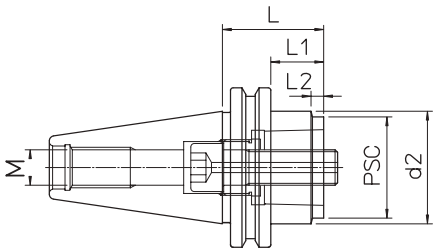


Supplied with coolant tube - Completo di raccordo per il refrigerante

HSK-T	REF.	CODE	PSC	L	L1	kg
63	**HSK-T63 PSC 40.80**	41PS0405632T	40	80	54	1.1
63	**HSK-T63 PSC 50.90**	41PS0505632T	50	90	64	1.5
100	**HSK-T100 PSC 50.100**	41PS0505992T	50	100	71	3
100	**HSK-T100 PSC 63.110**	41PS0635992T	63	110	81	3.6
100	**HSK-T100 PSC 80.120**	41PS0805992T	80	120	91	4.7

CAT-AD - PSC ANSI B5.50 / ISO 26623-2

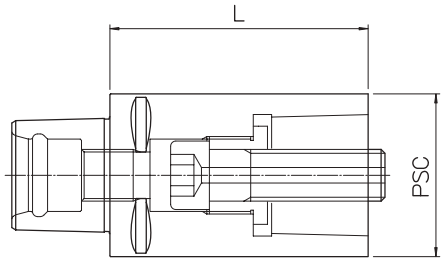




CAT	REF.	CODE	PSC	d2	L	L1	L2	M	kg
40	**CAT40 AD PSC 50.50**	41PS05014045	50		50	31		UNC 5/8-11	1
50	**CAT50 AD PSC 50.40**	41PS05015045	50	69.9	40	21	5	UNC 1-8	2.5
50	**CAT50 AD PSC 63.50**	41PS06315045	63	70	50	31	12.5	UNC 1-8	3
50	**CAT50 AD PSC 80.100**	41PS08015045	80		100	81		UNC 1-8	4.6

PSC - PR ISO 26623-1 / 2

EXTENSIONS
PROLUNGHE

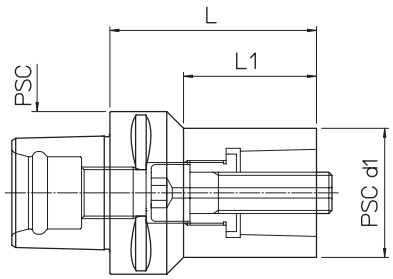


Supplied with coolant tube
Completo di raccordo per il refrigerante

PSC	REF.	CODE	L	kg	
40	**PR PSC 40.60**	656PS04006000	60	0.55	
50	**PR PSC 50.80**	656PS05008000	80	1.1	
63	**PR PSC 63.100**	656PS06310000	100	2.2	
80	**PR PSC 80.100**	656PS08010000	100	3.6	

PSC - RD ISO 26623-1 / 2

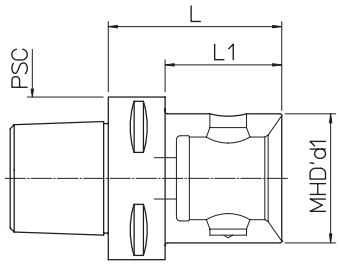
REDUCTIONS
RIDUZIONI



PSC	REF.	CODE	PSC d1	L	L1	kg	
50	**RD PSC 50/40.65**	657PS05004000	40	65	45	0.7	
63	**RD PSC 63/40.80**	657PS06304000	40	80	51.4	1.3	
63	**RD PSC 63/50.80**	657PS06305000	50	80	51.5	1.5	
80	**RD PSC 80/50.80**	657PS08005000	50	80	49.3	2.2	
80	**RD PSC 80/63.80**	657PS08006300	63	80	53.1	2.5	

PSC - MHD' ISO 26623-1

REDUCTIONS MHD'
RIDUZIONI MHD'

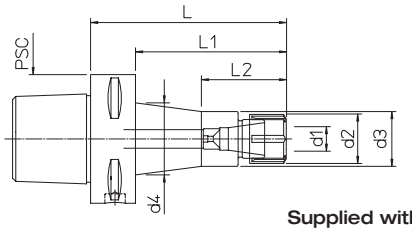


On request supplied with coolant tube PSC. See p.57
A richiesta Raccordo Refrigerante PSC vedere pag.57

PSC	REF.	CODE	MHD' d1	L	L1	kg	
50	**PSC 50 - MHD' 50.55**	416502605005	50	55		0.8	
63	**PSC 63 - MHD' 40.50**	416402606305	40	50	28	0.9	
63	**PSC 63 - MHD' 50.55**	416502606305	50	55	33	0.8	
63	**PSC 63 - MHD' 63.77**	416632606307	63	77		1.8	
80	**PSC 80 - MHD' 50.60**	416502608006	50	60	30	2	
80	**PSC 80 - MHD' 63.70**	416632608007	63	70	40	2.3	
80	**PSC 80 - MHD' 80.75**	416802608007	80	75		2.6	

PSC - ER

COLLETS CHUCKING TOOLS
ADATTATORI PER PINZE ELASTICHE

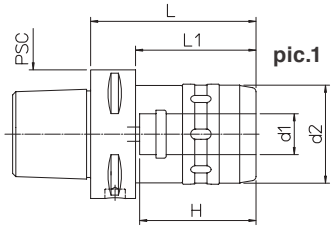


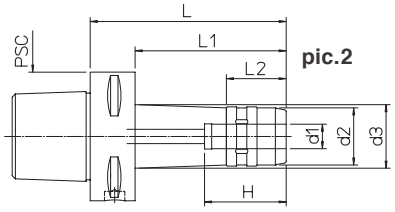
Supplied without collets and clamping wrenches - Chip prearrangement
Pinze elastiche e chiavi di serraggio escluse -Predisposizione Chip

PSC	REF.	CODE	ER	d1	d2	d3	d4	L	L1	L2	kg
50	**PSC50 - ER16.55**	71PSC-050ER1605	16M	0.5-10	22	24		55	35	26	0.5
50	**PSC50 - ER25.65**	71PSC-050ER2506	25	1-16	42			65	45		0.8
63	**PSC63 - ER16.60**	71PSC-063ER1606	16M	0.5-10	22	24		60	38		0.85
63	**PSC63 - ER16.120**	71PSC-063ER1612	16M	0.5-10	22	24	31	120	98	33	1.1
63	**PSC63 - ER25.65**	71PSC-063ER2506	25	1-16	42			65	43	37	1.1
63	**PSC63 - ER25.140**	71PSC-063ER2514	25	1-16	42		47.5	140	118	43.5	1.9
63	**PSC63 - ER32.75**	71PSC-063ER3207	32	2-20	50			75	53		1.5
63	**PSC63 - ER32.160**	71PSC-063ER3216	32	2-20	50			160	138		2.5
80	**PSC80 - ER25.70**	71PSC-080ER2507	25	1-16	42			70	40		2.1
80	**PSC80 - ER32.75**	71PSC-080ER3207	32	2-20	50			72	45		2..5

PSC - FORCE

MILLING POWER CHUCKS
FORTE SERRAGGIO





Without clamping wrench - Chip prearrangement
Chiave di serraggio esclusa - Predisposizione Chip

PSC	REF.	CODE	d1	d2	d3	H	L	L1	L2	kg	pic.
63	**PSC 63 - MF 12.100**	71PSC-063MF1210	12	28	31.5	46	100	78	29.5	1.4	**2**
63	**PSC 63 - MF 20.80**	71PSC-063MF2008	20	48		60	80	58		1.3	**1**
63	**PSC 63 - MF 32.100**	71PSC-063MF3210	32	66		80	100			2.1	**1**
80	**PSC 80 - MF 20.80**	71PSC-080MF2008	20	48		60	80	50		3.7	**1**
80	**PSC 80 - MF 32.100**	71PSC-080MF3210	32	66		80	100	70		4.4	**1**

PSC - KIT K01

MONOforce 20-32

MF 20

1 RC 20.06 1 RC 20.12
1 RC 20.08 1 RC 20.16
1 RC 20.10 1 CHV 50

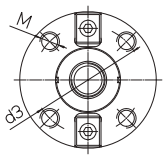
MF 32

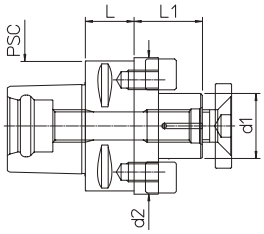
1 RC 32.06 1 RC 32.16
1 RC 32.08 1 RC 32.20
1 RC 32.10 1 RC 32.25
1 RC 32.12 1 CHV 75

PSC	REF.	CODE	kg
63	**KIT K01 MONOFORCE 20.80 PSC63**	7KPSC-063MF2008	2.3
63	**KIT K01 MONOFORCE 32.100 PSC63**	7KPSC-063MF3210	4.6
80	**KIT K01 MONOFORCE 20.80 PSC80**	7KPSC-080MF2008	5.4
80	**KIT K01 MONOFORCE 32.100 PSC80**	7KPSC-080MF3210	7.5

PSC - PF

SHELL MILL HOLDERS
PORTAFRESE





PSC	REF.	CODE	d1	d2	d3	M	L	L1	kg
50	**PSC 50 - PF22.25**	71PSC-050PF2202	22				25	19	0.5
50	**PSC 50 - PF27.25**	71PSC-050PF2702	27				25	21	0.6
63	**PSC 63 - PF27.25**	71PSC-063PF2702	27				25	21	0.8
63	**PSC 63 - PF32.25**	71PSC-063PF3202	32				25	24	0.9
80	**PSC 80 - PF32.30**	71PSC-080PF3203	32				30	24	1.8
80	**PSC 80 - PF40.45**	71PSC-080PF4004	40	84	66.7	M12	45	27	2.4

POWER MILLING CHUCKS

PORTAUTENSILI FORTE SERRAGGIO

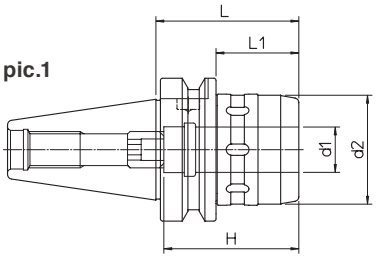
MONOforce high precision ultra-tight toolholders are suitable for rough milling and precision finishing operations. Produced in accordance with the most widespread standards of machine spindles, by using RC reduction collets, it allows a range of use from Ø 3mm to Ø 25mm.
All MONOforce tool holders are balanced to class G 6.3 at 15,000 rpm.

MONOforce portautensile a forte serraggio, adatto per lavorazioni di fresatura di sgrossatura e finiture di precisione.Prodotto in accordo agli standard più diffusi dei mandrini macchina, con l'impiego delle bussole di riduzione RC, permette un range d'impiego da Ø 3mm a Ø 25mm, disponibili anche le pinze RC a tenuta. Tutti i portautensili MONOforce sono equilibrati in classe G 6,3 a 15.000 giri/min.

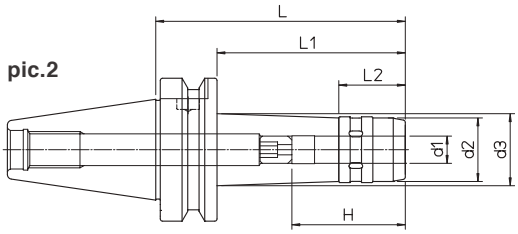
MAX.	RPM 15.000	MAX.	40 BAR

MAS 403 BT AD

pic.1



pic.2

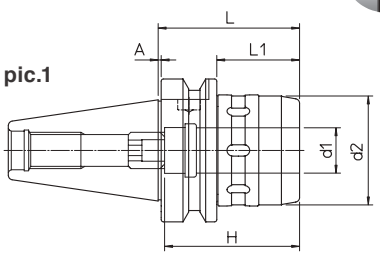


Without clamping wrench - Chip prearrangement
Chiave di serraggio esclusa - Predisposizione Chip

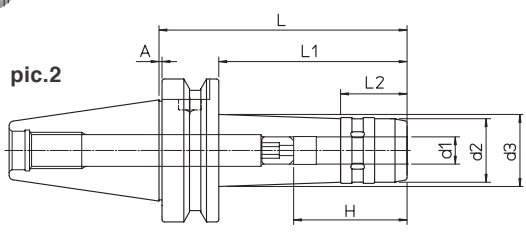
BT	REF.	CODE	d1	d2	d3	H	L	L1	L2	kg	pic.
40	**MAS403 BT40-AD MF12.100**	71MBT-A40MF1210	12	28	32	46	100	73	29.5	1.4	**2**
40	**MAS403 BT40-AD MF20.65**	71MBT-A40MF2007	20	48		63	65	38		1.3	**1**
40	**MAS403 BT40-AD MF32.90**	71MBT-A40MF3209	32	66		80	90			2.1	**1**
50	**MAS403 BT50-AD MF20.85**	71MBT-A50MF2008	20	48		63	85	47		3.7	**1**
50	**MAS403 BT50-AD MF32.95**	71MBT-A50MF3209	32	66		90	95	57		4.4	**1**

MAS 403 BT AD FACE CONTACT

pic.1



pic.2

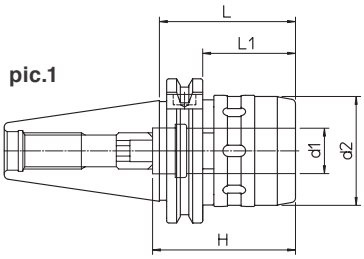


Without clamping wrench - Chip prearrangement
Chiave di serraggio esclusa - Predisposizione Chip

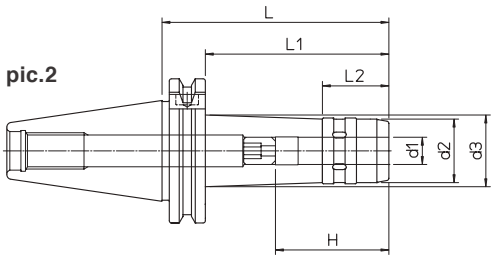
BT	REF.	CODE	d1	d2	d3	H	A	L	L1	L2	kg	pic.
40	**MAS403 BT40-AD FC MF12.100**	71MBF-A40MF1210	12	28	32	46	1	100	73	29.5	1.4	**2**
40	**MAS403 BT40-AD FC MF20.65**	71MBF-A40MF2007	20	48		63	1	65	38		1.3	**1**
40	**MAS403 BT40-AD FC MF32.90**	71MBF-A40MF3209	32	66		80	1	90			2.1	**1**
50	**MAS403 BT50-AD FC MF20.85**	71MBF-A50MF2008	20	48		63	1.5	85	47		3.7	**1**
50	**MAS403 BT50-AD FC MF32.95**	71MBF-A50MF3209	32	66		90	1.5	95	57		4.4	**1**

DIN 69871 AD

pic.1



pic.2

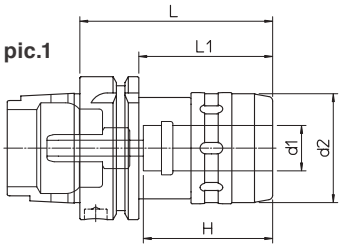


Without clamping wrench - Chip prearrangement
Chiave di serraggio esclusa - Predisposizione Chip

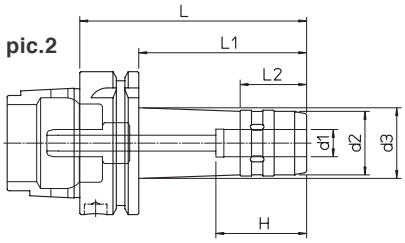
DIN	REF.	CODE	d1	d2	d3	H	L	L1	L2	kg	pic.
40	**DIN69871-AD40 MF12.100**	71DIN-A40MF1210	12	28	32	46	100	81	29.5	1.2	**2**
40	**DIN69871-AD40 MF20.60**	71DIN-A40MF2006	20	48		63	60	41		1.1	**1**
40	**DIN69871-AD40 MF32.95**	71DIN-A40MF3209	32	66		80	95			1.6	**1**
50	**DIN69871-AD50 MF20.80**	71DIN-A50MF2008	20	48		63	80	61		2.3	**1**
50	**DIN69871-AD50 MF32.75**	71DIN-A50MF3207	32	66		90	75	56		2.8	**1**

DIN 69893 HSK-A

pic.1



pic.2



Supplied with coolant tube - Without clamping wrench - Chip prearrangement
Completo di raccordo per il refrigerante - Chiave di serraggio esclusa - Predisposizione Chip

HSK-A	REF.	CODE	d1	d2	d3	H	L	L1	L2	kg	pic.
63	**HSK-A63 MF12.100**	71HSK-A63MF1210	12	28	32	46	100	74	29.5	1.1	**2**
63	**HSK-A63 MF20.85**	71HSK-A63MF2008	20	48		60	85	59		1.2	**1**
63	**HSK-A63 MF32.105**	71HSK-A63MF3210	32	66		80	105			2	**1**
100	**HSK-A100 MF20.95**	71HSKA100MF2009	20	48		60	95	66		2.8	**1**
100	**HSK-A100 MF32.110**	71HSKA100MF3211	32	66		80	110	81		3.1	**1**

PSC - FORCE
see / vedere p.49

KIT K01
MONOforce 20

1 RC 20.06
1 RC 20.08
1 RC 20.10
1 RC 20.12
1 RC 20.16
1 CHV 50

KIT K01
MONOforce 32

1 RC 32.06
1 RC 32.08
1 RC 32.10
1 RC 32.12
1 RC 32.16
1 RC 32.20
1 RC 32.25
1 CHV 75

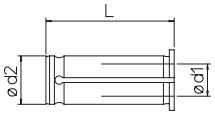
ON REQUEST / A RICHIESTA
KIT K01 FACE CONTACT

DIN	REF.	CODE	kg
40	**KIT K01 MONOFORCE 20.60 DIN40AD**	7KDIN-A40MF2006	2
40	**KIT K01 MONOFORCE 32.95 DIN40AD**	7KDIN-A40MF3209	4.4
50	**KIT K01 MONOFORCE 20.80 DIN50AD**	7KDIN-A50MF2008	4.6
50	**KIT K01 MONOFORCE 32.75 DIN50AD**	7KDIN-A50MF3207	6.2

BT	REF.	CODE	kg
40	**KIT K01 MONOFORCE 20.65 BT40AD**	7KMBT-A40MF2007	2.3
40	**KIT K01 MONOFORCE 32.90 BT40AD**	7KMBT-A40MF3209	4.6
50	**KIT K01 MONOFORCE 20.85 BT50AD**	7KMBT-A50MF2008	5.4
50	**KIT K01 MONOFORCE 32.95 BT50AD**	7KMBT-A50MF3209	7.5

HSK-A	REF.	CODE	kg
63	**KIT K01 MONOFORCE 20.85 HSK63**	7KHSK-A63MF2008	2.3
63	**KIT K01 MONOFORCE 32.105 HSK63**	7KHSK-A63MF3210	4.5
100	**KIT K01 MONOFORCE 32.110 HSK100**	7KHSKA100MF3211	6.7

RC BUSHES ULTRA-TIGHT SPINDLE / BUSSOLE MANDRINO A FORTE SERRAGGIO



RC SEALED bushes on request
A richiesta bussole RC a TENUTA

ød2	REF.	CODE	d1	L
12	**RC12.03**	497080012030	3	44
12	**RC12.04**	497080012040	4	44
12	**RC12.06**	497080012060	6	44
12	**RC12.08**	497080012080	8	44
12	**RC12.10**	497080012100	10	44

ød2	REF.	CODE	d1	L
20	**RC20.03**	497080020030	3	50
20	**RC20.04**	497080020040	4	50
20	**RC20.05**	497080020050	5	50
20	**RC20.06**	497080020060	6	50
20	**RC20.08**	497080020080	8	50
20	**RC20.10**	497080020100	10	50
20	**RC20.12**	497080020120	12	50
20	**RC20.14**	497080020140	14	50
20	**RC20.16**	497080020160	16	50

ød2	REF.	CODE	d1	L
32	**RC32.03**	497080032030	3	63
32	**RC32.04**	497080032040	4	63
32	**RC32.05**	497080032050	5	63
32	**RC32.06**	497080032060	6	63
32	**RC32.08**	497080032080	8	63
32	**RC32.10**	497080032100	10	63
32	**RC32.12**	497080032120	12	63
32	**RC32.14**	497080032140	14	63
32	**RC32.16**	497080032160	16	63
32	**RC32.18**	497080032180	18	63
32	**RC32.20**	497080032200	20	63
32	**RC32.25**	497080032250	25	63

MONOLITHIC TOOLHOLDERS

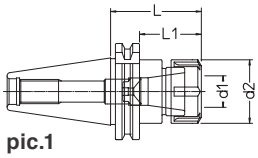
PORTAUTENSILI MONOLITICI

MONOd' monolithic collet chuck holders are manufactured according to ISO Standards in DIN 69871, MAS 403 BT and DIN 69893 HSK machine tools. High quality production guarantees a high level of precision. All ER toolholders are balanced to class G 6.3 at 15,000 rpm.

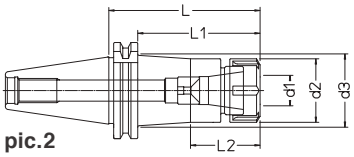
MONOd' serie di portapinze integrali prodotti in accordo agli Standard ISO negli attacchi macchina DIN 69871, MAS 403 BT e DIN 69893 HSK. Prodotti in alta qualità, garantiscono un elevato grado di precisione. Tutti i portautensili ER sono equilibrati in classe G 6,3 a 15.000 giri/min.

MAX.	RPM 15.000		0.003

DIN 69871 AD COLLET CHUCK HOLDER / PORTAPINZE - ER DIN 6499



pic.1

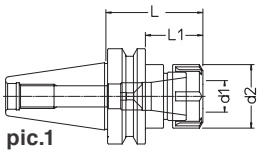


pic.2

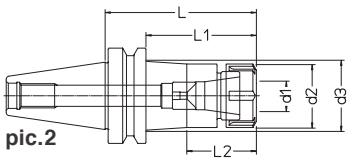
Supplied without collets and clamping wrenches
Pinze elastiche e chiavi di serraggio escluse

DIN	REF.	CODE	ER	d1	d2	d3	L	L1	L2	kg	pic.
40	DIN69871-AD40 ER16.60	71DIN-A40ER1606	16M	0.5-10	22		60	41		0.9	1
40	DIN69871-AD40 ER16.100	71DIN-A40ER1610	16M	0.5-10	22	29.5	100	81	41	1	2
40	DIN69871-AD40 ER25.60	71DIN-A40ER2506	25	1-16	42		60	41		1.1	1
40	DIN69871-AD40 ER25.100	71DIN-A40ER2510	25	1-16	42	47	100	81	46	1.6	2
40	DIN69871-AD40 ER32.70	71DIN-A40ER3207	32	2-20	50		70	51		1.2	1
40	DIN69871-AD40 ER32.110	71DIN-A40ER3211	32	2-20	50		110	91		1.7	1
50	DIN69871-AD50 ER16.100	71DIN-A50ER1610	16M	0.5-10	22	29.5	100	81	41	2.5	2
50	DIN69871-AD50 ER16.160	71DIN-A50ER1616	16M	0.5-10	22	32.5	160	141	41	3.3	2
50	DIN69871-AD50 ER25.110	71DIN-A50ER2511	25	1-16	42	48	110	91	46	2.8	2
50	DIN69871-AD50 ER25.160	71DIN-A50ER2516	25	1-16	42	50	160	141	46	3.6	2
50	DIN69871-AD50 ER32.70	71DIN-A50ER3207	32	2-20	50		70	51		2.9	1
50	DIN69871-AD50 ER32.160	71DIN-A50ER3216	32	2-20	50	57.5	160	141	52	4	2

MAS 403 BT AD COLLET CHUCK HOLDER / PORTAPINZE - ER DIN 6499



pic.1

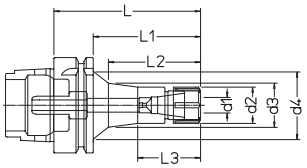


pic.2

Supplied without collets and clamping wrenches
Pinze elastiche e chiavi di serraggio escluse

BT	REF.	CODE	ER	d1	d2	d3	L	L1	L2	kg	pic.
40	MAS403 BT40-AD ER16.60	71MBT-A40ER1606	16M	0.5-10	22		60	33		1	1
40	MAS403 BT40-AD ER16.100	71MBT-A40ER1610	16M	0.5-10	22	28	100	73	41	1.1	2
40	MAS403 BT40-AD ER25.65	71MBT-A40ER2506	25	1-16	42		65	38		1.2	1
40	MAS403 BT40-AD ER25.100	71MBT-A40ER2510	25	1-16	42	45.5	100	73	46	1.7	2
40	MAS403 BT40-AD ER32.70	71MBT-A40ER3207	32	2-20	50		70	43		1.3	1
40	MAS403 BT40-AD ER32.110	71MBT-A40ER3211	32	2-20	50		110	83		1.8	1
50	MAS403 BT50-AD ER16.100	71MBT-A50ER1610	16M	0.5-10	22	26.5	100	62	41	3.6	2
50	MAS403 BT50-AD ER16.160	71MBT-A50ER1616	16M	0.5-10	22	31	160	122	41	4.3	2
50	MAS403 BT50-AD ER25.110	71MBT-A50ER2511	25	1-16	42	45.5	110	72	46	3.8	2
50	MAS403 BT50-AD ER25.160	71MBT-A50ER2516	25	1-16	42	48.5	160	122	46	4.6	2
50	MAS403 BT50-AD ER32.80	71MBT-A50ER3208	32	2-20	50		80	42		3.9	1
50	MAS403 BT50-AD ER32.160	71MBT-A50ER3216	32	2-20	50	56	160	122	52	5	2

DIN 69893 HSK-A COLLET CHUCK HOLDER / PORTAPINZE - ER DIN 6499



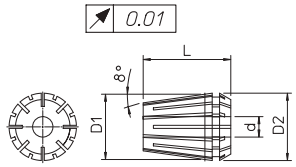
Supplied with coolant tube
Completo di raccordo per il refrigerante

HSK-A	REF.	CODE	ER	d1	d2	d3	d4	L	L1	L2	L3	kg
63	HSK-A63 ER16.80	71HSKA063ER1608	16M	0.5-10	22	32		80	54	41		1.1
63	HSK-A63 ER16.120	71HSKA063ER1612	16M	0.5-10	22	31		120	94			1.9
63	HSK-A63 ER25.80	71HSKA063ER2508	25	1-16	42			80	54			1.3
63	HSK-A63 ER25.140	71HSKA063ER2514	25	1-16	42	47.5		140	114	46		1.7
63	HSK-A63 ER32.90	71HSKA063ER3209	32	2-20	50			90	64			1.6
63	HSK-A63 ER32.160	71HSKA063ER3216	32	2-20	50			160	134			2.2
100	HSK-A100 ER16.100	71HSKA100ER1610	16M	0.5-10	22	25	45	100	71	61	41.5	2.3
100	HSK-A100 ER16.160	71HSKA100ER1616	16M	0.5-10	22	34.5	44	160	131	126		2.5
100	HSK-A100 ER25.100	71HSKA100ER2510	25	1-16	42	45.5		100	71	47		2.6
100	HSK-A100 ER25.160	71HSKA100ER2516	25	1-16	42	49.5		160	131	47		3.2
100	HSK-A100 ER32.120	71HSKA100ER3212	32	2-20	50	55		120	91	52		3.1
100	HSK-A100 ER32.160	71HSKA100ER3216	32	2-20	50	56.5		160	131	52		3.7

PSC - PE see / vedere p.51

ER COLLETS
PINZE ER

ER DIN 6499-B



REF.	d	D1	D2	L
ER 16	0.5 ~ 10	16	17	27.5
ER 25	1 ~ 16	25	26	34
ER 32	2 ~ 20	32	33	40

RANGE	CODE **ER16**		CODE **ER25**		CODE **ER32**	
1 - 0.5	496080116010					
1.5 - 1	496080116015					
2 - 1			496080125020			
2 - 1.5	496080116021					
2.5 - 2	496080116025					
3 - 2	496080116030		496080125030		496080132030	
4 - 3	496080116040		496080125040		496080132040	
5 - 4	496080116050		496080125050		496080132050	
6 - 5	496080116060		496080125060		496080132060	
7 - 6	496080116070		496080125070		496080132070	
8 - 7	496080116080		496080125080		496080132080	
9 - 8	496080116090		496080125090		496080132090	
10 - 9	496080116100		496080125100		496080132100	
11 - 10			496080125110		496080132110	
12 - 11			496080125120		496080132120	
13 - 12			496080125130		496080132130	
14 - 13			496080125140		496080132140	
15 - 14			496080125150		496080132150	
16 - 15			496080125160		496080132160	
17 - 16					496080132170	
18 - 17					496080132180	
19 - 18					496080132190	
20 - 19					496080132200	

ER collets SEALED on request
A richiesta pinze ER a TENUTA

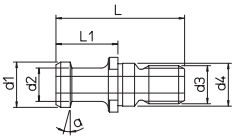
SET ER

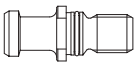
REF.	Ø	CODE
SET ER16/10	0.5 ~ 10	496080116000
SET ER25/15	1 ~ 16	496080125000
SET ER32/18	2 ~ 20	496080132000

RETENTION KNOBS
TIRANTI

ISO 7388/2 A - DIN 69872

pic. 1



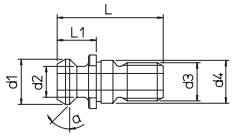


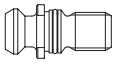
pic. 2

REF.	CODE	ISO	d1	d2	d3	d4	L	L1	a	pic.
TNT ISO7388/2A 40	201430250401	40	19	14	M16	17	54	26	15°	1
TNT ISO7388/2A 50	201430250501	50	28	21	M24	25	74	34	15°	1
TNT ISO7388/2A 40 WH	201430250400	40	19	14	M16	17	54	26	15°	2
TNT ISO7388/2A 50 WH	201430250500	50	28	21	M24	25	74	34	15°	2

ISO 7388/2 B - ANSI B.5 50

pic. 1

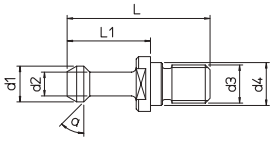




pic. 2

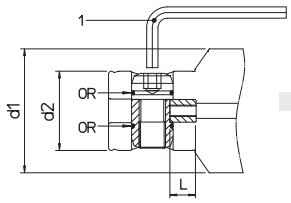
REF.	CODE	ISO	d1	d2	d3	d4	L	L1	a	pic.
TNT ISO7388/2B 40	201430251401	40	18.95	12.95	M16	17	44.50	16.40	45°	1
TNT ISO7388/2B 50	201430251501	50	29.10	19.60	M24	25	65.50	25.55	45°	1
TNT ISO7388/2B 40 WH	201430251400	40	18.95	12.95	M16	17	44.50	16.40	45°	2
TNT ISO7388/2B 50 WH	201430251500	50	29.10	19.60	M24	25	65.50	25.55	45°	2

MAS 403 BT - 30° - 45°

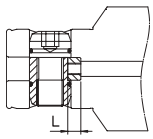


REF.	CODE	ISO	d1	d2	d3	d4	L	L1	a
TNT MAS403 BT30 30°	201430252301	30	11	7	M12	12.5	43	23	30°
TNT MAS403 BT40 30°	201430252401	40	15	10	M16	17	60	35	30°
TNT MAS403 BT50 30°	201430252501	50	23	17	M24	25	85	45	30°
TNT MAS403 BT30 45°	201430252302	30	11	7	M12	12.5	43	23	45°
TNT MAS403 BT40 45°	201430252402	40	15	10	M16	17	60	35	45°
TNT MAS403 BT50 45°	201430252502	50	23	17	M24	25	85	45	45°

MHD' SYSTEM
SISTEMA MHD'



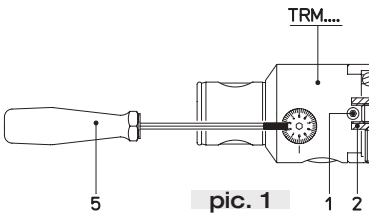
pic. 1



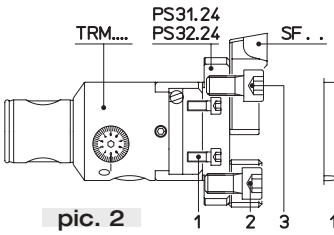
pic. 2

REF.	CODE	CODE 1	CODE OR	d1	d2	L	pic.
MHD' 16	381725001161	101500100250		16	10	2	2
MHD' 20	381725001201	101500100300		20	13	2.5	2
MHD' 25	381725001251	101500100300		25	16	3	2
MHD' 32	381725001321	101500100400	101254007510	32	20	3.55	2
MHD' 40	381725001401	101500100500	101254010010	40	25	4	2
MHD' 50 RD 50 / .. TRM - TRC - TR-E	381725001501	101500100600	101254013010	50	32	4.2	2
MHD' 50	381725001001	101500100600	101254013010	50	32	12.2	1
MHD' 63-80 RD 63 / .. TRM - TRC	381725001502	101500100800	101251002075	63-80	42	4.9	2
MHD' 63-80	381725001002	101500100800	101251002075	63-80	42	13.85	1

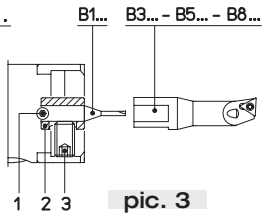
MHD' - TRM



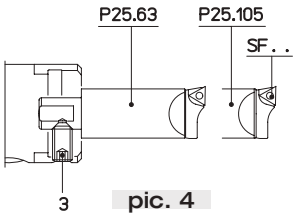
pic. 1



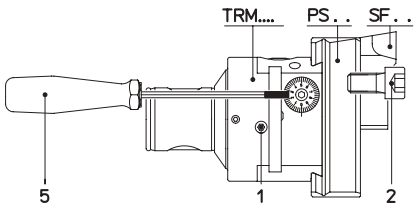
pic. 2

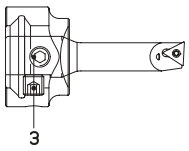


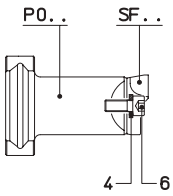
pic. 3



pic. 4



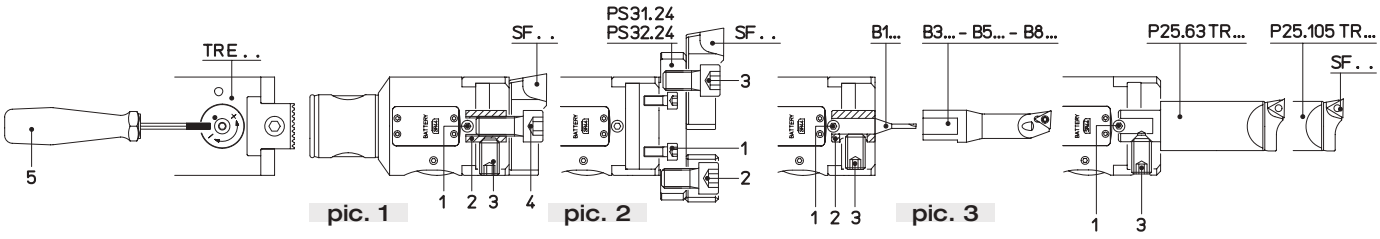




pic. 5

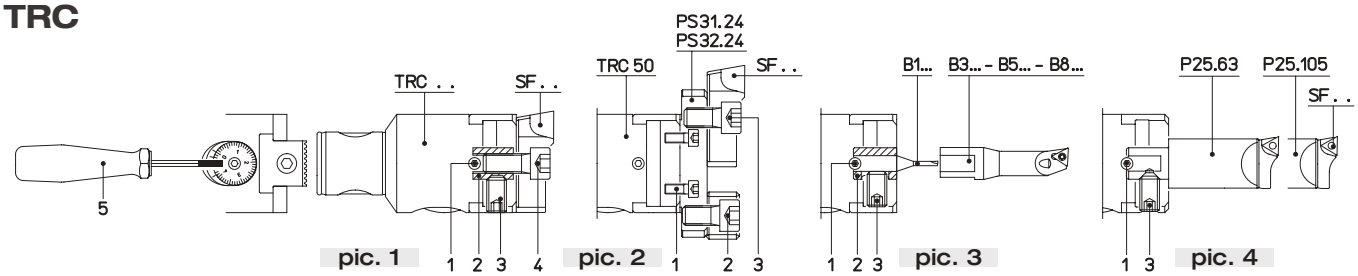
REF.	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5	CODE 6	pic.
TRM 16 MHD'	200100190301			100051030006	101500800150		1
TRM 20 MHD'	200100190301			100051040008	101500800150		1
TRM 25 MHD'	100271040004			100051050010	101500800200		1
TRM 32 MHD'	100271040006			100051060012	101500800200		1
TRM 40 MHD'	100271050005			100051080014	101500800250		1
TRM 50 MHD'	100271050008	201041015002	100231100016	100051100025	101500800250		1
TRM 50 MHD'	200100150501	100051100020	100051100020		101500800250		2
TRM 50 MHD'	100271050008	200560116082	100231100016		101500800250		3-4
TRM 63 MHD'	100251060010	100051100018	100251080008	100051050012	101500800300	100800100530	5
TRM 80-MHD'	100251060014	100051100018	100251080008	100051050012	101500800300	100800100530	5
TRM 125 MHD'	100251060020	100051100025		100051060018	101500800300	100800100640	5

TRE 50



REF.	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5	pic.	
TRE 50	100238060010	201041015002	100231100016	100051100025	101500800300	1	
TRE 50	200100150501	100051100020	100051100020			2	
TRE 50	100238060010	200560116082	100231100016			3	

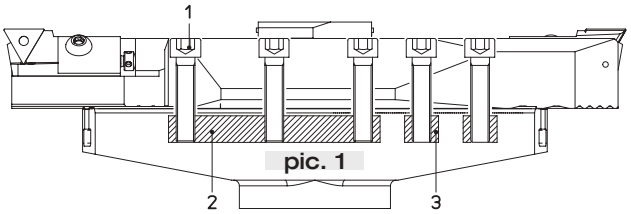
TRC



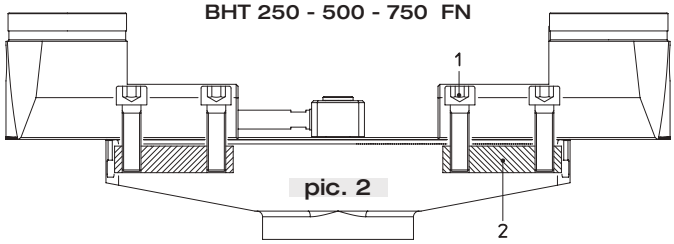
REF.	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5	pic.	
TRC 16	200100190301			100051030006	101500800150	1	
TRC 20	200100190301			100051040008	101500800150	1	
TRC 25	100271040004			100051050010	101500800150	1	
TRC 32	100271050005			100051060012	101500800250	1	
TRC 40	100271060006			100051080014	101500800300	1	
TRC 50	100271060008	201041015002	100231100016	100051100025	101500800300	1	
TRC 50	200100150501	100051100020	100051100025			2	
TRC 50	100271060008	200560116082	100231100010			3-4	
TRC 63	100271060008			100051100020	101500800300	1	
TRC 80	100271060012			100051100025	101500800300	1	

BHT 250 - 500 - 750

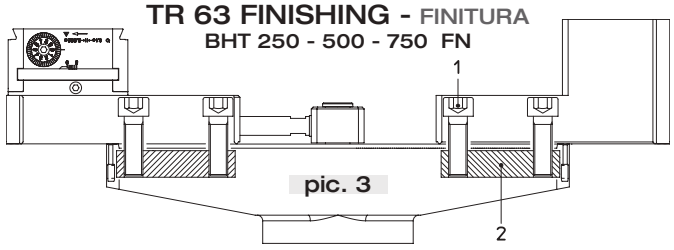
ROUGHING - SGROSSATURA
BHT 250 - 500 - 750 SG



TRM 63/63 FINISHING - FINITURA
BHT 250 - 500 - 750 FN

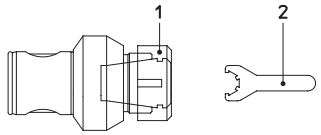


TR 63 FINISHING - FINITURA
BHT 250 - 500 - 750 FN



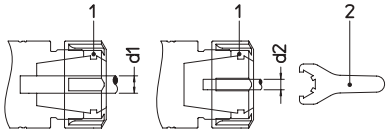
REF.		CODE 1	CODE 2	CODE 3	pic.	
SGROSSATURA	BHT 250 - 500 - 750 SG	100051100045	201430100065	201430100066	1	
FINITURA - TRM 63/63	BHT 250 - 500 - 750 FN	100051100035	201430100067		2	
FINITURA - TR 63	BHT 250 - 500 - 750 FN	100051100030	201430100067		3	

PE - MHD' ER DIN 6499



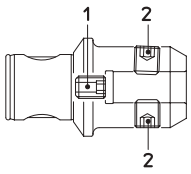
REF.	CODE 1	CODE 2
PE 20 / ER16M	100451011600	101501001600
PE 32 / ER25M	100451012500	101501002500
PE 40 / ER25	100451032500	101501002501
PE 50 / ER25	100451032500	101501002501
PE 50 / ER32	100451033200	101501003201
PE 63 / ER32	100451033200	101501003201

PE - PSC / MONOd ER DIN 6499



REF.	CODE 1	d1	CODE 2	d2
ER 16 M	100451011600	5 ~ 10	101501001600	1 ~ 4
ER 25	100451032500	8 ~ 16	101501002501	2 ~ 7
ER 32	100451033200	8 ~ 20	101501003201	3 ~ 7

AW DIN 1835 B-E

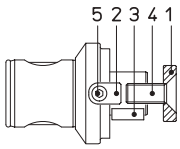


REF.	CODE 1	CODE 2
AW 50/6	200100190808	200100190610
AW 50/8	200100190808	200100190810
AW 50/10	200100190809	200100191012
AW 50/12	200100190809	200100191216
AW 50/14	200100190809	200100191216
AW 50/16	200100191215	200100191416
AW 50/20	200100191215	200100191616

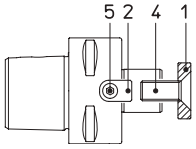
REF.	CODE 1	CODE 2
AW 50/25	200100191615	200100191820
AW 63/16	200100191215	200100191416
AW 63/20	200100191215	200100191616
AW 63/25	200100191615	200100191820
AW 63/32	200100191615	200100192020
AW 80/40	200100192019	200100192020

PF MHD' - PSC

MHD'

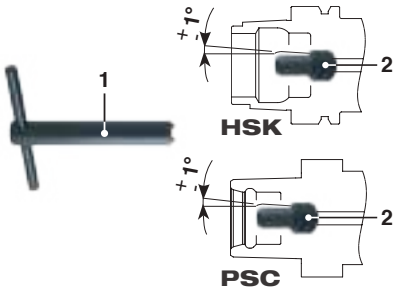


PSC



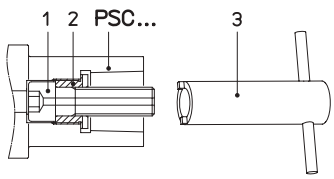
REF.	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5
PF 40/16	201010085010	201101800801	101001040014	100101080025	100051030008
PF 40/22	201010105030	201101801002	101001060016	100101100025	100051040010
PF 50/16	201010085010	201101800801	101001040014	100101080025	100051030008
PF 50/22 MHD' / PSC50-PF22.25	201010105030	201101801002	101001060016	100101100025	100051040010
PF 50/27 MHD' / PSC50-PF27.25	201010125030	201101801202	101001070018	100101120030	100051050012
PF 50/32	201010165020	201101801402	101001080020	100101160035	100051060016
PF 63/22	201010105030	201101801002	101001060016	100101100025	100051040010
PF 63/27 MHD' / PSC63-PF27.25	201010125030	201101801202	101001070018	100101120030	100051050012
PF 63/32 MHD' / PSC63-PF32.25	201010165020	201101801402	101001080020	100101160035	100051060016
PF 80/32 MHD' / PSC80-PF32.30	201010165020	201101801402	101001080020	100101160035	100051060016
PF 80/40 MHD' / PSC80-PF40.45	201010210010	201101801603	101001100025	100101200045	100051060018
PF 80/50	201010260330	201101801802	101001120028	100101240050	100051060020
PF 80/60		201101802510	101001140036		100051120025

RFR HSK - PSC



REF.	CODE 1	CODE 2
RFR HSK-A50	101501101400	382019010001
RFR HSK-A63	101501101600	382019012001
RFR HSK-A80	101501101800	382019014001
RFR HSK-A100	101501102200	382019016001
RFR PSC 40	101501200700	382020006001
RFR PSC 50	101501200800	382020007001
RFR PSC 63	101501200900	382020008001
RFR PSC 80	101501201100	382020010001

PSC

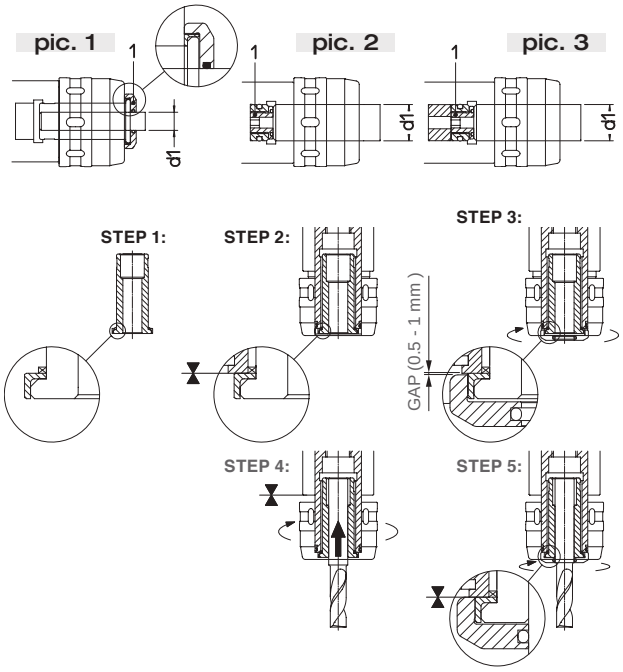


PSC	CODE 1	CODE 2	CODE 3
40	200101151448	201032215005	101501402101
50	200101151658	201032515005	101501402401
63	200101152071	201033015021	101501403001
80	200101152071	201033015021	101501403001

FORCE GH - VT

SEALING DEVICE FOR HIGH PRESSURE COOLANT SUPPLY

DISPOSITIVI A TENUTA PER REFRIGERANTE AD ALTA PRESSIONE

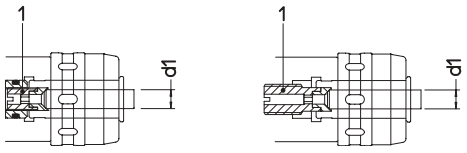


pic.	REF.	CODE 1	d1	
1	GH 20 MONOforce 20 HSK63 MHD'50 / DIN/BT-40-50 PSC 63 - 80	382042020062	6	
		382042020082	8	
		382042020102	10	
		382042020122	12	
		382042020142	14	
		382042020162	16	
2	VT 20.20 MONOforce 20 DIN/BT-40-50 HSK63-100 PSC 63-80	382042020201	20	
1	GH 32 MONOforce 32 DIN/BT-40-50 / HSK63-100 MHD'63 PSC 63-80	382042032062	6	
		382042032082	8	
		382042032102	10	
		382042032122	12	
		382042032142	14	
		382042032162	16	
		382042032182	18	
		382042032202	20	
		382042032252	25	
2	VT 32.32 MONOforce 32 DIN/BT-40 HSK63-100 PSC 63-80	382042032321	32	
3	VT 32.32.100 MONOforce 32 DIN/BT-50	382042032322	32	

FORCE VCR

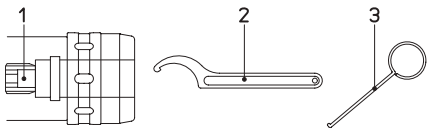
SETTING SCREW FOR INTERNAL COOLANT SUPPLY

VITE REGOLAZIONE CON PASSAGGIO REFRIGERANTE



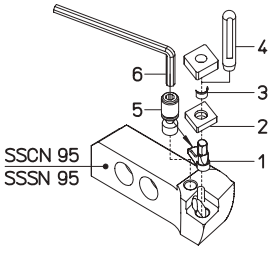
pic.	REF.	CODE 1	d1	
1	VCR 20 MONOforce 20 HSK63-100 MHD'50 PSC 63-80	382041020032	3 ~ 5	
		382041020062	6 ~ 12	
		382041020142	14 ~ 20	
1	VCR 32 MONOforce 32 HSK63-100 MHD'63 PSC 63-80	382041032033	3 ~ 5	
		382041032063	6 ~ 12	
		382041032143	14 ~ 20	
		382041032253	25 ~ 32	
2	VCR 20 MONOforce 20 DIN/BT-40-50	382041020031	3 ~ 5	
		382041020061	6 ~ 12	
		382041020141	14 ~ 20	
2	VCR 32 MONOforce 32 DIN/BT-40	382041032031	3 ~ 5	
		382041032061	6 ~ 12	
		382041032141	14 ~ 20	
		382041032251	25 ~ 32	
2	VCR 32 MONOforce 32 DIN/BT-50	382041032032	3 ~ 5	
		382041032062	6 ~ 12	
		382041032142	14 ~ 20	
		382041032252	25 ~ 32	

FORCE



REF	CODE 1	CODE 2	CODE 3	
FORCE 12	200100191014	101500400028	201271600400	
FORCE 20	200100191615	101500400050	201271600400	
FORCE 32	200100191615	101500400075	201271600400	

SS.. 95

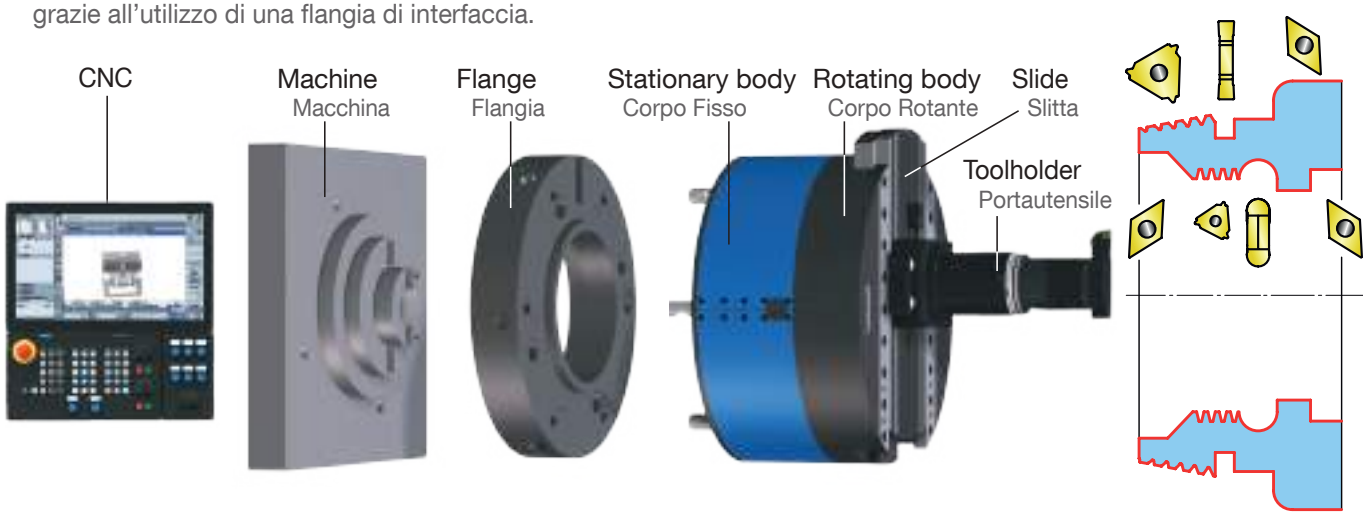


REF.	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5	CODE 6	
SSCN 95	491111190600	492031190600	100655095112	101501301408	494311190600	101500100400	
SSSN 95	491111190600	492035190600	100655095112	101501301408	494311190600	101500100400	

GENERAL FEATURES
CARATTERISTICHE GENERALI

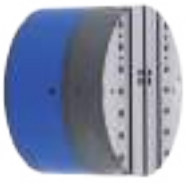
Medium and large Numerical Control heads, applicable on boring machines, machining centers and special machines. These offer the capabilities of different and additional machining operations, both internal and external. The slide movement is managed by an integrated servomotor and directly connected to the NC. The application on machines could be manual or automatic thanks to an interface flange.

Teste a Controllo Numerico di medie e grandi dimensioni, applicabili su alesatrici, centri di lavoro e macchine speciali. Permettono di eseguire differenti lavorazioni, sia interne che esterne. Lo spostamento della slitta è gestito da un servomotore integrato e direttamente collegato al CN. L'applicazione in macchina può essere manuale o automatica grazie all'utilizzo di una flangia di interfaccia.



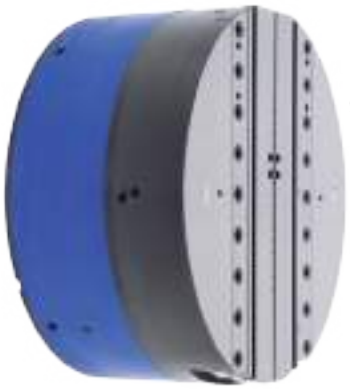
UT 5-500
Ø max 1000

UT 5-630
Ø max 1250



UT 3-360
Ø max 800

UT 5-800
Ø max 1600



UT 8-800
Ø max 1600

UT 8-1000
Ø max 2000

UT 8-1250
Ø max 2500

UT 8-1600
Ø max 3200

STANDARD

EXTENDED
PROLUNGATE

ANGULAR
ANGOLARI

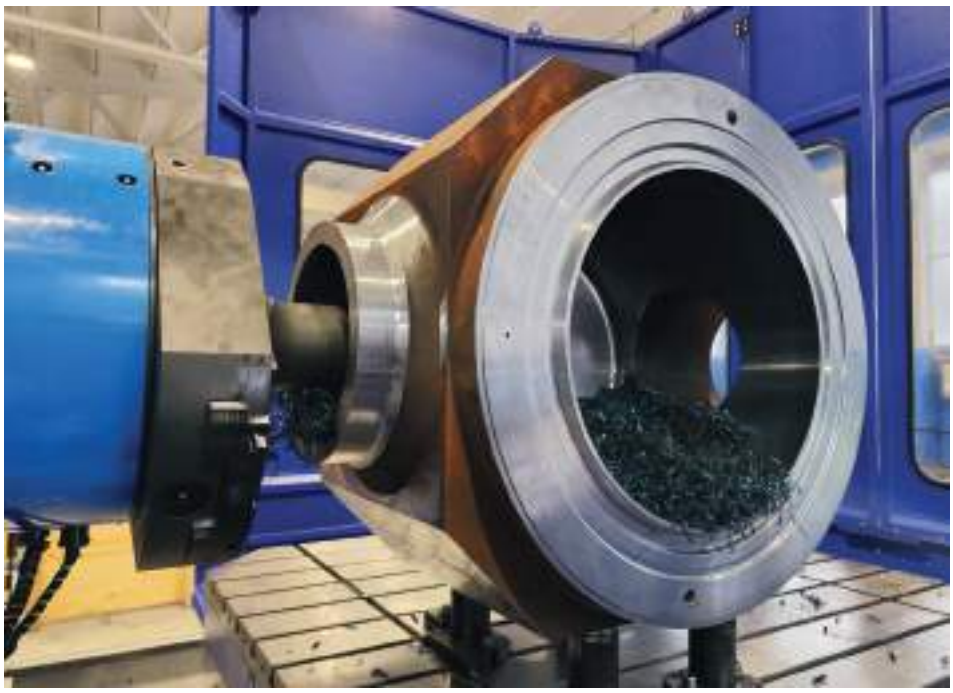
GEARBOX
RIDUTTORE

HOLE

DOUBLE SLIDE
DOPPIA SLITTA

HIGH SPEED
ALTA VELOCITA'

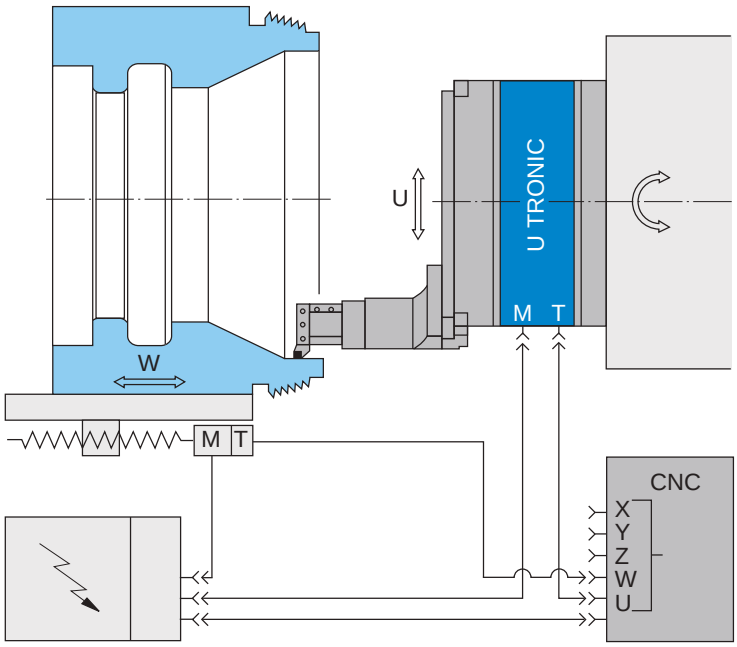
SPECIALS – SPECIALI



OPERATIONS U-AXIS
FUNZIONAMENTO ASSE-U

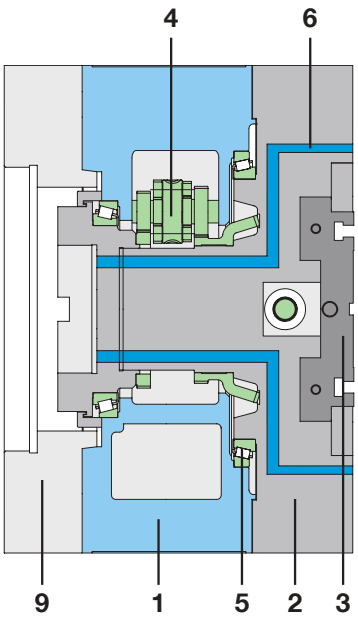
The control of the U-TRONIC heads takes place through the direct connection to the "U" axis of the machine numerical control. Through the interpolation of the axes, it offers the capabilities to perform any type of turning, boring, radiusing and spherical operations.

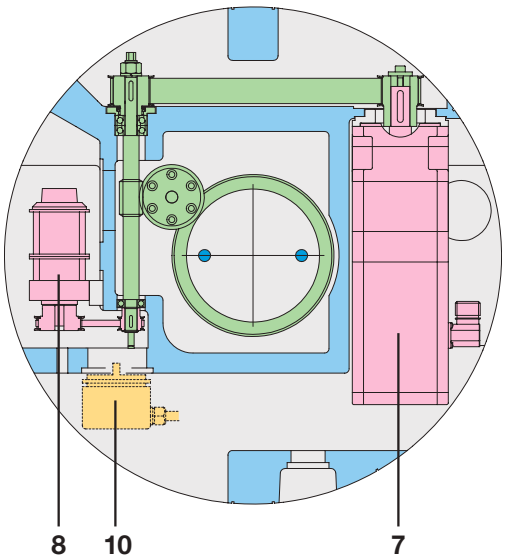
Il controllo delle teste U-TRONIC avviene tramite il collegamento diretto all'asse "U" del controllo numerico della macchina utensile, mediante l'interpolazione degli assi permette di eseguire ogni tipo di operazione di tornitura, alesature, raggiature e operazioni sferiche.



CNC

COMPONENTS
COMPONENTI





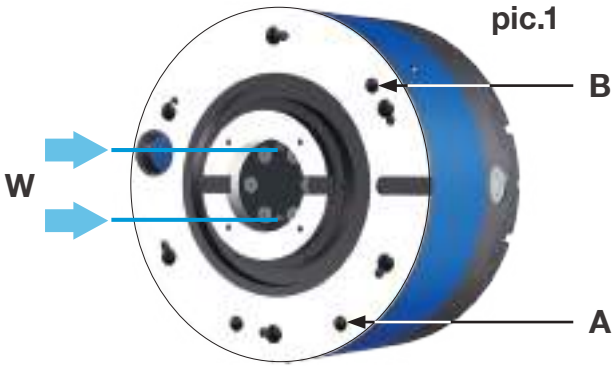
1. Stationary body
2. Rotating body
3. Tool slide
4. Gears
5. Bearings
6. Coolant way
7. Servomotor
8. Limit switches
9. Flange
10. Encoder on request

1. Corpo fisso
2. Corpo rotante
3. Slitta portautensili
4. Cinematismo
5. Cuscinetti
6. Passaggio refrigerante
7. Servomotore
8. Finecorsa
9. Flangia
10. Encoder a richiesta

A-Internal pressurization pic.1
Pressurizzazione interna

To prevent liquid and dust from getting into the motor, transducer, and limit switch areas, an Ø 8,5 **(A)** hole is provided for internal pressurization of the fixed body with an air inlet at **0.5-1 BAR.**

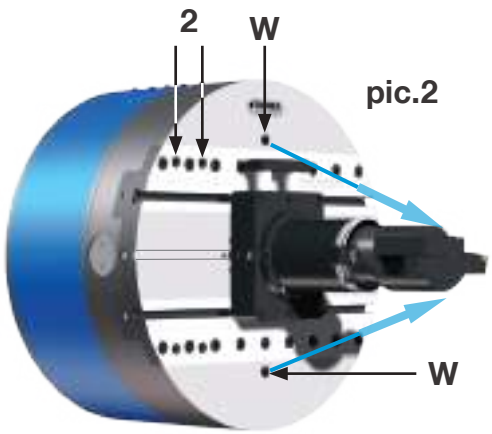
Per evitare che liquido e polvere entrino nella zona del motore, trasduttore e finecorsa, è previsto un foro Ø 8,5 **(A)** per pressurizzare l'interno del corpo fisso con l'ingresso dell'aria a **0,5-1 BAR.**



B-Automatic greaser pic.1
Ingrassatore automatico

A Ø 8,5 **(B)** hole is provided on the head so that grease can be automatically put in the U-TRONIC.

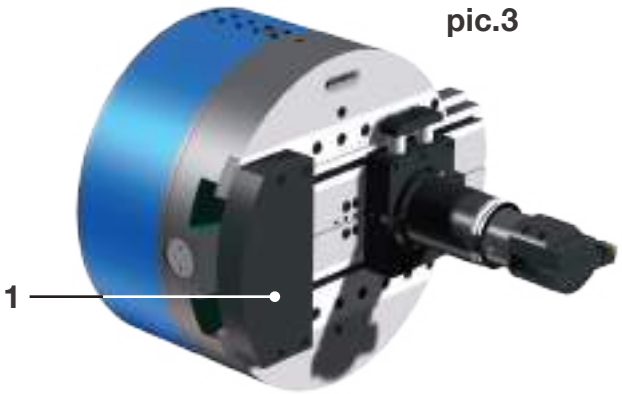
Sulla testa è previsto un foro Ø 8,5 **(B)** per permettere l'inserimento automatico del grasso all'interno della U-TRONIC.



Coolant supply pic.1-2
Adduzione liquido refrigerante

Internal coolant channels **(W)** are provided inside the U-TRONIC head that allow coolants to pass through from the machine spindle until the two threaded holes located next to the slide **(W).** Hoses can be screwed on these holes to bring coolant directly to the tool.
Max pressure BAR 40.

All'interno del corpo rotante della U-TRONIC sono previste delle canalizzazioni **(W)** che permettono il passaggio del liquido refrigerante dal mandrino della macchina sino a due fori filettati posti a fianco della slitta **(W)**. Su tali fori è possibile avvitare dei condotti flessibili e portare il liquido refrigerante direttamente all'utensile. Pressione **Max BAR 40**.



Balancing pic.3
Bilanciatura

To improve working conditions and balance the tool position when it appears shifted in relation to the U-TRONIC axis, counterweights **(1)** can be applied using the threaded holes **(2)** located on the rotating body.

Per migliorare le condizioni di lavoro e bilanciare la posizione dell'utensile quando risulta spostato rispetto all'asse della U-TRONIC, é possibile applicare dei contrappesi **(1)** utilizzando i fori filettati **(2)** posti sul corpo rotante.

APPLICATION

APPLICAZIONI

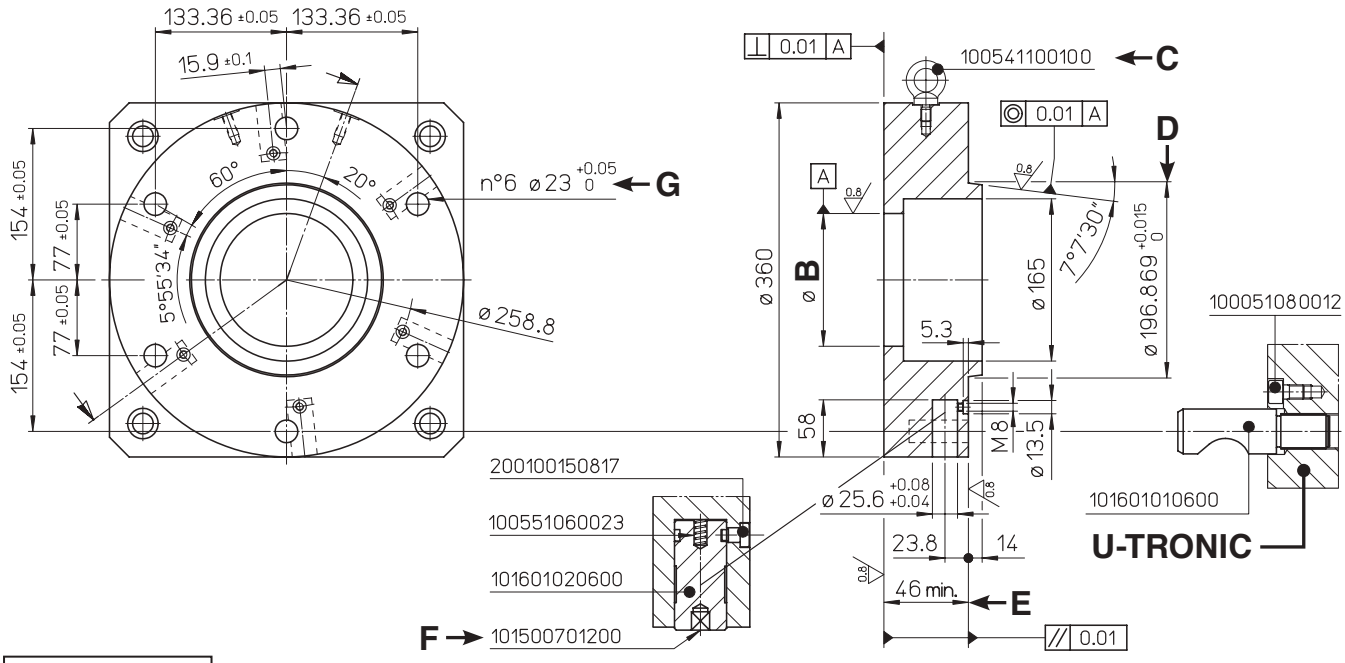
U-TRONIC is applied manually or automatically by using a flange for fastening to the machine tool and a driving plate for the rotary body rotation. It is applied manually using a flange for fastening with a cam lock quick coupling, or automatically with a palletized system and special connectors.

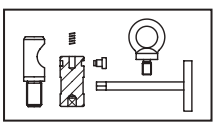
Le U-TRONIC si applicano manualmente o automaticamente mediante una flangia per il fissaggio alla macchina utensile e un platorello per la rotazione del corpo rotante. Si applicano manualmente utilizzando una flangia per il fissaggio con attacco rapido camlock, o automaticamente con sistemi palettizzati e appositi connettori.

U-TRONIC 3-360 S

The following layout shows the basic information for the flange manufacturing with cam lock rapid coupling.
The U-TRONIC UT 8-800 S and UT 8-1000 S do not include the fastening with a cam lock quick coupling.

I seguenti layout riportano i dati di base per la costruzione delle flange con attacco rapido camlock.
Le U-TRONIC UT 8-800 S e UT 8-1000 S non prevedono il fissaggio con attacco rapido camlock.

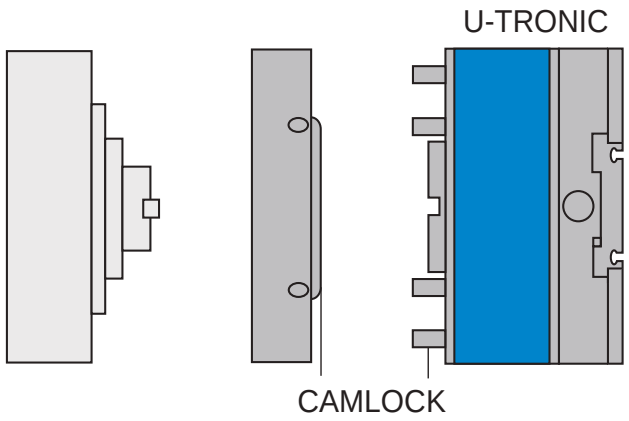


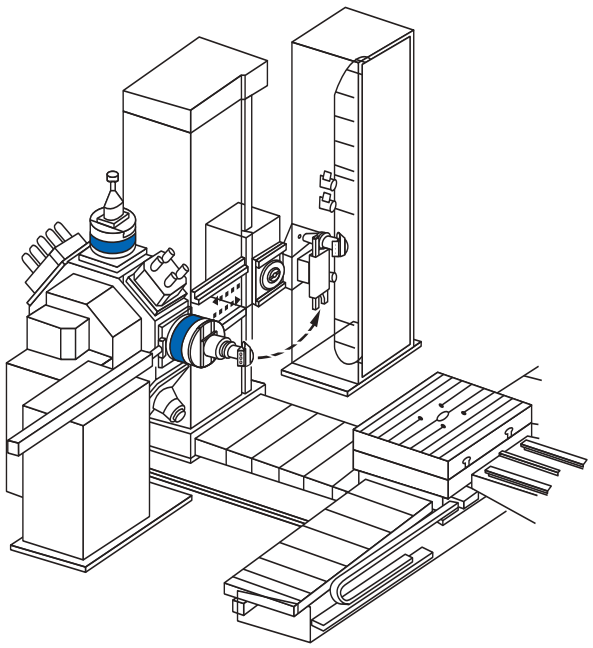


REF	CODE
KIT CAMLOCK UT 360	394200136000
n°6 VTC 8x12	100051080012
n°1 EYEBOLT - GOLFARE M10 UT BASE 3	100541100100
n°6 SPRING - MOLLA UT BASE 3-5	100551060023
n°1 KEY FOR CAM - CHIAVE CMC 6 UT BASE 3	101500701200
n°6 CAMLOCK PIN - TNT BLOC. CAM 6 UT BASE 3	101601010600
n°6 CAMLOCK CAM - CAMMA ECC. BLOC 6 UT BASE 3	101601020600
n°6 PIN FOR CAM - PUNTALINO CAMMA 6 UT BASE 3	200100150817

B Spindle centering **C** Eyebolt **D** Control with gauge
E Measurement to control depending on spindle protrusion
F Spanner **G** Bores min. depth 46.

B Centraggio mandrino **C** Golfare **D** Controllare con calibro
E Quota da controllare in funzione della sporgenza mandrino
F Chiave di manovra **G** Fori prof. min. 46.

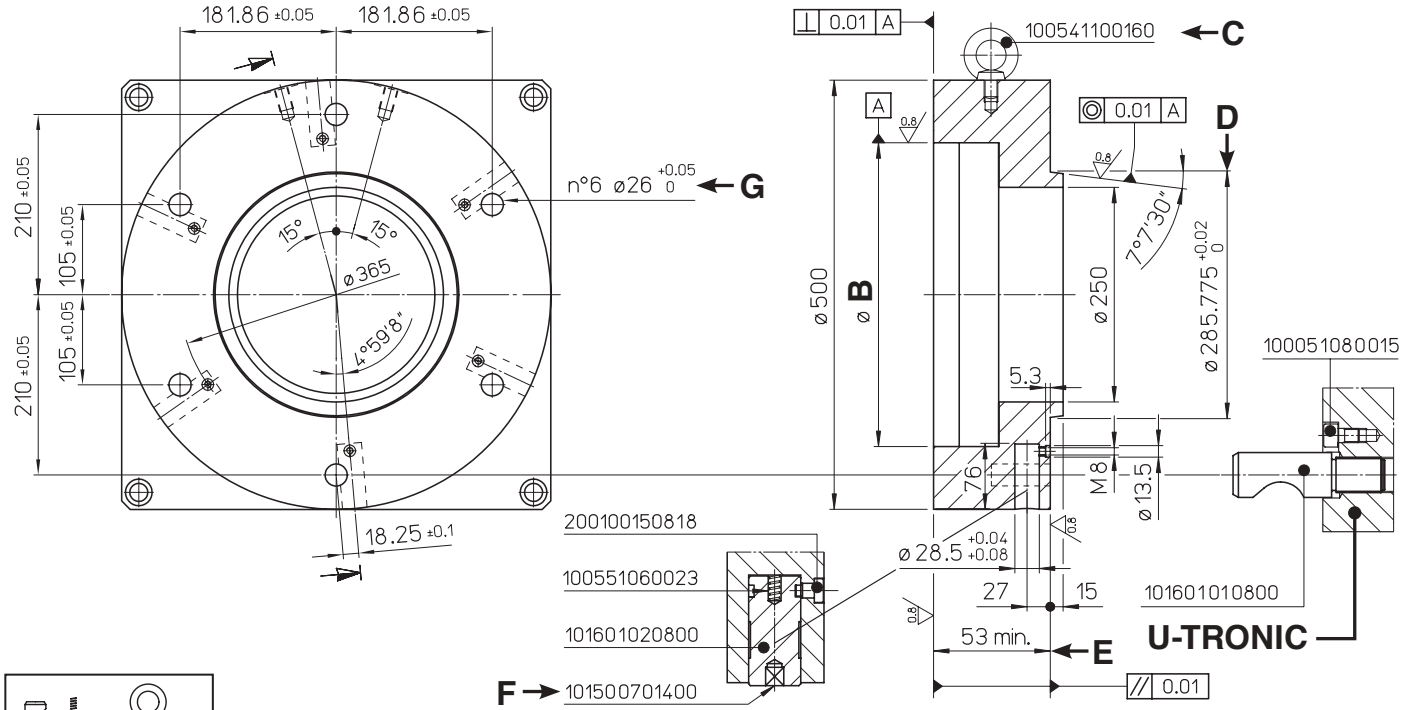


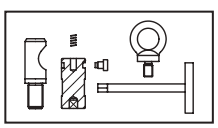


U-TRONIC 5-500 / 5-630 / 5-800 S

The following layout shows the basic information for the flange manufacturing with cam lock rapid coupling.
The U-TRONIC UT 8-800 S and UT 8-1000 S do not include the fastening with a cam lock quick coupling.

I seguenti layout riportano i dati di base per la costruzione delle flange con attacco rapido camlock.
Le U-TRONIC UT 8-800 S e UT 8-1000 S non prevedono il fissaggio con attacco rapido camlock.





REF	CODE
KIT CAMLOCK UT 500	394200150000
n°6 VTC 8x14	100051080014
n°1 EYEBOLT - GOLFARE M16 UT BASE 5	100541100160
n°6 SPRING - MOLLA UT BASE 3-5	100551060023
n°1 KEY FOR CAM - CHIAVE CMC 8 UT BASE 5	101500701400
n°6 CAMLOCK PIN - TNT BLOC. CAM 8 UT BASE 5	101601010800
n°6 CAMLOCK CAM - CAMMA ECC. BLOC 8 UT BASE 5	101601020800
n°6 PIN FOR CAM - PUNTALINO CAMMA 8 UT BASE 5	200100150818

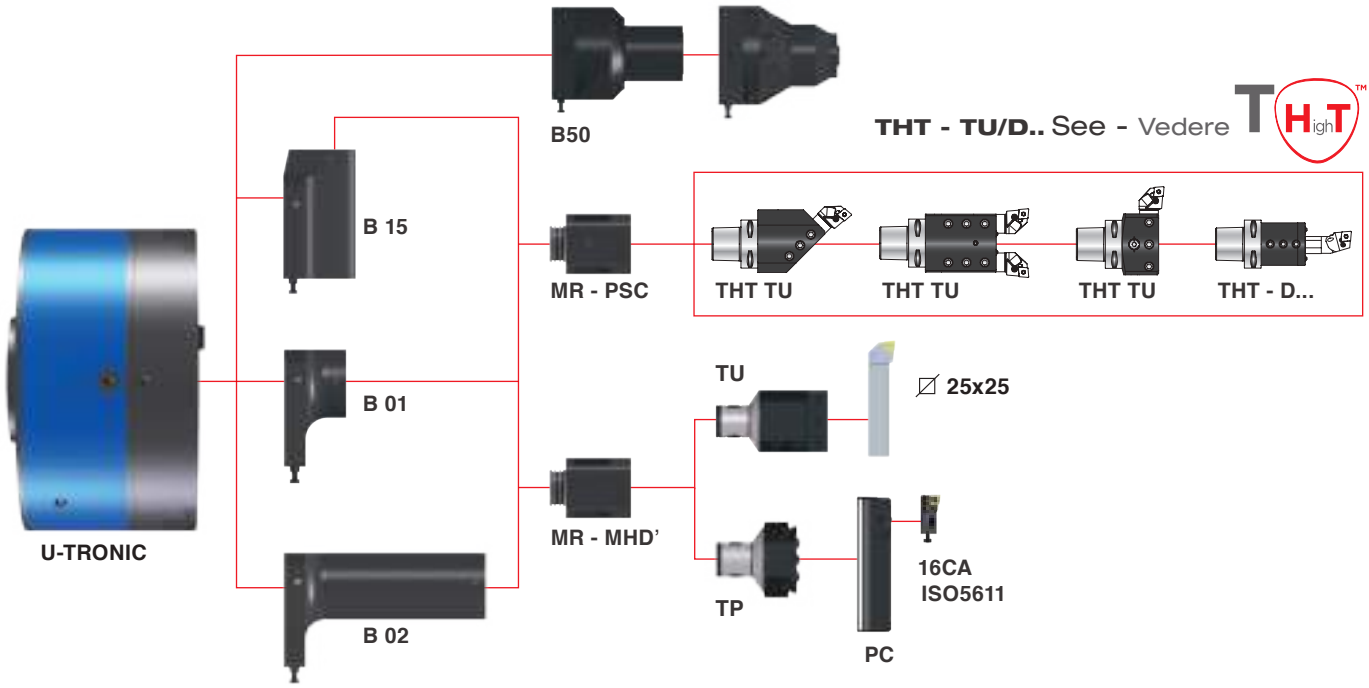
B Spindle centering **C** Eyebolt **D** Control with gauge
E Measurement to control depending on spindle protrusion
F Spanner **G** Bores min. depth 53.

B Centraggio mandrino **C** Golfare **D** Controllare con calibro
E Quota da controllare in funzione della sporgenza mandrino
F Chiave di manovra **G** Fori prof. min. 53.

TOOLHOLDERS AND ACCESSORIES PSC-MHD'

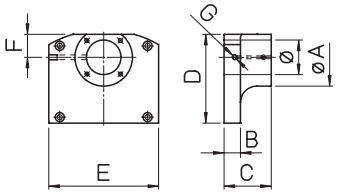
PORTAUTENSILI E ACCESSORI

UT 3-360 / 5-500 / 5-630 / 5-800 / 8-800 / 8-1000 S

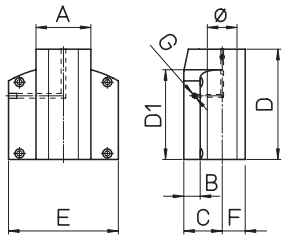


B01 / B02 / B15 - PSC / MHD'

B01 - B02 PSC / MHD'



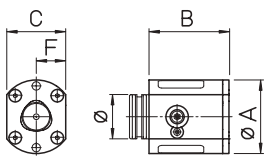
B15 PSC / MHD'



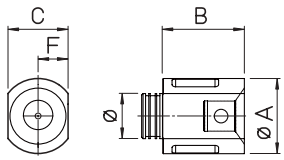
U-TRONIC	REF.	CODE	Ø^{H7}	A	B	C	D	D1	E	F	G	kg
UT 3-360 S	**B01 PSC63-MHD'80**	443006300310	63	105	25	31	137		150	42	G1/8'	3.5
	B02 PSC63-MHD'80	443006301610	63	105	27	161	137		150	42	G1/8'	10
	B15 PSC63-MHD'80	445006301210	63	105	32	60	121		150	42	G1/8'	10
UT 5-500 / 5-630 / 5-800 S	**B01 PSC63-MHD'80**	443006300861	63	105	30	86	167		200	42	G1/8'	11
	B02 PSC63-MHD'80	443006303310	63	105	30	331	167		200	42	G1/8'	22
	B15 PSC63-MHD'80	445006302010	63	105	31	70	201	170	200	42	G1/8'	6.5
	B01 PSC80-MHD'80	443007500710	75	133	30	71	185		200	50	G1/8'	10.5
	B02 PSC80-MHD'80	443007503160	75	133	32	316	235		200	50	G1/8'	34
	B15 PSC80-MHD'80	445007502620	75	133	30	85	262	200	200	50	G1/8'	32
UT 8-800 / 8-1000 S	**B01 PSC80-MHD'80**	443007501460	75	133	30	146	192		250	50	G1/4'	19
	B02 PSC80-MHD'80	443007506360	75	133	45	636	192		250	50	G1/4'	70
	B15 PSC80-MHD'80	445007503000	75	133	30	85	300	200	250	50	G1/4'	37

MR - PSC / MHD'

MR - PSC



MR - MHD'



U-TRONIC	REF.	CODE	Øg6	PSC	MHD'	A	B	C	F	kg
UT 3 / 5 ... S	**MR - PSC 63**	450206301050	63	63		105	114	84	42	6
UT 3 / 5 ... S	**MR - MHD' 80/105**	450208001050	63		80	105	114	84	42	6.5
UT 5 / 8 ... S	**MR - PSC 80**	450208001335	75	80		133	129	100	50	11
UT 5 / 8 ... S	**MR - MHD' 80/133**	450208001330	75		80	133	129	100	50	11

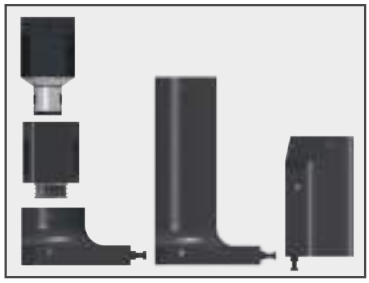
K03 PSC 63-80

1 B 01
1 B 02
1 B 15
1 MR

REF.	CODE	
KIT K03 PSC 63 UT 3-360 S	501703259501	
KIT K03 PSC 63 UT 5-500 / 5-630 / 5-800 S	501705009501	
KIT K03 PSC 80 UT 5-500 /5-630 / 5-800 S	501705009502	
KIT K03 PSC 80 UT 8-800 / 8-1000 S	501708009501	

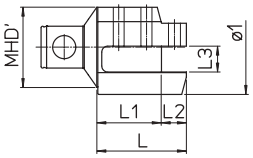
K03 MHD'80

1 B 01
1 B 02
1 B 15
1 MR
1 TU



REF.	CODE	
KIT K03 UT 3-360 S	501703259500	
KIT K03 UT 5-500 /5-630 /5-800 S	501705009500	
KIT K03 UT 8-800 / 8-1000 S	501708009500	

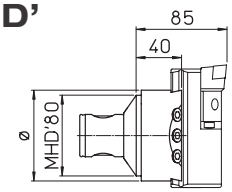
TU - MHD'



U-TRONIC	REF.	CODE	MHD'	Ø1	L	L1	L2	L3	kg	
UT 3 / 5 / 8 ... S ♦	TU 50/60.16	460505016001	50	60	60	44	16	16	1.2	
UT 3 / 5 / 8 ... S ♦	TU 63/75.20	460506320001	63	75	75	55	20	20	4	
UT 3 / 5 / 8 ... S	TU 80/95.25	460508025001	80	95	90	65	25	25	3.6	

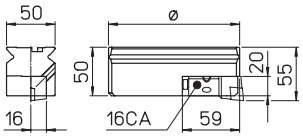
♦Use with **RD 80/ ....p.14** Utilizzare con **RD 80/ p.14**

TP - MHD'



U-TRONIC	REF.	CODE	Ø	kg	
UT 3-360 S	TP 80/90.50	460408050001	90	2.3	
UT 5-500 / 5-630 / 5-800 S	TP 80/90.50	460408050001	90	2.3	
UT 8-800 / 8-1000 S	TP 80/125.50	460408050002	125	3.2	

PC



U-TRONIC	REF.	CODE	Ø	kg	
UT 3-360 S	PC 11.50	433050160950	95	1.3	
UT 5-500 / 5-630 / 5-800 S	PC 12.50	433050161350	135	2	
	PC 13.50	433050162000	200	3.2	
UT 8-800 / 8-1000 S	PC 14.50	433050163000	300	5	

CARTRIDGES - CARTUCCE 16CA ISO 5611

PTGNL16CA-16 △		
CODE	483010161001	TNM1604

PCLNL16CA-12 ◇		
CODE	483010161002	CNM1204

PSSNL16CA-12 ◇		
CODE	483010161003	SNM1204

PSRNL16CA-12 ◇		
CODE	483010161004	SNM1204

TOOLHOLDER WITH AUTOMATIC TOOL CHANGE B50

PORTAUTENSILI A CAMBIO AUTOMATICO B50

The B50 tool holder is designed for U-Tronic and allows the automatic mounting of various tool holders required for machining in automatic cycles. This solution ensures greater speed and precision in performing operations, optimizing production times and preventing any possibility of errors. The B50 can be operated either mechanically or hydraulically, providing flexibility according to application requirements.

Il portautensile B50 è progettato per le nostre piattaforme a sfacciare U-Tronic e consente il montaggio automatico di diversi portautensili necessari per la lavorazione in ciclo automatico. Questa soluzione garantisce maggiore velocità e precisione nell'esecuzione delle operazioni, ottimizzando i tempi di produzione e prevedendo possibili errori. La gestione del B50 può essere **meccanica oppure oleodinamica,** offrendo flessibilità in base alle esigenze applicative.

B50 MECHANICAL
MECCANICO

B50 HYDRAULICS
OLEODINAMICI

pic.1

U-TRONIC	REF.	
UT 3-360 S	- HSK - A63 - A100	
UT 5-500 / UT 5-630 / 5-800 S	B50 - DIN69871-B 50	
UT 8-800 / 8-1000 S	- MAS BT50	

U-TRONIC	REF.	
UT 3-360 S	- PSC / HSK	
UT 5-500 / UT 5-630 / 5-800 S	B50 - DIN69871	
UT 8-800 / 8-1000 S	- MAS BT	

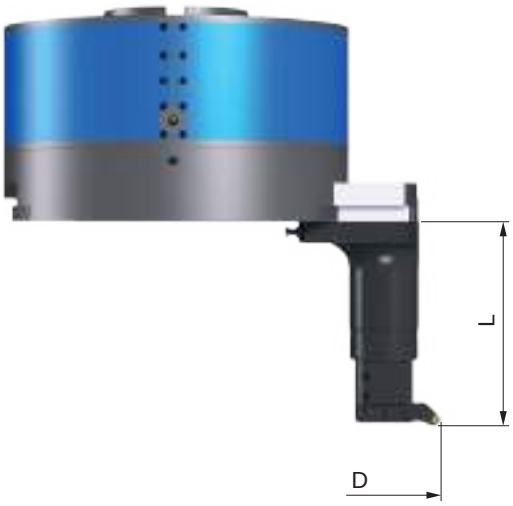
- Special and HYDRAULICS B50 toolholders for automatic tool change, can be provided on request **(pic.1).**
- A richiesta sono fornibili portautensili a cambio automatico dell'utensile B50, speciali e oleodinamici **(pic.1)**

COMMAND

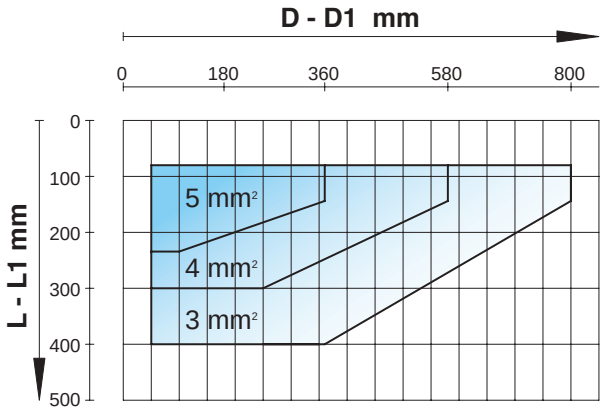
CHIP REMOVAL CAPACITY

The chip removal rates are indicative for normal working conditions on steels with hardness in the range of 160-200 HB, (average Ks = 2000 N/mm2) recommended Vt 120/160 m/min.
The optimal values and working times must be determined with trials.

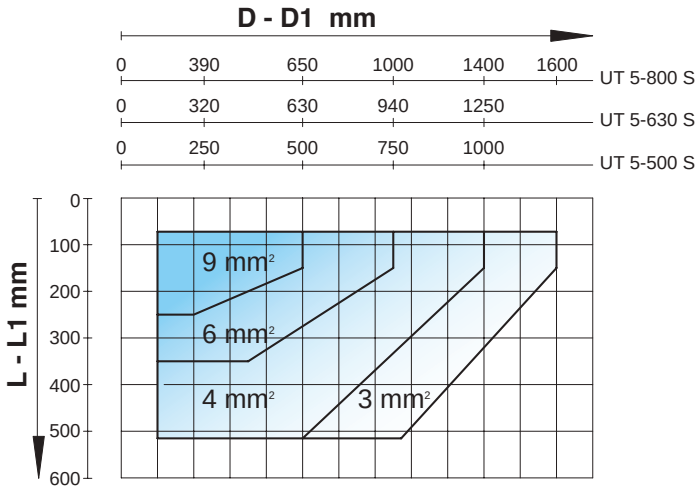
Le asportazioni sono indicative per condizioni di lavoro normali su acciai con durezza 160-200 HB, (Ks medio = 2000 N/mm²) Vt consigliata 120/160 m/min.
I valori ottimali ed i tempi di lavoro dovranno essere determinati con delle prove.



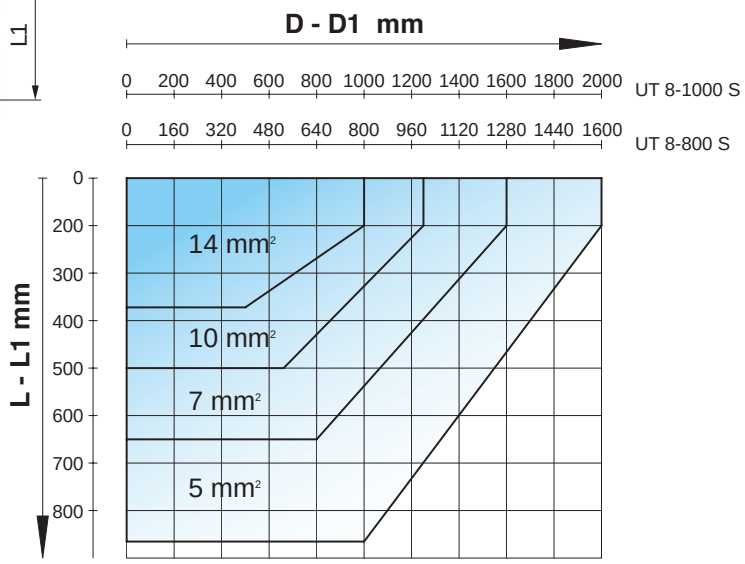
U-TRONIC 3-360 S

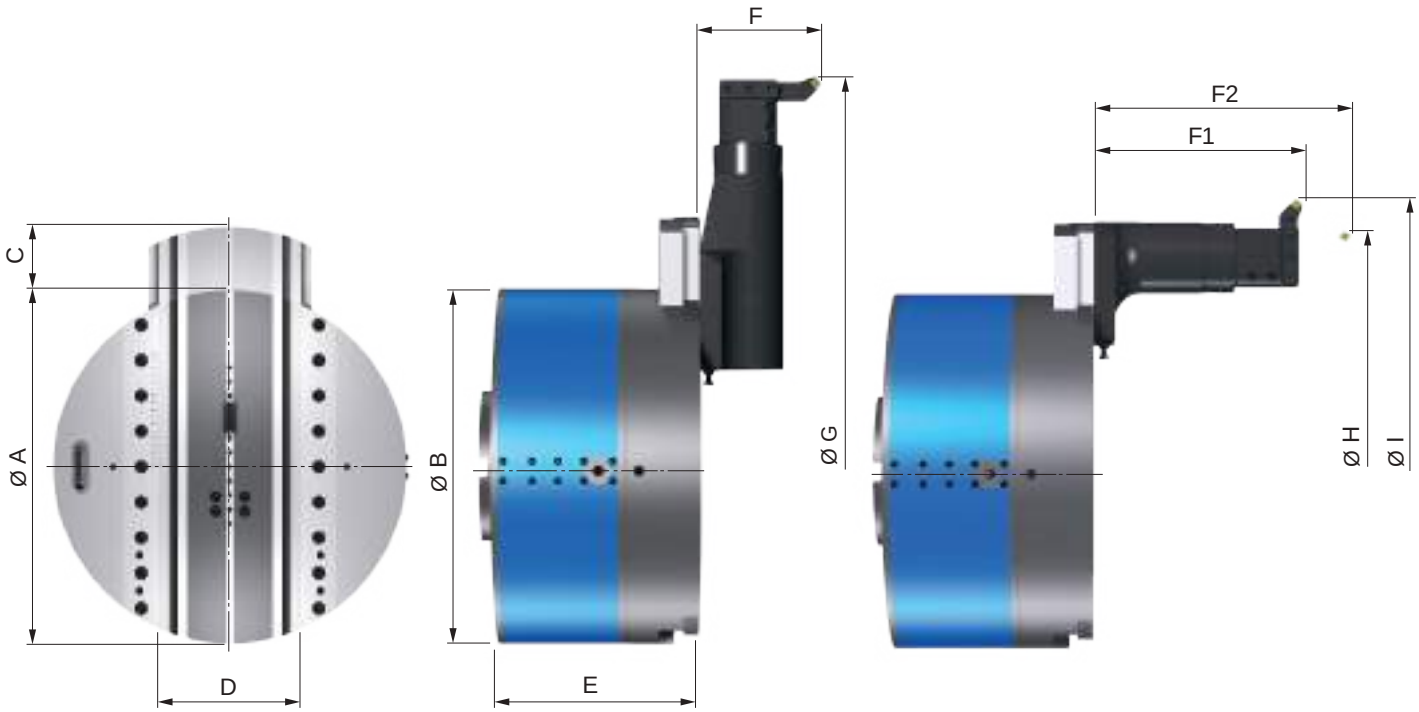


U-TRONIC 5-500 / 5-630 / 5-800 S



U-TRONIC 8-800 / 8-1000 S



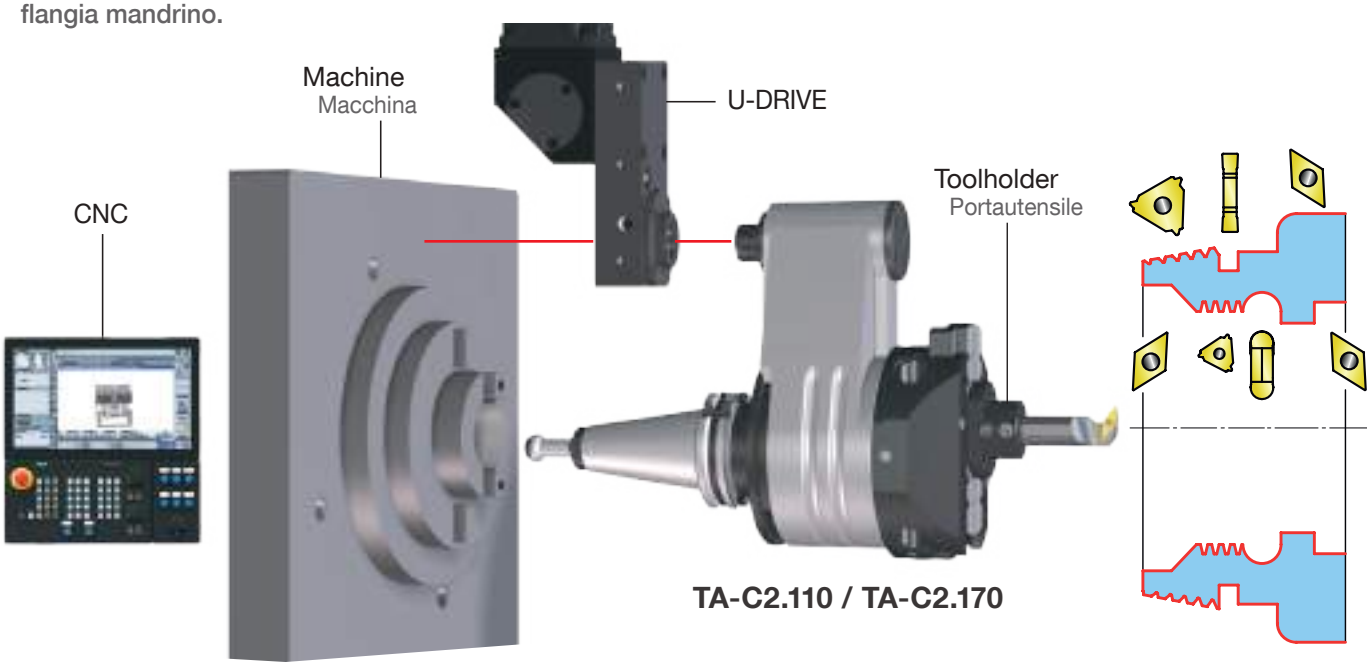


TECHNICAL DATA DATI TECNICI		UT 3-360 S	UT 5-500 S	UT 5-630 S	UT 5-800 S	UT 8-800 S	UT 8-1000 S
Ø A	mm	360	500	630	800		1000
Ø B	mm	360	500			800	
C Radial traverse Corsa radiale	mm	120	160	200	250	280	350
D	mm	154.6	199.6		230	250	260
E	mm	235	278.5	282	370	410	415
Ø G x F	mm	800 x 140	1000 x 150	1250 x 150	1600 x 150	1600 x 160	2000 x 160
Ø H x F2	mm	400 x 400	560 x 540	700 x 540	830 x 540	850 x 860	1050 x 860
Ø I x F1	mm	670 x 240	850 x 295	1050 x 295	1300 x 295	1250 x 370	1600 x 370
Max. mm/min	mm/min	1 ÷ 400				1 ÷ 500	
Max. ↻/min	RPM	500	315	250	200		160
Weight Peso	Kg	130	230	310	530	1000	1200
Radial force Forza radiale	daN	400	500			1000	
Torque Momento torcente	daNm	400	800			1000	
Repeatibility accuracy Precisione di ripetibilità	mm	0.003					
Boring accuracy Precisione in alesatura		IT7					
Max chip removal Max asportazione	mm^2 C40	5	9			14	
Rapid trasverse Rapido	mm/min	400				500	
Roughness Rugosità	Ra	0.8 in optimal working conditions - in condizioni di lavoro ottimali					

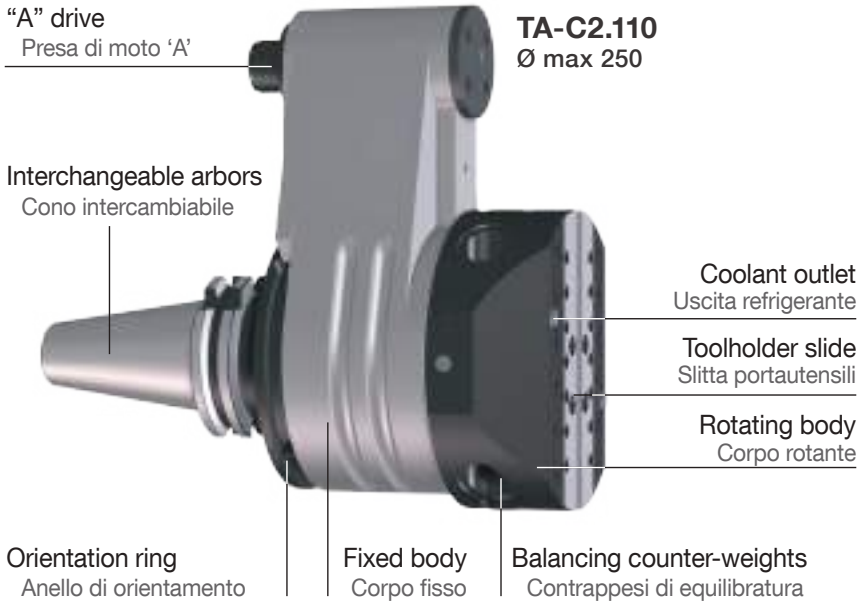
GENERAL FEATURES
CARATTERISTICHE GENERALI

TA-CENTER 2 Boring and facing heads uniquely designed for machines with automatic tool changers and applicable on all machining centers. The toolholder slide movement is managed by an external U-DRIVE unit attached to the spindle flange.

TA-CENTER 2 teste dedicate a macchine con cambio utensile automatico e applicabili su ogni centro di lavoro. Lo spostamento della slitta portautensile è gestito da un gruppo di motorizzazione U-DRIVE esterno e fissato alla flangia mandrino.



TA-C2.110 / TA-C2.170

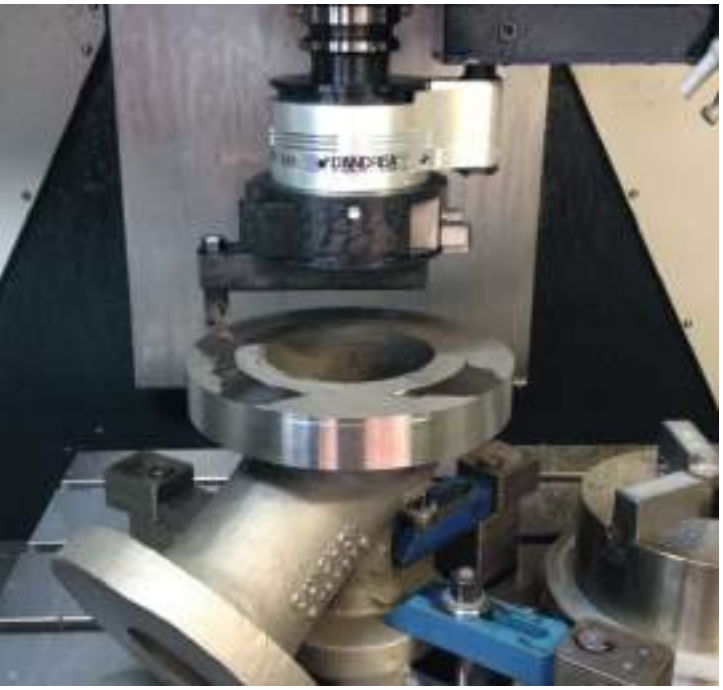


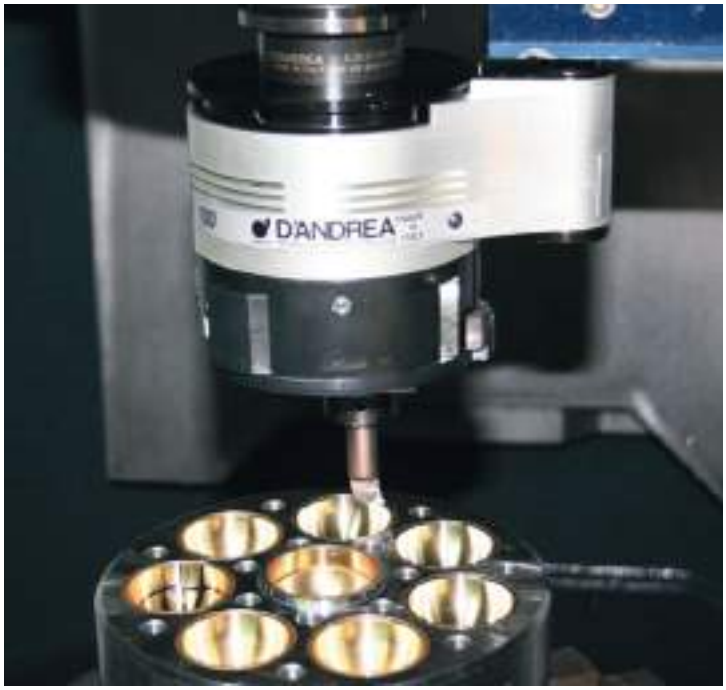
TA-C2.110
Ø max 250

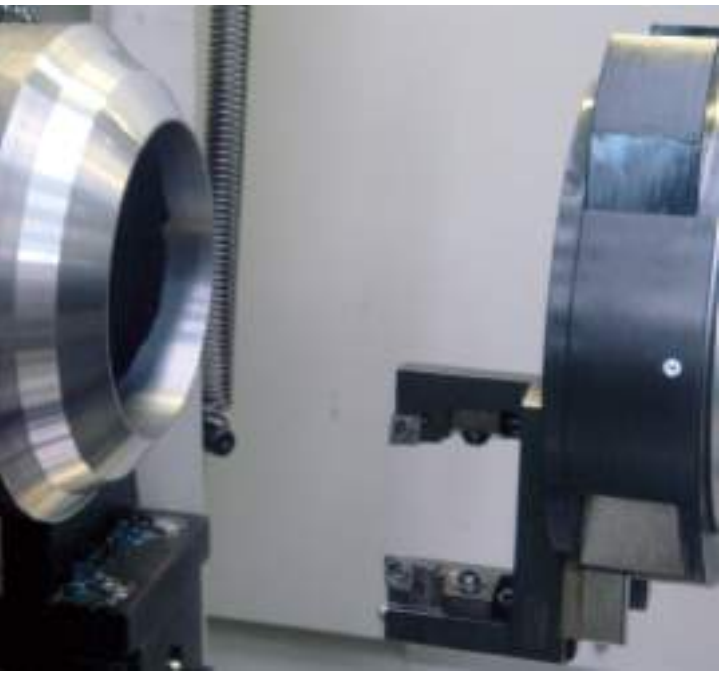
HT5 - HT8

HighT™

TA-C2.170
Ø max 460




D'ANDREA



OPERATIONS U-AXIS

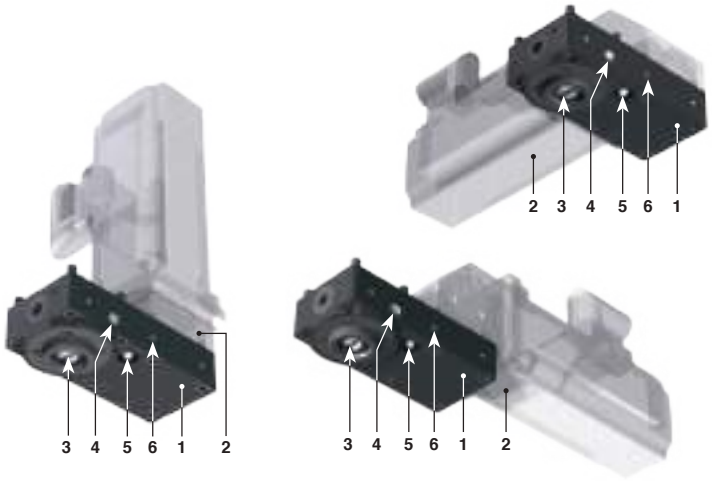
FUNZIONAMENTO ASSE-U

The TA-CENTER 2 boring and facing heads are designed to be used on machines with automatic tool changers, therefore essentially on all machining centers. The control of the feed, the tool-holder slide and the tool position, also during rotation, are controlled by a **U-DRIVE** gearbox unit. This group is managed directly by a U-axis of the numerical control of the machining center. A machining center set up in this way offers several additional and different operations including internal and external turning, grooves, taper bores, concave and convex radius machining, cylindrical and conical threads and facing for serration.

Le teste per alesare e sfacciare
TA-CENTER 2 nascono per essere impiegate su macchine con cambio utensili automatico, dunque essenzialmente su tutti i centri di lavoro. Il controllo dell'avanzamento, della slitta portautensili e della posizione utensile, anche durante la rotazione, è comandato da un gruppo di motorizzazione **U-DRIVE**. Questo gruppo viene gestito direttamente da un asse chiamato "U" del controllo numerico del centro di lavoro. Un centro di lavoro così predisposto permetterà di risolvere una serie di lavorazioni differenti come tornitura interna ed esterna, canalini, alesature coniche anche variabili, raggiature concave e convesse, filettature cilindriche e coniche, spirali fonografiche.

COMPONENTS U-DRIVE

COMPONENTI U-DRIVE



1. Base element
2. Servomotor
3. Mechanical unit for automatic hook-up to the TA-CENTER 2 drive
4. The unit comes with air inlet connection for cleaning the drive
5. Manual lubrication
6. n°6 M5x8 holes to be used for securing a possible protective casing

1. Corpo base
2. Servomotore
3. Gruppo meccanico per il collegamento alla presa di moto della TA-CENTER 2
4. Predisposizione attacco entrata aria per pulizia della presa di moto
5. Ingrassatore manuale
6. N°6 fori M5x8 da utilizzare per il fissaggio di un eventuale carter di protezione

PREARRANGEMENTS

PREDISPOSIZIONI

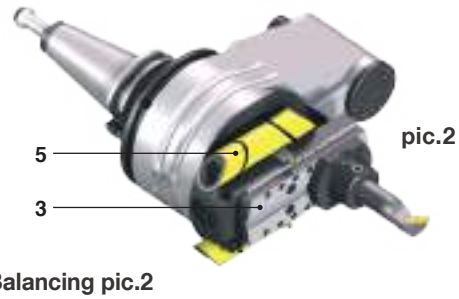
pic.1

Coolant supply pic.1

Coolant exits from the two adjustable nozzles in the TA-C2 located next to the slide after crossing the taper and the rotating body of the head. This noteworthy advantage ensures longer duration of the cutting edge, quicker cutting speed and for obtaining good surface finishes. The centralized supply of coolant does not harm the TA-C2 of which the internal labyrinth protected by an O-ring. It is advisable to not exceed **50 BAR** of pressure.

Adduzione liquido refrigerante fig.1

Nelle TA-C2 il liquido refrigerante esce da due ugelli orientabili posti a fianco della slitta dopo aver attraversato il cono ed il corpo rotante della testa. Questo notevole vantaggio assicura una maggiore durata dell'inserto, una maggiore velocità di taglio e l'ottenimento di buone finiture superficiali. L' adduzione centralizzata del liquido refrigerante non danneggia la TA-C-2 i cui labirinti interni sono protetti da anelli di tenuta.
È consigliabile non superare i **50 BAR** di pressione.



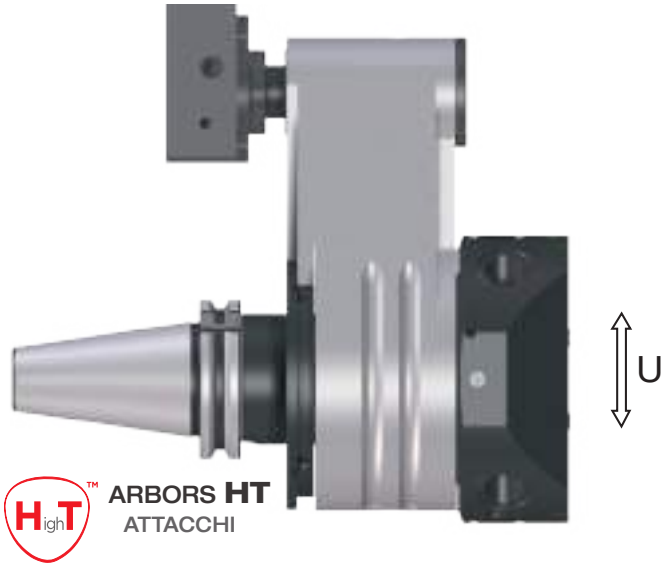
pic.2

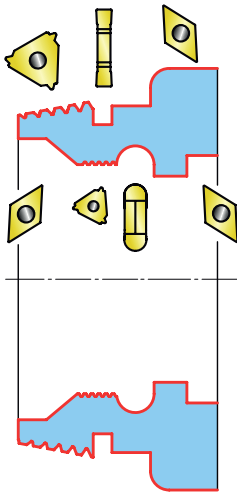
Balancing pic.2

TA-CENTER heads are designed with two counter-weights **(5)** for automatic balancing, that move opposite to the slide **(3)** allowing to machine at a higher number of rpm without noticeable oscillations.

Bilanciatura fig.2

Le teste TA-C2 sono state progettate con due contrappesi **(5)** per il bilanciamento automatico, che si muovono in senso opposto alla slitta **(3)** permettendo di lavorare ad un elevato numero di giri senza oscillazioni apprezzabili.

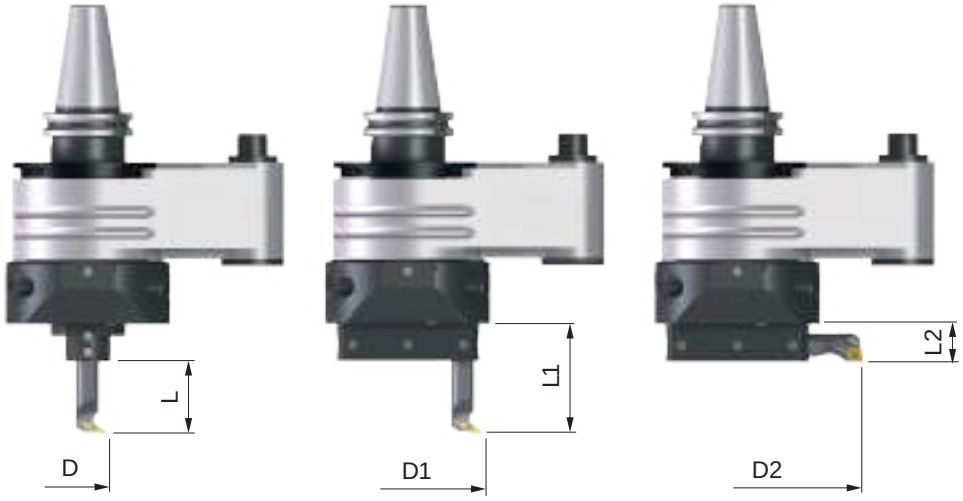




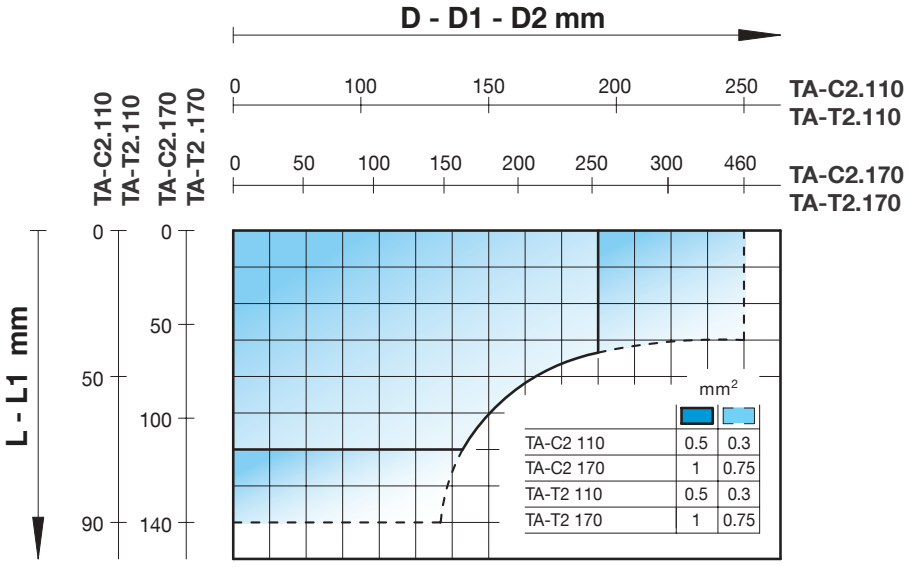
CHIP REMOVAL CAPACITY
CAPACITÀ DI ASPORTAZIONE
TA-C2 / TA-T2

The chip removal rates are indicative for normal working conditions on steels with hardness in the range of 160-200 HB, (average Ks = 2000 N/mm2) recommended Vt 120/160 m/min.
The optimal values and working times must be determined with trials.

Le asportazioni sono indicative per condizioni di lavoro normali su acciai con durezza 160-200 HB, (Ks medio = 2000 N/mm²) Vt consigliata 120/160 m/min.
I valori ottimali ed i tempi di lavoro dovranno essere determinati con delle prove.



	TA-C2.110 TA-T2.110	TA-C2.170 TA-T2.170
D	10 ~ 102	20 ~ 194
L	65	100
D1	96 ~ 126	153 ~ 263
L1	90	140
D2	126 ~ 250	203 ~ 460
L2	25.5	38.5

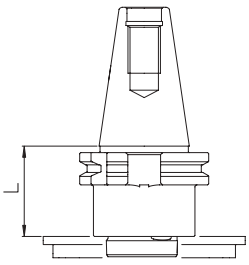


K02

REF.	CODE	
K02 TA-C2.110 I.80 R. 0.25	501271100800	
K02 TA-C2.110 I.80 R. 0.5	501271100801	
K02 TA-C2.110 I.110 R. 0.25	501271101100	
K02 TA-C2.110 I.110 R. 0.5	501271101101	
K02 TA-C2.170 I.110 R. 0.25	501271701100	
K02 TA-C2.170 I.110 R. 0.5	501271701101	
U-DRIVE KB1-KA1		

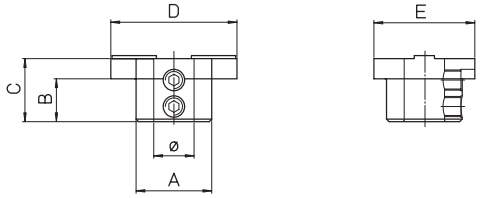
For Interchangeability with previous version TA-CENTER, use **TA-C2** with mechanical ratio **R.0.5.**
Per Intercambiabilità con versione precedente TA-CENTER. Utilizzare **TA-C2** con rapporto meccanico **R.0.5.**

ARBORS HT - ATTACCHI HT TA-C2 / TA-T2



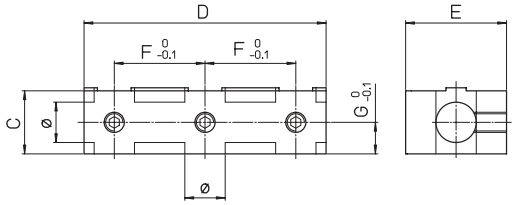
	REF.		CODE	L	Kg	
TA-C2.110 TA-T2.110	DIN69871-AD40	HT5 .36.5	41HT15024000	36.5	1.1	
	DIN69871-AD40	HT5 .44.5	41HT15024001	44.5	1.2	
	MAS403BT-AD40	HT5 .27	41HT15034000	27	1	
	MAS403BT-AD40	HT5 .36.5	41HT15034001	36.5	1.1	
	MAS403BT-AD40	HT5 .44.5	41HT15034002	44.5	1.2	
	HSK-A63	HT5 .54.5	41HT15046301	54.5	1.1	
	HSK-100	HT5 .60.5	41HT15041000	60.5	2.8	
	CAT40 UNC	HT5 .54.5	41HT15054000	54.5	1.3	
TA-C2.110	DIN69871-AD50	HT5 .36.5	41HT15025000	36.5	2.8	
	MAS403BT-AD50	HT5 .54.5	41HT15035000	54.5	3.7	
	CAT50 UNC	HT5 .36.5	41HT15055000	36.5	2.8	
TA-C2.170 TA-T2.170	DIN69871-AD50	HT8 .36.5	41HT18025000	36.5	3.4	
	DIN69871-AD50	HT8 .50.5	41HT18025001	50.5	3.9	
	MAS403BT-AD50	HT8 .38.5	41HT18035000	38.5	3.7	
	MAS403BT-AD50	HT8 .63.5	41HT18035002	63.5	4.6	
	HSK-A100	HT8 .76.5	41HT18041000	76.5	4	
	CAT50 UNC	HT8 .50.5	41HT18055000	50.5	3.9	

P120 TA-C2 / TA-T2

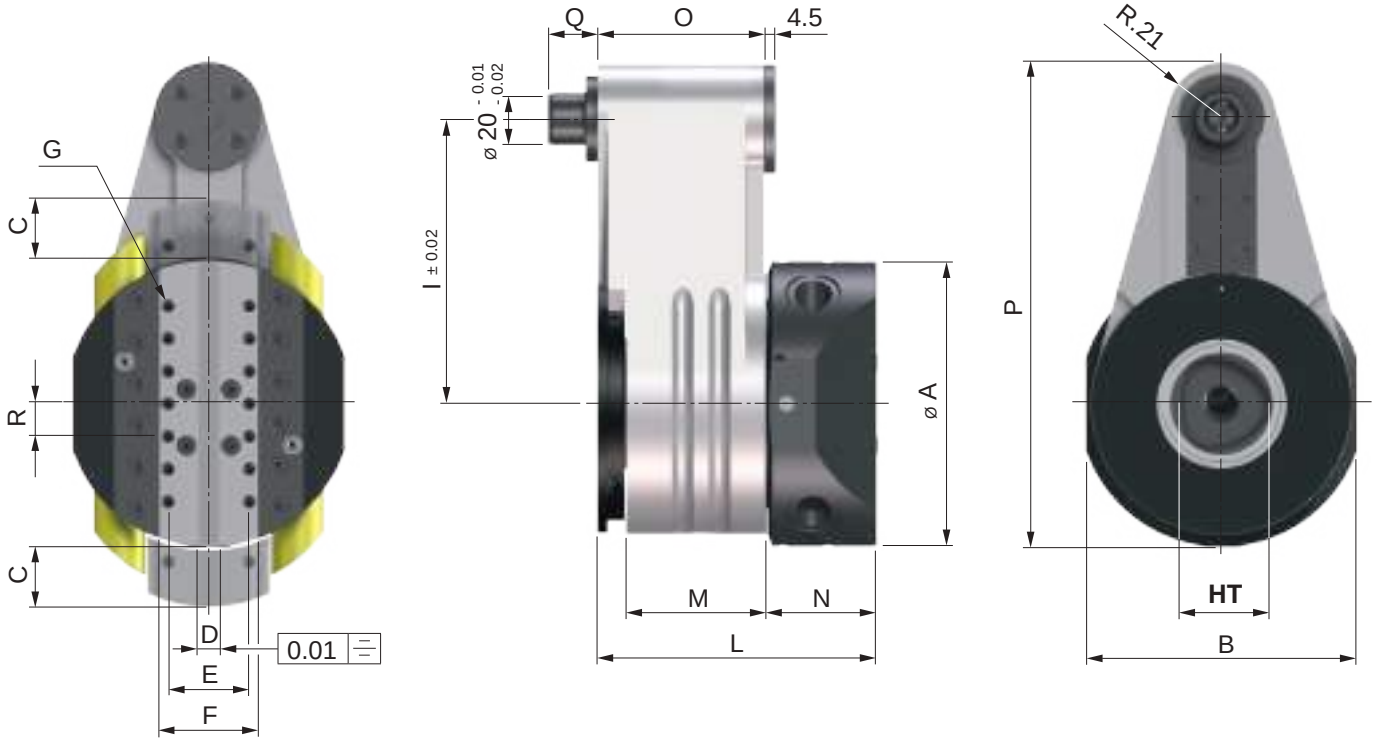


REF.	CODE	ØH7	A	B	C	D	E	Kg.	
P 120 TA-C2.110 / TA-T2.110	431550160250	16	30	17	25	50	40	0.2	
P 120 TA-C2.170 / TA-T2.170	431550250380	25	47	27.5	38	76	54	0.55	

P130 TA-C2 / TA-T2



REF.	CODE	ØH7	C	D	E	F	G	Kg.	
P 130 TA-C2.110 / TA-T2.110	433040250950	16	25	95	40	37	10.5	0.5	
P 130 TA-C2.170 / TA-T2.170	433054381520	25	38	152	54	59.5	16.5	1.6	

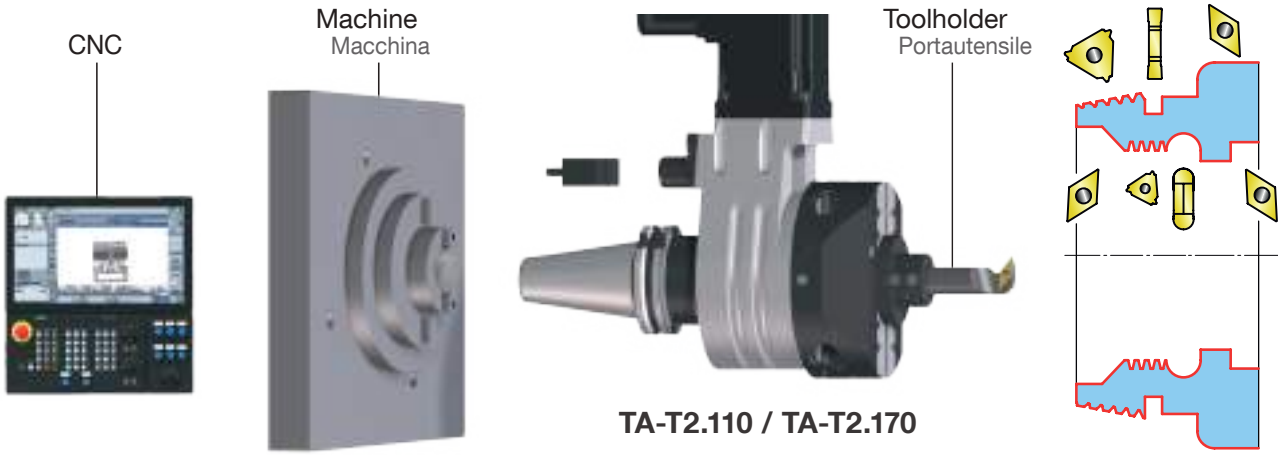


TECHNICAL DATA DATI TECNICI		TA-C2.110	TA-C2.170
Ø A	mm	110	170
B	mm	104	164
C Radial traverse Corsa radiale	mm	± 15	± 30
D	mm	$8^{+0.04}_{+0.02}$	$10^{+0.04}_{+0.02}$
E	mm	31	40
F	mm	38	54
G	mm	M 4	M5
HT	mm	**HT5**	**HT8**
I	mm	80/110	110
L	mm	108	136
M	mm	55	69
N	mm	42	56
O	mm	64.5	69
P	mm	156 / 186	216
Q	mm	19	19
R	mm	12.5	12.5
Feed Avanzamento	mm/min	1 ÷ 500	
Radial force Forza radiale	daN	150	250
Maximum speed Massima velocità	RPM	2500	2000
Torque Momento torcente	Nm	400	800
Weight without the cone Peso senza cono	Kg	5.7 / 6.1	16.6
Repeatibility accuracy Precisione di ripetibilità	mm	0.003	
Boring accuracy Precisione in alesatura		IT7	
Max workable ø Ø max. lavorabile	mm	250	460
Max chip removal on C40 steel Cap. max asportazione su Acc.C40	mm^2	0,5	1
Roughness Rugosità	Ra	0.8 in optimal working conditions - in condizioni di lavoro ottimali	

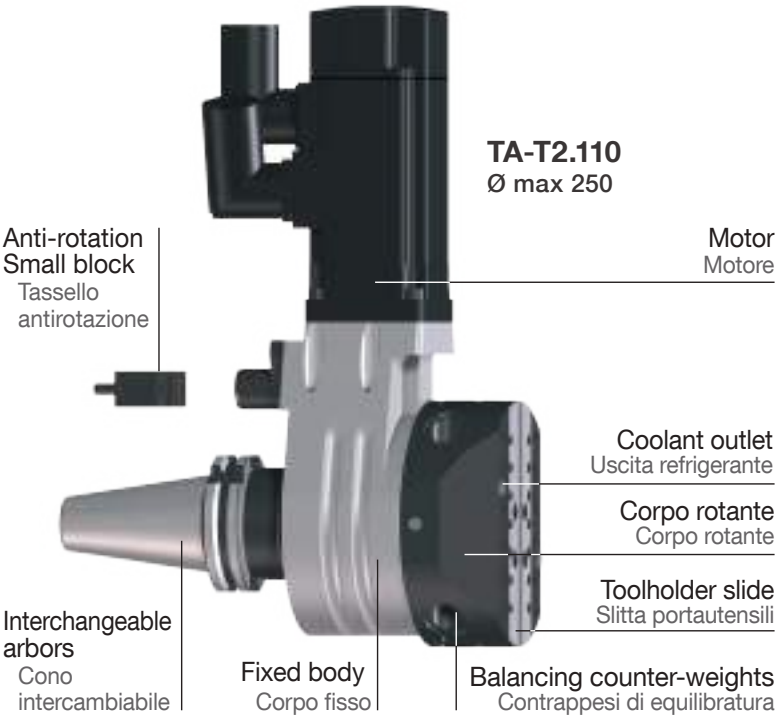
GENERAL FEATURES
CARATTERISTICHE GENERALI

TA-TRONIC 2 Boring and facing heads designed to be applied manually on small boring machines, machining centers and special machines. The integrated servomotor, connected to the CN, manages the toolholder slide movement. The stationary body is held in position by a flange or, for light operations, by a simple anti-rotation pin.

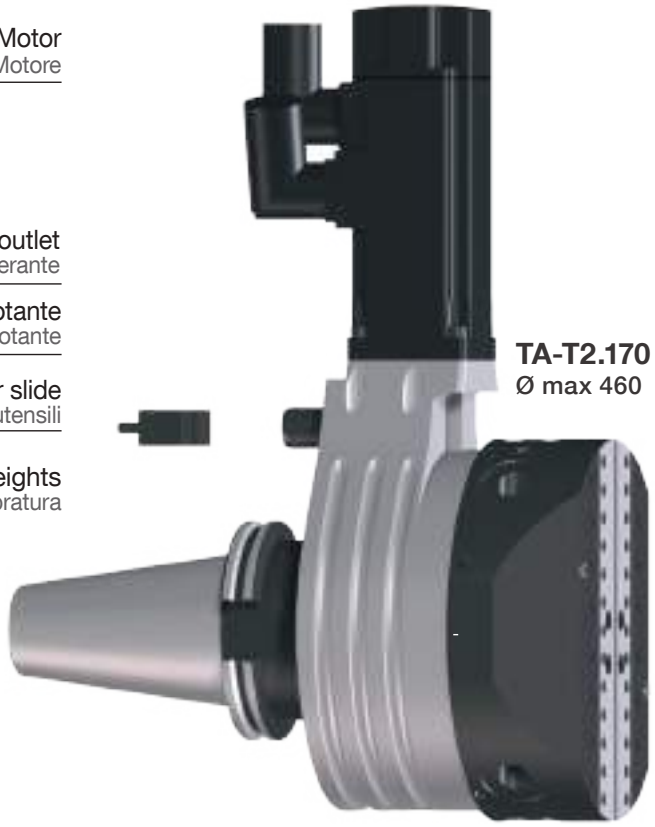
TA-TRONIC 2 Teste progettate per essere applicate manualmente su piccole alesatrici, centri di lavoro e macchine speciali. Il motore integrato si collega al CN e gestisce lo spostamento della slitta portautensile. Il corpo fisso viene mantenuto in posizione da una flangia o, per operazioni poco gravose, da un semplice perno antirotazione.



TA-T2.110 / TA-T2.170



OPERATIONS U-AXIS
FUNZIONAMENTO ASSE-U



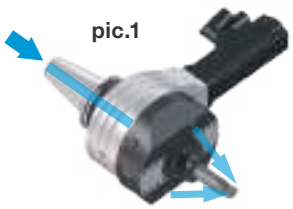
OPERATIONS U-AXIS - FUNZIONAMENTO ASSE-U

The control of the TA-T2 heads takes place through the direct connection to the "U" axis of the numerical control of the machine tool that allows boring, internal, external and back facing, internal and external turning, grooves, facing for serration, threads and taper bores, as well as concave and convex radius machining through interpolation with the other axes.

Il comando delle teste TA-T2 avviene tramite il collegamento diretto all'asse "U" del controllo numerico della macchina utensile che permette lavorazioni di alesatura, sfacciatura interna, esterna e sottosquadra, tornitura interna ed esterna, canalini, spirali fonografiche, filettature e alesature coniche, alesature coniche anche variabili, raggiature concave e convesse mediante l'interpolazione con gli altri assi.

CNC

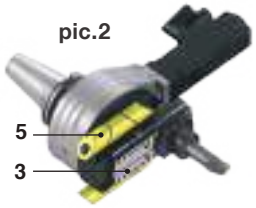
pic.1



Coolant supply pic.1 In the TA-T2, coolant exits from the two adjustable nozzles are located next to the slide after crossing the taper and the rotating body of the head. This noteworthy advantage ensures longer duration of the cutting edge, quicker cutting speed and for obtaining good surface finishes.
The centralized supply of coolant does not harm the TA-T2 of which the internal labyrinth protected by an O-ring. It is advisable not to exceed **50 BAR** of pressure.

Adduzione liquido refrigerante pic.1 Nelle TA-T2 il liquido refrigerante esce da due ugelli orientabili posti a fianco della slitta dopo aver attraversato il cono ed il corpo rotante della testa. Questo notevole vantaggio assicura una maggiore durata dell'inserto, una maggiore velocità di taglio e l'ottenimento di buone finiture superficiali. L' adduzione centralizzata del liquido refrigerante non danneggia la TA-T2 i cui labirinti interni sono protetti da anelli di tenuta.
È consigliabile non superare i **50 BAR** di pressione.

pic.2



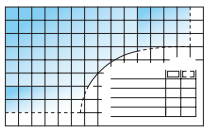
Balancing pic.2 TA-TRONIC heads are designed with two counter-weights **(5)** for automatic balancing, that move opposite to the slide **(3)** allowing to machine at a higher number of rpms without noticeable oscillations.

Bilanciatura pic.2 Le teste TA-T2 sono state progettate con due contrappesi **(5)** per il bilanciamento automatico, che si muovono in senso opposto alla slitta **(3)** permettendo di lavorare ad un elevato numero di giri senza oscillazioni apprezzabili.

REF.	CODE
K02 TA-T2.110 1FK7022-5AK74-1HA5	501221100400
K02 TA-T2.110 FANUC βis 1/6000	501221100800
K02 TA-T2.170 1FK7032-2AK74-1EA2	501221700400
K02 TA-T2.170 FANUC βis 1/6000	501221700800
FLANGIA TA-T2.110 / TA-T2.170	

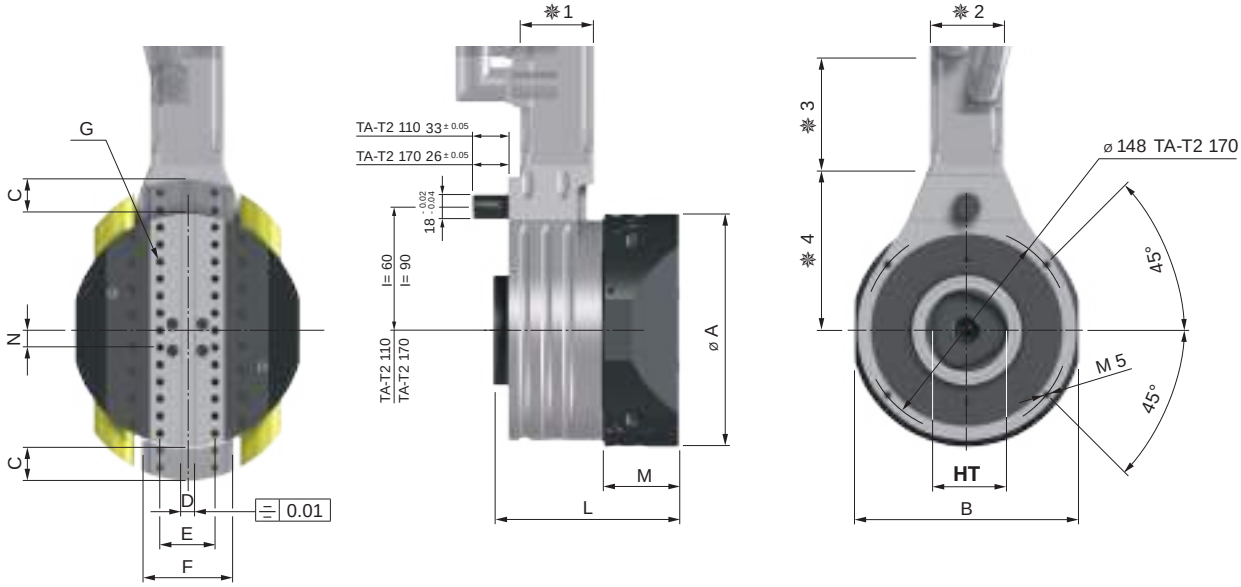
K02

CHIP REMOVAL
ASPORTAZIONE p.71



ARBORS HT- P120 - P130
ATTACCHI p.72

TECHNICAL DATA - DATI TECNICI



TECHNICAL DATA DATI TECNICI		TA-T2.110	TA-T2.170
Ø A	mm	110	170
B	mm	104	164
C radial traverse corsa radiale	mm	± 15	± 30
D	mm	$8^{+0.04}_{+0.02}$	$10^{+0.04}_{+0.02}$
E	mm	31	40
F	mm	38	54
G	mm	M4	M5
HT	mm	**5**	**8**
L	mm	108	136
M	mm	42	56
N	mm	12.5	
Feed Avanzamento	mm/min	1 ÷ 500	
Radial force Forza radiale	daN	150	250
Maximum speed Massima velocità	RPM	2500	2000
Repeatibility accuracy Precisione di ripetibilità	mm	0.003	

TECHNICA DATA DATI TECNICI		TA-T2.110	TA-T2.170
Torque - Momento torcente	Nm	400	800
Weight without the cone Peso senza cono	Kg	5.3 without motor senza motore	15.8 without motor senza motore
Boring accuracy Precisione in alesatura		IT7	
Max workable Ø - Ø max. lavorabile	mm	250	460
Max chip removal on C40 steel Cap. max asportazione su Acc.C40	mm^2	0,75	1
Roughness - Rugosità	Ra	0.8 in optimal working conditions in condizioni di lavoro ottimali	
SIEMENS Motors Dimensions Dimensioni Motori SIEMENS		**Siemens 1FK7022**	**Siemens 1FK7032**
✵ **1**		55	72
✵ **2**		55	72
✵ **3**		178	173
✵ **4**		90	120
FANUC Motors Dimensions Dimensioni Motori FANUC		**FANUC βis 1/6000**	
✵ **1**		60	
✵ **2**		60	
✵ **3**		111.5	
✵ **4**		90/120	

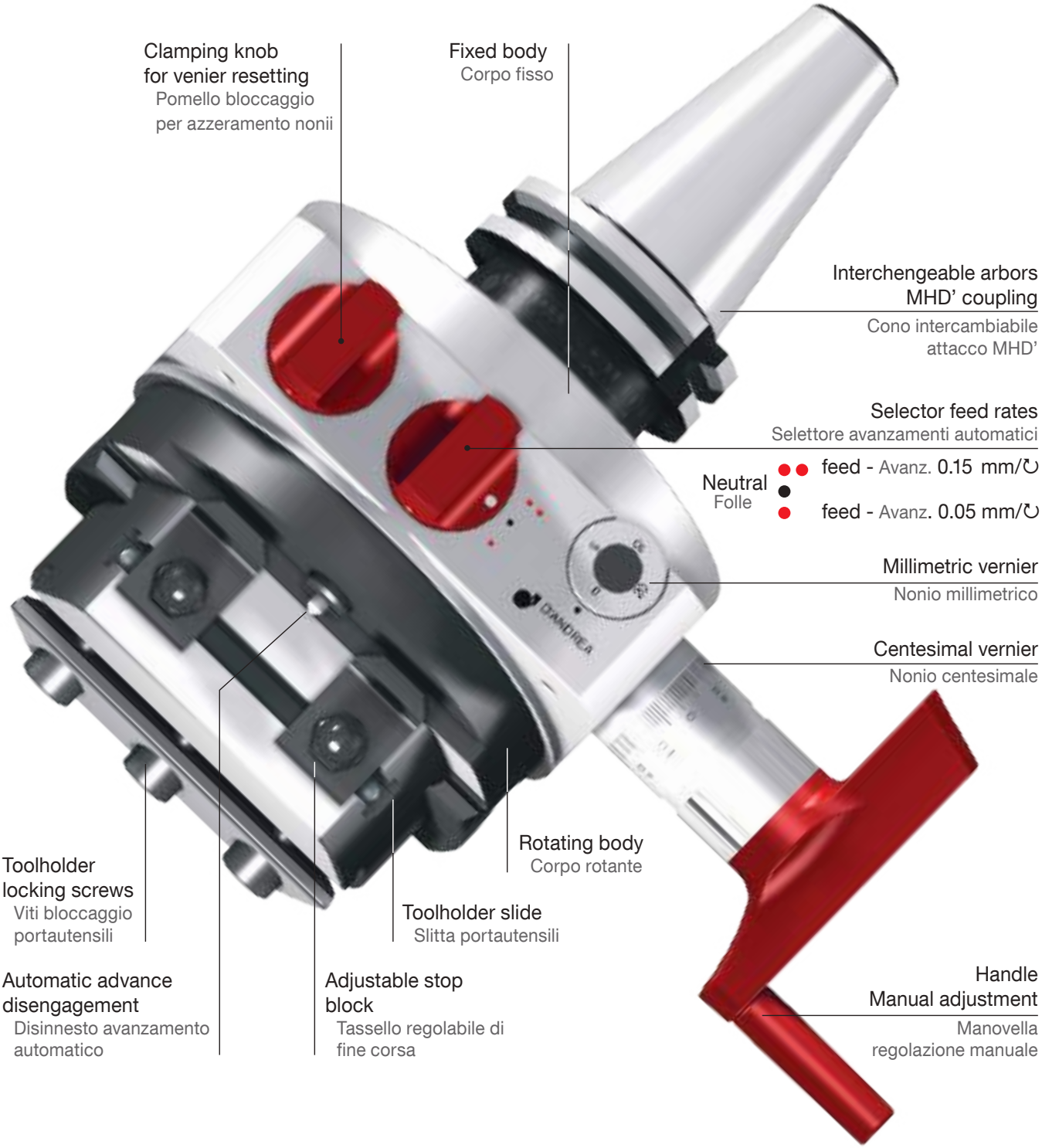
✵ **Rough measures that may vary on changing the motor**
Misure indicative che possono variare al variare del motore

GENERAL FEATURES
CARATTERISTICHE GENERALI

TA-SENSITIV 2 - Boring and facing heads, applicable for milling machines, boring mills and radial drills with the possibility of manual adjustments during **machine stops** and automatic feeds during the revolution of the machine spindle. It's possible to carry out external and internal facing operations, backward operations, cylindrical and conical borings, internal and external grooves, turning and chamfers. The arbor is interchangeable and, thanks to the MHD' coupling, it allows the use of all available arbors from the MHD' modular system.

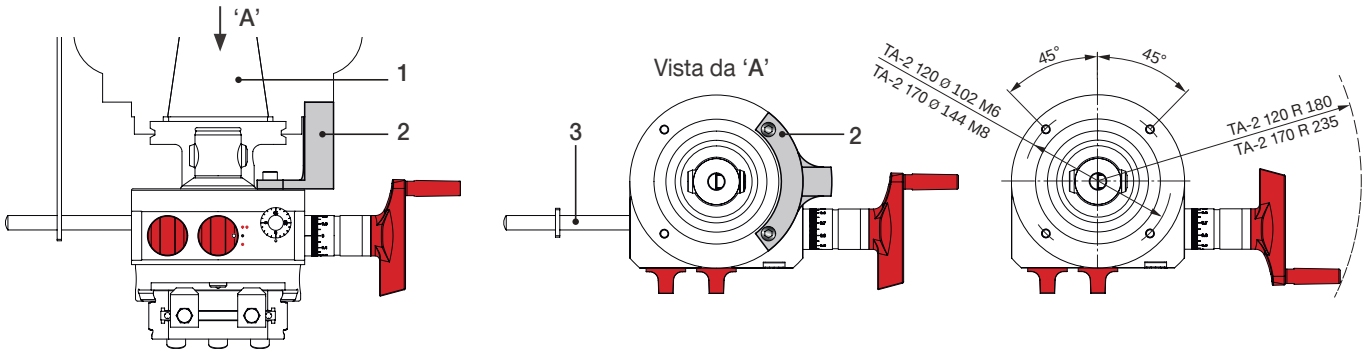
TA-SENSITIV 2 - Teste per alesare e sfacciare, applicabili a fresatrici, alesatrici e trapani radiali con possibilità di regolazioni manuali a **macchina ferma** ed avanzamenti automatici durante la rotazione del mandrino macchina. È possibile effettuare lavorazioni di sfacciature esterne, interne, sottosquadra, alesature cilindriche e coniche, scanalature interne ed esterne, torniture e smussature. Il cono è intercambiabile e, grazie all'adattatore MHD' System , permette l'utilizzo di tutti i coni disponibili del nostro sistema modulare.

TA-S2.120 max Ø 250 **TA-S2.170** max Ø 400



The TA-S2 heads can be applied to the machine tools through the driving arbor **(1)** and an anti-rotation stop block **(2)** and a retaining rod **(3)**. For heavy machining it is recommended to apply a flange.

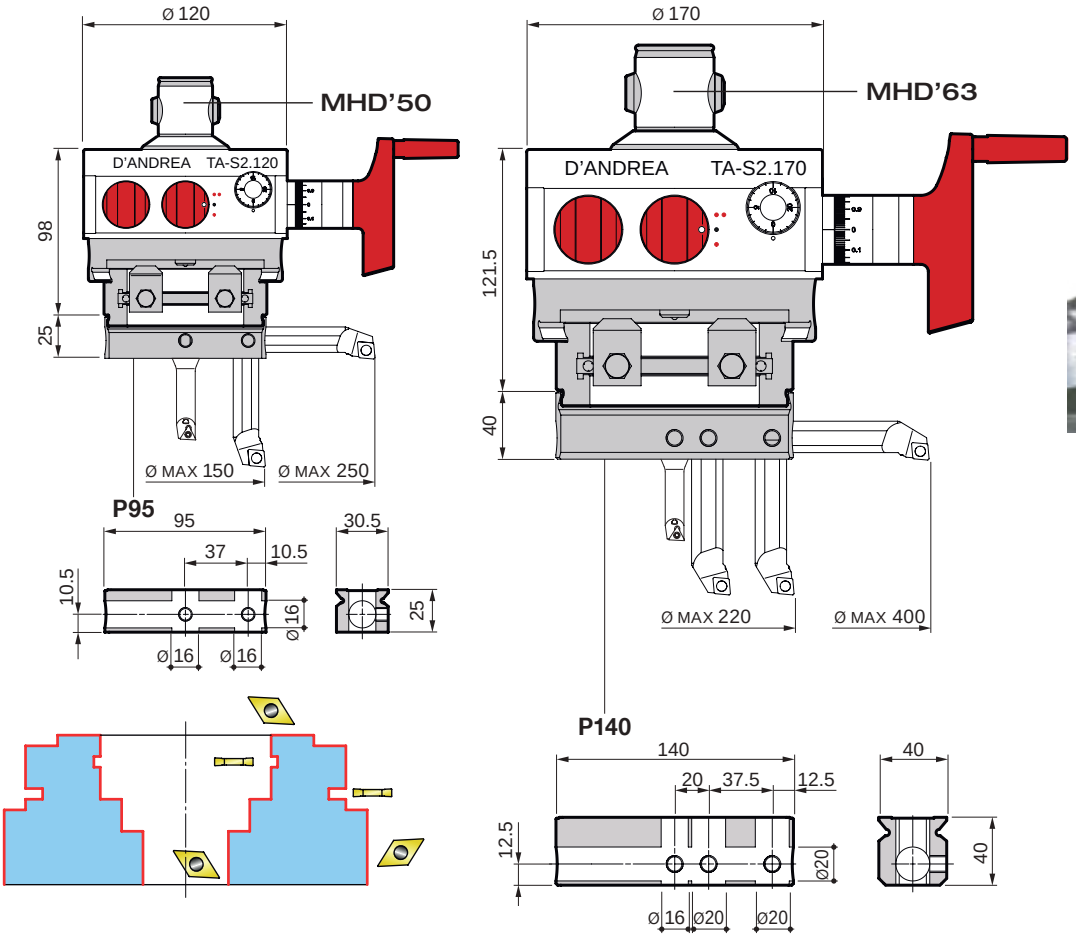
Le TA-S2 vengono applicate alla macchina utensile mediante il cono di trascinamento **(1)**, un tassello di fermo antirotativo **(2)** e un asta di ritegno **(3)**. Per lavorazioni gravose è consigliato applicare una flangia.



TECHNICAL DATA
DATI TECNICI

REF.	CODE	Kg	
K02 TA-S2.120	500212031001	5,8	
P95 TA-S2.120	433030300951	0,4	
K02 TA-S2.170	500217031001	14	
P140 TA-S2.170	433040401401	0,8	

TA-S2.120	TECHNICAL DATA - DATI TECNICI		TA-S2.170
250	Max workable ø - Ø max. lavorabile	mm	400
40	C radial traverse - corsa radiale	mm	60
1000	Maximum speed - Max. velocità	RPM	800
6.5	Net weight - Peso netto	Kg	19
400	Torque - Momento torcente	Nm	800
2 - 6	Motor Power - Potenza motore	Kw	3.5 - 11



GENERAL FEATURES
CARATTERISTICHE GENERALI

AUTORADIAL Automatic facing heads that can be applied on machining centers and on NC machines without the need for an electronic interface or interlock. They perform automatic working cycle without ever stopping the rotation of the spindle. Particularly suitable for machining of seats for elastic rings, facing for serration and creating “phonographic” spirals.

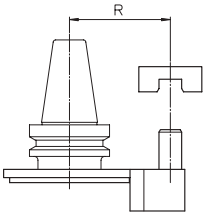
AUTORADIAL teste automatiche a sfacciare, applicabili su centri di lavoro e macchin a CN senza bisogno di alcuna interfaccia elettronica o asservimento.
Eseguono automaticamente un ciclo di lavoro senza mai arrestare la rotazione del mandrino.Particolarmente indicate per l’esecuzione di sedi per anelli elastici e spirali fonografiche.

K02

SPECIAL AUTORADIALS ON REQUEST
A RICHIESTA AUTORADIAL SPECIALI

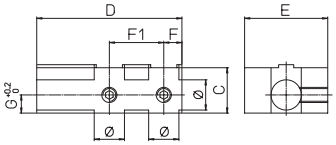
REF.	Fmm/↻	K02 AR 125 CODE	K02 AR 160 CODE
K02 AR...-F.0.05 ±0.005	0.05	500612520050	500616020050
K02 AR...-F.0.1 ± 0.005	0.1	500612520100	500616020100
K02 AR...-F.0.2 ± 0.01	0.2	500612520200	500616020200
K02 AR...-F.0.3 ± 0.01	0.3	500612520300	500616020300
K02 AR...-F.0.4 ± 0.02	0.4	500612520400	500616020400
K02 AR...-F.0.5 ± 0.02	0.5	500612520500	500616020500
K02 AR...-F.0.6 ± 0.02	0.6	500612520600	500616020600

K-NC



REF.	R.80 CODE		R.110 CODE	
K-NC R...-AR125	394112508002		394112511002	
K-NC R...-AR160	394116008002		394116011003	

P110



REF.	CODE	ØH7	C	D	E	F	F1	G	Kg.
AR 125 - P 110	433056381200	25	39	121	56	15	45.5	16	1.3
AR 160 - P 110	433063481600	32	49	164	63	19	63	21	2.5

MHD’

REF.	MHD’ Complete range of arbors on page 10 Gamma completa dei coni a pag.10
AR 125	63
AR 160	80

Fmm/↻

REF.		Fmm/↻	K02 AR 125 CODE		K02 AR 160 CODE	
F. 0.05-AR...	± 0.005	0.05	382006105001		382006205001	
F. 0.1 - AR...	± 0.005	0.1	382006110001		382006210001	
F. 0.2 - AR...	± 0.01	0.2	382006120001		382006220001	
F. 0.3 - AR...	± 0.01	0.3	382006130001		382006230001	
F. 0.4 - AR...	± 0.02	0.4	382006140001		382006240001	
F. 0.5 - AR...	± 0.02	0.5	382006150001		382006250001	
F. 0.6 - AR...	± 0.02	0.6	382006160001		382006260001	

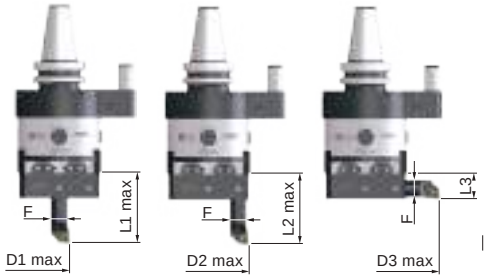
CHIP REMOVAL CAPACITY
CAPACITÀ DI ASPORTAZIONE

The chip removal rates are indicative for normal working conditions on steels with hardness in the range of 160-200 HB, (average Ks = 2000 N/mm2) recommended Vt 120/160 m/min.

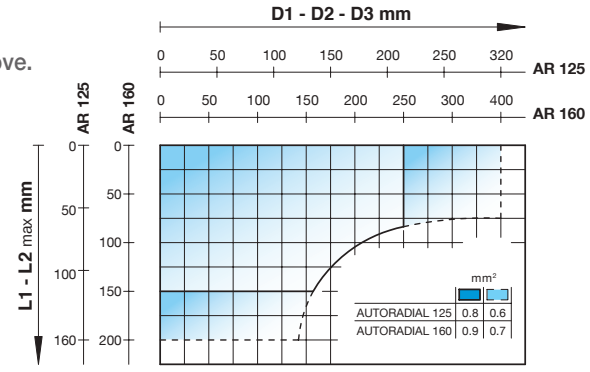
The optimal values and working times must be determined with trials.

Le asportazioni sono indicative per condizioni di lavoro normali su acciai con durezza 160-200 HB, (Ks medio = 2000 N/mm²) Vt consigliata 120/160 m/min.

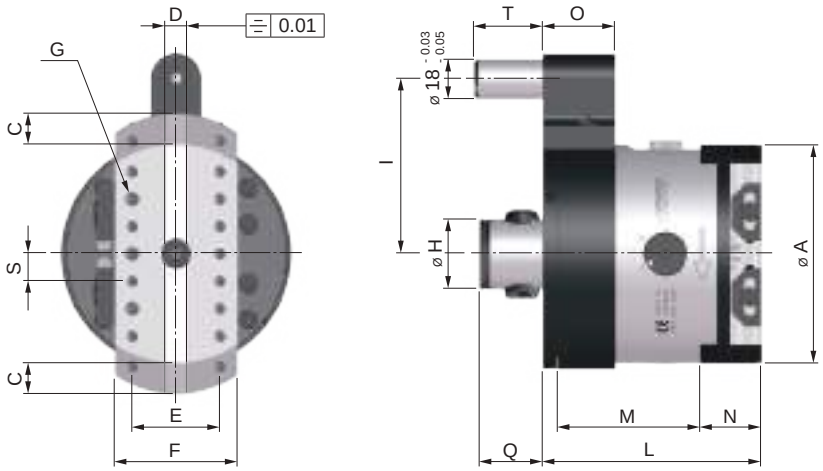
I valori ottimali ed i tempi di lavoro dovranno essere determinati con delle prove.



	AR 125	AR 160
F	25	32
D1 max	99	144
L1	160	200
D2 max	190	270
L2	160	200
D3 max	320	400
L3	40	50



TECHNICAL DATA
DATI TECNICI



TECHNICAL DATA DATI TECNICI		AR 125	AR 160
Ø A	mm	125	160
Ø B	mm	130	130
C radial traverse corsa radiale	mm	± 20	± 35
D	mm	$10^{+0.03}_{0}$	$12^{+0.03}_{0}$
E	mm	40	50
F	mm	$63^{-0.003}_{-0.007}$	$80^{-0.003}_{-0.007}$
G	mm	M5	M6
Ø H	mm	(MHD’63) $42^{-0.005}_{-0.008}$	(MHD’80) $42^{-0.005}_{-0.008}$
I	mm	80/110	80/110
L	mm	110	125

TECHNICA DATA DATI TECNICI		AR 125	AR 160
M	mm	75	83
N	mm	28	35
O	mm	35	35
P	mm	156.5 / 186.5	171.5 / 201.5
Q	mm	38.5	44.5
S	mm	12.5	15
T	mm	39.5	45.5
Maximum speed Massima velocità	RPM	500	400
Weight without the cone Peso senza cono	Kg	9	14
Quick return Ritorno rapido	mm/↻	0.8	0.8

GENERAL FEATURES
CARATTERISTICHE GENERALI

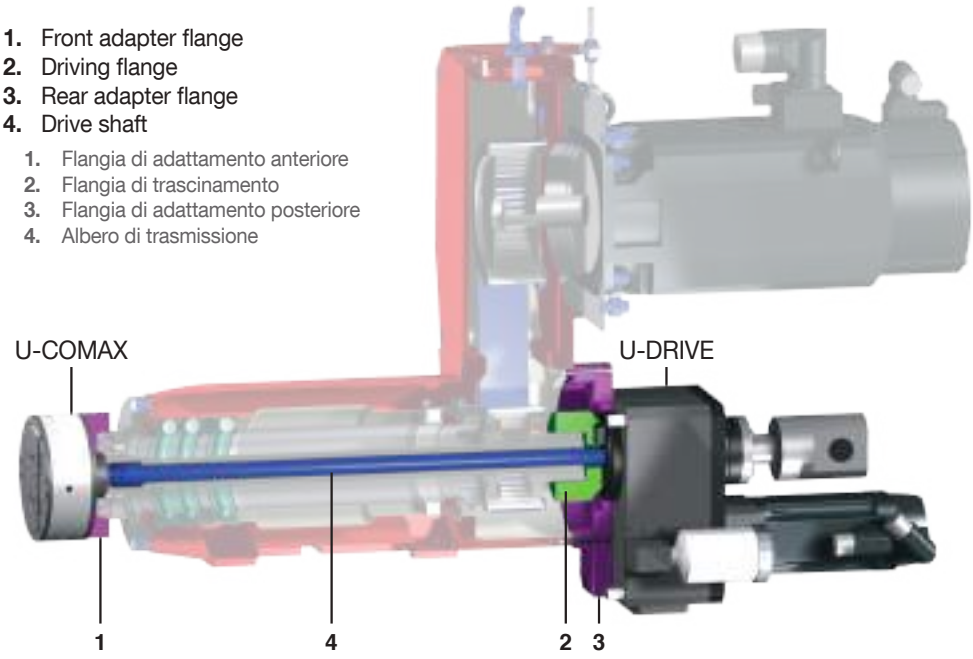
U-COMAX axial control heads designed to be used on transfer machines or special units. The movement of the slide is managed by a U-DRIVE gearbox unit mounted at the back of the spindle unit and managed by the NC.

U-COMAX teste a comando assiale destinate all'impiego su macchine transfer o unità speciali. Lo spostamento della slitta è gestito da un gruppo di motorizzazione U-DRIVE montato posteriormente all'unità mandrino e gestito dal CN.

MECHANICAL CONTROL (U-DRIVE) - UNITÁ DI COMANDO MECCANICA (U-DRIVE)

1. Front adapter flange
2. Driving flange
3. Rear adapter flange
4. Drive shaft

1. Flangia di adattamento anteriore
2. Flangia di trascinamento
3. Flangia di adattamento posteriore
4. Albero di trasmissione

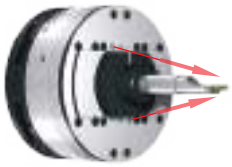


The U-Drive drive unit for U-Comax heads is mounted behind the spindle of the machine. It is controlled by an axis of the numerical control and mechanically connected to the U-Comax head drive with a transmission shaft that crosses the spindle of the machine. The U-Drive drive unit can be configured in various ways depending on the required application and the design of the machine.

La motorizzazione U-Drive per le teste U-Comax viene montata posteriormente al mandrino della macchina, viene gestito da un asse del controllo numerico e collegata meccanicamente alla presa di moto della teste U-Comax con un albero di trasmissione che attraversa il mandrino della macchina stessa. La motorizzazione U-Drive può assumere diverse configurazioni a seconda dell'applicazione e della forma costruttiva della macchina.

PREARRANGEMENTS - PREDISPOSIZIONI

pic.1



Coolant supply pic.1 In the U-COMAX, the coolant comes out of two adjustable nozzles located next to the slide after passing through the transmission shaft and the rotating body of the head. This considerable advantage ensures a longer life of the insert, a higher cutting speed and the achievement of good surface finishes.
The centralised supply of the coolant does not damage the U-COMAX whose internal labyrinths are protected by sealing rings.
It is advisable not to exceed **40 BAR** of pressure.

Adduzione liquido refrigerante pic.1
Nelle U-COMAX il liquido refrigerante esce da due ugelli orientabili posti a fianco della slitta dopo aver attraversato l'albero di trasmissione ed il corpo rotante della testa. Questo notevole vantaggio assicura una maggiore durata dell'inserto, una maggiore velocità di taglio e l'ottenimento di buone finiture superficiali.
L'adduzione centralizzata del liquido refrigerante non danneggia la U-COMAX i cui labirinti interni sono protetti da anelli di tenuta.
È consigliabile non superare i **40 BAR** di pressione.

pic.2

Balancing pic.2 U-COMAX heads are designed with two counter-weights **(5)** for automatic balancing, that move opposite to the slide **(3)** allowing to machine at a higher number of rpms without noticeable oscillations.

Bilanciatura pic.2 Le teste U-COMAX sono state progettate con due contrappesi **(5)** per il bilanciamento automatico, che si muovono in senso opposto alla slitta **(3)** permettendo di lavorare ad un elevato numero di giri senza oscillazioni apprezzabili.

CHIP REMOVAL CAPACITY
CAPACITÀ DI ASPORTAZIONE

The chip removal rates are indicative for normal working conditions on steels with hardness in the range of 160-200 HB, (average Ks = 2000 N/mm2) recommended Vt 120/160 m/min.

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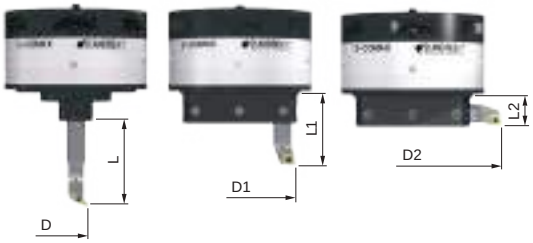
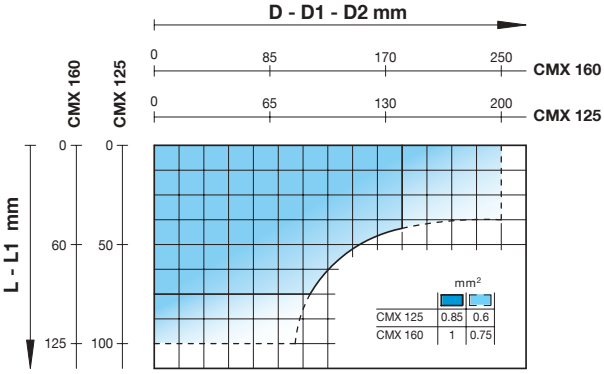
I valori ottimali ed i tempi di lavoro dovranno essere determinati con delle prove.



	CMX 125	CMX 160
D	10 ~ 72	20 ~ 81
L	75	100
D1	72 ~ 122	81 ~ 131
L1	100	125
D2	122 ~ 200	131 ~ 250
L2	25.5	38.5

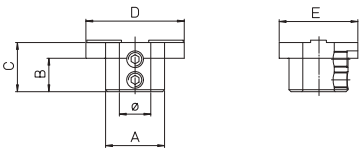


K02

REF.	CODE	
K02 CMX 125	500512510001	
K02 CMX 160	500516010001	

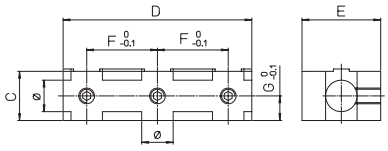
ON REQUEST U-COMAX SPECIALS
A RICHIESTA U-COMAX SPECIALI

P120

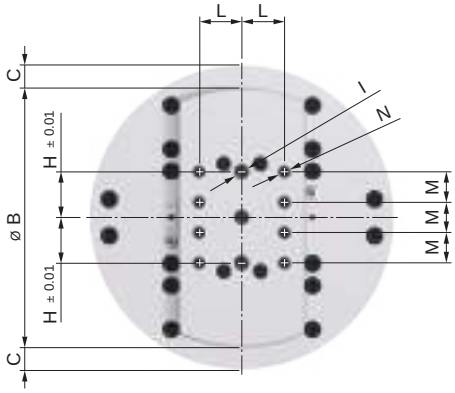


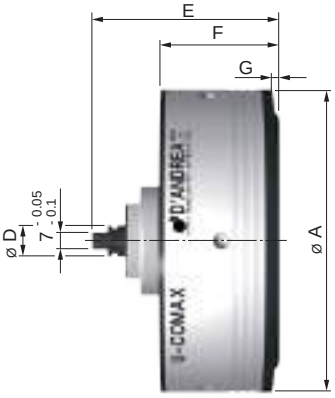
	REF.	CODE	ØH7	A	B	C	D	E	Kg.	
CMX 125	**P120**	431550160261	16	30	16	25	48.5	46	0.2	
CMX 160	**P120**	431550250390	25	47	26	38	61	58	0.55	

P130

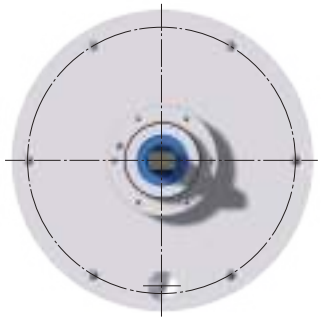


	REF.	CODE	ØH7	C	Ø D	E	F	G	Kg.	
CMX 125	**P130**	433046250810	16	25	81	46	30	10.5	0.45	
CMX 160	**P130**	433058381030	25	38	103	58	35	16.5	0.9	





TECHNICAL DATA
DATI TECNICI



TECHNICA DATA - DATI TECNICI		CMX 125	CMX 160
Ø A	mm	125	160
Ø B	mm	105	128
C radial traverse - corsa radiale	mm	± 12	± 16
D	mm	13 -0.01 -0.02	15 -0.01 -0.02
E	mm	86.5	109.5
F	mm	52.5	69
G	mm	2.5	3.5
H	mm	18.75	24
Ø I	mm	6	8
L	mm	17.5	22.5
M	mm	12.5	16
Ø N	mm	M5	M6
Feed - Avanzamento	mm/min	1 ÷ 500	
Radial force - Forza radiale	daN	150	250
Maximum speed - Massima velocità	RPM	3600	3200
Torque - Momento torcente	Nm	400	800
Weight without the cone Peso senza cono	Kg	3.2	9.8

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