

FH



HT



BAH



VH



TA.CP



TSI/TSX



TA



T



MOx



MT-TC-TC3



Made in Italy

Sistemi di foratura
utensili di foratura
sorgente

L'azienda O.M.G. Srl è lieta di presentare in questa unica soluzione grafica tutti i suoi prodotti, interamente progettati e costruiti al suo interno.

Chi ci conosce da un po' di tempo avra' potuto notare l'evoluzione tecnica e strutturale di cui l'azienda è protagonista.

La nostra ampia gamma di prodotti si è ampliata e migliorata:

- **serie TA**, teste ad angolo
- **serie MOx**, moltiplicatori di giri
- **serie HT**, torrette a revolver
- **serie VH**, teste multiple ad interassi variabili
- **serie TSI-TSX**, teste multiple per spuntatura ingranaggi
- **serie T**, teste multiple a giunti universali
- **serie MT, TC, TC3, TFS** esecuzioni speciali studiate e personalizzate per le più svariate applicazioni.
- **serie BAH**, teste ad angolo per grosse asportazioni studiate per l'industria militare, navale, aerospaziale ecc.
- **serie TA_CP**, teste ad angolo "Light Duty" studiate per contenere peso e costi.
- **serie FH**, teste a sfacciare studiate e realizzate per essere applicate su macchine utensili a CN.

È una dichiarazione d'intenti, l'esplicitazione della nostra mission: creatività e consulenza tecnica al servizio del cliente per aiutarlo a migliorare la propria produttività, affidabilità del servizio pre e post vendita con la garanzia di un'assistenza tempestiva e una sempre maggiore puntualità nelle consegne.

Ringraziamo con l'occasione tutti i clienti che hanno scelto i prodotti O.M.G., contribuendo così all'evoluzione degli stessi; un gradito benvenuto a tutti quelli che si rivolgeranno con fiducia a O.M.G., certi di avere un'azienda attenta alle singole esigenze e partecipe nelle più diverse attività produttive.

Un po' di storia.

L'azienda O.M.G. nasce negli anni '60 come laboratorio di piccole dimensioni specializzato nella progettazione e fabbricazione di teste multiple. La produzione era indirizzata, allora, verso tre prodotti: mandrini a maschiare, teste multiple a giunti universali e teste multiple ad assi variabili.

In seguito, sintonizzandosi con la grande evoluzione dell'industria metalmeccanica, anche l'azienda O.M.G. cresce e si sviluppa, partecipando alla diffusione di nuovi prodotti con le proposte più innovative e d'avanguardia in questo settore di ricerca e produzione.

Le tecnologie d'avanguardia nei processi produttivi e l'impiego di nuove tecniche computerizzate firmano la notorietà e l'immagine del marchio O.M.G.; un nome diffuso e conosciuto da tutte le aziende, piccole e grandi, un'immagine mai smentita ma sottolineata nelle numerose campagne pubblicitarie realizzate.

***Ringraziamo per l'attenzione,
O.M.G. Srl***



O.M.G. Srl is pleased to present, in a single graphic solution, its entire range of products, all designed and built inside its production facility. Those of you who have known us for some time will be well aware of the technical and organizational evolution that distinguishes our company.

Our range of products has been extended and upgraded:

- **series TA**, angle heads
- **series MOx**, spindle speeders
- **series HT** revolver turret heads
- **series VH**, variable centre distance multispindle heads
- **series TSI-TSX**, gear chamfering multispindle heads
- **series T**, universal joint multispindle heads
- **series MT, TC, TC3**, TFS special executions studied and customized to satisfy the most different applications.
- **series BAH**, angle heads suitable for heavy machining studied for military industry, naval industry, aerospace industry, etc.
- **series TA_CP**, "Light Duty" angle heads studied to limit weight and costs.
- **series FH**, facing heads, a new choice for the market, studied and realized to be applied on CNC machine tools.

Our mission involves a declaration of intent: creativity and technical advice at the service of customers to enable them to upgrade their output and their before and after-sales service reliability through prompt assistance and increasingly more punctual delivery.

Allow us to take this opportunity to thank all those customers who have chosen O.M.G. products, thereby contributing to their evolution; a warm welcome too to those who turn with confidence to O.M.G. , a company that caters for individual requirements and is involved in a range of different manufacturing activities.

O.M.G. history

O.M.G. was established in the 1960s as a small workshop specialised in designing and manufacturing multispindle heads. At that time, production centred on three products: tapping spindles, adjustable joint multispindle heads and variable centre distance multispindle heads.

Later on, in line with the evolution of the mechanical engineering industry, O.M.G. expanded and developed, taking part in the diffusion of new products with innovative and cutting-edge proposals for this research and production sector.

The cutting-edge technologies employed in the manufacturing processes and the use of new computerised methods resulted in the O.M.G. brand name and image becoming widely known to small and large companies alike, an image sustained by a long series of advertising campaigns.

*Thank you for your attention,
O.M.G. Srl*

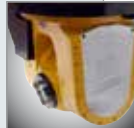


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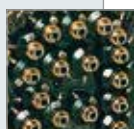
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Accessori
Accessories

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Facing Heads

Le teste a sfacciare della serie FH sono accessori studiati e realizzati per essere applicati su macchine utensili a CN. Sono predisposte per avere l'asse U controllato, consentendo perciò di eseguire lavorazioni di alta precisione quali: sfacciatura esterna ed interna, contro sfacciatura, alesatura, filettatura cilindrica e conica o qualsiasi lavorazione di interpolazione con gli assi della macchina utensile.

Le teste a sfacciare serie FH possono essere applicate sia manualmente che automaticamente alle macchine utensili quali alesatrici, centri di lavoro o macchine speciali.

Le teste a sfacciare serie FH nascono con il preciso obiettivo di superare i limiti di coppia, precisione e manutenzione delle attuali soluzioni presenti sul mercato.

Grazie ad un'architettura brevettata ed all'esperienza e qualità che contraddistinguono la OMG nella progettazione e produzione di teste accessorie, le teste a sfacciare serie FH permettono di eseguire le lavorazioni meccaniche richieste con assoluta precisione ed affidabilità.

La soluzione OMG si contraddistingue per 4 caratteristiche fondamentali:

- Rapporto di riduzione 3:1, 4:1 o 6:1 che consente di sfruttarle anche su macchine relativamente poco potenti
- Sistema di azionamento della slitta montato direttamente sulla parte rotante per la massima rigidità di trasmissione e l'assenza di giochi
- Sistema di misura diretto per la lettura della posizione dell'asse U che permette lavorazioni di estrema precisione
- Bloccaggio idraulico della slitta per la massima rigidità e precisione nelle operazioni di barenatura

The FH series Facing Heads are machine tool accessories researched and developed for applications on CNC Machines that have been prearranged to work with a controlled U axis. With the FH series you can achieve the following high performance machining operations: outer facing, inner facing, back facing, cylindrical and conical boring, threading, or any other kind of application that may be done through the interpolation with the other axes of the Machine.

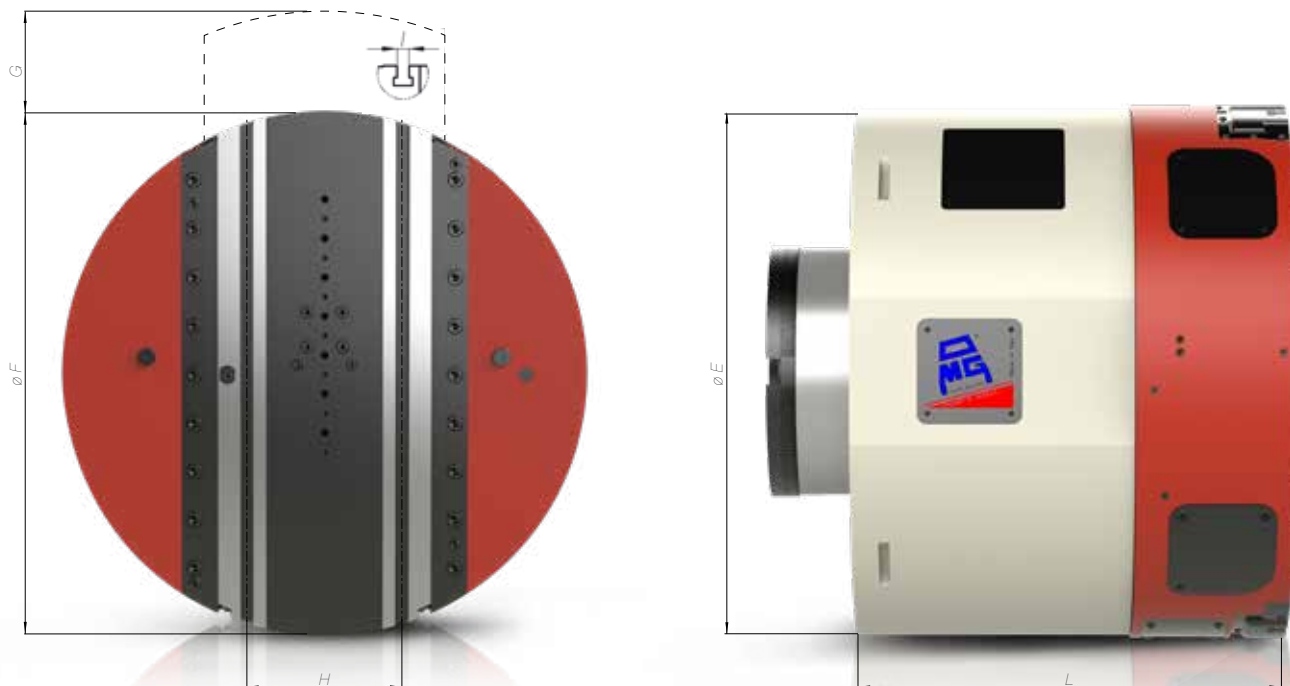
The FH Facing Heads can be applied manually or automatically to the machine tool spindle of boring machines, machining centers and special machines.

The FH series heads are designed to overcome the torque, precision and maintenance limits of the current solutions available on the market.

Thanks to a patented design and the experience and quality that characterize OMG in the design and production of Heads, the FH series Facing Heads allow you to perform the required machining operations with absolute precision and reliability.

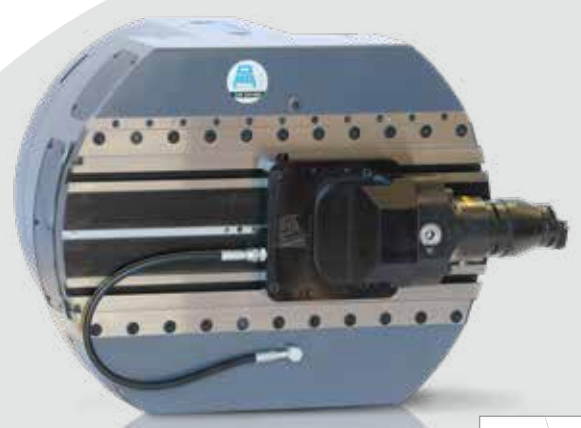
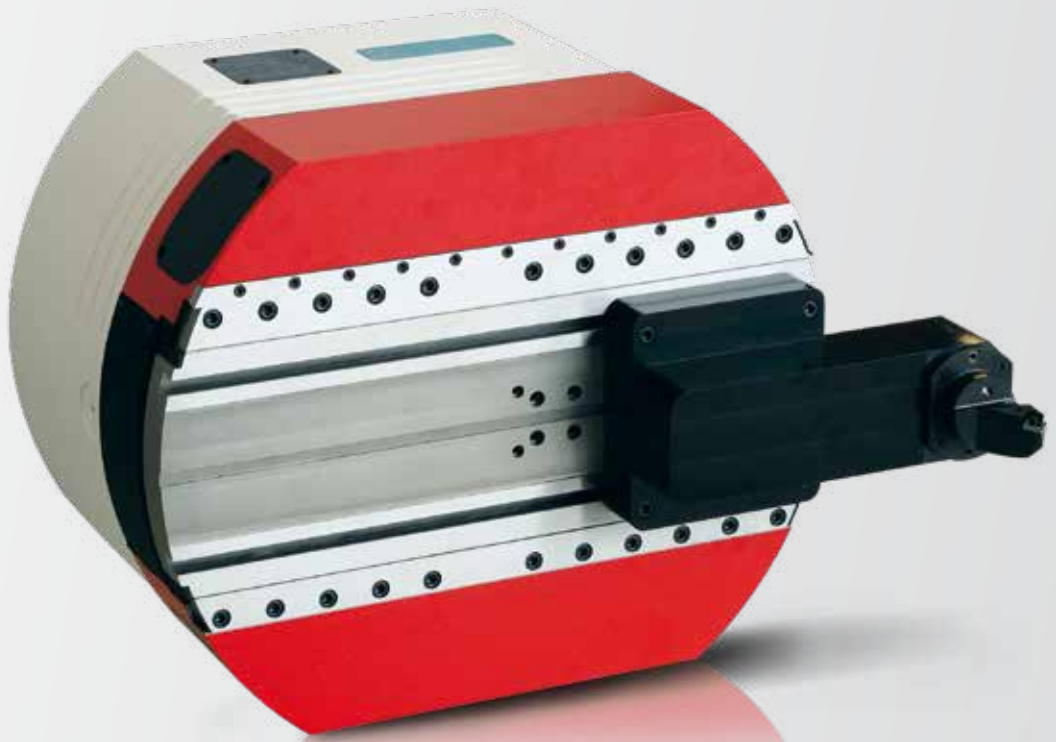
O.M.G.'s solution stands out for 4 main features:

- Gear reduction ratios 3:1, 4:1 or 6:1 allow applications on machine tools with relatively low spindle torque.
- The radial positioning system of the slide is directly mounted to the rotating area of the head for maximum rigidity and no backlash.
- A direct measurement system for reading the position of the U axis allows extremely precise machining.
- Hydraulic clamping of the slide for extreme rigidity and precision during boring operations.



CARATTERISTICHE TECNICHE TECHNICAL DATA			SERIE/SERIES FH400		SERIE/SERIES FH540			SERIE /SERIES FH640			SERIE /SERIES FH800	
			400	540/540	540/640	540/800	640/640	640/800	640/1000	800/800	800/1000	
Diametro base/Base diameter	E	mm	460	540			640			800		
Diametro /Diameter	F	mm	400	540	640	800	640	800	1000	800	1000	
Rapporto di riduzione/Ratio			3:1	4:1			4:1			4/6:1		
Corsa radiale/Radial Stroke	G	mm	115	160	200	250	200	250	350	250	350	
Distanza cave a T /T Slot distance	H	mm	125	160			160			200		
Cava T/T Slot	I	mm	10	12			12			14		
Altezza/Height	L	mm	380	420			420			538		
Velocità massima in uscita /Maximum output speed		RPM	500	300	200	280	200	170	200	170		
Velocità in traslazione /Radial speed		mm /min	400			400			400			
Massima coppia in uscita /Maximum output torque		Nm	4000	6000			8000			10000		
Massima forza radiale /Maximum radial force		N	15000	20000			25000			30000		
Massima sezione di truciolo /Maximum chip removal		mm ²	5	9			10			15		
Precisione posizionamento /Position accuracy		µm	1			1			1			
Ripetibilità di posizionamento /Repeatability		µm	1			1			1			
Direzione posizionamento /Positioning direction			bidirezionale /bidirectional									
Peso /Weight		kg	280	480	490	510	560	660	740	1300	1400	
Diametro massimo di tornitura / Max. turning diameter		mm	640	870	1050	1310	1050	1310	1710	1360	1710	
Diametro massimo di sfacciatura /Max. facing diameter		mm	910	1200	1390	1660	1390	1660	2060	1710	2060	







The Big Technology for the Big Industry

Le teste ad angolo qui esposte, sono state progettate e costruite per soddisfare le esigenze di equipaggiamento di macchine utensili di grandi dimensioni utilizzate in diversi settori:

Trasporto Pesante, Aeronautico, Navale, Militare, Ferroviario, Energetico, Stampi, Automotive.

Costruire queste tipologie di prodotti significa avere capacità progettuali, approfondita conoscenza del prodotto stesso e relative problematiche, capacità di investimento, macchine utensili e attrezzature dedicate, personale altamente qualificato.

La tecnologia applicata, i materiali, i componenti, il montaggio sono ai massimi livelli ed i collaudi statici e dinamici certificati garantiscono nel tempo le migliori performance. Sono solitamente prodotti speciali studiati su esigenze del produttore di macchine utensili o per retrofitting di macchine utensili già operativi nei settori di competenza.

Le caratteristiche principali di questi prodotti, si possono così sinteticamente riassumere:

- corpo in fusione di ghisa o ricavato dal pieno per ottenere la massima precisione e stabilità
- la trasmissione del moto è con ingranaggi Gleason ad evolvente rettificato. Normalmente il rapporto di trasmissione è 1:1, ma può essere sia in moltiplicazione che in riduzione a seconda delle esigenze di trasmissione di coppia
- attacchi portautensili standard: DIN69871 - DIN 2080 - BT - HSK - Coromant Capto o altri a richiesta
- il bloccaggio del portautensile sul mandrino può essere di due tipologie: manuale o automatico. Se automatico il bloccaggio è meccanico e lo sbloccaggio idraulico
- la adduzione del refrigerante può essere per il centro del portautensile. La pressione oggi raggiungibile è di 70 Bar ed è prevista la pulizia del portautensile tramite aria. In ogni caso, attorno al mandrino, vi sono sempre alcuni ugelli direzionabili. Inoltre il mandrino è sempre pressurizzato onde evitare intrusioni
- cuscinetti mandrino a contatto obliquo di precisione lubrificati con grasso long life
- ingranaggi normalmente lubrificati a grasso, separato dal grasso cuscinetti. In caso di alte velocità la lubrificazione è a circolazione di olio
- il bloccaggio degli assi delle teste con rotazione automatica avviene tramite corone Hirth, con divisione standard di 2,5° ed a richiesta di 1°
- tutti i controlli elettrici, sugli assi e sui mandrini, sono interni alla testa e con accesso facilitato.

Questi prodotti sono testati staticamente su macchina di misura tridimensionale e dinamicamente, ai regimi concordati, sul nostro banco prova BP05 che simula appieno le condizioni di utilizzo rispettando le normative del prodotto.

The angle heads exhibited here are designed and built to satisfy the tooling requirements of very large machines used in a variety of industries:

Heavy goods vehicles, Aeronautics, Shipping, Military, Railroad, Energy, Moulds and Automotive.

To build these types of products, one needs design expertise, thorough knowledge of the product itself and related problems, investment strength, specific machine tools and equipment as well as highly qualified personnel.

The applied technology, the materials, the parts and assembly all ensure top levels; the certified static and dynamic tests guarantee the best possible performance over time.

They are usually special products, tailor-made for the specific requirements of the manufacturer of machine tools or for retrofitting machines already at work in the specific industries.

The main features of these products may be summarised as follows:

- *body made of cast iron or obtained from the full piece to ensure maximum precision and stability*
- *motion transmitted by means of Gleason ground involute gears. The transmission ratio is normally 1:1, but it may be in both multiplication and in reduction based on torque transmission requirements*
- *standard tool-holder couplings: DIN69871 - DIN 2080 - BT - HSK - Coromant Capto or others on request*
- *the tool holder can be locked on the spindle in two ways: manually or automatically. If automatic, it is locked mechanically and released hydraulically*
- *the coolant may be supplied in the centre of the tool holder. The pressure currently reached is 70 Bar and the tool holder is cleaned with air. Whatever the case, there are always some turning nozzles around the spindle. Furthermore, the spindle is always pressurised to avoid intrusions*
- *spindle oblique contact precision bearings lubricated with long life grease*
- *gears normally lubricated with grease separated from the grease of the bearings. For high speeds, the lubrication system is oil circulation*
- *the axes of the heads with automatic rotation are locked by means of Hirth crowns, with standard division of 2.5° and 1° on request*
- *all the electrical control devices on the axes and the spindles are inside the head and are easily accessed.*

These products are tested statically on 3D measuring machines and dynamically, at the agreed rates, on our BP05 test bench that fully simulates the conditions of use in compliance with the product standards.



TIPOLOGIE DI TESTE HEADS TYPE

FA - Fork automatic

FT - Fork turning

TWA - Twin automatic

YA - Y-axis

SE - Spindle extension with ATC by machine spindle

SEH - Spindle extension with hydraulic ATC



FA



FT



TWA



YA



SE



SEH



**TIPOLOGIE DI TESTE
HEADS TYPE**

T1A - Tilting automatic

FM - Fork manual

FAW - Fork automatic worm gear

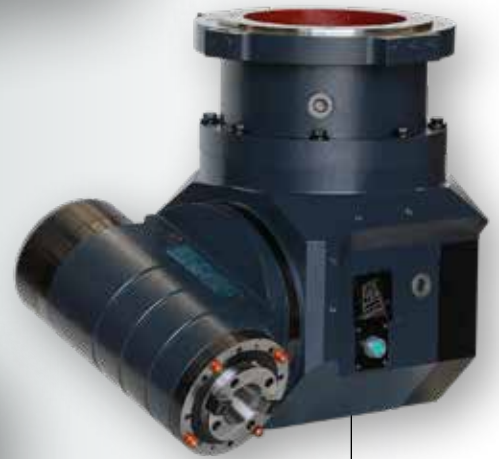
EXA - Extended automatic

EXM - Extended manual

RA - Right angle head



FM



T1A



FAW



EXM

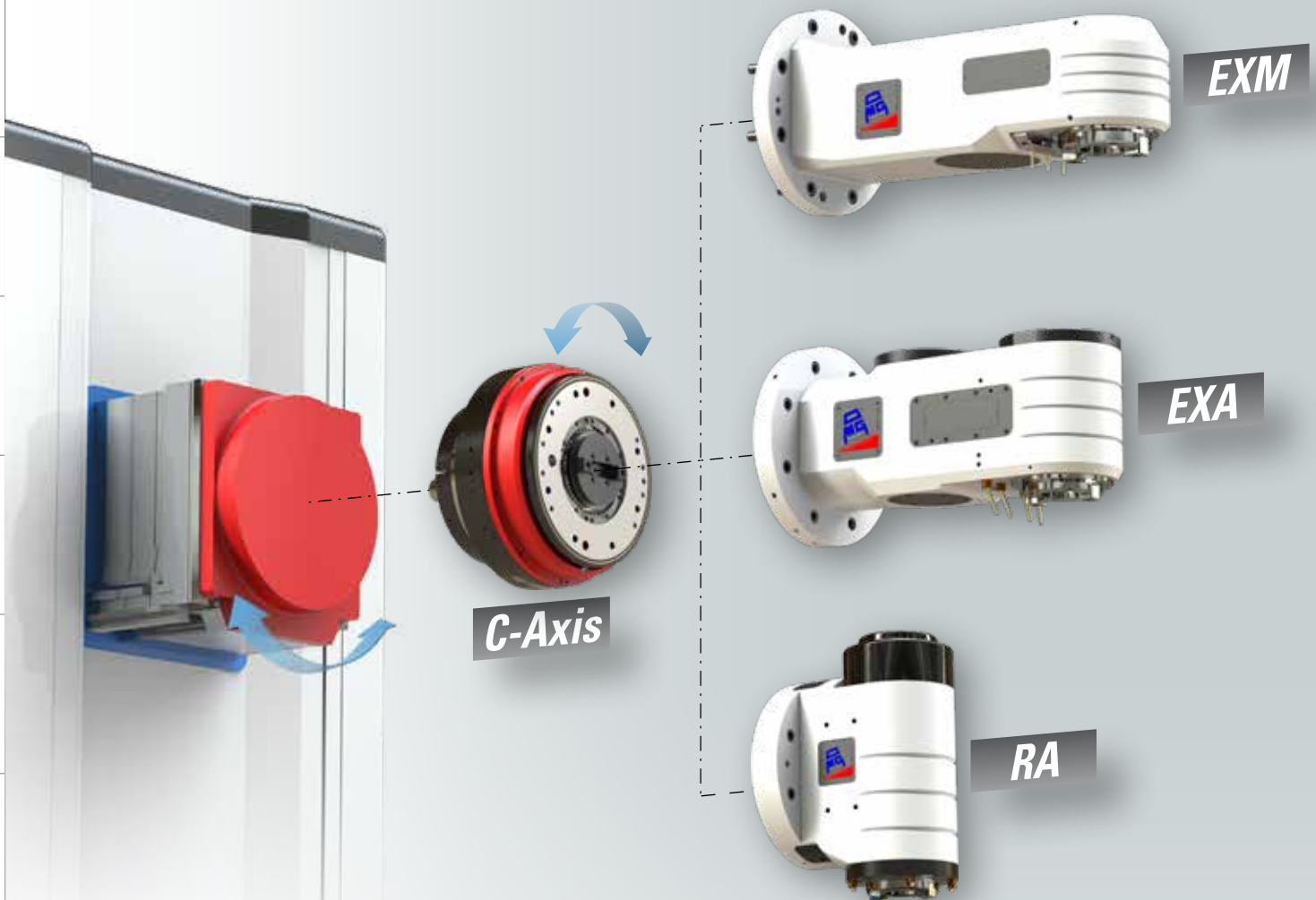


RA



EXA





MS Modular System

Con il sistema modulare si possono eseguire varie combinazioni, scegliendo di conseguenza tra varie opzioni:

- **Asse C:** con corona Hirth o con vite senza fine di alta precisione
- **EXM:** Testa ad Angolo slim design con cambio utensile manuale
- **EXA:** Testa ad Angolo slim design con cambio utensile automatico
- **RA:** Testa ad Angolo con cambio utensile automatico

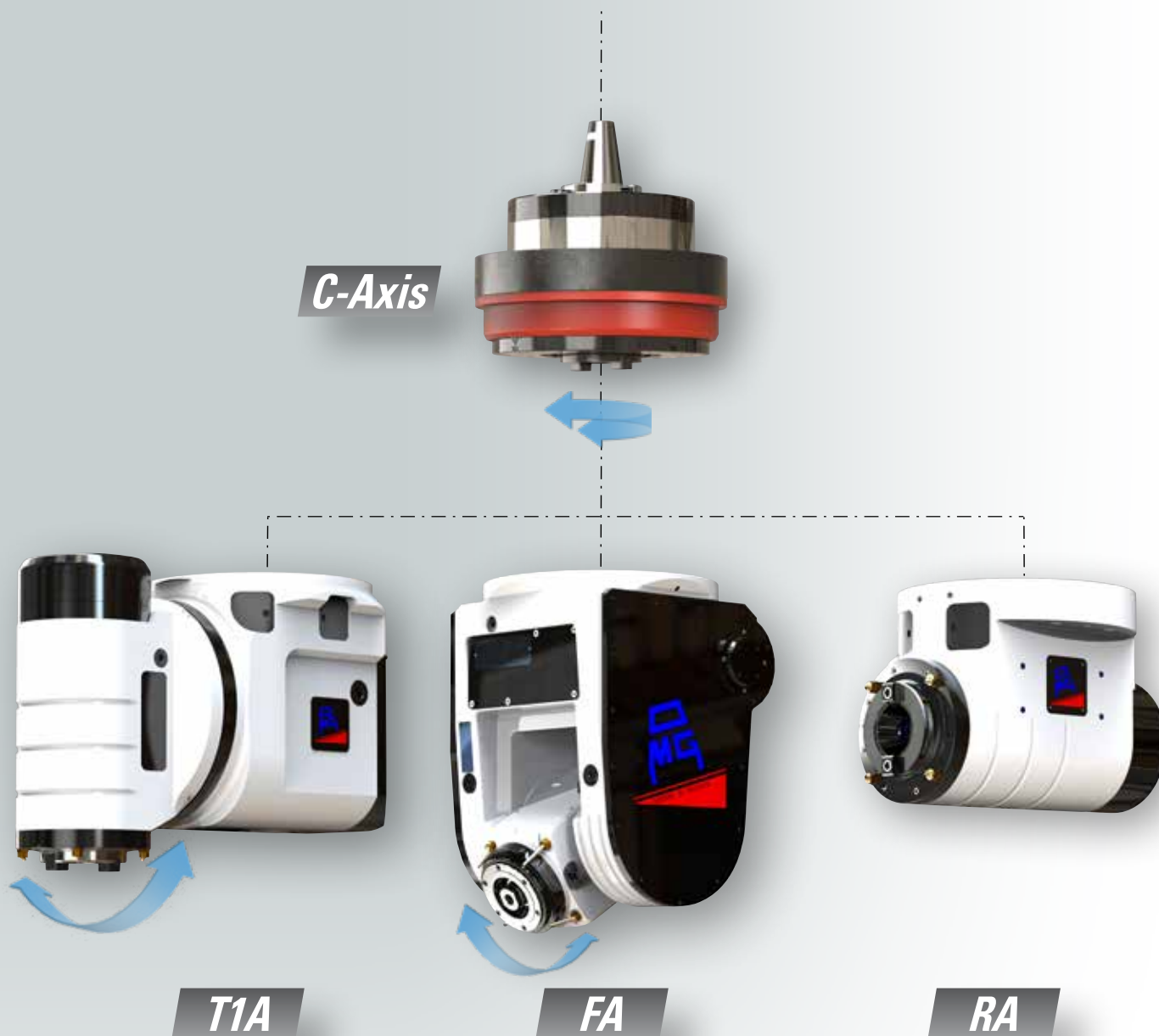
La posizione di lavoro può essere sia orizzontale che verticale. I vari componenti possono essere riutilizzati sia in altre applicazioni che su macchine diverse.

With the modular system different combinations are possible:

- **C Axis:** Manual, with Hirth crown or with high precision worm screw
- **EXM:** slim design Angle Head with manual tool change
- **EXA:** slim design Angle Head with automatic tool change
- **RA:** Angle Head with automatic tool change

The working position can be both horizontal and vertical. The components can be reused both in other applications and on different machines.





MS Modular System

Con il sistema modulare si possono eseguire varie combinazioni, scegliendo di conseguenza tra varie opzioni:

- **Asse C:** con corona Hirth o con vite senza fine di alta precisione
- **T1A:** Testa ad angolo Tilting Automatic con cambio utensile automatico e rotazione asse mandrino
- **FA:** Testa ad angolo Fork Automatic con cambio utensile automatico e rotazione asse mandrino
- **RA:** Testa ad Angolo con cambio utensile automatico

La posizione di lavoro può essere sia orizzontale che verticale. I vari componenti possono essere riutilizzati sia in altre applicazioni che su macchine diverse.

With the modular system different combinations are possible:

- **C Axis:** Manual, with Hirth crown or with high precision worm screw
- **T1A:** Tilting Automatic Angle Head, automatic tool change and spindle axis rotation
- **FA:** Fork Automatic Angle Head, automatic tool change and spindle axis rotation
- **RA:** Angle Head with automatic tool change

The working position can be both horizontal and vertical. The components can be reused both in other applications and on different machines.



teste ad angolo
angle heads



NUOVA GENERAZIONE DI TESTE AD ANGOLO LIGHT DUTY SERIE CP

Questa nuova generazione di Teste ad Angolo inaugura una linea innovativa nata per tutte le macchine utensili, anche di piccole dimensioni e dagli ingombri contenuti, dove si richiedono performances elevate nonostante la capacità di peso limitata sul cambio utensile. Quindi Teste ad Angolo più leggere ma con qualità e affidabilità tipiche dei nostri prodotti.

L'obiettivo di contenere il peso è stato raggiunto costruendo il corpo in lega di alluminio aeronautico e adottando un sistema antirotante semplificato e alleggerito, pur rimanendo inalterata la modularità dei coni di attacco tipica della serie Heavy Duty.

La caratteristica principale di questa nuova generazione di Teste ad Angolo è di potere eseguire forature, maschiature e lamature su quelle macchine utensili dove il peso del cambio utensile ha forti limitazioni o quando i costi di produzione devono essere estremamente competitivi.

Caratteristiche comuni della nuove Teste ad Angolo serie CP sono:

- perno antirotante conico come tutta la produzione O.M.G. che, al contrario dei perni cilindrici, elimina i giochi angolari
- possibilità di utilizzo su macchine dove già presente Stop-Block della serie Heavy Duty per una perfetta compatibilità di tutta la gamma
- sistema di orientamento testa ad angolo in macchina ottimizzato, per una più facile e rapida registrazione
- ingranaggi Gleason con evolvente rettificato
- lubrificazione a vita
- peso estremamente ridotto per Teste ad Angolo con queste capacità di lavoro
- utilizzo su centri di lavoro di piccole dimensioni
- versioni anche prolungate per una maggiore flessibilità di gamma
- coni disponibili: DIN69871, BT, BBT, HSK, CAT .

NEW GENERATION OF LIGHT DUTY ANGLE HEADS

The new generation of TA.CP angle heads introduces an innovative line targeting all the small machine-tools with restrained size, but with high performances despite limited weight on tool changer. Therefore TA.CP angle heads are lighter but with both quality and reliability typical of our products.

The goal of containing the weight has been reached by making the head body in aeronautical aluminium alloy and by engineering a simplified and lightened torque-arm system, yet maintaining unchanged the back-end shank modularity characteristic of our Heavy Duty range.

The major feature of this new generation of angle heads is to be able to perform drilling, tapping and reaming operations on machine-tools with high limitations on tool changer weight, or when production costs must be extremely competitive.

The major specifications of the new TA.CP range are:

- conical (V-shape) torque-arm pin like all OMG heads which eliminates any angular backlashes, unlike cylindrical type of pins
- possibility of using them on machines which are already equipped with a Stop-Block of the Heavy Duty range, getting them fully compatible with our complete range
- optimized indexing set-up for an easier and faster adjustment on machine-tools
- lubricated-for-life
- ground involute Gleason type gears
- extremely reduced weight in comparison to the capabilities and performances of this new range of angle heads
- usable on small size machining centres
- extended length versions available further completing this new range
- DIN69871, BT, BBT, HSK and CAT back-end shanks available



testa ad angolo - angle head

TA07.CP



caratteristiche/features



peso/weight



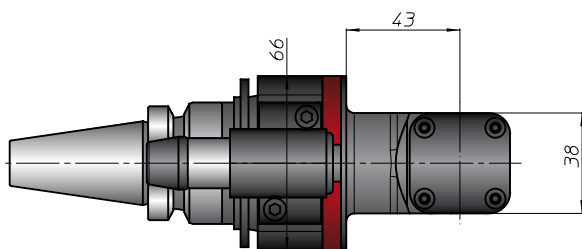
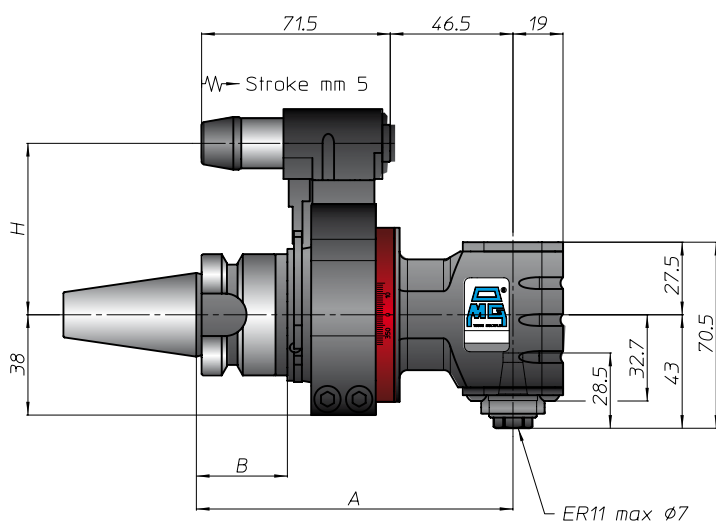
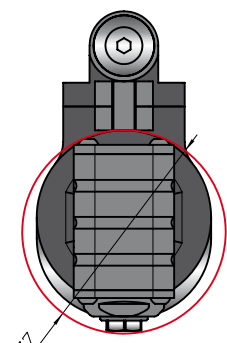
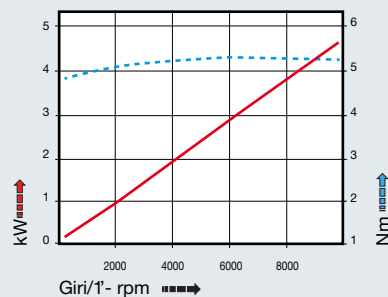
2,1 kg 2,5 kg

rotazione/rotation



input output

prestazioni/performance



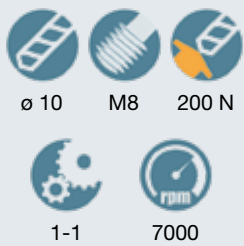
CONO SHANK	size	H					
		A	B	standard	optional		
DIN9871	30	120	35	65	-		
	40						
-	-			-	-		
ANSIB5.50	CAT			129	44	65	-
	40						
-	-			-	-		
BT	30			129	44	65	-
	40						
-	-			-	-		
HSK	63			129	44	65	-
	-						
DIN9893	-	-	-	-			
-	-	-	-	-			
CAPTO	-	129	44	65	-		
	-						
ISO28623	-	-	-	-			
-	-	-	-	-			
KM	-	129	44	65	-		
	-						
-	-	-	-	-			
DIN2080	-	129	44	65	-		
	-						
-	-	-	-	-			
NMTB	-	129	44	65	-		
	-						
ANSIB5.18	-	-	-	-			
-	-	-	-	-			

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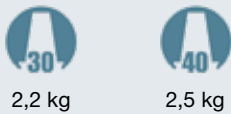


TA10.CP

caratteristiche/features



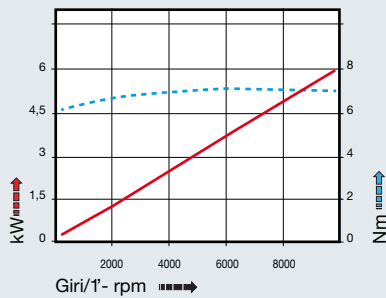
peso/weight



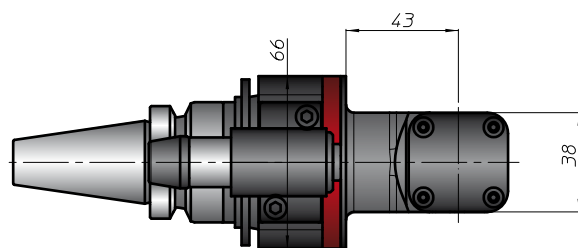
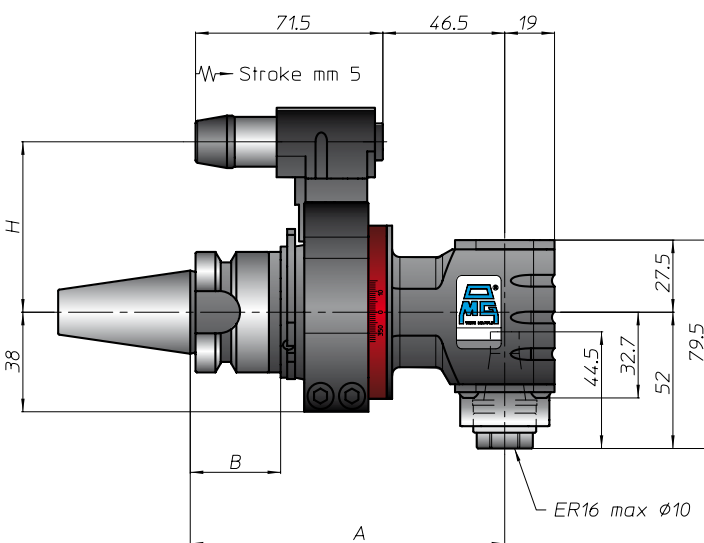
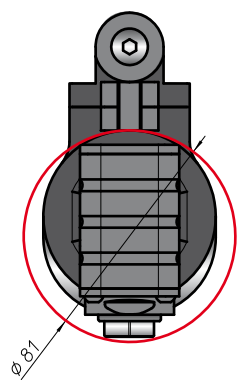
rotazione/rotation



prestazioni/performances



CONO SHANK	size	A	B	H		
				standard	optional	
DIN69871	30	120	35	65	-	
	40			-	-	
ANSIB5.50	40			65	-	
	-			-	-	
BT	30			65	-	
	40			65	-	
HSK	63			44	65	-
	-			129	-	-
CAPTO	-			-	-	-
	-			-	-	-
KM	-			-	-	-
	-			-	-	-
DIN2080	-	-	-	-		
	-	-	-	-		
ANSIB5.18 NMTB	-	-	-	-		
	-	-	-	-		



FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

testa ad angolo - angle head

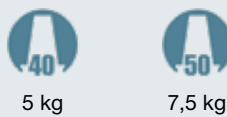
TA13.CP



caratteristiche/features



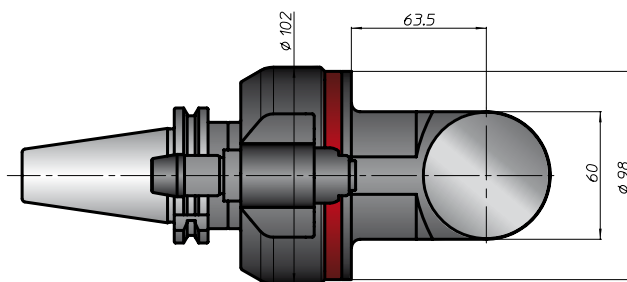
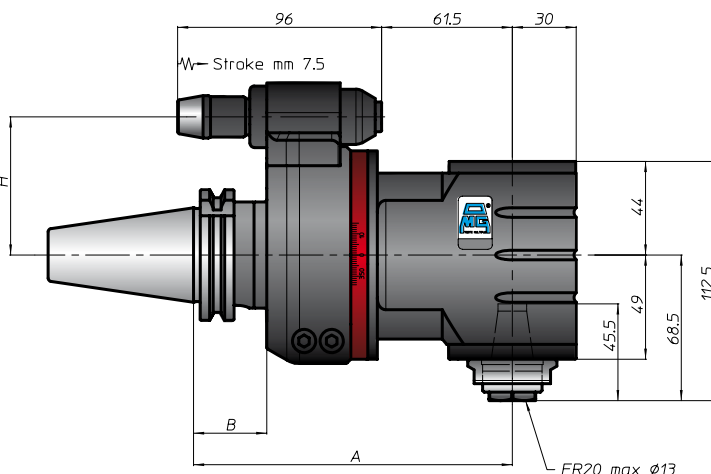
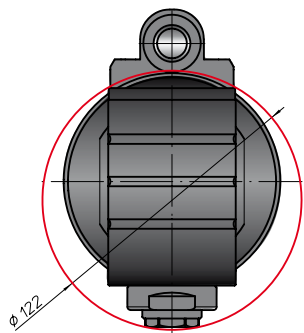
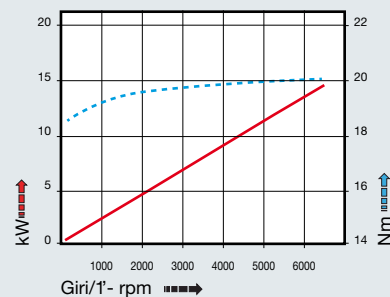
peso/weight



rotazione/rotation



prestazioni/performance



CONO SHANK	size	H			
		A	B	standard / optional	
DIN69871	30	150	35	65	-
	40			80	-
	45			80	-
ANSIB5.50	CAT	159	46	65	-
	50			80	-
BT	40	158	45	65	-
	50			80	-
HSK	63	159	46	44	65
	80			80	-
	100			80	-
ISO28623	CAPTO	-	-	-	-
KM	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
DIN2080	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
ANSIB5.18	NMTB	-	-	-	-
	-	-	-	-	-

FH
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TA
MOX
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VH
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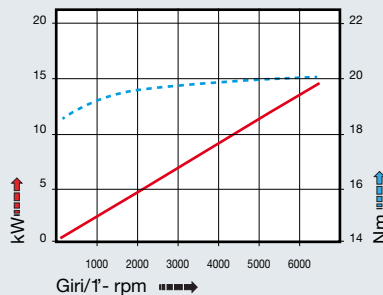
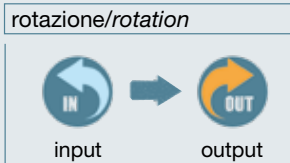


TA13.CPL

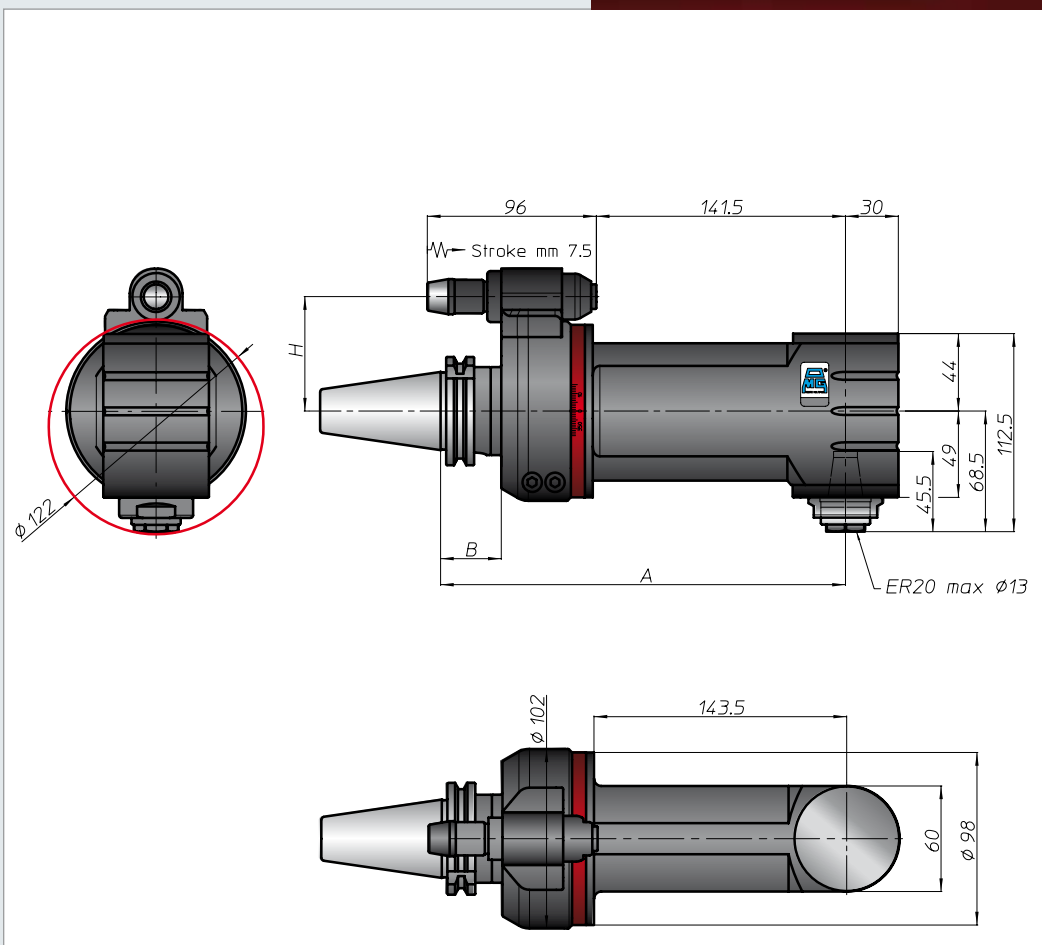
caratteristiche/features

peso/weight

prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871	30	230	35	65	-
	40			80	-
	45			80	-
	50			80	-
ANSIB5.50	40	230	35	65	-
	50			80	-
BT	40	238	45	65	-
	50			80	-
HSK	63	239	46	65	-
	80			80	-
	100			80	-
CAPTO	-	239	46	-	-
	-			-	-
	-			-	-
KM	-	239	46	-	-
	-			-	-
	-			-	-
DIN2080	-	239	46	-	-
	-			-	-
	-			-	-
ANSIB5.18	-	239	46	-	-
	-			-	-



FH
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TA
MOX
HT
VH
TSI/TSX
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MT-TC-TC3
Accessori
Accessories
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testa ad angolo - angle head

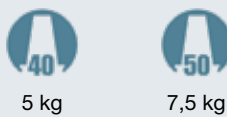
TA16.CP



caratteristiche/features



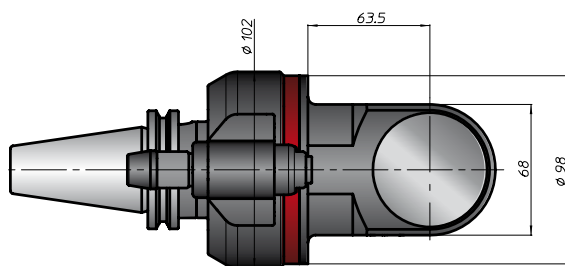
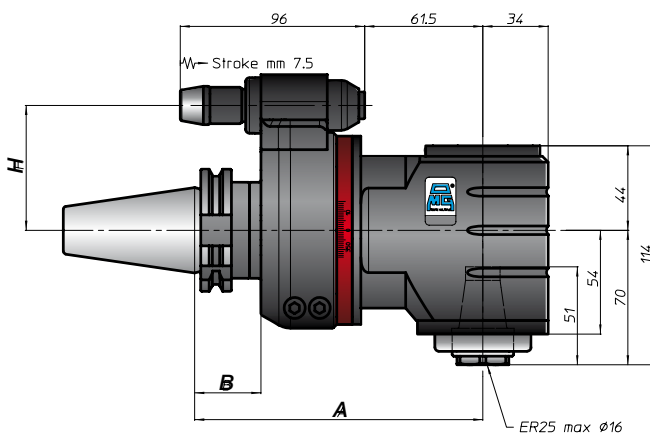
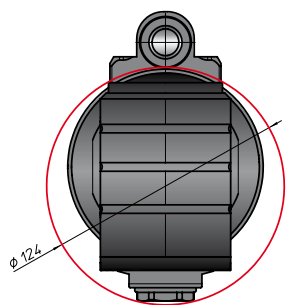
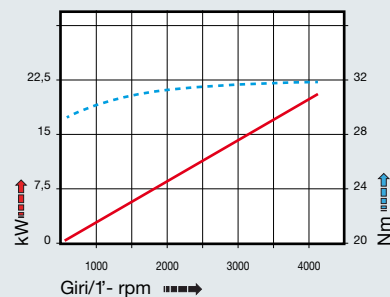
peso/weight



rotazione/rotation



prestazioni/performance



CONO SHANK	size	H		
		A	B	standard / optional
DIN69871	40	150	35	65
	45			80
	50			80
ANSI B5.50 CAT	40	150	35	65
	50			80
BT	40	158	45	65
	50			80
DIN69893 HSK	63	159	46	44 / 65
	80			80
	100			80
ISO28623 CAPTO	-	-	-	-
KM	-	-	-	-
DIN2080	-	-	-	-
ANSI B5.18 NMTB	-	-	-	-

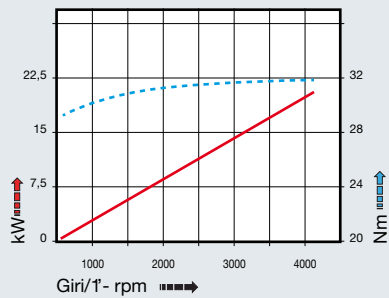
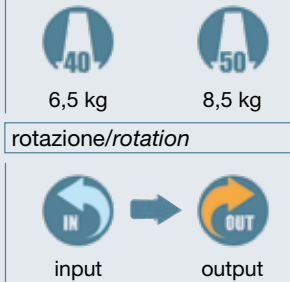


TA16.CPL

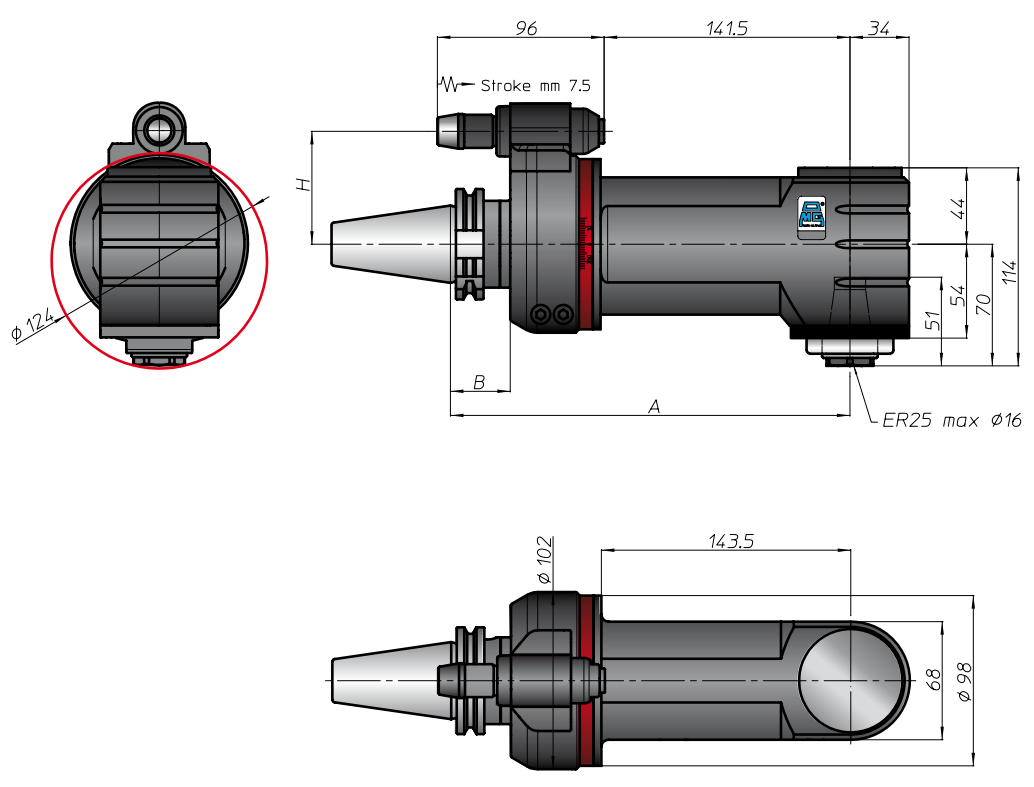
caratteristiche/features

peso/weight

prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871	-	230	35	65	-
	40			80	-
	45			80	-
ANSIB5.50	40	238	45	65	-
	50			80	-
BT	40	239	46	65	-
	50			80	-
HSK	63	239	46	65	-
	80			80	-
	100			80	-
CAPTO	-	-	-	-	-
	-			-	-
	-			-	-
KM	-	-	-	-	-
	-			-	-
	-			-	-
DIN2080	-	-	-	-	-
	-			-	-
	-			-	-
ANSIB5.18 NMTB	-	-	-	-	-
	-			-	-



FH
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TA
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VH
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testa ad angolo - angle head


TAV07.CP



caratteristiche/features

 $\phi 7$
  M6
  82 N
 1-1
  8000

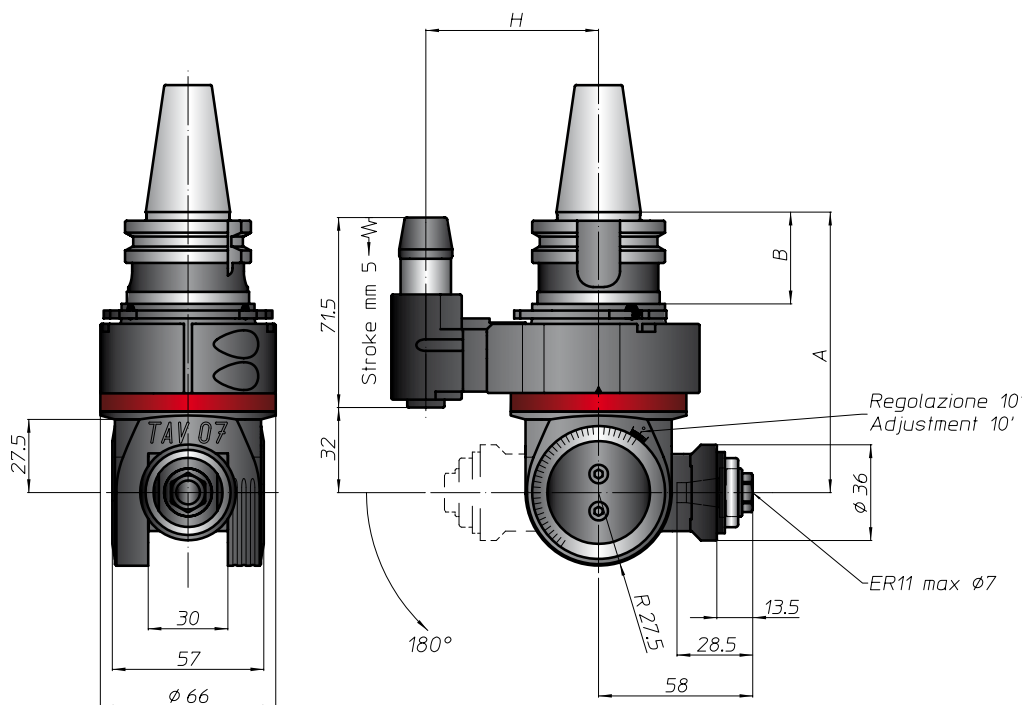
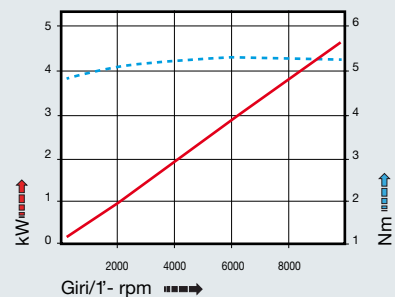
peso/weight

 30
  40
 2,2 kg 2,6 kg

rotazione/rotation

 IN
  OUT

prestazioni/performance



CONO SHANK	size	H					
		A	B	standard	optional		
DIN69871	30	105,5	35	65	-		
	40						
-	-			-	-		
ANSIB5.50	CAT			40	65	-	-
	-						
BT	30			65	-	-	
	40						
DIN69893	HSK			63	44	65	-
	-			114,5	-	-	-
	-			-	-	-	-
CAPTO	-	-	-	-	-		
	-	-	-	-	-		
	-	-	-	-	-		
KM	-	-	-	-	-		
	-	-	-	-	-		
	-	-	-	-	-		
DIN2080	-	-	-	-	-		
	-	-	-	-	-		
	-	-	-	-	-		
ANSIB5.18	NMTB	-	-	-	-		
	-	-	-	-	-		

FH
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TA.CP
TA
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VH
TSI/TSX
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MT-TC-TC3
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Gallery



FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement





Il gruppo antirotante ricopre una funzione di fondamentale importanza nella qualità di lavorazione della testa ad angolo. Per questo motivo i tecnici della OMG hanno studiato e messo a punto un antirotante di nuova concezione i cui punti salienti sono:

- il perno conico
- registrazione flangia di fasatura semplice, veloce e precisa.

Il perno conico permette una maggiore rigidità del sistema antirotante rispetto ai tradizionali, dotati di perni di $\varnothing 18$ mm, perché si eliminano i giochi. Conseguenza un miglioramento della rigidità sia angolare che assiale.

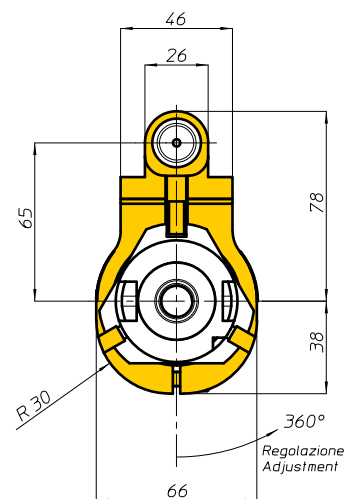
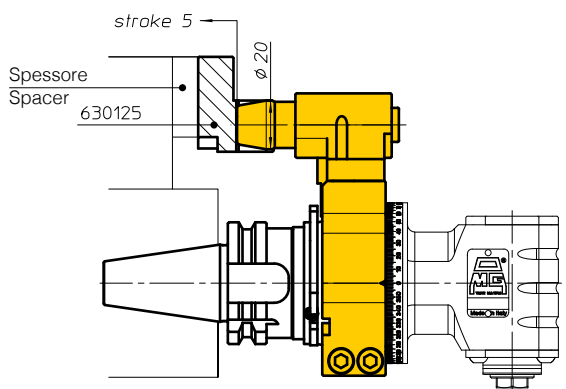
Il perno conico è forato e perciò predisposto per il passaggio del liquido refrigerante ad un max di 10 bar. Qualora il cliente volesse portare il liquido vicino all'utensile, occorre semplicemente installare un piccolo tubo.



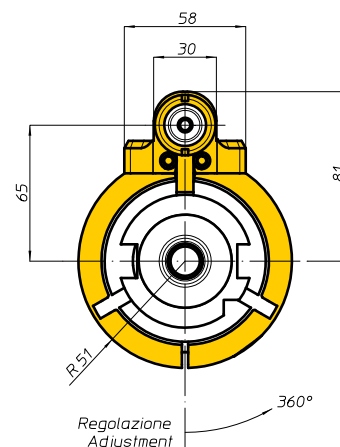
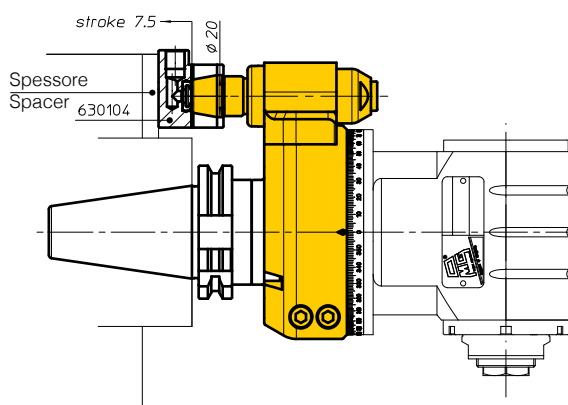
Quando possibile, nella Vostra applicazione, posizionate il perno conico dalla parte opposta al mandrino della testa ad angolo.

Antirotante Torque arm

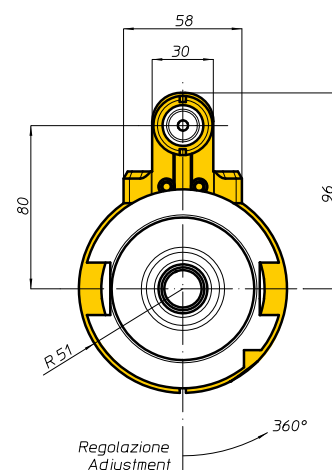
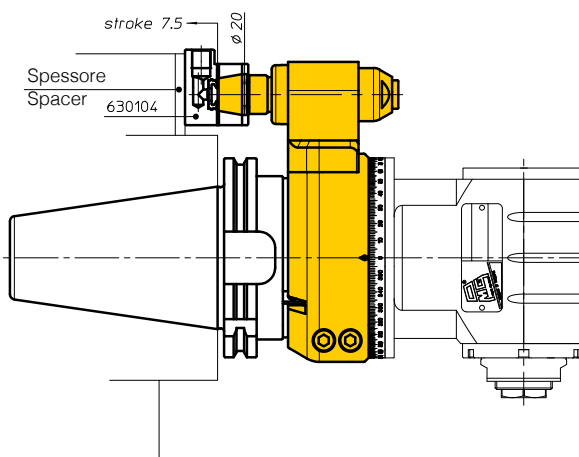
Teste ad angolo TA07.CP, TAV07.CP
Angle heads TA07.CP, TAV07.CP



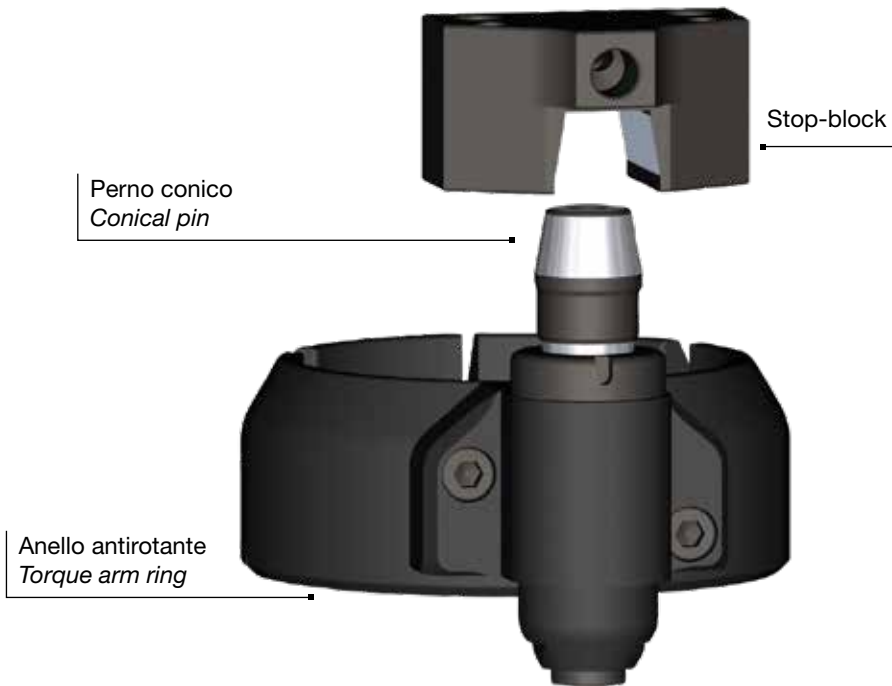
Teste ad angolo TA13.CP, TA16.CP con interasse H=65
Angle heads TA13.CP, TA16.CP with centre distance H=65



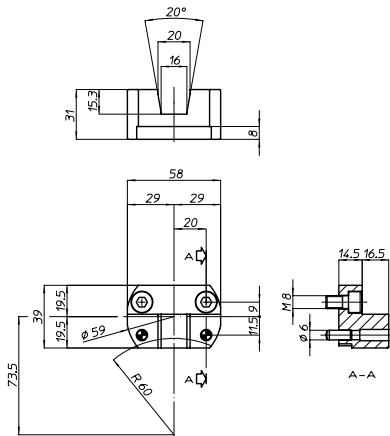
Teste ad angolo TA13.CP, TA16.CP con interasse H=80
Angle heads TA13.CP, TA16.CP with centre distance H=80



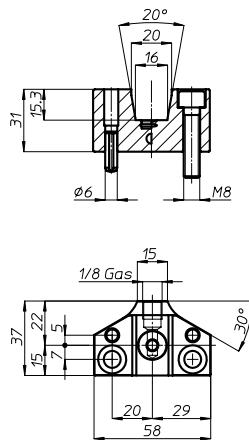
Stop-block



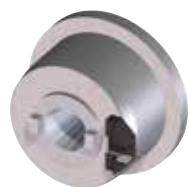
Stop-block (cod. 630125)



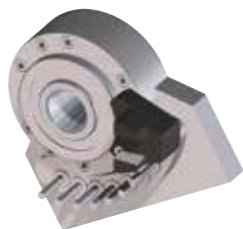
Stop-block (cod. 630104)



Stop-block preparati per Stop-block made for



HAAS



DMG Milltap



Mectron



Brother



Fanuc Robodrill



The torque-arm system is fundamental to achieve high quality machining results.

This is why the OMG technicians have engineered and fine tuned a new generation torque-arm system with following characteristics:

- conical (V-shape) timing pin
- simple, fast and precise timing pin adjustment

The conical (V-shaped) pin ensures a higher rigidity to the torque-arm system (than the traditional ones equipped with $\varnothing 18$ mm pins) because cancelling backlashes. The result is the enhancement of both angular and axial rigidity.

The conical timing pin is equipped with a hole and therefore prepared to let coolant through it up to max 10 bar. When customer needs coolant close to the tool, he can install just a small pipe.



Position the conical pin on the opposite side of the angle head spindle when possible in your application.



teste ad angolo
angle heads



Un prodotto fondamentale che grazie alla riduzione dei piazzamenti in lavorazione, vanta un contributo prezioso per l'aumento della produttività necessaria per competere su tutti i mercati: parliamo della Testa ad Angolo, da considerare come parte integrante del parco utensili della macchina.

- **Esperienza** - E' dall'inizio degli anni '60 che O.M.G. crea prodotti. L'esperienza non si acquista, si acquisisce. La realizzazione fin dai primi anni di prodotti speciali ha formato le competenze per lo sviluppo di una gamma di Teste ad Angolo articolata e performante, idonea alla clientela più esigente che crede negli investimenti per conquistare nuovi mercati.
- **Tradizione** - Il termine "qualità" viene spesso citato, ma non significa soltanto utilizzare macchine utensili tecnologicamente avanzate per ottenere lavorazioni precise. La qualità è il risultato di esperienze pratiche, di calcoli matematici, di sfide vinte e perse ma comunque accettate, di cui fare grande tesoro.
- **Innovazione** - Le Teste ad Angolo Speciali di ultima generazione offrono prestazioni superiori a tutti gli standard e condizionano spesso la produzione fino al punto da divenire indispensabili nel completamento del processo produttivo. Da queste O.M.G. continua a trarne grande beneficio e soddisfazione con soluzioni tecniche poi riproposte sulle Teste ad Angolo Standard a catalogo.
- **Modularità** - Indispensabile oggi la flessibilità produttiva, ancora maggiore negli investimenti. In questa ottica gli elementi modulari delle Teste ad Angolo consentono di ridurre i costi ed aumentare i benefici.
- **Personalizzazione** - Se l'ampia gamma di Teste ad Angolo standard non risponde all'esigenza specifica, siamo pronti a progettare e costruire il prodotto speciale, forti dell'esperienza di centinaia di soluzioni operative volte alle più svariate attività produttive.

An ultimate product that gives a valuable contribution to the productivity increase by reducing the management of the pieces to be machined, necessary condition to compete in the markets all over the world: we are talking about the Angle Heads, to be considered an integrant part of the machine tools range.

- **Experience** - O.M.G. engineers its products since the beginning of the '60's. The experience cannot be bought but it is acquired. Since that time the achievement of special products gave us the expertise to develop a range of Angle Heads very broad and performing, suitable to the most demanding customers believing in investments to gain new market shares.
- **Tradition** - The word "quality" is often mentioned, but it does not mean just to use technologically advanced machine tools to get accurate machining. The quality is the result of practical experiences, of mathematical calculations, of won and lost challenges, anyway accepted, which are treasured.
- **Innovation** - The last generation Special Angle Heads offers performances much higher than all standards, and they often affect the production cycles until becoming indispensable when completing production stages. O.M.G. keeps getting beneficial results from his special range which is also reflected into the standard Angle Heads range.
- **Modularity** - Nowadays the productivity flexibility is mandatory, and even more in the investments. Towards this goal the O.M.G. Angle Heads modular system allows cost reductions and to increase profits.
- **Customization** - And if the wide range of standard Angle Heads will not meet your requirements, we are ready to engineer and to manufacture a new Special Angle Head product, always supported by our experience of hundreds of solutions done for many different industrial activities.

Panoramica prodotti

Product overview



TAR

Piccole per piccoli spazi.

Tiny for narrow spaces.

Pagina/Page: 4-10



TA

Lavorazione singola di foratura e fresatura.

Drilling and milling machining.

Pagina/Page: 4-16



TA... 2P

Due mandrini contrapposti di 180°.

180° two opposed spindles.

Pagina/Page: 4-42



TA... D

Input refrigerante attraverso lo stop-block e uscita attraverso il centro utensile.

Input coolant from stop-block, and output through tool spindle.

Pagina/Page: 4-48



TAV

Mandrino variabile $\pm 90^\circ$.

$\pm 90^\circ$ adjustable spindle.

Pagina/Page: 4-68



TAF

Mandrino fisso, angolo su richiesta del cliente.

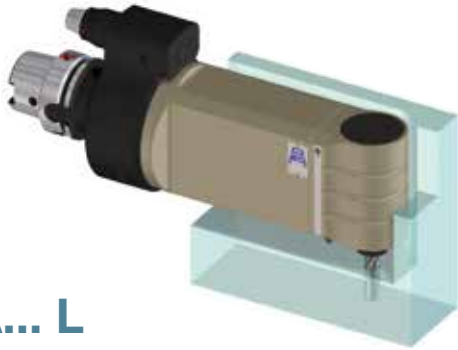
Fixed spindle with custom angle.

Pagina/Page: 4-89



Panoramica prodotti

Product overview



TA... L

Versione allungata per lavorazioni singole di foratura e fresatura.

Length stretched version for drilling and milling single machining operations.

Pagina/Page: 4-11



TAL

Versione leggera per lavorazioni singole di foratura e fresatura.

Ligth version for drilling and milling single machining operations.

Pagina/Page: 4-33



TAO

Mandrino offset, lavorazione in spazi ristretti ed ottima performance in fresatura.

Offset spindle, machining in narrow spaces, and excellent results in milling operations.

Pagina/Page: 4-58

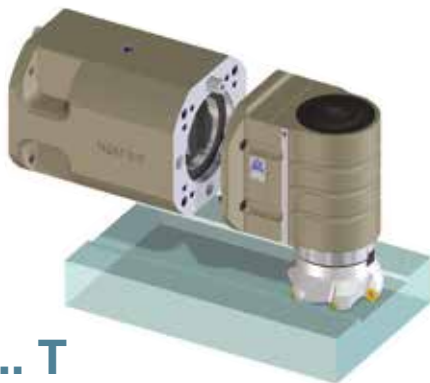


TAO... PD

Mandrino offset, input refrigerante attraverso il centro cono, uscita attraverso centro utensili con pressione 70 bar.

Offset spindle, input coolant through machine taper, output through tool spindle at 70 bar pressure.

Pagina/Page: 4-59



TA... T

Connessione alla macchina tramite flangia.

To be connected to the machine by flange.

Pagina/Page: 4-94

Simboli/Icons



Capacità di foratura
Drilling capacity



Maschiatura
Tapping



Rapporto entrata/uscita
Ratio input/output



N° max giri in uscita
Max output RPM



Pressione
Pressure



Peso
Weight



Carico assiale
Axial load



Peso con cono 40
Weight with size 40 shank



Peso con cono 50
Weight with size 50 shank



Rotazione in ingresso
Input rotation



Rotazione in uscita
Output rotation



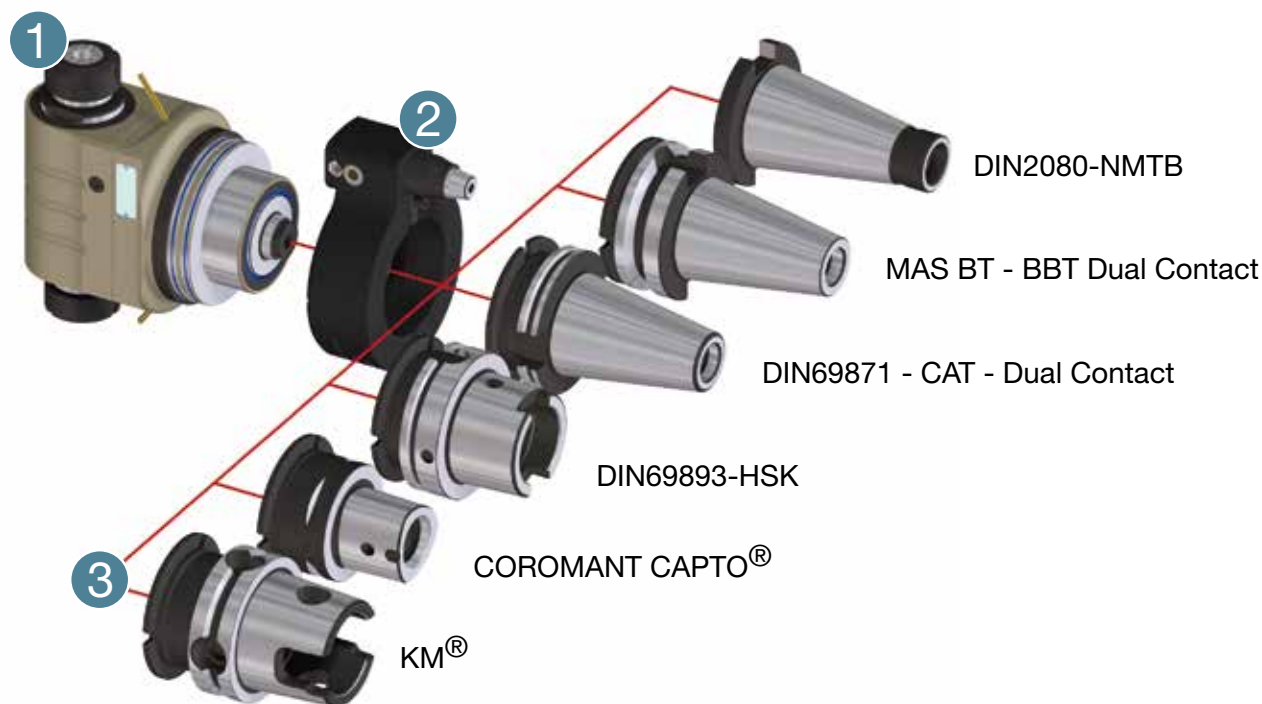
Dual
Contact



Accuracy

Sistema modulare per applicazioni flessibili

Modular system for flexible application



- 1** Testa ad angolo con presa utensile ER standard, oppure vedi tipi Mandrino.
Angle Head with standard ER tool connection, or check other spindle types.
- 2** Antitrotante standard “senza gioco”, oppure su specifico design per la vostra macchina utensile.
No backlash standard torque arm, or under specific design for your machine tool.
- 3** Coni macchina standard o speciali su richiesta.
Standard or on-demand machine tapers.

Modularità Coni – Sono disponibili tutti i tipi di cono macchina, da sostituire tramite un esclusivo accoppiamento di precisione che crea un sistema rigido pari ai cono integrali, ma con i pregi dell’intercambiabilità.

Modularità Antitrotanti – esistono fondamentalmente tre dimensioni unificate di interasse tra il centro cono ed il centro perno antitrotante: 65 mm per i cono grandezza 40, 80 mm per i cono grandezza 50 ed in alcuni casi anche 110 mm. Sono disponibili tutte le dimensioni e sostituire il gruppo antitrotante è una operazione banale.

Taper modularity - All the different machine tapers are available, and can be replaced with an exclusive precision coupling system generating a rigid system equal to integral tapers, but with additional interchangeability quality.

Torque arm modularity - Essentially three unified dimensions between taper and torque-arm centers exist: 65 mm for the taper size 40, 80 mm for the taper size 50 and also 110 mm in some cases. All sizes are available and torque-arm replacement is very simple.

Prese utensili - tipi mandrino

Clamping systems and spindle types



1 DIN6388-ER



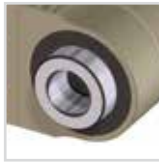
2 Albero portafrese
Milling shaft



3 Weldon
Whistle-Notch



4 DIN69893-HSK



5 COROMANT
CAPTO®



6 ABS
Licenza KOMET®



7 ISO-DIN2079
NMTB-BT

Refrigerante utensile

Coolant tool



STANDARD

TA... PD
max 10 bar

TAO... PD
max 70 bar

TAF... PD
max 70 bar

TAV... PD
max 70 bar

Il circuito refrigerante è standard - Tutte le teste sono provviste di canalizzazione interna, che parte dal perno dell'antiro-tante e termina sull'ugello vicino all'utensile, senza alcun costo aggiuntivo.

Refrigerante da cono macchina - La costruzione offset delle Teste ad Angolo serie TAO consente il montaggio di tenute ad alta pressione affidabili nel tempo ed isolate dalle parti vitali della Testa ad Angolo, per un sicuro utilizzo di utensili con passaggio refrigerante interno.

Coolant system is standard - All our Angle Heads are supplied with an internal channel system, which starts from the torque-arm pin and ends on the nozzles next to the tool, without additional cost.

Coolant system from machine taper - The offset construction of the TAO Angle Head series allows to fit high pressure seals which are time reliable and isolated from the vital parts of the Angle Heads, for a safe usage of tools with internal coolant transit.

Antirotante Torque arm



STANDARD



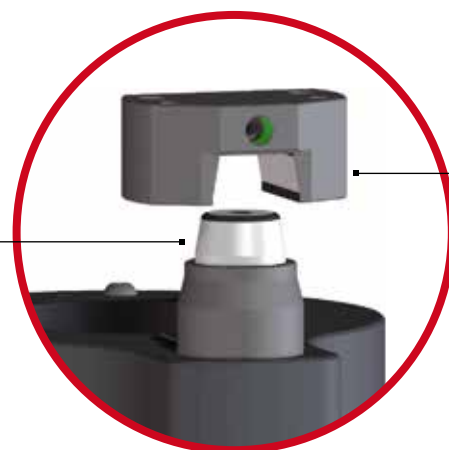
TriBlock®



QuadBlock®



Studiato e realizzato su
specifica richiesta.
*Customized design according
to your application.*



Stop-block

Perno conico
Conical pin

Prestazioni superiori - L'antirotante standard permette di cambiare la testa in automatico. Il sistema di accoppiamento fra perno conico regolabile assialmente e lo stop-block con sede a "V", permette di annullare la tolleranza tra le parti creando un sistema rigido, senza giochi. Evidenti sono i vantaggi: maggiore durata degli utensili, maggiore durata dei cuscinetti, risparmi in termini di manutenzione con conseguente riduzione dei costi.

Massima stabilità - I sistemi antirotanti **TriBlock** e **QuadBlock** di O.M.G. con perni regolabili permettono di contrastare al meglio le spinte radiali e assiali con la possibilità di affrontare in sicurezza lavorazioni di fresatura o finitura fino a ora mai effettuate con le teste ad angolo, destinate inizialmente a diversi piazzamenti pezzo.

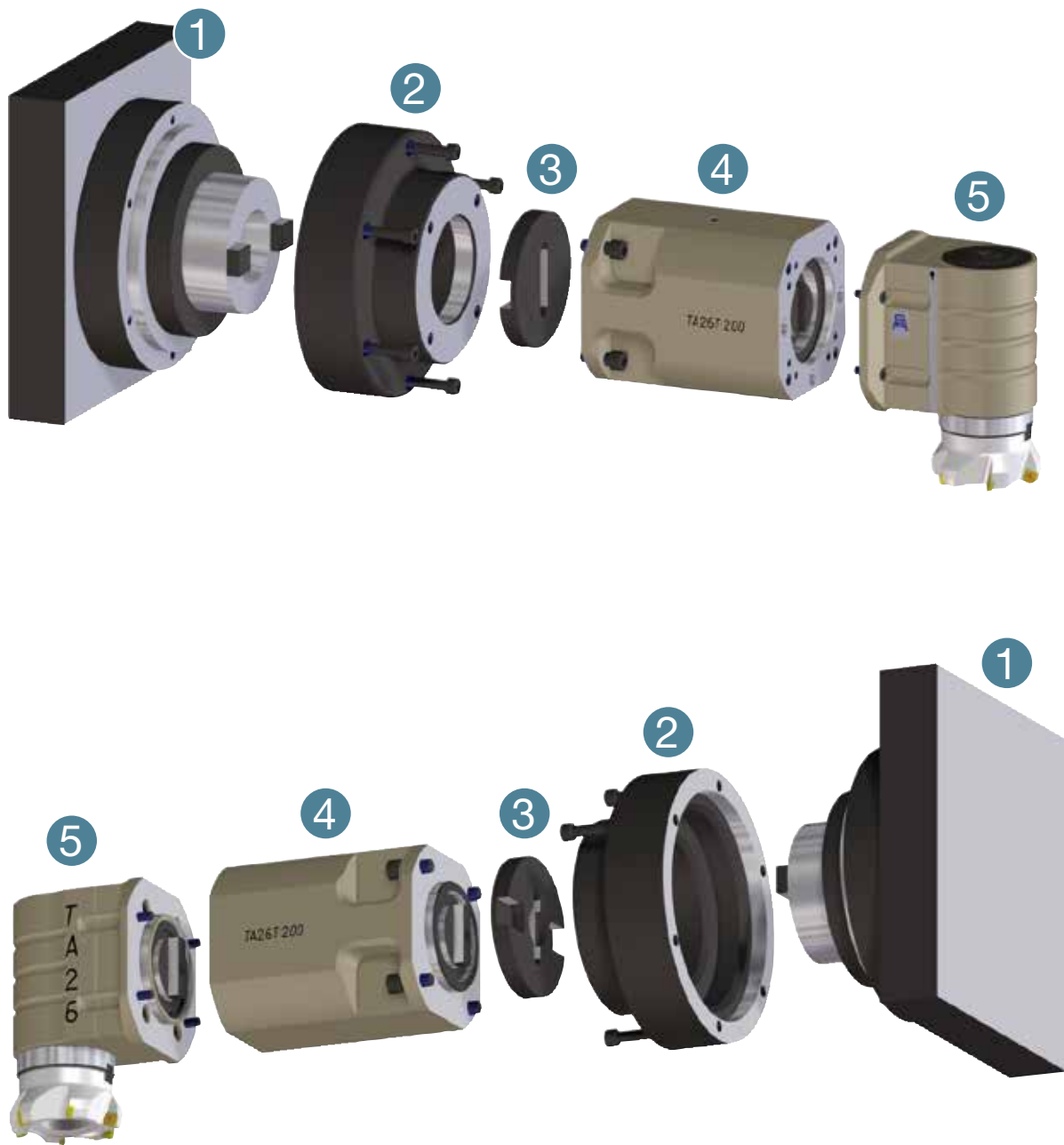
Higher performances - The standard torque arm allows an automatic change of the head. The coupling system between the conical pin, which can be axial adjusted, and the "V"-housing of the stop-block, allows to cancel any tolerance between those parts generating a rigid and backlash free system. The advantages are evident: longer life of tools, longer life of bearings, maintenance savings with consequent cost reductions.

Maximum stability - The O.M.G. **TriBlock** and **QuadBlock** torque arm systems with adjustable pin allow to oppose both radial and axial thrusts at their best, with the possibility of milling or finishing with total security, which was not possible until nowadays because requiring several changes of placement of the piece to be machined.



Connessione alla macchina tramite flangia

Machine connection by flange



1	Macchina	<i>Machine</i>
2	Flangia di connessione	<i>Connection flange</i>
3	Giunto ISO 40/50	<i>Driving joint ISO 40/50</i>
4	Estensione	<i>Extension</i>
5	Testa ad angolo TA... T	<i>Angle head TA... T</i>

Qualità dei componenti

Quality of components



CORPO/BODY

Corpo testa in acciaio: massima rigidità e minima dilatazione termica.

Heady body in steel: maximum rigidity and minimum thermal expansion.



CUSCINETTI/BEARINGS

Cuscinetti obliqui in classe di precisione ABEC7/9.

Angular contact ball bearings of precision class ABEC7/9



INGRANAGGI/GEARS

Ingranaggi Gleason con evolvente rettificato: massime performances e minori vibrazioni.

Gleason rectified gears: maximum performances and minimum vibration.



DESIGN

Design compatto, che insieme alle specifiche sopra descritte, consente: alte performances, elevate velocità, lunga durata degli utensili.

Compact design that, along with above mentioned described specifications, allows: high performances, high speeds, long life of tools.

Materiali - Tutte le teste ad angolo standard sono in acciaio ricavate dal pieno per fresatura a pareti sottili, minimo ingombro e minor peso. Hanno il corpo trattato con nipro, trattamento anticorrosione, che garantisce alta protezione contro la ruggine, lubrificanti aggressivi e acidi.

Componenti - Tutte le teste montano cuscinetti di precisione, oppure conici nelle versioni per grandi asportazioni. Si utilizzano solo cinematismi trattati termicamente e coppie coniche Gleason con dentatura rettificata. Lubrificazione con grasso long-life.

Materials - All our standard Angle Heads are made from solid steel for thin wall milling, resulting with the minimum possible size and less weight. Body is nipro treated and anti-corrosion coated giving the guarantee of high protection against rust as well as acid and aggressive lubricant-coolants.

Components - All our Angle Heads integrate precision bearings, or tapered roller bearings when models are for big removal machining. We only use thermal treated cinematic components and Gleason bevel gears with rectified teeth. Lubrication is with long-life grease.

Packaging



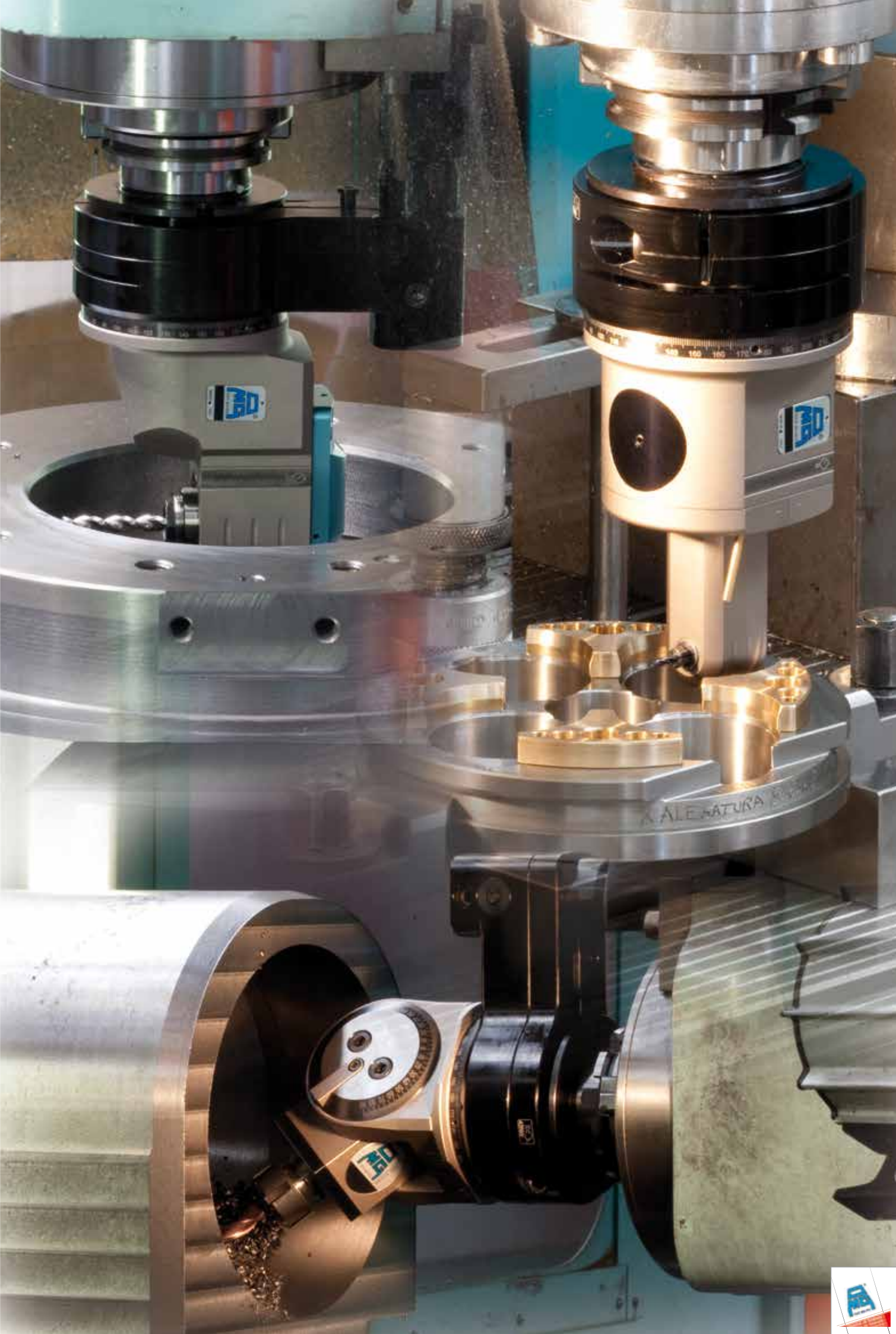
Le Teste ad Angolo sono racchiuse in robusta valigetta di materiale termoplastico e corredate di una completa dotazione di accessori:

- Stop-block standard con passaggio refrigerante
- Confezione di chiavi per messa in funzione e manutenzione
- Grasso di mantenimento
- Manuale istruzioni dettagliato per messa in funzione e manutenzione

The Angle Heads are packed in a strong thermoplastic case together with a complete set of accessories:

- *Standard stop-block with coolant way*
- *Set of keys for operation and maintenance*
- *Grease tube*
- *Operation and maintenance manual*





FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement



testa ad angolo - angle head

TAR02.P



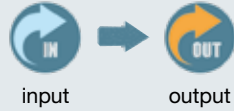
caratteristiche/features



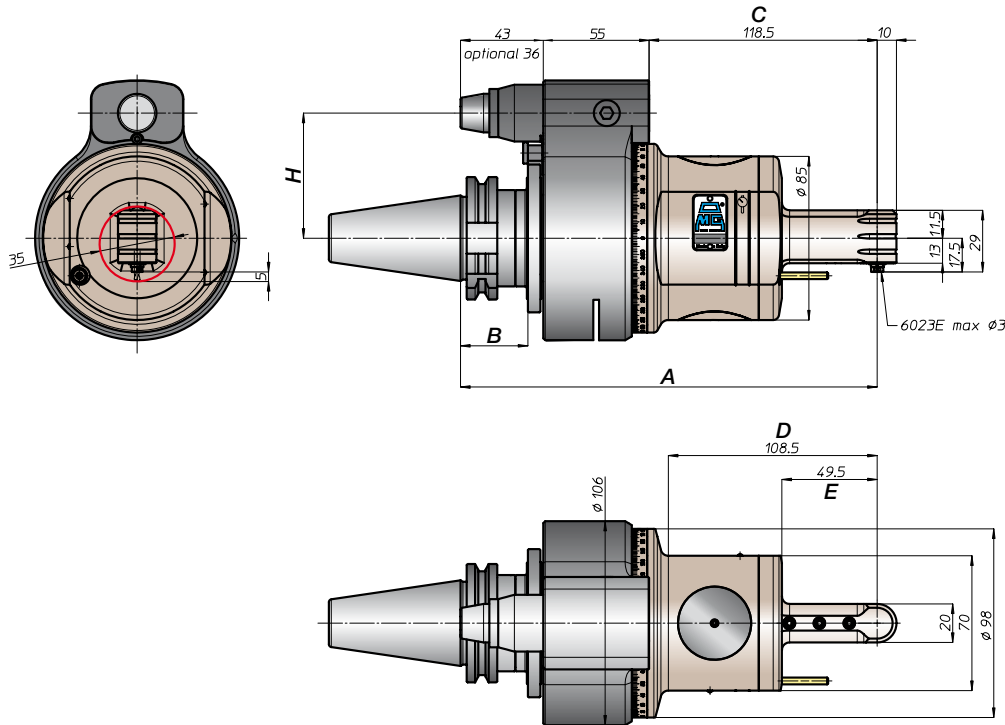
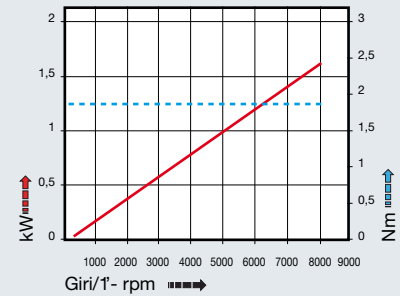
peso/weight



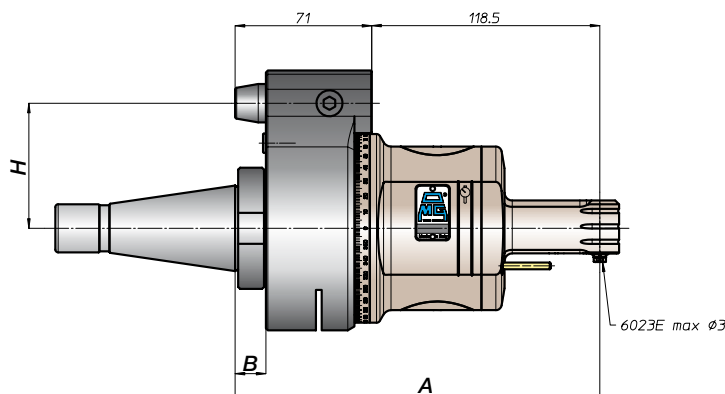
rotazione/rotation



prestazioni/performance



MODELLI AGGIUNTIVI EXTENDED VERSION	C	D	E	A	ROTAZIONE ROTATION		PESO WEIGHT	
TAR02.P-L65	133,5	123,5	64,5	+15	Input CCW	Output CW		
TAR02.P-L80	148,5	138,5	79,5	+30	Input CW	Output CW		
TAR02.P-L96	164,5	154,5	95,5	+46	Input CCW	Output CW	6,6 kg	9 kg
TAR02.P-L111	179,5	169,5	110,5	+61	Input CW	Output CW		



CONO SHANK	size	H			
		A	B	standard	optional
* DING69871	30			65	-
	40			80	110
	45			80	110
	50	216,5	35	80	110
* ANSIB5.50	40			65	-
	50			80	110
* BT	40			65	
	50	224,5	45	80	110
DING69893	63		44	65	
	80	225,5		80	110
	100		46	80	110
ISO26623	C5			65	
	C6	220,5	39		
	C8			80	110
KM	63			65	
	80	216,5		80	110
	100			80	110
DIN2080	-	186,5	13	65	-
	40			80	110
ANSIB5.18	-	189,5	16	80	110
	50			80	110
NMTB	40	186,5	13	65	-
	50	189,5	16	80	110

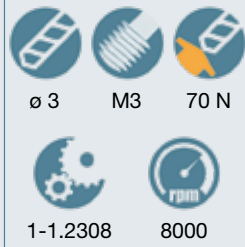
* Option: Dual Contact



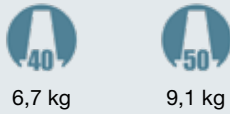
TAR03.P



caratteristiche/features



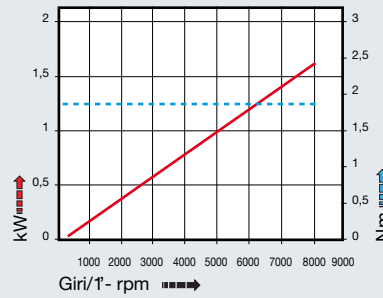
peso/weight



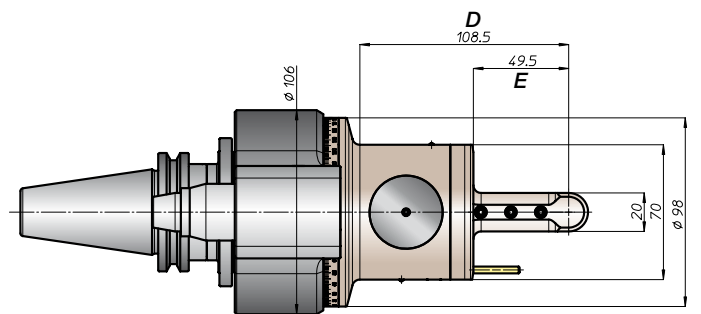
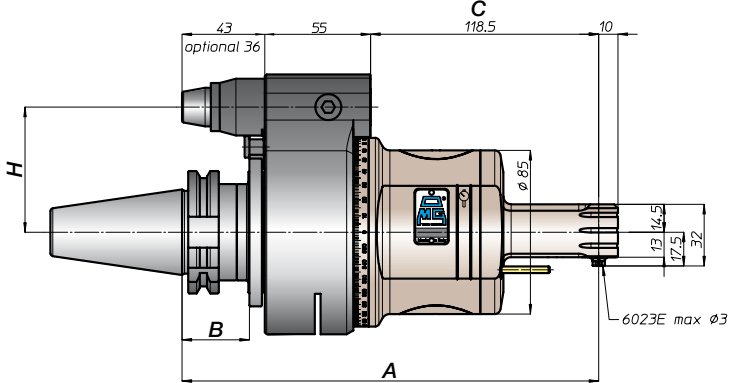
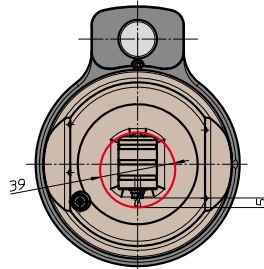
rotazione/rotation



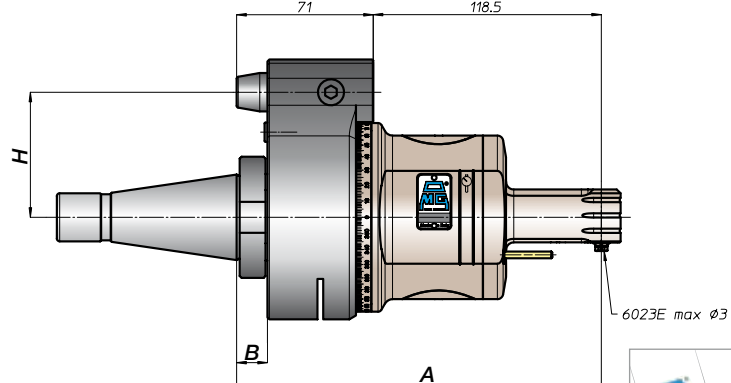
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
* DING9871	30	216,5	35	65	-
	40			80	110
	45			80	110
	50			80	110
* ANSIB5.50	40	224,5	45	65	-
	50			80	110
* BT	40	224,5	45	65	-
	50			80	110
DING9893 HSK	63	225,5	44	65	-
	80			80	110
	100			80	110
ISO26623 CAPTO	C5	220,5	39	65	-
	C6			80	110
	C8			80	110
KM	63	216,5	39	65	-
	80			80	110
	100			80	110
DIN2080	-	186,5	13	65	-
	40			80	110
	50			80	110
ANSIB5.18 NMTB	40	186,5	13	65	-
	50			80	110



MODELLI AGGIUNTIVI EXTENDED VERSION	C	D	E	A	ROTAZIONE ROTATION		PESO WEIGHT	
TAR03.P-L65	134	124	65	+15,5	Input CCW	Output CW		
TAR03.P-L80	149	139	80	+30,5	Input CW	Output CW		
TAR03.P-L96	165	155	96	+46,5	Input CCW	Output CW	6,7 kg	9,1 kg
TAR03.P-L111	180	170	111	+61,5	Input CW	Output CW		



* Option: Dual Contact

FH
BAH
TA.CP
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MOX
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VH
TSI/TSX
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testa ad angolo - angle head

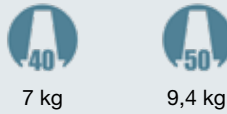
TAR04.P



caratteristiche/features



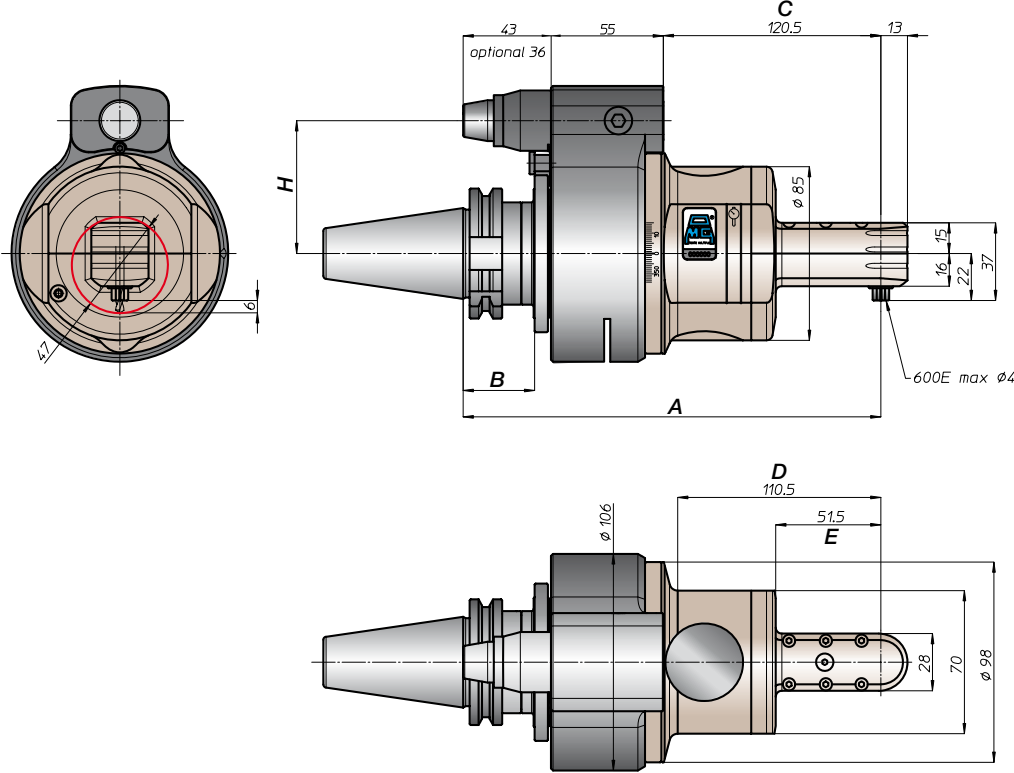
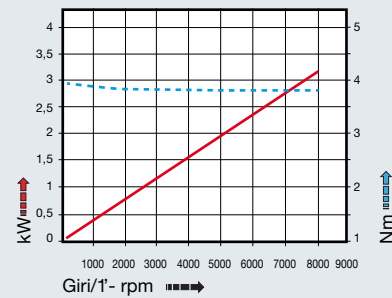
peso/weight



rotazione/rotation

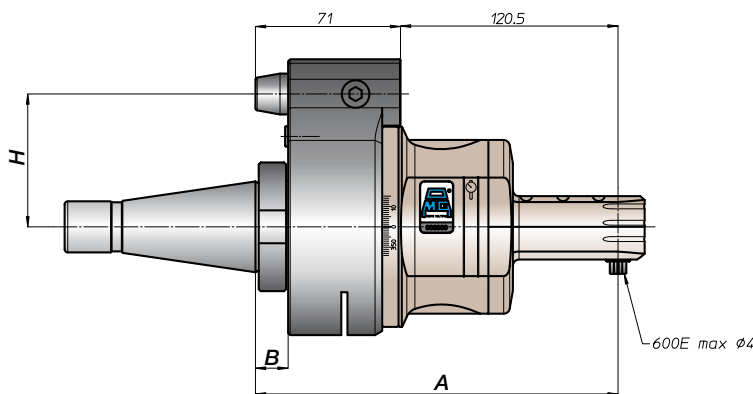


prestazioni/performance



MODELLI AGGIUNTIVI EXTENDED VERSION	C	D	E	A	ROTAZIONE ROTATION		PESO WEIGHT	
TAR04.P-L90	159	149	90	+38,5	Input CCW	Output CW		
TAR04.P-L109	178	168	109	+57,5	Input CW	Output CW		
TAR04.P-L128	197	187	128	+76,5	Input CCW	Output CW	7 kg	9,4 kg
TAR04.P-L147	216	206	147	+95,5	Input CW	Output CW		

CONO SHANK	size	H			
		A	B	standard	optional
* DING9871	30			65	-
	40			80	110
	45	218,5	35	80	110
	50	218,5	35	80	110
* CAT ANSIB5.50	40			65	-
	50			80	110
* BT	40			65	
	50	226,5	45	80	110
HSK DING9893	63		44	65	
	80	227,5		80	110
	100		46	80	110
CAPTO ISO28623	C5			65	
	C6	222,5	39		
	C8			80	110
KM	63			65	
	80	218,5		80	110
	100			80	110
DIN2080	-	188,5	13	65	-
	40			80	110
	-	191,5	16	80	110
ANSIB5.18 NMTB	40	188,5	13	65	-
	50	191,5	16	80	110



* Option: Dual Contact



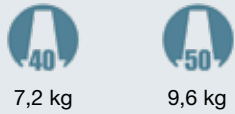
TAR06.P



caratteristiche/features



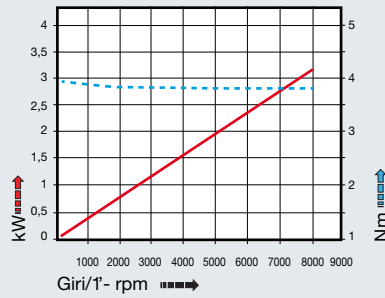
peso/weight



rotazione/rotation



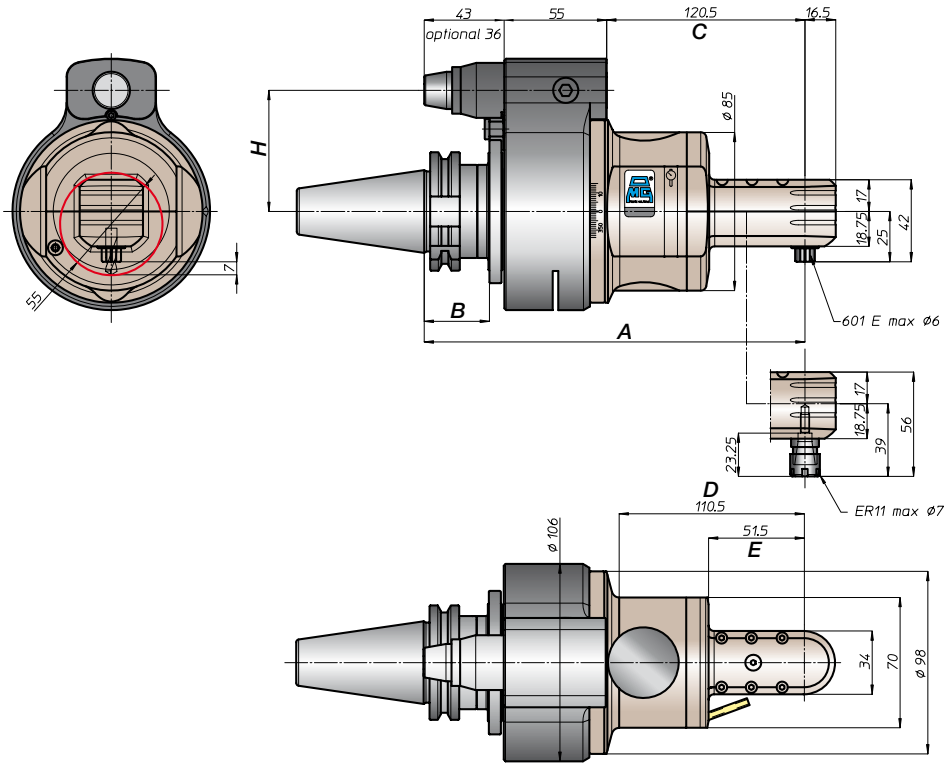
prestazioni/performance



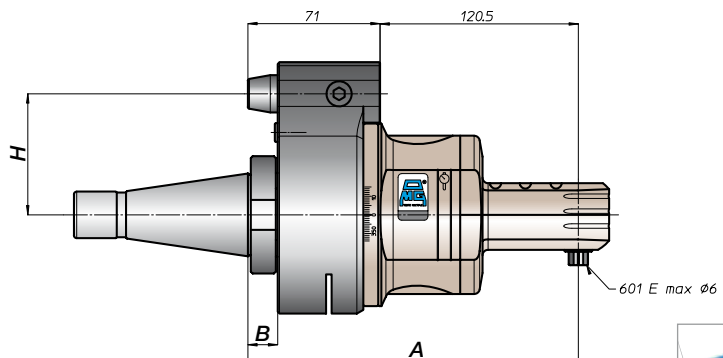
CONO SHANK	size	A	B	H	
				standard	optional
DIN9871 *	30	218,5	35	65	-
	40			80	110
	45			80	110
	50			80	110
ANSIB5.50 *	40	218,5	35	65	-
	50			80	110
* BT	40	226,5	45	65	-
	50			80	110
DING9893 HSK	63	227,5	44	65	-
	80			80	110
	100			80	110
ISO26623 CAPTO	C5	222,5	39	65	-
	C6			80	110
	C8			80	110
KM	63	218,5	35	65	-
	80			80	110
	100			80	110
DIN2080	-	188,5	13	65	-
	40			80	110
	50			80	110
ANSIB5.18 NMTB	40	188,5	13	65	-
	50			80	110

tipi mandrino disponibili / available spindle types

3 Weldon Whistle-Notch Ø6



MODELLI AGGIUNTIVI EXTENDED VERSION	C	D	E	A	ROTAZIONE ROTATION		PESO WEIGHT	
TAR06.P-L90	159	149	90	+38,5	Input CCW	Output CW	7,2 kg	9,6 kg
TAR06.P-L109	178	168	109	+57,5	Input CW	Output CW	7,2 kg	9,6 kg
TAR06.P-L128	197	187	128	+76,5	Input CCW	Output CW	7,2 kg	9,6 kg
TAR06.P-L147	216	206	147	+95,5	Input CW	Output CW	7,2 kg	9,6 kg



* Option: Dual Contact

FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori Accessories
Appendice tecnica Technical supplement

testa ad angolo - angle head

TAR10.P



caratteristiche/features

 ϕ 10
  M8
  430 N
 1-1
  6000

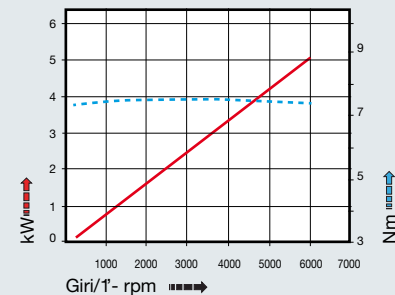
peso/weight

 7 kg
  9 kg

rotazione/rotation

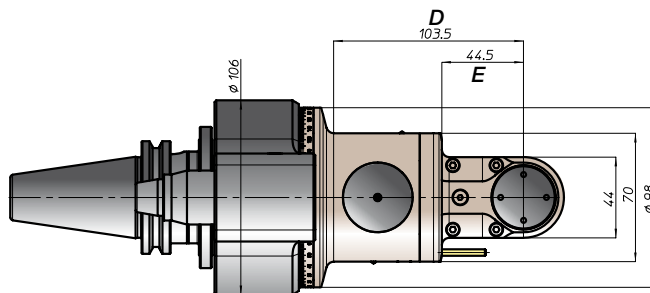
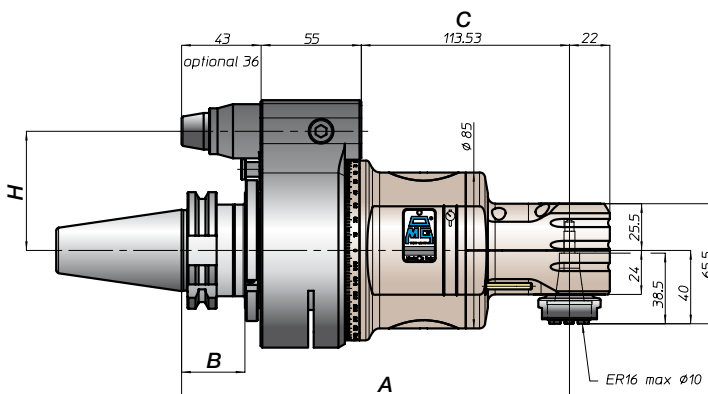
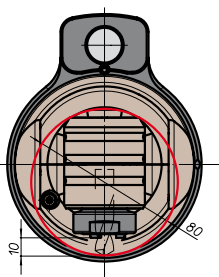
 input
  output





prestazioni/performance



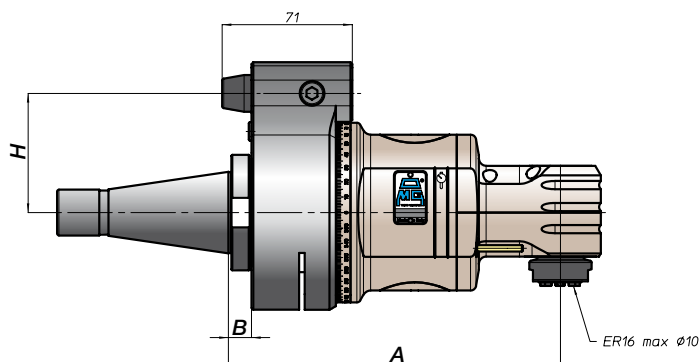
tipi mandrino disponibili / available spindle types

3 Weldon Whistle-Notch
 ϕ 12



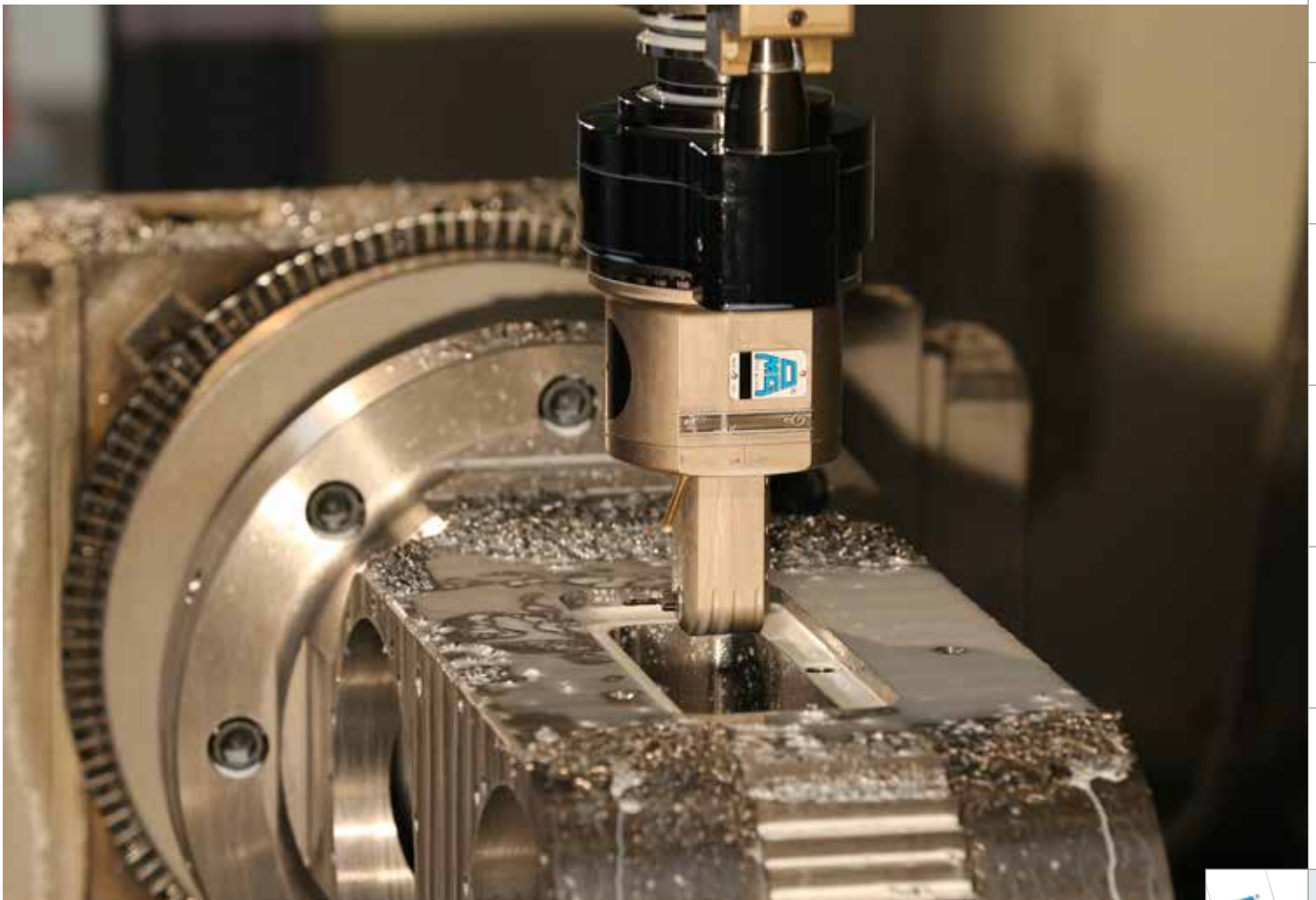
MODELLI AGGIUNTIVI EXTENDED VERSION	C	D	E	A	ROTAZIONE ROTATION	PESO WEIGHT
TAR10.P-L75	144,81	134,8	75,81	+31,28	Input CW Output CCW	 
TAR10.P-L107	176,10	166,1	107,10	+62,56	Input CW Output CW	 
TAR10.P-L138	207,38	197,3	138,38	+93,85	Input CW Output CCW	7 kg 9 kg

CONO SHANK	size	H			
		A	B	standard	optional
* DING9871	-			65	-
	40	211,5	35	80	110
	45			80	110
50	80			110	
* CAT	40			65	-
	50			80	110
* BT	40			65	
	50	219,5	45	80	110
HSK	63		44	65	
	80	220,5	46	80	110
	100			80	110
CAPTO	C5			65	
	C6	215,5	39	80	110
	C8			80	110
KM	63			65	
	80	211,5		80	110
	100			80	110
DIN2080	-	181,5	13	65	-
	40			80	110
	-			184,5	16
50	80	110			
NMTB	40	181,5	13	65	-
	50			184,5	16



* Option: Dual Contact





FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement



testa ad angolo - angle head

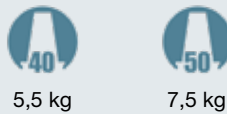
TA07.P



caratteristiche/features



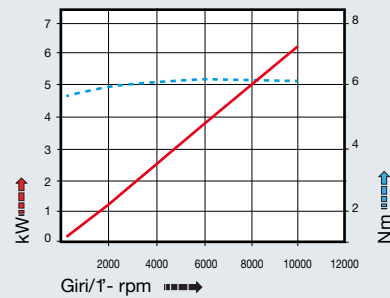
peso/weight



rotazione/rotation

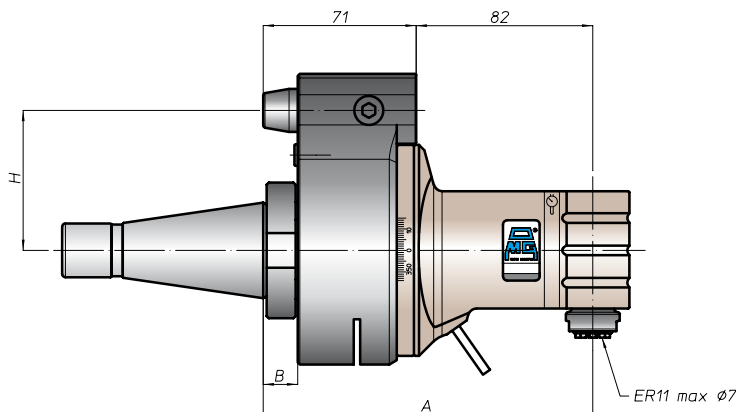
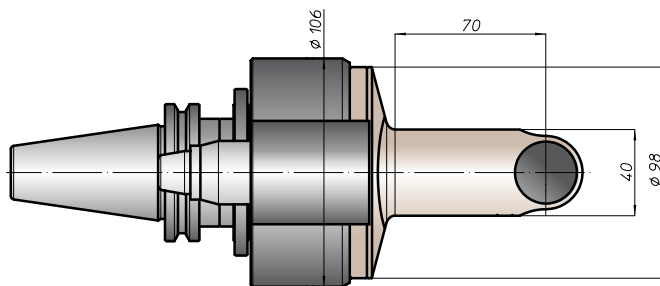
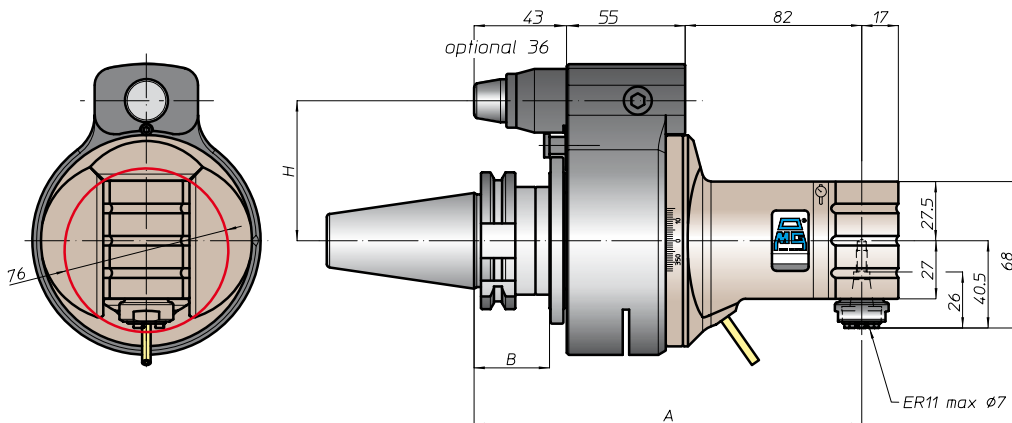


prestazioni/performance



tipi mandrino disponibili / available spindle types

3 Weldon Whistle-Notch
 ϕ 8- ϕ 10



CONO SHANK	size	H			
		A	B	standard	optional
* DING9871	30			65	-
	40			80	110
	45			80	110
	50	180	35	80	110
* ANSIB5.50 CAT	40			65	-
	50			80	110
* BT	40			65	
	50	188	45	80	110
HSK DING9893	63		44	65	
	80	189		80	110
	100		46	80	110
CAPTO ISO28623	C5			65	
	C6	184	39	80	110
	C8			80	110
KM	63			65	
	80	180		80	110
	100			80	110
DIN2080	-	150	13	65	-
	40			80	110
	-	153	16	80	110
ANSIB5.18 NMTB	40	150	13	65	-
	50	153	16	80	110

* Option: Dual Contact

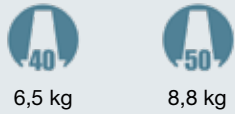


TA07.PL

caratteristiche/features



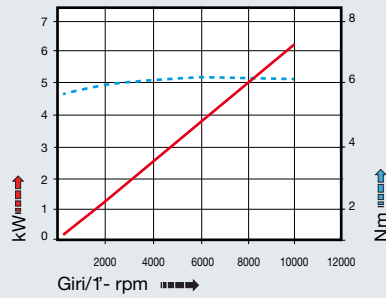
peso/weight



rotazione/rotation



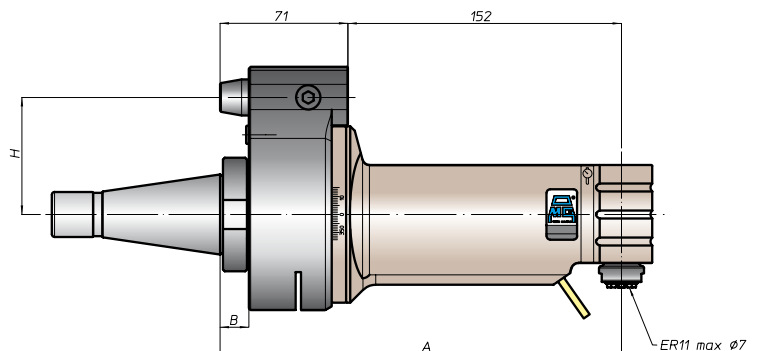
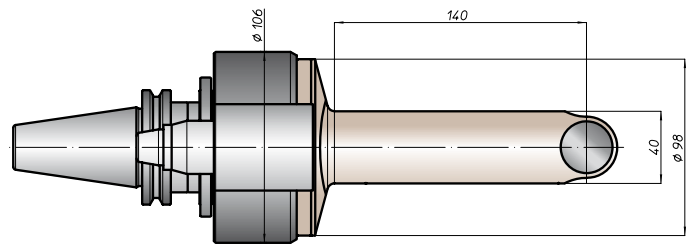
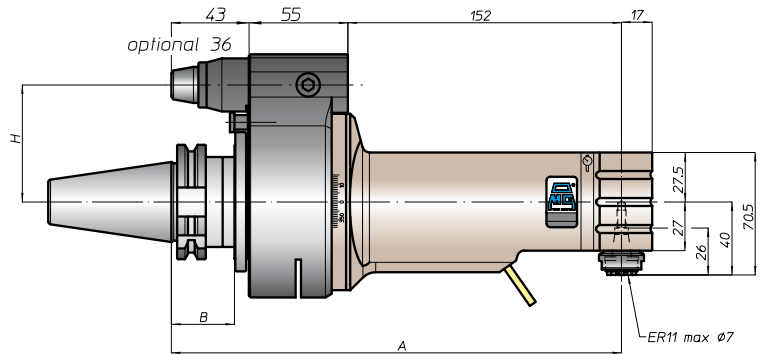
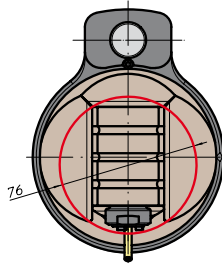
prestazioni/performance



CONO SHANK	size	A	B	H		
				standard	optional	
DING9871 *	-	250	35	65	-	
	40			80	110	
	45			80	110	
ANSIB5.50 *	CAT	258	45	65	-	
	BT			80	110	
DING9893	HSK	259	44	65	-	
	ISO26623			39	80	110
	CAPTO				65	-
DIN2080	C5	220	13	80	110	
	C6			65	-	
	C8			80	110	
ANSIB5.18	KM	223	16	65	-	
	NMTB			80	110	
	ANSIB5.18				80	110

tipi mandrino disponibili / available spindle types

3 Weldon Whistle-Notch
Ø8-Ø10



* Option: Dual Contact



FH
 BAH
 TA.CP
 TA
 MOX
 HT
 VH
 TSI/TSX
 T
 MT-TC-TC3
 Accessori
 Accessories
 Appendice tecnica
 Technical supplement

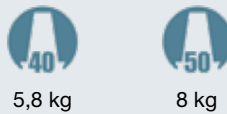
TA10.P



caratteristiche/features



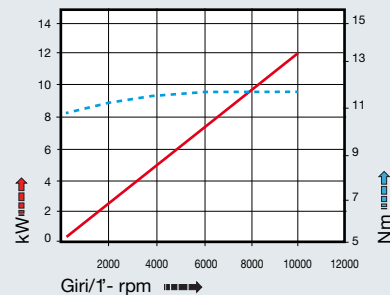
peso/weight



rotazione/rotation

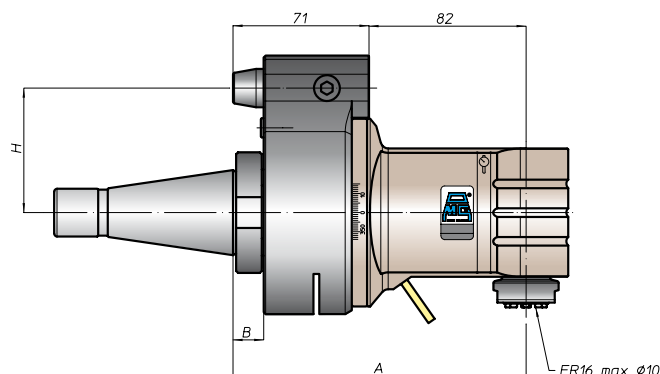
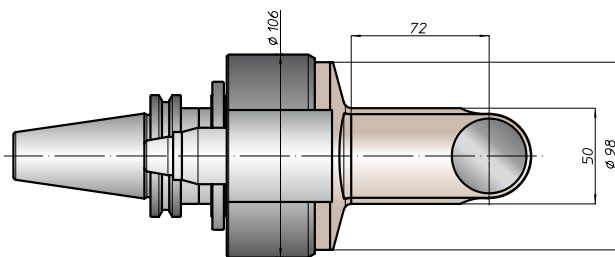
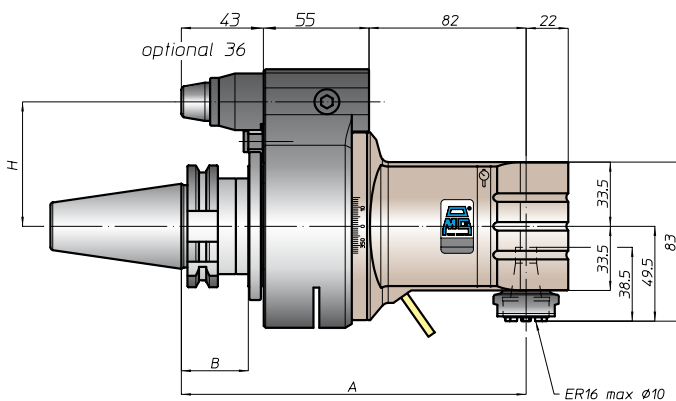
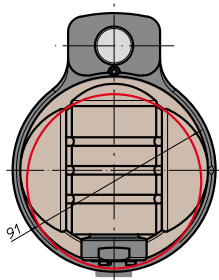


prestazioni/performance



tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER **ER20**
- 2** Albero portafresse Milling Shaft **Ø16**
- 3** Weldon Whistle-Notch **Ø8-10-12**



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	30	180	35	65	-
	40			80	110
	45			80	110
	50			80	110
ANSIB5.50 *	40	188	45	65	-
	50			80	110
* BT	40	189	46	65	-
	50			80	110
HSK	63	184	39	65	-
	80			80	110
	100			80	110
DIN69893	63	150	13	65	-
	80			80	110
	100			80	110
CAPTO	-	153	16	65	-
	40			80	110
	50			80	110
ISO 28623	40	150	13	65	-
	50			80	110
KM	-	153	16	65	-
	40			80	110
	50			80	110
DIN2080	40	150	13	65	-
	50			80	110
ANSIB5.18	40	153	16	65	-
	50			80	110

* Option: Dual Contact



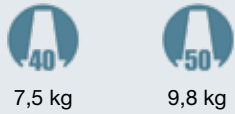
TA10.PL



caratteristiche/features



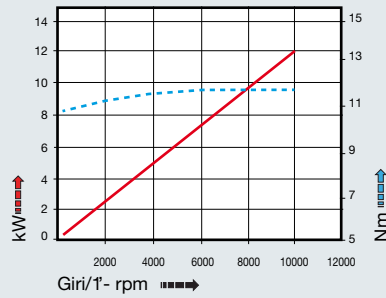
peso/weight



rotazione/rotation



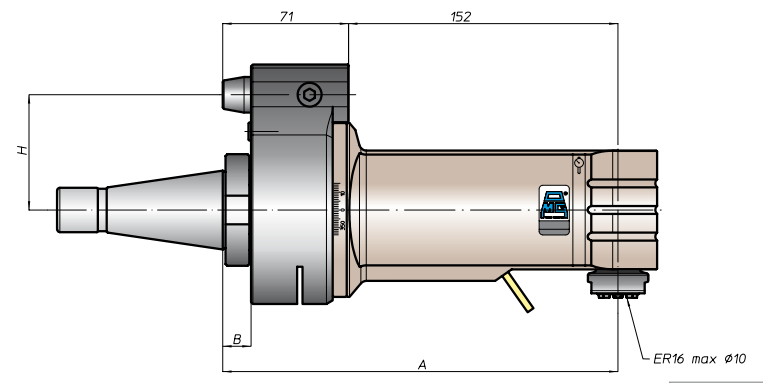
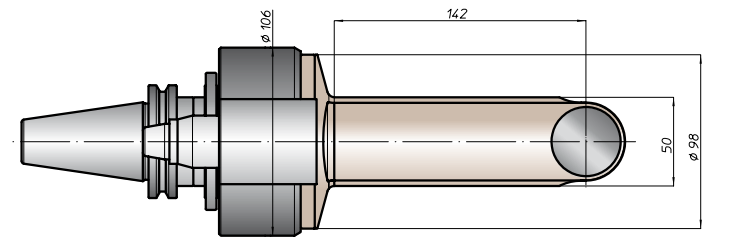
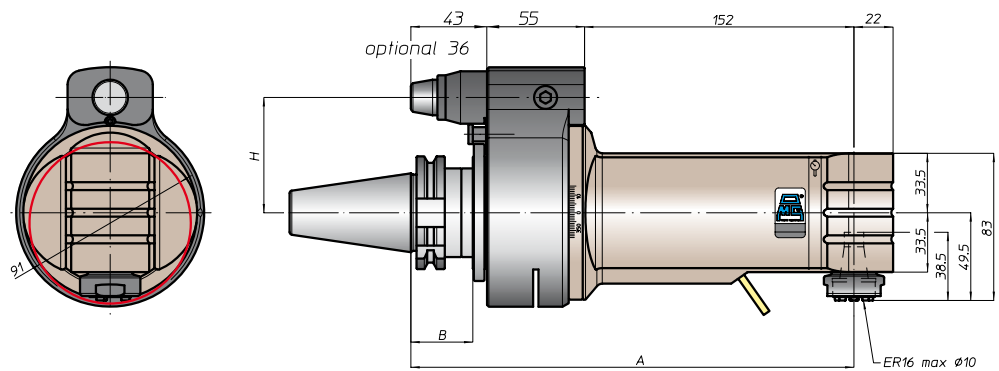
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871 *	-	250	35	65	-
	40			80	110
	45			80	110
ANSIB5.50 *	CAT	258	45	65	-
	BT			80	110
DIN69893	HSK	259	46	65	-
	80			80	110
	100			80	110
ISO26623	C5	254	39	65	-
	C6			80	110
	C8			80	110
KM	63	250	-	65	-
	80			80	110
	100			80	110
DIN2080	-	220	13	65	-
	40			80	110
	50			80	110
ANSIB5.18	NMTB	223	16	65	-
	50			80	110

tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER **ER20**
- 2** Albero portafresa Milling shaft **Ø16**
- 3** Weldon Whistle-Notch **Ø8-10-12**



* Option: Dual Contact

FH
 BAH
 TA.CP
 TA
 MOX
 HT
 VH
 TSI/TSX
 T
 MT-TC-TC3
 Accessori
 Accessories
 Appendice tecnica
 Technical supplement

testa ad angolo - angle head

TA13.P



caratteristiche/features



peso/weight



6,5 kg

9 kg

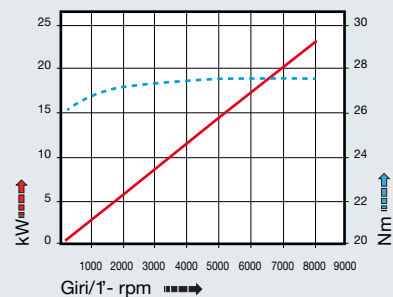
rotazione/rotation



input

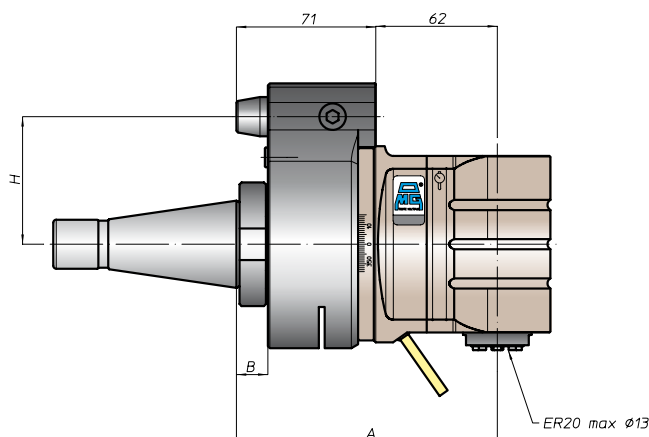
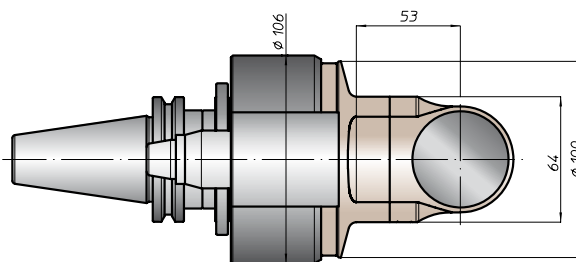
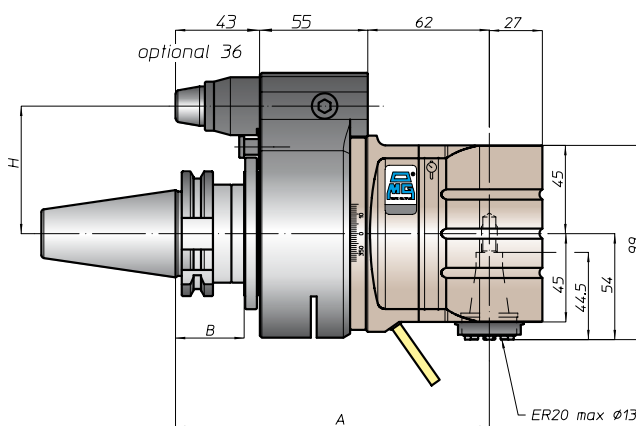
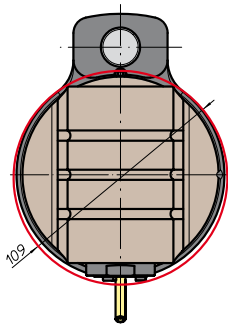
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER
ER25
- 2** Albero portafrese
Milling shaft
Ø16-Ø22
- 3** Weldon
Whistle-Notch
Ø16
- 6** ABS
Licenza KOMET®
ABS25



CONO SHANK	size	H			
		A	B	standard	optional
* DIN9871	-			65	-
	40			80	110
	45			80	110
* CAT	40	160	35	65	-
	50			80	110
	50			80	110
* BT	40			65	
	50	168	45	80	110
HSK	63		44	65	
	80	169		80	110
	100		46	80	110
CAPTO	C5			65	
	C6	164	39		
	C8			80	110
KM	63			65	
	80	160		80	110
	100			80	110
DIN2080	-	130	13	65	-
	40			80	110
	50	133	16	80	110
ANSIB5.18 NMTB	40	130	13	65	-
	50	133	16	80	110

* Option: Dual Contact



TA13.PL

caratteristiche/features



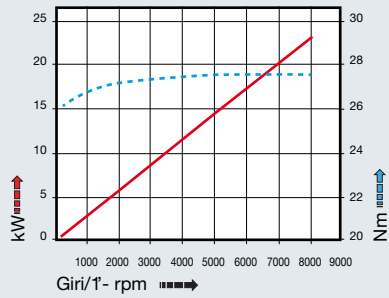
peso/weight



rotazione/rotation



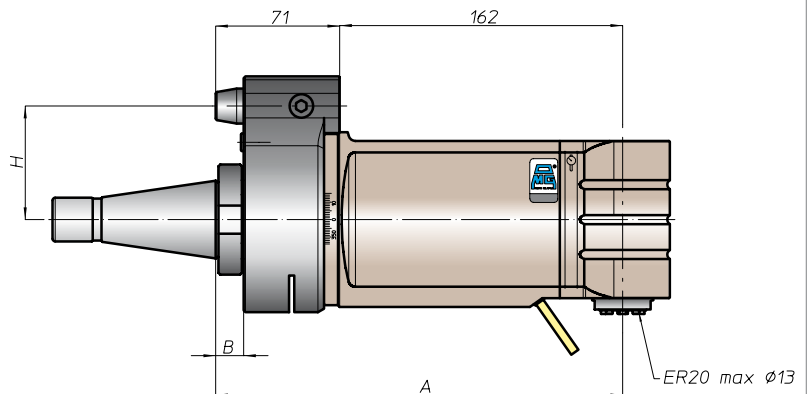
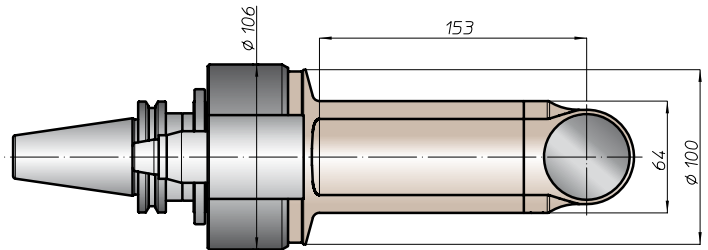
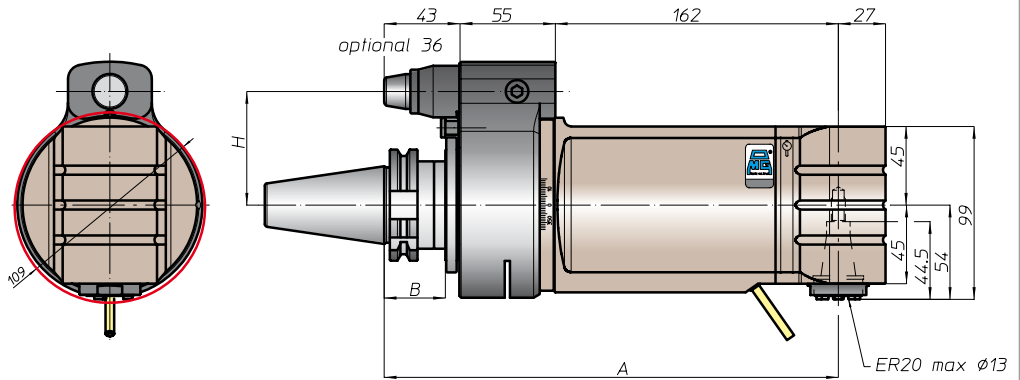
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DING9871 *	-	260	35	65	-
	40			80	110
	45			80	110
ANSIB5.50 *	40	268	45	65	-
	50			80	110
* BT	40	268	45	65	-
	50			80	110
DING9893	63	269	46	65	-
	80			80	110
	100			80	110
ISO26623	C5	264	39	65	-
	C6			80	110
	C8			80	110
KM	63	260	46	65	-
	80			80	110
	100			80	110
DIN2080	-	230	13	65	-
	40			80	110
	-			233	16
ANSIB5.18	40	233	16	65	-
	50			80	110

tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER
ER25
- 2** Albero portafresa
 Milling shaft
Ø16-Ø22
- 3** Weldon
 Whistle-Notch
Ø16
- 6** ABS
 Licenza KOMET®
ABS25



* Option: Dual Contact



FH
 BAH
 TA.CP
 TA
 MOX
 HT
 VH
 TSI/TSX
 T
 MT-TC-TC3
 Accessori
 Accessories
 Appendice tecnica
 Technical supplement

testa ad angolo - angle head

TA16.P



caratteristiche/features

ϕ 16
 M12
 1040 N
 1-1
 5000

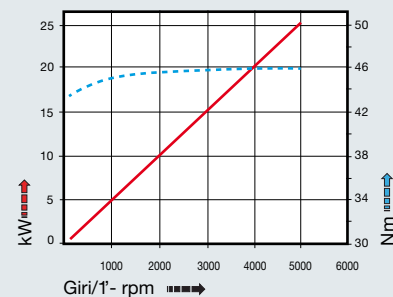
peso/weight

40
 50
 7,7 kg 11,7 kg

rotazione/rotation

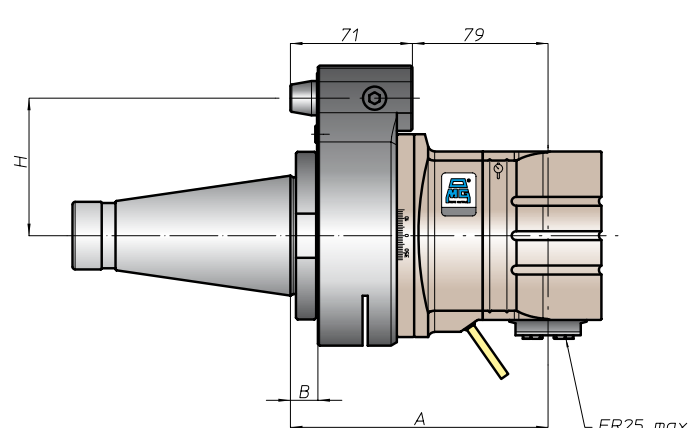
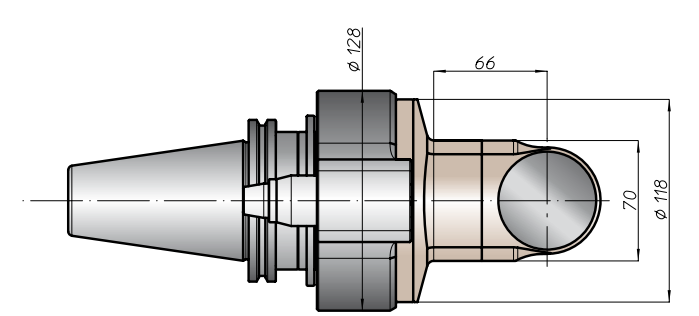
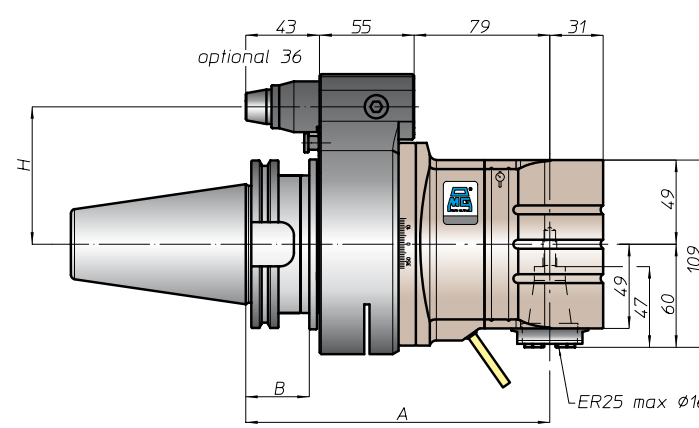
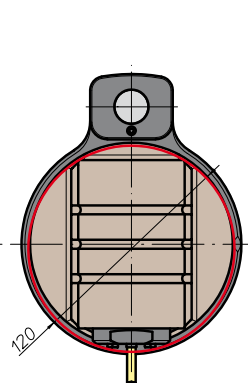
IN
 OUT

prestazioni/performance



tipi mandrino disponibili / available spindle types

- | | | | | | |
|---------------------|---|-------------------------------|-----------------------|--------------------------|-----------------------------|
| 1 DIN6499-ER | 2 Albero portafresse Milling Shaft | 3 Weldon Whistle-Notch | 4 DIN69893-HSK | 5 COROMANT CAPTO® | 6 ABS Licenza KOMET® |
| ER32 | Ø16-Ø22-Ø27-Ø32 | Ø20 | HSK32 | C3 | ABS32 |



CONO SHANK	size	H			
		A	B	standard	optional
* DIN69871	-	172		65	-
	40			65	-
	45	177	35	80	110
* ANSIB5.50 CAT	40	172		65	-
	50	177		80	110
* BT	40	172		65	
	50	185	45	80	110
HSK	63	181	44	65	
	80			65	
	100	186	46	80	110
CAPTO	C5	176		65	
	C6		39		
	C8	181		80	110
KM	63	172		65	
	80			65	
	100	177		80	110
DIN2080	-	147	13	65	-
	40			65	-
	50	150	16	80	110
ANSIB5.18 NMTB	40	142	13	65	-
	50	150	16	80	110

* Option: Dual Contact



TA16.PL



caratteristiche/features



peso/weight



15,5 kg

rotazione/rotation

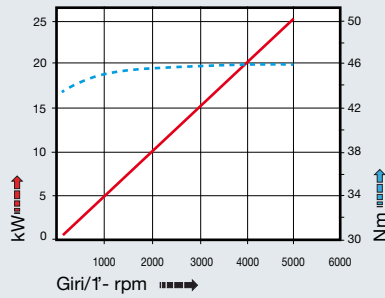


input



output

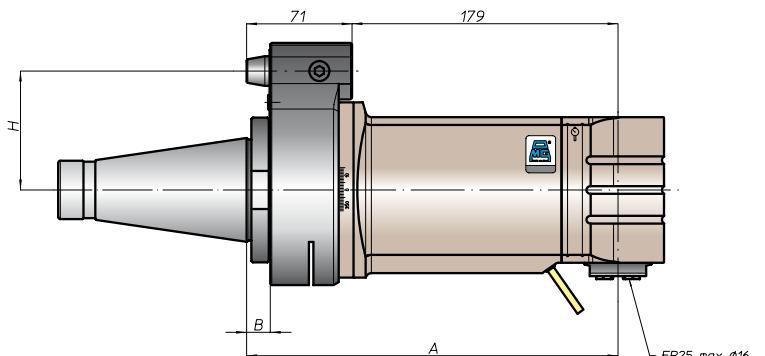
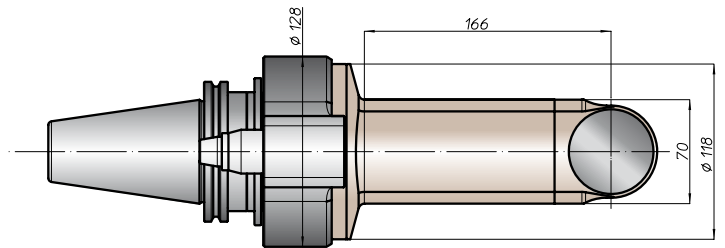
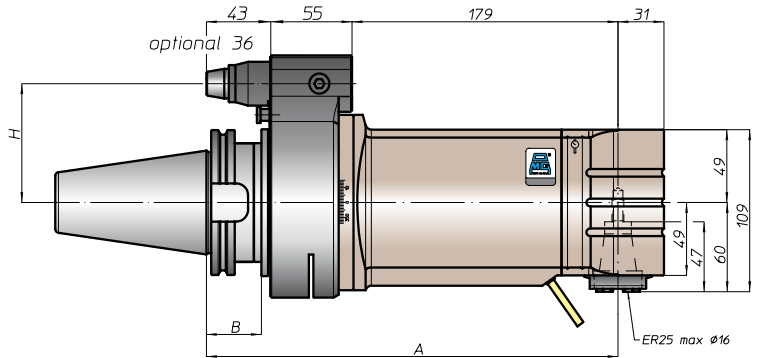
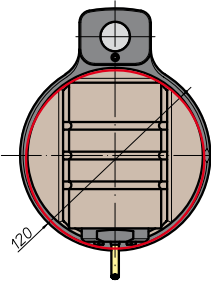
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871 *	-	-	-	-	-
	45	277	35	80	110
ANSIB5.50 *	-	-	-	-	-
	50	277	-	80	110
BT *	-	-	-	-	-
	50	285	45	80	110
HSK	-	-	44	-	-
	80	286	46	80	110
DIN69893	100	-	-	-	-
	-	-	-	-	-
CAPTO	-	-	-	-	-
	C6	281	39	80	110
ISO26623	C8	-	-	-	-
	-	-	-	-	-
KM	-	-	-	-	-
	80	277	-	80	110
DIN2080	100	-	-	-	-
	-	-	-	-	-
ANSIB5.18	-	-	-	-	-
	50	250	16	80	110
NMTB	-	-	-	-	-
	50	250	16	80	110

tipi mandrino disponibili / available spindle types

- 1 DIN6499-ER
ER32
- 2 Albero portafresa
Milling shaft
Ø16-Ø22-Ø27-Ø32
- 3 Weldon
Whistle-Notch
Ø20
- 4 DIN69893-HSK
HSK32
- 5 COROMANT
CAPTO®
C3
- 6 ABS
Licenza KOMET®
ABS32



* Option: Dual Contact



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement

testa ad angolo - angle head

TA20.P



caratteristiche/features



peso/weight



14,5 kg

rotazione/rotation

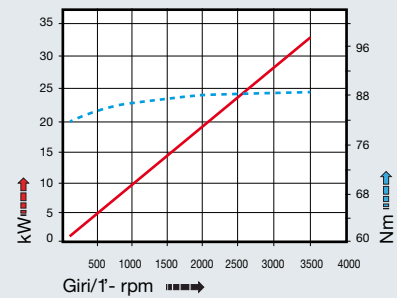


input



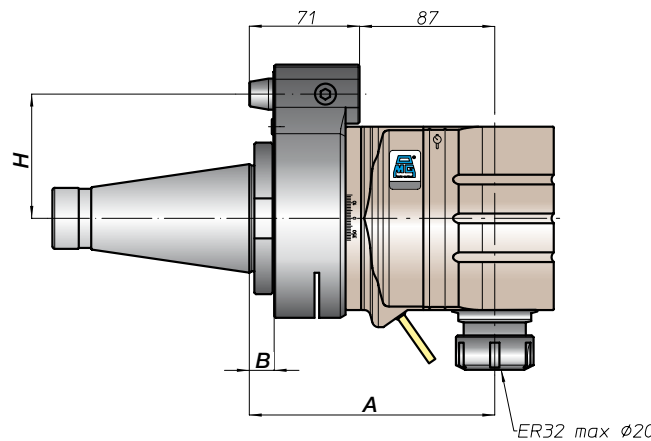
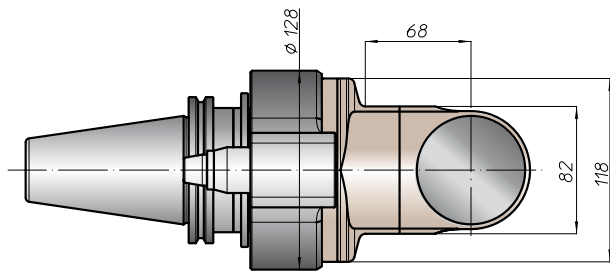
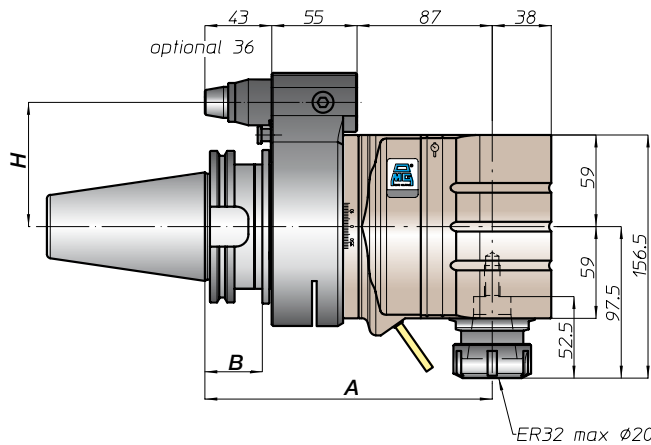
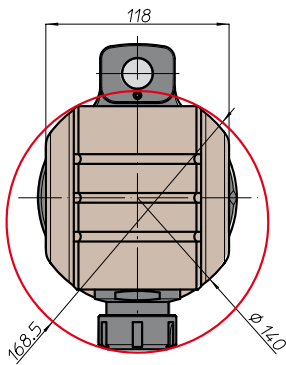
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER
ER40
- 2** Albero portafrese
Milling shaft
Ø22-Ø27-Ø32
- 3** Weldon
Whistle-Notch
Ø20-Ø25-Ø32
- 4** DIN69893-HSK
HSK40
- 5** COROMANT
CAPTO®
C4
- 6** ABS
Licenza KOMET®
ABS40



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	-	-	-	-	-
DIN69871 *	45	-	-	80	110
DIN69871 *	50	185	35	80	110
ANSIB5.50 *	-	-	-	-	-
ANSIB5.50 *	50	-	-	80	110
BT *	-	-	-	-	-
BT *	50	193	45	80	110
HSK	-	-	-	-	-
DIN69893	80	194	-	80	110
DIN69893	100	-	46	80	110
CAPTO	-	-	-	-	-
ISO28623	-	189	-	80	110
ISO28623	C8	-	-	80	110
KM	-	-	-	-	-
KM	80	185	-	80	110
KM	100	-	-	80	110
DIN2080	-	-	-	-	-
DIN2080	-	158	16	80	110
DIN2080	50	-	-	80	110
NMTB	-	-	-	-	-
ANSIB5.18	50	158	16	80	110

* Option: Dual Contact



TA20.PL



caratteristiche/features



peso/weight



19 kg

rotazione/rotation

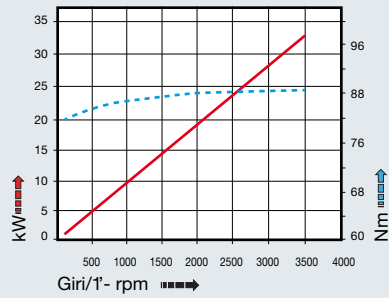


input



output

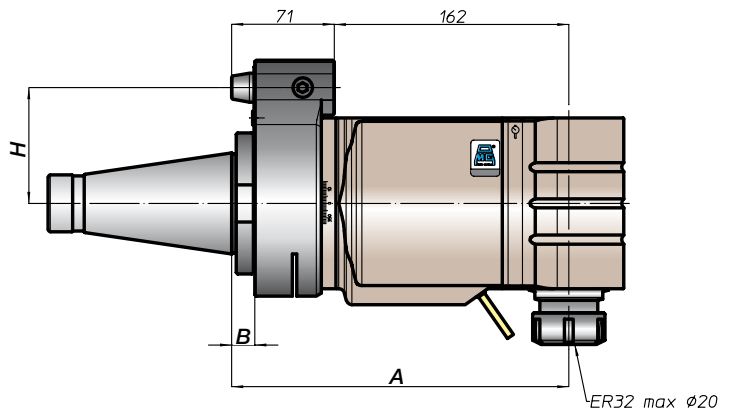
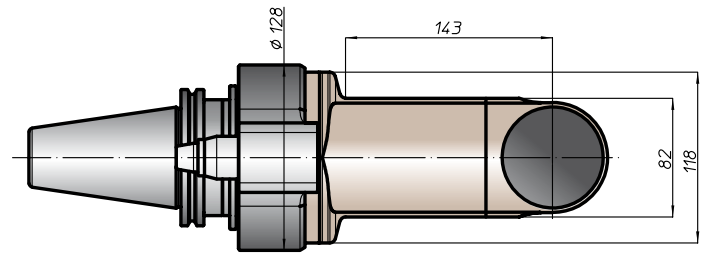
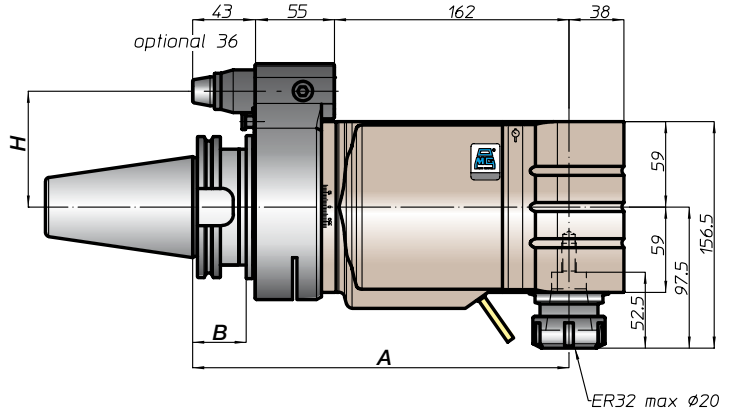
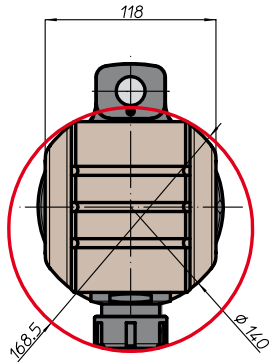
prestazioni/performances



CONO SHANK	size	A	B	H	
				standard	optional
* DING9871	-	260	35	-	-
	45			80	110
* ANSIB5.50	-	264	16	-	-
	50			80	110
* BT	-	268	45	-	-
	50			80	110
HSK	-	269	-	-	-
	80		46	80	110
ISO26623	-	264	-	-	-
	80		80	110	
KM	-	260	-	-	-
	80		80	110	
DIN2080	-	233	-	-	-
	50		80	110	
ANSIB5.18	-	233	-	-	-
	50		80	110	

tipi mandrino disponibili / available spindle types

- 1 DIN6499-ER
ER40
- 2 Albero portafresa
Milling shaft
Ø22-Ø27-Ø32
- 3 Weldon
Whistle-Notch
Ø20-Ø25-Ø32
- 4 DIN69893-HSK
HSK40
- 5 COROMANT
CAPTO®
C4
- 6 ABS
Licenza KOMET®
ABS40



* Option: Dual Contact



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement

FH

BAH

TA-CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

TA Extended Gallery



TA20.30



caratteristiche/features



peso/weight



14,7 kg

rotazione/rotation

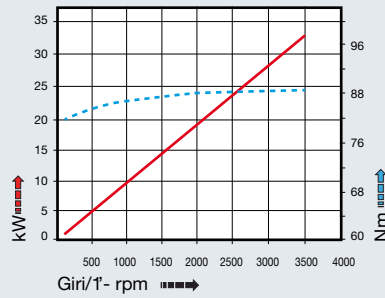


input

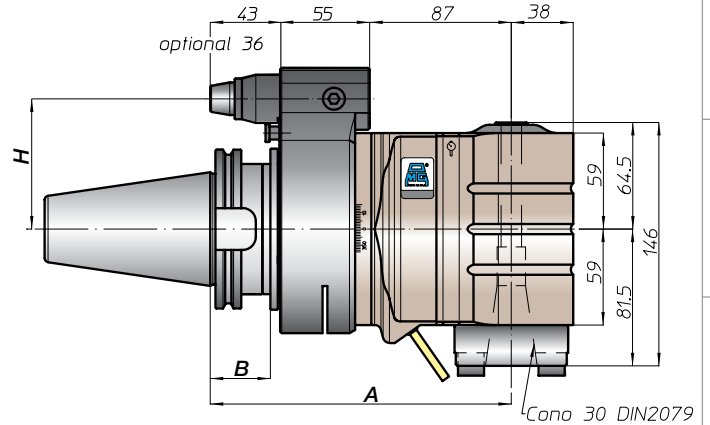
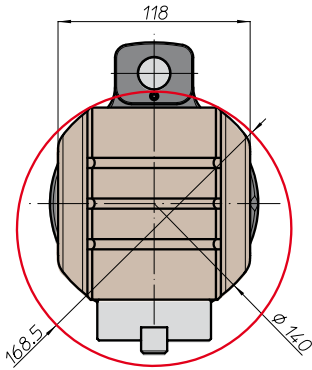


output

prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871 *	-	185	35	-	-
	45			80	110
ANSIB5.50 *	-	185	35	-	-
	50			80	110
BT *	-	193	45	-	-
	50			80	110
HSK	-	194	46	-	-
	80			80	110
CAPTO	-	189	-	-	-
	100			80	110
KM	-	185	-	-	-
	80			80	110
DIN2080	-	158	16	-	-
	50			80	110
ANSIB5.18	-	158	16	-	-
	50			80	110

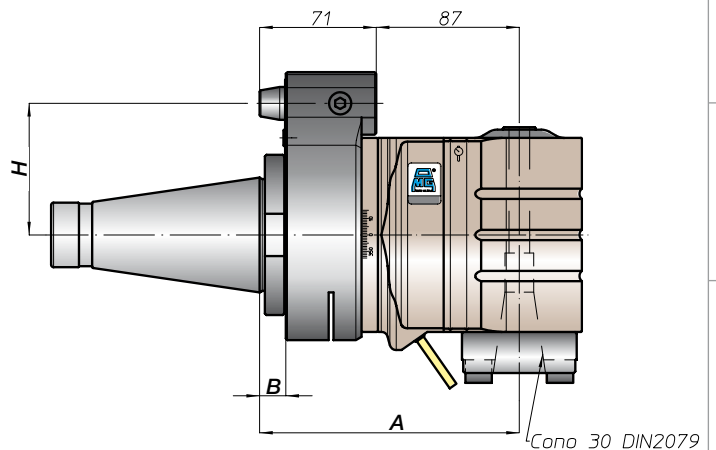
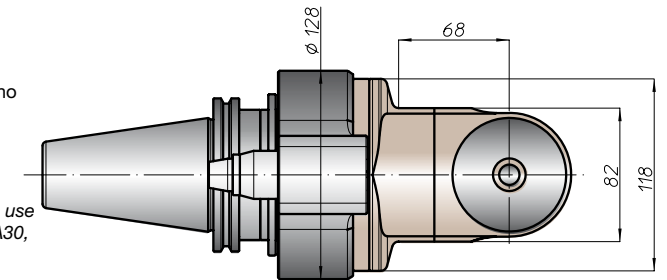


Nota:

- nel mandrino DIN2079 si possono utilizzare coni DIN2080-30, DIN69871-A30, MAS403-BT30

Note:

- on the spindle DIN2079 you can use shank DIN2080-30, DIN69871-A30, MAS403-BT30



* Option: Dual Contact



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement

TA26.P



caratteristiche/features



peso/weight



22 kg

rotazione/rotation

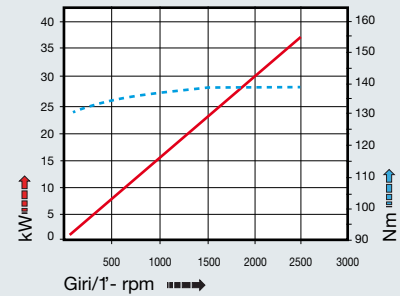


input



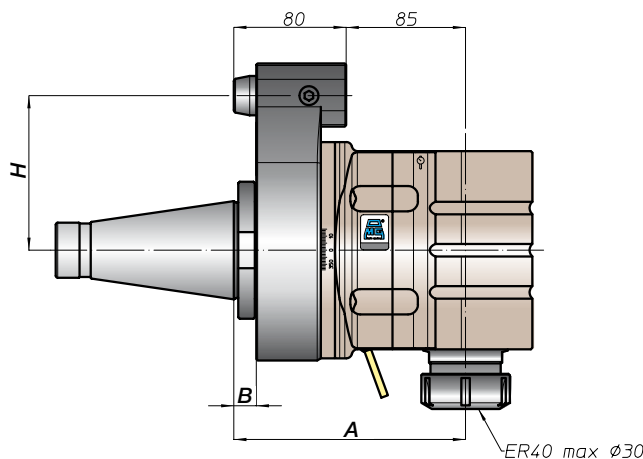
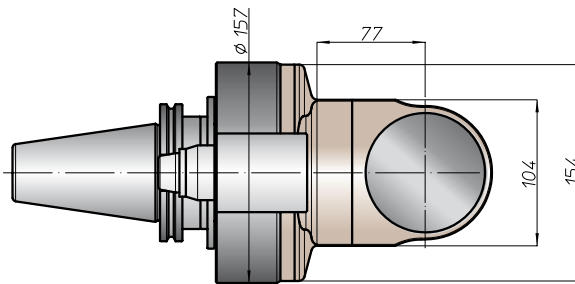
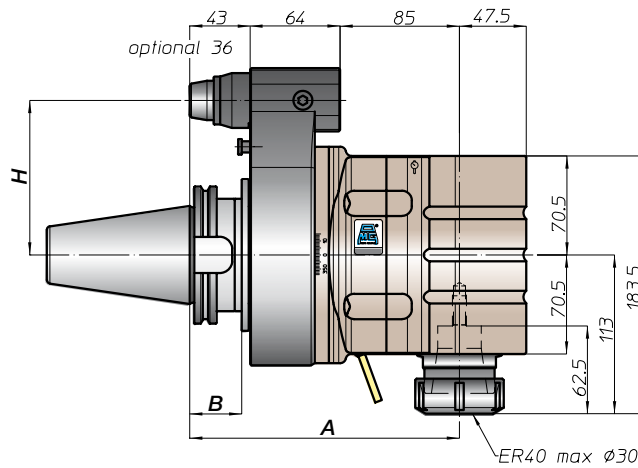
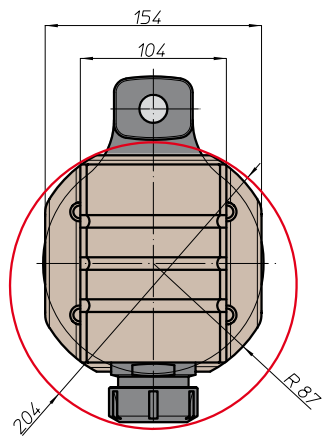
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER
ER50
- 2** Albero portafresa
 Milling shaft
Ø16-Ø27-Ø32-Ø40
- 3** Weldon
 Whistle-Notch
Ø32
- 4** DIN9893-HSK
HSK63
- 5** COROMANT
 CAPTO®
C4-C5-C6
- 6** ABS
 Licenza KOMET®
ABS50



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	-	-	-	-	-
DIN69871 *	45	-	-	110	-
DIN69871 *	50	192	35	-	-
ANSIB5.50 *	-	-	-	-	-
ANSIB5.50 *	50	-	-	110	-
BT *	-	-	-	-	-
BT *	50	200	45	110	-
HSK	-	-	-	-	-
DIN9893	80	201	46	110	-
DIN9893	100	-	-	-	-
CAPTO	-	-	-	-	-
ISO28623	-	196	-	-	-
ISO28623	C8	-	-	110	-
KM	-	-	-	-	-
KM	-	192	-	-	-
KM	100	-	-	110	-
DIN2080	-	-	-	-	-
DIN2080	-	165	16	110	-
DIN2080	50	-	-	-	-
NMTB	-	-	-	-	-
ANSIB5.18	50	165	16	110	-

* Option: Dual Contact



TA26.40



caratteristiche/features



peso/weight



22 kg

rotazione/rotation

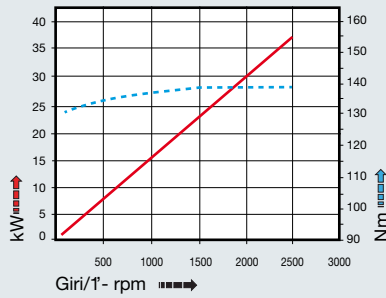


input

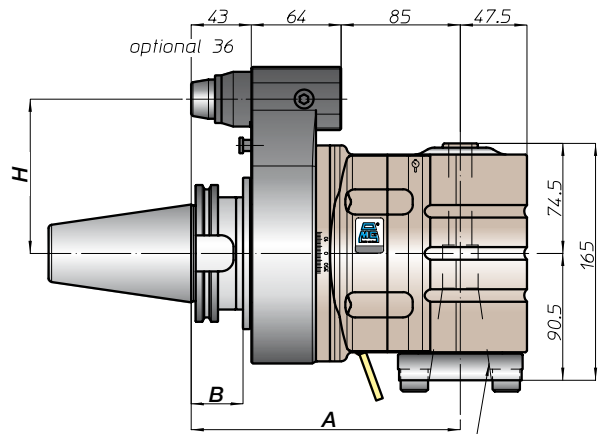
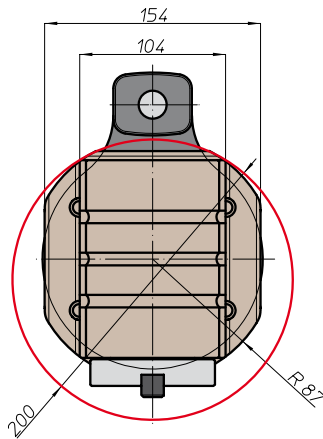


output

prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
 DIN69871 *	-	192	35	-	-
	45			110	-
	50			110	-
 ANSIB5.50 * CAT	-	196	46	-	-
	50			110	-
 * BT	-	201	46	-	-
	50			110	-
 HSK	-	196	46	-	-
	80			110	-
 DIN69893	-	192	35	-	-
	100			110	-
 CAPTO	-	165	16	-	-
	-			110	-
 ISO26623	-	165	16	-	-
	C8			110	-
 KM	-	165	16	-	-
	-			110	-
 DIN2080	-	165	16	-	-
	50			110	-
 NMTB ANSIB5.18	-	165	16	-	-
	50			110	-



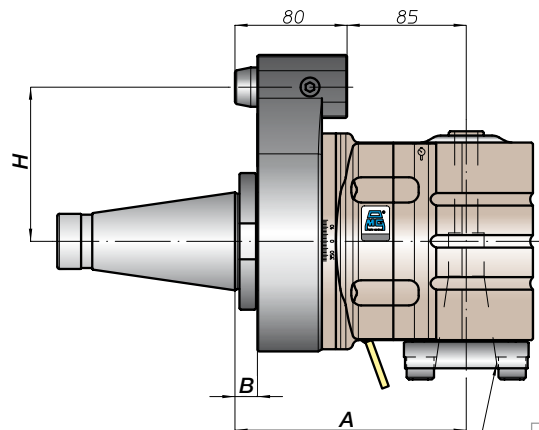
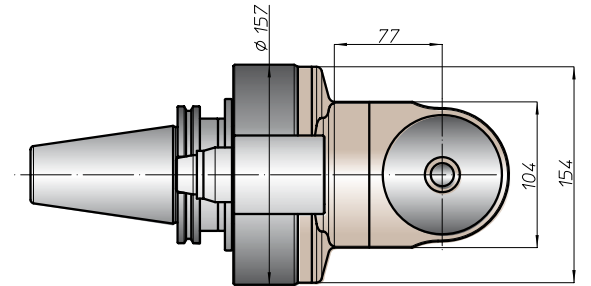
Cono 40 DIN2079

Nota:

- nel mandrino DIN2079 si possono utilizzare coni DIN2080-40, DIN69871-A40, MAS403-BT40

Note:

- on the spindle DIN2079 you can use shank DIN2080-40, DIN69871-A40, MAS403-BT40



Cono 40 DIN2079

* Option: Dual Contact

testa ad angolo - angle head

TA30.P



caratteristiche/features



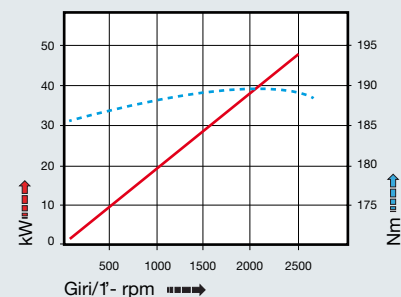
peso/weight



rotazione/rotation



prestazioni/performance



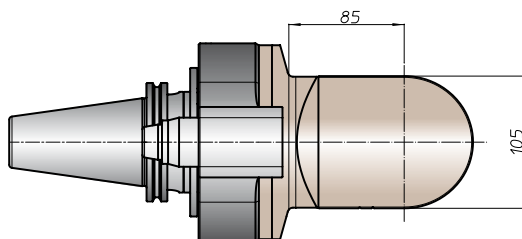
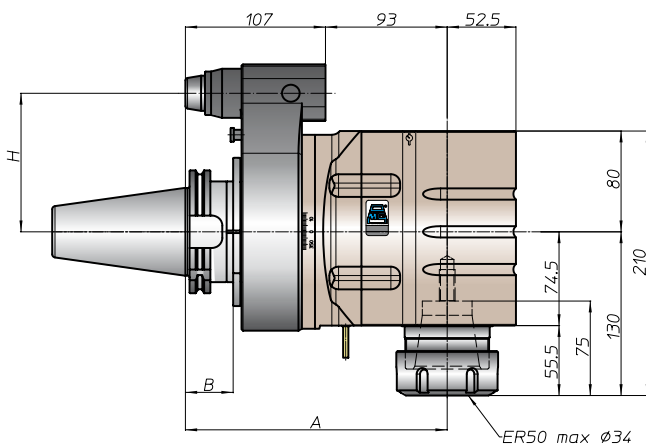
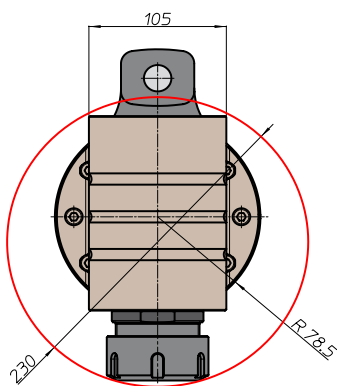
tipi mandrino disponibili / available spindle types

2 Albero portafrese
Milling shaft
Ø27-Ø32-Ø40

3 Weldon
Whistle-Notch
Ø32

4 DIN69893-HSK
HSK63

5 COROMANT
CAPTO®
C6



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	-	-	-	-	-
ANSIB5.50 *	50	200	36,5	110	-
BT *	50	-	-	110	-
HSK	-	-	-	-	-
DIN69893	100	209	46	110	-
CAPTO	-	-	-	-	-
ISO28623	C8	204	-	110	-
KM	-	-	-	-	-
DIN2080	-	-	-	-	-
NMTB	-	-	-	-	-
ANSIB5.18	-	-	-	-	-

* Option: Dual Contact



TA30.40



caratteristiche/features



peso/weight



24 kg

rotazione/rotation

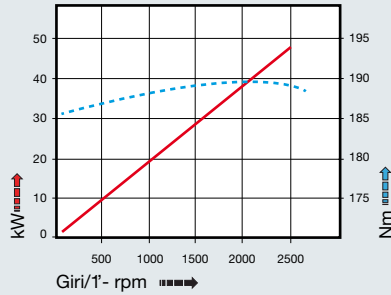


input

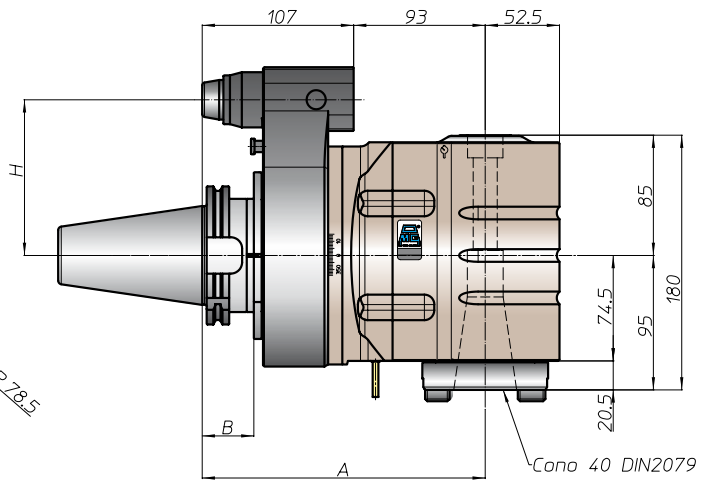
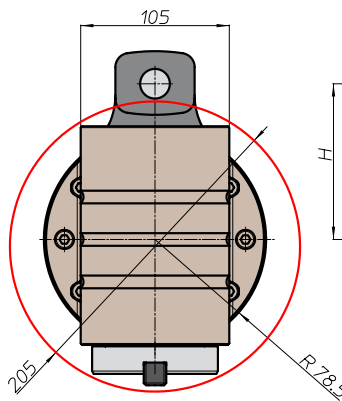


output

prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871 *	-	-	-	-	-
	45	200	35	110	-
	50			110	-
ANSIB5.50 *	-	-	-	-	-
	50	-	-	110	-
	50	-	-	110	-
BT *	-	-	-	-	-
	50	208	45	110	-
	50	208	45	110	-
HSK	-	-	-	-	-
	80	209	46	110	-
	100			110	-
CAPTO	-	-	-	-	-
	-	204	-	110	-
	C8			110	-
KM	-	-	-	-	-
	-	200	-	110	-
	100			110	-
DIN2080	-	-	-	-	-
	-	200	16	110	-
	50			110	-
NMTB	-	-	-	-	-
	-	200	16	110	-
	50			110	-

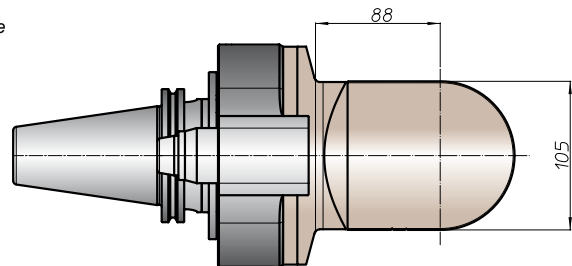


Nota:

- nel mandrino DIN2079 si possono utilizzare coni DIN2080-40, DIN69871-A40, MAS403-BT40

Note:

- on the spindle DIN2079 you can use shank DIN2080-40, DIN69871-A40, MAS403-BT40



* Option: Dual Contact



Appendice tecnica Technical supplement	MT-TC-TC3	T	TSI/TSX	VH	HT	MOx	TA	TA.CP	BAH	FH
4-32										





serie

TAL[®] LIGHT

Nuove Teste ad Angolo, quando la leggerezza è una priorità.

Le nuove Teste ad Angolo della serie TAL sono state realizzate con l'obiettivo di ottenere un prodotto leggero, che potesse essere applicato su macchine ATC dove il peso dell'utensile è considerato una limitazione. Un prodotto più leggero quindi, che non vede limiti nelle possibili lavorazioni le quali rimangono le stesse di una normale Testa ad Angolo O.M.G.

Anche questa gamma si contraddistingue per la qualità con cui le teste vengono realizzate, che rimane sempre alta, come tutti i prodotti O.M.G.

Disponibili in diversi modelli, queste teste ad angolo vanno dalla piccola TAL07 alla grande TAL26.

New Angle Heads, when lightness is a priority.

The goal was to develop a product series that could be applied on machines with ATC where the weight of the head represents a limitation. A lighter weight product therefore, that does not limit the possible machining operations, with the same performance to our standard O.M.G. Angle Heads. This range also stands out for the high quality our customers have come to appreciate for all O.M.G. products.

Available in different models, these heads start from the small TAL07 to our large TAL26.



testa ad angolo - angle head

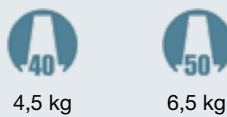
TAL07



caratteristiche/features



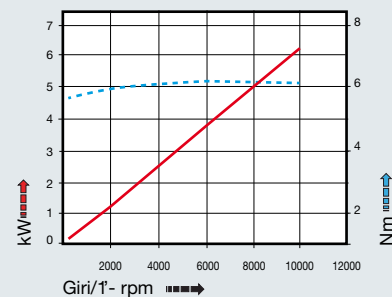
peso/weight



rotazione/rotation

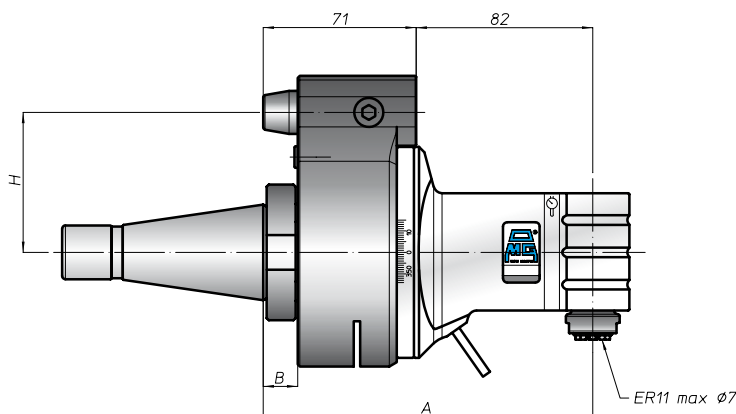
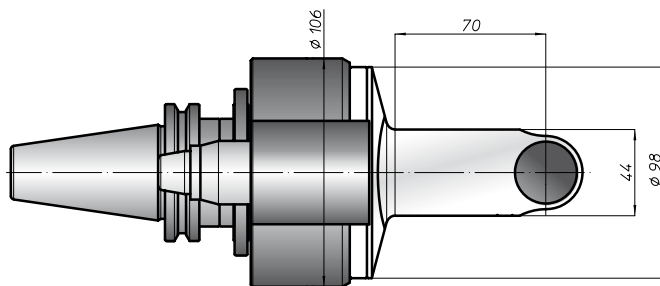
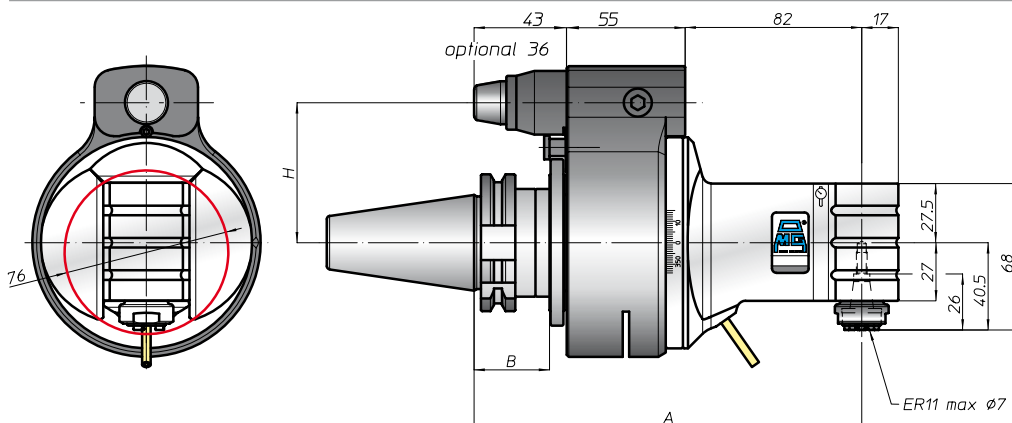


prestazioni/performance



tipi mandrino disponibili / available spindle types

3 Weldon Whistle-Notch
Ø8-Ø10



CONO SHANK	size	H			
		A	B	standard	optional
* DING9871	30			65	-
	40			80	110
	45			80	110
	50	180	35	80	110
* ANSIB5.50 CAT	40			65	-
	50			80	110
* BT	40			65	
	50	188	45	80	110
HSK DING9893	63		44	65	
	80	189		80	110
	100		46	80	110
CAPTO ISO28623	C5			65	
	C6	184	39	80	110
	C8			80	110
KM	63			65	
	80	180		80	110
	100			80	110
DIN2080	-	150	13	65	-
	40			80	110
	-	153	16	80	110
ANSIB5.18 NMTB	40	150	13	65	-
	50	153	16	80	110

* Option: Dual Contact



TAL10



caratteristiche/features

ø 10 M8 400 N

1-1 10000

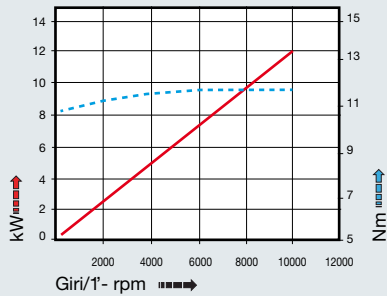
peso/weight

4,5 kg 6,7 kg

rotazione/rotation

input output

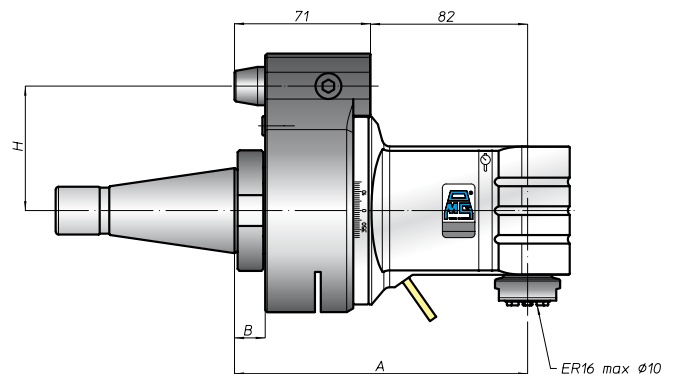
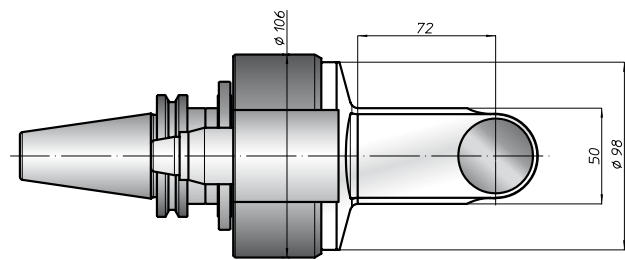
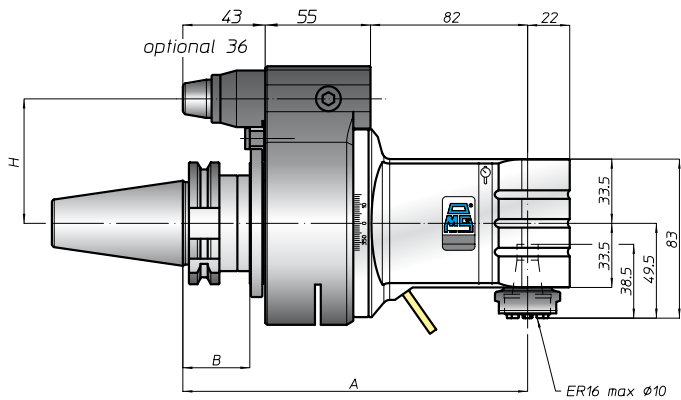
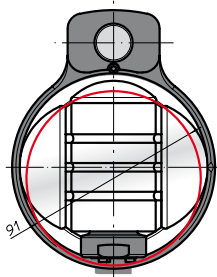
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871 *	30	180	35	65	-
	40			80	110
	45			80	110
	50			80	110
ANSI B5.50 *	CAT	180	35	65	-
	BT			80	110
*	40	188	45	65	-
	50			80	110
DIN69893	HSK	189	46	65	-
	80			80	110
	100			80	110
ISO 26623	C5	184	39	65	-
	C6			80	110
	C8			80	110
KM	63	180	-	65	-
	80			80	110
	100			80	110
DIN2080	-	150	13	65	-
	40	153	16	80	110
	50	153	16	80	110
ANSI B5.18	NMTB	150	13	65	-
	40	153	16	80	110

tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER **2** Albero portafresse Milling shaft **3** Weldon Whistle-Notch
- ER20** **Ø16** **Ø8-10-12**



* Option: Dual Contact

testa ad angolo - angle head

TAL13



caratteristiche/features



ø 13 M10 810 N



1-1 8000

peso/weight



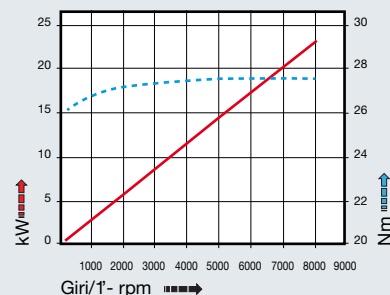
5 kg 7,5 kg

rotazione/rotation



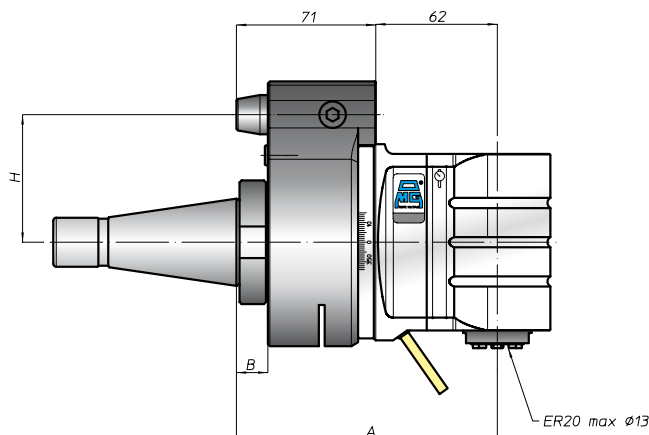
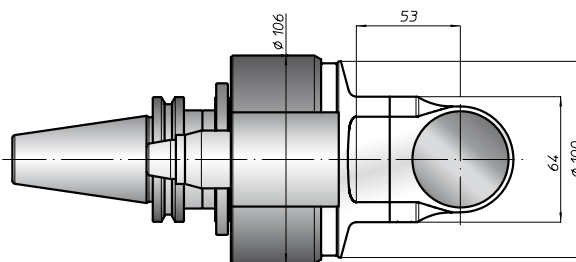
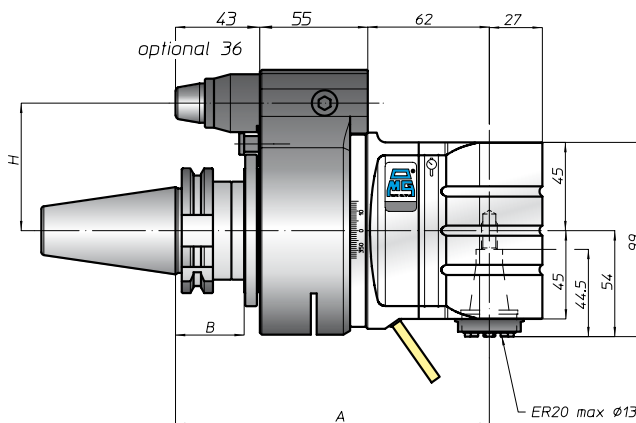
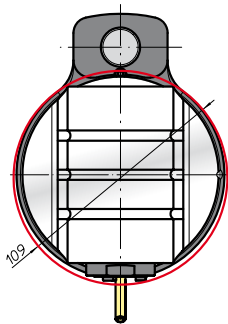
input output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER
ER25
- 2** Albero portafrese
Milling shaft
Ø16-Ø22
- 3** Weldon
Whistle-Notch
Ø16
- 6** ABS
Licenza KOMET®
ABS25



CONO SHANK	size	H			
		A	B	standard	optional
* DING9871	-			65	-
	40			65	-
	45			80	110
* CAT	40	160	35	80	110
	50			80	110
	50			80	110
* BT	40			65	
	50	168	45	80	110
HSK	63		44	65	
	80	169		80	110
	100		46	80	110
CAPTO	C5			65	
	C6	164	39		
	C8			80	110
KM	63			65	
	80	160		80	110
	100			80	110
DIN2080	-	130	13	65	-
	40			80	110
	50	133	16	80	110
NMTB	40	130	13	65	-
	50	133	16	80	110

* Option: Dual Contact



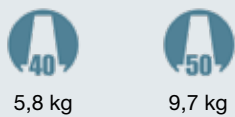
TAL16



caratteristiche/features



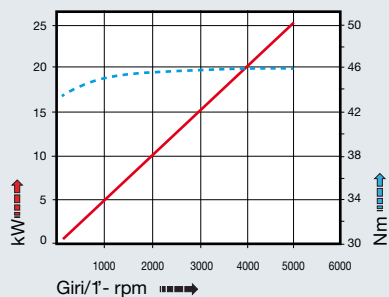
peso/weight



rotazione/rotation



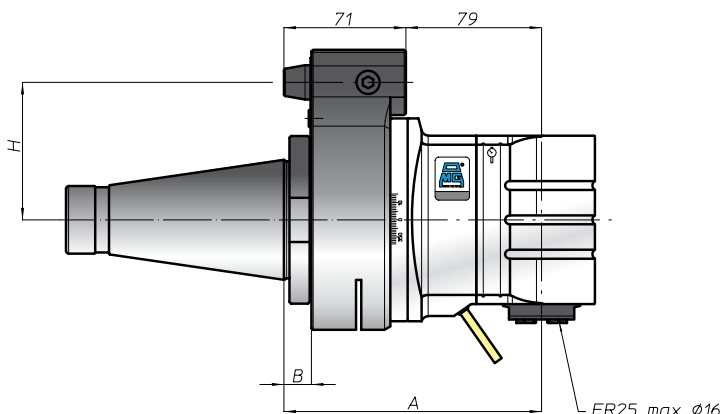
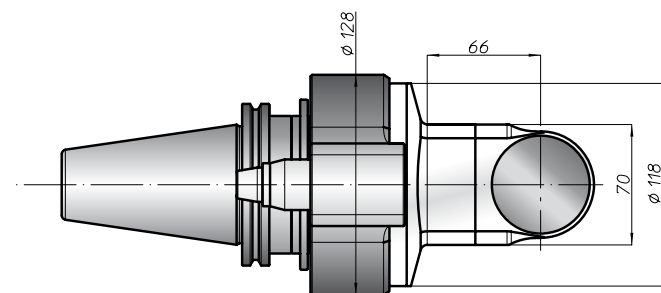
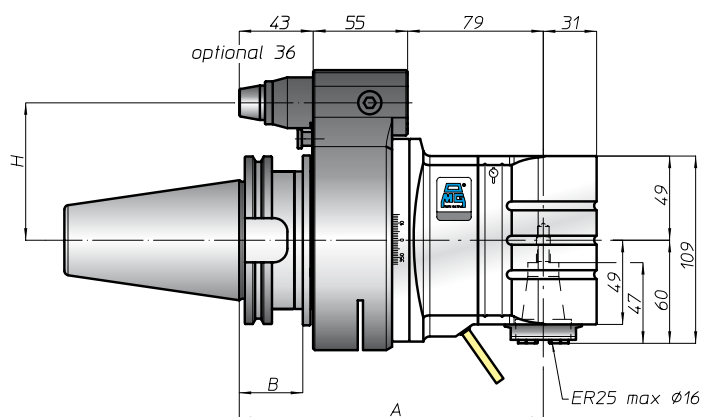
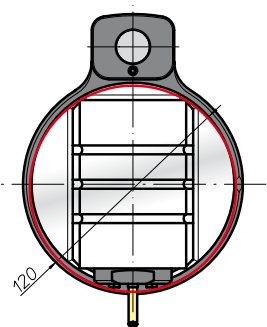
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN9871 *	-	172		65	-
	40				
	45	177		80	110
ANSI B5.50 *	40	172		65	-
	50	177	35	80	110
* BT	40	172		65	
	50	185	45	80	110
DIN9893 HSK	63	181	44	65	
	80				
	100	186	46	80	110
ISO 26623 CAPTO	C5	176		65	
	C6		39		
	C8	181		80	110
KM	63	172		65	
	80				
	100	177		80	110
DIN2080	-	147	13	65	-
	40				
	-	150	16	80	110
ANSI B5.18 NMTB	40	142	13	65	-
	50	150	16	80	110

tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER **ER32**
- 2** Albero portafresa Milling shaft **Ø16-Ø22-Ø27-Ø32**
- 3** Weldon Whistle-Notch **Ø20**
- 4** DIN69893-HSK **HSK32**
- 5** COROMANT CAPTO® **C3**
- 6** ABS Licenza KOMET® **ABS32**



* Option: Dual Contact



TAL20



caratteristiche/features



peso/weight



11,5 kg

rotazione/rotation

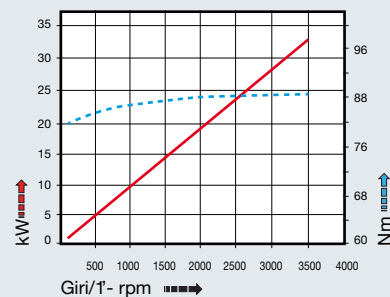


input



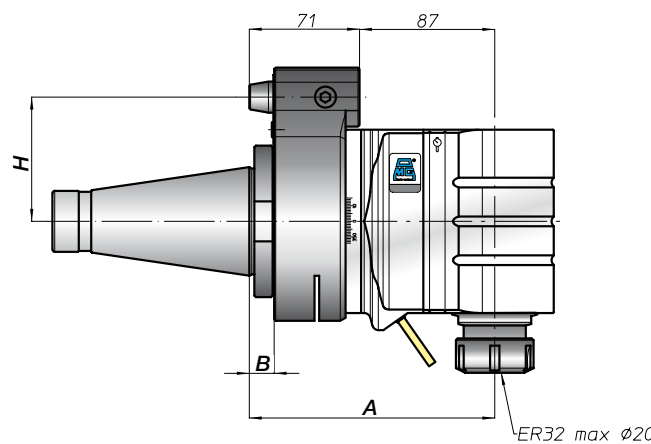
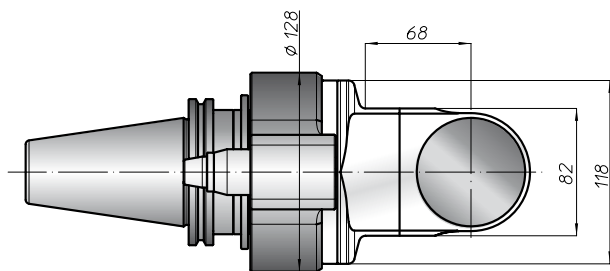
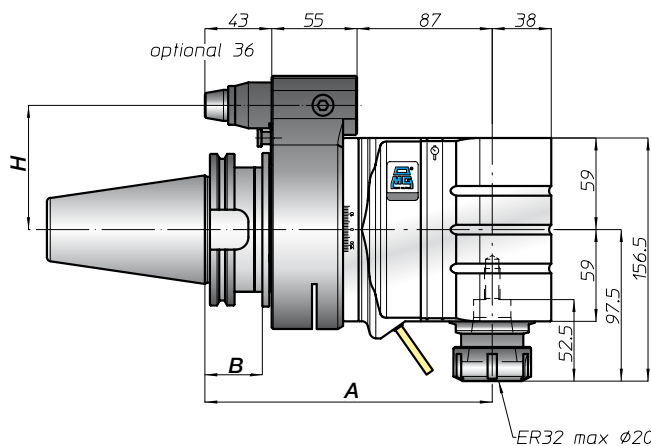
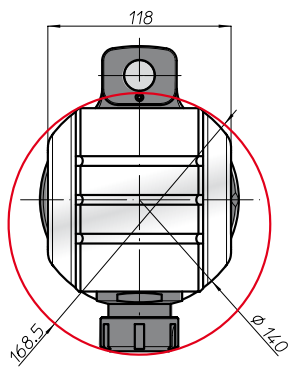
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER
ER40
- 2** Albero portafrese
Milling shaft
Ø22-Ø27-Ø32
- 3** Weldon
Whistle-Notch
Ø20-Ø25-Ø32
- 4** DIN69893-HSK
HSK40
- 5** COROMANT
CAPTO®
C4
- 6** ABS
Licenza KOMET®
ABS40



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	-	-	-	-	-
DIN69871 *	45	-	-	80	110
DIN69871 *	50	185	35	80	110
ANSIB5.50 *	-	-	-	-	-
ANSIB5.50 *	50	-	-	80	110
BT *	-	-	-	-	-
BT *	50	193	45	80	110
HSK	-	-	-	-	-
DIN69893	80	194	-	80	110
DIN69893	100	-	46	80	110
CAPTO	-	-	-	-	-
ISO28623	-	189	-	80	110
ISO28623	C8	-	-	80	110
KM	-	-	-	-	-
KM	80	185	-	80	110
KM	100	-	-	80	110
DIN2080	-	-	-	-	-
DIN2080	-	-	-	-	-
DIN2080	50	158	16	80	110
NMTB	-	-	-	-	-
ANSIB5.18	50	158	16	80	110

* Option: Dual Contact



TAL26



caratteristiche/features

peso/weight

prestazioni/performance



19 kg

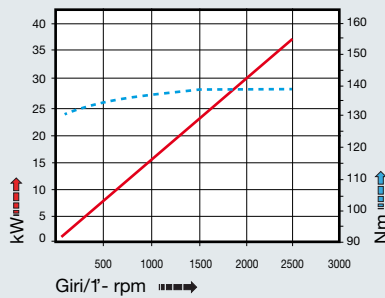
rotazione/rotation



input



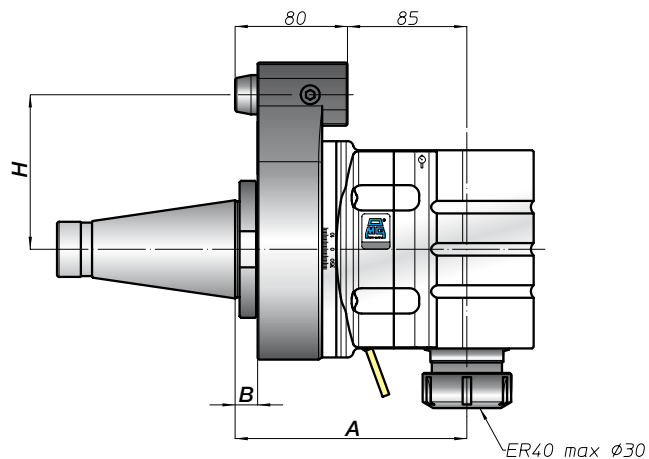
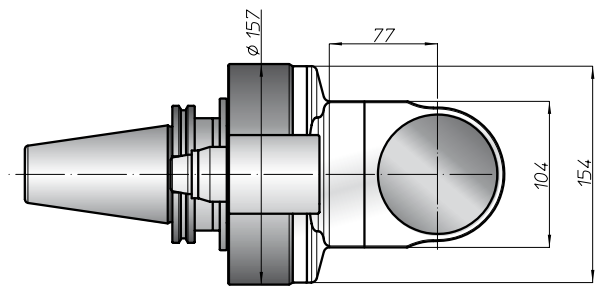
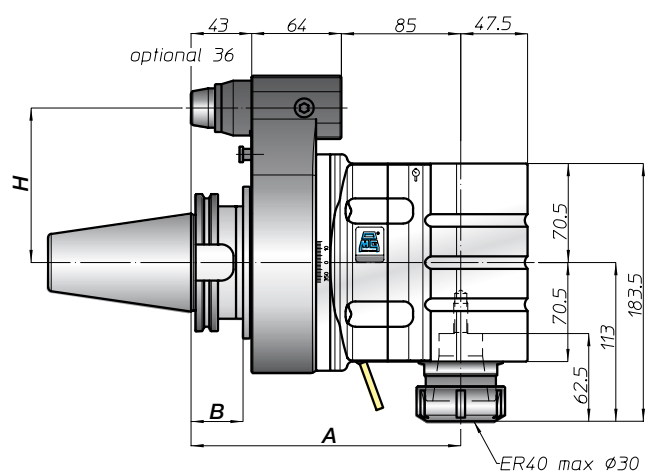
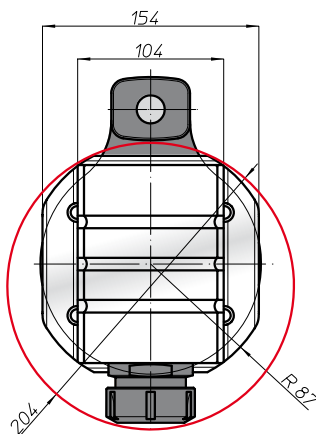
output



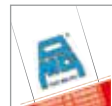
CONO SHANK	size	A	B	H	
				standard	optional
DING9871 *	-	-	-	-	-
	45	-	-	-	-
ANSIB5.50 *	50	192	35	110	-
	50	-	-	-	-
BT *	50	200	45	110	-
	50	-	-	-	-
HSK	80	201	46	110	-
	100	-	-	-	-
CAPTO	-	196	-	-	-
	C8	-	-	110	-
KM	-	192	-	-	-
	100	-	-	110	-
DIN2080	-	165	16	110	-
	50	-	-	-	-
NMTB	-	165	16	110	-
	50	-	-	-	-

tipi mandrino disponibili / available spindle types

- 1 DIN6499-ER
ER50
- 2 Albero portafresa
Milling shaft
Ø16-Ø27-Ø32-Ø40
- 3 Weldon
Whistle-Notch
Ø32
- 4 DIN69893-HSK
HSK63
- 5 COROMANT
CAPTO®
C4-C5-C6
- 6 ABS
Licenza KOMET®
ABS50



* Option: Dual Contact



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement

testa ad angolo - angle head

TAL26.40



caratteristiche/features



peso/weight



19 kg

rotazione/rotation

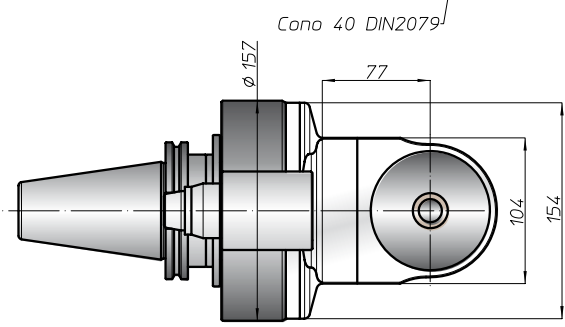
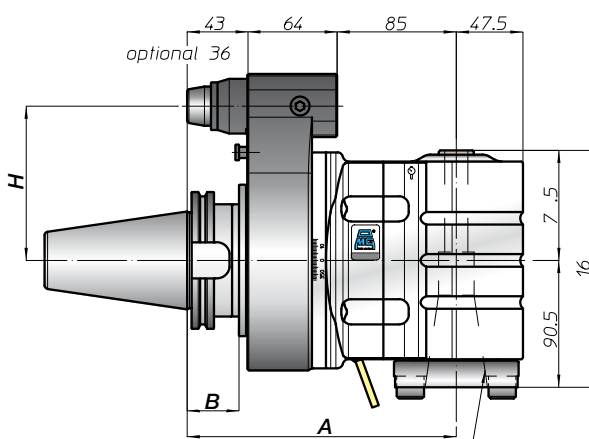
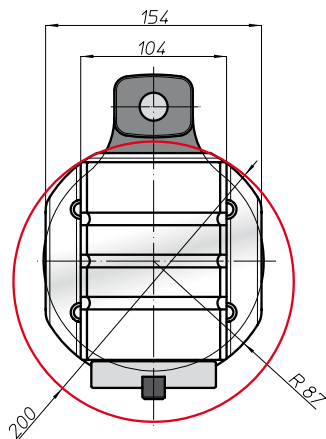
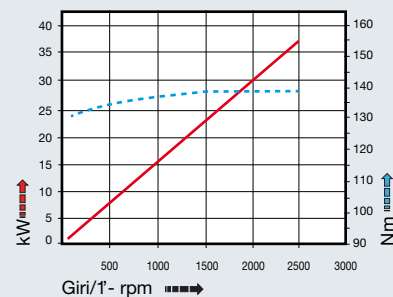


input



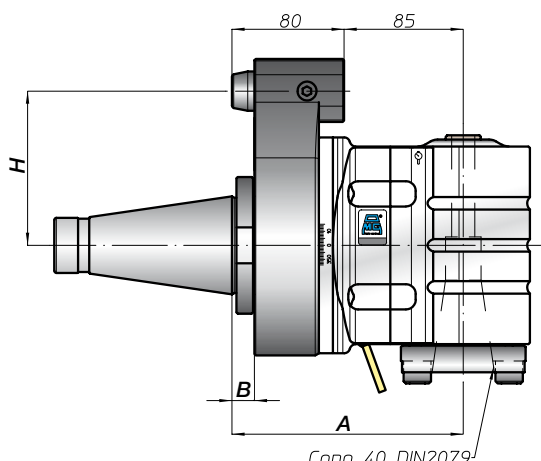
output

prestazioni/performance



Nota:
 • nel mandrino DIN2079 si possono utilizzare coni DIN2080-40, DIN69871-A40, MAS403-BT40

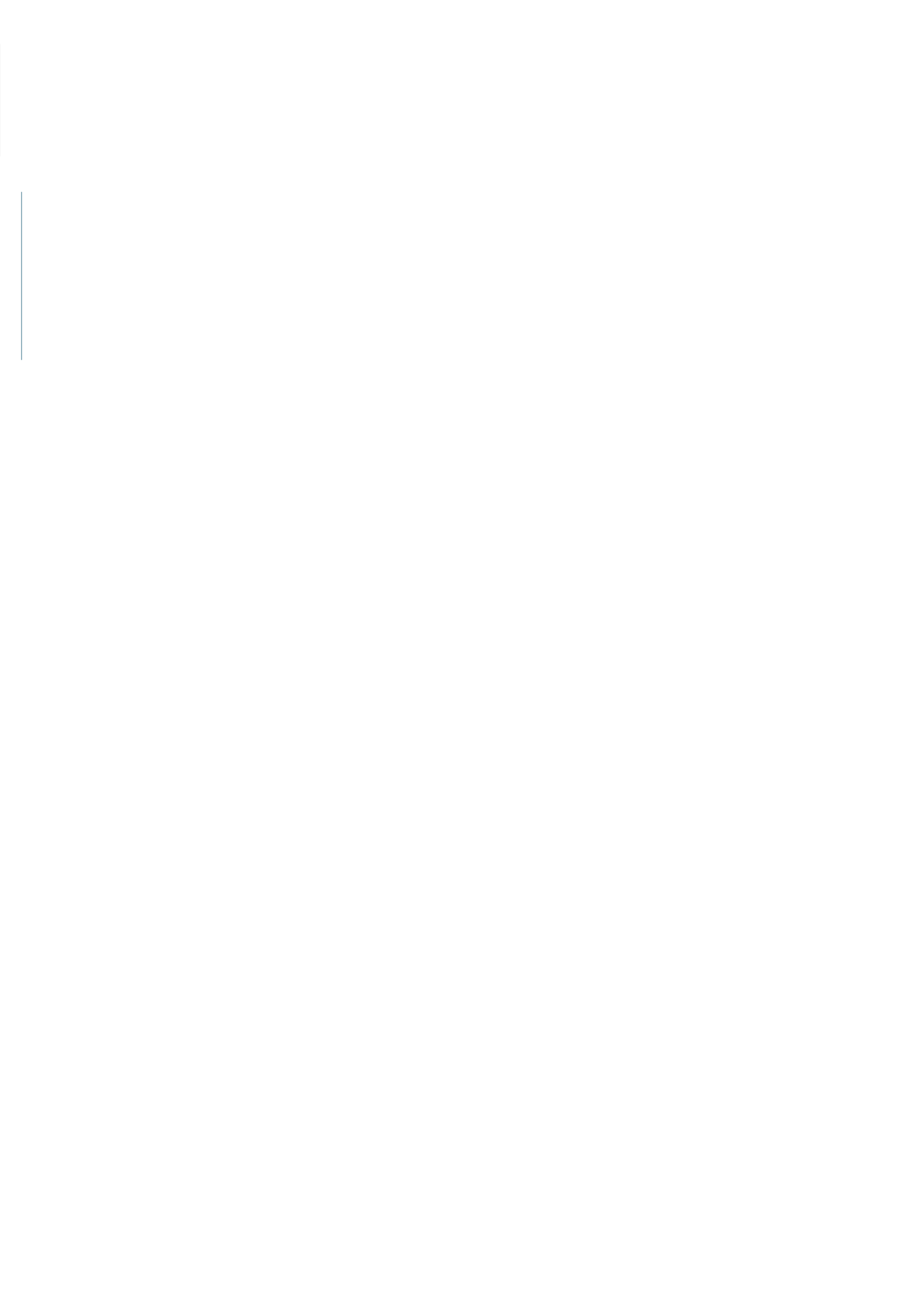
Note:
 • on the spindle DIN2079 you can use shank DIN2080-40, DIN69871-A40, MAS403-BT40



CONO SHANK	size	H		
		A	B	standard / optional
DIN69871 *	-	-	-	- / -
DIN69871 *	45	-	-	110 / -
DIN69871 *	50	192	35	- / -
ANSIB5.50 *	-	-	-	- / -
ANSIB5.50 *	50	-	-	110 / -
BT *	-	-	-	- / -
BT *	50	200	45	110 / -
HSK	-	-	-	- / -
DIN69893	80	201	46	110 / -
DIN69893	100	-	-	- / -
CAPTO	-	-	-	- / -
ISO28623	-	196	-	110 / -
ISO28623	C8	-	-	- / -
KM	-	-	-	- / -
KM	-	192	-	110 / -
KM	100	-	-	- / -
DIN2080	-	-	-	- / -
DIN2080	-	-	-	- / -
DIN2080	50	165	16	110 / -
NMTB	-	-	-	- / -
ANSIB5.18	50	165	16	110 / -

* Option: Dual Contact





TA07.2P



caratteristiche/features



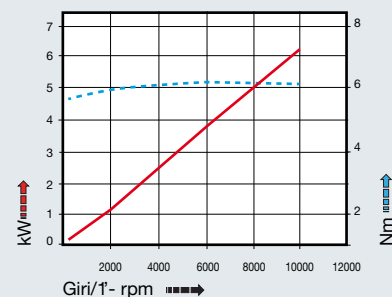
peso/weight



rotazione/rotation

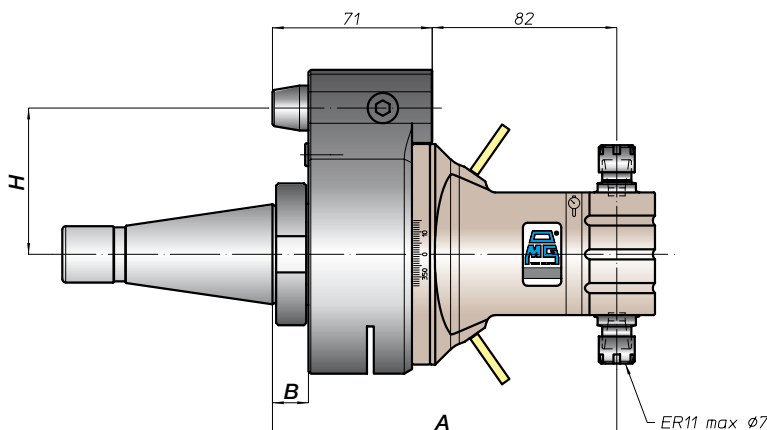
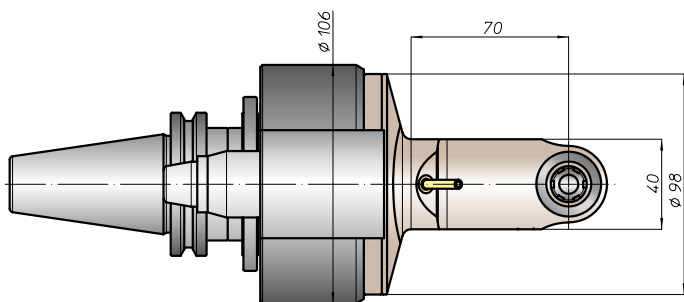
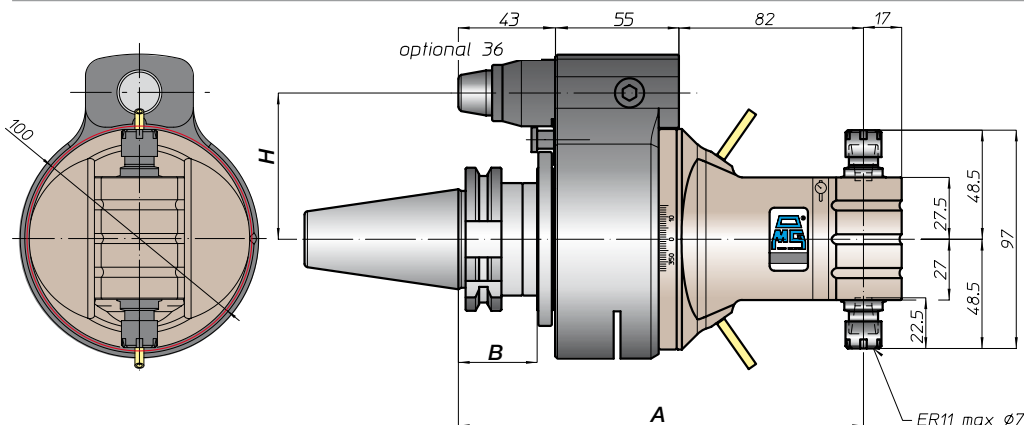


prestazioni/performance



tipi mandrino disponibili / available spindle types

3 Weldon Whistle-Notch
Ø10



CONO SHANK	size	H		
		A	B	standard / optional
* DING9871	30			65 -
	40			80 110
	45			80 110
	50	180	35	80 110
* ANSIB5.50 CAT	40			65 -
	50			80 110
* BT	40			65
	50	188	45	80 110
DING9893 HSK	63		44	65
	80	189		80 110
	100		46	80 110
ISO 28623 CAPTO	C5			65
	C6	184	39	80 110
	C8			80 110
KM	63			65
	80	180		80 110
	100			80 110
DIN2080	-	150	13	65 -
	40			80 110
ANSIB5.18 NMTB	-	153	16	80 110
	50			80 110
ANSIB5.18 NMTB	40	150	13	65 -
	50	153	16	80 110

* Option: Dual Contact

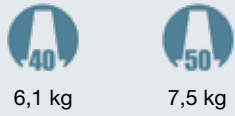


TA10.2P

caratteristiche/features



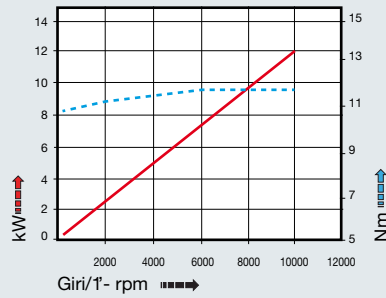
peso/weight



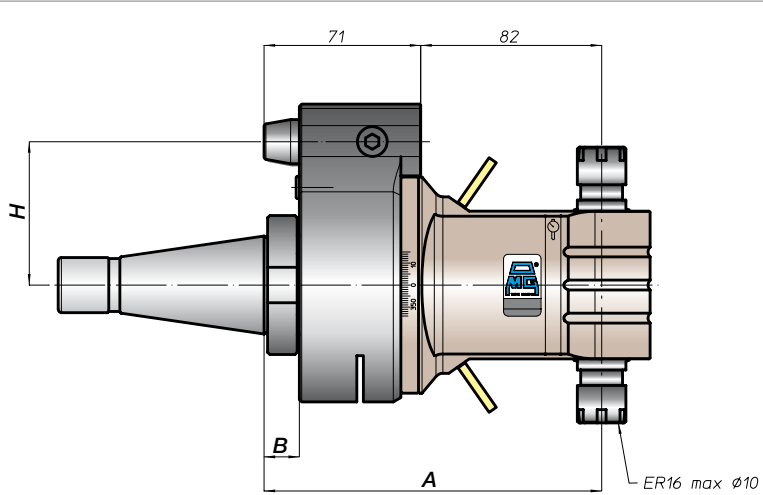
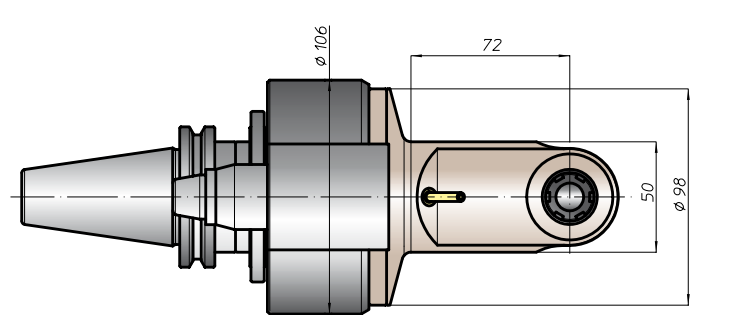
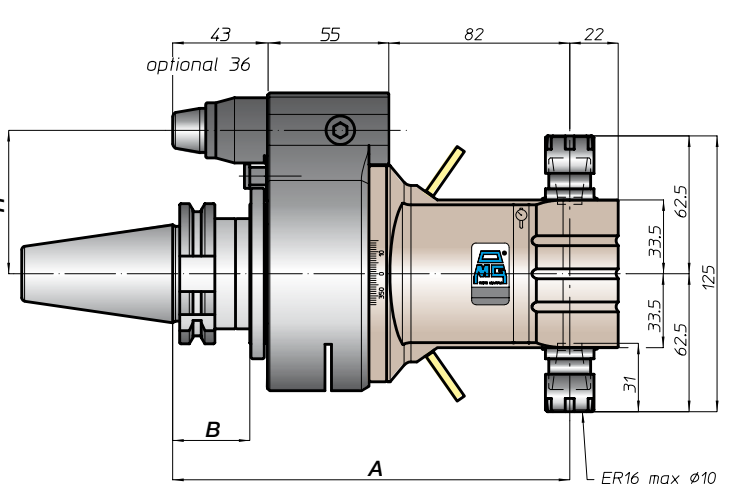
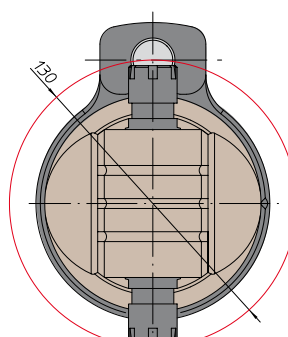
rotazione/rotation



prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DING9871 *	30	180	35	65	-
	40			80	110
	45			80	110
	50			80	110
ANSIB5.50 *	CAT			65	-
				80	110
* BT	40			65	
	50	188	45	80	110
HSK	63	189	44	65	
	80		46	80	110
	100				
CAPTO	C5	184	39	65	
	C6			80	110
	C8				
KM	63	180		65	
	80		80	110	
	100				
DIN2080	-	150	13	65	-
	40	153	16	80	110
	50				
ANSIB5.18	NMTB			65	-
		150	13	80	110



* Option: Dual Contact



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement

TA13.2P



caratteristiche/features



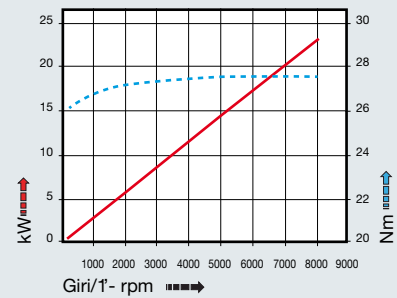
peso/weight



rotazione/rotation

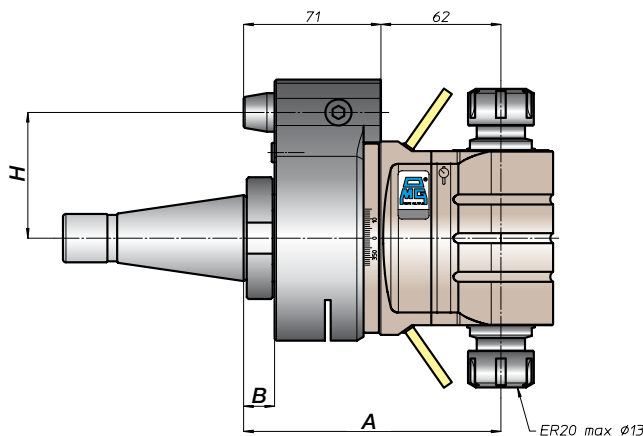
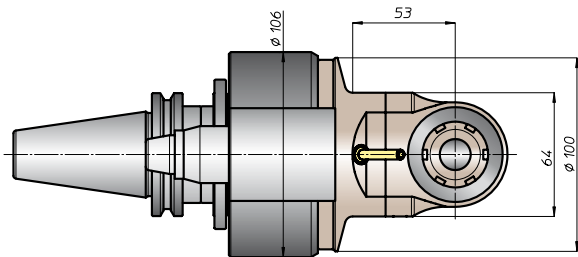
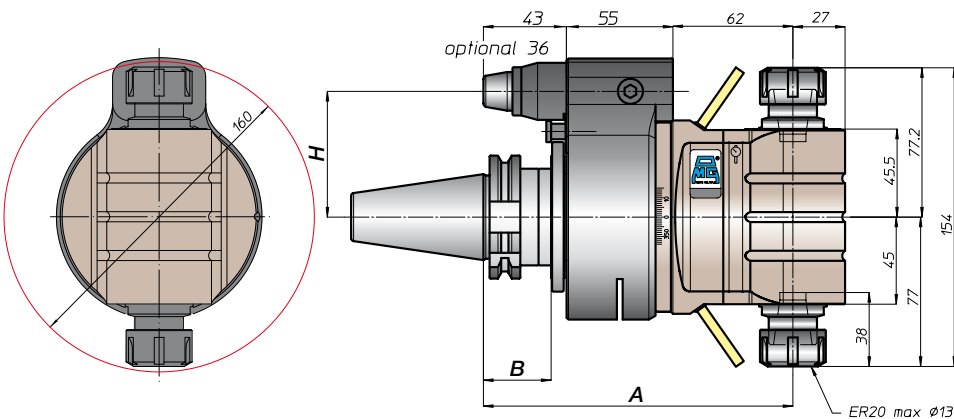


prestazioni/performance



tipi mandrino disponibili / available spindle types

1 DIN6499-ER
ER25



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	-				
	40			65	-
	45			80	110
ANSI B5.50 *	40	160	35	80	110
	50			80	110
* BT	40			65	
	50	168	45	80	110
DIN69893	63		44	65	
	80	169		80	110
	100		46	80	110
ISO 28623	C5			65	
	C6	164	39		
	C8			80	110
KM	63			65	
	80	160		80	110
	100			80	110
DIN2080	-	130	13	65	-
	40			80	110
ANSI B5.18	-	133	16	80	110
	50			80	110
NMTB	40	130	13	65	-
	50	133	16	80	110

* Option: Dual Contact



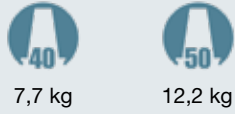
TA16.2P



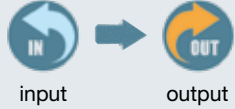
caratteristiche/features



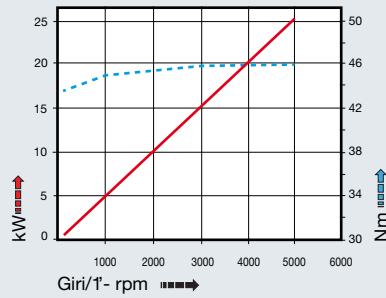
peso/weight



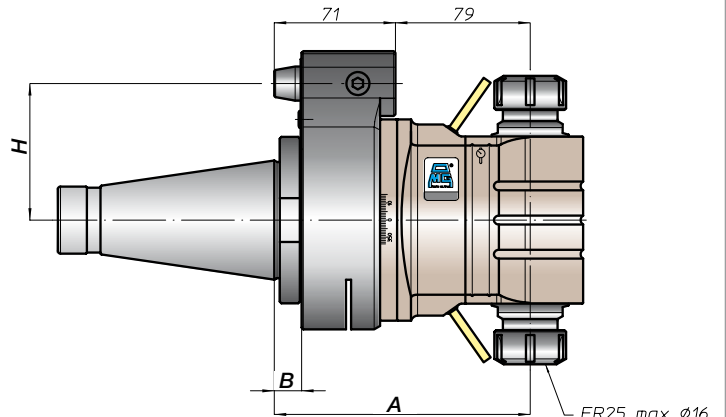
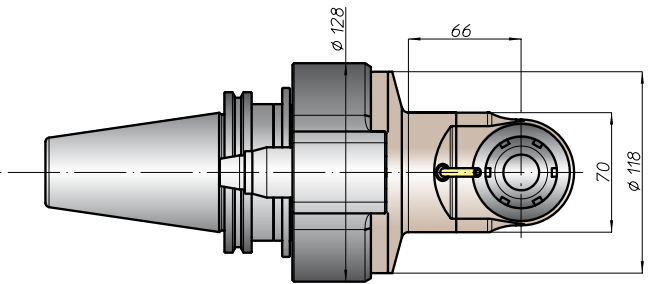
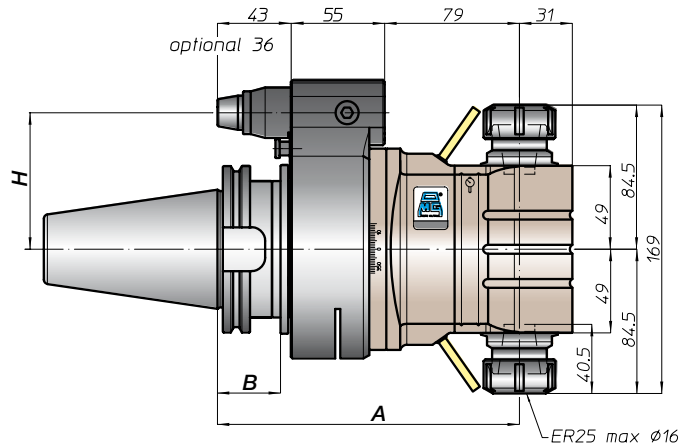
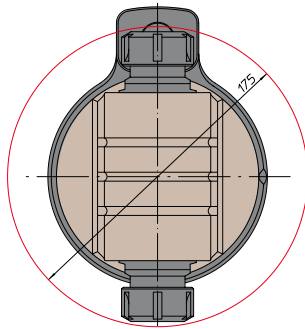
rotazione/rotation



prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DING9871 *	-	172	35	65	-
	40	177		80	110
	45	177		80	110
ANSIB5.50 * CAT	40	172	65	-	
	50	177	80	110	
* BT	40	172	65	-	
	50	185	45	80	110
HSK DING9893	63	181	44	65	-
	80	186	46	80	110
	100	186	46	80	110
CAPTO ISO26623	C5	176	39	65	-
	C6	181		80	110
	C8	181		80	110
KM	63	172	35	65	-
	80	177		80	110
	100	177		80	110
DIN2080	-	147	13	65	-
	40	150	16	80	110
	50	150	16	80	110
NMTB ANSIB5.18	40	142	13	65	-
	50	150	16	80	110



* Option: Dual Contact



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement

TA20.2P



caratteristiche/features



peso/weight



15 kg

rotazione/rotation

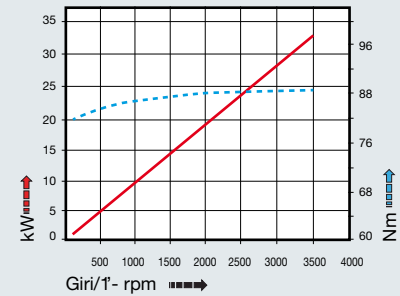


input



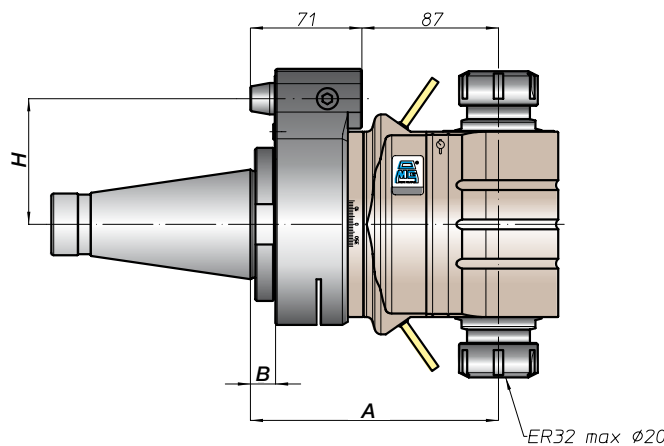
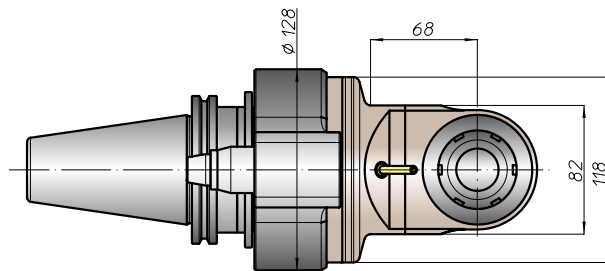
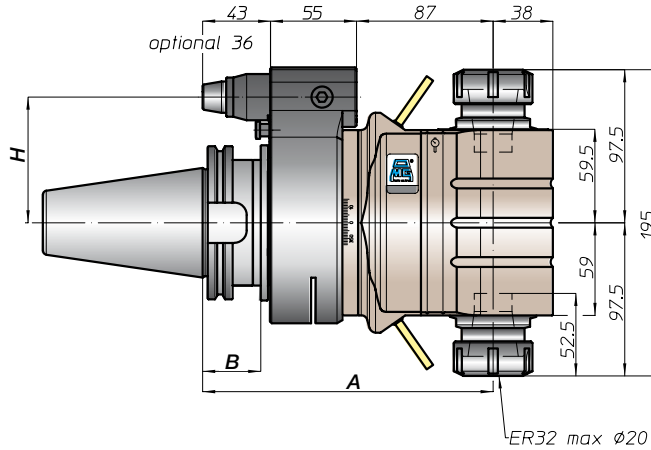
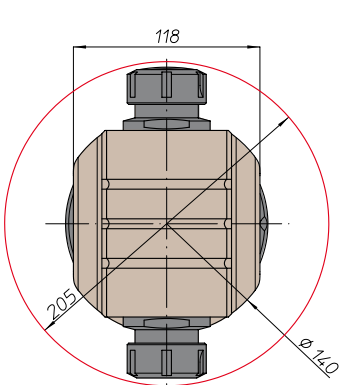
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 2** Albero portafresa
Milling shaft
Ø27-Ø32
- 3** Weldon
Whistle-Notch
Ø20



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	-	-	-	-	-
	45	-	-	80	110
	50	185	35	80	110
ANSI B5.50 *	CAT	-	-	-	-
	50	-	-	80	110
* BT	-	-	-	-	-
	50	193	45	80	110
HSK	-	-	-	-	-
DIN69893	80	194	-	80	110
	100	-	46	80	110
CAPTO	-	-	-	-	-
ISO 28623	-	189	-	80	110
	C8	-	-	80	110
KM	-	-	-	-	-
	80	185	-	80	110
	100	-	-	80	110
DIN2080	-	-	-	-	-
	-	-	-	-	-
	50	158	16	80	110
NMTB	-	-	-	-	-
ANSI B5.18	50	158	16	80	110

* Option: Dual Contact



TA26.2P

caratteristiche/features



peso/weight



22,5 kg

rotazione/rotation

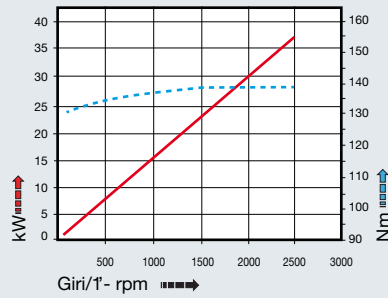


input



output

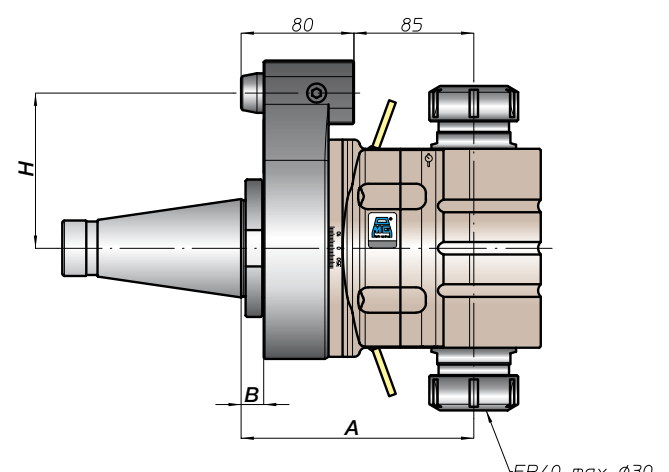
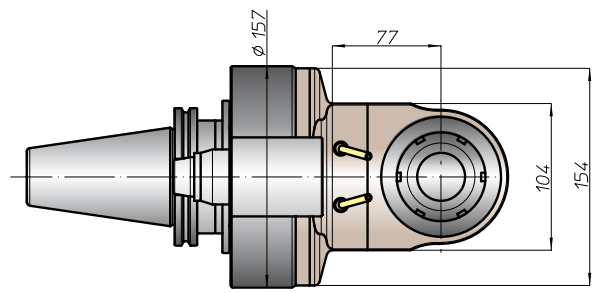
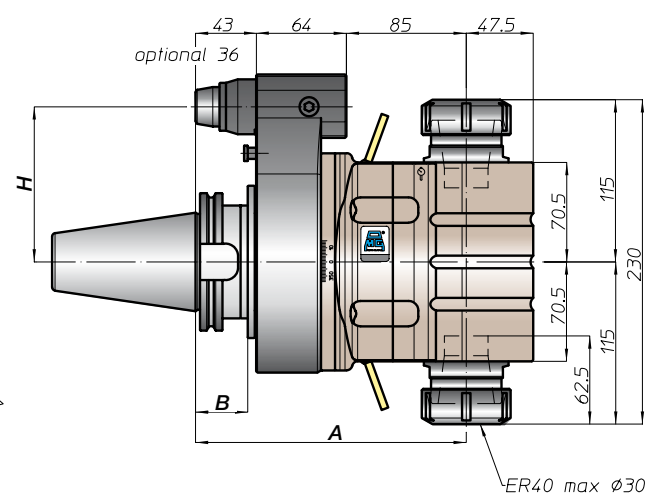
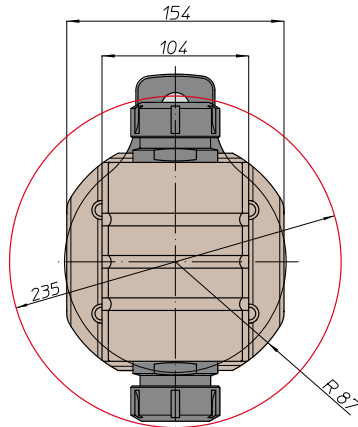
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DING9871 *	-	-	-	-	-
	45	-	-	110	-
	50	192	35	110	-
ANSIB5.50 *	CAT	-	-	-	-
	50	-	-	110	-
*	BT	-	-	-	-
	50	200	45	110	-
HSK	-	-	-	-	-
DING9893	80	201	46	110	-
	100	-	-	-	-
CAPTO	-	-	-	-	-
ISO26623	-	196	-	110	-
	C8	-	-	-	-
KM	-	-	-	-	-
	-	192	-	110	-
	100	-	-	-	-
DIN2080	-	-	-	-	-
	-	165	16	110	-
	50	-	-	-	-
NMTB	-	-	-	-	-
ANSIB5.18	50	165	16	110	-

tipi mandrino disponibili / available spindle types

- 2** Albero portafresa Milling shaft **3** Weldon Whistle-Notch **6** ABS Licenza KOMET®
- Ø16-Ø27-Ø32** **Ø32** **ABS50**



* Option: Dual Contact



FH
 BAH
 TA.CP
 TA
 MOX
 HT
 VH
 TSI/TSX
 T
 MT-TC-TC3
 Accessori
 Accessories
 Appendice tecnica
 Technical supplement

testa ad angolo - angle head

TA07.PD



caratteristiche/features



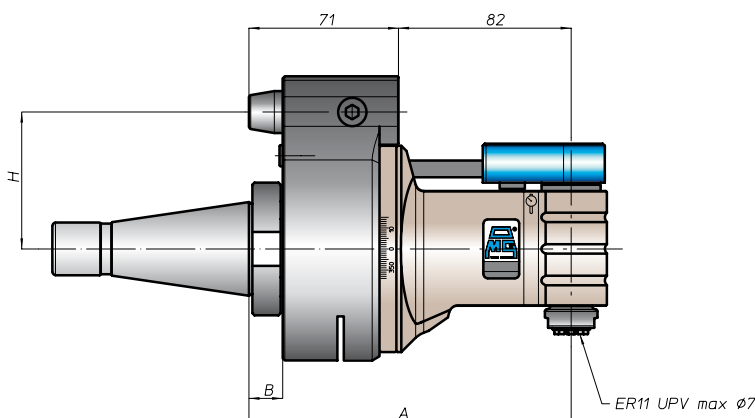
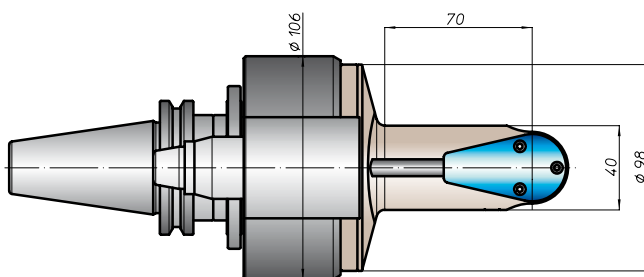
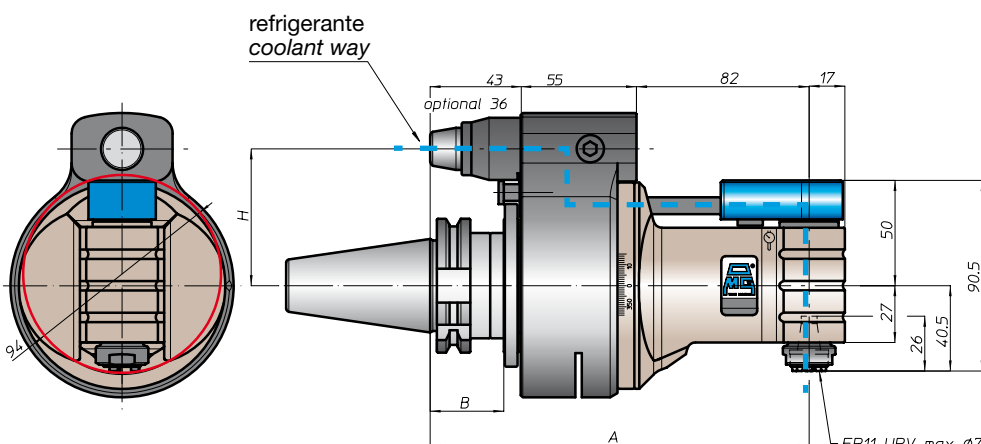
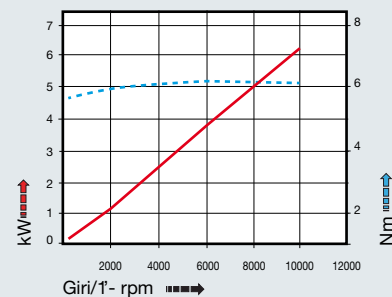
peso/weight



rotazione/rotation



prestazioni/performance



CONO SHANK	size	H					
		A	B	standard / optional			
* DING9871	30	150	35	65	-		
	40			80	110		
	45			80	110		
	50			80	110		
* ANSIB5.50 CAT	40	150	35	65	-		
	50			80	110		
* BT	40	150	35	65	-		
	50			158	45	80	110
DING9893 HSK	63	150	35	44	65		
	80			46	80	110	
	100			46	80	110	
ISO28623 CAPTO	C5	150	35	65	-		
	C6			154	39	80	110
	C8			154	39	80	110
KM	63	150	35	65	-		
	80			80	110		
	100			80	110		
DIN2080	40	120	13	65	-		
	50	123	16	80	110		
ANSIB5.18 NMTB	40	120	13	65	-		
	50	123	16	80	110		

* Option: Dual Contact



TA07.PDL



caratteristiche/features

\varnothing 7 M6 180 N
 1-1 10000 10 bar

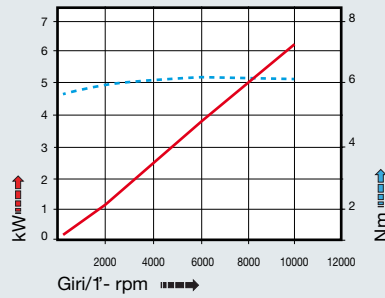
peso/weight

40 50
 6,7 kg 9 kg

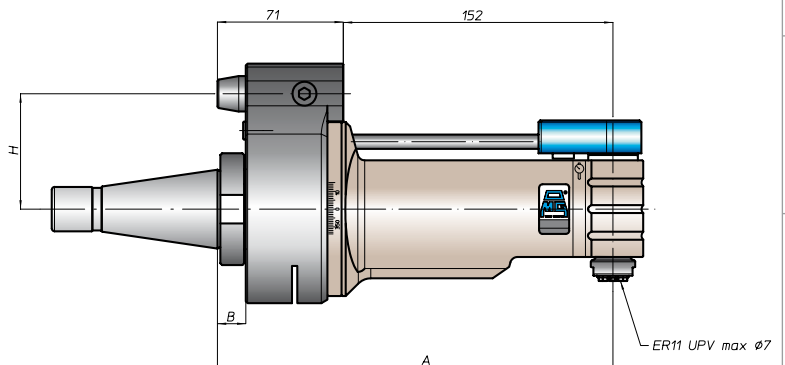
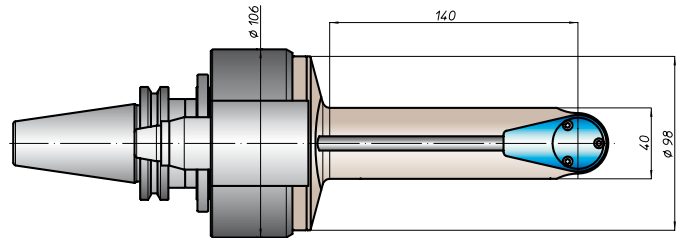
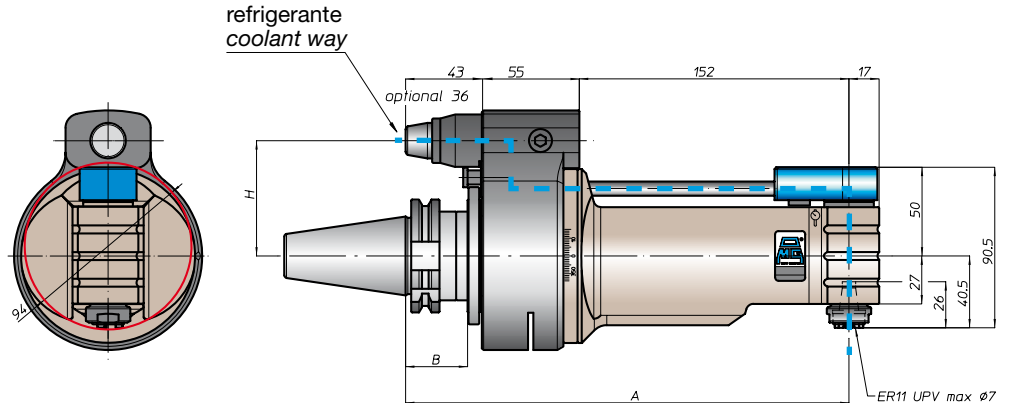
rotazione/rotation

IN OUT
 input output

prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DING9871 *	-	250	35	65	-
	40			80	110
	45			80	110
ANSIB5.50 *	40	258	45	65	-
	50			80	110
* BT	40	258	45	65	-
	50			80	110
DING9893	63	259	44	65	-
	80		46	80	110
	100		46	80	110
ISO26623	C5	254	39	65	-
	C6			80	110
	C8			80	110
KM	63	250	45	65	-
	80			80	110
	100			80	110
DIN2080	-	220	13	65	-
	40			80	110
	50			80	110
ANSIB5.18	40	223	16	65	-
	50			80	110



* Option: Dual Contact



FH
 BAH
 TA.CP
 TA
 MOX
 HT
 VH
 TSI/TSX
 T
 MT-TC-TC3
 Accessori
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 Appendice tecnica
 Technical supplement

testa ad angolo - angle head

TA10.PD



caratteristiche/features



peso/weight



5,8 kg

8 kg

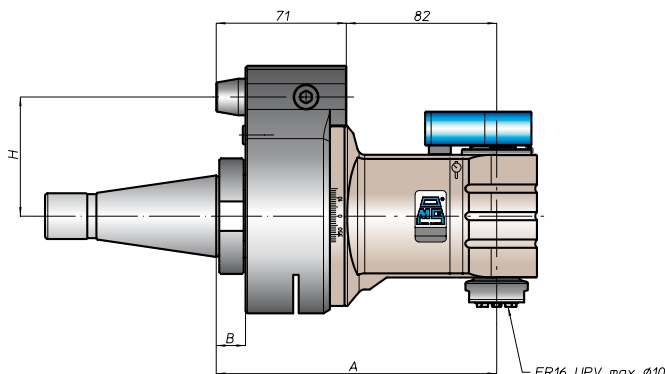
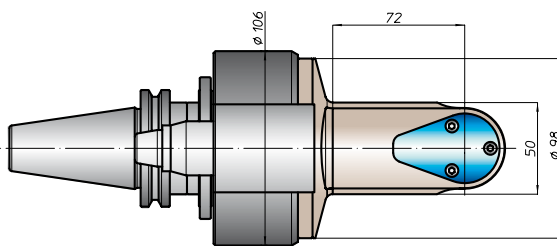
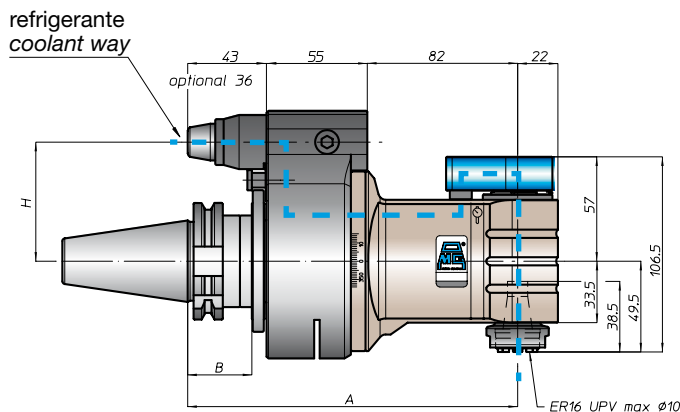
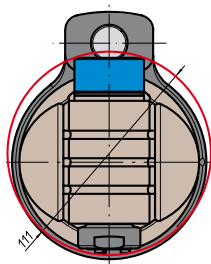
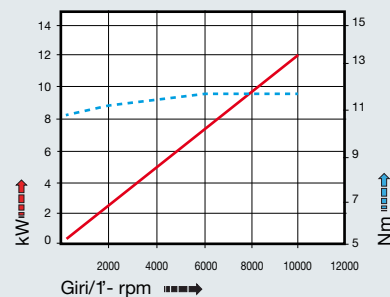
rotazione/rotation



input

output

prestazioni/performance



CONO SHANK	size	H			
		A	B	standard	optional
* DING9871	30			65	-
	40			80	110
	45			80	110
	50	180	35	80	110
* ANSIB5.50 CAT	40			65	-
	50			80	110
* BT	40			65	
	50	188	45	80	110
DING9893	63		44	65	
	80	189		80	110
	100		46	80	110
ISO 28623 CAPTO	C5			65	
	C6	184	39		
	C8			80	110
KM	63			65	
	80	180		80	110
	100			80	110
DIN2080	-	150	13	65	-
	40				
	-	153	16	80	110
ANSIB5.18 NMTB	40	150	13	65	-
	50	153	16	80	110

* Option: Dual Contact



TA10.PDL



caratteristiche/features



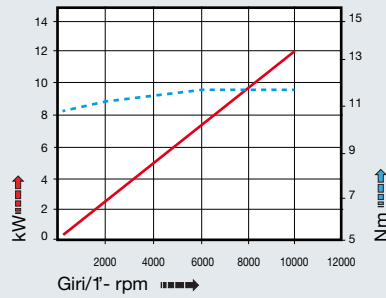
peso/weight



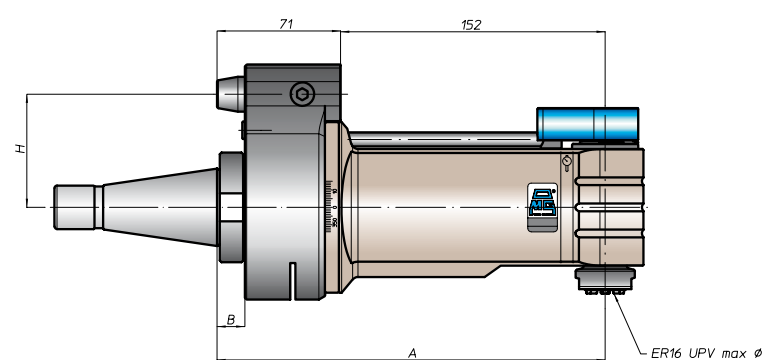
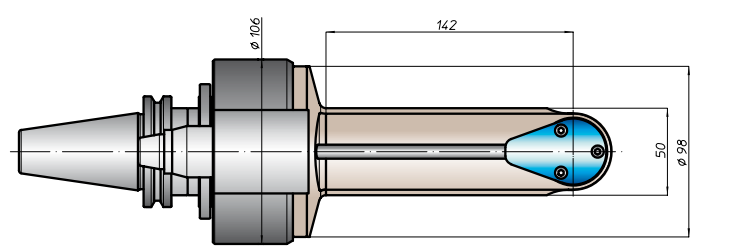
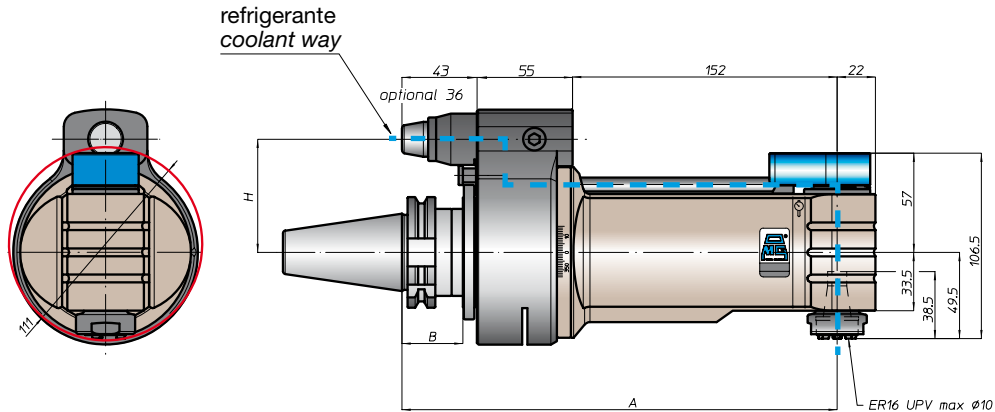
rotazione/rotation



prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DING9871 *	-	250	35	65	-
	40			80	110
	45			80	110
ANSIB5.50 *	CAT	258	45	65	-
	BT			80	110
DING9893	HSK	259	44	65	-
	80			80	110
	100			80	110
ISO26623	C5	284	39	65	-
	C6			80	110
	C8			80	110
KM	63	250	13	65	-
	80			80	110
	100			80	110
DIN2080	-	220	13	65	-
	40			80	110
	50			80	110
ANSIB5.18	NMTB	223	16	65	-
	50			80	110



* Option: Dual Contact



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement

testa ad angolo - angle head

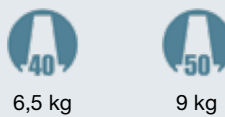
TA13.PD



caratteristiche/features



peso/weight



6,5 kg

9 kg

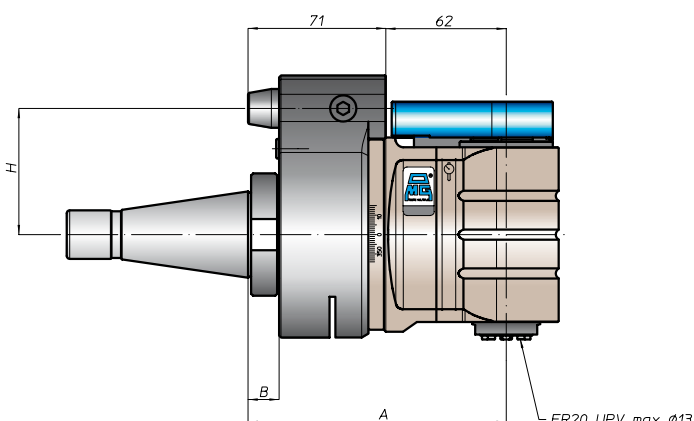
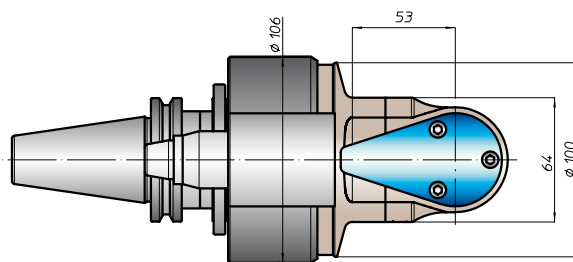
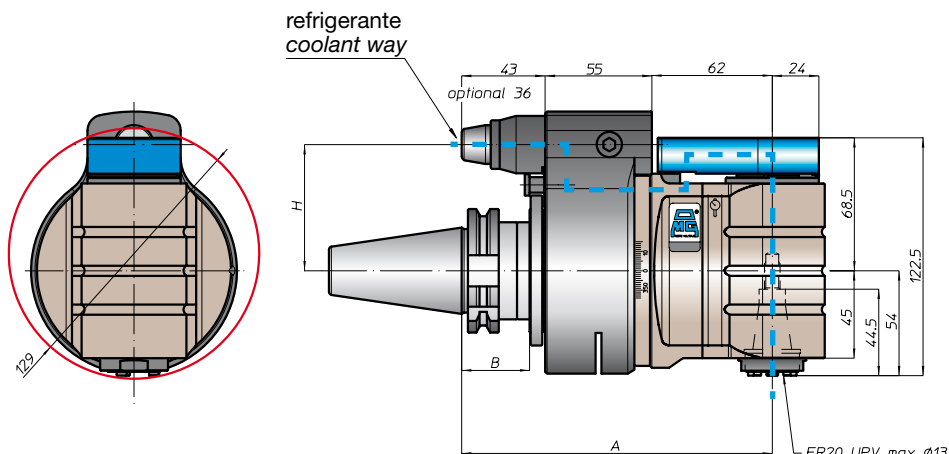
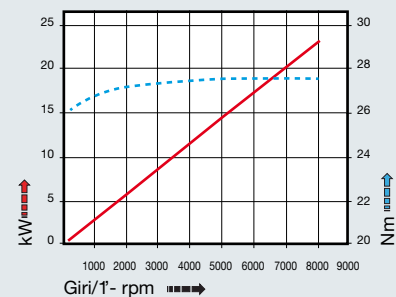
rotazione/rotation



input

output

prestazioni/performance



CONO SHANK	size	H			
		A	B	standard	optional
DIN9871 *	-			65	-
	40			65	-
	45			80	110
ANSI B5.50 *	40	160	35	80	110
	50			80	110
* BT	40			65	
	50	168	45	80	110
DIN9893	63		44	65	
	80	169		80	110
	100		46	80	110
ISO 28623	C5			65	
	C6	164	39		
	C8			80	110
KM	63			65	
	80	160		80	110
	100			80	110
DIN2080	-	130	13	65	-
	40			65	-
ANSI B5.18	-	133	16	80	110
	50			80	110
NMTB	40	130	13	65	-
	50	133	16	80	110

* Option: Dual Contact

FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement



TA16.PD



caratteristiche/features

\varnothing 16 M12 1040 N
 1-1 5000 10 bar

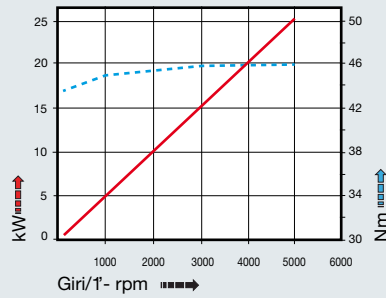
peso/weight

40 50
 7,7 kg 12 kg

rotazione/rotation

IN OUT
 input output

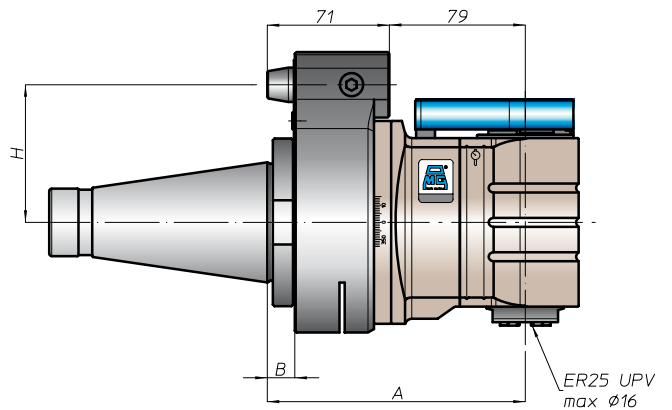
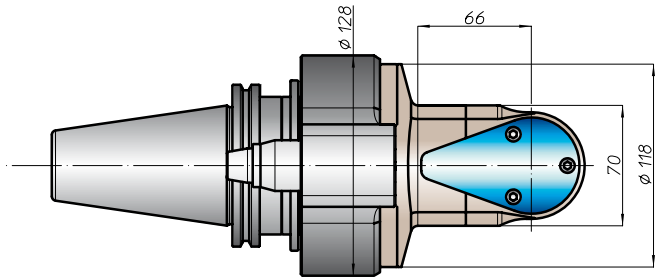
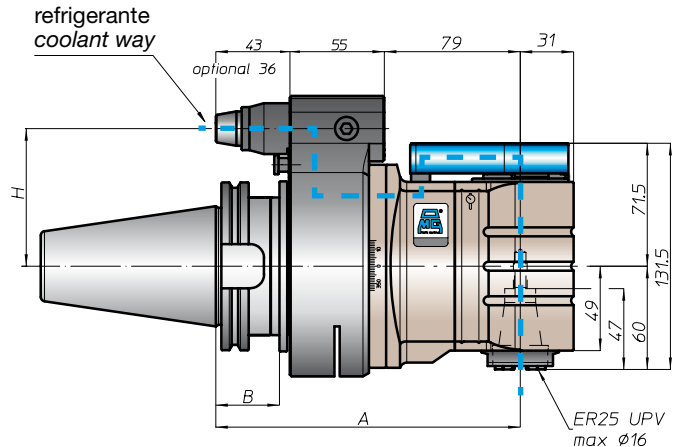
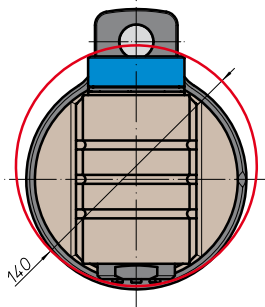
prestazioni/performances



CONO SHANK	size	A	B	H	
				standard	optional
DING9871 *	-	172	35	65	-
	40	172		65	-
	45	177		80	110
ANSIB5.50 * CAT	40	172	65	-	
	50	177	80	110	
* BT	40	172	65	-	
	50	185	45	80	110
HSK	63	181	44	65	-
	80	186	46	80	110
	100	186	46	80	110
CAPTO	C5	176	39	65	-
	C6	181		65	-
	C8	181		80	110
KM	63	172	13	65	-
	80	177		65	-
	100	177		80	110
DIN2080	-	147	13	65	-
	40	150	16	80	110
	50	150	16	80	110
NMTB	40	142	13	65	-
	50	150	16	80	110

tipi mandrino disponibili / available spindle types

1 DIN6499-ER
ER32



* Option: Dual Contact



testa ad angolo - angle head

TA20.PD



caratteristiche/features



peso/weight



14,5 kg

rotazione/rotation

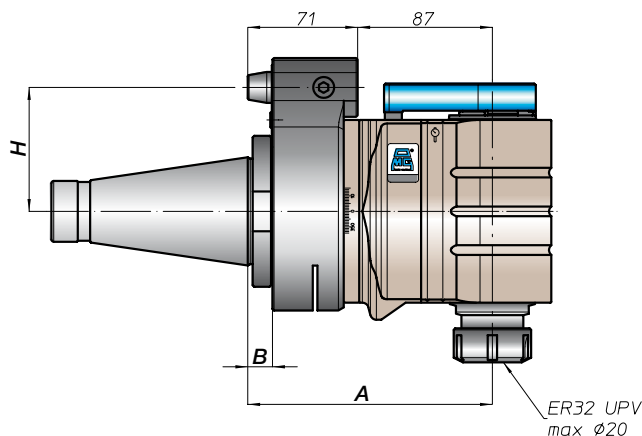
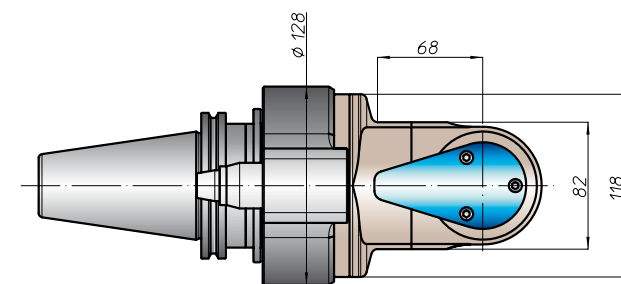
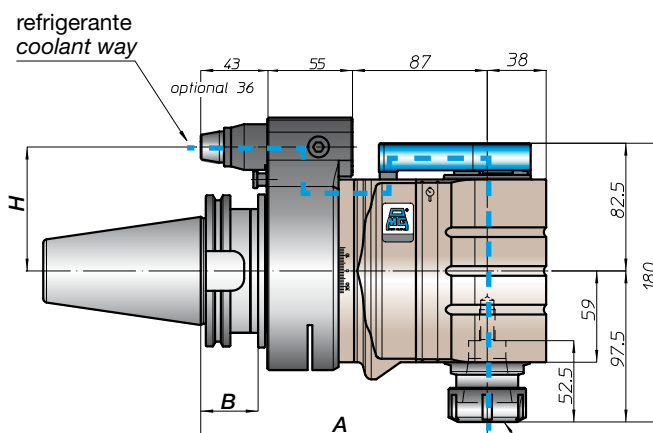
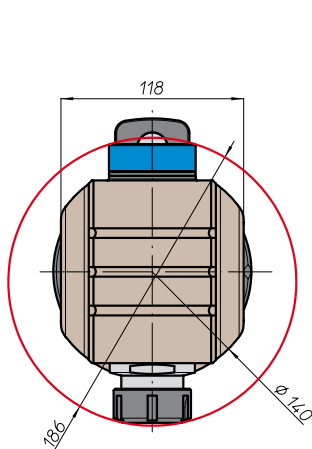
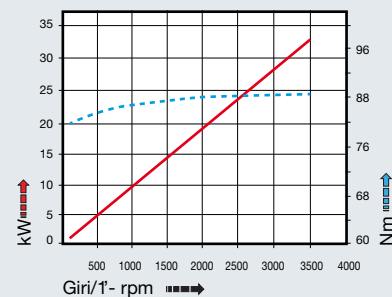


input



output

prestazioni/performance



CONO SHANK	size	H			
		A	B	standard	optional
DIN9871 *	-	-	-	-	-
DIN9871 *	45	185	35	80	110
	50			80	110
ANSI B5.50 *	-	-	-	-	-
ANSI B5.50 *	50	185	35	80	110
	50			80	110
BT *	-	-	-	-	-
BT *	50	193	45	80	110
	50			80	110
HSK	-	-	-	-	-
DIN9893	80	194	46	80	110
	100			80	110
CAPTO	-	-	-	-	-
ISO 28623	-	189	-	-	-
	C8			80	110
KM	-	-	-	-	-
KM	80	185	-	-	-
	100			80	110
DIN2080	-	-	-	-	-
DIN2080	-	158	16	80	110
	50			80	110
NMTB	-	-	-	-	-
ANSI B5.18	-	158	16	80	110
	50			80	110

* Option: Dual Contact



TA26.PD

caratteristiche/features

peso/weight

prestazioni/performance



22 kg

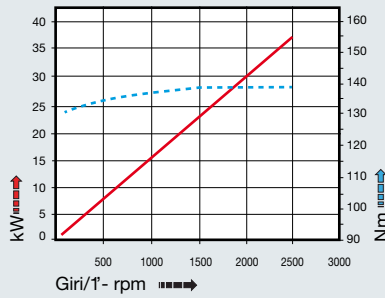
rotazione/rotation



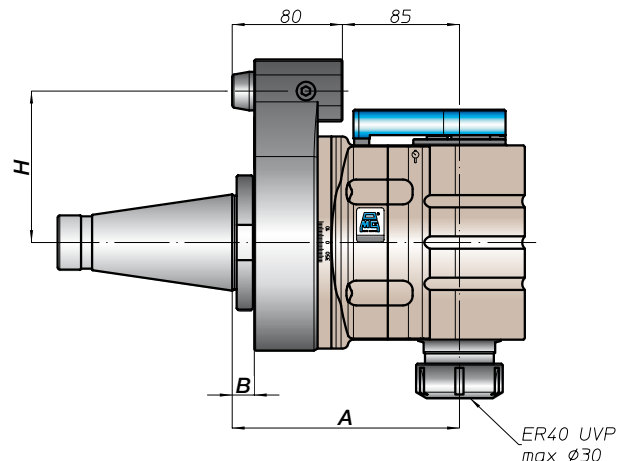
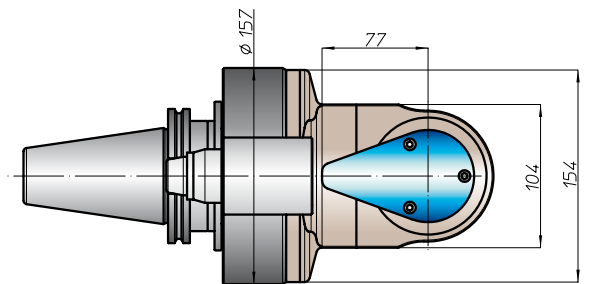
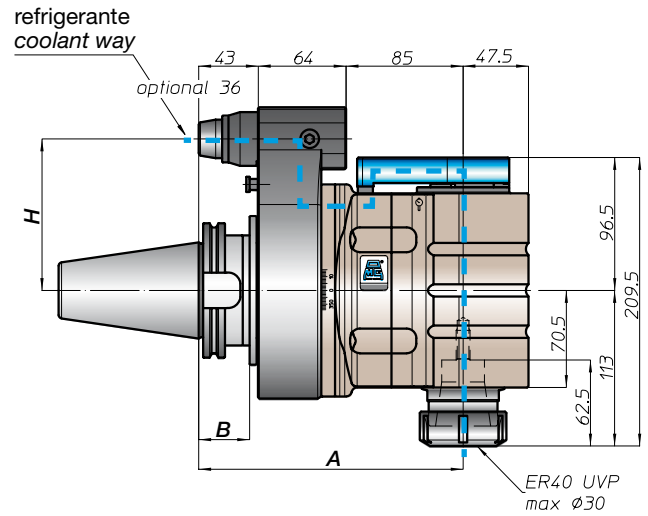
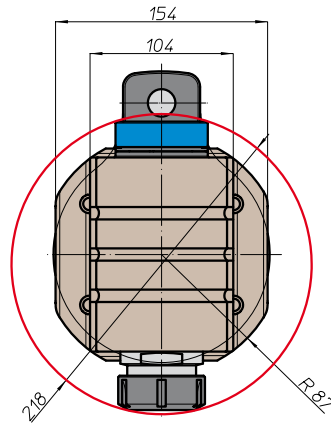
input



output



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871 *	-	192	35	-	-
	45			110	-
ANSIB5.50 *	-	192	35	-	-
	50			110	-
BT	-	200	45	110	-
	50			110	-
HSK	-	201	46	110	-
	80			110	-
CAPTO	-	196	-	110	-
	-			110	-
KM	-	192	-	110	-
	-			110	-
DIN2080	-	165	16	110	-
	50			110	-
NMTB	-	165	16	110	-
	50			110	-



* Option: Dual Contact



FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

testa ad angolo - angle head

TA26.40.D



caratteristiche/features



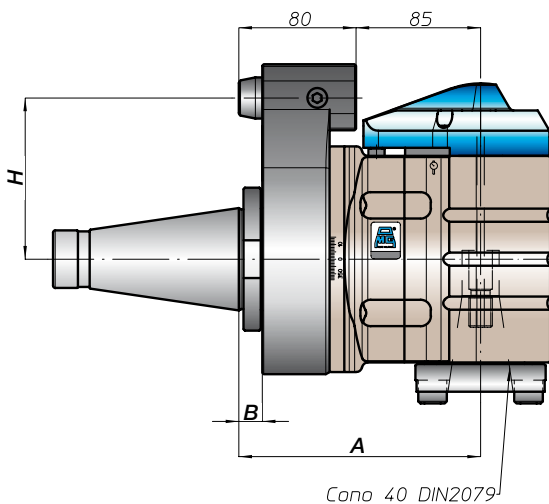
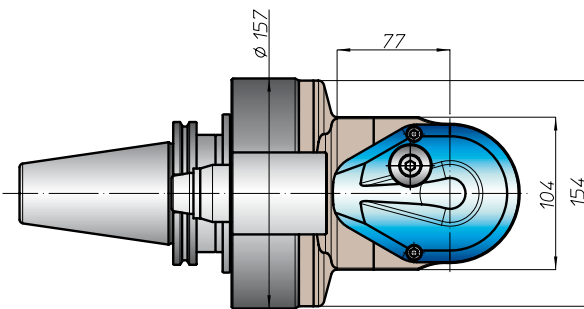
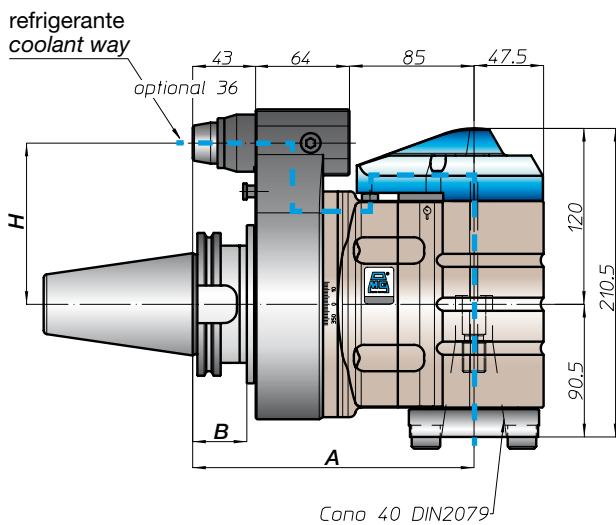
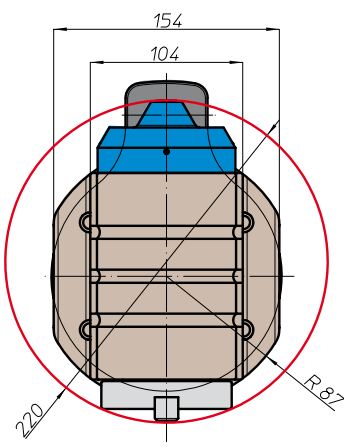
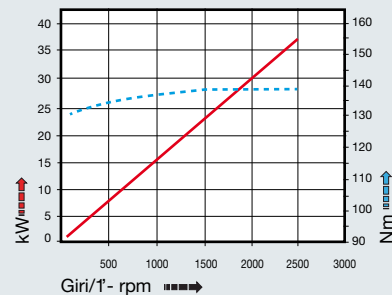
peso/weight



rotazione/rotation



prestazioni/performance



CONO SHANK	size	H		standard	optional
		A	B		
DIN69871 *	-	-	-	-	-
	45	-	-	110	-
	50	192	35	-	-
ANSIB5.50 *	CAT	-	-	-	-
	50	-	-	110	-
* BT	-	-	-	-	-
	50	200	45	110	-
HSK	-	-	-	-	-
DIN69893	80	-	-	110	-
	100	201	46	-	-
CAPTO	-	-	-	-	-
ISO26623	-	196	-	110	-
	C8	-	-	-	-
KM	-	-	-	-	-
	-	192	-	110	-
	100	-	-	-	-
DIN2080	-	-	-	-	-
	-	-	-	-	-
	50	165	16	110	-
NMTB	-	-	-	-	-
ANSIB5.18	50	165	16	110	-

* Option: Dual Contact





FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

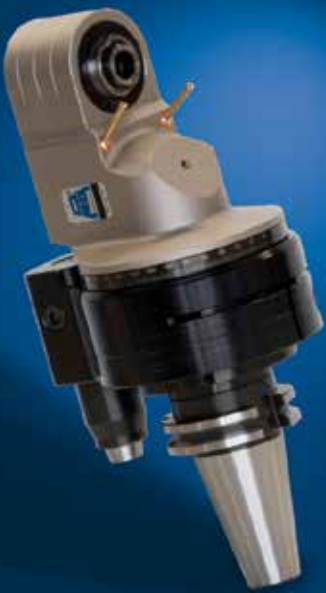
Accessori
Accessories

Appendice tecnica
Technical supplement



testa ad angolo - angle head

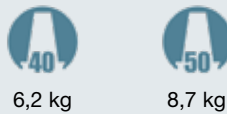
TAO10.P



caratteristiche/features



peso/weight

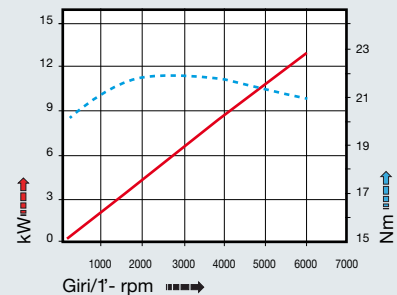


6,2 kg 8,7 kg

rotazione/rotation

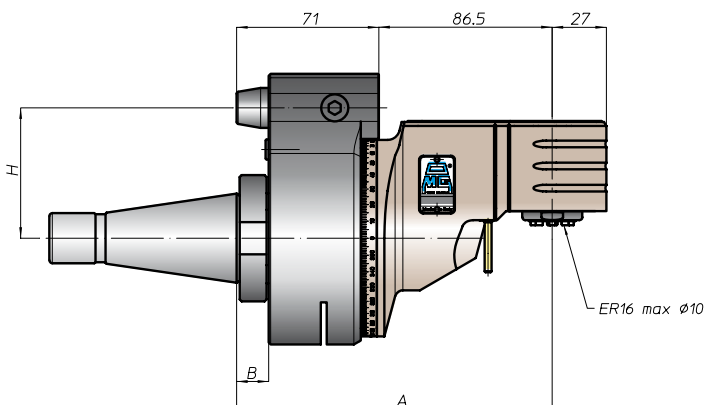
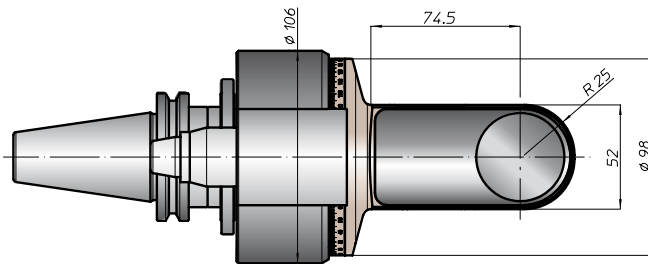
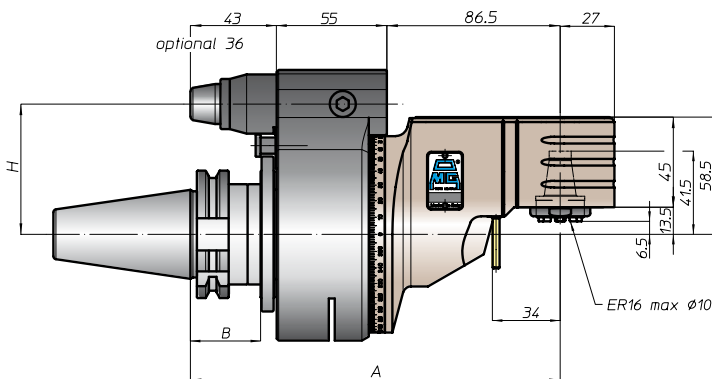
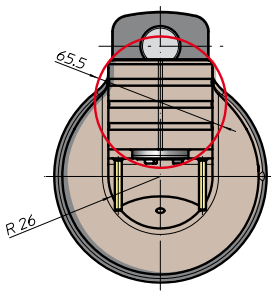


prestazioni/performance



tipi mandrino disponibili / available spindle types

- 2** Albero portafresa
Milling shaft
Ø16
- 4** DIN69893-HSK
HSK25



CONO SHANK	size	H			
		A	B	standard	optional
* DIN69871	-			65	-
	40			65	-
	45			80	110
* CAT	50	184,5	35		
	40			65	-
	50			80	110
* BT	40			65	
	50	192,5	45	80	110
HSK	63		44	65	
	80	193,5		80	110
	100		46	80	110
CAPTO	C5			65	
	C6	188,5	39		
	C8			80	110
KM	63			65	
	80	184,5			
	100			80	110
DIN2080	-	157,5	13	65	-
	40				
	-	160,5	16	80	110
ANSIB5.18	40	157,5	13	65	-
	50	160,5	16	80	110

* Option: Dual Contact

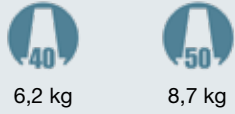


TAO10.PD

caratteristiche/features



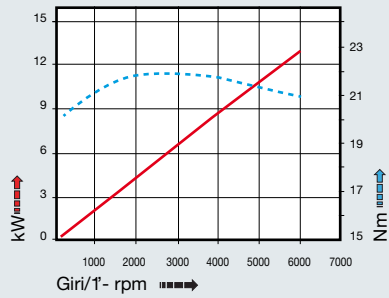
peso/weight



rotazione/rotation



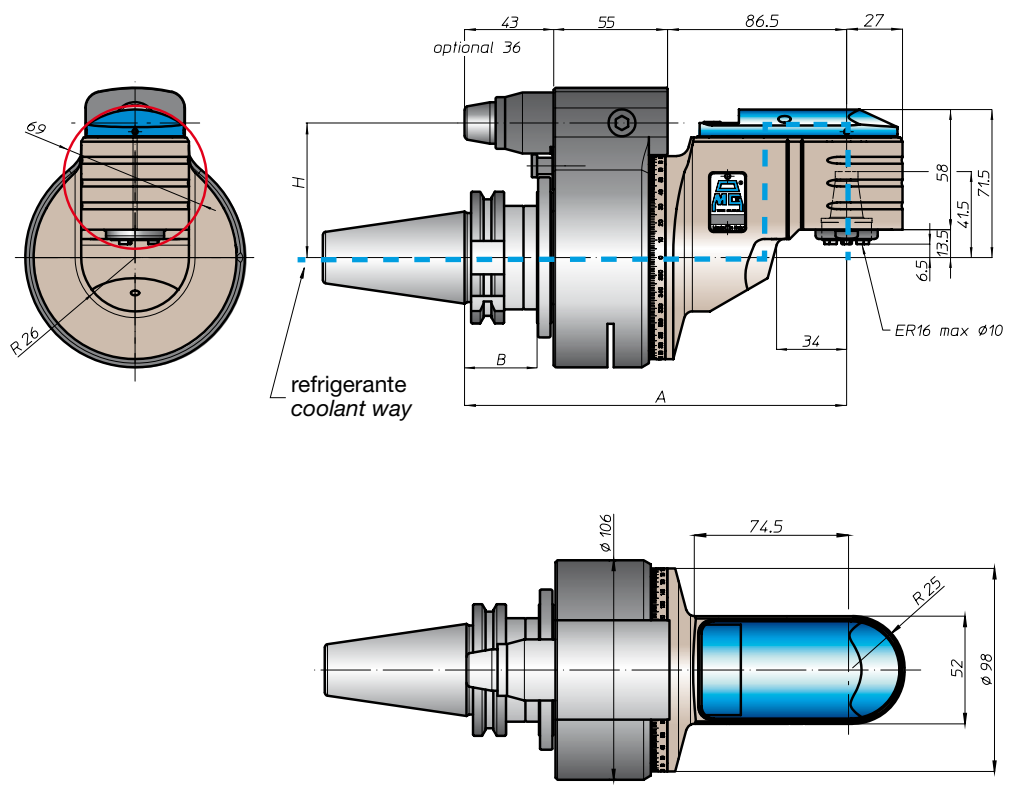
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871 *	-	184,5	35	65	-
	40			80	110
	45			80	110
ANSIB5.50 *	40	184,5	35	65	-
	50			80	110
* BT	40	192,5	45	65	-
	50			80	110
DIN69893 HSK	63	193,5	44	65	-
	80		46	80	110
	100		46	80	110
ISO26623 CAPTO	C5	188,5	39	65	-
	C6			80	110
	C8			80	110
KM	63	184,5	35	65	-
	80			80	110
	100			80	110
DIN2080	-	184,5	35	-	-
	-			-	-
	-			-	-
ANSIB5.18 NMTB	-	184,5	35	-	-
	-			-	-

tipi mandrino disponibili / available spindle types

- 2** Albero portafresa Milling shaft **Ø16**
- 4** DIN69893-HSK **HSK25**



* Option: Dual Contact

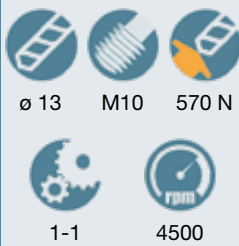


FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement

TAO13.P



caratteristiche/features



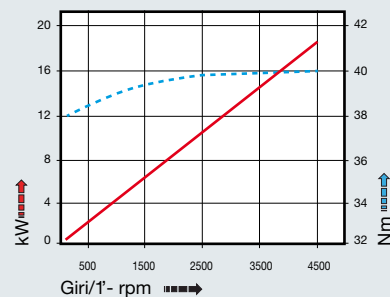
peso/weight



rotazione/rotation

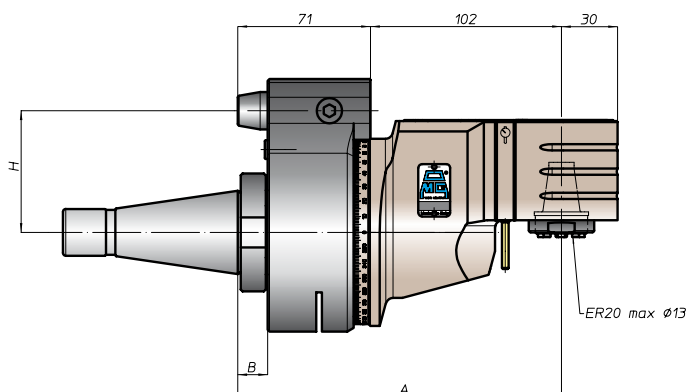
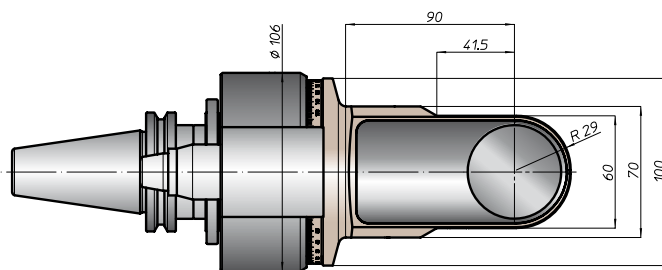
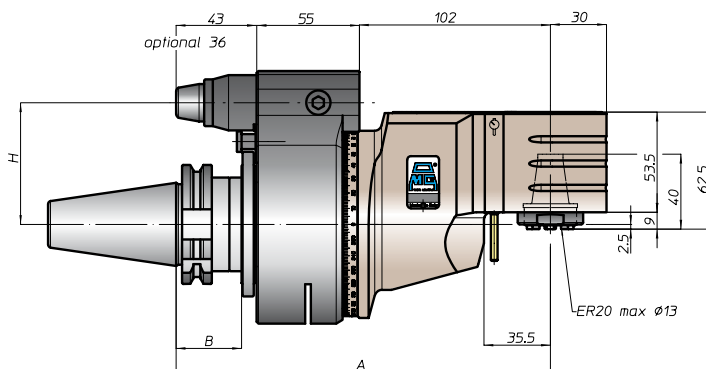
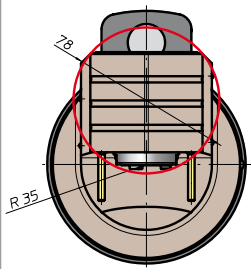


prestazioni/performance



tipi mandrino disponibili / available spindle types

- 2** Albero portafresa
Milling shaft
Ø16
- 3** Weldon
Whistle-Notch
Ø12
- 4** DIN69893-HSK
HSK32



CONO SHANK	size	H			
		A	B	standard	optional
* DIN69871	-			65	-
	40			65	-
	45			80	110
* CAT	40	200	35	80	110
	50			80	110
* BT	40			65	
	50	208	45	80	110
HSK	63			44	65
	80	209		46	80
	100			80	110
CAPTO	C5			65	
	C6	204	39		
	C8			80	110
KM	63			65	
	80	200		80	110
	100				
DIN2080	-	170	13	65	-
	40				
ANSIB5.18	-	176	16	80	110
	50				
NMTB	40	173	13	65	-
	50	176	16	80	110

* Option: Dual Contact



TAO13.PD



caratteristiche/features

\varnothing 13 M10 570 N
 1-1 4500 70 bar

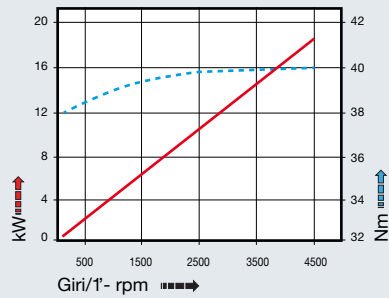
peso/weight

7,5 kg 10,5 kg

rotazione/rotation

input output

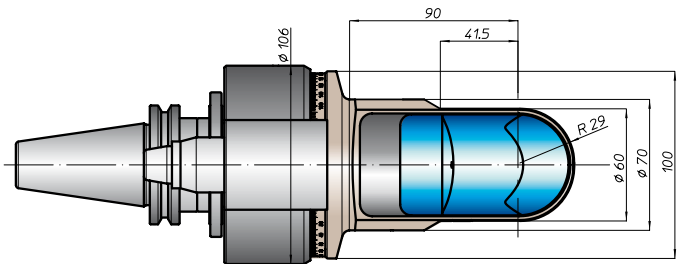
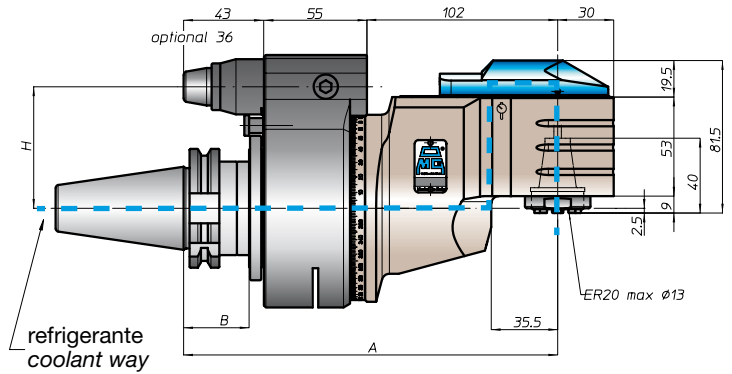
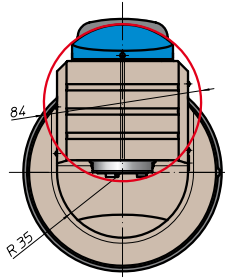
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN9871 *	-	200	35	65	-
	40			80	110
	45			80	110
ANSIB5.50 *	40	208	45	65	-
	50			80	110
BT *	40	208	45	65	-
	50			80	110
HSK	63	209	44	65	-
	80			80	110
	100			80	110
CAPTO	C5	204	39	65	-
	C6			80	110
	C8			80	110
KM	63	200	-	65	-
	80			80	110
	100			80	110
DIN2080	-	-	-	-	-
	-			-	-
	-			-	-
NMTB	-	-	-	-	-
	-			-	-

tipi mandrino disponibili / available spindle types

- 2** Albero portafresa Milling shaft \varnothing 16
- 3** Weldon Whistle-Notch \varnothing 12
- 4** DIN69893-HSK HSK32



* Option: Dual Contact



testa ad angolo - angle head

TAO16.P



caratteristiche/features



peso/weight



14 kg

rotazione/rotation

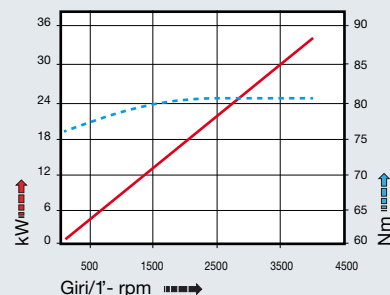


input



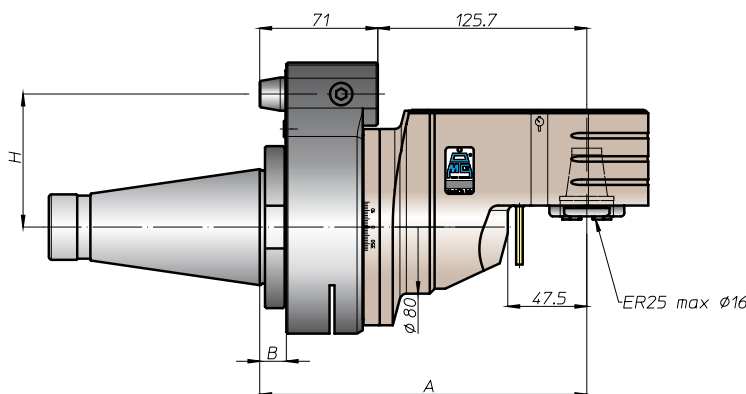
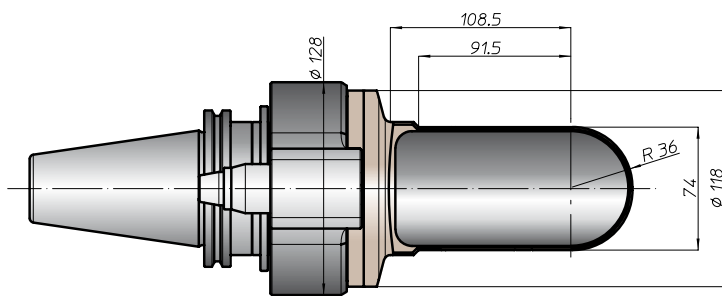
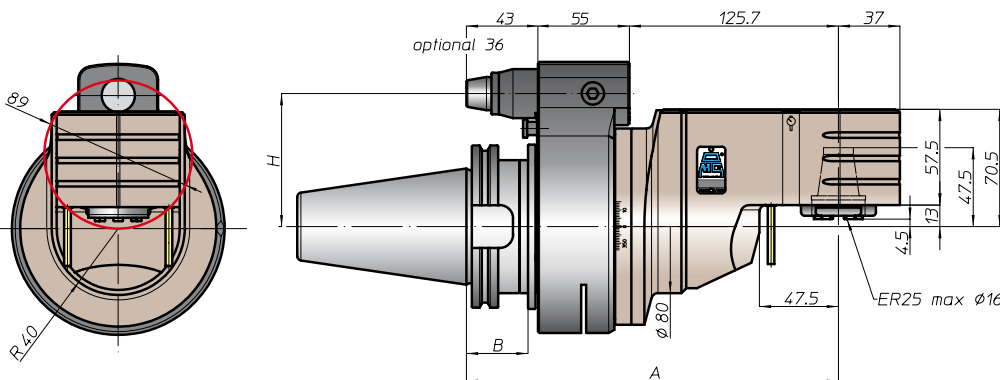
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 2** Albero portafresa
Milling shaft
Ø16-Ø22-Ø27
- 3** Weldon
Whistle-Notch
Ø16
- 4** DIN69893-HSK
HSK40



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	-	-	-	-	-
ANSIB5.50 *	45	223,5	35	80	110
	50			65	-
BT *	50	231,5	45	80	110
	50			65	-
HSK	80	232,5	46	80	110
	100			80	110
CAPTO	-	227,5	-	-	-
	C8			80	110
KM	80	223,5	-	80	110
	100			80	110
DIN2080	-	199,5	16	80	110
	50			80	110
ANSIB5.18	-	199,5	16	80	110
	50			80	110

* Option: Dual Contact



TAO16.PD



caratteristiche/features

\varnothing 16 M12 810 N
 1-1 4000 70 bar

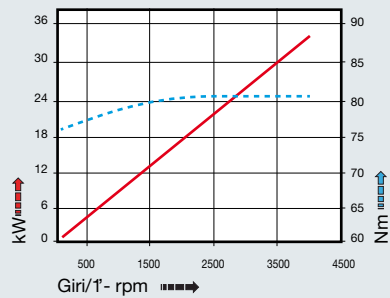
peso/weight



rotazione/rotation



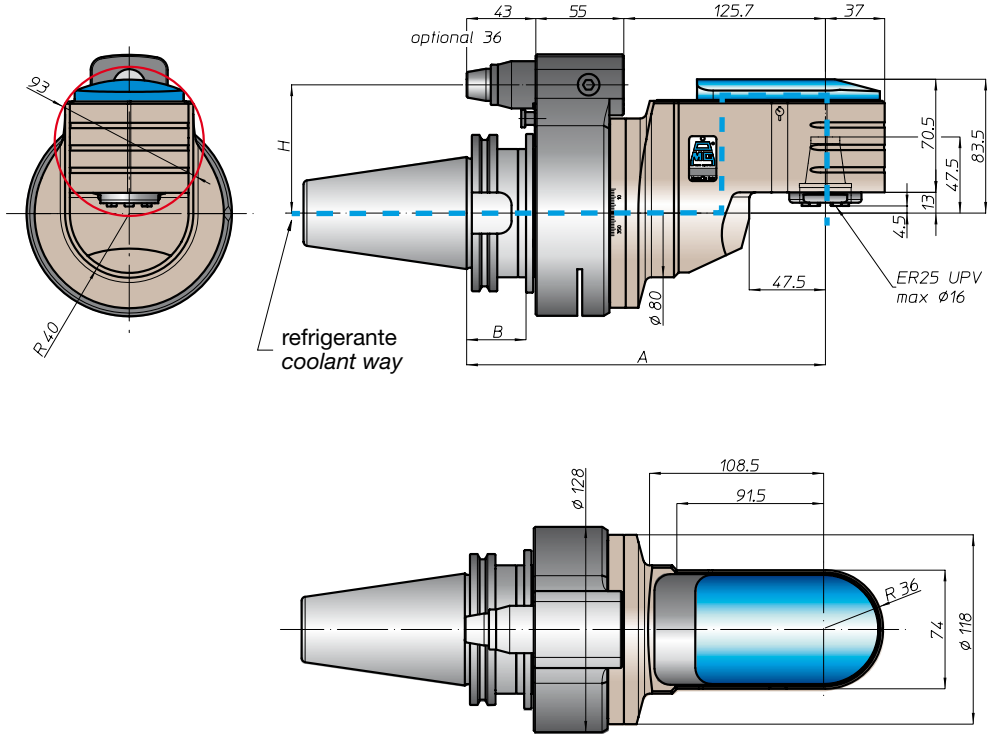
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871 *	-	223,5	35	-	-
	45			80	110
ANSIB5.50 *	-	227,5	-	65	-
	50			80	110
BT *	-	231,5	45	65	-
	50			80	110
HSK	-	232,5	46	-	-
	80			80	110
CAPTO	-	227,5	-	-	-
	C8			80	110
KM	-	223,5	-	-	-
	80			80	110
DIN2080	-	-	-	-	-
	-	-	-	-	-
NMTB	-	-	-	-	-
	-	-	-	-	-

tipi mandrino disponibili / available spindle types

- 2** Albero portafresa
Milling shaft
Ø16-Ø22-Ø27
- 3** Weldon
Whistle-Notch
Ø16
- 4** DIN69893-HSK
HSK40



* Option: Dual Contact



FH
 BAH
 TA.CP
 TA
 MOX
 HT
 VH
 TSI/TSX
 T
 MT-TC-TC3
 Accessori
 Accessories
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testa ad angolo - angle head

TAO20.P



caratteristiche/features

ø 20 M14 1150 N

1-1 3500

peso/weight



15 kg

rotazione/rotation

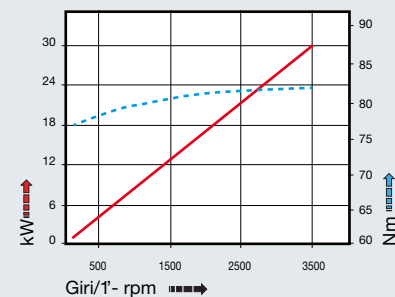


input



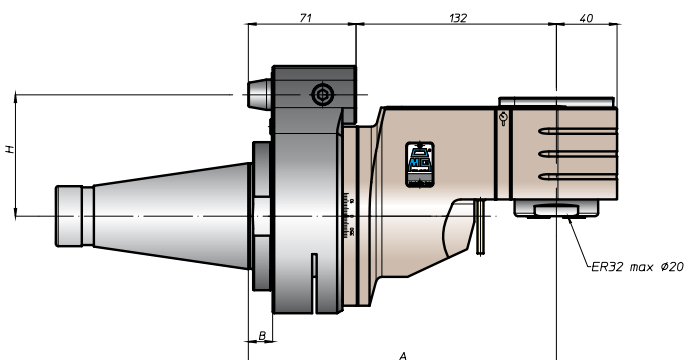
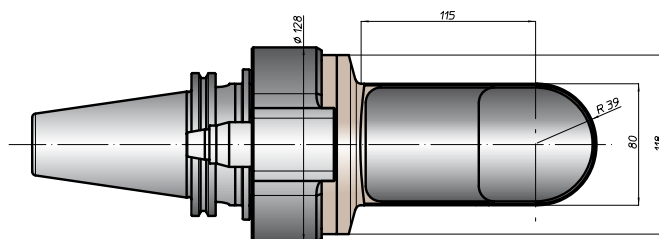
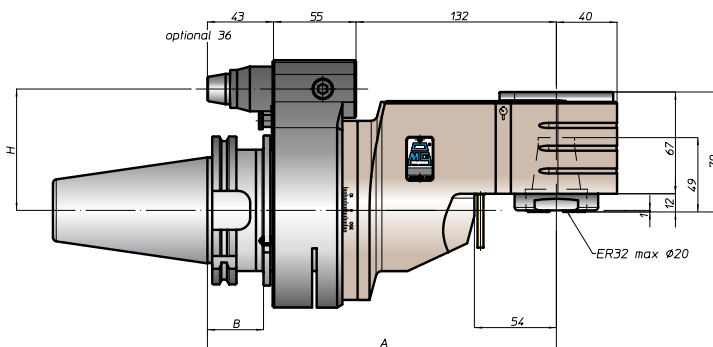
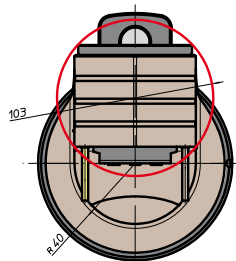
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 2** Albero portafresa
Milling shaft
Ø22-Ø27-Ø32
- 3** Weldon
Whistle-Notch
Ø16-Ø20
- 4** DIN69893-HSK
HSK50



CONO SHANK	size	H			
		A	B	standard	optional
DING9871 *	-	-	-	-	-
ANSIB5.50 *	45	230	35	80	110
	50			80	110
BT *	-	-	65	-	-
	50	238	45	80	110
HSK	-	-	-	-	-
	DING9893	80	239	46	80
CAPTO	-	234	-	-	-
	ISO28623			-	80
KM	-	230	-	-	-
	80			80	110
DIN2080	-	203	16	-	-
	50			80	110
ANSIB5.18	-	203	16	-	-
	50			80	110

* Option: Dual Contact



TAO20.PD



caratteristiche/features

\varnothing 20 M14 1150 N
 1-1 3500 70 bar

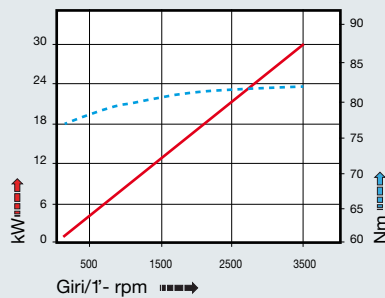
peso/weight



rotazione/rotation



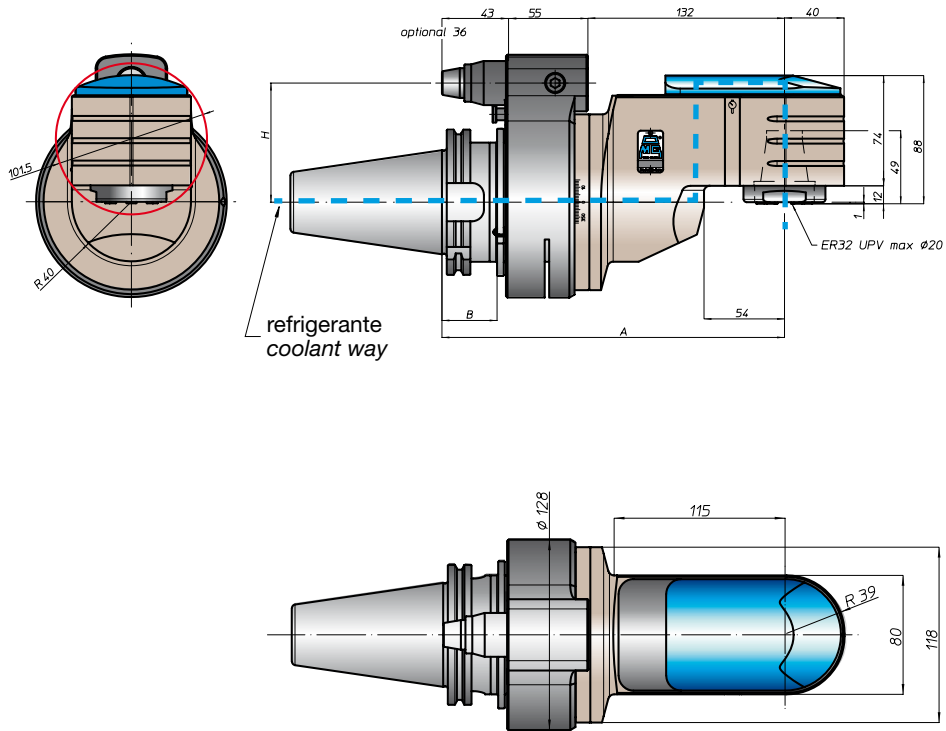
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
* DING9871	-	230	35	-	-
	45			80	110
* ANSIB5.50 CAT	-	234	35	-	-
	50			80	110
* BT	-	238	45	65	-
50	80			110	
HSK DING9893	-	239	46	42	-
	80			80	110
CAPTO ISO26623	-	234	35	-	-
	100			80	110
KM	-	230	35	-	-
	80			80	110
DIN2080	-	234	35	-	-
	100			80	110
ANSIB5.18 NMTB	-	234	35	-	-
	100			80	110

tipi mandrino disponibili / available spindle types

- 2** Albero portafresa Milling shaft
Ø22-Ø27-Ø32
- 3** Weldon Whistle-Notch
Ø16-Ø20
- 4** DIN69893-HSK
HSK50



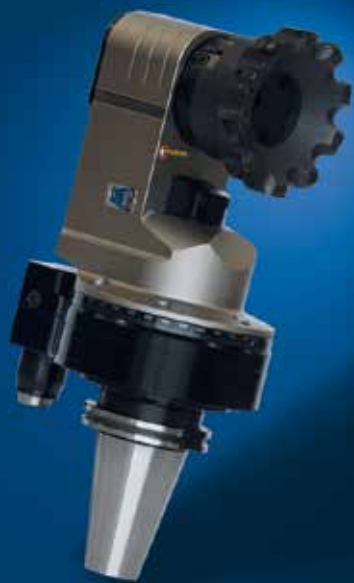
* Option: Dual Contact



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
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testa ad angolo - angle head

TAO26.P



caratteristiche/features

ø 26 M20 1590 N

1-1 3000

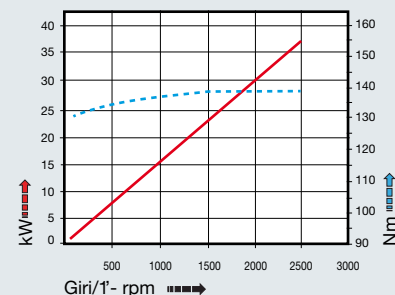
peso/weight

24 kg

rotazione/rotation

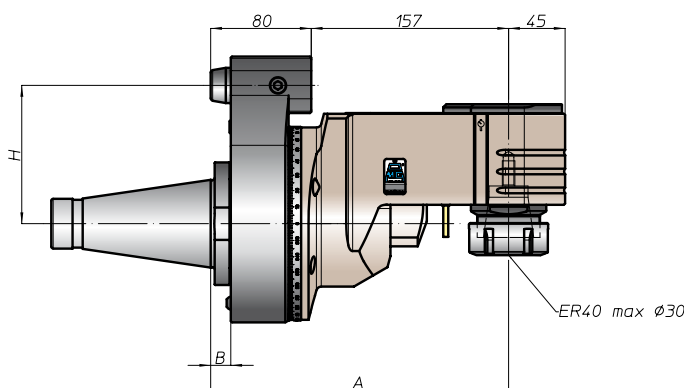
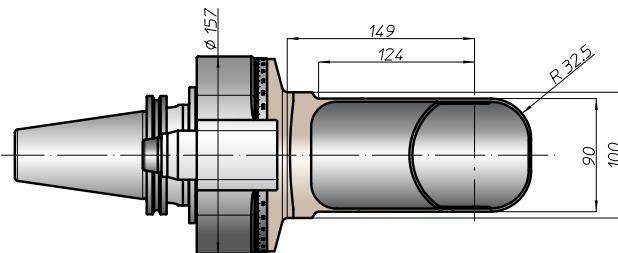
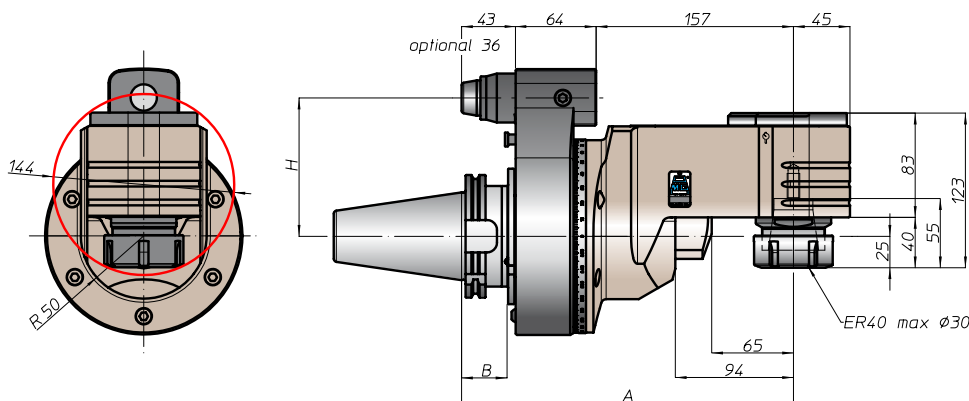
→
 input output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 2** Albero portafresa
Milling shaft
Ø27-Ø32
- 3** Weldon
Whistle-Notch
Ø25-Ø32
- 4** DIN69893-HSK
HSK63
- 5** COROMANT
CAPTO®
C4
- 6** ABS
Licenza KOMET®
ABS63
- 7** ISO-DIN2079
NMTB-BT
30-40



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	-	-	-	-	-
ANSI B5.50 *	50	264	36,5	110	-
BT	50	-	-	110	-
HSK	100	-	-	-	-
DIN69893	100	273	45,5	110	-
CAPTO	-	-	-	-	-
ISO28623	-	264	36,5	110	-
ISO28623	C8	-	-	-	-
KM	100	270	-	110	-
DIN2080	-	-	-	-	-
DIN2080	50	243	16	110	-
NMTB	-	-	-	-	-
ANSI B5.18	50	243	16	110	-

* Option: Dual Contact



TAO26.PD



caratteristiche/features

\varnothing 26 M20 1590 N
 1-1 3000 70 bar

peso/weight

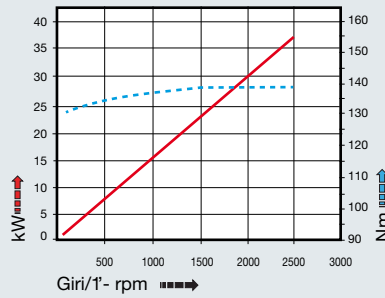


24 kg

rotazione/rotation



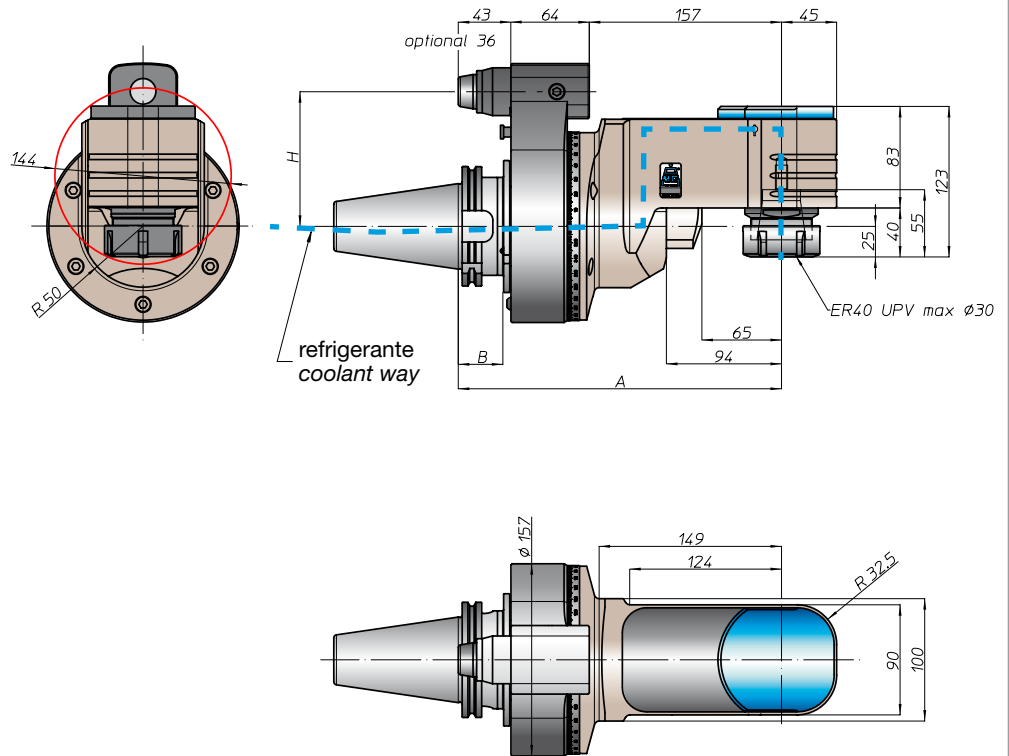
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
* DING9871	-	264	36,5	-	-
	50			110	-
* ANSIB5.50	-	264	36,5	-	-
	50			110	-
* BT	-	272	44,5	-	-
	50			110	-
HSK	-	273	45,5	-	-
	100			110	-
CAPTO	-	264	36,5	-	-
	C8			110	-
KM	-	270	-	-	-
	100			110	-
DIN2080	-	-	-	-	-
	-			-	-
NMTB	-	-	-	-	-
	-			-	-

tipi mandrino disponibili / available spindle types

- 2** Albero portafrese
Milling shaft
Ø27-Ø32
- 3** Weldon
Whistle-Notch
Ø25-Ø32
- 4** DIN69893-HSK
HSK63
- 5** COROMANT
CAPTO®
C4
- 6** ABS
Licenza KOMET®
ABS63



* Option: Dual Contact



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
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Nuovo standard nelle teste ad angolo variabile.

La serie TAV si propone ora con un display per la visualizzazione dell'inclinazione del mandrino. La facilità di utilizzo, la precisione del sistema, l'ingombro estremamente ridotto consentirà agli utenti di registrare direttamente in macchina l'angolo della lavorazione che la Testa ad Angolo Variabile deve eseguire sul pezzo in modo semplice ed efficace.

Oggi sono disponibili i tre principali modelli di Teste ad Angolo Variabile: TAV10, TAV13 e TAV20.

Lo sviluppo di questa soluzione verrà presto trasportata a tutta la famiglia delle Teste ad Angolo della serie TAV.

New standard system on TAV adjustable angle heads.

The TAV series is now being enhanced with a display to check the spindle angle inclination. Both the user-friendliness and the precision, as well as the extremely reduced footprint of this new system, will allow the users to easily and effectively set the adjustable angle head directly on the machine prepared to machine pieces.

*Nowadays the three major adjustable angle head models are available:
TAV10, TA13 and TAV20.*

And this new solution will be soon available on the whole range of TAV angle heads.



TAV10.P



caratteristiche/features

$\varnothing 10$
 M8
 550 N
 1-1
 8000
 $\pm 0,05$

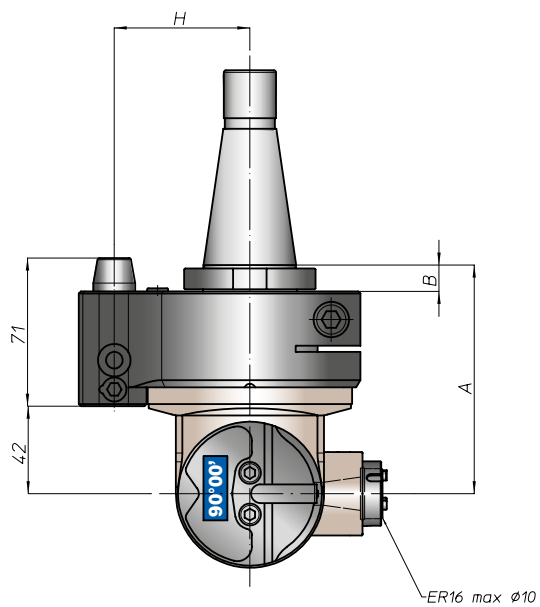
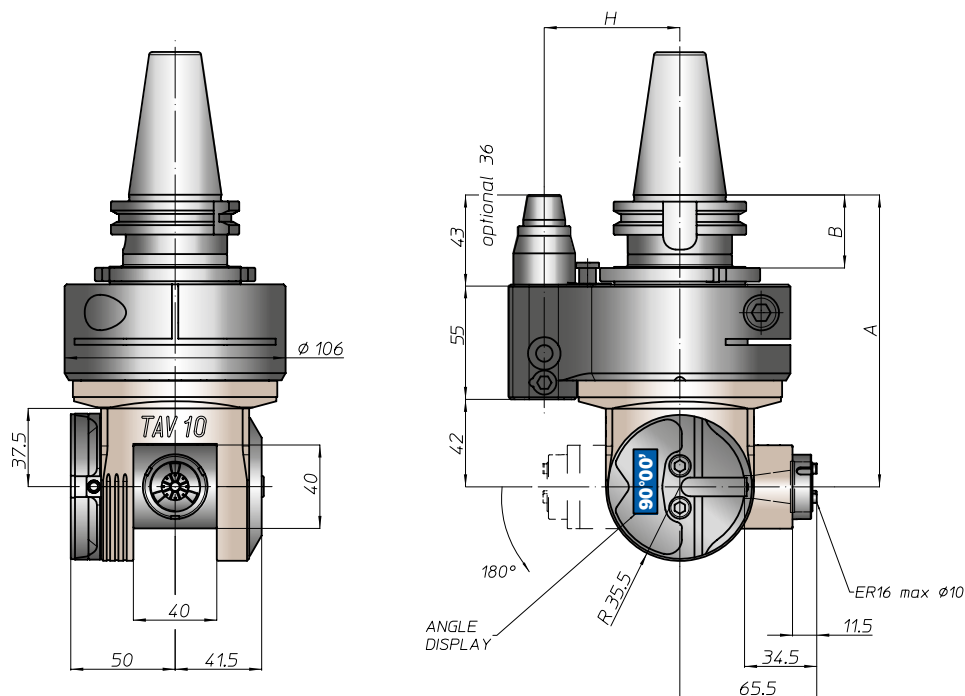
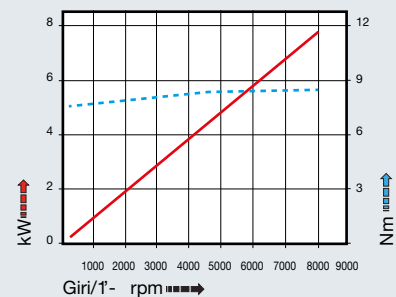
peso/weight

6,4 kg
 8,5 kg

rotazione/rotation

input
 output

prestazioni/performance



CONO SHANK	size	H			
		A	B	standard	optional
* DING9871	-			65	-
	40			80	110
	45	140	35	80	110
* ANSIB5.50 CAT	40			65	-
	50			80	110
* BT	40			65	
	50	148	45	80	110
DING9893 HSK	63		44	65	
	80	149		80	110
	100		46	80	110
ISO28623 CAPTO	C5			65	
	C6	144	39		
	C8			80	110
KM	63			65	
	80	140		80	110
	100			80	110
DIN2080	-	113	13	65	-
	40				
	-	116	16	80	110
ANSIB5.18 NMTB	40	113	13	65	-
	50	116	16	80	110

* Option: Dual Contact





testa ad angolo - angle head

TAV10.PD



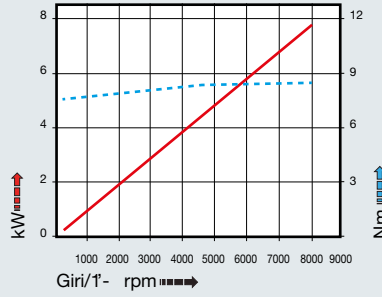
caratteristiche/features

peso/weight

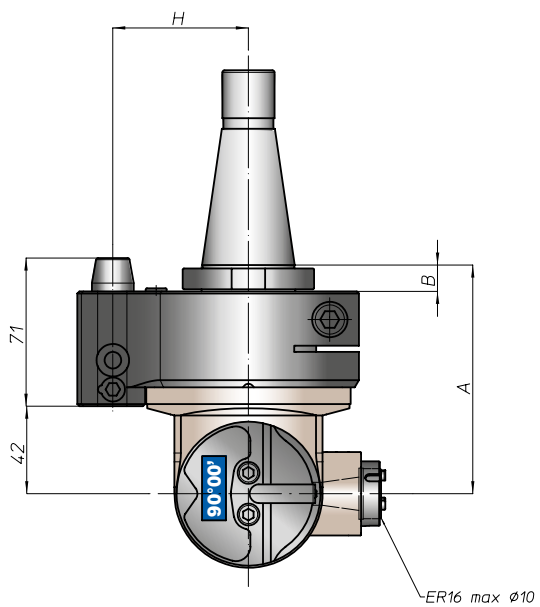
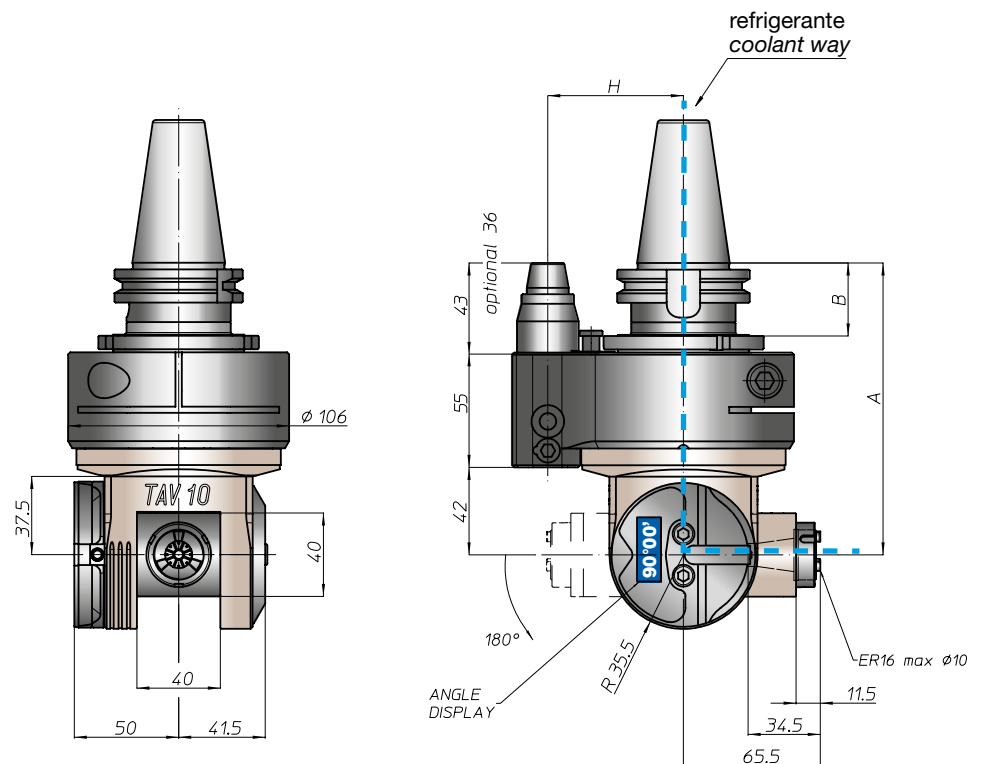
prestazioni/performances

ø 10 M8 550 N
 1-1 8000 ±0,05 70 bar

6,4 kg 8,5 kg
 rotazione/rotation
 input output



CONO SHANK	size	A	B	H	
				standard	optional
DIN9871 *	-	140	35	65	-
	40			80	110
	45			80	110
ANSIB5.50 *	40	148	45	65	-
	50			80	110
BT *	40	148	45	65	-
	50			80	110
HSK DIN9893	63	149	44	65	-
	80		46	80	110
	100		46	80	110
CAPTO ISO26623	C5	144	39	65	-
	C6			80	110
	C8			80	110
KM	63	140	-	65	-
	80			80	110
	100			80	110
DIN2080	-	113	13	65	-
	40			80	110
	50			80	110
ANSIB5.18 NMTB	40	116	16	65	-
	50			80	110



* Option: Dual Contact

FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
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TAV13.P



caratteristiche/features

$\varnothing 13$
 M10
 630 N
 1-1
 6000
 $\pm 0,05$

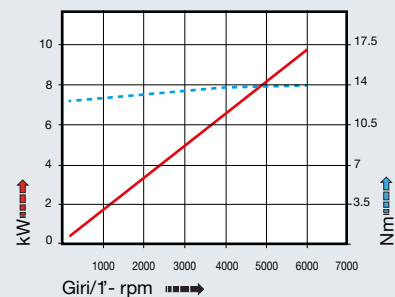
peso/weight

7,8 kg
 10,5 kg

rotazione/rotation

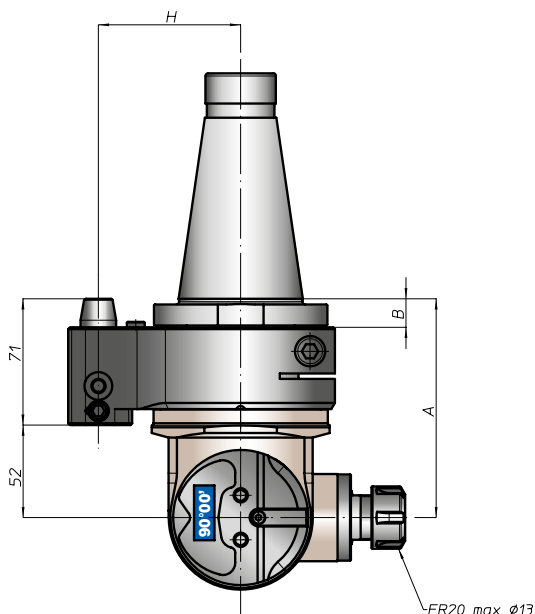
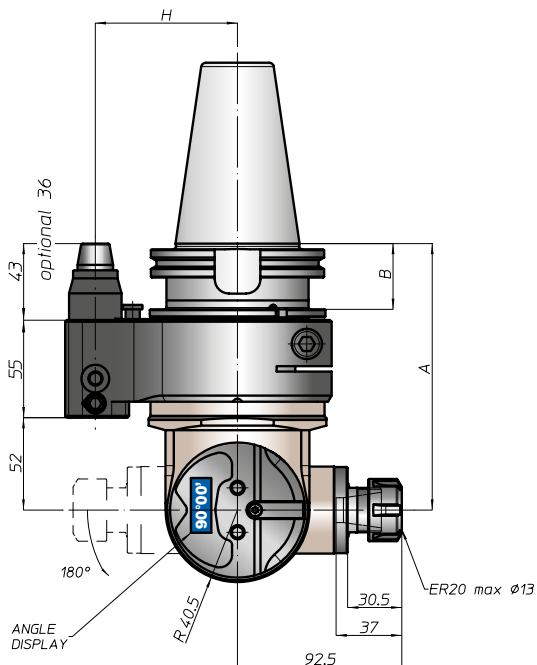
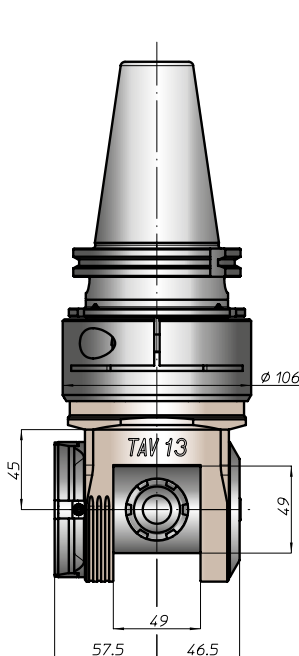
IN
 OUT

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER **ER25**
- 3** Weldon Whistle-Notch **$\varnothing 16$**



CONO SHANK	size	H			
		A	B	standard	optional
DIN9871 *	-			65	-
	40			80	110
	45	150	35		
ANSI B5.50 *	CAT			65	-
	50			80	110
*	BT			65	
	50	158	45	80	110
DIN9893	HSK		44	65	
	80	159	46	80	110
	100				
ISO 28623	C5			65	
	C6	154	39		
	C8			80	110
KM	63			65	
	80	150		80	110
	100				
DIN2080	-	120	13	65	-
	40				
ANSI B5.18	-	123	16	80	110
	50				
NMTB	40	120	13	65	-
	50	123	16	80	110

* Option: Dual Contact



TAV13.PD



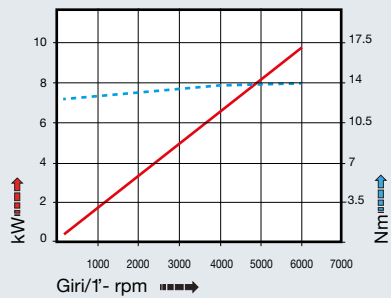
caratteristiche/features

peso/weight

prestazioni/performance

ø 13 M10 630 N
 1-1 6000 ±0,05 70 bar

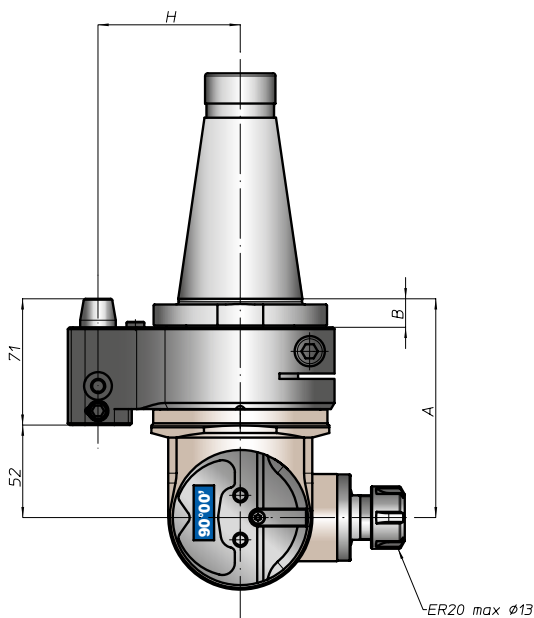
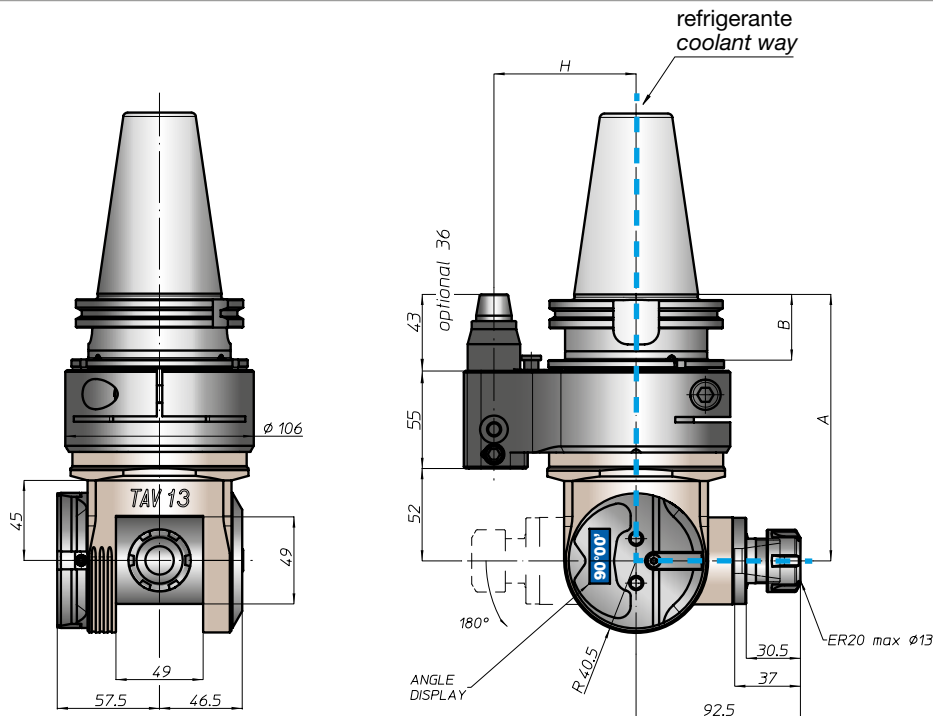
40 50
 7,8 kg 10,5 kg
 rotazione/rotation
 IN OUT
 input output



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871	-	150	35	65	-
	40			80	110
	45			80	110
ANSIB5.50 CAT	40	150	35	65	-
	50			80	110
BT	40	158	45	65	-
	50			80	110
DIN69893 HSK	63	159	46	65	-
	80			80	110
	100			80	110
ISO26623 CAPTO	C5	154	39	65	-
	C6			80	110
	C8			80	110
KM	63	150	46	65	-
	80			80	110
	100			80	110
DIN2080	-	120	13	65	-
	40			80	110
	-			123	16
ANSIB5.18 NMTB	40	123	16	65	-
	50			80	110

tipi mandrino disponibili / available spindle types

- 1 DIN6499-ER ER25
- 3 Weldon Whistle-Notch Ø16



★ Option: Dual Contact



FH
 BAH
 TA.CP
 TA
 MOX
 HT
 VH
 TSI/TSX
 T
 MT-TC-TC3
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TAV20.P



caratteristiche/features

$\varnothing 20$
 M16
 1740 N
 1-1
 4000
 $\pm 0,05$

peso/weight



22 kg

rotazione/rotation

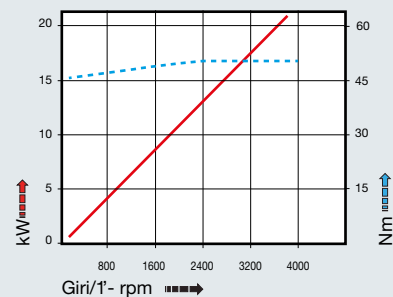


input



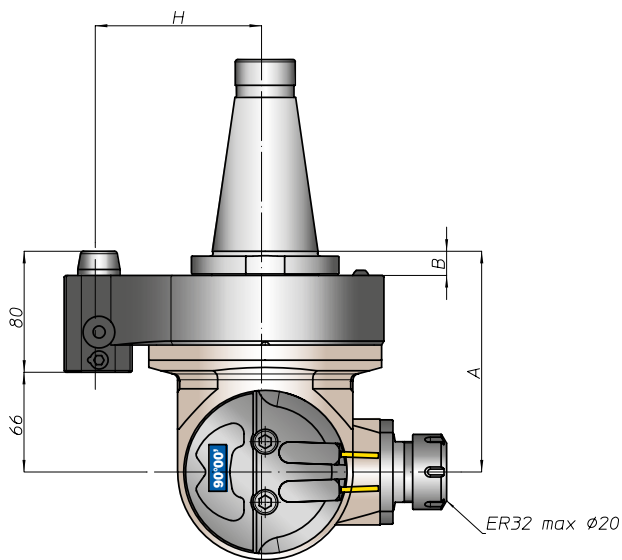
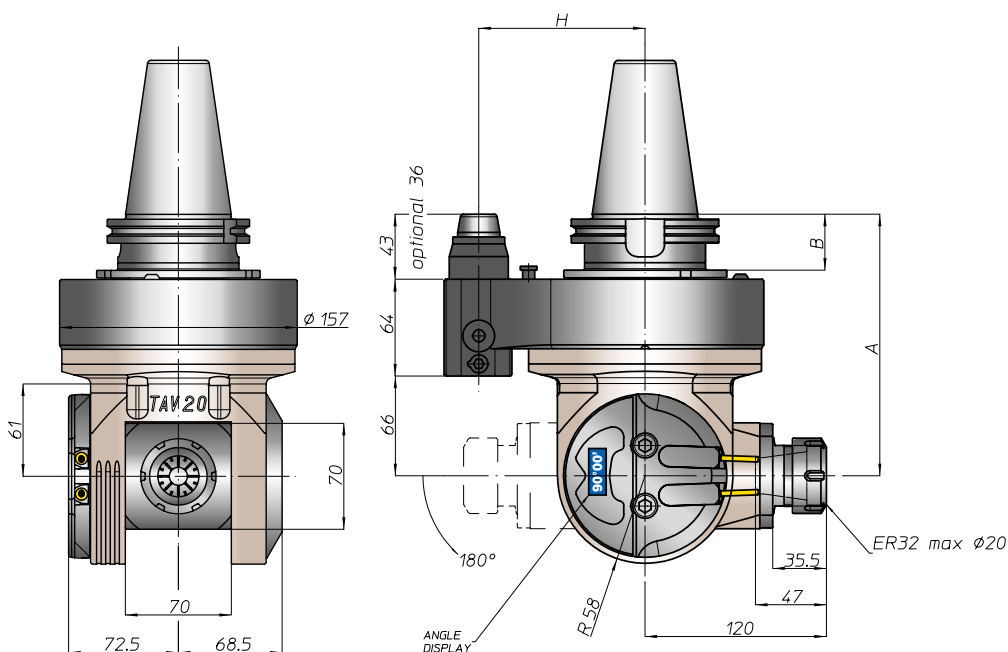
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER
ER40
- 2** Albero portafresa
Milling shaft
Ø32
- 3** Weldon
Whistle-Notch
Ø20-Ø25
- 4** DIN69893-HSK
HSK50
- 6** ABS
Licenza KOMET®
ABS50



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	-	-	-	-	-
DIN69871 *	50	173	35	110	-
ANSIB5.50 *	-	-	-	-	-
ANSIB5.50 *	50	-	-	110	-
BT *	-	-	-	-	-
BT *	50	181	45	110	-
HSK	-	-	-	-	-
DIN69893	80	182	-	110	-
DIN69893	100	-	46	110	-
CAPTO	-	-	-	-	-
ISO28623	-	177	-	110	-
ISO28623	C8	-	-	110	-
KM	-	-	-	-	-
KM	-	173	-	110	-
KM	100	-	-	110	-
DIN2080	-	-	-	-	-
DIN2080	-	149	16	110	-
DIN2080	50	-	-	110	-
NMTB	-	-	-	-	-
ANSIB5.18	50	149	16	110	-

* Option: Dual Contact





testa ad angolo - angle head

TAV20.PD



caratteristiche/features

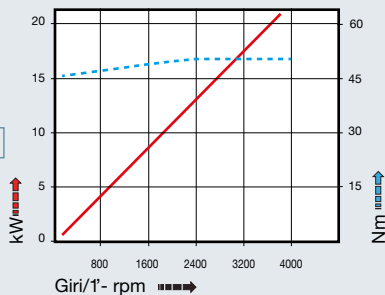
peso/weight

prestazioni/performances

\varnothing 20 M16 1740 N
 1-1 4000 $\pm 0,05$ 70 bar
 input output

22 kg

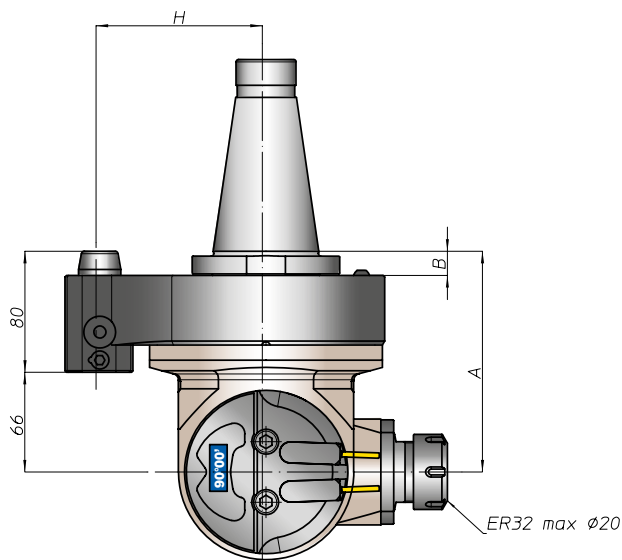
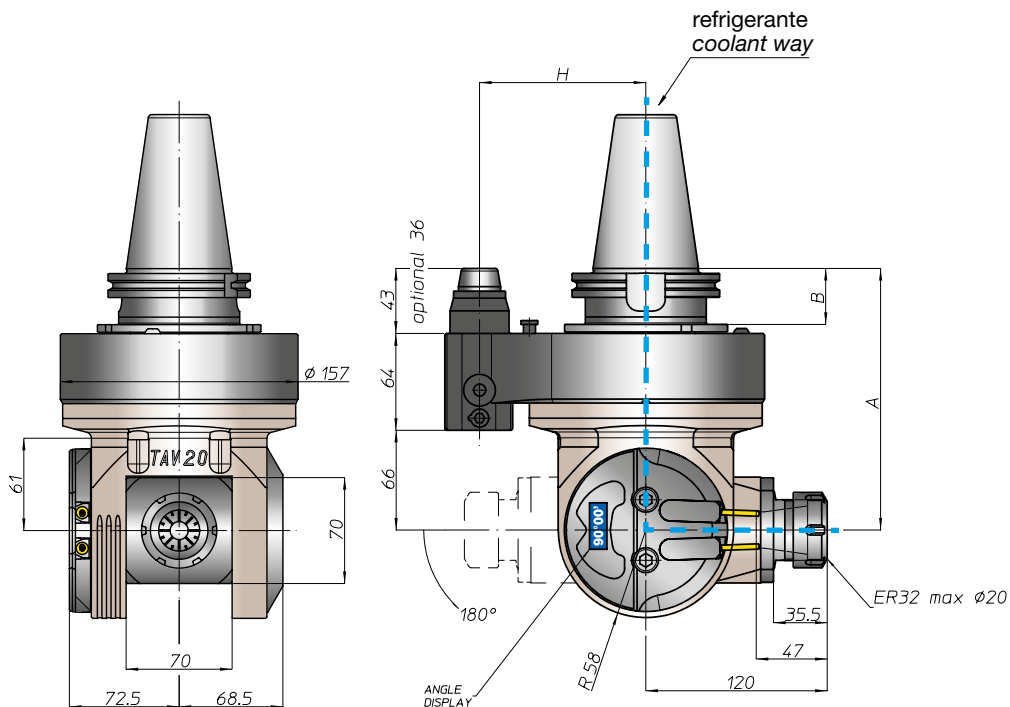
rotazione/rotation



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871	-	-	-	-	-
	50	173	35	110	-
ANSIB5.50	-	-	-	-	-
	50	-	-	110	-
BT	-	-	-	-	-
	50	181	45	110	-
DIN69893	-	-	-	-	-
	80	182	46	110	-
CAPTO	-	-	-	-	-
	C8	177	-	110	-
KM	-	-	-	-	-
	100	173	-	110	-
DIN2080	-	-	-	-	-
	50	149	16	110	-
ANSIB5.18	-	-	-	-	-
	50	149	16	110	-

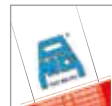
tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER
ER40
- 2** Albero portafresa
Milling shaft
Ø32
- 3** Weldon
Whistle-Notch
Ø20-Ø25
- 4** DIN69893-HSK
HSK50
- 6** ABS
Licenza KOMET®
ABS50



* Option: Dual Contact

FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement





TAV40.T

caratteristiche/features

ø 32	M26	2610 N
1-2	5000 OUTPUT	±0,014

peso/weight



70 kg

rotazione/rotation



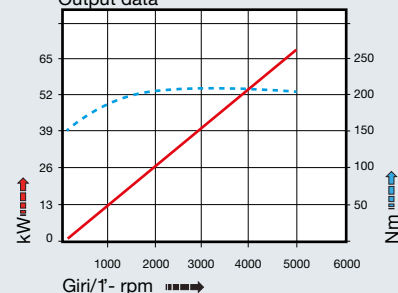
input



output

prestazioni/performance

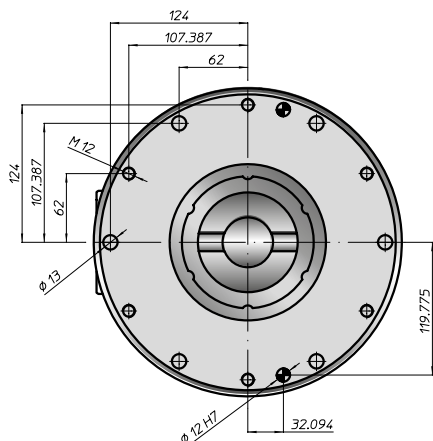
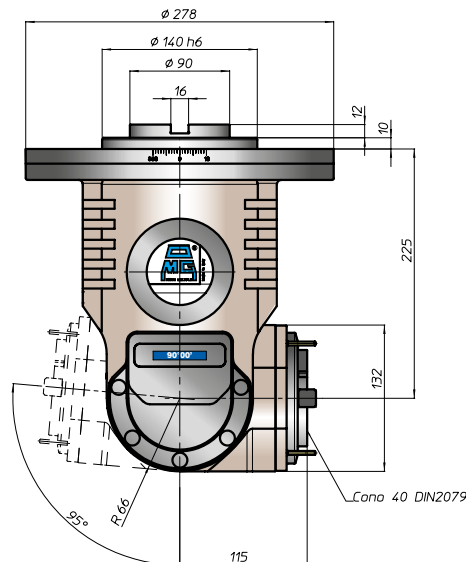
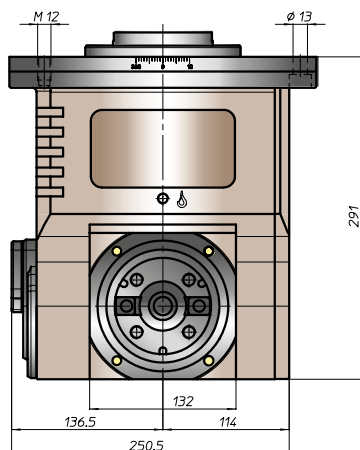
Output data



tipi mandrino disponibili / available spindle types

4 DIN69893-HSK
HSK63

5 COROMANT
CAPTO®
C5



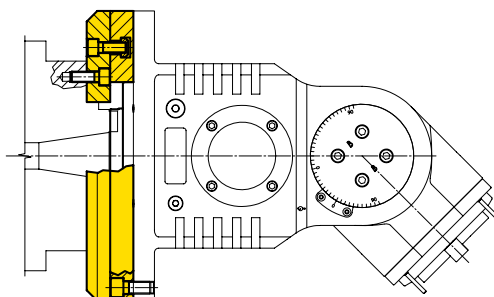
Equipaggiamento standard:

- pressurizzazione mandrino
- n. 4 ugelli orientabili vicino al mandrino
- regolazione angolare mandrino libera
- nel mandrino DIN2079 si possono utilizzare coni DIN2080-40, DIN69871-A40, MAS403-BT40

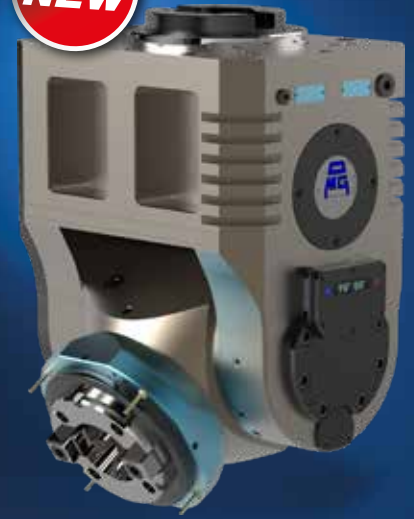
Standard equipment:

- spindle front pressurization
- nr 4 adjustable nozzle near the spindle
- free angle spindle adjustment
- on the spindle DIN2079 you can use shank DIN2080-40, DIN69871-A40, MAS403-BT40

esempio di collegamento - *connection example*



TAV50.T



caratteristiche/features

ø 45
 M36
 6180 N
 1-2
 4000 OUTPUT
 ±0,014

peso/weight



145 kg

rotazione/rotation



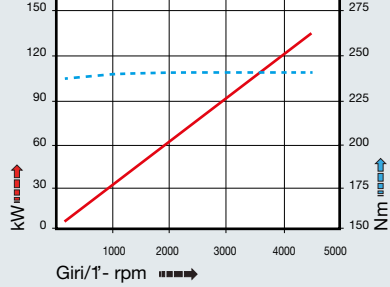
input



output

prestazioni/performance

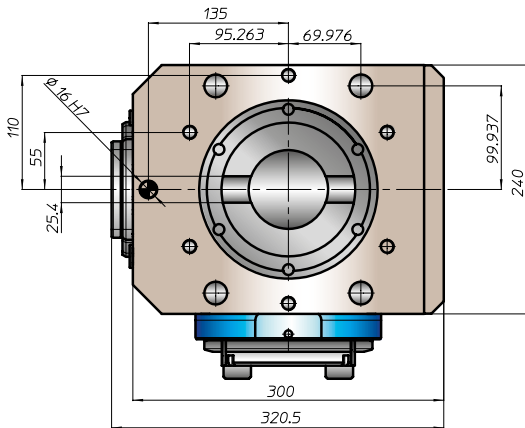
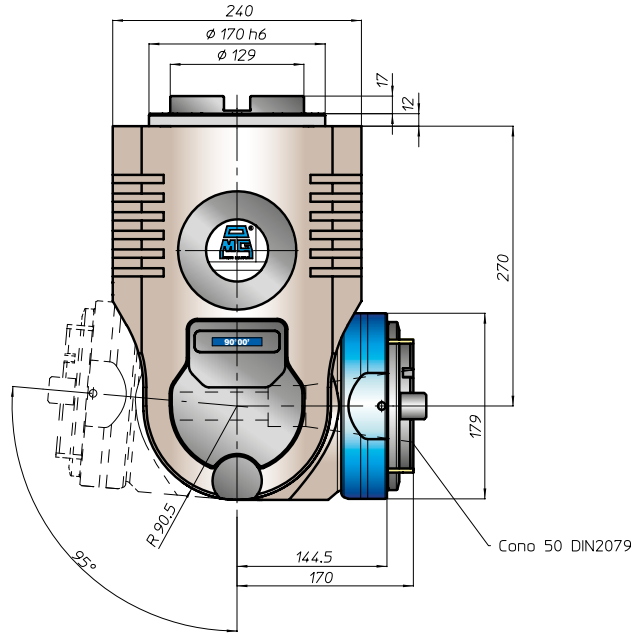
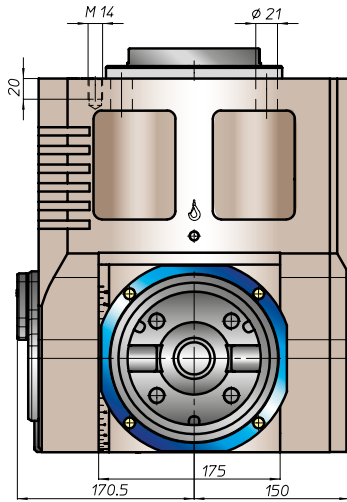
Output data



tipi mandrino disponibili / available spindle types

4 DIN69893-HSK
A100

5 COROMANT CAPTO®
C8



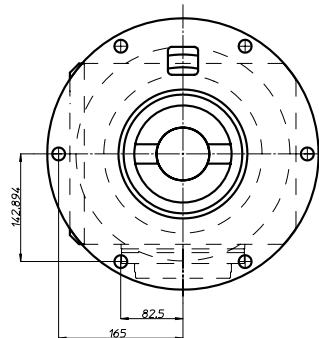
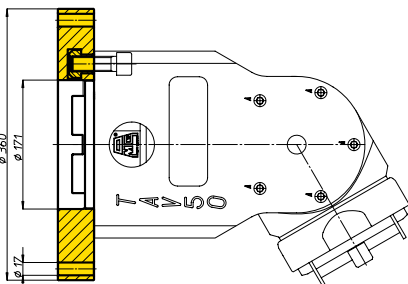
Equipaggiamento standard:

- pressurizzazione mandrino
- n. 4 ugelli orientabili vicino al mandrino
- regolazione angolare mandrino libera o posizionabile ogni 15°
- nel mandrino DIN2079 si possono utilizzare coni DIN69871-A50, MAS403-BT50

Standard equipment:

- spindle front pressurization
- nr 4 adjustable nozzle near the spindle
- free angle spindle adjustment or by pin each 15°
- on the spindle DIN2079 you can use shank DIN69871-A50, MAS403-BT50

esempio di collegamento - connection example






testa ad angolo - angle head

TAV10.P



caratteristiche/features

 ø 10 M8 550 N




 1-1 8000

peso/weight

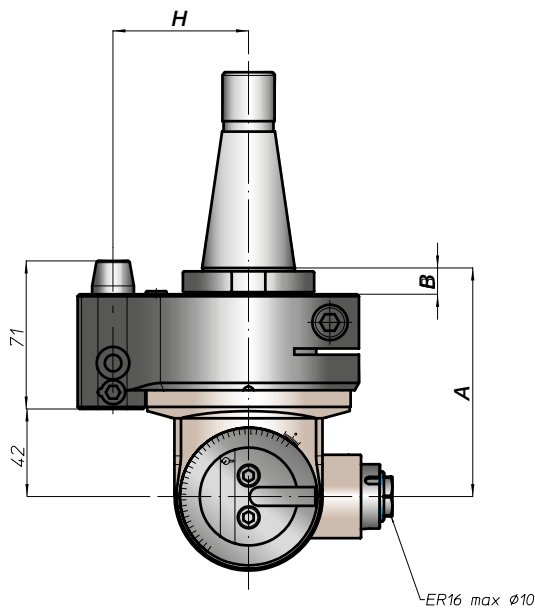
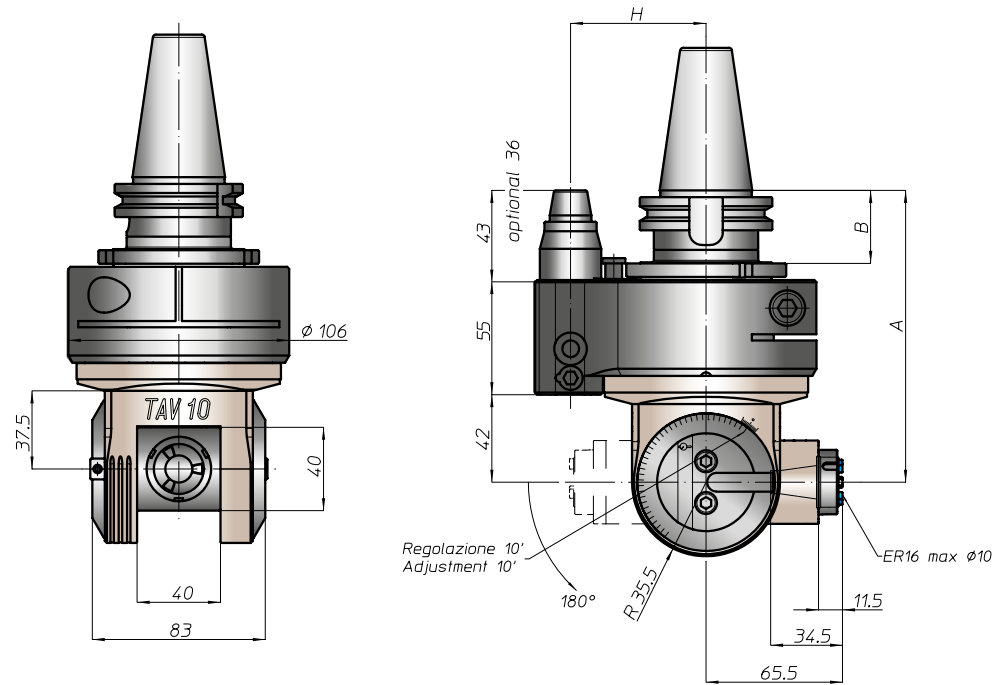
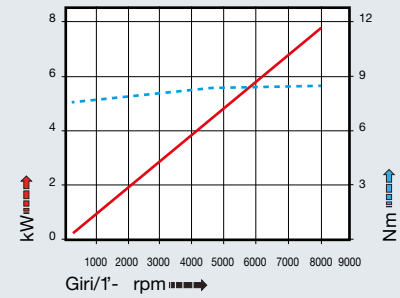


 6,4 kg 8,5 kg

rotazione/rotation



 input output

prestazioni/performance



CONO SHANK	size	H			
		A	B	standard	optional
* DIN9871	-			65	-
	40			80	110
	45	140	35		
* CAT ANSIB5.50	40			65	-
	50			80	110
* BT	40			65	
	50	148	45	80	110
HSK DIN9893	63		44	65	
	80	149		80	110
	100		46	80	110
CAPTO ISO26623	C5			65	
	C6	144	39		
	C8			80	110
KM	63			65	
	80	140		80	110
	100				
DIN2080	-	113	13	65	-
	40				
	-	116	16	80	110
ANSIB5.18 NMTB	40	113	13	65	-
	50	116	16	80	110

* Option: Dual Contact



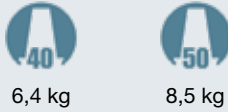


TAV10.PD

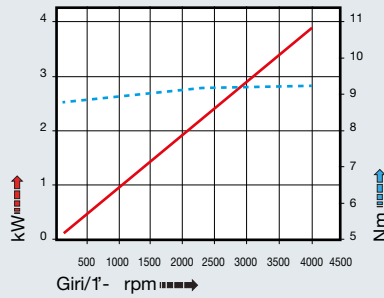
caratteristiche/features

peso/weight

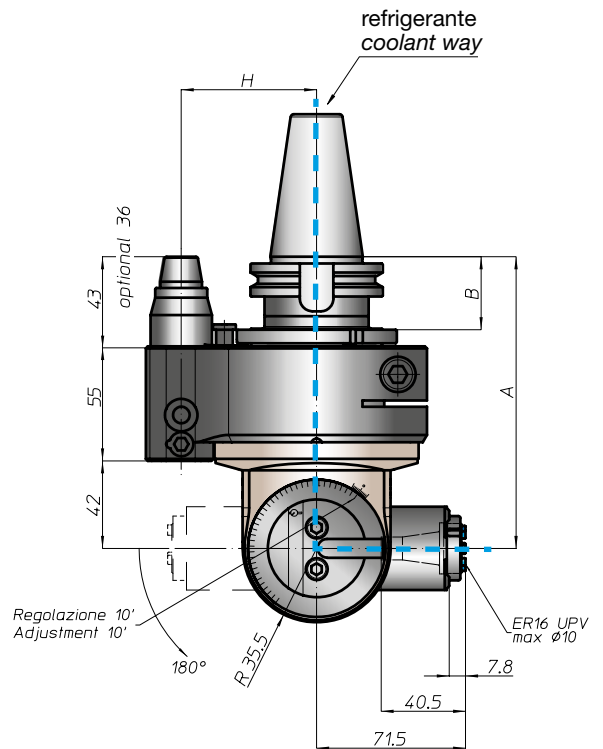
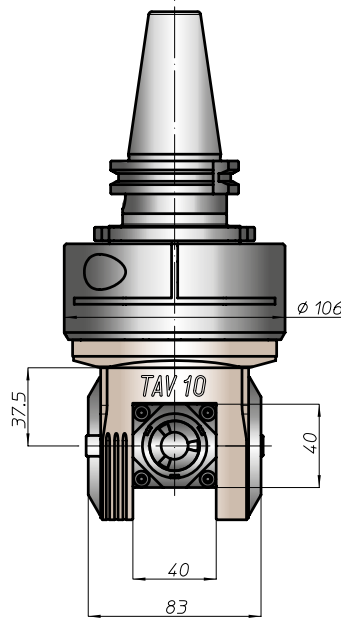
prestazioni/performance



rotazione/rotation



CONO SHANK	size	A	B	H	
				standard	optional
DIN9871 *	-	140	35	65	-
	40			80	110
	45			80	110
ANSIB5.50 * CAT	40	148	45	65	-
	50			80	110
* BT	40	148	45	65	-
	50			80	110
DIN9893 HSK	63	149	44	65	-
	80		46	80	110
	100		46	80	110
ISO26623 CAPTO	C5	144	39	65	-
	C6			80	110
	C8			80	110
KM	63	140	-	65	-
	80			80	110
	100			80	110
DIN2080	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
ANSIB5.18 NMTB	-	-	-	-	-
	-	-	-	-	-



* Option: Dual Contact

FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement





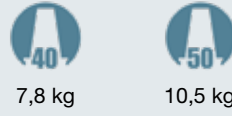
testa ad angolo - *angle head*

TAV13.P

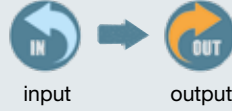
caratteristiche/features



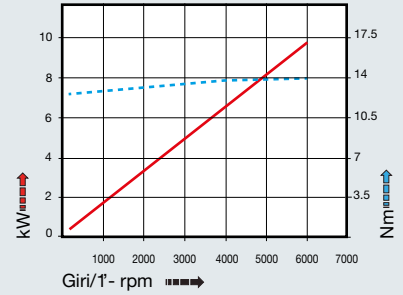
peso/weight



rotazione/rotation

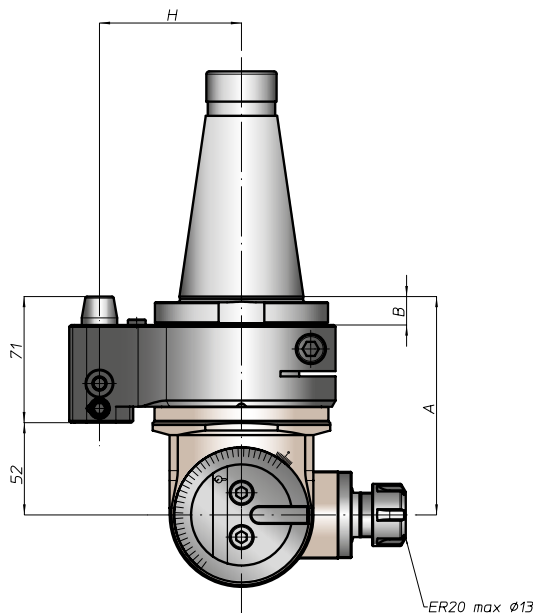
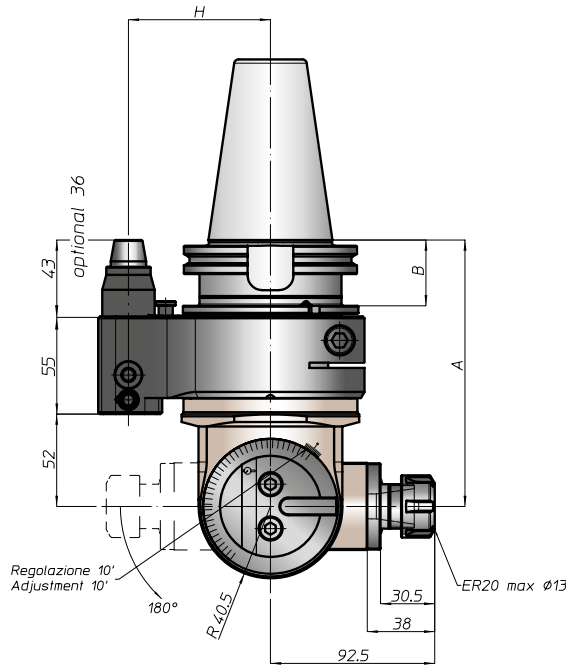
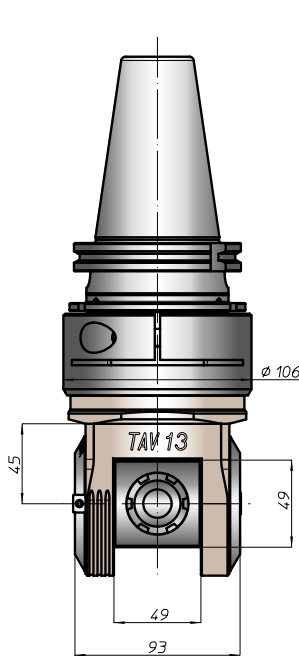


prestazioni/performance



tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER ER25
- 3** Weldon Whistle-Notch Ø16



CONO SHANK	size	H			
		A	B	standard	optional
* DIN69871	-	150	35	65	-
	40			80	110
	45			80	110
* CAT	40	158	45	65	-
	50			80	110
* BT	40	158	45	65	-
	50			80	110
DIN69893	63	159	46	65	-
	80			80	110
	100			80	110
CAPTO	C5	154	39	65	-
	C6			80	110
	C8			80	110
KM	63	150	80	65	-
	80			80	110
	100			80	110
DIN2080	-	120	13	65	-
	40			80	110
	50			80	110
NMTB	40	123	16	65	-
	50			80	110

* Option: Dual Contact





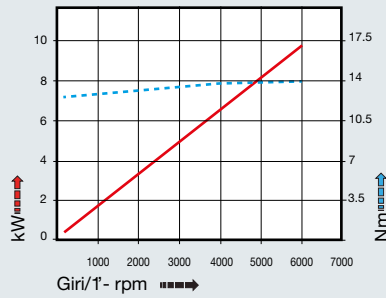
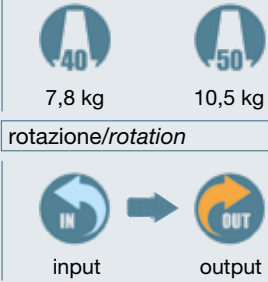
TAV13.PD



caratteristiche/features

peso/weight

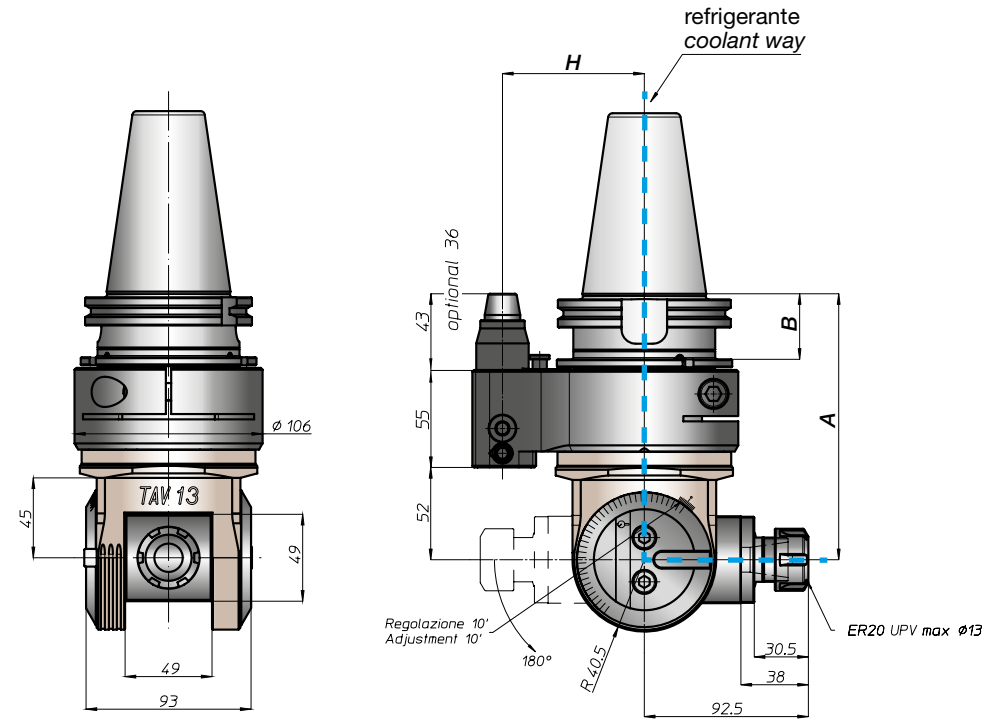
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
* DIN69871 *	-			65	-
	40			80	110
	45	150	35		
* CAT	40			65	-
	50			80	110
* BT	40			65	-
	50	158	45	80	110
DIN69893	63		44	65	-
	80	159		80	110
	100		46	80	110
CAPTO	C5			65	-
	C6	154	39		
	C8			80	110
KM	63			65	-
	80	150		80	110
	100			80	110
DIN2080	-	120	13	65	-
	40			-	-
	-	-	-	-	-
NMTB	-	-	-	-	-
	-	-	-	-	-

tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER **ER25**
- 3** Weldon Whistle-Notch **Ø16**



* Option: Dual Contact

FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement





testa ad angolo - angle head

TAV20.P



caratteristiche/features

ø 20
 M16
 1740 N
 1-1
 4000

peso/weight



22 kg

rotazione/rotation

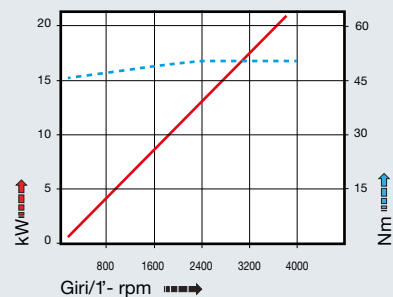


input



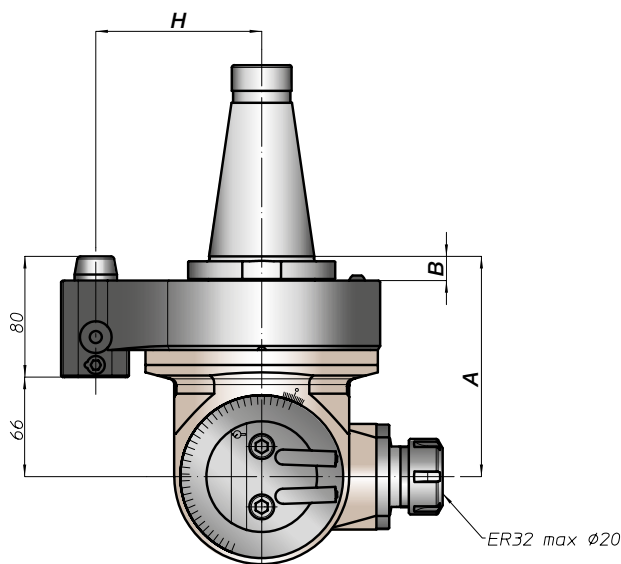
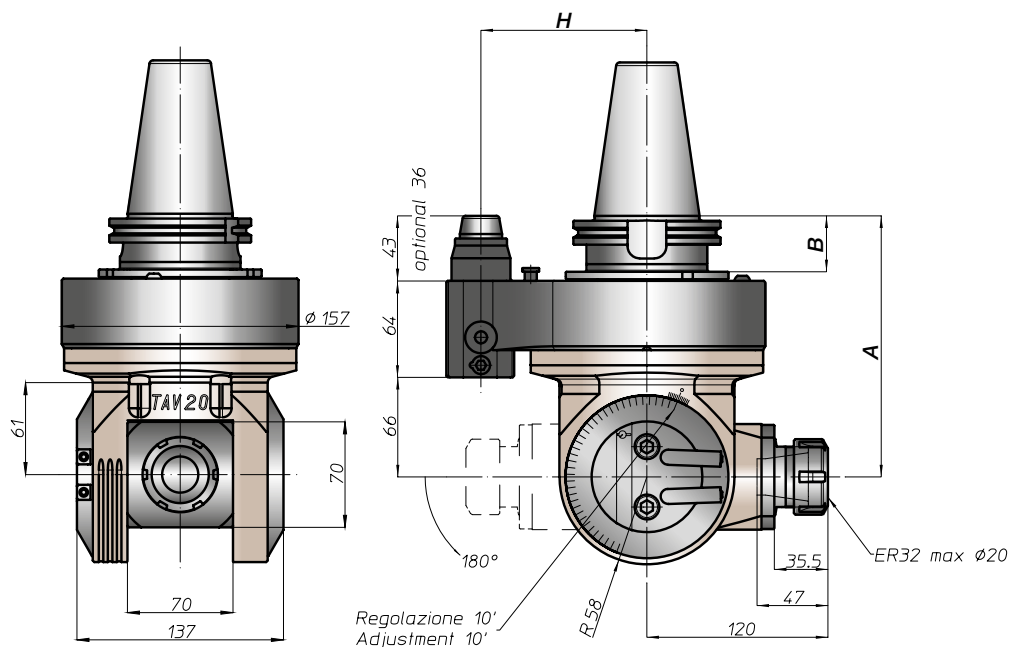
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER
ER40
- 2** Albero portafresa
Milling shaft
Ø32
- 3** Weldon
Whistle-Notch
Ø20-Ø25
- 4** DIN69893-HSK
HSK50
- 6** ABS
Licenza KOMET®
ABS50



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	-	-	-	-	-
DIN69871 *	50	173	35	110	-
ANSIB5.50 *	-	-	-	-	-
ANSIB5.50 *	50	-	-	110	-
* BT	-	-	-	-	-
* BT	50	181	45	110	-
HSK	-	-	-	-	-
DIN69893	80	182	-	110	-
DIN69893	100	-	46	110	-
CAPTO	-	-	-	-	-
ISO28623	-	177	-	110	-
ISO28623	C8	-	-	110	-
KM	-	-	-	-	-
KM	-	173	-	110	-
KM	100	-	-	110	-
DIN2080	-	-	-	-	-
DIN2080	-	149	16	110	-
DIN2080	50	-	-	110	-
NMTB	-	-	-	-	-
ANSIB5.18	50	149	16	110	-

* Option: Dual Contact





TAV20.PD



caratteristiche/features

ø 20 M16 1740 N

1-1 4000 70 bar

peso/weight



22 kg

rotazione/rotation

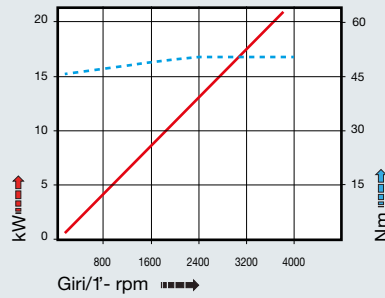


input



output

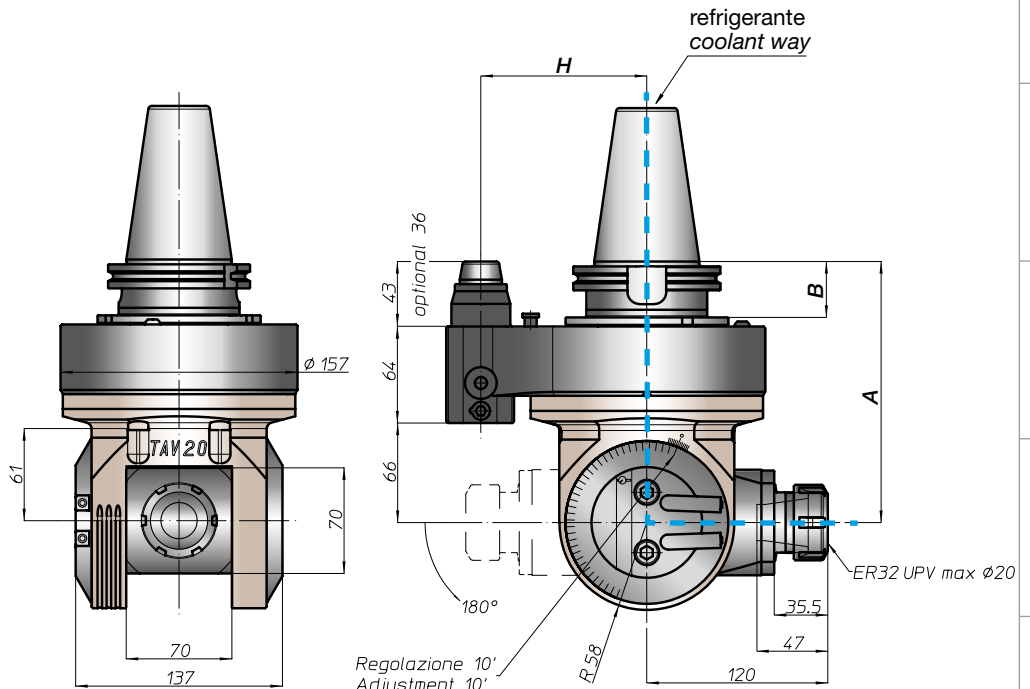
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871 *	-	-	-	-	-
	50	173	35	110	-
ANSIB5.50 *	-	-	-	-	-
	50	-	-	110	-
BT *	-	-	-	-	-
	50	181	45	110	-
HSK	-	-	-	-	-
DIN69893	80	182	-	110	-
	100	-	46	-	-
CAPTO	-	-	-	-	-
ISO26623	-	177	-	110	-
	C8	-	-	-	-
KM	-	-	-	-	-
	-	173	-	-	-
	100	-	-	110	-
DIN2080	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
NMTB	-	-	-	-	-
ANSIB5.18	-	-	-	-	-

tipi mandrino disponibili / available spindle types

- 1 DIN6499-ER
ER40
- 3 Weldon Whistle-Notch
Ø20-Ø25
- 4 DIN69893-HSK
HSK50
- 6 ABS Licenza KOMET®
ABS50



* Option: Dual Contact



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement

testa ad angolo - angle head

TAV30.P



caratteristiche/features




 ø 30 M24 2740 N


 1-1 2500

peso/weight



42 kg

rotazione/rotation

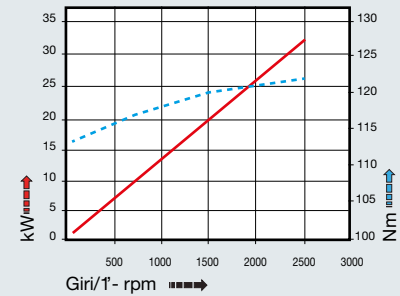


input



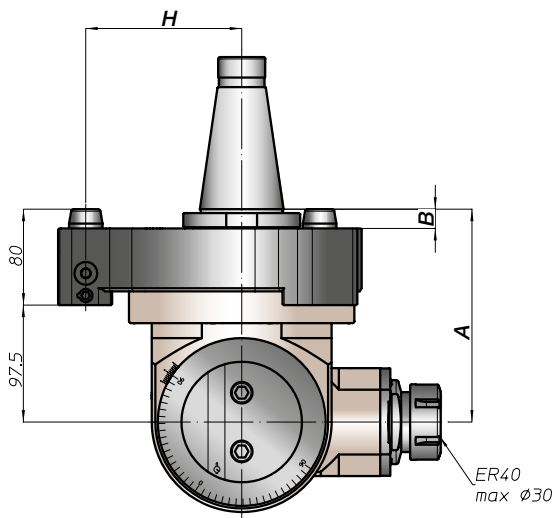
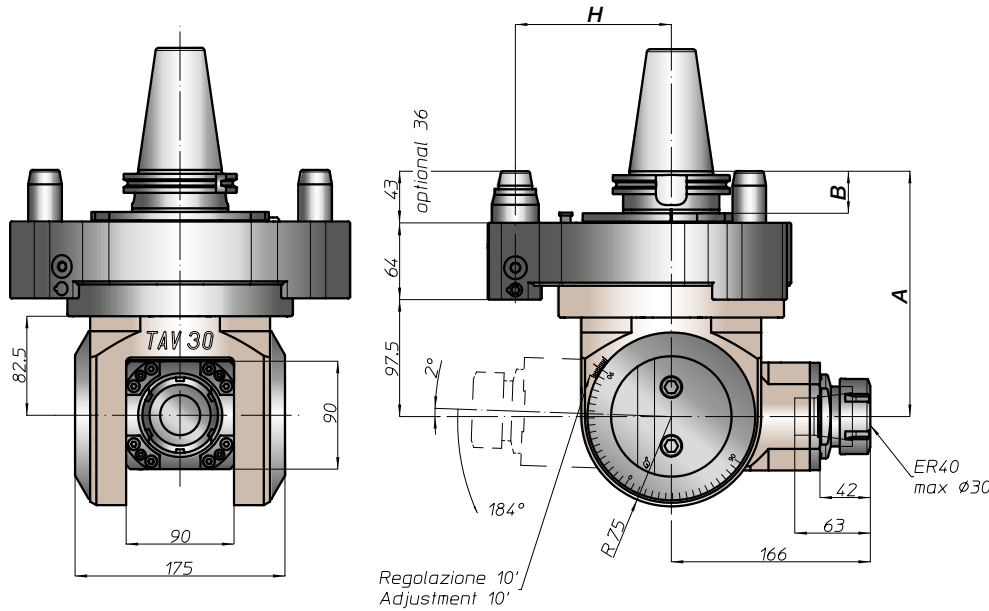
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- | | | | |
|------------------------------------|---|---------------------------------------|--|
| 1 DIN6499-ER
ER50 | 2 Albero portafresa
Milling shaft
Ø32-Ø40 | 4 DIN69893-HSK
HSK63 | 6 ABS
Licenza KOMET®
ABS63 |
|------------------------------------|---|---------------------------------------|--|



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	-	-	-	-	-
CAT *	-	-	-	-	-
ANSI B5.50 *	50	204,5	35	130	-
BT *	50	212,5	45	130	-
HSK	-	-	42	-	-
DIN69893	-	213,5	-	130	-
ISO26623	-	-	-	-	-
CAPTO	-	208,5	-	130	-
KM	-	204,5	-	130	-
DIN2080	-	-	-	-	-
NMTB	-	-	-	-	-
ANSI B5.18	50	177,5	16	130	-

* Option: Dual Contact



TAV40.T



caratteristiche/features

peso/weight

prestazioni/performance



70 kg

rotazione/rotation

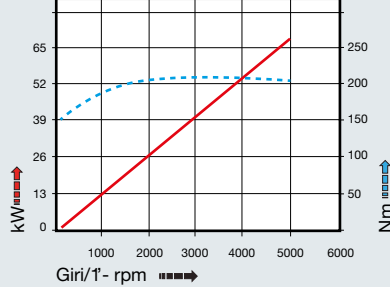


input



output

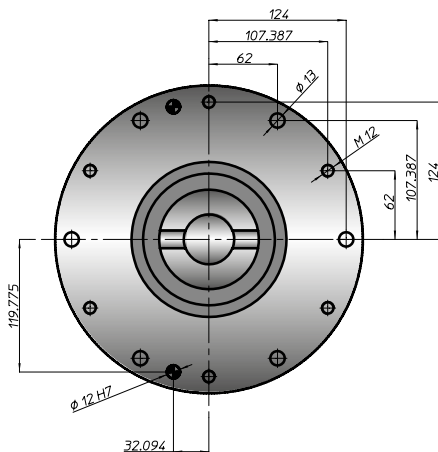
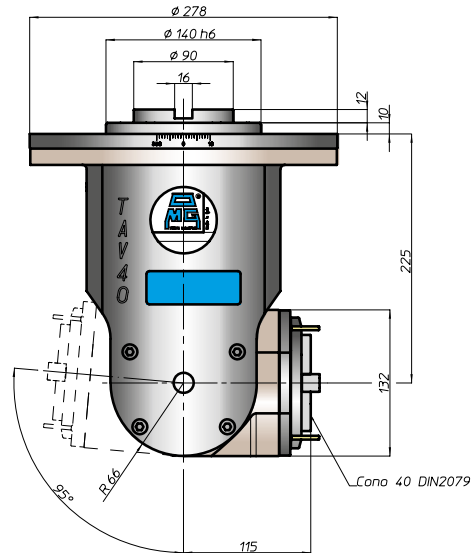
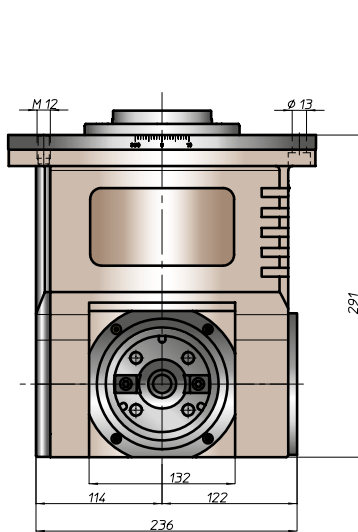
Output data



tipi mandrino disponibili / available spindle types

4 DIN69893-HSK
HSK63

5 COROMANT CAPTO®
C5



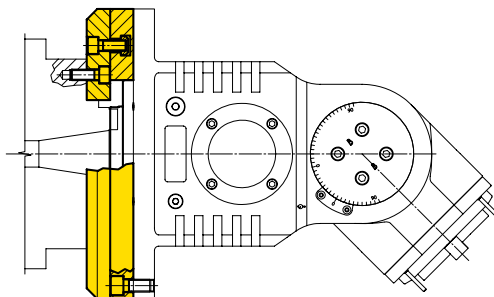
Equipaggiamento standard:

- pressurizzazione mandrino
- n. 4 ugelli orientabili vicino al mandrino
- regolazione angolare mandrino libera
- nel mandrino DIN2079 si possono utilizzare coni DIN2080-40, DIN69871-A40, MAS403-BT40

Standard equipment:

- spindle front pressurization
- nr 4 adjustable nozzle near the spindle
- free angle spindle adjustment
- on the spindle DIN2079 you can use shank DIN2080-40, DIN69871-A40, MAS403-BT40

esempio di collegamento - connection example



FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

TAV50.T



caratteristiche/features



peso/weight



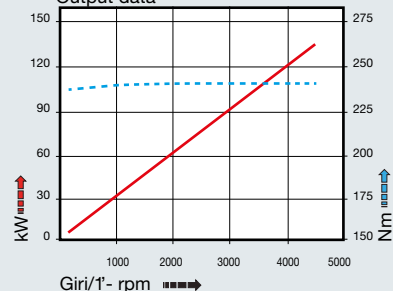
145 kg

rotazione/rotation



prestazioni/performance

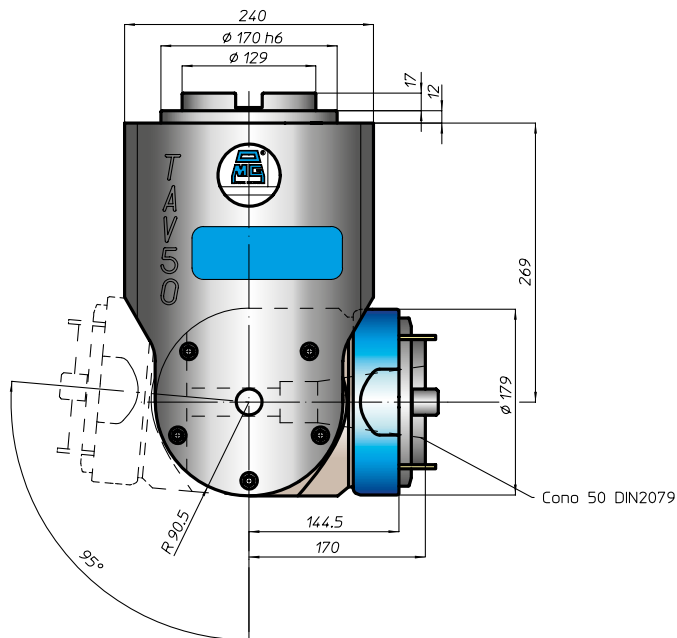
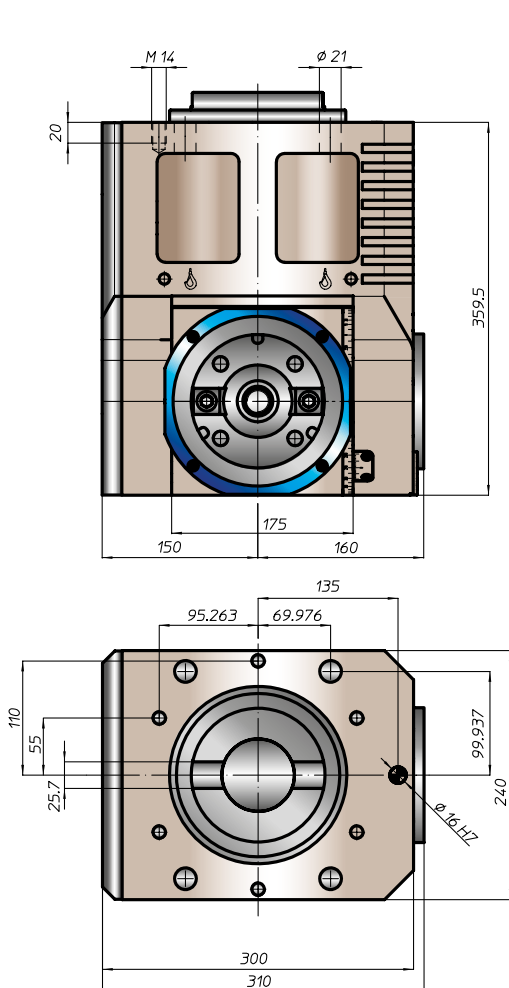
Output data



tipi mandrino disponibili / available spindle types

4 DIN69893-HSK
A100

5 COROMANT CAPTO®
C8



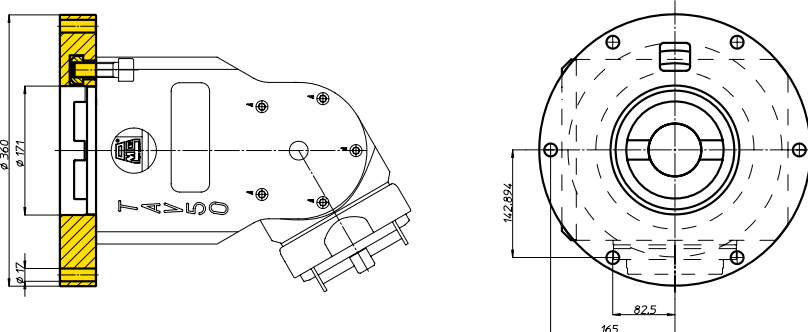
Equipaggiamento standard:

- pressurizzazione mandrino
- n. 4 ugelli orientabili vicino al mandrino
- regolazione angolare mandrino libera o posizionabile ogni 15°
- nel mandrino DIN2079 si possono utilizzare coni DIN69871-A50, MAS403-BT50

Standard equipment:

- spindle front pressurization
- nr 4 adjustable nozzle near the spindle
- free angle spindle adjustment or by pin each 15°
- on the spindle DIN2079 you can use shank DIN69871-A50, MAS403-BT50

esempio di collegamento - connection example



TAV Gallery



FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement



TAF Gallery



TAF10.P



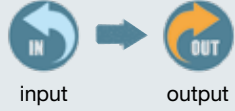
caratteristiche/features



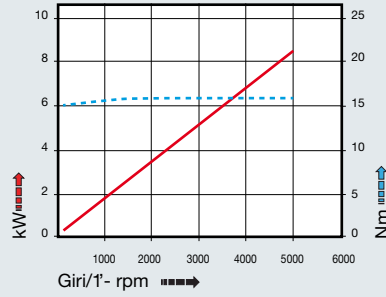
peso/weight



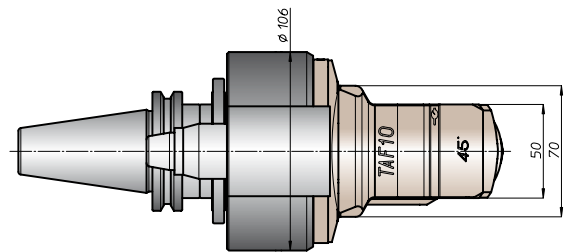
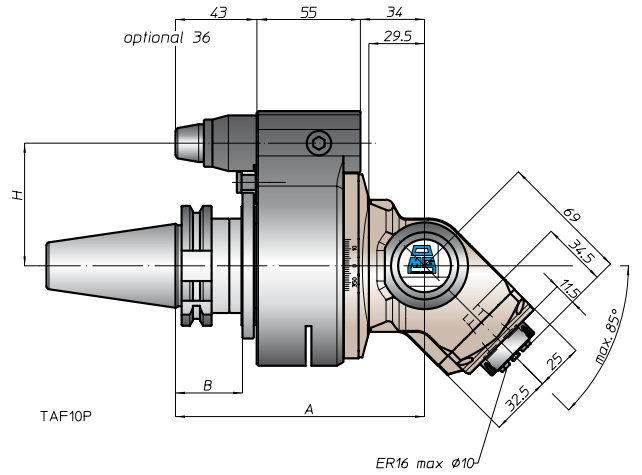
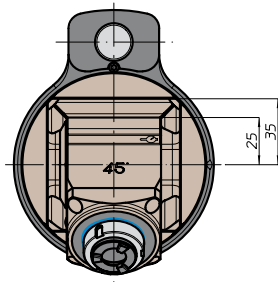
rotazione/rotation



prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
* DING9871	30	132	35	65	-
	40			80	110
	45			80	110
	50			80	110
* ANSIB5.50 CAT	40	132	35	65	-
	50			80	110
* BT	40	140	45	80	110
	50			80	110
DING9893 HSK	63	141	44	65	-
	80			80	110
	100			80	110
ISO26623 CAPTO	C5	136	39	65	-
	C6			80	110
	C8			80	110
KM	63	132	35	65	-
	80			80	110
	100			80	110
DIN2080	-	132	35	-	-
	-			-	-
	-			-	-
ANSIB5.18 NMTB	-	132	35	-	-
	-			-	-



* Option: Dual Contact

FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement



testa ad angolo - angle head

TAF13.P





caratteristiche/features




 ø 13 M10 900 N


 1-1 4000

peso/weight

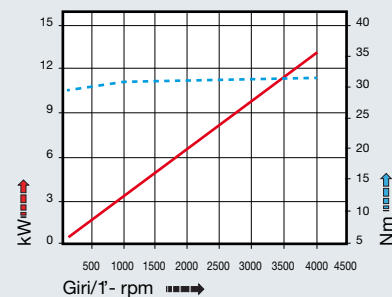


 6,5 kg 8,5 kg

rotazione/rotation



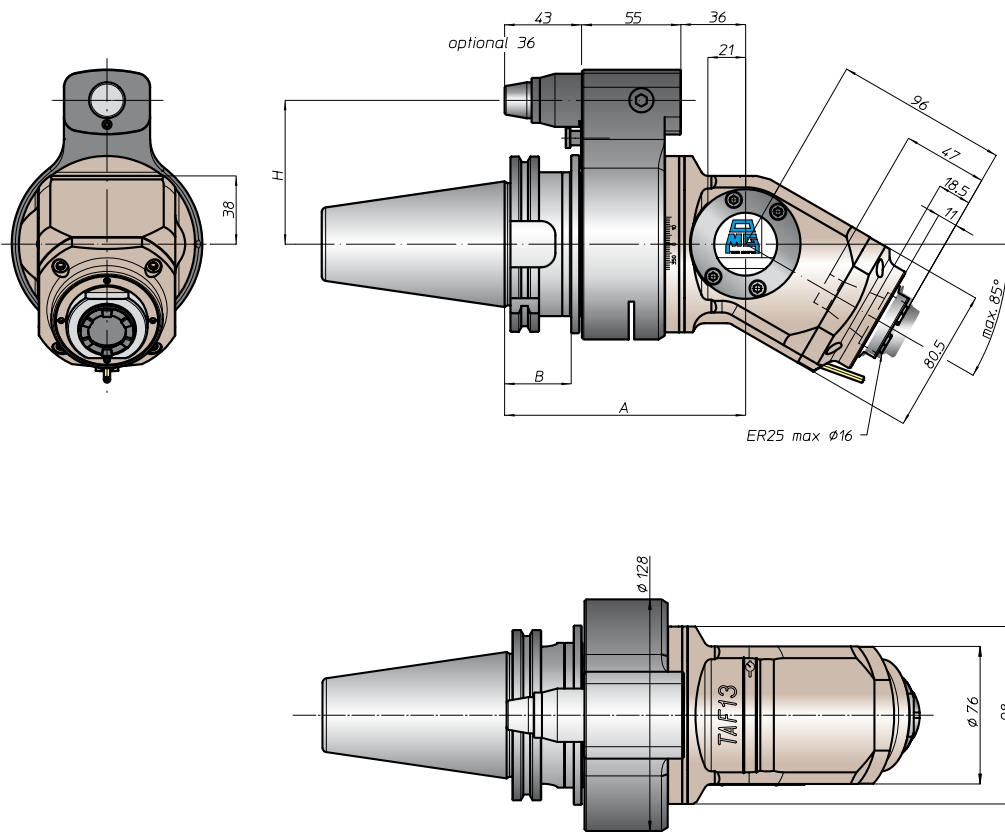
 input output

prestazioni/performance



tipi mandrino disponibili / available spindle types

4 DIN69893-HSK
HSK32



CONO SHANK	size	H			
		A	B	standard	optional
* DIN69871	-				
	40			65	-
	45			80	110
* CAT	40	134	35	65	-
	50			80	110
* BT	40			65	
	50	142	45	80	110
HSK	63		44	65	
	80	143		80	110
	100		46	80	110
CAPTO	C5			65	
	C6	138	39		
	C8			80	110
KM	63			65	
	80	134		80	110
	100			80	110
DIN2080	-			-	-
	-			-	-
	-			-	-
NMTB	-			-	-
	-			-	-

* Option: Dual Contact

FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement



TAF13.PD



caratteristiche/features

\varnothing 13 M10 900 N
 1-1 4000 70 bar

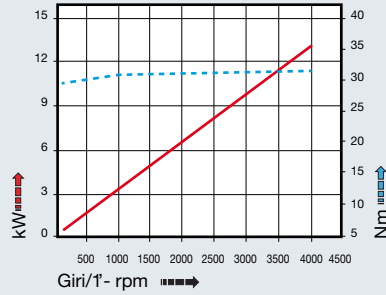
peso/weight

6,5 kg 8,5 kg

rotazione/rotation

input output

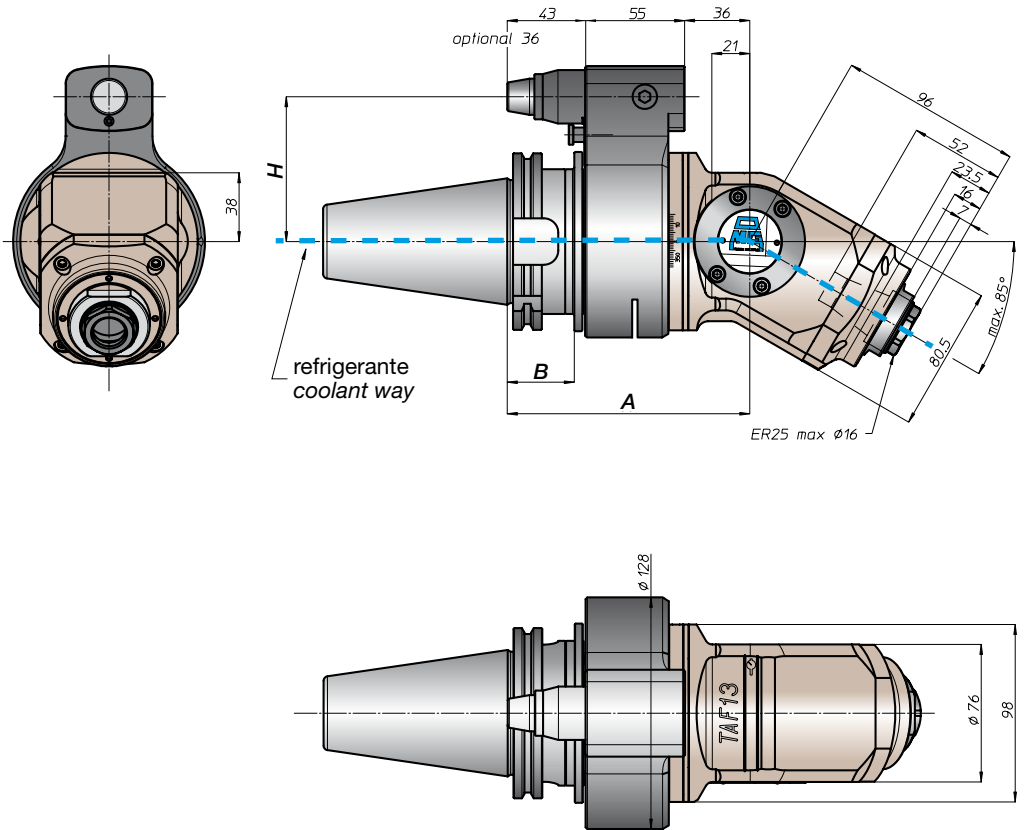
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871 *	-			65	-
	40	134	35	80	110
	45				
50					
ANSIB5.50 *	CAT			65	-
				80	110
* BT	40			65	-
	50	142	45	80	110
DIN69893	HSK	63	44	65	-
		80	143	46	80
		100		80	110
ISO26623	CAPTO	C5		65	-
		C6	138	39	
		C8		80	110
KM	63			65	-
	80	134		80	110
	100			80	110
DIN2080	-			-	-
	-			-	-
	-			-	-
ANSIB5.18	NMTB			-	-
				-	-

tipi mandrino disponibili / available spindle types

4 DIN69893-HSK
HSK32



* Option: Dual Contact



FH
 BAH
 TA.CP
 TA
 MOX
 HT
 VH
 TSI/TSX
 T
 MT-TC-TC3
 Accessori
 Accessories
 Appendice tecnica
 Technical supplement

TAF20.P



caratteristiche/features



peso/weight



13,5 kg

rotazione/rotation

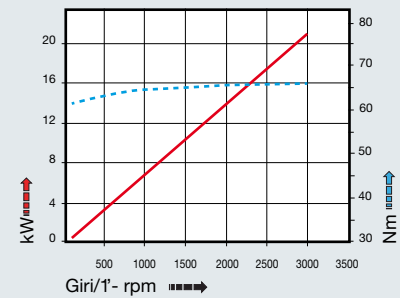


input



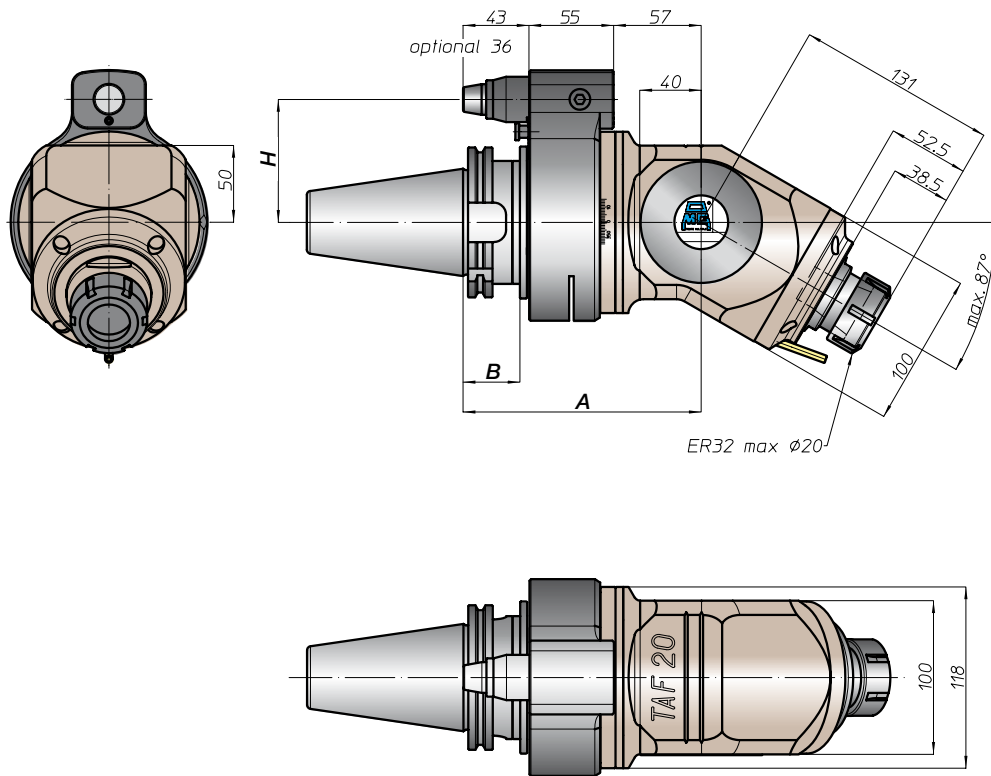
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER
ER40
- 2** Albero portafresa
Milling shaft
Ø32
- 3** Weldon
Whistle-Notch
Ø20
- 4** DIN69893-HSK
HSK50
- 6** ABS
Licenza KOMET®
ABS50



CONO SHANK	size	H			
		A	B	standard	optional
DIN69871 *	-	-	-	-	-
DIN69871 *	45	-	-	80	110
DIN69871 *	50	155	35	80	110
ANSIB5.50 *	-	-	-	-	-
ANSIB5.50 *	50	-	-	80	110
BT *	-	-	-	-	-
BT *	50	163	45	80	110
HSK	-	-	42	-	-
DIN69893	80	164	-	80	110
DIN69893	100	-	46	80	110
CAPTO	-	-	-	-	-
ISO26623	C6	159	-	80	110
ISO26623	C8	-	-	-	-
KM	-	-	-	-	-
KM	80	155	-	80	110
KM	100	-	-	-	-
DIN2080	-	-	-	-	-
DIN2080	-	-	-	-	-
DIN2080	-	-	-	-	-
NMTB	-	-	-	-	-
ANSIB5.18	-	-	-	-	-
ANSIB5.18	-	-	-	-	-

* Option: Dual Contact



TAF20.PD

caratteristiche/features



peso/weight



13,5 kg

rotazione/rotation

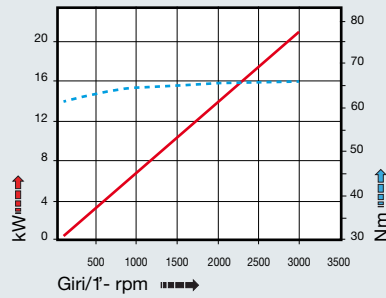


input



output

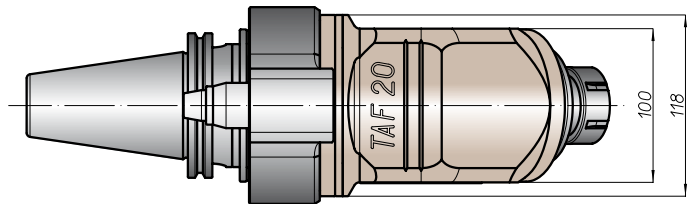
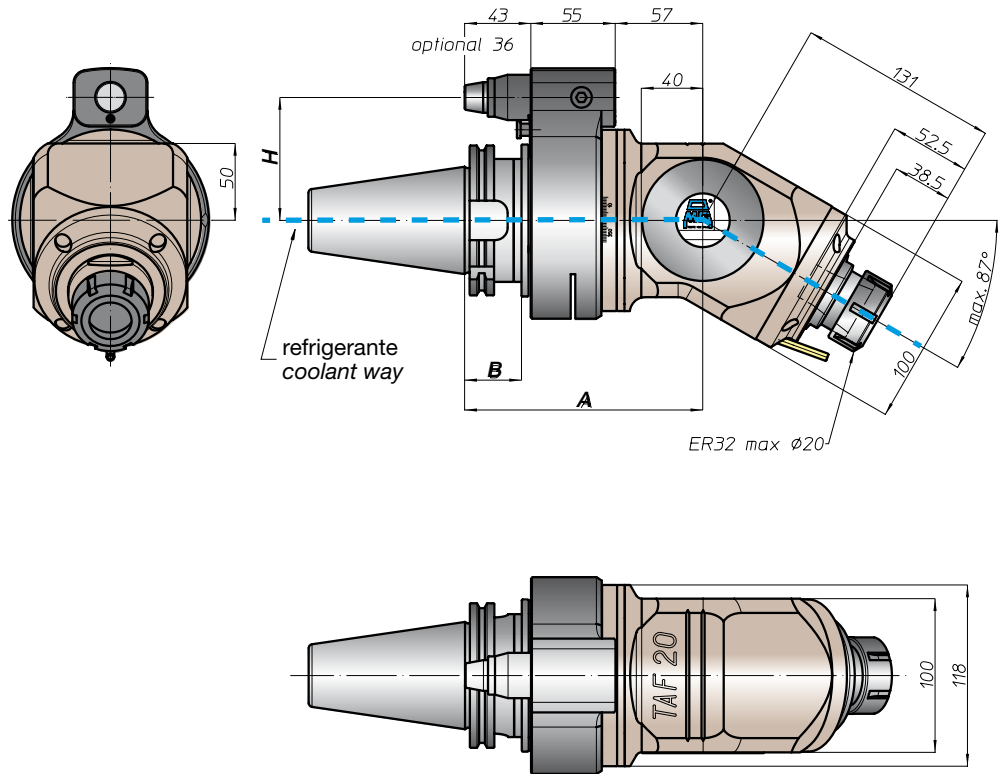
prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
 DIN69871 *	-	155	35	-	-
	45			80	110
	50			80	110
 ANSIB5.50 * CAT	-	155	35	-	-
	50			80	110
 * BT	-	163	45	80	110
	50			80	110
 HSK	-	164	42	-	-
	80		80	110	
	100		80	110	
 CAPTO	-	159	-	-	-
	C6		80	110	
 KM	-	155	-	-	-
	80		80	110	
 DIN2080	-	155	-	-	-
	80		80	110	
 NMTB	-	155	-	-	-
	80		80	110	

tipi mandrino disponibili / available spindle types

- 1
 DIN6499-ER
ER40
- 3
 Weldon Whistle-Notch
Ø20
- 4
 DIN69893-HSK
HSK50
- 6
 ABS Licenza KOMET®
ABS50



* Option: Dual Contact



FH
 BAH
 TA.CP
 TA
 MOX
 HT
 VH
 TSI/TSX
 T
 MT-TC-TC3
 Accessori
 Accessories
 Appendice tecnica
 Technical supplement

TA07P.T



caratteristiche/features



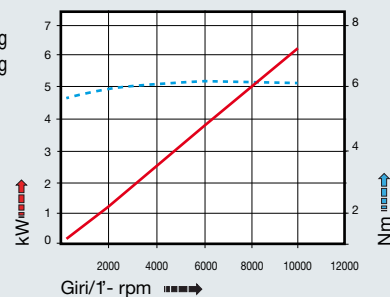
peso/weight



rotazione/rotation

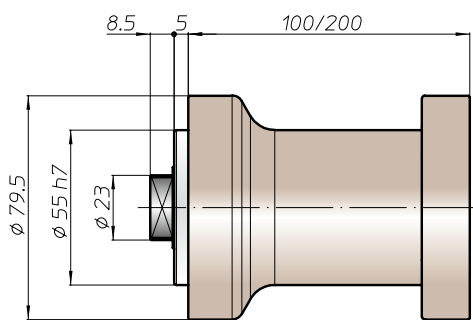
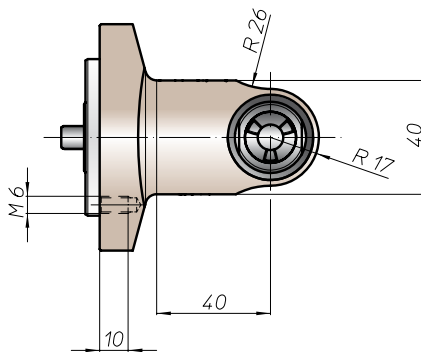


prestazioni/performance

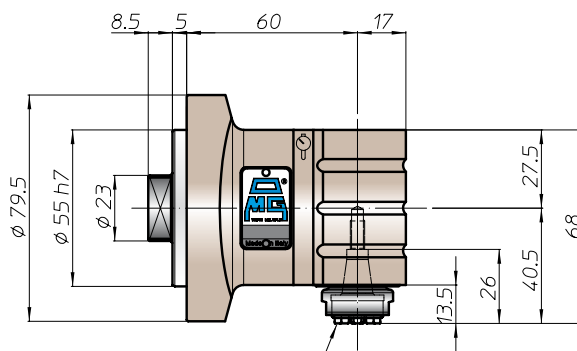


tipi mandrino disponibili / available spindle types

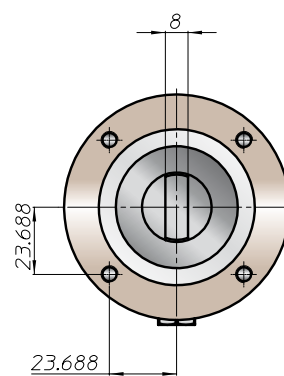
3 Weldon Whistle-Notch
Ø8-Ø10



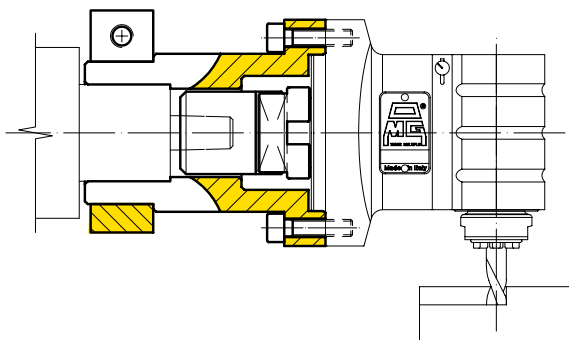
Prolunga
Extension



ER11 max ø7



esempio di collegamento - connection example



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement



TA10P.T

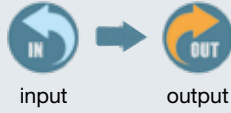
caratteristiche/features



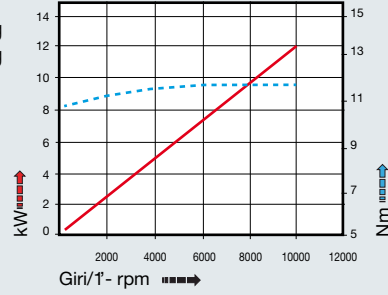
peso/weight



rotazione/rotation

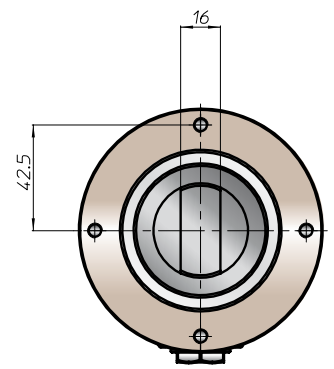
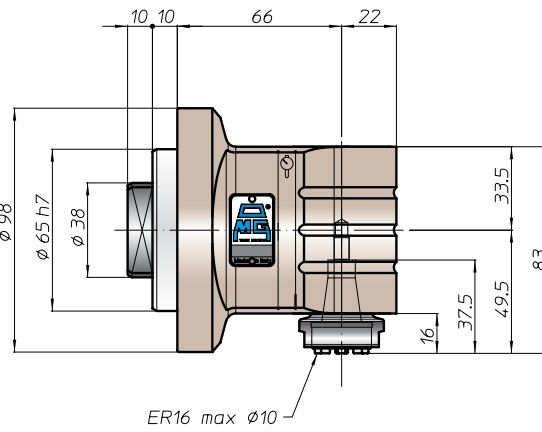
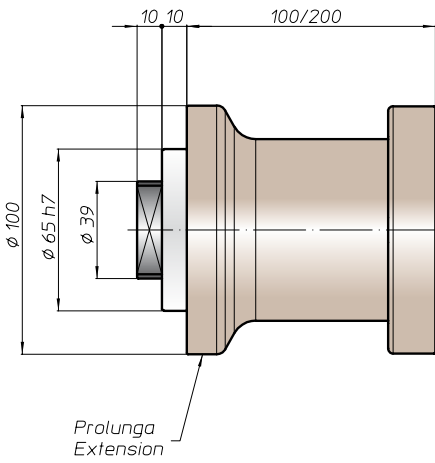
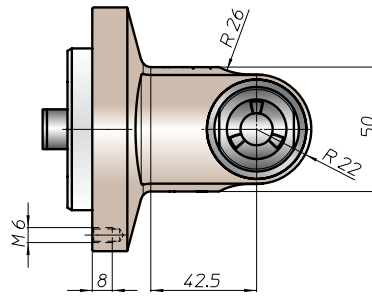


prestazioni/performance

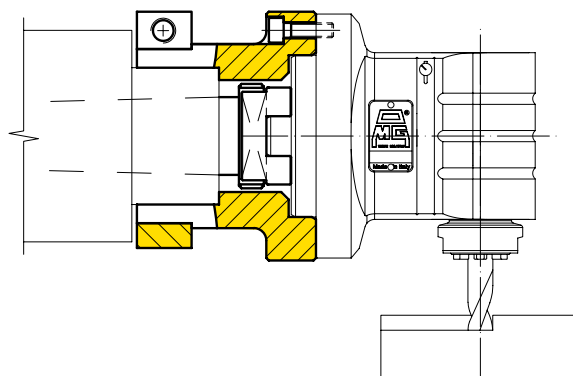


tipi mandrino disponibili / available spindle types

- | | | |
|---------------------|---|----------------------------------|
| 1 DIN6499-ER | 2 Albero portafrese
Milling shaft | 3 Weldon
Whistle-Notch |
| ER20 | Ø16 | Ø10 |



esempio di collegamento - connection example



testa ad angolo - angle head

TA13P.T



caratteristiche/features



peso/weight



3,5 kg

rotazione/rotation

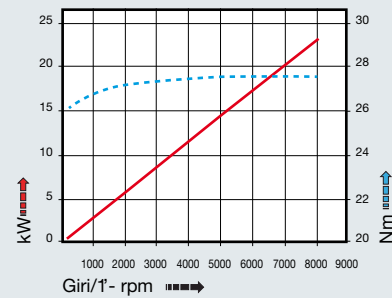


input



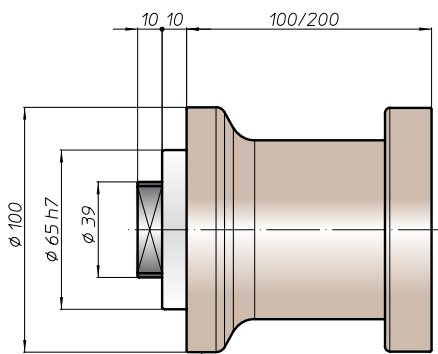
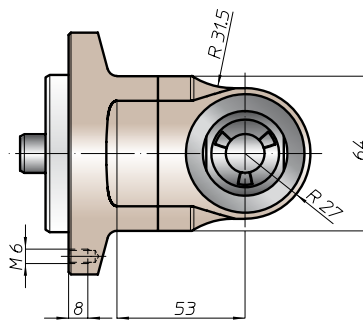
output

prestazioni/performance

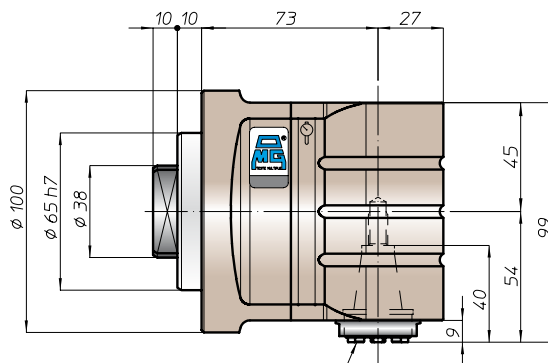


tipi mandrino disponibili / available spindle types

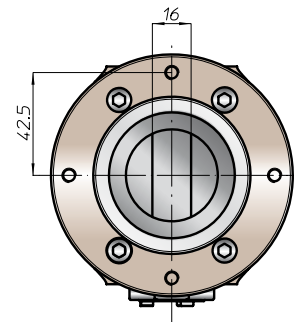
- 1** DIN6499-ER
ER25
- 2** Albero portafresa
Milling shaft
Ø16-Ø22
- 3** Weldon
Whistle-Notch
Ø16



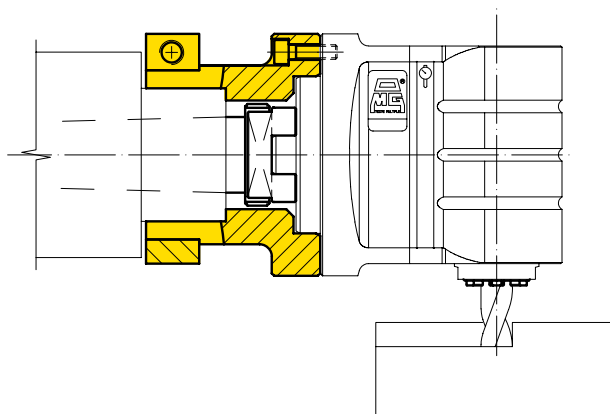
Prolunga
Extension



ER20 max ø13



esempio di collegamento - connection example



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement



TA16P.T

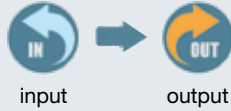
caratteristiche/features



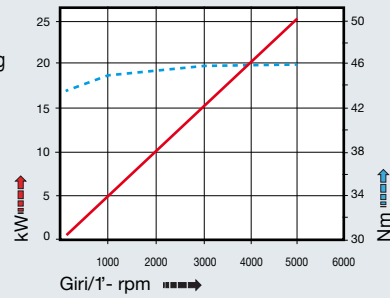
peso/weight



rotazione/rotation

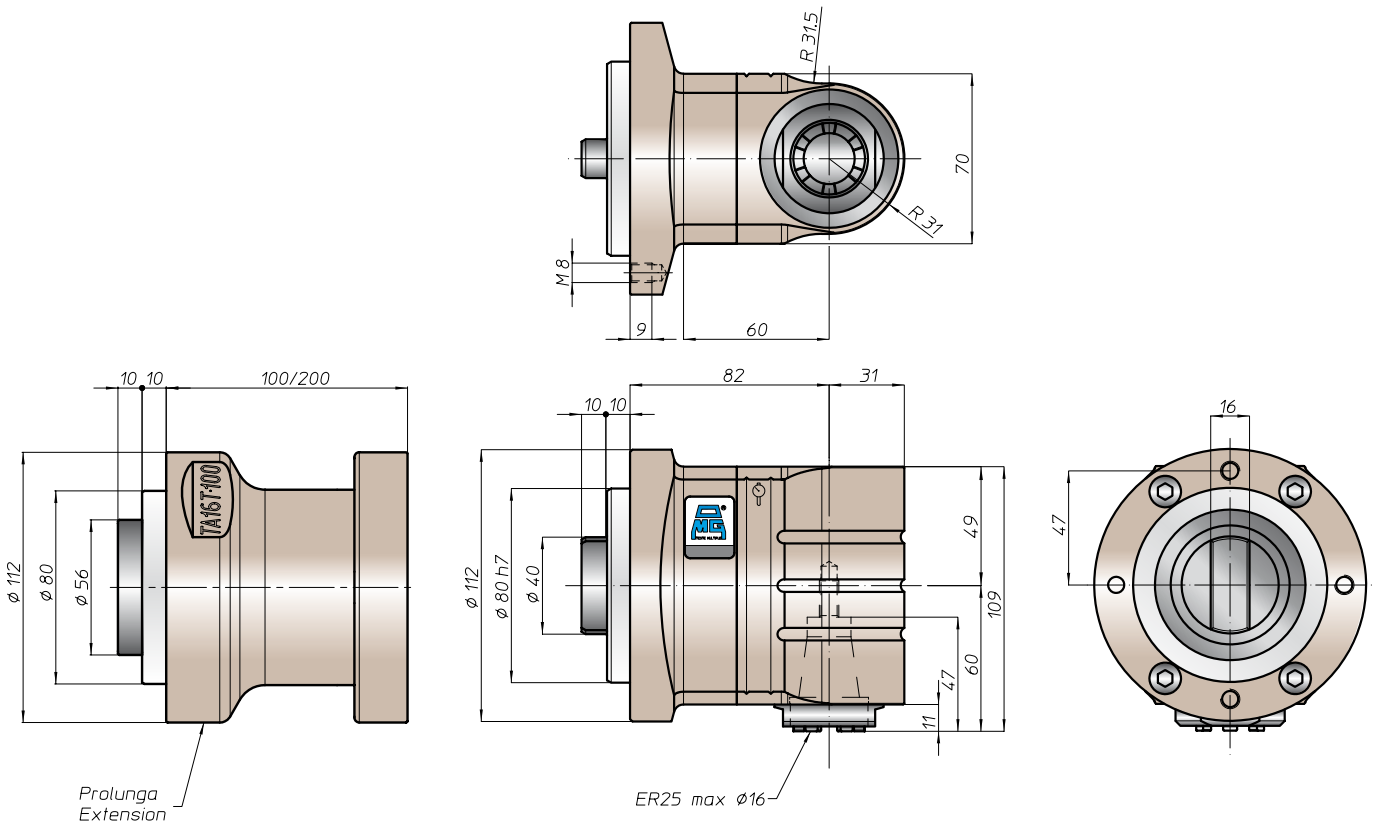


prestazioni/performance

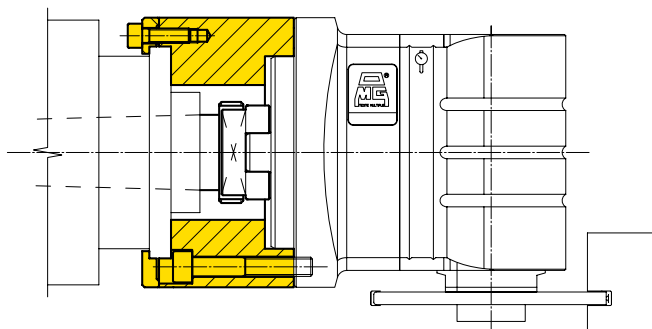


tipi mandrino disponibili / available spindle types

1 DIN6499-ER	2 Albero portafresse Milling shaft	3 Weldon Whistle-Notch	4 DIN69893-HSK	5 COROMANT CAPTO®	6 ABS Licenza KOMET®
ER32	Ø16-Ø22-Ø27-Ø32	Ø20	HSK32	C3	ABS32



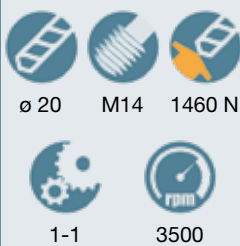
esempio di collegamento - connection example



TA20.PT



caratteristiche/features



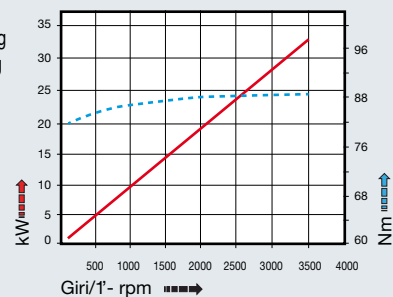
peso/weight



rotazione/rotation

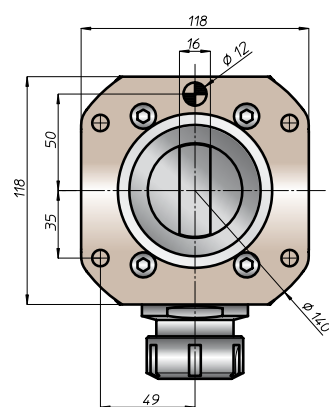
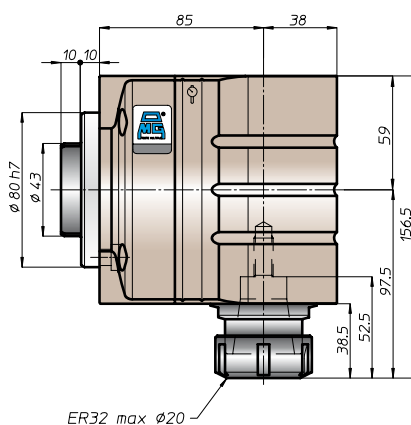
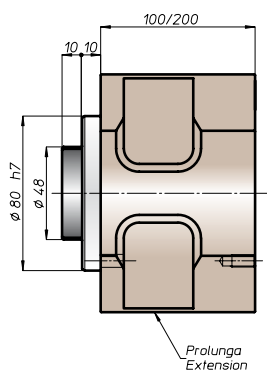
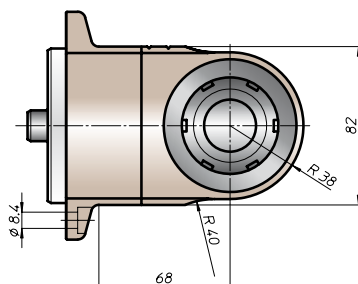


prestazioni/performance

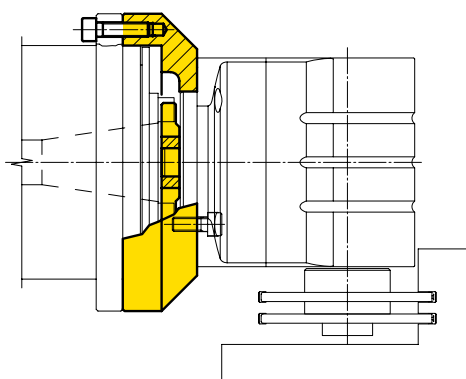


tipi mandrino disponibili / available spindle types

- | | | | | | |
|------------------------------------|---|--|---------------------------------------|--|--|
| 1 DIN6499-ER
ER40 | 2 Albero portafrese
Milling shaft
Ø22-Ø27-Ø32 | 3 Weldon
Whistle-Notch
Ø20-Ø25 | 4 DIN69893-HSK
HSK40 | 5 COROMANT
CAPTO®
C4 | 6 ABS
Licenza KOMET®
ABS40 |
|------------------------------------|---|--|---------------------------------------|--|--|



esempio di collegamento - connection example



TA20.30.T

caratteristiche/features



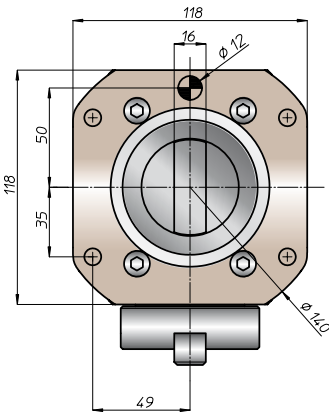
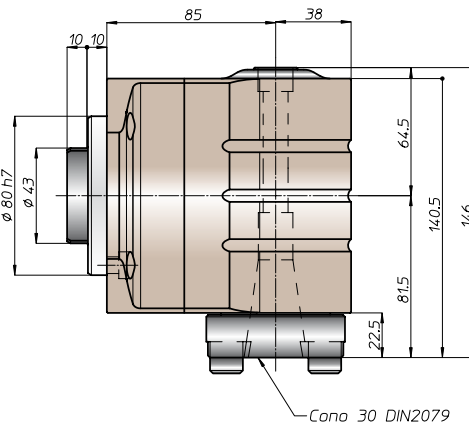
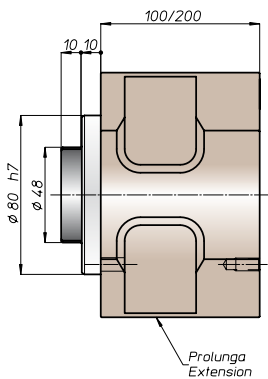
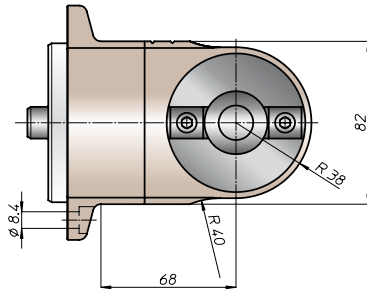
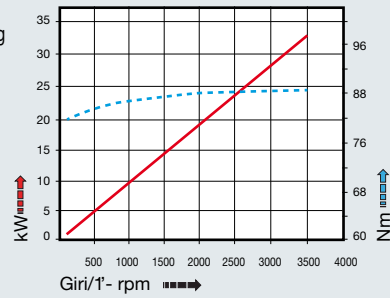
peso/weight



rotazione/rotation



prestazioni/performance



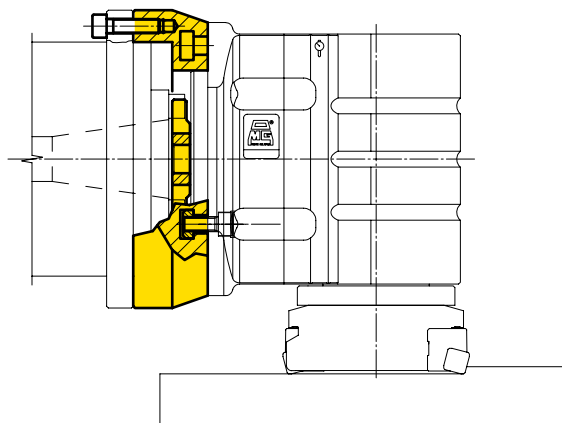
Nota:

- nel mandrino DIN2079 si possono utilizzare coni DIN2080-30, DIN69871-A30, MAS403-BT30

Note:

- on the spindle DIN2079 you can use shank DIN2080-30, DIN69871-A30, MAS403-BT30

esempio di collegamento - connection example



testa ad angolo - angle head

TA26.PT



caratteristiche/features



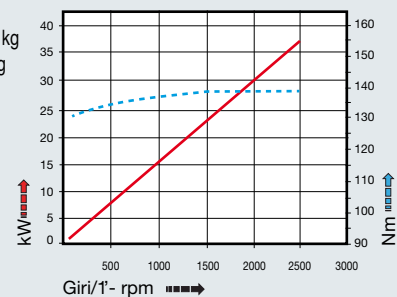
peso/weight



rotazione/rotation

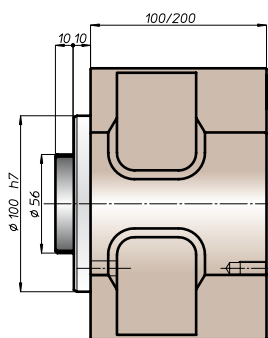
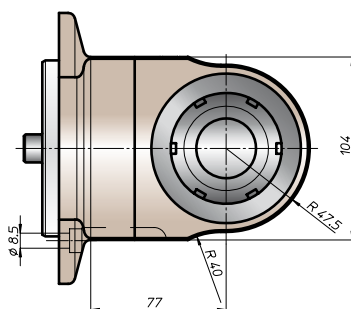


prestazioni/performance

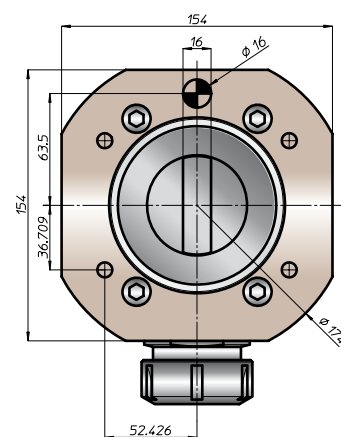
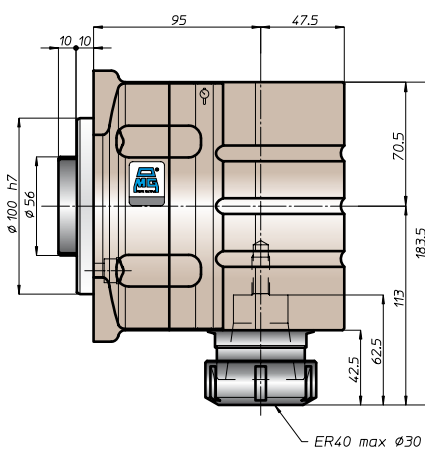


tipi mandrino disponibili / available spindle types

- | | | | | |
|--|---|--------------------------------|-----------------------------------|---|
| 2 Albero portafrese
Milling shaft
Ø16-Ø27-Ø32 | 3 Weldon
Whistle-Notch
Ø32 | 4 DIN69893-HSK
HSK63 | 5 COROMANT
CAPTO®
C4 | 6 ABS
Licenza KOMET®
ABS50 |
|--|---|--------------------------------|-----------------------------------|---|



Prolunga
Extension



esempio di collegamento - connection example



FH
BAH
TA.CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement



TA26.40.T

caratteristiche/features



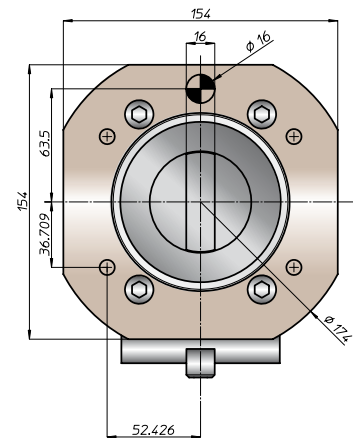
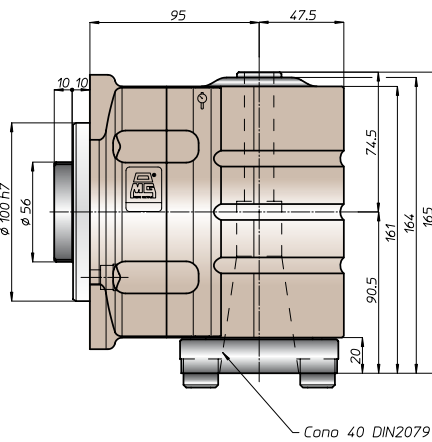
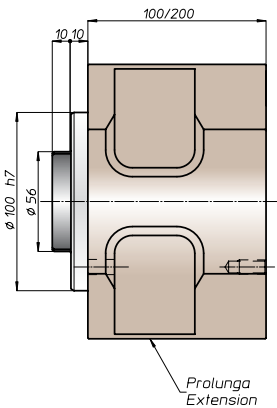
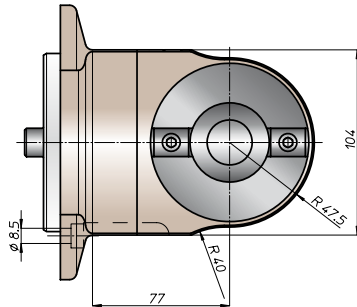
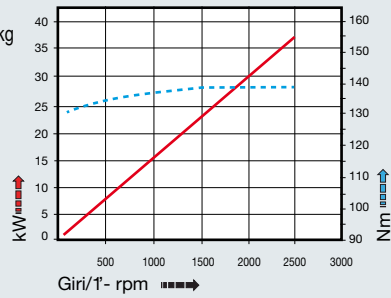
peso/weight

head 13,5 kg
 extension L 100=12,5 kg
 L 200=24 kg

rotazione/rotation



prestazioni/performances



Nota:

- nel mandrino DIN2079 si possono utilizzare coni DIN2080-40, DIN69871-A40, MAS403-BT40

Note:

- on the spindle DIN2079 you can use shank DIN2080-40, DIN69871-A40, MAS403-BT40

esempio di collegamento - connection example



FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement



TA40.T



caratteristiche/features



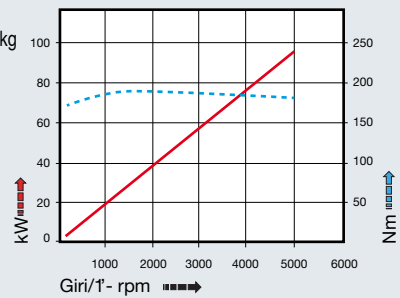
peso/weight



rotazione/rotation

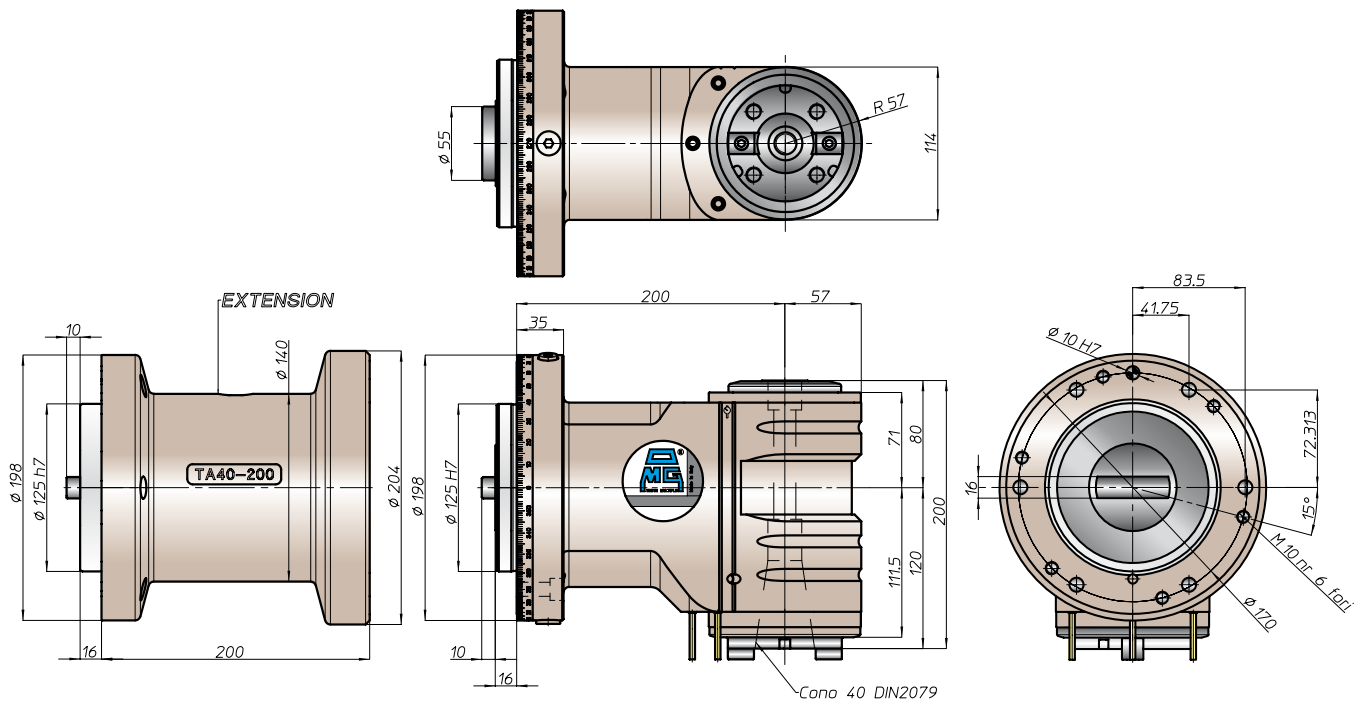


prestazioni/performance



tipi mandrino disponibili / available spindle types

4 DIN69893-HSK	5 COROMANT CAPTO®
HSK63	C5



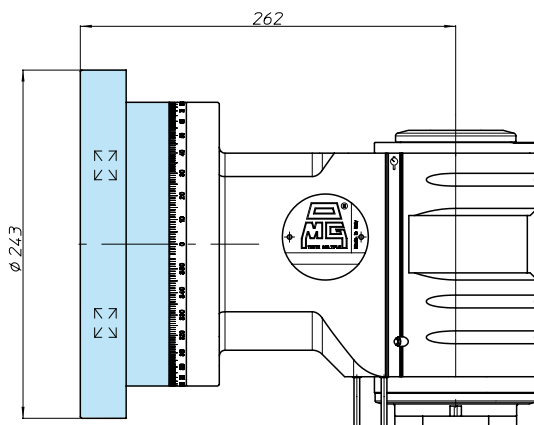
Equipaggiamento standard:

- pressurizzazione mandrino
- n. 3 ugelli orientabili vicino al mandrino
- nel mandrino DIN2079 si possono utilizzare coni DIN2080-40, DIN69871-A40, MAS403-BT40

Standard equipment:

- spindle front pressurization
- nr 3 adjustable nozzle near the spindle
- on the spindle DIN2079 you can use shank DIN2080-40, DIN69871-A40, MAS403-BT40

utilizzo su asse C-310 manuale - example with manual C axis C-310



- Nuovo Asse C a rotazione manuale
- Compatto, semplice e preciso
- Bloccaggio rotazione su cava a T
- Rotazione libera su cuscinetto a rulli incrociati
- Facilità di posizionamento

- New C Axis with manual rotation
- Space-saving, user friendly and precise
- Rotation lock on T slot
- Free rotation on crossed roller bearings
- Easy set up



TA40.TD

caratteristiche/features



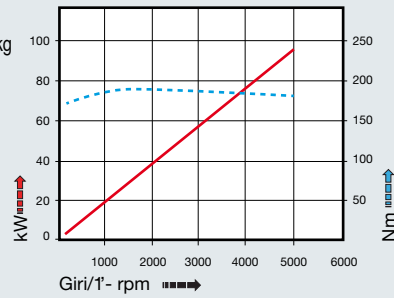
peso/weight



rotazione/rotation

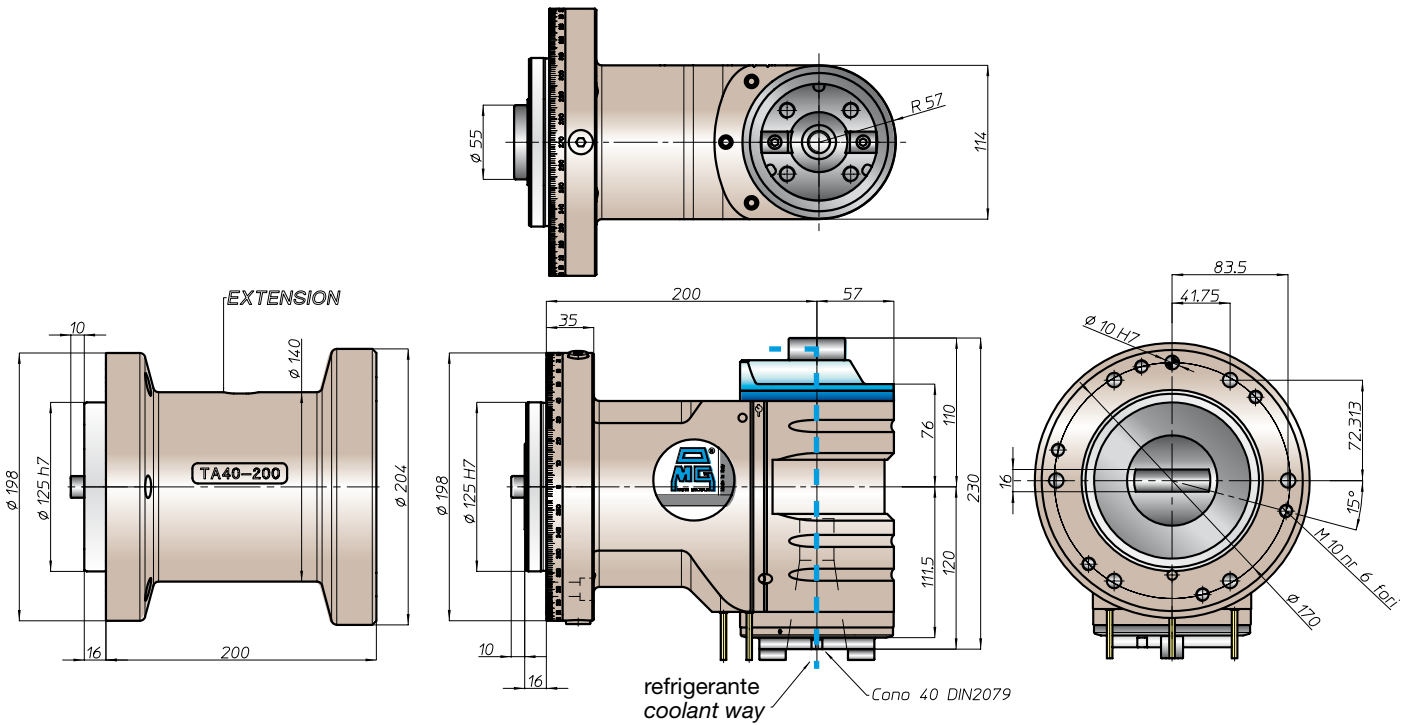


prestazioni/performance



tipi mandrino disponibili / available spindle types

- 4** DIN69893-HSK **HSK63**
- 5** COROMANT CAPTO® **C5**



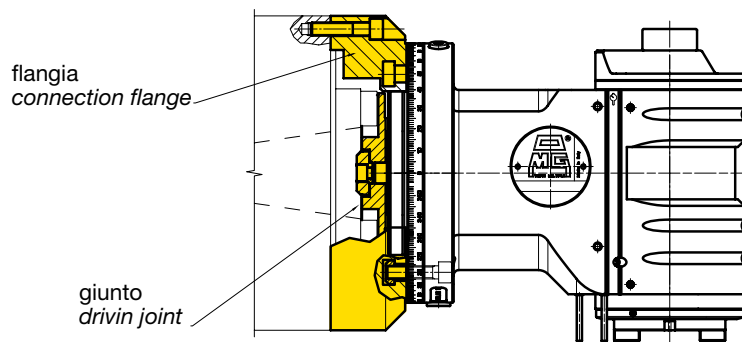
Equipaggiamento standard:

- pressurizzazione mandrino
- n. 3 ugelli orientabili vicino al mandrino
- nel mandrino DIN2079 si possono utilizzare coni DIN2080-40, DIN69871-A40, MAS403-BT40

Standard equipment:

- spindle front pressurization
- nr 3 adjustable nozzle near the spindle
- on the spindle DIN2079 you can use shank DIN2080-40, DIN69871-A40, MAS403-BT40

esempio di collegamento - connection example



FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement



testa ad angolo - angle head

TA50.T



caratteristiche/features



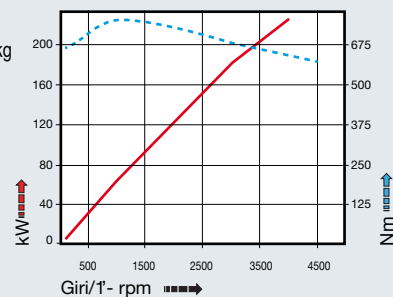
peso/weight



rotazione/rotation

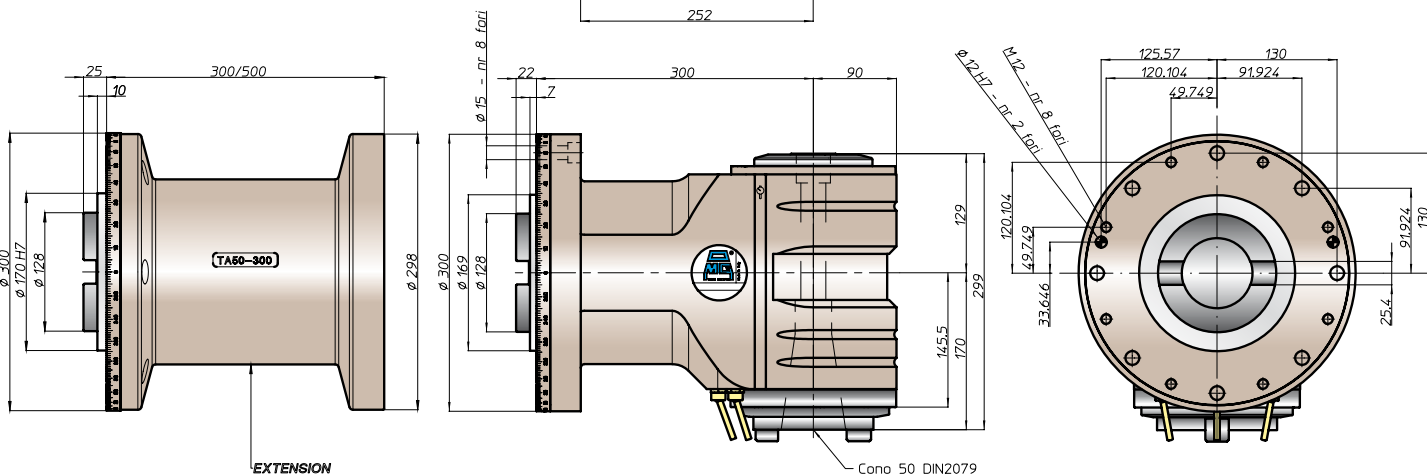
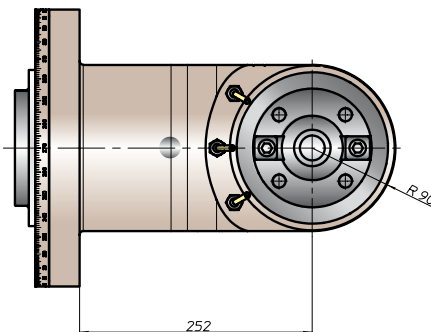


prestazioni/performance



tipi mandrino disponibili / available spindle types

- 4 DIN69893-HSK HSK100
- 5 COROMANT CAPTO® C8



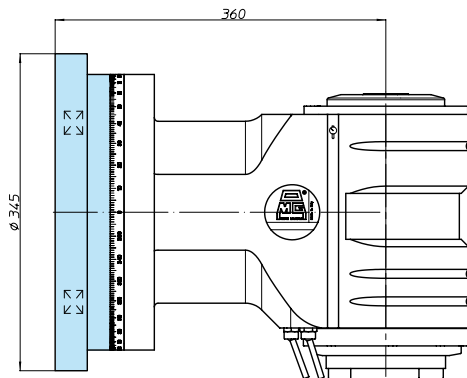
Equipaggiamento standard:

- pressurizzazione mandrino
- n. 3 ugelli orientabili vicino al mandrino
- nel mandrino DIN2079 si possono utilizzare coni DIN2080-50, DIN69871-A50, MAS403-BT50

Standard equipment:

- spindle front pressurization
- nr 3 adjustable nozzle near the spindle
- on the spindle DIN2079 you can use shank DIN2080-50, DIN69871-A50, MAS403-BT50

utilizzo su asse C-310 manuale - example with manual C axis C-310



- Nuovo Asse C a rotazione manuale
- Compatto, semplice e preciso
- Bloccaggio rotazione su cava a T
- Rotazione libera su cuscinetto a rulli incrociati
- Facilità di posizionamento
- New C Axis with manual rotation
- Space-saving, user friendly and precise
- Rotation lock on T slot
- Free rotation on crossed roller bearings
- Easy set up



TA50.TD



caratteristiche/features



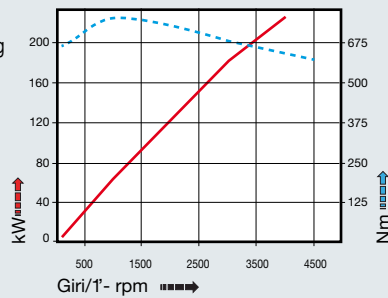
peso/weight



rotazione/rotation

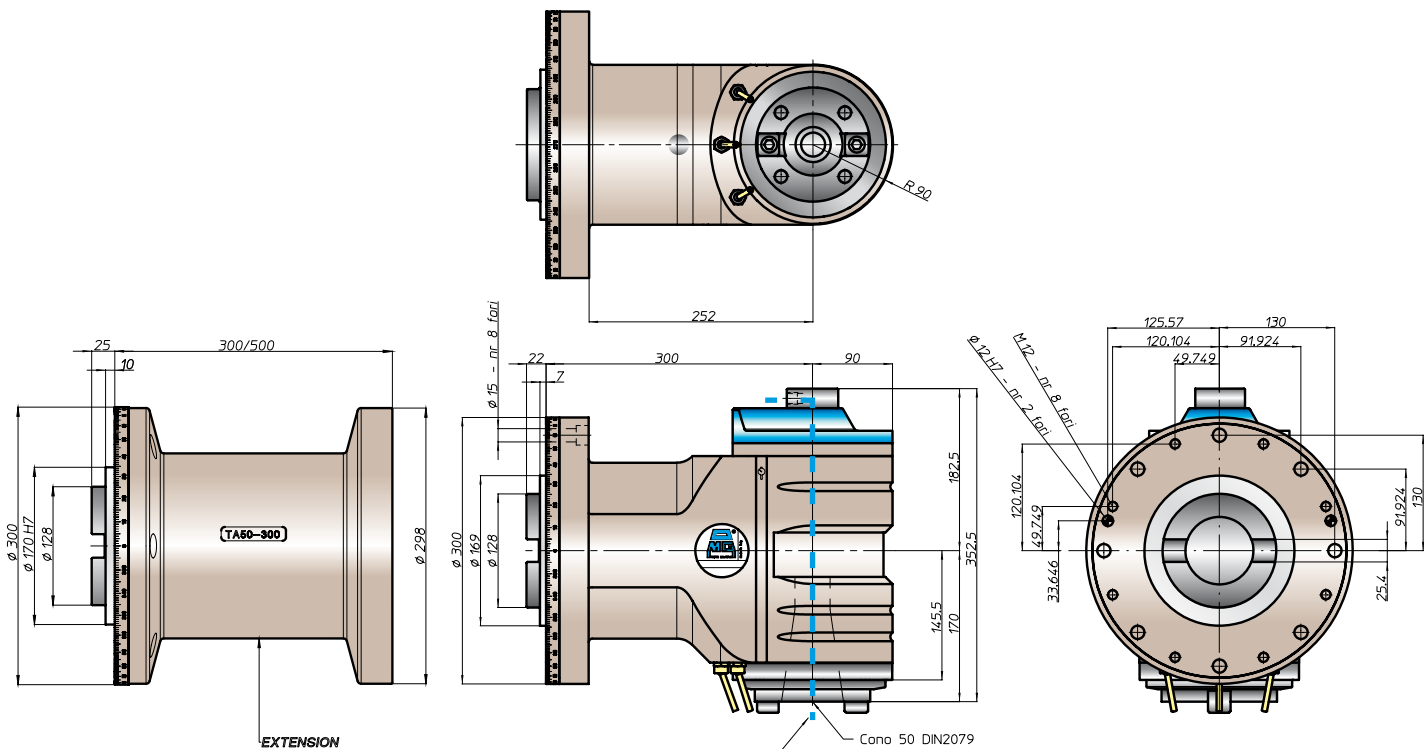


prestazioni/performance



tipi mandrino disponibili / available spindle types

- 4** DIN69893-HSK **HSK100**
- 5** COROMANT CAPTO® **C8**



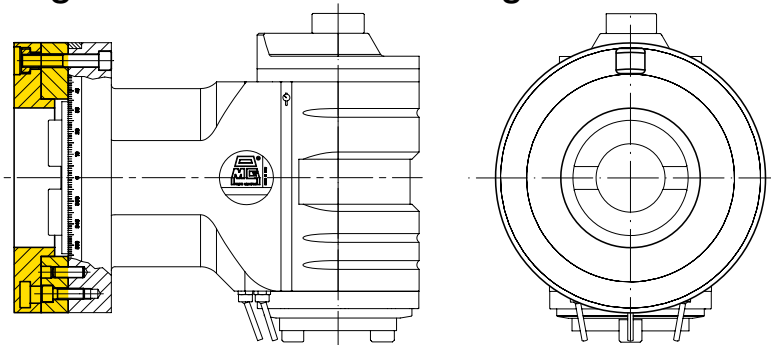
Equipaggiamento standard:

- pressurizzazione mandrino
- n. 3 ugelli orientabili vicino al mandrino
- nel mandrino DIN2079 si possono utilizzare coni DIN69871-A50, MAS403-BT50

Standard equipment:

- spindle front pressurization
- nr 3 adjustable nozzle near the spindle
- on the spindle DIN2079 you can use shank DIN69871-A50, MAS403-BT50

esempio di collegamento rotante - rotating connection example



FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

TA..T Extended Gallery



FH

BAH

TA.CP

TA

MOx

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement



TA..T Extended Gallery



FH

BAH

TA.CP

TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement



testa ad angolo - angle head

TA13.PVDI



caratteristiche/features



peso/weight



4,5 kg

rotazione/rotation

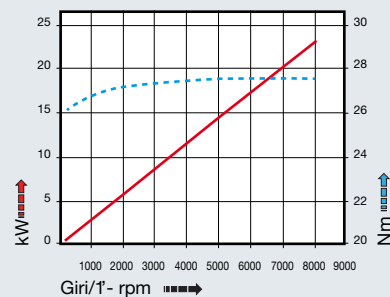


input



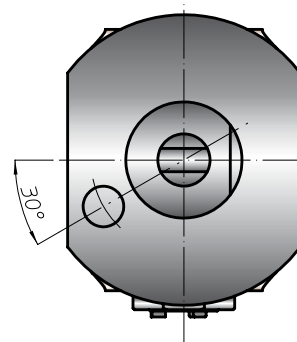
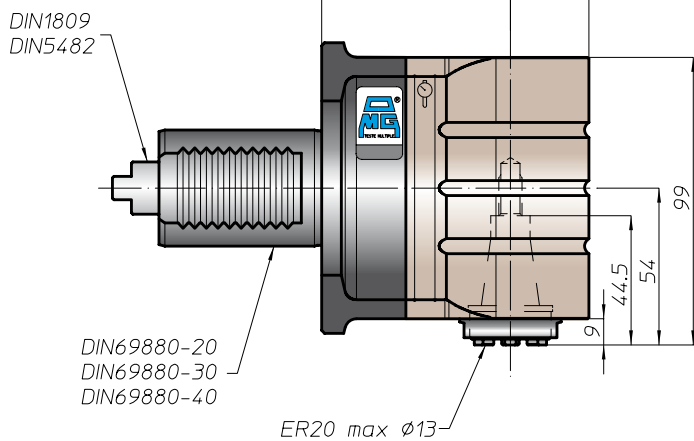
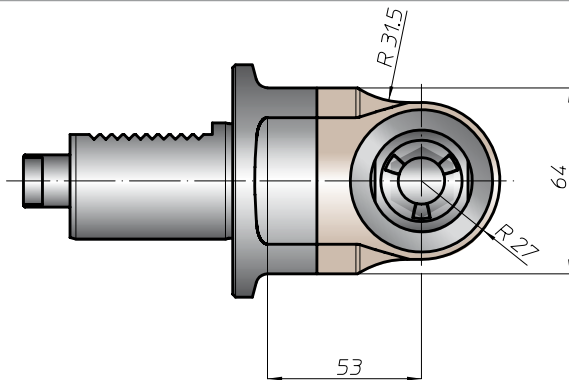
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- | | | |
|------------------------------------|---|--|
| 1 DIN6499-ER
ER25 | 2 Albero portafresa
Milling shaft
Ø16-Ø22 | 3 Weldon
Whistle-Notch
Ø16 |
|------------------------------------|---|--|



soluzioni speciali - special solutions



FH
BAH
TA-CP
TA
MOX
HT
VH
TSI/TSX
T
MT-TC-TC3
Accessori
Accessories
Appendice tecnica
Technical supplement



TA16.PVDI

caratteristiche/features



peso/weight



6,5 kg

rotazione/rotation

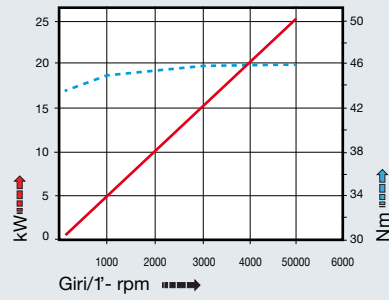


input



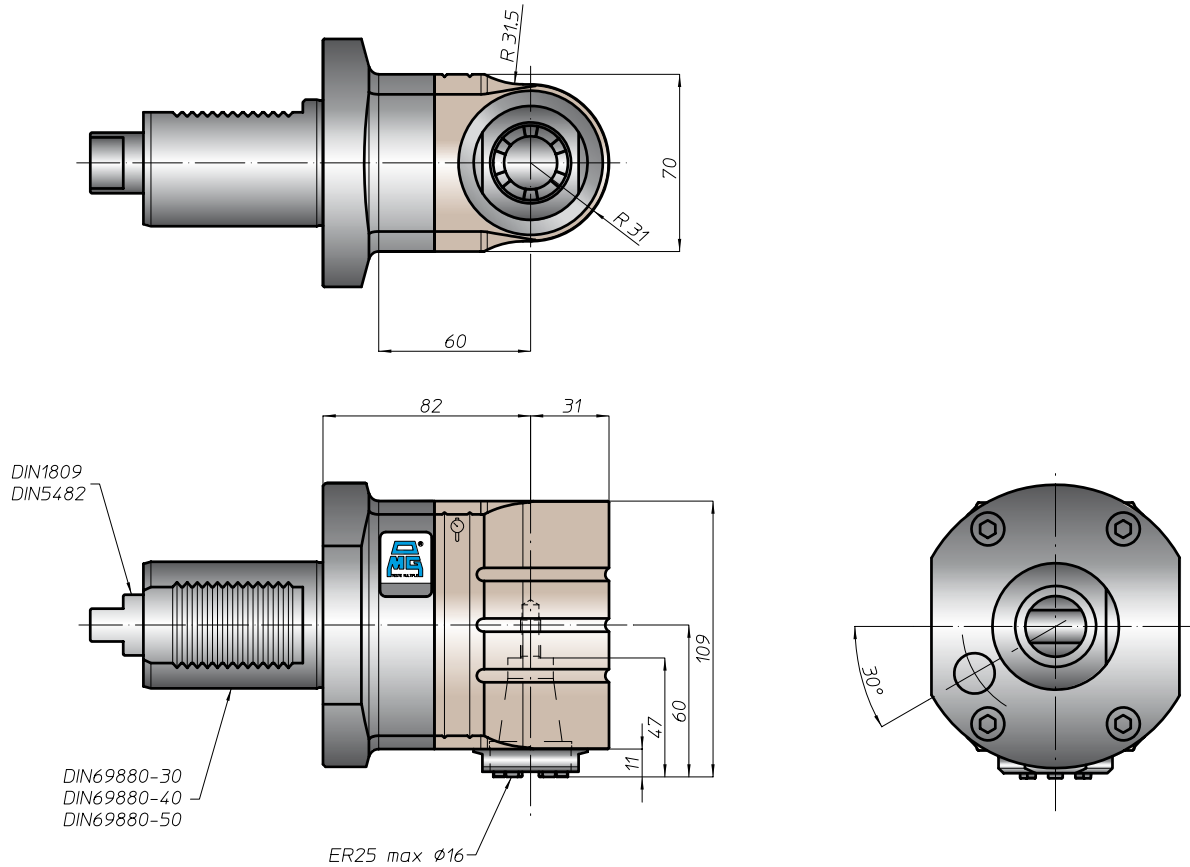
output

prestazioni/performance

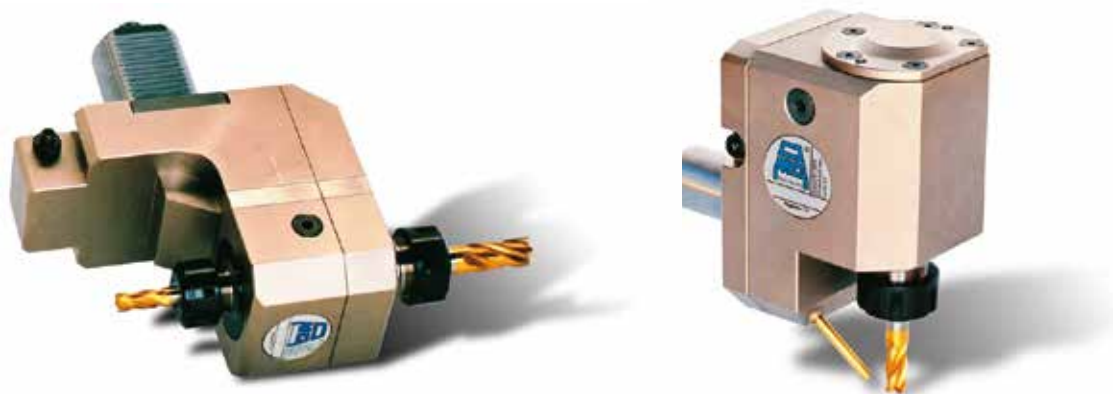


tipi mandrino disponibili / available spindle types

- | | | | | | |
|------------------------------------|---|--|---------------------------------------|--|--|
| 1 DIN6499-ER
ER32 | 2 Albero portafrese
Milling shaft
Ø16-Ø27-Ø32 | 3 Weldon
Whistle-Notch
Ø20 | 4 DIN69893-HSK
HSK32 | 5 COROMANT
CAPTO®
C3 | 6 ABS
Licenza KOMET®
ABS32 |
|------------------------------------|---|--|---------------------------------------|--|--|



soluzioni speciali - special solutions



FH
 BAH
 TA.CP
 TA
 MOX
 HT
 VH
 TSI/TSX
 T
 MT-TC-TC3
 Accessori
 Accessories
 Appendice tecnica
 Technical supplement

testa ad angolo - angle head

TAV10.PVDI



caratteristiche/features



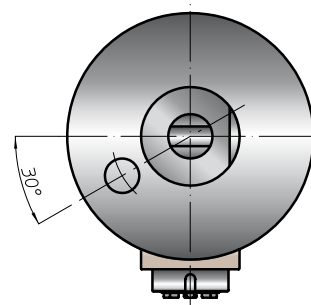
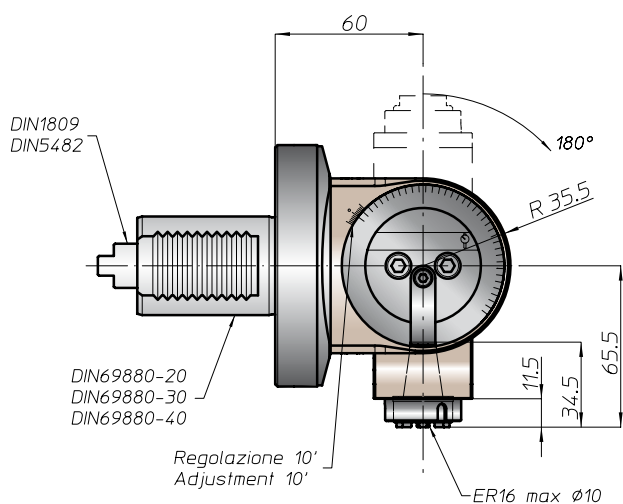
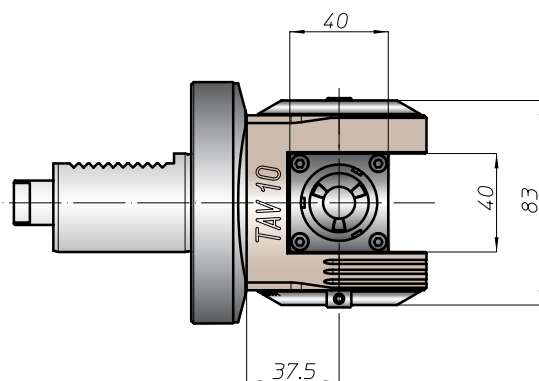
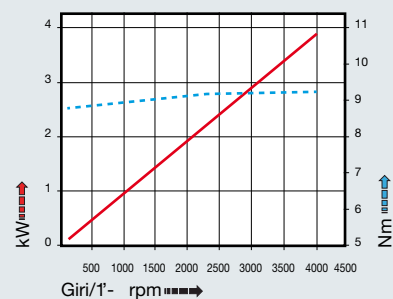
peso/weight



rotazione/rotation



prestazioni/performance



soluzioni speciali - special solutions



FH
BAH
TA.CP
TA

MOX

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement



TAV13.PVDI

caratteristiche/features



peso/weight



5,5 kg

rotazione/rotation

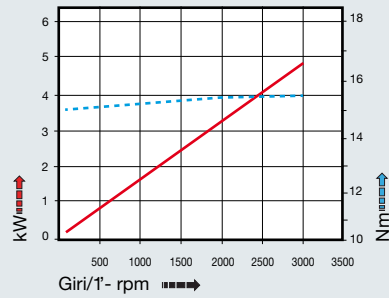


input



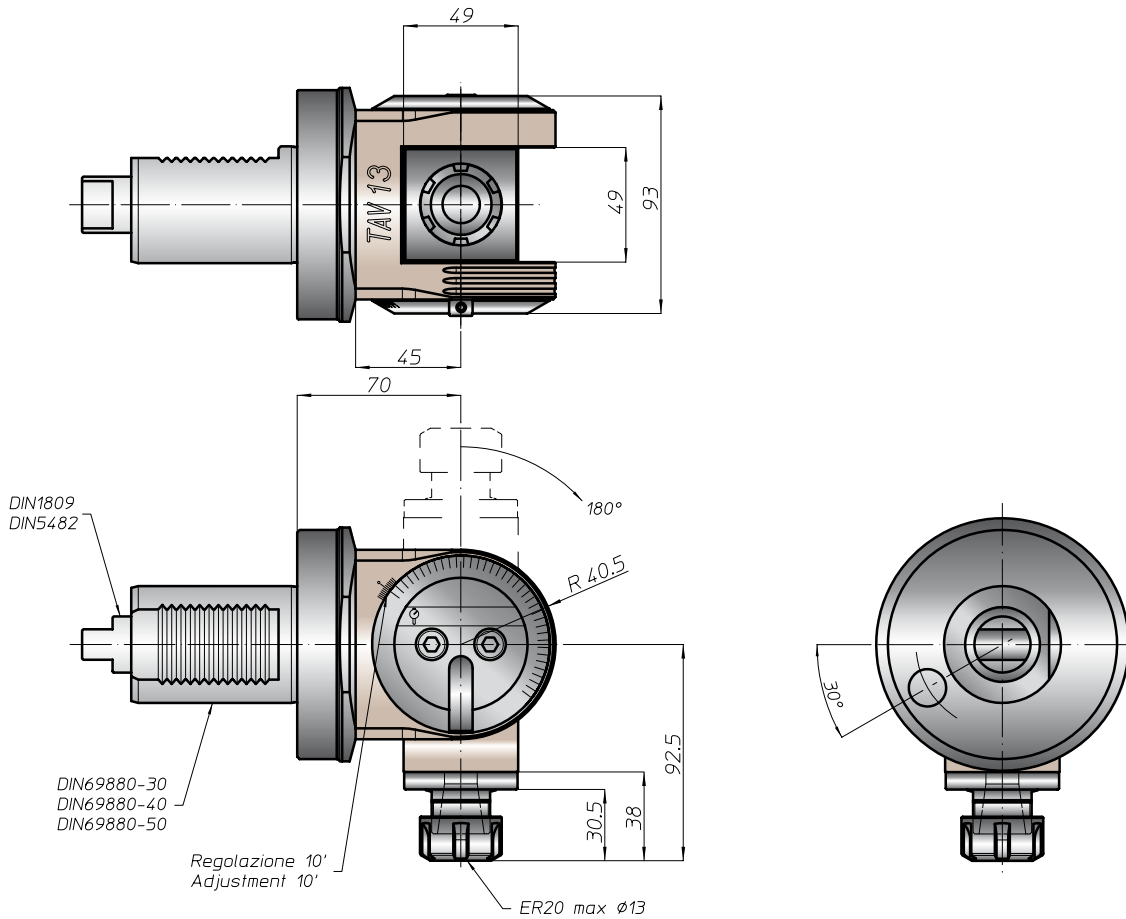
output

prestazioni/performance



tipi mandrino disponibili / available spindle types

- 1** DIN6499-ER **ER25**
- 3** Weldon Whistle-Notch **Ø16**



soluzioni speciali - special solutions

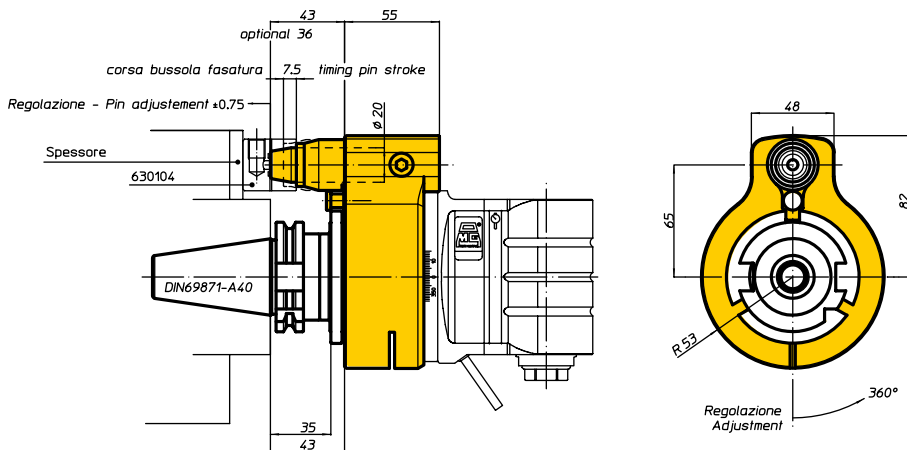


FH
 BAH
 TA.CP
 TA
 MOX
 HT
 VH
 TSI/TSX
 T
 MT-TC-TC3
 Accessori
 Accessories
 Appendice tecnica
 Technical supplement



Antirotante Torque arm

Teste ad angolo con interasse H=65 Angle heads with centre distance H=65



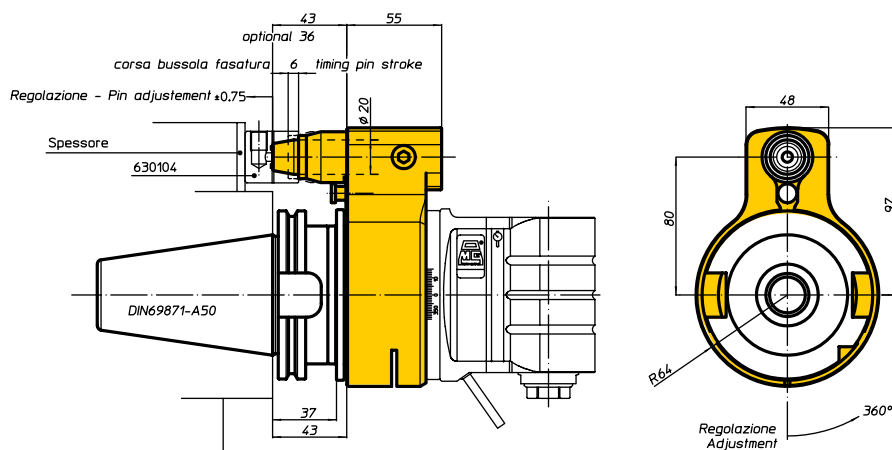
Il gruppo antirotante ricopre una funzione di fondamentale importanza nella qualità di lavorazione della testa ad angolo. Per questo motivo i tecnici della OMG hanno studiato e messo a punto un antirotante di nuova concezione i cui punti salienti sono:

- Il perno conico
- La registrazione assiale del perno
- Adduzione del liquido passante per il corpo testa

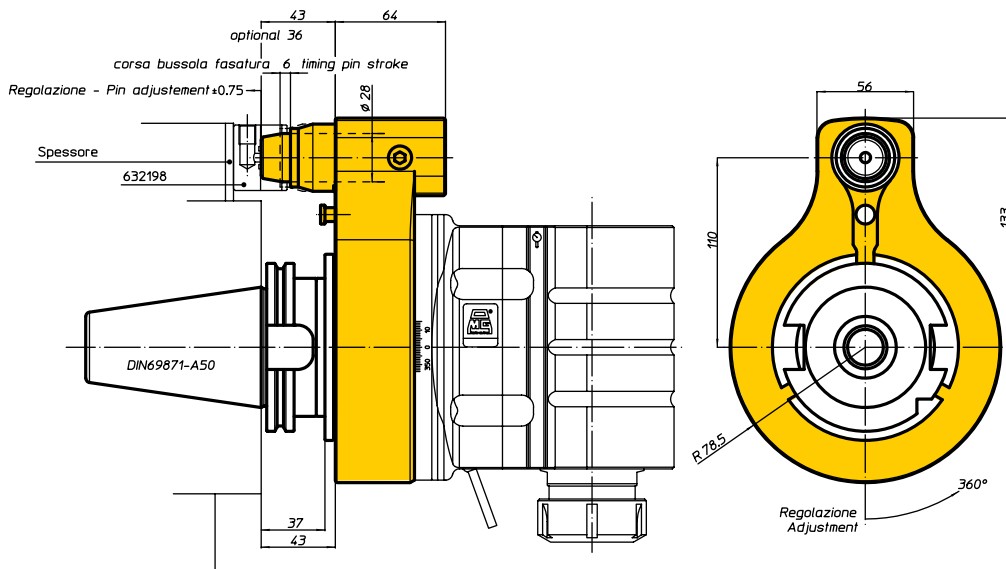
Il perno conico e la propria registrazione assiale di mm 1.5 permettono una maggiore rigidità del sistema antirotante rispetto ai tradizionali, dotati di perni di Ø18 mm perché si eliminano i giochi con conseguente miglioramento della rigidità sia angolare che assiale.

L'adduzione del liquido passante per il corpo testa, la cui uscita avviene tramite un ugello direzionabile, offre il vantaggio di non avere tubi "volanti" che possono muoversi durante le lavorazioni.

Teste ad angolo con interasse H=80 Angle heads with centre distance H=80



Teste ad angolo con interasse H=110 Angle heads with centre distance H=110



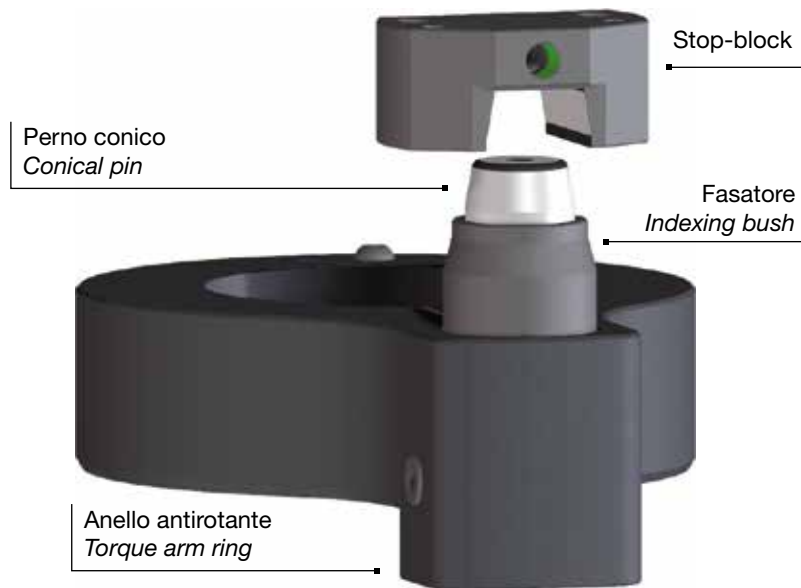
Scannerizza il codice per vedere il video di montaggio delle Teste ad Angolo



Quando possibile, nella Vostra applicazione, posizionate il perno conico dalla parte opposta al mandrino della testa ad angolo.



Stop-block



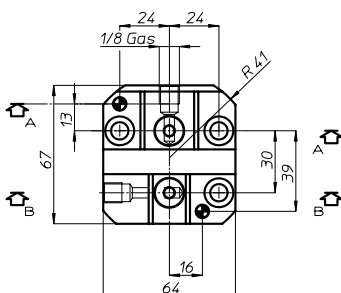
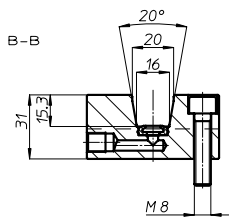
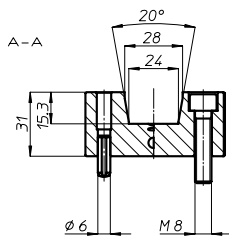
The torque arm system is crucial as far as angle-head machining quality is concerned. For this reason OMG technicians have designed and developed a new system with the following characteristics:

- conical pin
- axial pin adjustment
- coolant through the head body

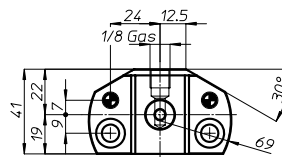
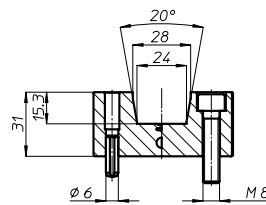
The conical pin and its 1.5 mm axial adjustment ensure upgraded antirotation system strength compared to traditional systems, featuring $\varnothing 18$ mm pin, because play is eliminated, thereby improving both angular and axial strength.

By the pin the coolant through the head, thanks to an adjustable nozzle, the added advantage is achieved of eliminating "free" pipes that could move during machining operations.

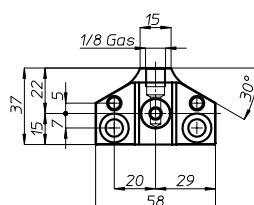
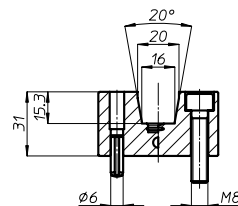
Double Stop-block (cod. 632199)



Stop-block (cod. 632198)



Stop-block (cod. 630104)



Scan the QR code and watch the video on how to install the Angle Heads



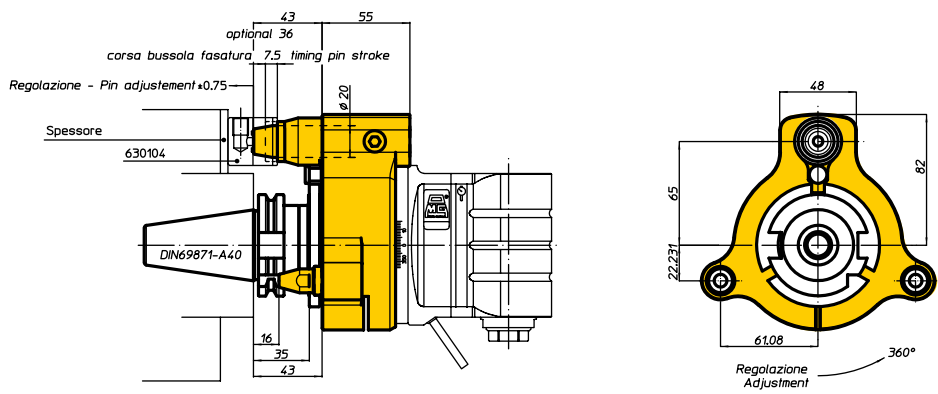
Position the conical pin on the opposite side of the angle head spindle when possible in your application.



Antirotante *Torque arm*



Teste ad angolo con interasse H=65
Angle heads with centre distance H=65

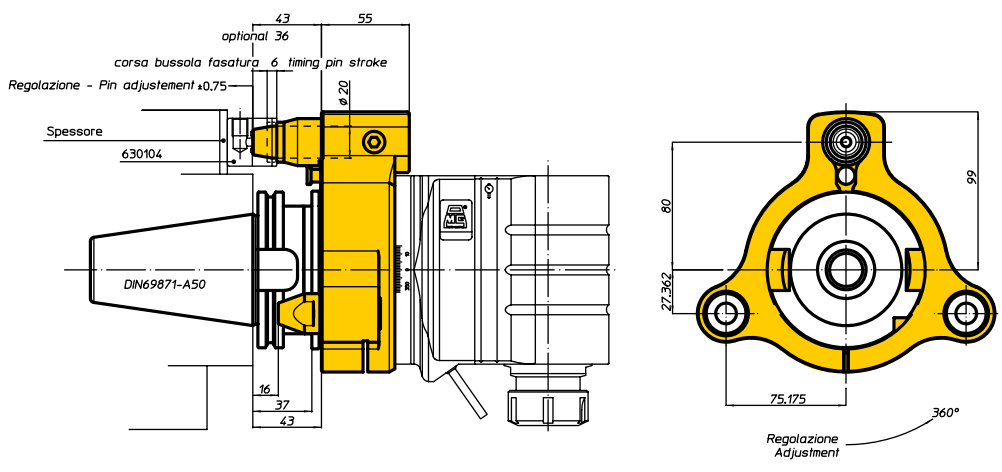


Il gruppo antirotante **TriBlock** ricopre una funzione di fondamentale importanza quando alla testa ad angolo è richiesto di:

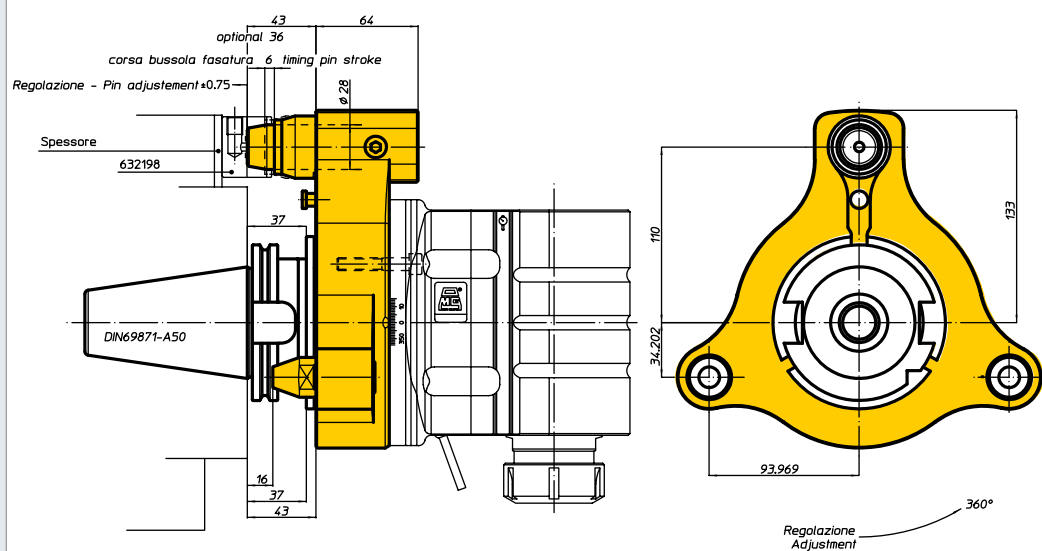
- eseguire una lavorazione più pesante
- essere più lunga dello standard
- finitura superficiale eccellente

Il **TriBlock** è dotato di tre punti di appoggio di cui uno è lo standard come nei precedenti e due supplementari da registrare tramite un rasamento. Questi tre punti, allargando l'appoggio di base della testa ad angolo, consentono di ottenere una rigidità superiore allo standard. Quando poi si richiede alla testa di essere immagazzinata su di un supporto esterno al magazzino standard, ecco che il **TriBlock** utilizza i propri tre punti per posizionare la testa.

Teste ad angolo con interasse H=80
Angle heads with centre distance H=80



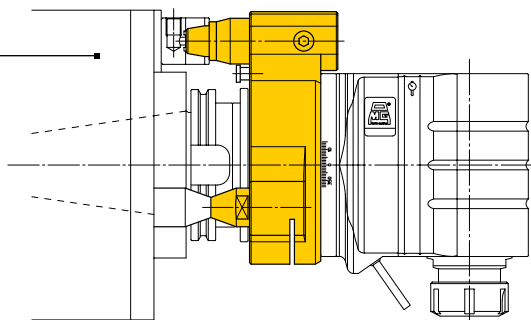
Teste ad angolo con interasse H=110
Angle heads with centre distance H=110



Antirotante *Torque arm*

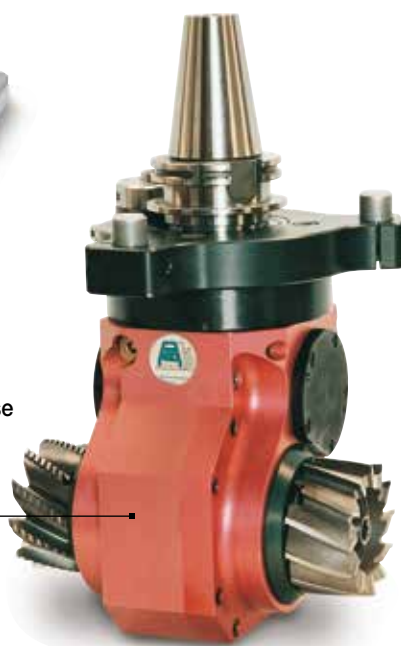
TriBlock

Sul mandrino macchina
On spindle machine



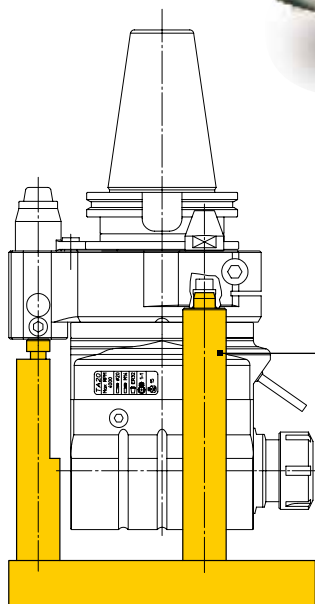
TFS 19907

Testa ad angolo per fresatura
componente motore a reazione.
Peso Kg 45,5
Milling angle head for jet engine.
Weight Kg 45,5



TFS 39195

Testa bimandrino di fresatura n° 2 frese
Ø 100 peso Kg 33
Twin milling head, nr. 2 milling cutter
Ø 100 weight Kg 33



Sul supporto da tavola
On rack table



The **TriBlock** system is of crucial importance when it comes to:

- doing difficult jobs
- having a head that is longer than standard
- achieving an excellent surface finish

The **TriBlock** system features three supporting points, one of which is standard, as in the previous version, plus two additional ones that need adjusting by means of a spacer. These three points, by extending the angle-head supporting base, provide above-average standards of strength.

When the head has to be stored on a rack table outside the standard magazine, the **TriBlock** system uses the three points to storage the angle heads.

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Antirotante *Torque arm*

QuadBlock 



Il sistema antirotante **QuadBlock** è un sistema all'avanguardia per equipaggiare Teste ad Angolo dove si richiede alta asportazione e alta rigidità dell'insieme "testa ad angolo-macchina". Utilizzabile nel montaggio manuale, esso consiste in un anello antirotante completo di quattro perni di contrasto suddivisi equamente sui 360°. Tale disposizione consente di poter ruotare la Testa ad Angolo in automatico con un semplice movimento della macchina, se questa ne ha le capacità. Il vantaggio di poter lavorare quattro facce del pezzo senza sostituire la Testa ad Angolo si concretizza con la riduzione dei costi previsti per gli utensili.

L'evoluzione del sistema **QuadBlock** per le macchine con cambio automatico, consente di utilizzare la Testa ad Angolo come un prolungamento del mandrino macchina ruotato dei gradi richiesti dal cliente. È possibile inoltre sostituire il portautensile in automatico ed ampliare infinitamente la versatilità della macchina utensile avendo a disposizione quei servizi normalmente presenti sul mandrino macchina:

- Aria pulizia del portautensile
- Liquido refrigerante centro utensile alta pressione
- Liquido refrigerante esterno utensile
- Liquido bloccaggio-sbloccaggio utensile
- Controllo presenza utensile

Tutto ciò per consentire l'utilizzo di portautensili tipo Capto, HSK, DIN69871. Mettiamo a disposizione il nostro ufficio tecnico e la nostra esperienza per personalizzare al meglio il Vostro sistema.

TAS13609

Fresatura su corpo in fusione di ghisa. Peso kg 36.

Milling on cast iron pump's body. Weight 36 kg.



TAS13209

Lavorazione di finitura interna col motore idraulico. Peso kg 36.

Internal finishing work for hydraulic motor's body. Weight 21 kg.



TAS16209

Linee di servizio per il mandrino HSK63F con cambio automatico dell'utensile, sensore presenza utensile in radiofrequenza. Peso kg 28.

Utility line for HSK63F spindle with automatic tool change, radio-frequency switch to verify tool presence. Weight 28 kg.

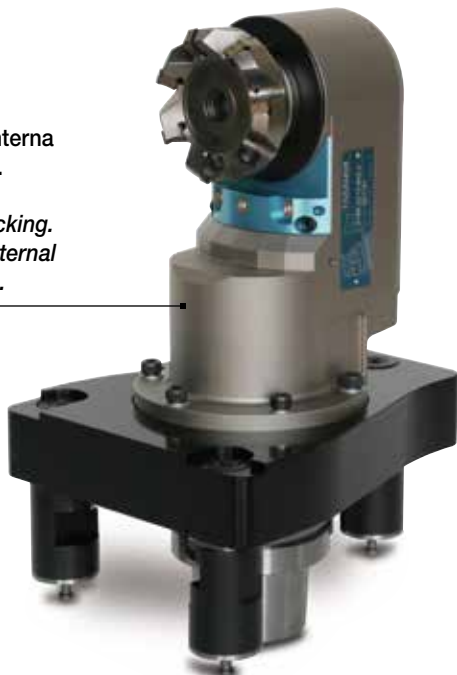


Antirotante Torque arm

QuadBlock 

TAS24408

Lavorazione di fresatura interna
corpo pinza freno in ghisa.
Peso Kg 28.
*Triblock with automatic locking.
Cast iron brake housing internal
milling work. Weight 28 kg.*



TA12907

Lavorazione di fresatura generica
struttura elettrosaldata di acciaio.
Peso Kg 48.
*Special Quadblock with automatic
locking. General milling work on
electro-welded steel structure.
Weight 48 kg.*



TAS08606

Servizi per mandrino CAPTO C4 con
cambio automatico dell'utensile.
Peso kg 36.
*Spindle with utility line for CAPTO C4
with automatic tool change.
Weight kg 36.*



The **QuadBlock** torque arm is a forefront system to equip Angle Heads which are requested with a high removal machining capacity and with extremely high rigidity in coupling with the machine tool. It can be used with a manual tool change and is made by a torque arm ring complete with four counterposed pins with same distance each other on the 360°. Such a layout allows an automatic rotation of the Angle Head with a simple movement of the machine if featured to do it. The possibility of machining four faces of the piece without replacing the Angle Head is giving the advantage of reducing costs of tools equipment.

The evolution of the **QuadBlock** system on automatic tool change machines allows to use the Angle Head like an extension of the machine spindle with the degree rotations required by the customer. It is also possible to automatically change the tool holder and to infinitely widen the versatility of the machine tool getting those utilities normally available on the machine spindle:

- tool-holder cleaning air
- through-tool high pressure coolant
- side-tool coolant
- tool locking-unlocking liquid
- tool presence control

All these to allow using tool-holders like Capto, HSK, DIN69871. Our R&D department is at your disposal with his experience to customize your system at its best.

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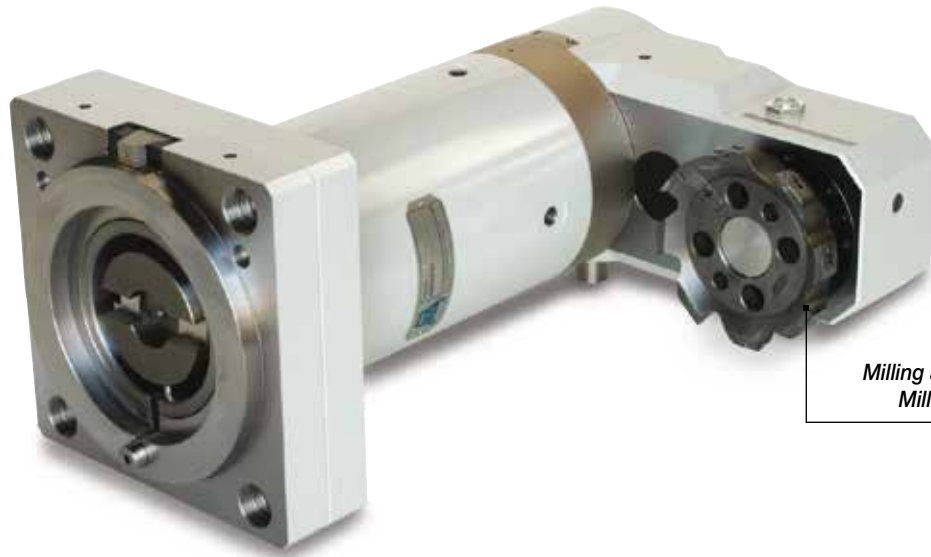
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Teste ad angolo speciali

Special angle heads



TFS 41304
 Testa ad angolo di fresatura
 con mandrino ribaltato.
 Fresa Ø 200. Peso Kg 327,5.
*Milling angle head with reverse spindle.
 Milling tool Ø 200. Weight Kg 327,5.*



TFS 05303
 Testa ad angolo di fresatura con
 fresa diam. 7 peso Kg 8
*Milling angle head with milling
 cutter diam. 7 weight Kg 8*



TAS 15505
 Testa ad angolo di foratura e fresa-
 tura, attacco utensile CAPTO C4
 automatico. Peso Kg 130.
*Drilling and milling angle head, auto-
 matic tools changer CAPTO C4.
 Weight Kg 130.*



TFS 23301
 Testa ad angolo di foratura
 a tre mandrini peso kg 5,9
*Drilling angle head with
 three spindles weight kg 5,9*



TFS 39998
 Testa ad angolo universale.
 Presa utensili ISO50, peso kg 580
*Angle head with tool
 shank ISO50, weight kg 580*

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Special angle heads



TFS 34004

Testa ad angolo di foratura
a 3 mandrini a 120°.
Peso Kg 18.
Drilling angle head, n 3
spindles at 120°.
Weight Kg 18.



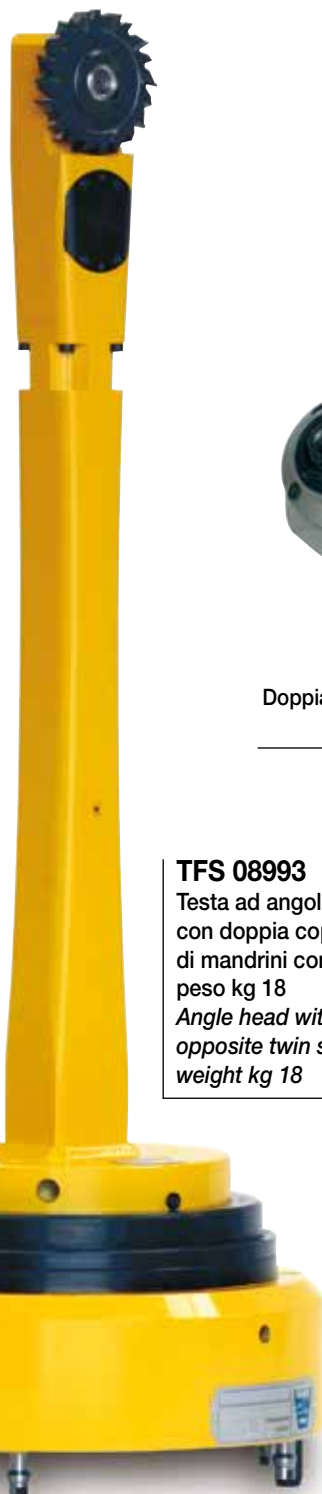
TFS 36699

Testa ad angolo bimandrino
registrabile, peso kg 29
Adjustable twin angle head,
weight kg 29



TA 09603

Testa ad angolo di alesatura con
utensile Ø 160 peso Kg 77
Boring angle head with tools
Ø 160 weight Kg 77



TFS 08993

Testa ad angolo speciale
con doppia coppia
di mandrini contrapposti
peso kg 18
Angle head with two
opposite twin spindles
weight kg 18



TAF 37503

Doppia testa ad angolo di foratura.
Twin drilling angle head.

TFS 06003

Testa ad angolo di fresatura con
fresa Ø 110 peso Kg 210
Milling angle head with milling
cutter Ø 110 weight Kg 210



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Special angle heads

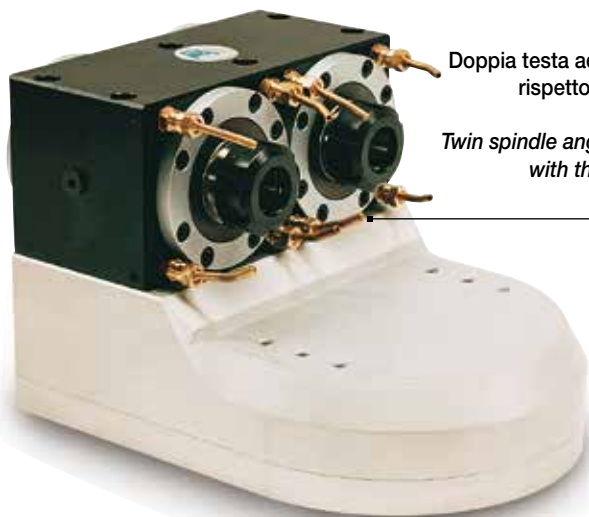


TAS 33206
Testa bimandrino di fresatura
per frese Ø 160 peso kg 63
*Twin milling head with
milling cutter Ø 160 weight kg 63*



TFS 21701
Testa di fresatura a due mandrini
paralleli, peso kg 14
*Milling angle head with two parallel
spindles, weight kg 14*

TFS 34495
Testa bimandrino di fresatura n. 2 frese Ø 130
peso kg 290
*Twin milling head, nr. 2 milling cutter Ø 130
weight kg 290*



TFS 16696
Doppia testa ad angolo disassata
rispetto all'asse macchina
peso kg 24
*Twin spindle angle head not in line
with the machine spindle
weight kg 24*



TFS 36994
Testa bimandrino di fresatura
n. 2 frese Ø 60, peso kg 15,5
*Twin milling head, nr. 2 milling
cutter Ø 60, weight kg 15,5*

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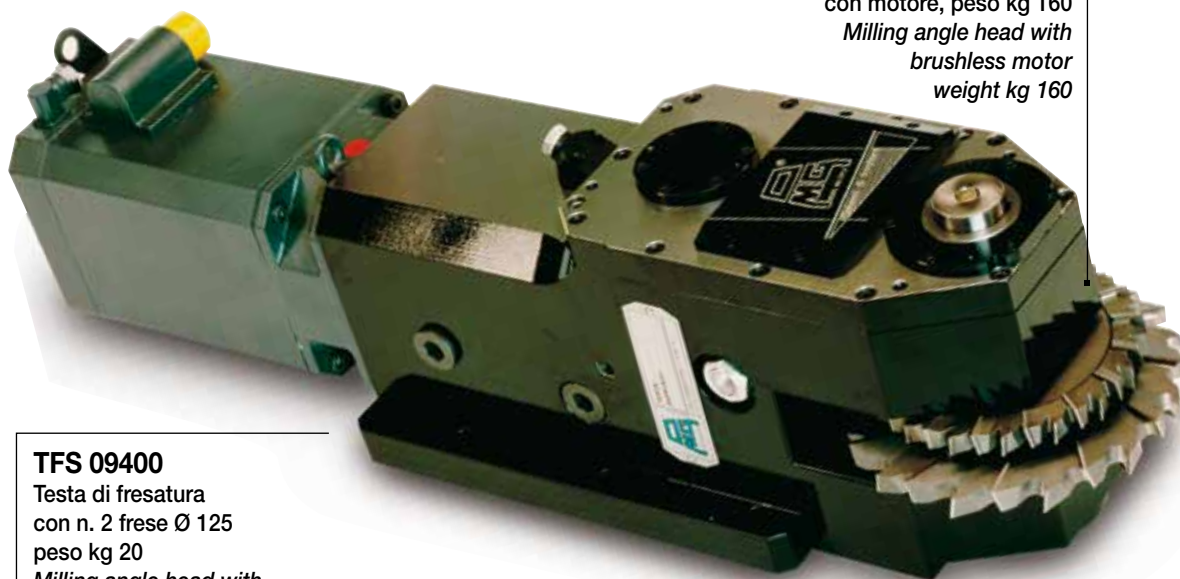
Special angle heads



TFS 12101
 Testa di fresatura con cono ISO30
 peso kg 16
*Milling angle head with ISO30
 weight kg 16*



TFS 13094
 Testa ad angolo disassata
 rispetto all'asse macchina
 peso kg 17
*Angle head not in line
 with the machine spindle
 weight kg 17*



TFS 50900
 Testa di fresatura
 con motore, peso kg 160
*Milling angle head with
 brushless motor
 weight kg 160*



TFS 09400
 Testa di fresatura
 con n. 2 frese Ø 125
 peso kg 20
*Milling angle head with
 nr. 2 milling cutter Ø 125
 weight kg 20*



TFS 24196
 Testa ad angolo bimandrino per
 fresatura su scatola del cambio
 peso kg 70
*Twin milling spindle angle head
 on gear box weight kg 70*

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Teste ad angolo speciali

Special angle heads

TAS 41504

Testa ad angolo mandrino di fresatura. Peso Kg 338.
Twin milling angle head. Weight Kg 338.



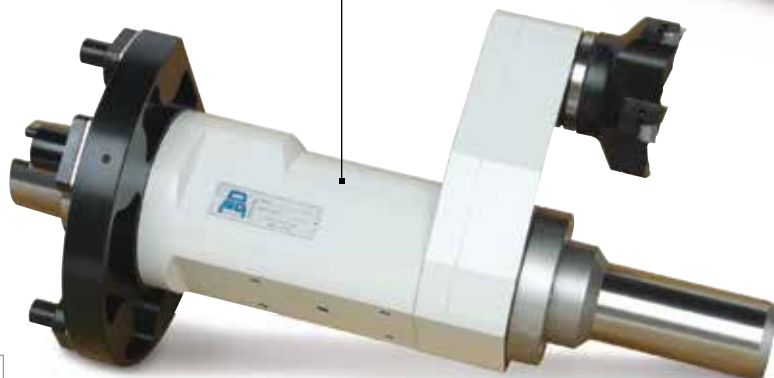
TFS 35698

Testa ad angolo di fresatura con fresa Ø 100 peso Kg34
Milling angle head, with milling cutter Ø 100 weight Kg 34



TFS 12005

Testa ad angolo disassata per fresature Ø 150.
Peso Kg 48.
Shift spindle angle head, milling tools Ø 150. Weight Kg 48.



TFS 28603

Testa di fresatura con n. 4 frese a disco Ø 125. Peso Kg 218.
Milling head, nr. 4 milling disc cutter Ø 125. Weight Kg 218.



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Teste ad angolo speciali

Special angle heads



TFS 33303
 Testa ad angolo disassata
 per foratura. Peso Kg 9,4.
*Angle head with shift
 drilling spindle.
 Weight Kg 9,4.*



TFS 12095
 Testa ad angolo di
 foratura peso kg 5
*Drilling angle head
 weight Kg 5*



TAS 30505
 Testa ad angolo di foratura
 HSK100 entrata e uscita.
 Peso Kg 50.
*Drilling angle head, HSK 100
 input-output. Weight Kg 50*

TFS 33503
 Testa ad angolo di lucida-
 tura con doppia rotazione,
 sia corpo che utensile.
 Peso kg 6,5.
*Polish angle head with
 duple rotation: body and
 tools. Weight Kg 6,5.*



TFS 13198
 Testa ad angolo
 disassata per foratura
 peso kg 5
*Angle head with
 shift spindle
 weight kg 5*



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Teste ad angolo speciali

Special angle heads



TFS 39997
 Testa ad angolo speciale
 bimandrino per foratura e
 maschiatura peso kg 16
*Twin angle head for
 drilling and tapping
 weight kg 16*



TAS 13806
 Testa bimandrino Capto C5
 manuale, peso kg 33
*Twin angle head with Capto C5
 manual clamping tool
 weight kg 33*



TAS 39806
 Testa di foratura a due mandrini
 con refrigerante attraverso il
 centro utensile a 50 Bar
 peso kg 21
*Twin drilling angle head with
 coolant through the centre tool
 at 50 Bar, weight kg 21*



TAS 08606
 Testa fresatura conica su acciaio
 peso kg 23
*Milling angle head with conical tool
 weight kg 23*



TFS 40601
 Testa ad angolo bimandrino,
 angolo tra i due mandrini 176°,
 peso Kg 13
*Twin angle head, angle 176°
 between spindles, weight Kg 13*

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Teste ad angolo speciali

Special angle heads



TFS 20298
 Testa bimandrino di fresatura
 n°2 frese Ø 120 peso kg 25
*Twin milling angle head, nr.2
 milling cutter Ø 120
 weight kg 25*



TA 05500
 Testa ad angolo di fresatura
 con fresa Ø125 peso kg 17
*Milling angle head with milling
 cutter Ø 125, weight kg 17*

TAS 20706
 Testa per fresatura interna
 pinza freno peso Kg 23
*Angle milling head for brake
 housing weight Kg 23*



TAS 39706
 Testa di fresatura per
 supporto motore frese
 Ø160/180 peso kg 31
*Milling head for engine's
 bracket milling cutter
 Ø160/180 weight kg 31*



TA 34397
 Testa ad angolo
 di fresatura
 con cono ISO20
 peso kg 0,9
*Milling angle head
 with shank ISO20
 weight kg 0,9*



TFS 39999
 Testa ad angolo
 speciale fresatura
 su plastica peso kg 4
*Milling angle head
 for plastic weight kg 4*



TA 17292
 Testa ad angolo di fresatura
 n. 2 frese per legno
 peso kg 3
*Twin angle head with nr. 2
 milling cutter for wood
 weight kg 3*



Teste ad angolo speciali

Special angle heads

TAS 37806

Testa ad Angolo di fresatura componente aeronautico, materiale Inconel. Peso Kg 40
Milling Angle Head for aeronautic piece, Inconel alloy material. Weight Kg 40



TFS 23910

Testa ad Angolo bimandrino, fresatura di componente in ghisa. Peso Kg 50
Twin Angle Head, milling cast iron pieces. Weight Kg 50



TFS 31110

Testa ad Angolo di foratura con mandrino HSK50 ribaltato. Peso Kg 31
Drilling Angle Head with HSK50 reverse spindle. Weight Kg 31



TAS 10708

Testa ad Angolo lunghezza mm 1.000, fresatura di cave su acciaio. Peso Kg 216
Angle Head overall length mm 1.000, milling key-way on steel. Weight Kg 216



TAS 13910

Testa ad Angolo di foratura con mandrino ER25. Peso Kg 31
Drilling Angle Head with ER25 spindle. Weight Kg 31



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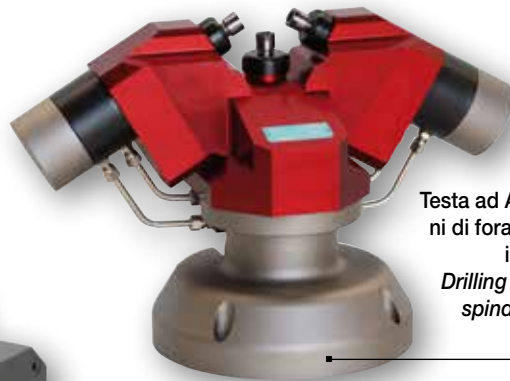
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Teste ad angolo speciali

Special angle heads



TFS 05609
 Testa ad Angolo di fresatura
 per tornio verticale.
 Peso Kg 286
*Milling Angle Head for ver-
 tical lathe. Weight Kg 286*



TAS 08411
 Testa ad Angolo con tre mandri-
 ni di foratura con avanzamento
 idraulico. Peso Kg 17,5
*Drilling Angle Head with three
 spindles, hydraulic spindles
 feed. Weight Kg 17,5*

TFS 26908

Testa ad Angolo bimandrino
 di foratura per macchina
 transfer. Peso Kg 9,5
*Twin drilling Angle Head for
 transfer machine.
 Weight Kg 9,5*



TAS 28010
 Testa ad Angolo con tre
 assi a regolazione manuale.
 Peso Kg 590
*Angle Head with three
 manual movement axis.
 Weight Kg 590*

TAS 19610

Testa ad Angolo di fresatura
 per macchina transfer.
 Peso Kg 35
*Milling Angle Head for transfer
 machine. Weight Kg 35*



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Teste ad angolo speciali

Special angle heads



TAS 19010
 Testa ad Angolo di foratura per macchina transfer. Max RPM 20.000.
 Peso Kg 5
Drilling Angle Head for transfer machine. Max RPM 20.000. Weight Kg 5

TAS 26810

Testa ad Angolo TAO20, utilizzata in fresatura su torretta a revolver HT250. Peso Kg 14
Milling Angle Head TAO20, assembled on HT250 turret head. Weight Kg 14



TAS 09407

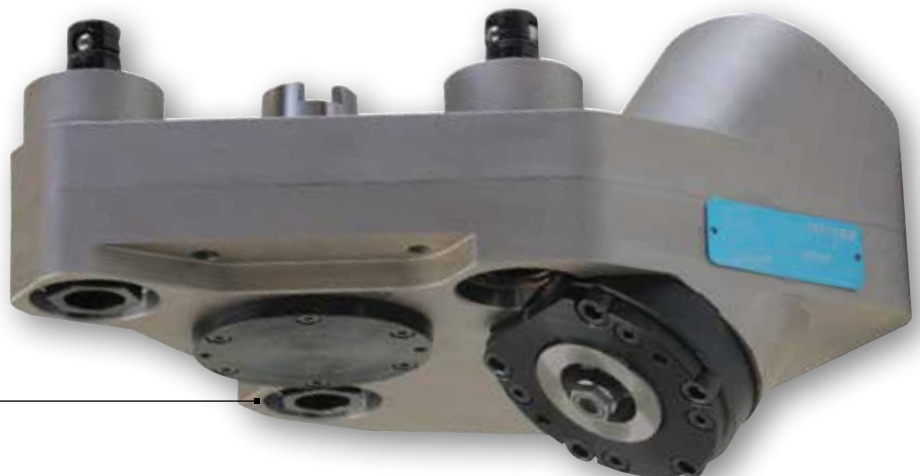
Testa ad Angolo per fresatura canna di fucile.
 Peso Kg 6,5
Milling Angle Head for rifle barrel. Weight Kg 6,5



TFS 06906
 Testa ad Angolo di foratura scatola sterzo. Peso Kg 10
Drilling Angle Head for steering body. Weight Kg 10

TAS 16308

Testa ad Angolo di foratura con mandrino HSK32 a cambio automatico utensile. Peso Kg 13,5
Drilling Angle Head with spindle HSK32 with automatic tool changer. Weight Kg 13,5



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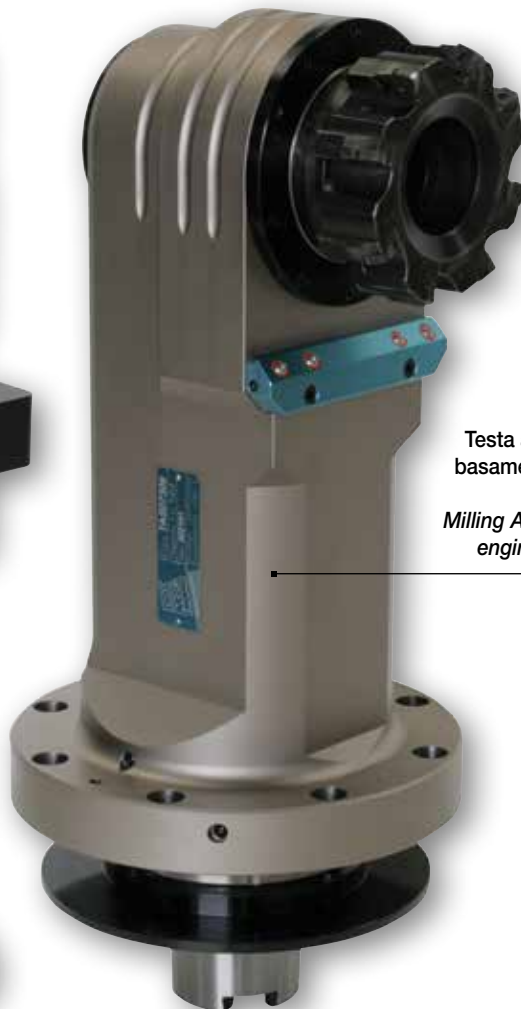
TAS 24508

Testa ad Angolo di fresatura
pinza freno. Peso Kg 29
*Milling Angle Head for brake
truck body. Weight Kg 29*



TAS 07309

Testa ad Angolo di fresatura,
basamento motore 12 cilindri.
Peso Kg 60
*Milling Angle Head, 12 cylinder
engine block. Weight Kg 60*



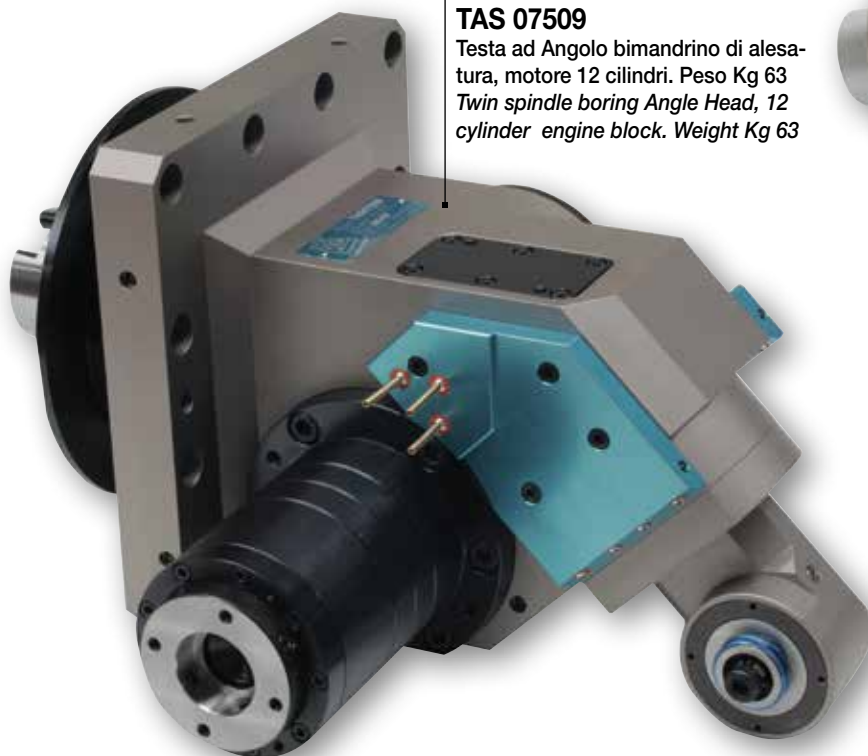
TAS 24010

Testa ad Angolo di foratura componente
aeronautico in alluminio.
Peso Kg 13,5
*Drilling Angle Head for aluminium
aeronautic component. Weight Kg 13,5*



TAS 07509

Testa ad Angolo bimanodrino di alesatura,
motore 12 cilindri. Peso Kg 63
*Twin spindle boring Angle Head, 12
cylinder engine block. Weight Kg 63*



TAS 28606

Testa ad Angolo di foratura componen-
te aeronautico con mandrino HSK50,
materiale Inconel. Peso Kg 27
*Drilling Angle Head with HSK50 spindle
for aeronautic piece, Inconel alloy
material. Weight Kg 27*



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serie MOx

moltiplicatori di giri spindle speeders

Grazie all'esperienza maturata dalla precedente serie di moltiplicatori di giri, è nata l'esigenza di dare vita ad una nuova generazione 2.0 che pone il focus su velocità e performance. I moltiplicatori della serie MOx vedono infatti le seguenti caratteristiche:

- Equilibratura di tutti i componenti in rotazione
- Maggiore velocità
- Maggiore rigidità grazie a nuovi cuscinetti
- Semplice set up nelle macchine con cambio utensile automatico
- Nuovi ingranaggi progettati per ridurre il rumore e le vibrazioni dell'utensile
- Maggiore capacità di carico
- Liquido refrigerante ad alta pressione su tutta la gamma
- Poca generazione di calore e maggiore stabilità termica grazie a nuovi cuscinetti

I moltiplicatori di giri serie "MOx" sono stati studiati e definiti con l'intento di offrire un prodotto che possa assicurare la massima affidabilità e precisione nelle operazioni di fresatura e foratura. Dalla progettazione al controllo statico e dinamico del prodotto finito, i nostri moltiplicatori di giri sfruttano le più avanzate conoscenze tecniche e tecnologiche.

- Giri max 35.000
- Utilizzati specialmente in operazioni di finitura
- Possibilità di montaggio manuale o automatico
- Consentono alla macchina di ruotare a bassi regimi di giri
- Possibilità di utilizzare utensili in metallo duro

La costruzione compatta, i componenti in acciaio trattato termicamente, gli ingranaggi rettificati sull'evolvente permettono la trasmissione di potenze elevate con ottimi livelli di silenziosità. Il mandrino è supportato da cuscinetti a sfere di precisione a contatto obliquo precaricati che gli conferiscono un'elevata rigidità e precisione di rotazione.

- Due ingranaggi satelliti per elevate potenze trasmissibili
- Attacco utensile speciale a richiesta (Komet, DIN 1835, ecc...)
- Attacco macchina speciale a richiesta (Cono Morse, DIN 69880, ecc...)
- Perno antirotante intercambiabile e perciò personalizzabile dal cliente

I moltiplicatori di giri possono essere montati su macchine tradizionali o con cambio utensile automatico. La lubrificazione è assicurata con grasso a base sintetica a lunga vita o con aria-olio in opzione. Il certificato di collaudo che troverete allegato ad ogni moltiplicatore di giri garantisce la qualità del prodotto. Robustezza, versatilità, facilità d'impiego e di manutenzione sono caratteristiche che hanno sempre contraddistinto la nostra produzione ed i moltiplicatori di giri ne sono una conferma.

Thanks to our experience, gained over the past years with Spindle Speeders, we have now been able to create a new generation 2.0 with the focus on speed and performance. Our new MOx series includes the following features:

- *Balancing of all the rotating components*
- *Greater speed*
- *More stability thanks to an advanced bearing layout*
- *A new system making set up easier for automatic tool change*
- *A new bearing layout that reduces noise and vibration of the tool*
- *Greater load capacity*
- *Low heat generation and more thermal stability thanks to the advanced bearing layout*

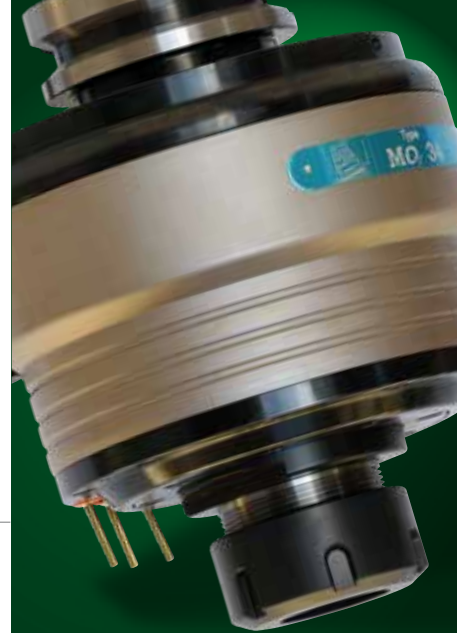
The "MOx" series spindle speeders have been designed and developed to offer maximum reliability and precision in milling and drilling. From design to static and dynamic testing of the finished product, our spindle speeders rely on the most advanced technical know-how.

- *Max 35.000 rpm*
- *Mainly used for finishing operations*
- *Manual or automatic tool change options*
- *Allows the machine to rotate at low rpm*
- *Allows the use of carbide cutting tools*

The compact construction, the heat-treated steel parts, and the ground gears on the involute, guarantee transmission of high power ratings with amazingly low noise levels. The spindle is supported by a set of preloaded precision ball bearings with oblique contact that ensure greater strength and rotation precision.

- *Two planetary gears for high transmission power ratings*
- *Special tool coupling systems on request (Komet, DIN 1835, etc.)*
- *Coolant through the tool center, standard or on request*
- *Special machine shank connections on request (Morse Cone, DIN 69880 etc.)*
- *Interchangeable anti-rotating pin which can be customized by the customer*

The MOx spindle speeders can be mounted on traditional machines and on machines with automatic tool change. The MOx spindle speeders are lubricated with a long-life synthetic grease that is practically maintenance free. The test certificate enclosed with each spindle speeder guarantees the quality of the product. Our tools have always stood out for their sturdiness, flexibility, and easy use and maintenance, and the MOx spindle speeders are an additional proof of these outstanding features. Our products have always stood out for their sturdiness, flexibility and easy use and maintenance and the MO spindle speeders series is an additional proof of such outstanding features.



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Simboli/Icons

- Pinza tipo ER
Spring collet ER type
- Refrigerante centro cono-mandrino
Coolant through the centre shank-spindle
- Refrigerante centro perno-ugello
Coolant through the pin-nozzle
- Rapporto entrata/uscita
Ratio input/output
- N° max giri in uscita
Max output RPM
- Peso con cono 40
Weight with size 40 shank
- Peso con cono 50
Weight with size 50 shank
- Rotazione in ingresso
Input rotation
- Rotazione in uscita
Output rotation



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MOX10.HS



caratteristiche/features

ER16
 10 bar
 1-8
 36000
 optional
 70 bar

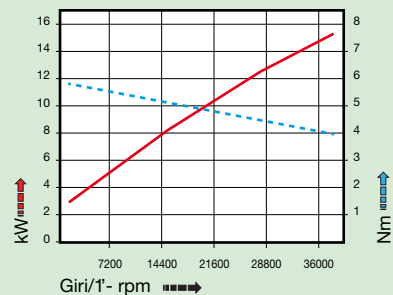
peso/weight

40
 5,8 kg
 50
 8 kg

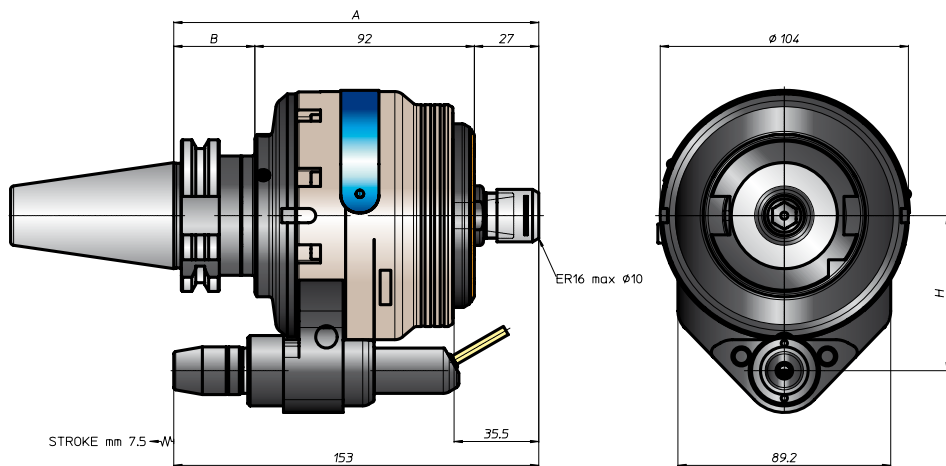
rotazione/rotation

input
 output

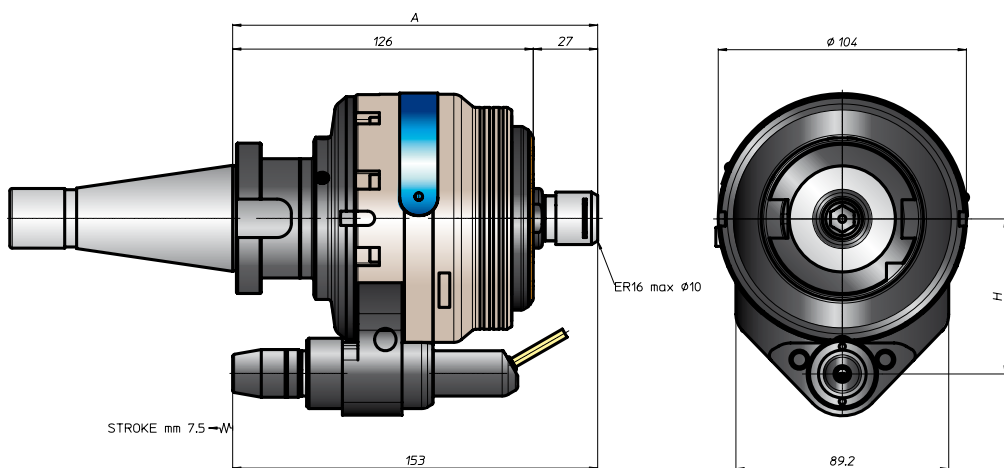
prestazioni/performance



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5-2



CONO SHANK	size	H				
		A	B	standard	optional	
DIN69871	30	153	34	65	80	
	40			110		
	45		42	80	110	
	50					
ANSIB5.50	40	34	65	80	110	
	50	42	80	110		
BT	40	35	65	80	110	
	50	161	50	80	80	
HSK	63	162	42	65	80	110
	80	165		80	110	
	100		51			
ISO26623	C5	161	-	65	80	110
	C6			80	110	
	C8					
KM	63	157	-	65	80	110
	80			80	110	
	100					
DIN2080	40	153	34	65	80	110
	50			42	80	110
ANSIB5.18	40	153	34	65	80	110
	50			42	80	110

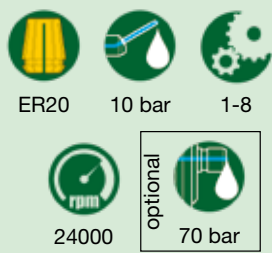


MOX10

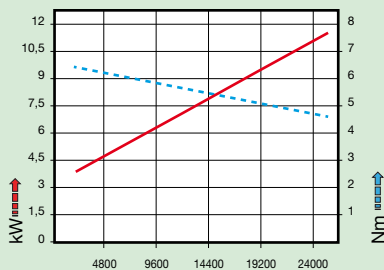
caratteristiche/features

peso/weight

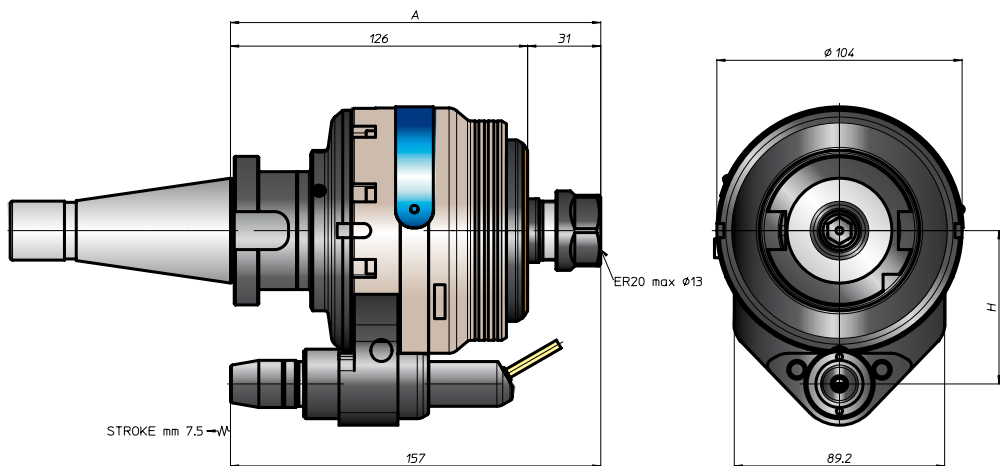
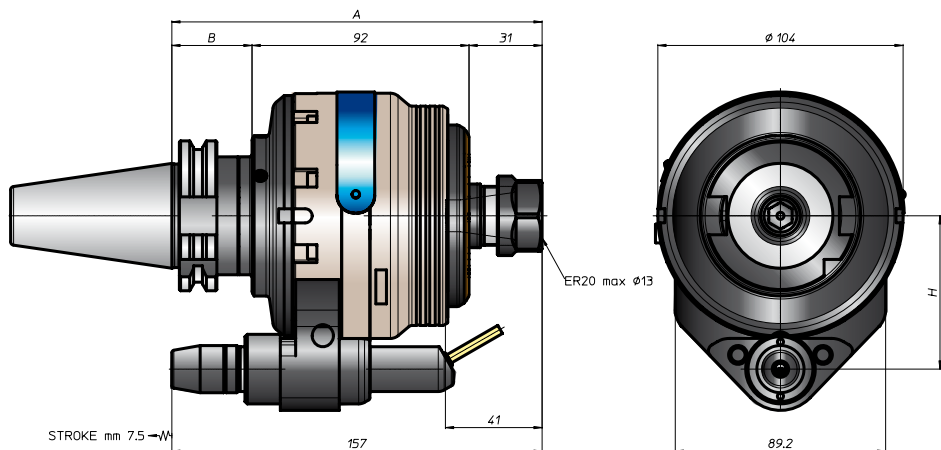
prestazioni/performance



rotazione/rotation



CONO SHANK	size	A	B	H	
				standard	optional
DING9871	30	157	34	65	80
	40			110	
	45		42	80	110
	50			110	
ANSIB5.50	CAT 40	157	34	65	80 110
	50		42	80	110
BT	40	165	35	65	80 110
	50		50	80	80
DING9893	HSK 63	166	42	65	80 110
	80	169		80	110
	100		51		
ISO26623	CAPTO C5	165	-	65	80 110
	C6			80	110
	C8				
KM	63	161	-	65	80 110
	80			80	110
	100				
DIN2080	40	157	34	65	80 110
	50			42	80
ANSIB5.18	NMTB 40	157	34	65	80 110
	50			42	80



FH

BAH

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MOX13



caratteristiche/features

ER25 10 bar 1-6

optional 70 bar

20000 rpm

peso/weight

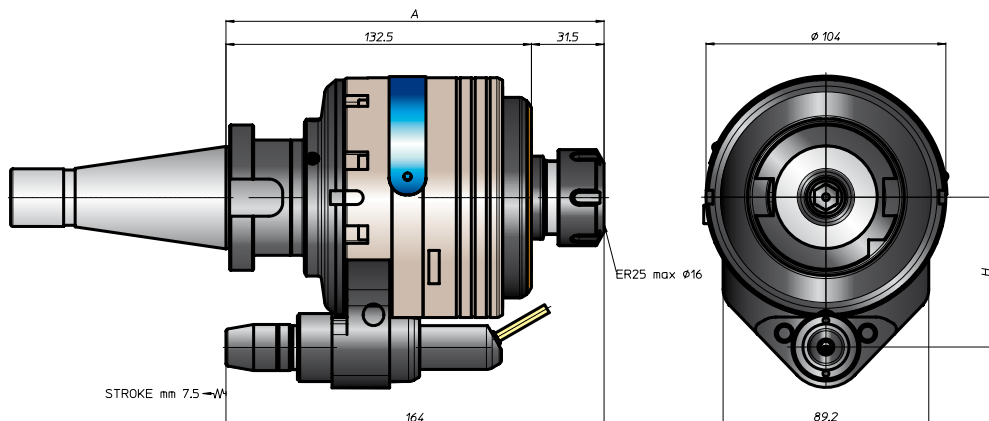
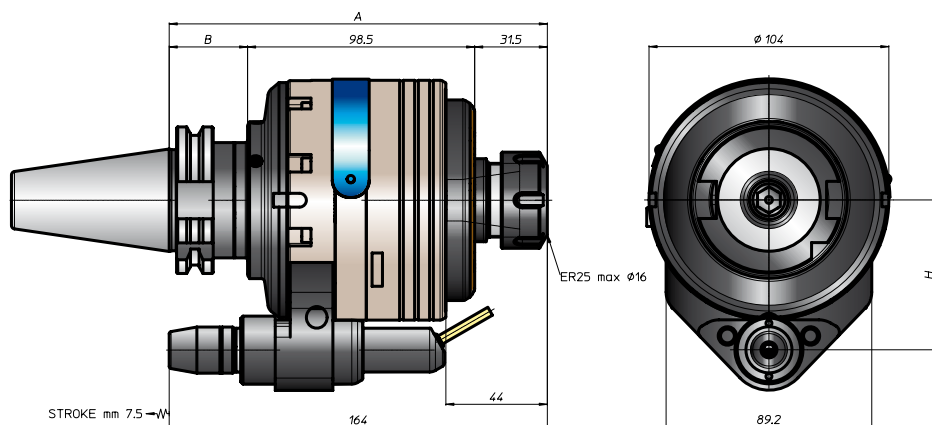
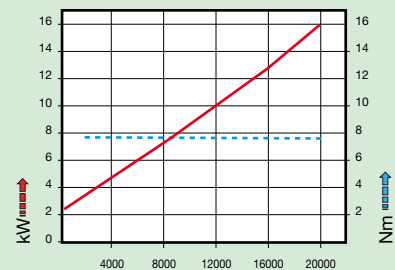
40 6,5 kg

50 9 kg

rotazione/rotation

input → output

prestazioni/performance



CONO SHANK	size	H			
		A	B	standard	optional
DIN9871	40	164	34	65	80 110
	45		42	80	110
	50		42	80	110
ANSIB5.50	40	164	34	65	80 110
	50		42	80	110
BT	40	164	35	65	80 110
	50		50	80	80
HSK	63	173	42	65	80 110
	80	175		80	110
	100		51	80	110
CAPTO	C5	172	-	65	80 110
	C6			80	110
	C8			80	110
KM	63	168	-	65	80 110
	80			80	110
	100			80	110
DIN2080	40	164	34	65	80 110
	50		42	80	110
ANSIB5.18	40	164	34	65	80 110
	50		42	80	110

MOX16

caratteristiche/features

ER32 10 bar 1-6
16000 optional 70 bar

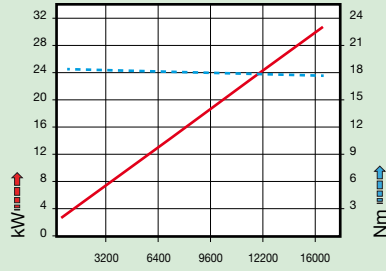
peso/weight

40 50
9 kg 11 kg

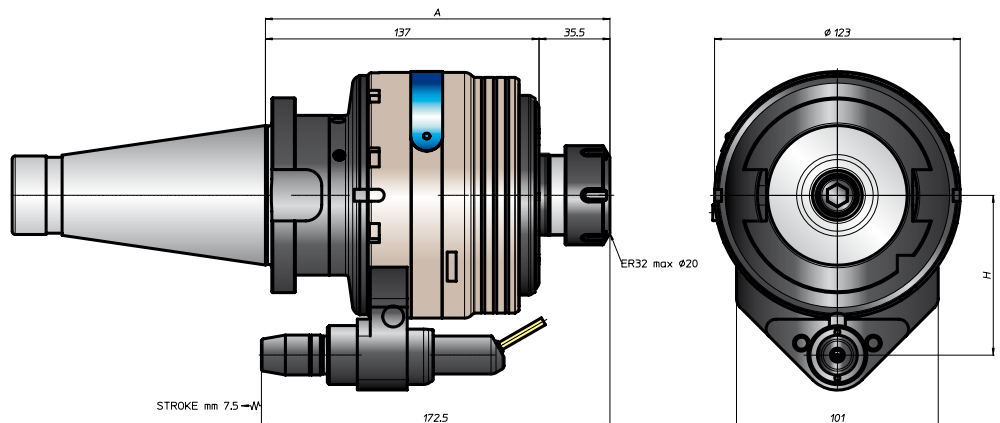
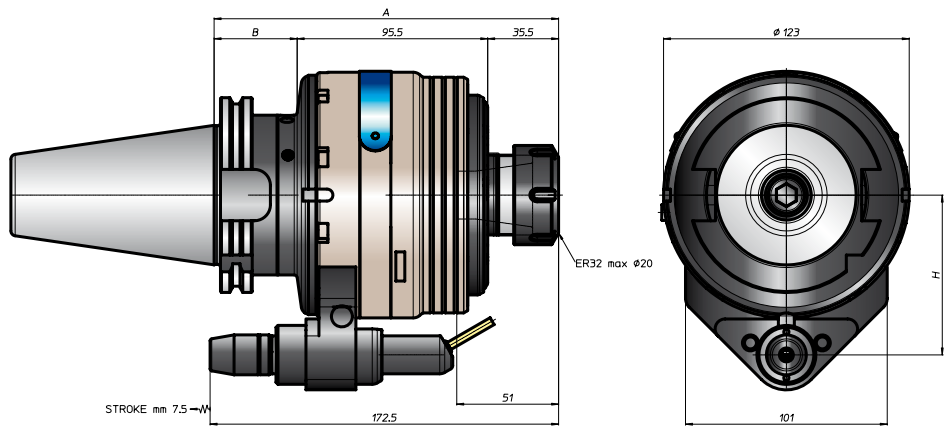
rotazione/rotation

input output

prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DING9871	40	172,5	34	80	110
	50		42	80	110
ANSIB5.50	50	180,5	35	80	110
	50		50	80	110
DING9893	80	184,5	42	80	110
	100		51	80	110
ISO26623	C6	180,5	-	80	110
	C8		-	80	110
KM	80	176,5	-	80	110
	100		-	80	110
DIN2080	40	172,5	34	80	110
	50		42	80	110
ANSIB5.18	40	172,5	34	80	110
	50		42	80	110



FH

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MOX26



caratteristiche/features

ER40 10 bar 1-4,2

optional 70 bar

12000

peso/weight



21 kg

rotazione/rotation

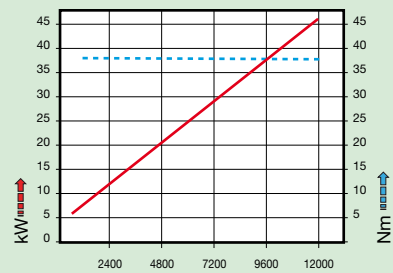


input

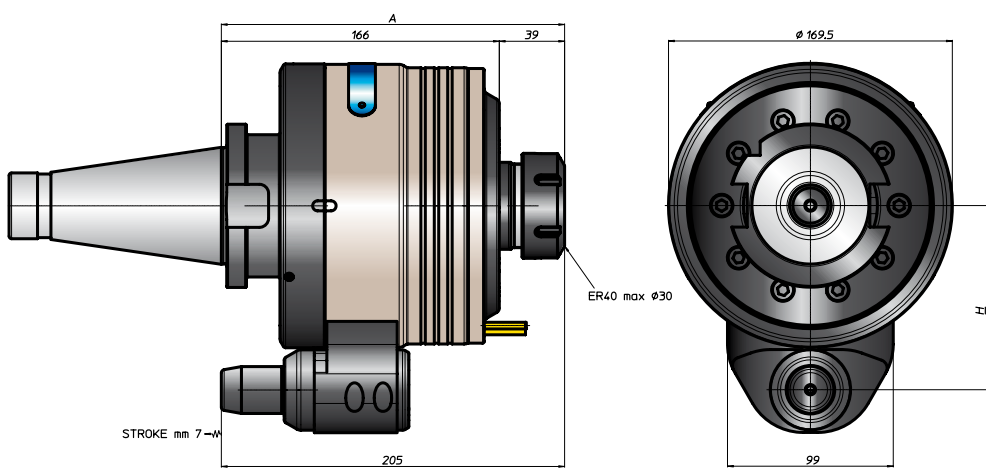
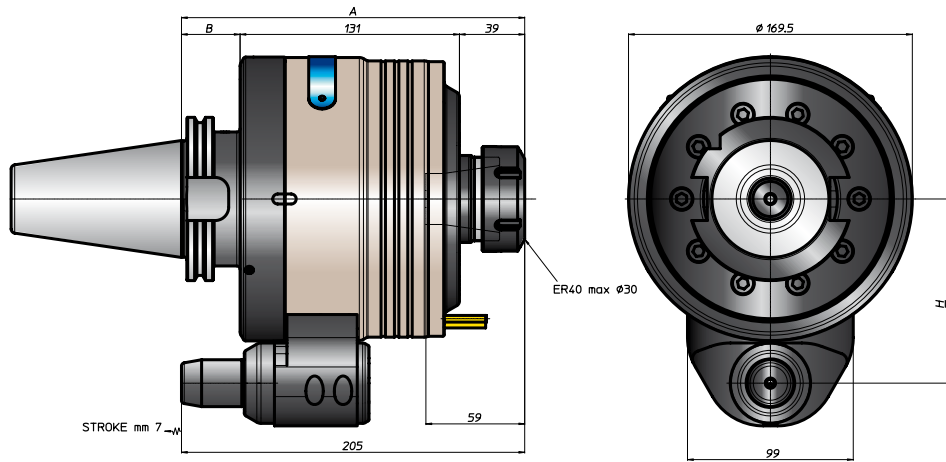


output

prestazioni/performance



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CONO SHANK	size	H		standard	optional
		A	B		
DIN9871	50	205	35	110	-
	60	221	51		
ANSIB5.50	50	205	35	110	-
		50	51		
DIN9893	100	217	53	110	-
ISO26623	C8	213	-	110	-
KM	100	209	-	110	-
DIN2080	50	205	-	110	-
ANSIB5.18	50	205	-	110	-



MOX34

caratteristiche/features



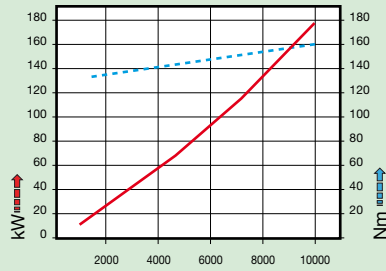
peso/weight



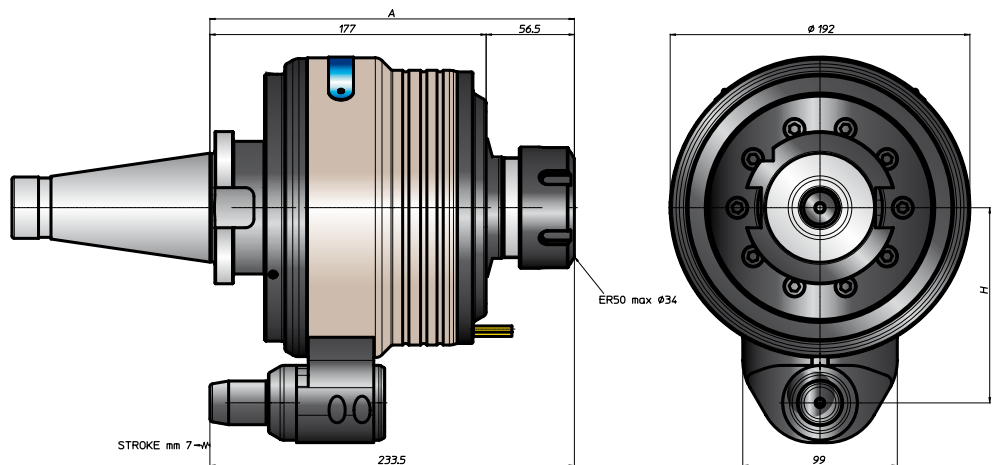
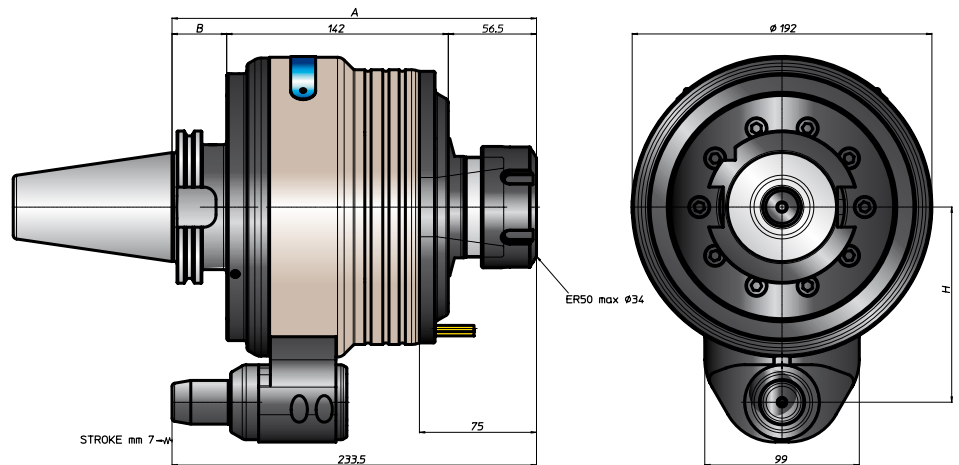
rotazione/rotation



prestazioni/performance



CONO SHANK	size	A	B	H	
				standard	optional
DIN69871	50	233,5	35	125	-
	60	249,5	51		
ANSIB5.50	50	233,5	35	125	-
			51	-	
HSK	100	245,5	53	125	-
CAPTO	C8	241,5	-	125	-
KM	100	237,5	-	125	-
DIN2080	50	233,5	-	125	-
NMTB	50	233,5	-	125	-



FH

BAH

TA.CP

TA

MOX

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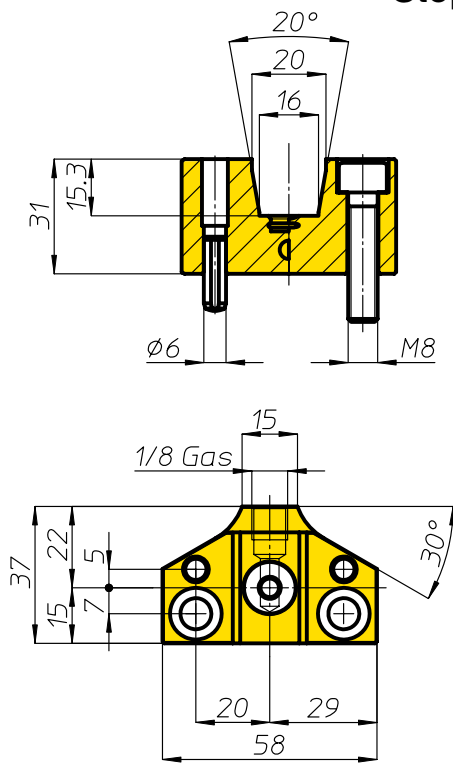
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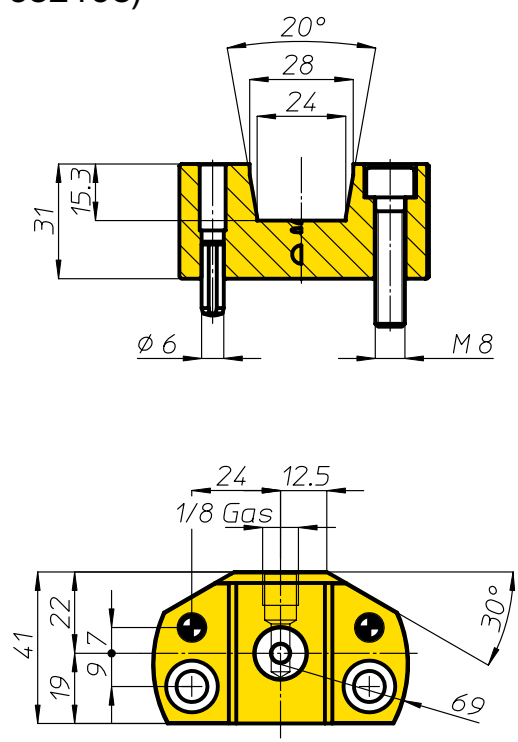
Stop-block



MOX 配备 H=65/80
MOX with H=65/80
Stop-block (cod. 630104)



MOX 配备 H=110/125
MOX with H=110/125
Stop-block (cod. 632198)



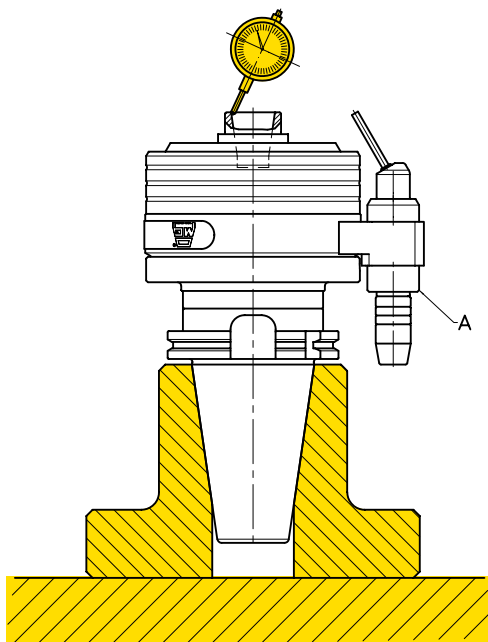


COLLAUDO

Ogni moltiplicatore di giri ha allegato il proprio certificato di collaudo dove sono riportate le proprie caratteristiche tecniche, il numero di matricola, i risultati ottenuti dai test eseguiti sul nostro banco prova BP03, il valore della concentricità tra il cono e la sede pinza il cui valore massimo è mm 0.01. Per verificare il valore della concentricità occorre disporre il moltiplicatore come in fig. 1, fermare il perno A e ruotare il cono. Il valore letto sul comparatore millesimale è la concentricità tra l'asse del cono e l'asse del mandrino.

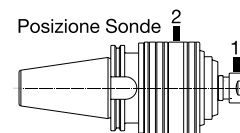
TEST

Every spindle speeder has his test certificate in which there are the technical characteristics, the serial number, the results of the tests made on our BP03 testing bench, the concentricity value between the shank and the collet (max. value 0,01 mm). To verify the concentricity value it is necessary to have the spindle speeder as from picture N°. 1, stopping the pin "A" and rotating the shank. The value on the dial indicator is the concentricity between the shank axe and the spindle axe.



CERTIFICATO DI COLLAUDO

Banco prova BP03
Data prova: 10/07/2011
Articolo: MO10 Matricola: 1315



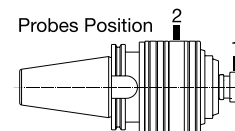
N° Max Giri Uscita: 22.000
Rapporto Entrata-Uscita: 1:6
N° Giri Uscita = N° Giri Entrata * Rapporto

Prova	N° Giri Entrata	Temp.(°C) Sonda 1	Temp.(°C) Sonda 2	Temp. Ambiente
1	1000	45,40	43,20	24,60
2	1500	40,80	36,80	24,60
3	2000	44,20	42,00	24,80
4	2500	48,80	42,00	24,80
5	3000	49,20	38,60	25,00

Concentricità Max Cono - Mandrino: 0,006

TEST REPORT

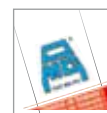
Testing bench BP03
Test date: 10/07/2011
Item: MO10 SN: 1315



Max Output RPM: 22.000
Ratio Input-Output: 1:6
Output RPM = Input RPM * Ratio

Test	Input RPM	Temp.(°C) Probe 1	Temp.(°C) Probe 2	Environment Temp.
1	1000	45,40	43,20	24,60
2	1500	40,80	36,80	24,60
3	2000	44,20	42,00	24,80
4	2500	48,80	42,00	24,80
5	3000	49,20	38,60	25,00

Max Runout between Shank and Spindle: 0,006



Moltiplicatori di giri speciali

Special spindle speeders



MO 26310

Riduttore di giri, rapporto 6-1,
input max 15.000 RPM, attacco
HSK63, mandrino ER20
Spindle reducer, ratio 6-1, input
max 15.000 RPM, shank HSK63,
ER20 spindle



MO 28910

MO16 con attacco CAPTO C8 e
mandrino ER25 prolungato
MO16 with CAPTO C8 shank
and extended ER25 spindle



MO 12110

Rapporto/Ratio 1-4
RPM max 4.500
Torque 1.150 Nm
Output DIN69871-A50
Peso/Weight Kg 240

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Moltiplicatori di giri speciali

Special spindle speeders

TFS 09011

Riduttore di giri per maschiatura con compensazione assiale mandrino, corsa compensazione ± 7 mm, rapporto 6-1, input max 10.000 RPM, attacco HSK-F63, mandrino per bussola porta maschio grandezza 1
Tapping spindle reducer with axial compensation, stroke ± 7 mm, ratio 6-1, input max 10.000 RPM, shank HSK-F63, spindle for tapping bush size 1



VDI 16610

MO13 rinviato di 90° con attacco VDI30
MO13 with VDI30 shank at 90°

MO 16210

MO13 con attacco VDI40
MO13 with VDI40 shank



MO26 con cono DIN69871-A60, mandrino Weldon $\varnothing 25$ e liquido refrigerante utensile passante dal centro stop-block/centro mandrino
MO26 with DIN69871-A60 shank, output spindle Weldon $\varnothing 25$, coolant trough the stop-block/spindle centre

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serie HT

torrette a revolver turret heads

Le torrette a revolver serie **HT** sono una novità della produzione O.M.G. Nate dall'esigenza di aumentare la flessibilità delle macchine utensili, possono eseguire lavorazioni di foratura, filettatura, alesatura, fresatura. Trovano collocazione direttamente sul mandrino della macchina o, con motorizzazione propria, montate su slitte a uno o più assi di movimento.

Disponibili in tre grandezze, hanno la possibilità di montare teste multiple, teste ad angolo e moltiplicatori di giri per aumentare la velocità dell'utensile. Tutte le versioni utilizzano un sistema di posizionamento tramite corona Hirth; questa soluzione costruttiva permette grande precisione, grande rigidità nelle lavorazioni di fresatura e alesatura di finitura, grande ripetitività.

- Costruzione torretta in acciaio e ghisa.
- Mandrini montati su cuscinetti di precisione.
- Mandrini con diverso attacco utensile (DIN55058, Komet, HSK, ecc) intercambiabili sulla stessa torretta.
- Mandrini in presa diretta con la presa di forza per sfruttare appieno la potenza
- Sistema idraulico di bloccaggio-sbloccaggio corona Hirth.
- La stessa motorizzazione permette la rotazione della torretta e la rotazione dei mandrini.
- Rotazione torretta bidirezionale per ricercare più velocemente il mandrino necessario alla lavorazione da eseguire.
- Refrigerante indipendente per ogni mandrino.
- Possibilità del refrigerante di passare attraverso il centro del mandrino.
- Lubrificazione effettuata a grasso o con miscela olio-aria.
- Pressurizzazione torretta
- Connettore unico per l'interscambio dati tra la torretta ed il cnc.

La serie **HT**, quindi, conferma la capacità di O.M.G. di affinare la gamma degli strumenti ad elevata affidabilità per le lavorazioni industriali e di puntare al centro delle esigenze della propria clientela offrendo sempre, come risorsa per l'innovazione, la versatilità dei propri prodotti.

*The **HT** series of turret heads are a novelty in the O.M.G. production range. Inspired by the need to increase the flexibility of machine tools, they are able to perform drilling, tapping, boring and milling. They can be installed directly on the machine spindle or, with their own drive, mounted on slides with one or more movement axes.*

Available in three sizes, they can be fitted with multispindle heads, angle heads and multipliers for greater tool velocity.

All versions use a positioning system based on a Hirth crown gear, providing utmost precision, excellent strength in milling and finishing boring and outstanding repeatability.

- Turret made of steel and cast iron
- Spindles mounted on precision bearings
- Spindles with different tool connections (HSK, Komet, DIN55058, etc.) which can be interchanged on the same turret
- Spindles directly engaged with p.t.o. to exploit power to the full
- Hydraulic Hirth crown gear locking-release system
- Single drive rotates both turret and spindles
- Two-way turret rotation for quicker retrieval of the spindle needed for the next process
- Separate coolant for each spindle
- Coolant through the spindle centre
- Lubrication with grease or oil-air mixture
- Pressurised turret
- Single connector for data exchange between turret and cnc.

*The **HT** series once more reflects O.M.G.'s ability to constantly perfect its range of highly reliable tools for industrial machining and to target the exact needs of its customers, offering product versatility as a resource for innovation.*



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Applicazioni/Applications 6-3

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HT 160



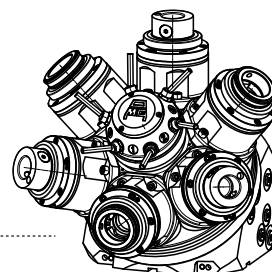
F1 circuito olio per bloccaggio-sbloccaggio torretta
oil circuit for turret locking-release

F2 entrata refrigerante utensili
coolant tools

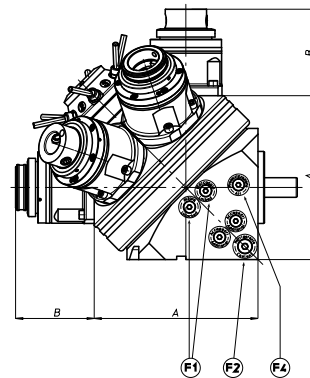
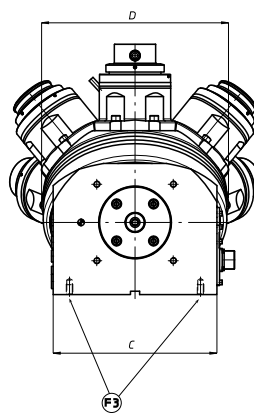
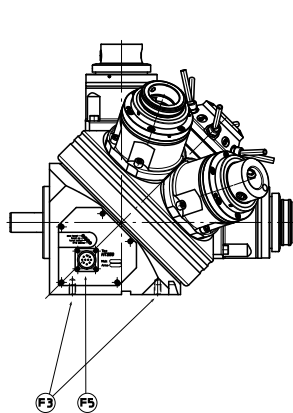
F3 fori fissaggio torretta
turret fixing holes

F4 entrata olio-aria
input oil-air

F5 connettore elettrico
electric connector



HT 200



HT 250



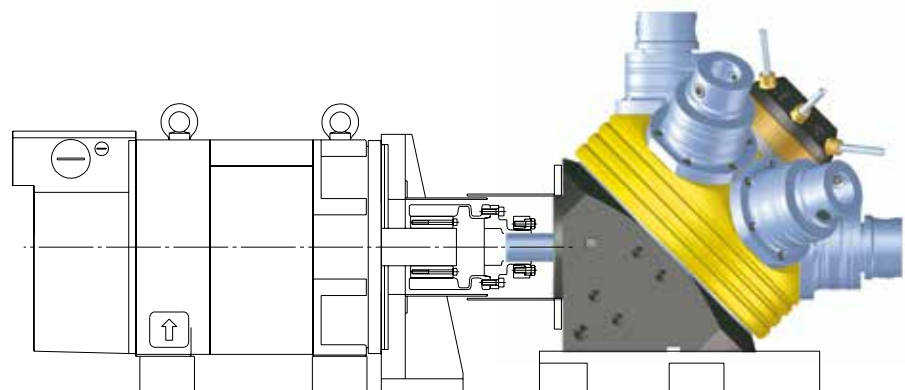
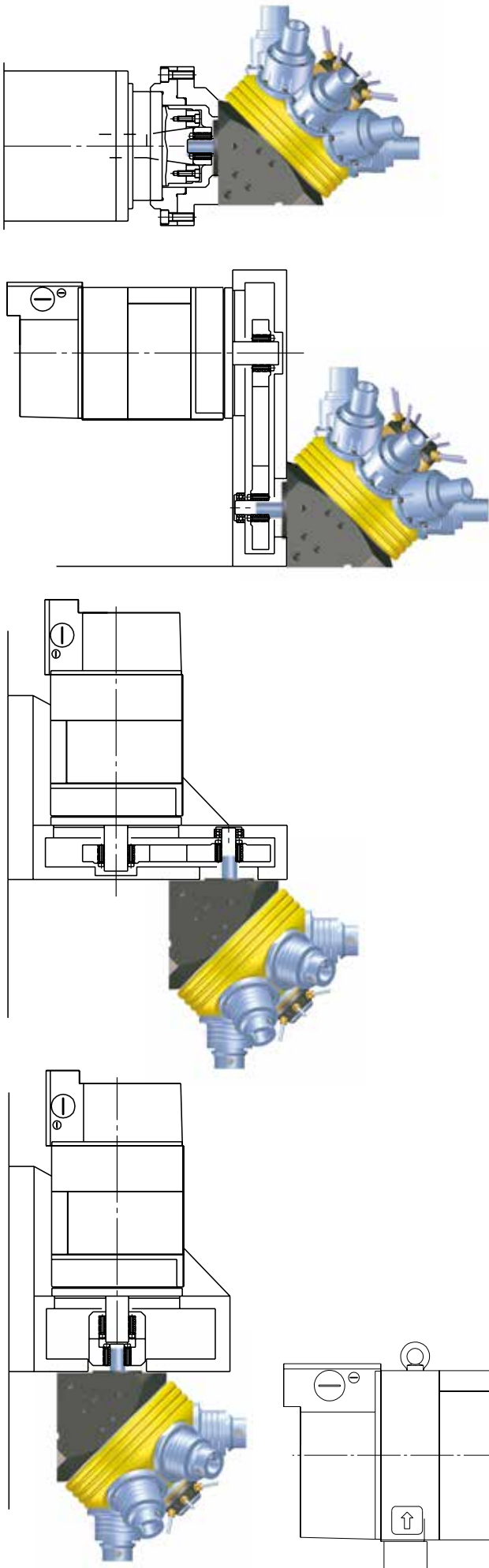
HT 360



		HT 160	HT 200	HT 250	HT 360
n° di posizioni max max nr. of position		6	6	6-8	6-8-12
coppia trasmissibile al mandrino transmitting torque by spindle	Nm	80	200	300	800
n° giri max mandrino max rpm spindle		12.000	10.000	10.000	8.000
precisione di posizione mandrini precision of spindles positioning		± 3"	± 3"	± 3"	± 3"
potenza motore motor power	approx Kw	4	5	6,5	16
tempo di rotazione (1/6 di giro) indexing time 1/6 of rotation	sec	0,9	1	1,1	1,5
diametro corona Hirth dimension rings Hirth	mm	160	200	250	350
A		160	200	250	360
B dipende dal tipo di mandrino to depend on the spindle type	approx mm	70/80	100/150	100/150	120/170
C		160	200	250	350
D		180	228	290	400
tipi di mandrini disponibili type of spindles		ABS, HSK, ER, DIN 55058			
peso weight	kg	35	60	140	300

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Gallery



HT 05007



HT 05209



HT 31808



HT 08509

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Gallery

HT 35907



HT 08718



HT 27206



HT 07813



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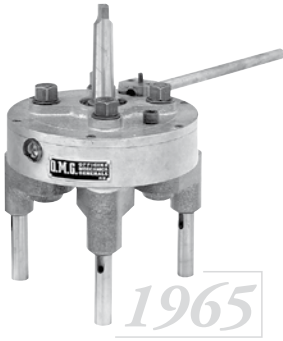
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serie

VH

teste multiple ad assi variabili variable axis heads



Lo sviluppo della serie TE, una linea completa di teste ad assi variabili, rappresenta l'innovazione degli anni '70 che sancisce a pieni voti il successo e la notorietà del marchio O.M.G.

Gli anni '80 sono dedicati al perfezionamento della linea TE e all'introduzione di due nuove serie; la TEM e la TEF. Il risultato é la messa a punto della più completa gamma di teste ad assi variabili presenti sul mercato nazionale ed internazionale.

Le tecnologie d'avanguardia nei processi produttivi e l'impiego di nuove tecniche computerizzate firmano la notorietà e l'immagine del marchio O.M.G.: un nome diffuso e conosciuto da tutte le aziende, piccole e grandi, un'immagine mai smentita ma sottolineata nelle numerose campagne pubblicitarie realizzate.

L'ultima generazione, la serie VH, racchiude gli elementi di tecnologia e know how delle teste multiple ad interassi fissi. Si tratta di strumenti ad alta prestazione che consentono agli utilizzatori l'impiego ottimale di tutte le più avanzate tecnologie applicate agli utensili.

La VH rappresenta una serie completamente diversa, sia sotto il profilo tecnologico che estetico: un prodotto per il quale anche la ricerca ergonomica é stata assolutamente meticolosa.



The TE series, a complete range of variable axes heads, represented a major company achievement in the seventies: it was a success and brought OMG into the limelight.

The eighties were characterised by upgrades to the TE range and the addition of two new series TEM and TEF.

Together this forms the most complete range of variable axis heads on domestic and international markets.

Cutting-edge technologies in production processes and the use of new computerised methods are the hallmarks of the O.M.G. brand name and image

thanks to which the company has won renown among small and large enterprises alike, an image that has never lost its importance but which is, instead, stressed by frequent advertising campaigns.



The latest generation, the VH series, bears witness to the technology and "know how" of multispindle heads with fixed centres and allows the end user to fully exploit the latest developments in tool manufacturing.

This new VH series, so different in terms of technology and aesthetics, is also the result of meticulous ergonomic research.



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FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

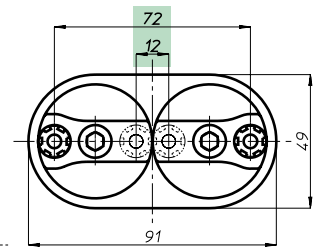
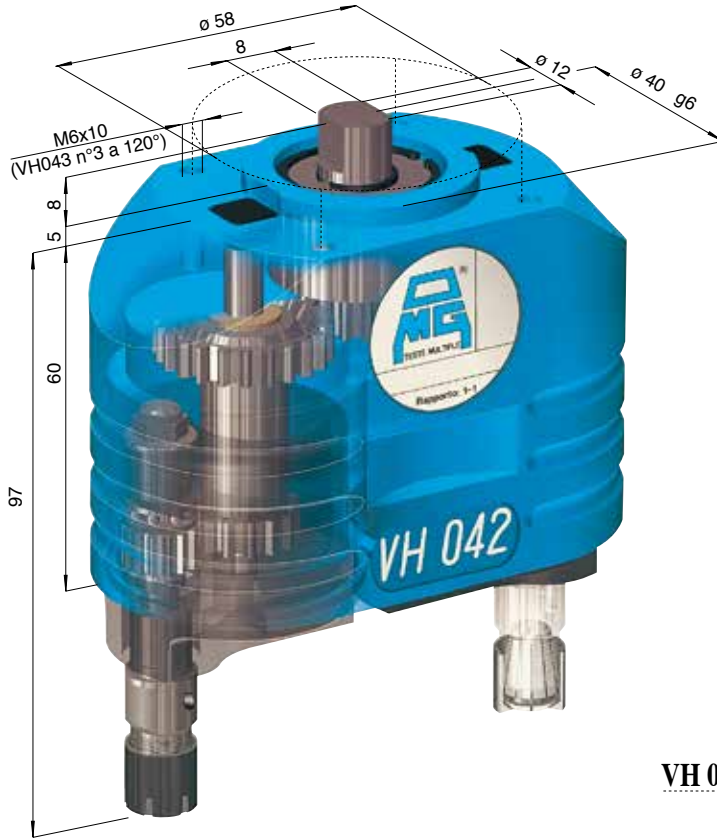
7-1



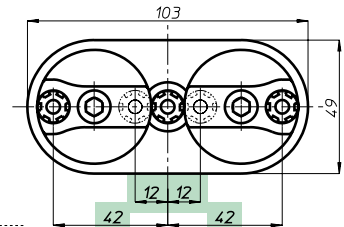
CAPACITA' FORATURA
DRILLING CAPACITY $\phi 5$

VH

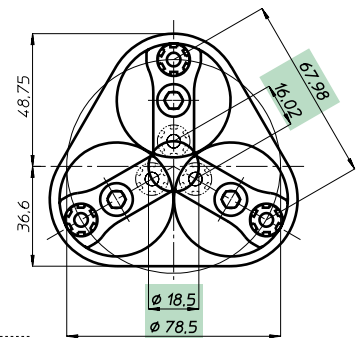
modello 04



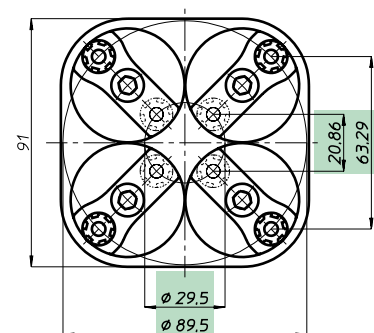
VH 042



VH 043 L



VH 043



VH 044

Testa modello Head type	VH 042	VH 043 L	VH 043	VH 044
Articolo Item	VH 042 P	VH 043 LP	VH 043 P	VH 044 P
Attacco utensile Spindle type	ER 8 - max $\phi 5$			
Articolo Item				
Attacco utensile Spindle type				
N. mandrini Spindles nr.	2	3	3	4
Campo di lavoro min.	12	12 + 12	$\phi 18,5$	$\phi 29,5$
Centre distances max.	72	42 + 42	$\phi 78,5$	$\phi 89,5$
Capacità foratura Drilling capacity	Acciaio Rm 500 N/mm ² - $\phi 4$			
Maschiatura Tapping	Ghisa GG25 - $\phi 5$			
Rapporto Ratio	M 3			
Velocità RPM	1 - 1			
Peso Weight	0,95	1,05	1,4	1,9

Teste multiple ad assi variabili • Variable axis heads

FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

7-2



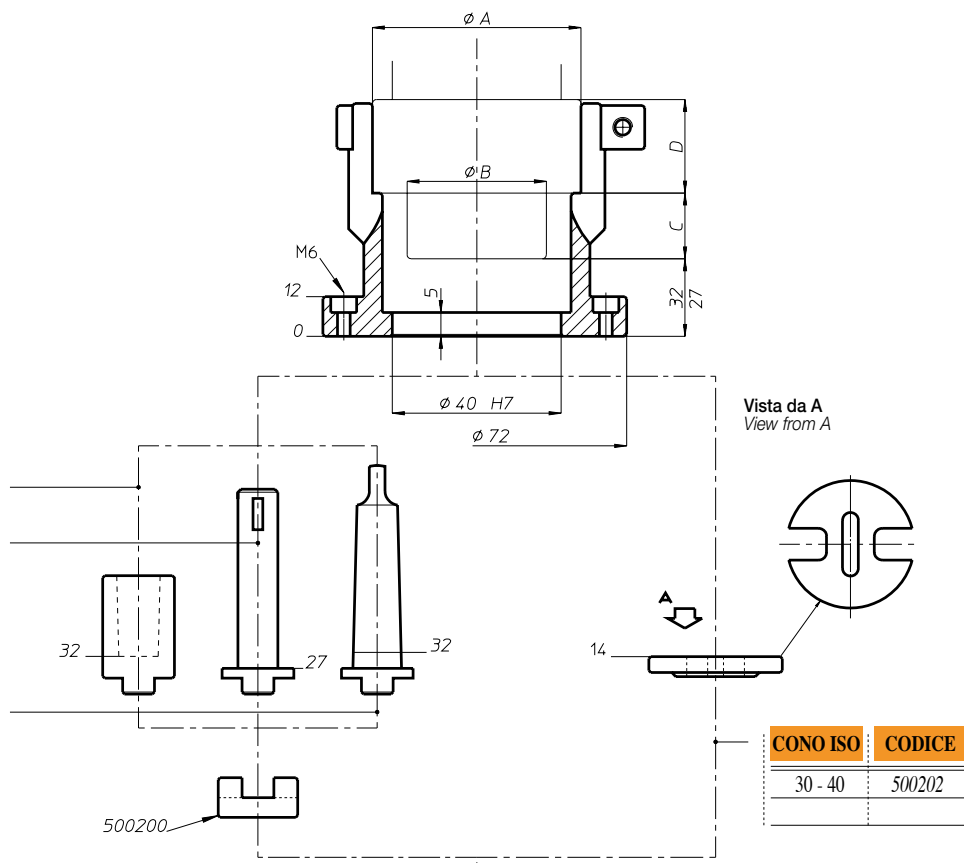
MANICOTTO DI COLLEGAMENTO - CONNECTION COLLAR

NOTA: A.B.C.D. dati macchina
NOTE: A.B.C.D. machine features

DIN 238	CODICE
B 10	011277
B 12	011278
B 16	011279
B 18	011280

DIN 55058	CODICE
16	525405
20	525406
28	525407

DIN 228	CODICE
CM 1	011115
CM 2	011120
CM 3	011125



Teste multiple ad assi variabili • Variable axis heads

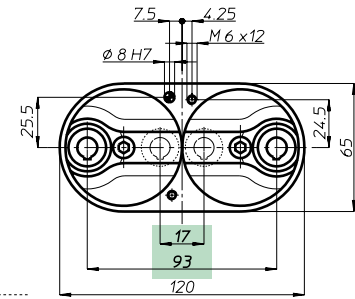
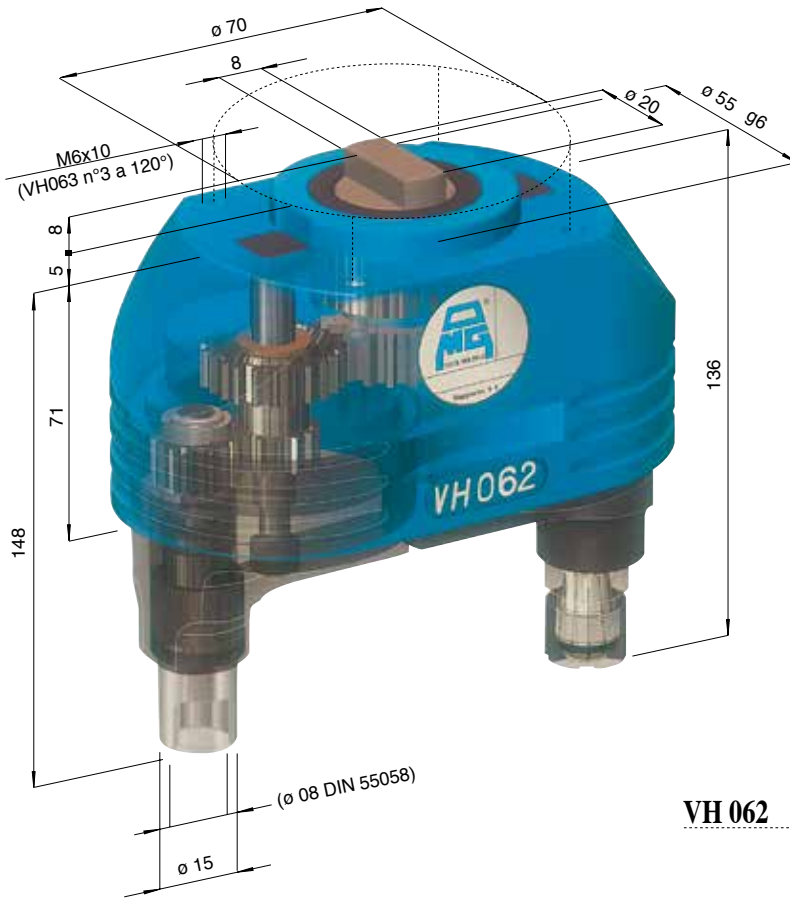


CAPACITA' FORATURA
DRILLING CAPACITY $\phi 7$

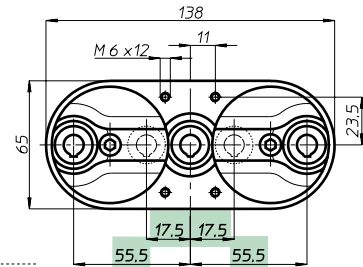
VH

modello 06

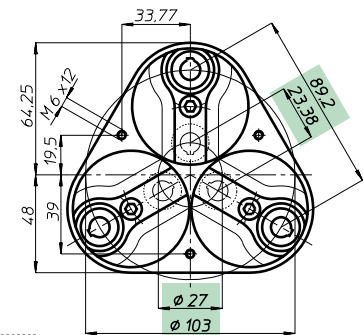
Teste multiple ad assi variabili • Variable axis heads



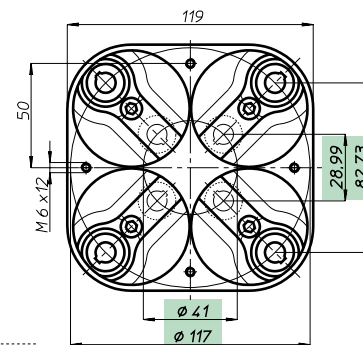
VH 062



VH 063 L



VH 063



VH 064

Testa modello Head type	VH 062	VH 063 L	VH 063	VH 064
Articolo Item	VH 062 P	VH 063 LP	VH 063 P	VH 064 P
Attacco utensile Spindle type	ER 11 - max $\phi 7$			
Articolo Item	VH 062 D	VH 063 LD	VH 063 D	VH 064 D
Attacco utensile Spindle type	DIN 55058 - $\phi 8$			
N. mandrini Spindles nr.	2	3	3	4
Campo di lavoro min.	17	17,5 + 17,5	$\phi 27$	$\phi 41$
Centre distances max.	93	55,5 + 55,5	$\phi 103$	$\phi 117$
Capacità foratura Drilling capacity	Acciaio Rm 500 N/mm ² - $\phi 6$ Ghisa GG25 - $\phi 7$			
Maschiatura Tapping	M 5			
Rapporto Ratio	1 - 1			
Velocità RPM	4.000			
Peso Weight	Kg. 1,65	1,95	2,3	3,1



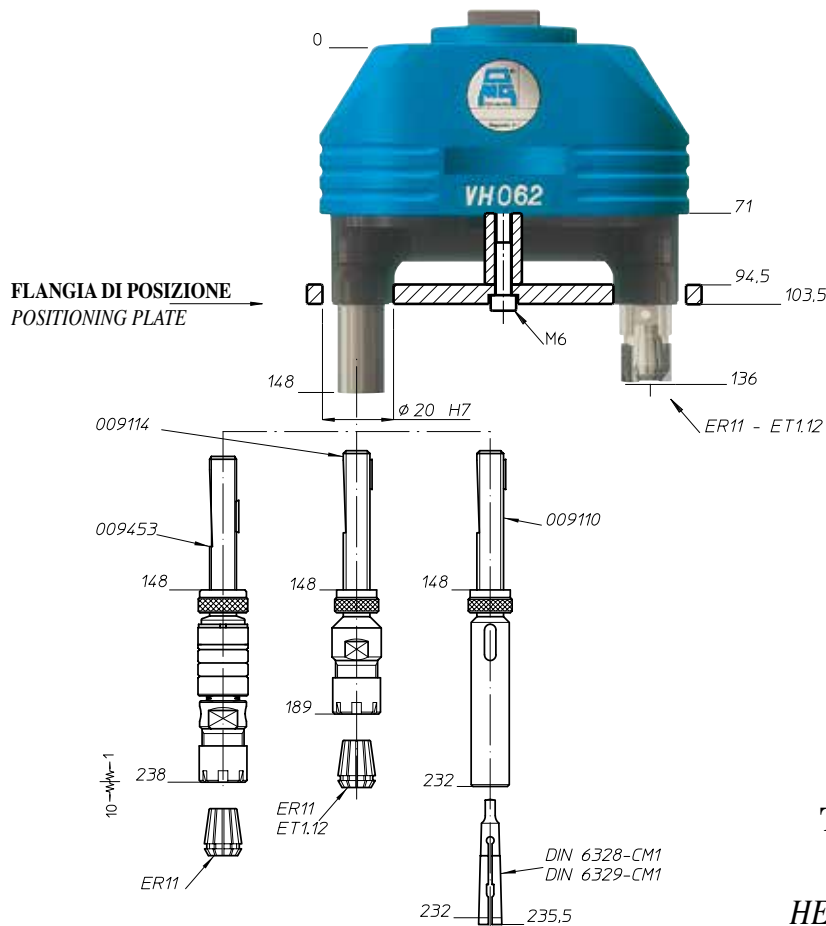
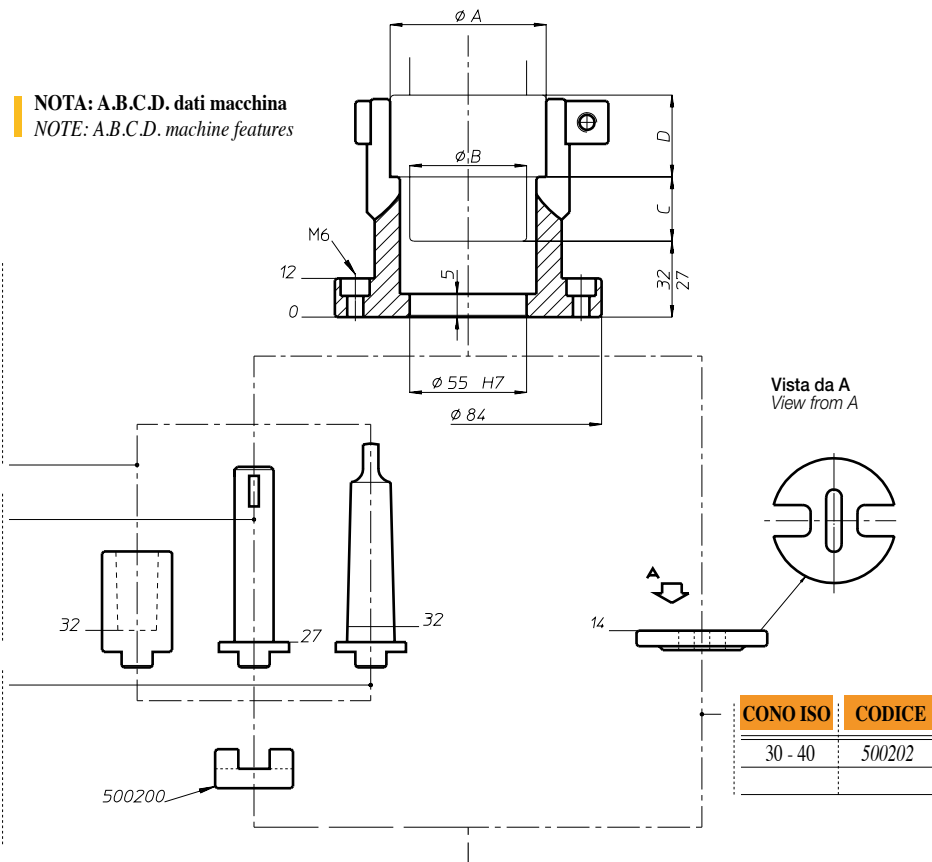
MANICOTTO DI COLLEGAMENTO - CONNECTION COLLAR

NOTA: A.B.C.D. dati macchina
NOTE: A.B.C.D. machine features

DIN 238	CODICE
B 10	011277
B 12	011278
B 16	011279
B 18	011280
B 22	011281
B 24	011282

DIN 55058	CODICE
16	525405
20	525406
28	525407
36	525408

DIN 228	CODICE
CM 1	011115
CM 2	011120
CM 3	011125
CM 4	011130
CM 5	011135



**ACCESSORI PER
TESTE MULTIPLE
MULTISPINDLE
HEADS ACCESSORIES**

Teste multiple ad assi variabili • Variable axis heads

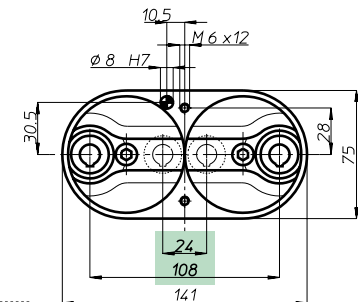
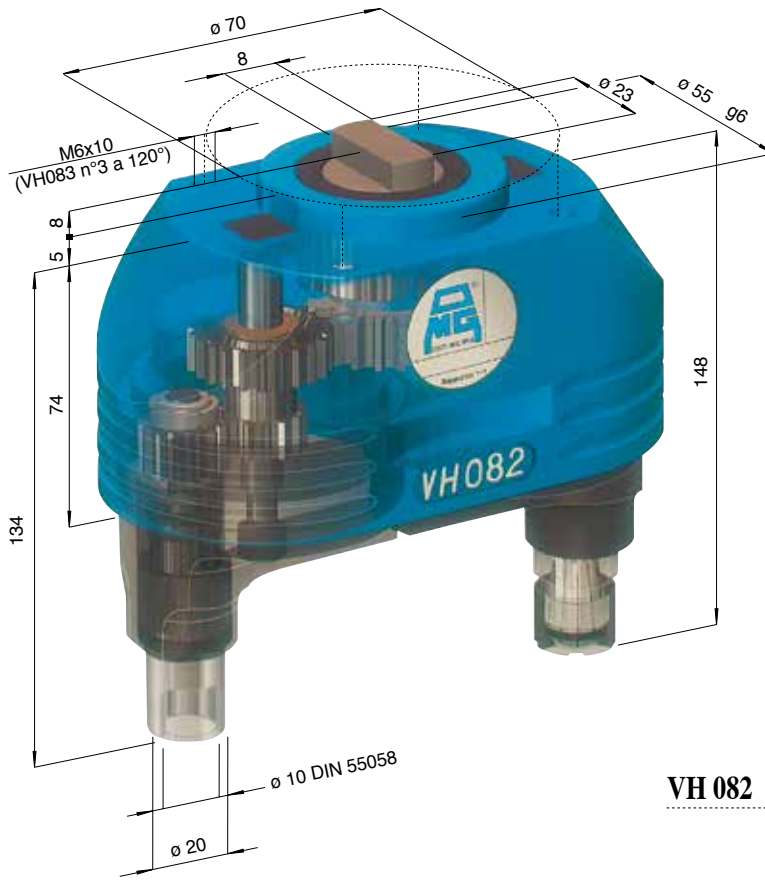


CAPACITA' FORATURA
DRILLING CAPACITY $\phi 10$

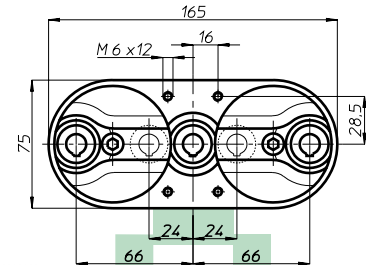
VH

modello 08

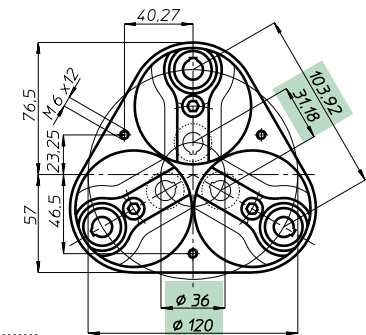
Teste multiple ad assi variabili • Variable axis heads



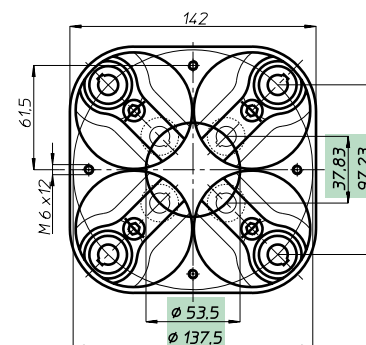
VH 082



VH 083 L



VH 083



VH 084

Testa modello Head type	VH 082	VH 083 L	VH 083	VH 084
Articolo Item	VH 082 P	VH 083 LP	VH 083 P	VH 084 P
Attacco utensile Spindle type	ER 16 - max $\phi 10$			
Articolo Item	VH 082 D	VH 083 LD	VH 083 D	VH 084 D
Attacco utensile Spindle type	DIN 55058 - $\phi 10$			
N. mandrini Spindles nr.	2	3	3	4
Campo di lavoro min.	24	24 + 24	$\phi 36$	$\phi 53,5$
Centre distances max.	108	66 + 66	$\phi 120$	$\phi 137,5$
Capacità foratura	Acciaio Rm 500 N/mm ² - $\phi 8$			
Drilling capacity	Ghisa GG25 - $\phi 10$			
Maschiatura Tapping	M 6			
Rapporto Ratio	1 - 1			
Velocità RPM	4.000			
Peso Weight	Kg. 2,2	2,9	3,4	4,6



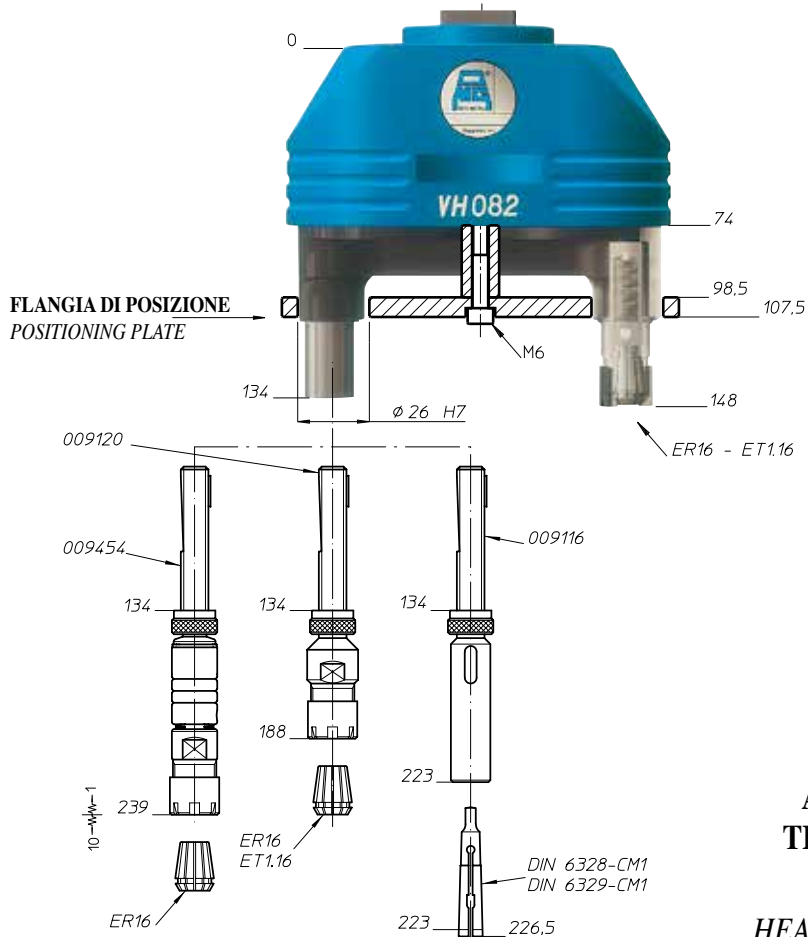
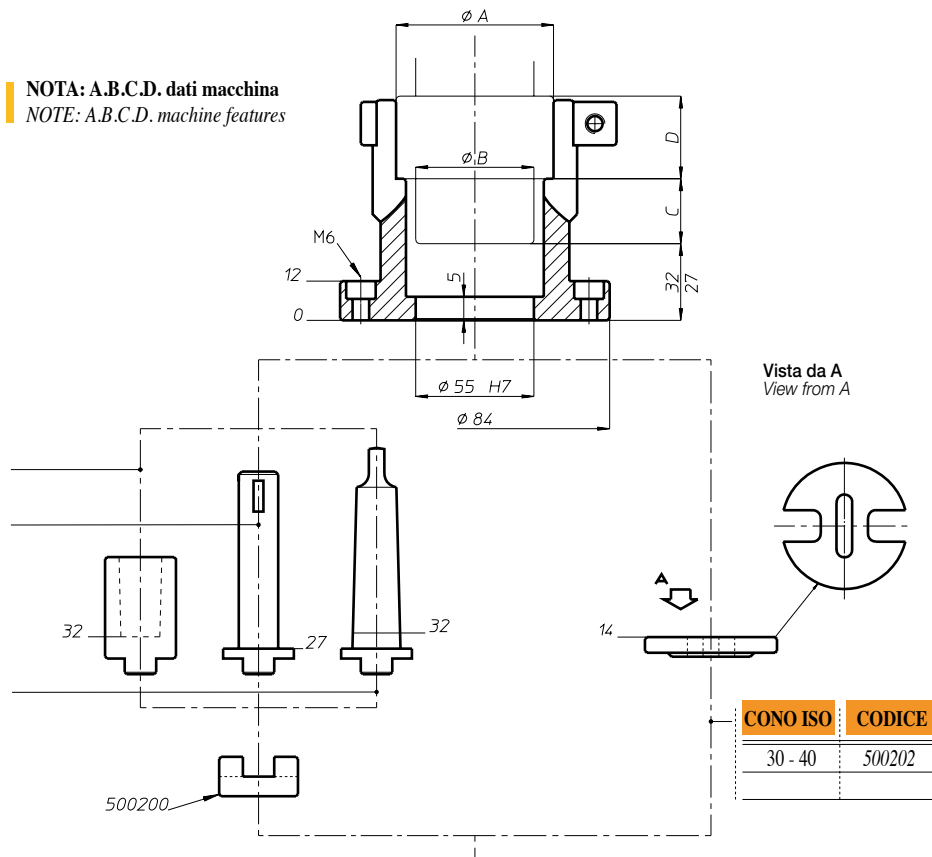
MANICOTTO DI COLLEGAMENTO - CONNECTION COLLAR

NOTA: A.B.C.D. dati macchina
NOTE: A.B.C.D. machine features

DIN 238	CODICE
B 10	011277
B 12	011278
B 16	011279
B 18	011280
B 22	011281
B 24	011282

DIN 55058	CODICE
16	525405
20	525406
28	525407
36	525408

DIN 228	CODICE
CM 1	011115
CM 2	011120
CM 3	011125
CM 4	011130
CM 5	011135



**ACCESSORI PER
TESTE MULTIPLE**
**MULTISPINDLE
HEADS ACCESSORIES**

Teste multiple ad assi variabili • Variable axis heads



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

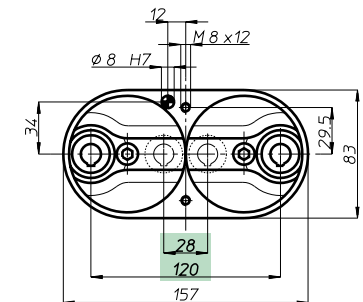
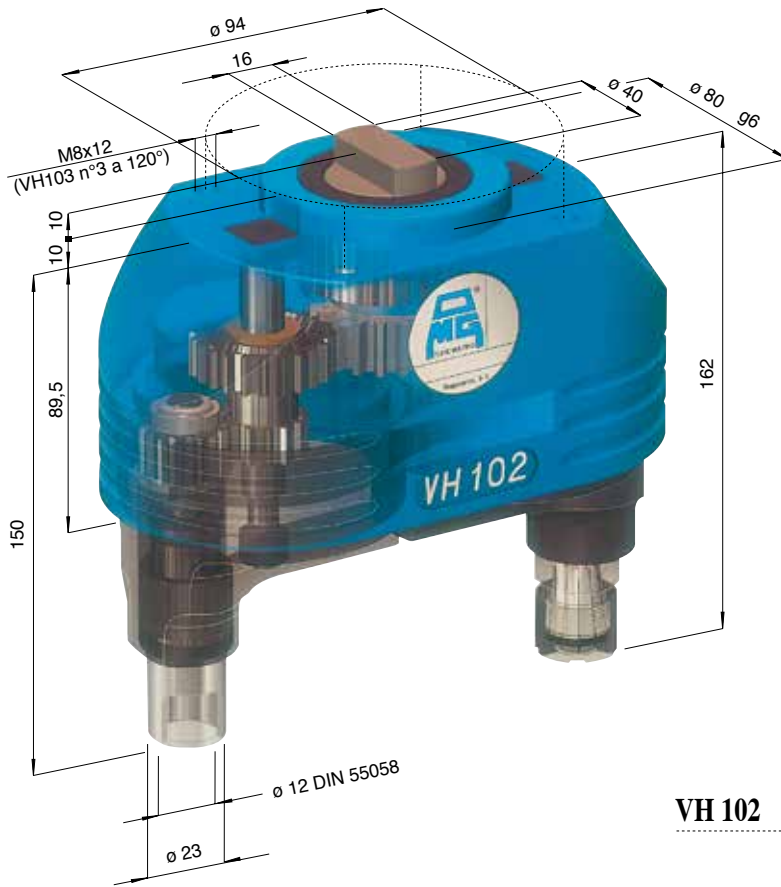
7-7

CAPACITA' FORATURA
DRILLING CAPACITY ϕ 12

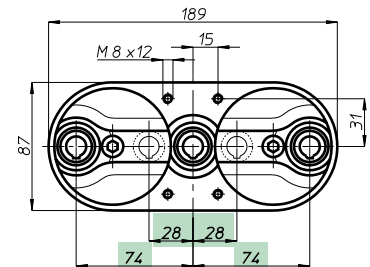
VH

modello 10

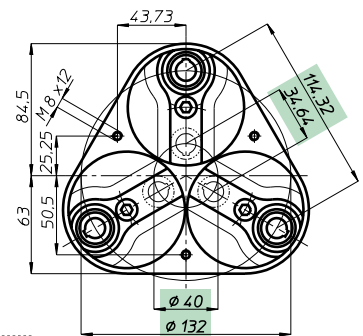
Teste multiple ad assi variabili • Variable axis heads



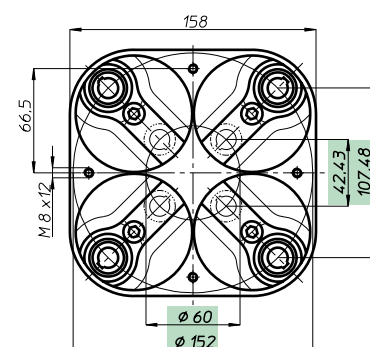
VH 102



VH 103 L



VH 103



VH 104

Testa modello Head type	VH 102	VH 103 L	VH 103	VH 104
Articolo Item	VH 102 P	VH 103 LP	VH 103 P	VH 104 P
Attacco utensile Spindle type	ER 16 - max ϕ 10			
Articolo Item	VH 102 D	VH 103 LD	VH 103 D	VH 104 D
Attacco utensile Spindle type	DIN 55058 - ϕ 12			
N. mandrini Spindles nr.	2	3	3	4
Campo di lavoro min.	28	28 + 28	ϕ 40	ϕ 60
Centre distances max.	120	74 + 74	ϕ 132	ϕ 152
Capacità foratura Drilling capacity	Acciaio Rm 500 N/mm ² - ϕ 10			
Maschiatura Tapping	Ghisa GG25 - ϕ 12			
Rapporto Ratio	M 8			
Velocità RPM	1 - 1			
Peso Weight	3,5	4,9	4,9	7,2



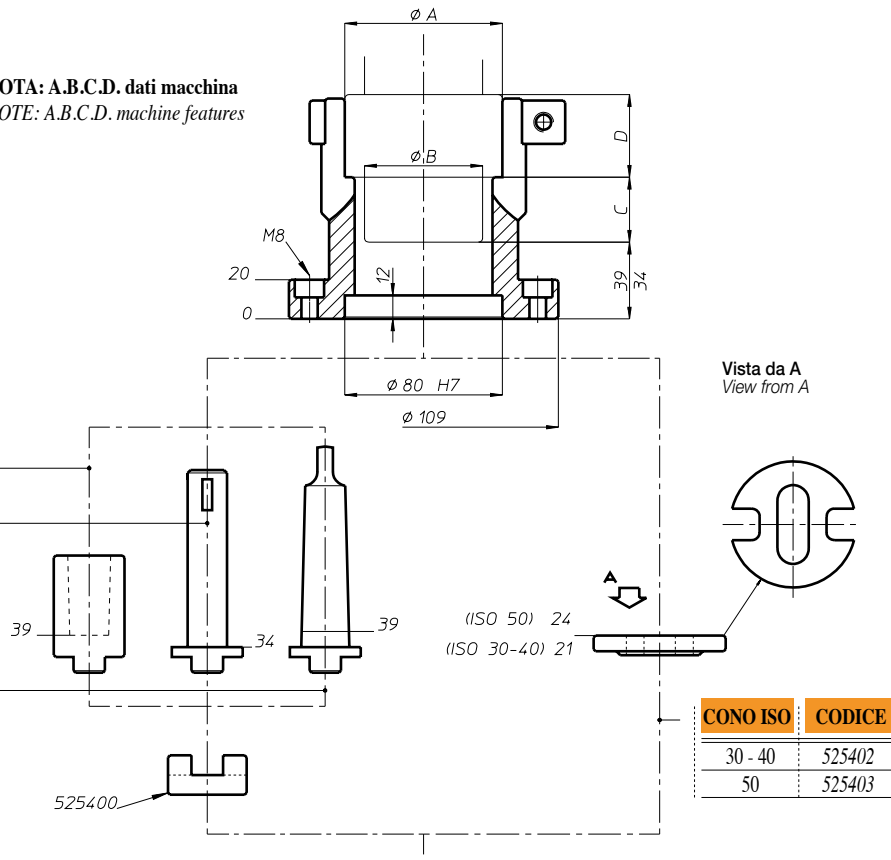
MANICOTTO DI COLLEGAMENTO - CONNECTION COLLAR

NOTA: A.B.C.D. dati macchina
NOTE: A.B.C.D. machine features

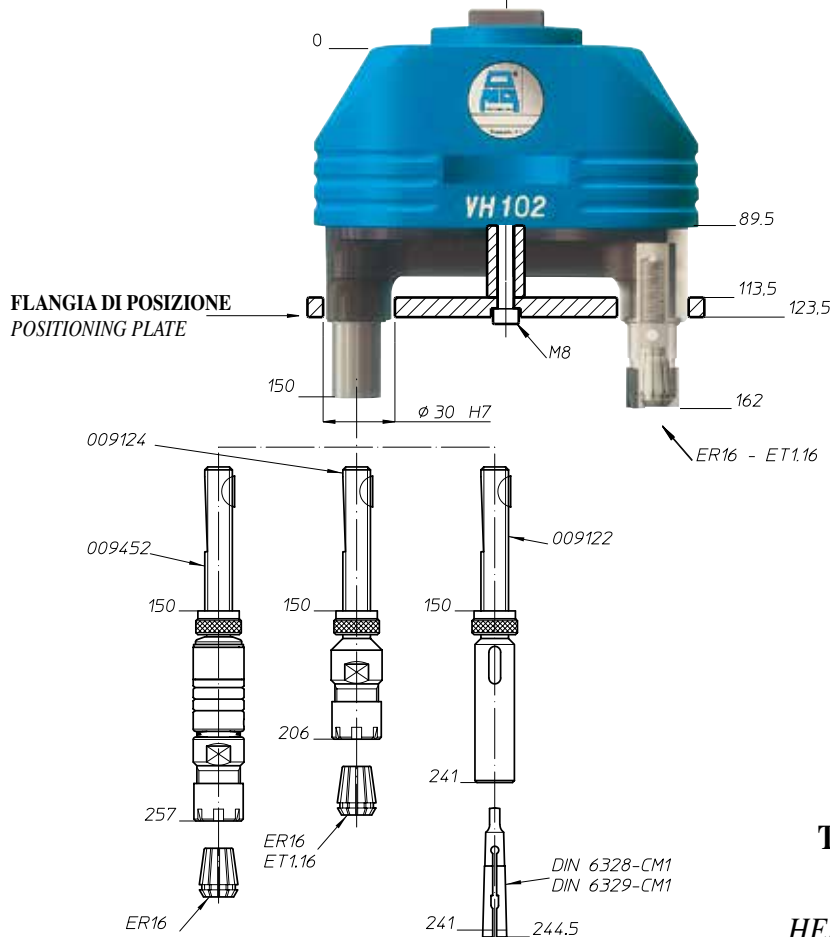
DIN 238	CODICE
B 10	011277
B 12	011278
B 16	011279
B 18	011280
B 22	011281
B 24	011282

DIN 55058	CODICE
16	525405
20	525406
28	525407
36	525408

DIN 228	CODICE
CM 1	011115
CM 2	011120
CM 3	011125
CM 4	011130
CM 5	011135



CONO ISO	CODICE
30 - 40	525402
50	525403



**ACCESSORI PER
TESTE MULTIPLE**
MULTISPINDLE
HEADS ACCESSORIES

Teste multiple ad assi variabili • Variable axis heads

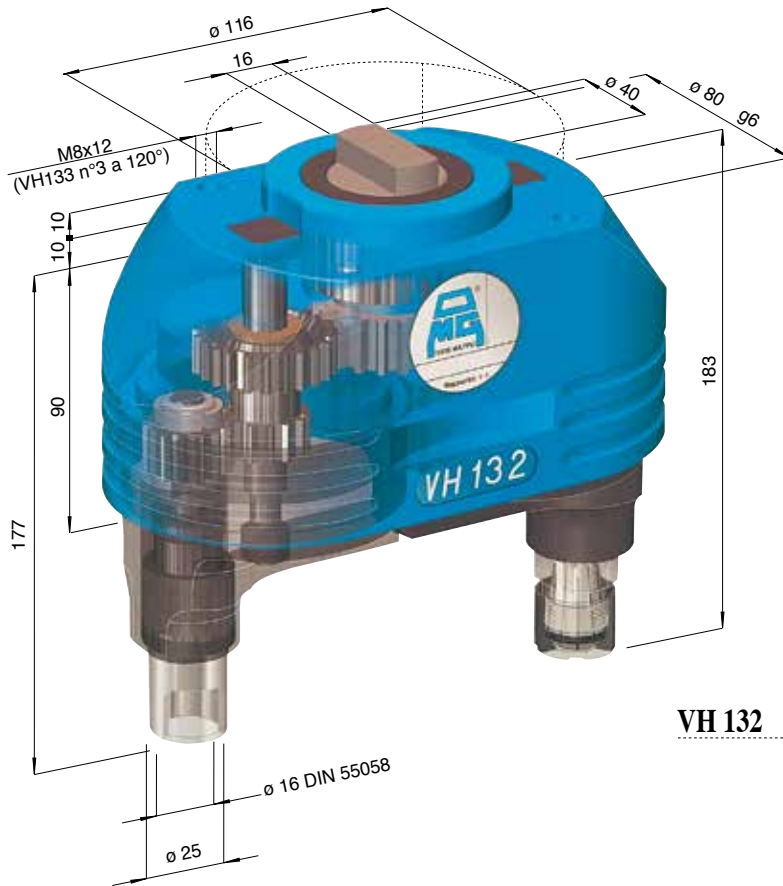


CAPACITA' FORATURA
DRILLING CAPACITY ϕ 14

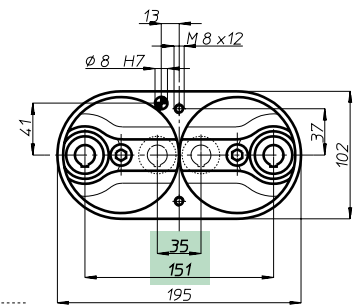
VH

modello 13

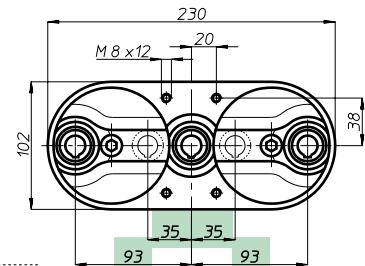
Teste multiple ad assi variabili • Variable axis heads



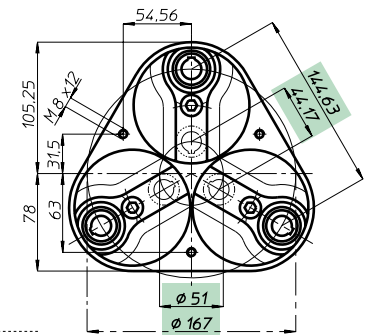
VH 132



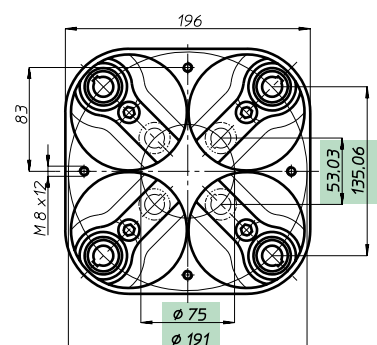
VH 133 L



VH 133



VH 134



Testa modello Head type	VH 132	VH 133 L	VH 133	VH 134
Articolo Item	VH 132 P	VH 133 LP	VH 133 P	VH 134 P
Attacco utensile Spindle type	ER 20 - max ϕ 13			
Articolo Item	VH 132 D	VH 133 LD	VH 133 D	VH 134 D
Attacco utensile Spindle type	DIN 55058 - ϕ 16			
N. mandrini Spindles nr.	2	3	3	4
Campo di lavoro min.	35	35 + 35	ϕ 51	ϕ 75
Centre distances max.	151	93 + 93	ϕ 167	ϕ 191
Capacità foratura Drilling capacity	Acciaio Rm 500 N/mm ² - ϕ 13			
Maschiatura Tapping	Ghisa GG25 - ϕ 14			
Rapporto Ratio	M 12			
Velocità RPM	1 - 1			
Peso Weight	5,3	7,2	7	10,8



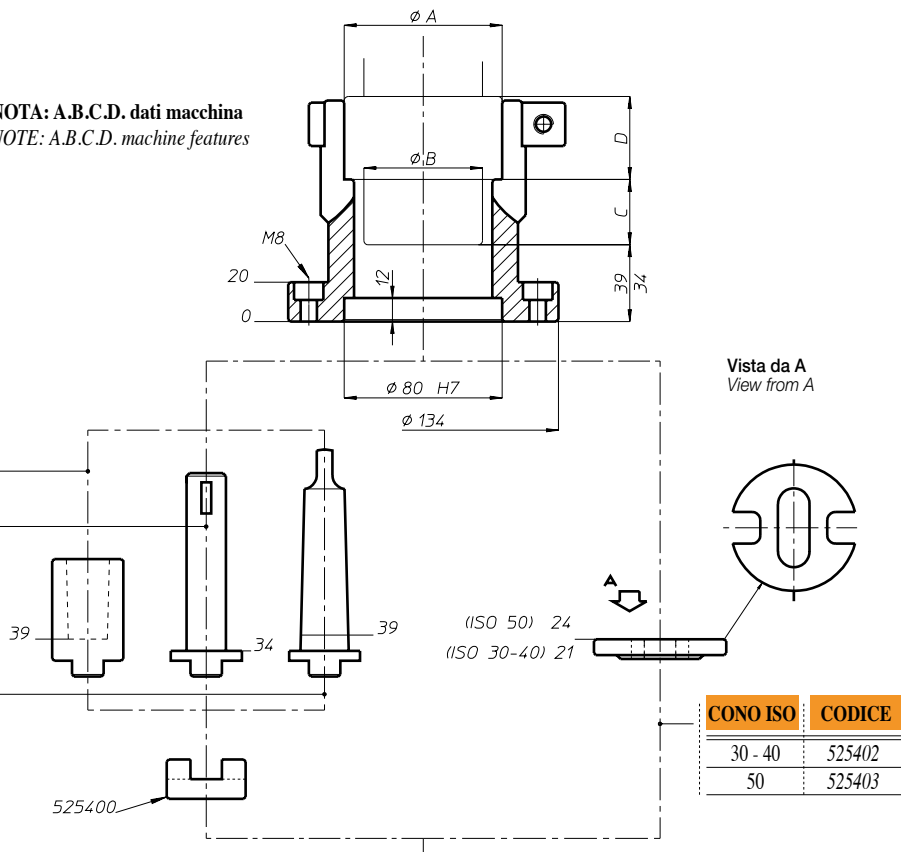
MANICOTTO DI COLLEGAMENTO - CONNECTION COLLAR

NOTA: A.B.C.D. dati macchina
NOTE: A.B.C.D. machine features

DIN 238	CODICE
B 16	011279
B 18	011280
B 22	011281
B 24	011282

DIN 55058	CODICE
16	525405
20	525406
28	525407
36	525408

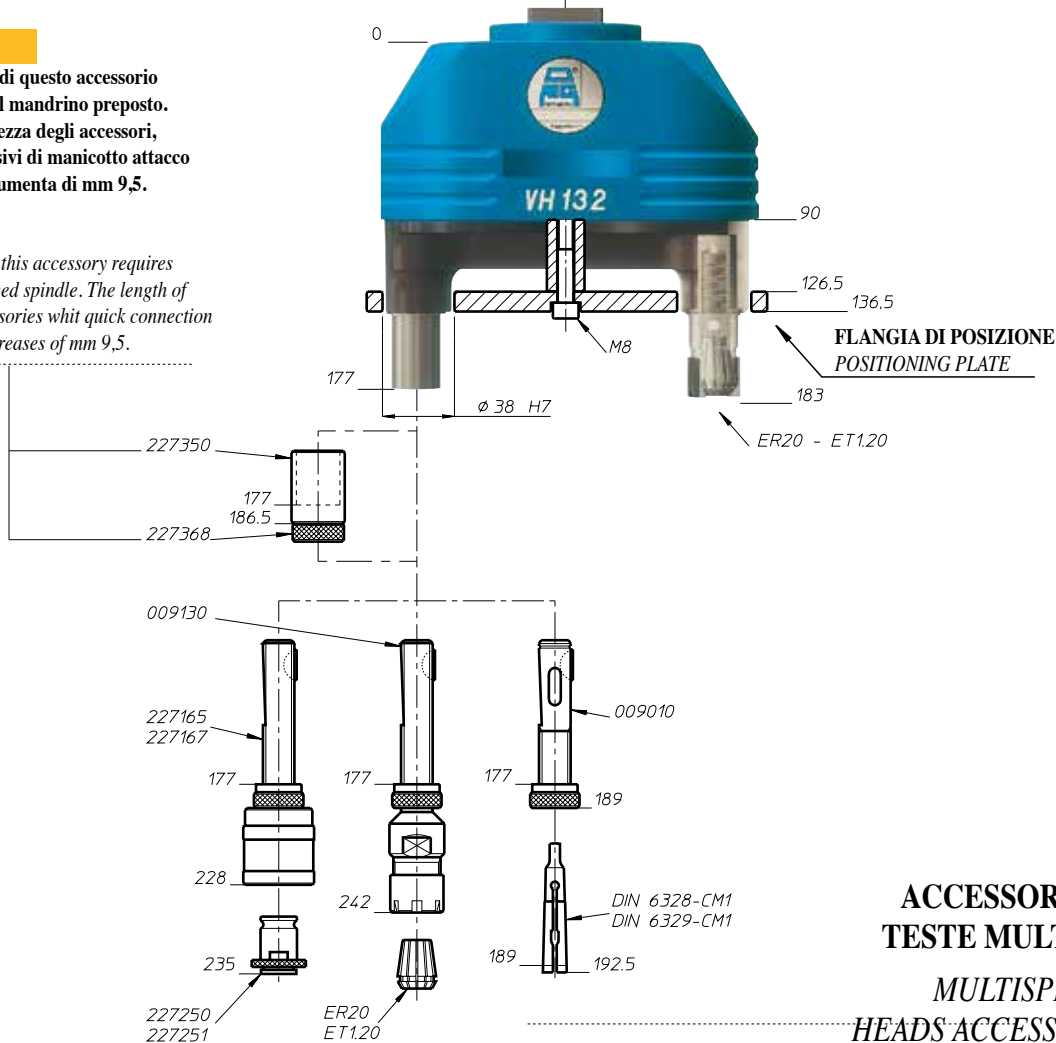
DIN 228	CODICE
CM 2	011120
CM 3	011125
CM 4	011130
CM 5	011135



NOTA:

l'utilizzo di questo accessorio richiede il mandrino preposto. La lunghezza degli accessori, comprensivi di manicotto attacco rapido, aumenta di mm 9,5.

NOTE:
the use of this accessory requires prearranged spindle. The length of this accessories whit quick connection sleeve increases of mm 9,5.



ACCESSORI PER TESTE MULTIPLE

MULTISPINDLE HEADS ACCESSORIES

Teste multiple ad assi variabili • Variable axis heads



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

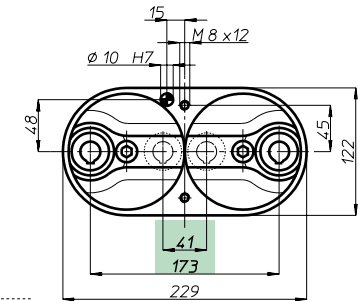
Appendice tecnica
Technical supplement

CAPACITA' FORATURA
DRILLING CAPACITY $\phi 20$

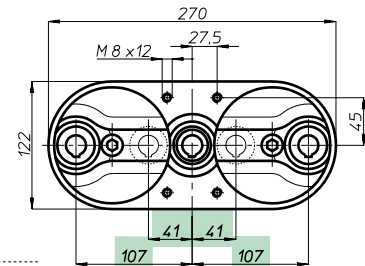
VH

modello 18

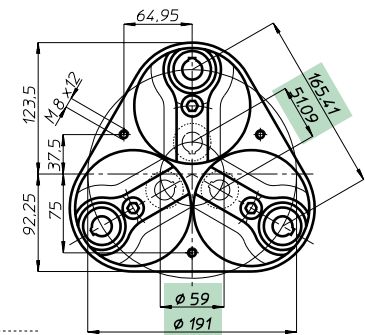
Teste multiple ad assi variabili • Variable axis heads



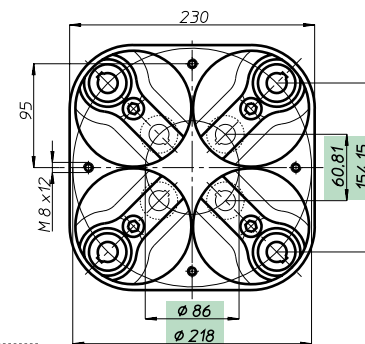
VH 182



VH 183 L



VH 183



VH 184

Testa modello Head type	VH 182	VH 183 L	VH 183	VH 184
Articolo Item	VH 182 P	VH 183 L P	VH 183 P	VH 184 P
Attacco utensile Spindle type	ER 25 - max $\phi 16$			
Articolo Item	VH 182 D	VH 183 LD	VH 183 D	VH 184 D
Attacco utensile Spindle type	DIN 55058 - $\phi 28$			
N. mandrini Spindles nr.	2	3	3	4
Campo di lavoro min.	41	41 + 41	$\phi 59$	$\phi 86$
Centre distances max.	173	107 + 107	$\phi 191$	$\phi 218$
Capacità foratura Drilling capacity	Acciaio Rm 500 N/mm ² - $\phi 18$			
Maschiatura Tapping	Ghisa GG25 - $\phi 20$			
Rapporto Ratio	M 14			
Velocità RPM	1 - 1			
Peso Weight	8,3	10,75	12	15,75



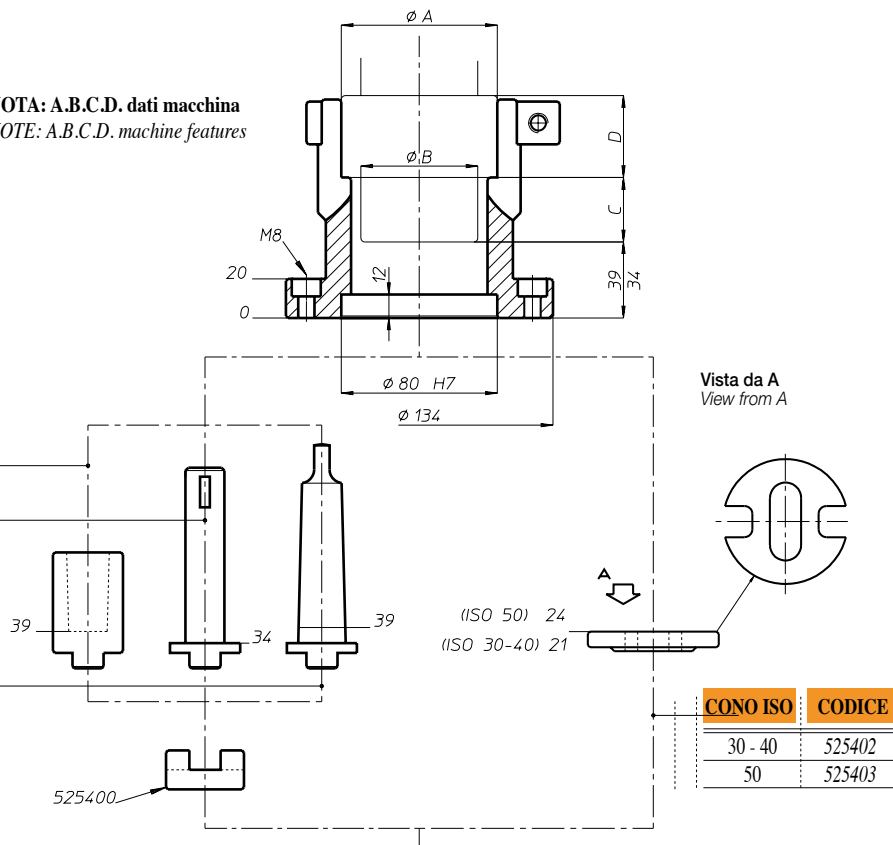
MANICOTTO DI COLLEGAMENTO - CONNECTION COLLAR

NOTA: A.B.C.D. dati macchina
NOTE: A.B.C.D. machine features

DIN 238	CODICE
B 16	011279
B 18	011280
B 22	011281
B 24	011282

DIN 55058	CODICE
16	525405
20	525406
28	525407
36	525408

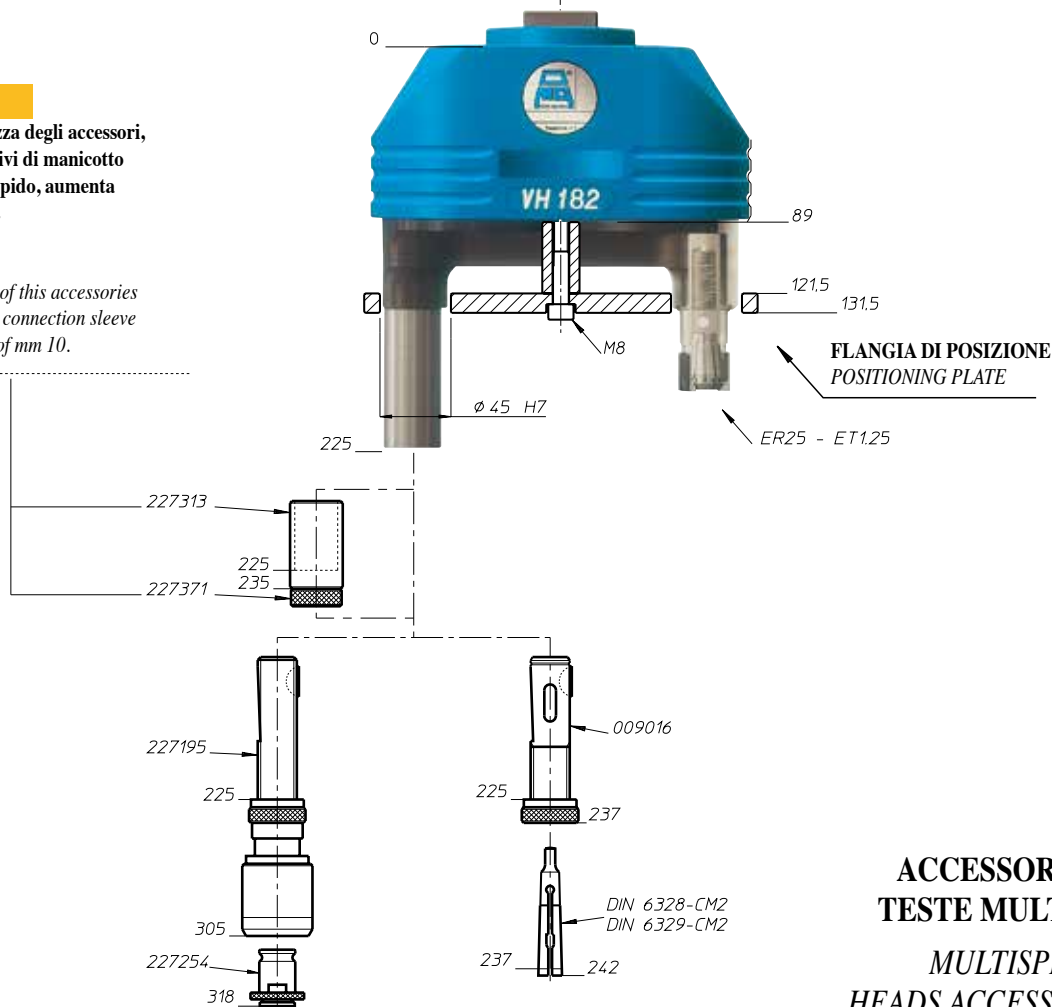
DIN 228	CODICE
CM 3	011125
CM 4	011130
CM 5	011135



NOTA:

la lunghezza degli accessori, comprensivi di manicotto attacco rapido, aumenta di mm 10.

NOTE:
the length of this accessories whit quick connection sleeve increases of mm 10.



**ACCESSORI PER
TESTE MULTIPLE
MULTISPINDLE
HEADS ACCESSORIES**

Teste multiple ad assi variabili - Variable axis heads

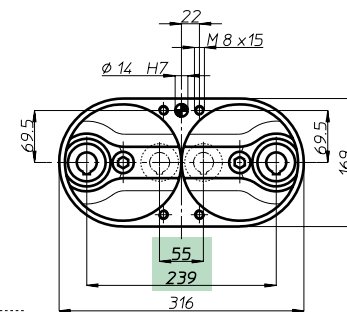
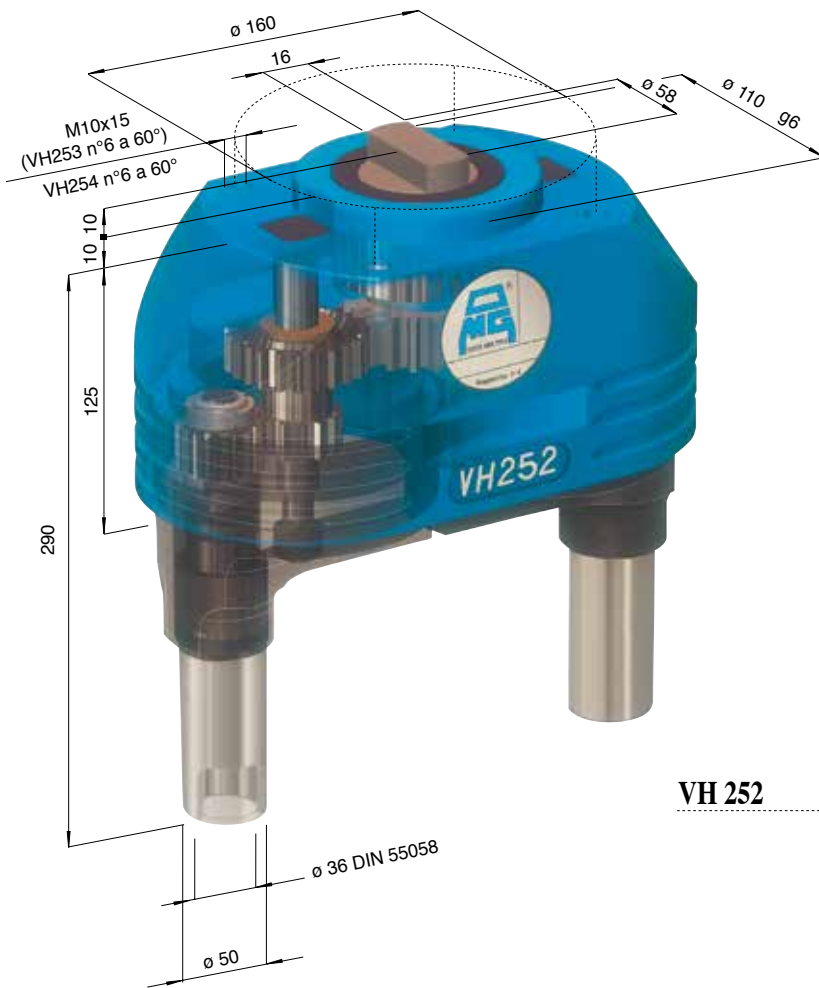


CAPACITA' FORATURA
DRILLING CAPACITY $\phi 28$

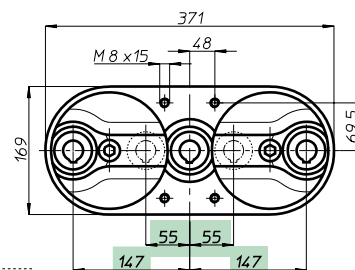
VH

modello 25

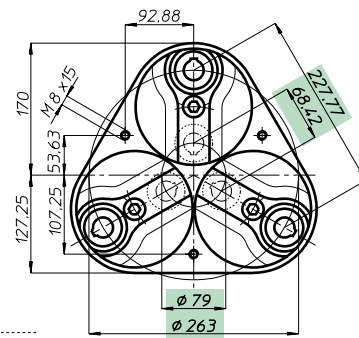
Teste multiple ad assi variabili • Variable axis heads



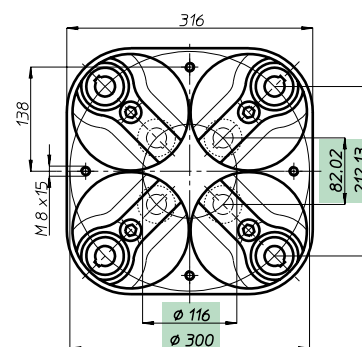
VH 252



VH 253 L



VH 253



VH 254

Testa modello Head type	VH 252	VH 253 L	VH 253	VH 254
Articolo Item				
Attacco utensile Spindle type	DIN 55058 - $\phi 36$			
Articolo Item	VH 252 D	VH 253 LD	VH 253 D	VH 254 D
Attacco utensile Spindle type	DIN 55058 - $\phi 36$			
N. mandrini Spindles nr.	2	3	3	4
Campo di lavoro min.	55	55 + 55	$\phi 79$	$\phi 116$
Centre distances max.	239	147 + 147	$\phi 263$	$\phi 300$
Capacità foratura Drilling capacity	Acciaio Rm 500 N/mm ² - $\phi 25$ Ghisa GG25 - $\phi 28$			
Maschiatura Tapping	M 20			
Rapporto Ratio	1 - 1			
Velocità RPM	2.000			
Peso Weight	Kg. 27	32	39,5	52



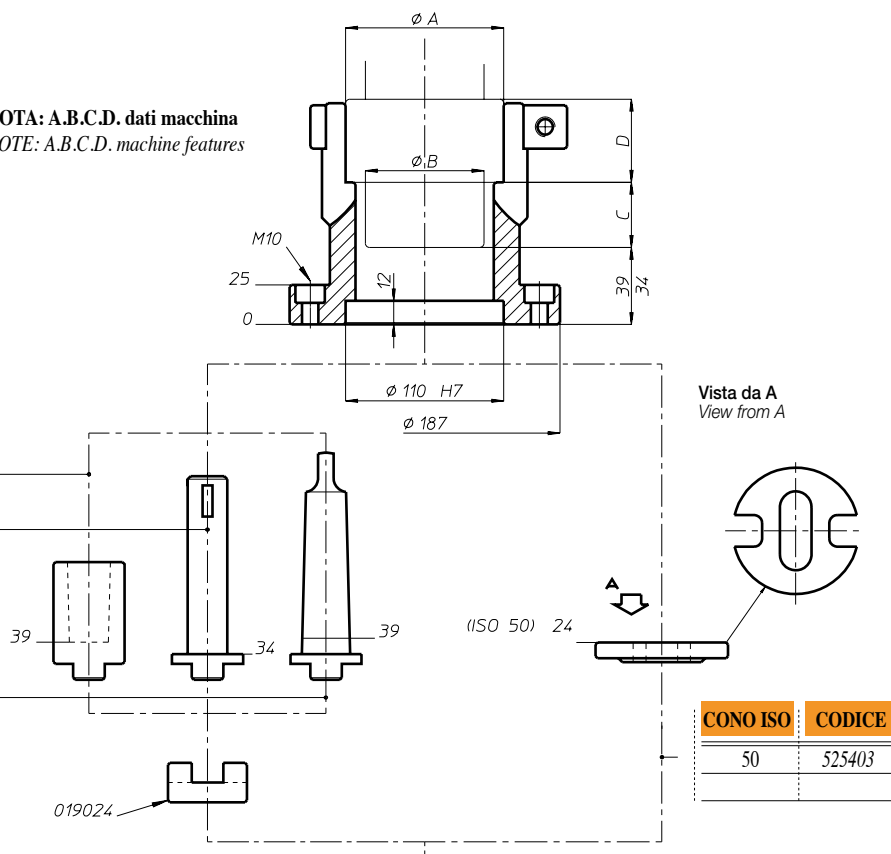
MANICOTTO DI COLLEGAMENTO - CONNECTION COLLAR

NOTA: A.B.C.D. dati macchina
NOTE: A.B.C.D. machine features

DIN 238	CODICE
B 18	011280
B 22	011281
B 24	011282

DIN 55058	CODICE
16	525405
20	525406
28	525407
36	525408

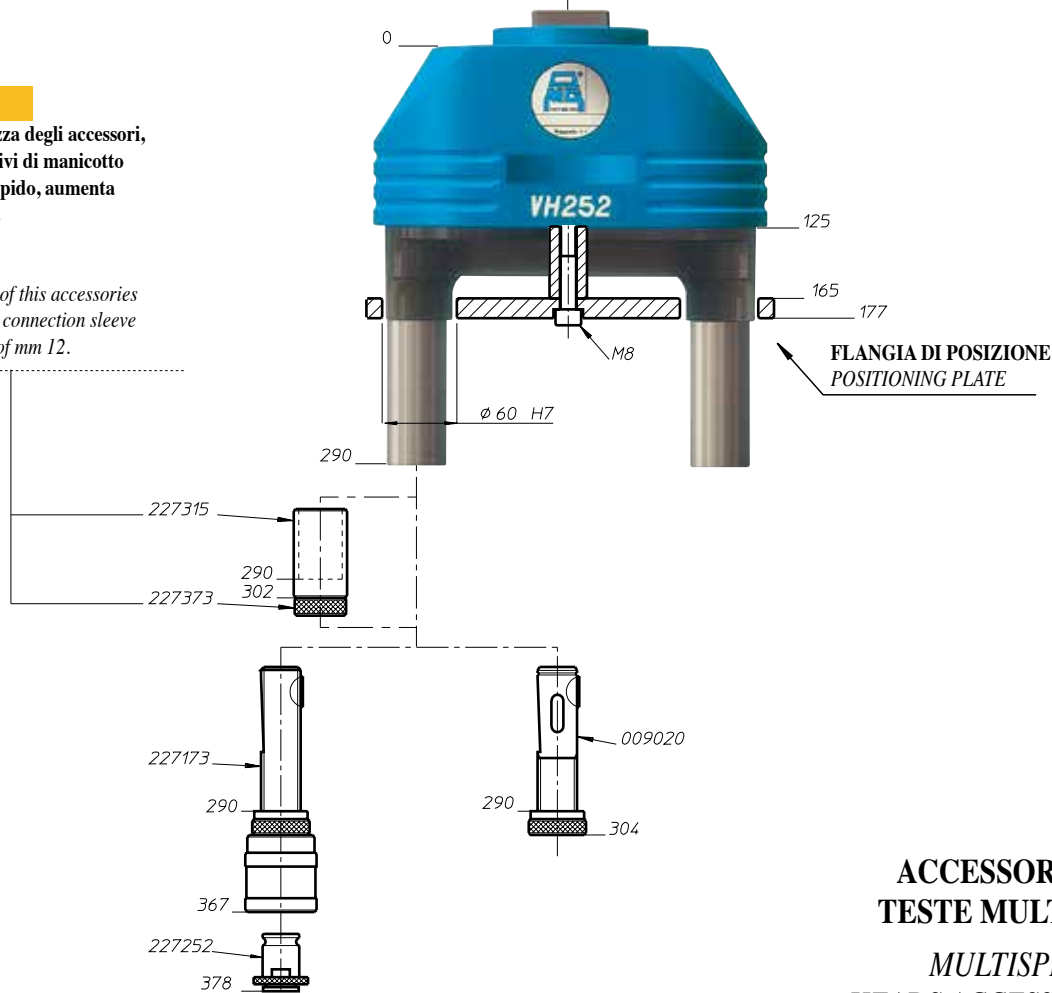
DIN 228	CODICE
CM 3	011125
CM 4	011130
CM 5	011135



NOTA:

la lunghezza degli accessori, comprensivi di manicotto attacco rapido, aumenta di mm 12.

NOTE:
the length of this accessories whit quick connection sleeve increases of mm 12.



**ACCESSORI PER
TESTE MULTIPLE**
MULTISPINDLE
HEADS ACCESSORIES

Teste multiple ad assi variabili • Variable axis heads



CAPACITA' FORATURA
DRILLING CAPACITY ϕ 12

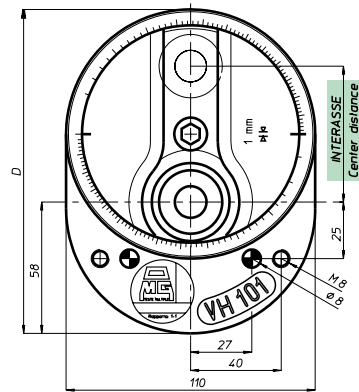
VH

modello 101

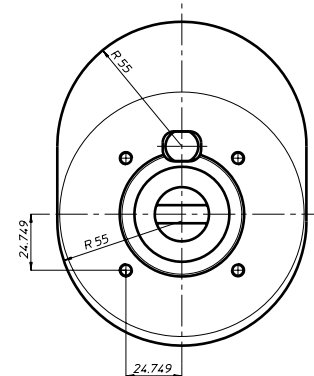
Teste multiple ad assi variabili • Variable axis heads



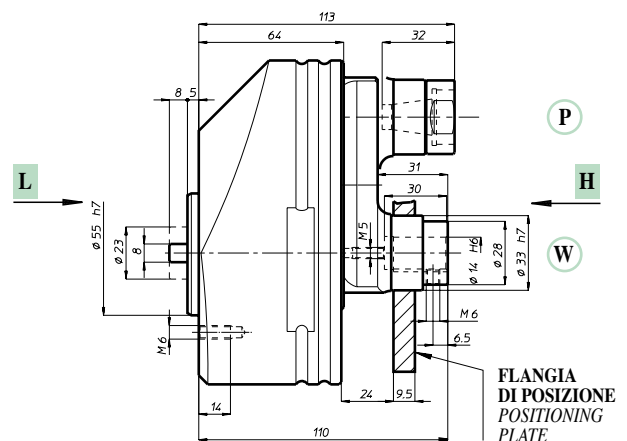
Testa modello Head type	VH 101	
Articolo Item	VH 101 P	
Attacco utensile Spindle type	ER16 - max ϕ 10	
Articolo Item	VH 101 W14	
Attacco utensile Spindle type	ϕ 14	
N. mandrini Spindles nr.	1	
Campo di lavoro min. Centre distances max.	0	60
D	143	
Capacità foratura Drilling capacity	Acciaio Rm 500 N/mm ² - ϕ 10	
Maschiatura Tapping	M 10	
Rapporto Ratio	1 - 1	
Velocità RPM	3.000	
Peso Weight	Kg. 2,8	



VISTA VIEW H



VISTA VIEW L



P

H

W

FLANGIA DI POSIZIONE
POSITIONING PLATE

FH

BAH

TA.CP

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VH

TSI/TSX

T

MT-TC-TC3

Accessories
Accessories

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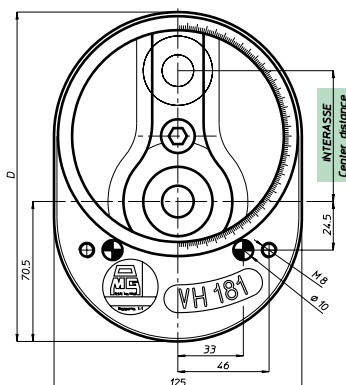
CAPACITA' FORATURA
DRILLING CAPACITY ϕ 20

VH

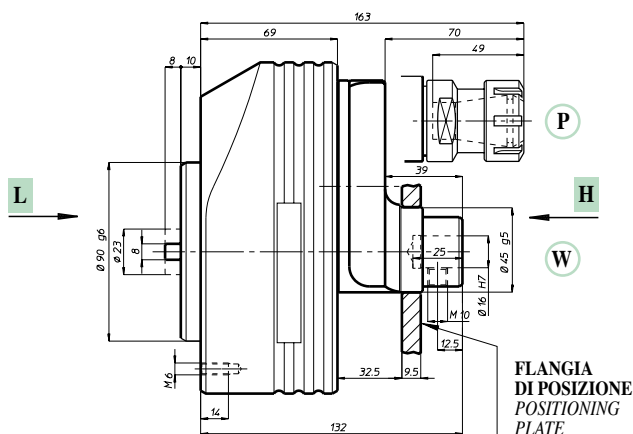
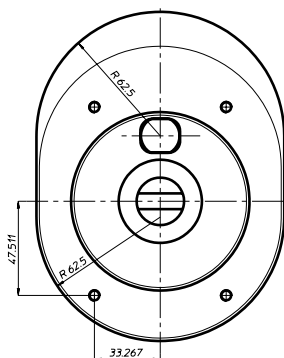
modello 181



VISTA
VIEW H



VISTA
VIEW L



Testa modello
Head type

**VH
181**

**VH
181-122**

Articolo
Item

VH 181 P

VH 181-122-P

Attacco utensile
Spindle type

ER25 - max ϕ 16

Articolo
Item

VH 181 W16

VH 181-122-W16

Attacco utensile
Spindle type

ϕ 16

N. mandrini
Spindles nr.

1

1

Campo
di lavoro min.

0

56

Centre
distances max.

66

122

D

166

222

Capacità
foratura

Acciaio Rm 500 N/mm² - ϕ 18

Drilling
capacity

Ghisa GG25 - ϕ 20

Maschiatura
Tapping

M 14

Rapporto
Ratio

1 - 1

Velocità
RPM

2.500

Peso
Weight

Kg.

4,1

6,4

Teste multiple ad assi variabili • Variable axis heads

FH

BAH

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VH

TSI/TSX

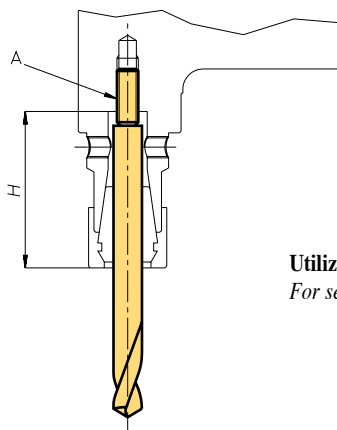
T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

FORATURA CON PINZE ER DRILLING WITH ER COLLETS

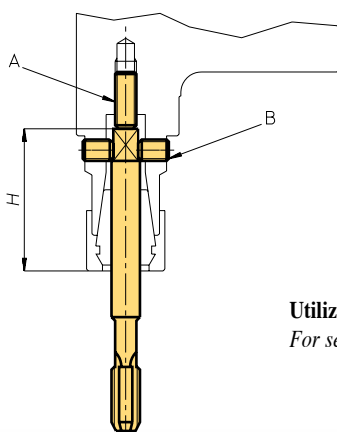


Testa Head	VH 04	VH 06	VH 08	VH 10	VH 13	VH 18
H max	23	27	44	44	52	49

NOTA: nella testa VH04 e VH06 la vite A non è presente
NOTE: in the head VH04 and VH06 there isn't the screw A

Utilizzare la vite A sinistra per registrare l'altezza utensile
For setting the tool length, use the left screw A

MASCHIATURA CON PINZE ER TAPPING WITH ER COLLETS



Testa Head	VH 04	VH 06	VH 08	VH 10	VH 13	VH 18
H max	23	27	38	38	44	49

NOTA: nella testa VH04 e VH06 la vite A non è presente
NOTE: in the head VH04 and VH06 there isn't the screw A

Utilizzare la vite A per registrare l'altezza utensile e le viti B per bloccare il quadro del maschio
For setting the tool length, use the screw A; locking the tap square with the screws B

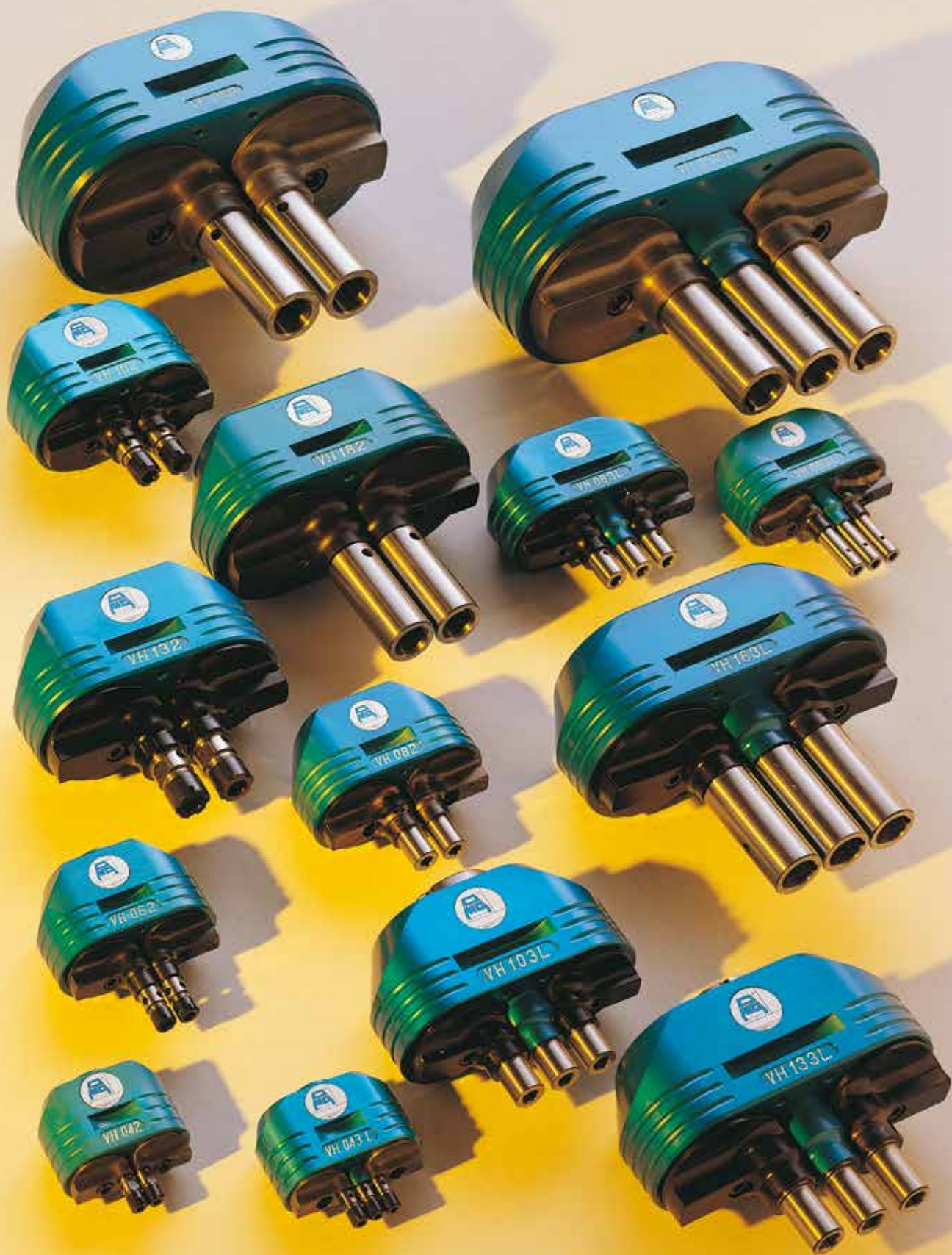


VH 042 LP	n° 2 mandrini a pinza, min. 24 max. 84	<i>2 spindles for spring collets min. 24 max. 84</i>
VH 042P R. 1-2	n° 2 mandrini a pinza, min. 12 max. 72 rapp. 1-2	<i>2 spindles for spring collets min. 12 max. 72 ratio 1-2</i>
VH 062 LP	n° 2 mandrini a pinza, min. 35 max. 111	<i>2 spindles for spring collets min. 35 max. 111</i>
VH 062 LD	n° 2 mandrini DIN 55058-8 min. 35 max. 111	<i>2 spindles DIN 55058-8 min. 35 max. 111</i>
VH 062/1	n° 1 mandrino a pinza, min. 8,5 max. 46,5	<i>1 spindle for spring collets min. 8,5 max. 46,5</i>
VH 062P R.1-2	n° 2 mandrini a pinza min. 17 max. 93 rapp. 1-2, 067	<i>2 spindles for spring collets min. 17 max. 93 ratio 1-2,067</i>
VH 062P CNC40	n° 2 mandrini a pinza min. 17 max. 93 completa di cono ISO 40	<i>2 spindles for spring collets min. 17 max. 93 with shank ISO 40</i>
VH 063P CNC40	n° 3 mandrini a 120° a pinza min. 27 max. 103 completa di cono ISO 40	<i>3 spindles at 120° for spring collets min. 27 max. 103 with shank ISO 40</i>
VH 064P CNC40	n° 4 mandrini a 90° a pinza min. 41 max. 117 completa di cono ISO 40	<i>4 spindles at 90° for spring collets min. 41 max. 117 with shank ISO 40</i>
VH 064/3P	n° 3 mandrini a pinza min. 41 max. 117	<i>3 spindles for spring collets min. 41 max. 117</i>
VH 081 P	n° 1 mandrino a pinza min. 0 max. 42	<i>1 spindle for spring collets min. 0 max. 42</i>
VH 082 LP	n° 2 mandrini a pinza min. 48 max. 132	<i>2 spindles for spring collets min. 48 max. 132</i>
VH 082 LD	n° 2 mandrini DIN 55058 - 10 min. 48 max. 132	<i>2 spindles DIN 55058 - 10 min. 48 max. 132</i>
VH 082 P R. 1-2	n° 2 mandrini a pinza min. 24 max. 108 rapp. 1-2	<i>2 spindles for spring collets min. 24 max. 108 ratio 1-2</i>
VH 082P CNC 40	n° 2 mandrini a pinza min. 24 max. 108 completa di cono ISO 40	<i>2 spindles for spring collets min. 24 max. 108 with shank ISO 40</i>
VH 082PFM	n° 2 mandrini a pinza min. 24 max. 108 fora/maschia	<i>2 spindles for spring collets min. 24 max. 108 drilling and tapping</i>
VH 083 LP CNC40	n° 3 mandrini in linea a pinza min. 24+24 max. 66+66 completa di cono ISO 40	<i>3 spindles on line for spring collets min. 24+24 max. 66+66 with shank ISO 40</i>
VH 084P CNC 40	n° 4 mandrini a pinza min. 53,5 max. 137,5 completa di cono ISO 40	<i>4 spindles for spring collets min. 53,5 max. 137,5 with shank ISO 40</i>
VH 084/3P	n° 3 mandrini a pinza min. 53,5 max. 137,5	<i>3 spindles for spring collets min. 53,5 max. 137,5</i>
VH 102 LP	n° 2 mandrini a pinza min. 56 max. 148	<i>2 spindles for spring collets min. 56 max. 148</i>
VH 102 LD	n° 2 mandrini DIN 55058-12 min. 56 max. 148	<i>2 spindles DIN 55058-12 min. 56 max. 148</i>
VH 102 P CNC 40	n° 2 mandrini a pinza min. 28 max. 120 completa di cono ISO 40	<i>2 spindles for spring collets min. 28 max. 120 with shank ISO 40</i>
VH 102P R. 1-2	n° 2 mandrini a pinza min. 28 max. 120 rapporto 1-2	<i>2 spindles for spring collets min. 28 max. 120 ratio 1-2</i>
VH 102 PFM	n° 2 mandrini a pinza min. 28 max. 120 fora/maschia	<i>2 spindles for spring collets min. 28 max. 120 drilling and tapping</i>
VH 102-220 P	n° 2 mandrini a pinza min. 128 max. 220	<i>2 spindles for spring collets min. 128 max. 220</i>
VH 102-300 P	n° 2 mandrini a pinza min. 208 max. 300	<i>2 spindles for spring collets min. 208 max. 300</i>
VH 104D R.1-2	n° 4 mandrini a 90° DIN 55058-12 min. 60 max. 152 rapp. 1-2	<i>4 spindles at 90° DIN 55058-12 min. 60 max. 152 ratio 1-2</i>
VH 104P CNC50	n° 4 mandrini a 90° a pinza min. 60 max. 152 completa di cono ISO 50	<i>4 spindles at 90° for spring collets min. 60 max. 152 with shank ISO 50</i>
VH 132 LP	n° 2 mandrini a pinza min. 70 max. 186	<i>2 spindles for spring collets min. 70 max. 186</i>
VH 132 LD	n° 2 mandrini DIN 55058-16 min. 70 max. 186	<i>2 spindles DIN55058-16 min. 70 max. 186</i>
VH 132D CNC50	n° 2 mandrini DIN 55058-16 min. 35 max. 151 completa di cono ISO 50	<i>2 spindles DIN55058-16 min. 35 max. 151 with shank ISO 50</i>
VH 132P CNC50	n° 2 mandrini a pinza min. 35 max. 151 completa di cono ISO 50	<i>2 spindles for spring collets min. 35 max. 151 with shank ISO 50</i>
VH 132 W12	n° 2 mandrini foro cilindrico diam. 12 min. 35 max. 151	<i>2 spindles diam. 12 min. 35 max. 151</i>
VH 132-260 D	n° 2 mandrini DIN 55058-16 min. 144 max. 260	<i>2 spindles DIN 55058-16 min. 144 max. 260</i>
VH 134P CNC50	n° 4 mandrini a 90° a pinza, min. 75 max. 191 completa di cono ISO 50	<i>4 spindles at 90° for spring collets, min. 75 max. 191 with shank ISO 50</i>
VH 181 R 1-2	n° 1 mandrino diam. 16 min. 16,5 max. 82,5 rapp. 1-2	<i>1 spindle diam. 16, min. 16,5 max. 82,5 ratio 1-2</i>
VH 182 LP	n° 2 mandrini a pinza, min. 82 max. 214	<i>2 spindles for spring collets, min. 82 max. 214</i>
VH 182 LD	n° 2 mandrini DIN 55058-28 min. 82 max. 214	<i>2 spindles DIN 55058-28 min. 82 max. 214</i>
VH 182 W16	n° 2 mandrini foro cilindrico diam. 16 min. 41 max. 173	<i>2 spindles diam 16, min. 41 max. 173</i>
VH 182 P CNC 50	n° 2 mandrini a pinza, min. 41 max. 173 completa di cono ISO 50	<i>2 spindles for spring collets, min. 41 max. 173 with shank ISO 50</i>
VH 182 P R.1-2	n° 2 mandrini a pinza, min. 41 max. 173 173 rapp. 1-2	<i>2 spindles for spring collets, min. 41 max. 173 ratio 1-2</i>
VH 182D R. 1-2	n° 2 mandrini DIN 55058-28 min. 41 max. 173 rapp. 1-2	<i>2 spindles DIN 55058-28, min. 41 max. 173 ratio 1-2</i>
VH 183 L W16	n° 3 mandrini foro cilindrico diam. 16 min. 41+41 max. 107+107	<i>3 spindles diam.16 min. 41+41 max. 107+107</i>
VH 252 LD	n° 2 mandrini DIN 55058-36 min. 110 max. 294	<i>2 spindles DIN 55058-36, min. 110 max. 294</i>



Teste multiple ad assi variabili • Variable axis heads





Teste multiple ad assi variabili • Variable axis heads



TSI/TSX



teste di fresatura *twin spindle milling heads*

Le teste multiple ad asii variabili serie **TSI-TSX** progettate a due mandrini paralleli o convergenti, sono adatte in lavorazioni di fresatura ed in particolare per la smussatura dei denti di ingranaggi. Durante lo studio di queste teste, la nostra attenzione si e' concentrata sulla disposizione dei cuscinetti del mandrino, poiche' nella smussatura di ingranaggi si utilizzano anche utensili in metallo duro ed il tutto deve sopportare un elevato numero di urti. Ne e' derivata una costruzione solida, compatta, affidabile e di aspetto gradevole.

Varie sono le caratteristiche tecniche delle teste multiple ad asii variabili serie **TSI-TSX** e sintetizzandone solamente alcune possiamo dire che: il corpo e' in lega di alluminio, i supporti mandrino in ghisa e la loro regolazione avviene con un'unica azione dell'operatore, i mandrini possono ruotare concordi o discordi e la lubrificazione della testa e' a grasso. La loro realizzazione si e' resa possibile in virtu' dell'esperienza acquisita nella costruzione di teste multiple, della conoscenza dei processi produttivi e dalla capacita' di saper proporre, per ogni particolare esigenza, prodotti qualificati.

*The adjustable multispindle heads **TSI and TSX** series with two parallel or convergent spindles are suitable to mill and to chamfering the gear teeth. Special care has been taken with the spindles bearing layout, because the hard metal tools are also used for chamfering and the entire machine has to withstand many knocks and bumps. The result is a solid, compact, reliable unit that also has an appealing look.*

*The adjustable multispindle heads **TSI and TSX** series have many different features among which: an aluminium body, cast iron spindle support, simply and easily adjusted by the operator. The spindles may turn in the same direction or in opposite direction and the adjustment of both spindles is achieved thanks to a single act. The tool connection may be cylindrical or with spring collets. The lubrication is by long life grease. The production of our twin adjustable multispindle head was made possible thanks to the experience acquired in the construction of multispindle heads, our knowledge of production process and our ability to know how to cater for individual requirements with qualified products.*

TSI 1646	8-2
TSI 1681	8-2
TSI 16180	8-3
TSI 16210	8-3
TSX 13C	8-4
TSX 13D	8-4
TSI 16280	8-5
Esecuzioni speciali/ <i>Special executions</i>	8-5
Accessori/ <i>Accessories</i>	11-1

FH

BAH

TA.CP

TA

MO

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VH

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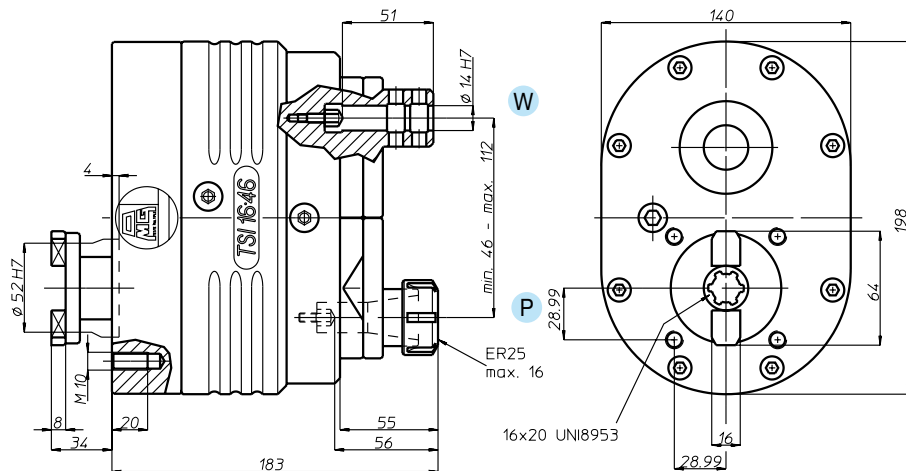
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testa di fresatura - *twin spindle milling head*

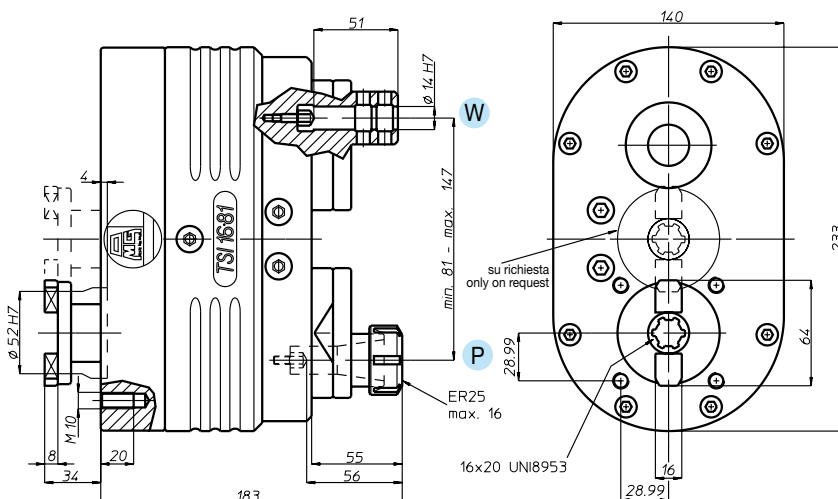
TSI 1646



	TSI 16-46C-P TSI 16-46C-W	TSI 16-46D-P TSI 16-46D-W
rotazione mandrini <i>spindle rotation</i>		
rapporto ratio	1-2	1-2
giri max rpm	3.000	3.000
peso weight	12 kg	12 kg

testa di fresatura - *twin spindle milling head*

TSI 1681



	TSI 16-81C-P TSI 16-81C-W	TSI 16-81D-P TSI 16-81D-W
rotazione mandrini <i>spindle rotation</i>		
rapporto ratio	1-2	1-2
giri max rpm	3.000	3.000
peso weight	13,5 kg	13,5 kg

FH

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TSI/TSX

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MT-TC-TC3

Accessori
Accessories

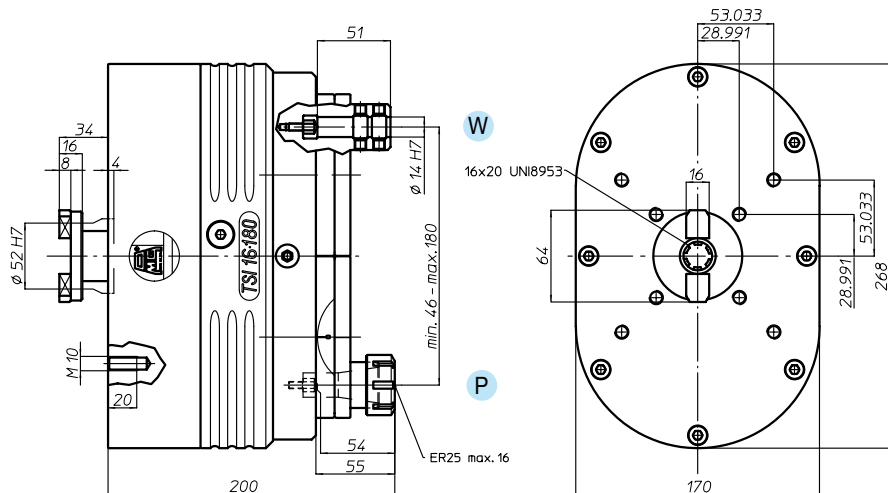
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testa di fresatura - twin spindle milling head

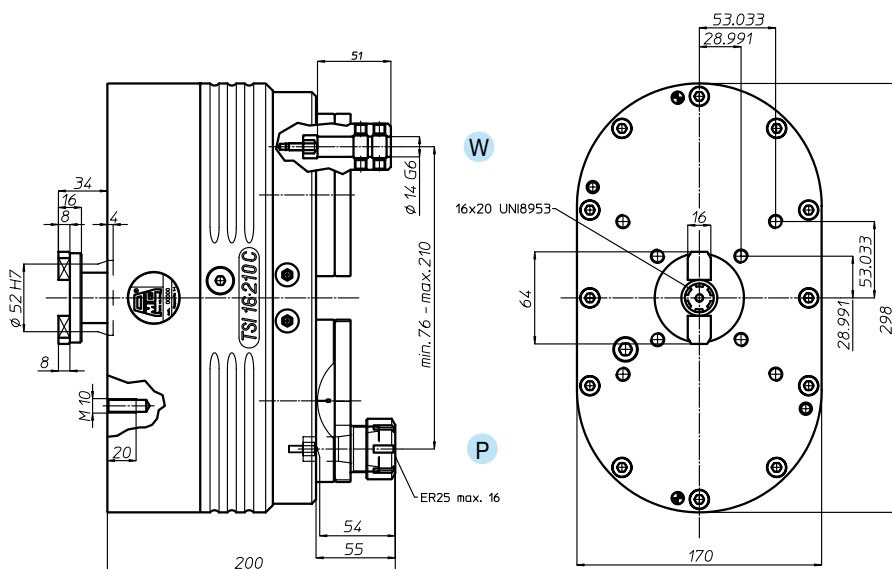
TSI 16180



	TSI 16-180C-P TSI 16-180C-W	TSI 16-180D-P TSI 16-180D-W
rotazione mandrini spindle rotation		
rapporto ratio	1-1	1-1
giri max rpm	3.000	3.000
peso weight	22,5 kg	22,5 kg

testa di fresatura - twin spindle milling head

TSI 16210



	TSI 16-210C-P TSI 16-210C-W	TSI 16-210D-P TSI 16-210D-W
rotazione mandrini spindle rotation		
rapporto ratio	1-1	1-1
giri max rpm	3.000	3.000
peso weight	22,5 kg	22,5 kg

FH

BAH

TA.CP

TA

MO

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VH

TSI/TSX

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MT-TC-TC3

Accessori
Accessories

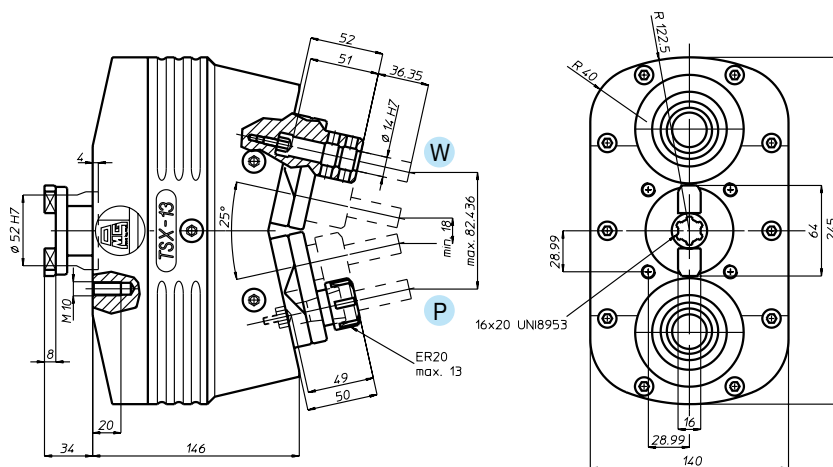
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8-3



testa di fresatura - *twin spindle milling head*

TSX 13C



TSX 13C-P
TSX 13C-W

rotazione
mandrini
spindle
rotation



rapporto
ratio

1-1

giri max
rpm

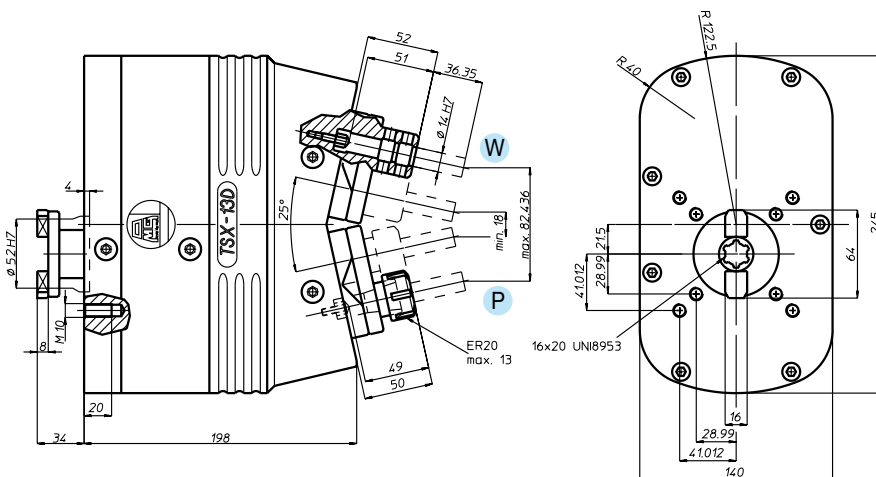
3.000

peso
weight

15,5 kg

testa di fresatura - *twin spindle milling head*

TSX 13D



TSX 13D-P
TSX 13D-W

rotazione
mandrini
spindle
rotation



rapporto
ratio

1-1

giri max
rpm

3.000

peso
weight

21 kg

FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

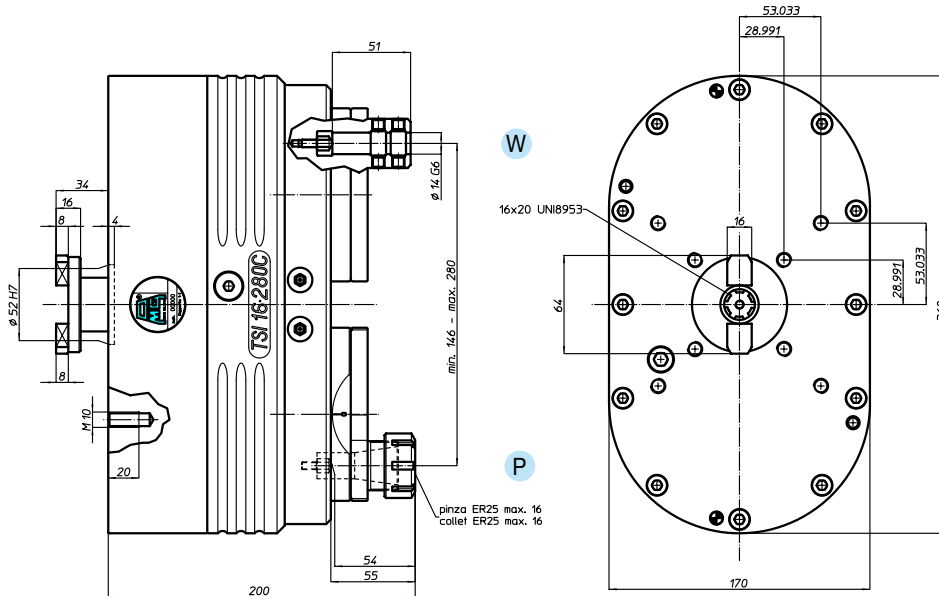
Accessories
Accessories

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TSI 16280



	TSI 16-280C-P TSI 16-280C-W	TSI 16-280D-P TSI 16-280D-W
rotazione mandrini spindle rotation		
rapporto ratio	1-1	1-1
giri max rpm	3.000	3.000
peso weight	22,5 kg	22,5 kg

esecuzioni speciali - *special executions*



TFS 23801
Testa di spuntatura con angolo di 34°
Fixed twin-spindle milling head with 34° from the axis



TS 31588
Testa di spuntatura ad assi variabili,
interasse min. 55 max 205,24
Adjustable twin multispindle milling head, centre distance min. 55 max 205,24

TFS 20205
Testa di spuntatura ad assi sghembi,
angolo di 25°
Fixed twin-spindle milling head with skew axis at 25°



TFS 14005
Testa di spuntatura ad assi fissi e paralleli, distanza mm 40
Fixed twin-spindle milling head, axis distance mm 40



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
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serie



teste multiple a giunti universali adjustable joint multispindle heads

Le teste multiple a giunti universali sono in produzione dal 1961; nel corso degli anni hanno subito modifiche e aggiornamenti, confermando però la validità dell'idea e lasciando inalterate le caratteristiche salienti:

- possibilità di utilizzo sia in foratura che in maschiatura
- possibilità di posizionamento nello spazio dei gruppi mandrino, vincolato soltanto dalle dimensioni dello stesso e dall'area di lavoro
- adattabilità a tutti i tipi di trapani o a soluzioni speciali
- vantaggiose soprattutto quando è necessario modificare di frequente gli interassi dei fori
- ampia gamma di modelli per le diverse esigenze

Sono disponibili a magazzino le seguenti versioni:

- serie T-TS a base circolare per l'esecuzione di massimo 12 fori; massima capacità di foratura diam. mm 22, interasse minimo mm 15 e massimo mm 350
- serie TL a base lineare per l'esecuzione di massimo 12 fori; massima capacità di foratura diam. mm 22, interasse minimo mm 17 e massimo mm 610
- serie TR a base rettangolare per l'esecuzione di massimo 16 fori; massima capacità di foratura diam. mm 22, interasse minimo mm 32 e massimo mm 395x345
- serie TM-TRM a base circolare e rettangolare per l'esecuzione di massimo 26 fori; grazie alle loro caratteristiche tecniche possono eseguire i più diversi schemi di foratura e maschiatura su macchine con potenza adeguata.

Il catalogo è congegnato per avere un preciso riscontro delle caratteristiche di tutte le teste a giunti universali e delle varie soluzioni possibili con esse; le nuove schede tecniche, gli esempi di attrezzature, gli accessori e le tabelle Vi guideranno nella scelta opportuna.

Qualora il Vs. lavoro non sia eseguibile con questa serie di teste, il Ns. ufficio tecnico Vi fornirà la soluzione alternativa con la serie VH ad interassi variabili o con teste ad assi fissi appositamente disegnate e costruite.

The universal joint multispindle heads have been in production since 1961; over the years they have been modified and updated, without however refuting the goodness of the idea and always leaving major features unaltered:

- *possibility of using for both drilling and tapping*
- *possibility of multi-positioning the spindle units, restricted only by the size of the spindle and of the working area*
- *suitable for all types of drills or for special solutions*
- *especially useful when the need arises to frequently change the hole centre distances*
- *broad range of models for different requirements*

The following versions are in stock:

- *series T-TS with round base for making up to 12 holes; max drilling capacity dia. 22 mm, minimum centre distance 15 mm, max centre distance 350 mm*
- *series TL with linear base for making up to 12 holes; max drilling capacity dia. 22 mm, minimum centre distance 17 mm, max centre distance 610 mm*
- *series TR with rectangular base for making up to 16 holes; max drilling capacity dia. 22 mm, minimum centre distance 32 mm, max centre distance 395x345 mm*
- *series TM-TRM with round and rectangular base for making up to 26 holes; thanks to their technical features, they are able to execute a series of different drilling and tapping patterns on machines of adequate power.*

The catalogue is compiled so as to provide a precise reference for all the adjustable joint heads and the various possible solutions these offer. Thanks to the new technical sheets, equipment examples, accessories and charts, you will find making the right choice much easier.

In the event of this series of heads not providing the solution for your job, our technical department can provide alternative solutions with the variable centre distance VH series or fixed-axis heads, specially designed and made for you.

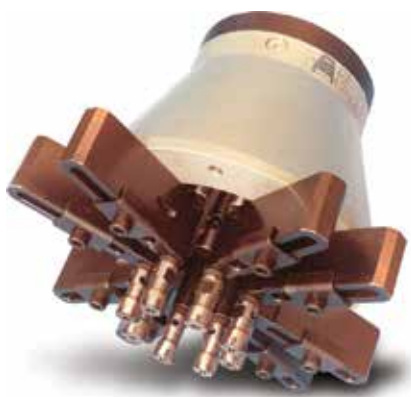
T2	9-2	MO
T4	9-3	
T7	9-4	
T10	9-5	HT
T12/TS12	9-6	
T15/TS15	9-7	
T18/TS18	9-8	VH
T22/TS22	9-9	
TL20/4	9-10	
TL20/6	9-11	TSI/TSX
TL20/8	9-12	
TL40/12	9-13	
TL40/16	9-14	T
TL40/22	9-15	
TL60/12	9-16	
TL60/16	9-17	MT-TC-TC3
TL60/22	9-18	
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TM500	9-25	
TRM43	9-26	Accessori/Accessories
TRM73	9-27	
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TRM73-2P	9-29	Accessori/Accessories
Mandrini per TM-TRM/TM-TRM spindles ...	9-30	
Attrezzature/Equipment	9-32	
Manicotto di collegamento/Connection collar ..	9-34	Accessori/Accessories
Accessori/Accessories	11-1	



T2

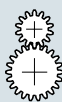
Codice testa
Head code

Codice mandrino
Spindle code



N° prese di moto
Nr. spindle drives

08



Rapporto
Ratio

1-1



Capacità di foratura
Drilling capacity

4



Maschiatura
Tapping

M4



Attacco utensile
Type of spindle

ER8



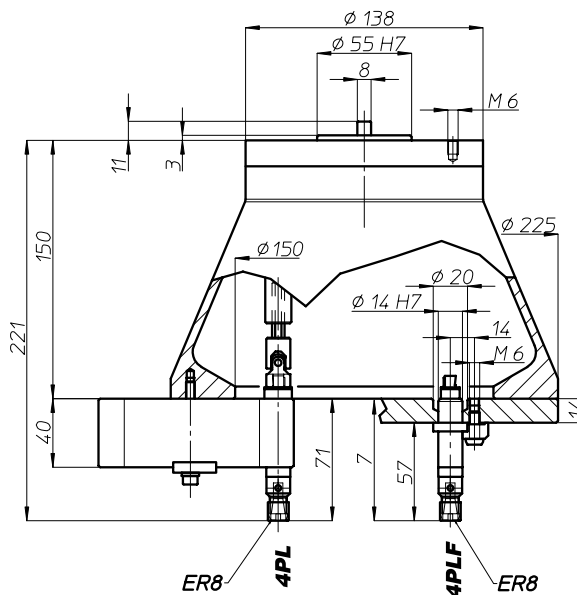
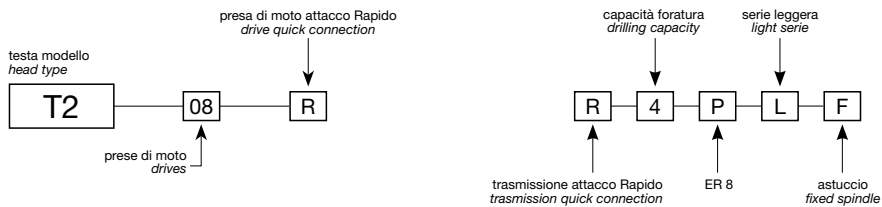
Peso gruppo testa
Head weight

Kg 3,25

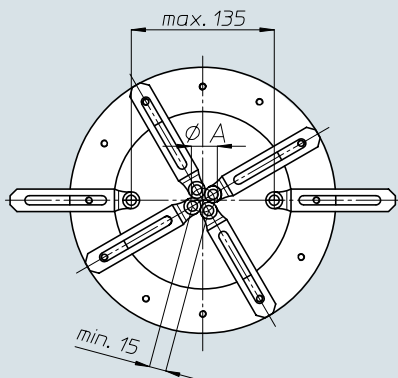


Peso gruppo mandrino
Spindle-set weight

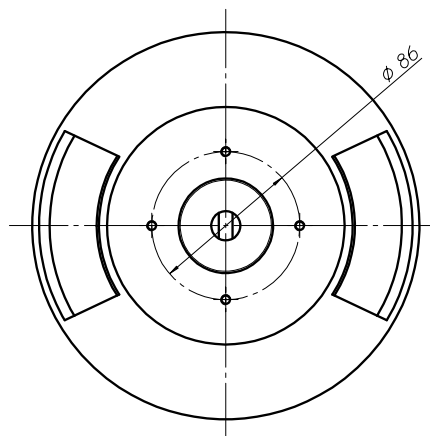
Kg 0,3



area di lavoro
working area



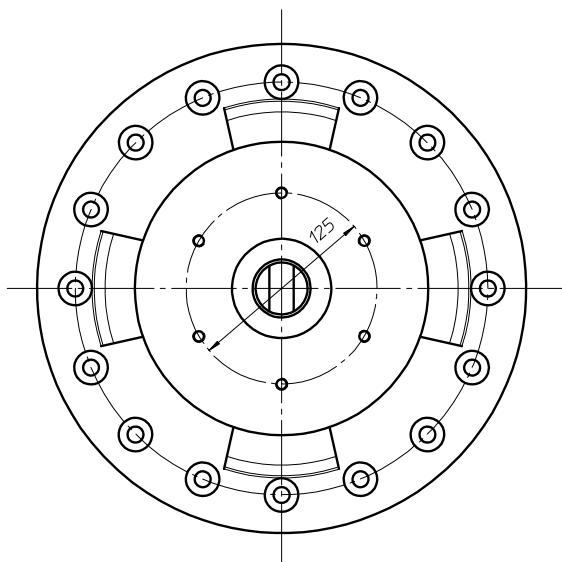
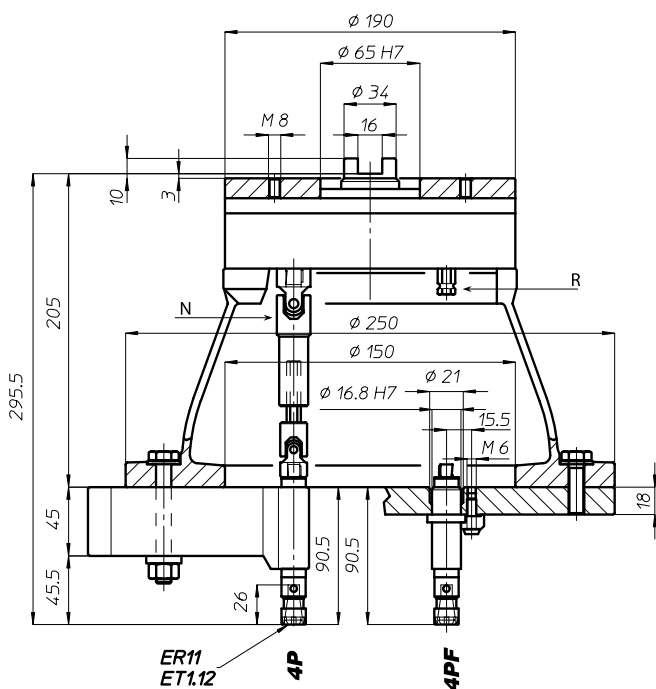
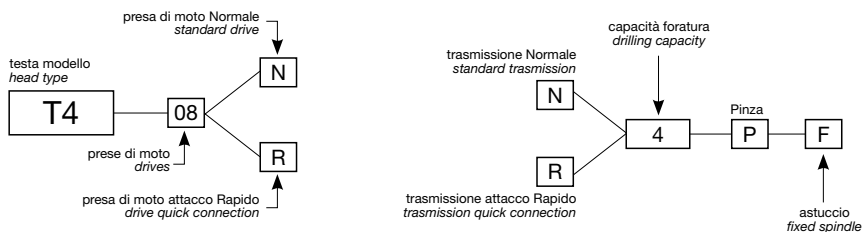
Ø A	n° mandrini n° spindles
15	2
17,5	3
21,5	4
26	5
30	6
35	7
39,5	8



T4

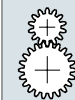
Codice testa
Head code

Codice mandrino
Spindle code



N° prese di moto
Nr. spindle drives

08



Rapporto
Ratio

1-1



Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

4

5



Maschiatura
Tapping

M4



Attacco utensile
Type of spindle
P

ER11



Peso gruppo testa
Head weight

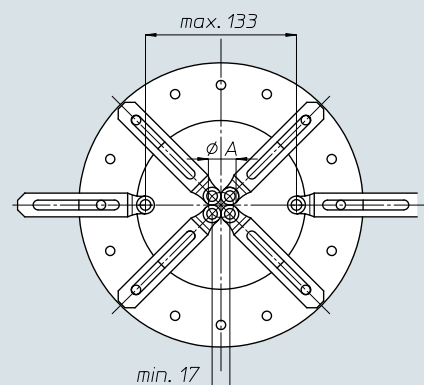
Kg 9,5



Peso gruppo mandrino
Spindle-set weight

Kg 1

area di lavoro
working area



ϕA	n° mandrini n° spindles
20	3
24,5	4
29,5	5
34,5	6
39,5	7
45	8



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

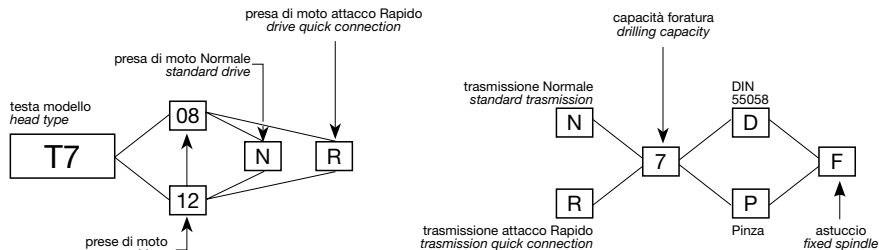
9-3

T7



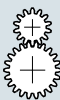
Codice testa
Head code

Codice mandrino
Spindle code



N° prese di moto
Nr. spindle drives

08-12



Rapporto
Ratio

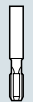
1-1



Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

6

7



Maschiatura
Tapping

M5



Attacco utensile
Type of spindle

D

P

DIN 55058 Ø10
ER11



Peso gruppo testa
Head weight

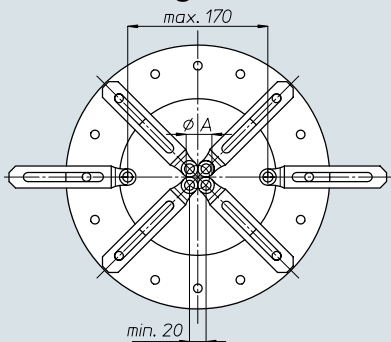
Kg 10



Peso gruppo mandrino
Spindle-set weight

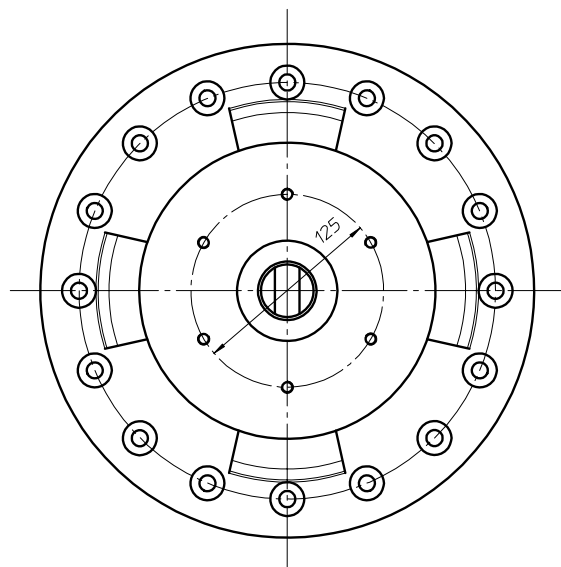
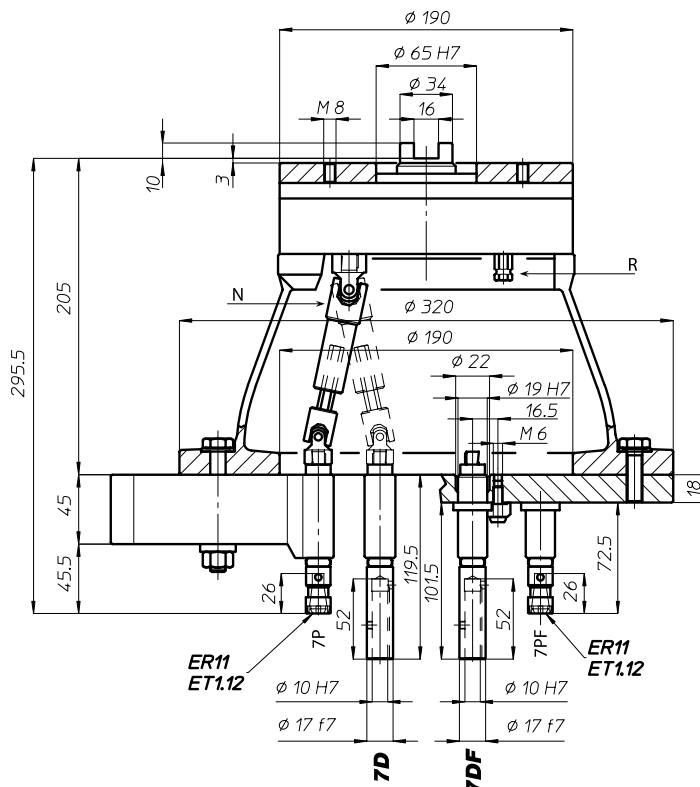
Kg 1,1

area di lavoro
working area



n° mandrini
n° spindles

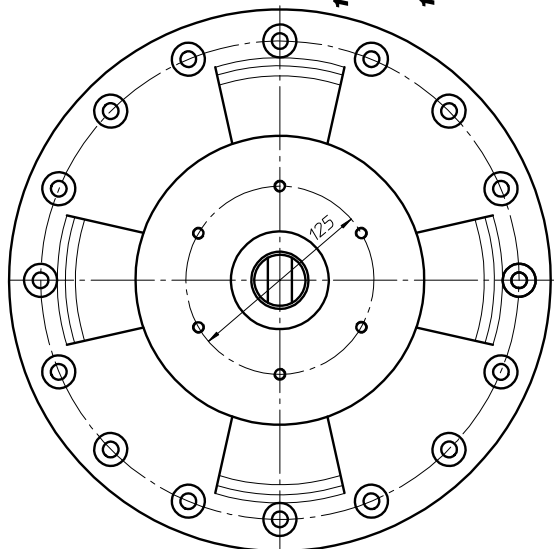
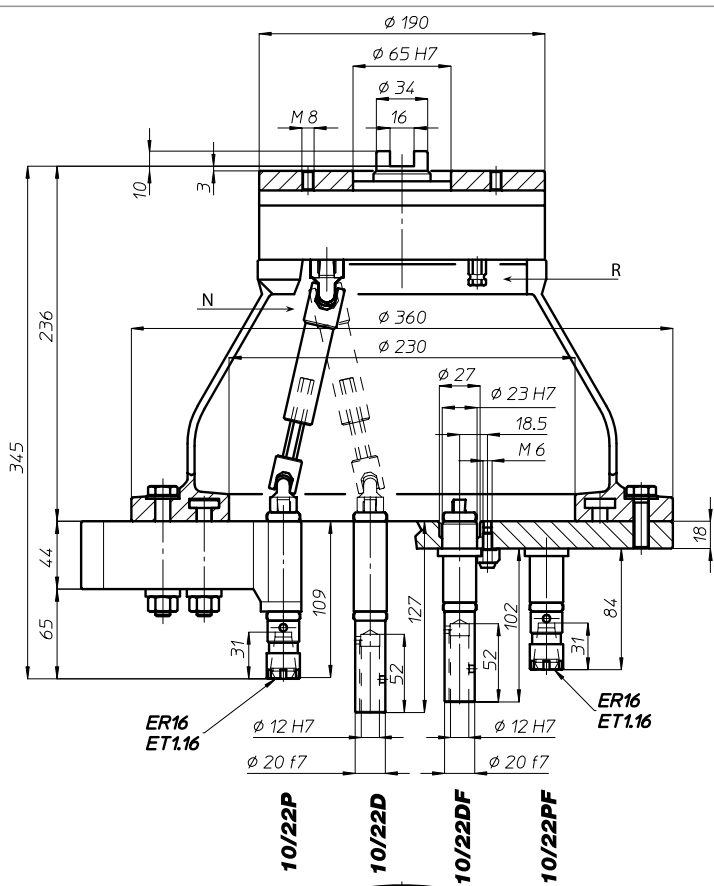
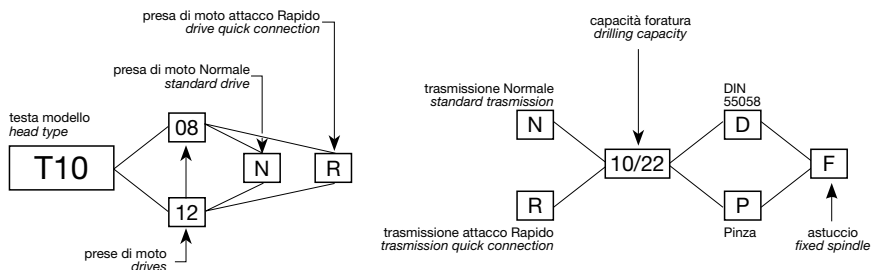
ø A	n° mandrini n° spindles
23,5	3
28,5	4
34,5	5
40,5	6
46,5	7
52,5	8
59	9
65,5	10
71,5	11
77,5	12



T10

Codice testa
Head code

Codice mandrino
Spindle code



N° prese di moto
Nr. spindle drives

08-12



Rapporto
Ratio

1-1



Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

8
10



Maschiatura
Tapping

M6



Attacco utensile
Type of spindle
D
P

DIN 55058 $\phi 12$
ER16



Peso gruppo testa
Head weight

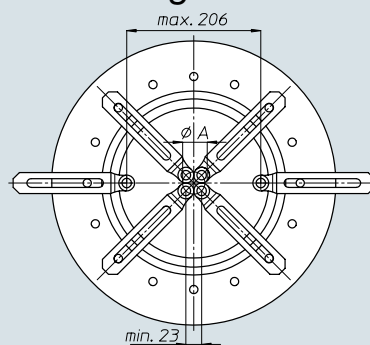
Kg 12



Peso gruppo mandrino
Spindle-set weight

Kg 1,5

area di lavoro
working area



ϕA n° mandrini
n° spindles

ϕA	n° mandrini n° spindles
27	3
33	4
39,5	5
46,5	6
53,5	7
60,5	8
67,5	9
75	10
82	11
89,5	12



FH

BAH

TA-CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

9-5

T12-TS12



Codice testa
Head code

Codice mandrino
Spindle code

N° prese di moto
Nr. spindle drives

08-12

Rapporto
Ratio

1-1

Capacità di foratura
Drilling capacity

acciaio R=500 N/mm²
ghisa: GG25

10
12

Maschiatura
Tapping

M8

Attacco utensile
Type of spindle

D
P

DIN 55058 Ø16
ER20

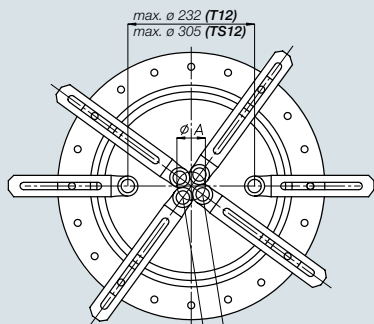
Peso gruppo testa
Head weight

T12: Kg 20
TS12: Kg 22,5

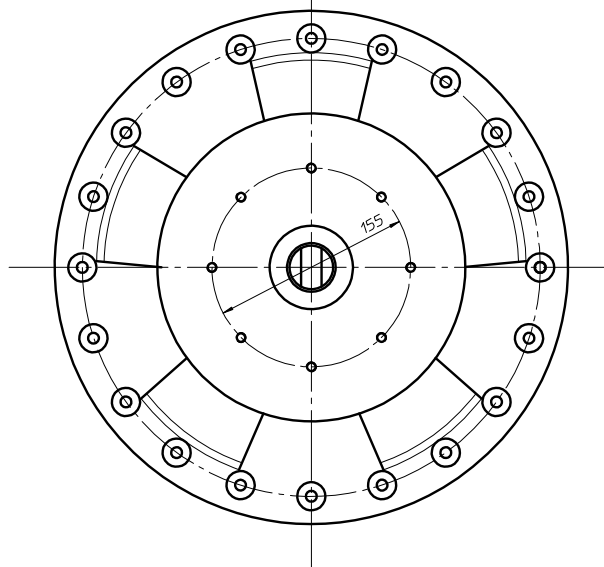
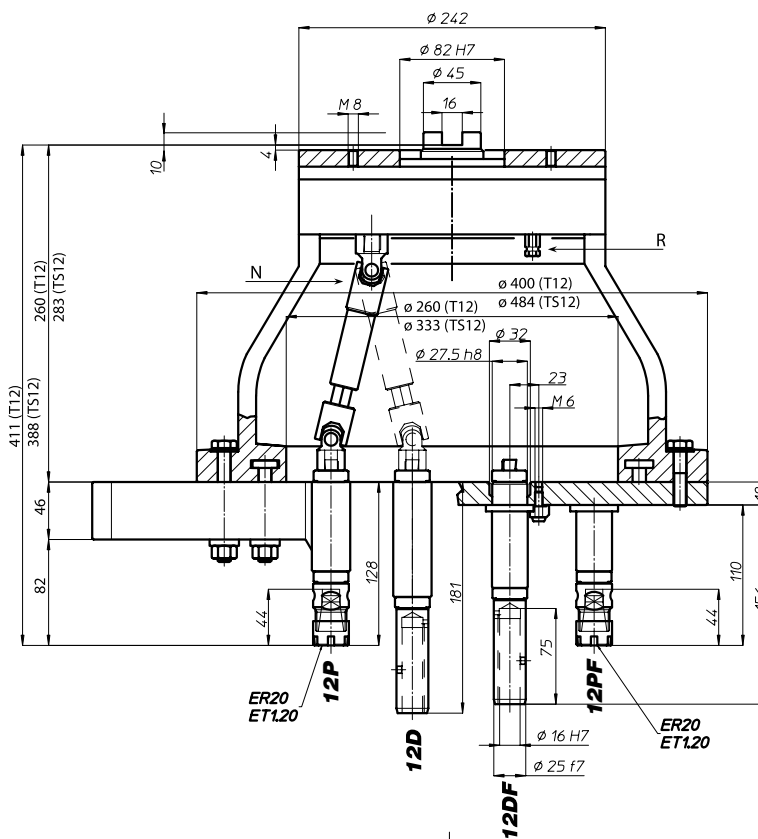
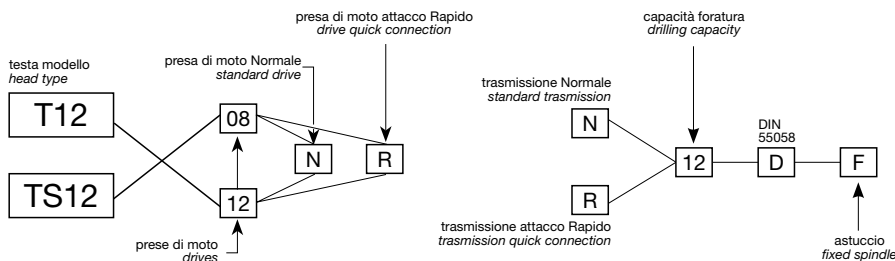
Peso gruppo mandrino
Spindle-set weight

Kg 2

area di lavoro working area



ϕ A	n° mandrini n° spindles
33	3
40	4
48	5
56,5	6
65	7
74	8
82,5	9
91	10
100	11
108,5	12



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

9-6



T18-TS18

Codice testa
Head code

Codice mandrino
Spindle code



N° prese di moto
Nr. spindle drives

08

Rapporto
Ratio

1-1

Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

16
18

Maschiatura
Tapping

M14

Attacco utensile
Type of spindle
D

DIN 55058 Ø25

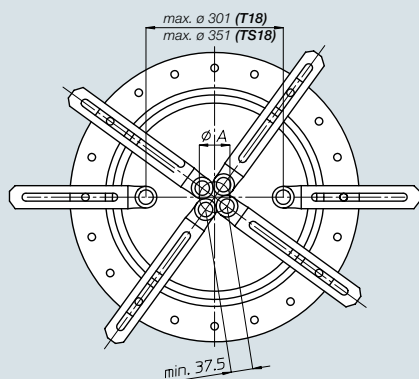
Peso gruppo testa
Head weight

T18: Kg 25
TS18: Kg 26,5

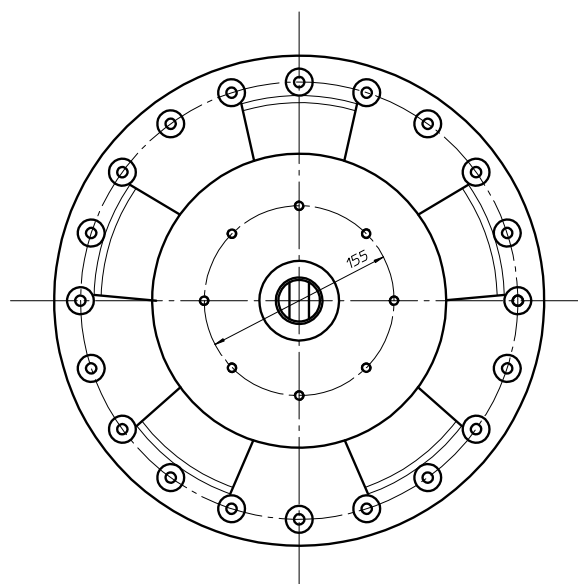
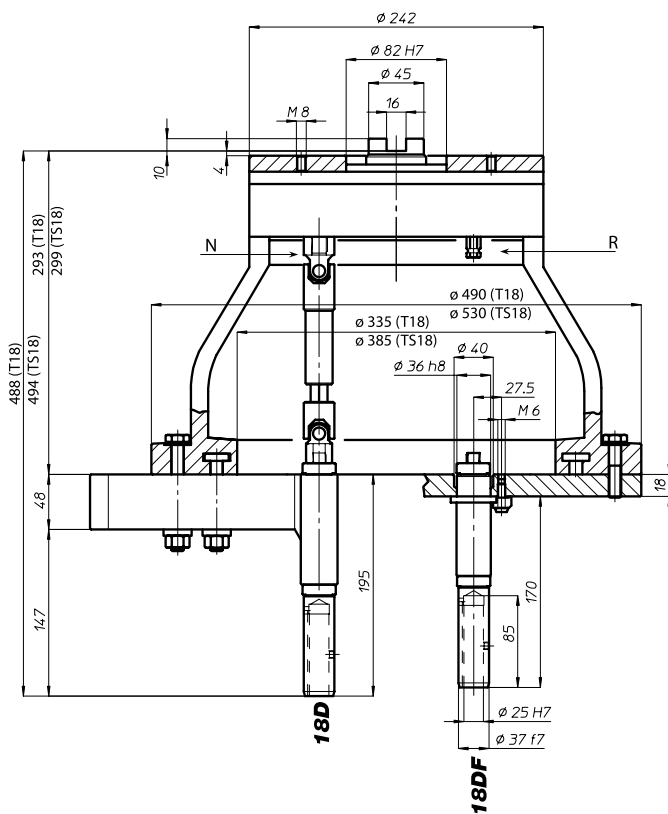
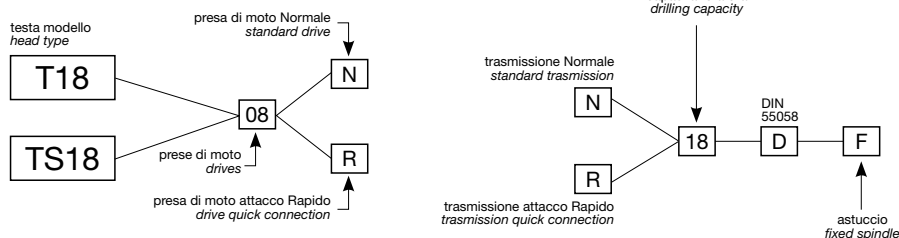
Peso gruppo mandrino
Spindle-set weight

Kg 3,3

area di lavoro working area



ø A	n° mandrini n° spindles
44	3
53,5	4
64,5	5
75,5	6
87	7
98,5	8



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

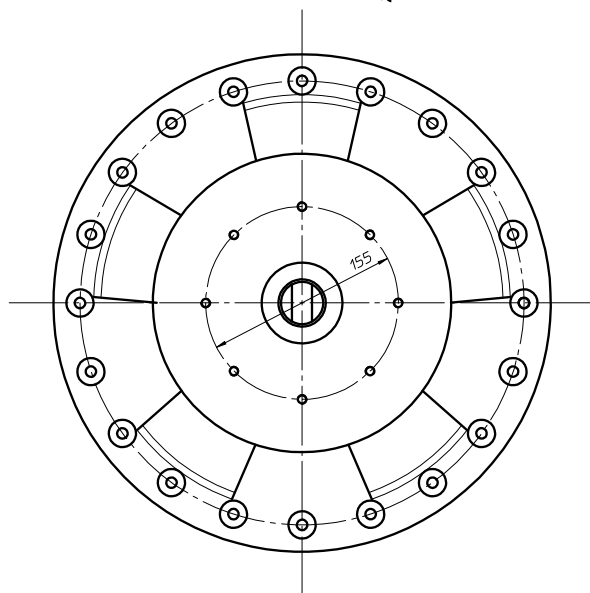
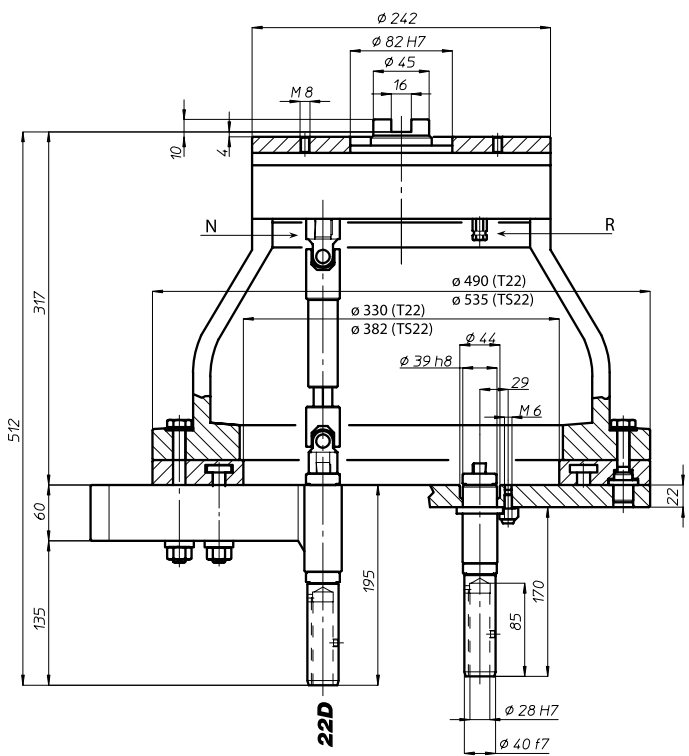
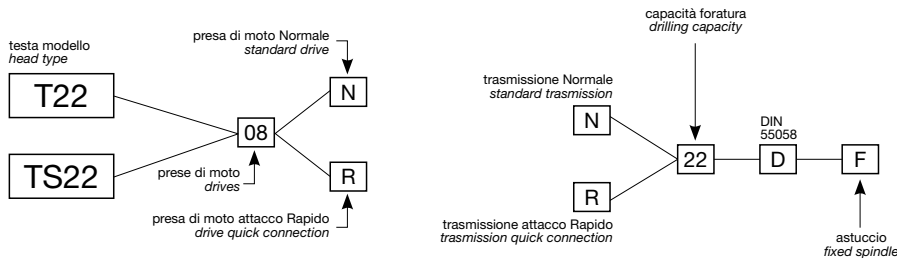
9-8




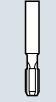





T22-TS22

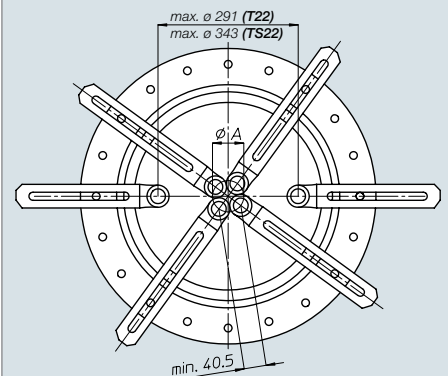
Codice testa
Head code

Codice mandrino
Spindle code



	N° prese di moto Nr. spindle drives	08
	Rapporto Ratio	1-1
	Capacità di foratura Drilling capacity acciaio R=500 N/mm ² ghisa: GG25	20 22
	Maschiatura Tapping	M16
	Attacco utensile Type of spindle D	DIN 55058 Ø28
	Peso gruppo testa Head weight	T22: Kg 38,5 TS22: Kg 41
	Peso gruppo mandrino Spindle-set weight	Kg 5,5

area di lavoro
working area



ϕA	n° mandrini n° spindles
47,5	3
58	4
69,5	5
81,5	6
94	7
106,5	8



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement


9-9


TL20/4

Codice testa
Head code


Codice mandrino
Spindle code





 N° prese di moto
Nr. spindle drives **08**


 Rapporto
Ratio **1-1**

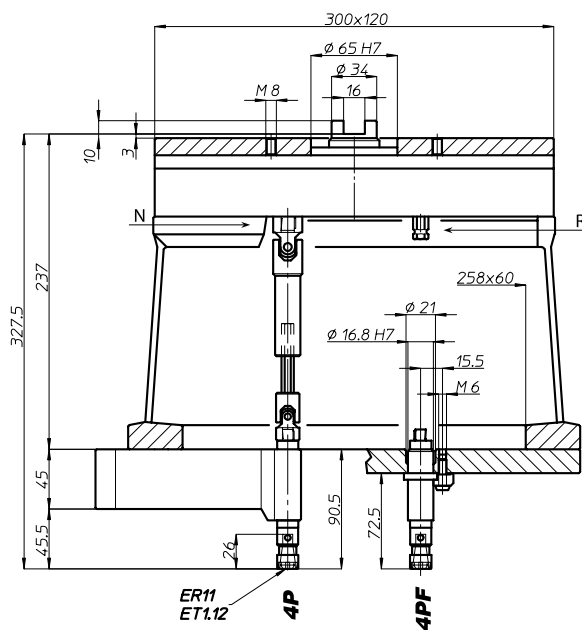
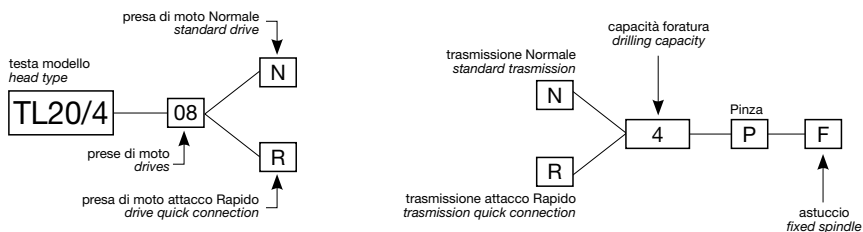
 Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25 **4**
5

 Maschiatura
Tapping **M4**

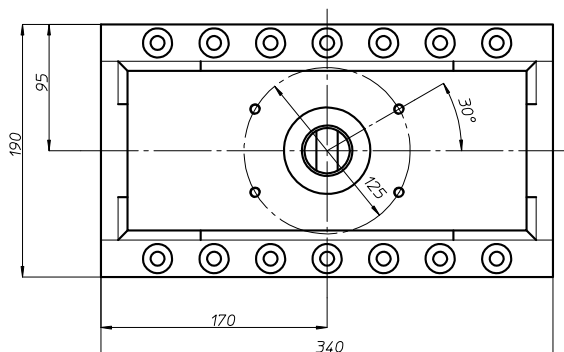
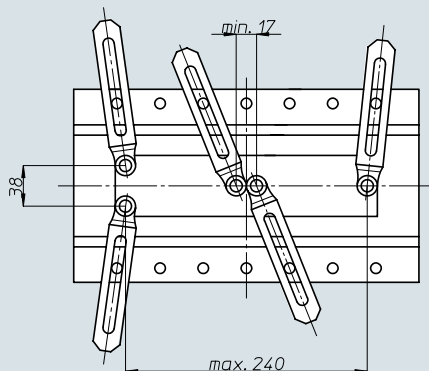
 Attacco utensile
Type of spindle
P **ER11**

 Peso gruppo testa
Head weight **Kg 13,5**

 Peso gruppo mandrino
Spindle-set weight **Kg 1**



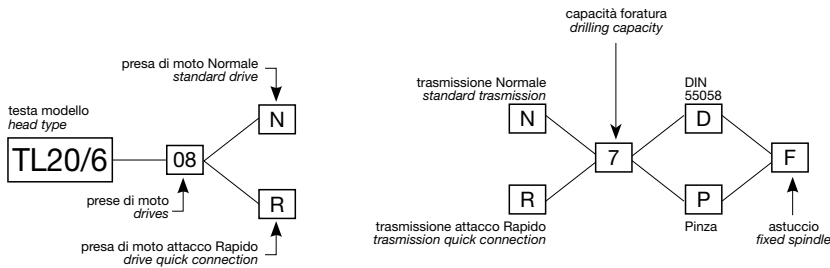
area di lavoro
working area



TL20/6

Codice testa
Head code

Codice mandrino
Spindle code



N° prese di moto
Nr. spindle drives

08



Rapporto
Ratio

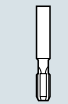
1-1



Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

6

7



Maschiatura
Tapping

M5



Attacco utensile
Type of spindle

D

P

DIN 55058 Ø10
ER11

HT



Peso gruppo testa
Head weight

Kg 13,5

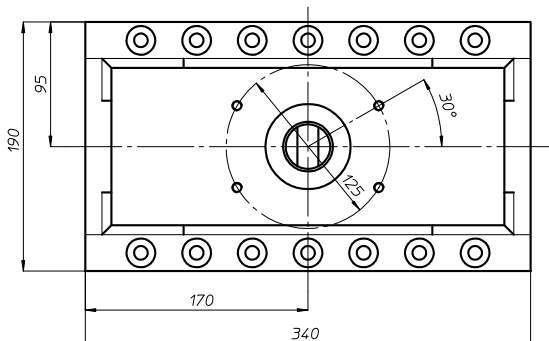
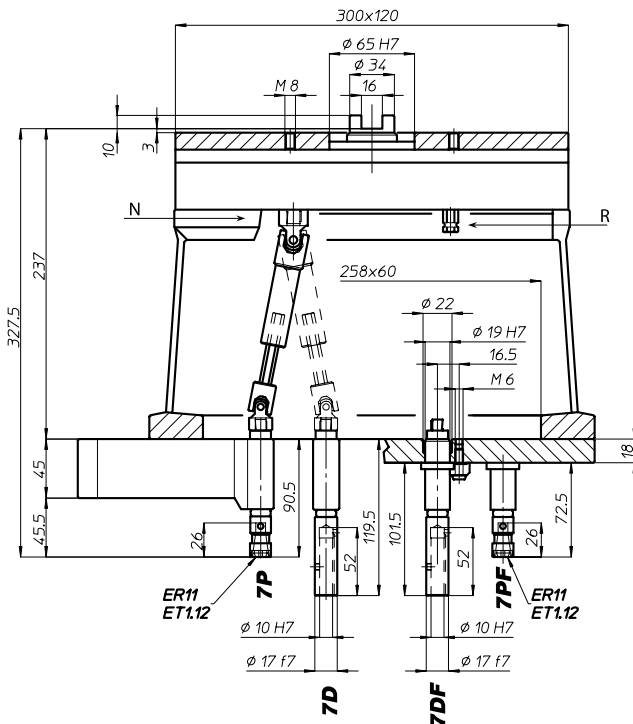
VH



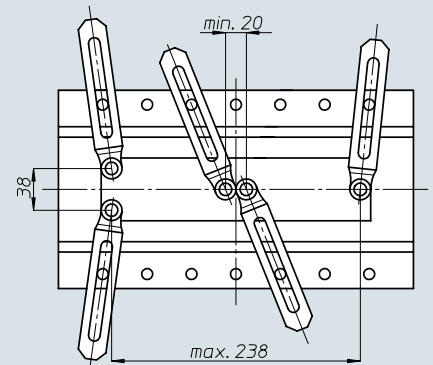
Peso gruppo mandrino
Spindle-set weight

Kg 1

TSI/TSX



area di lavoro
working area



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement



TL20/8

Codice testa
Head code

Codice mandrino
Spindle code



N° prese di moto
Nr. spindle drives

08



Rapporto
Ratio

1-1



Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

8

10



Maschiatura
Tapping

M6



Attacco utensile
Type of spindle

D

DIN 55058 Ø12

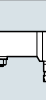
P

ER16



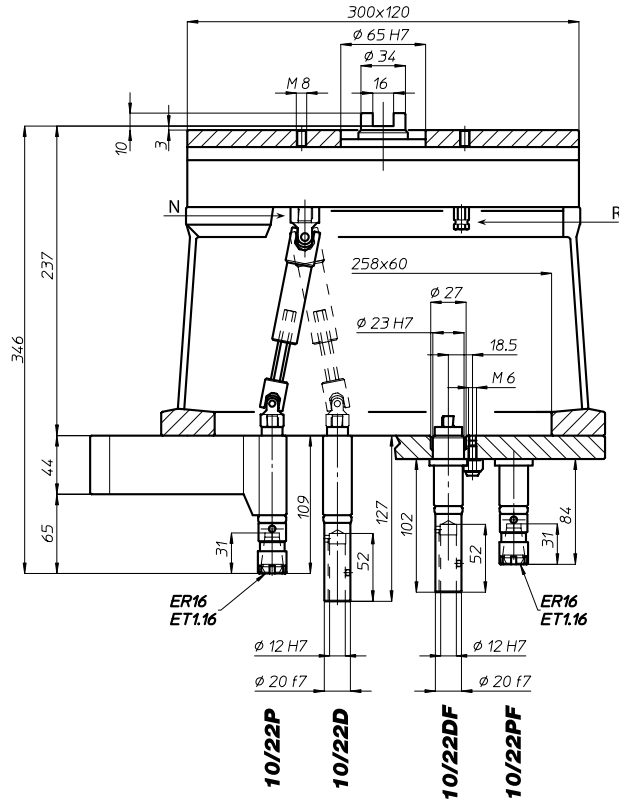
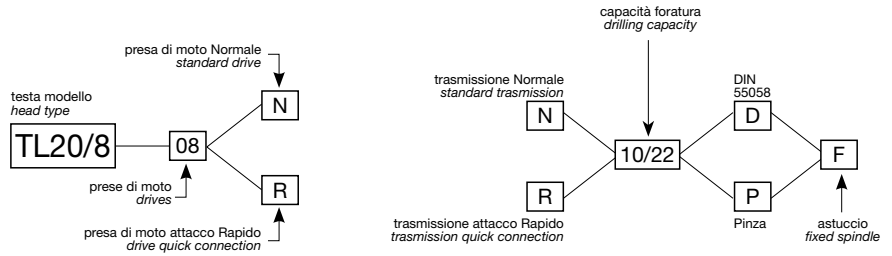
Peso gruppo testa
Head weight

Kg 13,5

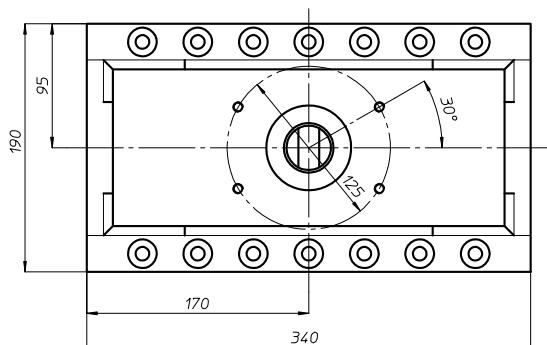
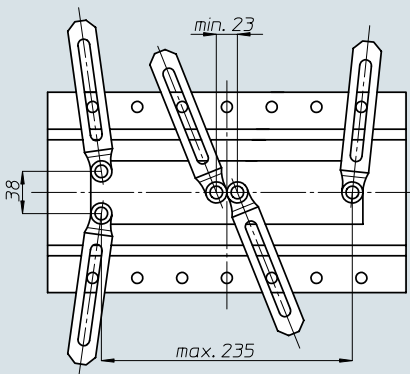


Peso gruppo mandrino
Spindle-set weight

Kg 1,5



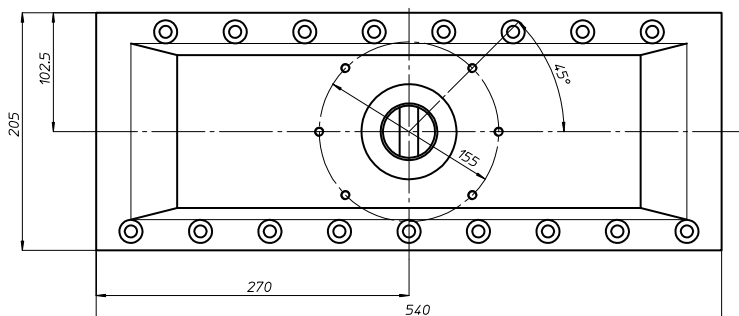
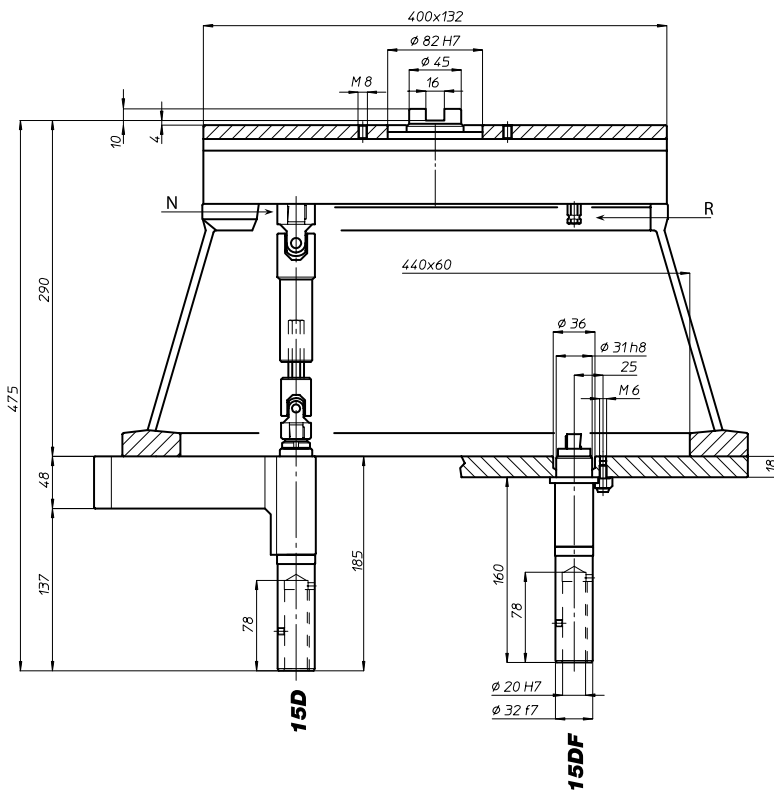
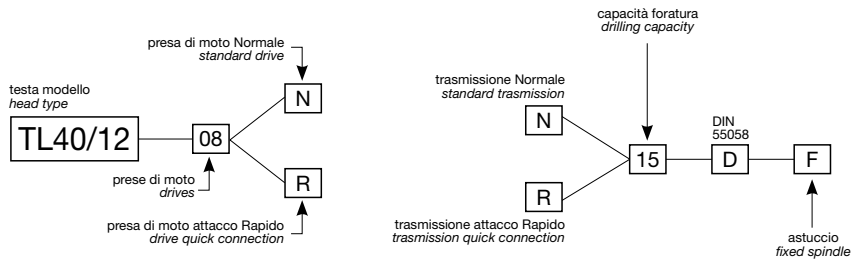
area di lavoro
working area



TL40/12

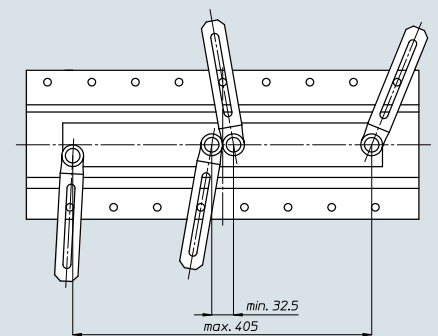
Codice testa
Head code

Codice mandrino
Spindle code



	N° prese di moto Nr. spindle drives	08
	Rapporto Ratio	1-1
	Capacità di foratura Drilling capacity acciaio R=500 N/mm ² ghisa: GG25	13 15
	Maschiatura Tapping	M12
	Attacco utensile Type of spindle D	DIN 55058 Ø20
	Peso gruppo testa Head weight	Kg 25
	Peso gruppo mandrino Spindle-set weight	Kg 2,5

area di lavoro
working area



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories


Appendice tecnica
Technical supplement


TL40/16

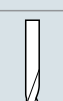



Codice testa
Head code


Codice mandrino
Spindle code


 N° prese di moto
Nr. spindle drives **08**


 Rapporto
Ratio **1-1**

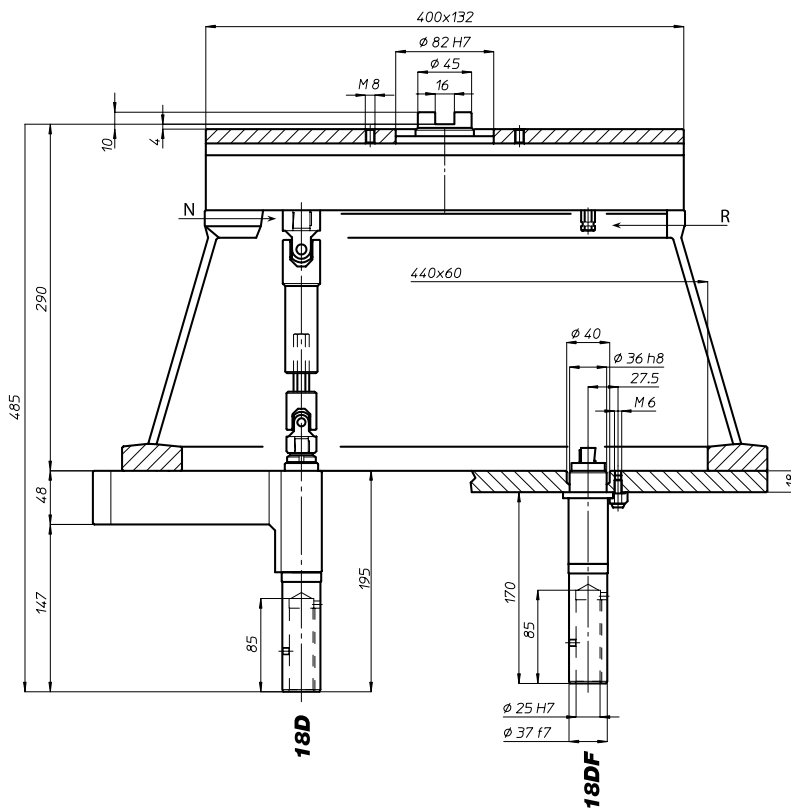
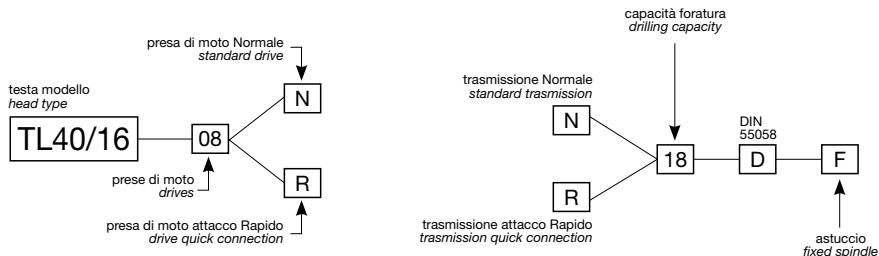
 Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25 **16**
18

 Maschiatura
Tapping **M14**

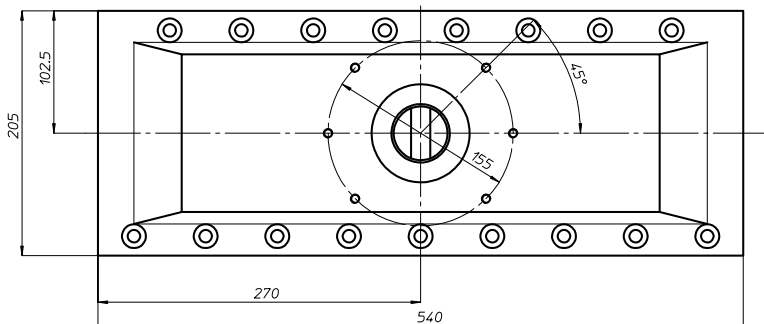
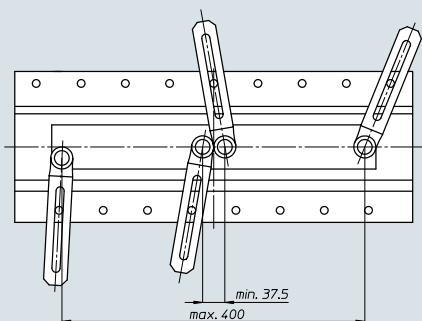
 Attacco utensile
Type of spindle
D **DIN 55058 Ø25**

 Peso gruppo testa
Head weight **Kg 26**

 Peso gruppo mandrino
Spindle-set weight **Kg 2,5**



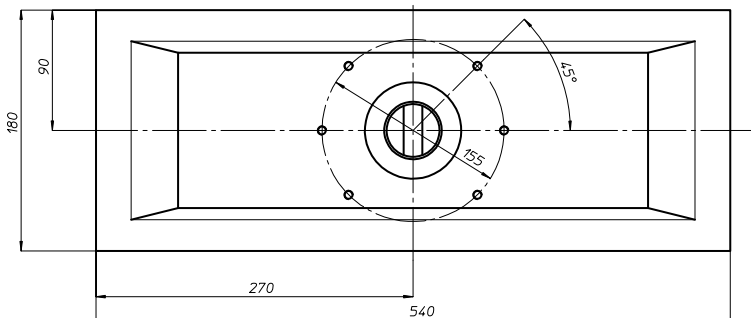
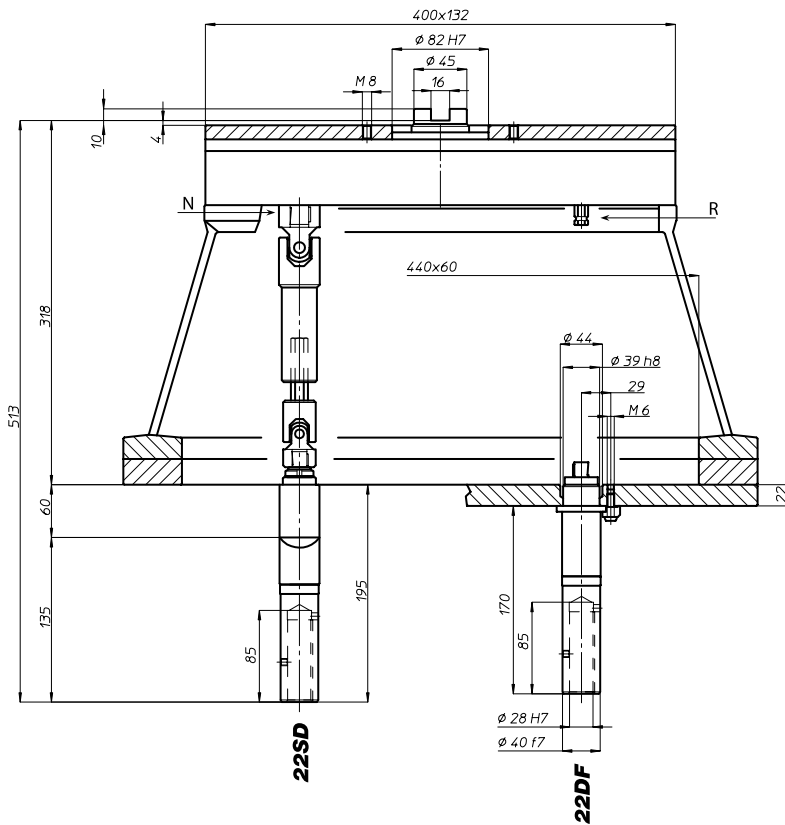
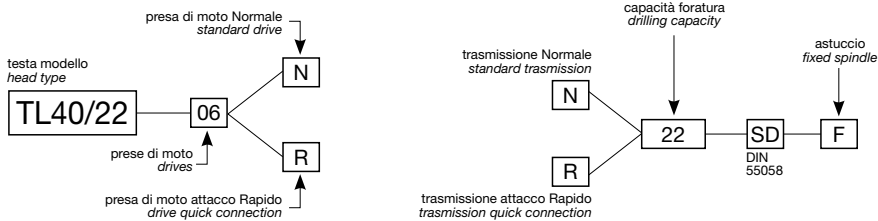
area di lavoro
working area



TL40/22

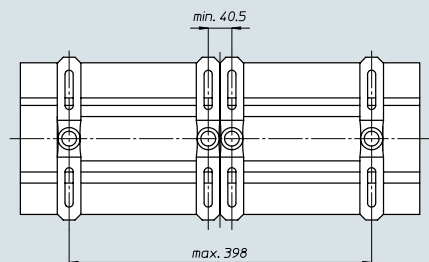
Codice testa
Head code

Codice mandrino
Spindle code



	N° prese di moto Nr. spindle drives	06
	Rapporto Ratio	1-1
	Capacità di foratura Drilling capacity acciaio R=500 N/mm ² ghisa: GG25	20 22
	Maschiatura Tapping	M16
	Attacco utensile Type of spindle D	DIN 55058 $\phi 28$
	Peso gruppo testa Head weight	Kg 37
	Peso gruppo mandrino Spindle-set weight	Kg 5

area di lavoro
working area



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

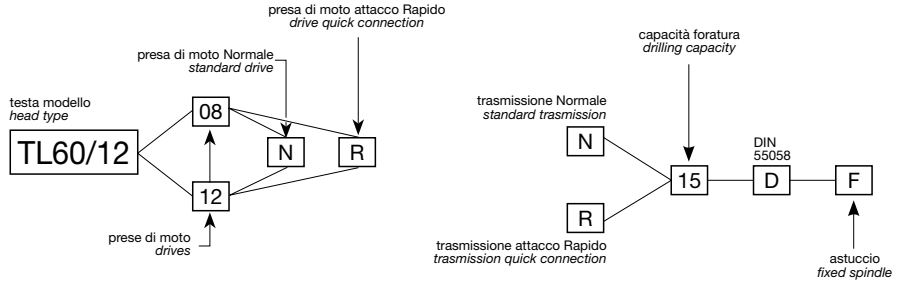
Appendice tecnica
Technical supplement

TL60/12



Codice testa
Head code

Codice mandrino
Spindle code



N° prese di moto
Nr. spindle drives

08-12



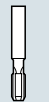
Rapporto
Ratio

1-1



Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

13
15



Maschiatura
Tapping

M12



Attacco utensile
Type of spindle

D DIN 55058 Ø20



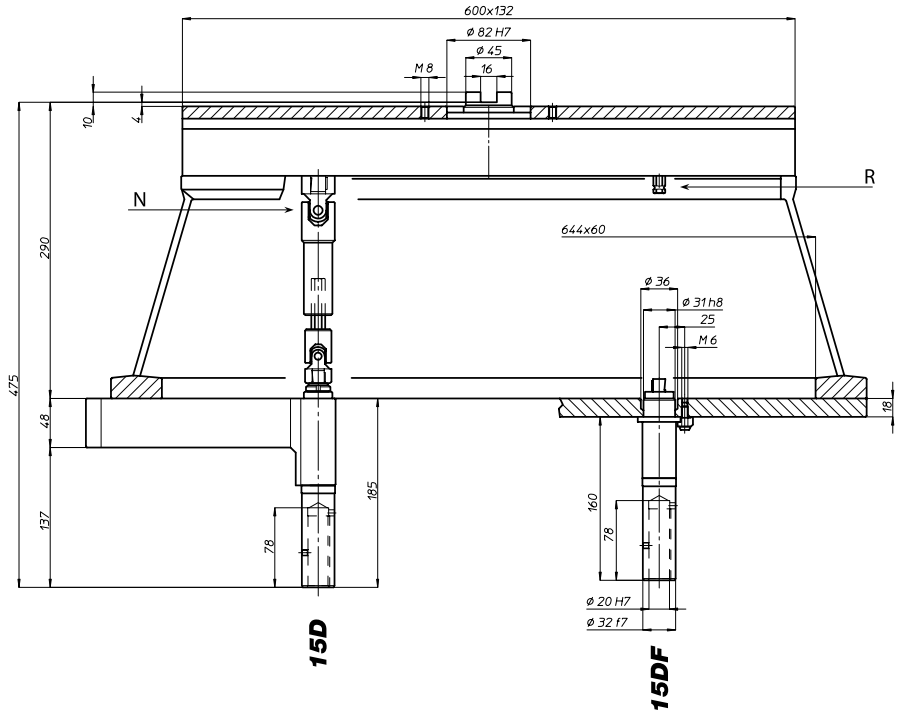
Peso gruppo testa
Head weight

Kg 34,5

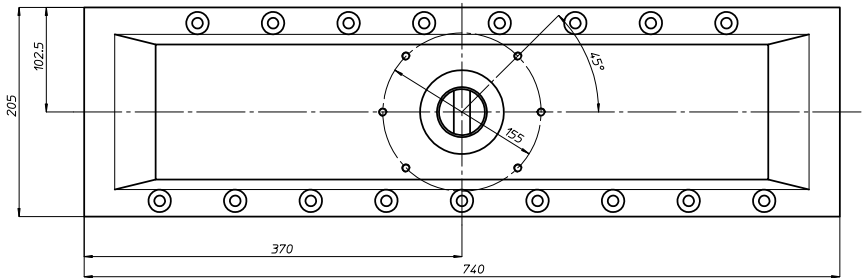
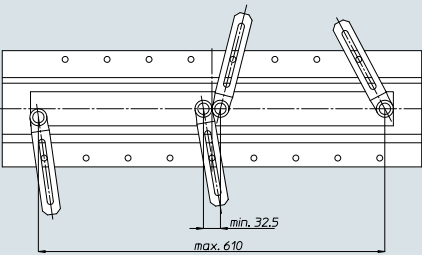


Peso gruppo mandrino
Spindle-set weight

Kg 2,5



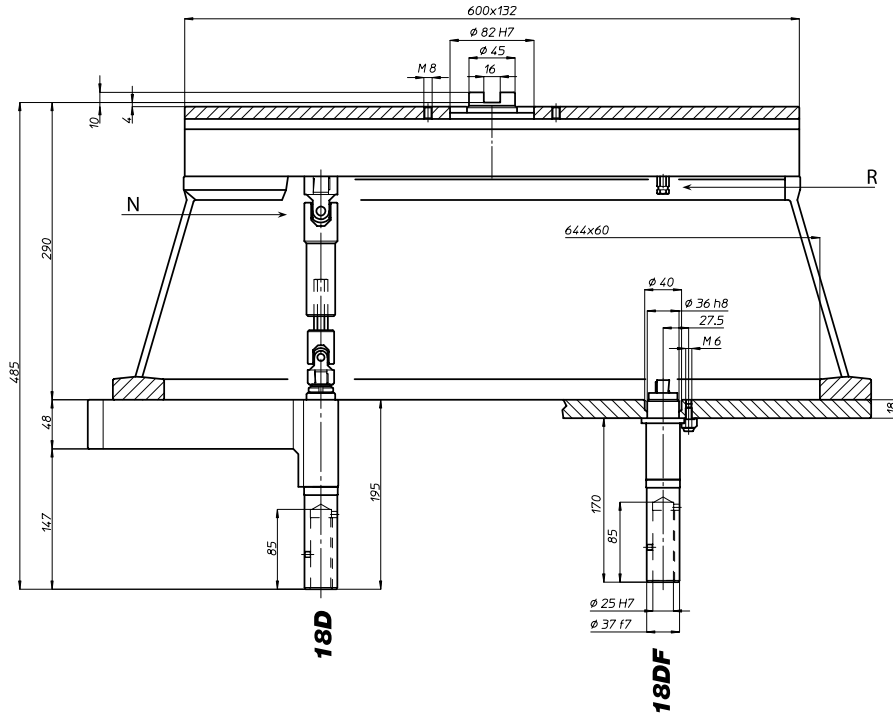
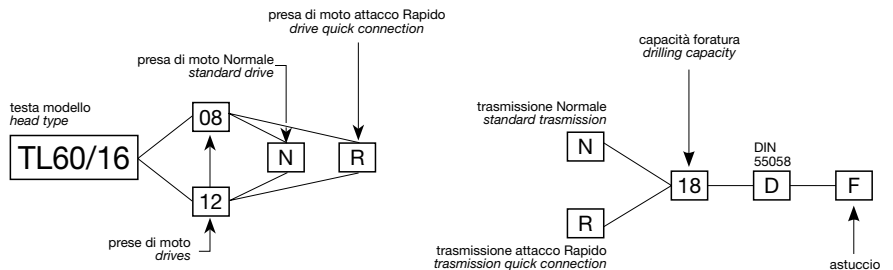
area di lavoro
working area



TL60/16

Codice testa
Head code

Codice mandrino
Spindle code



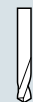
N° prese di moto
Nr. spindle drives

08-12



Rapporto
Ratio

1-1



Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

16
18



Maschiatura
Tapping

M14



Attacco utensile
Type of spindle
D

DIN 55058 Ø25



Peso gruppo testa
Head weight

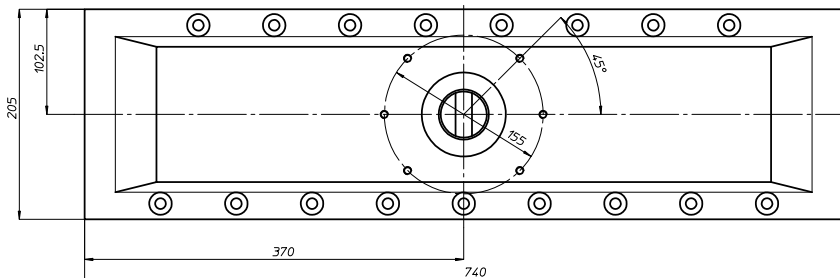
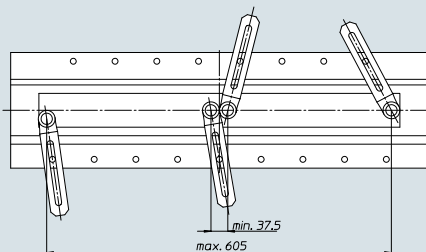
Kg 36



Peso gruppo mandrino
Spindle-set weight

Kg 2,5

area di lavoro
working area



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

TL60/22



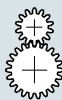
Codice testa
Head code

Codice mandrino
Spindle code



N° prese di moto
Nr. spindle drives

08



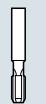
Rapporto
Ratio

1-1



Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

20
22



Maschiatura
Tapping

M16



Attacco utensile
Type of spindle
D

DIN 55058 Ø28



Peso gruppo testa
Head weight

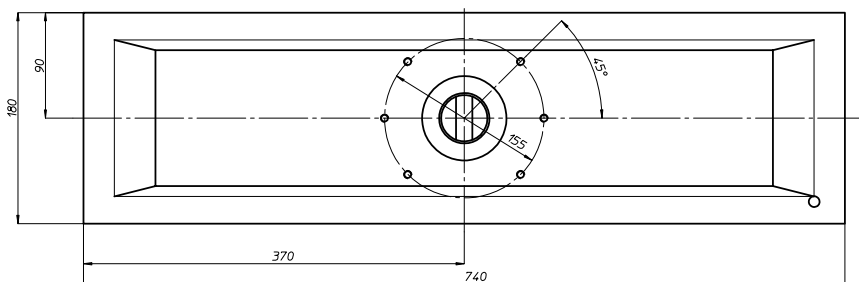
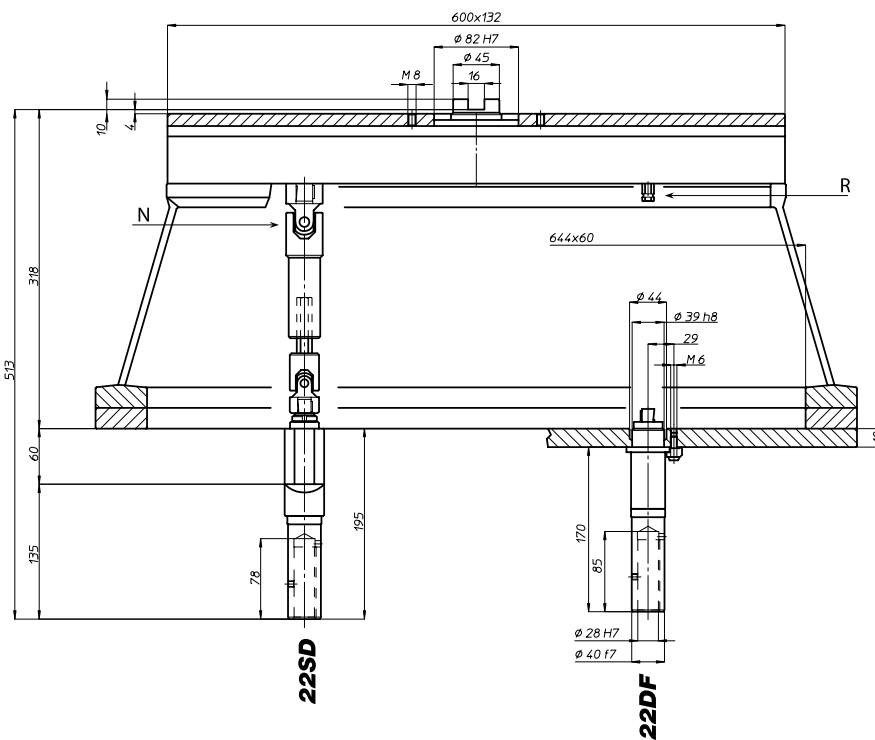
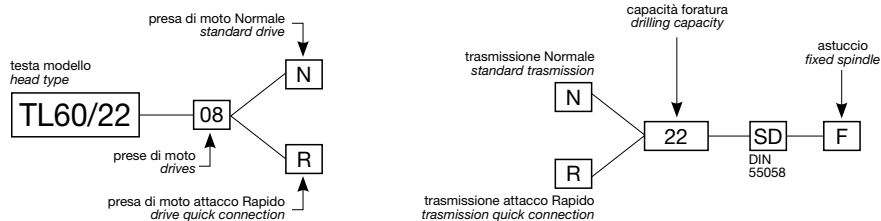
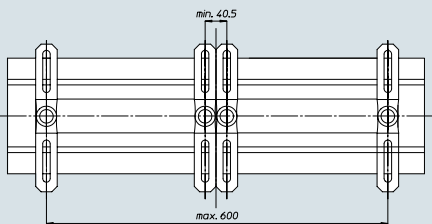
Kg 47,5



Peso gruppo mandrino
Spindle-set weight

Kg 5

area di lavoro
working area



Accessori
Accessories

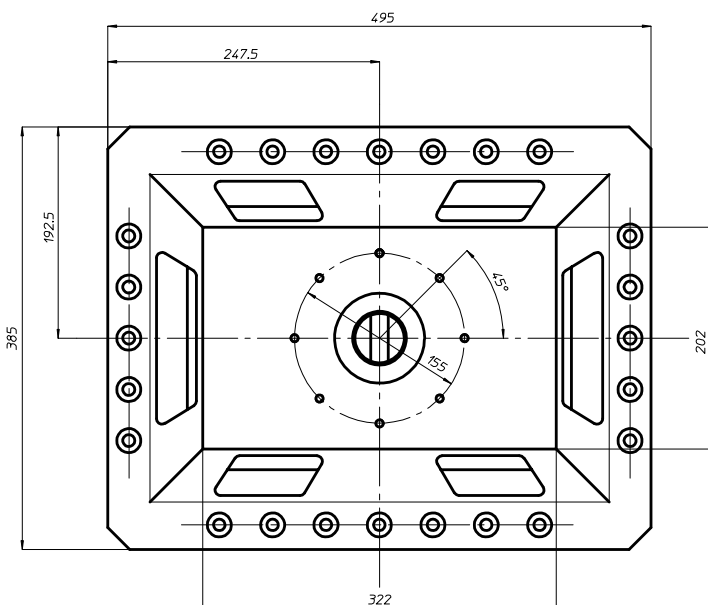
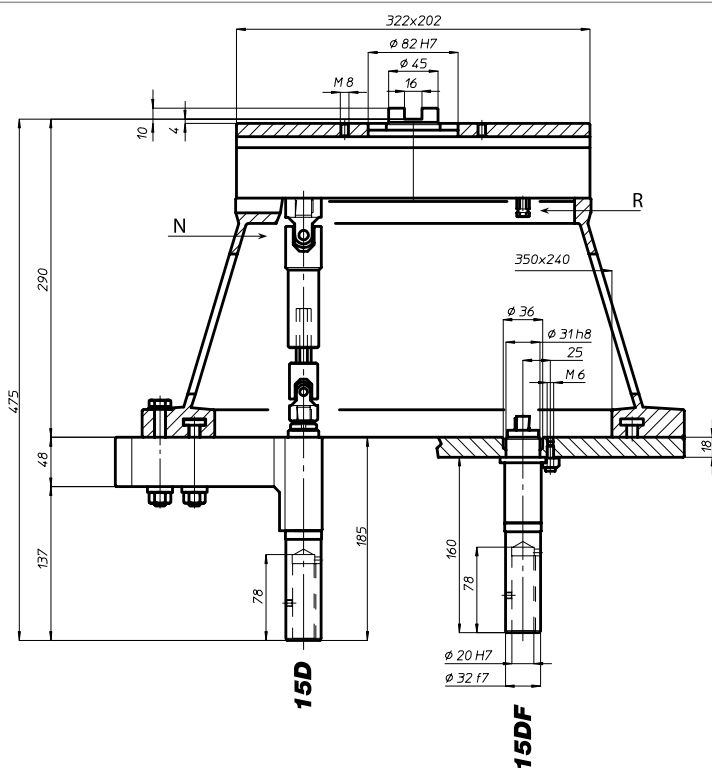
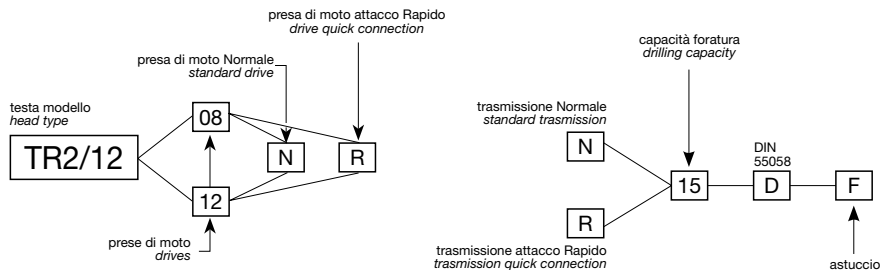
Appendice tecnica
Technical supplement



TR2/12

Codice testa
Head code

Codice mandrino
Spindle code



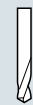
N° prese di moto
Nr. spindle drives

08-12



Rapporto
Ratio

1-1



Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

MO



Maschiatura
Tapping

M12



Attacco utensile
Type of spindle

DIN 55058 Ø20

HT



Peso gruppo testa
Head weight

Kg 30

VH

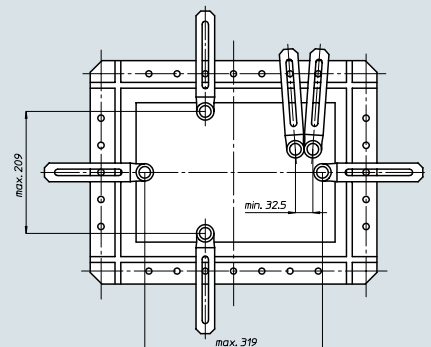


Peso gruppo mandrino
Spindle-set weight

Kg 2,6

TSI/TSX

area di lavoro
working area



T

MT-TC-TC3

Accessori
Accessories

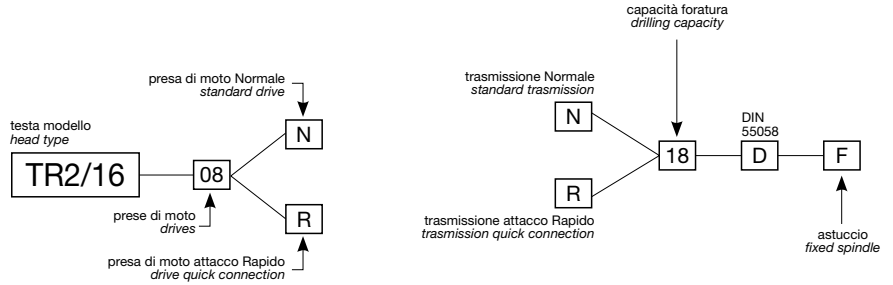
Appendice tecnica
Technical supplement

TR2/16



Codice testa
Head code

Codice mandrino
Spindle code



N° prese di moto
Nr. spindle drives

10



Rapporto
Ratio

1-1



Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

16
18



Maschiatura
Tapping

M14



Attacco utensile
Type of spindle

D DIN 55058 Ø25



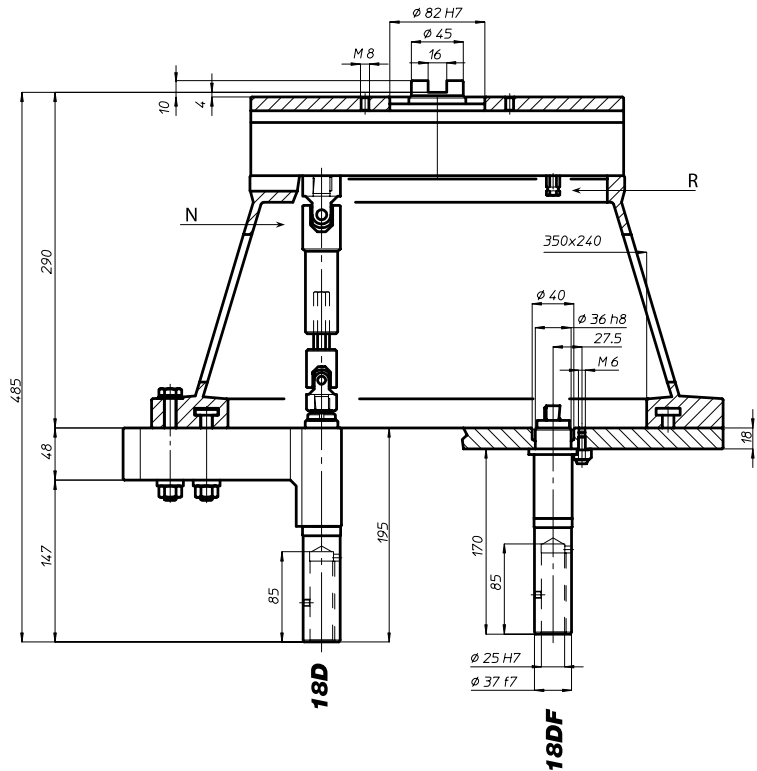
Peso gruppo testa
Head weight

Kg 31

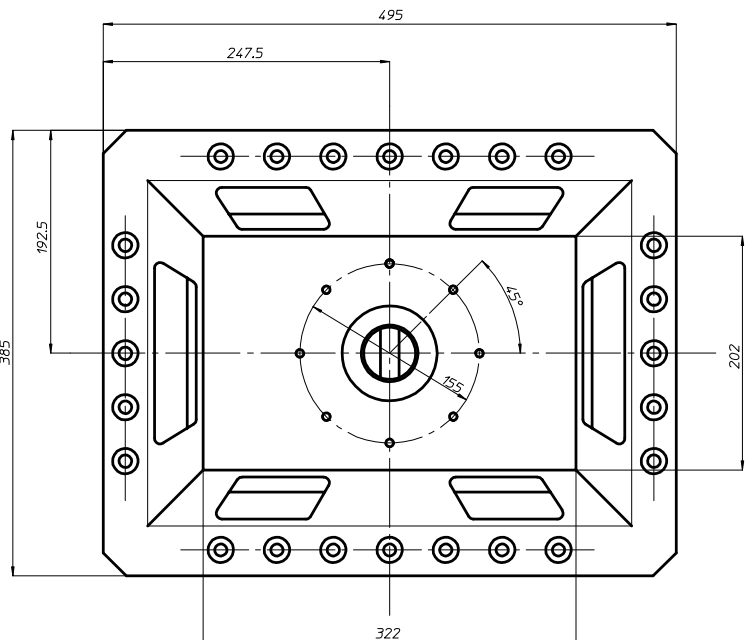
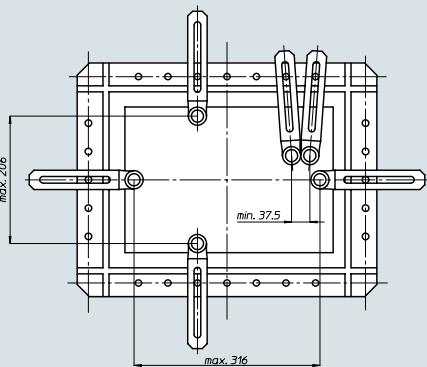


Peso gruppo mandrino
Spindle-set weight

Kg 3,3



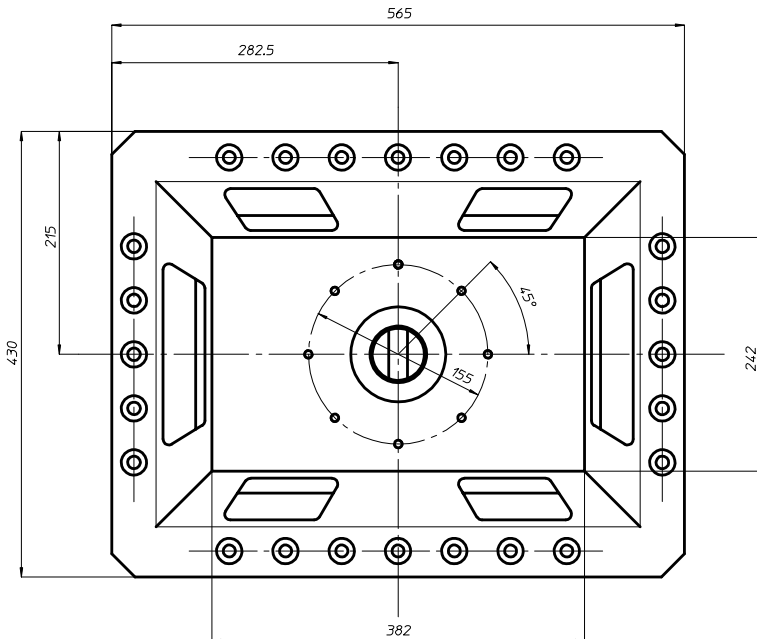
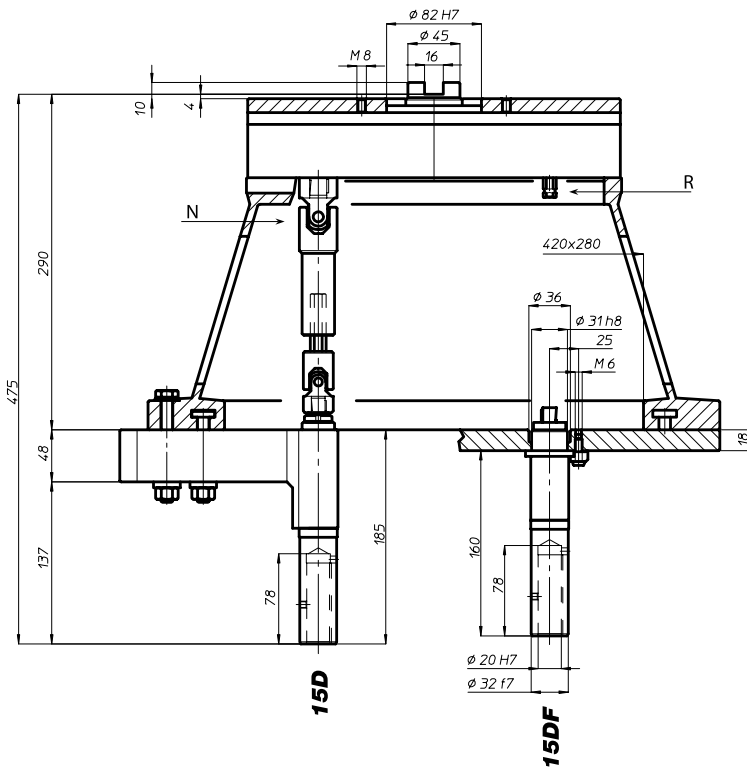
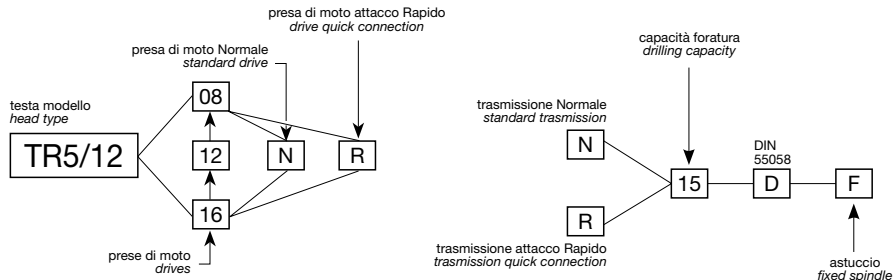
area di lavoro
working area










TR5/12

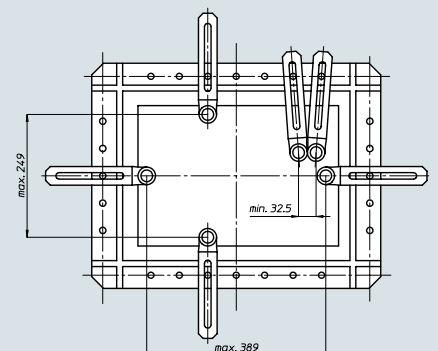
Codice testa
Head code

Codice mandrino
Spindle code



	N° prese di moto Nr. spindle drives	08-12-16
	Rapporto Ratio	1-1
	Capacità di foratura Drilling capacity acciaio R=500 N/mm ² ghisa: GG25	13 15
	Maschiatura Tapping	M12
	Attacco utensile Type of spindle D	DIN 55058 Ø20
	Peso gruppo testa Head weight	Kg 34,5
	Peso gruppo mandrino Spindle-set weight	Kg 2,6

area di lavoro
working area



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

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Technical supplement

9-21

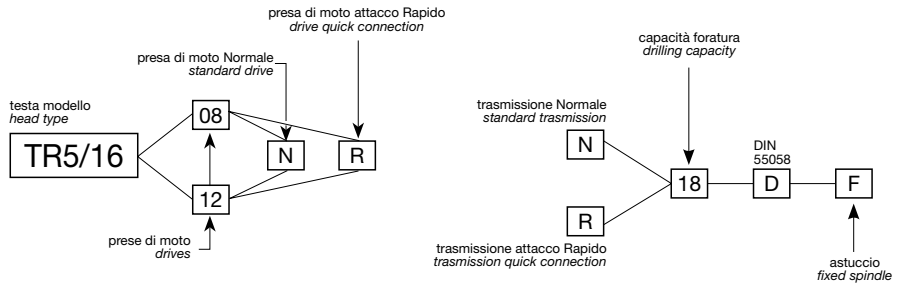


TR5/16



Codice testa
Head code

Codice mandrino
Spindle code



N° prese di moto
Nr. spindle drives

08-12



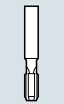
Rapporto
Ratio

1-1



Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

16
18



Maschiatura
Tapping

M14



Attacco utensile
Type of spindle

D DIN 55058 Ø25



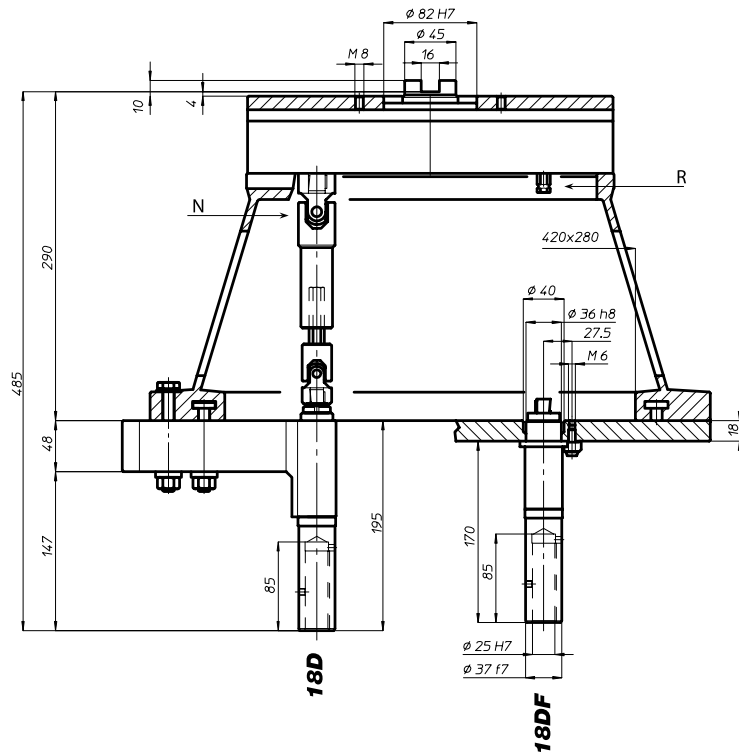
Peso gruppo testa
Head weight

Kg 36

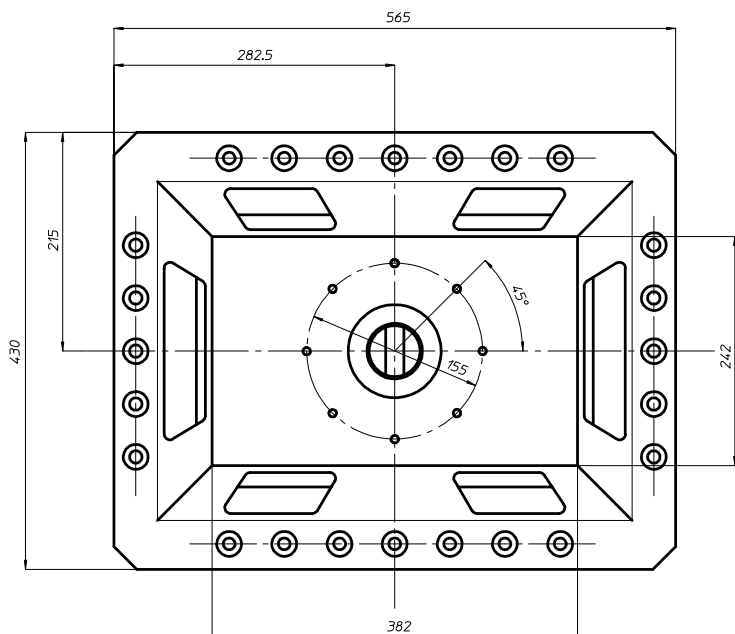
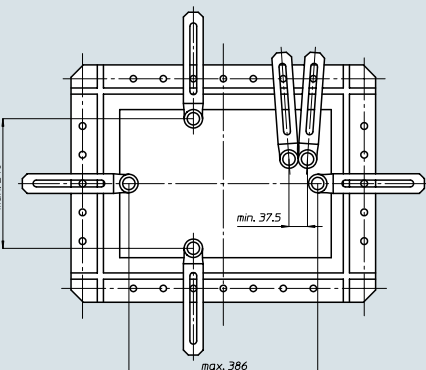


Peso gruppo mandrino
Spindle-set weight

Kg 3,3



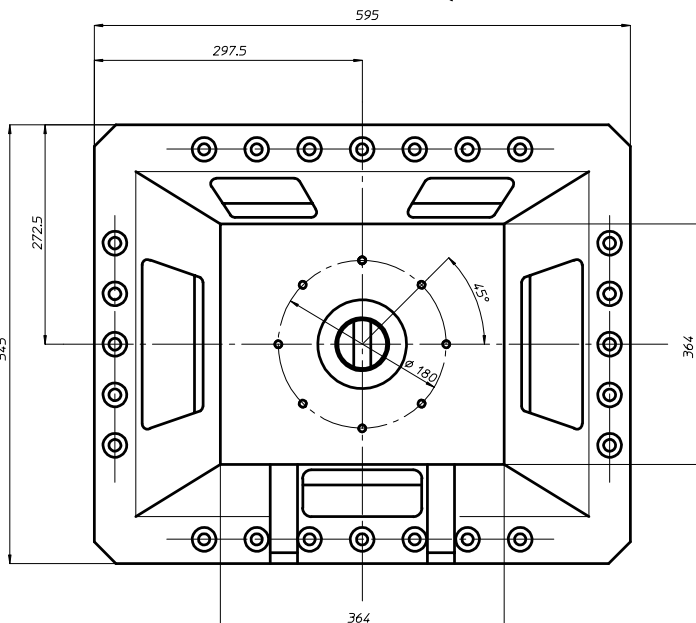
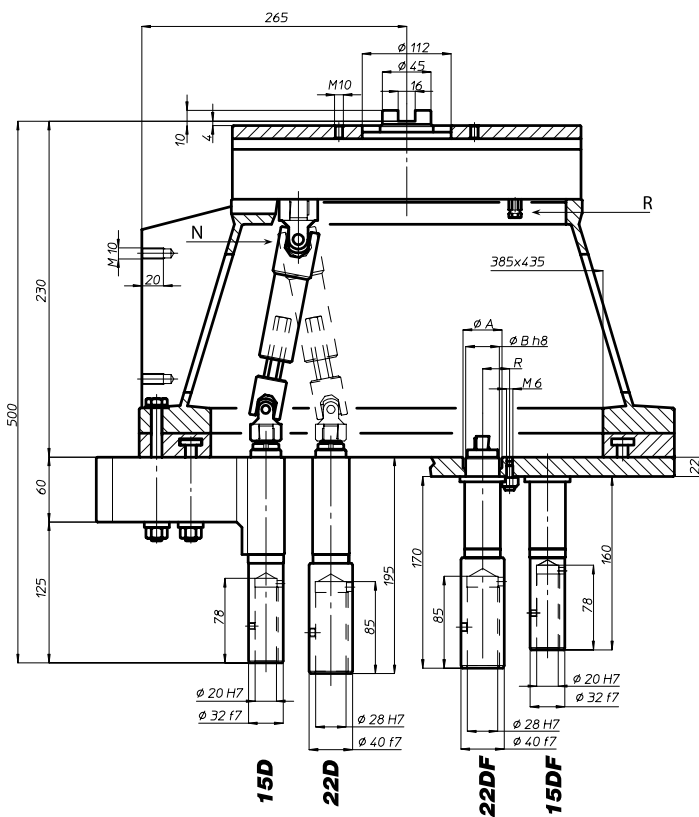
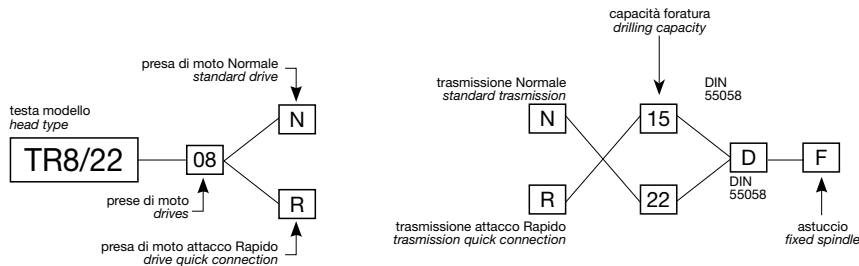
area di lavoro
working area



TR8/22

Codice testa
Head code

Codice mandrino
Spindle code



N° prese di moto
Nr. spindle drives

12



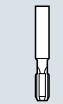
Rapporto
Ratio

1-1,5



Capacità di foratura
Drilling capacity
acciaio R=500 N/mm²
ghisa: GG25

15D: 13 22D: 20
15D: 15 22D: 22



Maschiatura
Tapping

15D: M12
22D: M16



Attacco utensile
Type of spindle
D

DIN 55058 $\phi 20$ - $\phi 28$



Peso gruppo testa
Head weight

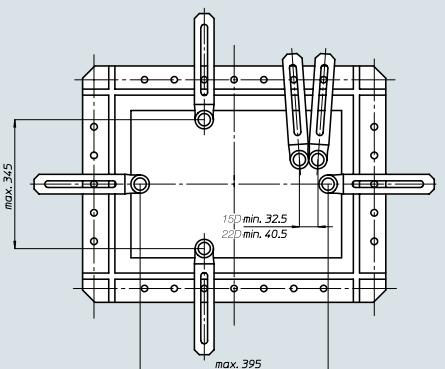
Kg 86



Peso gruppo mandrino
Spindle-set weight

15D: Kg 4
22D: Kg 5,5

area di lavoro
working area



FH

BAH

TA.CP

TA

MO

HT

VH

TSI/TSX

T

MT-TC-TC3

Accessori
Accessories

Appendice tecnica
Technical supplement

TM400



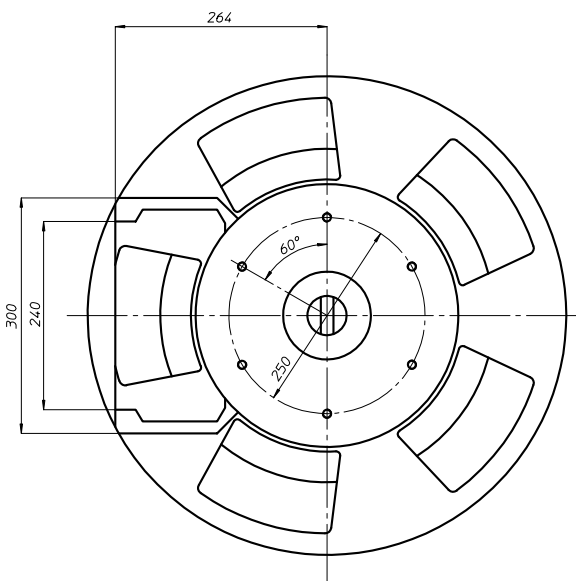
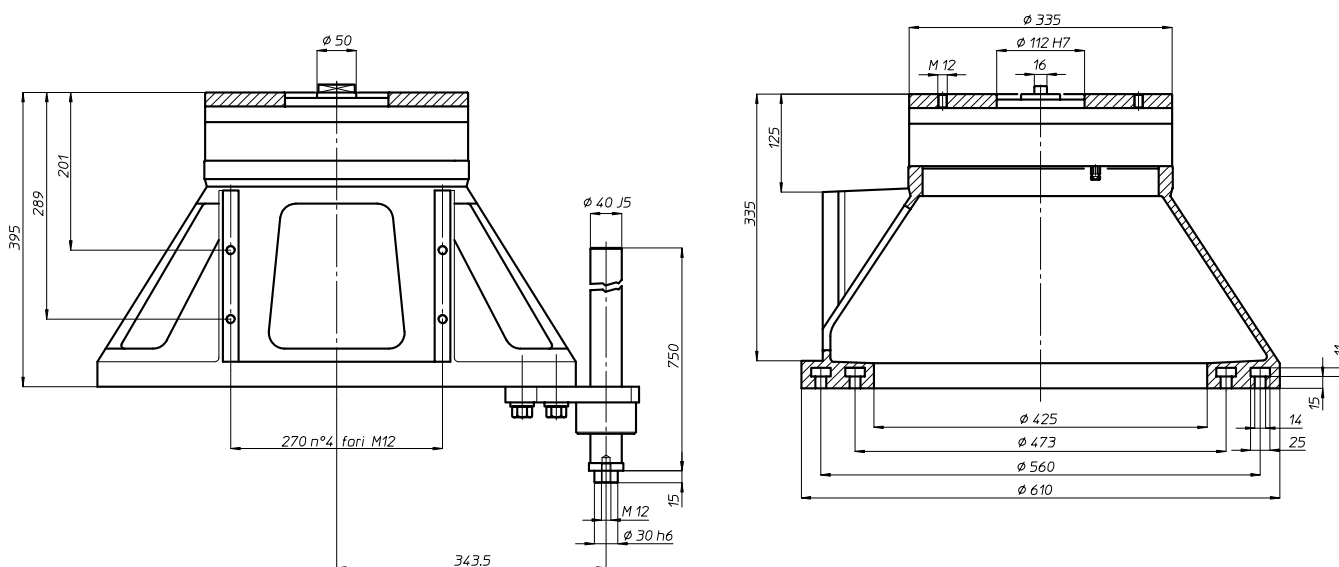
Codice testa
Head code

testa modello
head type

TM400 12 R

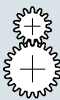
prese di moto
drives

presa di moto attacco Rapido
drive quick connection



N° prese di moto
Nr. spindle drives

12



Rapporto
Ratio

1-1



Peso
Weight

Kg 105

area di lavoro
working area

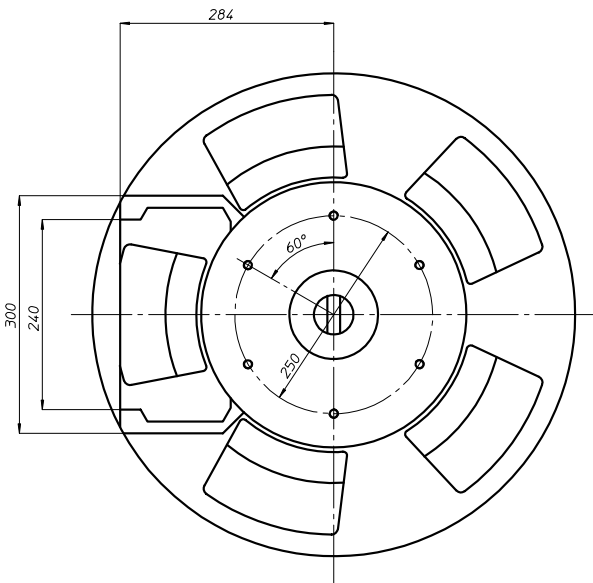
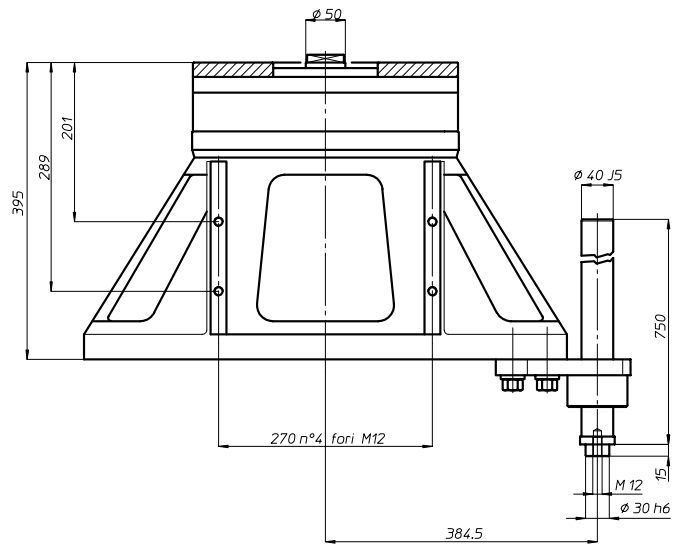
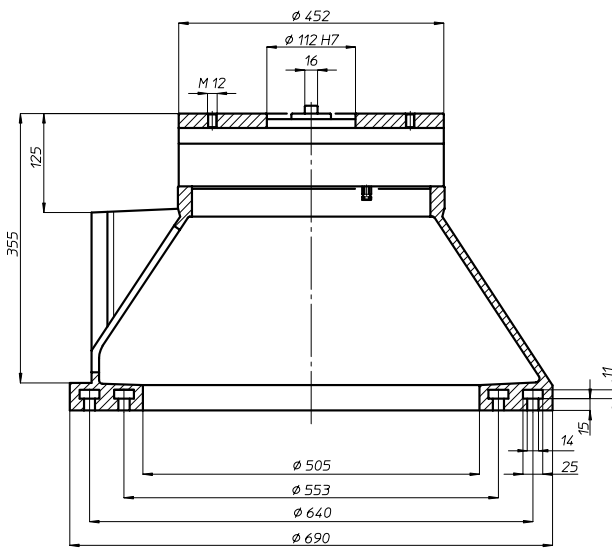
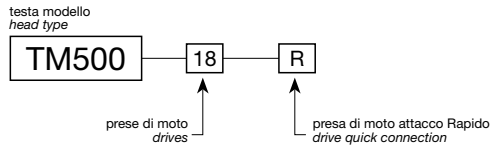
Ø 385



TM500



Codice testa
Head code



	N° prese di moto Nr. spindle drives	18
	Rapporto Ratio	1-1
	Peso Weight	Kg 145
area di lavoro working area		Ø 465

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TRM43



Codice testa
Head code

testa modello
head type

TRM43 — 16 — R

prese di moto
drives

presa di moto attacco Rapido
drive quick connection



N° prese di moto
Nr. spindle drives

16



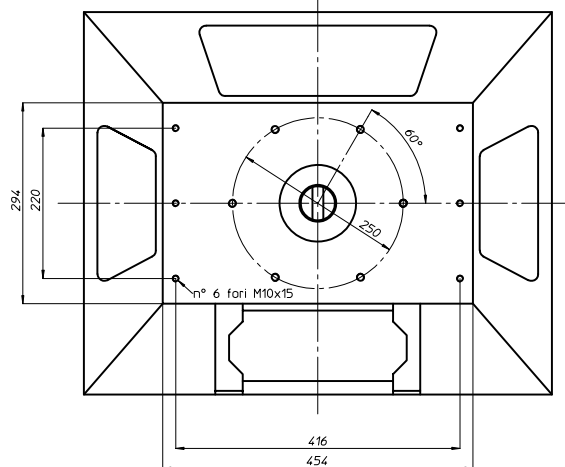
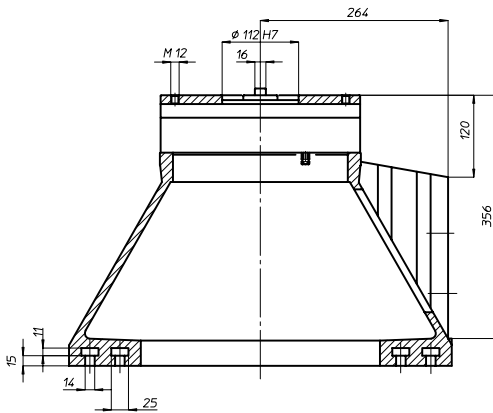
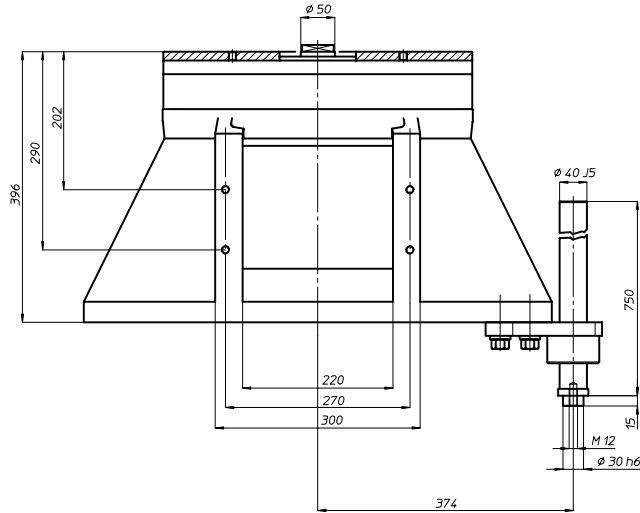
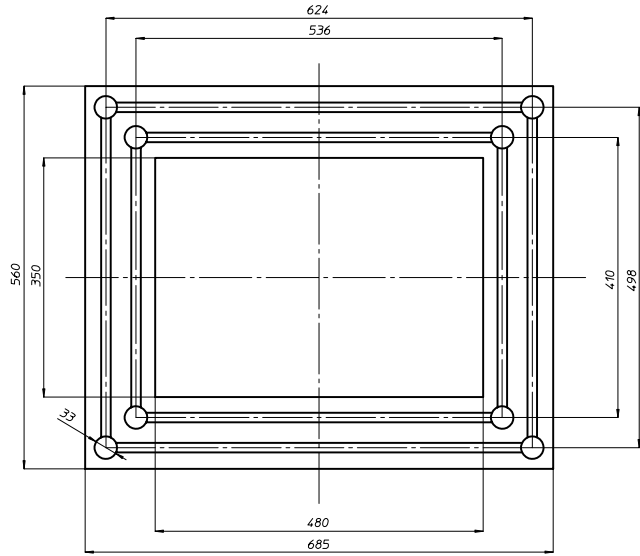
Rapporto
Ratio

1-1



Peso
Weight

Kg 135



area di lavoro
working area

300 x 440



TRM73

Codice testa
Head code

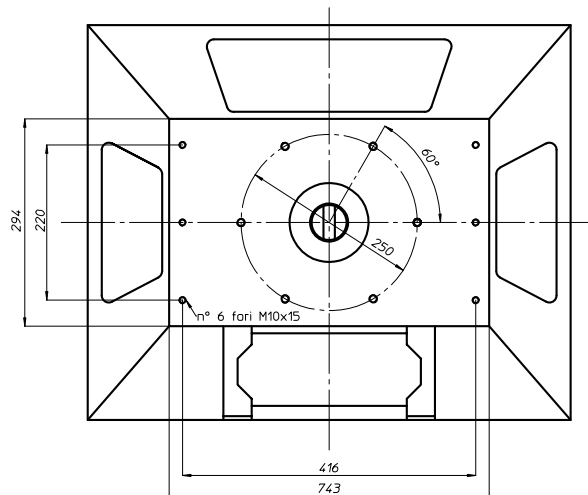
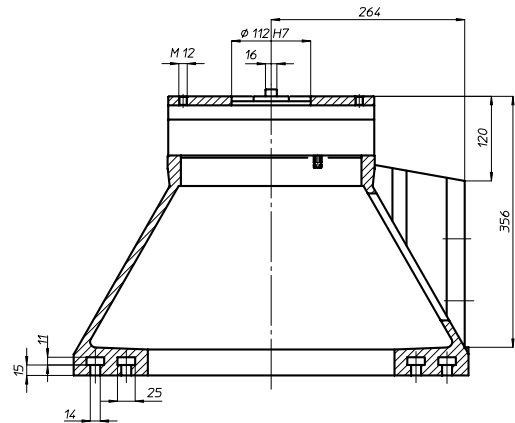
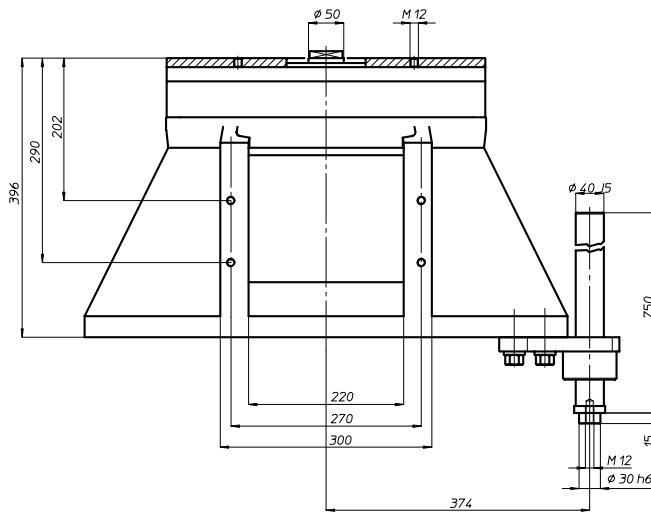
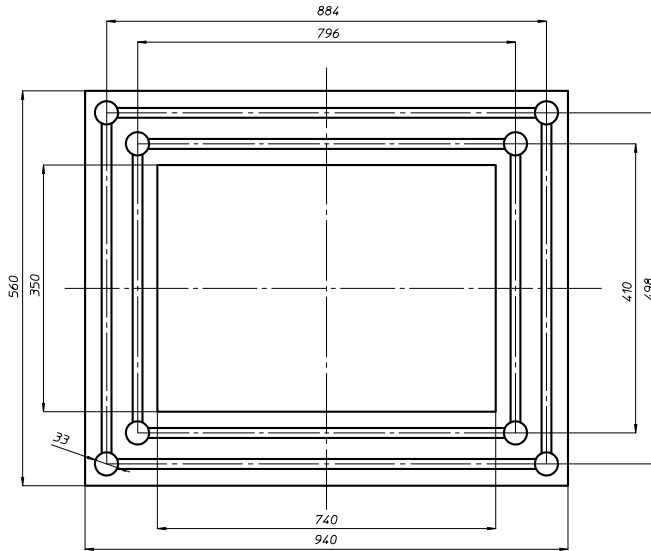


testa modello
head type



prese di moto
drives

presa di moto attacco Rapido
drive quick connection



	N° prese di moto Nr. spindle drives	26
	Rapporto Ratio	1-1
	Peso Weight	Kg 210

area di lavoro
working area
300 x 700

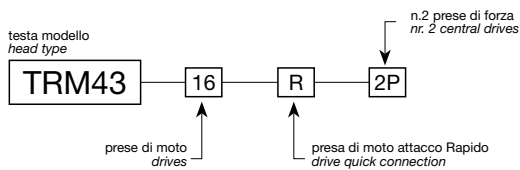


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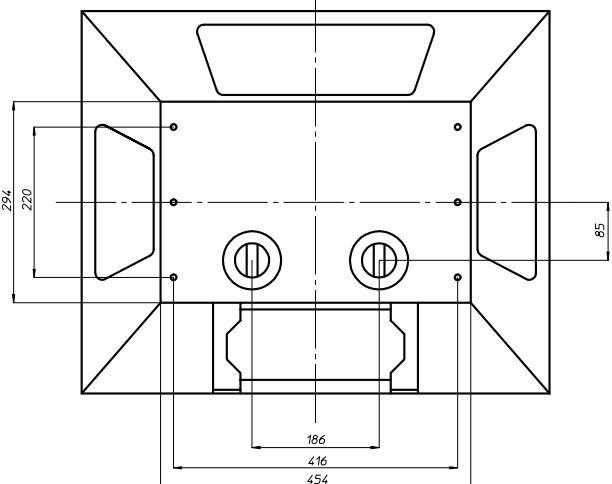
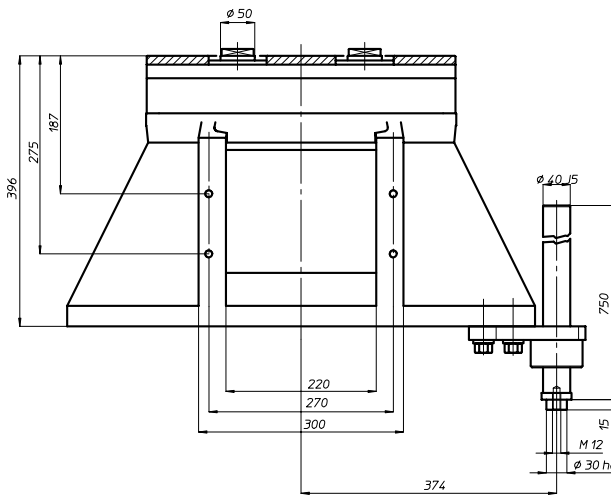
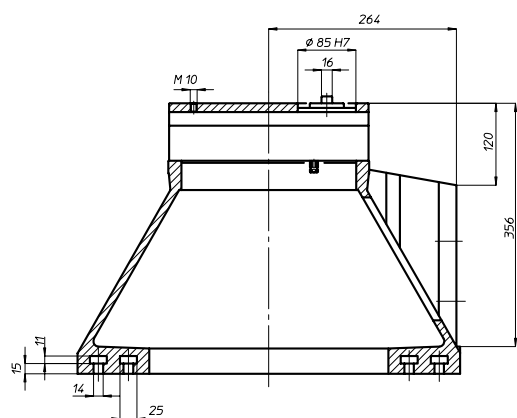
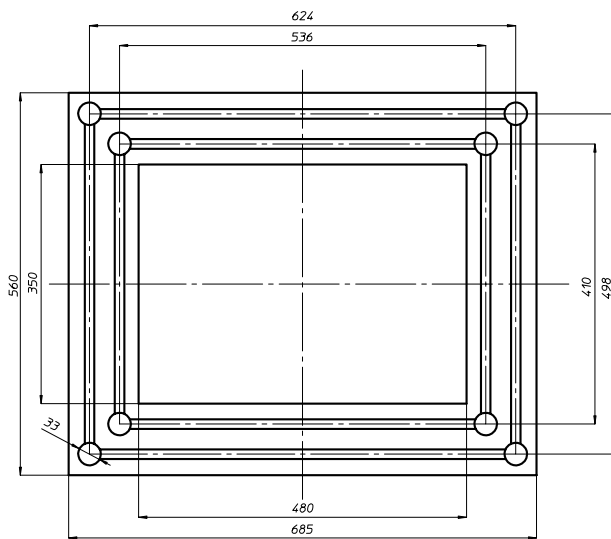
TRM43-2P



Codice testa
Head code



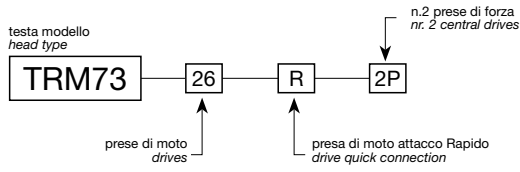
	N° prese di moto Nr. spindle drives	8+8
	Rapporto Ratio	1-1
	Peso Weight	Kg 140



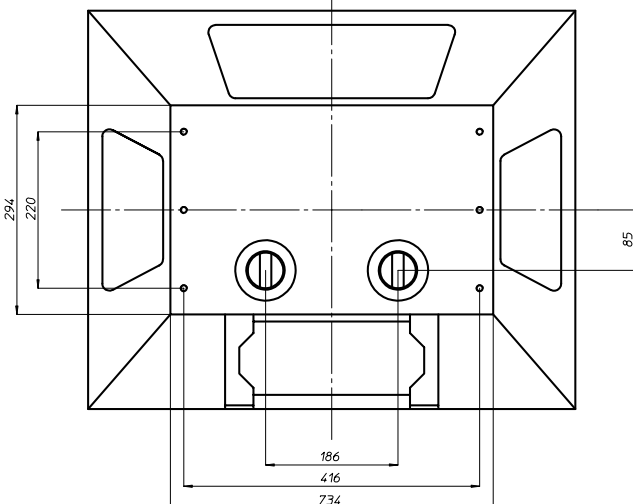
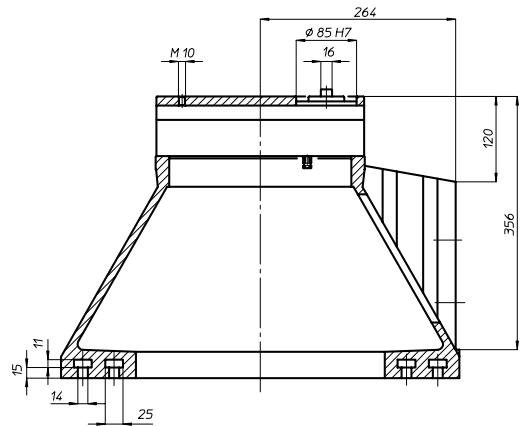
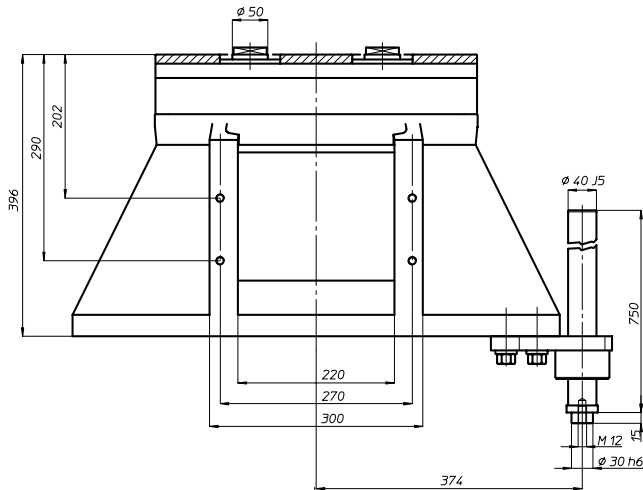
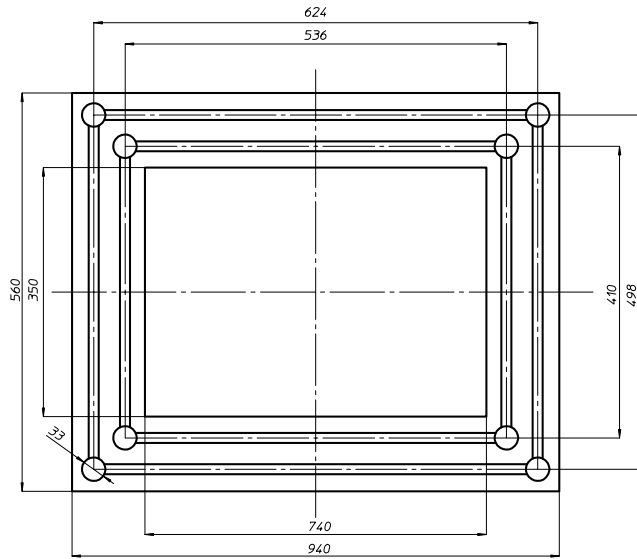
area di lavoro
working area
300 x 440



TRM73-2P

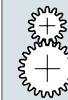


Codice testa
Head code



N° prese di moto
Nr. spindle drives

13+13



Rapporto
Ratio

1-1



Peso
Weight

Kg 210

area di lavoro
working area

300 x 700



FH

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TA.CP

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VH

TSI/TSX

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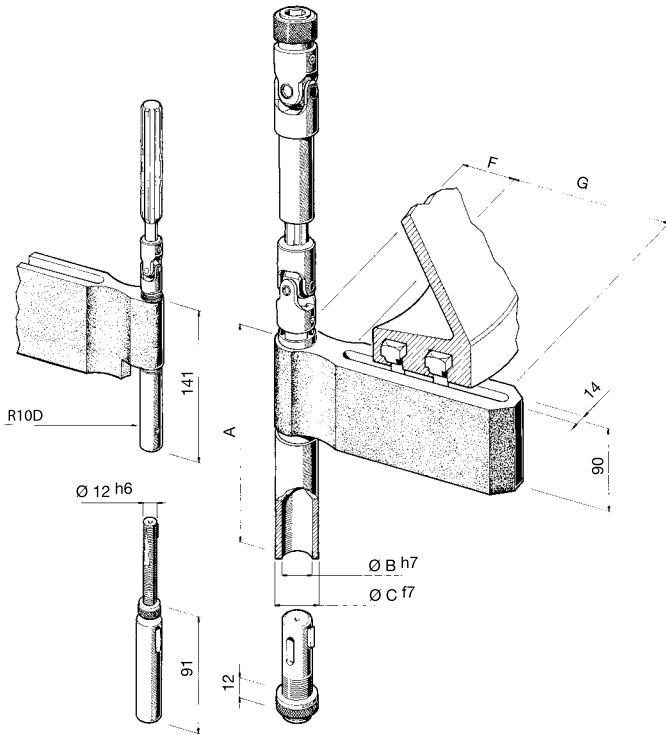
MT-TC-TC3

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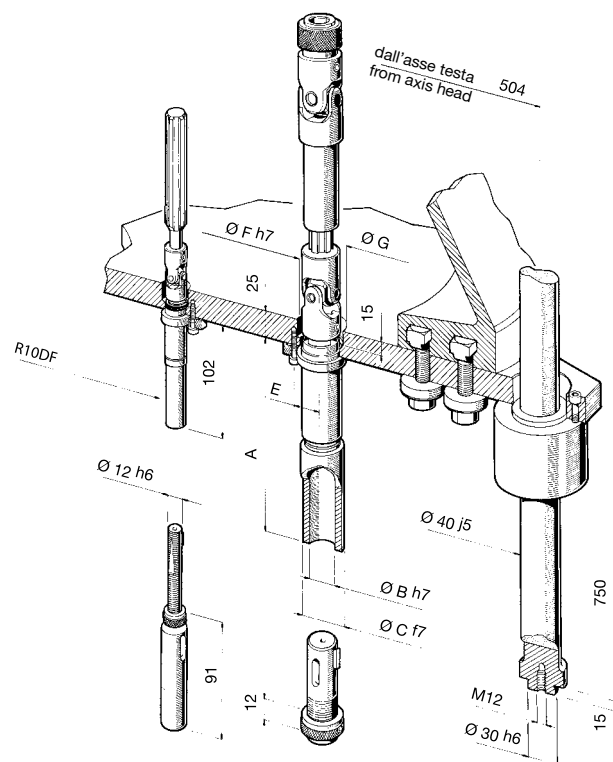
solo per teste TM-TRM for TM-TRM heads only

su staffa - *on arm*



Tipi mandrini spindles type	10D	12D	15D	18D	22D	25D
Codice code	R10D-S5 R10D-S6	R12D-S5 R12D-S6	R15D-S5 R15D-S6	R18D-S5 R18D-S6	R22D-S5 R22D-S6	R25D-S5 R25D-S6
Capacità foratura drilling capacity acciaio R=500 N/mm	8	10	13	16	20	22
ghisa: GG25	10	12	15	18	22	25
Capacità maschiatura tapping	M6	M8	M12	M14	M16	M18
A	127	181	185	194	195	232
ØB h7	12	16	20	25	28	32
ØC f7	20	25	32	37	40	45
F	59	55	55	55	55	60
G	200 270	200 270	200 270	200 270	200 270	200 270
Interasse minimo center distance	23	28	32,5	37,5	40,5	50
Peso weight	kg 4,0 4,5	kg 4,7 5,2	kg 5,2 5,7	kg 5,5 6,3	kg 6,6 7,4	kg 8,6 9,5

su astuccio per flangia fissa - *fixed plate spindle*

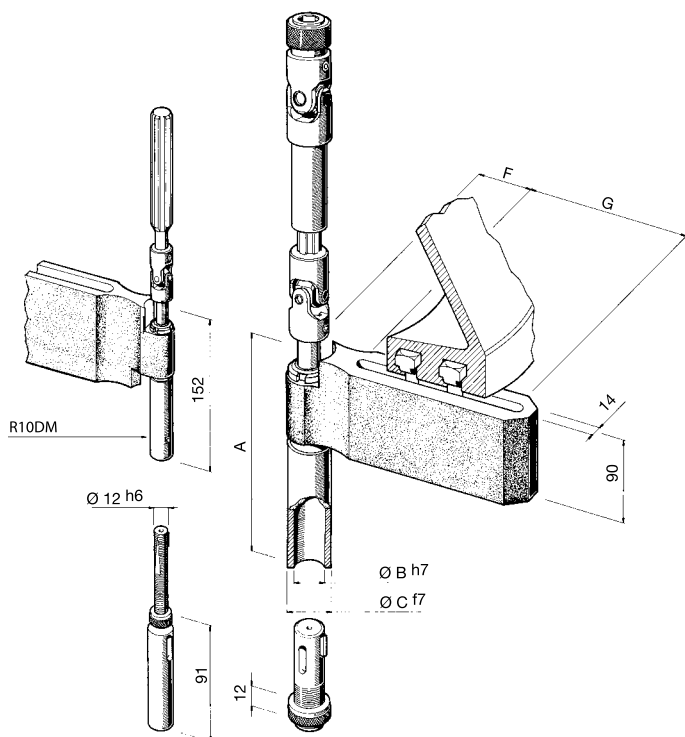


Tipi mandrini spindles type	10D	12D	15D	18D	22D	25D
Codice code	R10DF	R12DF	R15DF	R18DF	R22DF	R25DF
Capacità foratura drilling capacity acciaio R=500 N/mm	8	10	13	16	20	22
ghisa: GG25	10	12	15	18	22	25
Capacità maschiatura tapping	M6	M8	M12	M14	M16	M18
A	102	156	160	169	170	207
ØB h7	12	16	20	25	28	32
ØC f7	20	25	32	37	40	45
E Interasse vite M6 distance screw M6	18,5	23	25	27,5	29	34
ØF h7	23	27,5	31	36	39	50
ØG	27	32	36	40	44	56
Interasse minimo center distance	23,5	28	32,5	37,5	40,5	50,5
Peso weight	kg 2,0	kg 2,3	kg 2,6	kg 3,4	kg 3,8	kg 5,2



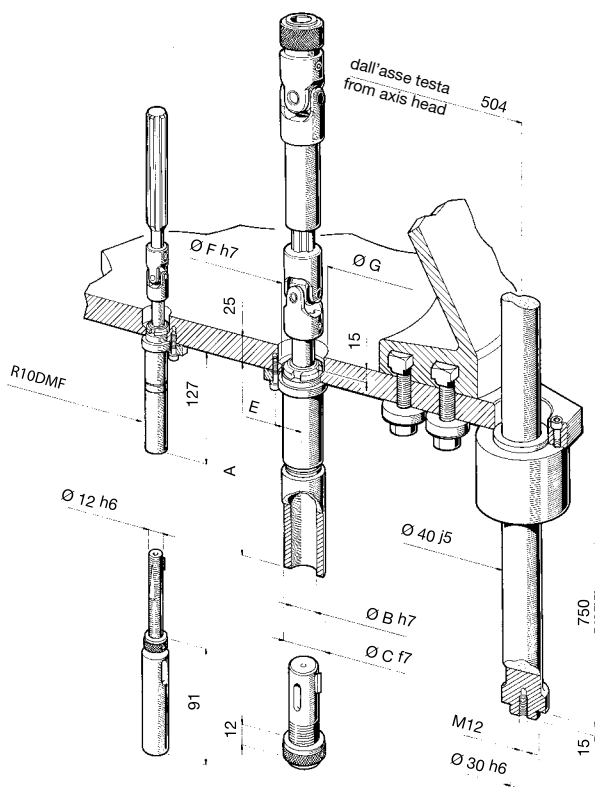
solo per teste TM-TRM for TM-TRM heads only

su staffa - on arm



Tipi mandrini spindles type	10DM	15DM	22DM
Codice code	R10DM-S5 R10DM-S6	R15DM-S5 R15DM-S6	R22DM-S5 R22DM-S6
Capacità maschiatura tapping	M6	M12	M16
Corsa maschiatura Tapping stroke	40	40	40
A	152	208	217
ØB h7	12	20	28
ØC f7	20	32	40
F	59	55	55
G	200 270	200 270	200 270
Interasse minimo center distance	23	32,5	40,5
Peso weight	kg 4,0 4,5	5,2 5,7	6,6 7,4

su astuccio per flangia fissa - fixed plate spindle



Tipi mandrini spindles type	10DM	15DM	22DM
Codice code	R10DMF	R15DMF	R22DMF
Capacità maschiatura tapping	M6	M12	M16
Corsa maschiatura Tapping stroke	40	40	40
A	127	183	192
ØB h7	12	20	28
ØC f7	20	32	40
E Interasse vite M6 distance crew M6	18,5	25	29
ØF f7	23	31	39
ØG	27	36	44
Interasse minimo center distance	23,5	32,5	40,5
Peso weight	kg 2,0	2,6	3,8

FH

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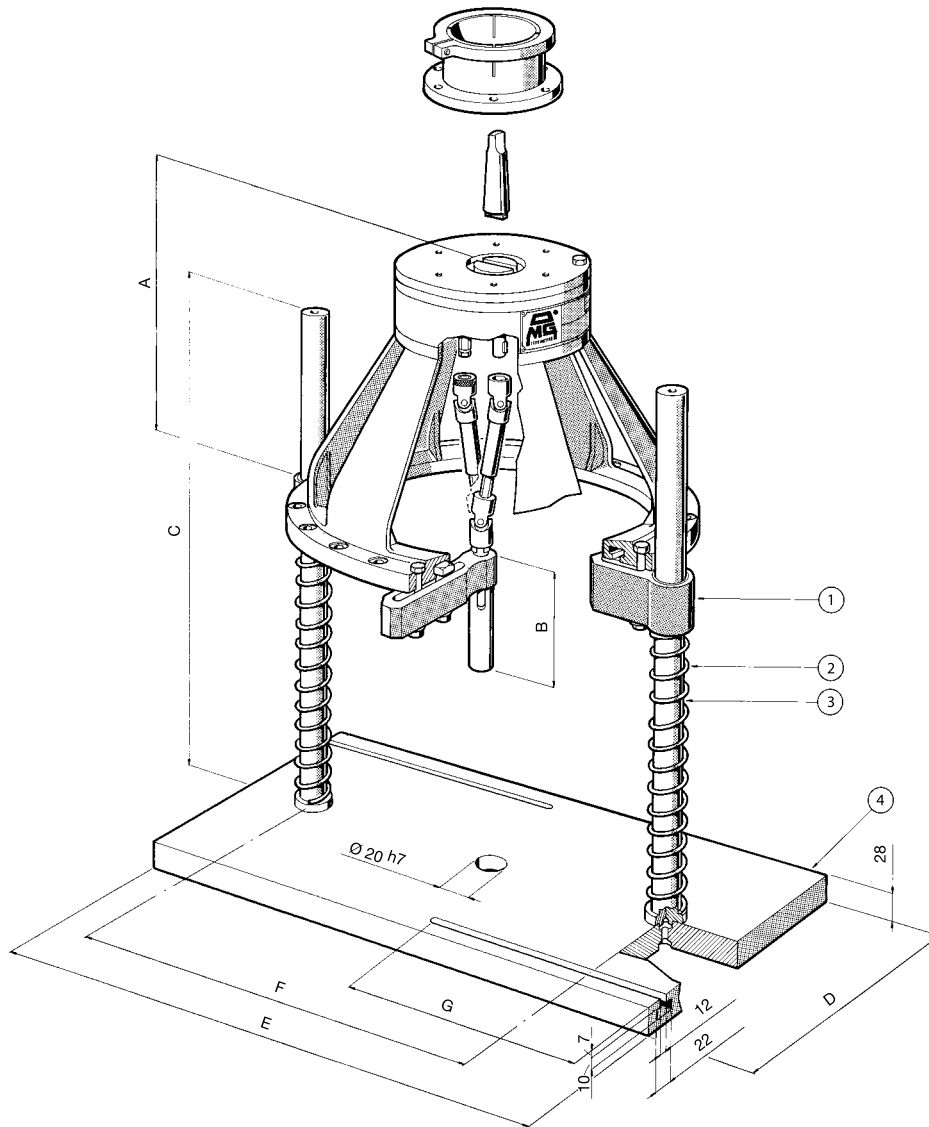
MT-TC-TC3

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attrezzature per teste multiple multispindle heads equipment

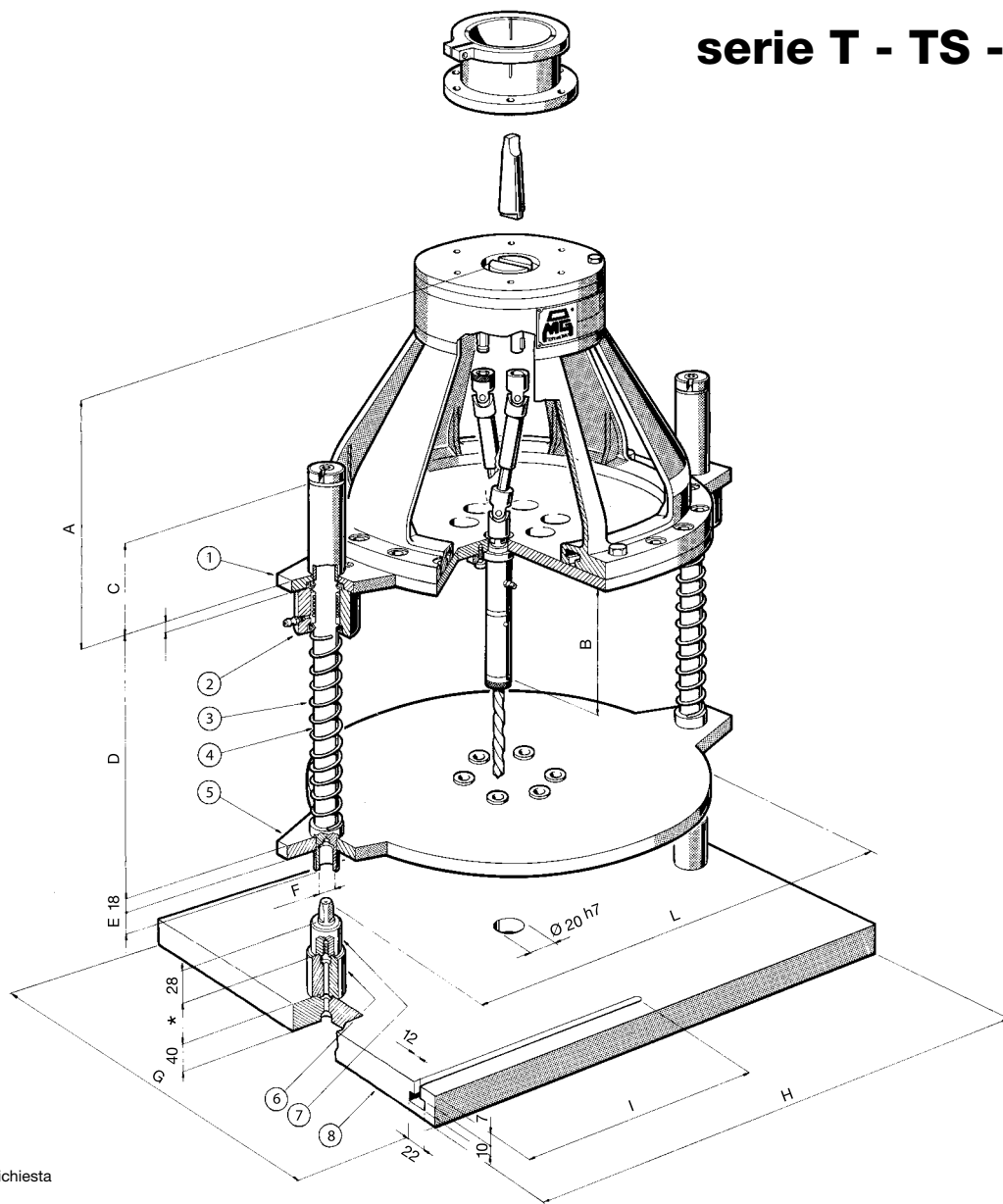
serie T - TS - TL - TR



Modello testa head type	A	B		C	D	E	F	G	1 supporto di guida guide bush	2 molla spring	3 colonna column	4 base base
		DIN 55058	Pinza ER									
T4	205	91,5	76	500	250	500	280	300	076123	076126	076120	076081
T7	205	101,5	76				076082					
T10	236	109	94,5				076083					
T12	260	172	076084									
TS12	283	172	076088									
T15	272	175	076085									
TS15	282	175	076089									
T18	293	185	076086									
TS18	299	85	076090									
T22	317	185	076087									
TS22	317	185	076091									
TL20/4	237	91,5	76	500	250	500	400	300	076123	076126	076120	076092
TL20/6	237	101,5	76				076093					
TL20/8	237	109	94,5				076094					
TL40/12	290	175	076095									
TL40/16	290	185	076093									
TL40/22	318	185	076094									
TL60/12	290	175	076094									
TL60/16	290	185	076094									
TL60/22	318	185	076094									
TR2/12	290	175	076095									
TR2/16	290	185	076095									
TR5/12	290	175	076096									
TR5/16	290	185	076096									

attrezzature per teste multiple multispindle heads equipment

serie T - TS - TL - TR



* a richiesta

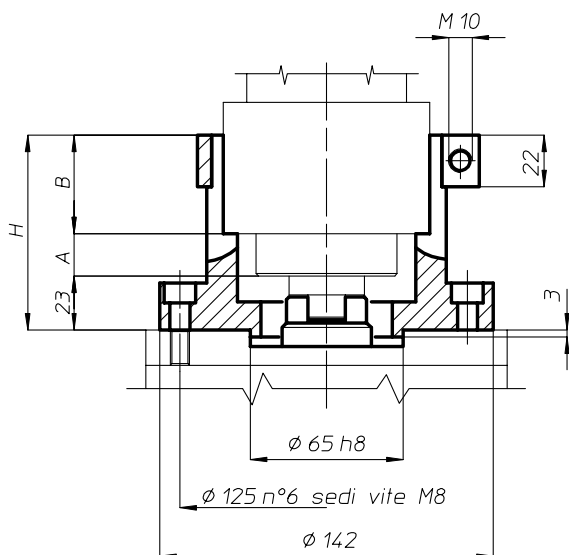
Modello testa head type	A	B		C	D	E	ØFh7	G	H	I	L	1	2	3	4	5	6	7	8
		DIN 55058	Pinza ER																
T4	205	91,5	76								280	076001				076051			076081
T7	205	101,5	76	70	280	22	10	250	500	300	350	076002	076122	076126	076121	076052	-	076127	076082
T10	236	109	94,5								404	076003				076053			076083
T12	260	172									454	076004				076054			076084
TS12	283	172									542	076005				076055			076085
T15	272	175									492	076006				076056			076086
TS15	282	175									552	076007	076132	076136	076131	076057	-	076137	076087
T18	293	185		100	405	27	18	300	650	350	540	076008				076058	-		076088
TS18	299	185									582	076009				076059			076089
T22	317	185									540	076010				076060			076090
TS22	317	185									582	076011				076061			076091
TL20/4	237	91,5	76																
TL20/6	237	101,5	76	70	280	22	10	250	500	300	400	076012	076122	076126	076121	076062	-	076127	076092
TL20/8	237	109	94,5																
TL40/12	290	175																	
TL40/16	290	185									650	350	604	076013		076063			076093
TL40/22	318	185																	
TL60/12	290	175																	
TL60/16	290	185																	
TL60/22	318	185		100	405	27	18	300	850	450	804	076014	076132	076136	076131	076064	-	076137	076094
TR2/12	290	175																	
TR2/16	290	185									650	350	548	076015		076065			076095
TR5/12	290	175																	
TR5/16	290	185									629	076016				076066			076096

Attacco Cono Morse trascinatorio

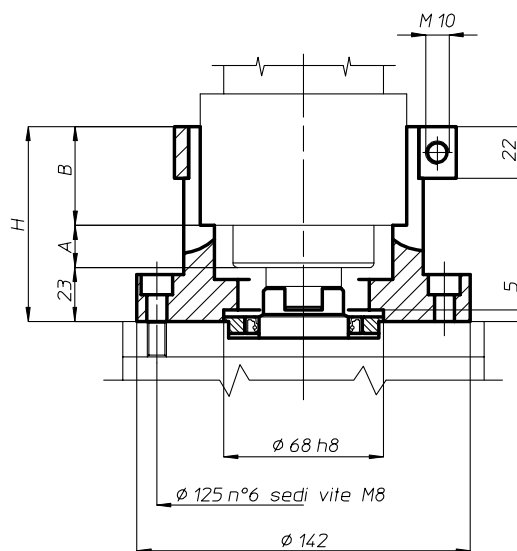
Morse Taper with driving dog

T4 - T7 - T10 - TL20...

Versione standard
Standard version

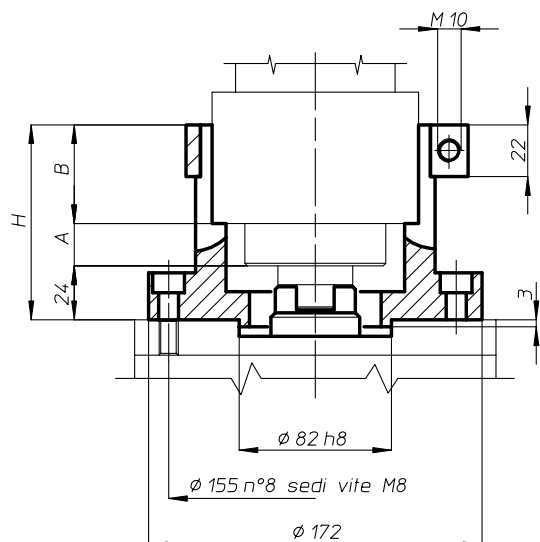


Solo versione orizzontale
For horizontal use only

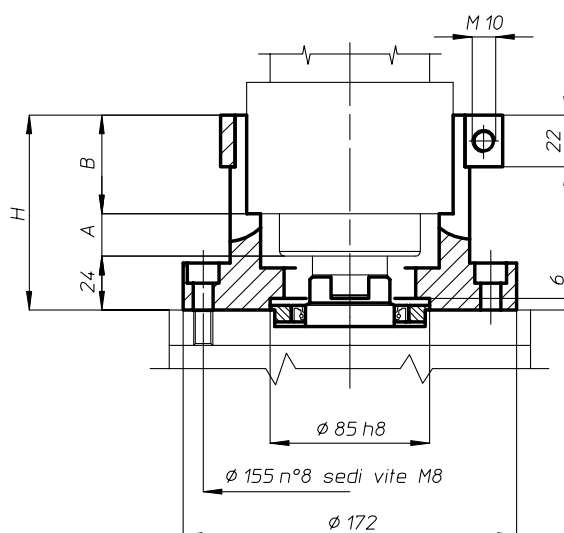


T12 - T15 - T18 - T22 - TL40... - TL60... - TR2... - TR5...

Versione standard
Standard version



Solo versione orizzontale
For horizontal use only



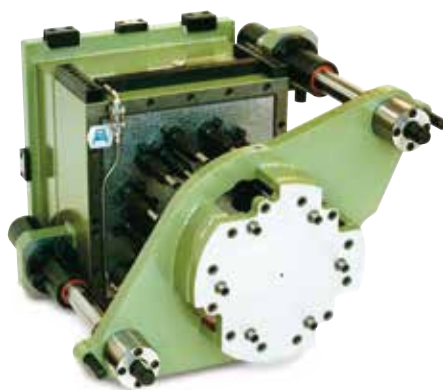
teste multiple ad assi fissi *fixed multispindle heads*

system **MT**

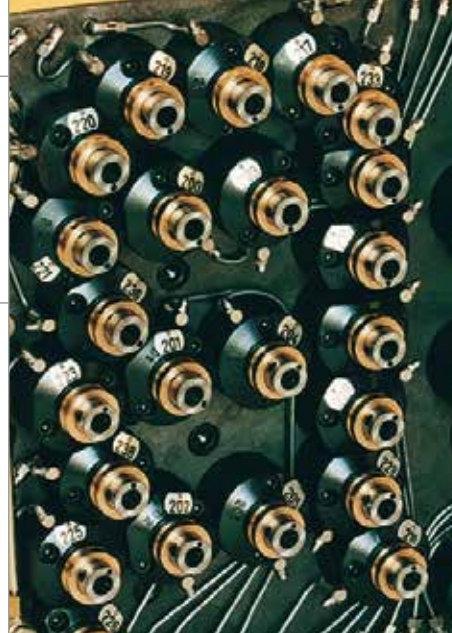


system **TC**

system **TC3**



serie **TFS**



MT	10-2
TC	10-3
TC3	10-4
TFS	10-5

Galleria fotografica/Photographic gallery 10-6

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teste multiple flessibili ad assi fissi
multispindle heads with fixed centers distance

system MT

Il sistema MT si utilizza dove gli interassi e le capacità di torsione sono ridotte. L'interasse minimo realizzabile è mm 10 perché al di sotto di tale misura verrebbero a mancare i requisiti di sicurezza caratteristici dei prodotti O.M.G..

Le realizzazioni MT, generalmente, hanno dimensioni contenute, pochi mandrini (3 o 4), peso ridotto (kg 2) e sono lubrificate con grasso long-life. È possibile eseguire con la medesima testa filettature con passo differente.

Tutta la componentistica, trattata termicamente, ruota interamente su cuscinetti offrendo la possibilità di raggiungere velocità di rotazione di 10.000 giri al minuto. Nonostante le caratteristiche minute, si possono comunque realizzare teste con un ragguardevole numero di mandrini (oltre 20) e con corpi di una certa dimensione.

The MT system is for small centre distances and low torque requirements. The minimum centre distance is 10 mm; below this heads reliability becomes questionable. MT units are normally very compact and with 3 or 4 spindles weigh little - 2 kg for example - and are permanent grease lubricated. Rotating

components

are hardened and ground, and are carried in anti-friction bearings enabling these heads to run up to 10.000 rpm. In special cases, MT heads are built with large bodies and high numbers of spindles - even in excess of 20.



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system TC

Migliaia di realizzazioni sia per trapani, unità, macchine combinate, centri di lavorazione con cambio automatico dell'utensile sono state costruite con il sistema TC, la serie di media capacità. La sua caratteristica principale sta nell'essere la più grande normalizzazione in materia di teste multiple oggi sul mercato. Corpi testa



il lega di alluminio delle più varie forme e dimensioni sono normalizzati. Partendo da un interasse minimo di mm 16 si può realizzare qualsiasi figura il cliente richieda; mandrini con tutti i tipi di attacchi utensili (a pinza DIN 6499, DIN 55058, Komet ABS, DIN 1895, ecc.) ruotano su cuscinetti a rullini selezionati, su cuscinetti a sfere a contatto obliquo di precisione, su cuscinetti a rulli conici, tutti indifferentemente per potere utilizzare qualsiasi tipologia di utensile. I mandrini di maschiatura a patrona partono da un interasse di mm 28. Colonne mobili o fisse per maschiare guida utensili completano l'intera gamma. È permesso inoltre superare abbondantemente la soglia dei 10.000 giri al minuto per ottemperare alle elevate velocità richieste dagli utensili.



Many TC system - medium capacity - heads have been supplied for drilling machines, unit head applications, special machines and machining centres. Outstanding is that this standardised series has become the industries Modular multi-head market leader. Head bodies of many sizes and form have been rationalised.

With a minimum centre distance of 16 mm holes patterns can be provided for any client need; spindles with all types of tool connection (DIN 6499 collets, DIN 55058, Komet, ABS, DIN 1895, etc.) are carried in combinations of selected needle, precision angular contact ball and taper rolling bearings to suit all tool types. Threading spindles with lead nuts give a minimum centres distance of 28 mm; additionally, fixed and movable columns with bush lates for tool guidance are available when required. When the tolls or work demand. TC series head spindles can be run excess of 10.000 rpm.



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teste multiple flessibili ad assi fissi
multispindle heads with fixed centers distance

system TC3

La serie TC3 è l'espressione dell'alta tecnologia O.M.G.. È il sistema di teste utilizzato per trasmettere elevate potenze su grosse unità, rototraslanti, macchine col cambio automatico delle teste. Massicce, solide, dal peso elevato (anche kg 900) non hanno limiti di utilizzo che non siano quelli della macchina utensile.

Il corpo, normalmente in fusione di ghisa sferoidale, racchiude tutto il cinematismo rettificato, con lubrificazione forzata e pressurizzata. Vari tipi di mandrini sono disponibili su questo tipo di teste e tra essi particolarmente indicati sono quelli supportati da cuscinetti a contatto obliquo di precisione adatti ad operazioni di foratura senza guida utensile,

alesatura, fresatura; in questo caso all'interno della testa si hanno due tipi di lubrificazione, ad olio per gli ingranaggi elicoidali ad evolvente rettificato e a grasso per tutti i gruppi mandrino. Anche questa serie si può equipaggiare con maschere guida utensili su colonne mobili o fisse, adduttori per refrigerante passanti per il centro dell'utensile.

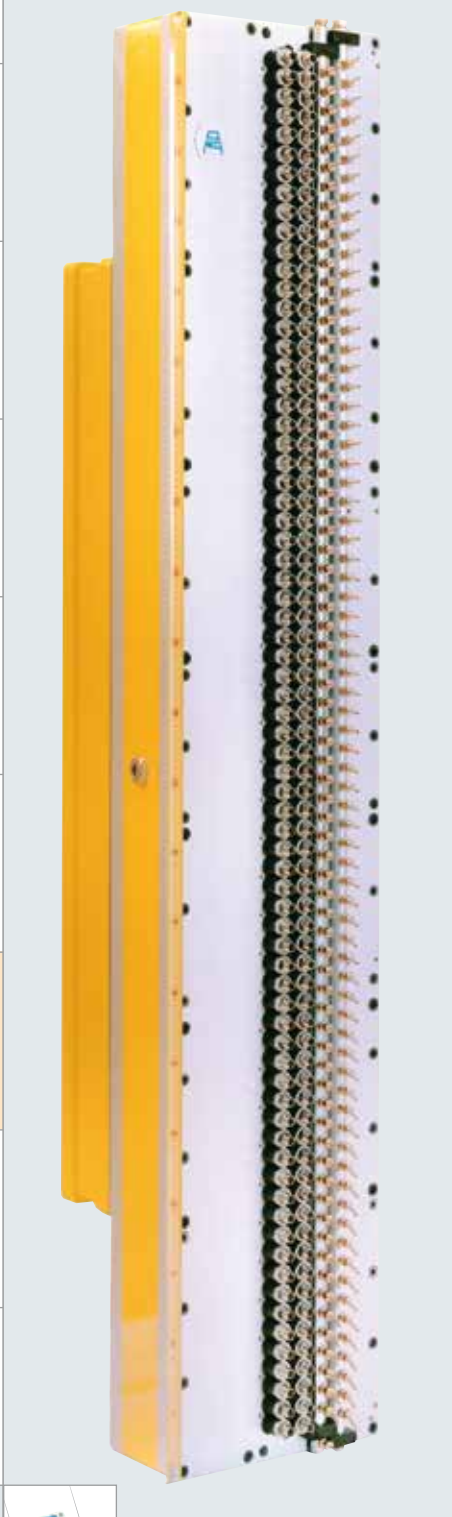
Molte macchine utensili non potrebbero funzionare senza queste teste multiple e la

qualità delle lavorazioni dipende esclusivamente dalla loro precisione, tanto che si potrebbero definire vere e proprie "macchine utensili".

The TC3 series is the expression of O.M.G.'s cutting-edge technology. This system of heads is used for transmitting high powers on large units, rotational-translating, machines with automatic head change. Sturdy, strong, of heavy weight (up to 900 kg) they have no restrictions as regards use excepting those of all machine tools.

The body, normally made of spheroidal cast iron, encloses all the ground kinematic mechanism, with forced and pressurised lubrication. Various types of spindles are available on this type of head and, among these, especially appropriate are those supported by precision oblique contact bearings suitable for drilling operations without tool jigs, boring, milling; in this case, inside the head are two types of lubrication - oil for the helical gears with ground involute and grease for all the spindle units. This series can also be equipped with tool jigs on moving or fixed columns, coolant feeders passing through the centre of the tool.

Many machine tools could not operate without these multiple heads and the quality of machining operations depends on their precision alone, to the extent that they could be considered "machine tools" in their own right.



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serie TFS

TFS: Testa Fissa Speciale. Speciale perché la sua progettazione è unica in quanto nasce per soddisfare richieste specifiche e particolari per le quali non può essere utilizzato nessuno degli standard già esistenti.

A differenza delle altre serie speciali MT-TC-TC3 che siamo riusciti a standardizzare e quindi a redigere delle tabelle tecniche, per la serie TFS possiamo presentarvi solo immagini, in quanto la loro unicità non ci permette di definire alcuna scheda tecnica, se non una specifica per ogni testa.

In breve:

- 1- non hanno limiti di dimensioni perché dipendono dalla macchina su cui verranno applicate;
- 2- possono trasmettere potenze fino e oltre il limite della macchina stessa;
- 3- possono equipaggiare una qualsiasi macchina utensile o far parte di applicazioni particolari.

Tutta la testa ed i suoi componenti sono studiati propriamente per soddisfare le caratteristiche di lavorazione che il pezzo, gli utensili e il cliente richiede.

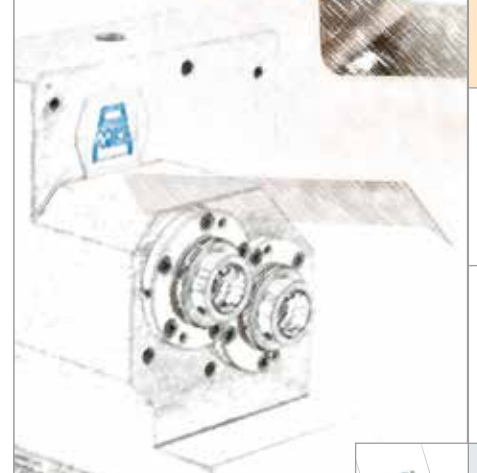
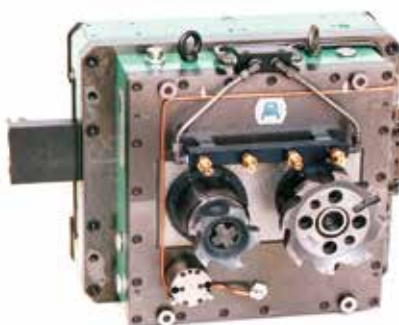
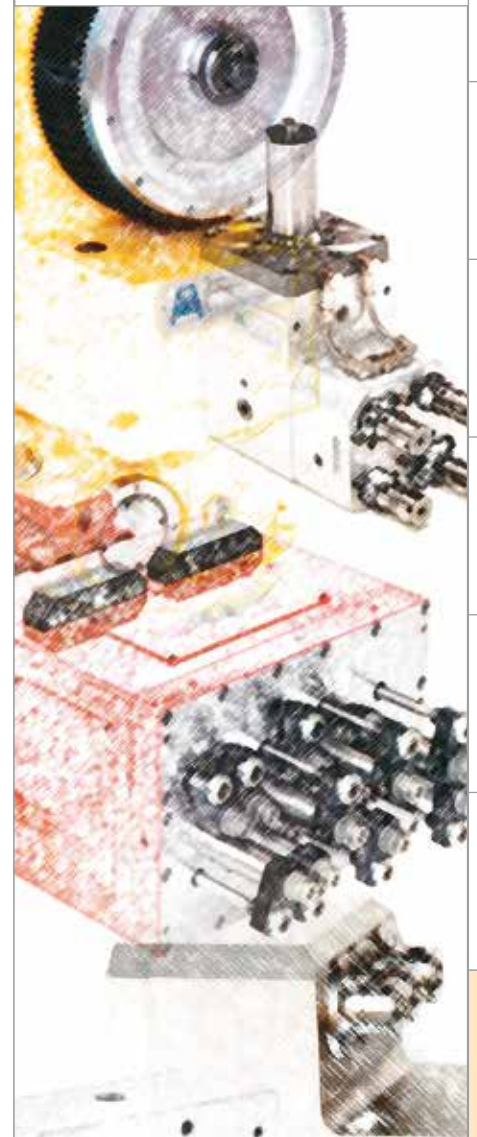
TFS: Special Fixed Head. Special because of its unique design, intended to cater for specific requirements and parts for which no existing standards can be used.

Unlike the other special series MT-TC-TC3 which we have managed to standardise and for which we have consequently drawn up technical charts, for the TFS series, we are only able to provide you with images because their uniqueness makes it impossible to define any technical sheet, except a specific one for each head.

In short:

- 1- there are no dimensional limits because these depend on the machine on which they are to be fitted;
- 2- they can transmit powers up to and beyond the limit of the machine itself;
- 3- they can equip any machine tool or become part of special applications.

The entire head and its component parts have been designed to satisfy the machining characteristics that the piece, the tools and the customer require.



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MT 38098
 Testa multipla per rivettatura
 componenti in plastica.
 Peso Kg 22.
*Rivet multispindle head for
 plastic components.
 Weight Kg 22.*



MT 05599
 Testa multipla per foratura
 corpo rubinetto. Applicazione su
 tornio. Peso Kg 4,8.
*Multispindle head for tap's body
 drilling on turning centre.
 Weight Kg 4,8.*



MT 38205
 Testa multipla di maschiatura con
 compensazione a trazione. Peso Kg 16,5.
*Multispindle tapping head with tapping
 compensation. Weight Kg 16,5.*



MT 22604
 Testa multipla per foratura su
 corpo pompa. Applicazione su
 torretta a revolver. Peso Kg 11,5.
*Multispindle head for pump's
 body drilling on turret head.
 Weight Kg 11,5.*



MT 09305
 Testa multipla per foratura su valvole
 oleodinamiche. Applicazione su centro di
 lavoro con ATC. Peso Kg 19.
*Multispindle head for hydraulic control valves
 drilling on ATC machining centre.
 Weight Kg 19.*





TC 15102
 Testa di foratura su ghisa.
 Applicazione su tornio.
 Peso Kg 47.
*Drilling multispindle head on
 cast iron for turning centre.
 Weight Kg 47.*



TC 06694
 Testa di foratura su alluminio per
 centro di lavoro con ATC. Peso Kg 33,5.
*Drilling multispindle head on aluminium
 for ATC. Weight Kg 33,5.*



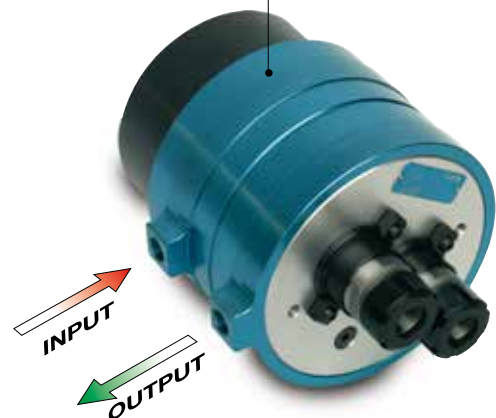
TC 40604
 Testa di foratura su alluminio, punte in metallo
 duro, passaggio refrigerante centro utensile a
 50 Bar, 9500 giri/min. Peso Kg 26.
*Drilling multispindle head on aluminium, hard
 metal tools, coolant through the centre tool at
 50 Bar, 9500 Rpm. Weight Kg 26.*



TC 13006
 Testa multipla per lavorazione testata
 motore a scoppio. Peso Kg 8,5.
*Multispindle head for working internal
 combustion engine. Weight Kg 8,5.*



TC 34706
 Testa multipla per foratura ad alta velocità
 con circolazione liquido per stabilizzazione
 temperatura. Peso Kg 9.
*High speed multispindle head with coolant for
 temperature control. Weight Kg 9.*



TC 38204
 Testa multipla di spazzolatura con doppia
 rotazione: testa e mandrini. Peso Kg 224.
*Brushing multispindle head with double rotation:
 body and spindles. Weight Kg 224.*

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TC3 43889

Testa di maschiatura equipaggiata di maschiatori con controllo rottura utensile a radiofrequenza. Peso Kg 69.
Tapping head equipped with tapping spindles with broken tool control device by remote control. Weight Kg 69.



TC3 33391

Testa di maschiatura a patrona di componente in ghisa per motore agricolo. Peso Kg 450.
Lead screw tapping head for tractor engine. Weight Kg 450.



TC3 35602

Testa di alesatura e smussatura con utensile combinato su cerchi ruota in acciaio per autotrazione. Peso Kg 285.
Boring and chamfering head with combined tools on truck's steel rim. Weight Kg 285.



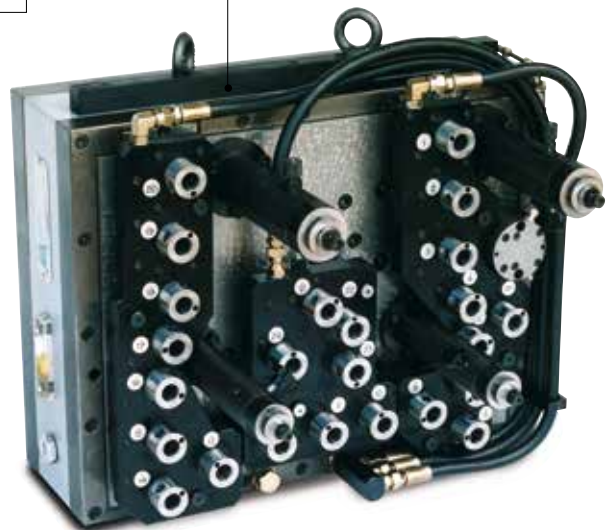
TC3 35205

Testa di foratura f25 con passaggio refrigerante per centro utensile a 50 Bar su componenti per desalatori. Peso Kg 322.
Drilling multispindle head f25 with coolant through the centre tool at 50 Bar for desalinators. Weight Kg 322.



TC3 10191

Testa di foratura basamento motore di autoveicolo. Peso Kg 540.
Drilling head for car engine. Weight Kg 540.





TFS 38906
 Testa di fresatura per biella in acciaio.
 Peso Kg 72,5.
 Milling head for steel connecting rod.
 Weight Kg 72,5.



TFS 34102
 Testa di fresatura pendolare a 24°.
 Peso Kg 25,5.
 Milling head with 24° pendular movement.
 Weight Kg 25,5.



TFS 06806
 Testa di foratura con movimento
 assiale mandrino. Peso Kg 15.
 Drilling head with axial spindle
 movement weight. Weight Kg 15.



TFS 30605
 Testa di foratura su 4 lati di
 componente oleodinamico. Peso Kg 11.
 Drilling head on 4 sides of hydraulic
 components. Weight Kg 11.



TFS 36805
 Testa di lavorazione facce di motore
 automobile. Peso Kg 291.
 Multispindle head for working on
 different car engine faces. Weight Kg 291.



TFS 21704
 Testa con slitta movimentata
 idraulicamente. Peso Kg 6,5.
 Head equipped with hydraulic
 slide. Weight Kg 6,5.

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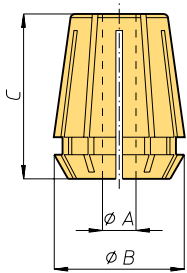
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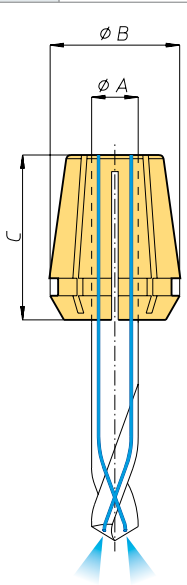
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Pinze DIN 6499 forma B - tipo ER Spring collets DIN 6499 form B - ER type



ER8		φB=8,5			C=15												
Codice Code	224400	224401	224402	224403	224404	224405	224406	224407	224408								
φA	1 - 0,5	1,5 - 1	2 - 1,5	2,5 - 2	3 - 2,5	3,5 - 3	4 - 3,5	4,5 - 4	5 - 4,5								
ER11		φB=11,5			C=18												
Codice Code	224411	224412	224413	224414	224415	224416	224417	224418	224419	224420	224421	224422	224423				
φA	1 - 0,5	1,5 - 1	2 - 1,5	2,5 - 2	3 - 2,5	3,5 - 3	4 - 3,5	4,5 - 4	5 - 4,5	5,5 - 5	6 - 5,5	6,5 - 6	7 - 6,5				
ER16		φB=17			C=27,5												
Codice Code	224426	224424	224425	224467	224436	224429	224430	224431	224432	224433	224434	224435					
φA	1 - 0,5	1,5 - 1	2 - 1,5	2,5 - 2	3 - 2,5	4 - 3	5 - 4	6 - 5	7 - 6	8 - 7	9 - 8	10 - 9					
ER20		φB=21			C=31,5												
Codice Code	224451	224437	224450	224409	224410	224440	224441	224442	224443	224444	224445	224446	224447	224448	224449		
φA	1 - 0,5	1,5 - 1	2 - 1,5	2,5 - 2	3 - 2,5	4 - 3	5 - 4	6 - 5	7 - 6	8 - 7	9 - 8	10 - 9	11 - 10	12 - 11	13 - 12		
ER25		φB=26			C=34												
Codice Code	224468	224469	224470	224471	224472	224454	224455	224456	224457	224458	224459	224460	224461	224462	224463	224464	
φA	1 - 0,5	1,5 - 1	2 - 1,5	2,5 - 2	3 - 2,5	4 - 3	5 - 4	6 - 5	7 - 6	8 - 7	9 - 8	10 - 9	11 - 10	12 - 11	13 - 12	14 - 13	
Codice Code	224465	224466	224550														
φA	15 - 14	16 - 15	16 - 17														
ER32		φB=33			C=40												
Codice Code	224473	224474	224476	224477	224478	224479	224480	224481	224482	224483	224484	224485	224486	224487			
φA	2,5 - 2	3 - 2,5	4 - 3	5 - 4	6 - 5	7 - 6	8 - 7	9 - 8	10 - 9	11 - 10	12 - 11	13 - 12	14 - 13	15 - 14			
Codice Code	224488	224489	224490	224491	224492	224551	224552										
φA	16 - 15	17 - 16	18 - 17	19 - 18	20 - 19	21 - 20	22 - 21										
ER40		φB=41			C=46												
Codice Code	224499	224500	224501	224502	224503	224504	224505	224506	224507	224508	224509	224510	224511	224512	224513		
φA	3 - 2	4 - 3	5 - 4	6 - 5	7 - 6	8 - 7	9 - 8	10 - 9	11 - 10	12 - 11	13 - 12	14 - 13	15 - 14	16 - 15	17 - 16		
Codice Code	224514	224515	224516	224517	224518	224519	224520	224521	224522	224523	224524	224525	224526				
φA	18 - 17	19 - 18	20 - 19	21 - 20	22 - 21	23 - 22	24 - 23	25 - 24	26 - 25	27 - 26	28 - 27	29 - 28	30 - 29				
ER50		φB=52			C=60												
Codice Code	224530	224531	224532	224533	224534	224535	224536	224537	224538	224539	224540	224541	224542	224543	224544	224545	224546
φA	6 - 4	8 - 6	10 - 8	12 - 10	14 - 12	16 - 14	18 - 16	20 - 18	22 - 20	24 - 22	25 - 23	26 - 24	28 - 26	30 - 28	32 - 30	34 - 32	36 - 34

Pinze DIN 6499 Spring collets DIN 6499



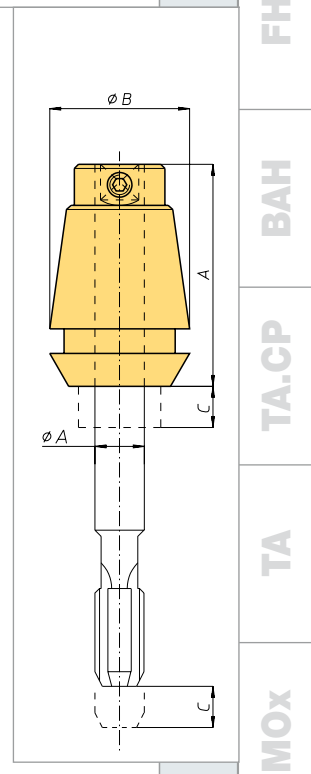
ER16 UPV		φB=17			C=27,5										
Codice Code	235205	235206	235207	235208	235209	235210	235211	235212							
φA	3	4	5	6	7	8	9	10							
ER20 UPV		φB=21			C=31,5										
Codice Code	235215	235216	235217	235218	235219	235220	235221	235222	235223	235224	235225				
φA	3	4	5	6	7	8	9	10	11	12	13				
ER25 UPV		φB=26			C=34										
Codice Code	235228	235229	235230	235231	235232	235233	235234	235235	235236	235237	235238	235239	235240	235241	
φA	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
ER32 UPV		φB=33			C=40										
Codice Code	235246	235247	235248	235249	235250	235251	235252	235253	235254	235255	235256	235257	235258	235259	235260
φA	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Codice Code	235261	235262	235263												
φA	18	19	20												
ER40 UPV		φB=41			C=46										
Codice Code	235266	235267	235268	235269	235270	235271	235272	235273	235274	235275	235276	235277	235278	235279	235280
φA	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Codice Code	235281	235282	235283	235284	235285	235286	235287	235288							
φA	19	20	21	22	23	24	25	26							



Pinze di maschiatura con compensazione - tipo ET1*
Tapping collets with compensation - ET1 type*

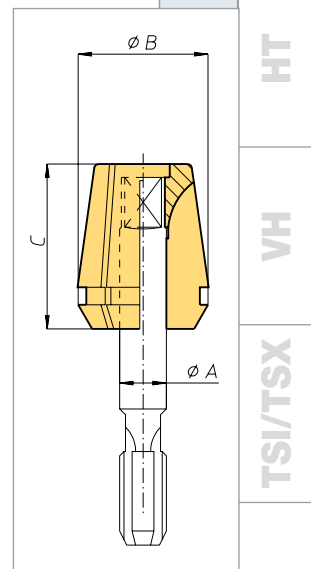
ET 1-12	A=21,5			φB=11,5		C=5,5		CAPACITÀ M2 - M4		
Codice Code	224650	224651	224652	224653	224654					
φA	1,4	2,2	2,5	2,8	3,5					
ET 1-16	A=27			φB=17		C=7		CAPACITÀ M2 - M8		
Codice Code	224658	224659	224660	224661	224662	224663	224664	224665		
φA	1,4	2,2	2,5	2,8	3,5	4	4,5	6		
ET 1-20	A=31			φB=21		C=7		CAPACITÀ M2 - M10		
Codice Code	224670	224671	224672	224673	224674	224675	224676	224677		
φA	2,2	2,5	2,8	3,5	4	4,5	6	7		
ET1-25	A=34			φB=26		C=8		CAPACITÀ M2 - M12		
Codice Code	224682	224683	224684	224685	224686	224687	224688	224689	224690	224691
φA	2,2	2,5	2,8	3,5	4	4,5	6	7	8	9
ET 1-32	A=43			φB=33		C=10		CAPACITÀ M35 - M16		
Codice Code	224695	224696	224697	224698	224699	224700	224701	224702	224703	
φA	4	4,5	6	7	8	9	10	11	12	
ET 1-40	A=54			φB=41		C=13		CAPACITÀ M5 - M20		
Codice Code	224706	224707	224708	224709	224710	224711	224712	224713	224714	
φA	6	7	8	9	10	11	12	14	16	

*Not suitable for coolant through (tool)



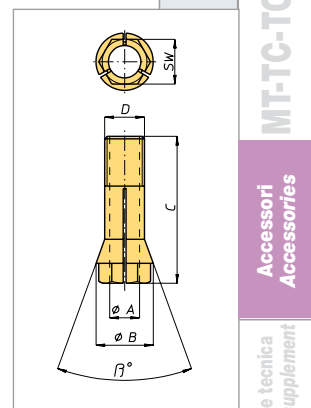
Pinze di maschiatura senza compensazione - tipo ER
Tapping collets without compensation - ER type

ER 16 GB	φB=16		C=27,5									
Codice Code	224585	224587	22458	224589	224590							
φA	4,5	6	7	8	9							
ER 20 GB	φB=20		C=31,5									
Codice Code	224593	224595	224596	224597	224598	224599	224600					
φA	4,5	6	7	8	9	10	11					
ER 25 GB	φB=25		C=34									
Codice Code	224604	224606	224607	224608	224609	224610	224611	224612	224613	224614		
φA	4,5	6	7	8	9	10	11	12	14	16		
ER 32 GB	φB=32		C=40									
Codice Code	224617	224619	224620	224621	224622	224623	224624	224625	224626	224627	224628	224629
φA	4,5	6	7	8	9	10	11	12	14	16	18	20
ER 40 GB	φB=40		C=46									
Codice Code	224634	224635	224636	224637	224638	224639	224640	224641	224642	224643	224644	224645
φA	6	7	8	9	10	11	12	14	16	18	20	22



Pinze Collets

6023E	φB=6,5		C=20		D=M5x0,6		SW=5,5		β°=20°		Coppia serraggio (Nm)=3	
Codice Code	224740	224741	224742	224743	224746							
φA	1	1,5	2	2,5	3							
600E	φB=9		C=28,5		D=M6x0,75		SW=7		β°=20°		Coppia serraggio (Nm)=5	
Codice Code	224574	224575	224576	224577	224578	224579						
φA	1,5	2	2,5	3	3,5	4						
601E	φB=11		C=33		D=M8x0,75		SW=9		β°=20°		Coppia serraggio (Nm)=9	
Codice Code	224728	224729	224730	224731	224732	224733	224734	224735	224736	224737		
φA	1,5	2	2,5	3	3,5	4	4,5	5	5,5	6		



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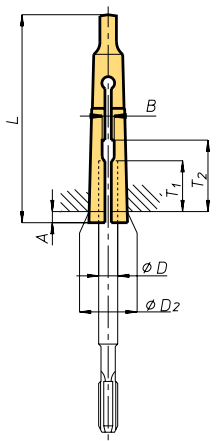
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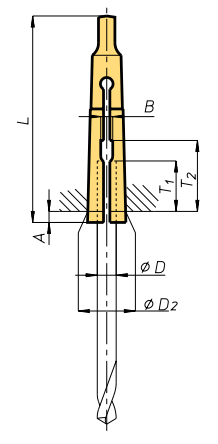
Pinze porta maschi DIN 6328 Tapholder collets DIN 6328



DIN 6328 - CONO MORSE 1									
D	2,5	2,8	3,5	4	4,5	6	7	8	9
Codice Code	224000	224002	224008	224010	224012	224018	224022	224024	224026
B	2,2	2,2	2,8	3,1	3,5	5,1	5,7	6,3	7,3
T1	15	15	16	16	18	19,5	19,5	22	25
T2	19	19	21	24	24	26	27	30	32

DIN 6328 - CONO MORSE 2									
D	6	7	8	9	10	11	12		
Codice Code	224112	224116	224120	224122	224126	224128	224134		
B	5,1	5,7	6,4	7,3	8,3	9,3	9,3		
T1	19,5	19,5	19,5	22	23	24	24		
T2	26	26	27	22	32	34	34		

Pinze porta punte DIN 6329 Toolholder collets DIN 6329



DIN 6329 - CONO MORSE 1																								
D	3	3,2	3,5	3,75	4	4,25	4,5	4,75	5	5,25	5,5	5,75	6	6,25	6,5	6,75	7	7,25	7,5	7,75	8			
Codice Code	224164	224166	224168	224170	224172	224174	224176	224178	224180	224182	224184	224186	224188	224190	224192	224194	224196	224198	224200	224202	224204			
B	1,8		2,2		2,4		2,7		3,2			3,8												
T1	20						22						22											
T2	25						26						29			29								

DIN 6329 - CONO MORSE 2																
D	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10	10,5	11	11,5	12	12,5	13
Codice Code	224260	224262	224264	224266	224268	224270	224272	224274	224276	224278	224280	224282	224284	224286	224288	224290
B	3,2		3,8		4,8		5,3		6,3							
T1	22				25				28							
T2	29				33				37				39			

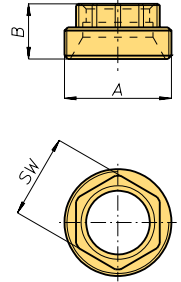
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Ghiere esagonali per pinze DIN 6499 Exagon clamping nut for spring collets DIN 6499

Ghiera Nut	Codice Code	φA	B	SW	Coppia serraggio Clamping force (Nm)
ER 11AE	224980	M18 x1	9	15	24 (30)
ER 16AE	224981	M24 x1	12	19	40 (50)
ER 20AE	224982	M28 x1,5	13	22	52 (65)
ER 25AE	224983	M32 x1,5	16,5	27	80 (100)
ER 32AE	224984	M40 x1,5	19	32	104 (130)

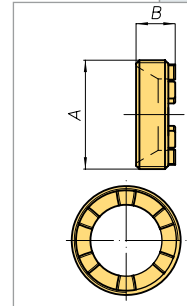
Tra parentesi valore massimo - Between brackets max. value



Ghiere regofix per pinze DIN 6499 Regofix clamping nut for spring collets DIN 6499

Ghiera Nut	Codice Code	φA	B	Wrench	Coppia serraggio Clamping force (Nm)	
					Pinze con scarico Spring collet with extractor	Pinze senza scarico Spring collet without extractor
HI-Q/ER AX 11	224951	M18 x1	7,5	E 11 AX	21 (25)	24 (29)
HI-Q/ER AX 16	224950	M24 x1	7,6	E 16 AX	40 (50)	40 (50)
HI-Q/ER AX 20	224952	M28 x1,5	8,5	E 20 AX	35 (42)	40 (50)
HI-Q/ER AX 25	224953	M32 x1,5	8,8	E 25 AX	64 (80)	64 (80)
HI-Q/ER AX 32	224954	M40 x1,5	9,8	E 32 AX	72 (90)	104 (125)

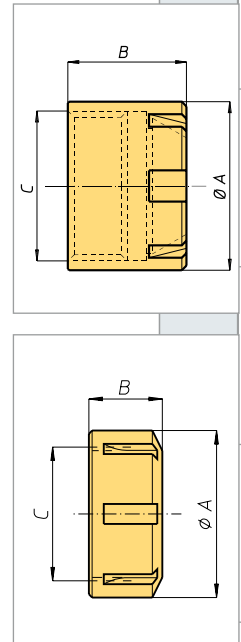
Tra parentesi valore massimo - Between brackets max. value



Ghiere per pinze DIN 6499 Clamping nut for spring collets DIN 6499

Ghiera Nut	Codice Code	φA	B	C	Coppia serraggio Clamping force (Nm)	
					Pinze con scarico Spring collet with extractor	Pinze senza scarico Spring collet without extractor
ER 8M	224900	11,8	10,8	M10 x 0,75	5 (6)	5 (6)
ER 11M	224902	16	12	M13 x 0,75	12 (15)	16 (20)
ER 16M	224904	22	18	M19 x 1	24 (30)	24 (30)
ER 20M	224906	28	21	M24 x 1	28 (35)	28 (35)
ER 25M	224908	35	20	M30 x 1	32 (40)	32 (40)
ER 11 S	224985	19	11,3	M14 x 0,75	16 (19)	24 (30)
ER 16 S	224932	28	17,5	M22 x 1,5	44 (53)	56 (70)
ER 20 S	224935	34	19	M25 x 1,5	35 (42)	80 (100)
ER 25 S	224974	42	20	M32 x 1,5	64 (80)	104 (130)
ER 32 S	224975	50	22,5	M40 x 1,5	136 (170)	136 (170)
ER 40 S	224976	63	25,5	M50 x 1,5	176 (220)	176 (220)
ER 50 S	224986	78	35,3	M64 x 2	240 (300)	240 (300)
HI-Q/ER 11	224933	19	11,3	M14 x 0,75	16 (19)	24 (30)
HI-Q/ER 16	224909	28	17,5	M22 x 1,5	44 (53)	56 (70)
HI-Q/ER 20	224910	34	19	M25 x 1,5	35 (42)	80 (100)
HI-Q/ER 25	224912	42	20	M32 x 1,5	64 (80)	104 (130)
HI-Q/ER 32	224914	50	22,5	M40 x 1,5	136 (170)	136 (170)
HI-Q/ER 40	224916	63	25,5	M50 x 1,5	176 (220)	176 (220)
HI-Q/ER 50	224918	78	35,3	M64 x 2	240 (300)	240 (300)

Tra parentesi valore massimo - Between brackets max. value



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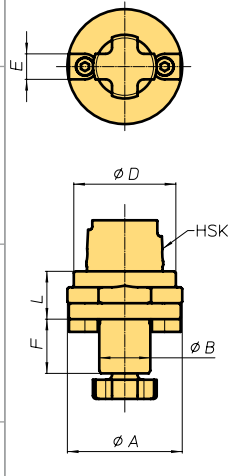
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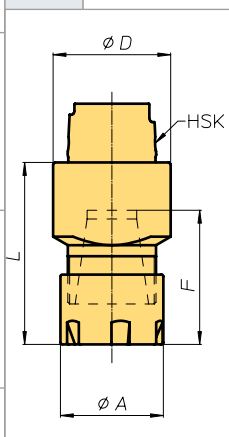
Inserto HSK porta fresa HSK mill adapters



Codice Code	Grandezza Size	HSK	φA	φB	φD	E	F	L	Vite Screw	Chiave* Wrench*
009401	HSK 32-16	32	36	16	32	8	17	15	M8	097419
009419	HSK 32-22	32	54	22	32	10	19	22	M10	097415
009404	HSK 40-16	40	40	16	40	8	17	15	M8	097419
009405	HSK 40-22	40	54	22	40	10	19	22	M10	097415
009416	HSK 50-22	50	54	22	50	10	19	23	M10	097416
009406	HSK 50-27	50	64	27	50	12	21	23	M12	097416
009417	HSK 63-27	63	64	27	64	12	21	25	M12	097416
009408	HSK 63-32	63	74	32	63	14	24	25	M16	097417
009414	HSK 80-32	80	80	32	80	14	24	35	M16	097417
009413	HSK 80-40	80	80	40	80	16	27	35	M20	097591

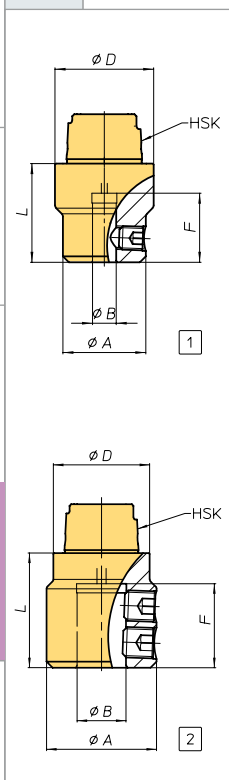
* Le chiavi non sono comprese - * The wrench aren't included

Inserto HSK porta pinze per utensili a gambo cilindrico HSK adapters with collet for cylindrical shank tools



Codice Code	Grandezza Size	HSK	Pinza Collet	φA	φD	F	L	Ghiera Nut
009400	HSK 32-ER 20M	32	ER 20	28	32	37,5	49,5	ER 20M
009402	HSK 32-ER 25M	32	ER 25	35	32	41	53	ER 25M
009415	HSK 40-ER 20M	40	ER 20	28	40	37,5	49,5	ER 20M
009403	HSK 40-ER 25M	40	ER 25	35	40	41	54	ER 25M
009418	HSK 40-ER 32M	40	ER 32	50	42	47	59,5	ER 32UM
009407	HSK 50-ER 32	50	ER 32	50	50	47	64	ER 32UM
009409	HSK 63-ER 32	63	ER 32	50	63	47	65	ER 32UM
009410	HSK 63-ER 40	63	ER 40	63	63	53	71	ER 40UM
009411	HSK 80-ER 40	80	ER 40	63	80	53	73,5	ER 40UM
009412	HSK 80-ER 50	80	ER 50	78	80	69	91,5	ER 50UM

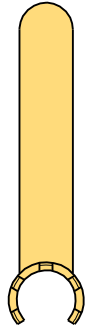
Inserto HSK Weldon/Whistle Notch Adapter HSK Weldon/Whistle Notch



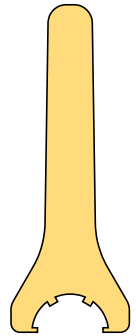
Codice Code	Grandezza Size	HSK	φA	φD	F	L	B	TIPO Type
228220	HSK 32 W8	32	28	32	30	45	8	1
228221	HSK 32 W10	32	32	32	30	45	10	
228222	HSK 32 W12	32	32	32	35	50	12	
228223	HSK 40 W8	40	28	40	30	45	8	
228224	HSK 40 W10	40	35	40	30	45	10	
228225	HSK 40 W12	40	40	40	35	50	12	
228226	HSK 40 W16	40	40	40	40	55	16	
228227	HSK 50 W8	50	28	50	30	45	8	
228228	HSK 50 W10	50	35	50	30	45	10	
228229	HSK 50 W12	50	42	50	35	50	12	
228230	HSK 50 W16	50	50	50	40	55	16	
228231	HSK 50 W20	50	50	50	45	60	20	
228232	HSK 63 W8	63	28	63	30	45	8	2
228233	HSK 63 W10	63	35	63	30	45	10	
228234	HSK 63 W12	63	42	63	35	50	12	
228235	HSK 63 W16	63	50	63	40	55	16	
228236	HSK 63 W20	63	52	63	45	60	20	
228237	HSK 63 W25	63	63	63	50	70	25	
228238	HSK 63 W32	63	72	63	55	75	32	

Chiavi per ghiera Clamping nuts spanner

Chiavi Spanner	Codice chiave Spanner code	Per ghiera For clamping nut	Codice ghiera Clamping nut code
CE 8M	231300	ER 8M	224900
CE 11M	231302	ER 11M	224902
CE 16M	231306	ER 16M	224904
CE 20M	231309	ER 20M	224906
CE 25M	231313	ER 25M	224908

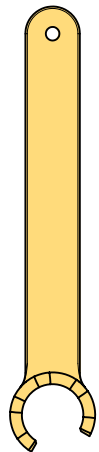


Chiavi Spanner	Codice chiave Spanner code	Per ghiera For clamping nut	Codice ghiera Clamping nut code
CE 20U	231315	ER 20UM	224973
CE 25U	231314	ER 25UM	224974
CE 32U	231320	ER 32UM	224975
CE 40U	231321	ER 40UM	224976
CE 50U	231323	ER 50UM	224986



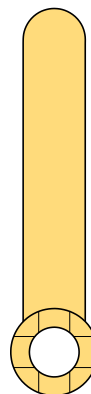
Chiavi per ghiera Clamping nuts spanner

Chiavi Spanner	Codice chiave Spanner code	Per ghiera For clamping nut	Codice ghiera Clamping nut code
E 11 AX	231356	ERAX11	224951
E 16 AX	231357	ERAX16	224950
E 20 AX	231358	ERAX20	224952
E 25 AX	231359	ERAX25	224953
E 32 AX	231360	ERAX32	224954



Chiavi per viti Spanner screw

Chiavi Spanner	Codice Code	Inserito HSK HSK mill adapter
CM8	097419	HSK 32-16 HSK 40-16
CM10	097415	HSK 40-22 HSK 50-22
CM12	097416	HSK 50-27 HSK 63-27
CM16	097417	HSK 63-32 HSK 80-32
CM20	097591	HSK 80-40



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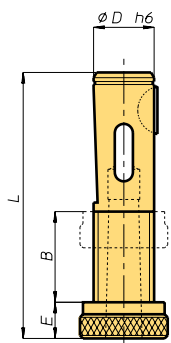
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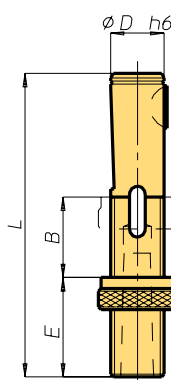


Inserti registrabili DIN 6327/1 porta utensili a cono Morse
DIN 6327/1 adjustable adapters for morse taper shank tools



Codice Code	Grandezza Size	Cono Morse Morse taper	ϕD^{h6}	Filettatura Thread	B	E	L	Linguetta Woodruff key
009010	D 16 x 1	1	16	Tr 16 x 1,5	28	12	85	5 x 6,5
009012	D 20 x 1	1	20	Tr 20 x 2	28	12	88	5 x 7,5
009014	D 25 x 2	2	25	Tr 25 x 2	30	12	95	6 x 9
009016	D 28 x 2	2	28	Tr 28 x 2	30	12	95	6 x 9
009018	D 32 x 3	3	32	Tr 32 x 2	36	12	118	8 x 11
009020	D 36 x 3	3	36	Tr 36 x 2	36	14	118	8 x 11
009022	D 48 x 4	4	48	Tr 48 x 2	47	18	144	10 x 13

Inserti registrabili DIN 6327/2 porta utensili a cono Morse
DIN 6327/2 adjustable adapters for morse taper shank tools



Codice Code	Grandezza Size	Cono Morse Morse taper	ϕD^{h6}	Filettatura Thread	B	E	L	Linguetta Woodruff key
009024	F 16 x 1 x 25	1	16	Tr 16 x 1,5	28	37	110	5 x 6,5
009026	F 16 x 1 x 50					62	135	
009028	F 16 x 1 x 75					87	160	
009030	F 16 x 1 x 100					112	185	
009032	F 20 x 1 x 25	1	20	Tr 20 x 2	28	37	113	5 x 7,5
009034	F 20 x 1 x 50					62	38	
009036	F 20 x 1 x 75					87	163	
009038	F 20 x 1 x 100					112	188	
009040	F 25 x 2 x 25	2	25	Tr 25 x 2	30	37	120	6 x 9
009042	F 25 x 2 x 50					62	145	
009044	F 25 x 2 x 75					87	170	
009046	F 25 x 2 x 100					112	195	
009048	F 28 x 2 x 25	2	28	Tr 28 x 2	30	37	120	6 x 9
009050	F 28 x 2 x 50					62	145	
009052	F 28 x 2 x 75					87	170	
009054	F 28 x 2 x 100					112	195	
009056	F 32 x 3 x 25	3	32	Tr 32 x 2	36	37	148	8 x 11
009058	F 32 x 3 x 50					62	178	
009060	F 32 x 3 x 75					87	208	
009062	F 32 x 3 x 100					112	238	
009064	F 36 x 3 x 25	3	36	Tr 36 x 2	36	37	148	8 x 11
009066	F 36 x 3 x 50					62	178	
009068	F 36 x 3 x 75					87	208	
009070	F 36 x 3 x 100					112	238	
009072	F 48 x 4 x 25	4	48	Tr 48 x 2	47	37	184	10 x 13
009074	F 48 x 4 x 50					62	224	
009076	F 48 x 4 x 75					87	264	
009078	F 48 x 4 x 100					112	304	

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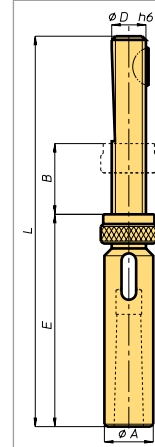
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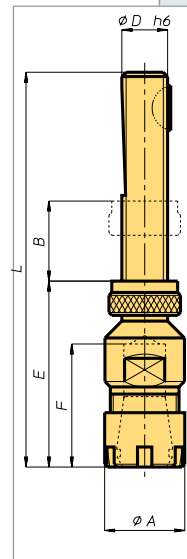
Inserti registrabili porta utensili a cono Morse (Norma OMG)
Adjustable adapters for morse taper shank tools (OMG norm)

Codice Code	Grandezza Size	Cono Morse Morse taper	ϕD^{h6}	Filettatura Thread	ϕA	B	E	L	Linguetta Woodruff key
009110	Tr 8 x 1	1	8	Tr 8 x 1	16,8	16	84	126	2 x 3,7
009116	Tr 10 x 1	1	10	Tr 10 x 1,5	19,5	18	89	138	3 x 5
009122	Tr 12 x 1	1	12	Tr 12 x 1,5	22	18	91	138	3 x 5



Inserto porta pinze per utensili a gambo cilindrico (DIN 6327)
DIN 6327 adjustable adapters for cylindrical shank tools

Codice Code	Grandezza Size	ϕD^{h6}	Filettatura Thread	ϕA	B	E	F	L	Pinza Collet	Linguetta Woodruff key
009112	Tr 8 ER 8	8	Tr 8 x 1	12	16	36	23	75	ER 8	2 x 3,7
009114	Tr 8 ER 11	8	Tr 8 x 1	16	16	41	28	80	ER 11	2 x 3,7
009118	Tr 10 ER 11	10	Tr 10 x 1,5	16	18	43	28	93	ER 11	3 x 5
009120	Tr 10 ER 16	10	Tr 10 x 1,5	22	18	54	39	104	ER 16	3 x 5
009124	Tr 12 ER 16	12	Tr 12 x 1,5	22	18	56	39	106	ER 16	3 x 5
009130	Tr 16 ER 20	16	Tr 16 x 1,5	28	28	65	47	136	ER 20	5 x 6,5
009140	Tr 20 ER 20	20	Tr 20 x 2	32	28	65	47	139	ER 20	5 x 7,5
009145	Tr 20 ER 25	20	Tr 20 x 2	35	28	61	44	135	ER 25	5 x 7,5
009170	Tr 28 ER 32	28	Tr 28 x 2	50	30	65	49	147	ER 32	6 x 9



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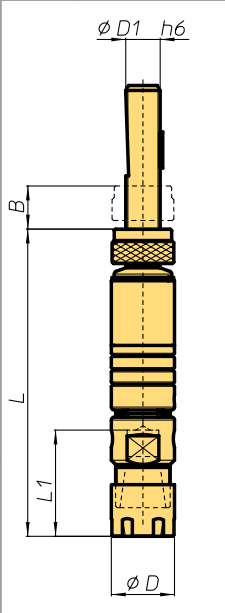
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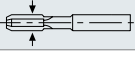

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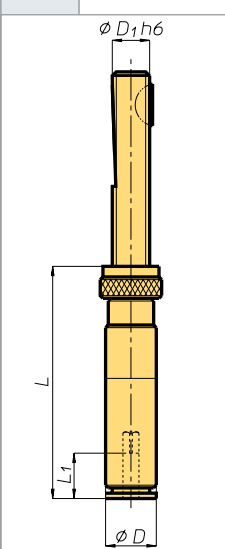
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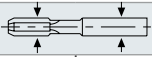
Mandrini OMG per maschiare con diametro ridotto OMG tapping spindles with reduced diameter



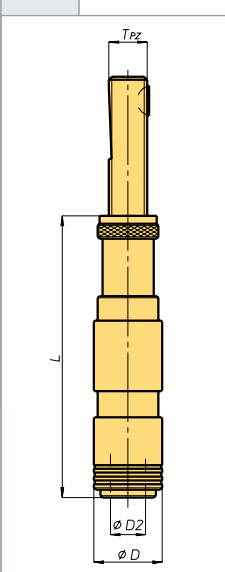
Codice Code	Mandrino Spindle			ØD	D1	L	L1	B	Pinza Collet	
009450	MM.Tr8.ER8	M5	0,5	8	15	8	75	23	16	ER8
009453	MM.Tr8.ER11	M6	1	10	19	8	90	27	16	ER11
009451	MM.Tr10.ER11	M6	1	10	19	10	90	27	18	ER11
009454	MM.Tr10.ER16	M8	1	10	22	10	105	37	18	ER16
009452	MM.Tr12.ER16	M8	1	10	22	12	107	37	18	ER16




Mandrini per maschiare con diametro ridotto Tapping spindles with reduced diameter



Codice Code	Mandrino Spindle		ØD	D1	L	L1
227030	MR. 0 - 10x1.5 Tpz	M1 - M10	14	10	44	15
227031	MR. 0 - 12x1.5 Tpz			12		
227032	MR. 1 - 12x1.5 Tpz	M4 - M14	19	12	52	17
227033	MR. 1 - 16x1.5 Tpz			16		
227034	MR. 2 - 20x2 Tpz	M8 - M24	31	20	77	30
227035	MR. 2 - 28x2 Tpz			28		
227036	MR. 3 - 28x2 Tpz	M14 - M36	48	28	95	44
227037	MR. 3 - 36x2 Tpz			36		
227038	MR. 4 - 36x2 Tpz	M22 - M48	60	36	132	71
227039	MR. 4 - 48x2 Tpz			48		

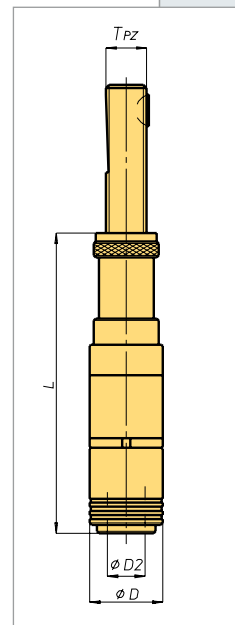
Mandrini a cambio rapido per maschiare con compensazione assiale Quick change tapping clucks with axial compensation



Mandrino Spindle		D	D2			16x1.5 Tpz	Codice Code	20x2 Tpz	Codice Code	28x2 Tpz	Codice Code	36x2 Tpz	Codice Code		
MF 0-5D-20-10	M1 - M10	23	13	20	10	0	116	227060	116	227061					
MF 0-5D-15-15				15	15		111	227062	111	227063					
MF 0-5D-0-30				0	30		96	227064	96	227065					
MF 1-5D-30-10	M3 - M12	35	19	30	10	1	148	227066	148	227067	148	227068			
MF 1-5D-20-20				20	20		138	227069	138	227070	138	227071			
MF 1-5D-0-40				0	40		118	227072	118	227073	118	227074			
MF 2-4D-30-10	M8 - M20	50	31	30	10	2			172	227075	172	227076	172	227077	
MF 2-4D-20-20				20	20				162	227078	162	227079	162	227080	
MF 2-4D-0-40				0	40				142	227081	142	227082	142	227083	
MF 3-3D-30-10	M14 - M33	72	48	30	10	3				218	227084	218	227085		
MF 3-3D-20-20				20	20				208	227086	208	227087			
MF 3-3D-0-40				0	40				188	227088	188	227089			

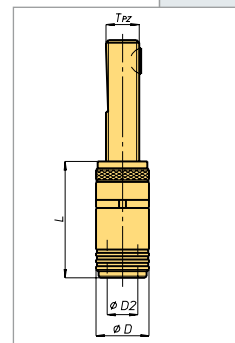
Mandrini a cambio rapido per maschiare con compensazione assiale e spostamento parallelo all'asse
Quick change tapping chucks with axial compensation and radial parallel floating

Mandrino Spindle	D	D2	\pm	\leftarrow \rightarrow	\leftarrow \rightarrow	16x1.5 Tpz	Codice Code	20x2 Tpz	Codice Code	28x2 Tpz	Codice Code	36x2 Tpz	Codice Code	
MFC 0-5D-20-10	M1 - M10	23	13	0,25	20	10	0	138	227090	138	227091			
MFC 0-5D-15-15					15	15		133	227092	133	227093			
MFC 0-5D-0-30					0	30		118	227094	118	227095			
MFC 1-5D-30-10	M3 - M12	35	19	0,5	30	10	1	163	227096	163	227097	163	227098	
MFC 1-5D-20-20					20	20		153	227099	153	227100	153	227101	
MFC 1-5D-0-40					0	40		133	227102	133	227103	133	227104	
MFC 2-4D-30-10	M8 - M20	50	31	1	30	10	2		196	227105	196	227106	174	227077
MFC 2-4D-20-20					20	20			186	227108	186	227109	164	227080
MFC 2-4D-0-40					0	40			166	227111	166	227112	144	227083
MFC 3-3D-30-10	M14 - M33	72	48	1,5	30	10	3			252	227084	220	227085	
MFC 3-3D-20-20					20	20				242	227116	210	227087	
MFC 3-3D-0-40					0	40				222	227118	190	227089	



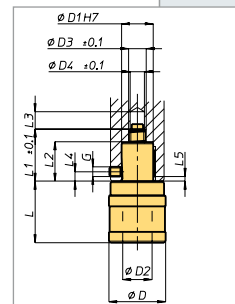
Mandrini a cambio rapido per maschiare con spostamento parallelo all'asse
Quick change tapping chucks with radial parallel floating

Mandrino Spindle	D	D2	\pm	\leftarrow \rightarrow	16x1.5 Tpz	Codice Code	20x2 Tpz	Codice Code	28x2 Tpz	Codice Code	36x2 Tpz	Codice Code
MFC 0	M1 - M10	23	13	0,25	0	65	227131	65	227132			
MFC 1	M3 - M12	35	19	0,5	1	70	227133	70	227134	70	227135	
MFC 2	M8 - M20	50	31	1	2		96	227136	96	227137	98	227138
MFC 3	M14 - M33	72	48	1,5	3				136	227139	138	227146



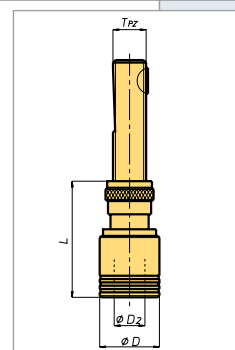
Mandrini a cambio rapido per maschiare con compensazione assiale
Quick change tapping chucks with axial compensation

Codice Code	Mandrino Spindle	D	D1	D2	D3	D4	L	L1	L2 min.	L3 min.	L4	L5	G	Chiavetta DIN 6885			
227185	MKD0.GC M1 - M10	0	6,5	6,5	26	15	13	8,2	6	37	32	18,5	11	6	3	M5	5x3x12
227186	MKD1.GC M3 - M12	1	7,5	7,5	36	20	19	11,2	9	39	33	24,5	11	6	3	M6	6x4x16
227187	MKD2.GC M8 - M20	2	12,5	12,5	53	25	31	13,2	11	63	39	30,5	20	8	4	M8	6x6x20



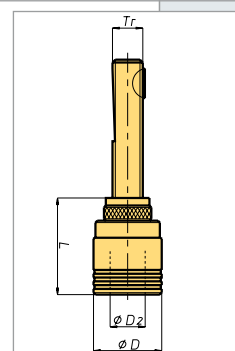
Mandrini a cambio rapido per maschiare con compensazione assiale
Quick change tapping chucks with axial compensation

Mandrino Spindle	\pm	\leftarrow \rightarrow	\leftarrow \rightarrow	\varnothing D	\varnothing D2	28x2 Tpz	Codice Code	36x2 Tpz	Codice Code	48x2 Tpz	Codice Code	
AKD 1 - ..	M3 - M12	1	20	20	32	19	65	227190	67	227191	71	227192
AKD 2 - ..	M8 - M20	2	20	25	50	31		83	227193	87	227194	
AKD 40 - ..	M6 - M18	4	20	20	40	26	80	227195				



Mandrini a cambio rapido per maschiare con compensazione assiale
Quick change tapping chucks with axial compensation

Mandrino Spindle	\pm	\leftarrow \rightarrow	\leftarrow \rightarrow	\varnothing D	\varnothing D2	16x1.5 Tpz	Codice Code	20x2 Tpz	Codice Code	28x2 Tpz	Codice Code	36x2 Tpz	Codice Code
MKD-0 - Tr..	M1 - M10	0	6,5	6,5	26	13	50	227165	50	227166			
MKD-1 - Tr..	M1 - M12	1	7,5	7,5	36	19	52	227167	52	227168	52	227169	
MKD-2 - Tr..	M4 - M20	2	12,5	12,5	53	31		76	227171	76	227172	78	227173
MKD-3 - Tr..	M4 - M33	3	20	20	78	48						111	227175



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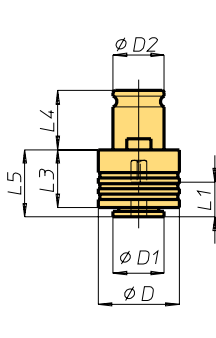
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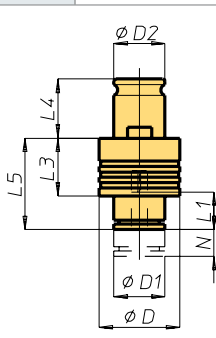
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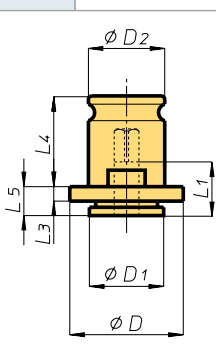
Bussole porta maschio a cambio rapido con frizione destra e sfere
Quick connection tap-holder bushes with ball right clutch

Codice Code	Bussola Bush		Ø gambo maschio Tap shank diametre	ØD	ØD1	ØD2	L1	L3	L4	L5
227206	BFS 0	M1 - M10	2,5 - 7,2	23	13	13	15	20	19,5	21
227207	BFS 1	M3 - M12	3,5 - 11,3	32	19	19	17	25	21,5	25
227208	BFS 2	M8 - M20	7 - 18	50	30	31	30	31	35	34
227209	BFS 3	M14 - M33	11 - 28	72	48	48	44	41	55,5	45
227210	BFS 40	M6 - M18	6 - 14	40	25	26	30	27	32	30




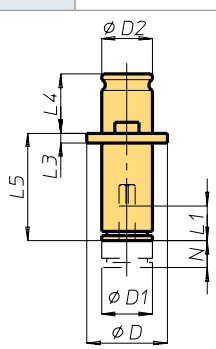
Bussole porta maschio a cambio rapido con frizione destra e sfere
Quick connection tap-holder bushes with ball right clutch

Codice Code	Bussola Bush		Ø gambo maschio Tap shank diametre	N	ØD	ØD1	ØD2	L1	L3	L4	L5
227211	BFSR 0	M1 - M10	2,5 - 7,2	8	23	13	13	15	20	19,5	28
227212	BFSR 1	M2 - M12	3,5 - 11,3	10	32	19	19	17	25	21,5	33
227213	BFSR 2	M8 - M20	7 - 18	15	50	30	31	30	31	35	59
227214	BFSR 3	M14 - M33	11 - 28	25	72	48	48	44	41	55,5	82




Bussole porta maschio a cambio rapido
Quick connection tap-holder bushes

Codice Code	Bussola Bush		Ø gambo maschio Tap shank diametre	ØD	ØD1	ØD2	L1	L3	L4	L5
227250	BFC 0	M1 - M10	2,5 - 7,2	22	13	13	15	4	19,5	7
227251	BFC 1	M3 - M12	3,5 - 11,3	30	19	19	17	4	21,5	7
227252	BFC 2	M8 - M20	7 - 18	48	30	31	30	5	35	11
227253	BFC 3	M14 - M33	11 - 28	70	48	48	44	6	55,5	14
227254	BFC 40	M6 - M18	6 - 14	40	25	26	30	5	32	13



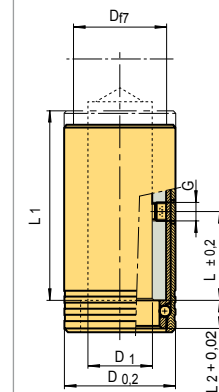
Bussole porta maschio a cambio rapido
Quick connection tap-holder bushes

Codice Code	Bussola Bush		Ø gambo maschio Tap shank diametre	N	ØD	ØD1	ØD2	L1	L3	L4	L5
227255	BFCR 0	M1 - M10	2,5 - 7,2	8	22	13	13	15	4	19,5	28
227256	BFCR 1	M2 - M12	3,5 - 11,3	10	30	19	19	17	4	21,5	33
227257	BFCR 2	M8 - M20	7 - 18	15	48	30	31	30	5	35	59
227258	BFCR 3	M14 - M33	11 - 28	25	70	48	48	44	6	55,5	82



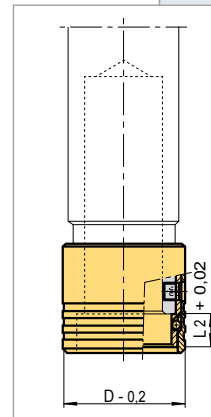
Manicotti ad innesto rapido
Quick connection sleeves

Codice Code	Manicotto Sleeve	ØD	ØD1	ØD3	L	L1	L2	G
227309	AIRFA. 12	24	12	20	22	48	9	M5
227310	AIRFA. 16	30	16	25	34	64	9,5	M6
227311	AIRFA. 20	38	20	32	34	70	11	M6
227312	AIRFA. 25	45	25	37	38	76	12	M8
227313	AIRFA. 28	48	28	40	38	78	12	M8
227314	AIRFA. 32	55	32	45	45	89	14	M8
227315	AIRFA. 36	60	36	50	45	97	16	M8
227316	AIRFA. 48	80	48	67	57	122	20	M10



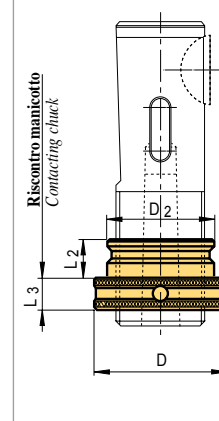
Manicotti ad innesto rapido
Quick connection sleeves

Codice Code	Manicotto Sleeve	ØD	ØD1	ØD3	ØD4	L	L1	L2	G
227350	AIRFCA. 16	27	16	25	22	8	30	9,5	M5
227351	AIRFCA. 20	34	20	32	28	8	30	11	M5
227352	AIRFCA. 25	41	25	37	34,5	8	32	12	M6
227353	AIRFCA. 28	44	28	40	37	8	32	12	M6
227354	AIRFCA. 32	49	32	45	41	9	39	13,5	M6
227355	AIRFCA. 36	55	36	50	46	9	39	16	M6
227356	AIRFCA. 48	73	48	67	61	11	51	20	M8



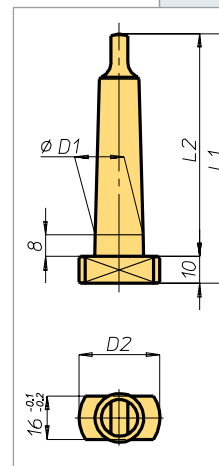
Ghiere ad innesto rapido
Ring nuts

Codice Code	Ghiera Nut	ØD	ØD2	L2	L3
227367	GIRF. 12	21,5	16,4	9	9
227368	GIRF. 16	26	19,9	9,5	9
227369	GIRF. 20	33	25,4	11	9
227370	GIRF. 25	40	31,9	12	10
227371	GIRF. 28	42	33,9	12	10
227372	GIRF. 32	47	37,9	13,5	10
227373	GIRF. 36	54	43,4	16	10
227374	GIRF. 48	72	57,9	20	14



Trascinatori a cono Morse
Morse taper with driving dog

Codice Code	Cono Morse Morse taper	A	B	L1	L2	L3	D1	D2	D3	R	B
011120	2	8	6,3	93	83	16	17,78	28	13,5	6	1°25'50"
011125	3	8	7,9	112	102	20	23,825	30	18,5	7	1°26'16"
011130	4	8	11,9	135,5	125,5	24	31,267	42	24,5	8	1°29'15"
011135	5	8	15,9	167,5	157,5	29	44,399	50	35,7	10	1°30'26"
011136	6	8	19	228	218	40	63,348	62	51	13	1°29'



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calcolo momento torcente e potenza

estimate torque and power

La OMG, con questo diagramma, desidera offrire la possibilità di calcolare con velocità e ottima approssimazione, il momento torcente e la relativa potenza necessaria per l'esecuzione delle forature. Scegliendo l'appropriato avanzamento sull'ascissa, congiungendo con il relativo diametro di foratura, in ordinata si leggerà un determinato valore del "coefficiente β "; moltiplicando questo per la resistenza del materiale si otterrà il momento torcente. Applicando poi la formula

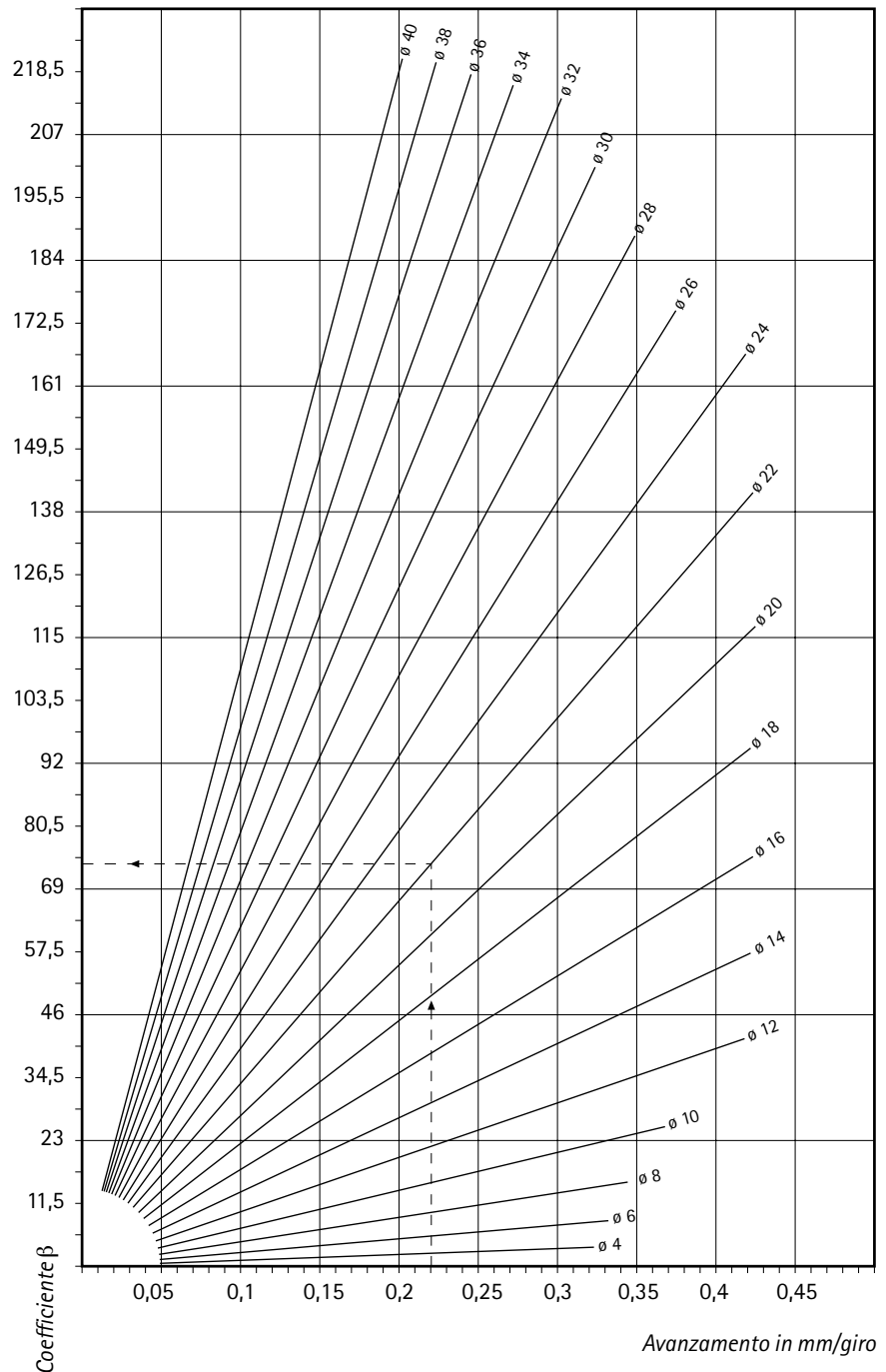
$$N = \frac{M_t \times n}{9549,3}$$

dove n è il n° di giri, si otterrà la potenza N espressa in kW

With this diagram, OMG makes it possible to calculate the torque and corresponding power necessary for drilling quickly and with maximum approximation. By selecting the proper feed on the abscissa and adding it to the corresponding drilling diameter on the ordinate, a certain «coefficient β » value is obtained. By multiplying this by the material strength, the torque can be found. Then, by applying the formula,

$$N = \frac{M_t \times n}{9549,3}$$

where n is the number of revolutions, it is possible to determine power N expressed in kW.



Es:

$a = 0,22$ mm/giro
 punta Ø 22
 giri/1' = 230
 $R = 500$ N/mm²
 coefficiente $\beta = 73$

Ex:

$a = 0,22$ mm/revs
 tip Ø 22
 rpm = 230
 $R = 500$ N/mm²
 coefficient $\beta = 73$

$$M_t = \frac{73 \times 500}{1000} = 36,5 \text{ Nm}$$

$$N = \frac{36,5 \times 230}{9549,3} = 0,88 \text{ kW}$$



manicotti di collegamento connection collars

Dimensioni estremità mandrini macchine utensili per la costruzione del manicotto di collegamento.
Spindles dimensions off machine-tools to manufacture the connection collar.

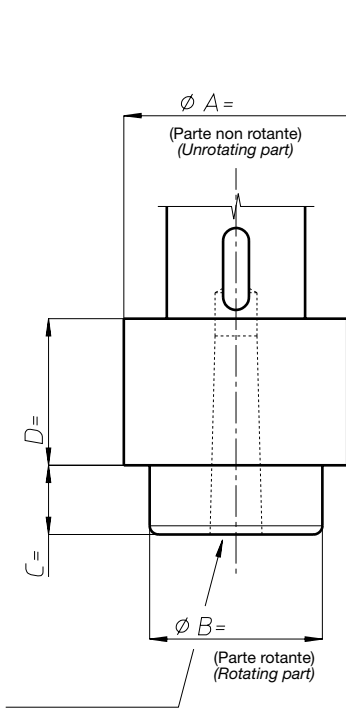


Fig. 1

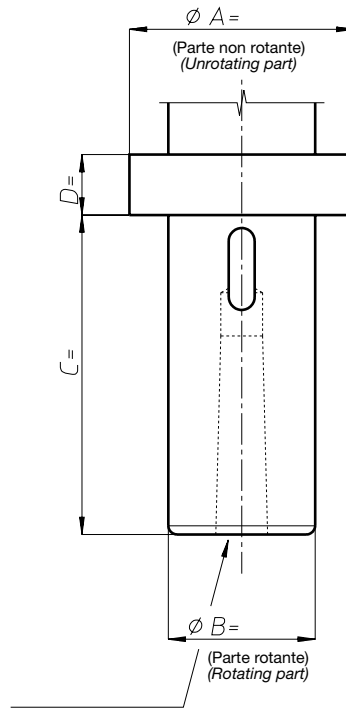


Fig. 2

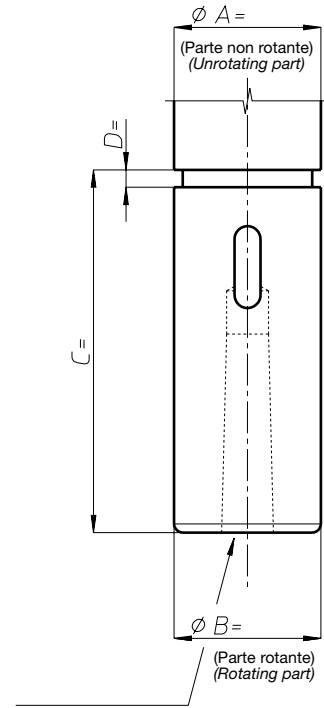


Fig. 3

Se nessuna figura si adatta alla vostra macchina,
disegnate qui l'estremità mandrino.
If no picture fits your machine, draw here the spindle end.

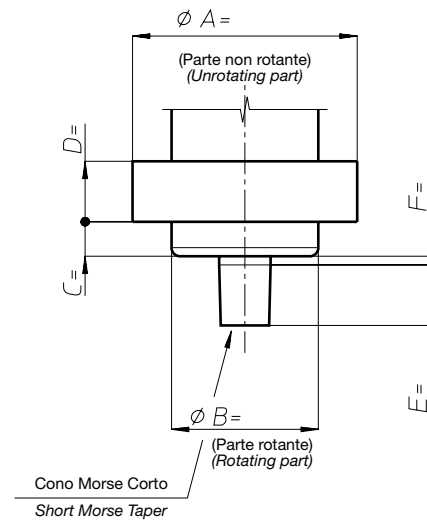
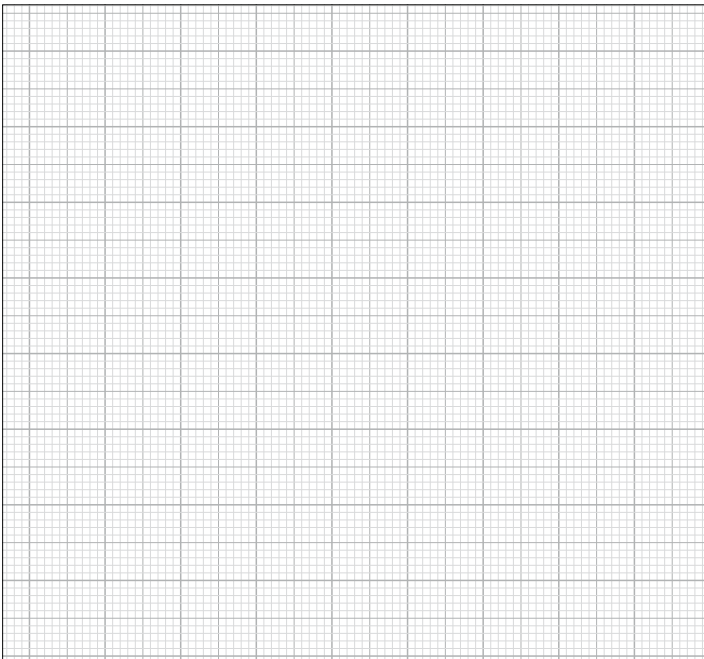
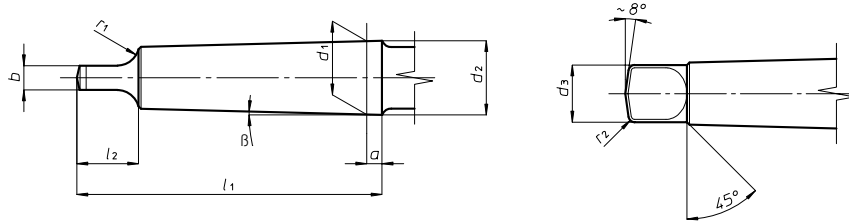


Fig. 4

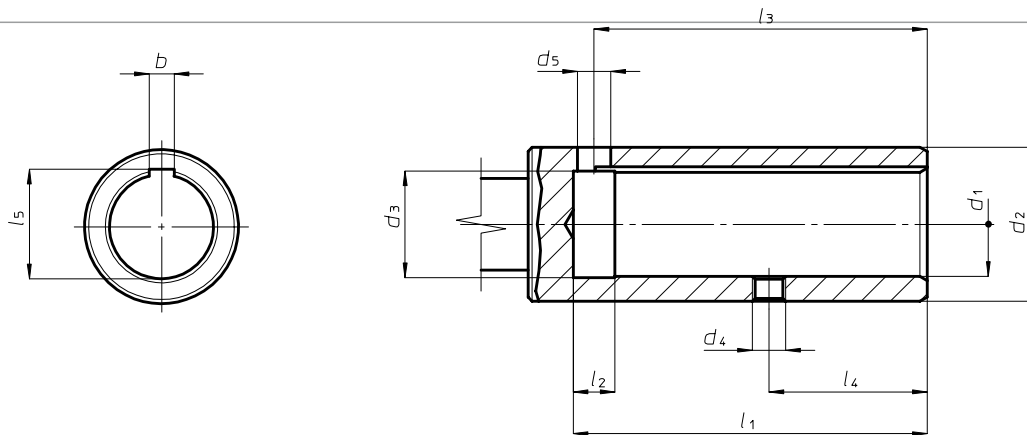
DIN 228

Cono Morse
Morse taper



Cono Morse Morse Taper	a	b ^{h13}	d1	d2	d3max	l1max	l2max	r1	r2	β
0	3	3,9	9,045	9,2	6	59,5	10,5	4	1	1°29'27"
1	3,5	5,2	12,065	12,2	8,7	65,5	13,5	5	1,2	1°25'43"
2	5	6,3	17,780	18	13,5	80	16	6	1,6	1°25'50"
3	5	7,9	23,825	24,1	18,5	99	20	7	2	1°26'16"
4	6,5	11,9	31,267	31,6	24,5	124	24	8	2,5	1°29'15"
5	6,5	15,9	44,399	44,7	35,7	156	29	10	3	1°30'26"
6	8	19	63,348	63,8	51	218	40	13	4	1°29'36"

DIN 55058

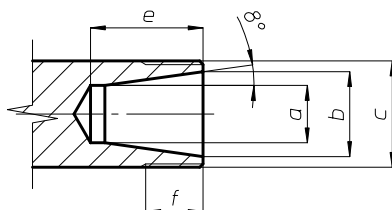


Grandezza Size d1 H7	Ø8	Ø10	12	16	Ø20	Ø25	28	Ø32	Ø36	48
b	2	3	3	5	5	6	6	8	9	10
d2f7	15	18	20	25	32	37	40	45	50	67
d3	8,6	10,6	12,6	16,6	20,6	25,6	28,6	32,8	36,8	48,8
d4	M4	M5	M5	M6	M6	M8	M8	M8	M8	M10
d5	3,5	5	5	6	6	8	8	10	10	12
l1 min	42	52	52	75	78	85	85	106	106	129
l2	8	8	8	8	8	10	10	10	10	12
l3	35	48	48	70	73	80	80	101	101	123
l4 ±0,1	16	22	22	34	34	38	38	45	45	57
l5 ±0,1	9	11,1	13,1	17,3	21,3	26,7	29,7	33,7	37,7	50,1

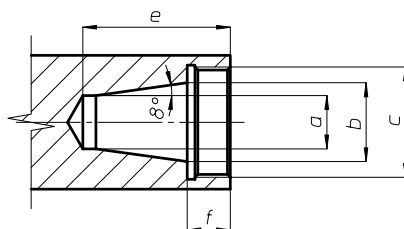


Sedi delle pinze ER
ER housing

DIN 6499



Grandezza Size d1 H7	Serraggio Clamping	a	b $\pm 0,05$	c	e	f
ER8	0,5... 5,0	5,2	8	M10x0,75	13,0	7,5
ER11	0,5... 7,0	7,5	11	M13x0,75	17,0	10,0
ER16	0,5... 10,0	10,5	16	M19x1,00	22,0	13,0
ER20	0,5... 13,0	13,5	20	M24x1,00	26,5	13,5
ER25	0,5... 16,0	18,0	25	M30x1,00	29,0	14,0
ER16	0,5... 10,0	10,5	16	M22x1,50	22,0	13,0
ER20	0,5... 13,0	13,5	20	M25x1,50	26,5	13,5
ER25	0,5... 16,0	18,0	25	M32x1,50	29,0	14,0
ER32	1,0... 20,0	23,5	32	M40x1,50	34,0	16,0
ER40	2,0... 30,0	30,5	40	M50x1,50	38,0	17,0
ER50	4,0... 34,0	38,0	50	M64x2,00	48,0	24,0



Grandezza Size d1 H7	Serraggio Clamping	a	b $\pm 0,05$	c	e	f
ER11	0,5... 7,0	7,5	11	M18x1,00	23,0	7,0
ER16	0,5... 10,0	10,5	16	M24x1,00	32,0	10,0
ER20	0,5... 13,0	13,5	20	M28x1,50	37,5	11,0
ER25	0,5... 16,0	18,0	25	M32x1,50	41,0	12,0
ER32	1,0... 20,0	23,5	32	M40x1,50	48,0	14,0

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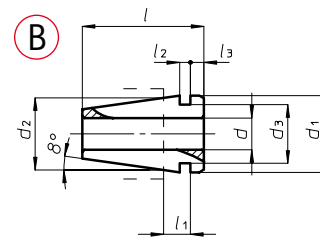
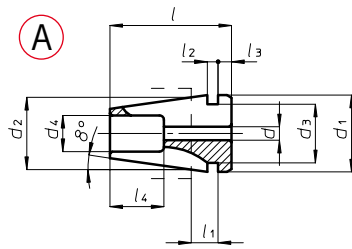
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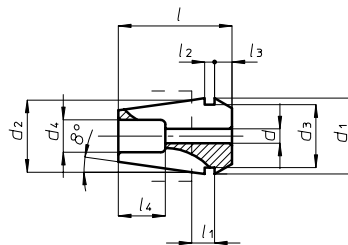


DIN 6499-B

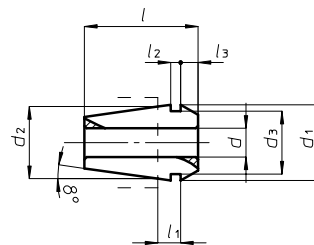
Pinze
Collets



Grandezza Size d1 H7	d	d1	d2	d3	d4	l	l1	l2	l3	l4	Disegno Picture
ER8	0,5... 2,5	8,5	8,0	6,5	4,0	13,5	2,98	1,2	1,5	6,0	A
ER8	3,0... 5,0	8,5	8,0	6,5	-	13,5	2,98	1,2	1,5	-	A



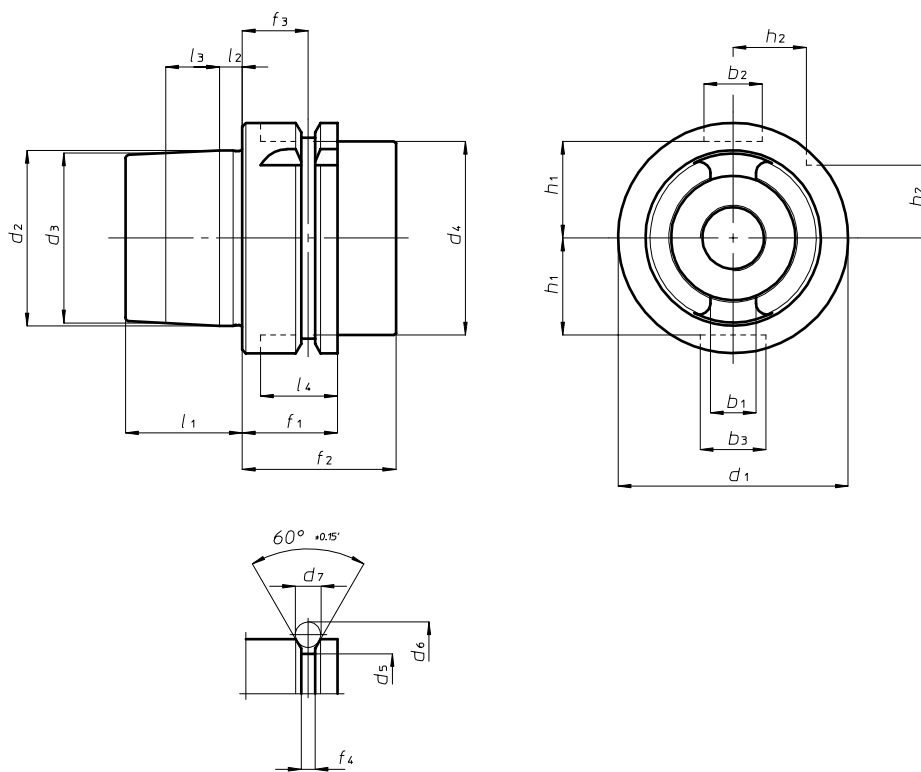
Grandezza Size d1 H7	d	d1	d2	d3	d4	l	l1	l2	l3	l4
ER11	0,5... 2,5	11,5	11,0	9,5	5,0	18,0	3,80	2,0	2,5	9,0
ER16	0,5... 4,5	17,0	16,0	13,8	7,5	27,5	6,26	2,7	4,0	10,0
ER20	1,0... 6,5	21,0	20,0	17,4	9,0	31,5	6,36	2,8	4,8	13,0
ER25	1,0... 7,5	26,0	25,0	22,0	12,0	34,0	6,66	3,1	5,0	15,0
ER32	2,0... 3,5	33,0	32,0	29,2	15,0	40,0	7,16	3,6	5,5	20,0
ER32	4,0... 7,5	33,0	32,0	29,2	15,0	40,0	7,16	3,6	5,5	15,0
ER40	3,0... 3,5	41,0	40,0	36,2	20,0	46,0	7,66	4,1	7,0	21,0
ER40	4,0... 8,5	41,0	40,0	36,2	20,0	46,0	7,66	4,1	7,0	18,0
ER50	4,0... 10,0	52,0	50,0	46,0	20,0	60,0	12,60	5,5	8,5	26,0



Grandezza Size d1 H7	d	d1	d2	d3	l	l1	l2	l3
ER11	3,0... 7,0	11,5	11,0	9,5	18,0	3,80	2,0	2,5
ER16	5,0... 10,0	17,0	16,0	13,8	27,5	6,26	2,7	4,0
ER20	7,0... 13,0	21,0	20,0	17,4	31,5	6,36	2,8	4,8
ER25	8,0... 16,0	26,0	25,0	22,0	34,0	6,66	3,1	5,0
ER32	8,0... 20,0	33,0	32,0	29,2	40,0	7,16	3,6	5,5
ER40	9,0... 30,0	41,0	40,0	36,2	46,0	7,66	4,1	7,0
ER50	12,0... 34,0	52,0	50,0	46,0	60,0	12,60	5,5	8,5

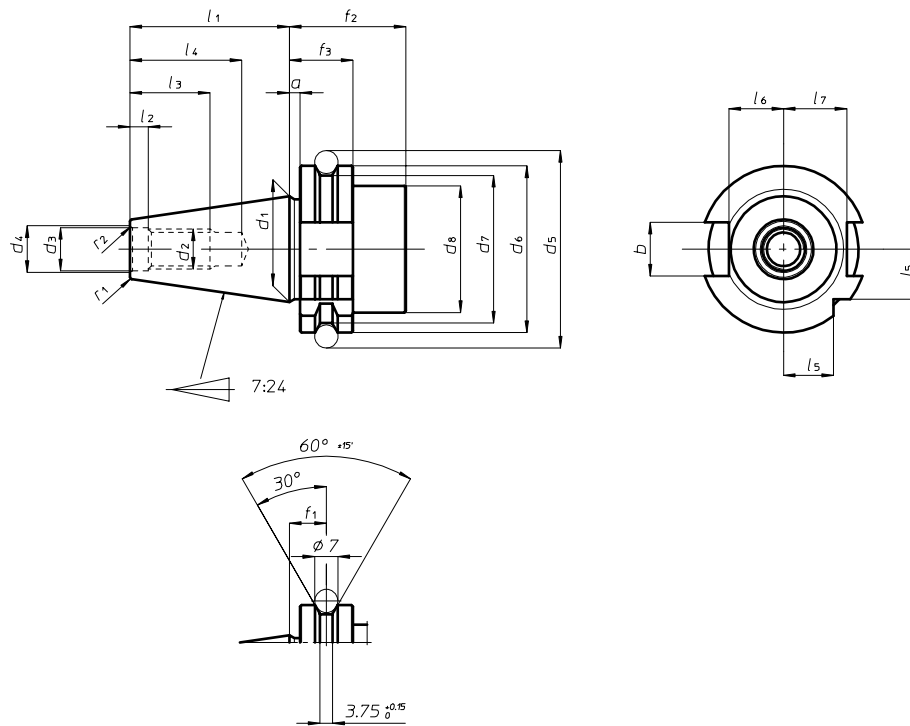


DIN 69893



	HSK50	HSK63	HSK80	HSK100
b₁ H10	10,5	12,5	16	20
b₂ H10	12	16	18	20
b₃ H10	14	18	20	22
d₁ H10	50	63	80	100
d₂	38 ^{+0,009} _{+0,006}	48 ^{+0,011} _{+0,007}	60 ^{+0,013} _{+0,008}	75 ^{+0,015} _{+0,009}
d₃	36,900 ^{+0,006} _{+0,003}	46,530 ^{+0,007} _{+0,003}	58,100 ^{+0,008} _{+0,003}	72,600 ^{+0,009} _{+0,003}
d₄ max	42	53	67	85
d₅ ⁰ _{-0,1}	43	55	70	92
d₆ ⁰ _{-0,1}	59,3	72,3	88,8	109,75
d₇	7	7	7	7
f₁ ⁰ _{-0,1}	26	26	26	29
f₂ min	42	42	42	45
f₃ ±0,1	18	18	18	20
f₄ ^{+0,15} ₀	3,75	3,75	3,75	3,75
h₁ ⁰ _{-0,2}	21	26,5	34	44
h₂ ⁰ _{-0,3}	15,5	20	25	31,5
l₁ ⁰ _{-0,2}	25	32	40	50
l₂	5	6,3	8	10
l₃	11	14,7	19	24
l₄	19	21	22	24

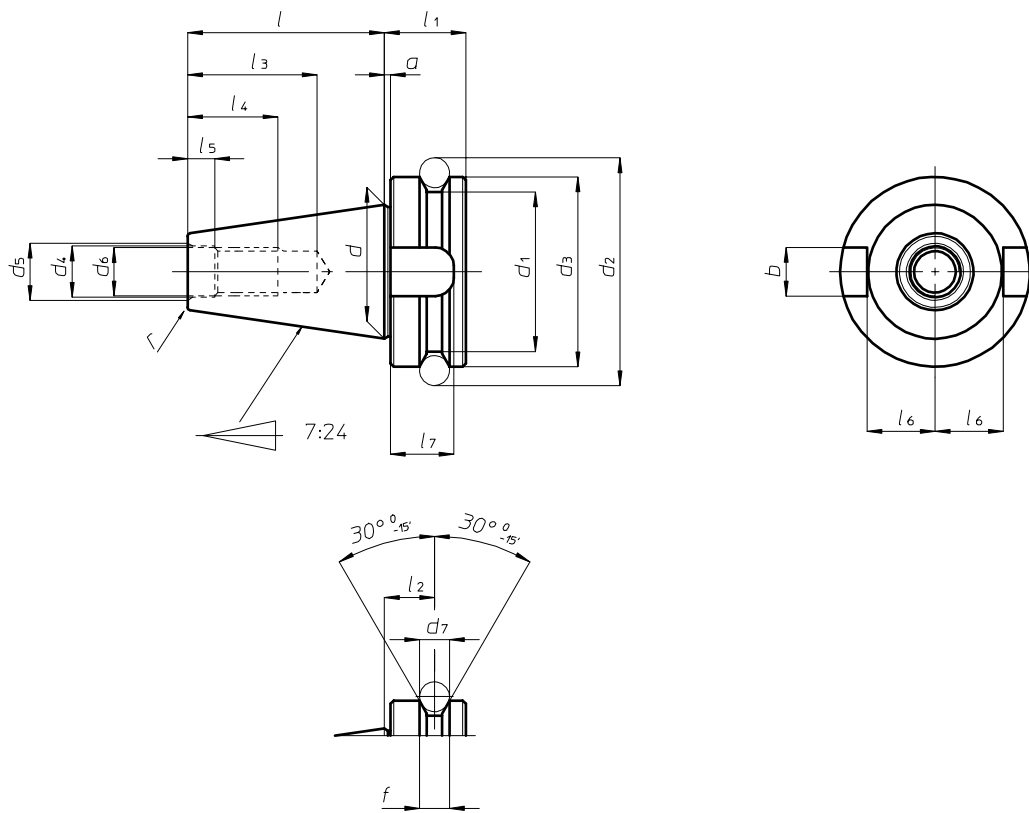
DIN 69871 Forma A A shape



Grandezza Size d1 H7	30	40	45	50
a $\begin{matrix} +0,1 \\ -0,1 \end{matrix}$	32	3,2	3,2	3,2
b H12	16,1	16,1	19,3	25,7
d1	31,75	44,45	57,15	69,85
d2	M12	M16	M20	M24
d3 H7	13	17	21	25
d4 max	14	19	23,4	28
d5 $\begin{matrix} +0,05 \\ -0,05 \end{matrix}$	59,3	72,3	91,35	107,25
d6 $\begin{matrix} 0 \\ -0,1 \end{matrix}$	50	63,55	82,55	97,50
d7 $\begin{matrix} 0 \\ -0,5 \end{matrix}$	44,3	56,25	75,25	91,25
d8 max	45	50	63	80
f1 $\begin{matrix} +0,1 \\ -0,1 \end{matrix}$	11,1	11,1	11,1	11,1
f2 min	35	35	35	35
f3 $\begin{matrix} 0 \\ -0,1 \end{matrix}$	19,1	19,1	19,1	19,1
l1 $\begin{matrix} 0 \\ -0,3 \end{matrix}$	47,8	68,4	82,7	101,75
l2 $\begin{matrix} +0,5 \\ 0 \end{matrix}$	5,5	8,2	10	11,5
l3 min	24	32	40	47
l4 min	33,5	42,5	52,5	61,5
l5 $\begin{matrix} 0 \\ -0,3 \end{matrix}$	15	18,5	24	30
l6 $\begin{matrix} 0 \\ -0,4 \end{matrix}$	16,4	22,8	29,1	35,5
l7 $\begin{matrix} 0 \\ -0,4 \end{matrix}$	19	25	31,3	37,7
r1	0,6 $\begin{matrix} 0 \\ -0,3 \end{matrix}$	1,2 $\begin{matrix} 0 \\ -0,5 \end{matrix}$	2 $\begin{matrix} 0 \\ -0,5 \end{matrix}$	2,5 $\begin{matrix} 0 \\ -0,5 \end{matrix}$
r2 $\begin{matrix} 0 \\ -0,5 \end{matrix}$	0,8	1	1,2	1,5



MAS 403



Grandezza Size d1 H7	30	40	50
a $\pm 0,4$	2	2	3
b H8	16,1	16,1	25,7
d	31,75	44,45	69,85
d1 $\begin{smallmatrix} -0,1 \\ -0,3 \end{smallmatrix}$	38	53	85
d2	56,144	75,679	119,019
d3 H8	46	63	100
d4 H8	12,5	17	25
d5	14,5	19	27
d6	M12	M16	M24
d7	8	10	15
f $\begin{smallmatrix} +0,1 \\ 0 \end{smallmatrix}$	8	10	15
l $\pm 0,15$	48,4	65,4	101,8
l1	22	27	38
l2 $\pm 0,1$	13,6	16,6	23,2
l3	34	43	62
l4	24	30	45
l5 $\begin{smallmatrix} +0,5 \\ 0 \end{smallmatrix}$	7	9	13
l6 $\begin{smallmatrix} 0 \\ -0,2 \end{smallmatrix}$	16,3	22,6	35,4
l7	17	21	31
r	0,5	1	1

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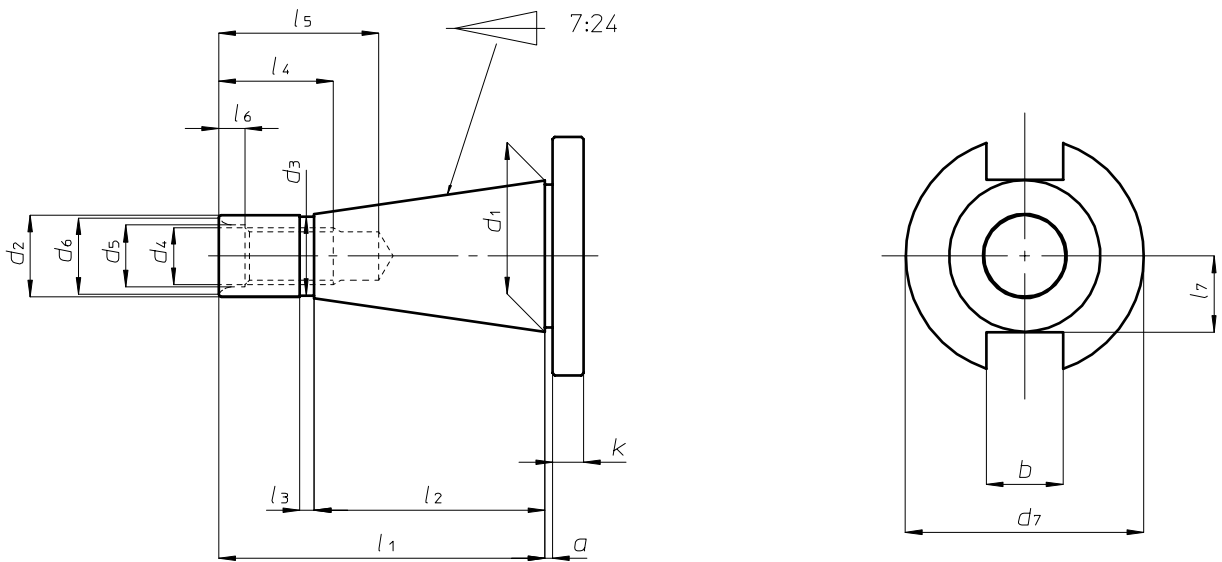
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MT-TC-TC3

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AccessoriesAppendice tecnica
Technical supplement

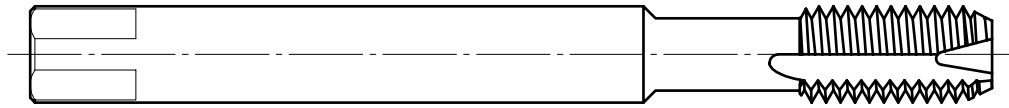
DIN 2080



Grandezza Size	30	40	45	50
a $\pm 0,2$	1,6	1,6	3,2	3,2
b H12	16,1	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
d3	16,5	24	30	38
d4	M12	M16	M20	M24
d5	13	17	21	26
d6 max	16	21,5	26	32
d7 $\begin{smallmatrix} 0 \\ -0,4 \end{smallmatrix}$	50	63	80	97,5
k $\pm 0,15$	8	10	12	12
l1	68,4	93,4	106,8	126,8
l2	48,4	65,4	82,8	101,8
l3	3	5	6	8
l4	24	32	40	47
l5 min	33,5	42,5	52,5	61,5
l6 $\begin{smallmatrix} +0,5 \\ 0 \end{smallmatrix}$	5,5	8,2	10	11,5
l7 max	16,2	22,5	29	35,3

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MASCHI/TAPS



Maschi/Taps		ISO 529		DIN 371 (DIN 2181)		DIN 371		DIN 376		JAPAN JIS		US STANDARD	
(mm)	(pollici)	(∅)	(□)	(∅)	(□)	(∅)	(□)	(∅)	(□)	(∅)	(□)	(∅)"	(□)"
M1.0		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M1.1		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M1.2		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M1.4		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M1.6	1/16	2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M1.7		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	-	-
M1.8		2,50	2,10	-	-	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M2.0		2,80	2,10	2,50	2,00	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M2.2		2,80	2,10	2,80	2,24	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M2.3		2,80	2,10	2,80	2,24	2,50	2,10	-	-	3,00	2,50		
M2.5	3/32	2,80	2,10	2,80	2,24	2,50	2,10	-	-	3,00	2,50	0,141	0,110
M2.6		2,80	2,10	2,80	2,24	2,50	2,10	-	-	3,00	2,50		
M3.0	1/8	3,15	2,50	3,15	2,50	3,50	2,70	3,00	-	4,00	3,00	0,141	0,110
M3.5		3,55	2,80	3,55	2,80	4,00	3,00	2,50	2,10	4,00	3,00	0,141	0,110
M4.0	5/32	4,00	3,15	-	-	4,50	3,40	2,80	2,10	5,00	4,00	0,168	0,131
M4.5	3/16	4,50	3,55	-	-	6,00	4,90	3,50	2,70	5,00	4,00	0,194	0,152
M5.0		5,00	4,00	-	-	6,00	4,90	3,50	2,70	5,50	4,50	0,194	0,152
M6.0	1/4	6,30	5,00	-	-	6,00	4,90	4,50	3,40	6,00	4,50	0,255	0,191
M7.0	5/16	7,10	5,60	-	-	7,00	5,50	5,50	4,30	6,20	5,00	0,318	0,238
M8.0		8,00	6,30	-	-	8,00	6,20	6,00	4,90	6,20	5,00	0,318	0,238
M9.0		9,00	7,10	-	-	9,00	7,00	7,00	5,50	7,00	5,50	0,381	0,286
M10.0	3/8	10,00	8,00	-	-	10,00	8,00	7,00	5,50	7,00	5,50	0,381	0,286
M11.0		8,00	6,30	-	-	-	-	8,00	6,20	8,00	6,20	0,381	0,286
M12.0	1/2	9,00	7,10	-	-	-	-	9,00	7,00	8,50	6,50	0,367	0,275
M14.0	9/16	11,20	9,00	11,20	-	-	-	11,00	9,00	10,50	8,00	0,429	0,322
M16.0	5/8	12,50	10,00	12,50	-	-	-	12,00	9,00	12,50	10,00	0,480	0,360
M18.0	11/16	14,00	11,20	14,00	-	-	-	14,00	11,00	14,00	11,00	0,542	0,406
M20.0	13/16	14,00	11,20	14,00	-	-	-	16,00	12,00	15,00	12,00	0,652	0,489
M22.0	7/8	16,00	12,50	16,00	-	-	-	18,00	14,50	17,00	13,00	0,697	0,523
M24.0	15/16	18,00	14,00	18,00	-	-	-	18,00	14,50	19,00	15,00	0,760	0,570
M27.0	1 1/16	20,00	16,00	20,00	-	-	-	20,00	16,00	20,00	15,00	0,896	0,672
M30.0	1 3/16	20,00	16,00	20,00	-	-	-	22,00	18,00	23,00	23,17	1,021	0,766

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