# 2 Evolution Line

CAPITOLO
*CHAPTER*

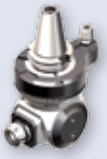
## TESTE ANGOLARI - ANGLE HEADS

# 2 Evolution Line

CAPITOLO - *CHAPTER*

## Teste Angolari - *Angle Heads*




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ATC - Automatic | FS90-3 | FS90-3L | FS90-4 | FS90-4L | F90-7 | F90-7L | F90-10 | F90-10L | F90-16S | F90-16 |
| 2. | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| ATC - Automatic | F90-16L | F90-20 | F90-S40 | F90-7 10BAR | F90-7L 10BAR | F90-10 10BAR | F90-16S 10BAR | F90-16 10BAR | F90-20 10BAR | F90-S40 70BAR |
| 2. | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| ATC - Automatic | FR90-10 70BAR | FR90-16 70BAR | FR90-20 70BAR | FMU-10 | FMU-16 |  FMU-20 | REFR. INTERNO INT. COOL. | DOPPIA USCITA DOUBLE OUTPUT | | |
| 2. | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 36 | | |
| MTC - Manual | F90-16S | F90-16L | F90-20 | F90-20L | F90-S40 | REFR. INTERNO INT. COOL. | DOPPIA USCITA DOUBLE OUTPUT | | | |
| 2. | 39 | 40 | 41 | 42 | 43 | 44 | 44 | | | |
| Accessori Accessories | PINZE COLLETS | GHIERE/CHIAVI NUTS/WRENCHES | ATC MTC CONI/SHANKS | ANELLO/RING | GRUPPO PERNO PIN GROUP | STOP-BLOCK | MONTAGGIO TESTE ATC ATC HEADS MOUNTING | IDONEITÀ INTERASSE H PITCH H SUITABILITY | FLANGE & PROLUNGHE FLANGES & EXTENSIONS | MONTAGGIO TESTE MTC MTC HEADS MOUNTING |
| 2. | 46 | 47 | 48 | 48 | 49 | 50 | 51 | 52 | 53 | 54 |

# Linea Evolution

Le teste angolari Gerardi della nuovissima Linea Evolution nascono da solide basi tecniche e dall'esperienza maturata in 40 anni trascorsi al fianco dei nostri clienti durante i quali abbiamo risolto i problemi più variegati cercando la soluzione migliore e garantendo sempre l'elevata qualità ed affidabilità dei nostri prodotti.
30 modelli di teste angolari standard, ideati, realizzati e distribuiti in oltre 50 paesi nel mondo dalla Gerardi S.p.A., corredati da una gamma di opzioni che ne completano le potenzialità applicative e prestazionali.

## Caratteristiche tecniche principali:

1- Corpo in acciaio ad alta resistenza trattato per resistere alla corrosione e per garantire dilatazioni minime.
2- Modularità: albero con cono intercambiabile (Doppio contatto cono-piano) e quindi possibilità di utilizzare la testa su più centri di lavoro anche con mandrini diversi. E' infatti possibile sostituire il gruppo antirotante ed il cono in entrata senza compromettere rigidità e precisione.
3- Ciascun albero di trasmissione supportato da coppie di cuscinetti a contatto obliquo di precisione precaricati in classe di precisione ABEC 7 e lubrificati con grasso a vita.
4- Coppia conica di ingranaggi spiroidali Gleason con evolvente rettificato ottimizzata per una maggior coppia disponibile
5- Oltre 30 modelli di teste disponibili.
6- Nuovissimi modelli di teste con Pesi ed Ingombri ridotti serie Slim in grado di entrare in diametri di 39mm.
7- Passaggio refrigerante dal perno a 10 bar standard compreso nel prezzo. Inoltre possibilità di adduzione refrigerante 10 bar attraverso l'albero porta utensile e attraverso il cono mandrino fino a 70 bar.
8- Design ottimizzato per una migliore dispersione del calore e tempi più lunghi di rotazione alle alte velocità.
9- Compatibilità con le teste da sempre installate (perno anti-rotazione e stop block identici).
10- 100% Made in Italy, le teste angolari Gerardi Evolution Line sono progettate ed interamente realizzate in Italia e sono coperte da 1 anno di garanzia.

Per Caratteristiche tecniche, prestazioni e dotazione standard, fare riferimento alle pagine successive.

## SERIE ATC

*da pag 2.8 a 2.36*

Le teste ATC (Automatic Tool Change) sono ideali per le macchine di produzione a controllo numerico con cambio utensili automatico. Sono trasportabili automaticamente dal magazzino utensili al mandrino macchina e viceversa. L'anello di orientamento e la flangia di indexaggio che supporta il perno di fermo, sono entrambi posizionabili su 360° per ottimizzare gli orientamenti angolari. Sulle teste modello FMU, il supporto del mandrino portautensile ha possibilità di inclinarsi di ±90°. Se la testa non è in posizione di lavoro, un sistema di aggancio impedisce la rotazione del cono rispetto al corpo testa.

## SERIE MTC

*da pag 2.37 a 2.44*

Linea di teste per le macchine non dotate di cambio utensili automatico. Le teste MTC (Manual Tool Change) vanno montate manualmente e fissate al mandrino tramite flangiatura.
Sulle teste modello FMU, il supporto del mandrino portautensile ha la possibilità di inclinarsi e di posizionarsi di ±90°.

# Evolution Line

The new Evolution line of Gerardi angle heads has been designed from a technical base derived from 40 years experience of solving thousands of production problems, finding optimum solutions and always guaranteeing the highest product quality 30 standard angle head types are now offered, designed, built and distributed in more than 50 countries the world over by Gerardi S.p.A., and available with a range of options to complete their application and performance potentials.

## Main Technical features

1- Minimum thermal expansion and high corrosion resistant treated steel body
2- Modularity: main shaft with interchangeable Drive Taper (Double contact) allows an EVOLUTION angle head to be used on other machining centres with different spindle types and sizes. It is also possible to exchange the anti-rotation (arrester) sub-assembly and the input drive taper with no effect on rigidity or accuracy.
3- All spindles are supported by pairs of preloaded angular contact ball bearings with ABEC 7 precision and long life lubrication.
4- Gleason computer based calculations for the Gleason cut spiral bevel drive gears with ground teeth in order to guarantee a bigger torque
5- More than 30 angle head types available.
6- Among the new range of angle head types the slim series have reduced weights and overall dimensions. The Slim series are even able to enter a minimum diameter of 35mm.
7- Up to 10 bar coolant through the pin included in the standard heads. Options include feeding coolant at 10 bar though the cutter spindle or at up to 70 bar through the machine.
8- Designed for superior heat dissipation and for sustained periods of high speed operations
9- 100% compatibility with heads installed during the last 40 years (same anti-rotation/arrester pin and stop block dimensions)
10- GERARDI Evolution angle heads have been designed and are manufactured in Italy. They are covered by 1 year warranty.

For technical features, performances and standard equipment, please refer to the present catalogue.

## ATC SERIES

*from page 2.8 to 2.36*

ATC angle heads are ideal for CNC machines with automatic tool change and can be automatically transferred from the tool store to the machine spindle and vice-versa.
The orientation ring and arrester arm support ring are both 360° adjustable to allow the best angular orientation. On FMU heads, the cutter spindle housing can be adjusted at ±90°.
If an ATC angle head is not placed into the machine spindle, a locking system prevents shank rotation relative to the head body.

## MTC SERIES

*from page 2.37 to 2.44*

This range of angle heads is for conventional machines without automatic tool change.
MTC angle heads (Manual Tool Change) are manually mounted on the machine headstock through a flange.
On FMU heads, the cutter spindle housing can be adjusted at ±90°.

# MODULARITÀ SENZA MODULAR

## UNA SOLA TESTA PER PIÙ CENTRI DI LAVORO
## ONE HEAD FOR MANY MACHINES

Coni intercambiabili per un utilizzo su più centri di lavoro !! - Interchangeable Drive Tapers to suit any machine spindle!!

PERNO DI POSIZIONAMENTO
MODULARE INTERCAMBIABILE A SCELTA
A CHOICE OF MODULAR
INTERCHANGEABLE ARRESTER PINS

Il doppio contatto cono e piano assicurano rigidità e precisione !!
The unique Gerardi taper and face location ensures rigidity and accuracy!!

UN INVESTIMENTO CHE SI RIPAGA VELOCEMENTE !!

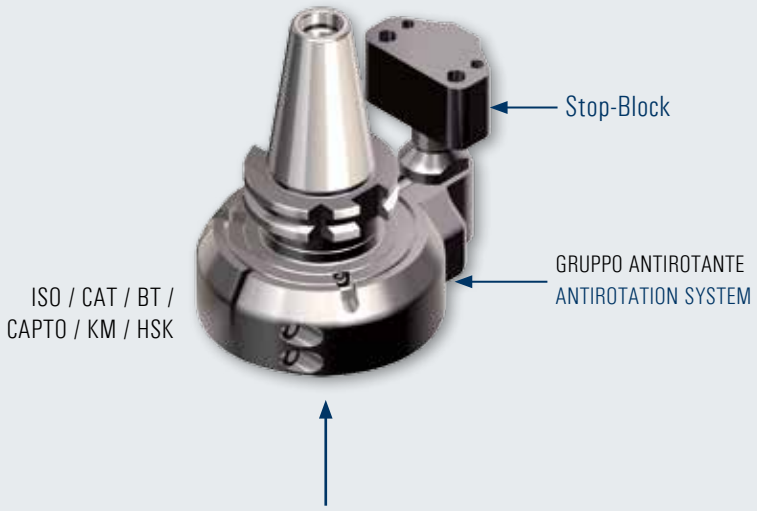
QUICKEST RETURN ON YOUR INVESTMENT !!

# COMPROMESSI
# WITHOUT COMPROMISES



## UN SOLO CENTRO DI LAVORO CON PIÙ TESTE
## THE SAME MACHINE WITH MANY HEADS

Lavorare nelle migliori condizioni risparmiando sui costi di acquisto !! - A system to save costs !!




F90-10 F90-10L F90-16S 2U FMU-16

**UNA SOLUZIONE APERTA PER IL LAVORO DI OGGI PENSANDO A QUELLO DI DOMANI !!**

**BE READY FOR TOMORROW WITH THE HEAD YOU BUY TODAY !!**

# serie ATC series
# Evolution Line

## PER MACCHINE CON CAMBIO UTENSILE AUTOMATICO
## DESIGNED FOR AUTOMATIC TOOL CHANGE MACHINES

### DESIGN

Il Design compatto, insieme alle specifiche descritte, consente: alte perfomances, elevate velocità, lunga durata degli utensili.

The Compact design, along with mentioned specifications, allows: highest performances, high speeds, long tools life

Albero con cono cementato, temprato, rettificato

Case hardened and ground shank and shaft

Perno di riferimento con sbloccaggio automatico del porta utensile

Positioning pin with automatic release

Gruppo antirotante modulare
Modular antirotation group

Anello graduato aggancio
Graduated retaining ring

Passaggio refrigerante 10BAR attraverso il perno

Standard 10BAR coolant through the pin

Uscita:
- Portapinza ER (standard)
- Weldon
- Portafresa
- Speciale

Output:
- ER collet (standard)
- Weldon
- Shell mill holder
- Special

Corpo testa orientabile a 360° con pressurizzazione interna. In acciaio trattato, massima rigidità e resistenza alla corrosione. Minima dilatazione termica.

Treated steel head body with 360° position and internal air pressure, maximum rigidity and corrosion resistant. Minimum thermal expansion

### CUSCINETTI - BEARINGS

Cuscinetti obliqui precaricati in classe di precisione ABEC7/9

Angular contact preloaded ball bearings of precision class ABEC7/9

Fascia lappata di precisione per un accurato allineamento

Precision/lapped surface for accurate alignment

### INGRANAGGI - GEARS

Ingranaggi Gleason con evolvente rettificato: massime performances e minori vibrazioni

Gleason ground spiral bevel gears maximum performances and minimum vibration

### STOP BLOCK

con bussola cementata e guarnizione

with case hardened bushing and gasket

# ATC Evolution Line

## CAMBIO UTENSILE AUTOMATICO - AUTOMATIC TOOL CHANGE

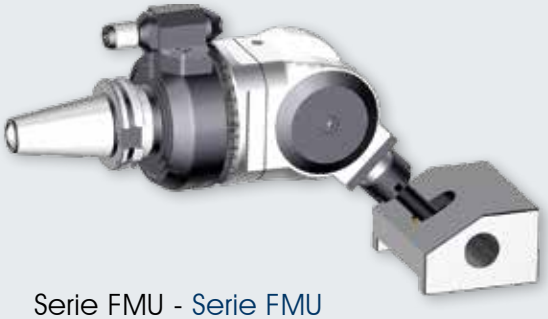
Serie SLIM - SLIM series
Ideali per Microlavorazioni in spazi ristretti.
Ideal for Micromachining in narrow spaces

Serie F90
F90 series
Ideali per Fresatura,
Foratura, Maschiatura a ±90
Ideal for milling, drilling, tapping at ±90

Serie F90L
F90L series
Serie lunga per lavorazioni in profondità
Long series for machining at deep positions

Serie F90 10BAR
F90 10BAR series
Con passaggio refrigerante
dal perno, uscita utensile 10BAR
With coolant input from positioning
Pin and output through the tool

Serie FR90 - FR90 series
Testa angolare disassata per lavorazioni in spazi ristretti con passaggio refrigerante dal cono, uscita utensile 70BAR
Offset series for machining in narrow spaces with coolant input directly from machine spindle and output through the tool at 70BAR



Serie FMU - Serie FMU
Uscita utensile ad angolo
variabile ±90° per forature,
maschiature e fresature inclinate
Adjustable output at ±90° for tilt
drilling, milling and tapping

TESTA ANGOLARE SLIM
PER MICROLAVORAZIONI

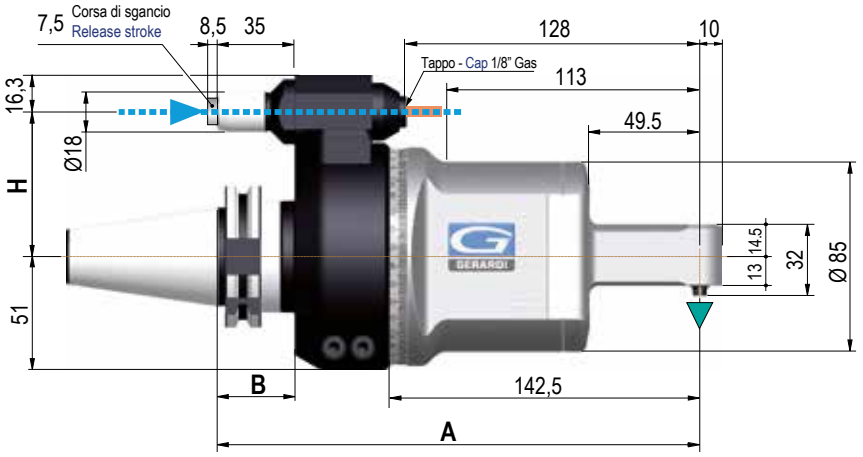
SLIM ANGLE HEADS
FOR MICROMACHINING

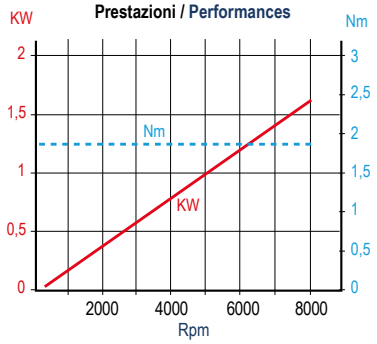
Evolution Line

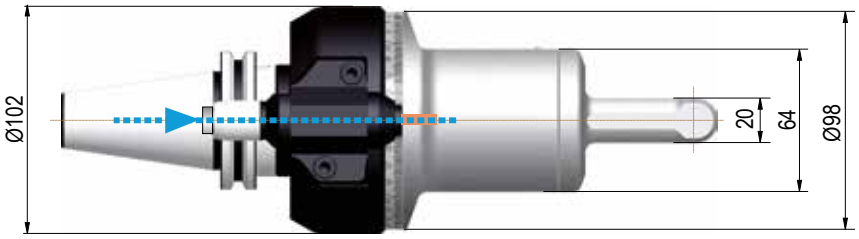
# FS90-3

*Type 1*

| Cod. | 9.FS9.03000 |
|---|---|
| € | - |




Senso di rotazione uguale al mandrino - Direction of rotation same as machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | optional | std | optional | std | optional | std | optional | optional | optional | optional | optional | optional | optional | optional | on request | on request | optional | optional |
| H Standard Ø 18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | 216,5 | | | 216,5 | | 216,5 | 224,5 | 225,5 | | | - | 220,5 | | 216,5 | | | 216,5 | |
| B | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | 34,5 | - | | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 8.000 |
| Max. carico assiale / Max. axial load | N | 70 |
| Momento torcente / Torque | Nm | 2 |
| Peso / Weight ISO/BT40 | kg | 5,5 |
| Peso / Weight ISO/BT50 | | 7,5 |
| Utensile - maschio / Tool - tap | | Ø3-M3 |

| Opzioni - Options | € |
|---|---|
| Refr. Int. da mandrino macchina<br>Int. Cool. da mandrino macchina | NO |
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output , Weldon, Tool-holder | NO |
| Doppia uscita - Double output | NO |
| Pinza / Collet 6023E | pag.2.46 |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | optional |

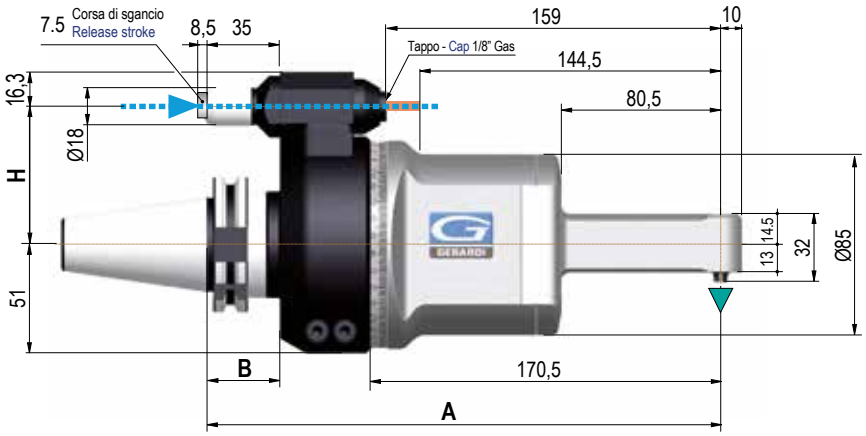
**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

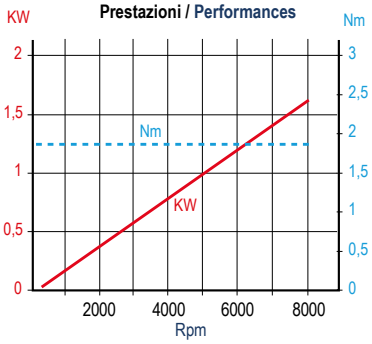
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna**
- Bauletto - Tassello di ritegno
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni
- **Internal coolant from positioning pin**
- **Internal air pressure**
- Special bag - Retaining block
- Wrenches - Grease tube - Instruction book

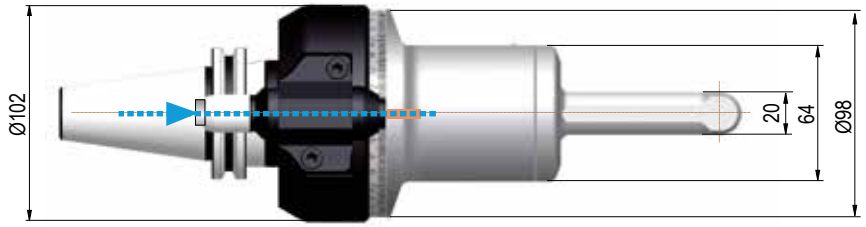
# FS90-3L

*Type 1*

| Cod. | 9.FS9.03L00 |
|---|---|
| € | - |




▼ Senso di rotazione uguale al mandrino - Direction of rotation same as machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | *optional* | std | *optional* | std | *optional* | std | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *on request* | *on request* | *optional* | *optional* |
| H Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65 / 80 | 80 | | 65 / 80 | 80 | | 65/ 80 | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 | | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | Ø28 | | | Ø28 | | | Ø28 |
| A | 247,5 | | | 247,5 | | 247,5 | 255,5 | 256,5 | | | - | | | 247,5 | | | 247,5 | |
| B | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | - | | | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 8.000 |
| Max. carico assiale / Max. axial load | N | 70 |
| Momento torcente / Torque | Nm | 2 |
| Peso / Weight ISO/BT40 | kg | 6,4 |
| Peso / Weight ISO/BT50 | | 8,6 |
| Utensile - maschio / Tool - tap | | Ø3-M3 |

| Opzioni - Options | € |
|---|---|
| Refr. Int. da mandrino macchina<br>Int. Cool. da mandrino macchina | NO |
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output , Weldon, Tool-holder | NO |
| Doppia uscita - Double output | NO |
| Pinza / Collet 6023E | pag.2.46 |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | *optional* |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna**
- Bauletto - Tassello di ritegno
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni
- **Internal coolant from positioning pin**
- **Internal air pressure**
- Special bag - Retaining block
- Wrenches - Grease tube - Instruction book

GERARDI

TESTA ANGOLARE SLIM
PER MICROLAVORAZIONI

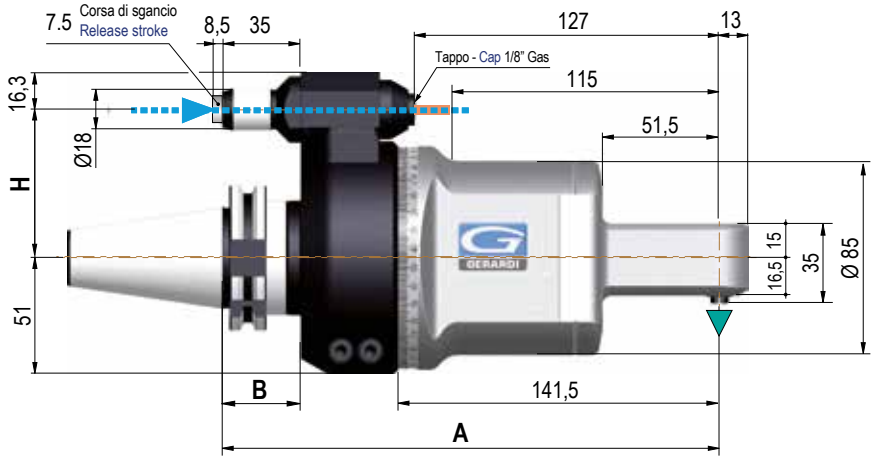
SLIM ANGLE HEADS
FOR MICROMACHINING

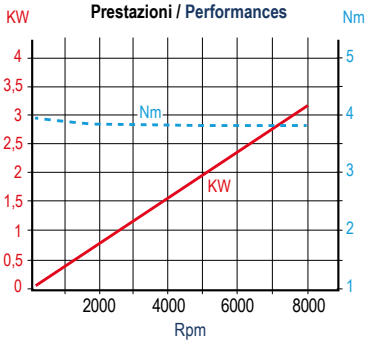
Evolution Line

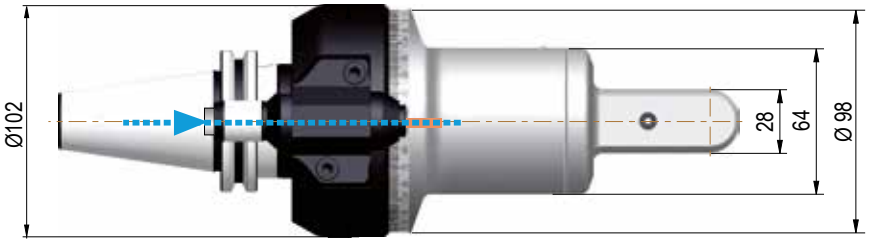
# FS90-4

*Type 1*

| Cod. | 9.FS9.04000 |
|---|---|
| € | - |




Senso di rotazione uguale al mandrino - Direction of rotation same as machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | optional | std | optional | std | optional | std | optional | optional | optional | optional | optional | optional | optional | optional | on request | on request | optional | optional |
| H Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | 218,5 | | | 218,5 | | 218,5 | 226,5 | 222,5 | | | 218,5 | | | 218,5 | | | 218,5 | |
| B | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | - | | | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 8.000 |
| Max. carico assiale / Max. axial load | N | 120 |
| Momento torcente / Torque | Nm | 3,5 |
| Peso / Weight ISO/BT40 | kg | 5,5 |
| Peso / Weight ISO/BT50 | | 7,5 |
| Utensile - maschio / Tool - tap | | Ø4-M3 |

| Opzioni - Options | € |
|---|---|
| Refr. Int. da mandrino macchina<br>Int. Cool. da mandrino macchina | NO |
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output , Weldon, Tool-holder | NO |
| Doppia uscita - Double output | NO |
| Pinza / Collet 600E | pag.2.46 |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | optional |

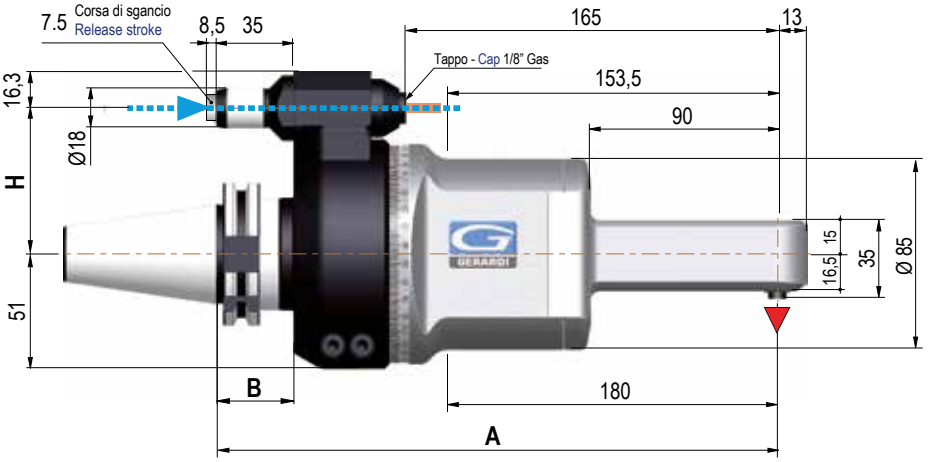
**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

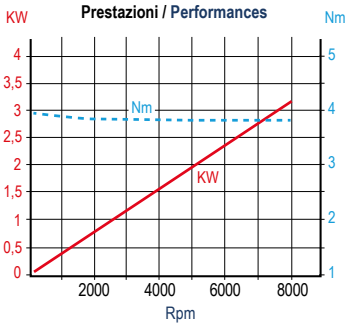
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna**
- Bauletto - Tassello di ritegno
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni
- **Internal coolant from positioning pin**
- **Internal air pressure**
- Special bag - Retaining block
- Wrenches - Grease tube - Instruction book

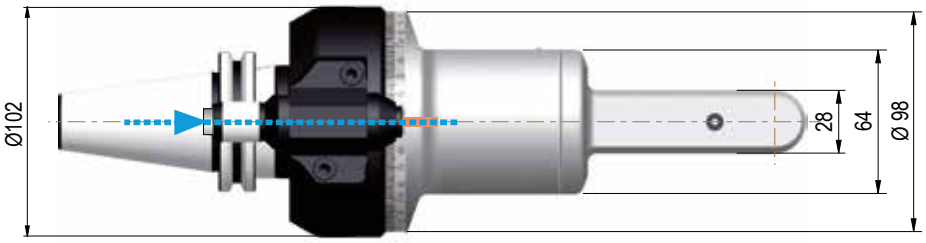
# FS90-4L

*Type 1*

| Cod. | 9.FS9.04L00 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | | *optional* | std | *optional* | std | *optional* | std | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *on request* | *on request* | *optional* | *optional* |
| H | Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H | 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H | 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | | 257 | | | 257 | | 257 | 265 | 261 | | | 257 | | | 257 | | | 257 | |
| B | | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | - | | | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 8.000 |
| Max. carico assiale / Max. axial load | N | 120 |
| Momento torcente / Torque | Nm | 3,5 |
| Peso / Weight ISO/BT40 | kg | 6,8 |
| Peso / Weight ISO/BT50 | kg | 9 |
| Utensile - maschio / Tool - tap | | Ø4-M3 |

| Opzioni - Options | € |
|---|---|
| Refr. Int. da mandrino macchina<br>Int. Cool. da mandrino macchina | NO |
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output , Weldon, Tool-holder | NO |
| Doppia uscita - Double output | NO |
| Pinza / Collet 600E | pag.2.46 |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | *optional* |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna**
- Bauletto - Tassello di ritegno
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni
- **Internal coolant from positioning pin**
- **Internal air pressure**
- Special bag - Retaining block
- Wrenches - Grease tube - Instruction book

TESTA ANGOLARE
AD ALTA VELOCITÀ 10.000 Rpm
(compresa nel prezzo)

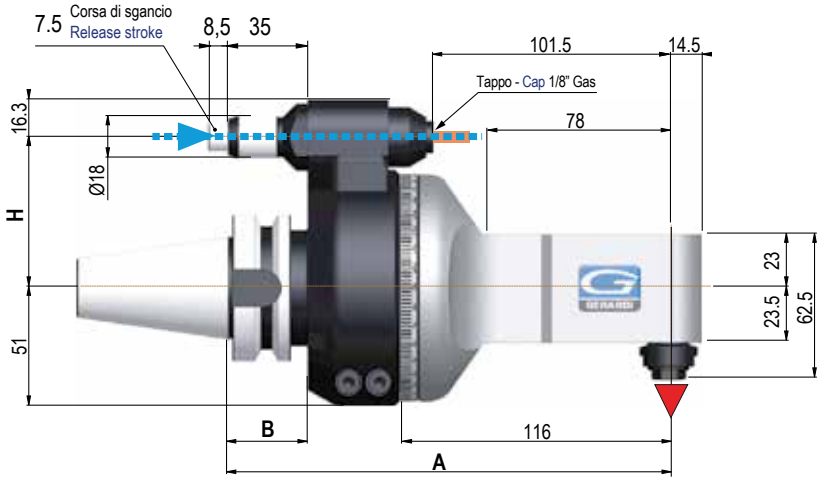
10.000 Rpm HIGH SPEED ANGLE HEADS
(included as standard)

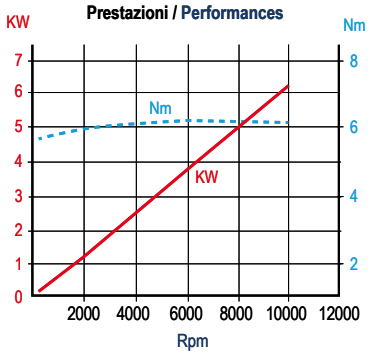
Evolution Line

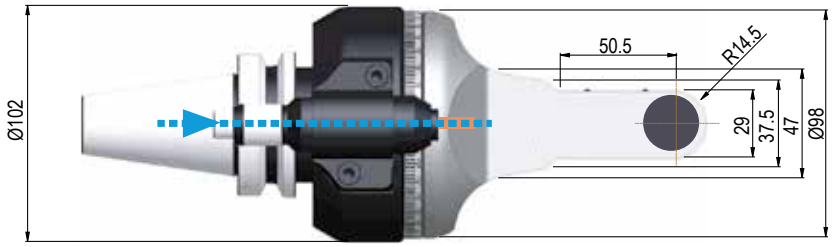
# F90-7

*Type 1*

| Cod. | 9.F90.07000 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | optional | std | optional | std | optional | std | optional | optional | optional | optional | optional | optional | optional | optional | on request | on request | optional | optional |
| H Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | 190 | | | 190 | | 190 | 198 | 199 | | | 194 | | | 190 | | | 190 | |
| B | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | - | | | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 10.000 |
| Max. carico assiale / Max. axial load | N | 127 |
| Momento torcente / Torque | Nm | 6 |
| Peso / Weight ISO/BT40 | kg | 5 |
| Peso / Weight ISO/BT50 | | 7 |
| Utensile - maschio / Tool - tap | | Ø7-M6 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output , Weldon Ø 6/10 | optional |
| Doppia uscita - Double output ER11 - ER11 | optional |
| Pinza / Collet ER11 - Ø1 / 7 | optional |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | optional |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

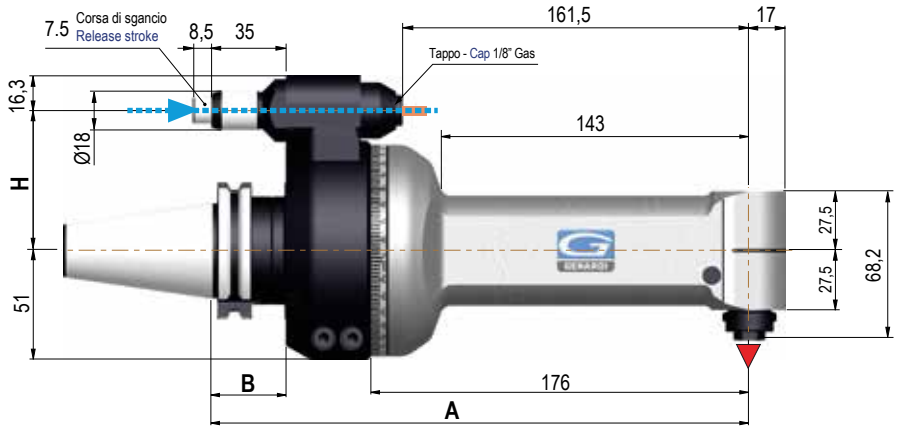
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

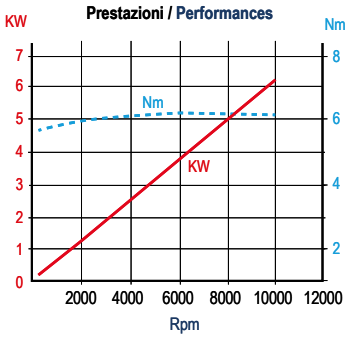
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

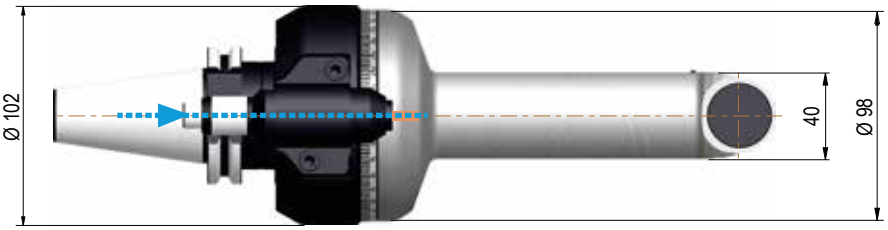
# F90-7L

*Type 1*

| Cod. | 9.F90.07L00 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | optional | std | optional | std | optional | std | optional | optional | optional | optional | optional | optional | optional | optional | on request | on request | optional | optional |
| H Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | 250 | | | 250 | | 250 | 258 | 259 | | | 254 | | | 250 | | | 250 | |
| B | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | 34,5 | - | - | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | min$^{-1}$ | 10.000 |
| Max. carico assiale / Max. axial load | N | 180 |
| Momento torcente / Torque | Nm | 6 |
| Peso / Weight ISO/BT40 | kg | 6,3 |
| Peso / Weight ISO/BT50 | | 8,5 |
| Utensile - maschio / Tool - tap | | Ø7-M6 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output , Weldon Ø 6/10 | optional |
| Doppia uscita - Double output ER11 - ER11 | optional |
| Pinza / Collet ER11 - Ø1 / 7 | optional |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | optional |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

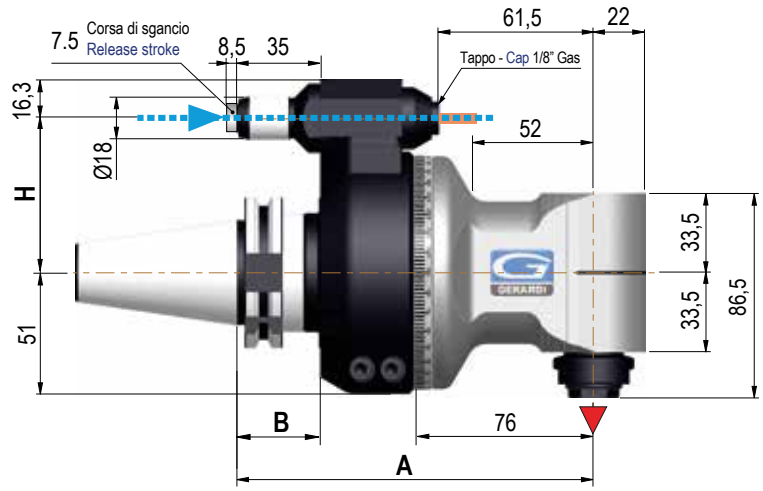
TESTA ANGOLARE
AD ALTA VELOCITÀ 10.000 Rpm
(compresa nel prezzo)
10.000 Rpm HIGH SPEED ANGLE HEADS
(included as standard)

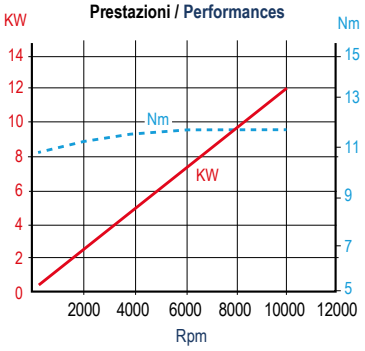
Evolution Line

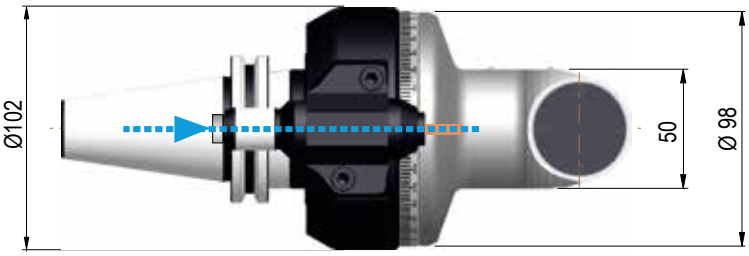
# F90-10

*Type 1*

| Cod. | 9.F90.10000 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | | optional | std | optional | std | optional | std | optional | optional | optional | optional | optional | optional | optional | optional | on request | on request | optional | optional |
| H | Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H | 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H | 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | | 150 | | | 150 | | 150 | 158 | 159 | | | 154 | | | 150 | | | 150 | |
| B | | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | 34,5 | - | - | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 10.000 |
| Max. carico assiale / Max. axial load | N | 400 |
| Momento torcente / Torque | Nm | 11 |
| Peso / Weight ISO/BT40 | kg | 5,3 |
| Peso / Weight ISO/BT50 | | 7,5 |
| Utensile - maschio / Tool - tap | | Ø10-M8 |

| Opzioni - Options | | € |
|---|---|---|
| Uscita - Output | HSK, CAPTO, KM | NO |
| Uscita - Output | Weldon 6 ÷ 12 | optional |
| | Portafresa - Toolholder 16 | optional |
| Doppia uscita - Double output | | optional |
| Pinza / Collet ER16 - Ø1 / 10 | | optional |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | | optional |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

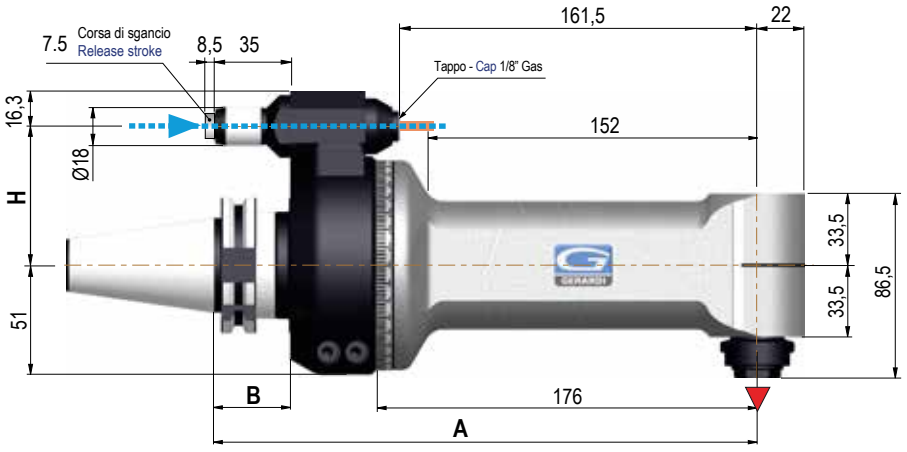
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

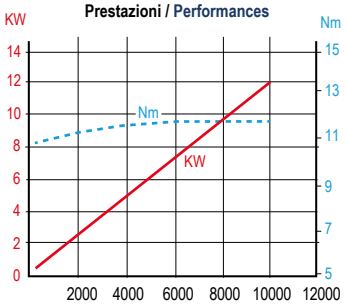
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

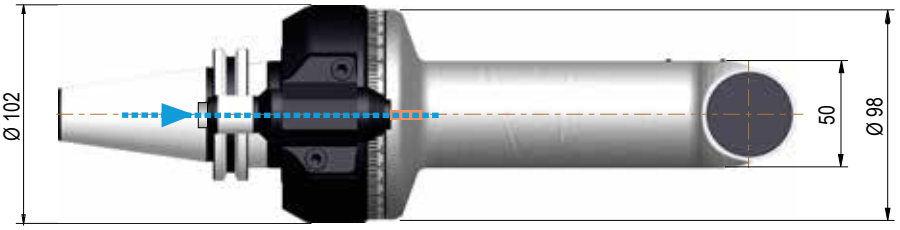
# F90-10L

*Type 1*

| Cod. | 9.F90.10L00 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | *optional* | std | *optional* | std | *optional* | std | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *on request* | *on request* | *optional* | *optional* |
| H Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | 250 | | | 250 | | 250 | 258 | 259 | | | 254 | | | 250 | | | 250 | |
| B | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | 34,5 | - | - | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | min$^{-1}$ | 10.000 |
| Max. carico assiale / Max. axial load | N | 400 |
| Momento torcente / Torque | Nm | 11 |
| Peso / Weight ISO/BT40 | kg | 6,9 |
| Peso / Weight ISO/BT50 | kg | 9,2 |
| Utensile - maschio / Tool - tap | | Ø10-M8 |

| Opzioni - Options | | € |
|---|---|---|
| Refr. Int. tramite distributore rotante Max 10 bar<br>Int. Cool. through rotating distributor Max 10 bar | | *optional* |
| Uscita - Output | HSK, CAPTO, KM | NO |
| Uscita<br>Output | Weldon 6 ÷ 12 | *optional* |
| | Portafresa - Toolholder 16 | *optional* |
| Doppia uscita - Double output | | *optional* |
| Pinza / Collet | ER16 - Ø1 / 10 | *optional* |
| Interasse / Pitch | *H= 110mm Ø18 / Ø28 | *optional* |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

TESTA ANGOLARE AD ALTA VELOCITÀ
8.000 Rpm E PERFORMANCE OTTIMALI

8.000 Rpm HIGH SPEED ANGLE HEADS
WITH EXCELLENT PERFORMANCES IN

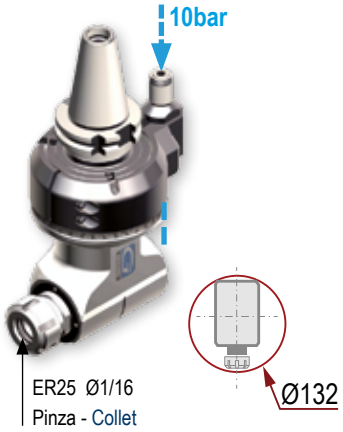
Evolution Line

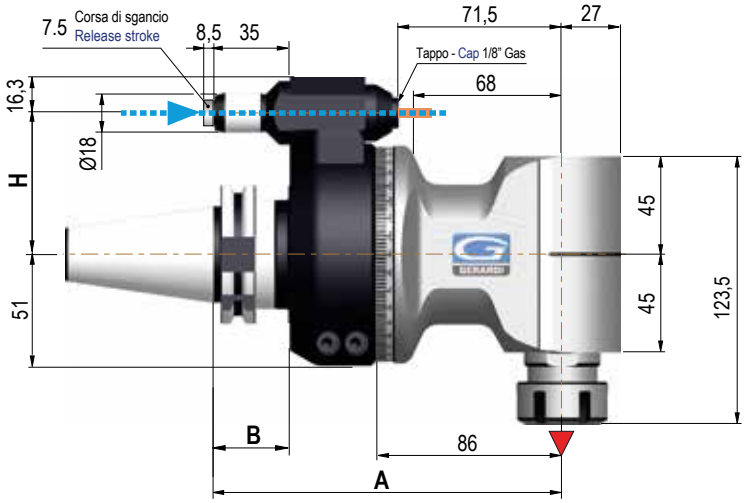
# F90-16S

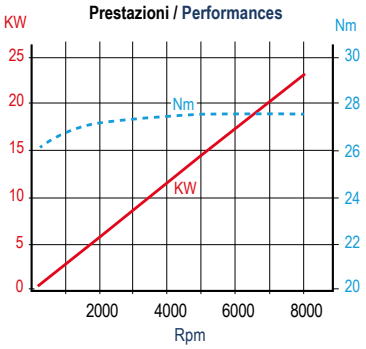
*Type 1*

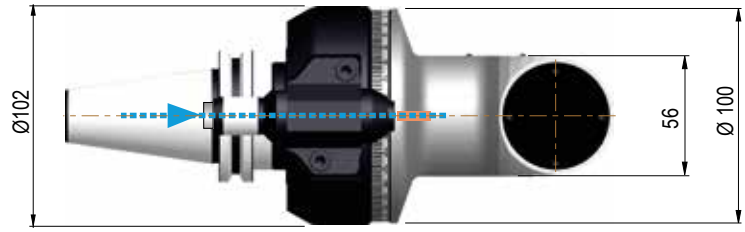
| Cod. | 9.F90.16S00 |
|---|---|
| € | - |

***Performance ridotte con coni grandezza C5***
***Reduced performances with shank size C5***




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* *Extra Price €* | | *optional* | std | *optional* | std | *optional* | std | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *on request* | *on request* | *optional* | *optional* |
| H | Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| H | 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| H | 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | | 160 | | | 160 | | 160 | 168 | 169 | | | 164 | | | 160 | | | 160 | |
| B | | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | 34,5 | - | - | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 8.000 |
| Max. carico assiale / Max. axial load | N | 810 |
| Momento torcente / Torque | Nm | 27 |
| Peso / Weight ISO/BT40 | kg | 6,4 |
| Peso / Weight ISO/BT50 | | 8,7 |
| Utensile - maschio / Tool - tap | | Ø16-M12 |

| Opzioni - Options | | € |
|---|---|---|
| Uscita - Output | Weldon 6 ÷ 16 | *optional* |
| | Portafresa - Toolholder 16 | *optional* |
| Doppia uscita - Double output ER25 - ER25 | | *optional* |
| Pinza / Collet ER25 WP Ø1 / 16 | | *optional* |
| Pinza / Collet ER25 - Ø1 / 16 | | *optional* |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | | *optional* |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDE S:**

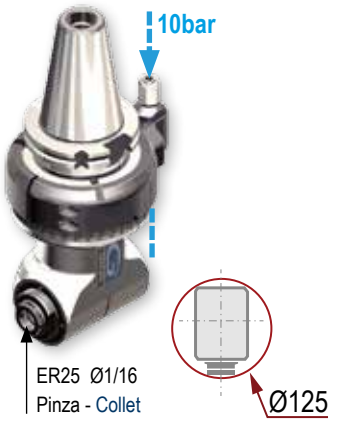
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna**
- Bauletto - Tassello di ritegno - Ghiera ER
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni

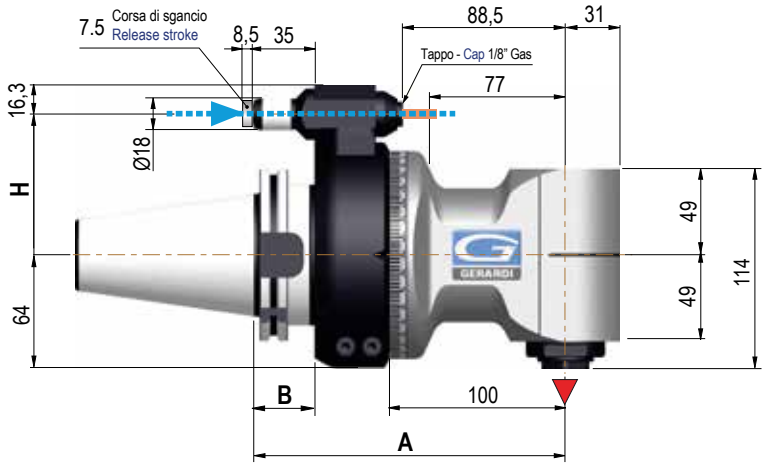
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

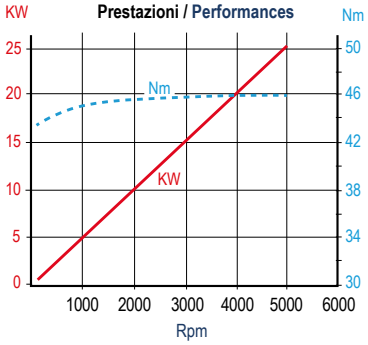
# F90-16

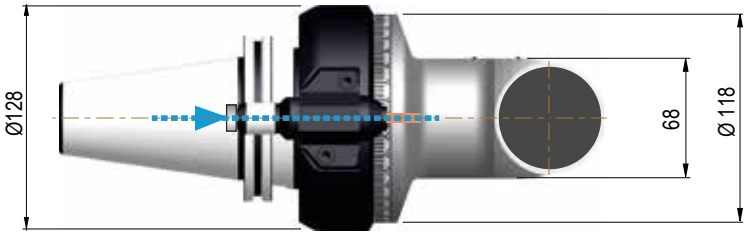
*Type 2*

| Cod. | 9.F90.16000 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | CAT ANSI B5.50 | BT | HSK DIN 69893 | | CAPTO ISO 26623 | KM | | ISO DIN 2080 |
|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 50 | 50 | 50 | 80 | 100 | C8 | 80 | 100 | 50 |
| *Prezzi Extra €* / *Extra Price €* | std | *optional* | std | *optional* | *optional* | *optional* | *on request* | | *optional* |
| H Standard Ø18 | 80 | 80 | 80 | 80 | | 80 | 80 | | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 | | Ø18 |
| *H 110 Type 3 Ø28 | Ø28 | Ø28 | Ø28 | Ø28 | | Ø28 | Ø28 | | Ø28 |
| A | 177 | 177 | 185 | 186 | | 181 | 177 | | 177 |
| B | 35 | 35 | 43 | 46 | | - | - | | 35 |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 5.000 |
| Max. carico assiale / Max. axial load | N | 1.040 |
| Momento torcente / Torque | Nm | 46 |
| Peso / Weight ISO/BT50 | kg | 11 |
| Utensile - maschio / Tool - tap | | Ø16-M12 |

| Opzioni - Options | | € |
|---|---|---|
| Uscita - Output HSK 32 | | *optional* |
| Uscita Output | Weldon 6 ÷ 20 | *optional* |
| | Portafresa - Toolholder 16-22-27-32 | *optional* |
| Doppia uscita - Double output ER25 - ER25 | | *optional* |
| Pinza / Collet ER25 - Ø1 / 16 | | *optional* |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | | *optional* |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

TESTA ANGOLARE PER LAVORAZIONI PESANTI

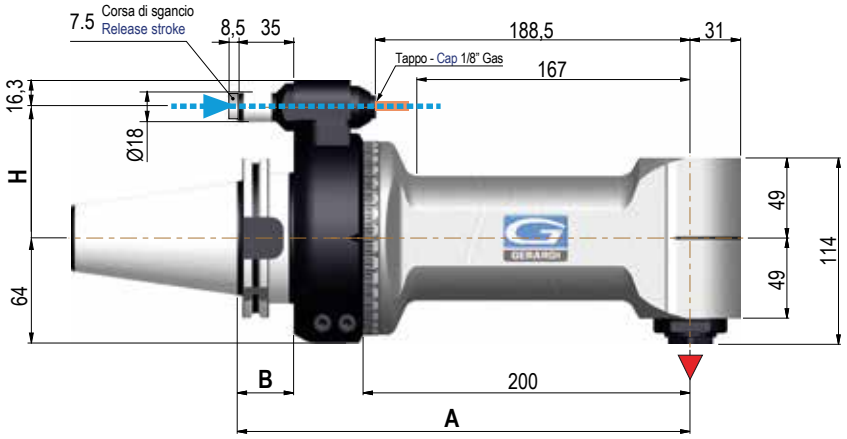
HIGH TORQUE ANGLE HEADS FOR HEAVY DUTIES MACHINING

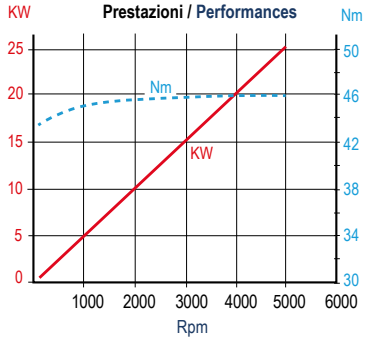
Evolution Line

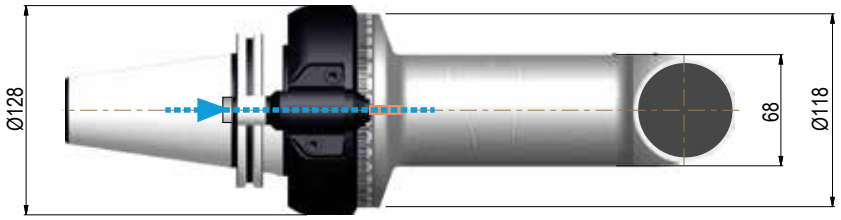
# F90-16L

*Type 2*

| Cod. | 9.F90.16L00 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | CAT ANSI B5.50 | BT | HSK DIN 69893 | | CAPTO ISO 26623 | KM | | ISO DIN 2080 |
|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 50 | 50 | 50 | 80 | 100 | C8 | 80 | 100 | 50 |
| *Prezzi Extra €* / *Extra Price €* | std | *optional* | std | *optional* | *optional* | *optional* | *on request* | | *optional* |
| H Standard Ø18 | 80 | 80 | 80 | 80 | | 80 | 80 | | 80 |
| * H 110 Type 1-2 Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 | | Ø18 |
| * H 110 Type 3 Ø28 | Ø28 | Ø28 | Ø28 | Ø28 | | Ø28 | Ø28 | | Ø28 |
| A | 277 | 277 | 285 | 286 | | 281 | 277 | | 277 |
| B | 35 | 35 | 43 | 46 | | - | - | | 35 |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 5.000 |
| Max. carico assiale / Max. axial load | N | 1.040 |
| Momento torcente / Torque | Nm | 46 |
| Peso / Weight ISO/BT50 | kg | 12,7 |
| Utensile - maschio / Tool - tap | | Ø16-M12 |

| Opzioni - Options | | € |
|---|---|---|
| Refr. Int. tramite distributore rotante Max 10 bar / Int. Cool. through rotating distributor Max 10 bar | | *optional* |
| Uscita - Output HSK 32 | | *optional* |
| Uscita Output | Weldon 6 ÷ 20 | *optional* |
| | Portafresa - Toolholder 16-22-27-32 | *optional* |
| Doppia uscita - Double output ER25 - ER25 | | *optional* |
| Pinza / Collet ER25 - Ø1 / 16 | | *optional* |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | | *optional* |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

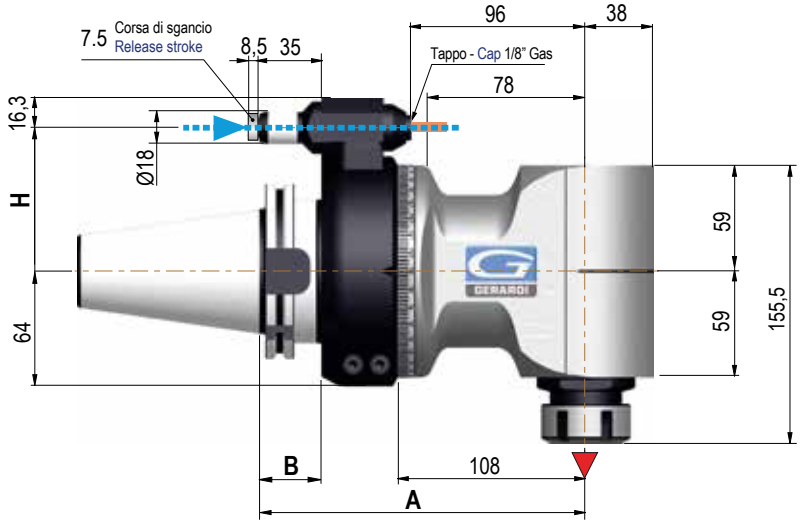
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

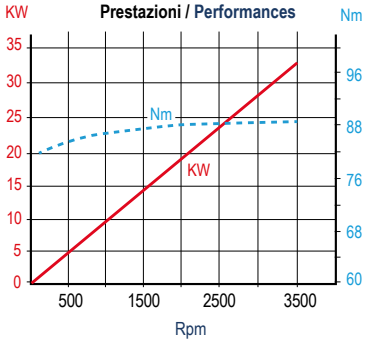
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

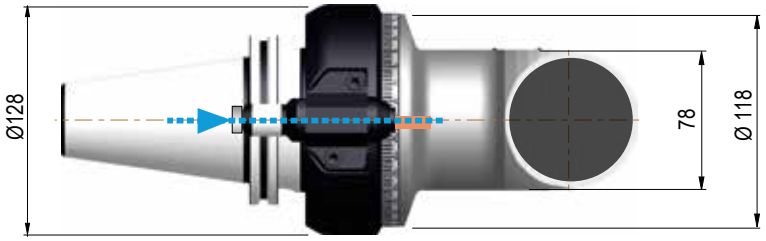
# F90-20

*Type 2*

| Cod. | 9.F90.20000 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | CAT ANSI B5.50 | BT | HSK DIN 69893 | | CAPTO ISO 26623 | KM | | ISO DIN 2080 |
|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 50 | 50 | 50 | 80 | 100 | C8 | 80 | 100 | 50 |
| *Prezzi Extra €* / *Extra Price €* | std | *optional* | std | *optional* | *optional* | *optional* | *on request* | | *optional* |
| H Standard Ø18 | 80 | 80 | 80 | 80 | | 80 | 80 | | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 | | Ø18 |
| *H 110 Type 3 Ø28 | Ø28 | Ø28 | Ø28 | Ø28 | | Ø28 | Ø28 | | Ø28 |
| A | 185 | 185 | 193 | 194 | | 189 | 185 | | 185 |
| B | 35 | 35 | 43 | 46 | | - | - | | 35 |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | min$^{-1}$ | 3.500 |
| Max. carico assiale / Max. axial load | N | 1.460 |
| Momento torcente / Torque | Nm | 85 |
| Peso / Weight ISO/BT50 | kg | 13,2 |
| Utensile - maschio / Tool - tap | | Ø20-M14 |

| Opzioni - Options | | € |
|---|---|---|
| Uscita - Output HSK 40 | | *optional* |
| Uscita - Output CAPTO C4 | | *optional* |
| Uscita - Output ISO 30, CAT 30, BT30 (*) | | *optional* |
| Uscita Output | Weldon 6 ÷ 22 | *optional* |
| | Portafresa - Toolholder 22-27-32 | *optional* |
| Doppia uscita - Double output ER32 - ER32 | | *optional* |
| Pinza / Collet ER32 - Ø2 / 20 | | *optional* |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | | *optional* |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDE S:**

- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna**
- Bauletto - Tassello di ritegno - Ghiera ER
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni
- Doppia vite di fissaggio coni
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book
- Double screw for shank clamping

TESTA ANGOLARE PER
LAVORAZIONI PESANTI

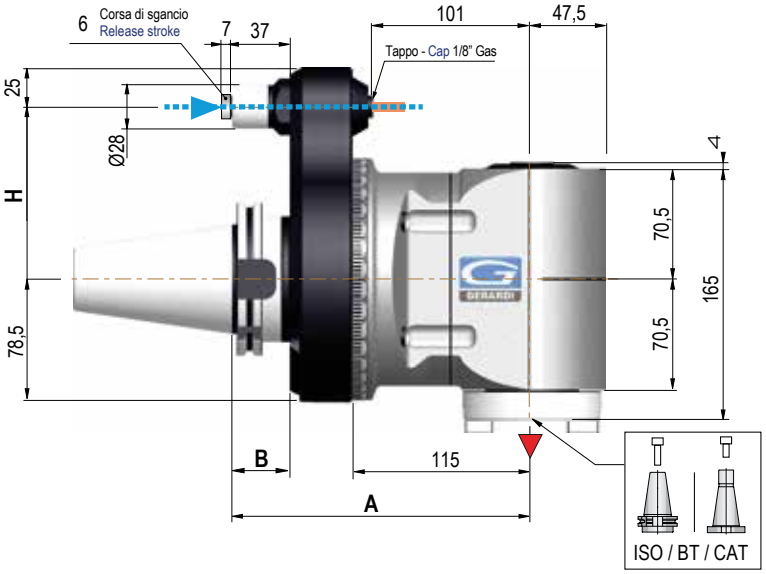
HIGH TORQUE ANGLE HEADS
FOR HEAVY DUTIES MACHINING

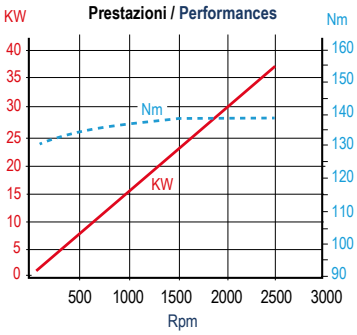
Evolution Line

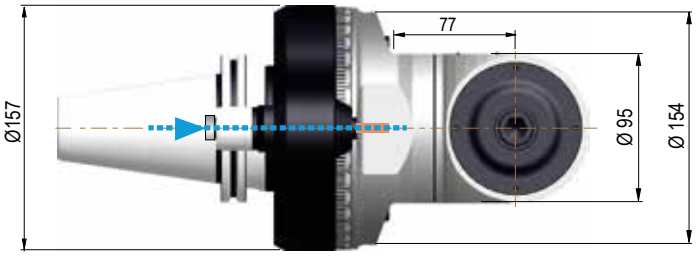
# F90 - S40

*Type 3*

| Cod. | 9.F90.S4000 |
|---|---|
| € | - |




**Esempio di ordinazione - Example to order:**
F90-S40 ATC - ISO50 / 69871 - Uscita - Output ISO40

▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | CAT ANSI B5.50 | BT | HSK DIN 69893 | | CAPTO ISO 26623 | KM | | ISO DIN 2080 |
|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 50 | 50 | 50 | 80 | 100 | C8 | 80 | 100 | 50 |
| *Prezzi Extra € / Extra Price €* | std | *optional* | std | *optional* | *optional* | *optional* | A RICHIESTA / ON REQUEST | | *optional* |
| H Ø28 Standard | 110 | 110 | 110 | 110 | | 110 | 110 | | 110 |
| A | 192 | 192 | 200 | 201 | | 196 | 192 | | 192 |
| B | 37 | 37 | 45 | 48 | | - | - | | 37 |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 2.500 |
| Max. carico assiale / Max. axial load | N | 3.020 |
| Momento torcente / Torque | Nm | 135 |
| Peso / Weight ISO/BT50 | kg | 21,7 |
| Utensile - maschio / Tool - tap | | Ø26-M20 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK 63 | *optional* |
| Uscita - Output CAPTO C5 | *optional* |
| Uscita - Output ER40 (F90-30) | std |
| Doppia uscita - Double output ER40 | *optional* |

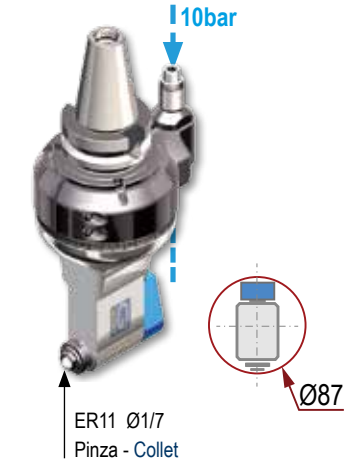
**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

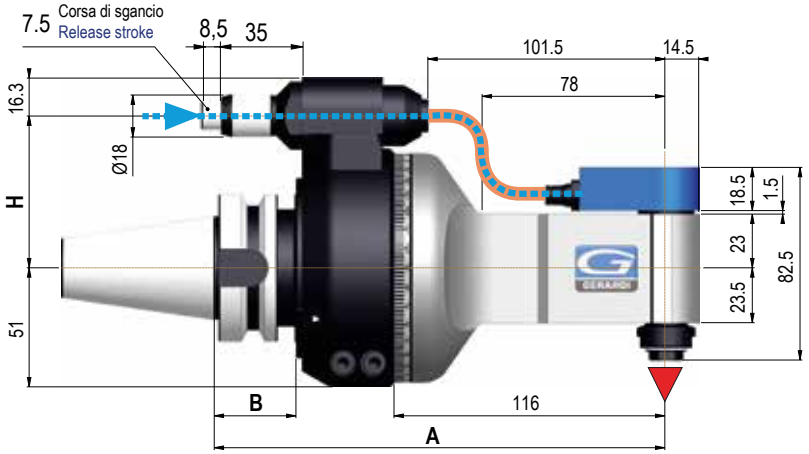
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Cassa in legno
- Tassello di ritegno - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni
- Doppia vite fissaggio coni
- **Internal coolant from positioning pin**
- **Internal air pressure** - Wood Box
- Retaining block - Wrenches
- Grease tube - Instruction book
- Double screw for shank clamping

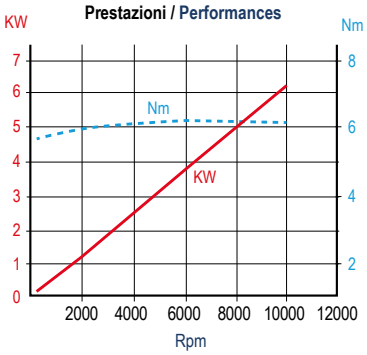
# F90-7 10BAR

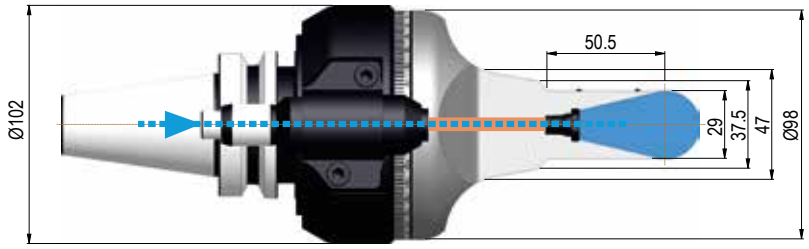
*Type 1*

| Cod. | 9.F90.070B0 |
|---|---|
| € | - |




**ROTAZIONE A SECCO NON POSSIBILE** | **DRY RUNNING NOT POSSIBLE**

Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | optional | std | optional | std | optional | std | optional | optional | optional | optional | optional | optional | optional | optional | on request | on request | optional | optional |
| H Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | 190 | | | 190 | | 190 | 198 | 199 | | | 194 | | | 190 | | | 190 | |
| B | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | - | | | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 10.000 |
| Max. carico assiale / Max. axial load | N | 127 |
| Momento torcente / Torque | Nm | 6 |
| Peso / Weight ISO/BT40 | kg | 5 |
| Peso / Weight ISO/BT50 | kg | 7 |
| Utensile - maschio / Tool - tap | | Ø7-M6 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output , Weldon Ø 6 ÷ 10 | optional |
| Pinza / Collet ER11 WP Ø1 / 7 | NO |
| Pinza / Collet ER11 - Ø1 / 7 | optional |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | optional |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

TESTA ANGOLARE AD ALTA VELOCITÀ
E REFRIGERANTE DALL' UTENSILE

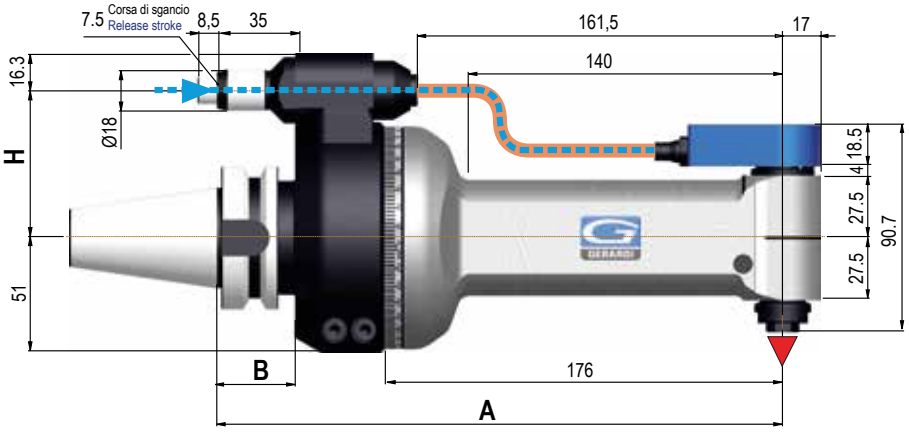
HIGH SPEED ANGLE HEADS AND
COOLANT THROUGH THE TOOL

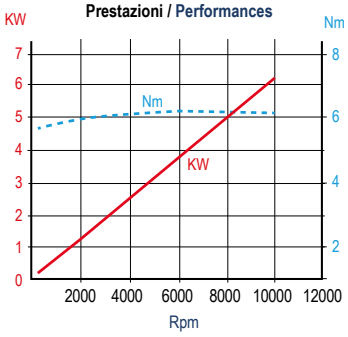
Evolution Line

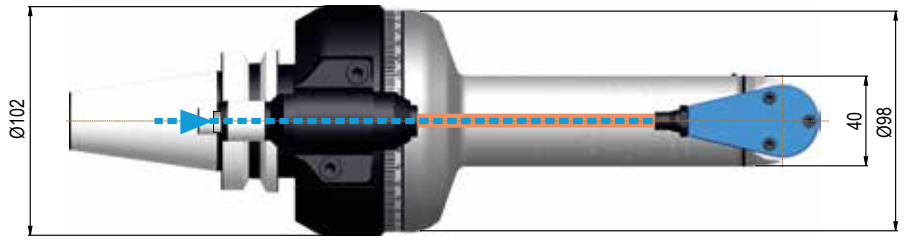
# F90-7L 10BAR

*Type 1*

| Cod. | 9.F90.07LB0 |
|---|---|
| € | - |




**ROTAZIONE A SECCO NON POSSIBILE** | **DRY RUNNING NOT POSSIBLE**

Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | optional | std | optional | std | optional | std | optional | optional | optional | optional | optional | optional | optional | optional | on request | on request | optional | optional |
| H Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | 250 | | | 250 | | 250 | 258 | 259 | | | 254 | | | 250 | | | 250 | |
| B | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | - | | | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 10.000 |
| Max. carico assiale / Max. axial load | N | 180 |
| Momento torcente / Torque | Nm | 6 |
| Peso / Weight ISO/BT40 | kg | 6,6 |
| Peso / Weight ISO/BT50 | | 8,6 |
| Utensile - maschio / Tool - tap | | Ø7-M6 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output Weldon 6 ÷ 10 | optional |
| Pinza / Collet ER11 WP Ø1 / 7 | NO |
| Pinza / Collet ER11 - Ø1 / 7 | optional |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | optional |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

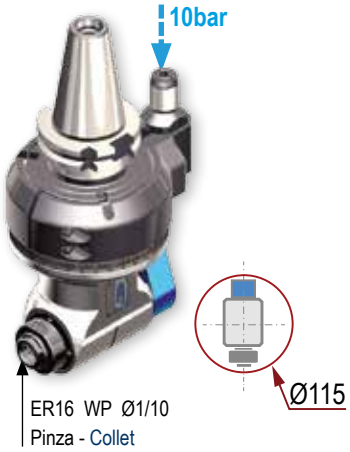
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

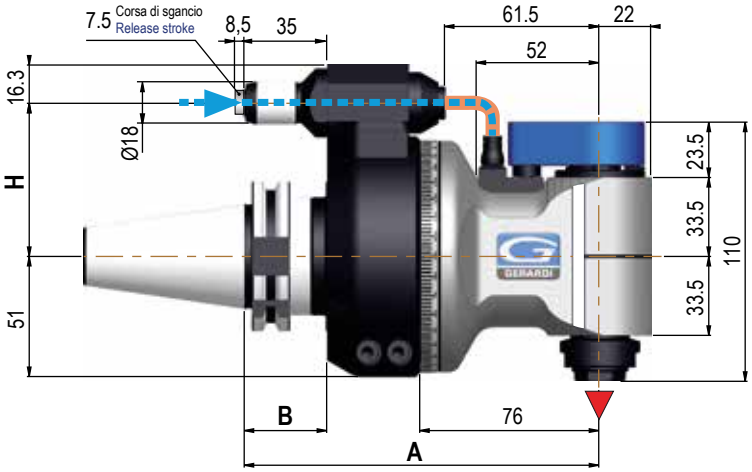
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

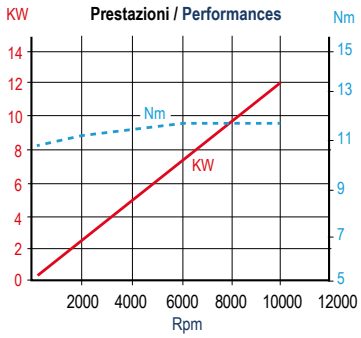
# F90-10 10BAR

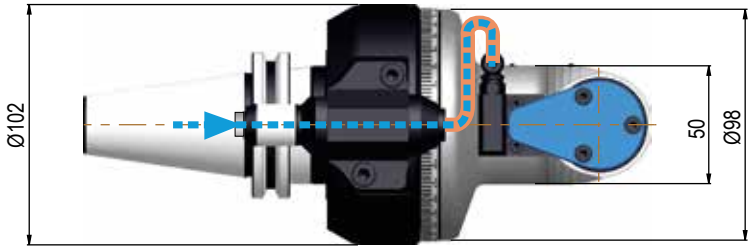
*Type 1*

| Cod. | 9.F90.100B0 |
|---|---|
| € | - |




**ROTAZIONE A SECCO NON POSSIBILE** | **DRY RUNNING NOT POSSIBLE**

▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | optional | std | optional | std | optional | std | optional | optional | optional | optional | optional | optional | optional | optional | on request | on request | optional | optional |
| H Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | 150 | | | 150 | | 150 | 158 | 159 | | | 154 | | | 150 | | | 150 | |
| B | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | - | | | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 10.000 |
| Max. carico assiale / Max. axial load | N | 400 |
| Momento torcente / Torque | Nm | 11 |
| Peso / Weight ISO/BT40 | kg | 5,6 |
| Peso / Weight ISO/BT50 | kg | 7,8 |
| Utensile - maschio / Tool - tap | | Ø10-M8 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output Weldon 6 ÷ 16 | optional |
| Pinza / Collet ER16 WP Ø1 / 10 | optional |
| Pinza / Collet ER16 - Ø1 / 10 | optional |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | optional |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

TESTA ANGOLARE AD ALTA VELOCITÀ, CON PERFORMANCE OTTIMALI E REFRIGERANTE DALL' UTENSILE

HIGH SPEED ANGLE HEADS WITH EXCELLENT PERFORMANCES AND COOLANT THROUGH THE TOOL

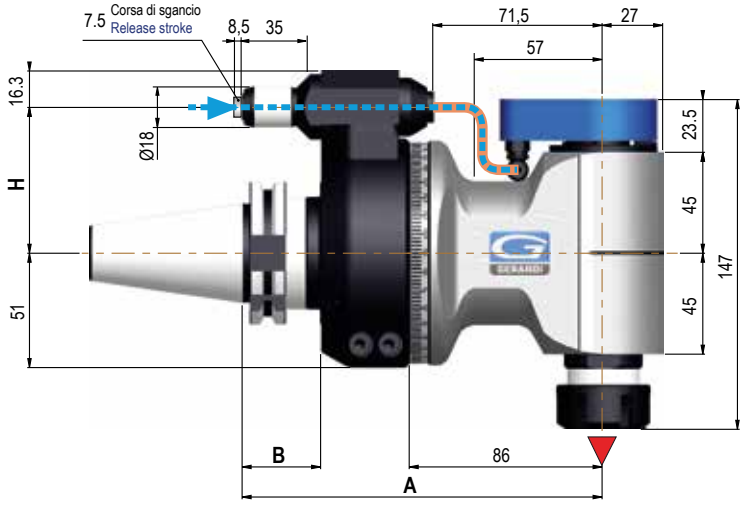
Evolution Line

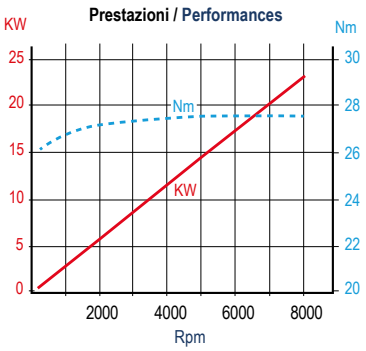
# F90-16S 10BAR

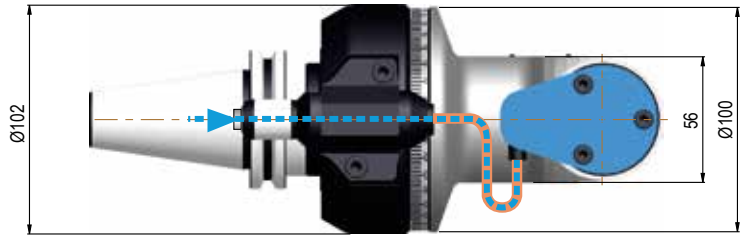
*Type 1*

| Cod. | 9.F90.16SB0 |
|---|---|
| € | - |

*Performance ridotte con coni grandezza C5*
*Reduced performances with shank size C5*




**ROTAZIONE A SECCO NON POSSIBILE** | **DRY RUNNING NOT POSSIBLE**

▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | optional | std | optional | std | optional | std | optional | optional | optional | optional | optional | optional | optional | optional | on request | on request | optional | optional |
| H Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | 160 | | | 160 | | 160 | 168 | 169 | | | 164 | | | 160 | | | 160 | |
| B | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | 34,5 | - | - | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 8.000 |
| Max. carico assiale / Max. axial load | N | 810 |
| Momento torcente / Torque | Nm | 25 |
| Peso / Weight ISO/BT40 | kg | 6,4 |
| Peso / Weight ISO/BT50 | | 8,7 |
| Utensile - maschio / Tool - tap | | Ø16-M12 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output Weldon 6 ÷ 16 | optional |
| Pinza / Collet ER25 WP Ø1 / 16 | optional |
| Pinza / Collet ER25 - Ø1 / 16 | optional |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | optional |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDE S:**

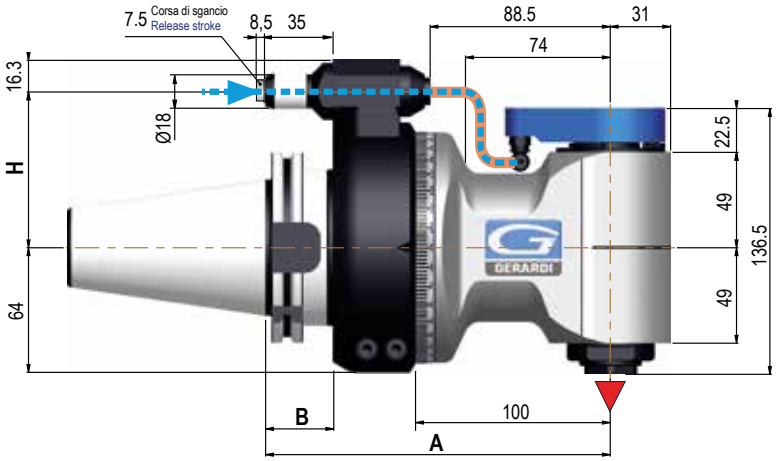
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

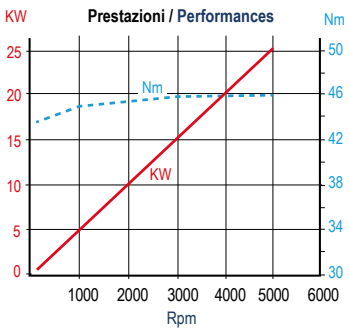
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

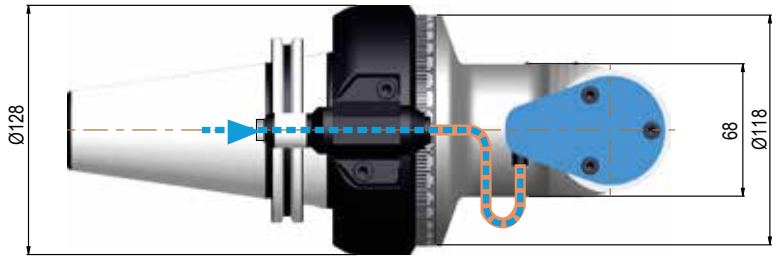
# F90-16 10BAR

*Type 2*

| Cod. | 9.F90.160B0 |
|---|---|
| € | - |




**ROTAZIONE A SECCO NON POSSIBILE** | **DRY RUNNING NOT POSSIBLE**

▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | CAT ANSI B5.50 | BT | HSK DIN 69893 | | CAPTO ISO 26623 | KM | | ISO DIN 2080 |
|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 50 | 50 | 50 | 80 | 100 | C8 | 80 | 100 | 50 |
| *Prezzi Extra €* / *Extra Price €* | std | *optional* | std | *optional* | *optional* | *optional* | *on request* | | *optional* |
| H Standard Ø18 | 80 | 80 | 80 | 80 | | 80 | 80 | | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 | | Ø18 |
| *H 110 Type 3 Ø28 | Ø28 | Ø28 | Ø28 | Ø28 | | Ø28 | Ø28 | | Ø28 |
| A | 177 | 177 | 185 | 186 | | 181 | 177 | | 177 |
| B | 35 | 35 | 43 | 46 | | - | - | | 35 |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 5.000 |
| Max. carico assiale / Max. axial load | N | 1.040 |
| Momento torcente / Torque | Nm | 46 |
| Peso / Weight ISO/BT50 | kg | 11,5 |
| Utensile - maschio / Tool - tap | | Ø16-M12 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK 32 | *optional* |
| Uscita - Output Weldon 6 ÷ 16 | *optional* |
| Pinza / Collet ER25 WP Ø1 / 16 | *optional* |
| Pinza / Collet ER25 - Ø1 / 16 | *optional* |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | *optional* |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

TESTA ANGOLARE PER LAVORAZIONI PESANTI,
CON REFRIGERANTE DALL' UTENSILE

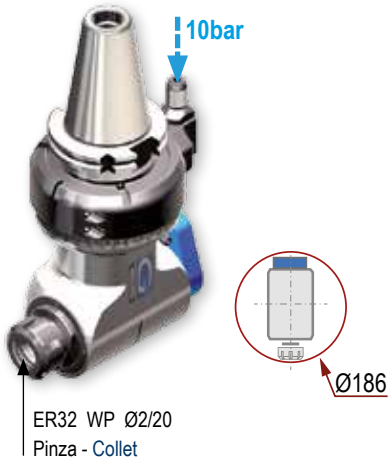
HIGH TORQUE ANGLE HEADS FOR HEAVY DUTIES
MACHINING AND WITH COOLANT THROUGH THE TOOL

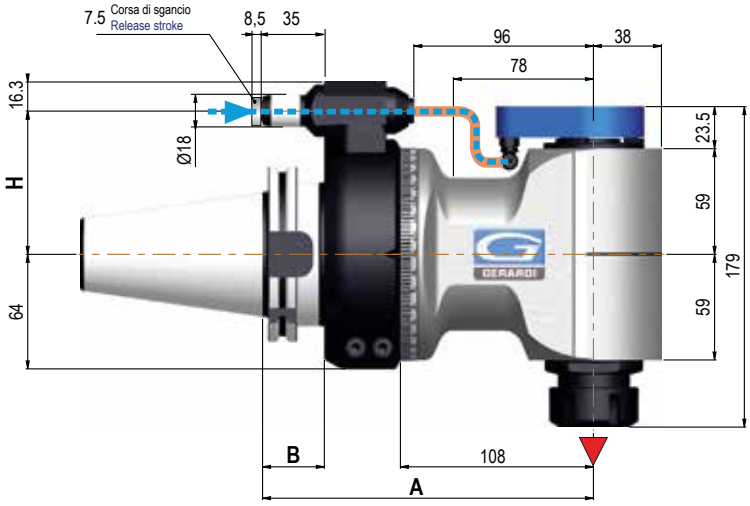
Evolution Line

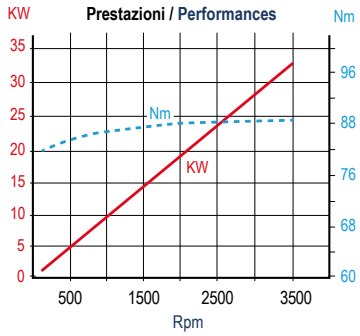
# F90-20 10BAR

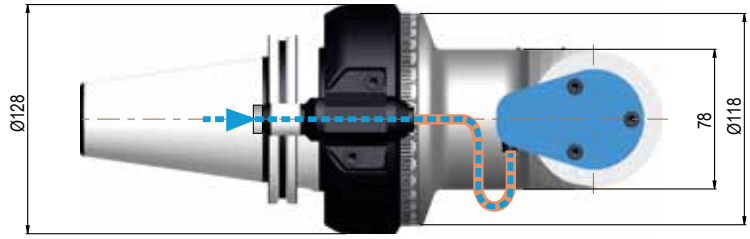
*Type 2*

| Cod. | 9.F90.200B0 |
|---|---|
| € | - |




**ROTAZIONE A SECCO NON POSSIBILE** | **DRY RUNNING NOT POSSIBLE**

▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | CAT ANSI B5.50 | BT | HSK DIN 69893 | | CAPTO ISO 26623 | KM | | ISO DIN 2080 |
|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 50 | 50 | 50 | 80 | 100 | C8 | 80 | 100 | 50 |
| *Prezzi Extra €* / *Extra Price €* | std | *optional* | std | *optional* | *optional* | *optional* | *on request* | | *optional* |
| H Standard Ø18 | 80 | 80 | 80 | 80 | | 80 | 80 | | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 | | Ø18 |
| *H 110 Type 3 Ø28 | Ø28 | Ø28 | Ø28 | Ø28 | | Ø28 | Ø28 | | Ø28 |
| A | 185 | 185 | 193 | 194 | | 189 | 185 | | 185 |
| B | 35 | 35 | 43 | 46 | | - | - | | 35 |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 3.500 |
| Max. carico assiale / Max. axial load | N | 1.460 |
| Momento torcente / Torque | Nm | 85 |
| Peso / Weight ISO/BT50 | kg | 13,4 |
| Utensile - maschio / Tool - tap | | Ø20-M14 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK 40 | *optional* |
| Uscita - Output CAPTO C4 | *optional* |
| Uscita - Output Weldon 6 ÷ 22 | *optional* |
| Pinza / Collet ER32 WP Ø2 / 20 | *optional* |
| Pinza / Collet ER32 - Ø2 / 20 | *optional* |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | *optional* |

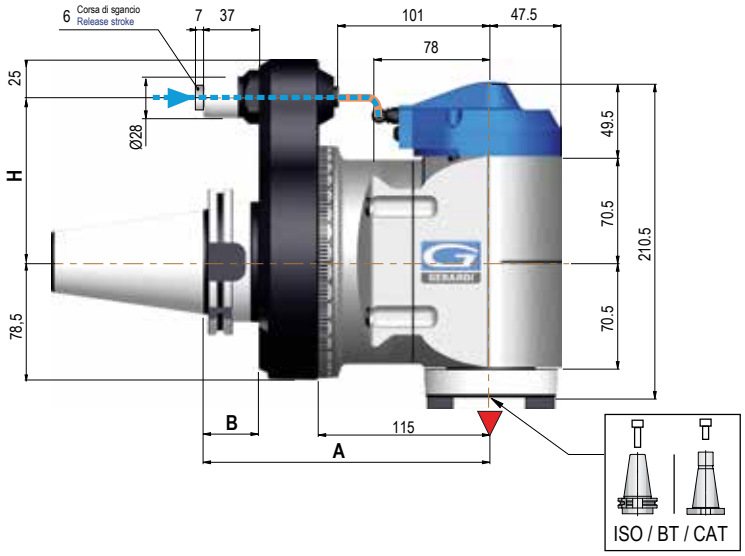
**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDE S:**

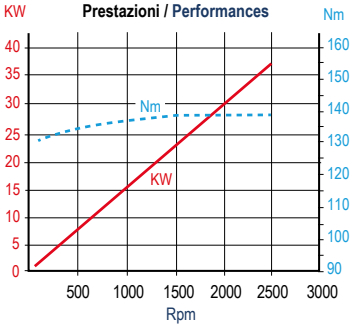
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna**
- Bauletto - Tassello di ritegno - Ghiera ER
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

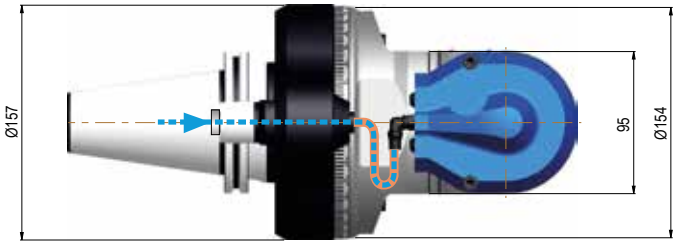
# F90-S40 70BAR

*Type 3*

| Cod. | 9.F90.S40B0 |
|---|---|
| € | - |




**ROTAZIONE A SECCO NON POSSIBILE** | **DRY RUNNING NOT POSSIBLE**

**Esempio di ordinazione - Example to order:**
F90-S40 ATC - ISO50 / 69871 - Uscita - Output ISO40

▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | CAT ANSI B5.50 | BT | HSK DIN 69893 | | CAPTO ISO 26623 | KM | | ISO DIN 2080 |
|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 50 | 50 | 50 | 80 | 100 | C8 | 80 | 100 | 50 |
| *Prezzi Extra €* / *Extra Price €* | std | *optional* | std | *optional* | *optional* | *optional* | A RICHIESTA / ON REQUEST | | *optional* |
| H Ø28 Standard | 110 | 110 | 110 | 110 | | 110 | 110 | | 110 |
| A | 192 | 192 | 200 | 201 | | 196 | 192 | | 192 |
| B | 37 | 37 | 45 | 48 | | - | - | | 37 |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | min$^{-1}$ | 2.500 |
| Max. carico assiale / Max. axial load | N | 3.020 |
| Momento torcente / Torque | Nm | 135 |
| Peso / Weight ISO/BT50 | kg | 22 |
| Utensile - maschio / Tool - tap | | Ø26-M20 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK 63 | *optional* |
| Uscita - Output CAPTO C5 | *optional* |
| Uscita - Output ER 40 (solo 10BAR) | std |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Cassa in legno
- Tassello di ritegno - Chiavi di servizio - Tubetto di grasso
- Libro istruzioni - Doppia vite fissaggio coni

- **Internal coolant from positioning pin**
- **Internal air pressure - Wood Box**
- Retaining block - Wrenches
- Grease tube - Instruction book
- Double screw for shank clamping

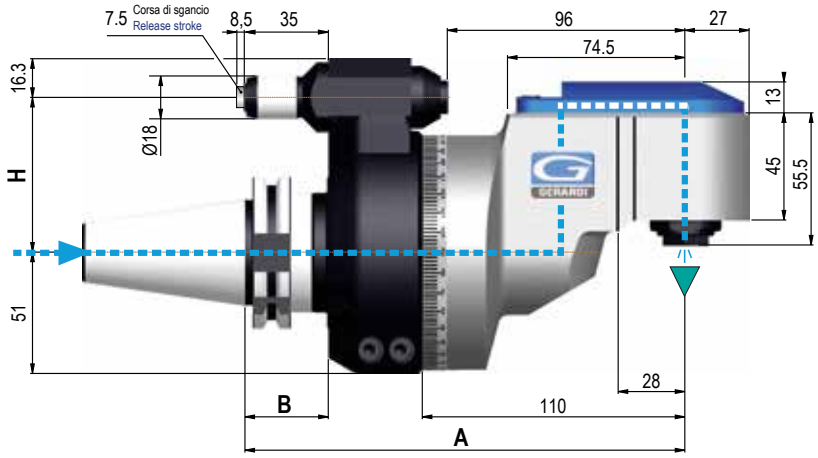
TESTE ANGOLARI DISASSATE PER
FRESATURA E FORATURA IN SPAZI RISTRETTI
OFFSET ANGLE HEADS FOR
MILLING AND DRILLING IN NARROW SPACES

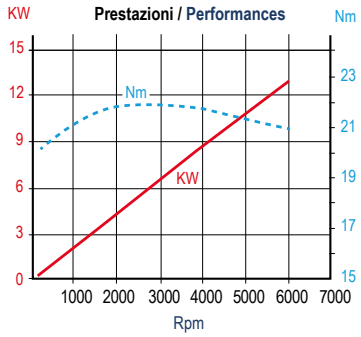
Evolution Line

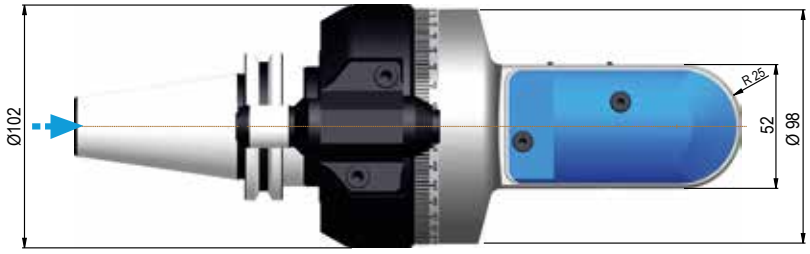
# FR90-10 70BAR

*Type 1*

| Cod. | 9.FR9.100B0 |
|---|---|
| € | - |




**ROTAZIONE A SECCO NON POSSIBILE** | **DRY RUNNING NOT POSSIBLE**

▼ Senso di rotazione uguale al mandrino - Direction of rotation same as machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | optional | std | optional | std | optional | std | optional | optional | optional | optional | optional | optional | optional | optional | on request | on request | optional | optional |
| H Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | 184,5 | | | 184,5 | | 184,5 | 192,5 | 193,5 | | | 188,5 | | | 184,5 | | | 184,5 | |
| B | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | - | | | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | min$^{-1}$ | 6.000 |
| Max. carico assiale / Max. axial load | N | 500 |
| Momento torcente / Torque | Nm | 22 |
| Peso / Weight ISO/BT40 | kg | 6,2 |
| Peso / Weight ISO/BT50 | | 8,7 |
| Utensile - maschio / Tool - tap | | Ø10-M8 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output Weldon 6 ÷ 10 | optional |
| Pinza / Collet ER16 WP Ø1 /10 | optional |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | optional |
| SENZA PASSAGGIO REFRIGERANTE NO INTERNAL COOLANT | optional |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

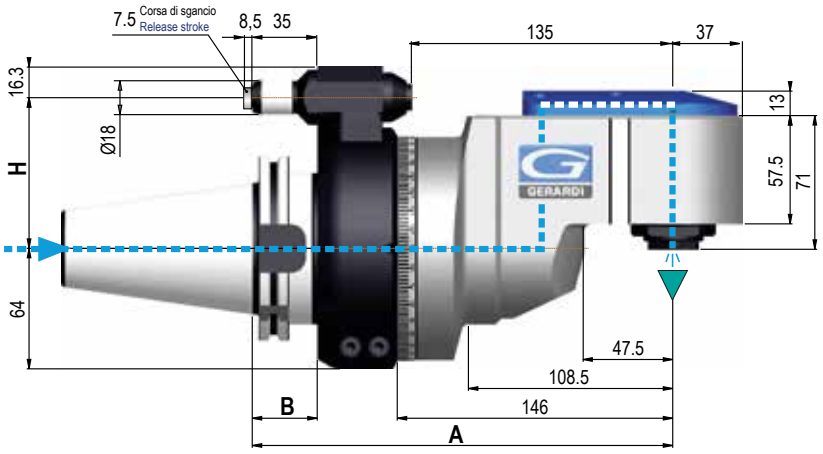
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

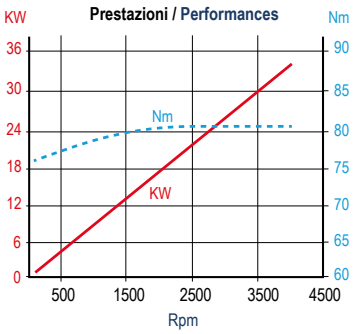
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

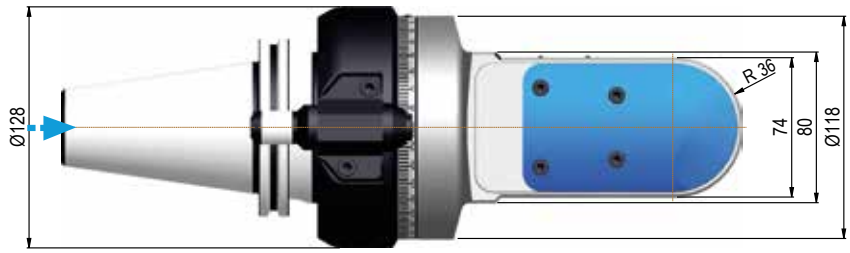
# FR90-16 70BAR

**Type 2**

| Cod. | 9.FR9.160B0 |
|---|---|
| € | - |




**ROTAZIONE A SECCO NON POSSIBILE** | **DRY RUNNING NOT POSSIBLE**

▼ Senso di rotazione uguale al mandrino - Direction of rotation same as machine spindle

| Cono - Shank | SK DIN 69871 | CAT ANSI B5.50 | BT | HSK DIN 69893 | | CAPTO ISO 26623 | KM | | ISO DIN 2080 |
|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 50 | 50 | 50 | 80 | 100 | C8 | 80 | 100 | 50 |
| *Prezzi Extra €* / *Extra Price €* | std | *optional* | std | *optional* | *optional* | *optional* | *on request* | | *optional* |
| H Standard Ø18 | 80 | 80 | 80 | 80 | | 80 | 80 | | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 |
| *H 110 Type 3 Ø28 | Ø28 | Ø28 | Ø28 | Ø28 | Ø28 | Ø28 | Ø28 | | Ø28 |
| A | 223,5 | 223,5 | 231,5 | 232,5 | | 227,5 | 223,5 | | 223,5 |
| B | 35 | 35 | 43 | 46 | | - | - | | 35 |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 4.000 |
| Max. carico assiale / Max. axial load | N | 810 |
| Momento torcente / Torque | Nm | 80 |
| Peso / Weight ISO/BT50 | kg | 11,7 |
| Utensile - maschio / Tool - tap | | Ø16-M12 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK 32 | *optional* |
| Uscita - Output Weldon 6 ÷ 16 | *optional* |
| Pinza / Collet ER25 WP Ø1 / 16 | *optional* |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | *optional* |
| SENZA PASSAGGIO REFRIGERANTE NO INTERNAL COOLANT | *optional* |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

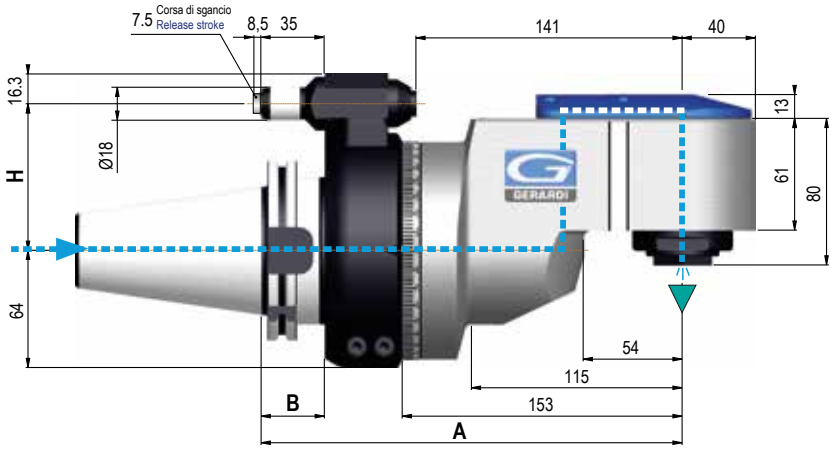
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

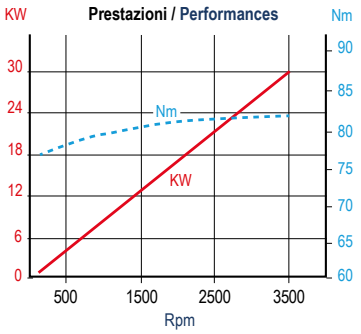
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

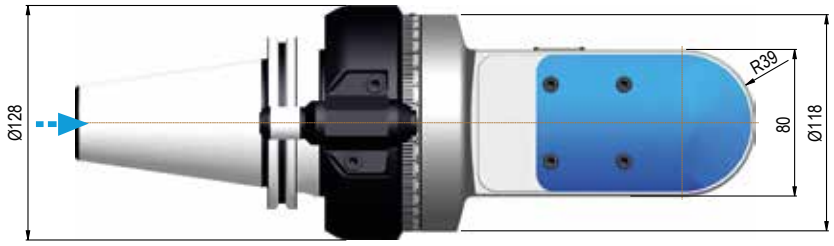
# FR90-20 70BAR

*Type 2*

| Cod. | 9.FR9.200B0 |
|---|---|
| € | - |




**ROTAZIONE A SECCO NON POSSIBILE** | **DRY RUNNING NOT POSSIBLE**

Senso di rotazione uguale al mandrino - Direction of rotation same as machine spindle

| Cono - Shank | SK DIN 69871 | CAT ANSI B5.50 | BT | HSK DIN 69893 | | CAPTO ISO 26623 | KM | | ISO DIN 2080 |
|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 50 | 50 | 50 | 80 | 100 | C8 | 80 | 100 | 50 |
| Prezzi Extra € / Extra Price € | std | optional | std | optional | optional | optional | on request | | optional |
| H Standard Ø18 | 80 | 80 | 80 | 80 | | 80 | 80 | | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 | | Ø18 |
| *H 110 Type 3 Ø28 | Ø28 | Ø28 | Ø28 | Ø28 | | Ø28 | Ø28 | | Ø28 |
| A | 230 | 230 | 238 | 239 | | 234 | 230 | | 230 |
| B | 35 | 35 | 43 | 46 | | - | - | | 35 |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | min$^{-1}$ | 3.500 |
| Max. carico assiale / Max. axial load | N | 1.150 |
| Momento torcente / Torque | Nm | 82 |
| Peso / Weight ISO/BT50 | kg | 14,5 |
| Utensile - maschio / Tool - tap | | Ø20-M14 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK 50 | optional |
| Uscita - Output CAPTO C4 | NO |
| Uscita - Output Weldon 6 ÷ 20 | optional |
| Pinza / Collet ER32 WP Ø2 / 20 | optional |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | optional |
| SENZA PASSAGGIO REFRIGERANTE NO INTERNAL COOLANT | optional |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

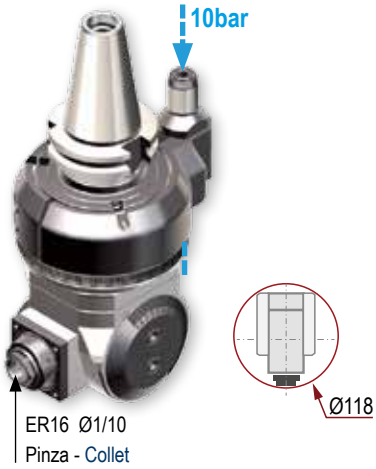
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

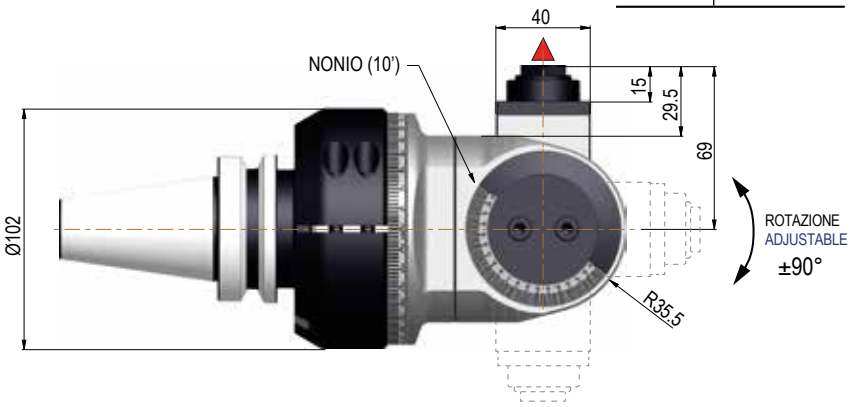
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

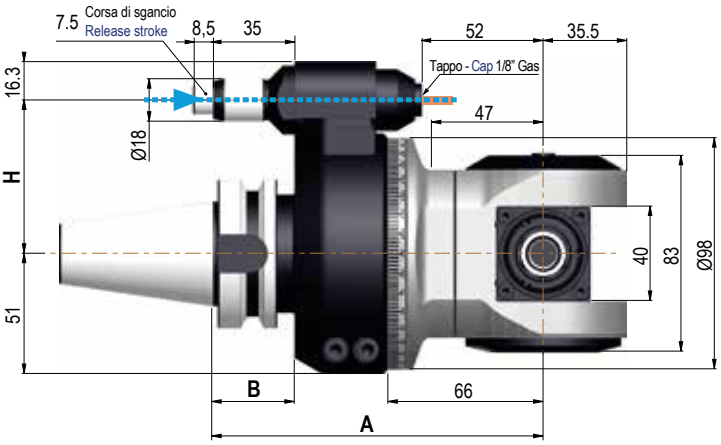
# FMU-10

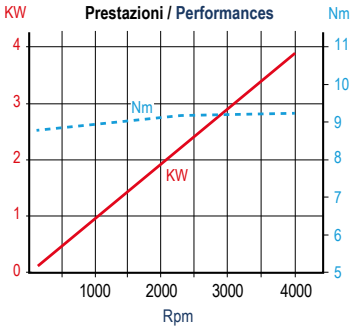
*Type 1*

| Cod. | 9.FMU.10000 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | optional | std | optional | std | optional | std | optional | optional | optional | optional | optional | optional | optional | optional | on request | on request | optional | optional |
| H Standard Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H 110 Type 1-2 Ø18 | Ø18 | | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | Ø18 | | Ø18 | | Ø18 | Ø18 | Ø18 | | Ø18 | Ø18 |
| *H 110 Type 3 Ø28 | | | Ø28 | | Ø28 | | Ø28 | | Ø28 | | | | Ø28 | | Ø28 | | | Ø28 |
| A | 140 | | | 140 | | 140 | 148 | 149 | | | 144 | | | 140 | | | 140 | |
| B | 35 | | | 35 | | 35 | 43 | 44 | 46 | | - | | | 34,5 | - | - | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 4.000 |
| Max. carico assiale / Max. axial load | N | 550 |
| Momento torcente / Torque | Nm | 9 |
| Peso / Weight ISO/BT40 | | 6,3 |
| Peso / Weight ISO/BT50 | kg | 8,8 |
| Utensile - maschio / Tool - tap | | Ø13-M10 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output Weldon 6 ÷ 12 | optional |
| Pinza / Collet ER16 - Ø1 / 10 | optional |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | optional |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

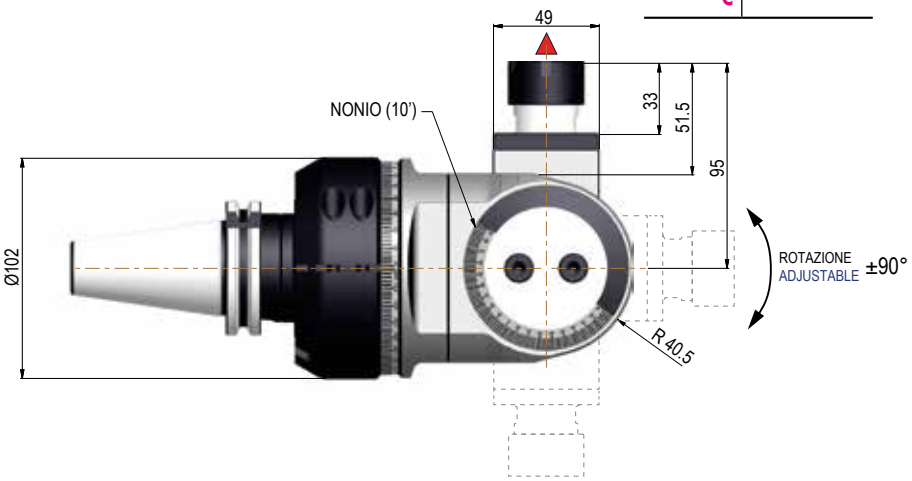
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna** - Bauletto
- Tassello di ritegno - Ghiera ER - Chiavi di servizio
- Tubetto di grasso - Libro istruzioni

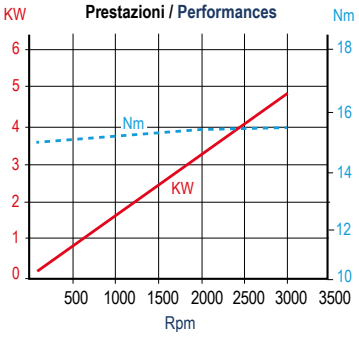
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

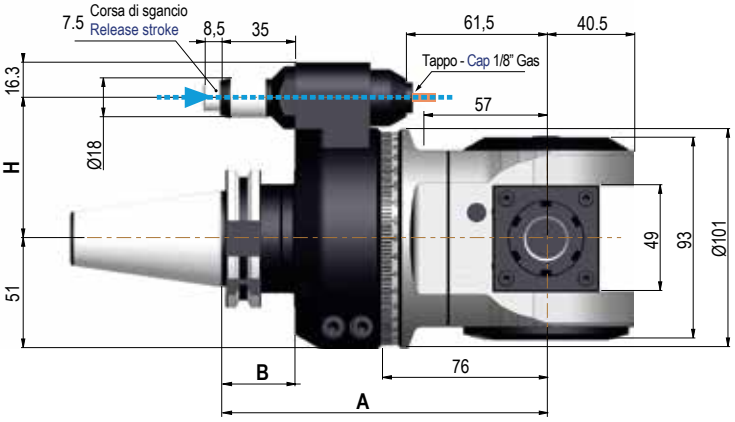
# FMU-16

*Type 1*

| Cod. | 9.FMU.16000 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | optional | std | optional | std | optional | std | optional | optional | optional | optional | optional | optional | optional | optional | on request | on request | optional | optional |
| H 110 Type 1-2 Ø18 | 65 / 80 | | 80 | 65 / 80 | 80 | 65 / 80 | 80 | 65 / 80 | 80 | | 65/80 | | 80 | 65 / 80 | 80 | | 65 / 80 | 80 |
| *H 110 Type 3 Ø28 | Ø18 | | Ø18<br>Ø28 | Ø18 | Ø18<br>Ø28 | Ø18 | Ø18<br>Ø28 | Ø18 | Ø18<br>Ø28 | | Ø18 | | Ø18<br>Ø28 | Ø18 | Ø18<br>Ø28 | | Ø18 | Ø18<br>Ø28 |
| A | 150 | | | 150 | | 150 | 158 | 159 | | | 154 | | | 150 | | | 150 | |
| B | 35 | | | 35 | | 35 | 43 | 42 | 46 | | - | | | 34,5 | - | - | 35 | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | min$^{-1}$ | 3.000 |
| Max. carico assiale / Max. axial load | N | 630 |
| Momento torcente / Torque | Nm | 15 |
| Peso / Weight ISO/BT40 | kg | 8,2 |
| Peso / Weight ISO/BT50 | | 10,5 |
| Utensile - maschio / Tool - tap | | Ø16/M12 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK, CAPTO, KM | NO |
| Uscita - Output Weldo 6 ÷ 16 | optional |
| Pinza / Collet ER25 - Ø1 / 16 | optional |
| Interasse / Pitch *H= 110mm Ø18 / Ø28 | optional |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDE S:**

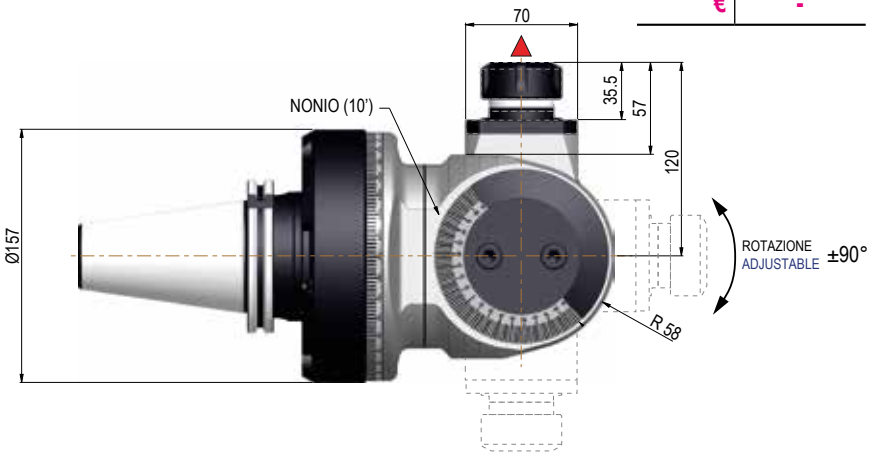
- **Passaggio refrigerante dal perno**
- **Pressurizzazione interna**
- Bauletto - Tassello di ritegno - Ghiera ER
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni

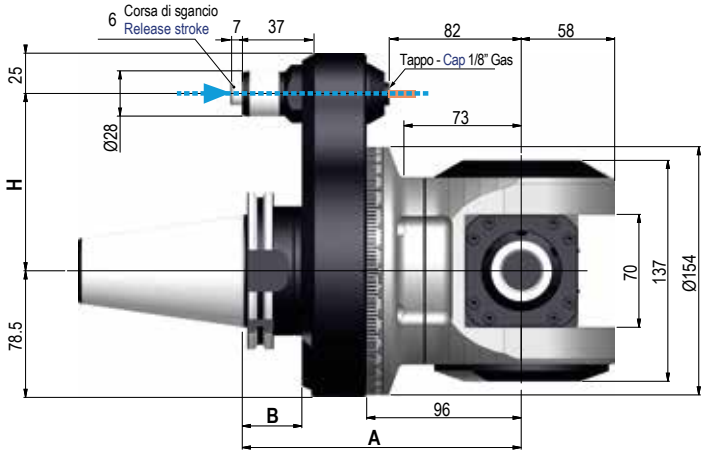
- **Internal coolant from positioning pin**
- **Internal air pressure** - Special bag
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

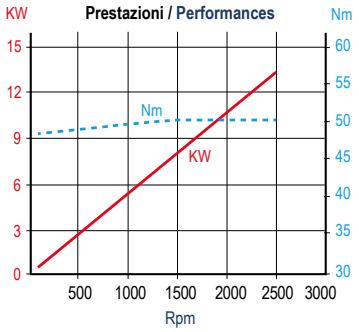
# FMU-20

*Type 3*

| Cod. | 9.FMU.20000 |
|---|---|
| € | - |




Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| | | SK DIN 69871 | CAT ANSI B5.50 | BT | HSK DIN 69893 | | CAPTO ISO 26623 | KM | | ISO DIN 2080 |
|---|---|---|---|---|---|---|---|---|---|---|
| Cono - Shank | | | | | | | | | | |
| Grandezza - Size | | 50 | 50 | 50 | 80 | 100 | C8 | 80 | 100 | 50 |
| *Prezzi Extra €* *Extra Price €* | | std | *optional* | std | *optional* | *optional* | *optional* | A RICHIESTA ON REQUEST | | *optional* |
| H | Ø28 Standard | 110 | 110 | 110 | 110 | | 110 | 110 | | 110 |
| A | | 173 | 173 | 181 | 182 | | 177 | 173 | | 173 |
| B | | 37 | 37 | 45 | 48 | | - | - | | 37 |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 2.500 |
| Max. carico assiale / Max. axial load | N | 1.740 |
| Momento torcente / Torque | Nm | 48 |
| Peso / Weight ISO/BT50 | kg | 22 |
| Utensile - maschio / Tool - tap | | Ø20-M16 |

| Opzioni - Options | € |
|---|---|
| Uscita - Output HSK 50 | *optional* |
| Uscita - Output CAPTO C4 | NO |
| Uscita - Output Weldon 6 ÷ 20 | *optional* |
| Pinza / Collet ER32 - Ø2 / 20 | *optional* |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDE S:**

**- Passaggio refrigerante dal perno**
**- Pressurizzazione interna**
- Tassello di ritegno - Ghiera ER
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni

**- Internal coolant from positioning pin**
**- Internal air pressure**
- Retaining block - ER nut
- Wrenches - Grease tube
- Instruction book

# OPZIONE REFRIGERANTE SERIE ATC
# INTERNAL COOLANT OPTION ATC SERIES

## F90-16

Passaggio refrigerante standard attraverso il perno (10bar) senza alcun costo aggiuntivo.

Standard 10 bar coolant through the positioning pin. All our Angle Heads are supplied with an internal coolant from positioning pin which ends on the nozzles next to the tool, without additional costs

## F90-16 10BAR

Refrigerante attraverso l'utensile tramite distributore rotante. (Entrata perno - uscita utensile)

Coolant through the positioning pin and the tool, by rotating distributor

## FR90-16 70BAR

**REFRIGERANTE DA MANDRINO MACCHINA**

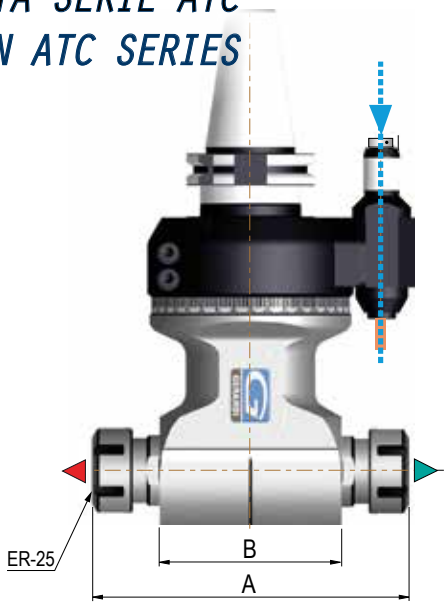
La costruzione disassata delle teste serie FR90 consente il montaggio di speciali tenute ad alta pressione, che consentono l'utilizzo di utensili con passaggio refrigerante interno (70bar) mantenendo isolati i componenti cinetici interni.

**COOLANT SYSTEM FROM MACHINE**

The offset design of the FR90 angle heads series allows to fit high pressure seals which allows the use of tools with (70bar) internal coolant transit keeping the internal components safe.

# OPZIONE DOPPIA USCITA SERIE ATC
# DOUBLE OUTPUT OPTION ATC SERIES

F90-16S 2U




**Disponibile per i modelli:**
**Available for following types:**

| Modello - Model | Uscita - Output | A | B |
|---|---|---|---|
| F90-7 | ER11 - ER11 | 55 | 97 |
| F90-7L | | | |
| F90-10 | ER16 - ER16 | 67 | 127,5 |
| F90-10L | | | |
| F90-16S | ER25 - ER25 | 157 | 90 |
| F90-16 | | 98 | 170 |
| F90-16L | | | |
| F90-20 | ER32 - ER32 | 118 | 193 |
| F90-S40 | ER40 - ER40 | 141 | 226 |

# 2 MTC Evolution Line

CAPITOLO
*CHAPTER*

## CAMBIO UTENSILE MANUALE - MANUAL TOOL CHANGE

Linea di teste per le macchine non dotate di cambio utensili automatico.
Le teste MTC (Manual Tool Change) vanno montate manualmente e fissate al mandrino tramite flangiatura.
Sulle teste modello FMU, il supporto del mandrino portautensile ha la possibilità di inclinarsi e di posizionarsi di ±90°.

This range of angle heads is for conventional machines without automatic tool change.
MTC angle heads (Manual Tool Change) are manually mounted on the machine headstock through a flange.
On FMU heads, the cutter spindle housing can be adjusted at ±90°.

DESIGN
Il Design compatto, insieme alle specifiche descritte, consente: alte perfomances, elevate velocità, lunga durata degli utensili.

The Compact design, along with mentioned specifications, allows: highest performances, high speeds, long tools life

Albero con cono cementato, temprato, rettificato

Case hardened and ground shank and shaft

Anello graduato aggancio
Graduated retaining ring

Flangia universale
Universal flange

Uscita:
- Portapinza ER (standard)
- Weldon
- Portafresa
- Speciale

Output:
- ER collet (standard)
- Weldon
- Shell mill holder
- Speciale

Corpo testa orientabile a 360° con pressurizzazione interna. In acciaio trattato, massima rigidità e resistenza alla corrosione. Minima dilatazione termica.

Treated steel head body with 360° position and internal air pressure, maximum rigidity and corrosion resistant. Minimum thermal expansion

CUSCINETTI - BEARINGS
Cuscinetti obliqui precaricati in classe di precisione ABEC7/9

Angular contact preloaded ball bearings of precision class ABEC7/9

INGRANAGGI - GEARS
Ingranaggi Gleason con evolvente rettificato: massime performances e minori vibrazioni

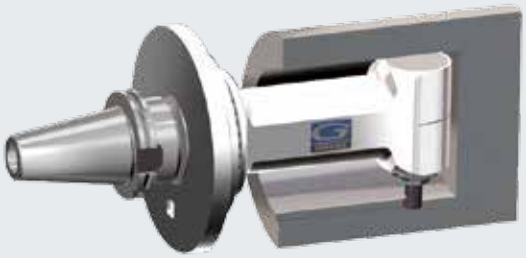
Gleason ground spiral bevel gears maximum performances and minimum vibration

# 2 MTC Evolution Line

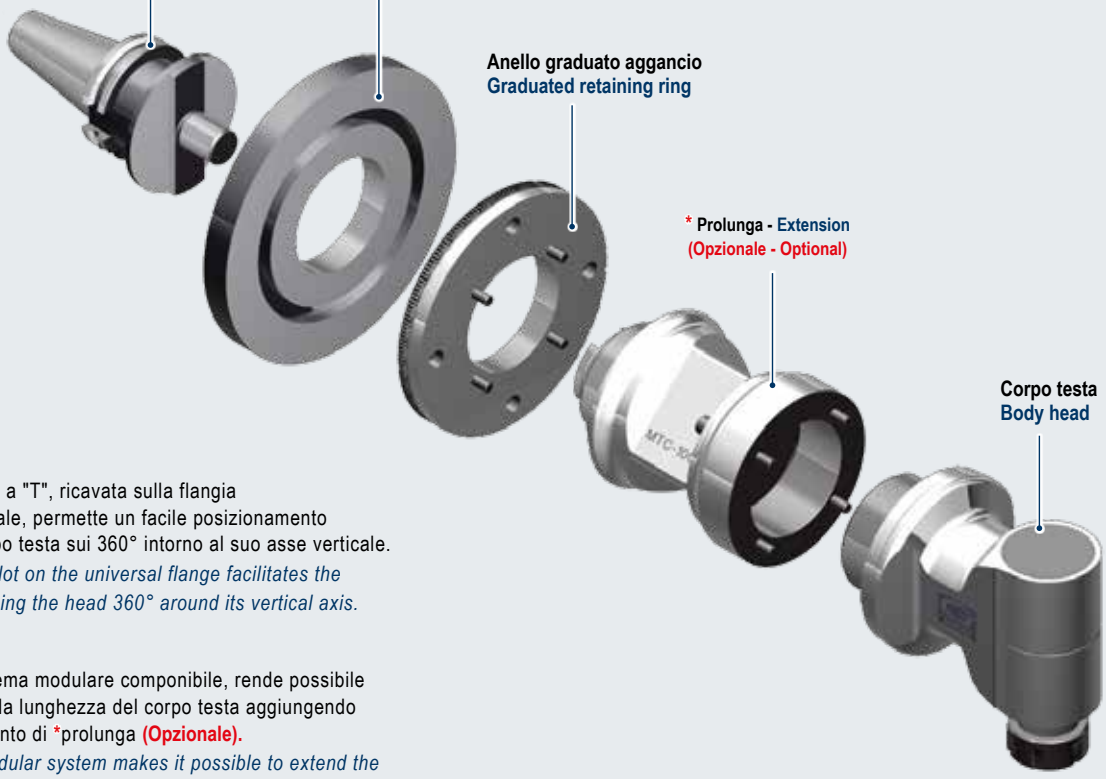
CAPITOLO
*CHAPTER*

## CAMBIO UTENSILE MANUALE - MANUAL TOOL CHANGE

Serie F90
F90 series
Ideali per Fresatura,
Foratura, Maschiatura a ±90°
Ideal for milling, drilling, tapping at ±90°



Serie F90L
F90L series
Serie lunga per lavorazioni in profondità
Long series for machining at deep positions



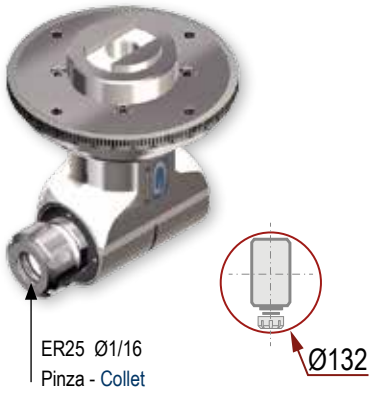

La cava a "T", ricavata sulla flangia universale, permette un facile posizionamento del corpo testa sui 360° intorno al suo asse verticale.
*The T-slot on the universal flange facilitates the positioning the head 360° around its vertical axis.*

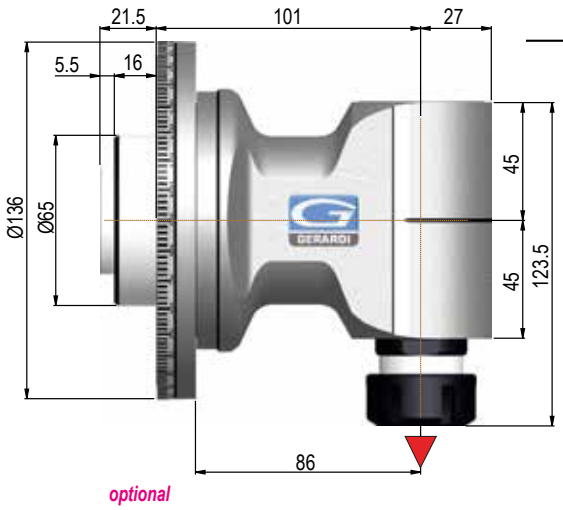
Un sistema modulare componibile, rende possibile variare la lunghezza del corpo testa aggiungendo l'elemento di *prolunga **(Opzionale).**
*The modular system makes it possible to extend the lenght of the body by adding a *extension* **(Optional).**

# F90-16S/MTC

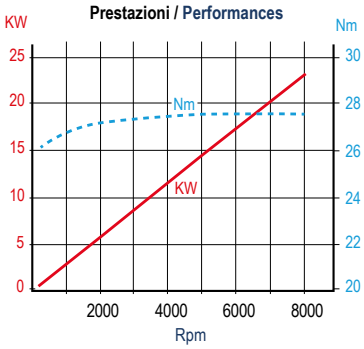
*Type 1*

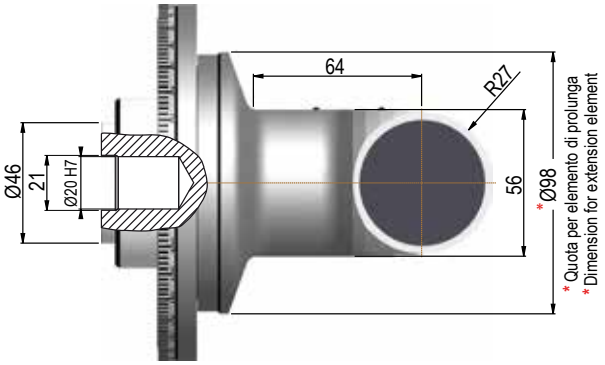
| Cod. | 9.F90.16S01 |
|---|---|
| € | - |




*optional*




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 30 | 40 | 50 |
| *Prezzi Extra €* *Extra Price €* | *optional* | std | *optional* | std | *optional* | std | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | A RICHIESTA ON REQUEST | | | std | std | *optional* |

## Dati Tecnici - Technical Data

| | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 8.000 |
| Max. carico assiale / Max. axial load | N | 810 |
| Momento torcente / Torque | Nm | 27 |
| Peso / Weight ISO/BT40 | kg | 6,4 |
| Peso / Weight ISO/BT50 | kg | 8,7 |
| Utensile - maschio / Tool - tap | | Ø16-M12 |

## Opzioni - Options

| | | € |
|---|---|---|
| Uscita - Output | HSK, CAPTO, KM | NO |
| Uscita - Output | Weldon 6 ÷ 16 | *optional* |
| | Portafresa - Toolholder 16 | *optional* |
| Doppia uscita - Double output ER25 - ER25 | | *optional* |
| Pinza / Collet ER25 - Ø1 / 16 | | *optional* |
| * Elemento di prolunga / * Extension element | H100 | *optional* |
| | H200 | *optional* |
| - Passaggio refrigerante tramite distributore rotante - Internal coolant through rotating distributor | | On Request |

## DOTAZIONE STANDARD
## STANDARD EQUIPMENT INCLUDE S:

**- Pressurizzazione interna**
- Bauletto - Anello graduato di aggancio
- Flangia universale - Cono std - Ghiera ER
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni

**- Internal air pressure** - Special bag
- Graduated retaining ring - Universal flange
- std Drive shank - ER nut
- Wrenches - Grease tube
- Instruction book

GERARDI

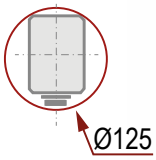
TESTA ANGOLARE PER LAVORAZIONI PESANTI
HIGH TORQUE ANGLE HEADS FOR HEAVY DUTIES MACHINING

Evolution Line

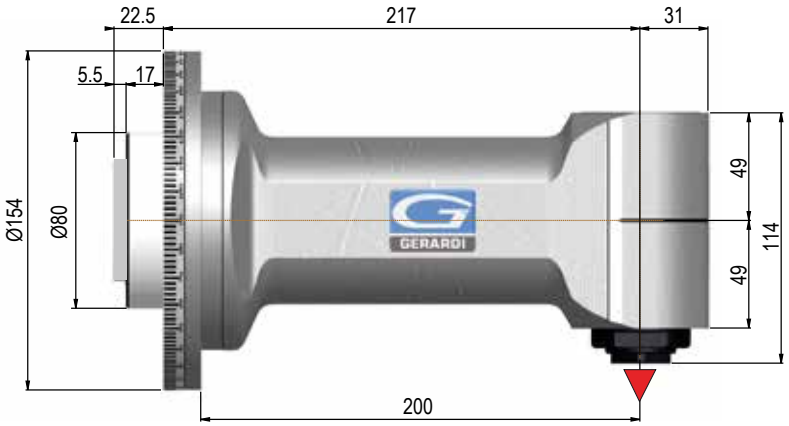
# F90-16L/MTC

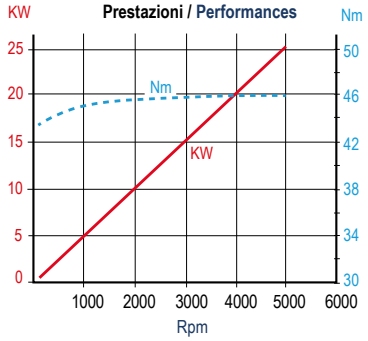
*Type 2*

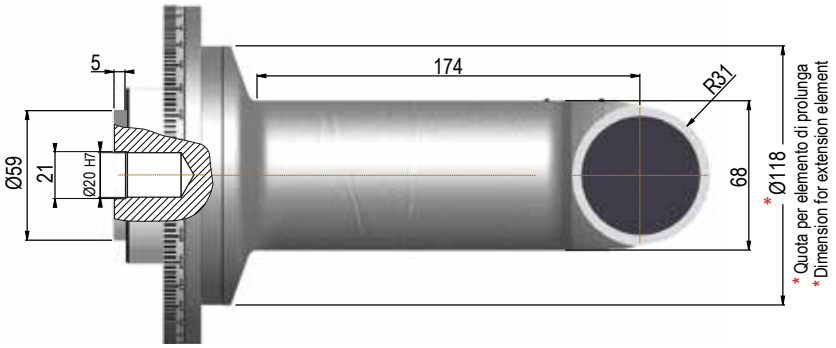
| Cod. | 9.F90.16L01 |
|---|---|
| € | - |




ER25 Ø1/16
Pinza - Collet




Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cono - Shank | | | | | | | | | | | | | | | | | | | |
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 30 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | std | std | std | std | std | std | std | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | A RICHIESTA ON REQUEST | | | A RICHIESTA ON REQUEST | | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 5.000 |
| Max. carico assiale / Max. axial load | N | 1.040 |
| Momento torcente / Torque | Nm | 46 |
| Peso / Weight ISO/BT40 | kg | - |
| Peso / Weight ISO/BT50 | kg | - |
| Utensile - maschio / Tool - tap | | Ø16-M12 |

| Opzioni - Options | | € |
|---|---|---|
| Uscita - Output HSK 32 | | *optional* |
| Uscita Output | Weldon 6 ÷ 20 | *optional* |
| | Portafresa - Toolholder 16-22-27-32 | *optional* |
| Doppia uscita - Double output ER25 - ER25 | | *optional* |
| Pinza / Collet ER25 - Ø1 / 16 | | *optional* |
| *Elemento di prolunga / *Extension element | H100 | *optional* |
| | H200 | *optional* |
| - Passaggio refrigerante tramite distributore rotante<br>- Internal coolant through rotating distributor | | On Request |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDE S:**

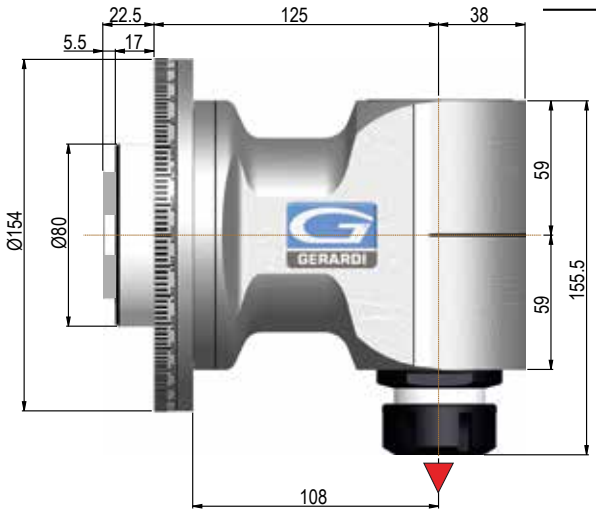
**- Pressurizzazione interna**
- Bauletto - Anello graduato di aggancio
- Flangia universale - Cono std - Ghiera ER
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni

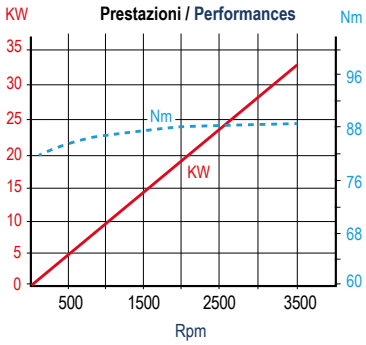
**- Internal air pressure** - Special bag
- Graduated retaining ring - Universal flange
- std Drive shank - ER nut
- Wrenches - Grease tube
- Instruction book

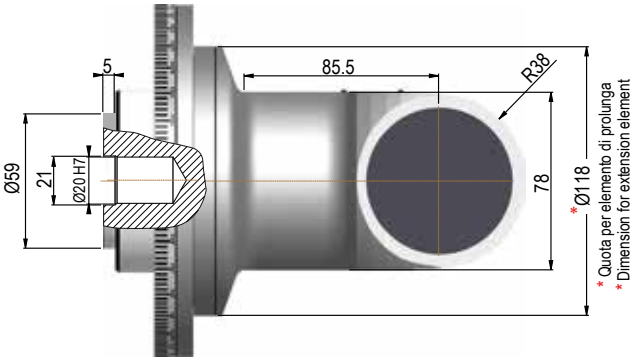
# F90-20/MTC

*Type 2*

| Cod. | 9.F90.20001 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 30 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | std | std | std | std | std | std | std | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | A RICHIESTA ON REQUEST | | | A RICHIESTA ON REQUEST | | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 3.500 |
| Max. carico assiale / Max. axial load | N | 1.460 |
| Momento torcente / Torque | Nm | 85 |
| Peso / Weight ISO/BT40 | kg | - |
| Peso / Weight ISO/BT50 | kg | - |
| Utensile - maschio / Tool - tap | | Ø20-M14 |

| Opzioni - Options | | € |
|---|---|---|
| Uscita - Output HSK 40 | | optional |
| Uscita - Output CAPTO C4 | | optional |
| Uscita - Output ISO 30, CAT 30, BT30 (*) | | optional |
| Uscita Output | Weldon 6 ÷ 22 | optional |
| | Portafresa - Toolholder 22-27-32 | optional |
| Doppia uscita - Double output ER32 - ER32 | | optional |
| Pinza / Collet ER32 - Ø2 / 20 | | optional |
| *Elemento di prolunga | H100 | optional |
| *Extension element | H200 | optional |
| - Passaggio refrigerante tramite distributore rotante<br>- Internal coolant through rotating distributor | | On Request |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDE S:**

**- Pressurizzazione interna**
- Bauletto - Anello graduato di aggancio
- Flangia universale - Cono std - Ghiera ER
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni

**- Internal air pressure** - Special bag
- Graduated retaining ring - Universal flange
- std Drive shank - ER nut
- Wrenches - Grease tube
- Instruction book

GERARDI

TESTA ANGOLARE PER LAVORAZIONI PESANTI

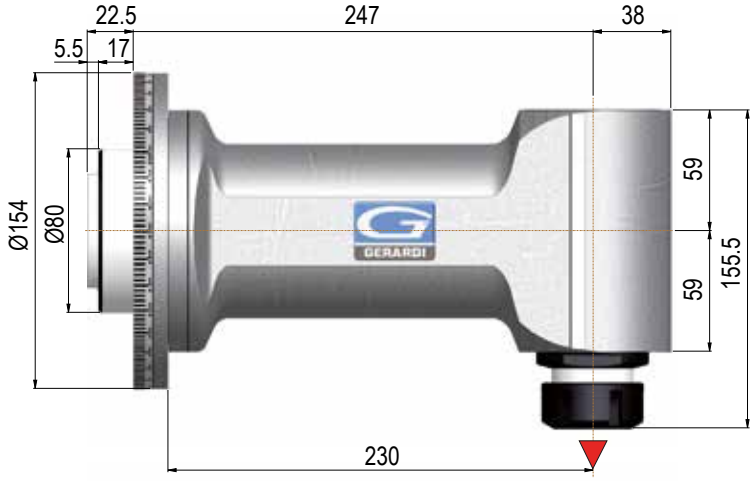
HIGH TORQUE ANGLE HEADS FOR HEAVY DUTIES MACHINING

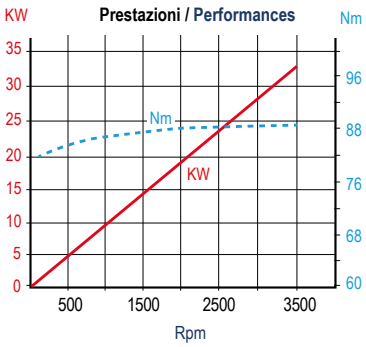
Evolution Line

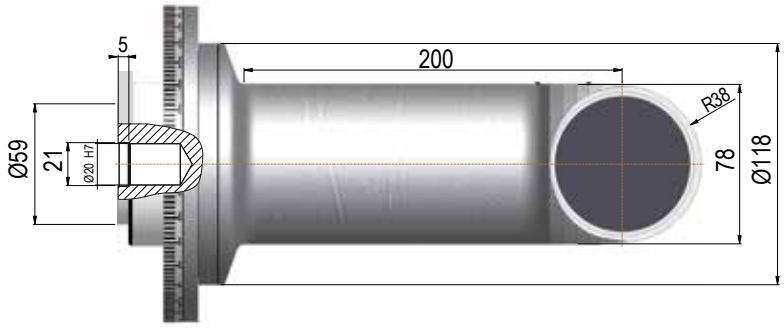
# F90-20L/MTC

*Type 2*

| Cod. | 9.F90.20L01 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 30 | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 30 | 40 | 50 |
| *Prezzi Extra €* / *Extra Price €* | std | std | std | std | std | std | std | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | A RICHIESTA ON REQUEST | | | A RICHIESTA ON REQUEST | | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 3.500 |
| Max. carico assiale / Max. axial load | N | 1.460 |
| Momento torcente / Torque | Nm | 85 |
| Peso / Weight ISO/BT40 | kg | |
| Peso / Weight ISO/BT50 | kg | |
| Utensile - maschio / Tool - tap | | Ø20-M14 |

| Opzioni - Options | | € |
|---|---|---|
| Uscita - Output HSK 40 | | optional |
| Uscita - Output CAPTO C4 | | optional |
| Uscita - Output ISO 30, CAT 30, BT30 (*) | | optional |
| Uscita Output | Weldon 6 ÷ 22 | optional |
| | Portafresa - Toolholder 22-27-32 | optional |
| Doppia uscita - Double output ER32 - ER32 | | optional |
| Pinza / Collet ER32 - Ø2 / 20 | | optional |
| *Elemento di prolunga / *Extension element | H100 | optional |
| | H200 | optional |
| - Passaggio refrigerante tramite distributore rotante - Internal coolant through rotating distributor | | On Request |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDE S:**

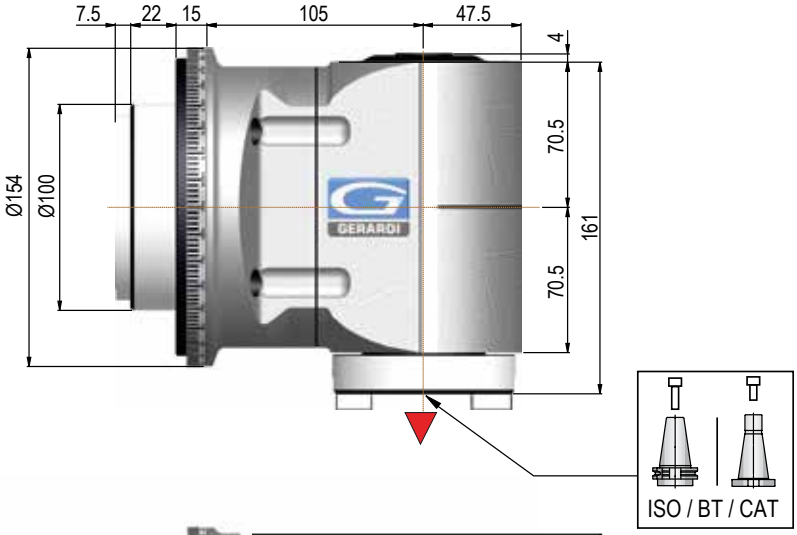
- **Pressurizzazione interna**
- Bauletto - Anello graduato di aggancio
- Flangia universale - Cono std - Ghiera ER
- Chiavi di servizio - Tubetto di grasso - Libro istruzioni

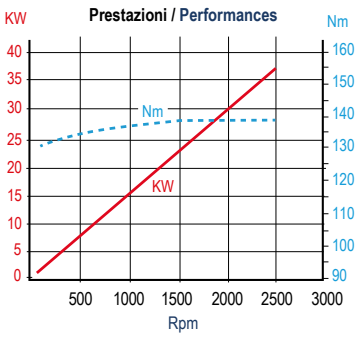
- **Internal air pressure** - Special bag
- Graduated retaining ring - Universal flange
- std Drive shank - ER nut
- Wrenches - Grease tube
- Instruction book

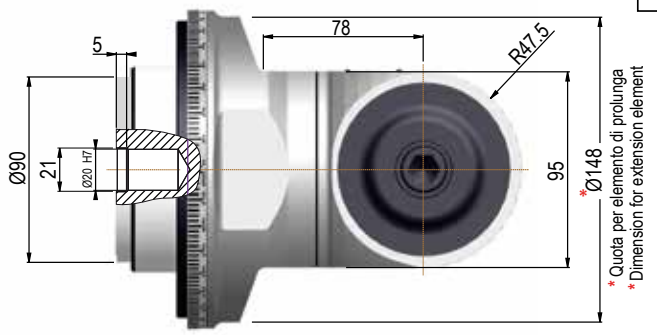
# F90 - S40/MTC

*Type 3*

| Cod. | 9.F90.S4001 |
|---|---|
| € | - |




▼ Senso di rotazione contrario al mandrino - Direction of rotation opposite to machine spindle

| Cono - Shank | SK DIN 69871 | | CAT ANSI B5.50 | | BT | | HSK DIN 69893 | | | CAPTO ISO 26623 | | | KM | | | ISO DIN 2080 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grandezza - Size | 40 | 50 | 40 | 50 | 40 | 50 | 63 | 80 | 100 | C5 | C6 | C8 | 63 | 80 | 100 | 40 | 50 |
| *Prezzi Extra €* *Extra Price €* | std | std | std | std | std | std | *optional* | *optional* | *optional* | *optional* | *optional* | *optional* | *A RICHIESTA ON REQUEST* | | | *A RICHIESTA ON REQUEST* | |

| Dati Tecnici - Technical Data | | |
|---|---|---|
| Ratio | | 1:1 |
| RPM max. | $min^{-1}$ | 2.500 |
| Max. carico assiale / Max. axial load | N | 3.020 |
| Momento torcente / Torque | Nm | 135 |
| Peso / Weight ISO/BT40 | kg | 15 |
| Peso / Weight ISO/BT50 | kg | 15,5 |
| Utensile - maschio / Tool - tap | | Ø26-M20 |

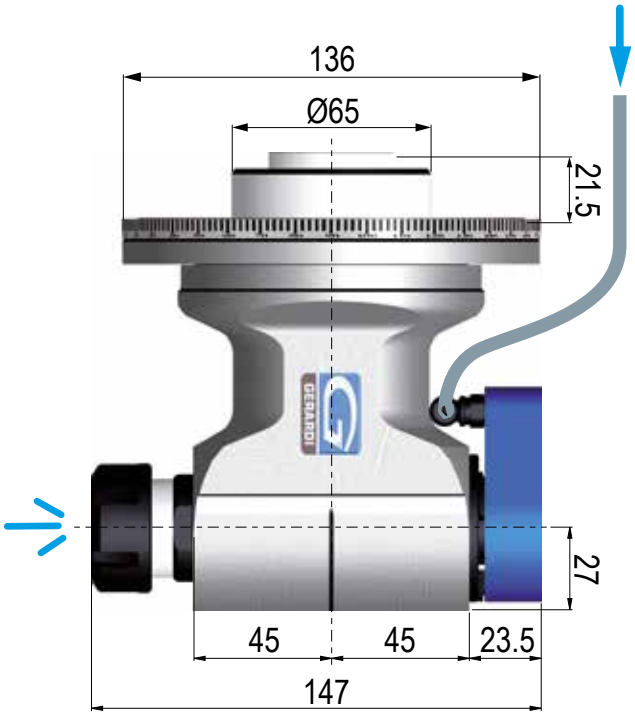
| Opzioni - Options | | € |
|---|---|---|
| Uscita - Output HSK 63 | | *optional* |
| Uscita - Output CAPTO C5 | | *optional* |
| Uscita - Output ER40 (F90-30) | | std |
| Doppia uscita - Double output ER40 | | *optional* |
| - Elemento di prolunga<br>- Extension element | H100 | *optional* |
| | H200 | *optional* |
| - Passaggio refrigerante tramite distributore rotante<br>- Internal coolant through rotating distributor | | *On Request* |

**DOTAZIONE STANDARD**
**STANDARD EQUIPMENT INCLUDES:**

- **Pressurizzazione interna** - Cassa in legno
- Anello graduato di aggancio - Flangia universale
- Cono std - Chiavi di servizio - Tubetto di grasso
- Libro istruzioni - Doppia vite fissaggio cono

- **Internal air pressure** - Wood box -
- Graduated retaining ring - Universal flange
- Std Drive shank - Wrenches - Grease tube
- Instruction book - Two screws for shank clamping

# OPZIONE REFRIGERANTE SERIE MTC
# INTERNAL COOLANT OPTION MTC SERIES

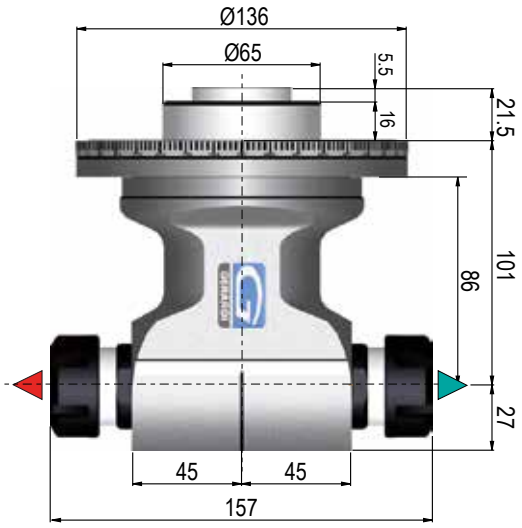



## F90-16S 10BAR

Refrigerante attraverso l'utensile tramite distributore rotante.
(Entrata perno - uscita utensile)

Coolant through the positioning pin and the tool, by rotating distributor

# OPZIONE DOPPIA USCITA SERIE MTC
# DOUBLE OUTPUT OPTION MTC SERIES




## F90-16S 2U MTC

**Disponibile per i modelli:**
**Available for following types:**

| | |
|---|---|
| F90-16S | |
| F90-16L | |
| F90-20 | ER32 - ER32 |
| F90-20L | ER32 - ER32 |
| F90-S40 | ER40 - ER40 |

# 2 ATC & MTC Evolution Line

CAPITOLO
*CHAPTER*

## ACCESSORI - ACCESSORIES

*STOP-BLOCK TIPO 3*
***STOP-BLOCK TYPE 3***

*PINZA ER-DIN 6499*
***ER-DIN 6499 COLLET***

*STOP-BLOCK TIPO 1-2*
***STOP-BLOCK TYPE 1-2***

*PINZE TIPO ET1 (COMPENSATE)*
***COLLET ET1 TYPE (COMPENSATION)***

*GRUPPO PERNO*
***PIN GROUP***

*ANELLO*
***RING***

*GRUPPO CONO*
***SHANK GROUP***

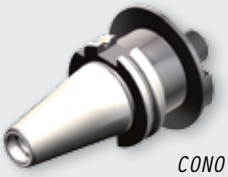
*PINZE 6023*
***6023 COLLET***

*PINZE 600E*
***600E COLLET***

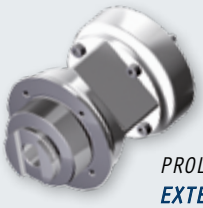
## ATC

*FLANGIA*
***FLANGE***

## MTC



*CONO*
***SHANK***



*PROLUNGHE*
***EXTENSION***

Mini

ES

STD

Mini

ES

STD

# PINZE-COLLETS

6023E 600E

| MODELLO TESTA ANGOLARE ANGLE HEAD TYPE | TIPO PINZA COLLET TYPE | Ø PINZA Ø COLLET | Cod. | € | Ø INTERMEDI PINZE Ø INTERMEDI PINZE | € |
|---|---|---|---|---|---|---|
| FS90-03<br>FS90-03L | 6023E | 1,0 | 9.60.23E00/... | - | 1,1 - 1,2 - 1,3 - 1,4 | - |
| | | 1,5 - 2 - 2,5 | | - | 1,6 - 1,7 - 1,8 - 1,9 - 2,1 - 2,2 - 2,3 - 2,4 | - |
| | | 3,0 | | - | 2,6 - 2,7 - 2,8 - 2,9 | - |
| FS90-04<br>FS90-04L | 600E | 1,0 | 9.60.0E000/... | - | 1,1 - 1,2 - 1,3 - 1,4 | - |
| | | 1,5 - 2 - 2,5 | | - | 1,6 - 1,7 - 1,8 - 1,9 - 2,1 - 2,2 - 2,3 - 2,4 | - |
| | | 3,0 - 4,0 | | - | 2,6 - 2,7 - 2,8 - 2,9 | - |

**Esempio di ordinazione - Example to order:** 600E - Ø2,3 = 9.60.0E000 / 2,3

# ER-DIN 6499

## FORATURA-FRESATURA/DRILLING-MILLING

## MASCHIATURA / TAPPING

| MODELLO TESTA ANGOLARE ANGLE HEAD TYPE | TIPO PINZA COLLET TYPE | Ø PINZA Ø COLLET | Cod. | € | PINZE TIPO ET1 (compensate) COLLET ET1 TYPE (compensation) | Cod. | € |
|---|---|---|---|---|---|---|---|
| F90-07<br>F90-07L | ER11 | Ø1 / 7 | 9.ER.11000/... | - | - | - | - |
| F90-07 10BAR<br>F90-07L 10BAR | ER11 WP | Ø3/ 7 | 9.ER.11WP0/... | - | - | - | - |
| F90-10<br>F90-10L<br>FMU-10 | ER16 | Ø1 / 10 | 9.ER.16000/... | - | ET 1-16 (M2 - M8) | 9.ET.16000 | - |
| FR90-10 70BAR<br>F90-10 10BAR | ER16 WP | Ø3/ 10 | 9.ER.16WP0/... | - | - | - | - |
| F90-16S<br>F90-16<br>F90-16L<br>FMU-16 | ER25 | Ø1 / 16 | 9.ER.25000/... | - | ET 1-25 (M2 - M12) | 9.ET.25000 | - |
| FR90-16 70BAR<br>F90-16S 10BAR<br>F90-16 10BAR<br>F90-16L 10BAR | ER25 WP | Ø3 / 16 | 9.ER.25WP0/... | - | - | - | - |
| F90-20<br>FMU-20 | ER32 | Ø2 / 20 | 9.ER.32000/... | - | ET 1-32 (M3,5 - M16) | 9.ET.32000 | - |
| FR90-20 70BAR<br>F90-20 10BAR | ER32 WP | Ø3 / 20 | 9.ER.32WP0/... | - | - | - | - |

**Esempio di ordinazione - Example to order:** ER25 - Ø10 = 9.ER.25000/10

**WP:** Resistente all'acqua - Waterproof

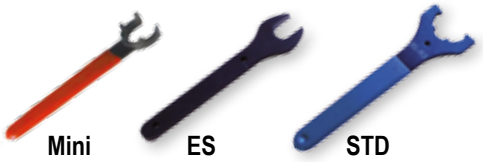
# GHIERE-NUTS

| MODELLO TESTA ANGOLARE ANGLE HEAD TYPE | TIPO GHIERA NUT TYPE | Cod. | € |
|---|---|---|---|
| FS90-03<br>FS90-03L | - | - | - |
| FS90-04<br>FS90-04L | - | - | - |

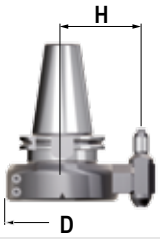
| MODELLO TESTA ANGOLARE ANGLE HEAD TYPE | TIPO GHIERA NUT TYPE | Cod. | € |
|---|---|---|---|
| F90-07<br>F90-07L | ER11 ES * | 9.ER.110ES | - |
| F90-07 10BAR<br>F90-07L 10BAR | ER11 ES * | 9.ER.110ES | - |
| F90-10<br>F90-10L<br>F90-10 10BAR | ER16 ES * | 9.ER.160ES/E | - |
| FMU-10 | ER25 Mini | 9.ER.2500M | - |
| FR90-10 70BAR | ER16 ES * | 9.ER.160ES | - |
| F90-16S<br>F90-16S 10BAR | ER25 STD | 9.ER.25STD | - |
| F90-16<br>F90-16L<br>F90-16 10BAR<br>F90-16L 10BAR | ER25 ES * | 9.ER.250ES | - |
| FMU-16 | ER25 Mini | 9.ER.2500M | - |
| FR90-16 70BAR | ER25 ES * | 9.ER.250ES | - |
| F90-20<br>F90-20 10BAR | ER32 STD | 9.ER.32STD | - |
| FMU-20 | ER32 STD | 9.ER.32STD | - |
| FR90-20 70BAR | ER32 ES * | 9.ER.320ES | - |

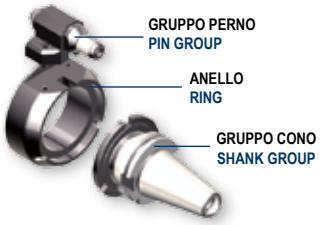
# CHIAVI-WRENCHES

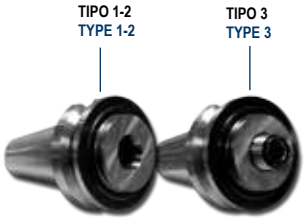
| CHIAVI WRENCHES | Cod. | € |
|---|---|---|
| CH-5,5 | 9.CH.55000 | - |
| CH-7 | 9.CH.70000 | - |




| CHIAVI WRENCHES | Cod. | € |
|---|---|---|
| **CH-13 ES** | **9.CH.130ES** | - |
| CH-22 ES | 9.CH.220ES | - |
| **CH-13 ES** | **9.CH.130ES** | - |
| CH-22 ES | 9.CH.220ES | - |
| **CH-19 ES** | **9.CH.190ES** | - |
| CH-30 ES | 9.CH.300ES | - |
| **CH-19 ES** | **9.CH.190ES** | - |
| **CH-19 ES** | **9.CH.190ES** | - |
| CH-27 ES | 9.CH.270ES | - |
| CH-32 ES | 9.CH.320ES | - |
| **CH-25 STD** | **9.CH.25STD** | - |
| **CH-27 ES** | **9.CH.270ES** | - |
| CH-38 ES | 9.CH.380ES | - |
| **CH-25 Mini** | **9.CH.2500M** | - |
| CH-27 ES | 9.CH.270ES | - |
| **CH-27 ES** | **9.CH.270ES** | - |
| CH-36 ES | 9.CH.360ES | - |
| CH-47 ES | 9.CH.470ES | - |
| **CH-32 STD** | **9.CH.32STD** | - |
| CH-40 ES | 9.CH.400ES | - |
| **CH-32 STD** | **9.CH.32STD** | - |
| **CH-32 ES** | **9.CH.320ES** | - |
| CH-47 ES | 9.CH.470ES | - |



## ANGLE HEADS

## GRUPPI ANTIROTANTE
## ANTI-ROTATION GROUP

## GRUPPO CONO-SHANK GROUP

## ANELLO - RING

| MODELLO MODEL | TIPO TYPE | Cod. | € | Cod. | € | DISEGNI DRAWINGS | Cod. | D | A | € |
|---|---|---|---|---|---|---|---|---|---|---|
| FS90-3-3L | 1 (Ø102) | 9.GA1.SK3065 | - | 9.SK30.1ATC | - | SK DIN 69871 | 9.FL1.ATC00 | Ø102 | 41,75 | - |
| FS90-4-4L | | 9.GA1.SK4065 | - | 9.SK40.1ATC | - | | | | | |
| F90-7-7L | | 9.GA1.SK5080 | - | 9.SK50.1ATC | - | | | | | |
| F90-10-10L | | 9.GA1.CT4065 | - | 9.CT40.1ATC | - | | | | | |
| F90-16S | | 9.GA1.CT5080 | - | 9.CT50.1ATC | - | | | | | |
| F90-20S* | | 9.GA1.BT4065 | - | 9.BT40.1ATC | - | | | | | |
| F90-07-07L 10BAR | | 9.GA1.BT5080 | - | 9.BT50.1ATC | - | CAT ANSI B5.50 | | | | |
| F90-10-10L* 10BAR | | 9.GA1.HSK6365 | - | 9.HSK63.1ATC | - | | | | | |
| F90-16S 10BAR | | 9.GA1.HSK8080 | - | 9.HSK80.1ATC | - | | | | | |
| FMU-10-16 | | 9.GA1.HSK10080 | - | 9.HSK100.1ATC | - | | | | | |
| FR90-10 70BAR | | 9.GA1.C56500 | - | 9.C5.1ATC | - | | | | | |
| FR90-10* | | 9.GA1.C68000 | - | 9.C6.1ATC | - | | | | | |
| | | 9.GA1.C88000 | - | 9.C8.1ATC | - | BT | | | | |
| | | 9.GA1.KM6365 | - | 9.KM63.1ATC | - | | | | | |
| | | 9.GA1.KM8080 | - | 9.KM80.1ATC | - | | | | | |
| | | 9.GA1.KM10080 | - | 9.KM100.1ATC | - | | | | | |
| | | 9.GA1.20804065 | - | 9.208040.1ATC | - | | | | | |
| | | 9.GA1.20805080 | - | 9.208050.1ATC | - | HSK DIN 69893 | | | | |
| F90-16-16L | 2 (Ø128) | 9.GA2.SK5080 | - | 9.SK50.2ATC | - | | 9.FL2.ATC00 | Ø128 | 56,75 | - |
| F90-20 | | 9.GA2.CT5080 | - | 9.CT50.2ATC | - | | | | | |
| F90-S30* | | 9.GA2.BT5080 | - | 9.BT50.2ATC | - | | | | | |
| F90-16-20 10BAR | | 9.GA2.HSK8080 | - | 9.HSK80.2ATC | - | | | | | |
| FR90-16-20 70BAR | | 9.GA2.HSK10080 | - | 9.HSK100.2ATC | - | CAPTO ISO 26623 | | | | |
| FR90-16*-20* | | 9.GA2.C68000 | - | 9.C6.2ATC | - | | | | | |
| | | 9.GA2.C88000 | - | 9.C8.2ATC | - | | | | | |
| | | 9.GA2.KM8080 | - | 9.KM80.2ATC | - | | | | | |
| | | 9.GA2.KM10080 | - | 9.KM100.2ATC | - | | | | | |
| | | 9.GA2.20805080 | - | 9.208050.2ATC | - | | | | | |
| F90-S40 | 3 (Ø157) | 9.GA3.SK50110 | - | 9.SK50.3ATC | - | KM | | | | |
| F90-S40 70BAR | | 9.GA3.CT50110 | - | 9.CT50.3ATC | - | | | | | |
| F90-30 (ER40)* | | 9.GA3.BT50110 | - | 9.BT50.3ATC | - | | | | | |
| FMU-20 | | 9.GA3.HSK80110 | - | 9.HSK80.3ATC | - | | | | | |
| | | 9.GA3.HSK100110 | - | 9.HSK100.3ATC | - | ISO DIN 2080 | | | | |
| | | 9.GA3.C6110 | - | 9.C6.3ATC | - | | | | | |
| | | 9.GA3.C8110 | - | 9.C8.3ATC | - | | | | | |
| | | 9.GA3.KM80110 | - | 9.KM80.3ATC | - | | | | | |
| | | 9.GA3.KM100110 | - | 9.KM100.3ATC | - | | | | | |
| | | 9.GA3.208050110 | - | 9.208050.3ATC | - | | | | | |

♦ All'interno del Gruppo di teste **Tipo 1** si possono scambiare tutti i gruppi antirotante e tutti i vari gruppi coni

♦ Among the angle heads **Type 1** all the anti-rotation and shank-groups **Type 1** can be exchanged freely

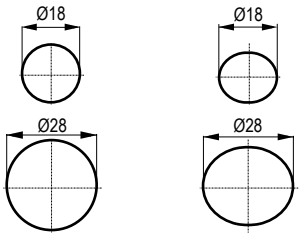
## FLANGIA INTEGRALE
## INTEGRAL FLANGE

| Cod. | D | A | € |
|---|---|---|---|
| 9.FL3.ATC00 | Ø157 | - | - |

** A Richiesta - On Request*

Specificare per gruppi antirotante a 70 BAR - Specify for 70 BAR antirotation group **Es: (9.GA1.SK40 49/70)**

(Chip Balluf on HSK shanks)



**STANDARD** 2 AXIS | **ON REQUEST** 1 AXIS | **GRUPPO PERNO - PIN GROUP**

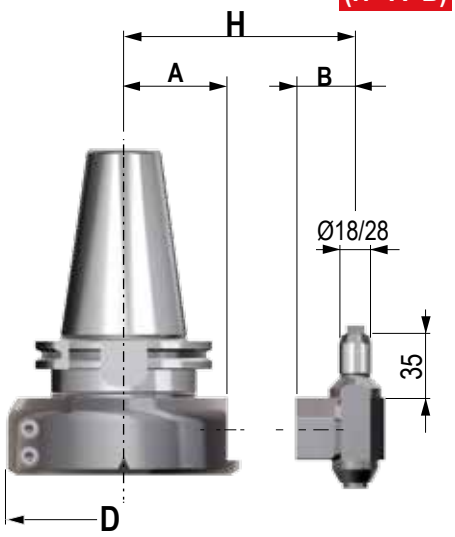
| Perno cilindrico Cylindrical positioning pin Cod. | Perno ellittico Elliptic positioning pin Cod. | Ø | B | H | € |
|---|---|---|---|---|---|
| 9.F18.T165 | 9.F18.T165.1 *637030* | 18 | 23,25 | 65 | - |
| 9.F18.T180 | 9.F18.T180.1 *637031* | 18 | 38,25 | 80 | - |
| 9.F28.T1110 | 9.F28.T1110.1 *637032* | 28 | 68,25 | 110 | - |
| 9.F18.T1110 | 9.F18.T1110.1 *637035* | 18 | | | |
| 9.F18.T280 | 9.F18.T280.1 *637033* | 18 | 23,25 | 80 | - |
| 9.F28.T2110 | 9.F28.T2110.1 *637034* | 28 | 53,25 | 110 | - |
| 9.F18.T2110 | 9.F18.T2110.1 *637036* | 18 | | | |

**PERNO TIPO 3 - PIN TYPE 3**

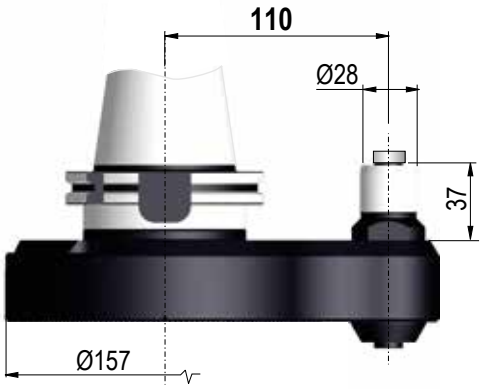
| | | | | | |
|---|---|---|---|---|---|
| 9.F28.T300 | 9 .F28.T300.1 | 28 | - | 110 | - |

| SPECIALE - SPECIAL | |
|---|---|
| Perno STD accorciato / Perno speciale<br>STD Short Pin / Special Pos. Pin | |
| Gruppo antirotante speciale<br>Special Anti-rotation group | |

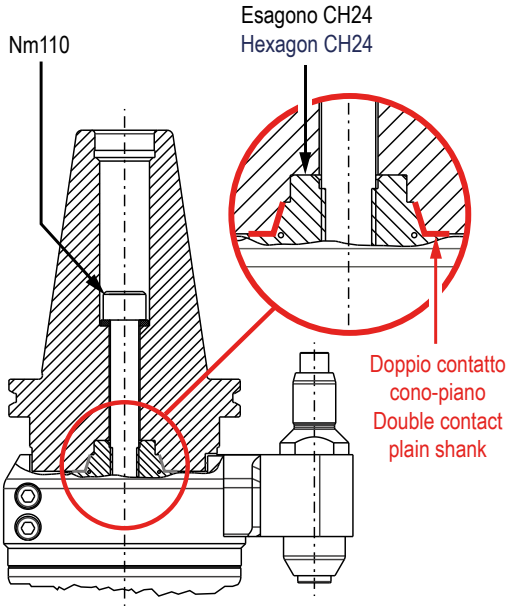
(H= A+B)



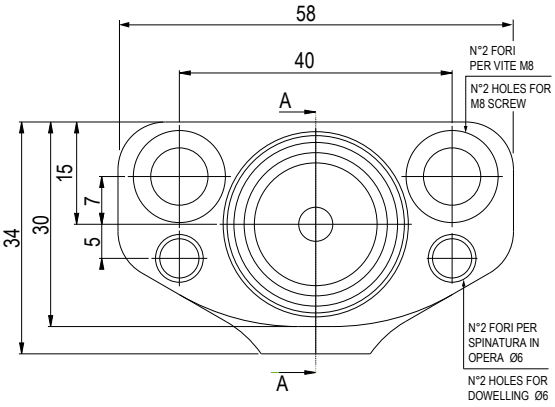

Gruppo antirotante tipo 1 - 2 (Anello + Gruppo perno)
Anti-rotation group type 1-2 (Ring + Pin group)

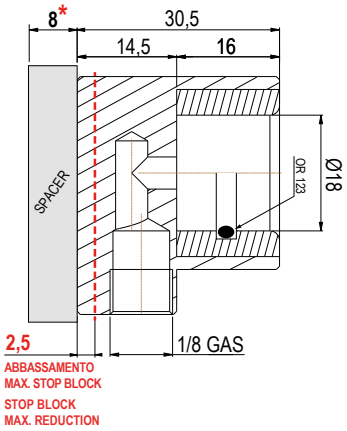



Gruppo antirotante tipo 3 (Flangia integrale)
Anti-rotation group type 3 (Integral flange)



# STOP-BLOCK TYPE 1-2



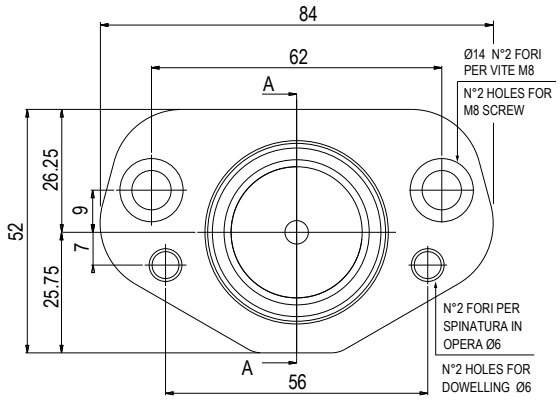



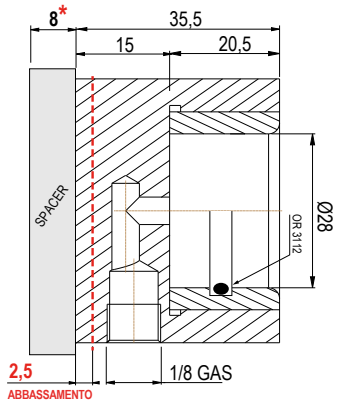

| Stop Block Cod. | € |
|---|---|
| 9.F18.INDEX | - |
| NO STOP BLOCK | - |

| Bushing Cod. | € |
|---|---|
| 9.F18.INDEX.2 | - |

* Misura minima per distanziale sotto la quale è necessario accorciare il perno (Accorciamento massimo del perno 8 / 13mm)
Spacer minimum dimension under this dimension it is necessary to reduce the positioning pin height (Max possible reduction is 8 / 13mm)

# STOP-BLOCK TYPE 3



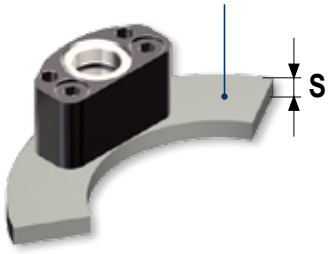



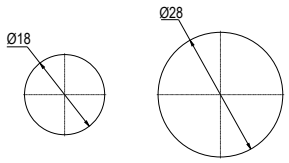

| Stop Block Cod. | € |
|---|---|
| 9.F28.INDEX | - |
| NO STOP BLOCK | - |

| Bushing Cod. | € |
|---|---|
| 9.F28.INDEX.2 | - |

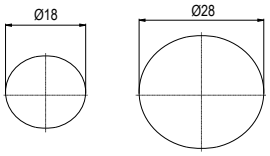
Per Teste Angolari tipo F90-S40 / F90-S40 70BAR / FMU 20
For Angle heads type F90-S40 / F90-S40 70BAR / FMU 20

**Distanziale - Spacer**




Perno cilindrico 2 assi
(per applicazione teste singole)
Cylindrical positioning pin 2 axis
(For single Angle Head applications)




Perno elittico 1 asse
(per applicazione teste multiple)
Elliptic positioning pin
(For multiple Angle Head applications)

# ESEMPIO DI MONTAGGIO TESTA ATC
# ATC ANGLE HEAD MOUNTING EXAMPLE

## *PER UN CORRETTO ORDINE VERIFICARE L'IDONEITÀ DEL **PERNO DI POSIZIONAMENTO***
## *FOR A RIGHT PURCHASE ORDER CHECK THE **POSITIONING PIN SUITABILITY***

### • STOP-BLOCK GIà PRESENTE SUL MANDRINO MACCHINA

Inviateci il disegno dello Stop-block e del mandrino macchina per determinare il perno

### • NESSUNO STOP-BLOCK MONTATO SUL MANDRINO MACCHINA

Rilevare la quota **X** e determinare (tramite tabella 1) il tipo di perno (standard, accorciato o speciale) necessario per una corretta installazione.
La quota **B** dipende dal tipo di mandrino macchina (SK - CAT - BT).

**1)** Il ***perno Standard*** è idoneo e bisognerà realizzare un distanziale se la quota **X** è superiore ad un determinato valore (indicato in tabella)

**2)** Il ***perno andrà Accorciato*** se invece la quota **X** è compresa tra i valori indicati in tabella 1. (Accorciamento Max. 8mm cono teste tipo 1 & 2, 6,5mm con teste tipo 3)

**3)** Sarà necessario realizzare un ***perno Speciale*** se infine la quota **X** è inferiore ai valori indicati in tabella 1

### • STOP-BLOCK ALREADY MOUNTED ON THE MACHINE SPINDLE

Send us the Stop-block and the machine spindle drawings in order to design the right Pin

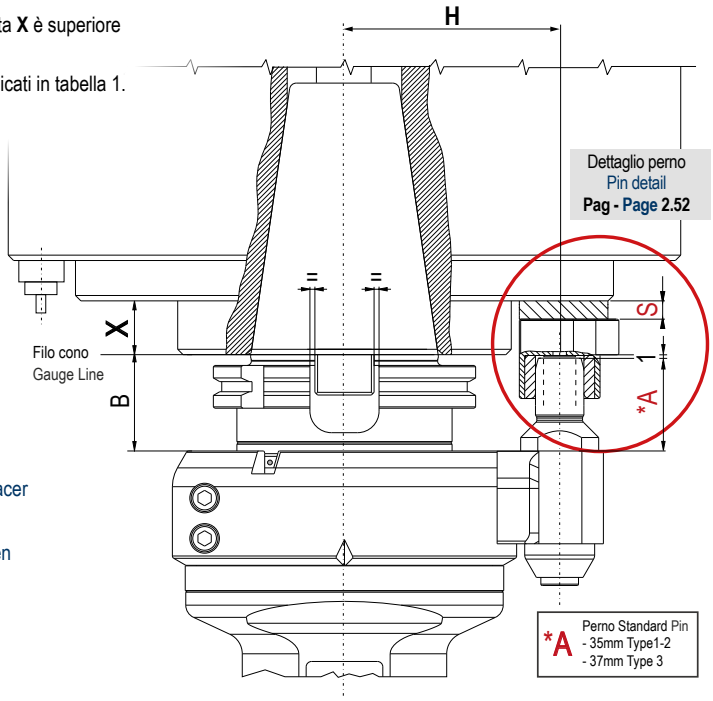
### • NO STOP-BLOCK MOUNTED ON THE MACHINE SPINDLE

Check **X** dimension and determine (through table 1) the right positioning pin type (standard, short or special).
Dimension **B** depends on the machine spindle type (SK - CAT - BT)

**1)** The ***Standard positioning pin*** is **OK** and it will be necessary to make a spacer if dimension **X** is superior than the values indicated in table 1.

**2)** ***The positioning pin must be Shortened*** if dimension **X** is included between values indicated in table 1 (Max shortening 8mm with angle heads type 1 & 2, Max 6,5mm with angle heads type 3).

**3)** It will be necessary a ***Special positioning pin*** if dimension **X** is inferior than the values indicated in table 1

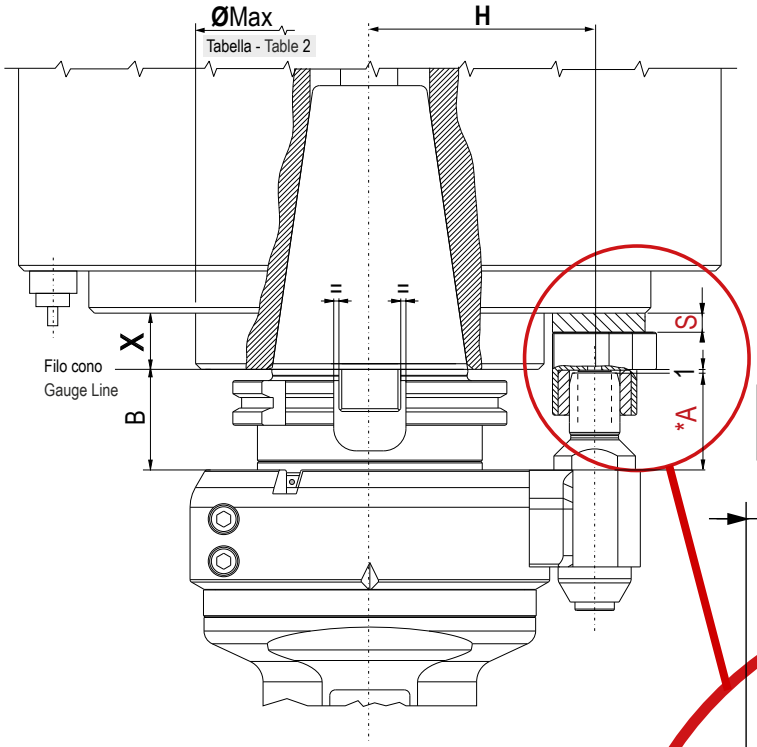



| (Tabella - Table 1) | STANDARD 35mm (type 3 = 37mm) NO Extra Price | | | ACCORCIATO-SHORTENED S= 8mm Extra Price: | | SPECIALE-SPECIAL Extra Price: |
|---|---|---|---|---|---|---|
| CONI SHANKS | B | X | CALCOLO SPESSORE DISTANZIALE CALCULATION FOR SPACER THICKNESS "S" | X | CALCOLO ALTEZZA PERNO HEIGHT PIN CALCULATION "A" | X |
| SK-CAT-BT30<br>SK-CAT-BT40<br>SK-CAT50 | 35 | X ≥ 23,5mm | H = 65/80/110 - Ø18<br>S= X-15,5 mm | 24 > X > 16,5 mm | A= (X+B) -23,5 | X < 16,5 |
| | 37 | X ≥ 24mm | H = 110 - Ø28<br>S= X-16 mm | | A= (X+B) -24 | |
| BT50 | 43 | X ≥ 15,5mm | H = 65/80/110 - Ø18<br>S= X-7,5 mm | 16 > X > 8,5 mm | A= (X+B) -23,5 | X < 8,5 |
| | 45 | X ≥ 16mm | H = 110 - Ø28<br>S= X-8 mm | | A= (X+B) -24 | |
| HSK-63 | 44 | X ≥ 14,5mm | H = 65/80/110 - Ø18<br>S= X-6,5 mm | 15 > X > 7,5 mm | A= (X+B) -23,5 | X < 7,5 |
| | | X ≥ 15mm | H = 110 - Ø28<br>S= X-7mm | | A= (X+B) -24 | |
| HSK-80<br>HSK-100 | 46 | X ≥ 12,5mm | H = 80/110 - Ø18<br>S= X-4,5 mm | 13 > X > 5,5 mm | A= (X+B) -23,5 | X < 5,5 |
| | | X ≥ 13mm | H = 110 - Ø28<br>S= X-5mm | | A= (X+B) -24 | |

Vedi esempio di calcolo distanziale **Pag. 2.52** - See spacer calculation example **Page. 2.52**

# PER UN CORRETTO ORDINE VERIFICARE L'IDONEITÀ DELL' **INTERASSE "H"**
# FOR A RIGHT PURCHASE ORDER CHECK **PITCH "H" SUITABILITY**

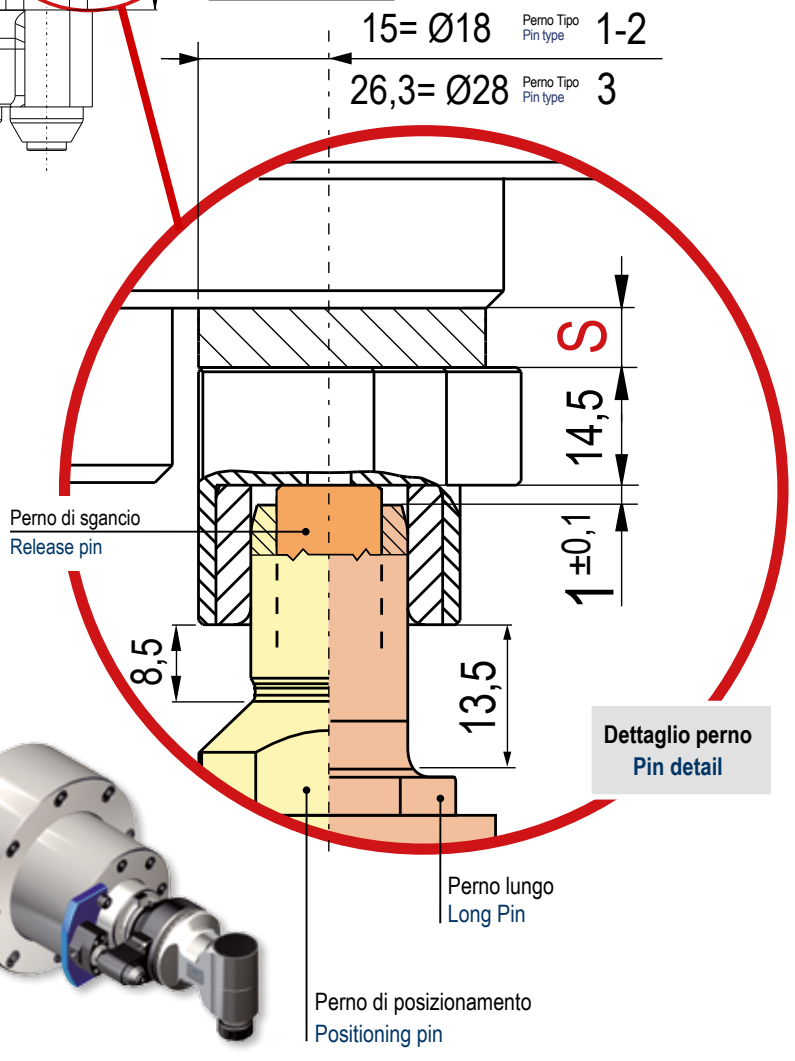
- **Verificare l'idoneità dell'interasse "H" tramite tabella 2**
- **Check pitch "H" through table 2**




(Tabella - Table 2)

| DIAMETRO MAX MANDRINO MACCHINA PER INTERASSI STANDARD<br>MAX MACHINE SPINDLE DIAMETER FOR STANDARD PITCH | | |
|---|---|---|
| **Perno - Pin** | **"H" Interasse - Pitch** | **Ø Max** |
| **Ø18** | 65 | Ø99 |
| | 80 | Ø129 |
| **Ø28** | 80 | Ø106 |
| | 110 | Ø166 |

*A Perno Standard Pin
- 35mm Type1-2
- 37mm Type 3



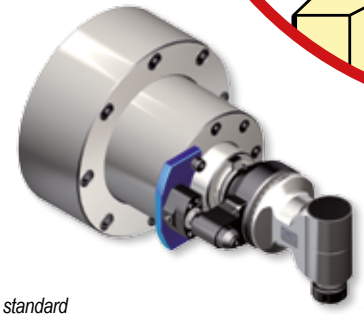

## ATTENZIONE !!

Il distanziale per il posizionamento dello stop-block, deve essere realizzato di uno spessore tale da comprimere il perno di sgancio **NON** per l'intera corsa, ma in modo da lasciare sempre 1mm di gioco.
I calcoli della pagina precedente sono già fatti in tal senso.

## ATTENTION !!

*The spacer for the stop-block must be done in order to push the release pin **NOT** for the whole stroke release, but leaving always 1mm play.*
*Previous page calculations are already considering this issue.*

| ESEMPIO DI CALCOLO SPESSORE DISTANZIALE<br>EXAMPLE OF CALCULATION FOR SPACER THICKNESS | |
|---|---|
| **X**= 23,5mm | **B**= 35mm (SK40) |
| **S**= **X** (23,5) - 15,5 = **8** | |



***N.B.:***

**23,5** *è anche la* **X** *minima per poter utilizzare il perno standard*
*is also the minimum* **X** *to use the standard pin*

**8** *è lo spessore per distanziale*
*is the spacer thickness*

## ANGLE HEADS

## GRUPPO CONO-SHANK GROUP

## FLANGIA-FLANGE

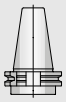
## PROLUNGHE - EXTENSION

| MODELLO MODEL | TIPO TYPE |
|---|---|
| F90-16S | 1 |
| F90-16L<br>F90-20 | 2 |
| F90-S40 | 3 |
| F90-S50 | 4 |

| Cod. | € |
|---|---|
| 9.SK30.MTC | - |
| 9.SK40.MTC | - |
| 9.SK50.MTC | - |
| 9.CT40.MTC | - |
| 9.CT50.MTC | - |
| 9.BT40.MTC | - |
| 9.BT50.MTC | - |
| 9.HSK63.MTC | - |
| 9.HSK80.MTC | - |
| 9.HSK100.MTC | - |
| 9.C5.MTC | - |
| 9.C6.MTC | - |
| 9.C8.MTC | - |
| 9.KM63.MTC | - |
| 9.KM80.MTC | - |
| 9.KM100.MTC | - |
| 9.208040.MTC | - |
| 9.208050.MTC | - |

DISEGNI DRAWINGS

SK DIN 69871



CAPTO ISO 26623

CAT ANSI B5.50

KM

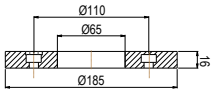
BT

ISO DIN 2080

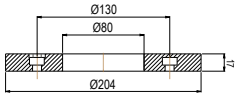
HSK DIN 69893

Senza Cono
No Shank:

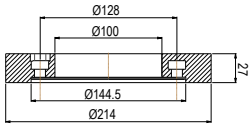
| 22,066 mm | € |
|---|---|
| 9.FL.F90T1 | - |
| No flange | - |




| 9.FL.F90T2 | - |
|---|---|
| No flange | - |

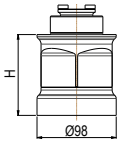



| 9.FL.F90T3 | - |
|---|---|
| No flange | - |

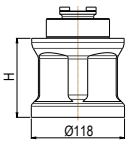



| 9.FL.F90T4 | |
|---|---|
| - | |

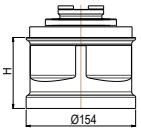
| H | Cod. | € |
|---|---|---|
| 100 | 9.FEX.10100 | - |
| 200 | 9.FEX.10200 | - |




| 100 | 9.FEX.20100 | - |
|---|---|---|
| 200 | 9.FEX.20200 | - |




| 100 | 9.FEX.30100 | - |
|---|---|---|
| 200 | 9.FEX.30200 | - |

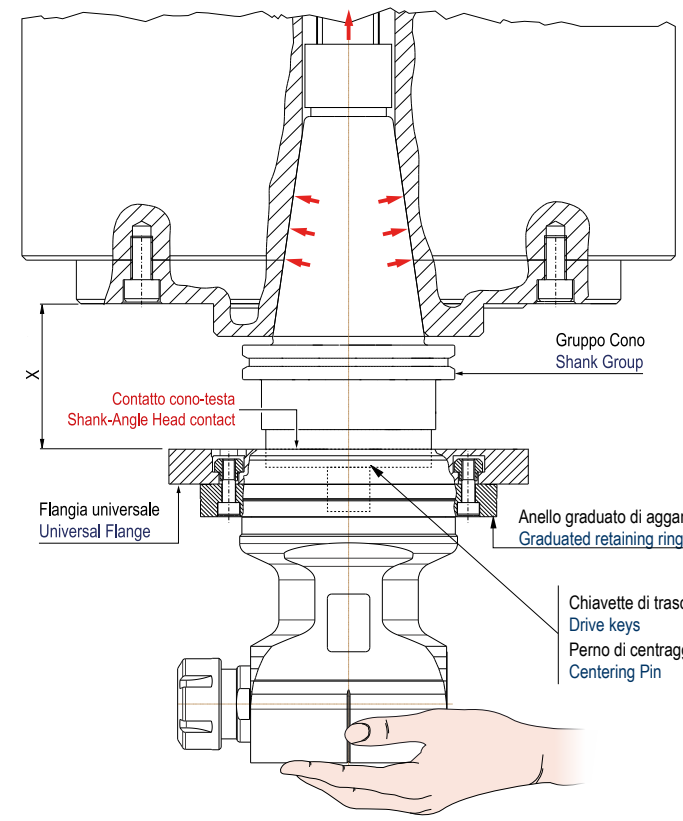



| 300 | 9.FEX.40300 | - |
|---|---|---|
| - | | |

# ESEMPIO DI MONTAGGIO TESTA MTC
# MTC ANGLE HEAD MOUNTING EXAMPLE

*Distanziale realizzato in opera - Spacer to be made*

Evolution Line

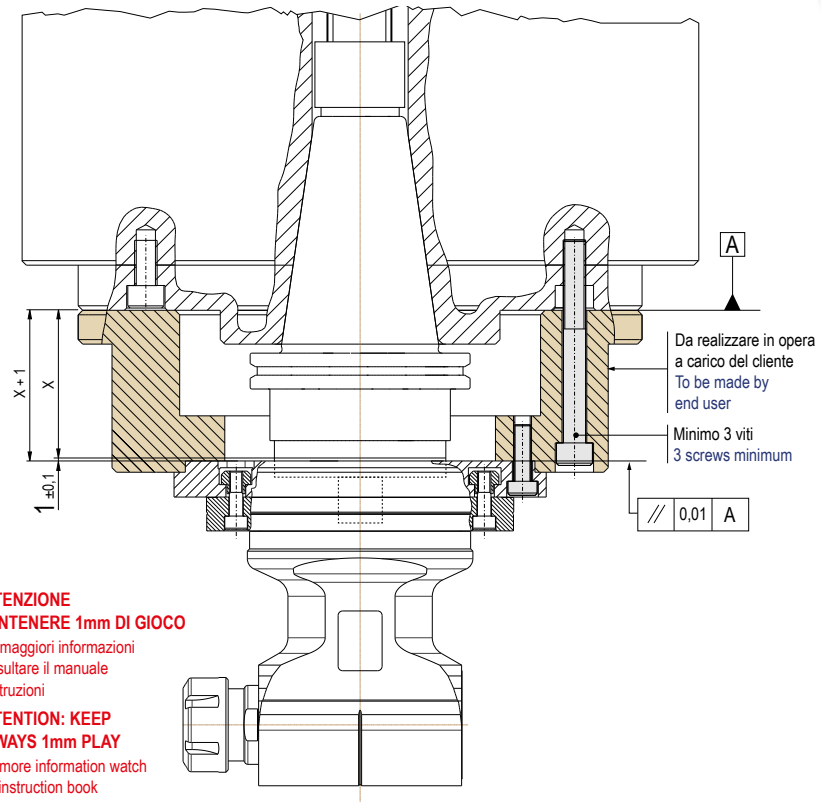



## FASE 1

- *Montare il cono in macchina bloccandolo con il mandrino*
- *Montare la flangia universale sulla testa*
- *Centrare e posizionare la testa sotto il cono avendo cura di mantenere il contatto cono-testa*
- *Rilevare la misura "X"*

## STEP 1

- *Assemble the shank on the machine through the machine spindle*
- *Assemble the universal flange on the head*
- *Position the head ensuring the contact shank-angle head body*
- *Check dimension "X"*




**ATTENZIONE**
**MANTENERE 1mm DI GIOCO**
Per maggiori informazioni consultare il manuale di istruzioni

**ATTENTION: KEEP ALWAYS 1mm PLAY**
For more information watch our instruction book

## FASE 2

- *Realizzare un distanziale avente spessore X + 1mm idoneo ad essere interposto tra flangia universale e mandrino macchina,*
- *Utilizzare minimo 3 viti*

## STEP 2

- *Make a spacer with X + 1mm thickness to be mounted between universal flange and machine spindle*
- *Use 3 screws minimum*