

帕莱克

GERARDI

A

ANGLE HEADS

高精度  
角度头

INTEGRAL & MODULAR SERIES / 整体式&模块化系列

无坚不摧  
无孔不入  
无所不能



IDEAL FOR MILLING, DRILLING & TAPPING OPERATION  
铣削、钻孔及攻丝的完美选择



QUICK ASSISTANCE  
快速服务

1 YEAR GUARANTEED  
1年质保

MODULAR QUICK CHANGE  
快换接口



series  
SLiM



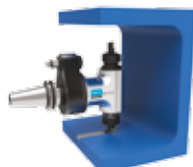
MICROMCHINNING  
微型系列

series  
OFFSET



OFFSET OUPUT  
偏置系列

series  
DOUB2E



DOUBLE OUTPUT  
双向输出系列

Omega angle heads are based on a solid technical know-how and on experience gained in 50 years spent at the side of our customers, during which we solved the most varied problems looking for the best solution and always ensuring the high quality and reliability of our products.

232 models of angle heads that can be split in two different ranges, CLASSIC LINE (the "integral" ones) composed of 141 models and EVOLUTION LINE (the "modular" ones) composed of 91 models. Both heads groups are accompanied by a range of options that complete their application and performance potentiality.

帕莱克角度头致力于为客户提供高品质的产品及专业的加工解决方案, 全系列产品拥有50多年设计经验, 解决了成千上万的产品生产问题, 始终确保产品的高品质及稳定性。

232种零部件可分解为两种系列角度头, CLASSIC系列由141个零部件组成, EVOLUTION系列由91个零部件组成, 两种系列角度头相辅相成, 提供最佳解决方案及最优质服务。

## INTEGRAL ANGLE HEADS SERIES

整体式系列角度头

# CLASSIC LINE



Integral case hardened & ground shank and shaft and made in 1 piece.  
整体式高刚性驱动刀柄

Positioning pin with automatic release  
销组件

Modular antirotation group  
旋转环

series  
**DOUB2E**

Standard 10BAR coolant through the pin  
10BAR 外接冷却

Graduated ring  
分度盘

series  
**LIGHT**

**REDUCE SET-UP TIME**  
and **ALLOW OFFLINE TOOL PRESETTING!**  
节约换刀时间，  
允许刀具离线预调！



### MODULAR QUICK CHANGE ADAPTORS 模块化快换接口

They are a modular toolholder system for the fitting of toolholders in a spindle unit with ER collets (DIN6499) outputs. All Adaptors are suitable for external and internal coolant supply and keep the presetting already done.  
模块化快换接口适用于所有ER系列(DIN6499) 输出角度头，支持内冷功能，允许刀具离线预调。



Internal thread  
内嵌式接口



External thread  
外螺纹接口



### ANGLE HEADS COOLANT TYPES 角度头冷却方式:

**10bar**

- » Positioning
- » Pin Tool
- » 外部冷却

**10bar**

- » Positioning Pin
- » Rotating Distributor
- » Tool
- » ATC外接刀具中心内冷

**up to 70bar**

- » Shank
- » Rotating Distributor
- » Tool
- » 主轴中心内冷

**10bar**

- » Positioning Pin
- » ReCool Nut
- » Tool
- » 内冷螺母转接刀具中心内冷



## MODULAR ANGLE HEADS SERIES & SPINDLE SPEEDERS

模块化系列角度头&模块化增速器

# EVOLUTION LINE



**SLIM**

MICROMACHINING  
微型系列



**STD 90°**

90° MACHINING  
标准系列



**COOLANT BY TOOL**

COOLANT BY TOOL  
10 bar内冷系列



**FM U**

ADJUSTABLE OUTPUT  
0° to 90°万向系列



**DOUB2E**

DOUBLE OUTPUT  
双向输出系列



**OFFSET**

OFFSET OUPUT  
偏置系列

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

角度头壳体可以实现0~360°轴向旋转和承载内部空气压力，具有高刚性、耐腐蚀性与抗热膨胀性能。

OUTPUTS - 输出:

ER collet (standard) / Weldon / Shell mill holder / Special  
ER弹簧夹套(标准)/侧固式类型/芯轴类型/定制类型



ONE HEAD FOR MANY MACHINES  
一个角度头适用于多台机床

Interchangeable drive tapers to suit any machine spindle  
模块化驱动刀柄

THE SAME MACHINE WITH MANY HEADS!  
多种角度头适用于一台机床

Antifriction Group  
旋转环



Positioning pin with automatic release pin component

Case hardened and ground shank and shaft  
高刚性角度头体

Graduated ring  
分度盘

10BAR coolant through the pin  
10BAR外接冷却



GEARS - 伞齿

Gleason ground spiral bevel gears maximum performances and minimum vibration

格里森精磨螺旋伞齿轮，低噪音，耐高温，使用寿命长久



BEARINGS - 轴承

Angular contact preloaded ball bearings of precision class ABEC 9

高精度角接触球轴承，精度达ABEC9级以上



STOP BLOCK - 定位块

with case hardened bushing and gasket  
高刚性定位块

series  
**LIGHT**

## FIND OUT THE MODULAR RANGE OF ANGLE HEADS

### ATC模块化系列角度头选型

# EVOLUTION LINE

# ATC

\* ALSO AVAILABLE "L" SERIES WITH THE LONGER BODY  
所有系列支持角度头体加长设计

### series LIGHT

Light angle heads with aluminum body  
轻型系列

#### FL90-7 / FL90-13 / FL90-16

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.FL9.07000	0		11 - Ø1/7	5	8.000	2.1
9.FL9.13000	1		25 - Ø1/13	20	6.000	4.6
9.FL9.16000	1		25 - Ø1/16	26	4.000	4.6

#### FL90-16 2U/ FLU-7

9.FL9.162U0	1		25 - Ø1/16	26	4.000	4.6
9.FLU.07000	0		11 - Ø1/7	5	8.000	2

### series SLiM

Slim angle heads for micromachining  
微型系列

#### FS90-3 / FS90-4 / FS90-6

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.FS9.03000	1		6023E - Ø1/3	2	8.000	5.5
9.FS9.04000	1		600E - Ø1/4	3.5	8.000	5.5
9.FS9.06000	1		601E - Ø1/6	4	8.000	6

#### FS90-3L / FS90-4L / FS90-6L

9.FS9.03L00	1		6023E - Ø1/3	2	8.000	6.4
9.FS9.04L00	1		600E - Ø1/4	3.5	8.000	6.8
9.FS9.06L00	1		11 - Ø1/7	4	8.000	6

### \* series STD 90°

Ideal for milling, drilling and tapping at ±90°  
标准系列

#### F90-7 / F90-10 / F90-13 / F90-16 / F90-20

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.F90.07000	1		11 - Ø1/7	6	10.000	5
9.F90.10000	1		16 - Ø1/10	11	10.000	5.3
9.F90.13000	1		20 - Ø1/13	27	8.000	6.3
9.F90.16000	2		25 - Ø1/16	46	5.000	9
9.F90.20000	2		32 - Ø2/20	85	3.500	13.2

### series STD 90°

Ideal for milling, drilling and tapping at ±90°  
标准加长系列

#### F90-7L / F90-10L / F90-13 / F90-16 / F90-20

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.F90.07L00	1		11 - Ø1/7	6	10.000	5
9.F90.10L00	1		16 - Ø1/10	11	10.000	5.3
9.F90.13L00	1		20 - Ø1/13	27	8.000	7.1
9.F90.16L00	2		25 - Ø1/16	46	5.000	12.7
9.F90.20L00	2		32 - Ø2/20	85	3.500	19

### series STD 90°

Ideal for milling, drilling and tapping at ±90°  
重型系列

#### F90-16S / F90-20S / F90-S40

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.G90.16S00	1		25 - Ø1/16	27	8.000	6.4
9.G90.20S00	1		32 - Ø2/20	46	5.000	7
9.G90.S4000	3		ISO40/ CAT/BT40	135	2.500	21.7

### series OFFSET

Offset series for machining in narrow spaces with coolant input  
偏置系列

#### FR90-10 70BAR / FR90-13 70BAR

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.FR9.100B0	1		16 WP- Ø1/10	22	6.000	6.2
9.FR9.130B0	1		20 WP- Ø1/13	40	4.500	7.5

#### FR90-16 70BAR / FR90-20 70BAR

9.FR9.160B0	2		25WP- Ø1/16	80	4.000	11.7
9.FR9.200B0	2		32 WP- Ø2/20	82	3.500	14.5

DIRECTION OF ROTATION OPPOSITE TO THE MACHINE SPINDLE  
与主轴输入方向相反

DIRECTION OF ROTATION SAME AS MACHINE SPINDLE  
与主轴输入方向相同

FIND OUT THE MODULAR RANGE OF ANGLE HEADS  
ATC & MTC模块化系列角度头选型

## EVOLUTION LINE

# ATC

\* ALSO AVAILABLE "L" SERIES WITH THE LONGER BODY  
所有系列支持角度头体加长设计

### series COOLANT

Ideal for milling, drilling and tapping at  $\pm 90^\circ$   
内冷系列

#### F90-7 10BAR

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.F90.070B0	1		11 WP- Ø1/7	6	10.000	5

#### F90-S40 70BAR

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.F90.S40B0	3		ISO40 CAT BT40	135	2.500	22

### series FMU

Angle heads with adjustable angle from  $0^\circ$  to  $90^\circ$   
万向系列

#### FMU-10 / FMU-16 / FMU-20

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.FMU.10000	1		16 - Ø1/10	9	4.000	6.3
9.FMU.16000	1		25 - Ø1/16	15	3.000	8.2
9.FMU.20000	3		32 - Ø2/20	48	2.500	22

### series DOUB2E

Angle heads series with 2 opposite outputs  
双向输出系列

#### F90-7 2U / F90-10 2U / F90-16 2U / F90-20 2U / F90-30 2U

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.F90.072U0	1		11 - Ø1/7	6	10.000	5
9.F90.102U0	1		16 - Ø1/10	11	10.000	5.3
9.F90.162U0	2		25 - Ø1/16	46	5.000	9
9.F90.202U0	1		32 - Ø2/20	85	3.500	13.2
9.F90.302U0	3		40 - Ø3/30	135	2.500	21.7

### series DOUB2E

Angle heads series with 2 opposite outputs  
双向输出加长系列

#### F90-7L 2U / F90-10L 2U / F90-16L 2U

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.F90.07L2U0	1		11 - Ø1/7	6	10.000	6.3
9.F90.10L2U0	1		16 - Ø1/10	11	10.000	6.9
9.F90.16L2U0	2		25 - Ø1/16	46	5.000	12.7

### series STD 90°

Ideal for milling, drilling and tapping at  $\pm 90^\circ$   
标准系列

#### F90-16S MTC / F90-20 MTC

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.F90.16S01	1		25 - Ø1/16	27	8.000	6
9.F90.20001	2		32 - Ø2/20	85	3.500	7.5

#### F90-16L MTC / F90-20L MTC

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.F90.16L01	2		25 - Ø1/16	46	5.000	7.5
9.F90.20L01	2		32 - Ø2/20	85	3.500	10.5

# MTC

### series XL

Designed for heavy duty cutting (turbines, valves, big casting)  
重型系列

#### F90-S40 MTC

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.F90.S4001	3		ISO40 CAT BT40	135	2.500	21

DIRECTION OF ROTATION OPPOSITE TO THE MACHINE SPINDLE  
与主轴输入方向相反

DIRECTION OF ROTATION SAME AS MACHINE SPINDLE  
与主轴输入方向相同

FIND OUT THE COMPLETE RANGE OF ANGLE HEADS

ATC整体式系列角度头选型

## CLASSIC LINE

# ATC

\* ALSO AVAILABLE "L" SERIES WITH THE LONGER BODY  
所有系列支持角度头体加长设计

### series LIGHT

Light angle heads with aluminum body  
轻型系列



#### GL90-7 / GL90-10

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.GL9.07000	0		11 - Ø1/7	5	10.000	2.2
9.GL9.10000	0		16 - Ø1/10	10	10.000	2.4

#### GL90-16 / GTU-10

9.GL9.16000	1		25 - Ø1/16	24	8.000	5.1
9.GTU.10000	0		16 - Ø1/10	10	6.000	3.8

### series GMU

Angle heads with adjustable angle from 0° to 90°  
万向系列



#### GMU-13 / GMU-16 / GMU-20

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.GMU.13000	0		20 - Ø1/13	6	4.000	4.2
9.GMU.16000	1		25 - Ø1/16	18	4.000	6.8
9.GMU.20000	2		32 - Ø2/20	32	4.000	13

### \* series STD 90°

Ideal for milling, drilling and tapping at ±90°  
标准系列



#### G90-5 / G90-7

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.G90.05000	1		8 - Ø0,5/5	4	10.000	4
9.G90.07000	1		11 - Ø1/7	5	10.000	4

#### G90-10 / G90-16

9.G90.10000	1		16 - Ø1/10	10	10.000	4.3
9.G90.16000	1		25 - Ø1/16	24	8.000	5.4

### series DOUB2E

Angle heads series with 2 opposite outputs  
双向输出系列



#### G90-16 2U / G90-20 2U / G90-30 2U

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.G90.162U0	1		25 - Ø1/16	24	4.000	6.4
9.G90.202U0	2		32 - Ø2/20	40	4.000	11.7
9.G90.302U0	3		40 - Ø3/30	75	4.000	20

### \* series STD 90°

Ideal for milling, drilling and tapping at ±90°  
重型系列



#### G90-20 / G90-30 / G90-S40

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.G90.20000	2		32 - Ø2/20	40	4.000	11
9.G90.30000	3		40 - Ø3/30	75	4.000	17
9.G90.S40000	4		ISO40/ CAT/BT40	140	4.000	22

### series OFFSET

Offset series for machining in narrow spaces with coolant input  
偏置系列



#### GR90-5 / GR90-10

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.GR9.05000	1		SCHAUBLIN P6 - Ø0,3/4,5	9	8.000	4.7
9.GR9.10000	1		16 - Ø1/10	20	4.000	6.2

#### GR90-16 / GR90-S40

9.GR9.16000	1		25 - Ø1/16	20	4.000	6
9.GR9.S4000	4		ISO40/ CAT/BT40	140	4.000	22.6

DIRECTION OF ROTATION OPPOSITE TO THE MACHINE SPINDLE  
与主轴输入方向相反

DIRECTION OF ROTATION SAME AS MACHINE SPINDLE  
与主轴输入方向相同



FIND OUT THE COMPLETE RANGE OF ANGLE HEADS  
MTC整体式系列角度头选型

## CLASSIC LINE

# MTC

\* ALSO AVAILABLE "L" SERIES WITH THE LONGER BODY  
所有系列支持角度头体加长设计

### \* *series* STD 90°

Ideal for milling, drilling and tapping at ±90°  
标准系列

#### G90-5 MTC / G90-7 MTC

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.G90.05001	1		8 - Ø0,5/5	4	10.000	4
9.G90.07001	1		11 - Ø1/7	5	10.000	3.7

#### G90-10 MTC / G90-16 MTC

9.G90.10001	1		16 - Ø1/10	10	10.000	4.3
9.G90.16001	1		25 - Ø1/16	24	8.000	4.5

### \* *series* GMU

Angle heads with adjustable angle from 0° to 90°  
万向系列

#### GMU-16 MTC / GMU-20 MTC / GMU-S40 / GMU-S50 MTC

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.GMU.16001	1		25 - Ø1/16	18	4.000	6.3
9.GMU.20001	2		32 - Ø2/20	32	4.000	13
9.GMU.S4001.125	6		ISO40/ CAT/BT40	100	3.000	59.3
9.GMU.S4001	5		ISO40/ CAT/BT40	100	3.000	49.5
9.GMU.S5001	6		ISO40/ CAT/BT40	220	3.000	121

### \* *series* STD 90°

Ideal for milling, drilling and tapping at ±90°  
标准系列

#### G90-20 MTC / G90-30 MTC

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.G90.20001	2		32 - Ø2/20	40	4.000	10
9.G90.30001	3		40 - Ø3/30	75	4.000	17

### \* *series* DOUB2E

Angle heads series with 2 opposite outputs  
双向输出系列

#### G90-16 2U MTC / G90-20 2U MTC / G90-30 2U MTC

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.G90.162U01	1		25 - Ø1/16	24	4.000	5.6
9.G90.202U01	2		32 - Ø2/20	40	4.000	14
9.G90.302U01	3		40 - Ø3/30	75	4.000	20

### *series* XL

Designed for heavy duty cutting (turbines, valves, big casting)  
重型系列

#### G90-S40 MTC / G90-S40XL MTC / G90-S50 MTC

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.G90.S4001	4		ISO40/ CAT/BT40	140	4.000	22
9.G90.S40XL1	5		ISO40/ CAT/BT40	140	4.000	32.5
9.G90.S5001	6		ISO40/ CAT/BT50	400	3.000	77

### *series* XL

Designed for heavy duty cutting (turbines, valves, big casting)  
重型加长系列

#### G90-S40XL MTC / G90-S50XL MTC

Cod. - Code	TYPE		ER	Nm	Rpm	Kg
9.G90.S40XL.400	5		ISO40/ CAT/BT40	140	4.000	57
9.G90.S40XL.500						67
9.G90.S40XL.600						78
9.G90.S40XL.700						86
9.G90.S50XL.400	6		ISO40/ CAT/BT50	400	3.000	149
9.G90.S50XL.500						169
9.G90.S50XL.600						190
9.G90.S50XL.700						211
9.G90.S50XL.800						231

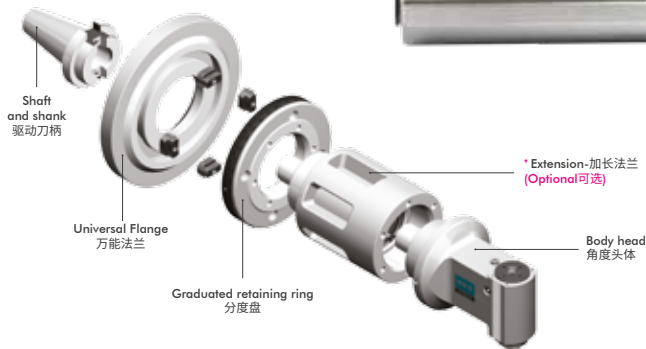
DIRECTION OF ROTATION OPPOSITE TO THE MACHINE SPINDLE  
与主轴输入方向相反

DIRECTION OF ROTATION SAME AS MACHINE SPINDLE  
与主轴输入方向相同

## MTC SERIES - MANUAL TOOL CHANGE MTC系列-手动换刀角度头

CLASSIC LINE

EVOLUTION LINE



This is a range of heads for traditional machine tools with flange attachment. The T-slot on the universal flange facilitates positioning the head 360° around its vertical axis. The modular system makes it possible to extend the length of the body by adding a spacer. The extension spacer, drive tapers and universal flange are modular and therefore interchangeable among all the heads of similar size.

该系列角度头是带有法兰附件的机床工具，安装在万能法兰盘中的T型滑块可以调节角度头头部沿着轴向往进行360°旋转，模块化设计可以通过增加加长法兰来延长角度整体长度，加长法兰，驱动刀柄及万能法兰都是模块化结构，因此所有MTC系列类似尺寸角度头可以互换。



### MTC extension MTC 加长法兰

On MTC series is possible to extend the length of the body by adding an extension  
MTC系列角度头可通过增加加长法兰实现角度头体加长



### Double output option 双向输出选项

With the double option output you can optimize the production cycle avoiding extra set-up  
双向输出设计，避免角度二次调整



### MULTIPOINT system 辅助支撑

- High precision guaranteed
- For heavy duty machining
- Avoiding any type of vibration
- For any type of machine spindle
- 提高加工精度
- 适用于重载切削
- 避免加工震动
- 适用于ATC系列



### ReCool ER nuts 外接内冷螺母

By ReCool nuts it is possible to get coolant through the tool even on angle heads which do not have this option.  
通过增加内冷螺母实现内冷角度头实现内冷功能。

# 帕莱克

## GERARDI

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