



BARUFFALDI

MACHINE TOOL COMPONENTS

產品綜合目錄



Product reference guide



昆山苏美自动化科技有限公司

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TURRET CONTROLLED BY SERVO-MOTOR TYPE TB

TB伺服刀架



AXIAL DRIVEN TOOLS TURRETS TYPE TBMA

TBMA轴向装刀伺服动力刀架



RADIAL DRIVEN TOOLS TURRETS TYPE TBMR/VDI

TBMR/VDI径向装刀伺服动力刀架



RADIAL DRIVEN TOOLS TURRETS TYPE TBMR/BMT

TBMR/BMT径向装刀伺服动力刀架



TURRET CONTROLLED BY SERVO-MOTOR TYPE TBH

TBH伺服刀架



AXIAL DRIVEN TOOLS TURRETS TYPE TBHMA

TBHMA轴向装刀伺服动力刀架



ELECTROMECHANICAL TURRETS TYPE TE

TE电动刀架



ELECTROMECHANICAL TURRETS TYPE TAN

TAN立式电动架



"Y-AXIS" UNIT TYPE YAX

Y轴单元及其刀架



TURN-MILL MULTIFUNCTION UNIT 'B' AXIS TYPE BAX

B轴单元



TWO SPEED GEARBOX TYPE CE

CE双速变速箱



TOOL HOLDER DISC CATALOG

刀盘及动力头



FRONTAL TEETH RINGS GUIDE

定制齿盘



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Baruffaldi S.p.a.

High precision mechanical industries development

Baruffaldi has been in the mechanical branch since 30s producing brakes for motorcycles.

Thanks to the development of the market and to the experience gained, during the 70s, Baruffaldi started the production of components for machine tools, gearboxes, and electromechanical turrets for CNC lathes.

Attentive to the needs and demands of new technology, Baruffaldi has been able to develop the precise and safe product requested by the machine tools market, with particular attention to the new servomotor turrets, to the 2 speed gearboxes, the toolholder discs, the driven tools and the new B axis and Y axis devices.

These products successfully met the market demands, which permitted Baruffaldi to be soon a leading company in the mechanical industry.

Nowadays, the products have maintained their high quality standard, but their technical characteristics have been considerably improved thanks to a continuous cooperation among the design, test, production, and sales departments.

Baruffaldi is now developing its business in the two NEW branches of Settala (Machine Tools Components) and Tribiano (Electromagnetic Clutches and Brakes), on an area of 23.000 covered square meters.

Baruffaldi sells its product line and provides service all over the world thanks to sales managers and technical services operating in the most industrialized Countries.

巴罗法蒂公司自20世纪30年代，从生产摩托车刹车开始进入机械加工领域。鉴于从不断发展的市场中获得的宝贵经验，公司从20世纪70年代开始生产机床功能部件，变速箱以及数控车床用电动刀架。

因市场对新技术的渴望，公司致力于发展更为精密和安全的产品，特别是新型伺服电机控制的刀架、主轴双速变速箱、刀盘、动力头以及新型的B轴刀架和Y轴单元等。

这些产品不仅迎合了市场的需求，而且使得公司很快成为机械工业领域中的佼佼者。如今，这些产品在设计、测试和生产部门的共同合作下，在保持其原有的高品质前提下，技术性能不断的进步。

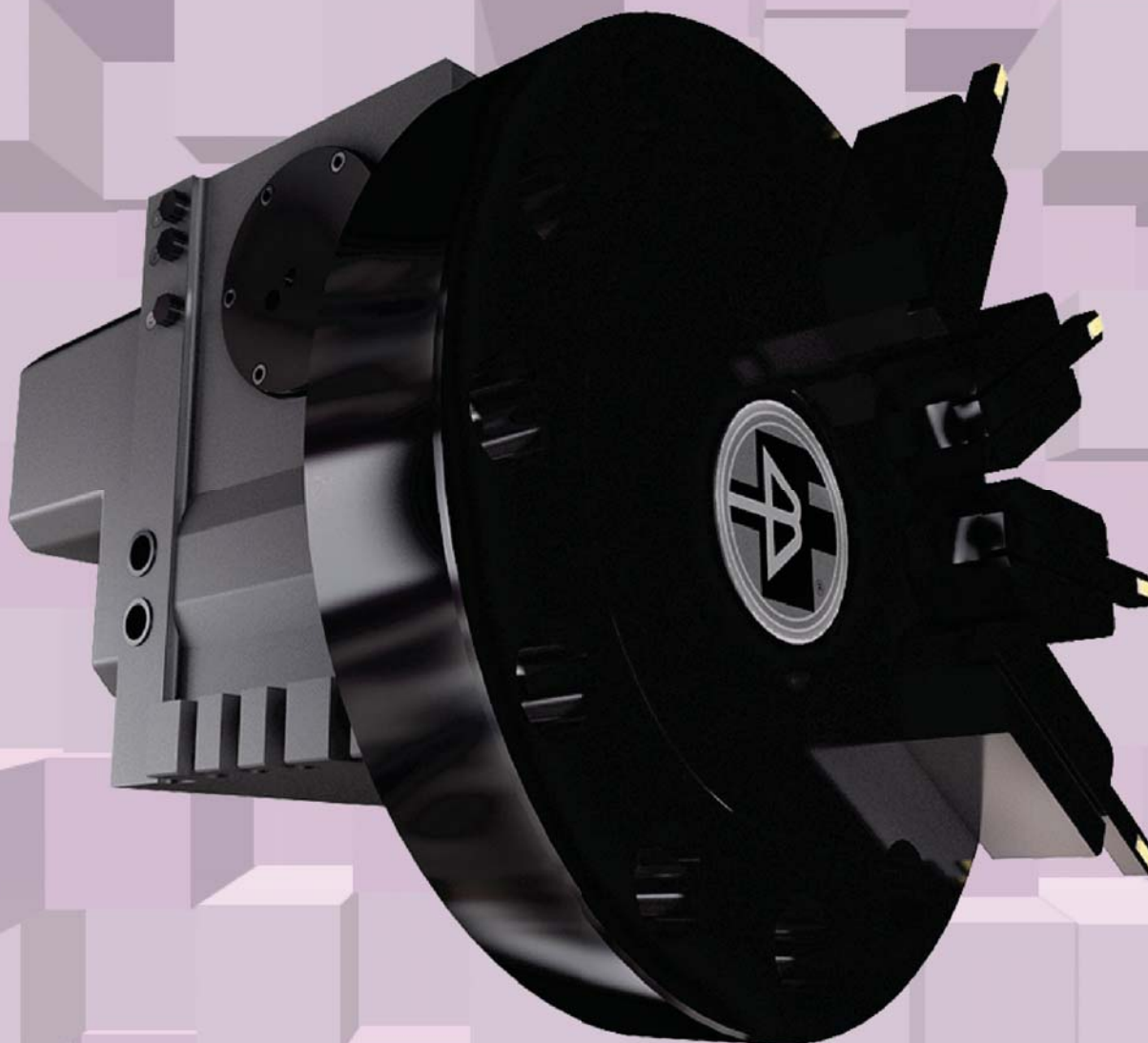
公司目前有两个主要生产基地，分别是：Settala（机床功能部件）

Tribiano（电磁离合器和刹车）

总面积达23,000平方米。通过销售管理和技术支持，我们的产品行销世界主要的工业化国家。



Turrets controlled by servo-motor type TB



伺服电机转位刀架TB系列选型指南



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	刀架的选型	Selection of turret		
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10	冷却液的进给连接	feedings connections of the coolan		
11	电器连接	Electrical connections		
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14	TB120 刀架外形图	External view	TB	120
15	TB160 刀架外形图	External view	TB	160
16	TB200 刀架外形图	External view	TB	200
17	TB250 刀架外形图	External view	TB	250
18	TB320 刀架外形图	External view	TB	320
19	TB400 刀架外形图	External view	TB	400
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23	TBF200 刀架外形图	External view	TBF	200
24	TBF250 刀架外形图	External view	TBF	250



Turrets controlled by servo-motor type TB

伺服电机转位刀架 TB



新型的TB刀架通过无碳刷电机，由最新的驱动器控制分度。因这些新的组合，最大限度的降低

刀架的分度时间，定位时无振动。刀架锁紧之后，通过内部的碟簧保持锁紧力超大直径的端齿盘附加高预载力，给刀架提供强大的刚性。

气动辅助锁紧松开（标准型），或者液压辅助锁紧松开（备选型）刀架工位有多种选择，转动惯量变化范围广泛。控制和执行分度的机构（DMS08-BF）

承担着CNC发出的换刀指令伺服驱动器置于电箱内因此刀架非常紧凑，体积变小

- 高转速，分度速度极高
- 锁紧和松开是无轴向窜动
- 双向选刀
- 刀架可以以气动或液压辅助锁紧和松开（320以上只有液压）
- 碟簧系统保证刀架能在断电的情况下依然锁紧
- 新型设计，刀架高刚性
- 绝对值编码器定位
- 极高的定位精度
- 维修简便
- 规格齐全120,160,200,250,320,400,500
- 可以使用8-12-16-24工位

The turrets TB.type rotate thanks to a BRUSHLESS SERVO MOTOR, controlled by a New generation proper driver.

Thanks to this new combination, extremely Reduced times and shockless positionings are performed.

The locking of the turret occurs through the Belleville washer that give a strong stiffness to the turret.

The Hirth couplings, with a large diameter and highly preloaded, give a strong stiffness to the turret.

A pneumatic actuator (standard) or hydraulic (on request) Locks/unlocks the turret.

The turrets can perform various positions and Various inertia of applied masses.

The controlling and energizing unit (drive DMS08BF) operates on to all the phases for the positioning changes requested by the CNC.

The servo drive unit is placed in a panel.

In this way the turret result very compact and with Reduced dimensions.

Main Characteristics:

Very high rotating speed and minimum indexing times

Locking and unlocking without axial movement

Bi-directional rotation

Possibility to command the locking and the unlocking of the turret with hydraulic or pneumatic system (TB 320-400-500 only hydraulic system)*

A spring system ensures the turret's clamping also in absence of electric power

High rigidity, due to the new design

Absolute positioning

Very accurate positioning

Easy maintenance

Wide range 120,160,200,250,320,400,500

Possibility to use 8-12-16-24 position disc





Technical data

技术参数

规格 Size			TB 100	TB 120	TB 160	TB 200	TB 250	TB 320	TB 400	TB 500
工位数 No. of divisions			8 - 12	8 - 12	8 - 12	8 - 12	8 - 12	8 - 12	8 - 12	8 - 12
			16	16 - 24	16 - 24	16 - 24	16 - 24	16 - 24	16 - 24	16 - 24
转动惯量 Moment of inertia	Kgm ²		0,25	0,15÷1,8	0,15÷1,8	0,4÷8	0,4÷8	0,7÷40	20÷100	100
最大切线方向扭矩 Max Tangential torque	Nm		450	1100	1900	4000	7500	16000	26000	75000
最大下压扭矩 Max overturning torque in pressing direction	Nm		400	1200	2100	6000	12000	25000	41400	50000
最大脱离扭矩 Max Overturning Torque in Lifting Direction	Nm		150	700	1600	3500	6500	13000	20000	25000
最大不平衡扭矩 Max out of balance torque	Nm		3	10	15	40	60	160	470	500
定位精度 Positioning accuracy	Gradi Deg.		± 4"	± 4"	± 4"	± 4"	± 4"	± 4"	± 4"	± 4"
重复定位精度 Accuracy of Repeatability	Gradi Deg.		± 1,6"	± 1,6"	± 1,6"	± 1,6"	± 1,6"	± 1,6"	± 1,6"	± 1,6"
分度时间 Positioning time	30°	sec	0,13	0,13÷0,24	0,13÷0,24	0,20÷0,34	0,20÷0,34	0,64	0,86	0,86
	45°	sec	0,17	0,17÷0,28	0,17÷0,28	0,25÷0,38	0,25÷0,38	0,71	0,96	0,96
	180°	sec	0,3	0,34÷0,50	0,34÷0,50	0,53÷0,73	0,53÷0,73	1,76	2,42	2,42
松开时间 Unlocking time*	sec		0,1	0,1	0,1	0,12	0,12	0,6	0,6	0,6
锁紧时间 Locking time*	sec		0,1	0,1	0,1	0,12	0,12	0,6	0,6	0,6
版本 Available version	气压 Pneumatic		•	•	•	•	•			
	液压 Hydraulic			•	•	•	•	•	•	•
工作压力 Working pressure	Bar	气压 (标准) Pneumatic (standard)								5 ± 1
		液压 (选配) Hydraulic (standard)								30 ± 3



Order code for turret Type TB

TB刀架订货号

规格 <i>Size</i>	订货号 <i>code</i>	工位数 <i>No. of division</i>	订货号 <i>code</i>
TB 120	0120	8/12	0
TB 160	0160	8	1
TB 200	0200	12	2
TB 250	0250	16	3
TB 320	0320	24	5
TB400	0400		
TB500	0500		

伺服放大器 <i>Servo amplifier control unit</i>	订货号 <i>code</i>
BF标准电机和驱动 <i>Motor and drive standard BF</i>	0
不带驱动，电机为西门子1FK7-042 <i>Without drive preset for motor Siemens 1FK7 - 042</i>	2
不带驱动，电机为发那科M3和alpha4HV(伺服) <i>Without drive preset for motor Fanuc M3 and alpha 4HV (servo)</i>	3
不带驱动和电机 <i>Without servo and motor for turret</i>	4

K **5** **4** - [] [] [] [] - [] [] [] [] - [] [] [] [] - [] [] [] []

2 **4**
Vecchio old

TBF

5 **5**

Cod
货号

刀盘 <i>Tool holder disc</i>	*
根据规格最终在此生成一个字母	
On request, based on the specifications, a letter will be assigned	

版本规格 *Version specifications*

	Cod
无冷却水盘 <i>Model without coolant ring</i>	0
右刀架冷却水盘 <i>Model with clockwise collant interception ring</i>	1
左刀架冷却水盘 <i>Model with counterclockwise collant interception ring</i>	2
通用冷却水盘 <i>standard version with universal collant interception ring</i>	3

驱动方式 <i>Actuator</i>	Cod
气动 / <i>Pneumatic</i>	0
TB 100 120 160 200 250	
液压 / <i>Hydraulic</i>	1
TB 120 160 200 250 320 400 500	

版本规格 *Version specifications*

	Cod
标准版 <i>Standard version</i>	01
图号 <i>refer to the drawing</i>	*

立式安装使用 <i>Application vertical down</i>	Cod
G	
* 根据客户订货号 BARUFFALDI 将提供最终刀架货号	
Based on the data provided by the customer Baruffaldi will supply the code	



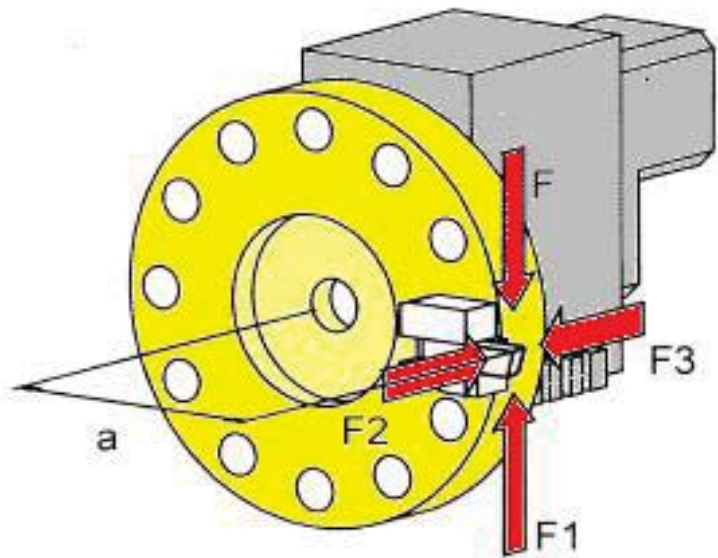
Selection of turret

刀架选型

根据下图所示刀盘的受力情况。
固定刀座装配数量
请阅生产商的参数表

Following diagrams refer to forced applied to toolholder disc.

For loading capacity of static toolholders
Please refer to manufacturer's data sheet.
For turret operating capabilities please
Refer to section "technical data" page 4.

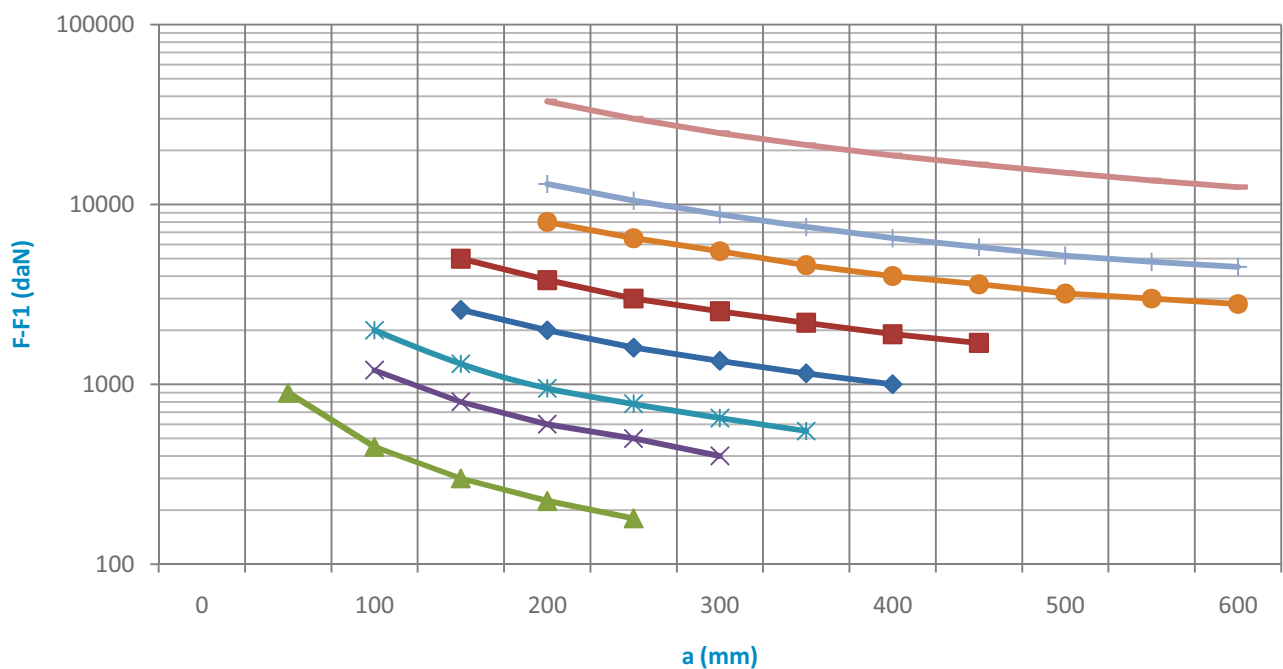


切线方向的切削力F-F1

As a function of the tangential thrust F-F1-F1

F F1单位 (daN) 1daN=10N

切线方向
tangential

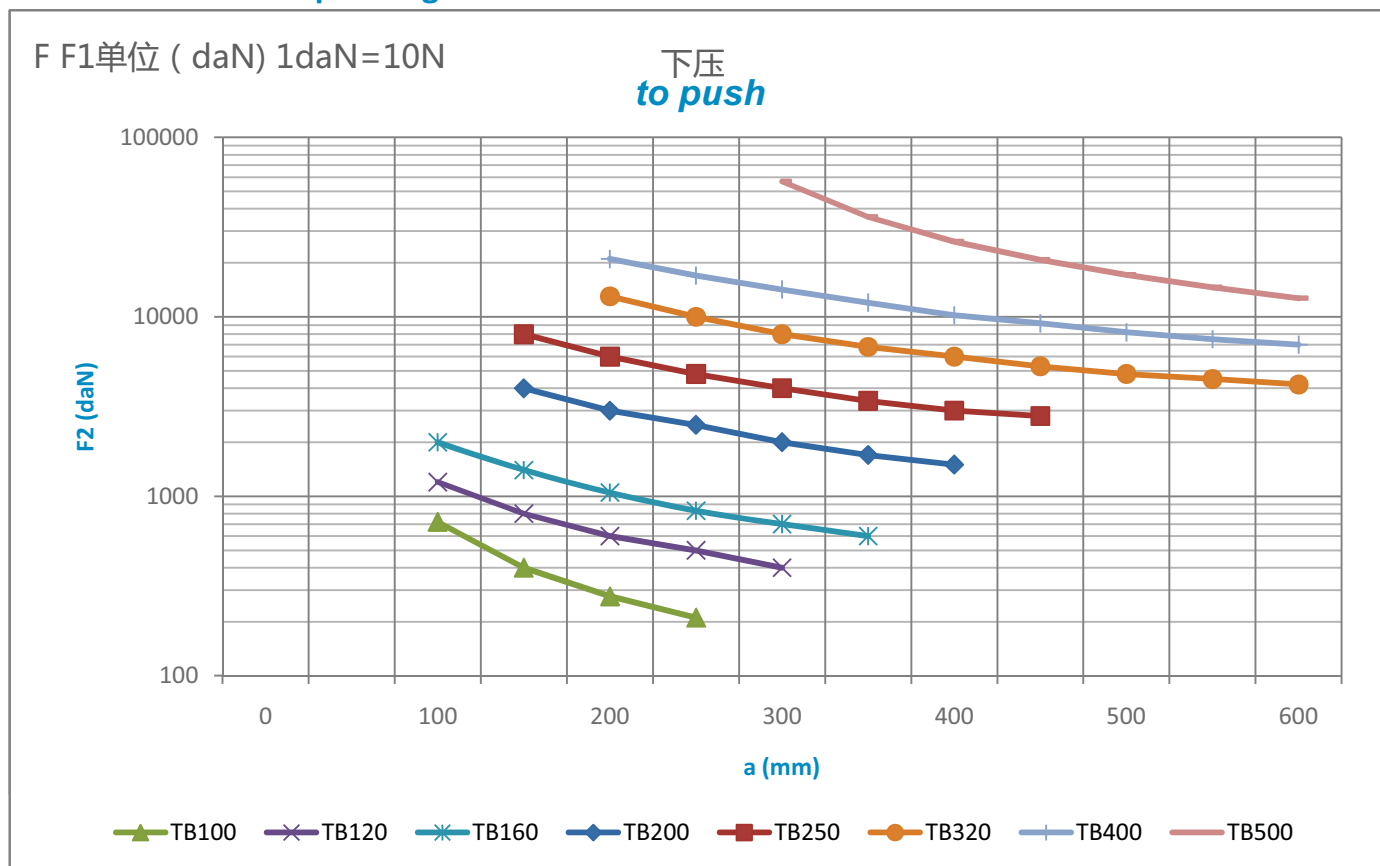


▲ TB100 × TB120 * TB160 ◆ TB200 ■ TB250 ● TB320 + TB400 — TB500



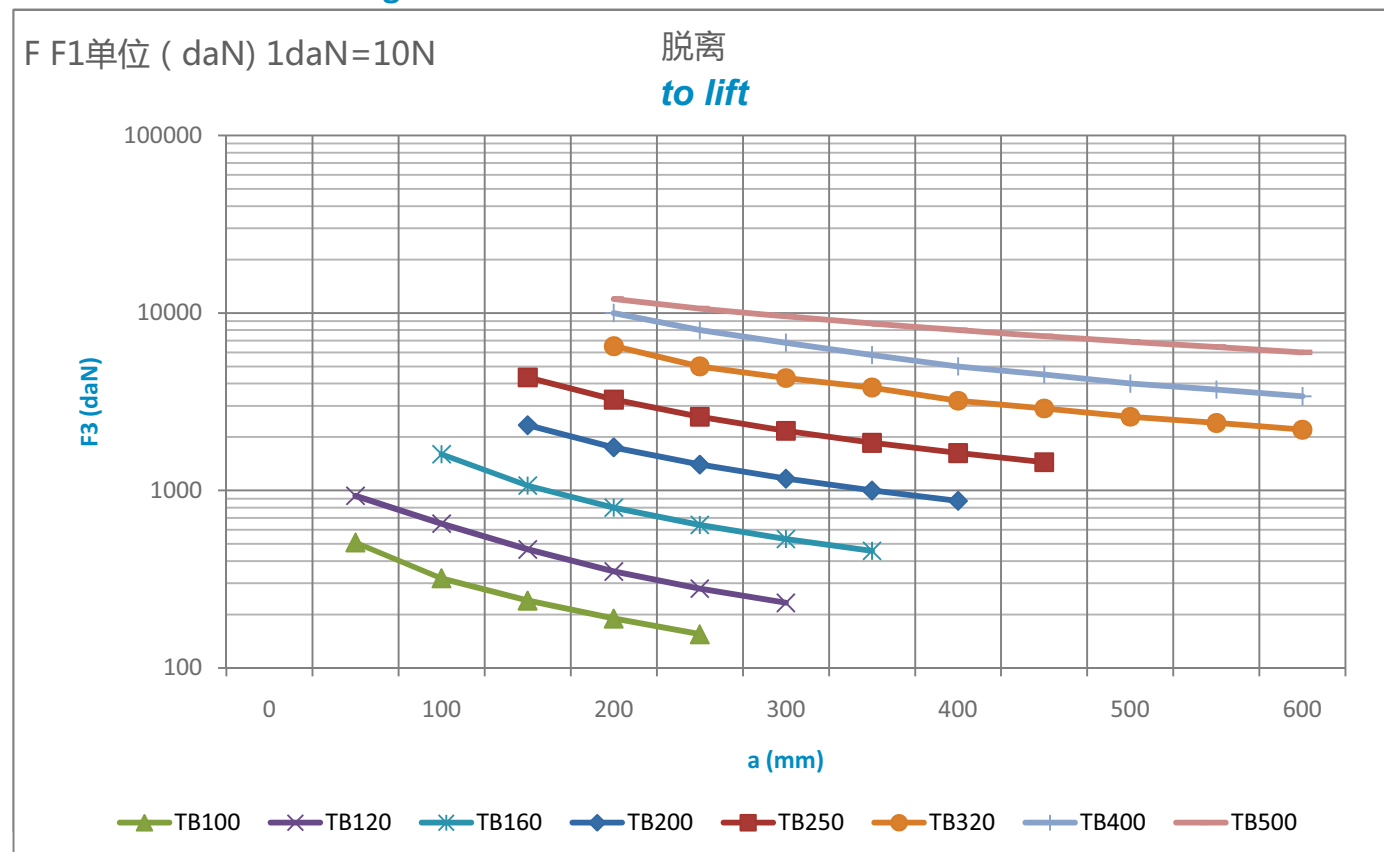
从刀架正面轴向的下压力F2

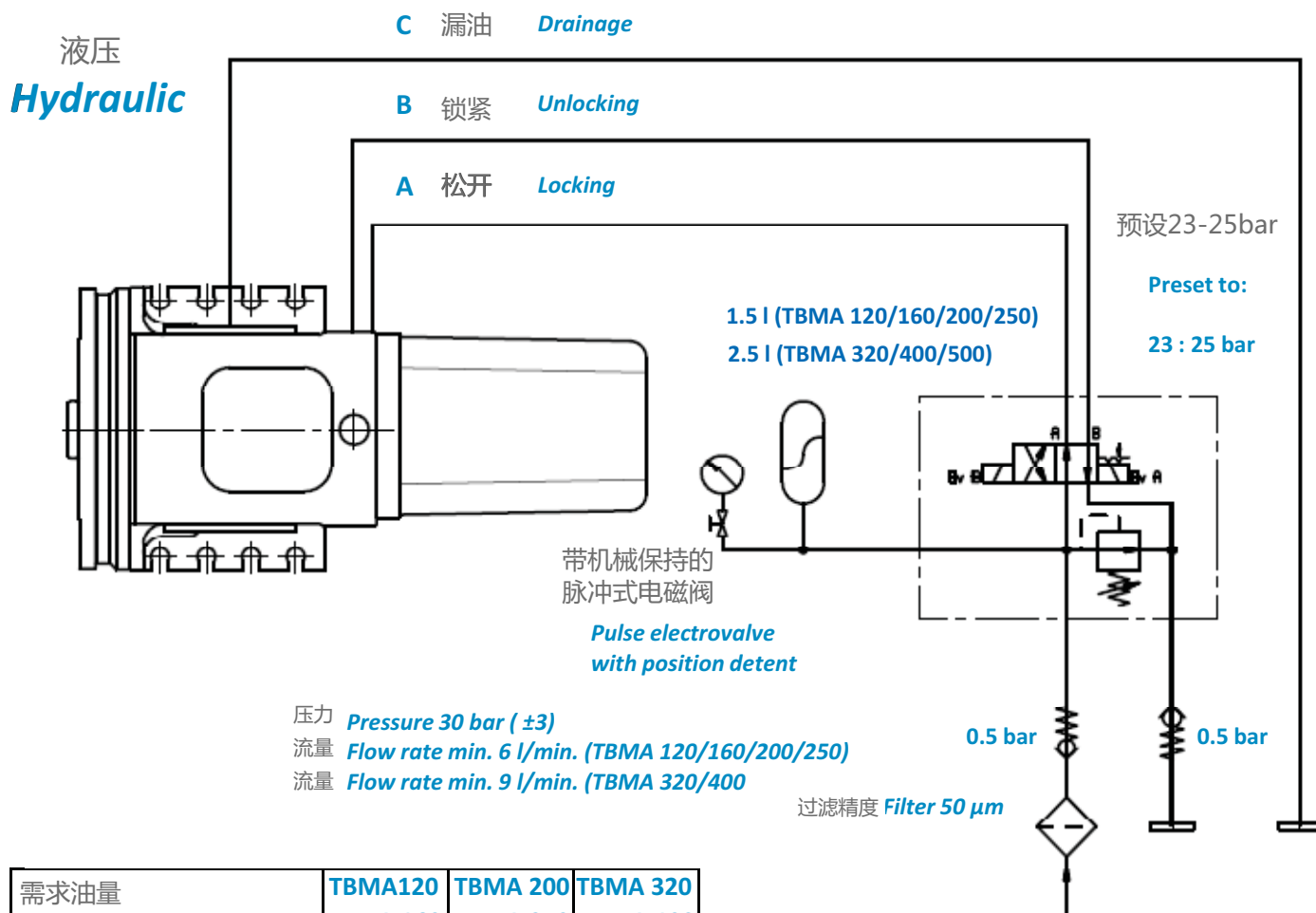
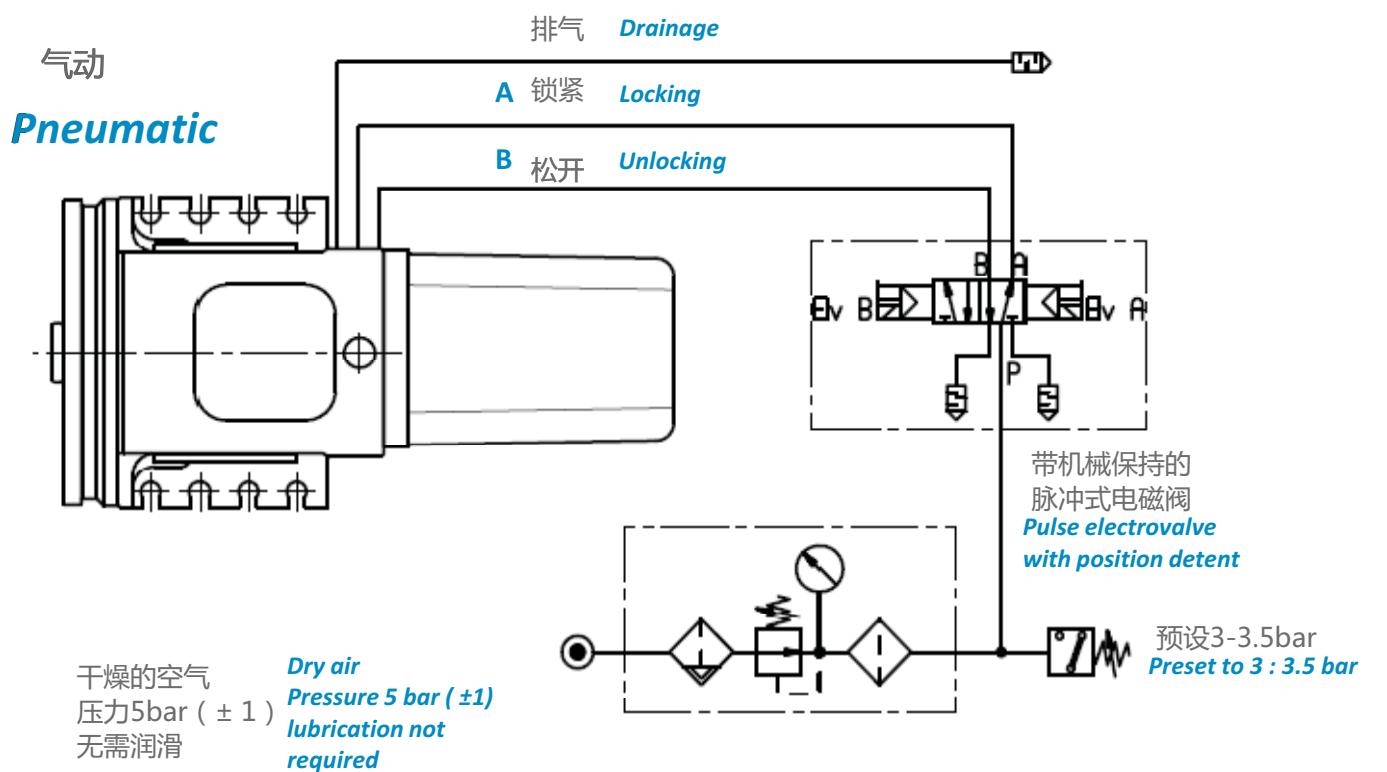
As a function of the pressing axial thrust F2



从刀架背面轴向的脱离力F3

As a function of the lifting axial thrust F3





需求油量 <i>Required oil volume</i>	TBMA120 TBMA 160	TBMA 200 TBMA 250	TBMA 320 TBMA 400
锁紧 / <i>Locking (cm³)</i>	22,6	39,4	215
松开 / <i>Unlocking (cm³)</i>	22,6	39,4	215

- For a more immediate answer of locking/unlocking piston, we advise to position the valve very near to the turret
- 为了更快的响应锁紧/松开，我们建议将阀的位置尽可能的接近刀架



TB 120/160/200/250

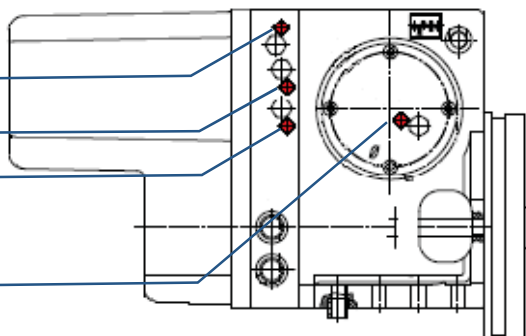
液压气压连接

Hydraulic-pneumatic connection

管路在刀架侧面连接

Pipes connected on the side of

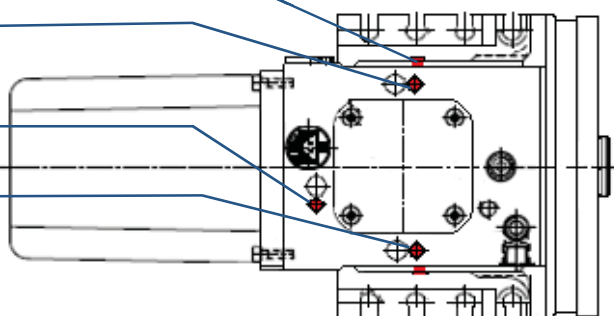
A 锁紧	Locking	1/8" Gas
B 松开	Unlocking	1/8" Gas
C 漏气	Drainage 1/8" Gas	
*	Pneumatic	气动
C 漏油	Drainage 1/8" Gas	
*	Hydraulic	液压



刀架右侧为加工位置

Turret used on right working side

C 漏油	Drainage 1/8" Gas	
*	Hydraulic	液压
A 锁紧	Locking	1/8" Gas
C 漏气	Drainage 1/8" Gas	
*	Pneumatic	气动
B 松开	Unlocking	1/8" Gas



管路在刀架顶部连接

Pipes connected on the top of the turret

刀架左侧为加工位置

Turret used on left working side



液压管内径6mm

Use internal diameter pipe 6mm

TB 320/400/500

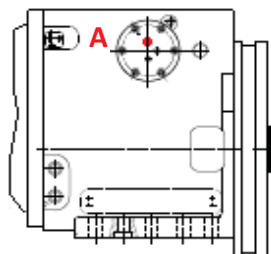
仅有液压连接

Available only with hydraulic connection

C 漏油 Drainage 1/8" Gas

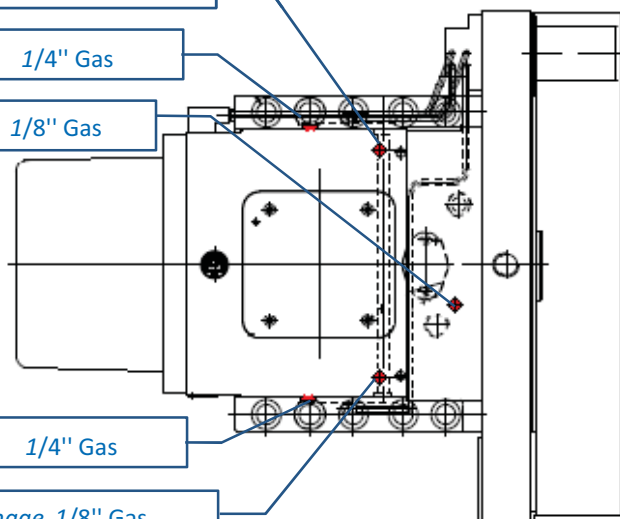
A 锁紧 Locking 1/4" Gas

C1 松开 Drainage 1/8" Gas



管路在刀架顶部和侧面连接

Pipes connected on the side and on the top of the turret



A 锁紧 Locking 1/4" Gas

C 漏油 Drainage 1/8" Gas



管径最小8mm

Use internal diameter pipe 8mm minimum



TB 120/160/200/250

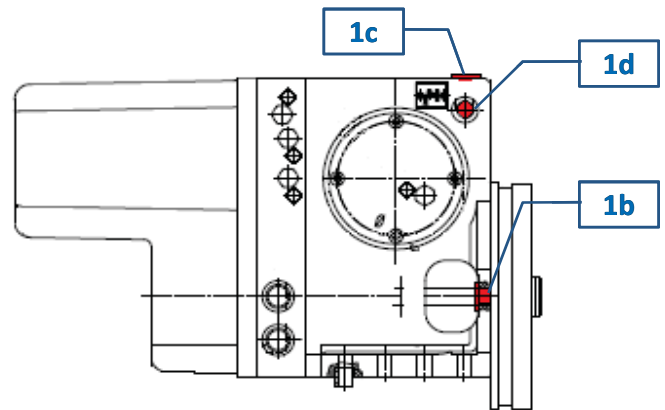
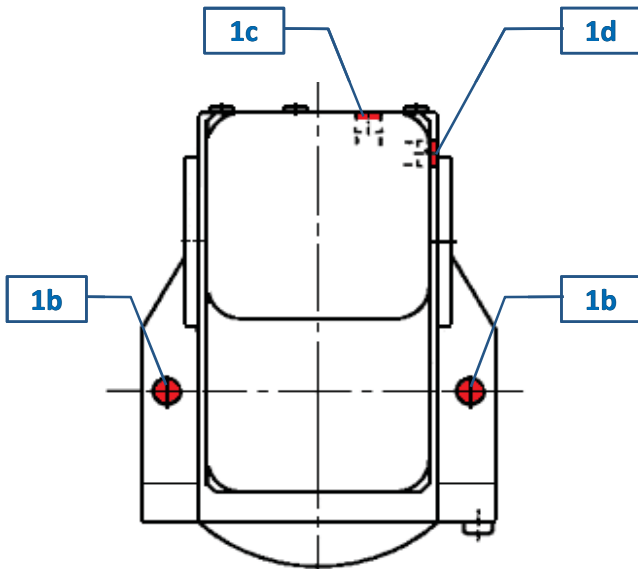
冷却液输入管必须接一个孔，1b-1c-1d这些孔中的一个，（其他必须封死）

Coolant inlet pipe to be connected to one one of the following holes:

1b-1c-1d- (others will have to be plugged)

1b-1c-1d

TB 120	1/4" Gas
TB 160	3/8" Gas
TB 200	3/8" Gas
TB 250	1/2" Gas



最大冷却液压力 50bar

Max coolant pressure 50 ba

TB 320/400/500

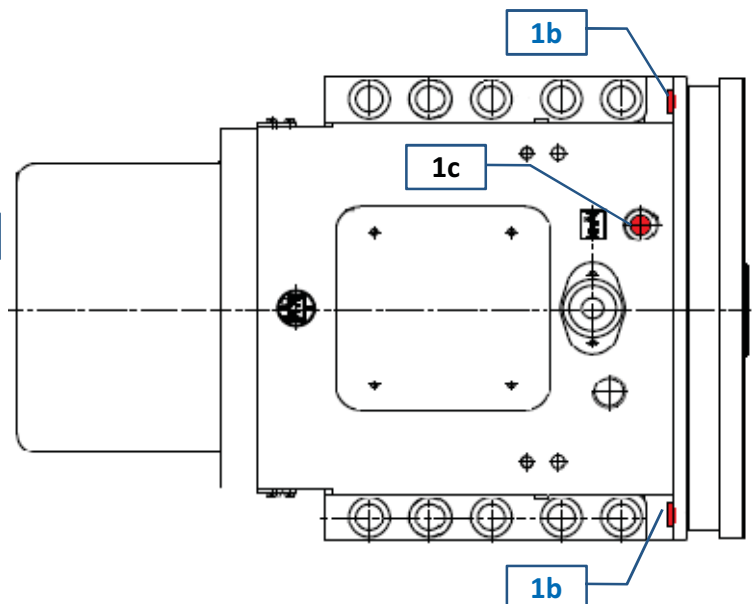
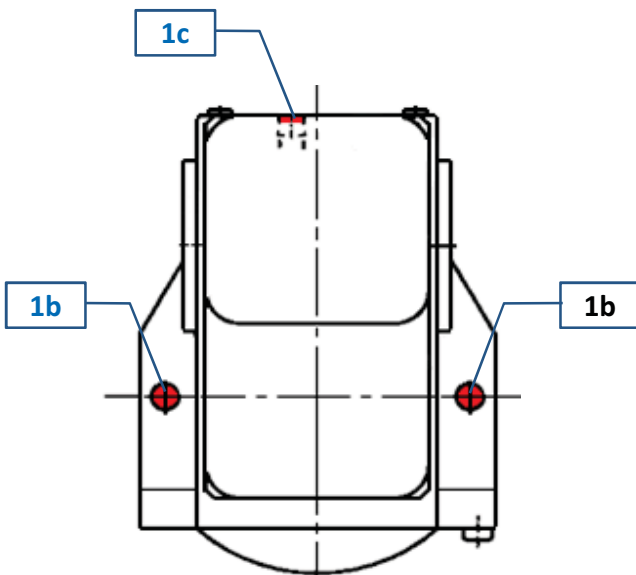
冷却液输入管必须接一个孔，1b-1c这些孔中的一个，（其他必须封死）

Coolant inlet pipe to be connected to one one of the following holes:

1b-1c (others will have to be plugged)

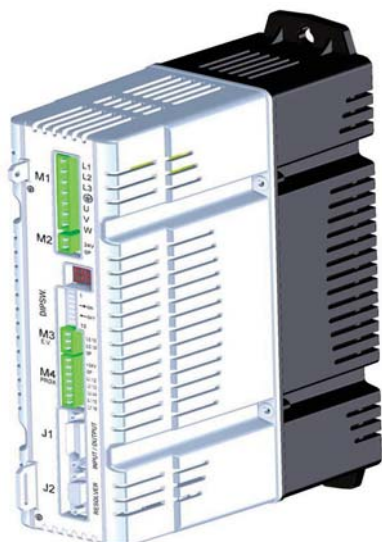
1b-1c

TB 320	3/4" Gas
TB 400	3/4" Gas
TB 400	3/4" Gas



最大冷却液压力 50bar

Max coolant pressure 50 bar



Electrical connections

电器连接

驱动器的连接请参看驱动器使用说明版本：

DMS08-BF

For the connection refer to electrical instruction drive manual

DMS08-BF

所有TB刀架供货时，都带有最新版本的驱动器
工作稳定可靠

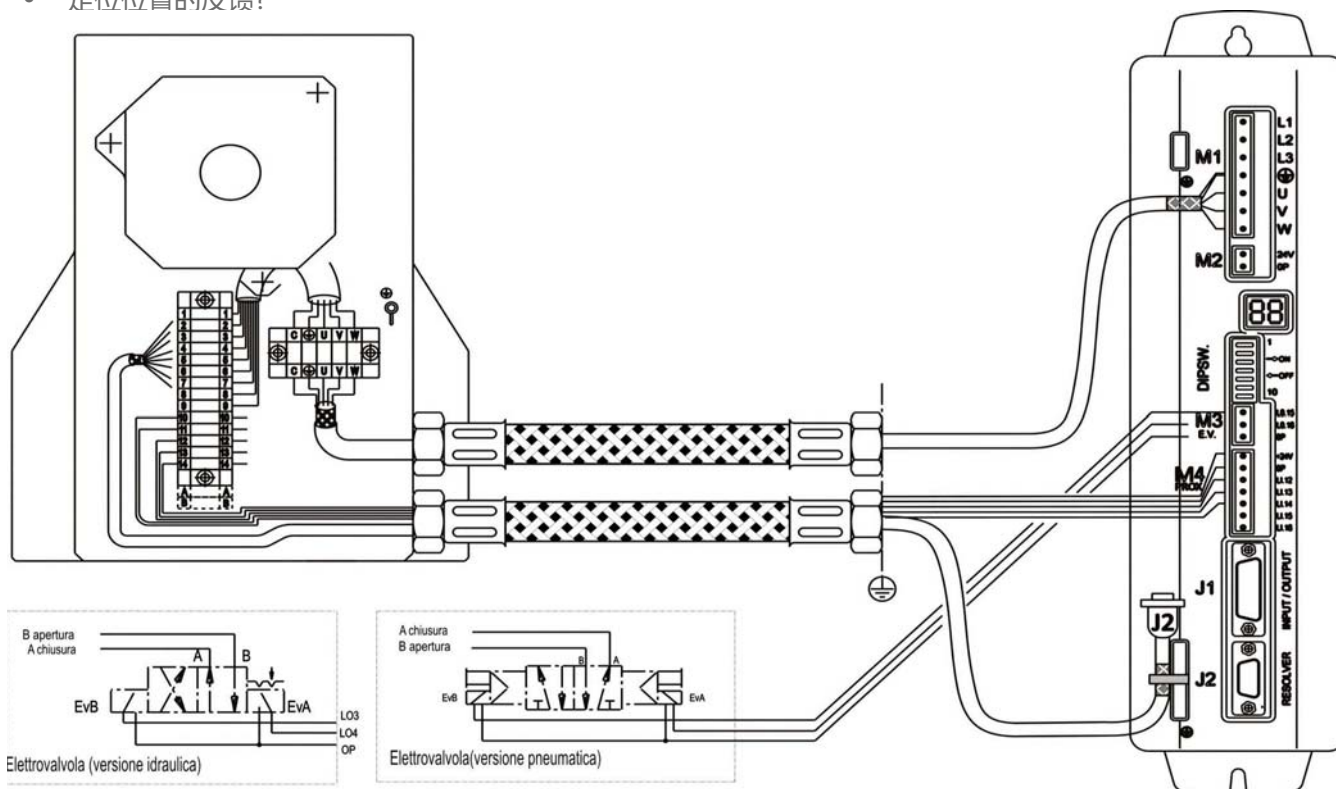
- 这种新的驱动器可以实现刀架远程控制
- 可视窗口随时观察
- 驱动器电源（24Vcc）
- 刀架定位准确
- 多达25中的报警信息
- 很容易的了解使用过程中刀架发送的问题
- 定位位置的反馈？

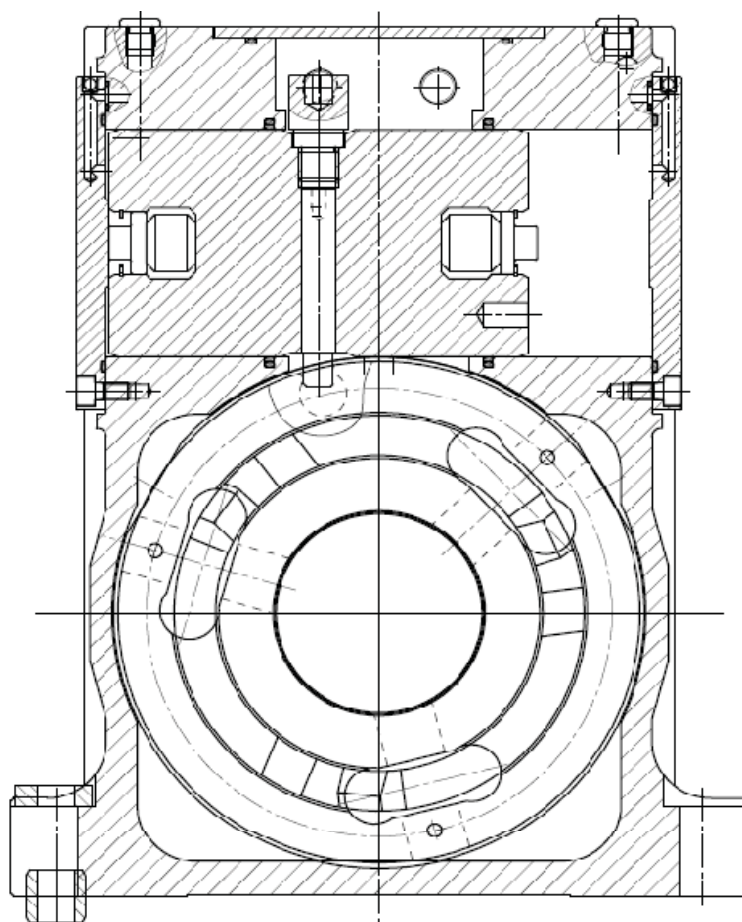
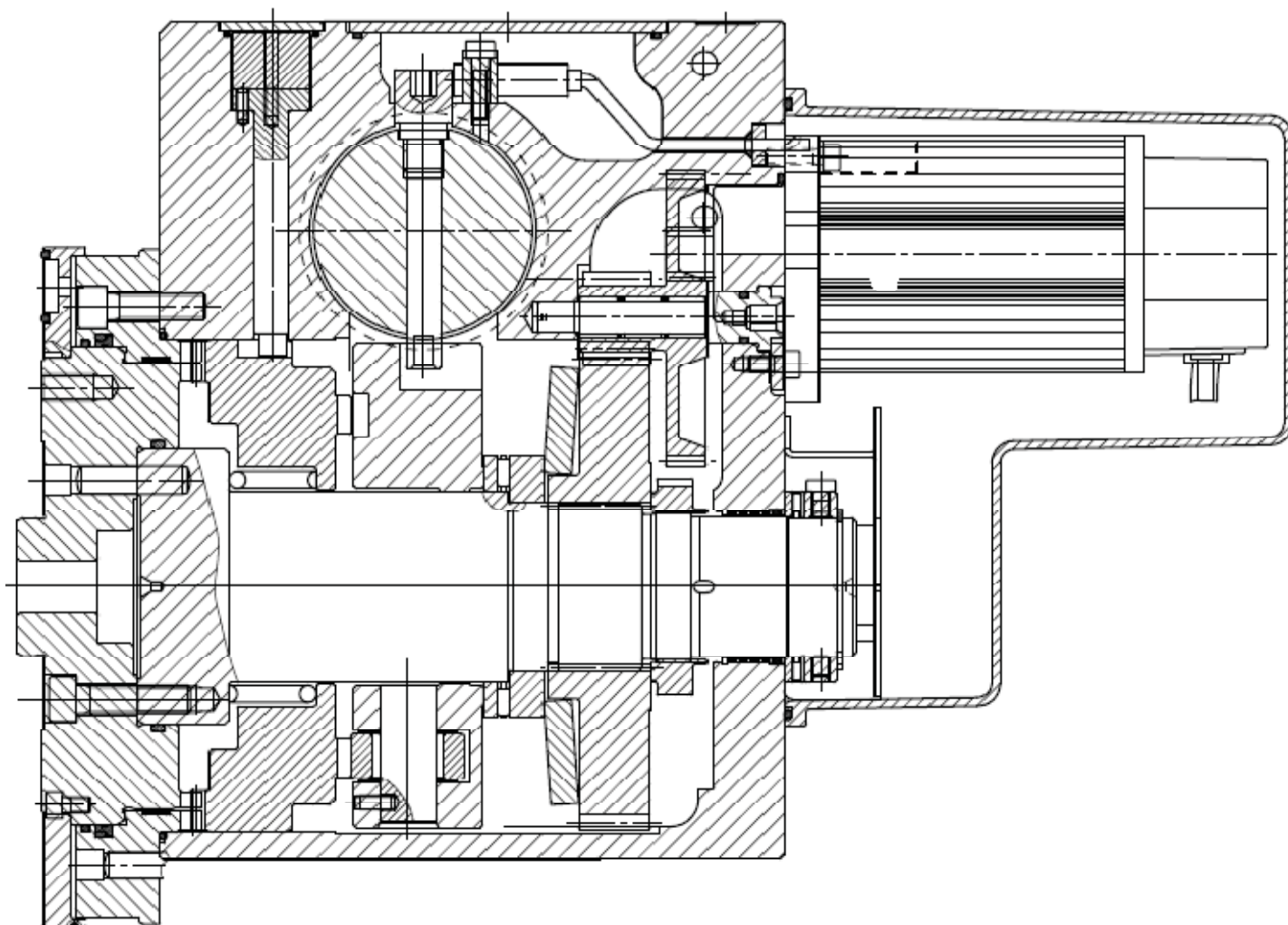
All the series of the TB turret is supplied with a new developed drive, extremely stable and sophisticated

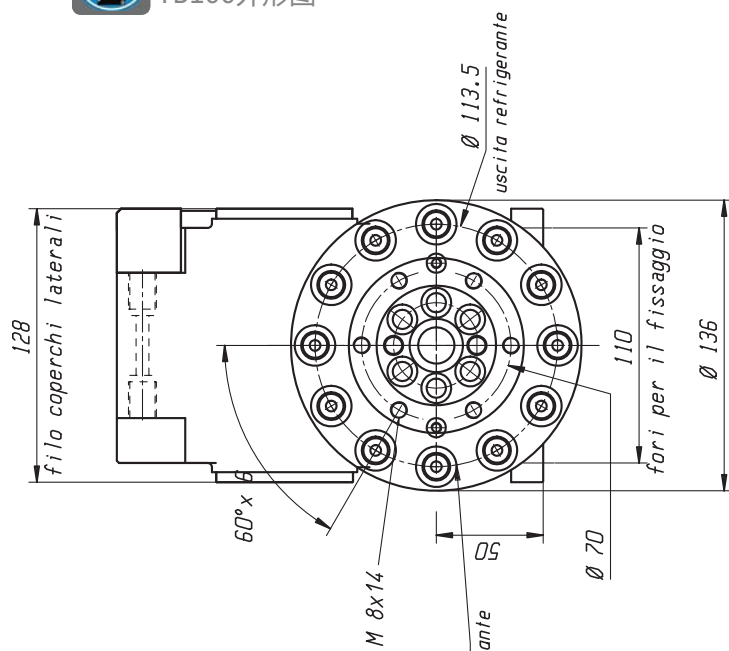
- This new drive allows the turret remote control.
- Through a display shows constantly:
- The Drive supply (24Vcc)
- The actual turret's position
- Over 25 activated alarms
- Possibility to find easily eventually problems happened during the use
- Positioning feedback

Topographic view

接线图

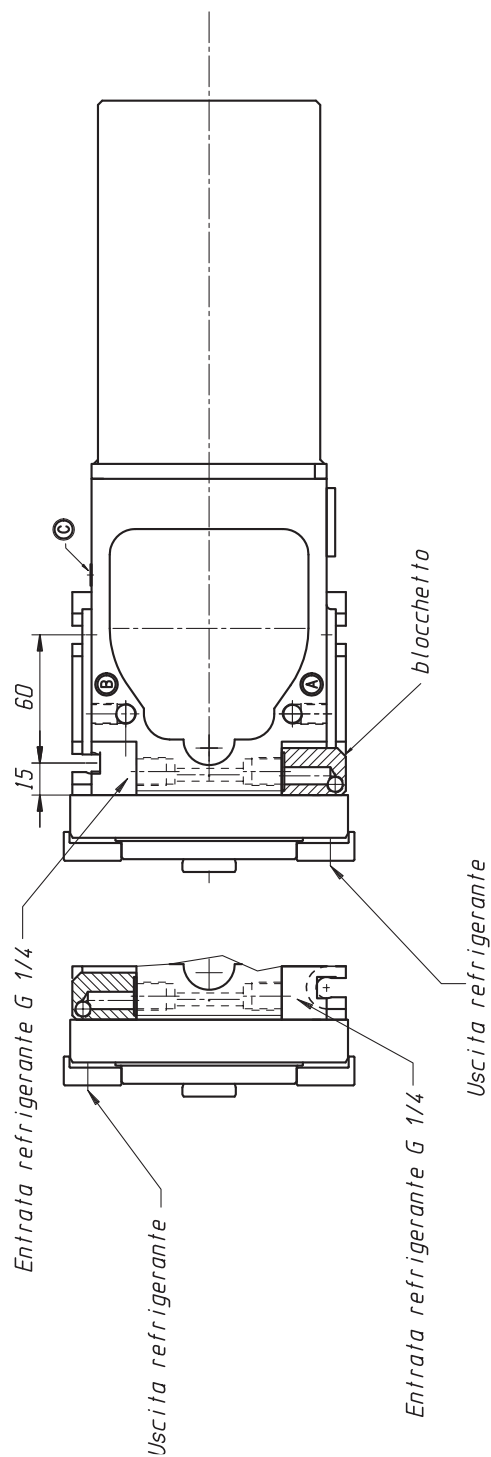
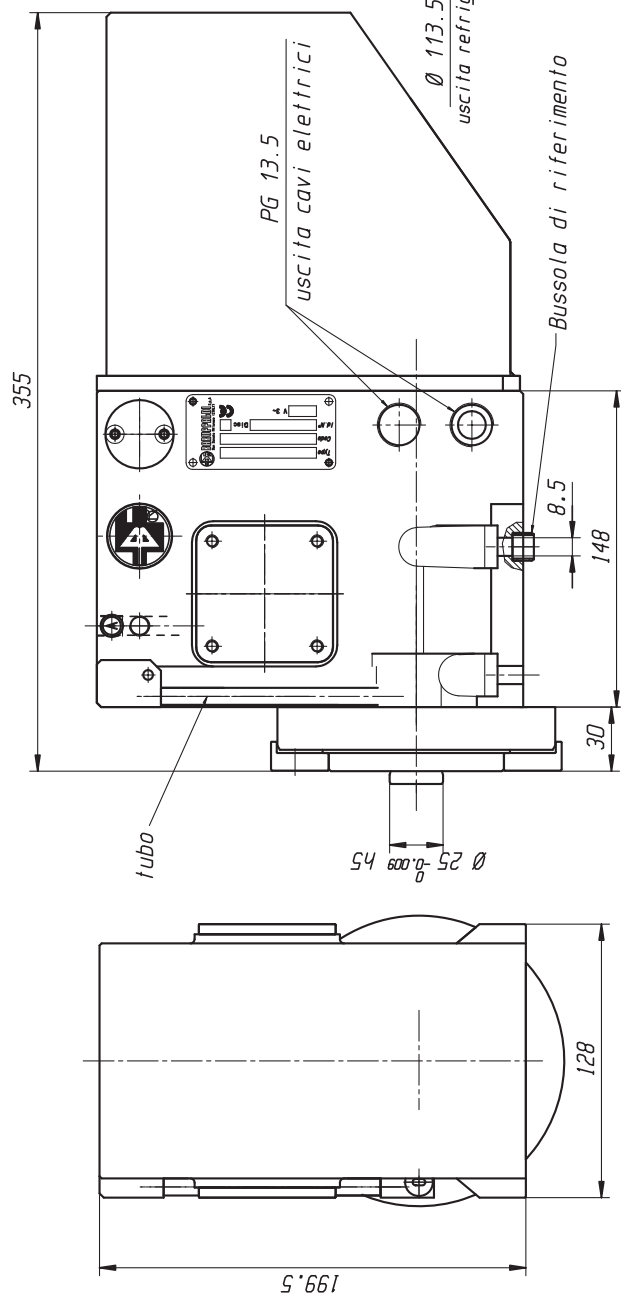


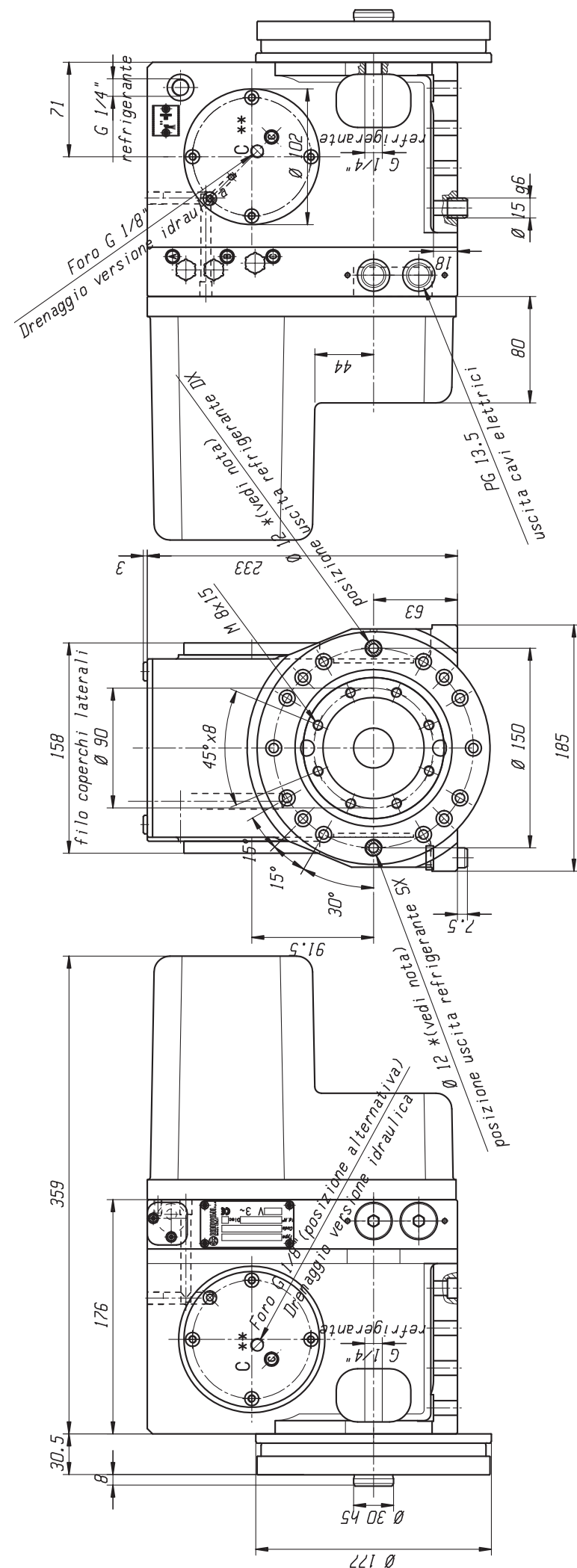




TB 100

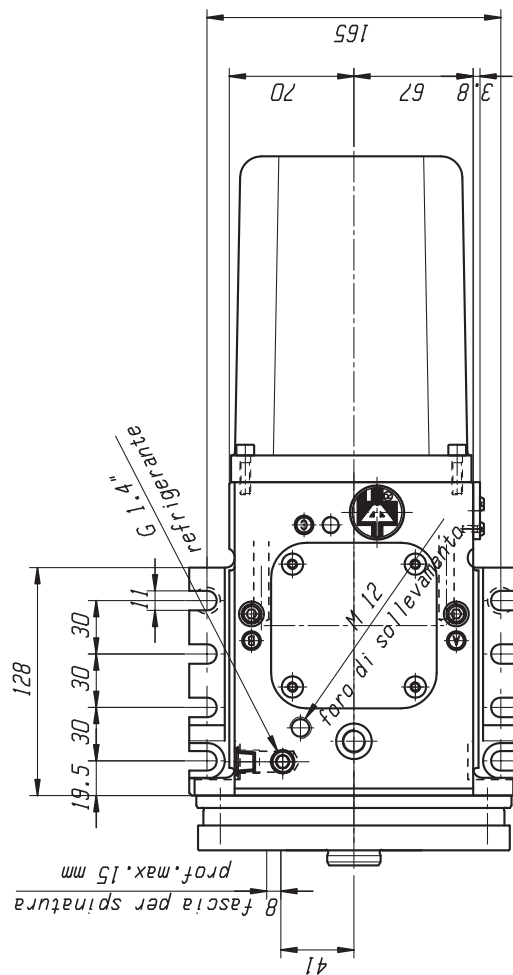
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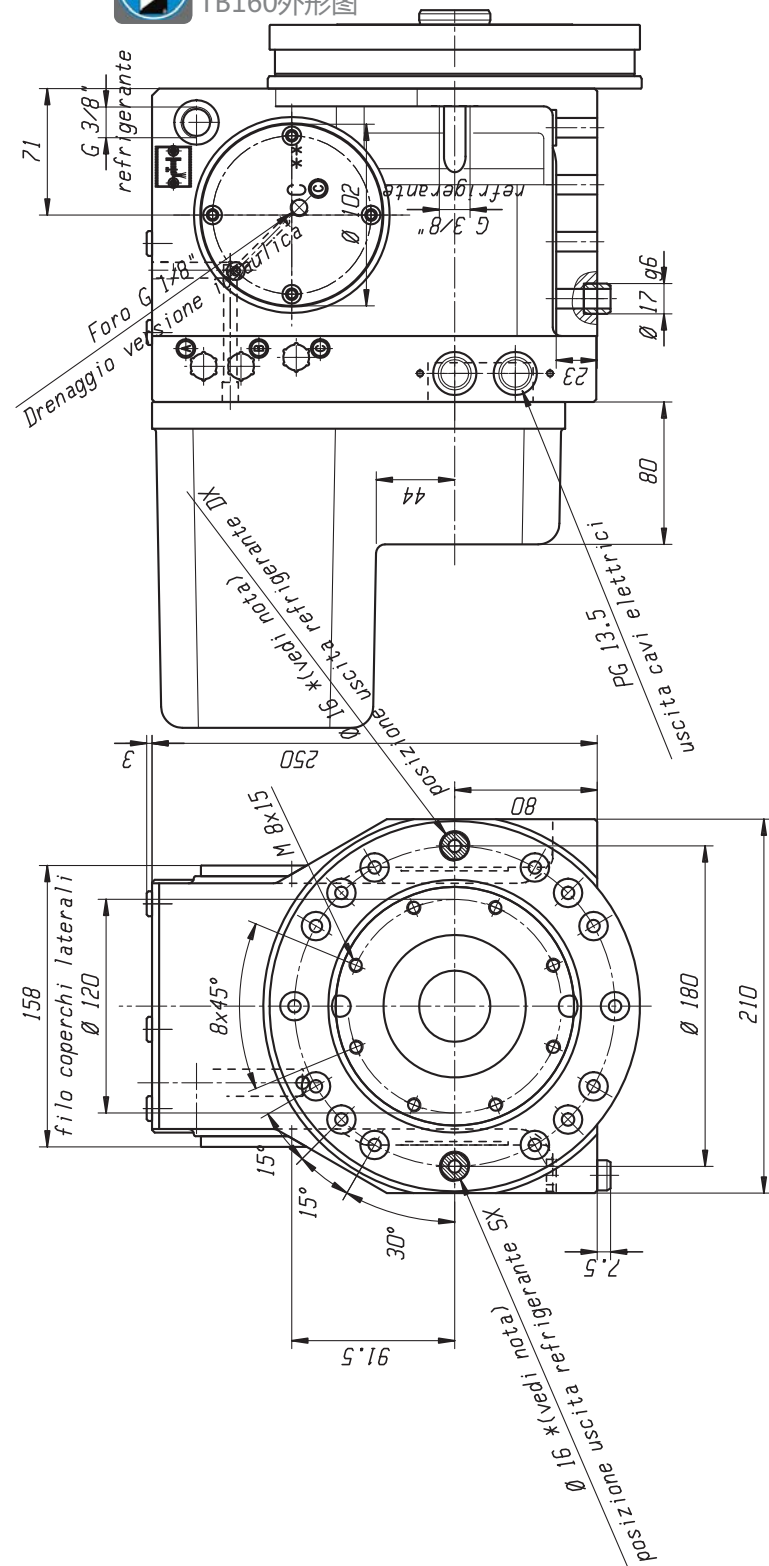




TB 120

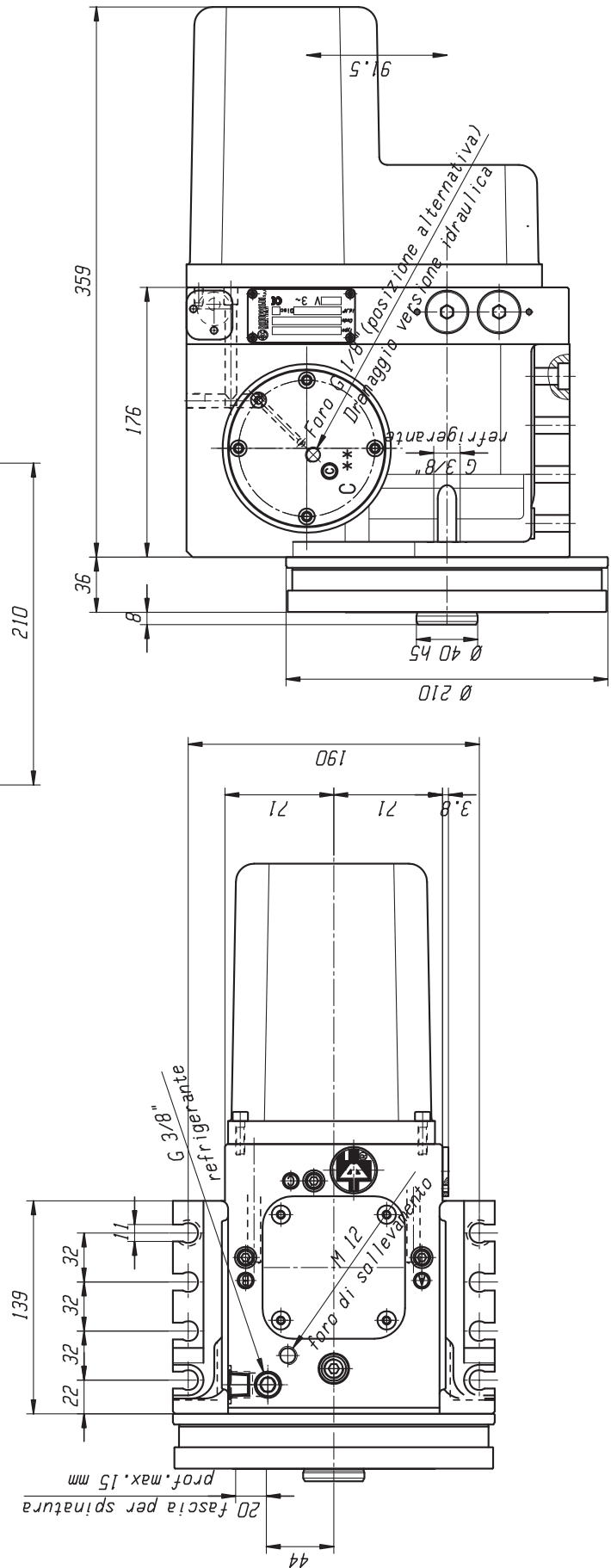
K54. - 120 . - - - - . 01





TB 160

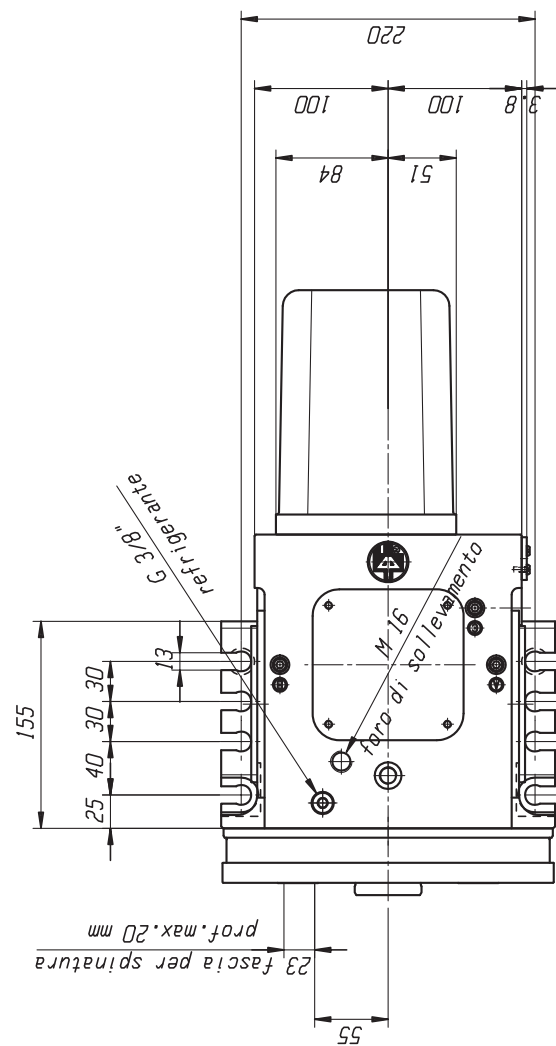
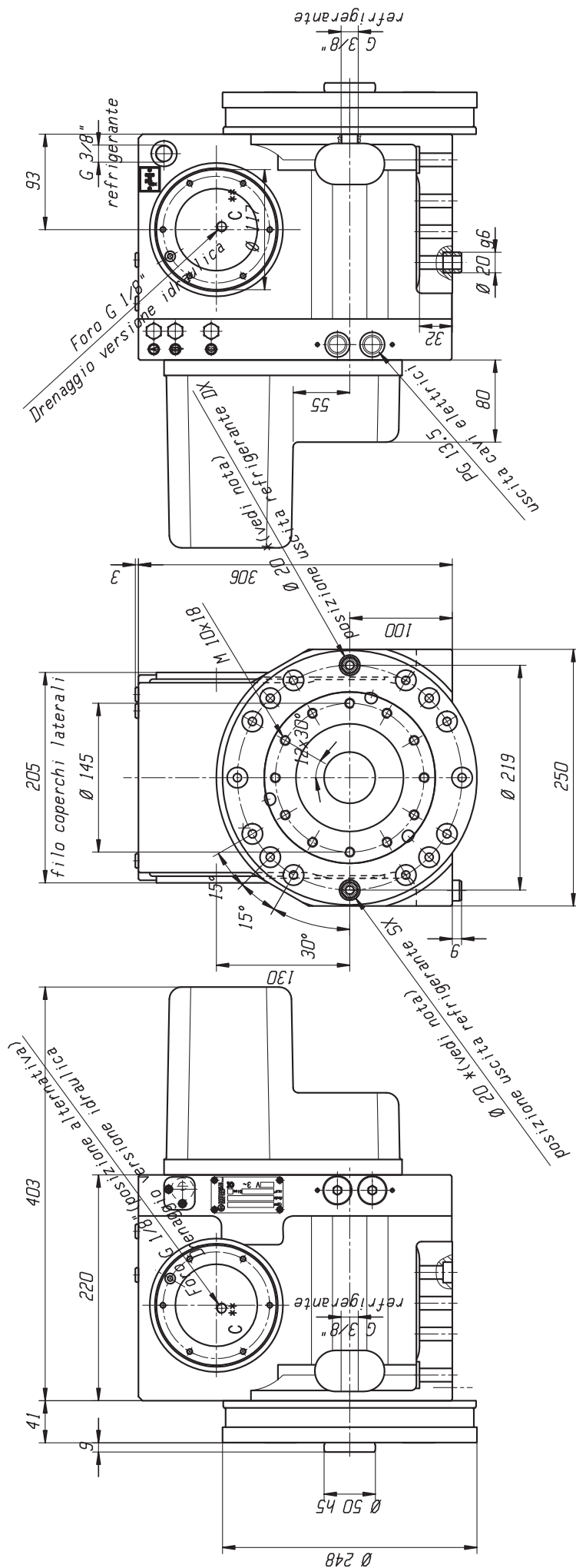
K54. - 160 01

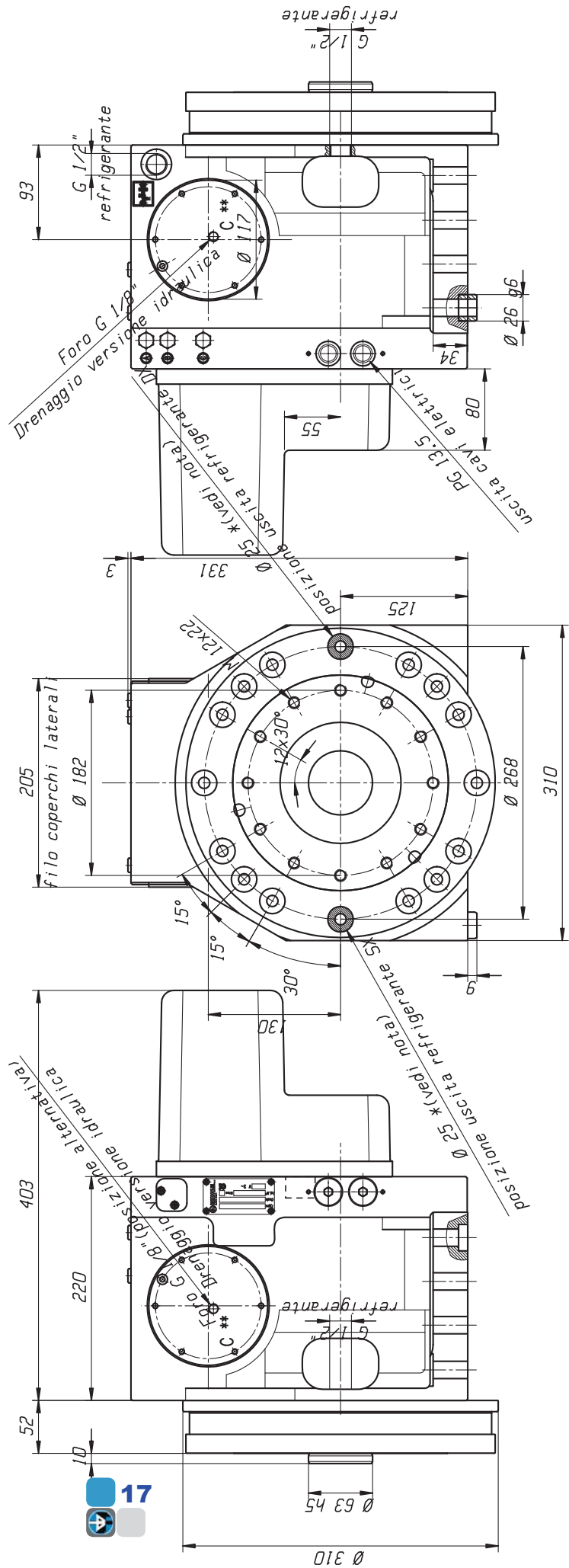




TB 200

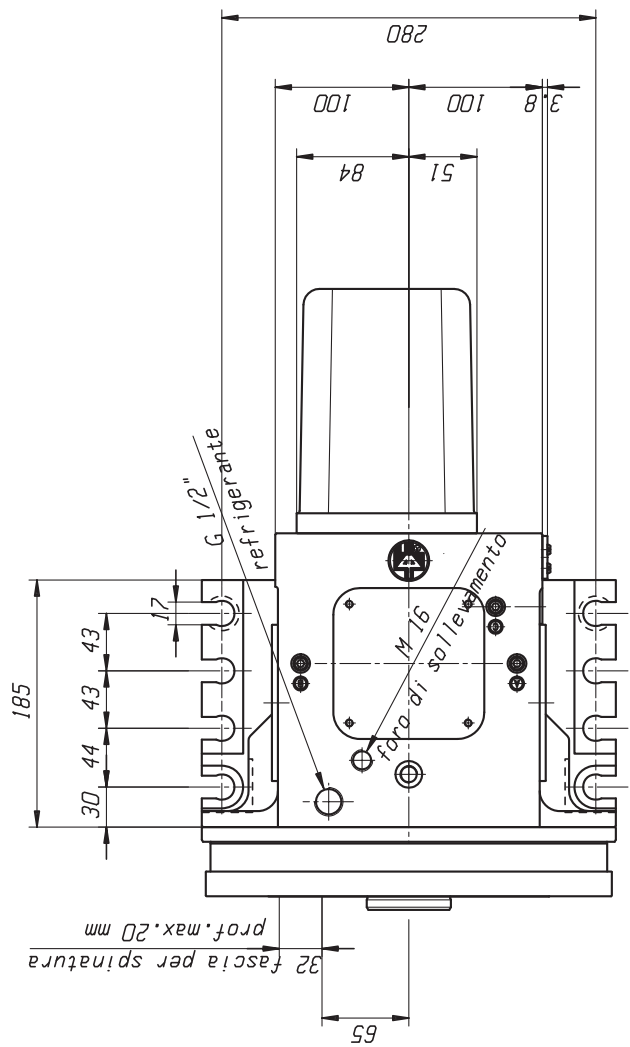
K54. - 200 01

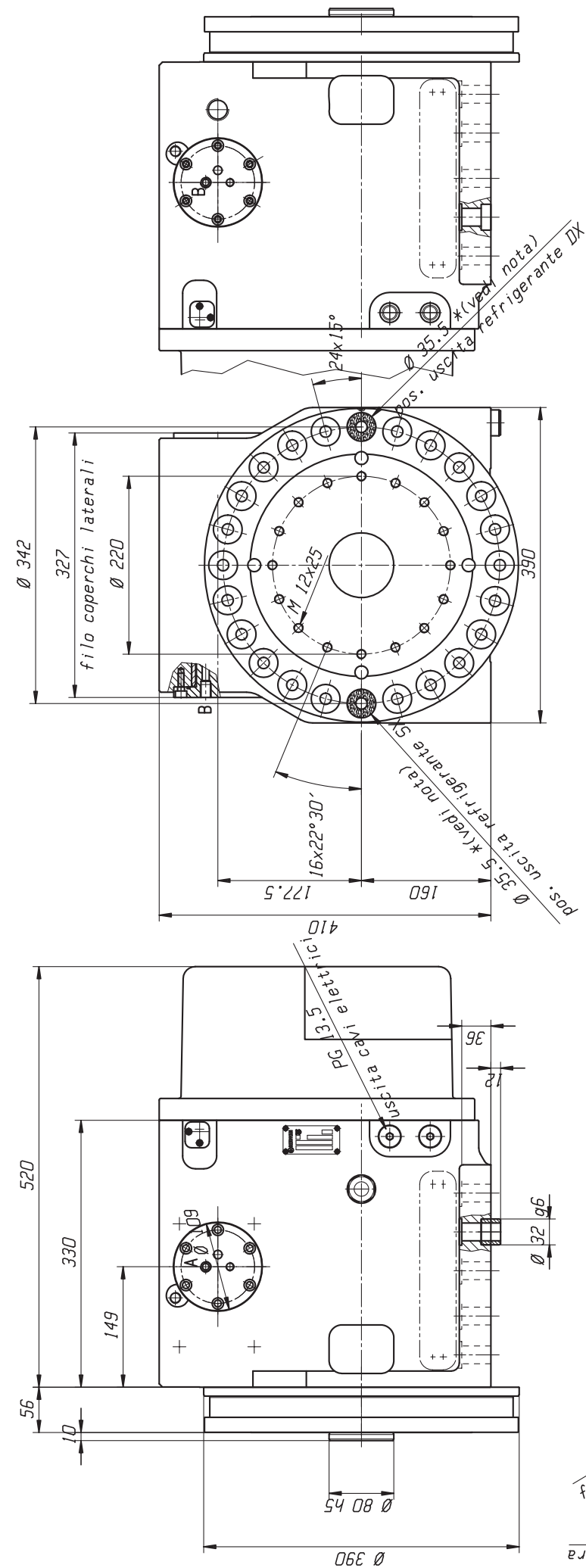




TB 250

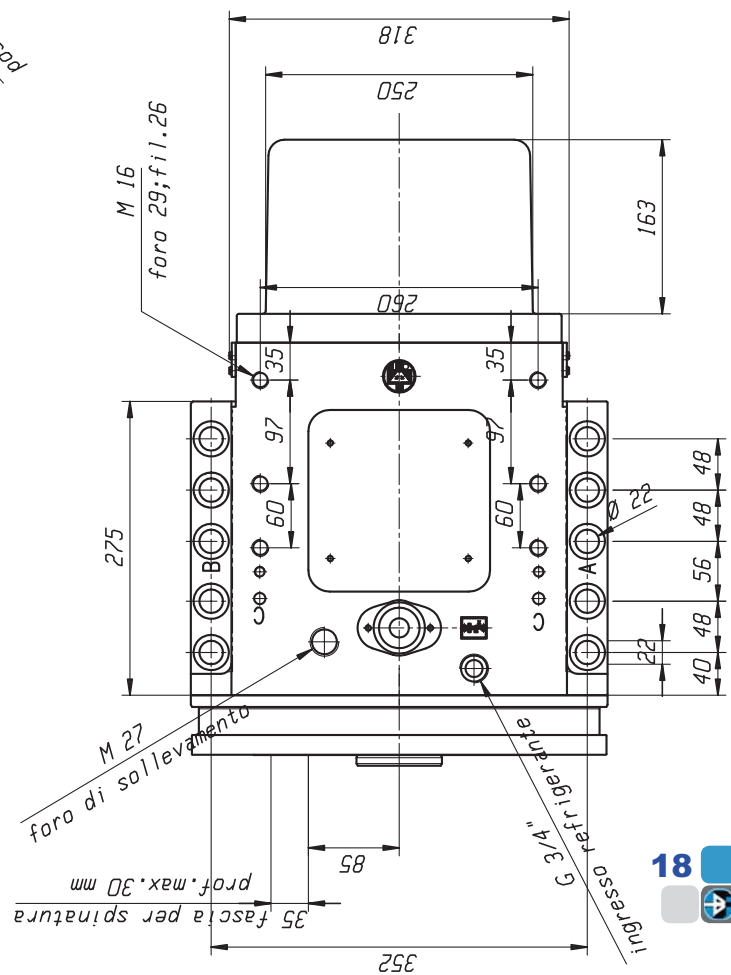
K54. - 250 01

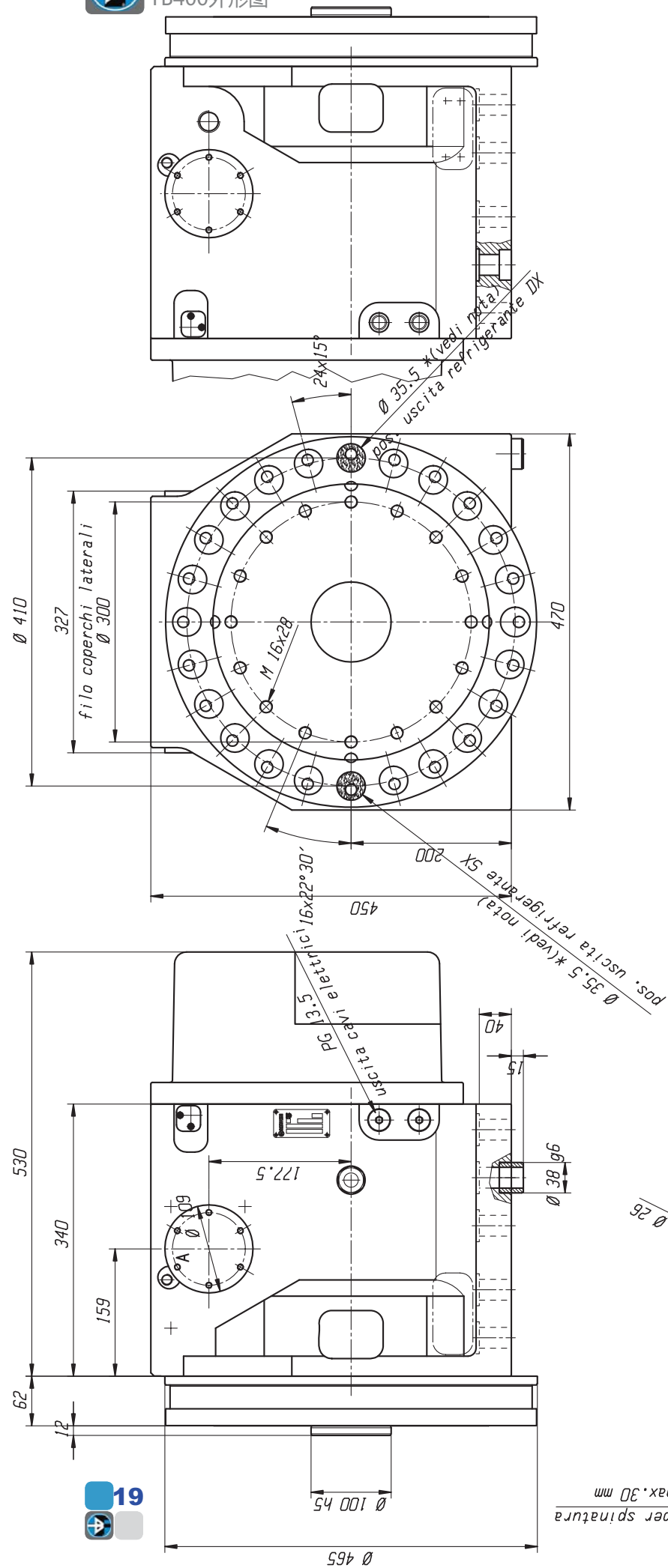




TB 320

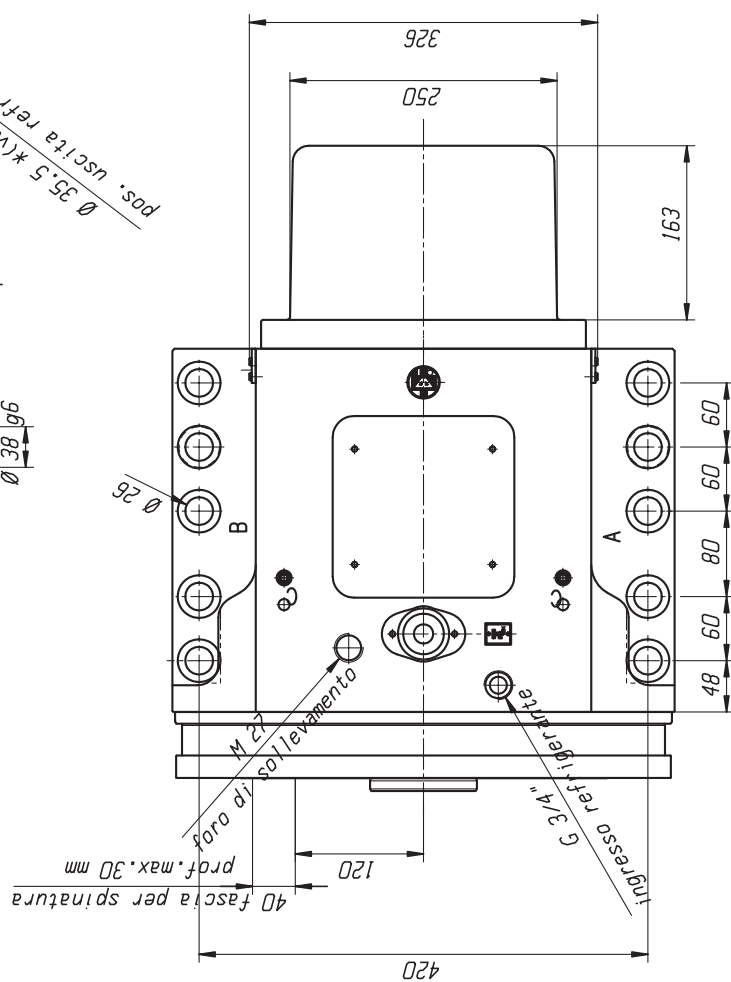
K54. - 320 . - - - - - . 01





TB 400

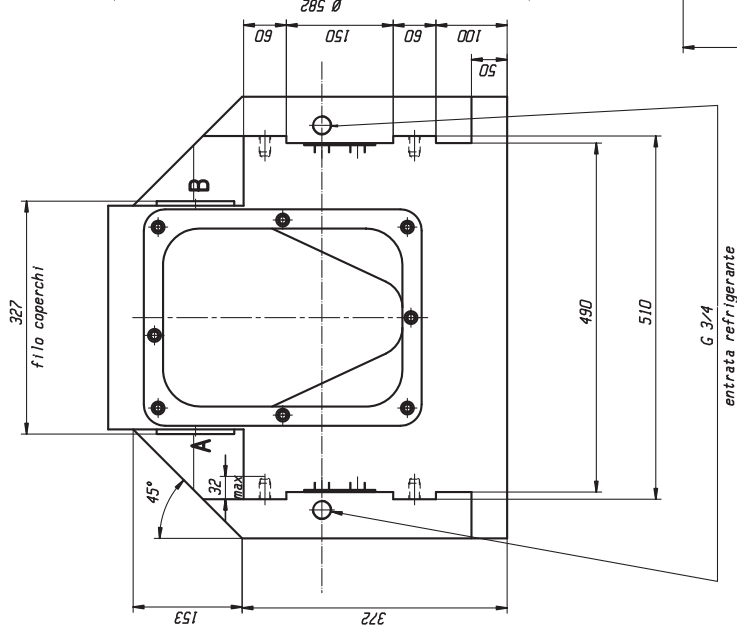
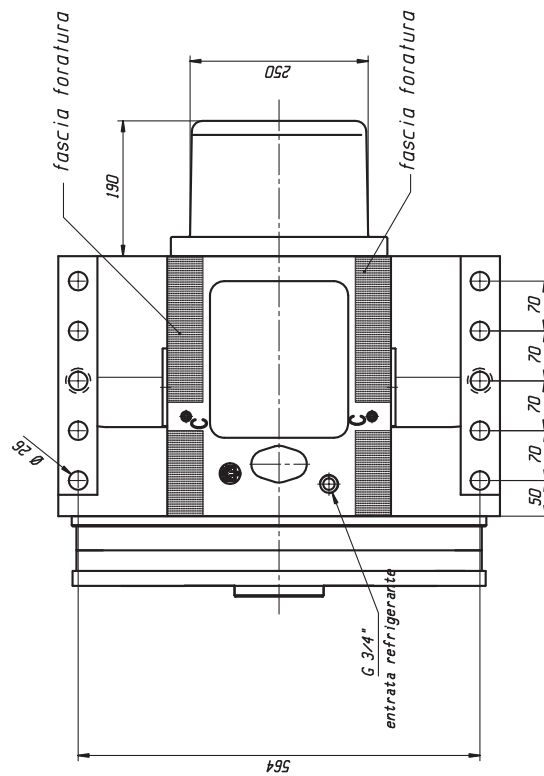
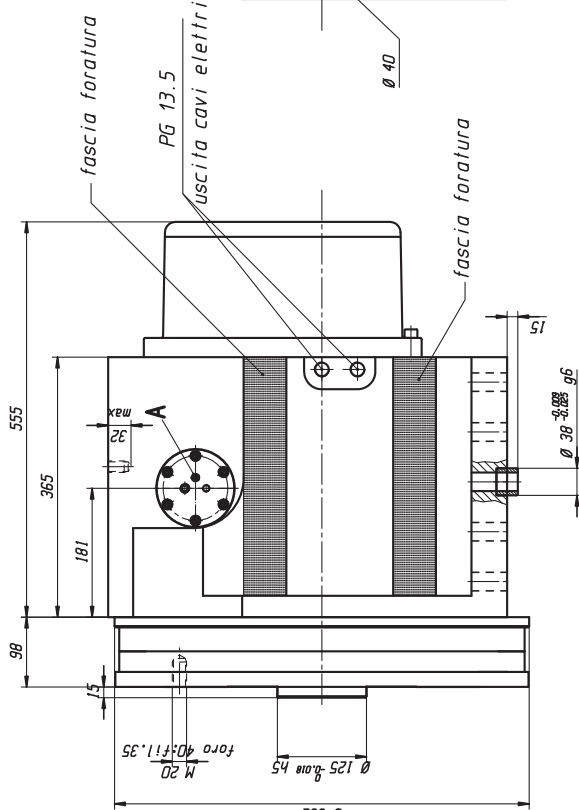
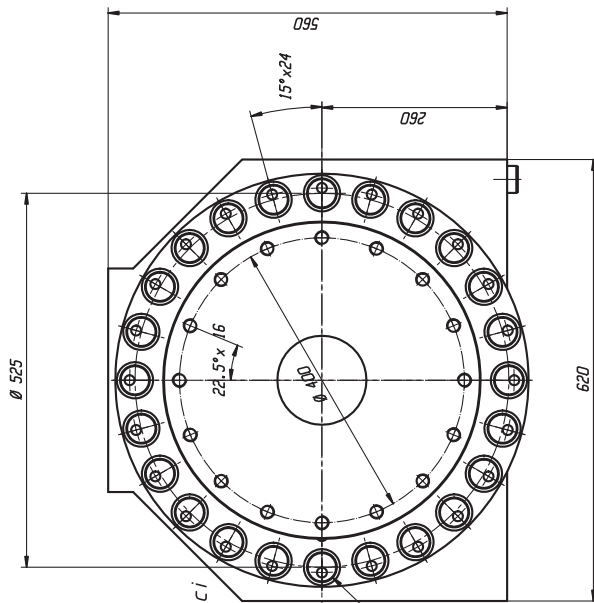
K54. - 400 . - - - - . 01

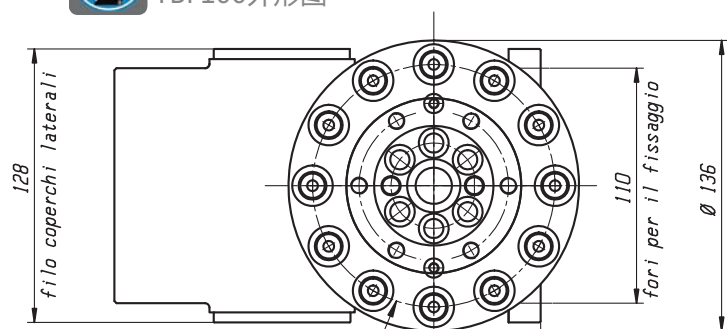




TB 500

K54. - 500 01

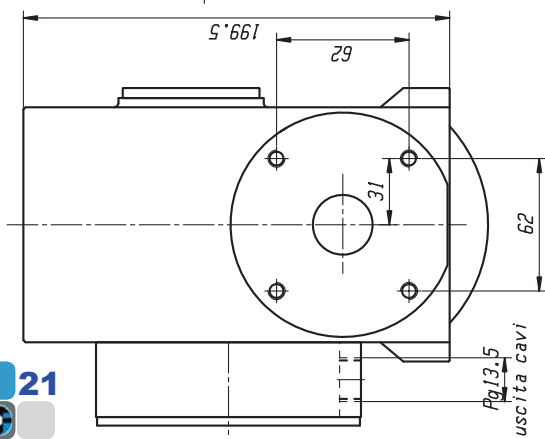
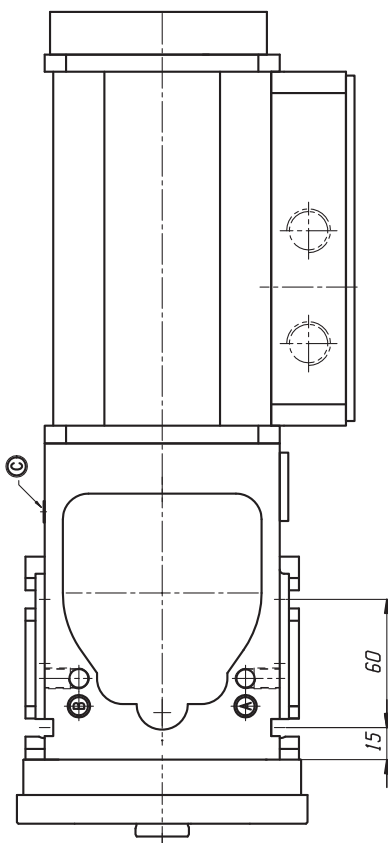
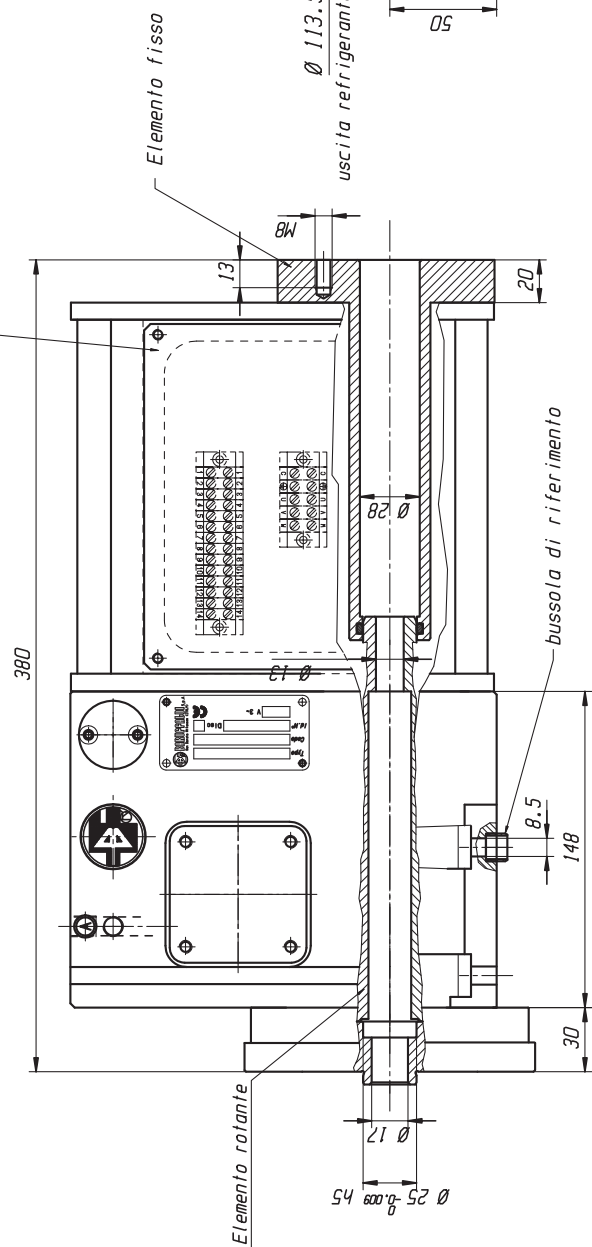




TBF 100

K25. - 100 01

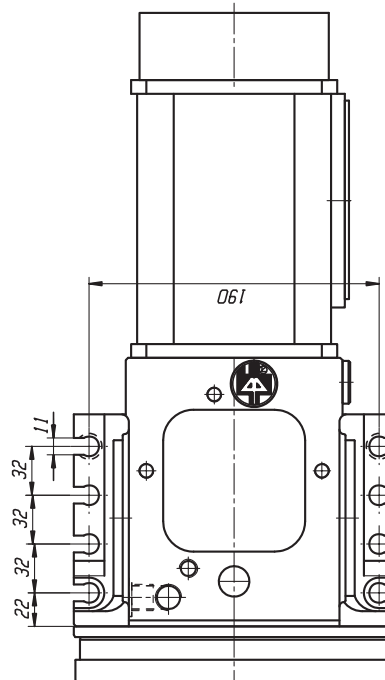
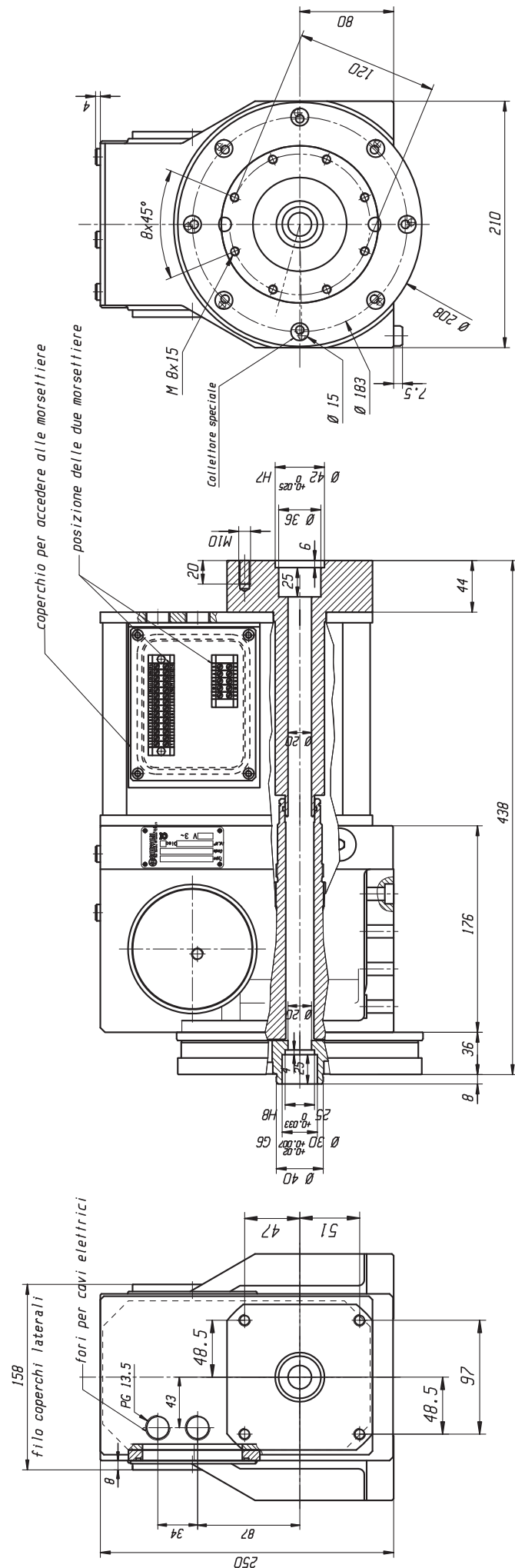
coperchio per accedere alle morsettiere

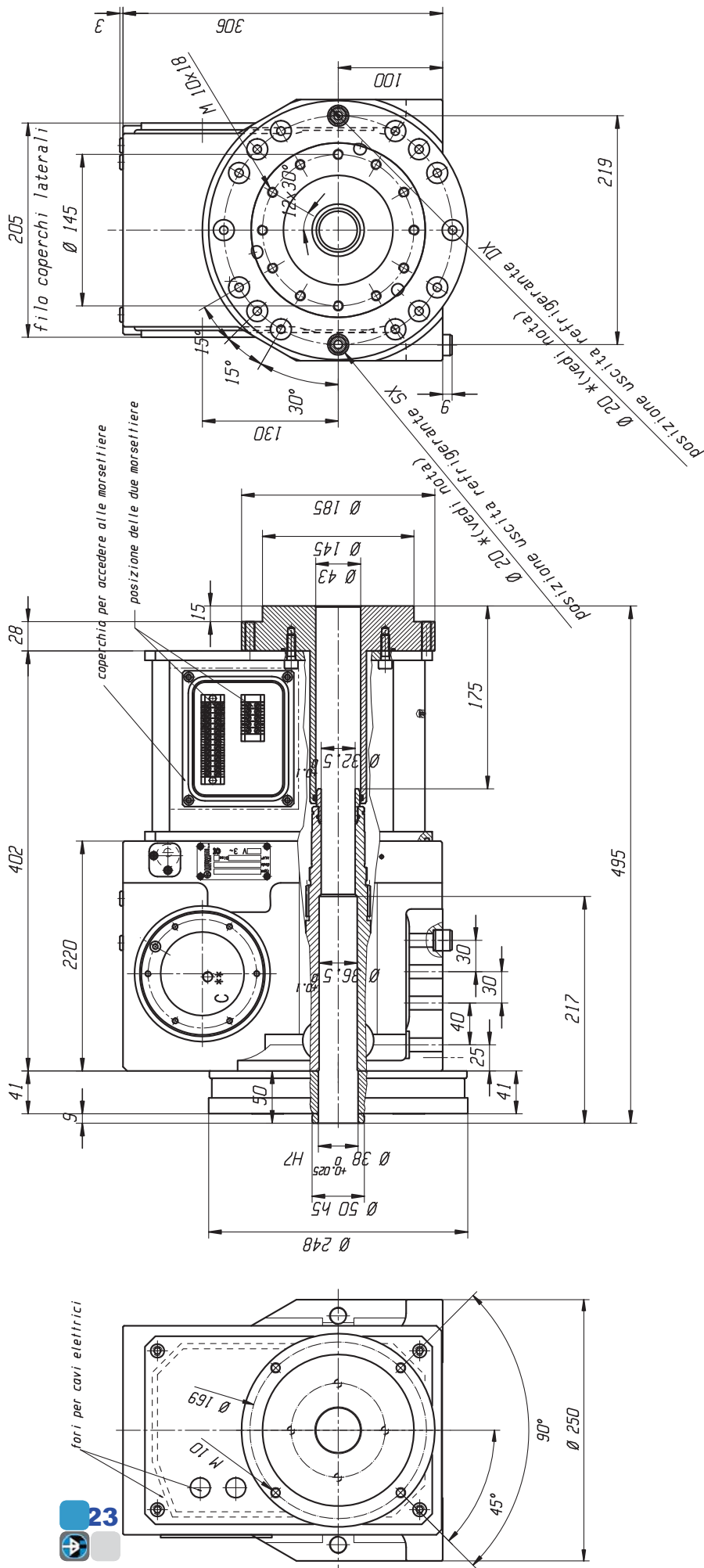




TBF 160

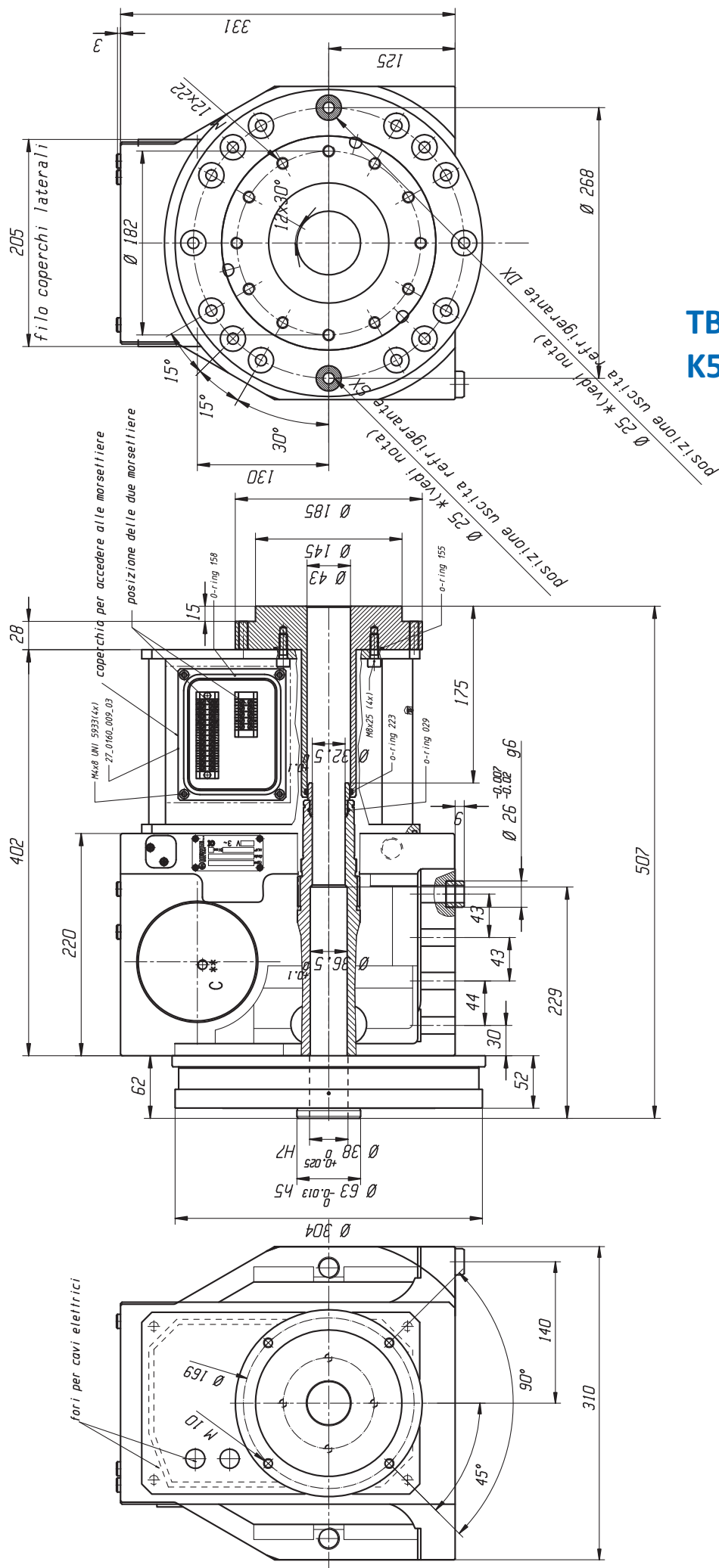
K55. - 160 01





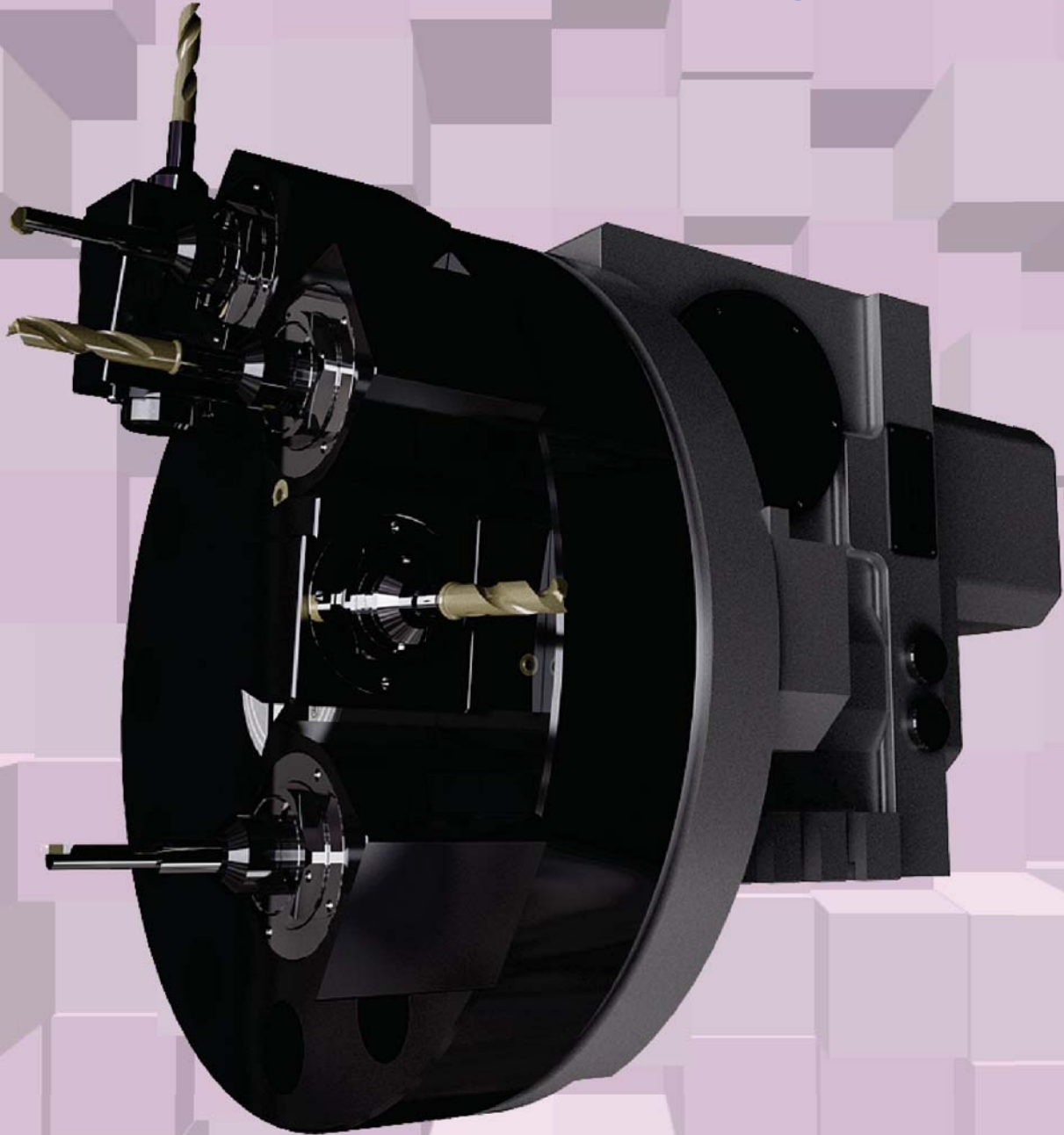
TBF 200

K55. - 200 01



TBF 250
K55. - 250 . - - - - - . 01

Axial driven tools turret type TBMA



轴向装刀伺服动力刀架TBMA选型指南

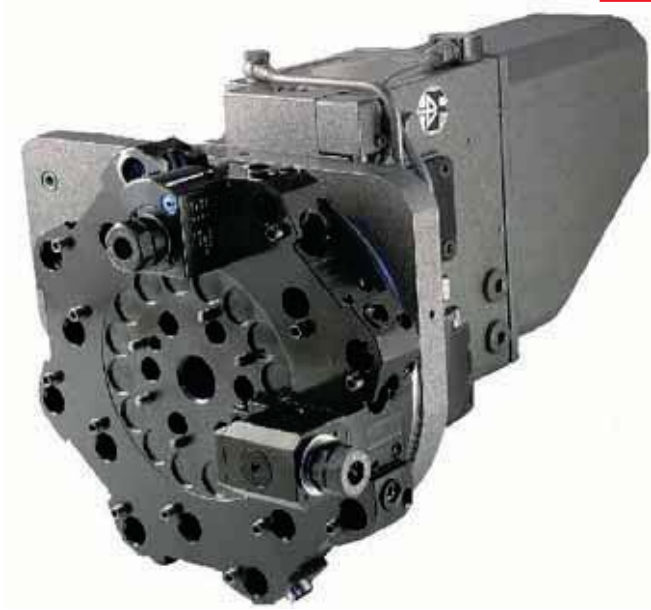


3	简介	<i>Introduction</i>
4	技术参数	<i>Technical data</i>
5	刀架订货号	<i>Order code for turrets</i>
6	功能描述	<i>Function description</i>
7	动力电机指令说明	<i>Command cycle for the rotating tool drive motor</i>
8	刀架电缆输出图	<i>Cable outlet plan</i>
9	刀架的选型	<i>Selection of turret</i>
	从切线方向的切削力F-F1	<i>As a function of the tangential thrust F-F1</i>
	刀架的选型	<i>Selection of turret</i>
10	从刀架正面轴向的下压力F2	<i>As a function of the pressing axial thrust F2</i>
	从刀架背面轴向的脱离力F3	<i>As a function of the lifting axial thrust F3</i>
11	工作原理图	<i>Functional diagram</i>
12	液压/气压的连接	<i>Hydraulic/Pneumatic connections</i>
13	冷却液的进给连接	<i>feedings connections of the coolant</i>
14	TBMA 100 Version 1	95 X=15 DX
15	TBMA 120 Version 1	112,5 X=0 DX
16	TBMA 120 Version 3	112,5 X=0 SX
17	TBMA 120 Version 4	120 X=0 DX
18	TBMA 120 Version 5	120 X=0 SX
19	TBMA 160 Version 1	135 X=0 DX
20	TBMA 160 Version 2	135 X=25 DX
21	TBMA 160 Version 4	150 X=0 DX
22	TBMA 160 Version 5	135 X=35 DX
23	TBMA 160 Version 6	135 X=0 SX
24	TBMA 160 Version 16	135 X=0 SX motor on top
25	TBMA 200 Version 1	170 X=0 DX
26	TBMA 200 Version 2	170 X=32 DX
27	TBMA 200 Version 3	190 X=80 DX
28	TBMA 200 Version 4	170 X=0 SX
29	TBMA 200 Version 6	190 X=0 DX
30	TBMA 200 Version 7	170 X=32 DX
31	TBMA 200 Version 11	170 X=65 DX
32	TBMA 200 Version 12	170 X=65 SX
33	TBMA 200 Version 15	170 X=0 DX motor on top
34	TBMA 250 Version 1	200 X=0 DX
35	TBMA 250 Version 2	200 X=35 DX
36	TBMA 250 Version 3	200 X=20 DX
37	TBMA 250 Version 4	222,76 X=0 DX
38	TBMA 250 Version 5	222,7 X=80 DX
39	TBMA 250 Version 6	200 X=0 SX
40	TBMA 250 Version 7	200 X=35 DX DIN 1809
41	TBMA 250 Version 11	200 X=0 SX motor on top
42	TBMA 320 Version 1	245 X=0 DX motor on top
43	TBMA 320 Version 2	245 X=55 DX motor on top
44	TBMA 320 Version 3	245 X=0 SX motor on top
45	TBMA 320 Version 5	245 X=0 DX motor left
46	TBMA 320 Version 6	245 X=55 DX motor left
47	TBMA 320 Version 7	245 X=0 SX motor right
48	TBMA 320 Version 8	245 X=55 SX motor on top
49	TBMA 400 Version 1	310 X=0 DX motor on top
50	TBMA 400 Version 3	310 X=0 SX motor on top
51	TBMA 400 Version 5	310 X=0 DX motor left
52	TBMA 400 Version 6	310 X=0 SX motor right
53	TBMA 400 Version 13	310 X=0 DX Motor left VDI 60



Axial driven tools turret type TBMA

轴向装刀伺服动力刀架TBMA



刀架携带外部动力模块驱动的动力刀具系统这种刀架的外形基于标准的TB伺服刀架只有加工位置输出动力动力头在换刀过程中自动实现动力结合输出和脱开（解决了动力头轴部定位的难度，节约了时间）使用DIN69880标准的刀盘每个工位都可安装动力头动力头系统外形结构紧凑，不影响机床加工能力

- 高转速，分度速度极高
- 锁紧和松开是无轴向窜动
- 双向选刀
- 刀架和动力传递系统油润滑
- 动力结合处两个接近开关
- 新型设计高刚性
- 绝对值编码器定位
- 极高的定位精度
- 维修简便
- 规格齐全120,160,200,250,320,400
- 可以使用8-12-16-24工位

Turrets with rotating tools with external modular driven tool sistem.

It is applied externally on the TB standard turrets.

Only the tool in the working position is driven.

Automatic engagement and disengagement of rotating tool during turret indexing cycle.

(Difficult- orientations of the rotating tool shaft are eliminated -DEAD TIME SAVING).

Use of DIN 69880 disc.

Every position on the tool disc can receive either toolholder with rotating or fixed tool.

Compact overall dimensions of the "Driven tool system does not compromise the working capacity of the lathe.

Main Characteristics:

- *Very high rotating speed and minimum indexing times*
- *Locking and unlocking without axial movement*
- *Bi-directional rotation*
- *Oil lubrication of turret and power tool sistem*
- *Double proximity for the engagement control*
- *High rigidity, due to the new design*
- *Absolute positioning*
- *Very accurate positioning*
- *Easy maintenance*
- *Wide range 120,160,200,250,320,400*
- *Possibility to use 8-12-16-24 position disc*



规格 Size			TBMA 100	TBMA 120	TBMA 160	TBMA 200	TBMA 250	TBMA 320	TBMA 400
工位数 No. of divisions			8 - 12	8 - 12	8 - 12	8 - 12	8 - 12	8 - 12	8 - 12
			16	16 - 24	16 - 24	16 - 24	16 - 24	16 - 24	16 - 24
转动惯量 Moment of inertia	Kgm ²		0,25	0,15÷1,8	0,15÷1,8	0,4÷8	0,4÷8	0,7÷40	20÷100
最大切线方向扭矩 Max Tangential torque	Nm		450	1100	1900	4000	7500	16000	26000
最大下压扭矩 Max Overturning Torque in Pressing Direction	Nm		400	1200	2100	6000	12000	25000	41400
最大脱离扭矩 Max Overturning Torque in Lifting Direction	Nm		150	700	1600	3500	6500	13000	20000
最大不平衡扭矩 Max out of balance torque	Nm		3	10	15	40	60	160	470
定位精度 Positioning accuracy	Gradi Deg.		± 4"	± 4"	± 4"	± 4"	± 4"	± 4"	± 4"
重复定位精度 Accuracy of Repeatability	Gradi Deg.		± 1,6"	± 1,6"	± 1,6"	± 1,6"	± 1,6"	± 1,6"	± 1,6"
分度时间 Positioning time	30°	sec	0,13	0,13÷0,24	0,13÷0,24	0,20÷0,34	0,20÷0,34	0,64	0,86
	45°	sec	0,17	0,17÷0,28	0,17÷0,28	0,25÷0,38	0,25÷0,38	0,71	0,96
	180°	sec	0,3	0,34÷0,50	0,34÷0,50	0,53÷0,73	0,53÷0,73	1,76	2,42
松开时间 Unlocking time*	sec		0,1	0,1	0,1	0,12	0,12	0,6	0,6
锁紧时间 Locking time*	sec		0,1	0,1	0,1	0,12	0,12	0,6	0,6

* 标准版本
Standard version.

动力头技术参数 Technical data power tools									
动力头轴柄尺寸 Toolholder shaft size	mm		16 - 20	20	30	40	50	60	80
动力电机最大扭矩 Max. Torque at the motor	Nm		10	16	16	50	50	100	130
动力电机最大功率 Max. Power	Kw		3	5	5	9	9	15	18,5
动力电机最大转速 Max. Motor speed	g/min RPM		6000	6000	6000	5000	5000	3000	3000
动力电机/动力头 输出位置传动比 Ratio: RPM motor / RPM take power	直传 Direct		1:1	1:1	1:1	1:1	1:1	1:1	1:1
	减速 Reduction		-	-	1,25	1,315	1,52	1,45	1,85
刀架总质量 Turret's total weight	Kg			60	80	140	170	426	500
版本 Available version	气动 Pneumatic		•	•	•	•	•		
	液压 Hydraulic			•	•	•	•	•	•
工作压力 Working pressure	Bar	气动 (标准) Pneumatic (standard)	5 ± 1						
		液压 (选配) Hydraulic (optional)	30 ± 3						



Order code for turret Type TBMA

TBMA刀架订货号

规格 <i>Size</i>	订货号 <i>code</i>	工位数 <i>No. of division</i>	订货号 <i>code</i>	伺服放大器 <i>Servo amplifier control unit</i>	订货号 <i>code</i>
TBMA 120	0120	8/12	0	BF标准电机和驱动 <i>Motor and drive standard BF</i>	0
TBMA 160	0160	8	1	不带驱动，电机为西门子1FK7-042 <i>Without drive preset for motor Siemens 1FK7 - 042</i>	2
TBMA 200	0200	12	2	不带驱动，电机为发那科M3和alpha4HV(伺服) <i>Without drive preset for motor Fanuc M3 and alpha 4HV (servo)</i>	3
TBMA 250	0250	16	3	不带驱动和电机 <i>Without servo and motor for turret</i>	4
TBMA 320	0320	24	5		
TBMA400	0400				



2 6
Vecchio old

刀盘 <i>Tool holder disc</i>	Cod 货号 *
根据规格最终在此生成一个字母 <i>On request, based on the specifications, a letter will be assigned</i>	

动力电机厂商 <i>Manufacturer of the motor for the rotating tools</i>	Cod *

动力电机型号 <i>Motor type for rotating tools</i>	Cod *

立式安装使用 <i>Application vertical down</i>	Cod G

*
根据客户订货号
BARUFFALDI将提供最终刀架货号

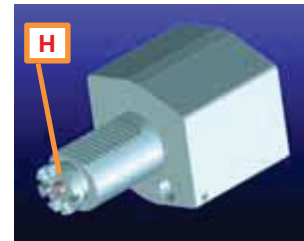
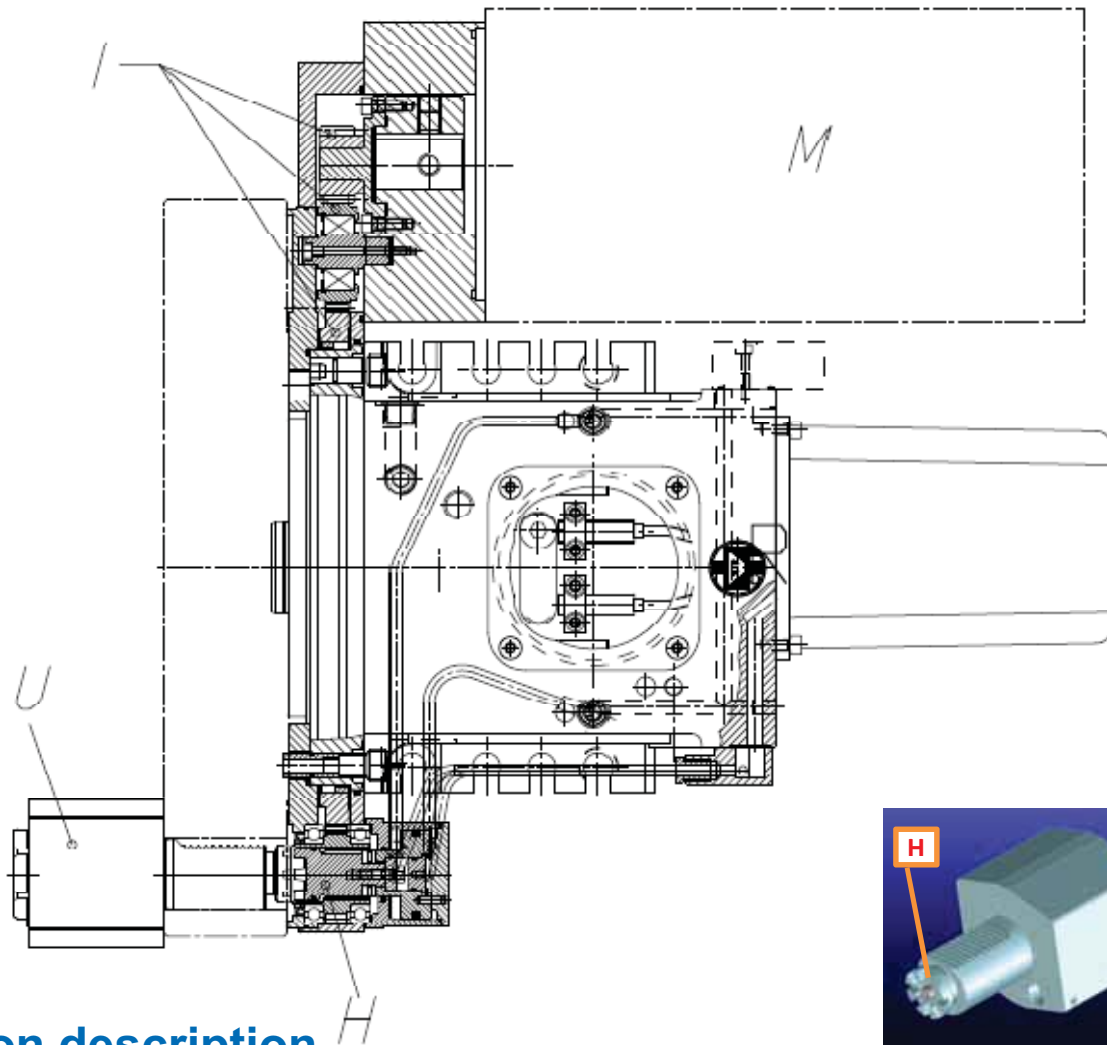
Based on the data provided by the customer Baruffaldi will supply the code

驱动方式 <i>Actuator</i>	Cod
气动 <i>Pneumatic</i>	0
液压 <i>Hydraulic</i>	1

电机轴形式 <i>Shaft Type</i>	cod
电机轴不带键 <i>Motor shaft without key</i>	0
电机轴带键 <i>Motor shaft with key</i>	1
锥轴 <i>conic shaft</i>	2

传动比 (电机转速/动力头输出位置转速) Ratio (Rpm motor / Rpm take power)		Cod ?
1:1		1
减速 Reduction	见技术参数 see technical data	2

版本规格 <i>Version specifications</i>	Cod
refer to the drawing 图号	
需要不同的版本请接洽销售部门 <i>On demand are available further versions contact the sales office</i>	*



Function description

功能描述

通过齿轮组 (I) 和端齿离合器 (H) 将动力电机M旋转传递至动力头U。刀架锁紧过程中动力头 (U) 和端齿离合器的啮合是自动完成的。在刀架分度前，离合器自动完成脱离刀盘可以旋转分度。

*H动力头端齿连接组加载预紧力 (背隙) 可以胜任有难度的铣削加工此外，BARUFFALDI还提供一系列的附件整体打包订购，能保证最经济可靠。例如：动力头、刀座。

不要犹豫，请接洽销售部门？

Baruffaldi furthermore offers a series of accessories, which facilitate the purchase of complete, warranted and economic full package. Example driven tools, toolholder discs and tool holders. Do not hesitate to contact the sales office.

FUNCTION DESCRIPTION

The transmission of rotation of the drive motor **M** to the rotating toolholder **U** is made by a gear train **I** and frontal Hirth clutch coupling **H**.

The engagement of the coupling with rotating toolholder **U** (Shaft as per DIN 69880 norms) is made automatically during the locking sequence of the turret.

During the phase of turret indexing the coupling is automatically disengaged and permits the rotation of the toolholder disc.

*H Coupling of the rotating tool is made via preloaded, multi-teeth Hirth clutch (without backlash) which assures possibility of difficult milling operations





Command cycle for the rotating tool drive motor

动力电机指令说明

On the TBMA turret the indexing cycle remains unchanged (the indexing cycle is the same as the TB turret) with the exception: when turret indexing is called for, the take power of rotating tools should be revolved at 500 Rpm. This ensures smooth engagement of the multi-teeth hirt drive clutch during turret locking cycle. For the indexing times please refer to the TB turrets catalogue.

TBMA刀架的分度时序没有做改变（和标准的TB刀架一样的分度时序），只是在分度时，动力头转速控制在500转。这是为了确保在刀架锁紧时，动力头端齿能顺利的和离合器啮合。分度时间请参看TB刀架样本

Turret index cycle

刀架分度时，电机控制刀架从固定刀座工位（不旋转）更换到动力头工位

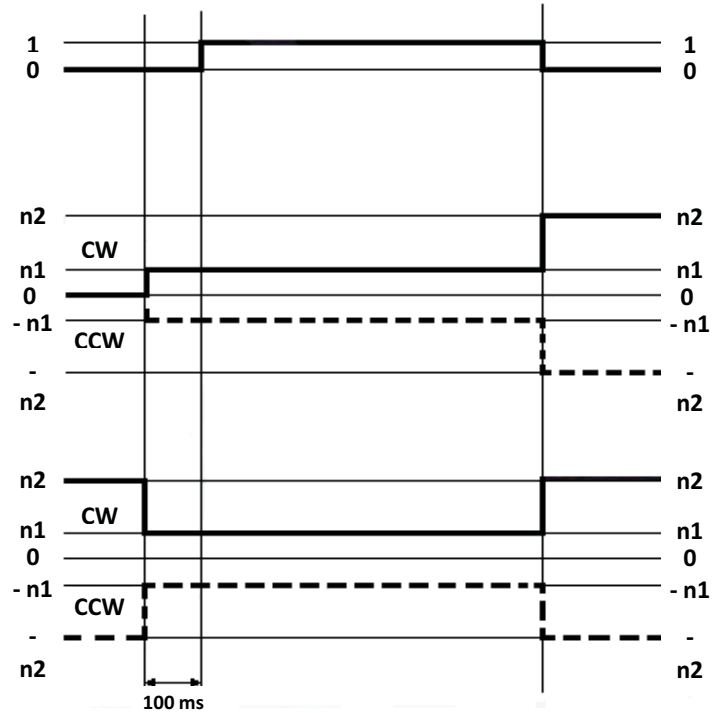
Motor command during turret index cycle from station with fixed tool (not rotating) to a station with a rotating tool.

刀架分度时，电机控制刀架从动力头工位更换到动力头工位

Motor command during turret index cycle from station with a rotating tool to a station with a rotating tool.

$n1/-n1$ = 刀架分度时，动力头结合齿的转数（500转）

$n1/-n1$ = R.P.M. of the clutch during turret indexing (500 R.P.M.)



$n2/-n2$ = 动力电机工作转数

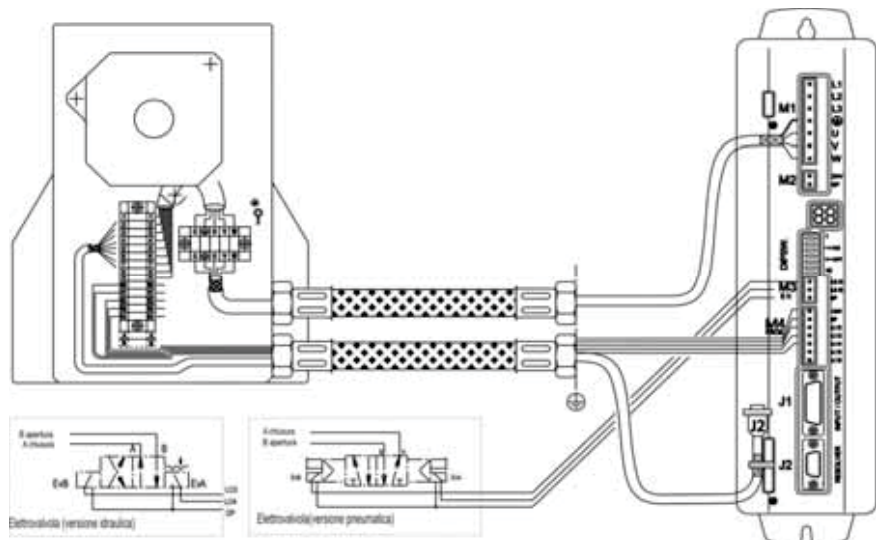
$n2/-n2$ = Working R.P.M. of drive motor

所有TB刀架供货时，都带有最新版本的驱动器工作稳定可靠

- 这种新的驱动器可以实现刀架远程控制
- 可视窗口随时观察
- 驱动器电源（24Vcc）
- 刀架定位准确
- 多达25中的报警信息
- 很容易的了解使用过程中刀架发送的问题
- 定位位置的反馈？

All the series of the TB turret is supplied with a new developed drive, extremely stable and sophisticated

- *This new drive allows the turret remote control.*
- *Through a display shows constantly:*
- *The Drive supply (24Vcc)*
- *The actual turret's position*
- *Over 25 activated alarms*
- *Possibility to find easily eventually problems happened during the use*



驱动器的连接请参看驱动器使用说明版本：

DMS08-BF

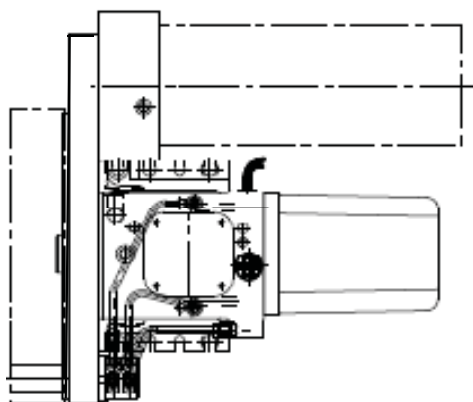
For the connection refer to electrical instruction drive manual

DMS08-BF

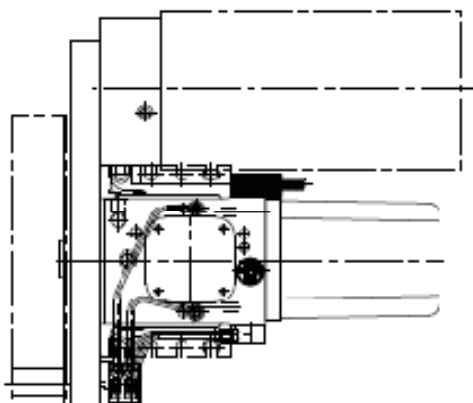


Cable outlet plan

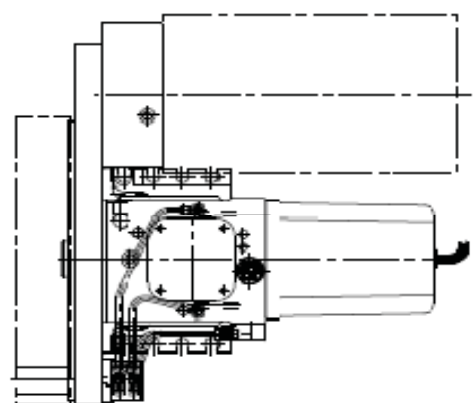
刀架电缆输出图



标准电缆输出
Standard cables outlet



电缆接线盒输出
Cable outlet with bolck



电缆后盖输出
Cable outlet from rear cover

刀架 Turret	PCD直径 Pitch diameter	举例电机型号 Motor type example	输出 Outlet
TBMA 120	225	143 (Fanuc alpha 1,5) 142 (Siemens 1FT5-072)	●
	240	143 (Fanuc alpha 1,5) 142 (Siemens 1FT5-072)	●
TBMA 160	270	174 (Fanuc alpha 2) 155 (Siemens 1FT7-082)	●
	300	174 (Fanuc alpha 2) 155 (Siemens 1FT7-082)	●
TBMA 200	340	174 (Fanuc alpha 2) 155 (Siemens 1FT7-082) 210 (Fanuc alpha 8) 192 (Siemens 1FT7-102)	● ~
	380	210 (Fanuc alpha 8) 192 (Siemens 1FT7-102)	●
TBMA250	400	174 (Fanuc alpha 2) 155 (Siemens 1FT7-082) 210 (Fanuc alpha 8) 192 (Siemens 1FT7-102)	* ●
	445,5	210 (Fanuc alpha 8) 192 (Siemens 1FT7-102)	*
TBMA 320	490	266 (Fanuc alpha 12) 260 (Siemens 1PH7-131)	*
TBMA 400	620	266 (Fanuc alpha 15) 260 (Siemens 1PH7-133)	*



Selection of turret

刀架选型

根据下图所示刀盘的受力情况。

固定刀座和动力头的装配数量

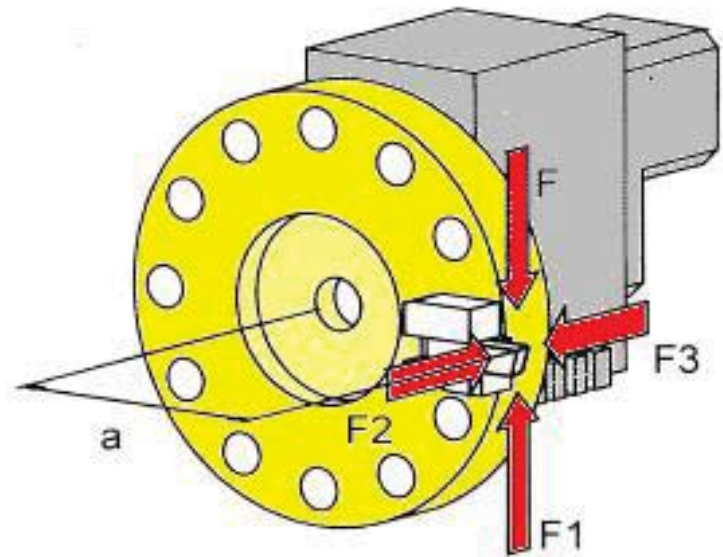
请阅生产商的参数表

刀架的切削能力请参看第4页

Following diagrams refer to forced applied to tool-holder disc.

For loading capacity of static and driven tool-holders please refer to manufacturer's data sheet.

For turret operating capabilities please refer to section " technical data " - "Power tools" page 4.

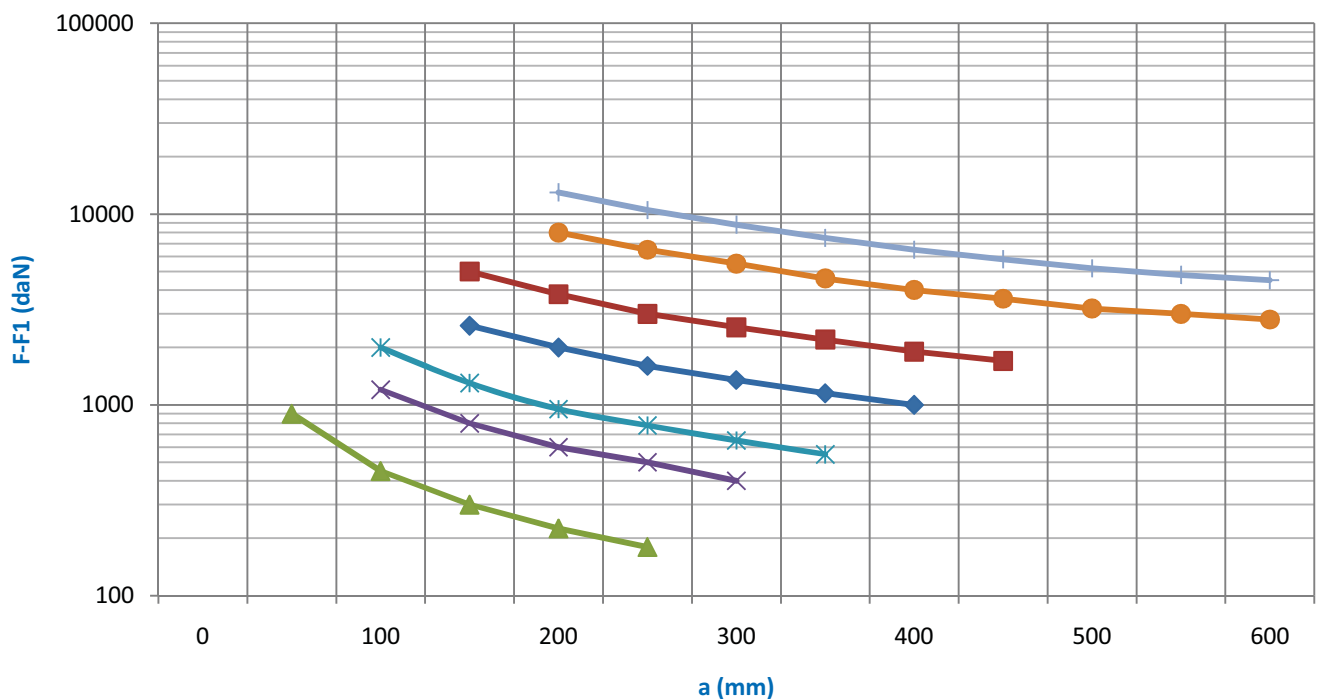


切线方向的切削力F-F1

As a function of the tangential thrust F-F1-F1

F F1单位 (daN) 1daN=10N

切线方向
tangential





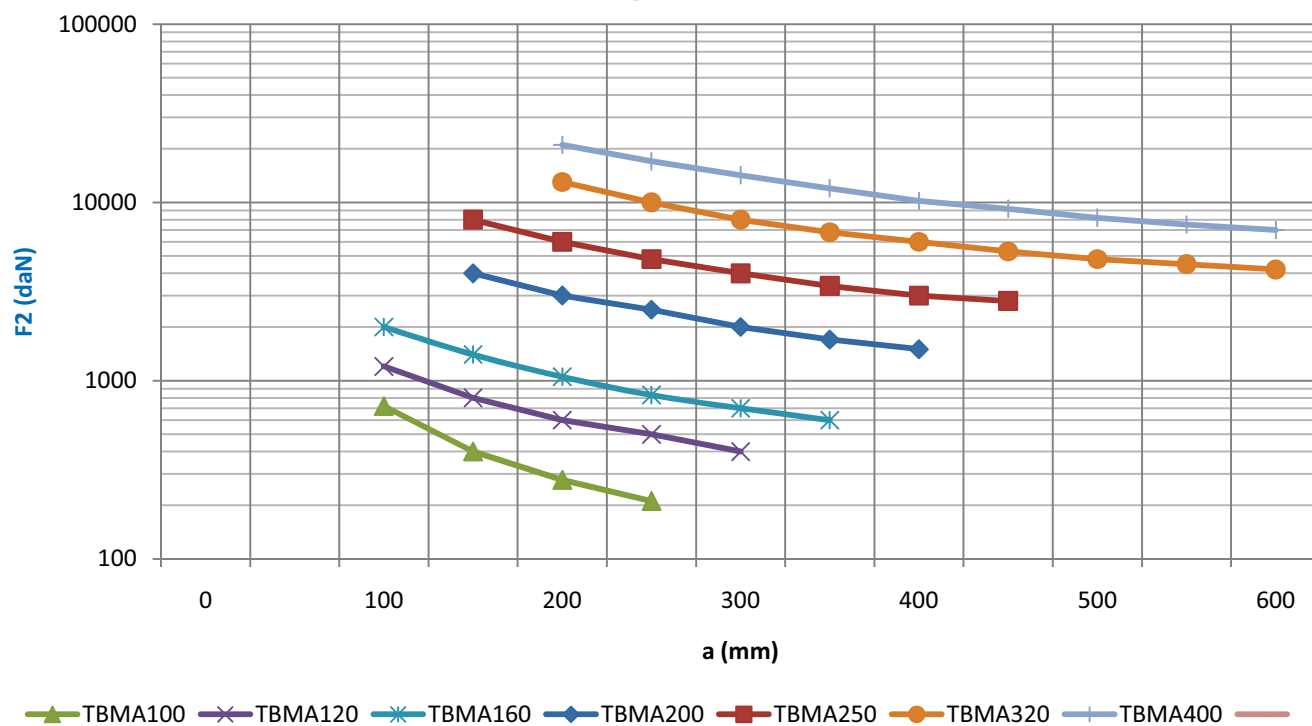
从刀架正面轴向的下压力F2

As a function of the pressing axial thrust F2

F F1单位 (daN) 1daN=10N

下压

to push



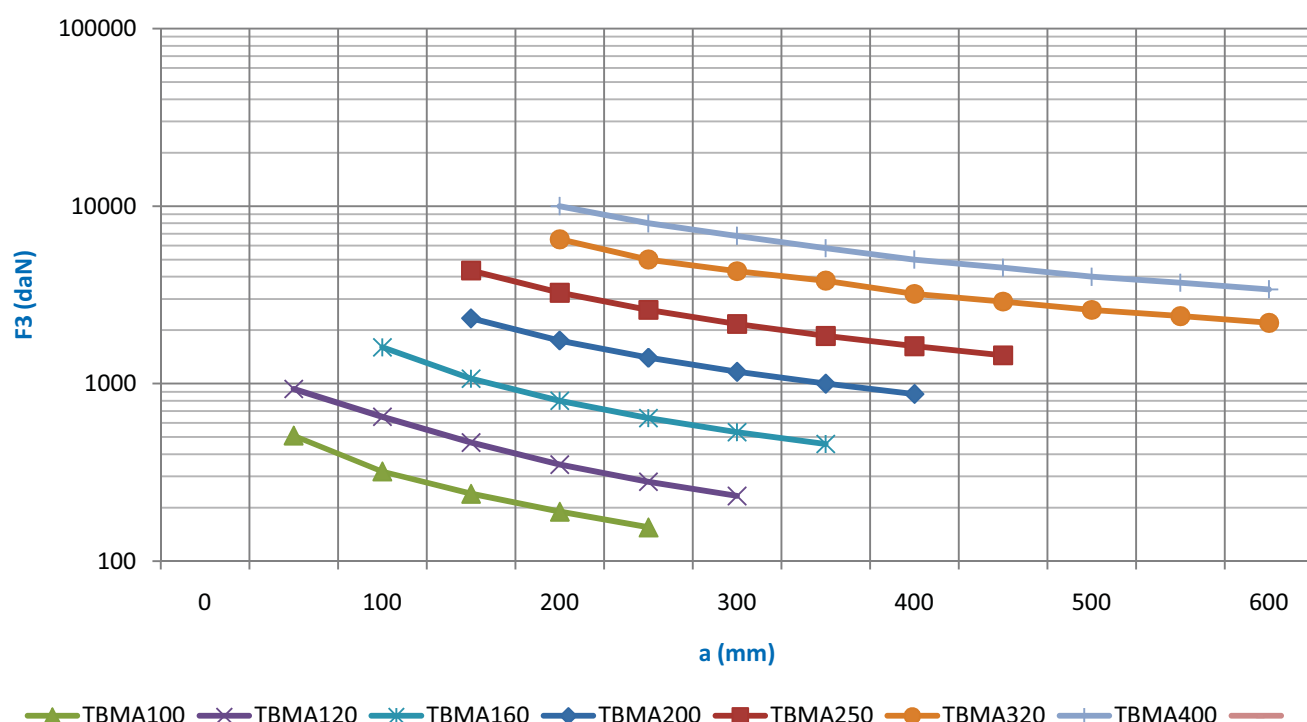
从刀架背面轴向的脱离力F3

As a function of the lifting axial thrust F3

F F1单位 (daN) 1daN=10N

脱离

to lift

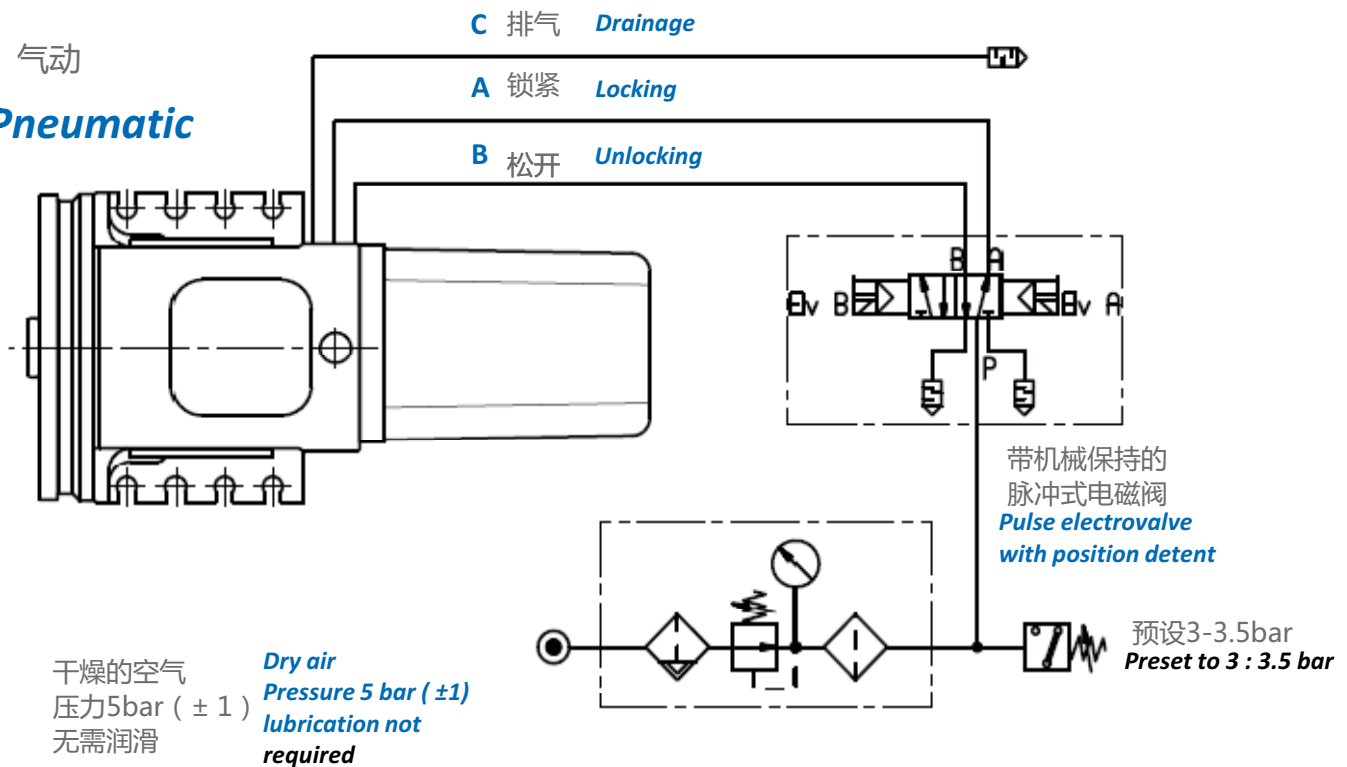




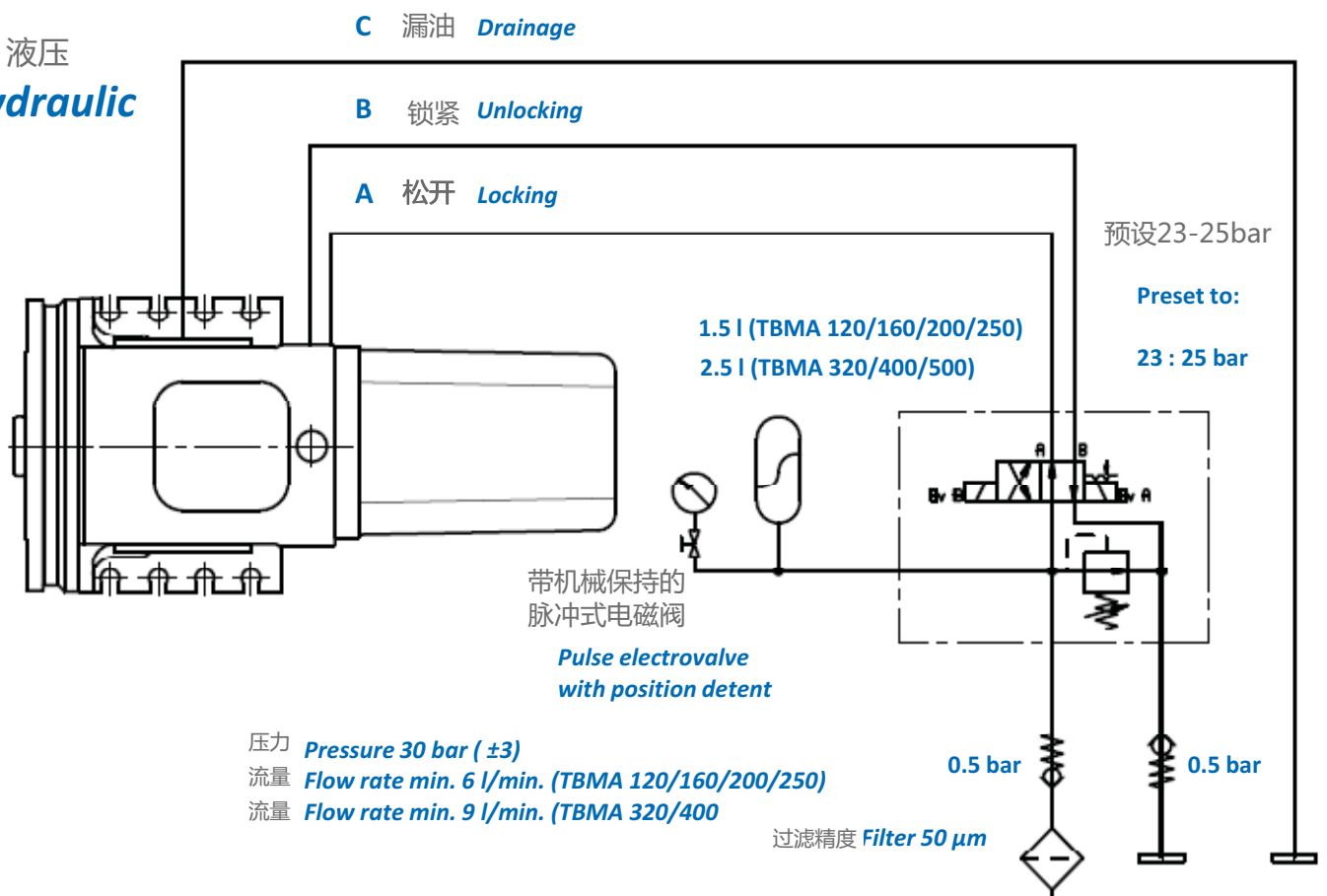
Functional diagram

工作原理图

气动 Pneumatic



液压 Hydraulic



需求油量 <i>Required oil volume</i>	TBMA120 TBMA 160	TBMA 200 TBMA 250	TBMA 320 TBMA 400
锁紧 / <i>Locking (cm³)</i>	22,6	39,4	215
松开 / <i>Unlocking (cm³)</i>	22,6	39,4	215

• 为了更快的响应锁紧/松开，我们建议将阀的位置尽可能的接近刀架

• *For a more immediate answer of loching/unlocking piston, we advise to position the valve very near to the turret*

**TBMA****120/160/200/250**

液压气压连接

Hydraulic-pneumatic connection

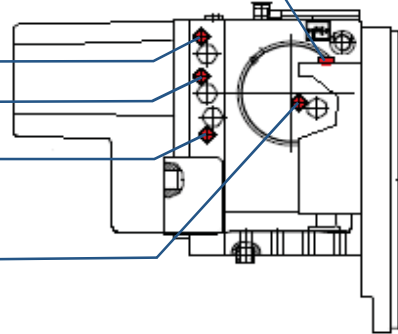
管路在刀架侧面连接

Pipes connected on the side of the turret

刀架右侧为加工位置

Turret used on right working side

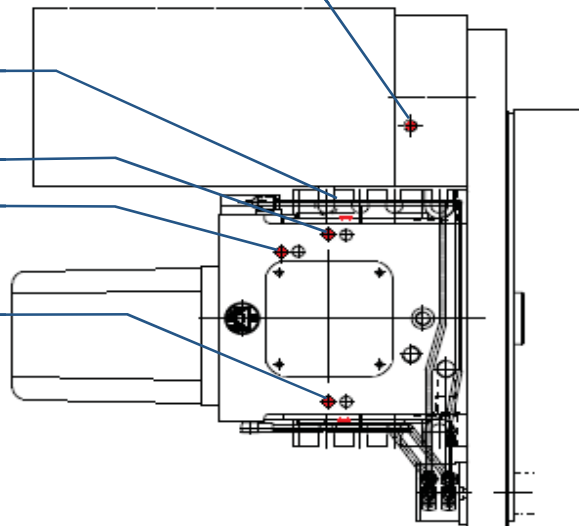
C1 漏油	Drainage 1/8" Gas
A 锁紧	Locking 1/8" Gas
B 松开	Unlocking 1/8" Gas
C 漏气	Drainage 1/8" Gas
*	Pneumatic 气动
C 漏油	Drainage 1/8" Gas
*	Hidraulic 液压



刀架左侧为加工位置

Turret used on left working side

C1 漏油	Drainage 1/8" Gas
C 漏油	Drainage 1/8" Gas
*	Hidraulic 液压
A 锁紧	Locking 1/8" Gas
C 漏气	Drainage 1/8" Gas
*	Pneumatic 气动
B 松开	Unlocking 1/8" Gas

管路在刀架顶部连接
Pipes connected on the top of the turret

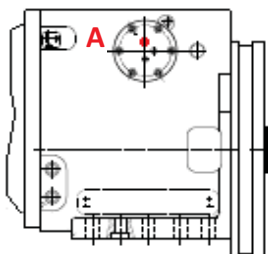
管径最小6mm

Use internal diameter pipe 6mm minimum

TBMA 320/400/500

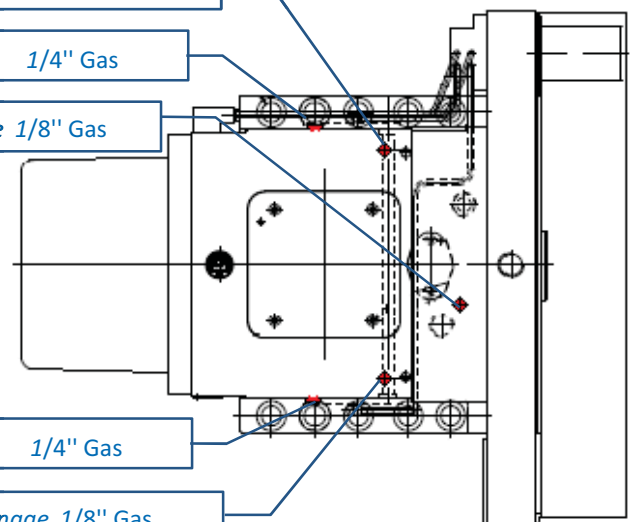
仅有液压连接

Available only with hydraulic connection

C 漏油 Drainage 1/8" Gas**A** 锁紧 Locking 1/4" Gas**C1** 松开 Drainage 1/8" Gas

管路在刀架顶部和侧面连接

Pipes connected on the side and on the top of the turret

**A** 锁紧 Locking 1/4" Gas**C** 漏油 Drainage 1/8" Gas

管径最小8mm

Use internal diameter pipe 8mm minimum





TBMA 120/160/200/250

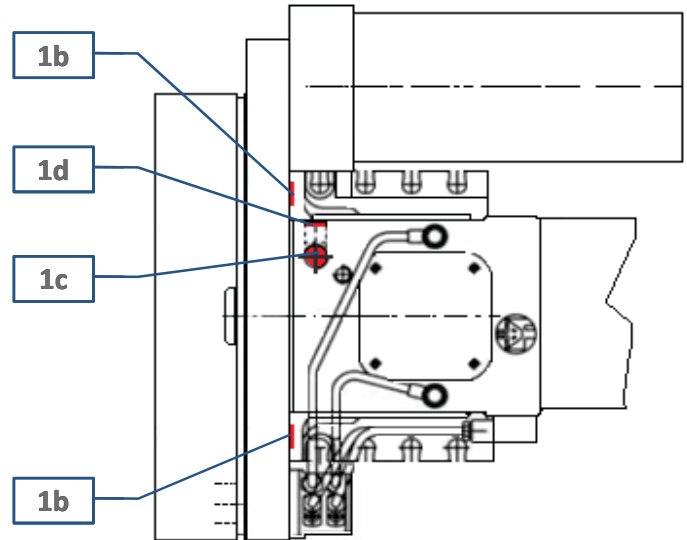
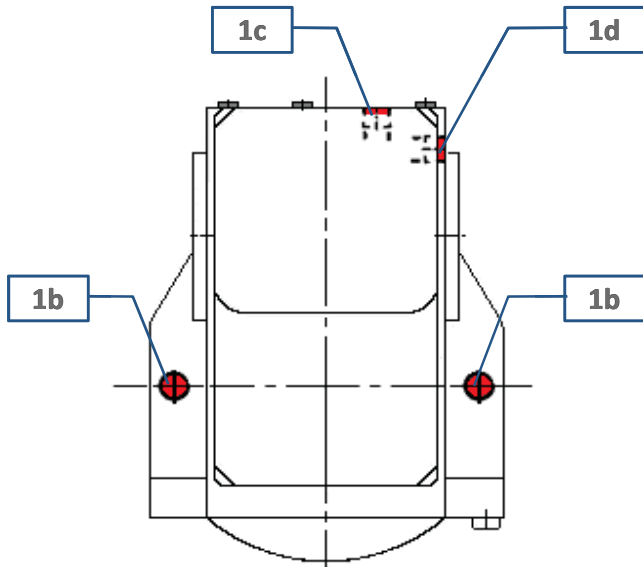
冷却液输入管必须接一个孔，1b-1c-1d这些孔中的一个，（其他必须封死）

Coolant inlet pipe to be connected to one one of the following holes:

1b-1c-1d- (others will have to be plugged)

1b-1c-1d

TBMA 120	1/4" Gas
TBMA 160	3/8" Gas
TBMA 200	3/8" Gas
TBMA 250	1/2" Gas



TBMA 320/400

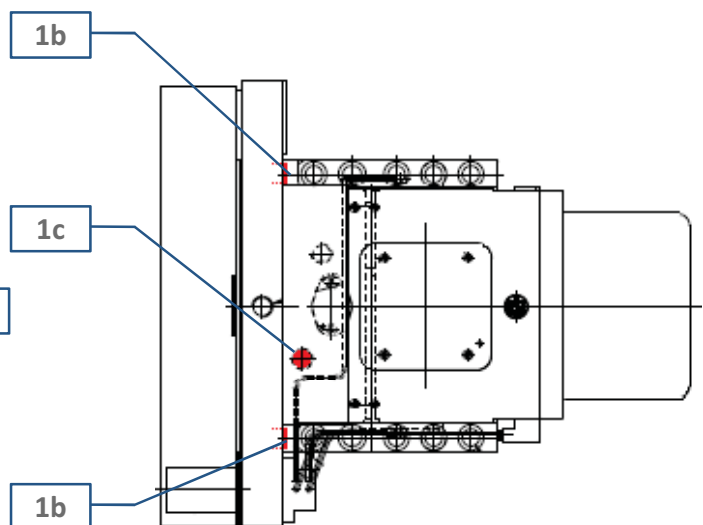
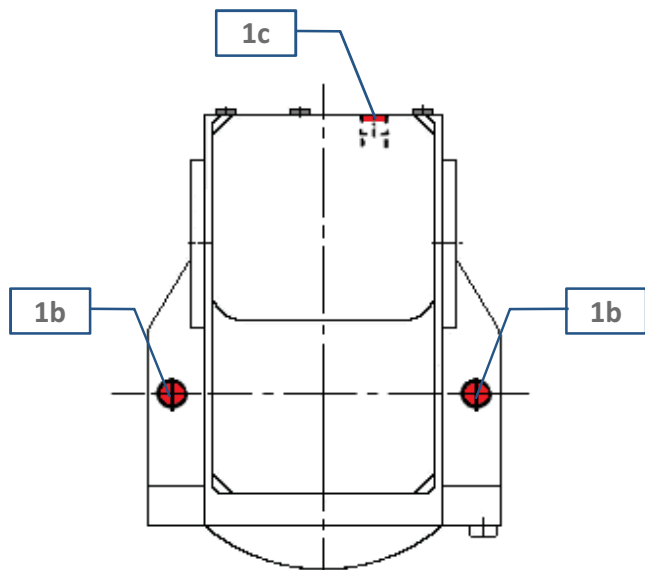
冷却液输入管必须接一个孔，1b-1c这些孔中的一个，（其他必须封死）

Coolant inlet pipe to be connected to one one of the following holes:

1b-1c (others will have to be plugged)

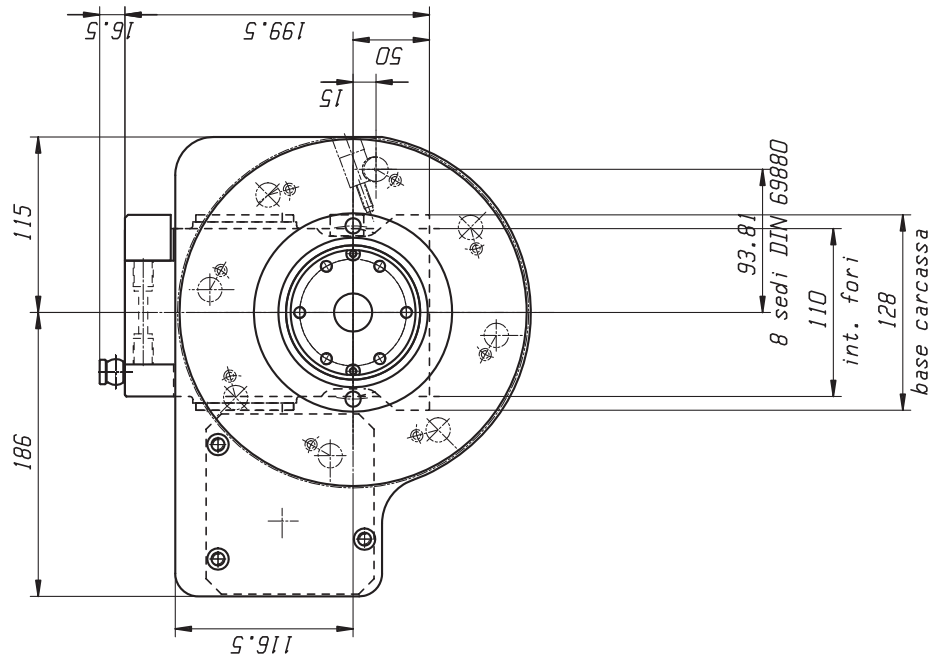
1b-1c

TBMA 320	3/4" Gas
TBMA 400	3/4" Gas

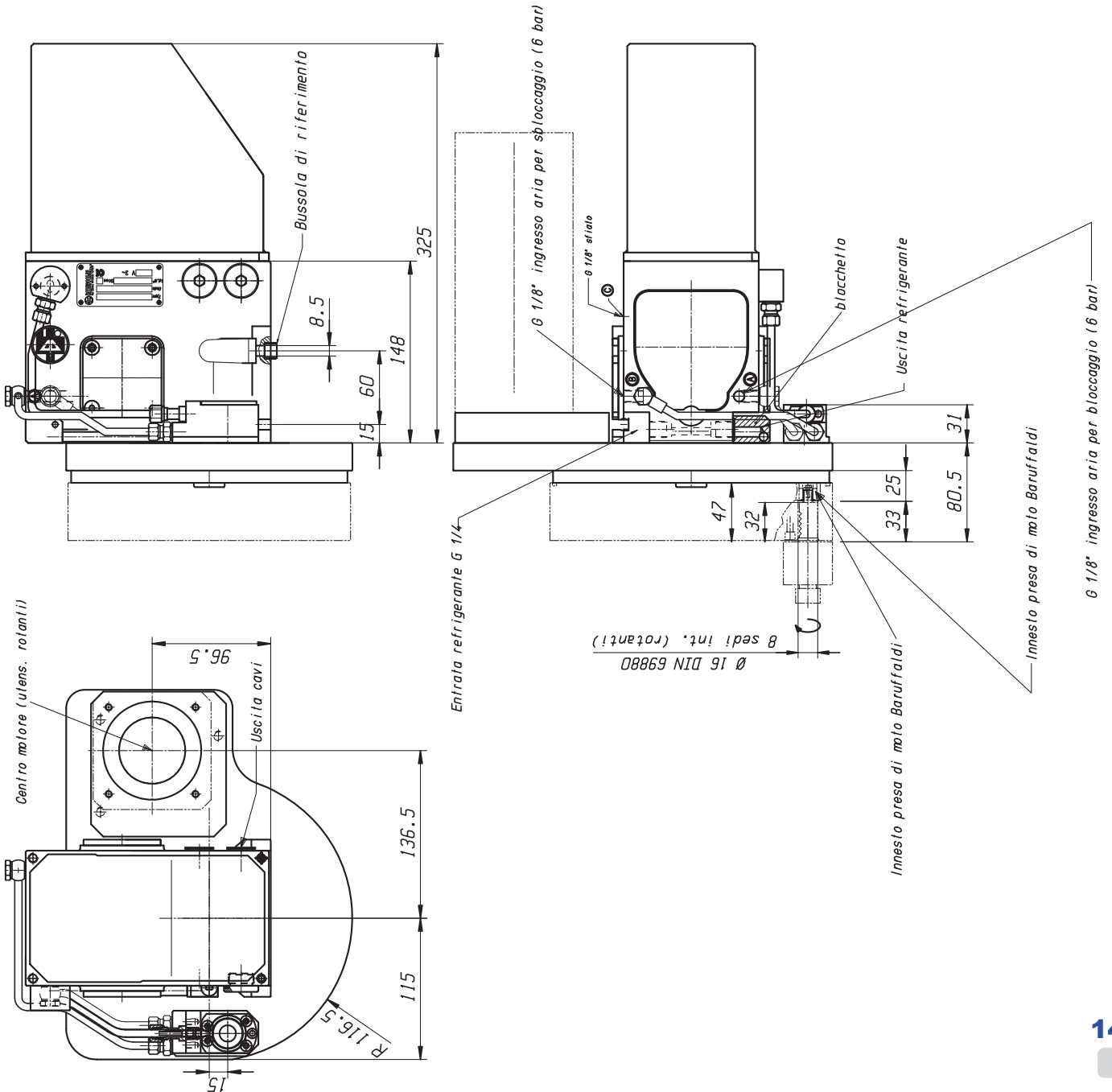


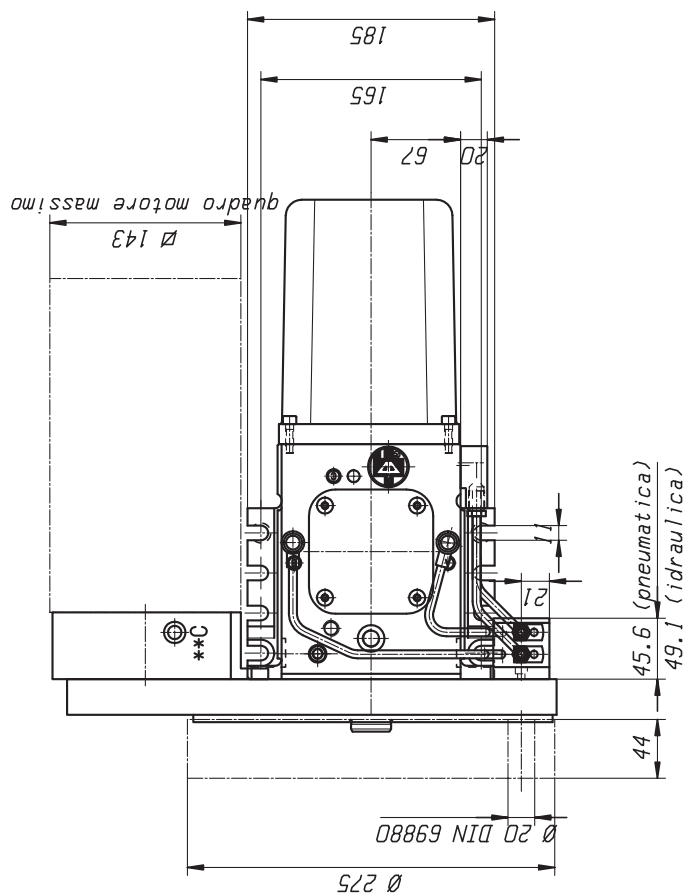
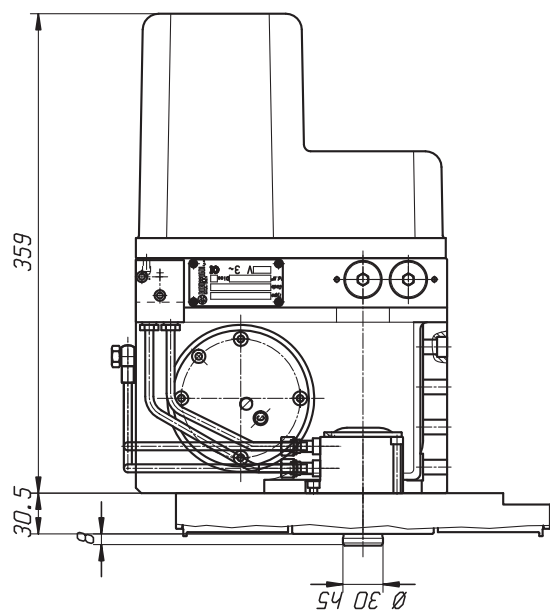
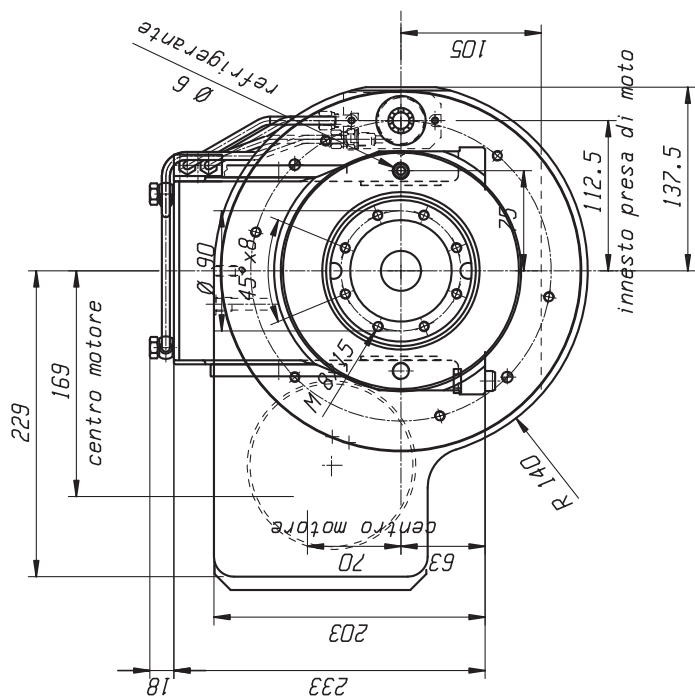
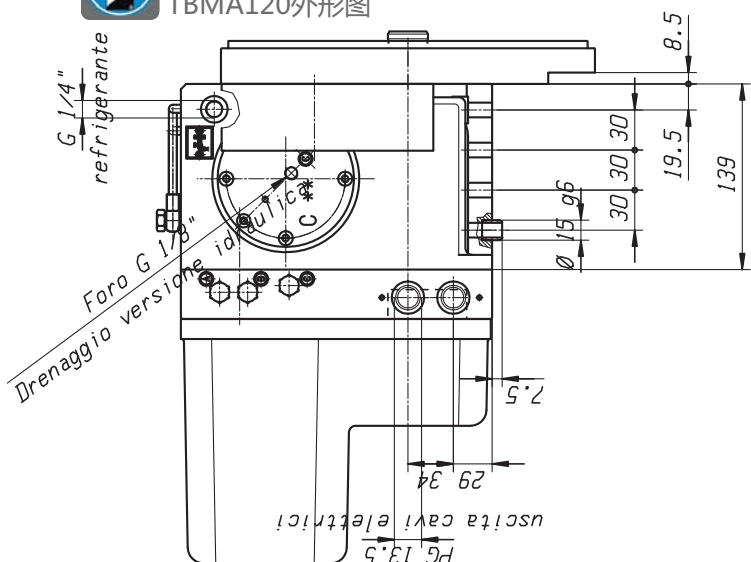
最大冷却液压力 50bar

Max coolant pressure 50 bar

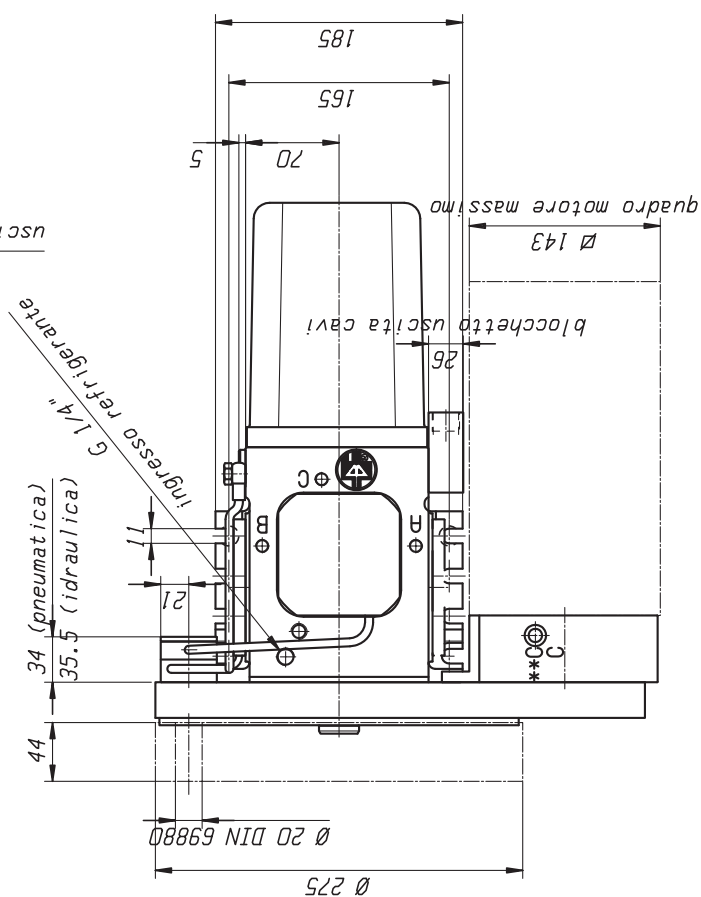


TBMA 100 Version 1
95 X = 15 DX
K26. - 100 . - - - - - . 01

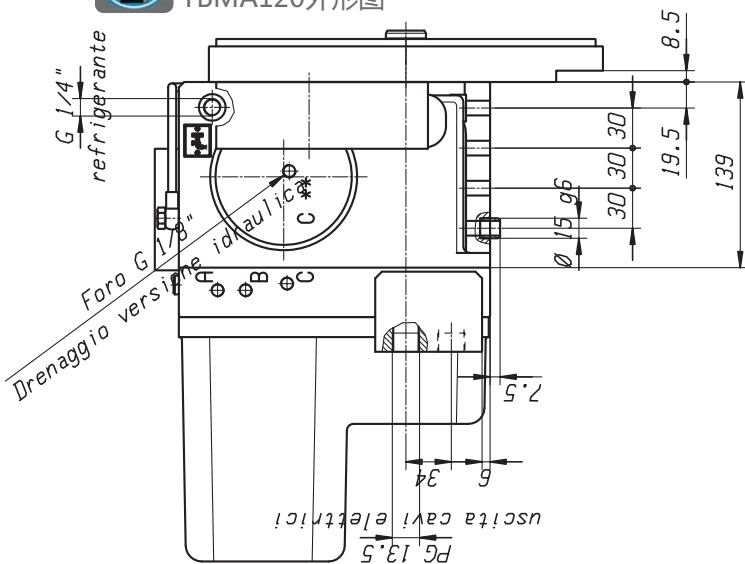




TBMA 120 Version 1
112,5 X = 0 DX
K56. - 120 . - - - - - . 01



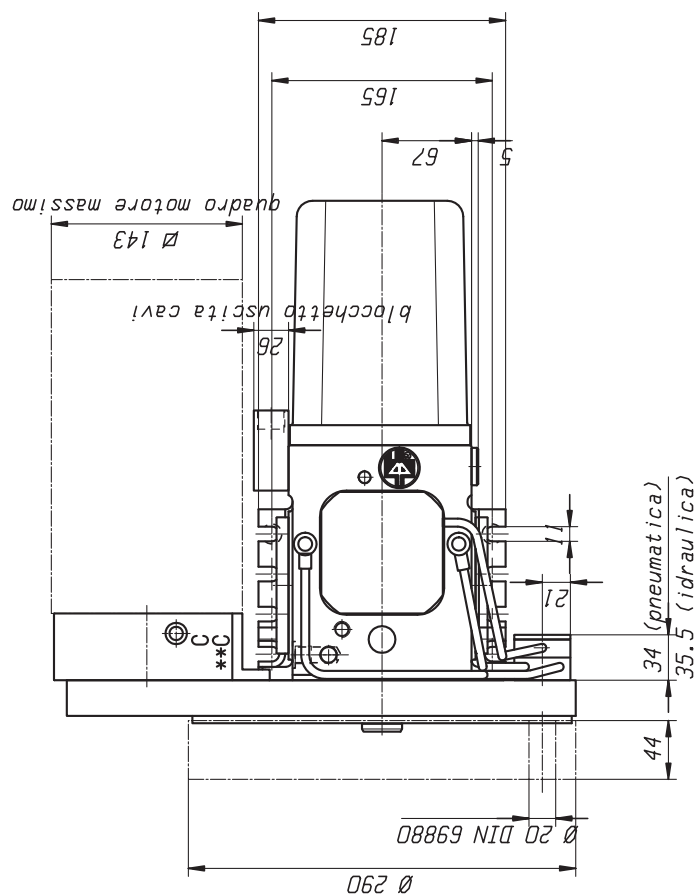
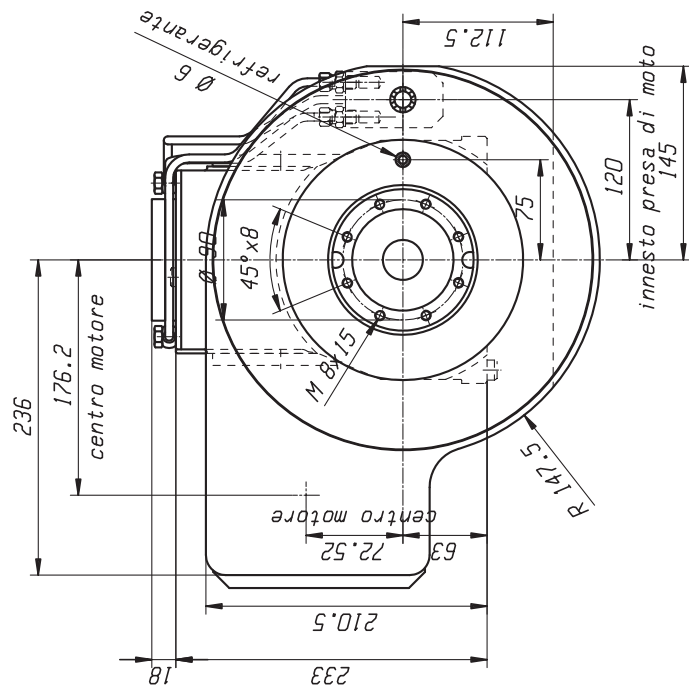
K56. - 120 . - - - - - . 03

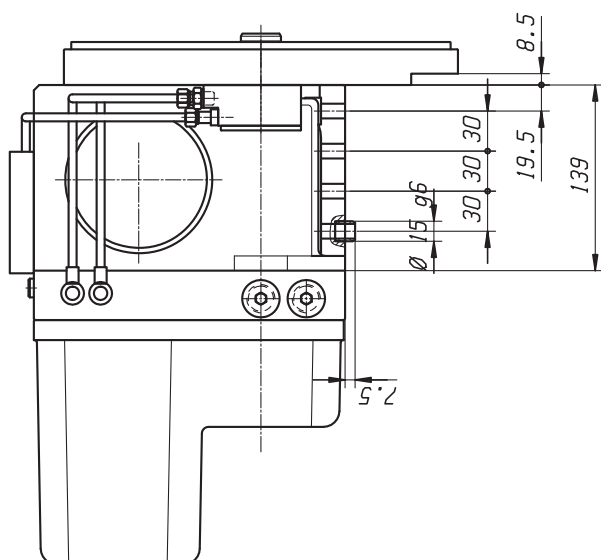


TBMA 120 Version 4

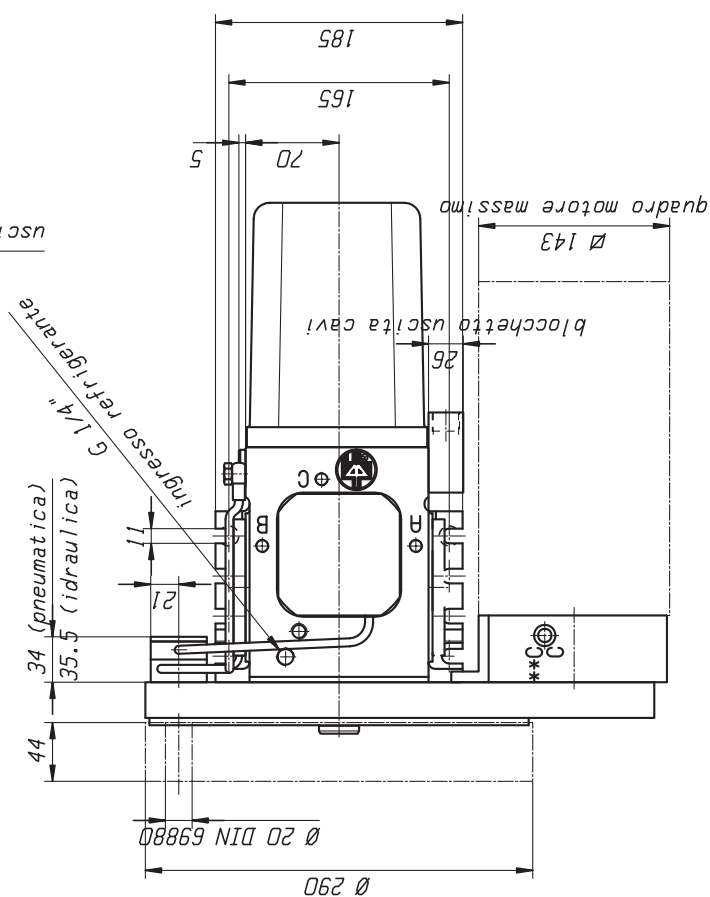
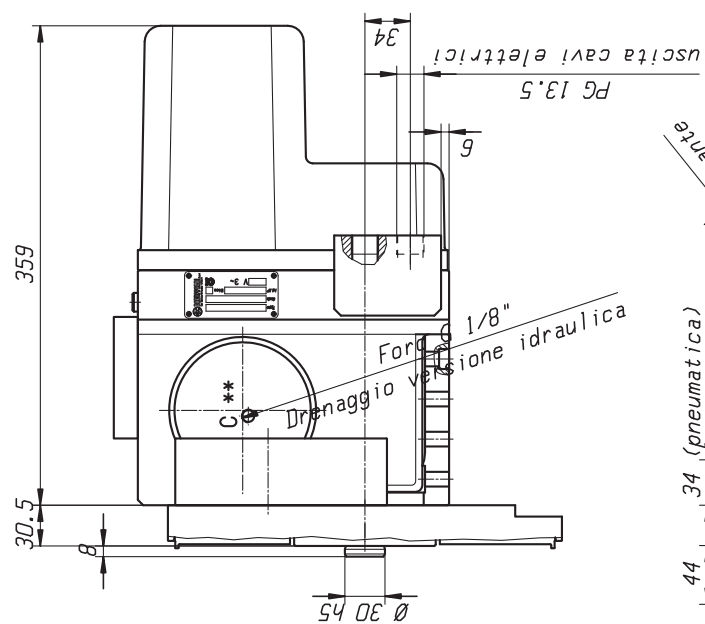
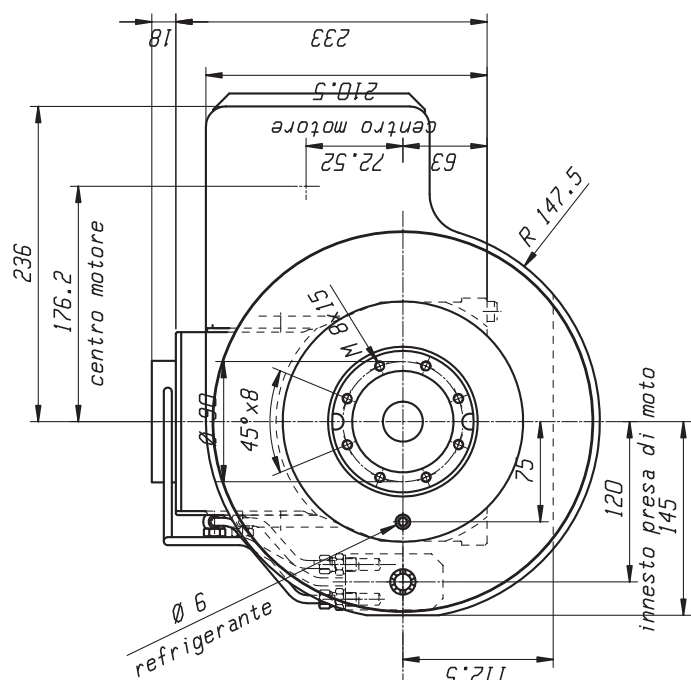
120 $X = 0$ DX

K56. - 120 . - - - - - . 04





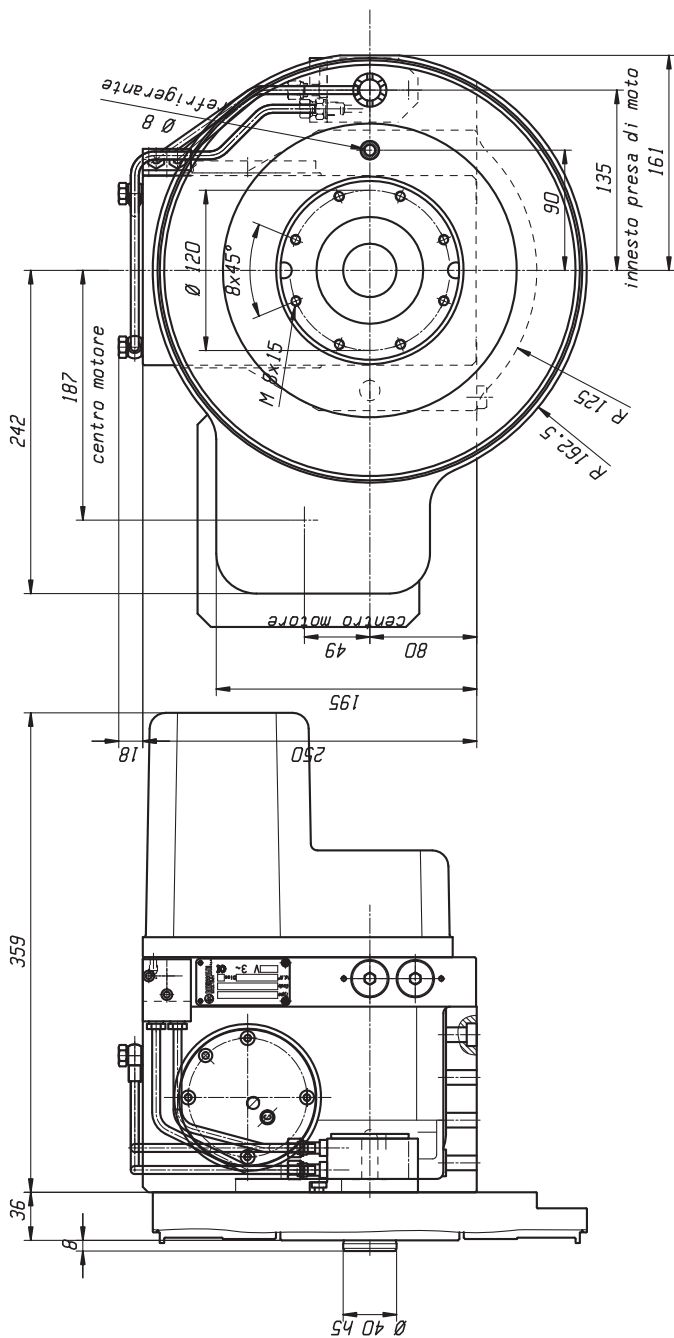
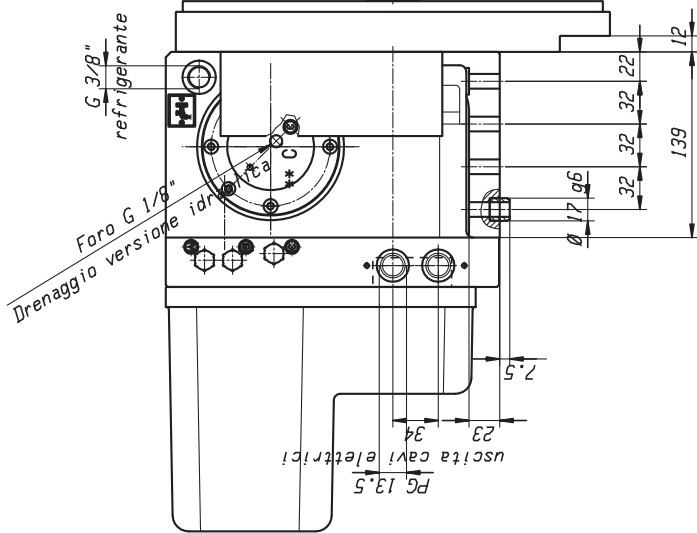
K56. - 120 . - - - - - . 05





Axial driven tools turret type TBMA

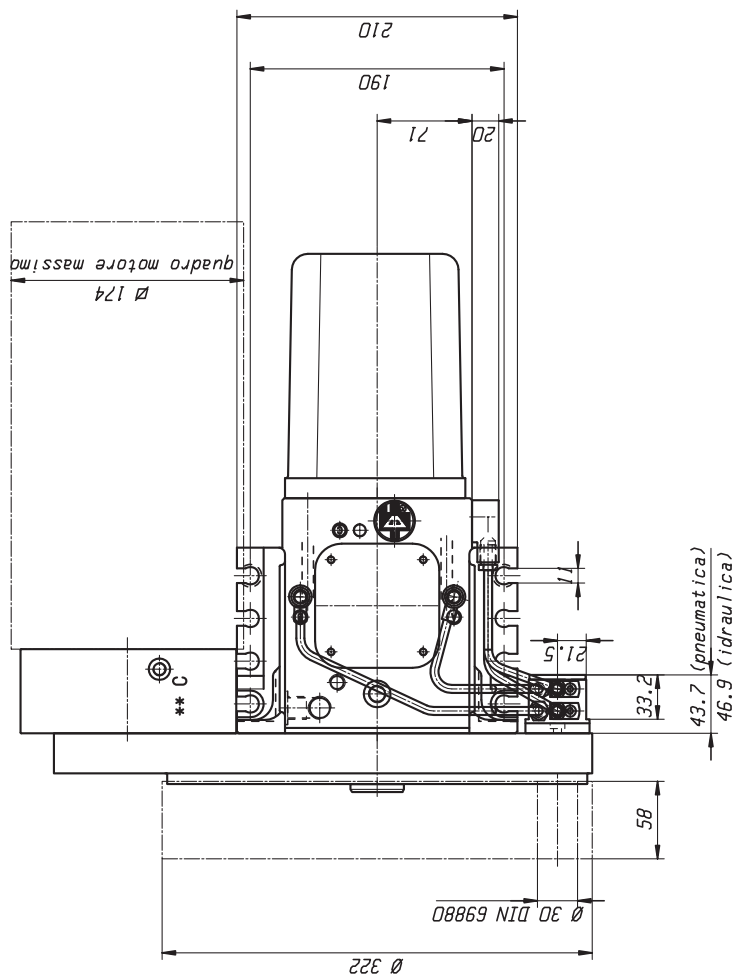
TBMA160外形图

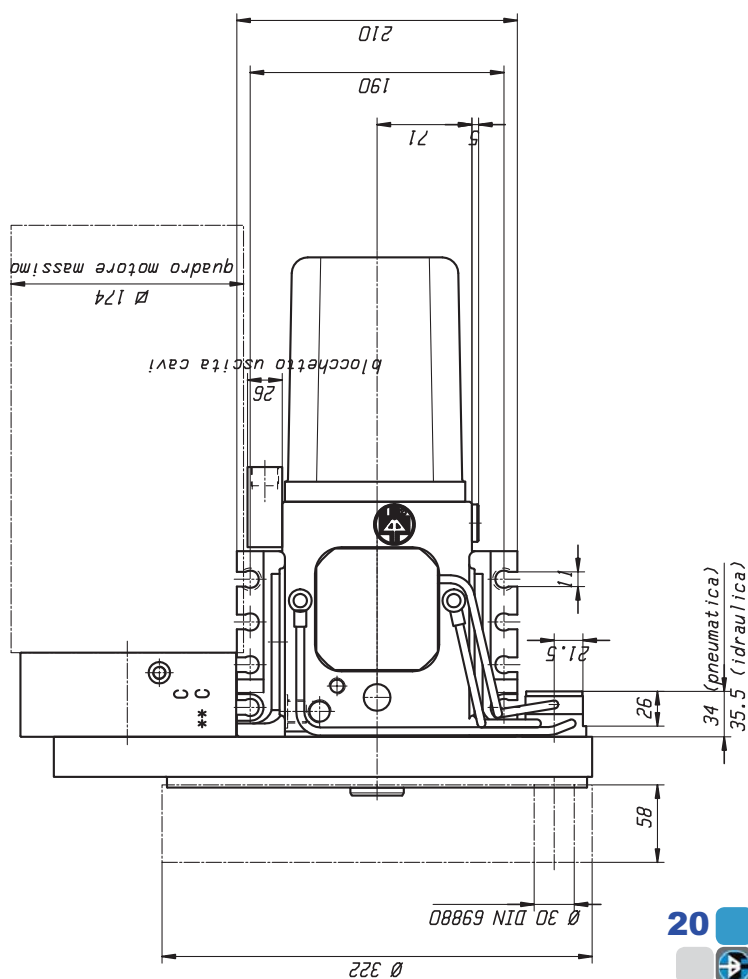
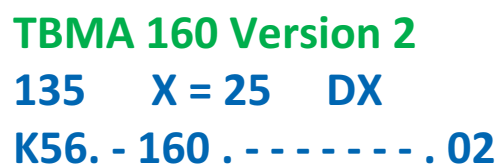


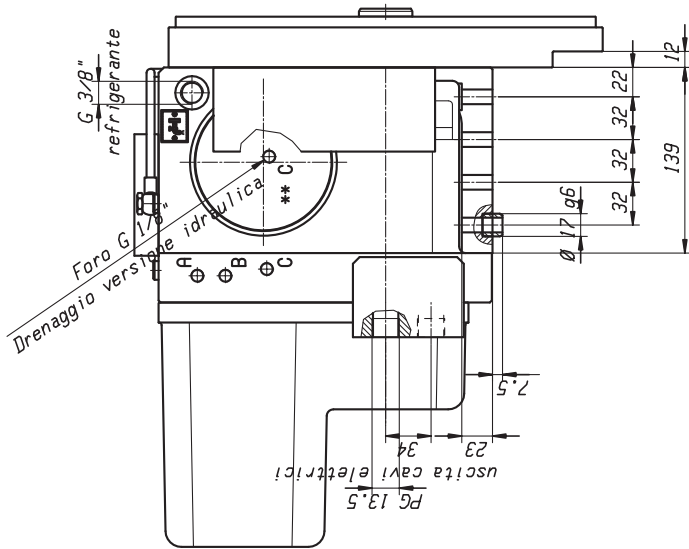
TBMA 160 Version 1

135 X = 0 DX

K56. - 160 . - 01



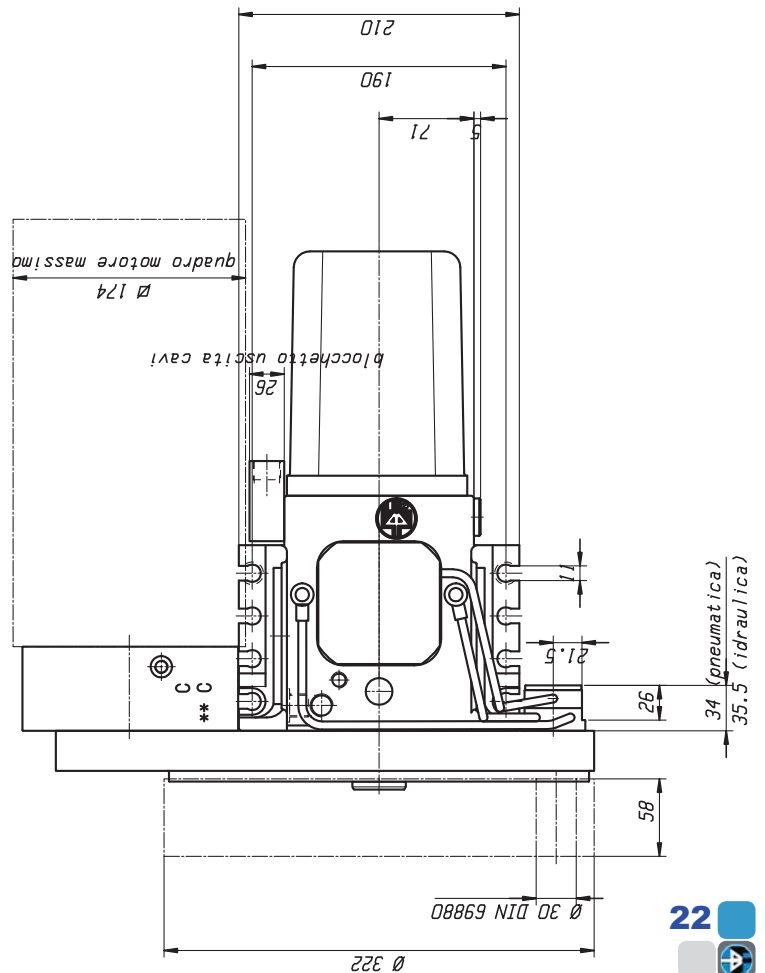
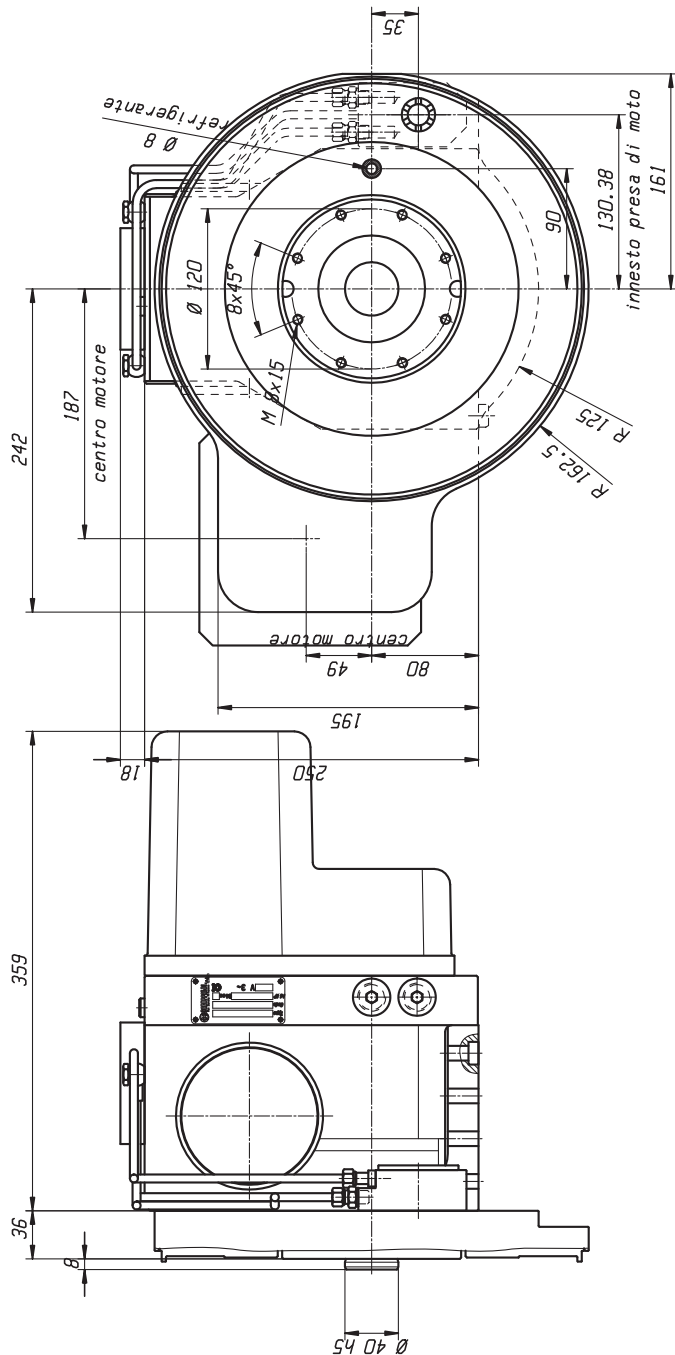


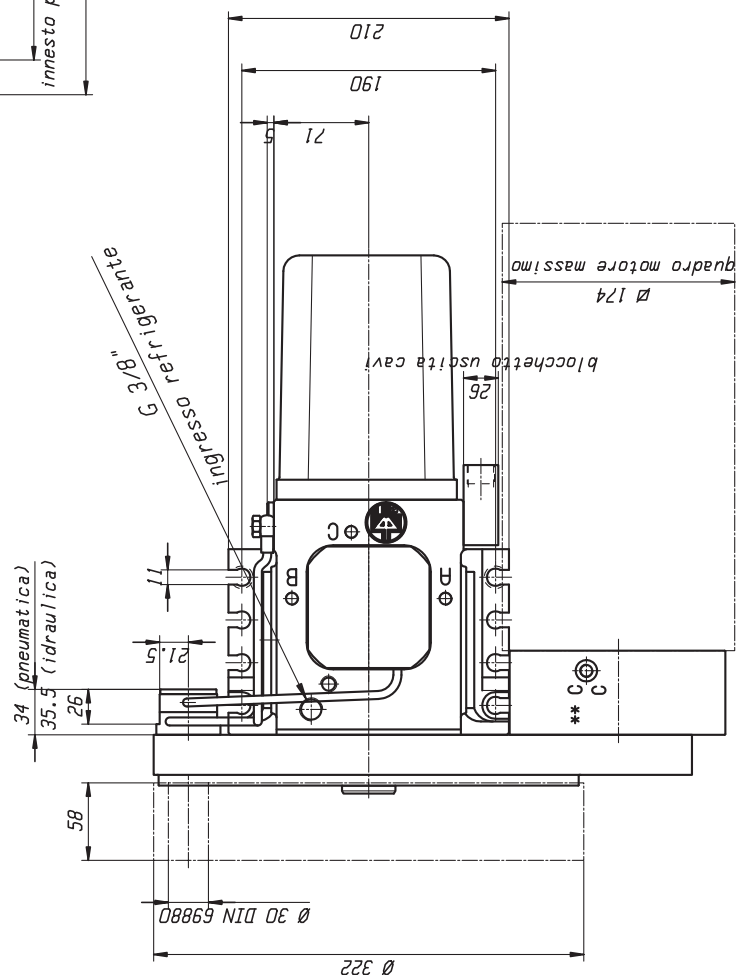
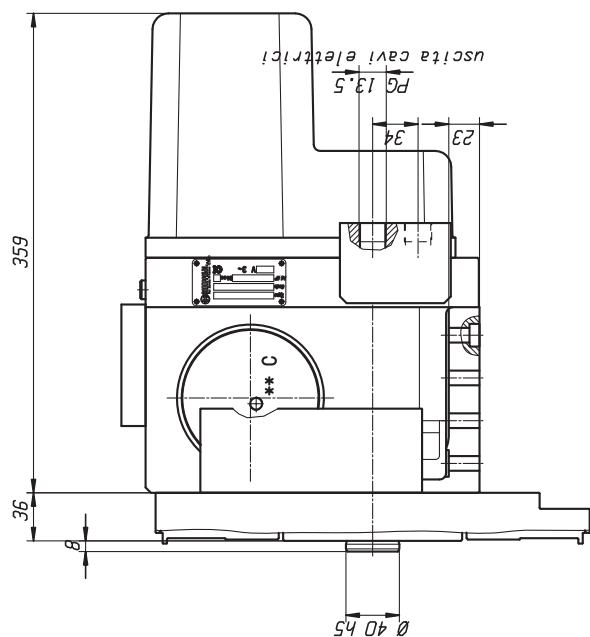
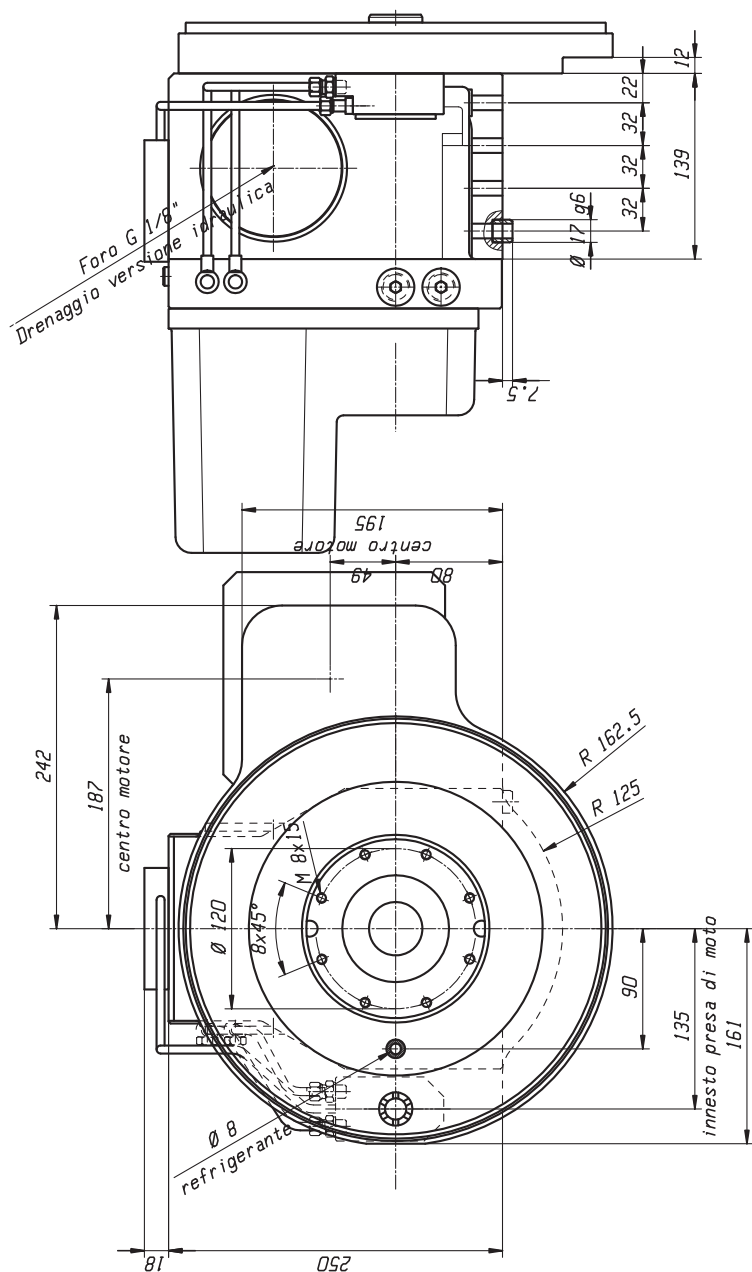


TBMA 160 Version 5

135 X = 35 DX

K56. - 160 05

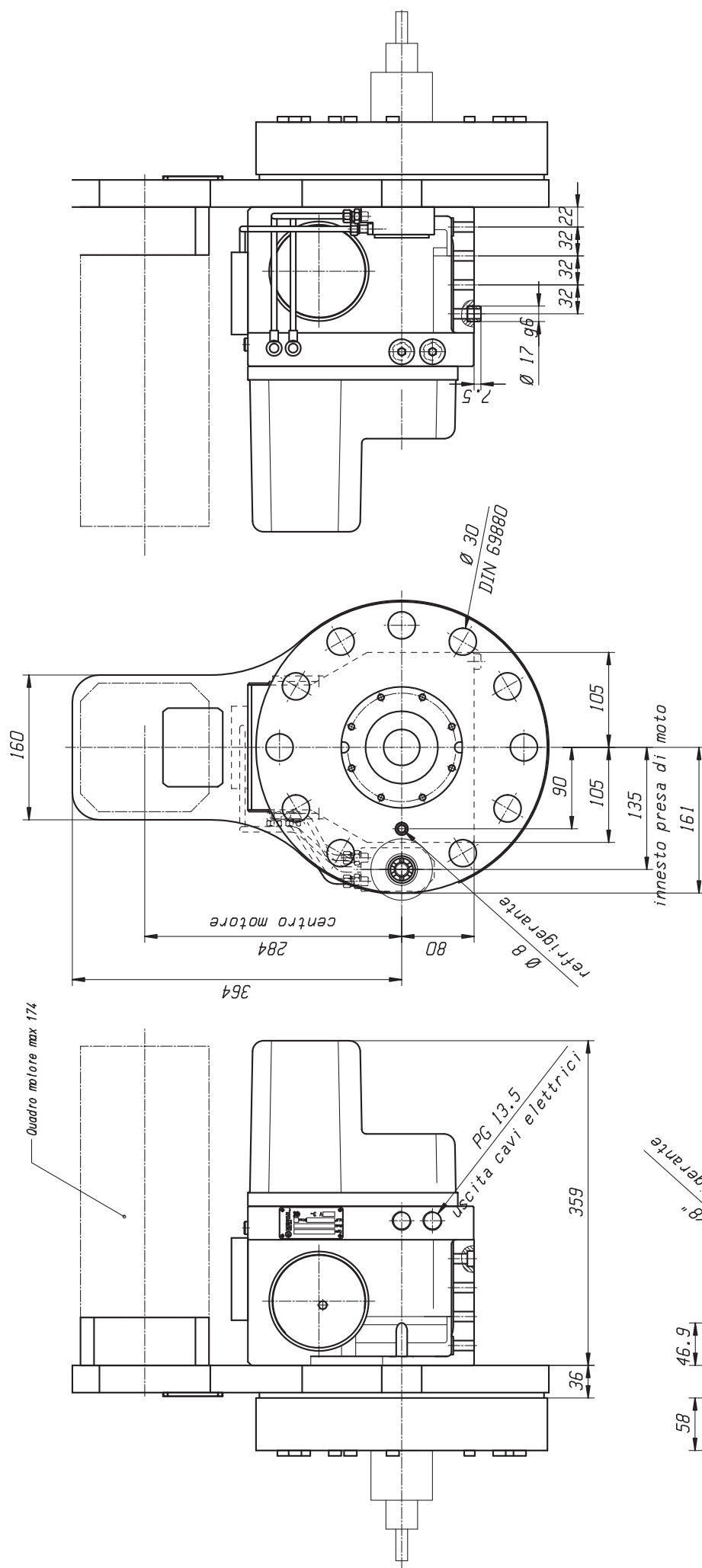




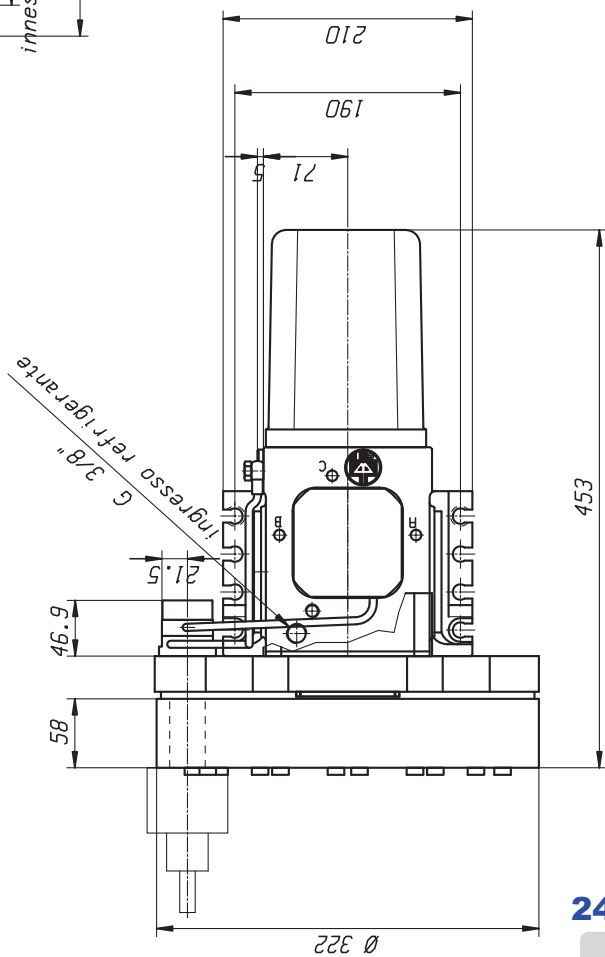
TBMA 160 Version 6

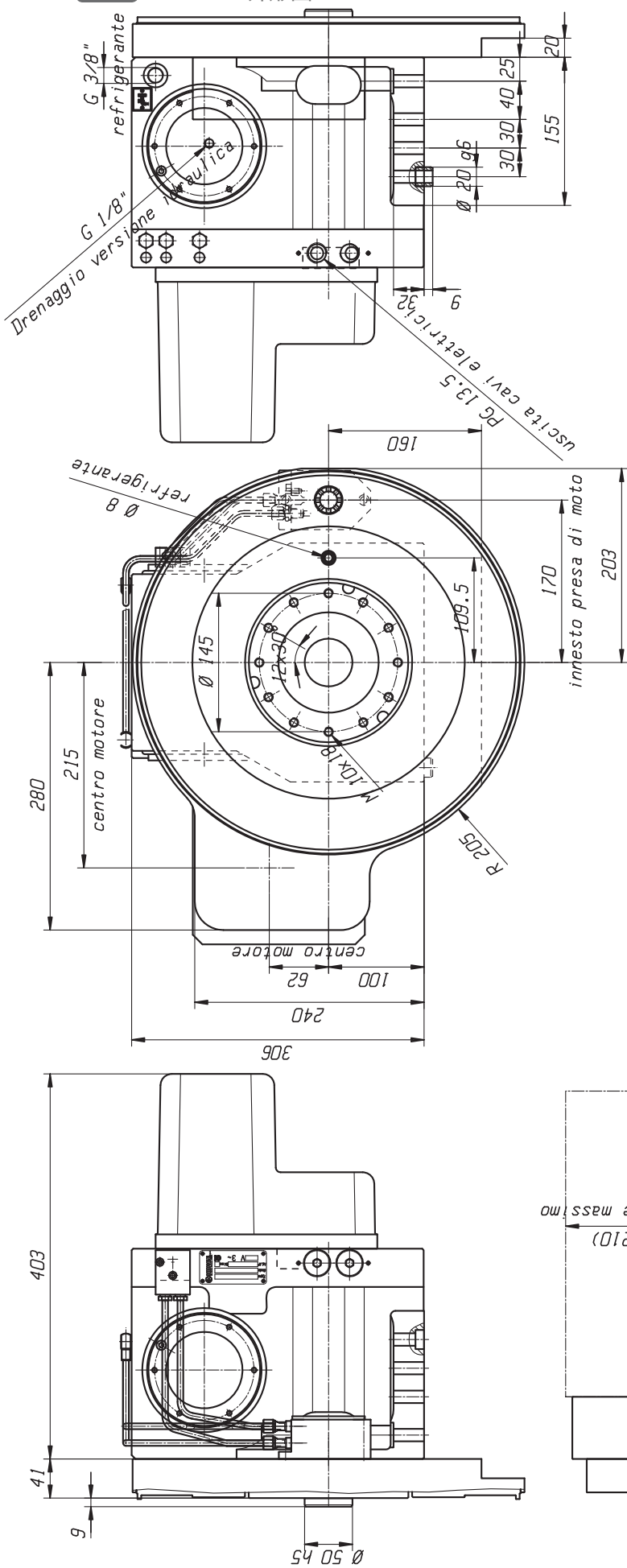
135 $X = 0$ SX

K56. - 160 . - - - - - . 06



TBMA 160 Version 16
135 X = 0 SX motor on top
K56. - 160 . - - - - - . 16

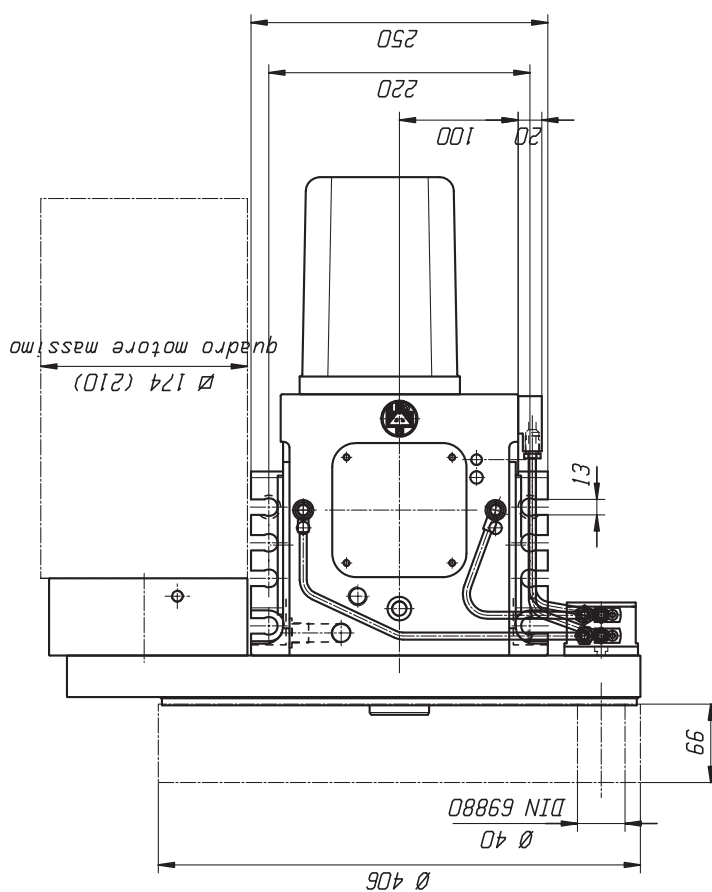


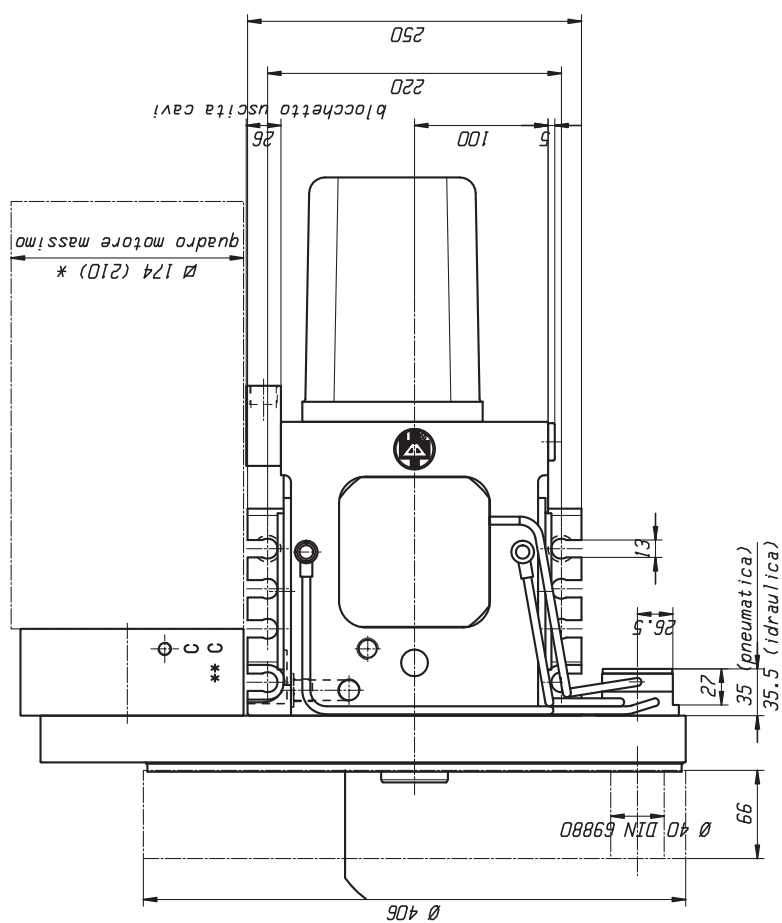
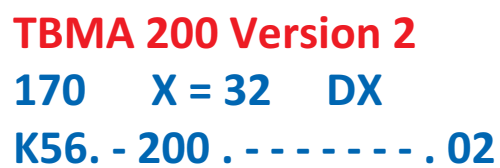


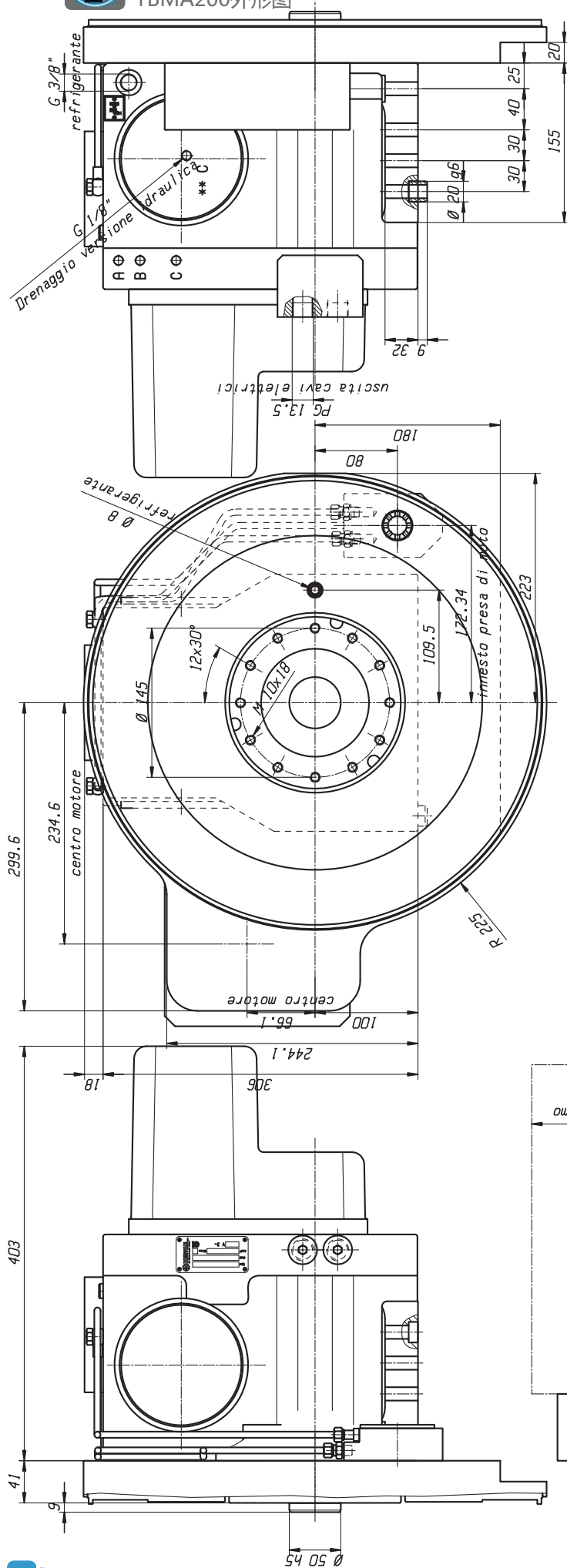
TBMA 200 Version 1

170 $X = 0$ DX

K56. - 200 . - - - - - . 01



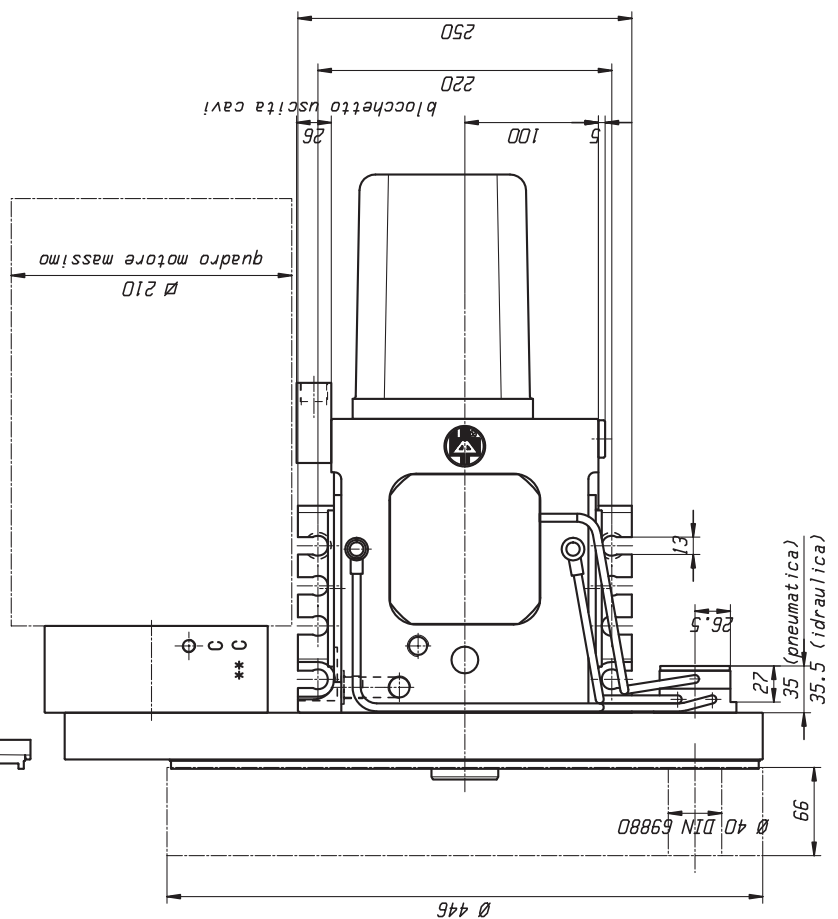


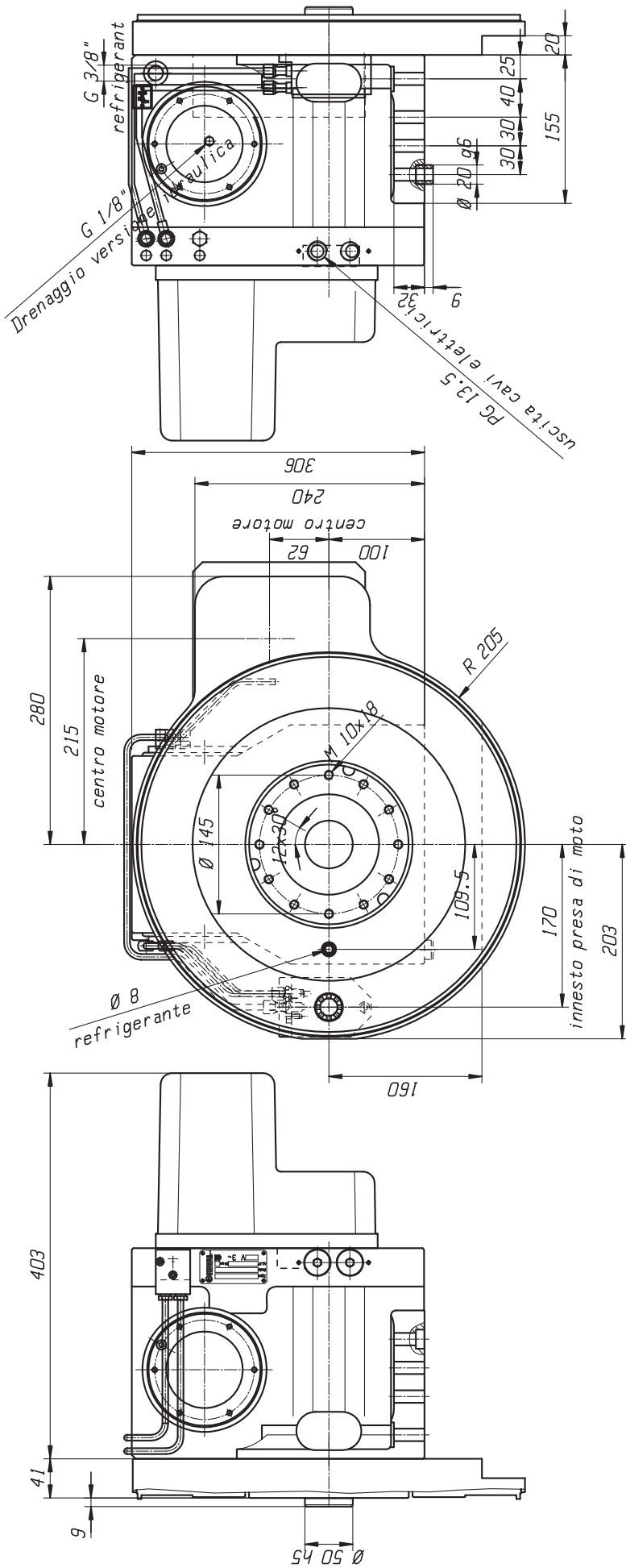


TBMA 200 Version 3

190 X = 80 DX

K56. - 200 . - - - - - . 03

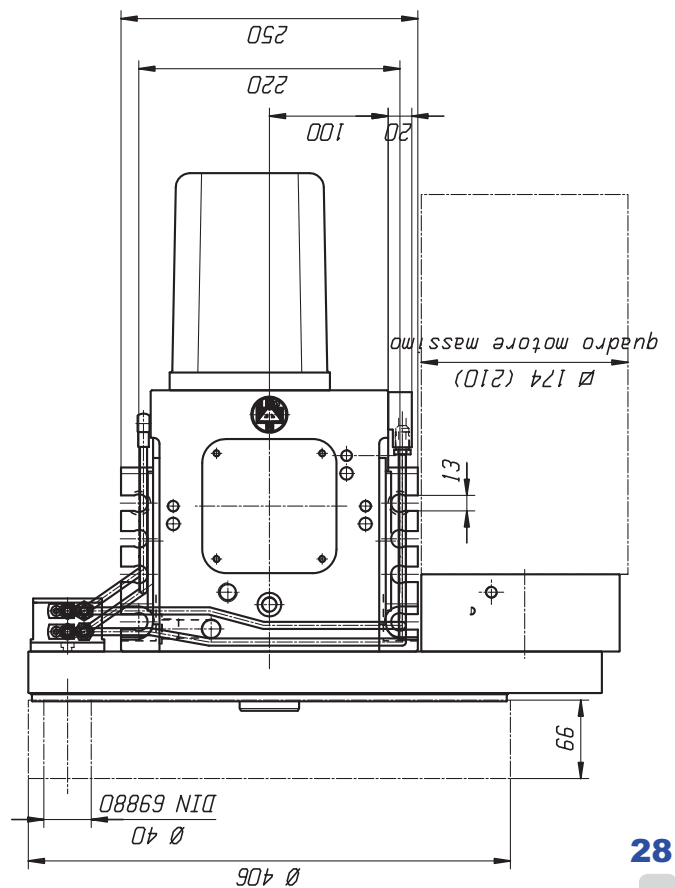


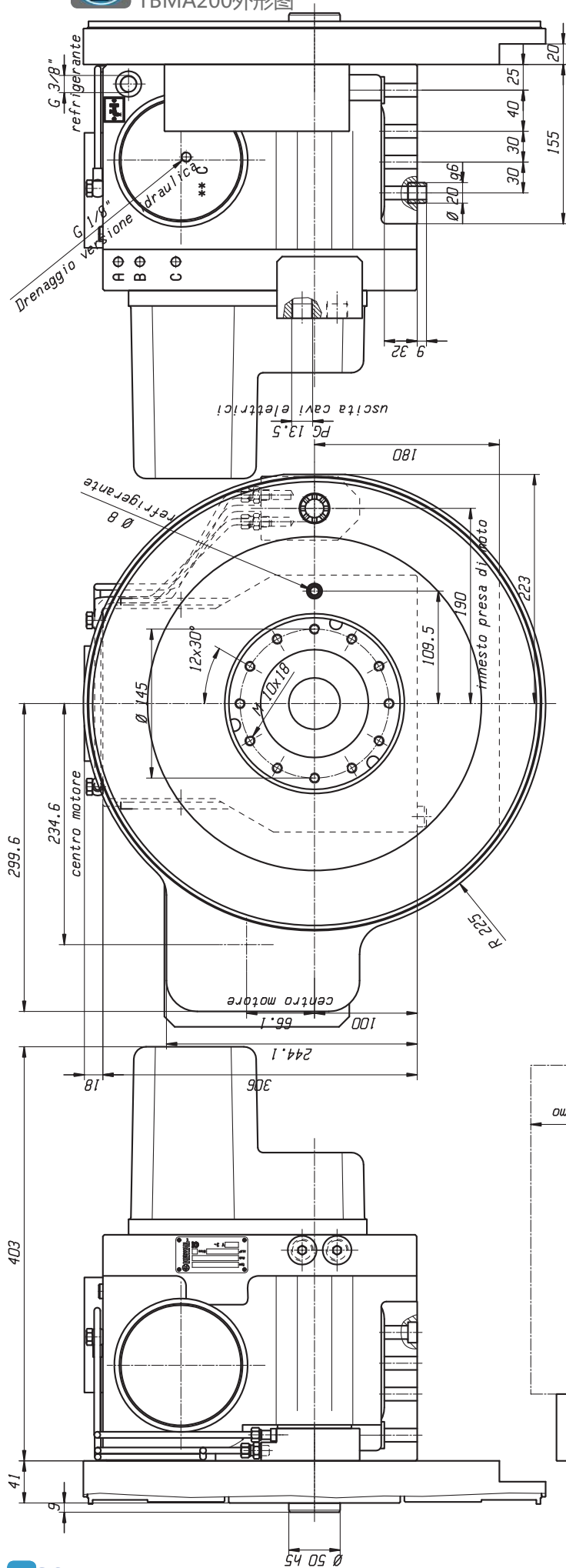


TBMA 200 Version 4

170 X = 0 SX

K56. - 200 . - 04

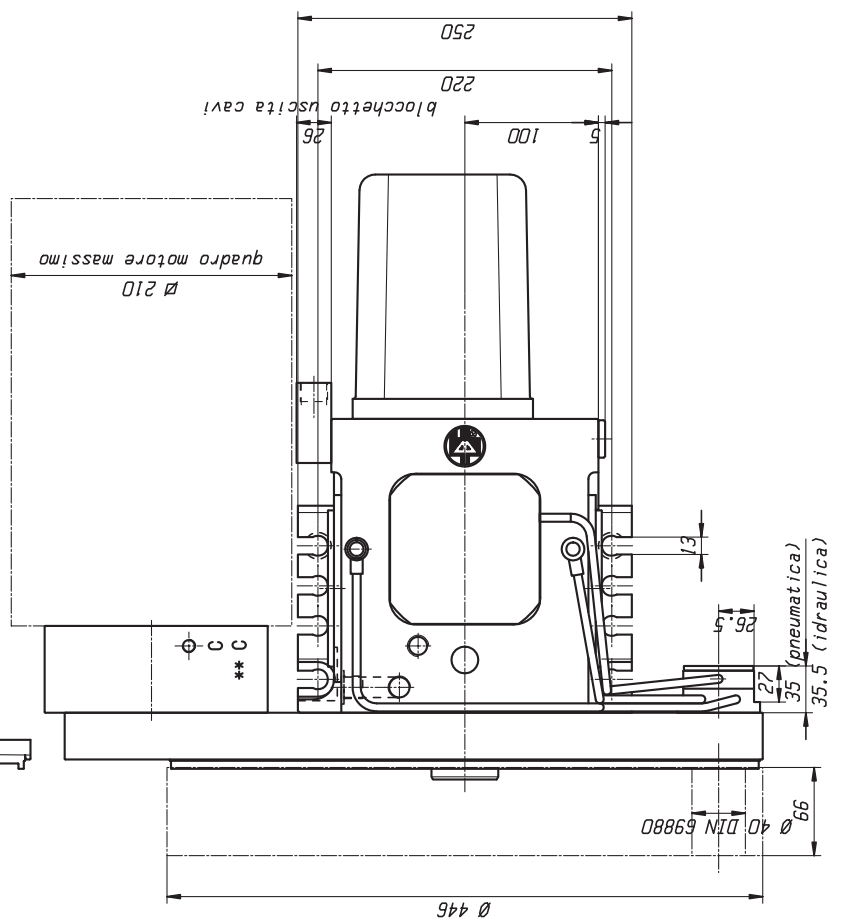


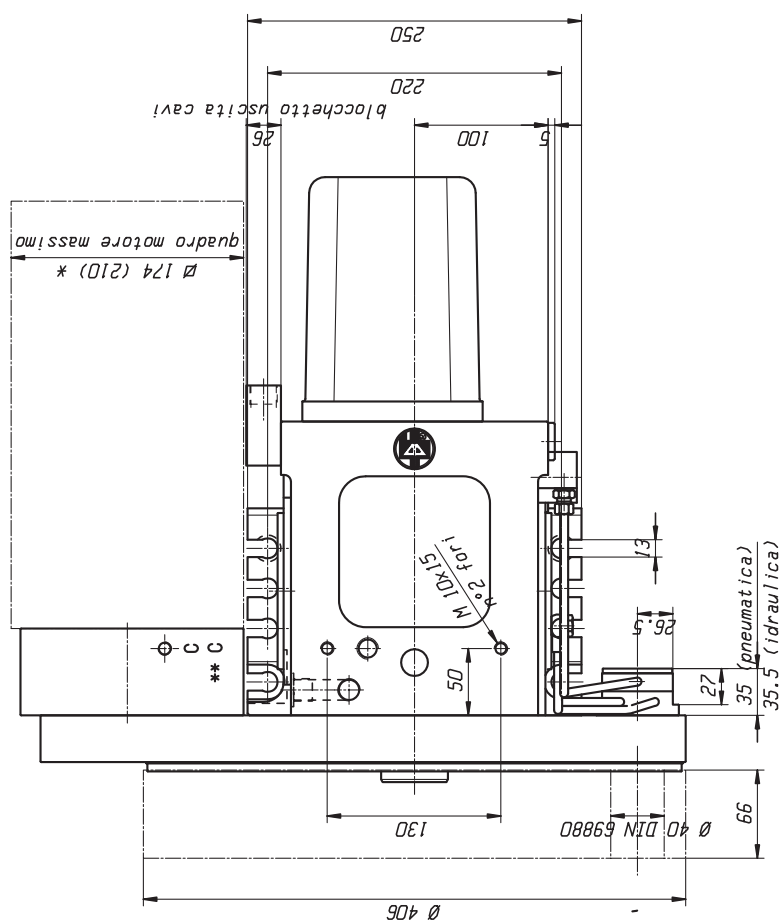
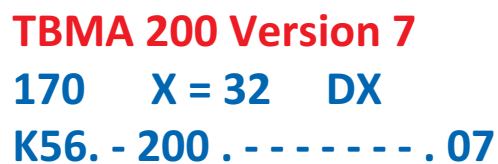


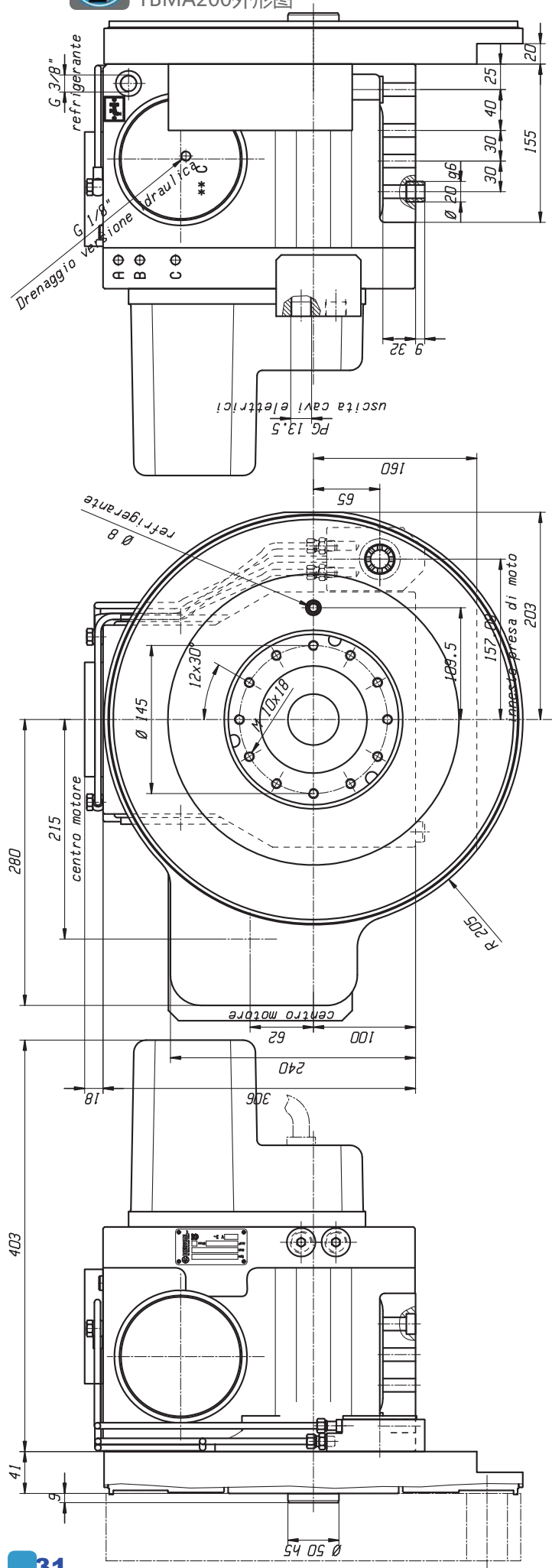
TBMA 200 Version 6

190 $X = 0$ DX

K56. - 200 . - - - - - . 06



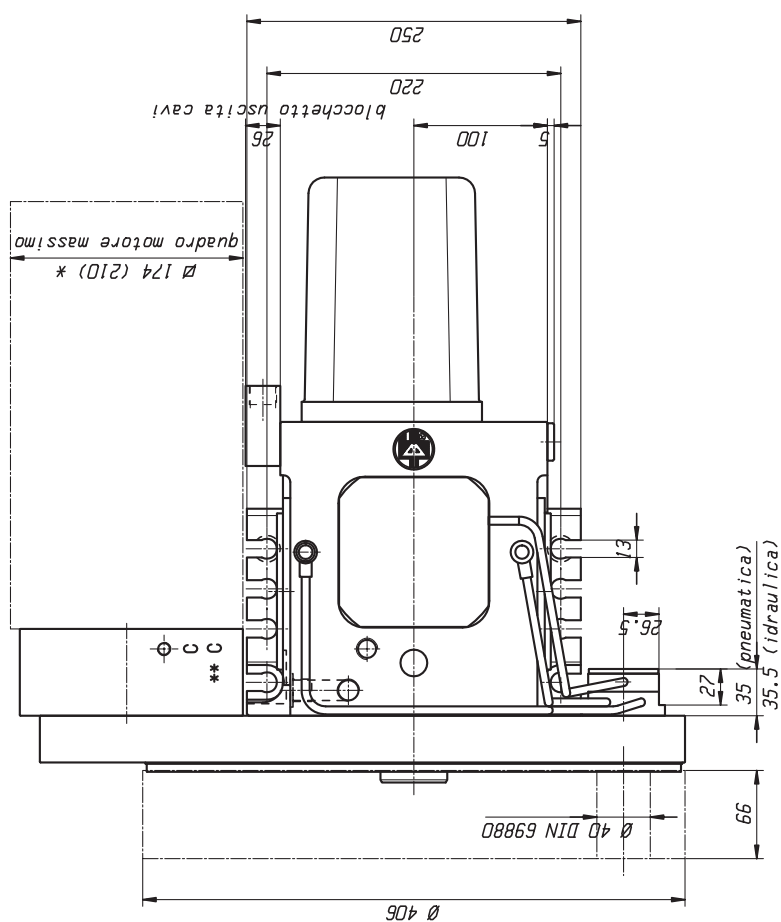


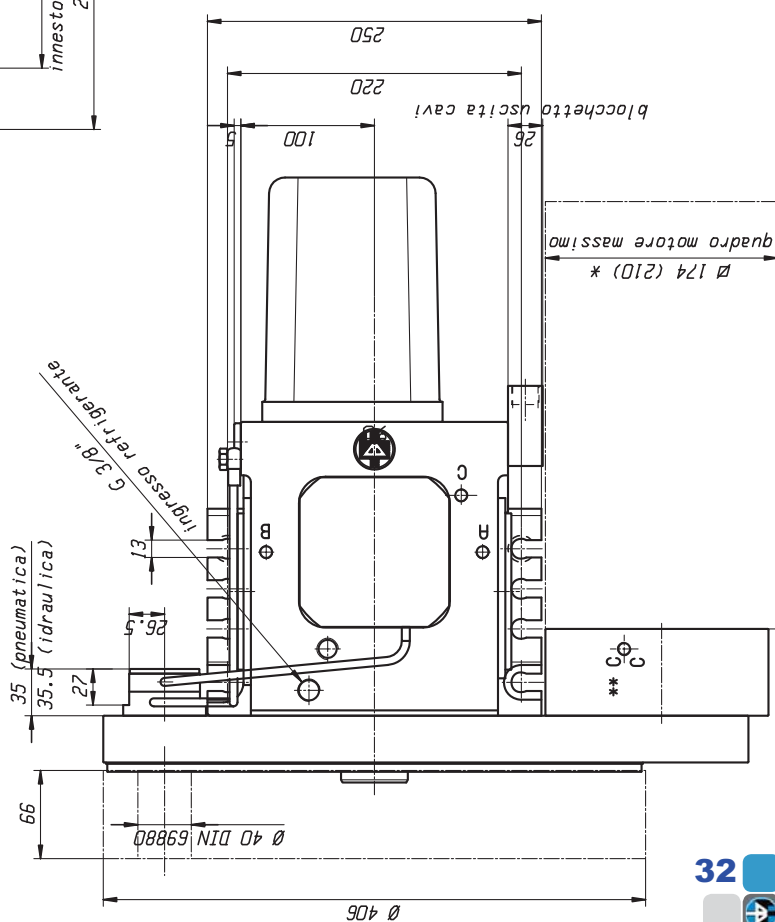


TBMA 200 Version 11

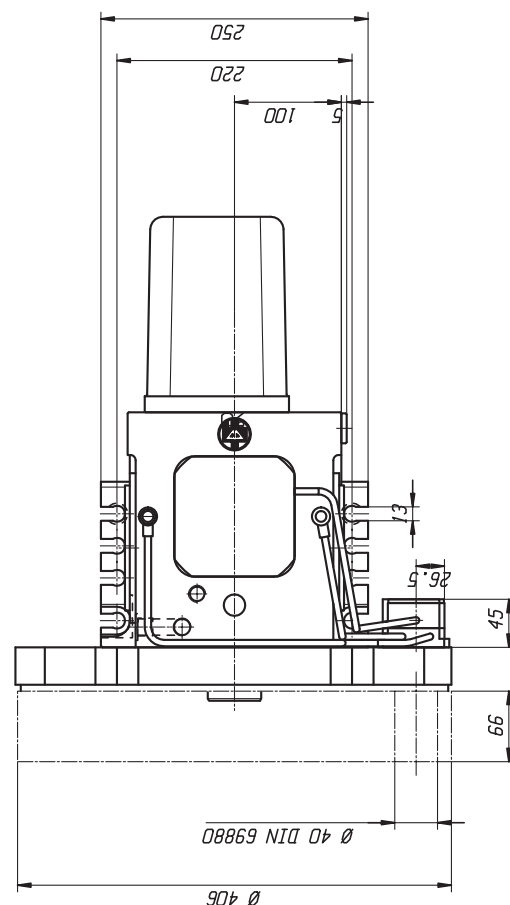
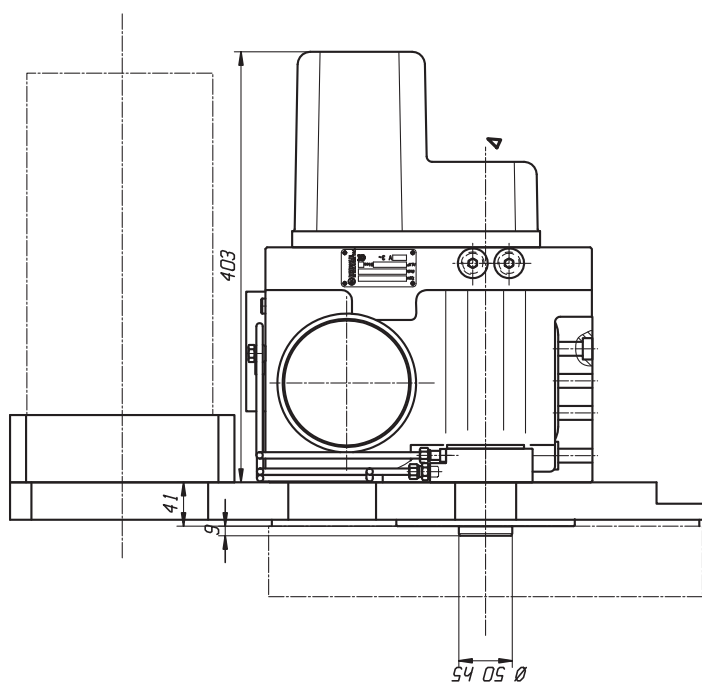
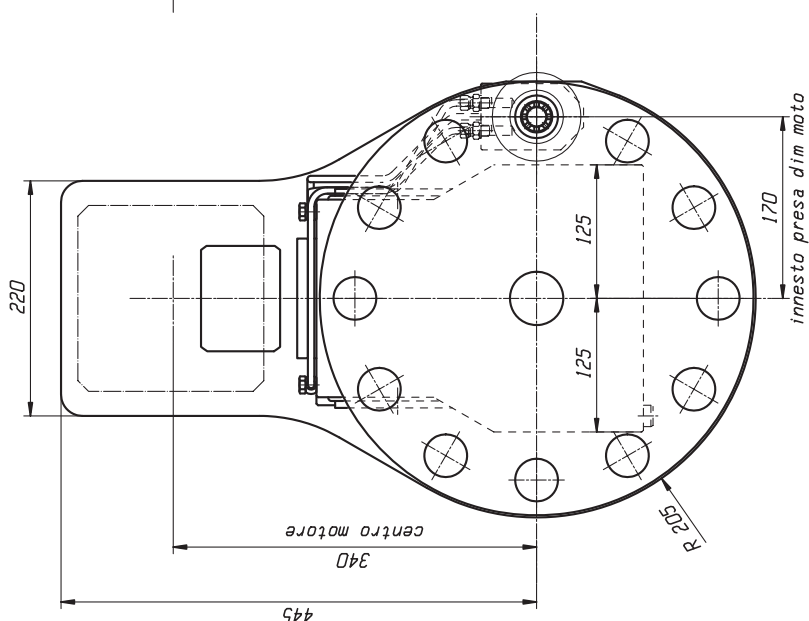
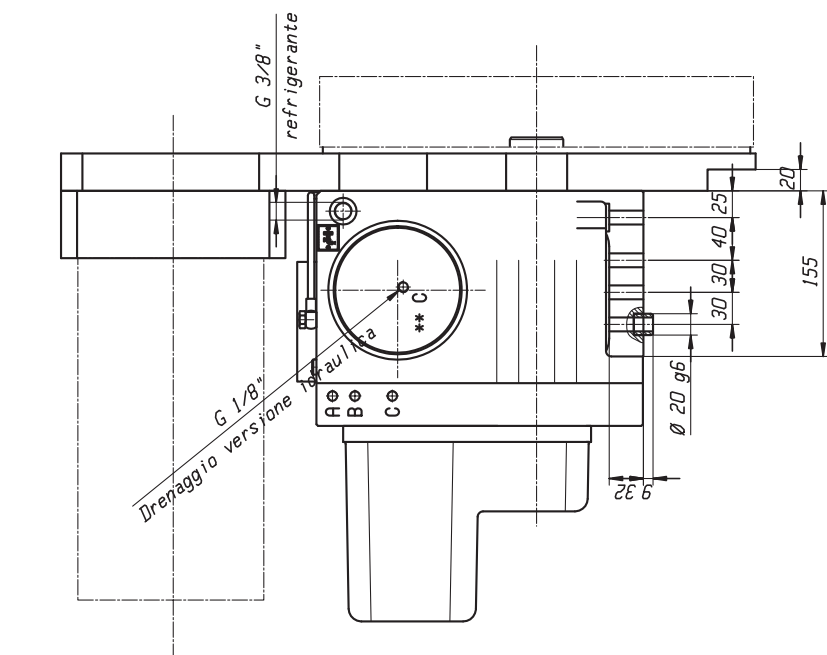
170 X = 65 DX

K56. - 200 . - - - - - . 11

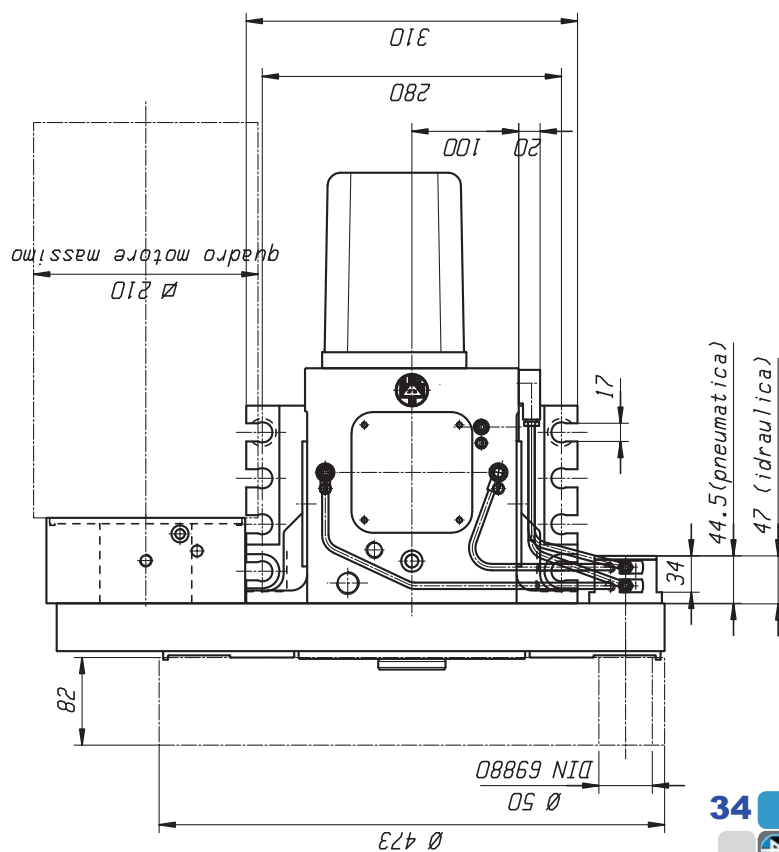
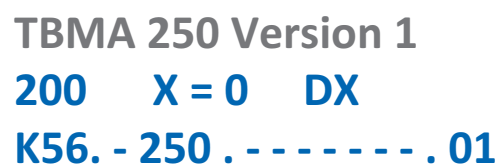


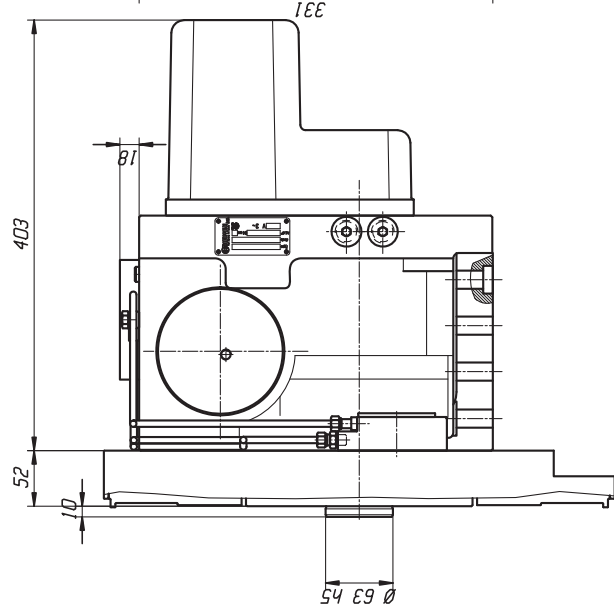
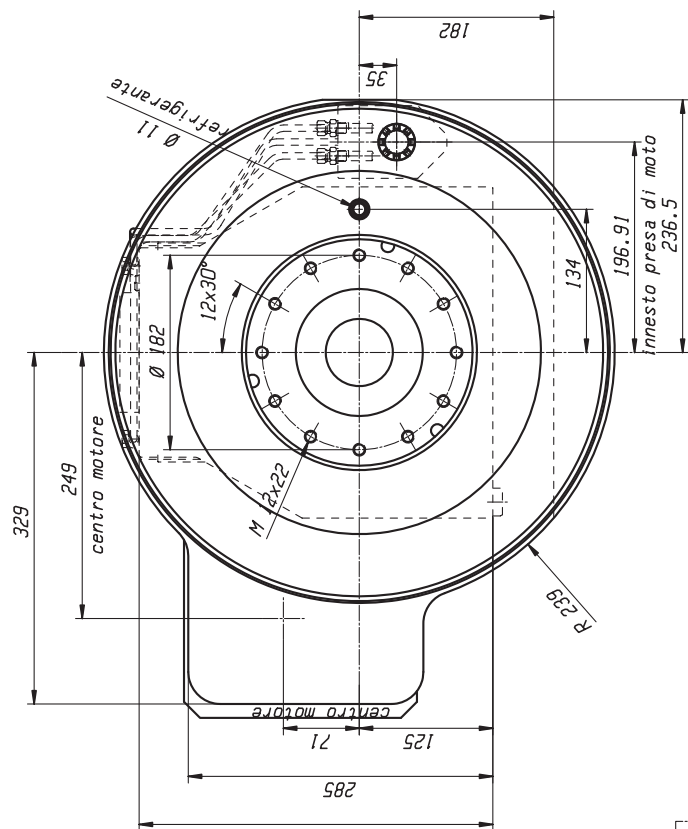
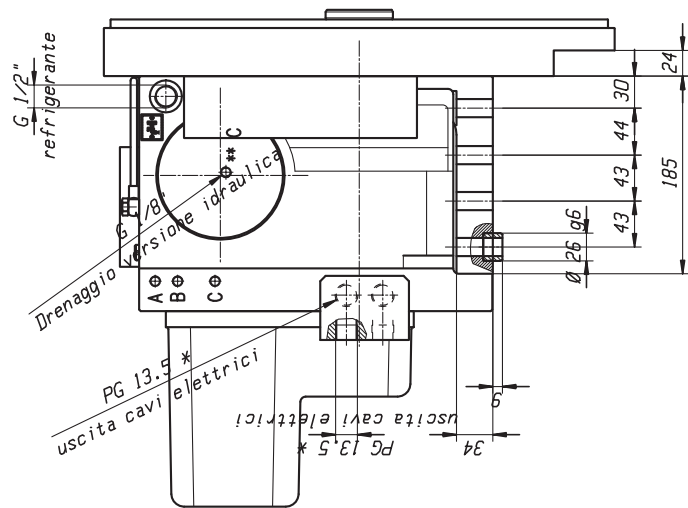


K56. - 200 . - - - - - . 12



TBMA 200 Version 15
170 X = 0 DX motor on top
K56. - 200 . - - - - - . 15

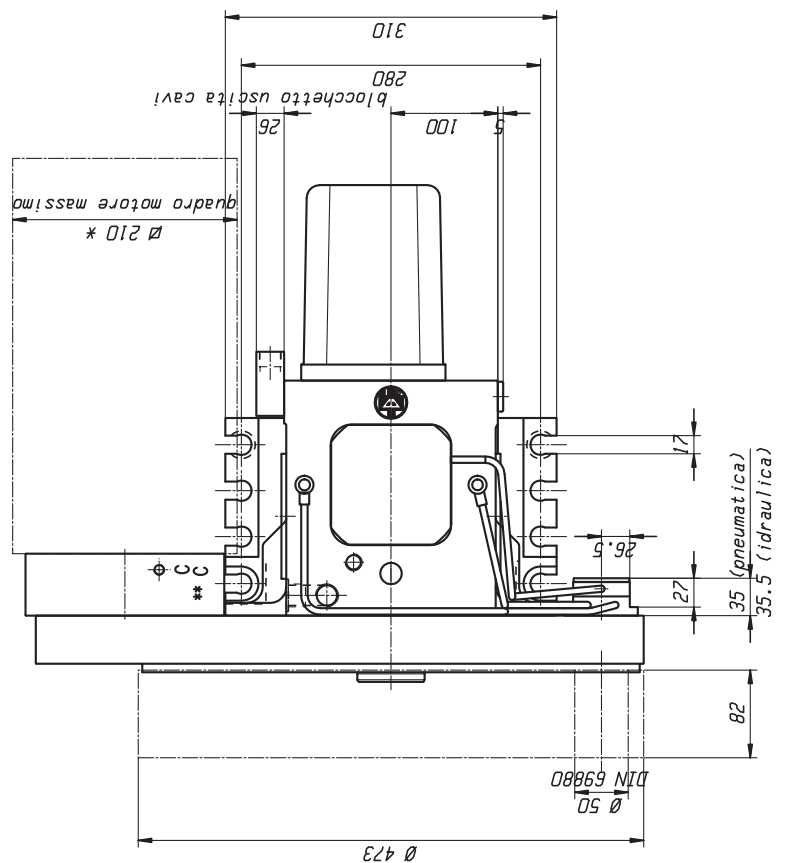


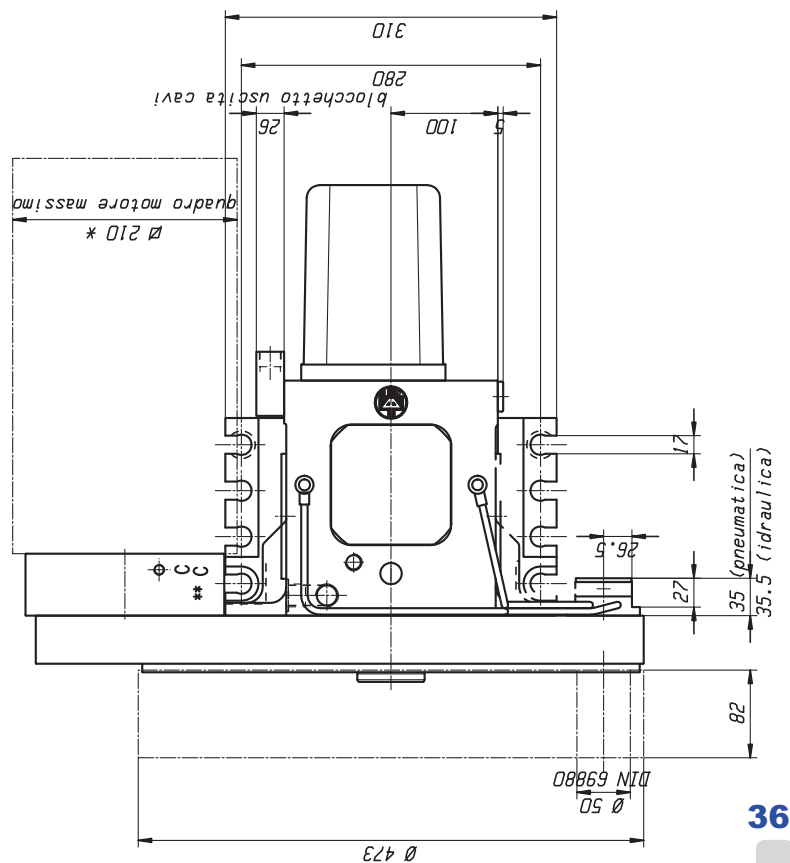
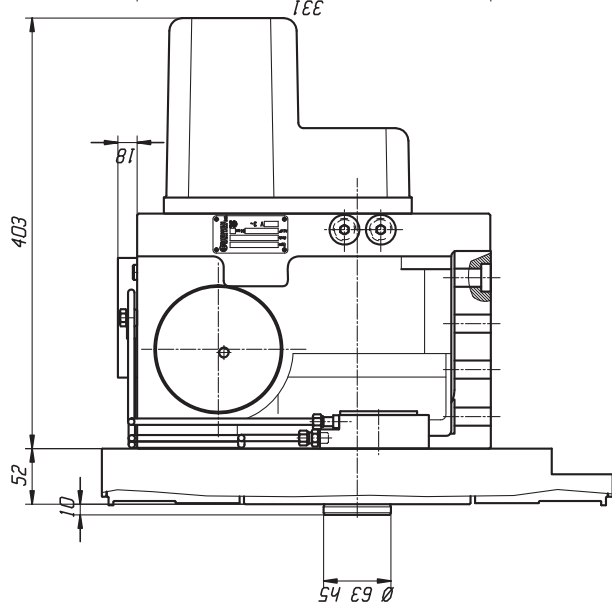
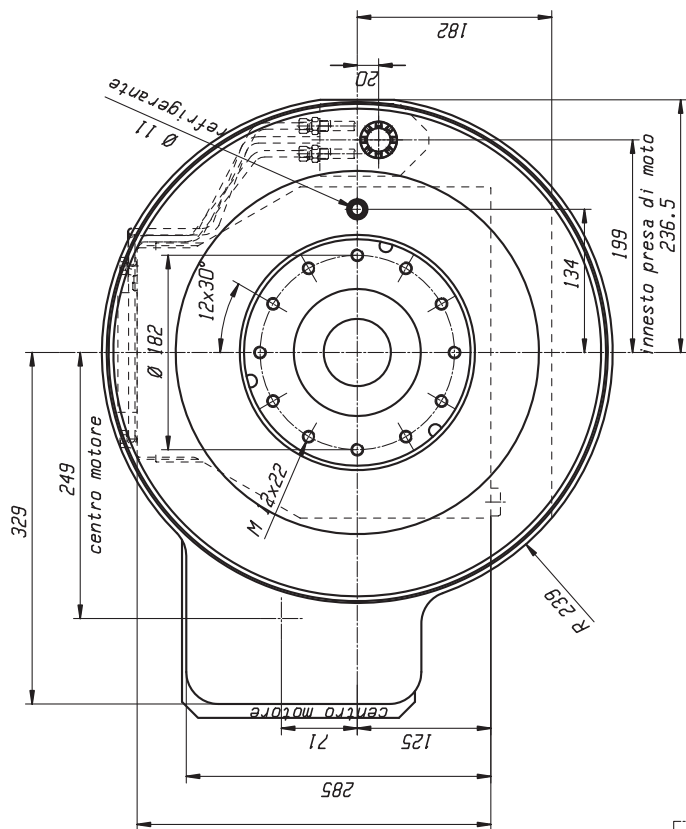
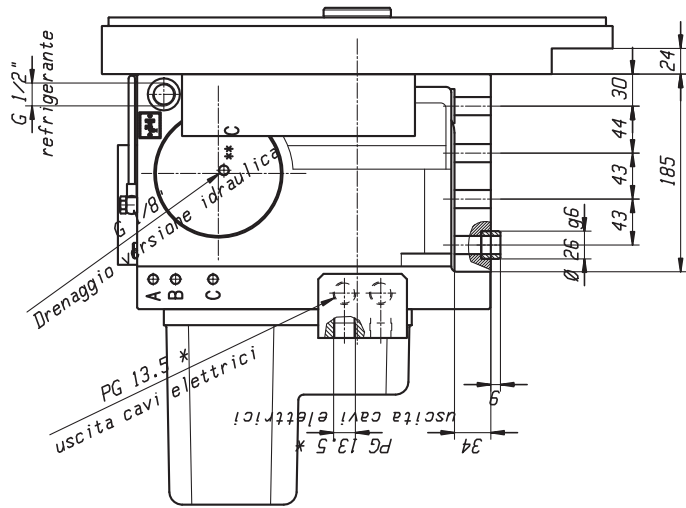


TBMA 250 Version 2

200 X = 35 DX

K56. - 250 . - 02



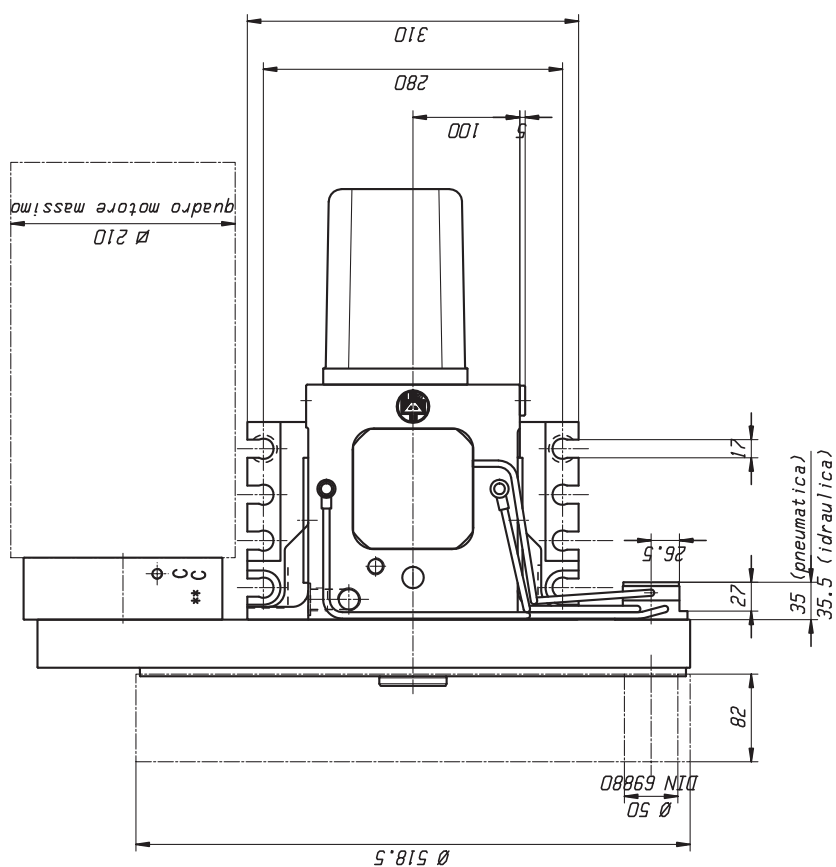
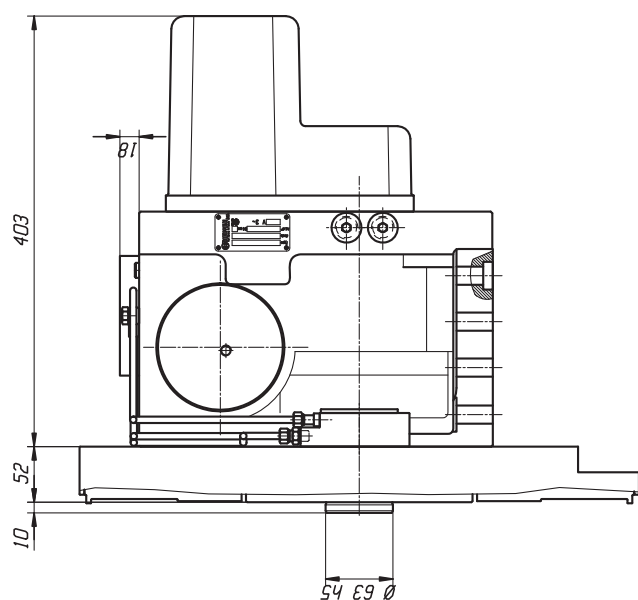
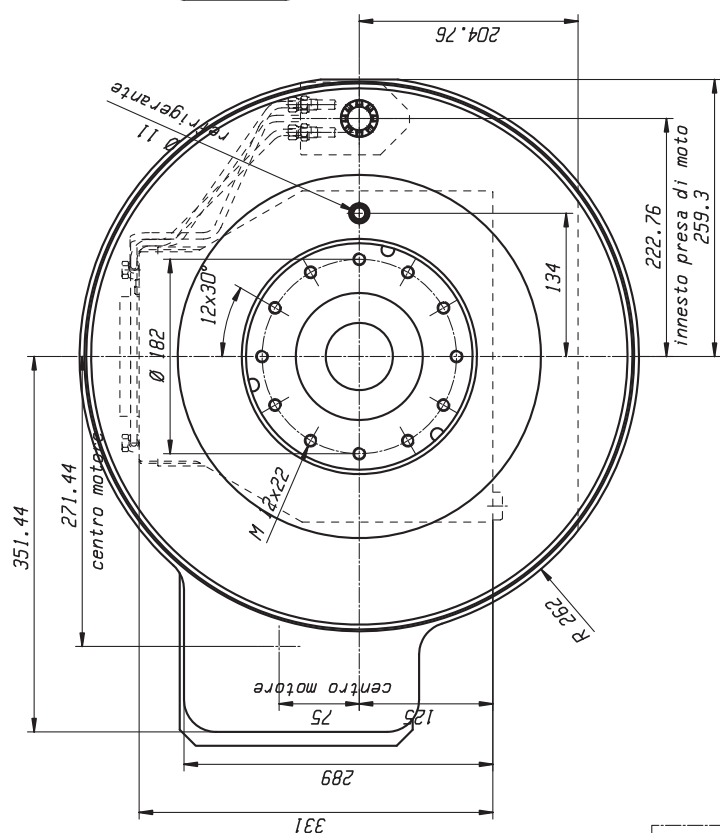
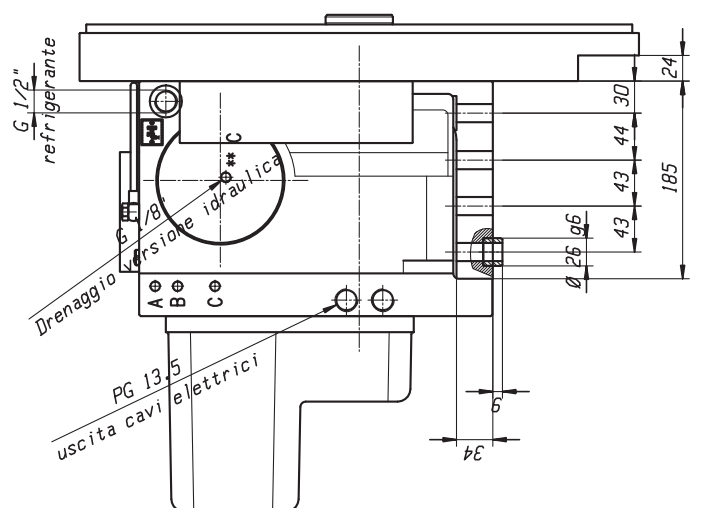


TBMA 250 Version 3

200 X = 20 DX

K56. - 250 03

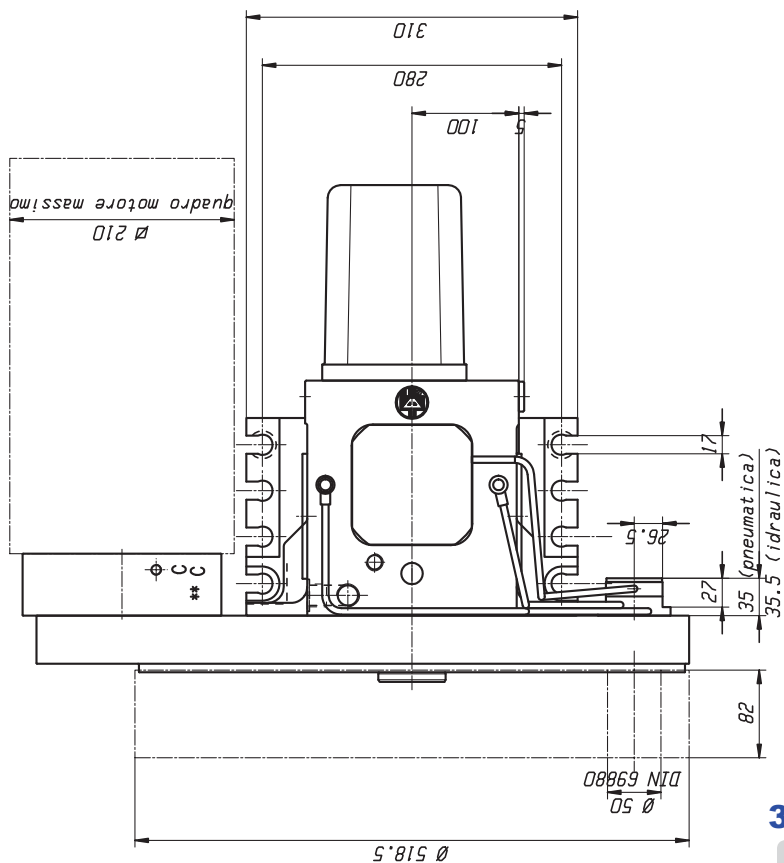


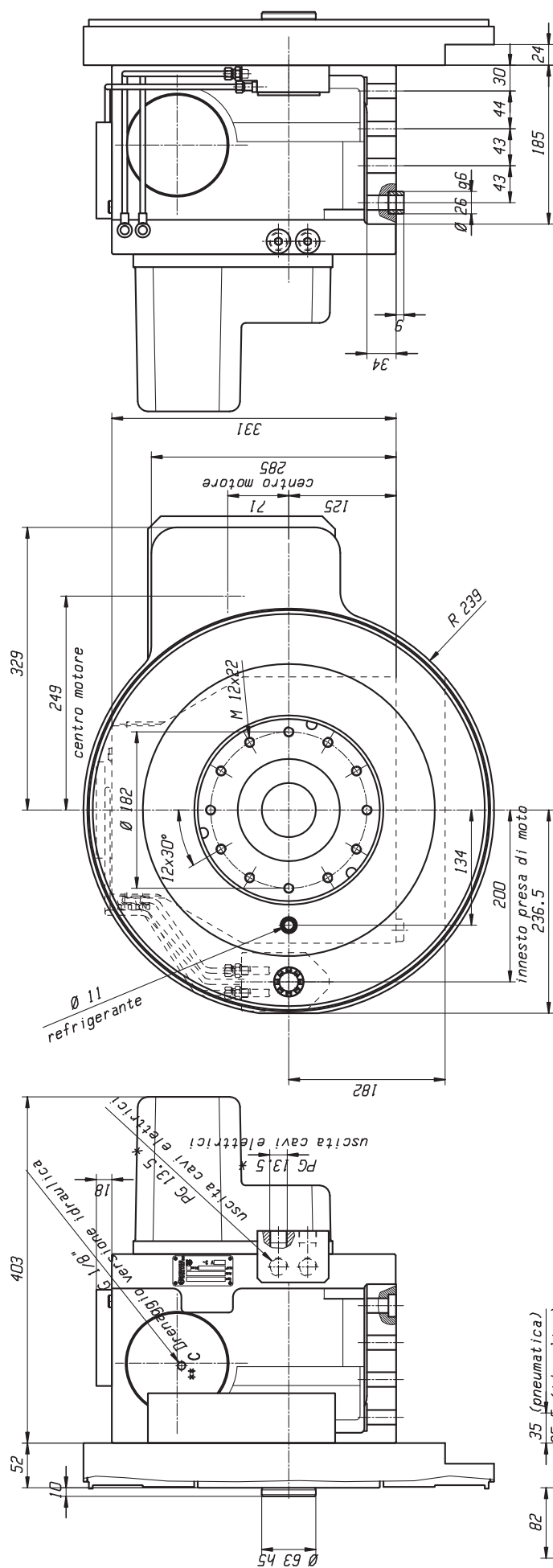


TBMA 250 Version 4

222,76 $X = 0$ DX

K56. - 250 . - - - - - . 04

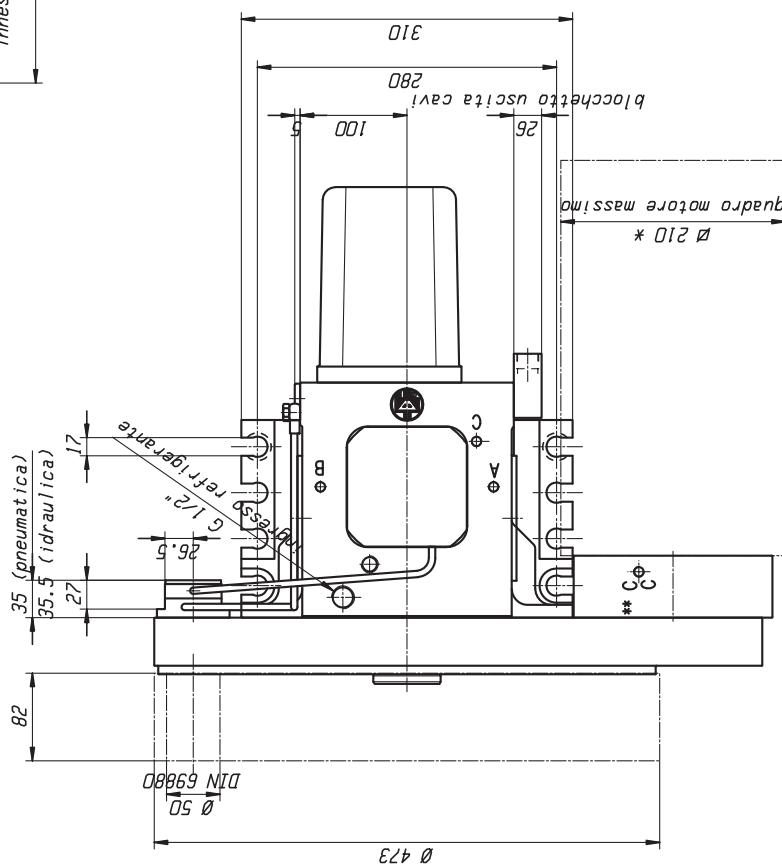
38 

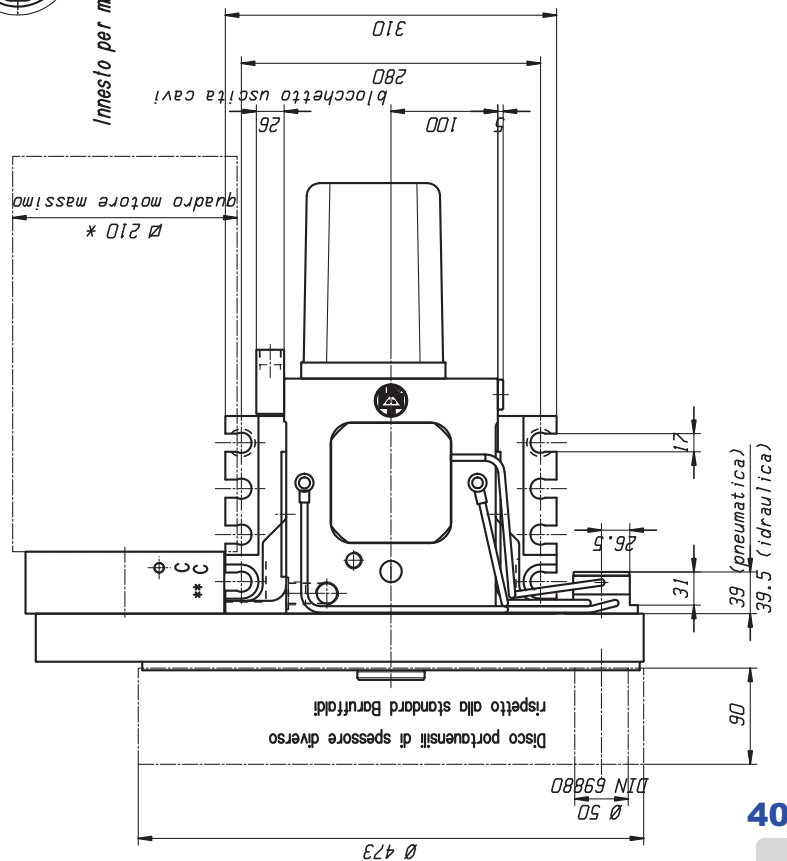
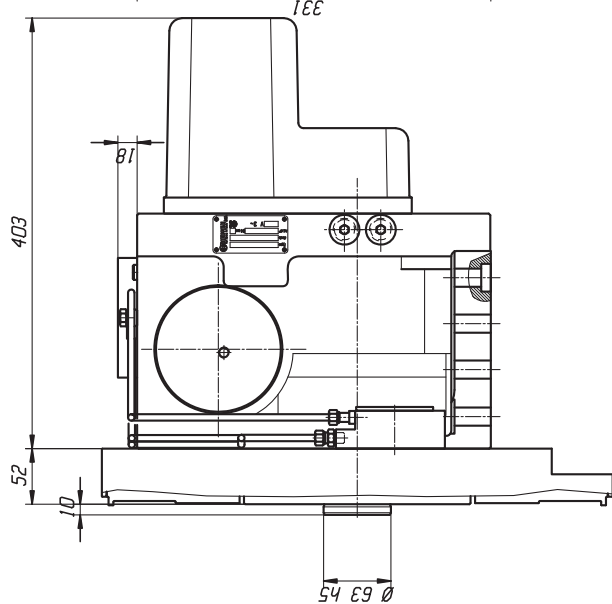
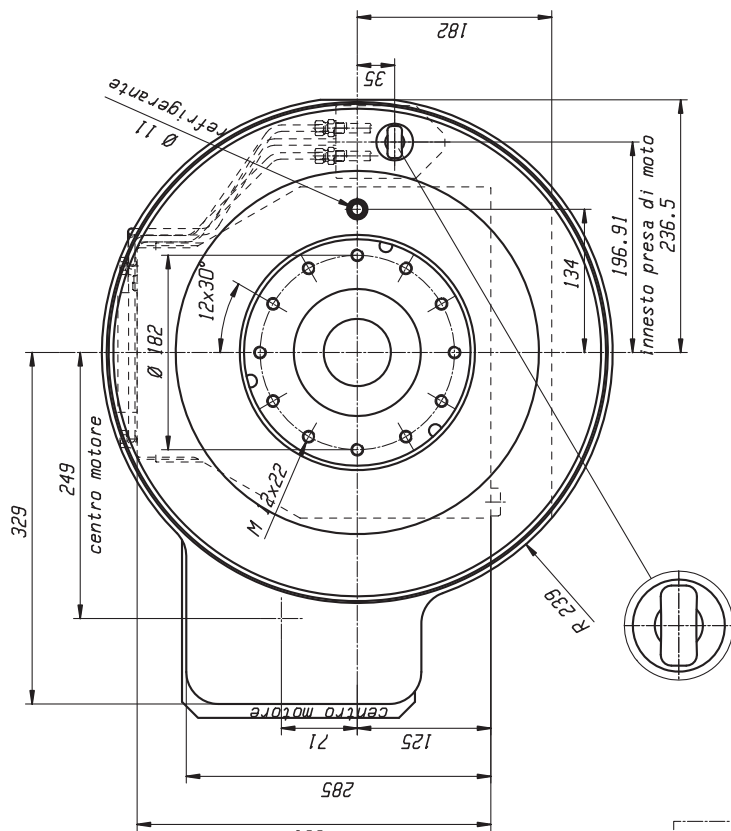
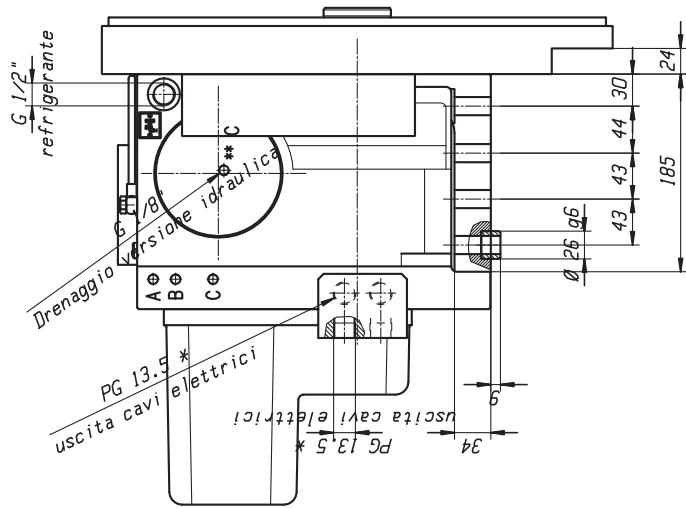


TBMA 250 Version 6

200 $X = 0$ SX

K56. - 250 . - - - - - . 06



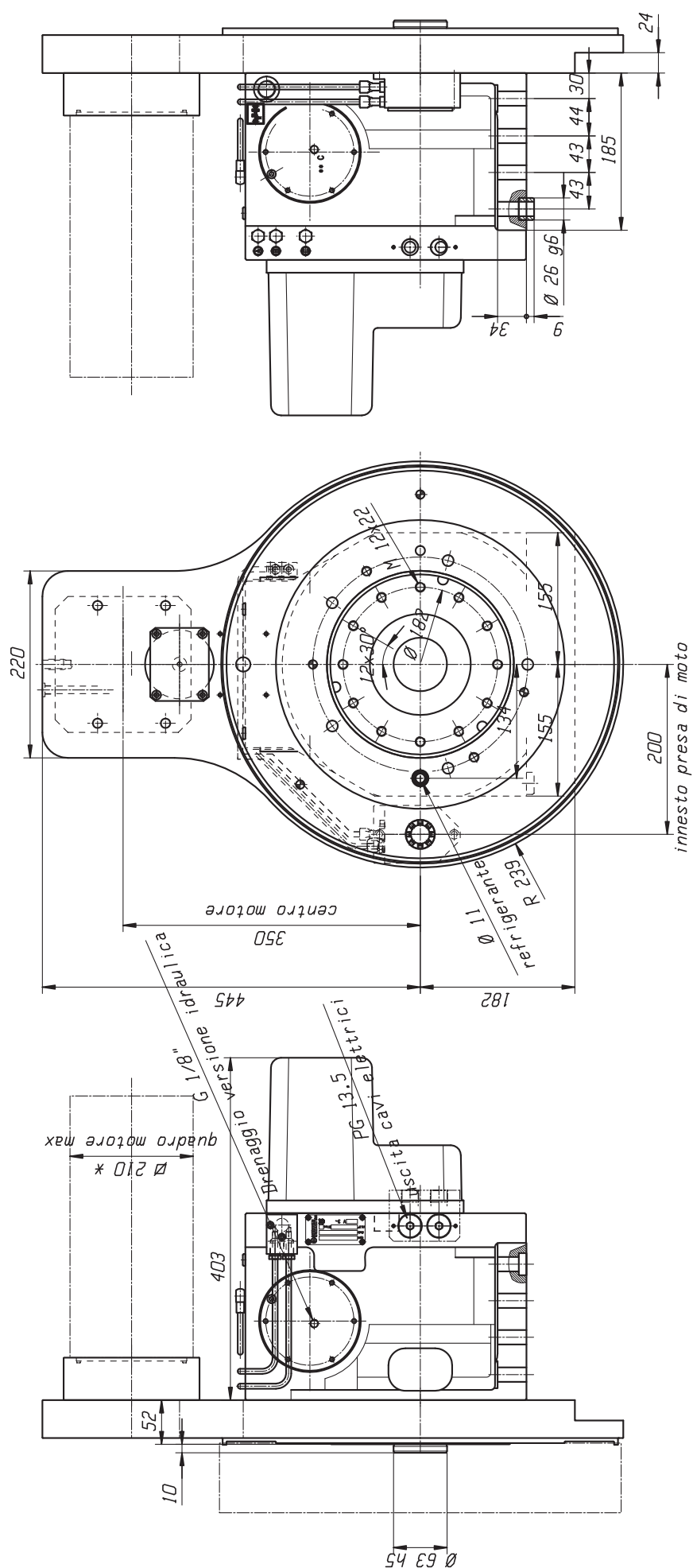


TBMA 250 Version 7

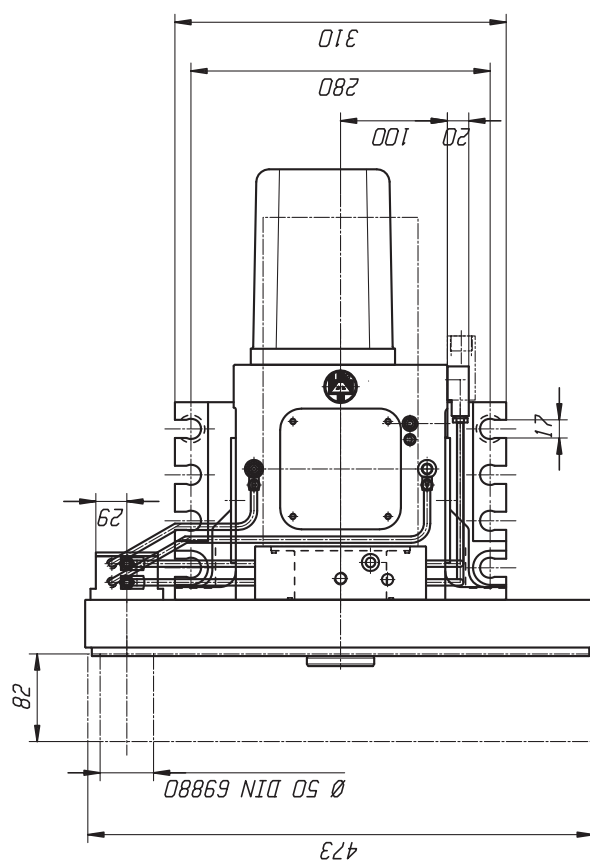
200 X = 35 DX DIN 1809

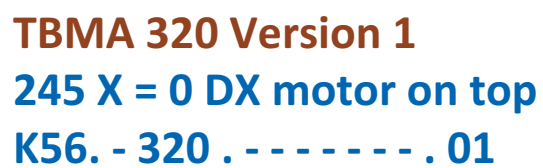
K56. - 250 07

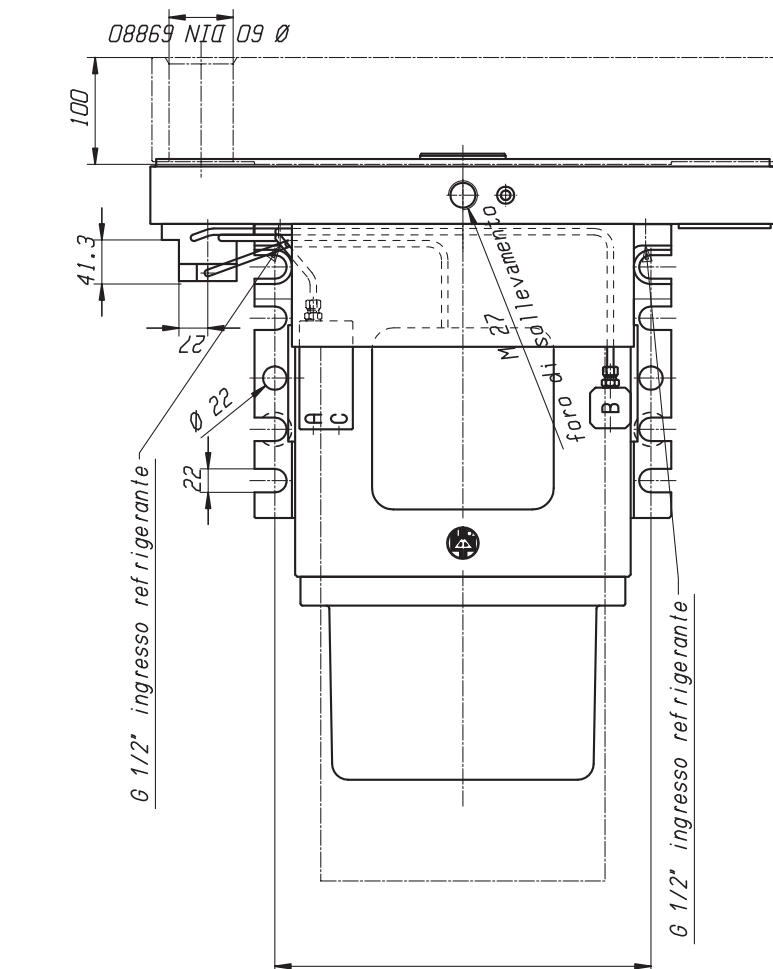




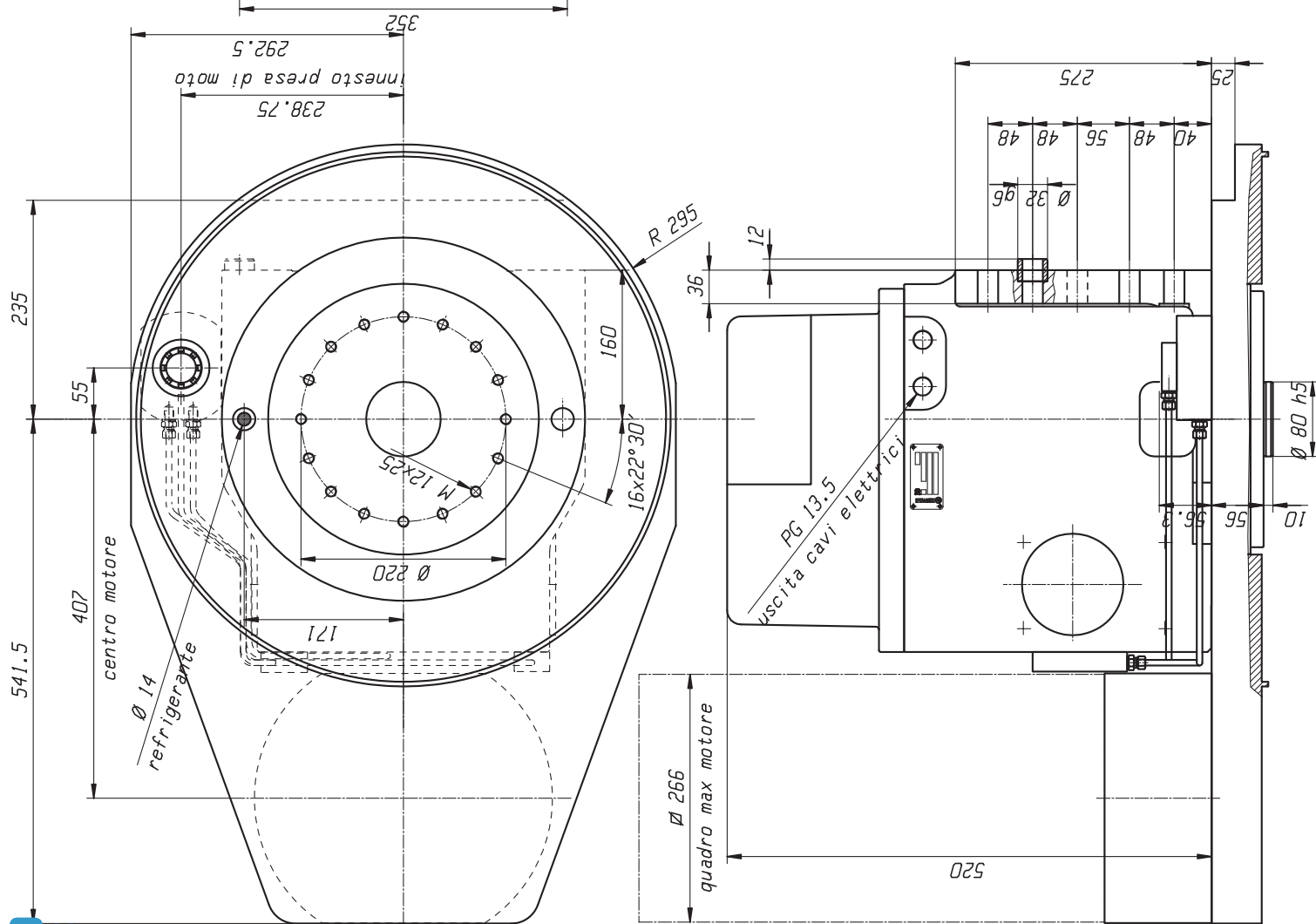
TBMA 250 Version 11
200 X = 0 SX motor on top
K56. - 250 . - - - - - . 11

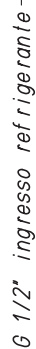






TBMA 320 Version 2
245 X=55 DX motor on top
K56. - 320 . - - - - - . 02

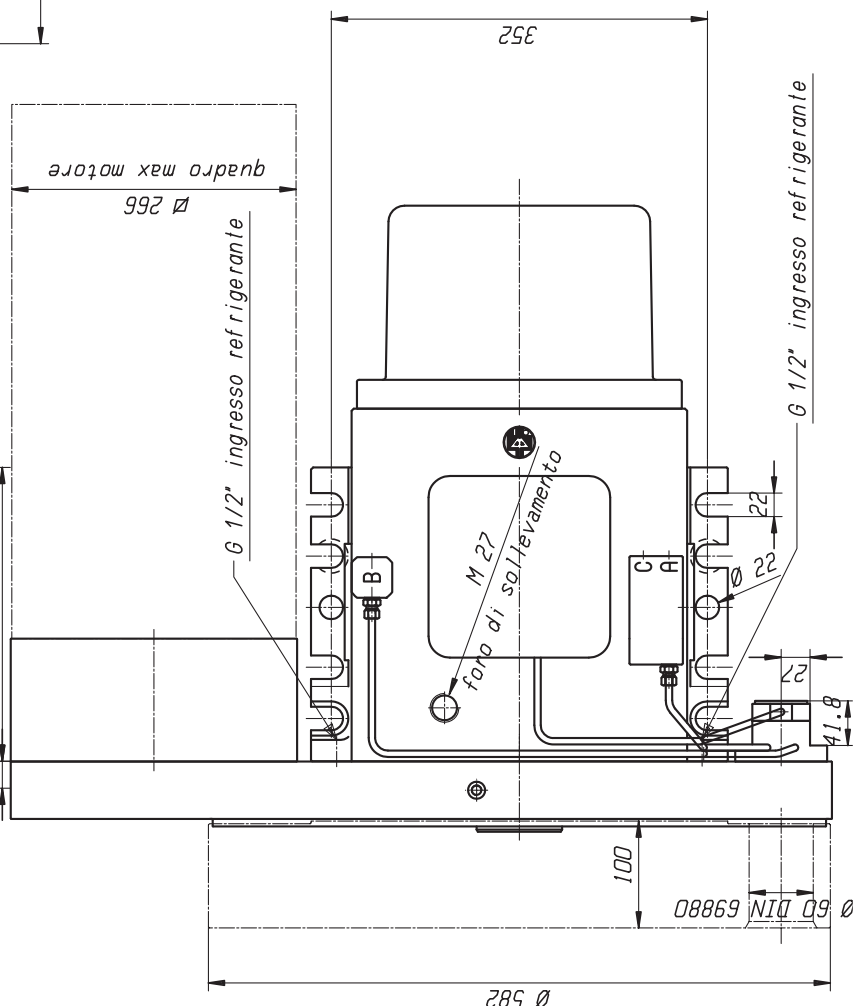
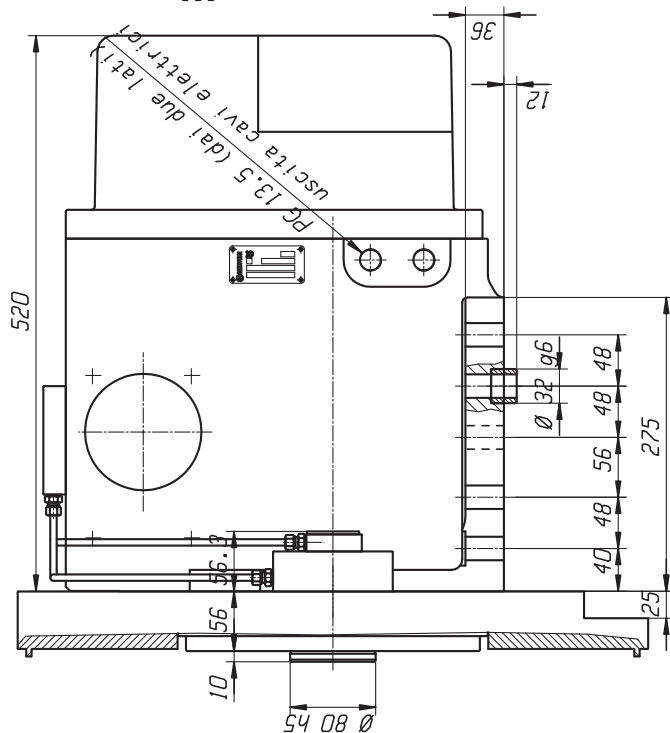
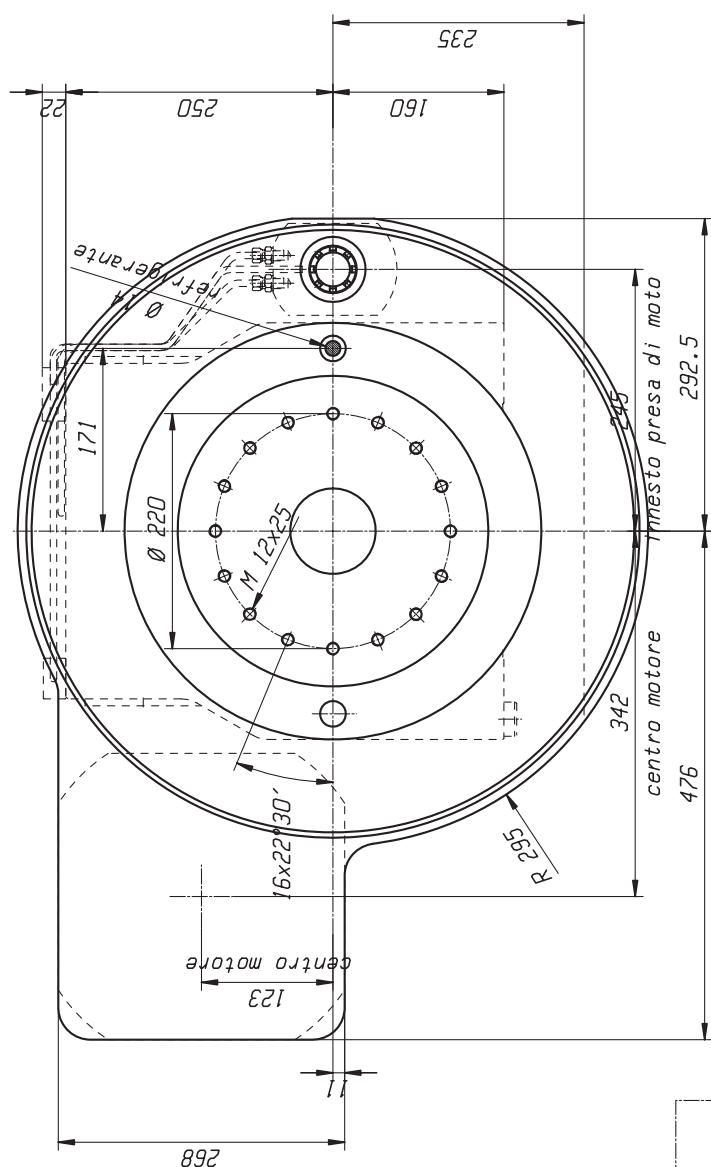




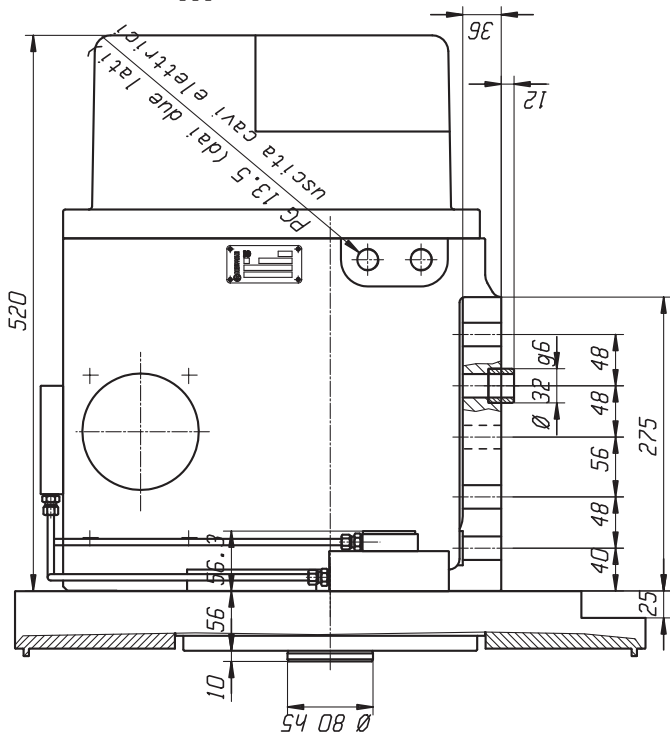
TBMA 320 Version 3

245 X=0 SX motor on top

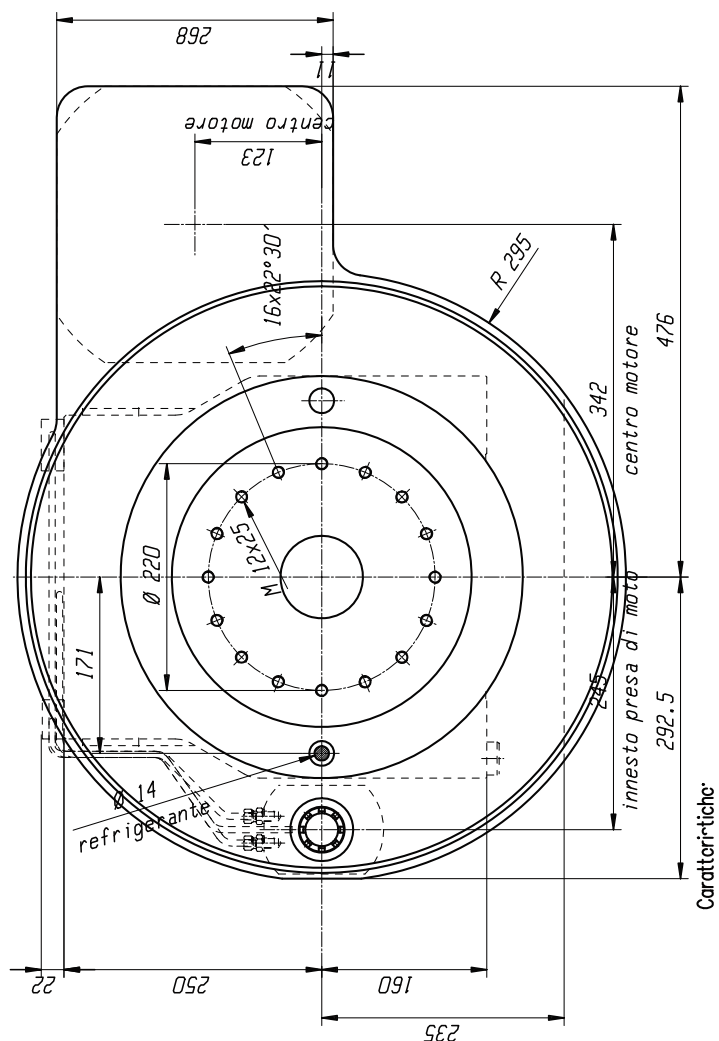
K56. - 320 . - - - - - . 03



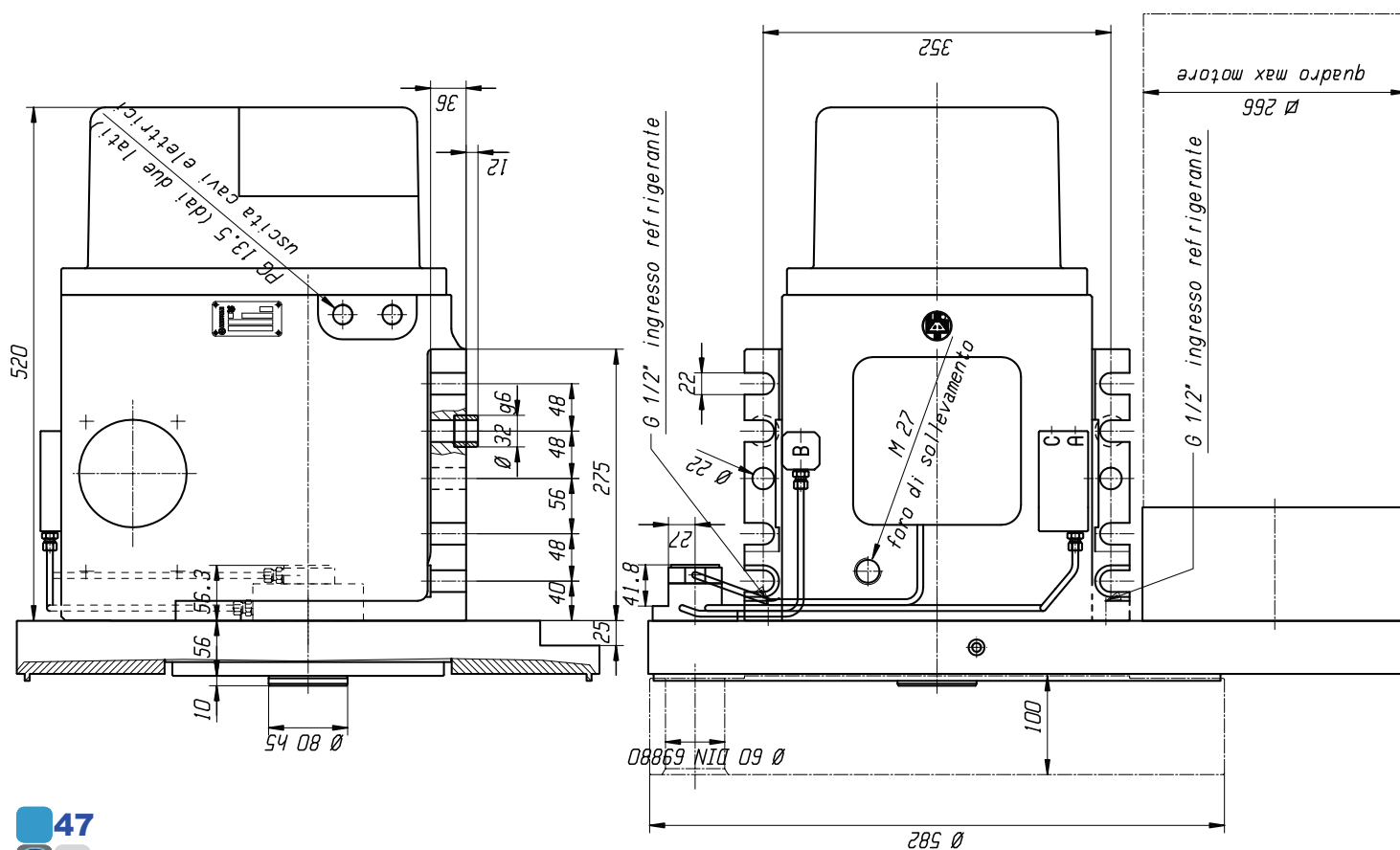
TBMA 320 Version 5
245 X=0 DX motor left
K56. - 320 . - - - - - . 05

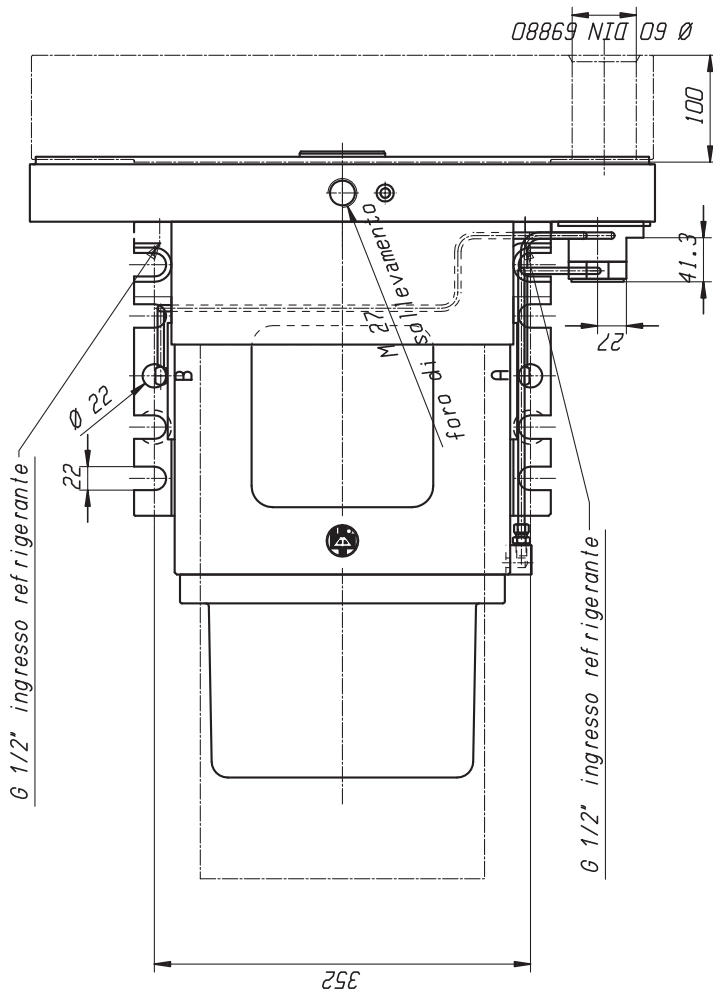


Technical drawing of the condenser unit for the R2000 refrigerator. The drawing shows a side view of the unit with various dimensions and labels. Key dimensions include a total width of 352, a motor width of 266, and a base width of 582. The height of the condenser coils is 100. The drawing also shows the refrigerant inlet (G 1 1/2) and the motor (M 27) with a lifting eye (foro di sollevamento). The unit is labeled 'quadro max motore' and 'G 1 1/2° ingresso refrigerante'.

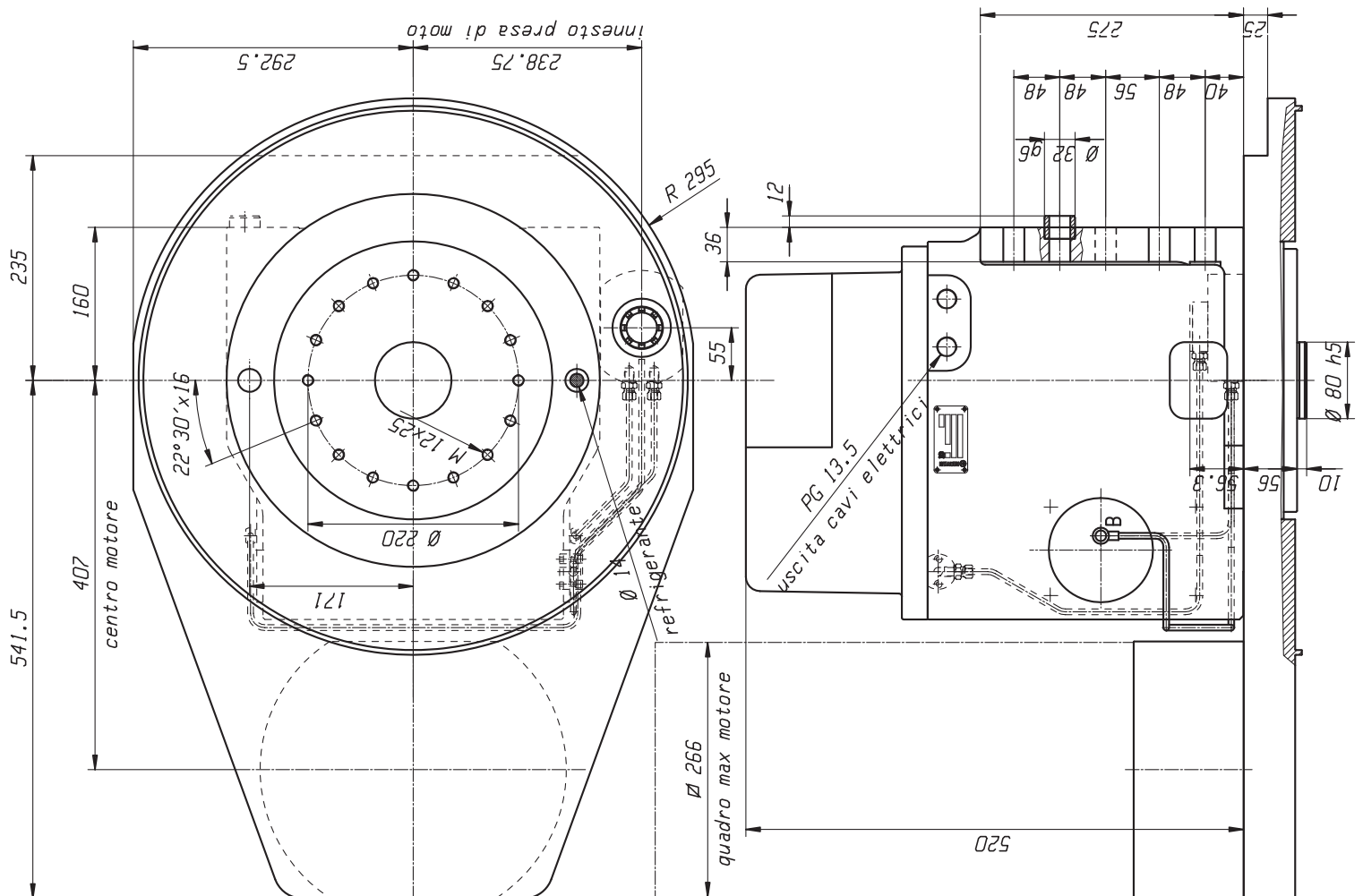


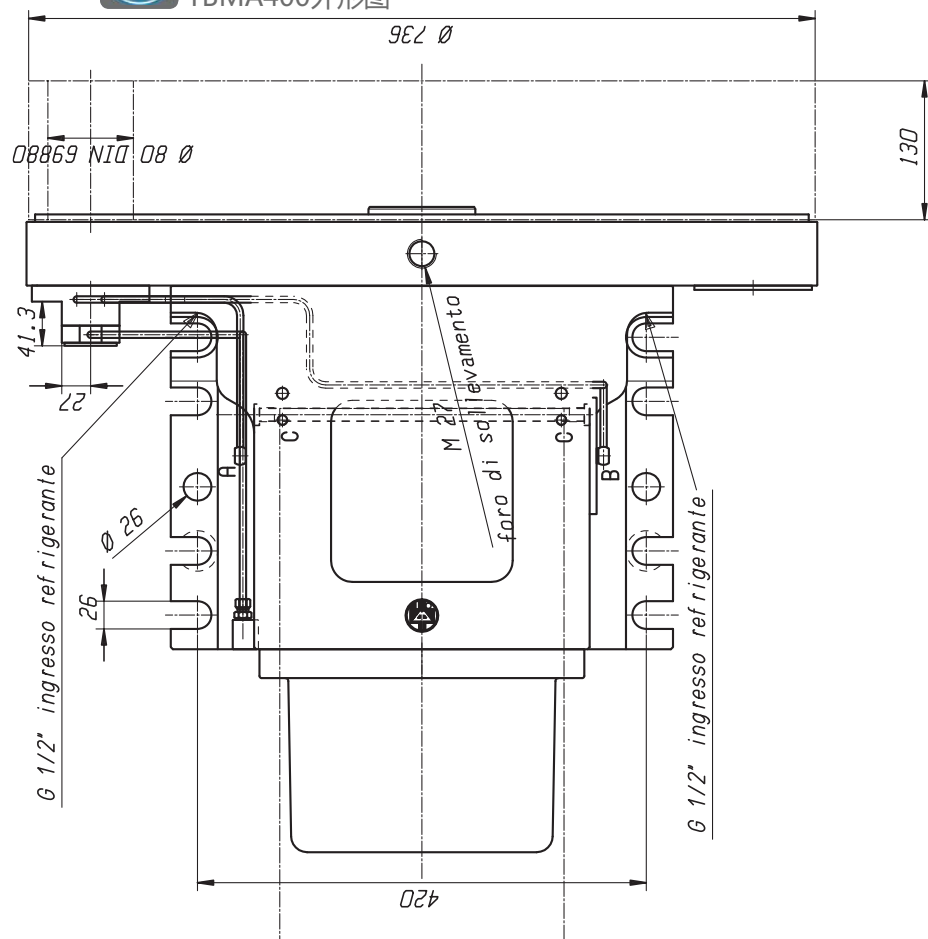
TBMA 320 Version 7
245 X=0 SX motor right
K56. - 320 . - - - - - . 07



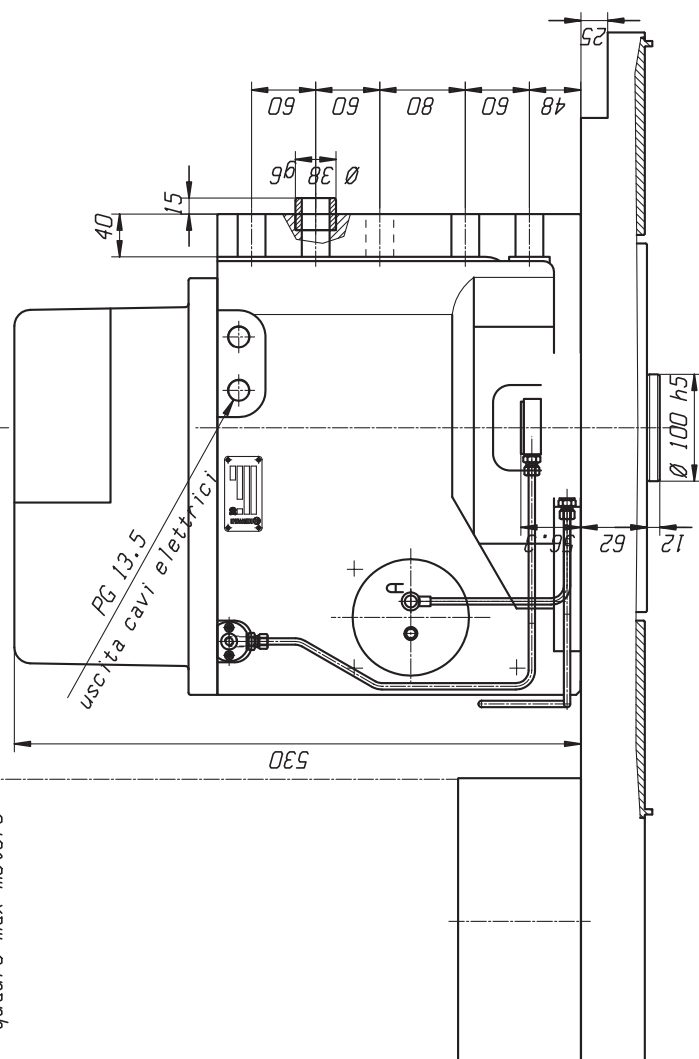
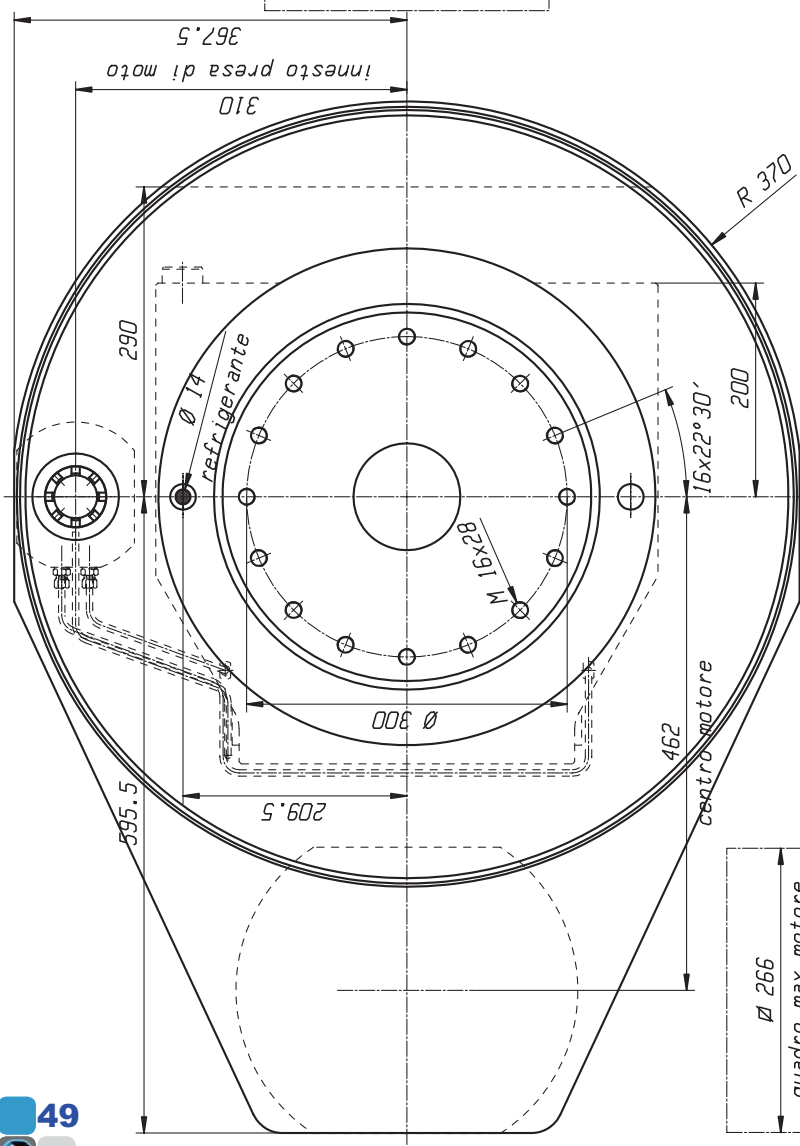


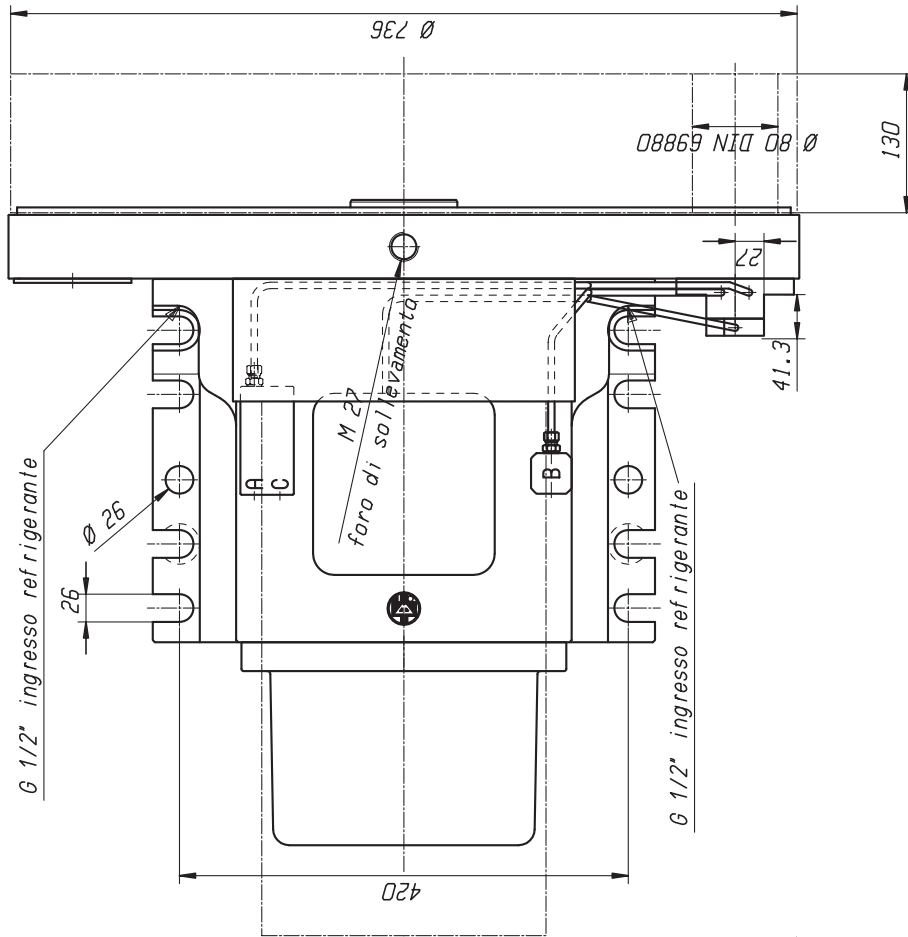
TBMA 320 Version 8
245 X=55 SX motor on top
K56. - 320 08



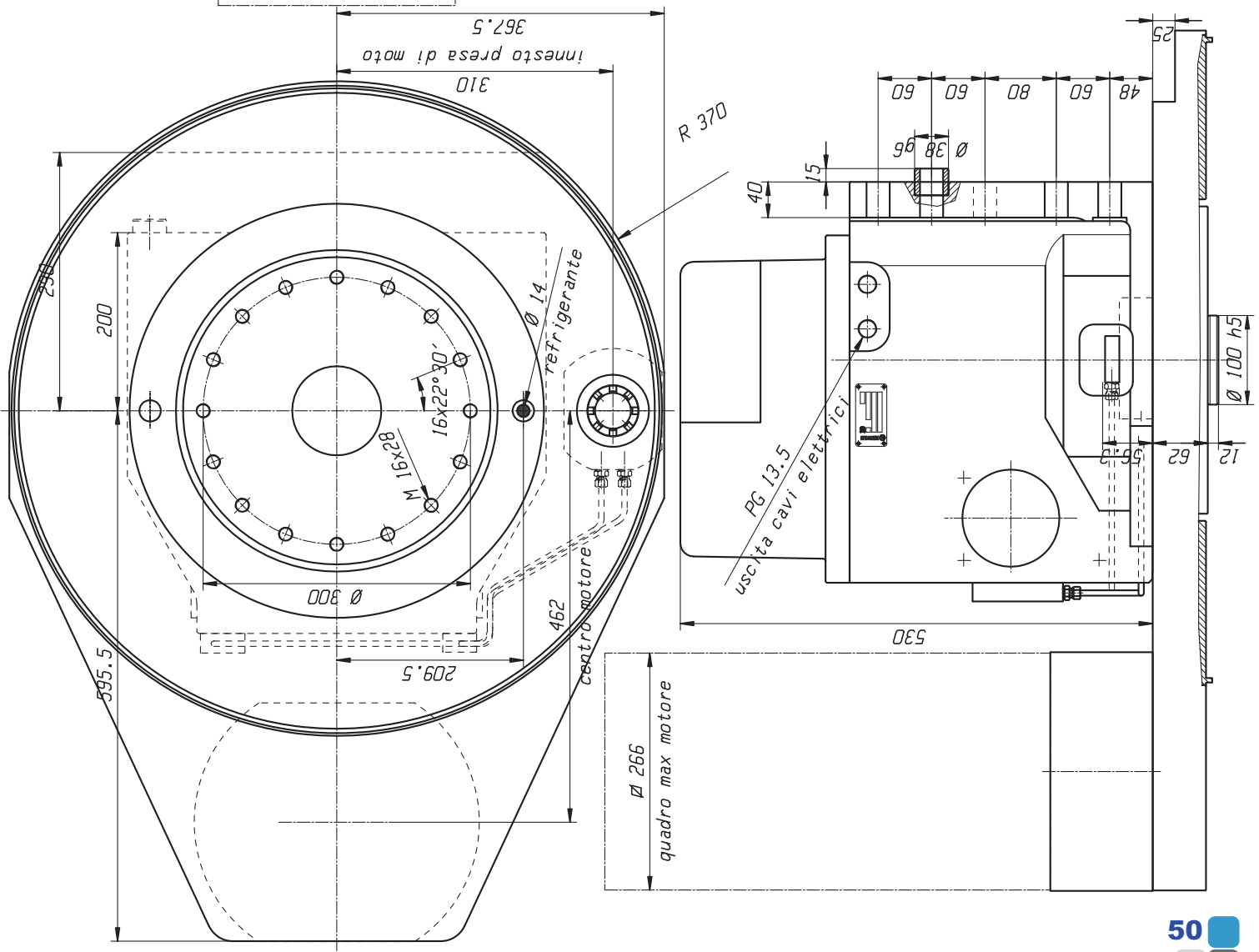


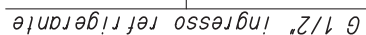
TBMA 400 Version 1
310 X=0 DX motor on top
K56. - 400 . - - - - . 01

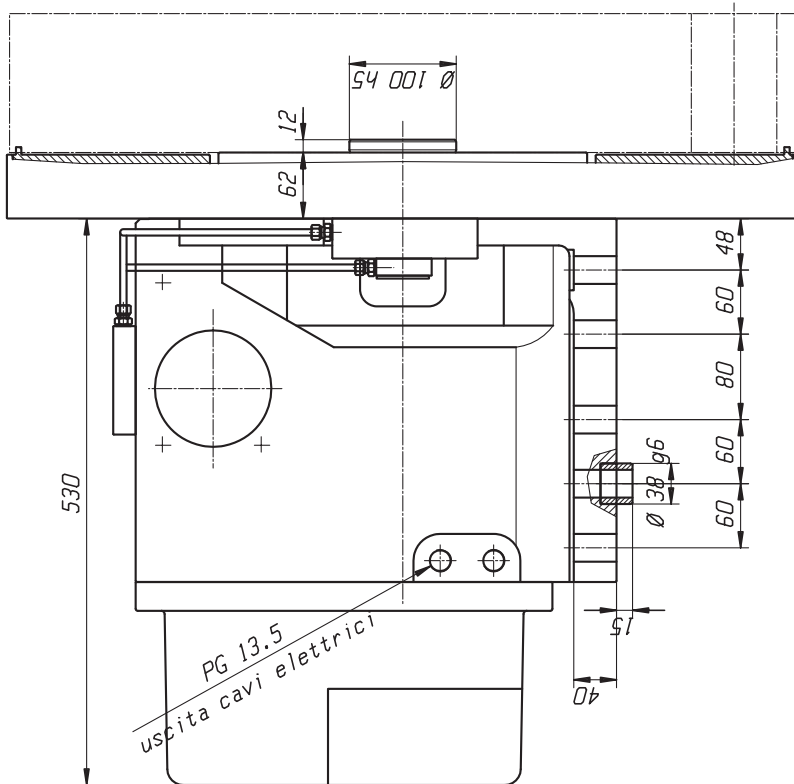




TBMA 400 Version 3
310 X=0 SX motor on top
K56. - 400 03

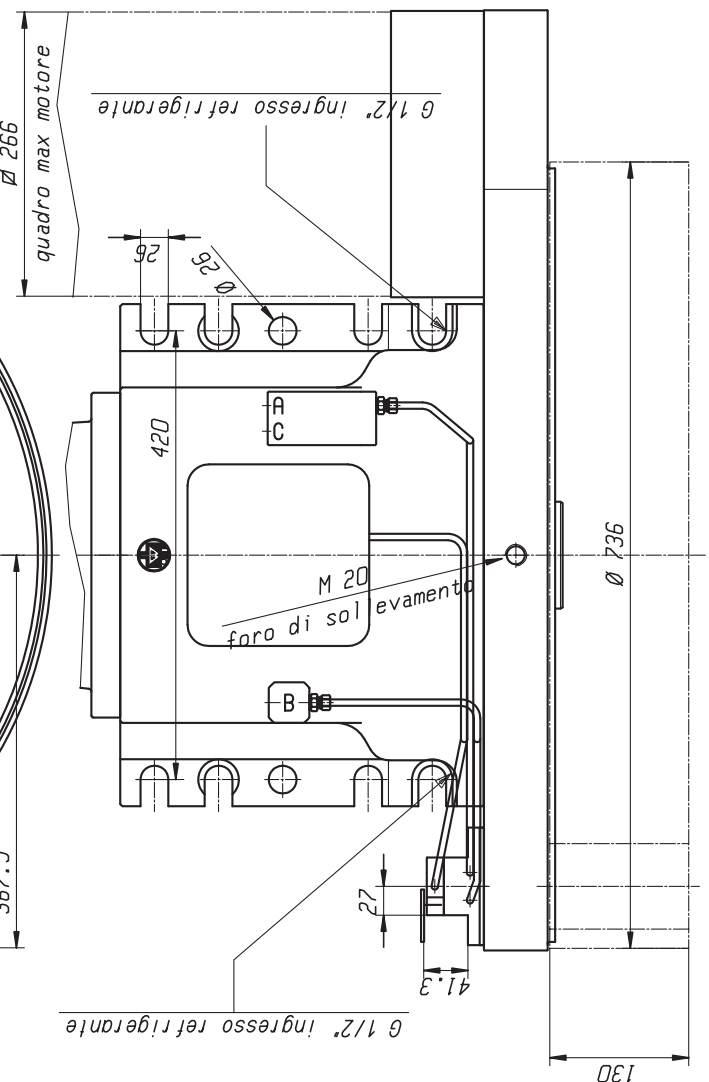
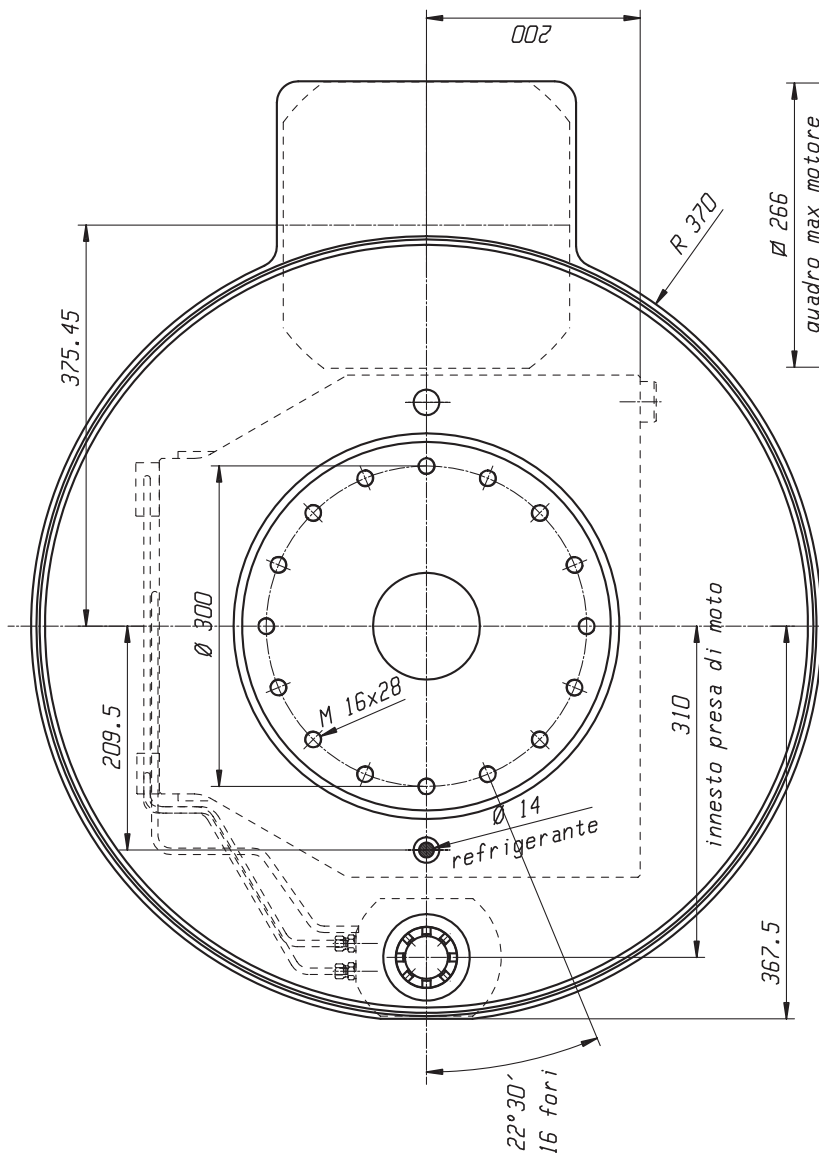


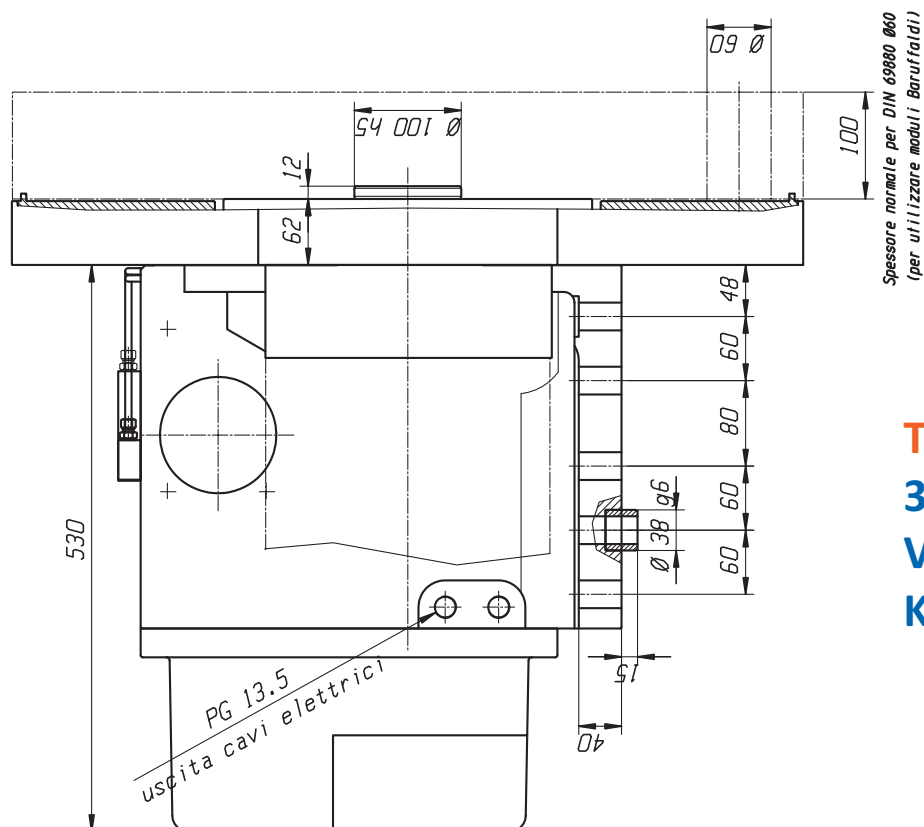




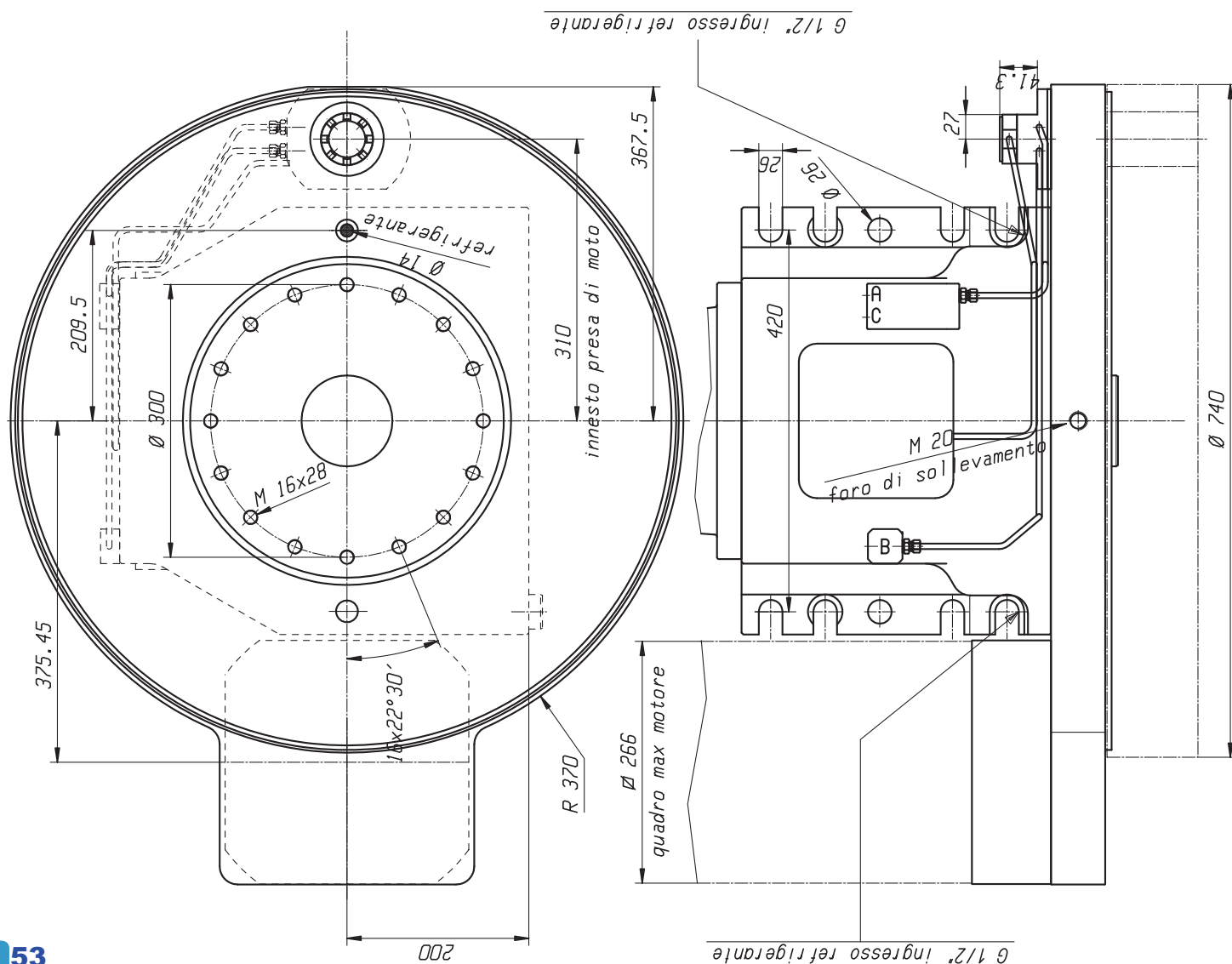
TBMA 400 Version 6

310 X=0 SX motor right
K56. - 400 06

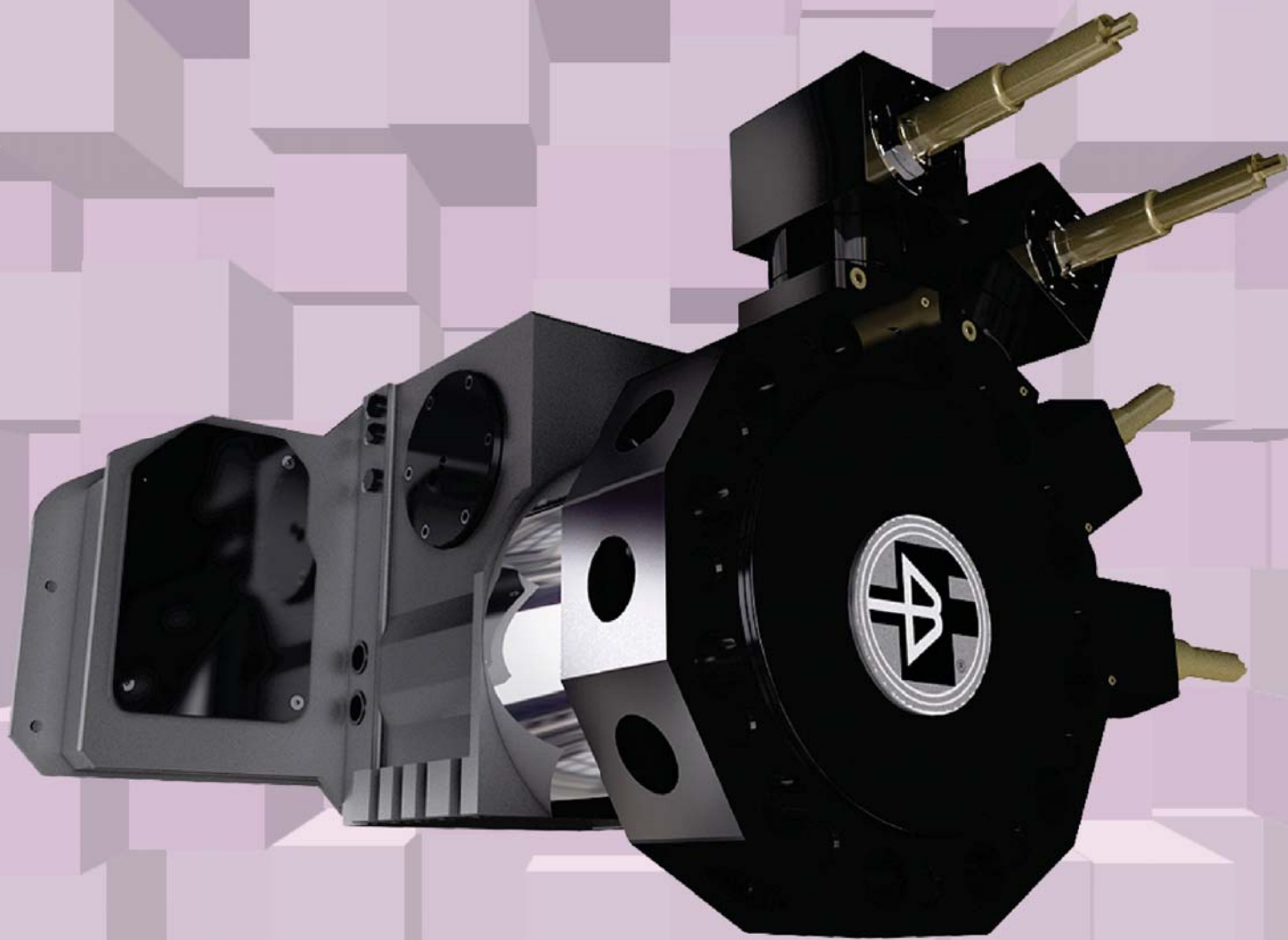




TBMA 400 Version 13
310 X=0 DX motor left
VDI 60
K56. - 400 . - - - - - . 13



Radial driven tools turrets type TBMR/VDI



径向装刀伺服动力刀架TBMR/VDI选型指南



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6	多样性和特点	<i>Versatility and feature</i>
7	功能描述	<i>Function description</i>
8	TBMR 160 Version 1	TBMR 160 Version 1
9	TBMR 160 Version 2	TBMR 160 Version 2
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16	TBMR 320 Version 2	



Radial driven tools turrets type TBMR for tool-holders as per ISO 10889 (ex DIN 69880) norms

径向出刀伺服动力刀架 **TBMR** 刀座标准 **ISO10889(ex DIN 69880)**



通过30多年为数控机床设计和制造刀架，我们获取了很多宝贵经验。为此Baruffaldi开发了崭新的通过刀架内部动力传递系统的动力刀架：TBMR家族系列。

DIN norms 69880标准的动力头安装在刀盘径向座内。

只有工作位置的动力头才有动力输出
每个工位上都可以安装动力头或固定刀座。

这种刀架，其主要特点为能够在换刀过程中实现高速自动的动力结合和脱离，加长的刀架脖子能够适应背向加工。刀架外壳坚固能适应不同机床布局的需要。

主要特点：

- 非常高的动力输出转数，极短的分度时间
- 锁紧松开无轴向窜动
- 双向选刀
- 动力系统依靠润滑油润滑
- 动力头离合器两个接近开关
- 高刚性
- 绝对值编码器
- 动力头离合器部分靠润滑油润滑
- 定位极准确

Thanks to the experience reached after more than 30 years activity in the design and production of turrets for the positioning of the tools on CNC lathes, BARUFFALDI has developed new turrets with rotating tools with internal driven tool system family TBMR. The tools are located on discs with radial seats as per DIN norms 69880.

Only the tool in the working position is driven and every position on the tool disc can receive either toolholders with rotating of fixed tools.

This turret has, as main characteristics, ultra high speed and automatic engagement and disengagement of rotating tool during turret indexing cycle, an extended neck useful for back machining operations, strong housing and high flexibility.

Main characteristics

- Very high rotating speed and minimum indexing times
- Locking and unlocking without axial movement
- Bi-directional rotation
- Oil lubrication of turret and power tool system
- Double proximity for the take power engagement control
- High rigidity, due to the new design
- Absolute positioning
- Take power lubricated with oil
- Very accurate positioning





Technical data

技术参数

Technical data Basic turret						
规格 Size			120	160	200	250 320
工位数 No. of divisions			08 - 12	08 - 12	08 - 12	08 - 12
			16 - 24	16 - 24	16 - 24	16 - 24
转动惯量 Moment of inertia	Kgm ²		0.15÷1.8	0.15÷1.8	0.4 ÷ 8	0.4 ÷ 8 0.7÷ 40
最大切线方向扭矩 Max Tangential torque	Nm		1100	1900	4000	7500 16000
最大下压扭矩 Max Overturning Torque in Pressing Direction	Nm		1200	2100	6000	12000 25000
最大脱离扭矩 Max Overturning Torque in Lifting Direction	Nm		700	1600	3500	6500 13000
最大不平衡扭矩 Max out of balance torque	Nm		10	15	40	60 160
定位精度 Positioning accuracy	Gradi Deg.		± 4"	± 4"	± 4"	± 4"
重复定位精度 Accuracy of Repeatability	Gradi Deg.		± 1.6"	± 1.6"	± 1.6"	± 1.6"
分度时间 Positioning time	30°	sec	0.13÷0.24	0.13÷0.24	0.20÷0.34	0.20÷0.34 0.64
	45°	sec	0.17÷0.28	0.17÷0.28	0.25÷0.38	0.25÷0.38 0.71
	180°	sec	0.34÷0.50	0.34÷0.50	0.53÷0.73	0.53÷0.73 1.76
松开时间 * Unlocking time*	sec		0.1	0.1	0.12	0.12 0.6
锁紧时间 * Locking time*	sec		0.1	0.1	0.12	0.12 0.6

动力头技术参数 Technical data power tools

动力头轴柄尺寸 Toolholder shaft size	mm	20	30	40	50	60
动力电机最大扭矩 Max Torque at the motor	Nm	16	16	50	50	100
动力电机最大功率 Max Power	Kw	5	5	9	9	15
动力电机最大转速 Max. Motor speed	g/min RPM	5000	5000	4000	4000	3000
动力电机/动力头 输出位置传动比 Ratio: RPM motor / RPM take power		1.23	1.23	1.25	1.25	1.33
刀架总质量 Turret's total weight	Kg	84	115	192	285	595
工作压力 Working pressure	bar	气动 (标准) Pneumatic version (standard)				5 ± 1
		液压 (选配) Hydraulic version (optional)				30 ± 3

* · 标准版本
Standard version.



规格 <i>Size</i>	订货号 <i>Code</i>	工位数 <i>Number of divisions</i>	订货号 <i>Code</i>	伺服放大器 <i>Servo amplifier control unit</i>	订货号 <i>Code</i>
TBMR 120	0120	8/12	0	BF标准电机和驱动 <i>Motor and drive standard BF</i>	0
TBMR 160	0160	8	1	不带驱动，电机为西门子1FK7-042 <i>Without drive, preset for motor Siemens 1FK6 - 042</i>	2
TBMR 200	0200	12	2	不带驱动，电机为发那科M3和alpha4HV(伺服) <i>Without drive preset for motor Fanuc M3 and alpha 4HV (servo)</i>	3
TBMR 250	0250	16	3		
TBMR 320	0320	24	5	不带驱动和电机 <i>Without motor and drive for turret</i>	4



驱动方式 <i>Actuator</i>	Code
气动 <i>Pneumatic</i>	0
液压 <i>Hydraulic</i>	1

Code	
动力电机厂商	*

Code	
动力电机型号 <i>Motor type for rotating tools</i>	*

电机轴形式	Code
电机轴不带键 <i>Motor shaft without key</i>	0
电机轴带键 <i>Motor shaft with key</i>	1
锥轴 <i>Conic shaft</i>	2

* 根据客户订货号 BARUFFALDI 将提供最终刀架货号

Based on the data provided by the customer Baruffaldi will supply the code.

5 *Enclose the driven tools Motor specifications: manufacturer, code, dimensions drawing.*



版本规格 <i>Version specifications</i>	<i>Code</i>
图号 <i>Refer to the drawing</i>	★
需要不同的版本请接洽销售部门 <i>On demand are available further versions. Contact the sales office</i>	

立式安裝使用 <i>Application vertical down</i>	Code G
--	-----------

刀架外形				Code
Turret configuration				
动力输出 Take power	右边 Right	电机 Motor	右边 Right	1
动力输出 Take power	左边 Left	电机 Motor	左边 Left	2
动力输出 Take power	右边 Right	电机 Motor	左边 Left	3
动力输出 Take power	左边 Left	电机 Motor	右边 Right	4
动力输出 Take power	右边 Right	电机 Motor	上边 On Top	5
动力输出 Take power	左边 Left	电机 Motor	上边 On Top	6
动力输出 Take power	上边 On Top	电机 Motor	右边 Right	7
动力输出 Take power	下边 Down	电机 Motor	上边 On Top	8
动力输出 Take power	上边 On Top	电机 Motor	左边 Left	9

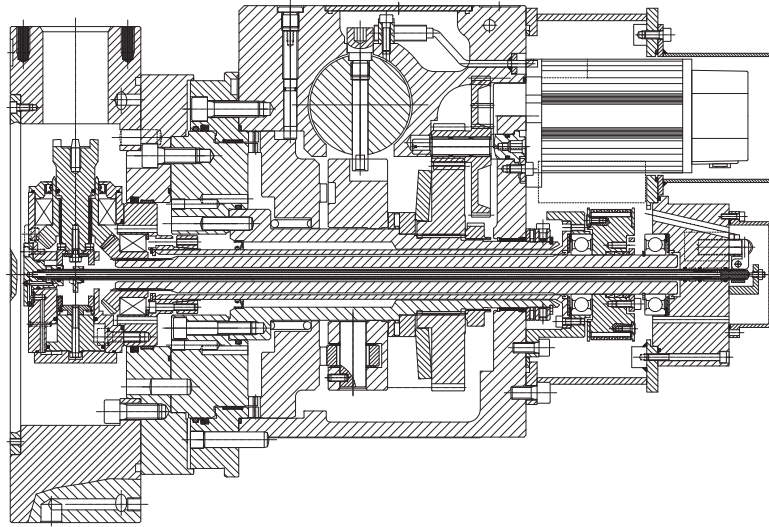
面向刀盘(动力输出)

面向电机



Versatility and feature

多样性和特点



刀架新的技术特点，能使其适应极为多样化的应用

- 设计简单
- 便于维修
- 型号范围120,160,200,250,320
- 可以提供8-12-16-24工位
- 可以提供VDI20-25-30-40-50-60
- 带角度的动力输出

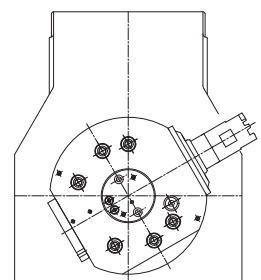
The new technical features, make this turret extremely versatile allowing many applications.

- Simple design
- Easy maintenance
- Wide range 120, 160, 200, 250, 320
- Possibility to use 8-12-16-24
- Possibility to use VDI 20-25-30-40-50-60
- Take power rotation

刀架规格 <i>Turret type</i>	工位数 <i>N. of divisions</i>	VDI Ø <i>VDI Ø</i>	刀盘对边 <i>Key</i>	动力输出位置 <i>Take power</i>		
TBMR 120	12	20	224	右边 <i>Right</i>	左边 <i>Left</i>	0°
TBMR 120	12	25	240	右边 <i>Right</i>	左边 <i>Left</i>	0°
TBMR 160	12	30	270	右边 <i>Right</i>	左边 <i>Left</i>	0°
TBMR 160	12	30	270	右边 <i>Right</i>	左边 <i>Left</i>	30°
TBMR 200	12	40	320	右边 <i>Right</i>	左边 <i>Left</i>	0°
TBMR 200	12	40	320	右边 <i>Right</i>	左边 <i>Left</i>	30°
TBMR 200	16	30	380	右边 <i>Right</i>	左边 <i>Left</i>	0°
TBMR 200	16	30	380	右边 <i>Right</i>	左边 <i>Left</i>	30°
TBMR 250	12	50	380	右边 <i>Right</i>	左边 <i>Left</i>	0°
TBMR 250	12	50	380	右边 <i>Right</i>	左边 <i>Left</i>	30°
TBMR 250	16	40	420	右边 <i>Right</i>	左边 <i>Left</i>	0°
TBMR 250	16	40	420	右边 <i>Right</i>	左边 <i>Left</i>	30°
TBMR 320	12	60	500	右边 <i>Right</i>	左边 <i>Left</i>	

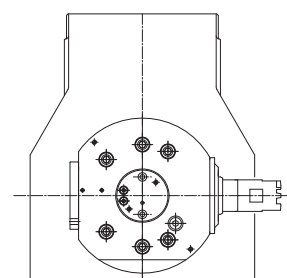
为Y轴刀架设计的带30度角的动力输出

Take power at 30° for "y" axis turrets



动力输出在刀架轴线上

Take power on the axis



此表数据位示例，可以制定进一步需求的解决方案

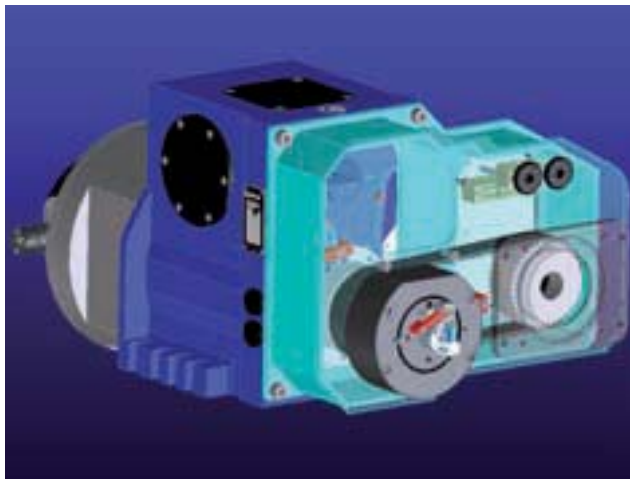
* the table is indicative, on demand further solutions can be elaborated





- 动力电机和动力头之间通过皮带轮（P）齿轮和端齿组件共同传递动力。
- 刀架锁紧时，端齿和动力头（动力头轴柄为DIN69880）的结合是自动完成。
- 刀架要分度时，端齿和动力头自动脱离，刀盘能够自由转动

模块化的内部动力传递系统以及带有两个接近开关确保锁紧和松开时的动力系统的离合



Drive supply / Mode 0 / Zero Research not executed / In rotation

驱动通电/模式0/找零未执行/在旋转



Actual station
实际工位



Activated alarm
报警号

新型的TB刀架通过无碳刷电机，由最新的驱动器控制分度。因这些新的组合，最大限度的降低刀架的分度时间，定位时无振动。刀架锁紧之后，通过内部的碟簧保持锁紧力。气动辅助锁紧松开（标准型），或者液压辅助锁紧松开（备选型）。

Function description

功能描述

- The transmission of rotation of the drive motor to the rotating toolholder is made by a pulley (P), gears and a frontal Hirth clutch coupling
- The engagement of the coupling with the rotating toolholder (shaft as per DIN 69880 norms) is made automatically during the locking sequence of the turret.
- During the phase of turret indexing the coupling is automatically disengaged and permit the rotation of the toolholder disc.

Internal power trasmission with modular power system and double proximity for the engagement control

两个接近开关确
保动力系统离合
*Double proximity for the
engagement control*



带数显的驱动器

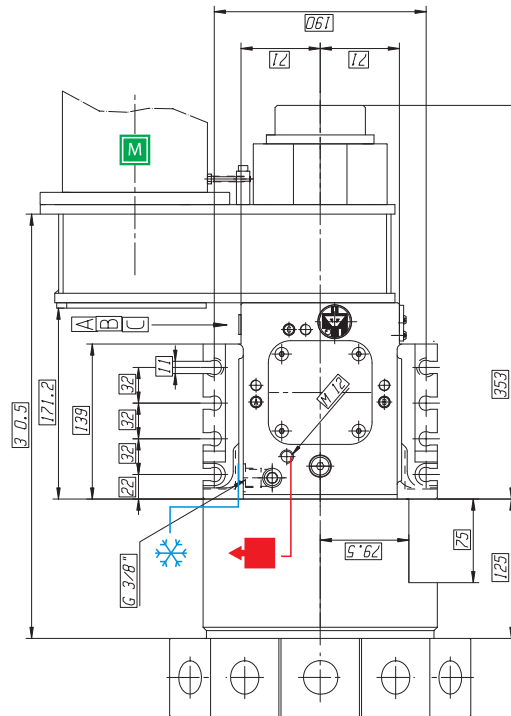
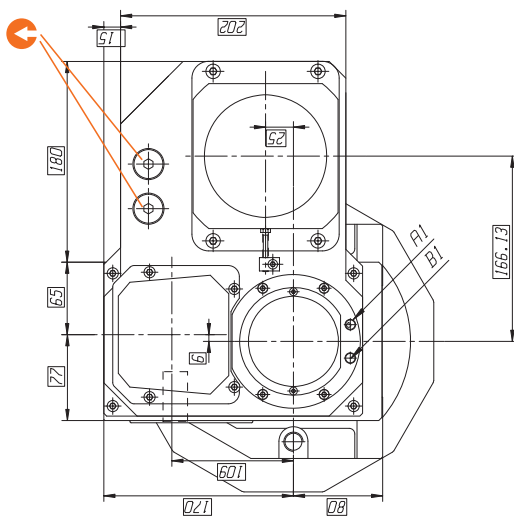
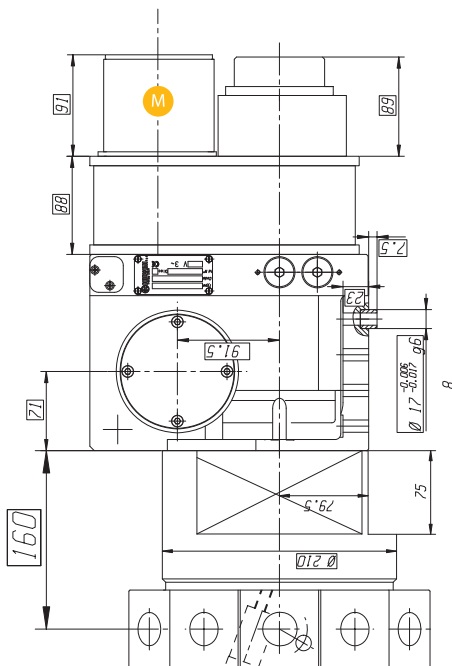
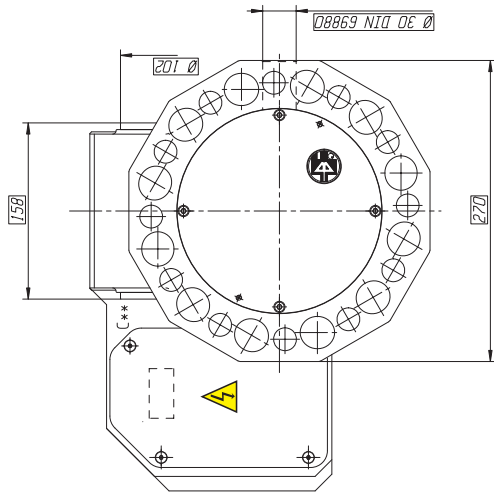
*Drive with integrated control
display*

The new turrets TB... type rotate, thanks to a BRUSHLESS SERVO-MOTOR, energised by a new generation proper drive.

Thanks to this new combination, extremely reduced times and shockless positioning are performed.

The locking of the turret occurs through the Belleville washer.

A pneumatic actuator (standard) or hydraulic (on request) locks/unlocks the turret.



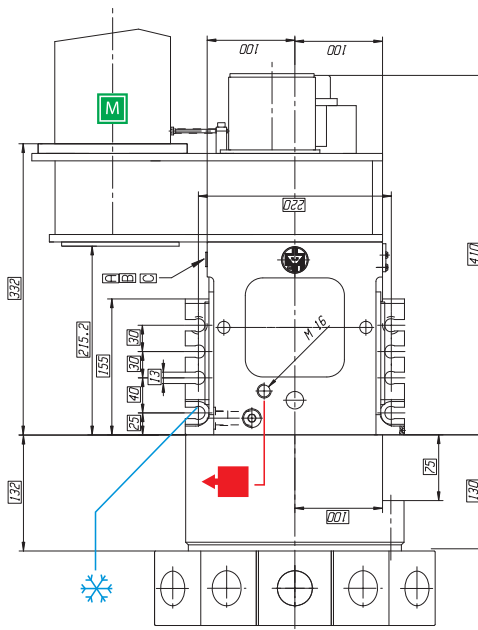
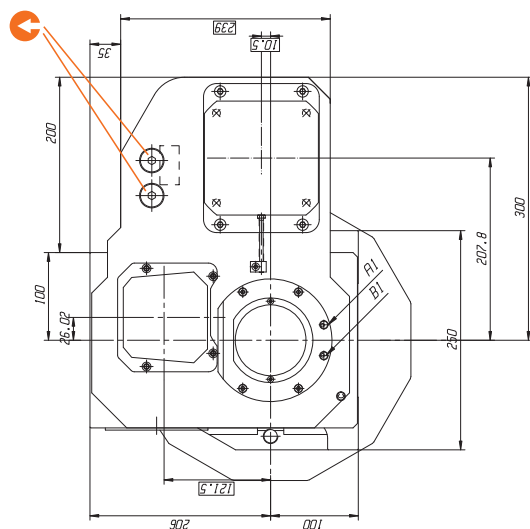
	M12吊装孔 M12 lifting hole
	接线端子 Terminal board
	动力电机 Take power tools motor
	刀架分度电机 Turret motor
	PG13.5电缆输出口 PG13,5 outlet for supply cables
	G3/8冷却液输入孔 G3/8 coolant inlet

如需要可提供左手型刀架

Left version available on request

57.A160.2 0 1.01





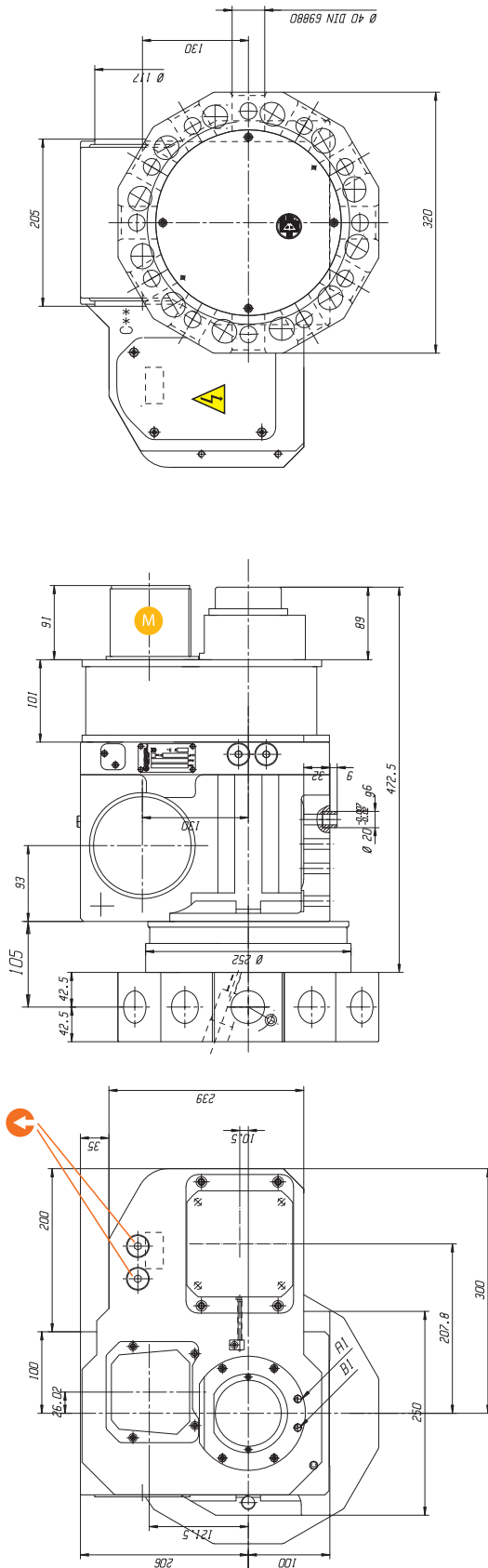
Left version and speial applications
available on request

57.A200.2 0 1.01



Radial driven tools turrets type TBMR/VDI

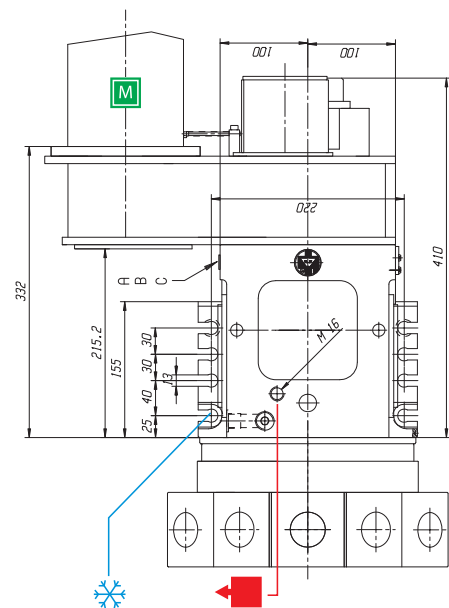
TBMR200外形图



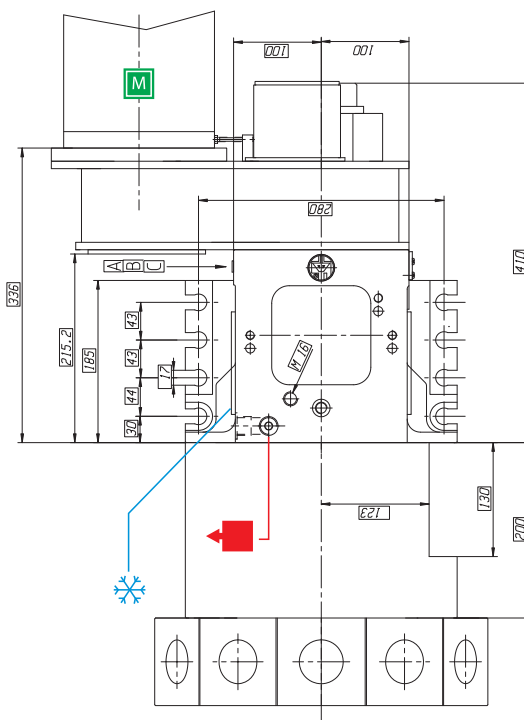
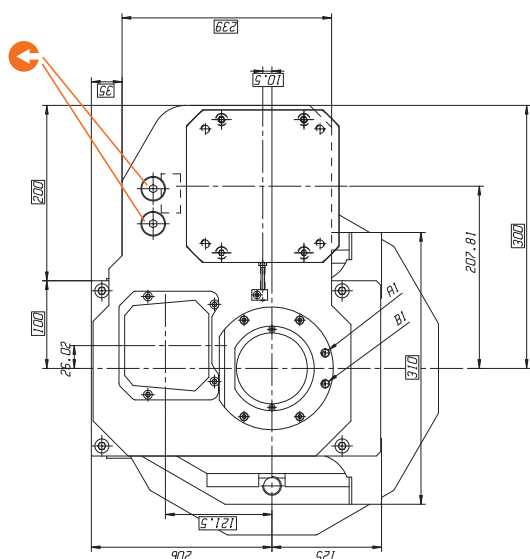
	M16吊装孔 M16 lifting hole
	接线端子 Terminal board
	动力电机 Take power tools motor
	刀架分度电机 Turret motor
	PG13.5电缆输出口 PG13,5 outlet for supply cables
	G3/8冷却液输入孔 G3/8 coolant inlet

如需要可提供左手型或者特殊型刀架

Left version and speial applications
available on request



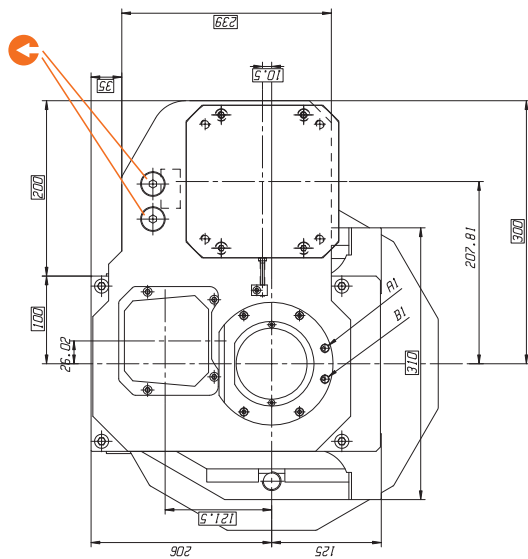
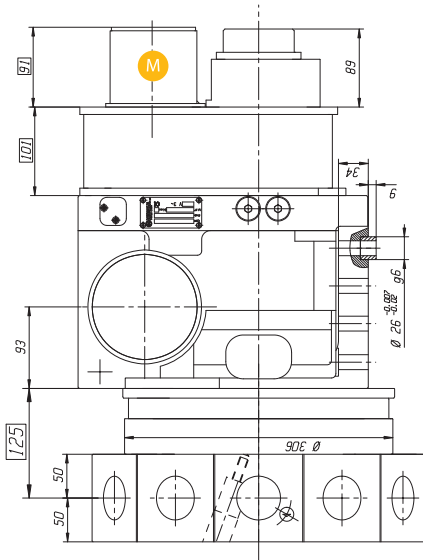
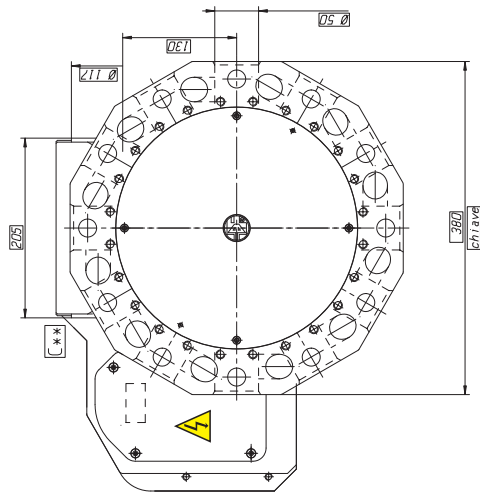
57.A200.2 0 1.02



如需要可提供左手型或者特殊型刀架

Left version and speial applications
available on request

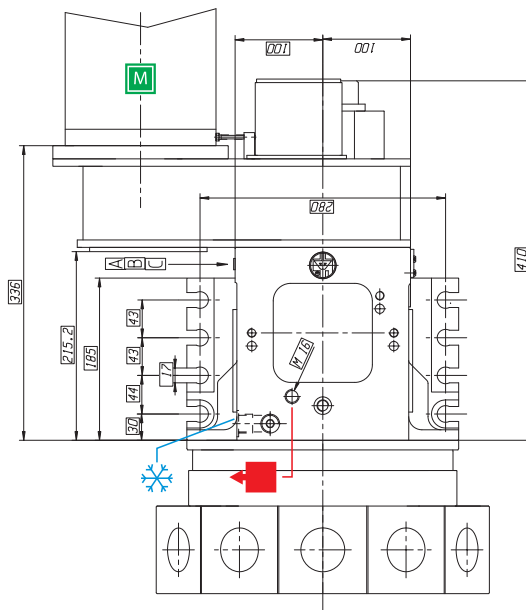
1.01



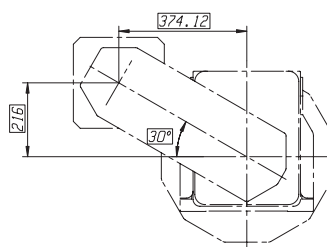
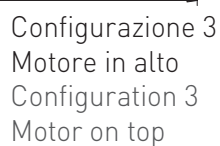
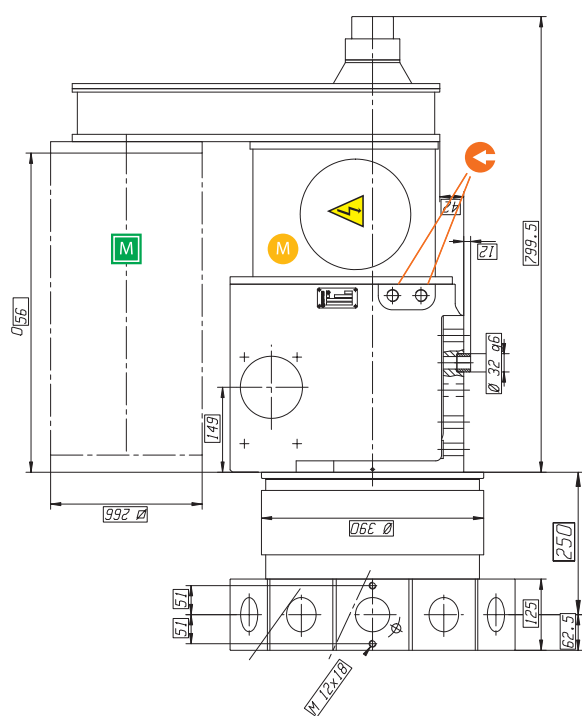
	M16吊装孔 <i>M16 lifting hole</i>
	接线端子 <i>Terminal board</i>
	动力电机 <i>Take power tools motor</i>
	刀架分度电机 <i>Turret motor</i>
	PG13.5电缆输出口 <i>PG13,5 outlet for supply cables</i>
	G3/8冷却液输入孔 <i>G3/8 coolant inlet</i>

如需要可提供左手型或者特殊型刀架

Left version and special applications
available on request



57.A250.2 0 1.02



Technical drawing of a mechanical part, likely a gear or a similar component. The drawing shows a cross-section with a central hole and a flange. The dimensions are 374,12 (length) and 370° (angle).

Configurazione 2 Configuration 2



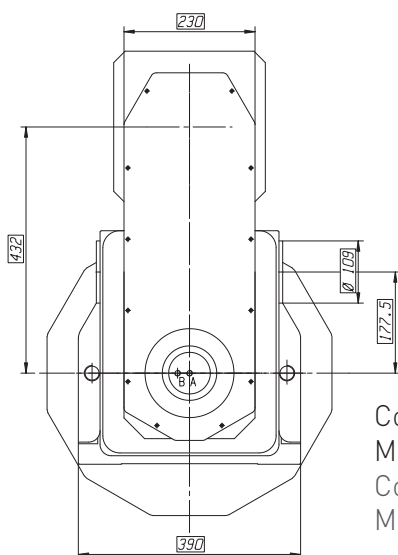
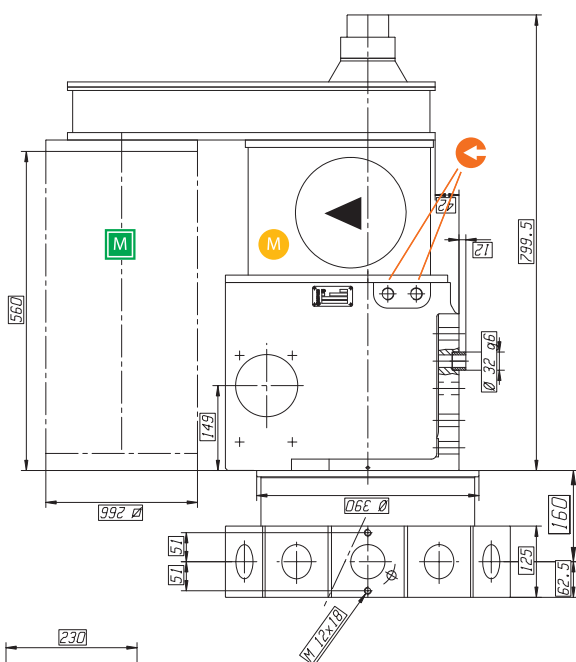
Technical drawing of a mechanical part, likely a flange or a base plate, showing a top view and a side view. The part features a central circular hole and a rectangular slot. Dimensions are provided in millimeters (mm).

Top View Dimensions:

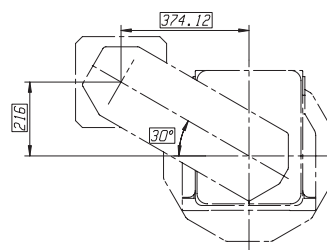
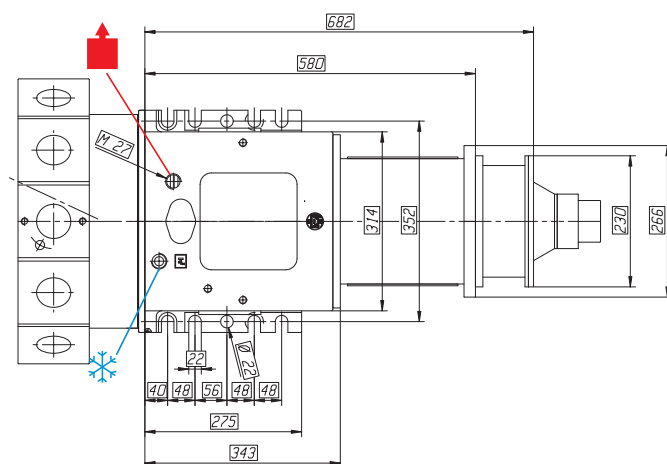
- Overall width: 500 mm
- Overall height: 327 mm
- Central circular hole diameter: $\varnothing 95$
- Distance from the left edge to the center of the hole: 191 mm
- Distance from the right edge to the center of the hole: 191 mm
- Distance from the bottom edge to the center of the hole: 191 mm
- Distance from the top edge to the center of the hole: 191 mm

Side View Dimensions:

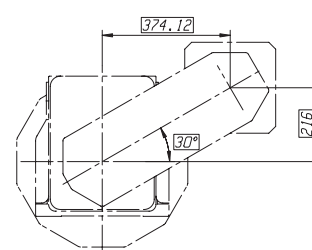
- Overall height: 327 mm
- Distance from the left edge to the center of the hole: 191 mm
- Distance from the right edge to the center of the hole: 191 mm
- Distance from the bottom edge to the center of the hole: 191 mm
- Distance from the top edge to the center of the hole: 191 mm



Configurazione 3
Motore in alto
Configuration 3
Motor on top

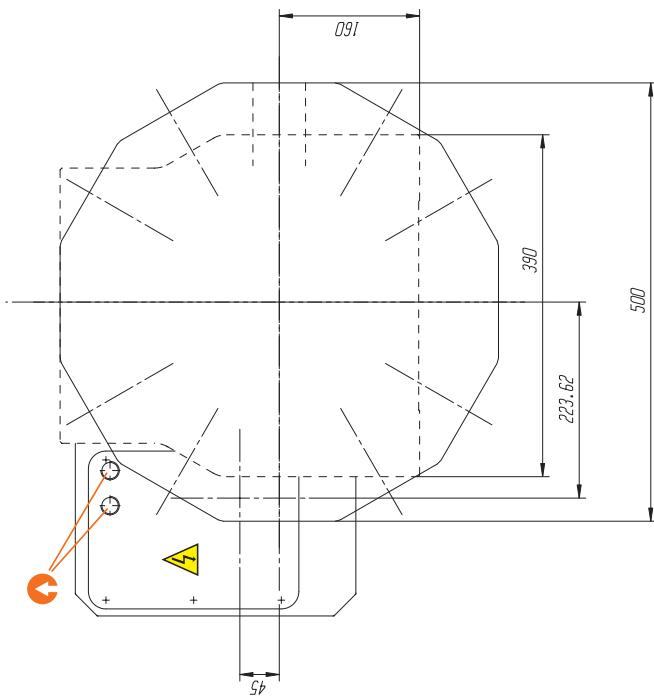


Configurazione 1
Configuration 1



Configurazione 2
Configuration 2

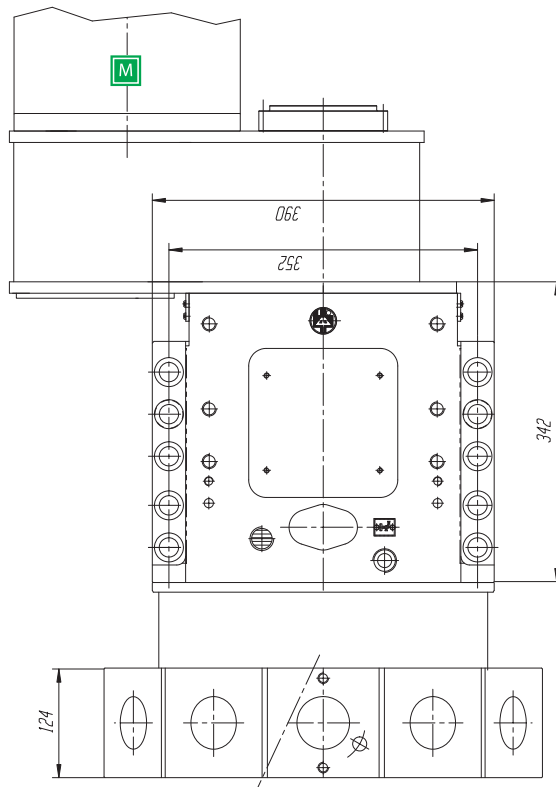
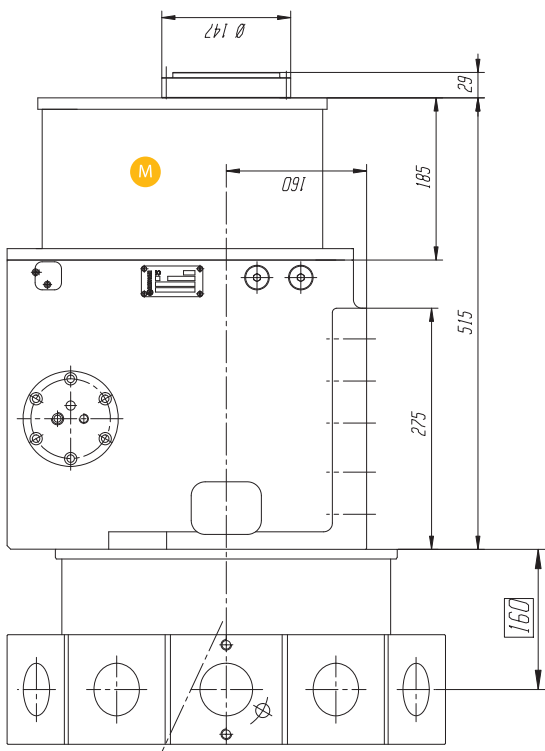
27.A320.2 0 1.02



	M16吊装孔 M16 lifting hole
	接线端子 Terminal board
	动力电机 Take power tools motor
	刀架分度电机 Turret motor
	PG13.5电缆输出口 PG13,5 outlet for supply cables
	G3/8冷却液输入孔 G3/8 coolant inlet

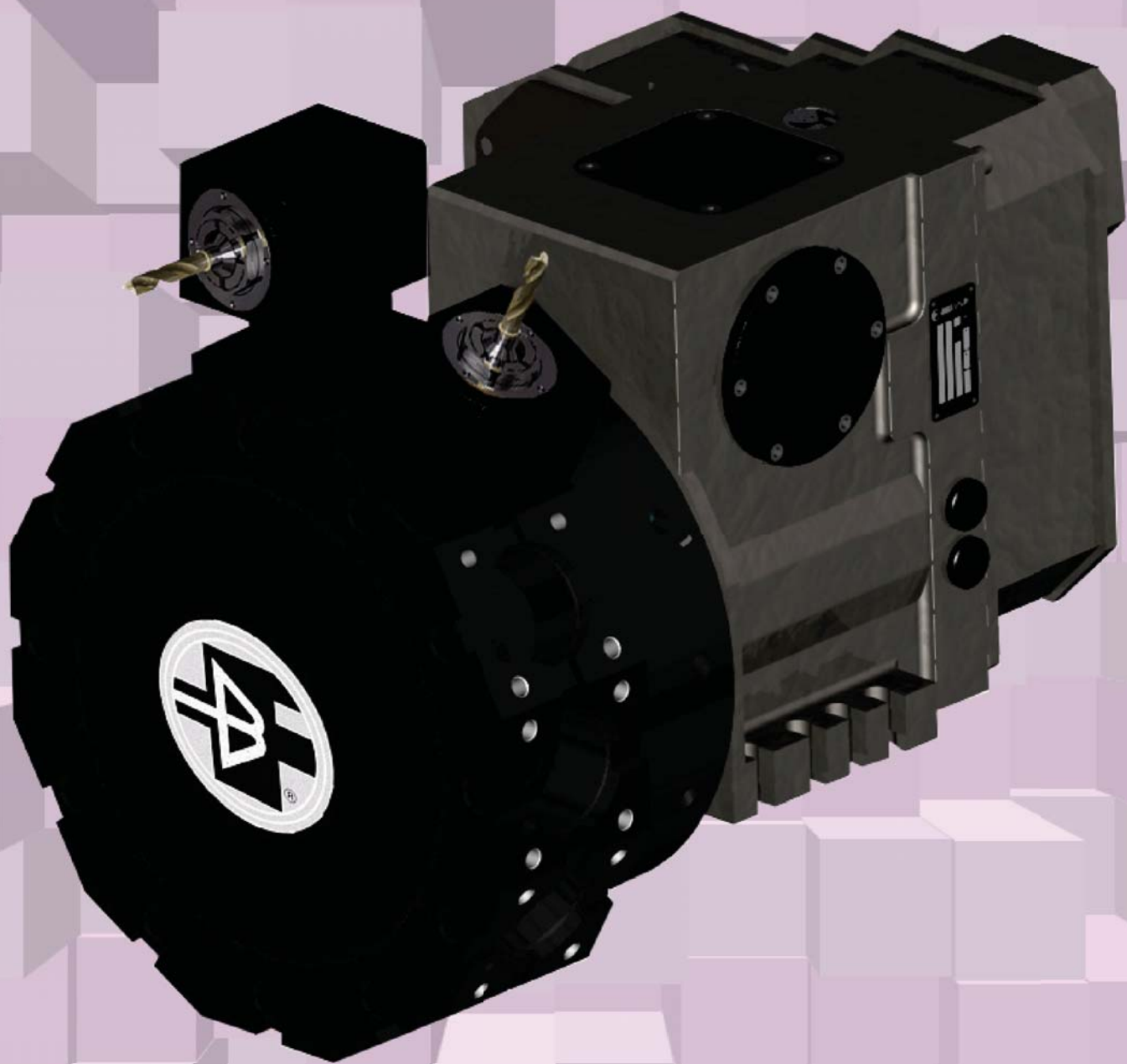
如需要可提供左手型或者特殊型刀架

Left version and special applications available on request



57.A320.2 0 1.02

Radial driven tools turrets type TBMR/BMT



径向装刀伺服动力刀架TBMR/BMT选型指南



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3	简介	<i>Introduction</i>
4	技术参数	<i>Technical data</i>
5	刀架订货号	<i>Order code for turrets</i>
6	多样性和特点	<i>Versatility and feature</i>
7	功能描述	<i>Function description</i>
8	TBMR 160 Version 1	TBMR 160 Version 1
9	TBMR 160 Version 2	TBMR 160 Version 2
10	TBMR 200 Version 1	TBMR 200 Version 1
11	TBMR 200 Version 2	TBMR 200 Version 2
12	TBMR 250 Version 1	TBMR 250 Version 1
13	TBMR 250 Version 2	TBMR 250 Version 2
14	TBMR 320 Version 1	TBMR 320 Version 1
15	TBMR 320 Version 2	TBMR 320 Version 2
16	TBMR 320 Version 2	



Radial driven tools turrets type TBMR for tool-holders series BMT

径向出刀伺服动力刀架 **TBMR** 刀座标准 **BMT**



通过30多年为数控机床设计和制造刀架，我们获取了很多宝贵经验。为此Baruffaldi开发了崭新的通过刀架内部动力传递系统的动力刀架：TBMR家族系列。

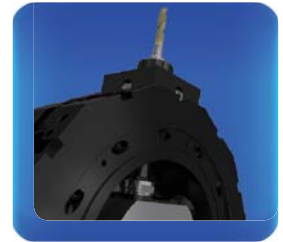
BMT形式的固定刀座和动力头安装在刀盘径向座内。动力头结合齿为DIN norms1809标准

只有工作位置的动力头才有动力输出
每个工位上都可以安装动力头或固定刀座。

这种刀架，其主要特点为能够在换刀过程中实现高速自动的动力结合和脱离，加长的刀架脖子能够适应背向加工。刀架外壳坚固能适应不同机床布局的需要。

主要特点：

- 非常高的动力输出转数，极短的分度时间
- 锁紧松开无轴向窜动
- 双向选刀
- 动力系统依靠润滑油润滑
- 固定刀座和动力头采用BMT（底座安装刀座）固定系统
- 高刚性
- 绝对值编码器
- 动力头离合器部分靠润滑油润滑
- 定位极准确



Thanks to the experience reached after more than 30 years activity in the design and production of turrets for the positioning of the tools on CNC lathes, BARUFFALDI has developed new turrets with rotating tool with internal driven tools system family TBMR. The static and rotating toolholders are located on discs with radial seats type BMT.

The rotating toolholders use a take power, as per DIN norms 1809.

Only the tool in the working position is driven and every position on the tool disc can receive either toolholders with rotating or fixed tools.

This turret presents ultra high speed, a simplified system for the engagement and disengagement of the take power, an extended neck useful for back machining operations, strong housing and high flexibility.

Main characteristics

- Very high rotating speed and minimum indexing times
- Locking and unlocking without axial movement
- Bi-directional
- Oil lubrication of turret and power tool system
- BMT (Base Mounted Tool holder) fixing system for static e rotating tools
- High rigidity, due to the new design
- Easy alignment thanks to the key present on the BMT tool holder
- Absolute positioning
- Very simple & reliable take power
- Very accurate positioning thanks to BMT toolholder





Technical data

技术参数

Technical data Basic turret

规格 Size			120	160	200	250	320
工位数 No. of divisions			08 - 12 16 - 24	08 - 12 16 - 24	08 - 12 16 - 24	08 - 12 16 - 24	08 - 12 16 - 24
转动惯量 Moment of inertia	Kgm ²		0.15÷1.8	0.15÷1.8	0.4 ÷ 8	0.4 ÷ 8	0.7÷ 40
最大切线方向扭矩 Max Tangential torque	Nm		1100	1900	4000	7500	16000
最大下压扭矩 Max Overturning Torque in Pressing Direction	Nm		1200	2100	6000	12000	25000
最大脱离扭矩 Max Overturning Torque in Lifting Direction	Nm		700	1600	3500	6500	13000
最大不平衡扭矩 Max out of balance torque	Nm		10	15	40	60	160
定位精度 Positioning accuracy	Gradi Deg.		± 4"	± 4"	± 4"	± 4"	± 4"
重复定位精度 Accuracy of Repeatability	Gradi Deg.		± 1.6"	± 1.6"	± 1.6"	± 1.6"	± 1.6"
分度时间 Positioning time	30°	sec	0.13÷0.24	0.13÷0.24	0.20÷0.34	0.20÷0.34	0.64
	45°	sec	0.17÷0.28	0.17÷0.28	0.25÷0.38	0.25÷0.38	0.71
	180°	sec	0.34÷0.50	0.34÷0.50	0.53÷0.73	0.53÷0.73	1.76
松开时间 * Unlocking time*	sec		0.1	0.1	0.12	0.12	0.6
锁紧时间 * Locking time*	sec		0.1	0.1	0.12	0.12	0.6

动力头技术参数

Technical data power tools

BMT尺寸 BMT size	mm	45	45	55 65	65 75	75 85
动力电机最大扭矩 Max Torque at the motor	Nm	16	16	50	50	100
动力电机最大功率 Max Power	Kw	5	5	9	9	15
动力电机最大转速 Max. Motor speed	g/min RPM	6000	6000	5000	5000	3000
动力电机/动力头 输出位置传动比 Ratio: RPM motor / RPM take power		1	1	1	1	1
工作压力 Working pressure	bar	气动 (标准) Pneumatic version (standard)				5 ± 1
		液压 (选配) Hydraulic version (optional)				30 ± 3

* 标准版本
Standard version.



规格 <i>Size</i>	订货号 <i>Code</i>	工位数 <i>Number of divisions</i>	订货号 <i>Code</i>	伺服放大器 <i>Servo amplifier control unit</i>	订货号 <i>Code</i>
TBMR 120	0120	8/12	0	BF标准电机和驱动 <i>Motor and drive standard BF</i>	0
TBMR 160	0160	8	1	不带驱动，电机为西门子1FK7-042 <i>Without drive preset for motor Siemens 1FK6 - 042</i>	2
TBMR 200	0200	12	2	不带驱动，电机为发那科M3和alpha4HV(伺服) <i>Without drive, preset for motor Fanuc M3 and alpha 4HV (servo)</i>	3
TBMR 250	0250	16	3		
TBMR 320	0320	24	5	不带驱动和电机 <i>Without motor and drive for turret</i>	4



驱动方式 <i>Actuator</i>	<i>Code</i>
气动 <i>Pneumatic</i>	0
液压 <i>Hydraulic</i>	1

	Code
动力电机厂商 <i>Manufacturer of the motor for the rotating tools</i>	*

Code	
动力电机型号 <i>Motor type for rotating tools</i>	*

电机轴形式 <i>Shaft type</i>	Code
电机轴不带键 <i>Motor shaft without key</i>	0
电机轴带键 <i>Motor shaft with key</i>	1
锥轴 <i>Conic shaft</i>	2

根据客户订货号 BARUFFALDI将提供最终刀架货号

Based on the data provided by the customer Baruffaldi will supply the code.

版本规格 <i>Version specifications</i>	Code
BMT尺寸 <i>BMT dimension</i>	★
刀盘对边尺寸 <i>Key</i>	
其他规格 <i>Further specifications</i>	

立式安装使用 <i>Application vertical down</i>	Code G
--	-----------

刀架外形				Code
Turret configuration				
动力输出 Take power	右边 Right	电机 Motor	右边 Right	1
动力输出 Take power	左边 Left	电机 Motor	左边 Left	2
动力输出 Take power	右边 Right	电机 Motor	左边 Left	3
动力输出 Take power	左边 Left	电机 Motor	右边 Right	4
动力输出 Take power	右边 Right	电机 Motor	上边 On Top	5
动力输出 Take power	左边 Left	电机 Motor	上边 On Top	6
动力输出 Take power	上边 On Top	电机 Motor	右边 Right	7
动力输出 Take power	下边 Down	电机 Motor	上边 On Top	8
动力输出 Take power	上边 On Top	电机 Motor	左边 Left	9

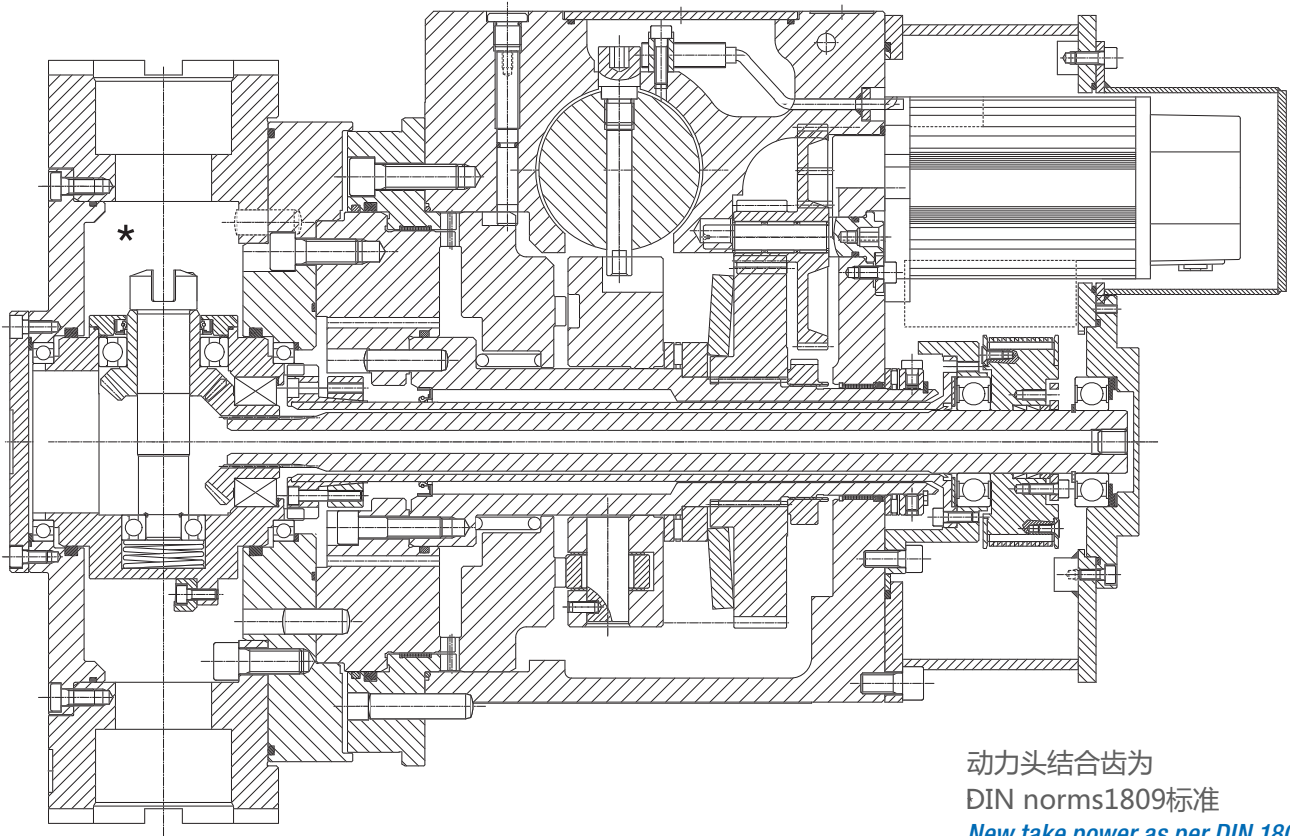
面向刀盘(动力输出)

面向电机



Versatility and feature

多样性和特点



动力头结合齿为
DIN norms1809标准
New take power as per DIN 1809.

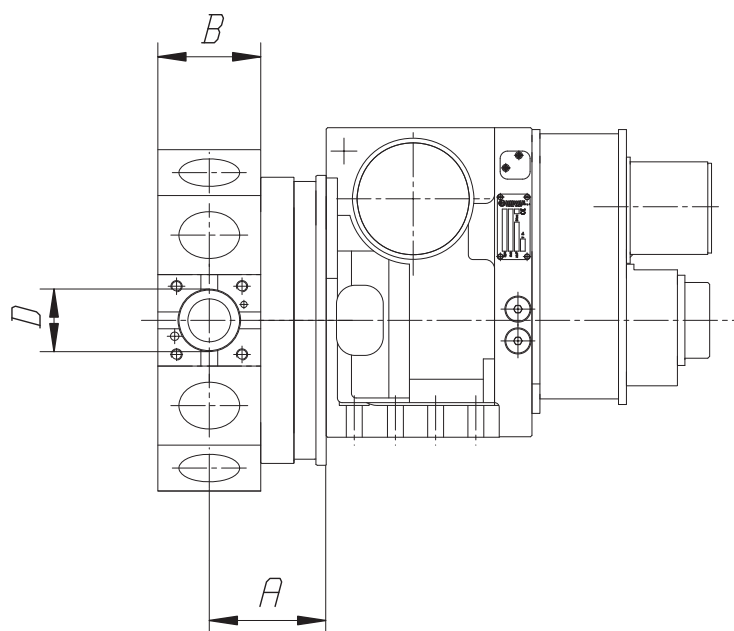
刀架新的技术特点，能使其适应极为多样化的应用

- 设计简单
- 便于维修
- 型号范围120,160,200,250,320
- 可以提供8-12-16-24工位
- 可以提供BMT45-55-65-75-85
- 带角度的动力输出

The new technical features, make this turret extremely versatile allowing many applications.

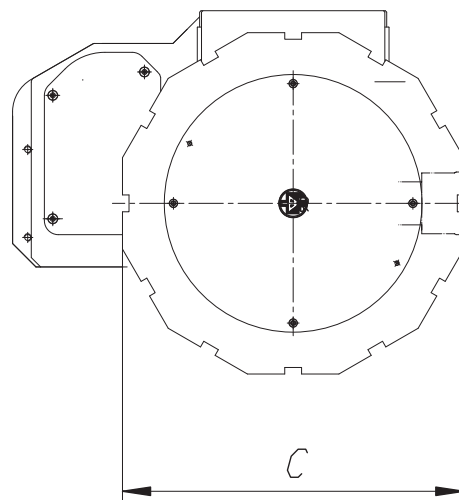
- Simple design
- Easy maintenance
- Wide range 120, 160, 200, 250, 320
- Possibility to use 8-12-16-24
- Possibility to use BMT 45-55-65-75-85
- Take power rotation





External view

外形图



刀架型号 Turret type	工位数 N. of divisions	A	B	C 刀盘对边 Key	D BMT
TBMR 120	12	mm 100	mm 90	mm 290	45
TBMR 160	12	mm 100	mm 90	mm 290	45
TBMR 200	12	mm 105	mm 100	mm 350	55
TBMR 200	12	mm 105	mm 110	mm 365	65
TBMR 250	12	mm 125	mm 110	mm 365	65
TBMR 250	12	mm 125	mm 115	mm 430	75
TBMR 320	12	mm 160	mm 140	mm 530	85

此表数据位示例，可以制定进一步需求的解决方案

The table is indicative, on demand further solutions can be elaborated.

BMT Presetting		VDI Presetting [DIN 69880]		ER Collect DIN [6499]	Tool shank
尺寸	刀柄	尺寸	刀柄		mm
BMT 45	Ø 45	VDI 20	Ø 20	ER 20 0.5 ~ 13	16
BMT 55	Ø 55	VDI 30	Ø 30	ER 25 2.0 ~ 16	20
BMT 65	Ø 65	VDI 40	Ø 40	ER 32 0.3 ~ 20	25
BMT 75	Ø 75	VDI 50	Ø 50	ER 40 4 ~ 26	32
BMT 85	Ø 85	VDI 60	Ø 60	ER 50 6 ~ 34	32

Turrets controlled by servo-motor type TBH



伺服电机转位刀架TBH系列选型指南



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目录

3	TBH刀架介绍	Turret TBH introduction
4	技术参数	Technical data
5	TBH刀架订货号	Order code for turret Type TBH
6	刀架选型 从切线方向的切削力F-F1	Selection of turret As a function of the tangential thrust F-F1
7	从刀架正面轴向的下压力F2 从刀架背面轴向的脱离力F3	As a function of the pressing axial thrust F2 As a function of the lifting axial thrust F3
8	工作原理图	Functional diagram
9	冷却液的进给连接	Feedings connections of the coolant
10	Baruffaldi伺服电机和刀架的接线	Baruffaldi brushless motor
11	刀架-驱动器-电磁阀连接	Turret - Drive - Electrovalve connections
12	刀架运行时序图	Command cycle
13	刀架剖面图	Turret section view
14	TBH160外形图	External view TBH 160
15	TBH200外形图	External view TBH 200
16	TBH250外形图	External view TBH 250



Turrets controlled by servo-motor type TBH

伺服电机转位刀架 **TBH**



A new line of turrets has been designed, in order to match the global competition. They use a hydraulic locking system.

为了增加全球市场的竞争力，新型的刀架应运而生。该刀架液压锁紧

Main characteristics:

- High speed rotation
- Extremely simple design
- Minimum maintenance

主要特点

- 高速转位
- 设计简单
- 维修便捷

An additional AC servo motor is required for the tool drive.

额外配置AC伺服电机可以实现动力加工





Technical data

技术参数

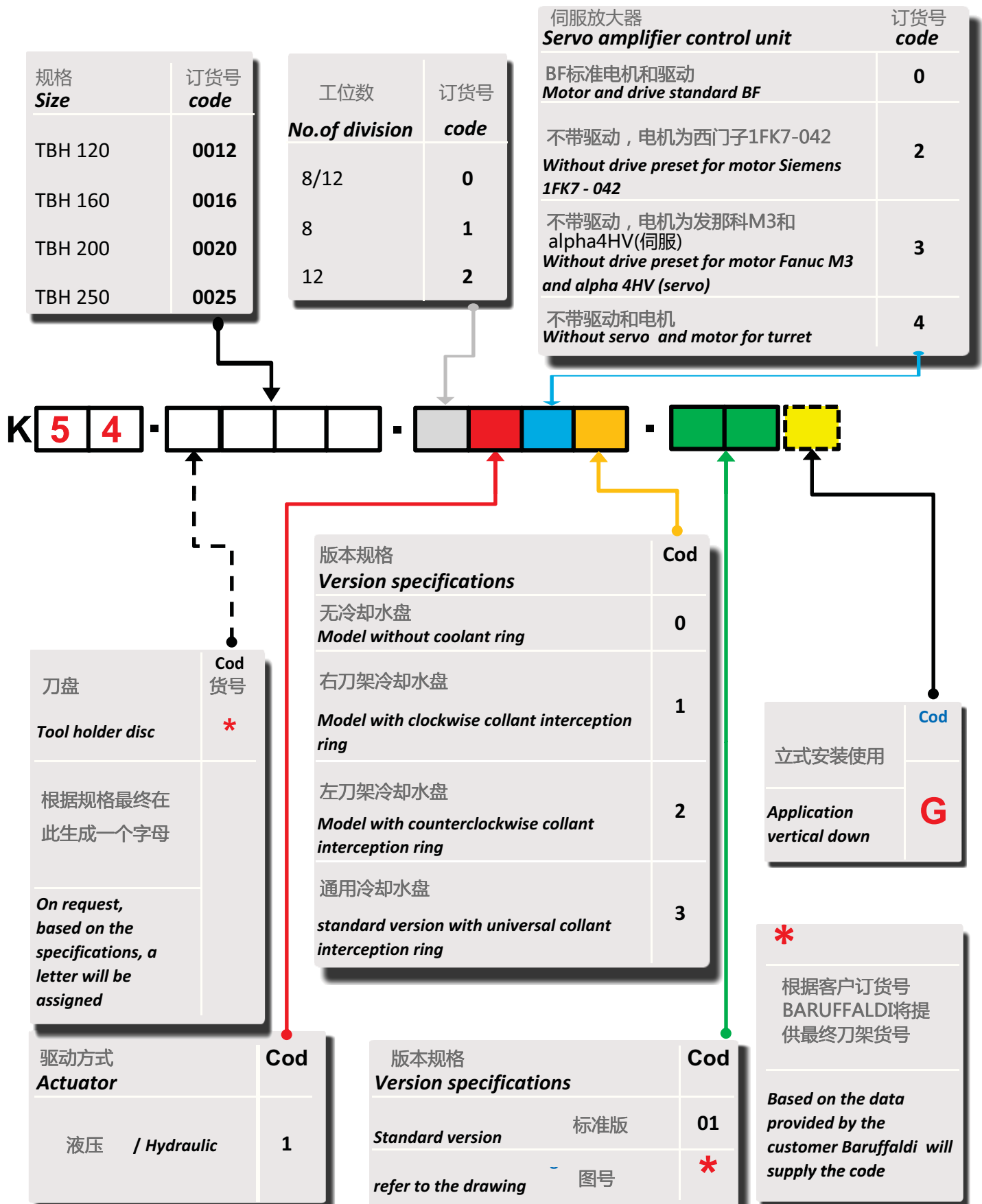
Size 规格			TBH 120	TBH 160	TBH 200	TBH 250
N° of divisions 工位数			8 - 12	8 - 12	8 - 12	8 - 12
Moment of inertia 转动惯量		kgm ²	0.15÷1.8	0.15÷1.8	0.4÷8	0.4÷8
Max tangential torque 最大切线方向扭矩		Nm	1100	1900	4000	7500
Max overturning torque in pressing direction 最大下压扭矩		Nm	1200	2100	6000	12000
Max overturning torque in lifting direction 最大脱离扭矩		Nm	700	1600	3500	6500
Max out of balance torque 最大不平衡扭矩		Nm	10	15	40	60
Positioning accuracy 定位精度		Deg. Gradi	±4"	±4"	±4"	±4"
Accuracy of repeability 重复定位精度		Deg. Gradi	±1.6"	±1.6"	±1.6"	±1.6"
Positioning time 分度时间	30°	sec	0.13÷0.24	0.13÷0.24	0.20÷0.34	0.20÷0.34
	45°	sec	0.17÷0.28	0.17÷0.28	0.25÷0.38	0.25÷0.38
	180°	sec	0.34÷0.50	0.34÷0.50	0.53÷0.73	0.53÷0.73
Unlocking time* 松开时间		sec	0.1	0.1	0.12	0.12
Locking time* 锁紧时间		sec	0.1	0.1	0.12	0.12
Working pressure 工作压力		Bar	Hydraulic 液压	40 ± 3		





Order code for turret Type TBH

TBH刀架订货号

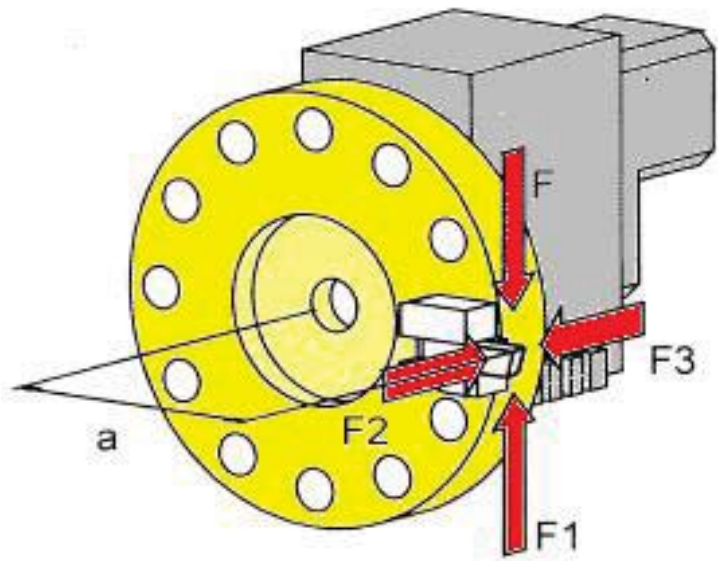




Selection of turret

刀架选型

根据下图所示刀盘的受力情况。
固定刀座装配数量
请阅生产商的参数表



Following diagrams refer to forced applied to tool-holder disc.

For loading capacity of static tool-holders please refer to manufacturer's data sheet.

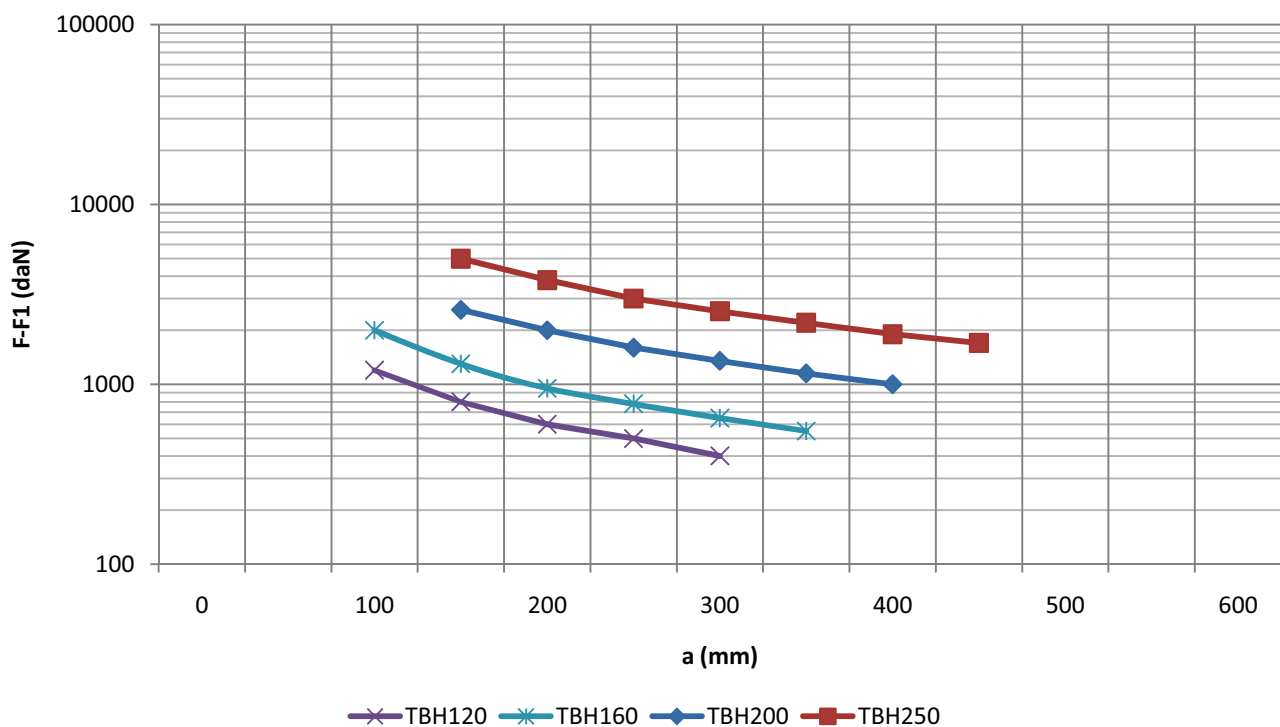
For turret operating capabilities please refer to section " technical data " page 4.

切线方向的切削力F-F1

As a function of the tangential thrust F-F1-F1

F F1单位 (daN) 1daN=10N

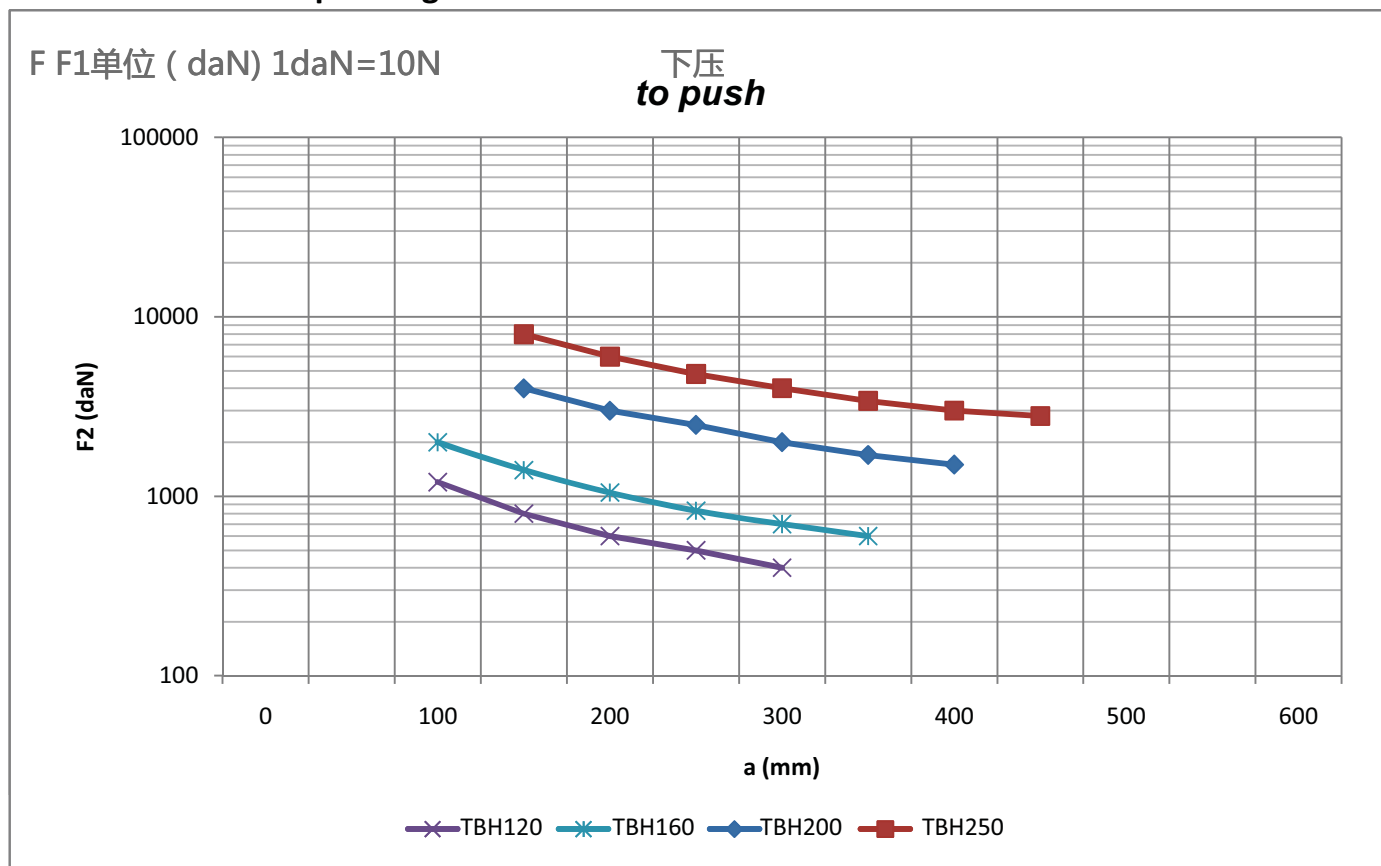
切线方向
tangential





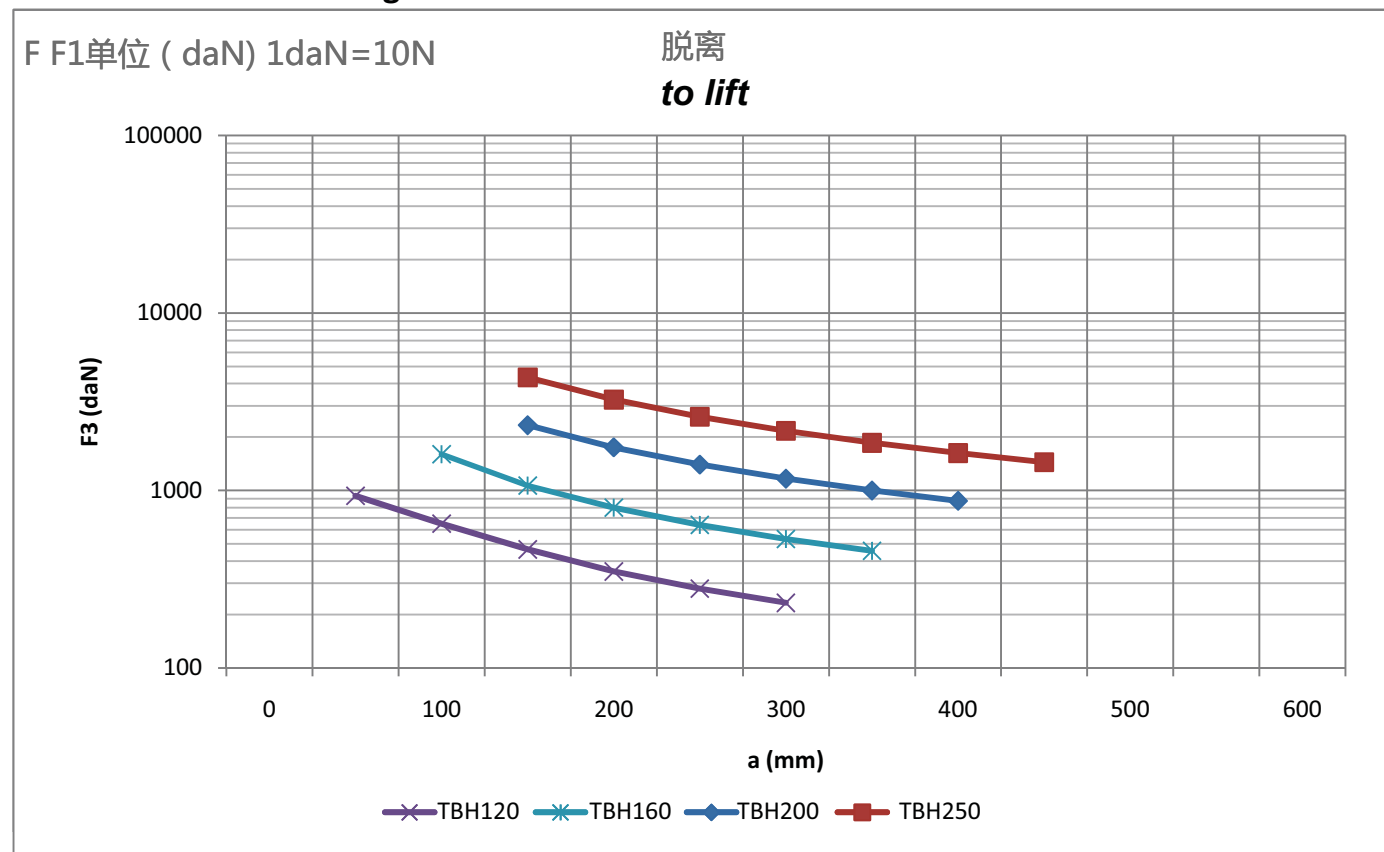
从刀架正面轴向的下压力F2

As a function of the pressing axial thrust F2



从刀架背面轴向的脱离力F3

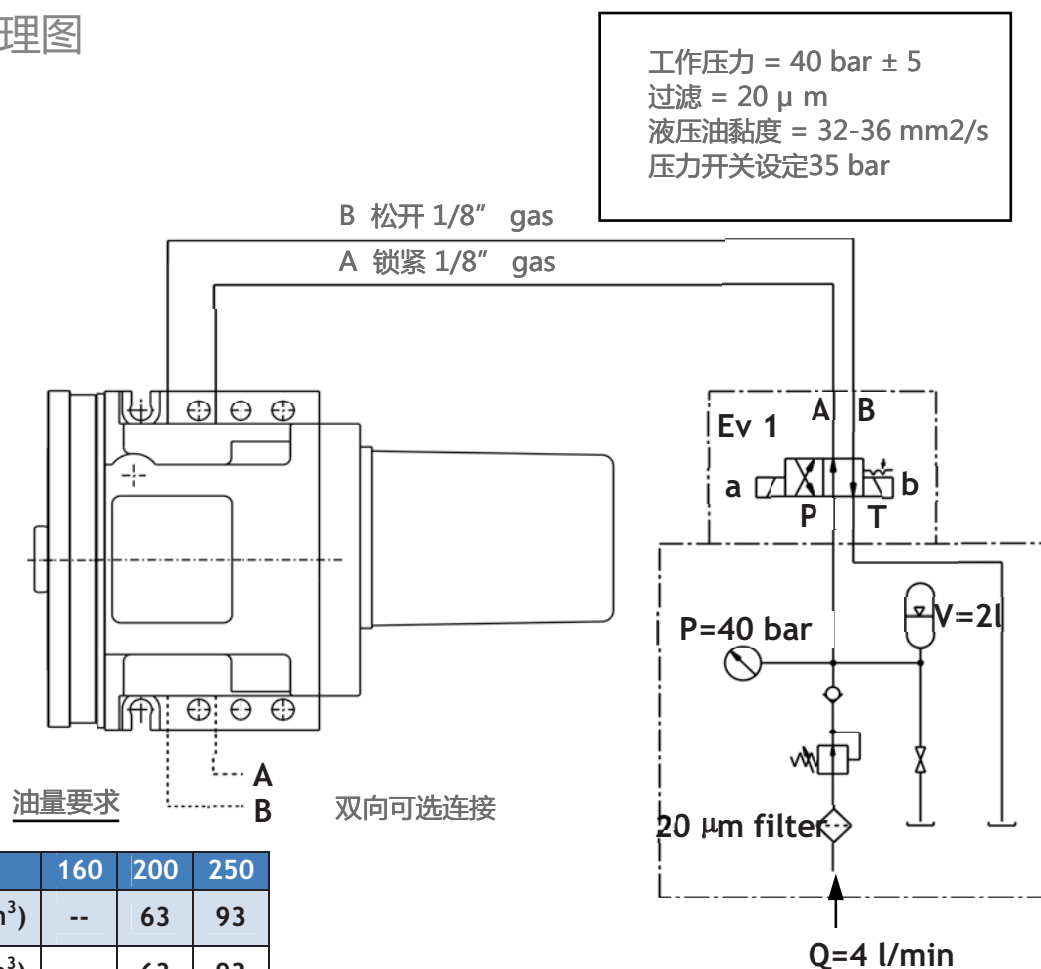
As a function of the lifting axial thrust F3





Functional diagram

工作原理图



TBH	160	200	250
A 锁紧 (cm ³)	--	63	93
B 松开 (cm ³)	--	63	93

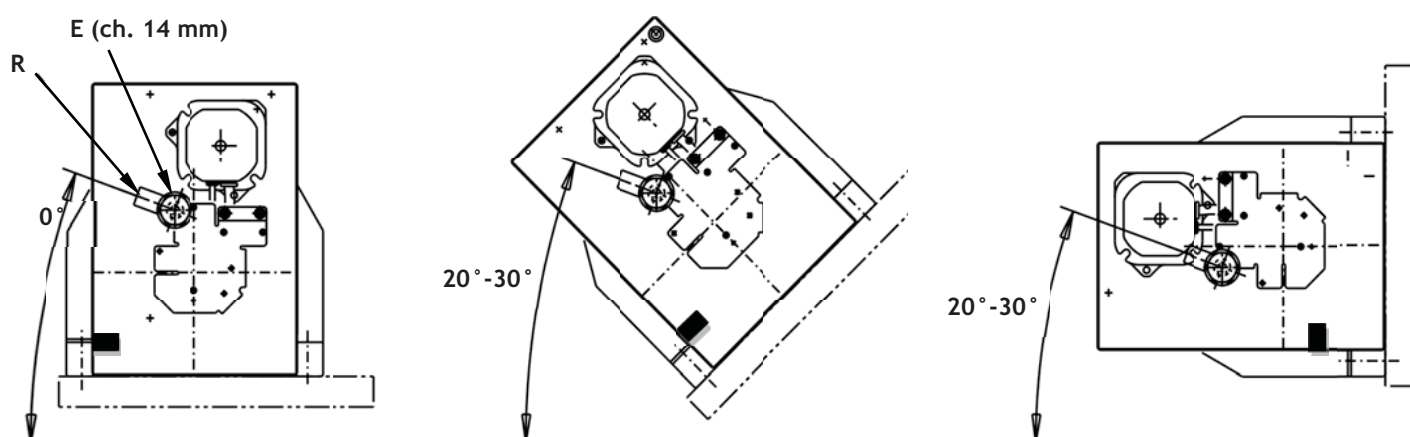
液压油泄漏口位置初始化

将刀架安装到机床上之后，必须要根据刀架的安装方式来调整液压油泄露口的位置

卧式应用

斜床身应用

90° 应用



泄露口接头 (R) 必须始终保持水平方向 20° - 30°

■ 泄露堵





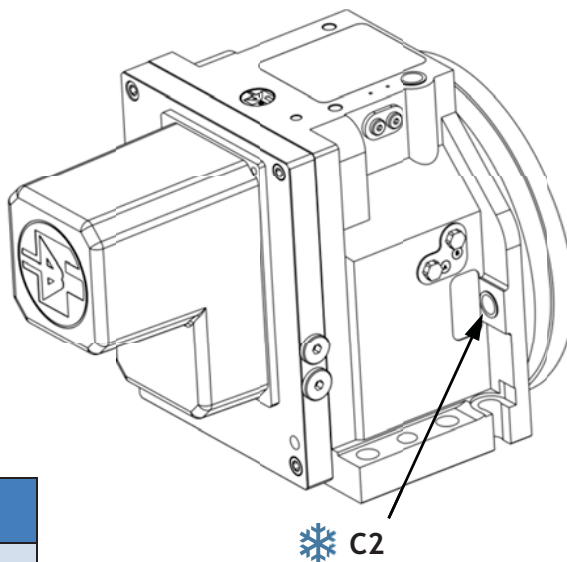
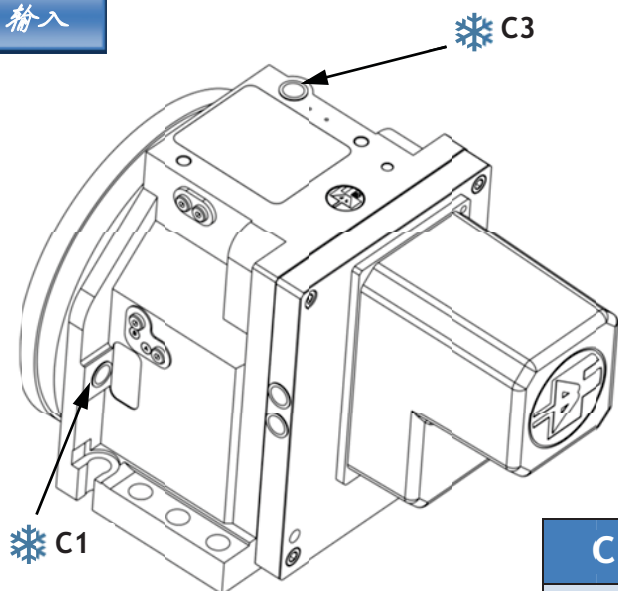
Feedings connections of the coolant

冷却液进给连接

TBH刀架可以承受最高30bar的冷却液压力。如需更高，请接洽我们技术部门

冷却液输入管必须连接在下面进水口之一：C1 或C2或 C3。（其他口必须堵住）

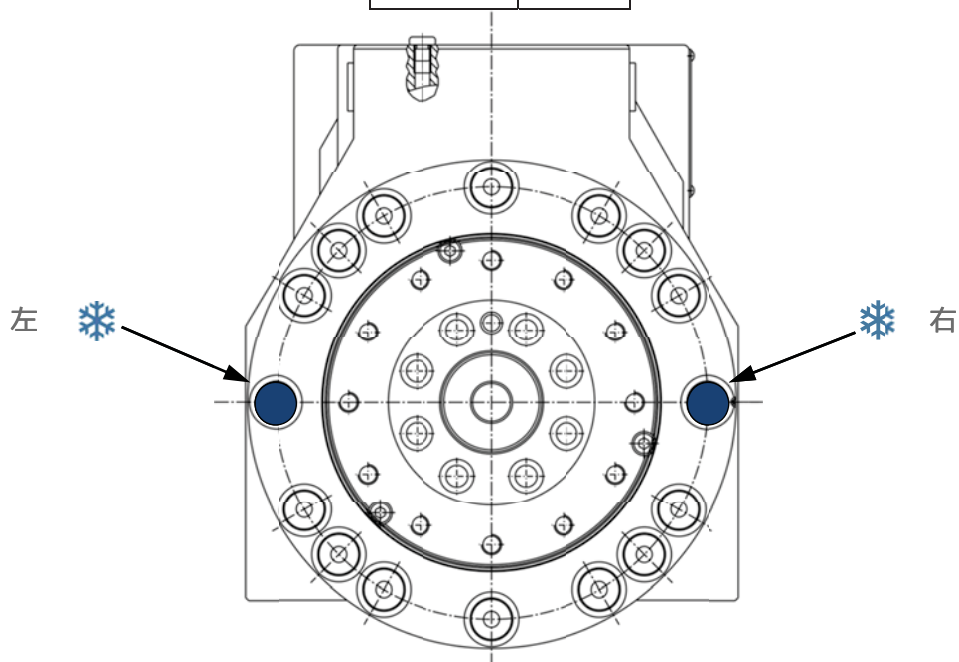
输入



C1-C2-C3

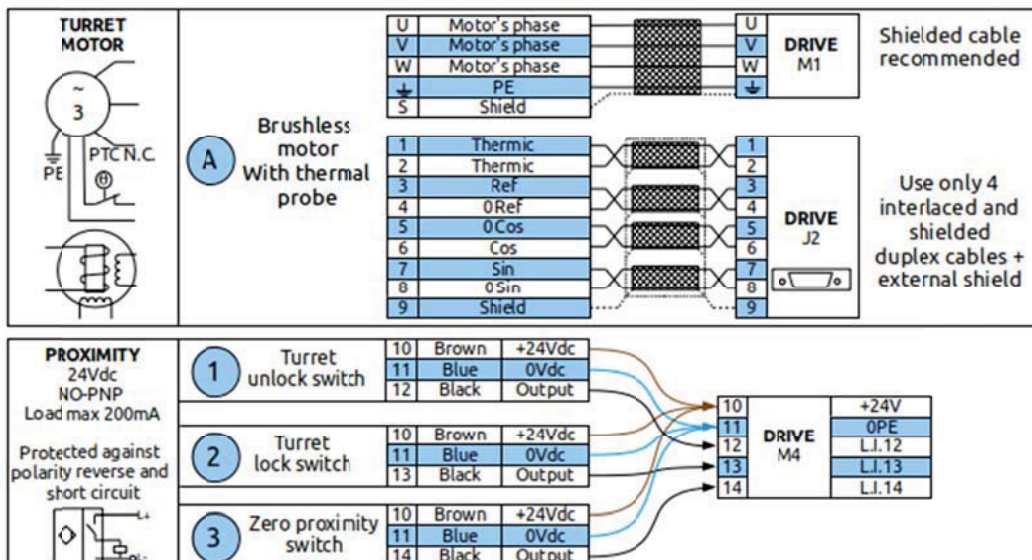
刀架规格	孔
160	G 3/8"
200	G 3/8"
250	G 1/2"

输出



必须始终将不用的冷却液输入口堵住防止泄露!

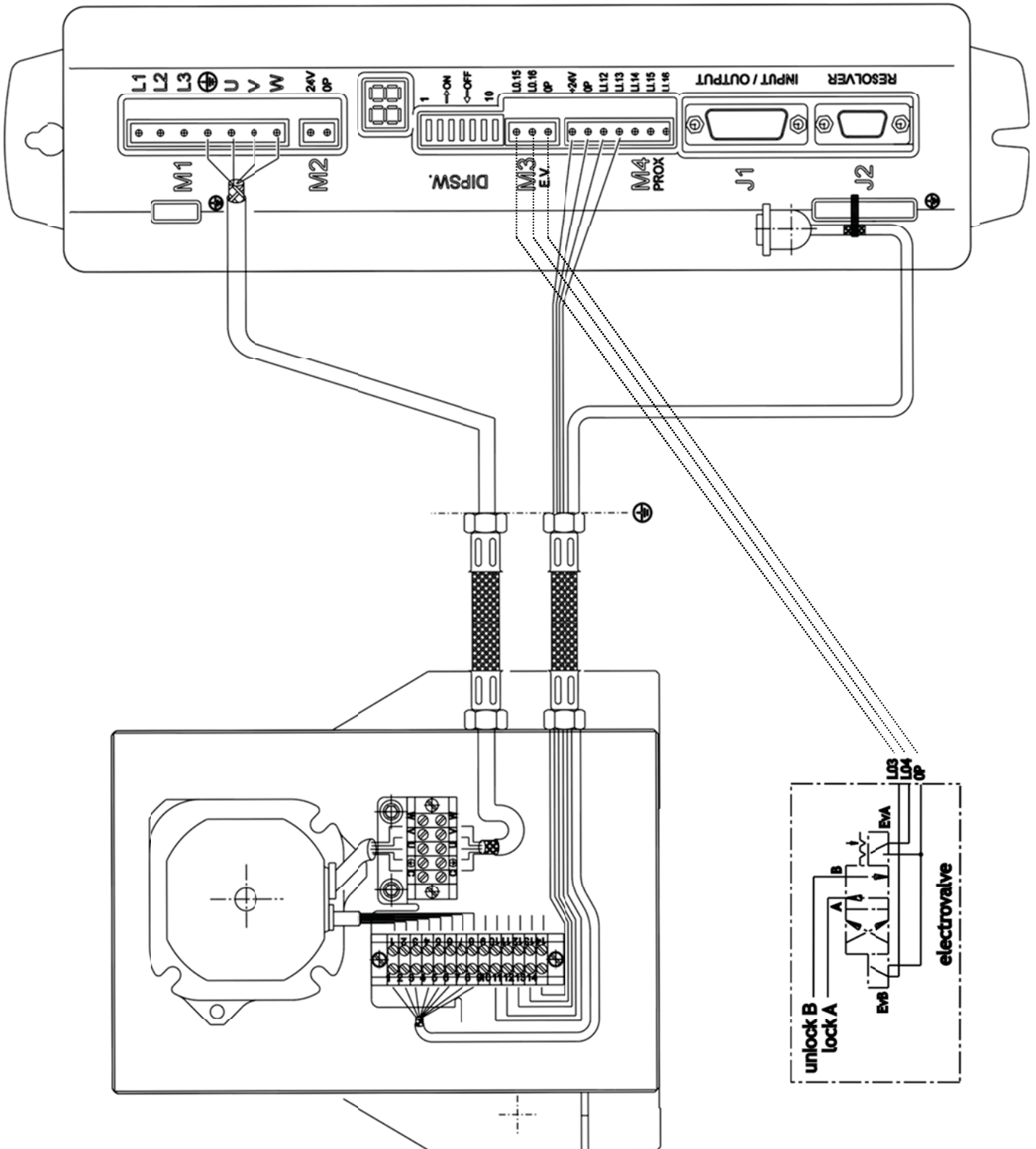
Baruffaldi伺服电机和刀架的接线





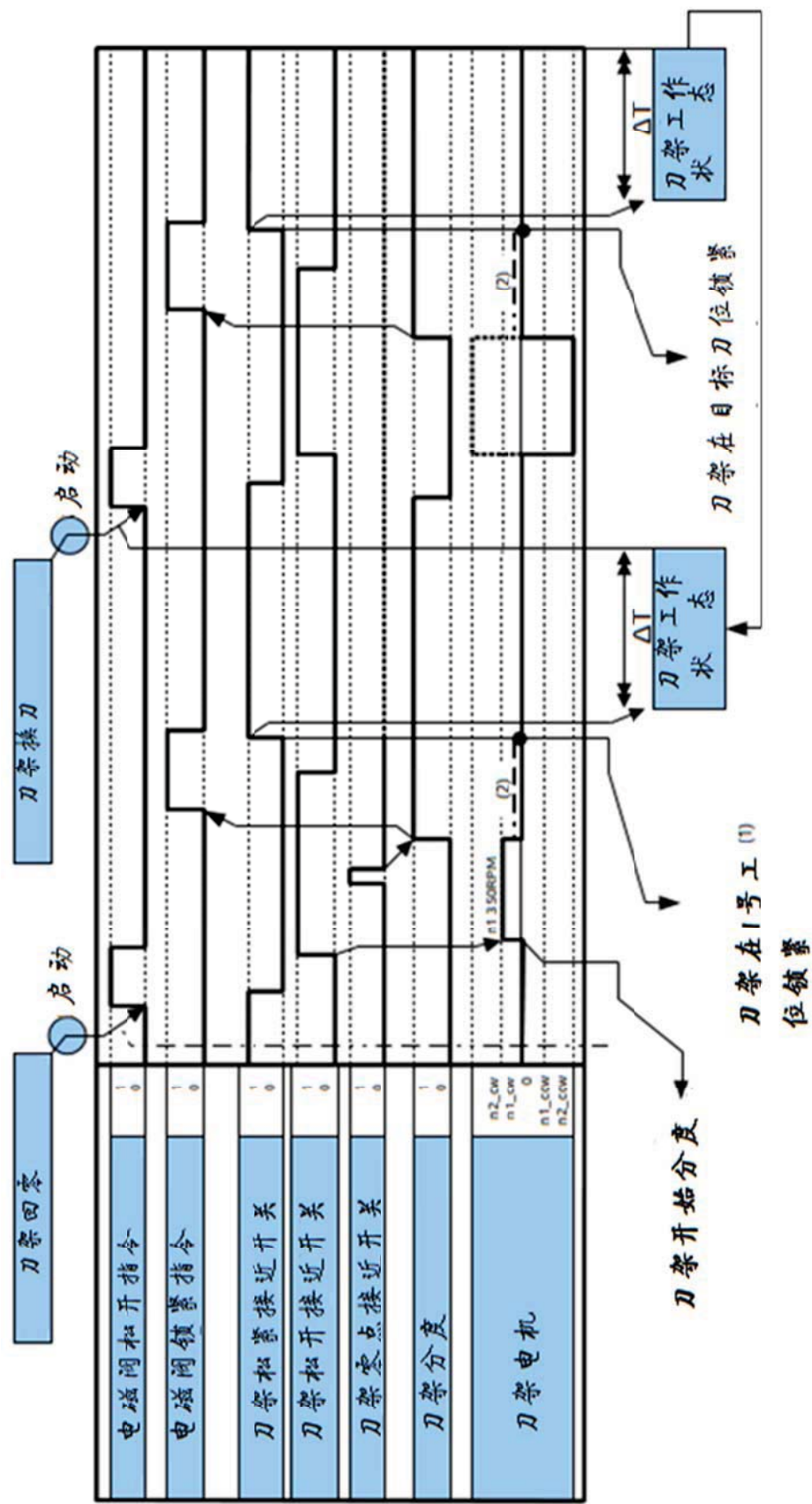
Turret - Drive - Electrovalve connections

刀架-驱动器-电磁阀连接



Command cycle

刀架运行时序图



(1) 隐藏式回零：当刀架处于无序状态时（当开启驱动器电源或复位后）可以直接换刀，这时，电机顺时针缓慢的不停顿的通过机械1号位后到达目标刀位。

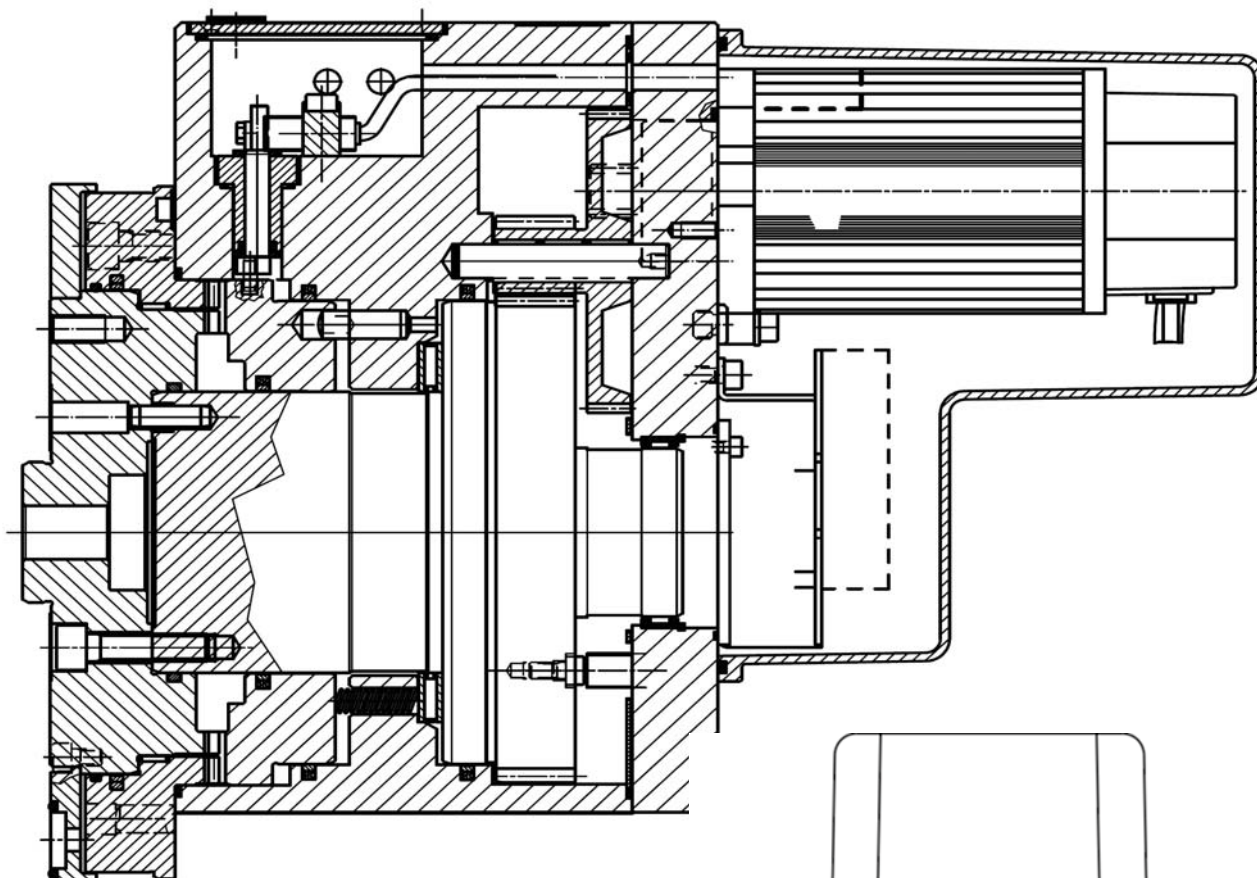
(2) 此时，电机在刀位控制状态

TBH 160 = $\Delta T > 2"$
TBH 200/250 = $\Delta T > 4"$

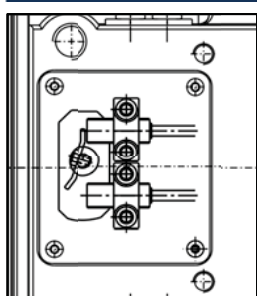


Turret section view

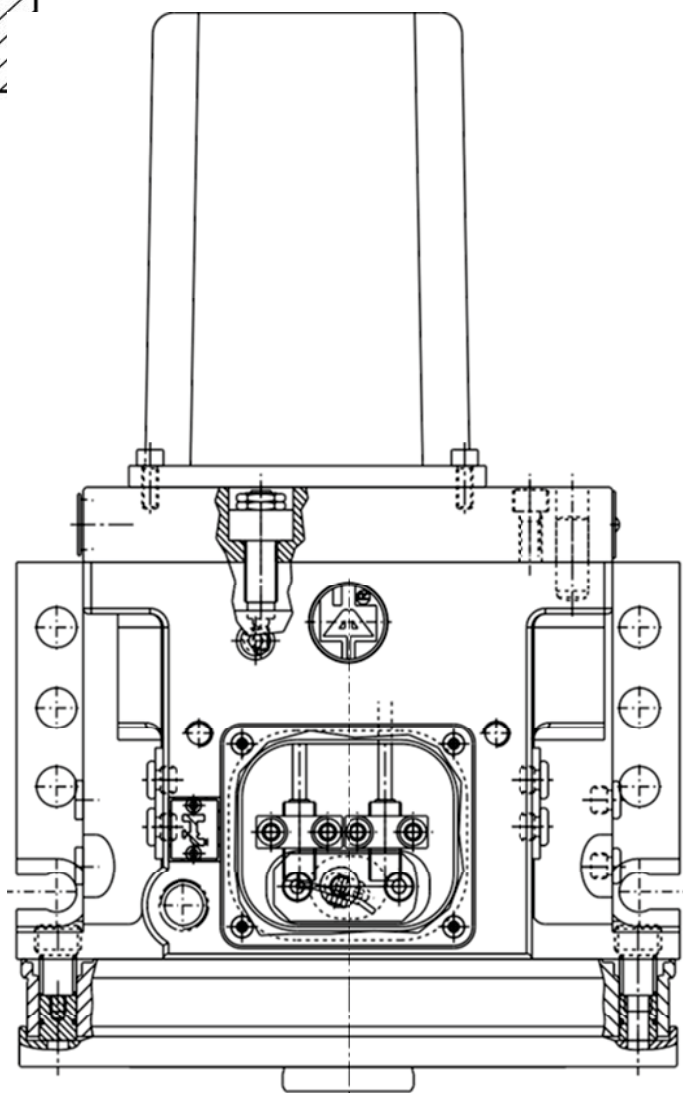
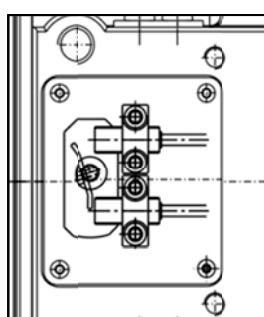
刀架剖面图



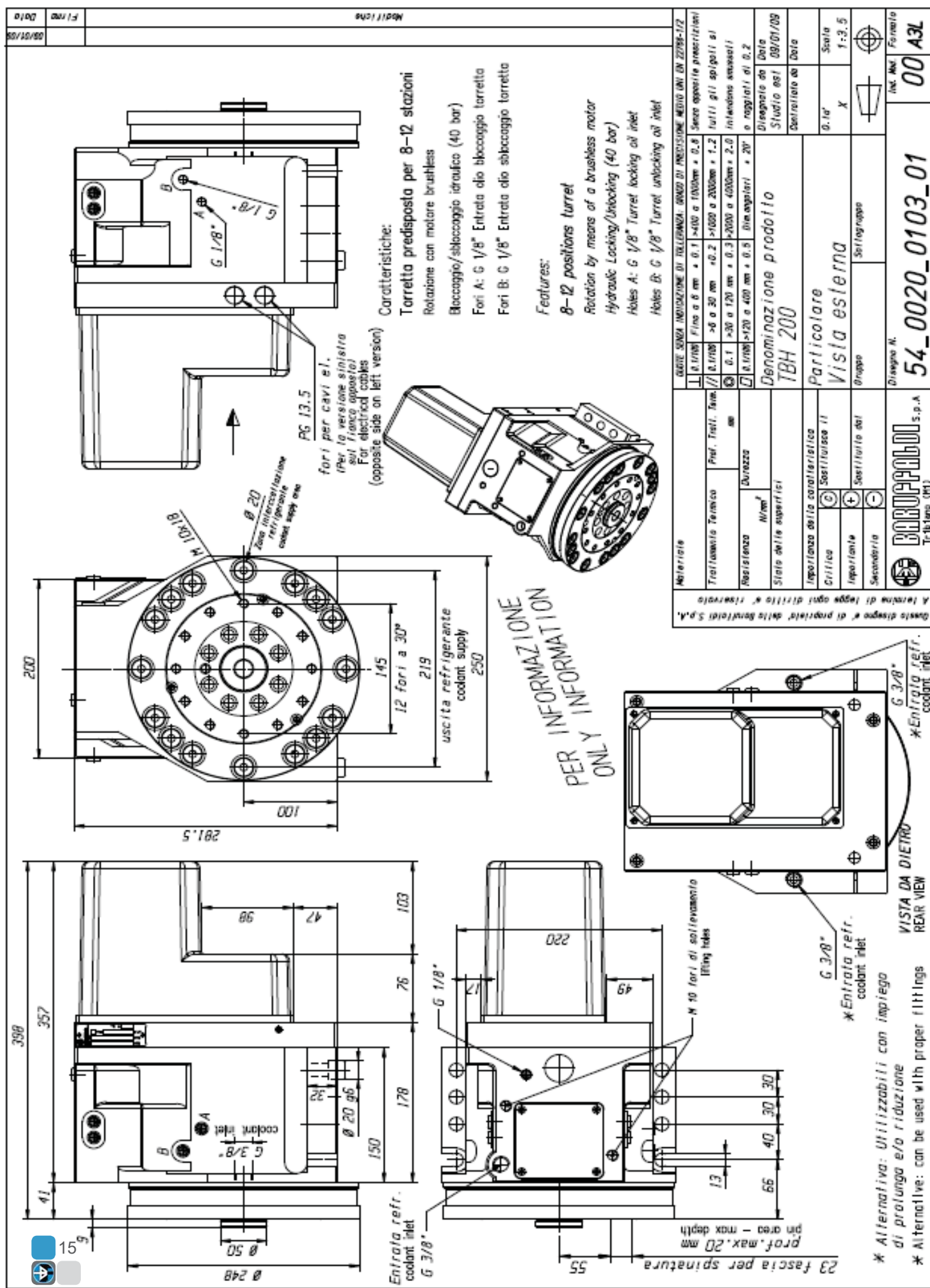
刀架锁紧

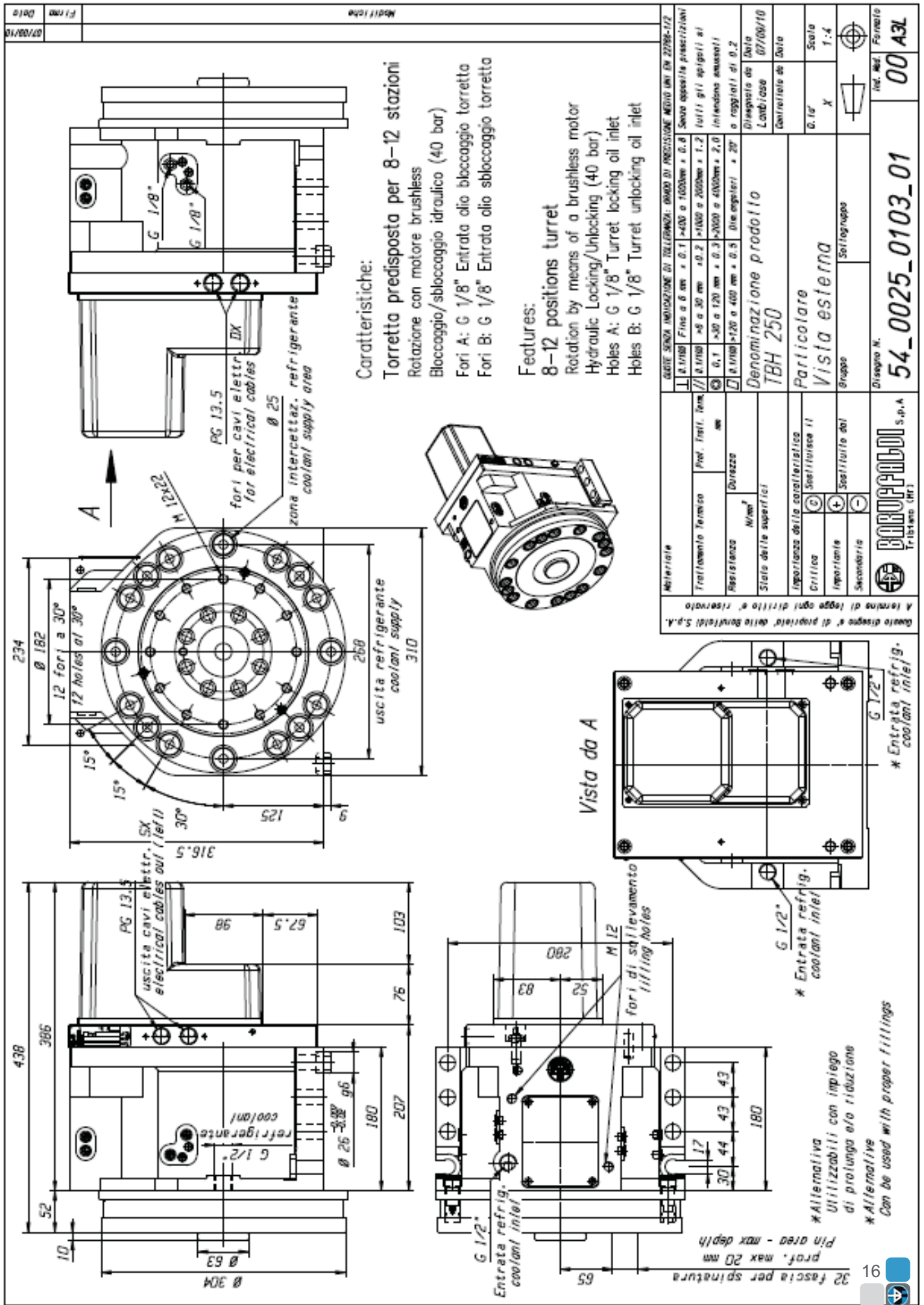


刀架松开



[illegible]





Electromechanical Turrets type TE



电动刀架型号TE系列选型指南



Index

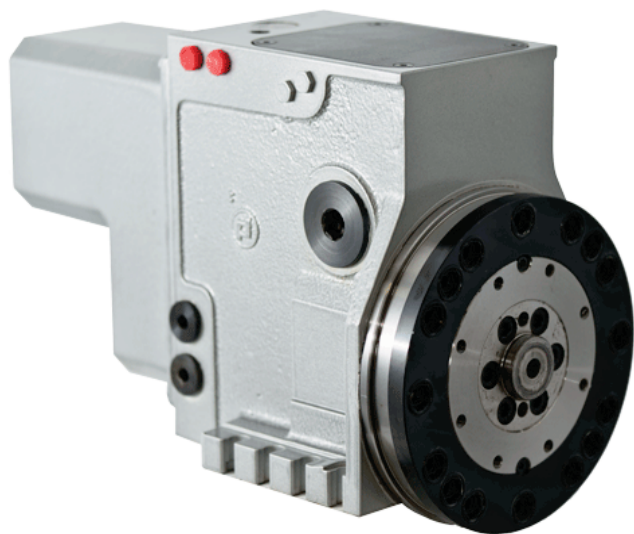
目录

3	简介	<i>Introduction</i>
4	技术参数	<i>Technical data</i>
5	刀架订货号	<i>Order code for turrets</i>
6	刀架的选型 从切线方向的切削力F-F1	<i>Selection of turret As a function of the tangential thrust F-F1</i>
	刀架的选型	<i>Selection of turret</i>
7	从刀架正面轴向的下压力F2 从刀架背面轴向的脱离力F3	<i>As a function of the pressing axial thrust F2 As a function of the lifting axial thrust F3</i>
8	运行时序图	<i>Opertation chart</i>
9	换刀描述	<i>Cycle Description</i>
10	电器元件规格	<i>Electrical component specification</i>
11	电器连接	<i>Electrical connections</i>
12	TE120外形图	<i>External view TE 120</i>
13	TE160外形图	<i>External view TE 160</i>
14	TE200外形图	<i>External view TE 200</i>
15	TE250外形图	<i>External view TE 250</i>



Electromechanical turrets type TE

电动刀架 TE



通过30多年为数控机床设计和制造刀架，我们获取了很多宝贵经验。为此Baruffaldi开发了崭新的电动刀架TE系列来满足市场高要求的产品：

刀架为电动机构操控双向选刀

主要特点

- 非常快的转位速度极小的分度时间
- 锁紧和松开刀架无轴向窜动
- 双向选刀
- 高速高负荷
- 碟簧系统确保刀架在断电时依旧保持锁紧力
- 新型设计刚性极高
- 定位精确
- 维护简单
- 产品规格120-160-200-250
- 可以配备6-8-12工位刀盘



Thanks to the experience reached after more than 30 years activity in the design and production of eletromechanical turrets for the positioning of the tools on CNC lathes, BARUFFALDI has developed new turrets family TE type, this in order to satisfy the always higher request coming from the market.

Turret with totally electromechanical operation both for rotation and locking

Main Characteristics:

- *Very high rotating speed and minimum indexing times*
- *Locking and unlocking without axial movement*
- *Bi-directional rotation*
- *High load capacity in spite of high speed*
- *A spring system ensures the turret's clamping also in absence of electric power*
- *High rigidity, due to the new design*
- *Very accurate positioning*
- *Easy maintenance*
- *Wide range 120,160,200,250.*
- *Possibility to use 6-8-12 position disc*



Technical data

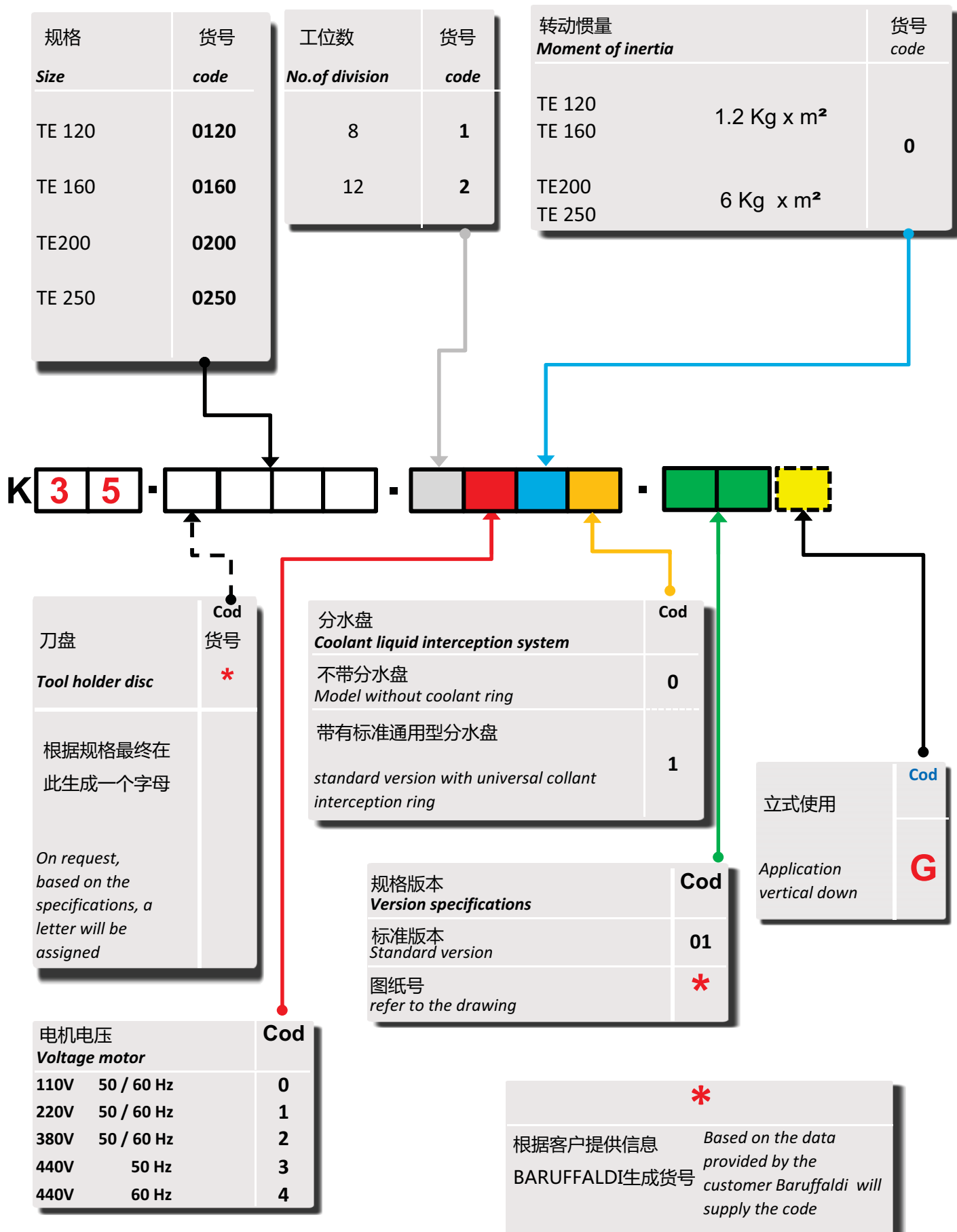
技术参数

规格 Size			TE 120	TE 160	TE 200	TE 250
工位数 No. of divisions			8 - 12	8 - 12	8 - 12	8 - 12
转动惯量 Moment of inertia	Kgm ²		1,2	1,2	6	6
最大切线方向扭矩 Max Tangential torque	Nm		1100	1900	4000	7500
最大下压扭矩 Max Overturning Torque in Pressing Direction	Nm		1200	2100	6000	12000
最大脱离扭矩 Max Overturning Torque in Lifting Direction	Nm		700	1600	3500	6500
最大不平衡扭矩 Max out of balance torque	Nm		10	15	40	60
定位精度 Positioning accuracy	Gradi Deg.		± 4"	± 4"	± 4"	± 4"
重复定位精度 Accuracy of Repeatability	Gradi Deg.		± 1,6"	± 1,6"	± 1,6"	± 1.6"
分度时间50HZ (松开+旋转+锁紧) IndexingTime 50 Hz (open + rotation + close)	30°	sec	0,36	0,36	0,45	0,45
	45°	sec	0,45	0,45	0,57	0,57
	180°	sec	1,25	1,25	1,7	1,7
仅分度时间50HZ Only rotation time 50 Hz	30°	sec	0,18	0,18	0,24	0,24
	45°	sec	0,24	0,24	0,36	0,36
分度频率 Indexing Frequency	n/h		800	800	800	800



Order code for turret Type TE

TE刀架订货号





Selection of turret

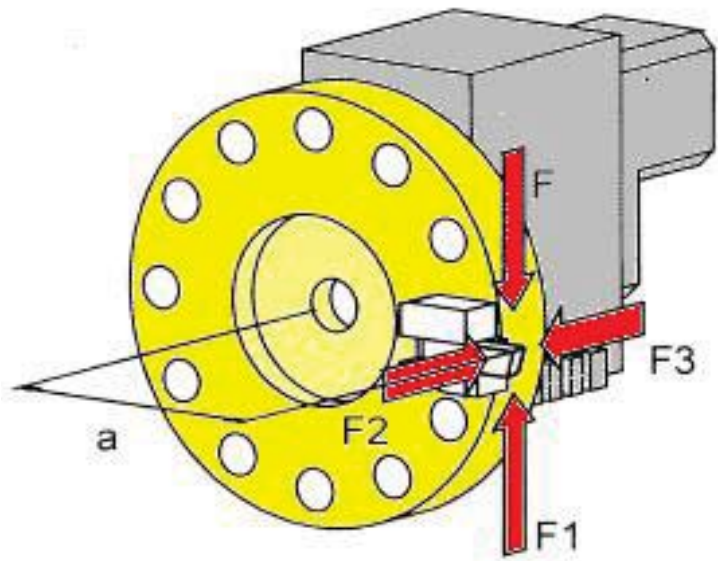
刀架选型

根据下图所示刀盘的受力情况。
固定刀座装配数量
请阅生产商的参数表
刀架的切削能力请参看第4页

Following diagrams refer to forced applied to tool-holder disc.

For loading capacity of static tool-holders please refer to manufacturer's data sheet.

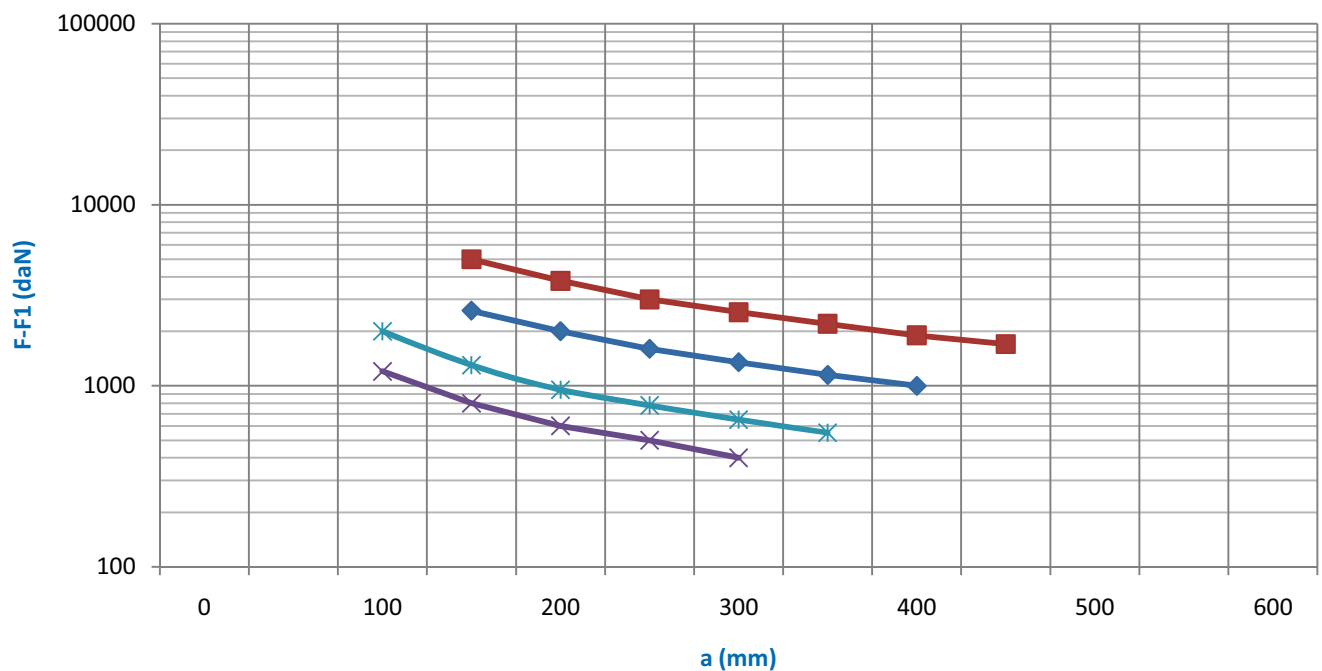
For turret operating capabilities please refer to section " technical data " page 4.



从切线方向的切削力F-F1

As a function of the tangential thrust F-F1

**tangenziale
tangential**



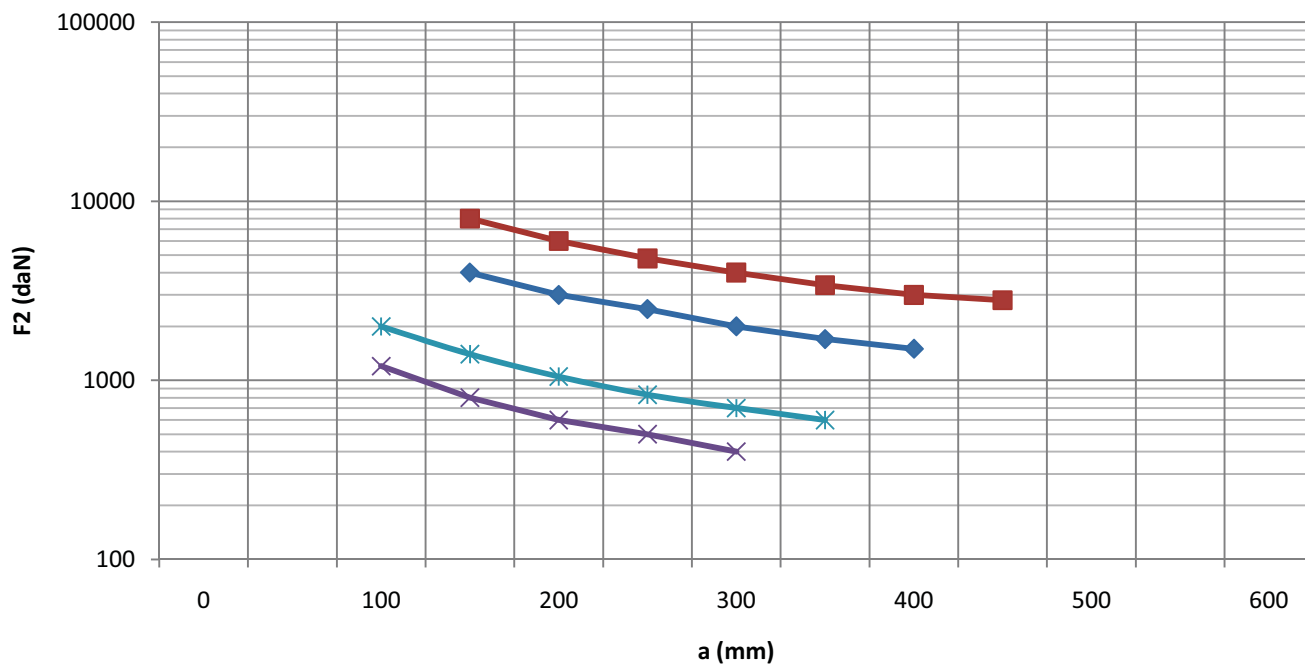
—▲— TE 120 —*— TE 160 —◆— TE 200 —■— TE 250 —●— —+— —



从刀架正面轴向的下压力F2

As a function of the pressing axial thrust F2

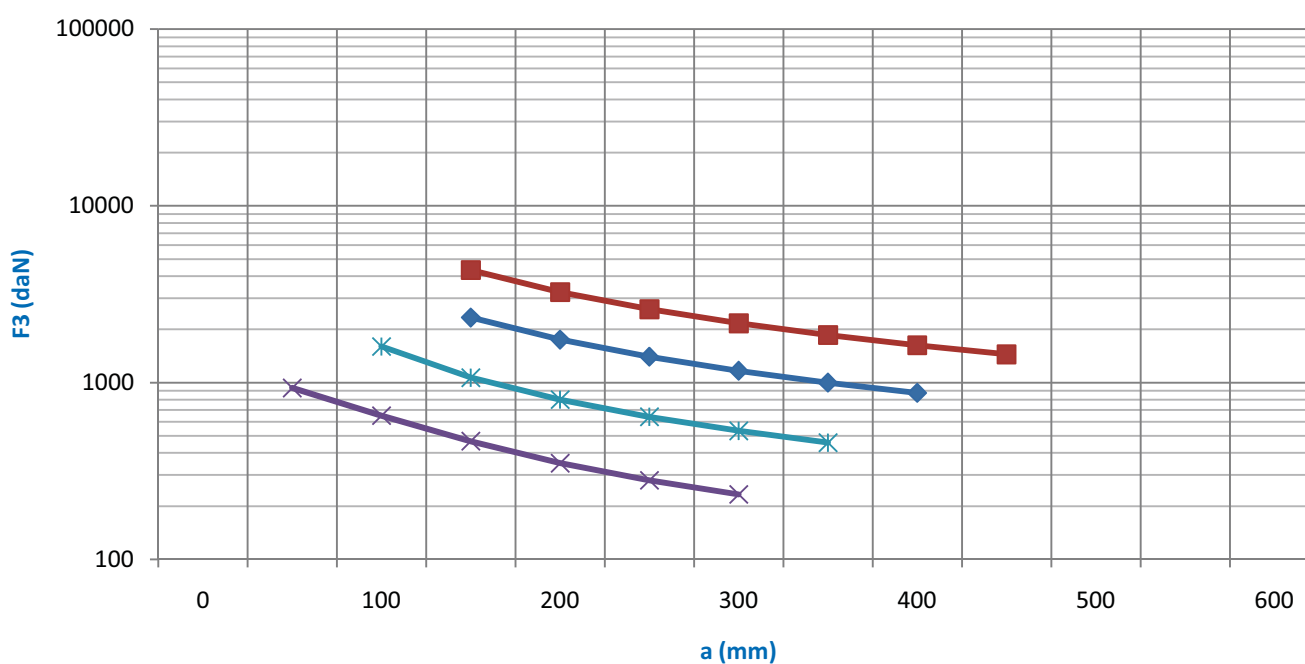
a premere
to push



从刀架背面轴向的脱离力F3

As a function of the lifting axial thrust F3

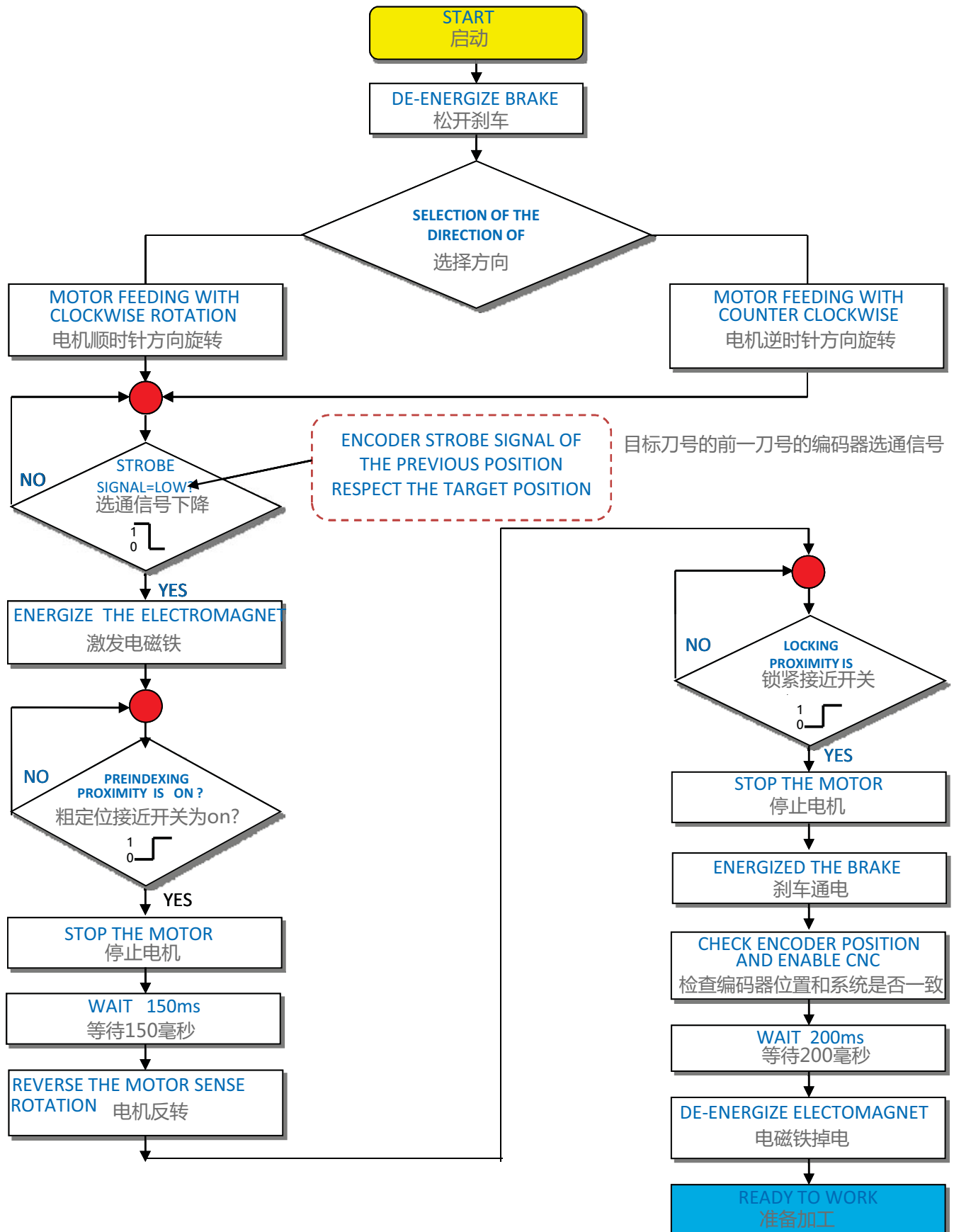
a sollevare
to lift

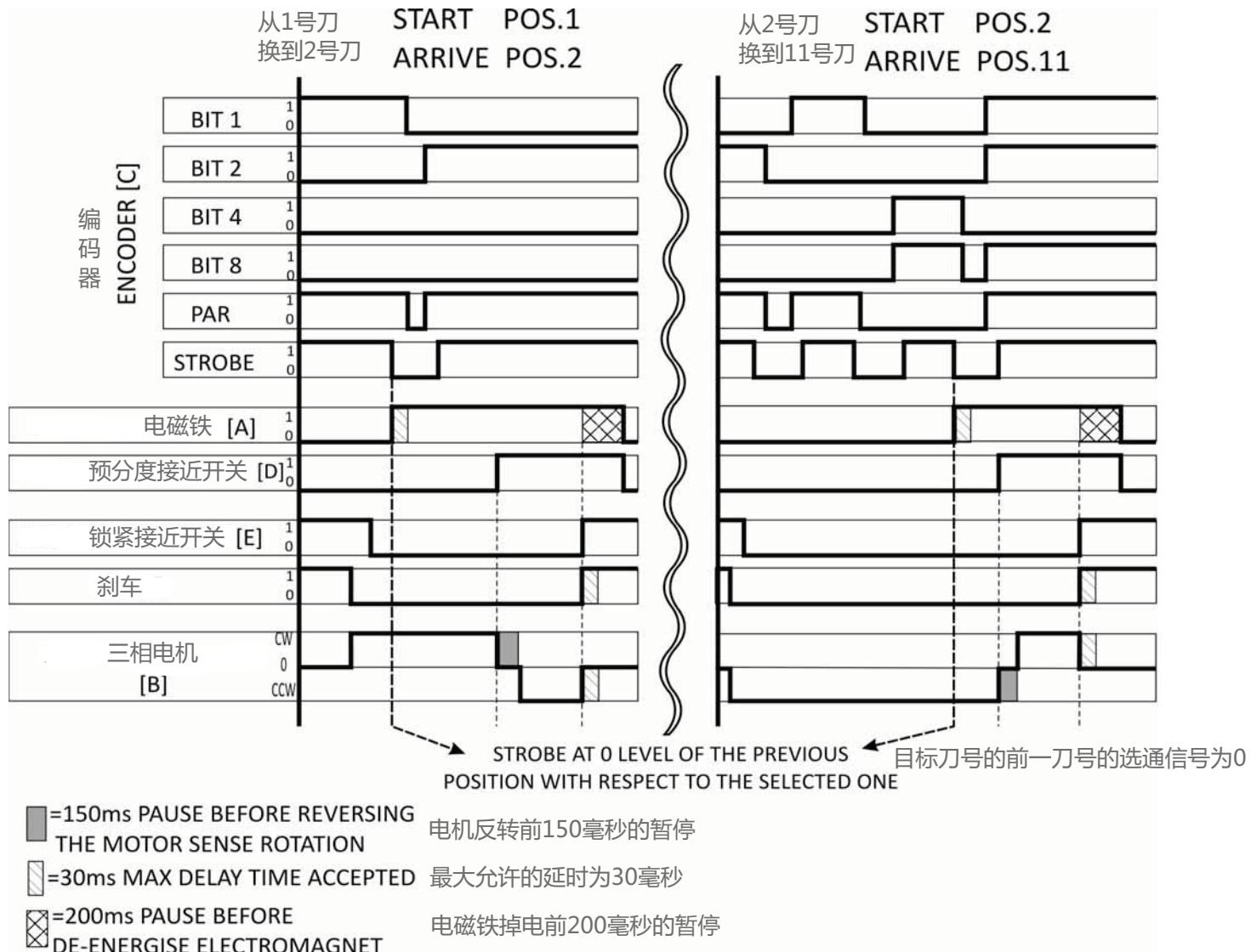




Operation chart

运行时序图





- 上述操作动作是指从1号工位顺时针换到2号工位（面对刀盘）以及从2号工位逆时针换到11号工位的时序
- 首先刹车掉电，电机按照选定的方向旋转。等到被选工位选通信号下降到0线时，尽可能快的激发预分度电磁铁（最大允许的延时内）
- 随着电磁铁被激发，等预分度接近开关的信号出现后，预分度定位销别停刀架的分度。根据这个信号，电机立刻停止转动并在150毫秒暂停后反转
- 等到锁紧接近开关出现后，尽可能快的在电机停止前将刹车通电（在最大允许的延时值内）
- 这个时候安全检查完毕系统发出认可信号，200毫秒后，电磁铁掉电

The above operation diagram shows the sequence to be followed in order to move from position 1 to position 2, in clockwise rotation (with the turret tool-holder disk in front), and from position 2 to position 11 in anti-clockwise rotation.

The brake is first de-energised and the motor feed for rotation in the direction selected. Wait until the STROBE signal of the requested one, goes down to "zero" level. Energising the pre-indexing electromagnet as quickly as possible (within the maximum permitted delay time),

With the electromagnet energised, the pre-indexing proximity switch signal is awaited, which confirms that rotation has been halted by means of the index key. Upon reception of this signal the motor is immediately halted and the rotation sense is reversed after 150ms pause.

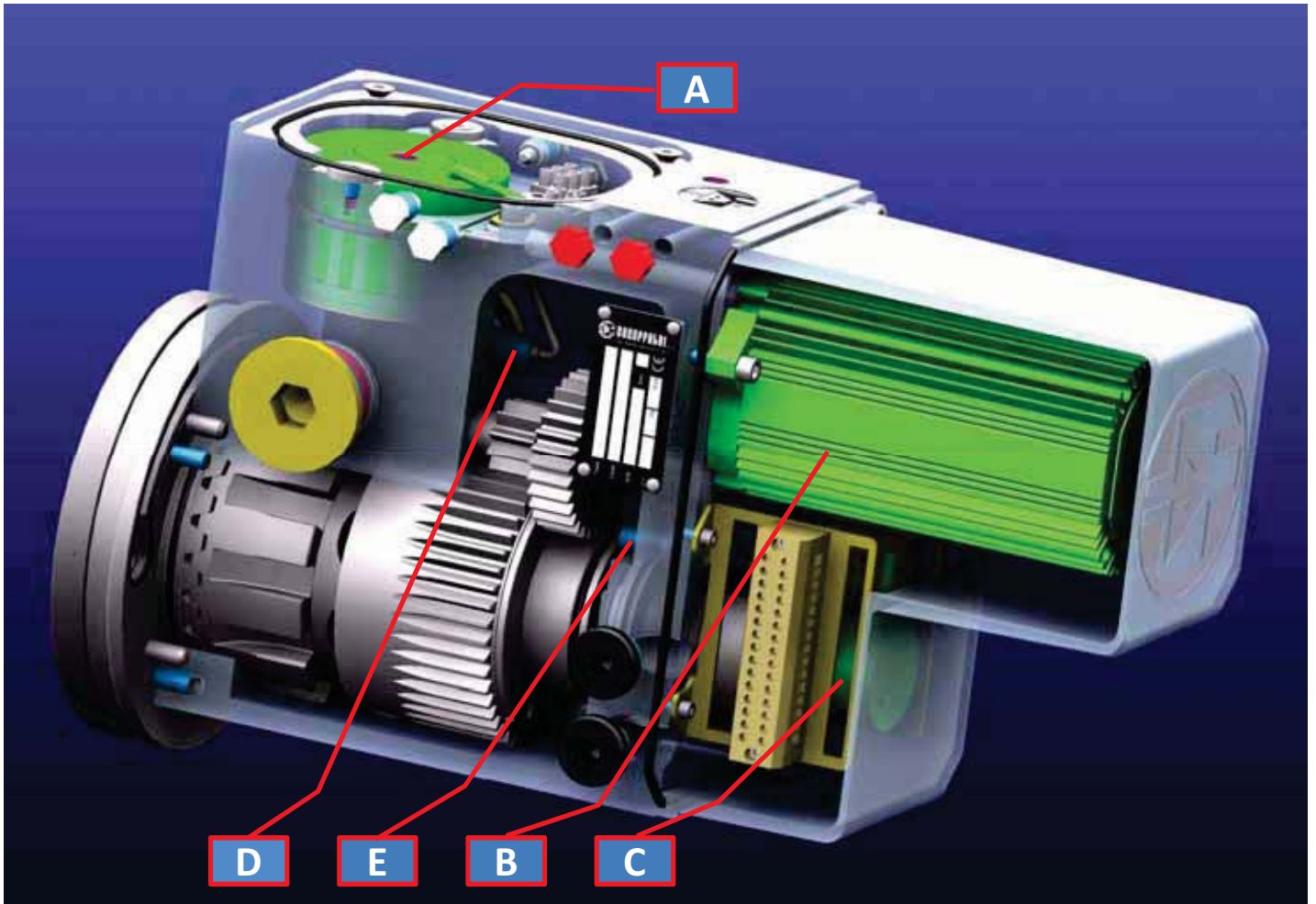
The locking proximity switch signal is then awaited, before halting the motor as rapidly as possible and energising the brake (within the maximum permitted delay time)

A safety check can be carried out at this point and consent for machining can be given, followed by electromagnet de-energising after 200ms pause

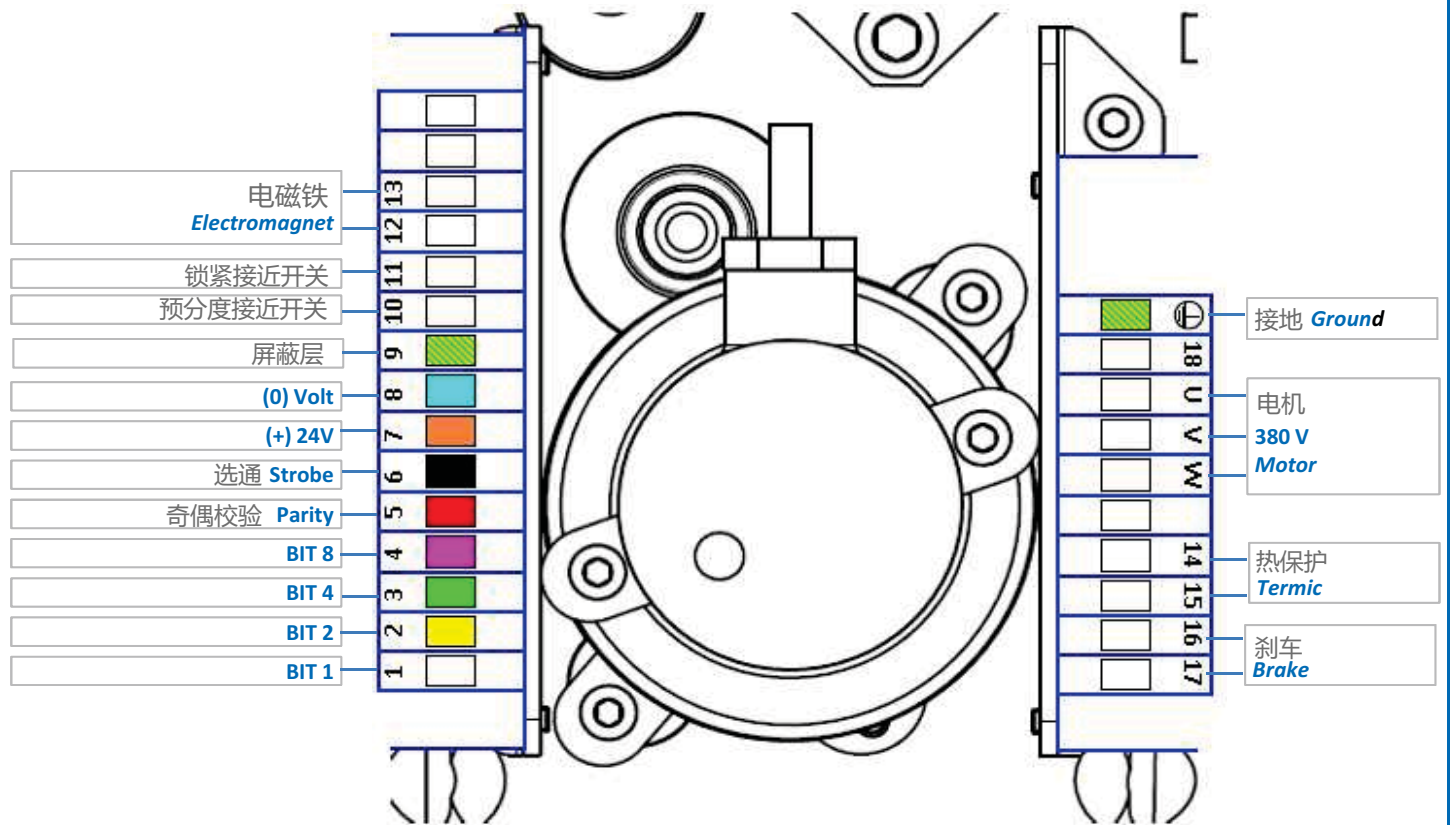


Electrical component specification

电器元件规格



- A** 电磁铁 : 24 Vdc - 65 W - ED 50%
Electromagnet : 24 Vdc - 65 W - ED 50%
- B** 三相电机 : 标准的为380v 50Hz带热保护开关
Three-phase motor : 380V 50Hz other voltages on request, temperature probes with thermostatic switch NC
- C** 编码器 : 24Vdc 二进制编码带奇偶校验和选通输出PNP
Encoder : 24V dc Binary code with Parity and strobe control outputs PNP.
 Protected against polarity inversions and short-circuits
- D** 预分度接近开关 : 24Vdc 输出PNP-NO
Pre index Proximity : 24 Vdc Outputs PNP-NO -Protected against polarity inversions and short-circuits
- E** 锁紧接近开关 : 24Vdc 输出PNP-NO
Locking Proximity : 24 Vdc Outputs PNP-NO -Protected against polarity inversions and short-circuits



编码器编码表

Encoder code table

工位 Position	A	B	C	D	奇偶 Parity	选通 Strobe
1	●				●	●
2		●			●	●
3	●	●				●
4			●		●	●
5	●		●			●
6		●	●			●
7	●	●	●		●	●
8				●	●	●
9	●			●		●
10		●		●		●
11	●	●		●	●	●
12			●	●		●

- 输入电源24V直流± 10%
- PNP输出 (最大50毫安)二进制码
- 奇偶校验和选通信号
- 反向极性保护
- 输出短路保护
- 编码器和接近开关需使用屏蔽电缆
以免不必要的干扰例如来自电机的干扰



屏蔽线皮必须接到电箱外壳上

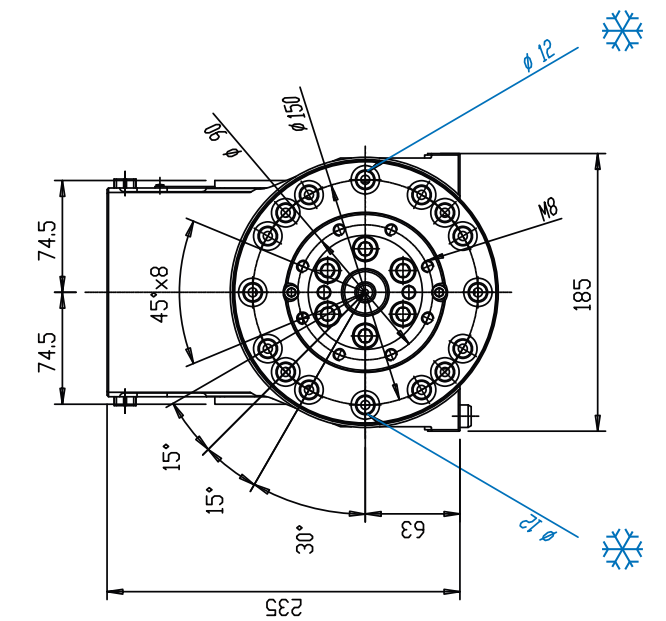
- Power supply DC 24 Volt +/- 10 % Ripple 10 %
- PNP Outputs (max. load 50 mA) in BINARY code
- PARITY Check and STROBE signal
- Reverse polarity protected
- Output short-circuit protected
- The use of shielded cable (8/10 poles) for Encoder and proximity is required. This is necessary to ensure against noise interference etc. from the electric motor.



Shield must be connected to the electric box.



TE 120

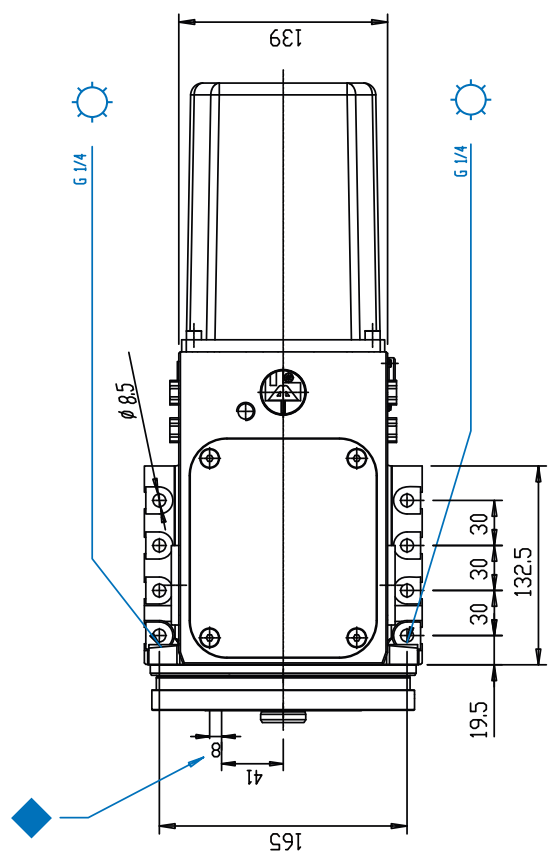
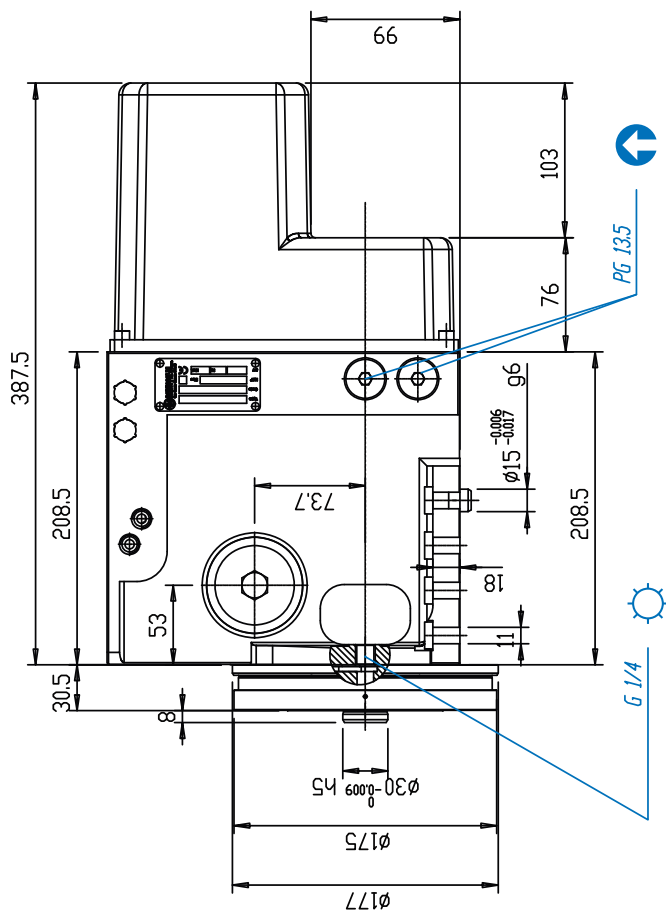


Ingresso refrigerante
Coolant inlet

Uscita refrigerante
Coolant outlet

Uscita cavi elettrici
Outlet for supply cables

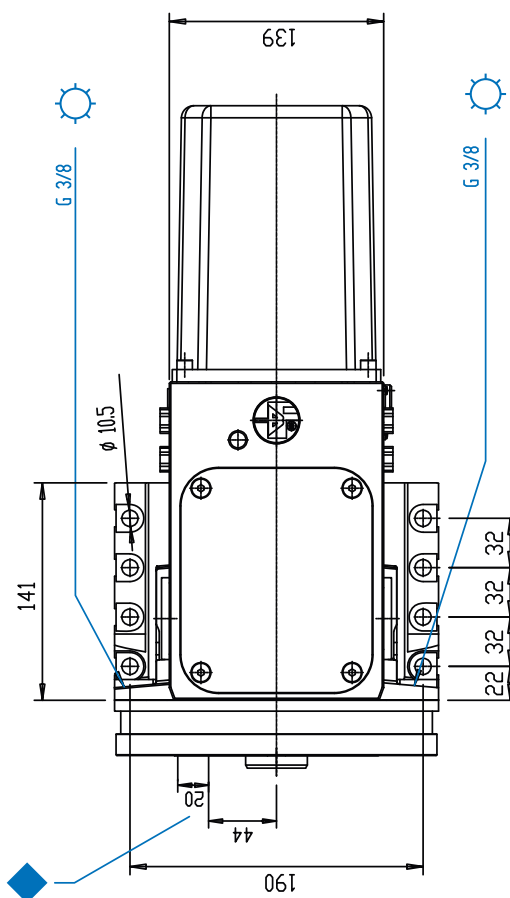
Superfici su cui è possibile eseguire la spinatura
Area in which is possible to drill holes for the pins





TE160外形图

TE 160



Ingresso refrigerante
Coolant inlet

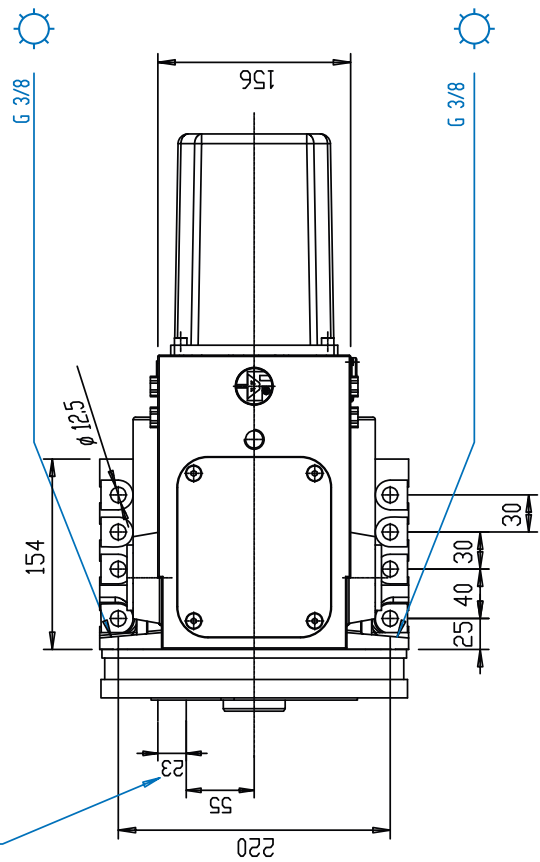
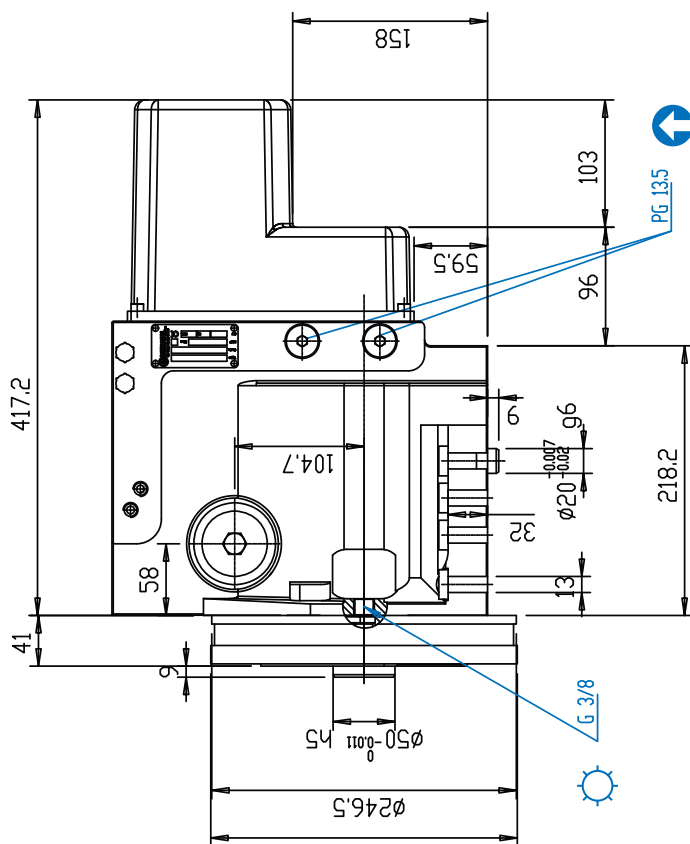
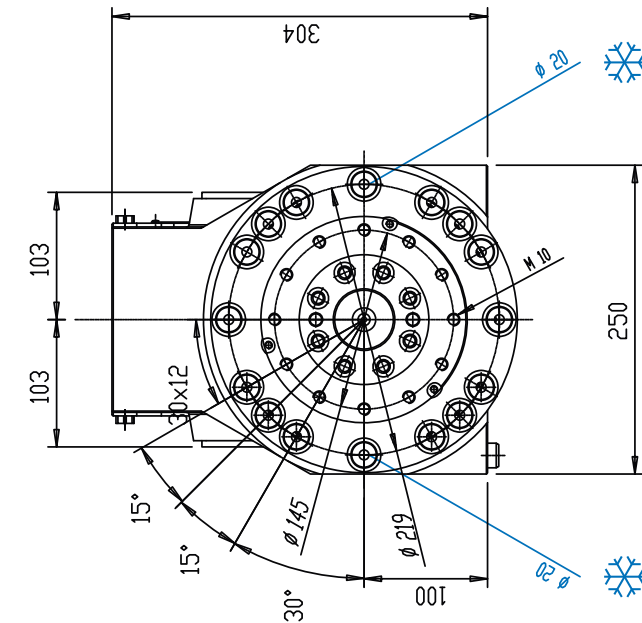
Uscita refrigerante
Coolant outlet

Uscita cavi elettrici
Outlet for supply cables

Superfici su cui è possibile eseguire la spinatura
Area in which is possible to drill holes for the pins



TE 200



Ingresso refrigerante
Coolant inlet



Uscita refrigerante
Coolant outlet



Uscita cavi elettrici
Outlet for supply cables



Superfici su cui è possibile eseguire la spinatura
Area in which is possible to drill holes for the pins



Electromechanical Turrets type TAN



立式电动刀架TAN系列选型指南



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7	运行时序	<i>Operating sequence</i>
8	运行图	<i>Operation diagram</i>
9	电器连接	<i>Electrical connections</i>
10	冷却液阀	<i>Coolant valves</i>
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14	TAN210/4工位外形图	<i>Overall dimensions TAN 210/4 PS</i>
15	TAN210/6工位外形图	<i>Overall dimensions TAN 210/6 PS</i>
16	TAN265/4工位外形图	<i>Overall dimensions TAN 265/4 PS</i>
17	TAN265/6工位外形图	<i>Overall dimensions TAN 265/6 PS</i>
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19	TAN340/6工位外形图	<i>Overall dimensions TAN 340/6 PS</i>
20	TAN440/4工位外形图	<i>Overall dimensions TAN 440/4 PS</i>
21	TAN440/6工位外形图	<i>Overall dimensions TAN 440/6 PS</i>
22	特殊应用	<i>Special Applications</i>
23	附件	<i>Accessories</i>
24	TAN刀架订货所需信息	<i>Needed informations to order TAN</i>
25		
26	加工位置	<i>Tabella lati di lavoro</i>



Electromechanical turrets type TAN

电动刀架 TAN



TAN series turrets are built by a fixed basis and a rotating head both of hardened and grinded steel. A single motor commands the phases of release, of rotation of positioning and locking.

TAN series turrets can be mounted with the axis in horizontal, vertical or slanting position. It is possible furthermore to select any work station without necessity of stopping in the intermediate stations.

Turrets are normally built for carrying 4 tool, as per DIN norms 3425; on demand can be supplied with a different number of faces and every face is supplied with a slot for the positioning of the tools (presetting), solution which allows to reduce the dead times necessary for the presetting of the tools.

选配
Available on demand



TAN刀架是由经过热处理的安装基座和旋转体共同组成的。

单电机控制刀架松开，旋转分度和锁紧
TAN系列刀架可以水平安装或者立式安装
选择加工工位时无需在中间工位停顿
刀架通常为四工位DIN norms3425，
如果需要带有刀具定位的键槽，这样可以节省更换刀具我们可以提供不同的工位数量，每个工位允许所需要的停机时间。

BA93/EL820控制板

BA93/EL820控制板控制TAN刀架分度和信号处理
他掌控刀架和系统之间的通讯，时序和报警信号

- 微处理器内置Eprom存储器，运行频率8MHz
- 可以操控多达31工位
- 控制板上的按钮可以自动实现刀架复位
- 数显提供刀架工位数量、刀架型号和必要的计时
- 显示报警号码
- 通电自检
- 保护与刹车和电磁铁连接的继电器的高发故障：
- 短路和永久性的过载

Electronic card type BA 93/ EL 820

The electronic card type BA 93/EL 820 is provided for indexing & management of the Baruffaldi turrets serie TAN.

It handles all communications, timing and alarm signals between the turret and the cnc.

- Microprocessor with built in Eprom, running at 8 MHz
- Possibility to manage up to 31 indexing positions
- Automatic turret resetting command by button on card
- Dip-switch settings for turret positions number, selection of turret type and necessary timing
- Fixed and codified alarm display
- Autotest on power up
- Protections against high frequency troubles, on relay connections for Brake and Electromagnet, short circuit and permanent overload.



Technical data

技术参数

规格 Size		TAN 160	TAN 210	TAN 265	TAN 340	TAN 440
工位数 No. Of divisions		4	4	4 - 6	4 - 6	4 - 6 - 8
转动惯量 Moment of inertia of masses to be carried	Kgm ²	1	3	8	21	55
最大可携带刀具重量 Maximum permissible weight to be carried by turret	Kg	35	75	120	220	320
最大切线方向扭矩 Max Tangential torque	Nm	1100	1800	3600	12000	22000
最大不平衡扭矩 Max out of balance torque on horizontal axis	Nm	8	35	130	200	400
定位精度 Indexing accuracy	Gradi Deg.	± 6"	± 6"	± 6"	± 6"	± 6"
重复定位精度 Accuracy of Repeatability	Gradi Deg.	± 2"	± 2"	± 2"	± 2"	± 2"
松开和抬起时间 Unlocking and lift time	sec	0,28	0,35	0,50	0,70	0,80
旋转一周时间 Time taken for one revolution	sec	1,66	4	5	7,5	10
下落和锁紧时间 Lowering and locking time	sec	0,82	0,85	1	1,4	1,6
电机电源频率50/60Hz Supply voltage for motor 50/60 Hz	V	110	110	110	110	110
		220	220	220	220	220
		380	380	380	380	380
		400	400	400	400	400
刹车所需功率 Power requirements for brake	W	4,4	3,6	6,8	6,8	6,8
刹车所需电压 Power requirements for brake	V	24	24	24	24	24
刀架重量 Turret's total weight	Kg	31	62	116	250	430





Order code for turret Type TAN

TAN刀架订货号

型号	工位数	不带阀 (标准) 刀座不带内冷系统	带阀 刀座带有内冷系统
Type	number of Positions	Without valve (STANDARD) without coolant system through the tool holder	With valve with coolant system through the tool holder
TAN 120 *	4	6722	X
TAN 160	4	5951	6922
TAN 210	4	5998	6923
TAN 265	4	5999	6924
TAN 265	6	6555	6925
TAN 340	4	4782	6718
TAN 340	6	6926	6772
TAN 440	4	6719	4777
TAN 440	6	6776	6775
TAN 440	8	6935	6972

分度数 number of Divisions	货号 CODE
4	6
5	A
6	0
8	1
12	2



电机频率 Motor tension and frequency	CODE
110V 50HZ	0
110V 60HZ	1
220V 50HZ	4
220V 60HZ	6
380V 50HZ	2
380V 60HZ	8
440V 50HZ	5
440V 60HZ	3
480V 60HZ	7

应用 Applications	CODE
标准 通过选择开关分度 Standard Positioning with selector switch	0
TANE * 通过编码器分度 Positioning control with encoder	2
双向选刀 * Bidirectional *	8

特殊的应用可以定制具体联系销售部门

Are furthermore available on demand, special applications, for information and code contact the sales office

* 特殊电机 * Special motor	CODE
400V 50HZ	G
400V 60HZ	E
415V 50HZ	A
460V 60HZ	B
500V 50HZ	C
500V 60HZ	F
575V 60HZ	H

选配 Optional	CODE
不带雷尼绍测量 Without-prearrangement for RENICHAW	0
携带雷尼绍测量 * With-prearrangement for RENICHAW	1

* 特殊的应用可定制

Special applications possibly available only on demand



Selecion of turret

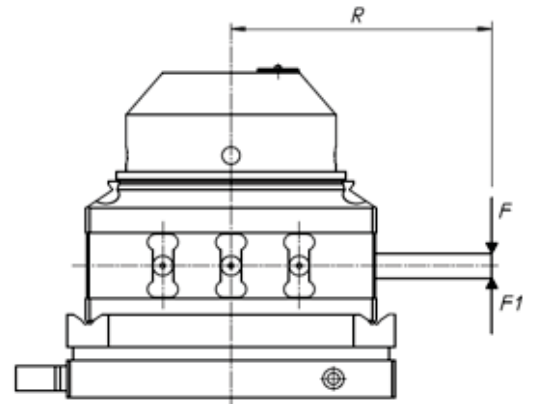
刀架的选择

作用在刀具上最大下压力 (F) 距离刀架中心 (R)

作用在刀具上最大脱离力 ($F1$) 距离刀架中心轴线(R)

Max pushing force on tool (F) vs. distance from turret axis (R).

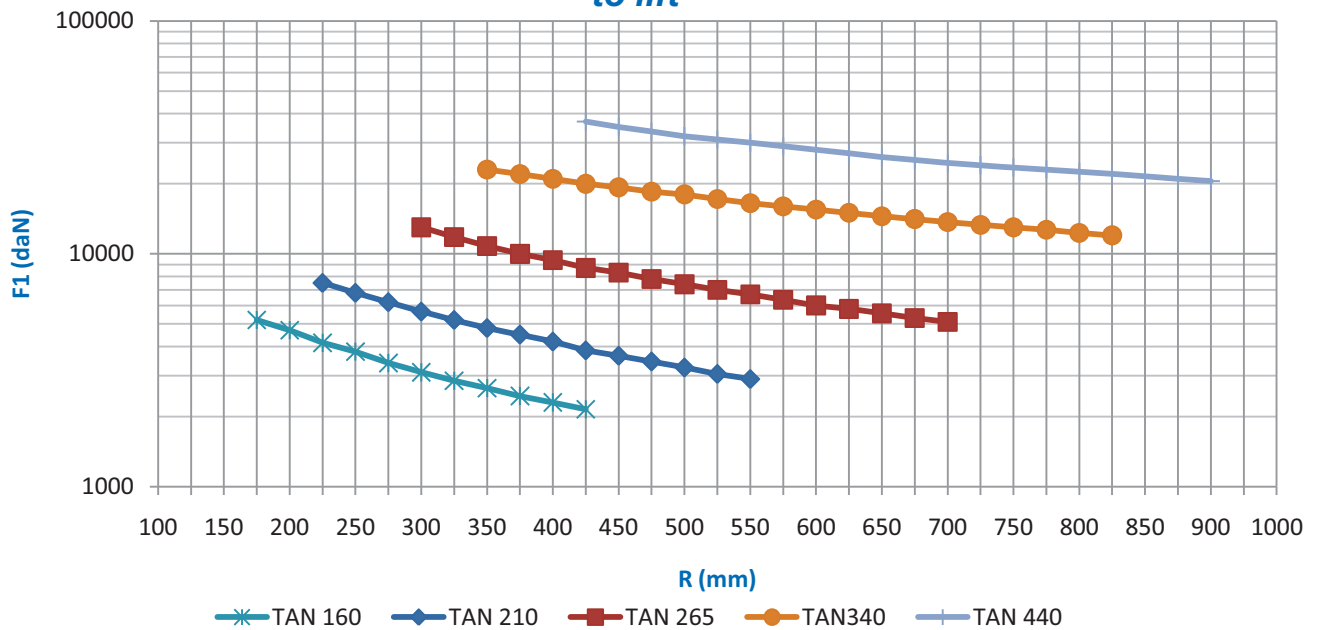
Max lifting force on tool ($F1$) vs. distance from turret axis (R).



F 单位 (daN) 1daN=10N

脱离力

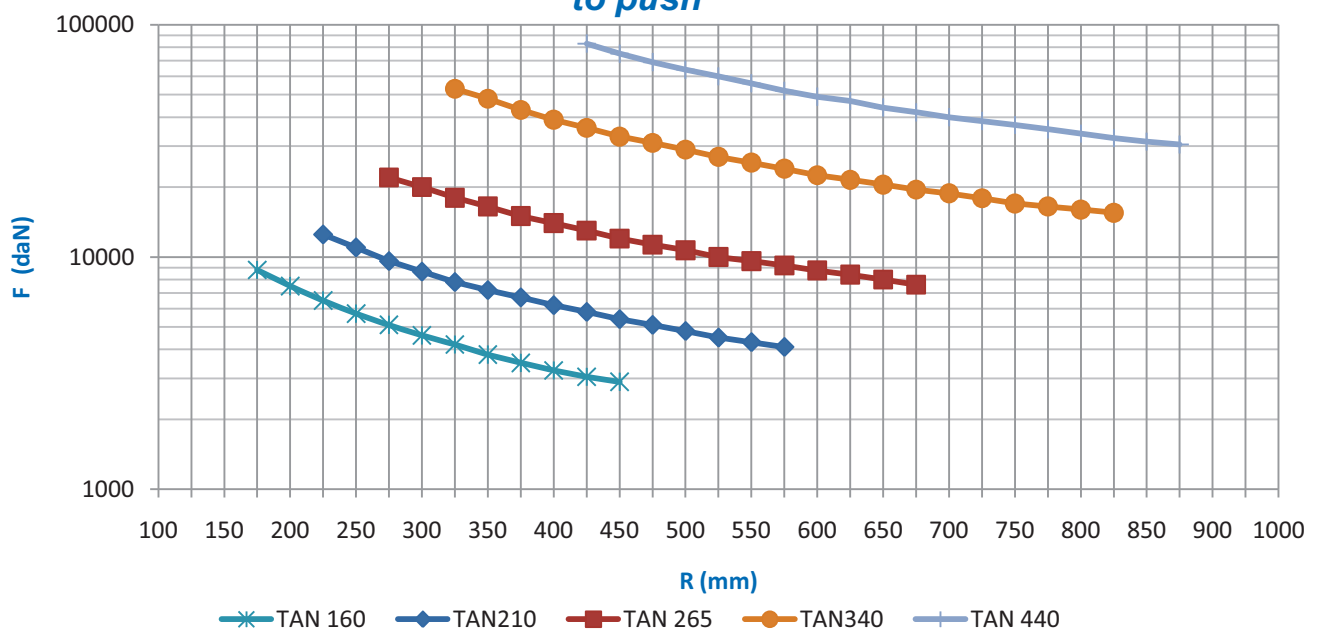
to lift



F 单位 (daN) 1daN=10N

下压力

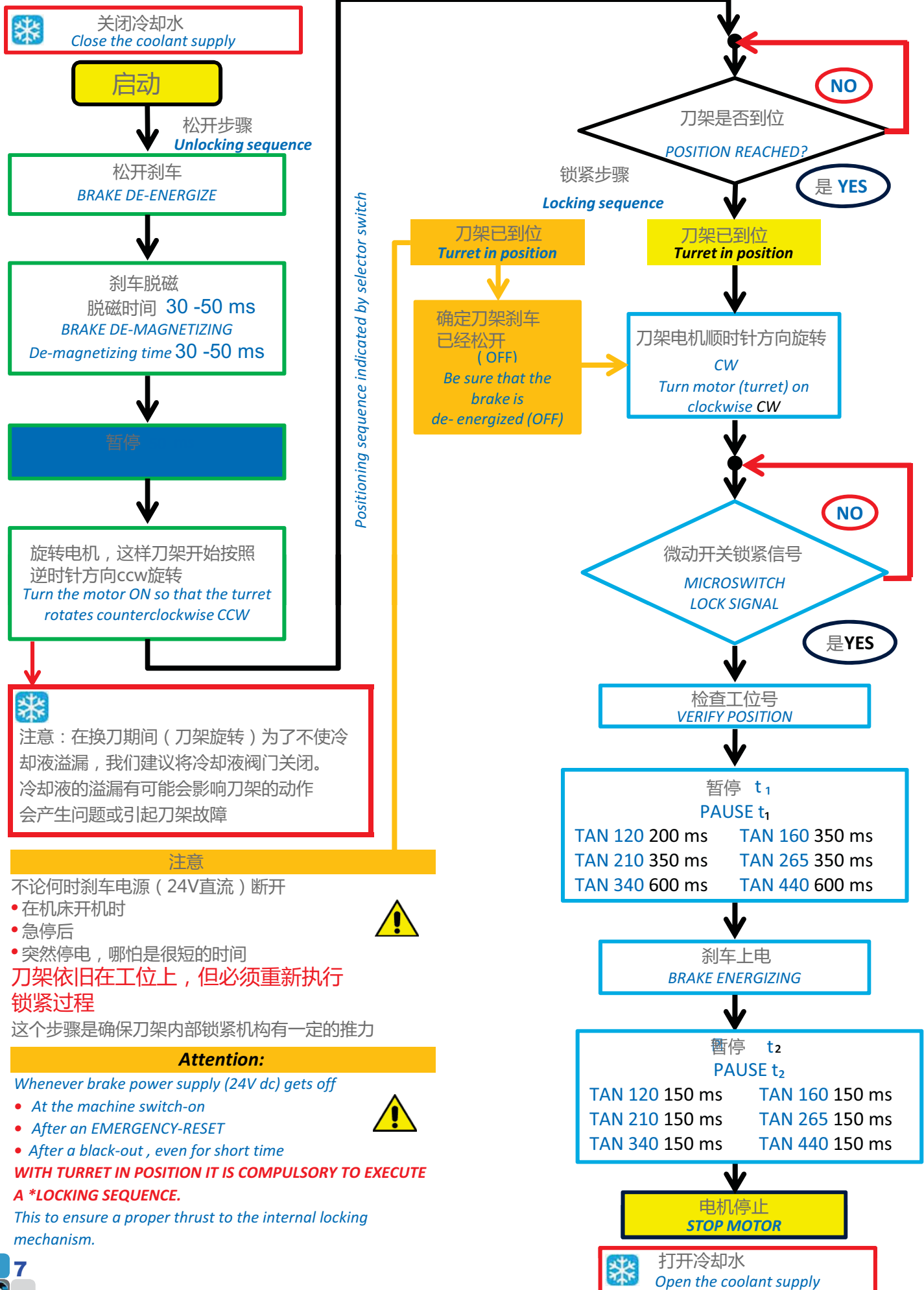
to push





Operation chart

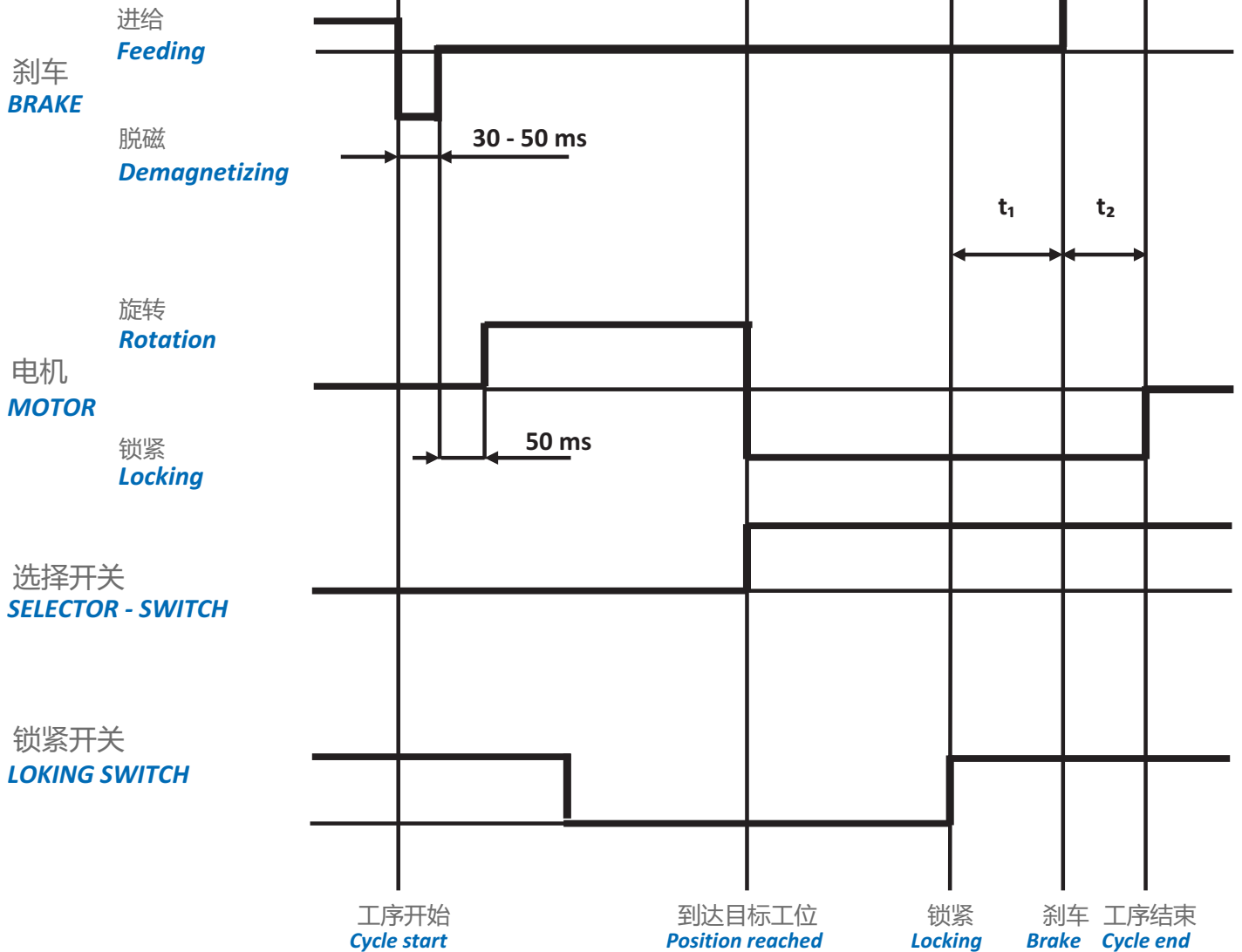
运行时序图





Operation diagram

运行图



工序描述

- 为了刀架能正确的换刀一定要按照上述运行图的步骤来执行
- 刹车首先失电并脱磁，经过50毫秒的停顿后进给电机逆时针旋转（面对刀架顶部）
- 等待选择开关的目标刀位信号（见电器连接页中的彩色接线组合）然后反转电机
- 等待锁紧微动开关信号出现后，开始暂停t₁这个暂停时间，能完全的锁紧刀架

在这个暂停结束时刹车必须通电

开始第二个暂停t₂，允许刹车锁住所有的运动部件，之后停止电机

- 刹车必须始终上电直到新的换刀开始

Cycle description

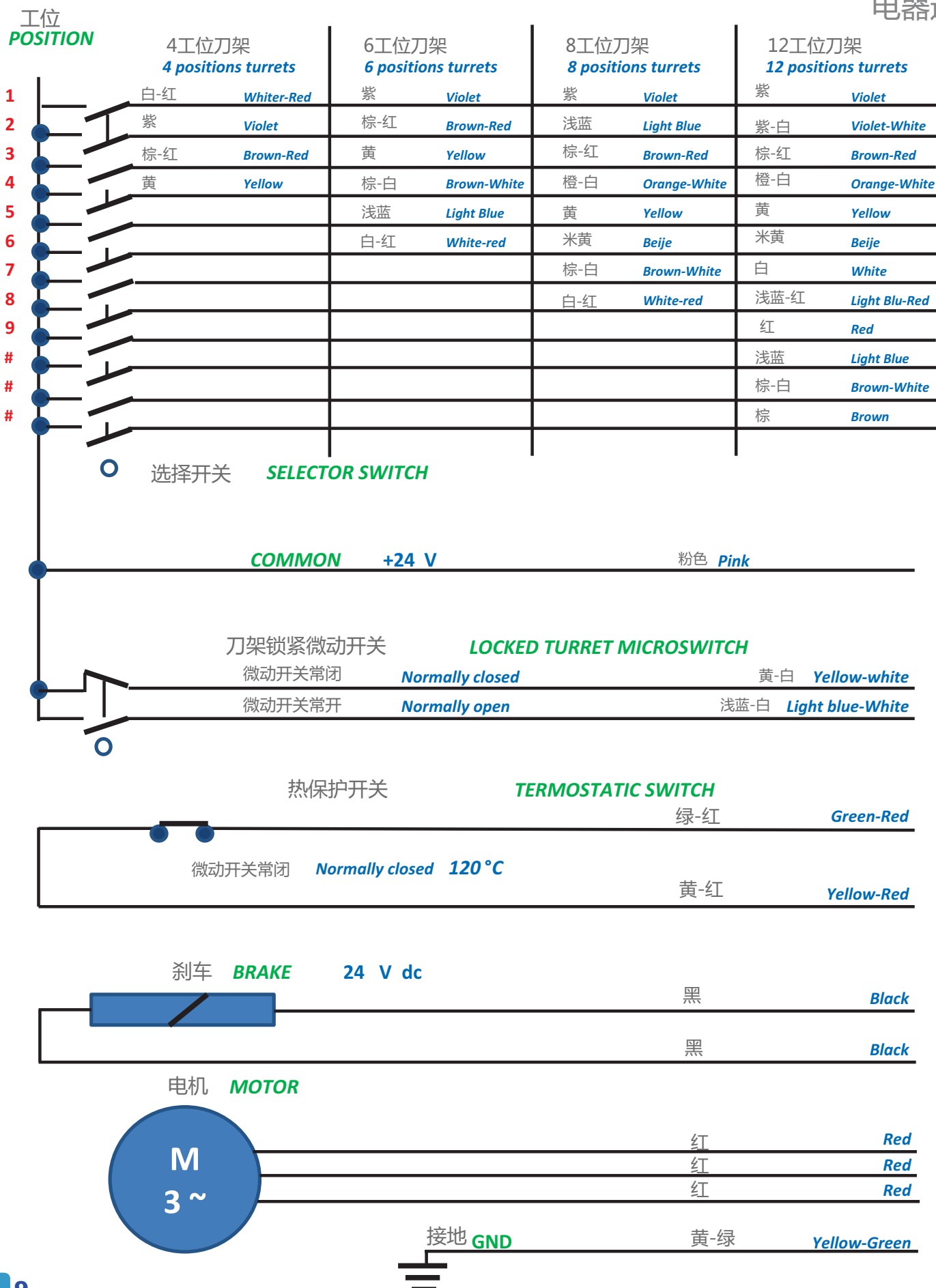
- The above operation diagram shows the sequence to be followed in order to correctly position the turret.
 - The brake is first de-energized and de-magnetizing and, after 50 ms of pause, the motor is feeded for counterclockwise rotation (with the turret tool-holder disk in front).
 - Wait the signal from the selector switch related at the required position (see [page electrical connections for the wires](#) colours combination) and then reverse the motor rotation.
 - The locking microswitch signal is then awaited for start the first pause t₁ to permit the completely locking of the turret.
- At the end of this pause the brake must be energized.**
- Start now the second pause t₂ to allow the brake to lock all cinematic parts and after that stop the motor.
- Brake must be energized until a new requested position.





Electrical connections

电器连接



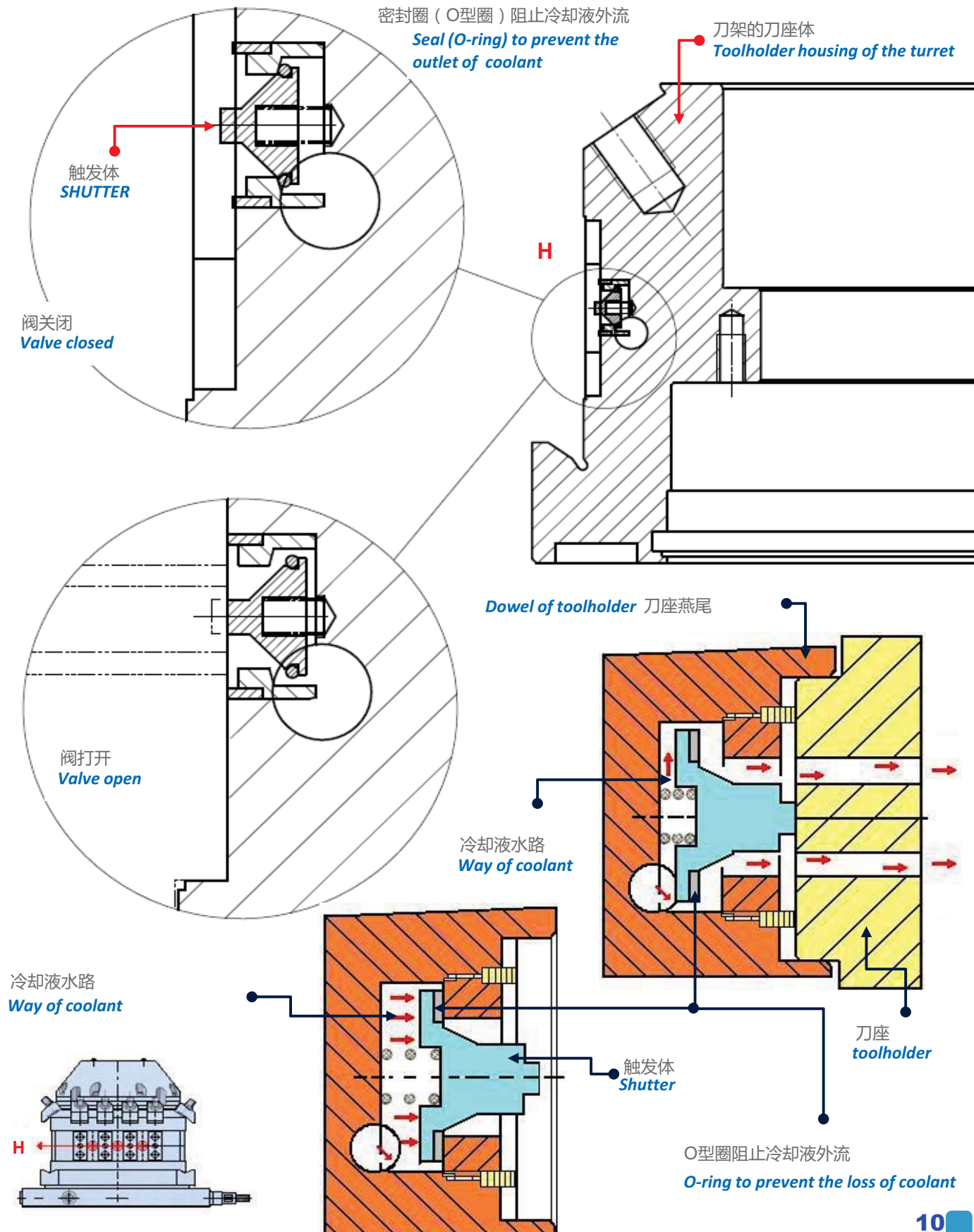


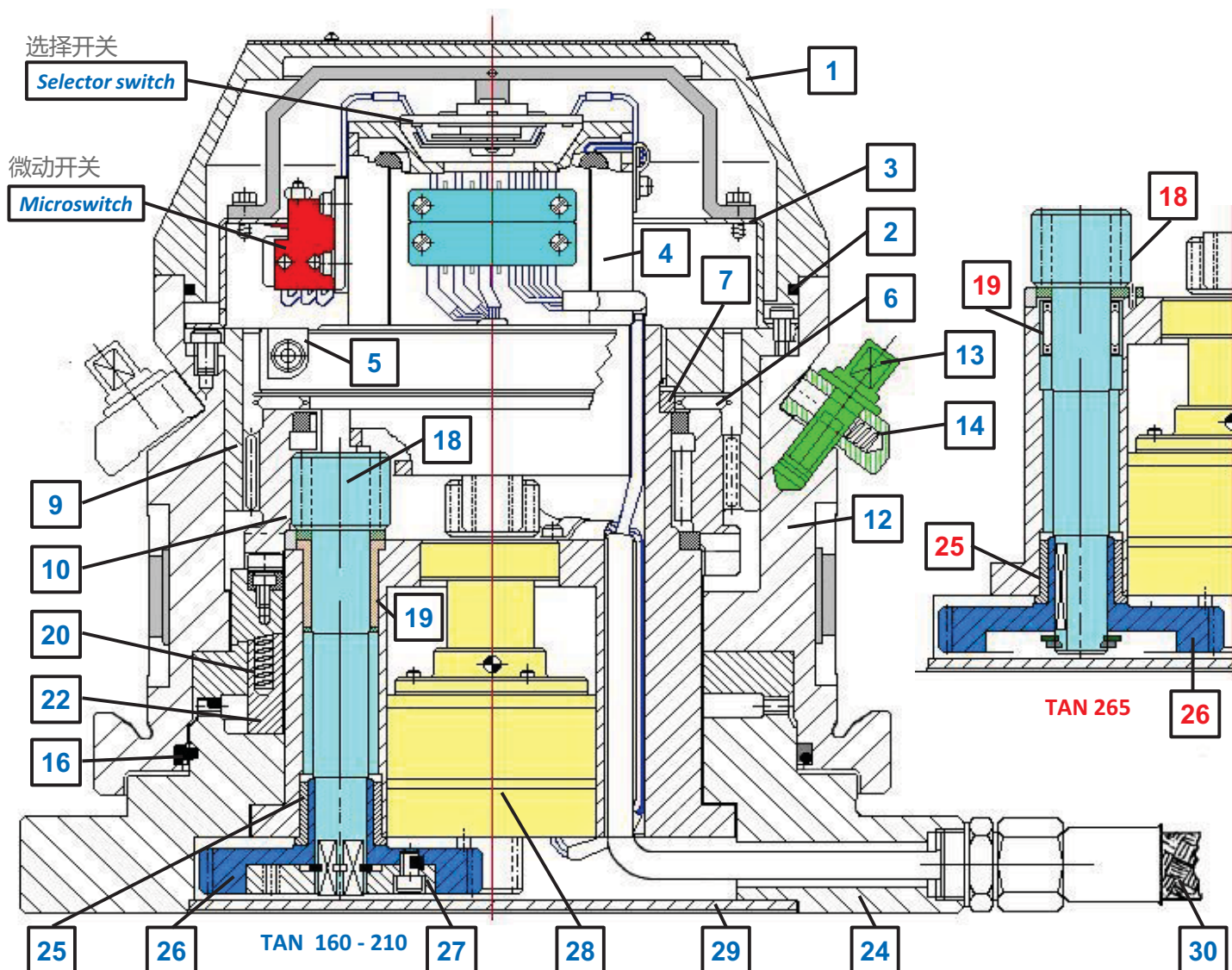
Coolant valves

冷却液阀

如果需要，刀架可以提供带有内冷系统
从刀座内部出水

On request the turret are available with coolant system
through the tool holder



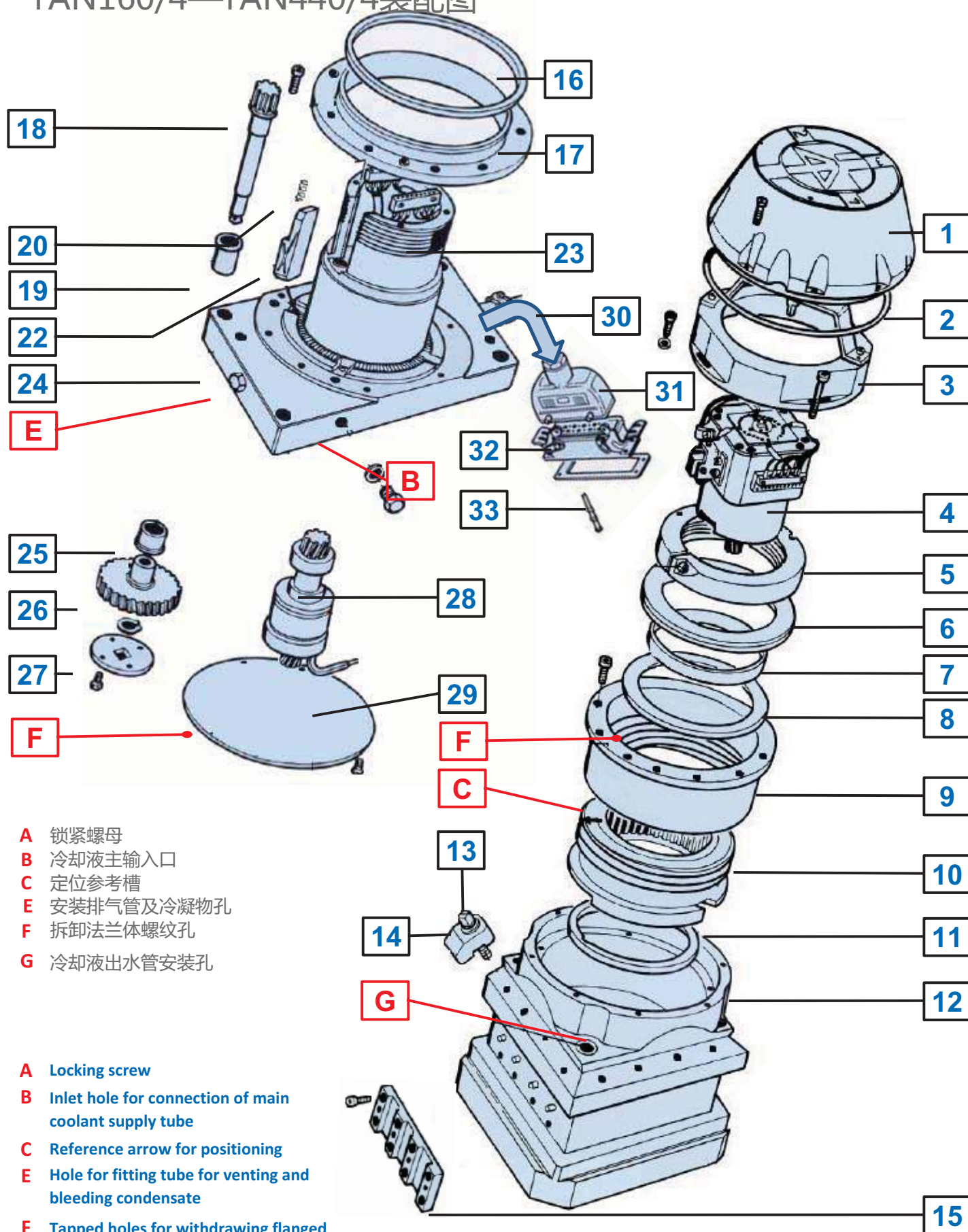


- | | | | |
|------------|-------------|---|--------------------------------------|
| 1 顶盖 | 15 刀具安装块 | 1 Top cover | 15 Plate for carryng pre-set tools |
| 2 O型圈 | 16 格拉圈 | 2 O-Ring | 16 Gasket |
| 3 传动机构体 | 17 带法兰盘的密封环 | 3 Housing for operating mechanism | 17 Flanged packing ring |
| 4 电机 | 18 连接轴 | 4 Motor assembly | 18 Pinion |
| 5 调整环 | 19 连接轴轴承套 | 5 Adjustment ring | 19 Primary bearing bush for pinion |
| 6 推力轴承 | 20 弹簧 | 6 Thrust bearing | 20 Spring |
| 7 推力轴承定心环 | 22 定位键 | 7 Ring for centering of thrust bearing | 22 Trailing key |
| 8 轴承定心环支撑环 | 23 中心体 | 8 Support ring for centering bearing ring | 23 Centre column |
| 9 内螺纹体 | 24 基座 | 9 Housing with internal Thread | 24 Base-plate |
| 10 驱动螺母 | 25 连接轴次轴承套 | 10 Driving screw | 25 Secondary bearing bush for pinion |
| 11 驱动螺母支撑环 | 26 齿轮 | 11 Support ring for driving screw | 26 Gear |
| 12 刀座安装体 | 27 驱动法兰 | 12 Toolholder Housing | 27 Driving flange |
| 13 带环螺丝 | 28 中心轴刹车 | 13 Collar screw | 28 Countershaft-brake assembly |
| 14 刀具加紧机构 | 29 底盖 | 14 Tool clamp | 29 Bottom cover |
| | 30 电缆 | | 30 Electrical supply cable |
| | 31 公插头 | | 31 Plug |
| | 32 母插头 | | 32 Socket |
| | 33 插针插座 | | 33 Contact pin socket |



Assemblage schema TAN160/4 to TAN440/4

TAN160/4—TAN440/4装配图



- A 锁紧螺母
- B 冷却液主输入口
- C 定位参考槽
- E 安装排气管及冷凝物孔
- F 拆卸法兰体螺纹孔
- G 冷却液出水管安装孔

- A Locking screw
- B Inlet hole for connection of main coolant supply tube
- C Reference arrow for positioning
- E Hole for fitting tube for venting and bleeding condensate
- F Tapped holes for withdrawing flanged housing
- G Outlet hole for coolant supply pipe





TAN160/4工位外形图

* 所有面硬度Hrc.55

B 冷却液输入孔

D 电缆

E 气孔

G 冷却液输出

H 内冷出水位置

* *All sides hardened Hrc. 55*

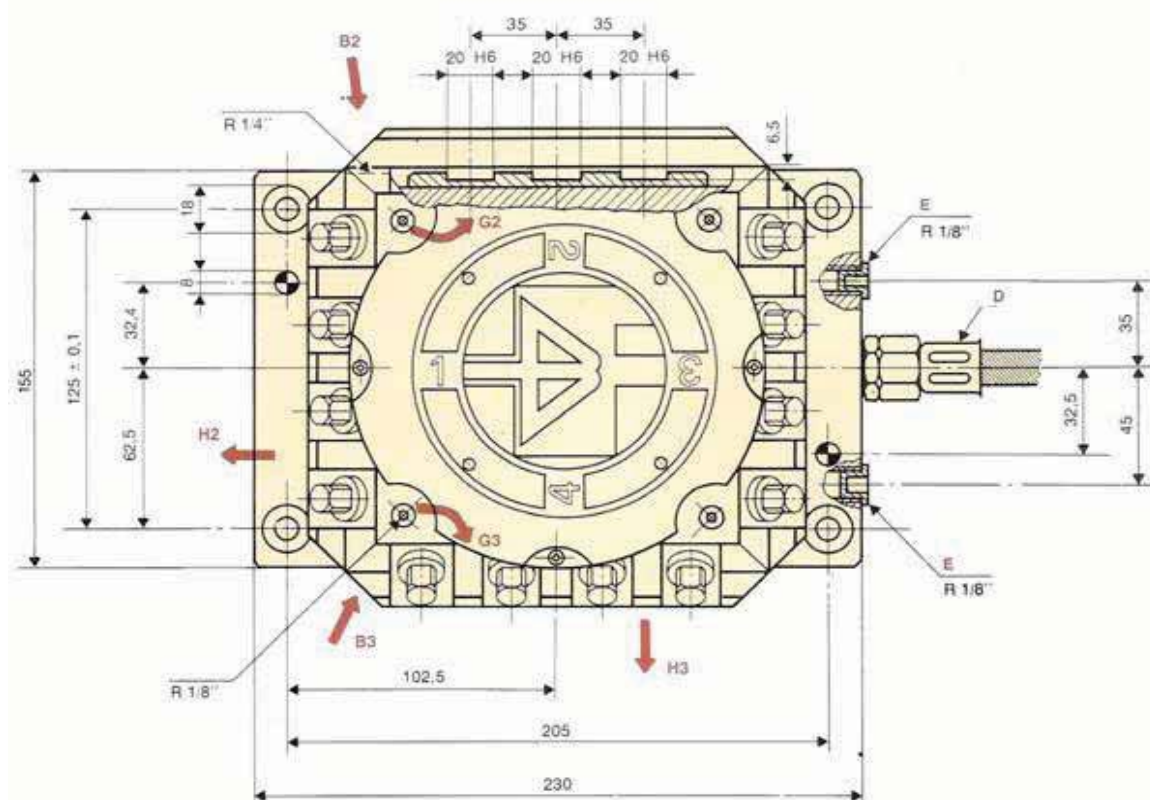
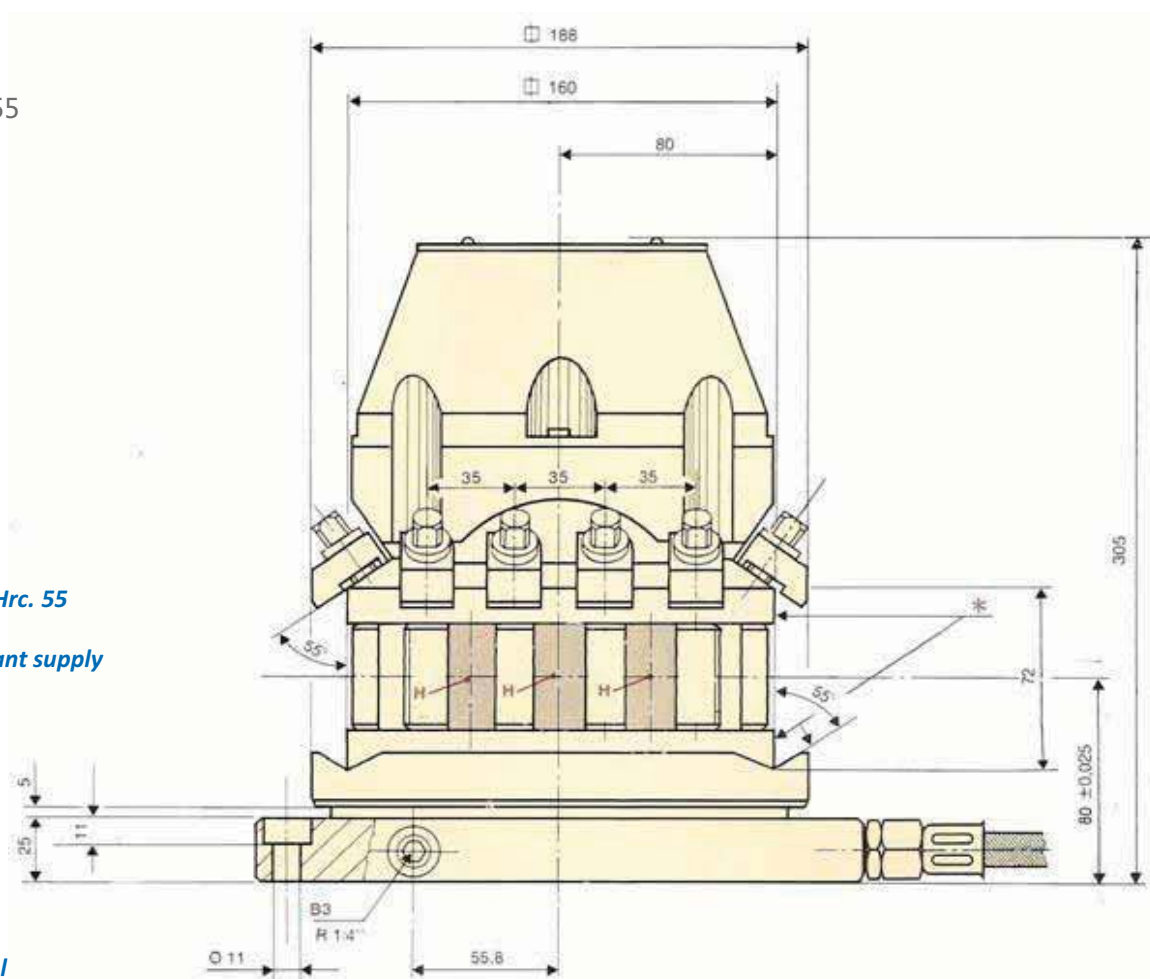
B Inlet holes for coolant supply

D Electrical supply

E *Vent hole*

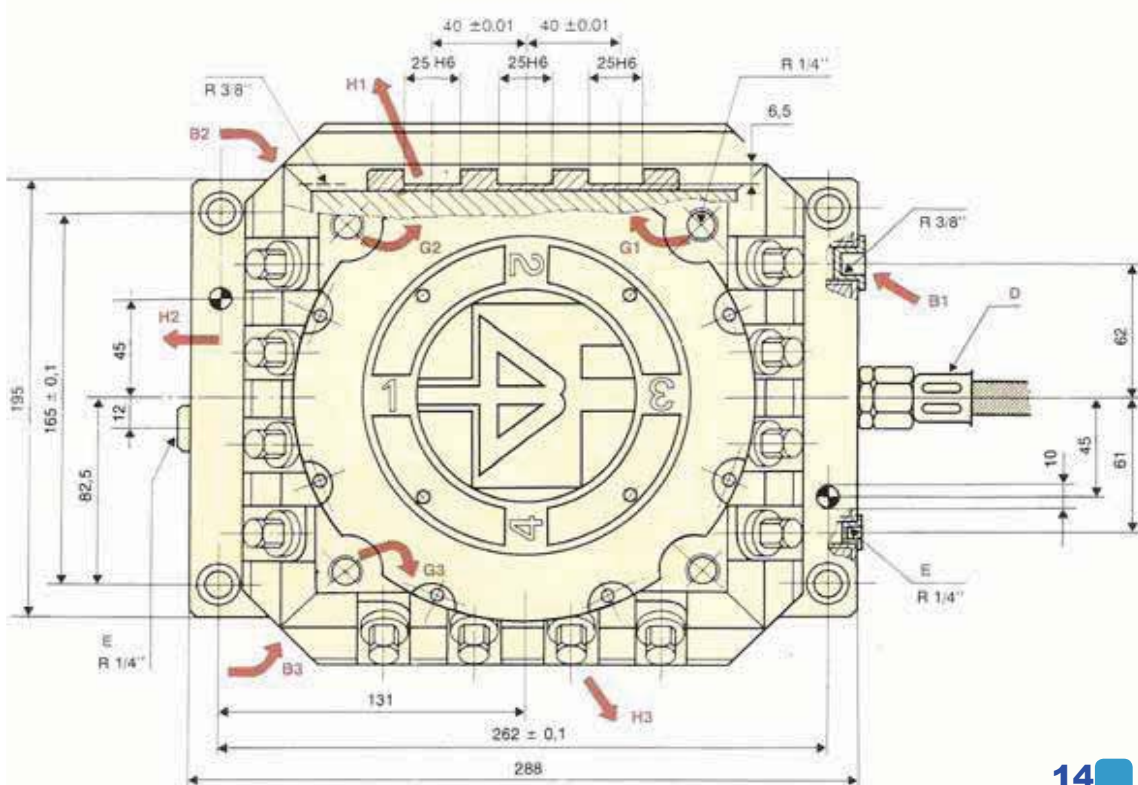
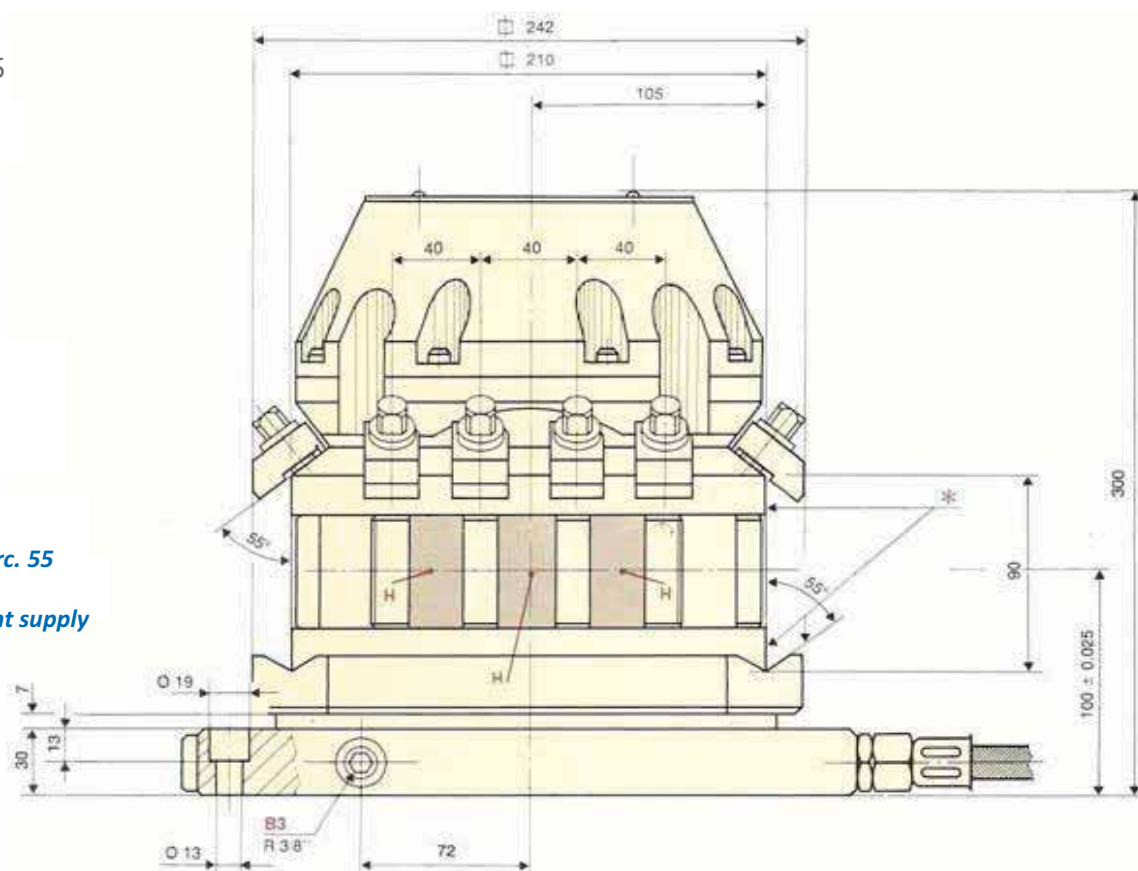
G *Outlet for*

H *Position of the valves for coolant outlet through the tool*



H 内冷出水位置

H *Position of the valves for coolant outlet through the tool*





TAN210/6工位外形图

* 所有面硬度Hrc.55

B 冷却液输入孔

D 电缆

E 气孔

G 冷却液输出

H 内冷出水位置

* *All sides hardened Hrc. 55*

B Inlet holes for coolant supply

D Electrical supply

E *Vent hole*

G *Outlet for*

H Position of the valves for coolant outlet through the tool





* 所有面硬度Hrc.55

B 冷却液输入孔

D 电缆

E 气孔

G 冷却液输出

H 内冷出水位置

* All sides hardened Hrc. 55

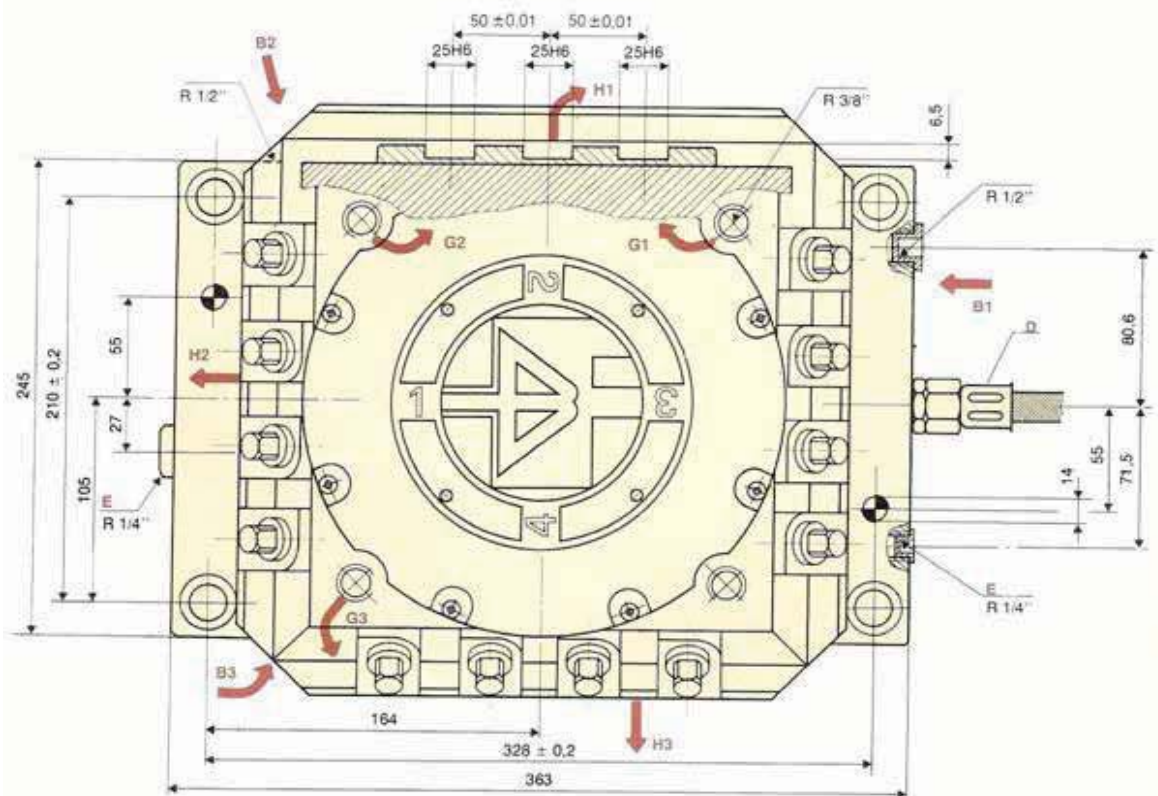
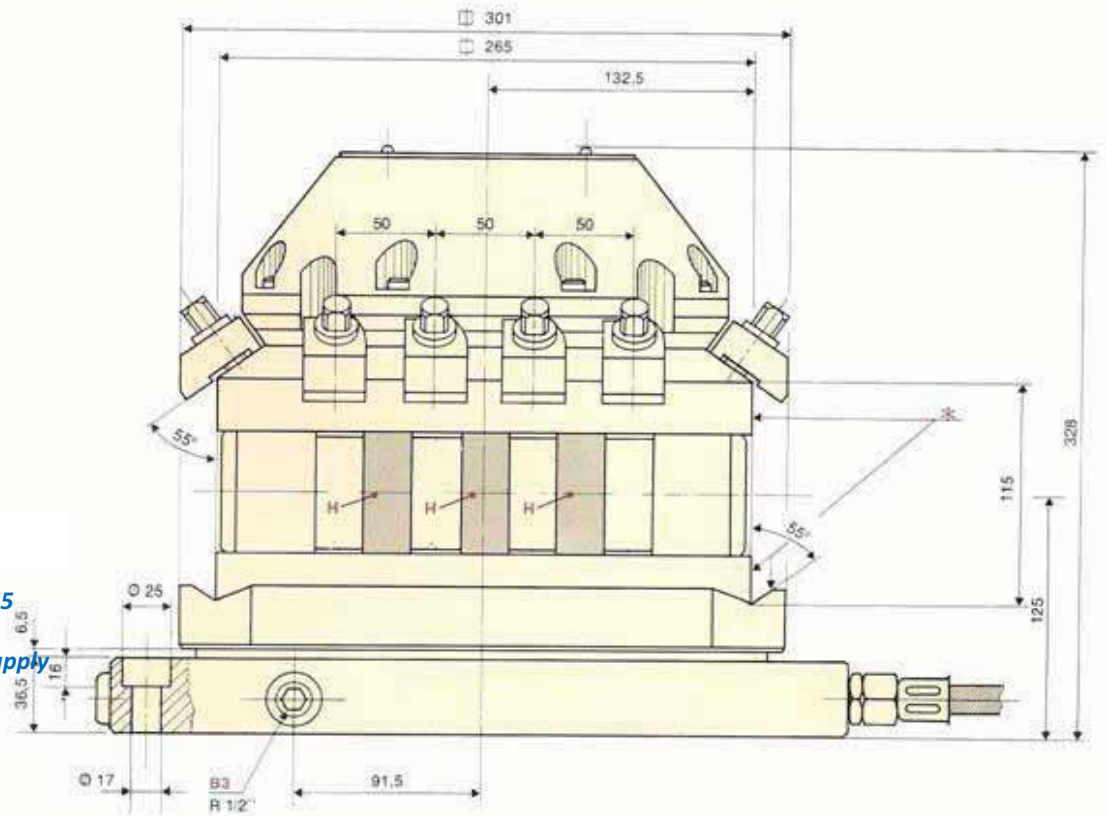
B Inlet holes for coolant supply

D Electrical supply

E Vent hole

G Outlet for

H Position of the valves for coolant outlet through the tool





TAN265/6工位外形图

- * 所有面硬度Hrc.55

B 冷却液输入孔

D 电缆

E 气孔

G 冷却液输出

H 内冷出水位置

- * *All sides hardened Hrc. 55*

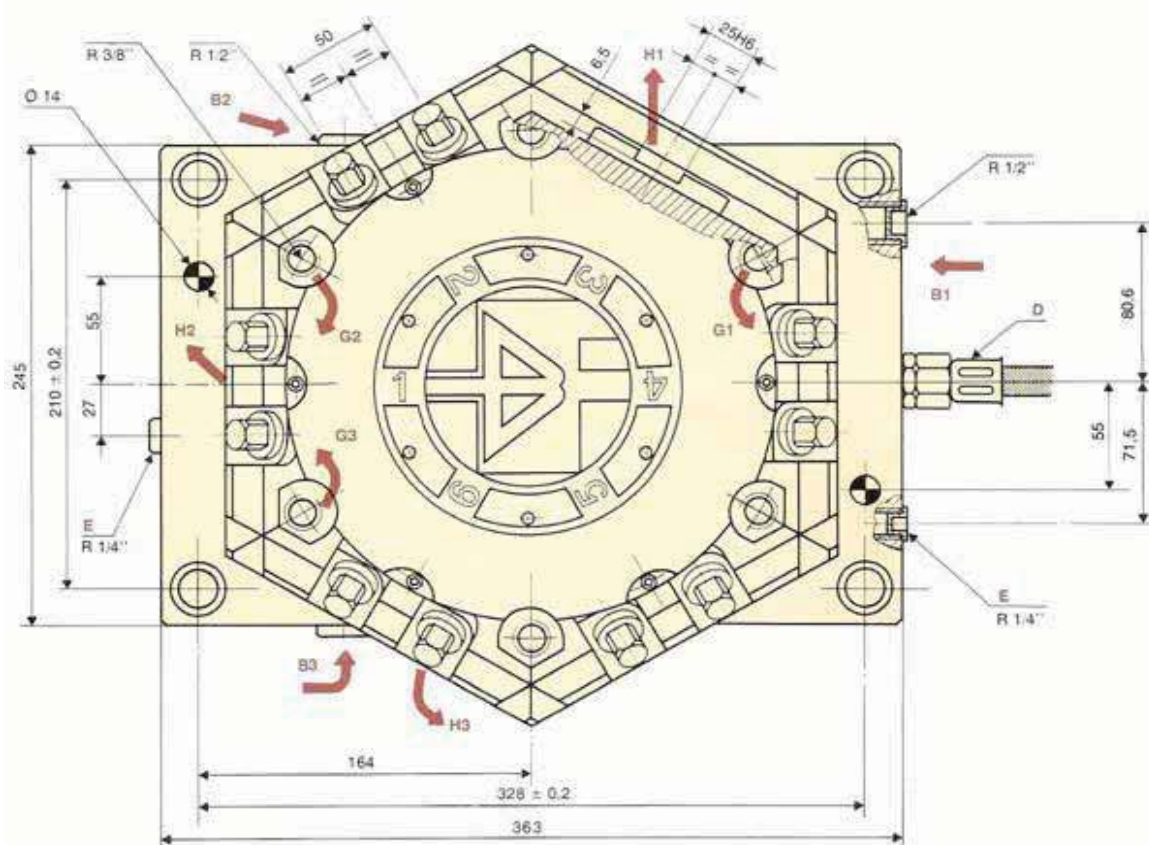
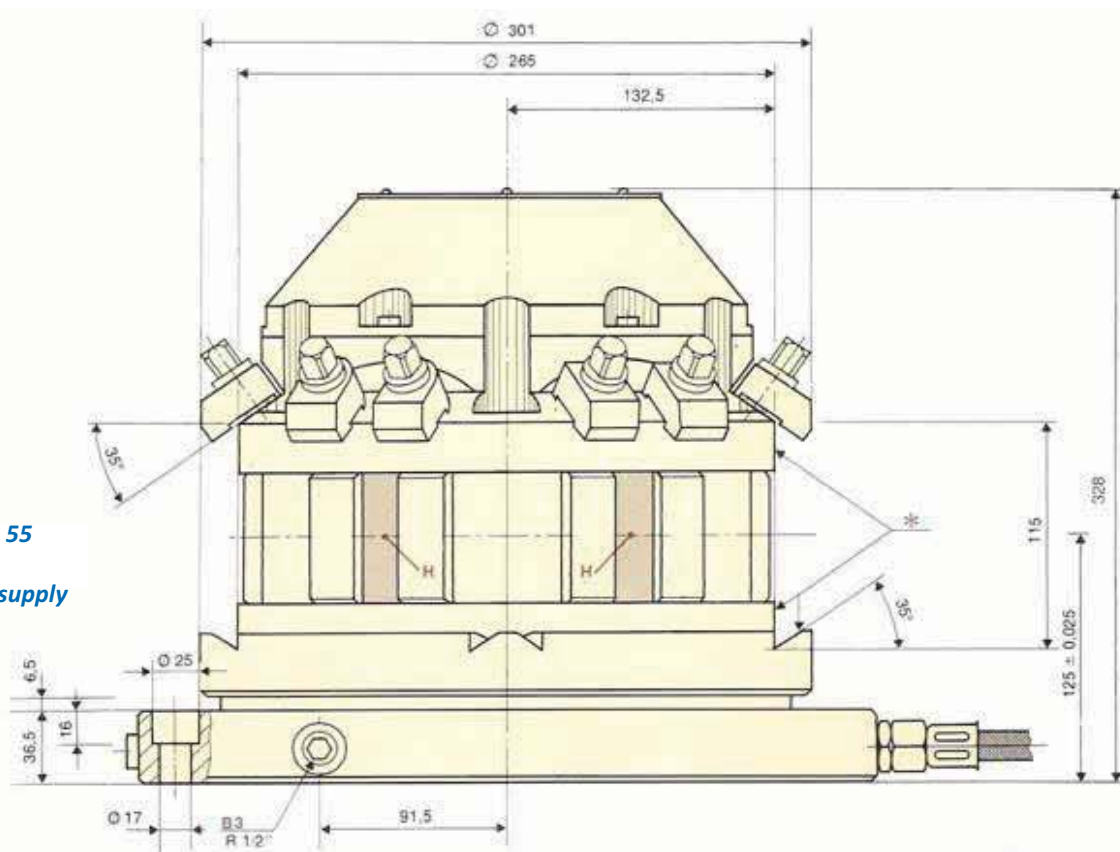
B Inlet holes for coolant supply

D Electrical supply

E *Vent hole*

G Outlet for

H *Position of the valves for coolant outlet through the tool*





* 所有面硬度Hrc.55

B 冷却液输入孔

D 电缆

E 气孔

G 冷却液输出

H 内冷出水位置

* All sides hardened Hrc. 55

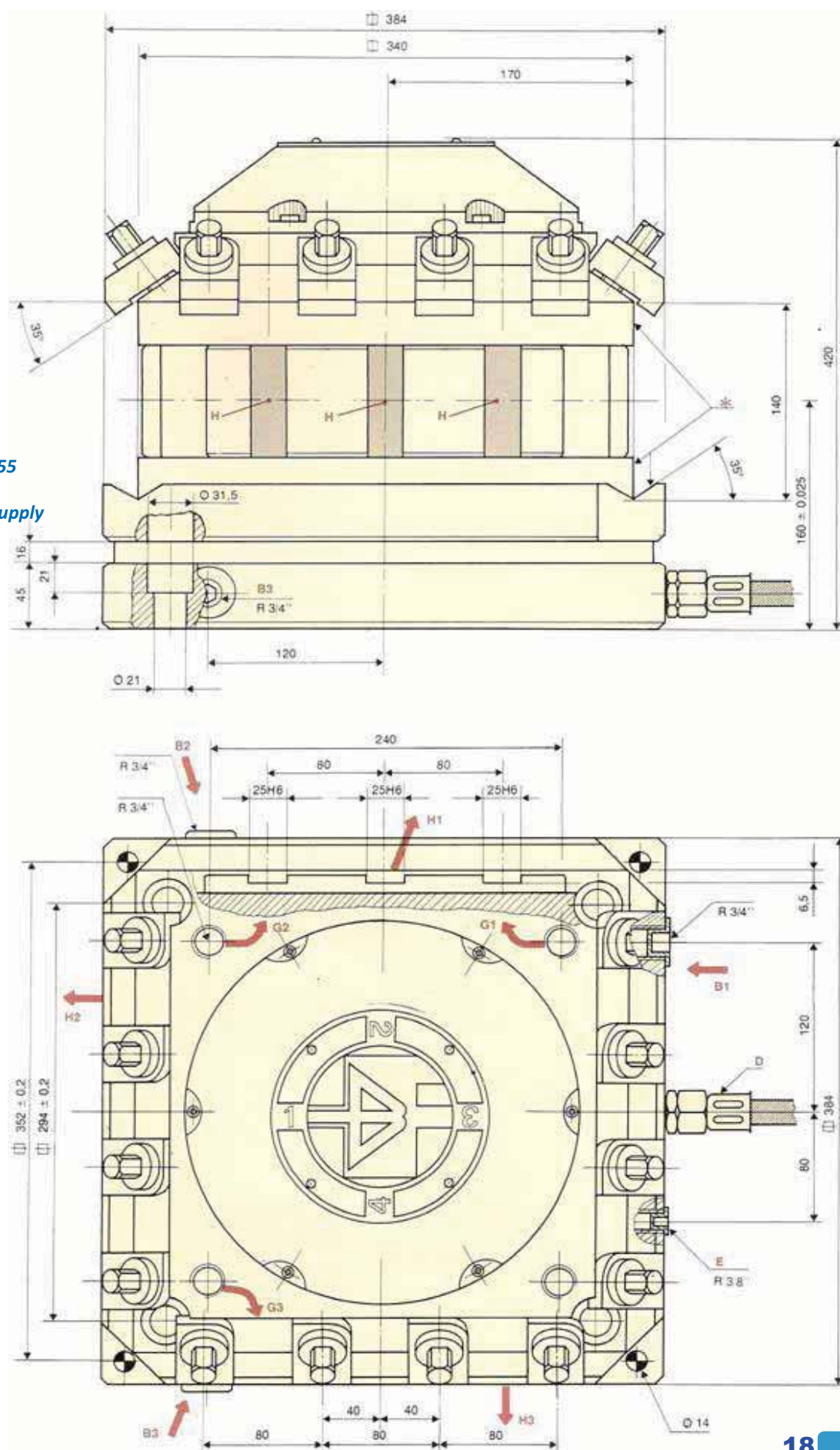
B Inlet holes for coolant supply

D Electrical supply

E Vent hole

G Outlet for

H Position of the valves for coolant outlet through the tool





* 所有面硬度Hrc.55

B 冷却液输入孔

D 电缆

E 气孔

G 冷却液输出

H 内冷出水位置

* All sides hardened Hrc. 55

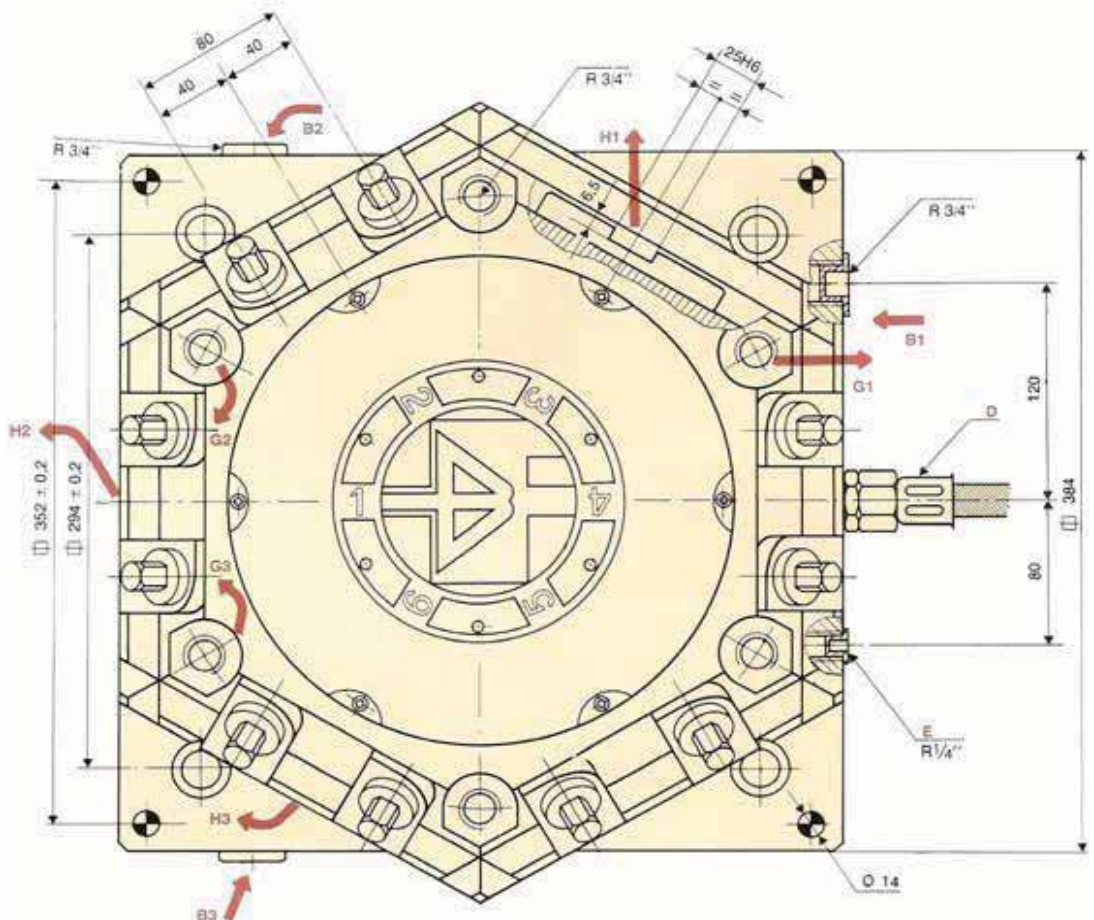
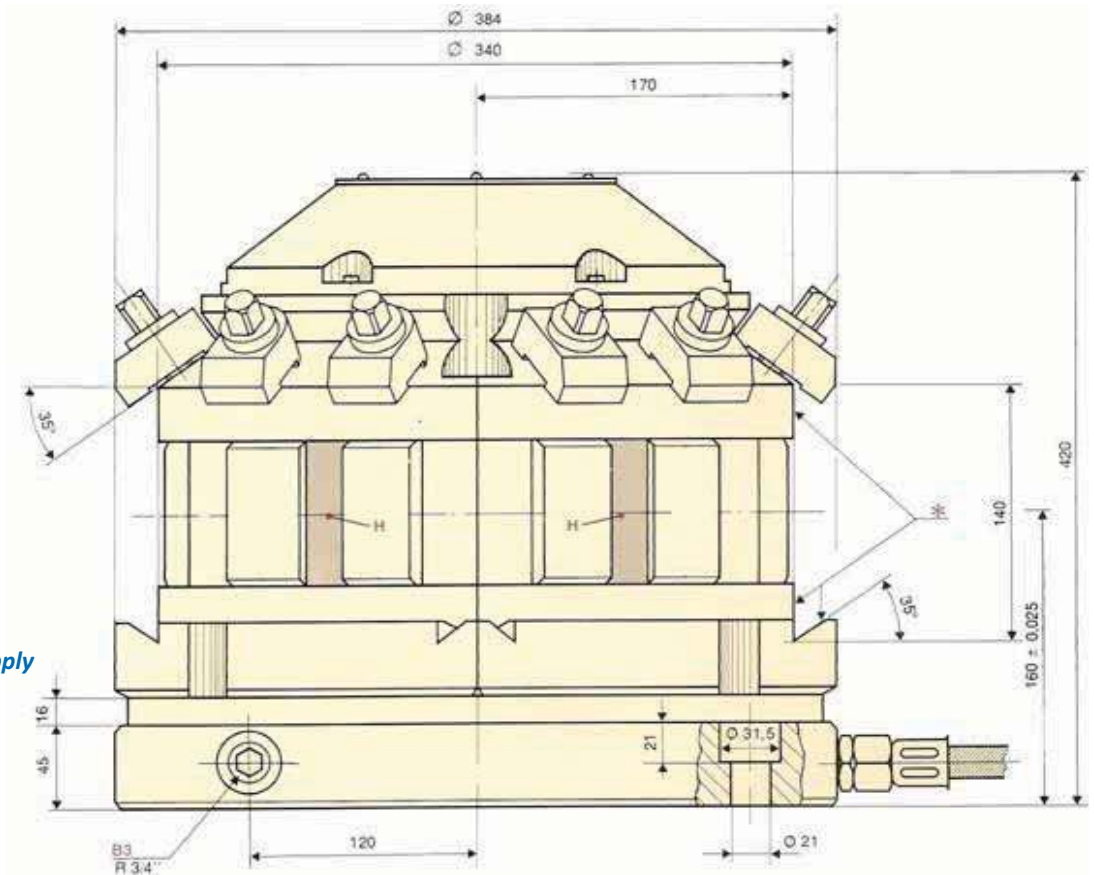
B Inlet holes for coolant supply

D Electrical supply

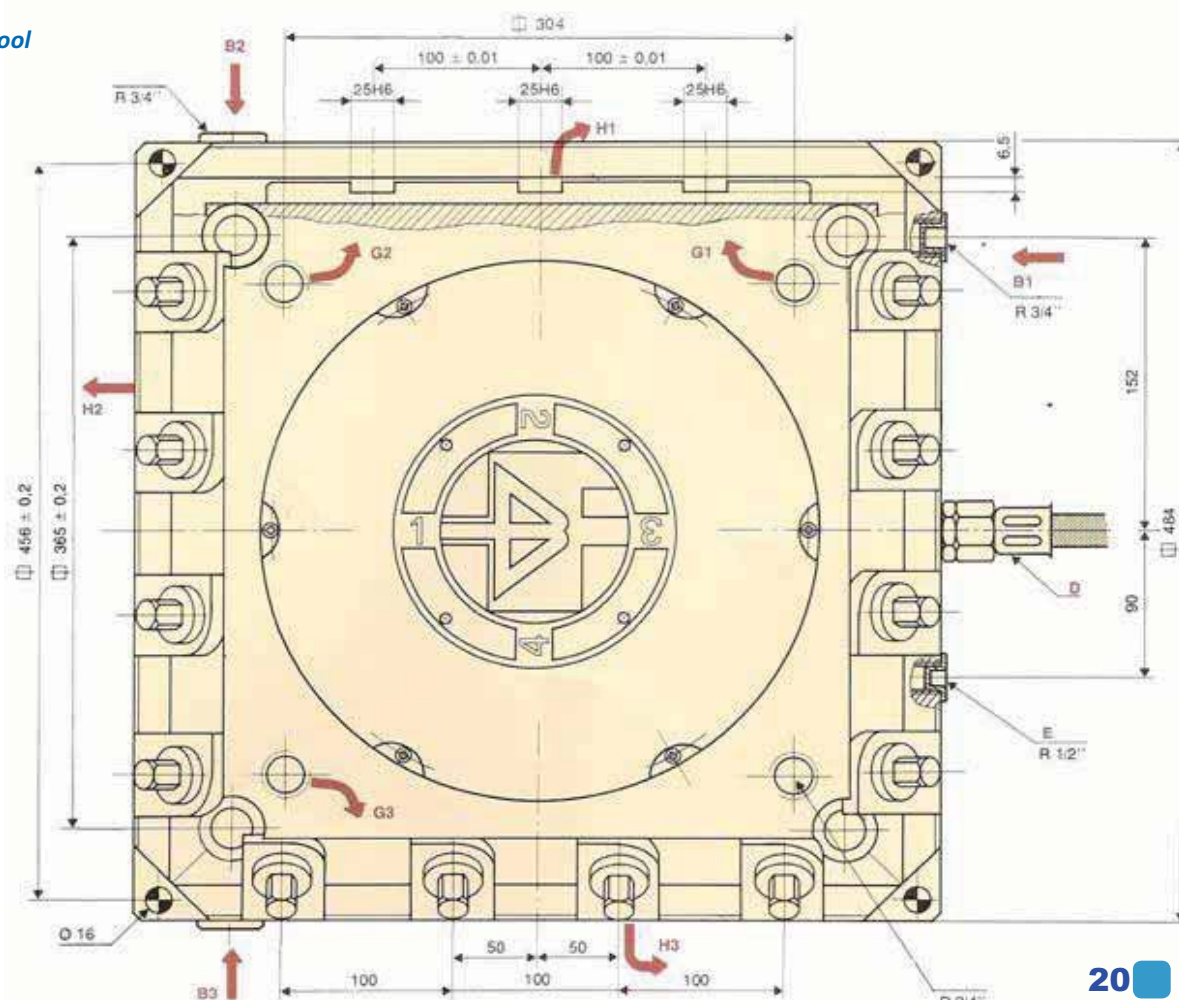
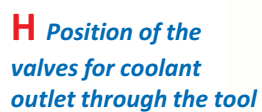
E Vent hole

G Outlet for

H Position of the valves for coolant outlet through the tool



- H** 内冷出水位置





TAN440/6工位外形图

- * 所有面硬度Hrc.55

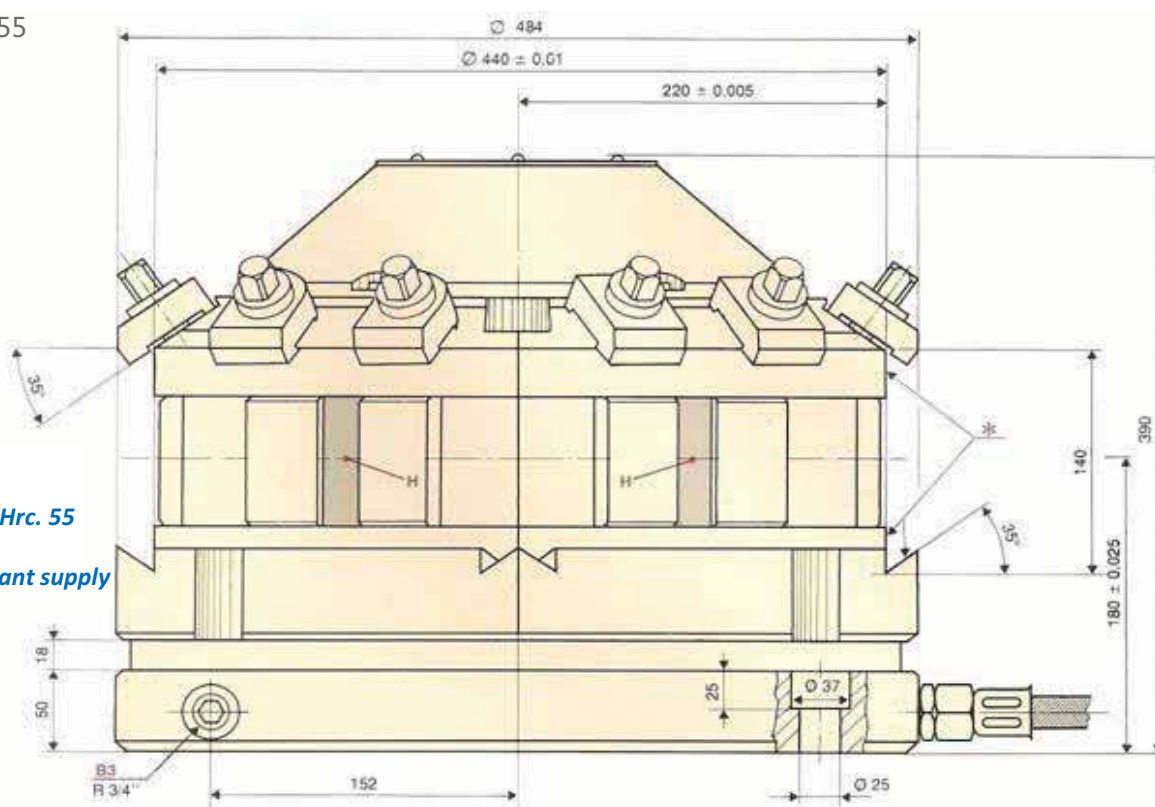
- B** 冷却液输入孔

- ## D 电缆

- E** 气孔

- ### G 冷却液输出

- H** 内冷出水位置



- * *All sides hardened Hrc. 55*

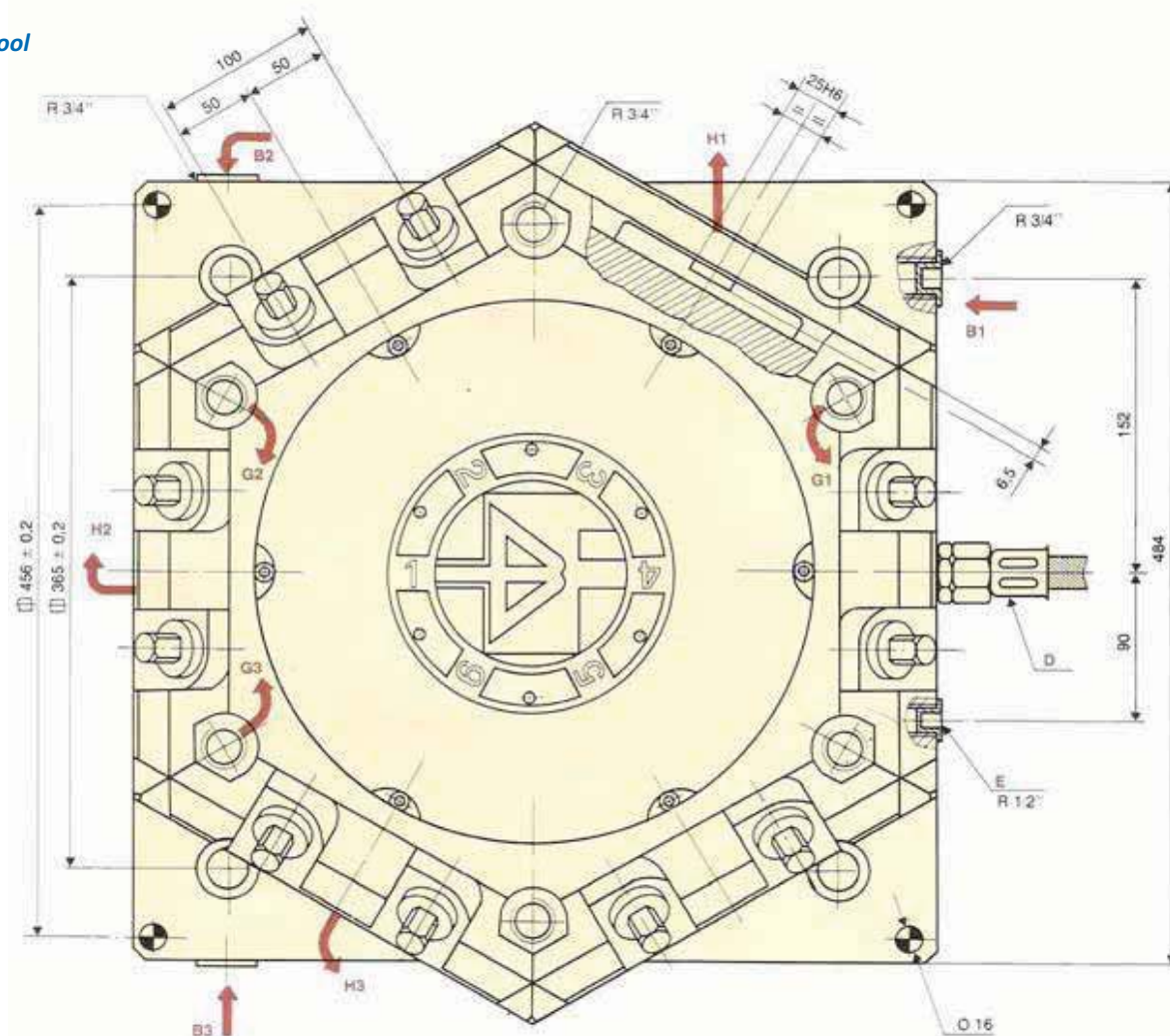
- B** Inlet holes for coolant supply

- ## D Electrical supply

- E** *Vent hole*

- ## G Outlet for

- H** *Position of the valves for coolant outlet through the tool*





Special Applications

特殊应用

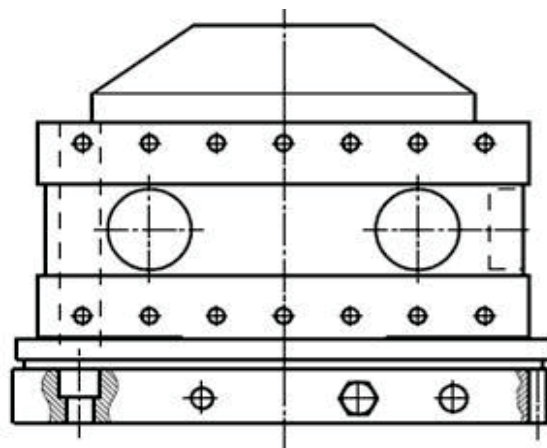
Baruffaldi可以根据客户要求
提供特殊的TAN刀架
请接洽技术部门

*On demand Baruffaldi can supply
special TAN turrets.*

For information contact the technical office

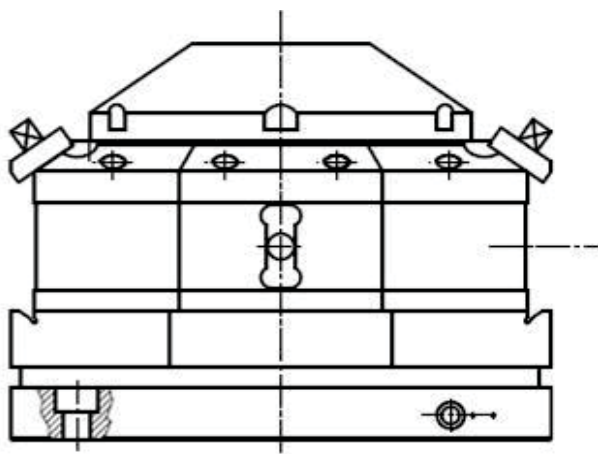
特殊的TAN 5工位刀架

TAN 5 Posizioni special



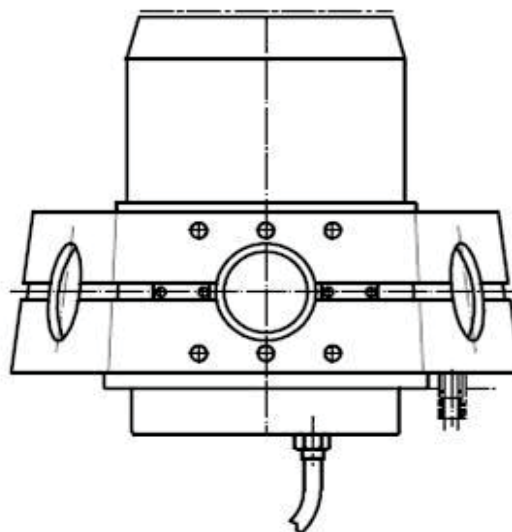
特殊的TAN 8工位刀架

TAN 8 Posizioni



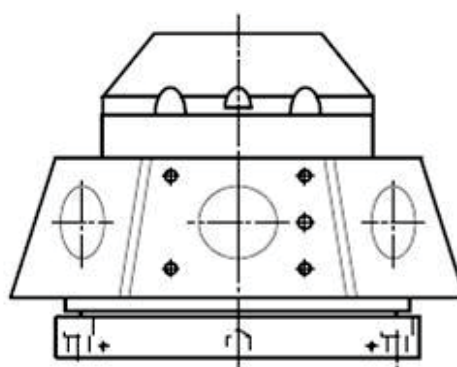
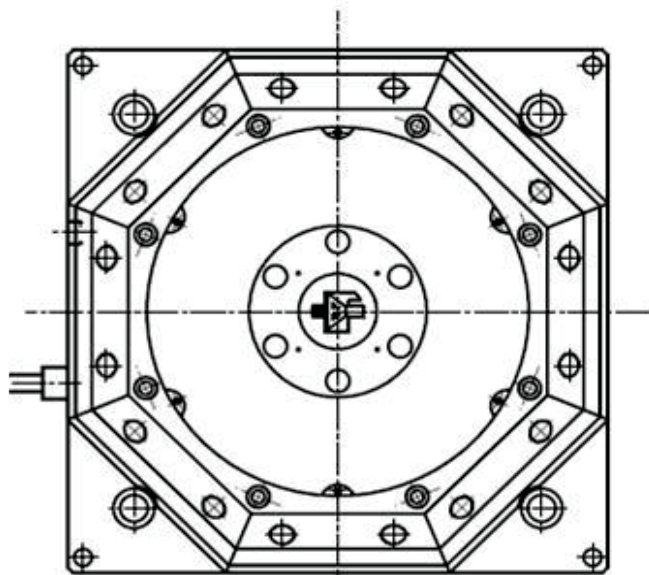
特殊的TAN 5工位刀架

TAN 5 Posizioni special



特殊的TAN 6工位刀架

TAN 6 Posizioni speciale





Accessories

附件

此外，BARUFFALDI还提供一系列的附件
整体打包订购，能保证最经济可靠。

后面您将看到一些刀座
如需特殊的规格，可以定制。
不要犹豫，请接洽销售部门

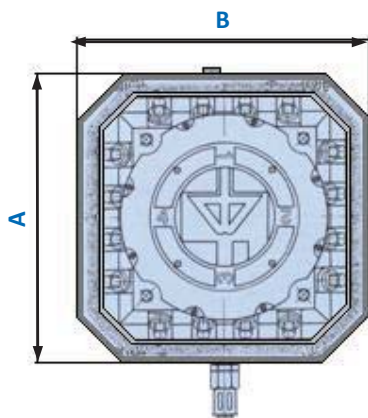
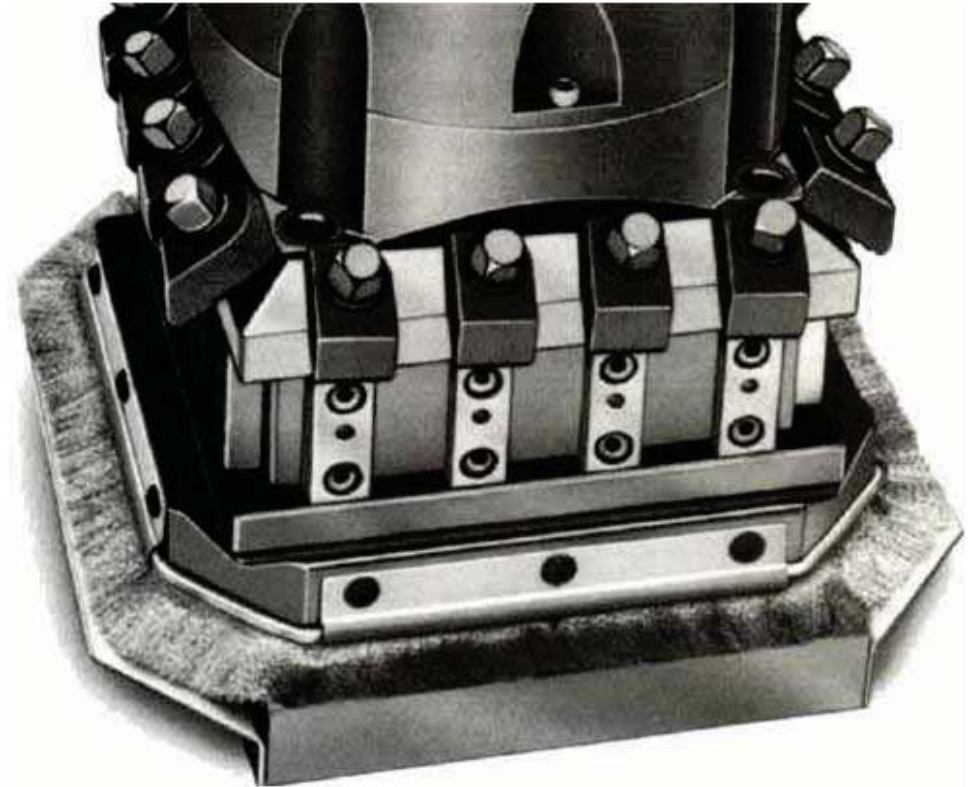
Baruffaldi furthermore offers a series of accessories, which facilitate
the purchase of complete, warranted and economic full package.

You will afterwards find an example of a few toolholders, which are
at your disposal.

There are further versions available on demand, do not hesitate to
contact the sales office.

任何TAN刀架都可以配备线刷
以防止刀架体下部部件和基座
之上的部件之间的积屑
这种情况下，基座会根据下面的
表格中的数据配备两条长短
足以覆盖整个尺寸的线刷。

*At request any type TAN turret can be
supplied with wire brushes to avoid
accumulation of shavings between the
lower part of the housing and the upper
part or top of the base plate.
In such a case the base plate will be
furnished with two strips which modify
the overall dimensions according to the
values stated in the table.*



Tottetta	A	B	Turret	A	B
TAN 120-4	144	188	TAN 265-4	363	363
TAN 160-4	230	191	TAN 340-4	384	454
TAN 210-4	288	288	TAN 440-4	484	554

刀座 Toolholder

三面装刀的刀座
DIN norms 3425

*Triple toolholder for turrets
as per DIN norms 3425*



轴向镗刀座
DIN norms 3425

*Axial toolholder for boring
bars for turret as per DIN*



轴向刀座
DIN norms 3425

*Axial toolholder for turrets as
per DIN norms 3425*





TAN TURRET

客户名称
Customer Name
订单号
Order

1	2	3	4	5	6	7	8
6	3						

型号 / Type

不带出水阀 (标准) / Without valve (STANDARD)

带出水阀 / With valve

外冷

without coolant system through the tool holder

内冷

with coolant system through the tool holder

1	2	3	4

		code	
TAN 160	4 positions	5951	
TAN 210	4 positions	5998	
TAN 265	4 positions	5999	
TAN 265	6 positions	6555	
TAN 340	4 positions	4782	
TAN 340	6 positions	6926	
TAN 440	4 positions	6749	
TAN 440	6 positions	6776	
TAN 440	8 positions	6935	

		code	
TAN 160	4 positions	6922	
TAN 210	4 positions		
TAN 265	4 positions	6924	
TAN 265	6 positions	6925	
TAN 340	4 positions	6718	
TAN 340	6 positions	6772	
TAN 440	4 positions	4777	
TAN 440	6 positions	6775	
TAN 440	8 positions	6972	

工位数

Numero di Division

5

	code	
4 positions	6	
5 positions	A	

	code	
6 positions	0	
8 positions	1	
12 positions		

电机参数

标准电机 / standard motor

特殊电机 / Special motor *

		code			code	
6	110V 50HZ	0		380V 50HZ	2	
	110V 60HZ	1		380V 60HZ	8	
	220V 50HZ	4		440V 50HZ	5	
	220V 60HZ	6		440V 60HZ	3	

		code			code	
	400V 50HZ	G		500V 50HZ	C	
	400V 60HZ	E		500V 60HZ	F	
	415V 50HZ	A		575V 60HZ	H	
	460V 60HZ					

应用 / Applications

7	STANDARD	code	0	

选择开关选位
Positioning with selector switch

TANE *	code	2	

编码器选位
Positioning control with encoder

SPECIAL *	code	8	

双向分度
Bidirectional positioning

Opzionale / Optional

8	STANDARD	code	0	

不带雷尼绍测量
Without-prearrangement for RENISHAW

SPECIAL *	code	1	

携带雷尼绍测量
With-prearrangement for RENISHAW

更进一步的信息 / Further information

 电缆长度 米
Cable lenght Meters

 清洁刷
cleaning brushes
 是 YES 否 NO

 电缆接头
Cable connector
 是 YES 否 NO

 直输出
straight Output
向右90度输出
90° right output
向左90度输出
90° left output

A	
B	
C	

加工位置 - Work's side

P		R	
S		S1	

version - 版本

Y		X	
---	----------------------	---	----------------------





Needed informations to order TAN turrets

TAN刀架订货所需信息

刀架型号 *Type of turret*

TAN 160 ☐ TAN 340 ☐

TAN 210 ☐ TAN 440 ☐

TAN 265 ☐

清洁刷

cleaning brushes

任何TAN四工位刀架都可以配备线刷
以防止刀架体下部部件和基座
之上的部件之间的积屑

On request the TAN 4 positions can be supplied with wire brushes to avoid accumulation of chips between the lower part or top of the base plate.

根据客户需要配备清洁刷，额外付费

Brushes Supplied upon request and charged separately



Yes

☐

No

☐

工位数 *Number of divisions*

4 ☐ 6 ☐ 8 ☐

进给电机参数 *Feeding motor data*

110 V ☐ 220 V ☐ 380 V ☐

400 V ☐ 50 Hz ☐ 60 Hz ☐

其他 /other ☐ V ☐

电缆接头 - *Cable connector*

根据客户需要配备不同的电器接头
需要额外付费

On request we can supply a connector to facilitate the Machine electrical connection. Supplied upon request and charged separately

Yes

☐

No

☐


电缆长度 *Cable lenght*

米 /Meters

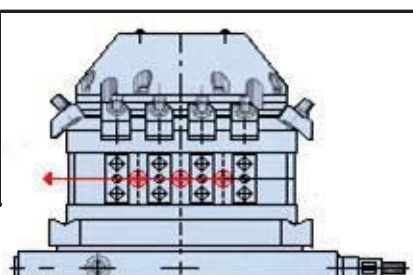
电缆超过1.5米需要额外付费

Over the 1,5 meters the cable will be charged

冷却液阀 *Coolant Valve*

如果需要可提供带内冷的刀架

On request the turret are available with coolant system through the tool holder



Yes

☐

No

☐

额外付费
charged separately

电缆输出- *Cable output*

☐

A 直出
straight Output

☐

B 向右90度输出
90° right output

☐

C 向左90度输出
90° left output

加工位置 - *Work's side*

根据卡盘来确定加工位置，底座的安装位置以及电缆输出位置

Specify the work side referring to the chuck, to the fixing plate positioning and the cable output

6工位刀架也需要确定加工位置

FOR THE 6 POSITIONS TURRET SPECIFY ALSO THE WORKING SIDE VERSION

加工位置
Work's side

P

☐

加工位置
Work's side

R

☐

加工位置
Work's side

S

☐

加工位置
Work's side

S1

☐

版本
Version

Y

☐

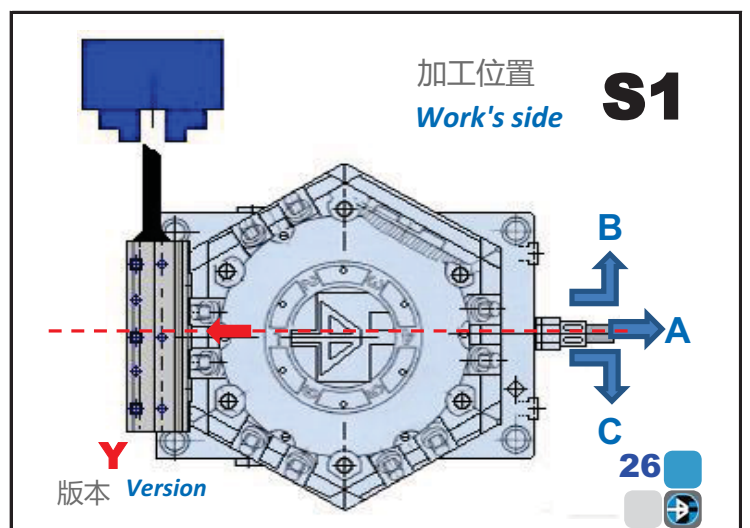
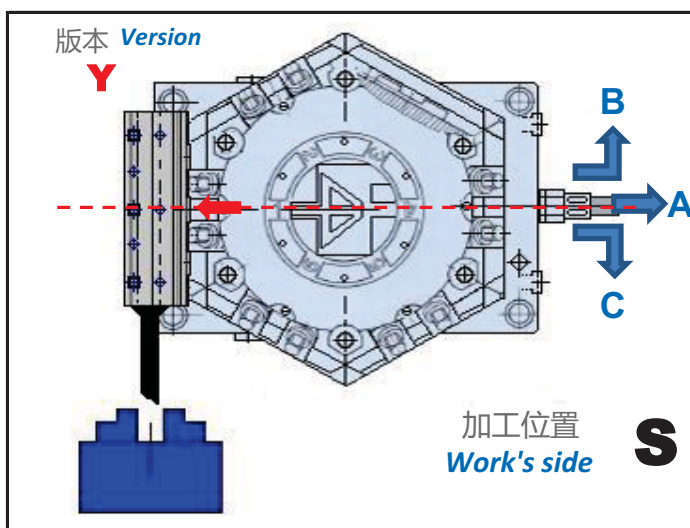
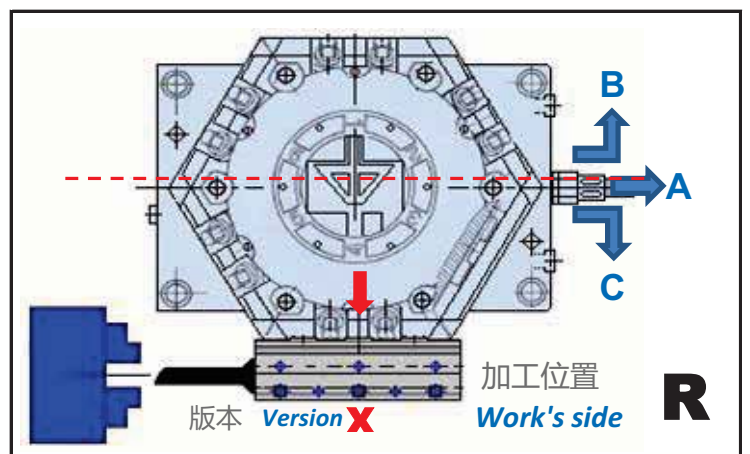
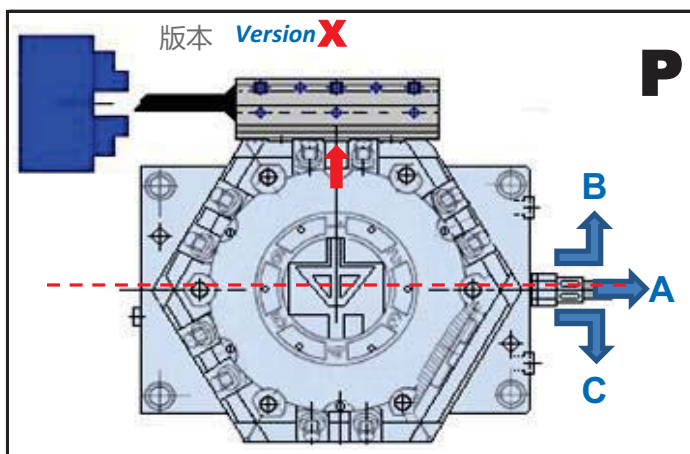
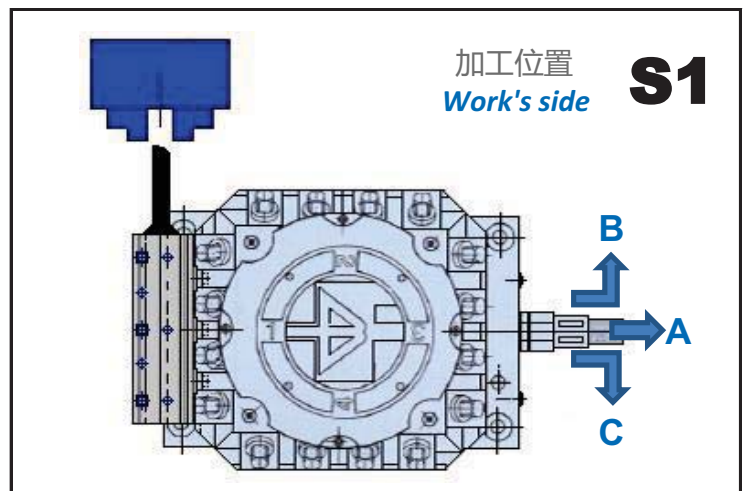
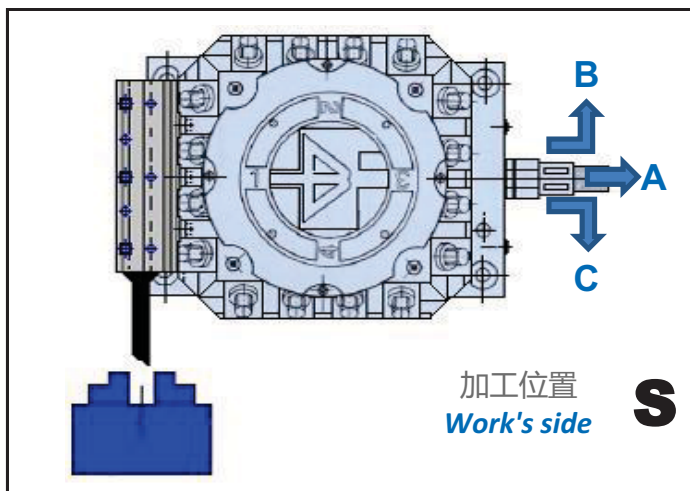
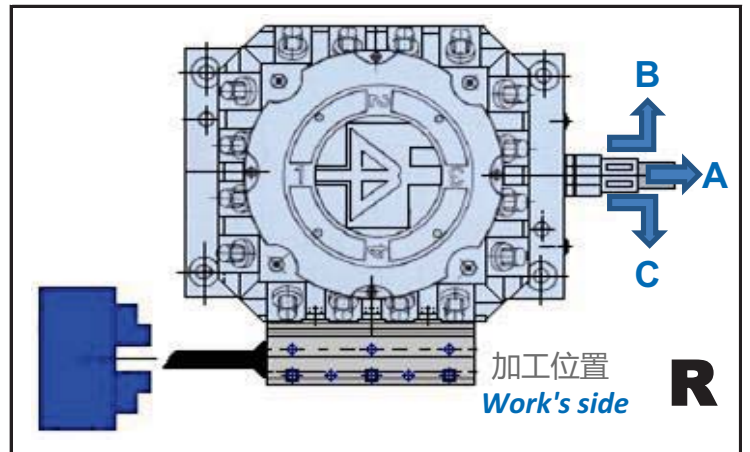
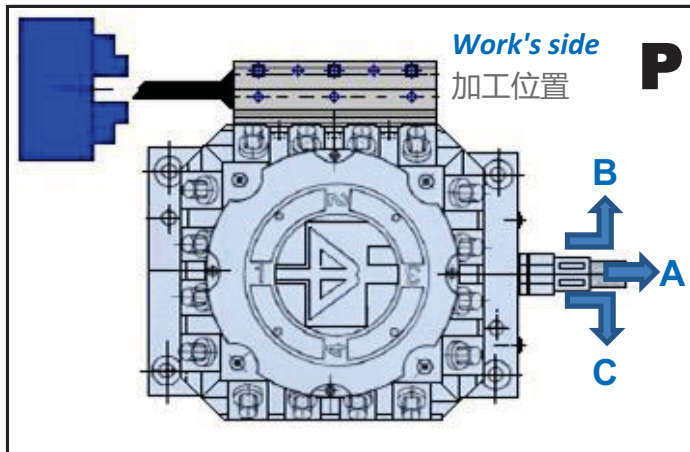
版本
Version

X

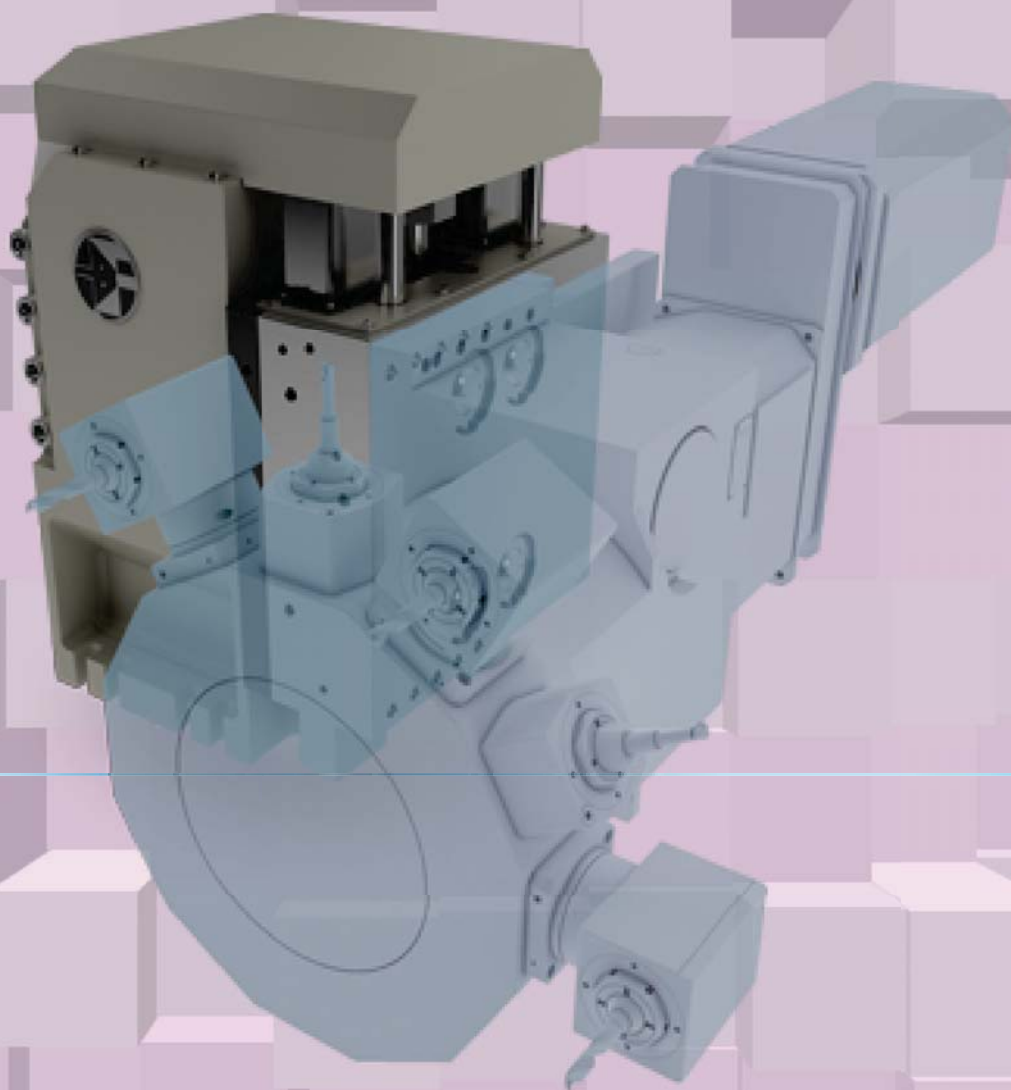
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见下页参数表
SEE ENCLOSED TABLE





Y-Axis unit type YAX



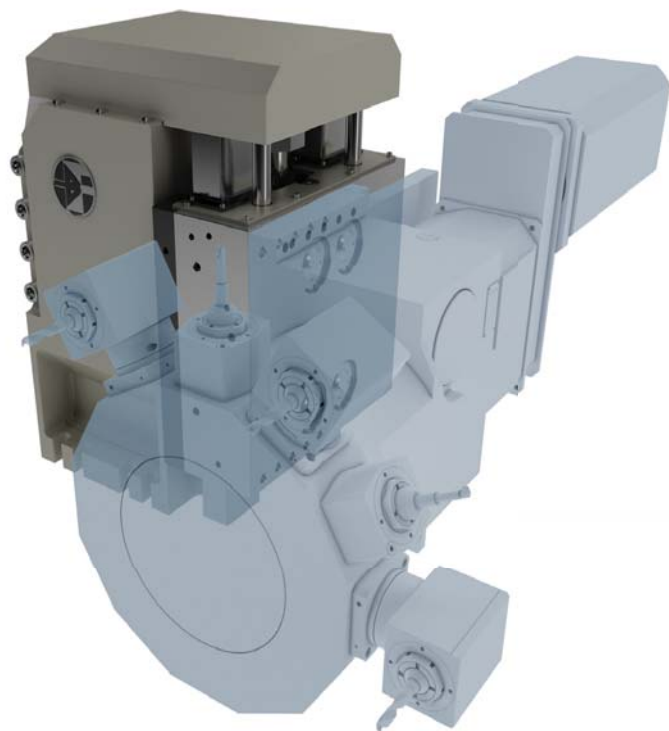
Y轴单元YAX选型指南



Index

目录

3	YAX介绍	Y-Axis unit introduction
4	技术参数	Technical data
5	YAX部件组成	Assemblage schema YAX
6	YAX液压刹车	YAX hydraulic brake
7	导轨预载系统	Guideways preload system
8	导轨预载系统	Guideways preload system
9	集中润滑	Centralized lubrication
10	导轨间隙消除系统	Recovering guideways backlash
11	Y轴单元YAX3D图	YAX 3D drawing
12	YAX 16.16外形图	External view YAX 16.16
13	YAX 25.25外形图	External view YAX 25.25
14	YAX 40.32外形图	External view YAX 40.32
15	YAX用刀架	Turret for Y-Axis unit
16	TBYA/TBYR技术参数	TBYA/TBYR Technical data



The YAX unit allows displacement of tools in lathe Y-direction, in order to produce manifolds where out-of-axis operations are required, such as face millings, holes and tappings, key-slots and so on. It can be fit on flat bed lathes as well as on slant bed lathes, where required y-axis movement is perpendicular to machine slide.

The rugged meehanite cast iron column with wide sliding guideways and all other strongly designed components, together with hydraulic guideways preload system (patent pending) allow hard machining operations either with fixed tools and live tools.

Thanks to the modular design, YAX is available in 3 sizes: YAX 16 (for 120 and 160 size turrets), YAX 25 (for 200 and 250 size turrets) and YAX 40 (for 320 and 400 size turrets). TBYA as well as TBYR turrets can be fit. Standard strokes are available as well as custom strokes (to be defined with our Technical Department).

Main features:

- Strong meehanite cast iron column for optimal vibration dampening results and stable in time
- Very wide and strong hardened sliding guideways with backlash recovery devices in all directions, centralized lubrication included (except oil supply unit)
- Adjustable hydraulic guideways preload system (patent pending) for extremely hard operations
- Strong hydraulic Y-direction brake
- High strokes, available as standard as well as custom
- All standard turrets can be fit, for front and back-machining

“Y-axis” unit type YAX

Y轴单元 YAX



YAX单元可以使刀具在Y轴方向进行移动，从而实现过轴加工以满足加工类型的需求。例如：端面铣削，孔加工和攻丝，键槽加工等。YAX可以在平床身车床和斜床身车床上，作为有Y轴方向移动的特殊需求的垂直于滑轨使用。带有宽轨和其他加固部件的高强度铸铁柱，以及液压导轨预负荷系统（专利）可以承受高强度的车削及动力加工。由于使用模块化设计，YAX有三种型号：YAX16(适应于120和160刀架) YAX25(适应于200和250刀架) YAX32(适应于320和400刀架) TBYA和TBYR刀架可以使用。标准的行程可以根据主机厂要求制定（联系我们技术部门）

主要特点：

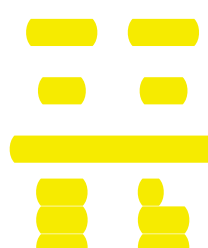
- 坚固的高强度铸铁柱，能够最好的抑制振动达到稳定的效果
- 非常宽的经过热处理的滑轨，各个方向均带有消除背隙的装置，包含中央润滑系统（润滑油系统不含）
- 可调整的液压导轨预负荷系统（专利）能适应高强度的操作
- 带有高强度的Y轴方向的液压刹车
- 大行程，可根据要求定制
- 所有标准刀架都可以按照使用，正向加工或者反向加工



Technical data

技术参数

Size 规格		YAX16		YAX25		YAX40	
Turret size 刀架型号		120	160	200	250	320	400
Minimum suggested motor torque 最小电机推荐扭矩	S1	4	6	10	13	25	30
Ball screw diameter x pitch 滚珠丝杠直径x螺距	mm	32x5	32x5	40x5	40x5	63x10	63x10
Max feed speed in Y direction 最大Y向进给速度	m/min	10	10	10	10	10	10
Max feed force in Y-direction 最大Y向进给力	N	8000	12000	18000	27000	32000	39000
Nominal stroke 标准行程	mm	± 40	± 40	± 70	± 70	± 100	± 100
Hydraulic brake force in Y-direction* Y向液压刹车力*	N/bar	50	50	90	90	180	180
Max. Y-direction hydraulic brake oil pressure** 最大Y向液压刹车油压**	bar	100(150)	100(150)	100(150)	100(150)	100(150)	100(150)
Positioning accuracy 定位精度	电机编码器	μm	≤20	≤20	≤20	≤20	≤20
	滚珠丝杠编码器 (选配)		≤15	≤15	≤15	≤15	≤15
	直线编码器 (选配)		≤10	≤10	≤10	≤10	≤10



* For friction coefficient $f=0.1$

** 100 bar maximum standard pressure, 150 bar on request

* 摩擦系数 $f=0.1$

** 100bar最大标准压力, 150bar (选配)





NEW!

YAX 部件组成

- (*) 根据客户规格提供



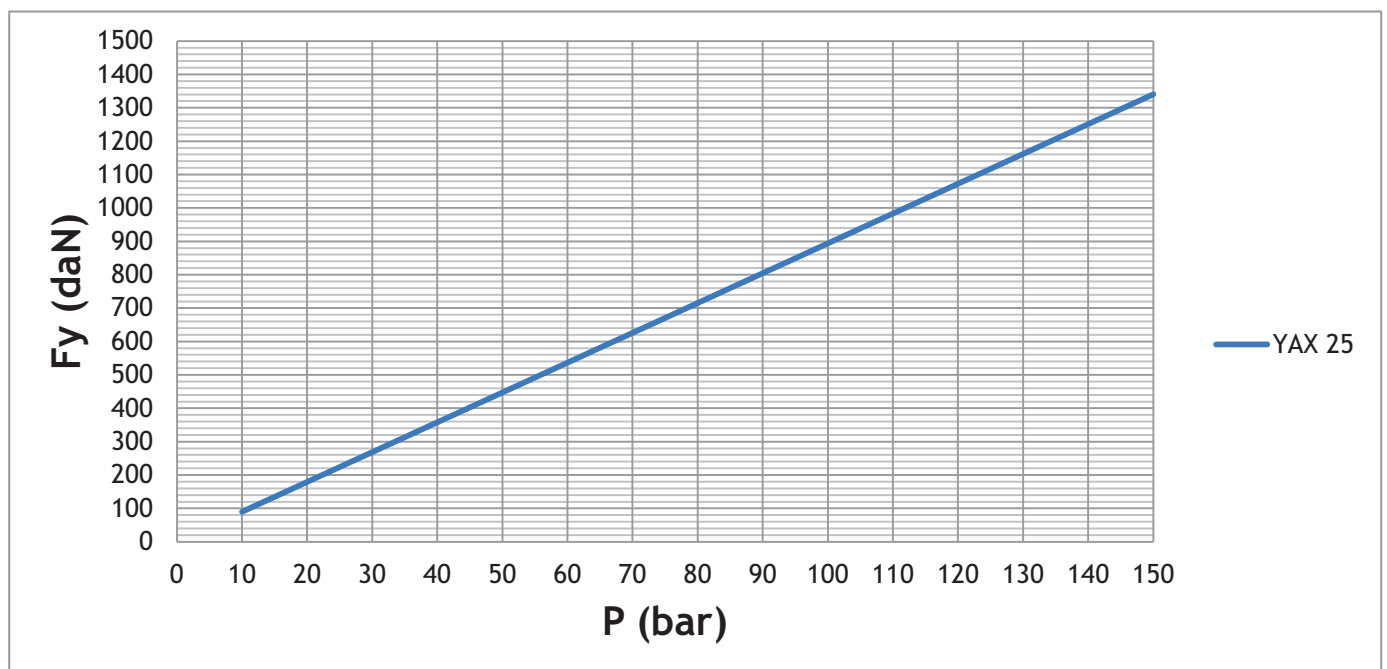
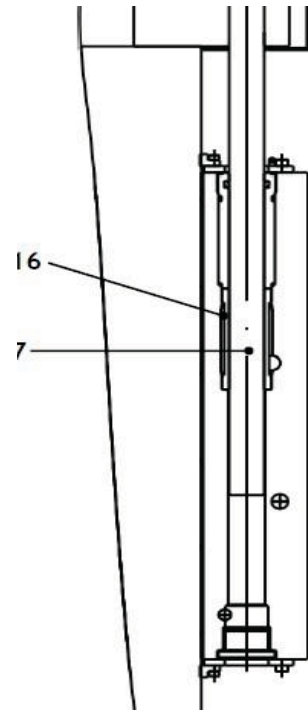


YAX hydraulic brake

YAX液压刹车

When the unit is in fixed position, before starting machining operations either with fixed tools or with live tools, it is necessary to activate Y-Axis brake, in order to prevent the slide from displacing downwards/upwards due to machining forces. This is necessary even if Y-Axis motor has a brake, because elastic and mechanically reversible components in unit kinematic system might allow the slide to move under machining forces and vibrations.

当Y轴单元固定在某一个位置时，在启动车削加工或动力加工程序前，必须将Y轴进行刹车，以防切削力使滑板上下移动。如果Y轴电机带刹车，这个步骤也是必要的，因为Y轴单元运动部件中的一些带有弹性的机械上可逆的部件，会在切削力作用下使得滑板位移或震动。



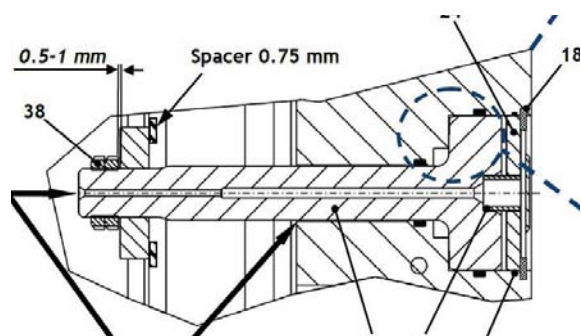


Guideways preload system

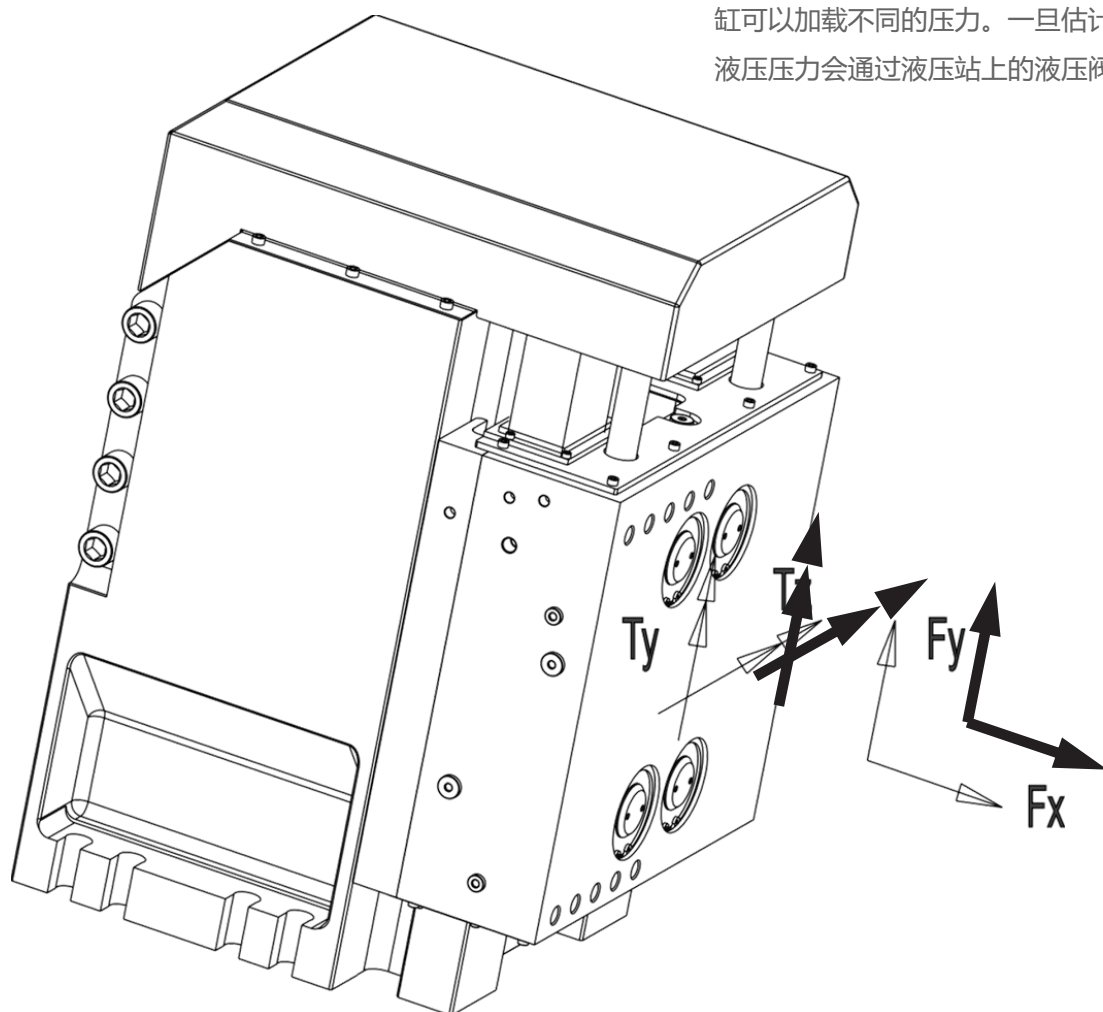
导轨预载系统

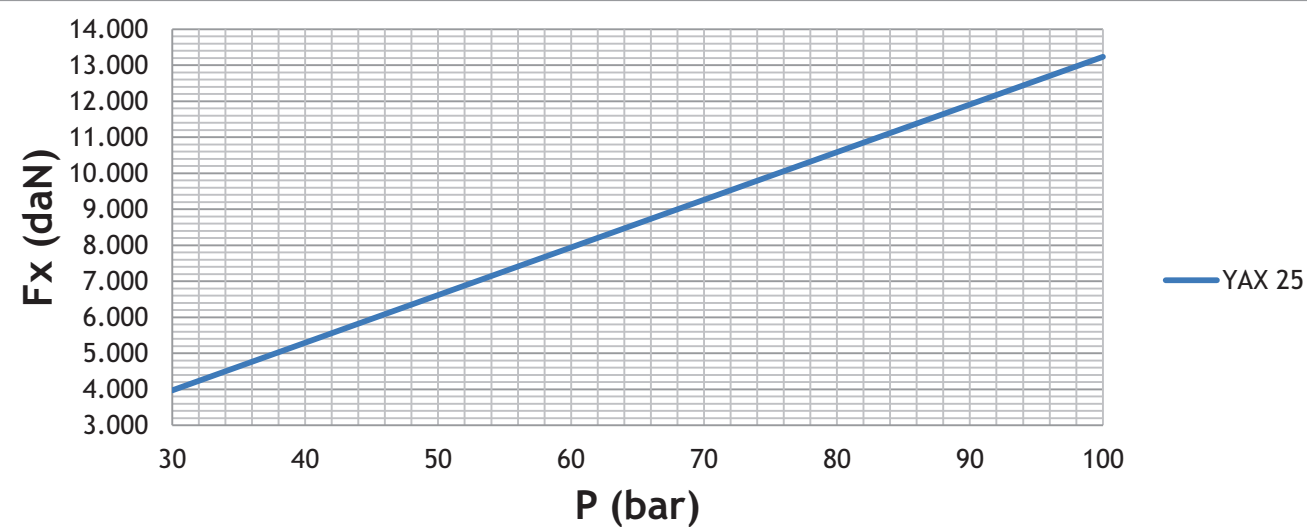
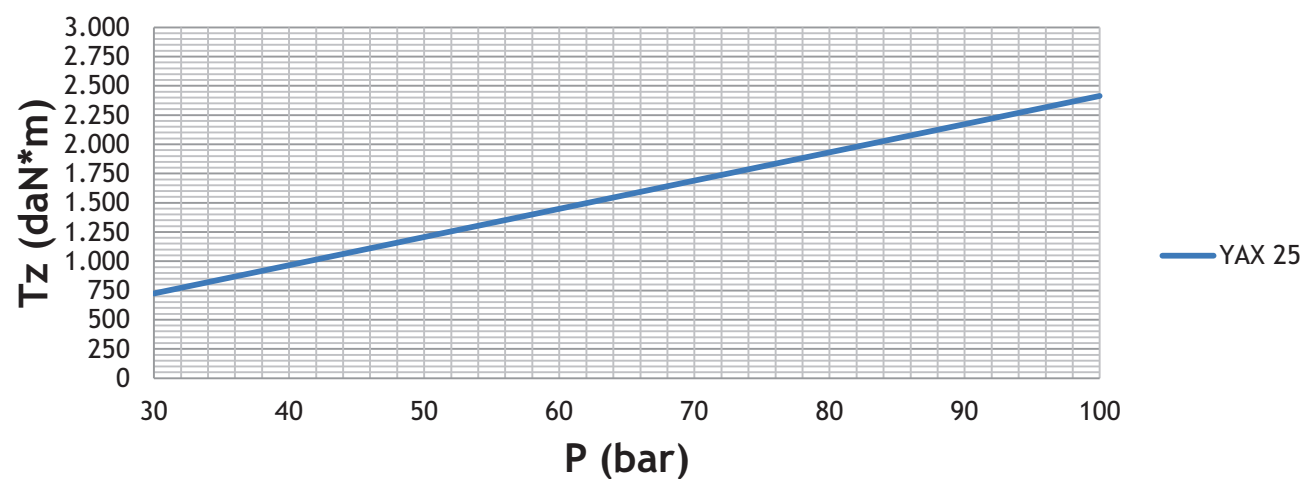
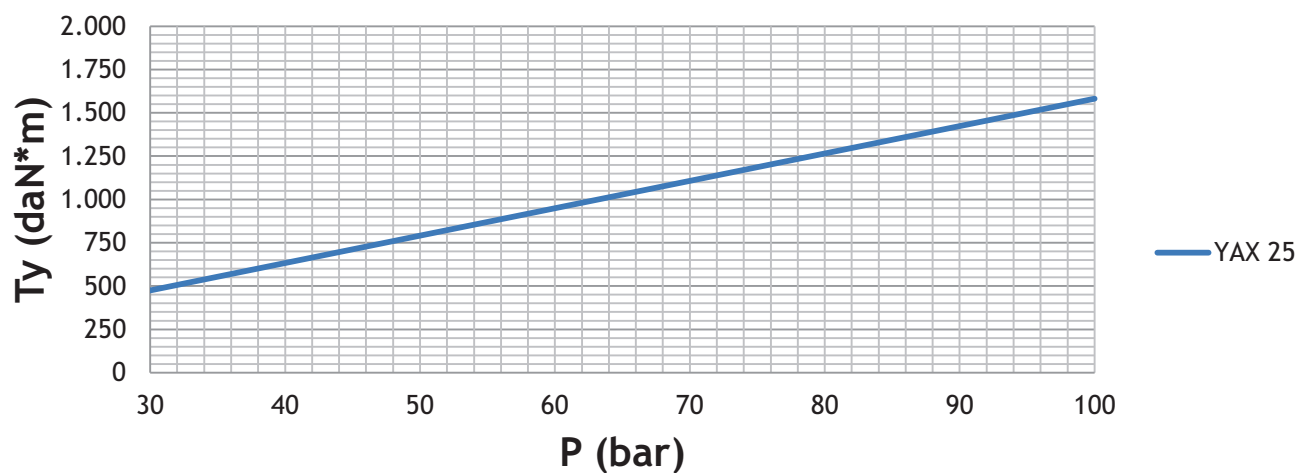
Y-Axis guideways preload system consists of 4 hydraulic cylinders that pull the slide against the guideways when the unit is in fixed position. This system prevents turret from displacing due to high machining forces that arise during turning operations, especially when guideways have been working for a while and some backlash, even very small, may be present due to wear.

Preload cylinders can be activated with different oil pressures, according to machining forces that are applied to the unit. Once estimated such machining forces, the right oil pressure can be evaluated and set on hydraulic valves in power pack unit.



Y轴导轨预载系统由四个液压油缸组成，当Y轴需要固定在某个位置时，他会将滑板 and 导轨拽拉在一起。这个系统可以在机床进行车削工作时防止由于高强度切削力，而对刀架产生的移动。尤其是当导轨工作一段时间后，甚至由于磨损而产生的微小间隙。根据加工时，在Y轴单元上产生的切削力，预载油缸可以加载不同的压力。一旦估计出切削力，相应的液压压力会通过液压站上的液压阀来加压。

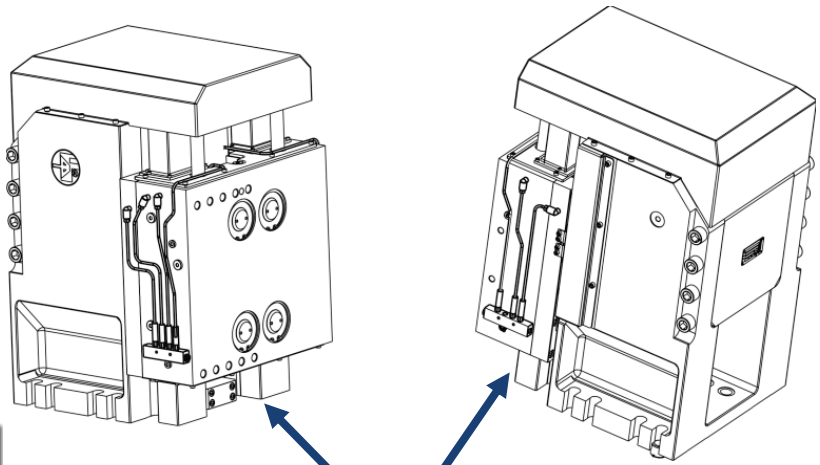






Centralized lubrication

集中润滑



YAX unit is equipped with a centralized lubrication system, to ensure lubricating oil supply to sliding guideways and ball screw.

YAX单元带有集中润滑系统，以确保滑轨和滚珠丝杠的润滑

润滑油相关信息

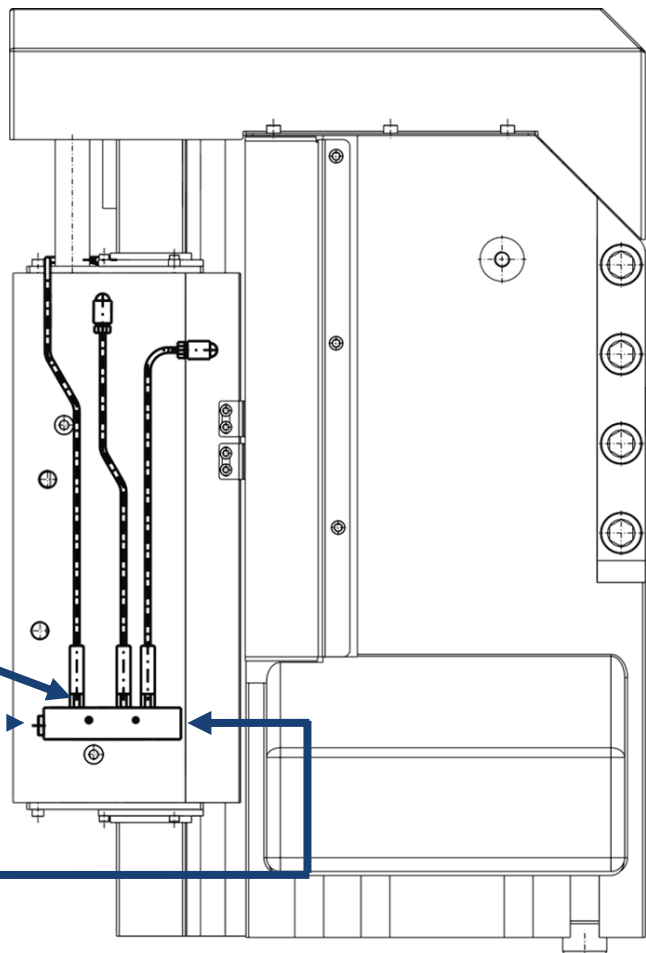
油压：P=50bar
流量：Q=0.7cm³/循环
润滑周期：2-4循环/小时
润滑油粘度：32-2000cSt
润滑脂：NLGI 0

润滑油喷射量 (0,10 cm³/ 循环)

两边均可

对面镜像

润滑油供油孔 (M10x1)





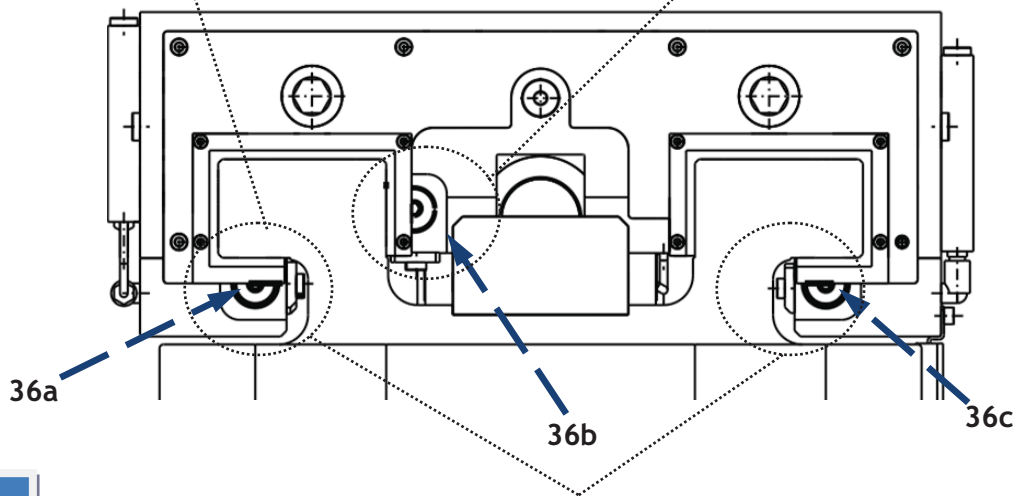
Recovering guideways backlash

导轨间隙消除系统

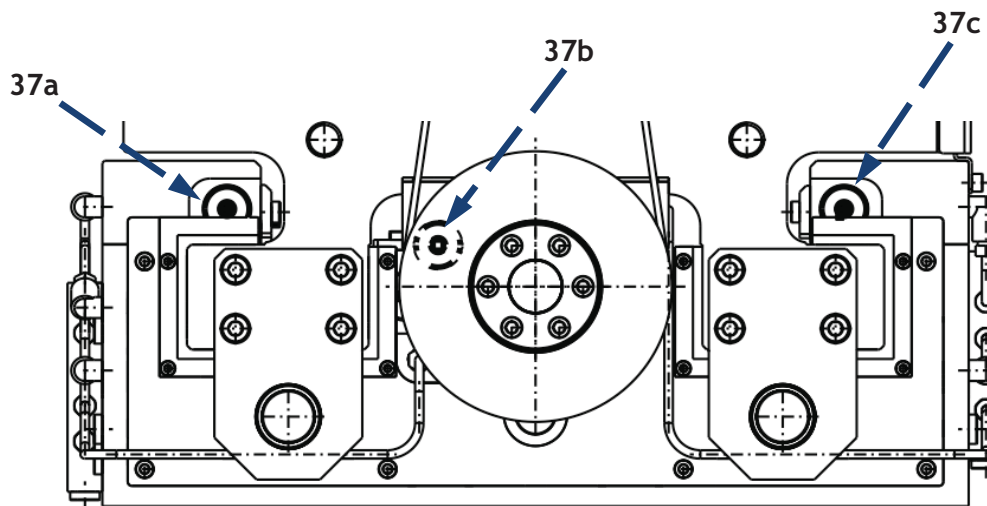
YAX unit moves upon flat sliding guideways, by means of a sliding material applied to the moving parts and to sliding wedges.

The unit is equipped with 3 backlash recovery wedges, 1 for transverse backlash recovery (48) and 2 for orthogonal backlash recovery (49,50)

底视图



顶视图

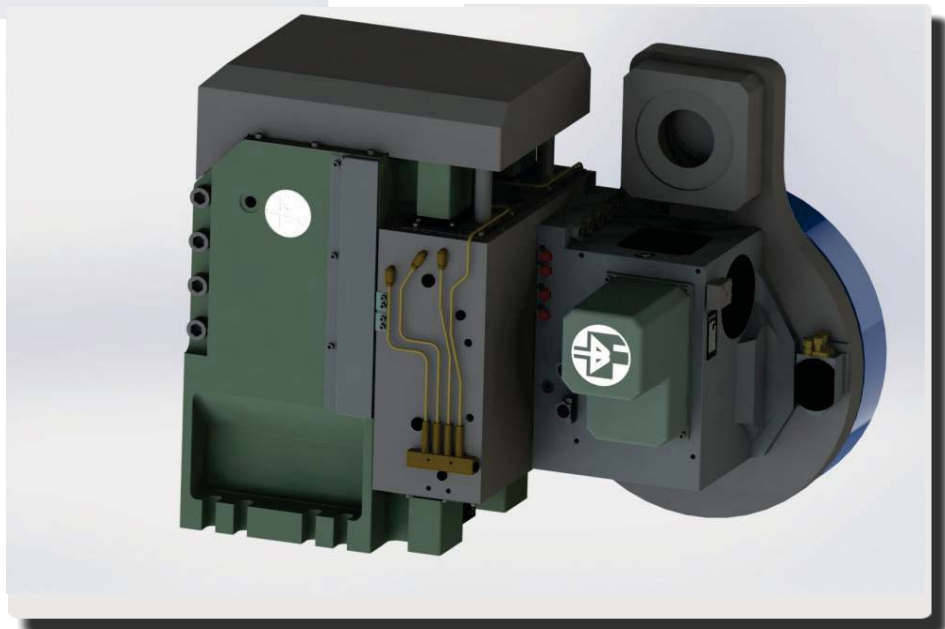
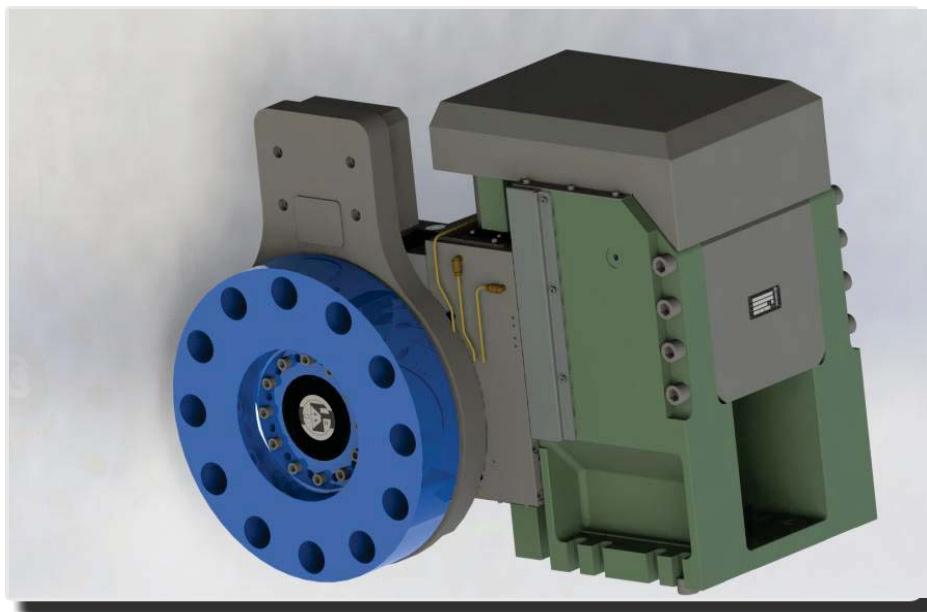


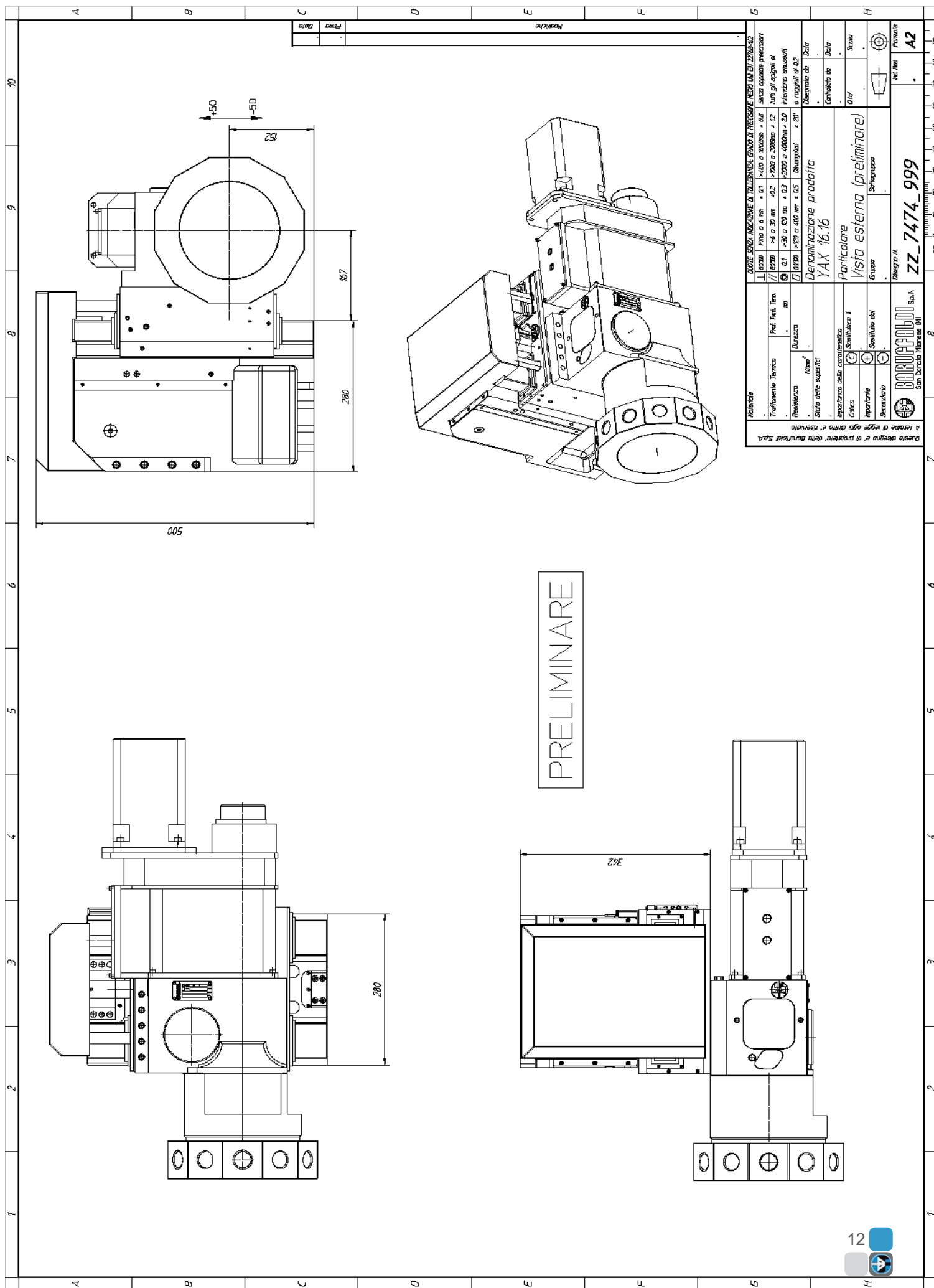
YAX单元过作用在运动部件和滑动楔块的滑动体，在宽滑轨上移动。YAX单元一共有3个间隙消除楔块，1个用于消除横向间隙（48），另外2个用于消除垂直间隙（49,50）



“Y-axis” unit type YAX

Y轴单元 YAX 3D图

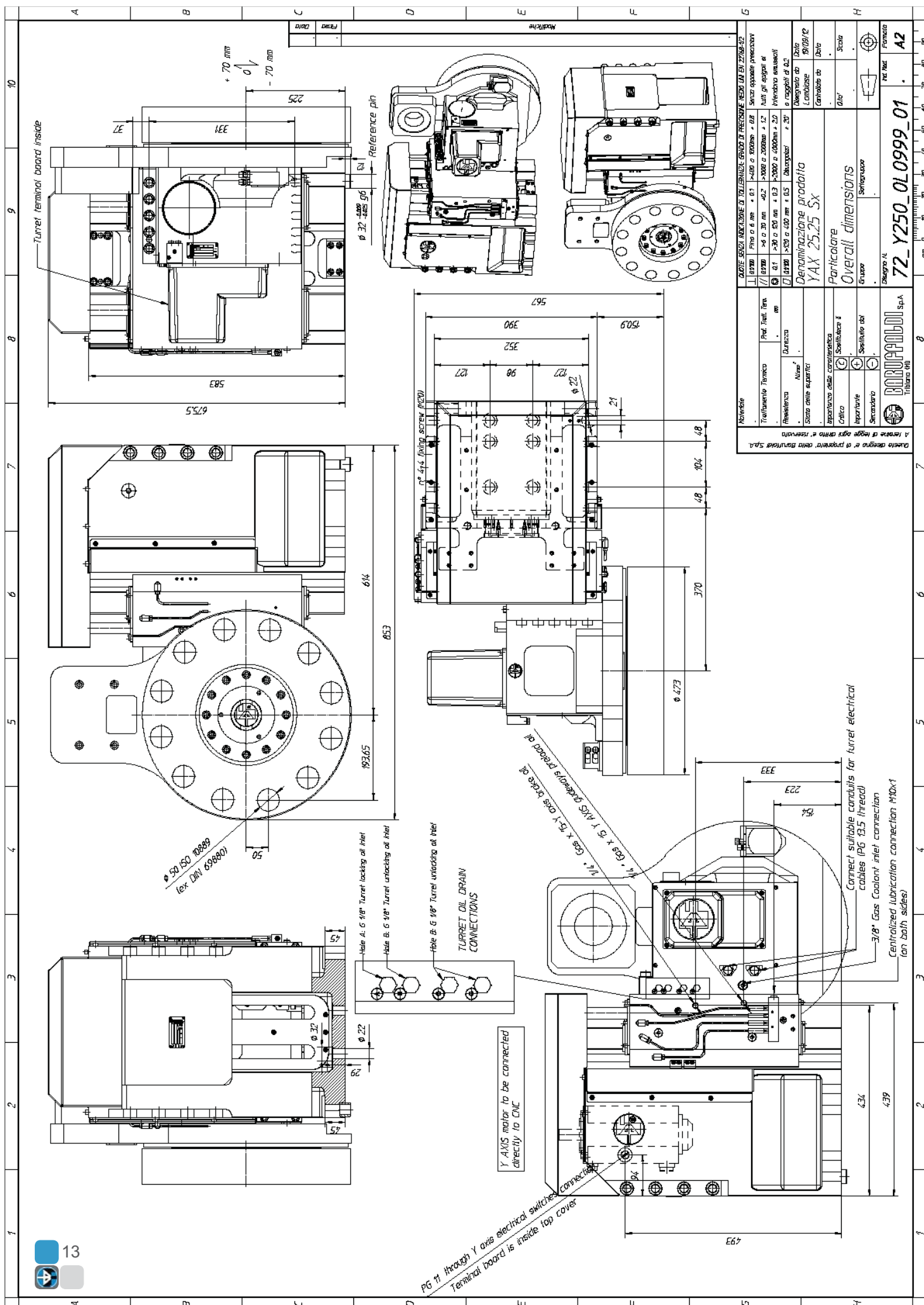


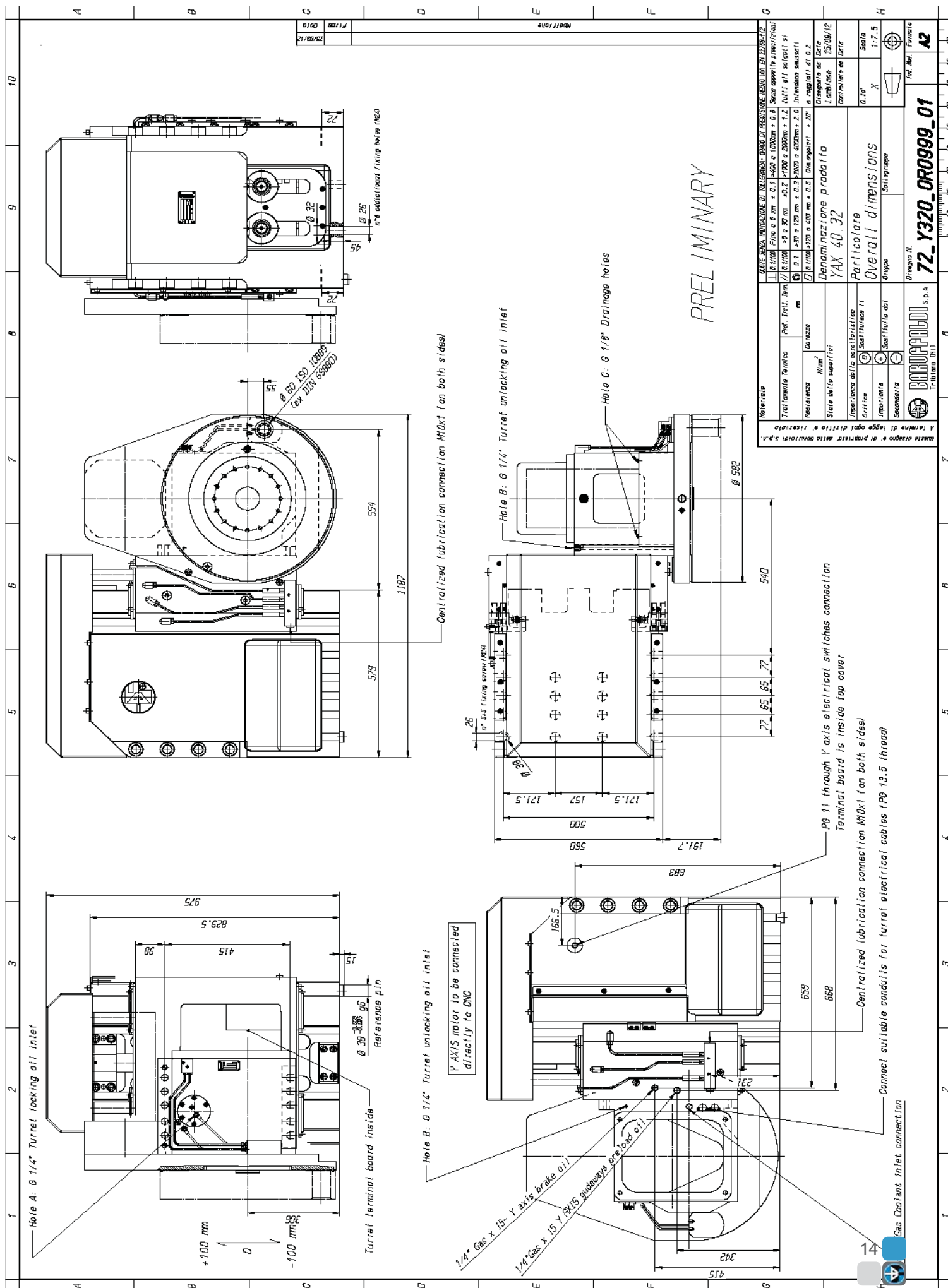




NEW!

YAX 25.25







Y axis Axial and Radial driven tools turrets type TBYA/TBYR for tool-holders as per ISO norms 10889 (ex DIN 69880)

Y轴用轴向和径向出刀伺服动力刀架 **TBYA/TBYR**
刀座标准 **ISO10889(ex DIN 69880)**



This turret has been designed for use on the Y axis of turning centres.

The turret has compact overall dimensions towards the chuck, the tailstock and the slide.

This solution allows use of toolholder discs with standard dimensions.

这款刀架是专门为车铣中心的Y轴设计的
对卡盘、尾座以及滑轨来说，刀架机构紧凑
这种方案可以使用标准直径的刀盘。

Main characteristics and advantages:

- These turrets can be supplied together with Barufaldi Y-axis unit (see YAX section), for a rugged, precise and cost-effective solution
- As an alternative, such turrets can be fit on customer's Y-axis unit
- Both frontal TBYA and radial TBYR turrets can be used on the same Y-axis
- Main features of these turrets are similar to TBMA and TBMR turrets
- Available sizes 120-160-200-250-320.

主要特性和优点：

- 这些刀架可以和Y轴单元组装后一同供应，坚固精密并且性价比最优。
- 客户亦可单独购买这种刀架，装配在自己的Y轴单元上
- TBYA和TBYR可独立安装在相同的Y轴上
- 其他主要特性和TBMA以及TBMR相似
- 可选规格：120-160-200-250-320

1. For technical data refer to TBMA, TBMR-VDI and TBMR-BMT sections.

2. For Y-axis unit see YAX section.

1. 技术参数参考TBMA, TBMR-VDI和TBMR-BMT部分

2. Y轴单元请参见YAX部分





TBYA live tools technical data

TBYA动力头技术参数

Size 规格		TBYA 120	TBYA 160	TBYA 200	TBYA 250	TBYA 320
Toolholder shaft size 动力头轴柄尺寸	mm	20	30	40	50	60
Max torque at the motor 动力电机最大扭矩	Nm	16	16	50	50	100
Max power 动力电机最大功率	Kw	5	5	9	9	15
Max motor speed 动力电机最大转速	RPM g/min	6000	6000	5000	5000	3000
Ratio: RPM motor / RPM take power 动力电机/动力头输出位置传动比	Direct	1:1	1:1	1:1	1:1	1:1
	Reduction	-	1.25	1.315	1.52	1.45
Turret's total weight 刀架总质量	Kg	60	80	140	170	426
Available version 版本	Pneumatic 气压	•	•	•	•	•
	Hydraulic 液压	•	•	•	•	•
Working pressure 工作压力	Bar	气压	5 ± 1			
		液压	30 ± 3			

TBYR - VDI live tools technical data

TBYR-VDI 动力头技术参数

Size 规格		TBYR 120	TBYR 160	TBYR 200	TBYR 250	TBYR 320
Toolholder shaft size 动力头轴柄尺寸	mm	20	30	40	50	60
Max torque at the motor 动力电机最大扭矩	Nm	16	16	50	50	100
Max power 动力电机最大功率	Kw	5	5	9	9	15
Max motor speed 动力电机最大转速	RPM g/min	5000	5000	4000	4000	3000
Ratio: RPM motor / RPM take power 动力电机/动力头输出位置传动比	Direct	1:1	1:1	1:1	1:1	1:1
	Reduction	1.23	1.23	1.25	1.25	1.33
Turret's total weight 刀架总质量	Kg	84	115	192	285	595
Available version 版本	Pneumatic 气压	•	•	•	•	•
	Hydraulic 液压	•	•	•	•	•
Working pressure 工作压力	Bar	气压	5 ± 1			
		液压	30 ± 3			

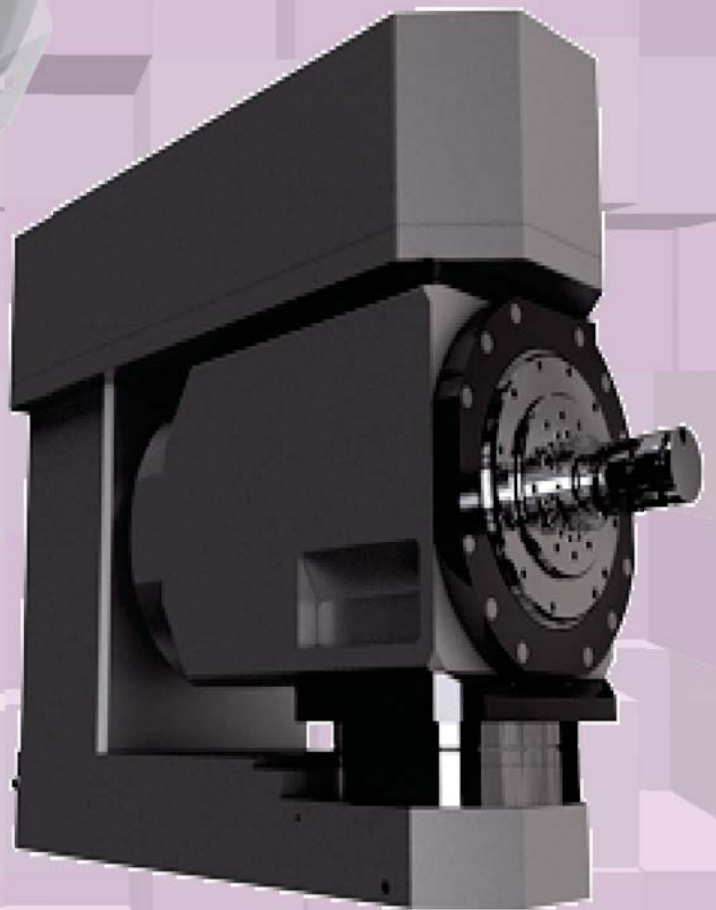
TBYR - BMT live tools technical data

TBYR-BMT 动力头技术参数

Size 规格		TBYR 120	TBYR 160	TBYR 200	TBYR 250	TBYR 320
BMT size 动力头轴柄尺寸	Dimensione mm	45	45	55	65	75
				65	75	85
Max torque at the motor 动力电机最大扭矩	Nm	16	16	50	50	100
Max power 动力电机最大功率	Kw	5	5	9	9	15
Max motor speed 动力电机最大转速	RPM g/min	6000	6000	5000	5000	3000
Ratio: RPM motor / RPM take power 动力电机/动力头输出位置传动比		1	1	1	1	1
Turret's total weight 刀架总质量	Kg	84	115	192	285	595
Available version 版本	Pneumatic 气压	•	•	•	•	•
	Hydraulic 液压	•	•	•	•	•
Working pressure 工作压力	Bar	气压	5 ± 1			
		液压	30 ± 3			



Turn-Mill multifunction unit B-Axis type BAX



车铣复合多功能B轴单元型号BAX选型指南



Turn-Mill multifunction unit B-Axis type BAX

车铣复合多功能B轴单元型号BAX

车铣复合单元“B轴”型号：BAX

Baruffaldi开发B轴刀架型号BAX，从而完善了车床和加工中心功能附件的种类。

BAX单元，可以进行比如车、铣、钻、同轴偏心、以及任意角度的攻丝，而且还可以进行三维外形的加工BAX单元根据电主轴扭矩的不同有三个规格：100Nm (BAX100) 200Nm (BAX200) 和330Nm (BAX330) 不同的刀座系统均可使用，比如HSK, CAPTO等。坚固的钢结构，大直径齿盘和无背隙摆动传递确保始终提供强大的切削能力和切削精度。

主要特点

- 紧凑的设计，根据客户要求，可以将刀架和机床滑板做成一个整体
- 可定制种类齐全的电主轴
- 三种扭矩规格，可以满足极大硬度加工的需要
- 高强度的钢结构
- 大直径三对齿盘靠液压锁紧，同时满足工作台和电主轴高强度车削（油压高达70bar）
- 高扭矩液压刹车（高达3500Nm）
- 无背隙摆动，高精度高重复定位精度
- 工作台预载的多样性能实现插补加工



Baruffaldi has developed B-Axis type BAX, thus completing its range of accessories for lathes and machining centers.

By means of BAX unit, machining operations such as turning, milling, drilling, tapping - coaxial, offset and at any angle - plus three-dimensional profiling can be carried out. BAX unit is available in three sizes, with reference to electrospindle torque capability: 100Nm (BAX 100), 200Nm (BAX 200) and 330Nm (BAX 330). Different toolholder systems can be supplied, such as HSK, CAPTO and others on request. Rugged steel structure, big diameter Hirth teeth rings and backlash-free swiveling transmission assure strong machining with high and constant precision over time.

Main Characteristics:

- Compact design. Upon customer request, it can be integrated in machine slide
- Widely customizable electrospindle
- Three torque sizes available, to meet the hardest machining needs
- Very high steel structure stiffness
- Hydraulic locking on big diameter three-rings Hirth coupling, both for table and electrospindle, for very heavy turning operations (oil pressure up to 70 bar)
- High torque hydraulic brake (up to 3500 Nm)
- Backlash free swiveling, high precision and positioning repeatability
- Variable table pre-load for interpolation machining



Technical data

技术参数

Size规格			BAX 100		BAX 200		BAX 330			
Swiveling angle 摆动角度			Deg°		± 105°					
分度精度 Angular positioning		齿盘锁紧 Index clamping		Deg°	Every 5°					
		刹车锁紧 (1) Brake clamping (1)			角码器 Resolution		0,4"			
定位精度 Positioning accuracy		齿盘锁紧 Index clamping		Deg°	± 4"					
		刹车锁紧 (1) Brake clamping (1)			± 15"					
重复定位精度 Positioning repeatability		齿盘锁紧 Index clamping		Deg°	± 1,5"					
		刹车锁紧 (1) Brake clamping (1)			± 5"					
最大切削方向扭矩 Maximum tangential torque		50 bar		Nm	4000		4000		7700	
		70 bar			5600		5600		10800	
油压 Oil pressure			bar		50 - 70 bar (according to duty)					

电主轴 Electrospindle				
最小主轴扭矩S1 (2) Maximum electrospindle torque - S1 (2)	Nm	100	200	330
	RPM	0 - 2000	0 - 1500	0 - 1300
最小主轴扭矩S640% (2) Maximum electrospindle torque - S6 40% (2)	Nm	130	260	430
最大电主轴旋转速度 (2) Maximum electrospindle rotating speed (2)	RPM	14.000	14.000	8.000
刀具接口 Tool coupling (3)		HSK A50 - A63	HSK A63 - A80	HSK A80 - A100
		CAPT0 C5 - C6	CAPT0 C6 - C8	CAPT0 C8
油压 Oil pressure	bar	50 - 70 bar (according to duty)		

* Sono possibili differenti posizioni di montaggio.
Different mounting positions are possible.

- 1 表中的数据是用标准的编码器，低一些的数据可以通过使用更精确的编码器
- 2 实际扭矩，最大速度可以定制
- 3 可以满足不同的连接

- 1 Values achieved with standard encoder. Lower values can be achieved by using a more accurate encoder
- 2 Actual torque, defluxing speed and maximum speed can be customized
- 3 Different couplings upon request



Turn-Mill multifunction unit B-Axis 100Nm

车铣复合多功能B轴单元 B轴 100牛米

The device is designed as a “C”-shaped structure comprising:

- Steel base, where turning table is fitted
- Welded steel column
- Cast-iron upper structure, where swiveling motor is fitted
- Electrospindle

Swiveling +/- 105° or more if necessary.

B轴刀架设计外形为C结构

- 旋转工作台为铁底座
- 钢焊接立柱
- 电机摆动和传递所在的上部结构为钢焊接
- 电主轴

摆动角度± 105° 或者更多

- TURNING TABLE

Main features

- Turning upon axial and radial needle bearings
- Swiveling by means of a direct Torque Motor, no mechanical plays and wear, thus no periodical adjustments requested
- Indexed locking every 5 deg on 3-part Hirth rings
- Free angle locking by means of a hydraulic brake
- N°2 inductive sensors for locked/unlocked Hirth rings signal
- Interpolation machining possible during finish-milling, different table bearings pre-loads can be set.

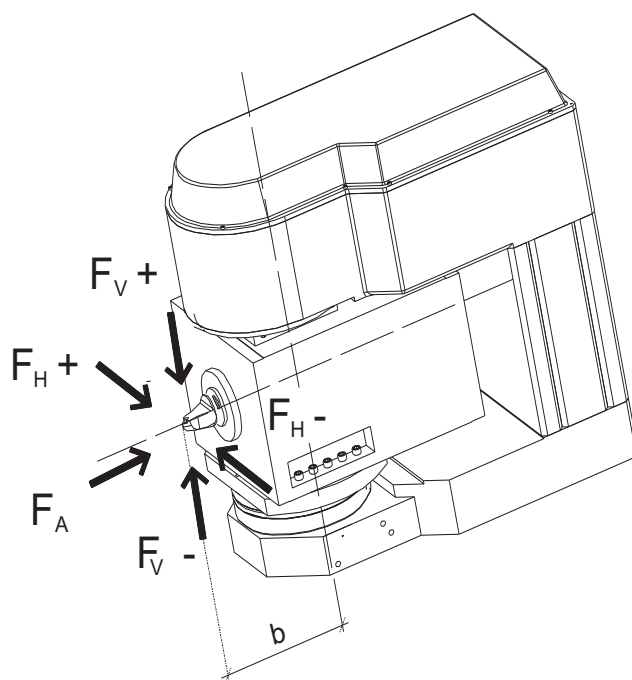
车削工作台

- 车削时，轴向和径向滚针轴承
- 通过扭矩电机直接驱动摆动，无机械动作和磨损，因此无需周期性的调整
- 3齿盘结构，分度精度5°
- 液压刹车任意角度分度锁紧
- 通过两个传感器传输松开锁紧信号
- 精铣时可以插补加工，可以使用不同的工作台预载轴承



Mechanical performances

机械性能



- 油压 : 50BAR
- **OIL PRESSURE: 50 BAR**

齿盘锁紧 (车削工序)

Hirth rings locked (Turning operations)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F_- *b$)

4000 Nm

最大倾斜扭矩, 下压

Max tilting torque, pushing ($F_V + *b$)

4000 Nm

最大倾斜扭矩, 脱离

Max tilting torque, lifting ($F_V - *b$)

$b=230\text{mm}$

$F_{V-} \text{ max} = 14800 \text{ N}$

$C = 3400 \text{ Nm}$

最大轴向力

Max axial force (F_A)

26000 N

液压刹车锁紧 (刀具旋转加工工序)

Hydraulic brake locked (Rotating tool operations)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F_- *b$)

2500 Nm

最大倾斜扭矩, 下压

Max tilting torque, pushing ($F_V + *b$)

4000 Nm

最大倾斜扭矩, 脱离

Max tilting torque, lifting ($F_V - *b$)

$b=230\text{mm}$

$F_{V-} \text{ max} = 14800 \text{ N}$

$C = 3400 \text{ Nm}$

最大轴向力

Max axial force (F_A)

26000 N

插补 (精铣)

Interpolation (Finish-milling)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F_- *b$)

616 Nm

(standard motor)

1320 Nm

(on request)



- 油压 : 70BAR
- **OIL PRESSURE: 70 BAR**

齿盘锁紧 (车削工序)

Hirth rings locked (Turning operations)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F - *b$)

5600 Nm

最大倾斜扭矩, 下压

Max tilting torque, pushing ($F_V + *b$)

5600 Nm

最大倾斜扭矩, 脱离

Max tilting torque, lifting ($F_V - *b$)

b=230mm

Fv- max= 20700 N

C = 4760 Nm

最大轴向力

Max axial force (F_A)

36400 N

液压刹车锁紧 (刀具旋转加工工序)

Hydraulic brake locked (Rotating tool operations)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F - *b$)

3500 Nm

最大倾斜扭矩, 下压

Max tilting torque, pushing ($F_V + *b$)

5600 Nm

最大倾斜扭矩, 脱离

Max tilting torque, lifting ($F_V - *b$)

b=230mm

Fv- max= 20700 N

C = 4760 Nm

最大轴向力

Max axial force (F_A)

36400 N

插补 (精铣)

Interpolation (Finish-milling)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F - *b$)

616 Nm

(standard motor)

1320 Nm

(on request)



• ELECTROSPINDLE 电主轴

Tool coupling 刀具接口

Capto C5/C6 – HSK A63 (others on request)

Motor features: 电机参数

Synchronous Phase Motor TK195-90

C_{max} (S1) = 100 Nm (0-2000 rpm)

Max power = 23.7 kW

Max turning speed = 14.000 rpm

- No maintenance, permanent grease bearings lubrication
- Liquid motor cooling
- Encoder L+B GEL 2442 KN for spindle vectorial control and positioning
- Front air pressurization
- Tool coupling air cleaning during tool change
- Hydraulic cylinder for tool change operations
- Tool change operations control by means of inductive sensors
- Rotating joint for through-tool coolant supply
- Vacuum device for coolant rotating joint leaks draining
- Outer coolant supply through built-in nozzles
- Spindle hydraulic locking on 3-part Hirth rings for turning operations (spindle bearings are released)

- 无需维护，轴向永久性脂润滑
- 液体电机冷却
- 通过编码器L+B GEL 2442 KN对主轴矢量控制和定位
- 前部空气增压
- 换刀时，对刀具接口吹气清洁
- 通过液压缸进行换刀操作
- 通过传感器进行换刀操作的控制
- 旋转接头刀具中心出水
- 真空装置保证冷却液旋转接头的泄露



- **POSSIBLE MACHINING OPERATIONS WITH 50 BAR TABLE LOCKING**

工作台压力50BAR时的加工情况

Material to be machined: low alloy steel, $R_m=600 \text{ N/mm}^2$ 工件材料：低合金钢， $R_m600\text{N/mm}^2$
 Insert tools. 刀片

Outer diameter turning (table Hirth rings locked, electrospindle Hirth rings locked)

加工外圆（工作台齿盘锁紧，电主轴齿盘锁紧）

D= 300mm	workpiece diameter	工件直径
Vc=180 m/min	cutting speed	切削速度
ap= 7 mm	depth of cut	切削深度
fn= 0.6 mm/rev	feed per revolution	线速度

Center drilling (table Hirth rings locked, electrospindle Hirth rings locked)

钻中心孔（工作台齿盘锁紧，电主轴齿盘锁紧）

d=63mm	drill diameter	钻头直径
Vc=200 m/min	cutting speed	钻削速度
fn=0.15 mm/rev	feed per revolution	线速度

Off-center drilling with electrospindle (table Hirth rings locked, electrospindle turning)

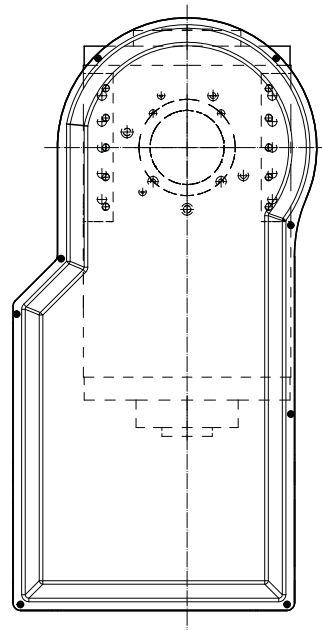
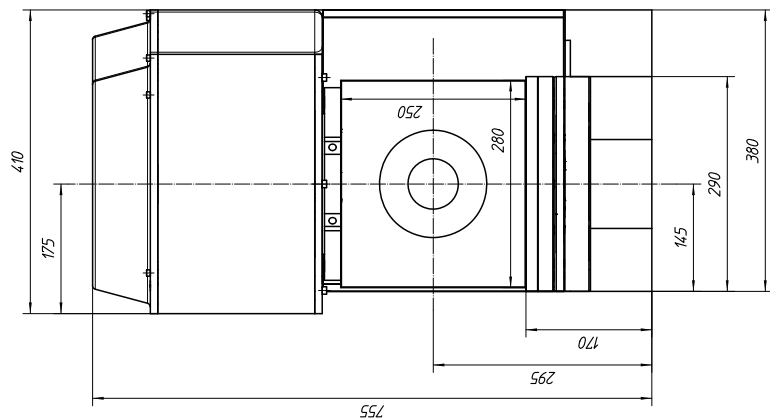
钻偏心孔（工作台齿盘锁紧，电主轴旋转）

d=40 mm	drill diameter	钻头直径
Vc=170 m/min	cutting speed	钻削速度
fn=0.13 mm/rev	feed per revolution	线速度

Face milling (hydraulic brake locked, electrospindle turning)

端面铣削（液压刹车锁紧，电主轴旋转）

d=63 mm	mill diameter	铣刀直径
Vc=250 m/min	cutting speed	铣削速度
ap= 5 mm	axial depth of cut	轴向铣削深度
ae=47 mm	radial depth of cut	径向铣削深度
fz=0.14 mm/tooth	mill feed per tooth	铣削进给量
z=7 teeth	number of teeth	铣刀齿数



PRELIMINARY DRAWING

Materiali		NOTE: SENZA INDICAZIONE DI TOLLERANZA: GRADO DI PRECISIONE MEDIO UN EN 22768-12	
Trattamento Termico		Senza apposite precisazioni tutti gli spigoli si intendono smussati	
Resistenza		a raggi di 0,2	
Stato delle superfici		Disegnato da 20/H08 Data	
Importanza della caratteristica		Controllato da Data	
Critica		Scala 0,1"	
Importante		Scala 0,5	
Secondaria		Gruppo Sottogruppo	
Particolare		Overall dim. EM 100Nm	
Denominazione prodotto		Disegno N. 99_0100_9999_01	
Baruffaldi S.p.A. San Donato Milanese (MI)		Int. Mod. Finito	
A		A2	

segno N. 99_0100_9999_01



BARUFFALDI Sp.A
San Donato Milanese (MI)



Turn-Mill multifunction unit B-Axis 200Nm

车铣复合多功能B轴单元 B轴 200牛米

The device is designed as a "C"-shaped structure comprising: Nm

- Steel base, where turning table is fitted
- Welded steel column
- Cast-iron upper structure, where swiveling motor is fitted
- Electrospindle

Swiveling +/- 105° or more if necessary.

B轴刀架设计外形为C结构

- 旋转工作台为铁底座
- 钢焊接立柱
- 电机摆动和传递所在的上部结构为钢焊接
- 电主轴

摆动角度± 105° 或者更多

- TURNING TABLE
车削工作台

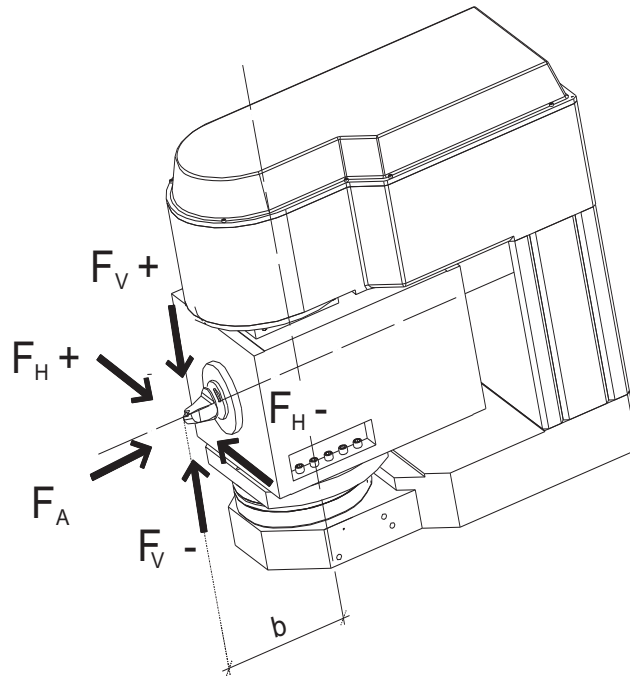
Main features

- Turning upon axial and radial needle bearings
- Swiveling by means of a direct Torque Motor, no mechanical plays and wear, thus no periodical adjustments requested
- Indexed locking every 5 deg on 3-part Hirth rings
- Free angle locking by means of a hydraulic brake
- N°2 inductive sensors for locked/unlocked Hirth rings signal
- Interpolation machining possible during finish-milling, different table bearings pre-loads can be set.
- 车削时，轴向和径向滚针轴承
- 通过扭矩电机直接驱动摆动，无机械动作和磨损，因此无需周期性的调整
- 3齿盘结构，分度精度5°
- 液压刹车任意角度分度锁紧
- 通过两个传感器传输松开锁紧信号
- 精铣时可以插补加工，可以使用不同的工作台预载轴承



Mechanical performances

机械性能



- 油压 : 50BAR
- **OIL PRESSURE: 50 BAR**

齿盘锁紧 (车削工序)

Hirth rings locked (Turning operations)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F_H - *b$)

4000 Nm

最大倾斜扭矩, 下压

Max tilting torque, pushing ($F_V +$)

4000 Nm

最大倾斜扭矩, 脱离

Max tilting torque, lifting ($F_V - *b$)

$b=230\text{mm}$

$F_V - \text{max} = 14800 \text{ N}$

$C = 3400 \text{ Nm}$

最大轴向力

Max axial force (F_A)

26000 N

液压刹车锁紧 (刀具旋转加工工序)

Hydraulic brake locked (Rotating tool operations)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F_H -$)

2500 Nm

最大倾斜扭矩, 下压

Max tilting torque, pushing ($F_V + *b$)

4000 Nm

最大倾斜扭矩, 脱离

Max tilting torque, lifting ($F_V - *b$)

$b=230\text{mm}$

$F_V - \text{max} = 14800 \text{ N}$

$C = 3400 \text{ Nm}$

最大轴向力

Max axial force (F_A)

26000 N

插补 (精铣)

Interpolation (Finish-milling)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F_H - *b$)

616 Nm

(standard motor)

1320 Nm

(on request)



- 油压 : 70BAR
- **OIL PRESSURE: 70 BAR**

齿盘锁紧 (车削工序)

Hirth rings locked (Turning operations)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F - *b$)

5600 Nm

最大倾斜扭矩, 下压

Max tilting torque, pushing ($F_V + *b$)

5600 Nm

最大倾斜扭矩, 脱离

Max tilting torque, lifting ($F_V - *b$)

b=230mm

Fv- max= 20700 N
C = 4760 Nm

最大轴向力

Max axial force (F_A)

36400 N

液压刹车锁紧 (刀具旋转加工工序)

Hydraulic brake locked (Rotating tool operations)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F - *b$)

3500 Nm

最大倾斜扭矩, 下压

Max tilting torque, pushing (F_V)

5600 Nm

最大倾斜扭矩, 脱离

Max tilting torque, lifting ($F_V - *b$)

b=230mm

Fv- max= 20700 N
C = 4760 Nm

最大轴向力

Max axial force (F_A)

36400 N

插补 (精铣)

Interpolation (Finish-milling)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F - *b$)

616 Nm (standard motor)

1320 Nm (on request)



- ELECTROSPINDLE 电主轴

Tool coupling 刀具接口

Capto C6 – HSK A63/A80 (others on request)

Motor features: 电机参数

Synchronous Phase Motor TK195-180

Cmax (S1) = 200 Nm (0-1000 rpm)

Max power = 21 kW

Max turning speed = 14.000 rpm

- No maintenance, permanent grease bearings lubrication
- Liquid motor cooling
- Encoder L+B GEL 2442 KN for spindle vectorial control and positioning
- Front air pressurization
- Tool coupling air cleaning during tool change
- Hydraulic cylinder for tool change operations
- Tool change operations control by means of inductive sensors
- Rotating joint for through-tool coolant supply
- Vacuum device for coolant rotating joint leaks draining
- Outer coolant supply through built-in nozzles
- Spindle hydraulic locking on 3-part Hirth rings for turning operations (spindle bearings are released)

- 无需维护，轴向永久性脂润滑
- 液体电机冷却
- 通过编码器L+B GEL 2442 KN对主轴矢量控制和定位
- 前部空气增压
- 换刀时，对刀具接口吹气清洁
- 通过液压缸进行换刀操作
- 通过传感器进行换刀操作的控制
- 旋转接头刀具中心出水
- 真空装置保证冷却液旋转接头的泄露



- POSSIBLE MACHINING OPERATIONS WITH 50 BAR TABLE LOCKING

工作台压力50BAR时的加工情况

Material to be machined: low alloy steel, $R_m=600 \text{ N/mm}^2$ 工件材料：低合金钢， $R_m600\text{N/mm}^2$

Insert tools.

刀片

Outer diameter turning (table Hirth rings locked, electrospindle Hirth rings locked)

加工外圆（工作台齿盘锁紧，电主轴齿盘锁紧）

D= 300mm	workpiece diameter	工件直径
Vc=180 m/min	cutting speed	切削速度
ap= 7 mm	depth of cut	切削深度
fn= 0.6 mm/rev	feed per revolution	线速度

Center drilling (table Hirth rings locked, electrospindle Hirth rings locked)

钻中心孔（工作台齿盘锁紧，电主轴齿盘锁紧）

d=63mm	drill diameter	钻头直径
Vc=200 m/min	cutting speed	钻削速度
fn=0.15 mm/rev	feed per revolution	线速度

Off-center drilling with electrospindle (table Hirth rings locked, electrospindle turning)

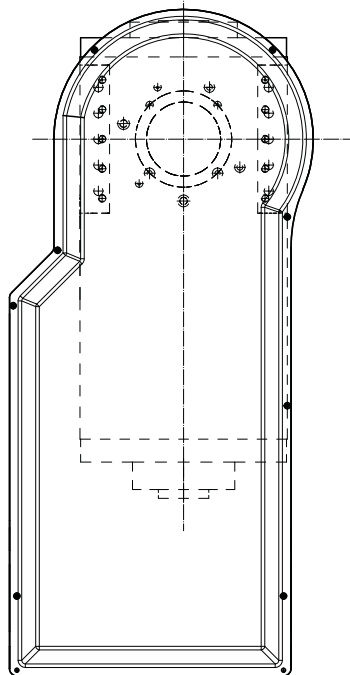
钻偏心孔（工作台齿盘锁紧，电主轴旋转）

d=55 mm	drill diameter	钻头直径
Vc=170 m/min	cutting speed	钻削速度
fn=0.13 mm/rev	feed per revolution	线速度

Face milling (hydraulic brake locked, electrospindle turning)

端面铣削（液压刹车锁紧，电主轴旋转）

d=100mm	mill diameter	铣刀直径
Vc=250 m/min	cutting speed	铣削速度
ap= 5 mm	axial depth of cut	轴向铣削深度
ae=75mm	radial depth of cut	径向铣削深度
fz=0.15 mm/tooth	mill feed per tooth	铣削进给量
z=7 teeth	number of teeth	铣刀齿数量



Questo disegno e' di proprieta' della Baruffaldi S.p.A.

Materiale	Trattamento Termico		Prod. Trail, Terni, mm
	Resistenza	Durezza	
	N/mm ²		
	Stato delle superfici		
	Importanza della caratteristica		
	Critica	Grave	Sostituisce #
	Importante	+	Sostituito dal
	Secondaria	-	
 BARUPALDI S.p.A. San Donato Milanese (MI)			

QUOTE SENZA INDICAZIONE DI TOLLERANZA GRADO DI PRECISIONE MEDIO UN ISO 2769-12		Serie apposite prescrizioni tutti gli spigoli si intendono smussati a raggio di 0,2		Data 29/04/09
Denominazione prodotto Particolare Overall dim. EM 200Nm		Disegnato da Molteni	Controlato da Data	Scala 0,5
Gruppo		Sottogruppo		0,5
Disegno N. 99_0200_9999_01		Int. Mod.		Formato A2

99_0200_9999_01



Turn-Mill multifunction unit B-Axis 200Nm

车铣复合多功能B轴单元 B轴 200牛米

The device is designed as a "C"-shaped structure comprising: 322 Nm

- Steel base, where turning table is fitted
- Welded steel column
- Cast-iron upper structure, where swiveling motor is fitted
- Electrospindle

Swiveling +/- 105° or more if necessary.

B轴刀架设计外形为C结构

- 旋转工作台为铁底座
- 钢焊接立柱
- 电机摆动和传递所在的上部结构为钢焊接
- 电主轴

摆动角度± 105° 或者更多

- TURNING TABLE 车削工作台

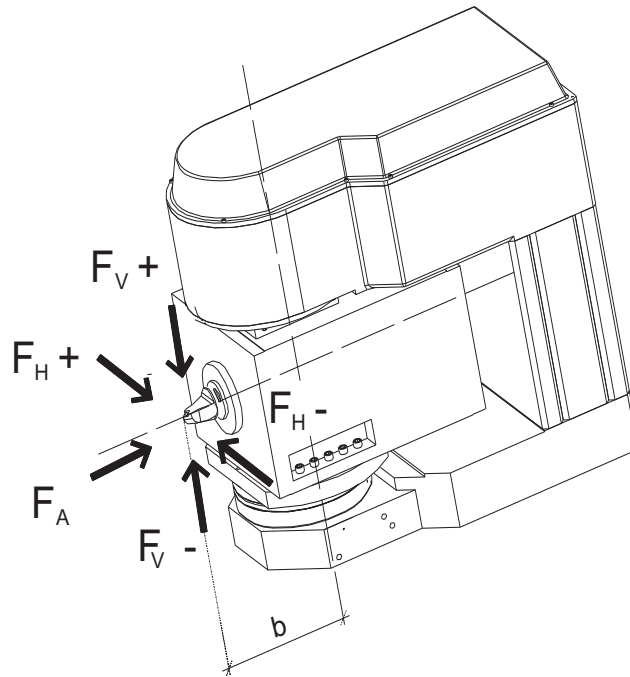
Main features

- Turning upon axial and radial needle bearings
- Swiveling by means of a direct Torque Motor, no mechanical plays and wear, thus no periodical adjustments requested
- Indexed locking every 5 deg on 3-part Hirth rings
- Free angle locking by means of a hydraulic brake
- N°2 inductive sensors for locked/unlocked Hirth rings signal
- Interpolation machining possible during finish-milling, different table bearings pre-loads can be set.
- 车削时，轴向和径向滚针轴承
- 通过扭矩电机直接驱动摆动，无机械动作和磨损，因此无需周期性的调整
- 3齿盘结构，分度精度5°
- 液压刹车任意角度分度锁紧
- 通过两个传感器传输松开锁紧信号
- 精铣时可以插补加工，可以使用不同的工作台预载轴承



Mechanical performances

机械性能



- 油压 : 50BAR
- **OIL PRESSURE: 50 BAR**

齿盘锁紧 (车削工序)

Hirth rings locked (Turning operations)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F_V - *b$)

7700 Nm

最大倾斜扭矩, 下压

Max tilting torque, pushing (F_V)

7700 Nm

最大倾斜扭矩, 脱离

Max tilting torque, lifting ($F_V - *b$)

$b=230\text{mm}$

$F_V - \text{max} = 14800 \text{ N}$

$C = 3400 \text{ Nm}$

最大轴向力

Max axial force (F_A)

28000 N

液压刹车锁紧 (刀具旋转加工工序)

Hydraulic brake locked (Rotating tool operations)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, F_V)

2500 Nm

最大倾斜扭矩, 下压

Max tilting torque, pushing ($F_V + *b$)

7700 Nm

最大倾斜扭矩, 脱离

Max tilting torque, lifting ($F_V - *b$)

$b=230\text{mm}$

$F_V - \text{max} = 14800 \text{ N}$

$C = 3400 \text{ Nm}$

最大轴向力

Max axial force (F_A)

28000 N

插补 (精铣)

Interpolation (Finish-milling)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F_V - *b$)

616 Nm

(standard motor)

1320 Nm

(on request)



- 油压：70BAR
- **OIL PRESSURE: 70 BAR**

齿盘锁紧（车削工序）

Hirth rings locked (Turning operations)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F - *b$)

10800 Nm

最大倾斜扭矩，下压

Max tilting torque, pushing ($F_V + *b$)

10800 Nm

最大倾斜扭矩，脱离

Max tilting torque, lifting ($F_V - *b$)

b=230mm

Fv- max= 20700 N

C = 4760 Nm

最大轴向力

Max axial force (F_A)

39200 N

液压刹车锁紧（刀具旋转加工工序）

Hydraulic brake locked (Rotating tool operations)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F - *b$)

3500 Nm

最大倾斜扭矩，下压

Max tilting torque, pushing (F_V)

10800 Nm

最大倾斜扭矩，脱离

Max tilting torque, lifting ($F_V - *b$)

b=230mm

Fv- max= 20700 N

C = 4760 Nm

最大轴向力

Max axial force (F_A)

39200 N

插补（精铣）

Interpolation (Finish-milling)

最大切线方向扭矩

Max tangential torque ($F_H + *b$, $F - *b$)

616 Nm

(standard motor)

1320 Nm

(on request)



- ELECTROSPINDLE 电主轴

Tool coupling 刀具接口

Capto C6/C8 – HSK A80 (others on request)

Motor features: 电机参数

Synchronous Phase Motor TK260-120

C_{max} (S1) = 322 Nm (0-1400 rpm)

Max power = 46 kW

Max turning speed = 10.000 rpm

- No maintenance, permanent grease bearings lubrication
- Liquid motor cooling
- Encoder L+B GEL 2442 KN for spindle vectorial control and positioning
- Front air pressurization
- Tool coupling air cleaning during tool change
- Hydraulic cylinder for tool change operations
- Tool change operations control by means of inductive sensors
- Rotating joint for through-tool coolant supply
- Vacuum device for coolant rotating joint leaks draining
- Outer coolant supply through built-in nozzles
- Spindle hydraulic locking on 3-part Hirth rings for turning operations (spindle bearings are released)

- 无需维护，轴向永久性脂润滑
- 液体电机冷却
通过编码器L+B GEL 2442 KN对主轴矢量控制和定位
- 前部空气增压
- 换刀时，对刀具接口吹气清洁
- 通过液压缸进行换刀操作
- 通过传感器进行换刀操作的控制
- 旋转接头刀具中心出水
- 真空装置保证冷却液旋转接头的泄露



- **POSSIBLE MACHINING OPERATIONS WITH 50 BAR TABLE LOCKING**
工作台压力50BAR时的加工情况

Material to be machined: low alloy steel, $R_m=600 \text{ N/mm}^2$ 工件材料：低合金钢， $R_m600\text{N/mm}^2$
刀片

Outer diameter turning (table Hirth rings locked, electrospindle Hirth rings locked)

加工外圆（工作台齿盘锁紧，电主轴齿盘锁紧）

D= 600mm	workpiece diameter	工件直径
Vc=190 m/min	cutting speed	切削速度
ap= 10 mm	depth of cut	切削深度
fn= 0.9 mm/rev	feed per revolution	线速度

Center drilling (table Hirth rings locked, electrospindle Hirth rings locked)

钻中心孔（工作台齿盘锁紧，电主轴齿盘锁紧）

d=100mm	drill diameter	钻头直径
Vc=70 m/min	cutting speed	钻削速度
fn=0.5 mm/rev	feed per revolution	线速度

Off-center drilling with electrospindle (table Hirth rings locked, electrospindle turning)

钻偏心孔（工作台齿盘锁紧，电主轴旋转）

d=50mm	d=70mm (insert)	drill diameter	钻头直径
Vc=70 m/min	Vc=130 m/min	cutting speed	钻削速度
fn=0.35 mm/rev	fn=0.13mm/rev	feed per revolution	线速度

Face milling (hydraulic brake locked, electrospindle turning)

端面铣削（液压刹车锁紧，电主轴旋转）

d=150mm (45° inserts)	d=125mm (round inserts r=8)	mill diameter	铣刀直径
Vc=200 m/min	Vc=200 m/min	cutting speed	铣削速度
ap= 3.5 mm	ap= 3.5mm	axial depth of cut	轴向铣削深度
ae=110mm	ae=100mm	radial depth of cut	径向铣削深度
fz=0.12 mm/tooth	fz=0.25 mm/tooth	mill feed per tooth	铣削进给量
z=12 teeth	z=8 teeth	number of teeth	铣刀齿数量



Firma
Data

Molteni
05/05/09

Modifiche

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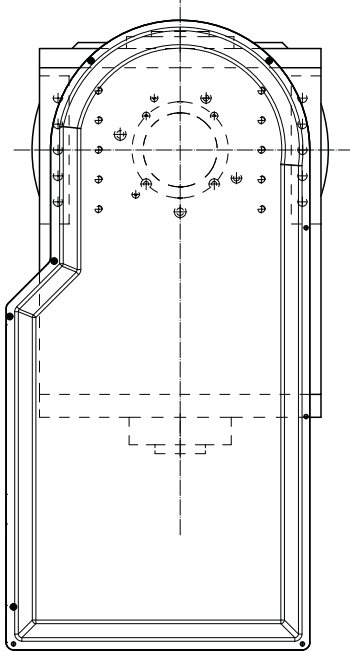
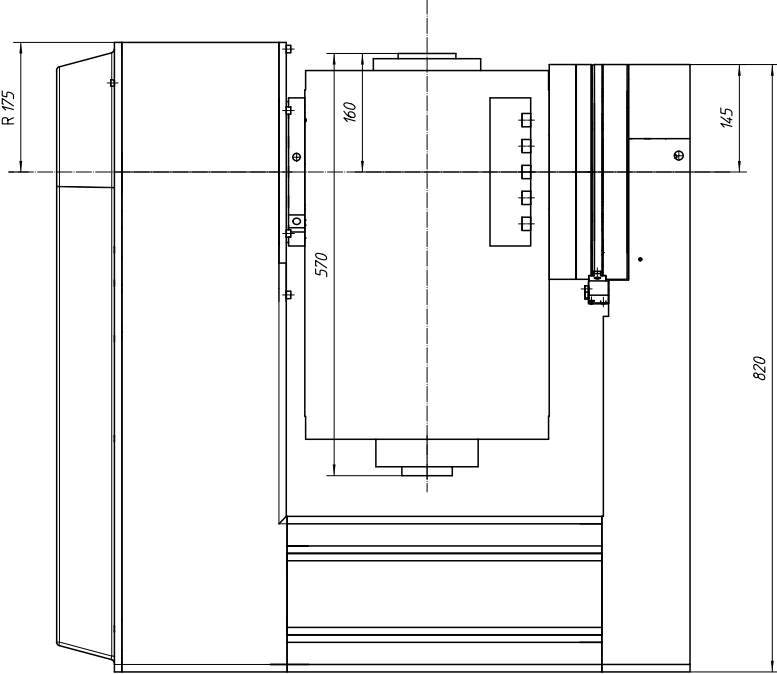
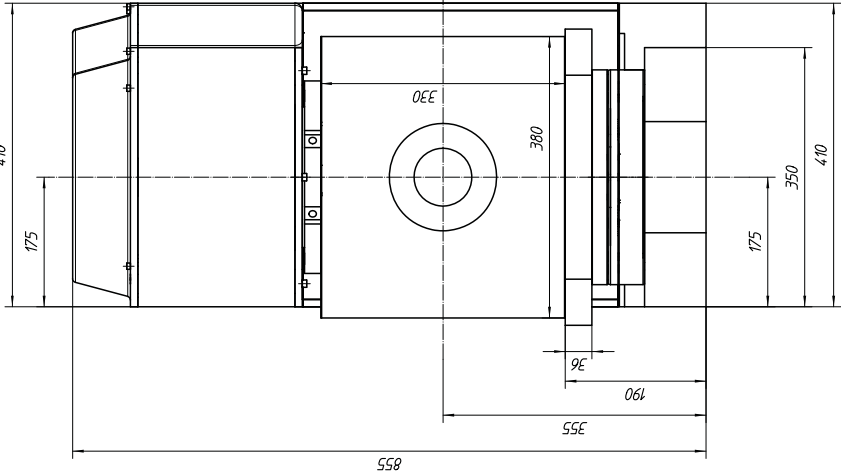
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PRELIMINARY DRAWING

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Two speed gearbox type CE



双速变速箱型号CE系列选型指南



Two speed planetary gearboxes - Introduction

双速行星轮变速箱简介



Baruffaldi has designed a wide range of two speed planetary gearboxes, in order to meet increasing demands coming from the market.

Two speed gearboxes are commonly used on machine tools main spindles together with variable speed motors, aiming to extend constant power field offered by the motor and to increase torque at low speeds.

By using Baruffaldi two speed gearboxes, production flexibility of the machine is increased without affecting precision: high torque is available for hard materials machining and high speed for soft materials.

Main characteristics:

- High functioning speed
- Reduced noise values
- Extension of the constant power range of electric motors
- Fast preparation by connecting a tested series product to a series motor
- High belt pull tension allowed
- Reduced overall dimensions
- Vibrations and heat considerably reduced near the spindle line due to the decentralization of the driving unit
- Possibility to select a proper lubrication system according to the application

为满足不断增长的市场需求，Baruffaldi 设计了全系列的行星轮结构的双速变速箱。该产品应用于机床可变速的主轴电机上，目的在于拓展电机恒定功率区域以及提高电机低速时的扭矩输出。通过使用该产品，可在不影响精度的同时增加设备可加工范围：大扭矩输出适合加工坚硬材质的工件，高速输出适合加工软质材料的工件。

主要特点

- 可持续电机高速运转
- 降低噪音
- 增大电机的恒定功率范围
- 可针对不同系列电机的快速安装
- 能够承受高强度皮带拉伸
- 紧凑的外形
- 驱动旋转部件设计位置使得主轴端振动和温升得以有效的降低
- 润滑方式的多样性

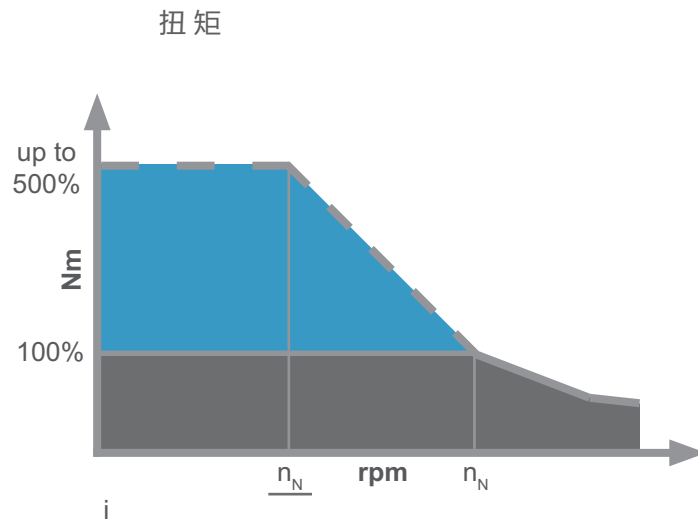


The advantages are:

- Increased spindle motor constant power range
- Increased machine production capacity while maintaining excellent precision
- Possibility to cut soft materials at very high speed and to provide high cutting forces for hard materials machining

优点

- 增加主轴电机的恒定功率范围
- 保持高精度同时提高产能
- 可高速加工软质工件和高扭矩加工硬质工件

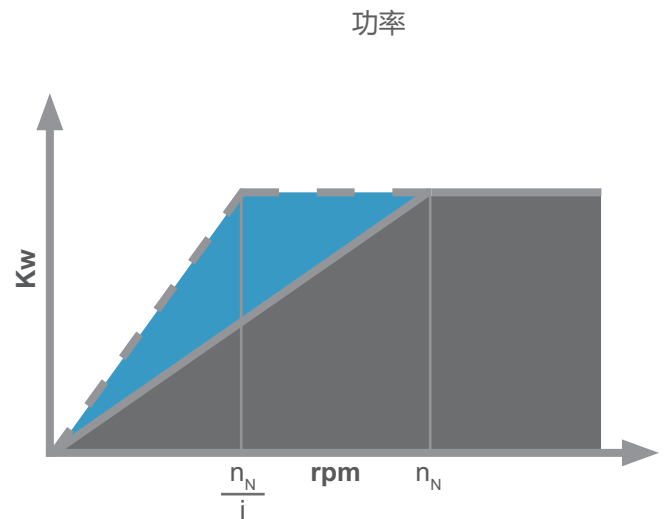


Motor torque increase up to 500% ($i=5$)

电机扭矩增加到500% ($i=5$)

Extended range $i>1$ (low speed)
扩展的扭矩范围 (低速)

$i=1$ (high speed)
 $i=1$ (高速)



Motor constant power range is this increased

电机恒定功率范围增加

Motor-gearbox assembly in $i=1$ (high speed)
变速箱 $i=1$, 即电机高速运转

Motor-gearbox assembly in $i>1$ (low speed)
变速箱 i 大于 1, 即电机低速运转





Two speed planetary gearboxes - Technical data

双速变速箱技术参数

Size	型号		CE11		CE12		CE13		CE14		CE16		CE18		CE20		
Ratio	速比		i=4	i=4,48	i=4	i=5	i=4	i=4,4	i=4	i=5	i=4	i=5	i=4	i=5	i=4		
Nominal power	额定功率	kw	19	19	22	22	40	40	50	50	60	60	63	63	84		
Nominal speed	额定转数	RPM	1500		1500		1500		1500		1250		1000		1000		
Nominal input torque 额定输入扭矩	(S1) Nm	i=4	120	-	140	-	260	-	325	-	450	-	600	-	800		
		i=4.4	-	-	-	-	-	260	-	-	-	-	-	-	-		
		i=4.48	-	120	-	-	-	-	-	-	-	-	-	-	-		
		i=5	-	-	-	140	-	-	-	280	-	450	-	600	-		
Nominal input torque 额定输入扭矩	(S6) Nm	i=4	150	-	160	-	400	-	400	-	630	-	840	-	900		
		i=4.4	-	-	-	-	-	400	-	-	-	-	-	-	-		
		i=4.48	-	150	-	-	-	-	-	-	-	-	-	-	-		
		i=5	-	-	-	160	-	-	-	325	-	630	-	840	-		
Nominal output torque 额定输出扭矩	Nm	i=4	480	-	560	-	1040	-	1300	-	1800	-	2400	-	3200		
		i=4.4	-	-	-	-	-	1144	-	-	-	-	-	-	-		
		i=4.48	-	540	-	-	-	-	-	-	-	-	-	-	-		
		i=5	-	-	-	700	-	-	-	1400	-	2250	-	3000	-		
Max permitted input speed 最大允许输入转数		RPM	8000	8000	8000	8000	7000	7000	6300	6300	5000	5000	5000	5000	5000		
Mass moment of inertia** 转动惯量	i=1 (kgcm ²)		134		189		310		624		1587		1630		2066		
	i=4 (kgcm ²)	output	400		378		1136		1408		6208		6256		6896		
	i=4.4 (kgcm ²)	input	25		23,6		71		88		388		391		431		
	i=4.4 (kgcm ²)	output	-		-		1355		-		-		-		-		
	i=4.48 (kgcm ²)	input	-		-		70		-		-		-		-		
	i=4.48 (kgcm ²)	output	400		-		-		-		-		-		-		
	i=5 (kgcm ²)	input	20		-		-		-		-		-		-		
	i=5 (kgcm ²)	output	-		550		-		2075		9400		9450		-		
	input	-		22		-		83		376		378		-			
Max angular backlash 最大角背隙	α	Arcmin	≤ 25		≤ 25		≤ 25		≤ 25		≤ 25		≤ 25		≤ 25		
Max radial backlash 最大径向背隙	X	mm	0,03		0,03		0,03		0,03		0,03		0,03		0,03		
Max axial backlash 最大轴向背隙	Y	mm	0,25		0,25		0,25		0,25		0,25		0,25		0,25		
Max vibration value 最大振动值		mm/s	1		1		1		1		1		1		1		
At test run speed 测试转数		RPM	6000		6000		6000		6000		4000		4000		4000		
Weight ca. 重量		kg	45		65		80		90		190÷230		190÷230		190÷230		
Oil fill volume 注油量	dm ³	Opp. (B5)	0,6		1,1		2,1		3,1		-		-		-		
		Indicated value; refer to the level indicator. 基准值：液面指示器液位															
Oil grade for: 润滑油等级	Splash lubrication 飞溅润滑		HLP 68 as per ISO VG68			Recirculation lubrication 循环润滑			HLP 46 as per ISO VG46		Rec. Lub. With heat exchanger 带热交换机的循环润滑			HLP 32 as per ISO VG32			
Oil change interval* 换油周期	h 小时	5000															
Oil temperature 油温			Max 120°C permitted depending on application, installation position,lubrication and cooling 最高油温120度。根据变速箱不同的安装位置应用以及润滑冷却方式决定														

Actuator (shifting unit) electrical data 换挡器（换挡装置）电器参数

Needed power supply 24Vcc ± 10% min 5A 所需电源		
Shifting unit power consumption 换挡器功耗	W	60
Supply voltage 电压	Vcc	24

Nominal current 额定电流	In (A)	2,5
Starting current 启动电流	Ia (A)	8.5
Inner clutch slipping current 内部离合器滑动电流	A	3.5±0.5

* Only for splash lubrication
* 仅适用于飞溅润滑

** On request
欢迎垂询



Two speed planetary gearboxes - Order code

双速行星轮变速箱订货号码

Transmission ratio	传输比	code
Ratio 传输比 4	CE 11 - CE 12 - CE 13 CE 14 - CE 16 - CE 18 CE 20	4
Ratio 传输比 5	CE 12 - CE 14 CE 16 - CE 18	5
Ratio 传输比 4.48	CE 11	5
Ratio 传输比 4.4	CE 13	7
Ratio 传输比 4.923	CE 13 [128/26]	8

Size	型号	code
CE 11	19 KW	11
CE 12	22 KW	12
CE 13	40 KW	13
CE 14	50 kW	14
CE 16	60 KW	16
CE 18	63 KW	18
CE 20	84 KW	20

Input motor shaft balancing	输入电机轴平衡形式	code
Balanced without key	光轴平衡	0
Balanced with half key	半键平衡	1
Balanced with full key	全键平衡	2

VERSION	Standard	code
标准版		01
With oil sensor and actuator at 180°	带油量传感器及180度换挡器	06
With actuator at 180°	带180度换挡器	07
With oil sensor	带油量传感器	08
With double bearing	带双轴承	10
With double bearing and oil sensor	带双轴承以及油量传感器	20
With angular contact bearing	带角接触轴承	21
With bigger oil drain hole	带大孔径卸油口	24
Only for CE20, Compact gearbox with output shaft for coaxial assembly	仅适合CE20紧凑型变速箱输出轴同轴安装	30

Output unit	变速箱输出	code
Flange	法兰式输出	1
CE 11 Ø 100		
CE 12 Ø 100		
CE 13 Ø 118		
CE 14 Ø 118		
CE 16 Ø 140		
CE 18 Ø 150		
CE 20 Ø 180		
Shaft with key	轴带键式输出	2
CE 11 L= 80 Ød=42 k= 70		
CE 12 L= 80 Ød=42 k= 70		
CE 13 L=110 Ød=48 k= 90		
CE 14 L=110 Ød=55 k=100		
CE 16 - CE 18 - CE 20		
L=140 Ød=65 k=125		
Shaft without key	光轴输出	3
CE 11 L= 80 Ød=42 k= —		
CE 12 L= 80 Ød=42 k= —		
CE 13 L=110 Ød=48 k= —		
CE 14 L=110 Ød=55 k= —		
CE 16 L=140 Ød=65 k= —		
CE 20 L=140 Ød=65 k= —		
Long shaft with key	长轴带键输出	4
CE 14 L=128 Ød=55 k=125		
CE 20 L=160 Ød=65 k=125		
Long shaft without key	长光轴输出	5
CE 14 L=128 Ød=55 k= —		
CE 20 L=160 Ød=65 k= —		
Shaft with double key	轴带双键式输出	6
CE 13 L=110 Ød=48 k= 90		
CE 14 L=110 Ød=55 k=100		
Short shaft with double key	短轴带双键式输出	7
CE 13 L= 70 Ød=42 k=60		
CE 14 L= 70 Ød=42 k=60		
Short shaft without key	短光轴输出	8
CE 13 L= 70 Ød=42 k= —		
CE 14 L= 70 Ød=42 k= —		

Cod	Motor Size	电机尺寸
*	see next page	见下页

Cod	Motor Size	电机尺寸
B	Angular backlash reduced	角背隙缩量
X	Sealed cover actuator	换挡器盖子密封

code	Lubrication	润滑	Assembling	Piazzamento
0	CE 11-12-13-14 Horizontal OPP/OPS Max input speed 4500 rpm SPLASH LUBRICATION ce11-12-13-14卧式OPP/OPS形式安装 最大输入4500转	飞溅润滑		
1	CE 11-12-13-14-16-18-20 Horizontal OPP/OPS FORCED LUBRICATION ce11-12-13-14-16-18-20卧式OPP/OPS形式安装	强制润滑		
2	CE 11-12-13-14-16-18-20 Vertical Upward VFA FORCED LUBRICATION ce11-12-13-14-16-18-20立式VFA形式安装	强制润滑		
3	CE 11-12-13-14-16-18-20 Vertical downward VFB FORCED LUBRICATION ce11-12-13-14-16-18-20立式VFB形式安装	强制润滑		
4	CE 12-14 Vertical downward VFB Max input speed 4500 rpm SPLASH LUBRICATION ce12-14立式VFB形式安装 最大输入4500转	飞溅润滑		



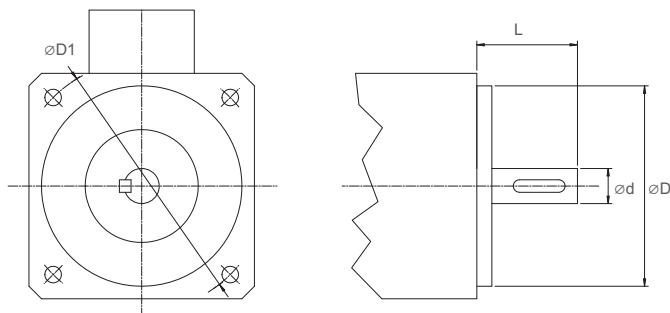
Connection flange dimensions (motor/gearbox)

连接法兰尺寸 (电机/变速箱)



Motor dimensions provided by the manufacturer

电机尺寸由电机供应商提供



CE 11				
Motor Code	Diameter	Length	Centering	Distance between center
电机编码	直径	长度	中心圆	圆心距
	d	L	D	D1
0	38	80	180	215
1	32	80	180	215
2	42	110	250	300
3	48	110	180	215
4	48	110	230	265
5	48	110	250	300
6				
7				
8	42	110	230	265
A				

CE 12				
Motor Code	Diameter	Length	Centering	Distance between center
电机编码	直径	长度	中心圆	圆心距
	d	L	D	D1
0	38	80	180	215
1	38	80	230	265
2	42	110	250	300
3	48	110	180	215
4	48	110	230	265
5	48	110	250	300
6	28	60	180	215
7	42	110	230	265
8	32	80	180	215
A	55	110	230	265
E	55	110	250	300

CE 13				
Motor Code	Diameter	Length	Centering	Distance between center
电机编码	直径	长度	中心圆	圆心距
	d	L	D	D1
0	42	110	250	300
1	55	110	230	265
2	55	110	300	350
3	60	140	300	350
4	48	110	250	300
5	48	110	230	265
6	55	110	250	300
8	42	110	230	265
A	55	110	280	325

CE 14				
Motor Code	Diameter	Length	Centering	Distance between center
电机编码	直径	长度	中心圆	圆心距
	d	L	D	D1
0	42	110	250	300
1	55	110	230	265
2	55	110	300	350
3	60	140	300	350
4	48	110	250	300
5	48	110	230	265
6	55	110	250	300
7	38	80	230	265
8	42	110	230	265
A	48	110	300	350
B	60	140	350	400

CE 16 - CE 18 - CE 20				
Motor Code	Diameter	Length	Centering	Distance between center
电机编码	直径	长度	中心圆	圆心距
	d	L	D	D1
0	60	140	300	350
1	65	140	350	400
2	75	140	450	500
3	80	170	350	400
4	75	140	300	350
5	65	140	450	500
6	70	140	350	400
7	55	110	300	350
8	65	140	300	350

On demand link flanges can be provided for special motors.

可根据要求提供特殊电机的连接法兰

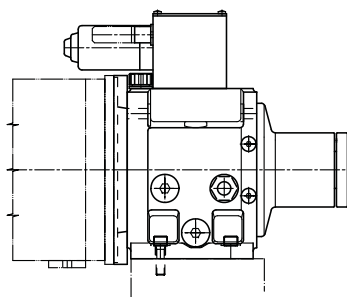


Assembling positions and lubrication

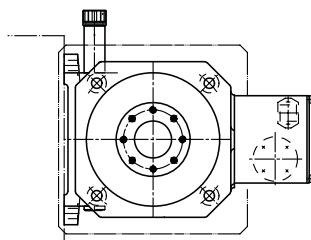
安装位置及润滑

The lubrication system is chosen according to the gearbox model, the working speed (RPM) and the different installation positions (assembling positions).

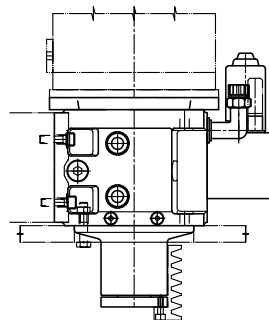
润滑系统的选择是根据变速箱的型号，工作时的电机转速以及不同的安装位置而定



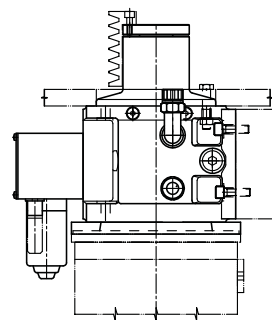
OPP B5 Horizontal
水平安装



OPS B5 Horizontal turned
水平并转向



VFB V1 Vertical downward
立式输出向下



VFA V3 Vertical upward
立式输出向上

In order to evaluate the gearbox thermal conditions during working, it is strongly suggested to carry out tests with an ordinary working cycle. The amount of heat developed depends on gearbox turning speed and time.

The gearbox can stand temperatures up to 120 °C (oil 110°C) without problems.

All Baruffaldi gearboxes are designed for operation with inner pressure equal to outer (atmospheric) pressure.

Any overpressure will increase seals closing force thus causing a greater friction, higher heat production and early wear.

Any depressure will decrease seals closing force thus allowing oil leakage and internal pollution due to dust, fluids and so on.

According to the gearbox model and the assembling position, vent valves are supplied on the gearbox.

Make sure that the air orifice is not stuck.

为了测算变速箱工作时的温度状况，强烈建议在按照正常工作模式下做一个测试。热量的多少取决于变速箱工作时的转速和时间。

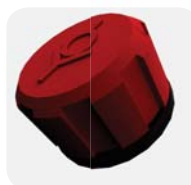
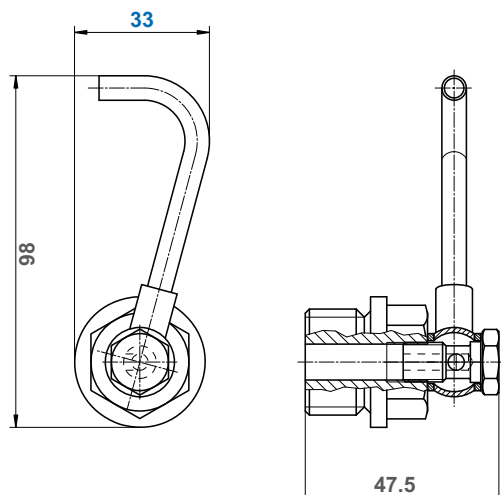
变速箱在摄氏120度以下可以正常使用（油温在110度）

所有baruffaldi的变速箱工作时，内外应无压差。

任何正压差都将会增加密封圈的密封能力，从而摩擦加大，导致温度过高以及内部过早磨损。

任何负压差都将降低密封圈的密封能力，造成漏油以及由于灰尘和液体的进入而引发的内部污损

根据不同的型号和安装位置，变速箱随机附带透气阀
请确保变速箱透气孔畅通



Assembling positions and lubrication

安装位置及润滑

Splash lubrication

飞溅润滑

It is used in applications with frequent shiftings, speed changes, variable turning speeds and machine downtimes such as, for example, rest for tool changes.

Splash lubrication with fixed amount of oil (see table below) is suitable only for applications with maximum input speed up to 4500 rpm and in the following assembling positions:

飞溅润滑适用于频繁的换挡、变速、变换转速和停机，例如换刀间歇。

额定油量的飞溅润滑（见下表）只适用最大输入转速为4500转以内和以下的安装位置

Suitable assembling positions for splash lubrication 适用于飞溅润滑的安装方式			CE 11	CE 12	CE 13	CE 14	CE 16-18-20
Horizontal standard maximum input speed up to 4500 rpm. 标准的水平安装方式 最大输入转速4500转	B5 OPP		是	是	是	是	否
Horizontal turned maximum input speed up to 4500 rpm. 水平并转向的安装方式 最大输入转速4500转	B5 OPS		是	是	是	是	否
Vertical downward maximum input speed up to 4500 rpm. 立式输出向下的安装方式 最大输入转速4500转	V1 VFB VPB		是	是	否	是	否
Vertical upward 立式输出向上的安装方式	V3 VFA VPA		否	否	否	否	否

For CE 16-18-20 gearboxes and for vertical upward assembling position, splash lubrication is not allowed.

For such gearboxes and for all vertical upward assembling positions, only oil recirculating lubrication is allowed.

CE16-18-20变速箱以及所有立式输出向上安装变速箱均不可使用飞溅润滑，只可以使用循环润滑

The oil for splash lubrication must have a viscosity according to **ISO VG 68**, must be compatible with seal elements, must have good resistance to aging and develop a high protection towards corrosion and wear.

飞溅润滑使用黏度为ISO VG68的润滑油兼具密封性，具备良好的抗氧化性和抗磨损能力。

Fill the gearbox with oil until it reaches the middle of the oil sight-glass or the oil level sensor, when supplied.

The oil amount indicated on the technical information is an indicative value only.

给变速箱注油时，油量应达到油镜中间位置或油量传感器设定的位置。技术参数中油量仅供参考



Assembling positions and lubrication

安装位置及润滑

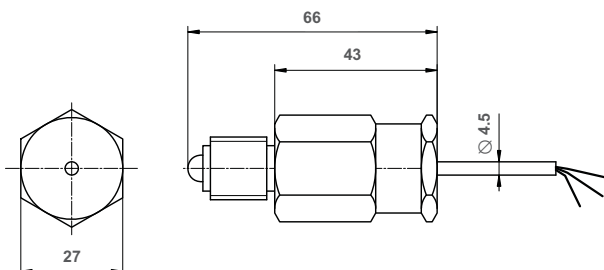
Assembling position 安装位置		Approximate oil amount in litres / 注油量					Oil level indicator / 油镜
		CE11	CE12	CE13	CE14	CE16-CE18-CE20	
Horizontal 水平安装	OPP B5	0,6	1,1	2,1	3,1	x	

WARNING: whenever the gearbox is used in applications that may cause the development of a great amount of heat, recirculating lubrication should be used, whatever the assembling position is: long time rotation without gear change, high rotation speed, short downtimes and so on...

警告 无论何种安装方式，变速箱在任何会产生温升过高的应用中，例如：长时间不换档运行、高速运转、短停机等。都应使用循环润滑

For applications with splash lubrication, we suggest to use an “oil sensor” assembled on the gearbox, in order to monitor the oil level over time. On demand, Baruffaldi can provide a suitable sensor (code 999.912.06547).

对于飞溅润滑，我们建议在变速箱上安装一个油量传感器，这样可以实时检查油量。如果需要，我们可以提供相应的油量传感器（订货号999.912.06547）

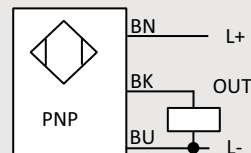


(NO) - Normally Open sensor output is: open in air and closed in the presence of liquids

通常油量传感器运行输出模式：
在空气中常开，碰到液体后常闭。

Key

BN	brown/ 棕色	supply voltage/ 电压
BK	black/ 黑色	output/ 输出
BU	blue/ 蓝色	(GND/0V) 接地



When output is activated, the sensor provides the power supply to the load.

当输出时，油量传感器给负载加压





Assembling positions and lubrication

安装位置及润滑

Oil recirculating lubrication

循环润滑

Using oil recirculating lubrication, in whatsoever assembling position, improves heat dissipation in the gearbox.

In case of continuous use at high rotation speed and with short downtimes, an oil recirculating lubrication may be necessary.

In order to have a proper recirculating lubrication, there are different holes on the gearbox housing, to be used according to the different assembling positions and working conditions. Please see “applications” section.

It is essential to avoid oil stagnation into the gearbox, that may cause overheating and reduce gearbox efficiency. Make sure that the air pipe or the breather are free. In case of oil return by fall-down, follow the instructions on pipe type and dimension. Make sure that the oil input supply as well as the oil output supply (if a suction pump is used) are steady and in accordance with the required values. Pay attention to the use of the service holes according to the different applications.

Electric oil flow indicator

(suitable for forced lubrication)

For gearbox optimal operating conditions, lubrication is a vital factor.

For applications where **forced lubrication** is required, we suggest the use of a flow indicator to be connected to the oil supply circuit in order to monitor oil flow over time.

On demand, Baruffaldi can provide a suitable flow indicator.

无论何种安装方式，使用循环润滑都可以提高变速箱内部散热量如果变速箱持续高速运转且停机时间短，都必须使用循环润滑方式

为了建立一个良好的循环润滑系统，变速箱体上有很多孔，不同的安装位置和工况有着相应的使用方法，详见应用章节。

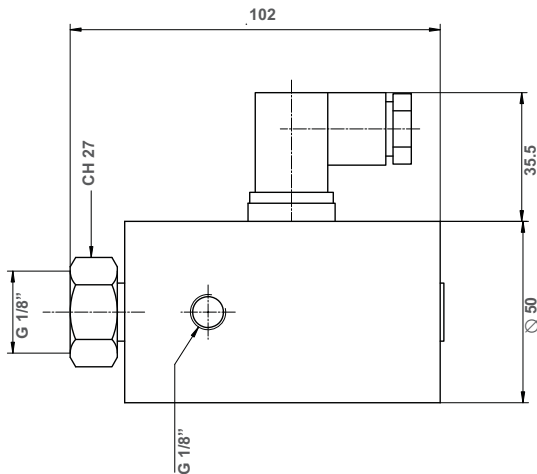
应避免润滑油滞留在变速箱体内，因为这可能会引起变速箱过热进而影响工作效率。确保透气管路畅通。如果采用重力回油，应使用符合规定的油管，确保进出油量相当且稳定且符合要求值（吸油泵已使用）。注意根据不同的应用使用恰当的检修孔。

电子流量计（适用于强制润滑）

变速箱重要的运行条件，润滑至关重要采用强制润滑的使用中，我们建议使用流量计，连接在油路上用以监控油量。

根据客户要求我们可以提供相应的流量计

CE 11-12-13-14	1,50 l/min	Flow indicator / flussostato OFI 1.5	996.002.01468.2
CE 16-18-20	3,00 l/min	Flow indicator / flussostato OFI 3	996.002.01468.3



- The oil tank must be placed in a ventilated and cold area
 - The tank capacity should be at least 10 times the recirculating oil quantity
 - Oil return pipe must be straight, avoiding bends (whenever possible)
 - Oil return pipe by fall down diameter $\varnothing$ min=20mm
 - Oil back pressure in the return pipe from the gearbox must be avoided
 - A 60 μ m filter and a pressure limitation valve should also be used as a safeguard
 - For continuous operation in direct drive, one gear change per hour is mandatory, with a short turning period in reduction ratio
 - Overall rate for CE 11-12-13-14 is 1,5 L/min
Overall rate for CE 16-18-20 is 3 L/min
- 润滑油站必须放置于阴凉通风处
 - 润滑油站容量至少10倍于循环油量
 - 回油管必须保持平直，任何时候都避免弯曲
 - 回油管直径最小20mm
 - 应避免回油管内的背压
 - 安全考虑，建议使用一个60微米的过滤器和一个压力控制阀
 - 变速箱持续1比1运转的情况下，应每小时换低档位短暂运行
 - CE11-12-13-14流量1.5升/分钟
CE16-18-20流量3升/分钟

Whenever a further reduction in working temperature is required, or if it is necessary to keep the gearbox temperature within a strict range, recirculating lubrication may be used in the following ways:

控制在一个严格的范围内。循环润滑可以采取如下方法：任何情况下都需要降低变速箱的油温，或者说有必要将油温

- Recirculating lubrication with intermediate tank
 - Recirculating lubrication with air-heat exchanger
 - Recirculating lubrication with cooling heat exchanger (chiller)
- 带有中间油站的循环润滑
 - 带有空气热交换的循环润滑
 - 带有油冷机的循环润滑

Oil grade for / 润滑油等级滑

- splash lubrication/ 飞溅润滑
- recirculating lubrication with intermediate tank / 带有中间油站的循环润滑
- rec. lub. with air-oil heat exchanger/ 带有空气热交换的循环润滑
- recirculating lubrication with cooling heat exchanger (chiller) / 带有油冷机的循环润滑

HLP 68 as per ISO VG 68
HLP 46 as per ISO VG 46
HLP 32 as per ISO VG 32
HLP 32 as per ISO VG 32

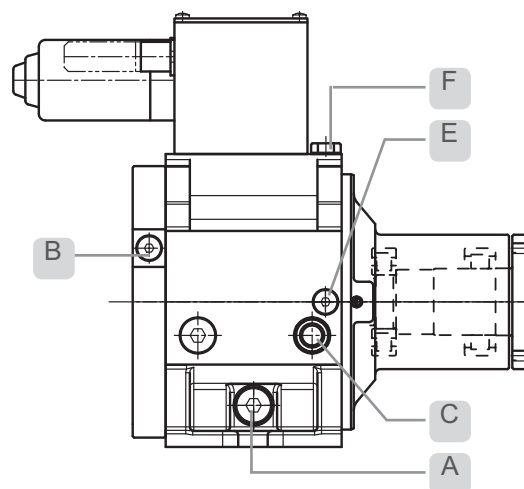
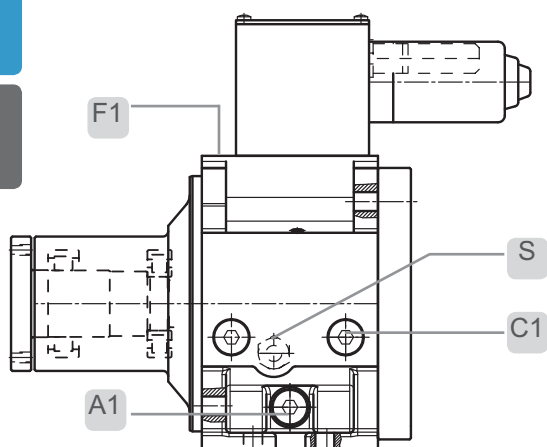


Assembling positions and lubrication - CE11

安装位置及润滑-CE11

OPP

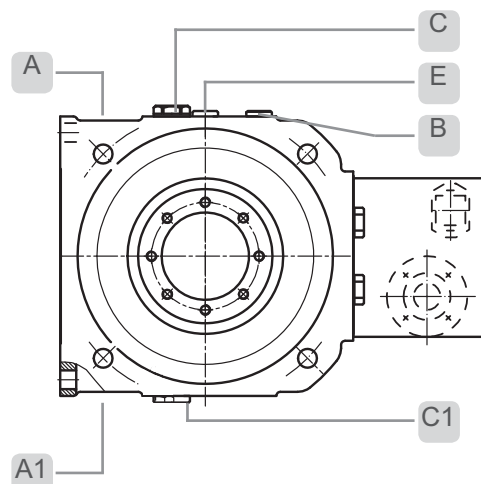
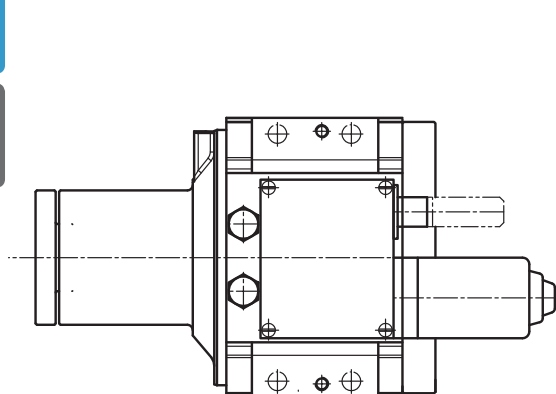
B5



Horizontal 水平安装	Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
Splash lubrication 飞溅润滑	F1 F1 3/8"G OIL FILL IN	A or A1 A 1/2"G OIL DRAIN A1 1/2"G OIL DRAIN	X	F F 3/8"G	C or C1 C 1/2"G C1 1/2"G	S S 3/8"G
Forced lubrication 强制润滑	B+E B 1/4"G 0,75 l/min E 1/4"G 0,75 l/min	A or A1 A 1/2"G A1 1/2"G	C or C1 C 1/2"G C1 1/2"G	F1 F1 3/8"G	X	X

OPS

B5
90°

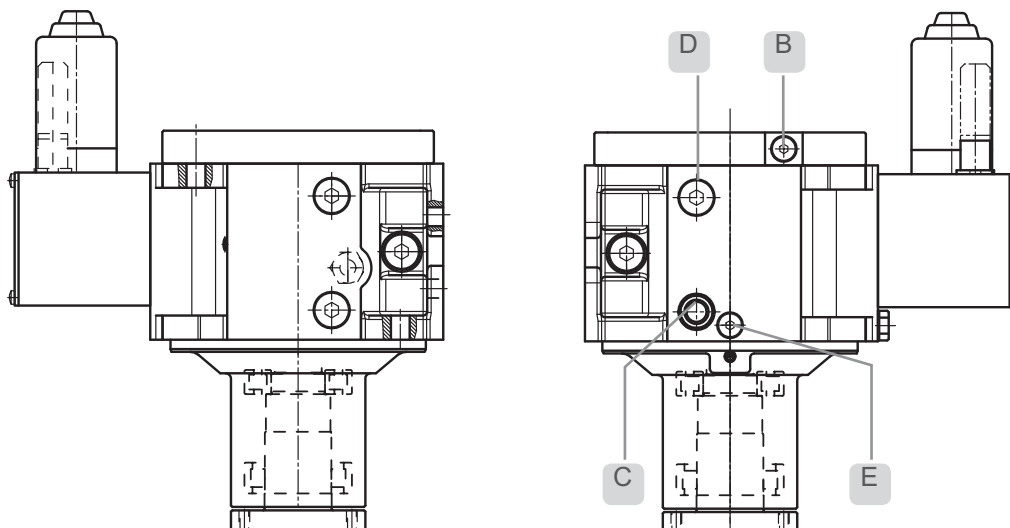


Horizontal turned 水平转向安装	Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
Splash lubrication 飞溅润滑	A A 1/2"G OIL FILL IN	A1 A1 1/2"G OIL DRAIN	X	C C 1/2"G	X	X
Forced lubrication 强制润滑	B+E B 1/4"G 0,75 l/min E 1/4"G 0,75 l/min	A1 A1 1/2"G	C1 C1 1/2"G	C C 1/2"G	X	X



VFP
VPB

V1



Vertical downward

立式输出向下安装

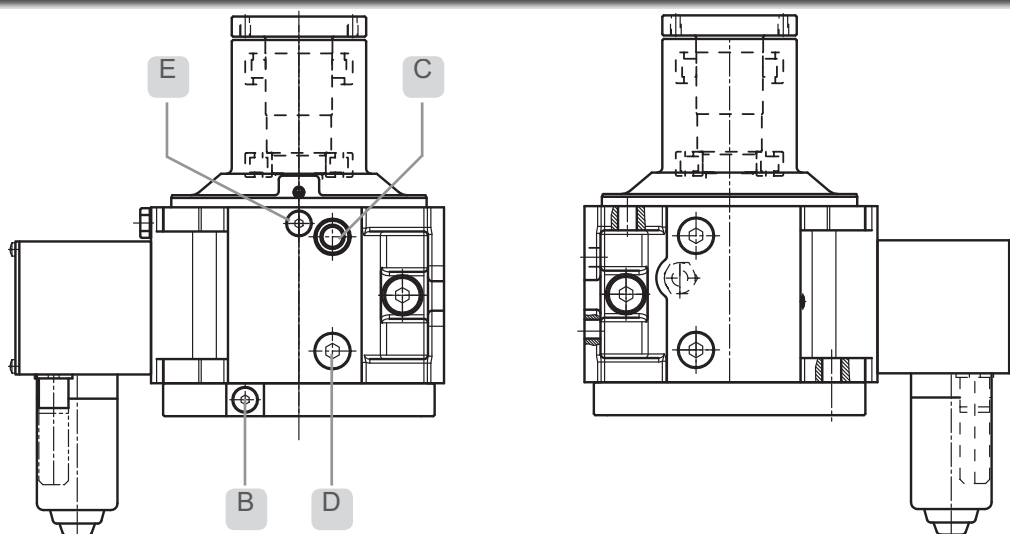
Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 $\varnothing$ min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
X	X	X	X	X	X
B+E	C	C	D	X	X
B 1/4"G 0,75 l/min E 1/4"G 0,75 l/min	C 1/2"G	C 1/2"G	D 1/2"G		

Splash lubrication
飞溅润滑

Forced lubrication
强制润滑

VFA
VPA

V3



Vertical upward

立式输出向上安装

Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 $\varnothing$ min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
X	X	X	X	X	X
E	D	B	C	X	X
E 1/4"G 1,50 l/min	D 1/2"G	B 1/4"G	C 1/2"G		

Splash lubrication
飞溅润滑

Forced lubrication
强制润滑

Oil grade for / 润滑油等级滑

- splash lubrication/ 飞溅润滑
- recirculating lubrication with intermediate tank / 带有中间油站的循环润滑
- rec. lub. with air-oil heat exchanger/ 带有空气热交换的循环润滑
- recirculating lubrication with cooling heat exchanger (chiller) / 带有油冷机的循环润滑

HLP 68 as per ISO VG 68
HLP 46 as per ISO VG 46
HLP 32 as per ISO VG 32
HLP 32 as per ISO VG 32

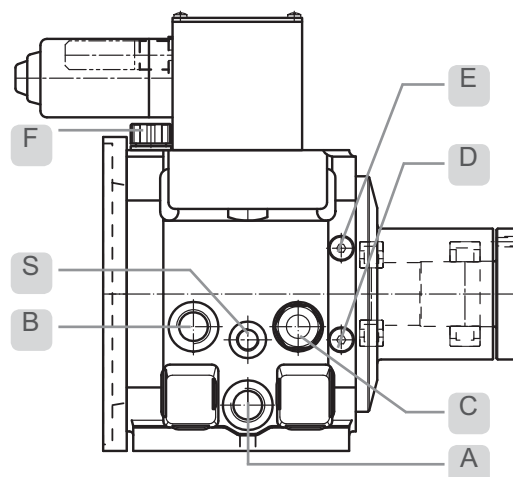
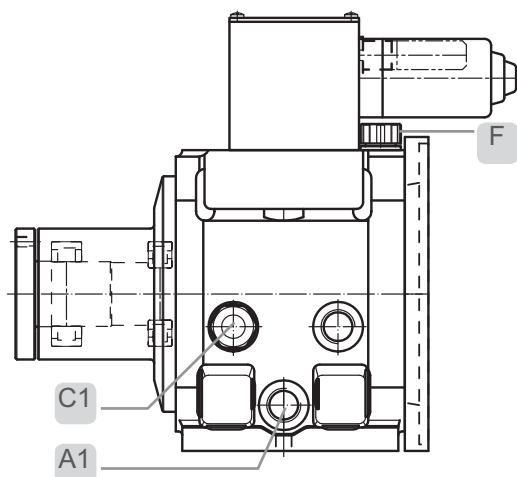


Assembling positions and lubrication - CE12

安装位置及润滑-CE12

OPP

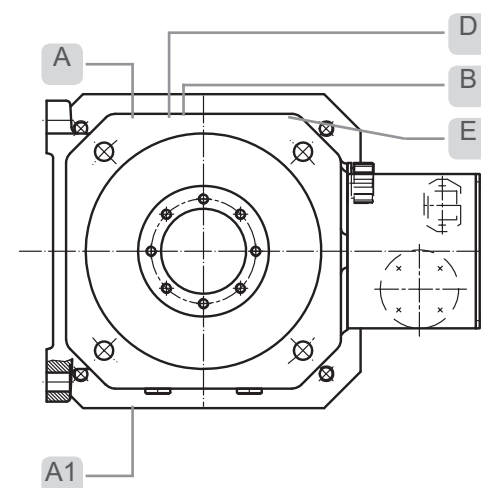
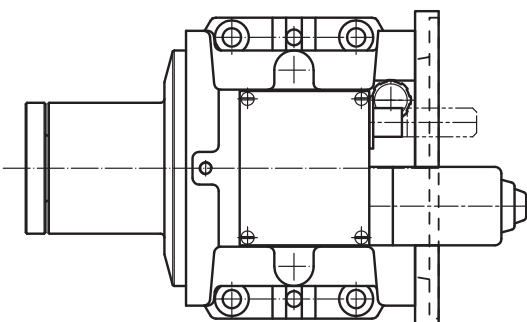
B5



Horizontal 水平安装	Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
Splash lubrication 飞溅润滑	F F 3/8"G OIL FILL IN	A or A1 A 3/4"G OIL DRAIN A1 3/4"G OIL DRAIN	X	F F 3/8"G	C or C1 C 3/4"G C1 3/4"G	S S 3/8"G
Forced lubrication 强制润滑	⚠ B+E+D B 1/4"G 0,50 l/min E 1/4"G 0,50 l/min D 1/4"G 0,50 l/min	A or A1 A 3/4"G A1 3/4"G	C or C1 C 3/4"G C1 3/4"G	F F 3/8"G	X	X

OPS

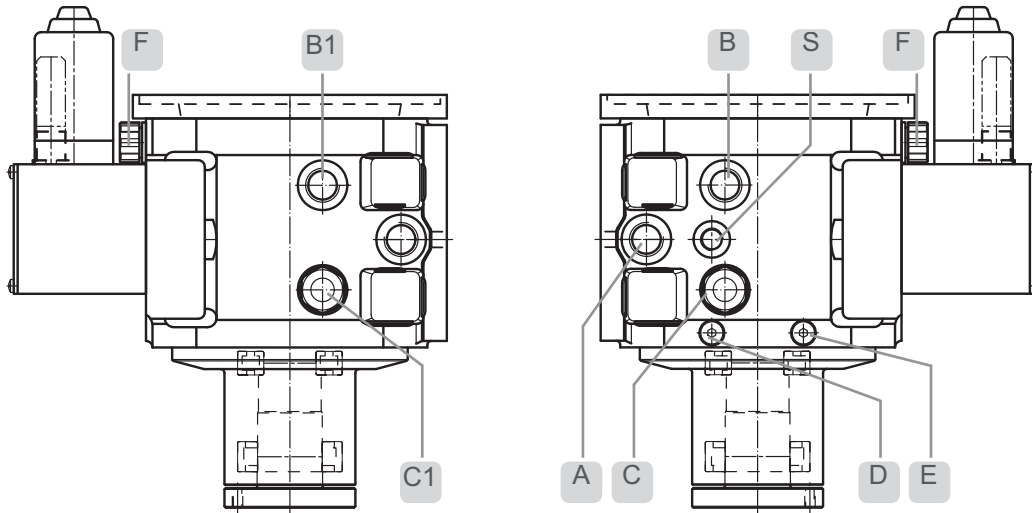
B5
90°



Horizontal turned 水平转向安装	Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
Splash lubrication 飞溅润滑	A A 3/4"G OIL FILL IN	A1 A1 3/4"G OIL DRAIN	X	A A 3/4"G	X	X
Forced lubrication 强制润滑	⚠ B+E+D B 1/4"G 0,50 l/min E 1/4"G 0,50 l/min D 1/4"G 0,50 l/min	A1 A1 3/4"G	A1 A1 3/4"G	A A 3/4"G	X	X

VFP
VPB

V1

Vertical downward
立式输出向下安装Oil inlet
注油口Oil return by
fall down 重力回油
管径最小 ϕ min. 20mm)Oil return by suction
吸力回油Vent valve
透气阀Oil level indicator
油镜Sensor on request
选配油量传感器Splash lubrication
飞溅润滑

B or B1

C or C1

X

F

C or C1

S

B 3/4"G OIL FILL IN
B1 3/4"G OIL FILL INC 3/4"G OIL DRAIN
C1 3/4"G OIL DRAIN

F 3/8"G

C 3/4"G
C1 3/4"G

S 3/8"G

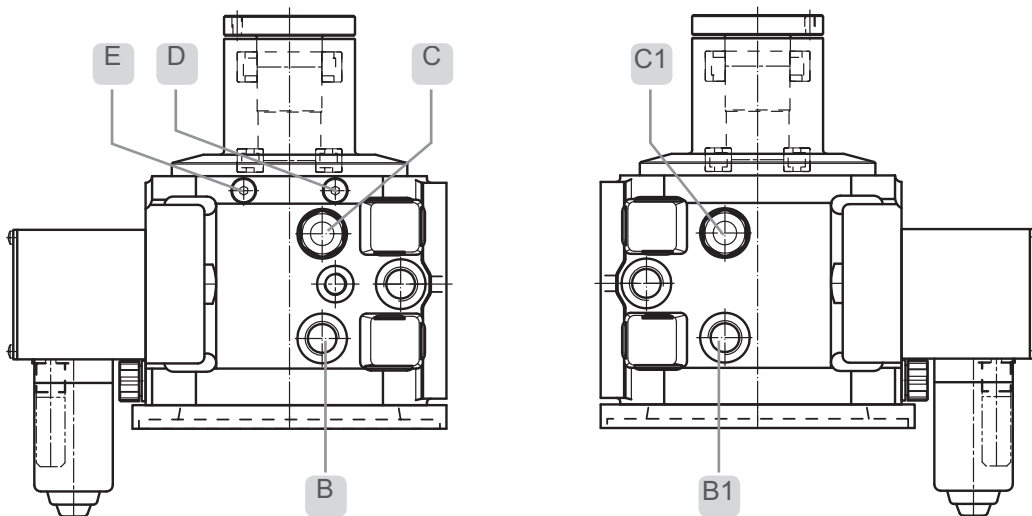
Forced lubrication
强制润滑⚠ B+B1+E
B 1/4"G 0,50 l/min
B1 1/4"G 0,50 l/min
E 1/4"G 0,50 l/minC or C1
C 3/4"G
C1 3/4"GD
D 1/4"GF
F 3/8"G

X

X

VFA
VPA

V3

Vertical upward
立式输出向上安装Oil inlet
注油口Oil return by
fall down 重力回油
管径最小 ϕ min. 20mm)Oil return by suction
吸力回油Vent valve
透气阀Oil level indicator
油镜Sensor on request
选配油量传感器Splash lubrication
飞溅润滑

X

X

X

X

X

X

Forced lubrication
强制润滑D + E
D 1/4"G 0,75 l/min
E 1/4"G 0,75 l/min⚠ B or B1
B 3/4"G
B1 3/4"G⚠ B or B1
B 3/4"G
B1 3/4"GC or C1
C 3/4"G
C1 3/4"G

X

X

Oil grade for / 润滑油等级滑

- splash lubrication/ 飞溅润滑
- recirculating lubrication with intermediate tank / 带有中间油站的循环润滑
- rec. lub. with air-oil heat exchanger/ 带有空气热交换的循环润滑
- recirculating lubrication with cooling heat exchanger (chiller) / 带有油冷机的循环润滑

HLP 68 as per ISO VG 68
HLP 46 as per ISO VG 46
HLP 32 as per ISO VG 32
HLP 32 as per ISO VG 32



In position B and B1, injectors are fitted for lubrication oil. Do not remove or turn, seizing danger!

B和B1孔, 是润滑油喷射口, 请勿去掉或旋拧



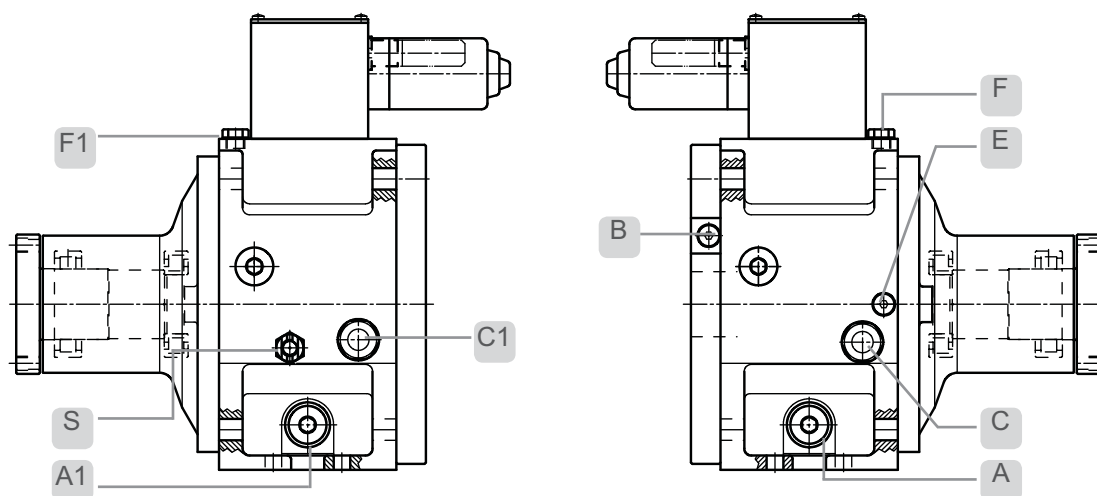


Assembling positions and lubrication - CE13

安装位置及润滑-CE13

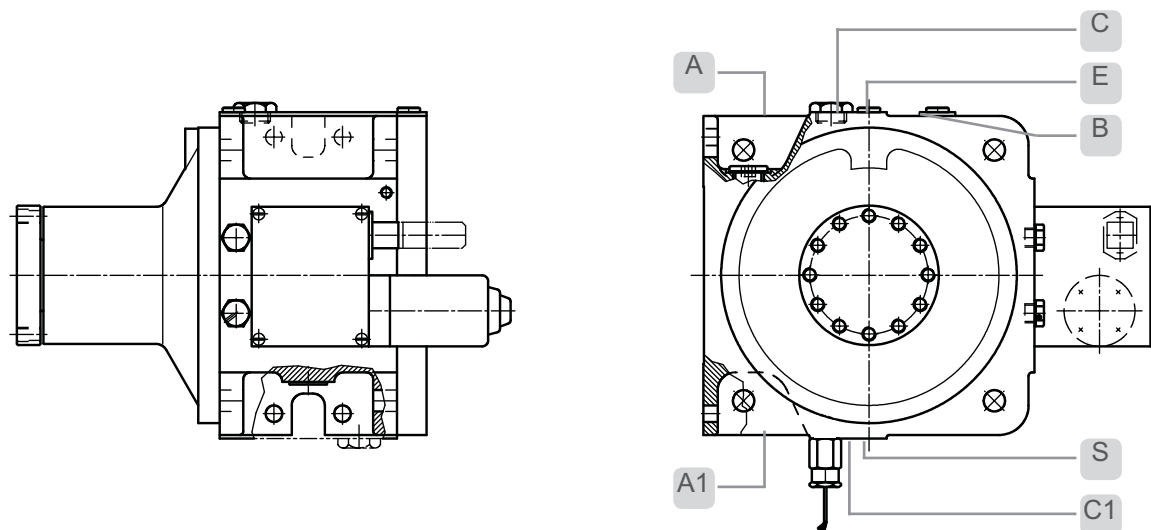
OPP

B5



Horizontal 水平安装	Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
Splash lubrication 飞溅润滑	F1 F1 3/8"G OIL FILL IN	A or A1 A 3/4"G OIL DRAIN A1 3/4"G OIL DRAIN	X	F F 3/8"G	C or C1 C 3/4"G C1 3/4"G	S S 3/8"G
Forced lubrication 强制润滑	B+E B 1/4"G 0,75 l/min E 1/4"G 0,75 l/min	A or A1 A 3/4"G A1 3/4"G	C or C1 C 3/4"G C1 3/4"G	F1 F1 3/8"G	X	X

OPS

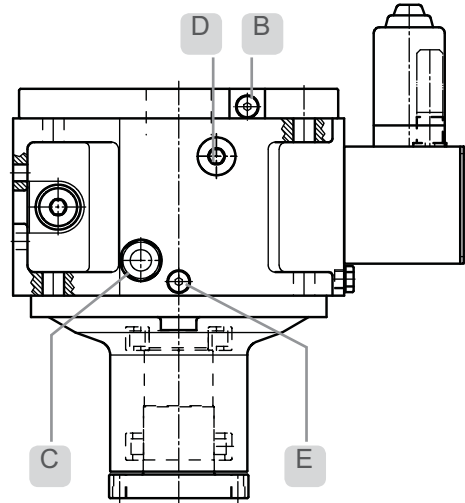
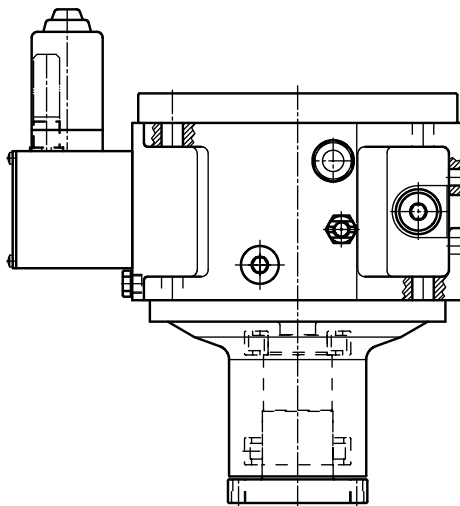
B5
90°

Horizontal turned 水平转向安装	Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
Splash lubrication 飞溅润滑	A A 3/4"G OIL FILL IN	A1 A1 3/4"G OIL DRAIN	X	C C 3/4"G	X	X
Forced lubrication 强制润滑	B+E B 1/4"G 0,75 l/min E 1/4"G 0,75 l/min	A1 A1 3/4"G	S S 3/8"G	C C 3/4"G	X	X




 VFP
VPB

V1


Vertical downward
立式输出向下安装

 Oil inlet
注油口

 Oil return by
fall down 重力回油
管径最小 $\varnothing$ min. 20mm)

 Oil return by suction
吸力回油

 Vent valve
透气阀

 Oil level indicator
油镜

 Sensor on request
选配油量传感器

 Splash lubrication
飞溅润滑

X

X

X

X

X

X

 Forced lubrication
强制润滑

B+E
B 1/4"G 0,75 l/min
E 1/4"G 0,75 l/min

C
C 3/4"G

C
C 3/4"G

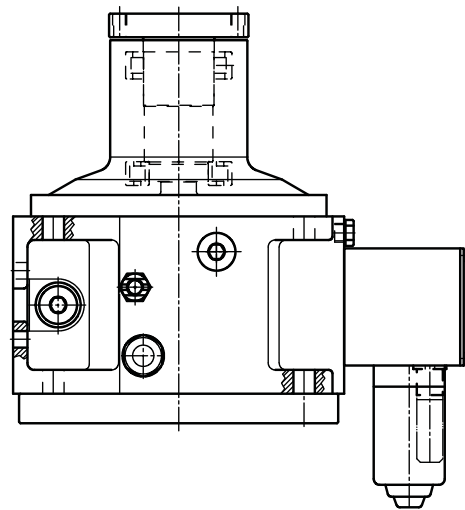
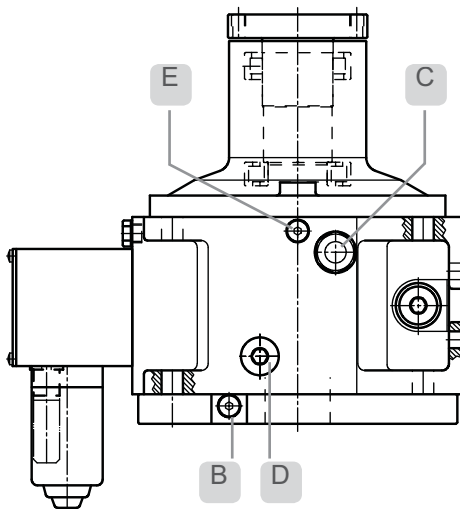
D
D 3/4"G

X

X

 VFA
VPA

V3


Vertical upward
立式输出向上安装

 Oil inlet
注油口

 Oil return by
fall down 重力回油
管径最小 $\varnothing$ min. 20mm)

 Oil return by suction
吸力回油

 Vent valve
透气阀

 Oil level indicator
油镜

 Sensor on request
选配油量传感器

 Splash lubrication
飞溅润滑

X

X

X

X

X

X

 Forced lubrication
强制润滑

E
E 1/4"G 1,50 l/min

D
D 3/4"G

B
B 1/4"G

C
C 3/4"G

X

X

Oil grade for / 润滑油等级滑

- splash lubrication/ 飞溅润滑
- recirculating lubrication with intermediate tank / 带有中间油站的循环润滑
- rec. lub. with air-oil heat exchanger/ 带有空气热交换的循环润滑
- recirculating lubrication with cooling heat exchanger (chiller) / 带有油冷机的循环润滑

 HLP 68 as per ISO VG 68
HLP 46 as per ISO VG 46
HLP 32 as per ISO VG 32
HLP 32 as per ISO VG 32

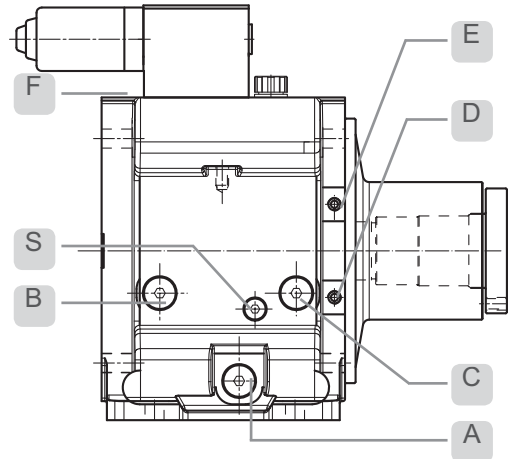
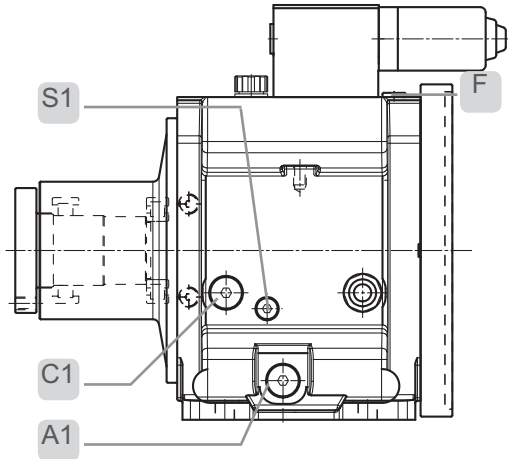



Assembling positions and lubrication - CE14

安装位置及润滑-CE14

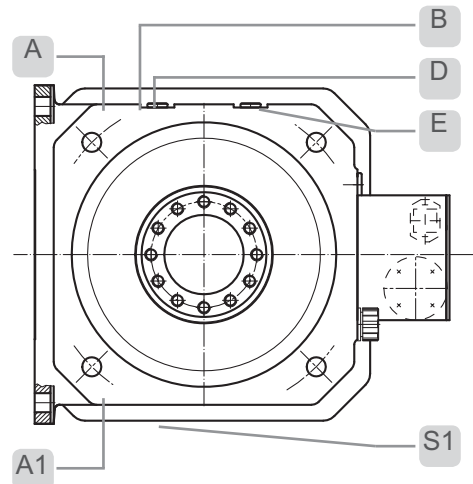
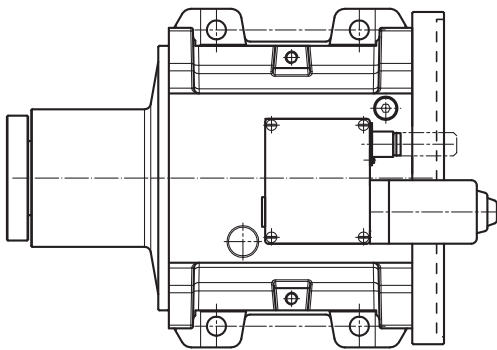
OPP

B5



Horizontal 水平安装	Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 $\varnothing$ min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
Splash lubrication 飞溅润滑	F F 3/8"G OIL FILL IN	A or A1 A 3/4"G OIL DRAIN A1 3/4"G OIL DRAIN	X	F F 3/8"G	C or C1 C 3/4"G C1 3/4"G	S S 3/8"G
Forced lubrication 强制润滑	B+E+D B 1/4"G 0,50 l/min E 1/4"G 0,50 l/min D 1/4"G 0,50 l/min	A or A1 A 3/4"G A1 3/4"G	C or C1 C 3/4"G C1 3/4"G	F F 3/8"G	X	X

OPS

B5
90°

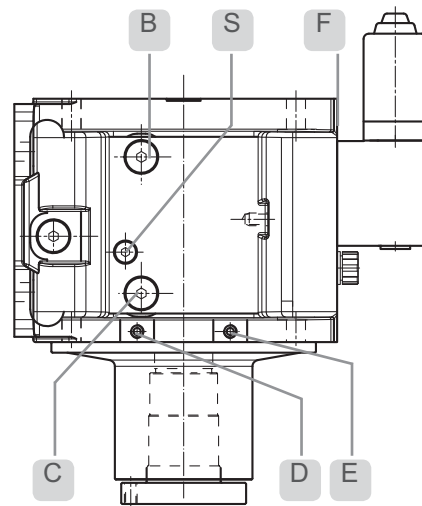
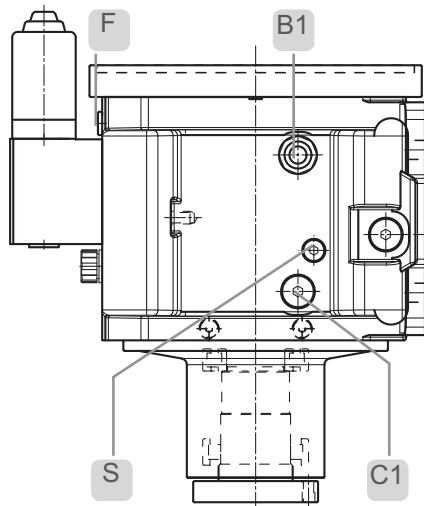
Horizontal turned 水平转向安装	Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 $\varnothing$ min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
Splash lubrication 飞溅润滑	A A 3/4"G OIL FILL IN	A1 A1 3/4"G OIL DRAIN	X	A A 3/4"G	X	X
Forced lubrication 强制润滑	B+E+D B 1/4"G 0,50 l/min E 1/4"G 0,50 l/min D 1/4"G 0,50 l/min	A1 A1 3/4"G	S1 S1 3/4"G	A A 3/4"G	X	X





VFP
VPB

V1



Vertical downward
立式输出向下安装

Oil inlet
注油口

Oil return by
fall down 重力回油
管径最小 ϕ min. 20mm)

Oil return by suction
吸力回油

Vent valve
透气阀

Oil level indicator
油镜

Sensor on request
选配油量传感器

Splash lubrication
飞溅润滑

B or B1

C or C1

X

F

C or C1

S

B 3/4"G OIL FILL IN
B1 3/4"G OIL FILL IN

C 3/4"G OIL DRAIN
C1 3/4"G OIL DRAIN

F 3/8"G

C 3/4"G
C1 3/4"G

S 3/8"G

Forced lubrication
强制润滑

! B+B1+E

C or C1

D

F

X

X

B 1/4"G 0,50 l/min
B1 1/4"G 0,50 l/min
E 1/4"G 0,50 l/min

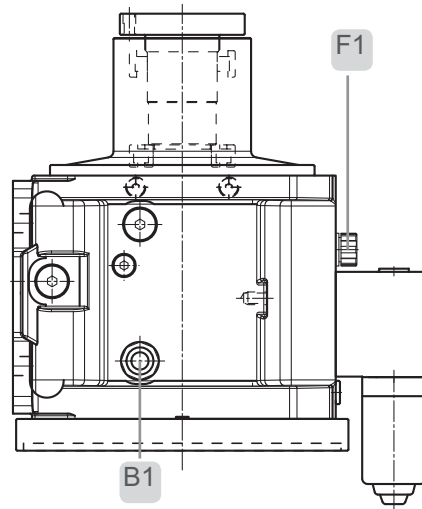
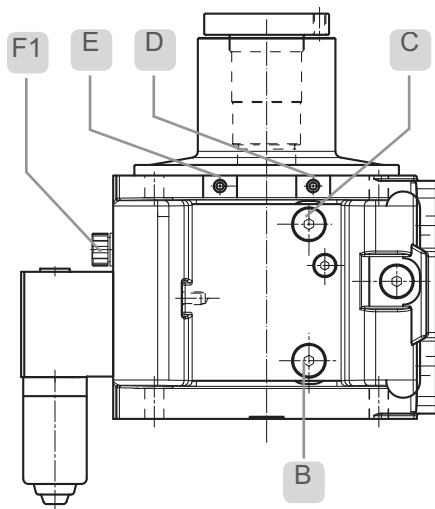
C 3/4"G
C1 3/4"G

D 1/4"G

F 3/8"G

VFA
VPA

V3



Vertical upward
立式输出向上安装

Oil inlet
注油口

Oil return by
fall down 重力回油
管径最小 ϕ min. 20mm)

Oil return by suction
吸力回油

Vent valve
透气阀

Oil level indicator
油镜

Sensor on request
选配油量传感器

Splash lubrication
飞溅润滑

X

X

X

X

X

X

Forced lubrication
强制润滑

D + E

! B or B1

! B or B1

F1

X

X

D 1/4"G 0,75 l/min
E 1/4"G 0,75 l/min

B 3/4"G
B1 3/4"G

B 3/4"G
B1 3/4"G

F1 3/8"G

Oil grade for / 润滑油等级滑

- splash lubrication/ 飞溅润滑
- recirculating lubrication with intermediate tank / 带有中间油站的循环润滑
- rec. lub. with air-oil heat exchanger/ 带有空气热交换的循环润滑
- recirculating lubrication with cooling heat exchanger (chiller) / 带有油冷机的循环润滑

HLP 68 as per ISO VG 68
HLP 46 as per ISO VG 46
HLP 32 as per ISO VG 32
HLP 32 as per ISO VG 32



In position B and B1, injectors are fitted for lubrication oil. Do not remove or turn, seizing danger!

B和B1孔, 是润滑油喷射口, 请勿去掉或旋拧



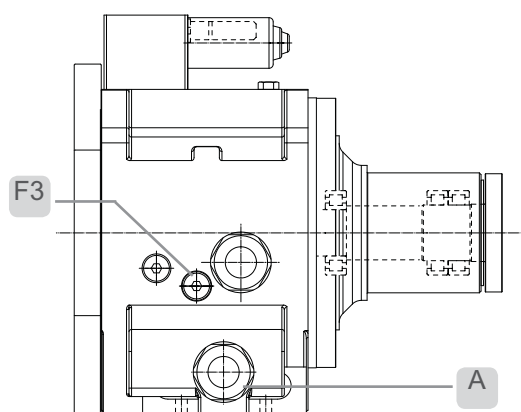
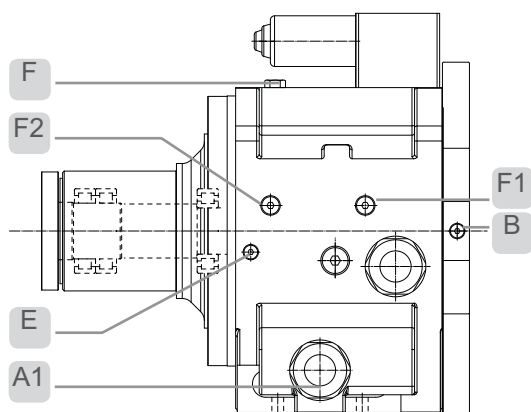


Assembling positions and lubrication - CE16/CE18

安装位置及润滑-CE16/CE18

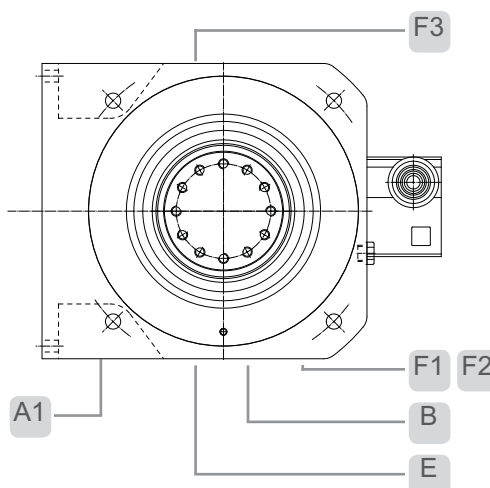
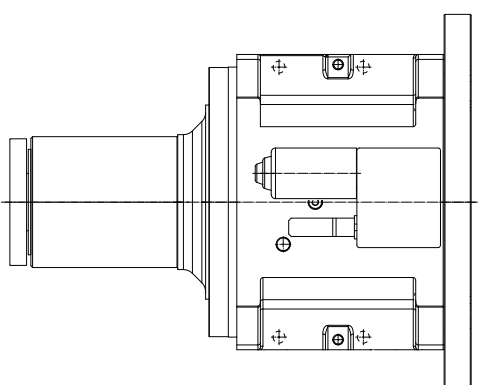
OPP

B5



Horizontal 水平安装	Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 $\varnothing$ min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
Forced lubrication 强制润滑	B+E B M12x1,5 0,50 l/min E M12x1,5 2,50 l/min	A or A1 A M48x2 A1 M48x2	X	F F 3/8"G	X	X

OPS

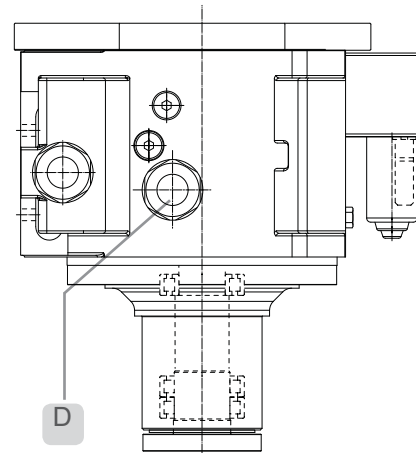
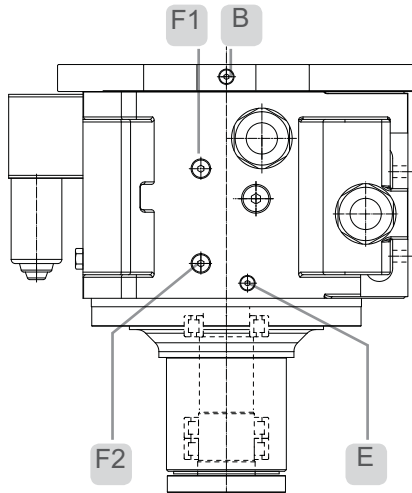
B5
90°

Horizontal turned 水平转向安装	Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 $\varnothing$ min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
Forced lubrication 强制润滑	B+E B M12x1,5 0,50 l/min E M12x1,5 2,50 l/min	A1 A1 M48x2	F1 or F2 F1 F2 3/8"G	F3 F3 3/8"G	X	X



VFP
VPB

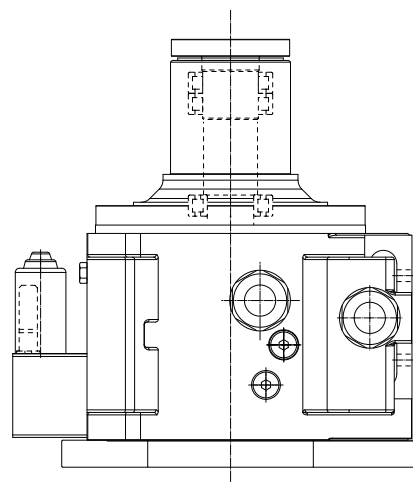
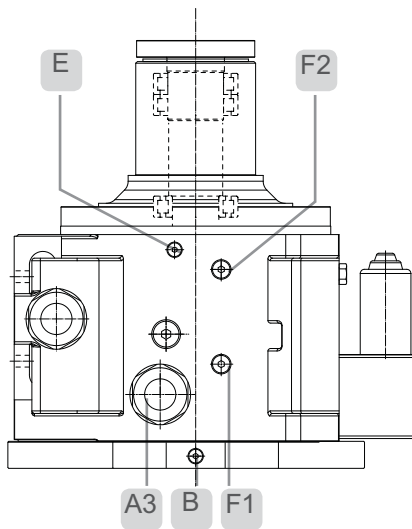
V1



Vertical downward 立式输出向下安装	Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 $\varnothing$ min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
Forced lubrication 强制润滑	B+E B M12x1,5 0,50 l/min E M12x1,5 2,50 l/min	D M48x2	F2 F2 3/8"G	F1 F1 3/8"G	X	X

VFA
VPA

V3



Vertical upward 立式输出向上安装	Oil inlet 注油口	Oil return by fall down 重力回油 管径最小 $\varnothing$ min. 20mm)	Oil return by suction 吸力回油	Vent valve 透气阀	Oil level indicator 油镜	Sensor on request 选配油量传感器
Forced lubrication 强制润滑	E E M12x1,5 2,50 l/min	A3 A3 M48x2	F1 F1 3/8"G	F2 F2 3/8"G	X	X

Oil grade for / 润滑油等级滑

- splash lubrication/ 飞溅润滑
- recirculating lubrication with intermediate tank / 带有中间油站的循环润滑
- rec. lub. with air-oil heat exchanger/ 带有空气热交换的循环润滑
- recirculating lubrication with cooling heat exchanger (chiller) / 带有油冷机的循环润滑

HLP 68 as per ISO VG 68
HLP 46 as per ISO VG 46
HLP 32 as per ISO VG 32
HLP 32 as per ISO VG 32



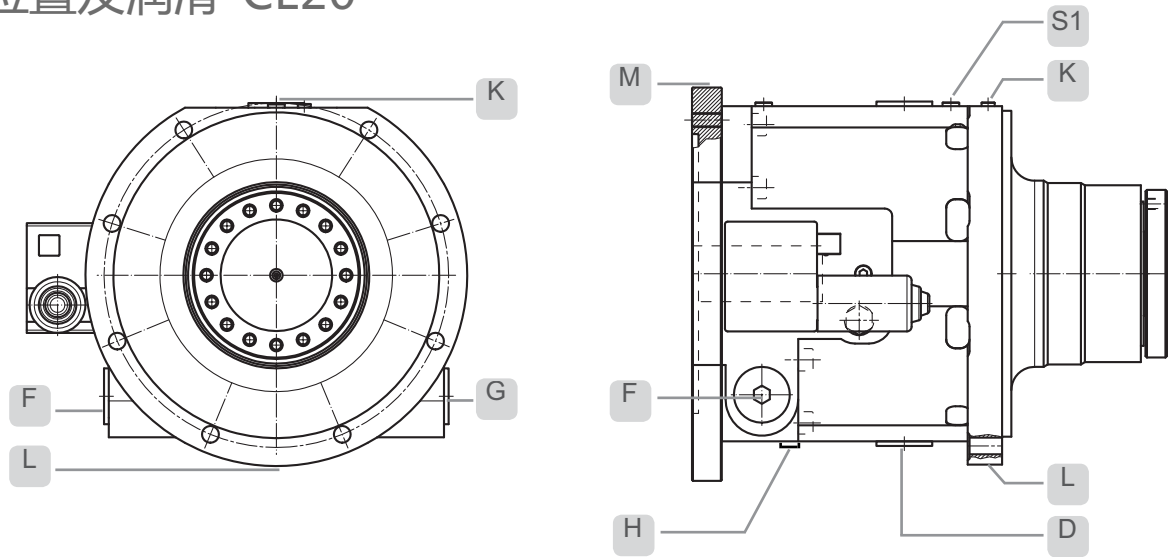


Assembling positions and lubrication - CE20

安装位置及润滑-CE20

OPP

B5



Horizontal
水平安装

Oil inlet
注油口

Oil return by
fall down 重力回油
管径最小 $\varnothing$ min. 20mm)

Oil return by suction
吸力回油

Vent valve
透气阀

Oil level indicator
油镜

Sensor on request
选配油量传感器

Forced lubrication
强制润滑

M+K

F or G or D

L or H

S1

X

X

M M12x1,5 0,50 l/min
K M12x1,5 2,50 l/min

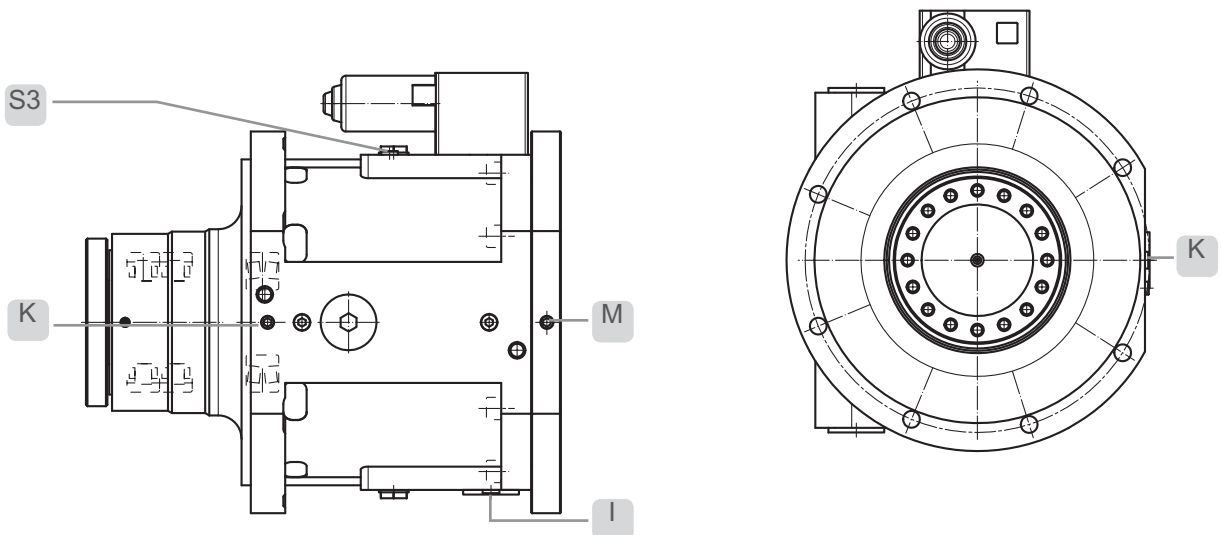
F M48x2
G M48x2
D M48x2

L M20x1,5
H M20x1,5

S1 3/8"G

OPS

B5
90°



Horizontal turned
水平转向安装

Oil inlet
注油口

Oil return by
fall down 重力回油
管径最小 $\varnothing$ min. 20mm)

Oil return by suction
吸力回油

Vent valve
透气阀

Oil level indicator
油镜

Sensor on request
选配油量传感器

Forced lubrication
强制润滑

M+K

G

I

S3

X

X

M M12x1,5 0,50 l/min
K M12x1,5 2,50 l/min

G M48x2

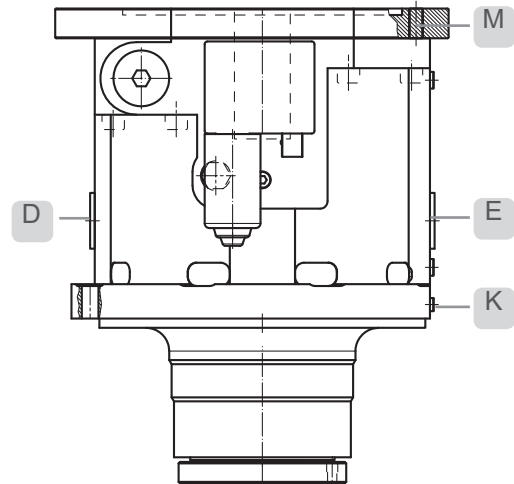
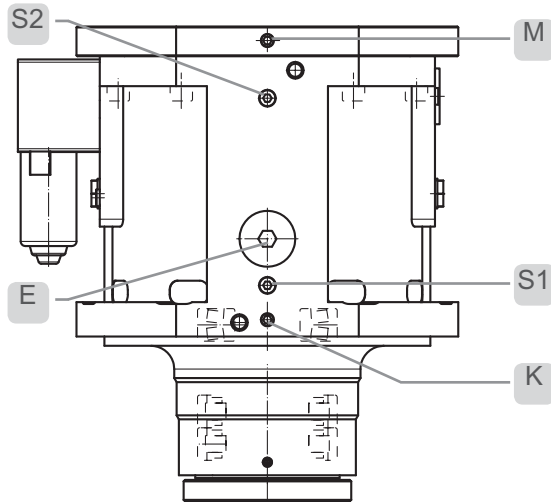
I M20x1,5

S3 3/8"G



VFP
VPB

V1



Vertical downward
立式输出向下安装

Oil inlet
注油口

Oil return by
fall down 重力回油
管径最小 $\varnothing$ min. 20mm)

Oil return by suction
吸力回油

Vent valve
透气阀

Oil level indicator
油镜

Sensor on request
选配油量传感器

Forced lubrication
强制润滑

M+K

E or D

S1

S2

X

X

M M12x1,5 0,50 l/min
K M12x1,5 2,50 l/min

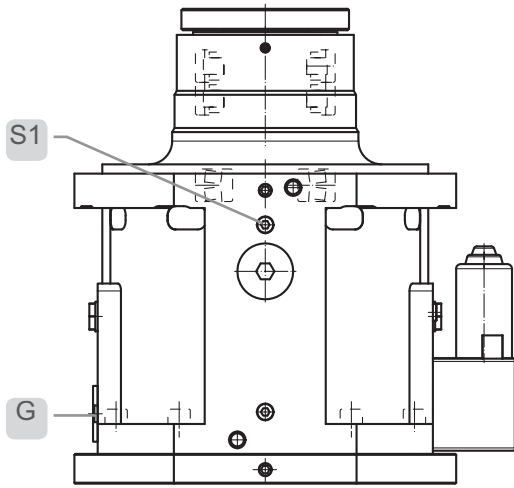
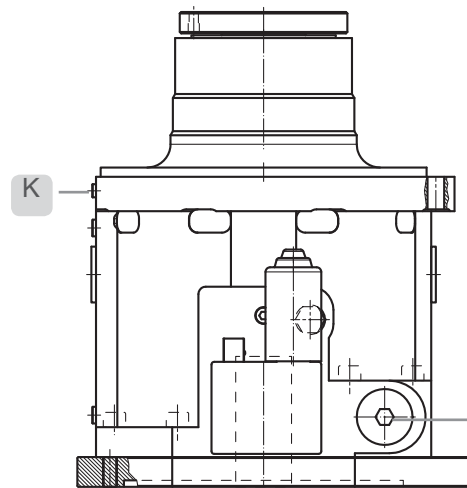
E M48x2
D M48x2

S1 3/8"G

S2 3/8"G

VFA
VPA

V3



Vertical upward
立式输出向上安装

Oil inlet
注油口

Oil return by
fall down 重力回油
管径最小 $\varnothing$ min. 20mm)

Oil return by suction
吸力回油

Vent valve
透气阀

Oil level indicator
油镜

Sensor on request
选配油量传感器

Forced lubrication
强制润滑

K

F or G

H

S1

X

X

K M12x1,5 2,50 l/min

F M48x2
G M48x2

H M20x1,5

S1 3/8"G

Oil grade for / 润滑油等级滑

- splash lubrication/ 飞溅润滑
- recirculating lubrication with intermediate tank / 带有中间油站的循环润滑
- rec. lub. with air-oil heat exchanger/ 带有空气热交换的循环润滑
- recirculating lubrication with cooling heat exchanger (chiller) / 带有油冷机的循环润滑

HLP 68 as per ISO VG 68

HLP 46 as per ISO VG 46

HLP 32 as per ISO VG 32

HLP 32 as per ISO VG 32





Main motor specifications

主轴电机说明

Motor applied to the gearbox should comply with the following specifications:

- Size and power admitted by the gearbox
- Motor form **V1 / V3** for vertical assembly positions. DIN 42950
- Motor without seal on the shaft
- Construction Tolerances according to **DIN 42955-R**
- Vibration level **R**
- Coupling between motor and gearbox can be achieved by means of a clamping unit or by a key

When using a clamping unit, motor shaft is smooth thus self-balanced



When using a key, motor shaft can be balanced with half key or full key. In this case it is mandatory to state the motor shaft balancing convention (indicated by motor manufacturer) so that we can supply a properly balanced pinion.

At the order you need to indicate the way the motor shaft has been balanced

- | | |
|---|----------------------------|
| 0 | Without key (smooth shaft) |
| 1 | With half key |
| 2 | With full key |

- **Motor form B3 / B5** for horizontal assembling positions in order to reduce bending and vibrations, you may need to support the motor on its feet.

与变速箱相匹配的电机应该符合以下要求：

- 电机的尺寸大小和功率应与变速箱匹配
- DIN42950电机应采用V1/V3立式安装
- 电机输出轴不能有密封圈
- 结构公差依据DIN42955-R
- 振动等级为R级
- 电机和变速箱可以通过涨紧套或键连接
- 当使用涨紧套时，电机输出轴需要光滑且已是自平衡

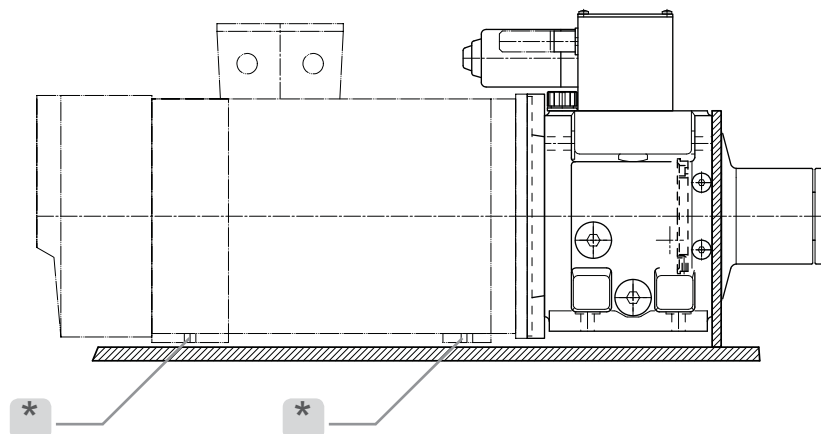


当使用连接键时，电机输出轴可以是半键平衡或全键平衡。这种情况必须明确（由电机生产商提供）我们将提供对应的平衡连接轴

您在订货时需要告之我们电机轴的平衡形式

- | | |
|---|------|
| 0 | 光轴 |
| 1 | 全键平衡 |
| 2 | 半键平衡 |

- 当电机采用B3/B5立式安装时，为了减少弯曲和振动电机脚需要支撑



* Fit shims, to be defined after aligning motor + gearbox

应在电机和变速箱找正后，置入相应的支撑垫片



Gearbox output bearings

变速箱输出轴承

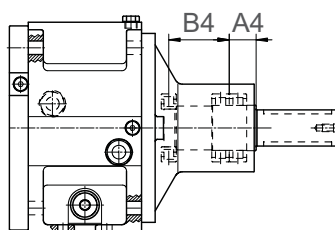
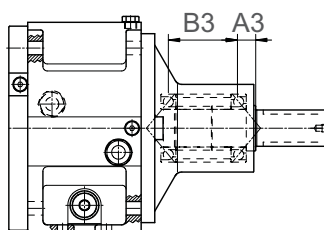
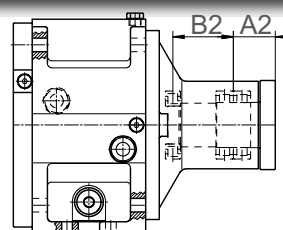
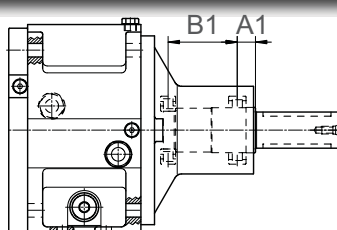
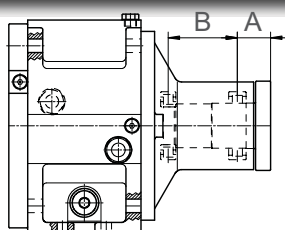
Table 1 shows bearings mounted on the output shaft and their loading capacity.

These data, together with the ones at the bottom of the page, allow bearings lifetime calculation, considering applied load, position of applied load and RPM.

表1所示安装在变速箱输出端的轴承及其相关的负载值

这些数据，包括本页下半部数据，通过使用时的负载，安装位置和工作转速，可以计算出轴承的使用寿命

Table 1 表1	Bearing B 轴承B		Bearing B 轴承B			Second bearing 第二级轴承	
	Type 型号	Loading capacity N 负载力N	Type 型号	Loading capacity N 负载力N		Type 型号	Loading capacity N 负载力N
Standard 标准	CE 11	NUP 208 ECP	62.000	NU 2208 ECP	81.500	X	X
	CE 12	NUP 208 ECP	62.000	NU 2208 ECP	81.500	X	X
	CE 13	NUP 210 ECP	73.500	NU 2210 ECP	90.000	X	X
	CE 14	NUP 211 ECP	96.500	NU 2211 ECP	114.000	X	X
Double bearing 双轴承	CE 13	NUP 210 ECP	73.500	NU 2210 ECP	90.000	(+) NU 2210 ECP	90.000
	CE 14	NUP 211 ECP	96.500	NU 2211 ECP	114.000	(+) NU 2211 ECP	114.000
	CE 16	NUP 2111 EC	114.000	RNU 2211 ECP	114.000	(+) RNU 2211 ECP	114.000
	CE 18	NUP 2213 ECP	170.000	NU 2213 ECP	170.000	(+) NU 2213 ECP	170.000
	CE 20	21314 E	285.000	NU 314 ECP	236.000	(+) NU 314 ECP	236.000
Angular contact bearing 角接触轴承	CE 13	7210 BEGAP	40.000	7210 BEGAP	40.000	X	X
	CE 14	7211 BEGAP	49.000	7211 BEGAP	49.000	X	X
	CE 20	7314 BEP	119.000	7314 BEP	119.000	X	X



STANDARD flange output
标准 法兰式输出

	CE11	CE12	CE13	CE14
A (mm)	39	39	44	47,5
B (mm)	71,5	71,5	91,5	87

STANDARD shaft output
标准 轴输出

	CE11	CE12	CE13	CE14
A1 (mm)	24	24	24	27,5
B1 (mm)	71,5	71,5	91,5	87

Flange output with double bearing
法兰式输出并带双轴承

	CE13	CE14	CE16	CE18	CE20
A2 (mm)	55,5	60	64	72	79
B2 (mm)	80	74,5	133	161,5	110,5

Shaft output with angular contact bearings
轴输出并带角接触轴承

	CE13	CE14	CE20
A3 (mm)	6,5	7	8
B3 (mm)	151	154	175

Shaft output with double bearing
轴输出并带双轴承

	CE16	CE18	CE20
A4 (mm)	44,5	44,5	56
B4 (mm)	133	161,5	110,5





Gearbox output bearing

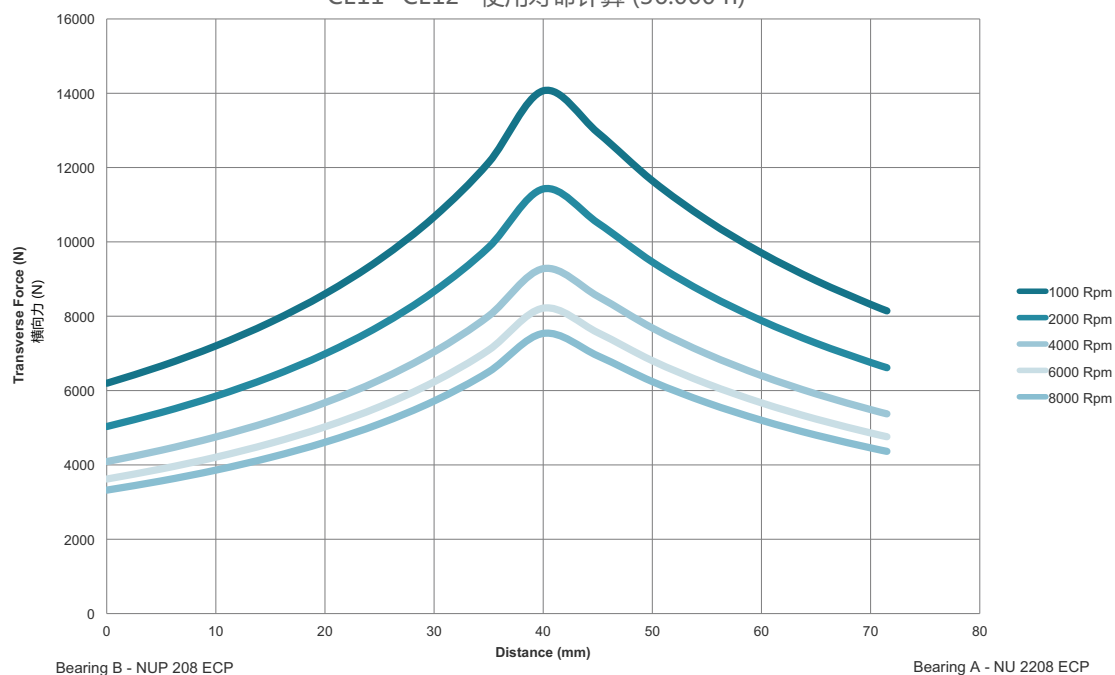
变速箱输出轴承

STANDARD flange output and STANDARD shaft output

标准法兰式输出和标准轴输出

CE11- CE12 Lifetime Calculation (36.000 h)

CE11- CE12 使用寿命计算 (36.000 h)

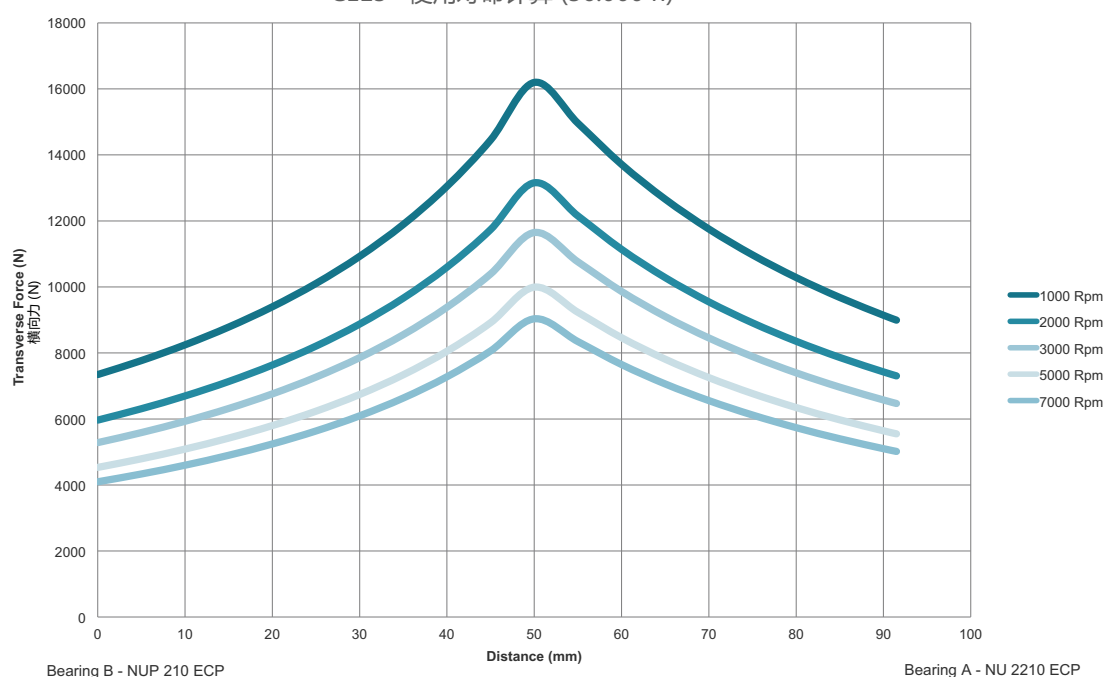


STANDARD flange output and STANDARD shaft output

标准法兰式输出和标准轴输出

CE13 Lifetime Calculation (36.000 h)

CE13 使用寿命计算 (36.000 h)

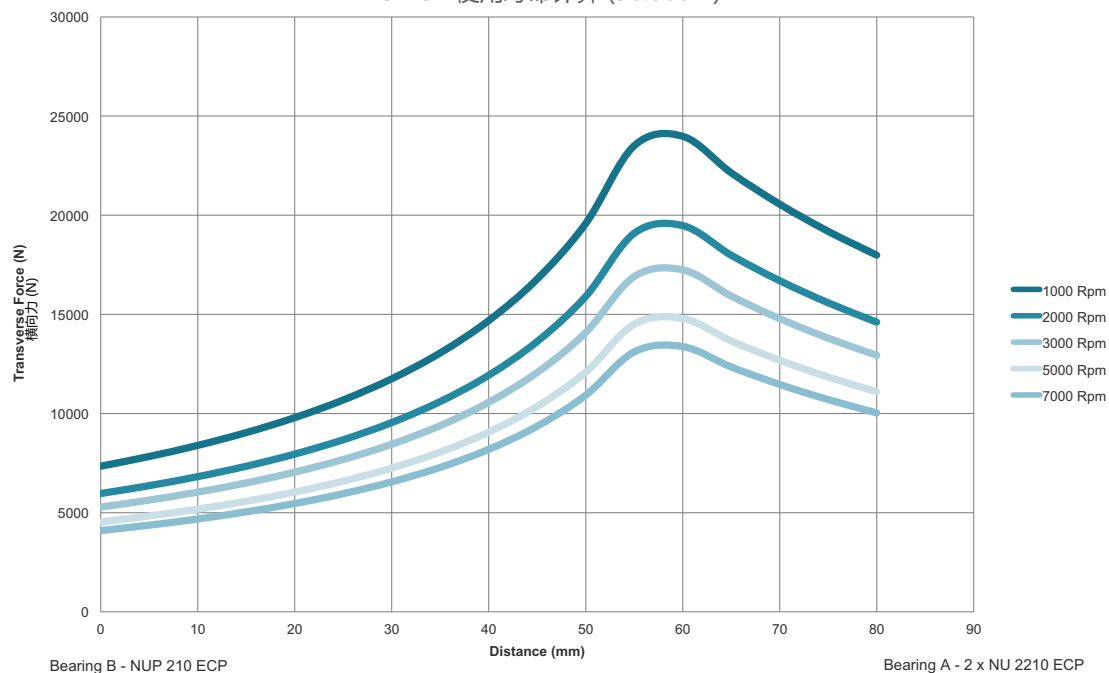




Flange output with double bearing 法兰式双轴承输出

CE13 Lifetime Calculation (36.000 h)

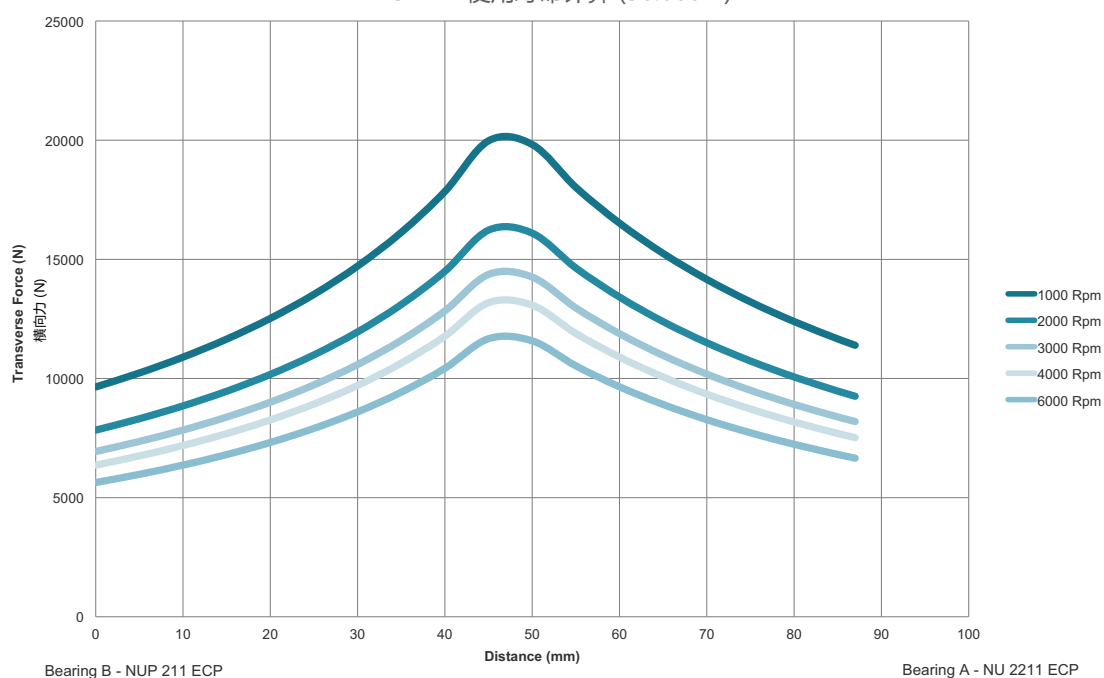
CE13 使用寿命计算 (36.000 h)



STANDARD flange output and STANDARD shaft output 标准法兰式和标准轴输出

CE14 Lifetime Calculation (36.000 h)

CE14 使用寿命计算 (36.000 h)





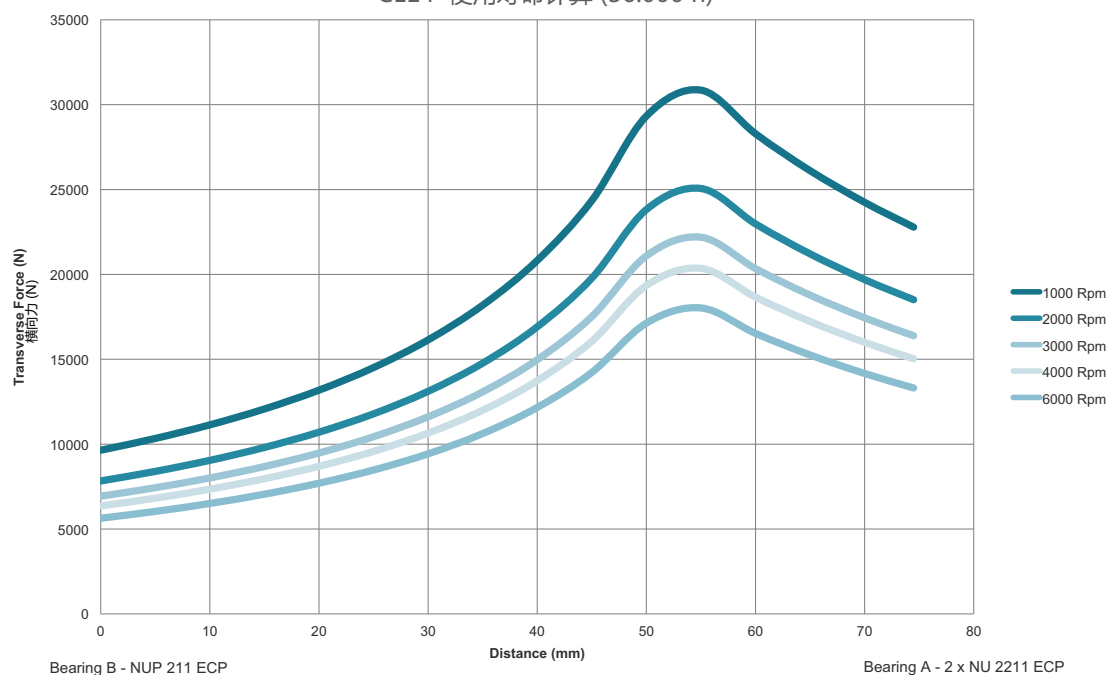
Gearbox output bearing

变速箱输出轴承

Flange output with double bearing
法兰式双轴承输出

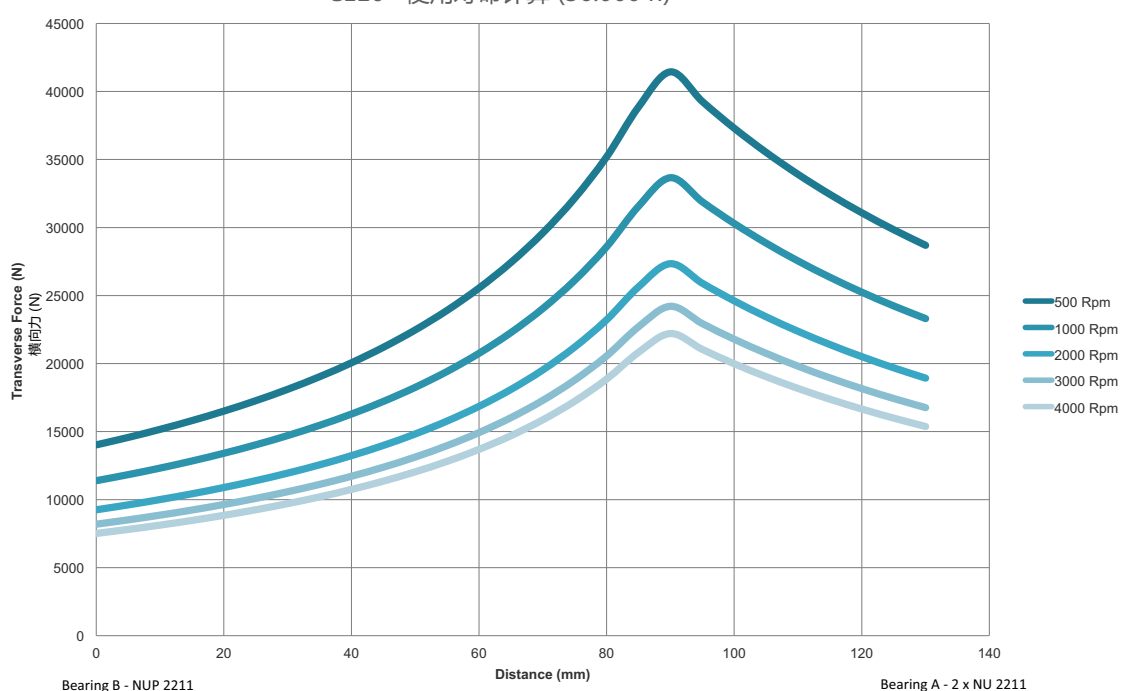
CE14 Lifetime Calculation (36.000 h)

CE14 使用寿命计算 (36.000 h)

STANDARD flange output with double bearing and STANDARD shaft output with double bearing
标准法兰式双轴承和标准轴式双轴承输出

CE16 Lifetime Calculation (36.000 h)

CE16 使用寿命计算 (36.000 h)

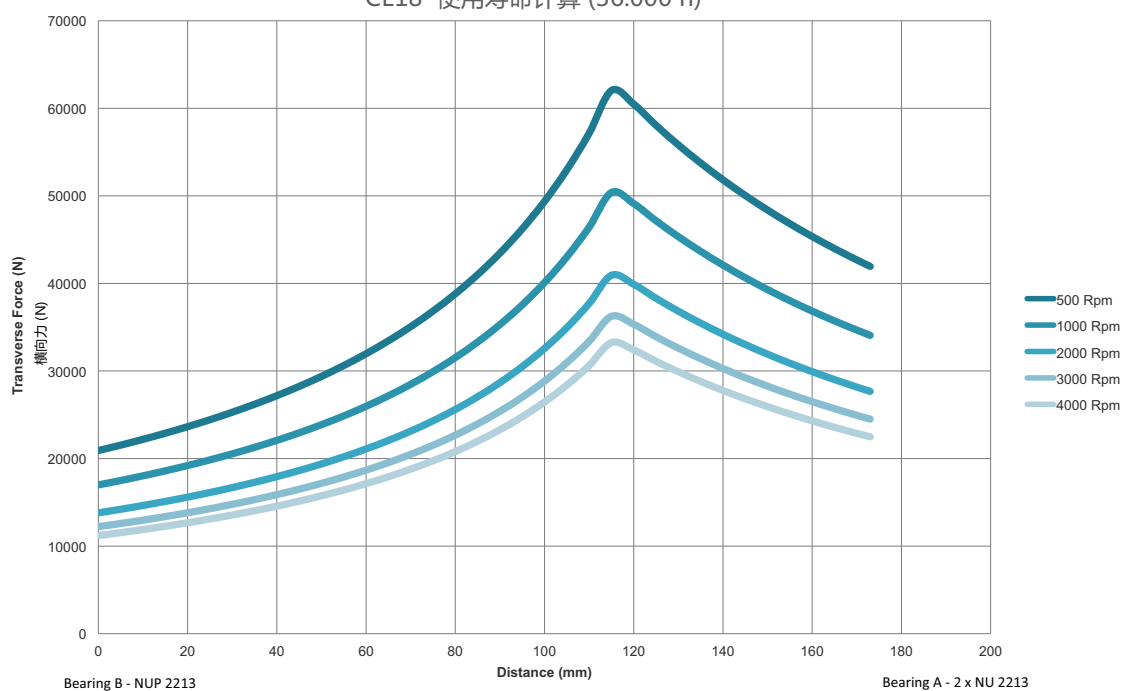




STANDARD flange output with double bearing and STANDARD shaft output with double bearing 标准法兰式双轴承和标准轴式双轴承输出

CE18 Lifetime Calculation (36.000 h)

CE18 使用寿命计算 (36.000 h)

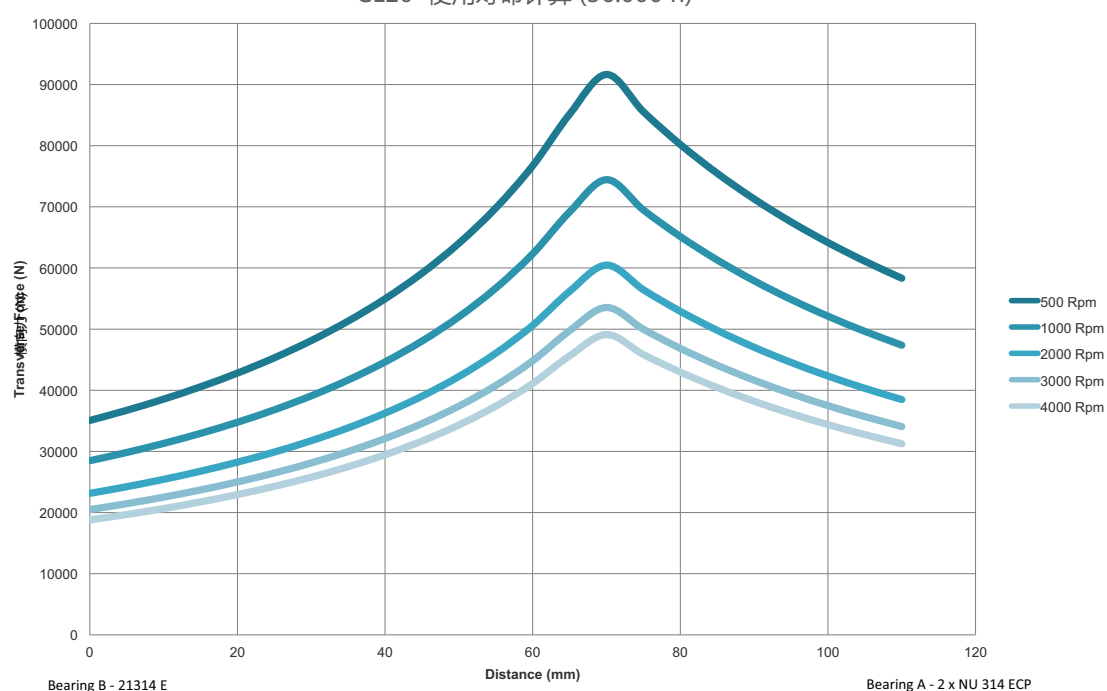


STANDARD flange output with double bearing and STANDARD shaft output with double bearing 标准法兰式双轴承和标准轴式双轴承输出

STANDARD

CE20 Lifetime Calculation (36.000 h)

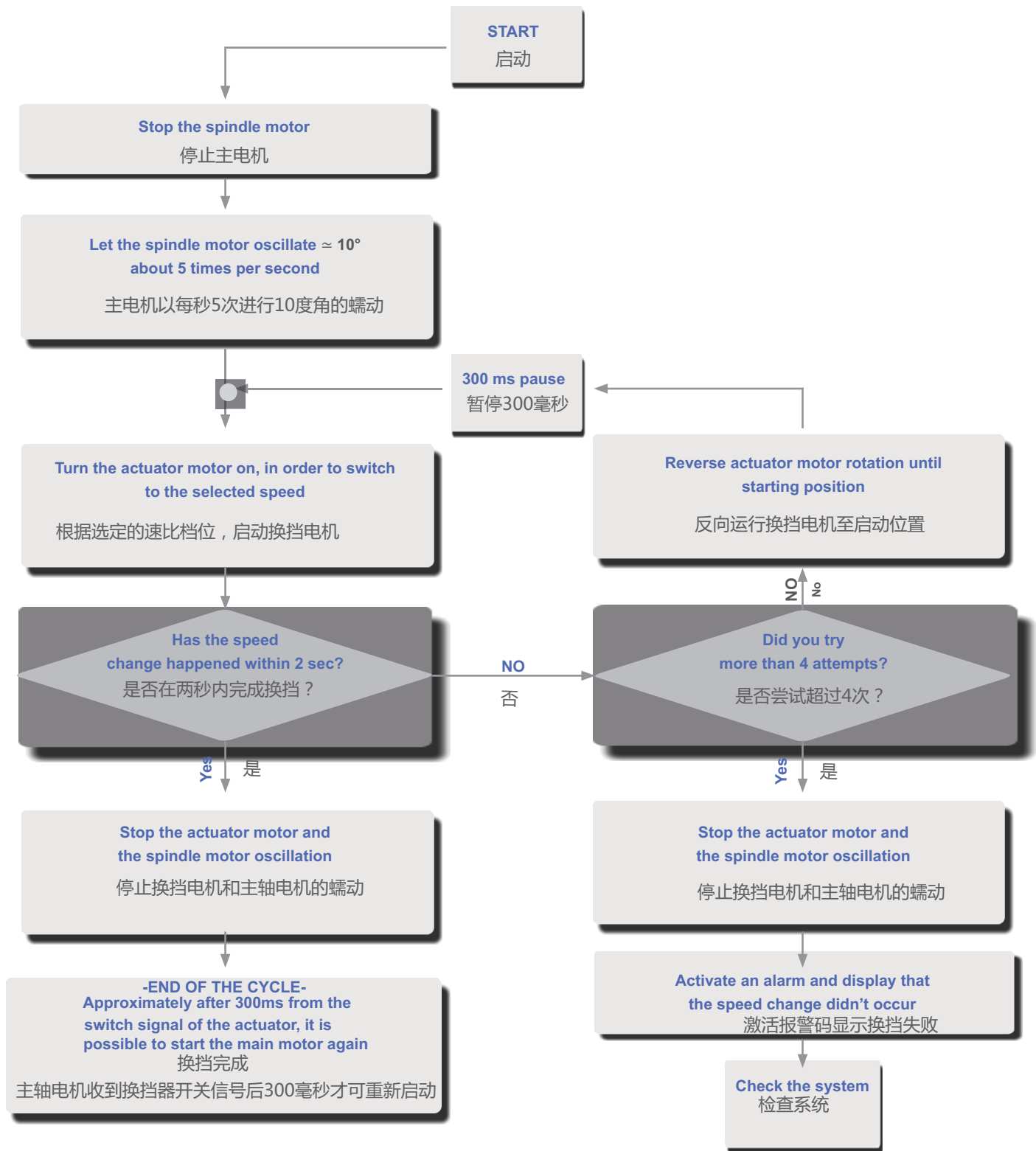
CE20 使用寿命计算 (36.000 h)





Operating sequence

运行时序图



* When the microswitches signal is active the speed change is already done and the power of the actuator motor must be cut to preserve its life

* 当收到微动开关信号时，换挡已经结束，此时必须切断换挡器的电机的电源，以保护其使用寿命





Actuator (electro-mechanical shifting unit)

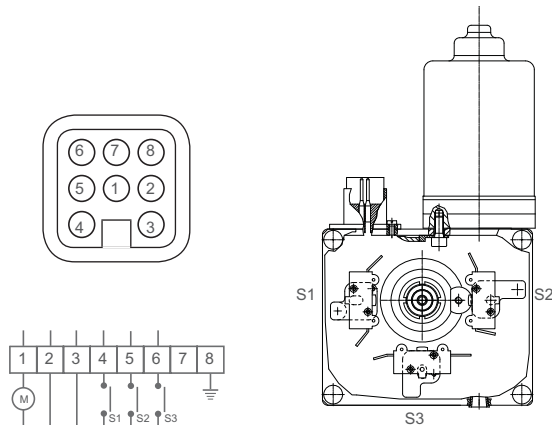
换挡器（电动换挡机构）

The gearbox actuator is an electro-mechanical shifting unit used to switch between the low-speed/high-speed/neutral.

This unit is designed according to the easiest and most durable solutions for the speed change.

变速箱的换挡器是一个电动换挡机构，是用来进行高速档，低速档及空挡之间的转换

这个机构的设计，考虑到了能够用最简便耐用的方式来换挡



Unit details

详细参数

Power supply 电源	Vdc A	24±10% 6(min)
Power consumption 功耗	W	60
Nominal current 额定电流	A	2.5
Starting current 启动电流	A	8.5
Inner clutch slipping current 内置离合器滑动电流	A	3.5±0.5

Connection Pinout

线路连接

- | | | | |
|---|--|------------------------------------|---------------------------------------|
| 1. Motor phase/ 电机相位 | 2. Motor phase/ 电机相位 | 3. Com.+24V microswitch
24v微动开关 | 4. S1-Low speed microswitch/ S1低速微动开关 |
| 5. S2-High speed
microswitch/ S2高速微动开关 | 6. S3-Neutral
microswitch/ S3空挡微动开关 | 7. | 8. Ground/ 接地 |

Circuit diagram 电路图

The following circuit diagram is the best solution in order to preserve the motor and to avoid delays due to the actuator motor inertia.

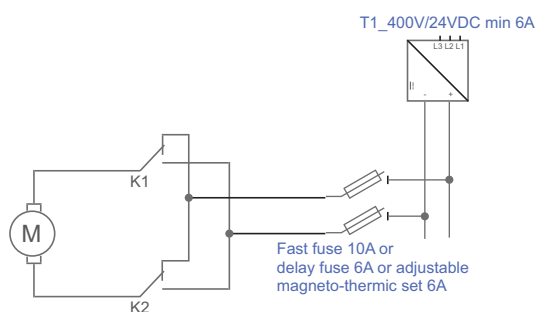
The power supply unit must be at least 6A, in order to allow clutch slipping and to be able to overcome static friction torque.

下面的电路是保护电机和避免因换挡电机惯性所产生的延时的最佳解决方案

为了使离合器滑动自如，克服静摩擦扭力，电源必须至少是6A以上

⚠ It is mandatory to follow this lay-out and to give the spindle motor an oscillating movement: actuator motor failure may occur.

⚠ 必须按照下面电路连接，并蠕动主电机否则换挡电机会出现故障



快熔电阻10A或者延时电阻6A，或可调电热电阻6A

K1-K2
Relais (coil 24V=/contact 10A=)
used to feed the actuator motor.
PLC controller.

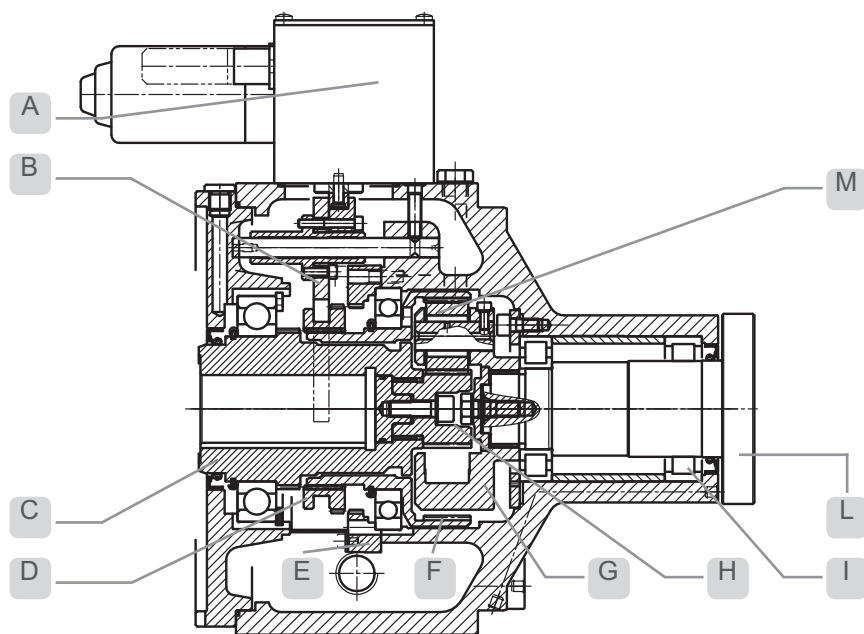
继电器，用于供给换挡电机，PLC控制器



Gearbox construction CE 11 - CE 13

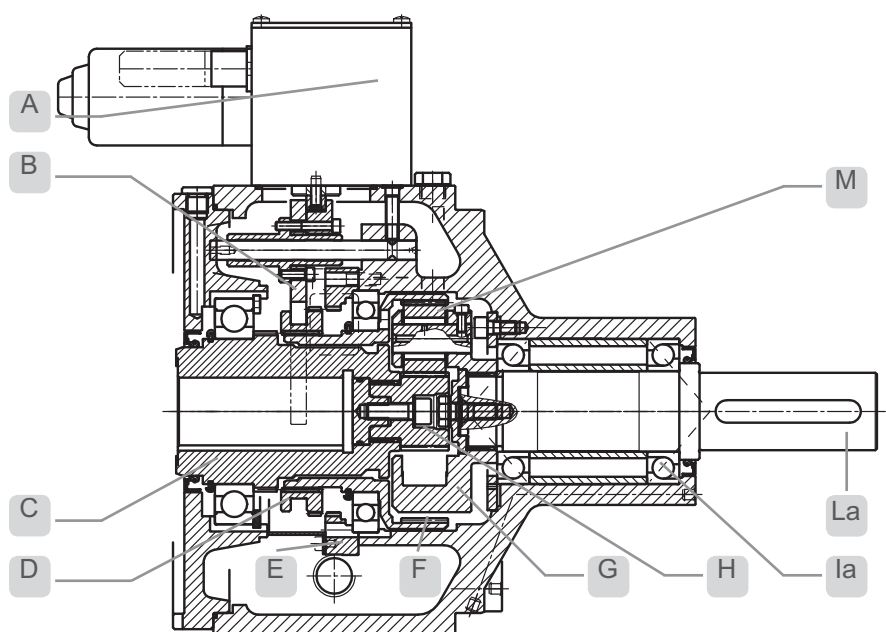
变速箱CE11-CE13结构

Flange output 法兰输出



- A** = actuator
- B** = fork
- C** = pinion (connected to the motor)
- D** = sliding sleeve
- E** = fixed splined ring
- F** = ring gear
- G** = planet gears carrier
- H** = sun gear (connected to the pinion)
- I** = output roller bearings
- la** = output angular contact ball bearings
- L** = output flange
- La** = output shaft
- M** = planet gears

Shaft output 轴输出



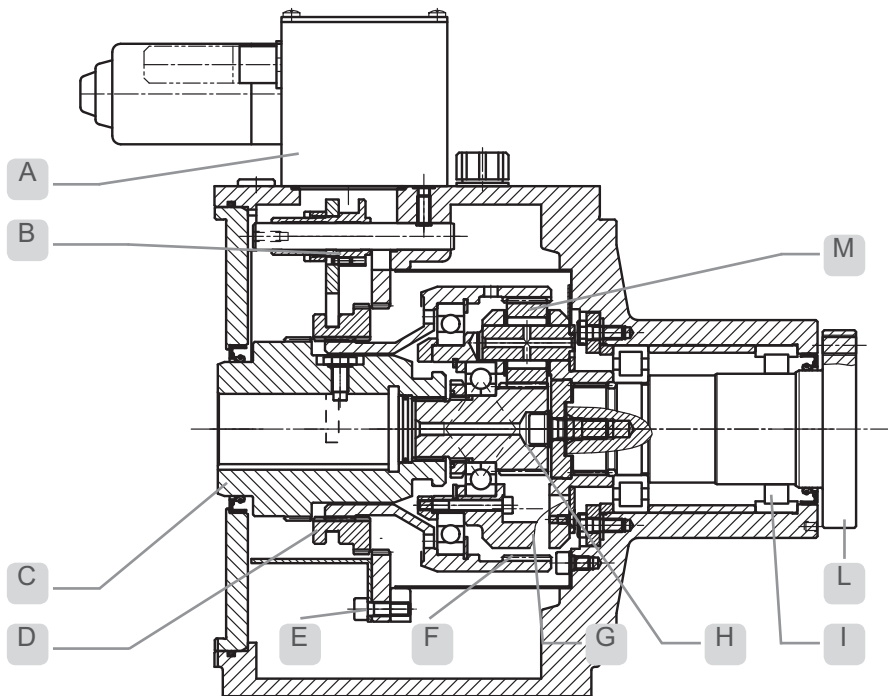
- A** 换挡器
- B** 拨叉
- C** 连接轴（和电机相连）马达
- D** 滑套
- E** 固定齿轮
- F** 环轮
- G** 行星齿轮架
- H** 太阳轮（与连接轴连接）
- I** 输出滚柱轴承
- Ia** 输出角接触轴承
- L** 输出法兰
- La** 输出轴
- M** 行星轮



Gearbox construction CE 12 - CE 14

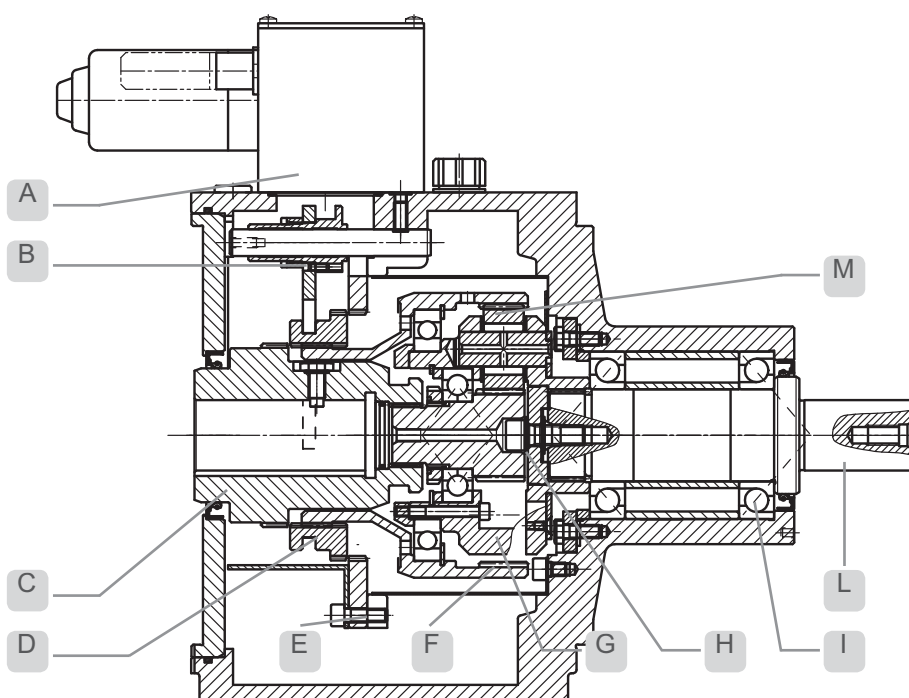
变速箱CE12-CE14结构

Flange output
法兰输出



- A = actuator
- B = fork
- C = pinion (connected to the motor)
- D = sliding sleeve
- E = fixed splined ring
- F = ring gear
- G = planet gears carrier
- H = sun gear (connected to the pinion)
- I = output roller bearings
- la = output angular contact ball bearings
- L = output flange
- La = output shaft
- M = planet gears

Shaft output
轴输出



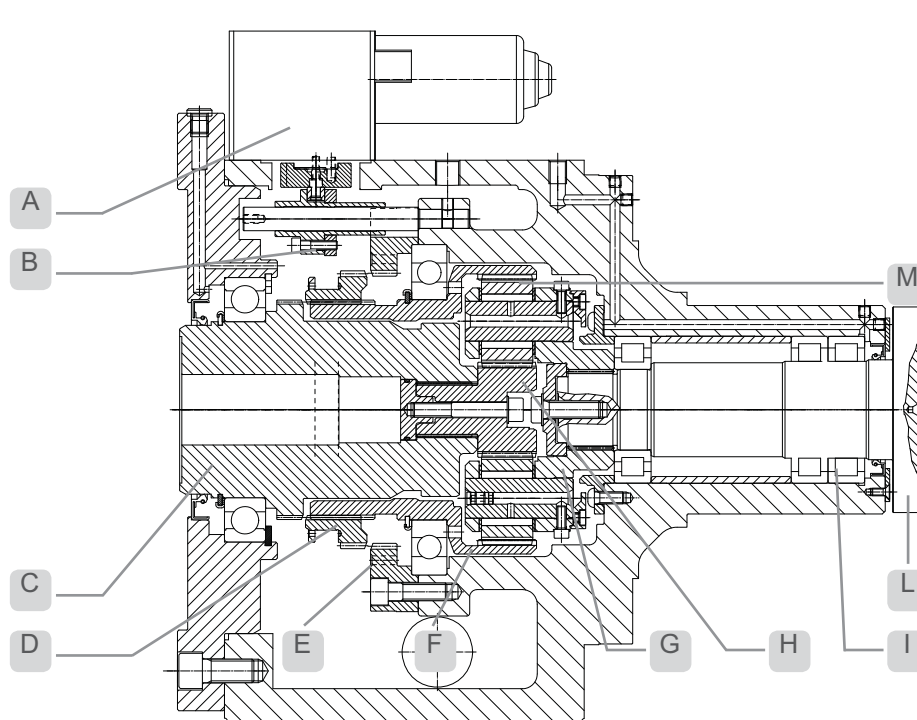
- A 换挡器
- B 拨叉
- C 连接轴（和电机相连）马达
- D 滑套
- E 固定齿轮
- F 环轮
- G 行星齿轮架
- H 太阳轮（与连接轴连接）
- I 输出滚柱轴承
- la 输出角接触轴承
- L 输出法兰
- La 输出轴
- M 行星轮



Gearbox construction CE 16 - CE 18

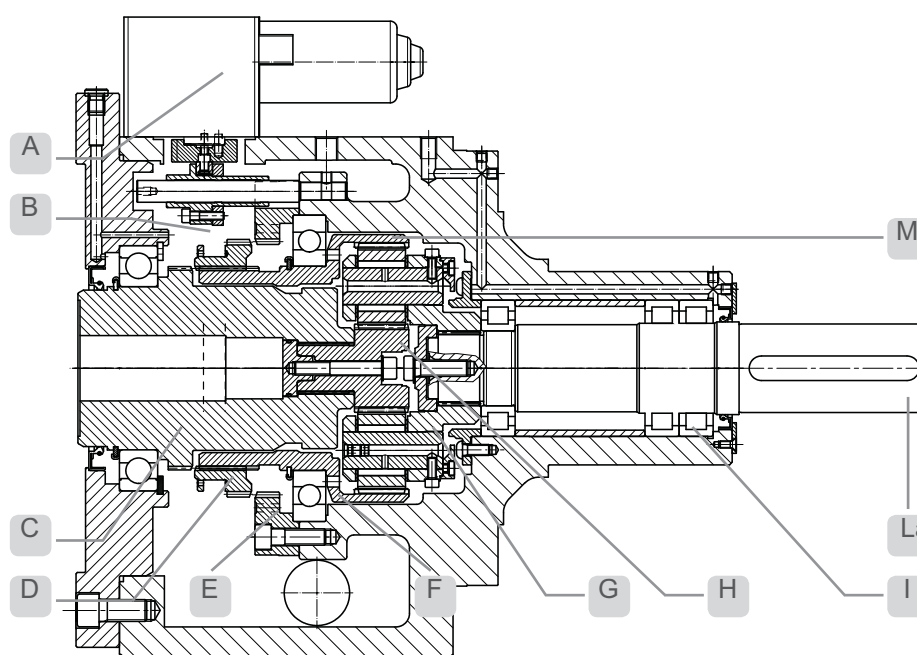
变速箱CE16-CE18结构

Flange output 法兰输出



- A** = actuator
- B** = fork
- C** = pinion (connected to the motor)
- D** = sliding sleeve
- E** = fixed splined ring
- F** = ring gear
- G** = planet gears carrier
- H** = sun gear (connected to the pinion)
- I** = output roller bearings
- La** = output angular contact ball bearings
- L** = output flange
- La** = output shaft
- M** = planet gears

Shaft output 轴输出



- A** 换挡器
- B** 拨叉
- C** 连接轴（和电机相连）马达
- D** 滑套
- E** 固定齿轮
- F** 环轮
- G** 行星齿轮架
- H** 太阳轮（与连接轴连接）
- I** 输出滚柱轴承
- La** 输出角接触轴承
- L** 输出法兰
- La** 输出轴
- M** 行星轮

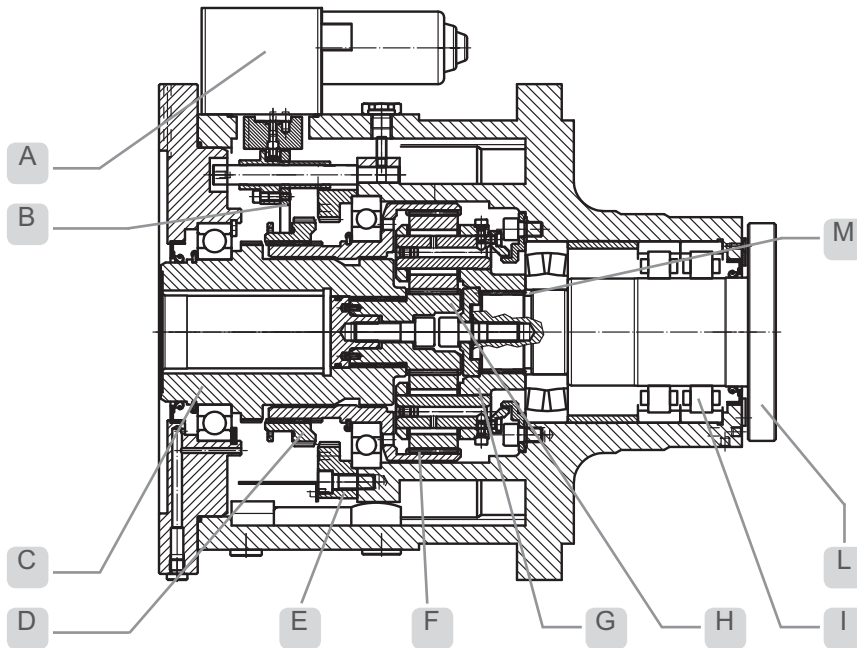


Gearbox construction CE 20

变速箱CE20结构

Flange output

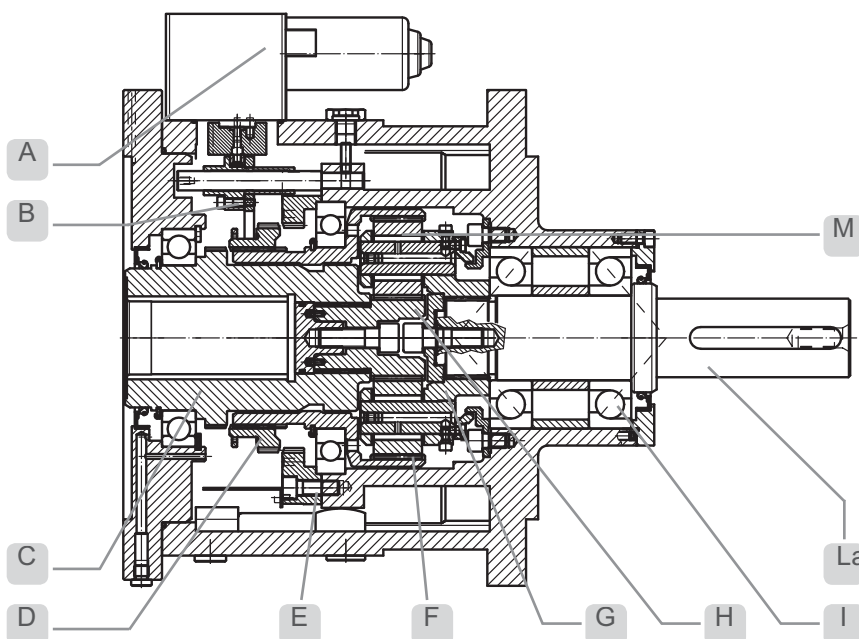
法兰输出



- A** = actuator
- B** = fork
- C** = pinion (connected to the motor)
- D** = sliding sleeve
- E** = fixed splined ring
- F** = ring gear
- G** = planet gears carrier
- H** = sun gear (connected to the pinion)
- I** = output roller bearings
- la** = output angular contact ball bearings
- L** = output flange
- La** = output shaft
- M** = planet gears

Shaft output

轴输出



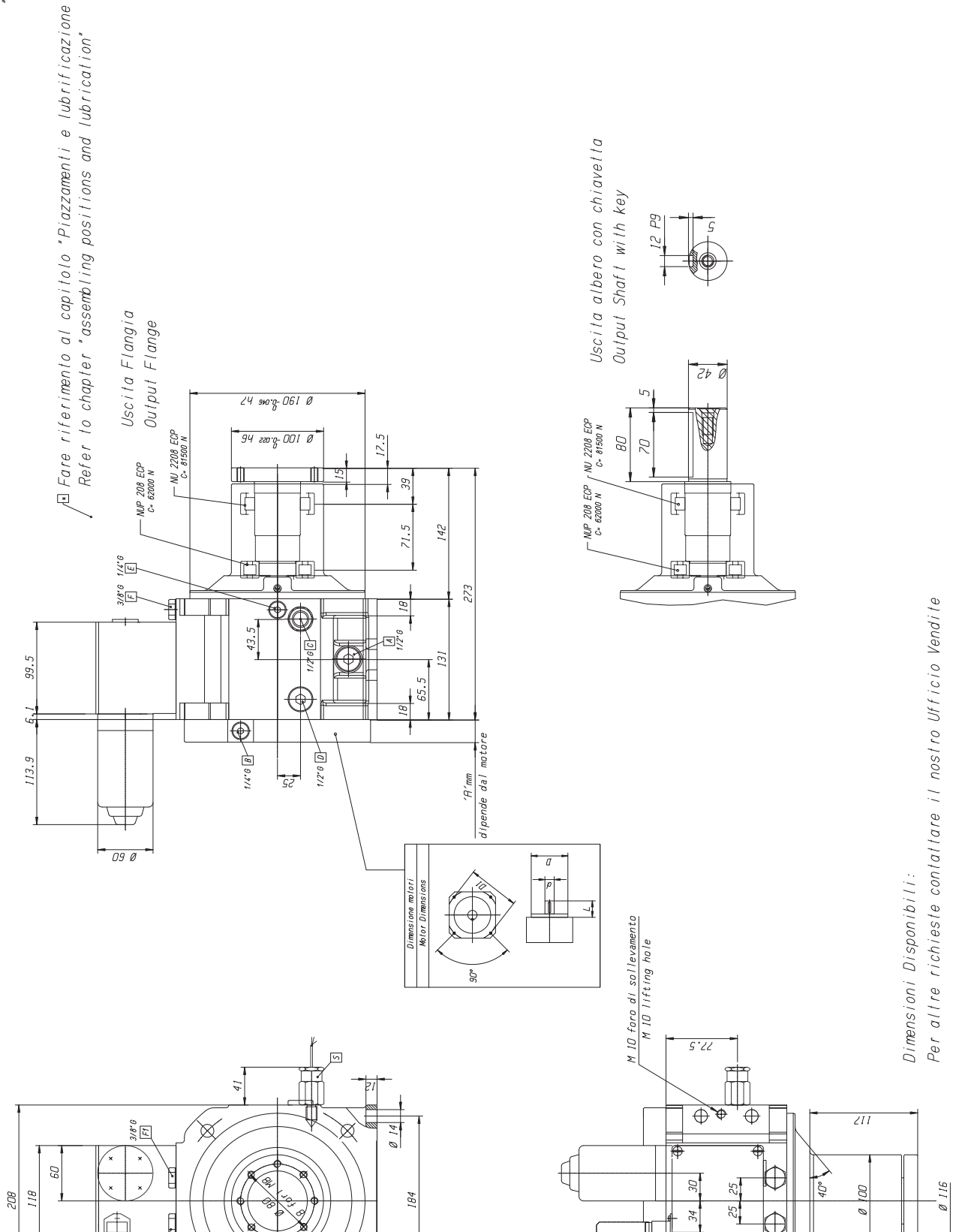
- A** 换挡器
- B** 拨叉
- C** 连接轴（和电机相连）马达
- D** 滑套
- E** 固定齿轮
- F** 环轮
- G** 行星齿轮架
- H** 太阳轮（与连接轴连接）
- I** 输出滚柱轴承
- la** 输出角接触轴承
- L** 输出法兰
- La** 输出轴
- M** 行星轮





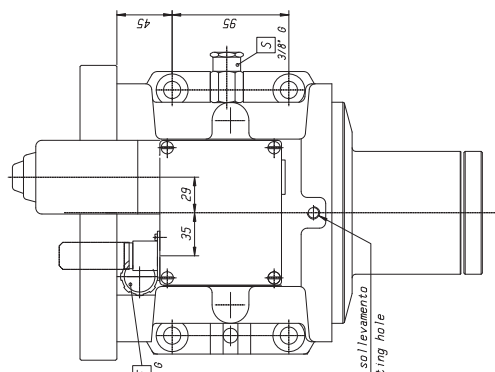
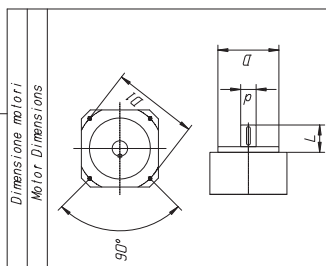
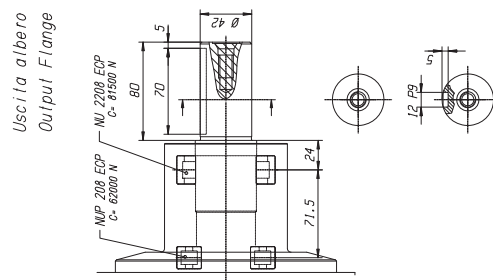
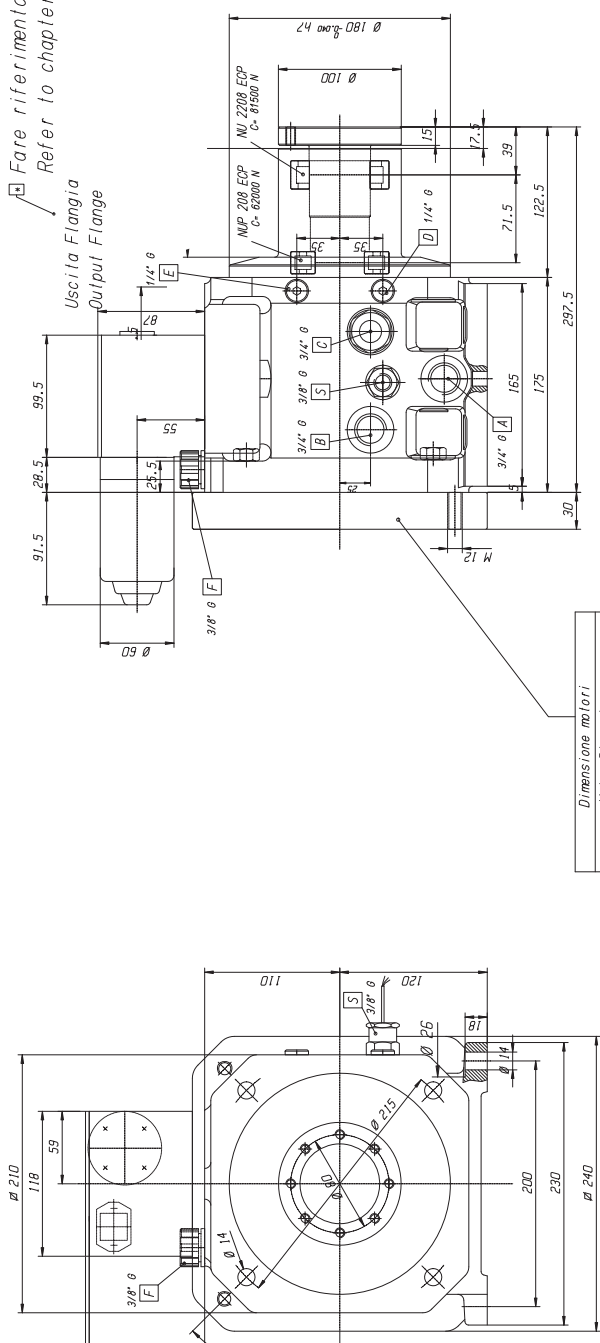
External view CE 11

变速箱CE11外形图

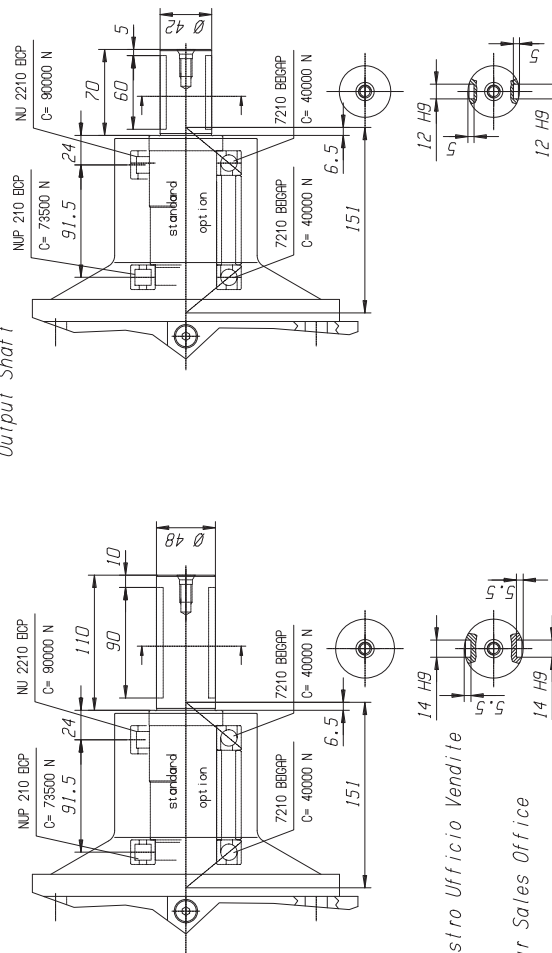
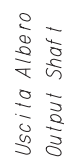
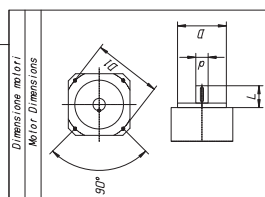


变速箱CE12外形图

☐ Fare riferimento al capitolo "Piazzamenti e lubrificazione"
Refer to chapter "assembling positions and lubrication"



*Dimensioni Disponibili:
Per altre richieste contattate il nostro Ufficio Vendite
Available dimensions:
For other requests please contact our sales office*



变速箱CE13外形图

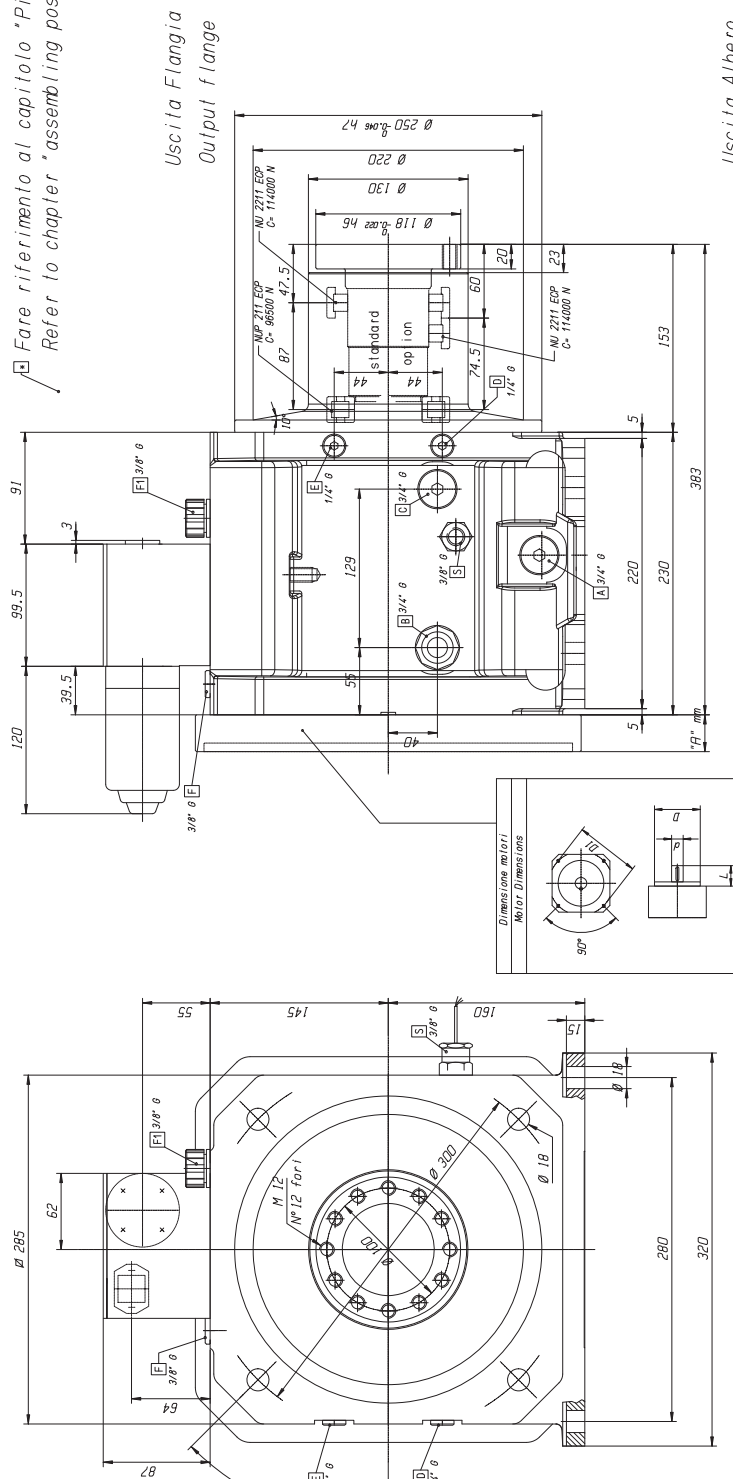
For other requests please contact our Sales Office



External view CE 14

变速箱CE14外形图

Fare riferimento al capitolo "Piazamenti e lubrificazione"
Refer to chapter "assembling positions and lubrication"



变速箱CE16外形图



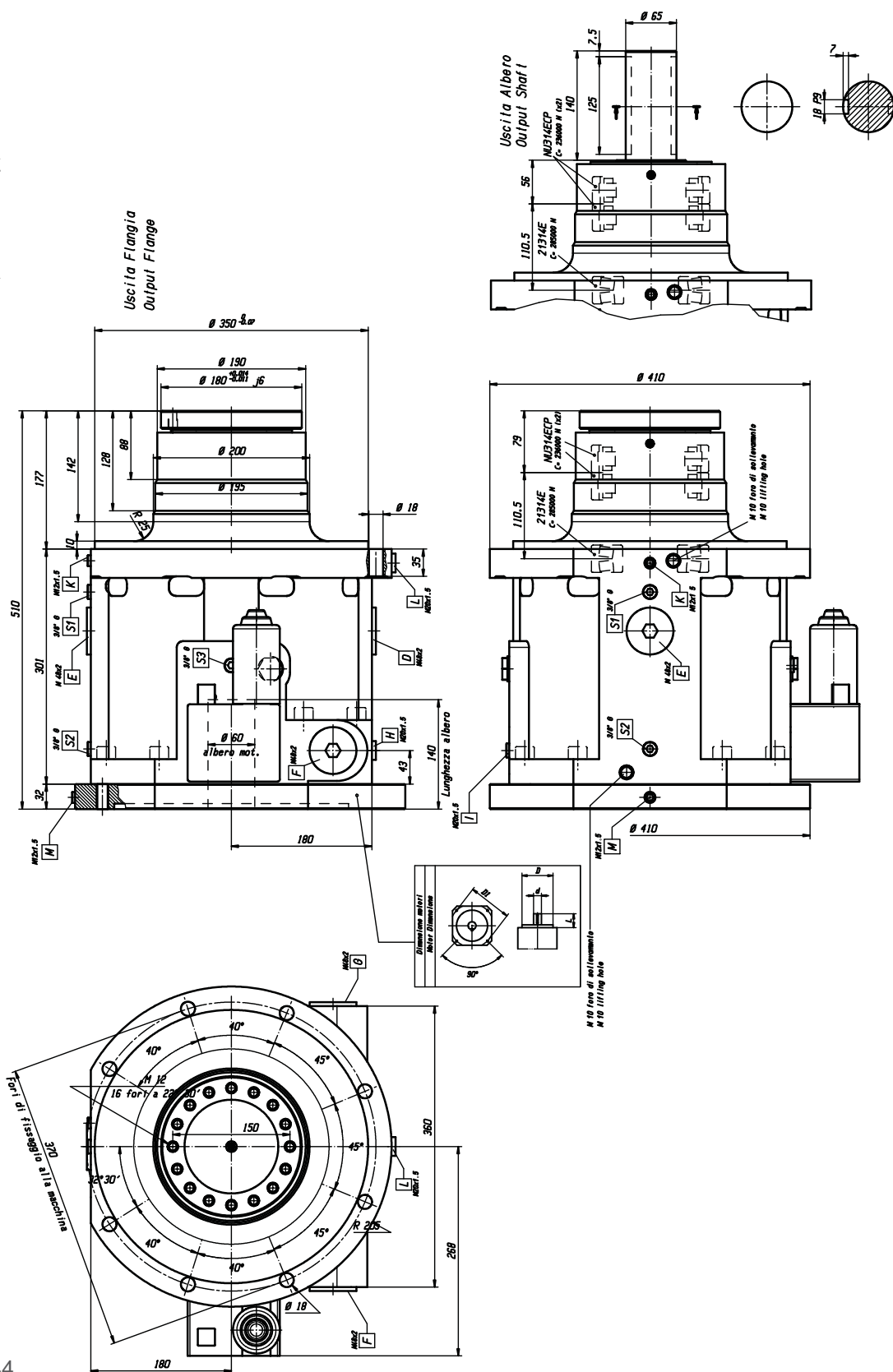
变速箱CE18外形图



External view CE 20

变速箱CE20外形图

 Fare riferimento al capitolo "Piazzamenti e lubrificazione"
Refer to chapter "assembling positions and lubrication"

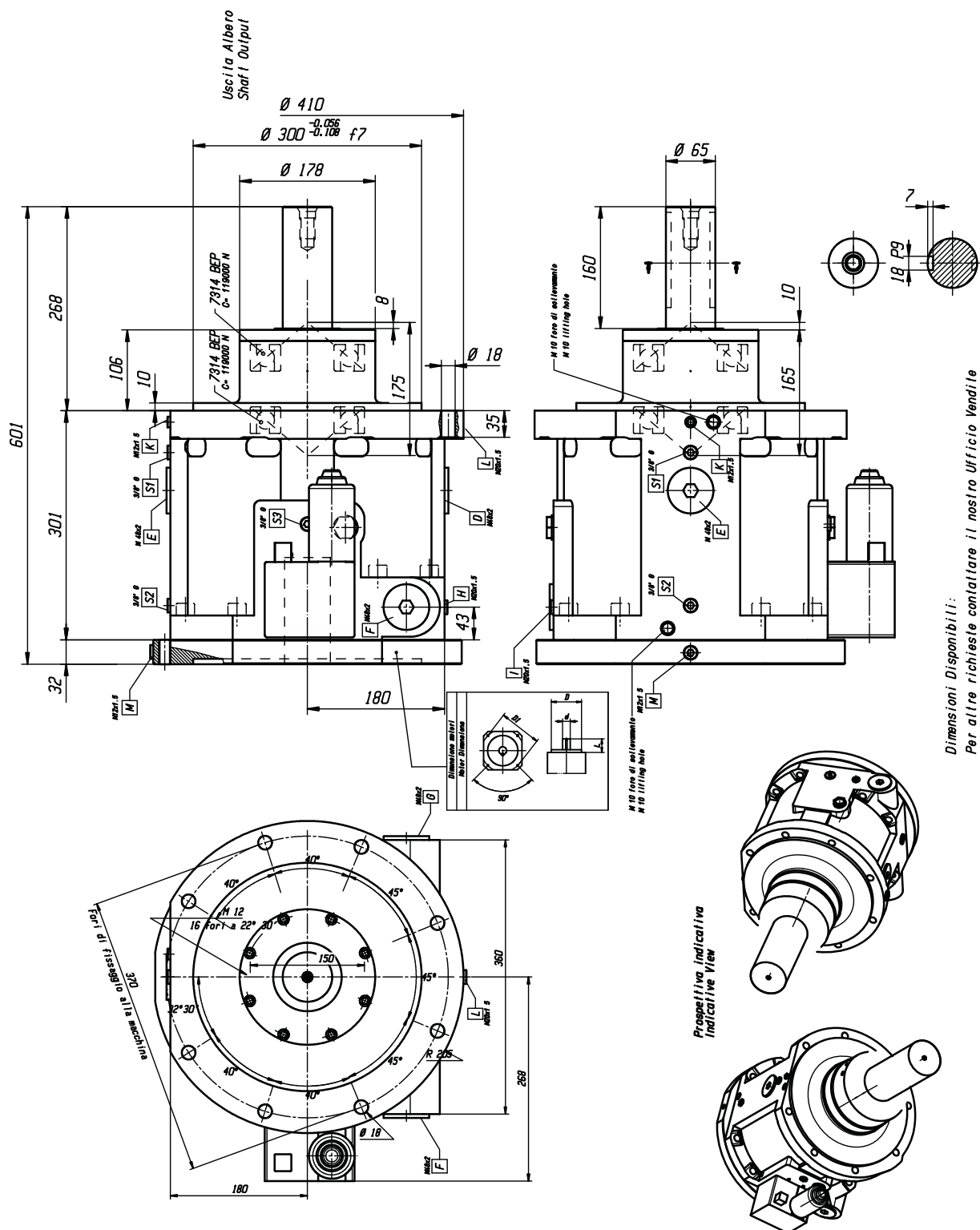


*Dimensioni Disponibili:
Per altre richieste contattare il nostro Ufficio Vendite*

*Available dimensions:
For other requests please contact our Sales Office*

变速箱紧凑型CE20外形图

 Fare riferimento al capitolo "Piazzamenti e lubrificazione"
Refer to chapter "assembling positions and lubrication"



Tool holder Disc guide



刀盘选型指南



Order code for tool holder Disc

刀盘订货号

Type of tool holder disc 刀盘型号	code
Axial VDI 轴向VDI	PA
longitudinal Milled seat 纵向铣刀座	PF
Axial Double PCD 轴向双层PCD	PD
RadialVDI 径向VDI	PR
Radial BMT 径向BMT	PB
Special 特殊	PS

offset value(X mm) 偏心值 (Xmm)	code

code	No. of positons 工位数
6	6
8	8
12	12
16	16

Based on the data provided by the customer B.F will assign the reference code of the drawing

根据客户提供的数据，BF会根据图纸生成一



VDI∅ or hole width VDI直径或孔宽度	code
---------------------------------	------

Distance between center dia or Key (ch) 圆心距或者对边大小 (ch)	code

Working side 加工位置	code
Right 右边 D	D
Left 左边 S	S

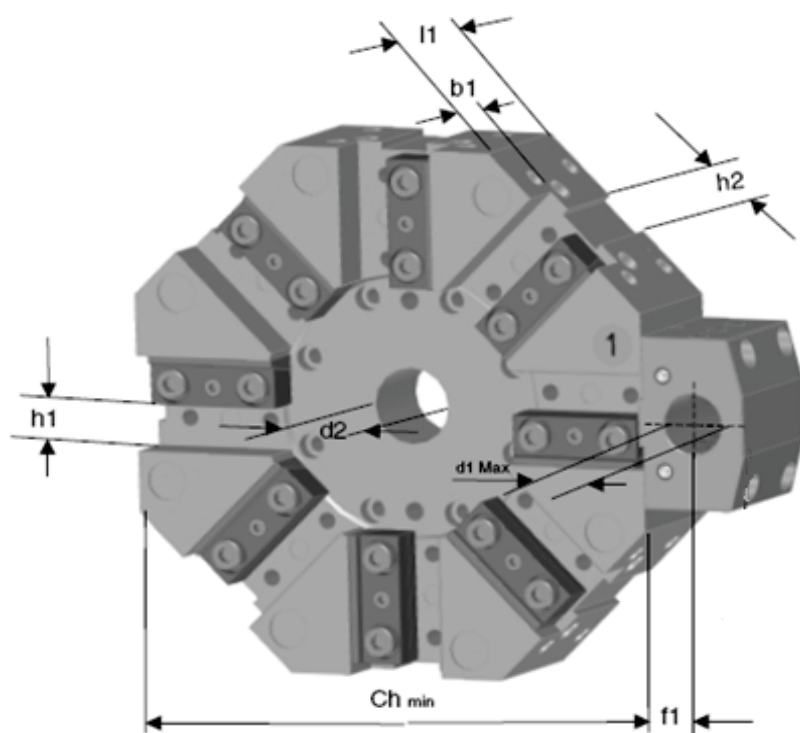
Turret type 刀架型号	code
h mm	
80	80
50	100
63	120
80	160
100	200
125	250
160	320
200	400
260	500

Suitable for turrets with static tools and driven tools 适用于固定刀架及动力刀架	code
	R
Suitable only for turrets with static tools 仅适用于固定刀架使用	code
	F



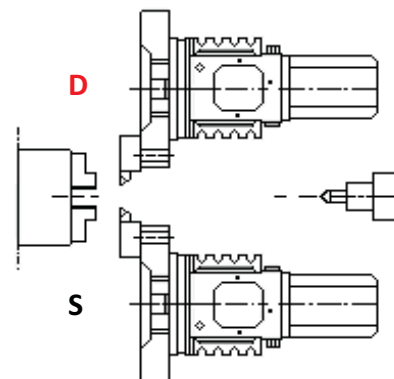
Tooldisc with 8 reversible square seats and 8 square seats for longitudinal toolholder

带8个可逆向安装的刀座槽及8个纵向安装刀座槽的刀盘



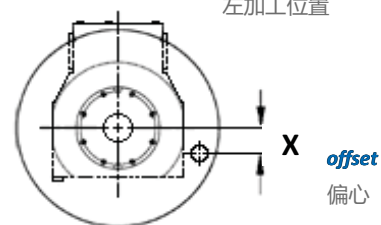
Right working side

右加工位置



Left working side

左加工位置



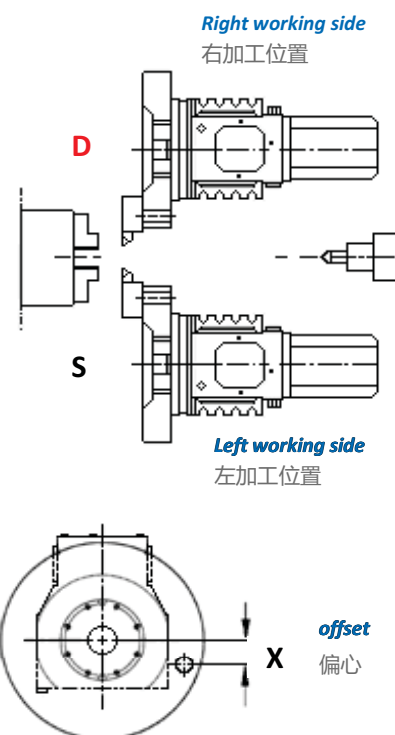
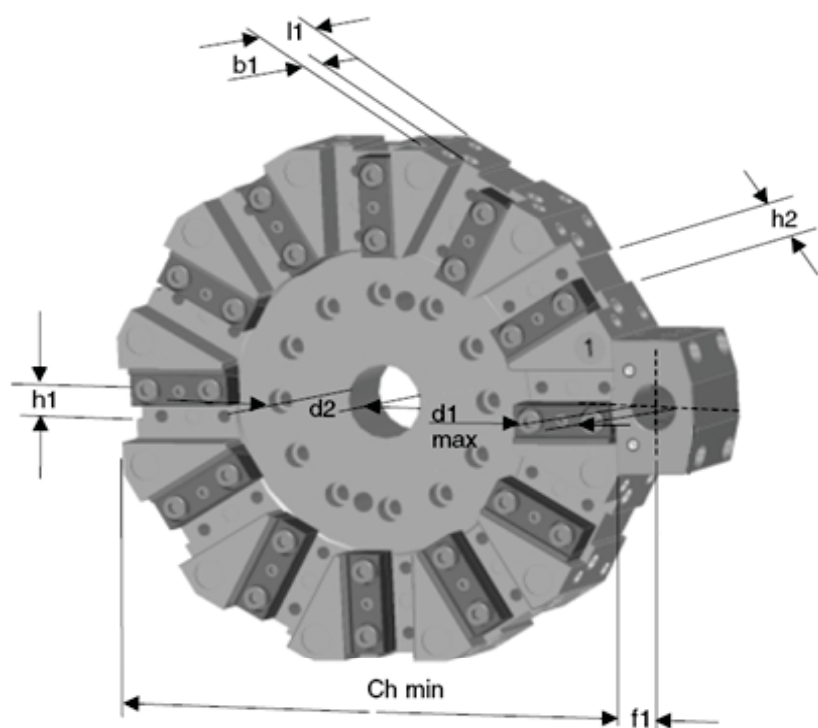
Codice N°	Dimensioni								Dimensions						
Code N°	h ₁	Ch	X	N° POS	刀架 型号 Turret type	S D	F R	图号 Drawing		d ₁	h ₂ m	d ₂	b ₁	Min l ₁	f ₁
	mm	mm	mm							mm	m	mm	mm	mm	mm
PF-12-150X00-08-100DF-A	12	150	00	08	100	D	F	A		20	12	25	12	41	20
PF-12-150X00-08-100SF-A	12	150	00	08	100	S	F	A		20	12	25	12	41	20
PF-16-190X00-08-120DF-A	16	190	00	08	120	D	F	A		25	16	30	16	51	23
PF-16-190X00-08-120SF-A	16	190	00	08	120	S	F	A		25	16	30	16	51	23
PF-20-220X00-08-120DF-A	20	220	00	08	120	D	F	A		32	20	30	20	61	25
PF-20-220X00-08-120SF-A	20	220	00	08	120	S	F	A		32	20	30	20	61	25
PF-25-275X00-08-160DF-A	25	275	00	08	160	D	F	A		40	25	40	25	76	30
PF-25-275X00-08-160SF-A	25	275	00	08	160	S	F	A		40	25	40	25	76	30
PF-32-350X00-08-200DF-A	32	350	00	08	200	D	F	A		50	32	50	32	96	35
PF-32-350X00-08-200SF-A	32	350	00	08	200	S	F	A		50	32	50	32	96	35
PF-40-450X00-08-250DF-A	40	450	00	08	250	D	F	A		60	40	63	40	126	40
PF-40-450X00-08-250SF-A	40	450	00	08	250	S	F	A		60	40	63	40	126	40

F Suitable only for turrets with static tools
仅适用于固定刀架使用

R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架

Tool disc with 12 reversible square seats and 12 square seats for longitudinal toolholder

带12个可逆向安装的刀座槽及8个径向安装刀座槽的刀盘



Codice N°	Dimensioni								Dimensions						
Code N°	h ₁	Ch	X	N° POS	刀架 型号 Turret type	S D	F R	图号 Drawing		d ₁	h _{2m}	d ₂	b ₁	Min l ₁	f ₁
	mm	mm	mm							mm	m	mm	mm	mm	mm
PF-12-175X00-12-100DF-A	12	175	00	12	100	D	F	A		20	12	25	12	41	20
PF-12-175X00-12-100SF-A	12	175	00	12	100	S	F	A		20	12	25	12	41	20
PF-16-230X00-12-120DF-A	16	230	00	12	120	D	F	A		25	16	30	16	51	23
PF-16-230X00-12-120SF-A	16	230	00	12	120	S	F	A		25	16	30	16	51	23
PF-20-278X00-12-160DF-A	20	278	00	12	160	D	F	A		32	20	40	20	61	25
PF-20-278X00-12-160SF-A	20	278	00	12	160	S	F	A		32	20	40	20	61	25
PF-25-345X00-12-200DF-A	25	345	00	12	200	D	F	A		40	25	50	25	76	30
PF-25-345X00-12-200SF-A	25	345	00	12	200	S	F	A		40	25	50	25	76	30
PF-32-435X00-12-250DF-A	32	435	00	12	250	D	F	A		50	32	63	32	96	35
PF-32-435X00-12-250SF-A	32	435	00	12	250	S	F	A		50	32	63	32	96	35
PF-40-565X00-12-320DF-A	40	565	00	12	320	D	F	A		60	40	80	40	126	40
PF-40-565X00-12-320SF-A	40	565	00	12	320	S	F	A		60	40	80	40	126	40

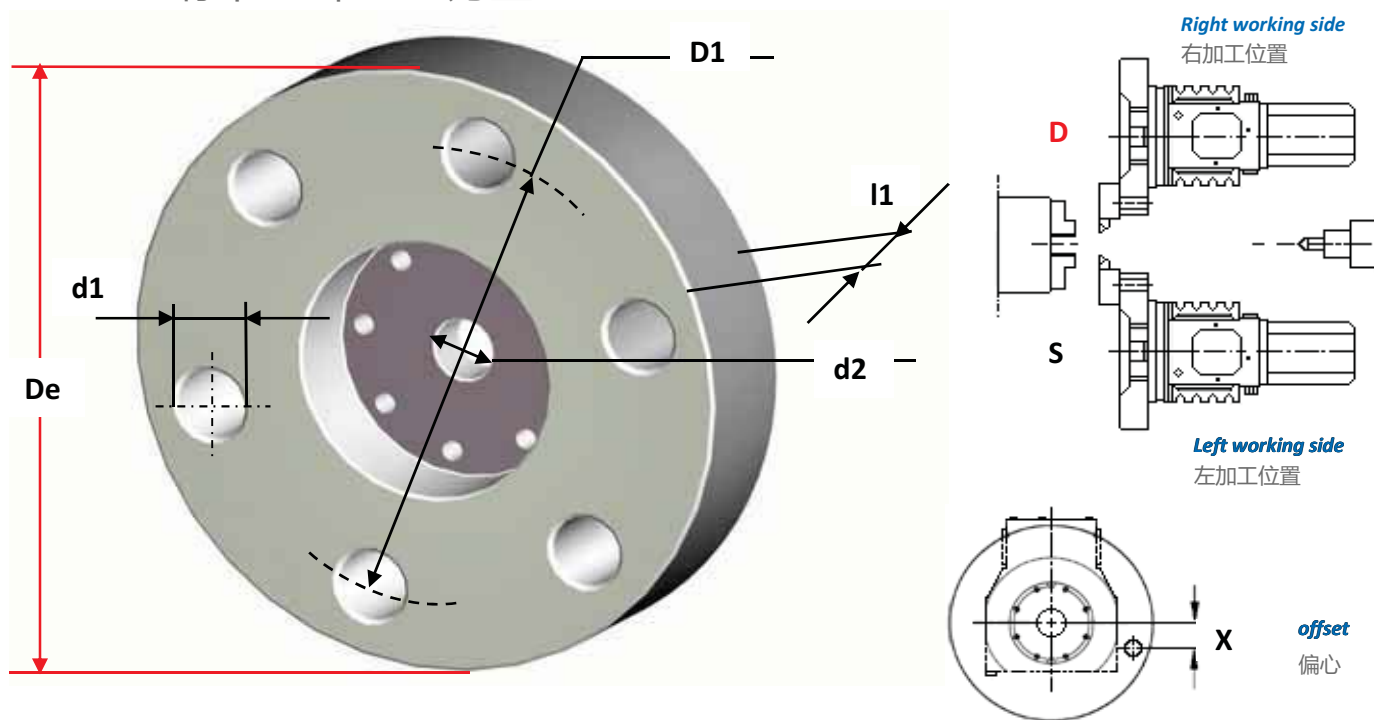
F Suitable only for turrets with static tools
仅适用于固定刀架使用

R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架



Tooldisc for 6 VDI toolholders as per DIN norms 69880

DIN 69880标准6工位VDI刀盘



Codice N°	Dimensioni								Dimensions				
Code N°	VDI d ₁ mm	PCD D ₁ mm	X mm	N° POS	刀架 型号 Turret type	S D	F R	图号 Drawing	PCD D ₂ mm	De mm	d ₂ mm	l ₁ mm	Min D ₃ mm
PA-40-270X00-06-120DF-024	40	270	00	06	120	D	F	024		340	30	65	
PA-30-200X00-06-120DF-033	30	200	00	06	120	D	F	033		260	30	57	
PA-30-200X00-06-120SF-034	30	200	00	06	120	S	F	034		260	30	57	
PA-40-230X00-06-120DF-040	40	230	00	06	120	D	F	040		290	65		
PA-40-270X35-06-160DR-039	40	270	35	06	160	D	R	069		335	40	77,7	
PA-40-272X00-06-200DF-084	40	272	00	06	200	D	F	084		332	50	78	
PA-50-300X00-06-200SF-095	50	300	00	06	200	S	F	095		375	50	82	
PA-40-340X00-06-200SR-109	40	340	00	06	200	S	R	109		410	50	66	
PA-40-340X32-06-200SF-120	40	340	32	06	200	S	F	120		410	50	66	

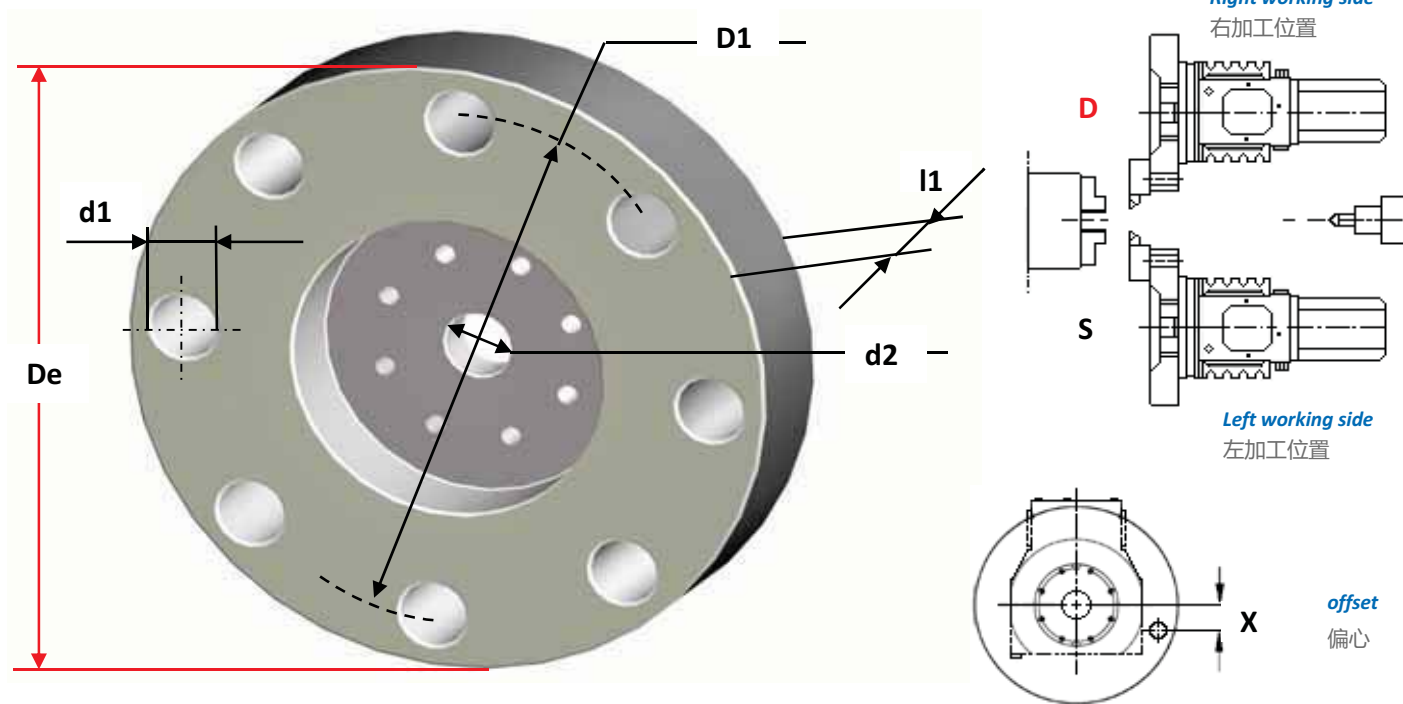
F Suitable only for turrets with static tools
仅适用于固定刀架使用

R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架



Tooldisc for 8 VDI toolholders as per DIN norms 69880

DIN 69880标准8工位VDI刀盘



Codice N°	Dimensioni								Dimensions					
Code N°	VDI d ₁ mm	PCD D ₁ mm	X mm	N° POS	刀架 型号 Turret type	S D	F R	图号 Drawing	PCD D ₂ mm	De mm	d ₂ mm	l ₁ mm	Min D ₃ mm	
PA-20-225X00-08-120DR-006	20	225	00	08	120	D	R	006		275	30	44		
PA-25-225X00-08-120DR-008	25	225	00	08	120	D	R	008		275	30	52		
PA-30-240X00-08-120DF-011	30	240	00	08	120	D	F	011		290	30	59		
PA-30-240X00-08-120SF-016	30	240	00	08	120	S	F	016		290	30	59		
PA-30-205X00-08-120SF-018	30	205	00	08	120	S	F	018		255	30	59		
PA-30-190X00-08-120DF-019	30	190	00	08	120	D	F	019		240	30	57		
PA-30-225X00-08-120SR-023	30	225	00	08	120	S	R	023		275	30	71		
PA-30-200X00-08-120DF-025	30	200	00	08	120	D	F	025		260	30	58		
PA-30-240X00-08-120SR-027	30	240	00	08	120	S	R	027		290	30	71		
PA-30-240X00-08-120DR-028	30	240	00	08	120	D	R	028		290	30	71		
PA-30-240X15-08-120DF-031	30	240	15	08	120	D	F	031		290	30	59		
PA-30-225X17-08-120DR-036	30	225	17	08	120	D	R	036		275	30	71		
PA-30-225X00-08-120DR-037	30	225	00	08	120	D	R	037		275	30	71		

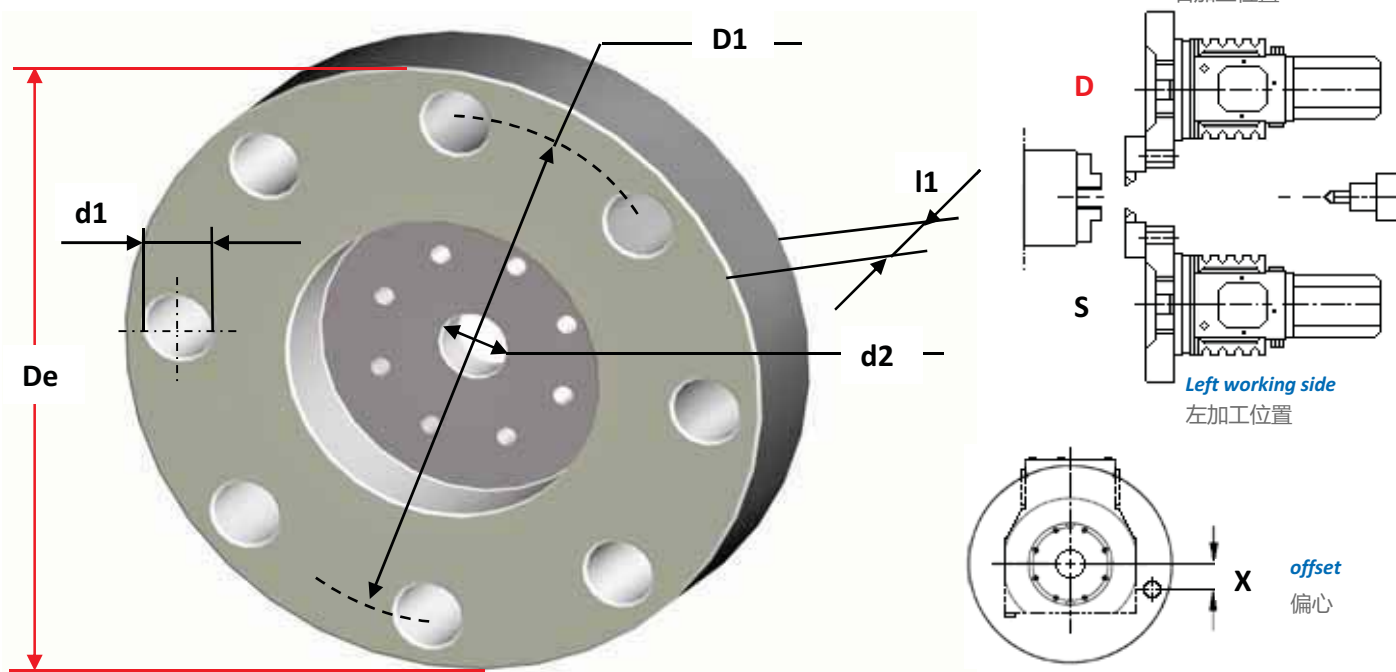
F Suitable only for turrets with static tools
仅适用于固定刀架使用

R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架



Tooldisc for 8 VDI toolholders as per DIN norms 69880

DIN 69880标准8工位VDI刀盘



Codice N°	Dimensioni								Dimensions				
Code N°	VDI d ₁ mm	PCD D ₁ mm	X mm	N° POS	刀架 型号 Turret type	S D	F R	图号 Drawing	PCD D ₂ mm	De mm	d ₂ mm	l ₁ mm	Min D ₃ mm
PA-30-270X00-08-160DR-039	30	270	00	08	160	D	R	039		322	40	58	
PA-30-270X25-08-160DR-040	30	270	25	08	160	D	R	040		322	40	58	
PA-40-270X25-08-160SR-043	40	270	25	08	160	S	R	043		340	40	77,7	
PA-40-270X00-08-160SR-044	40	270	00	08	160	S	R	044		340	40	77,7	
PA-30-270X00-08-160SR-045	30	270	00	08	160	S	R	045		322	40	58	
PA-40-270X00-08-160SF-047	40	270	00	08	160	S	F	047		340	40	65	
PA-40-270X00-08-160DR-051	40	270	00	08	160	D	R	051		335	40	77,7	
PA-40-245X00-08-160DF-052	40	245	00	08	160	D	F	052		305	40	77,7	
PA-30-190X00-08-160DF-055	30	190	00	08	160	D	F	055		240	40	68	
PA-30-190X00-08-160SF-056	30	190	00	08	160	S	F	056		240	40	68	
PA-40-245X25-08-160DF-057	40	245	25	08	160	D	F	057		305	40	65	
PA-40-245X00-08-160SF-058	40	245	00	08	160	S	F	058		315	40	65	
PA-30-270X35-08-160DR-063	30	270	35	08	160	D	R	063		322	40	58	
PA-30-210X00-08-160DF-064	30	210	00	08	160	D	F	064		260	40	68	
PA-50-290X00-08-160DF-067	50	290	00	08	160	D	F	067		363	40	80	
PA-40-270X25-08-160DR-070	40	270	25	08	160	D	R	070		335	40	77,7	
PA-40-350X00-08-160DF-075	40	350	00	08	160	D	F	075		405	40	66	
PA-40-350X40-08-160SF-076	40	350	40	08	160	S	F	076		380	40	66	

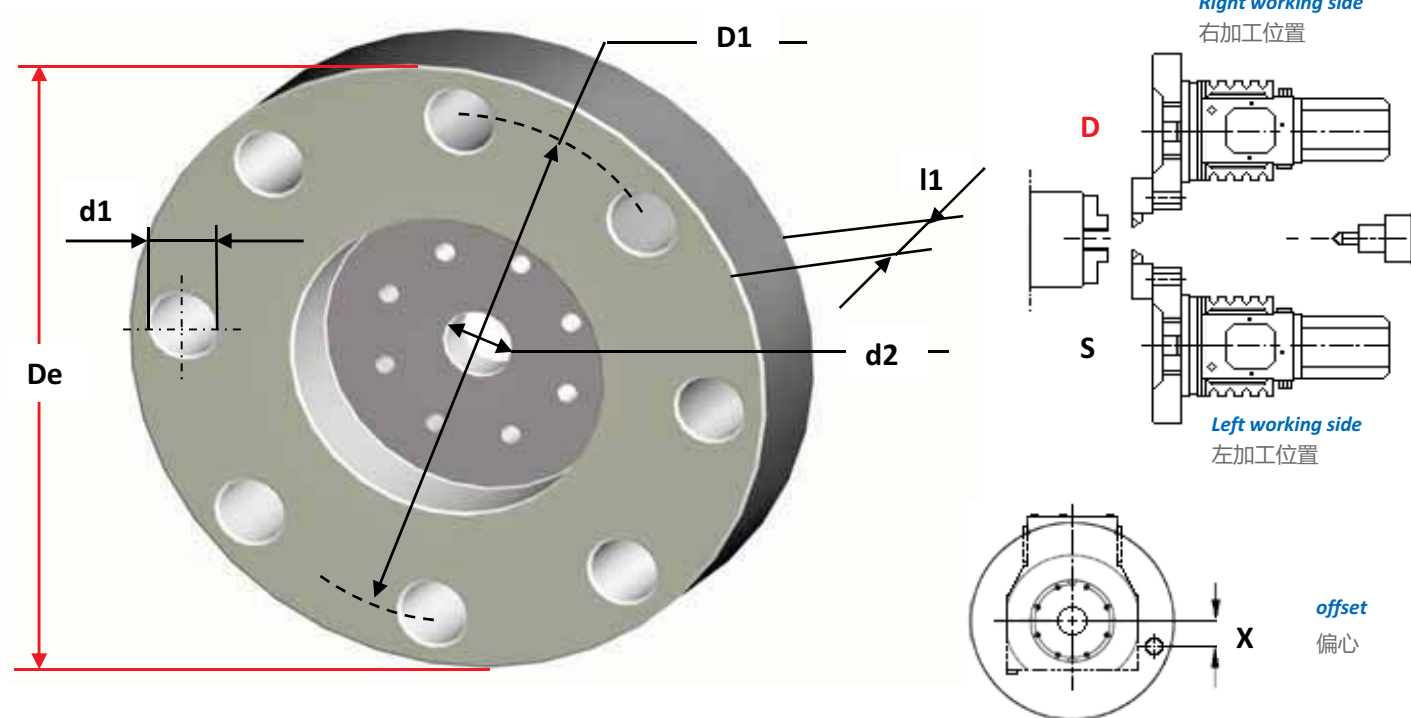
F Suitable only for turrets with static tools
仅适用于固定刀架使用

R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架



Tooldisc for 8 VDI toolholders as per DIN norms 69880

DIN 69880标准8工位VDI刀盘



Codice N°	Dimensioni								Dimensions					
Code N°	VDI d ₁ mm	PCD D ₁ mm	X mm	N° POS	刀架 型号 Turret type	S D	F R	图号 Drawing	PCD D ₂ mm	De mm	d ₂ mm	l ₁ mm	Min D ₃ mm	
PA-50-340X00-08-200SR-064	50	340	00	08	200	S	R	064		420	50	82		
PA-40-340X00-08-200SR-066	40	340	00	08	200	S	R	066		410	50	66		
PA-40-340X32-08-200SR-068	40	340	32	08	200	S	R	068		410	50	66		
PA-40-340X00-08-200DF-073	40	340	00	08	200	D	F	073		410	50	66		
PA-40-272X00-08-200SF-074	40	272	00	08	200	S	F	074		340	50	70		
PA-50-340X00-08-200DR-077	50	340	00	08	200	D	R	077		420	50	82		
PA-50-340X32-08-200SR-078	50	340	32	08	200	S	R	078		420	50	82		
PA-50-272X35-08-200SF-079	50	272	35	08	200	S	F	079		355	50	80		
PA-50-290X00-08-200DF-080	50	290	00	08	200	D	F	080		365	50	80		
PA-40-245X00-08-200SF-081	40	245	00	08	200	S	F	081		305	50	78		
PA-40-310X00-08-200DS-086	40	310	00	08	200	D		086		380	50	66		
PA-50-290X35-08-200SF-088	50	290	35	08	200	S	F	088		375	50	82		
PA-50-340X00-08-200DR-094	50	340	00	08	200	D	R	094		420	50	82		
PA-40-170X32-08-200DR-108	40	340	32	08	200	D	R	108		410	50	82		
PA-50-170X32-08-200DF-116	50	340	32	08	200	D	F	116		410	50	80		
PA-40-290X00-08-200DF-119	40	290	00	08	200	D	F	119		360	50	66		
PA-40-272X32-08-200SF-122	40	272	32	08	200	S	F	122		340	50			

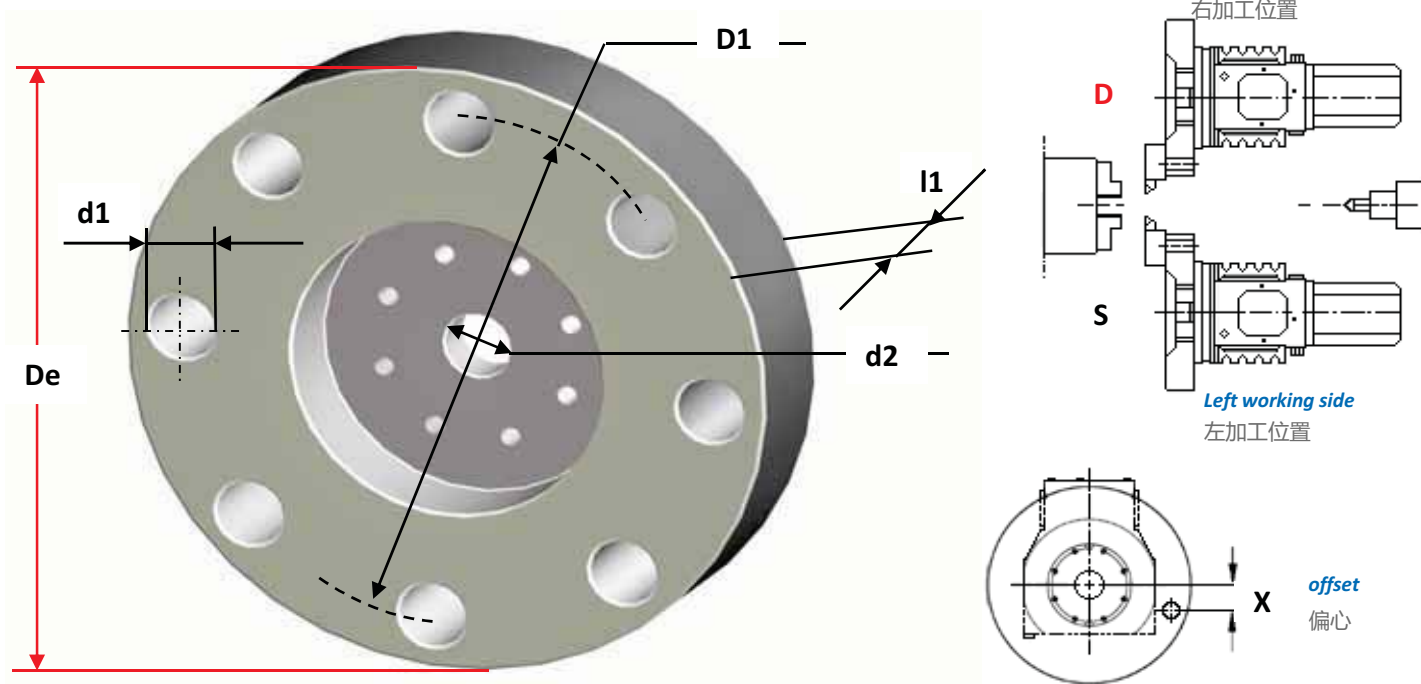
F Suitable only for turrets with static tools
仅适用于固定刀架使用

R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架



Tooldisc for 8 VDI toolholders as per DIN norms 69880

DIN 69880标准8工位VDI刀盘



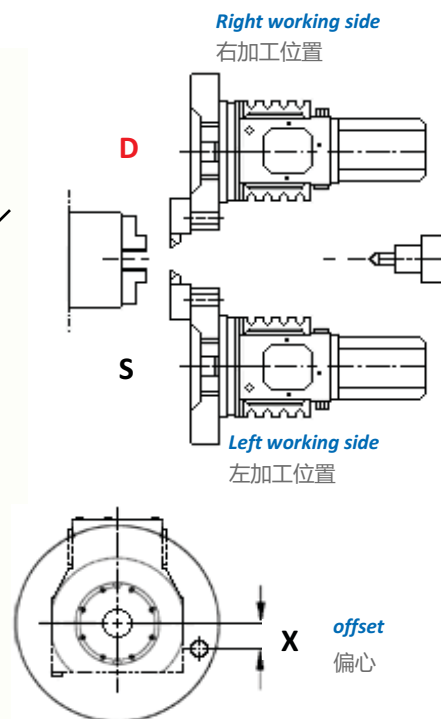
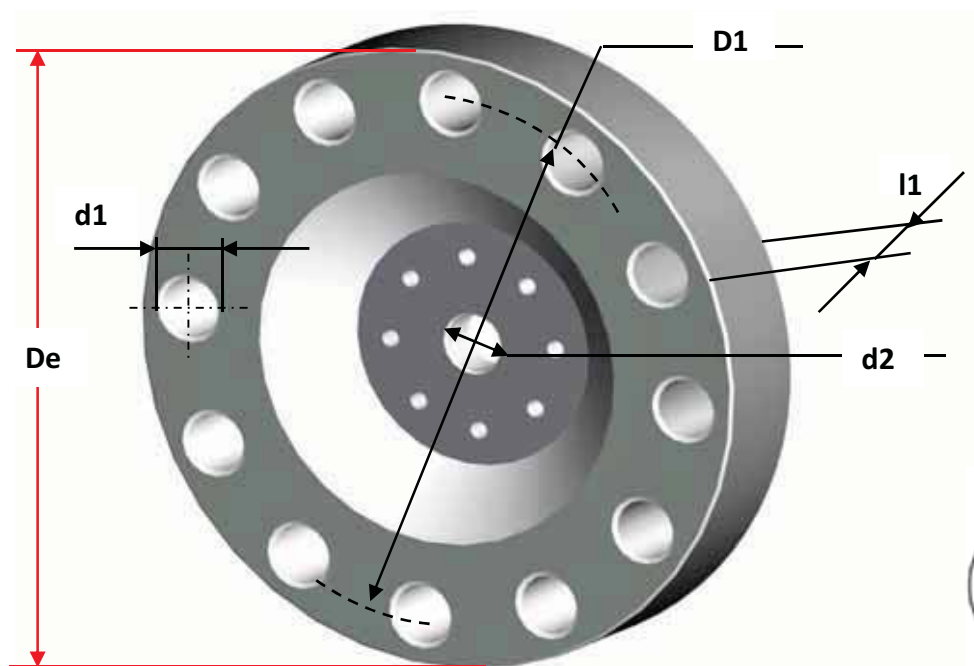
Codice N°	Dimensioni								Dimensions				
Code N°	VDI d ₁ mm	PCD D ₁ mm	X mm	N° POS	刀架 型号 Turret type	S D	F R	图号 Drawing	PCD D ₂ mm	Min De mm	d ₂ mm	l ₁ mm	D ₃ mm
PA-50-400X00-08-250SR-015	50	400	00	08	250	S	R	015		473	63	82	
PA-50-340X35-08-250SF-029	50	340	35	08	250	S	F	029		420	63	82	
PA-50-290X00-08-250DF-048	50	290	00	08	250	D	F	048		365	63	95	
PA-60-400X00-08-250SR-056	60	400	00	08	250	S	R	056		490	63	115	
PA-50-400X00-08-250DR-079	50	400	00	8	250	D	R	079		473	63	82	
PA-60-490X00-08-320SR-038	60	490	00	08	320	S	R	038		582	80	100	
PA-60-490X00-08-320DR-040	60	490	00	08	320	D	R	040		582	80	100	
PA-80-550X00-08-400SF-023	80	550	00	08	400	S	F	023		670		130	
PA-80-620X00-08-400SR-027	80	620	00	08	400	S	R	027		740		130	
PA-80-620X00-08-400SF-029	80	620	00	08	400	S	F	029		740		150	

F Suitable only for turrets with static tools
仅适用于固定刀架使用

R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架

**Tooldisc for 12 VDI toolholders as per DIN norms 69880**

DIN 69880标准12工位VDI刀盘



Codice N°	Dimensioni								Dimensions					
Code N°	VDI d ₁ mm	PCD D ₁ mm	X mm	N° POS	刀架 型号 Turret type	S D	F R	图号 Drawing	PCD D ₂ mm	De mm	d ₂ mm	l ₁ mm	Min D ₃ mm	
PA-16-190X15-12-100DR-001	16	190	15	12	100	D	R	001		230	25	48		
PA-20-225X00-12-120DR-007	20	225	00	12	120	D	R	007		275	30	44		
PA-25-225X00-12-120DR-009	25	225	00	12	120	D	R	009		275	30	52		
PA-30-290X00-12-120DF-013	30	290	00	12	120	D	F	013		345	30	58		
PA-20-240X00-12-120DR-015	20	240	00	12	120	D	R	015		290	30	44		
PA-20-225X17-12-120DR-026	20	225	17	12	120	D	R	026		275	30	44		
PA-30-270X00-12-120DF-029	30	270	00	12	120	D	F	029		322	30	56		
PA-30-270X00-12-120DR-035	30	270	00	12	120	D	R	035		322	30	67		DIN 5480
PA-30-270X25-12-160DR-019	30	270	25	12	160	D	R	019		322	40	58		
PA-30-270X00-12-160DR-026	30	270	00	12	160	D	R	026		322	40	58		
PA-30-300X00-12-160DR-038	30	300	00	12	160	D	R	038		352	40	58		
PA-20-270X25-12-160DR-049	20	270	25	12	160	D	R	049		322	40	43		
PA-30-270X35-12-160DR-061	30	270	35	12	160	D	R	061		322	40	58		
PA-30-270X00-12-160SR-066	30	270	00	12	160	S	R	061		322	40	58		
PA-30-340X00-12-160DF-077	30	340	0	12	160	D	F	077		392	40	56		

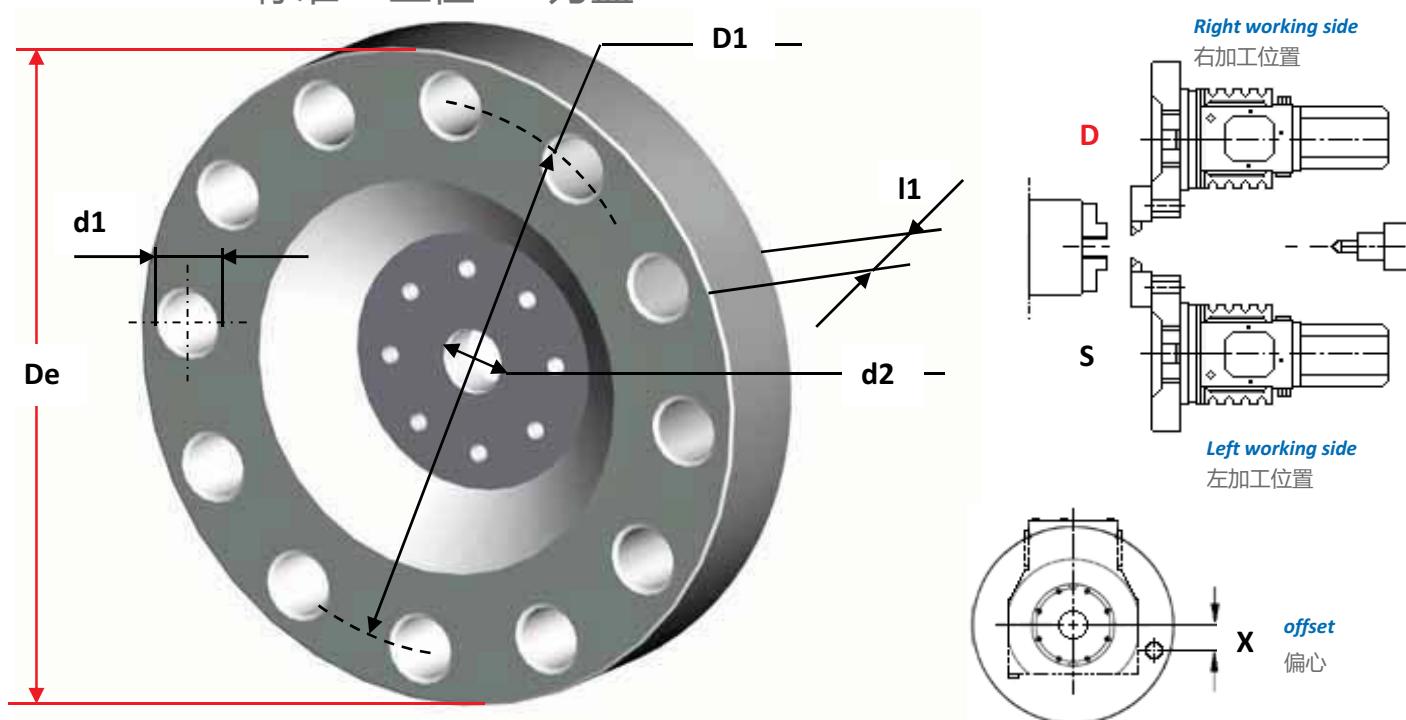
F Suitable only for turrets with static tools
仅适用于固定刀架使用

R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架



Tool disc for 12 VDI toolholders as per DIN norms 69880

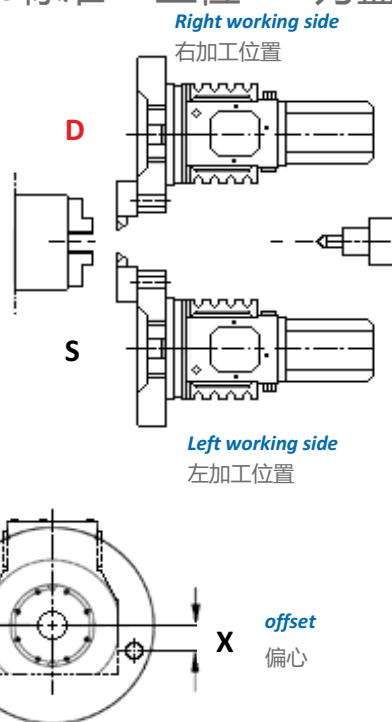
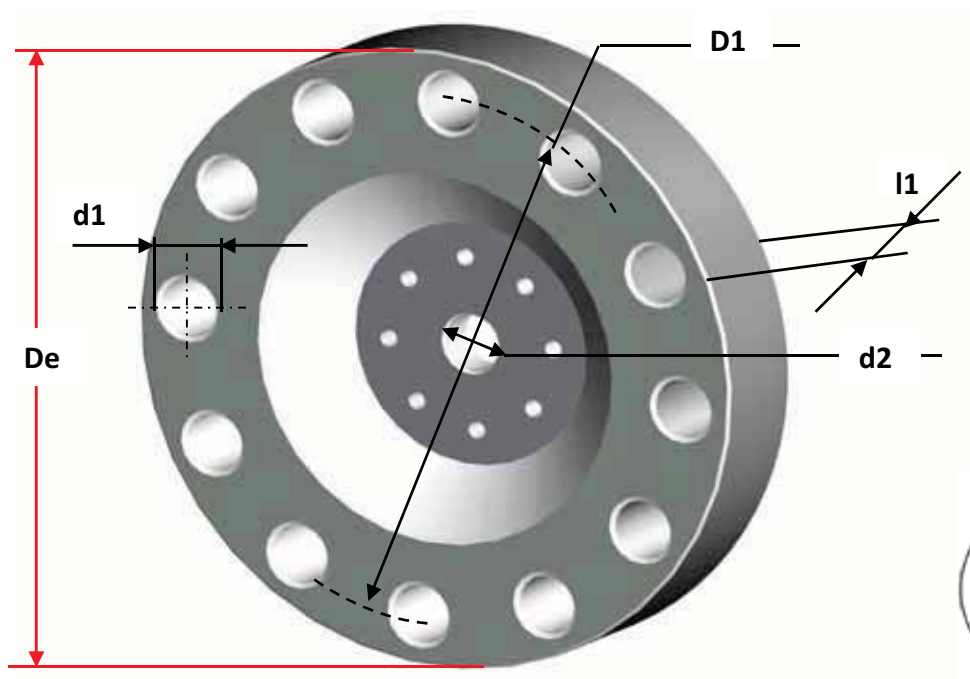
DIN 69880标准12工位VDI刀盘



Codice N°	Dimensioni								Dimensions					
Code N°	VDI d ₁ mm	PCD D ₁ mm	X mm	N° POS	刀架 型号 Turret type	S D	F R	图号 Drawing	PCD D ₂ mm	De mm	d ₂ mm	l ₁ mm	Min D ₃ mm	
PA-40-340X00-12-200DR-042	40	340	00	12	200	D	R	042		410	50	66		
PA-40-340X32-12-200DR-046	40	340	32	12	200	D	R	046		410	50	66		
PA-40-446X80-12-200DR-047	40	380	80	12	200	D	R	047		450	50	66		
PA-40-340X00-12-200SR-060	40	340	00	12	200	S	R	060		410	50	66		
PA-40-340X32-12-200SR-076	40	340	32	12	200	S	R	076		410	50	66		
PA-40-340X40-12-200DR-083	40	340	40	12	200	D	R	083		410	50	66		
PA-40-380X00-12-200DR-089	40	380	00	12	200	D	R	089		450	50	66		
PA-30-340X00-12-200DR-092	30	340	00	12	200	D	R	092		410	50	58		
PA-50-400X00-12-250DR-011	50	400	00	12	250	D	R	011		473	63	82		
PA-50-400X35-12-250DR-013	50	400	35	12	250	D	R	013		473	63	82		
PA-50-400X00-12-250SR-028	50	400	00	12	250	S	R	028		473	63	82		
PA-50-400X45-12-250DF-041	50	400	45	12	250	D	F	041		473	63	100		
PA-50-400X35-12-250SR-043	50	400	35	12	250	S	R	043		473	63	82		
PA-40-400X00-12-250DR-019	40	400	00	12	250	D	R	019		473	63	66		
PA-50-400X50-12-250DR-060	50	400	50	12	250	D	R	060		473	63	82		
PA-40-345X00-12-250DR-062	40	345	00	12	250	D	F	062		405	63	66		
PA-50-400X00-20-250DR-063	50	400	20	12	250	D	F	063		473	63	82		

F Suitable only for turrets with static tools
仅适用于固定刀架使用

R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架

**Tooldisc for 12 VDI toolholders as per DIN norms 69880****DIN 69880标准12工位VDI刀盘**

Codice N°	Dimensioni								Dimensions				
Code N°	VDI d ₁ mm	PCD D ₁ mm	X mm	N° POS	刀架 型号 Turret type	S D	F R	图号 Drawing	PCD D ₂ mm	De mm	d ₂ mm	l ₁ mm	Min D ₃ mm
PA-60-476X00-12-320DF-027	60	476	00	12	320	D	F	027		570	80	95	
PA-60-490X00-12-320DR-030	60	490	00	12	320	D	R	030		582	80	100	
PA-60-490X00-12-320SR-035	60	490	00	12	320	S	R	035		582	80	100	
PA-60-490X55-12-320DR-036	60	490	55	12	320	D	R	036		582	80	100	
PA-60-530X00-12-400DF-018	60	530	00	12	400	D	F	018		630	100	95	
PA-80-620X00-12-400DR-022	80	620	00	12	400	D	R	022		740	100	130	
PA-80-620X00-12-400SR-028	80	620	00	12	400	S	R	028		740	100	130	

F Suitable only for turrets with static tools
仅适用于固定刀架使用

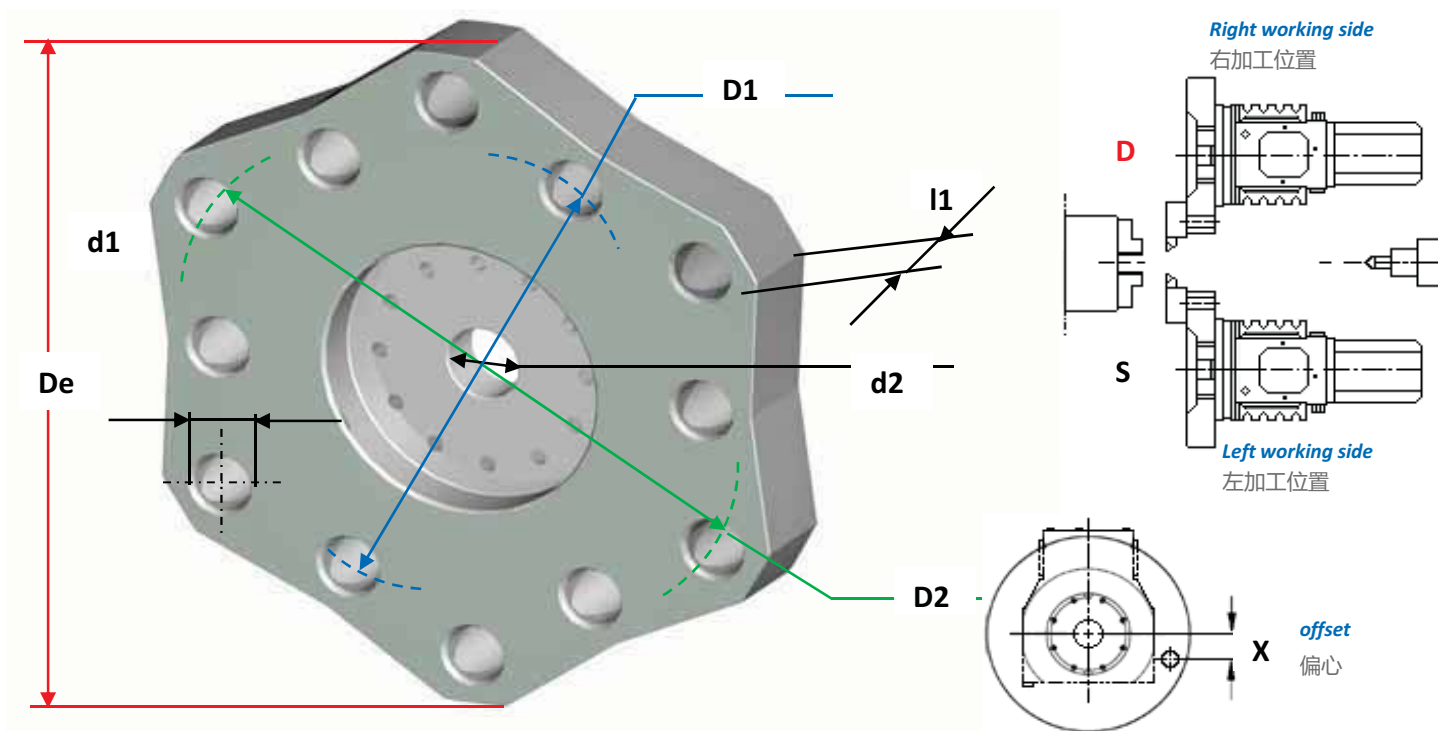
R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架



Tooldisc for 12 VDI toolholders as per DIN norms 69880

Double PCD

DIN 69880标准12工位VDI双层PCD刀盘



Codice N°	Dimensioni								Dimensions					
Code N°	VDI d ₁ mm	PCD D ₁ mm	X mm	N° POS	刀架 型号 Turret type	S D	F R	图号 Drawing	PCD D ₂ mm	De mm	d ₂ mm	l ₁ mm	Min D ₃ mm	
PD-20-200X00-12-120DF-041	20	200	00	12	120	D	F	041	240	275	30	42		
PD-30-270X00-12-160DR-037	30	270	00	12	160	D	R	037	335	390	40	58		
PD-30-265X22-12-160DF-046	30	265	22	12	160	D	F	046	330	400	40	56		
PD-30-265X25-12-160DF-048	30	265	25	12	160	D	F	048	330	390	40	58		
PD-40-340X00-12-200DR-053	40	340	00	12	200	D	R	053	400	470	50	66		
PD-40-310X25-12-200DF-087	40	310	25	12	200	D	F	087	360	446	50	65		
PD-40-340X32-12-200DF-115	40	340	32	12	200	D	F	115	400	470	50	66		
PD-50-400X00-12-250DR-026	50	400	00	12	250	D	R	026	460	540	63	82		
PD-40-400X00-12-250DR-027	40	400	00	12	250	D	R	027	460	540	63	66		
PD-40-380X80-12-250DF-064	40	380	80	12	250	D	F	064	450	520	63	65		
PD-50-400X00-12-250DR-083	50	400	00	12	250	D	R	083	510	590	63	82		
PD-60-400X00-12-320DR-034	60	490	00	12	320	D	R	034	570	662	80			
PD-60-620X00-12-400DR-030	60	620	00	12	400	D	R	030	830	920				

F Suitable only for turrets with static tools
仅适用于固定刀架使用

R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架

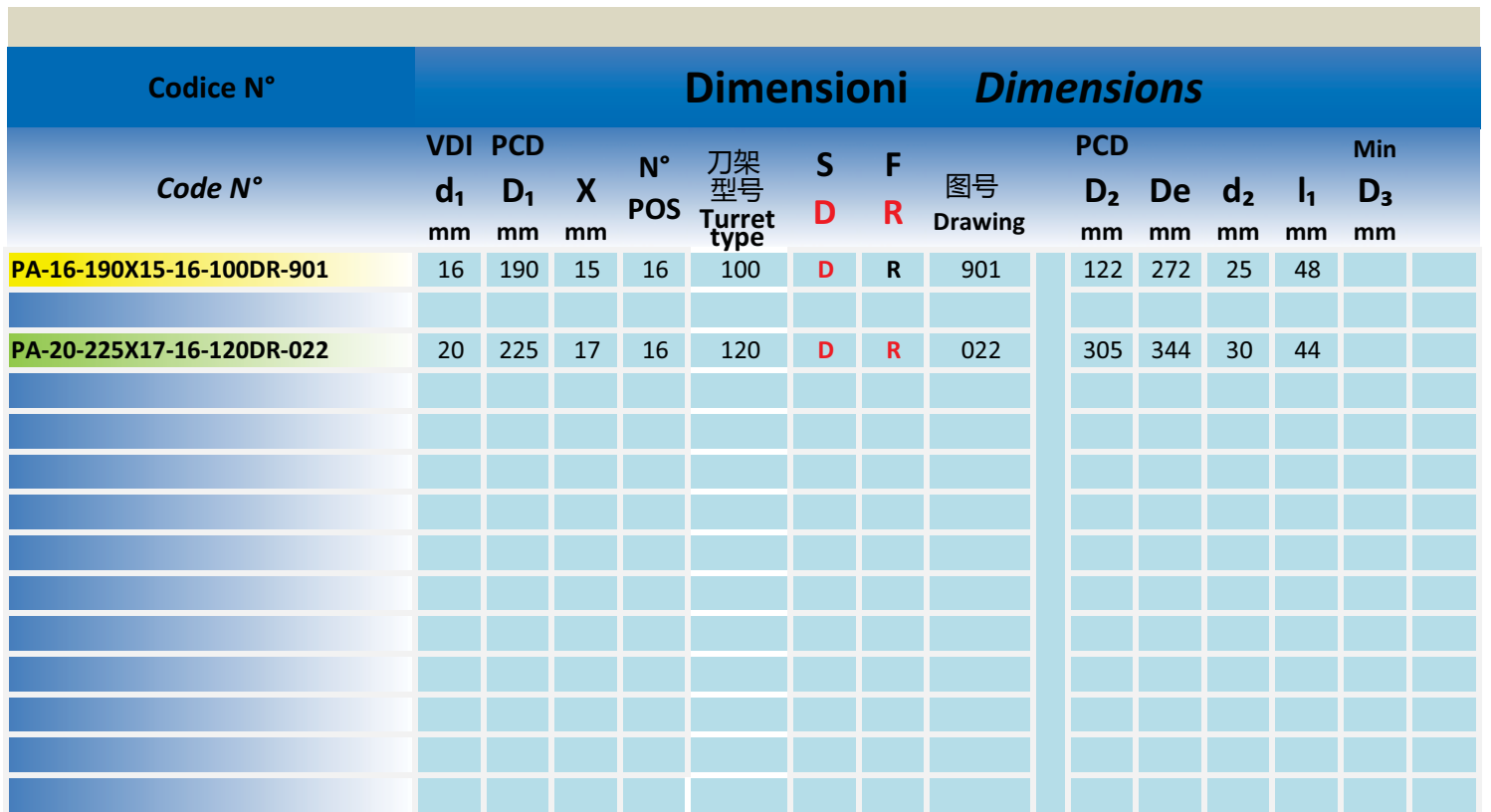


DIN 69880标准16工位VDI刀盘



R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架

DIN 69880标准16工位VDI双层PCD刀盘



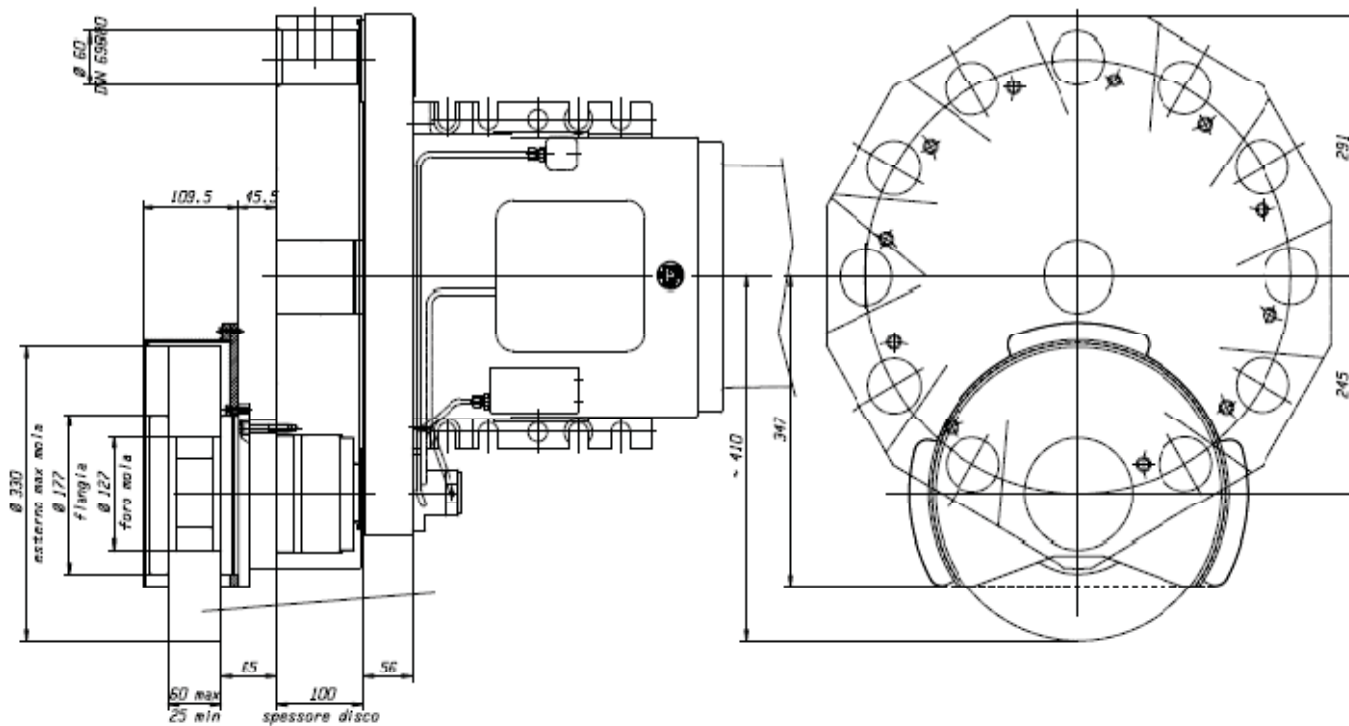
R Suitable for turrets with static tools and driven tools
适用于固定刀架及动力刀架

Furthermore, on demand, are available turrets and discs with special applications.

Example, tool disc with grinding unit.

Do not hesitate to contact the sales office.

对于刀架和刀盘更进一步的特殊需求
例如：刀盘带有磨削装置等，不要犹豫联系我们销售部门



Codice N°	Dimensioni								Dimensions				
Code N°	VDI	PCD		N°	刀架	S	F	图号	PCD	Min			
	d ₁	D ₁	X	POS	型号	D	R	Drawing	D ₂	De	d ₂	l ₁	D ₃
	mm	mm	mm		Turret type				mm	mm	mm	mm	mm
	disco portautensili con modulo di rettifica								tool disc with grinding unit				
PS-60-490X00-12-320DR-032	60	490	00	12	320	D	R	032		582	80	100	
PS-60-490X00-12-320SR-033	60	490	00	12	320	S	R	033		582	80	100	
PS-80-620X00-12-400DR-024	80	620	00	12	400	D	R	024		740	100	130	
PS-80-620X00-12-400SR-025	80	620	00	12	400	S	R	025		740	100	130	

Baruffaldi offers a series of accessories (driven tools and toolholders), which facilitate the purchase of complete, warranted and economic full package.

BARUFFALDI还提供一系列的附件整体打包订购，能保证最经济可靠。例如：动力头、刀座。不要犹豫，请接洽销售部门



LiveTooling tool holder BMT guide



BARUFFALDI BMT动力头



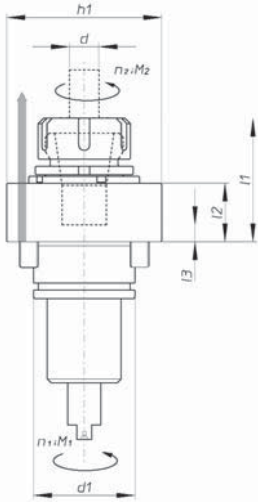
1/BMT

Assiale
Axial
Axial
Axial

Portapinza
Collet chuck
Pince de serrage
Spannzangeaufnahme

Refrigerazione esterna
External coolant supply
Alimentation d'arrosage extérieur
Kühlschmierstoffzuführung extern

$i = n1:n2 = +1 (1:1)$



Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	h1	h2	h3	h4	M2 Nm	n2 min-1	p kw
RAPPS 25 121UT85 - BMT45	45	25	52÷56,5	25	2					35	8000	6
RAPPS 25 121UT55 - BMT55	55	25	52÷56,5	25	2					40	8000	8
RAPPS 32 121UT65 - BMT65	65	32	68÷72,5	32	9					70	6000	10
RAPPS 40 121UT75 - BMT75	75	40	84÷89,5	51	20					100	4000	12
RAPPS 50 121UT85 - BMT85	85	50	110÷118	60	18					150	3200	15

2/BMT

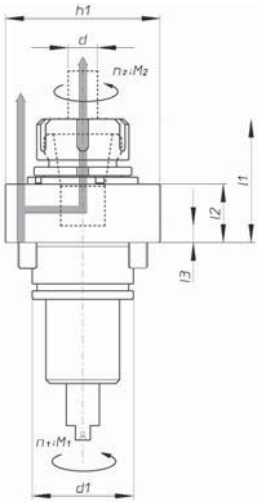
Assiale
Axial
Axial
Axial

Portapinza
Collet chuck
Pince de serrage
Spannzangeaufnahme

Refrigerazione interna-esterna
External and internal coolant supply
Alimentation d'arrosage extérieur et intérieur
Kühlschmierstoffzuführung extern und intern

$i = n1:n2 = +1 (1:1)$

70 BAR



Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	h1	h2	h3	h4	M2 Nm	n2 min-1	p kw
RAPPS 25 131UT85 - BMT45	45	25	52÷56,5	25	2					35	8000	6
RAPPS 25 131UT55 - BMT55	55	25	52÷56,5	25	2					40	8000	8
RAPPS 32 131UT65 - BMT65	65	32	68÷72,5	32	9					70	6000	10
RAPPS 40 131UT75 - BMT75	75	40	84÷89,5	51	20					100	4000	12
RAPPS 50 131UT85 - BMT85	85	50	110÷118	60	18					150	3200	15



3/BMT

Assiale

Axial

Axial

Axial

Portapinza

Collet chuck

Pince de serrage

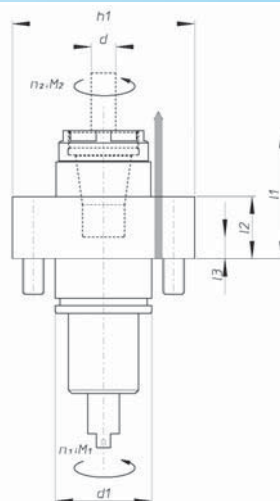
Spannzangeaufnahme

Refrigerazione esterna

External coolant supply

Alimentation d'arrosage extérieur

Kühlschmierstoffzuführung extern

 $i = n_1:n_2 = +0,25 (1:4)$ 

Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	h1	h2	h3	h4	M ₂ Nm	n ₂ min-1	p kw		
RAPPS 16 122UT45 - BMT45	45	16	48	20	16					3	32000	2,5		
RAPPS 16 122UT55 - BMT55	55	16	48	20	16					4	24000	3		
RAPPS 25 122UT65 - BMT65	65	25	81	22	40					8	24000	4		
RAPPS 25 122UT75 - BMT75	75	25	67	35	26					8	24000	4		
RAPPS 32 122UT85 - BMT85	85	32	85	33	37					25	12000	6		

4/BMT

Assiale

Axial

Axial

Axial

Portapinza

Collet chuck

Pince de serrage

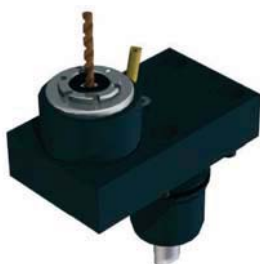
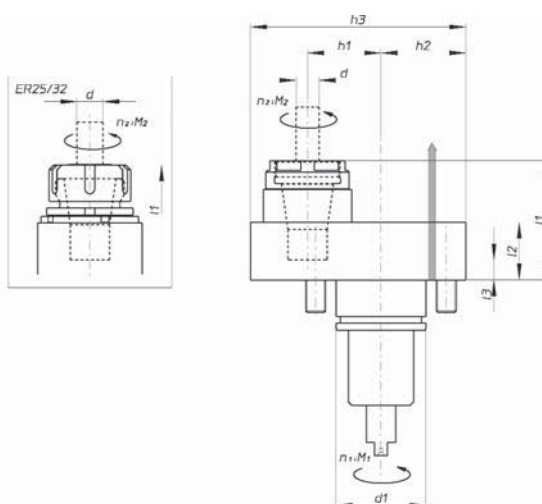
Spannzangeaufnahme

Refrigerazione esterna

External coolant supply

Alimentation d'arrosage extérieur

Kühlschmierstoffzuführung extern

 $i = n_1:n_2 = -0,5 (1:2)$ 

Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	h1	h2	h3	h4	M ₂ Nm	n ₂ min-1	p kw		
RAPPD 16 1222UT45 - BMT45	45	16	69	32	32	45	37,5	114,5		15	16000	4		
RAPPD 16 1222UT55 - BMT55	55	16	69	32	32	45	42,5	119		15	16000	4		
RAPPD 25 1222UT65 - BMT65	65	25	100,5±105	59	53	45	47	122		35	12000	8		
RAPPD 25 1222UT75 - BMT75	75	25	100,5±105	59	53	45	56	131		35	12000	8		
RAPPD 32 1222UT85 - BMT85	85	32	100,5±110	47	45	60	62,5	158		75	6000	12		



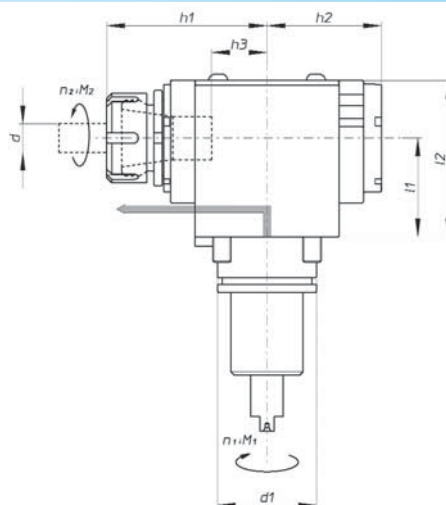
5/BMT

Radiale
Radial
Radial
Radial

Portapinza
Collet chuck
Pince de serrage
Spannzangeaufnahme

Refrigerazione esterna
External coolant supply
Alimentation d'arrosage extérieur
Kühlschmierstoffzuführung extern

$i = n1:n2 = -1 (1:1)$



Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	h1	h2	h3	h4	M ₂ Nm	n ₂ min-1	p kw
RRPPS 25 121UT45 - BMT45	45	25	65	95		80÷84,5	55	29		35	8000	6
RRPPS 25 121UT55 - BMT55	55	25	60	90		80÷84,5	55	29		40	8000	8
RRPPS 32 121UT65 - BMT65	65	32	72	107		89÷93,5	57	31		70	6000	10
RRPPS 40 121UT75 - BMT75	75	40	60	104		107÷111	74	44		100	4000	12
RRPPS 50 121UT85 - BMT85	85	50	85	137		138÷146	83	46		150	3200	15

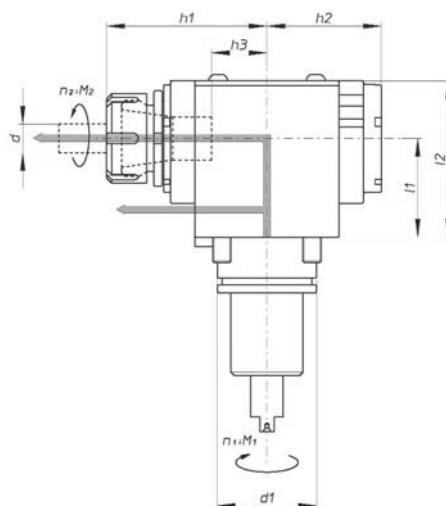
6/BMT

Radiale
Radial
Radial
Radial

Portapinza
Collet chuck
Pince de serrage
Spannzangeaufnahme

Refrigerazione interna-esterna
External and internal coolant supply
Alimentation d'arrosage extérieur et intérieur
Kühlschmierstoffzuführung extern und intern

$i = n1:n2 = -1 (1:1)$



70 BAR



Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	h1	h2	h3	h4	M ₂ Nm	n ₂ min-1	p kw
RRPPS 25 131UT45 - BMT45	45	25	65	95		80÷84,5	55	29		35	8000	6
RRPPS 25 131UT55 - BMT55	55	25	60	90		80÷84,5	55	29		40	8000	8
RRPPS 32 131UT65 - BMT65	65	32	72	107		89÷93,5	57	31		70	6000	10
RRPPS 40 131UT75 - BMT75	75	40	60	104		107÷111	74	44		100	4000	12
RRPPS 50 131UT85 - BMT85	85	50	85	137		138÷146	83	46		150	3200	15

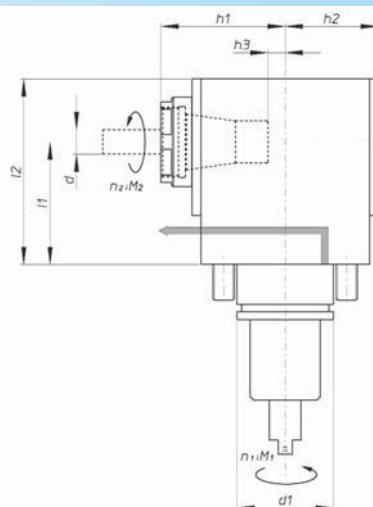


7/BMT

Radiale
Radial
Radial
Radial

Portapinza
Collet chuck
Pince de serrage
Spannzangeaufnahme

Refrigerazione esterna
External coolant supply
Alimentation d'arrosage extérieur
Kühlschmierstoffzuführung extern

 $i = n_1:n_2 = +0,25 (1:4)$ 

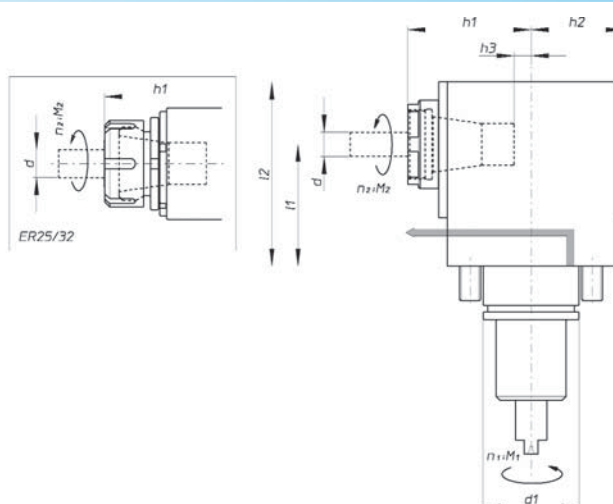
Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	h1	h2	h3	h4	M ₂ Nm	n ₂ min-1	p kw		
RRPPS 16 122UT45 - BMT45	45	16	65	95		59	68	32		3	32000	2,5		
RRPPS 16 122UT55 - BMT55	55	16	60	90		72	68	40		4	24000	3		
RRPPS 25 122UT65 - BMT65	65	25	72	107		77	65	36		8	24000	4		
RRPPS 25 122UT75 - BMT75	75	25	60	104		77	74	36		8	24000	4		
RRPPS 32 122UT85 - BMT85	85	32	85	137		127	83	79		25	12000	6		

8/BMT

Radiale
Radial
Radial
Radial

Portapinza
Collet chuck
Pince de serrage
Spannzangeaufnahme

Refrigerazione esterna
External coolant supply
Alimentation d'arrosage extérieur
Kühlschmierstoffzuführung extern

 $i = n_1:n_2 = +0,5 (1:2)$ 

Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	h1	h2	h3	h4	M ₂ Nm	n ₂ min-1	p kw		
RRPPS 16 1222UT45 - BMT45	45	16	65	95		72	55	36		15	16000	4		
RRPPS 16 1222UT55 - BMT55	55	16	60	90		72	55	36		15	16000	4		
RRPPS 25 1222UT65 - BMT65	65	25	72	107		93,5÷98	67	46		35	12000	8		
RRPPS 25 1222UT75 - BMT75	75	25	60	95		93,5÷98	67	46		35	12000	8		
RRPPS 32 1222UT85 - BMT85	85	32	85	124		127,5÷132	63	71		75	6000	12		



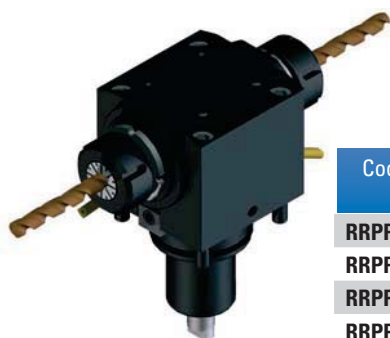
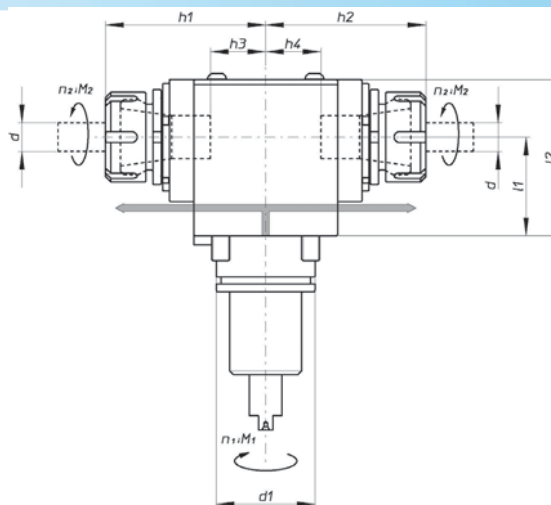
9/BMT

Doppio
Double
Double
2 Fach

Portapinza
Collet chuck
Pince de serrage
Spannzangeaufnahme

Refrigerazione esterna
External coolant supply
Alimentation d'arrosage extérieur
Kühlschmierstoffzuführung extern

$i = n_1:n_2 = -1 (1:1)$



Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	h1	h2	h3	h4	M ₂ Nm	n ₂ min-1	p kw
RRPPT 25 121UT85 - BMT45	45	25	65	95		80÷84,5	80÷84,5	40	40	35	8000	6
RRPPT 25 121UT55 - BMT55	55	25	60	90		80÷84,5	80÷84,5	40	40	40	8000	8
RRPPT 32 121UT65 - BMT65	65	32	72	107		89÷93,5	89÷93,5	37	46	70	6000	10
RRPPT 40 121UT75 - BMT75	75	40	60	104		107÷111	107÷111	54	54	100	4000	12

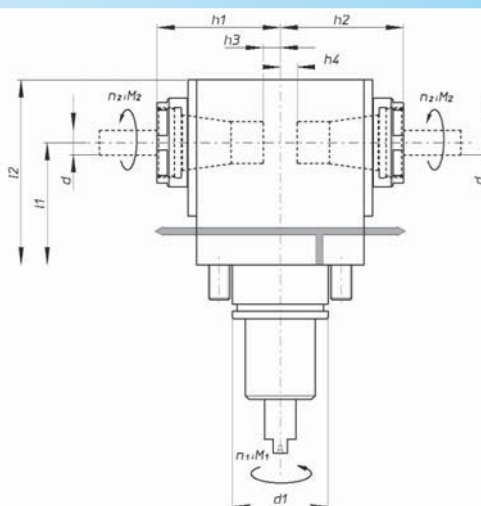
10/BMT

Doppio
Double
Double
2 Fach

Portapinza
Collet chuck
Pince de serrage
Spannzangeaufnahme

Refrigerazione esterna
External coolant supply
Alimentation d'arrosage extérieur
Kühlschmierstoffzuführung extern

$i = n_1:n_2 = +0,25 (1:4)$



Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	h1	h2	h3	h4	M ₂ Nm	n ₂ min-1	p kw
RRPPT 16 122UT45 - BMT45	45	16	65	95		59	59	32	32	3	32000	2,5
RRPPT 16 122UT55 - BMT55	55	16	60	90		72	72	40	40	4	24000	3
RRPPT 25 122UT65 - BMT65	65	25	72	107		77	77	36	36	8	24000	4
RRPPT 25 122UT75 - BMT75	75	25	60	104		77	77	36	36	8	24000	4

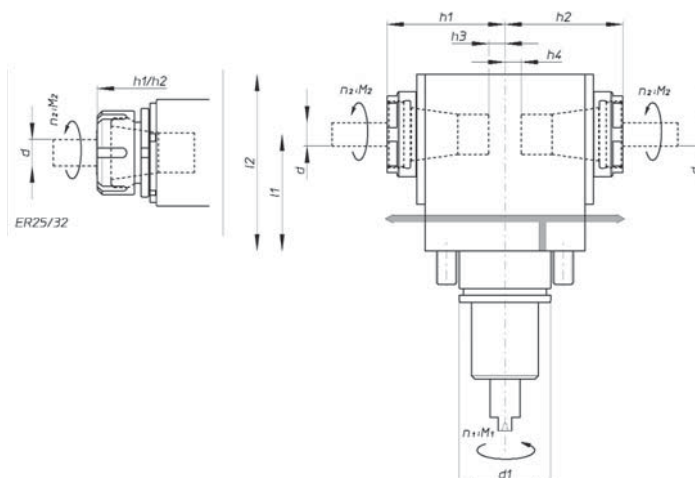


11/BMT

Doppio
Double
Double
2 Fach

Portapinza
Collet chuck
Pince de serrage
Spannzangeaufnahme

Refrigerazione esterna
External coolant supply
Alimentation d'arrosage extérieur
Kühlschmierstoffzuführung extern

 $i = n_1:n_2 = +0,5 (1:2)$


Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	h1	h2	h3	h4	M ₂ Nm	n ₂ min-1	p kw
RRPPT 16 1222UT45 - BMT45	45	16	65	95		72	72	36	36	15	16000	4
RRPPT 16 1222UT55 - BMT55	55	16	60	90		72	72	36	36	15	16000	4
RRPPT 25 1222UT65 - BMT65	65	25	72	107		93,5÷98	93,5÷98	46	46	35	12000	8
RRPPT 25 1222UT75 - BMT75	75	25	60	95		93,5÷98	93,5÷98	46	46	35	12000	8



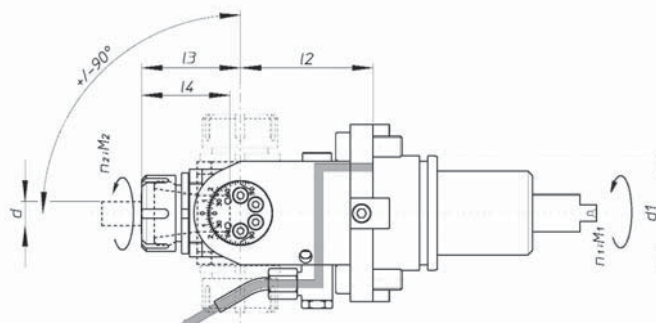
12/BMT

Orientabile
Angle adjustable
Angle réglable
winkeleinstellbar

Portapinza
Collet chuck
Pince de serrage
Spannzangeaufnahme

Refrigerazione esterna
External coolant supply
Alimentation d'arrosage extérieur
Kühlschmierstoffzuführung extern

$i = n1:n2 = +1 (1:1)$



Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	l4	h1	h2	h3	h4	M ₂ Nm	n ₂ min-1	p kw
ROPPS 20 121UT45 - BMT45	45	20		65	48-52,5	37					15	8000	3
ROPPS 20 121UT55 - BMT55	55	20		65	48-52,5	37					15	8000	3
ROPPS 25 121UT65 - BMT65	65	25		75	63-67,5	42					25	6000	4
ROPPS 25 121UT75 - BMT75	75	25		75	63-67,5	42					25	6000	4
ROPPS 32 121UT85 - BMT85	85	32		115	48-52,5	50					50	4000	6

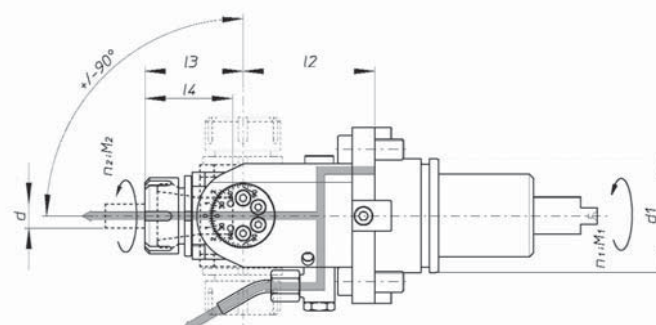
13/BMT

Orientabile
Angle adjustable
Angle réglable
winkeleinstellbar

Portapinza
Collet chuck
Pince de serrage
Spannzangeaufnahme

Refrigerazione interna-esterna
External and internal coolant supply
Alimentation d'arrosage extérieur et intérieur
Kühlschmierstoffzuführung extern und intern

$i = n1:n2 = +1 (1:1)$



70 BAR



Codice - code - code - Bestell Nr.	d1	ER	l1	l2	l3	l4	h1	h2	h3	h4	M ₂ Nm	n ₂ min-1	p kw
ROPPS 20 131UT45 - BMT45	45	20		65	48-52,5	37					15	8000	3
ROPPS 20 131UT55 - BMT55	55	20		65	48-52,5	37					15	8000	3
ROPPS 25 131UT65 - BMT65	65	25		75	63-67,5	42					25	6000	4
ROPPS 25 131UT75 - BMT75	75	25		75	63-67,5	42					25	6000	4
ROPPS 32 131UT85 - BMT85	85	32		115	48-52,5	50					50	4000	6

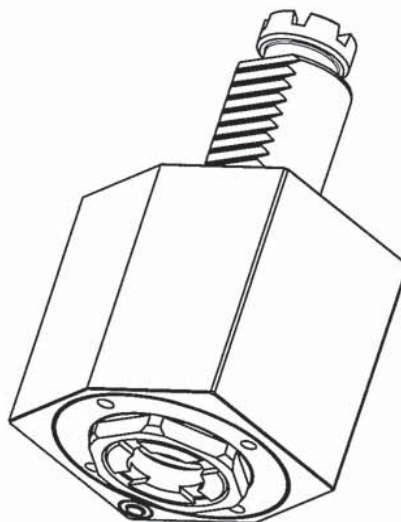
LiveTooling tool holder VDI Drawing



BARUFFALDI VDI 动力头外形图



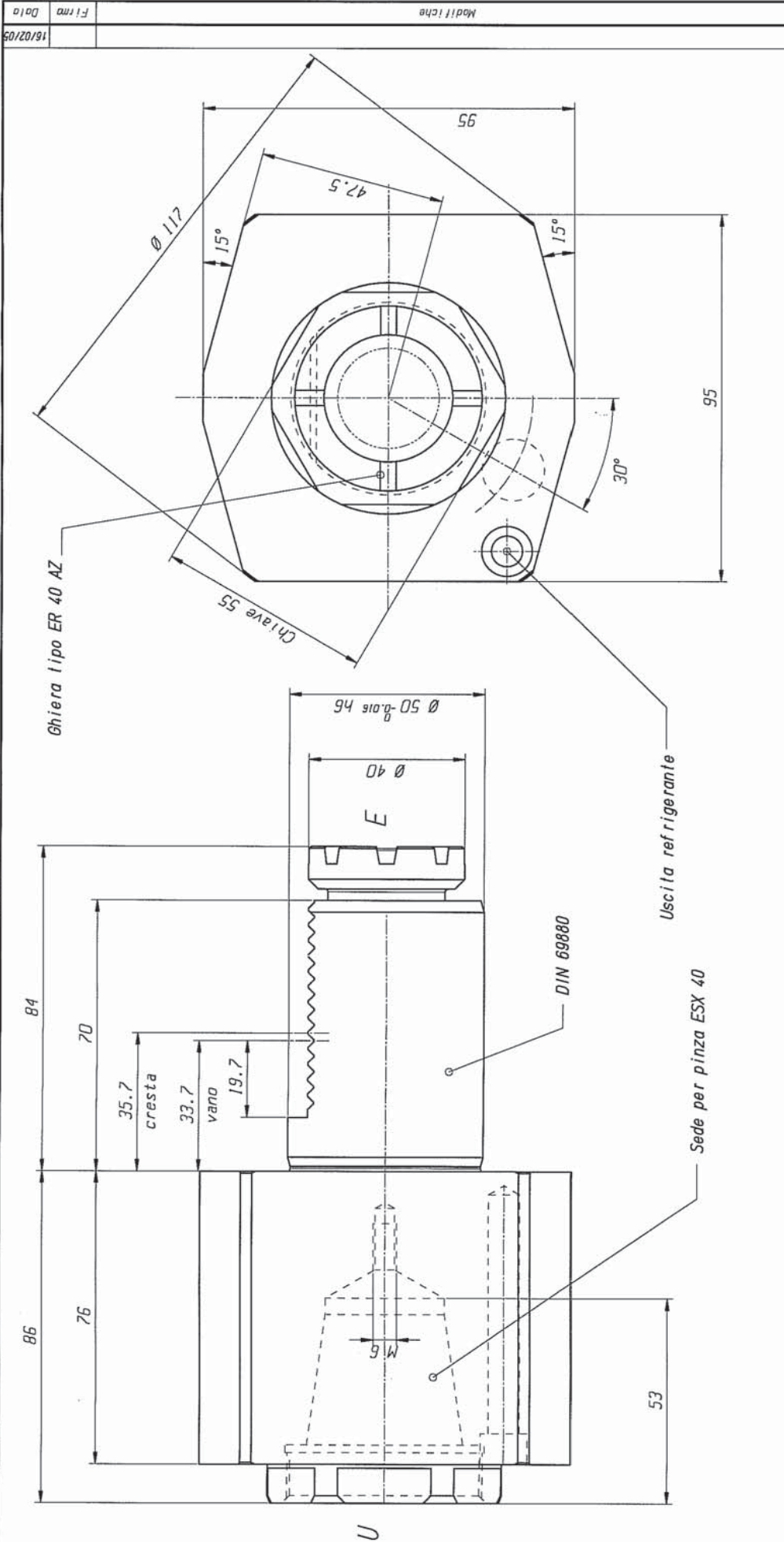
DIN 69880



Rapporto tra il n° di giri in entrata "E" ed il n° di giri in uscita "U"

 $\vdots$

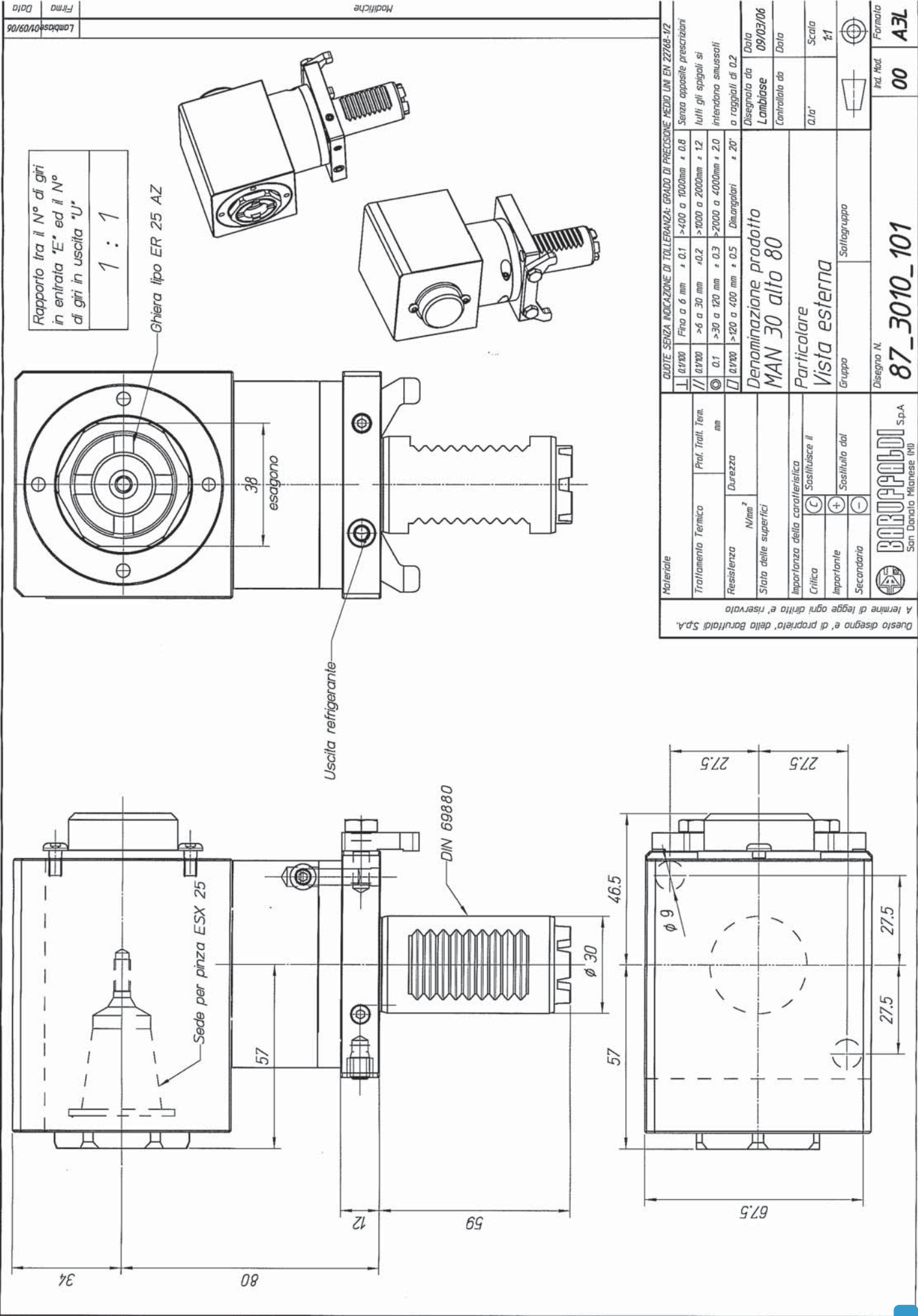
Questo disegno e' di proprieta' dello Baruffaldi S.p.A. A termine di legge ogni diritto e riservato		Materiali		Quote senza indicazione di tolleranza: GRADO DI PRECISIONE MEDIO UNI EN 22768-1/2	
Treatment Termico	Prof. Trail. Tem. mm	Resistenza	Durezza N/mm²	1. 0.1/0.00	Fino a 6 mm ± 0.1 >6 a 30 mm ±0.2 >100 a 2000mm ± 1.2
Importanza della caratteristica Critica	Sostituisce il	Stato delle superfici	2	2. 0.0/0.00	>30 a 120 mm ± 0.3 >200 a 4000mm ± 2.0
Importante	Sostituito dal	Importanza della caratteristica Secondaria	3	3. 0.1	>120 a 400 mm ± 0.5 Disomogenei ± 2.0
Gruppo	Sottogruppo	Particolare Vista esterna	Denominazione prodotto MRA 30 Dx/Sx	4. 0.1/0.00	0.1/0.00
Ind. Aut.	Ind. Aut.	Disegno N.	86_3010_101	5. 0.1/0.00	0.1/0.00
Formata	Formata	Baruffaldi S.p.A. San Donato Milanese (MI)	00	25/11/05	00

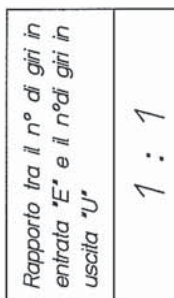


Questo disegno è di proprietà della Baruffaldi S.p.A. A termine di legge ogni diritto è riservato.		Materiale		Qualità senza indicazione di tolleranza: GRADO DI PRECISIONE MEDIO UNI EN 22768-1/2	
Trattamento Termico	Prof. Tratt. Term.	Trattamento Termico	Prof. Tratt. Term.	Trattamento Termico	Prof. Tratt. Term.
Resistenza	Durezza	Resistenza	Durezza	Resistenza	Durezza
Stato delle superfici	Stato delle superfici	Stato delle superfici	Stato delle superfici	Stato delle superfici	Stato delle superfici
Importanza della caratteristica	Importanza della caratteristica	Importanza della caratteristica	Importanza della caratteristica	Importanza della caratteristica	Importanza della caratteristica
Critica	Critica	Critica	Critica	Critica	Critica
Importante	Importante	Importante	Importante	Importante	Importante
Secondaria	Secondaria	Secondaria	Secondaria	Secondaria	Secondaria
Denominazione prodotto		MRA 50 dx/sx		Disegnato da	
Particolare		Vista esterna		Lambiose	
Gruppo		Sottogruppo		Controllato da	
Scala		1:1		Data	
0.10		X		16/02/05	
Ind. Mod.		Formato		Data	
00		A3L		16/02/05	

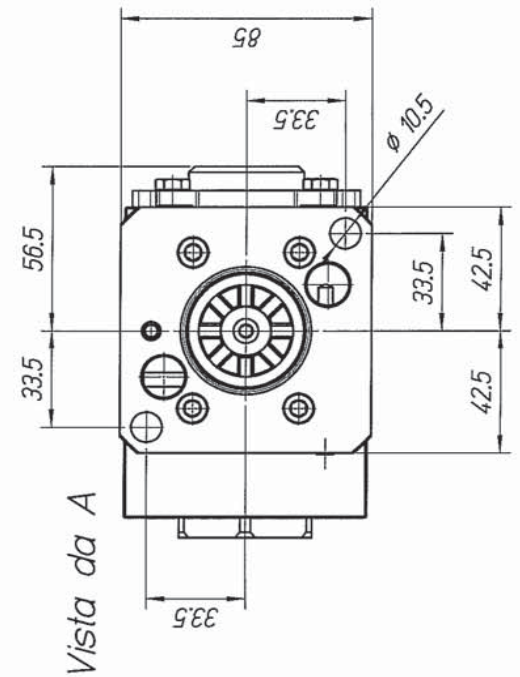
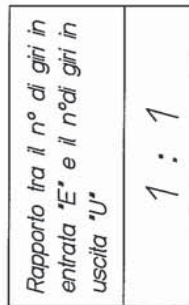
Rapporto tra il N° di giri
in entrata "E" ed il N°
di giri in uscita "U"

1 : 1

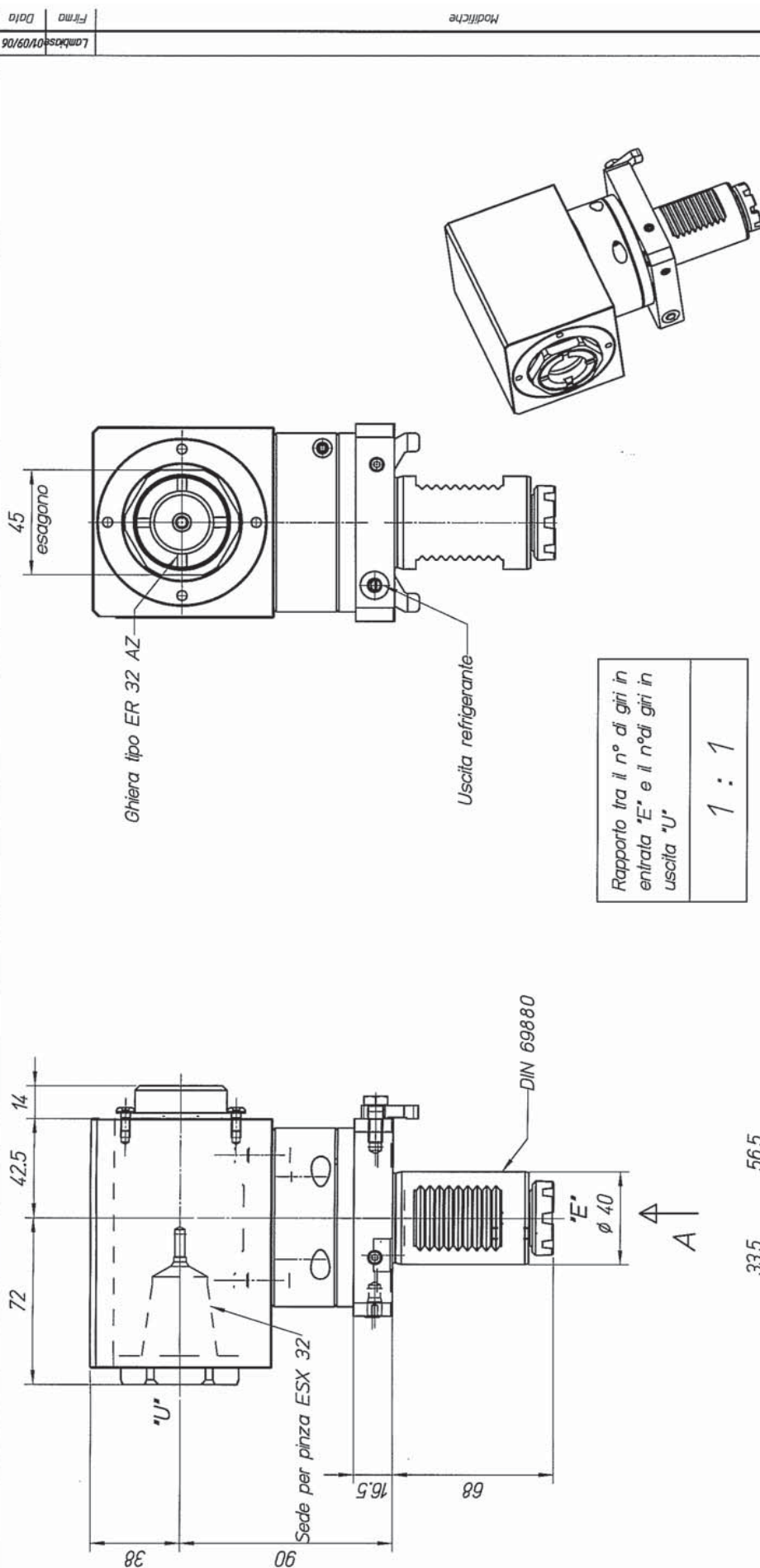




Questo disegno e' di proprieta' della Baruffaldi S.p.A. A termine di legge ogni diritto e' riservato		Baruffaldi S.p.A. San Donato Milanese (MI)		Disegno N. 87_4010_103		Ind. Tech. 00		Formato A3L	
Materiali		Trattamento Termico		Profil. Tratt. Term. mm		QUOTE SENZA INDICAZIONE DI TOLLERANZA: GRADO DI PRECISIONE MEDIO UNI EN 22768-1/2			
Resistenza		Durezza		N/mm²		☐ $\sigma_{\text{lim}} \geq 1000$ ± 0.1 >100 a $1000\text{mm} \pm 0.8$ ☐ $\sigma_{\text{lim}} \geq 600$ ± 0.2 >100 a $2000\text{mm} \pm 1.2$ ☐ $\sigma_{\text{lim}} \geq 300$ ± 0.3 >100 a $4000\text{mm} \pm 2.0$ ☐ $\sigma_{\text{lim}} \geq 120$ ± 0.5 >100 a $2000\text{mm} \pm 2.0$ ☐ $\sigma_{\text{lim}} \geq 60$ ± 0.5 >100 a $4000\text{mm} \pm 2.0$			
Stato delle superfici		Importanza della caratteristica		Sostituisce il		Denominazione prodotto MAN 40 alto 62.5			
Critica		Importante		Secondaria		Particolare Vista esterna			
Gruppo		Saltograppo		Scala 1:1		Controllata da Lombiose			
Disegnato da 09/03/06		Controllata da		Data		Data 09/03/06			
Baruffaldi		Baruffaldi		Baruffaldi		Baruffaldi			

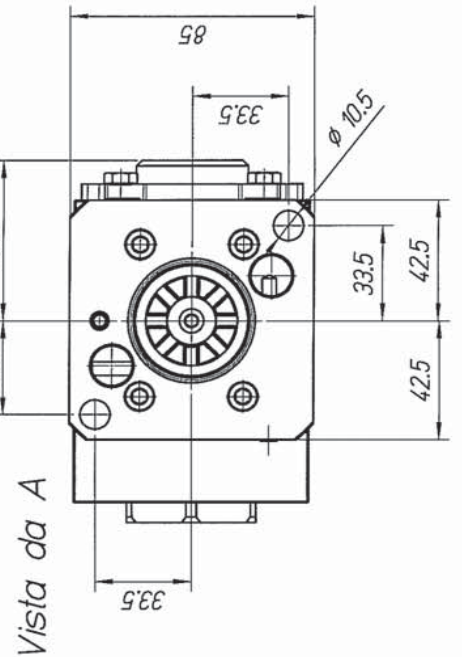
Modifiche

Materiali			QUOTE SENZA INDICAZIONE DI TOLLERANZA: GRADO DI PRECISIONE MEDIO UNI EN 22766-1/2		
Trattamento Termico		Prof. Tratt. Term.	Senza apposite precisazioni		
		mm			
Resistenza		Durezza			
N/mm ²					
Stato delle superfici					
Importanza della caratteristica					
Critica					
Importante					
Secondaria					
Sostituisce il					
Sostituito dal					
Gruppo			Sottogruppo		
Particolare					
Vista Esterna					
Data			Data		
09/03/06			01/01		
Lambiose			Contrallato da		
Disegnato da			Data		
09/03/06			09/03/06		
Lambiose			Contrallato da		
Disegnato da			Data		
09/03/06			09/03/06		
Lambiose			Contrallato da		
Disegnato da			Data		
09/03/06			09/03/06		
Lambiose			Contrallato da		
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09/03/06			09/03/06		
Lambiose			Contrallato da		
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09/03/06			09/03/06		
Lambiose			Contrallato da		
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Lambiose			Contrallato da		
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Lambiose			Contrallato da		
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Lambiose			Contrallato da		
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Lambiose			Contrallato da		
Disegnato da			Data		
09/03/06			09/03/06		
Lambiose			Contrallato da		
Disegnato da			Data		
09/03/06			09/03/06		
Lambiose			Contrallato da		
Disegnato da			Data		
09/03/06			09/03/06		
Lambiose			Contrallato da		
Disegnato da			Data		
09/03/06			09/03/06		
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Disegnato da			Data		
09/03/06			09/03/06		
Lambiose			Contrallato da		

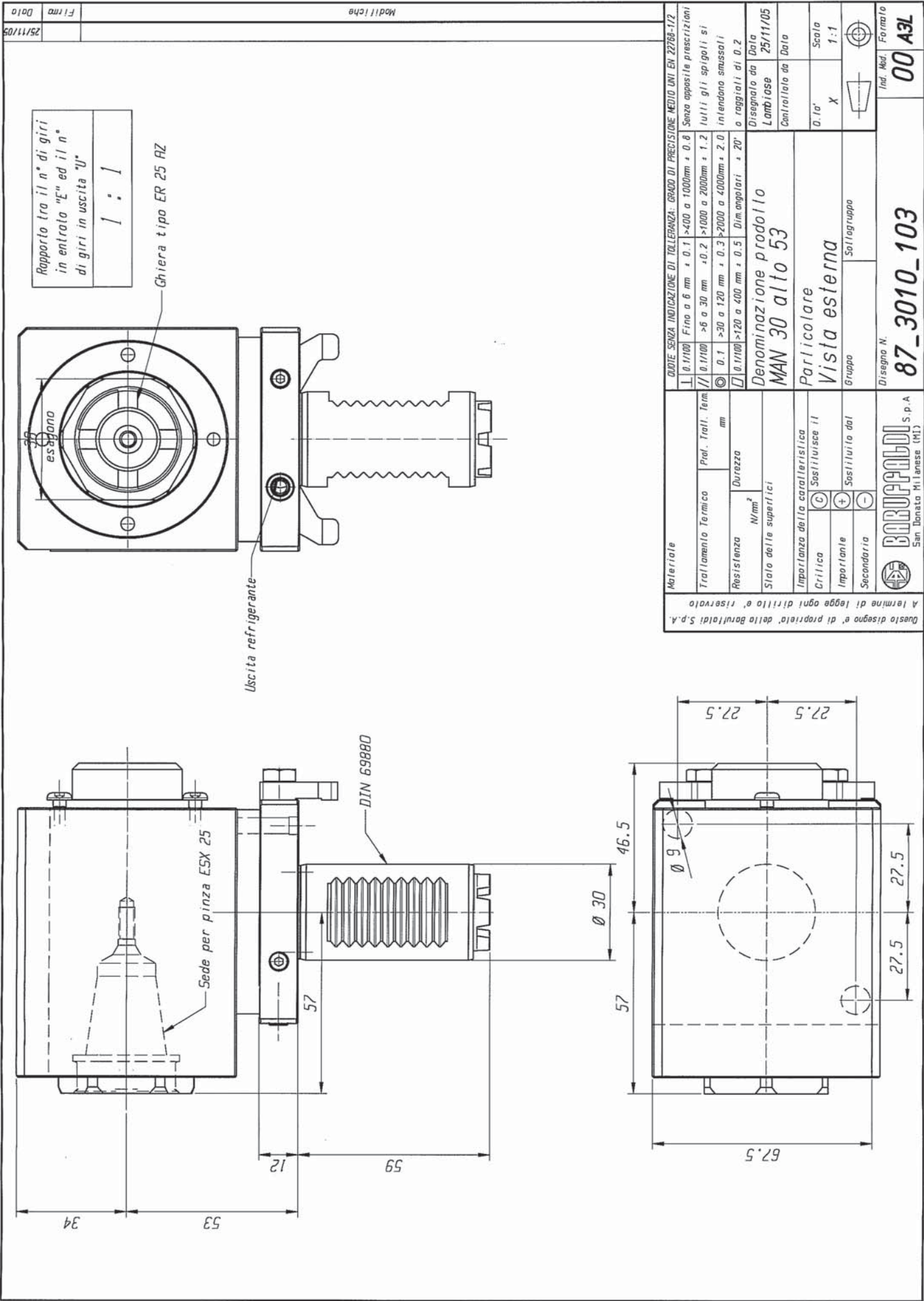


Rapporto tra il n° di giri in
entrata "E" e il n° di giri in
uscita "U"

1 : 1



Questo disegno e' di proprieta' della Boruffaldi S.p.A. A termine di legge ogni diritto e' riservato		Materiale		Tolleranze senza indicazione di tolleranza: GRADO DI PRECISIONE MEDIO UNI EN 22768-1/2		Data	
Trattamento Termico		Prof. Tratt. Term.		Fino a 6 mm ± 0.1		0.1/100	
Resistenza		Durezza		> 6 a 30 mm ± 0.2		0.1	
Stato delle superfici		Importanza della caratteristica		> 30 a 120 mm ± 0.3		0.1	
Importanza della caratteristica		Sostituisce il		> 200 a 4000 mm ± 2.0		0.1/100	
Critica		Importante		a raggiati di 0.2		0.1/100	
Importante		Sostituito dal		Dinamometri ± 20°		0.1/100	
Secondaria		Gruppo		Disegnato da		0.1/100	
		Sottogruppo		Lambiose		0.1/100	
				Controllato da		0.1/100	
				Data		0.1/100	
				Scala		0.1/100	
				1:1		0.1/100	
				Formato		0.1/100	
				Ind. Mod.		0.1/100	
				00		0.1/100	
				A3L		0.1/100	
				87_4010_101		0.1/100	
				Disegno N.		0.1/100	
				BORUFFALDI S.p.A.		0.1/100	
				San Donato Milanese (MI)		0.1/100	
				Denominazione prodotto		0.1/100	
				MAN 40 alto 90		0.1/100	
				Particolare		0.1/100	
				Vista esterna		0.1/100	

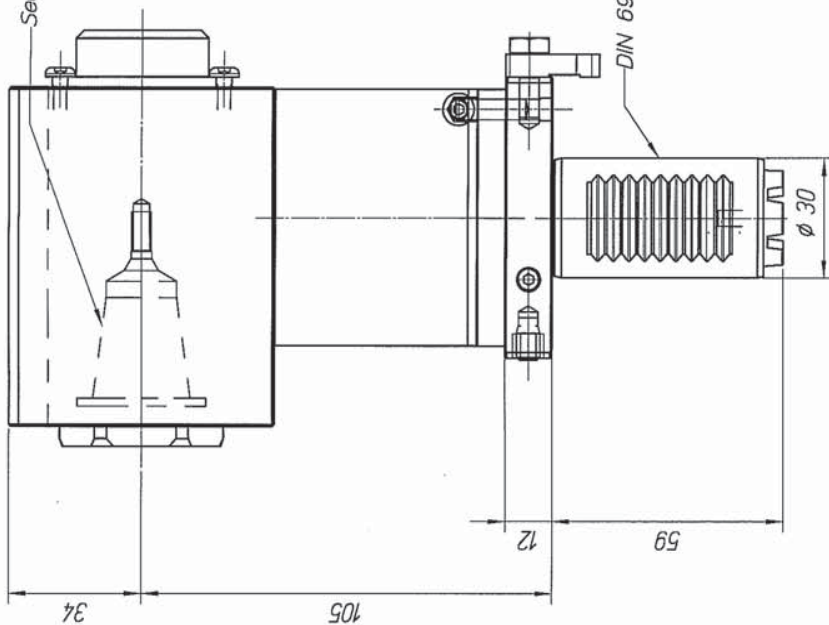


Questo disegno e' di proprieta' della Baruffaldi S.p.A.
A termine di legge ogni diritto e' riservato

Materiale		Profil. Term.	Profil. Term.	mm	mm
Trattamento Termico		Profil. Term.	Profil. Term.	mm	mm
Resistenza		N/mm ²	Durezza		
Stato delle superfici					
Importanza della caratteristica					
Critica		+	Sostituisce il		
Importante		+	Sostituisce il		
Secondaria		-	Sostituisce il		
Gruppo			Sottogruppo		
Denominazione prodotto		MAN 30 alto 53			
Disegnato da		Lambiose			
Data		25/11/05			
Controllo da		Data			
D. lo'		X			
Scala		1:1			
Ind. Mod.		00 A3L			
Disegno N.		87_3010_103			
Baruffaldi S.p.A.		San Donato Milanese (MI)			

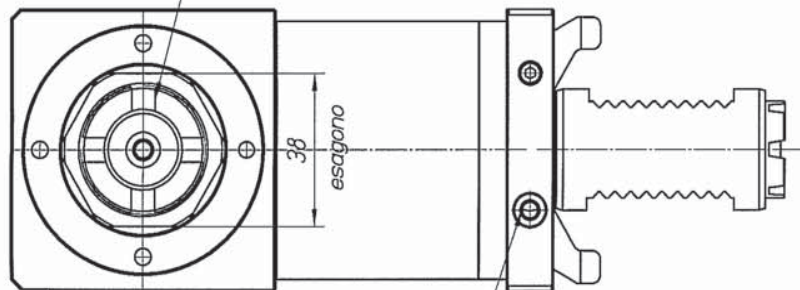


Sede per pinza ESX 25



Uscita refrigerante

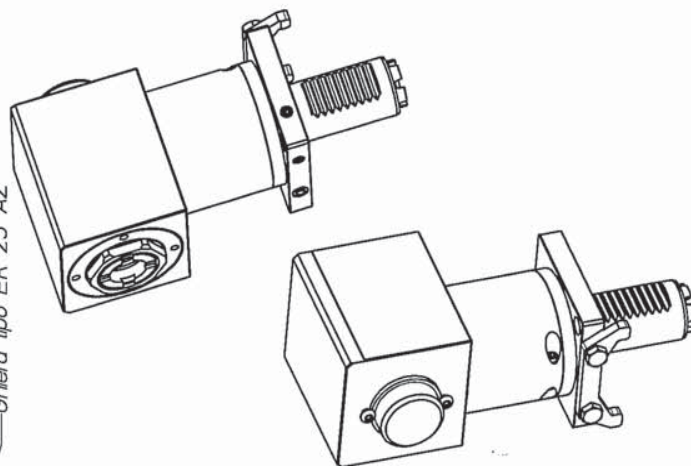
DIN 69880

esagono
38

Rapporto tra il N° di giri
in entrata "E" ed il N°
di giri in uscita "U"

1 : 1

Ghiera tipo ER 25 AZ



Modif. altezza 105 mm era 100 mm

Modifiche

Firma
Data

Lombardi 12/04/06

Questo disegno è di proprietà della Baruffaldi S.p.A.
A termine di legge ogni diritto è riservato

Materiale

Trattamento Termico	Prof. Trati. Term.	mm
Resistenza	Durezza	
N/mm ²		
Stato delle superfici		
Importanza della caratteristica		
Critica	Sostituisce il	
Importante	87_3010_102.00	
Secondaria	Sostituito dal	

Baruffaldi S.p.A.
San Donato Milanese (MI)

87_3010_102

Disegno N.

01

Formato

A3L

Denominazione prodotto
MAN 30 alto 105

Particolare
Vista esterna

Gruppo
Sottogruppo

Scala
1:1

Data
09/03/06

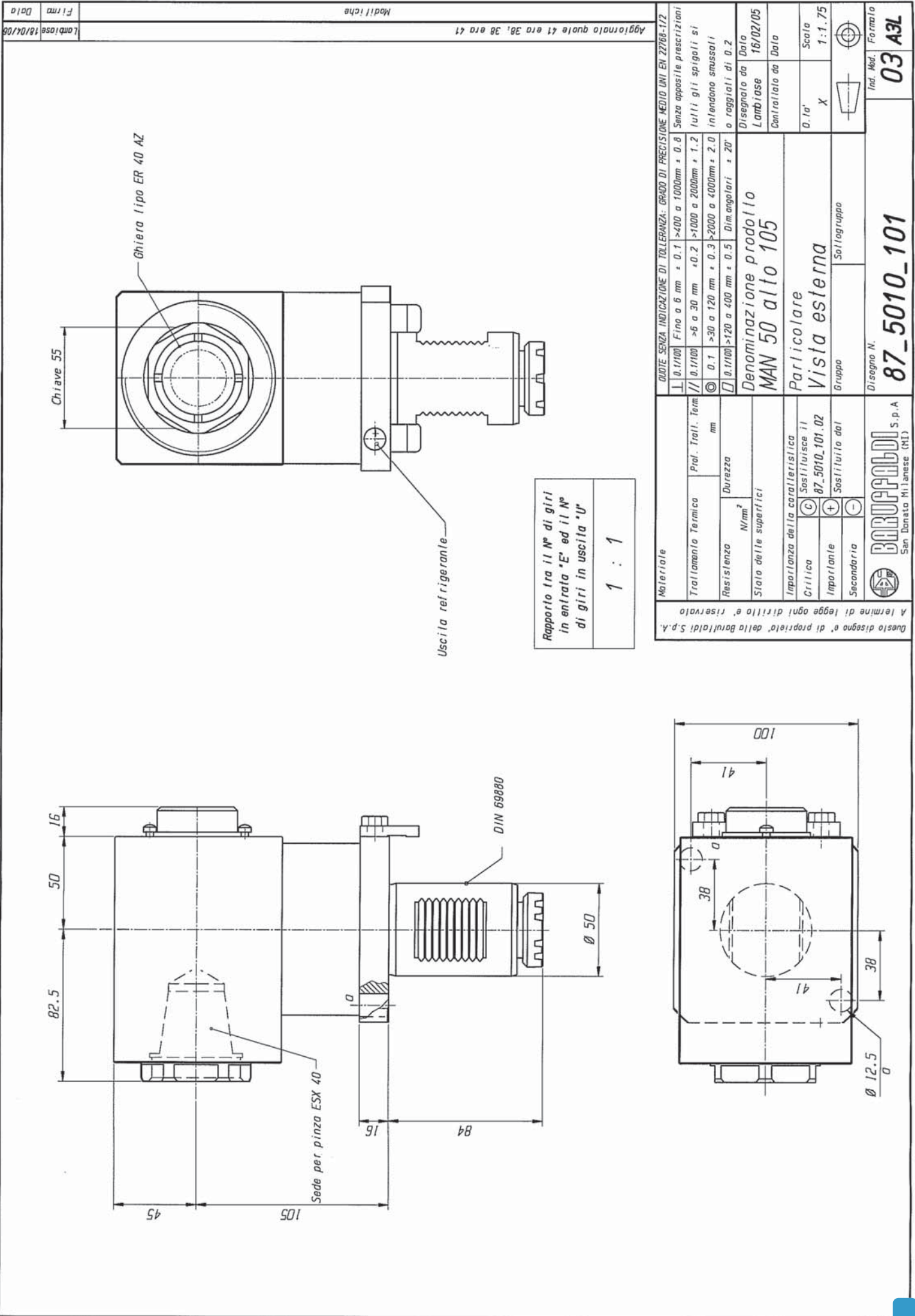
Disegnato da
Lombardi

Controllato da

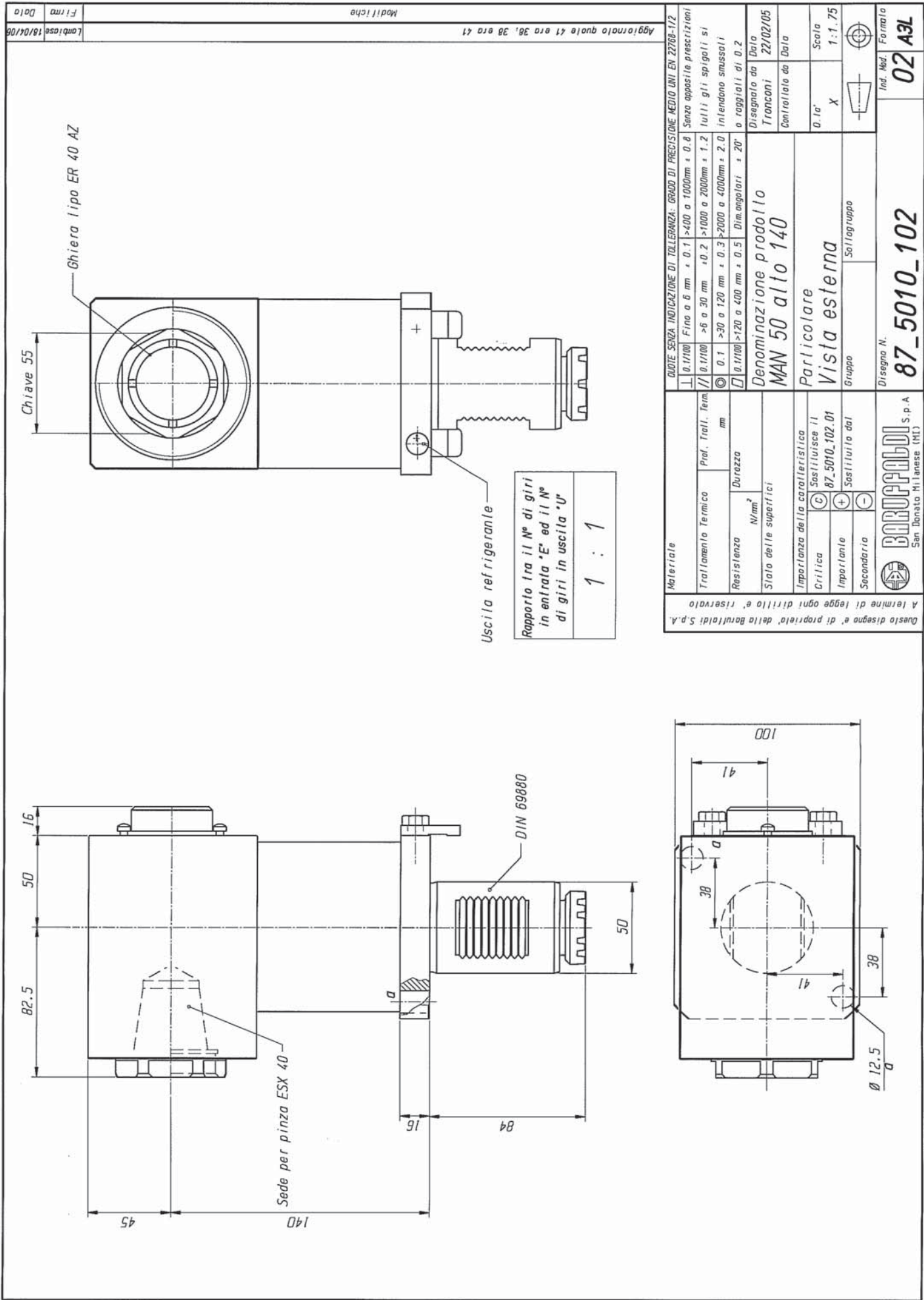
Data

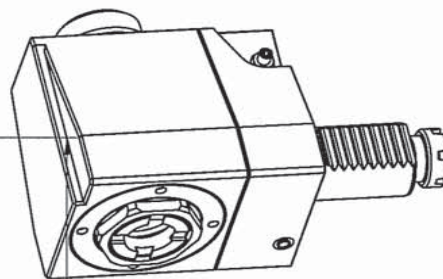
Quote senza indicazione di tolleranza: GRADO DI PRECISIONE MEDIO UNI EN 22768-1/2

$\square$ 0.1/100	Fino a 6 mm ± 0.1	>400 a 1000mm ± 0.8	Senza apposite prescrizioni
$\parallel$ 0.1/100	>6 a 30 mm ± 0.2	>1000 a 2000mm ± 1.2	Tutti gli spigoli si
$\odot$ 0.1	>30 a 120 mm ± 0.3	>2000 a 4000mm ± 2.0	intendono smussati
$\square$ 0.1/100	>120 a 400 mm ± 0.5	Dimensionali $\pm 20'$	a raggiati di 0.2



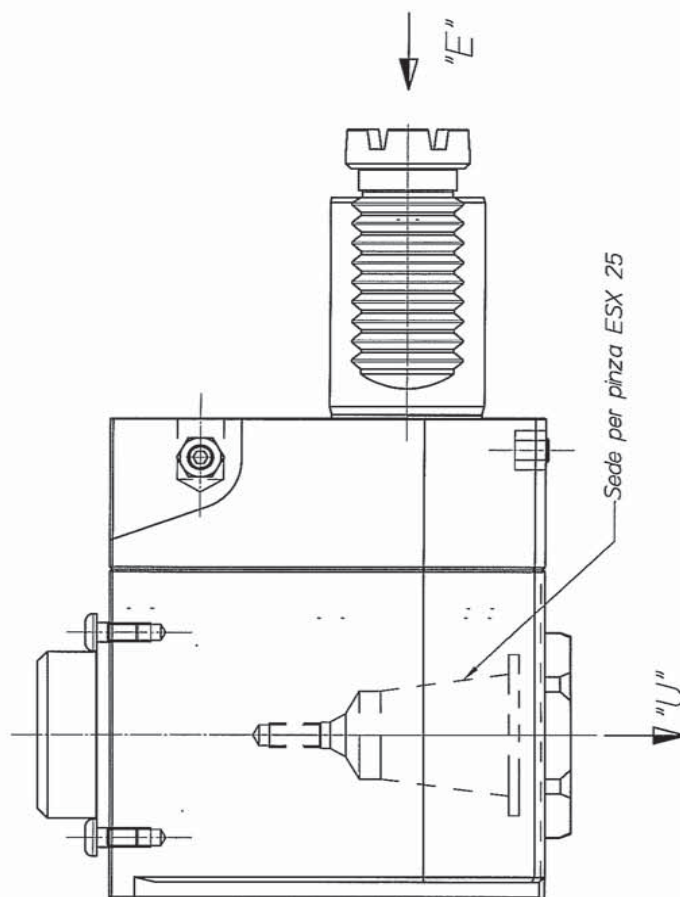
A termine di legge ogni diritto e' riservato		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q		Q	
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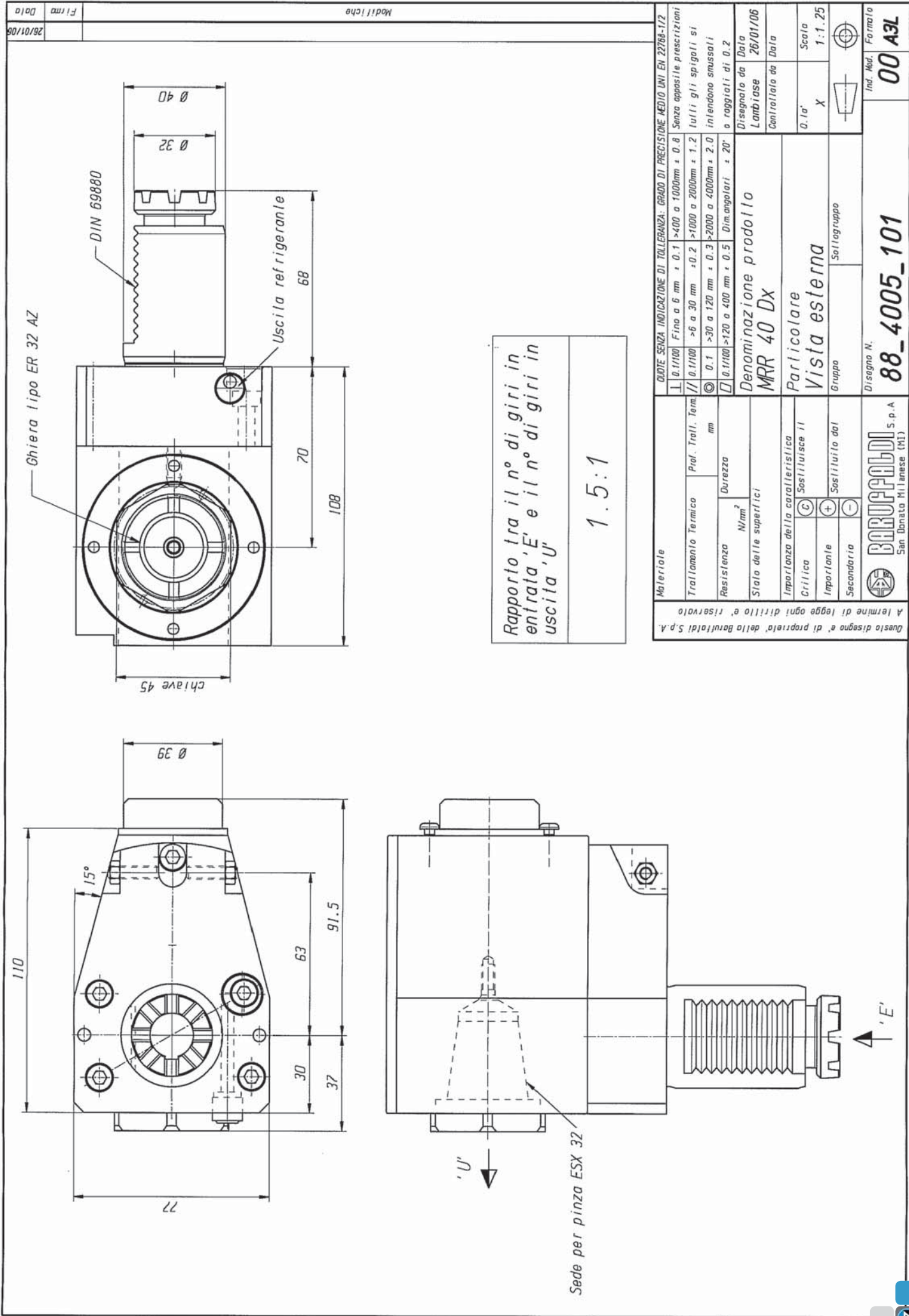


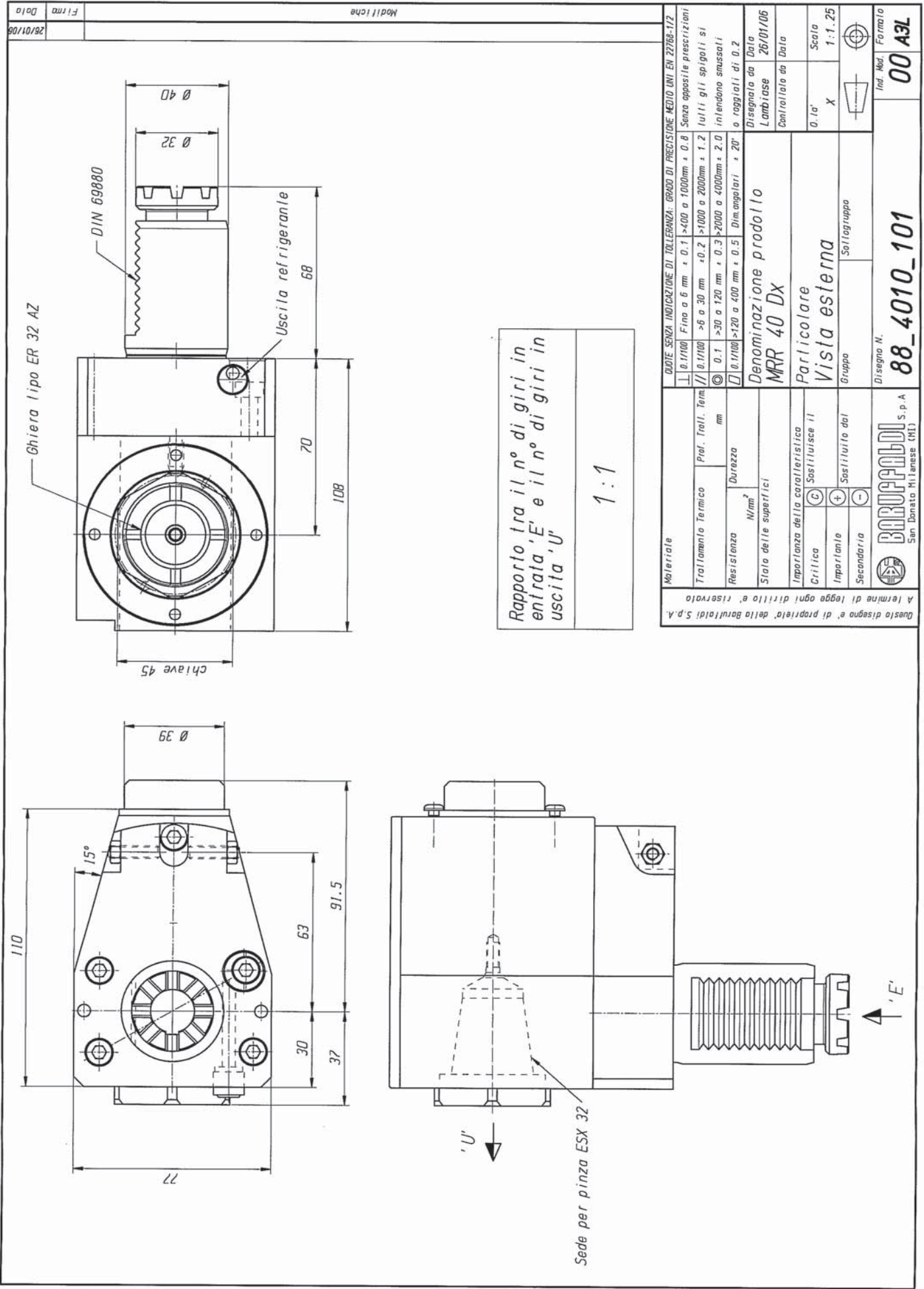
Rapporto tra il n° di giri in
entrata 'E' e il n° di giri in
uscita 'U'

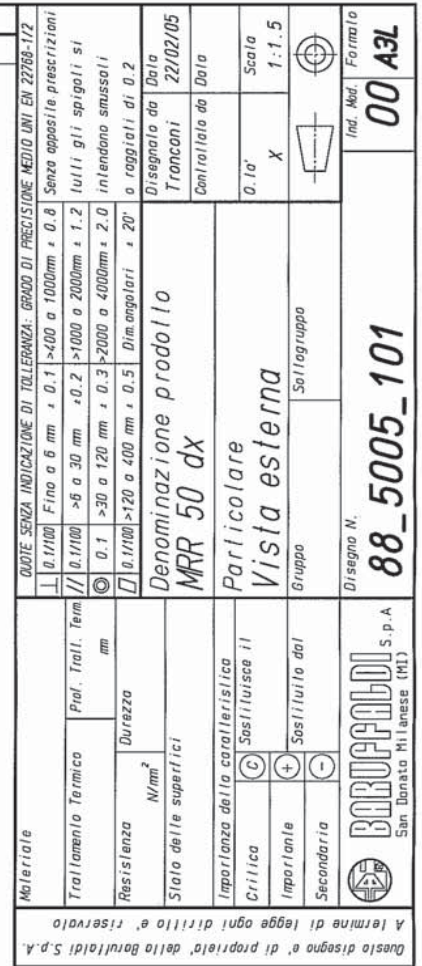
1.1



Materiali		Trattamento Termico		Prof. Tratl. Term. mm	Quote senza indicazione di tolleranza: GRADO DI PRECISIONE MEDIO UNI EN 22748-1/2	
Resistenza		Durezza	N/mm²		Fino a 6 mm ± 0.1 >6 a 30 mm ± 0.2 >30 a 120 mm ± 0.3 >120 a 400 mm ± 0.5	Senza apposite prescrizioni tutti gli spigoli si intendano smussati
Stato delle superfici		Importanza della caratteristica		o raggiati di 0.2		Designata da 13/03/06
Critico		Sostituisce il		Lambiose		Data
Importante		Sostituito dal		0/1a'		Scala 1:1
Secondaria		Gruppo		Sottogruppo		
Denominazione prodotto MRR 30 Dx		Particolare Vista esterna		Controlata da		Ind. Aut. 00
Disegno N. 88_3010_101		Formato A3L		Baruffaldi S.p.A. Sede: Dossola, Monfesa (NO)		Termine di legge ogni diritto e riservato



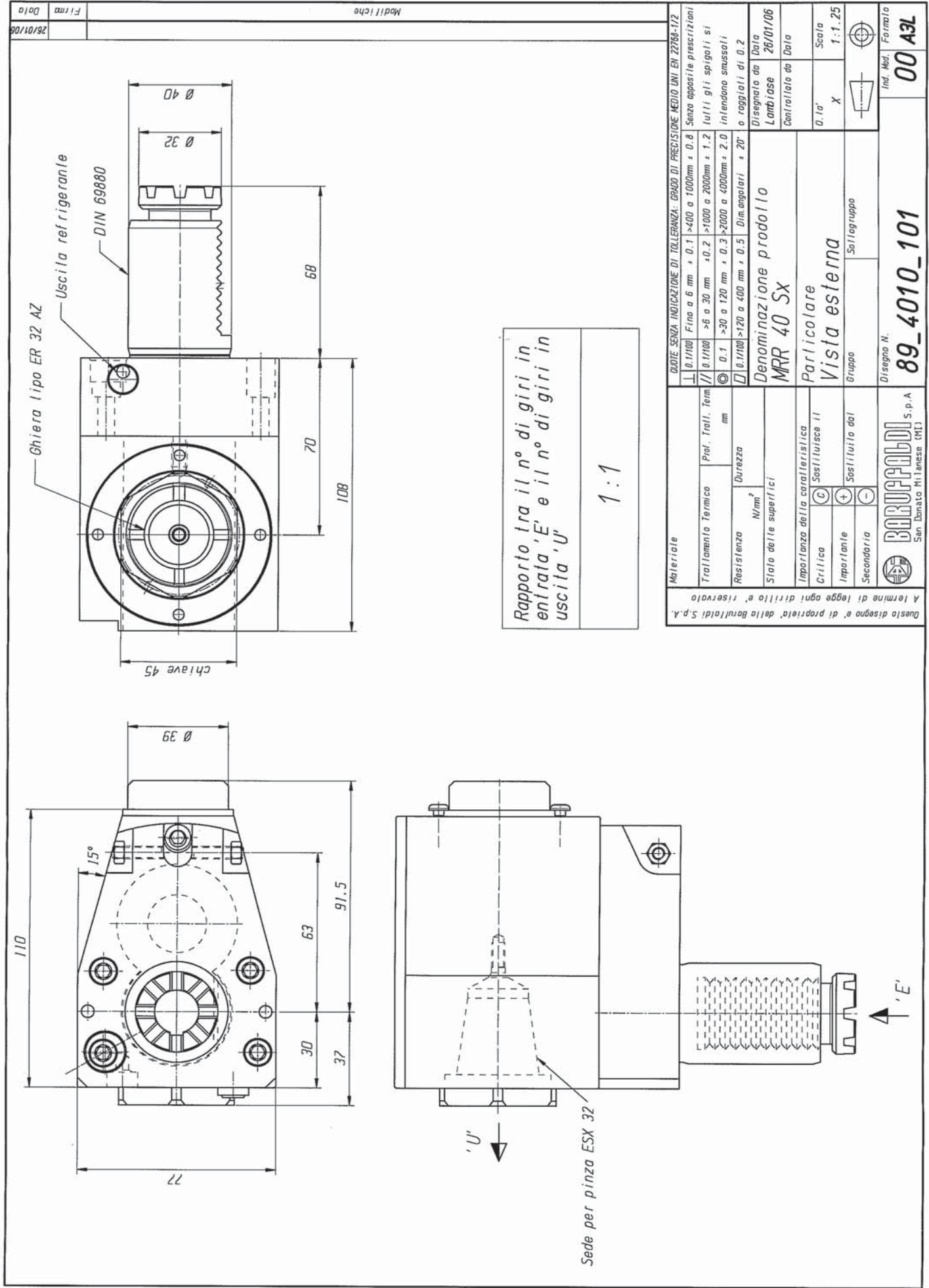


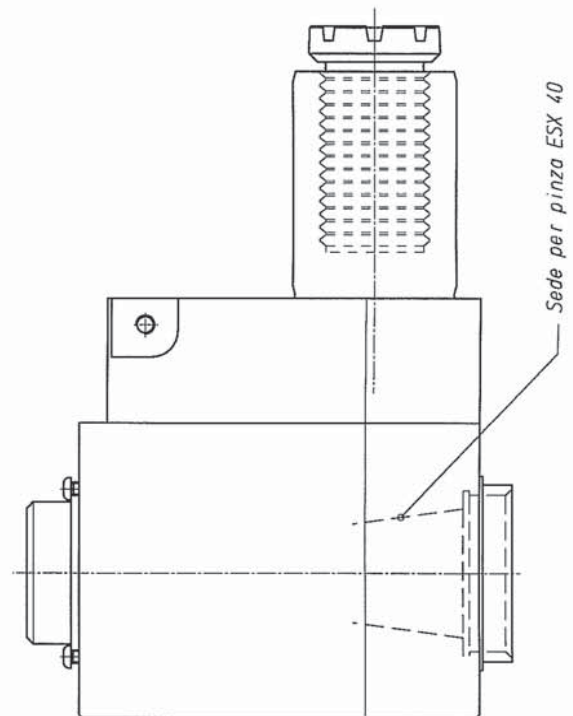


Sede per pinza ESX 40

Materiale		QUOTE SENZA INDICAZIONE DI TOLLERANZA: GRADO DI PRECISIONE MEDIO UN EN 22768-1/2 <table border="1"> <tr> <td>$\perp$ 0,020</td> <td>Fino a 6 mm $\pm$ 0,1</td> <td>>400 a 1000mm $\pm$ 0,8</td> <td>Senza apposite prescrizioni</td> </tr> <tr> <td>$\parallel$ 0,040</td> <td>>6 a 30 mm $\pm$ 0,2</td> <td>>1000 a 2000mm $\pm$ 1,2</td> <td>Tutti gli spigoli si</td> </tr> <tr> <td>$\odot$ 0,1</td> <td>>30 a 120 mm $\pm$ 0,3</td> <td>>2000 a 4000mm $\pm$ 2,0</td> <td>intendano smussati</td> </tr> <tr> <td>$\square$ 0,040</td> <td>>120 a 400 mm $\pm$ 0,5</td> <td>Disegnati $\pm$ 20'</td> <td>a raggioli di 0,2</td> </tr> </table>		$\perp$ 0,020	Fino a 6 mm $\pm$ 0,1	>400 a 1000mm $\pm$ 0,8	Senza apposite prescrizioni	$\parallel$ 0,040	>6 a 30 mm $\pm$ 0,2	>1000 a 2000mm $\pm$ 1,2	Tutti gli spigoli si	$\odot$ 0,1	>30 a 120 mm $\pm$ 0,3	>2000 a 4000mm $\pm$ 2,0	intendano smussati	$\square$ 0,040	>120 a 400 mm $\pm$ 0,5	Disegnati $\pm$ 20'	a raggioli di 0,2
$\perp$ 0,020	Fino a 6 mm $\pm$ 0,1	>400 a 1000mm $\pm$ 0,8	Senza apposite prescrizioni																
$\parallel$ 0,040	>6 a 30 mm $\pm$ 0,2	>1000 a 2000mm $\pm$ 1,2	Tutti gli spigoli si																
$\odot$ 0,1	>30 a 120 mm $\pm$ 0,3	>2000 a 4000mm $\pm$ 2,0	intendano smussati																
$\square$ 0,040	>120 a 400 mm $\pm$ 0,5	Disegnati $\pm$ 20'	a raggioli di 0,2																
Resistenza N/mm ² Durezza		Data 13/03/06 Disegnato da Lambiasi Controllato da Data																	
Stato delle superfici		Denominazione prodotto MRR 30 Sx																	
Importanza della cavalleristica Critica Importante Secondaria		Particolare Vista esterna Gruppo Sottogruppo																	
Sostituisce il Sostituito dal		Scala 1:1 																	
BARUFFALDI S.p.A. San Donato Milanese (MI)		Disegno N. 89_3010_101 Int. Mod. 00 Formato A3L																	

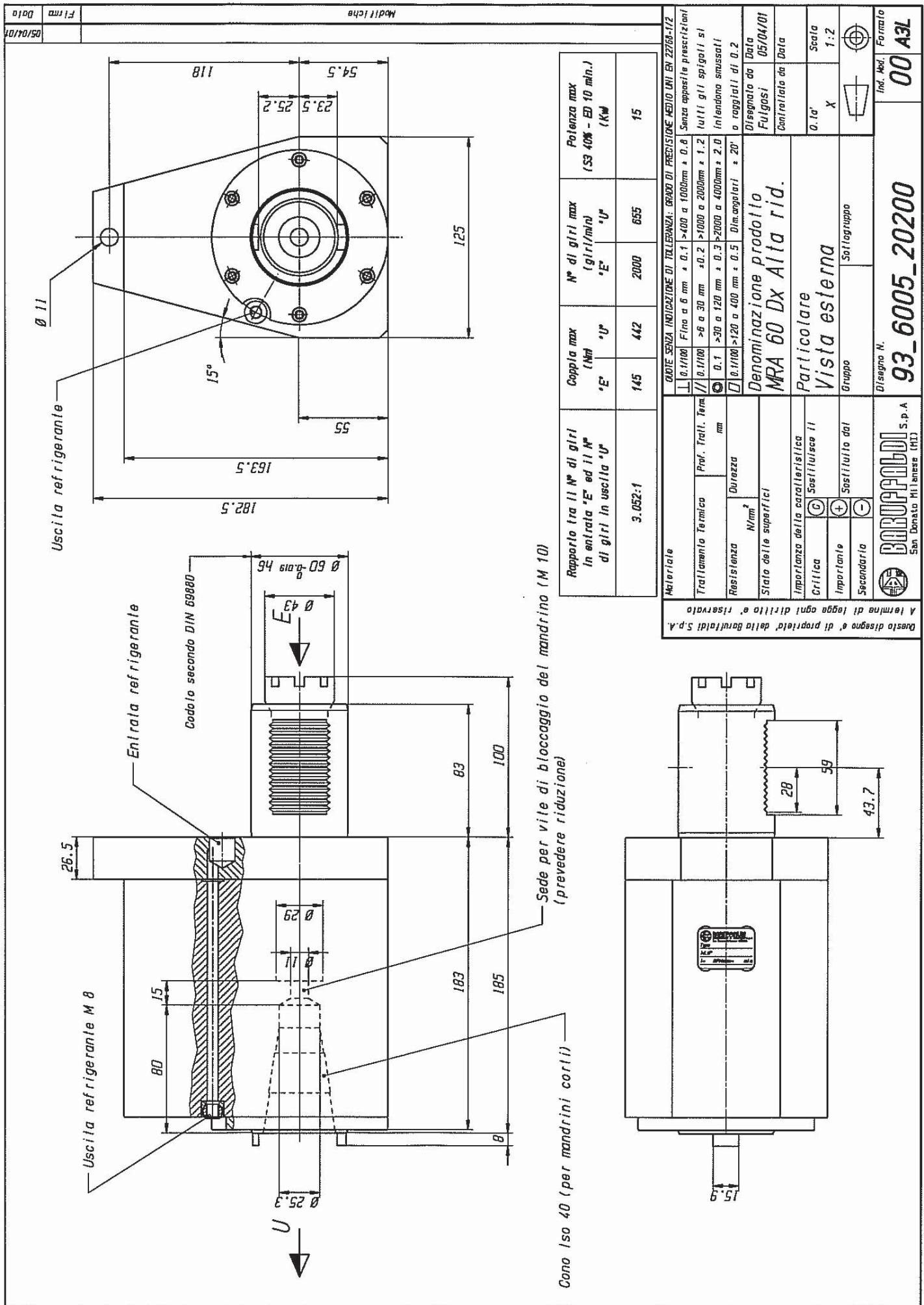
*Questo disegno e' di proprieta' della Boruffaldi S.p.A.
A termine di legge ogni diritto e' riservato*

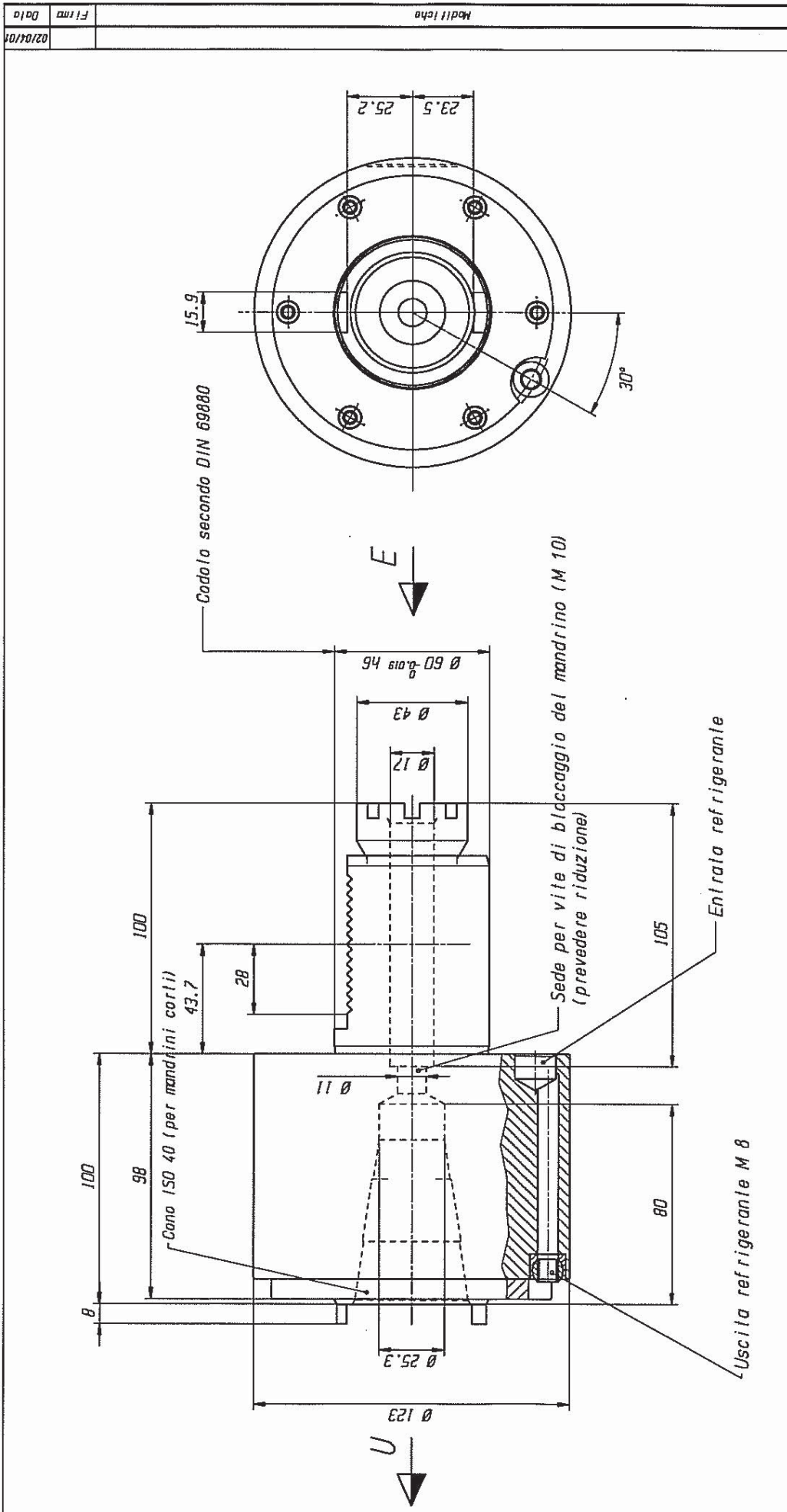




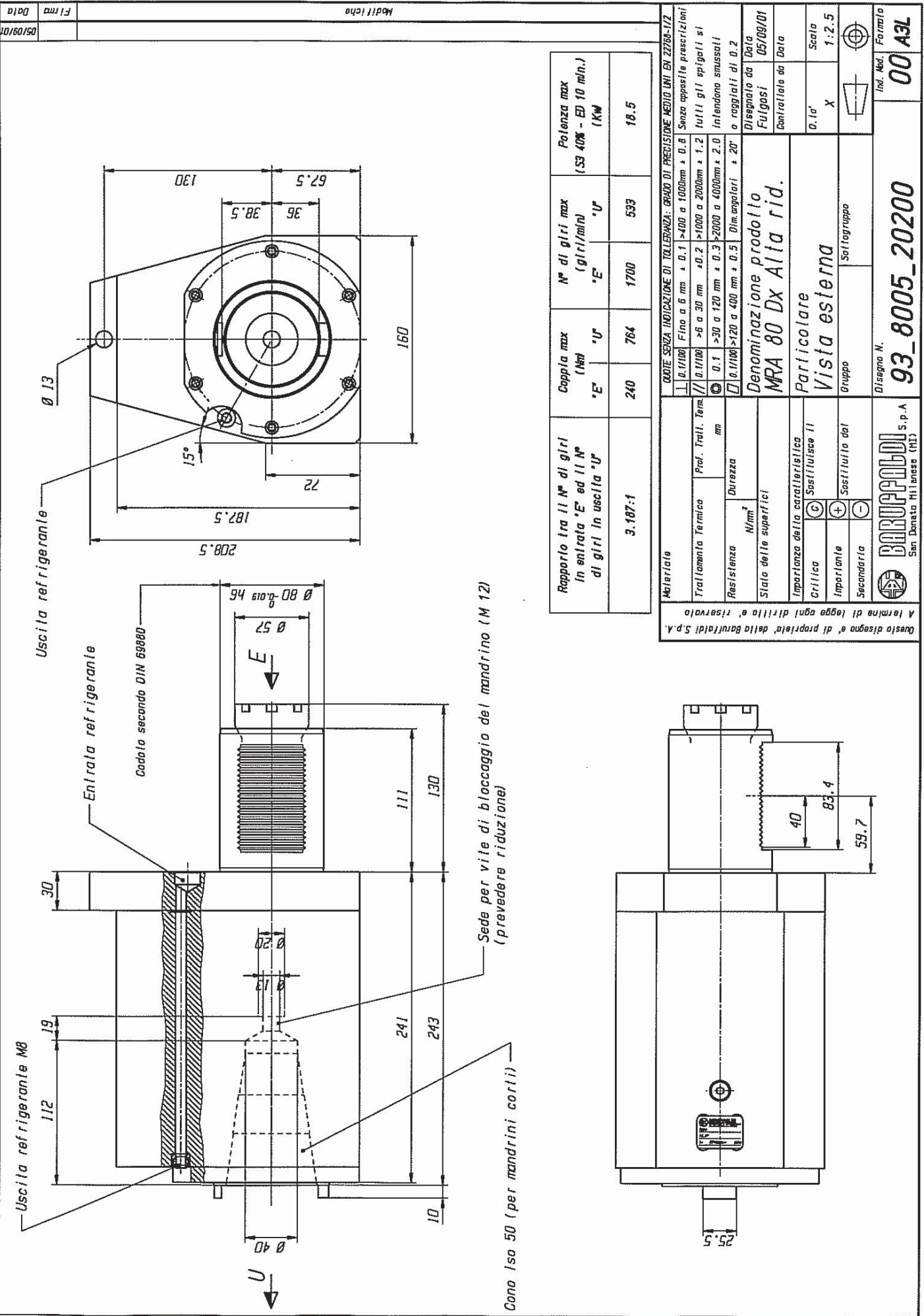
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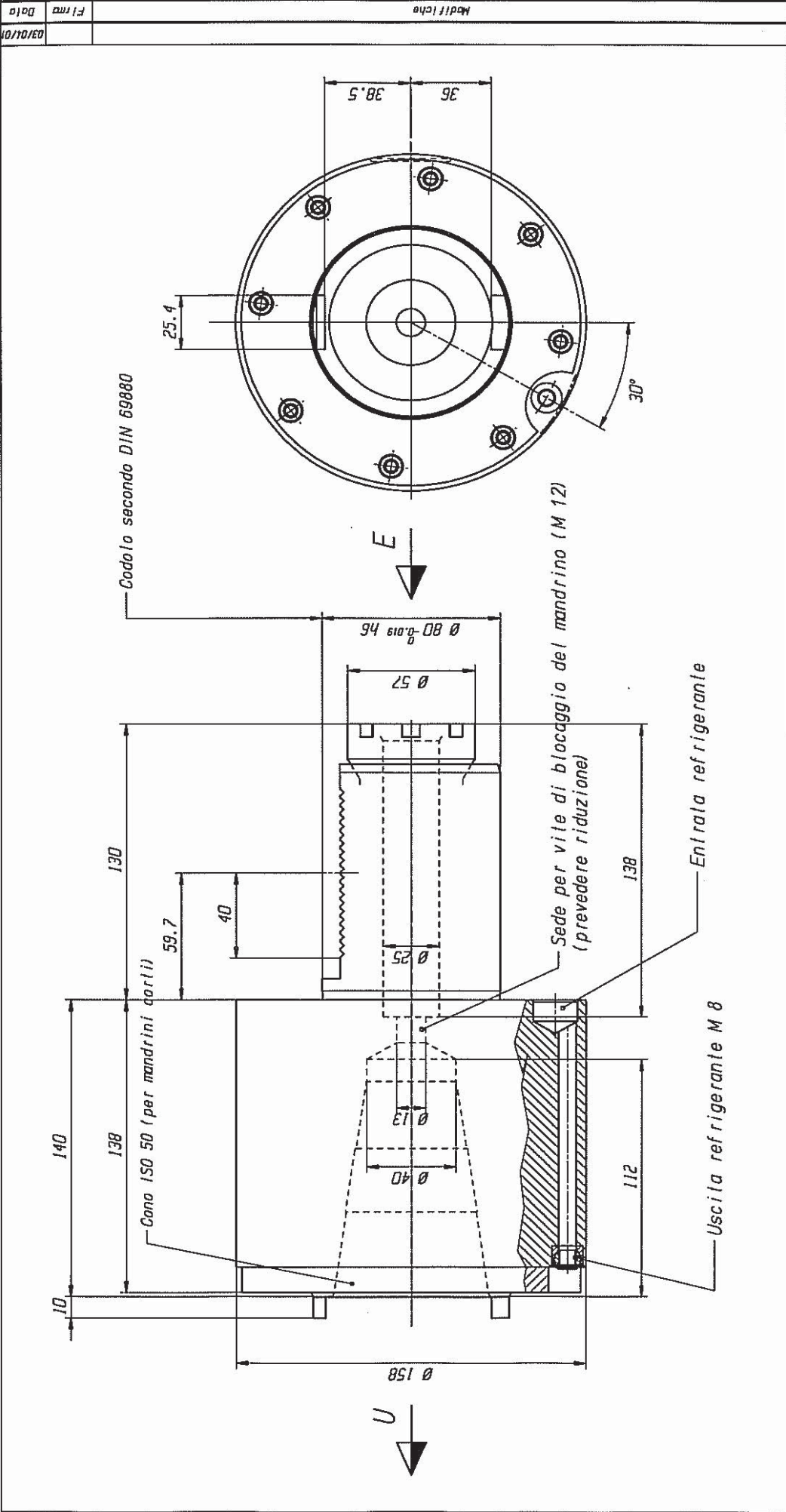
Materiale		Prof. Tratl. Term		mm		Senza apposite prescrizioni tutti gli spigoli si intendono smussati		Senza apposite prescrizioni tutti gli spigoli si intendono smussati	
Resistenza		Durezza		N/mm ²		0.1 >30 a 120 mm ± 0.3 >2000 a 4000mm ± 2.0		0.1 >400 a 1000mm ± 0.8 >1000 a 2000mm ± 1.2	
Stato delle superfici		Importanza della caratteristica		C Sostituisce il		0.1 >100 a 120 a 400 mm ± 0.5 Dim.angolari ± 2.0		0.1 >100 a 120 a 400 mm ± 0.5 Dim.angolari ± 2.0	
Importanza della caratteristica		Critica		Importante		Secondaria		Disegnato da Data Lambiase 10/03/05	
Importante		Sostituito dal		Gruppo		Soll'ingrosso		Controlato da Data	
Secondaria		Importante		Critica		Importante		Controlato da Data	
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Importante		Sostituito dal		Gruppo		Soll'ingrosso		Controlato da Data	
Secondaria		Importante		Critica		Importante		Controlato da Data	
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Secondaria		Importante		Critica		Importante		Controlato da Data	
Importante		Sostituito dal		Gruppo		Soll'ingrosso		Controlato da Data	
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Importante		Sostituito dal		Gruppo		Soll'ingrosso		Controlato da Data	
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Importante		Sostituito dal		Gruppo		Soll'ingrosso		Controlato da Data	
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Importante		Sostituito dal		Gruppo		Soll'ingrosso		Controlato da Data	
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Importante		Sostituito dal		Gruppo		Soll'ingrosso		Controlato da Data	
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Importante		Sostituito dal		Gruppo		Soll'ingrosso		Controlato da Data	
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Importante		Sostituito dal		Gruppo		Soll'ingrosso		Controlato da Data	
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Importante		Sostituito dal		Gruppo		Soll'ingrosso		Controlato da Data	
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Secondaria		Importante		Critica		Importante		Controlato da Data	
Importante									





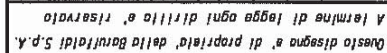
Questo disegno è di proprietà della Baruffaldi S.p.A.		A termine di legge ogni diritto è riservato	
Materiale			
Trattamento Termico		Prof. Tratt. Term. mm	
Resistenza		Durezza	
Stato delle superfici		N/mm ²	
Importanza della caratteristica		Sostituisce il	
Critica		C	
Importante		+	
Secondaria		-	
Gruppo		Sottogruppo	
Particolare		Vista esterna	
Denominazione prodotto		MPA 60	
Disegnato da		Fulgosi	
Data		02/04/01	
Controllato da		Data	
0.1a'		Scala	
X		1:1.5	
			
Ind. Mod.		Formato	
93_6010_20100		00 A3L	



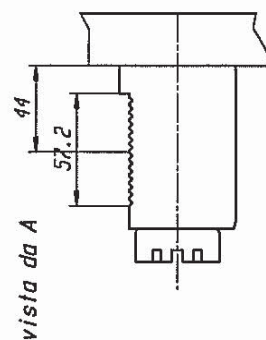


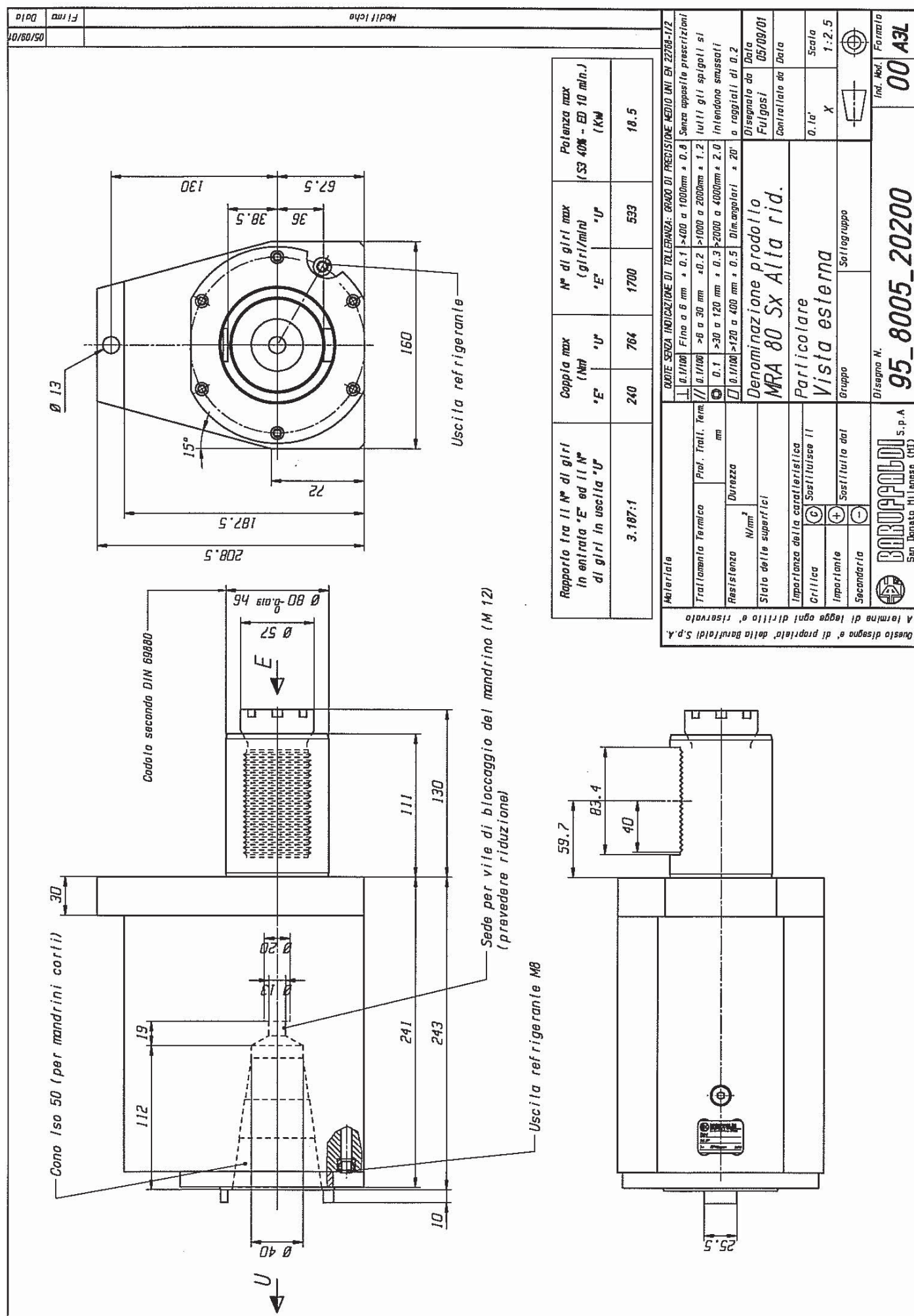
Questo disegno è di proprietà della Baruffaldi S.p.A. A termine di legge ogni diritto è riservato.		Materiale		NOTE SENZA INDICAZIONE DI TOLLERANZA: GRADO DI PRECISIONE MEDIO UNI EN 22768-1/2	
Trattamento termico		Prof. Tratt. Term.		1 0.1/100 Fino a 6 mm ± 0.1 >6 a 30 mm ± 0.2 >30 a 120 mm ± 0.3 >120 a 400 mm ± 0.5	
Resistenza		Durezza		0.1 >0.1 >0.2 >0.3 >0.5	
Stato delle superfici		Durezza		0.1 >0.1 >0.2 >0.3 >0.5	
Importanza della caratteristica		Sostituisce il		Denominazione prodotto	
Critica		Importante		MRA 80	
Importante		Secondaria		Particolare	
Entrata refrigerante		Uscita refrigerante		Vista esterna	
Gruppo		Sottogruppo		Disegnato da	
Scala		0.1		Fulgosi	
1:1.75		X		Controlato da	
Data		03/04/01		Data	
Ind. Mod.		00		Forma	
Disegno N.		93_8010_20100		A3L	
Baruffaldi S.p.A.		San Donato Milanese (MI)			

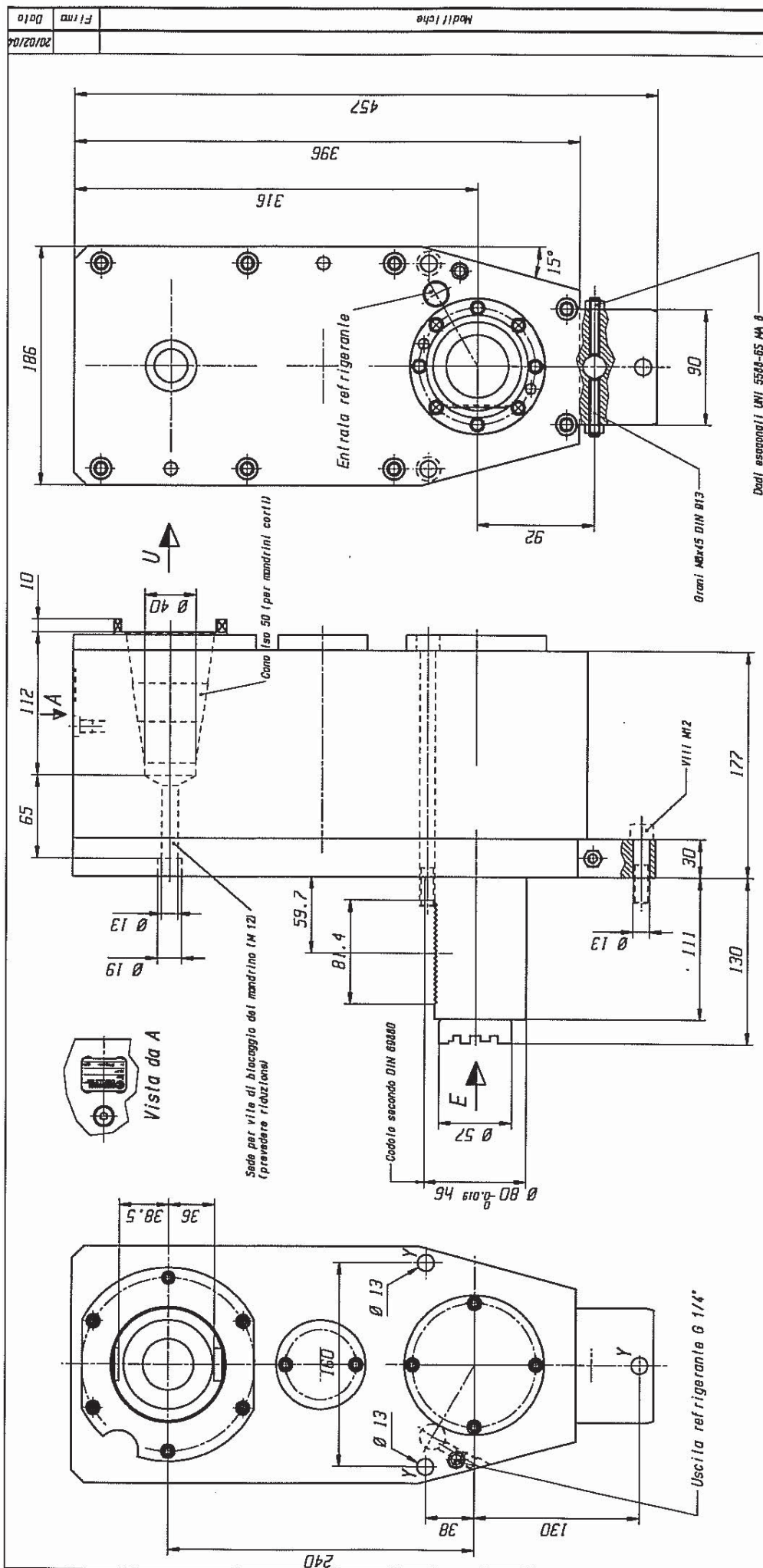




Materiali		Quote senza indicazione di tolleranza: ØDAØ DI PRECISIONE MEDIO UNI EN 22768-1/2																	
Trattamento Termico	Prof. Tratl. Term mm	<table border="1"> <tr> <td>1</td> <td>0.1/100</td> <td>Fino a 8 mm ± 0.1</td> <td>>400 a 1000mm ± 0.8</td> </tr> <tr> <td>2</td> <td>0.1/100</td> <td>>8 a 30 mm ± 0.2</td> <td>>1000 a 2000mm ± 1.2</td> </tr> <tr> <td>3</td> <td>0.1</td> <td>>30 a 120 mm ± 0.3</td> <td>>2000 a 4000mm ± 2.0</td> </tr> <tr> <td>4</td> <td>0.1/100</td> <td>>120 a 400 mm ± 0.5</td> <td>Dim. angolari ± 20</td> </tr> </table>		1	0.1/100	Fino a 8 mm ± 0.1	>400 a 1000mm ± 0.8	2	0.1/100	>8 a 30 mm ± 0.2	>1000 a 2000mm ± 1.2	3	0.1	>30 a 120 mm ± 0.3	>2000 a 4000mm ± 2.0	4	0.1/100	>120 a 400 mm ± 0.5	Dim. angolari ± 20
1	0.1/100	Fino a 8 mm ± 0.1	>400 a 1000mm ± 0.8																
2	0.1/100	>8 a 30 mm ± 0.2	>1000 a 2000mm ± 1.2																
3	0.1	>30 a 120 mm ± 0.3	>2000 a 4000mm ± 2.0																
4	0.1/100	>120 a 400 mm ± 0.5	Dim. angolari ± 20																
Resistenza	Durezza N/mm ²	Disegnata da Data Tronconi 20/04/05 Contratto da Data																	
Stato delle superfici		Particolare Vista esterna Gruppo Sottogruppo																	
Importanza della caratteristica		0.10' Scala 1:2.5																	
Critica	Sostituisce il																		
Importante	Sostituito dal																		
Secondaria		Ind. Mod. Formato 00 A3L																	







"Y" Fori supplementari di fissaggio

A termine di legge ogni diritto è riservato		Questo disegno è di proprietà della Baruffaldi S.p.A.	
		San Donato Milanese (MI)	
BARUFFALDI		S.p.A.	
Disegno N.		95_8010_20500	
Gruppo		Saltingruppo	
Particolare		Vista esterna	
MRA 80		Denominazione prodotto	
Stato della superfici		Durezza	
Resistenza		N/mm ²	
Trattamento Termico		Prof. Tratt. Term.	
Materiali		mm	
0.1		0.1	
0.1/100		0.1/100	
Fino a 6 mm ± 0.1		Fino a 1000mm ± 0.8	
>6 a 30 mm ±0.2		>1000 a 2000mm ± 1.2	
>30 a 120 mm ± 0.3		>2000 a 4000mm ± 2.0	
>120 a 400 mm ± 0.5		Diam. angolari ± 20°	
a raggiati di 0.2		Disegnato da Lambiasi	
Data		20/02/04	
Controllato da		Data	
0.1a		Scala	
X		1:3	
			
Ind. Mod.		Formato	
00		A3L	

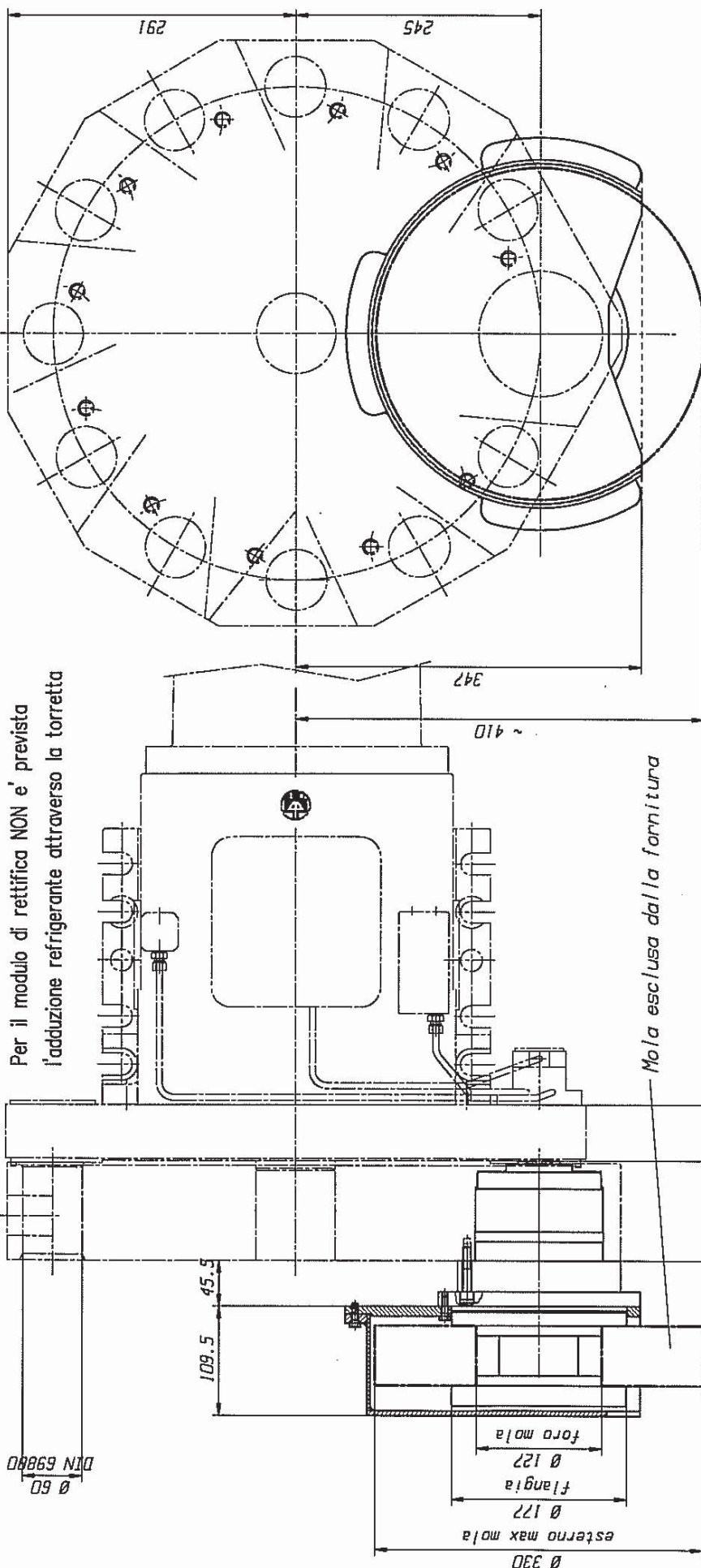
Rapporto tra il N° di giri in entrata "E" ed il N° di giri in uscita "U"	Coppia max (N/m)	N° di giri max (giri/min)	Potenza max (33 40% - ED 10 min.)
1 : 1	240	1700	16.5



Nota

Per il modulo di rettifica NON e' prevista
l'adduzione refrigerante attraverso la torretta

Ø 60
DIN 69880



Applicabile su torretta TBMA 320

Motore azionamento utensili (S3 40% ED-10 min.)

Potenza max: 15 kw; numero giri max: 3000 giri/1'; coppia max 100 Nm

Rapporto di trasmissione (giri motore/giri presa di moto): 1.45:1

(Numero giri max mola: 2050 giri/1')

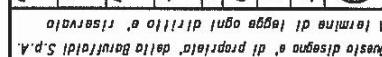
Sedi Ø 60 DIN 69880 utilizzabili sul disco portautensili:

Con modulo di rettifica montato: 9 (tutte motorizzabili)

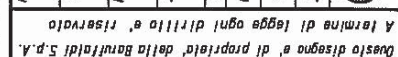
Senza modulo di rettifica: 11 (tutte motorizzabili)

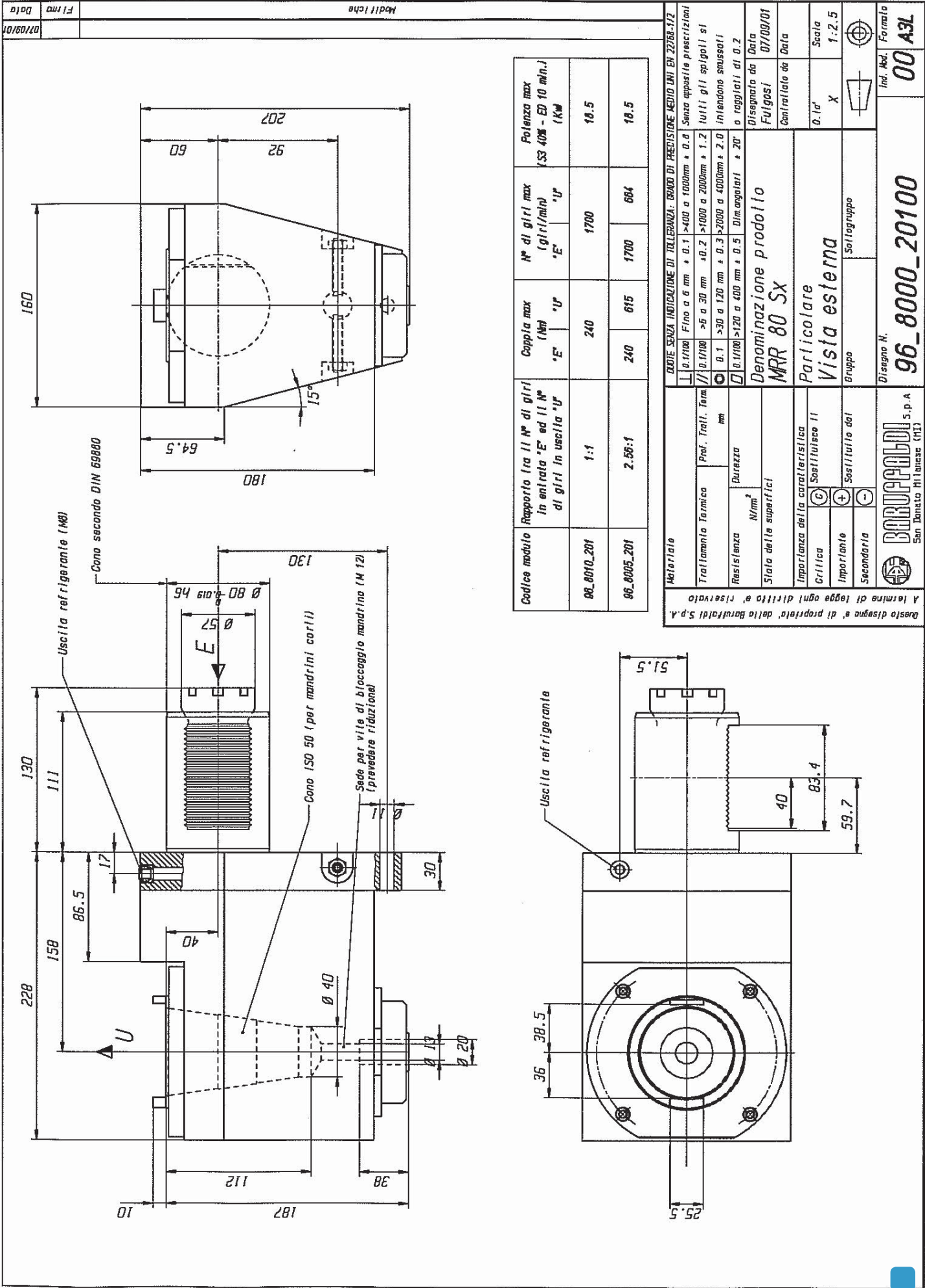
Materiale		NOTE SENZA INDICAZIONE DI Tolleranza: GRADO DI PRECISIONE MEDIO UNI EN 22769-1/2							
Trattamento Termico	Prof. Tratt. Term.	L	0.1/100	Fino a 6 mm	+ 0.1	>400 a 1000mm	+ 0.8	Senza apposite precisazioni	
Resistenza	Durezza	N/mm ²	//	0.1/100	>6 a 30 mm	+ 0.2	>1000 a 2000mm	+ 1.2	tutti gli spigoli si
Stato della superficie			□	0.1/100	>120 a 400 mm	+ 0.5	Dimensionali	+ 20'	a ragliati di 0.2
Importanza della caratteristica		Particolare							
Critica	⊕	Sostituisce il							
Importante	⊕	Sostituito dal							
Secondaria	⊖	Gruppo							
		Catalogo		Sottogruppo					
		Disegno N.		97_6010_80100		Inf. Mod.		00 A3L	
		Disegno N.		97_6010_80100		Inf. Mod.		00 A3L	
		Disegno N.		97_6010_80100		Inf. Mod.		00 A3L	
		Disegno N.		97_6010_80100		Inf. Mod.		00 A3L	
		Disegno N.		97_6010_80100		Inf. Mod.		00 A3L	
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		Disegno N.		97_6010_80100		Inf. Mod.		00 A3L	
		Disegno N.		97_6010_80100		Inf. Mod.		00 A3L	
		Disegno N.		97_6010_80100		Inf. Mod.		00 A3L	
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		Disegno N.		97_6010_80100		Inf. Mod.		00 A3L	
		Disegno N.		97_6010_80100		Inf. Mod.		00 A3L	
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		Disegno N.		97_6010_80100		Inf. Mod.		00 A3L	
		Disegno N.							

Motore azionamento utensili (S3 40% ED-10 min.)
 Potenza max: 18.5 kw; numero giri max: 3000 giri/1'; coppia max 130 Nm
 Rapporto di trasmissione (giri motore/giri presa di moto): 1.85:1
 (Numero giri max mola: 1600 giri/1')
 Sedi ø 80 DIN 69880 utilizzabili sul disco portautensili:
 Con modulo di rettifica montato: 9 (tutte motorizzabili)
 Senza modulo di rettifica: 11 (tutte motorizzabili)









FRONTAL TEETH RINGS GUIDE



端齿盘选型指南



Thoothed 3-ring sets (custom design) 三套式端齿盘 (根据客户设计定制)



In all indexing systems, such as turning tables, revolver turrets, B-Axis units, turn-mill electrospindles and so on, frontal teeth rings are used, in order to achieve high division precision and repeatability, together with extremely high stiffness and load capacities. Baruffaldi has been manufacturing frontal teeth rings for over 40 years, ever since revolver turrets production started in the seventies. Thanks to its long manufacturing experience and design optimization, Baruffaldi offers custom frontal teeth 3-ring units for all devices, designed and produced according to customer specifications and drawings.

Main features

- 3-ring frontal teeth system, no lifting of indexing components
- High precision and positioning repeatability
- Different number of teeth in order to meet customer's division demands
- 20 deg teeth taper, which ensures high rigidity and high loading capacities
- Fully customized, they can replace any 3-ring indexing system previously used

三套式端齿盘

在所有的分度系统中，例如旋转工作台，回转刀架B轴单元，车铣电主轴等，都会使用到端齿盘。BF可追溯到70年代开始生产回转刀架，有着40多年的生产经验，造就了其产品有着高精度和重复定位精度的同时，能够拥有极高的刚性和负载能力。由于长时间的生产经验和优化的设计，BF向客户推出3套式端齿盘可根据客户要求定制。

主要特点

- 三齿盘结构，无旋转部件的抬升
- 高精度以及重复定位精度
- 齿盘的不同齿数可以满足客户对分度的需要
- 20° 的齿锥度可保证高刚性和高负载能力
- 完全根据客户需要定制，可完全替代任何三齿盘结构的端齿盘



Hirth couplings

直齿连接齿盘

On many machine tools, such as vertical lathes and machining centers, it is necessary to provide an extremely stiff and strong system with very high position repeatability, in order to join RAM with different toolings.

Hirth rings are profitably used at this purpose, ensuring a very stiff, strong, precise and stable coupling.

While using them for many years in its own products, Baruffaldi has recently developed technical and production skills, in order to design and produce custom Hirth rings for market demand.

Main features

- High precision and positioning repeatability
- Different number of teeth in order to meet customer's division demands or fit to existing rings
- Full interchangeability with any other compatible Hirth ring on the market
- Fully customizable

很多机床，例如立车和加工中心都会考虑一个系统它必须是极为坚固和强壮的，并且具有极高的重复定位精度，以便更换刀具。

因此，直齿联轴器应运而生，它确保提供非常的坚固强壮和高精度以及稳定的结合。

在多年自己内部使用的同时，BF开始研发新的技术和生产工艺，用以设计和生产能满足市场需求的产品

主要特点

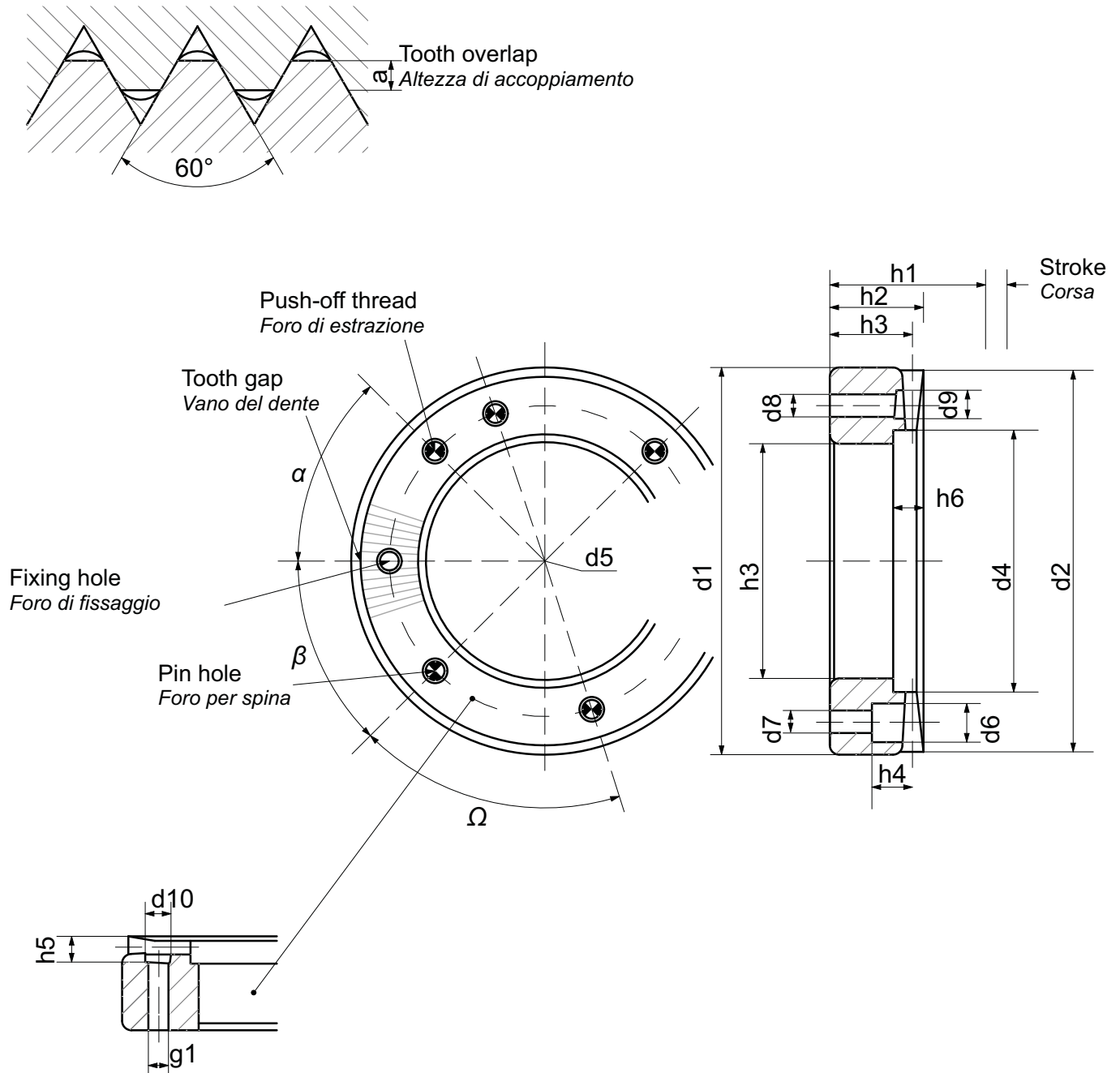
- 高精度以及重复定位精度
- 不同的齿数可以满足客户对分度的需要或应用于现有的齿盘
- 完全和市场上任何竞争产品互换
- 完全根据客户需要定制。





Hirth couplings - technical data

直齿连接齿盘技术参数





	Numero di denti Number of teeth	Corsa di sgancio Disengagement stroke	Altezza accoppiamento Tooth overlap	N° fori di fissaggio Fixing holes	N° fori per spina Pin holes	β	Ω	N° fori di estrazione Push-off thread	α	d2 Ø	d3 Ø h6	d4 Ø	d5 Ø ±0,1	d6 Ø	d7 Ø	d8 Ø	d9 Ø	d10 Ø	g1	h1 ±0,1	h2	h3 ±0,1	h4	h5	h6
ø200	60	4.7	4.5																		19.75				
	72	4.4	4.2																		19.6				
	96	3.4	3.2	6x60°	4	30°	72°	2x180°	30°	199	150	151	175	15	9	7	12	12	M8	35	19.1	17.5	14	6	5
	120	2.8	2.6																		18.8				
	144	2.3	2.1																		18.55				
ø250	60	5.4	5.2																		20.1				
	72	4.6	4.4																		19.7				
	96	3.9	3.7	10x36°	4	54°	72°	2x180°	18°	249	200	201	225	15	9	7	12	12	M8	35	19.4	17.5	13.5	5	5
	120	3.4	3.2																		19.1				
	144	2.8	2.6																		18.8				
	360	1.3	1.1																		18.1				
ø280	120	3.6	3.4																		21.7				
	144	3.1	2.9	10x36°	4	54°	72°	2x180°	18°	279	230	231	255	15	9	7	12	12	M8	40	21.45	20	14	6	5.5
	360	1.4	1.2																		20.6				
ø320	120	4.2	4																		22				
	144	3.6	3.4	10x36°	4	54°	72°	2x180°	18°	319	260	261	290	15	9	7	12	12	M8	40	21.7	20	14.5	6.5	5.5
	180	3	2.8																		21.4				
	360	1.6	1.4																		20.7				
ø360	120	4.6	4.4																		24.7				6
	144	3.9	3.7																		24.35				5
	180	3.3	3.1	10x36°	4	54°	72°	2x180°	18°	359	300	301	330	18	11	9	12	12	M8	45	24.05	22.5	15	6	5
	240	2.5	2.3																		23.65				5
	360	1.8	1.6																		23.3				5
ø400	120	4.7	4.5																		24.75				6
	144	4.5	4.3																		24.65				5
	180	3.6	3.4	10x36°	4	54°	72°	2x180°	18°	399	340	341	370	18	11	9	12	12	M8	45	24.2	22.5	15	6	5
	240	2.7	2.5																		23.75				5
	360	2	1.8																		23.4				5

In addition to the standard series, Baruffaldi can also provide customized rings
Please contact us for any details
+39 02 906090 - info.mtc@baruffaldi.it

Su richiesta, oltre alla serie standard, la baruffaldi è in grado di fornire anche corone personalizzate
Per informazioni contattaci
+39 20 906090 - info.mtc@baruffaldi.it



Worldwide sales and service organization

全球销售及服务机构



Baruffaldi has developed a sales and service organisation all over the world.
Furthermore, thanks to a net of agents and distributors, it is ensured a direct contact in many nations.



苏美自动化
Sumei Automation



UCIMU-SISTEMI PER PRODURRE



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The technical data, dimensions and weight are subject to change without notice. The illustrations are for reference only.

所有技术参数，外形尺寸重量等如有变化恕不另行通知。插图仅供参考。中文翻译仅供参考，以英文为准！

Designed by Manuel Romeo