



BARUFFALDI
MACHINE TOOL COMPONENTS

High precision mechanical
industry development



since 1927

**Torretta assiale ad utensili rotanti
serie TBMA
per portautensili a norme DIN 69880**

**Axial driven tools turrets
type TBMA
for tool-holders as per DIN norms 69880**

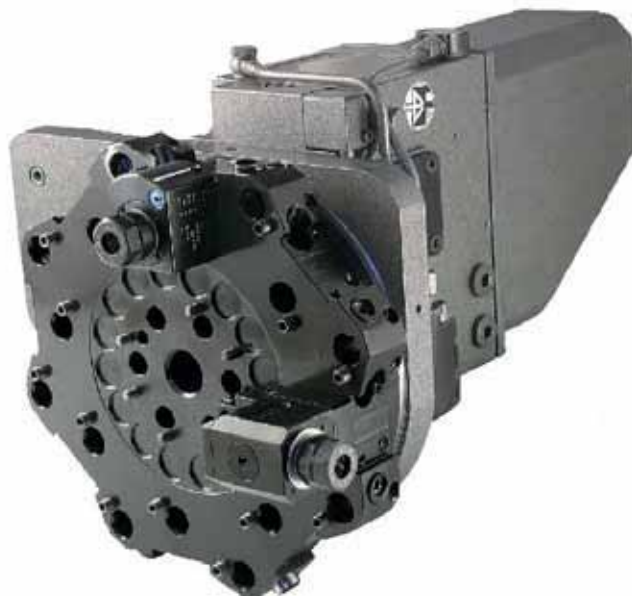


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Introduzione Introduction



Torrette ad utensili rotanti con motorizzazione esterna modulare.

Si applica esternamente alla torretta TB standard, gira solo l'utensile interessato alla lavorazione.

Innesto automatico, senza perdita di tempo, dell'utensile rotante in posizione di lavoro (non sono necessari orientamenti dell'albero del modulo né prima né dopo l'indexaggio della torretta - RISPARMIO TEMPI MORTI).

Utilizzo di dischi a norme DIN 69880.

In tutte le posizioni è possibile montare indifferentemente un utensile rotante o fisso.

Ingombri del sistema di motorizzazione contenuti, tali da non limitare il campo di lavoro del tornio.

Turrets with rotating tools with external modular driven tool system.

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.

Caratteristiche principali:

- Alta velocità di rotazione e tempi minimi indexaggio
- Apertura e chiusura senza movimenti assiali
- Rotazione bidirezionale
- Torretta e presa di moto lubrificata ad olio
- Doppio proximity per il controllo dell'innesto
- Alta rigidità grazie al nuovo design
- Posizionamento assoluto
- Posizionamento molto accurato
- Facile manutenzione
- Ampia gamma 120, 160, 200, 250, 320, 400
- Possibilità di utilizzare dischi 8-12-16-24 posizioni

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 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*



Grandezza Size			TBMA 100	TBMA 120	TBMA 160	TBMA 200	TBMA 250	TBMA 320	TBMA 400
N° di stazioni 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
Momento d'inerzia 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
Massima coppia tangenziale Max Tangential torque	Nm		450	1100	1900	4000	7500	16000	26000
Massima coppia ribaltante a premere Max Overturning Torque in Pressing Direction	Nm		400	1200	2100	6000	12000	25000	41400
Massima coppia ribaltante a sollevare Max Overturning Torque in Lifting Direction	Nm		150	700	1600	3500	6500	13000	20000
Massima coppia di sbilanciamento Max out of balance torque	Nm		3	10	15	40	60	160	470
Precisione di posizione Positioning accuracy	Gradi Deg.		± 4"	± 4"	± 4"	± 4"	± 4"	± 4"	± 4"
Precisione di ripetibilità Accuracy of Repeatability	Gradi Deg.		± 1,6"	± 1,6"	± 1,6"	± 1,6"	± 1,6"	± 1,6"	± 1,6"
Tempo di posizionamento 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
Tempo di sbloccaggio* Unlocking time*	sec		0,1	0,1	0,1	0,12	0,12	0,6	0,6
Tempo di bloccaggio* Locking time*	sec		0,1	0,1	0,1	0,12	0,12	0,6	0,6

* Versione standard.

Standard version.

Dati tecnici motorizzazione									
Technical data power tools									
Dimensione gambo portautensile		mm	16 - 20	20	30	40	50	60	80
Toolholder shaft size									
Coppia massima Motore		Nm	10	16	16	50	50	100	130
Max. Torque at the motor									
Potenza massima motore		Kw	3	5	5	9	9	15	18,5
Max. Power									
Numero di giri massimo motore		g/min	6000	6000	6000	5000	5000	3000	3000
Max. Motor speed		RPM							
Rapporto di trasmissione	In diretta	Direct	1:1	1:1	1:1	1:1	1:1	1:1	1:1
	Ratio: RPM motor / RPM take power								
		In riduzione	Reduction	-	-	1,25	1,315	1,52	1,45
								1,85	
Peso totale della torretta		Kg		60	80	140	170	426	500
Turret's total weight									
Versione disponibile	Pneumatica	Pneumatic	•	•	•	•	•		
	Idraulica	Hydraulic		•	•	•	•	•	•
Pressione di lavoro	Bar	Pneumatica	Pneumatic (standard)				5 ± 1		
		Idraulica	Hydraulic (optional)				30 ± 3		
Working pressure									



Codice per l'ordinazione delle torrette serie TB

Order code for turrets Type TB

Grandezza	codice
Size	code
TBMA 120	0120
TBMA 160	0160
TBMA 200	0200
TBMA 250	0250
TBMA 320	0320
TBMA400	0400

Numero di stazioni	codice
No. of division	code
8/12	0
8	1
12	2
16	3
24	5

Azionamento	codice
Servo amplifier control unit	code
Azionamento e motore standard BF	0
Motor and drive standard BF	
Senza azionamento predisposta per motore Siemens 1FK7 - 042	2
Without drive preset for motor Siemens 1FK7 - 042	
Senza azionamento predisposta per motore Fanuc M3 e alpha 4HV (servo)	3
Without drive preset for motor Fanuc M3 and alpha 4HV (servo)	
Senza azionamento e motore torretta	4
Without servo and motor for turret	



Disco portautensili	Cod
Tool holder disc	*
su richiesta, in base alle specifiche, verrà assegnata una lettera	
On request, based on the specifications, a letter will be assigned	

Costruttore del motore per utensili rotanti	Cod
Manufacturer of the motor for the rotating tools	*

Tipo di motore per utensili rotanti	Cod
Motor type for rotating tools	*

Applicazione verticale verso il basso	Cod
Application vertical down	G

In base ai dati forniti dal cliente la Baruffaldi assegnerà il codice	
Based on the data provided by the customer Baruffaldi will supply the code	

Attuatore	Cod
Actuator	
Pneumatico	0
Pneumatic	
Iidraulico	1
Hydraulic	

Tipo di albero	cod
Shaft Type	
Albero liscio	0
Motor shaft without key	
Albero con chiave	1
Motor shaft with key	
Albero conico	2
conic shaft	

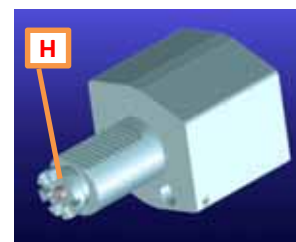
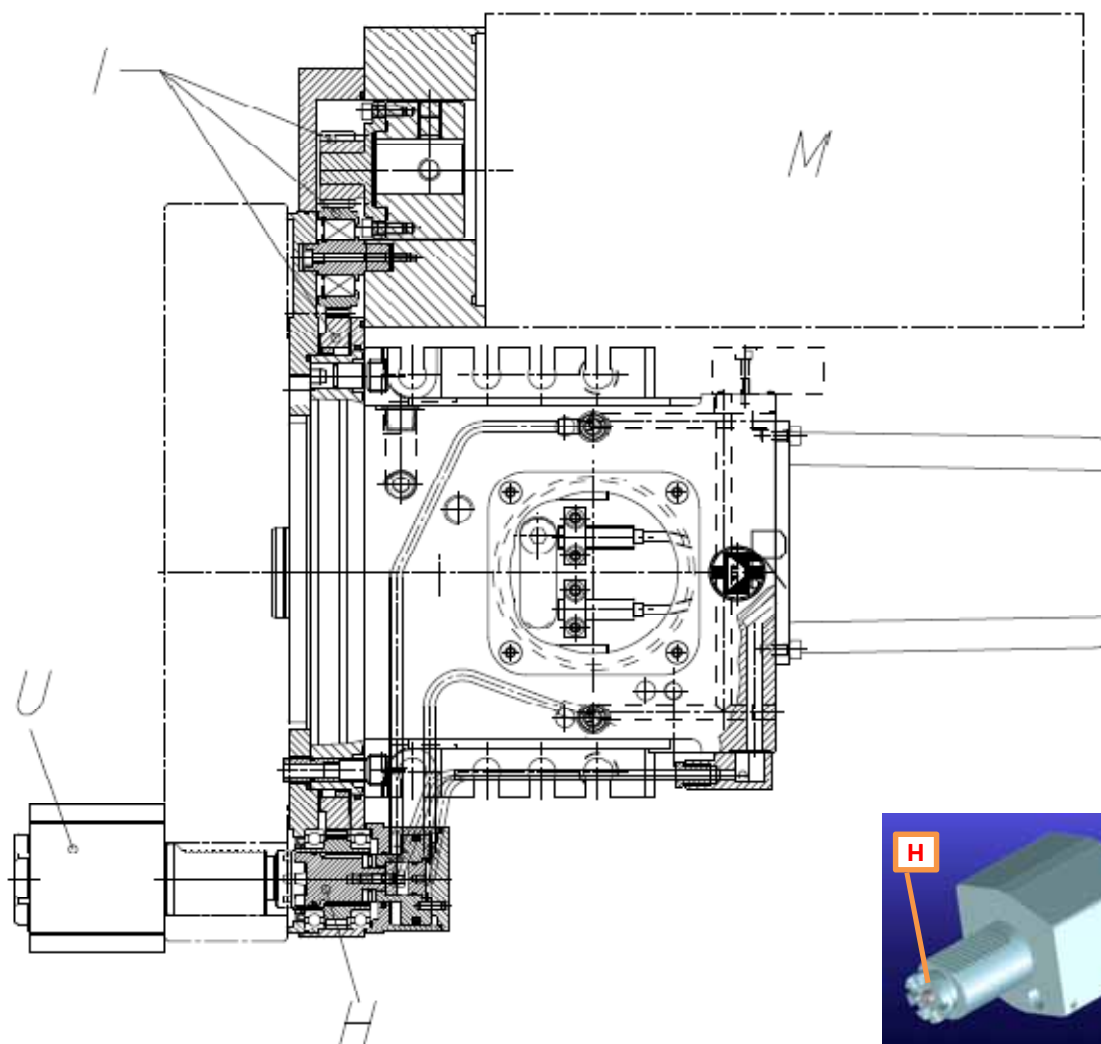
Rapporto di trasmissione	Cod
(Rpm motore / Rpm presa di moto)	
Ratio	
(Rpm motor / Rpm take power)	
1:1	1
Ridotta	2
Reduction	
vedi dati tecnici	
see technical data	

Specifiche della versione	Cod
Version specifications	
Fare riferimento ai disegni	
refer to the drawing	
Su richiesta sono disponibili ulteriori versioni	*
contattare l'ufficio vendite	
On demand are available further versions	
contact the sales office	



Trasmissione esterna del moto con sistema di motorizzazione modulare

External power transmission with modular power system



PRINCIPIO DI FUNZIONAMENTO

La trasmissione del moto dal motore **M** all'utensile rotante **U** avviene tramite una catena d'ingranaggi **I** e un innesto frontale tipo Hirth **H**.

L'imbocco con l'utensile rotante **U** (gambo a norme din 69880) avviene automaticamente durante la fase di bloccaggio della torretta.

Nella fase di cambio stazione della torretta l'innesto è svincolato automaticamente permettendo la rotazione del disco portautensili.

***H** Innesto tramite dentature frontali di notevole diametro, precaricate e senza gioco, che rendono possibile lavori gravosi di fresatura

La Baruffaldi offre inoltre una serie di accessori, che permette l'acquisto di pacchetti completi, garantiti ed economici. Come ad esempio moduli rotanti e dischi portautensili . Non esitate a contattare l'ufficio vendite.

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





Ciclo di comando motore per utensili rotanti

Command cycle for the rotating tool drive motor

Nelle torrette della serie TBMA rimane naturalmente tutto invariato per quanto riguarda il ciclo di posizionamento della torretta (vedi torretta TB).

Quando è richiesta una posizione con utensile motorizzato, è necessario far ruotare la presa di moto degli utensili rotanti ad una velocità di circa 500 giri/min, per facilitare l'innesto della presa di moto.

Per i tempi di cambio stazione fare riferimento al catalogo torrette TB .

Ciclo torretta

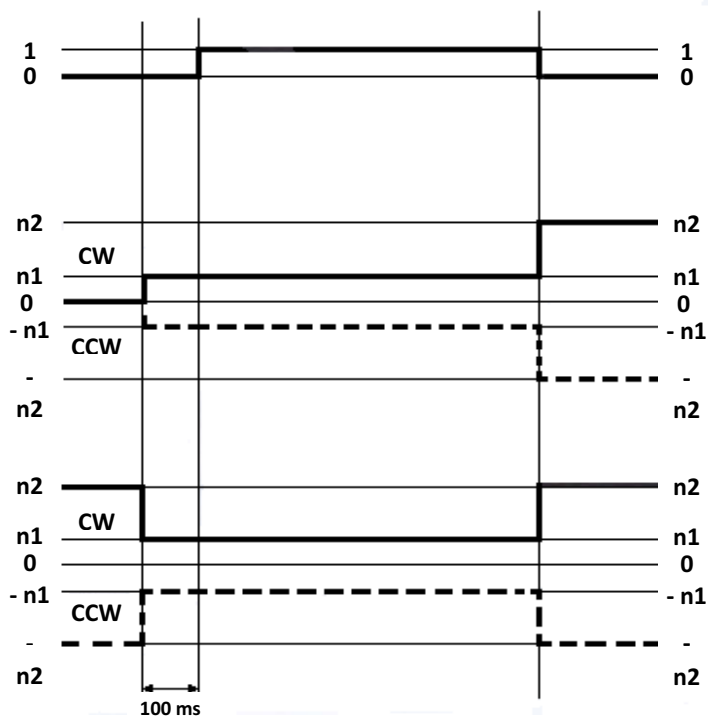
Turret index cycle

Comando motore con partenza da posizione con utensile fisso e arrivo in posizione con utensile rotante.

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

Comando motore con partenza da posizione con utensile rotante e arrivo in posizione con utensile rotante.

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



n1/ -n1 = Velocità di rotazione presa di moto per cambio di posizione (500 g/min)
n1/ -n1 = R.P.M. of the clutch during turret indexing (500 R.P.M.)

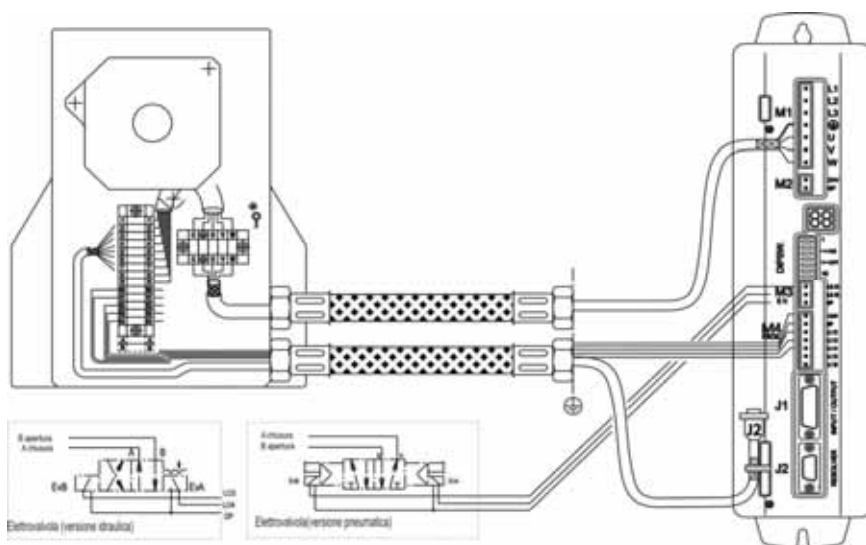
n2/ -n2 = Velocità di lavoro con utensili rotanti
n2/ -n2 = Working R.P.M. of drive motor

La serie di torrette TB è fornita con un nuovo azionamento di ultima generazione, estremamente stabile e sofisticato.

- Questo nuovo azionamento permette il controllo remoto della torretta
- Attraverso un display segnala costantemente :
- Il voltaggio dell'azionamento (24Vcc)
- La posizione attuale della torretta
- Oltre 25 allarmi attivati
- Possibilità di trovare facilmente eventuali
- Feedback di posizione

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

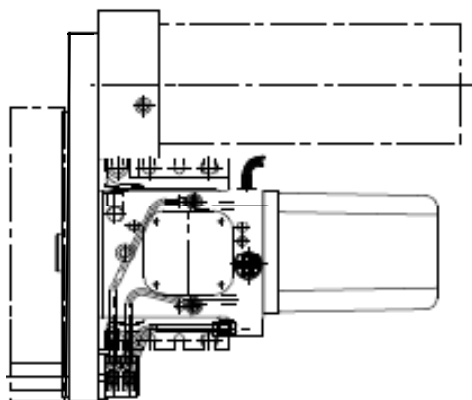


Per i collegamenti fare riferimento al manuale di istruzione elettrico
DMS08-BF

For the connection refer to electrical instruction drive manual
DMS08-BF

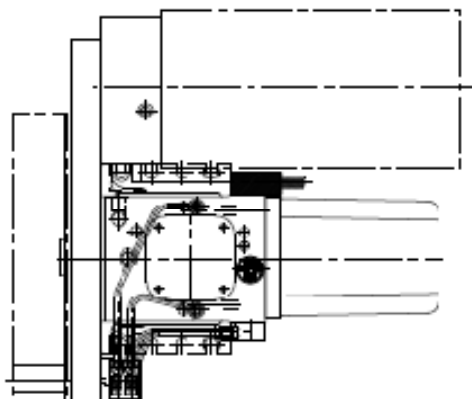


Schema uscita cavi Cable outlet plan



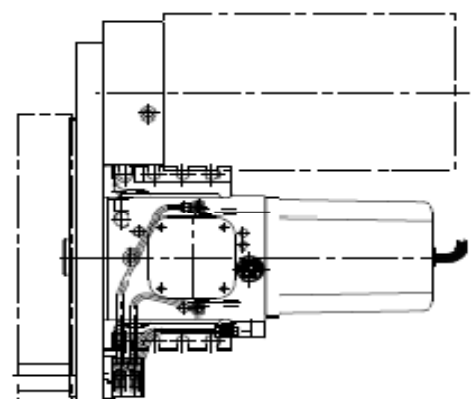
Uscita cavi standard
Standard cables outlet

*



Uscita cavi con blocchetto
Cable outlet with bolck

•



Uscita cavi con coperchio posteriore
Cable outlet from rear cover

~

Torretta Turret	Interasse Pitch diameter	Esempio di motore Motor type example	Uscita 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)	*



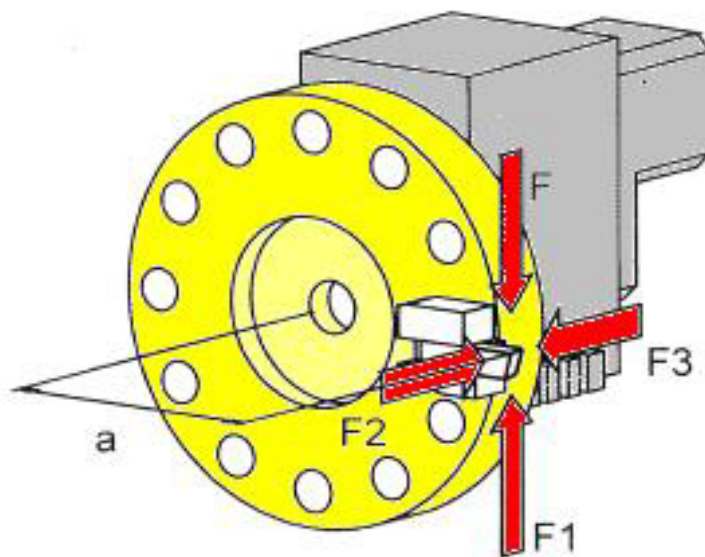
Sceita della torretta Selection of turret

I diagrammi di seguito si riferiscono alle forze applicate al disco porta-utensili.
Per una verifica sulle capacità di carico dei portautensili fissi e rotanti, fare riferimento ai dati tecnici forniti dai rispettivi costruttori.
Per le condizioni operative della torretta e degli utensili rotanti fare riferimento alla sezione "dati tecnici" - "motorizzazione" pag. 4

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

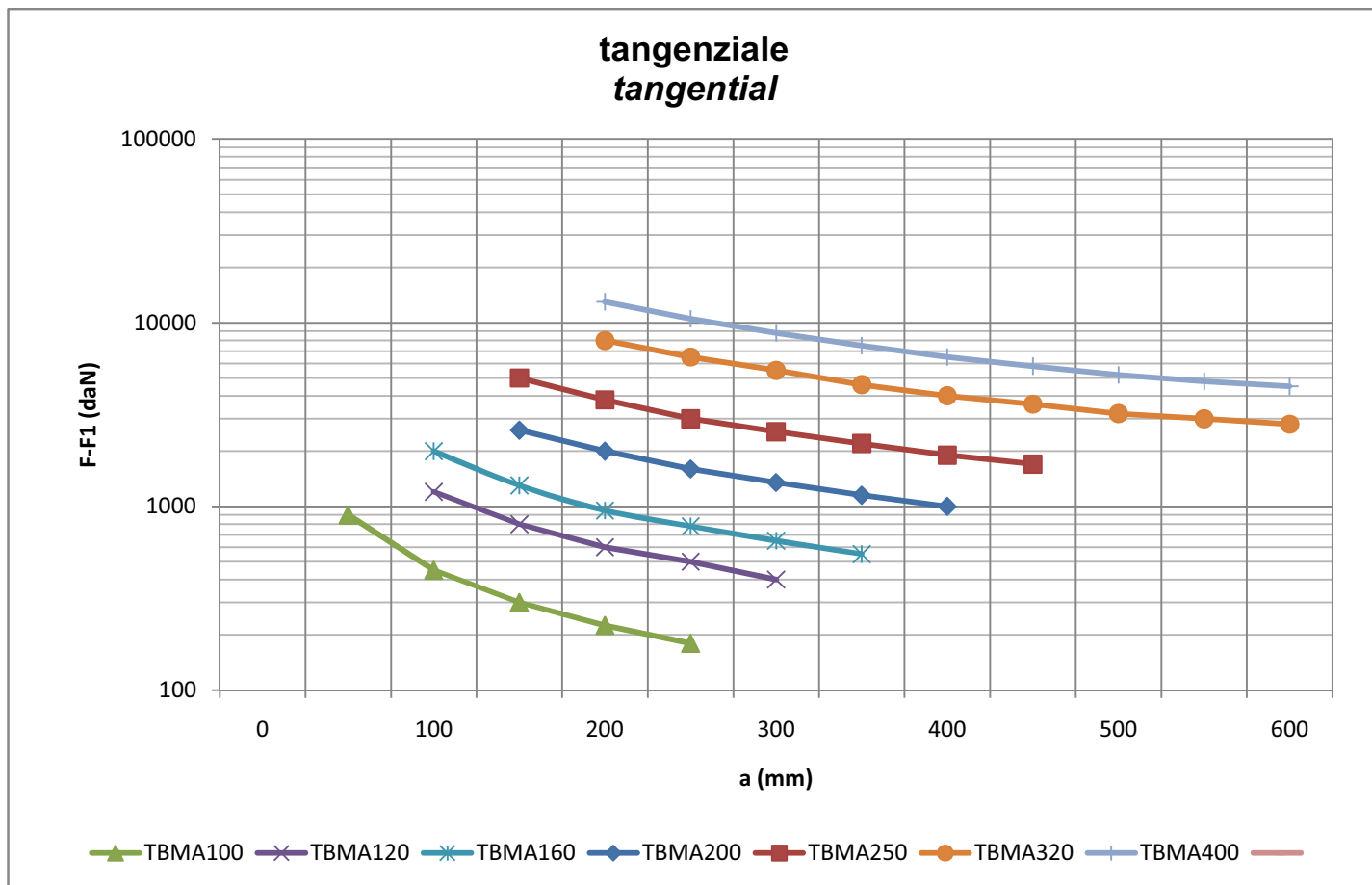
For loading capacity of static and driven tool-holders please refer to manufacturer's data sheet.

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



In funzione delle spinte tangenziali F-F1

As a function of the tangential thrust F-F1

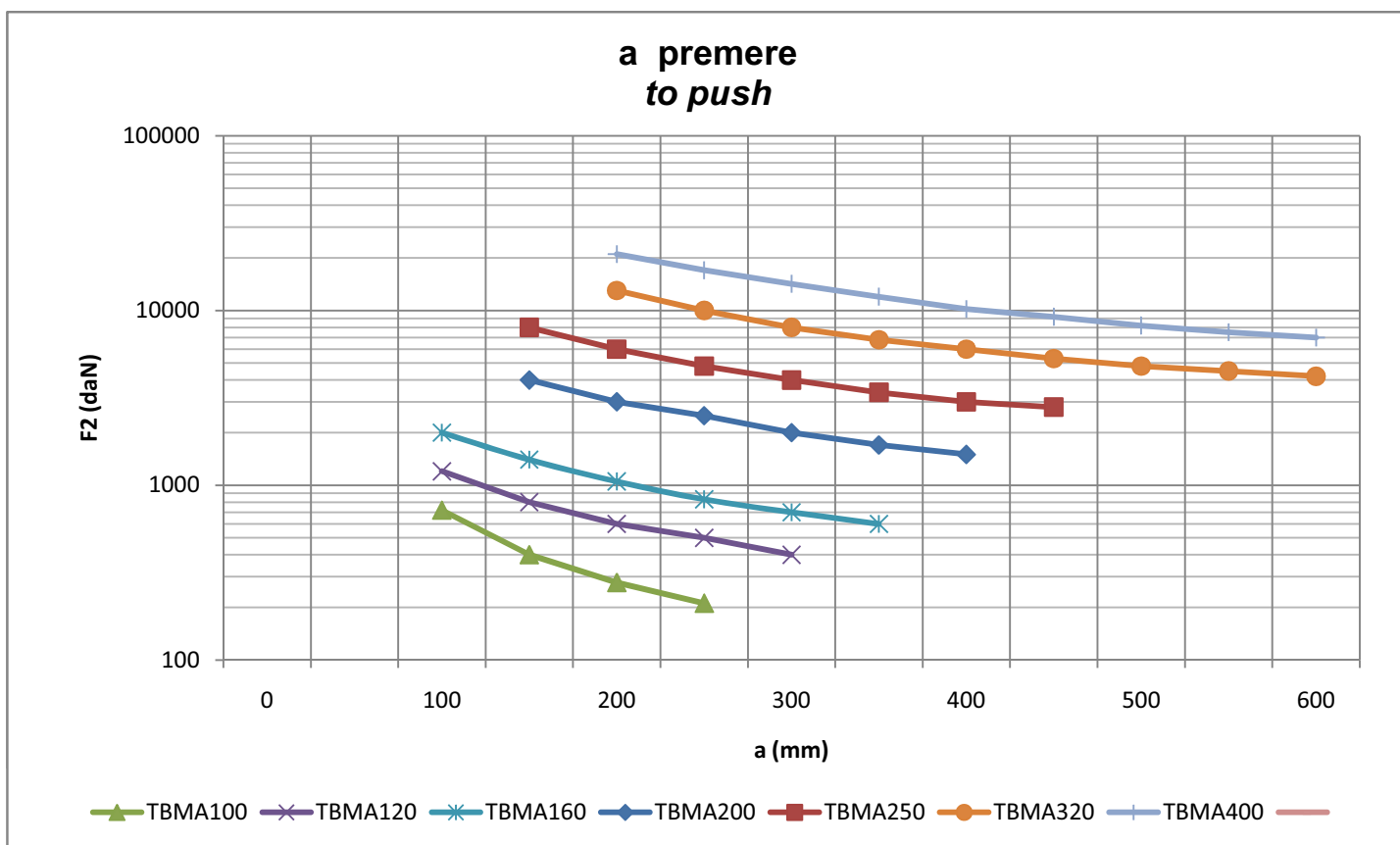




Scelta della torretta Selection of turret

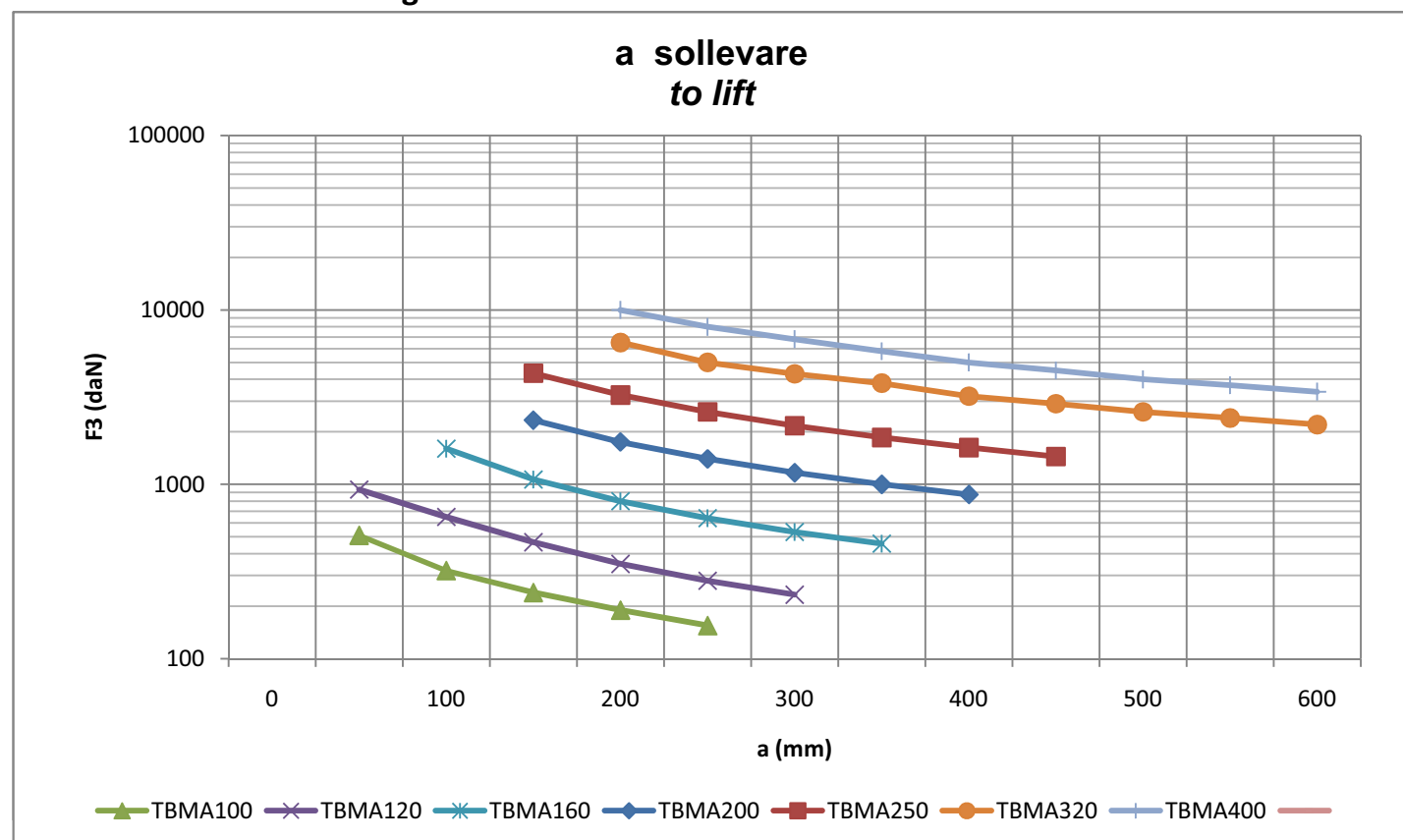
In funzione delle spinte assiali a premere F2

As a function of the pressing axial thrust F2



In funzione delle spinte assiali a sollevare F3

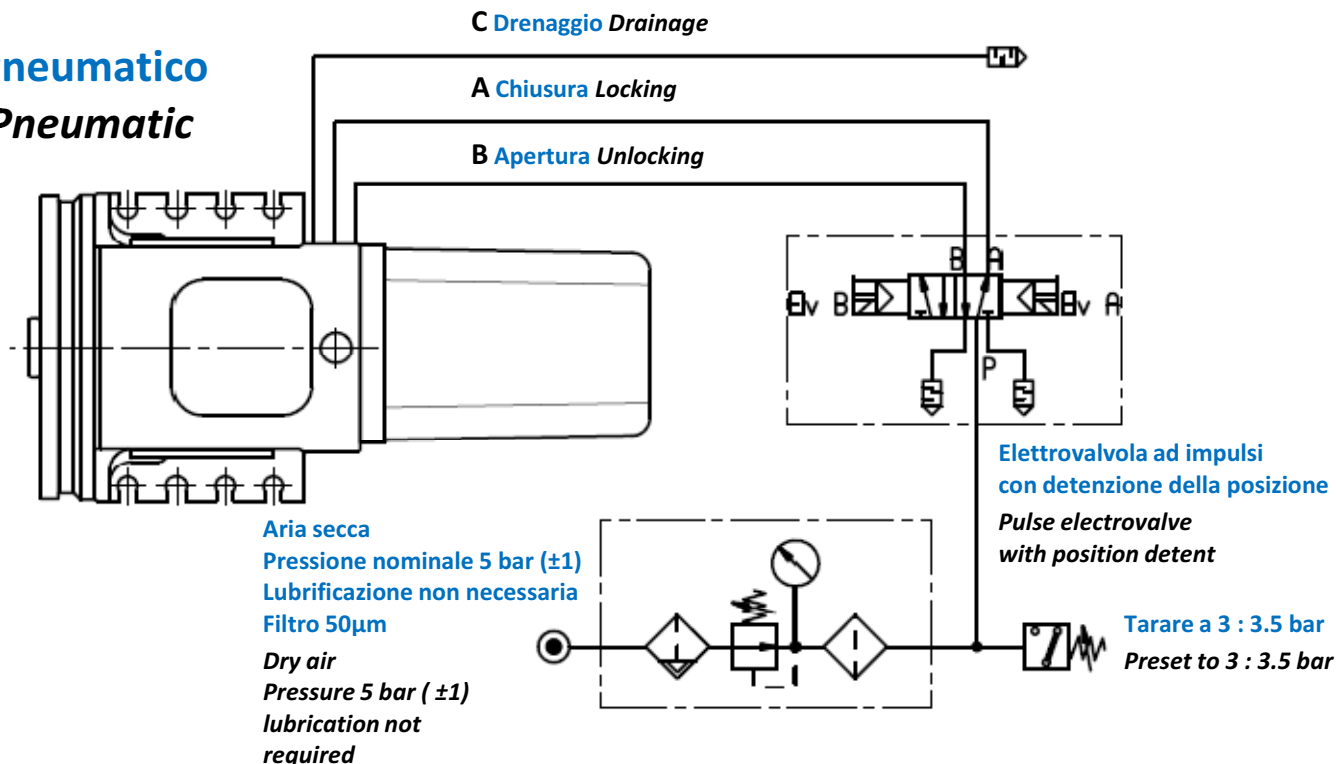
As a function of the lifting axial thrust F3



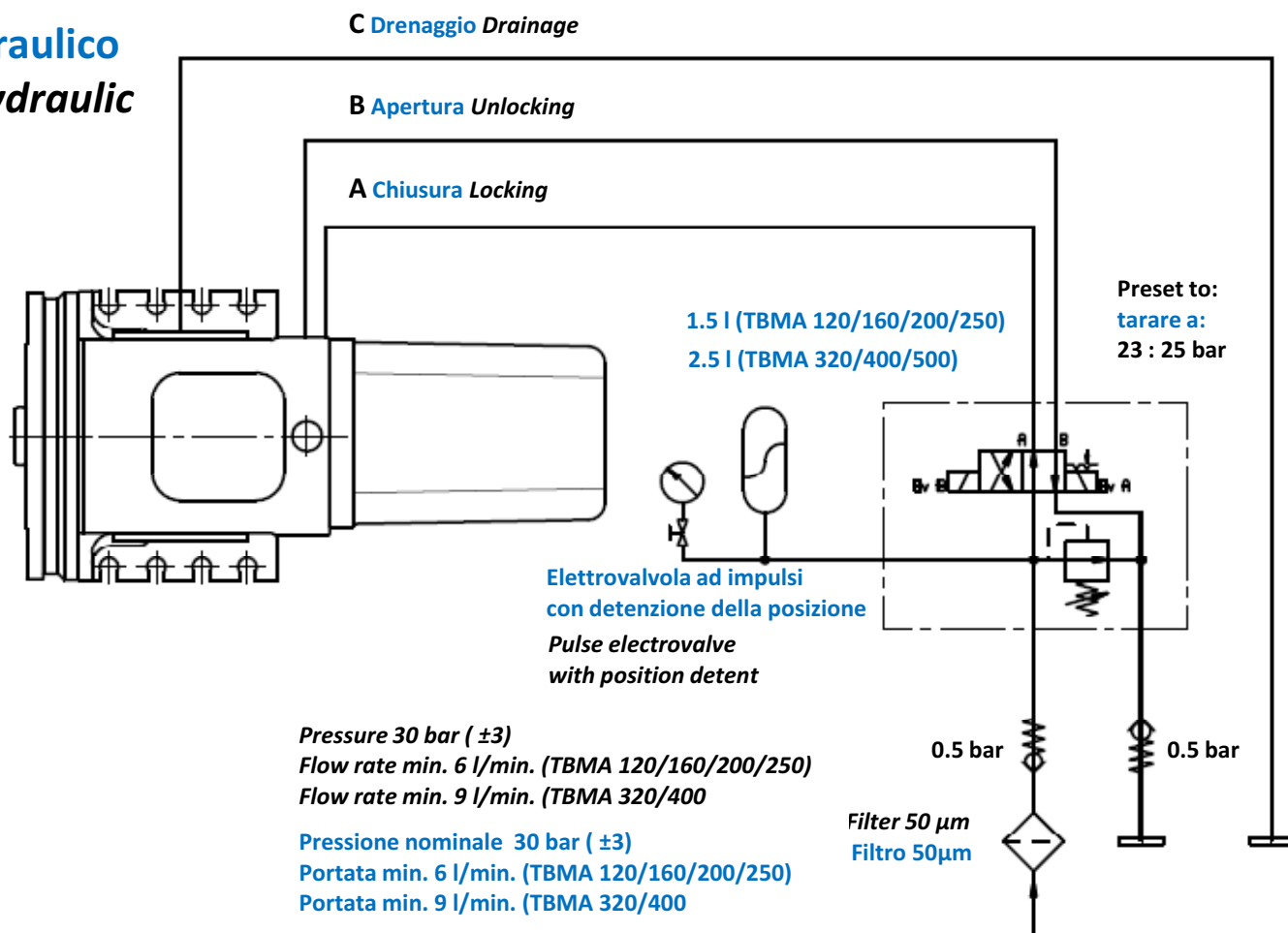


Schema funzionale Functional diagram

Pneumatico Pneumatic



Idraulico Hydraulic



Volume di olio richiesto Required oil volume	TBMA120 TBMA 160	TBMA 200 TBMA 250	TBMA 320 TBMA 400
chiusura / Locking (cm ³)	22,6	39,4	215
Apertura / Unlocking (cm ³)	22,6	39,4	215

- Per una risposta più immediata dell'attuatore di bloccaggio/sbloccaggio si consiglia di posizionare l'elettrovalvola nelle immediate vicinanze della torretta.
- For a more immediate answer of loching/unlocking piston, we advise to position the valve very near to the turret



Collegamento Idraulico/Pneumatico Hydraulic/Pneumatic connections

TBMA

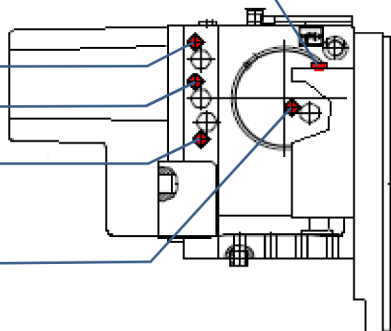
120/160/200/250

Collegamento Idraulico-pneumatico
Hydraulic-pneumatic connection

Tubi collegati sul fianco della
torretta
Pipes connected on the side of
the turret

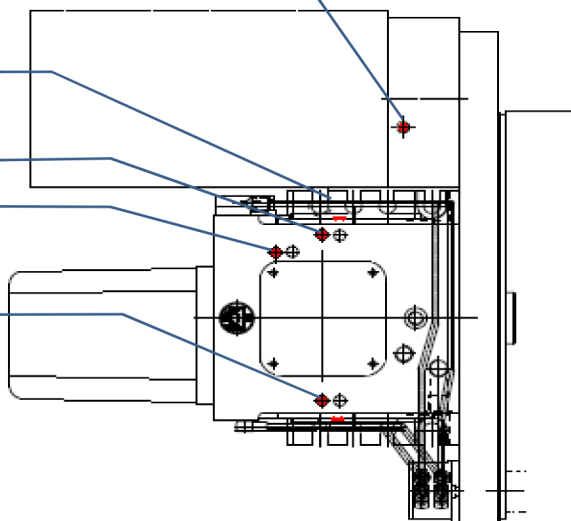
Torretta impiegata con lato
di lavoro destro
Turret used on right working
side

- C1** Drenaggio Drainage 1/8" Gas
- A** Chiusura Locking 1/8" Gas
- B** Apertura Unlocking 1/8" Gas
- C** Drenaggio Drainage 1/8" Gas
* Pneumatica Pneumatic
- C** Drenaggio Drainage 1/8" Gas
* Idraulica Hydraulic



Torretta impiegata con lato
di lavoro Sinistro
Turret used on left working
side

- C1** Drenaggio Drainage 1/8" Gas
- C** Drenaggio Drainage 1/8" Gas
* Idraulica Hydraulic
- A** Chiusura Locking 1/8" Gas
- C** Drenaggio Drainage 1/8" Gas
* Pneumatica Pneumatic
- B** Apertura Unlocking 1/8" Gas



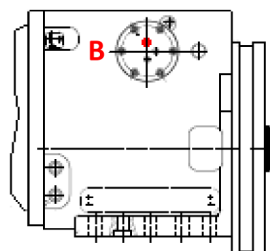
Tubi collegati sul
piano superiore
della torretta
Pipes connected on
the top of the turret



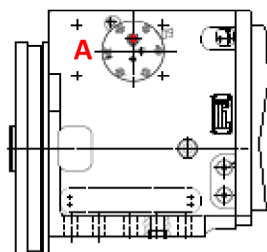
Utilizzare tubi con un diametro interno
minimo di 6 mm

TBMA 320/400/500

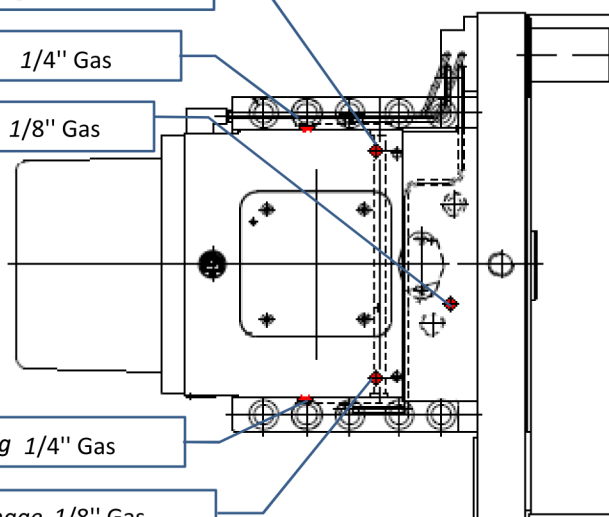
Disponibile solo con collegamento Idraulico
Available only with hydraulic connection



Tubi collegati sui lati e sul
piano della torretta
Pipes connected on the side
and on the top of the turret



- C** Drenaggio Drainage 1/8" Gas
- A** Chiusura Locking 1/4" Gas
- C1** Drenaggio Drainage 1/8" Gas



- B** Apertura Unlocking 1/4" Gas
- C** Drenaggio Drainage 1/8" Gas

Utilizzare tubi con un diametro interno minimo di 8mm
Use internal diameter pipe 8mm minimum



Collegamento alimentazione liquido refrigerante *feedings connections of the coolant*

TBMA 120/160/200/250

Il tubo di alimentazione del refrigerante può essere collegato ad uno dei seguenti fori :

1b-1c-1d (gli altri dovranno essere tappati)

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

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

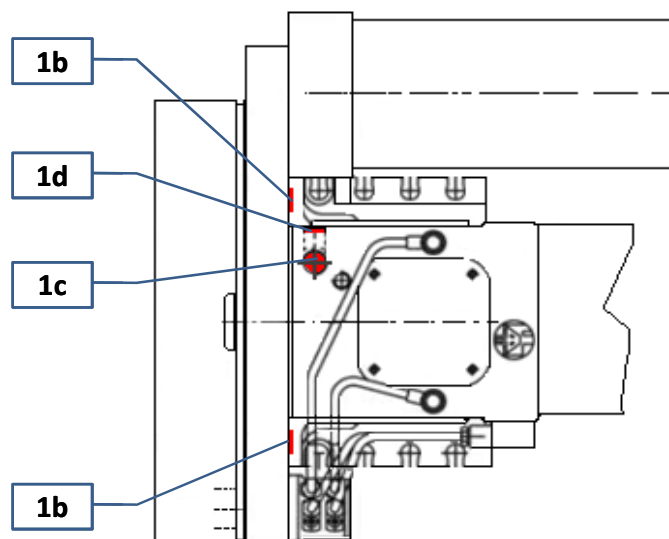
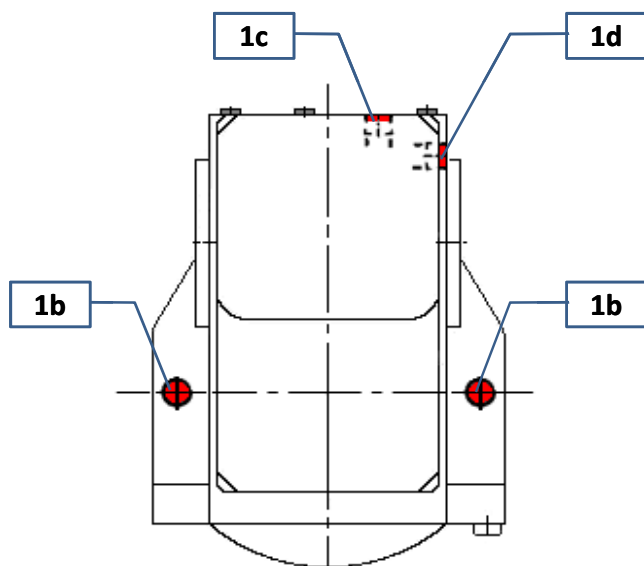
1b-1c-1d

TBMA 120 1/4" Gas

TBMA 160 3/8" Gas

TBMA 200 3/8" Gas

TBMA 250 1/2" Gas



TBMA 320/400

Il tubo di alimentazione del refrigerante può essere collegato ad uno dei seguenti fori :

1b-1c (gli altri dovranno essere tappati)

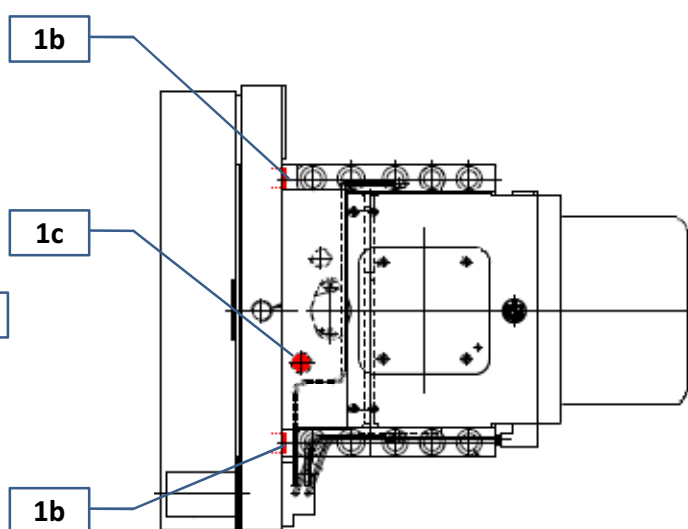
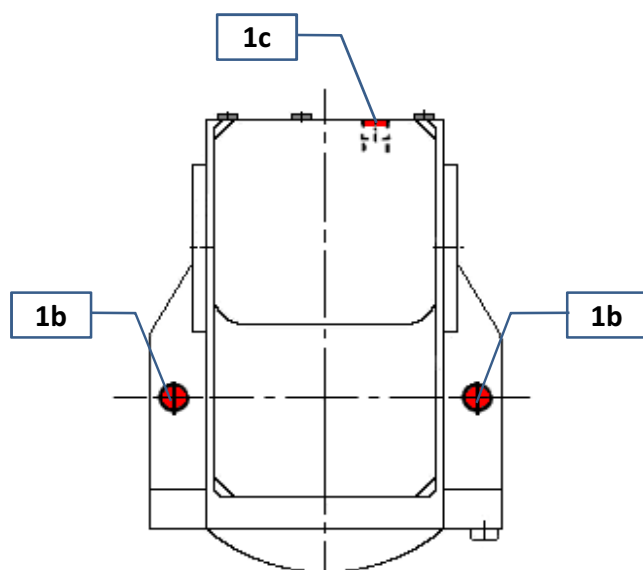
Coolant inlet pipe to be connected to one one of the following holes:

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

1b-1c

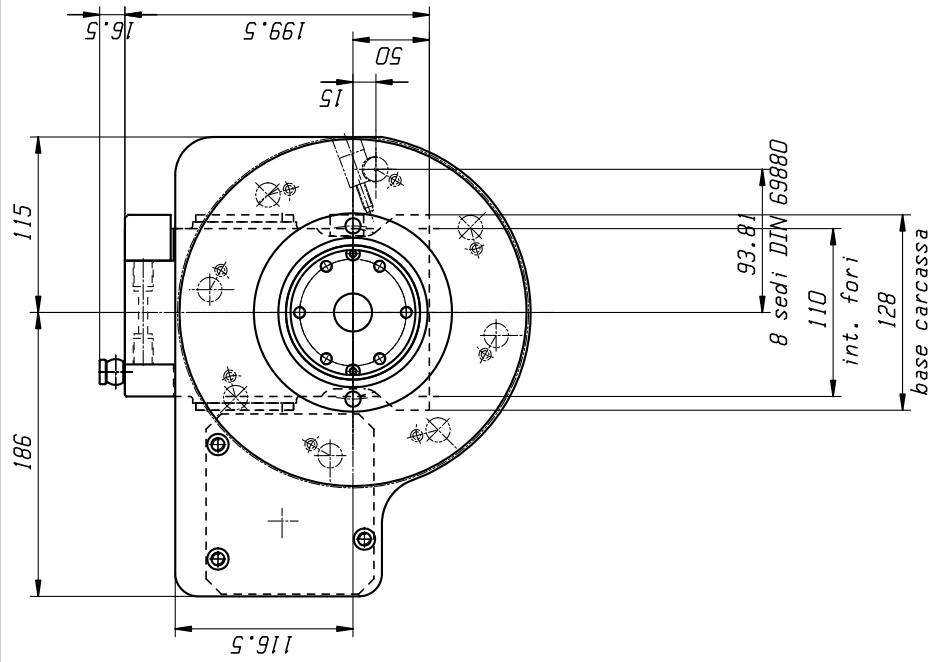
TBMA 320 3/4" Gas

TBMA 400 3/4" Gas

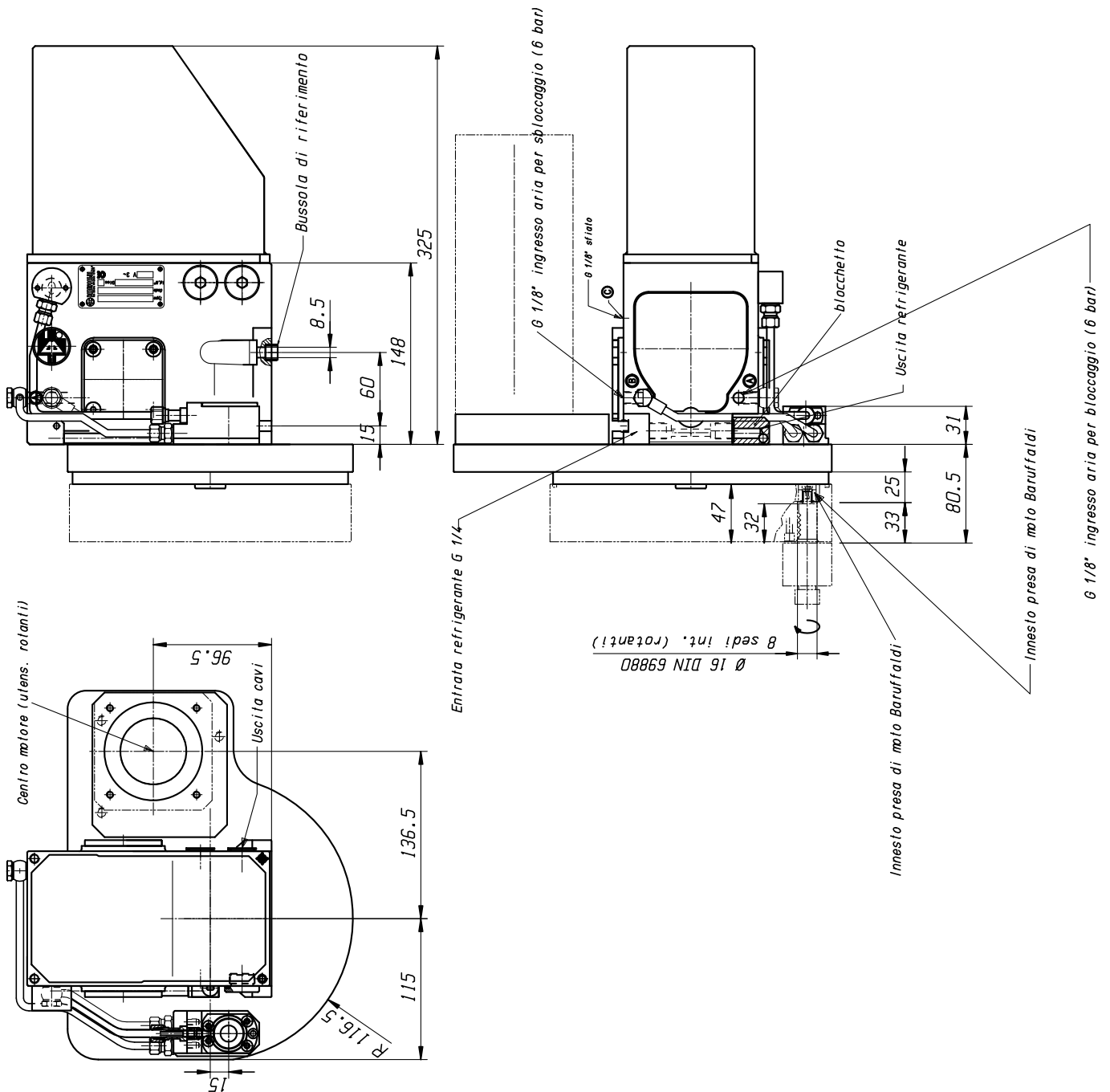


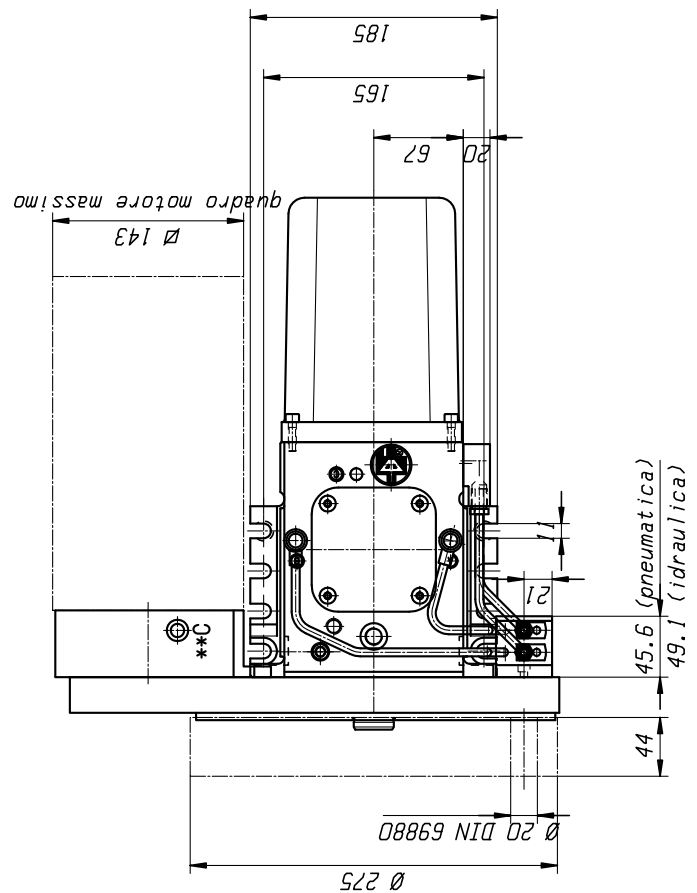
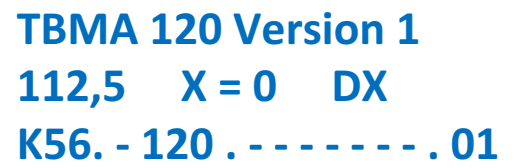
Massima pressione del refrigerante 50 bar

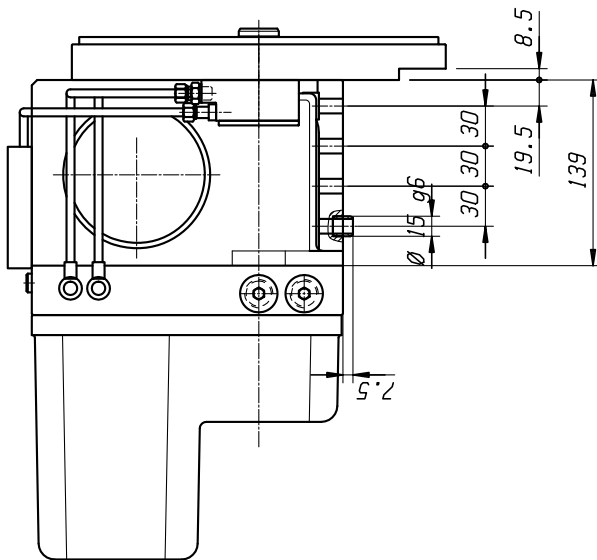
Max coolant pressure 50 bar



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



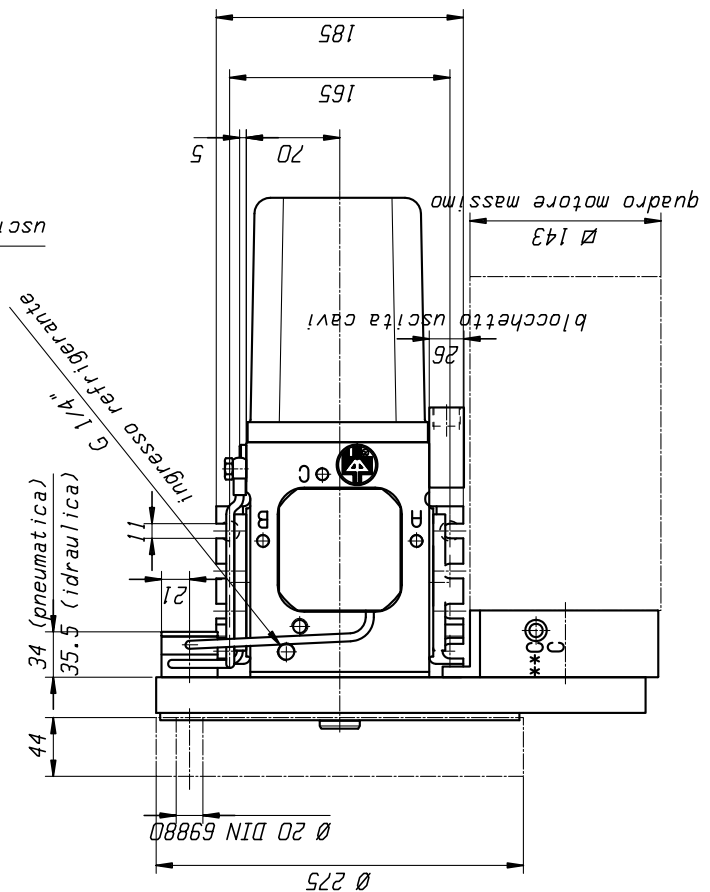
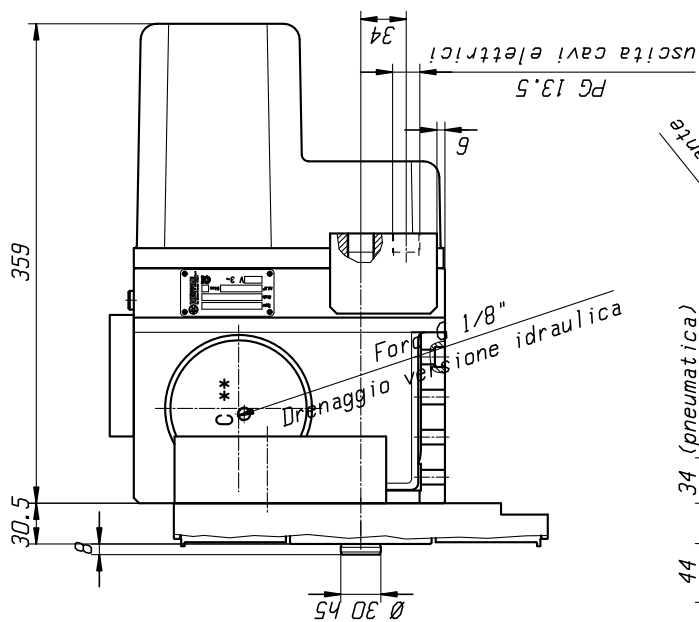
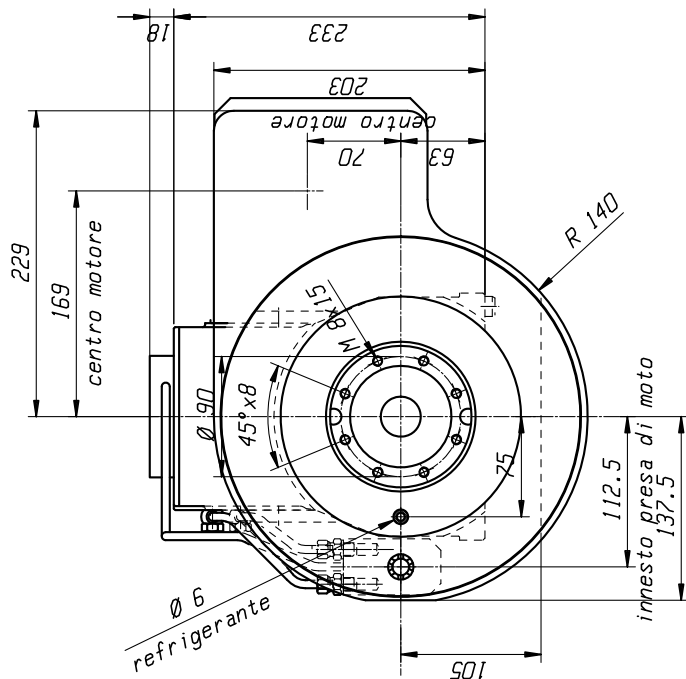


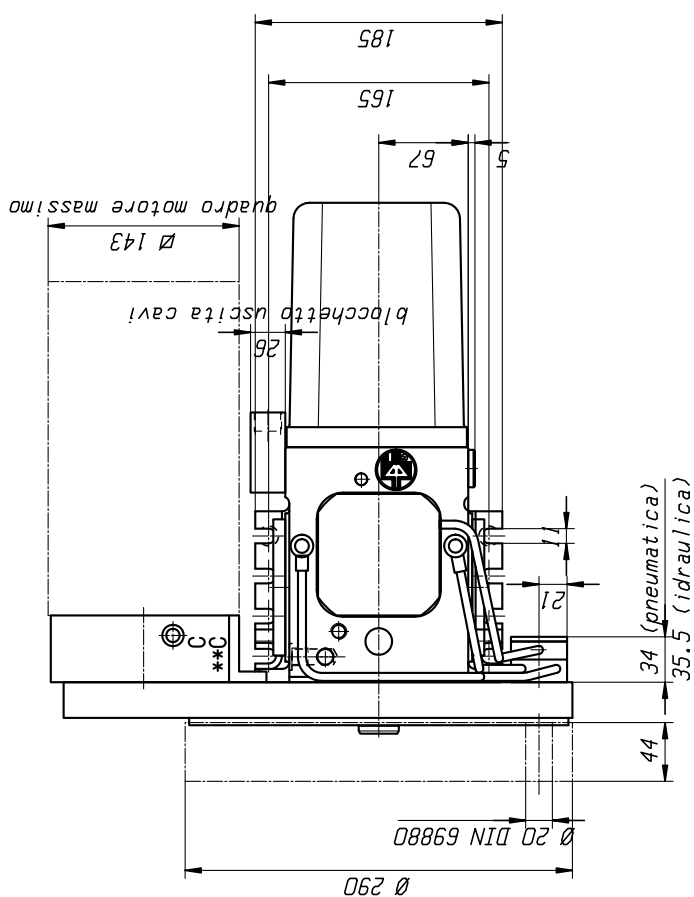
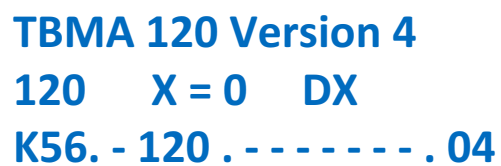


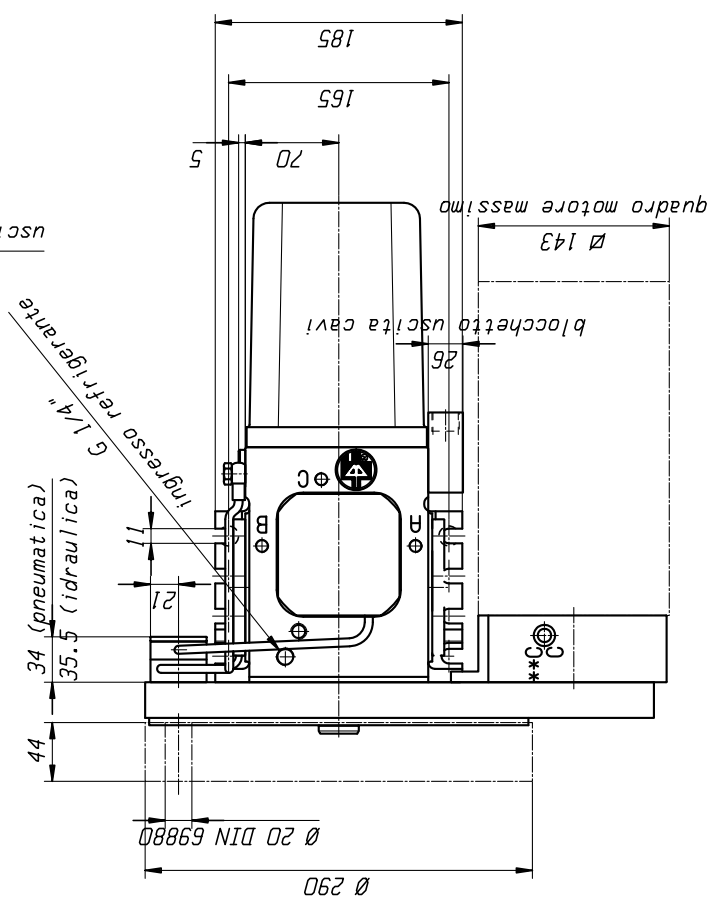
TBMA 120 Version 3

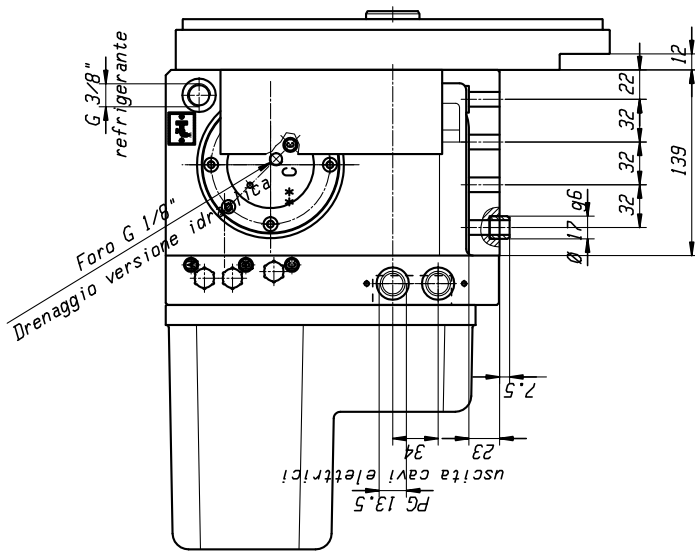
112,5 X=0 SX

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





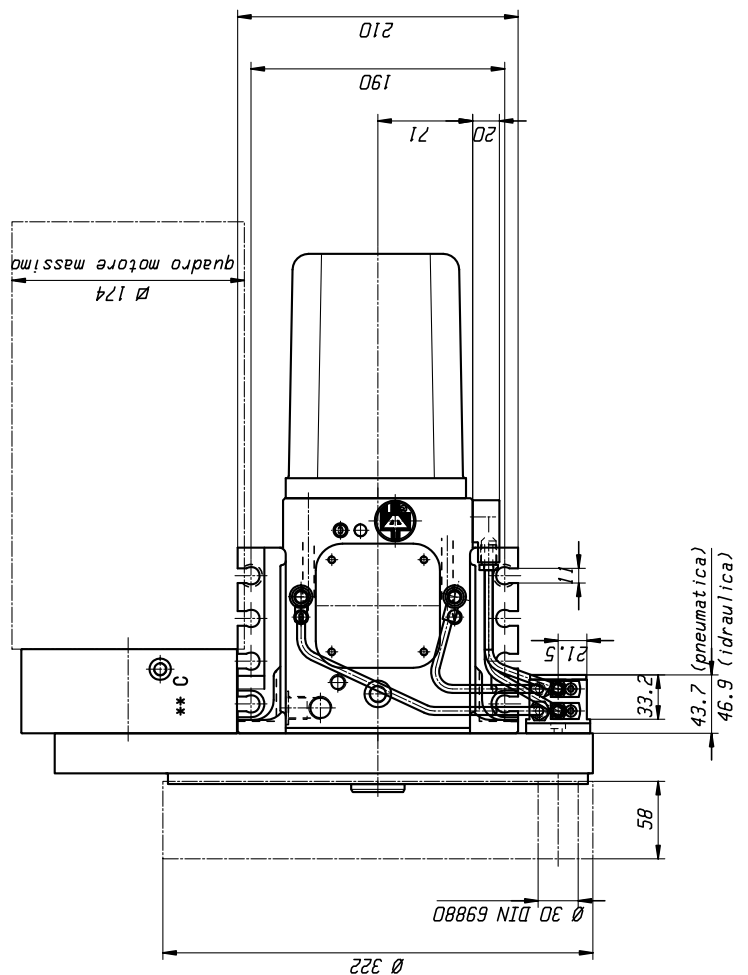
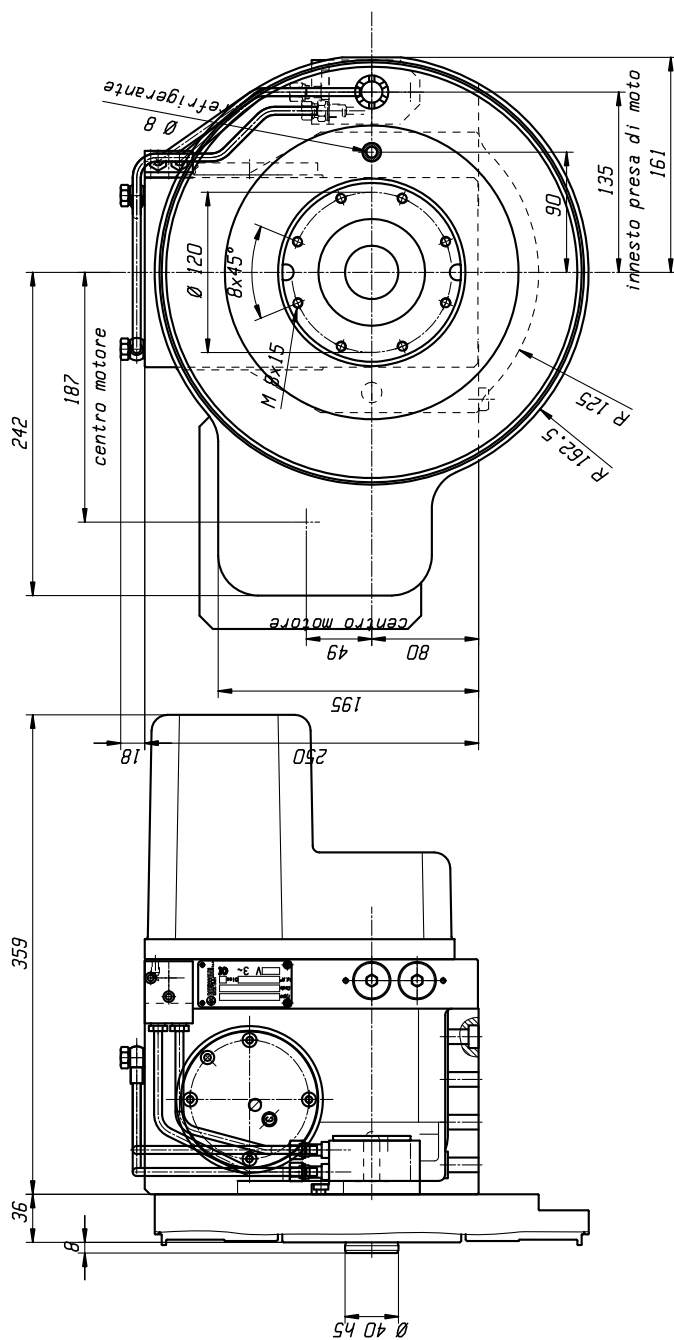


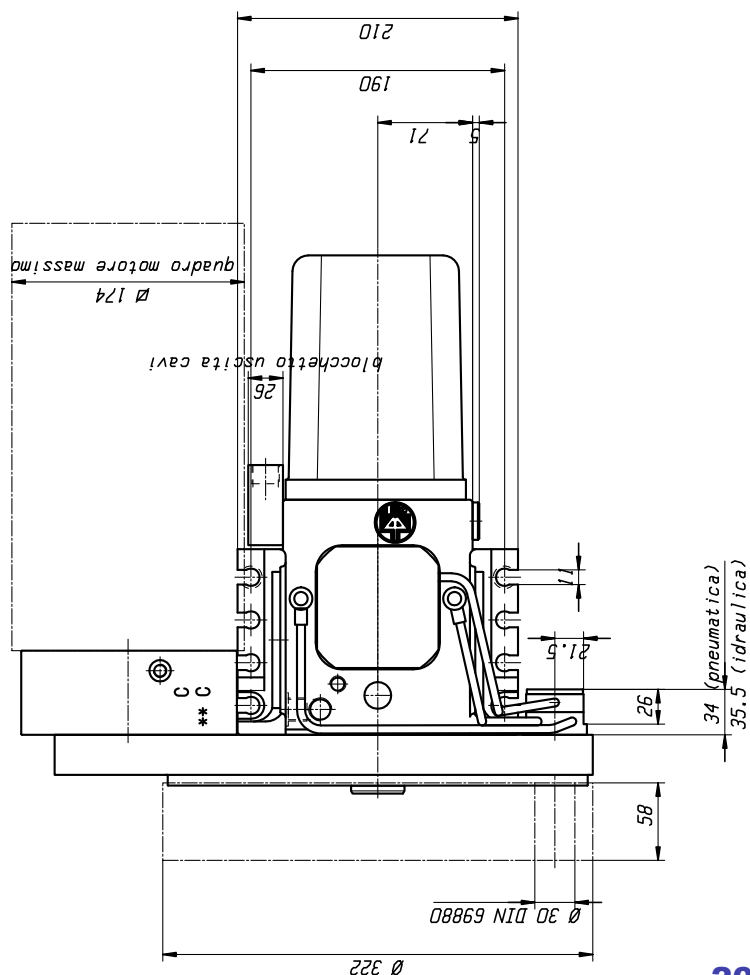
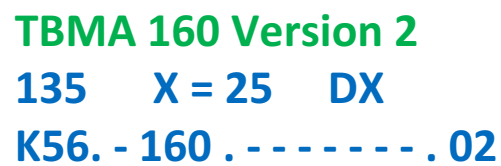


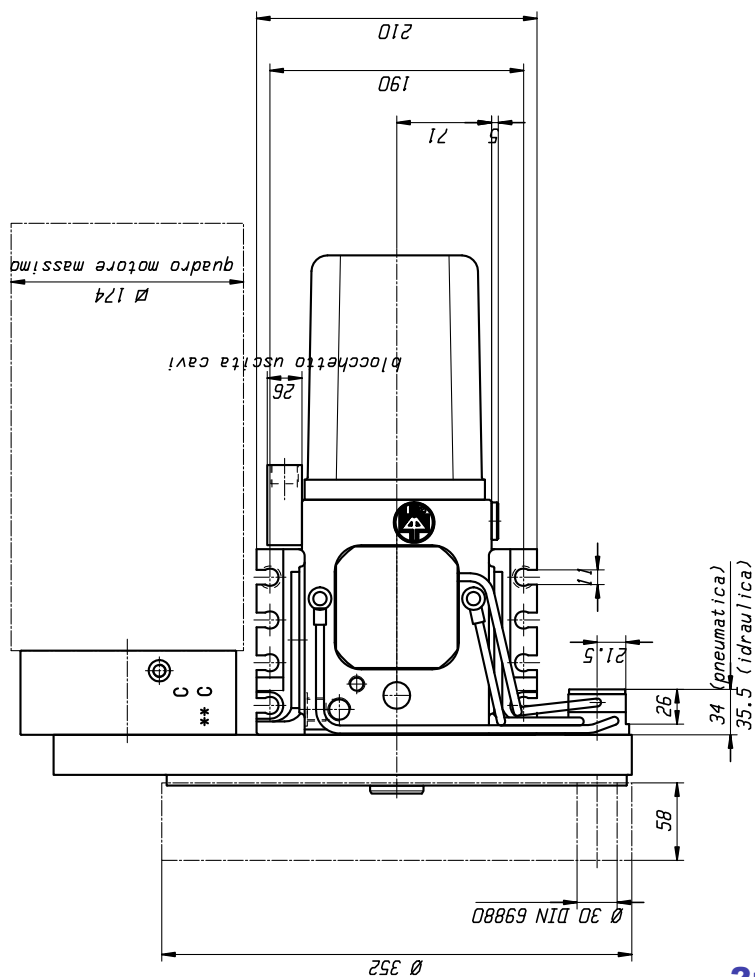
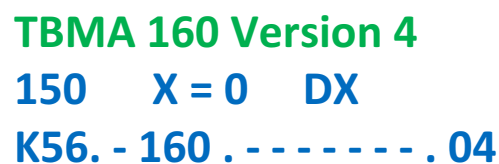
TBMA 160 Version 1

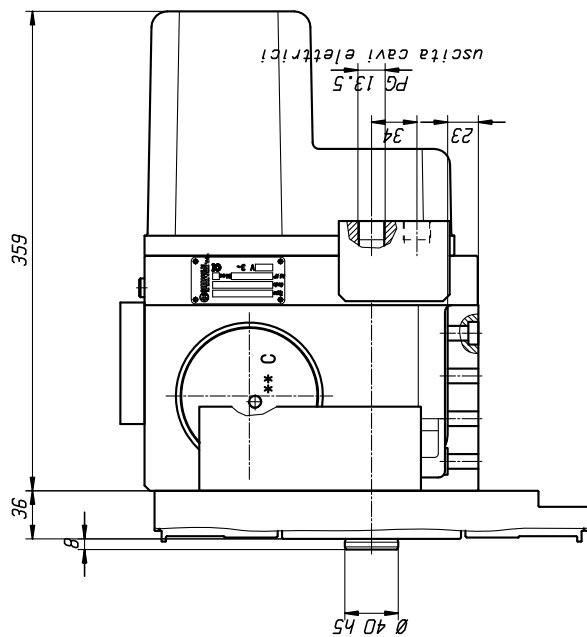
135 X = 0 DX

K56. - 160 . - 01

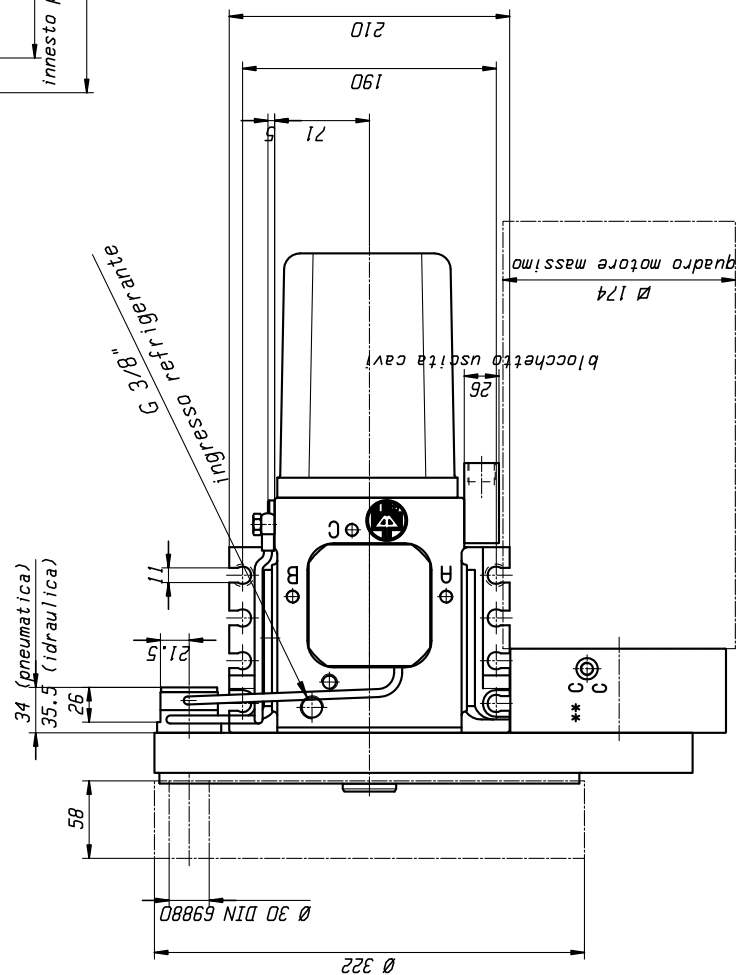


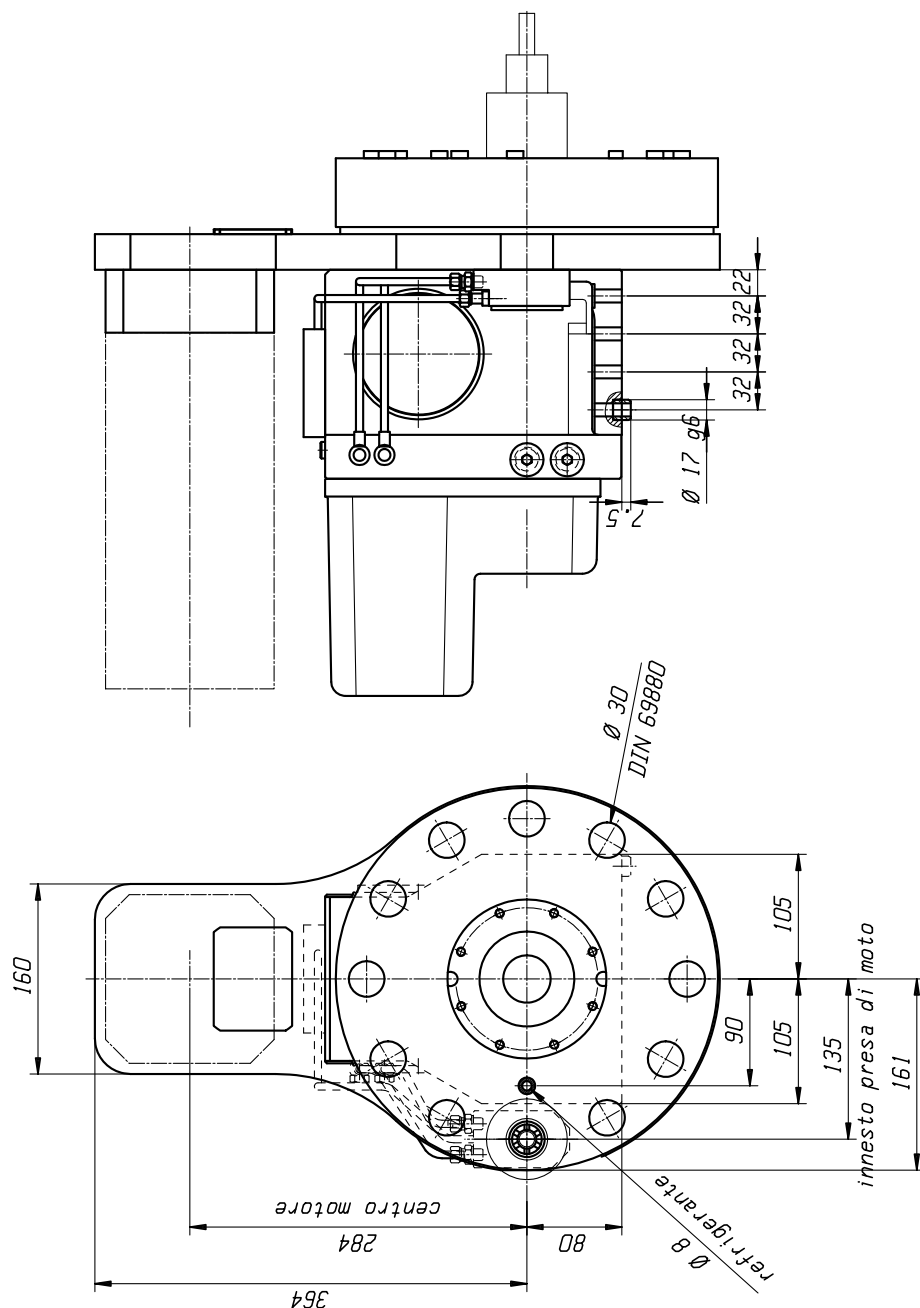




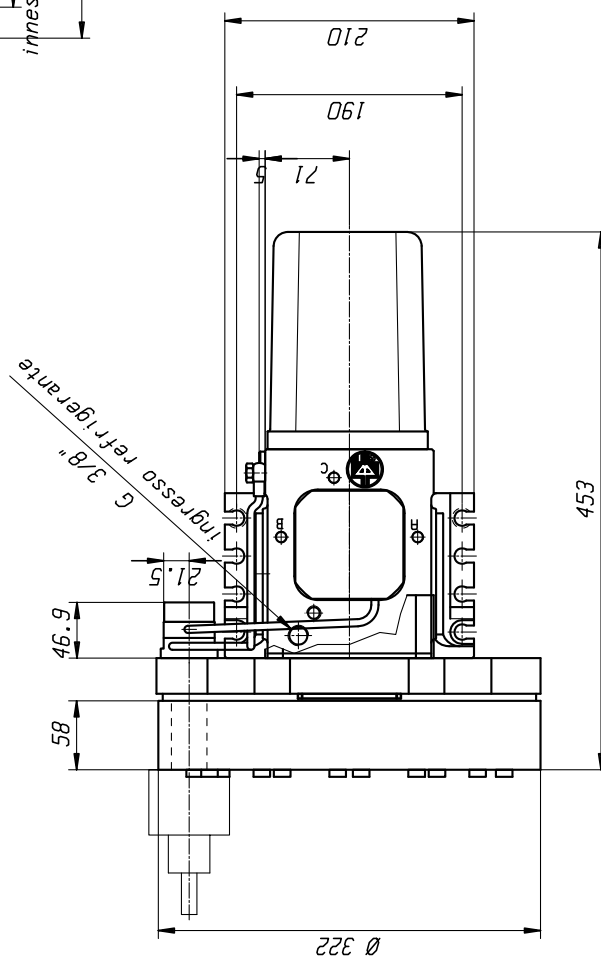
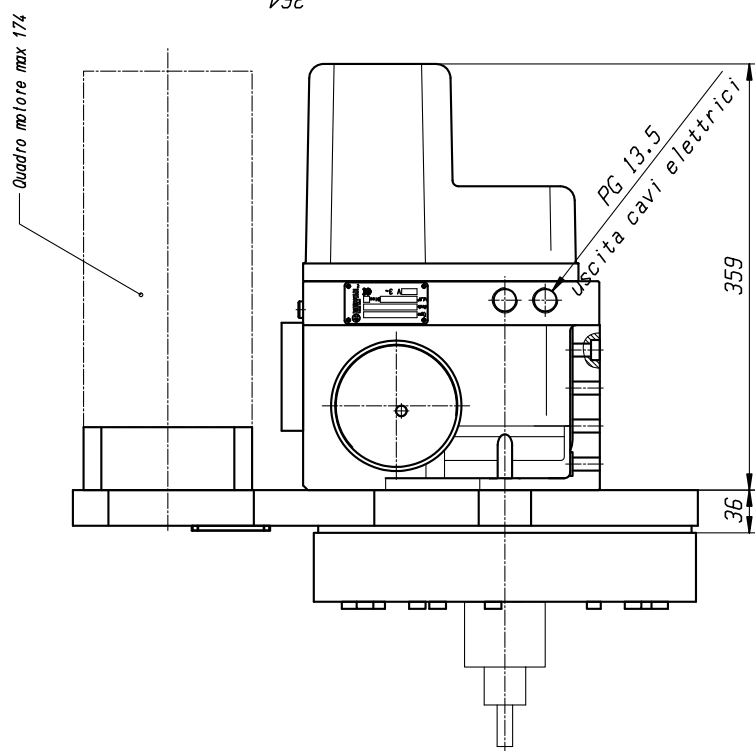


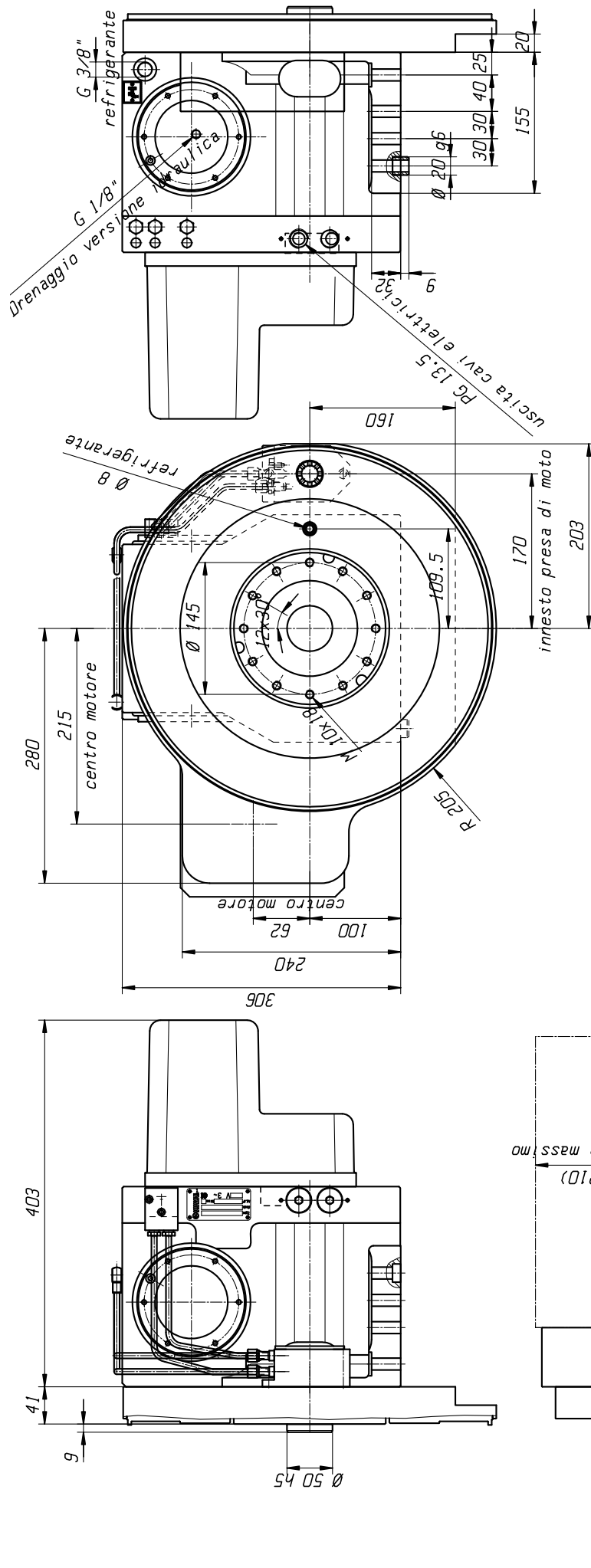
K56. - 160 . - - - - - . 06





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

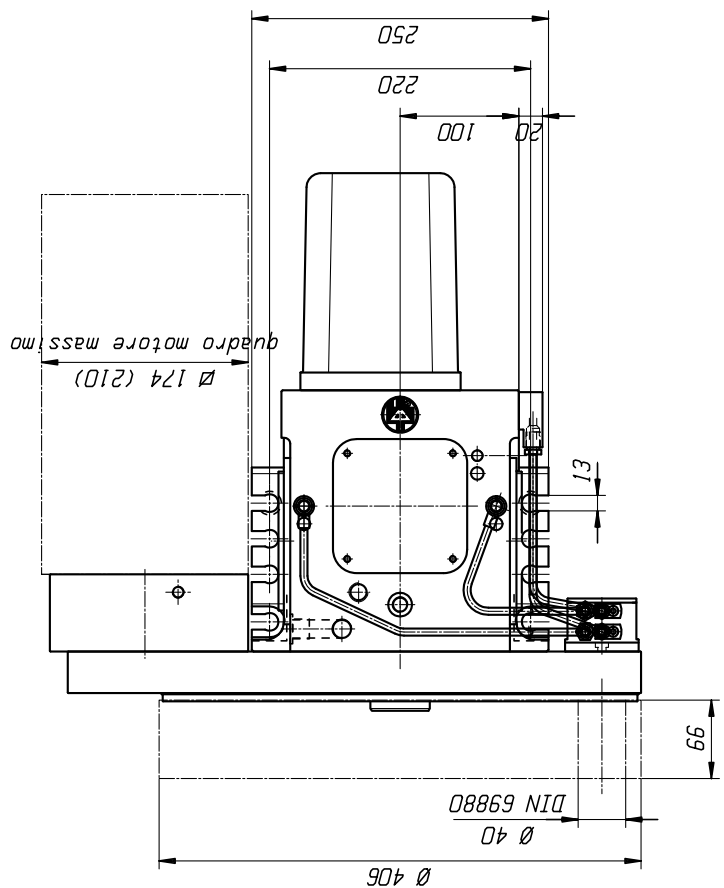


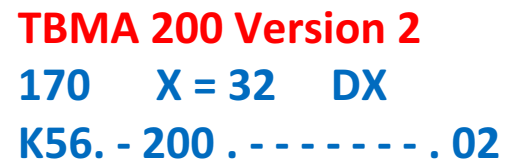


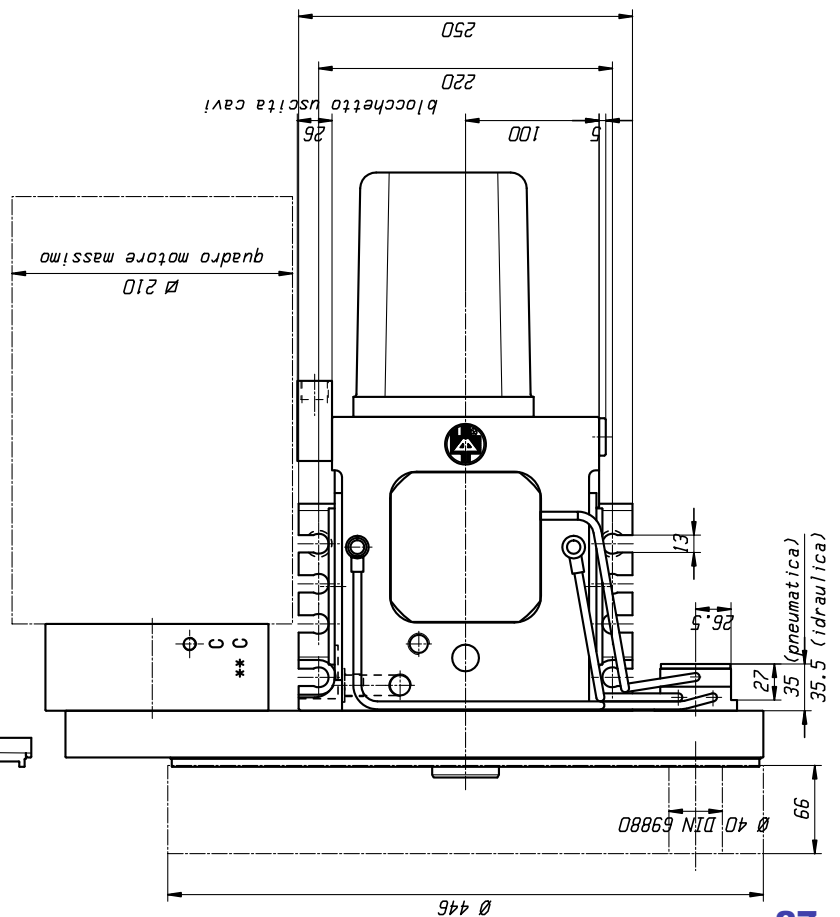
TBMA 200 Version 1

170 X = 0 DX

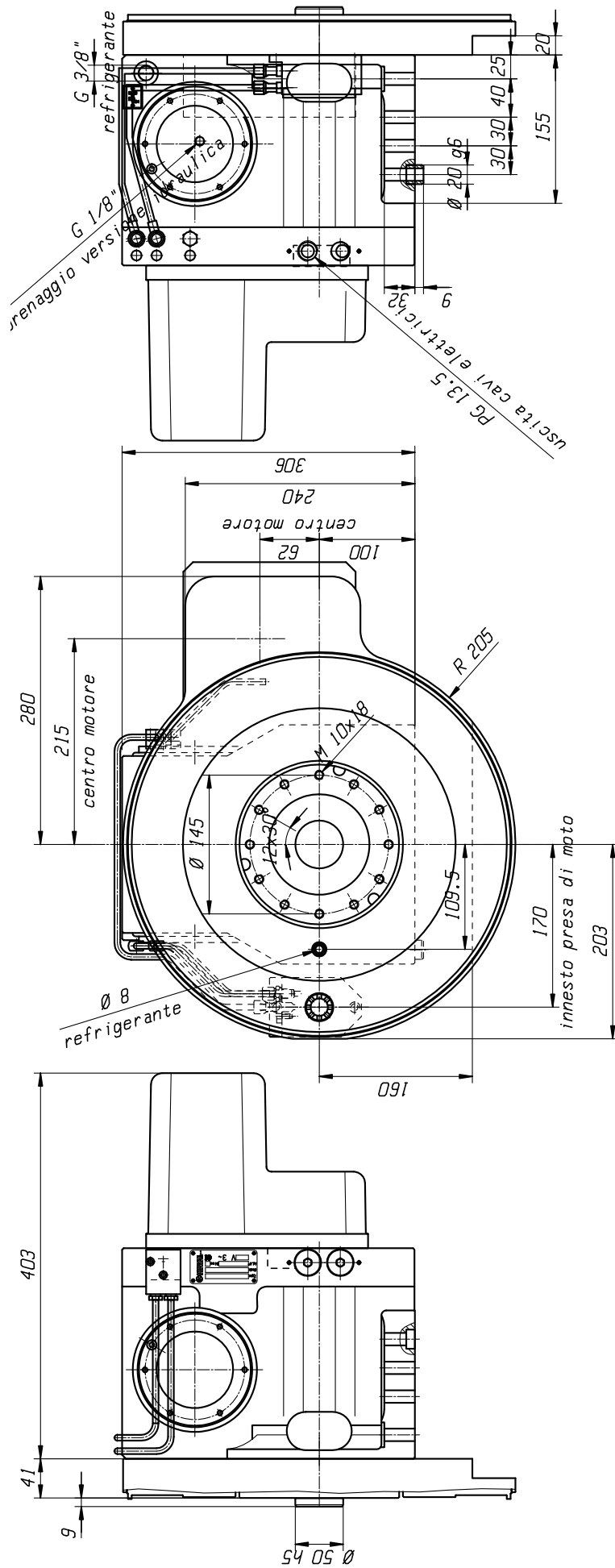
K56. - 200 01







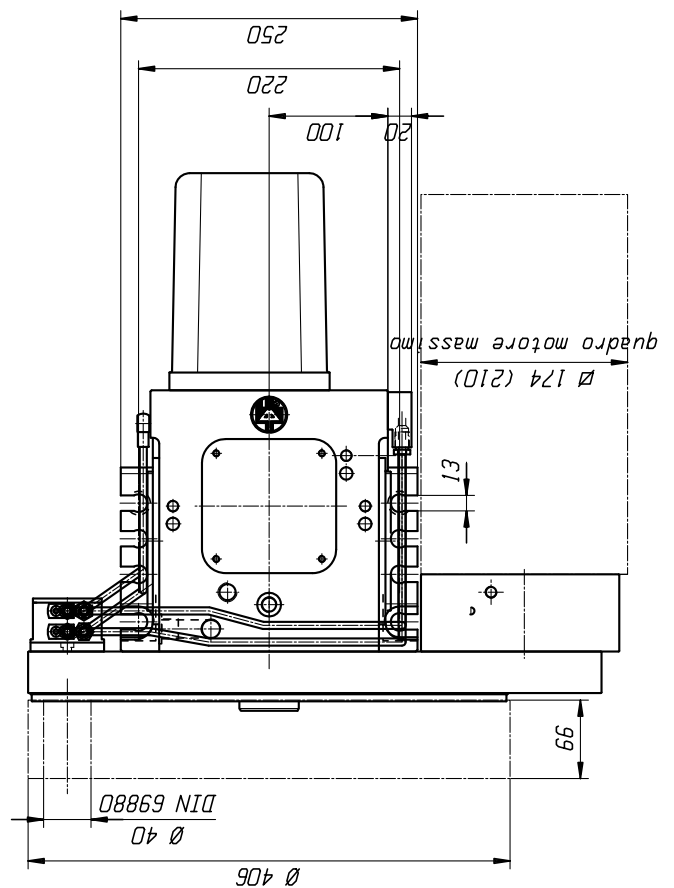
K56. - 200 . - - - - - . 03



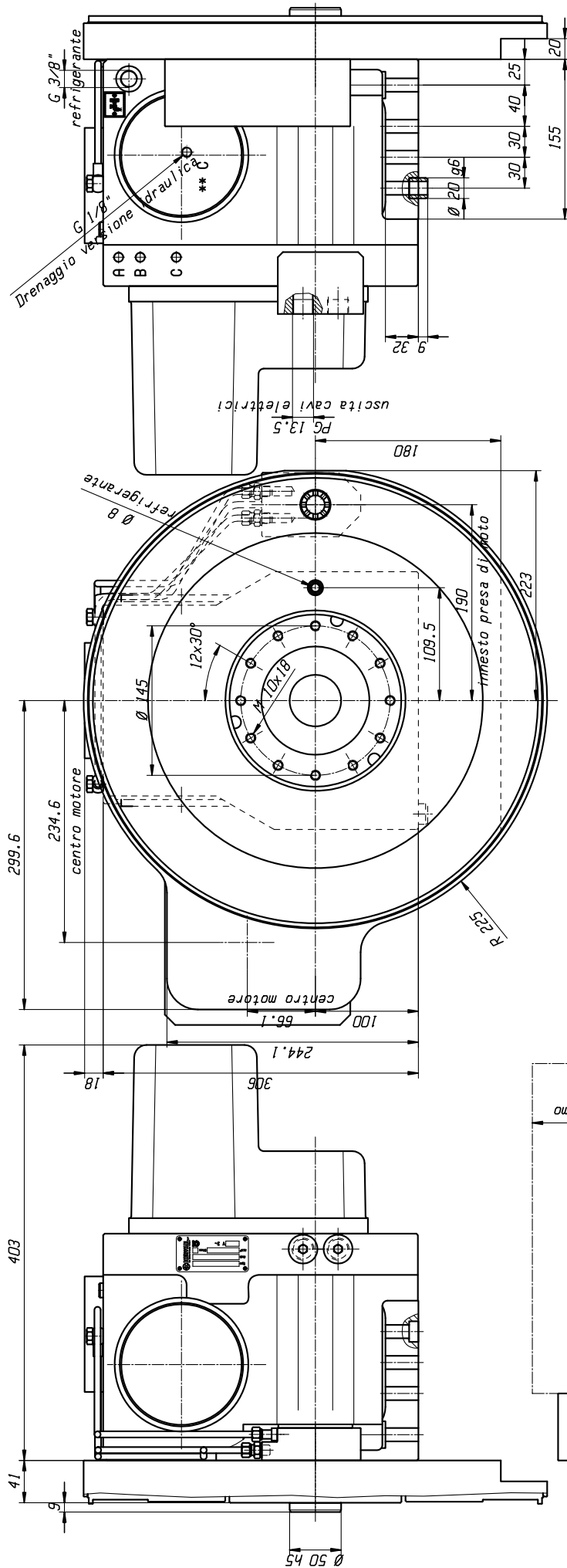
TBMA 200 Version 4

170 X = 0 SX

K56. - 200 04



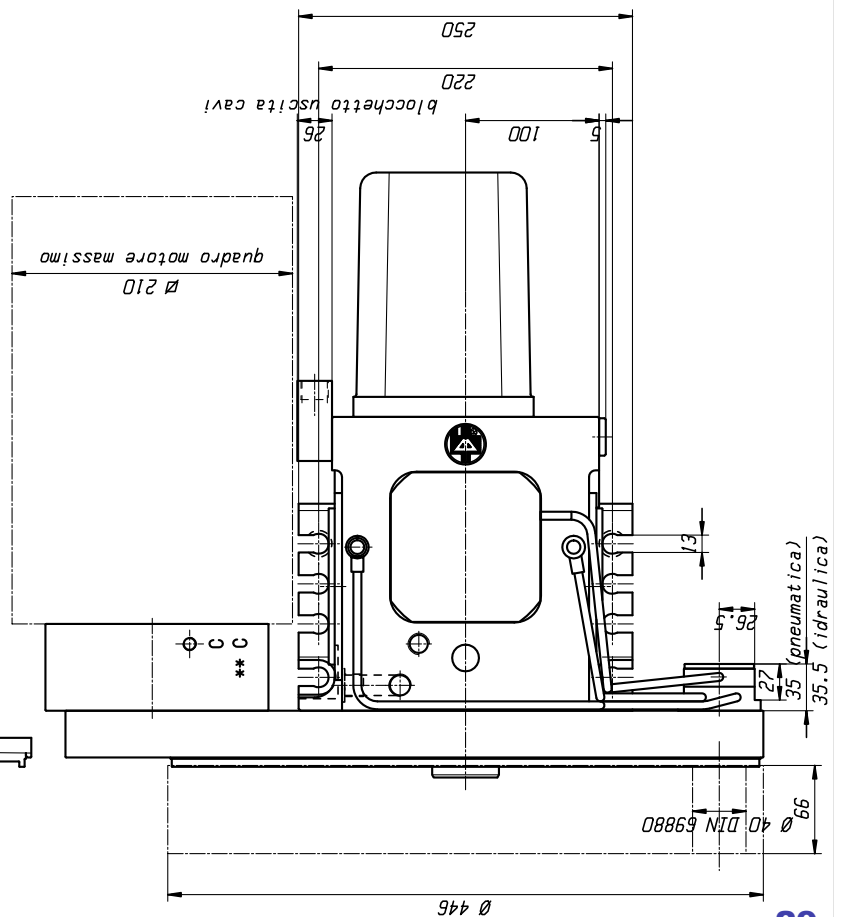
Vista esterna External view

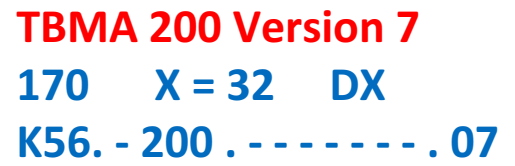


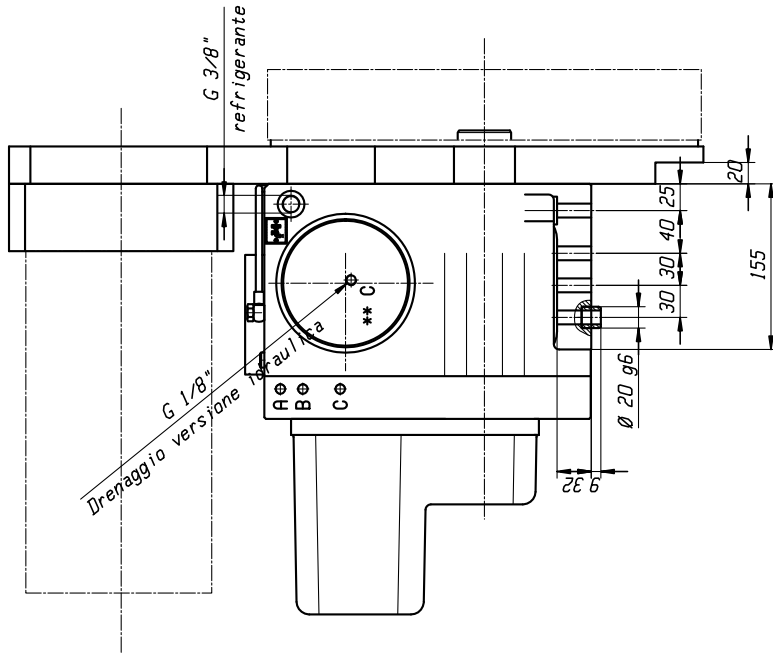
TBMA 200 Version 6

190 X = 0 DX

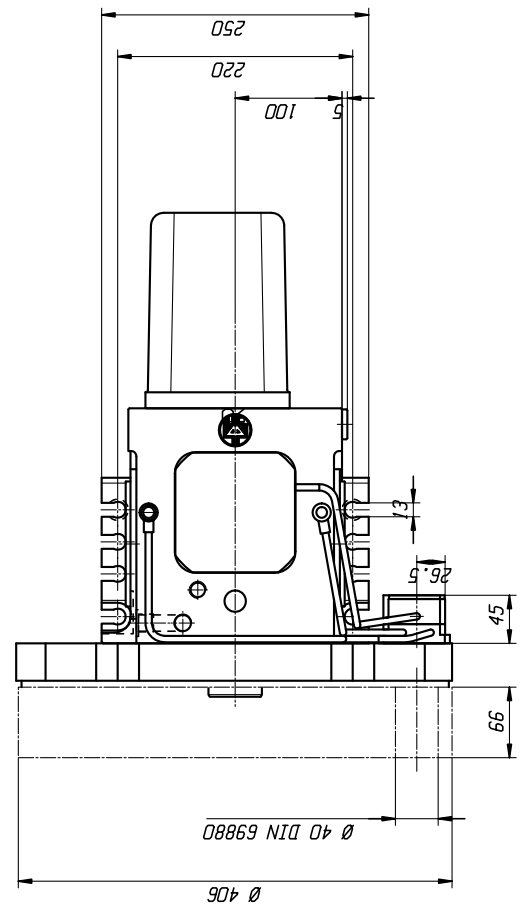
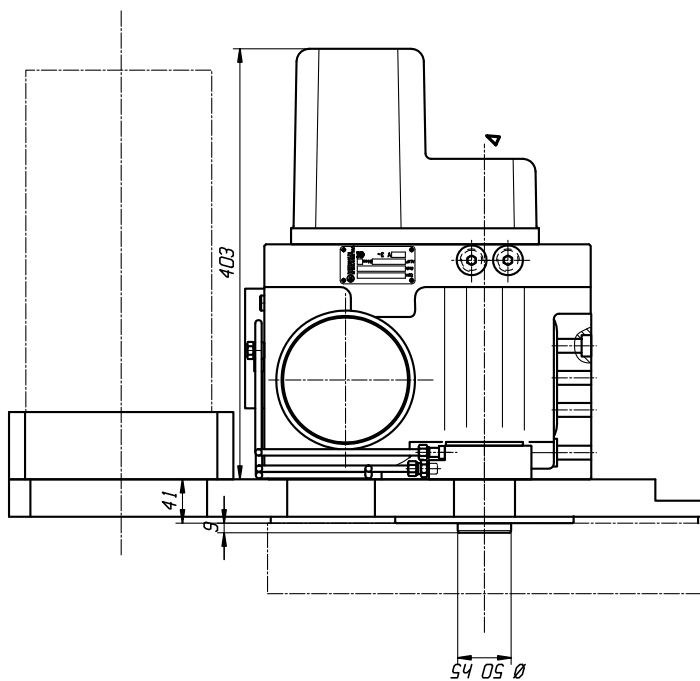
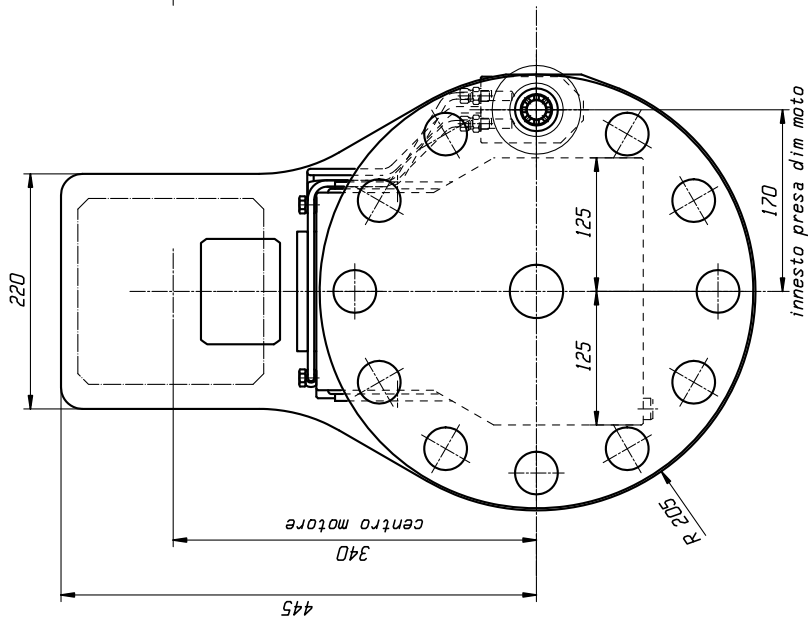
K56. - 200 06

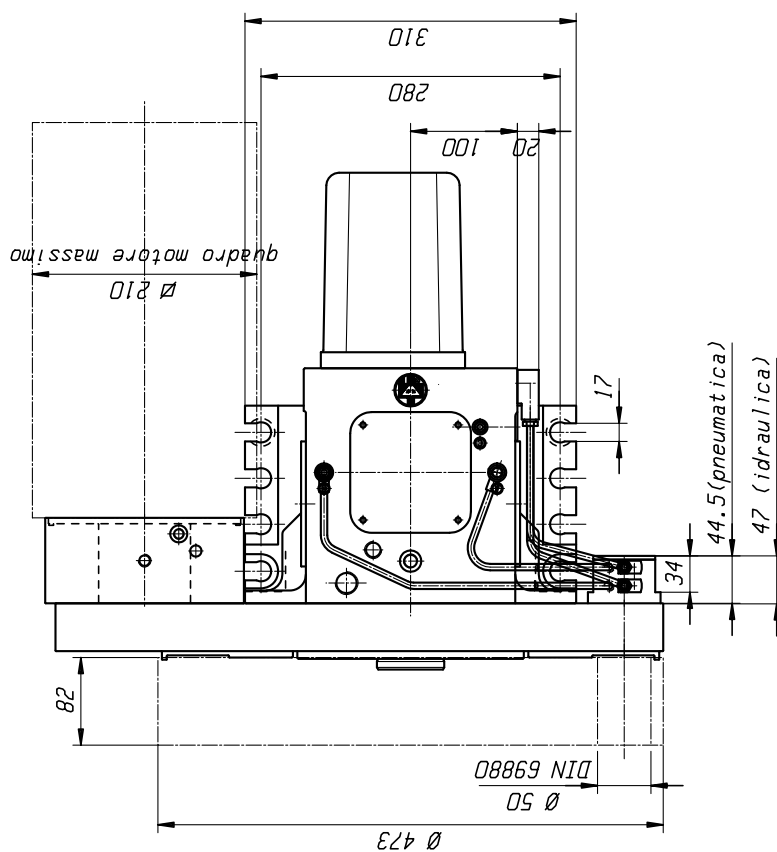
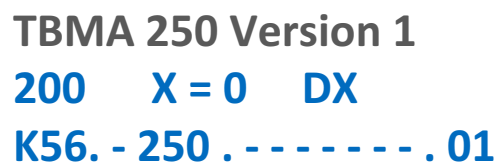


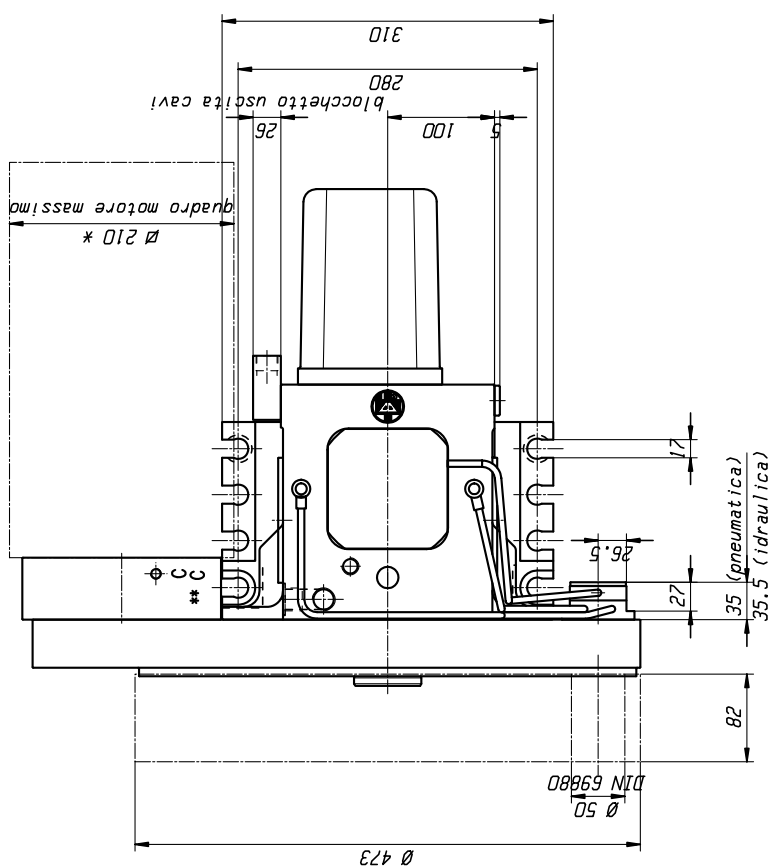




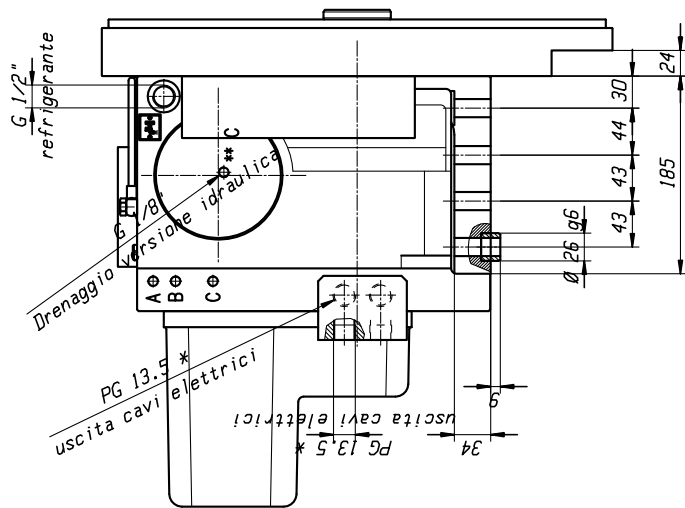
TBMA 200 Version 15
170 X = 0 DX motor on top
K56. - 200 . - - - - - . 15







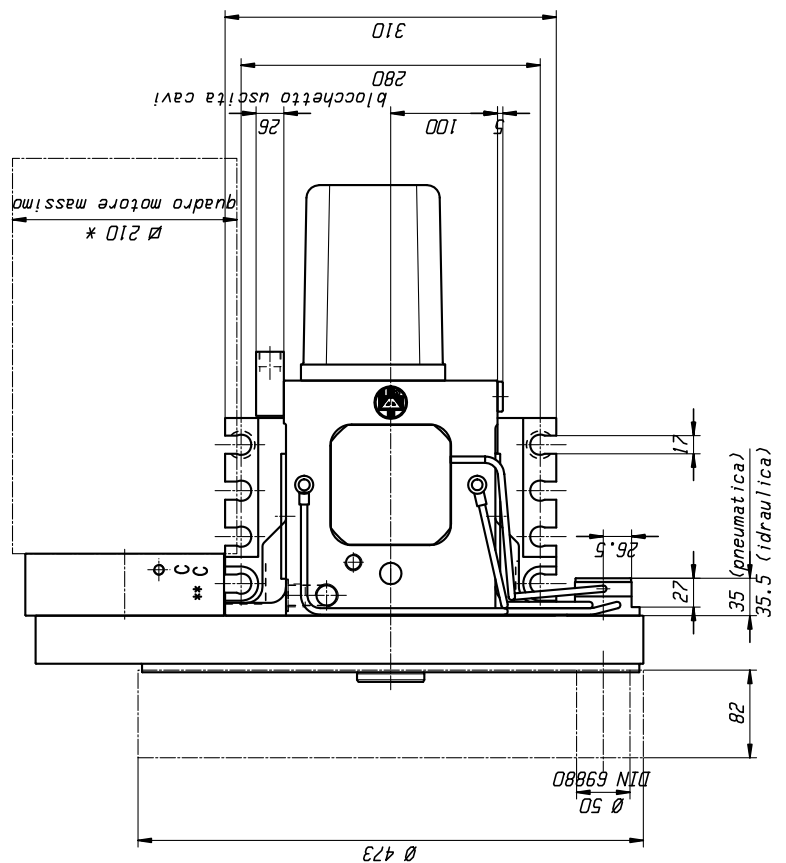
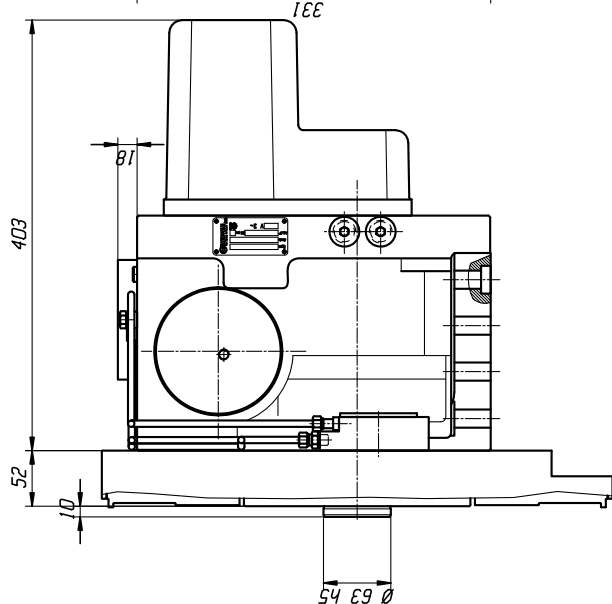
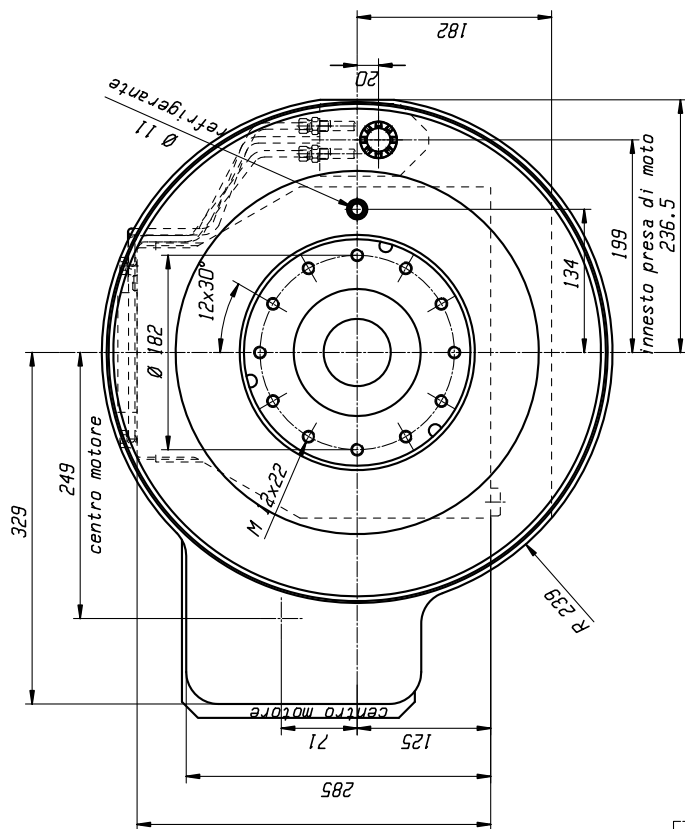
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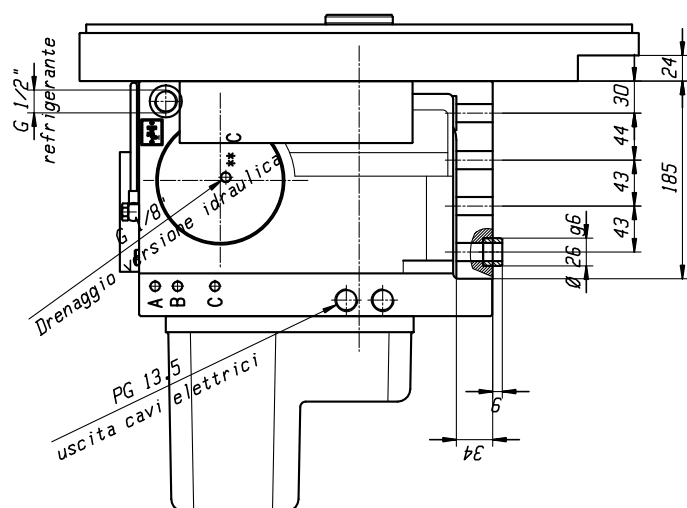


TBMA 250 Version 3

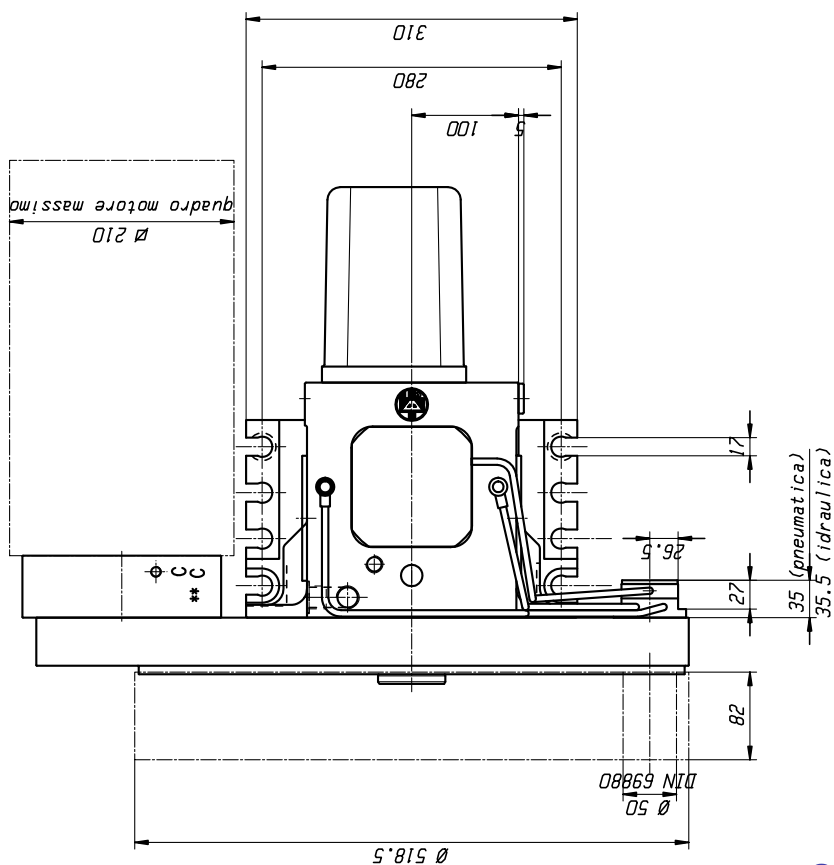
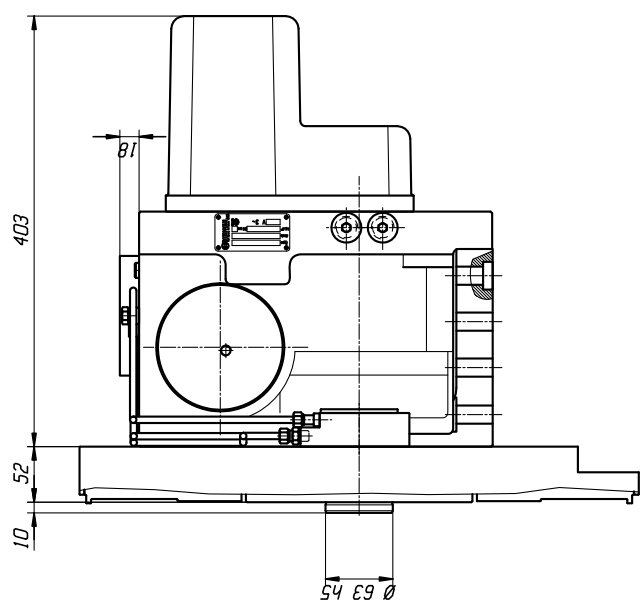
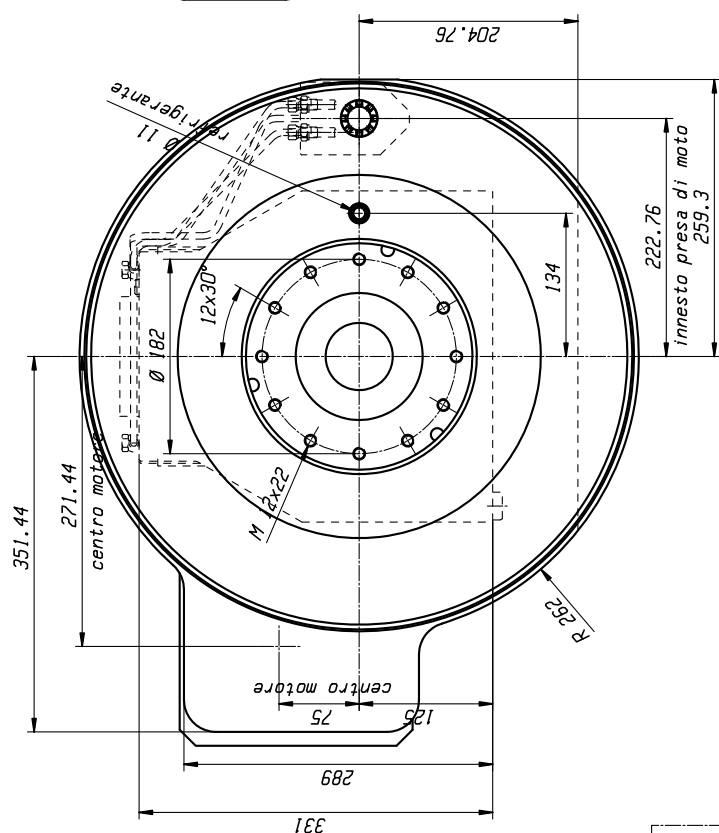
200 X = 20 DX

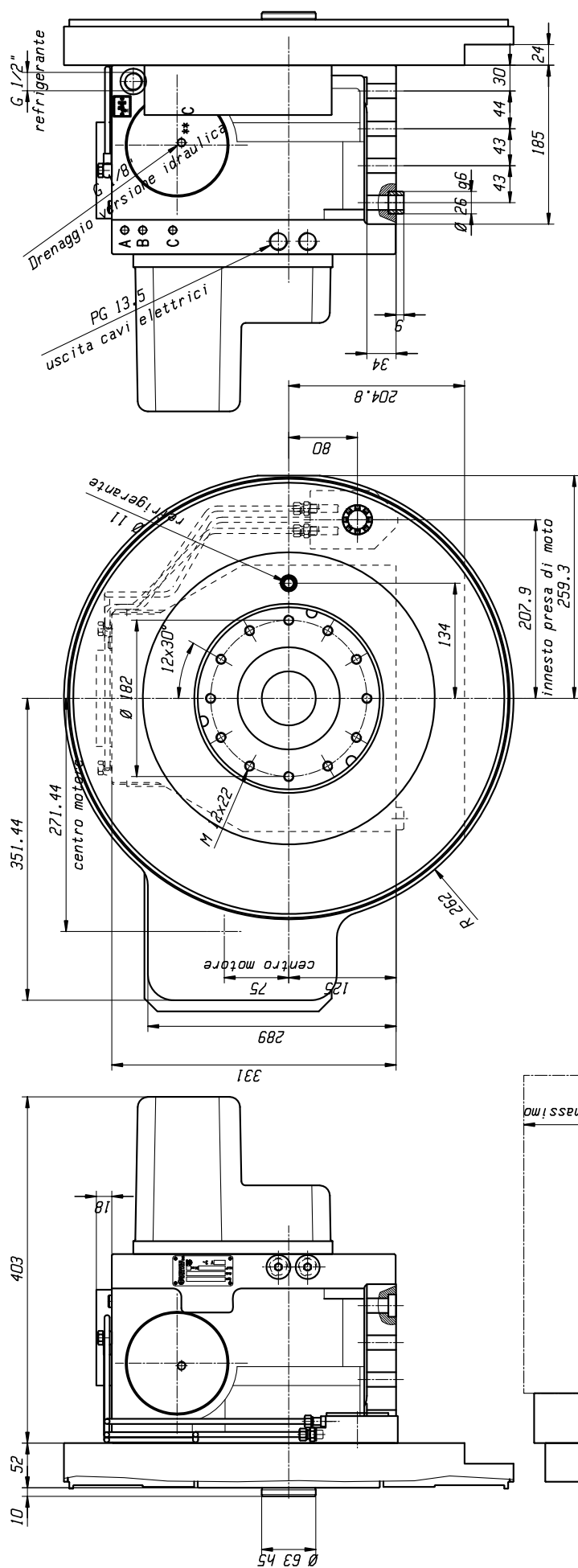
K56. - 250 03



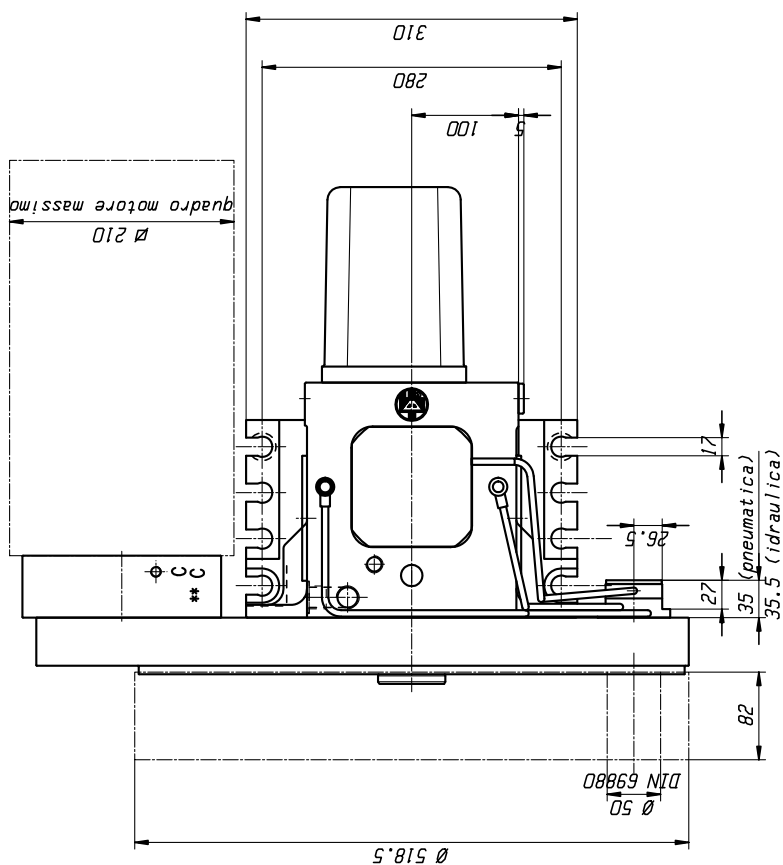


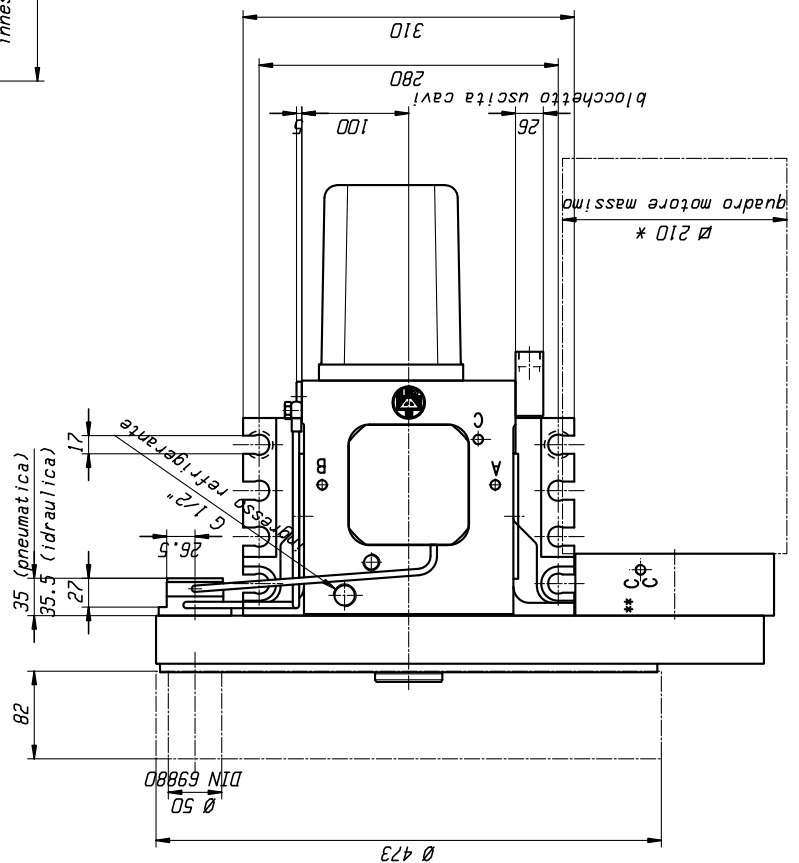
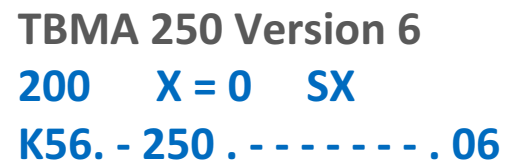
TBMA 250 Version 4
222,76 X = 0 DX
K56. - 250 04

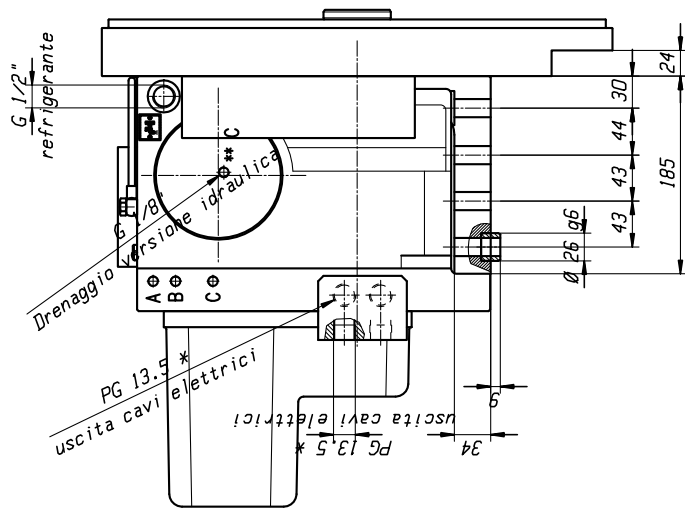




TBMA 250 Version 5
222,76 X = 80 DX
K56. - 250 05



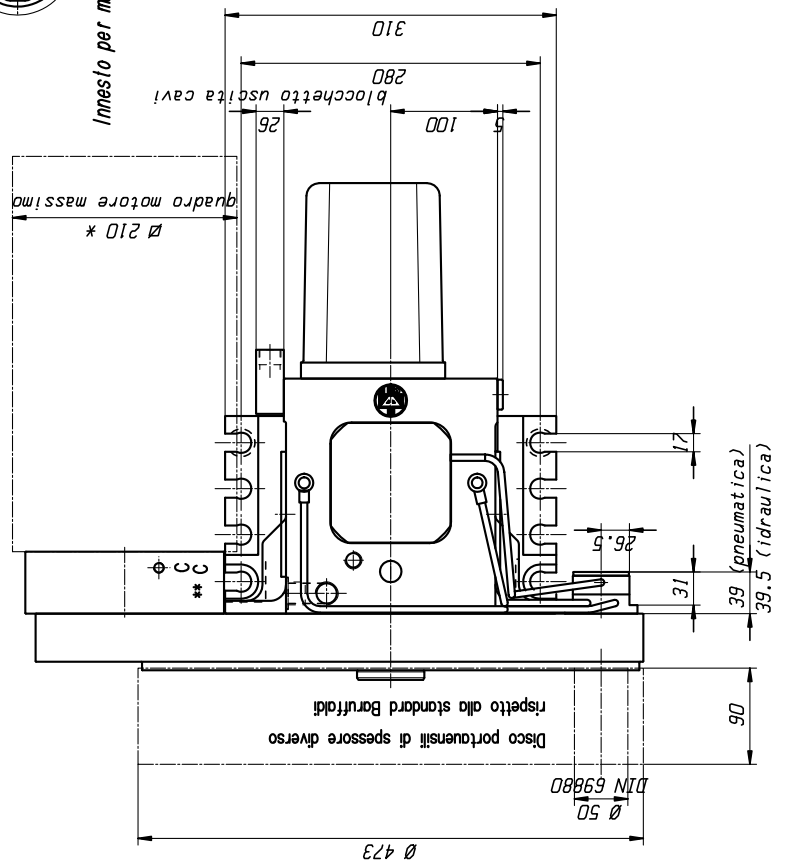
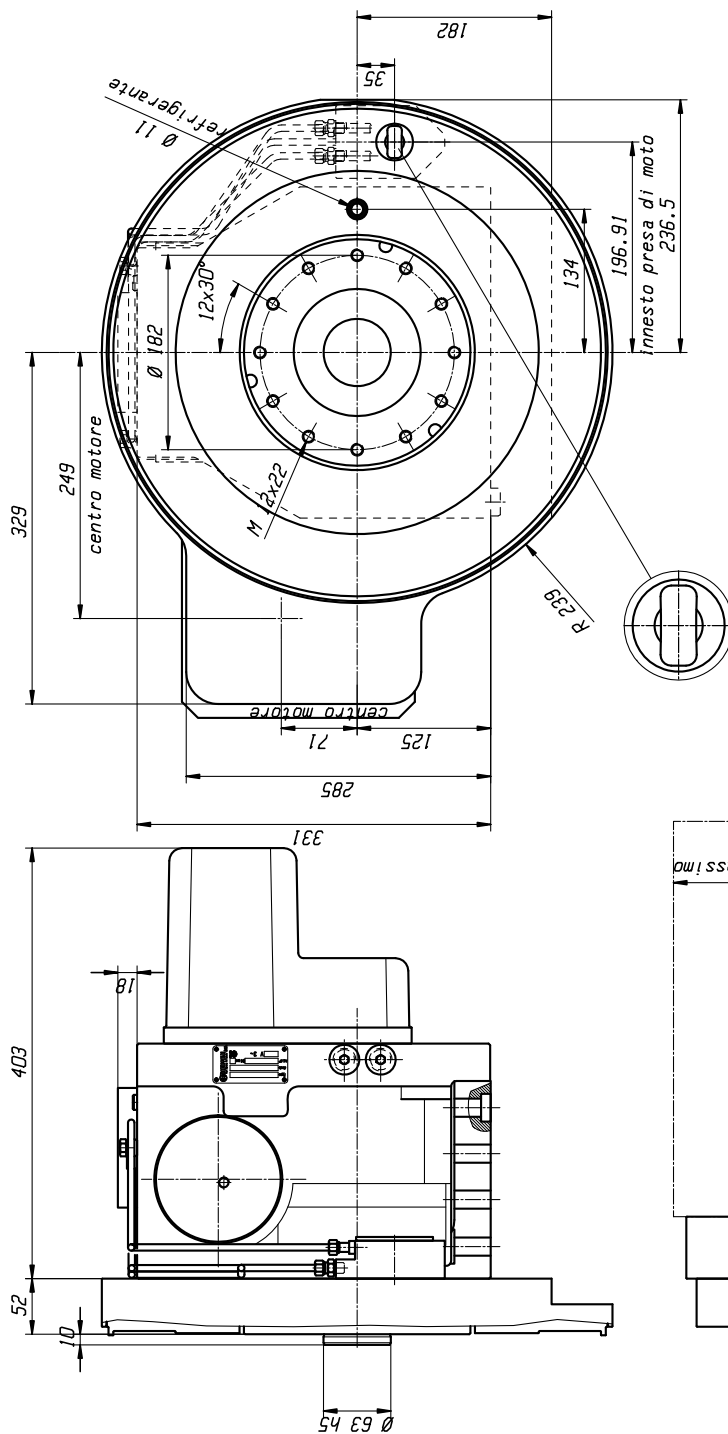


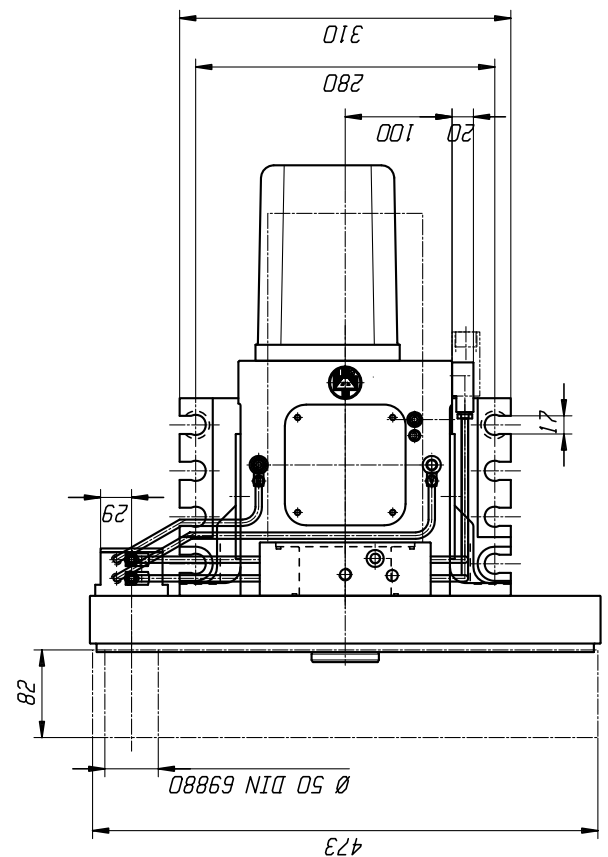
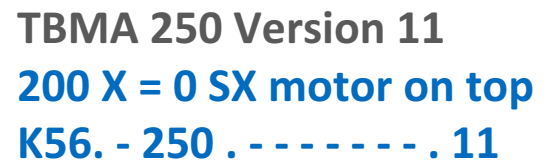


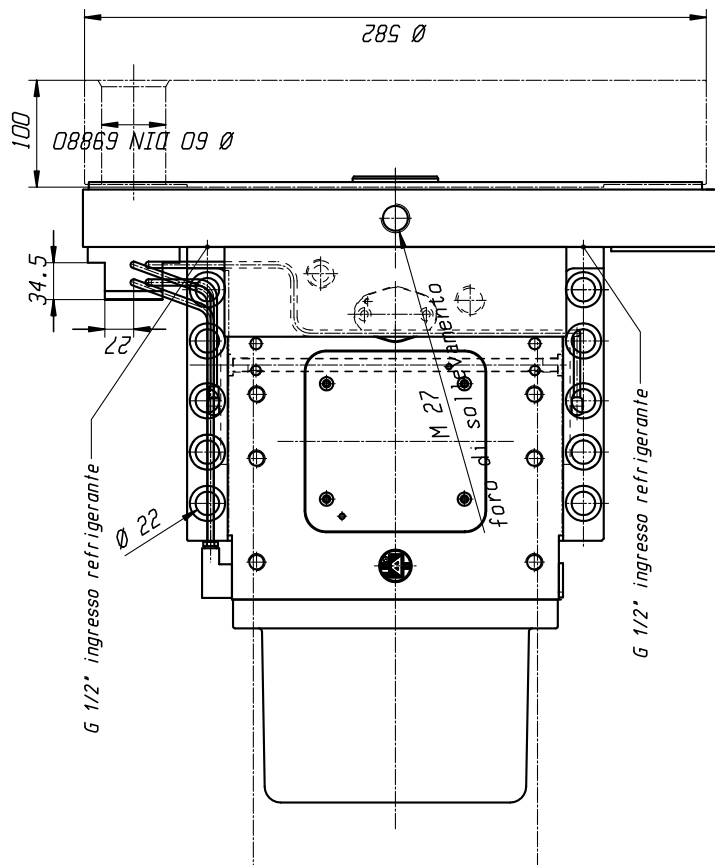
TBMA 250 Version 7

200 X = 35 DX DIN 1809

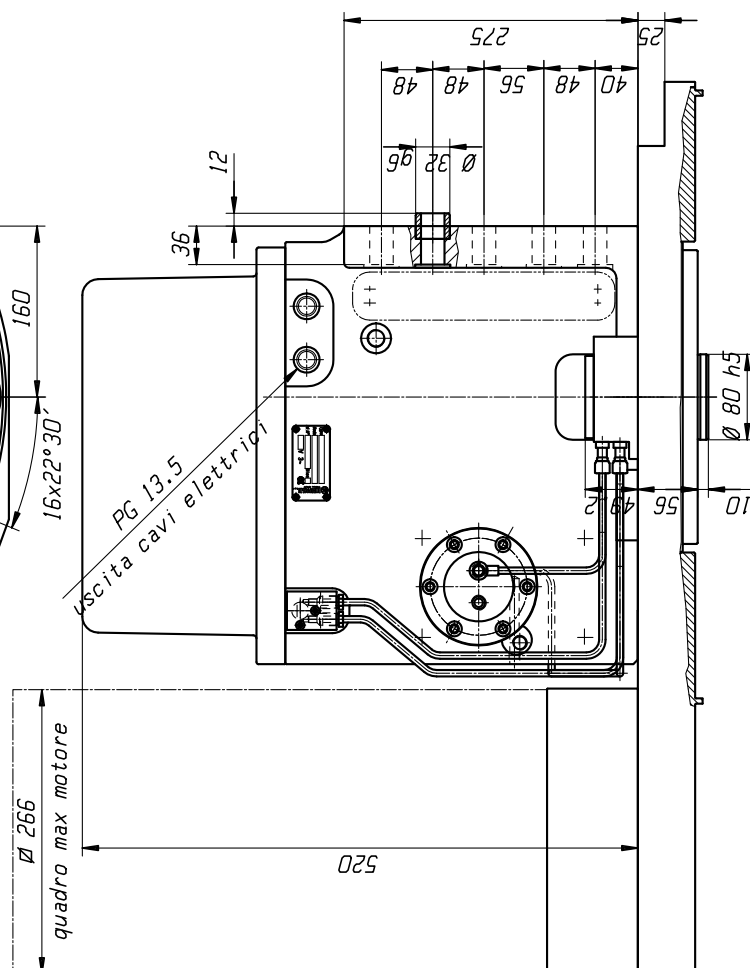
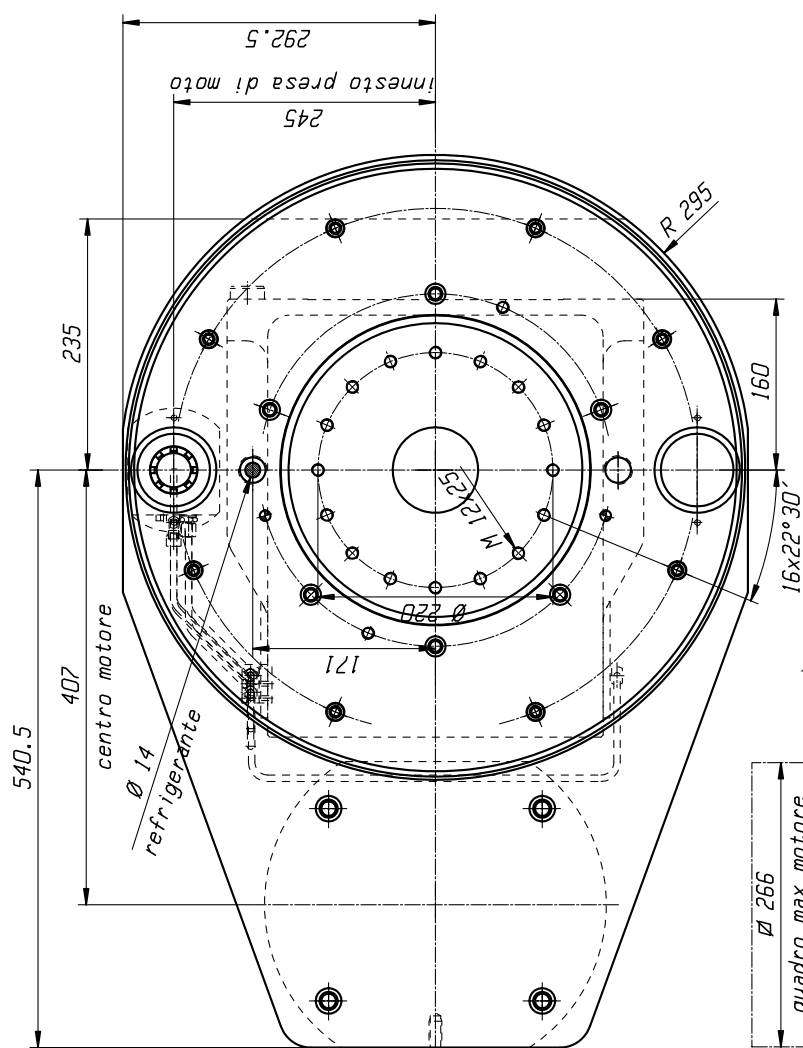
K56. - 250 07

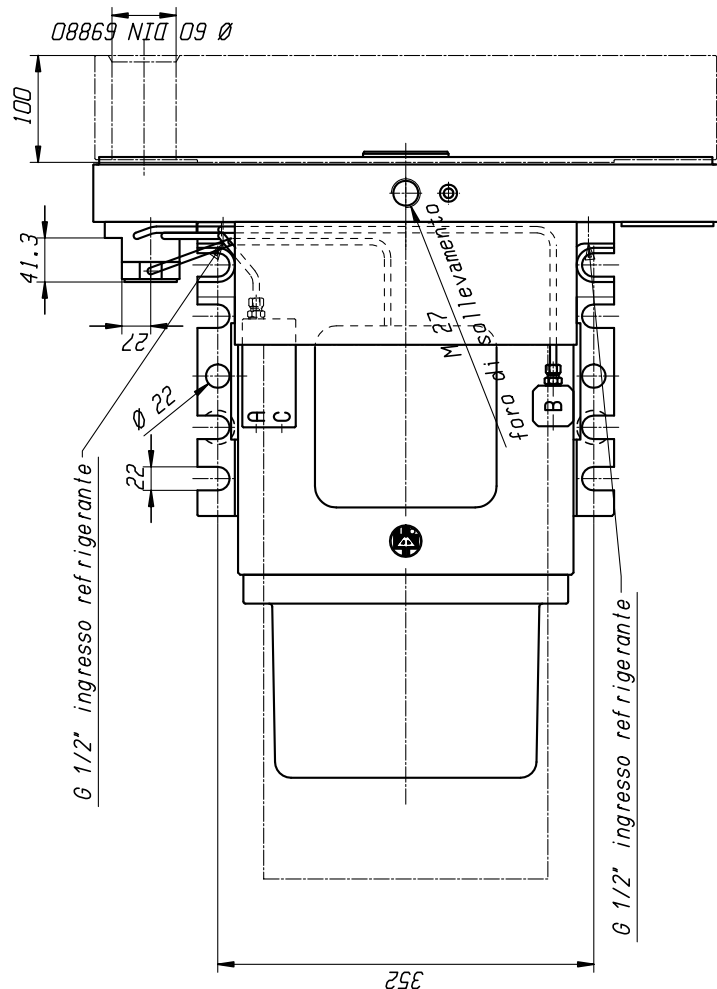




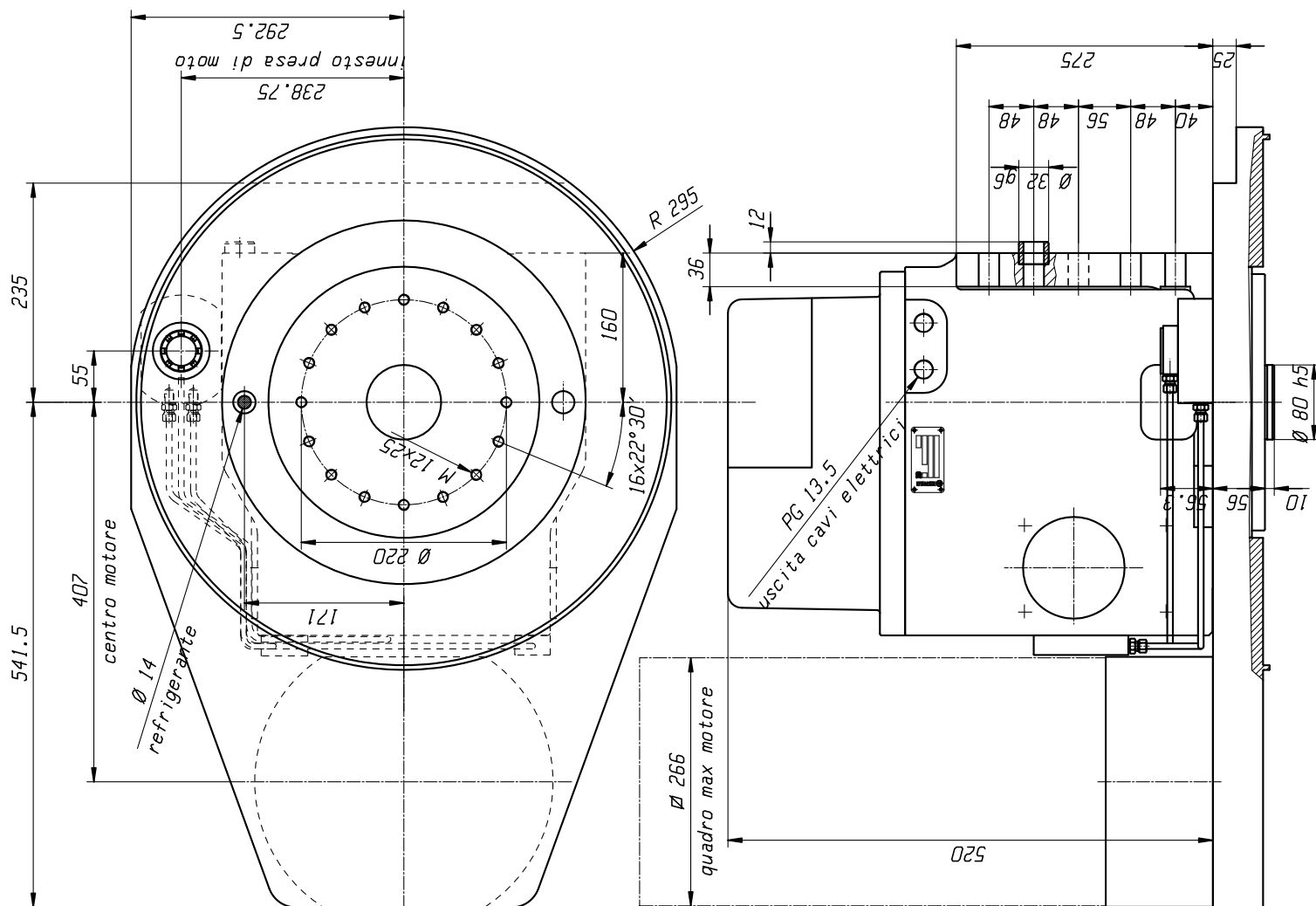


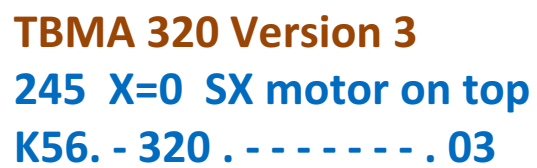
TBMA 320 Version 1
245 X = 0 DX motor on top
K56. - 320 . - - - - - . 01

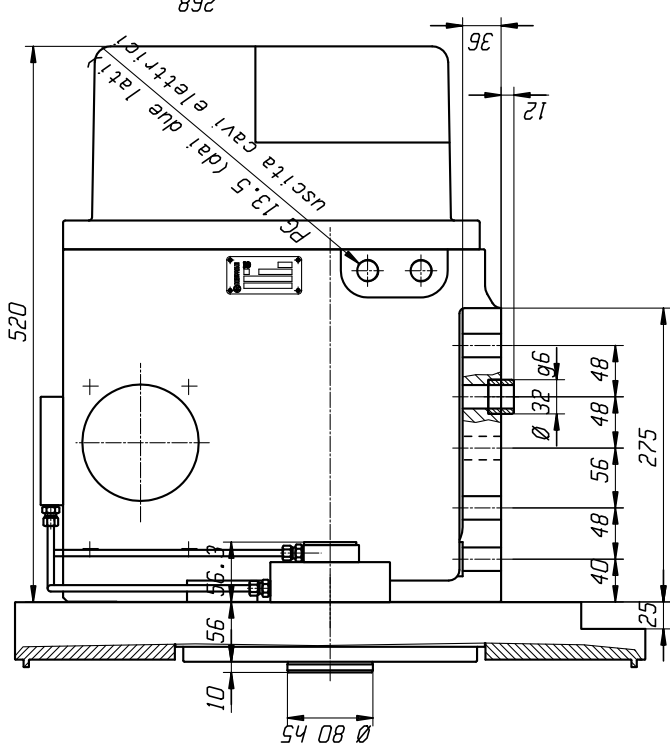


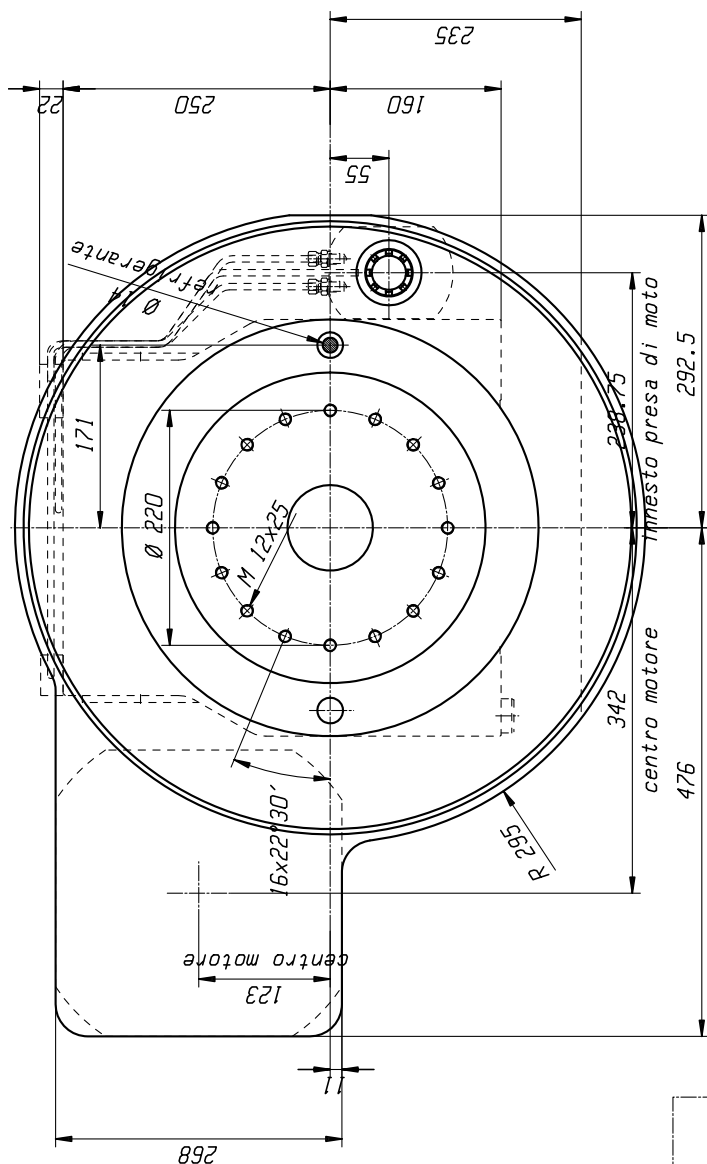


TBMA 320 Version 2
245 X=55 DX motor on top
K56. - 320 . - - - - - . 02

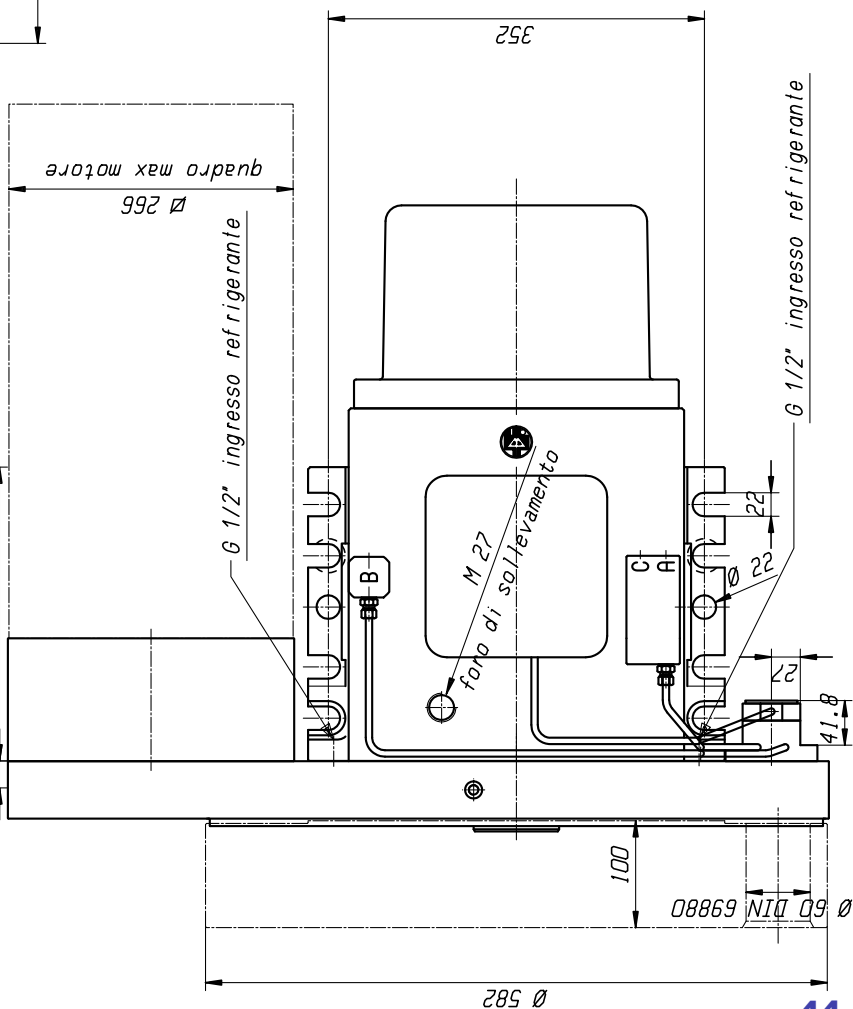
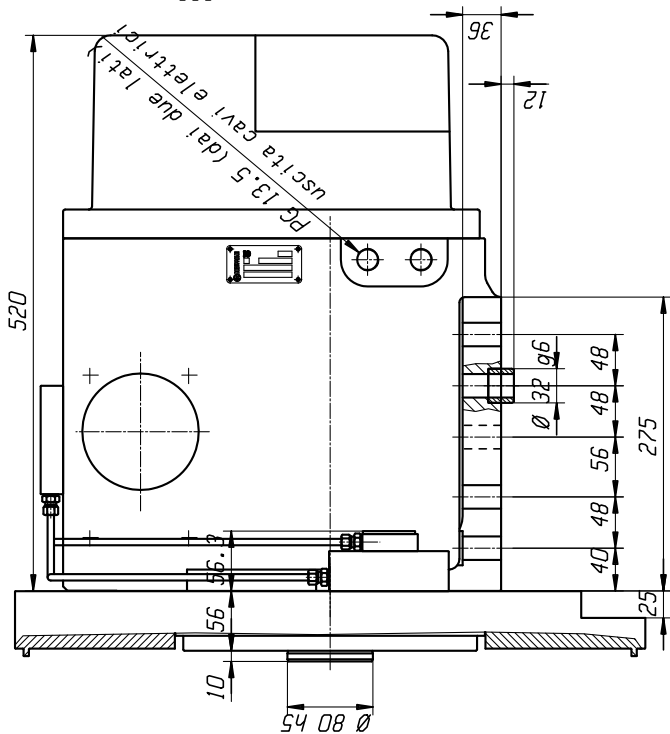


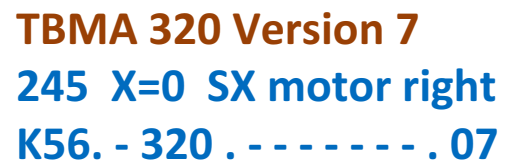


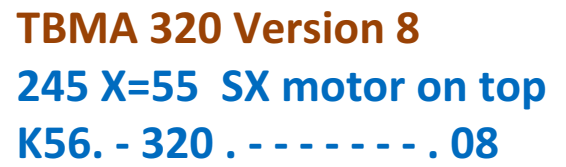


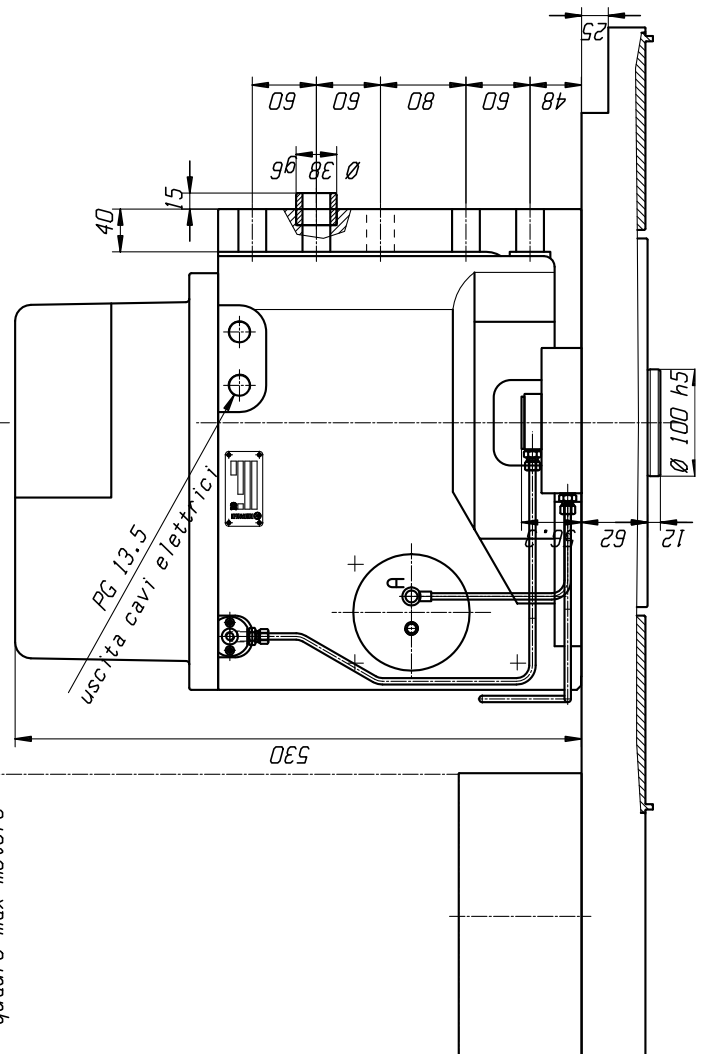


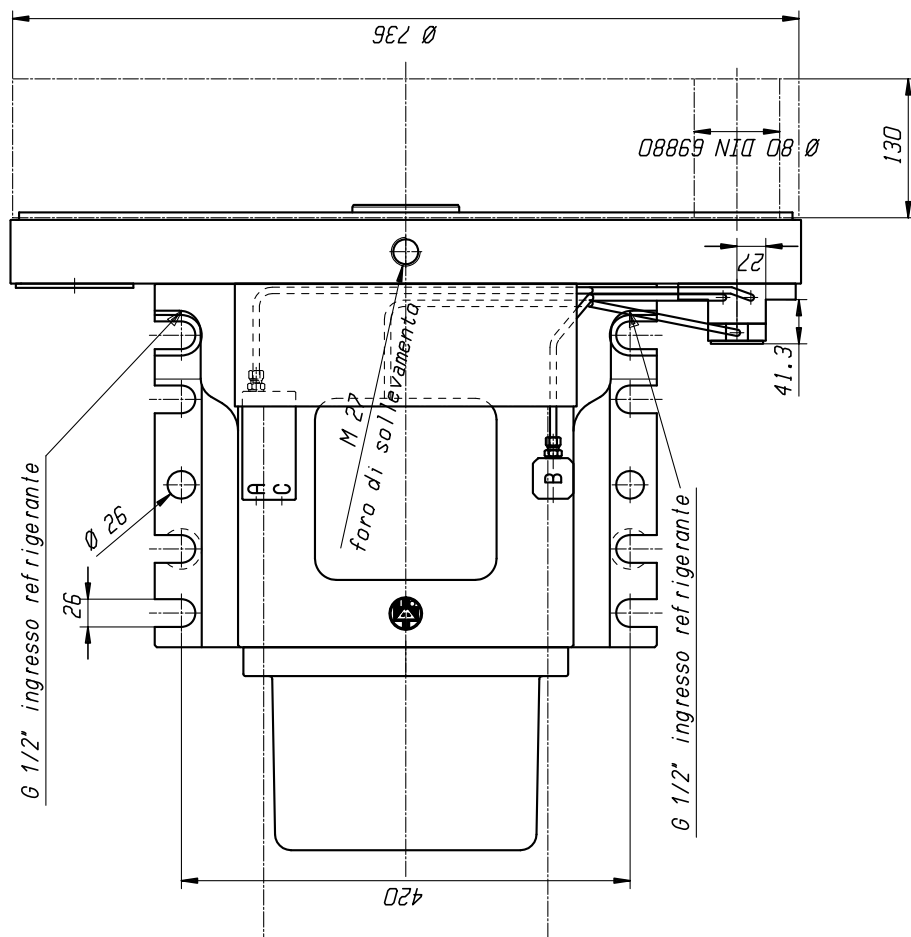
TBMA 320 Version 6
245 X=55 DX motor left
K56. - 320 . - - - - - . 06



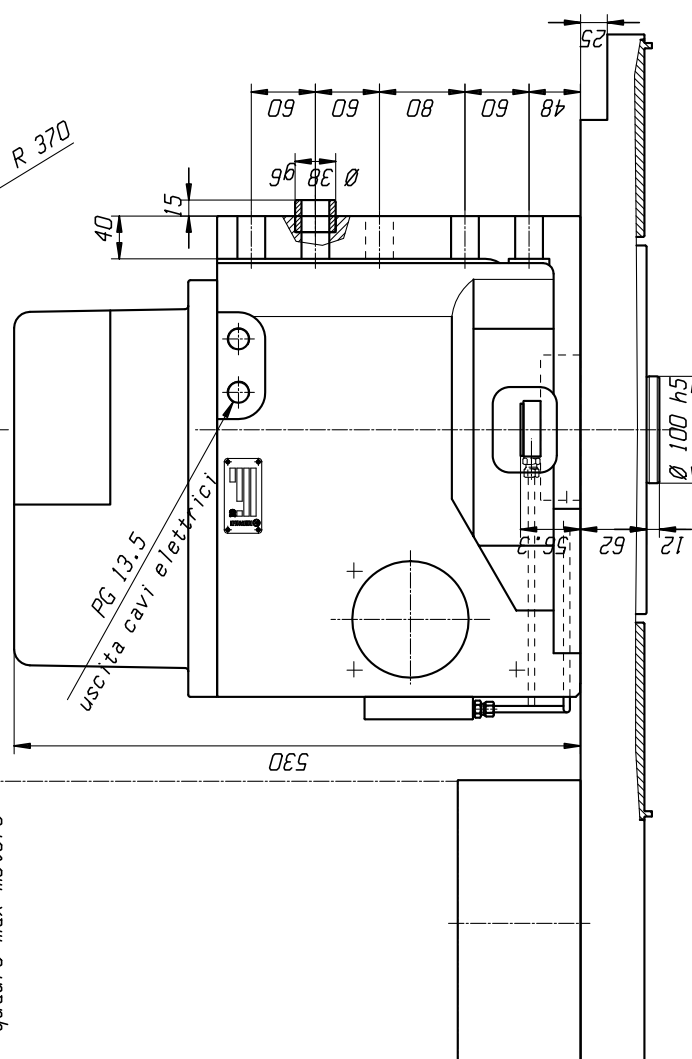
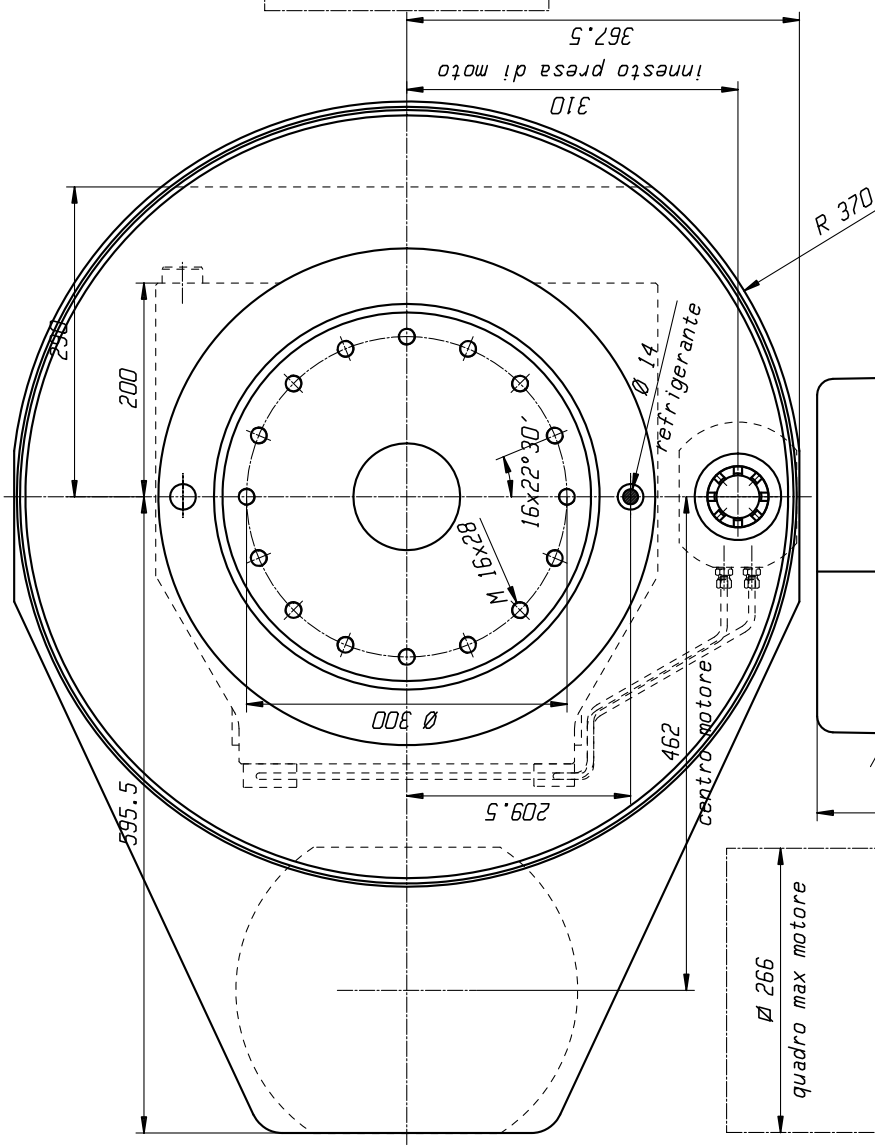


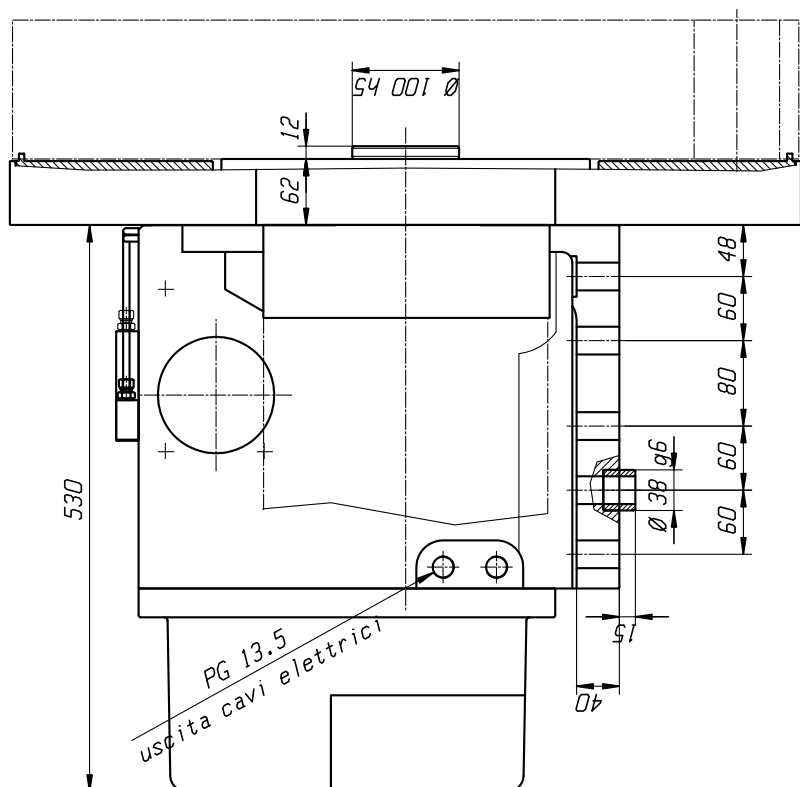




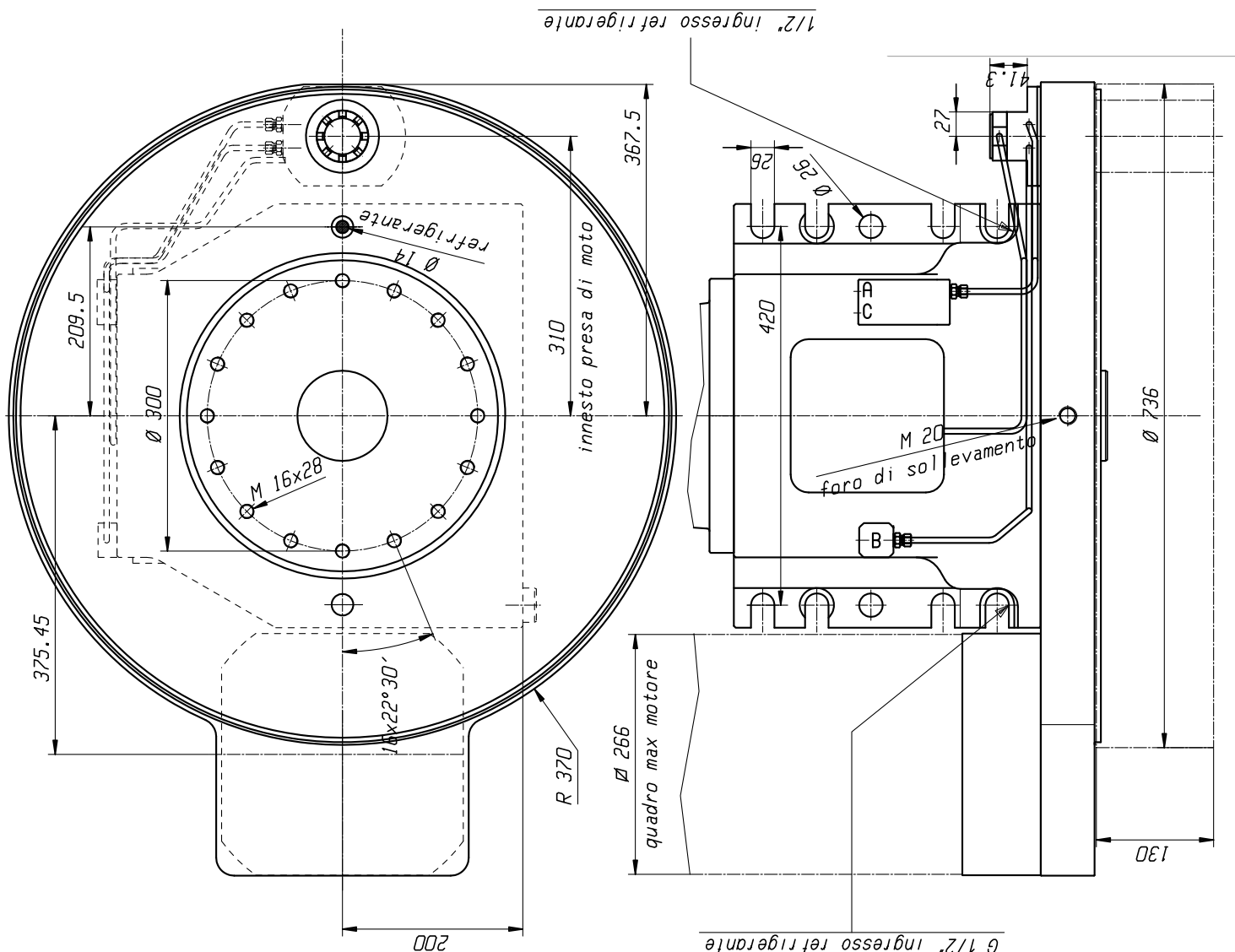


TBMA 400 Version 3
310 X=0 SX motor on top
K56. - 400 03



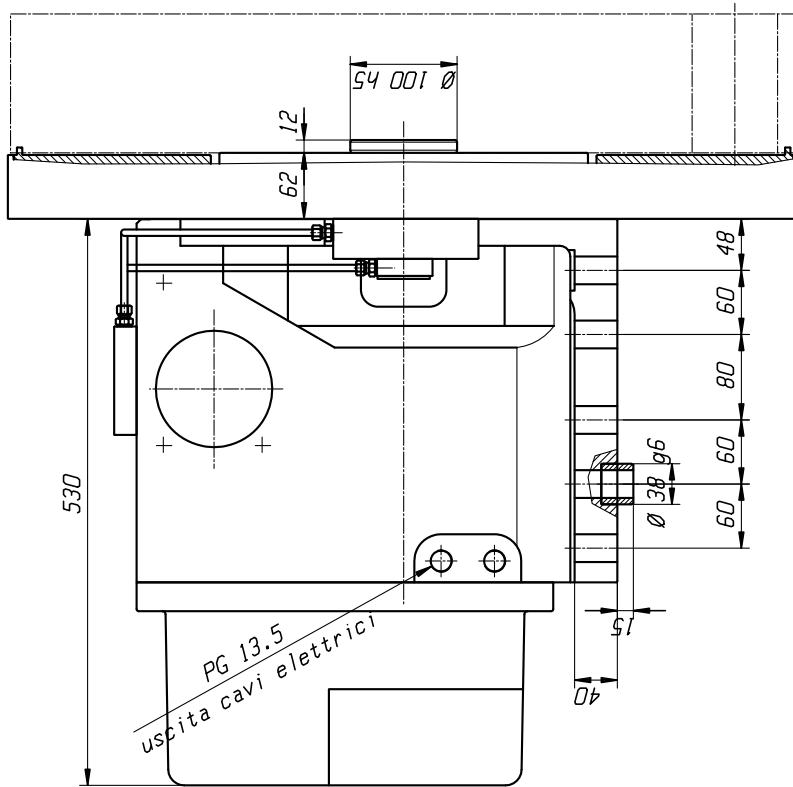


TBMA 400 Version 5
310 X=0 DX motor left
K56. - 400 05

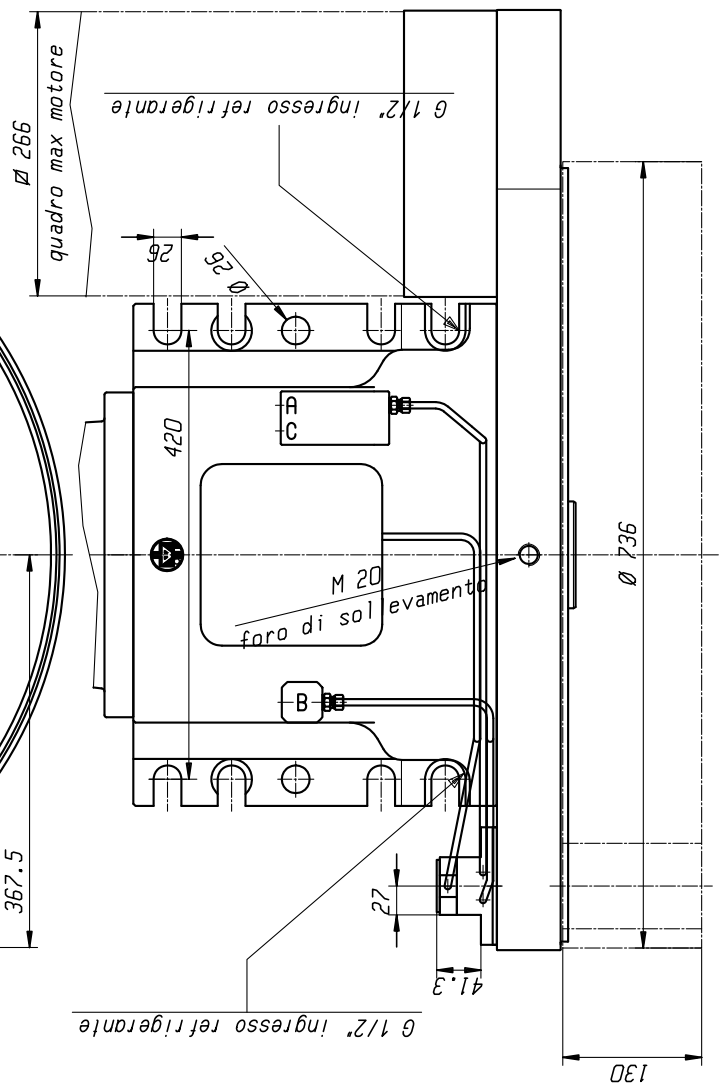
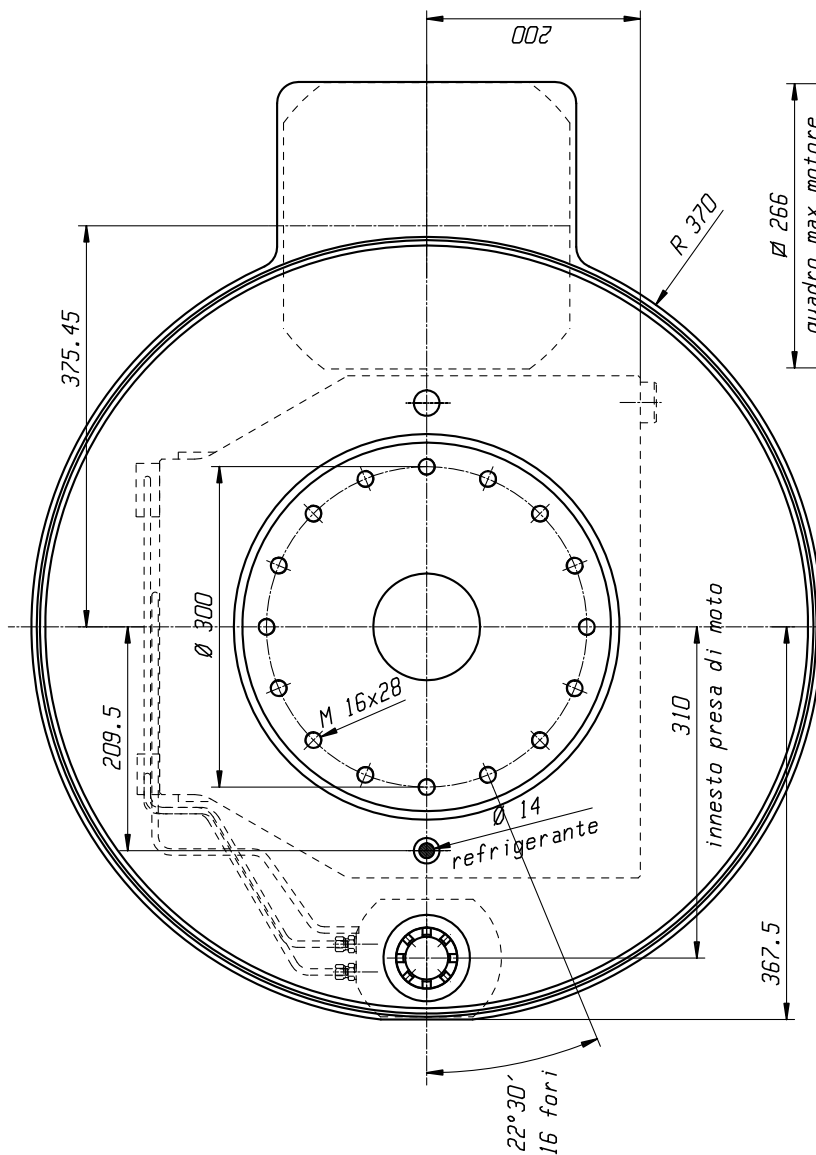




Vista esterna External view

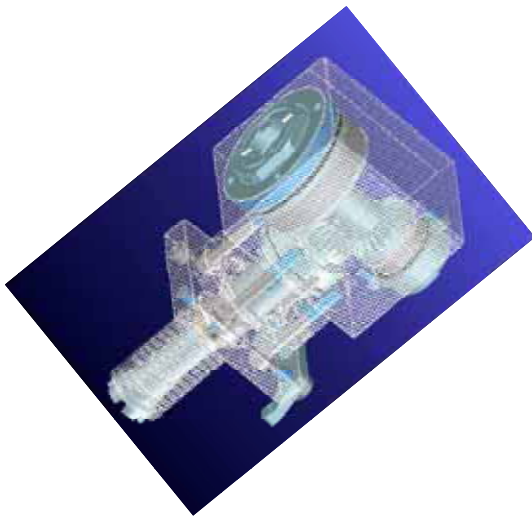


TBMA 400 Version 6
310 X=0 SX motor right
K56. - 400 06

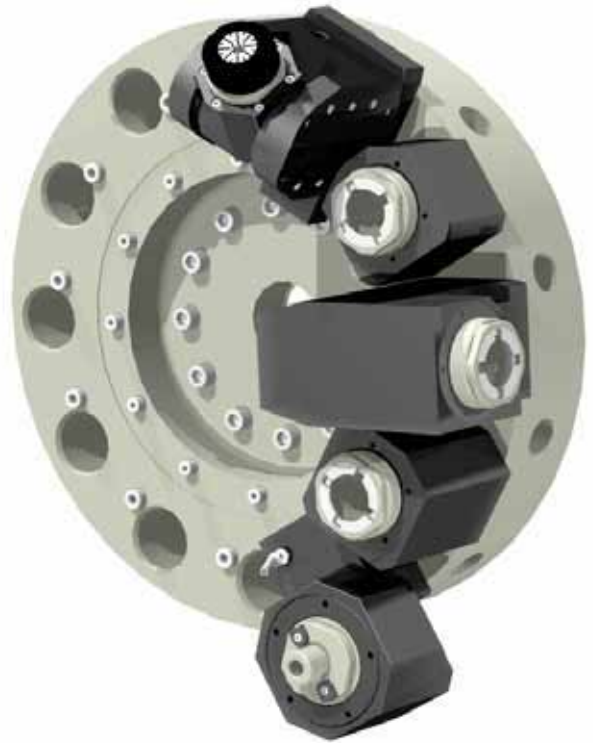




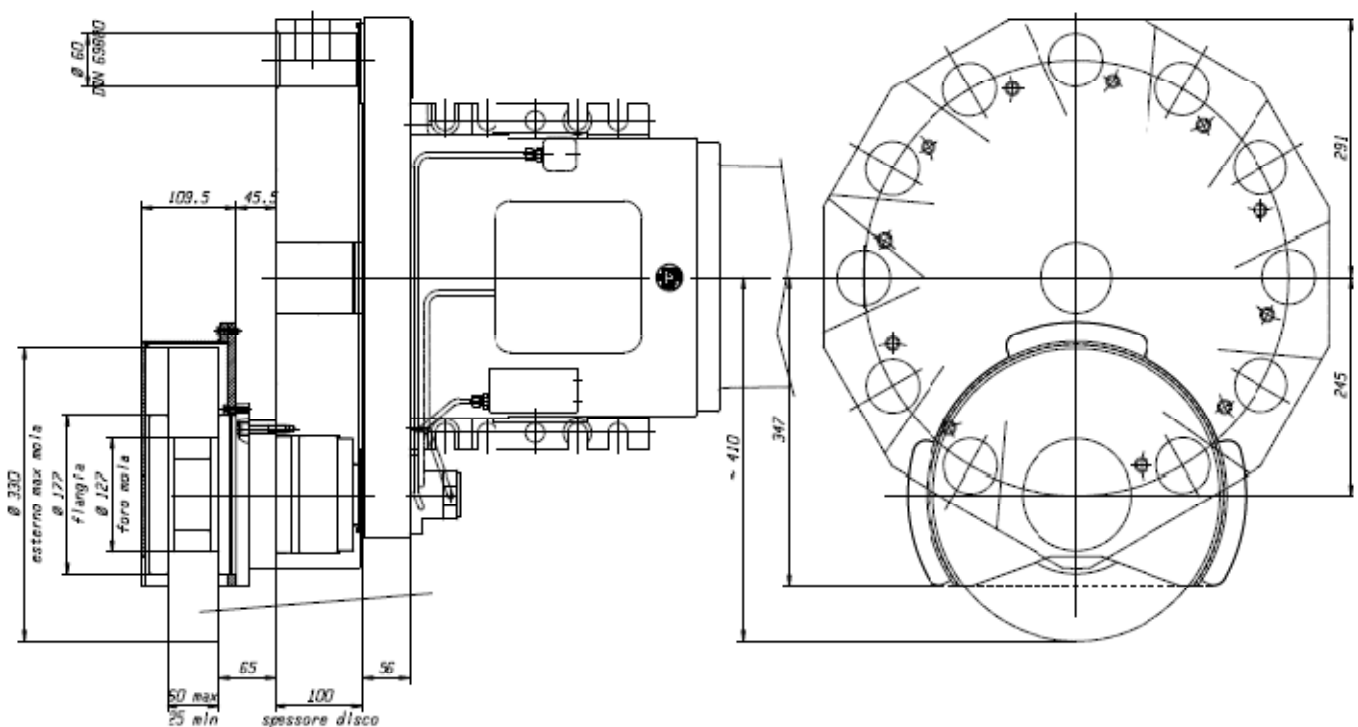
Baruffaldi offers a series of accessories (driven tools, toolholder discs and toolholders), which facilitate the purchase of complete, warranted and economic full package.



Furthermore, on demand , are available turrets with special applications. Do not hesitate to contact the sales office.

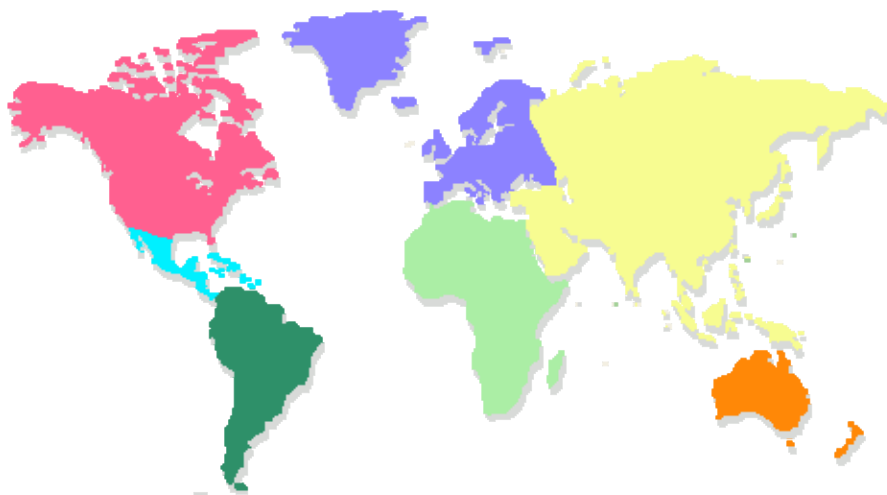


TBMA 320 grinding unit





Organizzazione mondiale di vendite e servizi *Worldwide sales and service organization*



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- The technical data, dimensions and weights are subject to change unless otherwise stated in the individual pages of this catalogue. The illustrations are for reference only.