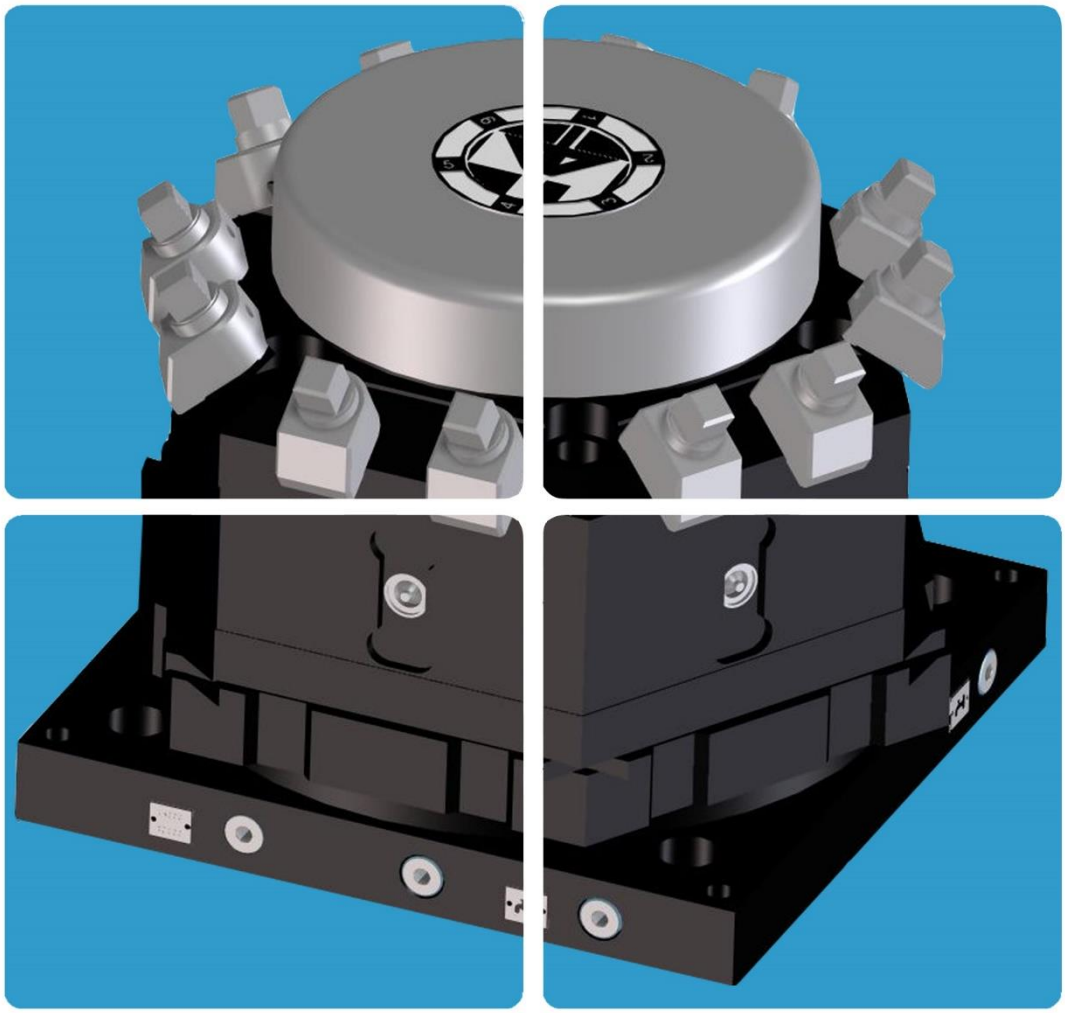
BARUFFALDI

MACHINE TOOL COMPONENTS

Excellence in Mechanical Engineering

TAB Vertical Axis Servo Turrets guide

Catalogo torrette servo ad asse verticale TAB



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BARUFFALDI spa - Excellence in mechanical engineering

Baruffaldi has been in the mechanical branch since 1927.

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

Following the needs and demands of new technology, Baruffaldi has been able to develop the precise and safe products requested by the machine tools market.

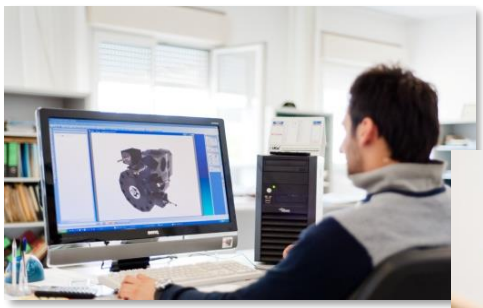
Today Baruffaldi is a leader in the production of turrets for CNC lathes, 2 speed gearboxes, tool holder discs, driven tools, Y axis and B axis units.

La Baruffaldi è nel settore della meccanica fin dal 1927.

Grazie allo sviluppo del mercato e all' esperienza conseguita, durante gli anni 70 la Baruffaldi inizia a produrre componenti per macchine utensili.

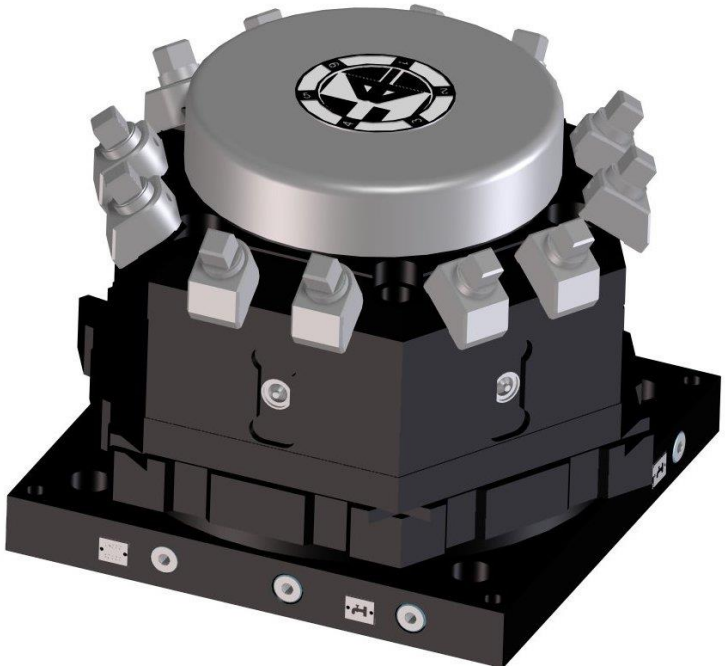
Attenta alle necessità e alle domande di nuova tecnologia è stata capace di sviluppare prodotti precisi e sicuri, come richiesto dal mercato di macchine utensili.

Oggi Baruffaldi è diventata leader nel settore della produzione di torrette per torni CNC, cambi a due di velocità, dischi portautensili, moduli rotanti e l' unità Asse B.



TAB Vertical Axis Servo Turret - Introduction

TAB Torretta Servo ad Asse Verticale- Introduzione



They use a **fully hydraulic locking system** and rotate thanks to a **BRUSHLESS SERVO MOTOR** controlled by a **SERVO DRIVE**.

TAB turrets are **bi-directional**, **without tool holder body lifting** during the indexing rotation, simple design, high performances and request a minimum maintenance.

Turrets can carry 4/6 tool holders as per DIN 69881-1 norms; on demand, they can be supplied with a different number of faces or special body.

Main Characteristics:

- Minimum indexing times
- Bi-directional
- Locking/Unlocking without tool holder body lifting
- Double sensor for locking and unlocking status
- High rigidity due to the new design
- Turret tool holder body with 4 or 6 positions.
- Possibility to lock the turret in intermediate positions (24 divisions)
- Coolant output flow through valve on the body side (for coolant through tool holder)
- Possibility, upon request, to increase the coolant pressure up to 70bar

Utilizzano un sistema di bloccaggio idraulico e ruotano grazie ad un **MOTORE SERVO** gestito interamente da un **SERVO DRIVE**.

Le torrette TAB sono **bidirezionali**, **senza alzata** del corpo durante la rotazione, design semplice, alte performance e richiedono una minima manutenzione.

Le torrette sono normalmente costruite per portare 4/6 portautensili, secondo norme DIN 69881-1; a richiesta possono essere fornite con un numero diverso di lati o corpi speciali.

Caratteristiche principali:

- Minimi tempi di posizionamento
- Bidirezionalità
- Doppio sensore per segnalare il bloccaggio e sbloccaggio torretta
- Sblocco/ Blocco senza alzata del corpo
- Alta rigidità grazie al nuovo design
- Corpo portautensili a 4 o 6 posizioni
- Possibilità di posizionamenti intermedi (24 divisioni)
- Uscita refrigerante attraverso valvole laterali (per uscita refrig. attraverso il portautensile)
- Possibilità, su richiesta, di raggiungere la pressione dell'uscita refrigerante fino a 70bar

Size *Taglia*			**TAB 210**	**TAB 265**	**TAB 340**
N° of stations (standard) *N° di posizioni (standard)*			4		
N° of stations (optional) *N° di posizioni (opzionale)*			6		
N° of divisions *N°di divisioni*			24		
Direction of rotation *Direzione di rotazione*			Bidirectional *Bidirezionale*		
Max Moment of Inertia *Momento d'inerzia massimo*		kgm²	8	8	30
Clamping Force (at 50bar) *Forza di bloccaggio (a 50bar)*		N	36000	62000	92000
Max Tangential Torque *Massima coppia tangenziale*		Nm	3200	6560	13850
Max Overturning Torque (pressing)* *Massima coppia ribaltante (a premere)**		Nm	6600	13800	29500
Max Overturning Torque (lifting)* *Massima coppia ribaltante (a sollevare)**		Nm	2600	5000	10900
*** Distance from turret axis** ** Distanza dall'asse torretta*		mm	200	250	300
Positioning Accuracy *Precisione di posizionamento*		deg.	±4"		
Accuracy of Repeatability *Precisione di ripetibilità*		deg.	±1,6"		
Hydraulic Locking Pressure *Pressione idraulica di serraggio*		bar	50 ±5		
Max coolant pressure (standard) *Massima pressione refr. (standard)*			20		
Max coolant pressure (option) *Massima pressione refr. (opzionale)*			70		
Ambient temperature range *Temperatura ambiente*		°C	0-40		
Protection degree *Gradi di protezione*		IP	65		
Locking+unlocking time* *Tempi aperture/chiusura**		sec.	0.75	0.75	0.9
Minimum positioning time *Tempi posizionamento minimi*	**90°**	sec.	0.55	0.55	0.92
	180°		0.85	0.85	1.34
	360°		1.45	1.45	2.2

*The times could change according to the configuration and characteristic of the hydraulic circuit of the machine

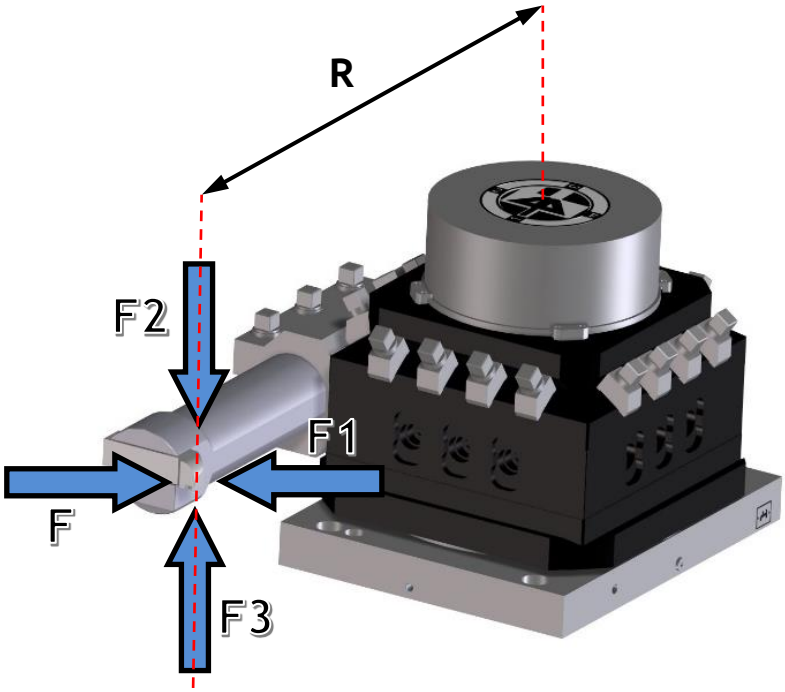
*I tempi possono variare a secondo della configurazione e delle caratteristiche del circuito idraulico della macchina

TAB Turrets - Loading capacity

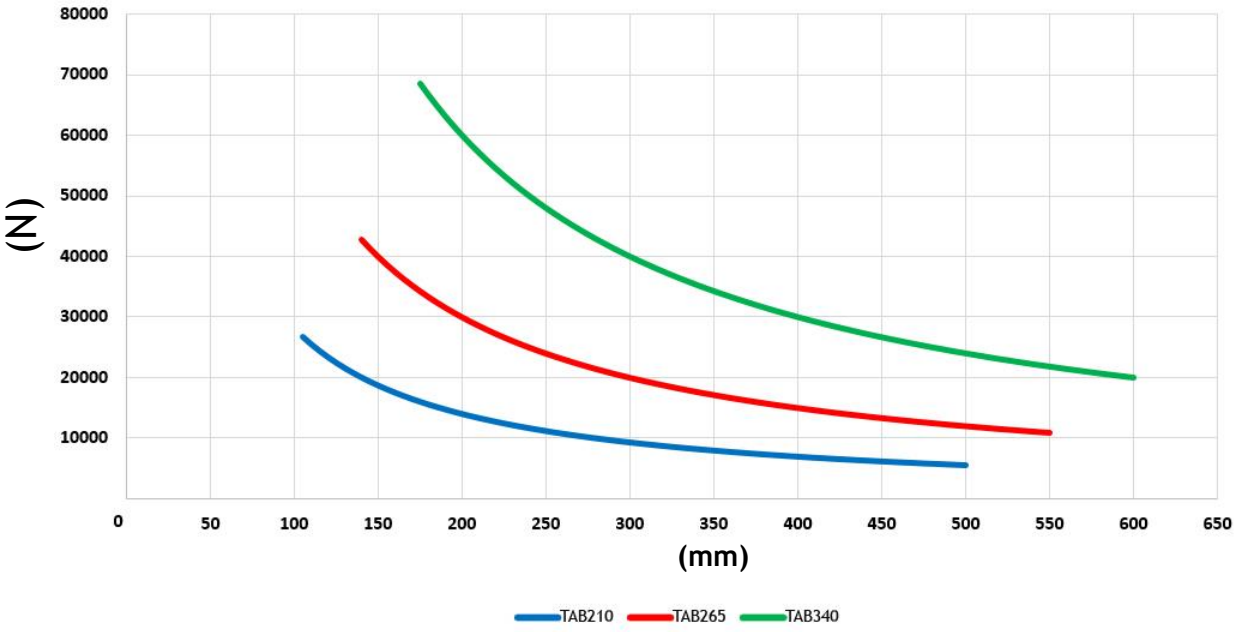
Torrette TAB - Capacità di carico

Following diagrams refer to forced applied to the turret. For loading capacity of static tool holders please refer to manufacturer's data sheet.

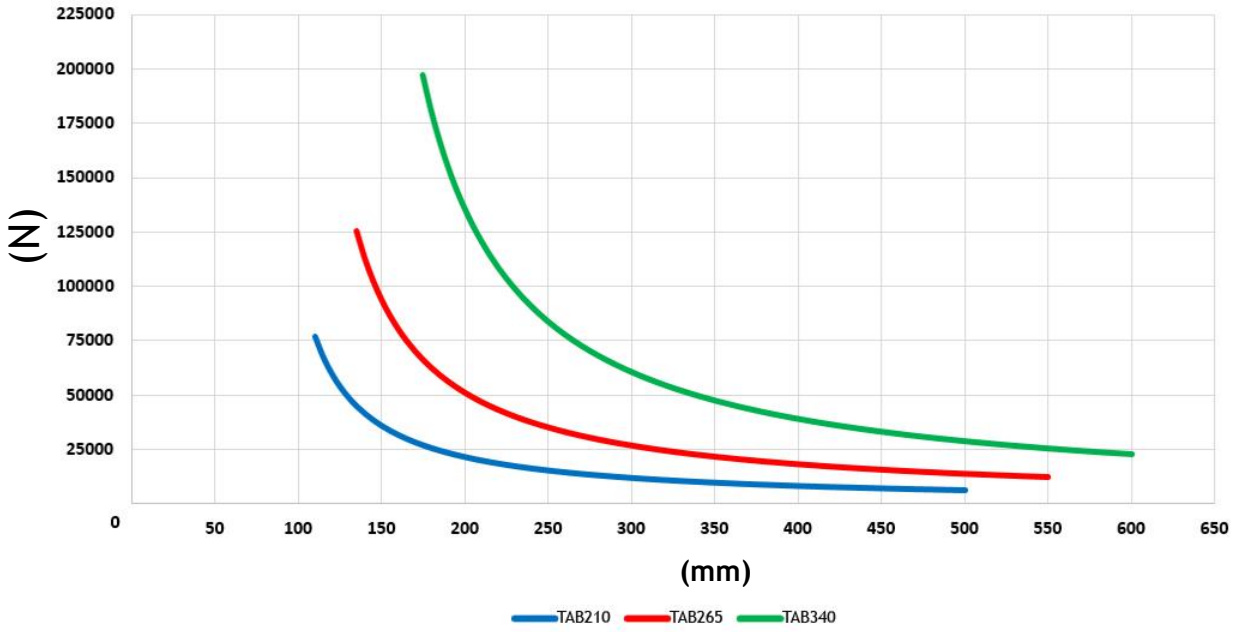
Il diagramma seguente si riferisce alle forze applicabili alla torretta. Per la capacità dei portautensili consultare i dati forniti dai rispettivi produttori.



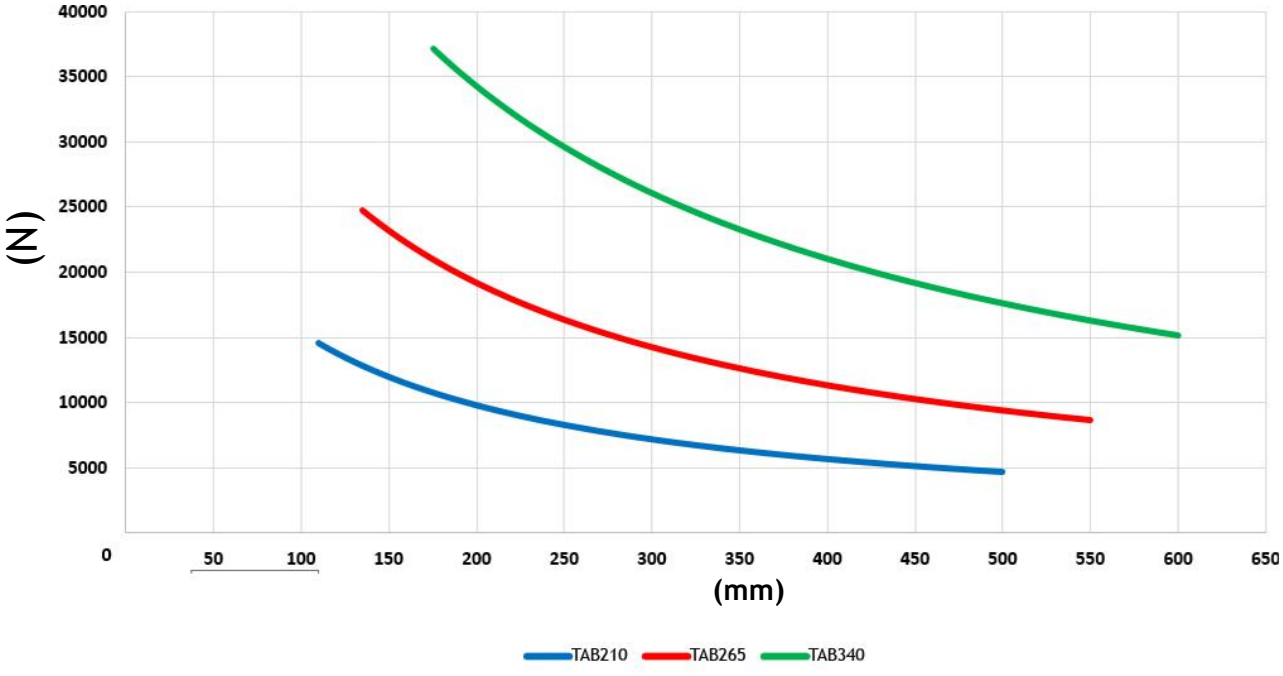
F-F1 Tangential / *Tangenziale*



F2 To Push / *A Premere*



F3 To Lift / *A Sollevare*



TAB Turrets - Order Code

Torrette TAB - Codice per l'ordinazione

OUTPUT COOLANT *Uscita Refrigerante*	*Code*
WITHOUT OUTPUT COOLANT VALVES Senza Valvoline uscita refrigerante	0
WITH OUTPUT COOLANT VALVES Con Valvoline uscita refrigerante	1

ELECTRICAL WIRING *Cablaggio elettrico*	*Code*
INTERNAL ELECTRICAL TERMINAL BLOCKS (on request) Morsettiere elettriche interne (su richiesta)	0
ELECTRICAL CONNECTION WITH EXTERNAL BOX (STANDARD) Connessioni elettriche con scatola di derivazione esterna (STANDARD)	1

TOOL HOLDER BODY Corpo portautensili	Code
STANDARD FOR TOOLS DIN 69881-1 Standard per utensili tipo DIN 69881-1	0
WITH EXTENDED DOVETAIL FOR TOOLS DIN 69881-1 (only for TAB210/265) Con attacco maggiorato per utensili tipo DIN 69881-1 (solo per TAB210/265)	1
CYLINDRICAL TOOL HOLDER BODY (SPECIAL) Corpo porta utensili cilindrico (SPECIALE)	2
SPECIAL TOOL HOLDER BODY Corpo porta utensili speciale	3

VARIOUS *Varie*	*Code*
HIGH COOLANT PRESSURE Alta pressione refrigerante	P
TRANSFORMER 400V TO 220V Trasformatore da 400V a 220V	T

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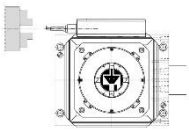
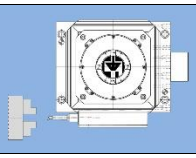
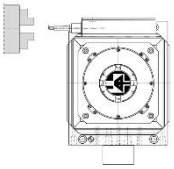
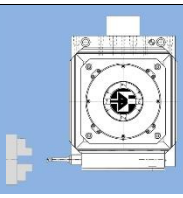
TURRET SIZE *Taglia torretta*	*Code*
TAB 210	210
TAB 265	265
TAB 340	340

N° OF DIVISIONS *Numero di divisioni*	*Code*
4	0
5	1
6	2
8	3
10	4
12	5

VERSION *Versione*	*Code*
STANDARD	01
SPECIAL APPLICATION (on request) Applicazioni speciali (su richiesta)	*

WORKING POSITION *Posizione di lavoro*		*Code*
P		0
R		1
S		2
S1		3

The turret rotates and positions thanks to an internal Brushless Servo Motor (M) fully controlled by our safe and stable Servo Drive type DMS08.

When hydraulic oil pressure acts in chamber (A), locking ring (C) moves upwards, disengaging hirth teeth rings. The turret is thus ready for tool change.

During turret locking sequence, oil pressure acts in chamber (B) and pushes locking ring (C) downward, making hirth teeth rings engage. The turret is ready for machining. Motor (M) drives tool holder body by means of a gear transmission, to achieve tool change.

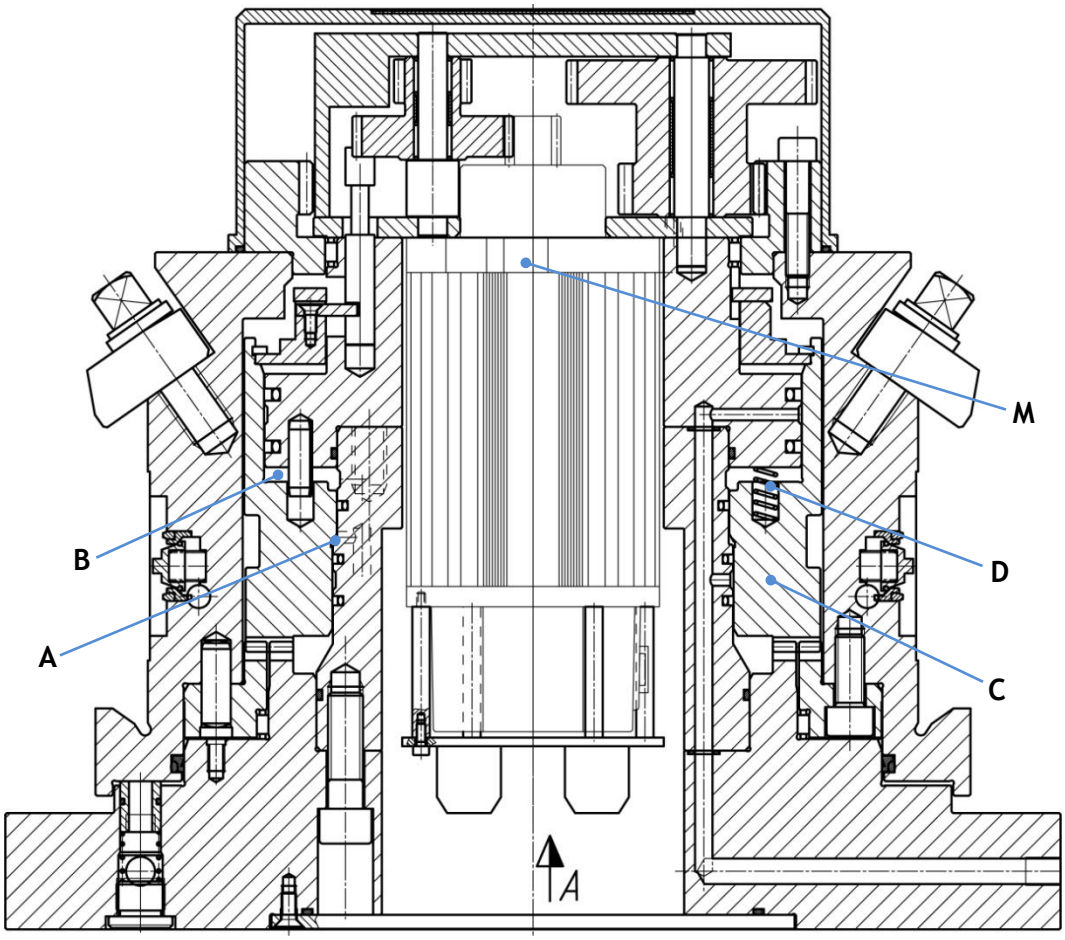
The turret is equipped with safety springs (D) that push locking ring (C) downward when oil pressure is close to zero. This is only a security self-locking in the event of an oil pressure breakdown (for instance due to power failure).

Il corpo portautensili ruota e si posiziona grazie a un Servo Motore interno di tipo Brushless (M) completamente controllato e gestito da un Servo Azionamento di ultima generazione tipo DMS08.

Quando la pressione idraulica dell'olio è nella camera (A) la corona cortocircuitante (C) viene spinta in alto disinnestando le corone hirth. La torretta è quindi pronta per un cambio utensile.

In fase di bloccaggio torretta, la pressione dell'olio nella camera (B) spinge la corona cortocircuitante (C) verso il basso accoppiandosi le corone hirth e serrando la torretta. Di fatto l'unità è pronta per lavorare.Il motore fa girare il corpo portautensili, attraverso la rotazione di una trasmissione ad ingranaggi, realizzando il cambio utensile.

La torretta è munita di molle di sicurezza (D) che di fatto spingono la corona cortocircuitante (C) verso il basso anche quando la pressione idraulica è vicina allo zero. Questo è solo un'auto chiusura di sicurezza della torretta in caso di mancanza della pressione idraulica (dovuta anche eventi di emergenza).



TAB Turrets - ServoDrive function description

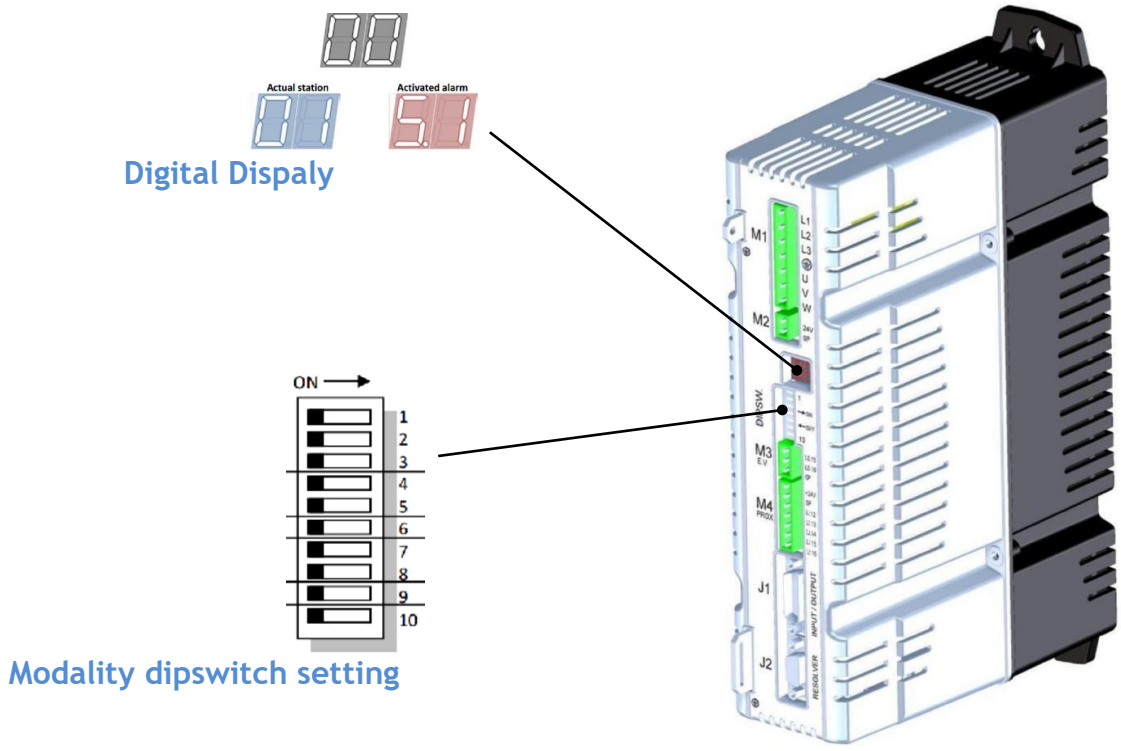
Torrette TAB - Descrizione di Funzionamento

TAB turrets are supplied with a new generation Drive (type DMS08) that operates the turret by connecting it to the plc and allows its remote control. A digital display shows constantly:

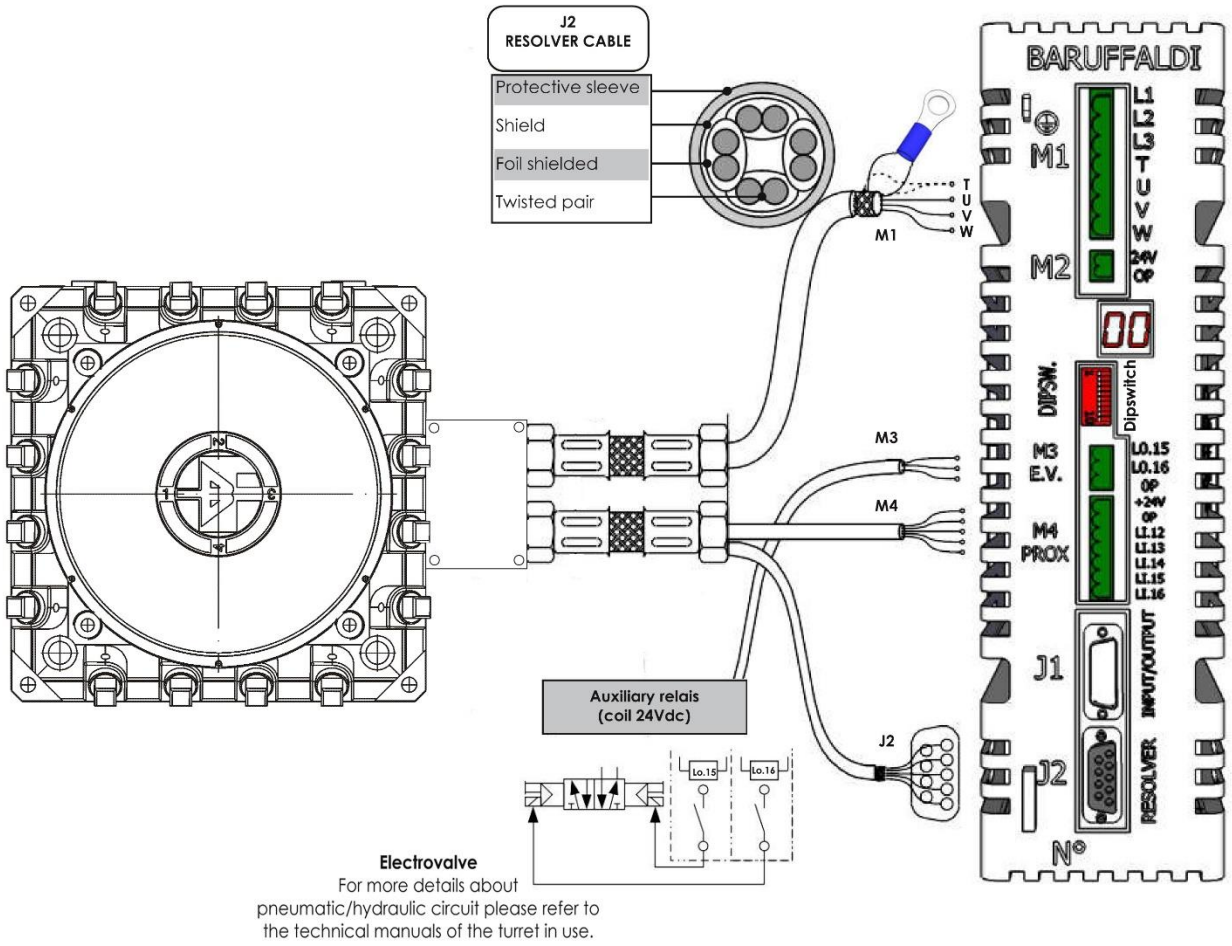
- Drive power supply 220V
- Current position of the turret
- The activation of 26 alarms in case of trouble: this allows to easily find problems that occur during the turret operation
- Position feedback

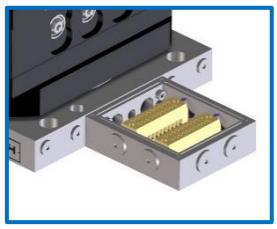
Le torrette TAB sono fornite con un Servo Azionamento di ultima generazione (tipo DMS08) che permette il controllo remoto dell'unità. Attraverso il suo display elettronico, segnala costantemente:

- Il voltaggio dell'azionamento (220V)
- Posizione attuale della torretta
- Attivazione di 26 allarmi in caso di problemi permettendo la rapida risoluzione di anomalie
- Feedback di posizione



MAIN SHOWN ALLARMS	
Input Power Supply Error	*Errore tensione in entrata*
Position error	*Errore posizionamento*
No signal from unlock proximity switch	*Mancanza segnale proximity apertura*
No signal from lock proximity switch	*Mancanza segnale proximity chiusura*
No signal from Zero proximity switch	*Nessun segnale dal proximity di Zero*
During locking sequence the turret remains opened	*Durante sequenza chiusura la torretta rimane aperta*
Zero search error	*Errore ricerca di zero*
Time out rotation (30")	*Time out rotazione (30")*
Resolver failure	*Errore resolver*
Motor PTC	*Termica motore*
Wrong parity bit setting	*Errore parità*
A non-existing position has been called	*Posizione inesistente richiesta*

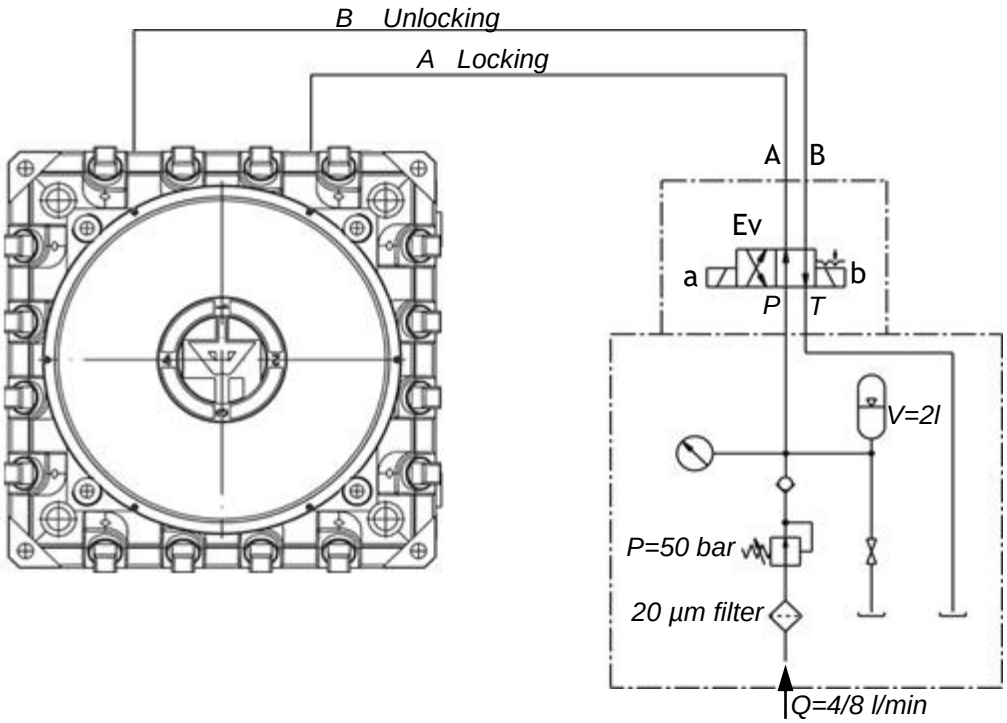




EXTERNAL ELECTRICAL BOX (Standard)

TAB Turrets - Hydraulic connections

Torrette TAB - Connessioni idrauliche



			TAB210	TAB265	TAB340
Working pressure		bar	50 bar ±3		
Filtering		µm	20		
Oil viscosity		mm^2/s	32-36		
Pressure - switch set at		bar	50		
Turret oil connection		G	1/4"		
Pipe diameter*		G	3/4"		
Required oil volume	**A Locking**	cm^3	40	63	93
	B Unlocking		40	63	93

The locking and unlocking times of the turret are influenced by the hydraulic circuit characteristics (pipes diameter, electrovalve and fittings size)

I tempi di aperture e chiusura torretta sono fortemente influenzati dalla conformazione del cicuito idraulico (diametro tubi, taglia elettrovalvola e raccordi)

The standard TAB turrets can be used with a coolant pressure up to 20 bar.

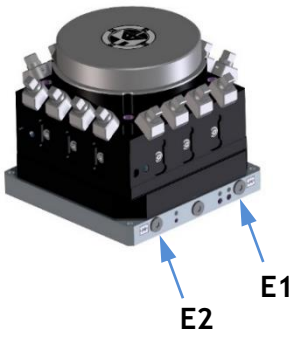
The coolant flow can come out through the holes (C1) on top of the turret, using flexible pipes, or from the valves (C2) on the side of the turret (only when the tool holder is assembled).

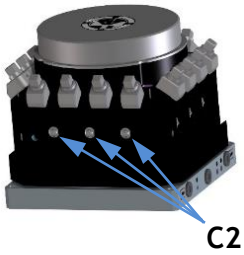
On request is possible to reach coolant pressure up to 70 bar (only from output C1).

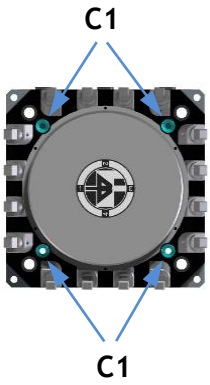
La TAB standard può essere utilizzata con la pressione del liquido refrigerante fino a 20bar.

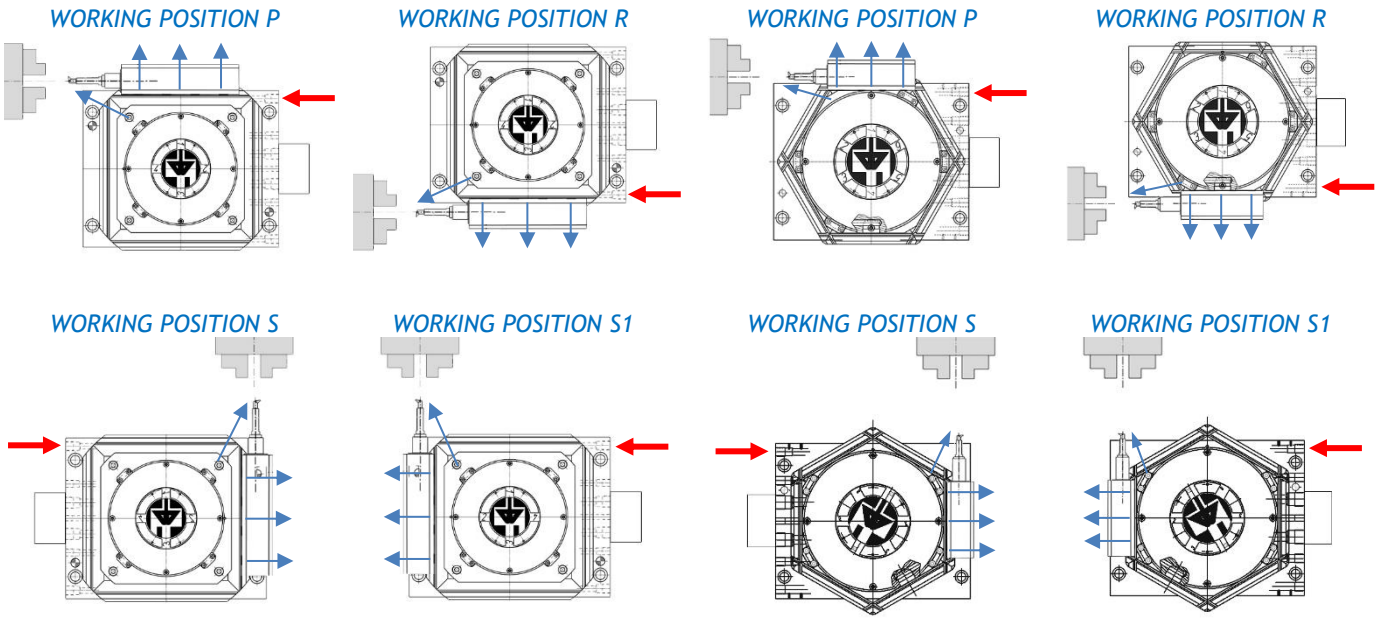
Il flusso refrigerante può fuoriuscire attraverso i fori (C1) dall'alto della torretta, utilizzando tubi flessibili, o dalle valvole laterali (C2) sul lato torretta (solo quando il portautensile è montato).

Su richiesta si può raggiungere la pressione di uscita del liquido refrigerante fino a 70 bar (solo dai fori d'uscita C1).





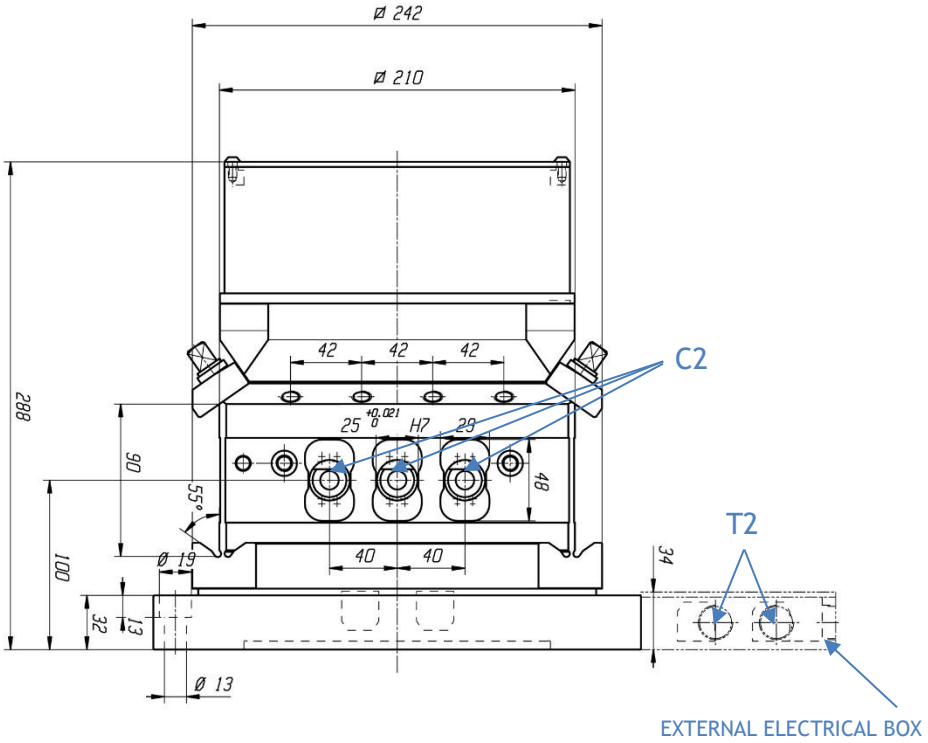


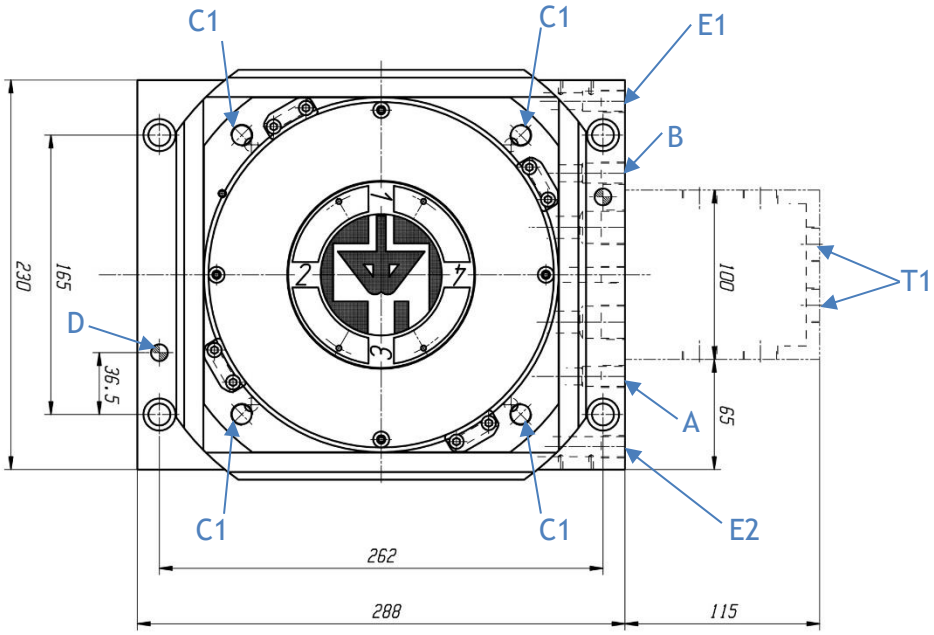


TURRET SIZE	INPUT (E1-E2) HOLE SIZE	OUTPUT (C1) HOLE SIZE	PRESSURE (standard)	PRESSURE (Option)*
TAB210	G 1/4"	G 1/4"	20bar	70bar*
TAB265	G 3/8"	G 3/8"		
TAB340	G 3/4"	G 3/4"		

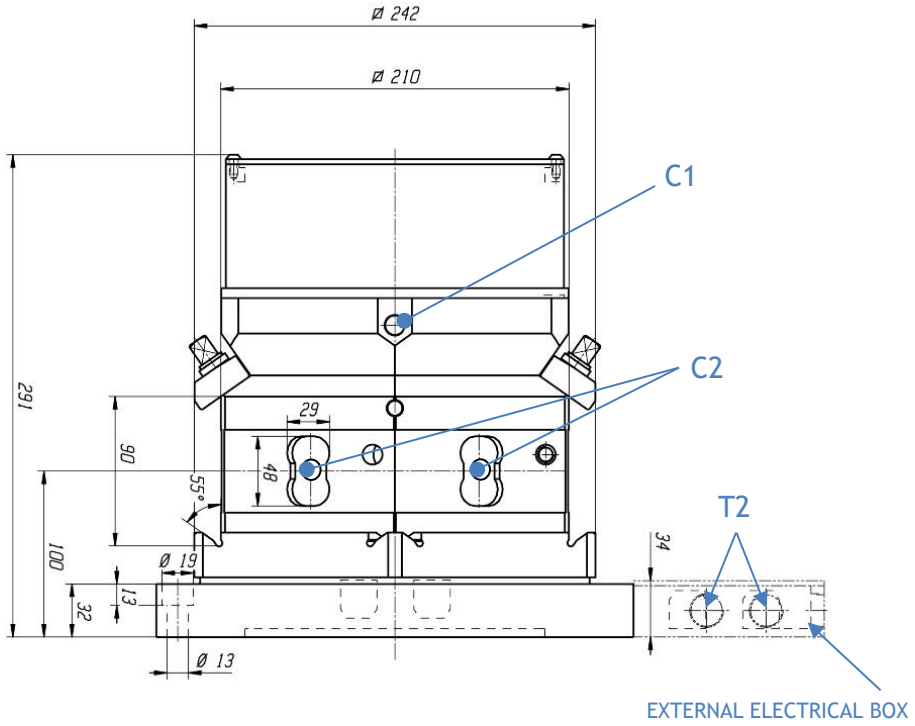
* Only from output holes C1 / Solo da uscite refrigerante C1

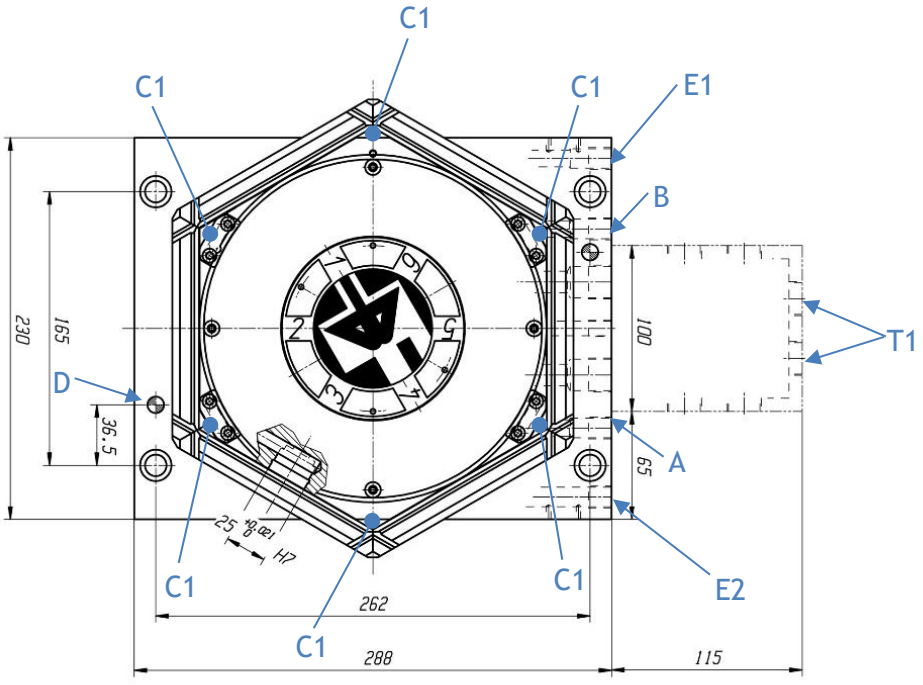
TAB210 4 Positions Turrets - Drawings





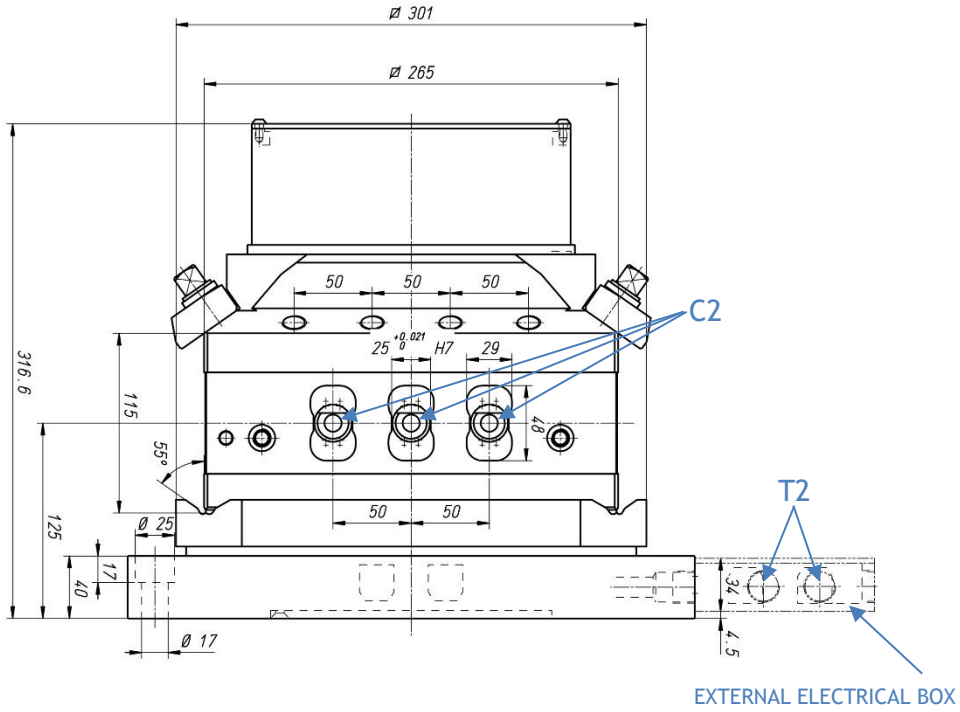
A-B Hydraulic connections 1/4" GAS
E1-E2 Coolant inlet 1/4" GAS
T1-T2 Electrical connection PG 13,5
C1 Coolant outlet 1/4" GAS
C2 Coolant outlet through valves
D Holes for referance pins

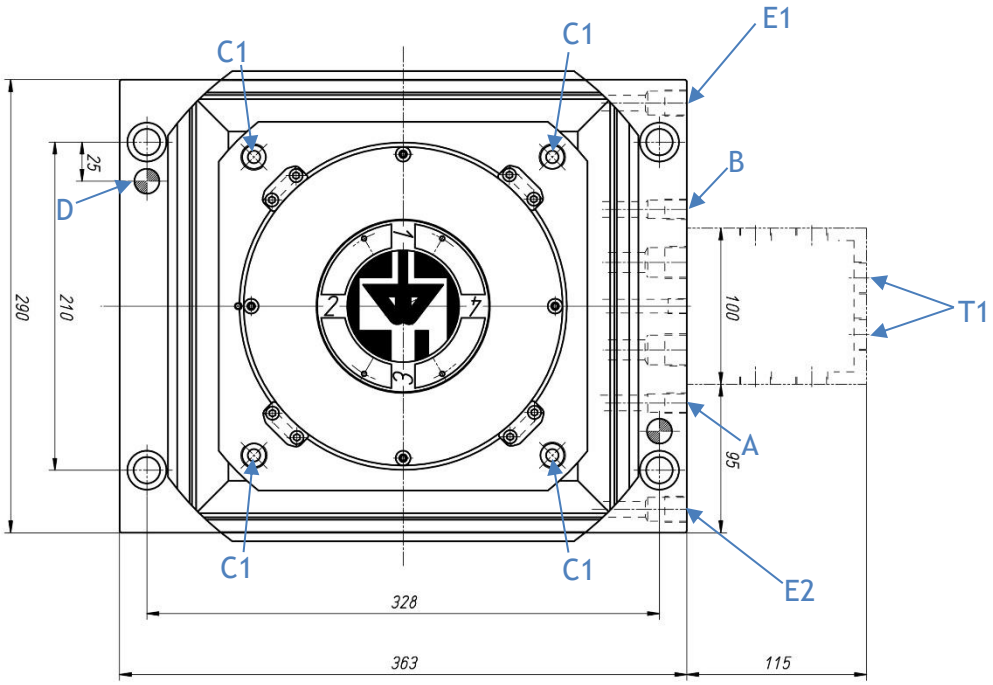




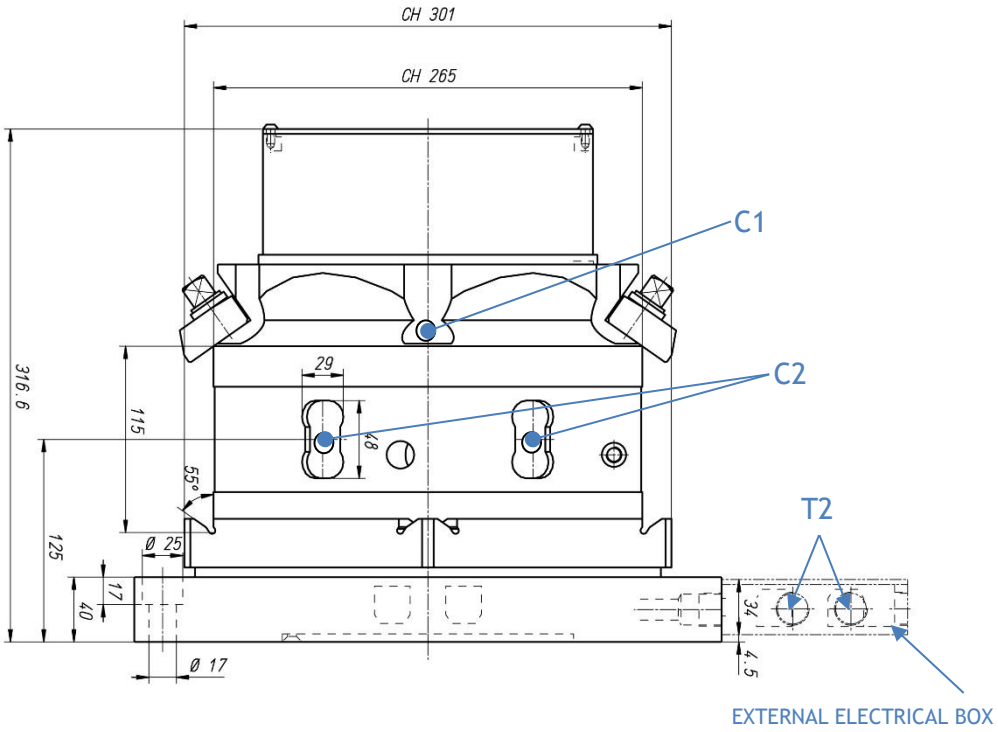
A-B Hydraulic connections 1/4” GAS
E1-E2 Coolant inlet 1/4” GAS
T1-T2 Electrical connection PG 13,5
C1 Coolant outlet 1/4” GAS
C2 Coolant outlet through valves
D Holes for referance pins

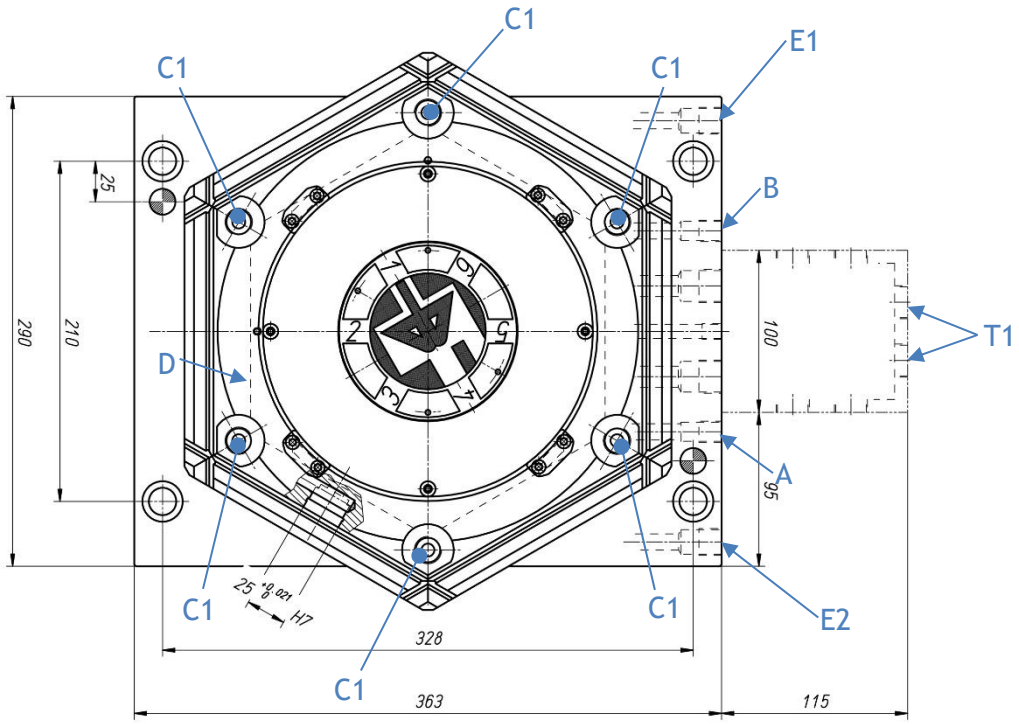
TAB265 4 Positions Turrets - Drawings





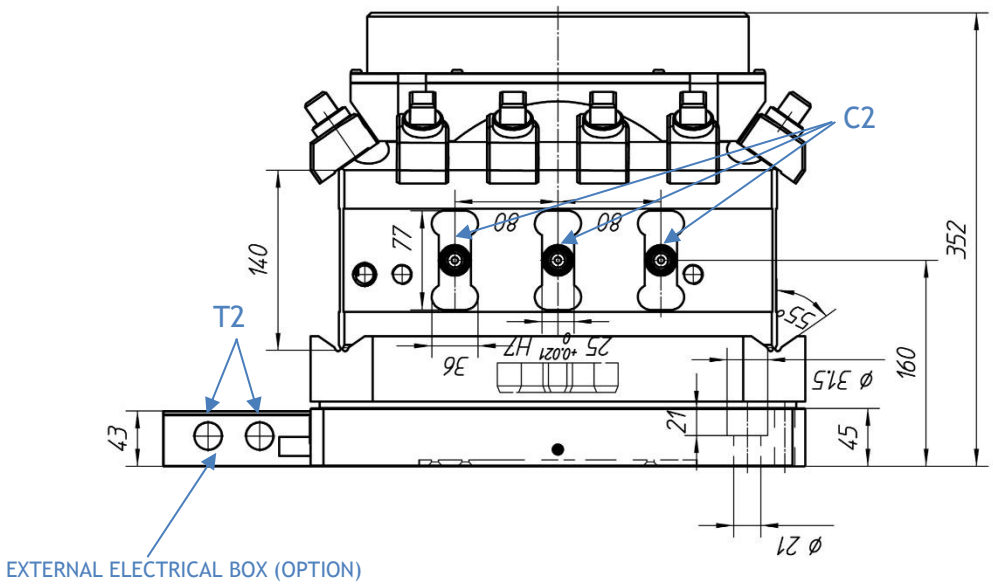
A-B Hydraulic connections 1/4” GAS
E1-E2 Coolant inlet 3/8” GAS
T1-T2 Electrical connection PG 13,5
C1 Coolant outlet 3/8” GAS
C2 Coolant outlet through valves
D Holes for referance pins

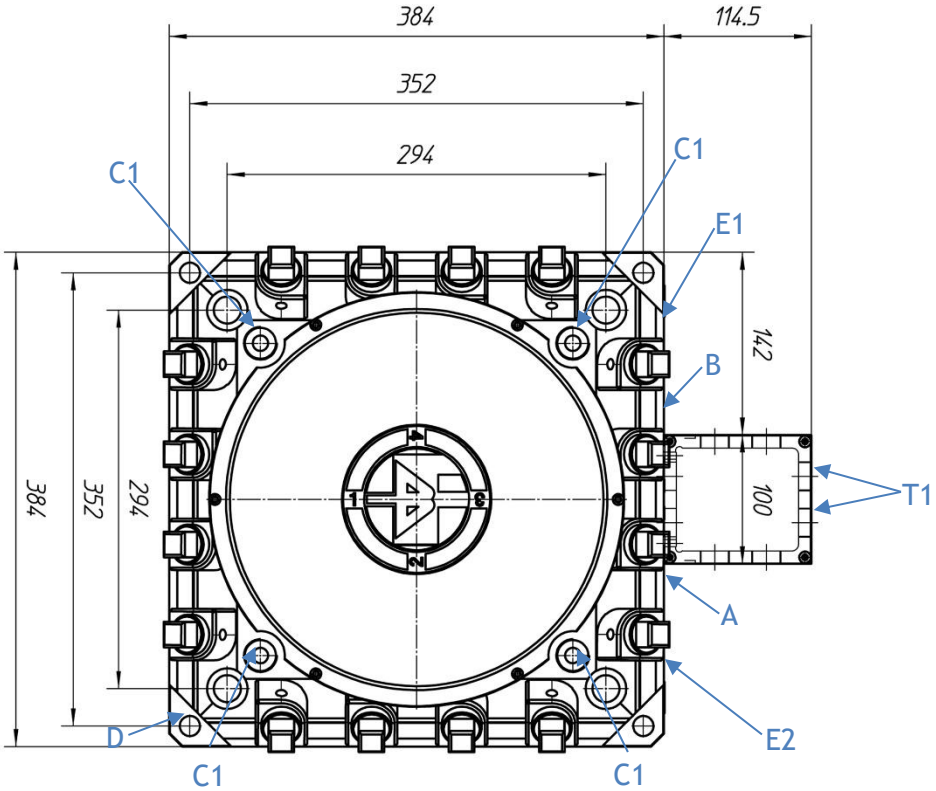




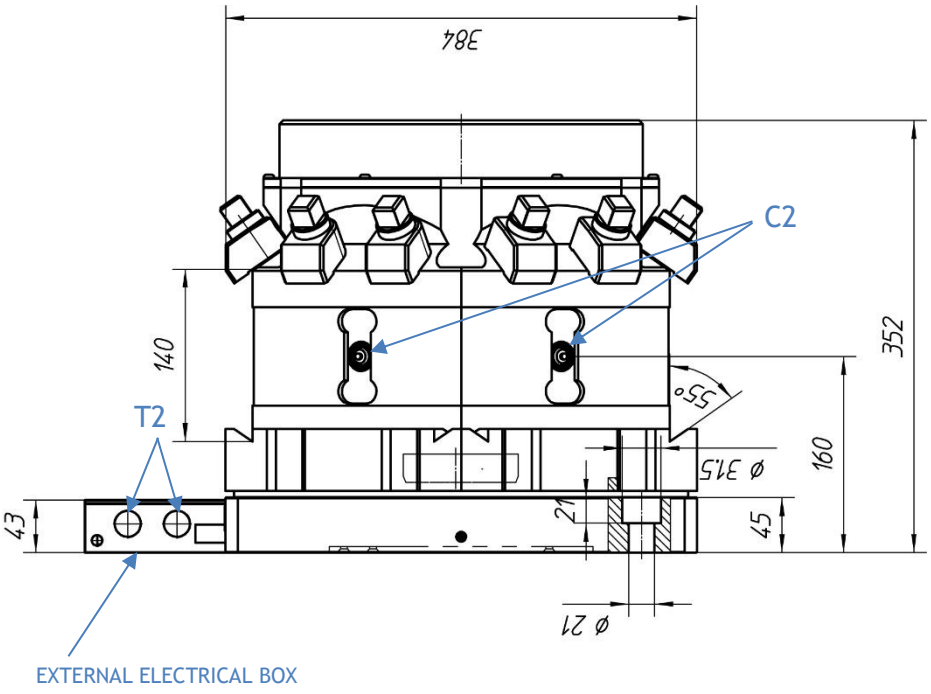
A-B Hydraulic connections 1/4” GAS
E1-E2 Coolant inlet 3/8” GAS
T1-T2 Electrical connection PG 13,5
C1 Coolant outlet 3/8” GAS
C2 Coolant outlet through valves
D Holes for referance pins

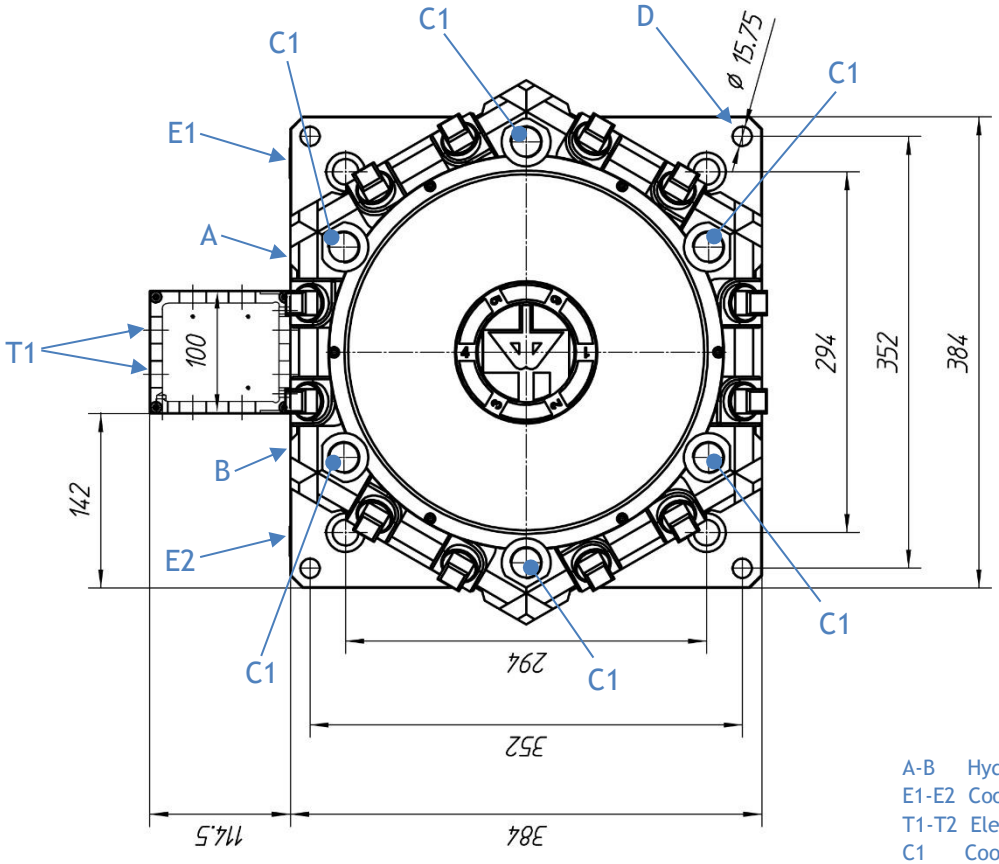
TAB340 4 Positions Turrets - Drawings





A-B Hydraulic connections 1/4” GAS
E1-E2 Coolant inlet 3/4” GAS
T1-T2 Electrical connection PG 13,5
C1 Coolant outlet 3/4” GAS
C2 Coolant outlet through valves
D Holes for referance pins

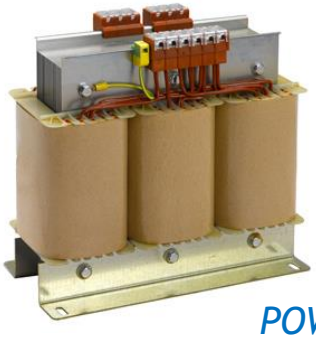




A-B Hydraulic connections 1/4" GAS
E1-E2 Coolant inlet 3/4" GAS
T1-T2 Electrical connection PG 13,5
C1 Coolant outlet 3/4" GAS
C2 Coolant outlet through valves
D Holes for referance pins

TOOL HOLDERS (external and internal cooling)

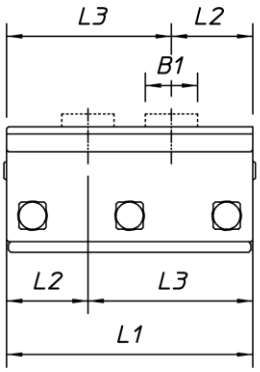
PG21

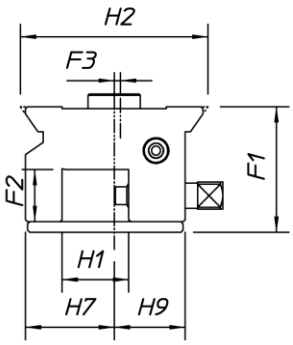


POWER TRANSFORMER 400v to 220V

PG26

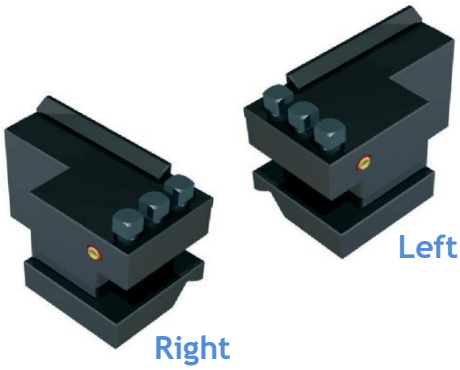
Axial Tool Holder - Portautensile Assiale

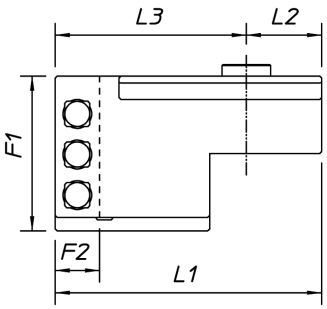


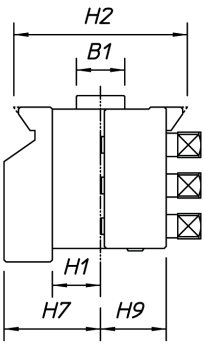


	H1	H2	H7	H9	F1	F2	F3	L1	L2	L3	B1		
SHORT TYPE													
736.0000.101/2-R	16	56	26	19	39	18	-	84	34	50	16		
736.1100.101/2-R	20	56	30	15	39	18	4	84	34	50	16		
736.2000.101/2-R	20/25	72	34	26	47	22	0/5	98	29	69	20		
736.3200.101/2-R	25/32	72	39	21	47	23	5	98	29	69	20		
736.4000.101/2-R	25	90	42,5	34	52	25	-	118	39	79	25		
736.6000.101/2-R	32	115	55	47	52	32	-	118	49	69	25		
736.8000.101/2-R	40	140	67,5	57	63	40	-	144	59	85	25		
LONG TYPE													
736.4000.101/2-S-R	25	90	42,5	34	55	25		160	60	100	25		
736.6000.101/2-S-R	32	115	55	47	54	32		175	50	125	25		

Radial Tool Holder - Portautensile Radiale





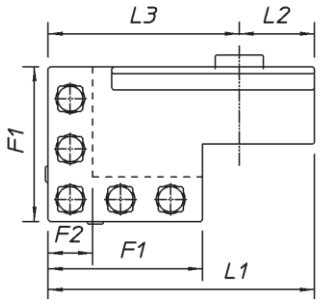


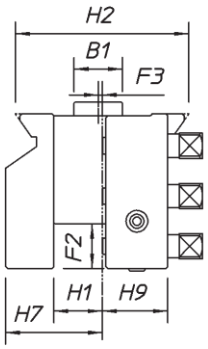
	H1	H2	H7	H9	F1	F2	F3	L1	L2	L3	B1		
LEFT HAND TYPE													
736.4000.021-R	25	90	50	34	72	25		138	39	99	25		
736.8000.021-R	40	140	80	57	110	40		209	59	150	25		
RIGHT HAND TYPE													
736.0000.022-R	16	56	36	19	50	18		94	34	60	16		
736.4000.022-R	25	90	50	34	72	25		138	39	99	25		
736.6000.022-R	32	115	62,5	47	85	32		185	43	142	25		

Radial and Axial Tool Holder - Portautensile Radiale e Assiale

Right

Left



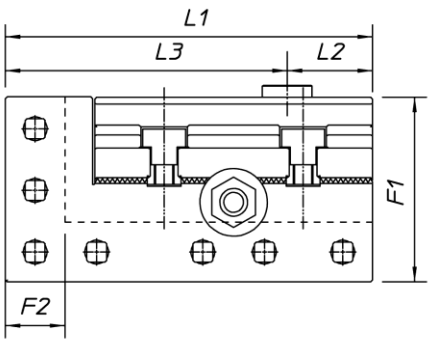


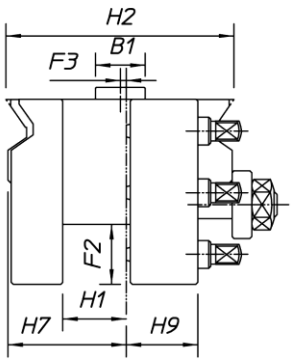
	H1	H2	H7	H9	F1	F2	F3	L1	L2	L3	B1		
LEFT HAND TYPE													
736.1100.011-R	16/20	56	40	15	50	18	0/4	94	34	60	16		
736.3200.011-R	5	72	47,5	21	63	23	5	102	29	73	20		
736.4000.011-R	25	90	50	34	80	25	-	138	39	99	25		
736.6000.011-R	32	115	62,5	47	94	32	-	185	43	142	25		
736.8000.011-R	40	140	80	57	110	40	-	209	59	150	25		
RIGHT HAND TYPE													
736.1100.012-R	16/20	56	40	15	50	18	0/4	94	34	60	16		
736.2000.012-R	20	72	42,5	26	63	22	-	102	29	73	20		
736.3200.012-R	25	72	47,5	21	63	23	5	102	29	73	20		
736.4000.012-R	25	90	50	34	80	25	-	138	39	99	25		
736.6000.012-R	32	115	62,5	47	94	32	-	185	43	142	25		
736.8000.012-R	40	140	80	57	110	40	-	209	59	150	25		

Radial and Axial Tool Adjustable Holder - Portautensile Radiale e Assiale Regolabile

Right

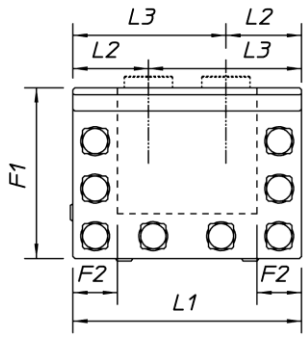
Left

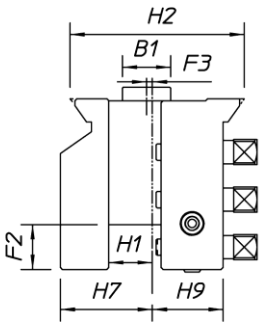




	H1	H2	H7	H9	F1	F2	F3	L1	L2	L3	B1		
LEFT HAND TYPE													
736.1800.011	20	56	33	15	50	18	4	94	34	60	16		
736.3800.011	25	72	42	19	63	23	5	102	29	73	20		
736.4800.011	25	90	46	30	80	23	-	138	39	99	25		
736.6800.011	32	115	58	36	94	30	-	185	43	142	25		
RIGHT HAND TYPE													
736.1800.012	20	56	33	15	50	18	4	94	34	60	16		
736.3800.012	25	72	42	19	63	23	5	102	29	73	20		
736.4800.012	25	90	46	30	80	23	-	138	39	99	25		
736.6800.012	32	115	58	36	94	30	-	185	43	142	25		

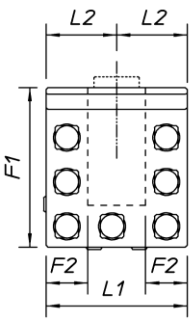
Triple Holder - Portautensile Triplo

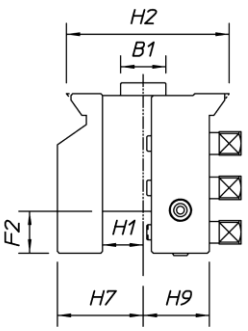




	H1	H2	H7	H9	F1	F2	F3	L1	L2	L3	B1		
736.0000.031/2-R	16	56	36	19	60	18	-	84	34	50	16		
736.3000.031/2-R	25	72	42,5	26	81	22	-	98	34	64	20		
736.3200.031/2-R	25	72	47,5	21	81	23	5	98	34	64	20		
736.4000.031/2-R	25	90	50	34	88	25	-	118	39	69	25		
736.6000.031/2-R	32	115	62,5	47	94	32	-	118	49	69	25		
736.8000.031/2-R	40	140	80	57	115	40	-	148	59	85	25		

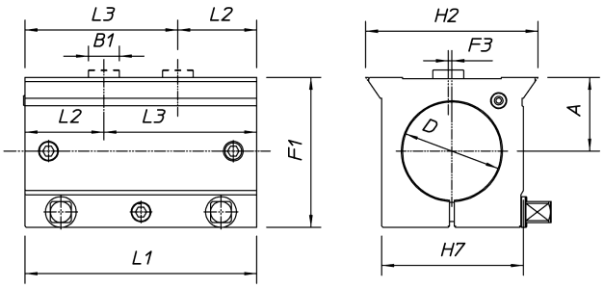
Triple Holder Narrow - Portautensile Triplo Stretto





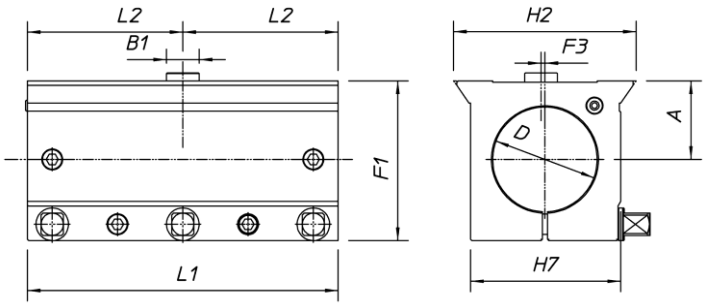
	H1	H2	H7	H9	F1	F2	F3	L1	L2	L3	B1		
736.0000.050-R	16	56	36	19	60	18		68	34		16		
736.4000.050-R	25	90	50	34	88	25		78	39		25		
736.6000.050-R	32	115	62,5	47	94	32		98	49		25		

Tool Holder for Boring Bar (short) - Portautensile per Bareno (corto)



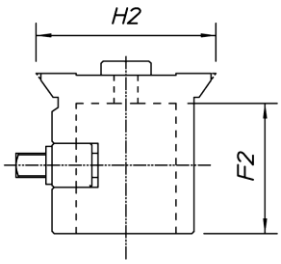
	H2	H7	H9	F1	F2	F3	L1	L2	L3	B1	A	D	
736.0032.501/2-R	56	39	52	62	70	-	93	34	59	16	29	32	
736.1132.501/2-R	56	52	-	59	59	4	93	34	59	16	29	32	
736.2040.501/2-R	72	59	68	69	78	-	114	34	80	20	35	40	
736.2050.501/2-R	72	59	68	69	78	-	114	34	80	20	40	50	
736.3240.501/2-R	72	68	70	69	83	5	114	34	80	20	35	40	
736.3250.501/2-R	72	68	70	69	83	5	114	34	80	20	40	50	
736.4050.501/2-R	90	71	85	88	98	-	138	39	99	25	40	50	
736.4060.501/2-R	90	71	85	88	98	-	138	39	99	25	45	60	
736.6060.501/2-R	115	95	110	94	116	-	148	49	99	25	45	60	
736.6080.501/2-R	115	95	110	94	116	-	148	49	99	25	55	80	

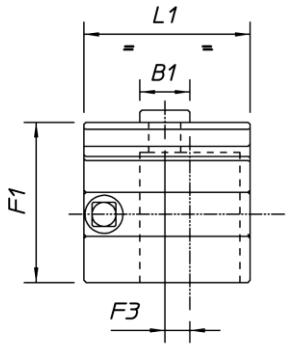
Tool Holder for Boring Bar (long) - Portautensile per Bareno (lungo)



	H2	H7	H9	F1	F2	F3	L1	L2	B1	A	D		
736.0040.510-R	56	39	52	59	69	-	118	59	16	34	40		
736.1132.510-R	56	56	52	59	69	4	118	59	16	29	32		
736.1140.510-R	56	56	52	59	69	4	118	59	16	34	40		
736.2040.510-R	72	59	68	69	78	-	150	75	20	35	40		
736.2050.510-R	72	59	68	69	78	-	150	75	20	40	50		
736.3240.510-R	72	72	68	79	69	5	150	75	20	35	40		
736.3250.510-R	72	72	68	79	69	5	150	75	20	40	50		
736.4050.510-R	90	71	85	88	97	-	198	99	25	40	50		
736.4060.510-R	90	71	85	88	97	-	198	99	25	45	60		
736.6060.510-R	115	95	110	94	116	-	198	99	25	45	60		
736.6080.510-R	115	95	110	94	116	-	198	99	25	55	80		
736.8080.510-R	140	115	135	122	145	-	238	119	25	60	80		
736.8010.510-R	140	115	135	122	145	-	238	119	25	70	100		

Frontal Tool Holder for Boring Bar- Portautensile per Bareno Frontale



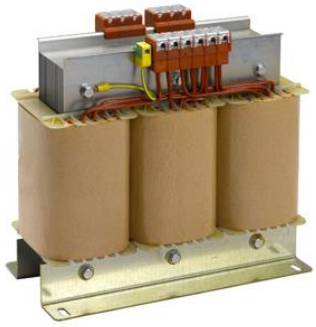


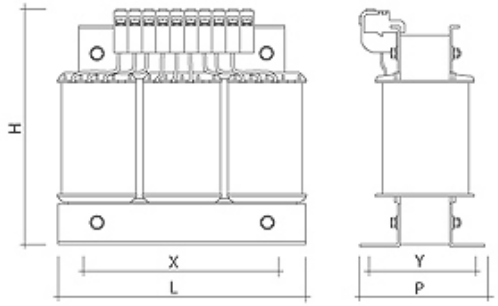
	H1	H7	F1	F2	F3	L1	B1	D					
736.0032.600-R	56	39	54	40	10	68	16	32					
736.2040.600-R	72	53	65	50	10	78	20	40					
736.4050.600-R	90	71	80	65	12,5	83	25	50					
736.6060.600-R	115	95	94	80	12,5	98	25	60					

Tool Holder with Capto solution - Portautensile con soluzioni Capto

On request

Power transformer -Trasformatore





INPUT VOLTAGE *Voltaggio in entrata*		Volt	**400**
OUTPUT VOLTAGE *Voltaggio in uscita*		Volt	**220**
FREQUENCY *Frequenza*		Hz	**50/60**
POWER *Potenza*		KVA	**0.1÷250**
IP Protection *Gradi protezione IP*		IP	**00**
Electrical protection *Protezione elettrica*			**I**
Temp. range *Temperatura ambiente*		C°	**0 ÷ 40**
LENGTH *Lunghezza*	**L**	mm	**240**
WIDHT *Larghezza*	**P**		**130**
HEIGHT *Altezza*	**H**		**235**
FIXING DIMENSION *Misure staffaggio*	**X**		**200**
	Y		**100**
LOOSING *Perdita*	**FE W**		**29**
	CU		**57**
WEIGHT *Peso*	Kg	**25**	**WEIGHT**
VCC	**%**		**5,3**
Norm CEI EN 61558 2-1 / 2-2 / 2-4 / 2-6 Norm UL-CSA			

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Organizzazione mondiale di vendite e servizi

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Furthermore, thanks to a net of agents and distributors, it is ensured a direct contact in many nations.

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Note

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