

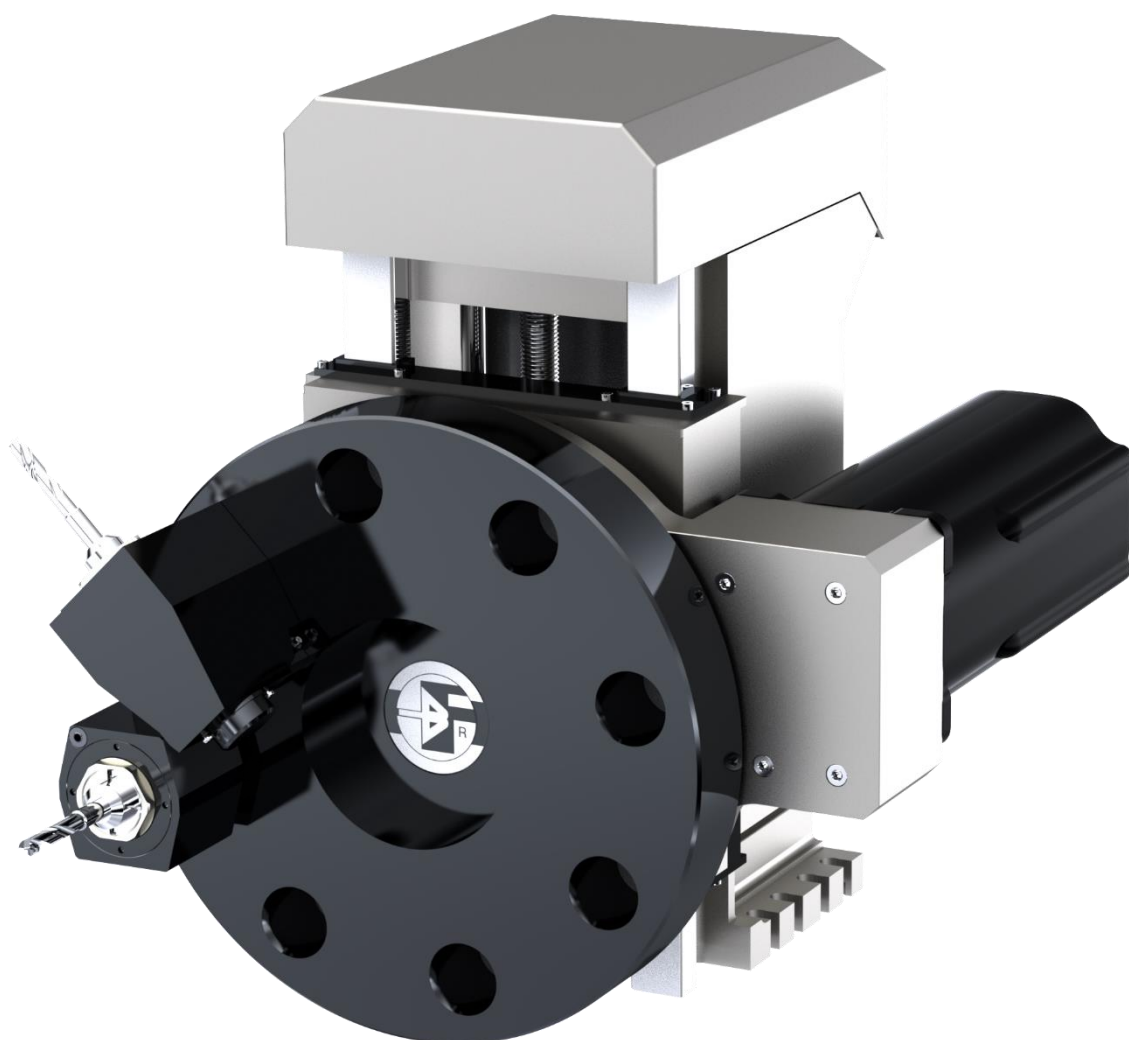


BARUFFALDI
MACHINE TOOL COMPONENTS

The Partner for Machine Tool
Builders

Y-Axis Unit Series **guide**

Catalogo unità Asse-Y



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Rev. 2018

BARUFFALDI – Since 1927

90 years of Italian mechanical excellence

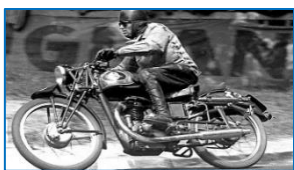
1927



Eng. Cesare Boffelli

Baruffaldi was founded in Milano (Italy) by Cesare Boffelli, a qualified mechanical engineer, in 1927

1932



Motorcycle Certum from '30s

The Company started the production of brakes for motorcycles in the '30s

1955



Baruffaldi Catalog

In the '50s Baruffaldi expanded its business area manufacturing brakes and clutches for several industrial applications

1972



Fiat Truck '70s

With high technology knowledge in brake and clutches The Company became a partner of truck manufacturers

BARUFFALDI

1975



PPL "Galaxy" turning lathe '70s

In the '70s it began the production of components for Machine Tool industry

1984



Agricultural Tractor '80s

Baruffaldi entered the agricultural and textile machines industries

2007



Baruffaldi Production Units

Baruffaldi reorganized the company into 2 new production units located in Milan area. The total covered area is 25.000sqm

Today Baruffaldi, with over 90 years of experience, is one of the leaders in the Machine Tool Industry offering high quality products and services worldwide.

Oggi Baruffaldi, con oltre 90 anni di esperienza, è una dei leader del settore delle Macchine Utensili offrendo prodotti di alta qualità e servizi in tutto il mondo.



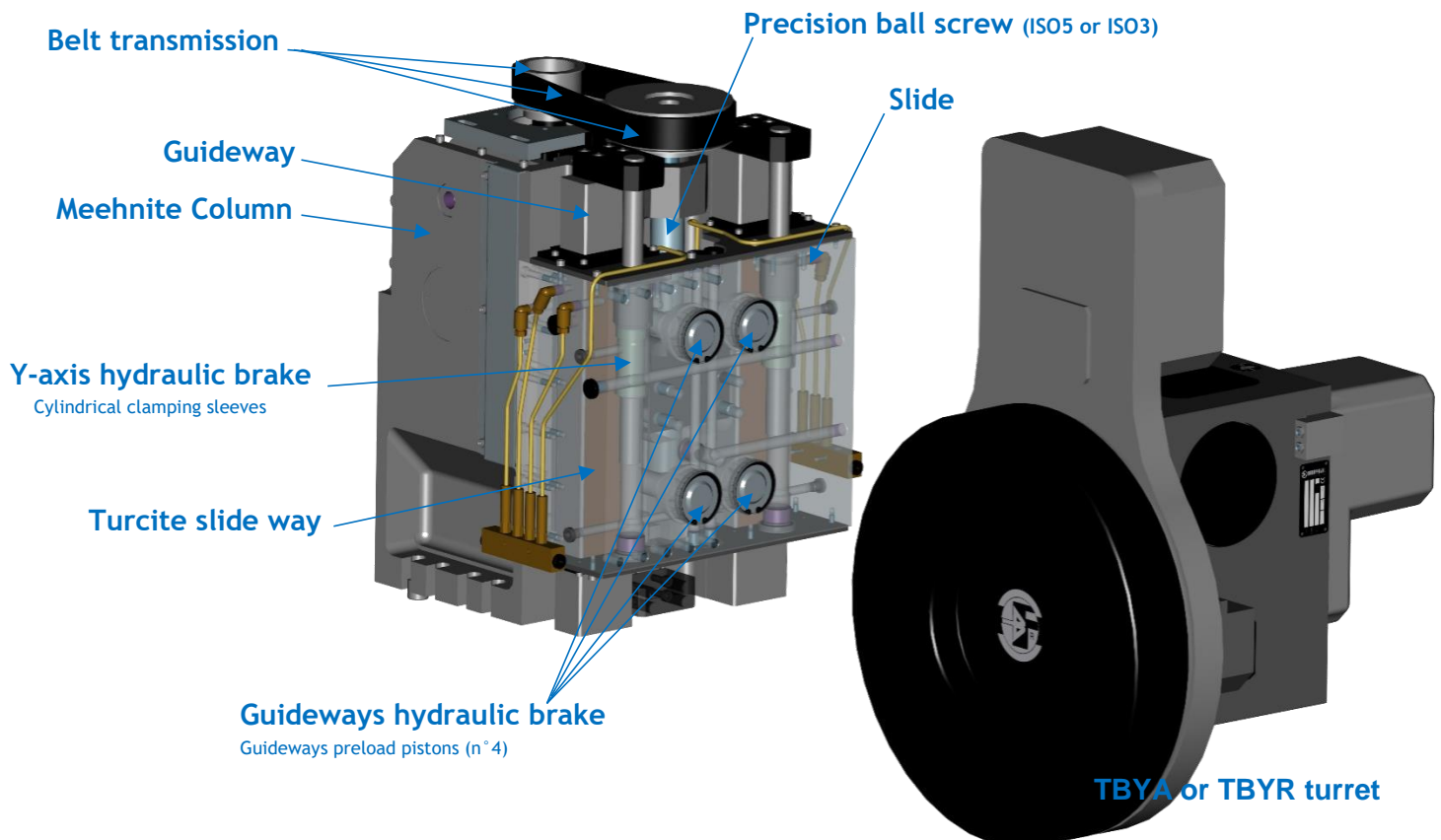
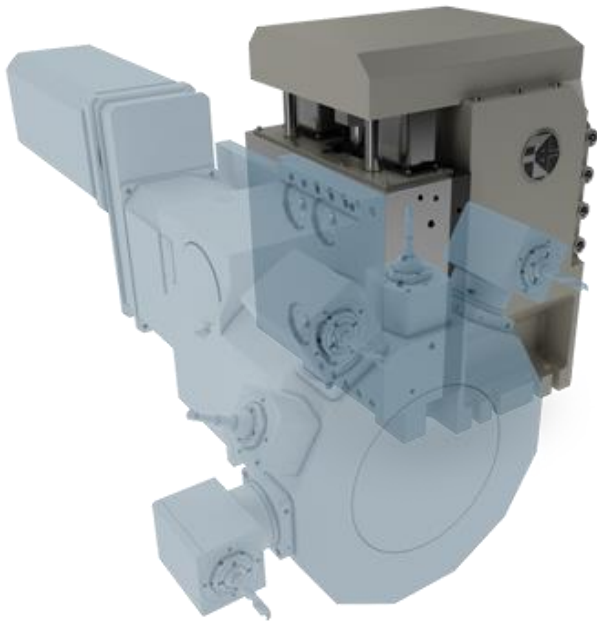
Baruffaldi, The Partner for Machine Tool Builders

YAX Standard - Introduction

YAX Standard - Introduzione

The YAX has rugged meehanite cast iron column, wide sliding guideways and double hydraulic locking system that allow either hard milling or turning operations.

The YAX unit allows displacement of the turret, and of its tools, in Y-direction in order to produce manifolds where out-of-axis operations are required, such as face millings, holes and tapping, key-slots and so on

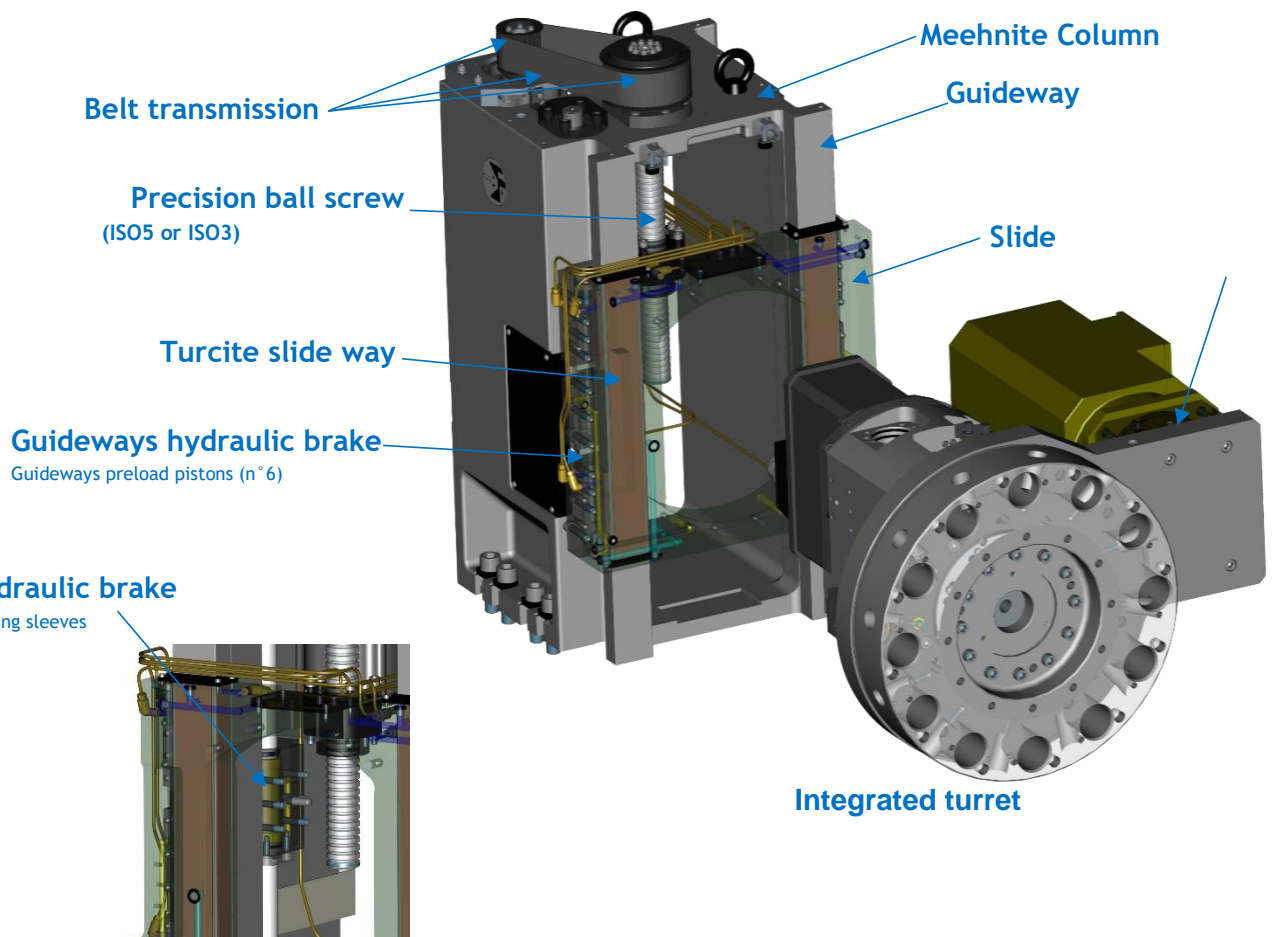
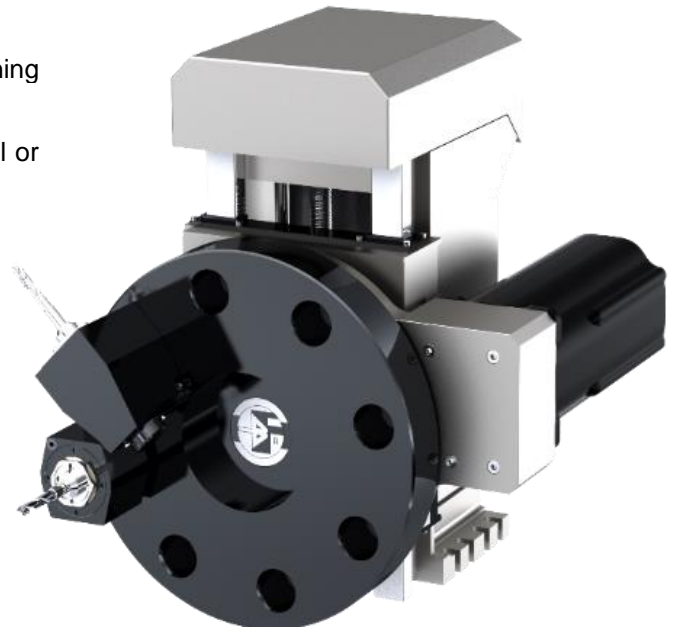


Baruffaldi has developed the new "Compact" Y-Axis units Type "C".

These new units with reduced dimensions can be assembled and integrated on any sizes of standard turning machines, flat or slant bed.

A new hydraulic guideways preload system allows hard machining operations, either with fixed tools and live tools.

The YAX-C units mount integrated Driven Tool Turrets with Axial or Radial Tooling system (VDI or BMT).



YAX Standard - General technical data

YAX Standard - Dati tecnici generali

YAX size		16			25	
Turret size		120	160	200	200	250
Turret tooling size	VDI	20	30/40	40/50	40/50	50/60
Turret tooling size	BMT	/	45/55	55/65	65/75	75/85
Nominal stroke *	mm	± 55			± 70	
Ball screw diameter x pitch	mm	32 x 5			40 x 5	
Max speed in Y direction	m/min	10				
Max motor speed	rpm	4000				
Max feed force in Y direction	N	12000		18000	27000	
Min suggested motor torque	Nm	6		10	13	
Hydraulic brake force in Y-direction **	N/bar	50			90	
Max Y-direction hydraulic brake oil pressure ***		bar	100 (150)			
Positioning accuracy	Motor encoder	µm	≤ 20			
	Ball screw encoder (optional)		≤ 15			
	Linear encoder (optional)		≤ 10			
YAX unit weight (without turret)		Kg	~ 250			~ 450

* For different strokes please contact our Technical Department

** For friction coefficient $f = 0.1$

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

YAX-C Compact version - General technical data

YAX verione Compatta - Dati tecnici generali

YAX-C size		16	20	25	32	
Turret size		160	200	250	320	
Turret tooling size	VDI	30/40	40/50	50	60	
Turret tooling size	BMT	45/55	55/65	65/75	75/85	
Nominal stroke *	mm	± 60	± 100	± 125	± 150	
Ball screw diameter x pitch	mm	32 x 5	40 x 5		63x10	
Max speed in Y direction	m/min	10				
Max motor speed	rpm	4000				
Max feed force in Y direction	N	12000	21000	25000	29000	
Min suggested motor torque	Nm	6	10	13	25	
Hydraulic brake force in Y-direction **	N/bar	50	90		180	
Max Y-direction hydraulic brake oil pressure ***		bar	100 (150)			
Positioning accuracy	Motor encoder	μm	≤ 20			
	Ball screw encoder (optional)		≤ 15			
	Linear encoder (optional)		≤ 10			
YAX unit weight (without turret)		Kg	~ 220	~ 340	~ 400	~ 650

* For different strokes please contact our Technical Department

** For friction coefficient $f = 0.1$

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

Turrets for YAX Standard - General technical data

Torrette per YAX Standard - Dati tecnici generali

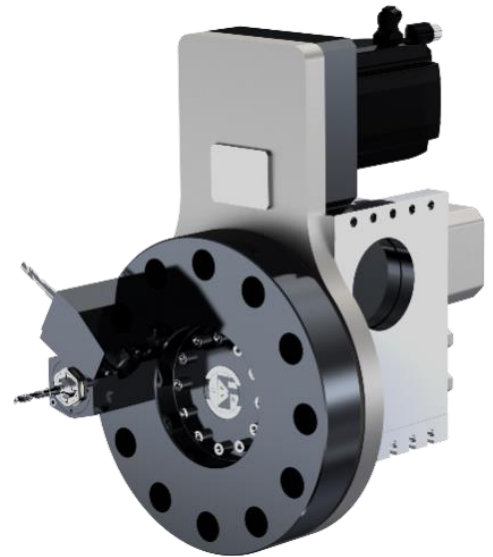
These turrets have been designed for use on the Y axis of turning centers. The turrets have compact overall dimensions towards the chuck, the tailstock and the slide. This solution allows use of tool holder discs with standard dimensions. Main features of these turrets are similar to TBMA and TBMR turrets.

TBYA Turrets (Axial Drive Tool Turrets)

Torrette TBYA (Torretta con Motorizzazione Assiale)

Size		TBYA160	TBYA200	TBYA250	TBYA320
VDI		30-40	40-50	50	60
Max Speed	rpm	6000	5000	5000	3000
Max Motor Torque	Nm	20	50	55	100
Max Power	Kw	6	9	10	15
Ratio		1:1	1:1	1:1	1:1
		1:1,25	1:1,315	1:1,52	1:1,45
Locking System	PN	•	•	•	•
	HYD	•	•	•	•
Live Tooling System		Baruffaldi			
		DIN 1809			-
		DIN 5480			-

This table shows the characteristic of the Driven Tool Unit, for the turret see the TB's data sheet.

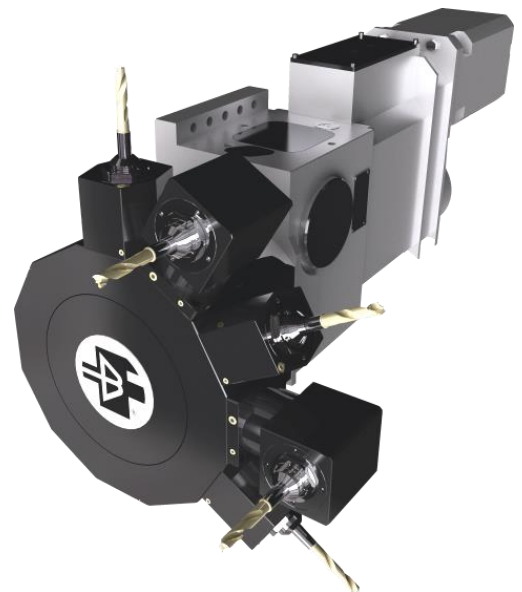


TBYR Turrets (Radial Drive Tool Turrets)

Torrette TBYR (Torretta con Motorizzazione Radiale)

Size		TBYR120	TBYR160	TBYR200	TBYR250	TBYR320
VDI		20	30	40-50	50	60
BMT		-	45	55-65	65-75	75-80
Max Speed	rpm	6000	6000	5000	5000	3000
Ratio		1:1	1:1	1:1	1:1	1:1
Max Motor Torque	Nm	16	20	50	55	100
Max Power	Kw	5	6	9	10	15
Locking System	PN	•	•	•	•	•
	HYD	•	•	•	•	•

This table shows the characteristic of the Driven Tool Unit, for the turret see the TB's data sheet.



General Information / Informazioni Generali

BARUFFALDI

YAX and YAX-C General information

YAX e YAX-C Informazioni Generali

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.

Thanks to the flat guideways, it is possible to achieve high strokes with minimum dimensions, whereas traditional Y-axes with interpolating wedges have greater dimensions, that often limit stroke to lower values.

YAX and YAX-C Structure description and working principle

YAX e YAX-C Descrizione strutturale e di funzionamento

The unit consists of a rugged meehanite cast iron column with integrated flat guideways, induction hardened and ground to a roughness value lower than $Ra=0.6 \mu m$.

A strong slide made of high strength steel integrates a sliding material, finely ground.

Guideways wedges are used either for transverse backlash, either for perpendicular backlash adjustment and recovery (with reference to the column guideways).

All guideways are equipped with holes and webs for forced oil lubrication; oil circuit as well as metering injectors are supplied.

A guideways hydraulic preload system (patent pending) pulls the slide against the column guideways to prevent slide (and then tool) displacement under high turning forces; it also reduces vibrations due to residual guideways backlash.

This device, in addition to well-known vibration dampening characteristics either of cast iron and of sliding guideways, allows extremely severe machining operations with fixed tools as well as with live tools, in fixed position and interpolating.

The unit also integrates a Y-axis direction hydraulic brake, backlash free, to be activated when operating in fixed y-direction position.

Y-Axis motor acts on a wide timing belt with involutes gear-like profile, which turns a strong preloaded ball screw unit that finally achieves precise Y-axis movement without backlash, even if only motor encoder is used for positioning (ball screw encoder or linear encoder are available as options).

YAX and YAX-C Guideways preload system characteristics

YAX e YAX-C Caratteristiche del sistema di precarico guide

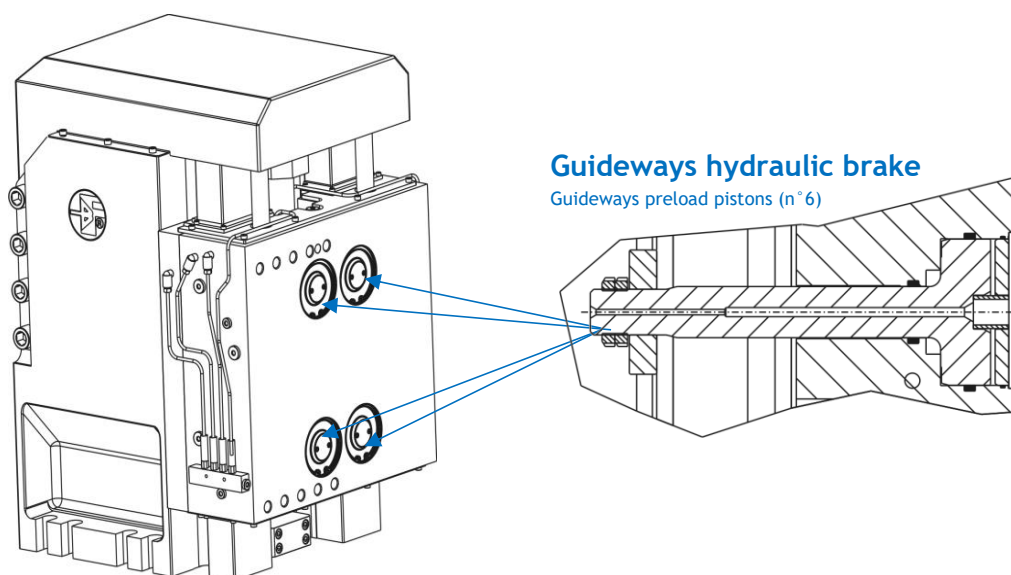
Y-Axis guideways preload system consists of hydraulic locking cylinders that pull the slide against the guideways when the unit is in fixed position. This system prevents turret from displacing due to high machining forces that arise during turning operations, especially when guideways have been working 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.

Optimal pressures range from 30 to 50 bars, higher values should not be necessary. Anyway, if you need to apply pressures greater than 50 bars, please contact our Technical Department.

The guideways preload system must be used together with Y-axis brake system, as their functions are different and complementary.

In following charts, forces and torques held by the guideways preload system are shown, with a safety factor 1.25. Forces and torques are considered as applied one at a time, this means that the charts just give an idea of acceptable values; in real cases, the combination of all forces/torques should be considered. Please contact our Technical Department for detailed analyses.



YAX and YAX-C Brake Characteristics

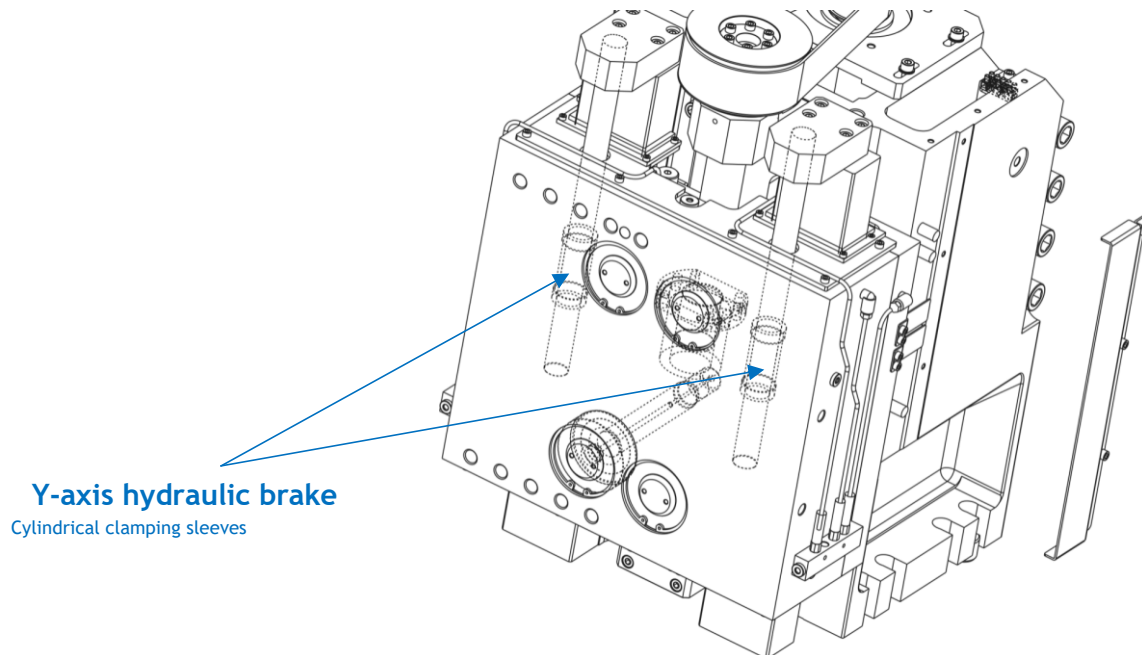
YAX e YAX-C Caratteristiche freno

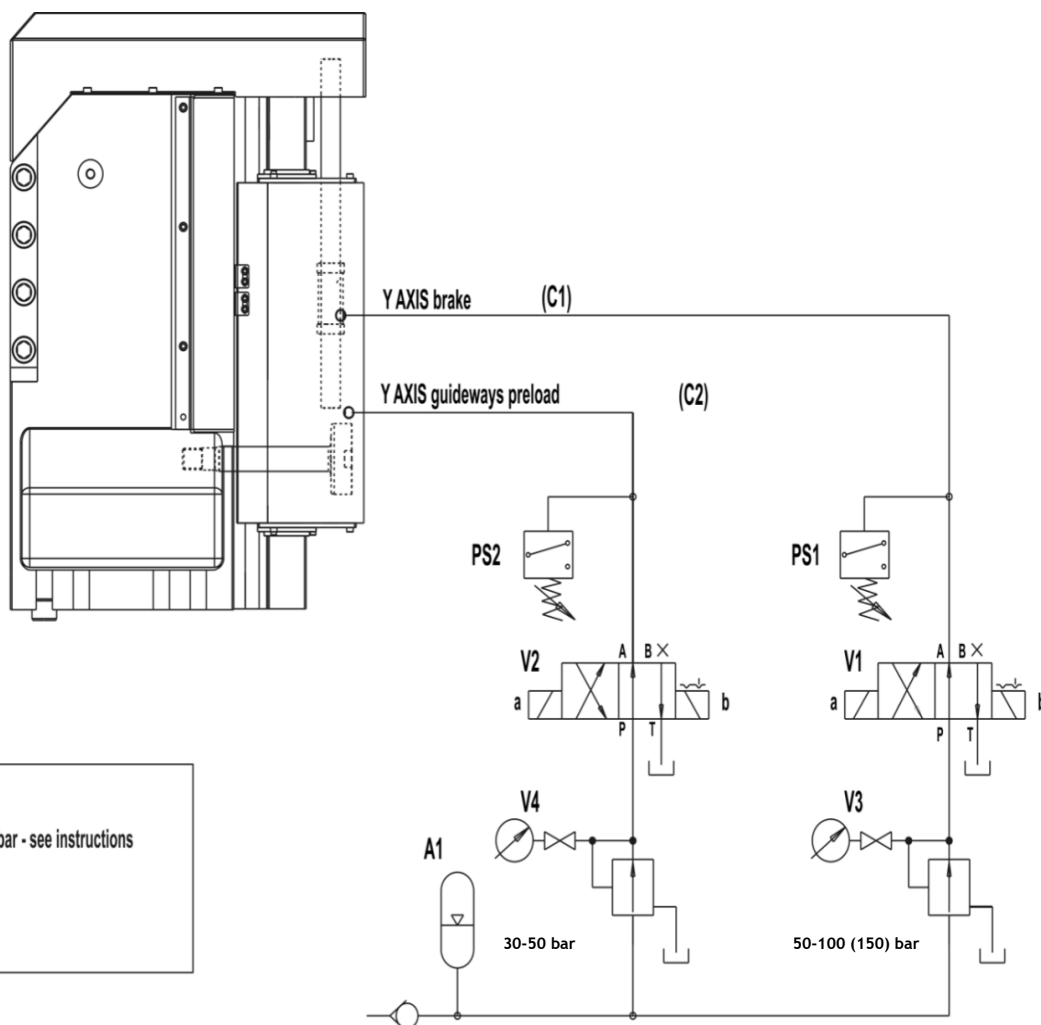
When the unit is in fixed position, before starting machining operations either with fixed tools or with live tools, it is necessary to activate Y-Axis brake, in order to prevent the slide from displacing downwards/upwards due to machining forces. This is necessary even if Y-Axis motor has a brake, because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

Y-Axis brake can be activated with different oil pressures, according to machining forces that are applied to the unit.

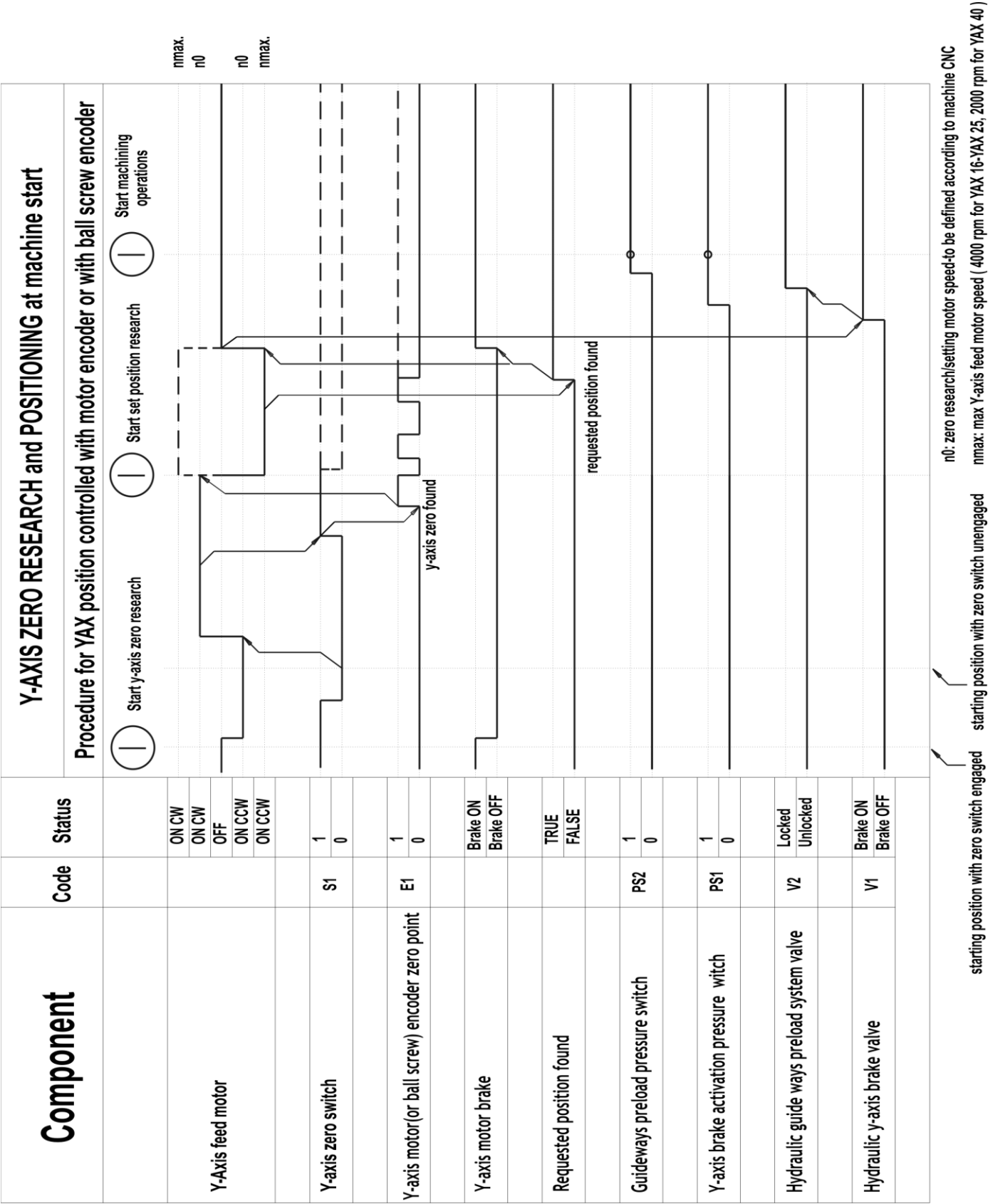
Once estimated such machining forces, the right oil pressure can be evaluated and set on hydraulic valves in power pack unit.

Optimal pressures range from 50 to 100 bars, higher values should not be necessary. In case of extremely high machining forces, you can set pressure up to 150 bars (higher pressures to be checked with our Technical Department).





YAX e YAX-C Ciclo di funzionamento



Worldwide sales and service organization

Organizzazione mondiale di vendite e servizi



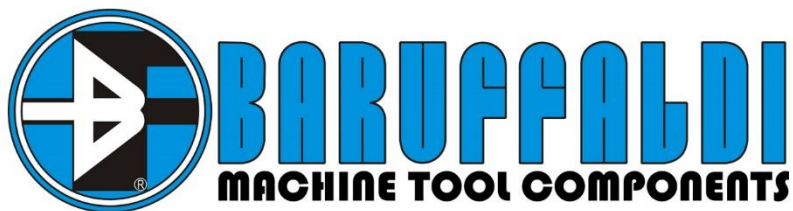
Baruffaldi has developed a sales and service organisation all over the world.

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

La Baruffaldi è strutturata per offrire un servizio di vendita e assistenza in tutto il mondo.

Inoltre grazie ad una rete di agenti e distributori garantisce un contatto diretto in molte nazioni.

**Visit our web site for more information
WWW.BARUFFALDI.IT**



Via Cassino D'Alberi 16, 20067 Tribiano (Milan) ITALY

Tel +39 02906090 Fax +39 02906090 915

Email Sales.mtc@baruffaldi.it

P.Iva / Vat 00757870159



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