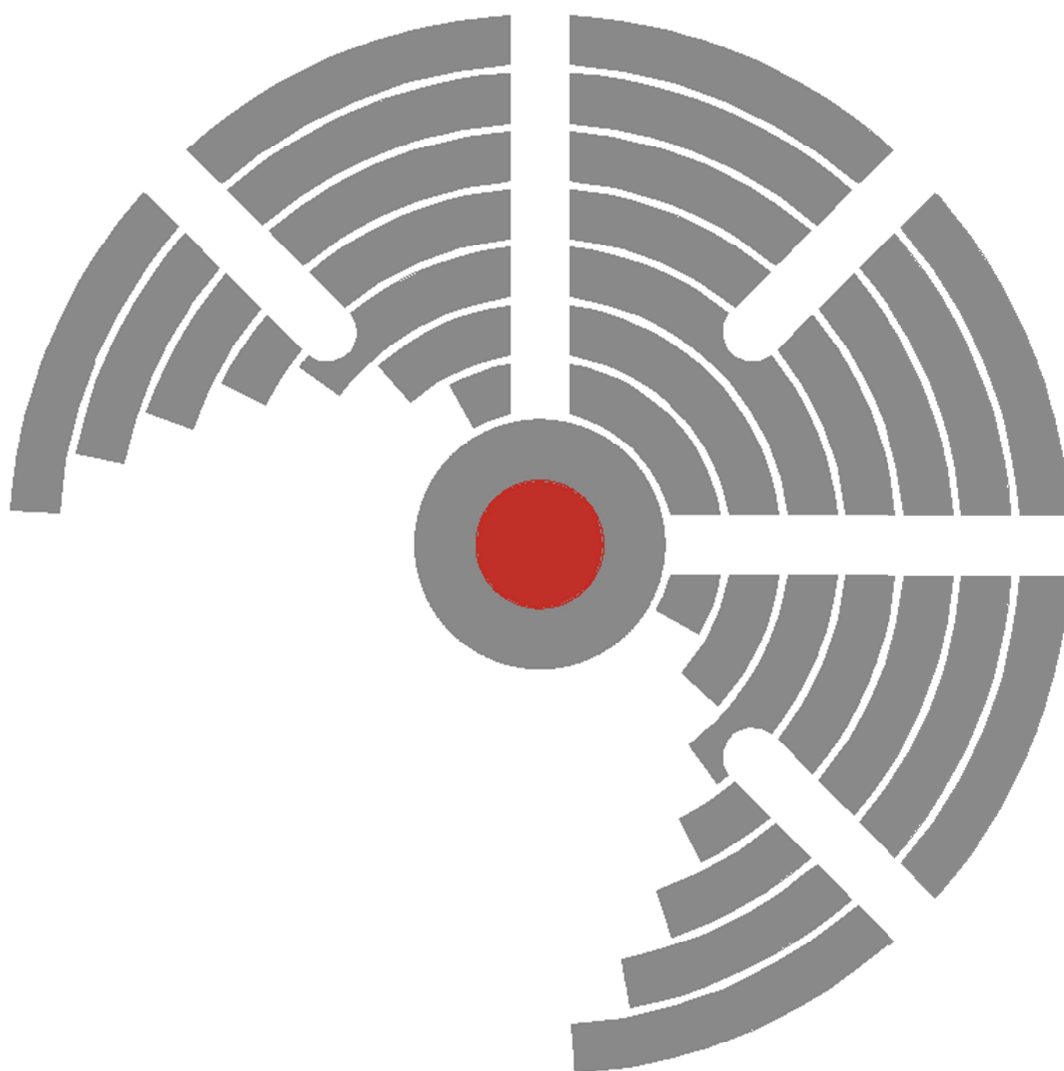


ROTARY TABLES



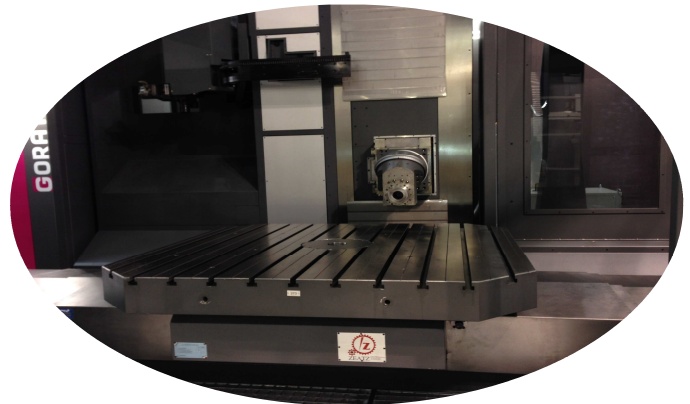
ZEATZ

Polígono Industrial de Itziar, Parcela C-2 / 20829 Itziar-Deba (Gipuzkoa) / Apartado 69 20820 Deba / **SPAIN**

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High precision horizontal rotary tables (Worm gear)

PH (mm)	Tables from	Ø Axial bearing	Ø Drive	Load Capacity
PH-320	Ø 12.6" (Ø320)	Ø 6.3-7.9" (Ø160-200)	Ø 9.9" (Ø253)	1,780 lbs (8.00 kg)
PH-450	Ø 17.7" (Ø450)	Ø 9.8-12.9" (Ø250-330)	Ø 15.3" (Ø390)	3,330 lbs (1.500 kg)
PH-600	Ø23.6" (Ø600)	Ø 12.6-15.7" (Ø320-400)	Ø 18.1" (Ø460)	6,665 lbs (3.000 kg)
PH-800	Ø31.5" (Ø800)	Ø 17.3-21.2" (Ø440-540)	Ø 23.6" (Ø600)	13,330 lbs (6.000 kg)
PH-1000	Ø39.4" (Ø1.000)	Ø 21.6-26.4" (Ø550-670)	Ø 28.9" (Ø736)	22,220 lbs (10.000 kg)



- Rotary table of continuous rotation, 360.000 positions
- Transmission system of worm gear
- Axial and radial bearing of big dimensions

- Anti backlash system "Dual Lead"
- Atlanta worm gear gearbox
- Table of cast iron GG-30
- Mecano-welded and stabilized base

High precision horizontal rotary tables (Gears)

PH	Tables from	Ø Axial bearing	Ø Drive	Load Capacity
(mm)				
PH-1000	Ø 39.3" (Ø1.000)	Ø 23.6-28.3" (Ø600-720)	Ø 26.4" (Ø670)	22,222 lbs (10.000 kg)
PH-1200	Ø 47.2" (Ø1.200)	Ø 30.3-35.4" (Ø770-900)	Ø 40.5" (Ø1.030)	33,333 lbs (15.000 kg)
PH-1500	Ø 59" (Ø1.500)	Ø 37.4-45.3" (Ø950-1.150)	Ø 50" (Ø1.270)	66,667 lbs (30.000 kg)
PH-1800	Ø 70.8" (Ø1.800)	Ø 43.3-55.1" (Ø1.100-1.400)	Ø 60.6" (Ø1.540)	88,889 lbs (40.000 kg)
PH-2000	Ø 78.7" (Ø2.000)	Ø 47.6-59.4" (Ø1.210-1.510)	Ø 63.8" (Ø1.620)	111,111 lbs (50.000 kg)



- Rotary table of continuous rotation, 360.000 positions
- Transmission system of gears
- Tandem system with electronic preload
- Axial and radial bearing of big dimensions
- Stober PHK gearbox
- Table of cast iron GG-30
- Mecano-welded and stabilized base
- Tables of high rigidity and positioning accuracy



High precision vertical rotary tables

PV (mm)	Tables from	Ø Axial bearing	Ø Drive	Load Capacity
PV-320	Ø 12.6" (Ø320)	Ø 6.3-7.9" (Ø160-200)	Ø 9.9" (Ø253)	555 lbs (250 kg)
PV-450	Ø 17.7" (Ø450)	Ø 9.8-12.9" (Ø250-330)	Ø 15.3" (Ø390)	1,778 lbs (800 kg)
PV-600	Ø 23.6" (Ø600)	Ø 12.6-15.7" (Ø320-400)	Ø 18.1" (Ø460)	3,333 lbs (1.500 kg)
PV-800	Ø 31.5" (Ø800)	Ø 17.3-21.2" (Ø440-540)	Ø 23.6" (Ø600)	5,555 lbs (2.500 kg)
PV-1000	Ø 39.4" (Ø1.000)	Ø 21.6-26.4" (Ø550-670)	Ø 28.9" (Ø736)	6,667 lbs (3.000 kg)
PV-1200	Ø 47.2" (Ø1.200)	Ø 30.3-35.4" (Ø770-900)	Ø 38.4" (Ø976)	8,889 lbs (4.000 kg)
PV-1500	Ø 59" (Ø1.500)	Ø 31.5-39.4" (Ø800-1.000)	Ø 43.2" (Ø1.098)	13,333 lbs (6.000 kg)
PV-2000	Ø 78.7" (Ø2.000)	Ø 50-60.2" (Ø1.270-1.530)	Ø 64.5" (Ø1.638)	26,667 lbs (12.000 kg)



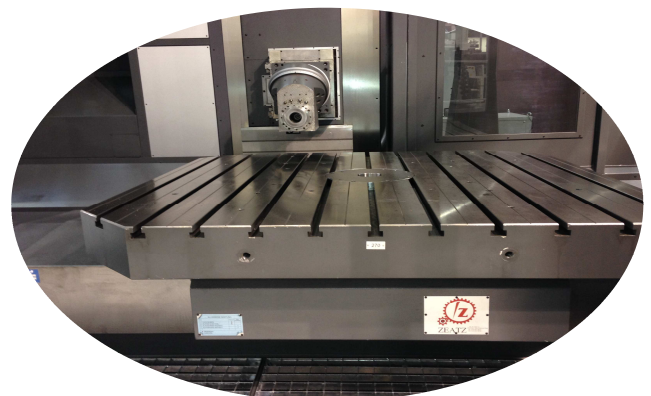
- Rotary table of continuous rotation, 360.000 positions
- Transmission system of worm gear until size PV-1200 (Anti backlash system "Dual Lead")
- Transmission system of gears from size PV-1500 (Tandem system with electronic preload)
- Table of cast iron GG-30

- Atlanta worm gear gearbox
- Stober PHK gearbox for "Twin drive" system
- Axial and radial bearing of big dimensions
- Tables of high rigidity and positioning accuracy
- Mecano-welded and stabilized base

High precision linear rotary tables

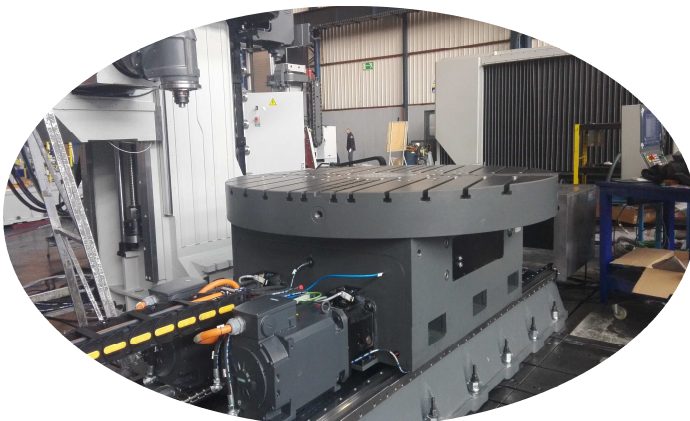
PHL	(mm)	Tables from	Ø Axial bearing	Ø Drive	Load Capacity
PHL-1000		Ø 39.4" (Ø1.000)	Ø 23.6-28.3" (Ø600-720)	Ø 28.9" (Ø736)	22,222 lbs (10.000 kg)
PHL-1200		Ø 47.2" (Ø1.200)	Ø 30.3-35.4" (Ø770-900)	Ø 38.4" (Ø976)	33,333 lbs (15.000 kg)
PHL-1500		Ø 59" (Ø1.500)	Ø 37.4-45.3" (Ø950-1.150)	Ø 50" (Ø1.270)	66,667 lbs (30.000 kg)
PHL-1800		Ø 70.8" (Ø1.800)	Ø 43.3-55.1" (Ø1.100-1.400)	Ø 60.5" (Ø1.536)	88,889 lbs (40.000 kg)
PHL-2000		Ø 78.7" (Ø2.000)	Ø 47.6-59.4" (Ø1.210-1.540)	Ø 63.6" (Ø1.616)	111,111 lbs (50.000 kg)

- Rotary table of continuous rotation, 360.000 positions
- Transmission system of worm gear until size PHL-1000 (Anti backlash system "Dual Lead")
- Transmission system of gears from size PHL-1200 (Tandem system with electronic preload)
- Axial and radial bearing of big dimensions
- Atlanta worm gear gearbox
- Stober PHK gearbox for "Twin drive" system
- Table of cast iron GG-30
- Mecano-welded and stabilized base
- Tables of high rigidity and positioning accuracy



Turning and milling horizontal rotary tables of high precision

PHT (mm)	Tables from	Ø Axial bearing	Ø Drive	Load Capacity	Rpm	Motor 2x
PHT-1000	Ø 47.2" (Ø1.200)	Ø 19.7-28.3" (Ø500-700)	Ø 35.4" (Ø900)	13,333 lbs (6.000 kg)	300 rpm	28 Kw
PHT-1200	Ø 59" (Ø1.500)	Ø 25.9-36.2" (Ø660-920)	Ø 43.3" (Ø1.100)	22,222 lbs (10.000 kg)	250 rpm	37 Kw
PHT-1500	Ø 78.7" (Ø2.000)	Ø 32.3-45.3" (Ø820-1.150)	Ø 53.1" (Ø1.350)	33,333 lbs (15.000 kg)	200 rpm	46 Kw
PHT-2000	Ø 98.4" (Ø2.500)	Ø 47.6-59.4" (Ø1.210-1.510)	Ø 64.9" (Ø1.650)	44,444 lbs (20.000 kg)	150 rpm	52 Kw



- Rotary table of continuous rotation of high revolutions
- Transmission system of gears ("Twin drive" tandem system with electronic preload)
- Package of two axial bearings with the gear
- Axial and radial bearing of big dimensions
- Two ranges Stober gearbox
- Steel table
- Mecano-welded and stabilized base
- Tables of high rigidity and positioning accuracy
- Motors until size 2x75Kw

Turning and milling H/V rotary tables of high precision

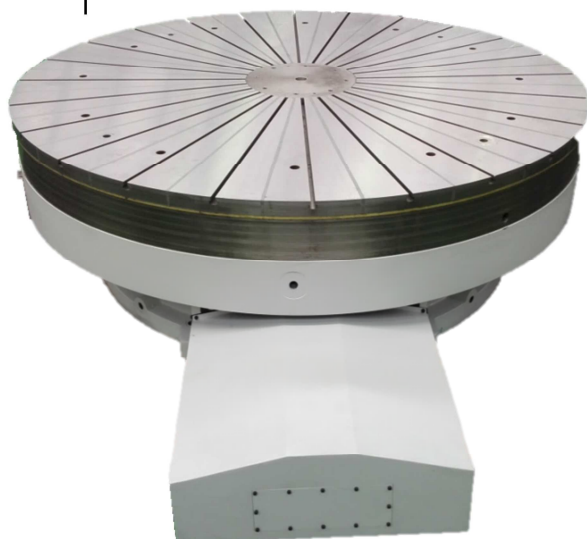
PHVT (mm)	Tables from	Ø Axial bearing	Ø Drive	Load Capacity	Rpm	Motor
PHVT-1000	Ø 39.4" (Ø1.000)	Ø 19.7-28.3" (Ø500-720)	Ø 35.4" (Ø900)	H: 13,335 lbs (6.000 kg) V: 6,665 lbs (3.000 kg)	300rpm	2x28 Kw
PHVT-1200	Ø 47.2" (Ø1.200)	Ø 25.9-36.2" (Ø660-920)	Ø 43.3" (Ø1.100)	H: 22,225 lbs (10.000 kg) V: 11,110 lbs (5.000 kg)	250rpm	2x37 Kw
PHVT-1500	Ø 59" (Ø1.500)	Ø 32.3-45.3" (Ø820-1.150)	Ø 53.1" (Ø1.350)	H: 33,330 lbs (15.000 kg) V: 17,775 lbs (8.000 kg)	200rpm	2x46 Kw
PHVT-2000	Ø 78.7" (Ø2.000)	Ø 47.6-59.4" (Ø1.210-1.510)	Ø 64.9" (Ø1.650)	H: 44,445 lbs (20.000 kg) V: 22,225 lbs (10.000 kg)	150rpm	2x52 Kw

- Rotary table of continuous rotation, 360.000 positions
- Transmission system of gears ("Twin drive" tandem system with electronic preload)
- Package of two axial bearings with the gear
- Axial and radial bearing of big dimensions
- Radial bearing of super precision cylindrical roller
- Two ranges gearbox
- Steel table
- Mecano-welded and stabilized base
- Tables of high rigidity and positioning accuracy
- Motors until size 2x75Kw



High precision grinding rotary tables

PHR (mm)	Tables from	Ø Axial bearing	Ø Drive	Load Capacity	Rpm	Motor
PHR-1000	Ø 47.2" (Ø1.200)	Ø 19.7-28.3" (Ø500-720)	Ø35.4" (Ø900)	13,333 lbs (6.000 kg)	115 rpm	2x28 Kw
PHR-1200	Ø 59" (Ø1.500)	Ø 25.9-36.2" (Ø660-920)	Ø 43.3" (Ø1.100)	22,222 lbs (10.000 kg)	100 rpm	2x37 Kw
PHR-1500	Ø 78.7" (Ø2.000)	Ø 32.3-45.3" (Ø820-1.150)	Ø 53.1" (Ø1.350)	26,667 lbs (12.000 kg)	90 rpm	2x46 Kw
PHR-2000	Ø 98.4" (Ø2.500)	Ø 47.6-59.4" (Ø1.210-1.510)	Ø 64.9" (Ø1.650)	33,333 lbs (15.000 kg)	75 rpm	2x52 Kw



- Rotary table of continuous rotation, 360.000 positions
- Transmission system of gears ("Twin drive" tandem system with electronic preload)
- Package of two axial bearings with the gear
- Axial and radial bearing of big dimensions
- Radial bearing of super precision cylindrical roller
- Two ranges gearbox
- Steel table
- Mecano-welded and stabilized base
- Tables of high rigidity and positioning accuracy
- Motors until size 2x75Kw

High precision palletizing rotary tables

PHP	Tables from	Ø Axial bearing	Ø Drive	Load Capacity
(mm)				
PHP-1000	39.4x39.4" (1.000x1.000)	Ø 23.6-28.3" (Ø600-720)	Ø 26.4" (Ø670)	13,333 lbs (6.000 kg)
PHP-1200	47.2x47.2" (1.200x1.200)	Ø 30.3-35.4" (Ø770-900)	Ø 40.5" (Ø1.030)	22,222 lbs (10.000 kg)
PHP-1500	59x59" (1.500x1.500)	Ø 37.4-45.3" (Ø950-1.150)	Ø 50" (Ø1.270)	44,444 lbs (20.000 kg)
PHP-2000	78.7x78.7" (2.000x2.000)	Ø 47.6-59.4" (Ø1.210-1.510)	Ø 63.8" (Ø1.620)	77,777 lbs (35.000 kg)



- This table series gives customers the option to select any pallet changer system in compliance with ISO 8526-2
- Transmission system of gears ("Twin drive" tandem system with electronic preload)
- The tables are free from backlash and guarantees good control quality for optimum positioning and continuous operation
- Table clamping system bears big forces for machining
- Prepared to integrate directly into the machine
- Table of cast iron GG-30
- Mecano-welded and stabilized base
- Tables of high rigidity and positioning accuracy

High precisión tailstock

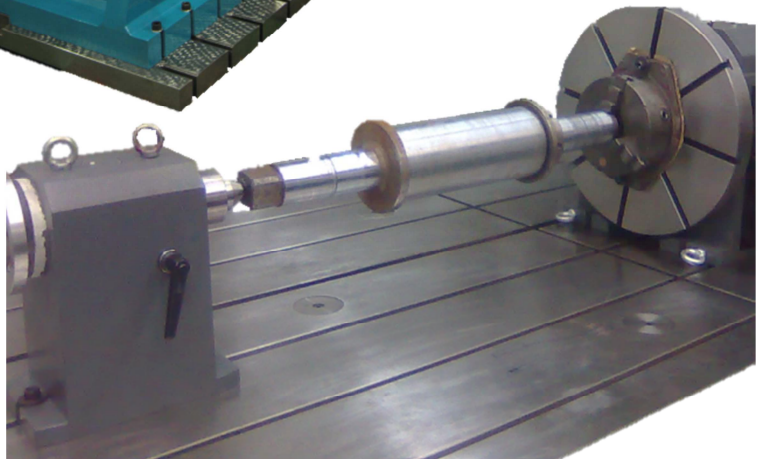
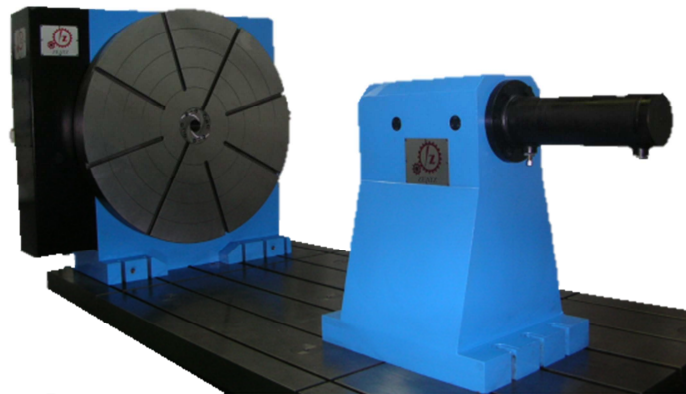
We manufacture all type of tailstocks, automatic, pneumatic, manual, combined

The travel of any tailstock is adapted to the customer needs.

The tailstock size depends on the load capacity required for each customer.

Special projects of tailstock can have linear travel by a rack and pinion.

The manufacturing is specific for each size and customer conditions in all types of tailstocks.



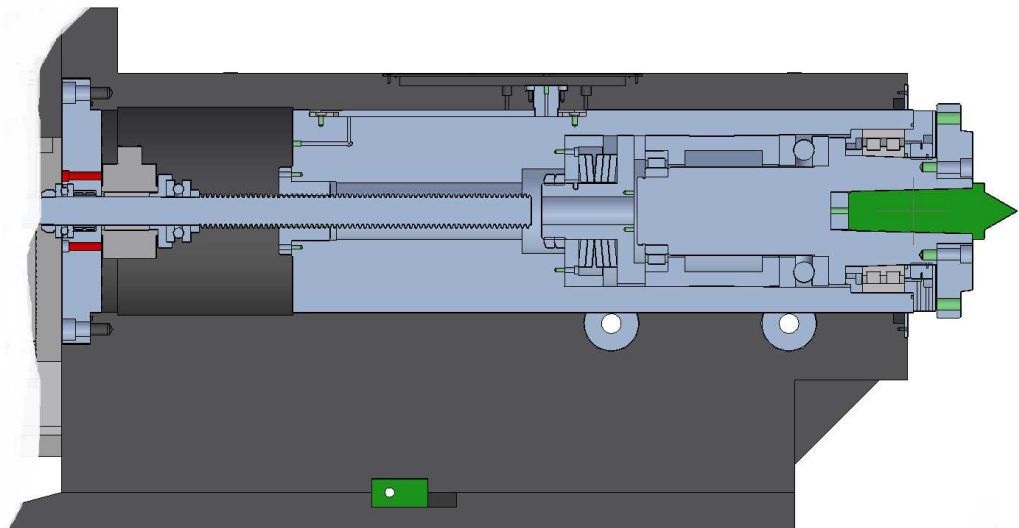
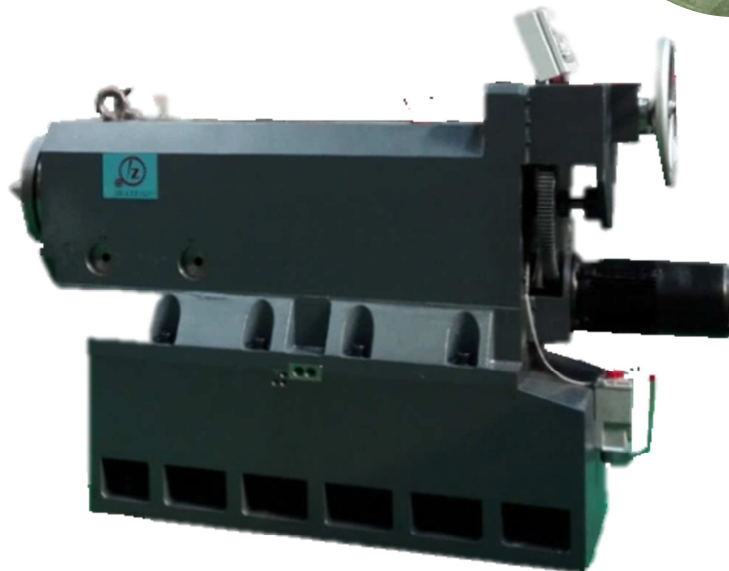
Tailstock with rotary quill

In combined tailstock, can be the movement manually or with a motor. The hand wheel is disengaged so that you can work with the motor.

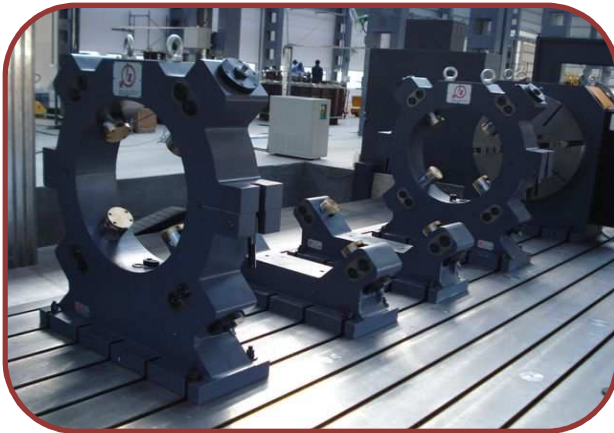
The tailstock is ready with a display that indicates the thrust force by a force sensor located in the spindle.

In these pictures there is a tailstock with rotary quill.

The size depends on the load capacity required for each customer.



Steady rest



We manufacture all type of steady rest, automatic, pneumatic, manual...

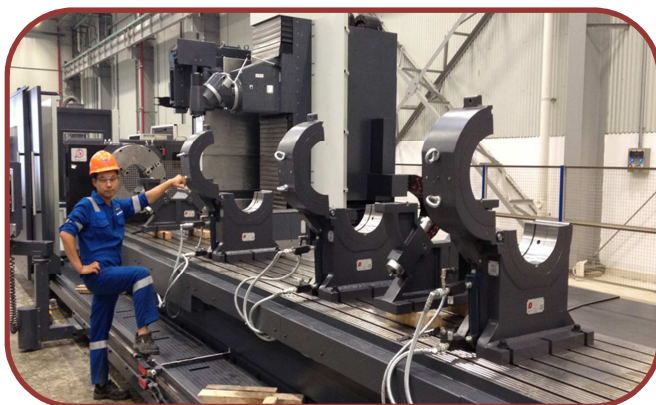
The size of the steady rest depends on the load capacity required for each customer.

The steady rest can be opened or closed, with 2, 3 or 4 support points.

The travel depends on the type of work piece that the customer wants to clamp.

Steady rest support with rollers.

Each roller has a linear travel to adapt to different dimensions of work piece.



The fixed pneumatic steady rest has a bronze bushing to adapt to different work piece diameters.

Big dimension steady rests are adapted specifically each machine.



Main transmission systems

Worm gear

In some cases, the main transmission is done by worm gear with anti backlash system "Dual Lead" to guarantee the necessary precision.



Pinion gear

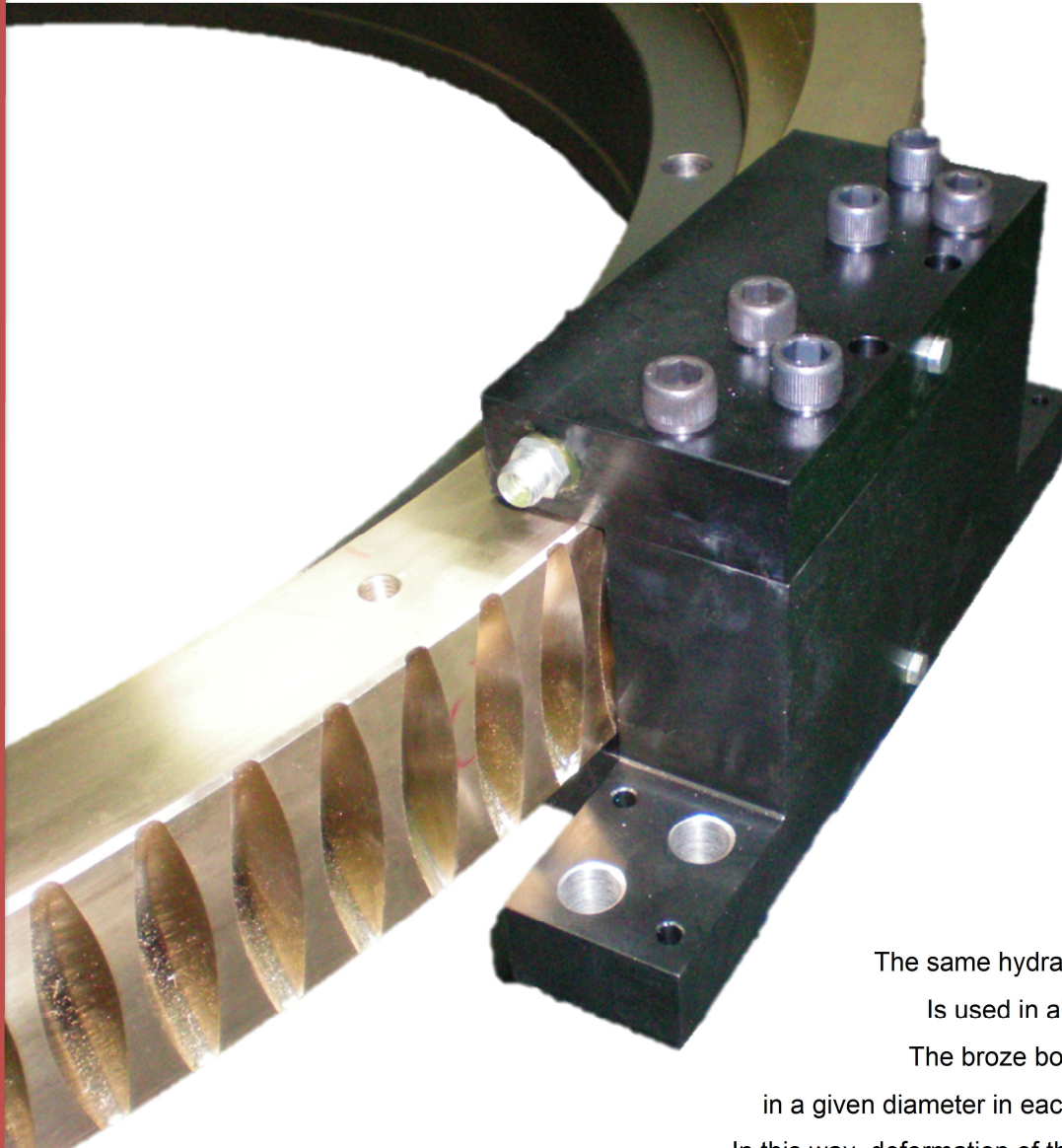


In other cases, the main transmission is done by main gear and pinions in tandem.

In this case, the anti backlash system works electronic preload "Twin drive".

Thus, we guarantee the high rigidity and positioning accuracy.

Hydraulic clamping system



The same hydraulic clamping system

Is used in all of our rotary tables.

The broze bolt attach to the crown

in a given diameter in each size of rotary table.

In this way, deformation of the table are outsided.

It the customer would need more clamping force than the estándar,

the bolt number could be changed or the pump pressure adjusted.

Following table ilustrated how increases the clamping force of the brakes

depending on the size and the pump pressure used.

Size>	320	450	600	800	1000	1200	1500	2000
Pressure								
150 Bar	1000 Nm	2100 Nm	6200 Nm	8200 Nm	18300 Nm	24500 Nm	37000 Nm	55500 Nm
200 Bar	1350 Nm	2800 Nm	8300 Nm	10900 Nm	25000 Nm	32500 Nm	48500 Nm	74000 Nm

Encoder



Direct encoder in the main shaft

Flexibility to place any type of encoder with easy access from the surface of the table..

Most commonly used brands are: Heidenhain, Fagor, Renishaw...

Encoders of $\pm 1''$, $\pm 5''$... are placed according to the precision required for the work to be performed

The following encoders are the most used:

Heidenhain		Fagor	
ROD 880C $\pm 1''$	ROD 280C $\pm 5''$	S D170 $\pm 2''$	H D170 $\pm 2''$
			
RON 287C $\pm 2.5''$	RON 285C $\pm 5''$	S D90 $\pm 5''$	H D90 $\pm 5''$
			

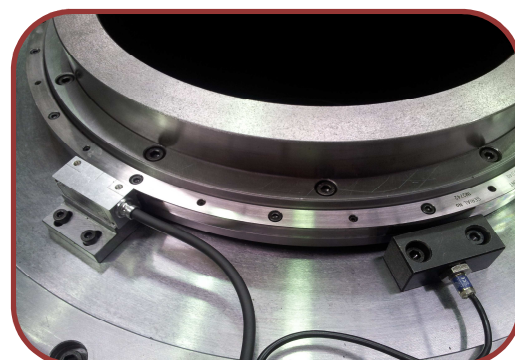
Direct encoder with hole in the main shaft



The encoder is always mounted on a place with easy access to be manipulated in case of need.

In encoders with hole are mounted with rings and its playhead.

Encoders of $\pm 2''$, $\pm 5''$... are placed according to the precision required for the work to be performed

The encoders below are the most common , the accuracy changes depending on the diameter of the hole:



Renishaw	Heidenhain
	

Gearbox



Atlanta gearbox

This type of gearbox is used when the drive is with worm gear.

There is a wide range of reductions in order to choose the most appropriate in each case.

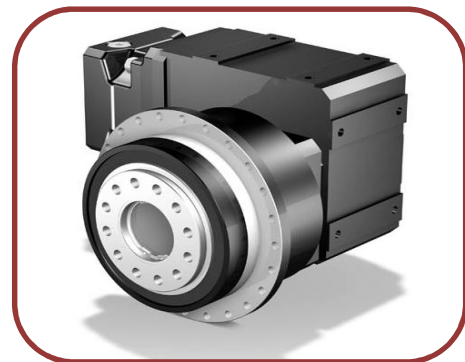
High accuracy is provided with integrated worm gear system.

Stober PHK gearbox

The Stober PHK gearbox is installed when the mechanical drive is with main gear and tandem pinions.

They have a wide range of reductions in order to choose the most appropriate in each case.

Thus, we guarantee the high rigidity and positioning accuracy.



Redex KRP(1input-2outputs) gearbox

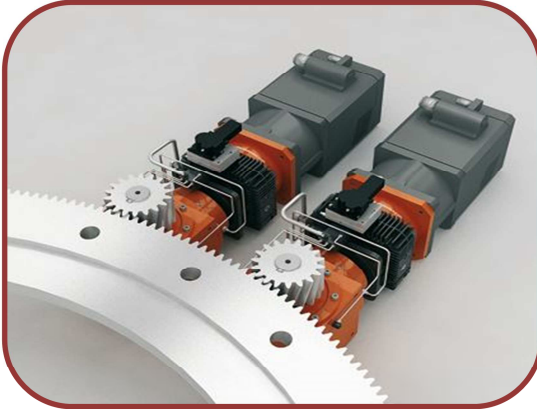
This type of gearbox allows us to operate the tandem pinions with single engine.

The transmission have more rigidity with the mechanical preload system.

They have a wide range of reductions and provide good accuracy.



Gearbox (2 ranges)



Redex (2 ranges) gearbox

Stober (2 ranges) gearbox

The gearboxes of 2 ranges allow us to get the necessary reductions to reach the necessary rpm.

If we changed the range we can work on milling or turning operations.

Provide us high accuracy.



Lubrication



Integrated lubrication system

For the oil recirculation and the lubrication of other components, the equipment can be integrated on the same machine.

This equipment consists of a pump, pressure, flow meter, filter ... It absorbs oil at one point and re-integrates into different necessary points.

The integration into the machine makes them a useful equipment.

External lubrication system

The external lubrication equipments are used when the machine has no place to store the necessary oil for lubrication.

In this case, we have an independent deposit which is completed with the necessary elements for recirculation, such pump, flow meter, pressure switch, filter ...

There is a fan that allows the cooling process of the oil in the lubricating circuit.

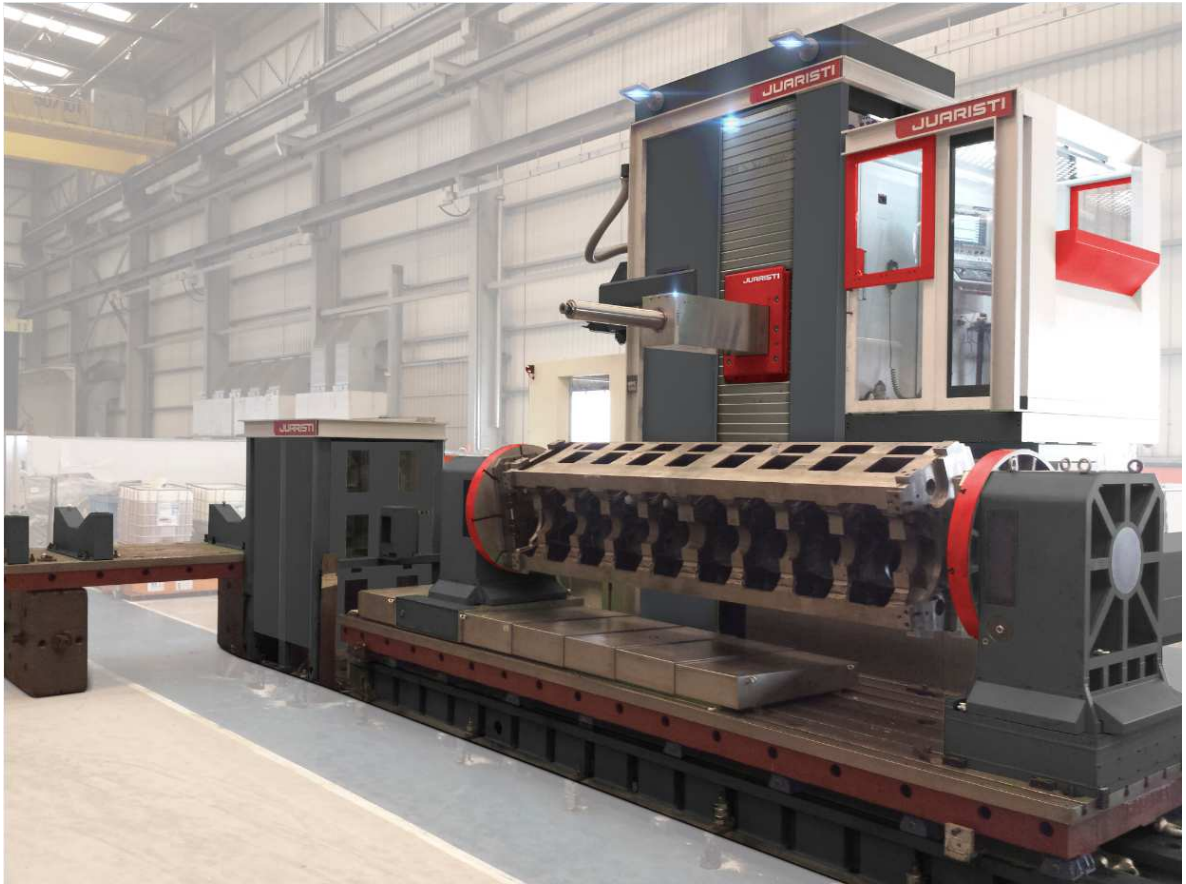


Lubrication pump

This pump is used when the rotary table can not be connected to the equipment of the machine.

It is a small pump, easy to instal.

Rotary tables installed in different machines



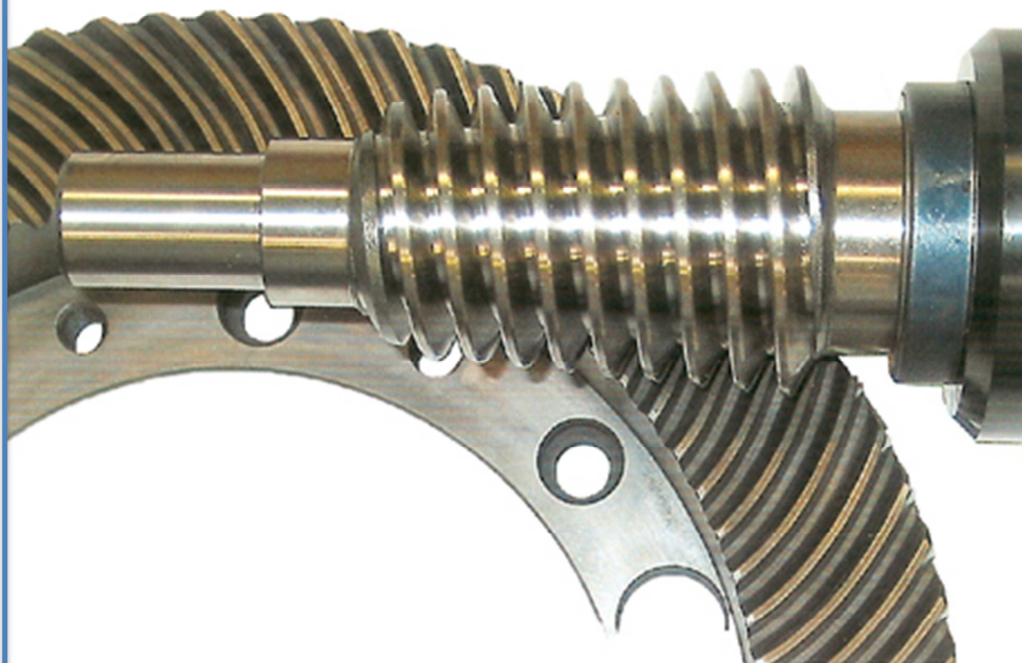








ROTARY TABLES OF HIGH PRECISION

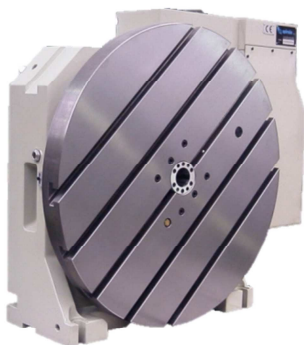


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High precision horizontal / vertical rotary tables

H/V	(mm)	Ø Table	Ø Axial bearing	Ø Drive	Load Capacity
81125		Ø 7.87" (Ø 200)	Ø 3.9" (Ø 99)	Ø 5.3" (Ø 135)	V: 188 lbs (85 kg)
81170		Ø8.8"-Ø10.2" (Ø225 – Ø260)	Ø 5.6" (Ø 143)	Ø 7.7" (Ø 195)	V: 277 lbs (125 kg)
81210		Ø12.6"-Ø13.8" (Ø320 – Ø350)	Ø 4.7" (Ø 119)	Ø 8.3" (Ø 210)	V: 311 lbs (140 kg) H: 622 lbs (280 kg)
81260		Ø15.7"-Ø17.7" (Ø400 – Ø450)	Ø 7.5" (Ø 190)	Ø 10.6" (Ø 270)	V: 555 lbs (250 kg) H: 1,111 lbs (500 kg)
81335		Ø19.7"-Ø23.6" (Ø500 – Ø600)	Ø 9.8" (Ø 250)	Ø 14.2" (Ø 360)	V: 1,666 lbs (750 kg) H: 3,333 lbs (1.500 kg)
81660		Ø25.9"-Ø31.5" (Ø660 - Ø800)	Ø 16.9" (Ø 430)	Ø 14.9" (Ø 380)	V: 2,222 lbs (1.000 kg) H: 5,555 lbs (2.500 kg)

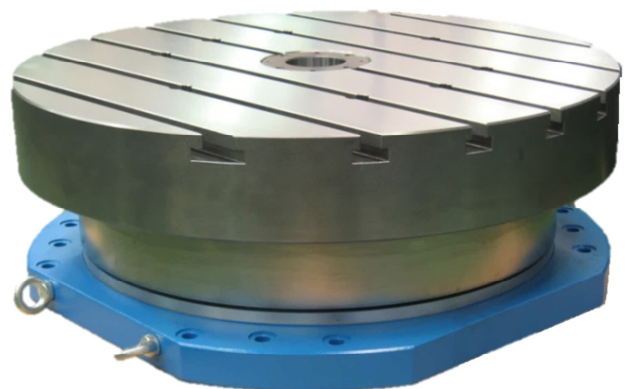
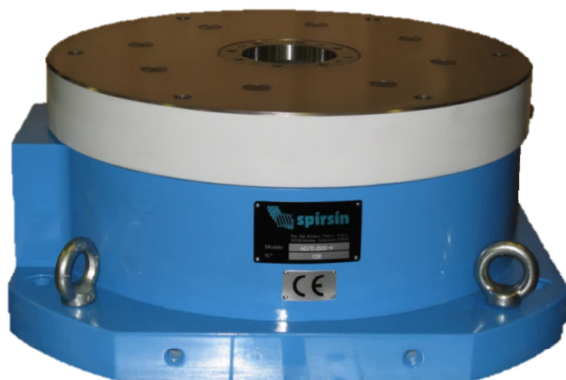


- Rotary table of continuous rotation, 360.000 positions
- Transmission system: spiroid crown with front gear and conical worm

- Cast iron GG-30 table
- Cast iron GG-30 base
- High rigidity and position accuracy tables

High-precision rotary tables with direct engine

MD	(mm)	Ø Table	Ø Axial bearing	Ø Drive	Load Capacity
MD-320		Ø 12.6" (Ø 320)	Ø 11.8" (Ø 300)	250 rpm	1,110 lbs (500 kg)
MD-500		Ø 17.7" (Ø 450)	Ø 11.8" (Ø 300)	200 rpm	1,665 lbs (750 kg)
MD-630		Ø 23.6" (Ø 600)	Ø 15.1" (Ø 385)	180 rpm	2,665 lbs (1.200 kg)
MD-800		Ø 31.5" (Ø 800)	Ø 17.7" (Ø 450)	140 rpm	4,445 lbs (2.000 kg)
MD-1000		Ø 39.4" (Ø 1.000)	Ø 23.6" (Ø 600)	100 rpm	7,777 lbs (3.500 kg)
MD-1200		Ø 47.2" (Ø 1.200)	Ø 23.6" (Ø 600)	80 rpm	10,000 lbs (4.500 kg)

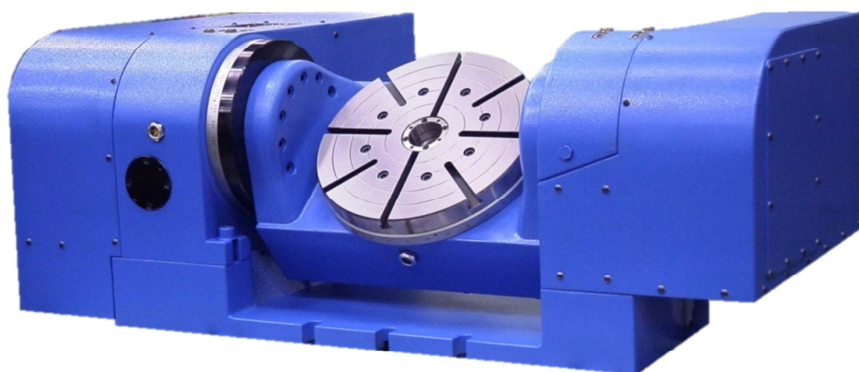
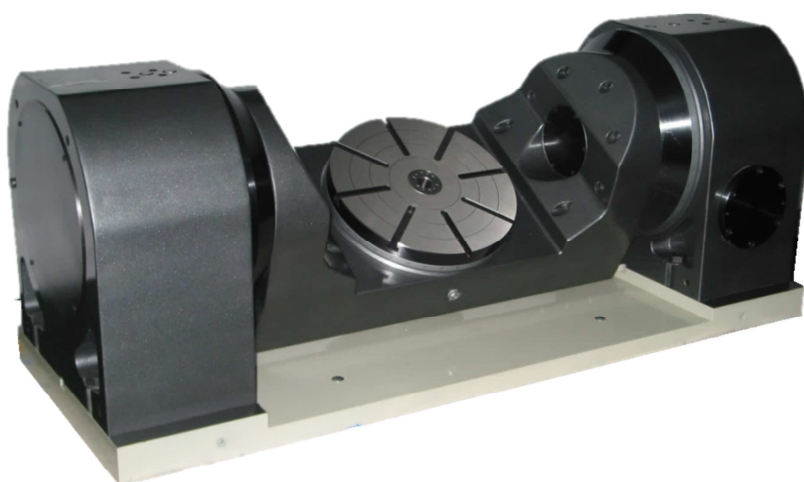


- Rotary table of continuous rotation, 360.000 positions
- Motor direct TMB (ETEL)
- High speed and precision

- Steel table
- Cast iron GG-30 table
- Hydraulic clamping system

High precision Tilting rotary tables

PT	(mm)	Ø Table	Ø Axial bearing	Ø Drive	Load Capacity
82210		Ø 8.8" (Ø 225)	Ø 4.7" (Ø 119)	Ø 8.3" (Ø 210)	V: 222 lbs (100 kg)
		Ø 10.2" (Ø 260)			H: 110 lbs (50 kg)
82250		Ø 12.8" (Ø 325)	Ø 7.5" (Ø 190)	Ø 10.6" (Ø 270)	V: 265 lbs (120 kg)
		Ø 15.7" (Ø 400)			H: 135 lbs (60 kg)



- Rotary table of continuous rotation, 360.000 positions
- Transmission system: spiroid crown with front gear and conical worm
- High speed and precision

- Cast iron GG-30 table
- Cast iron GG-30 base
- Hydraulic clamping system

Spiroid crown with front gear and conical worm

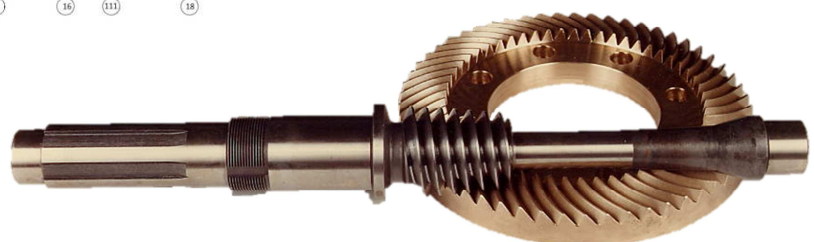
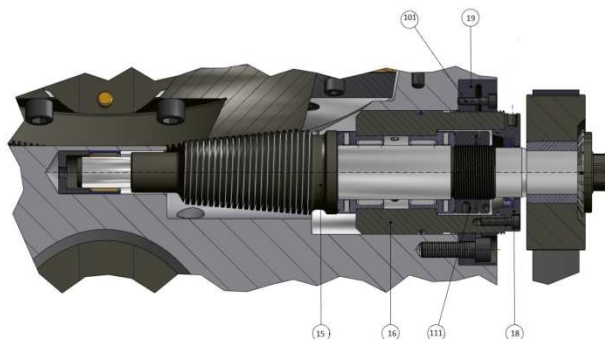
In Spirsin rotary tables the rotation and positioning is performed by

spiroid crown with front gear and conical worm.

We ensure high rigidity and minimal backlash.

The main characteristics of these gears are:

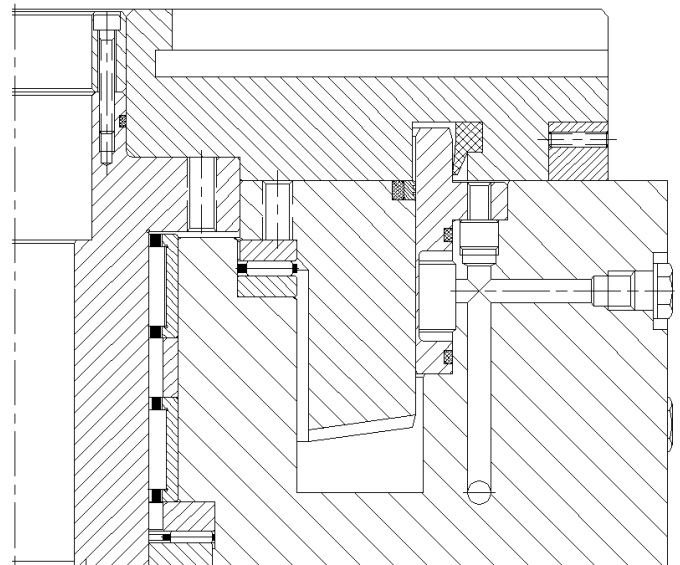
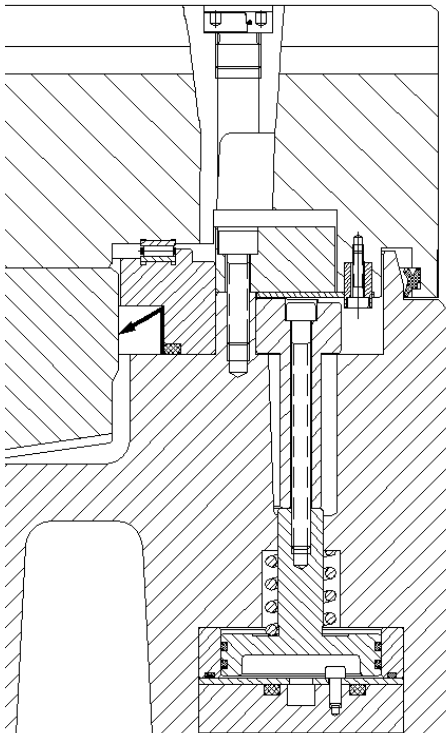
- Minimum backlash and simple and effective regulation by axial displacement of the worm.
- Possibility of big reductions in a single gear.
- High precision of division and overall repeatability.
- High rigidity due to the high number of teeth in contact.
- Capacity to transmit high force.
- Smooth and quiet operation.



Clamping system

Two types of clamping system can be used:

- Hydraulic Brake: The necessary pressure is supplied by the hydraulic power of the machine. If the machine does not have its own hydraulic unit, the necessary pressure would be obtained with an independent hydraulic unit.
- Pneumatic-hydraulic brake: In this case, the hydraulic pressure is obtained by a multiplier cylinder of pneumatic pressure, located in the interior of the rotary table.



Manufacturers we work with:

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