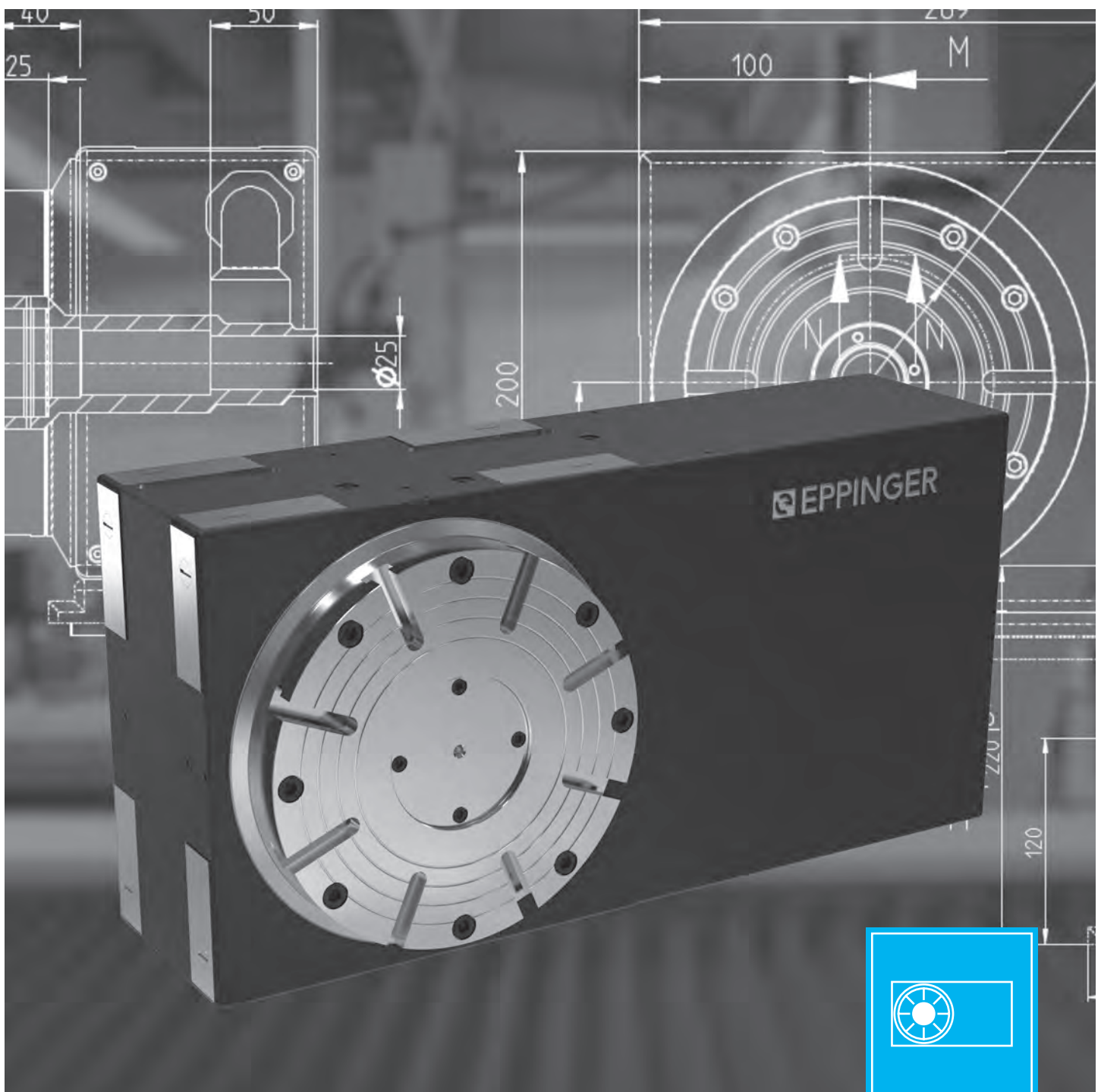


ROTARY TABLES

A PRODUCT AS UNIQUE AS YOUR REQUIREMENT





EPPINGER

FOR DEMANDING MACHINING PROCESSES

Discover our high-performance tools and tooling systems, innovative gearing technologies, as precision gears, servo gearboxes and as rotary tables.

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1 EPPINGER GROUP

ABOUT US

Since 1925, the EPPINGER family has offered individual and end-to-end solutions from a single source – from development and design, to complete production and assembly.

Today, the EPPINGER Group – with its more than 500 employees worldwide – remains one of the leading mechanical engineering companies in the field of development and production of tool holders for CNC mill/turn and multi-tasking machining centers, as well as high precision gears and gearboxes.

The EPPINGER Group has now expanded their product range and developed a rotary table series that has all-inclusive solutions to their demanding requirements. EPPINGER rotary tables offer the highest standard accuracy available, as well as unique designs for universal mounting and multi-machine installation.

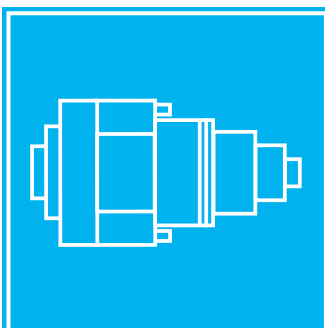
Move your single rotary table from one machine to another by simply installing our Machine Interface Unit (MIU) on both machines.

Our rotary tables are a one stop solution to many changes that machine shops face surrounding 4th and 5th axis applications. Discover within this catalog, what makes us stand apart from the rest.

We take pride in the quality of our products so much that we use our products in our very own production processes.

Because EPPINGER products are used by EPPINGER to make EPPINGER products, function is top priority. Let our nearly 100 years of experience be your advantage today!

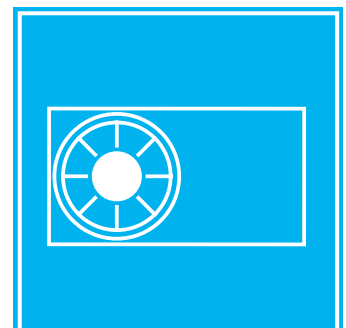
EPPINGER PRODUCT DIVERSITY



TOOLHOLDER



GEARS



ROTARY TABLES



2 TECHNICAL FEATURES

2.1 RIGID BY DESIGN

Each component of EPPINGER rotary tables is designed to absorb maximum machining forces:

- Double-sided spindle bearing for absorbing thrust and tilting forces
- Compact and stiff housing

2.2 HYDRAULIC CLAMPING

EPPINGER rotary tables are equipped with a clamping system for very high cutting forces:

- Hydraulic multi-disc clamping for strong clamping torque
- High torsional stiffness due to clamping at the largest outer diameter
- Rigid clamping through hydraulic power pack or pneumatic booster possible. No hydraulic supply from the CNC machine required

2.3 FACEPLATES

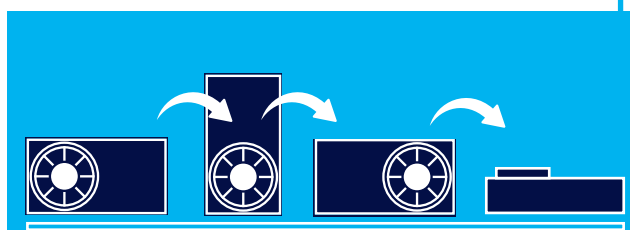
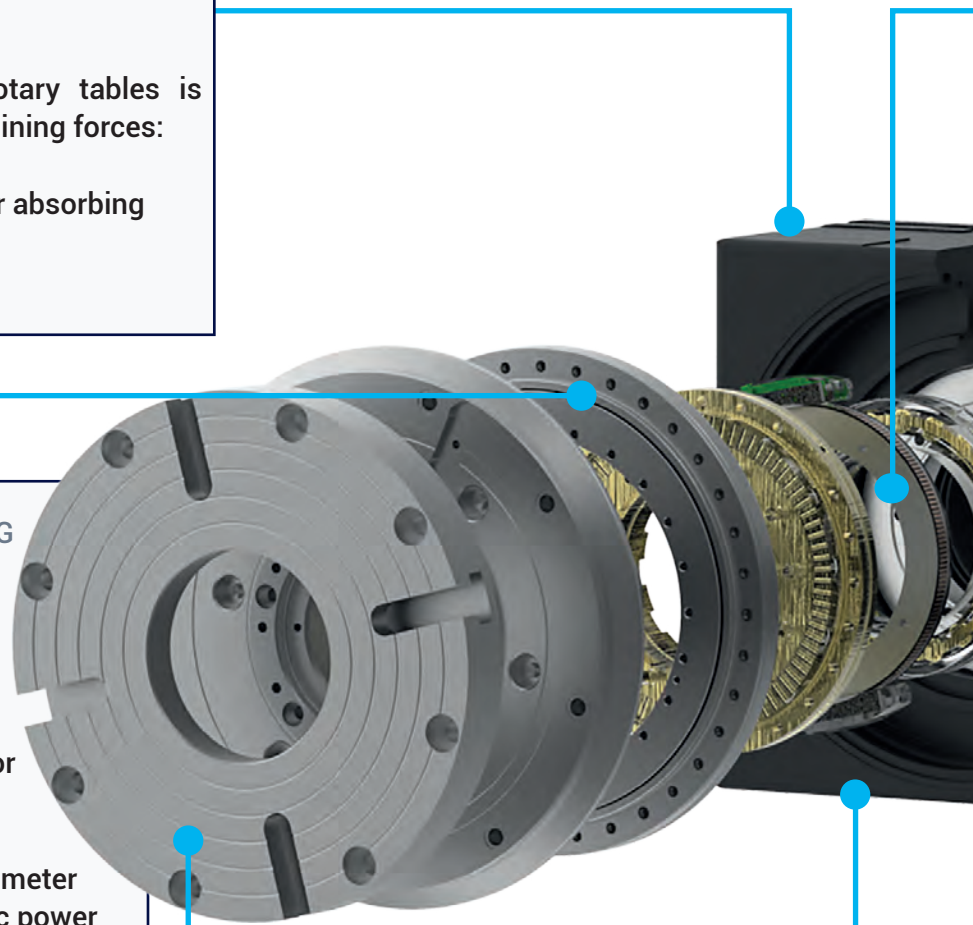
Spindle has short taper flange for faceplates according to ISO 702-1:

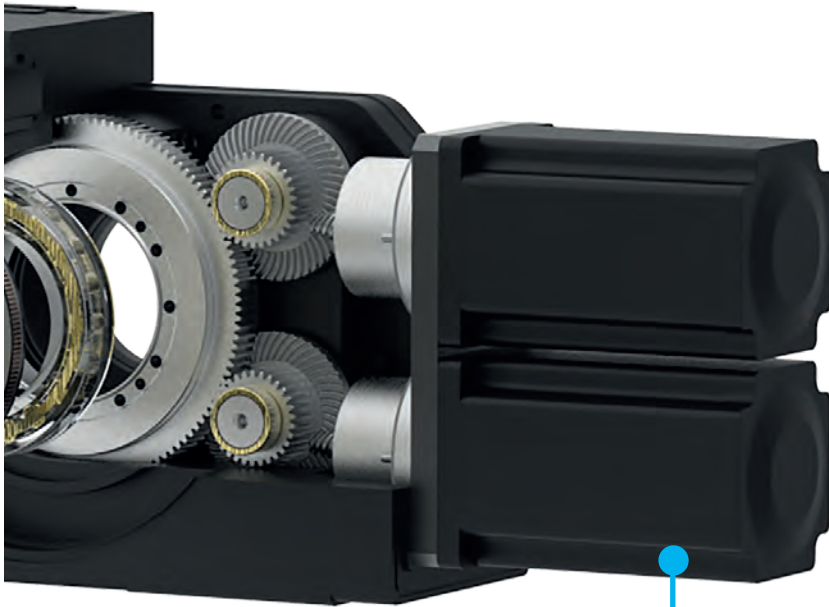
- Faceplates available for various clamping systems
- Quickest change of faceplates and work holding devices without the need to realign

2.4 UNIVERSAL MOUNTING

The symmetrical design of EPPINGER rotary tables allows complete flexibility:

- One rotary table, four mounting positions without any modification
- Lowest centre height and most compact housing in the market for maximum Z-axis travel



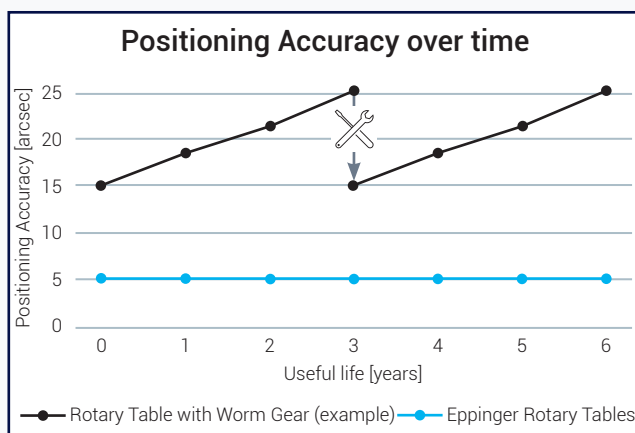


INTEGRATED ANGLE SENSOR

2.5

Each EPPINGER rotary table is equipped with two integrated angle sensors. Our high accuracy specifications are achieved by a closed loop control box based on the true spindle position:

- Extremely high bidirectional positioning accuracy
- Extremely high repeatability
- No expensive external angle measuring system with complex installation is required
- Unlike solutions with external sensors the centre bore of EPPINGER rotary tables is always accessible



TWIN DRIVE CONCEPT

2.6

In contrast to the common worm gear drive, EPPINGER rotary tables use two motors in combination with preloaded, case-hardened hypoid gears. The electrical preload of the gearbox is controlled by a patented algorithm that allows maximum accuracy and precision even under variable loads:

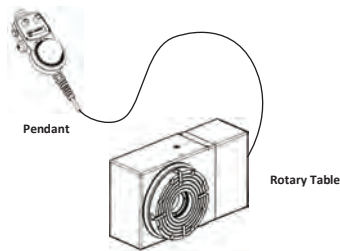
- Backlash-free over lifetime
- Unique high-speed electrical clamping (S-APC) without the use of hydraulic clamping
- High rigidity and durability of the gear train
- No position deviation during clamping

2 TECHNICAL FEATURES

Option Modes

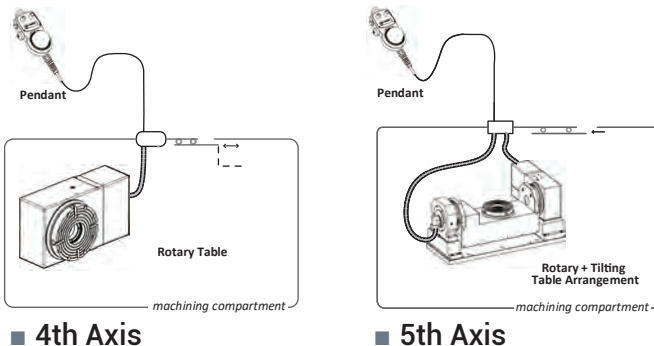
Stand-Alone Operation Mode

This mode allows for (limited) stand-alone operation. Great for grinding applications.



Rotary System Installed in CNC

In this mode the rotary table performs angular positioning and clamping tasks. Commands are given directly from the CNC using G-Code.



Pendant 2.7



THE PENDANT

The Pendant is an additional way to interact with EPPINGER rotary tables without using a CNC program. This comes in handy for tests or set-up operations. An emergency stop and consent switch enables safe operation at all

times. A clear and intuitive menu navigation gives the possibility to interact quickly and easily with the rotary table. The Pendant enables the control of the following parameters and operations.

- Clamp and unclamp
- Rotary axis jog
- Start continuous rotation
- Set zero
- Set rotation speed
- Show and reset alarms
- Hirth gear mode
- Auto clamp mode

EPPINGER

SMART FEATURES

In a world where production becomes smarter every day, your rotary table must not stay behind.



3 EPPINGER SMART FEATURES

Increase your productivity with Smart Features. Through advanced electronics and soft-ware in combination with the unique Twin Drive System, capabilities of EPPINGER rotary tables go beyond those of the competition. Enable or parameterize these Smart Features easily via

handheld Pendant, network (if available and connected) or G-code in the CNC program.

There is no need to go into the machines PMC/PLC ladder to change parameters like timers, different workloads, clamping and release times.

SMART FEATURES:

S-PAC – PREDICTIVE AXIS CONTROL

Due to deterministic control and constant self-monitoring, look ahead movement trajectory planning will allow optimization in synchronization between machine and rotary table axis without any time loss. Machine axis can start moving before the rotary table has reached its final position, reducing overall cycle time.

S-PCC – PREDICTIVE CLAMPING CONTROL

In combination with S-PAC, clamping and unclamping times can be optimized with Predictive Clamping Control. Clamping and unclamping process can be initiated before finish signals are given. This reduces waiting times for building up and releasing the required pressure in the hydraulic clamping system.

S-APC – ACTIVE POSITIONING CONTROL

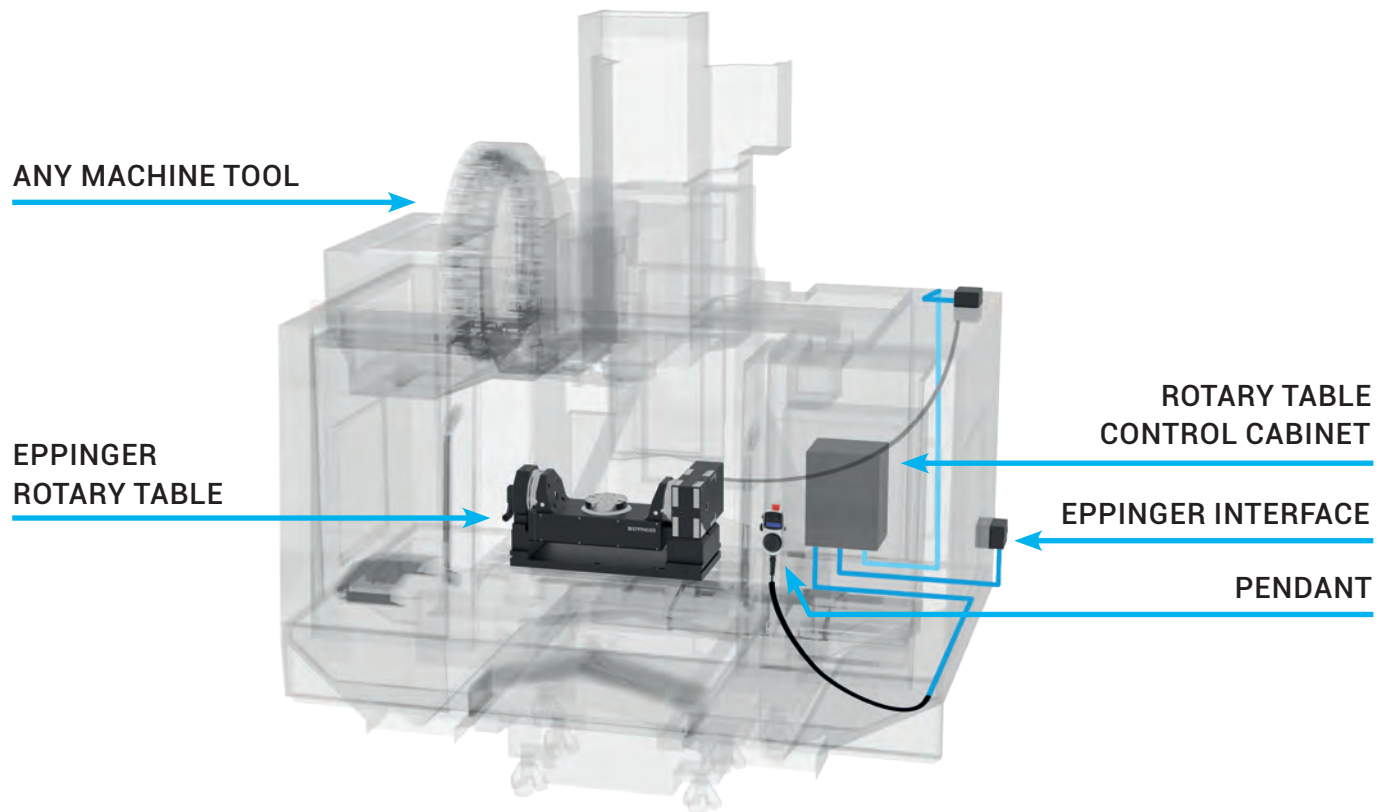
During light duty machining like grinding or finishing operations the position can be held without time consuming hydraulic clamping. Active Positioning Control holds the position using the EPPINGER Twin Drive Concept and a closed control loop. Increasing cutting forces are compensated by equally increasing counterforces without loss of position.

S-ADC – AUXILIARY DEVICE CONTROL

Additional devices like I/O extensions, workholding solutions, or workpiece loaders can be controlled by EPPINGER rotary table's Auxiliary Device Control. The Auxiliary Device Control also allows to control additional pneumatic and hydraulic valves without requiring any modification at CNC machine level.

4 PLUG & PLAY CONCEPT

4.1 EPPINGER ROTARY TABLE SETUP OVERVIEW



4.2 EPPINGER FLEXIBILITY

Gain total flexibility on your machine tool. Your advantages by using the EPPINGER setup:



TRUE PLUG & PLAY: Plug in and run your rotary table



SUPER FAST: Switch or install a rotary table in a matter of minutes



SAVE MONEY: Simply install on any of your existing machine tools

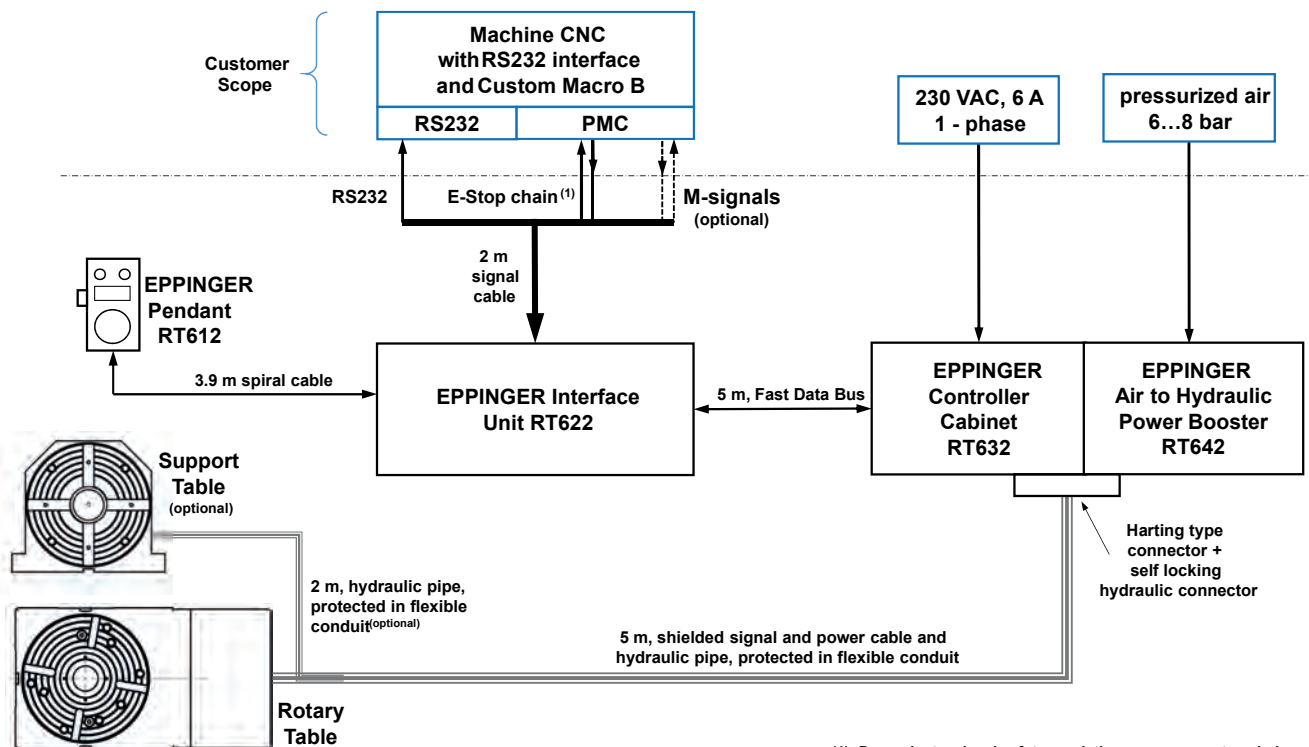


INTERCHANGEABLE: Free switching of our rotary tables among each other



NO DOWNTIME: If your table needs service use one of our loaner rotary tables without specific configuration

4.3 SCHEMATIC INSTALLATION DIAGRAM



(1) Dependent on local safety regulation, emergency stop chain signals are required to be installed by qualified personnel

OUR PLUG & PLAY CONCEPT

Instead of expensive and complex integration into the machine PLC, EPPINGER Plug & Play capability offers easy installation and use. By quickly and inexpensively preparing an existing CNC machine with the EPPINGER Interface Unit, it becomes "EPPINGER READY".

After that, any EPPINGER rotary table and additional accessories can simply be plugged in and be used immediately. Use your rotary table

exactly when you need it on the machine you need it on! Every EPPINGER rotary table functions identically on your machine. If your table ever needs service, replace it from our pool and produce with no downtime.






Note: EPPINGER Plug & Play allows only 3+1 and 3+2 axis machining. Simultaneous movement is not possible.

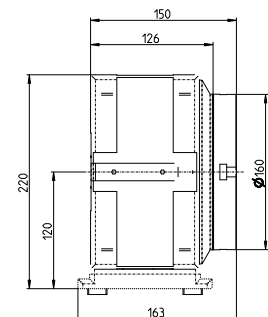
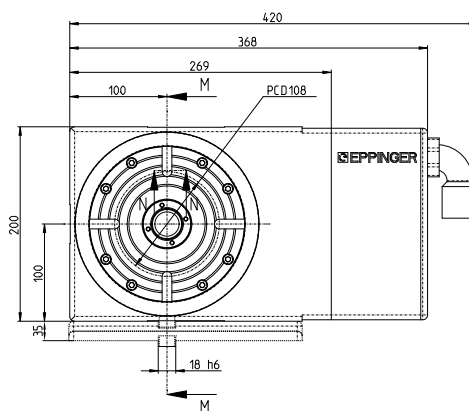
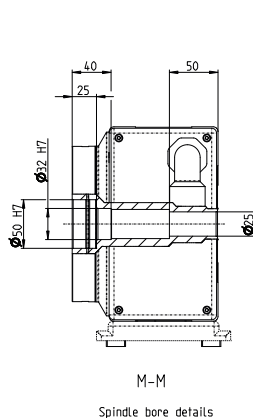
5 ROTARY TABLES

5.1 ETS-160



Specifications






Diameter of Table	[mm]	160	Load Capacity Vertical	[kg]		100
Diameter of Spindle Hole	[mm]	25thru, 32 H7		Load Capacity Horizontal	[kg]	
Centre Height	[mm]	135	Max. Thrust Load axial		[kN]	
Width of T-Slot	[mm]	10 H7		Max. Thrust Load	[Nm]	
Axis		Rotary	Max. Thrust Load		[Nm]	
Clamping System		Pneum via booster only / Hydr / S-APC				
Clamping Torque Hydr. and Pneum (via booster)	[Nm]	400				
Motor clamping torque	[Nm]	64				
Indexing Accuracy	[arcsec]	+/- 10 arc sec				
Repeatability	[arcsec]	+/- 4 arc sec				
Internal Signal Resolution	[°]	< 0.0002				
Rotation Speed	[rpm]	50				
Total Reduction Ratio		60				
Net Weight	[kg]	50				
Maximum Work Inertia	[kg m ²]	1				
Max. Driving Torque	[Nm]	80				

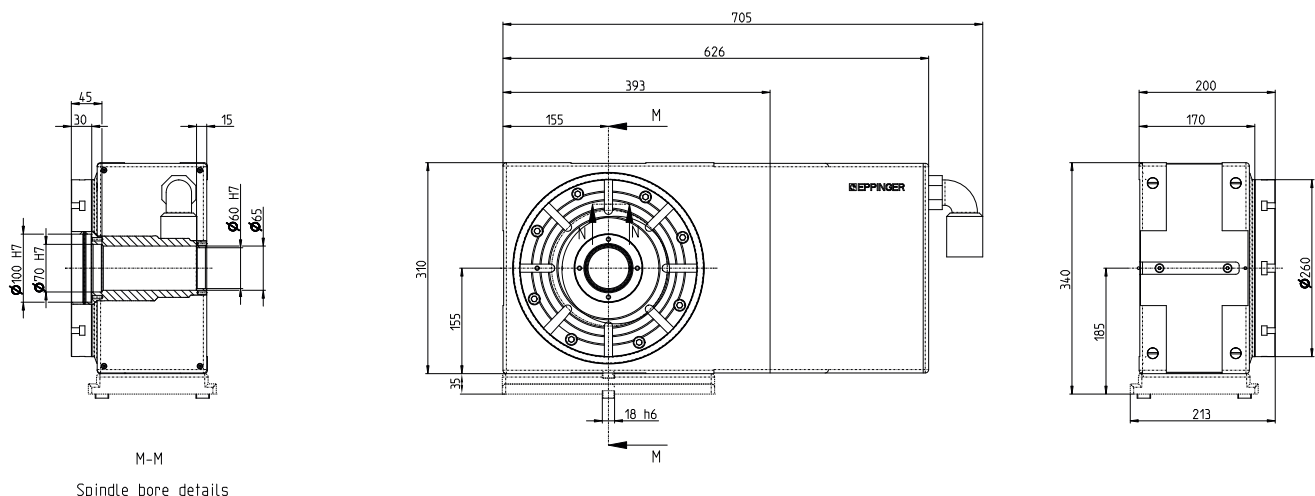


5.3 ETS-260



Specifications

Diameter of Table	[mm]	260	Load Capacity Vertical	[kg]		175	
Diameter of Spindle Hole	[mm]	60 thru, 100 H7		Load Capacity Horizontal	[kg]		350
Centre Height	[mm]	190			Max. Thrust Load axial	[kN]	
Width of T-Slot	[mm]	12 H7		Max. Thrust Load		[Nm]	
Axis		Rotary	Max. Thrust Load		[Nm]		1400
Clamping System		Pneum via booster only / Hydr / S-APC					
Clamping Torque Hydr. and Pneum (via booster)	[Nm]	1600					
Motor clamping torque	[Nm]	240					
Indexing Accuracy	[arcsec]	+/- 4 arcsec					
Repeatability	[arcsec]	+/- 1 arcsec					
Internal Signal Resolution	[°]	< 0.0001					
Rotation Speed	[rpm]	42					
Total Reduction Ratio		48					
Net Weight	[kg]	200					
Maximum Work Inertia	[kg m ²]	8					
Max. Driving Torque	[Nm]	480					








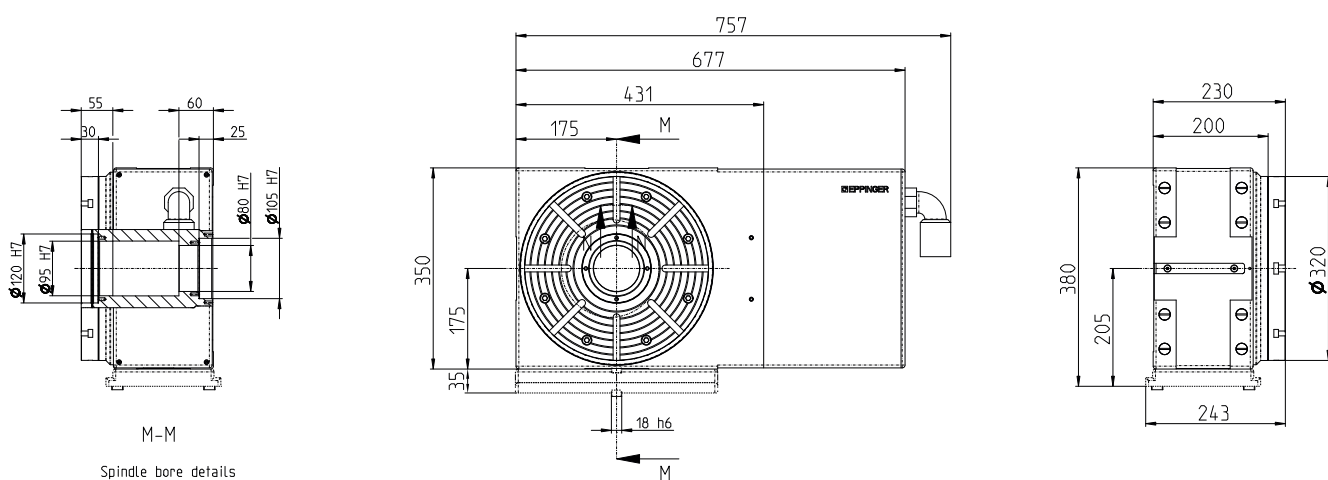
M-M
Spindle bore details

5.4 ETS-320



Specifications

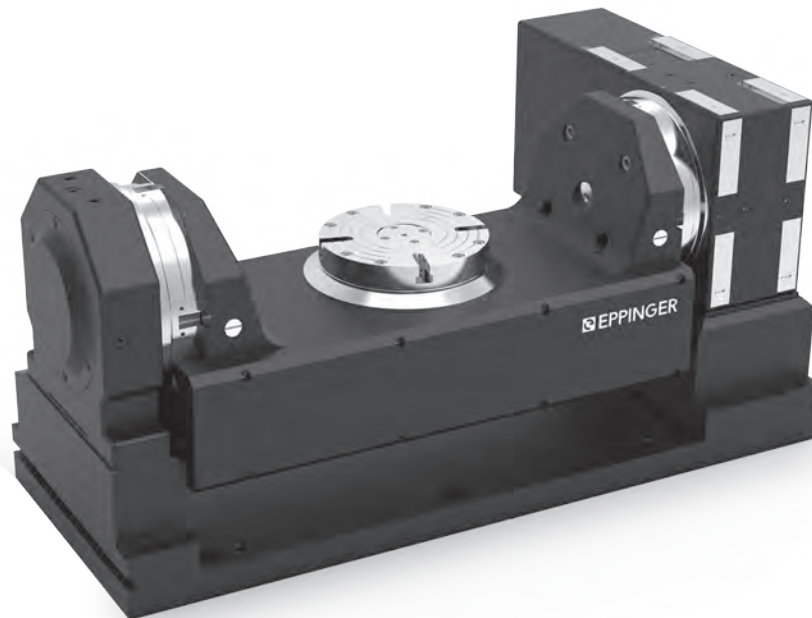
Diameter of Table	[mm]	320	Load Capacity Vertical	[kg]		250	
Diameter of Spindle Hole	[mm]	80 thru, 120 H7		Load Capacity Horizontal	[kg]		500
Centre Height	[mm]	210			Max. Thrust Load axial	[kN]	
Width of T-Slot	[mm]	12 H7		Max. Thrust Load		[Nm]	
Axis		Rotary	Max. Thrust Load		[Nm]		2600
Clamping System		Pneum via booster only / Hydr / S-APC					
Clamping Torque Hydr. and Pneum (via booster)	[Nm]	2700					
Motor clamping torque	[Nm]	240					
Indexing Accuracy	[arcsec]	+/- 4 arc sec					
Repeatability	[arcsec]	+/- 1 arc sec					
Internal Signal Resolution	[°]	< 0.0001					
Rotation Speed	[rpm]	42					
Total Reduction Ratio		48					
Net Weight	[kg]	250					
Maximum Work Inertia	[kg m ²]	8					
Max. Driving Torque	[Nm]	480					





M-M
Spindle bore details

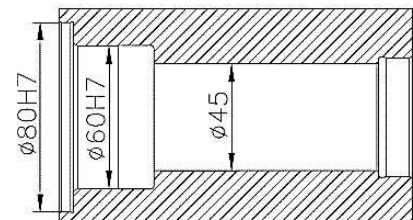
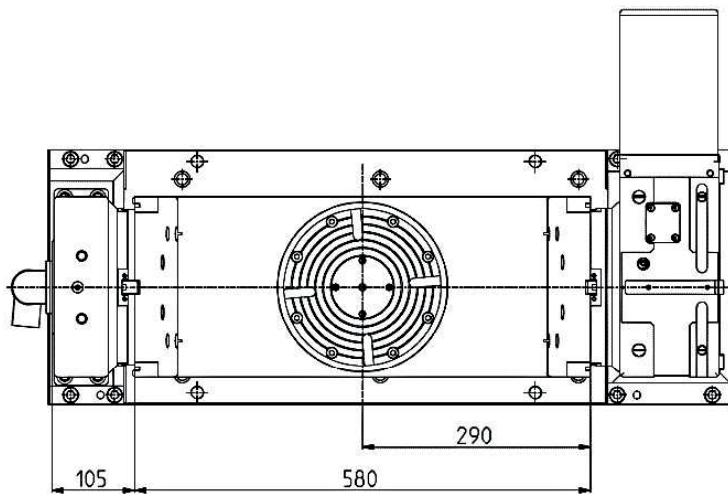
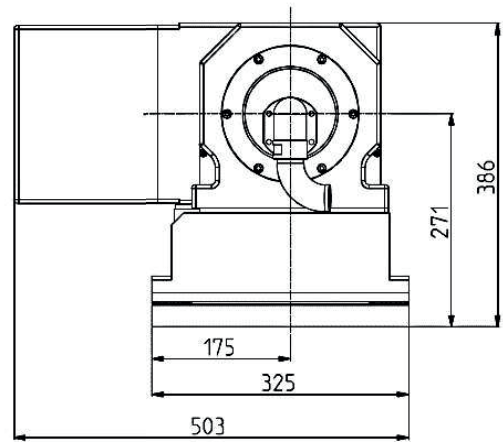
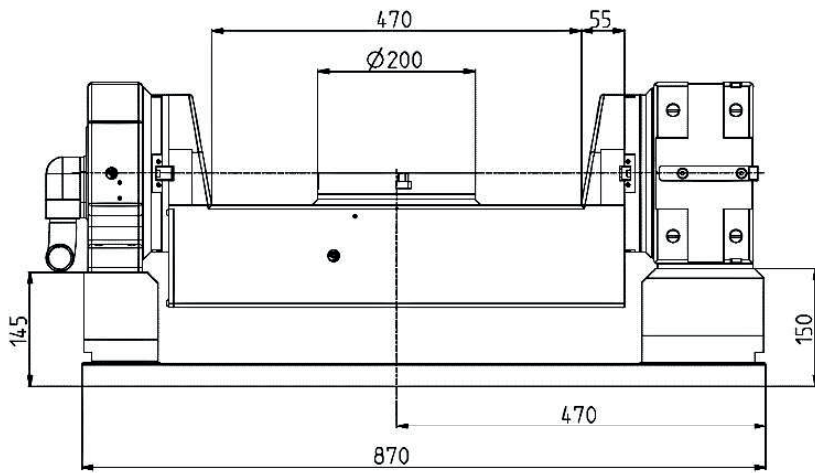
6 ROTARY TILTING TABLES

6.1 ETS-200-5AX



Specifications

Diameter of Table	[mm]	200	Load Capacity 0° to 30°	[kg]		90
Diameter of Spindle Hole	[mm]	45thru, 60 H7		Load Capacity 30° to 90°	[kg]	
Centre Height	[mm]	271	Max. Thrust Load axial		[kN]	
Width of T-Slot	[mm]	12 H7		Max. Thrust Load	[Nm]	
Axis		Rotary / Tilting	Max. Thrust Load		[Nm]	
Clamping System		Pneum via booster only / Hydr.				
Clamping Torque Hydr. Tilting	[Nm]	1100				
Clamping Torque Hydr. Rotary	[Nm]	550				
Indexing Accuracy Tilting	[arcsec]	+/- 10 arcsec				
Indexing Accuracy Rotary	[arcsec]	+/- 5 arc sec				
Repeatability Tilting	[arcsec]	+/- 5 arcsec				
Repeatability Rotary	[arcsec]	+/- 2 arcsec				
Internal Signal Resolution	[°]	< 0.0001				
Rotation Speed Rotary	[rpm]	75				
Total Reduction Ratio		40				
Net Weight	[kg]	360				
Maximum Work Intertia	[kg m²]	0,5				
Max. Driving Torque	[Nm]	150				



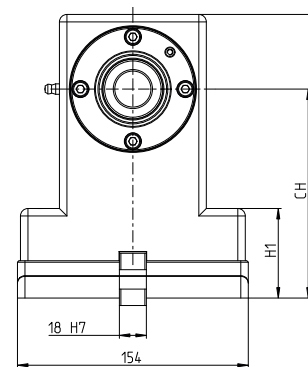
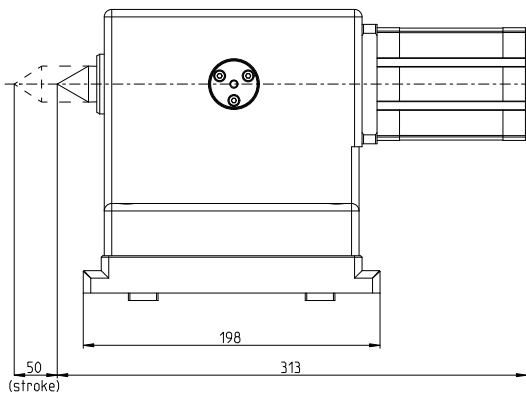
7 ACCESSORIES

7.1 Pneumatic Tailstock



Specifications

Model No.	For Table Size	CH	H1	H2	Dead center	Stroke	Thrust [N] Ø 5 bar
RTS-140-P	ETS 200	140	60	190	MT#3	50	1558
RTS-185-P	ETS 260	185	105	235	MT#3	50	1558
RTS-205-P	ETS 320	205	125	255	MT#3	50	1558

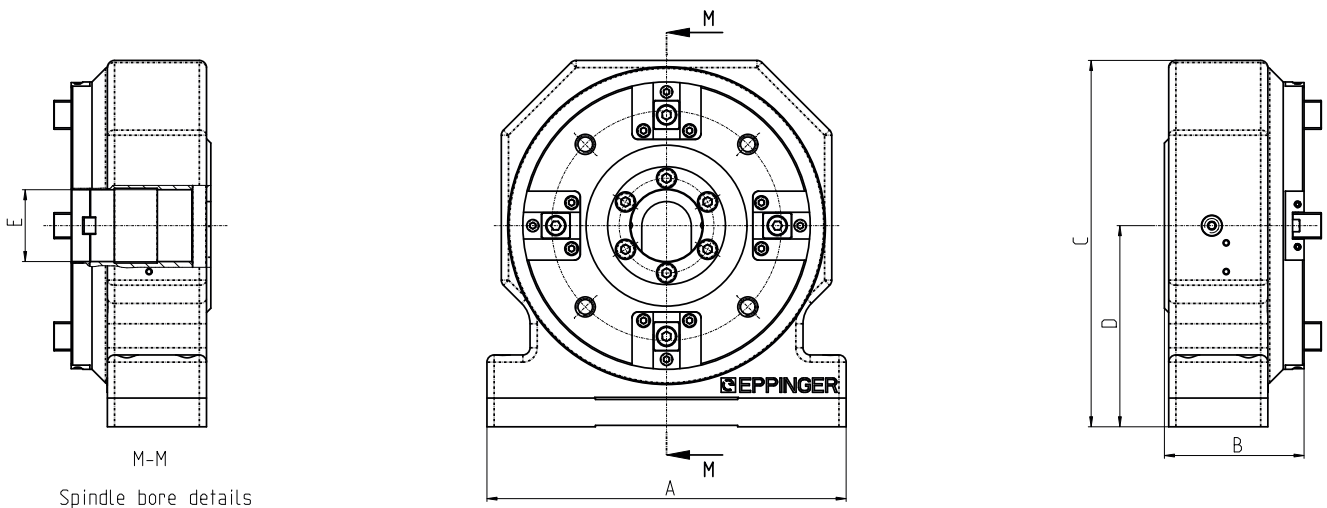


7.2 Support Table



Specifications

Model No.	For Table Size	A	B	C	D	Ø E H7	Clamping system	Clamping Torque [Nm]
RST-140-H	ETS 200	250	98	255	140	50	Air / Hydr.	300 / 500
RST-185-H	ETS 260	312	128	335	185	70	Air / Hydr.	400 / 1600
RST-205-H	ETS 320	355	146	380	205	100	Air / Hydr.	700 / 2700

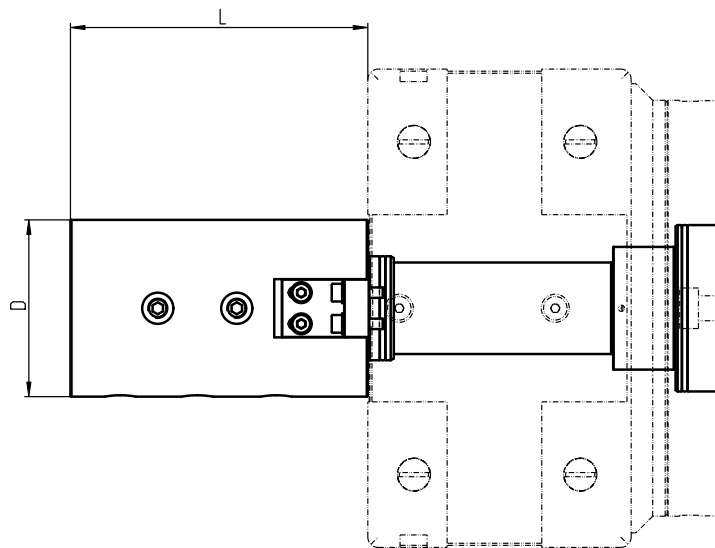


7.3 Rotary Union / Feeder

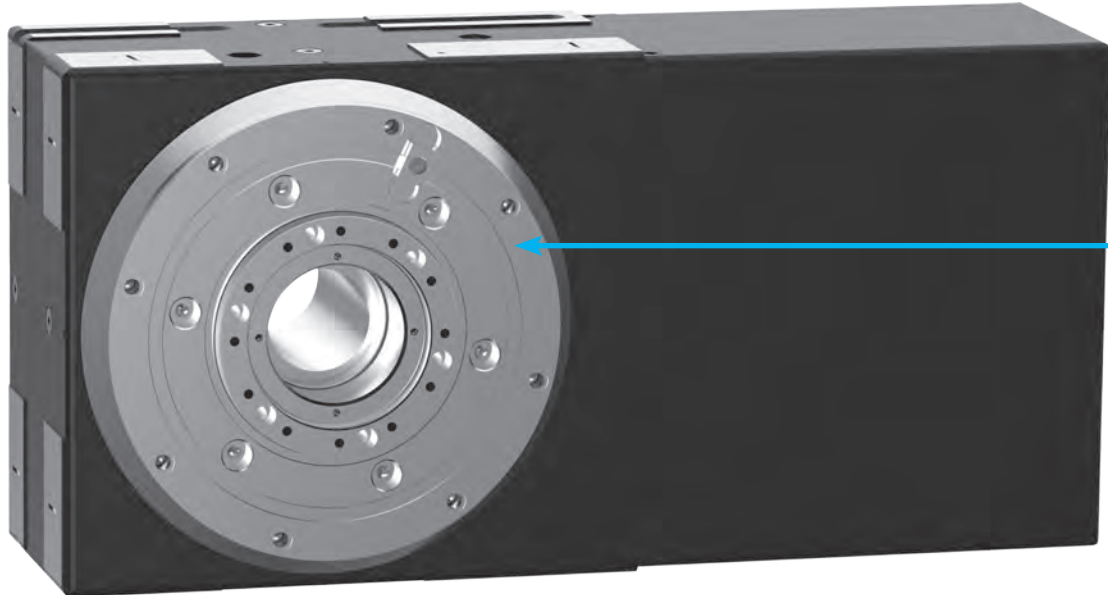


Specifications

Model No.	For Table Size	Ø D	L	no. of ports	Transfer Fluid
HRU-200-4	ETS 200	85	143	4	Air / Oil
HRU-260-4	ETS 260	85	143	4	Air / Oil
HRU-320-4	ETS 320	85	143	4	Air / Oil



8 WORKHOLDING SOLUTIONS

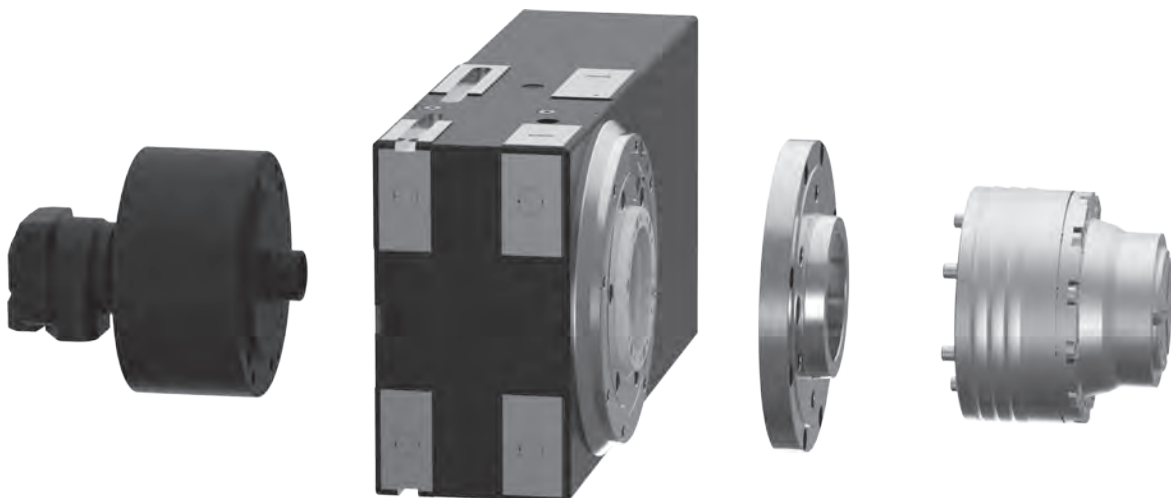


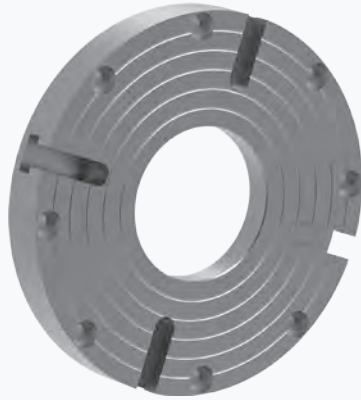
EPPINGER FACEPLATE SYSTEM

Use and benefit from our faceplate system. Inter-changeable faceplates ensure maximum compatibility with a wide range of workholding solutions. Inspired by the ISO 702-1 industry standard, EPPINGER rotary tables feature a uni-form interface to the spindle. The short taper

directly aligns faceplates during mounting. This way, a runout accuracy of 10µm is achieved without alignment when assembled. Apart from a standard hex key, no other tool is required to change the faceplate. With EPPINGER you achieve high flexibility with short set-up times.

EXAMPLE FOR A MODULAR SETUP WITH EPPINGER ROTARY TABLE:





T-SLOT FACEPLATE

The standard T-slot faceplate allows the use of a variety of common workholding solutions on our rotary tables. This face-plate also allows the mounting of L-plates for cradle set-ups.



CUSTOM FACEPLATE

We are happy to design and manufacture custom faceplates that enable the fast integration of third party workholding solutions. We already offer a selection of available workholding systems with matching faceplates.



BLANK FACEPLATE

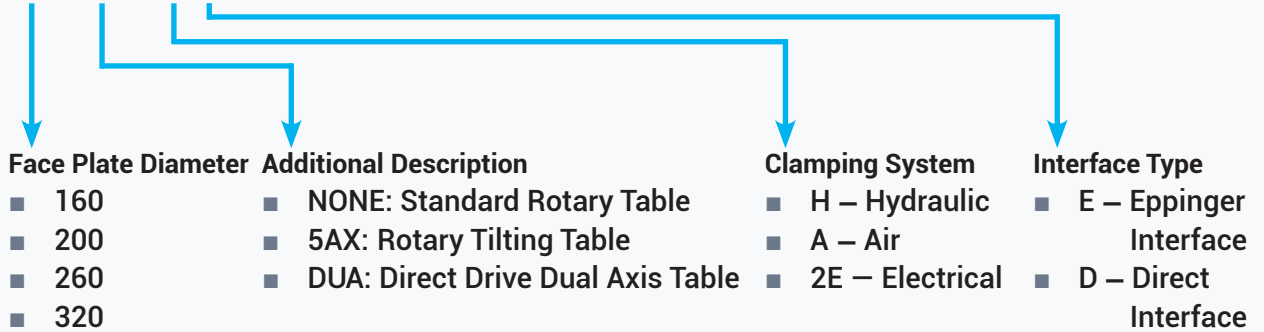
In addition to completely manufactured face plates, EPPINGER also offers blanks with matching interface to EPPINGER rotary tables. This gives our customers the possibility to create their own faceplates for fixtures and individual clamping systems.

9 ORDER CODES

Rotary Table

Eg.: Standard Rotary Table: ETS-200-H-E
 Rotary Tilting Table: ETS-200-5AX-H-E

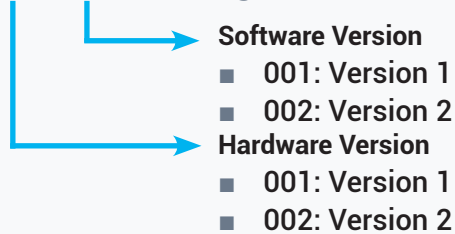
ETS-xxx-xxx-x-x



Electronics

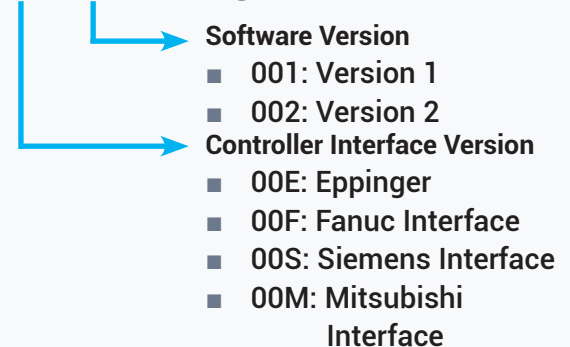
CONTROL CABINET

CC-xxx-xxx Eg.: CC-001-001



MACHINE INTERFACE UNIT

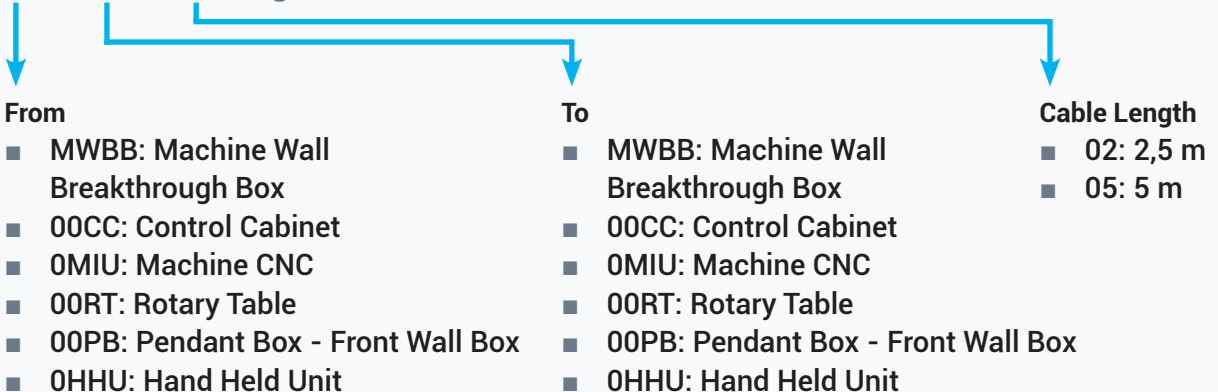
MIU-xxx-xxx Eg.: MIU-00E-001



Electrical Cables

CABLES

EW-xxxx-xxxx-xx Eg.: EW-MWBB-RT-05



Accessories

TAILSTOCK

RTS-xxx-x

Eg.: RTS-140-P



Tailstock type

- P: Pneumatic
- M: Manual
- H: Hydraulic

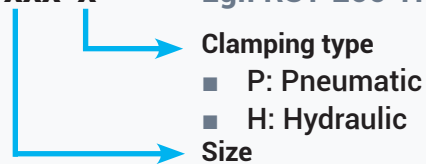
Size

- 120: Suitable for Dia. 160 Rotary Table
- 140: Suitable for Dia. 200 Rotary Table
- 185: Suitable for Dia. 260 Rotary Table
- 205: Suitable for Dia. 320 Rotary Table

SUPPORT TABLE

RST-xxx-x

Eg.: RST-200-H



Clamping type

- P: Pneumatic
- H: Hydraulic

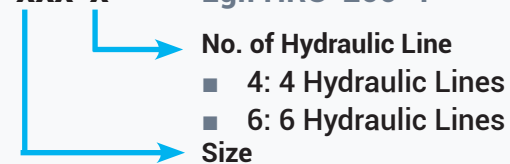
Size

- 120: 120mm center height, Suitable for Dia. 160 Rotary Table
- 140: 140mm center height, Suitable for Dia. 200 Rotary Table
- 185: 185mm center height, Suitable for Dia. 260 Rotary Table
- 205: 205mm center height, Suitable for Dia. 320 Rotary Table

ROTARY UNION

HRU-xxx-x

Eg.: HRU-200-4



No. of Hydraulic Line

- 4: 4 Hydraulic Lines
- 6: 6 Hydraulic Lines

Size

- 160: Suitable for Dia. 160 Rotary Table
- 200: Suitable for Dia. 200 Rotary Table
- 260: Suitable for Dia. 260 Rotary Table
- 320: Suitable for Dia. 320 Rotary Table

HYDRO PNEUMATIC INTENSIFIER / BOOSTER

HPB-xxx

Eg.: HPB-010


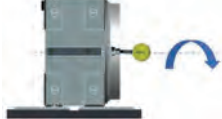
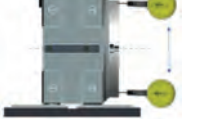

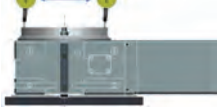


Size

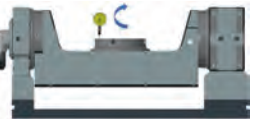
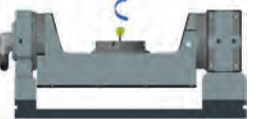
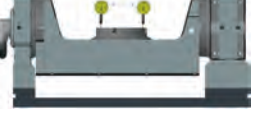
- 010: Suitable for ETS 160, 200, 260
- 020: Suitable for ETS 320

10 GEOMETRICAL TOLERANCES

Rotary Tables

Measuring Item	Method	Unit	ETS-160	ETS-200	ETS-260	ETS-320
Runout of faceplate surface		[mm]	0.01	0.01	0.015	0.015
Concentricity of spindle bore		[mm]	0.01	0.01	0.01	0.01
Perpendicularity of faceplate surface and bottom surface (vertical)		[mm]	0.02	0.02	0.02	0.02
Parallelism between table centre axis and mounting plate		[mm]	0.02	0.02	0.02	0.02
Parallelism of faceplate surface and bottom surface (horizontal)		[mm]	0.015	0.015	0.02	0.02

Rotary Tilting Tables

Measuring Item	Method	Unit	ETS-200 -AX
Runout of faceplate surface		[mm]	0.02
Concentricity of spindle bore		[mm]	0.02
Perpendicularity of faceplate surface and bottom surface		[mm]	0.02

EPPINGER RESERVES THE RIGHT TO CHANGE SPECIFICATIONS AND DIMENSIONS WITHOUT PRIOR INFORMATION.



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PRECISION FOR DEMANDING MACHINING PROCESSES



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CATALOGUE ROTARY TABLES – 06/2022