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Driven by
Roller Gear Cam

Driven by
Worm & Worm Gear

Driven by
D.D. Motor

TJR Precision Technology

Rotating Positivity Forward www.tjr.com.tw The 14th Edition

TJR Precision Technology

Rotating Positivity Forward

TJR Taiwan – Taichung headquarters
established in 2009

LV TJR China – Suzhou factory
established in 2015

in TJR India – Chennai factory
registered in 2021

Masaki TJR Japan – Tokyo factory
registered in 2022

th TJR Thailand – Bangkok factory
registered in 2023

Company Profile

TJR Precision Technology was established in December 2009, specializing in the manufacturing of high-precision key components for CNC machine tools. Our main products are ultra-high precision CNC rotary tables (4th axis and 5th axis), which are widely used in aerospace, high-tech electronics, automotive parts manufacturing, and various other machinery industries.

With our outstanding R&D capabilities, we provide high-precision, high-efficiency, and reasonably priced customized professional services to meet the needs of both domestic and international customers.

Our core values—integrity, responsibility, and innovation — drive our commitment to long-term, sustainable development and business longevity.

Guided by the spirit of "Rotating Positivity Forward", we strive to build a corporate culture rooted in optimism, accountability, and continuous progress.

There are three common transmission mechanisms of rotary table as bellow:

You can find all types of mechanism in TJR.

3 Transmission Mechanisms

A

Driven by roller gear cam
(speed: 80 rpm)

Strength:

① Almost no backlash during the clockwise / anti-clockwise rotation
② Almost no abrasion for the transmission mechanism
③ High speed

B

Driven by
worm & worm gear

Strength:

① The major and cost-effective solution
② Easy to adjust backlash after some abrasions

C-1

Driven by Super high speed
direct drive motor
(super high speed: 2000 rpm)

Strength: **a mill / turn component**

① If the moving column vertical machining center or drilling & tapping center is equipped with our table, it can make the machine work as a horizontal or vertical lathe concurrently.
② The super high speed of rotary axis: 2000 rpm.
③ Truly zero backlash during the clockwise / anti-clockwise rotation.
④ Truly zero wear for the transmission mechanism.
⑤ Long-lastiong high precision
(The actual precision depends on the selected angle encoder)

C-2

Driven by direct drive motor
(speed: 200 rpm)

Strength:

① Truly zero backlash during the clockwise / anti-clockwise rotation.
② Truly zero wear for the transmission mechanism. (No abrasion at all)
③ High speed: 200 rpm
④ Long-lastiong high precision.
(The actual precision depends on the selected angle encoder)

Instruction

How to choose a suitable TJR rotary table

❶ Workpiece material :

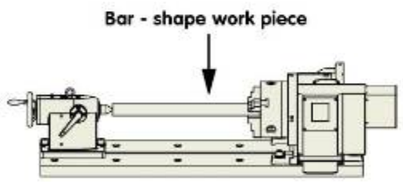
A : For materials like aluminum and copper, it is OK to select AR series (Pneumatic brake)
B : For materials like cast iron and steel, it is OK to select HR series (Hydraulic brake) or HI series (Hirth coupling Hydraulic brake)

❷ Workpiece accuracy requirement :

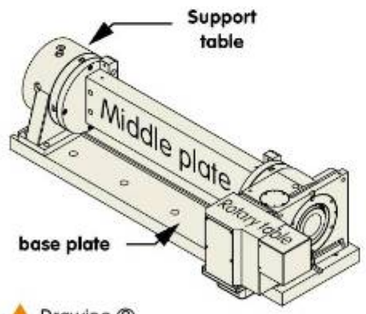
A : For accuracy within 20 sec, select AR series (as rotary table for any angle)
B : For accuracy within 15 sec, select HR series (as rotary table for any angle)
C : For accuracy within 10 sec, the retrofitting of angle encoder can be considered; but the angle encoder costs more. If the processing only occurs at fixed angles, HI series (±5 sec can be achieved) can be considered; however, the HI series cannot be used for continuous cutting, as it only works at fixed angles of multiple of 1° or 5° (see page 38)

❸ Workpiece shape and size :

A : If it is in the shape of round bar, please purchase the 3-jaw chuck and the center tailstock additionally. (as below Dia.① shows) When choosing the 3-jaw chuck, note that its outer diameter should not exceed the table diameter. Please see page 76 for the grip range of the chuck.
B : If of odd shapes and more than two workpieces are processed at once (see page 75), then purchase support table additionally. (as below Dia.② shows) (For L-block, base plate and middle plate (connection plates), please have them manufactured by fixture suppliers).
※ When using middle plate, please note to limit its width to the max. table diameter.



▲ Drawing ①



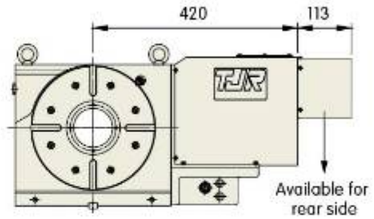
▲ Drawing ②

❹ Max. load :

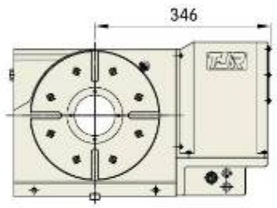
Verify if the rotary table can withstand the load of workpiece and then add up the weights of predetermined rotary table, tailstock, L-block, middle plate, base plate, workpiece and fixture to see if the total load which the machine can withstand is exceeded. If overweighed, check the material of workpiece first. If the material is aluminum alloy or other light material but you are forced to select a larger rotary table due to its too long details in shapes which require over-large radius of rotation, please feel reassured to select the rotary table of a next smaller size. Fit raiser blocks to lift the workpiece so asto accommodate the radius of rotation whereby to reduce the total weight and the cost.

❺ Y axis interference :

First, verify whether the selected rotary table interferes when it is placed on the work table of the machining center. With the Y axis of the vertical machining center moved to the origin, please measure
A : the distance between central groove of the worktable and the sheet metal of the machine's slide door (Ex: assuming 450mm remains)
B : the distance between the centerline of rotary table and the end of motor cover (excluding the wiring box) (Ex: 420mm in HR255-R as below Dia. ③ shows)
If the "B" distance is less than the "A" distance, it is certain that the rotary table will not collide with the sheet metal of the slide door. (Ex: 420mm < 450mm; thus it's ok to select HR255-R) If not, please change to sheet metal cover reduction version of TJR rotary table. (Ex: only 346mm in HR255-N as below Dia. ③-1 shows)



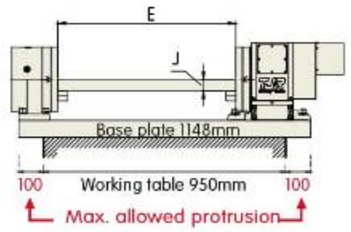
▲ Drawing ③ : HR-255R



▲ Drawing ③-1 : HR-255N

❻ Verify the available room for placing the workpiece :

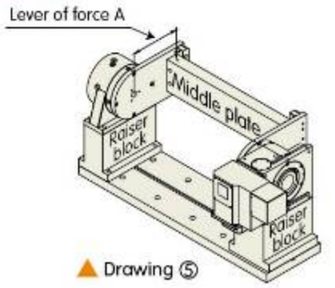
Please measure the length of working table of the machine to verify that it is not 200 mm smaller than base plate. It is the maximal allowed protrusion for the base plate of all models to stand out by 100mm on each side of the working table. For example: Assuming the length of working table of the machine is 950mm. (as below Dia. ④ shows) If HR255-N rotary table, RTH-255 support table, and middle plate are selected, then it is determined that 700 mm in "E" middle plate is available for workpiece. (see data sheet on page 75) By the same principle, it's 1148mm in "B" base plate. In this case, it's acceptable since it is only 198 mm larger than machine's working-table. As for the space "E", thickness "J" and width "H", they are advised not to exceed the set values in our specification (as data sheet on page 71).



▲ Drawing ④ :
base is bigger than working table

❼ Important notices :

When purchasing rotary table, support table, and cradle-type fixture (as below Dia. ⑤ shows), it is necessary to advise us if the arm (A) has overtaken the table radius and caused off-center process. Otherwise, the worm wheel will be worn out quickly. (The longer the arm (A) is, the more it's against common sense and normal practice) We shall not be responsible if you fail to advise so.



▲ Drawing ⑤

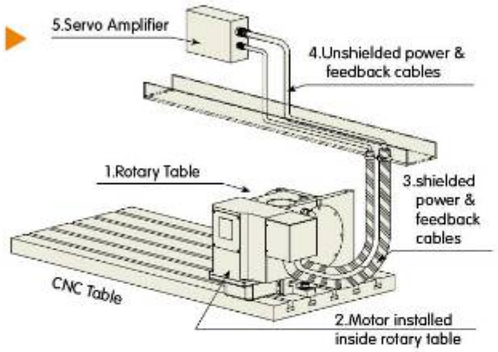
⑧ "Reserved interface for the forth axis" :

The so-called "reserved interface for the forth axis" refers to all the small hardware or PLC software necessarily reserved for the fourth axis on the machine as well as refers to five main components including ① rotary table ② 4th axis motor ③ shielded power & feedback cables ④ unshielded power & feedback cables, and ⑤ 4th axis amplifier. (as below Dia. ⑥ shows)

(A) If the machine comes with those reserved interfaces for the fourth axis, there is no problem at all to retrofit the fourth axis of the same system for four-axes simultaneous contouring.

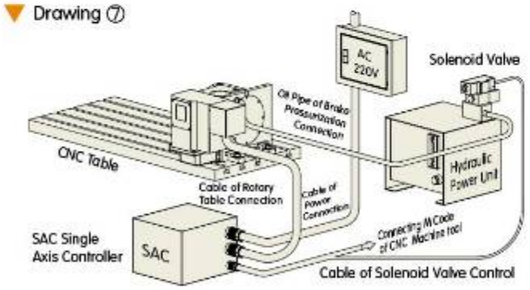
(B) If the machine does not come with those reserved interfaces for the fourth axis, the single-axis controller (SAC) we provide (as below Dia. ⑦ shows) can be used to retrofit the fourth axis. However, such single-axis controller does not interlock with any of X, Y and Z axes in the machine. In other words, the other three axes can not be moved unless the fourth-axis motion is complete.

Drawing ⑥ 5 main components of the 4th axis ▶



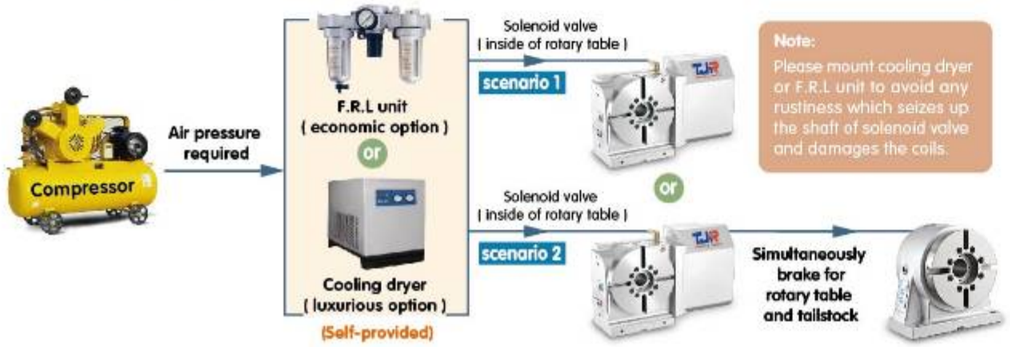
⑨ Application for single axis controller (SAC) :

▼ Drawing ⑦



★ With a reserved M Code in the machine center, TJR SAC single axis controller or AIC hydraulic controller can be easily installed, no matter which brand of control system is used.

⑩ While using AR series rotary table (pneumatic brake), please note the following matters :



Product Code

• 4 - Axis

Model Code — **Table Diameter** — **Hydraulic Brake** — **Multi-Spindle Series** — **Motor Mounting & Cover Type**

Min. Indexing Angle: 0.001°

- AR Worm Gear Drive with Pneumatic Brake
- HR Worm Gear Drive with Hydraulic Brake
- RC Roller Gear Cam Drive
- HRC Swivel Head with Roller Gear Cam Drive (also applicable for horizontal setup)
- HHR Horizontal Worm Gear Drive with Hydraulic Brake
- MTHR Manual Tilting 4th Axis with Worm Gear Drive and Hydraulic Brake
- AD Direct Drive Motor with Pneumatic Brake
- iHHD Embedded Horizontal Direct Drive Motor with Hydraulic Brake

Min. Indexing Angle: 1° or 5°

- HI Hirth Coupling Index Table with Hydraulic Brake
- HHI Horizontal Hirth Coupling Index Table with Hydraulic Brake

Hydraulic Brake

- H Hydraulic Brake Option (For Ø170~250mm models) (excl. AR-255H)

Multi-Spindle Series

- 2W 2-Spindle Coupled
- 3W 3-Spindle Coupled
- 4W 4-Spindle Coupled

Motor Mounting & Cover Type

- R Right-side Motor; Vertical & Horizontal use
- N Right-side Motor with compact Cover; Vertical use
- B Back-side Motor; Vertical use
- L Left-side Motor; Vertical & Horizontal use
- SP Swivel Spindle Head
- FA FANUC Direct Drive Motor

▲ HR-255

• 5 - Axis

Model Code — **Table Diameter** — **Rotary Axis Type** — **Max. Allowable Workpiece Rotation Diameter** — **Tilting Axis Type** — **Tilting Axis Features**

Min. Indexing Angle: 0.001°

- FAR Worm Gear Drive with Pneumatic Brake
- FHR Worm Gear Drive with Hydraulic Brake
- FRC Roller Gear Cam Drive
- FAD Direct Drive Motor with Pneumatic Brake
- FHD Direct Drive Motor with Hydraulic Brake
- FCHR Dual-pallet Worm Gear Drive with Hydraulic Brake; designed for automatic pallet changers

Rotary Axis Type

- C Dual-axis Cradle Type
- S Dual-axis Single-arm Type
- SN Dual-axis Single-arm Type (Compact Type)
- A Compact Type
- F Enlarged Faceplate
- L Extended Type
- 2W 2-Spindle Coupled
- HS Ultra-High Speed (for direct-drive motor models)

Tilting Axis Type

- RC Roller Gear Cam Drive
- B Tilt Axis: Back-side Motor Type

Tilting Axis Features

- H Hydraulic Brake Option (For Ø170~250mm models)
- FA FANUC Direct Drive Motor

▲ FHR-255-2W-RC320

Roller Gear Cam

Description	Model code		Page
4 - Axis (Min. indexing angle : 0.001°)		RC Series – Roller Gear Cam Drive RC-170(H) / 210(H) / 250(H) / 255 / 320 / 400	9~14
		HRC Series – Swivel Head with Roller Gear Cam Drive (also applicable for horizontal setup) HRC-400SP	13~14
5 - Axis (Min. indexing angle : 0.001°)		FRC Series – Roller Gear Cam Drive FRC-170A / 210L / 255CL / 320CF	15~16
		FAR / FHR-RC Series – Worm Gear Drive with (Pneumatic / Hydraulic brake) FAR-170-2W / 210-2W FHR-255-2W / 350F-2W / 350CF-2W	17~18
CNC APC Hook Type (for VMC)		CURC Series – Hook type CNC auto pallet changer (180° to and fro) CURC-500x700	64

Worm & Worm gear

Description	Model code		Page
4 - Axis (Min. indexing angle : 0.001°)		AR Series – Worm Gear Drive with Pneumatic Brake AR-125 / 170(H) / 210(H) / 250(H) / 255H	19~24
		AR Multi-Spindle Series AR-125-2W / 125-3W / 125-4W AR-170-2W / 170-3W / 210-2W / 210-3W	25~28
		HR Series – Worm Gear Drive with Hydraulic Brake HR-255 / 320 / 320B-2W / 400 / 500 / 630 / 800	29~36
Manual Tilting (Min. indexing angle : 0.001°)		MTHR Series – Manual Tilting 4th Axis with Worm Gear Drive and Hydraulic Brake (Tilt axis : Manal / Rotary axis : Numerical Control) MTHR-255	35~36
4 - Axis (Min. Indexing Angle : 1° & 5°)		HI Series – Hirth Coupling Index Table with Hydraulic Brake HI-255 / 320 / 400 / 500	37~40
4 - Axis Horizontal only (HHI : 1° & 5° / HHR : 0.001°)		HHI Series – Horizontal HI Series HHR Series – Horizontal HR Series HHI-320x320F / 400x400A / 500x500 HHI-630x630 / 800x800 / 1000x1000 HHR-400x400 / 500x500	41~44

Worm & Worm gear

Description	Model code		Page
5 - Axis (Min. indexing angle : 0.001°)		FAR Series – Worm Gear Drive with Pneumatic / Hydraulic Brake FAR-125 / 170(H) / 170A(H) / 210(H) FARs-160SN	45~48
		FHR Series – Worm Gear Drive with Hydraulic Brake FHR-255C / 255CL / 320 / 320C / 400CF / 500C / 650C FHR-400C-540-HR400B / 401C-820-HR400B FHR-400S / 650S-525 / 650S-550 FCHR-650S-550	49~56
CNC APC Tray Type and Rotary Table (for HMC)		CHI Series – Dual-pallet HI Series for APC. CHR Series – Dual-pallet HR Series for APC. CTH Series – Tray type APC (180° to and fro) CTU Series – Hook type auto pallet changer (180° to and fro) CHI-400 / 500 / 630 、CHR-500 / 630 、CTH-400 / 500 / 630 CTU-400x600 / 500x700	57~63

Direct Drive Motor (D.D.M)

Description	Model code		Page
4 - Axis		AD Series – D.D.M with Pneumatic Brake iHHD Series – Embedded Horizontal D.D.M with Hydraulic Brake AD-170 / 261iB / 261iB-FA iHHD-650	65~66
		FAD / FHD Series – D.D.M with Pneumatic / Hydraulic Brake FAD-170F / 210F / 211-AD261iB FHD-650S-ID650	67~68
5 - Axis		FAD Series – D.D.M with Hydraulic Brake FAD-300F-HS / 400HS-AD500I / 500FHS-AD500I	69~70

Optional Accessories

Description	Model code		Page
Tailstock Support		Support table	71~72
		Manual tailstock Manual tailstock with Pneumatic / Hydraulic Switching valve	73~74
Bridge Fixture Plate Assembly Rotary Table + Support Table + Fixture Plate + Base Plate + Disc L Block		Connection Plates	75~76
Other Accessories		Other Accessories	77~84

Driven by Roller Gear Cam

RC Series (Pneumatic / Hydraulic Brake)

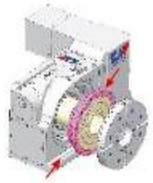
RC - 170 H R

- RC: Roller Gear Cam Drive (Min. Indexing Angle: 0.001°)
- 170: Table Diameter
- H: Hydraulic Brake Option
- R: Right-side Motor; Vertical & Horizontal use

Vertical

Horizontal

Use
radial & axial bearings



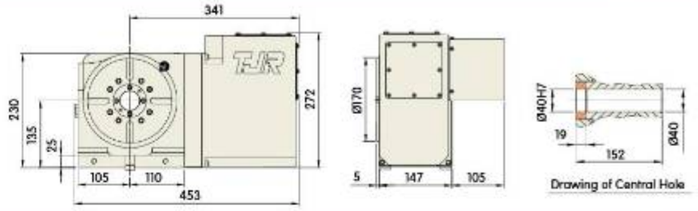
Wrap-around Brake

Item / Model		Unit	RC-170(H)R	RC-210(H)R RC-250(H)R	RC-255R	RC-320R	RC-400R
Table Diameter		mm	Ø170	Ø210 / Ø250	Ø255	Ø320	Ø400
Inner Diameter of Mandrel Sleeve		mm	Ø40H7	Ø40H7	Ø80H7	Ø120H7 x 35 deep	Ø120H7
Diameter of Center Through Hole		mm	Ø40	Ø40	Ø80	Ø105	Ø120
Center Height (Vertical)		mm	135	160	160	210	255
Table Height (Horizontal)		mm	152	152 / 185	200	235	250
Table T-slot Width		mm	12H7	12H7	12H7	14H7	14H7
Guide Block Width		mm	18h7	18h7	18h7	18h7	18h7
Min. Increment		deg.	0.001	0.001	0.001	0.001	0.001
Indexing Precision		sec.	30	30	20	20	20
Repeatability		sec.	6	6	6	6	6
Clamping System : Pne. 0.6(6) / Hyd. 3.5(35)		MPa (kgf/cm²)	Pne. / Hyd.	Pne. / Hyd.	Hyd.	Hyd.	Hyd.
Clamping torque (※1)		N·m (kgf·m)	304 (31) / 491 (50)	304 (31) / 491 (50)	687 (70)	1128 (115)	1962 (200)
Servo Motor Type (※3)	FANUC	Straight shaft without key	αiF8 / βis8	αiF8 / βis8	αiF8 / βis12	αiF12 / βis22	αiF12 / βis22
	MITSUBISHI	Straight shaft without key	HG - 54 / 104	HG - 54 / 104	HG - 154	HG - 204	HG - 204
Speed Reduction Ratio		-	1 / 36	1 / 36	1 / 60	1 / 90	1 / 90
Max. Rotation Rate of Table (※2)		min⁻¹	83.3	83.3	50	33.3	33.3
Allowable Inertia Load Capacity (Vertical)		kg-m²	0.63	0.63	1.2	3.15	6.25
Allowable Workpiece Load	Vertical	kg	75	75	100	150	200
	with support table	kg	150	150	250	350	500
	Horizontal	kg	150	150	250	350	500
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	14225 (1450)	14225 (1450)	19620 (2000)	29430 (3000)	39240 (4000)
	FxL	N·m (kgf·m)	1079 (110)	1079 (110)	1472 (150)	2943 (300)	3924 (400)
	FxL	N·m (kgf·m)	304 (31)	304 (31)	687 (70)	1128 (115)	1962 (200)
Driving Torque		N·m (kgf·m)	363 (37)	363 (37)	540 (55)	1050 (107)	1373 (140)
Net Weight (without motor)		kg	44	52 / 62	110	187	-

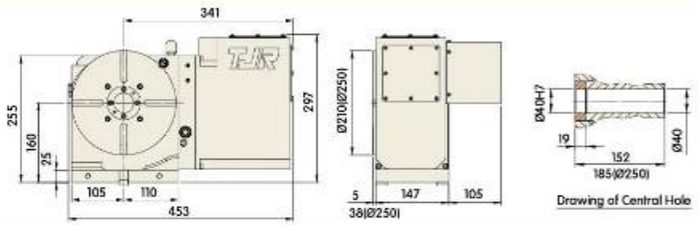
※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.
※3 : For this series of rotary tables, if sudden power outages may occur in the operating environment, motors equipped with a brake function are recommended to prevent displacement or slipping of the rotary or tilting axis during power loss, which could lead to collisions or other accidents.

Driven by Roller Gear Cam

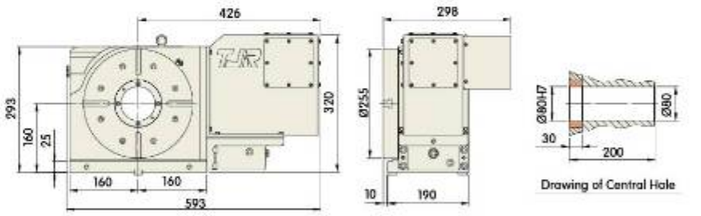
RC-170(H)R



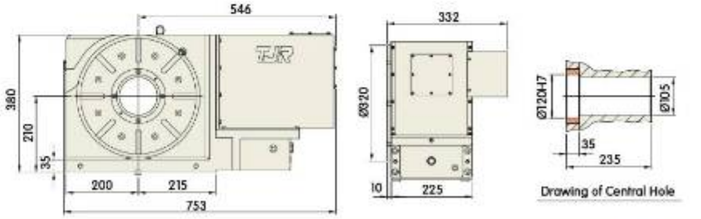
RC-210(H)R / RC-250(H)R



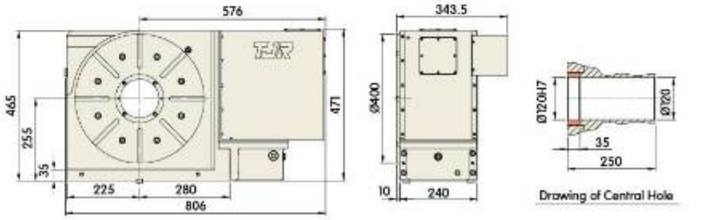
RC-255R



RC-320R



RC-400R



Driven by Roller Gear Cam

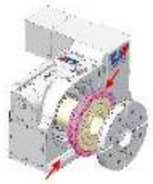
RC Series (Hydraulic Brake)

RC - 255 N

- RC: Roller Gear Cam Drive (Min. Indexing Angle: 0.001°)
- 255: Table Diameter
- N: Right-side Motor with Compact Cover; Vertical use

Vertical

Use radial & axial bearings



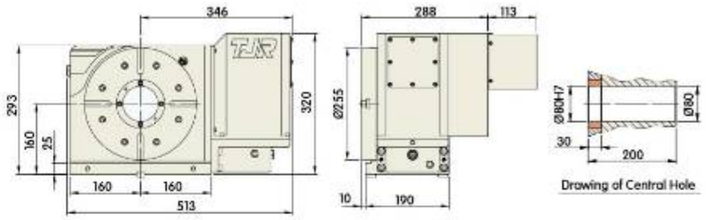
Wrap-around Brake

Item / Model		Unit	RC-255N	RC-320N	RC-400N
Table Diameter		mm	Ø255	Ø320	Ø400
Inner Diameter of Mandrel Sleeve		mm	Ø80H7	Ø120H7 x 35 deep	Ø120H7
Diameter of Center Through Hole		mm	Ø80	Ø105	Ø120
Center Height (Vertical)		mm	160	210	255
Table Height (Horizontal)		mm	200	235	250
Table T-slot Width		mm	12H7	14H7	14H7
Guide Block Width		mm	18h7	18h7	18h7
Min. Increment		deg.	0.001	0.001	0.001
Indexing Precision		sec.	20	20	20
Repeatability		sec.	6	6	6
Clamping System : Hydraulic		MPa (kgf/cm²)	35	35	35
Clamping torque (※1)		N·m (kgf·m)	687 (70)	1128 (115)	1962 (200)
Servo Motor Type (※3)	FANUC	Straight shaft without key	αiF8 / βis12	αiF12 / βis22	αiF12 / βis22
	MITSUBISHI	Straight shaft without key	HG - 154	HG - 204	HG - 204
Speed Reduction Ratio		-	1 / 60	1 / 90	1 / 90
Max. Rotation Rate of Table (※2)		min⁻¹	50	33.3	33.3
Allowable Inertia Load Capacity (Vertical)		kg-m²	1.2	3.15	6.25
Allowable Workpiece Load	Vertical	kg	100	150	200
	with support table	kg	250	350	500
	Horizontal	kg	-	-	-
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	19620 (2000)	29430 (3000)	39240 (4000)
	FxL	N·m (kgf·m)	1472 (150)	2943 (300)	3924 (400)
	FxL	N·m (kgf·m)	687 (70)	1128 (115)	1962 (200)
Driving Torque		N·m (kgf·m)	540 (55)	1050 (107)	1373 (140)
Net Weight (without motor)		kg	110	187	-

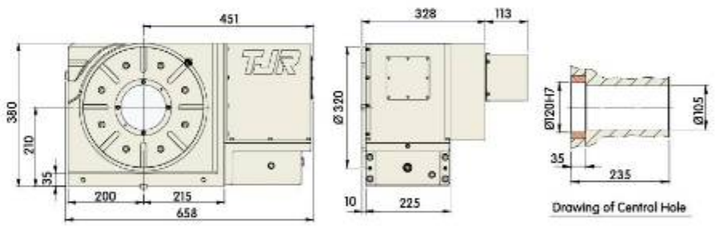
※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.
※3 : For this series of rotary tables, if sudden power outages may occur in the operating environment, motors equipped with a brake function are recommended to prevent displacement or slipping of the rotary or tilting axis during power loss, which could lead to collisions or other accidents.

Driven by Roller Gear Cam

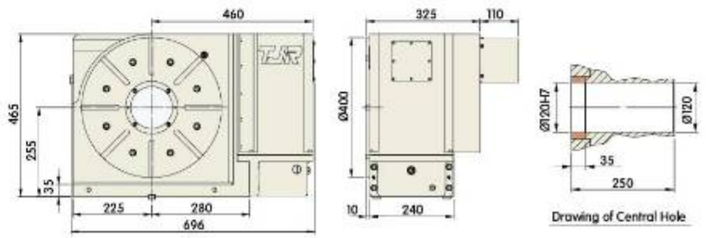
RC-255N



RC-320N



RC-400N



Driven by Roller Gear Cam

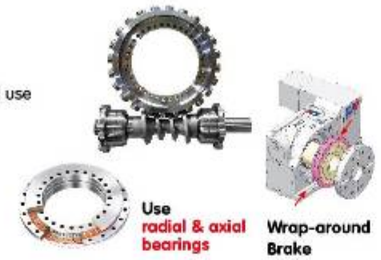
RC Series (Pneumatic / Hydraulic Brake) Left-side motor

RC - 170 H L

- L Left-side Motor; Vertical & Horizontal use
- SP Swivel Spindle Head
- Hydraulic Brake Option
- Table Diameter
- RC Roller Gear Cam Drive (Min. Indexing Angle: 0.001°)
- HRC Swivel Head with Roller Gear Cam Drive (also applicable for horizontal setup) (Min. Indexing Angle: 0.001°)

Vertical

Horizontal



Use radial & axial bearings

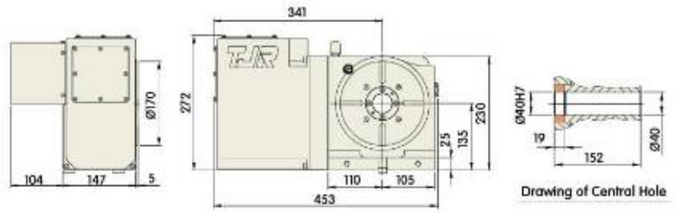
Wrap-around Brake

Item / Model		Unit	RC-170(H)L	RC-210(H)L RC-250(H)L	RC-320L	HRC-400SP
Table Diameter		mm	Ø170	Ø210 / Ø250	Ø320	Spindle interface
Inner Diameter of Mandrel Sleeve		mm	Ø40H7	Ø40H7	Ø120H7 x 35 deep	-
Diameter of Center Through Hole		mm	Ø40	Ø40	Ø105	Ø34 (Ø60)
Center Height (Vertical)		mm	135	160	210	-
Table Height (Horizontal)		mm	152	152 / 185	235	265
Table T-slot Width		mm	12H7	12H7	14H7	-
Guide Block Width		mm	18h7	18h7	18h7	-
Min. Increment		deg.	0.001	0.001	0.001	0.001
Indexing Precision (A axis 0°~+90°)		sec.	30	30	20	20
Repeatability		sec.	6	6	6	6
Clamping System : Pne. 0.6(6) / Hyd. 3.5(35)		MPa (kgf/cm²)	Pne. / Hyd.	Pne. / Hyd.	Hyd.	Hyd. 4.5(45)
Clamping torque (※1)		N·m (kgf·m)	304 (31) / 491 (50)	304 (31) / 491 (50)	1128 (115)	200
Servo Motor Type (※3)	FANUC	Straight shaft without key	αiF8 / βis8	αiF8 / βis8	αiF12 / βis22	αiF12 / βis22
	MITSUBISHI	Straight shaft without key	HG - 54 / 104	HG - 54 / 104	HG - 204	HG / HF - 204
	SIEMENS	Straight shaft	1FK7060 / 7063	1FK7060 / 7063	1FK7083	1FK7083
Speed Reduction Ratio		-	1 / 36	1 / 36	1 / 90	1 / 90
Max. Rotation Rate of Table (※2)		min⁻¹	83.3	83.3	33.3	33.3
Allowable Inertia Load Capacity (Vertical)		kg-m²	0.63	0.63	3.15	-
Allowable Workpiece Load	Vertical	kg	75	75	150	-
	with support table	kg	150	150	350	-
	Horizontal	kg	150	150	350	-
	0° Horizontal	kg	-	-	-	-
	0°~90° Tilt	kg	-	-	-	Vertical ⇔ 200
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	14225 (1450)	14225 (1450)	29430 (3000)	-
	FxL	N·m (kgf·m)	1079 (110)	1079 (110)	2943 (300)	3924 (400)
	FxL	N·m (kgf·m)	304 (31)	304 (31)	1128 (115)	1128 (155)
Driving Torque		N·m (kgf·m)	363 (37)	363 (37)	1050 (107)	143 (dynamic) (1400)
Net Weight (without motor)		kg	44	52 / 62	187	406

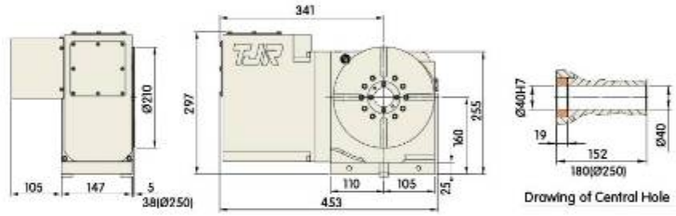
※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.
※3 : For this series of rotary tables, if sudden power outages may occur in the operating environment, motors equipped with a brake function are recommended to prevent displacement or slipping of the rotary or tilting axis during power loss, which could lead to collisions or other accidents.

Driven by Roller Gear Cam

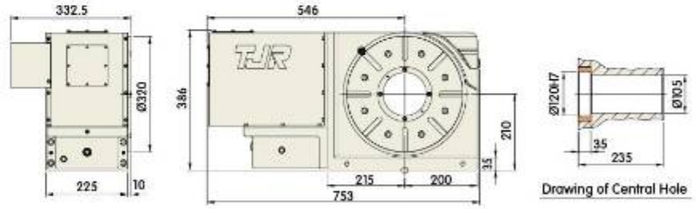
RC-170(H)L



RC-210(H)L / RC-250(H)L [Left-side Motor]

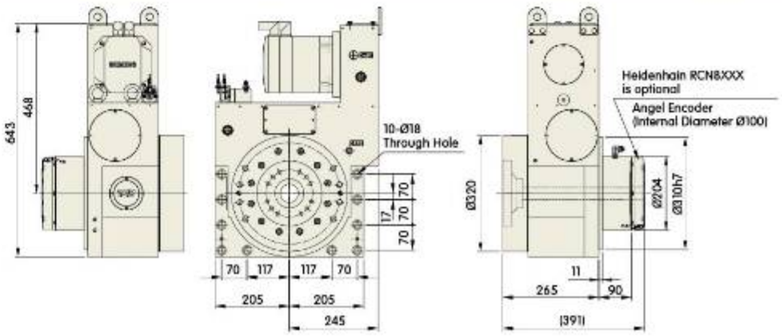


RC-320L [Left-side Motor]



HRC-400SP [Swivel (Spindle) Head]

(without spindle motor)



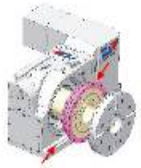
Driven by Roller Gear Cam

FRC Series (Pneumatic / Hydraulic Brake)

FRC - 255 C L - RC320

- FRC: 5th Axis; Vertical & Horizontal
- Roller Gear Cam Drive (Min. Indexing Angle: 0.001°)
- 255: Table Diameter
- C: Dual-axis Cradle Type; A: Compact Type
- L: Extended Type; F: Enlarged Faceplate
- RC320: Roller Gear Cam Tilting Axis Type

Use radial & axial bearings



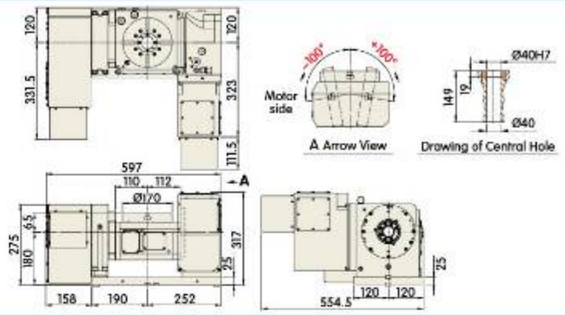
Wrap-around Brake

Item / Model	Unit	FRC-170A-RC210		FRC-210L-RC255		FRC-255CL-RC320		FRC-320CF-RC320	
Table Diameter	mm	Ø170		Ø210		Ø255		Ø320	
Inner Diameter of Mandrel Sleeve	mm	Ø40H7		Ø40H7		Ø80H7		Ø80H7	
Diameter of Center Through Hole	mm	Ø40		Ø35		Ø80		Ø80	
Table Height (Horizontal)	mm	245		270		310		310	
Table T-slot Width	mm	12H7		12H7		12H7		14H7	
Guide Block Width	mm	18h7		18h7		18h7		18h7	
Min. Increment	deg.	0.001		0.001		0.001		0.001	
Axis	-	Rotation	Tilt ±100°	Rotation	Tilt ±110°	Rotation	Tilt ±110°	Rotation	Tilt ±110°
Indexing Precision	sec.	45	60	30	50	20	60	20	60
Repeatability	sec.	6	8	6	8	6	8	6	8
Clamping System : Pne. 0.6(6) / Hyd. 3.5(35)	MPa (kgf/cm²)	Hyd.	Hyd.	Pne. 0.5(5) (※4)	Pne. 0.5(5) (※4)	Hyd.	Hyd.	Hyd.	Hyd.
Clamping torque (※1)	N·m (kgf·m)	245 (25)	491 (50)	294 (30)	1128 (115)	687 (70)	1717 (175)	687 (70)	1717 (175)
Servo Motor Type (※2)(※5) FANUC	Straight shaft without key	αiS4 / βis4	αiF4 / βis8	αiF8 / βis8	αiF8 / βis8	αiF8 / βis12	αiS12 / αiF12 / βis12	αiF8 / βis12	αiS12 / αiF12 / βis12
Servo Motor Type (※2)(※5) MITSUBISHI	Straight shaft without key	HG-105	HG-54/104	HG-104	HG-154	HG-154	HG-204	HG-154	HG-204
Speed Reduction Ratio	-	1 / 60	1 / 36	1 / 60	1 / 90	1 / 60	1 / 120	1 / 60	1 / 120
Max. Rotation Rate of Table (※3)	min⁻¹	50	50	50	25	50	25	50	25
Allowable Inertia Load Capacity (Horizontal)	kg-m²	0.33		0.59		2.56		2.56	
Allowable Workpiece Load 0° Horizontal	kg	60		75		200		200	
Allowable Workpiece Load 0°~90° Tilt	kg	40		50		150		150	
Allowable Thrust Load (with Rotary Table Clamping) F	N (kgf)	5886 (600)		7358 (750)		14715 (1500)		14715 (1500)	
Allowable Thrust Load (with Rotary Table Clamping) FxL	N·m (kgf·m)	304(Pne.) (31)(Pne.)	491(Hyd.) (50)(Hyd.)	1128 (115)		1717 (175)		1717 (175)	
Allowable Thrust Load (with Rotary Table Clamping) FxL	N·m (kgf·m)	245 (25)		294 (30)		687 (70)		687 (70)	
Driving Torque	N·m (kgf·m)	245 (25)		363 (37)		540 (55)		540 (55)	
Net Weight (without motor)	kg	140		315		580		580	

※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : Standard configuration: straight shaft without key. Please inquire for tapered-shaft motor compatibility.
※3 : The structural limit value, while the actual operating speed will vary depending on the motor.
※4 : This model is equipped with a built-in air-to-oil booster cylinder and requires only 5 kg/cm² of inlet air pressure to operate.
※5 : For this rotary table series, a brake motor is recommended where sudden power loss may occur to prevent rotary or tilting axis movement and possible collisions.

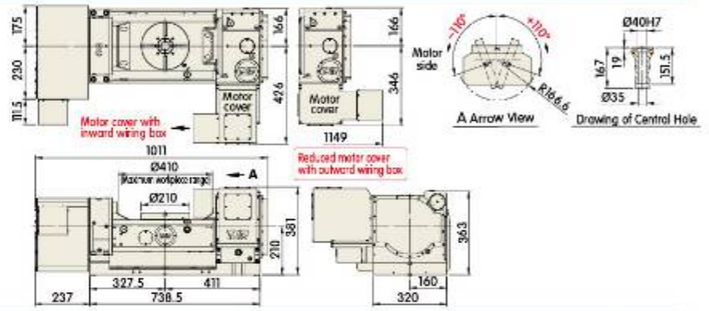
Driven by Roller Gear Cam

FRC-170A-RC210



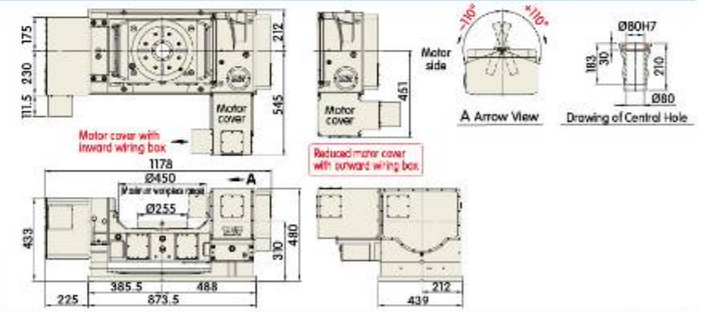
FRC-210L-RC255

Compatible with 4-port rotary joint



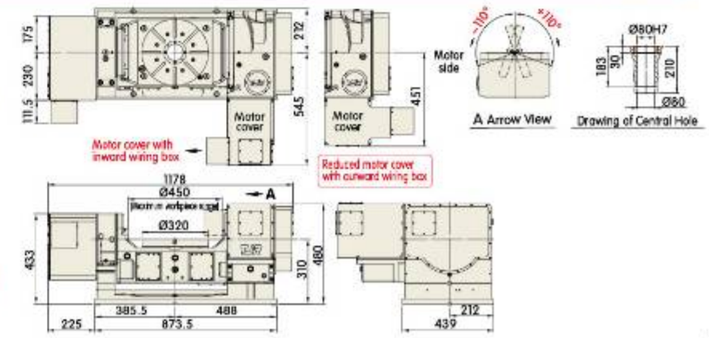
FRC-255CL-RC320

Compatible with 6-port rotary joint and angle encoder



FRC-320CF-RC320

Compatible with 6-port rotary joint and angle encoder



Driven by Roller Gear Cam

FHR Series (Pneumatic / Hydraulic Brake)

FHR - 350 C F - 2W - RC320 - 2A

- FHR: 5th Axis
- HR: Worm Gear Drive with Hydraulic Brake (Min. Indexing Angle: 0.001°)
- AR: Worm Gear Drive with Pneumatic Brake (Min. Indexing Angle: 0.001°)
- 350: Table Diameter
- C: Dual-axis Cradle Type
- F: Enlarged Faceplate
- 2W: 2-Spindle Coupled
- RC320: Roller Gear Cam Tilting Axis Type
- 2A: Dual-drive Tilting Axis with Two Servo Motors

Vertical & Horizontal

C axis

A axis

Use radial & axial bearings

Wrap-around Brake

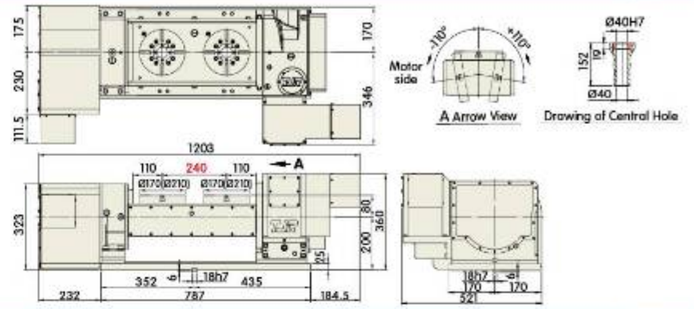
Item / Model	Unit	FAR-170-2W-RC255 / FAR-210-2W-RC255		FHR-255-2W-RC320		FHR-350F-2W-RC320-2A		FHR-350CF-2W-RC320-2A	
Table Diameter	mm	Ø170 / Ø210		Ø255		Ø350		Ø350	
Distance between Table Centers	mm	240		400		450		450	
Inner Diameter of Mandrel Sleeve	mm	Ø40H7		Ø80H7		Ø120H7		Ø120H7	
Diameter of Center Through Hole	mm	Ø40		Ø80		Ø120 x 200 deep		Ø120 x 200 deep	
Table Height (Horizontal)	mm	280		290		370		380	
Table T-slot Width	mm	12H7		12H7		14H7		14H7	
Guide Block Width	mm	18h7		18h7		18h7		18h7	
Min. Increment	deg.	0.001		0.001		0.001		0.001	
Axis	-	Rotation	Tilt ±110°	Rotation	Tilt ±110°	Rotation	Tilt ±110°	Rotation	Tilt ±110°
Indexing Precision	sec.	40	60	40	60	40	60	40	60
Repeatability	sec.	6	8	6	8	6	8	6	8
Clamping System : Pne. 0.6(6) / Hyd. 3.5(35)	MPa (kgf/cm²)	Pne.	Hyd.	Hyd.	Hyd.	Hyd.	Hyd.	Hyd.	Hyd.
Clamping torque (※1)	N·m (kgf·m)	304 (31)	1373 (140)	687 (70)	1717 (175)	1128 (115)	2256 (230)	1128 (115)	2256 (230)
Servo Motor Type (※3) FANUC	Straight shaft without key	αiF8 / αiS12 / βis12	αiS12 / βis12	αi512 / βis12	αiS12 / βis12	αiF12 / βis22	αiS12 x 2 βis12 x 2	αiF12 / βis22	αiS12 x 2 βis12 x 2
Servo Motor Type (※3) MITSUBISHI	Straight shaft without key	HG-154	HG-154	HG-154	HG-204/354	HG-204	HG-154 x 2	HG-204	HG-154 x 2
Speed Reduction Ratio	-	1 / 90	1 / 60	1 / 150	1 / 90	1 / 120	1 / 90	1 / 120	1 / 90
Max. Rotation Rate of Table (※2)	min⁻¹	44.4	16.6	20	16.6	25	16.6	25	16.6
Allowable Inertia Load Capacity (Horizontal)	kg-m²	0.3		0.8		2.3		2.3	
Allowable Workpiece Load 0° Horizontal	kg	50 (One pallet)		100 (One pallet)		150 (One pallet)		150 (One pallet)	
Allowable Workpiece Load 0°~90° Tilt	kg	40 (One pallet)		75 (One pallet)		150 (One pallet)		150 (One pallet)	
Allowable Thrust Load (with Rotary Table Clamping) F	N (kgf)	7358 (750)		14715 (1500)		17658 (1800)		17658 (1800)	
Allowable Thrust Load (with Rotary Table Clamping) FxL	N·m (kgf·m)	1373 (140)		1717 (175)		2256 (230)		2256 (230)	
Allowable Thrust Load (with Rotary Table Clamping) FxL	N·m (kgf·m)	304 (31)		687 (70)		1128 (115)		1128 (115)	
Driving Torque	N·m (kgf·m)	177 (18)		540 (55)		785 (80)		785 (80)	
Net Weight (without motor)	kg	305(Ø170) / 312(Ø210)		740		1080		-	

※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.
※3 : For this rotary table series, a brake motor is recommended where sudden power loss may occur to prevent rotary or tilting axis movement and possible collisions.

Driven by Roller Gear Cam

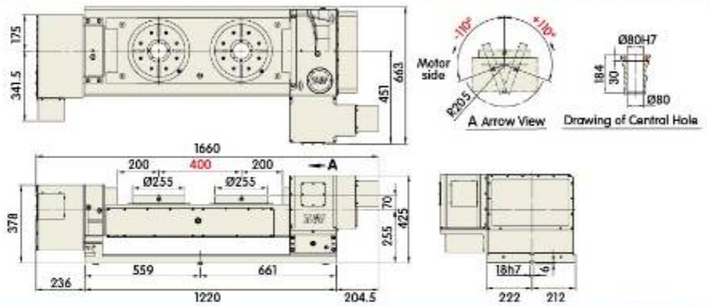
FAR-170-2W-RC255 / FAR-210-2W-RC255

Compatible with 2-oil & 2-air port rotary joint



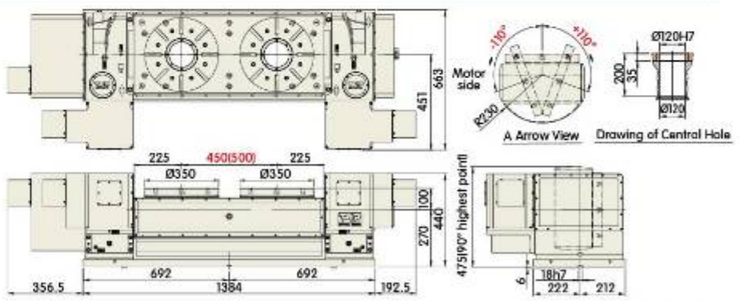
FHR-255-2W-RC320

Compatible with 2-oil & 2-air port rotary joint



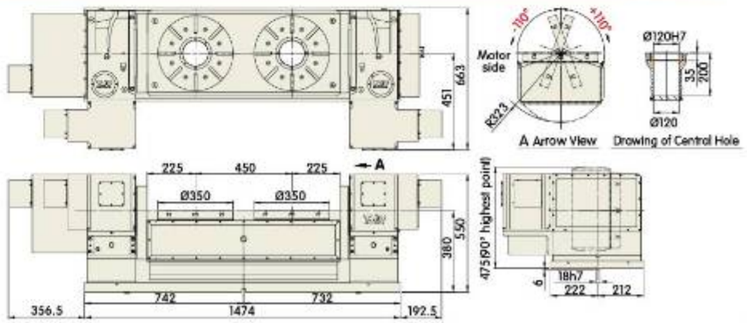
FHR-350F-2W-RC320-2A

Compatible with 4-oil & 2-air port rotary joint



FHR-350CF-2W-RC320-2A

Compatible with 4-oil & 2-air port rotary joint



Driven by Worm & Worm Gear

AR Series (Pneumatic Brake)

AR - 210 H R

- AR: Worm Gear Drive with Pneumatic Brake (Min. Indexing Angle: 0.001°)
- 210: Table Diameter
- H: Hydraulic Brake Option
- R: Right-side Motor; Vertical & Horizontal use
- N: Right-side Motor with Compact Cover; Vertical use

Vertical

Horizontal

Drive by
Worm & Worm Gear

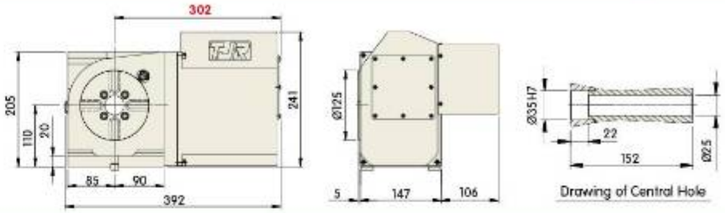
Use
radial & axial bearings

Item / Model		Unit	ARs-125R	AR-170(H)R	AR-210(H)R AR-250(H)R	AR-255HR	AR-255HN
Table Diameter		mm	Ø125	Ø170	Ø210 / Ø250	Ø255	Ø255
Inner Diameter of Mandrel Sleeve		mm	Ø35H7	Ø40H7	Ø40H7	Ø80H7	Ø80H7
Diameter of Center Through Hole		mm	Ø25	Ø40	Ø40	Ø80	Ø80
Center Height (Vertical)		mm	110	135	160	160	160
Table Height (Horizontal)		mm	152	152	152 / 160	200	-
Table T-slot Width		mm	12H7	12H7	12H7	12H7	12H7
Guide Block Width		mm	14h7	18h7	18h7	18h7	18h7
Min. Increment		deg.	0.001	0.001	0.001	0.001	0.001
Indexing Precision		sec.	40	20	20	15	15
Repeatability		sec.	6	6	6	6	6
Clamping System : Pne. 0.6(6) / Hyd. 3.5(35)		MPa (kgf/cm²)	Pne.	Pne. / Hyd.	Pne. / Hyd.	Pne.	Pne.
Clamping torque (※1)		N·m (kgf·m)	128 (13)	304 (31) / 540 (55)	304 (31) / 540 (55)	687 (70)	687 (70)
Servo Motor Type	FANUC	Straight shaft without key	αiS4 / βis4	αiF4 / βis8	αiF8 / βis8	αiF8 / βis12	αiF8 / βis12
	MITSUBISHI	Straight shaft without key	HG - 75 / 105	HG - 54 / 104	HG - 54 / 104	HG - 154	HG - 154
Speed Reduction Ratio		-	1 / 60	1 / 90	1 / 90	1 / 120	1 / 120
Max. Rotation Rate of Table (※2)		min⁻¹	33.3	44.4	44.4	33.3	33.3
Allowable Inertia Load Capacity (Vertical)		kg-m²	0.28	0.63	0.63	1.2	1.2
Allowable Workpiece Load	Vertical	kg	50	75	75	100	100
	with support table	kg	100	150	150	250	250
	Horizontal	kg	100	150	150	250	-
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	9810 (1000)	14225 (1450)	14225 (1450)	19620 (2000)	19620 (2000)
	FxL	N·m (kgf·m)	441 (45)	1079 (110)	1079 (110)	1472 (150)	1472 (150)
	FxL	N·m (kgf·m)	128 (13)	304 (31)	304 (31)	687 (70)	687 (70)
Driving Torque		N·m (kgf·m)	88 (9)	284 (29)	284 (29)	540 (55)	540 (55)
Net Weight (without motor)		kg	34	50	55 / 58	118	118

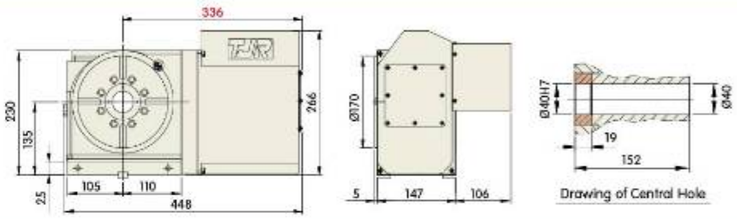
※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

Driven by Worm & Worm Gear

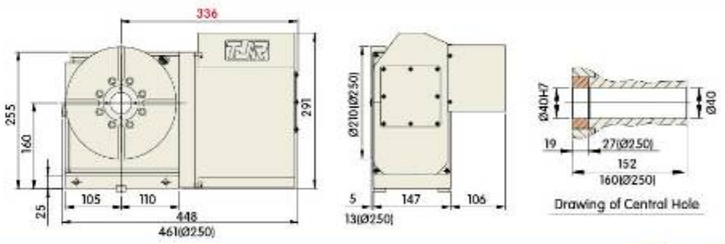
ARs-125R



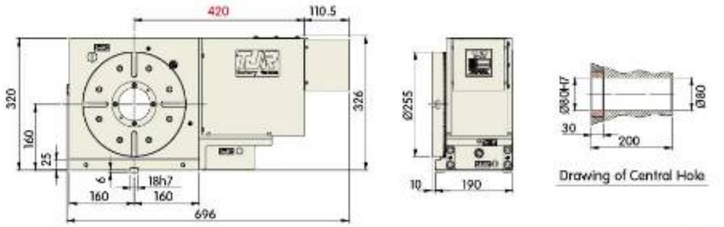
AR-170(H)R



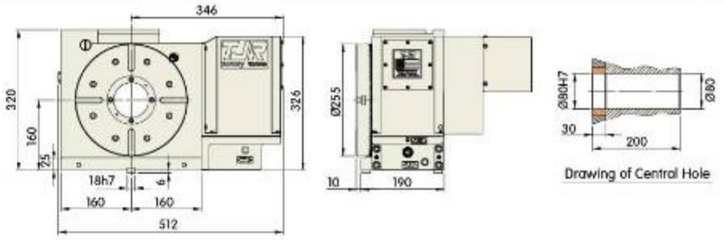
AR-210(H)R / AR-250(H)R



AR-255HR



AR-255HN



Driven by Worm & Worm Gear

AR Series (Pneumatic Brake) Left-side motor

AR - 210 H L

- L: Left-side Motor; Vertical & Horizontal use
- H: Hydraulic Brake Option
- 210: Table Diameter
- AR: Worm Gear Drive with Pneumatic Brake (Min. Indexing Angle: 0.001°)

Vertical

Horizontal

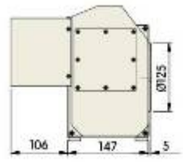
Drive by
Worm & Worm Gear

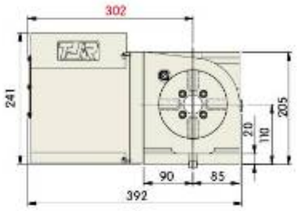
Use
radial & axial bearings

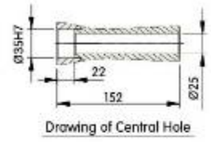
Item / Model		Unit	ARs-125L	AR-170(H)L	AR-210(H)L	AR-250(H)L
Table Diameter		mm	Ø125	Ø170	Ø210	Ø250
Inner Diameter of Mandrel Sleeve		mm	Ø35H7	Ø40H7	Ø40H7	Ø40H7
Diameter of Center Through Hole		mm	Ø25	Ø40	Ø40	Ø40
Center Height (Vertical)		mm	110	135	160	160
Table Height (Horizontal)		mm	152	152	152	160
Table T-slot Width		mm	12H7	12H7	12H7	12H7
Guide Block Width		mm	14h7	18h7	18h7	18h7
Min. Increment		deg.	0.001	0.001	0.001	0.001
Indexing Precision		sec.	40	20	20	20
Repeatability		sec.	6	6	6	6
Clamping System : Pne. 0.6(6) / Hyd. 3.5(35)		MPa (kgf/cm²)	Pne.	Pne. / Hyd.	Pne. / Hyd.	Pne. / Hyd.
Clamping torque (※1)		N·m (kgf·m)	128 (13)	304 (31) / 540 (55)	304 (31) / 540 (55)	304 (31) / 540 (55)
Servo Motor Type	FANUC	Straight shaft without key	αiS4 / βis4	αiF4 / βis8	αiF8 / βis8	αiF8 / βis8
	MITSUBISHI	Straight shaft without key	HG - 75 / 105	HG - 54 / 104	HG - 54 / 104	HG - 54 / 104
Speed Reduction Ratio		-	1 / 60	1 / 90	1 / 90	1 / 90
Max. Rotation Rate of Table (※2)		min⁻¹	33.3	44.4	44.4	44.4
Allowable Inertia Load Capacity (Vertical)		kg-m²	0.28	0.63	0.63	0.63
Allowable Workpiece Load	Vertical	kg	50	75	75	75
	with support table	kg	100	150	150	150
	Horizontal	kg	100	150	150	150
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	9810 (1000)	14225 (1450)	14225 (1450)	14225 (1450)
	FxL	N·m (kgf·m)	441 (45)	1079 (110)	1079 (110)	1079 (110)
	FxL	N·m (kgf·m)	128 (13)	304 (31)	304 (31)	304 (31)
Driving Torque		N·m (kgf·m)	88 (9)	284 (29)	284 (29)	284 (29)
Net Weight (without motor)		kg	34	50	55	58

※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

ARs-125L

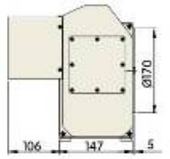


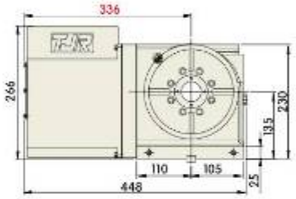


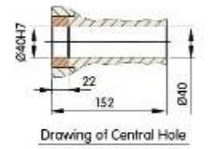


Drawing of Central Hole

AR-170(H)L

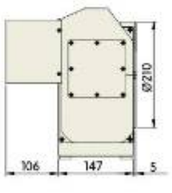


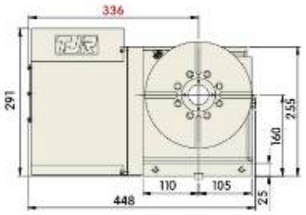


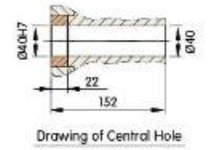


Drawing of Central Hole

AR-210(H)L

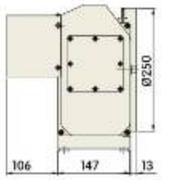


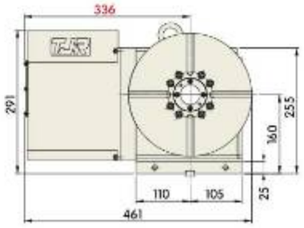


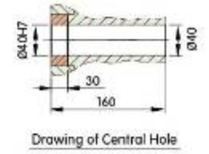


Drawing of Central Hole

AR-250(H)L







Drawing of Central Hole

AR Series (Pneumatic Brake) Back-side motor

AR - 210 H B

- B: Back-side Motor; Vertical use
- H: Hydraulic Brake Option
- 210: Table Diameter
- AR: Worm Gear Drive with Pneumatic Brake (Min. Indexing Angle: 0.001°)

C Vertical

Drive by
Worm & Worm Gear

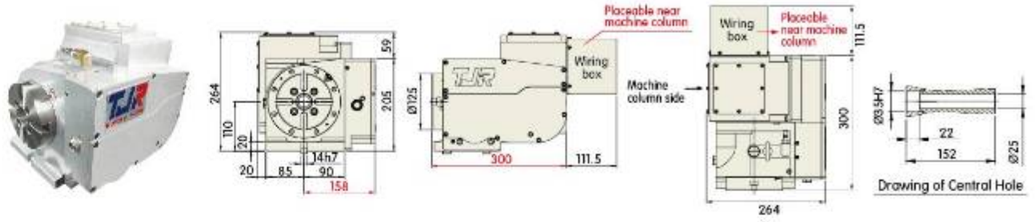
Use
radial & axial bearings

Item / Model		Unit	ARs-125B	AR-170(H)B	AR-210(H)B	AR-250(H)B
Table Diameter		mm	Ø125	Ø170	Ø210	Ø250
Inner Diameter of Mandrel Sleeve		mm	Ø35H7	Ø40H7	Ø40H7	Ø40H7
Diameter of Center Through Hole		mm	Ø25×152 deep	Ø40×152 deep	Ø40×152 deep	Ø40×152 deep
Center Height (Vertical)		mm	110	135	160	160
Table Height (Horizontal)		mm	-	-	-	-
Table T-slot Width		mm	12H7	12H7	12H7	12H7
Guide Block Width		mm	14h7	18h7	18h7	18h7
Min. Increment		deg.	0.001	0.001	0.001	0.001
Indexing Precision		sec.	40	20	20	20
Repeatability		sec.	6	6	6	6
Clamping System : Pne. 0.6(6) / Hyd. 3.5(35)		MPa (kgf/cm²)	Pne.	Pne. Hyd.	Pne. Hyd.	Pne. Hyd.
Clamping torque (※1)		N·m (kgf·m)	128 (13)	304 (31) 540 (55)	304 (31) 540 (55)	304 (31) 540 (55)
Servo Motor Type	FANUC	Straight shaft without key	αiS4 / βis4	αiF4 / αiF8 / βis8	αiF8 / βis8	αiF8 / βis8
	MITSUBISHI	Straight shaft without key	HG - 75 / 105	HG - 54 / 104	HG - 54 / 104	HG - 54 / 104
Speed Reduction Ratio		-	1 / 60	1 / 90	1 / 90	1 / 90
Max. Rotation Rate of Table (※2)		min⁻¹	33.3	44.4	44.4	44.4
Allowable Inertia Load Capacity (Vertical)		kg-m²	0.28	0.63	0.63	0.63
Allowable Workpiece Load	Vertical	kg	50	75	75	75
	with support table	kg	100	150	150	150
	Horizontal	kg	-	-	-	-
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	9810 (1000)	14225 (1450)	14225 (1450)	14225 (1450)
	FxL	N·m (kgf·m)	441 (45)	1079 (110)	1079 (110)	1079 (110)
	FxL	N·m (kgf·m)	128 (13)	304 (31)	304 (31)	304 (31)
Driving Torque		N·m (kgf·m)	88 (9)	284 (29)	284 (29)	284 (29)
Net Weight (without motor)		kg	44	60	65	72

※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

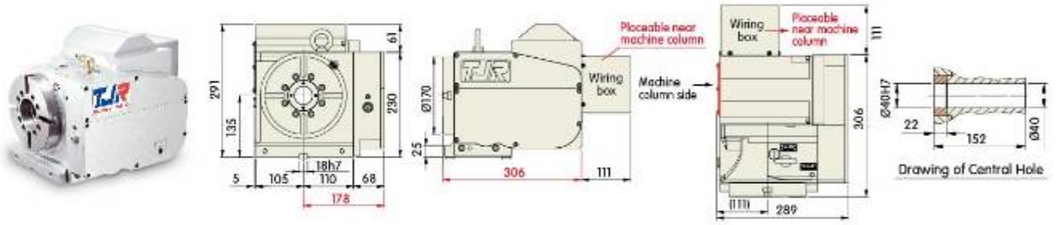
ARs-125B

C



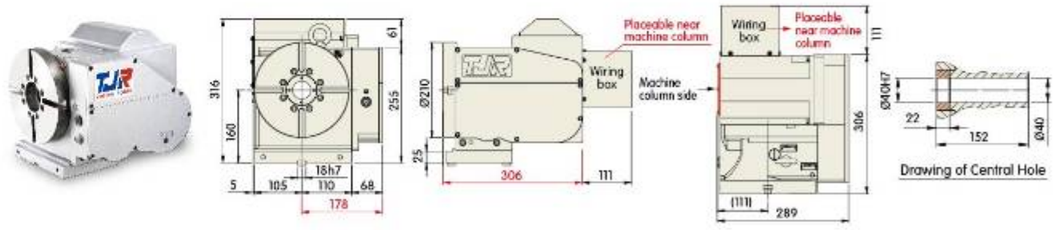
AR-170(H)B

C



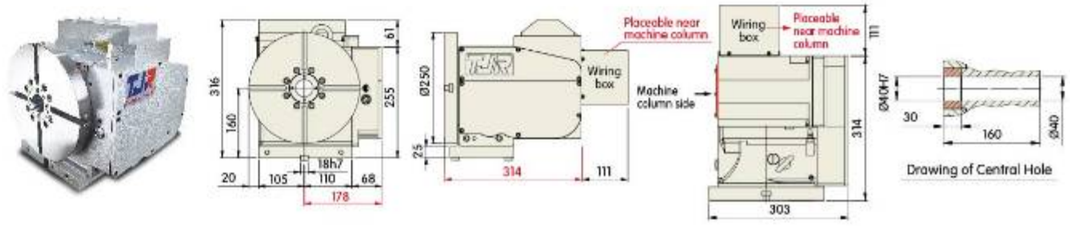
AR-210(H)B

C



AR-250(H)B

C



Driven by Worm & Worm Gear

AR Multi-Spindle Series (Pneumatic Brake)

AR - 125 - 2W

- AR: Worm Gear Drive with Pneumatic Brake (Min. Indexing Angle: 0.001°)
- 125: Table Diameter
- 2W: 2-Spindle Coupled
- 3W: 3-Spindle Coupled
- 4W: 4-Spindle Coupled

C Vertical

Drive by
Worm & Worm Gear

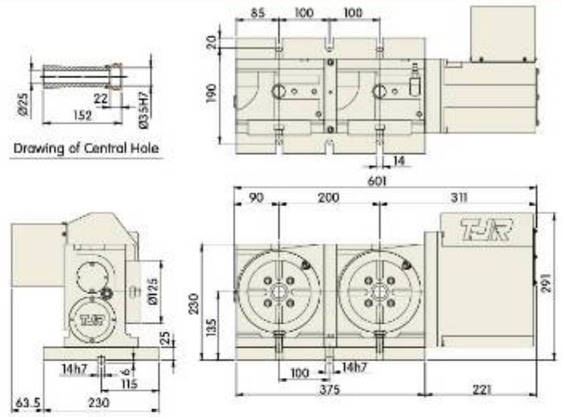
Use
radial & axial bearings

Item / Model		Unit	ARs-125-2W	ARs-125-3W	ARs-125-4W
Table Diameter		mm	Ø125	Ø125	Ø125
Inner Diameter of Mandrel Sleeve		mm	Ø35H7	Ø35H7	Ø35H7
Diameter of Center Through Hole		mm	Ø25	Ø25	Ø25
Center Height (Vertical)		mm	135	135	135
Distance between Table Centers		mm	200	200	200
Table T-slot Width		mm	12H7	12H7	12H7
Guide Block Width		mm	14h7	14h7	14h7
Min. Increment		deg.	0.001	0.001	0.001
Indexing Precision		sec.	60	60	90
Repeatability		sec.	6	6	6
Clamping System : Pneumatic		MPa (kgf/cm²)	0.6 (6)	0.6 (6)	0.6 (6)
Clamping torque (※1)		N·m (kgf·m)	128 (13)	128 (13)	128 (13)
Servo Motor Type	FANUC	Straight shaft without key	αiF4 / βis8	αiF8 / βis8	αiF8 / βis12
	MITSUBISHI	Straight shaft without key	HG - 104	HG - 154	HG - 224
Speed Reduction Ratio		-	1 / 60	1 / 60	1 / 60
Max. Rotation Rate of Table (※2)		min⁻¹	33.3	33.3	33.3
Allowable Inertia Load Capacity (Vertical)		kg-m²	0.28	0.28	0.28
Allowable Workpiece Load	Vertical	kg	50	50	50
	with support table	kg	100	100	100
	Horizontal	kg	-	-	-
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	9810 (1000)	9810 (1000)	9810 (1000)
	FxL	N·m (kgf·m)	441 (45)	441 (45)	441 (45)
	FxL	N·m (kgf·m)	128 (13)	128 (13)	128 (13)
Driving Torque		N·m (kgf·m)	88 (9)	88 (9)	88 (9)
Net Weight (without motor)		kg	82	120	-

※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

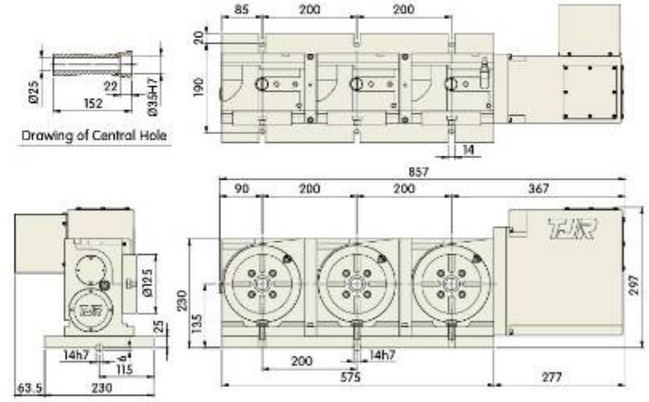
ARs-125-2W

C



ARs-125-3W

C



ARs-125-4W

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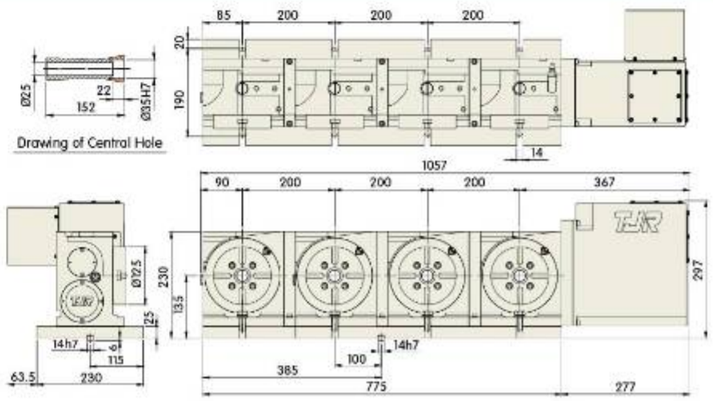


Driven by Worm & Worm Gear

AR Multi-Spindle Series (Pneumatic Brake)

AR - 170 - 2W

- AR: Worm Gear Drive with Pneumatic Brake (Min. Indexing Angle: 0.001°)
- 170: Table Diameter
- 2W: 2-Spindle Coupled
- 3W: 3-Spindle Coupled

C Vertical

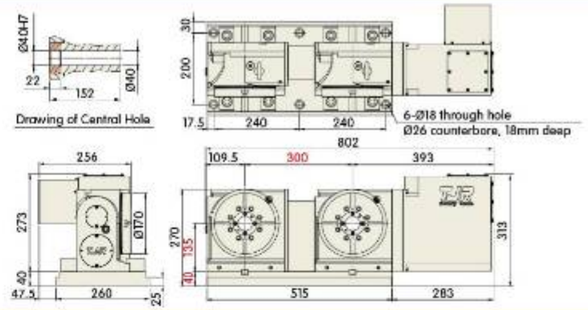
Drive by
Worm & Worm Gear

Use
radial & axial bearings

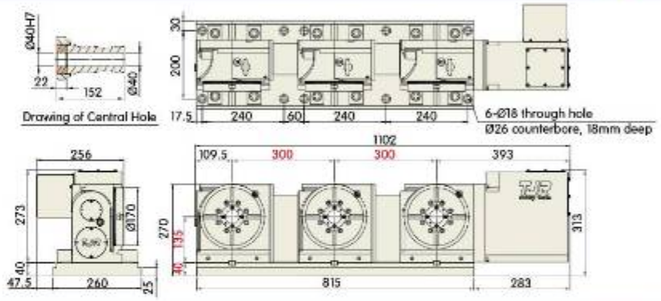
Item / Model		Unit	AR-170-2W	AR-170-3W	AR-210-2W	AR-210-3W
Table Diameter		mm	Ø170	Ø170	Ø210	Ø210
Inner Diameter of Mandrel Sleeve		mm	Ø40H7	Ø40H7	Ø40H7	Ø40H7
Diameter of Center Through Hole		mm	Ø40	Ø40	Ø40	Ø40
Center Height (Vertical)		mm	175	175	200	200
Distance between Table Centers		mm	152	152	152	152
Table T-slot Width		mm	12H7	12H7	12H7	12H7
Guide Block Width		mm	18h7	18h7	18h7	18h7
Min. Increment		deg.	0.001	0.001	0.001	0.001
Indexing Precision		sec.	40	40	40	40
Repeatability		sec.	6	6	6	6
Clamping System : Pneumatic		MPa (kgf/cm²)	0.6 (6)	0.6 (6)	0.6 (6)	0.6 (6)
Clamping torque (※1)		N·m (kgf·m)	304 (31)	304 (31)	304 (31)	304 (31)
Servo Motor Type	FANUC	Straight shaft without key	αiF8 / βis8	αiF8 / βis8	αiF8 / βis8	αiF8 / βis8
	MITSUBISHI	Straight shaft without key	HG - 104 / 154	HG - 104 / 154	HG - 104 / 154	HG - 104 / 154
Speed Reduction Ratio		-	1 / 90	1 / 90	1 / 90	1 / 90
Max. Rotation Rate of Table (※2)		min⁻¹	44.4	44.4	44.4	44.4
Allowable Inertia Load Capacity (Vertical)		kg-m²	0.63	0.63	0.63	0.63
Allowable Workpiece Load	Vertical	kg	75	75	75	75
	with support table	kg	150	150	150	150
	Horizontal	kg	-	-	-	-
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	14225 (1450)	14225 (1450)	14225 (1450)	14225 (1450)
	FxL	N·m (kgf·m)	1079 (110)	1079 (110)	1079 (110)	1079 (110)
	FxL	N·m (kgf·m)	304 (31)	304 (31)	304 (31)	304 (31)
Driving Torque		N·m (kgf·m)	284 (29)	284 (29)	284 (29)	284 (29)
Net Weight (without motor)		kg	133	204	140	211

※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

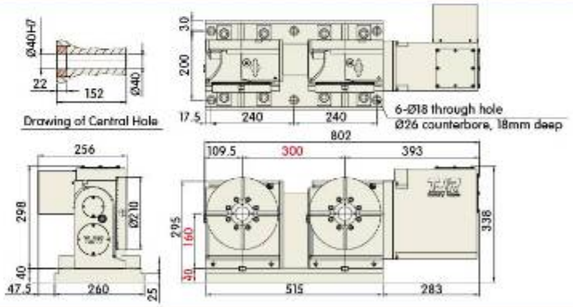
AR-170-2W



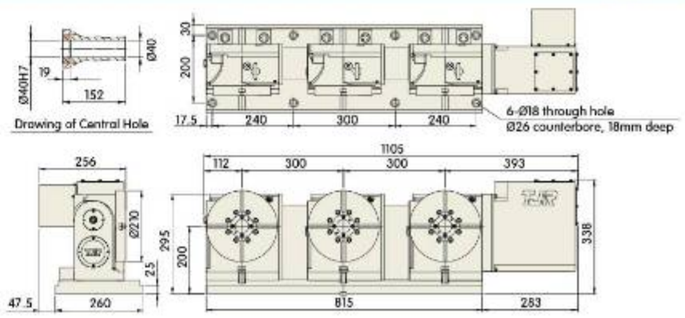
AR-170-3W



AR-210-2W



AR-210-3W



Driven by Worm & Worm Gear

HR Series (Hydraulic Brake)

HR - 255 R

- HR: Worm Gear Drive with Hydraulic Brake (Min. Indexing Angle: 0.001°)
- 255: Table Diameter
- R: Right-side Motor; Vertical & Horizontal use

Vertical

Horizontal

Drive by
Worm & Worm Gear

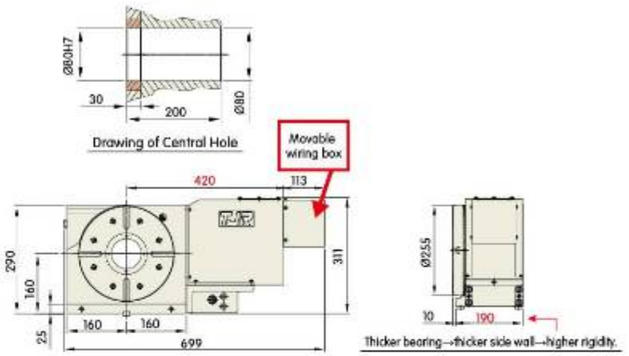
Use
radial & axial bearings

Wrap-around Brake

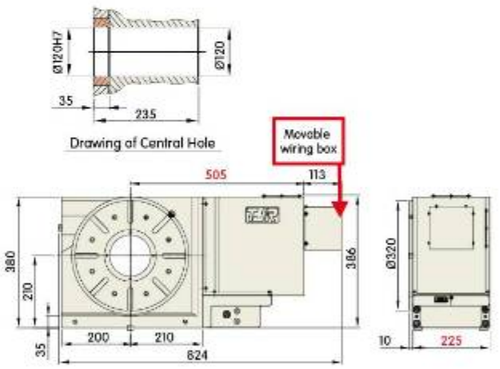
Item / Model		Unit	HR-255R	HR-320R	HR-400R
Table Diameter		mm	Ø255	Ø320	Ø400
Inner Diameter of Mandrel Sleeve		mm	Ø80H7	Ø120H7	Ø120H7
Diameter of Center Through Hole		mm	Ø80	Ø120	Ø120
Center Height (Vertical)		mm	160	210	255
Table Height (Horizontal)		mm	200	235	250
Table T-slot Width		mm	12H7	14H7	14H7
Guide Block Width		mm	18h7	18h7	18h7
Min. Increment		deg.	0.001	0.001	0.001
Indexing Precision		sec.	15	15	15
Repeatability		sec.	6	6	6
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5 (35)	3.5 (35)	3.5 (35)
Clamping torque (※1)		N·m (kgf·m)	687 (70)	1128 (115)	1962 (200)
Servo Motor Type	FANUC	Straight shaft without key	αiF8 / βis12	αiF12 / βis22	αiF12 / βis22
	MITSUBISHI	Straight shaft without key	HG - 154	HG - 204	HG - 204
Speed Reduction Ratio		-	1 / 120	1 / 120	1 / 120
Max. Rotation Rate of Table (※2)		min⁻¹	33.3	25	25
Allowable Inertia Load Capacity (Vertical)		kg-m²	1.2	3.1	6.2
Allowable Workpiece Load	Vertical	kg	100	150	200
	with support table	kg	250	350	500
	Horizontal	kg	250	350	500
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	19620 (2000)	29430 (3000)	39240 (4000)
	FxL	N·m (kgf·m)	1472 (150)	2943 (300)	3924 (400)
	FxL	N·m (kgf·m)	687 (70)	1128 (115)	1962 (200)
Driving Torque		N·m (kgf·m)	540 (55)	785 (80)	1668 (170)
Net Weight (without motor)		kg	109	204	286

※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

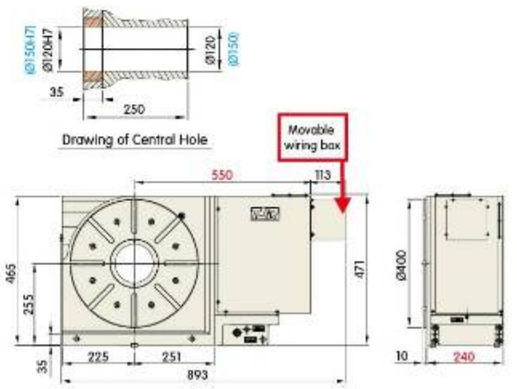
HR-255R



HR-320R



HR-400R



*1) Ø150 central through hole is available.

Driven by Worm & Worm Gear

Driven by Worm & Worm Gear

HR Series (Hydraulic Brake)

HR - 255 N

- HR: Worm Gear Drive with Hydraulic Brake (Min. Indexing Angle: 0.001°)
- 255: Table Diameter
- N: Right-side Motor with Compact Cover; Vertical use

C Vertical

Drive by
Worm & Worm Gear

Use
radial & axial bearings

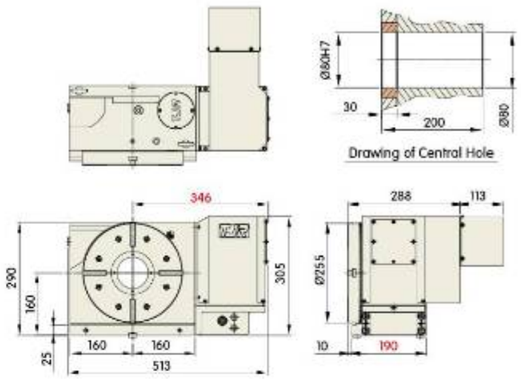
Wrap-around Brake

Item / Model		Unit	HR-255N	HR-320N	HR-400N
Table Diameter		mm	Ø255	Ø320	Ø400
Inner Diameter of Mandrel Sleeve		mm	Ø80H7	Ø120H7	Ø120H7
Diameter of Center Through Hole		mm	Ø80	Ø120	Ø120
Center Height (Vertical)		mm	160	210	255
Table Height (Horizontal)		mm	-	-	-
Table T-slot Width		mm	12H7	14H7	14H7
Guide Block Width		mm	18h7	18h7	18h7
Min. Increment		deg.	0.001	0.001	0.001
Indexing Precision		sec.	15	15	15
Repeatability		sec.	6	6	6
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5 (35)	3.5 (35)	3.5 (35)
Clamping torque (※1)		N·m (kgf·m)	687 (70)	1128 (115)	1962 (200)
Servo Motor Type	FANUC	Straight shaft without key	αiF8 / βis12	αiF12 / βis22	αiF12 / βis22
	MITSUBISHI	Straight shaft without key	HG - 154	HG - 204	HG - 204
Speed Reduction Ratio		-	1 / 120	1 / 120	1 / 120
Max. Rotation Rate of Table (※2)		min⁻¹	33.3	25	25
Allowable Inertia Load Capacity (Vertical)		kg-m²	1.2	3.1	6.2
Allowable Workpiece Load	Vertical	kg	100	150	200
	with support table	kg	250	350	500
	Horizontal	kg	-	-	-
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	19620 (2000)	29430 (3000)	39240 (4000)
	FxL	N·m (kgf·m)	1472 (150)	2943 (300)	3924 (400)
	FxL	N·m (kgf·m)	687 (70)	1128 (115)	1962 (200)
Driving Torque		N·m (kgf·m)	540 (55)	785 (80)	1668 (170)
Net Weight (without motor)		kg	109	204	286

※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

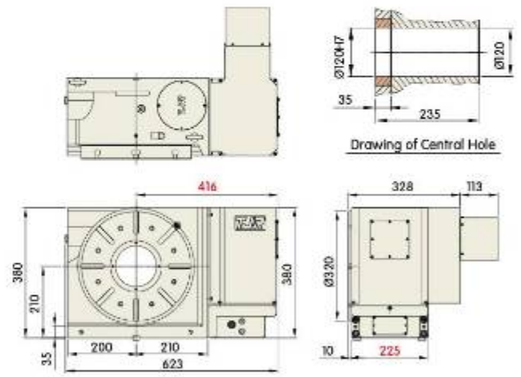
HR-255N

C



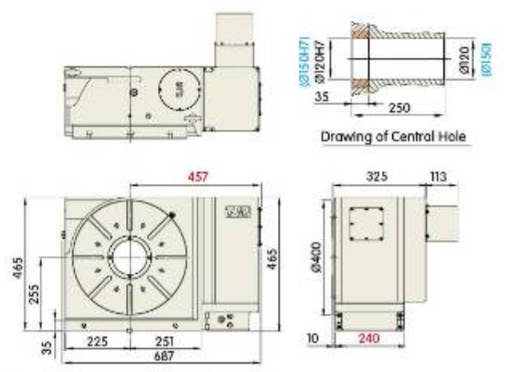
HR-320N

C



HR-400N

C



*1) Ø150 central through hole is available.

Driven by Worm & Worm Gear

Driven by Worm & Worm Gear

HR Series (Hydraulic Brake)

HR - 320 B - 2W

- HR: Worm Gear Drive with Hydraulic Brake (Min. Indexing Angle: 0.001°)
- 320: Table Diameter
- B: Back-side Motor; Vertical use
- 2W: 2-Spindle Coupled

C Vertical

Drive by Worm & Worm Gear

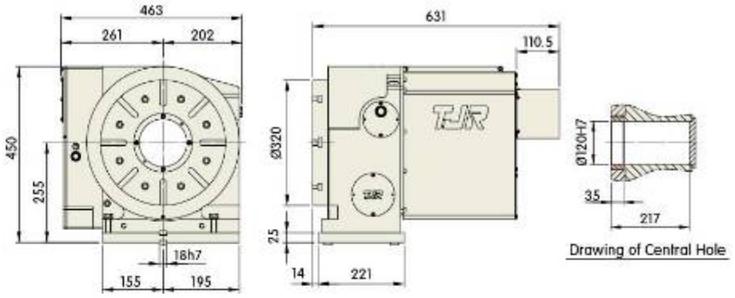
Use radial & axial bearings

Wrap-around Brake

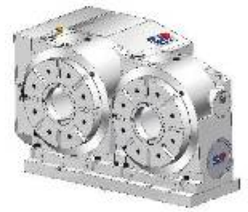
Item / Model		Unit	HR-320B	HR-320B-2W	HR-400B
Table Diameter		mm	Ø320	Ø320	Ø400
Inner Diameter of Mandrel Sleeve		mm	Ø120H7	Ø120H7	Ø120H7
Diameter of Center Through Hole		mm	Ø120×217 deep	Ø120H7×217 deep	Ø120×220 deep
Center Height (Vertical)		mm	255	270	255
Table Height (Horizontal)		mm	-	-	-
Distance between Table Centers		mm	-	400	-
Table T-slot Width		mm	14H7	14H7	14H7
Guide Block Width		mm	18h7	18h7	18h7
Min. Increment		deg.	0.001	0.001	0.001
Indexing Precision		sec.	15	15	15
Repeatability		sec.	6	6	6
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5 (35)	3.5 (35)	3.5 (35)
Clamping torque (※1)		N·m (kgf·m)	1128 (115)	1128 (115)	1962 (200)
Servo Motor Type	FANUC	Straight shaft without key	αiF12 / βis22	αiF12 / βis22	αiF12 / βis22
	MITSUBISHI	Straight shaft without key	HG - 204	HG - 204	HG - 204
Speed Reduction Ratio		-	1 / 150	1 / 150	1 / 150
Max. Rotation Rate of Table (※2)		min⁻¹	25	25	25
Allowable Inertia Load Capacity (Vertical)		kg-m²	3.1	3.1	6.2
Allowable Workpiece Load	Vertical	kg	150	150	200
	with support table	kg	350	350	500
	Horizontal	kg	-	-	-
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	29430 (3000)	29430 (3000)	39240 (4000)
	FxL	N·m (kgf·m)	2943 (300)	2943 (300)	3924 (400)
	FxL	N·m (kgf·m)	1128 (115)	1128 (115)	1962 (200)
Driving Torque		N·m (kgf·m)	785 (80)	785 (80)	1668 (170)
Net Weight (without motor)		kg	-	-	281

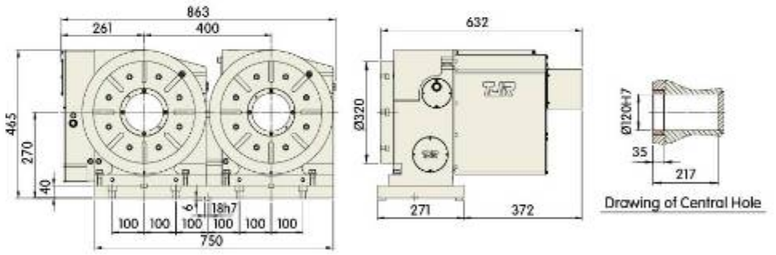
※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

HR-320B

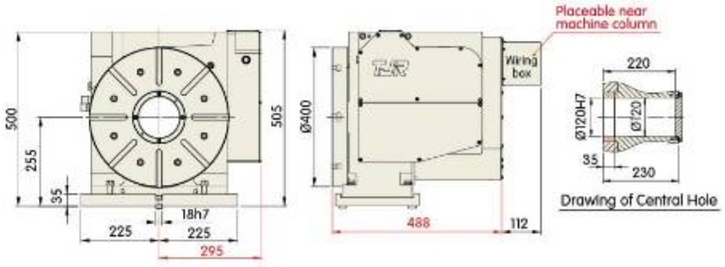


HR-320B-2W





HR-400B



Driven by Worm & Worm Gear

HR / MTHR Series

HR - 500 R

- HR: Worm Gear Drive with Hydraulic Brake (Min. Indexing Angle: 0.001°)
- MTHR: Manual Tilting 4th Axis with Worm Gear Drive and Hydraulic Brake
- 500: Table Diameter
- R: Right-side Motor; Vertical & Horizontal use

Vertical | Horizontal | Vertical & Horizontal

Drive by Worm & Worm Gear

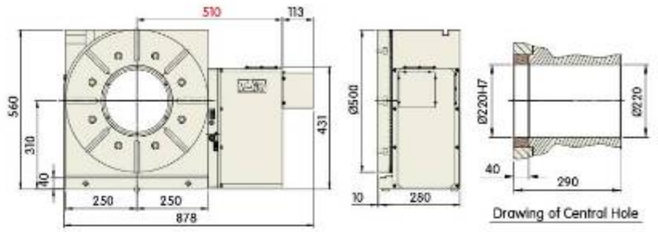
Use radial & axial bearings

Wrap-around Brake

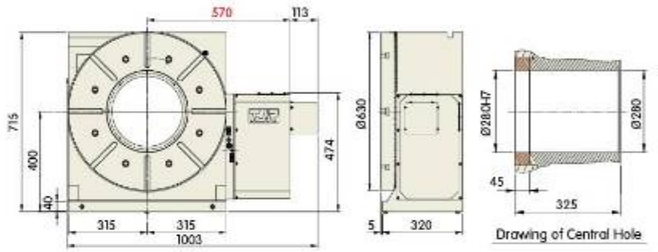
Item / Model		Unit	HR-500R	HR-630R	HR-800R	MTHR-255	
Table Diameter		mm	Ø500	Ø630	Ø800	Ø225	
Inner Diameter of Mandrel Sleeve		mm	Ø220H7	Ø280H7	Ø350H7	Ø80H7	
Diameter of Center Through Hole		mm	Ø220	Ø280	Ø350	Ø80	
Center Height (Vertical)		mm	310	400	470	-	
Table Height (Horizontal)		mm	290	325	350	275	
Table T-slot Width		mm	18H7	18H7	18H7	12H7	
Guide Block Width		mm	18h7	18h7	18h7	18h7	
Min. Increment		deg.	0.001	0.001	0.001	0.001	
Axis		-	-	-	-	Rotation	Tilt 0°~100°
Indexing Precision		sec.	15	15	15	15	-
Repeatability		sec.	6	6	6	6	-
Clamping System : Pne. 0.6(6) / Hyd. 3.5(35)		MPa (kgf/cm²)	Hyd.	Hyd.	Hyd.	Hyd.	Dual-lever manual disc brake
Clamping torque (※1)		N·m (kgf·m)	3630 (370)	7848 (800)	7848 (800)	687 (70)	98 (10)
Servo Motor Type	FANUC	Straight shaft without key	αiF12 / βis22	αiF12 / βis22	αiF22 / βis30	αiF8 / αi512 / βis12	Manual
	MITSUBISHI	Straight shaft without key	HG - 204	HG - 204	HG - 354	HG - 104	Manual
Speed Reduction Ratio		-	1 / 180	1 / 180	1 / 180	1 / 120	1 / 40
Max. Rotation Rate of Table (※2)		min⁻¹	16.7	16.7	11.1	33.3	-
Allowable Inertia Load Capacity (Vertical)		kg-m²	11.6	31.2	81.4	2.03	
Allowable Workpiece Load	Vertical	kg	250	400	800	-	
	with support table	kg	600	800	1500	-	
	Horizontal	kg	600	800	1500	-	
	0° Horizontal	kg	-	-	-	250	
	0°~90° Tilt	kg	-	-	-	100	
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	39240 (4000)	49050 (5000)	49050 (5000)	15696 (1600)	
	FxL	N·m (kgf·m)	4905 (500)	8339 (850)	9810 (1000)	98 (10)	
	FxL	N·m (kgf·m)	3630 (370)	7848 (800)	7848 (800)	687 (70)	
Driving Torque		N·m (kgf·m)	2453 (250)	4120 (420)	7848 (800)	540 (55)	
Net Weight (without motor)		kg	405	692	991	145	

※1 : If no mechanical brake is used, the value equals motor holding torque. Tilting axis brake torque varies with handle force, allowable up to 663 kgf·cm.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

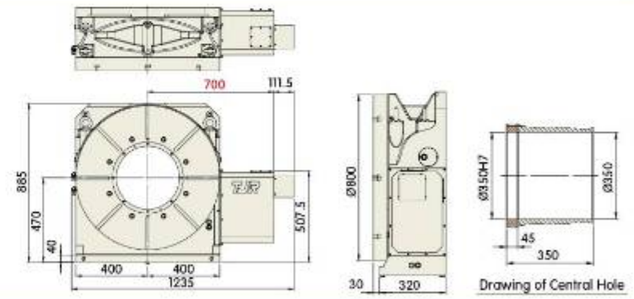
HR-500R



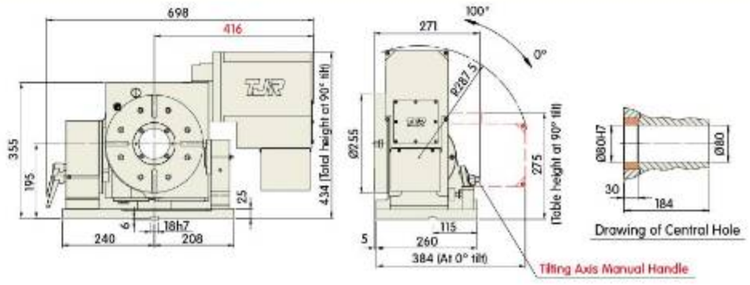
HR-630R



HR-800R



MTHR-255



Driven by Worm & Worm Gear

Driven by Worm & Worm Gear

HI Series

HI - 255 R

- HI: Hirth Coupling Index Table with Hydraulic Brake (Min. Indexing Angle: 1° or 5°)
- 255: Table Diameter
- R: Right-side motor; Vertical & Horizontal use

Vertical

Horizontal

Drive by
Worm & Worm Gear

HI Series:
Three-Piece Clutch Plate Design Advantages:

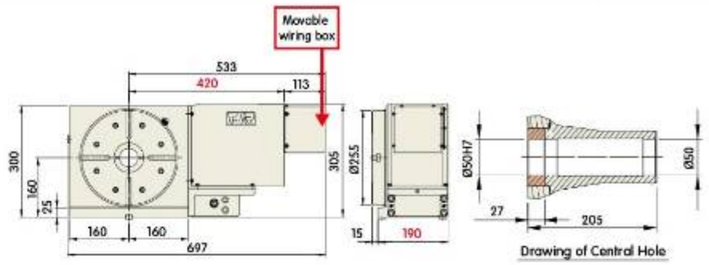
① Positioning accuracy up to ±5 arcseconds. (comparable to angle encoder precision)

② Table surface remains flat during rotation, preventing chips or coolant from entering.

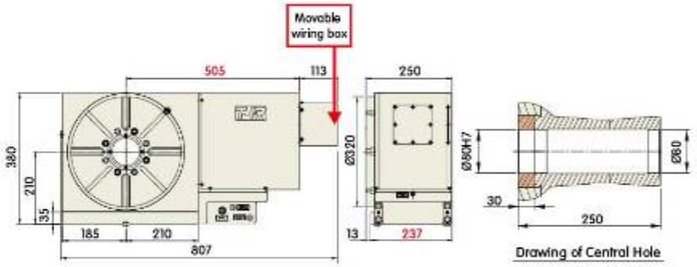
Item / Model		Unit	HI-255R	HI-320R	HI-400R	HI-500R
Table Diameter		mm	Ø255	Ø320	Ø400	Ø500
Inner Diameter of Mandrel Sleeve		mm	Ø50H7	Ø80H7	Ø80H7	Ø120H7
Diameter of Center Through Hole		mm	Ø50	Ø80	Ø80	Ø120
Center Height (Vertical)		mm	160	210	255	310
Table Height (Horizontal)		mm	205	250	255	290
Table T-slot Width		mm	12H7	14H7	14H7	18H7
Guide Block Width		mm	18h7	18h7	18h7	18h7
Min. Increment		deg.	1° or 5°	1° or 5°	1° or 5°	1° or 5°
Indexing Precision		sec.	±5	±5	±5	±5
Repeatability		sec.	±1	±1	±1	±1
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5(35)	3.5(35)	3.5(35)	3.5(35)
Clamping torque		N·m (kgf·m)	2943 (300)	3924 (400)	4905 (500)	9810 (1000)
Servo Motor Type	FANUC	Straight shaft without key	βis8	βis22	βis22	βis22
	MITSUBISHI	Straight shaft without key	HG - 154	HG - 204	HG - 204	HG - 204
Speed Reduction Ratio		-	1 / 120	1 / 120	1 / 120	1 / 180
Max. Rotation Rate of Table (※1)		min⁻¹	33.3	25	25	16.7
Allowable Inertia Load Capacity (Vertical)		kg-m²	2.5	4.5	10	18.8
Allowable Workpiece Load	Vertical	kg	125	175	250	400
	with support table	kg	250	350	500	600
	Horizontal	kg	300	350	500	600
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	15696 (1600)	19620 (2000)	29430 (3000)	39240 (4000)
	FxL	N·m (kgf·m)	1717 (175)	2453 (240)	2943 (300)	5886 (600)
	FxL	N·m (kgf·m)	2943 (300)	3924 (400)	4905 (500)	9810 (1000)
Net Weight (without motor)		kg	120	210	320	410

※1 : The structural limit value, while the actual operating speed will vary depending on the motor.

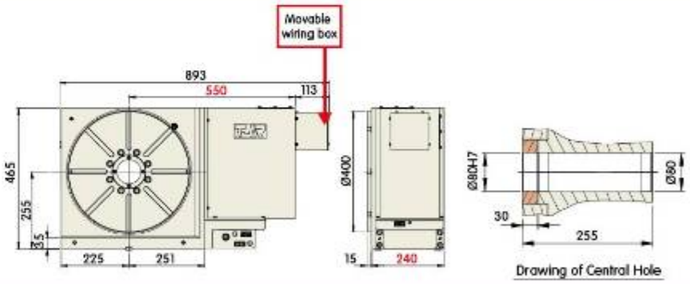
HI-255R



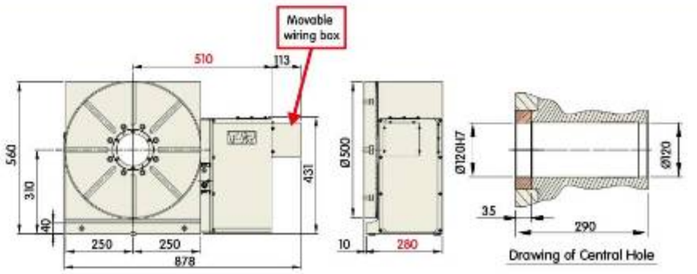
HI-320R



HI-400R



HI-500R



HI Series

HI - 255 N

- HI: Hirth Coupling Index Table with Hydraulic Brake (Min. Indexing Angle: 1° or 5°)
- 255: Table Diameter
- N: Right-side Motor with Compact Cover; Vertical use

Drive by
Worm & Worm Gear

HI Series:
Three-Piece Clutch Plate Design Advantages:

① Positioning accuracy up to ±5 arcseconds. (comparable to angle encoder precision)

② Table surface remains flat during rotation, preventing chips or coolant from entering.

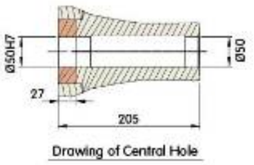
C Vertical

Item / Model		Unit	HI-255N	HI-320N	HI-400N
Table Diameter		mm	Ø255	Ø320	Ø400
Inner Diameter of Mandrel Sleeve		mm	Ø50H7	Ø80H7	Ø80H7
Diameter of Center Through Hole		mm	Ø50	Ø80	Ø80
Center Height (Vertical)		mm	160	210	255
Table Height (Horizontal)		mm	205	250	255
Table T-slot Width		mm	12H7	14H7	14H7
Guide Block Width		mm	18h7	18h7	18h7
Min. Increment		deg.	1° or 5°	1° or 5°	1° or 5°
Indexing Precision		sec.	±5	±5	±5
Repeatability		sec.	±1	±1	±1
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5(35)	3.5(35)	3.5(35)
Clamping torque		N·m (kgf·m)	2943 (300)	3924 (400)	4905 (500)
Servo Motor Type	FANUC	Straight shaft without key	ßis8	ßis22	ßis22
	MITSUBISHI	Straight shaft without key	HG - 154	HG - 204	HG - 204
Speed Reduction Ratio		-	1 / 120	1 / 120	1 / 120
Max. Rotation Rate of Table (※1)		min⁻¹	33.3	25	25
Allowable Inertia Load Capacity (Vertical)		kg-m²	2.5	4.5	10
Allowable Workpiece Load	Vertical	kg	125	175	250
	with support table	kg	250	350	500
	Horizontal	kg	300	350	500
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	15696 (1600)	19620 (2000)	29430 (3000)
	FxL	N·m (kgf·m)	1717 (175)	2453 (240)	2943 (300)
	FxL	N·m (kgf·m)	2943 (300)	3924 (400)	4905 (500)
Net Weight (without motor)		kg	120	210	320

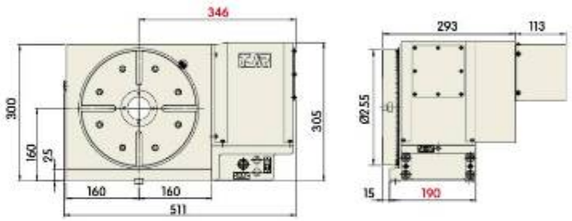
※1 : The structural limit value, while the actual operating speed will vary depending on the motor.

HI-255N

C

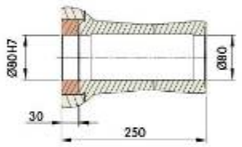


Drawing of Central Hole

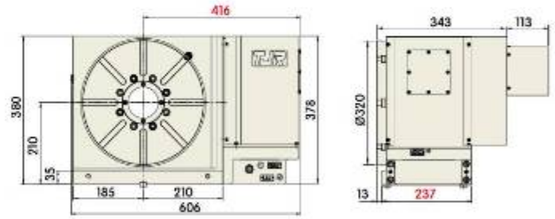


HI-320N

C

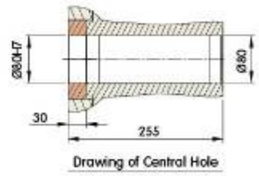


Drawing of Central Hole

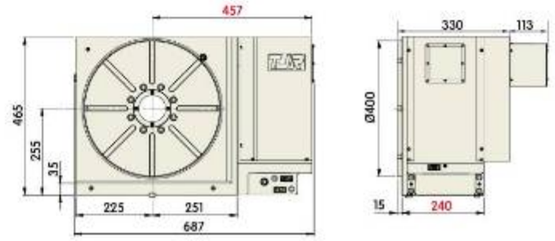


HI-400N

C



Drawing of Central Hole



Driven by Worm & Worm Gear

Driven by Worm & Worm Gear

HHI / HHR Series

(Single Indexing Table for Horizontal Machining Centers)

HHI - 320x320 F

- F Enlarged Faceplate
- A Enhanced Type
- Table Size
- HHI Horizontal Hirth Coupling Index Table with Hydraulic Brake (Min. Indexing Angle: 1° or 5°)
- HHR Horizontal Worm Gear Drive with Hydraulic Brake (Min. Indexing Angle: 0.001°)

Drive by
Worm & Worm Gear

HHI/HHR Series:
Three-Piece Clutch Plate Design Advantages:

① Positioning accuracy up to ±5 arcseconds. (comparable to angle encoder precision)

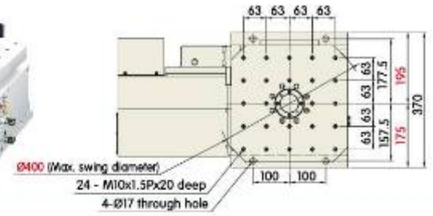
② Table surface remains flat during rotation, preventing chips or coolant from entering.

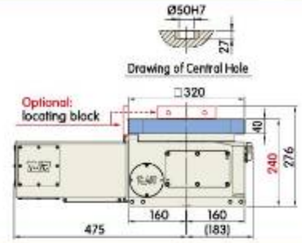
Horizontal

Item / Model		Unit	HHI-320x320F	HHI-400x400A	HHI-500x500	HHR-400x400	HHR-500x500
Table Size		mm	□320x320	□400x400	□500x500	□400x400	□500x500
Inner Diameter of Mandrel Sleeve		mm	Ø50H7x27 deep	Ø50H7x27 deep	Ø50H7x27 deep	Ø50H7x27 deep	Ø50H7x27 deep
Table Height (Horizontal)		mm	240	270	320	282.5	295
Table T-slot Width		mm	-	14H7	18H7	-	18H7
Guide Block Width		mm	18h7	18h7	18h7	18h7	18h7
Min. Increment		deg.	1° or 5°	1° or 5°	1° or 5°	0.001	0.001
Indexing Precision		sec.	±5	±5	±5	20	15
Repeatability		sec.	±1	±1	±1	6	6
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5(35)	3.5(35)	3.5(35)	4.5(45)	4.5(45)
Clamping torque		N·m (kgf·m)	2943 (300)	4905 (500)	9810 (1000)	1521 (155)	3630 (370)
Servo Motor Type	FANUC	Straight shaft without key	ßis12	ßis22	ßis22	αiF12 / ßis22	αiF12 / ßis22
	MITSUBISHI	Straight shaft without key	HG - 154	HG - 204	HG - 204	HG - 204	HG - 204
Speed Reduction Ratio		-	1 / 120	1 / 120	1 / 180	1 / 120	1 / 180
Max. Rotation Rate of Table (※1)		min⁻¹	25.0	25	16.7	25	16.7
Allowable Inertia Load Capacity		kg-m²	5	16	50	13	25
Allowable Workpiece Load	Horizontal	kg	300	600	1200	500	600
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	15696 (1600)	29430 (3000)	39240 (4000)	24525 (2500)	39240 (4000)
	FxL	N·m (kgf·m)	1717 (175)	2943 (300)	5886 (600)	2943 (300)	4905 (500)
	FxL	N·m (kgf·m)	2943 (300)	4905 (500)	9810 (1000)	1521 (155)	3630 (370)
Driving Torque		N·m (kgf·m)	- (-)	- (-)	- (-)	1668 (170)	2453 (250)
Net Weight (without motor)		kg	149	-	518	405	405

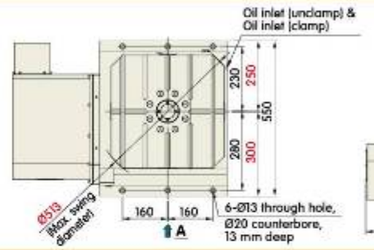
※1 : The structural limit value, while the actual operating speed will vary depending on the motor.

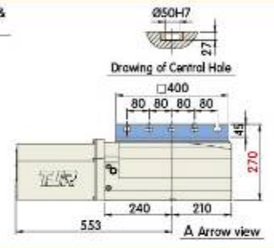
HHI-320x320F (1° or 5°)



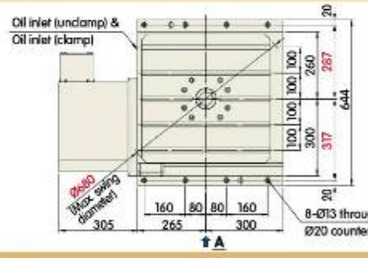


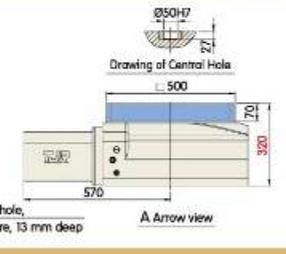
HHI-400x400A (1° or 5°)



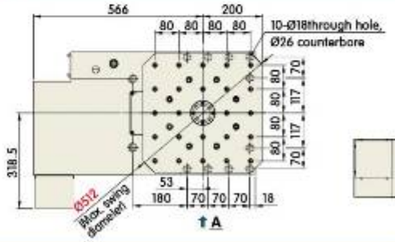


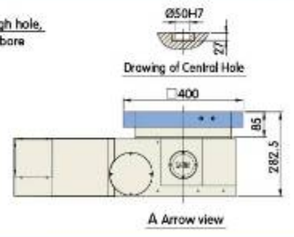
HHI-500x500 (1° or 5°)



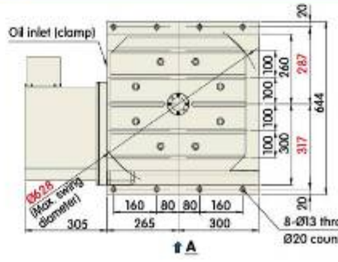


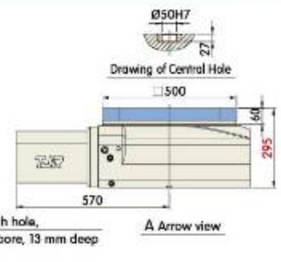
HHR-400x400 (0.001°)





HHR-500x500 (0.001°)





Driven by Worm & Worm Gear

Driven by Worm & Worm Gear

HHI Series
(Single Indexing Table for Horizontal Machining Centers)

HHI - 630x630

- HHI: Horizontal Hirth Coupling Index Table with Hydraulic Brake (Min. Indexing Angle: 1° or 5°)
- 630x630: Table Size

Drive by
Worm & Worm Gear

HHI Series:
Three-Piece Clutch Plate Design Advantages:

① Positioning accuracy up to ±5 arcseconds. (comparable to angle encoder precision)

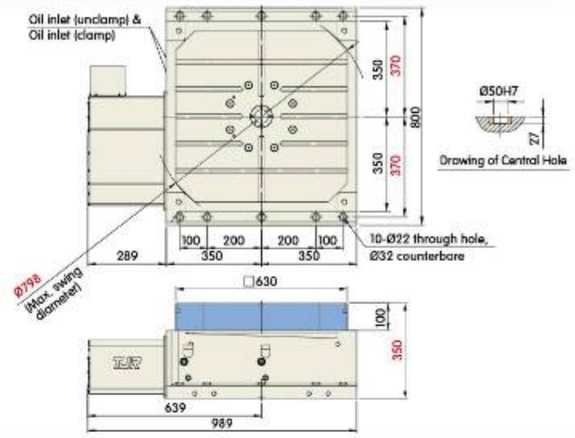
② Table surface remains flat during rotation, preventing chips or coolant from entering.

Horizontal

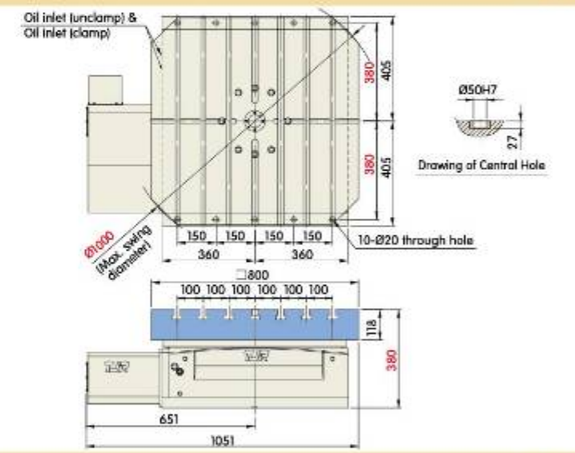
Item / Model		Unit	HHI-630x630	HHI-800x800	HHI-1000x1000
Table Size		mm	□ 630x630	□ 800x800	□ 1000x1000
Inner Diameter of Mandrel Sleeve		mm	Ø50H7x27 deep	Ø50H7x27 deep	Ø50H7x27 deep
Table Height (Horizontal)		mm	350	380	400
Table T-slot Width		mm	18H7	22H7	22H7
Guide Block Width		mm	18h7	18h7	18h7
Min. Increment		deg.	1° or 5°	1° or 5°	1° or 5°
Indexing Precision		sec.	±5	±5	±5
Repeatability		sec.	±1	±1	±1
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5(35)	3.5(35)	3.5(35)
Clamping torque		N·m (kgf·m)	11772 (1200)	39240 (4000)	51993 (5300)
Servo Motor Type	FANUC	Straight shaft without key	ßis22	ßis22	ßis30
	MITSUBISHI	Straight shaft without key	HG - 204	HG - 204	HG - 354
Speed Reduction Ratio		-	1 / 180	1 / 180	1 / 360
Max. Rotation Rate of Table (※1)		min⁻¹	16.7	11.1	5.6
Allowable Inertia Load Capacity		kg-m²	119	427	833
Allowable Workpiece Load	Horizontal	kg	1800	4000	5000
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	58860 (6000)	88290 (9000)	112815 (11500)
	FxL	N·m (kgf·m)	6377 (650)	19130 (1950)	22955 (2340)
	FxL	N·m (kgf·m)	11772 (1200)	39240 (4000)	51993 (5300)
Net Weight (without motor)		kg	565	1053	1971

※1 : The structural limit value, while the actual operating speed will vary depending on the motor.

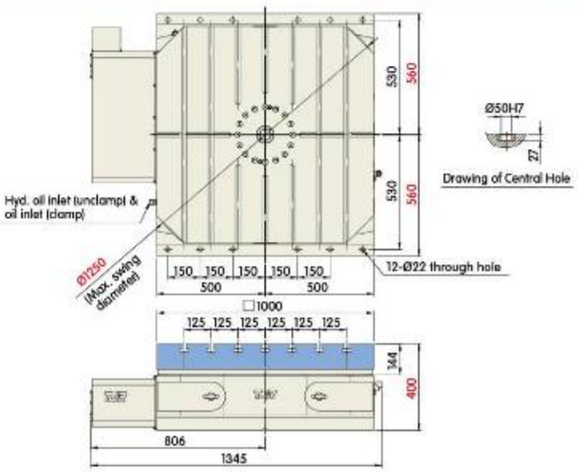
HHI-630x630 (1° or 5°)



HHI-800x800 (1° or 5°)



HHI-1000x1000 (1° or 5°)



Driven by Worm & Worm Gear

Driven by Worm & Worm Gear

FAR Series (Pneumatic Brake)

FAR - 170 H B

- FAR: 5th Axis
- FAR: Worm Gear Drive with Pneumatic Brake (Min. Indexing Angle: 0.001°)
- 170: Table Diameter
- H: Tilt Axis: Hydraulic Brake Optional
- B: Back-side Motor; Vertical use

Vertical & Horizontal

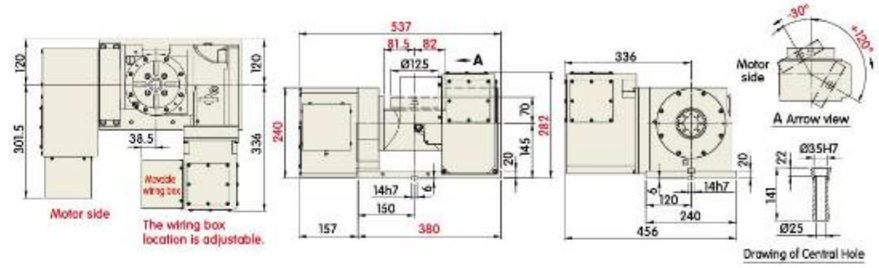
Drive by
Alloy Steel Worm Gear

Use
radial & axial bearings

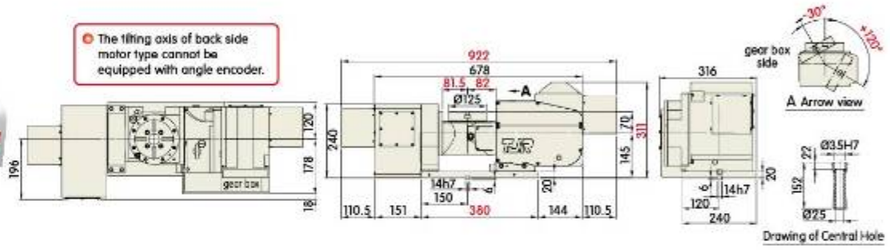
Item / Model		Unit	FARs-125 / 125B		FAR-170(H) / 170(H)B	
Table Diameter		mm	Ø125		Ø170	
Inner Diameter of Mandrel Sleeve		mm	Ø35H7		Ø40H7	
Diameter of Center Through Hole		mm	Ø25		Ø40	
Table Height (Horizontal)		mm	215		270	
Table T-slot Width		mm	12H7		12H7	
Guide Block Width		mm	14h7		18h7	
Min. Increment		deg.	0.001		0.001	
Axis		-	Rotation	Tilt (-30°~+120°)	Rotation	Tilt ±100°
Indexing Precision		sec.	40	60	20	60
Repeatability		sec.	6	8	6	8
Clamping System : Pne. 0.6(6) / Hyd. 3.5(35)		MPa (kgf/cm²)	Pne.	Pne.	Pne.	Pne. / Hyd.
Clamping torque (※1)		N·m (kgf·m)	128 (13)	304 (31)	304 (31)	304 (31) / 540 (55)
Servo Motor Type	FANUC	Straight shaft without key	αiS4 / βis4	αiF4 / βis8	αiF4 / βis8	αiF8 / αis12 / βis12
	MITSUBISHI	Straight shaft without key	HG - 75 / 105	HG - 54 / 104	HG / HF - 54 / 104	HG / HF - 104
Speed Reduction Ratio		-	1 / 60	1 / 90	1 / 90	1 / 90
Max. Rotation Rate of Table (※2)		min⁻¹	33.3	33.3	33.3	25
Allowable Inertia Load Capacity (Horizontal)		kg-m²	0.1		0.27	
Allowable Workpiece Load	0° Horizontal	kg	50		75	
	0°~90° Tilt	kg	35		50	
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	3924 (400)		7358 (750)	
	FxL	N·m (kgf·m)	304 (31)		304 (31)	
	FxL	N·m (kgf·m)	128 (13)		304 (31)	
Driving Torque		N·m (kgf·m)	36 (3.7)		284 (29)	
Net Weight (without motor)		kg	97	107	153	163

※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

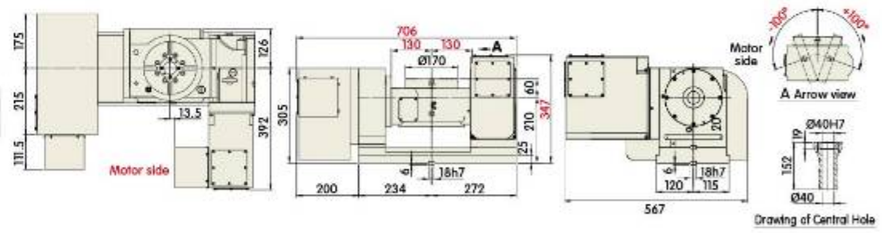
FARs-125



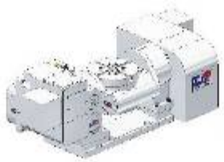
FARs-125B

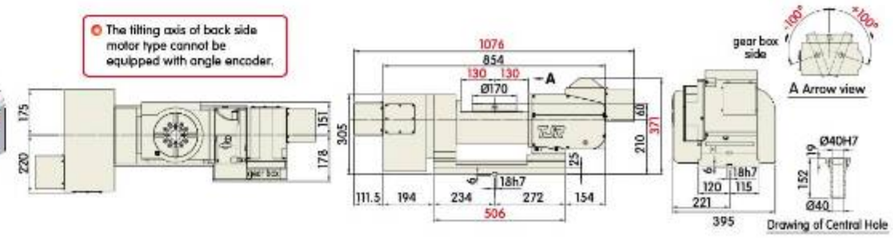


FAR-170(H)



FAR-170(H)B





Driven by Worm & Worm Gear

Driven by Worm & Worm Gear

FAR Series (Pneumatic Brake)

FAR - 160 SN H - RC255 N

- FAR: 5th Axis
- Worm Gear Drive with Pneumatic Brake (Min. Indexing Angle: 0.001°)
- 160: Table Diameter
- SN: Dual-axis Single-arm Type (Compact Type)
  - A: Compact Type
  - B: Tilt Axis: Back-side Motor Type
- H: Tilt Axis: Hydraulic Brake Optional
- RC255: Roller Gear Cam Tilting Axis Type
- N: Tilt Axis: with Compact Cover

Vertical & Horizontal

Drive by
Worm & Worm Gear

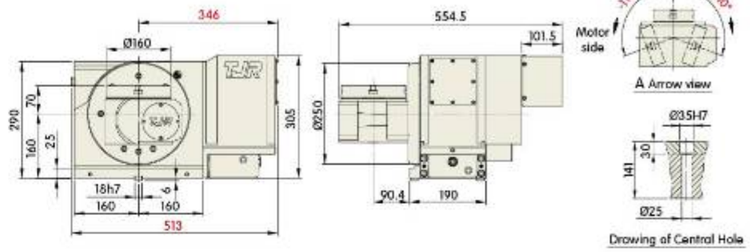
Use
radial & axial bearings

Item / Model		Unit	FARs-160SN-RC255N		FAR-170A(H)		FAR-210(H) / 210B(H)	
Table Diameter		mm	Ø160		Ø170		Ø210	
Inner Diameter of Mandrel Sleeve		mm	Ø35H7		Ø40H7		Ø40H7	
Diameter of Center Through Hole		mm	Ø25		Ø40		Ø35	
Table Height (Horizontal)		mm	230		245		270	
Table T-slot Width		mm	12H7		12H7		12H7	
Guide Block Width		mm	18h7		18h7		18h7	
Min. Increment		deg.	0.001		0.001		0.001	
Axis		-	Rotation	Tilt ±110°	Rotation	Tilt ±100°	Rotation	Tilt ±100°
Indexing Precision		sec.	40	60	20	60	20	60
Repeatability		sec.	6	8	6	8	6	8
Clamping System : Pne. 0.6(6) / Hyd. 3.5(35)		MPa (kgf/cm²)	Pne.	Hyd.	Pne.	Pne. Hyd.	Pne.	Pne. Hyd.
Clamping torque (※1)		N·m (kgf·m)	128 (13)	687 (70)	245 (25)	304 (31) 540 (55)	304 (31)	304 (31) 540 (55)
Servo Motor Type	FANUC	Straight shaft without key	αiS4 / βis4	αiS12 / βis12	αiS4 / βis4	αiF4 / βis8	αiF4 / βis8	αiF8 / αiS12 / βis12
	MITSUBISHI	Straight shaft without key	HG - 56	HG - 154	HG - 75 / 105	HG - 54 / 104	HG - 54 / 104	HG - 104
Speed Reduction Ratio		-	1 / 60	1 / 60	1 / 72	1 / 90	1 / 90	1 / 90
Max. Rotation Rate of Table (※2)		min⁻¹	33.3	50	33.3	25	33.3	25
Allowable Inertia Load Capacity (Horizontal)		kg-m²	0.1		0.22		0.27	
Allowable Workpiece Load	0° Horizontal	kg	25		60		75	
	0°~90° Tilt	kg	20		40		50	
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	5886 (600)		5886 (600)		7358 (750)	
	FxL	N·m (kgf·m)	687 (70)		304 (31)	540 (55)	304 (31)	
	FxL	N·m (kgf·m)	128 (13)		245 (25)		304 (31)	
Driving Torque		N·m (kgf·m)	36 (3.7)		177 (18)		284 (29)	
Net Weight (without motor)		kg	126		125		153	163

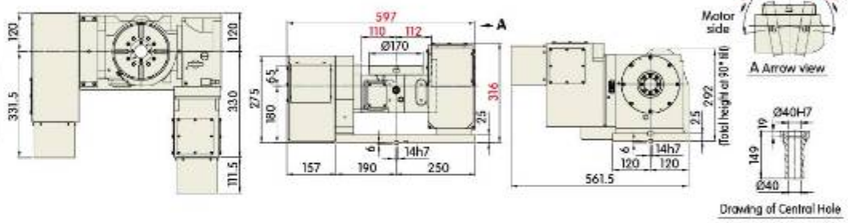
※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

Driven by Worm & Worm Gear

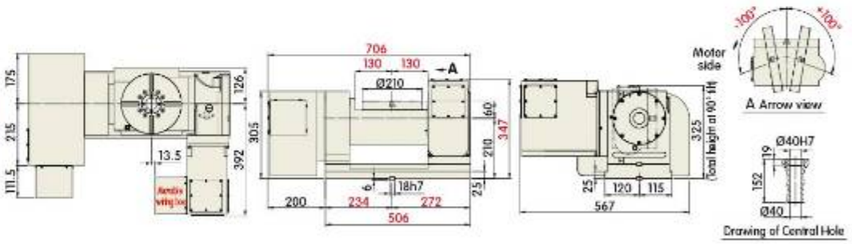
FARs-160SN-RC255N



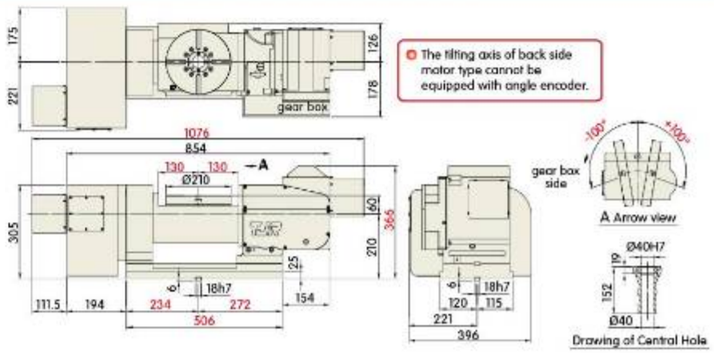
FAR-170A(H)



FAR-210(H)



FAR-210B(H)



Driven by Worm & Worm Gear

FHR Series (Hydraulic Brake)

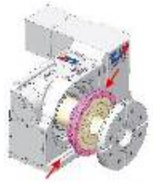
FHR - 255 C L

- FHR: Worm Gear Drive with Hydraulic Brake (Min. Indexing Angle: 0.001°)
- 255: Table Diameter
- C: Dual-axis Cradle Type
- L: Extended Type
- 5th Axis

Vertical & Horizontal

Drive by
Worm & Worm Gear

Use
radial & axial bearings

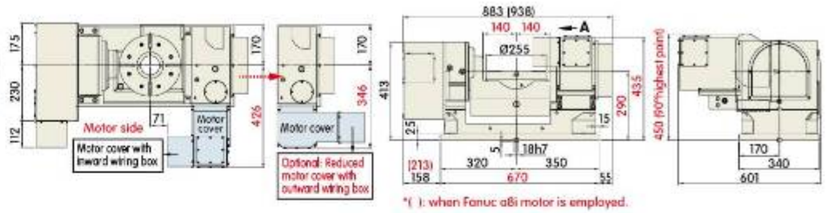


Wrap-around Brake

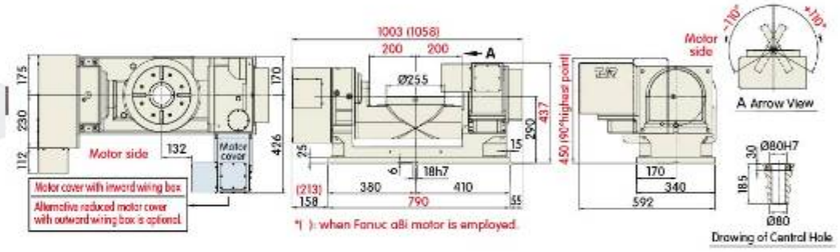
Item / Model	Unit	FHR-255C / 255CL	FHR-320	FHR-320C
Table Diameter	mm	Ø255	Ø320	Ø320
Inner Diameter of Mandrel Sleeve	mm	Ø80H7	Ø120H7	Ø120H7x30 deep
Diameter of Center Through Hole	mm	Ø80	Ø120	Ø80
Table Height (Horizontal)	mm	290	355	310
Table T-slot Width	mm	12H7	14H7	14H7
Guide Block Width	mm	18h7	18h7	18h7
Min. Increment	deg.	0.001	0.001	0.001
Axis	-	Rotation / Tilt ±110°	Rotation / Tilt ±110°	Rotation / Tilt ±110°
Indexing Precision	sec.	15 / 60	15 / 50	15 / 60
Repeatability	sec.	6 / 8	6 / 8	6 / 8
Clamping System : Hydraulic	MPa (kgf/cm²)	3.5 (35) / 3.5 (35)	3.5 (35) / 3.5 (35)	3.5 (35) / 3.5 (35)
Clamping torque (※1)	N·m (kgf·m)	687 (70) / 1373 (140)	1128 (115) / 1717 (175)	687 (70) / 1717 (175)
Servo Motor Type — FANUC	Straight shaft without key	aiF8 / aiS12 / BisI2 / aiF8 / aiS12 / BisI2	aiF8 / aiS12 / BisI2 / aiF8 / aiS12 / BisI2	aiF8 / aiS12 / BisI2 / aiF12 / Bis22
Servo Motor Type — MITSUBISHI	Straight shaft without key	HG - 104 / HG - 154	HG - 104 / HG - 204	HG - 104 / HG - 204
Speed Reduction Ratio	-	1 / 120 / 1 / 120	1 / 120 / 1 / 120	1 / 120 / 1 / 120
Max. Rotation Rate of Table (※2)	min⁻¹	33.3 / 16.6	25 / 16.6	25 / 16.6
Allowable Inertia Load Capacity (Horizontal)	kg-m²	0.8	2.6	2.6
Allowable Workpiece Load — 0° Horizontal	kg	100	200	200
Allowable Workpiece Load — 0°~90° Tilt	kg	75	150	100
Allowable Thrust Load (with Rotary Table Clamping) — F	N (kgf)	14715 (1500)	17658 (1800)	17658 (1800)
Allowable Thrust Load (with Rotary Table Clamping) — FxL	N·m (kgf·m)	1373 (140)	1717 (175)	1717 (175)
Allowable Thrust Load (with Rotary Table Clamping) — FxL	N·m (kgf·m)	687 (70)	1128 (115)	687 (70)
Driving Torque	N·m (kgf·m)	540 (55)	785 (80)	540 (55)
Net Weight (without motor)	kg	296 / 312	470	489

※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

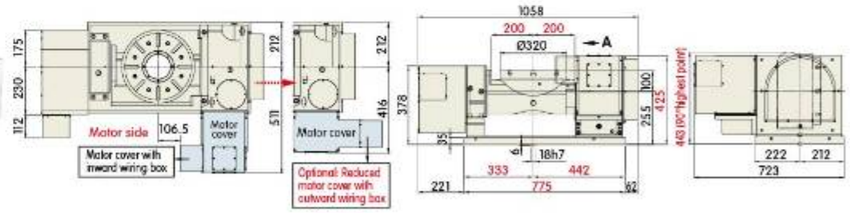
FHR-255C



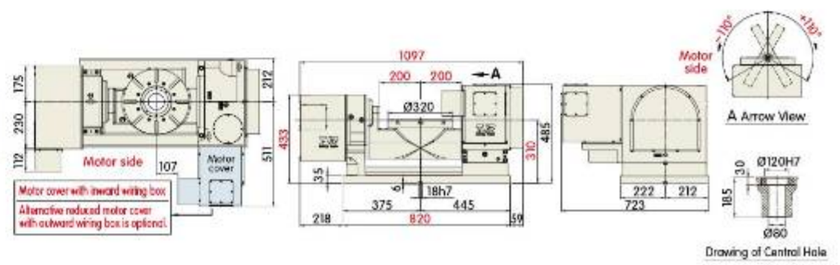
FHR-255CL



FHR-320



FHR-320C



Driven by Worm & Worm Gear

Driven by Worm & Worm Gear

FHR Series (Hydraulic Brake)

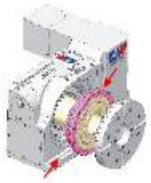
FHR - 400 C F - 540 - HR400B

- FHR: 5th Axis
- Worm Gear Drive with Hydraulic Brake (Min. Indexing Angle: 0.001°)
- 400: Table Diameter
- C: Dual-axis Cradle Type
- F: Enlarged Faceplate
- 540: Allowable Workpiece Rotation Diameter
- HR400B: Tilt Axis: Back-side Motor Type

Vertical & Horizontal

Drive by
Worm & Worm Gear

Use
radial & axial bearings

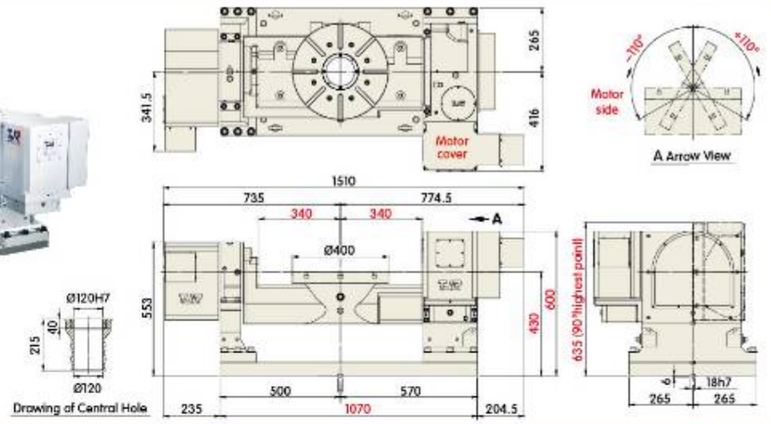


Wrap-around Brake

Item / Model		Unit	FHR-400CF		FHR-400C-540-HR400B		FHR-401C-700/820-HR400B	
Table Diameter		mm	Ø400		Ø400		Ø400	
Inner Diameter of Mandrel Sleeve		mm	Ø120H7		Ø120H7		Ø120H7	
Diameter of Center Through Hole		mm	Ø120		Ø120		Ø105	
Table Height (Horizontal)		mm	430		380		380	
Table T-slot Width		mm	14H7		14H7		14H7	
Guide Block Width		mm	18h7		18h7		18h7	
Min. Increment		deg.	0.001		0.001		0.001	
Axis		-	Rotation	Tilt ±110°	Rotation	Tilt ±110°	Rotation	Tilt ±110°
Indexing Precision		sec.	15	60	15	60	15	60
Repeatability		sec.	6	8	6	8	6	8
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5 (35)	3.5 (35)	3.5 (35)	3.5 (35)	3.5 (35)	3.5 (35)
Clamping torque (※1)		N·m (kgf·m)	1128 (115)	1717 (175)	1128 (115)	2698 (275)	1128 (115)	2698 (275)
Servo Motor Type	FANUC	Straight shaft without key	αiF8 / αiS12 / βis12	αiF12 / βis22	αiF12 / βis12	αiF22 / βis22	αiS12 / βis12	αiF22 / βis22
	MITSUBISHI	Straight shaft without key	HG - 154	HG - 354	HG - 154	HG - 354	HG - 154	HG - 354
Speed Reduction Ratio		-	1 / 120	1 / 120	1 / 120	1 / 120	1 / 120	1 / 120
Max. Rotation Rate of Table (※2)		min⁻¹	25	16.6	25	16.6	25	16.6
Allowable Inertia Load Capacity (Horizontal)		kg-m²	4		4.4		4.4	
Allowable Workpiece Load	0° Horizontal	kg	200		220		220	
	0°~90° Tilt	kg	100		120		120	
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	17658 (1800)		17658 (1800)		17658 (1800)	
	FxL	N·m (kgf·m)	1717 (175)		2698 (275)		2698 (275)	
	FxL	N·m (kgf·m)	1128 (115)		1128 (115)		1128 (115)	
Driving Torque		N·m (kgf·m)	785 (80)		785 (80)		785 (80)	
Net Weight (without motor)		kg	818		702		958	

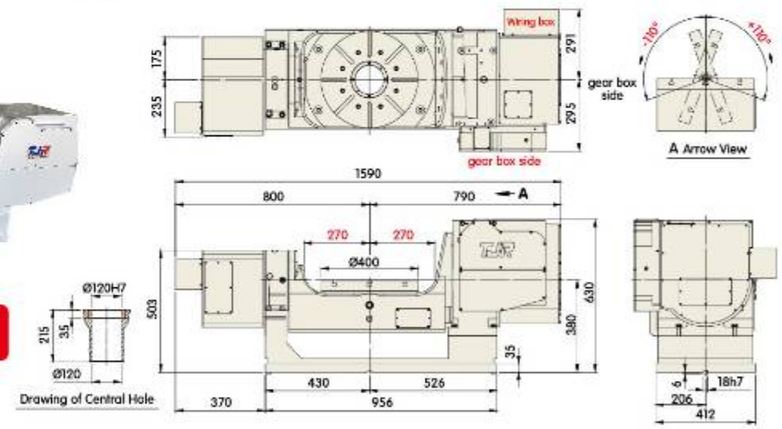
※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

FHR-400CF



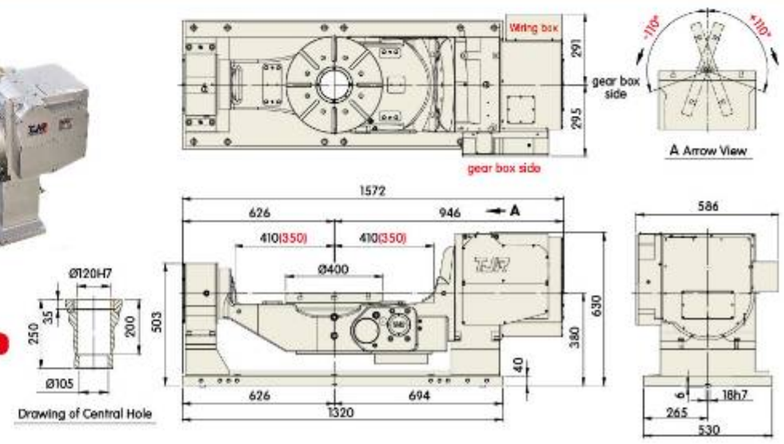
FHR-400C-540-HR400B

A 6-port rotary joint and an angle encoder can be accommodated at the same time.



FHR-401C-700/820-HR400B

6-port rotary joint can be accommodated.



Driven by Worm & Worm Gear

Driven by Worm & Worm Gear

FHR Series (Hydraulic Brake)

FHR - 500 C - 550

- FHR: 5th Axis (Vertical & Horizontal)
- HR: Worm Gear Drive with Hydraulic Brake (Min. Indexing Angle: 0.001°)
- CHR: Dual-pallet Worm Gear Drive with Hydraulic Brake; designed for automatic pallet changers (Min. Indexing Angle: 0.001°)
- 500: Table Diameter
- C: Dual-axis Cradle Type
- S: Dual-axis Single-arm Type
- 550: Distance from Mounting Surface to Table Center

Drive by Worm & Worm Gear

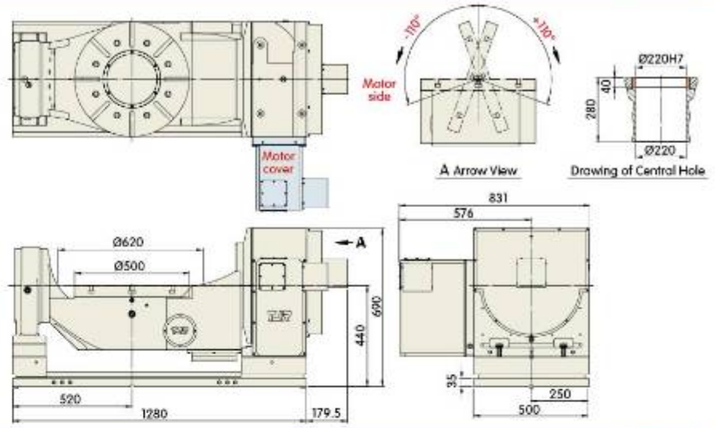
Use radial & axial bearings

Wrap-around Brake

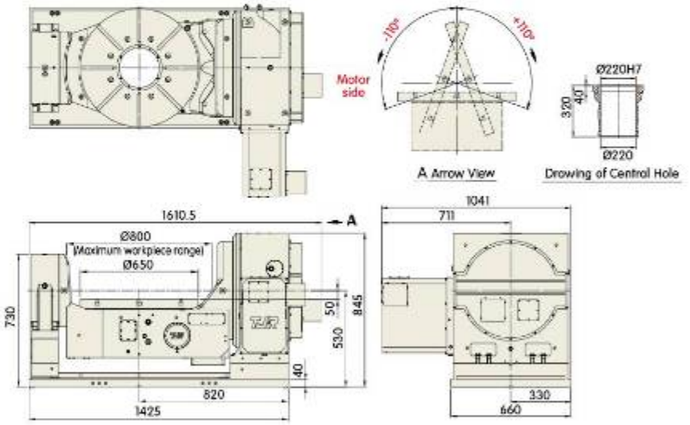
Item / Model		Unit	FHR-500C		FHR-650C		FCHR-650S-550	
Table Diameter		mm	Ø500		Ø400		Ø650	
Inner Diameter of Mandrel Sleeve		mm	Ø220H7		Ø120H7		Ø50H7x27 deep	
Diameter of Center Through Hole		mm	Ø220		Ø120		-	
Table Height (Horizontal)		mm	440		430		-	
Table T-slot Width		mm	18H7		18H7		18H7	
Guide Block Width		mm	18h7		18h7		-	
Min. Increment		deg.	0.001		0.001		0.001	
Axis		-	Rotation	Tilt ±110°	Rotation	Tilt ±110°	Rotation	Tilt ±110°
Indexing Precision		sec.	15	60	15	60	15	60
Repeatability		sec.	6	8	6	8	6	8
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5 (35)	3.5 (35)	3.5 (35)	3.5 (35)	3.5 (35)	3.5 (35)
Clamping torque (※1)		N·m (kgf·m)	3630 (370)	4022 (410)	3630 (370)	7848 (800)	3630 (370)	4905 (500)
Servo Motor Type	FANUC	Straight shaft without key	αiF12 / βis22	αiF22 / βis30	αiF12 / βis22	αiF30 / βis40	αiF22	αiF40
	MITSUBISHI	Straight shaft without key	HG - 204	HG - 354	HG - 204	HG - 703	HG - 204	HG - 703
Speed Reduction Ratio		-	1 / 120	1 / 180	1 / 120	1 / 180	1 / 120	1 / 150
Max. Rotation Rate of Table (※2)		min⁻¹	25	11.1	25	11.1	25	13.3
Allowable Inertia Load Capacity (Horizontal)		kg-m²	9.4		15.5		15.5	
Allowable Workpiece Load	0° Horizontal	kg	500		500		250	
	0°~90° Tilt	kg	300		400		250	
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	29430 (3000)		31392 (3200)		31392 (3200)	
	FxL	N·m (kgf·m)	4022 (410)		7848 (800)		4905 (500)	
	FxL	N·m (kgf·m)	3630 (370)		3630 (370)		3630 (370)	
Driving Torque		N·m (kgf·m)	2453 (250)		2453 (250)		2453 (250)	
Net Weight (without motor)		kg	1091		1867		1434	

※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

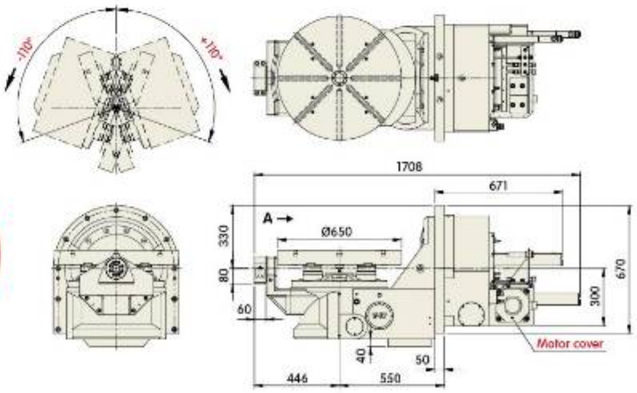
FHR-500C



FHR-650C



FCHR-650S-550



Driven by Worm & Worm Gear

Driven by Worm & Worm Gear

FHR Series (Hydraulic Brake)

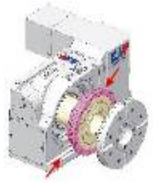
FHR - 650 S - 525

- FHR: 5th Axis; Worm Gear Drive with Hydraulic Brake (Min. Indexing Angle: 0.001°)
- 650: Table Diameter
- S: Dual-axis Single-arm Type
- 525: Distance from Mounting Surface to Table Center

Vertical & Horizontal

Drive by **Worm & Worm Gear**

Use **radial & axial bearings**

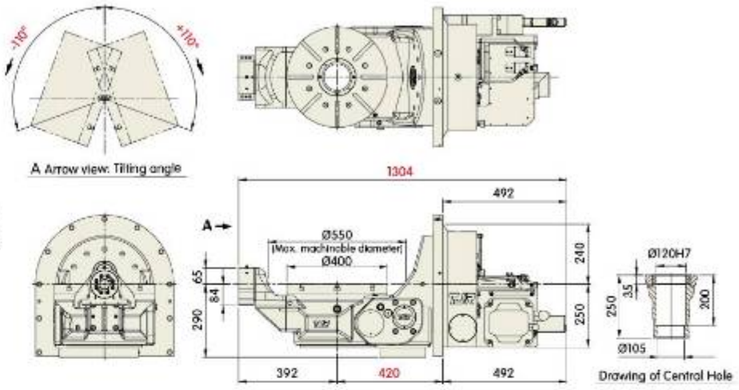


Wrap-around Brake

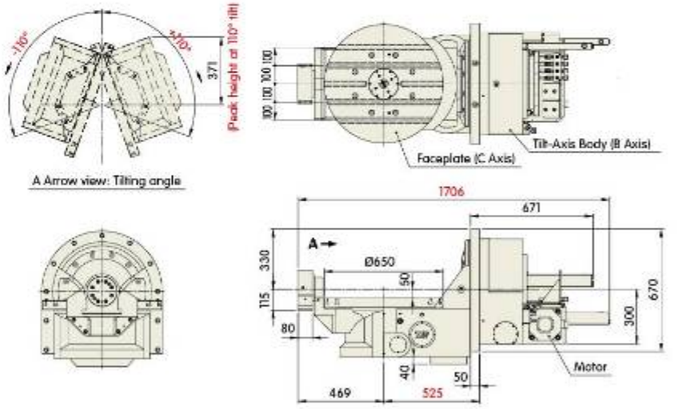
Item / Model		Unit	FHR-400S		FHR-650S-525 / 550	
Table Diameter		mm	Ø400		Ø650	
Inner Diameter of Mandrel Sleeve		mm	Ø120H7		-	
Diameter of Center Through Hole		mm	Ø105		-	
Table Height (Horizontal)		mm	-		-	
Table T-slot Width		mm	14H7		18H7	
Guide Block Width		mm	-		-	
Min. Increment		deg.	0.001		0.001	
Axis		-	Rotation	Tilt ±110°	Rotation	Tilt ±110°
Indexing Precision		sec.	15	60	15	60
Repeatability		sec.	6	8	6	8
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5 (35)	3.5 (35)	3.5 (35)	3.5 (35)
Clamping torque (※1)		N·m (kgf·m)	1128 (115)	1962 (200)	3630 (370)	4905 (500)
Servo Motor Type	FANUC	Straight shaft without key	αiS12	αiF22	αiF22	αiF40
	MITSUBISHI	Straight shaft without key	HG - 154	HG - 354	HG - 204	HG - 703
Speed Reduction Ratio		-	1 / 120	1 / 150	1 / 120	1 / 150
Max. Rotation Rate of Table (※2)		min⁻¹	25	13.3	25	13.3
Allowable Inertia Load Capacity (Horizontal)		kg-m²	4.4		15.8	
Allowable Workpiece Load	0° Horizontal	kg	220		500	
	0°~90° Tilt	kg	120		300	
Allowable Thrust Load (with Rotary Table Clamping)	F	N (kgf)	17658 (1800)		17658 (1800)	
	FxL	N·m (kgf·m)	1962 (200)		4905 (500)	
	FxL	N·m (kgf·m)	1128 (115)		3630 (370)	
Driving Torque		N·m (kgf·m)	785 (80)		2453 (250)	
Net Weight (without motor)		kg	482		1120	

※1 : If a mechanical brake is not used, this value will correspond to the motor's holding torque.
※2 : The structural limit value, while the actual operating speed will vary depending on the motor.

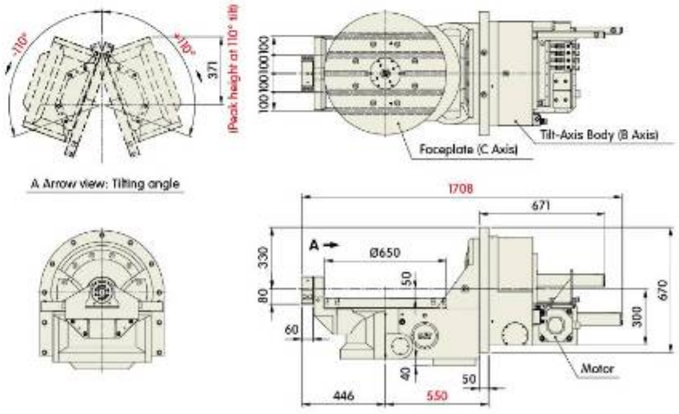
FHR-400S



FHR-650S-525



FHR-650S-550



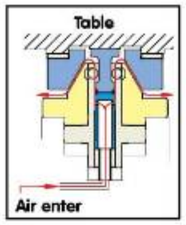
Driven by Worm & Worm Gear

CHI Series (for HMC use)

▲ **CHI Series:**
Three-Piece Clutch Plate Design Advantages:

① Positioning accuracy up to ±5 arcseconds. (comparable to angle encoder precision)

② Table surface remains flat during rotation, preventing chips or coolant from entering.



▲ **The function of cones :**
① Precise positioning
② Air blast for chip removal
③ Airtight testing

▲ **Cones:**
Powerful hydraulic clamping

Driven by Worm & Worm Gear

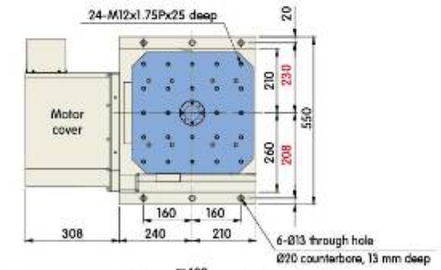
CHI-400 (1° or 5°)

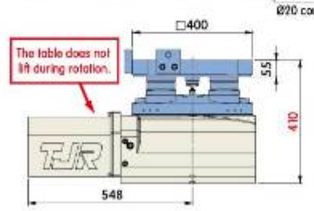
CHI - 400

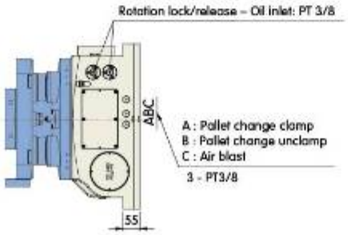
- CHI: Dual-pallet HI/HR series for APC
- Hirth Coupling Index Table with Hydraulic Brake (Min. Indexing Angle: 1° or 5°)
- 400: Table Size

Horizontal

Item / Model		Unit	CHI-400
Table Size		mm	□400x400
Diameter of Table Central Hole		mm	Ø50x27 deep
Table Height		mm	410
Table T-slot Width		mm	14H7
Guide Block Width		mm	18h7
Min. Increment		deg.	1° or 5°
Indexing Precision		sec.	±5
Repeatability		sec.	±1
Clamping Force of Positioning Cones		N (kgf)	9418x4=37672 (960x4=3840)
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5(35)
Clamping Torque		N·m (kgf·m)	4905 (500)
Servo Motor Type	FANUC	Straight shaft without key	αiF12 / βis22
	MITSUBISHI	Straight shaft without key	HG / HF - 204
Speed Reduction Ratio		-	1 / 120
Max. Rotation Rate of Table		r.p.m	25
Allowable Workpiece Load	Horizontal	kg	400
Driving Torque		N·m (kgf·m)	-
Net Weight (without motor)		kg	410





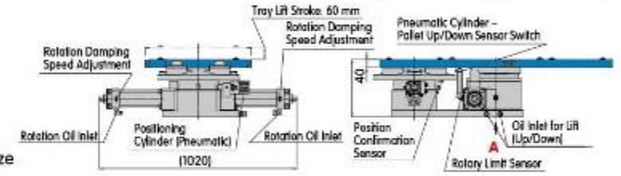


CTH Series (for HMC use)

CTH-400

CTH - 400

- CTH: Tray type APC (180° to and fro)
- 400: Compatible Model Table Size

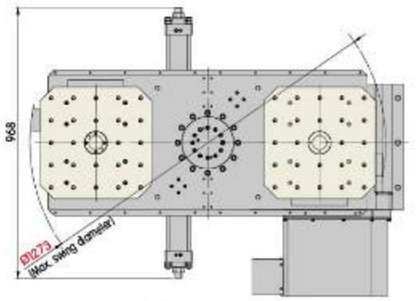


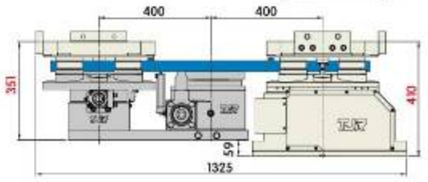
Horizontal

Item / Model		Unit	CTH-400
Lifting Mechanism		-	Tray type (H type)
Pallet Size		mm	520x1140
Rotation Method		-	Hydraulic hirth coupling
Rotation Angle		deg.	180° to and fro
Clamping System (Hydraulic)		MPa (kgf/cm²)	3.5(35)
Positioning Method		-	Cone positioning
Clamping Force		N (kgf)	9418x4=37672 (960x4=3840)
Operating System (Up & Down & Rotate) (Hydraulic)		MPa (kgf/cm²)	3.5(35)
Lifting Thrust Force		N (kgf)	21582 (2200)
Up and Down Travel of the Pallet		mm	60
Allowable Workpiece Load	Horizontal	kg	400x2=800
Inspection Precision			
Repeatability accuracy on positioning of the same pallet		mm	0.01
Max. positioning tolerance for 2 pallets		mm	0.02
Parallelism of pallet top and base bottom		mm	0.02

Driven by Worm & Worm Gear

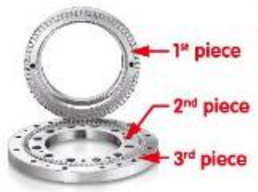
CTH-400+CHI-400





Driven by Worm & Worm Gear

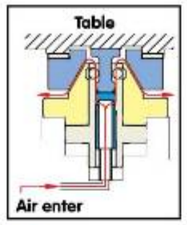
CHI/CHR Series (for HMC use)



CHI Series:
Three-Piece Clutch Plate Design Advantages:

① Positioning accuracy up to ±5 arcseconds. (comparable to angle encoder precision)

② Table surface remains flat during rotation, preventing chips or coolant from entering.



The function of cones :
① Precise positioning
② Air blast for chip removal
③ Airtight testing

Cones: Powerful hydraulic clamping

▲ CHI-500

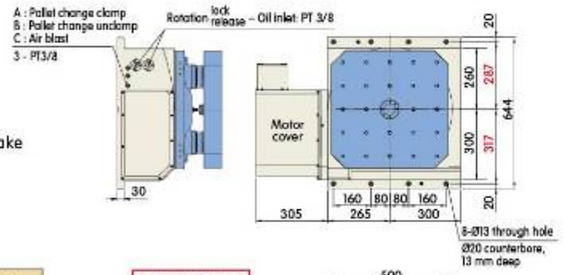
▲ CHR-500

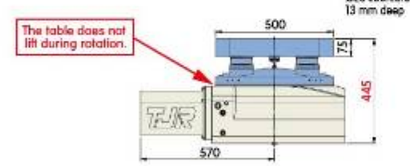
CHI-500 (1° or 5°)

CHI - 500

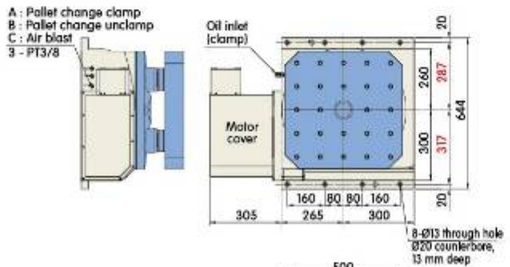
- Table Size
- HI Hirth Coupling Index Table with Hydraulic Brake (Min. Indexing Angle: 1° or 5°)
- HR Worm Gear Drive with Hydraulic Brake (Min. Indexing Angle: 0.001°)
- Dual-pallet HI/HR series for APC

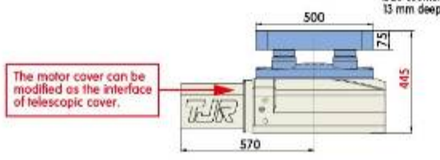
Horizontal





CHR-500 (0.001°)

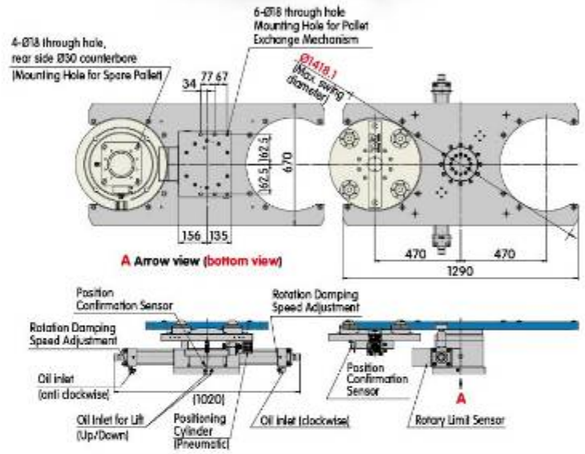




Item / Model		Unit	CHI-500	CHR-500
Table Size		mm	□500x500	□500x500
Diameter of Table Central Hole		mm	Ø50x27 deep	Ø50x27 deep
Table Height		mm	445	445
Table T-slot Width		mm	18H7	18H7
Guide Block Width		mm	18h7	18h7
Min. Increment		deg.	1° or 5°	0.001
Indexing Precision		sec.	±5	15
Repeatability		sec.	±1	6
Clamping Force of Positioning Cones		N (kgf)	9418x4=37672 (960x4=3840)	9418x4=37672 (960x4=3840)
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5(35)	3.5(35)
Clamping Torque		N·m (kgf·m)	9810 (1000)	3630 (370)
Servo Motor Type	FANUC	Straight shaft without key	βis22	αiF12 / βis22
	MITSUBISHI	Straight shaft without key	HG/HF-204	HG/HF-204
Speed Reduction Ratio		-	1 / 180	1 / 180
Max. Rotation Rate of Table		r.p.m	16.6	16.6
Allowable Workpiece Load	Horizontal	kg	600	600
Driving Torque		N·m (kgf·m)	- (-)	2452 (250)
Net Weight (without motor)		kg	716 (Two pallets)	708 (Two pallets)

CTH Series (for HMC use)

CTH-500



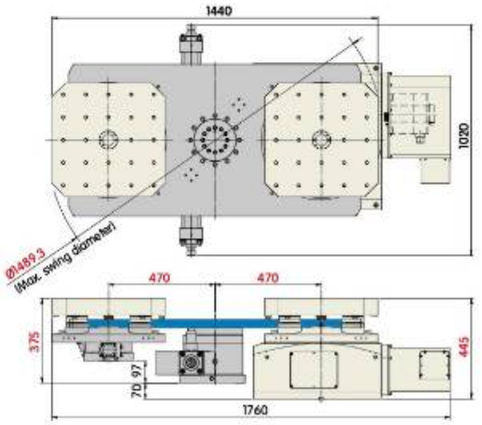
CTH - 500

- Compatible Model Table Size
- Tray type APC (180° to and fro)

Horizontal

Item / Model		Unit	CTH-500
Lifting Mechanism		-	Tray type (H type)
Pallet Size		mm	670x1290
Rotation Method		-	Hydraulic hirth coupling
Rotation Angle		deg.	180° to and fro
Clamping System (Hydraulic)		MPa (kgf/cm²)	3.5(35)
Positioning Method		-	Cone positioning
Clamping Force		N (kgf)	9418x4=37672 (960x4=3840)
Operating System (Up & Down & Rotate) (Hydraulic)		MPa (kgf/cm²)	4.5(45)
Lifting Thrust Force		N (kgf)	28057 (2860)
Up and Down Travel of the Pallet		mm	60
Allowable Workpiece Load	Horizontal	kg	500x2=1000
Inspection Precision			
Repeatability accuracy on positioning of the same pallet		mm	0.01
Max. positioning tolerance for 2 pallets		mm	0.02
Parallelism of pallet top and base bottom		mm	0.02

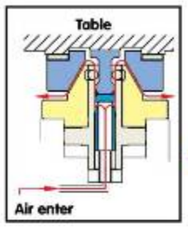
CTH-500+CHI-500



Driven by Worm & Worm Gear

Driven by Worm & Worm Gear

CHI/CHR Series (for HMC use)



▶ **Cones:** Powerful hydraulic clamping

◀ **The function of cones :**
① Precise positioning
② Air blast for chip removal
③ Airtight testing

◀ **CHI Series:**
Three-Piece Clutch Plate Design Advantages:
① Positioning accuracy up to ±5 arcseconds. (comparable to angle encoder precision)
② Table surface remains flat during rotation, preventing chips or coolant from entering.

CHI - 630 L

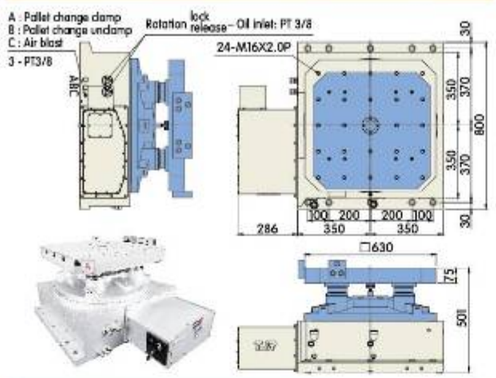
- CHI: HI Hirth Coupling Index Table with Hydraulic Brake (Min. Indexing Angle: 1° or 5°); HR Worm Gear Drive with Hydraulic Brake (Min. Indexing Angle: 0.001°)
- 630: Table Size
- L: Linear Guide Interface

Horizontal

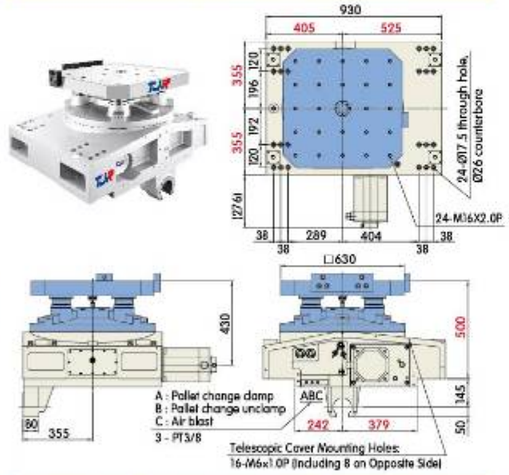
Dual-pallet HI/HR series for APC

Item / Model		Unit	CHI-630 CHI-630L	CHR-630L
Table Size		mm	□630x630	□630x630
Diameter of Table Central Hole		mm	Ø50x27 deep	Ø50x27 deep
Table Height		mm	500	500
Table T-slot Width		mm	-	-
Guide Block Width		mm	-	-
Min. Increment		deg.	1° or 5°	0.001
Indexing Precision		sec.	±5	15
Repeatability		sec.	±1	6
Clamping Force of Positioning Cones (3.5 MPa)		N (kgf)	9418x4=37672 (960x4=3840)	9418x4=37672 (960x4=3840)
Clamping System : Hydraulic		MPa (kgf/cm²)	3.5(35)	3.5(35)
Clamping Torque		N·m (kgf·m)	49050 (5000)	7848 (800)
Servo Motor Type	FANUC	Straight shaft without key	βis22	αiF22 / βis22
	MITSUBISHI	Straight shaft without key	HG/HF-204	HG/HF-204
Speed Reduction Ratio		-	1 / 180	1 / 180
Max. Rotation Rate of Table		r.p.m	16.6	16.6
Allowable Workpiece Load	Horizontal	kg	1200	1200
Driving Torque		N·m (kgf·m)	- (-)	4120 (420)
Net Weight (without motor)		kg	- / 1135	-

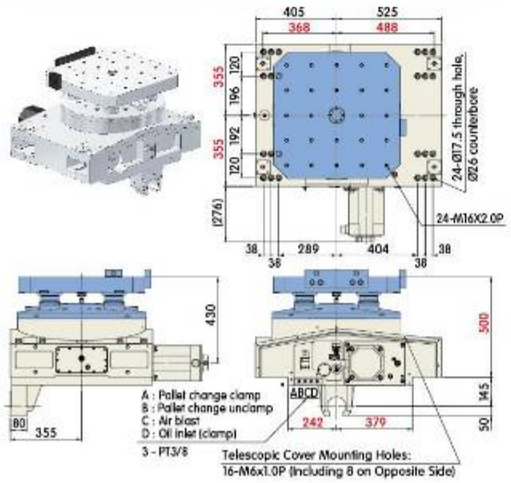
CHI-630 (1° or 5°)



CHI-630L (1° or 5°)



CHR-630L (0.001°)



CTH Series (for HMC use)

▲ CTH-630

▲ CTH-630+CHI-630L

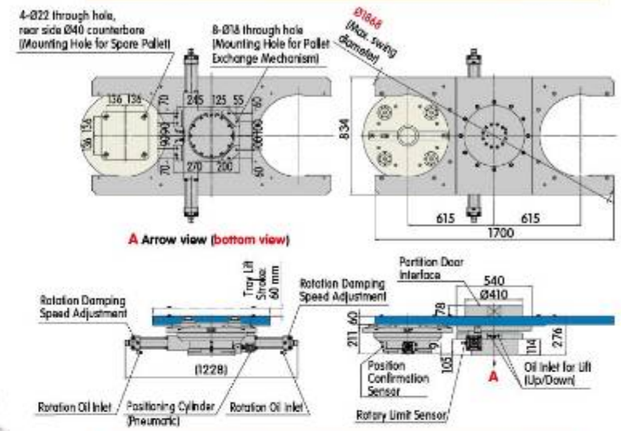
CTH - 630

- CTH: Tray type APC (180° to and fro)
- 630: Compatible Model Table Size

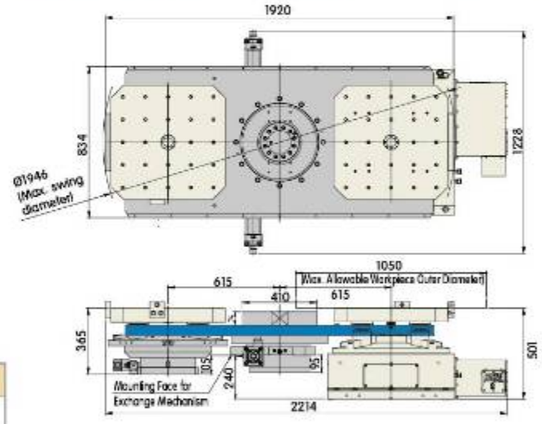
Horizontal

Item / Model		Unit	CTH-630
Lifting Mechanism		-	Tray type (H type)
Pallet Size		mm	834x1700
Rotation Method		-	Hydraulic hirth coupling
Rotation Angle		deg.	180° to and fro
Clamping System (Hydraulic)		MPa (kgf/cm²)	3.5(35)
Positioning Method		-	Cone positioning
Clamping Force (3.5kg/cm²)		N (kgf)	9418x4=37672 (960x4=3840)
Operating System (Up & Down & Rotate) (Hydraulic)		MPa (kgf/cm²)	4.5(45)
Lifting Thrust Force		N (kgf)	37082 (3780)
Up and Down Travel of the Pallet		mm	60
Allowable Workpiece Load	Horizontal	kg	1000x2=2000
Inspection Precision			
Repeatability accuracy on positioning of the same pallet		mm	0.01
Max. positioning tolerance for 2 pallets		mm	0.02
Parallelism of pallet top and base bottom		mm	0.02

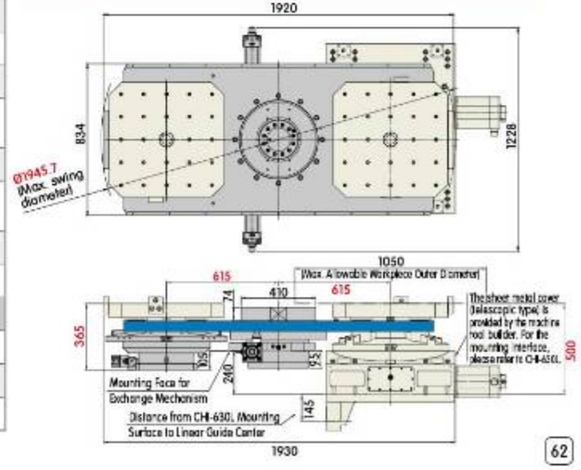
CTH-630



CTH-630+CHI-630



CTH-630+CHI-630L

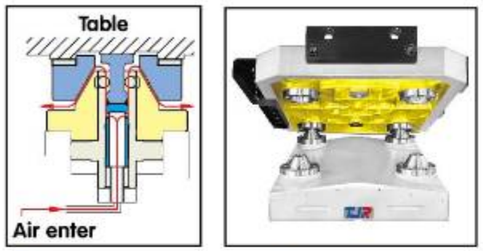


Driven by Worm & Worm Gear

Driven by Worm & Worm Gear

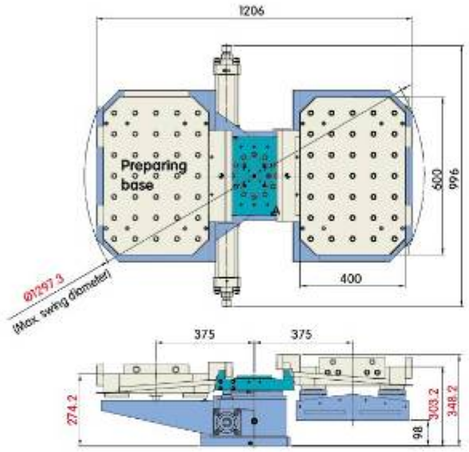
CTU Series (for HMC use)

CTU-400x600



▲ **The function of cones :**
① Precise positioning
② Air blast for chip removal
③ Airtight testing

▲ **Cones:**
Powerful hydraulic clamping

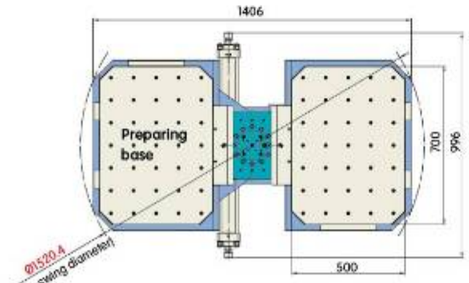


CTU - 400x600

- CTU: Hook type auto pallet changer (180° to and fro)
- 400x600: Table size

Horizontal

CTU-500x700



Item / Model		Unit	CTU-400x600	CTU-500x700
Lifting Mechanism		-	Hook type (U type)	Hook type (U type)
Table Size		mm	□400x600	□500x700
Rotation Method		-	Hydraulic hirth coupling	Hydraulic hirth coupling
Rotation Angle		deg.	180° to and fro	180° to and fro
Clamping System (Hydraulic)		MPa (kgf/cm²)	3.5(35)	3.5(35)
Positioning Method		-	Cone positioning	Cone positioning
Clamping Force of Positioning Cones (35kg/cm²)		N (kgf)	9418x4=37672 (960x4=3840)	9418x4=37672 (960x4=3840)
Operating System (Up & Down & Rotate)		MPa (kgf/cm²)	4.5(45) Hyd.	4.5(45) Hyd.
Lifting Thrust Force		N (kgf)	28057 (2860)	28057 (2860)
Up and Down Travel of the Pallet		mm	60	60
Allowable Workpiece Load	Horizontal	kg	250x2=500	250x2=500
Inspection Precision				
Repeatability accuracy on positioning of the same pallet		mm	0.01	
Max. positioning tolerance for 2 pallets		mm	0.02	
Parallelism of pallet top and base bottom		mm	0.02	

Driven by Roller Gear Cam

CURC Series
(for C-Type VMCs and Drilling/Tapping Centers)

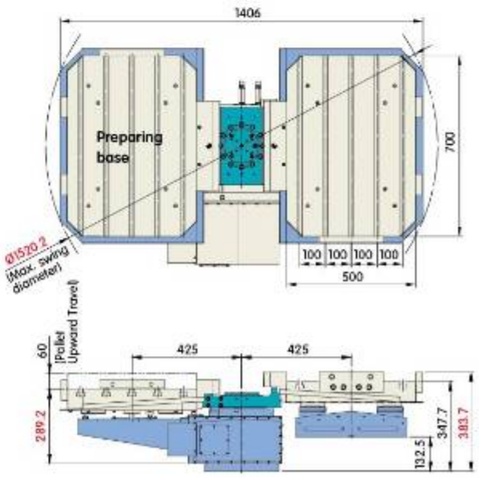
CURC - 500x700

- CURC: CNC Hook-Type Roller Gear Cam Drive (180° to and fro)
- 500x700: Table size

Horizontal

Item / Model		Unit	CURC-500x700
Lifting Mechanism		-	Hook type (U type)
Table Size		mm	500 x 700
Rotation Method		-	Servo motor
Rotation Angle		deg.	180° to and fro
Clamping System (Hydraulic)		MPa (kgf/cm²)	3.5(35)
Positioning Method		-	Cone positioning
Clamping Force (35kg/cm²)		N (kgf)	9418x4=37672 (960x4=3840)
Operating System (Up & Down & Rotate)		MPa (kgf/cm²)	3.5(35) Hyd.
Lifting Thrust Force		N (kgf)	21582 (2200)
Up and Down Travel of the Pallet		mm	60
Servo Motor Type	FANUC	Straight shaft	βis12
	DELTA	Straight shaft	ECMA-E 1320GS
	MITSUBISHI	Straight shaft	HG - 224
Speed Reduction Ratio		-	1 / 90
Allowable Workpiece Load	Horizontal	kg	250x2=500
Inspection Precision			
Repeatability accuracy on positioning of the same pallet		mm	0.01
Max. positioning tolerance for 2 pallets		mm	0.02
Parallelism of pallet top and base bottom		mm	0.02
Saddle + Single Table Weight (Excluding Motor)		kg	712

CURC-500x700



Direct Drive (4th Axis) Series

Vertical

Horizontal

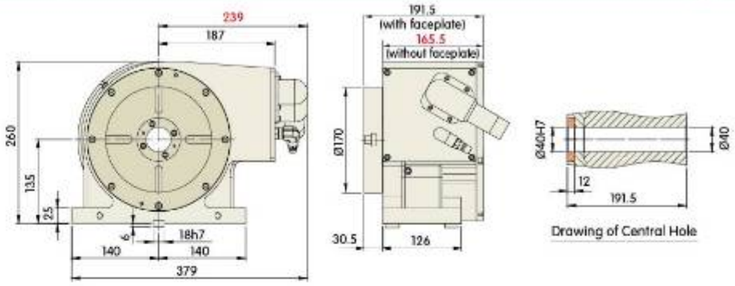
AD - 170 iB - FA

- AD: Direct Drive Motor with Pneumatic Brake (Min. Indexing Angle: 0.001°)
- iHHD: Embedded Horizontal Direct Drive Motor with Hydraulic Brake
- 170: Table Diameter
- iB: Reinforced Type
- FA: FANUC Direct Drive Motor

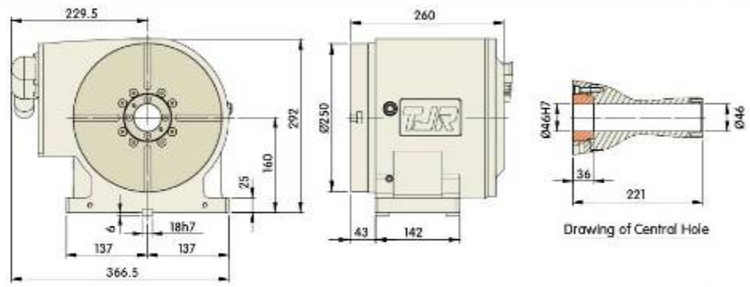
Item / Model		Unit	AD - 170	AD - 261*i*B	AD-261*i*B-FA	iHHD-650
Table Diameter		mm	Ø170	Ø250	Ø250	Ø650
Inner Diameter of Mandrel Sleeve		mm	Ø40H7	Ø46H7	Ø46H7	Ø50 x 30 deep (Diameter of table central hole)
Diameter of Center Through Hole		mm	Ø40	Ø46	Ø46	-
Center Height (Vertical)		mm	135	160	160	-
Table height (Horizontal)		mm	-	-	-	-
Table T-slot width		mm	12H7	12H7	12H7	18H7
Guide block width		mm	18h7	18h7	18h7	-
Axis		-	-	-	-	-
Transmission Mechanisms		-	-	-	-	Direct Drive
Cooling System		-	Free Cooling	Free Cooling / Oil Cooling	Free Cooling / Oil Cooling	Oil Cooling
Min. increment		deg.	0.001	0.001	0.001	0.001
Indexing Precision (A axis 0°~+90°)		sec.	20	20	20	20 (※1)
Repeatability		sec.	4	4	4	4
Clamping System : Pneumatic / Hydraulic		MPa	0.6 (Pne.)	0.6 (Pne.)	0.6 (Pne.)	3.5 (Hyd.)
Clamping Torque		N·m	310	450	450	3700
Servo Motor Type		-	DD Motor	DD Motor	FANUC DD Motor	DD Motor
Speed Reduction Ratio		-	Direct Drive	Direct Drive	Direct Drive	Direct Drive
Rated / Max. Speed		min^{-1}	150 / 200	200 / 300	200 / 300	80 / 210
Rated / Max. Cutting Torque		Nm	50 / 183	50 (124 Oil Cooling) / 183	57 (120 Oil Cooling) / 300	554 / 741
Allowable Inertia Load Capacity (Vertical)		$kg\text{-}m^2$	0.25	1.2	1.2	21 (Horizontal)
Allowable workpiece load (Dynamic)	Vertical (※1)	kg	30	100 (Rated Speed)	100 (Rated Speed)	-
	with support table	kg	70	100 (Rated Speed)	100 (Rated Speed)	-
	Horizontal	kg	-	-	-	-
	0° Horizontal	kg	-	-	-	400
	0°~90° Tilt (※1)	kg	-	-	-	-
Allowable Thrust Load (with Rotary Table Clamping)	F	N	8000	10000	10000	40000
	FxL	Nm	105	231	231	5000
	FxL	Nm	310	450	450	3700
Net Weight (D.D motor included)		kg	55	90	90	479
Electrical Specification						
Encoder		-	RENISHAW / HEIDENHAIN	RENISHAW / HEIDENHAIN	Fanuc aicz	HEIDENHAIN
Back EMF Voltage		Vrms/100rpm	67.2	67.2	-	125.6
Rotor Poles		-	44	44	28	66
Rated / Max. Current		Arms	4.3 / 22.5	4.3 / 22.5 (Free Cooling) 11.6 / 22.5 (Oil Cooling)	9.3 / 56.6	29.8 / 75.7 (Oil Cooling)
Power Rating		KW	1.0	1.0 / 2.6 (Chilled Water Cooling)	-	4.7

※1 : To further enhance positioning accuracy, higher-grade angle encoders are available as an upgrade. Please refer to page P78 for applicable specifications and corresponding accuracy.

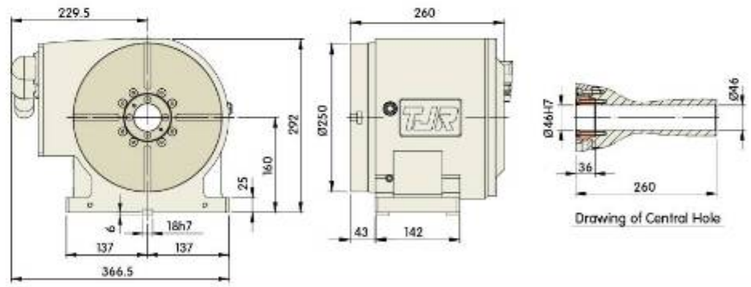
AD-170 (Taiwan-made DDM)



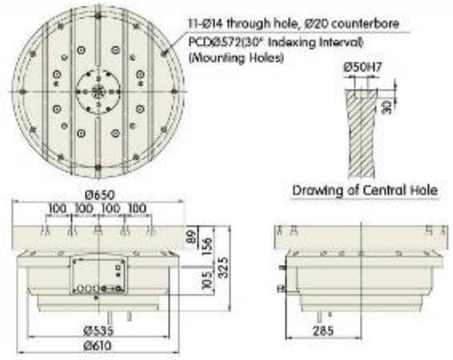
AD-261*i*B (Taiwan-made DDM)



AD-261*i*B-FA (FANUC OEM DDM)



iHHD-650 (FANUC OEM DDM & Taiwan-made DDM)



Direct Drive (5th Axis) Series

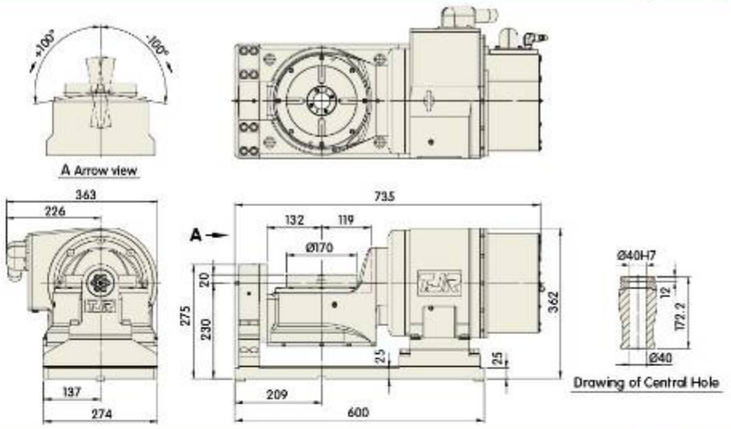
FAD - 170 F - AD261 iB - FA

- FAD: 5th Axis; Vertical & Horizontal
- AD: Direct Drive Motor with Pneumatic Brake (Min. Indexing Angle: 0.001°)
- HD: Direct Drive Motor with Hydraulic Brake (Min. Indexing Angle: 0.001°)
- 170: Table Diameter
- F: Enlarged Faceplate
- S: Dual-axis Single-arm Type
- AD261: Tilting Axis Type
- iB: Reinforced Type
- iD: Embedded Tilting Axis
- FA: FANUC Direct Drive Motor

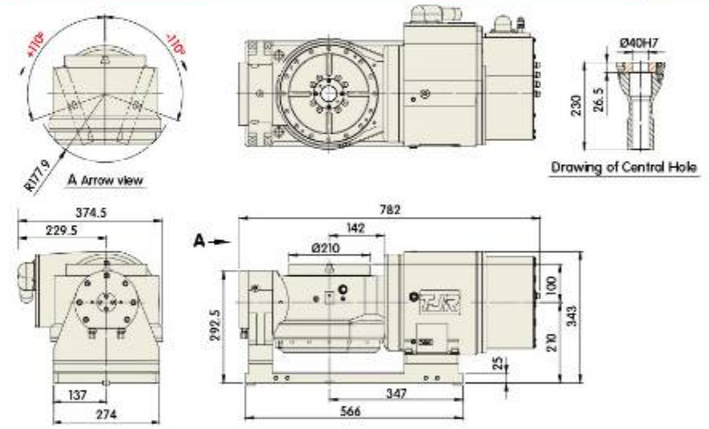
Item / Model	Unit	FAD-170F / 210F		FAD-211-AD261iB-FA		FHD-650S-iD650	
Table Diameter	mm	Ø170 / Ø210		Ø210		Ø650	
Inner Diameter of Mandrel Sleeve	mm	Ø40H7		Ø40H7		-	
Diameter of Center Through Hole	mm	Ø40		Ø40		-	
Center Heightt (Horizontal)	mm	250		310		-	
Table T-slot width	mm	12H7		12H7		18H7	
Guide block width	mm	18h7		18h7		-	
Axis	-	Rotation	Tilt ±100°	Rotation	Tilt ±100°	Rotation	Tilt ±110°
Transmission Mechanisms	-	Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive
Cooling System	-	Free Cooling	Free Cooling (Oil Cooling)	Free Cooling (Oil Cooling)	Free Cooling (Oil Cooling)	Oil Cooling	Oil Cooling
Min. increment	deg.	0.001	0.001	0.001	0.001	0.001	0.001
Indexing Precision (A axis 0°~+90°)	sec.	20	30	20	30	20 (※1)	30 (※1)
Repeatability	sec.	4	4	4	4	4	4
Clamping System : Pneumatic / Hydraulic	MPa	0.6 (Pne.)	0.6 (Pne.)	0.6 (Pne.)	0.6 (Pne.)	3.5 (Hyd.)	3.5 (Hyd.)
Clamping Torque	Nm	310	450	310	450	3700	5000
Servo Motor Type	-	DD Motor	DD Motor	FANUC DiS DD Motor	FANUC DiS DD Motor	DD Motor	DD Motor
Speed Reduction Ratio	-	Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive
Rated / Max. Speed	r.p.m	200 / 300	50 / 150	200 / 300	150 / -	80 / 210	50 / 50
Rated / Max. Cutting Torque	Nm	29 / 87	48 ($_{Cooling}^{Oil}$118) / 143	40 ($_{Cooling}^{Oil}$80) / 200	57 ($_{Cooling}^{Oil}$120) / 300	554 / 741	1890 / 2478
Allowable Inertia Load Capacity (0° Horizontal)	kg-m²	1.08		1.65		26.4	
Allowable workpiece load — 0° Horizontal	kg	50		50 (Rated Speed)		500	
Allowable workpiece load — 0°~90° Tilt	kg	30		30 (Rated Speed)		300	
Allowable Thrust Load (with Rotary Table Clamping) — F	N	4000		4000		25000	
Allowable Thrust Load (with Rotary Table Clamping) — FxL	Nm	450		450		5000	
Allowable Thrust Load (with Rotary Table Clamping) — FxL	Nm	310		310		3700	
Net Weight (D.D motor included)	kg	220 (Ø170) / 223 (Ø210)		237		1173	
Electrical Specification							
Encoder	-	RENISHAW or HEIDENHAIN		FANUC aiCZ Encoder		HEIDENHAIN	
Back EMF Voltage	Vrms/100rpm	Rotation : 38.8		-	-	125.6	
Rotor Poles	-	44		28 (Rotation)	28 (Tilt)	66	
Rated / Max. Current	Arms	4.25 / 12.75		10.2 / 28.3 (Rotation)	19.5 / 53.2 (Rotation)	29.8 / 75.7 (Oil Cooling)	
Power Rating	KW	0.77	0.76	-	-	4.7	10.1

※1 : To further enhance positioning accuracy, higher-grade angle encoders are available as an upgrade. Please refer to page P78 for applicable specifications and corresponding accuracy.

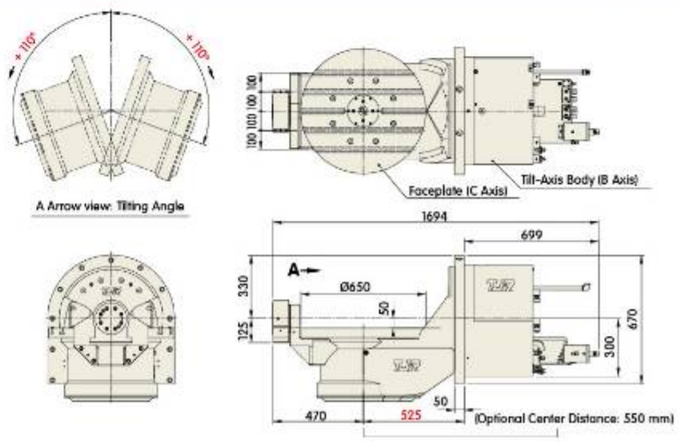
FAD-170F / 210F (Taiwan-made DDM)



FAD-211-AD261iB-FA (FANUC OEM DDM)



FHD-650S-iD650 (FANUC OEM DDM & Taiwan-made DDM)



Direct Drive (5th Axis) Series

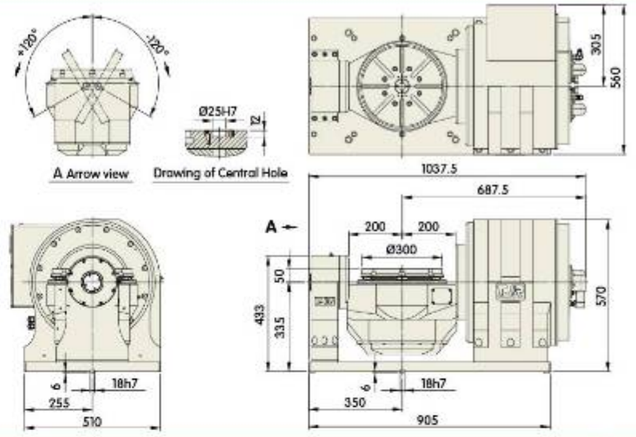
FAD - 300 F - HS - iD500 - 480

- FAD: 5th Axis
- Vertical & Horizontal
- Direct Drive Motor with Pneumatic Brake (Min. Indexing Angle: 0.001°)
- 300: Table Diameter
- F: Enlarged Faceplate
- HS: Ultra-High Speed (for direct-drive motor models)
- iD500: Tilting Axis Type
- 480: Distance from Table Center to Tilting Axis Mounting Surface

Item / Model		Unit	FAD-300F-HS		FAD-400HS-AD500i-420 / FAD-500FHS-AD500i-480	
Table Diameter		mm	Ø300		Ø400 / Ø500	
Inner Diameter of Mandrel Sleeve		mm	Ø25H7 x 12 deep (Diameter of table central hole)		Ø25H7 x 12 deep (Diameter of table central hole)	
Diameter of Center Through Hole		mm	-		-	
Center Height (Vertical)		mm	-		-	
Table Height (Horizontal)		mm	385		-	
Table T-slot width		mm	14H7		14H7	
Guide block width		mm	14h7		-	
Axis		-	Rotation	Tilt ±120°	Rotation	Tilt ±110°
Cooling System		-	Chilled Water Cooling	Chilled Water Cooling	Chilled Water Cooling	Chilled Water Cooling
Transmission Mechanisms		-	Direct Drive	Direct Drive	Direct Drive	Direct Drive
Min. increment		deg.	0.001	0.001	0.001	0.001
Indexing Precision (A axis 0°~+90°)		sec.	20	30	20	25
Repeatability		sec.	4	4	4	4
Clamping System : Pneumatic		MPa	0.6	0.6	0.6	0.6
Clamping Torque		Nm	430	730	850	2000
Servo Motor Type		-	DD Motor	DD Motor	DD Motor	DD Motor
Speed Reduction Ratio		-	Direct Drive	Direct Drive	Direct Drive	Direct Drive
Rated / Max. Speed		r.p.m	818 / 2000 (600VDC)	50 / 50	596 / 1200 (Ø400) or 596 / 800 (Ø500)	50 / 50
Rated / Max. Cutting Torque		Nm	113 / -	554 / 741	402 / -	1217 / 2120
Allowable Inertia Load Capacity (0° Horizontal)		kg-m²	1.2		4.0	
Allowable workpiece load	0° Horizontal	kg	100 (Rated Speed)		200 (balanced load)	
	0°~90° Tilt	kg	100 (Rated Speed)		100 (balanced load)	
Allowable Thrust Load (with Rotary Table Clamping)	F	N	-		15000	
	FxL	Nm	730		2000	
	FxL	Nm	430		850	
Net Weight (D.D motor included)		kg	730		882 (Ø400) / 914 (Ø500)	
Electrical Specification						
Encoder		-	RENISHAW or HEIDENHAIN		RENISHAW or HEIDENHAIN	
Back EMF Voltage		Vrms/100rpm	Rotation : 33		Rotation : 45.55	
Rotor Poles		-	22		44	
Rated / Max. Current		Arms	26.5 / 50.2		Rotation : 66.9 / 151	
Power Rating		KW	9.9	4.7	25.6	6.5

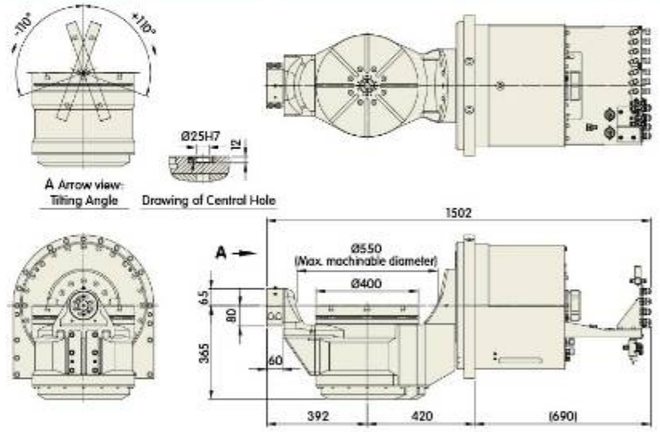
FAD-300F-HS (Taiwan-made DDM)

Equipped with a built-in pneumatic rotary joint (2 port)

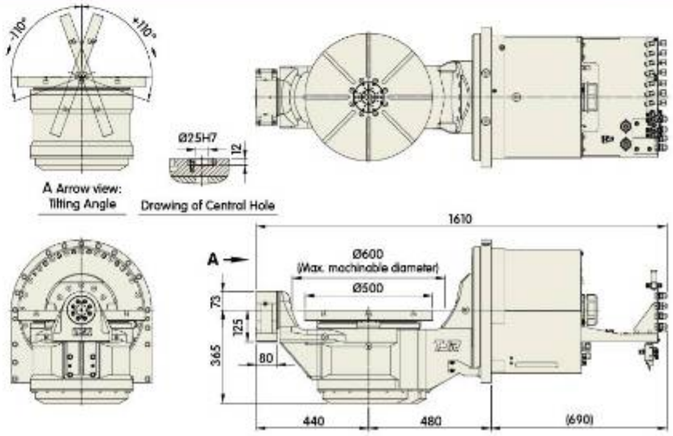


FAD-400HS-AD500i-420 (Taiwan-made DDM)

Equipped with a built-in pneumatic rotary joint (4 port)



FAD-500FHS-AD500i-480 (Taiwan-made DDM)



Support Table

Item / Model	Unit	RT-135	RT-170F	RTA-125	RTA-170 RTA-170H		RTA-210 / 250 RTA-210H / 250H		RTH-255	RTH-320	RTH-400A	RTH-400
Table Diameter	mm	Ø100	Ø170	Ø125	Ø170		Ø210 / Ø250		Ø255	Ø320	Ø400	Ø400
Inner Diameter of Mandrel Sleeve	mm	Ø35H7	Ø40H7	Ø35H7	Ø40H7		Ø40H7		Ø80H7	Ø120H7	Ø120H7	Ø120H7
Diameter of Center Through Hole	mm	Ø25	Ø40	Ø25	Ø40		Ø40		Ø80	Ø80	Ø80	Ø80
Center Height (Vertical)	mm	135	135	110	135		160		160	210	255	255
Table T-slot Width	mm	-	12H7	12H7	12H7		12H7		12H7	14H7	14H7	14H7
Guide block Width	mm	14h7	18h7	14h7	18h7		18h7		18h7	18h7	18h7	18h7
Clamping System : Pne. 0.6(6) / Hyd. 3.5(35)	MPa (kgf/cm²)	-	-	Pne.	Pne. (RTA-170)	Hyd. (RTA-170H)	Pne. (RTA-210 / 250)	Hyd. (RTA-210H / 250H)	Hyd.	Hyd.	Hyd.	Hyd.
Clamping torque	N·m (kgf·m)	- (-)	- (-)	128 (13)	304 (31)	540 (55)	304 (31)	540 (55)	687 (70)	1128 (115)	1128 (115)	1962 (200)
Allowable Workpiece Load	kg	50	50	50	75		75		100	150	150	250
Tailstock Total Weight	kg			18	29		35 / 38		57	83	106	164

RTA - 170 H

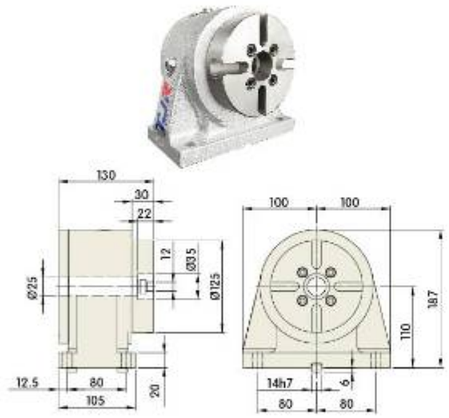
- H Hydraulic Brake Option
- A Economic
- F Enlarged Faceplate

Table Diameter

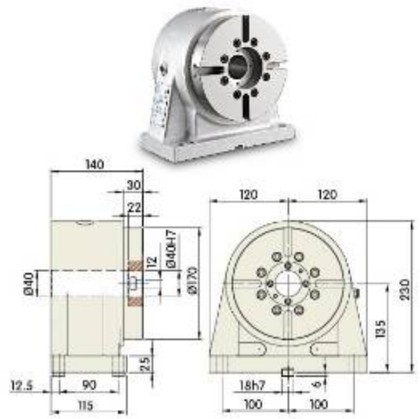
- A Pneumatic Brake
- H Hydraulic Brake
- Without Brake

Support Table

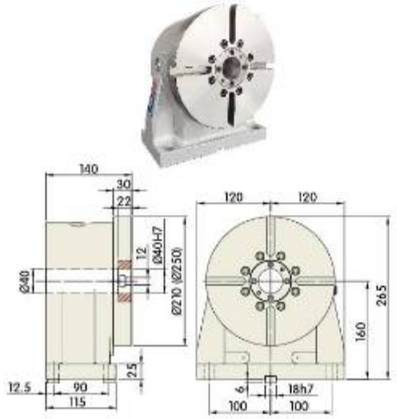
RTA-125 (Pneumatic 13 kgf·m)



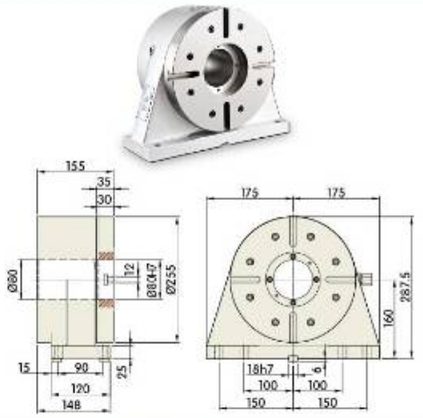
RTA-170 (Pneumatic 31 kgf·m)
RTA-170H (Hydraulic 55 kgf·m)



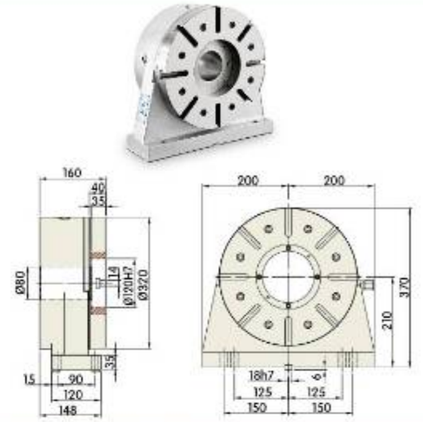
RTA-210 / 250 (Pneumatic 31 kgf·m)
RTA-210H / 250H (Hydraulic 55 kgf·m)



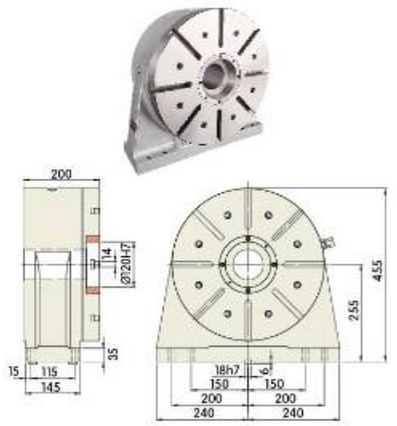
RTH-255 (Hydraulic 70 kgf·m)



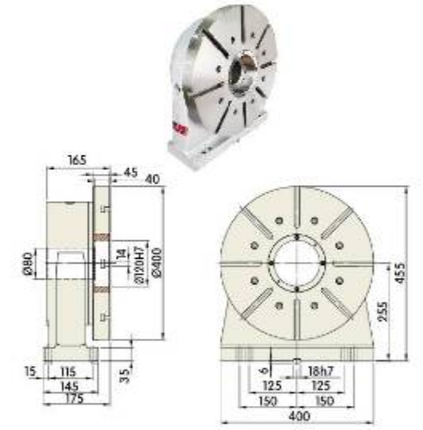
RTH-320 (Hydraulic 115 kgf·m)



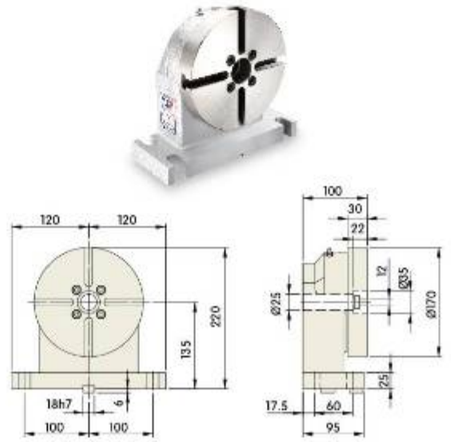
RTH-400 (Hydraulic)



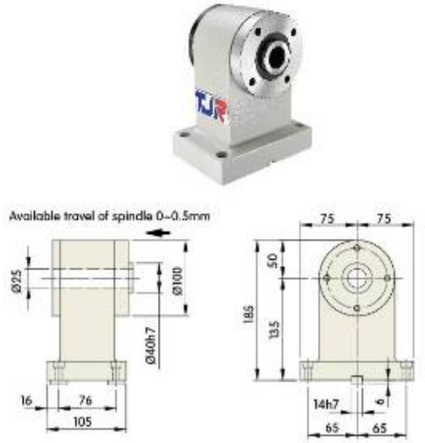
RTH-400A (Hydraulic 115 kgf·m)



RT-170F (Without Brake)



RT-135 (Without Brake)



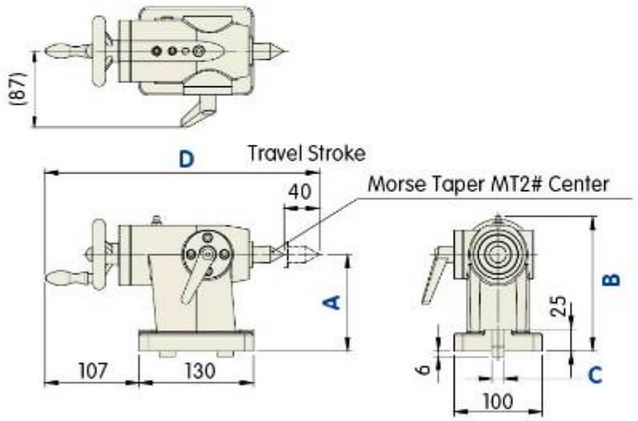
Manual Tailstock

TTJ Series (Manual) Unit : mm						
Model	A	B	C	D	Weight (kg)	Tailstock Center Specification
TTJ - 125A	110	155	14	312	8.5	MT2
TTJ - 125	110	156	14	435.5	21.5	MT4
TTJ - 170	135	181	18	435.5	23	MT4
TTJ - 210	160	206	18	435.5	25	MT4
TTJ - 255	160	206	18	435.5	25	MT4
TTJ - 320	210	256	18	435.5	29	MT4 / MT5
TTJ - 400	255	310	18	503.5	48	MT4 / MT5

ATTJ Series (Pneumatic) / HTTJ Series (Hydraulic) Unit : mm						
Model	A	B	C	D	Weight (kg)	Tailstock Center Specification
ATTJ - 125	110	156	14	376	21	MT4
ATTJ - 170	135	181	18	376	23	MT4
ATTJ - 210	160	206	18	376	25	MT4
HTTJ - 210	160	206	18	376	25	MT4
HTTJ - 255	160	206	18	376	25	MT4
HTTJ - 320	210	256	18	376	29	MT4 / MT5
HTTJ - 400	255	310	18	495	50	MT4 / MT5

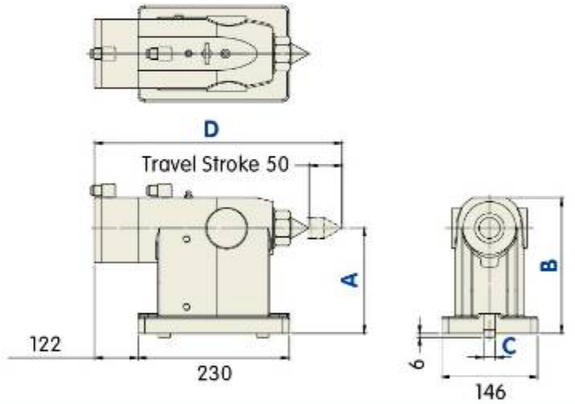
TTJ-125A (For light cutting) (Weight : 8.5 kg)

▲ TTJ-125A



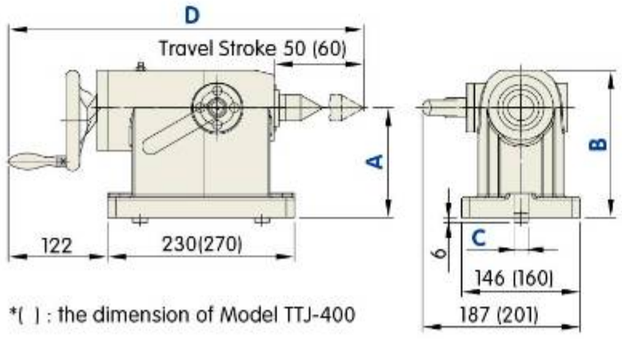
ATTJ

▲ ATTJ-210
(with Pneumatic switching valve)



TTJ

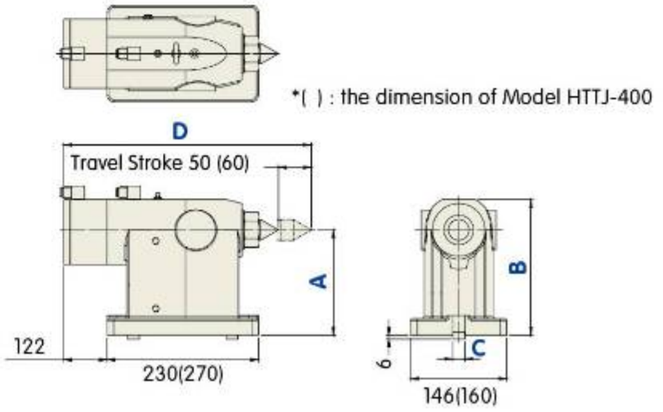
▲ TTJ-210
(with Replaceable Taper)



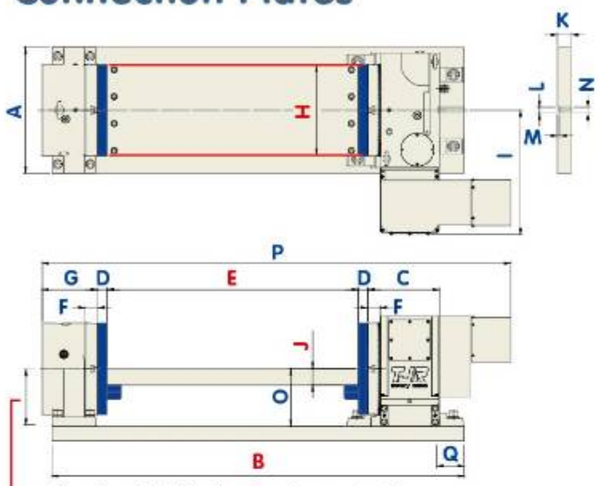
*( ) : the dimension of Model TTJ-400

HTTJ

▲ HTTJ-320
(with Hydraulic switching valve)

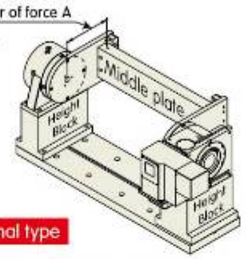


CNC Rotary Table + Support Table + Connection Plates



The plane of middle plate is at the same height as the center of rotary table (standard type)
(An exception: the plane of ARs-125 / RTA-125 middle plate is 5 mm higher than the center of rotary table)

Please keep us informed before ordering while the lever of force A exceeds the table radius



Optional type

(Example of workpiece installation)

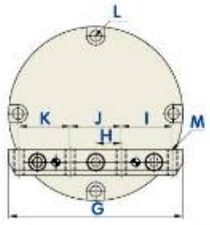
Specification

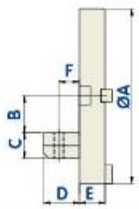
Model / Dimension	A	B ※	C	D	E ※	F	G	H ※	I	J ※	K	L	M	N	O	P	Q
ARs-125 / RTA-125	250	725	152	20	400	30	130	125	302	30	35	14	8	14	110	828	0
AR-170(H) / RTA-170(H)	300	911	152	25	500	30	140	170	336	35	40	18	8	18	135	947	69
AR-210(H) / RTA-210(H)	300	1011	152	25	600	30	140	200	336	40	40	18	8	18	160	1047	69
AR-250(H) / RTA-250(H)	300	1020	160	25	600	38	140	250	336	40	40	18	8	18	160	1055	69
HR-255N / RTH-255	350	1148	200	25	700	35	155	250	346	45	40	18	8	18	160	1305	69
HR-320N / RTH-320	400	1297	235	30	800	40	160	300	416	45	40	18	8	18	210	1460	69
HR-400N / RTH-400A	450	1455	250	30	900	45	175	400	457	45	40	18	8	18	255	1572	69

※ J is the thickness of the middle plate, recommended for manufacturing.
If the thickness is not enough, the middle plate will be easy to deform when twisted.

(Unit : mm)

Disc L-block





Specification (Unit : mm)

Model / Dimension	ØA	B	C	D	E	F	G	H	I	J	K	L	M
ARs-125	Ø125	25	25	25	20	12.5	120	27	25	54	25	M10	4-M8
AR-170(H)	Ø170	35	25	35	25	20	170	25	50	50	50	M10	4-M10
AR-210(H)	Ø210	40	35	40	25	20	200	27.5	55	55	55	M10	4-M10
HR-255	Ø250	45	40	40	25	20	250	37.5	75	75	75	M10	4-M10
HR-320	Ø320	45	45	45	30	22.5	300	42.5	85	85	85	M12	4-M12
HR-400	Ø400	45	45	45	30	22.5	400	75	80	150	80	M12	4-M12

Accessories Series

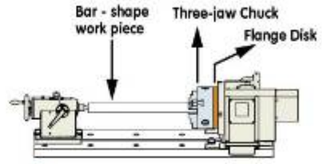
▲ Installation of Manual Three-jaw Chuck

▲ Three-jaw Chuck

▲ Flange Disk

▲ AIC Hydraulic Controller

▲ Installation of Hydraulic Three-jaw Chuck



▲ Diagram of Chuck Installation

▲ Single axis controller for Direct Drive Motor (DD SAC)

▲ Single axis controller (SAC) / Dual axis controller (DAC)

Specification Table of Manual Three-jaw Chuck

Specification Sheet of Manual 3-Jaw Chuck (For Reference)						Max. Bar Through Hole Diameter (Incl. Rotary Table & Chuck) (mm)	Chuck Adapter Plate Thickness (mm)
Applicable Rotary Table	Model & Dimension	I.D. Clamping Range (Standard Jaws)	O.D. Clamping Range (Reversed Jaws)	Manual Chuck Thickness (mm)	Chuck Through Hole Diameter (mm)		
ARs-125	SK-4	Ø3~Ø95	Ø29~Ø84	59	Ø24	Ø24	16
	SK-5	Ø3~Ø110	Ø33~Ø100	60	Ø32	Ø28	16
AR / RC-170	SK-6	Ø4~Ø160	Ø55~Ø150	67	Ø45	Ø30	16
	SK-7	Ø8~Ø180	Ø62~Ø170	76.5	Ø58	Ø30	16
AR / RC-210(H) AR / RC-250(H)	SK-7	Ø8~Ø180	Ø62~Ø170	76.5	Ø58	Ø30	16
	SK-8	Ø8~Ø190	Ø68~Ø180	76.5	Ø58	Ø30	16
HI / HR / RC-255 HI-320	SK-9	Ø11~Ø220	Ø70~Ø210	84	Ø70	Ø70	20
	SK-10	Ø12~Ø260	Ø80~Ø250	87	Ø89	Ø70	20
HR / RC-320	SK-9	Ø11~Ø220	Ø70~Ø210	84	Ø70	Ø70	20
	SK-10	Ø12~Ø260	Ø80~Ø250	87	Ø89	Ø89	20
HR / RC-400	SK-12	Ø15~Ø300	Ø90~Ø290	96	Ø105	Ø105	25
HI-400 HI-500	SK-12	Ø15~Ø300	Ø90~Ø290	96	Ø105	Ø70	25
	SK-16	Ø30~Ø380	Ø110~Ø350	122	Ø160	Ø70	25
HR-500	SK-16	Ø30~Ø380	Ø110~Ø360	122	Ø160	Ø160	25
	SK-20	Ø125~Ø460	Ø25~Ø480	140	Ø205	Ø205	25
HR-630	SK-20	Ø125~Ø460	Ø25~Ø480	140	Ø205	Ø205	25
	SK-25	Ø198~Ø601	Ø80~Ø630	140	Ø275	Ø270	28

※ Note: After the chuck grips the workpiece, if the protruding jaws cause the rotation radius to exceed the center height of the rotary table, a riser block must be installed to prevent the jaws from interfering with the machine table.

(Unit : mm)

Servo Motor Reference Table (Please use oil-proof motors)

The data in the CNC rotary table specification sheet are calculated based on FANUC αiF servo motors. If other brands of servo motors are employed, please refer to the below list in order to select the suitable non-Fanuc servo motors whose sizes and features are similar to assigned Fanuc αiF ones. But, the below list is not suitable for the rotary axis of FAR-100/160SN and FAR-170A. Please consult with TJR to confirm the model of servo motor while placing order.

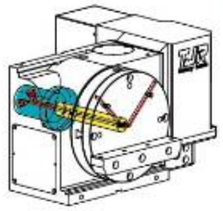
FANUC	αiF2 / 5000 αiS4 / 4000 βiS4 / 4000	αiF4 / 4000 αiS8 / 4000 βiS8 / 3000	αiF8 / 3000 αiS12 / 4000 βiS12 / 3000	αiF12 / 3000 αiS22 / 4000 βiS22 / 2000	αiF22 / 3000 αiS22 / 4000 αiS40 / 4000	αiF40 / 3000 αiS40 / 4000 αiS60 / 4000
MITSUBISHI	HF-75T / HG75T	HF-54T / HG104T	HG154S	HF-204S / HG204S	HF-354S / HG354S	HF-703S
YASKAWA	SGM7J-08A	SGM7G-09A	SGM7G-13A SGM7G-20A	SGM7G-30A	SGM7G-30A SGM7G-44A	SGM7G-44A
SIEMENS	1FK7042	1FK7060	1FK7063	1FK7083	1FK7101	1FK7103 / 1FK7105
HEIDENHAIN	QSY-96A	QSY-116C	QSY-116E QSY-130C	QSY-155B	QSY-155D	QSY-190D
SYNTEC	AM3-60	AM5-40	AM8-40 AM11-40	AM18-40	AM28-40	AM35-20(Ø35)

※ The servo motor models of the above list are actually categorized by motor sizes from the perspective of installation on the rotary tables. However, please do check the compatibility of servo motor based on the specification of NC control on the machining center.

※ Please employ higher torque motor while using connection plates and fixtures with support table.

Accessories Series

Air Hydraulic Booster Unit :
Timing for applications
1.Use hydraulic brake rotary table
2. Use hydraulic brake rotary table
+ manual tailstock



Application diagram – rotary joint
pneumatic / hydraulic distributor

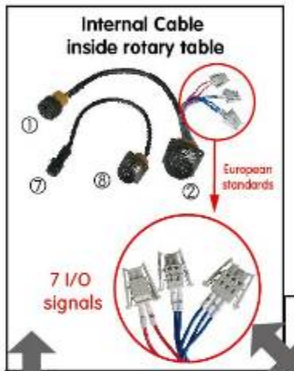
When mounting pneumatic/hydraulic fixtures, please use rotary joint and disc L-blocks equipped with air/oil holes so that the air/fluid can go through the center-through hole to avoid intertwining while the rotary table spins.
(The standard operating pressure is below 70 MPa. Please inform us in advance if the pressure exceeds this range.)

Hydraulic Power Unit :
Timing for applications
1. Use hydraulic brake rotary table
+ rotary tailstock
2. Use hydraulic brake rotary table
+ rotary tailstock
+ hydraulic fixtures

Pneumatic / Hydraulic rotary joint :
(can be equipped with 2, 4, 6, 8 holes)

2 holes :
1 input ; 1 output

8 holes :
4 input ; 4 output



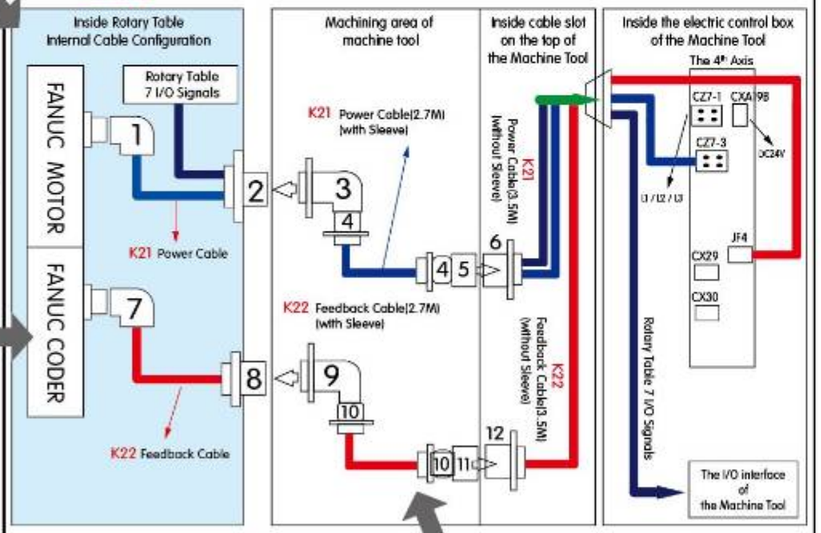
Cable assembly we provide (Standard)

Separated wiring of adaption and connection for power cable and feedback cable respectively.

※ As shown in the right diagram, internal cables include:
No. ① - ② power cable
No. ⑦ - ⑧ feedback cable
7 I/O signals for rotary table

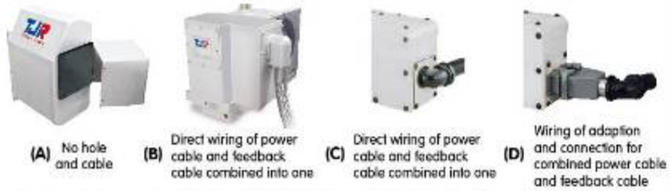
※ TJR can also provide :
③ - ⑥ and ⑨ - ⑫ cables

TJR Power (& Signal) & Feedback Cable Diagram



Cable assembly the customer provide (Optional)

Cables located inside machining area of machine tool.



Feedback cable

Power (& signal) cable

If you prefer any one of the above-mentioned types of cable assembly, we will provide only the rotary table [7 (air brake) / 5 (oil brake)] I/O signal connector. You need to prepare the rest.

Take Heidenhain for example

	Heidenhain model of angle encoder	Fargor model of angle encoder	Angle encoder accuracy	Rotary table accuracy C axis	Rotary table accuracy A axis
Absolute	**ECN-2190F** (FANUC)	H2AF-23-D87	± 10"	-	Within 30"
	ECN-2190M (MITSUBISHI)	H2AM-23-D87			
	ECN-2110 (SIEMENS)	H2AD-23-D87			
		H2AD-23-D87+EC-PA-DQ1 don't need SMC-20			
	RCN-2391F (FANUC)	H2AF-26-D90	± 4"	Within 10"	Within 20"
	RCN-2391M (MITSUBISHI)	H2AM-26-D90			
	RCN-2311 (SIEMENS)	H2AS-26-D90			
		H2AD-26-D90+EC-PA-DQ1 don't need SMC-20			
	RCN-2591F (FANUC)	H2AF-28-D90-2	± 2"	Within 8"	Within 15"
	RCN-2591M (MITSUBISHI)	H2AM-28-D90-2			
	RCN-2511 (SIEMENS)	H2AS-26-D90-2			
		H2AD-26-D90-2+EC-PA-DQ1 don't need SMC-20			
	RCN-8391F (FANUC)	H2-AF-29-D2001100-2	± 2"	Within 6"	-
	RCN-8391M (MITSUBISHI)	H2-AM-29-D2001100-2			
	RCN-8311 (SIEMENS)	H2-AS-29-D2001100-2			

※ Not any rotary table can be equipped with above-mentioned angle encoder. Please check the compatibility between rotary table and angle encoder with TJR after rotary table model is confirmed.

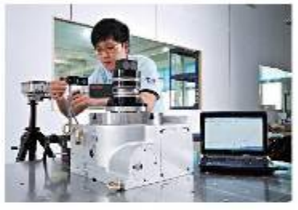
Diagram of angle encoder installation

Angle encoder

Accuracy comparison sheet while using angle encoder

❶ Spindle bearings strength

TJR	Others	Others
Radial & axial preloading bearing	Taper roller bearing	Cross roller bearing
Large diameter	Small diameter	Small diameter
Suitable for for heavy-duty cutting in the horizontal and vertical directions.	Only suitable for light cutting	Only suitable for light cutting



Laser measuring equipment
(Indexing precision testing)

❷ Advanced inspection facilities

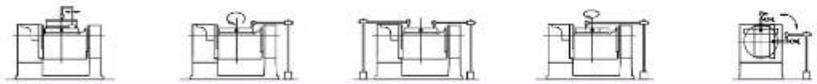
3D measuring equipment
Geometry precision testing

Geometry Precision Test Standard of Rotary Table (Unit : mm)

AR / HR
(single axis)

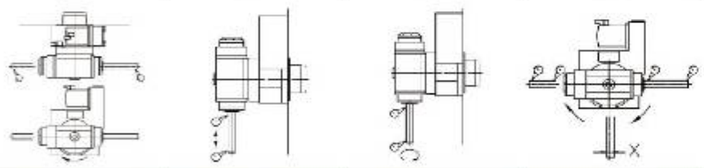
Inspection Items	Flatness of table top (Lower in the center) Total Length	Runout of table top during rotation Per 300 mm	Parallelism of table top to frame bottom Total Length	Runout of table central hole Front	Perpendicularity of table top to frame bottom Total Length	Perpendicularity of table top to frame bottom guide blocks Total Length	Indexing Precision (Measured by optical instrument) Accumulative tolerance	Parallelism of centerline between rotary table and tailstock frame bottom guide blocks	Height Difference between Center Line of Rotary Table and that of tailstock (tailstock center line should be higher)
ARs-125	0.01	0.015	0.02	0.01	0.01	0.02	40"	0.02	0.02
AR-170(H) / 210(H) / 250(H)	0.01	0.015	0.02	0.01	0.01	0.02	20"	0.02	0.02
AR-170(H)B/210(H)B/250(H)B	0.01	0.015	-	0.01	0.01	0.02	20"	0.02	0.02
HR-255 / 320 / 400	0.015	0.015	0.02	0.01	0.01	0.02	15"	0.02	0.02
HR-500	0.02	0.015	0.02	0.01	0.02	0.02	15"	0.02	0.02
HR-630 / HR-800	0.03	0.02	0.03	0.01	0.03	0.03	15"	0.02	0.02

FHR
(dual axes)



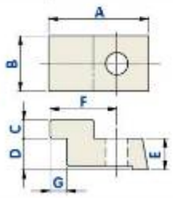
Inspection Items	Flatness of table top (Lower in the center) Total Length	Runout of table top during rotation Per 300 mm	Parallelism of table top to frame bottom Total Length	Runout of table central hole Front	Parallelism between center line of tilting axis and bottom Total Length	Tilt axis - indexing precison (seconds)	Rotary axis - indexing precision (seconds) Accumulative tolerance	Parallelism between rotary table and positioning block of bottom
FARs-125	0.015	0.015	0.02	0.01	0.02	60"	40"	0.02
FAR-170 / 210	0.015	0.015	0.02	0.01	0.02	60"	20"	0.02
FHR-255	0.015	0.015	0.02	0.01	0.02	60"	15"	0.02
FHR-320 / 400	0.015	0.015	0.02	0.01	0.02	60"	15"	0.02
FHR-500	0.02	0.015	0.02	0.01	0.02	60"	15"	0.02
FHR-650	0.02	0.015	0.02	0.01	0.02	60"	15"	0.02
MTHR-255	0.02	0.02	0.02	0.01	0.02	-	15"	0.02

HRC
Swivel (Spindle) Head

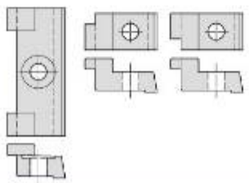


Inspection Items	pindle center to mounting surface parallelism (+90° to –90°) Per 150 mm	Spindle center to mounting surface parallelism (0°) Per 150 mm	Spindle runout at spindle center Per 150 mm	Offset between spindle center and rotary axis center (value X)	Cumulative indexing accuracy (measured by optical instrument) Accumulative tolerance
HRC-400SP	0.022	0.01	0.01	0.008	20"

Standard Clamping device ▶



Examples of special clamping device ▶



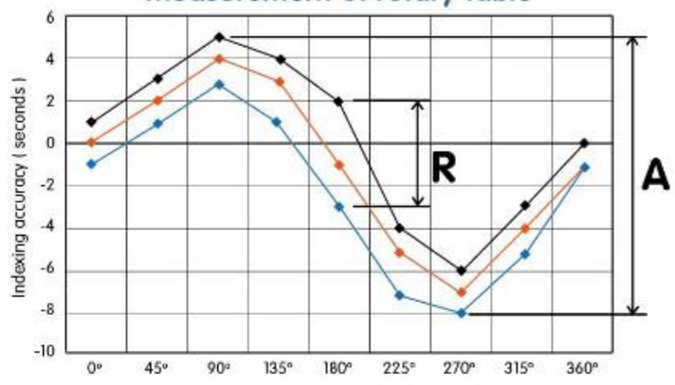
▼ Specification Clamping device

Model	Standard Clamping Device A	B	C	D	E	F	G
ARs-125	63	35	12	20	20	43	11
AR-170(H)	78	40	12	25	22	49	11
AR-210(H)	78	40	12	25	22	49	11
AR-255H	78	40	12	25	22	49	11
HR-255	78	40	12	25	22	49	11
HR-320	78	40	15	35	25	49	11

Model	Standard Clamping Device A	B	C	D	E	F	G
HR-400	78	40	15	35	25	49	11
HR-500	63	60	18	40	58	33	18
HR-630	63	60	18	40	58	33	18
HI-255	78	40	12	25	22	49	11
HI-320	78	40	15	35	25	49	11
HI-500	63	60	18	40	58	33	18

※ When using clamping devices other than the above, please use suitable ones that are available in the market or order tailor-made ones from TJR. (Unit : mm)

Rotary angle measurement of rotary table



The measurement of ISO 230-2

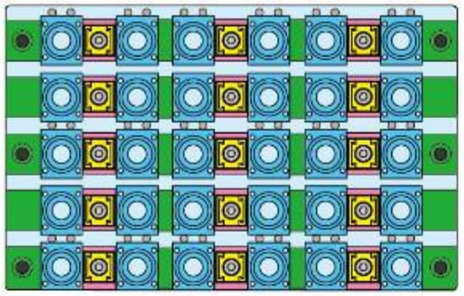
- **Indexing Precision**
  Rotate the axis in one direction and measure all the indexing values at equally divided and fixed angles (including at least 0°, 90°, 180°, 270°). Take the summary of the maximum positive difference and the maximum negative difference (absolute value) of all the measured values.

- **Repeatability**
  Repeatedly rotate the axis in one direction and measure all the indexing values at equally divided and fixed angles (including at least 0°, 90°, 180°, 270°). Get the maximum differences of all measured indexing values at each fixed angle. Then, pick the biggest values from the measured maximum differences of all angles.

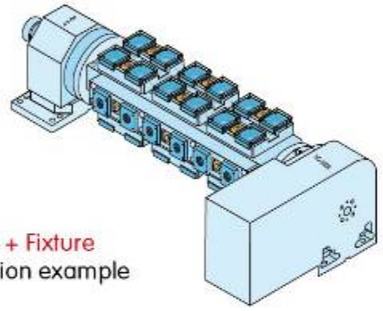
Optional Accessories

Optional Accessories

Little King Kong Vise

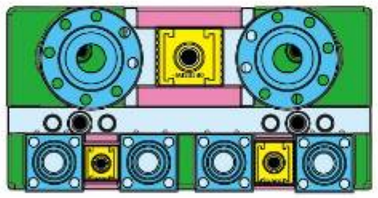


▶ Little King Kong Vise
An example of fixing round work-piece.



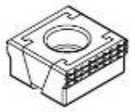
▶ The 4th axis + Fixture
An application example

- Blue: Work-piece
- Yellow: Little King Kong Vise
- Green:Work-holding fixture
- Pink: Vise directional fixture



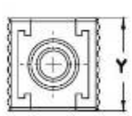
▶ Zero point clamping system is available.
High-precision exchange of clamping devices, fixtures and work-pieces within seconds.

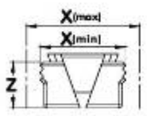
LK-A


LK-B

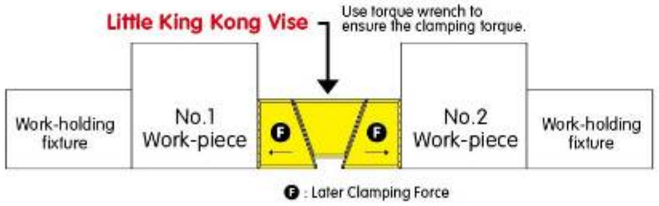
LK-C

Tool Fixture for Lathe Turrent





Unit : mm



Vise specification	Model	Vise dimension X (mm) Min.	X (mm) Rated	X (mm) Max.	Y (mm)	Z (mm)	Suitable Screw	F Clamping Force (KN)	Surface Hardness (HRC)
	M062525	23	25	26	25	12	M6*16	18	48-52
	M083030	27	30	31	30	15	M8*20	25	48-52
	M104040	36	40	42	40	20	M10*25	45	48-52
	M124540	40	45	47	40	22	M12*30	65	48-52
	M166060	54	60	63	60	29	M16*40	110	48-52

Zero Point Clamping System

A modern solution to replace traditional T-slot tables

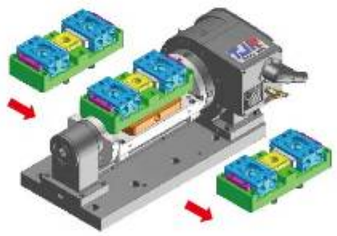
Zero point clamping system is the modern alternative to the conventional T-slot table: Drastically reduces the setup times and increases your machine capacity.

Make your own work-holding fixture by easily employing TJR Vise and TJR zero point clamping system on the fixture plate of 4th axis or the faceplate of 4th & 5th axes.
Holes on the zero point clamping system are used as sockets for clamping studs.
(For detailed dimensions, please contact us.)

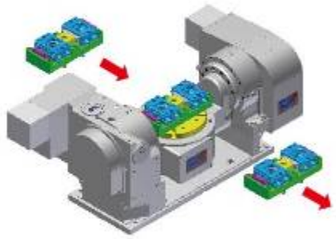
Benefit Analysis
Benefits after the introduction of the mold change system

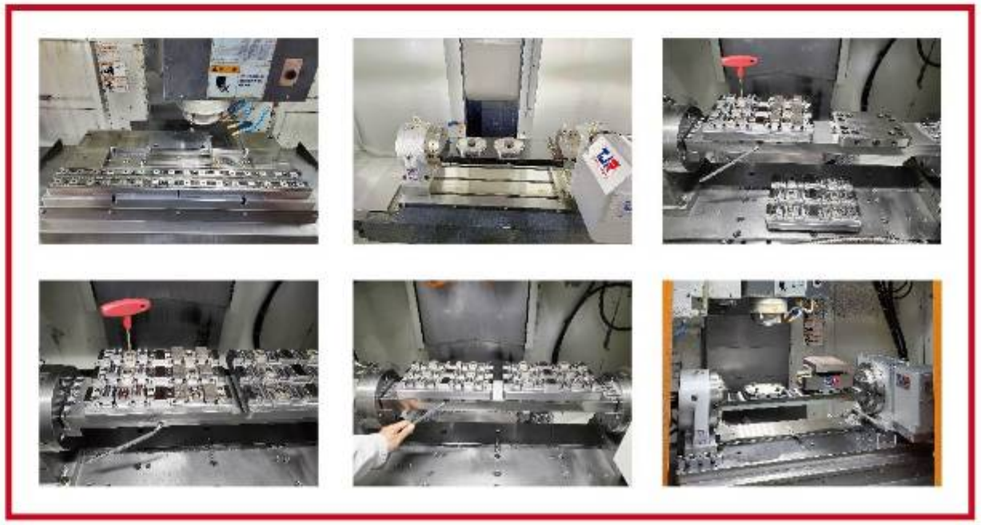
			Before	Afrer
Work time per week	400 hours (2400 mins)	Number of mold changes	2 hours (120 mins)	5 min
Number of mold changes	4 times	Saving time per year	460 mins	
Saving time per year	23,920 mins	NT$ 6 for one minute	NT$143,520	

Work-holding fixture can be changed quickly and accurately (across all machines).


The illustration of the applicaton for the 4th axis + connection plate

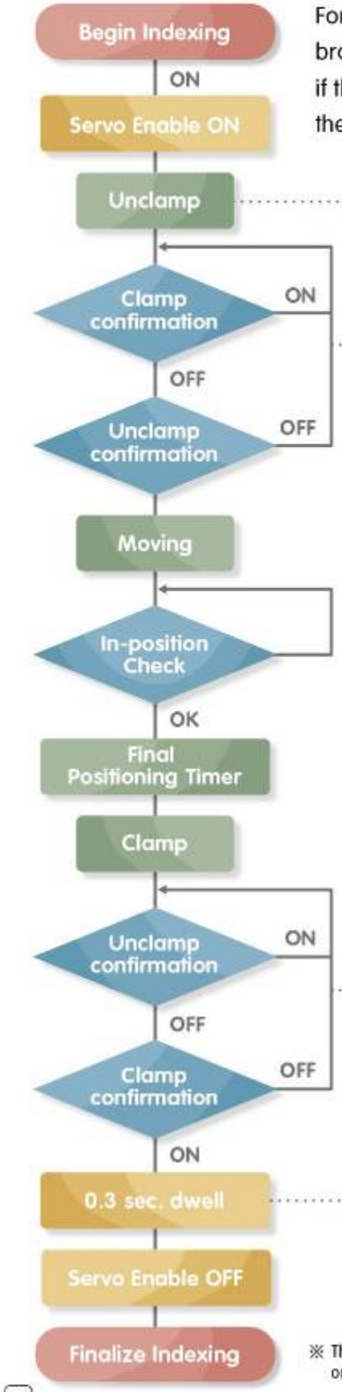
The zero point clamping system on the connection plate


The illustration of the application for the zero point clamping system on the faceplate of the 4th & 5th axes



Flow Chat of the Additional Axis Control

Applicable to the RC and FRC series models



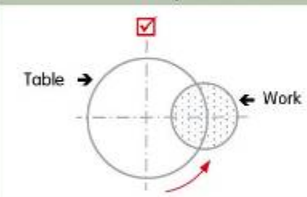
For precise positioning under an unbalanced load while the mechanical brake clamps, it's recommended to keep the servo enable **ON**. However, if the electric current consistently flows at more than 70%, please turn **OFF** the servo enable.

Please specify brake control specifications when ordering, including:

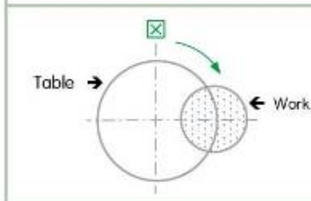
- Type of solenoid valve (DC24V, AC110V, or AC220V)
- Motion of solenoid valve for clamp (ON: Camp or OFF: Clamp)

Guideline of Unclamp timer:
Approx. 0.5 sec. But, this duration may vary depending on the type of brake and the layout of the piping.

Please move the unbalanced load all the way up to the destination position.



It is recommended to move the unbalanced object upward through a rotating motion to reach the target position.



It is not recommended to move the unbalanced object downward in a rotating motion to the target position.

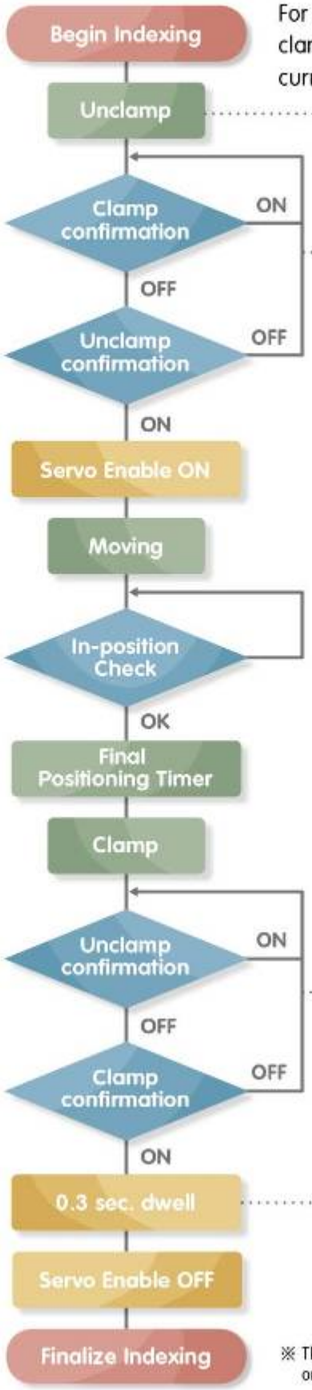
Guideline of Clamp timer:
Approx. 0.3 sec. But, this duration may vary depending on the type of brake and the layout of the piping.

For both hydraulic clamping systems and clamping systems that use an air-hydraulic booster, a dwell time of 0.3 seconds after clamp confirmation is necessary. The timer value can be set as a parameter during configuration.

※ The above dwell time is our recommended time, but the actual required dwell time may vary depending on different operating conditions and environments of rotary table.

Flow Chat of the Additional Axis Control

Applicable to the AR, HR, HI, FAR, and FHR series



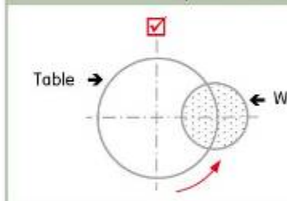
For precise positioning under an unbalanced load while the mechanical brake clamps, it's recommended to keep the servo enable **ON**. However, if the electric current consistently flows at more than 70%, please turn **OFF** the servo enable.

Please specify brake control specifications when ordering, including:

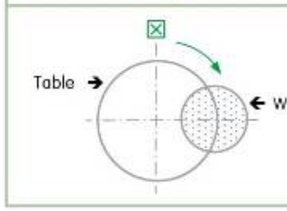
- Type of solenoid valve (DC24V, AC110V, or AC220V)
- Motion of solenoid valve for clamp (ON: Camp or OFF: Clamp)

Guideline of Unclamp timer:
Approx. 0.5 sec. But, this duration may vary depending on the type of brake and the layout of the piping.

Please move the unbalanced load all the way up to the destination position.



It is recommended to move the unbalanced object upward through a rotating motion to reach the target position.



It is not recommended to move the unbalanced object downward in a rotating motion to the target position.

Guideline of Clamp timer:
Approx. 0.3 sec. But, this duration may vary depending on the type of brake and the layout of the piping.

For both hydraulic clamping systems and clamping systems that use an air-hydraulic booster, a dwell time of 0.3 seconds after clamp confirmation is necessary. The timer value can be set as a parameter during configuration.

※ The above dwell time is our recommended time, but the actual required dwell time may vary depending on different operating conditions and environments of rotary table.

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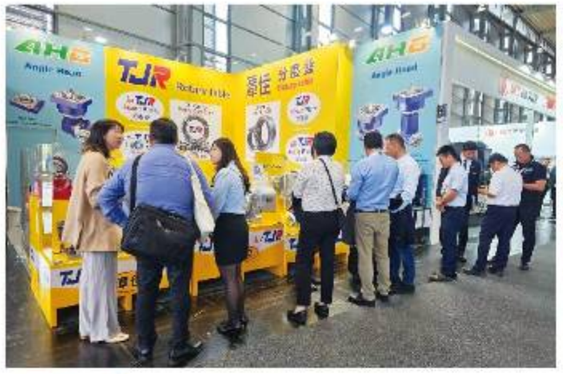

▲ EMO Hannover, Germany

▲ TIMTOS Taipei, Taiwan

▲ JIMTOF Tokyo, Japan

▲ TES Shenzhen, China

▲ CME Shanghai, China

Examples of applications: TJR can work with all brands of control systems and machines.