

ELECTRIC TAPPING MACHINE MR-16 (U) (Universal head)



OPERATION MANUAL

SPECIFICATION:

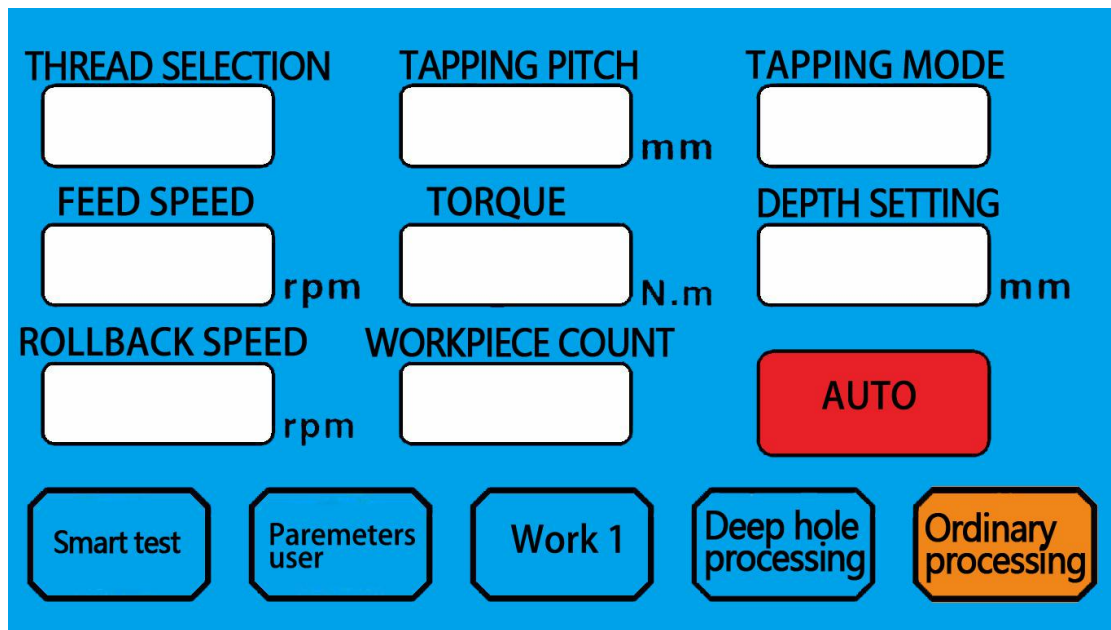
ITEM	MR-16 (U)
VOLTAGE	220V/50HZ
POWER	600W 312RPM
TAP RANGE	M3-M16
ISO COLLET	M3,M4,M5,M6-8,M10,M12,M14,M16
WEIGHT	30KG

NOTICE: Must read the instructions before operating the machine

Functional Specification of MR-16 Servo Tapping Machine System

I. Function brief

1. Common processing: common tapping parameters setting and selection.



The image shows a control panel for tapping parameters on a blue background. It includes the following elements:

- THREAD SELECTION:** A white rectangular input field.
- TAPPING PITCH:** A white rectangular input field followed by the unit "mm".
- TAPPING MODE:** A white rectangular input field.
- FEED SPEED:** A white rectangular input field followed by the unit "rpm".
- TORQUE:** A white rectangular input field followed by the unit "N.m".
- DEPTH SETTING:** A white rectangular input field followed by the unit "mm".
- ROLLBACK SPEED:** A white rectangular input field followed by the unit "rpm".
- WORKPIECE COUNT:** A white rectangular input field.
- AUTO:** A red rectangular button.
- Smart test:** A blue octagonal button.
- Parements user:** A blue octagonal button.
- Work 1:** A blue octagonal button.
- Deep hole processing:** A blue octagonal button.
- Ordinary processing:** An orange octagonal button.

(1) Thread selection: click to select the size of screw teeth to tap, and you can switch between metric and inch screw teeth.

(2) Tapping pitch: select screw teeth and automatically generate the corresponding standard screw pitch value. You can also click to enter the required pitch value, the screw tooth selection automatically becomes a custom, 0.001~10 mm.

(3) Tapping mode: click to switch to the required tapping mode.

- High speed mode: suitable for tapping small screw teeth, according to the set speed of high speed tapping.
- Smart tracking: suitable for tapping large screw teeth, automatically adjust the speed according to tapping load.
- Torque protection: work according to the recommended or set torque protection value to protect the tap continuously.

(4) Feed speed: the rotation speed of tapping timing head, click to enter the appropriate tapping speed value.

(5) Torque protection value: automatically open when tapping mode is selected as torque, and run according to the recommended value or self-set value of the selected screw tooth to protect the tap.

(6) Depth setting: click to enter the tapping depth for processing, ranging from 0.01 to 500 mm.

(7) Rollback speed: click the rotation speed of the rollback speed to enter the appropriate value of the rollback speed.

(8) Work-piece count: record the times of automatic processing, click to select zero.

(9) Manual / Auto: click to switch to manual or auto processing state.

2. Deep hole processing: deep hole processing (also known as intermittent tapping) parameter setting and selection

The image shows a control panel for deep hole processing with the following elements:

- THREAD SELECTION**: Input field
- TAPPING PITCH**: Input field with unit **mm**
- TAPPING MODE**: Input field
- FEED SPEED**: Input field with unit **rpm**
- TORQUE**: Input field with unit **N.m**
- DEPTH SETTING**: Input field with unit **mm**
- ROLLBACK SPEED**: Input field with unit **rpm**
- WORKPIECE COUNT**: Input field
- AUTO**: Red button
- Smart test**: Blue button
- Parameters user**: Blue button
- Work 1**: Blue button
- Deep hole processing**: Orange button
- Ordinary Processing**: Blue button

(1) Thread selection: same as common processing

(2) Tapping pitch: same as common processing

(3) Tapping mode: same as common processing

(4) Feed speed: Click to set the feed depth for a single time. The feed depth should be less than the set value of depth, in mm.

(5) Torque:same as common processing

(6) Depth setting:click to set the feed depth for a single time. The feed depth should be less than the set value of depth, in mm.

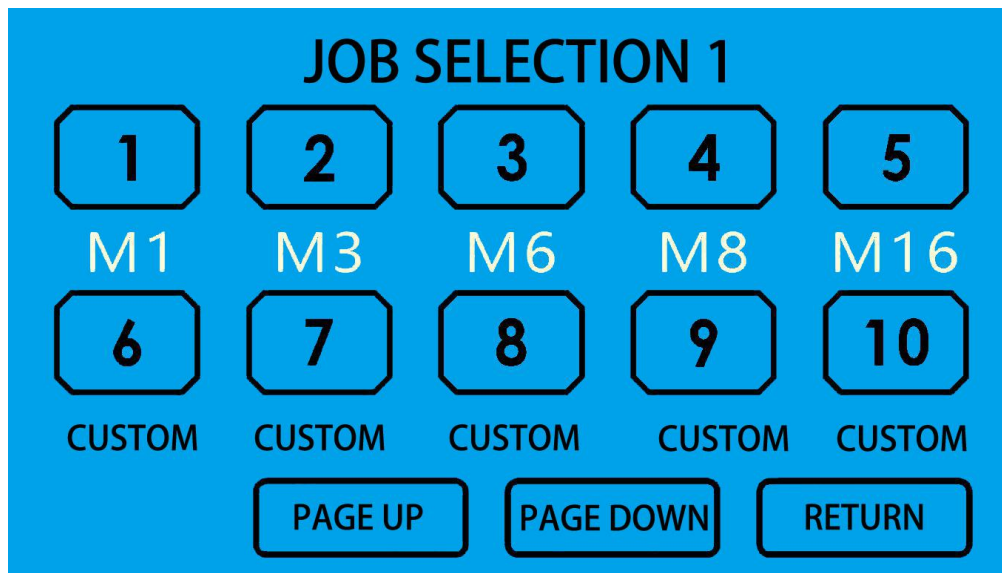
(7) Rollback speed:Click to set the rebounding depth for a single time. The rebounding depth should be less than the feed depth value, in mm.

(8) Workpiece count: same as common processing

(9) Tapping depth: same as common processing

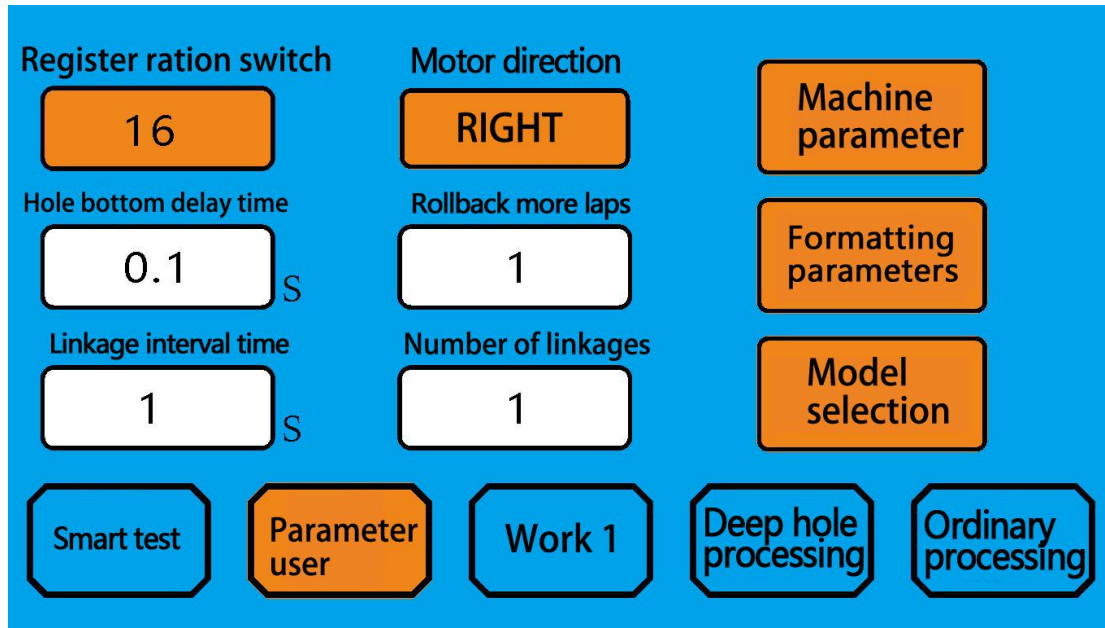
(10) Manual/Auto: same as common processing

3. programming : To record and call different work-piece processing parameters



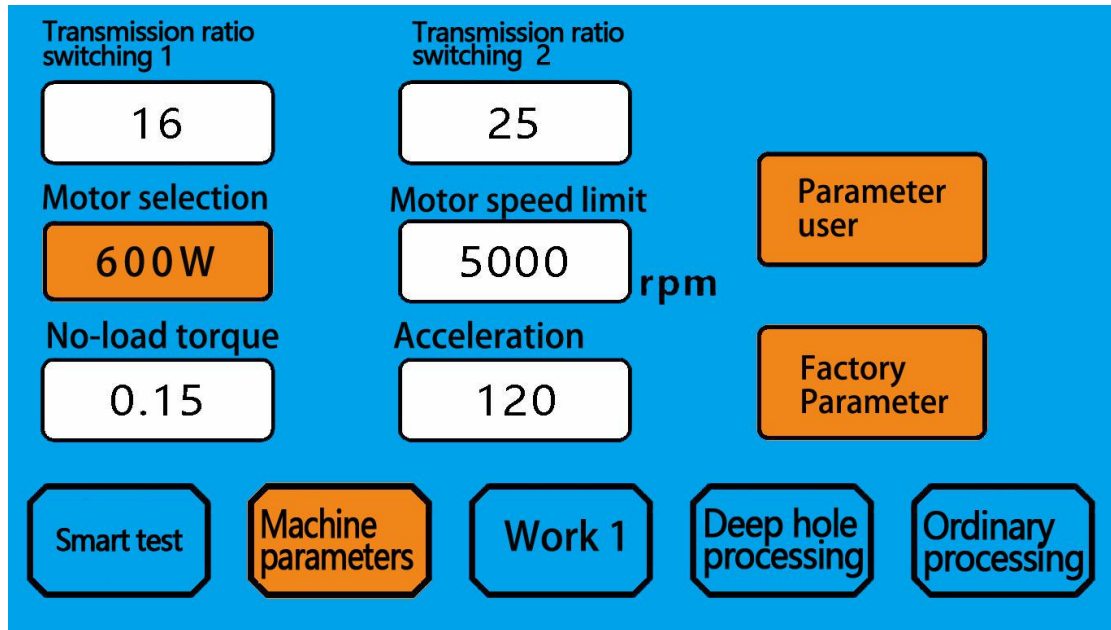
Selecting an work-piece and changing the processing parameters are automatically saved and run according to this set of parameters the next time. A total of 20 work-piece can be saved.

II. Parameters user: Setting of user parameters



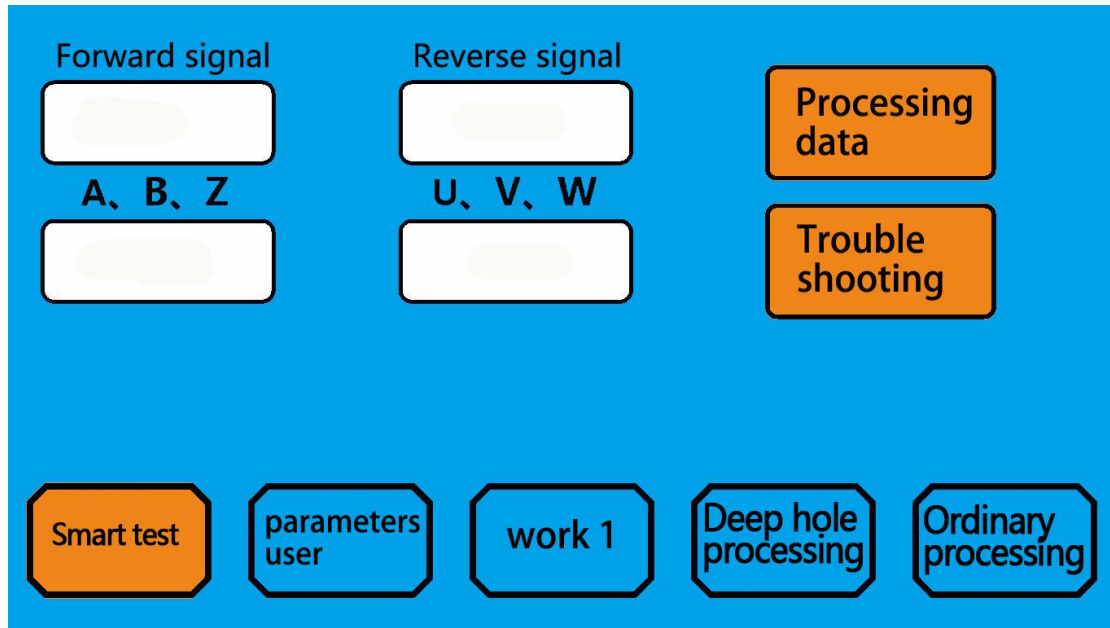
- (1) Register ratio switch: click to switch the two different register ratios that have been set.
- (2) Motor direction: Switch the Motor direction of the motor left and right, click to switch when reverse the screw teeth.
- (3) Hole bottom delay time: set the time to stay at the hole bottom after tapping reaches a predetermined depth, ranging from 0 to 10 seconds.
- (4) Rollback more laps number: for the rollback more laps, the tap can exit the work-piece, the number of rollback is more than the number of feed, ranging from 0 to 10.
- (5) Linkage interval time: set the waiting time between two linkage.
- (6) Number of linkages: set continuous action times.
- (7) Machine parameters: set all kinds of parameters related to machinery. It is not allowed to change freely after setting according to machine type.
- (8) Formatting parameters: click and select "yes" to format all parameters, be cautious!
- (9) Model selection: if the factory parameters are selected as tapping machine, the system can be selected as a tightening machine through this button.

III. Machine parameters: set machine parameters



- (1) Register ratio switching 1: set register ratio1. (For speed reducer with two - speed ratio)
- (2) Register ratio switching 2: set register ratio 2. (For speed reducer with two - speed ratio)
- (3) Motor selection: Select the motor model corresponding to the current system.
- (4) Motor speed limit: set the maximum running speed of the motor.
- (5) No-load torque: click to enter the no-load torque setting interface, and load after the test is completed. (interface and operation are the same as the no-load torque in the function of the tightening machine)
- (6) Parameters user: click return user parameters
- (7) Factory parameters: click and enter the password to enter the factory parameters interface. (the interface and operation are the same as the factory parameters in the function of the tightening machine)

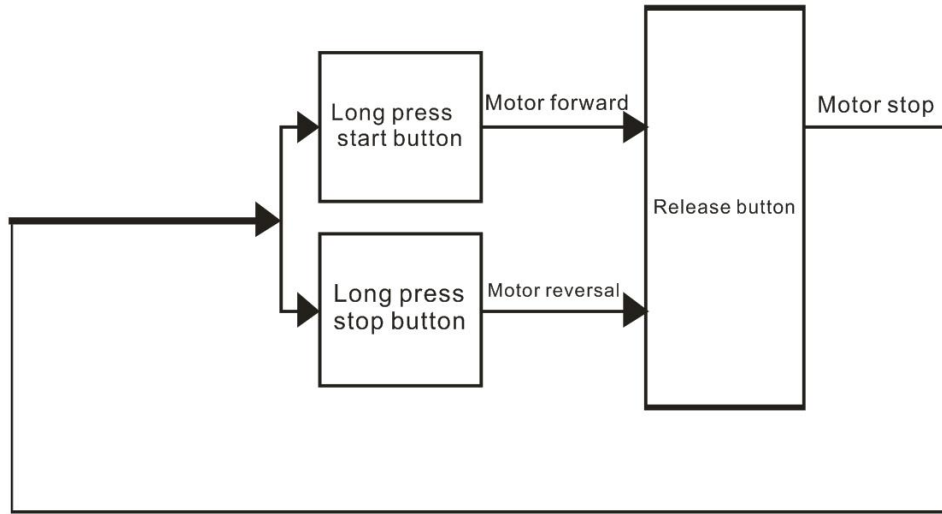
IV. Smart testing: cable testing and troubleshooting



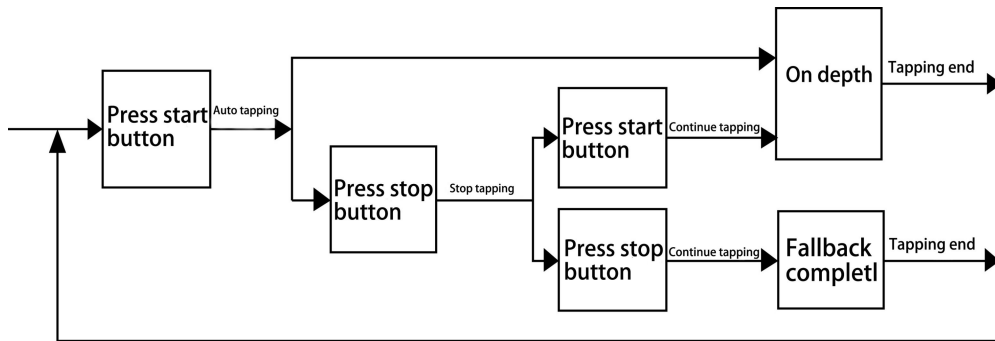
- (1) Forward signal: press the handle forward button, it should display normally. If it is always closed, check the handle line.
- (2) Reverse signal: press the handle reverse button, it should display normally. If it is always closed, check the handle line.
- (3) A.B.Z test: turn the tapping chuck by hand to show that the data should circulate between 0 and 2000. If the data does not move or is out of range, check the motor encoder line.
- (4) U.V.W test: turn the tapping chuck by hand and the display data should be cycled again between 1 and 6. If the data does not move or 0 and 7 appear, check the motor encoder line.
- (5) Processing data: record the last processing data, including torque, speed and curve.
- (6) Troubleshooting: fault alarm and handling method.

V. Tapping Machine Workflow

Hand



Auto



VI. Alarm Code

Fault Code	Error Description	Inspection and Handling Method
E-001	Over current protection	1. Check if the motor encoder line, power line contact is good 2. Check if mechanical parts are stuck 3. Check tool and center hole 4. Replace the screw tap
E-002	Over voltage protection	Input voltage is too high, or drive voltage is detected abnormal.
E-004	Over current protection (IO port detection)	Drive current detects persistent anomaly
E-008	Encoder anomaly	Check whether the encoder line is connected properly.
E-010	Position overshoot	The motor is not in position according to the set mode. Check whether the motor power line and encoder line are connected well, whether the UVW phase is missing, and whether the speed setting is too high.
E-037	Encoder mutation error	There is interference in the encoder signal
E-012	Torque protection	Check if the torque setting is reasonable
E-312		Check tool and center hole
E-300		Wrong speed setting
		Reset the speed or deceleration ratio or maximum speed

VII. Driver Interface

CN1: AC 220V power supply input.

CN2: Motor power line output.

CN3: Motor encoder output.

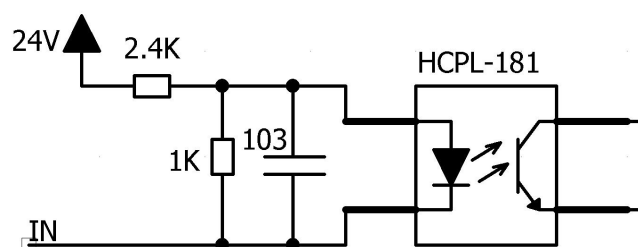
CN4: Communication signal line input.

CN5: Control signal line input (active low level)

IN1 Manual state: forward turn Automatic state: start

IN2 Manual state: reverse Automatic state: pause

Input control signal interface diagram

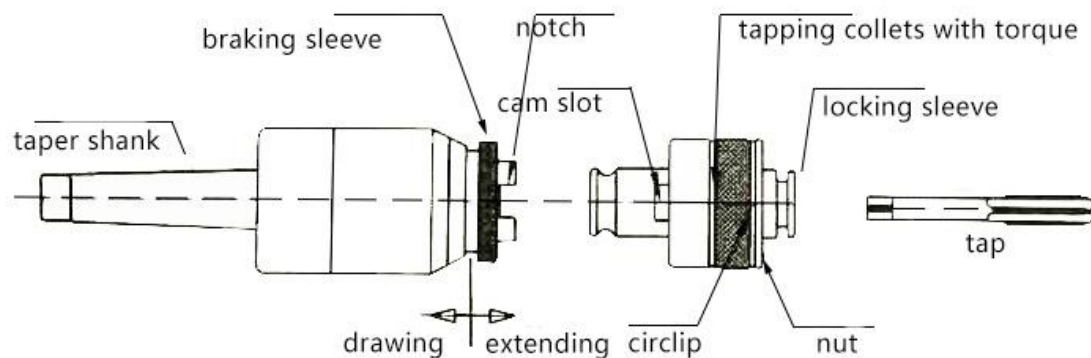


VIII. Tapping Collets Operation Instruction

1. Usage

This device is consisted of a tapping collet and its chuck holder. Its chuck holder posses with compensating device for thread pitch; Tapping collets are assigned to the protection device of overloading torque, to avoid tap breaking in use. In order to get the different release torques for taps with different diameter, just to adjust the nuts on chuck holder. This device is most applicable to tap holes on drilling, lathing, boring, CNC machine center and tapping special machines.

2. The outer structure sketch



3. Chuck holder connects with the main spindle

Carefully clean the outer taper part of shank holder and the main spindle, slightly hit the end face of chuck holder with rubber hammer after the assembling, to make sure of the reliable connection (It's unnecessary to hit if the automatic shank holder in use).

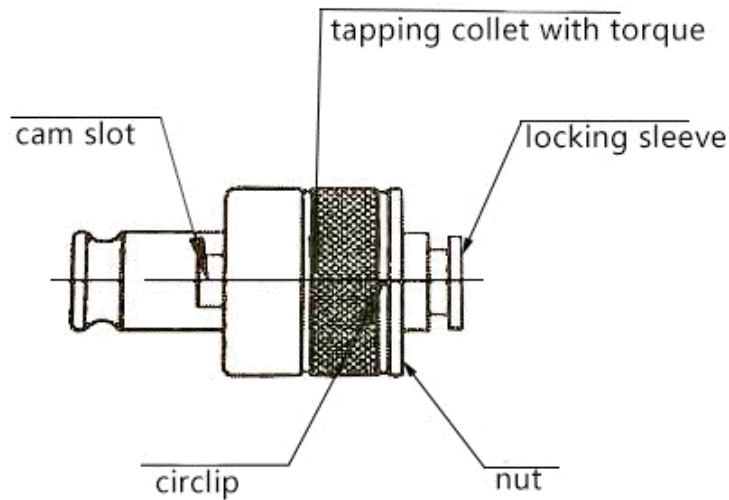
4. Installation and dismantle the tapping collets with its chuck holders.

To install the tap and tap collets, first make sure that the size of tap must be exactly same as its of tapping collets, then put the tap into the collets after pushing down the locking sleeve; To dismantle the tap, just to push down the lock function again and the tap will automatically be released.

5. The connection between the Tapping Collets and its chuck holders.

Push down the braking sleeve, then to put the tapping collet into the top center of chuck holder;
Attention to make sure their cam slot is directed to the notch. The tapping collet will be automatically locked when the braking sleeve goes down.

6. Adjustment of Torque on Tapping Collets.



Owing to different material to be tapped and over a long time use, the torque of tapping collets will be not as sharp as before. In order to adjust its torque, to take down the circlip and rotate the tapping collets clockwise with spanner, then its torque will become increased accordingly; if to rotate anti-clockwise, its torque will be decreased. When its torque is adjusted well, make sure that its small hole is in line with the slot of the nuts and assemble the circlip, it can be used again.
Attention to make clean after use.

IX. Adjust The Head's Angle



Loose the screw can adjust the tapping angle. After adjusting, please lock the screw.

Metric Tap Model	Coarse Thread	Fine Thread
M3	0.5	0.35
M3.5	0.6	0.35
M4	0.7	0.5
M4.5	0.75	0.5
M5	0.8	0.5
M6	1	0.5/0.75
M7	1	0.5
M8	1.25	0.5/0.75/1
M10	1.5	0.5/1/1.25
M12	1.75	1/1.25/1.5
M14	2	1/1.25/1.5
M16	2	1/1.5
M18	2.5	1/1.5/2
M20	2.5	1/1.5/2
M22	2.5	1/1.5
M24	3	1/1.5/2
M27	3	1.5/2
M30	3.5	1.5
M33	3.5	1.5/2/3
M36	4	1.5/3
M39	4	3
M42	4.5	1.5
M45	4.5	

Metric Screw And Drill Diameter Chart											
screw	M1	M2	M3	M4	M5	M6	M8	M10	M12	M14	M16
Drill Dia mm	0.75	1.6	2.5	3.3	4.2	5	6.8	8.5	10.2	12	14
screw	M18	M20	M22	M24	M27	M30	M33	M36	M39	M42	M45
Drill Dia mm	15.5	17.5	19.5	21	24	26.5	29.5	32	35	37.5	40.5
screw	M48	M52	M56	M60	M64	M68	M72	M76	M80	—	—
Drill Dia mm	43	47	50.5	54.5	58	62	66	70	74	—	—

More machine.....



Drill bit sharpener
MR-20G(Ø3-Ø20)



Drill bit sharpener
MR-G3 (Ø3-Ø32)



End mill sharpener
MR-X1 (Ø4-Ø14)



Spiral end mill sharpener
MR-X6A (Ø4-Ø20)



Screw tap sharpener
MR-Y3C (M5-M20)



Cutting machine
MR-X4 (Ø4-Ø14)



Side chamfer
MR-R300



Universal cutter grinder
MR-U3



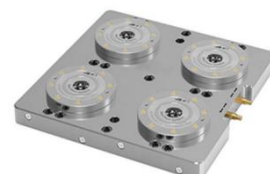
Electric tapping machine
MR-DS16(M3-M16)



Hydraulic vice



Magnetic chuck & Lifter



Zero position