MD/MDE
MD4x90° / MDE8x45°
- Automatic indexing power chuck.
  Hydraulic feed.
  E.13 - E.32

MADV
Manual self-centering power chuck.
  E.35 - E.38

MADT
Semi-automatic self-centering power chuck.
- Draw rod clamping and manual indexing.
  E.39 - E.42

EQUIPMENT
Adapter plate for machine spindle.
  E.43
INDEXING CHUCKS

Mechanical indexing power chucks are used by industries to work pieces with faces at right and axial angles using single loading and blockage.

To work these profiles with traditional chucks every side needs a new clamping and a replacement: this causes precision and time lost.

The complete working with indexing power chucks is made with only a rotation clamping, during rotation and indexing processes the workpiece is closed in the chuck.

With the automatic version it is happened without stopping chuck on the lathe.

Initially conceived to work crosspieces and valve bodies, over the last years constant improvements have been made to their construction and quality; this has led to a vaster application in the automobile, aeronautical, industrial components and in all industrial sectors needing to work pieces with a crossed axis in a single hold.

Automatic and semi-automatic indexing chucks are a good alternative to expensive special working machine or transfert machine with rotary table.

Manual power chucks are the best solution to work small series, prototype and equipment on lathe and on milling machines.

Very precise references and technical specifications adopted permit fast retooling of the power chuck between jobs and fast mounting and dismounting on the machine.

With this catalog we would help our customers giving all the technical informations and specifications they need about our indexing power chucks production.

Special chucks can be designed and manufactured on customer request.

This photo shows some pieces which can be worked with indexing chucks
Selection of the chuck

Workpiece sample scheme

For a first chuck selection it is most important to check the following dimensions:
- \( G \) = the biggest diagonal of the raw component.
- \( C \) = clamping area thickness + jaws thickness.

In the first following drawing it is represented a valve clamped in an automatic not self-centering power chuck MD.

In the second one a manual self-centering power chuck MADT (or MADV).

Other parameters to select the chuck are:
- profile shape
- working
- workpiece loading
- clamping stroke
- tools accessibility
- rotation speeds
- clamping force
- and other.

The experience of Tecnomors technicians can help you in this decision process; please contact them for every information you need.

MD

MADT

MD 300 power chuck jaws set photograph
MD is an automatic indexing chuck with hydraulic clamping and indexing. It is not self-centering.

Tecnomors is backed in the design and manufacture of MD indexing chucks by its exceptional experience matured in the construction of this specific product over last thirty years.

Unique MD Tecnomors automatic indexing chucks features:

1.1 - made in special high resistance hardened and cementing 60HRC steel UNI18NiCrMo5, to maintain a high degree of precision, reliability and quality.

1.2 - indexing movement (Tecnomors patent) simple and reliable with only a piston that works in rotation and in clamping position. Indexing precision ± 1°.

1.3 - guiding system of clamping and of the indexing mechanism.
1.4 - seals against contamination by coolant, chips or dust.

1.5 - constant and long lasting precision.

1.6 - easy installation to the machine.

1.7 - the chuck is connected to the rear rotating oil manifold thanks to the nest tube.
This tube system is supplied with grinding hardened steel clutches.

1.8 - centrifugal force compensation system for parts susceptible to deformations to obtain an higher productivity performance.

1.9 - indexing control device.

1.10 - a good automation system level grows using robot to load and to unload workpieces.

tecnomors co-operates with anthropomorphic and/or cartesian robot manufacturers also in grippers supply.

Other MD automatic indexing chuck technical features:

2.1 - indexing process is possible also in rotation position to allow a fast indexing position passage. The rotation speed has to be not at the maximum power.

2.2 - indexing takes, with position control, approx. 2-4 seconds per 90°, depending on the size of the chuck.

2.3 - very simple hydraulic system based on 2 indexing mechanism ports, 2 clamping pistons ports and 1 manifold drain.

2.4 - the chucking piston is connected to a safety device and keeps the working securely gripped in the jaws even in the event of a complete pressure loss.

2.5 - constant and automatic control of the indexing position and other working parameters by a separate electronic interface (not supplied) by the machine CNC.

2.6 - Optional:
- Retractable Locator see (pag. E.30)

2.7 - Complete “Operating Manual” is supplied with the chuck.

2.8 - The MDE 8x45° chucks are supplied on request.

Photo shaped grips for special chuck
Indexing system 4x90°

A single hydraulic piston, feeded from the rotating oil manifold and the tube nest, rotates and locks the indexing gear.

This device (tecnomors patent) with only one piston guarantees higher reliability than the two synchronized pistons that usually the other constructors apply.

The main parts of this system are the following:
- **A** = indexing shaft (driven by two pre-loaded cylindrical roller lines and supported by an axial ball bearing).
- **A1** = indexing square.
- **A2** = rotation square.
- **B** = indexing and rotation piston.
- **B1** = finger
- **B2** = locater

The drawings show the different phases of the rotation and of the indexing:
- **phase 1** = indexed chuck (pressure in P1).
- **phase 2** = turning operation (pressure in P2): piston B advances and the finger B1 moves the rotation square A2.
- **phase 3** = rotation phase completion:
  - Piston B advances, finger B1 acts on rotation square A2 and determines a rotation of 80°.
- **phase 4** = indexing (pressure in P1): piston B reverses the movement, locater B2 act on indexing square A1 and completes the rotation of 10° indexing and blocking the head pin.

Indexing precision = 0°01’.

Clamping system

The main parts of the locking device are:
- the closing piston C
- the pilot operated non-return valve A
- the compensating piston B.

The rotation shaft enclosed in the clamping piston is driven by two pre-loaded cylindrical roller lines and is supported by an axial ball bearing.

Work system:
- pressure in P3 = clamping piston C.
- pressure in P4 = The oil drives the non-return valve A opening that allows piston C opening.

Safety device:
The chucking piston C is connected to a non-return valve A and keeps the workpiece securely gripped in the jaws even in the event of a complete pressure lost.

Centrifugal force compensation system:
This hydraulic device cuts the clamping power loss that comes to the centrifugal force of the piston and the jaw mass.

During rotation, the pressure created by the clamping piston B and valve action A increases the pressure on the circuit P3 and compensates for the loss of gripping force due to the centrifugal force.
MD 4x90° • Technical specifications

Chuck size MD 160 - MD 425

Chuck body in an only piece made in hardened and cementating steel UNI 18NiCrMo5.

Chuck size MD 500 - MD 550

MD 500 and MD 550 indexing chucks body is build with a modular technique to assembling hardened steel parts with electro-welding supports.
Dimentions - 4x90°

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- Note:
  All the dimentions are in millimeter.
* For K level in relation to the spindle nose see “Adapter Plate” section.

Specifications

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- Note:
  • Important: max. rotation speed you find in the schedule can be reached only at max. operating pressure using a clamping jaw with a mass not exceeding the values shown for each model.
  If the pressure is not at the max. power or the clamping jaw mass exceeds the schedule values you have to reduce the speed.
  • It is advisable to reduce speed about 30 - 50 % during indexing and rotation operations to avoid vibrations due to the unbalance of masses while the piece is in an intermediate position.
  • All dimentions are indicative and subject to variation for technical upgrading. We reserve the right to make alterations without prior notification.
The rear hydraulic unit has:
- steel nest tube connected to the chuck.
- rotating oil manifold.
- indexing position control
- chuck connection rod.

Letters C1=C2=C3=C4 are the lever movements control system in comparison to the 4 proximity switches.

See the paragraph “Indexing position control system” for details.
The indexing position control system allows to check the right working of the 4 indexing position interfaced with the machine.

So it is possible to verify if the angular position obtained corresponds to that set by the CNC program.

The drawing shows the complete indexing position control mechanism.

The main parts of this mechanism are the followings:

- Front indexing position control (chuck body side):
  Cam "H" drives the rotary movement of the indexing shaft in a rectilinear movement that through lever "I" is put off the central cursor "K".
  Spring "L" assures the right power and the return of the cursor.

- Rear indexing position control (rotating oil manifold side):
  The rectilinear movement of the rod "F", connected to the cursor "K" through the screw "J", is amplified (relation 4.5/1) with a special device "E" fixed to the rotating oil manifold "C".

The movement produced to the lever "A" is brought up on the pin "D" by nr. 4 proximity switches "G" fixed on the plate "B".

The originally of the indexing position control by tecnomors is the amplify mechanism over described.

This solution make the device sensitiver giving the right identification of the 4 indexing position and recognising the eventually anomalies (incomplete rotation).

The 4 proximity switches are schematized in the technical drawing; the 4 proximity switches giving signals corresponding to the 4 indexing positions:

- C1 = pos. 0° - 360°
- C2 = pos. 90°
- C3 = pos. 180°
- C4 = pos. 270°

Hydraulic and connecting schemes, technical data and assembly instructions included in the present catalogue are supplied as information only. Please, refer to "Operating Instruction Manual - Indexing power chucks MD" for correct instruction about setting, connections, functioning, use, maintenance and safety indications.
Suggested hydraulic circuit specifications:
- tank with approx. 60 - 100 l capacity.
- system pressure minimum 60 bar.
- variable pump capacity of 16 lt/min.
- accumulator capacity 0.7 - 1.1 litres, pre-load with 20 bar
- double oil filtering.
- nr. 2 electro-valves systems with double solenoid with fixed positions.
- nr. 2 pressure reducing valves for indexing and clamping systems.
- nr. 3 pressure switch: (nr.1 for clamping, nr.2 for indexing circuit)

Optionals:
- hydraulic oil cooling system.
- double pressure clamping drive for parts susceptible to deformations (contact our technical staff for information to unlock the pilot operated non-return valve incorporated).

Note:
- The hydraulic oil manifold system of the chuck shall be ventilate.
- Hydraulic seat valves are very sensitive against contamination (recommended filtering BS5540/4 10 µm).
- OIL type HLP32 / DIN51524 - ISOVG32 / DIN51519 (32 cSt at 40°C).
- Only clean and recommended oil shall be used.
- Therefore an oil change every six months is recommended.
Indexing system 8x45°

A couple of hydraulic pistons, fed from the rotating oil manifold and the tube nest, rotate and lock the indexing gear.

This device uses two pistons, designed synchronized, which guarantee high reliability in the positioning and gentleness motion.

The main parts of this system are the following:

- A = indexing shaft (driven by two pre-loaded cylindrical roller lines and supported by an axial ball bearing).
- A1 = rotation and indexing square
- B = rotation and indexing piston at 90°
- B1 = indexing plane at 90°
- C = rotation and indexing piston at 45°
- C1 = indexing plane at 45°

The drawing shows the different phases of the rotation and of the indexing:

- phase 1 = indexed chuck at 90° (pressure in P1)
- phase 2 = turning and indexing operations at 45°, piston C advances (pressure in P2)
- phase 3 = C1 plane acts on A1 square, it turns and index at 45°
- phase 4 = turning and indexing operation at 90°, piston B advance (pressure in P1) B1 plane acts on A1 square, it turns and index at 90° (increase of 45° from the previous position).

Indexing precision = 0°01’.

Clamping system

The main parts of the locking device are:

- the closing piston C
- the pilot operated non-return valve A
- the compensating piston B.

The rotation shaft enclosed in the clamping piston is driven by two pre-loaded cylindrical roller lines and is supported by an axial ball bearing.

Work system:

- pressure in P3 = clamping piston C.
- pressure in P4 = The oil drives the non-return valve A opening that allows piston C opening.

Safety device:

The chucking piston C is connected to a non-return valve A and keeps the workpiece securely gripped in the jaws even in the event of a complete pressure loss.

Centrifugal force compensation system:

This hydraulic device cuts the clamping power loss that comes to the centrifugal force of the piston and the jaw mass.

During rotation, the pressure created by the clamping piston B and valve action A increases the pressure on the circuit P3 and compensates for the loss of gripping force due to the centrifugal force.
Chuck size MDE 160 - MDE300

Chuck body in an only piece made in hardened and cementating steel UNI 18NiCrMo5.
### Dimention - 8x45°

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* For K level in relation to the spindle nose see “Adapter Plate” section.

### Specifications

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* Note:
- All the dimensions are in millimeter.
- Important: max. rotation speed you find in the schedule can be reached only at max. operating pressure using a clamping jaw with a mass not exceeding the values shown for each model.
- If the pressure is not at the max. power or the clamping jaw mass exceeds the schedule values you have to reduce the speed.
- It is advisable to reduce speed about 30 - 50 % during indexing and rotation operations to avoid vibrations due to the unbalance of masses while the piece is in an intermediate position.
- All dimensions are indicative and subject to variation for technical upgrading. We reserve the right to make alterations without prior notification.
MDE 8x45° • Rear rotating oil manifold

MDE Rotating oil manifold - 8x45°

- The rear hydraulic unit has:
  - steel nest tube connected to the chuck.
  - rotating oil manifold.
  - indexing position control
  - chuck connection rod.

- Letters C1=C2=C3=C4=C5=C6=C7=C8 are the lever movements control system in comparison to the 8 proximity switches.

- See the paragraph “Indexing position control system” for details.

<table>
<thead>
<tr>
<th>Code</th>
<th>Ø A</th>
<th>Ø B</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDE 160</td>
<td>44</td>
<td>8</td>
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<tr>
<td>MDE 205 - MDE 235</td>
<td>50</td>
<td>8</td>
</tr>
<tr>
<td>MDE 260 - MDE 300</td>
<td>55</td>
<td>10</td>
</tr>
</tbody>
</table>
The indexing position control system allows to check the right working of the 8 indexing position interfaced with the machine.

So it is possible to verify if the angular position obtained corresponds to that set by the CNC program.

The drawing shows the complete indexing position control mechanism.

The main parts of this mechanism are the followings:

- **Front indexing position control** (chuck body side): Cam "H" drives the rotary movement of the indexing shaft in a rectilinear movement that through lever "I" is put off the central cursor "K".
  Spring "L" assures the right power and the return of the cursor.

- **Rear indexing position control** (rotating oil manifold side): The rectilinear movement of the rod "F", connected to the cursor "K" through the screw "J", is amplified (relation 4.5/1) with a special device "E" fixed to the rotating oil manifold "C".

The movement produced to the lever "A" is brought up on the pin "D" by nr. 8 proximity switches "G" fixed on the plate "B".

The originally of the indexing position control by *tecnomors* is the amplify mechanism over described.

This solution make the device sensitiver giving the right identification of the 8 indexing position and recognising the eventually anomalies (incomplete rotation).

The 8 proximity switches are schematized in the technical drawing; the 8 proximity switches giving signals corresponding to the 8 indexing positions:

- C1 = pos. 0° - 360°
- C2 = pos. 45°
- C3 = pos. 90°
- C4 = pos. 135°
- C5 = pos. 180°
- C6 = pos. 225°
- C7 = pos. 270°
- C8 = pos. 315°

**DANGER**

Hydraulic and connecting schemes, technical data and assembly instructions included in the present catalogue are supplied as information only. Please, refer to "Operating Instruction Manual - Indexing power chucks MD" for correct instruction about setting, connections, functioning, use, maintenance and safety indications.
Suggested hydraulic circuit specifications:
- tank with approx. 60 - 100 l capacity.
- system pressure minimum 60 bar.
- variable pump capacity of 16 lt/min.
- accumulator capacity 0.7 - 1.1 litres, pre-load with 20 bar
- double oil filtering.
- nr. 2 electro-valves systems with double solenoid with fixed positions.
- nr. 2 pressure reducing valves for indexing and clamping systems.
- nr. 3 pressure switch: (nr.1 for clamping, nr.2 for indexing circuit)

Optionals:
- hydraulic oil cooling system.
- double pressure clamping drive for parts susceptible to deformations (contact our technical staff for information to unlock the pilot operated non-return valve incorporated).

Note:
- The hydraulic oil manifold system of the chuck shall be ventilate.
- Hydraulic seat valves are very sensitive against contamination (recommended filtering BS5540/4 10 µm).
- OIL type HLP32 / DIN51524 - ISOVG32 / DIN51519 (32 cSt at 40°C).
- Only clean and recommended oil shall be used.
- Therefore an oil change every six months is recommended.
The standards MD/MDE power chuck includes:
- chuck
- hydraulic rear oil manifold
- tube nest
- indexing control predisposition (proximity switches not included)
- connecting flange to the lathe spindle nose.

When ordering send us a drawing with the spindle lathe dimensions and specification to do the correct choice for you.

Components supplied only on request:
- M8x1 proximity switches (specify the type) to fix on the indexing control system.
- hydraulic unit with pipings (flexibility pipe length must be specified).
- shaped grips *.

For this option we need a workpiece and the drawings of the raw part with working specifications.

We can’t supply the following parts:
- the first installation on the lathe
- the electrical and electronic devices to interface the hydraulic unit and the proximity switches to the electrical cabinet and the machine CNC (indexing drive & controls).
- the hydraulic, electrical and electronic connection between chuck and machine tool.

See instruction enclosed with the furniture “Operating Manual”.

For the correct working the CNC control unit needs to have auxiliary functions “M” wired to their respective relays.

The machines manufacturer had to supply them.
Forwarding:
The packing-case includes:
- MD/MDE power chuck
- ASA chuck adapter plate
- oil manifold + tube nest +
  control road
- rear lathe adapter plate
- fixing screw
- layout assembling drawing
- operating manual

When supplied our MD power chucks are already adapted to
the application; no adjustments are usually required.

See the following chapter for
mounting instructions details.
Mounting instructions (extract from Operating Manual)

See the mounting diagram at page E.28, (and the assembling drawing and the Operating manual enclosed with the furniture for specific details).

01 Flange ASA
(see Adapter Plate description at page E.43):
- 01A = Direct flange fixing:
  Fix the flange “S” on the MD body.
- 01B = Fixing with reduction or augmentation flange:
  Mount the flange “S” on the lathe spindle nose (the flange has to coincide with the reference pin) and fix with the screws “R”.

02 Set MD chuck body “W” on lathe spindle nose and fix the supplied screws “T”.

03 Rear flange “J”:
- 03 A = The front support “O” passes through the flange hole (around “L”):
  Fix flange “J” on the rear chuck side “I” and fix with screws “K”.
- 03 B = The front support “O” doesn’t pass through the flange hole (around “L”).
  In this case flange “J” is supplied introduced in the tube nest “N”; to put in the tube nest to fix it at the flange “J” with screws “K”.

04 To align tally mark on the oil manifold “F” in the same radial position as the one marked on the chuck body “W”.

05 Fix flange “G” of the oil manifold “C” with screws “H”. Mount and fix the cover “G1”.

06 Connect control road “M” using screw “U” (do not tighten them excessively); fix bottom plate “V” with screws “X”.

07 Connect hydraulic piping to D1 and D2.

08 Fix proximity switches A1 and A2 and adjust its 4 indexing positions with led control.

Regulate the proximity switches off-center respect the sensor pin “B” to increase their sensibility (see indexing control system chapter) and to prevent their switch on incomplete rotation (80°) or not indexing position.

With adjusting screw it is possible to regulate the rod.

09 General features for the first starting ignition:
- before start ignition test the pressure setting.
- acting the elettro-valves, with working chuck not in rotation, and effect some working cycles to bleed pipes.
- at the first starting ignition wait always for a shortly warming up phase, than it is possible to work at the maximum power.
- hydraulic, electric and electronic connections have to be conforming to the laws in force.
- mount an antirotation bracket on the manifold that does not create axial or radial forces.
- if it is necessary balance, after jaws set mounting, the chuck acting on either jaws or chuck body.
- during indexing process reduce speed as it is shown in specific chapter.

Photograph MD with shaped grips
For special applications, where the loading operation needs a phase positioning of the workpiece, a special hydraulically operated unit has been designed and built.

The name of this component (optional) is “Hydraulic Retractable Locator”.

The functioning of the Retractable Locator is made in sequence respect the clamping piston movement, thanks to the use of a couple of incorporated sequence valves (adjustable). Setting depended to the oil pressure and to the temperature.

Supplementary hydraulic supplies are not needed because it has a direct supply from the hydraulic circuit.

This part is applied after market too in all the chuck models able to received this accessory in specifying the chuck part number.

Functioning sequence (in reference with the drawing):
Phase 1 : when the clamping piston is opening, the Retractable Locator piston feed in giving a fix axial reference.
Phase 2 : when the clamping piston is closing, the Retractable Locator piston come back permitting next rotation and indexing phases.

NOTE:
Retractable Locator reduce chuck’s capacity.
This option is not available for the chuck size MD160 and MD205.
During the first chuck mounting phase on the lathe it’s necessary remove the hydraulic Retractable Locator group to reach the fixing screw of the indexing position reading rod.
### Retractable Locator

<table>
<thead>
<tr>
<th>Code</th>
<th>MD / MDE 205</th>
<th>MD / MDE 235</th>
<th>MD / MDE 260</th>
<th>MD / MDE 285</th>
<th>MD / MDE 300</th>
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<th>MD 350</th>
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<td>11.3</td>
<td>11.3</td>
<td>11.3</td>
<td>24.6</td>
<td>24.6</td>
<td>24.6</td>
<td>24.6</td>
<td>38.5</td>
<td>38.5</td>
</tr>
</tbody>
</table>
Chucks serie MAD are self-centering.

In version MADT jaws clamping is automatic through a draw rod and a rear cylinder, in version MADV jaws clamping is manual thanks to an operating key.

Chucks MADT and MADV have both manual indexing system.

In MADT and MADV power chucks manufacture and design we have applied the experience and the technology matured in particular in indexing power chuck design.

The originality of these indexing self-centering power chucks comes to the constant improvements tecnomors done since the early 1960’s after the first chuck prototype realisation.

The main MAD power chucks features are:
1.1 - made in special high resistance hardened and cementing 60HRC steel UNI18NiCrMo5, to maintain a high degree of precision, reliability and quality.

1.2 - jaws slideways execution with gib allows a good sliding surface finish with possibility to recover clearances consequent to wear.

1.3 - indexing movement simple and reliable: a conical shutter guarantees the mechanical indexing. Indexing precision ±1.30”.

1.4 - shaft guide system with two lines of big filled cylindrical pre-loaded roller radially and with a strong axial ball bearing axially.

1.5 - seals against contamination by coolant, chips and dust.

1.6 - constant and long lasting precision.

1.7 - easy installation to the machine.

1.8 - standard with 4 indexing 90° + 1 indexing 45°.

On request special indexing positions available (8x45°, 6x60°).

2.1 - MADT specifications:

- self-centering clamping.
- big clamping capacity.
- versions with long jaw for workpieces that need a big radius of revolution.
- quick and easy installation to the machine, it is request only the connection to the hydraulic cylinder on the lathe.

2.2 - MADT benefits:

- manufacturing of different pieces and also of small series.
- workpieces with big radius of revolution and flanges with big diameter.
- could be apply in the same machine with a conventional 3 jaws power chuck thanks to the quick retooling increasing unit flexibility and productivity.
- the indexing device allowing a quick change between the multiple working axes.
- good tools accessibility thanks to the chuck shape.

2.3 - a special tecnomors device with titled plane transmits the clamping force to the jaws.

2.4 - Chuck is supplied without driving cylinder. See the specific chapter to check cylinder and chuck size.

3.1 - MADV specifications:

- self-centering clamping.
- big clamping capacity.
- versions with long jaw for workpieces that need a big radius of revolution.
- it can be used on every tools machine (lathe, fresatrice, etc.)

3.2 - MADV benefits:

- the big jaws stroke makes really the clamping of complex profiles that couldn’t be good clamping with an automatic chuck.
- prototypes, samples and series also of big pieces realisation.

3.3 - a central screw supported by axial sliding bearing transmits the clamping force to the jaws.
**Indexing system**

In MADV chucks to obtain shaft revolution it is necessary to stop chuck rotation.

The main parts of this device are:

- **A** = indexing shaft (driven by 2 lines of cylindrical pre-loaded rollers supported by an axial ball bearing).
- **A1** = indexing notch.
- **B** = indexing shutter with spring.
- **B1** = conical tooth.
- **C** = shutter stop lever.

The mechanism is in each jaw. The particular releasing lever allows to pilot the two shutters at the same time.

Rotation and indexing in the following diagram described:

- phase 1 = indexed chuck: the shutter tooth is connected in the shaft notch.
- phase 2 = stop of the rotation of the chuck
- phase 3 = rotation: the rotation is manual working on the piece in the jaws.
- phase 4 = indexing: lever release allows spring shutter connection.

The realasing lever device is designed to use the centrifugal force in rotation as indexing force.

Indexing precision 0°01’30”.

**Clamping system**

The main parts of the blocking device are:

- lead screw **A**
- jaws **B**
- the chuck body **C**
- axial unit of centering **D**
- safety pins **E**.

The chucks MADV are manual clamped.

The opening and the clamping of the jaws is allowed rotating the lead screw with a key or with a screw driver.

Respect the clamping couple values you find in the specifications.

The screw **A** is fixed with the centering unit **D** that contains the axial ball bearing.

The torque applied to the drilled screw **A**, gives the movement and the clamping of the jaws **B**.

Safety device:

The safety screws **E** keep the jaws securely in the chuck body in the eventually event of a lead screw broken.

Normally these screws are used to reduce the opening stroke of the jaws.

Never remove these screws.
Specifications

<table>
<thead>
<tr>
<th>Code</th>
<th>MADV 170</th>
<th>MADV 180</th>
<th>MADV 195</th>
<th>MADV 230</th>
<th>MADV 250</th>
<th>MADV 275</th>
<th>MADV 315</th>
<th>MADV 350</th>
<th>MADV 425</th>
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<tr>
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<td>22.5</td>
<td>23.5</td>
<td>32</td>
<td>33</td>
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<td>45</td>
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<td>115</td>
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</table>

- Note:
- * The real clamping force is taken with a load cell between the jaws during a non rotation period.
- All dimensions are indicative and subject to variation for technical upgrading. We reserve the right to make alterations without prior notification.
### Dimenstions

<table>
<thead>
<tr>
<th>Code</th>
<th>MADV 170</th>
<th>MADV 180</th>
<th>MADV 195</th>
<th>MADV 230</th>
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**ARTICLE CODE**

- **DV170VBA**
- **DV180VCA**
- **DV195VDA**
- **DV230VEA**
- **DV250VFA**
- **DV275VIA**
- **DV315VRA**
- **DV350VSA**
- **DV425VOA**
- **DV450VPA**

- **Note:**
  All the dimensions are in millimeter.
  X = overall dimensions during rotation with max. jaw opening.
  All dimensions are indicative and subject to variation for technical upgrading. We reserve the right to make alterations without prior notification.
Supply diagram

Standard supply includes:
- MADV chuck.
- Operating key.
- Clamping screws.

Components supplied on request:
- Adapter plate to the lathe spindle nose.
- Clamping rough jaws.
- Clamping shaped grips.

Photograph of MADV with jaws and operating key.
Indexing system

In MADT chucks to obtain shaft revolution it is necessary to stop chuck rotation.

The main parts of this device are:

- A = indexing shaft (driven by 2 lines of cylindrical pre-loaded rollers supported by an axial ball bearing).
- A1 = indexing notch.
- B = indexing shutter with spring.
- B1 = conical tooth.
- C = shutter stop lever.

The mechanism is in each jaw. The particular releasing lever allows to pilot the two shutters at the same time.

Rotation and indexing in the following diagram described:

- phase 1 = indexed chuck: the shutter tooth is connected in the shaft notch.
- stop of the rotation of the chuck
- phase 2 = shutter release: let the releasing lever to disconnect the shutter.
- phase 3 = rotation: the rotation is manual working on the piece in the jaws.
- phase 4 = indexing: lever release allows spring shutter connection.

Indexing precision 0°01’30”.

Clamping system

The main parts of the blocking device are:

- driving hub with inclined plane A
- jaws B
- the chuck body C
- safety pin D.

The chucks model MADT are automatic clamped.

The driving hub A allows the opening and the clamping of the jaws through a draw rod connected to an hydraulic cylinder behind the lathe shaft.

Respect the max. power traction values you find in the specifications.

Traction applied to the hub A produces thanks to inclinad plane:

- jaws movement B
- clamping force increase.

Safety device:

The safety pins D keeps the jaws securely in the chuck body in the eventually event of a inclined planes coupler broken.

These pins are the bottom plates of the indexing device.
## Specifications

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- **Note:**
  - * The real clamping force is taken with a load cell between the jaws during a non rotation period.
  - For the correct hydraulic actuating cylinder choice see chapter "MADT • Standard supply”.
  - All dimensions are indicative and subject to variation for technical upgrading. We reserve the right to make alterations without prior notification.
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**Note:**
All the dimensions are in millimeter.


X = overall dimensions during rotation with max. jaw opening.

All dimensions are indicative and subject to variation for technical upgrading. We reserve the right to make alterations without prior notification.

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**Technical specifications**

ITALY

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**Note:**
All the dimensions are in millimeter.
The standard supply includes:
- MADT chuck.
- Clamping screws.

Components supplied on request:
- Adapter plate to the lathe spindle nose.
- Clamping rough jaws.
- Clamping shaped jaws.
  (in this case we need the drawings and the workpiece).

Scheme for the correct hydraulic cylinder choice.

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**Equipment**

**Adapter plate to the late spindle nose - DIN55026 / ISO-A 702/1**

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**Dimensions**

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**Note:**

- Type I = adapter plate with direct fixing (the chuck boring is like that on the lathe spindle nose). The adapter plate is fixed on the chuck that is connected direct to the lathe spindle nose with screws.
- Type II = reduction adapter plate, indirect fixing (the lathe spindle nose dimension is smaller than the standard of the chuck).
- Type III = augmentation adapter plate, indirect fixing (the lathe spindle nose dimension is bigger than the standard of the chuck).
- In these cases (type II and type III) the adapter plate is fixed on the machine spindle nose.
- The chuck is connected after to the adapter plate.
- Type IV = cam-lock adapter plate (special on request)
- We supply adapter plate with clamping screws.
- All dimensions are indicative and subject to variation for technical upgrading. We reserve the right to make alterations without prior notification.