GAME CHANGING WORKHOLDING SYSTEM FOR SMALL PARTS

MASATOOL.COM
MASA MICROCONIC SYSTEM

Masa Tool has developed the Microconic™ system specifically for holding workpieces from Ø0.15mm to 10mm (Ø0.006” to 0.394”). The system consists of two major components:

- The Microconic cartridge, which fits into your CNC machine spindle without modification
- The Microconic collet, which fits in the Microconic cartridge.

The Microconic system has unsurpassed concentricity. It works with either draw-type or push-type standard collet systems that are in many machines.

The over-grip collet capabilities of the Masa Microconic System introduce a whole new world of time saving opportunities. They open up to an amazing 4mm (0.157”) diameter larger than the clamping diameter.

We designed our products and our production system to ensure that every component of the Microconic system ships within 2 days of order. 100% made in the USA.
The Microconic™ system can do things that are impossible with traditional collets.

**THE MICROCONIC DIFFERENCE**

The Microconic™ system consists of the cartridge, which fits in like a standard collet, and the Microconic collets which fit into our cartridge.

- **Accuracy – Concentricity guaranteed to 5μm (.0002”) runout.**
- **Regular collets available from Ø0.15mm to 10mm (0.006”-0.394”).**
- **Over-grip collets from Ø0.5mm-8.2mm (0.020”-0.323”).**
- **Over-grip collets open up to 4mm (0.157”) diameter larger than the clamping diameter. See complete details in the table “Microconic Over-Grip Collets”.
- **Every Microconic collet fits in every Microconic cartridge, no matter which machine.**
- **Every Microconic cartridge has an extended nose with unsurpassed rigidity and accuracy due to solid one-piece construction.**
- **The Microconic cartridge can be used as a gauge to verify machine spindle accuracy under true working conditions.**

TRADITIONAL WEAK

![Traditional Weak Diagram]

MICROCONIC STRONG

The difference is unsurpassed rigidity.

- **Micrograd™ Dial Wrench allows you to set your collet clamping force with calibrated precision. Now, even the most fragile parts can be held safely and firmly.**
- **Microconic collets are hardened and precision ground to the highest quality standards.**
MICROCONIC CARTRIDGES

ADVANTAGES OF THE MICROCONIC™ CARTRIDGE

- Installed like a standard collet in your machine, and actuated like a normal collet.
- Solid extended nose for unsurpassed rigidity.
- Extreme accuracy. Concentricity typically within 5 microns (.0002") runnout.
- The Microconic cartridge can be used as a gauge to verify machine spindle accuracy.
- Available for draw-type collet systems like 5C used on conventional CNC machines, and push-type “dead length” systems, such as TF20, TF25 & TF37 used on “Swiss-type” machines.
- Delicate parts are held firmly and precisely, every time; - parts with thin walls - micro-size parts - plastic parts

- MicroGrad™ adjustment dial wrench gives you precise & repeatable control of collet clamping force. This is unique to our system!
- All Microconic cartridges in any machine use the same Microconic collets.
- Designed with an extended nose that is solid and rigid, yet small in diameter so tooling and coolant have easy access to workpiece.
- Eliminates the need for extended nose collets.

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5CM10 CARTRIDGE

Fits any machine or fixture that uses 5C collets.
- Great for gang-tool CNC lathes like Hardinge GT, OmniTurn, etc.
  - tighter tool spacing
  - precision chucking force control
  - better concentricity
- Ideal for rotary fixtures on CNC mills

- Tool and cutter grinders
- Eliminate the hassle of extended nose collets
- Solid extended nose gives superior access for tooling while maintaining 5 micron/.0002” concentricity
- MicroGrad dial control of collet closure regardless of the machine’s hydraulic or pneumatic pressure
- Workpiece stop mount available (SMT5)
F20M10 CARTRIDGE
Fits many 12mm and 16mm capacity machines from Citizen, Star, Tsugami, Traub, Nomura, Maier, etc.

F201M10 CARTRIDGE
Fits many 13mm and 16mm capacity Tornos Deco machines. Note that some enlargement of the spindle cap nut through-hole is required (see diagram at right). Contact us for details.

F25M10 CARTRIDGE
Fits many 20mm and 16mm capacity machines from Citizen, Star, Tsugami, Tornos, Traub, Nomura, Hanwha, Nexturn, Maier, etc.

F37M10 CARTRIDGE
Fits many 25mm and 32mm capacity machines from Citizen, Star, Tsugami, Tornos, Traub, Nomura, Hanwha, Nexturn, Maier, etc.
MICROCONIC COLLETS

Microconic™ collets work in concert with our Microconic cartridges to deliver the most accurate, rigid, and reliable work holding system for high-precision small parts machining. The word “Microconic” comes from the unique way we produce each conical segment of the precision ground clamping surfaces to ensure centralized contact for extreme repeatability.

Our proprietary heat treatment and 5-step grinding process results in the most accurate and rigid collets made. Whether you need our regular or over-grip collets, they are the absolute best! Every size available to ship within 2 days.

MICROCONIC REGULAR COLLETS

Our Microconic regular collets have game-changing rigidity with superb accuracy that will allow you to perform challenging operations that were difficult or impossible with conventional collets. Used with our Microconic cartridges, they eliminate the need for extended nose collets. They grip tighter yet can hold the most fragile workpiece without damage.

- Concentricity 5 microns (.0002”) or less TIR
- Eliminates the need for extended nose collets
- Rigidity for the most demanding operations
- Internal thread for available EGS work support
- Available for any size from Ø0.15mm – 10mm (.006”–.394”)

MICROCONIC OVER-GRIP COLLETS

Microconic over-grip collets are like nothing else you have ever seen. They open up to Ø4mm (.156”) larger to reach behind flanges, headed parts, and any enlarged feature. Due to our proprietary Microconic geometry, they have the same accuracy and rigidity as our industry-best regular collets! Now you can over-grip and do real machining like heavy drilling/milling/turning, blind hole broaching, etc. Choose to run parts the best way out, rather than be limited by conventional collets. Make serious profit from your sub-spindle!

- Available from Ø0.15mm – 8.2mm (.020” – .323”)
- Opens up to Ø4mm (.156”) larger than holding diameter
- Concentricity 5 microns (.0002”) TIR
- Rigidity for heavy operations
- Supplied with EGS guide sleeve blank to help part ejection
- Eliminate secondary operations
- Turn parts around to run “the right way out”
- Profit from your sub-spindle!
- All sizes available to ship in 2 days or less

W-TYPE: Our most popular over-grip type, these open about Ø4mm (.15”) larger and have a gripping length of about 1x diameter (see table on page 9).

T-TYPE: Intended for longer parts, this type opens about Ø3.4mm (.13”) larger and has a gripping length of about 2x-3x diameter, with a slightly longer nose (see page 9).

V-TYPE: Similar to W-type but optimized for larger diameter parts, these open about Ø3mm (.12”) larger (see page 9).
MICROGRAD™ DIAL WRENCH

Included with each cartridge, the Micrograd™ Dial Wrench is a dual-purpose tool used to install and adjust the collet in the cartridge. With dial graduations in either .02mm or .001-inch increments, the closure of the Microconic collet can be set with calibrated precision using a common pin gage the diameter of the work piece. This setting is held internally by the cartridge and remains stable regardless of variations in the machine’s closing pressure. In fact, the setting can be recorded in the job setup plan and precisely repeated in a later setup or even on a different machine! No guesswork or skilled “feel” is needed.

MACHINING CONDITION

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<td>LIGHT TO MODERATE – skim cutting, facing, ID chamfer, smaller parts</td>
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<td>HEAVY – turning, milling, drilling, threading, cross-drilling</td>
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<td>EXTREME – large drilling, blind hole broaching, heavy milling</td>
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MICROGUIDE EGS EJECTION GUIDE SLEEVES

Each Microconic™ Over-grip collet is supplied with a brass Microguide EGS ejection guide sleeve blank. The Microguide EGS sleeve can be bored, drilled or machined to match the part profile and support the part and guide it for reliable ejection into the part catcher.

Due to the extreme opening capability of our over-grip collets, workpiece ejection must be 100% reliable to prevent a part from getting stuck in the slots of the collets. This would cause collet damage or breakage.

You will need to machine the Microguide EGS to fit your particular part setup. We suggest using programmed cycle stops while validating the production setup to make sure part ejection is reliable.
**MICROCONIC REGULAR COLLET**

Microconic Collets get their name from our proprietary 5 step grinding process that produces the most accurate workholding collets in the industry. Absolutely the best for high-precision small parts and micromachining production. Our UM10 collets fit in any M10 series Microconic cartridge, no matter which machine. Use the same collet on your Swiss-type pick-off spindle, your 2nd Op gang-tool lathe, CNC mill indexer, or anywhere a Microconic cartridge is installed.

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**2575 JASON COURT, OCEANSIDE, CA 92056 USA Tel: 760.732.1422 Email: info@masatool.com**
UM10 Microconic Collets:

- Concentricity .005mm (.0002") T.I.R. or less
- Eliminates the need for long nose extended collets
- Hardened and ground for long production life
- Fits any machine with a Microconic cartridge
- Superior accuracy and rigidity of the Microconic geometry

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MASATOOL.COM | WE SHIP ALL SIZES WITHIN 2 DAYS OF ORDER
No other collet on the market can over-grip as much as the Microconic Over-grip Collet with the Masa Cartridge. Microconic Over-grip Collets can open up to 4mm over the chucking diameter and run within 5µm (0.0002”) T.I.R.

Over-grip collets, also referred to as over-the-shoulder collets, are used in a pick-off spindle when it is required to clear a shoulder and grip on a smaller diameter beyond the larger diameter. A screw head is a good example of this kind of part. Extra spread is required to open the collet wide enough to go over the screw head or larger diameter.

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**Notes:**
- ØA: Diameter Range
- ØG: Diameter of G
- B: Length of B
- ØC1: Diameter of C1
- D1: Diameter of D1
- ØC2: Diameter of C2
- D2: Length of D2
- SKU: Stock Keeping Unit
- MASATOOL.COM | WE SHIP ALL SIZES WITHIN 2 DAYS OF ORDER
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MASATOOL.COM | WE SHIP ALL SIZES WITHIN 2 DAYS OF ORDER
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2575 JASON COURT, OCEANSIDE, CA 92056 USA TEL: 760.732.1422 EMAIL: INFO@MASATOOL.COM
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**Source:** MASATOOL.COM | WE SHIP ALL SIZES WITHIN 2 DAYS OF ORDER
## MICROCONIC OVER-GRIP COLLETS

![Diagram of over-grip collets](image)

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Installing the Microconic Cartridge:

1. Remove any previous collet from the machine by normal means.

2. Remove the collet spring (this is not used with Microconic).

3. Make sure the machine spindle sleeve is clean and wiped free of any particles.

4. Insert the Microconic cartridge (without a collet yet), and seat it with a few twists to displace any dust particles.

5. Screw on the spindle nose cap normally.

6. Adjust the machine’s collet closer normally for firm closing force. The Microconic cartridge is now installed. The estimated time for above steps is under 5 minutes.

If desired, the working concentricity of the machine can now be verified using a dial test indicator measuring the runout of the cartridge nose. Machine should be in the CLOSED COLLET condition for this test. If improvement is needed, first try removing the cartridge and carefully cleaning all mating surfaces of the machine and cartridge, then reinstalling the cartridge. If runout is still excessive, further troubleshooting can be performed to determine the source of the runout in the machine. On machines in excellent condition, runout of less than 2 microns (.0001") should be achieved. The cartridge can remain in the machine and does not have to be removed to change Microconic collets.
Installing and adjusting Microconic Collets:

1. With cartridge already installed per above, put machine in CLOSED COLLET condition.

2. Loosen the adjustment set screw ½ turn with the included Masa screwdriver.

3. Insert the Microconic collet into the cartridge.

4. Screw the collet in using the MicroGrad wrench.

5. Insert a gage pin the diameter of your work piece.

6. Continue to screw in the collet with the MicroGrad wrench until it closes onto the gage pin. This is the ZERO CLAMPING reference position on the MicroGrad dial.*

7. Back-off 1 graduation of the MicroGrad wrench and remove the gage pin.

8. Return the MicroGrad dial to the ZERO CLAMPING reference position, and then rotate additional graduations to set the clamping force (see the MicroGrad Setting table on page 6). Remove the MicroGrad wrench when done.

9. Tighten the adjustment set screw with the Masa screwdriver. The collet is now installed and adjusted. The estimated time for above steps is under 2 minutes. *For over-grip collets additional adjustment steps are needed. See instructions included with each cartridge and over-grip collet, and also at masatool.com/installation.
WARRANTY

Masa Tool warrants that the products will be free from defects in material and workmanship.

- No product shall be returned to us without a return authorization (RMA) number.

- If you find any failure of our products to conform to our stated dimensions notify us this within 90 days from date of receipt of the product, we will replace the defective product or make suitable repairs. Stated performance claims apply only to product in non-worn condition. Catalog statements are valid as of the issue date and are subject to change without notice.

- If we are unable to correct the nonconformity by replacing the product or making suitable repairs we will refund the purchase price upon receipt of the nonconforming product FOB our plant.

- In no event shall we be liable either directly or by way of contribution or indemnity, for direct, special, incidental or consequential damages such as, but not limited to, property damage, loss of profit, or damages based on loss of use of the product, whether the claim for any such damages be based on warranty, express or implied, contract, tort, or otherwise.

- This warranty does not apply to products that are misapplied, altered, or abused. The foregoing is our sole warranty with respect to the product.

- We make no other warranties, express or implied, including implied warranties of merchantability and fitness for a particular purpose.

- Orders for special tools, non-catalog or modified tools, are accepted on a no cancellation basis, and are not returnable. A confirming purchase order and approved drawing is required prior to any work beginning on special tools.

DISTRIBUTOR ORDER AND SHIPPING POLICY

- Orders will be accepted only by email. Send orders to sales@masatool.com.

- Only orders that are clearly legible and are on a distributor letterhead or official company purchase order form, showing a valid PO number will be processed.

- All orders are shipped FOB 2575 Jason Court, Oceanside, CA 92056-3592.

- Customer Service hours are 8:00 AM until 5:00 PM, PST, Monday through Friday.

PAYMENT TERMS

- Standard Payment terms are Net 30 days.

- Credit card payments are accepted.

- FOB point is 2575 Jason Court, Oceanside, CA 92056-3592. Freight will be prepaid and added to invoice unless otherwise specified.