

# Safety And Operation Instructions

## RSR Model Self-Reversing Tapping Units for 4 Axis CNC Lathes



**WARNING** To Avoid Serious Injury And Ensure Best Results For Your Tapping Operation, Please Read Carefully *All* operator and safety instructions provided for this tapping attachment as well as all other safety instructions that are applicable, especially those for your machine tool.



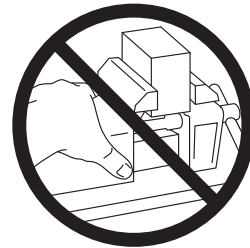
**1. Proper Clothing:** The rotating spindle of a machine tool can snag loose fitting clothing, jewelry or long hair. **Never** wear jewelry, long sleeves, neckties, gloves or anything else that could become caught when operating a machine tool. Long hair **must** be restrained or netted to prevent it from becoming entangled in rotating spindle.



**2. Proper Eye Protection:** Always wear safety glasses with side shields to protect your eyes from flying particles.



**3. Proper Work Piece Fixturing:** **Never** hold the work piece or the vise it is held in, by hand. The work piece **must** be clamped firmly to the table of the machine so that it cannot move, rotate or lift. For lathe applications be sure workpiece is held firmly in machine spindle.



**4. Always Be Aware Of The Potential Hazards Of A Machining Operation:** Sometimes working with your machine can see routine. You may find that you are no longer concentrating on the operation. A feeling of false security can lead to serious injury. **Always** be alert to the dangers of the machines with which you work. **Always** keep hands, body parts, clothing, jewelry and hair out of the areas of operation, when the machine spindle is rotating. Areas of operation include the immediate point of machining and all transmission components including the tapping attachment. **Never** bring your hand, other body parts or anything attached to your body into any of these areas until the machine spindle is completely stopped.



**5 Be aware of any other applicable safety instructions / requirements.**



**6.** The tapping attachment housing, drive spindle and tap itself can become hot to the touch after operation. Use caution when removing the attachment from the machine or handling.

### Check List For Good Tapping



- 1. **Never** use this unit before reading all safety instructions for this attachment as well as the machine it is to be used on.
- 2. Is tap sharp and of correct design for current job?
- 3. Is tap in proper alignment with drilled hole?
- 4. Is machine speed correct?
- 5. Is machine feed correct?
- 6. Is machine stop set properly so tap releases in neutral rather than bottoming in work piece or fixture?
- 7. Is work piece held rigidly against rotation and upward movement?
- 8. Is drilled hole the correct size?
- 9. Is clearance between the drilled hole and tap sufficient at start position to allow the tap to clear the hole upon retraction?
- 10. Is the base adapter firmly secured to tapping attachment and machine?
- 11. Is the proper cutting fluid or coolant being used for lubricating the tap?
- 12. If a bottom hole is being tapped is there sufficient chip clearance?
- 13. Is the correct Tapmatic model for the specific job requirement being used? (Capacity should be reduced 25% for roll form taps.)
- 14. If a torque control attachment is being used, is the torque set correctly so tap will not break if accidentally bottomed?
- 15. If depth control feature is employed, is it set correctly to cooperate with the machine stop, provide the total thread depth required and prevent engagement with bottom?
- 16. Is machine retraction correct for tapping attachment being used?

References for this Safety Information include but are not limited to:

American National Standards Institute  
ANSI B11.8-1983 (Adopted May 31, 1983  
by Department of Defense)

Coastal Video Communications Corporation  
Machine Guarding Copy Right 1994

Society Of Manufacturing Engineers  
Tool and Manufacturing Engineers Handbook  
Volume 1 Machining  
(Library of Congress Catalog No. 82-060312)

# Programming And Installation

## RSR Self-Reversing Tapping Units For 4 Axis CNC Lathes

Thank you for purchasing a Tapmatic RSR model. Please read this instructions sheet carefully before using the attachment.

### RSR PROGRAMMING SUGGESTION

Right Hand machine rotation results in right hand tapping. Do not run in left hand direction. Damage to tool could occur.

- 1.) Write sub-routine (Feed in at 64%, no dwell. Feed out at 68%.
- 2.) Rapid approach to clearance plane (.500 or 12mm) away from hole to be tapped.
- 3.) Call up sub-routine described above, making sure to feed all the way back to clearance plane.
- 4.) For blind holes or controlled thread depth, machine feed to desired thread depth minus an allowance for variation in machine feed and reaction time.

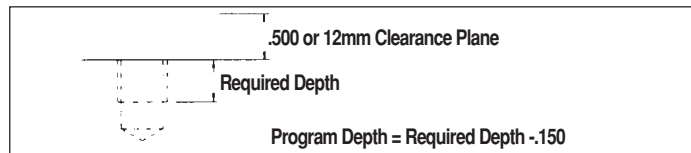
Note: The RSR Attachment reduces the machine spindle speed input by 33% for tapping.

The programming calculations we have given for the feed rate are based on the machine spindle input speed. always run at the cutting speeds recommended by the tap manufacturer but not to exceed the maximum speed for the tapping attachment.

**Through Hole Tapping:** Simply feed to desired depth and retract.

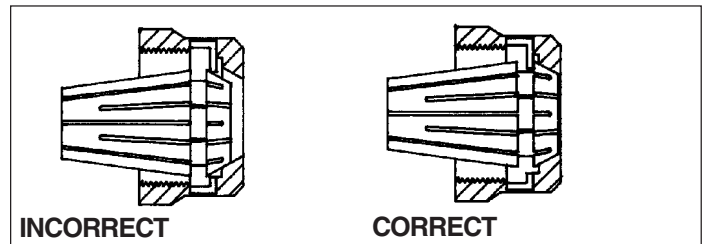
**Controlled Thread Depth Tapping:** Follow the same steps as outlined above. However, the machine program depth must be slightly shallower than the actual depth of thread desired.

When using the RSR, subtract .150 from the depth of thread required and use this value in your program. Please note that the actual depth will be slightly shallower than the required depth. Check thread depth on the first hole tapped and make any necessary adjustments to your program.



The thread depth during a production run will stay accurate within a small fraction of a revolution.

**Steel Collet Spindle:** Select the proper steel collet for the tap, (Steel collets must be ordered separately.) Insert the collet into the nut being sure to fix pawl of collet nut with the seat of the collet for assembly and then mount into the spindle.



Next, insert the tap and tighten collet nut firmly with wrenches provided. There are square sockets inside the drive spindle for the largest tap size. Please use collets with internal driving square whenever possible.

**REDUCING CYCLE TIME:** If you are looking for ways to reduce cycle times further, please consult our Tapmatic Sales Engineers. They can give you specific recommendations for your application. CALL (800) 854-6019.

### VERY IMPORTANT NOTICE

Regarding Ramp or Exact Stop: Please note that the G code for "Exact Stop" or "Ramp" should not be used with a Tapmatic self-reversing tapping attachment. Please be sure that these are not in effect when tapping because they will cause the tapping cycle time to be significantly slower and thread depth repeatability to be less accurate.

Machines With Fanuc Controls and Haas Machines: Use G64 while tapping to eliminate the Exact Stop. G61 will make Exact Stop modal again for other operations if desired.

### Feed Rate Calculations

#### Inch Taps:

**Feed Rate of Tap** = RPM divided by Pitch  
**Example:** 1/2-20 at Machine Speed of 1000 RPM (Tapping Speed 666 RPM)  
**Feed Rate In** = 1000 RPM divided by 20 rev/inch x .64  
**Feed Rate In** = 32 in/min  
**Feed Rate Out** = 1000 RPM divided by 20 rev/inch x .68  
**Feed Rate Out** = 34 in/min.

#### Metric Taps:

**Feed Rate Of Tap** = RPM x Pitch  
**Example:** M12 x 1.75 at Machine Speed of 1000 RPM (Tapping Speed 666 RPM)  
**Feed Rate In** = 1000 RPM x 1.75 mm/rev x .64  
**Feed Rate In** = 1120 mm/min.  
**Feed Rate Out** = 1000 RPM x 1.75 mm/rev. x .68  
**Feed Rate Out** = 1190 mm/min.

### Feed Rate Note: For High Speed Tapping

All CNC machines vary in their ability to advance or retract rapidly for the short distances required in small hole tapping at high rpms. While the control may be set exactly for the required feed rate, the mass of the machine spindle or head will not reach that feed rate instantaneously. In fact, it may not reach it all before the machine stops advancing.

An accurate feed rate is essential if the machine is to keep up with the tap, which is definitely advancing at the proper feed rate, since it is influenced solely by rotation (rpms).

If you note the spindle of the RSR VMC chattering during entry or retraction, this merely indicates that the machine feed rate is not keeping up with the tap feed rate. The Tapping Attachment spindle is rapidly engaging and disengaging from drive.

To correct this, either reduce the rpms until the chattering stops and the tap enters and retracts smoothly or increase the feed rate until the same occurs. A third alternative is to increase the clearance plane above the work piece. This will give the attachment time to get up to the proper feed rate before entering the hole. The problem described above is common when tapping with small taps.

# Accessories & Installation

## RSR Model Self-Reversing Tapping Units For 4 Axis CNC Lathes

Steel Collet With Square Drive For RSR 50 VMC <i>Please select Square Drive Collets whenever possible.</i>			
Steel Collets With Square Drive	Catalog No.	Collet Range	
		Tap Size	Shank Size
#16 Series For RSR50 VMC	21006	#10	.194
	21008	#12	.220
	21010	1/4"	.255
	21012	5/16"	.318
	21014	7/16"	.323

Steel Collet Without Square Drive For RSR50 VMC <i>Please select Square Drive Collets whenever possible.</i>			
Steel Collet Series w/o Internal Squares	Catalog No.	Collet Range	
		Tap Size	Shank Size
#16 Series For RSR50 VMC	20940	#6	.118-.157
	20943	#8, #10	.157-.197
	20945	#12	.197-.236
	20946	1/4"	.236-.276
	20949		.276-.315
	20950	5/16", 7/16"	.315-.354
	20953	3/8"-1/2"	.354-.394

Wrench Kits			
	Qty.	Catalog #	Description
RSR50 Model	1	28100	Wrench
	1	28075	Wrench
	1	29080	#10 Hook
	1	29090	Spring Puller

Base Adapter Dimensions Provided On Request For Specific Machine.

B1	d1	D1	L1	L2	L3

The ASR & RSR models are adapted to fit the turret of a mill turning center by using a base adapter. Base adapters designed for specific machines are available separately.

Attach the base adapter to the tapping attachment securely using the bolts provided. Follow instructions for your machine tool when installing all tooling to turret.

Always check for possible interference points in machine, with other tooling or the workpiece.

Here is a list of some of the machines already included in the program.

### Biglia

BIII, B131

### Boehinger

VDF 180C, VDF250,  
VDF315C, VDF32M,  
VDF400C

### EMCO

EMCOturn 360 TCM, 465

### Gildemeister

GAC25L, GAC42, GAC65,  
GDM30, GDM42, GDM65,  
GDM90 GDS65,  
MD3iC, MD3iT, MD5iT,  
MD5iT-4A, MD 5S, MD6S,  
MD7iT, MD7iC, MD7iT-4A,  
MDS7S., MDW7, MDWI0S

### George Fischer

NDM 16/50A, NDL 25/100,  
NDL 25/40

### Hahn & Tessky

GS30, GSC42, GE 42, GE 65,  
GU 42, GU600, GU800-3000,  
GB 42, GFG-250-450

### Index

GS65, G 200, MS 25

### Heid

S 300 CNC, S315 CNC

### Heylingen Staedt

Heynumat 5UK, 15UK, 25UK,  
Heynutwin

### Hitachi Seiki

### MAHO

Graziano GR 300, GR350,  
GR400, GR500

### MAZAK

Multiplex 610, 620, 630, Super  
Quick Turn 10M, 10MS, 15M,  
15MS, 15AM, 15AMS, 18MS,  
28MS, 20ATC

### Monarch

Ultra Center

### Monforts

RNC3, RNC4, RNC5, RNC7,  
MTS3, MNC5, RNC600, FNC  
1002-1502

### Mori Seiki

SL15/ZL, SL15MC, SL25MC

### Niles

DFS2, DFS4

### Okuma

LR10M, LR15M, LR15MW,  
LR25M, LB15IIM, LT15M,

### Pittler

Petra II, PV 800

### Takisawa

TM-15, TM-20, TS-15, TS-25,  
TS-20, TS-30

### Traub

TNS26, TNS30/30, TNS 42/60,  
TNS 65/65, TNA 480, TNA 200

### Tsugami

FA 45, NP 20

### Vest Alpine

Steinel WNC 300S, WNC500S,  
WNC 700S

### Weiler

DZ42 CNC, DZ32 CNC, Primus

If your particular machine is not listed, please provide us with the specifications so that we may offer you a quotation.

# Maintenance And Repair

## RSR Self-Reversing Tapping Units for 4 Axis CNC Lathes

### MAINTENANCE

**Lubrication:** We recommend lubrication every 100,000 cycles. To lubricate remove grease hole plug and add grease from the tubes provided. Use two tubes. For additional tubes, order part number 29000 for a box of 12. We recommend Prolong EP2 Grease and SPL100 Spray. The units come from the factory already lubricated for operation.

**Repair Service is available at...**

**Attention:**

**Repair Department  
Tapmatic Corporation  
802 Clearwater Loop  
Post Falls, ID 83854**

**To Expedite Repair:** Return tool direct to Tapmatic Corporation, by United Parcel Service and enclose the following statement with your purchase order: "**Authorization given to repair and return tool without notification if total repair cost does not exceed 40% of the cost of a new tool.**" Tapmatic will repair the tool and call to request your credit card # for invoicing.

**Important:** Be sure to return the tool complete with the tap chuck nut, back jaw and if the tool is a reversing unit, include stop arm. Otherwise, we will add these missing parts to every non-warranty repair.

**Cost Notification:** Tapmatic will FAX a cost notification to you, soliciting your approval before repairs are completed.

If it is determined that a tapping attachment cannot be repaired, at the customer's request, Tapmatic will return the disassembled parts. We are not able to reassemble tapping attachments using damaged or worn out parts.

**Optional Return Procedure:** Tools may also be returned for repair through your local Tapmatic Distributor. They will ship the tool to us and include instructions for the repair and return. You may already have an open account with them which facilitates the handling of invoicing.

**Priority Service:** Tapmatic services tapping attachments returned for repair in the order in which they are received. All tools will be evaluated and repaired within three weeks from the date they arrive subject to receiving the customer's approval to proceed with the repair.

Priority is given to the tools shipped to us by overnight or second day.

If a repair is sent to us by UPS ground or similar service it can also be given priority. Just call and let us know you need priority service and advise if you would like the tool returned to you by overnight or second day. In the interest of fairness, to all our customers, we ask that you approve return shipment by overnight or second day before we agree to upgrade your repair order to priority service. Typical turnaround, not including shipping time, for priority repairs is 3 days subject to receiving the customer's approval to proceed with the repair.

If we can answer any questions, please call our toll free number: 800 395-8231.

**TAPMATIC**  
*The Tapping Specialists*

TAPMATIC CORPORATION: ISO 9001 CERTIFIED  
802 Clearwater Loop, Post Falls, Idaho 83854  
Phone: (208) 773-8048, (800) 854-6019, FAX: (208) 773-3021

TAPMATIC INTERNATIONAL CORPORATION  
Alte Rheinstrasse, CH-9451 Kriessern, Switzerland  
Phone: 011 41 71 757 5900 FAX: 011 41 71 757 5901



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