

# SPD3, 5, 7 and 9A Self-Reversing Tapping Attachments

## Safety And Operation Instructions Revised 01/06

**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.



### 4. Proper Stop Arm / Torque Bar Installation For Self-Reversing Attachments On Conventional Machines:

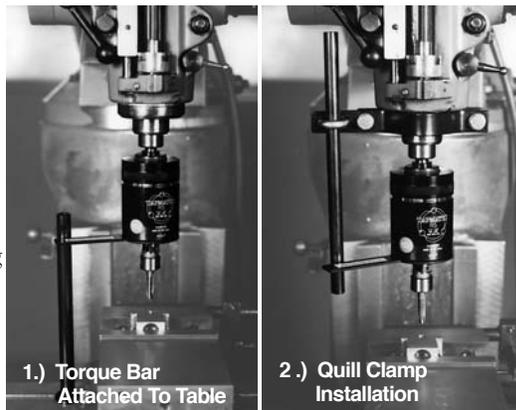
**Never** extend the length of the standard stop arm supplied with your tapping attachment. This will void warranty. A lengthened stop arm could break free, hitting the operator and causing serious injury.



**Never** hold the stop arm by hand. On reversal, full power of the machine is transmitted through the stop arm and the operator could be seriously injured.



**Always** mount a torque bar to hold the tapping attachment's stop arm from rotating. The torque bar **must** be mounted securely to the table or quill of your machine. The torque bar installation **must** be stronger than the largest tap in the capacity range of your tapping attachment. Order Tapmatic Torque Bars shown.



1.) Torque Bar Attached To Table

2.) Quill Clamp Installation

Quill Clamp Capacity	Order No.	Max Tap Size	Torque Bar Assembly	Order No.	Max Tap Size
1 1/2" - 2 3/8"	29099	1/2"	Table Mount	29097	3/4"
2 3/8" - 4 1/2"	290991	3/4"	Heavy Duty Table Mount	29096	1 3/4"

**5. To Install Collets In Rubber-Flex Collet Chucks:** Some collets vary slightly in outside diameter. This does not affect capacity or performance. To install, put collet into the end of the drive spindle and push the tap chuck nut over it until the threads are engaged. Screw nut down completely. This will seat collet properly. Then back off nut to install tap. Collets must be ordered separately.

**6. Inserting Tap In Rubber-Flex Collet Chucks:** Follow instructions to avoid excessive wear on back jaws when using tapping heads with collet chucks. Insert the tap into the tap chuck of the attachment so that the back jaws will engage the square of the tap. Hand tighten the chuck nut first, then tighten the back jaw on those units with adjustable back jaws. Then using the wrenches provided tighten the chuck nut firmly. When tightened correctly, the rubber flex collet should absorb most torque pressure, preventing the back jaws from being damaged by excessive torque. If the tap you are using has a male center at the square end, you must remove the point to assure maximum engagement in the back jaws.

Rubber-Flex Collet			
For Use With Tapping Attachments With Rubber-Flex Collet Spindles.			
Collet Series	Catalog No.	Tap Size	Collet Range Shank Size
#21000 Series For SPD3 attachments with capacities (#0-1/4")	21600 ★	#0-#8 Standard	.098-.177
	21700 ★	#10-1/4" Standard	.177-.256
	21500		.040-.098
	21200		.094-.146
#22000 Series For SPD5 attachments with capacities (#6-1/2")	22100 ★	#0-1/4" Standard	.139-.257
	22200 ★	1/4"-1/2" Standard	.253-.383
	22300		.090-.180
	22000		.194-.318
#24000 Series For SPD7 attachments with capacities (#10-5/8")	24100 ★	#10-1/2" Standard	.176-.383
	24000 ★	5/16"-5/8"	.280-.500
	24300		.110-.280
#26000 Series For SPD9A attachments with capacities (1/2"-1-1/8")	26100	1/2"-3/4"	.360-.630
	26200	7/8"-1-1/8"	.630-.900

# SPD3, 5, 7 and 9A Self-Reversing Tapping Attachments

## Safety And Operation Instructions

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**7. Always Be Aware Of The Potential Hazards Of A Machining Operation:** Sometimes working with your machine can seem 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.

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

**9. 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?
- 5. Is machine stop set properly so tap releases in neutral rather than bottoming in work piece or fixture?
- 6. Is work piece held rigidly against rotation and upward movement?
- 7. Is drilled hole the correct size?
- 8. Is clearance between the drilled hole and tap sufficient at start position to allow the tap to clear the hole upon retraction?
- 9. Is the stop arm of the tapping attachment held rigidly against rotation by the torque bar extending from the machine quill or table? Machine torque bar must be stronger than the largest tap to be used.
- 10. Is the proper cutting fluid or coolant being used for lubricating the tap?
- 11. If a bottom hole is being tapped is there sufficient chip clearance?
- 12. Is the correct Tapmatic model for the specific job requirement being used? (Capacity should be reduced 25% for roll form taps.)
- 13. If a torque control attachment is being used, is the torque set correctly so tap will not break if accidentally bottomed?
- 14. 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?
- 15. 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)

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

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MAXIMUM TAPMATIC TAPPING SPEEDS**														
Size	Cast Iron and Bronze	Plastics and Aluminum	Steel	Stainless Steel	Brass	Copper	Size	Cast Iron and Bronze	Plastics and Aluminum	Steel	Stainless Steel	Brass	Copper	
0	-80	2000	2000	1900	2000	2000	1/4	-20	1000	1200	750	400	1200	1200
1	-64	2000	2000	1600	2000	2000	1/4	-28	1200	1200	850	400	1300	1200
1	-72	2000	2000	1600	2000	2000	5/16	-18	850	1100	650	300	1200	1100
2	-56	1900	2000	1300	2000	2000	5/16	-24	900	1200	700	350	1300	1200
2	-64	2000	2000	1300	2000	2000	3/8	-16	700	900	550	250	1200	900
3	-48	1800	1900	1000	1900	1900	3/8	-24	750	1000	600	300	1200	1000
3	-56	1900	2000	1100	2000	2000	7/16	-14	600	800	450	200	950	800
4	-40	1700	1800	900	1900	1800	7/16	-20	650	850	475	225	1000	850
4	-48	1800	1900	1000	2000	1900	1/2	-13	500	650	400	200	850	650
5	-40	1650	1700	800	1800	1700	1/2	-20	575	750	425	200	1000	750
5	-44	1750	1800	900	1900	1800	9/16	-12	450	600	350	175	800	600
6	-32	1500	1600	700	1700	1600	9/16	-18	500	675	375	175	900	675
6	-40	1650	1700	800	1800	1700	5/8	-11	375	500	300	150	700	500
8	-32	1400	1400	600	1400	1400	5/8	-18	450	600	325	150	800	600
8	-36	1500	1500	700	1500	1500	3/4	-10	325	400	250	125	575	400
10	-24	1300	1400	500	1500	1400	3/4	-16	375	475	275	125	650	450
10	-32	1400	1500	600	1500	1400	7/8	-9	275	350	200	90	500	350
12	-24	1300	1400	400	1500	1400	7/8	-14	300	400	250	100	550	400
12	-28	1400	1500	500	1500	1400	1	-8	250	300	175	75	425	300
							1	-14	275	350	200	100	475	350

\*\*These maximum tapping speeds are for optimum tapping conditions for the tap size, tap pitch and material involved. Optimum conditions are (1) a through hole or blind hole with generous chip clearance; (2) thread depth is one times a tap diameter or less; (3) free machining material; (4) tap drill diameter for 60% thread; (5) use of LPS Tapmatic Cutting Fluid or Coolant; and (6) proper designed tap. Reduce speed accordingly for each non-optimum condition.

# SPD3, 5, 7 and 9A Self-Reversing Tapping Attachments

## Safety And Operation Instructions

This tapping attachment can be used on all types of manually operated or automated machines with rotating, non-reversing spindles. It should not be used on machines which reverse on the back stroke.

This attachment incorporates in its design a gear reverse which has a 1 to 1 reverse ratio. Reversing speed, then, is equal to the machine's spindle speed. Therefore, the in-feed and out-feed of the machine spindle may remain the same. The "bore cycle" on most NC machines can be employed for tapping.

### MOUNTING THE STOP ARM

There are three (3) screws provided with the unit to properly mount the stop arm onto the top of the housing.

Extend strong torque bar from machine quill or machine table to engage short stop arm. **DO NOT LENGTHEN STOP ARM.** Also, clamp part to be tapped securely as full power of the machine is transmitted in reverse. **DO NOT HOLD PART BY HAND. DO NOT HOLD STOP ARM BY HAND.**

### INSTALLING THE ARBOR IN TAPER MOUNT UNITS

Make sure that the taper mount of the unit and the arbor itself are clean and free of oil or grease. Then with a twisting motion, insert the arbor into the tapping attachment. The twisting motion allows the air entrapped in the taper to be released. When the arbor is inserted completely, several sharp blows should be made on the tang with a lead hammer to make sure the arbor is seated firmly. It is important that this procedure be followed, as the taper may be damaged if slippage occurs. Occasionally, for large units, it may be necessary for the attachment to be pinned to the arbor. This may be done with a #4 Taper Pin.

### INSERTING THE TAP

#### Rubber Flex Collet Spindle:

If the tap you are using has a male center as in Figure 1, the point should be ground off so that the tap square will be engaged by the back jaws as shown in Figure 2.

After removing the point, insert the tap into the tap chuck of the attachment so that the back jaws will engage the square of the tap. Hand tighten the chuck nut first. Then tighten back jaws with hex key. Then using wrenches provided, tighten chuck nut. This procedure will assure true running of the tap.

Note: Reduce capacity 25% for roll form taps.

**Quick Change Spindle:** To install or remove a tap adapter lift the release collar #71A. **Please order collets and tap adapters separately.**

**TAPPING SPEEDS:** The Tapping Attachment has been designed to operate properly at recommended tapping speeds. Please refer to chart for the recommendations for specific tap sizes. **Do not exceed the maximum speed shown on the tapping attachment.**

### PROGRAMMING INSTRUCTIONS WHEN USED ON CNC MACHINES

1. Utilize bore cycle of machine.
2. Set machine in-feed and out-feed at 98 to 100% of correct feed rate for thread pitch.
3. Establish clearance plane above hole (equal to diameter of largest tap within specific unit's capacity, up to maximum of 5/8" for largest tools) where machine's rapid approach converts to feed rate so that tap will definitely clear hole during retraction before machine indexes to next position.
4. For through holes or blind holes with sufficient clearance, simply machine feed to desired thread depth and retract.
5. For blind holes or controlled thread depth, machine feed to the desired thread depth minus the tapping attachment self-feed distance (see "Bottom Hole Tapping" above). Check depth on first hole and adjust program depth accordingly.

### THROUGH HOLE TAPPING

Through holes are easily tapped without machine stops or dwells; merely feed in and out, as desired. For programmed machine operation, program the machine spindle to feed at, or slightly less than, the taps' feed per revolution to insure production of quality threads.

Manual tapping with the attachment does not require operator to apply any lead pressure on the tap during the tapping operation. The free axial float in the attachment will automatically permit the tap to follow its own lead. The operator merely moves the machine's spindle behind the lead of the tap until the desired depth is reached. To reduce wear within the tapper, it is recommended that a short, quick, upward movement of the machine spindle be made during transition from drive to reverse. The tap will return to a forward rotation as soon as it is withdrawn from the hole.

### BOTTOM HOLE TAPPING

For accurate and efficient bottom hole tapping, a machine feed stop should be used to allow the attachment's spindle to disengage in neutral before the tap bottoms in the hole. To achieve this, set the machine stop so that the machine feed plus the attachment's self-feed will equal the desired thread depth. This greatly simplifies the tapping operation, and affords maximum tap protection.

This attachment does not have a clutch. It is positive drive. These units have a fixed self-feed length. The amount of self feed is 3mm for SPD3, 5mm for SPD5, 7mm for SPD7 and 10mm for SPD9A. For added tap protection in quick-change models, the torque release tap holders (TC style) may be employed. The tap will stop without breaking if the bottom of the hole is accidentally engaged.

### LUBRICATION

Lubricate approximately every 100,000 holes.

**To Lubricate:** Remove set screw from housing wall, add grease (use 2 tubes), and reinstall set screw. **FOR ADDITIONAL GREASE-USE ORDER NO. 29000 FOR A CASE OF 12 TUBES.**

**MAINTENANCE NOTE:** If tapping attachment becomes contaminated with coolant, submerge it in a light weight spindle oil. Allow the oil to work through the unit, then remove and let stand. When most of the oil has drained from the unit, re-grease it.

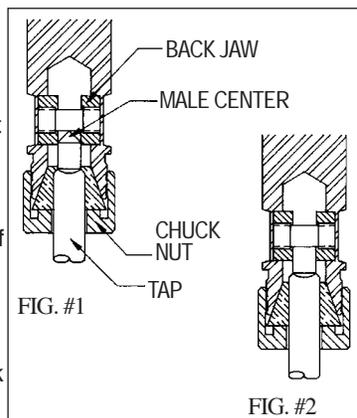
### TAP LUBRICATION

To insure maximum tap life, the proper lubricant should be used. For an ALL PURPOSE tapping fluid that meets the toughest safety requirements use our MQL Systems DRY-CUT.

### REMOVAL OF TAPERED ARBORS

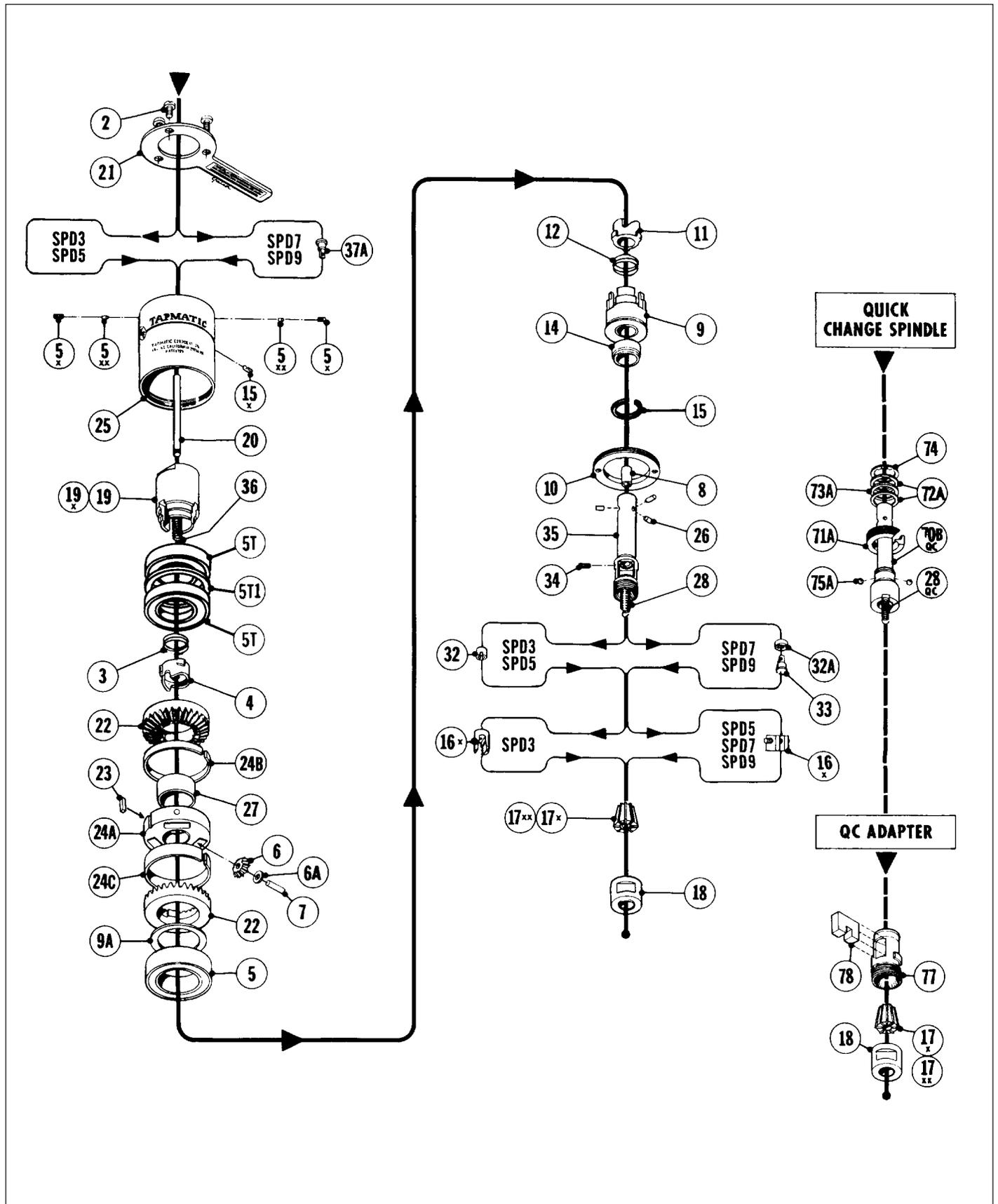
Removal of the arbor from the Jacobs or DIN taper in a tapping attachment will generally require striking the arbor with a soft metal rod. Hold the tapping attachment, with the arbor pointed away, in one hand and strike the arbor sideways on tang or in relief area, with a brass rod grasped in the other hand. Numerous blows may be required. **DO NOT STRIKE THE TAPPING ATTACHMENT.**

Stubborn arbors and arbors installed with Loctite will require the application of heat. Using a soft flame propane torch, evenly heat the interface area where the arbor enters the attachment. (300° F will be required to break down the Loctite.) After applying heat, resume striking the arbor with the soft metal rod until the arbor loosens. Always use caution when handling heated parts.



# Parts Listing

## SPD3, 5, 7 and 9A Self-Reversing Tapping Attachments



# Parts Listing

## SPD3, 5, 7 and 9A Self-Reversing Tapping Attachments

IDENT	PART NAME	SPD3	SPD5	SPD7	SPD9	Notes:
2	Stop Arm Screws	51302 (3 required)	51502 (3required)	51502 (3required)	51902 (3required)	(RF) Denotes Rubber Flex Only
*3	Cushion Spring	51312	51512	507122	509122	
*4	Spring Biased Driver	58304	58504	58704	509271	
5	Ball Bearing	51305	50509	50708	50908	(Thd Mount) Denotes Thread Mount Only
5T	Ball Bearings	51305 (2 required)	50509 (2 required)	50709 (2 required)	50909 (2 required)	
5TI	Shim	513052	51505	51705	51905	
5X	Lock Set Screw	56105A (1)	50305A (1)	50305A (1)	50905 (1)	(1) Lock Set Screw comes with Ident #5XX.
5XX	Lock Set Screw Plug	561051	503051	503051	509051	
6	Planet Gear	51306 (3 required)	51506 (3 required)	51706 (3required)	51906 (3 required)	
6A	Washer	513061 (3 required)	517061 (3 required)	517061 (3 required)	519061 (3 required)	(2) Threaded (#19) or Tapered (#19X) Mount only supplied as an assembly with part #5T, #5TI and #20
7	Gear Axle & Washers	51307A (3 required)	51507A (3required)	51707A (3 required)	51907A (3 required)	
8	Guide Spindle Bushing	50329	56529	50729	51908	
9	Reversing Member	58309 (3)	585091 (3)	58709 (3)	58909 (3)	
9A	Flange Washer	513091	515091	517091	519091	
10	Lock Nut	58310	58510	58710	51910	
*11	Spring Biased Rev. Driver	58304	58504	58704	509271	
*12	Reversing Drive Spring	51312	58512	507122	51912	(3) Reversing Member (#9) supplied as an assembly with part #14 and #15.
14	Drive Spindle Bushing	58314C	585141C	58714C	58914C	
15	Retaining Ring	51315	58515	51715	50311	
15X	Set Screw	50315	50315	69364	50915	
*16X	Back Jaws	503161	56516	50716	50916	
17X	Rubber Flex Collet (Small)	21600	22100	24100	26100	(4) Drive Spindle (#25) only supplied as an assembly with part #8.
17XX	Rubber Flex Collet (Large)	21700	22200	24500	26200	
18	Tap Chuck Nut	50318	56518	50718	50918	
19	Threaded Mount (5/16-24)	51319HA (2)	-	-	-	(5) Quick Change Drive Spindle (#70QC) only supplied as an assembly with part #8, #71, #72, #73, #74 and #75.
19	Threaded Mount (3/8-24)	51319IA	51519IA (2)	-	-	
19	Threaded Mount (1/2-20)	51319JA (2)	51519JA (2)	5819JA (2)	-	
19	Threaded Mount (5/8-16)	51319KA (2)	51519KA (2)	58719KA (2)	-	
19	Threaded Mount (3/4-16)	51319LA (2)	51519LA (2)	58719LA (2)	51919LA	
19	Threaded Mount (7/8-20)	-	51519MA (2)	587191MA (2)	-	
19	Threaded Mount (1-1/2-18)	-	-	-	51919NA (2)	
19X	Taper Mount (#6JT)	51319BA (2)	51519BA (2)	-	-	(6) Stop Arm (#21) only supplied as an assembly with part #2.
19X	Taper Mount (#33 JT)	51319EA (2)	51519EA (2)	-	-	
19X	Taper Mount (DIN B12)	51319FA (2)	-	-	-	
19X	Taper Mount (DIN B16)	51319GA (2)	51519GA (2)	-	-	
19X	Taper Mount (#3JT)	-	-	58719CA (2)	-	
19X	Taper Mount (#4JT)	-	-	-	5191DA (2)	
20	Guide Spindle	58320	58520	51720	51920	
*21	Stop Arm	51321A (6)	51521A (6)	51721A (6)	51921A (6)	1. Remove tap chuck (#18), rubber flex collet (#17X or XX), back jaw retaining screw (#34) and back jaws (#16X)
22	Ring Gear	51322 (2 required)	51522 (2 required)	51722 (2required)	51922 (2 required)	
23	Key	50319	51523	51723	51923	
24A	Gear Carrier	51324	51524	51724	51924	
24B	Gear Carrier Spacer (Short)	513241	515241	517241	519241	
24C	Gear Carrier Spacer (Long)	513242	515242	517242	519242	
25	Housing	58325	58525	58725	589259	
26	Drive Pins	50328 (3required)	56528 (3 required)	50728 (3 required)	50928 (3 required)	2. (SPD7 and SPD9) Remove return spring. (#28) by threading spring puller (supplied with unit) into part (#33) and pulling out to expose spring for hook also supplied with unit.)
27	Gear Carrier Bushing	51327	51527	51727	51927	
*28	Return Spring	51328	58528	507301	50930	
*28QC	Quick Change Return Spring	51228	58428	58928	58930	
31	Guide Spindle Washer	50333	-	-	-	
*32	Guide Spindle Nut	503341	56534	-	-	
32A	Spring Bearing	-	-	50734	50934	
33	Spring Hanger	-	-	50706	50706	
34	Back Jaw Retainer Screw	50315 (2 required)	50315	50315	50915	
35	Drive Spindle	58335A (4)	58535A (4)	58735A (4)	589359A (4)	
*36	Safety Cushion Spring	58336	58536	58736	-	
37A	Upper Spring Hanger	-	-	60334	50706	
70QC	Quick Change Drive Spindle	58370A (5)	58570A (5)	58770A (5)	58970A (5)	
71A	Locking Ring	583711	585711	587711	628711	
72A	Wave Spring	583721 (2 required)	585721 (2 required)	587721 (2 required)	-	
72A	Com. Springs	-	-	-	58972 (4 required)	
73A	Washer	583731	585731	587731	62873	
74	Truarc Ring	58374	58574	58774	62874	
75A	Steel Balls	583751 (3 required)	60328 (3 required)	60528 (3 required)	-	
75A	7/32 Ball	-	-	-	58976	
75A	9mm Balls	-	-	-	62875 (2 required)	
77	QC Adapter Housing	29510	29511	29512	29513	
78	QC Tap Jaws	29496 (8 required)	29497 (10 required)	29498 (12 required)	50916	
<b>WRENCH KITS</b>	5/64 HEX KEY RF	27078	27078	27078	27078	
	1/8 Hex Key	27125	27125	-	27125	
	3/32 Hex Key	27093	27093	27093	27093	
	5/32 Hex Key	-	27156	27156	-	
	7/32 Hex Key	-	-	-	27218	
	5/8 Wrench (RF)	28062	-	-	-	
	1/2 Wrench (RF)	28050	-	-	-	
	3/4 Wrench (RF)	-	28075	-	-	
	31/32 Wrench	28097	28097	28097	-	
	1 5/16 Wrench	-	28131	28131	-	
	1 9/16 Wrench (RF)	-	-	-	28156	
	#5 Hook	-	-	29085	-	
	Spring Puller	-	-	29090	29090	
	2 Wrench	-	-	-	28200	
	#1 Hook	-	-	-	29081	

\*These items are considered normal wear parts.

# Repair Policy

## SPD3, 5, 7 and 9A Self-Reversing Tapping Attachments

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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.



*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: 41 71 757 5900, FAX: 41 71 757 5901



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