Safety and Operation for SPD Self Reversing Tapping Attachments

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 unit as well as all other safety instructions that are applicable, especially those for your machine.

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 workpiece **must** be clamped firmly to the table of the machine so that it cannot move, rotate or lift.

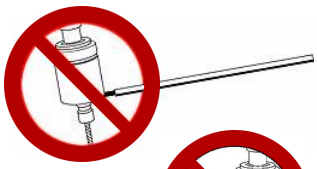
4. **Proper Stop Arm/Torque Bar Installation for Self-Reversing Attachments On Conventional Machines.**

Always mount a torque bar to hold the tapping attachments 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. The surface of the torque bar **must be smooth** to allow the stop arm to slide freely when feeding in and out of the hole. Order Tapmatic Torque Bars shown.

Quill Clamp Capacity Ø	Order No.	Max Tap Size
1 1/2"-3/8" 38-60 mm	29099	1/2" or M12
2 3/8"-4 1/2" 60-114 mm	290991	3/4" or M20

Torque Bar Assembly	Order No.	Max Tap Size
Table Mount	29097	3/4" or M20
Heavy Duty Table Mount	29096	1 3/4" or M42

Never extend the length of the standard stop arm supplied with your tapping attachment. 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.

5. **Do not exceed the maximum speed for the tapping head:** Speed is a critical factor in tapping. Please always refer to recommended tapping speed chart.

6. **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, parts of the body, 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 parts of the body or anything attached to your person into any of these areas until the machine spindle is completely stopped.

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 unit as well as all other safety instructions that are applicable, especially those for your machine.

7. **Be aware of any other applicable safety instructions/requirements especially those for your machine.**

8. **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 tapping attachment before reading all safety instructions for it as well as the machine it is to be used on.
2. Be sure tap is sharp and of correct design for your application.
3. Be sure tap is in proper alignment with the drilled hole.
4. Be sure the machine speed is correct.
5. Be sure you are following the correct feed rate for the tap based on the pitch of the tap and revolutions per minute.
6. Make sure the drilled hole is the correct size.
7. Be sure the machine stop is set correctly to avoid hitting the bottom of a blind hole. See Controlled Depth Tapping.
8. Be sure to allow for sufficient chip clearance especially when tapping blind holes.
9. Make sure the work piece is clamped rigidly so that it is not able to move, rotate, or lift.
10. Make sure there is enough clearance between the tap and work piece at the starting position and the retract position to be sure the tap is clear of the hole upon retraction. Remember the tapping attachment spindle extends during reversal out of the hole.
11. Make sure to mount a strong torque bar from the table of the machine, or to the non-rotating quill, to prevent the stop arm from rotating. The torque bar must be stronger than the largest tap in the tapping attachments capacity. It must also have a smooth surface so that the stop arm slides freely when feeding in and out of the hole.
12. Make sure to use the proper cutting fluid/lubricant for the application.

References for this safety information include but are not limited to: American National Standards Institute, ANSI B11.8-1983, 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

Safety and Operation for SPD Self Reversing Tapping Attachments

This tapping attachment can be used on all types of manually operated machines with rotating spindles. It can also be used in many automated applications. **IMPORTANT** Always follow all instructions from your machine manufacturer.

Installing the Arbor into the tapping attachment: Clean the thread or taper of both the arbor and the mount of the tapping head. Then install the arbor into the mount securely.

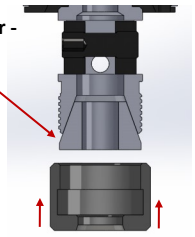
If it is a taper mount, twist the arbor as you push it into the tapping heads mount. Then use a mallet to give a sharp blow to the end of the arbor, to seat it into the taper mount of the tapping head.

To remove a taper mount arbor, give the arbor several sharp blows on the side using a mallet.

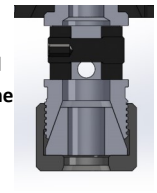
SPD with Rubber Flex Spindle

Installing a Rubber Flex Collet into the tap chuck nut:

Place rubber - flex collet in spindle

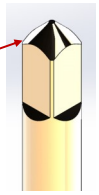


Then push and thread nut over the collet.

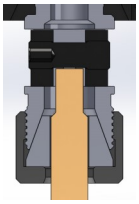


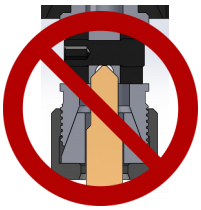
If the tap has a male center, it should be ground off:

Remove point...



So tap square will go into back jaw fully

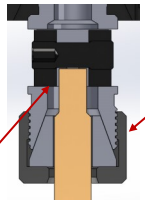




Tightening the back jaws and the nut:

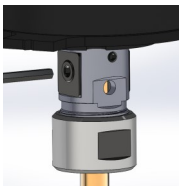
1. Open the back jaws using the key.

2. Slide tap all the way in so the tap square goes into the back jaws

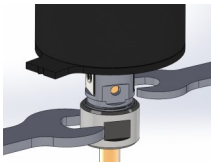


3. Lightly tighten the nut by hand. This holds the tap concentric.

4. Tighten the back jaw with the key.

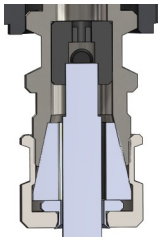


5. Tighten the collet nut with the wrenches



Note: In order to insure the tap runs concentrically, and avoid damage to back jaws or collet, it is important to follow the above steps.

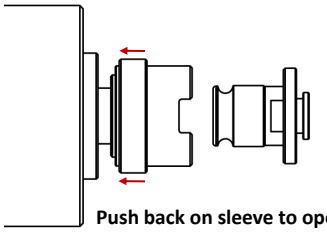
SPD3 Rubber Flex



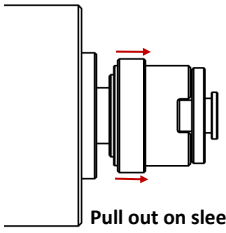
The smaller models do not have an adjustable back jaw. Instead they have a fixed tap jaw with three slots. Simply slide the tap into the jaw fully so that the tap square fits into the correct slot in the tap jaw. Please note that the two set screws are only for driving and retaining the tap jaw. They are not intended to tighten against the tap square.

SPD with Quick Change Spindle

Installing an adapter into QC spindle:

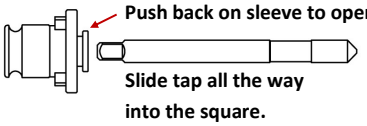


Push back on sleeve to open.



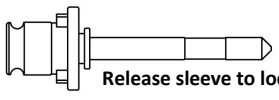
Pull out on sleeve to lock.

Installing a tap into an adapter:



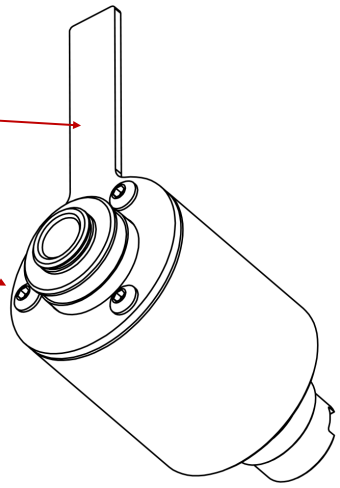
Push back on sleeve to open

Slide tap all the way into the square.



Release sleeve to lock.

Safety and Operation for SPD Self Reversing Tapping Attachments



In order for the Tapping Head to reverse, the stop arm must be prevented from rotating.

See also Proper Stop Arm/Torque Bar Installation on page 1.

Tapping Speeds: The following speed recommendations are for reference only. Please consult tap manufacturer for your specific tap. **Do not exceed the maximum speed for tapping attachment shown on the housing.**

Material	Low Carbon Steel	High-Carbon Steel	Tool Steel Hard	SS 303, 304, 316	SS 410, 430, 17-4 Hard	SS 17-4 Anneal.	Titan. Alloys	Ni Alloys	Alum Alloys	Alum Die cast	Magn.	Brass, Bronze	Copper	Cast Iron
M/min (ft/min)	10-20 (33-66)	8-12 (26-39)	4-6 (13-20)	6-12 (20-39)	3-5 (10-16)	6-12 (20-39)	4-8 (13-26)	3-5 (10-16)	15-25 (49-82)	10-15 (33-49)	15-25 (49-82)	15-25 (49-82)	8-12 (26-39)	10-20 (33-66)

RPM = $\frac{(M/min) \times 318.5}{\text{Tap Diameter in mm}}$ RPM = $\frac{(ft/min) \times 3.82}{\text{Tap Diameter inch}}$

Self-Feed: Every tapping attachment has a self-feed. What is self-feed?
Self feed is the additional depth that the tap will go into the hole after you feed to the stop on your machine.

SPD3 Self Feed 3mm
SPD5 Self Feed 5mm
SPD7 Self Feed 7mm
SPD9A Self Feed 10mm

Setting the stop on your machine for tapping: Please note that the tap will continue to go deeper into the hole by the self-feed distance. The total tapping depth will be based on the depth you set with your machine stop **plus** the self-feed of the tapping attachment. For example if you would like a tapping depth of 10mm and the tapping attachment's self-feed is equal to 5mm, start by setting the machine stop to allow the tap to enter the hole just 5mm. After tapping your first hole, check the depth and make any necessary adjustments to the machine stop.

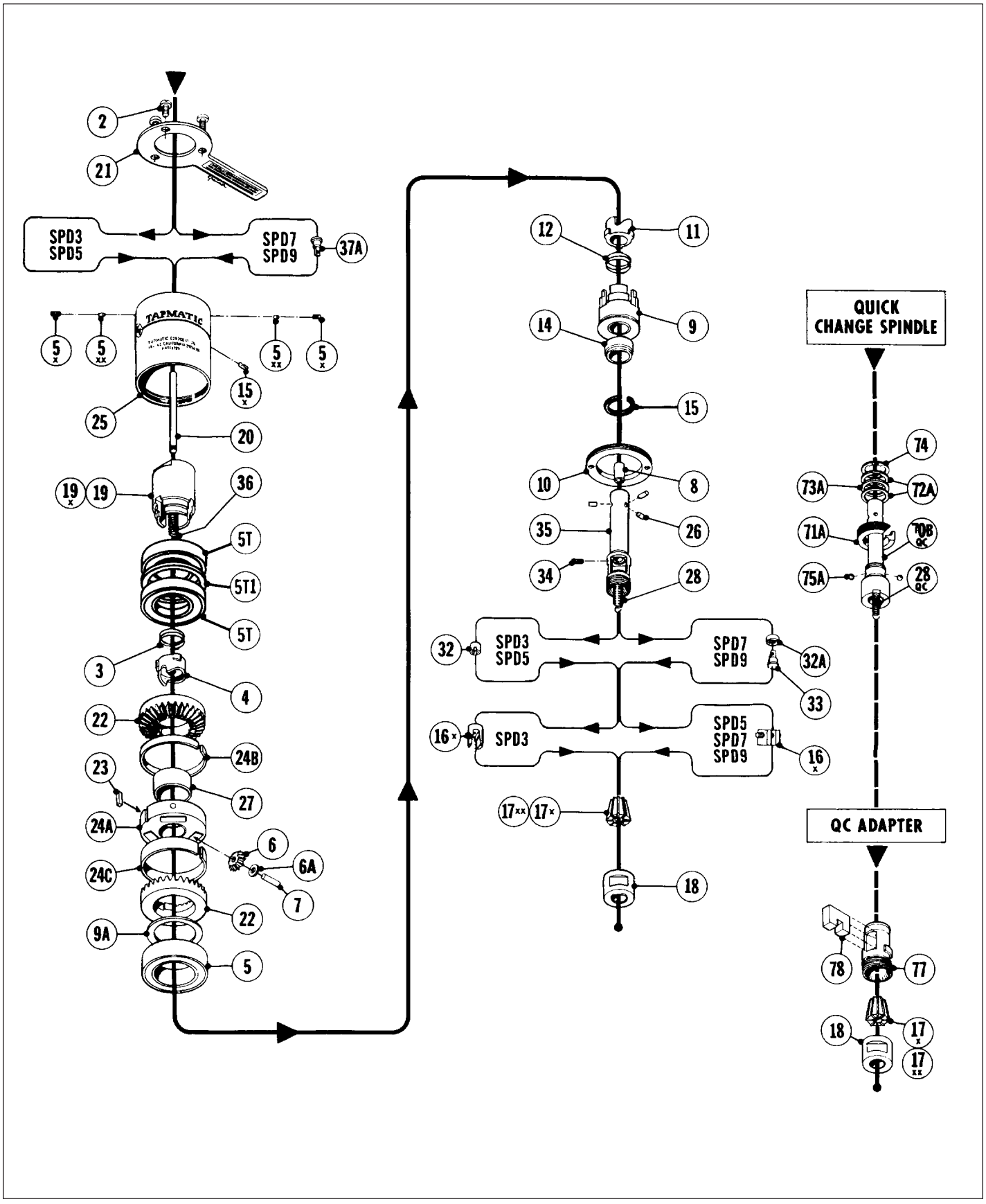
⚠ **Always set the machine stop to avoid tapping too deep and hitting the bottom of a blind hole. The SPD tapping attachments do not include built in torque control so if the tap hits the bottom of a blind hole it will be broken and depending on conditions possible damage to the tapping head may occur. The SPDQC can be used with torque control adapters but these are intended to only be a safety back up in case you accidentally go too deep.**

Tapping Holes: When tapping, it is not necessary to apply any pressure as you feed in. The tap will follow it's own pitch in and out of the hole. Just follow along with the tap, keeping up with it as it enters the hole. After you reach the machine stop, lift up on the feed handle to retract the tap. The tapping attachment will automatically reverse the taps rotation when you retract. Please note that the gear ratio is 1 to 1 in reverse, so you will need to feed out of the hole at the same rate you used feeding in. Be sure to keep up with the tap as it exits the hole. If you are feeding too slowly going in or out, the tap will stop and start and you will hear a clicking sound. If this occurs you need to feed faster to keep up with the tap.

Lubrication: This unit is pre-lubricated at the factory and ready for use. After 600 hours we recommend partially disassembling, cleaning and applying new grease. We recommend using a high quality NLGI 2 type of grease. We recommend returning the Tapping Attachment to Tapmatic for maintenance and repair, but if you would like to do this at your own facility, please follow the instructions shown on the next page. Please let us know if we can be of help.

Cutting Tool Lubrication: For the best results and longest life for your cutting tools, be sure to use the proper cutting fluid / lubricant based on your application and the type of material the work piece is made from.

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)	-	-	-	
19	Threaded Mount (3/8-24)	51319IA	51519IA (2)	-	-	(5) Quick Change Drive Spindle (#70QC) only supplied as an assembly with part #8, #71, #72, #73, #74 and #75.
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)	513191LA (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)	-	**INSTRUCTIONS FOR DISASSEMBLY**
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	3. Remove lock nut (#10)
70QC	Quick Change Drive Spindle	58370A (5)	58570A (5)	58770A (5)	58970A (5)	
71A	Locking Ring	583711	585711	587711	628711	4. Remove all internal components
72A	Wave Spring	583721 (2 required)	585721 (2 required)	587721 (2 required)	-	
72A	Com. Springs	-	-	-	58972 (4 required)	
73A	Washer	583731	585731	587731	62873	**FOR ASSEMBLY** Reverse procedure outlined above.
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	
WRENCH KITS	5/64 HEX KEY RF	27078	27078	27078	27078	
	1/8 or 3mm Hex Key	27125 (1/8)	27223 (3mm)	-	-	
	3/32 Hex Key	27093	27093	27093	27093	
	5/32 or 4mm Hex Key	-	27156 (5/32)	27224 (4mm)	-	
	6mm Hex Key (RF)	-	-	-	27228	
	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 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. Tapmatic will inspect the tool and advise you of the repair costs by fax or email before the repair is completed.

Important: Be sure to return tool complete with collet nut, and if applicable stop arm and back jaw, because otherwise these missing parts would be added to every non-warranty repair.

Cost Notification: Tapmatic will FAX or E-mail a cost notification to you, soliciting your approval before repairs are completed. If it is determined that a tool cannot be repaired, at the customer's request, Tapmatic will return the disassembled parts. We are not able to reassemble a tool 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 tools 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 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 shipment by overnight or second day before we agree to upgrade your repair order to priority service. Typical turn around, 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