



This Tapping Attachment can be used on all types of manually operated machines with rotating non-reversing spindles. It can also be used in many applications that are automated or semi-automated, such as air feed drill units. It should not be used on machines which reverse on the back stroke nor on machines which are automated and have no controlled backstroke.

#### **MOUNTING THE STOP ARM**

This attachment incorporates in its design a planetary gear reverse which has a 1.75 to 1 reverse ratio. To assure the best performance of this reversing mechanism, it is extremely important that a short stop arm (as furnished with the unit) be employed. If an extension is required, it is important that it be as light as possible. A truarc ring (#40X) is provided to hold the stop arm (#32X) in place.

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 and 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**

Insert the desired 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 jaws on those units with adjustable back jaws. The smallest unit has a fixed back jaw. Then, using the wrenches provided, tighten the chuck nut. This will assure true running of the tap.

#### **TAPPING SPEEDS**

This Tapping Attachment has been designed to operate properly at recommended tapping speeds. Please refer to chart for the recommendations for specific tap sizes.

#### **SETTING THE PRE-SELECTIVE TORQUE CONTROL**

This attachment has a spring loaded clutch. Driving torque adjustments are made by tightening or loosening the knurled cap at the upper end of the attachment. When the desired torque has been determined, the knurled cap may be locked in place by a set screw. Proper procedure when beginning tapping operation is to loosen the knurled cap so that all the graduations on the housing are visible. Then tighten cap progressively until the attachment will drive a sharp tap. If later during the operation the clutch slips, it is evident that the tap is dull and should be immediately exchanged for a sharp tap, but the clutch should not be tightened further.

The graduations on the housing are simply reference points; they do not refer to specific tap sizes. When the proper torque is determined for a specific job, this reference point may be noted to save set-up time in the future.

#### **SETTING DEPTH CONTROL**

These Models incorporate adjustable self-feed in conjunction with pre-selective torque control. By simply turning depth control collar #48X, you may reduce the standard amount of self-feed to as little as 1/16". This facilitates tapping of thin materials or any other shallow hole where thread depth is critical.

#### **THROUGH HOLE TAPPING**

Tapping with this Attachment does not require that the operator 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 taper 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 right handed motion as soon as it is withdrawn from the hole.

#### **BOTTOM HOLE TAPPING**

For bottom hole tapping it is suggested that the tap spindle be allowed to release in neutral before hitting bottom. Where possible, set the machine stop so that machine feed plus the attachments self-feed will equal the desired thread depth. This simplifies the tapping operation. For the smoothest operation, it is best not to drive the tap to the bottom of a blind hole, the clutch is then only employed as a safety device to avoid tap breakage. If the clutch should slip before the tap reaches the desired depth, check to see that the hole is not packed with chips. If the hole is clear, then it is time to change the tap for a sharp one.

The amount of self-feed built into each of these Tappers is as follows:

M6 or 1/4" cap.—1/16" to 1/4"    M16 or 5/8" cap.—1/16" to 3/8"  
M12 or 1/2" cap.—1/16" to 3/8"

#### **LUBRICATION**

This unit is pre-packed at the factory and only needs periodic additions to maintain proper lubrication. It is suggested that after approximately 600 hours of operation a small amount (from 1/4 to 3/4 ounce) of a #2 multi-purpose lithium grease be added. The smallest unit must be disassembled, per the disassembly instructions, to apply grease. The other units have grease holes in the gear carrier. Remove the stop arm and the gear carrier is exposed (a needle nose fitting for a grease gun may be required — Alemite Needle Nose Adapter, Part No. 6783). An excess amount of lubrication will create internal friction and overheating.

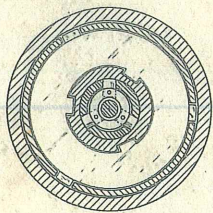
#### **TAP LUBRICATION**

To insure maximum tap life, the proper lubricant should be used. In high production tapping units, we recommend Tapmatic's Molecular Edge II Coolant. For hand applied cutting fluid applications, Tapmatic Cutting Fluids are recommended: Tapmatic Cutting Fluid #1 for steel and other hard alloys, Tapmatic Cutting Fluid #2 for aluminum and magnesium.

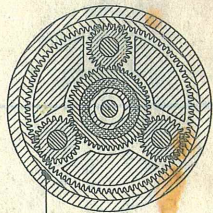
**Recommended Tapmatic Tapping Speeds**

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

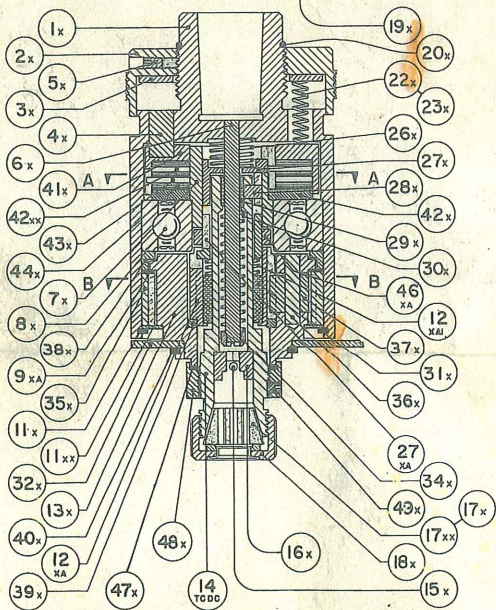




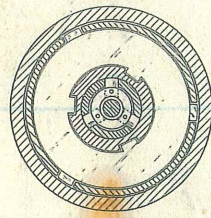
SECTION A-A



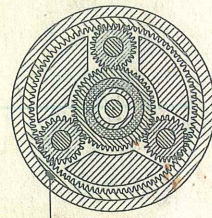
SECTION B-B



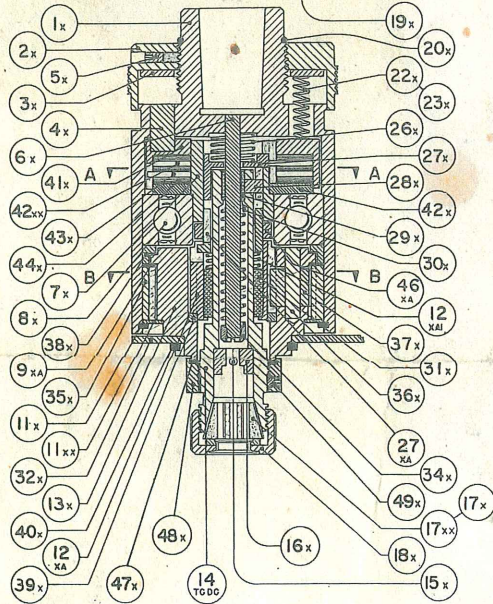
30TC/DC  
M6



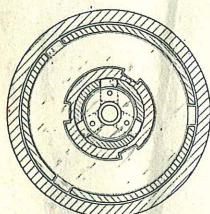
SECTION A-A



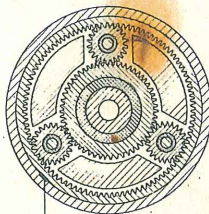
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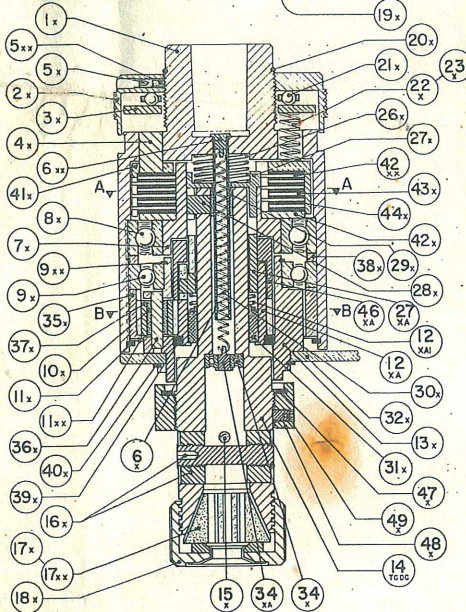
50TC/DC  
M12



SECTION A-A



SECTION B-B



70TC/DC  
M16



# "TC/DC" REVERSING ATTACHMENTS

## ORDERING NUMBERS FOR SPARE PARTS

IDENT. NO.	PART NAME	30TC/DC M6	50TC/DC M12	70TC/DC M16
1X	Housing	54301(1)	54501(1)	54701(1)
2X	Clutch Adjustment Cap	50302A(2)	56502A(2)	50702A(2)
3X	Spring Plate	50303	56503	50703
4X	Driver Pins	50304(3 set)	50704 (3 set)	50704 (3 set)
5X	Lock Set Screw	50305A(3)	50305A(3)	50305A(3)
5XX	Lock Set Screw Plug	503051	503051	503051
6X	Guide Spindle	503161	56506	51720
6XX	Upper Spring Hanger	—	—	517371
7X	Clutch Sleeve	50307	50507	50707
8X	Clutch Bearing	50308	56508	50708
9X	Gear Carrier Bearing (Ball)	—	50509	50709
9XA	Gear Carrier Bearing (Nylon)	503091	—	—
9XX	Truarc Ring	—	505091	507091
11X	Retaining Ring	50311	50511	50711
11XX	Gear Washer	503111	505111	507111
12XA	Reversing Sleeve	503121(4)	505121(4)	507121(4)
12XA1	Reversing Driver Spring	51312	505122	507122
13X	Gear Carrier	50313	54513	54713
14TC/DC	Drive Spindle	54314A(5)	54514A(5)	54714A(5)
15X	Back Jaw Retainer Screw	50315(2 req'd)	50315	50315
16X	Back Jaw or Tap Jaw	503161	56516	50716
17X	Rubber Flex Collet	21300 or 21600	22100	24100
17XX	Rubber Flex Collet (large)	21400 or 21700	22200	24000
18X	Tap Chuck Nut	50318	56518	50718
19X	Key	50319	50319	50719
20X	Stop Ring	50320	56520	50720
21X	Adjustment Thread Bearing	—	56521	50721
22X	Clutch Spring (large)	50322 (3 set)	50522 (9 set)	50722 (9 set)
23X	Clutch Spring (small)	50323 (3 set)	50723 (9 set)	50723 (9 set)
26X	Cushion Spring	50326	565261	50726
27X	Spring Cup Driver	503271	505271	507271
27XA	Reversing Driver	503272	505272	507272
28X	Drive Pins	50328 (3 set)	56528 (3 set)	50728 (3 set)
29X	Guide Spindle Bearing	50329	56529	50729
30X	Return Spring	51328	51528	507301
31X	Drive Spindle Bearing	— (4)	— (4)	— (4)
32X	Stop Arm	50332	56532	50732
34X	Guide Spindle Nut	503241	56534	—
34XA	Spring Bearing	—	—	50734
34XX	Spring Bearing Hanger	—	—	50706
35X	Ring Gear	50335	50535	50735
36X	Gear Pins	50336 (3 set)	50536 (3 set)	50736 (3 set)
37X	Planet Gears	50337 (3 set)	50537 (3 set)	50737 (3 set)
38X	Spacer	50338	54538 and 56511	54738 and 50611
39X	Thrust Washer	50339	50539	50739
40X	Truarc Ring	50340	56540	50740
41X	Clutch Driver	50341	56541	50741
42X	Primary Internal Clutch Plate	50342	56542	50742
42XX	Internal Clutch Plate	503421	565421 (2 set)	507421 (2 set)
43X	External Clutch Plate	50343	56543 (2 set)	50743 (2 set)
44X	Clutch Discs	50344 (3 set)	56544 (5 set)	50744 (5 set)
46XA	Reversing Sleeve Bushing	503461	505461	507461
47X	Friction Washer	50347	50547	50747
48X	Depth Control Collar	50348	50548	50748
49X	Lock Set Screw	50305	50305	50305

- (1) Housing only available as an assembly with ident #4X and #6X. (2) Clutch Adjustment Cap only available as an assembly with ident #5X and #5XX. (3) Lock Set Screw comes with ident #5XX. (4) Reversing Sleeve and Drive Spindle Bearing available only as an assembly. (5) Drive Spindle only available as an assembly with ident #29X.

## INSTRUCTIONS FOR DISASSEMBLY

- Remove stop ring (#20X) and unscrew clutch adjustment cap (#2X).
- Hold unit in vertical position and remove adjustment thrust bearing (#21X).
- Lift off spring plate (#3X).
- Carefully invert unit over a clean receptacle. Clutch springs (#22X & 23X) will drop out.
- Remove tap chuck nut (#18X) and collet (#17X).
- Remove back jaw retainer screw (#15X).
- Remove back jaw (#16X).
- Remove return spring (#30X) by threading spring puller (supplied with unit) into tapped hole in part (#34XX), and pulling out to expose spring for removal with spring hook (also supplied with unit).
- Remove truarc ring (#40X) and stop arm (#32X).
- Remove truarc ring (#11X) and gear washer (#11XX).
- Lift out drive spindle (#14TC/DC) and reversing sleeve (#12XA) sub-assembly from unit.
- Lift out spacer (#38X).
- Lift out clutch sleeve (#7X), clutch driver (#41X), clutch plates (#42X, 42XX, 43X) and clutch discs (#44X).
- Lift out cushion spring (#26X) and spring cup driver (#27X).
- Remove drive pins (#28X) from drive spindle (#14TC/DC).
- Press drive spindle (#14TC/DC) out of reversing sleeve (#12XA) sub-assembly.
- Do not disassemble planetary gear reversing subassembly (#13X).

## REPLACEMENT OF FRICTION WASHER #47X

- Remove tap chuck nut (#18X).
- Unscrew depth control collar all the way off.
- Using small screwdriver, flip out used washer (#47X) and insert new one.

## INSTRUCTIONS FOR ASSEMBLY

- Clean and lubricate all parts thoroughly.

- Place internal clutch plate (#42X) on clutch sleeve (#7X), then clutch disc (#44X), then external clutch plate (#43X), then another clutch disc (#44X), then internal clutch plate (#42XX), and so forth, until you have all plates and discs on clutch sleeve, then line up external dogs so that you can slip clutch driver (#41X) over complete subassembly.
- Place cushion spring (#26X) and spring cup driver (#27X) in clutch sleeve (#7X).
- Insert clutch sleeve (#7X) and clutch driver (#41X) subassembly into housing (#1X), making sure that 3 holes in clutch driver mate with 3 pins in housing (#1X).
- Insert spacer (#38X) into housing (#1X).
- Press drive spindle (#14TC/DC) into reversing sleeve (#12XA) sub-assembly and insert drive pins (#28X).
- Insert complete subassembly into housing (#1X).
- Insert gear washer (#11XX) and snap in truarc ring (#11X).
- Hook return spring (#30X) to spring hanger (#6X) and insert this subassembly into neck end of housing (#1X) making certain spring hanger is seated properly.
- Use spring hook (supplied with unit) to expose return spring (#30X), and attach spring bearing hanger (#34XX) with bearing (#34X) already mounted.
- Thread spring puller (supplied with unit) into tapped hole in spring hanger (#34XX) and carefully lower assembly into drive spindle (#14TC/DC) until bearing (#34X) seats itself, then unscrew spring puller.
- Place back jaws (#16X) in drive spindle (#14TC/DC) and install back jaw retainer screw (#15X).
- Insert collet (#17X) into tap chuck nut (#18X) and screw tap chuck nut (#18X) on to drive spindle (#14TC/DC).
- Insert clutch springs (#22X & 23X) into unit.
- Place spring plate (#3X) on springs.
- Place adjustment thrust bearing (#21X) on spring plate (#3X).
- Screw on clutch adjustment cap (#2X).
- Install stop ring (#20X).
- Install stop arm (#32X) and snap on truarc ring (#40X).