Holemaker
Drilling Solutions By ITM ®

OPERATING INSTRUCTION FOR REVERSIBLE TAPPING ATTACHMENT

SPTH102 & SPTH103

This tapping attachment can be used on all types of manually operated Drilling/machines with rotating non-reversing spindles.

INSTALLING MORSE TAPER ARBOR

Clean the mating taper, Then with a twisting motion, insert the arbor in to the tapping attachment. Strike the tang end of the arbor with a plastic hammer to lock it firmly. The hex nut is provided to remove the arbor.

MOUNTING THE ATTACHMENT ON THE MACHINE

Mount the STOP ARM on the attachment. A circlip is provided to hold the STOP ARM in place. Now mount the attachment on the machine spindle ensuring the taper is free of oil and grease. Extend strong stop bar from machine spindle or machine table to engage short STOP ARM. DO NOT HOLD STOP ARM BY HAND. DO NOT LENGTHEN STOP ARM. DO NOT HOLD JOB BY HAND, clamp the job securely as full power of the machine is transmitted in reverse.

INSERTING THE TAP

Insert the desired tap into the chuck of the attachment. The square of the tap it fit and centered between adjustable square nuts, which should be finger tip tightened. Then tighten chuck nut which forces collect to hold the tap shank in a firm grip. Slacken Adjustable Square Nuts in order to center the tap. Check that the Adjustable Square Nuts only grip the Square portion of the tap. Then firmly tighten the Adjustable Square Nuts.

TORQUE SETTING

The torque adjustments are made by tightening or loosening the cup nut (3) at the upper end of the adjustment. When the desired torque has been determined, the cup nut maybe locked in place by a grub screw (5). Proper procedure when beginning tapping operation is to loose the cup nut so that all the graduations on the body are visible. Then tighten the cup nut progressively until the attachment will drive a sharp tap. When the proper torque is determined for a specific job. This reference point may be noted to save set-up in future. If late 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.

THROUGH HOLE TAPPING

Press the tap lightly against the mouth, of the hole. The free axial float is provided in the attachment which will automatically permit the tip 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 of the attachment movement of the machine spindle during transition from forward to reverse. The tap will return to a forward rotation as soon as it is with-drawn from the hole.

BLIND HOLE TAPPING

For accurate and efficient blind 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. If the clutch should slip before the tap reaches the desired depth, check to see that the hole is of the correct size, not packed with chips and that the tap is sharp and undamaged. The torque control clutch is designed as a safety device to prevent tap breakage in case the tap accidentally hits the bottom. We do not recommend using the clutch for repetitive blind hole tapping unless absolutely necessary.

TAPPING SPEED

The factors to be considered while trying to determine the best tapping speed are :

- Material to be tapped.
- Pitch of the thread.
- Selection of tap
  - Length of chamfer on tap
  - Rake angle
  - Standard, spiral or spiral point
- The percentage of full thread to be cut.
  - The tapping speed must be reduced as the percentage of full thread to be cut is increased.
- Drilled hole with respect to length of the hole to be tapped.
- Cutting fluid
- Straight or tapered thread to be tapped.

These tapping attachments have been designed to operate at max. 1500 R.P.M. and 1000 R.P.M. in size 1 & size 2 respectively.

CUTTING FLUID

The cutting fluid works two ways. Heat generated as the tap proceeds in to the hole by the deformation of the material and by friction. The fluid must dissipate this heat. The fluid must also lubricate so that the friction between the tap, the chips and the hole is minimized. Be sure to use large quantities of cutting fluid under pressure for tapping. The higher the cutting speed, the deeper the hole and the tougher the material the more cutting fluid you will need.

LUBRICATION

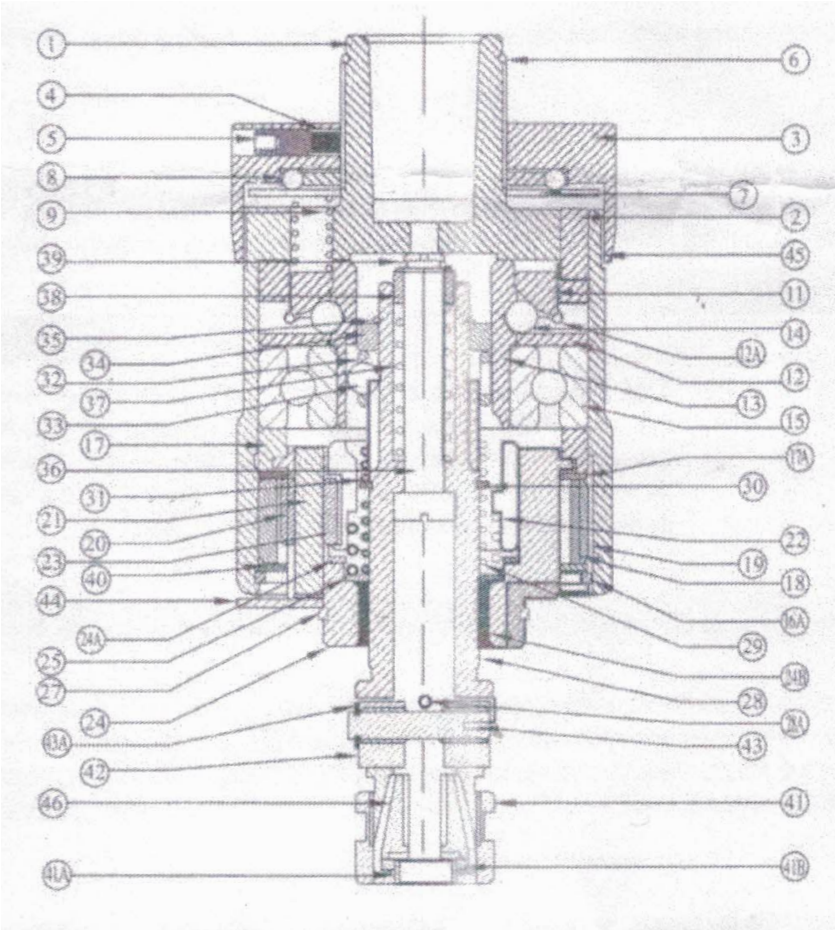
This attachment is pre-packed at the factory and only needs periodic additions of grease to maintain proper lubrication. Approximately every 600 Hrs partially disassemble the attachment and clean ball bearing and gears. Add a small amount of grease and reassemble. Do not over lubricate. Excess grease will create internal friction and overheating.

SERVICE OVERHAUL AND REPAIR

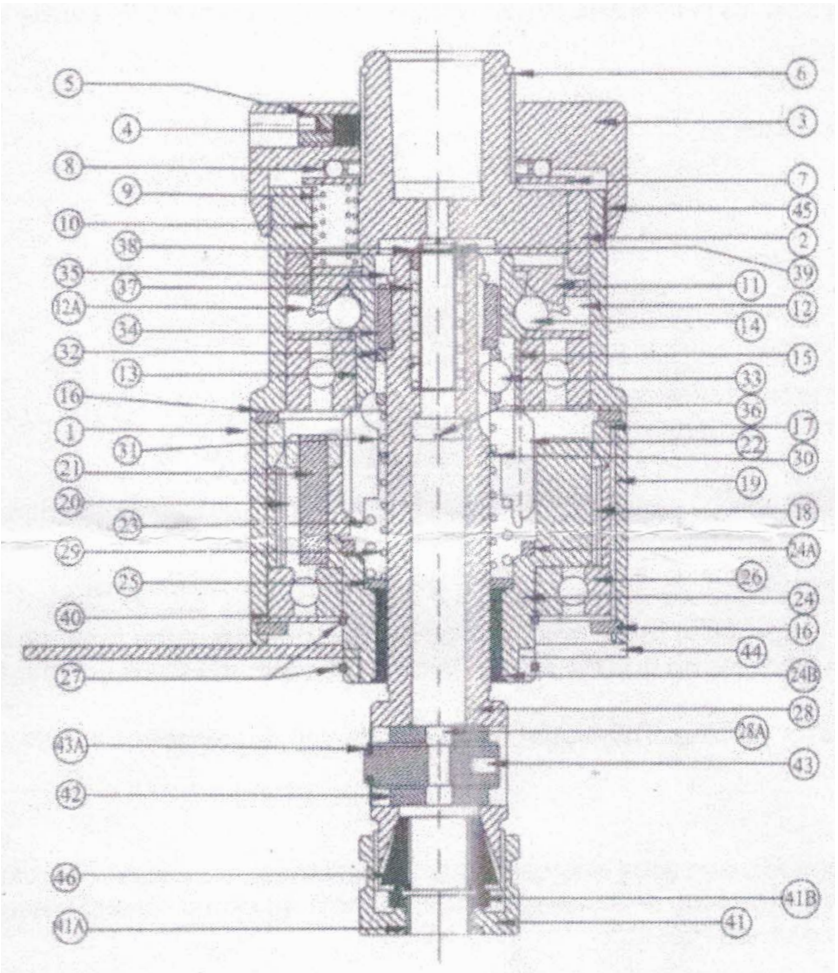
Since overhall and repair are time causing for some one not familiar with the attachment. We recommend that the they be sent to us. We will be glad to get your tapping attachment operational again in shortest possible time.

REVERSIBLE TAPPING ATTACHMENT

PART NO: SPTH102



PART NO: SPTH103



Part No.	Part Name	SPTH102	SPTH103
1.	Body	1 HR 1 (a)	1 HR 2 (a)
2.	Pin for Body	2 HR 1 (a) (3 Nos.)	2 HR 2 (a) (3 Nos.)
3.	Cup Nut	3 HR 1	3 HR 2
4.	Pin for Cup Nut	4 HR 1	4 HR 2
5.	Grub Screw	5 HR 1	5 HR 2
6.	Lockring for Cup Nut	6 HR 1	6 HR 2
7.	Washer for Cup Nut	7 HR 1	7 HR 2
8.	Thrust Bearing	8 HR 1	8 HR 2
9.	Pressure Spring Outer	9 HR 1 (6 Nos.)	9 HR 2 (9 Nos.)
10	Pressure Spring Inner	-	10 HR 2 (9 Nos.)
11.	Pressure Plate	11 HR 1	11 HR 2
12.	Clutch Driver	12 HR 1	12 HR 2
12.A	Lockring for Clutch Driver	12A HR 1	12A HR 2
13.	Forward Driver	13 HR 1 (c)	13 HR 2 (c)
14.	Balls for Forward Driver	14 HR 1 (6 Nos.)	14 HR 2 (6 Nos.)
15.	Ball Bearing for Forward Driver	15 HR 1 (c)	15 HR 2 (c)
16.	Circlip for body	-	16 HR 2 (2 Nos.)
16.A	Retaining Ring	16A HR 1	-
17.	Spacer	17 HR 1	17 HR 2
17.A	Fiber ring	17A HR 1 (b)	-
18.	Gear ring	18 HR 1	18 HR 2
19.	Key for Gear ring	19 HR 1	19 HR 2
20.	Pinion	20 HR 1 (b) (3 Nos	20 HR 2 (b) (3 Nos.)
21.	Pin for Pinion	21 HR 1 (b) (3 Nos	21 HR 2 (b) (3 Nos.)
22.	Reverse Gear	22 HR 1	22 HR 2
23.	Spring for reverse gear	23 HR 1	23 HR 2
24.	Carrier	24 HR 1 (b)	24 HR 2 (b)
24.A	Ring for carrier	24A HR 1 (b)	24A HR 2 (b)
24.B	Bush for carrier	24B HR 1 (b)	24B HR 2 (b)
25.	Washer for Carrier	25 HR 1 (b)	25 HR 2 (b)
26.	Ball Bearing for Carrier	-	26 HR 2 (b)
27.	Circlip for Carrier	27 HR 1	27 HR 2 (2 Nos.) (b)
28.	Spindle	28 HR 1	28 HR 2
28.A	Pin for Spindle	28A HR 1	28A HR 2
29.	Expansion Spring	29 HR 1	29 HR 2
30	Lockring for Spindle	30 HR 1	30 HR 2
31.	Spring for ball carrier	31 HR 1	31 HR 2
32.	Ball carrier	32 HR 1	32 HR 2
33.	Ball for ball carrier	33 HR 1 (3 Nos.)	33 HR 2 (3 Nos.)
34.	Washer for spindle	34 HR 1	34 HR 2
35.	Lockring for Washer	35 HR 1	35 HR 2
36.	Stud for Spindle	36 HR 1	36 HR 2
37.	Comp. Spring for Stud	37 HR 1	37 HR 2
38.	Washer for Stud	38 HR 1	38 HR 2
39.	Locking for Stud	39 HR 1	39 HR 2
40.	Thrust washer	40 HR 1	40 HR 2
41.	Chuck Nut	41 HR 1 (d)	41 HR 2 (d)
41.A	Bush for Chuck Nut	41A HR 1 (d)	41A HR 2 (d)
41.B	Washer for Chuck Nut	41B HR 1 (d)	41B HR 2 (d)
42.	Square Nuts	42 HR 1 (1 set)	42 HR 2 (1 set)
43.	L R Stud	43 HR 1	43 HR 2
43.A	E-Type Circlip	43A HR 1	43A HR 2
44.	Stop arm	44 HR 1	44 HR 2
45.	Torque strip	45 HR 1 (a)	45 HR 2 (a)
46.	Collet	S161	S212
	Collet	S171	S222
47.	Spanner	47 HR 1 (1 set)	47 HR 2 (1 set)
48.	Allen Key	48 HR 1	48 HR 2
49.	Arbor		
	(a) JT33/MT1	49 (a) HR 1	-
	(b) JT33/MT2	49 (b) HR 1	-
	(c) JT6/MT2	-	49 (c) HR 2
	(d) JT6/MT3	-	49 (d) HR 2
50.	Nut for Arbor	50 HR 1	50 HR 2

Note : Following parts are only available as an assembly.
(a) Body{1) wlth Part No. (2) and (45)
(b) (I) SPTH102 Carrier (24) with Part No 17A. 20, 21, 24A, 24B, 25
(II) SPTH103 Carrier (24) with Part No. 20, 21, 24A, 24B, 25, 26, 27
(c) Bearing (15) with Part No. (13)
(d) Chuck nut (41) with Part No (41A) and (4B)

RECOMMENDED CUTTING SPEED

Material	Rake Angle	Cutting Speed Speed Feet/min	Cutting Fluid
		Type Tap. HSS	
Steel Carbon		20 - 50	Oil emulsion
0.10 - 0.50% C		20 - 40	or Sulphur-base oil
0.50 - 1.10% C		10 - 30	Heavy Sulphur-- Base oil
Steel - Chromium-Nickel		10 - 30	
Steel - Chromium-Molybdenum	10° - 15°	10 - 23	Heavy Chloride base oil or Sulphur - Base oil
Steel - Stainless		10 - 23	Heavy Chloride base oil
Monet Metal			
Steel Cast		15 - 50	Soluble oil or Sulphur base oil
Iron - Cast	3° - 7°	30 - 80	Dry Soluble oil
Brass			
Drawn	10° - 15°	60 - 100	Soluble oil or light
Cast	0° - 5°	60 - 100	base oil
Bronze			
Aluminum			
Drawn	20° - 30°	60 - 100	Kerosene, Alcohol or Soluble oil
Cast	10° - 15°	60 - 100	
Duralumin	10° - 20°	60 - 100	
Bakelite	0° - 5°	30 - 65	Dry
Plastics, Soft	20° - 30°	60 - 70	Dry

The above information are subject to Tapping Speed instructions.

INSTRUCTIONS FOR DISASSEMBLY

1. Remove lockring (6) and unscrew cup nut (3).
2. Hold unit in vertical position and remove thrust bearing (8), washer (7)
3. Carefully invert unit over a clean surface pressure springs (9 & 10) will drop out.
4. From the lower end remove chuck nut (41), collet (46) If necessary then, remove 'E' type circlip, stud (43A) and Loosen L-R Stud (43) to remove Nuts (42) (For Model HR).
5. Remove circlip (27), Stop arm (44), circlip (16) and bearing cover (40), Do not remove circlip (27) which holds bearing.
6. Lift out complete gear carrier sub with spindle unit.
7. Remove Gear ring (18), Key (19) and spacer (17).
8. Remove lockring (35), washer (34), ball carrier (32), balls, (33) and spring (31).
9. Lift out reverse gear (22) and spring (23).
10. Remove lockring 30), expansion spring (29), washer (25) for relieving spindle unit from carrier sub-assembly.
11. Remove circlip (16) for disassembling clutch sub assembly, invert the Body over a clean receptable. Lift off pressure plate (11), balls (14), clutch drive (12), (For reassembly) pack grease in clutch sub-assembly so pressure plate (11) will stay in place while reassembling clutch bearing assembly.
12. Do not disassemble ball bearing (15&26).
13. Do not disassemble pinion (20) - carrier (24) sub-assembly.

INSTRUCTIONS FOR ASSEMBLY

1. Clean and lubricate all parts requiring lubrication thoroughly.
2. Reverse procedure of assembly.