TRSB/TRRB Operation

Stationary TRSB heads can be opened by the pull-off action generated between the rolls and completed thread when forward travel of the tool is stopped.

TRRB revolving heads are opened by the rearward movement of the operating yoke.

In both styles, opening action causes the eccentric roll shafts to rotate and cam the rolls radially outward to clear the completed thread.

All the TRSB/TRRB operation information you need is right here at your fingertips—ust click on the subject of your choice.

Landis Threading Systems
An Allegheny Technologies Company
Threadmaking answers.™

Operating

TRSB stationary and TRRB revolving thread rolling heads

Reference numbers referred to by these instructions can be identified by referring to the appropriate parts drawings below:

Stationary Head:

- No. 3 1/2 TRSB
- No. 5 TRSB
- No. 7 TRSB
- No. 10 TRSB

Revolving Head:

- No. 3 1/2 TRRB
- No. 5 TRRB
- No. 7 TRRB
- No. 10 TRRB
- No. 16 TRRB

How They Operate

STATIONARY TRSB heads are opened by the pull-off action generated between the rolls and completed thread when forward travel of the tool is stopped.

TRRB Revolving heads are opened by the rearward movement of the operating yoke.

In both styles, opening action causes the eccentric roll shafts to rotate and cam the rolls radially outward to clear the completed thread.

Lubrication

Rolling heads are supplied with multiple bushing bearings (standard), or one piece bronze or carbide bearings for more stringent operations.

Grooved channels in the helix angle bushings direct coolant to the bearings and all three types are sufficiently lubricated by the coolant used for the other machining operations.

For maximum wear qualities, the head should be periodically disassembled, thoroughly cleaned, and inspected for condition. Lubricate before reassembly with a light machine oil. Lubricate the splines on the head body (1) and operating ring (7) of revolving heads and the head body (1) shank of stationary heads with Moly Kote "G".

Changing Thread Rolls and Helix Angle Bushings

Replaceable helix angle bushings give Landis heads versatility and maximum wear qualities. Separate bushing sets are used for UNC, UNF, millimeter coarse, millimeter fine, sucker rods, and L.H. threading.

Refer to the individual size head specifications on pages 9 through 25 for the appropriate part numbers for available bushing sets. Bushings also available for other threads, or for special diameter, pitch and form threads. Contact factory for details.

These same pages also list part numbers for the three styles of bearings.

To replace rolls, roll shafts, or helix angle bushing requires that roll retaining cap (15) be removed.

Place the head in copper clad vise jaws, gripping it by the shank. Remove the three retaining cap screws (16) and the cap can be removed.

If the object is to just replace thread rolls, push down on the thread roll shafts as the cap is removed to prevent any unnecessary assembly.

If rolls of a different diameter and pitch or of a different form are to be used, then, further disassembly may be required.

Installing Helix Angle Bushings

Helix angle bushings consist of three front and three rear bushings, which are not interchangeable. Front bushings contain an oil groove only, rear ones contain an oil groove and two size reference marks.

Bushing sets must accommodate the particular thread form to be rolled. Bushings to be used for UNC are etched with "N", those for UNF with "F". For metric threading, bushings are marked mm-C and mm-F for metric coarse and fine, respectively. Bushings for left-hand threading are marked L.H.

To replace bushings, remove face cap (15) and roll shafts (20). Front bushings (12) can be removed from the cap by careful tapping. Rear bushings that resist removal by hand can be removed by lightly prying around the edge.

Note: Front helix angle bushings are identical to each other and can be installed in any hole in the face cap. The same is true of rear bushings.

Roll shafts (20) are also interchangeable with each other and can be installed in any position.

Front and rear bushings are properly located in their respective holes by a locating pin.

Exercise care that pins are not damaged or sheared during assembly. Either condition will prevent proper seating of the bushing.

First install rear bushings (13) in their respective seats.

Close the head and insert the splined end of the roll shaft (20) into the splined end of the shaft adjusting crank (21) with the notch on the shaft aligned with the suitable reference line on the bushing.

Note: If reference lines are not visible, then one or more front bushings have been incorrectly installed in the rear position.

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Operating

TRSB stationary and TRRB revolving thread rolling heads

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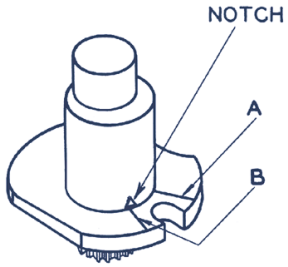
- No. 7 TRSB
- No. 10 TRSB

Revolving Head:

- No. 3 1/2 TRRB
- No. 5 TRRB
- No. 7 TRRB
- No. 10 TRRB
- No. 16 TRRB

Chart 1



The correct rear helix angle bushing reference line to use depends upon the diameter to be rolled. Refer to Chart 1 for reference line positioning.

7/16"	1/4" to 5/16"	3/8" to 7/16"
5/8"	5/16" to 7/16"	1/2" to 5/8"
7/8"	7/16" to 9/16"	5/8" to 7/8"
1-1/4"	5/8" to 7/8"	1" to 1-1/4"
2"	1-1/4" to 1-5/8"	1-11/16 to 2"

It may be necessary to lightly tap roll shaft into place causing the shaft adjusting crank (21) to assume the correct position.

During installation, the two opposed size adjusting screws (9) in the operating ring (7) or shank (22) should be approximately central. If, after adjusting the head to size, this is not the case, reset all the roll shafts one tooth at a time in the correct direction.

Check that thread rolls and the type of bearings to be used are free of foreign matter. If multiple bushing bearings are being used, first assemble the three piece bearing. Then, place whatever type of bearing that is to be used into the rolls and position the rolls on the shafts.

IMPORTANT: Rolls must be assembled clockwise in sequence 1, 2 and 3 as numbered for right-hand threading and in counterclockwise position 1, 2 and 3 for left-hand. Failure to assemble rolls properly can damage rolls when placed in operation.

Also, foreign material between the helix angle bushing flange and seat can cause rolls to skid and ruin them. A line worn from the front to the rear of the rolls on the crest and both flanks of the individual forms indicates that this condition exists. This is, of course, the wrong time to detect this problem, so extra care should be taken at assembly to prevent it.

Install front helix angle bushings (12) in retaining cap (15) and position it over roll shafts (20). Replace cap screws (16), AT THIS POINT, CHECK ROLLS FOR FREE ROTATION. If rolls do not freely turn, determine why and correct.

Disassembling Stationary Heads

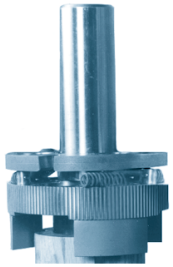
Grip head in vise with copper clad jaws by the retaining cap (15) with shank up. Take care not to buckle retaining cap. Do not grip over thread rolls.

Remove three stud screws (26) and springs (28) and remove shank (22) with attached adjusting ring (8). Remove two adjusting screws (9), then revolve adjusting ring (8) until "O" reference marks on it and shank are aligned. Pull adjusting ring forward and remove from shank.

Remove connecting studs (25) and washers (27). Revolve closing ring (2) slightly clockwise and pull rearward until spring pins (4) clear slots in rear of head body.

Allow head opening springs (5) to revolve closing rings until reaching their full free length. Remove closing ring with opening springs attached. Remove shaft adjusting cranks from roll shafts.

Figure 1



Assembling Stationary Heads

Place suitable rear helix angle bushings (13) in their respective seats. Place a block of wood with notched legs on head body (1), invert, and clamp in vise. Outside diameter of block must be small enough to fit between legs to hold bushings in place. See Figure 1.

Now, place three shaft adjusting cranks (21) in their respective recesses. Attach head opening springs (5) to spring retaining pins (6) and place closing ring (2) assembled with opening springs onto head body (1).

After assembling springs, position closing ring (2) close enough to allow free end of one spring to be placed in head body slot. Revolve closing ring to compress spring. Maintaining space between closing ring and head body, place remaining springs in their slots, then, slide ring forward until it contacts head body.

To retain closing ring, place stud washers (27) on connecting studs (25), pass studs through closing ring and screw into head body (1). Be sure closing ring moves freely before further assembly.

Assemble adjusting ring (8) to shank (22) with square slotted edge rearward. Revolve adjusting ring until adjusting screws' (9) recesses are in line with tapped holes in shank.

NEXT

TRSB stationary and TRRB revolving thread rolling heads

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- No. 5 TRSB
- No. 7 TRSB
- No. 10 TRSB

Revolving Head:

- No. 3 1/2 TRRB
- No. 5 TRRB
- No. 7 TRRB
- No. 10 TRRB
- No. 16 TRRB

Install adjusting screws and tighten all an equal amount.

Place assembled shank (22) and adjusting ring (8) on the head body (1) aligning "O" reference marks on both until splines mesh. Replace the three pull back springs (28) on connecting studs (25) and tighten stud screws (26).

Roll shafts, bearings, rolls, retaining cap, and all other front parts can now be assembled as described under "Changing Thread Rolls and Helix Angle Bushings".

Following assembly, grip shank in vise and push and pull open and close checking for proper functioning.

Disassembling Revolving Heads

Note: The instructions for disassembly and assembly will generally apply to all five sizes of revolving heads. However, the 2" No.16TRRB cannot be gripped in a vise because of the size and weight (approximately 200 lbs.) and the use of a flange instead of a shank. Therefore, it will be necessary to place the head on a sturdy work bench to accomplish tear down and build-up.

Grip head in vise with copper clad jaws by retaining cap (15) with shank up. Take care not to buckle retaining cap. Do not grip over thread rolls.

With head closed, remove retaining snap ring (40), then, retaining ring (38). Older heads have screw (39) which must be taken out before retaining ring can be removed.

Insert head adjusting wrench or suitable piece of bar stock between bore of adjusting ring (8) and shank until it contacts closing ring (2).

Using wrench to hold closing ring stationary, pull operating ring (7) back and remove head body (1).

Remove adjusting screws (9) from operating ring (7) and segment screws (11) from adjusting ring (8). Revolve adjusting ring until "O" on the ring aligns with "O" on shank. Adjusting ring can now be removed.

The preceding instructions are not necessary for average disassembly.

Continuing with disassembly, turn closing ring (2) slightly clockwise and pull it axially rearward until spring pins (6) clear slots in rear of head body. Allow head opening springs (5) to revolve closing ring (2) until springs reach their free length. Remove closing ring and attached head opening springs from head body. Remove roll shaft adjusting cranks (21) from shafts.

Assembling Revolving Heads

Place suitable rear helix angle bushings (13) in their respective seats. Place a block of wood with notched legs on head body (1), invert, and clamp in vise. Outside diameter of block must be small enough to fit between legs to hold bushings in place. See Figure 1.

Now, place three shaft adjusting cranks (21) in their respective recesses. Attach head opening springs (5) to spring retaining pin (6) and place closing ring (2) assembled with opening springs onto head body (1).

After assembling springs, position closing ring (2) close enough to allow free end of one spring to be placed in head body slot. Revolve closing ring to compress spring. Maintaining space between closing ring and head body, place the remaining springs in their slots. Position shank adjusting cranks until they are in alignment with closing ring slots, then, slide ring forward until it contacts head body.

If it had been disassembled, now assemble operating ring (7) aligning pins (3) with mating recesses in operating ring bore. Drop retaining segments (10) into position and secure with screws. Revolve adjusting ring inside operating ring until recesses for adjusting screws (9) are aligned so screws can be threaded through their respective holes into operating ring.

Install two screws and tighten each an equal amount.

Place assembled operating and adjusting rings, (7) and (8), onto head body. With "O" reference marks on both parts aligned and splines meshed, slide operating ring forward until head is completely closed.

Slide retaining ring (38) forward over snap ring relief. Place snap ring (40) on shank and secure. On older No.5 heads, slide retaining ring forward aligning clamp screw (39) with shank section of head body (1) and tighten.

Roll shafts, bearings, rolls, retaining cap, and other front parts can now be assembled as described under "Changing Thread Rolls and Helix Angle Bushings".

Following assembly, grip shank in vise and push and pull open and close checking for proper functioning.