NORTON

10 x 16" TYPE TS

HAND SURFACE GRINDER

Instruction and Parts Manual
No. 1247-3

These instructions were correct at the time of preparation. However, since it is NORTON COMPANY policy to improve its machines constantly, those built at later dates may differ from these details.

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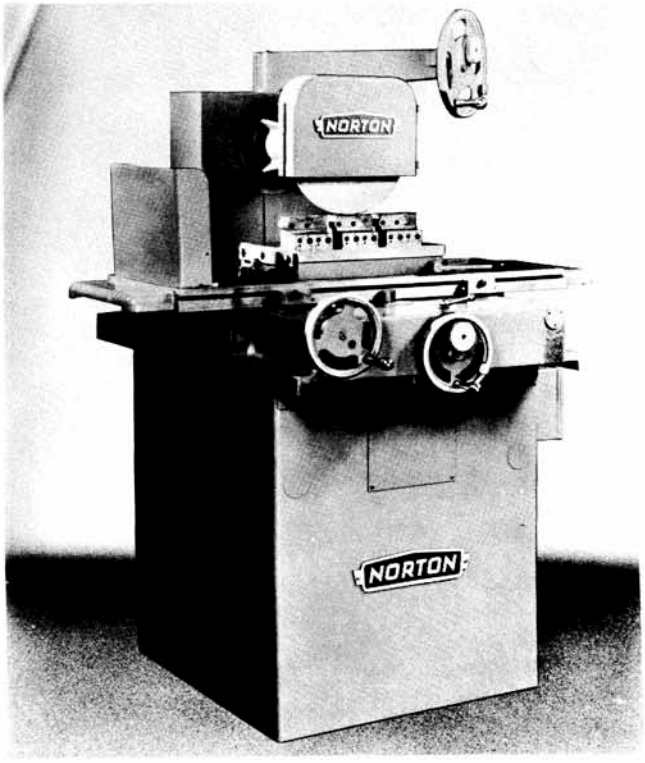
INDEX

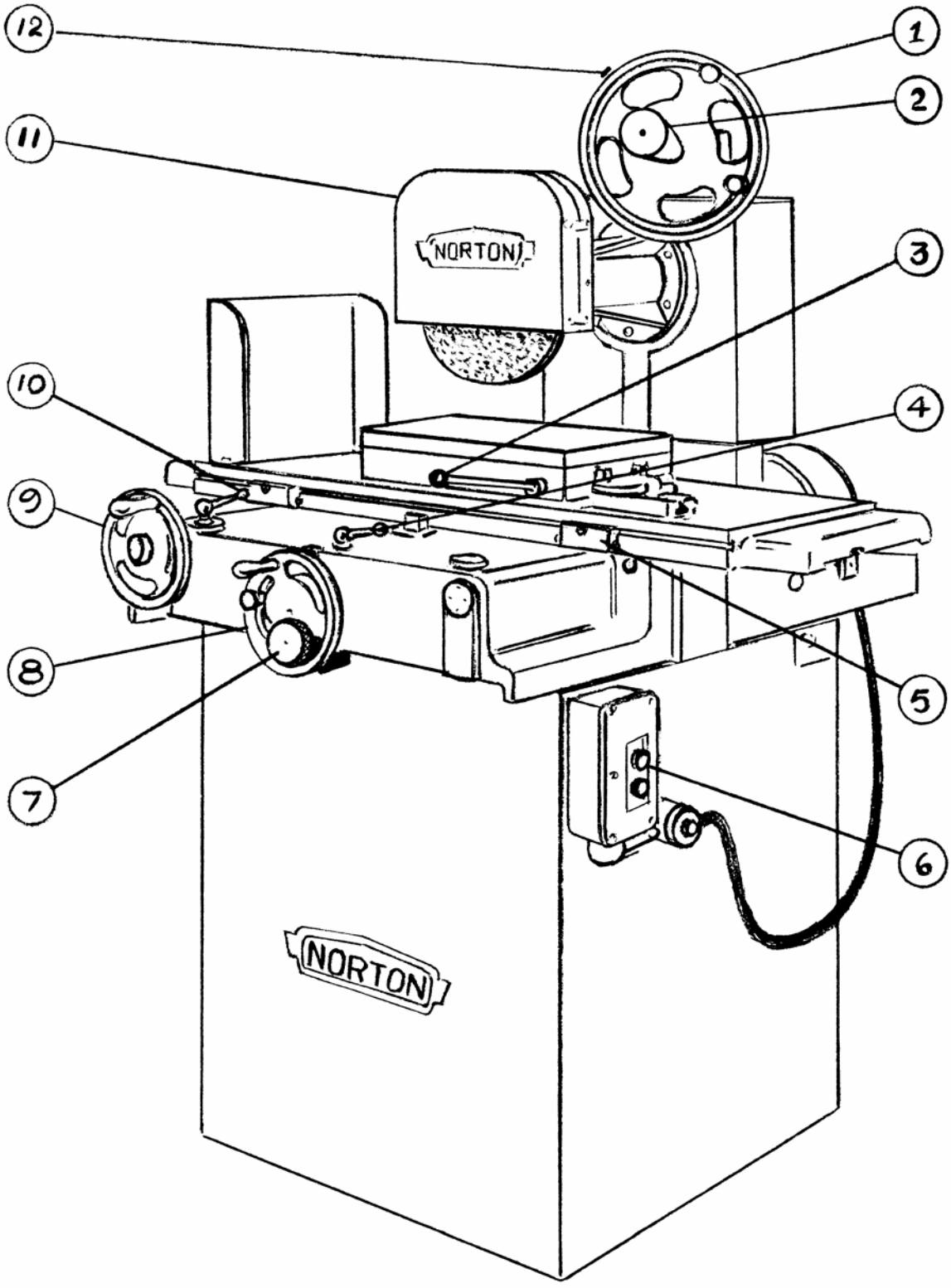
Operating a NORTON
10 x 16'' Type TS
Hand Surface Grinder

N8740-A



Left Front View
NORTON 10 x 16''
Type TS Hand
Surface Grinder

N8788-A



Identification of Controls and Components

(See next page)

IDENTIFICATION OF CONTROLS AND COMPONENTS
(as shown on previous page)

1. Wheel Feed Handwheel. Graduations on rim of this handwheel indicate feed of .0005".

2. Fine Downfeed Mechanism. Graduations on pointer (12) indicate .0001" feed.

3. Magnetic Chuck On-off Switch. (Magnetic chucks are furnished at extra cost).

4. Cross slide Brake. This is used to lock cross slide, or to set up a "drag" on cross-feed, if desired.

5. Table Dog. Table dog stops are spring-loaded for cushioned contact. Reverse dog positions, if positive contact is desired.

6. Manual Starter for Wheel Drive Motor. This is the standard arrangement. Machines built to NMTBA or J.I.C. Electrical Standards (at extra cost) have Combination Starters.

7. Fine Cross-feed Mechanism. This permits cross-feeding in increments of .0005".

8. Cross-feed Handwheel. Graduations on rim of this handwheel show .001" feed.

9. Table Drive Handwheel. This handwheel is readily oriented to position the handle for the most convenient short-stroke operation.

10. Table Brake. This is used to lock the table, or to set up a "drag" on table movement, if desired.

11. Hinged Grinding Wheel Guard. The cover swings back for wheel change.

12. Wheel Feed Pointer. Graduations on this pointer indicate .0001" feed.

NORTON

10 x 16" TYPE TS HAND SURFACE GRINDER

Initial Setting Up

On Receipt of Machine

Your 10 x 16" Type TS Hand Surface Grinder is built to provide precise service, and must be handled as a precision tool. Remove the packing materials with care.

Avoid direct, heavy blows on these materials to prevent shocks to the machine. In removing blocking, see that this is done so as to avoid undue stresses on machine or its components.

Separately Packed Material

Certain machine components are packed separately. See that these do not become lost, or are thrown away with packing material. Check the items received against the packing list. Report any missing items immediately.

Lifting

Lifting holes are provided through the front and rear base walls. Light sheet metal covers may be clipped into these when the machine arrives, but the location of the holes is readily apparent, and the covers are easily removed.

Lifting bars can be inserted through the holes, and slings rigged to the ends of the bars. This equipment should be capable of supporting approximately 1,800 pounds. Before lifting, blocks should be placed between the slings and the machine so that damage will not result to machine surfaces when the slings are under tension.

Locating the Machine

A floor plan blueprint is shipped with the machine. Refer to this to determine basic space requirements and add sufficient space to provide adequate clearances for operating activities and maintenance.

Leveling

The Type TS Grinder will operate satisfactorily on a good shop floor. It rests on three floor spots attached to the bottom of the base. These are indicated on the floor plan print shipped with the machine.

Insert steel plates approximately 3/8" thick under the three floor spots when the machine is put down. Then use steel shims between plates and floor spots to level the machine. To do this, use a sensitive spirit level on a flat machined surface, and take readings front and back, and from side to side, and shim to make the machine level.

Once the level has been established, it should be lasting if the floor is of good quality. However, it is good practice to check the level from time to time.

If the machine is put on a concrete floor, be sure that it is not actually attached to the floor.

Electrical Connections

A wiring diagram print is either shipped with the machine, or is mailed separately with other material concerning it.

Refer to this in making electrical connections.

Installing the Sliding Table

The sliding table of this machine moves on antifriction rollers which are contained in separators. These are shown in the Cross Slide Assembly parts drawing on Page 17.

Before putting the table on the machine, install the rollers and separators (which are usually shipped in a box). Arrange them as shown in the Cross Slide Assembly drawing.

The separator with the oval holes is used in the vee way. Note how the rollers are "staggered" in this separator. This provides directional stability in movement of the table. The separator for the flat way has rectangular holes.

Note

In setting the sliding table on the machine, observe care in the meshing of the table drive pinion and the rack on bottom of the table.

Table Drain Hole Cap

Inspection of the sliding table will show a drain-hole approximately 6" long, at the rear. A sheet metal cap is furnished for this. If the machine has been purchased for dry grinding only, this cap should be kept permanently over the hole. If the wet grinding arrangement has been bought, the cap must be removed to permit coolant drainage, but should be replaced whenever dry grinding is done.

Spindle Drive Belt Adjustment

It will be seen that spindle drive is by vee belt and two-step sheaves. These sheaves provide wheel spindle speeds of 1, 680 and 2, 380 r. p. m. approximately.

The "inside" steps are used with the new 12" diameter wheels that are furnished. Changeover to the "outside" (those nearest the Operator when facing the back of the machine) should be done when the grinding wheel has worn down to approximately 9" in diameter.

Belt position change-over and tension adjustment is made by changing the position of the wheel drive motor. To do this, loosen the hold-down screws, and turn the adjusting screw. Be sure to tighten the hold-down screws when suitable adjustment has been made.

Handwheels

If the handwheels are received separately, their identification and proper location should be no problem. The wheel feed handwheel is shown as #10TS-24 on the Vertical Slide Feed Mechanism drawing. The table drive handwheel is shown as #72 on the Cross Slide Assembly drawing. The cross-feed handwheel is shown as #55.

The drawings also indicate how the handwheels are mounted. In mounting table drive handwheel #72, it will be seen that this can be oriented (because of the serrated washer #73) to bring handle #56 into any position desired by the Operator. This is particularly helpful if much short-table-stroke grinding is to be done, and the Operator finds it easier to have the handle #56 in a certain position.

LUBRICATION

Vertical Wheel Head Ways

A grease fitting is provided in the right and left vertical wheel head way for lubrication. The one in the left way (when facing the back of the machine) is clearly visible. The one in the right way is recessed. However, its position is indicated by a plate.

As stated on this plate, lubricate the vertical ways with a light grease, once a week.

Vertical Feed Screw and Nut

When the cross slide is fed forward toward the Operator, a grease fitting will be seen on the front side of the vertical slide. This lubricates the vertical feed nut and the feed screw, as it revolves through the nut. Apply light grease, once a week.

Cross-Feed Screw and Nut

The cross-feed nut (and the screw as it revolves in the nut) are lubricated by a grease fitting which will be seen on front of the machine as the cross slide is moved to its inmost position. This fitting is shown as #109 on the Cross Slide Assembly drawing. Apply light grease once a week.

Cross Slide Ways

The cross slide ways are lubricated by a Lubricator which is mounted on the side of the base. It is identified as #10TS-125 in the Cross Slide Assembly drawing on page 17. The capacity of the Lubricator is approximately nine cubic inches (150 cu. cm.).

It will be seen that there is a capped fill point on top. Fill the Lubricator with a 145-175 S.U.V. combination hydraulic and way oil.

Note

This oil is the same as that suggested for the hydraulic system of Norton 6 x 18" and 8 x 24" Hydraulic Surface Grinders and may be in your inventory.

Lift the pull button at the start of each day. The maximum discharge is approximately 60 drops. Experience will show whether once a day is adequate. Fill to keep oil showing in the sight glass.

Feed Mechanism Bevel Gears

The bevel gears of the feed mechanism are oiled through an oil cup in cover #10TS-37, which is shown in the Vertical Slide Feed Mechanism drawing. Apply several drops of 300 machine oil once a week.

Wheel Spindle

The wheel spindle bearings are packed with grease at assembly of the unit. Periodic lubrication attention is not required.

OPERATING INFORMATION

Wheel Feed

Counterclockwise turning of the wheel feed handwheel feeds the grinding wheel down. The handwheel is graduated .0005", and gives .050" feed at one full turn.

The handwheel has a fine-feed mechanism which is operated by knob #10TS-23 shown on the drawing of the Vertical Slide Feed Mechanism. This knob, and the graduations on pointer #10TS-49, permit feeds of .0001".

Cross-Feed

Cross-feed of the slide is done by turning handwheel #10TS-55. This handwheel is graduated .001", and gives .200" feed for one full turn.

The handwheel also has a fine-feed mechanism which is operated by knob #10TS-67. This permits feeds in increments of .0005".

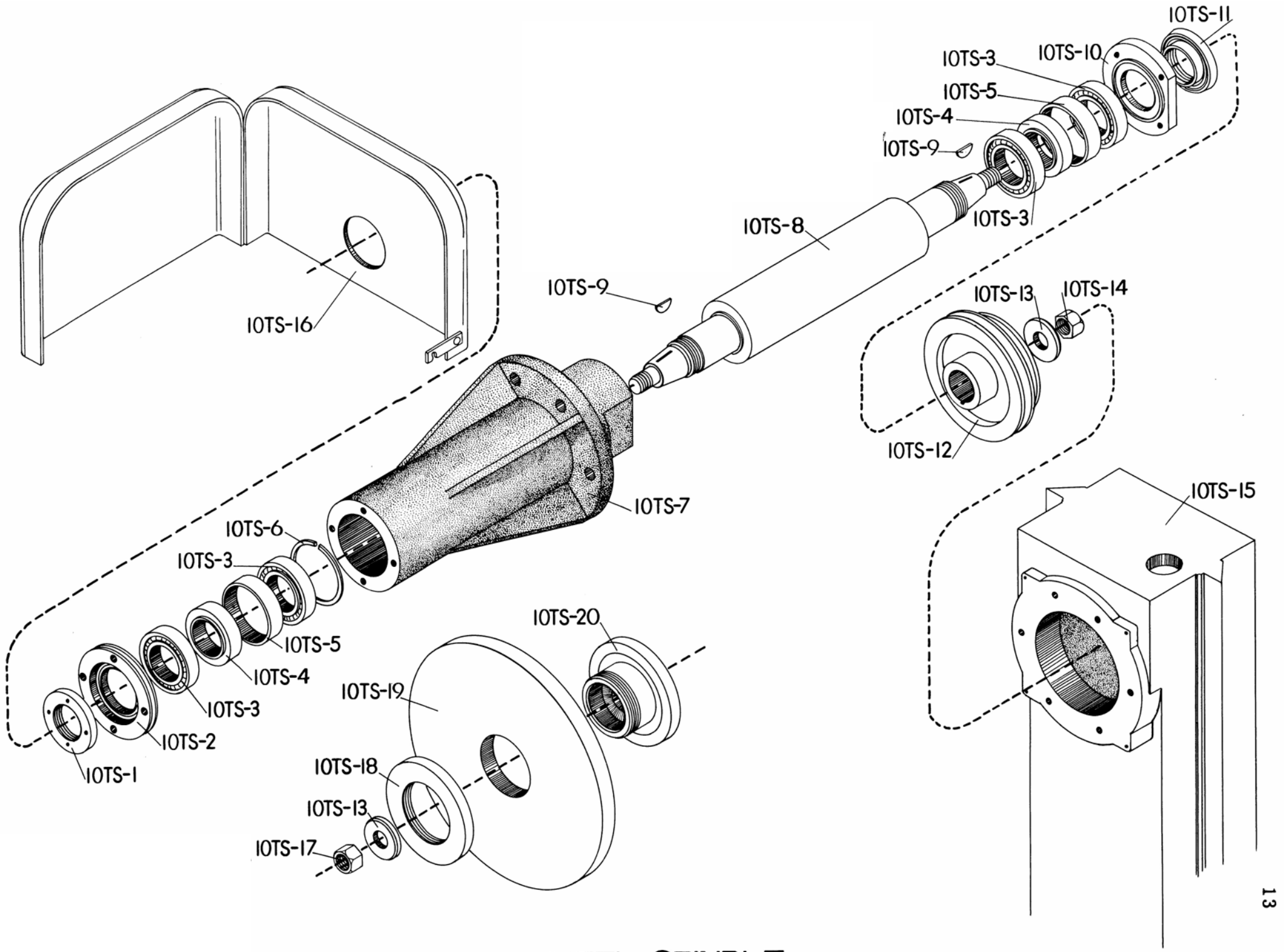
Table Operation

Table operation by turning the table drive handwheel #10TS-72 is "directional." That is, turning the handwheel to the right, moves the table to the right, and vice-versa.

Friction Brakes

Friction brakes are furnished for the table and for the cross slide. These permit setting a "drag" or the locking of these components, if desired.

The table brake is operated by lever #10TS-84. The cross slide brake is operated by lever #10TS-65.



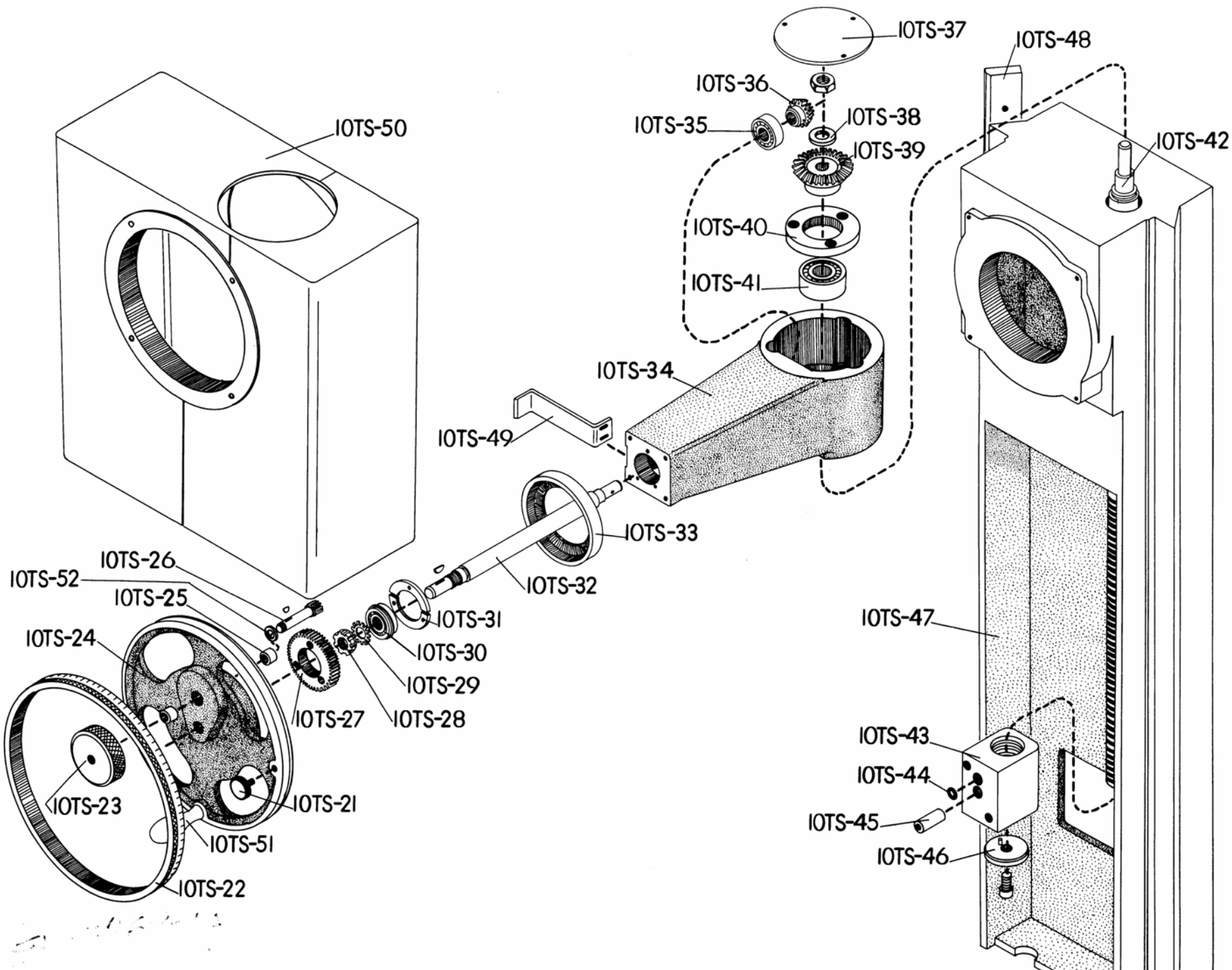
WHEEL SPINDLE

WHEEL SPINDLE

Code No.	Part Name
10TS-1	Ball Bearing Locknut
-2	Ball Bearing Cap (front)
-3	Ball Bearing (4)
-4	Ball Bearing Spacer (2) *
-5	Ball Bearing Spacer (2) *
-6	Tru-arc Ring
-7	Spindle Housing
-8	Spindle
-9	Key (2)
-10	Ball Bearing Cap (rear)
-11	Ball Bearing Locknut (R.H.)
-12	Spindle Sheave
-13	Washer 1/4 x 2 x 3/4"
-14	L.H. Hex Nut
-15	Vertical Slide
-16	Wheel Guard
-17	R.H. Hex Nut
-18	Spanner Nut
-19	Wheel
-20	Wheel Sleeve

*Supplied as a pair

NOTE: Where more than one of a pair is required, the number is indicated in parenthesis.

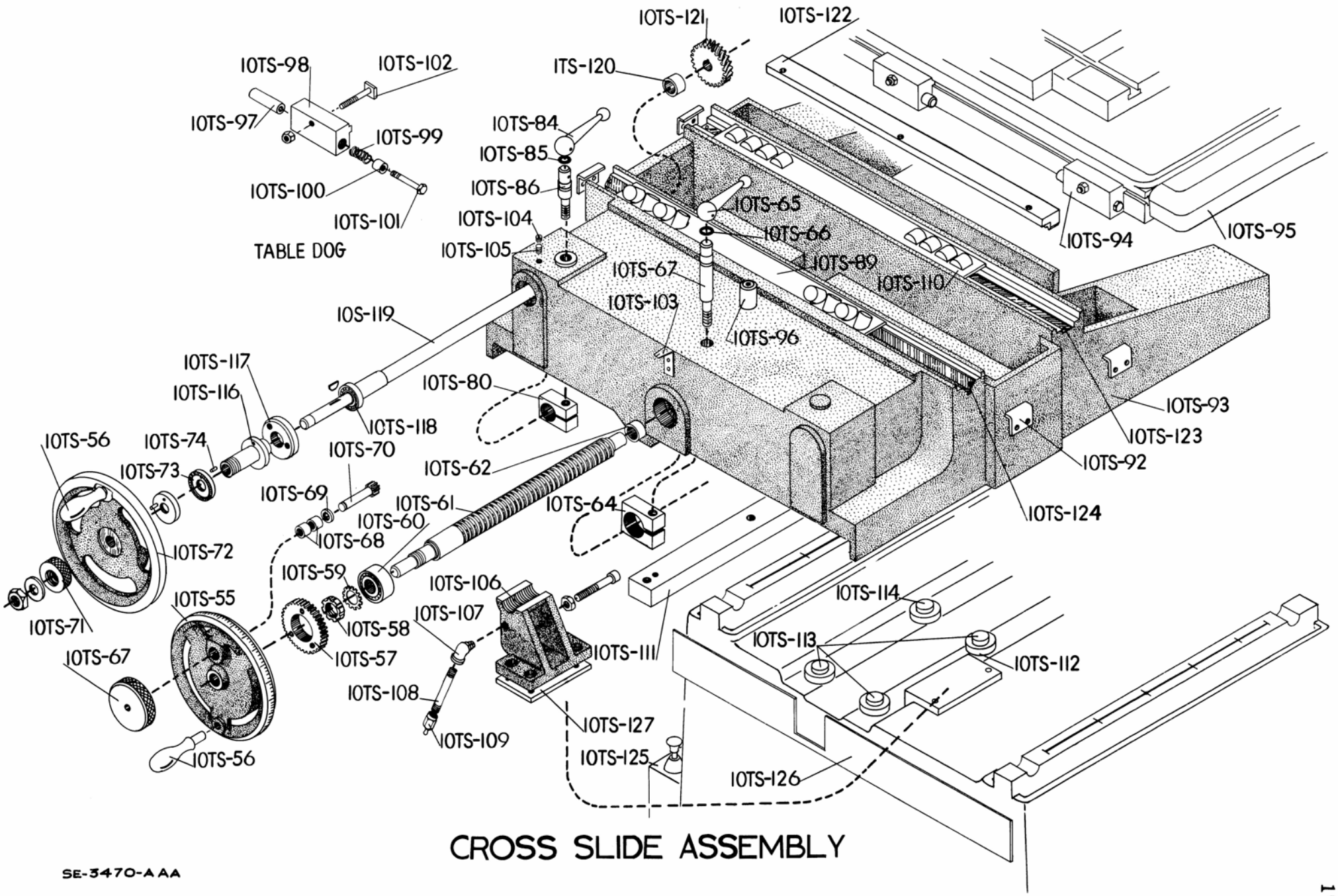


VERTICAL SLIDE FEED MECHANISM

SE-3469-A

VERTICAL SLIDE FEED MECHANISM

Code No.	Part Name
10TS-21	Slip Ring Screw
-22	Handwheel Slip Ring
-23	Knob
-24	Slip Ring Handwheel
-25	Torrington N. B. (2)
-26	Pinion
-27	Stationary Gear
-28	Nut
-29	Washer
-30	Ball Bearing
-31	Ball Bearing Spacer
-32	Horizontal Shaft
-33	Guard
-34	Wheel Feed Housing
-35	Ball Bearing
-36	Miter Gear (Driver)
-37	Cover
-38	Washer
-39	Miter Gear (Driven)
-40	Bearing Cap
-41	Ball Bearing
-42	Vertical Feed Screw
-43	Elevating Nut
-44	"O" Ring
-45	Pin
-46	Washer
-47	Vertical Slide
-48	Gib
-49	Pointer
-50	Guard
-51	#3 Machine Handle
-52	Spacer



CROSS SLIDE ASSEMBLY

SE-3470-AAA

CROSS SLIDE ASSEMBLY

Code No.	Part Name	Code No.	Part Name
10TS-55	Handwheel	10TS-98	Cushion Block (2)
56	#3 Plain Machine Handle (2)	99	Spring (2)
		100	Plug (2)
57	Stationary Gear	101	H. H. Cap Screw (2)
58	Nut	102	Tee Bolt (2)
59	Washer	103	Pointer
60	Ball Bearing	104	Rd. Pt. Set Screw
61	Cross-feed Screw	105	Dog. Pt. Set Screw
62	Torrington N. B.	106	Half Nut
64	Cross Slide Friction Bearing	107	St. Elbow
		108	Pipe Nipple
65	Spindle Clamp Lever	109	Alemite Hyd. Lub. Fitt. 1/8" pipe thd. female
66	"O" Ring		
67	Clamp Screw	110	Roll Separator (Table)
69	Spacer		
70	Pinion	111	Center Guide Bar
71	Adjusting Screw Nut	112	Ball Bearing (4)
72	Handwheel	113	Eccentric Stud (3)
73	Serrated Washer (2)	114	Stud
74	Roll Pin (2)	116	Sleeve
80	Table Friction Brg.	117	Bearing Cap
84	Spindle Lever Clamp	118	Ball Bearing
85	"O" Ring	119	Shaft
86	Clamp Screw	120	Needle Bearing
89	Roll Separator	121	Gear
92	Roller Gage Stop (4)	122	Table Rack
93	Cross Slide	123	Flat Way Strip (2)
94	Assembled Dog	124	Vee Way Strip (4)
95	Table	125	Lubricator
96	Stop Block	126	Guard
97	Cushion Plunger	127	Shim

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