

 **WARNING**

1. **Read and understand the entire instruction manual before attempting set-up or operation of this machine.**
2. Always wear approved safety glasses/face shields while using this machine.
3. Make certain the machine is properly grounded.
4. Before operating the machine, remove tie, rings, watches, other jewelry, and roll up sleeves above the elbows. Remove all loose clothing and confine long hair. Do **not** wear gloves.
5. Keep the floor around the machine clean and free of scrap material, oil and grease.
6. Keep machine guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately.
7. Do **not** over reach. Maintain a balanced stance at all times so that you do not fall or lean against moving parts.
8. Make all machine adjustments or maintenance with the machine unplugged from the power source.
9. Use the right tool. Don't force a tool or attachment to do a job which it was not designed for.
10. Replace warning labels if they become obscured or removed.
11. Make certain the main switch is in the **OFF** position before connecting the machine to the power supply.
12. Give your work undivided attention. Looking around, carrying on a conversation, and "horse-play" are careless acts that can result in serious injury.
13. Keep visitors a safe distance from the work area.
14. Use recommended accessories; improper accessories may be hazardous.
15. Keep hands away from all moving parts (belts, cutters, gears, etc.).
16. Never operate this machine under the influence of alcohol or drugs.
17. Some coolants used for machining contain chemicals that may be hazardous to your health if not used properly. Read and understand all user information listed on the coolant container and protect yourself accordingly.
18. Read and understand all warnings posted on the machine.
19. This manual is intended to familiarize you with the technical aspects of this milling machine. It is not, nor was it intended to be, a training manual.
20. **This machine is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper safe use of milling machines, do not use this machine until proper training and knowledge has been obtained.**
21. Failure to comply with all of these warnings may cause serious injury.
22. Some dust created by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
 - **Lead from lead based paint**
 - **crystalline silica from bricks and cement and other masonry products, and**
 - **arsenic and chromium from chemically-treated lumber.**
23. Your risk from those exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specifically designed to filter out microscopic particles.

Specifications

JTM-4VS

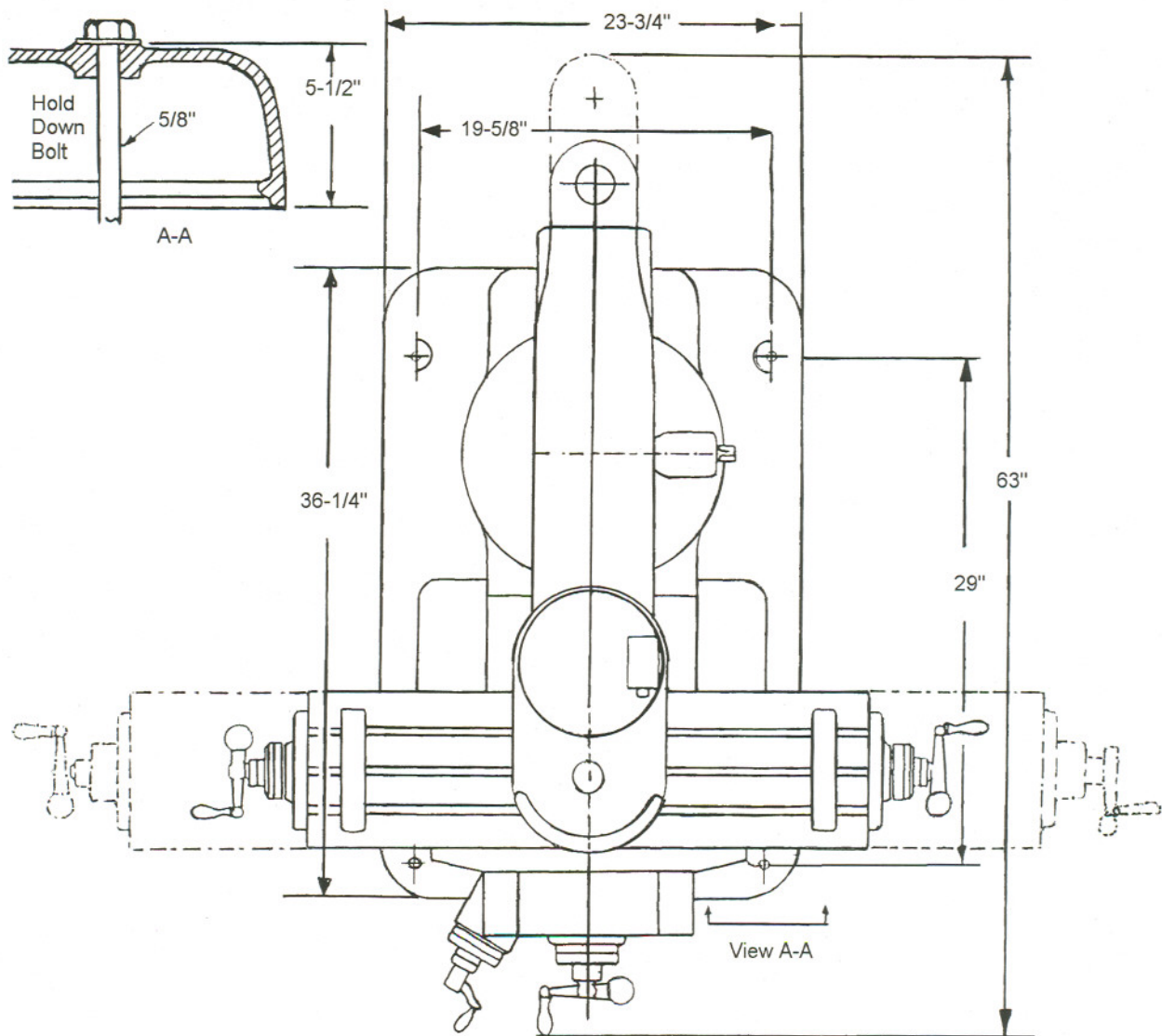
Stock Number	690182
Spindle Taper	R-8
Diameter of Quill	3.375"
Number of Spindle Speeds	Variable
Range of Spindle Speeds	60 to 4200 RPM
Downfeeds per Revolution of Spindle0015", .003", .006"
Spindle Travel	5"
Head Movement	90° L and R 45° F and B
Maximum Distance Spindle to Table	18-3/8"
Maximum Distance Spindle to Column	19"
Minimum Distance Spindle to Column	6-3/4"
Collet Capacity	1/8" – 7/8"
Table Size	9" x 49"
Longitudinal Table Travel	34"
Table Cross Travel	12"
Number of T-Slots	3
Size and Spacing of T-Slots	5/8" x 2-1/2"
Maximum Table Load	660 Lbs.
Knee Travel	16"
Overall Dimensions	65-1/2"W x 63"D x 87-3/4"H
Motor	3 HP, 3Ph., 230/460V rewired 230V
Net Weight (approx.)	2,420Lbs.

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The specifications in this manual are given as general information and are not binding. JET Equipment and Tools reserves the right to effect, at any time and without prior notice, changes or alterations to parts, fittings, and accessory equipment deemed necessary for any reason whatsoever.

JTM-4VS Installation Layout



Shipping Container Contents

- 1 Mill
- 1 Flat Way Cover (rear)
- 1 Accordion Way Cover (front)
- 1 Tool Box:
 - 1 Hex Wrench Set (1.5 - 10mm)
 - 1 17-19mm Combination Wrench
 - 1 #2 Cross Point Screw Driver
 - 1 #2 Flat Blade Screw Driver
 - 1 Plastic Oil Can
 - 1 Operator's Manual
 - 1 Warranty Card
 - 1 Eye Bolt

Unpacking and Clean-Up

1. Finish removing the sides of the crate. Leave the mill bolted to the skid until it is ready to move to its final location.
2. Clean all rust protected surfaces with kerosene or a light solvent. Do not use gasoline, paint thinner, or lacquer thinner. These will damage painted surfaces.
3. Cover all machined surfaces with a film of light machine tool oil to inhibit rust.

Site Preparation

CAUTION
Mill must be supported equally under all four corners. Failure to comply may cause the column to twist and put a bind in the tableways.

The mill must be placed on an even surface and bolted to the floor. Anchor bolts of sufficient size and length must be fastened to the floor according to the footprint of the mill. See the site installation diagram on page 4.

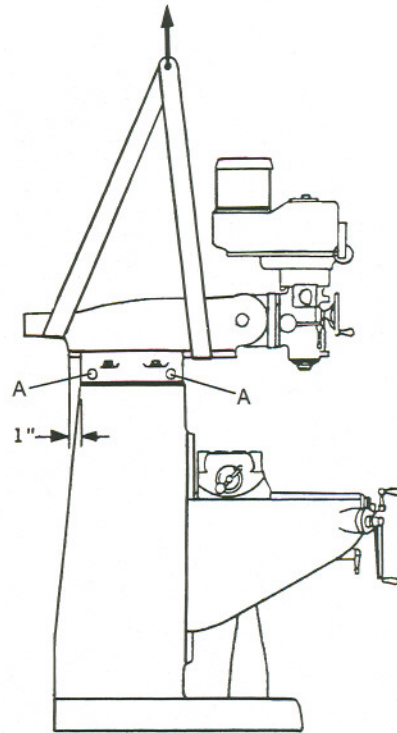
Lifting the Mill

The preferred method for lifting the mill is with a hook through the eye bolt screwed into the tapped hole on the ram. Be careful to steady the mill to prevent it from spinning.

An alternative method for lifting the mill is with a sling. Follow the diagram in Fig. 1 for the proper position of the sling under the ram. Note the position of the ram and that the table has been moved against the column. Tighten ram locking bolts (A, Fig. 1) before lifting.

Carefully lift the mill and move to a position over the anchor bolts. Lower the mill over the anchor bolts, check for level, and secure with washers and anchor bolt nuts.

Check the mill for level with a machinist's level placed on the table. Mill must be level back to front and side to side. Shim if necessary, but remember that the mill must be supported equally at all four corners. Check for level before tightening the anchor bolt nuts and after tightening them. Adjust as necessary.

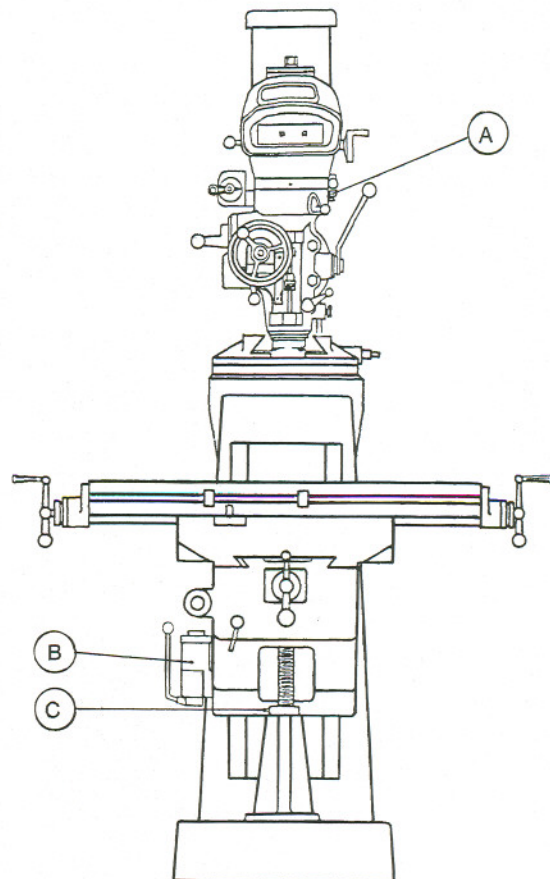


Lubrication

CAUTION
Do not operate the mill before lubricating the machine fully. Failure to comply may cause damage to the machine.

Reference Fig. 2 for parts of the mill to lubricate:

- A. **Quill Oil** - fill oil cup once daily with 10W machine oil.
- B. **Oil Pump** - fill reservoir as needed by removing cap on top of tank and filling with 10W machine oil. Pump oil with release handle once for every hour of operation. Way surfaces and leadscrews are lubricated in this manner.
- C. **Knee Leadscrew** - lubricate with #2 tube grease once weekly.



Electrical Connections

⚠ WARNING

**All electrical connections must be made by a qualified electrician!
Failure to comply may cause serious injury!**

The JTM-4VS mill is rated at 230/460V and comes from the factory prewired at 230V.

Confirm power at the site matches power requirements of the mill before connecting to the power source.

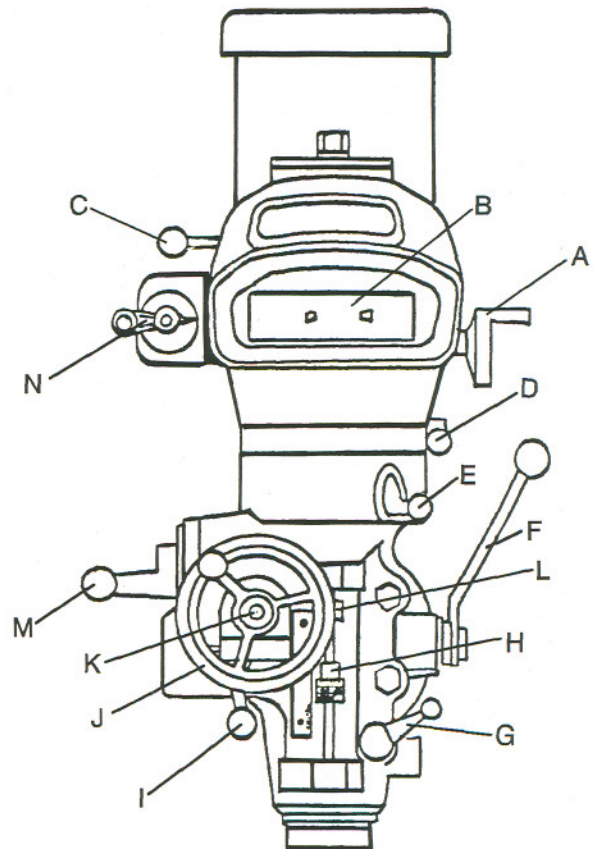
To change from 230V to 460V operation, remove the junction box cover on the motor and change the wires according to the diagram found on the inside of the cover.

The mill must be properly grounded.

Check for proper spindle rotation **in the high speed range**. The spindle should rotate clockwise when viewed from the top of the machine. If the spindle rotates counter-clockwise, switch two of the three power leads.

Controls

- A. **Variable Speed Control** (A, Fig. 3) - located on the right side of the head assembly. Turn clockwise or counter-clockwise to adjust spindle speed. **Caution: Change speed only when spindle is turning.**
- B. **Variable Speed Dial Indicator** (B, Fig. 3) - located on the front of the head assembly. Indicates selected speed in high or low range.
- C. **Spindle Brake** (C, Fig. 3) - located on left side of the head. Move in either direction to stop spindle once power has been turned off.



- D. **High-Neutral-Low Lever** (D, Fig. 4) - located on the right side of the head. Upper position is high speed (direct drive). Middle position is neutral. Lower position is low speed (back gear).

CAUTION

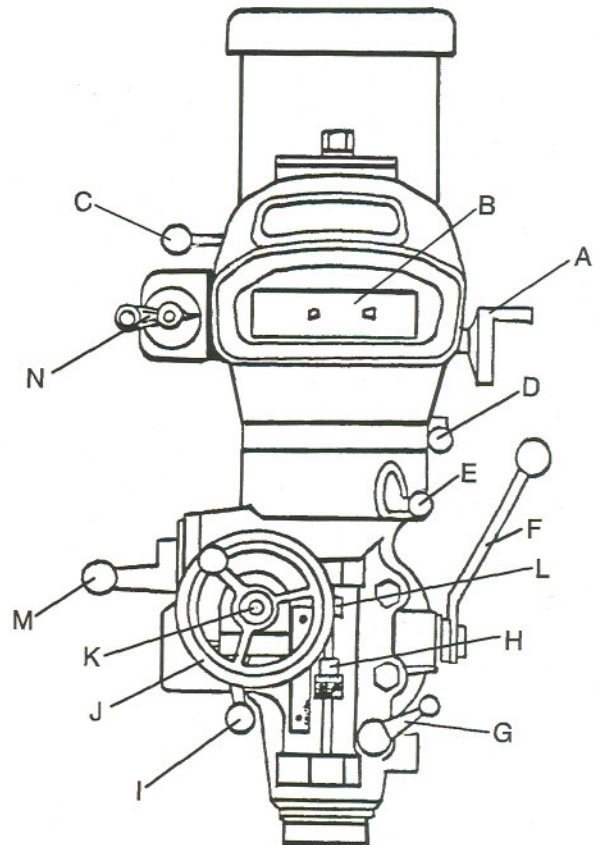
Do not shift High-Low Gear while motor is running. Rotate the spindle by hand to facilitate changing lever positions.

- E. **Power Feed Transmission Engagement Crank** (E, Fig. 4) - located on right side of head. When lever is in the right hole, the power feed worm gear is disengaged. To engage power feed, pull knob out and move lever around to opposite hole. Engage pin in hole.

CAUTION

Engage gently to avoid damage to the worm gear.
Power feed may be engaged when spindle is rotating, however, it must be engaged gently to avoid damage to the worm gear.
Do not use power feed at speeds above 3000 R.P.M.
It is recommended that the power feed worm gear be disengaged whenever the power feed is not required. This avoids unnecessary wear on the worm gear.

- F. **Quill Feed Handle** (F, Fig. 4) - located on right side of head. Rotate clockwise to lower spindle. Return spring will retract the spindle automatically once the handle is released.
- G. **Quill Lock** (G, Fig. 4) - located on the right side of the head. Rotate the handle clockwise to lock the quill in a desired position. Rotate the handle counter-clockwise to release.
- H. **Micrometer Adjusting Nut** (H, Fig. 4), - located on the front of the head. Use for setting specific spindle depth.
- I. **Feed Engagement Lever** (I, Fig. 4) - located on the left side of the head. Engages overload clutch on pinion shaft when positioned to the left. Stays engaged until quill stop comes in contact with micrometer adjusting nut (forcing feed control lever to drop out automatically), or until lever is released manually by engaging lever to the right.



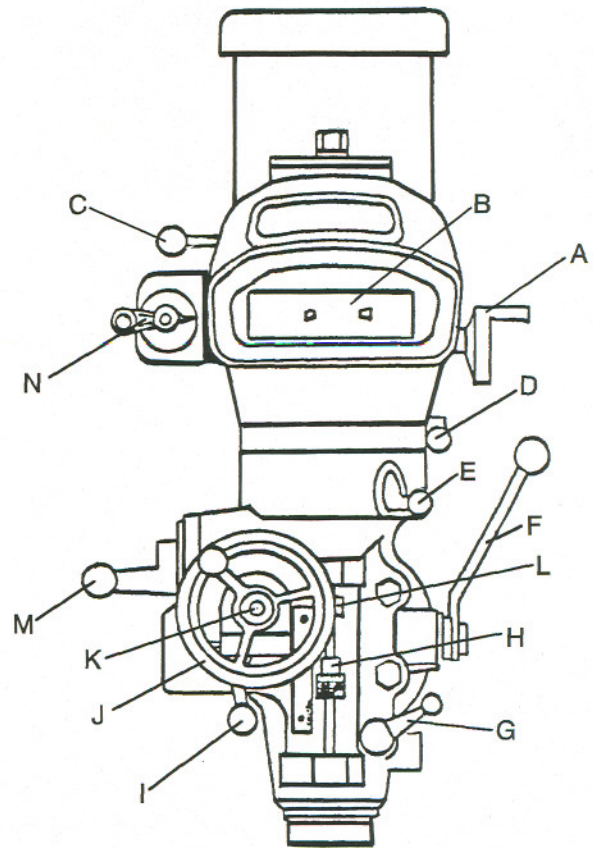
- J. **Manual Fine Feed** (J, Fig. 5) - located on the left side of the head. Feed reversing knob (K, Fig. 6) must be in the neutral position. The feed control lever (I, Fig. 6) must be engaged.

Note: manual feed handle and handwheel may be taken off when not in use.

- K. **Feed Reversing Knob** (K, Fig. 5) - located in center of manual feed handwheel. Position of the handle depends upon the direction of spindle rotation. If boring with right hand cutting tools, pull feed handle towards operator until clutch becomes engaged. Neutral position is between forward and reverse position.

CAUTION
It is recommended that the handle be left in the neutral position when not in use.

- L. **Quill Stop** (L, Fig. 5) - located on the front of head. Used to disengage the automatic feed in either direction as well as the setting point for working to a given depth.
- M. **Quill Feed Rate Selector** (M, Fig. 5) - located on the left side of the head. Pull knob out and locate handle over choice of three feed speeds - .0015", .003", .006" Downfeeds per Revolution of Spindle. Feed is more readily engaged when spindle is turning.
- N. **Reversing Switch** (N, Fig. 5) - located on the left side of the head. Switches rotation of spindle.



Operations

Operating Precautions

1. Do not attempt to change spindle RPM while motor is stopped.
2. Be certain the spindle brake is released before starting the motor.
3. Rotate the spindle by hand to facilitate meshing of the clutch and gears.
4. Do **not** use the quill power feed at speeds above 3000 RPM.

5. It is recommended that the power feed worm gear be disengaged whenever the power feed is not required. This will avoid unnecessary wear on the worm gear.
6. The power feed can be used for drills up to 3/8" in diameter (in mild steel). Use manual feed for drills larger than 3/8".
7. Overload clutch is factory set to hold up to 200 lbs. down feed pressure on the quill (accommodates drills up to 3/8"). Do **not** attempt to adjust clutch pressure.
8. Do **not** change spindle speeds without running motor.

Changing Speed Range

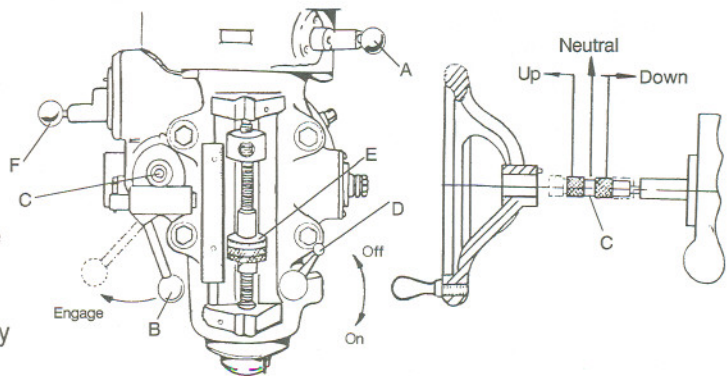
CAUTION

It is recommended to rotate the spindle by hand to ensure the clutch is engaged prior to turning on. Do not turn on the machine unless the spindle can be moved freely.

To change from high to low speed range, move lever (D, Fig. 6) by pressing in and rotating almost 180°. Lever will stay in place once pressure is released.

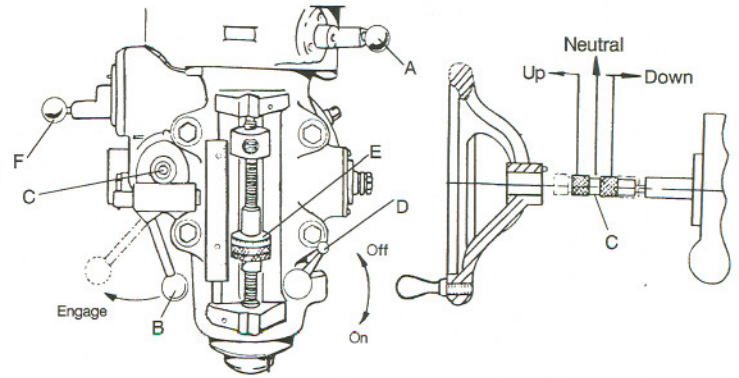
Setting Up for Fine Hand Feed

1. Disengage automatic feed by pulling out knob (A, Fig. 6) and moving lever to the right hole.
2. Locate the feed reversing knob (C, Fig. 6) in the center of neutral position.
3. Engage feed trip lever (B, Fig. 6) by pulling away from head assembly.



Setting Up for Automatic Feed

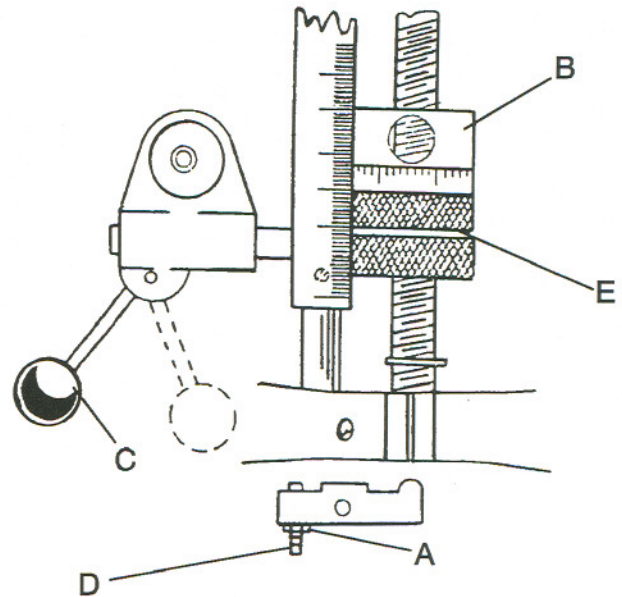
1. Ensure quill lock (D, Fig. 7) is off by rotating counter-clockwise.
2. Set micrometer dial (E, Fig. 7) to desired depth.
3. Engage auto quill feed lever (A, Fig. 7) by pulling out lock knob and moving lever to the left hole.
4. Select feed rate (F, Fig. 7).
5. Select feed direction (C, Fig. 7)
6. Engage feed trip lever (B, Fig. 7) by pulling away from head assembly.



Adjustments

Feed Trip Adjustment

1. Loosen locknut (A, Fig. 8).
2. Engage trip handle (C, Fig. 8) by pulling away from head assembly.
3. Adjust micro nuts (E, Fig. 8) against quill stop (B Fig. 8)
4. Slowly turn adjusting screw (D, Fig. 8) until lever (C, Fig. 8) trips.
5. Tighten locknut (A, Fig. 8)



Knee Gib Adjustment

Note: when adjusting the gibs for the knee, the saddle, and the table always start with the knee first. Adjust the saddle second, and adjust the table last.

Adjust gib screws through wiper on either side of the knee where it meets the column.

Saddle Adjustment

Adjust gib screw found on the left side front of the carriage.

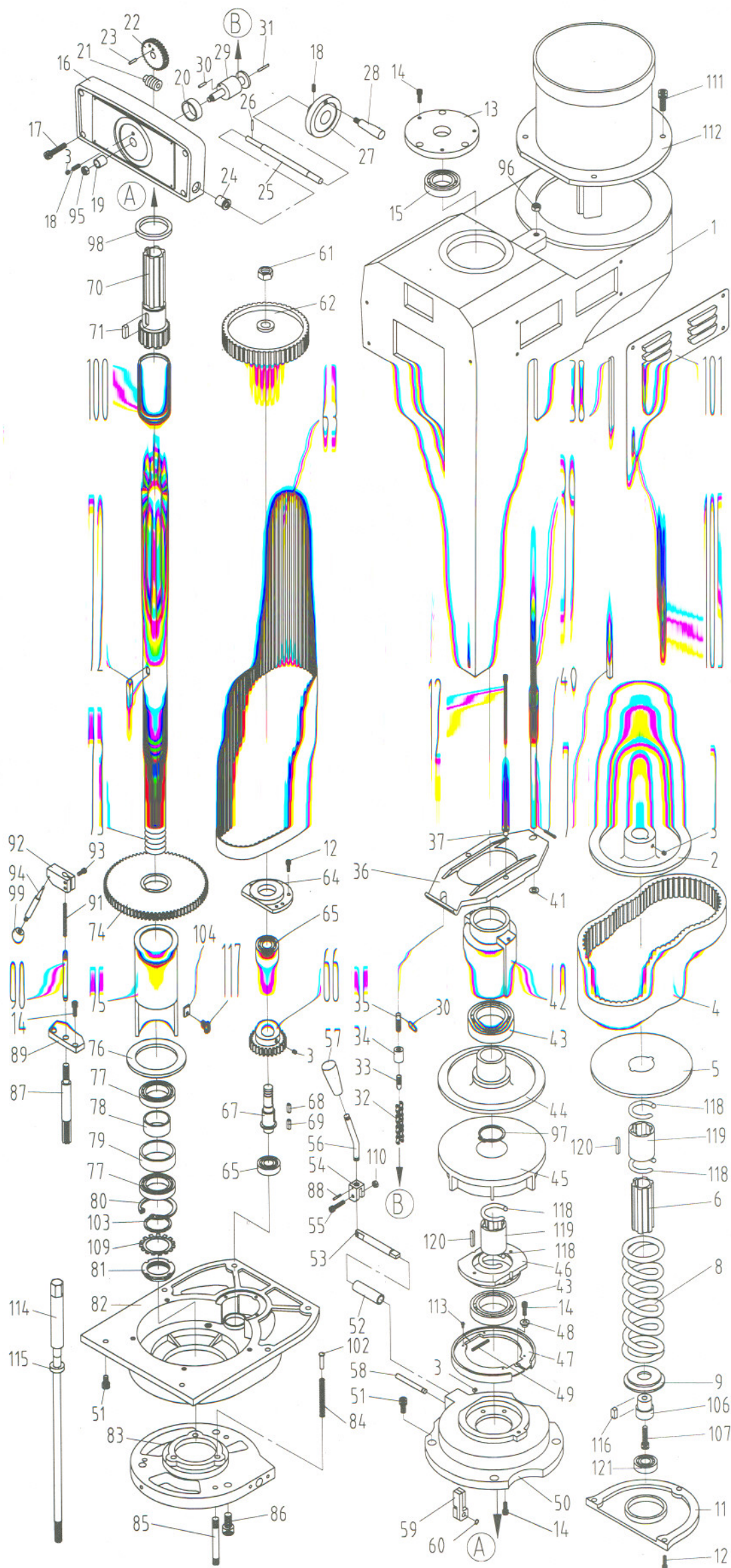
Table Adjustment

Adjust gib screws found on the sides of the table toward the front of the carriage.

Head Alignment

The scales on the ram adapter and for head rotation are guides only. Close tolerance work will require the use of a dial indicator to make sure the head is 90° to the table in the X and Y axis. Please note the table is fitted to be slightly higher in the front, usually about .0005".

Variable Speed Head Assembly



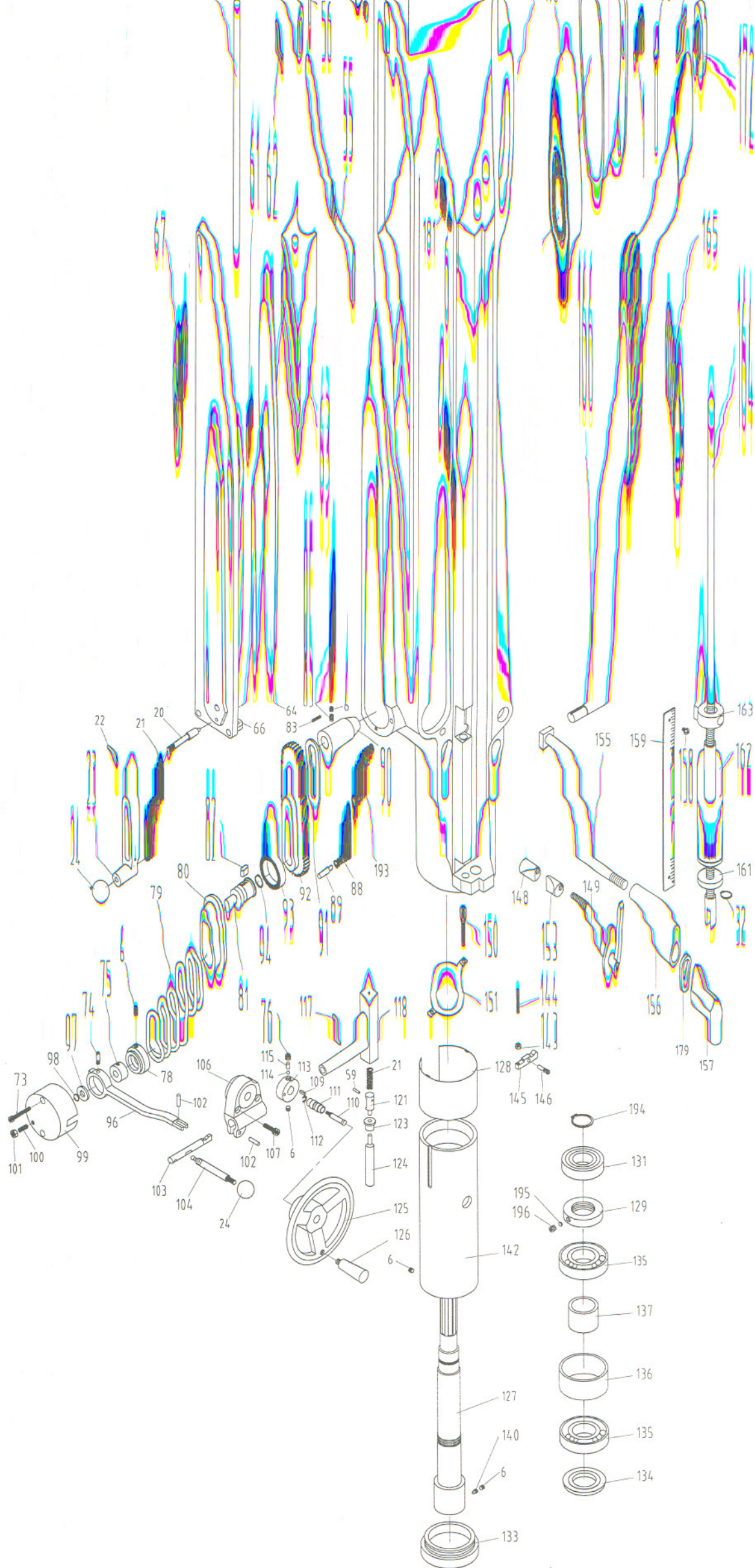
Parts List for the JTM-4VS Turret Mill

Variable Speed Head Assembly

Index No.	Part No.	Description	Size	Qty.
1	VS-001	Upper Housing		1
2	VS-002	Motor Pulley		1
	VS-044A	Motor Pulley Bushing (not shown)		1
3	TS-1503011	Set Screw	M6 x 6	4
4	VS-004	Belt		1
5	VS-005	Motor Pulley Disk		1
6	VS-006	Motor Pulley Shaft		1
7	KEY7725	Key	7 x 7 x 25	1
8	VS-008	Motor Pulley Spring		1
9	VS-009	Spring Stop Washer		1
11	VS-011A	Motor Pulley Cover		1
12	TS-1502051	Hex Socket Cap Screw	M5 x 20	8
13	VS-013	Cover		1
14	TS-1503041	Hex Socket Cap Screw	M6 x 16	10
15	BB-6007ZZ	Ball Bearing		1
16	VS-016	Dial Cover		1
17	TS-1503071	Hex Socket Cap Screw	M6 x 30	4
18	TS-1503041	Hex Socket Cap Screw	M6 x 16	2
19	VS-019	Bushing		1
20	VS-020	Bushing		1
21	VS-021	Worm		1
22	VS-022	Worm Gear		1
23	VS-023	Spring Pin	5 x 10	2
24	VS-024	Bushing		2
25	VS-025	Dial Control Shaft		1
26	VS-026	Spring Pin	3 x 12	1
27	VS-027	Dial Wheel		1
28	VS-028	Wheel Handle		1
29	VS-029	Shaft		1
30	VS-030	Spring Pin	4 x 16	2
31	VS-031	Spring Pin	3 x 25	1
32	VS-032	Speed Change Chain		1
33	VS-033	Adjustment Stud		1
34	VS-034	Sleeve Nut		1
35	VS-035	Adjustment Stud		1
36	VS-036	Tilter		1
37	VS-037	Bushing		2
38	KEY6645	Key	6 x 6 x 45	1
39	VS-039	Regulating Screw		1
40	VS-040	Spring Pin	3/32 x 3/4	1
41	VS-041	Washer		1
42	VS-042	Support		1
43	BB-6010VV	Ball Bearing		2
44	VS-044	Driven Pulley Assembly		1
45	VS-045	Steady Pulley		1
46	VS-046	Bearing Cover		1
47	VS-047	Brake Lining		1

48	VS-048	Lock Screw		1
49	VS-049	Brake Spring		2
50	VS-050	Lower Housing Cover		1
51	TS-1504031	Hex Socket Cap Screw		4
52	VS-052	Brake Shaft Sleeve	M8 x 20	1
53	VS-053	Brake Lock Shaft		1
54	VS-054	Brake Lock Block		1
55	TS-1503061	Hex Socket Cap Screw		1
56	VS-056	Brake Lock Handle	M6 x 25	1
57	VS-057	Plastic Ball		1
58	VS-058	Brake Finger Pivot Stud		2
59	VS-059	Brake Stud		1
60	VS-060	Snap Ring		2
61	TS-0561072	Nut	S-8	2
62	VS-062	Timing Belt Pulley	5/8-18 UNF	1
63	VB225L100	Belt		1
64	VS-064	Bearing Retainer		1
65	BB-6203ZZ	Ball Bearing		1
66	VS-066	Bull Gear		2
67	VS-067	Counter Shaft		1
68	VS-068	Key	5 x 5 x 15	1
69	VS-069	Key	5 x 5 x 18	1
70	VS-070	Spindle Pulley Hub		1
71	VS-071	Key	8 x 7 x 24	1
72	VS-072	Key	8 x 7 x 12	1
73	VS-073	Spindle Gear Hub		1
74	VS-074	Spindle Gear Assembly		1
75	VS-075	Rack Cup		1
76	VS-076	Washer		1
77	BB-6908ZZ	Ball Bearing		2
78	VS-078	Bearing Washer		1
79	VS-079	Bearing Washer		1
80	VS-080	Snap Ring		1
81	VS-081	Nut		1
82	VS-082	Lower Housing		1
83	VS-083	Fixed Clutch Bracket		1
84	VS-084	Spring		3
85	VS-085	Stud		3
86	TS-1506021	Hex Socket Cap Screw	M12 x 25	3
87	VS-087	Gear Shift Pinion		1
88	VS-088	Pin		1
89	VS-089	Detent Plate		1
90	VS-090	Detent Washer		1
91	VS-091	Spring		1
92	VS-092	Pinion Block		1
93	TS-1503011	Hex Socket Cap Screw	M5 x 14	2
94	VS-094	Pinion Crank		1
95	VS-095	Cap Nut		1
96	TS-0561031	Hex Nut	3/8	1
97	VS-097	Snap Ring		1
98	VS-098	Wave Washer		1
99	VS-099	Plastic Ball		1
100	Vs-100	Snap Ring		1
101	VS-101B	Cover		2

102	VS-102	Spring Shaft	3
103	VS-103	Washer	1
104	VS-104	Copper Washer	2
105	VS-105	Screw 1/4 x 3/8	8
106	VS-107	Shaft	1
107	TS-1504061	Hex Socket Cap Screw M8 x 30	1
109	VS-109	Lock Washer	1
110	TS-1540041	Hex Nut M6	1
111	TS-0209051	Hex Socket Cap Screw 3/8 x 1	4
112	VS-000	Motor	1
113	VS-113	Oval Head Screw 1/8 x 1/4	4
114	JTM1-001VS	Draw Bar	1
115	JTM4VS-A002B	Draw Bar Washer	1
116	VS-116	Key	1
117	VS-117	Oval Head Screw 3/16 x 1/2	1
118	VS-007	Snap Ring	4
119	VS-005A	Plastic Sleeve	2
120	VS-120	Key 6 x 4 x 32	2
	VS-000A	Forward-Reverse Switch (not shown)	1
	JTM1-598D	Switch Box (not shown)	1
	JTM1-598B	Switch Knob (not shown)	1
	JTM4VS-HA	Head Assembly w/ Motor (not shown)	1
	LK-041B	Switch Bracket (not shown)	1
121	BB-6206ZZ	Ball Bearing	1



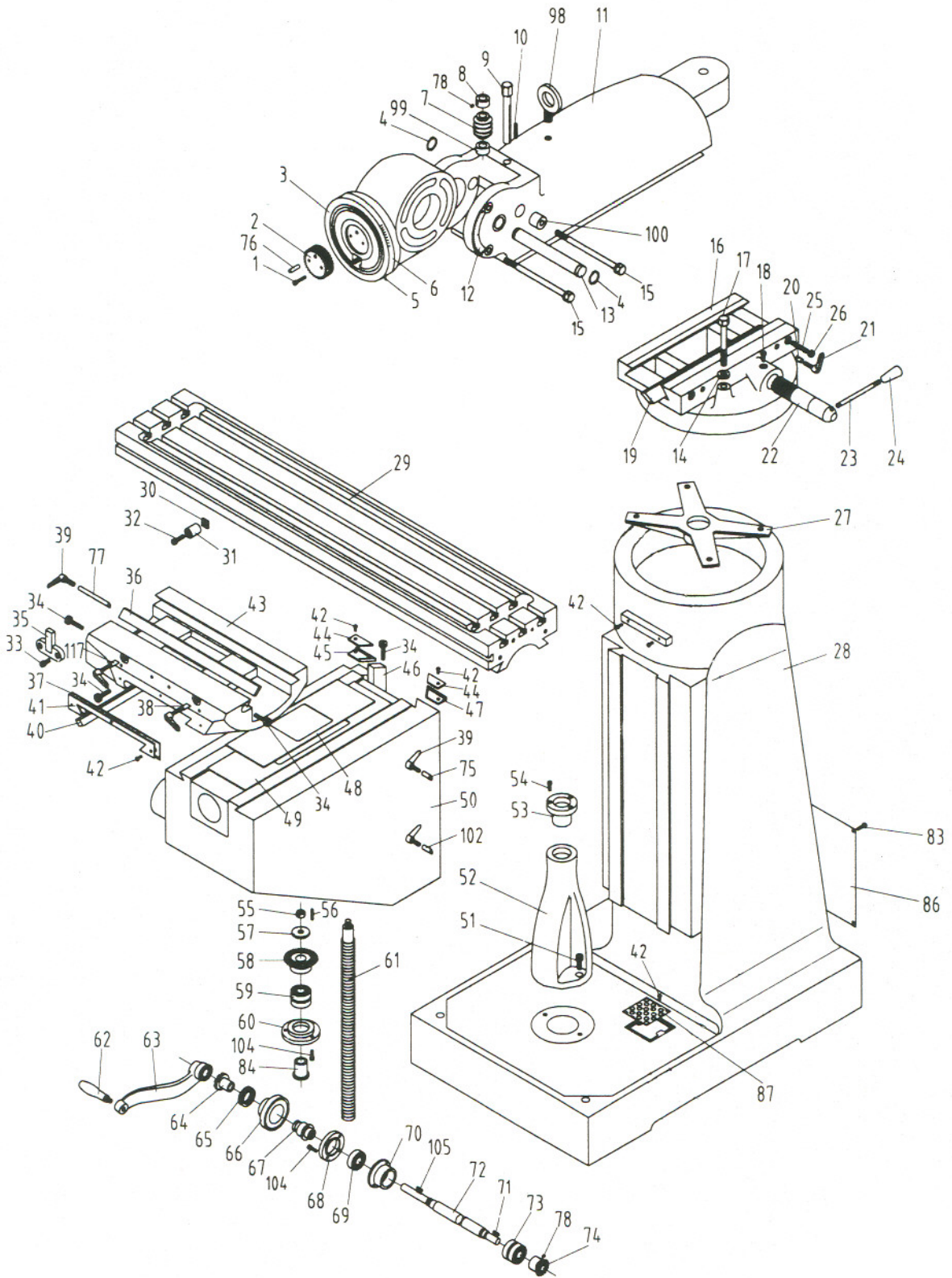
Head Assembly

1	TS-1533042	Screw	M5 x 10	6
2	HA-002	Bevel Pinion Washer		1
3	LA-166A	Feed Gear		1
4	LA-161	Shaft Sleeve		1
5	LA-162	Worm Cradle Bushing		1
6	TS-1523011	Set Screw	M6 x 6	9
7	LA-163	Worm Gear Spacer		1
8	LA-164	Feed Drive Worm Gear		1
9	LA-165	Worm Gear Shaft		1
10	HA-010	Worm Shaft Key	3 x 3 x 8	1
11	LA-166A	Key	3 x 3 x 20	1
12	HA-012	Locknut	M6 x 16	1
13	LA-166A	Washer		1
14	HA-014	Cluster Gear Key	3 x 3 x 8.5	1
15	LA-154	Feed Reverse Bevel Gear		1
16	LA-167	Feed Engage Pin		1
17	LA-166	Worm Gear Cradle		1
18	LA-066	Cam Rod		1
19	LA-002	Shift Sleeve		1
20	LA-004	Plunger		2
21	LA-005	Spring		3
22	HA-022	Spring Pin	3 x 22	2
23	LA-033	Cam Rod		2
24	LA-006	Plastic Ball		3
27	LA-147	Upper Bushing		1
28	LA-144	Cluster Gear Assembly		1
29	HA-029	Cluster Gear Key	3 x 3 x 45	1
31	LA-143	Cluster Gear Shaft		1
32	HA-032	Snap Ring		2
33	LA-142	Bevel Gear Bushing		1
34	LA-141	Thrust Spacer		1
36	LA-156	Feed Drive Gear		1
37	LA-166A	Key	3 x 3 x 10	1
40	LA-157	Feed Drive Gear		1
41	HA-041	Needle Bearing		1
42	LA-168	Bushing		1
43	LA-139	Worm		1
44	LA-138	Feed Worm Shaft Bushing		1
47	LA-137	Bevel Gear Thrust Spacer		1
48	LA-134	Bushing		2
49	LA-135	Feed Reverse Bevel Gear		2
50	LA-136	Feed Reverse Clutch		1
55	LA-132	Reverse Clutch Rod		1
56	HA-056	Spring Pin	3 x 20	1
57	LA-133	Feed Wrom Shaft		1
59	HA-059	Spring Pin	3 x 12	2
60	LA-150	Feed Shift Rod		1
61	TS-1522031	Set Screw	M5 x 10	1
62	HA-062	Key	3 x 3 x 15	1
63	LA-149	Feed Gear Shift Fork		1
64	LA-151	Cluster Gear Shift Crank		1
66	LA-148	Cluster Gear Cover		1

67	TS-1504011	Hex Socket Cap Screw	M8 x 10	4
73	TS-1502081	Hex Socket Cap Screw	M5 x 35	2
74	LA-081	Clutch Ring Pin		2
75	LA-080	Clutch Ring		1
76	TS-1524011	Set Screw	M8 x 8	1
78	LA-082	Overload Clutch Lockout		1
79	LA-083	Safety Clutch Spring		1
80	LA-084	Overload Clutch		1
81	LA-085	Overload Clutch Sleeve		1
82	LA-090	Key		1
83	TS-1532052	Pan Head Machine Screw	M4 x 16	3
85	TS-1523031	Set Screw	M6 x 10	2
88	LA-169	Spring		1
89	LA-089	Spring Plunger		1
90	LA-123	Pinion Shaft Bushing		1
91	LA-122	Spacer		1
92	LA-087	Overload Clutch Worm Gear		1
93	LA-086	Overload Clutch Ring		1
94	HA-094	Snap Ring		1
96	LA-079	Trip Lever		1
97	LA-078	Washer		1
98	HA-098	Snap Ring		1
99	LA-076	Clutch Arm Cover		1
100	TS-1523051	Set Screw	M6 x 10	1
101	HA-101	Locknut		1
102	LA-077	Pin		3
103	LA-091	Cam Rod		1
104	LA-100	Trip Handle		1
106	LA-092	Feed Trip Bracket		1
107	TS-1503051	Hex Socket Cap Screw	M6 x 20	2
109	HA-109	Key	3 x 3 10	1
110	LA-130	Feed Reverse Knob Stud		1
111	LA-131	Reverse Knob		1
112	HA-112	Snap Ring		1
113	LA-129	Handwheel Clutch		1
114	SB-3/16	Steel Ball	3/16	2
115	HA-115	Spring		2
117	HA-117	Spring Pin		1
118	LA-093	Cam Rod Sleeve Assembly		1
121	LA-095	Trip Plunger		1
123	LA-121	Bushing		1
124	LA-097	Feed Trip Plunger		1
125	LA-126	Handwheel		1
126	LA-125	Handle		1
127	LA-050A	Spindle		1
128	LA-060	Quill Skirt		1
129	LA-048	Lock Nut		1
131	BB-6206ZZ	Ball Bearing		1
133	LA-051	Nose Piece		1
134	LA-052	Spindle Shield		1
135	BB-7207C	Ball Bearing		2
136	LA-054	Bearing Spacer (large)		1
137	LA-053	Bearing Spacer (small)		1
140	LA-172	Set Screw		1

142	LA-058	Quill		1
143	TS-154021	Hex Nut	M4	1
144	TS-1521071	Set Screw	M4 x 20	1
145	LA-098	Feed Trip Lever		1
146	LA-099	Trip Lever Pin		1
148	LA-111	Quill Lock Sleeve		1
149	LA-109	Lock Handle		1
150	HA-150	Screw	M5 x 10	2
151	LA-057	Felt Washer		1
153	LA-110	Quill Lock Sleeve		1
155	LA-043	T-Bolt Assembly		4
156	LA-046	Spacer		4
157	LA-040	Lock Nut		4
158	HA-158	Screw	M4 x 5	2
159	LA-118	Micrometer Scale		1
161	LA-115	Quill Micro-Stop Nut		1
162	LA-116	Micrometer Nut		1
163	LA-117	Quill Stop Knob		1
164	LA-112	Quill Micro-Screw		1
165	LA-165A	Screw	3/8-24UNFx3/4	1
166	LA-101	Quill Pinion Shaft		1
168	LA-101A	Pin		1
171	HA-171	Key		2
172	LA-107	Pinion Shaft Hub		1
173	TS-0270021	Set Screw	5/16 x 1/4	1
175	LA-106	Hub		1
176	LA-104	Hub Sleeve		1
177	LA-103	Spring Cover		1
178	LA-102	Clock Spring		1
	LA-102/3	Clock Spring Assembly		1
179	TS-0680061	Washer	1/2	1
181	TS-1523011	Set Screw	M6 x 6	2
183	LA-113	Lever		1
184	LA-114	Plunger		1
185	LA-124	Screw		1
186	LA-018	Worm Gear		1
188	LA-173	Set Screw		1
189	LA-019	Worm Shaft		1
190	LA-105	Handle		1
191	LB-017	Plastic Ball		1
192	LA-016	Quill Housing		1
193	HA-193	Spring	10 x 20	1
194	RINS30	Snap Ring		1
195	HB1291	Lock Washer		1
196	TS-1524011	Set Screw	M8 x 8	1
197	TS-0561031	Hex Nut	3/8	1

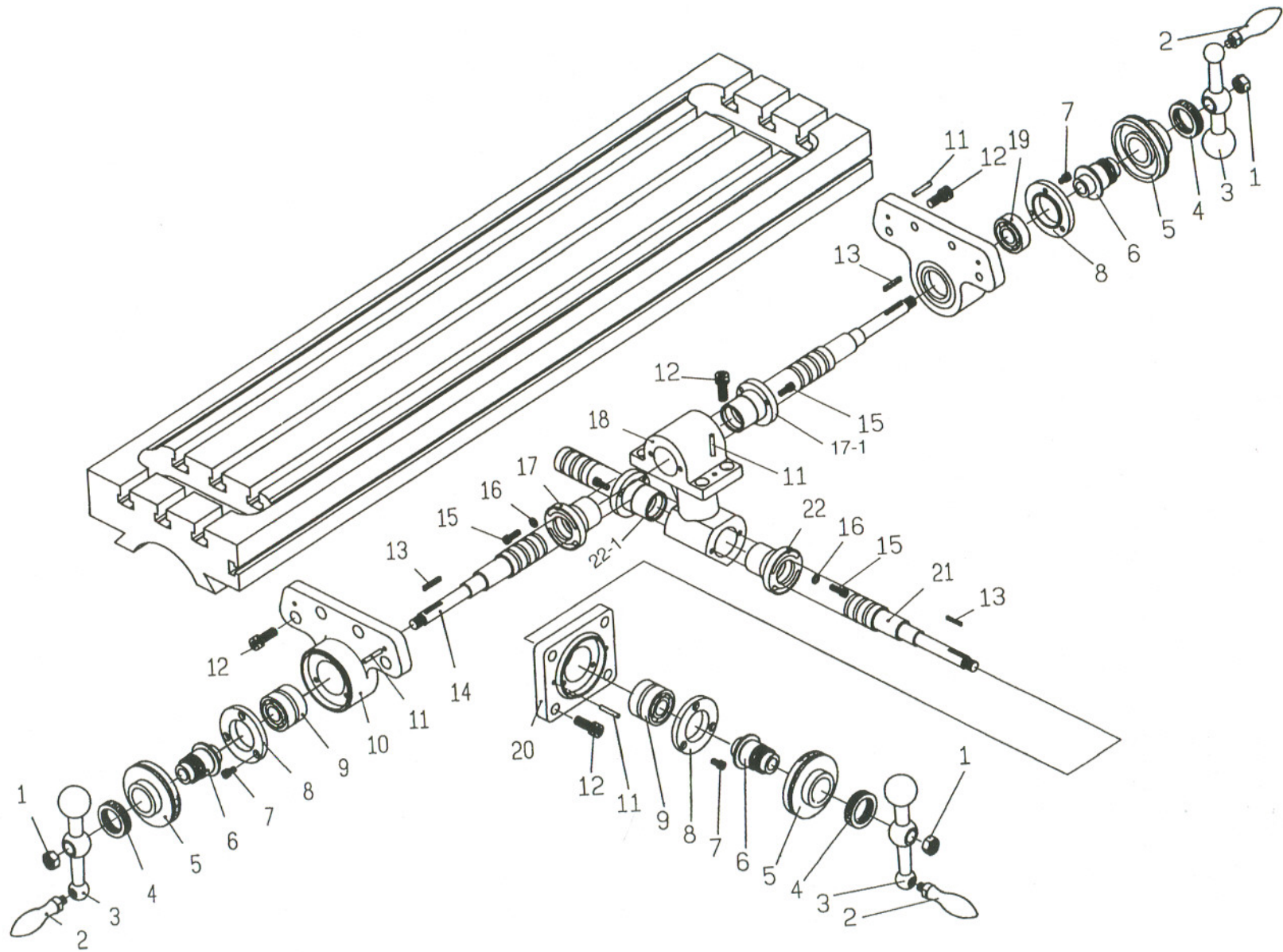
Base Assembly



Base Assembly

1	LB-001	Set Screw	M6 x30	2
2	LB-023	Gear		1
3	LB-020	Ram Adapter		1
4	LB-004	Snap Ring	S-28	2
5	LB-005	Rivet		5
6	LB-027	Adapter Scale		1
7	LB-035	Worm		1
8	LB-036	Worm Thrust Washer		1
9	LB-034	Shaft		1
10	LB-100	Key	5 x 5 x 40	1
11	MB-026	Ram		1
12	LB-032	Angle Plate		1
13	LB-028	Adapter Pivot Stud		1
14	LB-031	Washer		4
15	LB-030	Adapter Locking Bolt		3
16	MB-009	Turret		1
	MB-00B	Turret Scale (not shown)		1
17	LB-030	Lock Bolt		4
18	LB-041	Ram Pinion Screw		1
19	LB-011	Ram/Turret Gib		1
20	LS-005E	Lock Plunger		2
21	LB-014	Ram Lock Bolt Handle		2
22	LB-015	Ram Pinion		1
23	LB-016	Handle		1
24	LB-017	Black Plastic Ball		1
25	TS-0211131	Set Screw	3/8 x 2	2
26	TS-0561031	Hex Nut	3/8	2
27	MB-008	Spider		1
28	MB-000	Column		1
29	JTM1-330A	Table		1
30	LT-027	Stop Nut		2
31	LT-028	Table Stop		2
32	TS-1504071	Hex Socket Cap Screw	M8 x 35	2
33	TS-1504031	Hex Socket Cap Screw	M8 x 16	2
34	LK-002	Gib Adjusting Screw		6
35	LS-003	Table Stop Bracket		1
36	LS-008	Saddle/Table Gib		1
37	LS-013	Felt Wiper		2
38	LS-005	Table Lock Plunger		2
39	LS-011	Saddle Lock Handle		5
40	LS-001	Saddle/Knee Gib		1
41	LS-014	Wiper Plate		2
42	LS-042	Screw		16
43	MS-000	Saddle		1
44	LS-017A	Wiper Felt		2
45	LS-016A	Felt (left)		1
46	LK-001	Knee/Column Gib		1
47	LS-016B	Knee/Wiper Felt (right)		1
48	LK-007	Upper Chip Guard		1
49	LK-006	Lower Chip Guard		1
50	MK-000	Knee		1
51	TS-1505031	Hex Socket Cap Screw	M10 x 25	2

52	MK-012	Elevating Screw Housing		1
53	MK-014	Elevating Screw Nut		1
54	TS-1503041	Hex Socket Cap Screw	M6 x 16	8
55	TS-0561052	Hex Nut	1/2-20UNF	1
56	LK-058	Key	4 x 4 x 30	1
57	LK-022	Washer		1
58	MK-021	Bevel Gear		1
59	BB-6306ZZ	Ball Bearing		2
60	MK-019	Bearing Retainer Ring		1
61	MK-016	Elevating Screw		1
62	LK-037	Handle		1
63	LK-036	Elevating Crank		1
64	LK-035	Clutch Insert		1
65	LK-034	Dial Lock Nut		1
66	LK-033	Dial		1
67	LK-032	Dial Holder		1
68	LK-030	Bearing Retainer Ring		1
69	BB-6204ZZ	Ball Bearing		1
70	LK-029	Bearing Cap		1
71	LK-075	Key	4 x 4 x 18	2
72	MK-028	Elevating Shaft		1
73	BB-6204ZZ	Ball Bearing		2
74	MK-024	Bevel Pinion		1
75	LK-003	Plunger		1
76	LK-081	Spring Pin	8 x 30	1
77	LS-010	Saddle Lock Plunger		1
78	TS-1523011	Set Screw	M6 x 6	2
83	MB-090	Screw	1/4 x 3/8	4
84	MK-038	Bushing		1
86	MB-004	Cover		1
87	MB-041	Strainer Screen		2
98	RIBW34	Hoisting Ring		1
99	LB-036	Worm Thrust Washer		1
100	LB-033	Thrust Washer		1
102	LK-003	Lock Plunger		1
104	TS-1503051	Hex Socket Cap Screw	M6 x 20	6
	LS-017C	Flat Way Cover (rear – not shown)		1
	LS-018	Pleated Way Cover (front – not shown)		1
	JTM4VS-TB	Tool Box Kit Complete (not shown)		1
105	KEY3320	Key	3 x 3 x 20	1

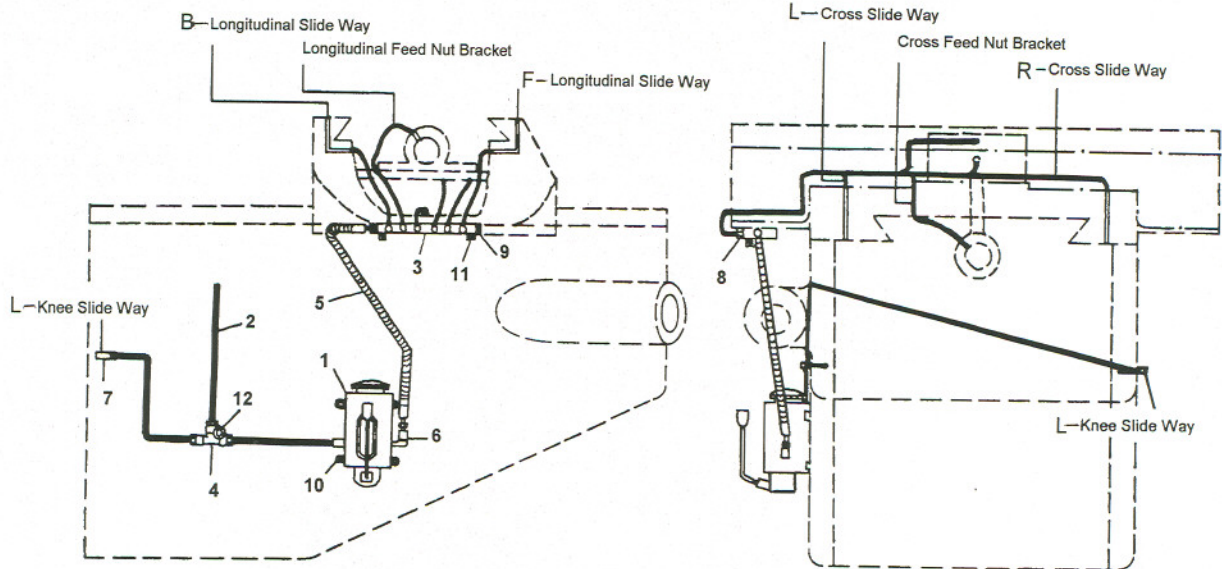


Leadscrew Assembly

Leadscrew Assembly

1	TS-0571052	Jam Nut	1/2-20UNF	3
2	LT-010C	Handle		3
3	LT-010B	Ball Crank		3
4	LT-009	Dial Lock Nut		3
5	LT-008	Dial		3
6	LT-007	Dial Holder		3
7	TS-150301	Hex Socket Cap Screw	M6 x 12	9
8	LT-005	Bearing Retainer Ring		3
9	BB-6204ZZ	Ball Bearing		3
10	LT-002	Bearing Bracket		1
11	LS-009	Spring Pin	5 x 30	8
12	TS-1505031	Hex Socket Cap Screw	M10 x 25	16
13	LS-014A	Key	3 x 3 x 25	3
14	MT-015D	Leadscrew		1
15	TS-1503041	Hex Socket Cap Screw	M6 x 16	10
16	TS-1550051	Washer	M7	4
17	MT-019B	Feed Screw Nut Assembly (Include Index No.17-1)		1
18	MT-017	Feed Nut Bracket		1
19	BB-6204ZZ	Ball Bearing		1
20	MT-025	Cross Feed Bearing Bracket		1
21	MT-024	Cross Feed Screw		1
22	MT-022	Cross Feed Nut Assembly (Include Index No.22-1)		1

One Shot Lubrication System



1	LT-8	Hand Oiler		1
2	ALMP-04	Aluminum Pipe	3.5M	1
	ALMP-04-VS	Oil Line Set w/ Fittings		1
3	DB-4	Oil Regulating Distributor		1
4	PKD-4	T-Joint		1
5	FHC-404	Flexible Steel Tube		1
6	PH-1-1/PB-4	Check Joint		2
7	PH-4	Elbow Joint		2
8	PA-4/PB-4	Straight Joint		14
9	PG-004	Union		1
10	JTM4VS-BUTW1458	Screw		4
11	TS-1503061	Hex Socket Cap Screw	M6 x 25	2
12	TS-1502061	Hex Socket Cap Screw	M5 x 25	1