Operator's Manual

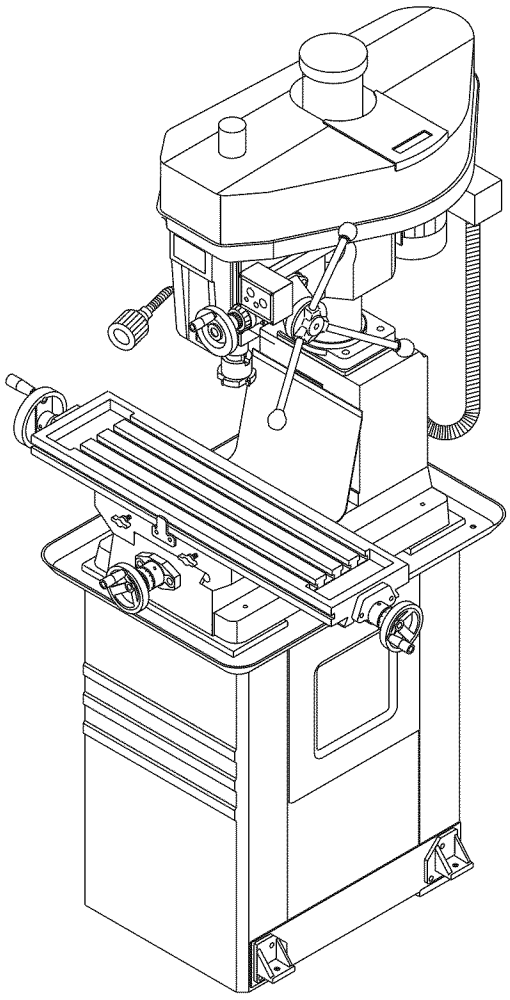
CRAFTSMAN®

PROFESSIONAL

MILL DRILL WITH STAND

Model No.

351.211970



CAUTION: Read and follow all Safety Rules and Operating Instructions before First Use of this Product.

Sears, Roebuck and Co., Hoffman Estates, IL 60179 U.S.A.

www.sears.com/craftsman

25140.00 Draft (02/19/07)

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WARRANTY

ONE-YEAR FULL WARRANTY ON CRAFTSMAN PROFESSIONAL TOOL

If this Craftsman tool fails due to a defect in material or workmanship within one year from the date of purchase, call 1-800-4-MY-HOME® TO ARRANGE FOR FREE REPAIR (or replacement if repair proves impossible). This warranty does not include expendable parts, such as lamps, batteries, bits or blades.

If this tool is ever used for commercial or rental purposes, this warranty will apply for only 90 days from the date of purchase.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Sears, Roebuck and Co., Hoffman Estates, IL 60179

SAFETY RULES

WARNING: For your own safety, read all of the instructions and precautions before operating tool.

CAUTION: Always follow proper operating procedures as defined in this manual — even if you are familiar with use of this or similar tools. Remember that being careless for even a fraction of a second can result in severe personal injury.

BE PREPARED FOR JOB

- Wear proper apparel. Do not wear loose clothing, gloves, neckties, rings, bracelets or other jewelry which may get caught in moving parts of machine.
- Wear protective hair covering to contain long hair.
- Wear safety shoes with non-slip soles.
- Wear safety glasses complying with United States ANSI Z87.1. Everyday glasses have only impact resistant lenses. They are **NOT** safety glasses.
- Wear face mask or dust mask if operation is dusty.
- Be alert and think clearly. Never operate power tools when tired, intoxicated or when taking medications that cause drowsiness.

PREPARE WORK AREA FOR JOB

- Keep work area clean. Cluttered work areas invite accidents.
- Do not use power tools in dangerous environments. Do not use power tools in damp or wet locations. Do not expose power tools to rain.
- Work area should be properly lighted.
- Proper electrical receptacle should be available for tool. Three-prong plug should be plugged directly into properly grounded, three-prong receptacle.
- Extension cords should have a grounding prong and the three wires of the extension cord should be of the correct gauge.
- Keep visitors at a safe distance from work area.
- Keep children out of workplace. Make workshop childproof. Use padlocks, master switches or remove switch keys to prevent any unintentional use of power tools.

TOOL SHOULD BE MAINTAINED

- Always unplug tool prior to inspection.
- Consult manual for specific maintaining and adjusting procedures.
- Keep tool lubricated and clean for safest operation.
- Remove adjusting tools. Form habit of checking to see that adjusting tools are removed before switching machine on.
- Keep all parts in working order. Check to determine that the guard or other parts will operate properly and perform their intended function.
- Check for damaged parts. Check for alignment of moving parts, binding, breakage, mounting and any other condition that may affect a tool's operation.
- A guard or other part that is damaged should be properly repaired or replaced. Do not perform makeshift repairs. (Use parts list provided to order replacement parts.)

KNOW HOW TO USE TOOL

- Use right tool for job. Do not force tool or attachment to do a job for which it was not designed.
- Disconnect tool when changing drill bit or cutter.
- Avoid accidental start-up. Make sure that the tool is in the "off" position before plugging in.
- Do not force tool. It will work most efficiently at the rate for which it was designed.
- Keep hands away from moving parts and cutting surfaces.
- Never leave tool running unattended. Turn the power off and do not leave tool until it comes to a complete stop.
- Do not overreach. Keep proper footing and balance.
- Never stand on tool. Serious injury could occur if tool is tipped or if drill bit or cutter is unintentionally contacted.

- Know your tool. Learn the tool's operation, application and specific limitations.
- Use recommended accessories (refer to page 15). Use of improper accessories may cause risk of injury to persons.
- Handle workpiece correctly. Protect hands from possible injury.
- Turn machine off if it jams. Drill bit or cutter jams when it digs too deeply into workpiece. (Motor force keeps it stuck in the work.) Do not remove workpiece until the mill drill is turned off, unplugged and the spindle has stopped.
- Clamp workpiece or brace against column to prevent rotation.
- Feed work into a bit or cutter against the direction of rotation of bit or cutter.
- Use recommended speed for mill drill accessory and workpiece material.

CAUTION: Think safety! Safety is a combination of operator common sense and alertness at all times when tool is being used.

WARNING: The operation of any power tool can result in foreign objects being thrown into the eyes, which can result in severe eye damage. Always wear safety goggles complying with United States ANSI Z87.1 (shown on package) before commencing power tool operation. Safety goggles are available through your Sears catalog.

UNPACKING

Refer to Figure 1.

Check for shipping damage. If damage has occurred, a claim must be filed with carrier. Check for completeness. Immediately report missing parts to dealer.

Carefully open crate and remove loose parts box. Unbolt mill drill from shipping pallet and remove from crate using heavy duty lifting equipment such as an overhead crane.

WARNING: Be careful not to touch overhead power lines, piping, lighting, etc. if lifting equipment is used. Mill Drill weighs approximately 650 lbs. Proper tools, equipment and qualified personnel should be employed in all phases of unpacking and installation.

Mill drill is shipped assembled except for certain parts shipped loose in a wooden box. Locate and account for the following parts:

A Drill chuck arbor
B ⅝" Drill chuck with key
C Face mill arbor
D 3" Face milling cutter
E Three feed handwheels
F R8/MT3 Adapter
G Drawbar

Stand is shipped unassembled.

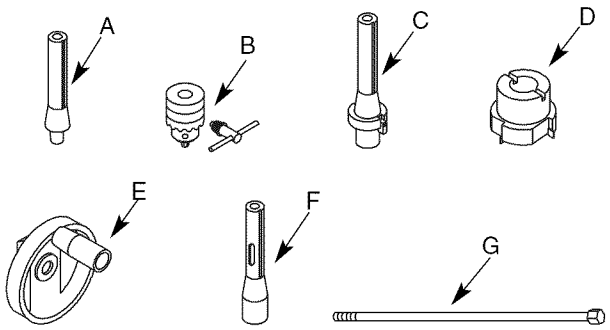


Figure 1 - Unpacking

IMPORTANT: Table is coated with a protectant. To ensure proper fit and operation, remove coating. Coating is easily removed with mild solvents, such as mineral spirits, and a soft cloth. Avoid getting solution on paint or any of the rubber or plastic parts. Solvents may deteriorate these finishes. Use soap and water on paint, plastic or rubber components. After cleaning, cover all exposed surfaces with a light coating of oil. Paste wax is recommended for table top.

WARNING: Never use highly volatile solvents. Non flammable solvents are recommended to avoid possible fire hazard.

ASSEMBLY

Refer to Figure 4, 7, 8, 9 and 11.

CAUTION: Do not attempt assembly if parts are missing. Use operator's manual to order replacement parts.

Mill drill must be mounted to a flat level surface. Use shims or machine mounts if necessary. Do not mount machine in direct sunlight. Heat caused by sunlight may deform plastic parts on machine.

If stand is used, be sure to bolt mill drill to stand and level stand to floor to minimize vibration. Use hex head bolts, hex nuts and leveling pads (Figure 10, Key Nos. 8, 11 and 12) to align the mill drill. Tighten all nuts and bolts that may have loosened in shipping. Secure mill drill base to stand or bench.

ASSEMBLE STAND

Refer to Figure 11.

- Place both supports (Key No. 5) upside down on floor.
- Attach feet (Key No. 9) and plate (Key No. 7) to each support using hex head bolts, washers and hex nuts (Key No. 2, 3 and 4). Finger tighten fasteners at this time.
- Repeat on other side of supports with feet and plate (Key No. 14).
- Turn unit right side up.
- Install left and right panels (Key Nos. 6 and 13). Gently spread supports so that tabs on panels fit into slots located on supports.
- Secure all fasteners from steps 2 and 3.

- Place chip pan (Key No. 1) on top of supports, locating the bottom rail of the chip pan inside the supports.
- Secure chip pan to supports using hex head bolts and flat washers (Key Nos. 2 and 3).

MOUNT MILL DRILL TO STAND

Refer to Figure 11.

Place mill drill on stand with mounting holes aligned. Bolt mill drill base to stand with four hex head bolts and four flat washers (Key Nos. 3 and 10).

MOUNT TABLE HANDWHEELS

Refer to Figure 9.

Thread handles (Key No. 11) into feed handwheels (Key No. 12). Secure handwheels to the ends of longitudinal lead screw (Key No. 35) and cross lead screw (Key No. 20) using set screws (Key No. 30).

INSTALL DRAWBAR AND ARBOR

Refer to Figures 7 and 8.

Insert draw bar (Figure 8, Key No. 52) into top of spindle. Be sure that arbor and spindle taper are clean of all dirt, metal chips, oil, etc. Insert chuck or face mill arbor (Figure 7, Key Nos. 52 and 55) into spindle and rotate arbor to engage spindle key in arbor keyway. Push arbor into spindle and thread draw bar into end of arbor. Use a wrench to tighten draw bar securely.

INSTALLATION

Refer to Figures 3, 4 and 5.

MOTOR

The 115/230 Volt AC motor has the following specifications:

Horsepower (Continuous Duty)	1½
Voltage	115/230
Amps	16.2/8.1
Hertz	60
Phase	Single
RPM	1725

POWER SOURCE

The motor is designed for operation on the voltage and frequency specified. Normal loads will be handled safely on voltages not more than 10% above or below the specified voltage.

Running the unit on voltages which are not within the range may cause overheating and motor burn-out. Heavy loads require that the voltage at motor terminals be no less than the voltage specified.

GROUNDING INSTRUCTIONS

WARNING: Improper connection of equipment grounding conductor can result in the risk of electrical shock. Equipment should be grounded while in use to protect operator from electrical shock.

Check with a qualified electrician if grounding instructions are not understood or if in doubt as to whether the tool is properly grounded.

This tool is equipped with an approved 3 conductor cord rated at 300V. A qualified electrician should wire appropriate 3-prong plug to mill drill line cord.

Grounding plug should be plugged directly into a properly installed and grounded 3-prong grounding-type receptacle, as shown (Figure 2).

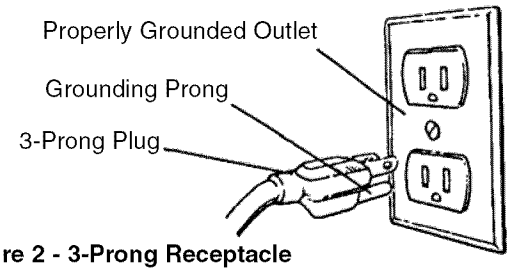


Figure 2 - 3-Prong Receptacle

Do not remove or alter grounding prong in any manner. In the event of a malfunction or breakdown, grounding provides a path of least resistance for electrical shock.

WARNING: Do not permit fingers to touch the terminals of plug when installing or removing from outlet.

Plug must be plugged into matching outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not modify plug provided. If it will not fit in outlet, have proper outlet installed by a qualified electrician.

Inspect tool cords periodically, and if damaged, have them repaired by an authorized service facility.

Green (or green and yellow) conductor in cord is the grounding wire. If repair or replacement of the electric cord or plug is necessary, do not connect the green (or green and yellow) wire to a live terminal.

Where a 2-prong wall receptacle is encountered, it must be replaced with a properly grounded 3-prong receptacle installed in accordance with National Electric Code and local codes and ordinances.

WARNING: This work should be performed by a qualified electrician.

A temporary 3-prong to 2-prong grounding adapter (see Figure 3) is available for connecting plugs to a two pole outlet if it is properly grounded.

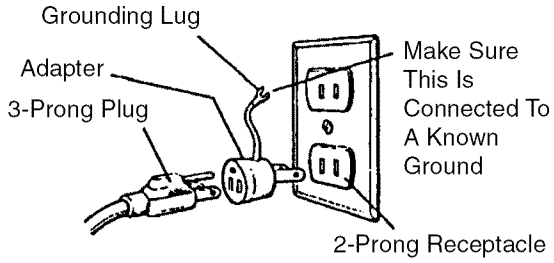


Figure 3 - 2-Prong Receptacle with Adapter

Do not use a 3-prong to 2-prong grounding adapter unless permitted by local and national codes and ordinances. (A 3-prong to 2-prong grounding adapter is not permitted in Canada.) Where permitted, the rigid green tab or terminal on the side of the adapter must be securely connected to a permanent electrical ground such as a properly grounded water pipe, a properly grounded outlet box or a properly grounded wire system.

Many cover plate screws, water pipes and outlet boxes are not properly grounded. To ensure proper ground, grounding means must be tested by a qualified electrician.

EXTENSION CORDS

- The use of any extension cord will cause some drop in voltage and loss of power.
- Wires of the extension cord must be of sufficient size to carry the current and maintain adequate voltage.
- Use the table to determine the minimum wire size (A.W.G.) extension cord.
- Use only 3-wire extension cords having 3-prong grounding type plugs and 3-pole receptacles which accept the tool plug.
- If the extension cord is worn, cut or damaged in any way, replace it immediately.

EXTENSION CORD LENGTH

Wire Size	A.W.G.
Up to 50 ft. (115 volts)	12
Up to 50 ft. (230 volts)	16

NOTE: Using extension cords over 50 ft. long is not recommended.

ELECTRICAL CONNECTIONS

Refer to Figure 4.

WARNING: All electrical connections must be performed by a qualified electrician. Make sure unit is off and disconnected from power source while motor is mounted, connected, reconnected or anytime wiring is inspected.

The Craftsman mill drill is prewired for 230 volts, 60 Hz, single-phase power. A qualified electrician should wire a 240 volt, 20 AMP, 3-prong plug to mill drill line cord. A wiring schematic has been included for your information.

To use machine with a 115 volt, 60 Hz, single-phase power supply:

WARNING: All electrical connections must be performed by a qualified electrician.

- Change motor wiring to 115 volts. Refer to motor nameplate for wiring schematic.
- Change setting of voltage select switch (Figure 10, Key No. 36) to 110 volts.
- Attach a 125 volt, 20 or 30 Amp, 3-prong plug to the mill drill line cord.

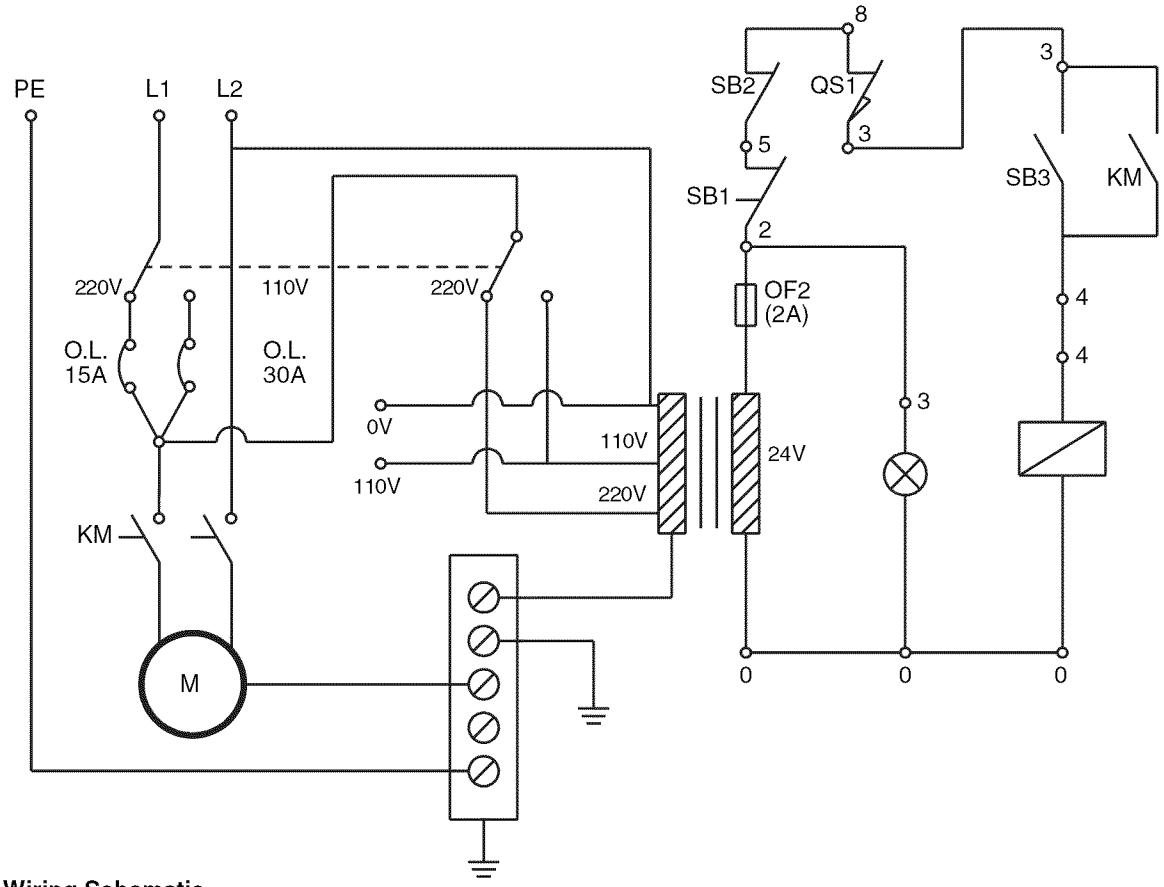


Figure 4 - Wiring Schematic

OPERATION

Refer to Figures 5, 7, 8 and 9.

Craftsman 12-Speed Mill Drill Model 21197 is a ruggedly constructed machine providing accurate milling, drilling and boring capabilities. The fully enclosed R-8 spindle has heavy-duty tapered thrust bearings at top and bottom of quill, adjustable depth stop with scale, fine feed adjustment handwheel with .001" graduations and quill lock down handle for securely clamping spindle at desired depth. One piece cast iron head rotates 360° and travels vertically by rack and pinion.

Hinged pulley cover allows fast and easy speed changes. Large 31⅞ x 9⅜" table has dovetail ways with adjustable gibs and bronze lead screw nuts for accurate and rigid table positioning. Table has four ⅝" T-slots, zero-setting handwheel dials with .001" graduations, adjustable stops for longitudinal feed and cross feed way cover.

A 1½ HP, 1725 RPM, 115/230 volt, 60 Hz single-phase motor and 115v work lamp are included. Prewired for 230v.

Craftsman Mill Drill comes with a heavy-duty stand. Stand is 14 gauge steel providing strength and rigidity. Stand features mounting flanges for mounting stand to floor, large chip pan, mounting bolts and leveling pads.

SPECIFICATIONS

12 Speeds	120, 190, 230, 285, 370, 440, 770, 1040, 1220, 1450, 1800, 2500 RPM
Table size	31⅞ x 9⅜"
T-slots	⅝" slots, four
Swing	16"
Spindle taper	R-8 with 7/16"-20 drawbar
Drilling capacity	1¼" mild steel 1½" cast iron
End mill capacity	¾" mild steel
Face mill capacity	3" mild steel
Spindle stroke	5"
Max. distance spindle to table	17¾"
Head swivel	360°
Quill diameter	3"
Quill collar diameter	3¾" (96mm)
Column diameter	4½"
Left-right table travel (longitudinal)	23"
Front-back table travel (cross)	7"
Overall dimensions	44 x 39 x 79"
Shipping weight	825 lbs

CAUTION: Always observe the following safety precautions:

- Clamp workpiece or brace against column to prevent rotation.
- Feed work into a bit or cutter against the direction of rotation of bit or cutter.
- Use recommended speed for mill drill accessory and workpiece material.

WARNING: Some dust created by power sanding, sawing, grinding, drilling, milling 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 paints.
- Crystalline silica from bricks and cement and other masonry products.
- Arsenic and chromium from chemically-treated lumber.

Your risk from these exposures vary, 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. Always wear **OSHA/NIOSH** approved, properly fitting face mask or respirator when using such tools.

ADJUSTING HEAD

Refer to Figures 7 and 9.

Loosen hex nut (Figure 7, Key No. 24) with wrench (Figure 7, Key No. 23). Head can be rotated 360° around column by hand. Be sure rack (Figure 9, Key No. 6) does not bind. Raise or lower head by turning head adjusting crank (Figure 7, Key No. 34). Be sure to tighten both hex nuts after adjusting head.

CHANGING SPEED

Refer to Figures 5 and 8.

Craftsman mill drill is a 12-speed machine. Spindle speeds are determined by location of V-belts on three pulleys.

- Always push stop button and disconnect power from machine before changing speeds.
- Open cover access door. Pulley cover top can be tilted back for speed changes. Be sure to close cover when finished.
- Loosen handle (Key No. 26) and push motor mount plate (Key No. 33) toward head. Tighten handle.
- Loosen transmitting pulley base (Key No. 41) by loosening hex head bolts (Key No. 46). Place V-belts on pulleys for desired speed as shown in speed chart (See Figure 4, page 5).
- Tension front V-belt (Key No. 53) by pushing middle pulley away from spindle pulley. Tighten hex head bolts.
- Loosen handle and push motor mount plate away from head to tension rear V-belt. Tighten handle. Check belt tension and adjust if necessary. Close pulley cover.
- Secure pulley cover latches.

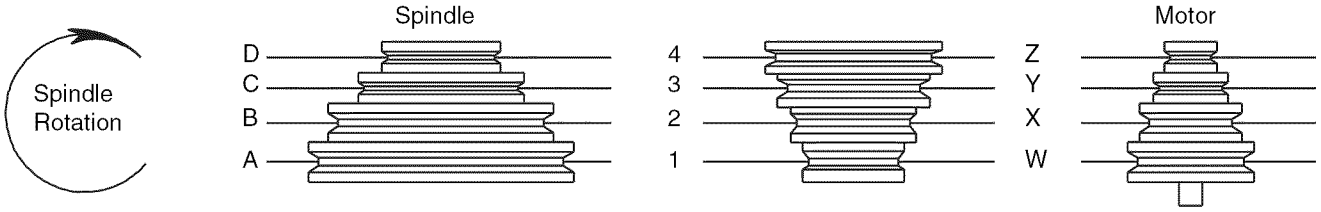


Figure 5 – Spindle Speed Chart

Spindle RPM	Belt Location
120	A1-4Z
190	B2-4Z
230	A1-3Y
285	C3-4Z
370	B2-3Y
440	A1-2X
770	D4-3Y
1040	C3-2X
1220	B2-1W
1450	D4-2X
1800	C3-1W
2500	D4-1W

SPINDLE OPERATION

Refer to Figures 7 and 8.

Craftsman mill drill is equipped with spindle fine feed handwheel and spindle depth lockdown handle.

Engage fine feed handwheel (Figure 7, Key No. 2) by rotating pinion knob clockwise (Figure 7, Key No. 17) until tight. Disengage fine feed by loosening pinion knob.Spindle depth can be locked into position by tightening quill lock handle (Figure 8, Key No. 23). Bring spindle down to desired position and tighten quill lock handle to hold spindle position.

DEPTH STOP

Refer to Figures 7 and 8.

Repeated operations where depth of cut is consistent are made easier by using depth scale (Figure 7, Key No. 47) and depth setting knob (Figure 8, Key No. 9).

Depth of cut is shown on depth scale and indicated by depth indicator (Figure 7, Key No. 48).

Depth of cut is set by rotating depth setting knob until desired depth is obtained.

HANDWHEEL SCALES

Refer to Figure 9.

The cross feed handwheel and right-hand longitudinal handwheel are equipped with graduated collars.

One full rotation of handwheel moves table .100″. Handwheel scales are graduated in .001″.

Scales are used when precise movement of table is required.

Scales can be zeroed by loosening dial screw (Key No. 16) and rotating lead screw dial (Key No. 13) until zero marks are aligned.

Tighten dial screw.

TABLE STOP BLOCKS

Refer to Figure 9.

Longitudinal travel can be limited to make repeated operations easier by using the table stop blocks (Key No. 40).

Table stop blocks are positioned to contact table stop bracket (Key No. 26) limiting table travel.

Adjust stop blocks by loosening socket head bolts (Key No. 39) and moving stop blocks to desired position. Secure socket head bolts.

TABLE LOCKS

Refer to Figure 8.

Mill drill table can be locked into position using table lock handles (Key No. 27).

Longitudinal position is secured by tightening lock handles on front of saddle.

Cross feed position is secured by tightening lock handles on right side of saddle.

REMOVE ARBOR

Loosen draw bar with wrench and remove arbor from spindle.

MAINTENANCE

WARNING: Make certain that unit is disconnected from power source before attempting to service or remove any component.

Refer to Figures 6, 7, 8 and 9.

- Keep all moving parts and surfaces clean of dirt, metal chips, etc. Keep a light coating of oil on all exposed surfaces, including table top and slots, all dovetail way surfaces, lead screws, rack and column.
- Replace worn V-belts.
- Check electrical connections and replace any worn or frayed wires or line cords.
- Replace worn way cover.

GIB ADJUSTMENT

Refer to Figures 6 and 9.

Craftsman mill drill is equipped with adjustable gibs (See Figure 6) on longitudinal and cross feed that eliminate excess play in table as dovetail ways wear over time.

- Rotating gib adjustment bolts (Fig. 9, Key No. 25) clockwise tightens dovetail ways. Adjust gib bolts until a slight drag is felt when moving the table with handwheels. Loosen bolts if table is too tight.

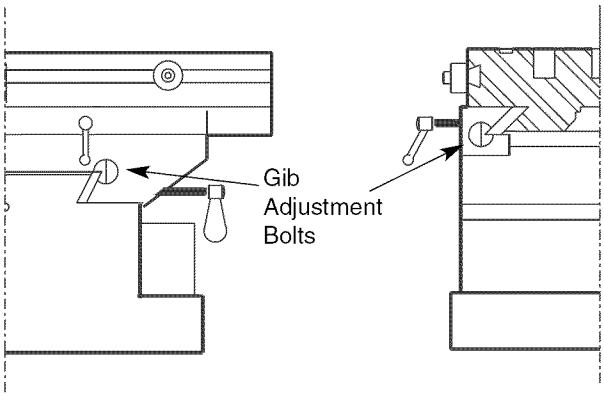


Figure 6 - Gib Adjustment

REPLACE RETURN SPRING

Refer to Figure 7 and 8.

Return spring may wear after extended use and will need replacement. If spindle does not return to full up position when released, then replace return spring.

CAUTION: Spring is under tension and may tend to twist forcefully when relaxed.

- To replace return spring, push spindle to fully up position and lock it in place by tightening quill lock handle (Figure 8, Key No. 23).
- Loosen spring cover knob (Figure 7, Key No. 38) slowly and carefully rotate spring and cover clockwise to relax spring tension.
- Remove spring cover knob and washer (Figure 7, Key No. 38 and 40). When tension is released, rotate spring and cover clockwise to release spring from mounting screw.
- Remove spring and cover. Place new spring over pinion shaft and slide slot at end of spring over mounting screw. Press spring and cover against head casting.
- Replace washer and spring cover knob. Rotate cover counterclockwise to tension spring. Rotate cover approximately three full turns and tighten cover knob. Release quill lock handle.
- Test spring tension by pulling down on crank handle (Figure 7, Key No. 19). Adjust spring tension as needed.

Overtightening spring causes quill to return with excessive force damaging quill and rubber bumper (Figure 8, Key Nos. 5 and 19).

LUBRICATION

Refer to Figures 7, 8 and 9.

Use medium weight, non-detergent oil.

DAILY:

- Apply five to six drops of oil on splines at the top of spindle (Figure 8, Key No. 4).
- Be sure cross feed lead screw (Figure 9, Key No. 20) is clean of dirt and metal chips. Oil if necessary.

WEEKLY:

- Oil cross feed lead screw (Figure 9, Key No. 20).
- Oil dovetail ways.

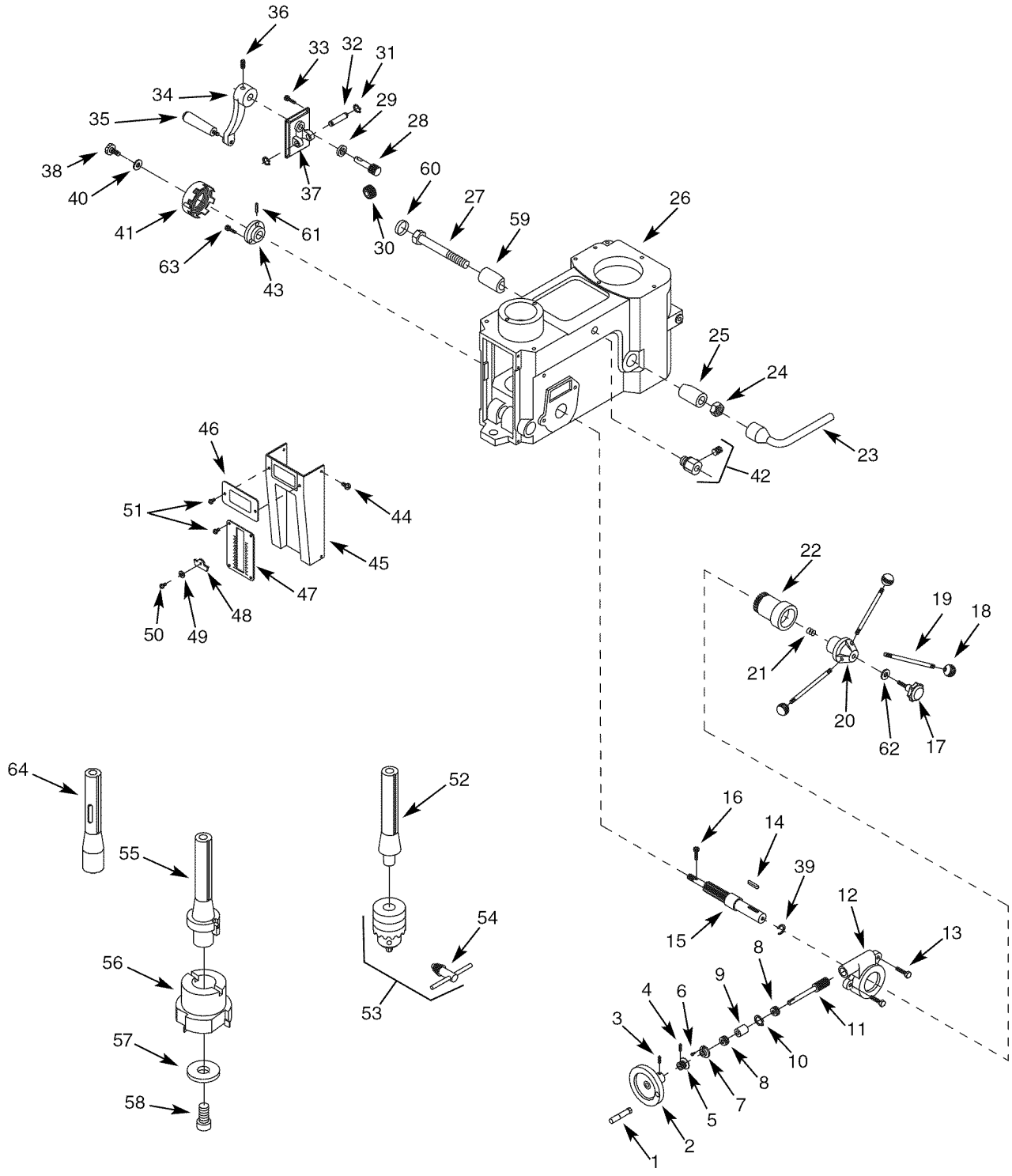
MONTHLY:

- Oil handwheel bearings through oil fittings (Figure 9, Key No. 19).
- Oil gear rack on back of quill where pinion shaft (Figure 7, Key No. 15) engages quill (Figure 8, Key No. 5).
- Oil depth stop lead screw (Figure 8, Key No. 17).
- Apply bearing grease to rack (Figure 9, Key No. 6) and pinion shaft (Figure 7, Key No. 15). Remove pinion knob and handle base (Figure 7, Key Nos. 17 and 20) to expose pinion shaft.
- Grease longitudinal lead screw (Figure 9, Key No. 35).

TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Motor does not run when start button is pushed	1. No power to motor 2. Blown fuse on control box 3. Defective switch or contactor	1. Check electrical connector and circuit breaker or fuse 2. Correct wiring problem and replace fuse 3. Replace defective parts
Motor overheats	1. Low voltage to motor 2. V-belts too tight 3. Too deep or too fast a cut 4. Worn contacts in contactor	1. Check voltage 2. Tension belts properly 3. Reduce cut depth or speed 4. Replace contactor
Spindle overheats	1. Poor quill bearing lubrication 2. Spindle bearings too tight 3. Mill drill operated at high speeds for extended period	1. Lubricate bearings with bearing grease 2. Adjust bearings so that spindle does not bind 3. Allow mill drill to cool
Lack of power at spindle	V-belts loose	Tension V-belts properly
Cutting tool chattering	1. Spindle bearings loose 2. Table is loose 3. Worn spindle bearings 4. Head clamp bolts loose	1. Tighten bearings 2. Adjust table and saddle gibs 3. Replace bearings 4. Tighten bolts
Spindle does not return to full "up" position	1. Poorly adjusted return spring 2. Worn return spring	1. Increase return spring tension 2. Replace return spring
Excessive backlash in lead screws	Worn lead screw nuts	Replace lead screw nuts
Excessive noise	1. Loose spindle bearings 2. Loose motor pulley	1. Adjust bearings properly 2. Tighten pulley set screws
Excessive play in table	Table is loose	Adjust table gibs properly

Figure 7 - Replacement Parts Illustration for Head



REPLACEMENT PARTS LIST FOR HEAD

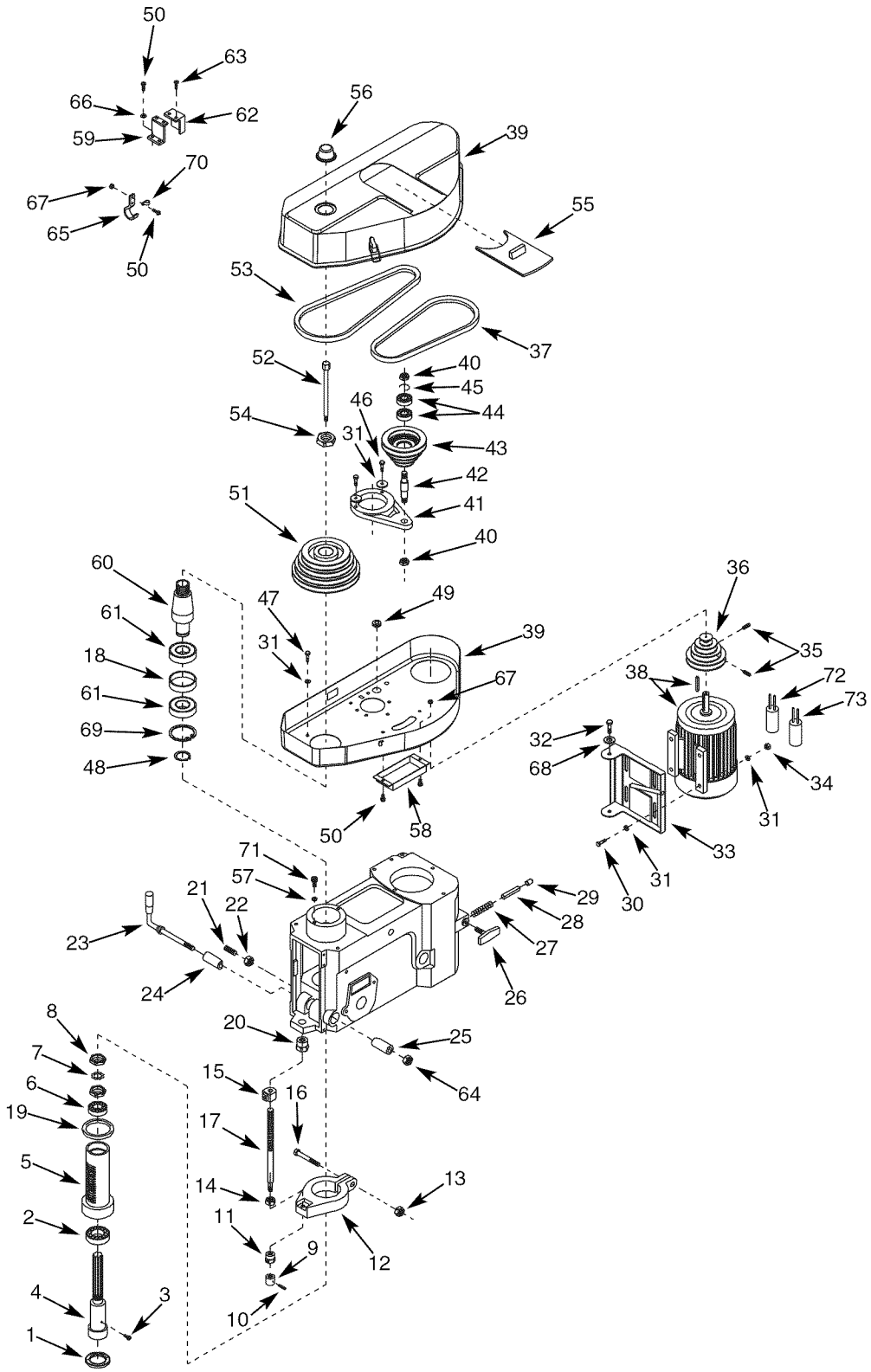
KEY NO.	PART NO.	DESCRIPTION	QTY.
1	05911.01	Handle	1
2	17147.00	Handwheel	1
3	07202.00	8-1.25 x 10mm Set Screw	1
4	01043.00	6-1.0 x 8mm Set Screw	1
5	05895.01	Fine Feed Scale	1
6	STD863510	5-0.8 x 10mm Pan Head Screw*	2
7	05894.01	Worm Cover	1
8	STD315521	6202ZZ Ball Bearing*	2
9	05893.00	Spacer	1
10	00533.00	3 AMI-15 Retaining Ring	1
11	05892.01	Worm Shaft	1
12	05891.00	Fine Feed Housing	1
13	STD870825	8-1.25 x 25mm Socket Head Bolt*	2
14	05889.00	7 X 7 x 20mm Key	1
15	17148.00	Pinion Shaft	1
16	07458.00	5-0.8 x 10mm Flat Head Screw	1
17	05883.00	Pinion Knob	1
18	05886.00	Handle Knob	3
19	17218.00	Crank Handle	3
20	17149.00	Handle Base	1
21	17150.00	Compression Spring	1
22	17151.00	Ring Gear Housing	1
23	17152.00	Wrench	1
24	STD843217	12-1.75mm Hex Nut*	1
25	17153.00	Bushing	1
26	17154.00	Head	1
27	25141.00	12-1.75 x 120mm Hex Head Bolt	1
28	05900.00	Worm Shaft	1
29	05972.00	Bushing	1
30	05899.00	Worm Gear	1
31	05989.00	3 AMI-14 Retaining Ring	2
32	16488.00	Worm Gear Shaft	1
33	STD870620	6-1.0 x 20mm Socket Head Bolt*	4

KEY NO.	PART NO.	DESCRIPTION	QTY.
34	05901.01	Head Adjusting Crank	1
35	04006.00	Handle	1
36	02683.00	10-1.5 x 8mm Set Screw	1
37	16489.00	Pinion Housing	1
38	05866.01	Knob	1
39	15350.00	Retaining Clip	1
40	STD551025	¼″ Flat Washer*	1
41	05881.00	Return Spring and Cover	1
42	00582.00	Strain Relief	1
43	05882.00	Spring Base	1
44	21409.00	6-1.0 x 12mm Washer Head Screw	4
45	05875.01	Front Cover	1
46	05877.01	Warning Label	1
47	05876.01	Depth Scale	1
48	05874.00	Depth Indicator	1
49	05981.00	3mm Flat Washer	1
50	15218.00	3-0.5 x 16mm Pan Head Screw	1
51	17155.00	3.5-1.3 x 8mm Tapping Screw	6
52	15214.00	R8 To JT3 Arbor	1
53	15351.00	JT3 Chuck with Key (Key No. 54)	1
54	15352.00	Chuck Key	1
55	17156.00	Face Mill Arbor	1
56	15354.00	Face Milling Cutter	1
57	15355.00	Retaining Plate	1
58	01002.00	10-1.5 x 25mm Socket Head Bolt	1
59	16491.00	Bushing	1
60	16492.00	32 x 7mm Oil Seal	1
61	06396.00	3 x 12mm Spring Pin	2
62	STD851010	10mm Flat Washer*	1
63	09738.00	5-0.8 x 20mm Pan Head Screw	3
64	17157.00	R8/Mt3 Adapter	1
Δ	25140.00	Operator's Manual	1

* Standard hardware item available locally.
Δ Not Shown.

PARTS LIST

Figure 8 - Replacement Parts Illustration for Head and Pulley Covers



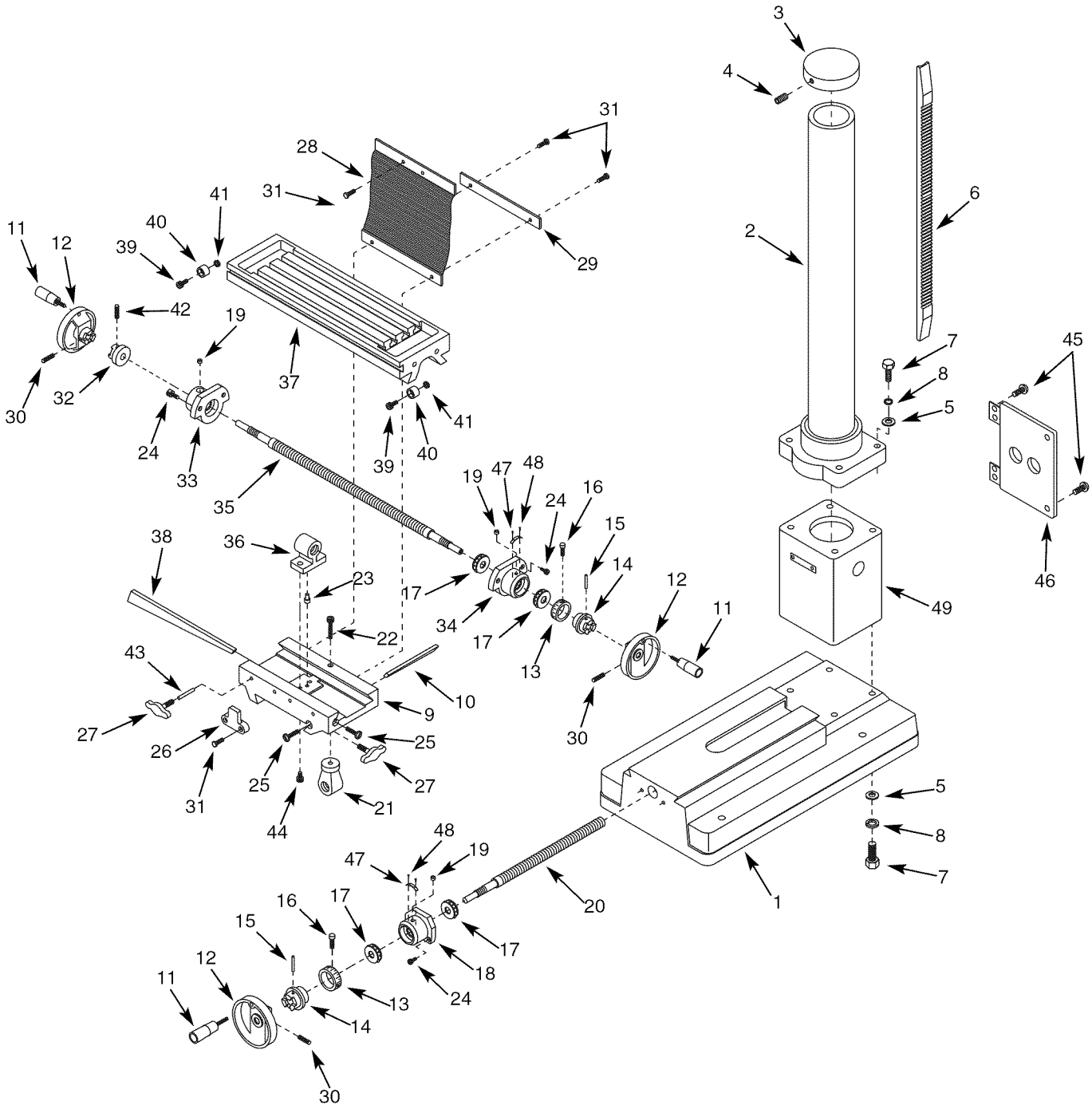
REPLACEMENT PARTS LIST FOR HEAD AND PULLEY COVERS

KEY NO.	PART NO.	DESCRIPTION	QTY.
1	15357.00	45 X 72 x 8mm Oil Seal	1
2	05855.00	30207 J-N Taper Bearing	1
3	STD870406	4-0.7 x 6mm Socket Head Bolt*	1
4	17158.00	Spindle	1
5	05852.01	Quill	1
6	05856.00	30206 J-N Taper Bearing	1
7	17159.00	30mm Keyed Washer	1
8	05858.00	30-1.25mm Spanner Nut	2
9	05867.01	Depth Setting Knob	1
10	02783.00	4 x 18mm Spring Pin	1
11	17160.00	Rod Bushing	1
12	05869.01	Rod Base	1
13	STD843610	6-1.0mm Hex Nut*	1
14	25145.00	16-2.0mm Hex Jam Nut	1
15	17161.00	Depth Indicator Block	1
16	STD833050	6-1.0 x 50mm Hex Head Bolt*	1
17	05872.00	Depth Stop Lead Screw	1
18	17171.00	Spacer	1
19	05859.00	Rubber Bumper	1
20	17162.00	Rod Bushing	1
21	02576.00	10-1.5 x 40mm Dog Point Set Screw	1
22	STD843015	10-1.5mm Hex Nut*	1
23	17163.00	Quill Lock Handle	1
24	17164.00	Quill Lock Bushing	1
25	16499.00	Quill Lock Sleeve	1
26	17165.00	Handle	1
27	05905.00	Compression Spring	1
28	05906.00	Tension Rod	1
29	05907.01	Rod Cap	1
30	STD835025	8-1.25 x 25mm Hex Head Bolt*	4
31	STD851008	8mm Flat Washer*	14
32	STD836025	10-1.5 x 25mm Hex Head Bolt*	2
33	05912.01	Motor Mount Plate	1
34	STD840812	8-1.25mm Hex Nut*	4
35	07202.00	8-1.25 x 10mm Set Screw	2
36	05914.00	Motor Pulley	1
37	05665.00	V-Belt	1

KEY NO.	PART NO.	DESCRIPTION	QTY.
38	17206.00	Motor and Key	1
39	17166.00	Pulley Cover	1
40	STD841620	16-2.0mm Hex Nut*	2
41	17167.00	Transmitting Pulley Base	1
42	17168.00	Transmitting Pulley Shaft	1
43	05910.00	Transmitting Pulley	1
44	00989.00	6204ZZ Bearing	2
45	05975.00	54mm Retainer Ring	1
46	STD835035	8-1.25 x 35mm Hex Head Bolt*	2
47	STD835016	8-1.25 x 16mm Hex Head Bolt*	5
48	05973.00	41mm Retainer Ring	1
49	04076.00	Grommet	1
50	STD863512	5-0.8 x 12mm Pan Head Screw*	6
51	05864.00	Spindle Pulley	1
52	05921.00	Draw Bar	1
53	04106.00	V-Belt	1
54	21379.00	Spindle Lock Nut	1
55	17169.00	Cover Access Door	1
56	17170.00	Draw Bar Cover	1
57	STD851006	6mm Flat Washer*	2
58	15343.00	Cover	1
59	17172.00	Plate	1
60	21380.00	Spindle Taper Sleeve	1
61	05860.00	6009ZZ Bearing	2
62	15345.00	Cover	1
63	STD863406	4-0.7 x 6mm Pan Head Screw*	2
64	STD843217	12-1.75mm Hex Nut*	1
65	17173.00	Switch Plate	1
66	STD851005	5mm Flat Washer*	2
67	STD843508	5-0.8mm Hex Nut*	4
68	STD851010	10mm Flat Washer*	2
69	05902.00	86mm Retainer Ring	1
70	02702.00	Clamp	1
71	05375.00	6-1.0 x 15mm Socket Head Bolt	2
72	22929.00	Capacitor	1
73	22930.00	Capacitor	1

* Standard hardware item available locally.

Figure 9 - Replacement Parts Illustration for Base



REPLACEMENT PARTS LIST FOR BASE

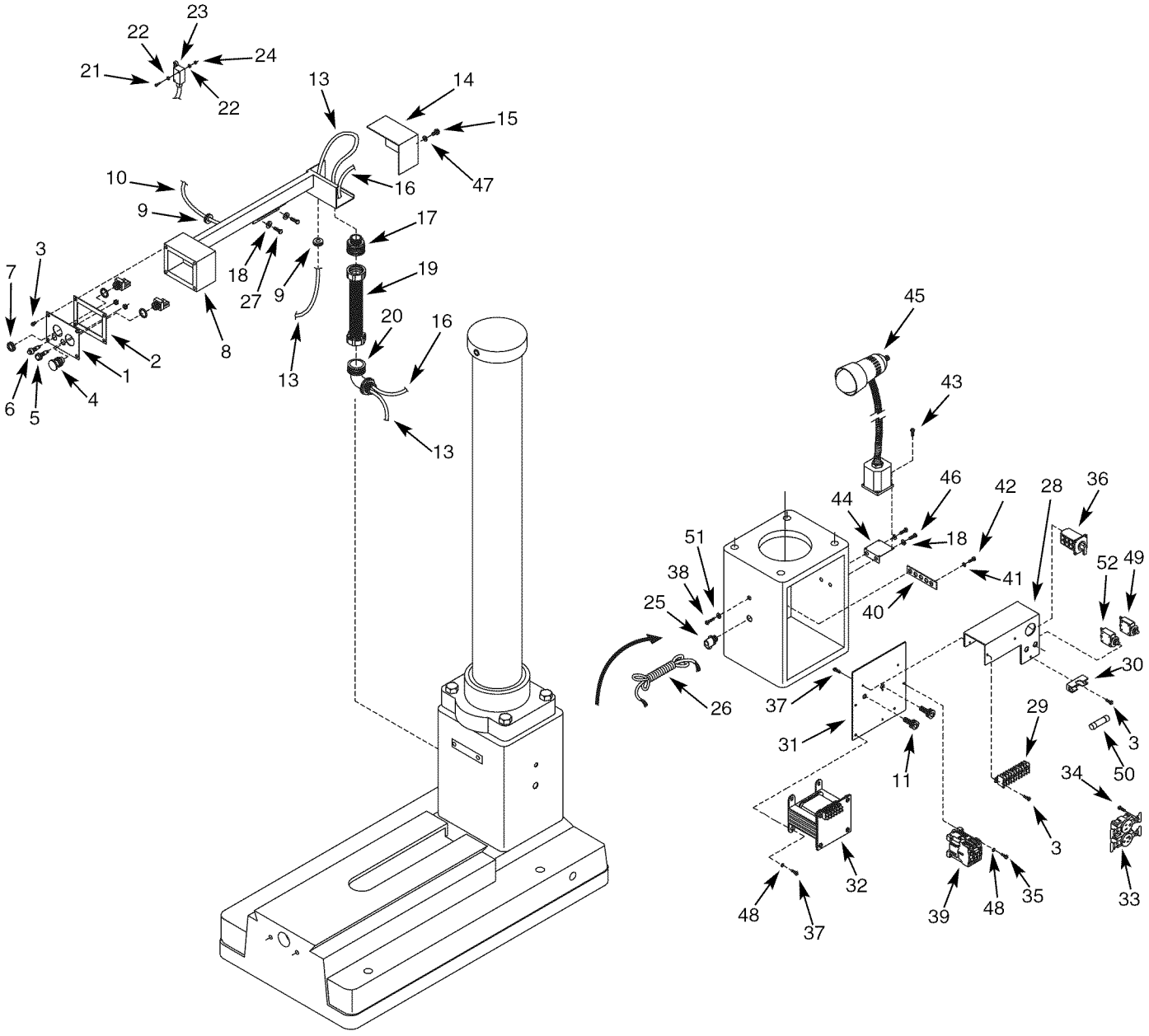
KEY NO.	PART NO.	DESCRIPTION	QTY.
1	17174.00	Base	1
2	16378.00	Column	1
3	17175.00	Column Cap	1
4	00958.00	8-1.25 x 8mm Set Screw	1
5	STD851012	12mm Flat Washer*	8
6	05926.00	Rack	1
7	15711.00	12-1.75 x 50mm Hex Head Bolt	8
8	STD852012	12mm Lock Washer*	8
9	17176.00	Saddle	1
10	17177.00	Saddle Gib	1
11	04006.00	Handle	3
12	05931.00	Handwheel	3
13	17178.00	Lead Screw Dial	2
14	05933.00	Lead Screw Coupling	2
15	05934.00	5 x 40mm Spring Pin	2
16	17179.00	6-1.0 x 10mm Dial Screw	2
17	05935.00	51103 Thrust Bearing	4
18	05936.01	Cross Feed Flange	1
19	05979.00	Oil Fitting	3
20	05937.01	Cross Feed Lead Screw	1
21	17180.00	Cross Feed Lead Screw Nut	1
22	STD870850	8-1.25 x 50mm Socket Head Bolt*	1
23	17181.00	Pin	1
24	STD870820	8-1.25 x 20mm Socket Head Bolt*	6
25	17182.00	Gib Adjustment Bolt	2
26	05939.00	Table Stop Bracket	1
27	15348.00	Table Lock Handle	4
28	05941.01	Way Cover	1
29	05942.00	Lower Cover Plate	1
30	STD502503	¼-20 x ⅜" Set Screw*	3
31	STD835016	8-1.25 x 16mm Hex Head Bolt*	6
32	17183.00	Left Lead Screw Coupling	1
33	05945.00	Left Lead Screw Flange	1
34	05946.01	Right Lead Screw Flange	1
35	05947.01	Longitudinal Lead Screw	1
36	17184.00	Longitudinal Lead Screw Nut	1
37	17185.00	Table	1
38	17186.00	Table Gib	1
39	STD870616	6-1.0 x 16mm Socket Head Bolt*	2
40	05951.01	Stop Block	2
41	17187.00	Stop Block Nut	2
42	06603.00	10-1.5 x 10mm Set Screw	1
43	16496.00	¼ x 1" Brass Dowel Pin	2
44	STD870825	8-1.25 x 25mm Socket Head Bolt*	2
45	21409.00	6-1.0 x 12mm Washer Head Screw	6
46	15332.00	Cover Plate	1
47	15334.00	Scale	2
48	01286.00	Rivet	4
49	17188.00	Column Support	1

* Standard hardware item available locally.
Δ Not Shown.

Recommended Accessories		
Δ	69-Piece Clamping Kit	9-26426
Δ	Millguard Max-A-Just	15000.00
Δ	Millguard Total Enclosure	15001.00
Δ	3" Angle Vise	9-24083
Δ	3" Quick Grip Vise	9-24079
Δ	4" Angle Vise	9-24085
Δ	4" Drill Press Vise	9-24093
Δ	4" Standard Vise	9-24073
Δ	4" Quick Grip Vise	9-24081
Δ	6" Standard Vise	9-24075
Δ	6" Drill Press Vise	9-24095
Δ	3" Cross Vise	9-24087
Δ	6" Cross Vise	9-24089

Model 351.211970

Figure 10 - Replacement Parts Illustration for Control Assembly



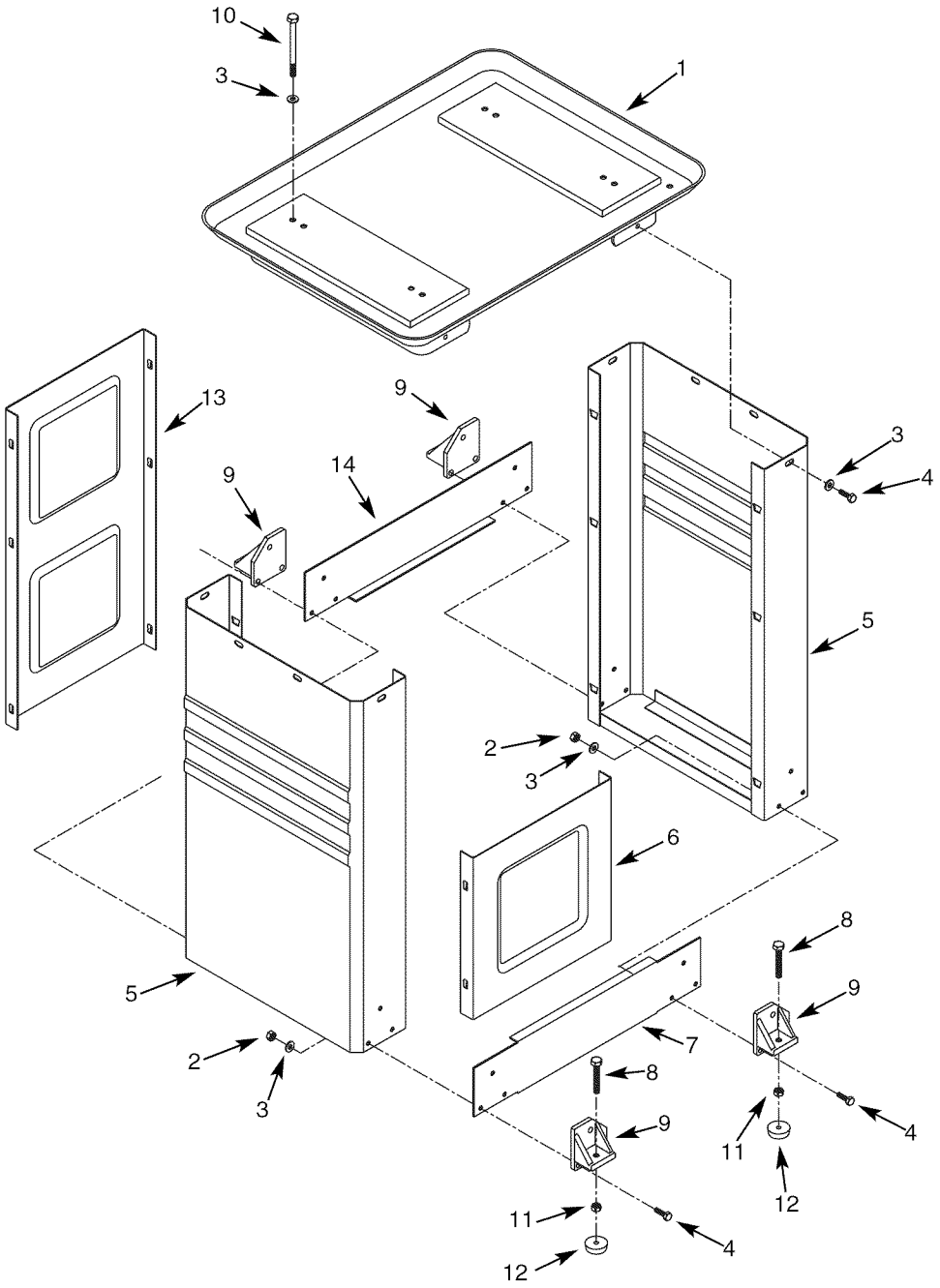
REPLACEMENT PARTS LIST FOR CONTROL ASSEMBLY

KEY NO.	PART NO.	DESCRIPTION	QTY.
1	17189.00	Control Box Face Plate	1
2	17190.00	Gasket	1
3	15219.00	4-0.7 x 8mm Round Head Screw	7
4	15337.00	Emergency Stop Switch	1
5	15338.00	Power Lamp	1
6	15339.00	Stop Switch	1
7	15310.00	Start Switch	1
8	17191.00	Control Box Housing	1
9	04076.00	Grommet	2
10	15312.00	Limit Switch Cord	1
11	STD870816	8-1.25 x 16mm Socket Head Bolt*	2
12	STD551031	5/16" Flat Washer*	2
13	17192.00	Motor Cord	1
14	15314.00	Cover	1
15	STD863406	4-0.7 x 6mm Pan Head Screw*	1
16	15315.00	Control Cord	1
17	15316.00	Upper Connector	1
18	STD851006	6mm Flat Washer*	2
19	15317.00	Cord Cover	1
20	15318.00	Lower Connector	1
21	STD863216	3-0.5 x 16mm Pan Head Screw*	2
22	05981.00	3mm Flat Washer	4
23	15319.00	Limit Switch	1
24	06946.00	3-0.5mm Hex Nut	2
25	00582.00	Strain Relief	1
26	05968.00	Line Cord	1
27	STD863612	6-1.0 x 12mm Pan Head Screw*	2
28	17193.00	Plate	1
29	17194.00	Terminal Block	1

KEY NO.	PART NO.	DESCRIPTION	QTY.
30	17205.00	Fuse Holder	1
31	17195.00	Plate	1
32	17196.00	Transformer	1
33	16376.00	Receptacle	2
34	16398.00	3.5-0.6 x 10mm Oval Countersunk	4
35	17197.00	4.2-1.4 x 16mm Tapping Screw	2
36	17204.00	Voltage Select Switch	1
37	17198.00	4.2-1.4 x 8mm Tapping Screw	6
38	STD870525	5-0.8 x 25mm Socket Head Bolt*	1
39	17199.00	Magnetic Contactor	1
40	17200.00	Grounding Block	1
41	01474.00	5mm Serrated Washer	3
42	STD863506	5-0.8 x 6mm Round Head Screw*	3
43	STD863416	4-0.7 x 15mm Pan Head Screw*	4
44	16497.00	Plate	1
45	17201.00	Lamp Assembly	1
46	STD863612	6-1.0 x 12mm Pan Head Screw*	2
47	STD851004	4mm Flat Washer*	1
48	STD852004	4mm Lock Washer*	6
49	23172.00	30A Circuit Breaker	1
50	STD382020	2A Fuse*	1
51	STD851005	5mm Flat Washer*	1
52	17933.00	15A Circuit Breaker	1
Δ	15328.00	Lamp Bulb	1
Δ	15329.00	Lamp Switch	1
Δ	17219.00	Lamp Circuit Board	1
Δ	17220.00	Lamp Lens	1

* Standard hardware item available locally.
Δ Not Shown.

Figure 11 - Replacement Parts Illustration for Mill Drill Stand



REPLACEMENT PARTS LIST FOR MILL DRILL STAND

KEY NO.	PART NO.	DESCRIPTION	QTY.
1	17413.00	Chip Pan	1
2	STD840812	8-1.25mm Hex Nut*	12
3	STD851008	8mm Flat Washer*	24
4	STD835025	8-1.25 x 25mm Hex Head Bolt*	20
5	15301.00	Support	2
6	15302.00	Right Panel	1
7	15303.00	Right Plate	1
8	15711.00	12-1.75 x 50mm Hex Head Bolt	4
9	15304.00	Foot	4
10	STD835120	8-1.25 x 120mm Hex Head Bolt*	4
11	STD841217	12-1.75mm Hex Nut*	4
12	15306.00	Leveling Pad	4
13	15307.00	Left Panel	1
14	15308.00	Left Plate	1

* Standard hardware item available locally.

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