



# Operating Instructions and Parts Manual

## Variable Speed Drill Press

Model JDP-20EVS



### JET

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**Part No. M-354210**  
Revision K 01/2016  
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# Warranty and Service

JET® warrants every product it sells against manufacturers' defects. If one of our tools needs service or repair, please contact Technical Service by calling 1-800-274-6846, 8AM to 5PM CST, Monday through Friday.

## Warranty Period

The general warranty lasts for the time period specified in the literature included with your product or on the official JET branded website.

- JET products carry a limited warranty which varies in duration based upon the product. (See chart below)
- Accessories carry a limited warranty of one year from the date of receipt.
- Consumable items are defined as expendable parts or accessories expected to become inoperable within a reasonable amount of use and are covered by a 90 day limited warranty against manufacturer's defects.

## Who is Covered

This warranty covers only the initial purchaser of the product from the date of delivery.

## What is Covered

This warranty covers any defects in workmanship or materials subject to the limitations stated below. This warranty does not cover failures due directly or indirectly to misuse, abuse, negligence or accidents, normal wear-and-tear, improper repair, alterations or lack of maintenance. JET woodworking machinery is designed to be used with Wood. Use of these machines in the processing of metal, plastics, or other materials outside recommended guidelines may void the warranty. The exceptions are acrylics and other natural items that are made specifically for wood turning.

## Warranty Limitations

Woodworking products with a Five Year Warranty that are used for commercial or industrial purposes default to a Two Year Warranty. Please contact Technical Service at 1-800-274-6846 for further clarification.

## How to Get Technical Support

Please contact Technical Service by calling 1-800-274-6846. **Please note that you will be asked to provide proof of initial purchase when calling.** If a product requires further inspection, the Technical Service representative will explain and assist with any additional action needed. JET has Authorized Service Centers located throughout the United States. For the name of an Authorized Service Center in your area call 1-800-274-6846 or use the Service Center Locator on the JET website.

## More Information

JET is constantly adding new products. For complete, up-to-date product information, check with your local distributor or visit the JET website.

## How State Law Applies

This warranty gives you specific legal rights, subject to applicable state law.

## Limitations on This Warranty

JET LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD OF THE LIMITED WARRANTY FOR EACH PRODUCT. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

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## Product Listing with Warranty Period

90 Days – Parts; Consumable items
1 Year – Motors; Machine Accessories
2 Year – Metalworking Machinery; Electric Hoists, Electric Hoist Accessories; Woodworking Machinery used for industrial or commercial purposes
5 Year – Woodworking Machinery
Limited Lifetime – JET Parallel clamps; VOLT Series Electric Hoists; Manual Hoists; Manual Hoist Accessories; Shop Tools; Warehouse & Dock products; Hand Tools; Air Tools

NOTE: JET is a division of JPW Industries, Inc. References in this document to JET also apply to JPW Industries, Inc., or any of its successors in interest to the JET brand.

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# Warnings

For your own safety, read the owner's manual before operating the drill press.

This drill press is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper and safe operation of a drill press, do not use until proper training and knowledge has been obtained.

- **KEEP GUARDS IN PLACE** and in working order.
- **KEEP ALL BODY PARTS AWAY FROM MOVING PARTS.** Avoid placing any part of your body near belts, cutters, gears, etc.
- **REMOVE ADJUSTING KEYS AND WRENCHES.** Form a habit of checking to see that keys and adjusting wrenches are removed from the machine before turning it on.
- **KEEP THE WORK AREA CLEAN.** Cluttered areas and work benches invite accidents.
- **DON'T USE IN A DANGEROUS ENVIRONMENT.** Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.
- **KEEP CHILDREN AWAY.** All visitors should be kept a safe distance from the work area.
- **MAKE THE WORKSHOP KID PROOF** with padlocks, master switches, or by removing starter keys.
- **DON'T FORCE THE MACHINE.** It will do the job better and more safely at the rate for which it was designed.
- **USE THE RIGHT MACHINE.** Don't force a machine or attachment to do a job for which it was not designed.
- **USE THE PROPER EXTENSION CORD.** Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your machine will draw. An undersized cord will cause a drop in the line voltage resulting in power loss and overheating. If in doubt, use the next heavier gauge. Remember, the smaller the gauge number, the heavier the cord.
- **WEAR PROPER APPAREL.** Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which may get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair.
- **ALWAYS USE SAFETY GLASSES.** Also use face or dust masks if the cutting operation is dusty. Everyday eyeglasses only have impact resistant lenses; they are not safety glasses.
- **DON'T OVERREACH.** Keep proper footing and balance at all times.
- **MAINTAIN TOOLS WITH CARE.** Keep tools sharp and clean for the best and safest performance. Follow instructions for lubricating and changing accessories.
- **ALWAYS DISCONNECT THE MACHINE FROM THE POWER SOURCE BEFORE SERVICING.**
- **REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure the switch is in the off position before plugging in.
- **NEVER STAND ON A MACHINE.** Serious injury could occur if the machine tips or if the drill bit is unintentionally contacted.
- **CHECK DAMAGED PARTS.** Before further use of the machine, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function - check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
- **NEVER LEAVE THE MACHINE RUNNING UNATTENDED. TURN POWER OFF.** Don't leave the machine until it comes to a complete stop.
- **SOME DUST** created by power sanding, sawing, grinding, drilling and other construction activities contain 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, cement and other masonry products.

- Arsenic and chromium from chemically treated lumber.

Your risk of exposure 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 face or dust masks that are specifically designed to filter out microscopic particles.

## Introduction

This manual is provided by JET, covering the safe operation and maintenance procedures for a JET Model JDP-20EVS Drill Press. This manual contains instructions on installation, safety precautions, general operating procedures, maintenance instructions and parts breakdown. This machine has been designed and constructed to provide years of trouble free operation if used in accordance with instructions set forth in this manual. If there are any questions or comments, please contact either your local supplier or JET. JET can also be reached at our web site: [www.jettools.com](http://www.jettools.com).

## Specifications

	<b>JDP-20EVS/230</b>	<b>JDP-20EVS/460</b>
Model Number .....	JDP-20EVS/230	JDP-20EVS/460
Stock Number .....	354210	354212
Drilling Capacity		
Cast Iron (in.) .....	1-1/2	1-1/2
Steel (in.) .....	1-3/8	1-3/8
Column Diameter (in.) .....	4-1/2	4-1/2
Spindle to Column (maximum – in.) .....	10-7/16	10-7/16
Spindle Travel (in.) .....	6	6
Spindle Taper .....	MT-3	MT-3
Max. Distance Spindle to Table (in.) .....	30-1/4	30-1/4
Max. Distance Spindle to Base (in.) .....	43-5/16	43-5/16
Table:		
Overall Size (in.) .....	22 x 18-3/4	22 x 18-3/4
Working Surface (in.) .....	18-1/8 x 14-3/4	18-1/8 x 14-3/4
Table Travel (in.) .....	18	18
Number of T-Slots .....	2	2
Table T-Slot Size (in.) .....	5/8	5/8
Table T-Slot Centers (in.) .....	7-7/16	7-7/16
Base:		
Overall Size (LxWxH/in.) .....	27-1/2 x 19-1/4 x 6-1/8	27-1/2 x 19-1/4 x 6-1/8
Base Work Table (in.) .....	14-3/4 x 11-13/16	14-3/4 x 11-13/16
Number of T-Slots .....	2	2
Base T-Slot Size (in.) .....	5/8	5/8
Base T-Slot Centers (in.) .....	7-7/16	7-7/16
Number of Spindle Speeds .....	Variable	Variable
Range of Spindle Speeds (RPM) .....	65-2,000	65-2,000
Main Motor .....	TEFC 2HP, 3PH, <b>230V Only</b> , 7A	TEFC 2HP, 3PH, <b>460V Only</b> , 3.5A
Coolant Motor .....	1/8 HP, 1Ph	1/8 HP, 3Ph
Overall Height (in.) .....	83-3/4	83-3/4
Net Weight (approx. – lbs.) .....	722	722
Floor Space Required (LxW/in) .....	37 x 37	37 x 37

The above specifications were current at the time this manual was published, but because of our policy of continuous improvement, JET reserves the right to change specifications at any time and without prior notice, without incurring obligations.

**⚠WARNING** Read and understand the entire contents of this manual before attempting set-up or operation. Failure to comply may cause serious injury.

## Unpacking and Clean-Up

1. Remove the shipping crate.
2. Remove the protective coating from all rust protected surfaces with a soft cloth moistened with kerosene or a mild solvent. Do not use acetone, gasoline, or paint thinner, as these may damage painted surfaces.
3. To prevent rust, apply a thin coat of metal sealer to the table.

## Lifting the JDP-20EVS

**⚠WARNING** Keep people a safe distance away from the drill press while it is being moved. Failure to comply may cause damage to property and/or serious bodily injury.

1. Make sure the two head locking bolts (refer to A, Fig. 4) are tight prior to lifting.
4. Position the JDP-20EVS next to the area that will be used for the machine.
5. The "Lifting Point" should be used to raise the drill press off of the shipping pallet.
6. Lift the machine at the "Lifting Point" with a forklift. Use a 2x4 on the fork to protect the head.

**NOTE:** You should remove the coolant hose holder so that it is not damaged during lifting.

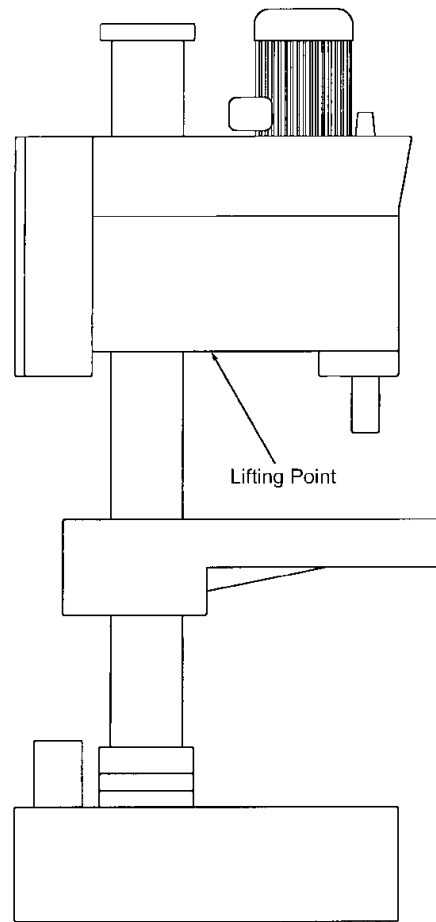


Figure 1

## Installation

The drill press must be located in a dry, well-lighted area with adequate room on all sides of the machine. The floor must be level and the drill press must rest solidly on the floor. The most accurate and vibration free operation will require the drill press to be bolted to the floor. While this is not absolutely necessary, it is highly recommended. Place shims near the four bolt holes to level the drill press, if necessary. Figure 2 shows the hole dimensions of the base. Equal pressure should be applied to all four nuts when tightening to prevent distortion of the base.

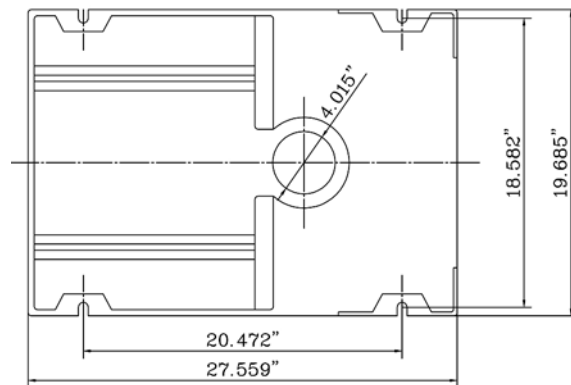


Figure 2

## Electrical Connections

**⚠WARNING** A qualified electrician must complete all electrical connections. All adjustments or repairs must be done with the drill disconnected from the power source. Failure to comply may result in serious injury.

The motor for the JDP-20EVS/230 is rated at 2HP, 3PH **230V only**. The machine can also be run on 1-Phase power by hooking up the ground, L1 and L2 wires, as explained below.

The motor for the JDP-20EVS/460 is rated at 2HP, 3PH, **460V only**.

The JDP-20EVS Drill Press is not supplied with a power cord. To connect power, you may either install a power cord with a UL/CSA listed plug, or hard wire the machine directly to a service panel.

If the drill press is to be hard-wired to a panel, make sure a disconnect is available for the operator. (During hard-wiring of the machine, make sure the fuses have been removed or the breakers have been tripped in the circuit to which the drill press will be connected.)

If using a power cord, strip back the cord until about 3 to 4 inches of the lead wires are exposed. Slide a grommet onto the cord to be installed later in the control box hole, to prevent stress to the power cord.

1. Bring the lead wires through the hole in the side of the control box and connect as follows (refer to Figure 3):
2. If your incoming power is **single phase**, connect the two leads to L1 and L2, and the green ground wire to the grounding screw.
3. If your incoming power is **three phase**, connect the three leads to L1, L2 and L3, and the green ground wire to the grounding screw.

***This drill press must be properly grounded.*** Make sure the green ground wire is secured to the grounding screw as described.

Make sure the power available matches the power requirement of the drill. When the drill is connected properly, the spindle turns clockwise in a conventional drilling rotation. If the spindle does not turn clockwise, disconnect the drill from the power supply and reverse two of the three power leads (except ground wire *green*).

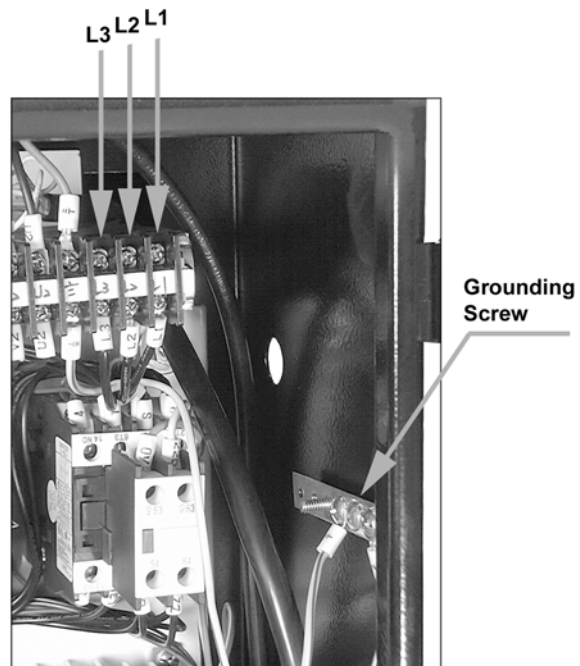


Figure 3

## Raising the Head

The drill press head is lowered on the column for crating and transportation. Before operating the drill press, the head will need to be raised to the operational level.

To raise the head:

1. Loosen the two head locking bolts (A, Figure 4) by turning counterclockwise. *Make sure the two screws (C, Figure 4) in the lock collar (B) are tight.*
2. Take the head and turn it slightly from side to side (Figure 5) to loosen the rust prevention solution on the column
3. Loosen the table lock by placing the handle on the crankshaft (A, Fig. 7) and rotating the handle counter-clockwise
4. Cut a 2x4 approximately 16" in length.
5. Raise the table by placing handle on crankshaft (B or C, Figure 7) and rotating clockwise. Snug the 2x4 between the table and the head as close to the column as possible. **Caution:** Do not place the 2x4 under the lock collar (B, Fig. 6).
6. Use the table lift crank on a shaft (B or C, Fig. 7) to raise the head and 2x4 until the head bore and the column are flush. **CAUTION:** When the head bore and the column cap are flush, the head cannot be raised anymore. Use a ladder to observe the column through the top of the belt cover.
7. Tighten the two head locking bolts (A, Fig. 4). This will hold the head in place until the lock collar can be moved into position. The 2x4 can now be safely removed.
8. After the head is set at the desired height, loosen two set screws (C, Fig. 4) on the lock collar.
9. Slide the lock collar up the column until it is flush with the head.
10. Firmly tighten the two setscrews on the lock collar (C, Fig. 4).

To lower the head, reverse the steps above. **Do not** loosen the head locking bolts without supporting the head.

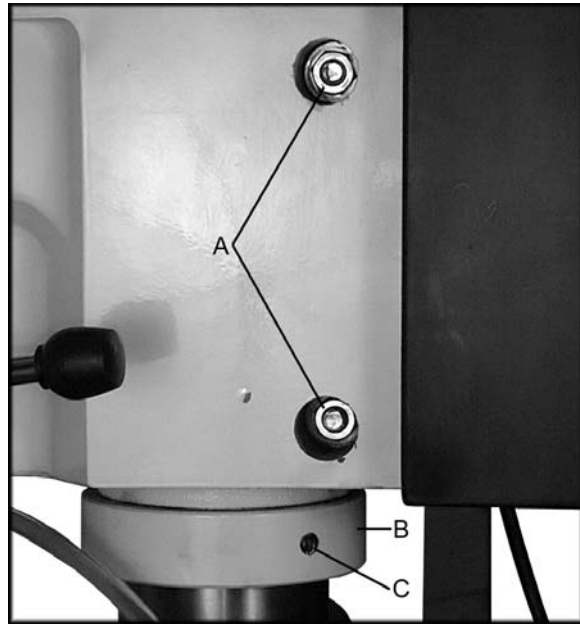


Figure 4

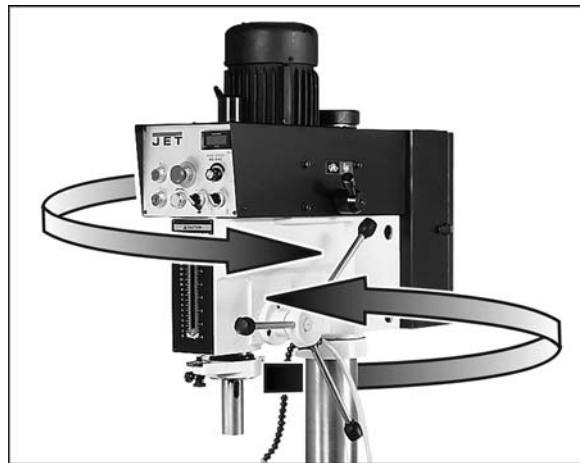


Figure 5

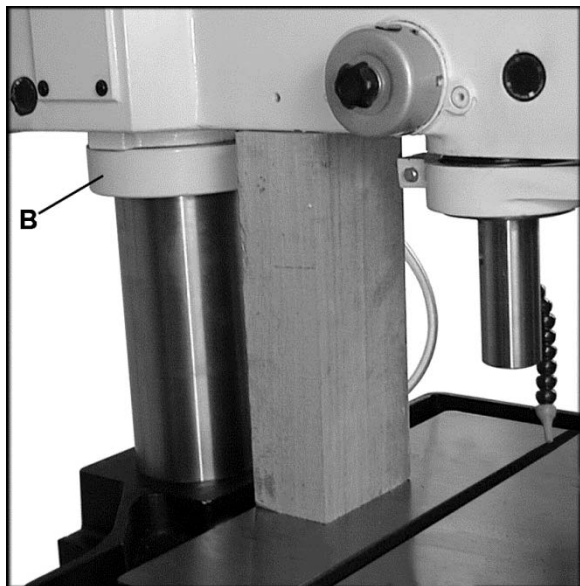


Figure 6



# Adjustments

## Raising the Rack

Some drilling operations will require the table to be moved closer to the spindle than the rack will allow as set by the factory. To raise the rack:

1. Tighten the table lock handle (A, Fig. 7).
2. Loosen two set screws (A, Fig. 8) on the column bearing collar (B, Fig. 8). **Caution:** Do not loosen the two setscrews with lock nuts (C, Fig. 8).
3. Raise the rack (D, Fig. 8) by placing the handle on crankshaft (refer to B or C, Fig. 7) and rotating clockwise to the desired level.
4. Tighten the two set screws (A, Fig. 8) to keep the rack in position.
5. Now the table can be raised to the desired position.

## Rotating the Table

The table can be rotated around the column to accommodate the workpiece.

1. Loosen the table lock handle (A, Fig. 7).
2. Pivot the table to a location you choose.
3. Tighten the table lock handle.

## Control Panel

1. **Off Button** (1, Fig. 9) This will stop the motor.
2. **On Button** (2, Fig. 9) Activates the motor in the drill or tap mode.
3. **Emergency Stop Button** (3, Fig. 9) Disconnects the power to the motor. Reset the button by turning 90° clockwise.
4. **Tap Reverse Button** (4, Fig. 9) Reverses the spindle rotation and the tap withdraws. Works only in the tap mode.
5. **Coolant Switch** (5, Fig. 9) Turns the coolant pump on while in drill or tap mode.
6. **Changing Spindle Speeds RPM** (6, Fig. 9) To change spindle speeds, turn the speed control knob until the read-out shows the desired speed.
7. **Drill/Tap Switch** (7, Fig. 9) Turn the switch to the left for the drill function. Turn the switch to the right for tap function.
8. **High-Low Handle** (8, Fig. 9) Turn to the right to select the high motor speed. Turn to the left to select the low motor speed. Change high-low handle only after stopping motor.

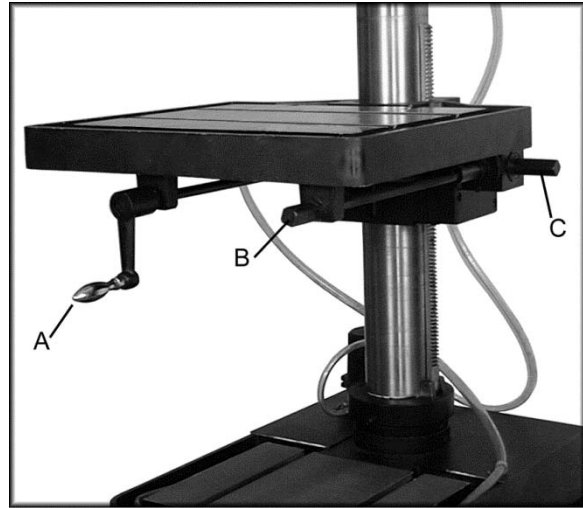


Figure 7

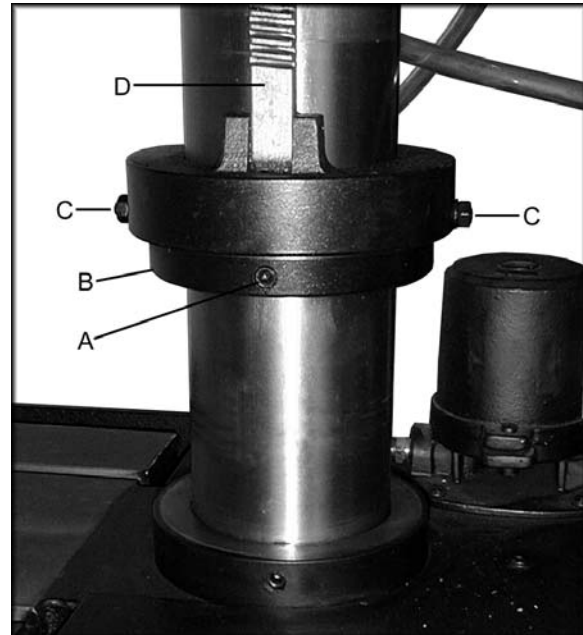


Figure 8



Figure 9

**NOTE:** The Electronic Variable Speed unit is designed to shut down, to prevent harm to the system, in the event of overloading the spindle. Make sure the Speed Control Knob and the High-Low Handle are in the matching ranges for the work being done. Drilling large holes requires the High-Low Handle to be in 'Low' mode and the Speed Control Knob to be selecting a speed that is high enough to power the large bit.

### Adjusting the Depth Stop for Drilling

Place the drill/tap switch (7, Fig. 10) in the drill mode. Adjust the zero reading on the scale as follows:

1. Lower the quill to the bottom of its stroke by turning the handle (A, Fig. 10) counter-clockwise until it stops, and hold in that position.
2. To set the zero, loosen lock knob (B, Fig. 10). Turn the knurled knob (C, Fig. 10) until the pointer reads zero.
3. To set the depth stop, turn the knurled knob (C, Fig. 10) to the desired setting. Tighten lock knob (B, Fig. 10). The quill will now advance to this setting.

### Adjusting the Depth Stop for Tapping

Place the drill/tap switch in the tap mode. To adjust the depth stop for tapping, follow the instructions for adjusting the depth stop for drilling. The major differences in the tap mode are two micro-switches.

1. Advance the quill, releasing the upper limit switch for tapping.
2. The spindle will reverse directions upon triggering the lower limit switch.

### Spindle Preparation

Thoroughly clean the inside of the spindle with a soft dry cloth. Also clean any taper or arbor to be used in the spindle. If these are not kept clean, the taper or arbor will not "seat" properly in the spindle and may drop out unexpectedly.



Figure 9

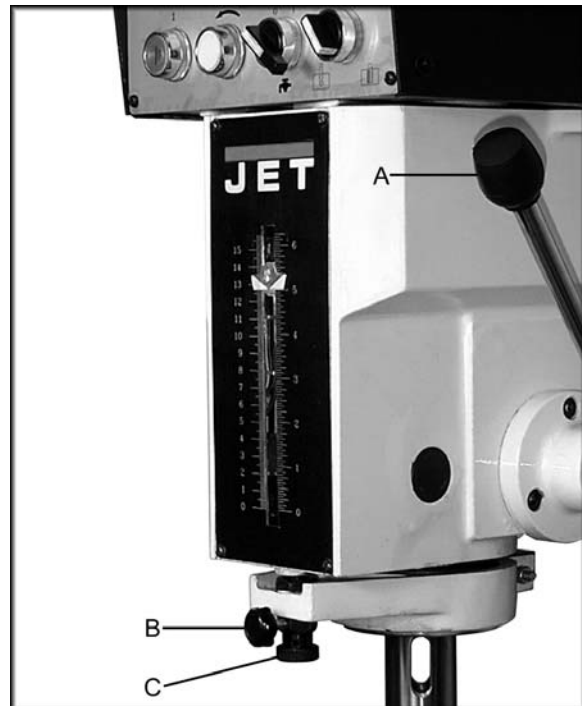


Figure 10

## Installing Tools into the Spindle Bore

1. Disconnect the machine from the power source.
2. Make sure the spindle bore and the tool are clean and free of oil.
3. Place a protective piece of scrap wood on the table.
4. Raise the table to approximately 8" to 10" below the spindle.
5. Insert the Morse Taper #3 tool into the spindle.
6. Lower the spindle, with the handle assembly, and seat the tool against the wood.

## Removing Tools from Spindle Bore

1. Disconnect the machine from the power source.
2. Place a protective piece of scrap wood on the table.
3. Raise the table to approximately 8" to 10" below the spindle.
4. Lower the spindle to expose the slots in the spindle wall.
5. Insert the drift key (A, Fig. 11) into the spindle slots and tap gently until the drill bit or chuck arbor loosens.

## Coolant Pump

The coolant tank should be filled with 2 gallons of a cutting coolant. Fill by pouring coolant into the base of the machine. Add coolant in the same manner when coolant is low. To drain coolant, remove hex cap screw located on the lower backside of the base. Follow all coolant manufacturer's instructions for safety, mixing disposal, etc.

Make sure the drain hose has a good tight connection into the table and that the coolant flows into the base.

Make sure the hose leaving the pump and entering the ball valve has good tight connections.

The flexible nozzle enables the user to adjust the coolant for each job. There is one ball valve that turns the coolant to the nozzle on, or off.

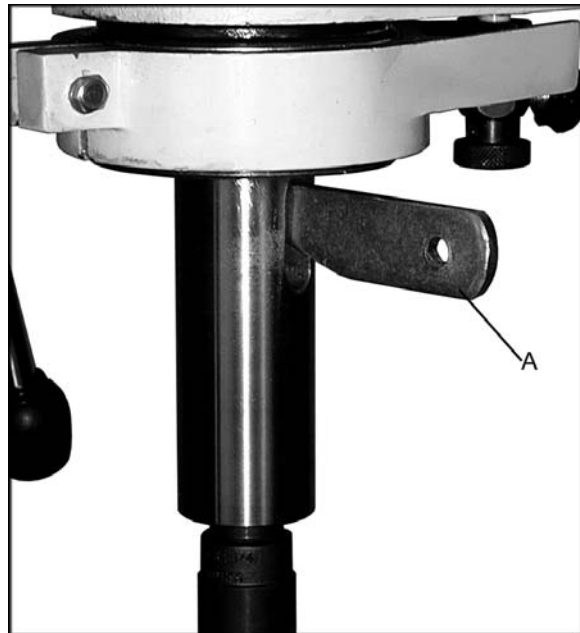


Figure 11

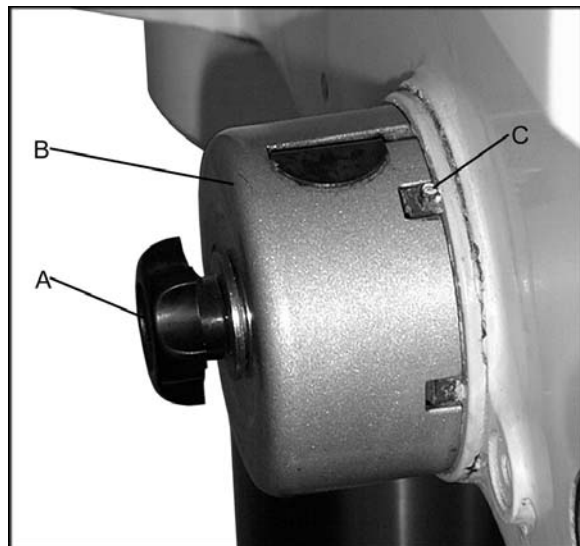


Figure 12

## Adjusting the Spindle Return Spring

The spindle return comes pre-set from the factory and should not need adjustment. If future attention is ever required, proceed as follows:

1. Do NOT remove the spring cap (B, Fig. 12).
2. Loosen knob (A, Fig. 12) just enough to rotate the spring cap past the notch (C, Fig. 12).
3. Rotate the spring cap clockwise to decrease spring tension. Rotate the spring cap counter-clockwise to increase spring tension.
4. Re-tighten the knob (A, Fig. 12).

## Drill Speed Chart

There are many variables when determining what RPM to use. Use the following drill speed chart to choose the approximate drill speed for the size bit, and type of material to be drilled. The chart is a general reference for a 90° cut in the workpiece using HSS (high-speed steel) tools. For more detailed information refer to the "Machinery's Handbook."

	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1-1/8"	1-1/4"
<b>Aluminum and Alloys</b>	2,000	2,000	2,000	2,000	1224-1834	1016-1528	876-1310	764-1146	680-1018	612-840
<b>Copper Alloys</b>	1833-2000	966-2000	611-1782	458-1336	366-1069	305-891	261-763	229-668	203-594	183-534
<b>Alloy Steels</b>	611-2000	305-1298	203-865	152-649	122-519	101-432	87-371	76-324	67-288	65-259

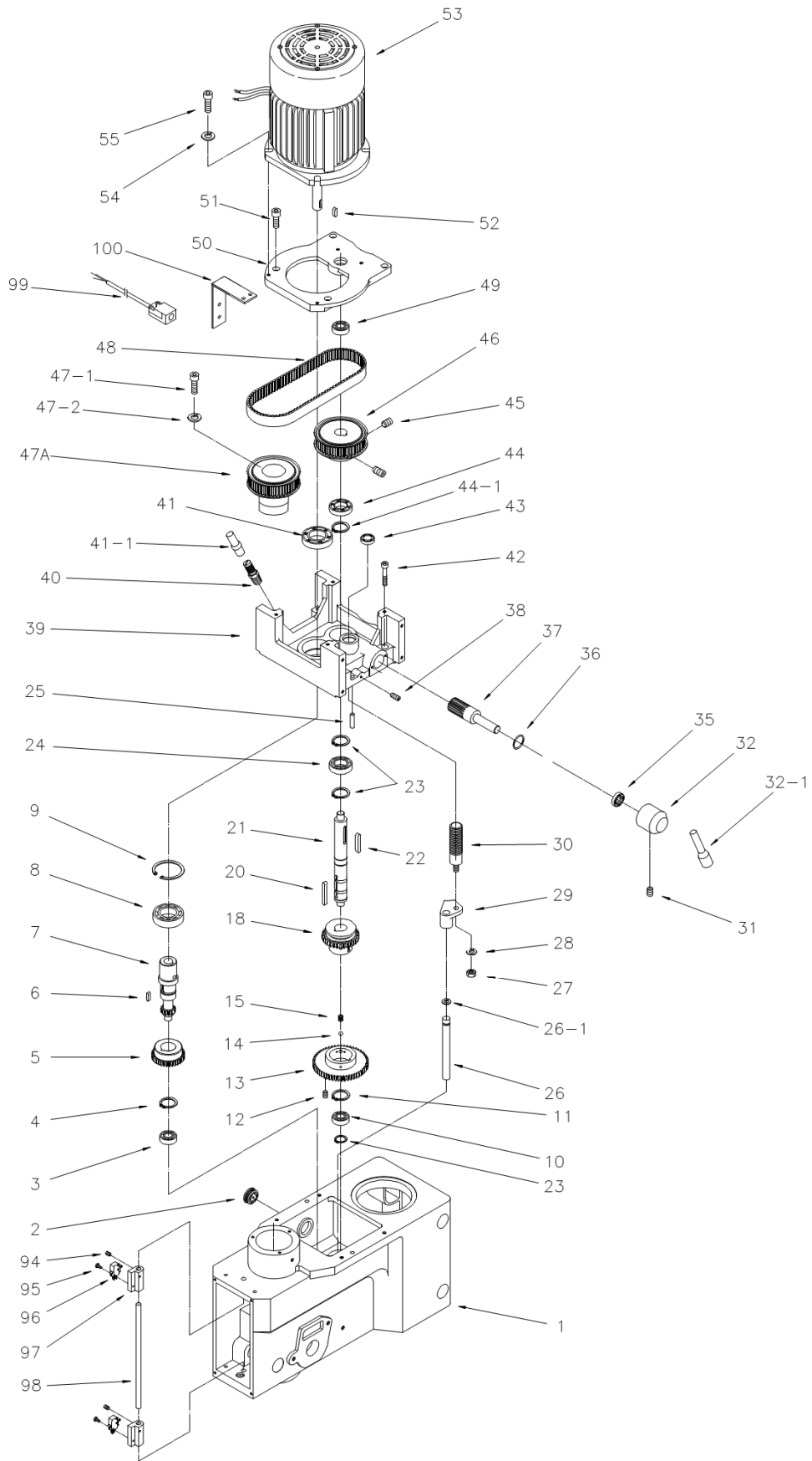
## Lubrication

Location	Type	Frequency
Top of spindle shaft under plastic cap	#2 lithium based tube grease	Monthly
Quill and column	Machine tool oil	Daily
Lift rack	20W non-detergent oil	Weekly (clean rack with kerosene before lubricating)
Table lift	Gear grease	Twice yearly (clean and regrease)
Behind oil fill label left side of head	Mobil DTE Heavy Medium	Change after 6 months and annually thereafter. Capacity 1 Quart. Drain plug is located in the cut away section on the bottom side of the head

## Replacement Parts

Replacement parts are listed on the following pages. To order parts or reach our service department, call 1-800-274-6848 Monday through Friday, 8:00 a.m. to 5:00 p.m. CST. Having the Model Number and Serial Number of your machine available when you call will allow us to serve you quickly and accurately.

# Top Head Assembly

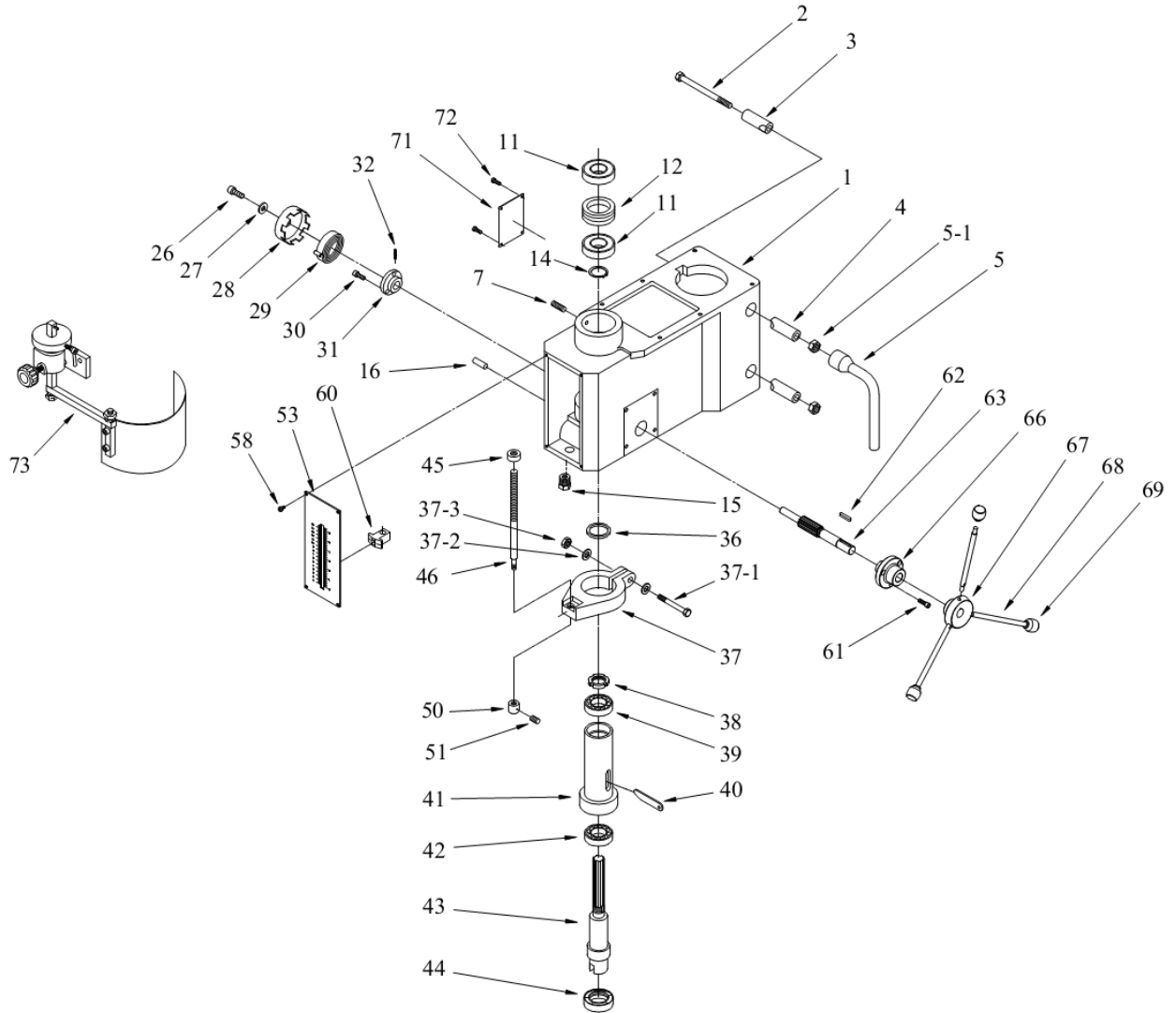


## Parts List: Top Head Assembly

Index No.	Part No.	Description	Size	Qty
1	20EVS-T01G	Head Body		1
2	20EVS-T02	Sight Glass		1
3	BB-6202Z	Ball Bearing	6202Z	1
4	20EVS-T04	C-Clip	S31	1
5	20EVS-T05	Gear	M=2, T=32	1
6	20EVS-T06	Key	6x6x20	1
7	20EVS-T07	Drive Shaft	M=2, T=13	1
8	BB-6007Z	Ball Bearing	6007Z	1
9	20EVS-T09	C-Clip	R62	1
10	BB-6202	Ball Bearing	6202	1
11	20EVS-T11	C-Clip	S48	1
12	20EVS-T12	Set Screw	3/8"x1"	2
13	20EVS-T13	Gear	M=2, T=56	1
14	20EVS-T14	Steel Ball	M8	2
15	20EVS-T15	Spring		2
18	20EVS-T18	Gear	M=2, T=36	1
20	20EVS-T20	Key	7x7x55	1
21	20EVS-T21	Shaft		1
22	20EVS-T22	Key	7x7x15	1
23	20EVS-T23	C-Clip	S25	3
24	BB-6005	Ball Bearing	6005	1
25	20EVS-T25	Taper Pin	5x38	2
26	20EVS-T26	Rod		1
26-1	20EVS-T26-1	Oil Ring		1
27	20EVS-T27	Hex Nut	M10xP1.5	1
28	20EVS-T28	Lock Washer	M10	1
29	20EVS-T29	Speed Change Block		1
30	20EVS-T30	Screw Bar		1
31	20EVS-T31	Set Screw	3/8"x3/8"	1
32	20EVS-T32	Speed Lever		1
32-1	20EVS-T32-1	Handle		1
35	20EVS-T35	C-Clip	R30	1
36	20EVS-T36	Oil Ring	30x17x7	1
37	20EVS-T37	Gear Shaft		1
38	TS-1523031	Set Screw	M6x10	1
39	20EVS-T39	Gear Box		1
40	20EVS-T40	Oil Filter	3/8"x3/8"	1
41	20EVS-T41	Oil Seal	62x35x10	1
41-1	20EVS-T41-1	Tube		1
42	TS-1504091	Hex Socket Cap Screw	M8x45	4
43	20EVS-T43	Oil Seal		1
44	20EVS-T44	Oil Seal	25x47x28	1
44-1	20EVS-T44-1	C-Clip	R47	1
45	20EVS-T45	Set Screw	5/16"x3/8"	2
46	20EVS-T46	Drive Pulley	M=2, T=35	1
47	20EVS-T47	Spindle Pulley		1
47A	20EVS-T47A	Spindle Pulley ( <i>serial no. 15050983 and higher</i> )	8Mx38T	1
47-1	20EVS-T47-1	Hex Socket Cap Screw	3/4"x3/16"	1
47-2	TS-0561081	Nut	3/4"	1
48	20EVS-T48	Belt	680xM8	1
49	BB-6202	Ball Bearing	6202	1
50	20EVS-T50	Motor Base		1
51	20EVS-T51	Screw	M8x20	4
52	20EVS-T52	Key	6x6x20	1
53	20EVS-230V	Motor	2HP, 3Ph, 230V	1
	20EVS-460V	Motor	2HP, 3Ph, 460V	1
	20EVS-230VF	Fan (not shown)	230V	1
	20EVS-460VF	Fan (not shown)	460V	1
	20EVS-460VFC	Fan Cover (not shown)		1
54	TS-1550051	Lock Washer	M8	3

<b>Index No.</b>	<b>Part No.</b>	<b>Description</b>	<b>Size</b>	<b>Qty</b>
55	TS-1515031	Hex Socket Cap Screw	M8x25	4
94	20EVS-T94	Set Screw	1/4"x1/4"	4
95	20EVS-T95	Cross Head Screw	M3x16	4
96	20EVS-T96	Micro Switch		2
97	20EVS-T97	Micro Switch Bracket		2
98	20EVS-T98	Micro Switch Support Rod		1
99	20EVS-T99	Induction Switch		1
100	20EVS-T100	Switch Support Plate		1

# Head Assembly

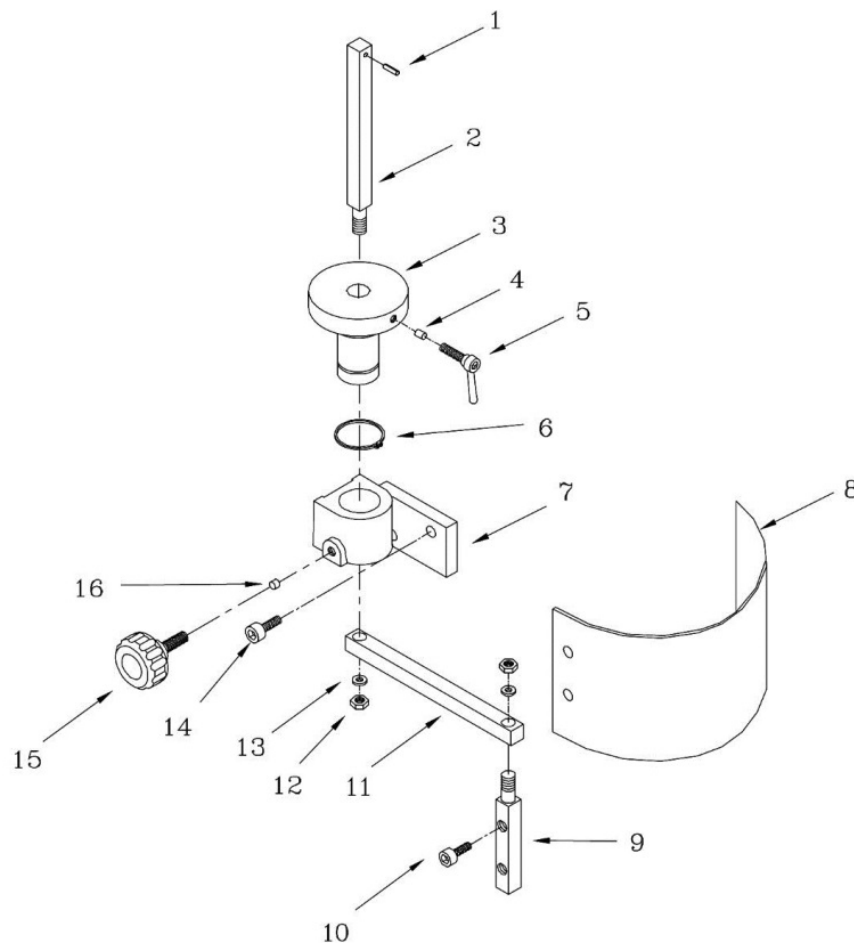




## Parts List: Head Assembly

Index No.	Part No.	Description	Size	Qty
1	20EVS-T01G	Head Body		1
2	20EVS-H2	Hex Head Bolt	1/2"x4-1/2"	2
2-1	20EVS-H2-1	Spring		2
3	20EVS-H3	Left Lock Sleeve		2
4	20EVS-H4	Right Lock Sleeve		2
5	5510251	Hex Head Wrench		1
5-1	20EVS-H5-1	Nut	1/2"	2
7	TS-1524031	Set Screw	M8x12	1
11	BB-6009ZR	Ball Bearing	6009ZR	2
12	20EVS-H12	Bearing Spacer		1
14	20EVS-H14	C-Clip	S45	1
15	20EVS-H15	Screw Bushing		1
16	20EVS-H16	Quill support Block		1
16-1	20EVS-H16-1	Set Screw	M8x10	1
26	20EVS-H26	Screw		1
27	TS-0680041	Washer	3/8"x1"	1
28	20EVS-H28	Spring Cover w/Spring #29		1
29	20EVS-H29	Spring		1
30	20EVS-H30	Screw	3/16"x1/2"	3
31	20EVS-H31	Spring Base		1
32	20EVS-H32	Spring Pin		1
36	20EVS-H36	Rubber Spacer		1
37	20EVS-H37G	Feed Base ( <i>serial no. 4030413 and higher</i> )		1
37-1	20EVS-H37-1	Hex Cap Bolt	1/4"x2"	1
37-2	TS-0720071	Spring Washer	1/4"	2
37-3	TS-0561011	Nut	1/4"	1
38	20EVS-H38	Jam Nut		2
39	20EVS-H39	Taper Roller Bearing	30206	1
40	20EVS-H40	Taper Arbor		1
41	20EVS-H41	Quill		1
42	20EVS-H42	Taper Roller Bearing	30207	1
43	20EVS-H43	Spindle Shaft		1
44	20EVS-H44	Oil Seal	72x45x8	1
45	20EVS-H45	Set Position Block ( <i>serial no. 4030413 and higher</i> )		1
45-1	TS-1521011	Set Screw	M4x4	1
46	20EVS-H46	Scale Rod ( <i>serial no. 4030413 and higher</i> )		1
50	20EVS-H50	Set Knob ( <i>serial no. 4030413 and higher</i> )		1
51	TS-2276081	Set Screw	M6x8	1
53	20EVS-H53	Graduated Dial Label		1
58	20EVS-H58	Cross Cap Screw	3/16"x3/8"	4
60	20EVS-H60	Limit Block		1
61	20EVS-H61	Hex Socket Cap Screw	M8x25	3
62	20EVS-H62	Key	6x6x20	1
63	20EVS-H63	Pinion Shaft		1
66	20EVS-H66G	Flange		1
67	20EVS-H67G	Handle Hub		1
68	20EVS-H68	Handle Rod		3
69	20EVS-H69	Knob		3
	5510286-RHA	Rubber Handle Assembly (includes #68,69)		3
71	20EVS-H71	Cover		1
72	20EVS-H72	Cross Cap Screw	1/4"x1/2"	4
73	32106A	Safety Shield Assembly (for 20" DP)		1

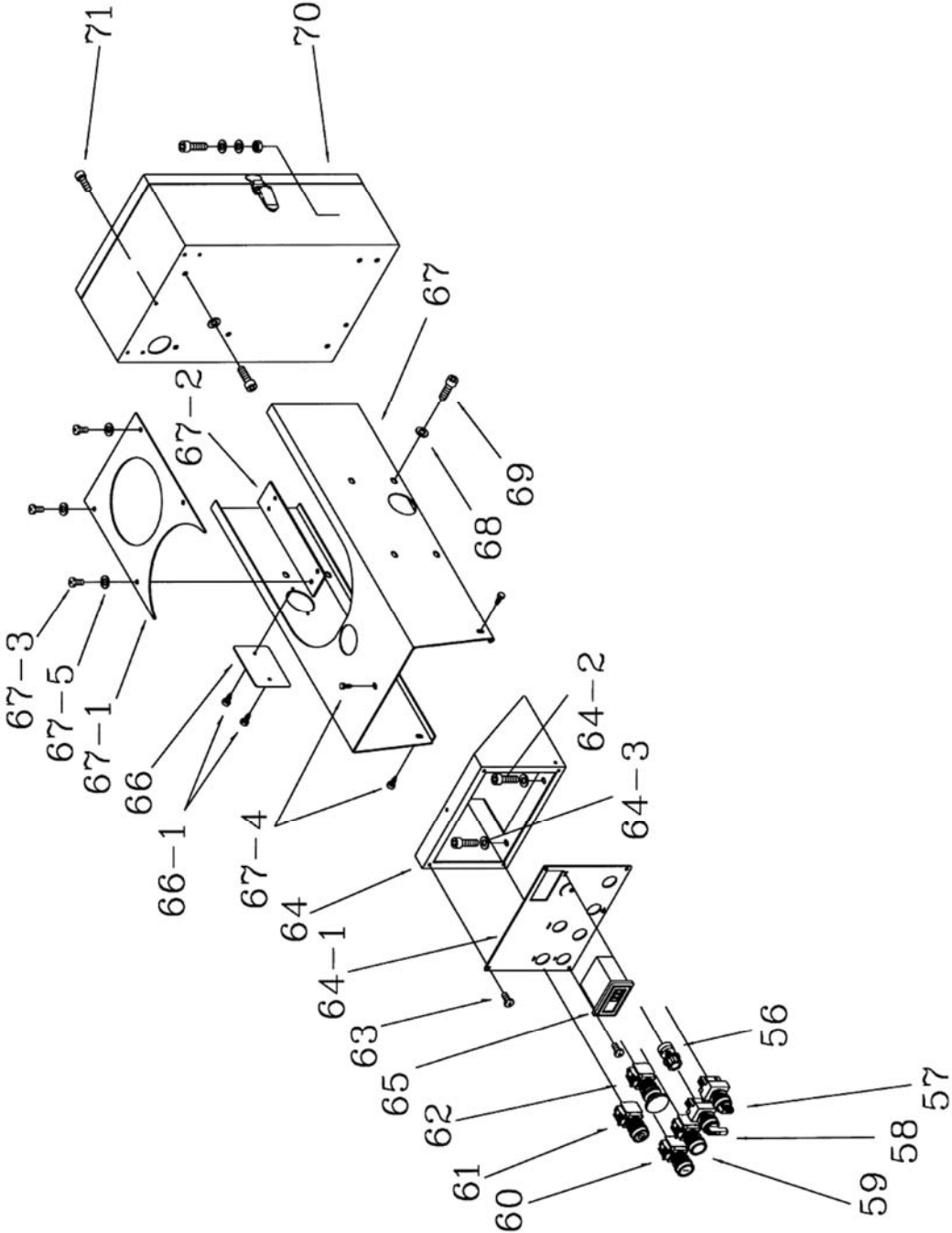
## Exploded View – Safety Shield Assembly (All Models)



## Parts List – Safety Shield Assembly (All Models)

Index No.	Part No.	Description	Size	Qty
.....	32106A	Safety Shield Assembly (#1 thru 16)	.....	.....
1.....	6293347	Spring Pin.....	3x16.....	1
2.....	32106A-2	Support Bracket Bar .....	.....	1
3.....	32106A-3	Bushing .....	.....	1
4.....	32106A-4	Spacer.....	.....	1
5.....	32106A-5	Lock Handle .....	M6x20 .....	1
6.....	32106A-6	C-Clip.....	S30 .....	1
7.....	32106A-7	Bracket.....	.....	1
8 .....	32106A-8	Safety Shield.....	530x210mm .....	1
9.....	32106A-9	Lower Bracket Bar .....	.....	1
10.....	TS-1504021	Hex Socket Head Cap Screw.....	M8x12 .....	1
11.....	32106A-11	Support Arm .....	.....	1
12.....	TS-0640091	Hex Nut.....	3/8" .....	1
13.....	TS-0720091	Spring Washer.....	3/8" .....	1
14.....	TS-1504041	Hex Socket Head Cap Screw.....	M8x20 .....	1
15.....	32106A-16	Lock Bolt with Knob .....	M8 .....	1
16.....	32106A-17	Spacer.....	.....	1

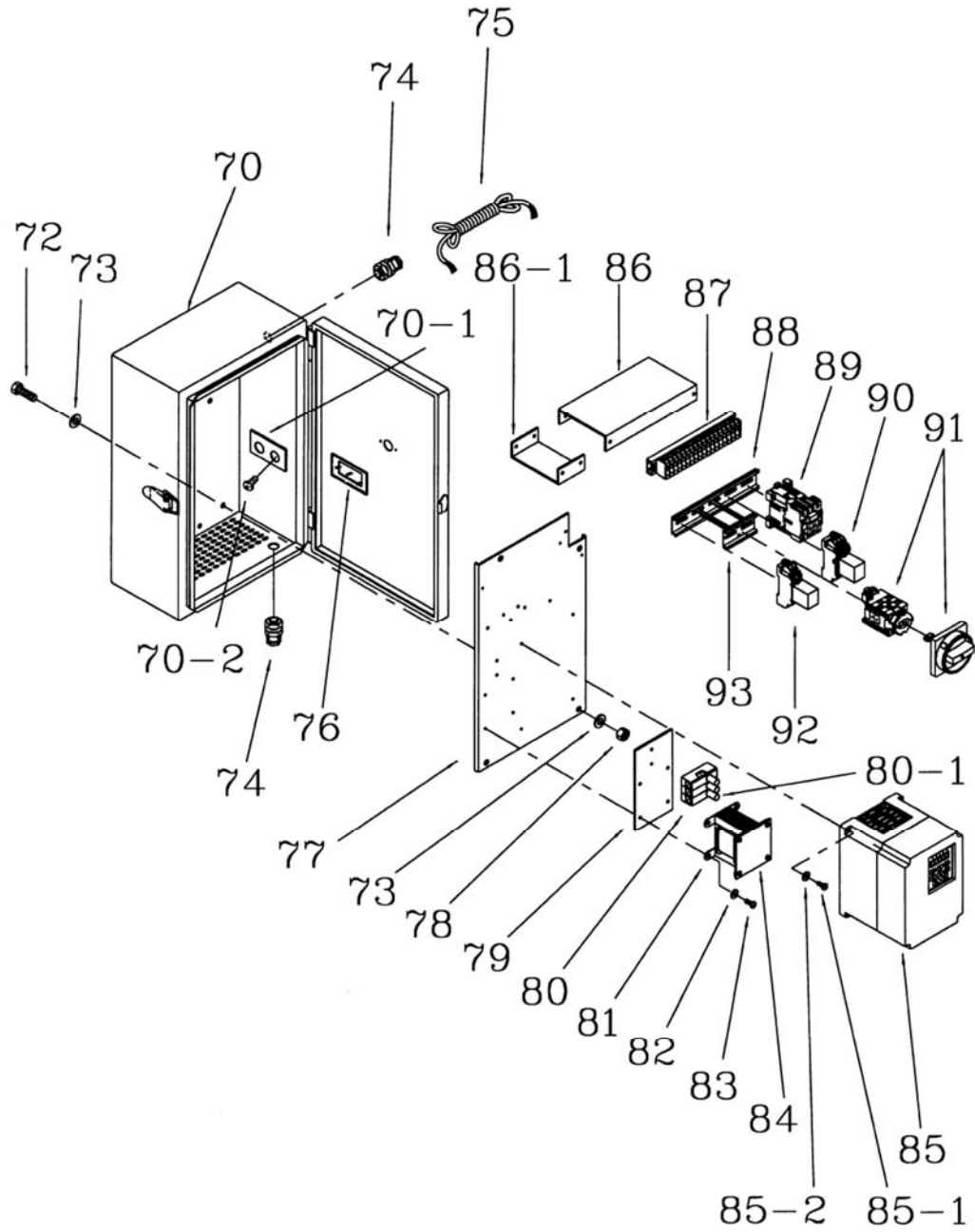
# Control Panel Assembly



## Parts List: Control Panel Assembly

Index No.	Part No.	Description	Size	Qty
56	20EVS-T56	Speed Control Knob		1
57	20EVS-T57	Drill/Tap Switch		1
58	20EVS-T58	Pump Switch		1
59	20EVS-T59	Reverse Switch		1
60	20EVS-T60	Start Switch		1
61	20EVS-T61	Stop Switch		1
62	20EVS-T62	Emergency Switch		1
63	20EVS-T63	Screw		4
64	20EVS-T64	Plate Bracket		1
64-1	20EVS-T64-1G	Control Panel I.D.		1
64-2	TS-1515031	Hex Socket Cap Screw	M8x20	2
64-3	20EVS-T64-3	Washer	M8	2
65	20EVS-T65	Digital Readout Assembly		1
66	20EVS-T66	Oil Filler Cover		1
66-1	20EVS-T66-1	Cross Head Screw	3/16"x3/8"	2
67	20EVS-T67	Pulley Cover		1
67-1	20EVS-T67-1	Top Cover		1
67-2	20EVS-T67-2	Fixed Plate		2
67-3	20EVS-T67-3	Cross Head Screw	3/16"x3/8"	11
67-5	20EVS-T67-5	Washer	3/16"	8
68	TS-1551061	Spring Washer	M8	8
69	TS-1515011	Hex Socket Cap Screw	M8x12	8
70	20EVS-T70	Electric Control Box w/Door and Latch (serial no. 3040097 and higher on the 460V model)		1
71	TS-1515011	Hex Socket Cap Screw	M8x12	4

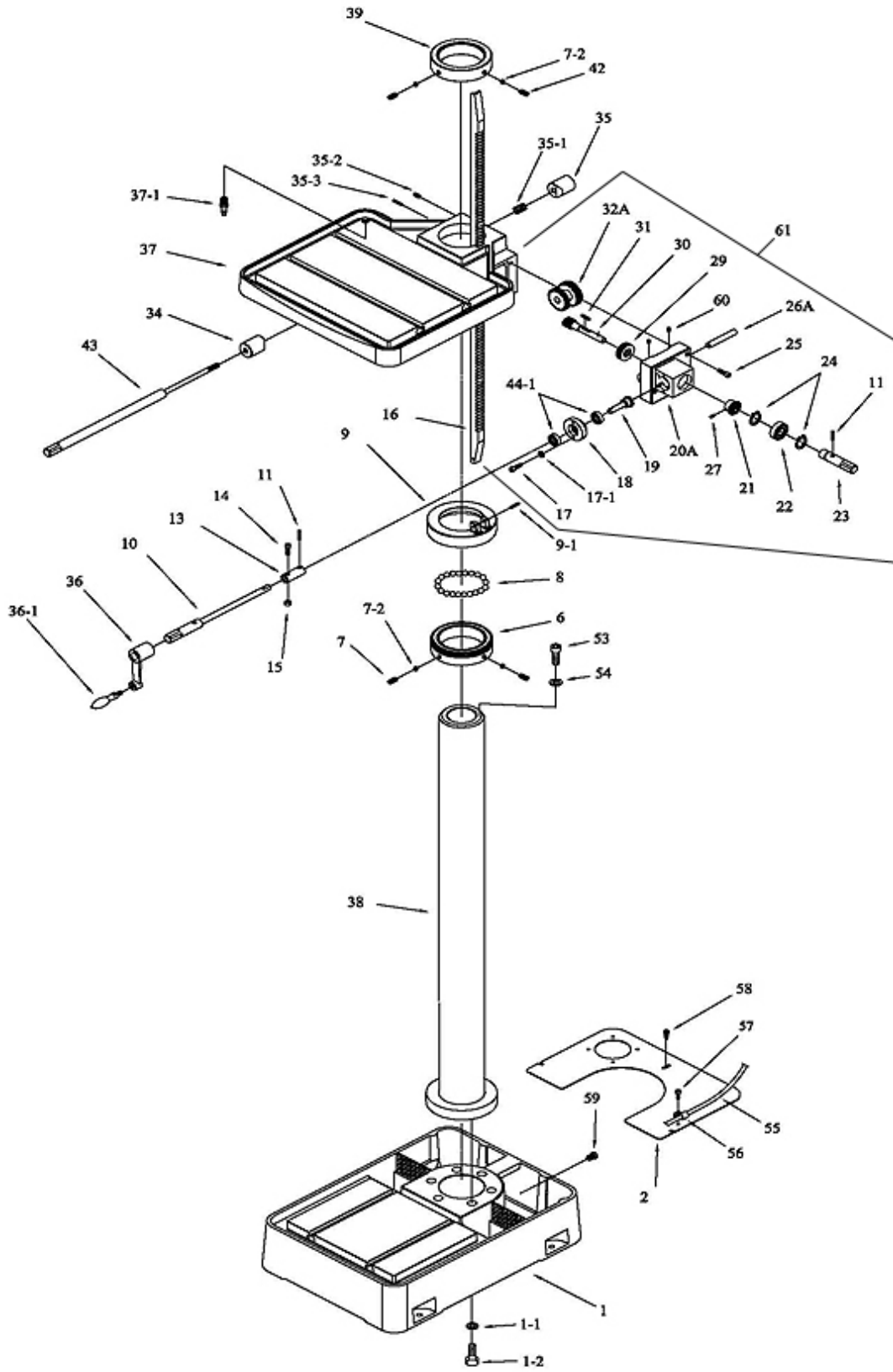
# Electrical Cabinet Assembly



## Parts List: Electrical Cabinet Assembly

Index No.	Part No.	Description	Size	Qty
70	20EVS-T70	Electric Control Box w/Door and Latch <i>(serial no. 3040097 and higher on the 460V model)</i>		1
70-1	20EVS-T70-1	Brass Plate		1
70-2	20EVS-T70-2	Screw		4
72	20EVS-T72	Hex Cap Bolt	5/16"x1"	3
73	TS-0680031	Washer	5/16"	6
74	20EVS-T74	Cable Relief		2
75	20EVS-T75	Electric Cable	1.25MM <sup>2</sup>	1
76	20EVS-T76	Plastic Plate		1
77	20EVS-T77	Electric Base Plate		1
78	TS-0570021	Nut	5/16"	3
79	20EVS-T79	Insulation Board		1
80	20EVS-T80	Fuse (0.5A)		2
80-1	20EVS-T80-1	Fuse (2A)		1
81	20EVS-T81	Transformer		1
82	TS-1550031	Washer	M5	4
83	20EVS-T83	Screw	M5x10	4
84	20EVS-T84	Insulation Board		1
85	VFD-B-230V	Delta Inverter (for 230V) <i>(serial no. 3040097 and higher)</i>		1
	VFD-B-460V	Delta Inverter (for 460V) <i>(serial no. 3040097 and higher)</i>		1
85-1	20EVS-T85-1	Screw	M4x20	4
85-2	20EVS-T85-2	Washer	M4	8
86	20EVS-T86	Connecting Board		1
86-1	20EVS-T86-1	Connecting Board (small)		1
87	20EVS-T87	Terminal Plate		1
88	20EVS-T88	Aluminum Rail Plate		1
89	20EVS-T89	Contacto		1
90	20EVS-T90	Relay	250V	1
	20EVS-T90-460	Relay	460V	1
91	20EVS-T91	Safety Switch Assembly		1
92	20EVS-T92	Relay	250V	1
	20EVS-T92-460	Relay	460V	1
93	20EVS-T93	Aluminum Rail Plate (small)		1

# Column/Table/Base Assembly



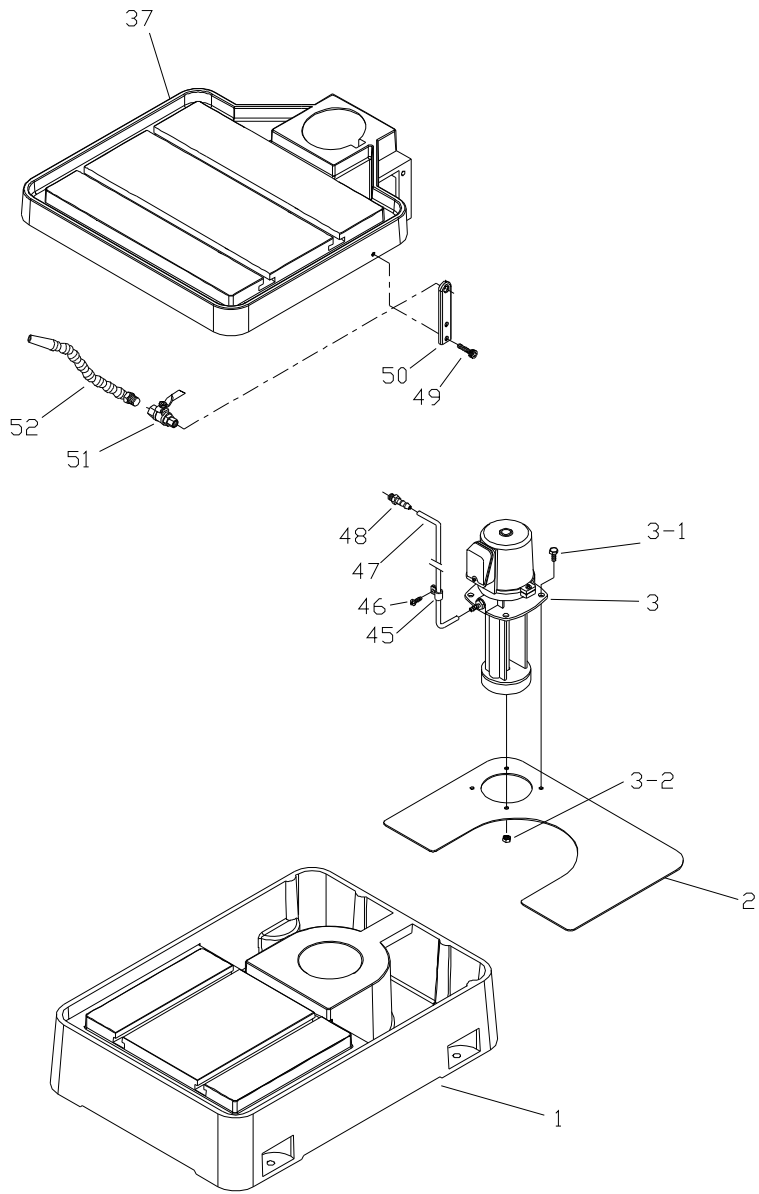
## Parts List: Column/Table/Base Assembly

Index No.	Part No.	Description	Size	Qty
1	20EVS-C1	Coolant Base ( <i>previous to serial no. 7090372</i> )		1
	20EVS-C1N	Coolant Base ( <i>serial no. 7090372 and higher</i> )		1
1-1	TS-0720111	Lock Washer	1/2"	6
1-2	TS-0070031	Hex Cap Screw	1/2" x 1-1/2"	6
2	20EVS-C2	Cover		1
6	20EVS-C6	Support Bearing Collar		1
	20EVS-C6-1	Support Bearing Collar ( <i>serial no. 7090372 and higher</i> )		1
7	20EVS-C7	Set Screw	1/2"x3/4"	1
7-2	20EVS-C7-2	Brass Block		4
8	20EVS-C8	Steel Ball	M10	40
9	20EVS-C9	Column Bearing Collar		1
	20EVS-C9N	Column Bearing Collar ( <i>serial no. 7090372 and higher</i> )		1
9-1	20EVS-C9-1	Screw	3/8"x1"	1
10	20EVS-C10	Crank Shaft w/ Connection Rod		1
11	20EVS-C11	Spring Pin	4x20	2
13	20EVS-C13	Sleeve		1
14	20EVS-C14	Hex Socket Cap Screw	1/4"x1-1/2"	1
15	TS-0561011	Hex Nut	1/4"	1
16	20EVS-C16	Rack		1
17	TS-1514031	Hex Socket Cap Screw	M6x20	2
17-1	TS-1541021	Spring Washer		2
18	20EVS-C18	Flange		1
19	20EVS-C19	Small Bevel Gear		1
20	20EVS-C20	Gear Bracket		1
20A	20EVS-C20A	Gear Bracket ( <i>serial no. 10120660 and higher</i> )		1
21	20EVS-C21	Bevel Gear		1
22	BB-6005ZZ	Ball Bearing	6005ZZ	1
23	20EVS-C23	Crank Shaft		1
24	20EVS-C24	C-Clip	S25	2
25	TS-1515051	Hex Socket Cap Screw	M8x35	3
26	20EVS-C26	Shaft		1
26A	20EVS-C26A	Shaft ( <i>serial no. 10120660 and higher</i> )		1
27	20EVS-C27	Set Screw	1/4" x 3/8"	1
29	20EVS-C29	Thrust Bearing	51102	1
30	20EVS-C30	Worm Shaft		1
31	20EVS-C31	Key	4x4x20	1
32	20EVS-C32	Gear		1
32A	20EVS-C32A	Gear Assembly ( <i>serial no. 10120660 and higher</i> )		1
34	20EVS-C34	Lock Sleeve		1
35	20EVS-C35	Lock Sleeve (thread)		1
35-1	20EVS-C35-1	Spring		1
35-2	20EVS-C35-2	Set Screw	M6x25	1
35-3	20EVS-C35-3	Pin	5x25	1
36	20EVS-C36	Lift Handle Crank		1
36-1	20EVS-C36-1	Handle		1
37	20EVS-C37	Table		1
37-1	20EVS-C37-1	Hose Coupler	1/2"	1
38	20EVS-C38	Column		1
	20EVS-C38N	Column ( <i>serial no. 7090372 and higher</i> )		1
	5510323B	Column with Column Base Assembly ( <i>serial no. 14100922 and higher</i> )		1
39	20EVS-C39	Rack Collar		1
42	20EVS-C42	Set Screw	1/2"x3/4"	2
43	20EVS-C43	Connecting Rod (threaded)		1
44-1	BB-6202ZZ	Ball Bearing	6202ZZ	2
53	20EVS-C53	Hex Socket Cap Screw		1
54	20EVS-C54	Washer		1
55	20EVS-C55	Hose	1/2"	1
56	20EVS-C56	Clamp		1
57	20EVS-C57	Pan Head Screw		1



<b>Index No.</b>	<b>Part No.</b>	<b>Description</b>	<b>Size</b>	<b>Qty</b>
58	20EVS-C58	Pan Head Screw		1
59	20EVS-C59	Plug	3/8"PT	1
60	TS-1522021	Socket Set Screw	M5x8	2
61	20EVS-TRM	Table Raising Mechanism Assembly		1
	20EVS-SBCA	Support Bearing Collar Assembly (includes #6,7,7-2,8,9 and 9-1)		1

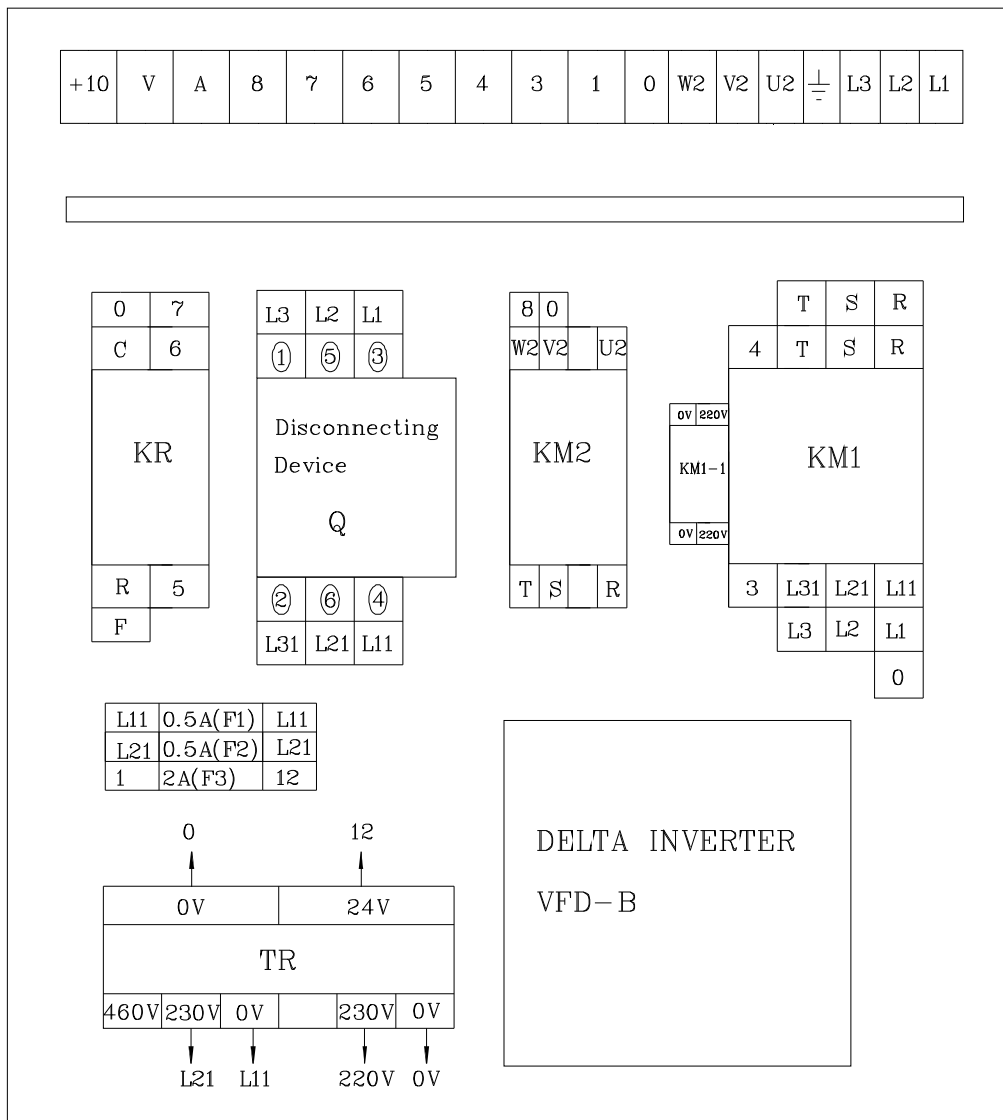
# Coolant Pump Assembly



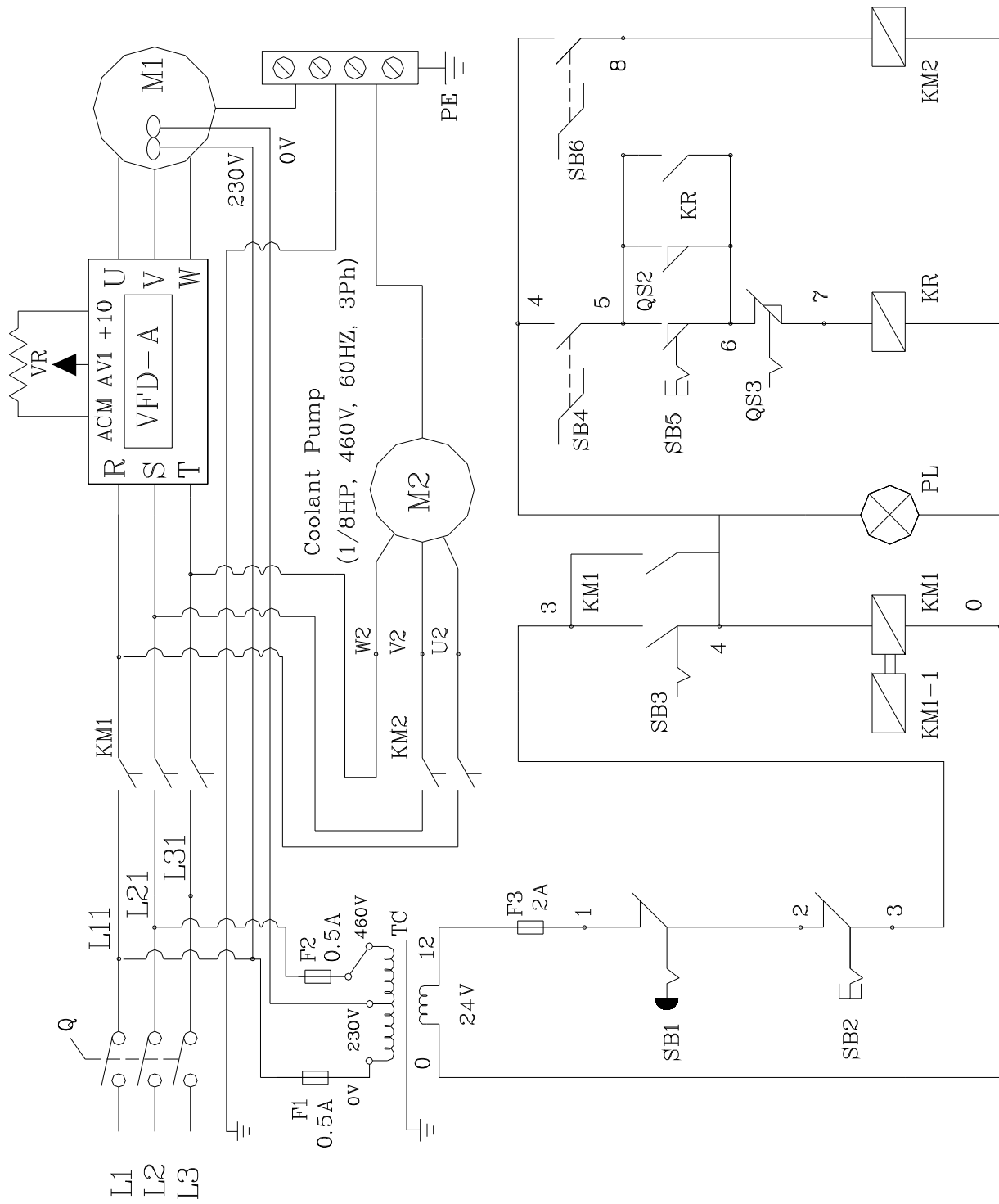
Index No.	Part No.	Description	Size	Qty
1	20EVS-C1	Coolant Base		1
2	20EVS-C2	Cover		1
3	20EVS-CP3PH	Coolant Pump	1/8 HP, 230V, 3 Ph	1
	20EVS-CP1PH	Coolant Pump	1/8 HP, 230V, 1 Ph	1
3-1	20EVS-C4	Hex Cap Bolt	1/4"x1/2"	4
3-2	20EVS-C5	Hex Nut		4
37	20EVS-C37	Table		1
45	20EVS-C45	Clamp		1
46	20EVS-C46	Cross Cap Screw		1
47	20EVS-C47	Tube		1
48	20EVS-C48	Connector		1
49	TS-1515031	Hex Socket Cap Screw	M8x20	1
50	20EVS-C50	Support Plate		1
51	20EVS-C51	ON/OFF Valve		1
52	20EVS-C52	Nozzle		1

# Electrical Cabinet

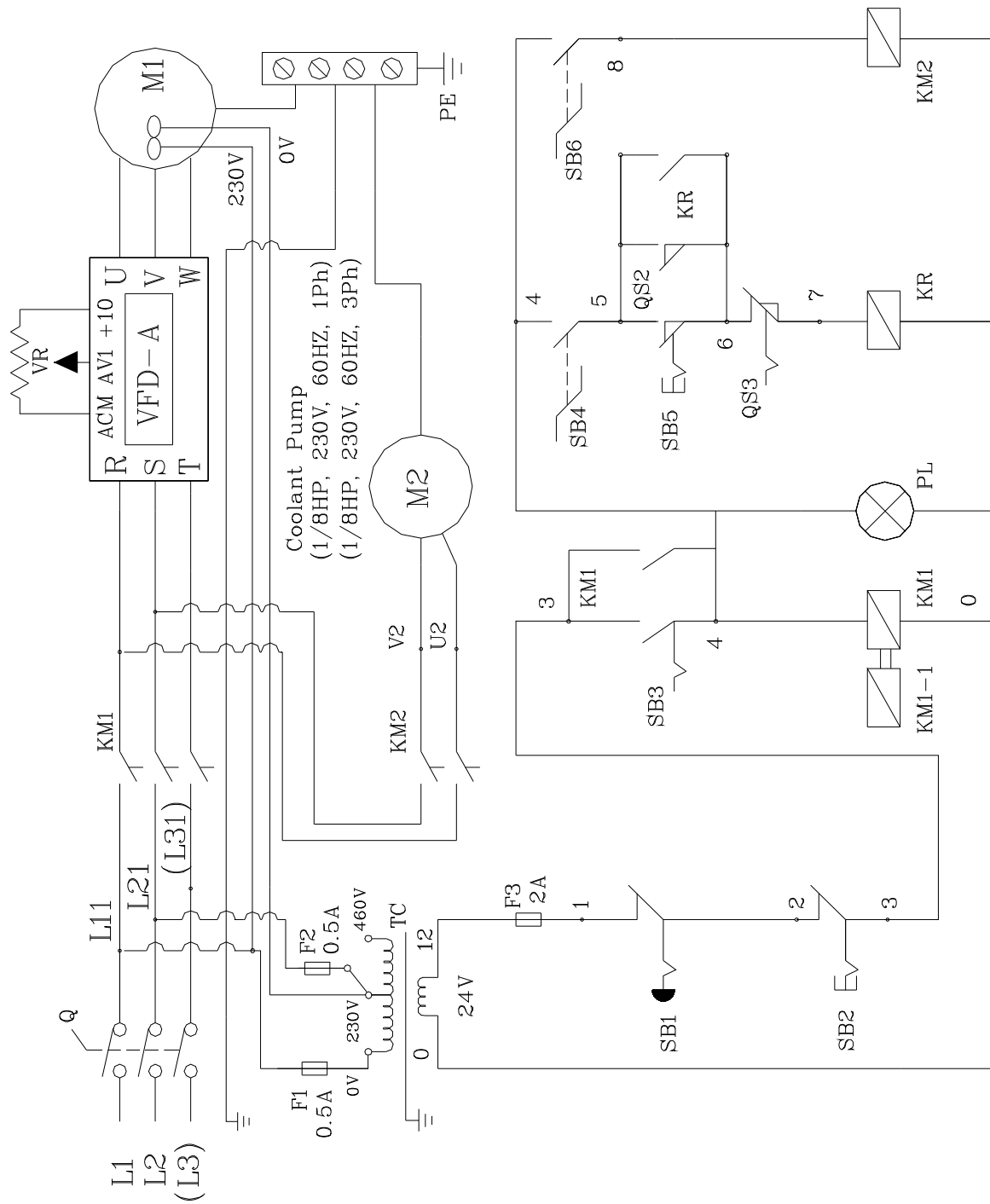
Index No.	Part No.	Description	Size	Qty
Q	20EVS-T91	Safety Switch Assembly	500Vac,16A	1
F1	20EVS-T80	Fuse	0.5A	1
F2	20EVS-T80	Fuse	0.5A	1
F3	20EVS-T80-1	Fuse	2A	1
KM1	20EVS-T89	Contactors		1
KM1-1	20EVS-T89-1	Connector		1
KM2	20EVS-T90	Relay	250V	1
	20EVS-T90-460	Relay	460V	1
KR	20EVS-T92	Relay	250V	1
	20EVS-T92-460	Relay	460V	1
TR	20EVS-T81	Transformer		1
VFD-B	VFD-B-230V	Delta Inverter (serial no. 3040097 and higher)	AC Motor	1
VFD-B	VFD-B-460V	Delta Inverter (serial no. 3040097 and higher)	AC Motor	1



# Wiring Diagram – 460 Volt, 3 Phase



# Wiring Diagram – 230 Volt, 1 & 3 Phase



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