MODEL CX613
15" VARIABLE SPEED DRILL PRESS
USER MANUAL

Version 1.0

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GENERAL SAFETY INSTRUCTIONS FOR MACHINES

Extreme caution should be used when operating all power tools. Know your power tool, be familiar with its operation, read through the user manual, and practice safe usage procedures at all times.

- **ALWAYS** read and understand the user manual before operating the machine.
- **CONNECT** your machine ONLY to the matched and specific power source.
- **ALWAYS** wear safety glasses respirators, hearing protection and safety shoes, when operating your machine.
- **DO NOT** wear loose clothing or jewelry when operating your machine. Wear protective hair covering.
- **A SAFE ENVIRONMENT** is important. Keep the area free of dust, dirt and other debris in the immediate vicinity of your machine.
- **BE ALERT! DO NOT** use prescription or other drugs that may affect your ability or judgment to safely use your machine.
- **DISCONNECT** the power source when changing drill bits, hollow chisels, router bits, shaper heads, blades, knives or making other adjustments or repairs.
- **NEVER** leave a tool unattended while it is in operation.
- **NEVER** allow unsupervised or untrained person to operate the machine.
- **NEVER** reach over the table when the tool is in operation.
- **ALWAYS** keep blades, knives and bits sharpened and properly aligned.
- **ALL OPERATIONS MUST BE** performed with the guards in place to ensure safety.
- **ALWAYS** use push sticks and feather boards to safely feed your work through the machine.
- **ALWAYS** make sure that any tools used for adjustments are removed before operating the machine.
- **ALWAYS** keep bystanders safely away while the machine is in operation.
- **NEVER** attempt to remove jammed cutoff pieces until the blade has come to a full stop.

SPECIFIC SAFETY INSTRUCTIONS
CX613 – 15" VARIABLE SPEED DRILL PRESS

- **READ AND UNDERSTAND** the user manual before operating the CX613.
- **ALWAYS WEAR** safety glasses for the protection of your eyes while operating this machine**.**
- **WEAR PROPER APPAREL.** Loose clothing, gloves neckties, rings, bracelets, or other jewelry may get caught in moving parts of the machine. Wear protective hair covering to contain long hair. Do not wear gloves and keep your fingers and hair away from rotating parts.
- **KEEP GUARDS** in place. Safe guards must be kept in place and in working order. Do not operate the drill press unless the chuck guard is in its position, guarding the chuck.
- **MAKE SURE** the work-piece is properly clamped to the table before operating the machine. Never hold the work-piece by hand when using the mill.
- **MAKE SURE** the cutting tool is sharp, not damaged and properly secured in the chuck before you start the machine.
- **NEVER** turn the power ON with the cutting tool contacting the work-piece.
- **SELECT THE PROPER SPINDLE SPEED** for the type of work and material you are cutting. Let the spindle reach to its full speed before beginning a cut.
- **DO NOT FORCE THE TOOL.** Always use the machine at the rate for which it is designed. Do not force the machine doing a job for which it is not designed.
- **NEVER LEAVE** the machine unattended while it is running.
- **ALWAYS** turn off the power before removing scrap pieces and cleaning the machine.
- **SHOULD ANY PART** of your tool be missing, damaged or fail in any way, shut off the machine immediately and remove the plug from power source. Replace any damaged or missing parts before resuming operation.
- **MAKE SURE** before installing and removing any parts, servicing, cleaning or making any adjustments, the switch is in the “OFF” position and the cord is un-plugged from the power source.
- **BEFORE OPERATING** your dill press make sure you have read and understood all the safety instructions in the manual and you are familiar with your machine. If you fail to do so, serious injury could occur.

WARNING!

***The safety instructions given above can not be complete because the environment in every shop is different. Always consider safety first as it applies to your individual working conditions*.**

CX613 – DRILL PRESS

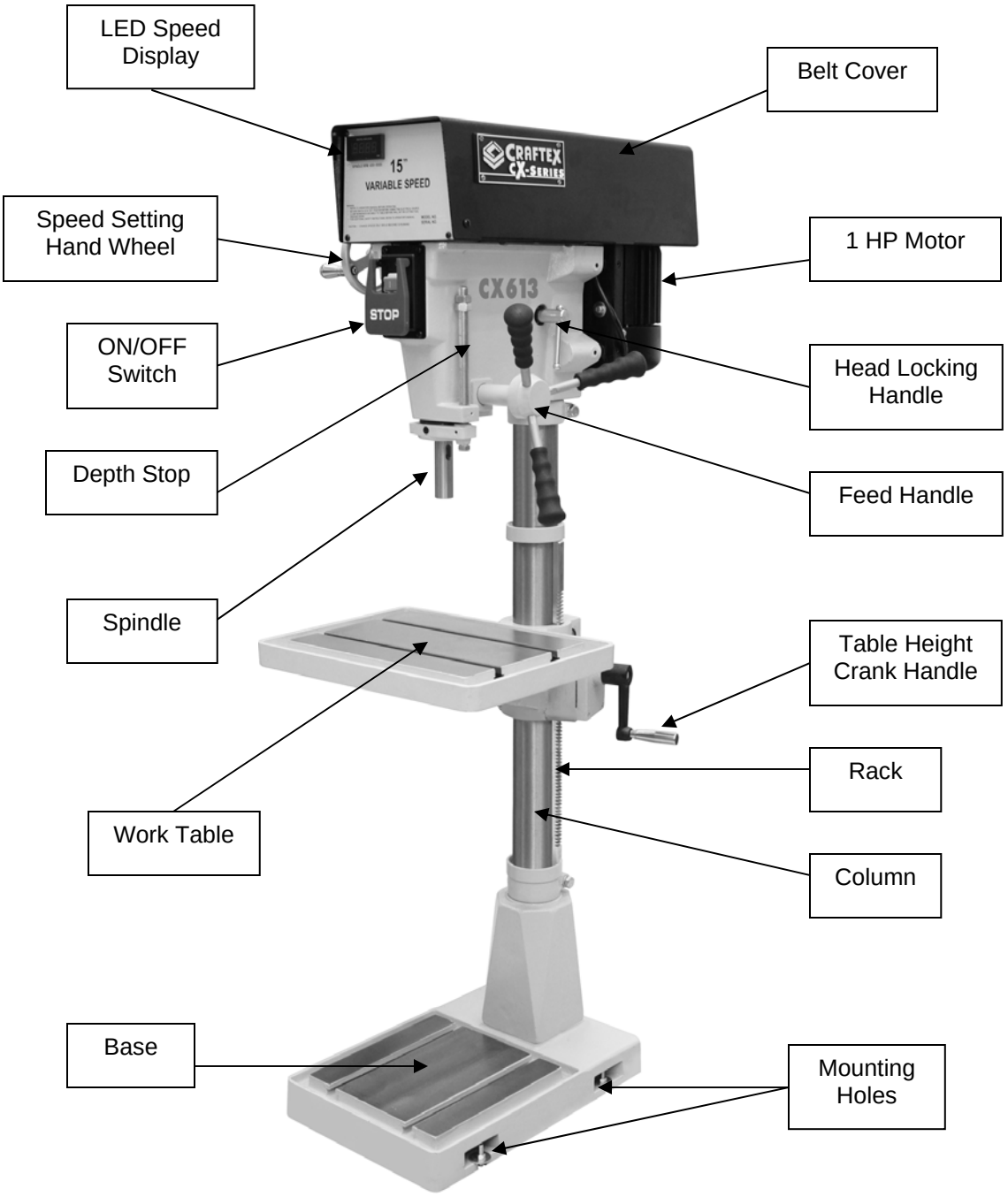
FEATURES

MODEL CX613 – 15" VARIABLE SPEED DRILL PRESS

As part of the growing line of Craftex metalworking equipment, we are proud to offer the CX613, a 15" Variable Speed Drill Press. By following the instructions and procedures laid out in this user manual, you will receive years of excellent service and satisfaction. The CX613 is a professional tool and like all power tools, proper care and safety procedures should be adhered to.

- Motor ..... 1 HP , 110V, 60 Hz, 1 Phase
- Type ..... Belt Drive
- Drilling Capacity (Cast Iron)..... 5/8"
- Drilling Capacity (Steel) ..... 1/2"
- Spindle Taper MT2
- Spindle Travel..... 6"
- Spindle Nose to Table ..... 27"
- Spindle Nose to Base ..... 46"
- Column Diameter..... 3"
- Quill Diameter..... 2-1/4"
- Table Size..... 14" x 18"
- Table Slot ..... 9/16"
- Base Size ..... 21" x 14"
- Machine Size ..... Length 30" x Width 20" x Height 71"
- Weight (Approx)..... 174 Kg
- Warranty..... 3-Years

PHYSICAL FEATURES
CX613 - 15" VARIABLE SPEED DRILL PRESS



PROPER GROUNDING

Grounding provides a path of least resistance for electric current to reduce the risk of electric shock.

CX613 is for use on a normal 110 volt circuit. Make sure that the machine is connected to an outlet having the same configuration as the plug. If an adaptor plug is used, it must be attached to the metal screw of the receptacle. To prevent electrical hazards, have a qualified electrician ensure that the line is properly wired.

The drill press should be wired with a plug having 3 prongs to fit a 3 prong grounded receptacle as shown in figure-1. Do not remove the grounding prong to fit it into a 2 pronged outlet.

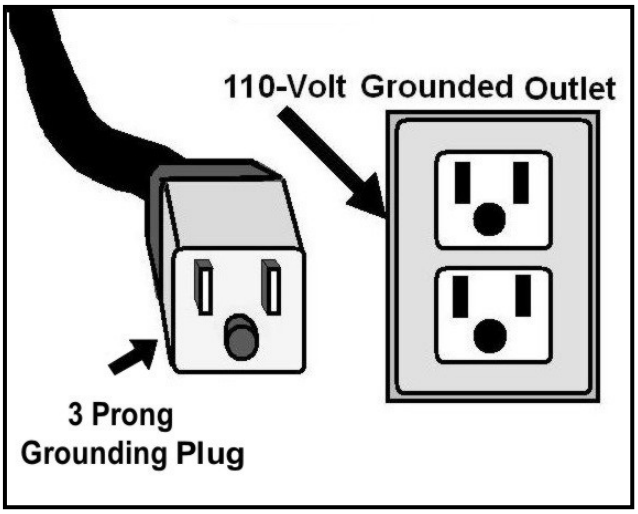


Figure-1 110-Volts outlet for CX613

WARNING!

Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded.

It is strongly recommended not to use extension cords with your CX613. Always try to position your machine close to the power source so that you do not need to use extension cords.

If you really find it necessary to use an extension cord, make sure the extension cord does not exceed 50-feet in length and the cord is 14-gauge to prevent motor damage.

UNPACKING

To ensure safe transportation this machine is properly packaged and shipped completely in a crate. When unpacking, carefully inspect the crate and ensure that nothing has been damaged during transit.

While doing inventory, if you can not find any part, check if the part is already installed on the machine. Some of the parts come assembled with the machine for the shipping purposes.

SETUP

Before setting up your machine you should read and understand the instructions given in this manual.

The unpainted surfaces of this machine are coated with a rust preventive waxy oil and you will want to remove this before starting assembly. Use a solvent cleaner that will not damage painted surfaces.

WARNING!

CX613 is a heavy machine, do not over-exert yourself. Use a fork truck or get the help of an assistant for safe moving.

OPERATING CONTROLS

ON/OFF SWITCH

The On/Off switch is located at the front of the drill head.

SPEED CONTROL HAND WHEEL

The speed control hand wheel is located on the left side of the drill head. An LED speed indicator is provided on the front side of the drill head.

Figure-2 Speed control hand wheel

CAUTION!

To avoid damage to the speed adjustment mechanism, the drill press must be ON and the motor must be running before attempting to adjust the speed setting.

DEPTH STOP

A drilling depth stop is provided on the right side of the drill head. The depth stop is consists of a threaded rod with depth setting jam nuts. The front side of the threaded rod has a depth scale. The jam nuts are loosened and moved to the desired depth on the scale. The upper jam nut is then tightened against the lower nut. See figure-3.

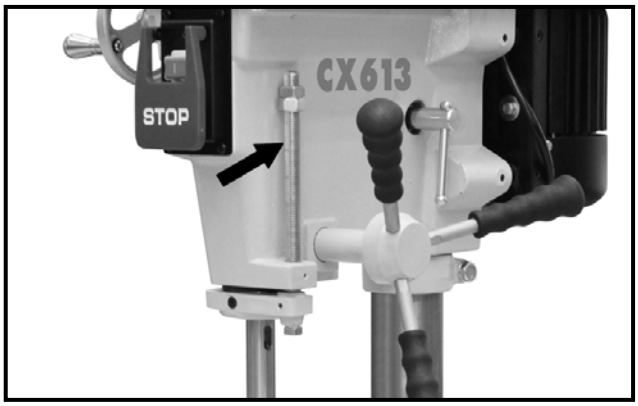


Figure-3 Depth stop

TEST RUN

Once you have assembled your drill press completely, it is then time for a test run to make sure that the mill/drill works properly and is ready for operation.

Remove all the tools used for assembling the machine and make sure all the guards are in place.

If you find an unusual problem during the test run, immediately stop the machine, disconnect it from the power and fix the problem before operating the machine again.

WARNING!

Before operating the drill press make sure that you have read and understood the instructions given in the manual and you are familiar with the functions and safety features on this machine. Failure to do so may cause serious personal injury or damage to the machine.

TO TEST RUN THE MACHINE

Connect the machine to power supply.

Turn the switch to ON position. The motor should run smoothly, without unusual vibration and noises.

Turn the speed control knob and let the machine run at a high speed for a minute.

Turn the switch to OFF position and allow the spindle to come to a complete stop.

OPERATION

The following operation and safety precautions must be observed in order to avoid harm to the operator or damage to the drill press.

Check the work piece to make sure it is suitable for drilling.

Put safety glasses and face shield.

Make sure to secure the work-piece to the table using a vise or T-slot clamps.

Install correct cutting tool for operation.

Make sure the spindle taper is clean and free of burrs, scoring, and galling to assure maximum gripping.

Adjust the table to correct height and lock it in place. See figure-4.

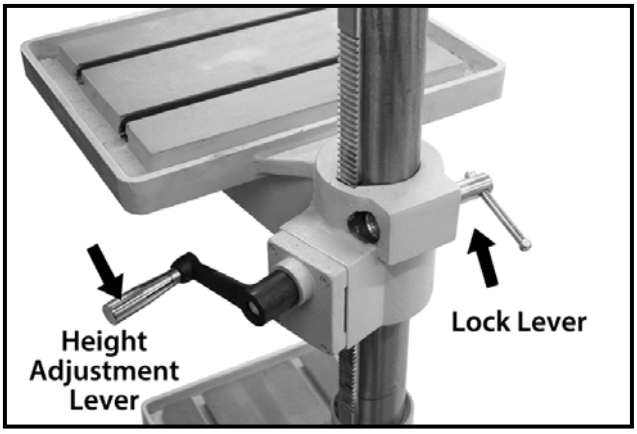


Figure-4 Table height adjustment

Select the correct spindle speed according to the chart on the V-belt cover.

Connect the machine to the power source and start the spindle.

Make sure the drive motor is running before turning the speed control hand-wheel in either direction.

Start drilling into the work-piece.

When finished, turn the switch to OFF position and disconnect the cord from the power source.

INSTALLING THE ARBOR AND CHUCK

Slide the long end of the arbor into the spindle as far as it will go.

Slide the chuck onto the arbor and then place a block of wood under the chuck and tap the chuck and arbor with a hammer until it seats into the spindle.

Do not strike the chuck directly with a steel hammer.

REMOVING THE CHUCK

Lower the chuck to its lowest position exposing the spindle sleeve.

The spindle sleeve has a large oval hole on both sides of it.

Rotate the chuck until the spindle hole lines up with the hole in the spindle sleeve.

Insert the wedge and tap the wedge lightly with a hammer.

The arbor and the chuck will release from the spindle.

TURNING THE HEAD

The drill press head turns to the right and to the left. Simply loosen the lock lever located on the side of the machine shown in figure-5 and turn the head to your desired position.

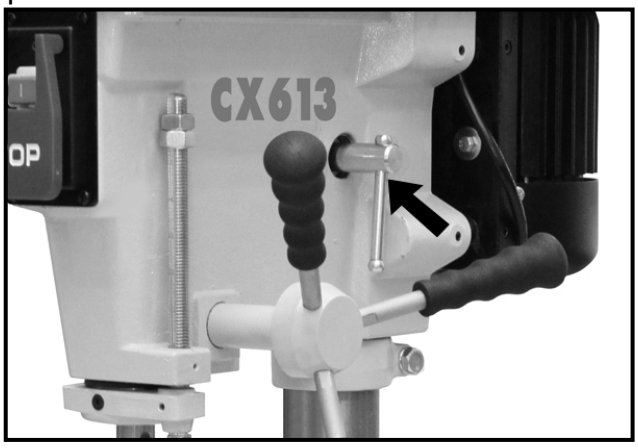


Figure-5 Drill press head lock lever

SPEEDS FOR DRILLING

The speed of a drill is usually measured in terms of the rate at which the outer periphery of the tool moves in relation to the work being drilled. The common term for this is Surface Feet per Minute (SFM). The relationship of SFM is expressed in the following formulas:

SFM = 0.26 X rpm X Drill Diameter (in inches)

$$RPM = 3.8 \times \frac{SFM}{\text{Drill diameter (in inches)}}$$

In general, the higher the speed the shorter the drill life. Operating at the low end of the speed range for a particular material will result in longer lift. The most efficient speed for operating a drill depends on many variables:

1. Composition and hardness of material

2. Depth of the hold

3. Efficiency of the cutting fluid

4.Type and condition of the drilling machine

5. Desired quality of the hole.

6. Difficulty of set-up

INDICATION OF EXTREME SPEEDS AND FEEDS

A drill that splits up the web is evidence of too much feed or insufficient tip clearance at the center as a result of improper grinding. The rapid wearing away of the extreme outer corners of the cutting edges indicates that the speed is too high. A drill chipping or braking out at the cutting edges indicates that either the feed is too heavy or the drill has been ground with too much tip clearance.

SPEEDS FOR HIGH SPEED STEEL DRILLS

MATERIAL	SPEED IN SFM
Alloy Steel — 300 to 400 Brinell	20-30
Stainless Steel	30-40
Automotive Steel Forgings	40-50
Tool Steel, 1.2C	50-60
Steel, 4C to .5C	70-80
Mild Machinery Steel, .2C to .3C	80-100
Hard Chilled Cast Iron	30-40
Medium Hard Cast Iron	70-100
Soft Cast Iron	100-150
Malleable Iron	80-90
High Nickel Steel or Monel	40-50
High Tensile Bronze	70-150
Ordinary Brass and Bronze	200-300
Aluminum and its Alloys	200-300
Magnesium and its Alloys	250-400
Slate, Marble, and Stone	15-25
Plastics & similar material (Bakelite)	100-150
Wood	300-400
Titanium Alloys	10-25
Titanium Alloy Sheet	50-60

In cases where carbon steel drills are applicable, the drill should be run at speeds of from 40 to 50 percent of those given above.

MAINTENANCE

During the life of your machine, you will need to practice some regular maintenance to keep your machine in peak performance condition.

WARNING!

Make sure the main power switch is OFF and the cord is disconnected from the power source, before making any adjustments, lubricating or servicing. Failure to do so could result in serious personal injury or even death.

1. Check the machine everyday before operation for; worn or damaged cord, wire, loose nuts and bolts and make sure all the safety devices are working properly.

2. Treat your machine with care, keep it clean and grease and lubricate it regularly. Only through good care you can be sure that the working quality of the machine will remain constant.

3. During operation, the chips which fall onto the sliding surface should be cleaned in a timely fashion. Frequent inspections should be made to prevent chips from falling into the position between the work table and the slide ways.

4. After the operation every day, eliminate all the chips and clean different parts of the machine tool and apply machine tool oil to prevent from rusting.

5. Make sure your work area is well ventilated.

DRIVE BELT REPLACEMENT

Start drill press and turn the speed control hand wheel to run the motor at highest speed.

Stop drill press.

Disconnect the power cord from the power source.

Remove the screws securing the belt cover to the machine and remove the belt cover.

With speed control setting at the highest speed, the belt should be loose enough to remove.

Remove belt from the pulleys.

Install the new belt onto the pulleys.

Install the head cover.

Connect electrical power to the drill press.

Operate the drill press to verify correct operation.

LUBRICATION

Following are lubrication recommendations for drill press components.

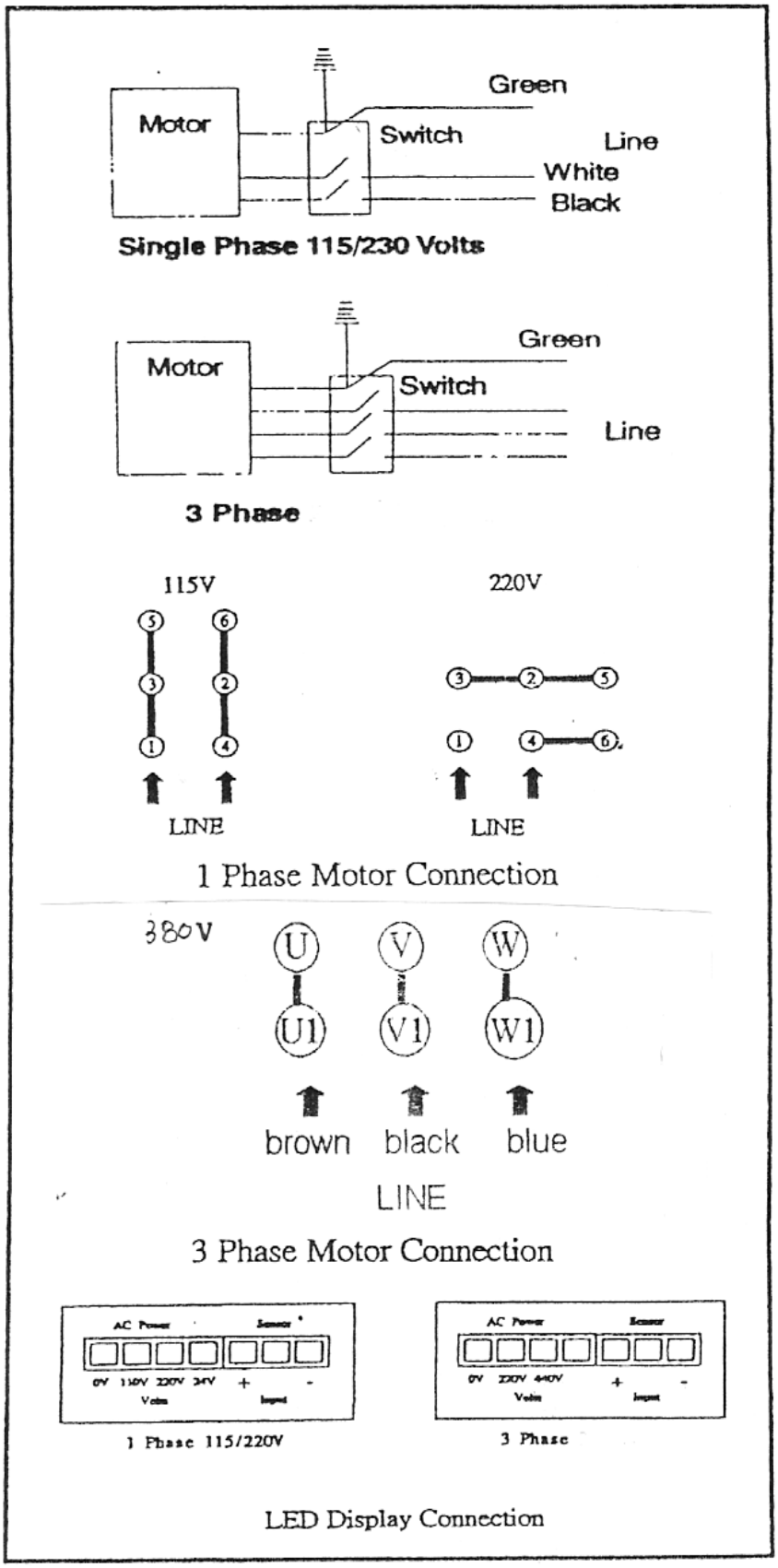
SPINDLE PULLEY DRIVE
Lubricate spindle occasionally with light grease.

QUILL, TABLE, AND COLUMN
Lubricate with light film of oil.

TABLE LIFT RACK
Lubricate regularly with SAE20 oil (clean rack with solvent before applying oil.)

VARIABLE SPEED DRIVE FORK
Lubricate contact points occasionally with grease.

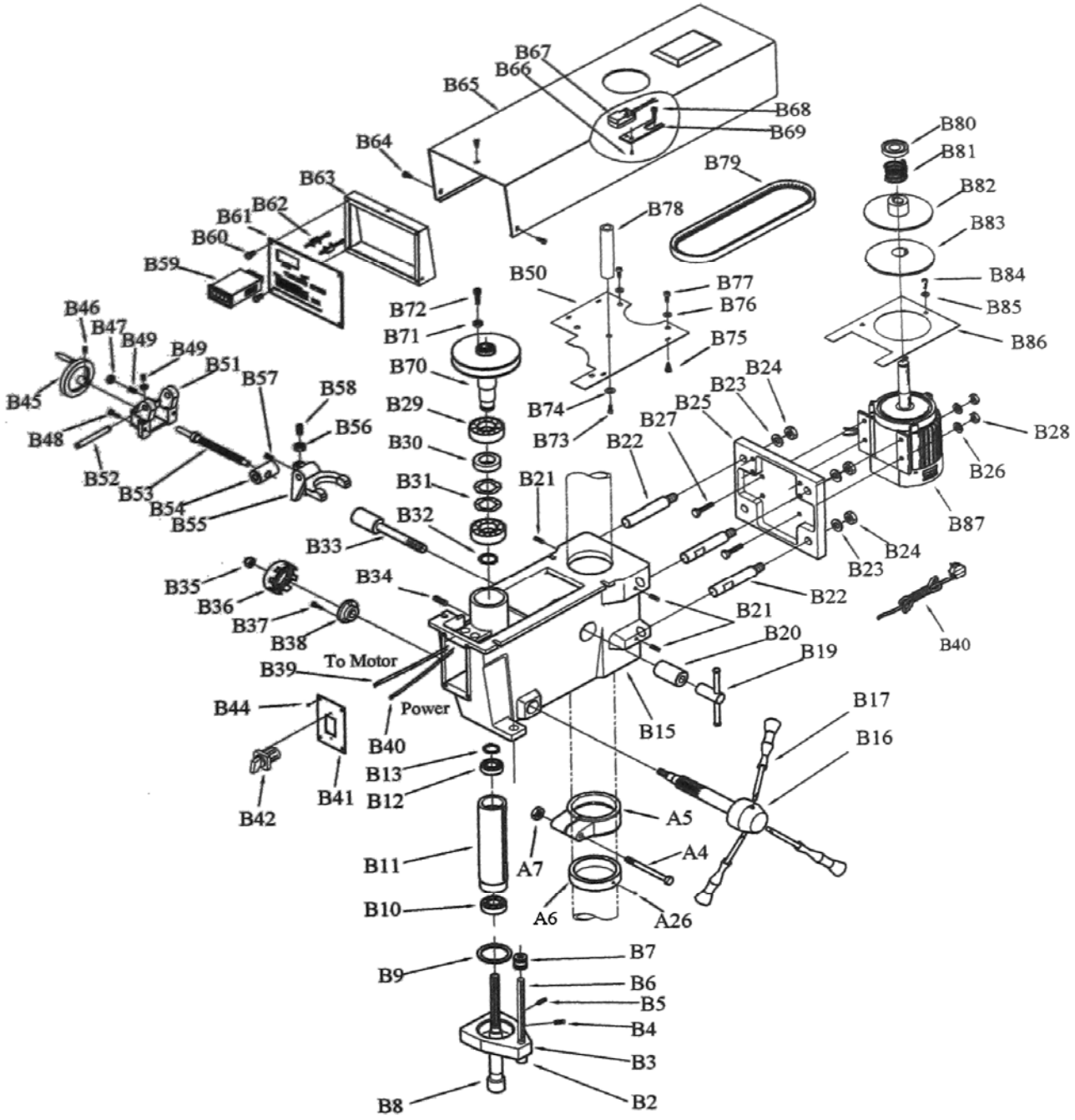
CX613 WIRING DIAGRAM



TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY
Spindle does not turn.	1. Circuit breaker tripped. 2. Branch circuit breaker tripped or fuse blown. 3. Open wire in switch circuit. 4. Defective switch. 5. Broken drive belt.	1. Reset circuit breaker. 2. Reset branch circuit breaker/replace fuse. 3. Repair open circuit. 4. Repair switch. 5. Replace drive belt.
Spindle noisy.	1. Damaged spindle bearings. 2. Worn spindle.	1. Replace bearings. 2. Replace spindle.
Drill stalls.	1. Worn drive belt. 2. Excessive feed rate for size of drill and material being drilled. 3. No cutting fluid or improper cutting fluid.	1. Check condition of belt. Replace if glazed or slipping on pulleys. 2. Reduce feed pressure or use cutting fluid. 3. Use correct cutting fluid.
Poorly drilled holes.	1. Drill dull. 2. Lack of rigidity in hold-down method. 3. Speed too fast for material and drill size. 4. Feed too fast for material and drill size. 5. No or improper cutting fluid or coolant being used. 6. Improperly ground drill bit.	1. Sharpen drill. 2. Check that all T-slot hold-downs are tight and that table-lock and drill head bolts are tight. 3. Check spindle speed recommendations. Reduce speed if necessary. 4. Reduce feed rate. 5. Use cutting fluid, or change to proper fluid or coolant for material being drilled. 6. Check for proper angles and reliefs. Regrind to proper geometry.
Motor overheating.	1. Electrical circuit fault. 2. Oversize drill. 3. Excessive feed. 4. No cutting fluid, or wrong fluid.	1. Check current draw in circuit. Make sure current draw is the same as rating on motor plate. 2. Reduce drill size. 3. Reduce feed rate. 4. Use correct cutting fluid for the material and drill.
Table can not be raised.	1. Lack of lubrication.	1. Lubricate.
No speed readout.	1. Speed pickup out of adjustment or failed.	1. Adjust gap between speed pickup and post spindle pulley. If there is no readout on the speed indicator, replace the speed pickup.

DRILL HEAD PARTS DIAGRAM



DRILL HEAD PARTS LIST

PART #	DESCRIPTION	QTY
B02	Nut M10xP1.5/Spring Washer 10	1
B03	Quill Band	1
B04	Flat Head Screw M6x16	1
B05	Set Screw M6x1	1
B06	Rod, Graduated	1
B07	Jam Nut 5/8-11	2
B08	Spindle (MT2# / JT3#)	1
B09	O-Ring	1
B10	Bearing 6204ZZ	1
B11	Quill	1
B12	Bearing 6203ZZ	1
B13	Truarc Retainer	1
B15	Head Casting	1
B16	Feed Shaft	1
B17	Spoke with Grip	3
B19	Lock Handle	1
B20	Head Lock (Plain Side)	3
B21	Set Screw 5/16-18 x 3/8	4
B22	Motor Plate Support Bar	4
B23	Spring Washer 1/2	4
B24	Hex Nut 1/2-12	4
B25	Motor Mounting Bracket	1
B26	Washer 5/16	8
B27	Screw 5/16-18x2	4
B28	Nut 5/16	4
B29	Bearing 6205ZZ	2
B30	Bearing Spacer	1
B31	Spring Washer	2
B32	Retainer	1
B33	Hex Head Cap Screw 1/2-12x4	1
B34	Set Screw 5/16-18 x 5/16	1
B35	Nylon Nut	1
B36	Return Spring	1
B37	Socket Head Cap Screw	3
B38	Return Spring Bracket	1
B39	Wiring Harness	1
B40	Wiring Harness	1
B41	Switch Mounting Plate	1
B42	Switch	1
B44	Screw 3/16	4
B45	Hand Wheel	1
B46	Set Screw 5/16-18x5/16"	1

PART #	DESCRIPTION	QTY
B47	Nut 1/4-20	2
B48	Cap Screw 1/4-20	2
B49	Set Screw 1/4-20x1-1/4"	2
B50	Plate	1
B51	Speed Change Housing	1
B52	Shaft Speed Change Lever	1
B53	Speed Change Shaft	1
B54	Speed Change Nut	1
B55	Speed Change Lever	1
B56	Nut 3/8-16	1
B57	Set Screw 1/4-20x1/2	1
B58	Set Screw 3/8-16x1	1
B59	LED Display	1
B60	Screw 3/16-24x3/8	4
B61	Plate Face	1
B62	Screw Locking	2
B63	Bracket, Face Plate	1
B64	Screw 3/16-24x3/8"	3
B65	Cover, Pulley	1
B66	Screw	2
B67	Sensor	1
B68	Cap Screw5/16-18x3/4"	1
B69	Plate , Bracket	1
B70	Variable Speed Pulley(Spindle)	1
B71	Hex Nut	1
B72	Cap Screw	1
B73	Cap Screw	1
B74	Washer 5/16"	1
B75	Screw3/16"	4
B76	Washer1/4"	4
B77	Cap Screw 1/4"	4
B78	Supporter	1
B79	Belt	1
B80	Spring Cover	1
B81	Spring	1
B82	Variable Speed Pulley-A(Motor)	1
B83	Variable Speed Pulley-B(Motor)	1
B84	Screw1/4"	3
B85	Spring Washer1/4"	3
B86	Motor Plate	1
B87	Motor	1

TABLE & BASE PARTS DIAGRAM

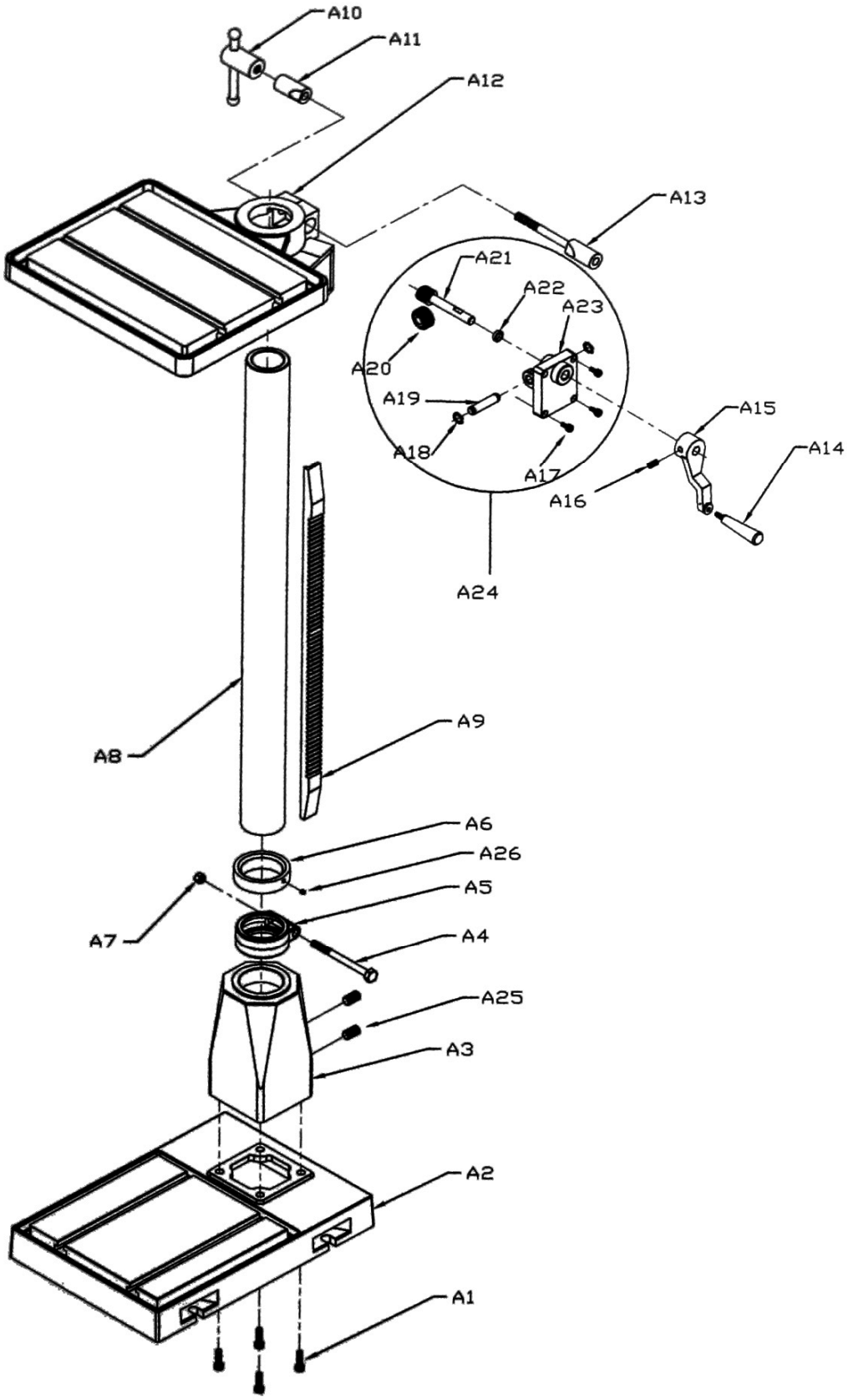


TABLE & BASE PARTS LIST

PART #	DESCRIPTION	QTY
A01	Hex Head Cap Screw 1/2-12x1-1/2	4
A02	Base	1
A03	Flange (Base / Column)	1
A04	Hex Head Cap Screw1/2"-12x4"	2
A05	Collar	2
A06	Rack Ring	2
A07	Hex Nut 7/16-14	2
A08	Column	1
A09	Rack	1
A10	Luck handle	1
A11	Table Lock (Plain Side)	l
A12	Table	1
A13	Hex Head Cap Screw 1/2" x 4"	1
A14	Grip, Table Raiser	1
A15	Handle, Table Raiser	1
A16	Socket Head Set Screw 5/16-18x3/8	1
A17	Hex Head Cap Screw1/4x1	4
A18	C-Ring, Table Raiser	2
A19	Shaft Table Raiser	1
A20	Gear Table Raiser	1
A21	Warm Shaft Table Raiser	1
A22	Bushing	1
A23	Raise Bracket	1
A24	Table Raiser Assembly	1
A25	Set Screw 1/2" x 1"	2
A26	Set Screw M6x6	2

WARRANTY

CRAFTEX 3 YEARS LIMITED WARRANTY

Craftex warrants every product to be free from defects in materials and agrees to correct such defects where applicable. This warranty covers **three years** for parts and 90 days for labor (unless specified otherwise), to the original purchaser from the date of purchase but does not apply to malfunctions arising directly or indirectly from misuse, abuse, improper installation or assembly, negligence, accidents, repairs or alterations or lack of maintenance.

***Proof of purchase is necessary*.**

All warranty claims are subject to inspection of such products or part thereof and Craftex reserves the right to inspect any returned item before a refund or replacement may be issued.

This warranty shall not apply to consumable products such as blades, bits, belts, cutters, chisels, punches etceteras.

Craftex shall in no event be liable for injuries, accidental or otherwise, death to persons or damage to property or for incidental contingent, special, or consequential damages arising from the use of our products.

RETURNS, REPAIRS AND REPLACEMENTS

To return, repair, or replace a Craftex product, you must visit the appropriate Busy Bee Tools showroom or call 1-800-461-BUSY. Craftex is a brand of equipment that is exclusive to Busy Bee Tools.

For replacement parts directly from Busy Bee Tools, for this machine, please call 1-800-461-BUSY (2879), and have your credit card and part number handy.

- All returned merchandise will be subject to a minimum charge of 15% for re-stocking and handling with the following qualifications.
- Returns must be pre-authorized by us in writing.
- We do not accept *collect* shipments.
- Items returned for warranty purposes must be insured and shipped pre-paid to the nearest warehouse
- Returns must be accompanied with a copy of your original invoice as proof of purchase. Returns must be in an un-used condition and shipped in their original packaging a letter explaining your reason for the return. Incurred shipping and handling charges are not refundable.
- Busy Bee will repair or replace the item at our discretion and subject to our inspection.
- Repaired or replaced items will be returned to you pre-paid by our choice of carriers.
- Busy Bee reserves the right to refuse reimbursement or repairs or replacement if a third party without our prior authorization has carried out repairs to the item.
- Repairs made by Busy Bee are warranted for 30 days on parts and labour.
- Any unforeseen repair charges will be reported to you for acceptance prior to making the repairs.
- The Busy Bee Parts & Service Departments are fully equipped to do repairs on all products purchased from us with the exception of some products that require the return to their authorized repair depots. A Busy Bee representative will provide you with the necessary information to have this done.
- For faster service it is advisable to contact the nearest Busy Bee location for parts availability prior to bringing your product in for repairs.