

INSTRUCTION BULLETIN

& MAINTENANCE MANUAL

FOR CTD 200R SERIES
MODELS M25R, F255R,
F255RHC, M25RHC & CM325R

CTD MODEL NO: _____

CTD SERIAL NO: _____

MANUFACTURE DATE: _____

DISTRIBUTOR PURCHASED THROUGH:

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CTD MACHINES

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Machine Requirements:

Cutting Capacities

Models M25R & F255R

M25R/45° Mitre: Maximum Cutting Capacity

12" Blade Capacity (305mm)

2-1/2" (64mm) High x 4-1/4" (108mm) Wide

3-1/2" (89mm) High x 4" (101mm) Wide

Cutting Capacity with fences set at centerline:

45° Mitre: 2-1/2" (64mm) High x 3-1/2" (89mm) Wide

90° Cutting: 2-1/2" (64mm) High x 5" (127mm) Wide

M25R & F255R/90° Cutting:

12" Blade Capacity (305mm)

2-1/2" (64mm) High x 7-1/2" (191mm)

3-3/4" (95mm) High x 3-3/4" (95mm) Wide

Model CM325R

90° Straight Cut:

2-1/2" (63mm) High x 7" (178mm) Wide

4" (101mm) High x 4" (101mm) Wide

45° Mitre:

3-1/4" (82mm) High x 5" (127mm) Wide

3-1/2" (89mm) High x 3-1/2" (89mm) Wide

90° Front to Back/45° Compound:

1-1/2" (38mm) High x 5-1/2" (140mm) Wide

1" (25mm) High x 7" (178mm) Wide

Models M25RHC & F255RHC

14" Blade Capacity (356mm)

M25RHC/45° Mitre: Maximum Cutting Capacity

5" (44mm) High x 7.5" (190mm) Wide

M25RHC & F255RHC/90° Max Cutting:

5" (44mm) High x 9" (229mm)

Cutting Capacity with fences set at centerline:

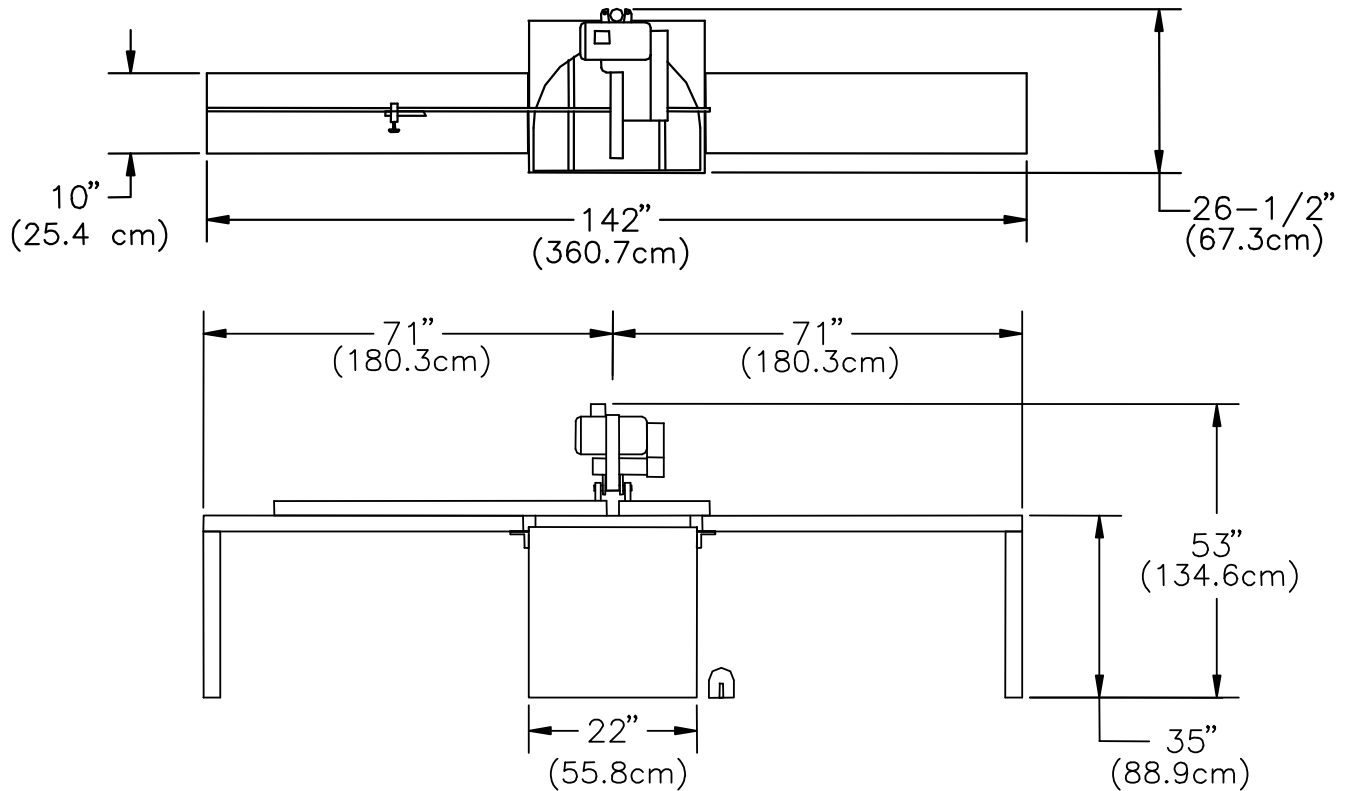
45° Mitre: 5" (44mm) High x 5" (127mm) Wide

90° Cutting: 5" (44mm) High x 6.625" (168mm) Wide

Electrical Requirements: Based on one motor per machine

<u>Motor Size</u>	<u>Req. Amperage</u>	<u>Breaker Needed</u>	<u>Motor Size</u>	<u>Req. Amperage</u>	<u>Breaker Needed</u>
2 H.P 3Ph 208V	5.7 amp	20 amp	2 H.P 3Ph 460V	2.7 amp	20 amp
2 H.P 1Ph 230V	12.6 amp	25 amp	3 H.P 3Ph 230V	7.4 amp	20 amp
2 H.P 3Ph 230V	5.4 amp	20 amp	3 H.P 3Ph 460V	3.7 amp	20 amp

Space Requirements



Pneumatic Requirements: (if applicable) 1 CFM per 10 strokes at 75 PSI (.043 cubic meters at 5.4 kg/cm²)

Dust Collection Requirements: 800 CFM at 2" outlets

Cutting Tool Requirements: Wide, heavy, rigid plate 12" blades: .100 to .110 plate

Installation and Set Up:

The CTD saw you have purchased is designed to cut wood, aluminum, plastic and steel, with, of course, the proper blade and conditions. For the material you are cutting, please refer to the cutting instructions for each material type. The 200R Series machines use a NEMA 56 Frame 2 H.P., 3450 RPM, 60 Hertz TEFC Motor. CTD uses a speed-up so that the blade will run at approximately 11,000 SFPM on a 12" blade.

IMPORTANT: Before operating saw, please be sure to read the "SAFETY INSTRUCTIONS TO THE OPERATOR" (see Page No. 7).

Note: The floor stand must be shimmed, leveled and bolted to the floor, or framed in to eliminate vibration. Use holes provided in bottom of floor stand. All machines have been completely assembled at the factory, then disassembled for shipment.

Assembly of Floor Stand, Support Tables and Measuring Gages:

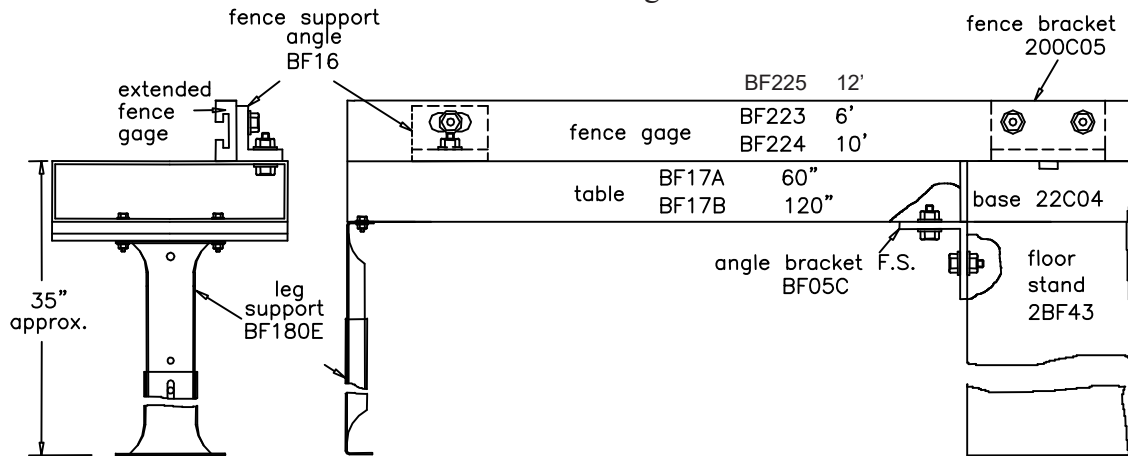
Standard Machine—The standard model has been completely assembled. Fences are set at the centerline of the blade (see Diagram "D" on Page No. 5). Adjust fences forward if necessary for your particular material. The machine base must be level. The incoming material and outgoing material must lay flat on the machine base (see Diagram "F" on Page No. 10).

Floor Stand Model—The 200R and 300R Series base is attached to the Floor Stand by means of three hex cap screws bolted from the bottom of the base. The Floor Stand must be shimmed and leveled, and, if necessary, bolted to the floor to eliminate vibration. The F255R is attached with (2) socket cap screws from the top in front, and (1) hex cap screw from the bottom in the rear.

Assembly of Tables to Floor Stand:

1. Assemble leg to table with 3/8-16 bolts and nuts provided. Turn table upside down and attach leg to table with leg rising vertically. *Note:* The hole in the table (when mounted properly) should be toward the back of the table and at the far end from the blade to attach Fence Support Angle, P/N BF16 (see Diagram "A").
2. Attach Table, P/N BF17 to machine floor stand on Angle Bracket, P/N BF05C. Use 3/8-16 bolts and nuts provided on angle bracket.

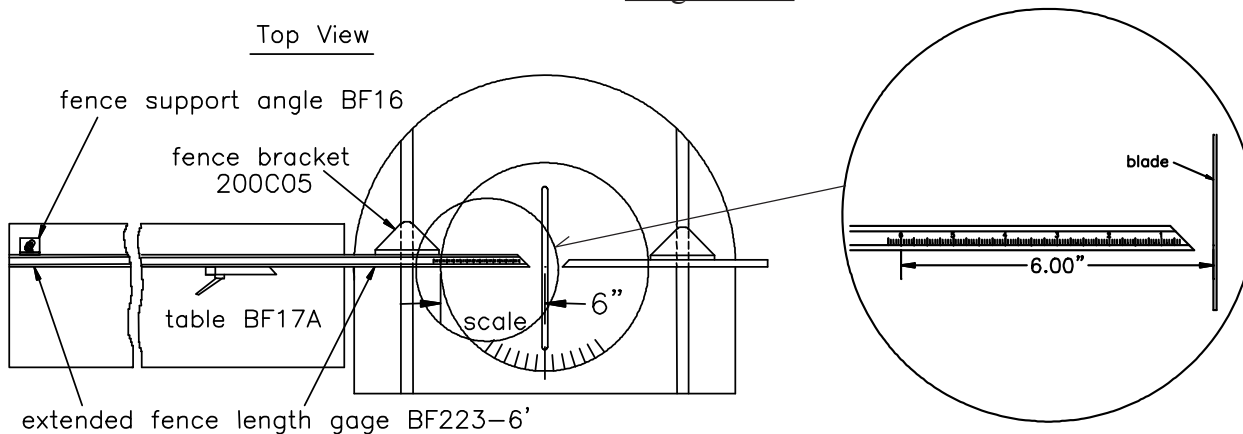
Diagram "A"



Attaching Extended Fence Gage:

1. Place Extended Fence Gage (5/8 x 2" material) on table. Bolt to fence bracket with screws provided. Adjust fence gage so measurement rule is correctly set:
 - A. With a scale or ruler touching the side of the tips of the blade, measure a distance away from blade. Be sure the ruler and the tape on the fence gage read the same. This may be visually deceiving. Use a 90° square to check.
 - B. Adjust fence, left to right, as necessary.
 - C. Both fences, left and right, must be in perfect alignment. Use a long straight edge for this purpose (see Diagram "D" & "E").
 - D. Attach fence support angle to fence and table.

Diagram "B"



Blade Installation:

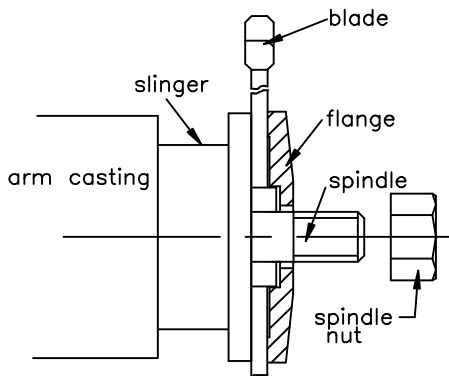
Before setting blades on spindle, *always shut off or disconnect air supply*. With **Motor OFF** and **Power Disconnected**, rotate Lower Blade Guard (p/n 200A270) up into Main Blade Guard (p/n 200A26L or R). Slide link puller (p/n 200M320) off puller screw and bushing through large hole on slot. Remove four machine nuts on Blade Guard Cover (200F250L or R). The entire Lower Blade Guard Cover Assembly (p/n 200E250L or R) comes off as one piece, exposing spindle nut and flange. (Refer to Diagram "D" on Page No. 5.).

Blade Installation (continued):

1. Remove Spindle Nut, P/N 2B1P36 or 2B1P37 and Outer Flange, P/N 200BM03. If necessary, hold blade in hand with rag or lower blade into a piece of wood, and loosen spindle nut by pushing down on a 15/16" wrench.
2. Place blade on spindle with tips pointing down. Make sure Slinger (inner flange), P/N 200BM04, and blade surface are **clean** before putting blade on spindle. This is a critical surface and is ground within .0005 flatness. Any debris or dust will wear this surface. Wipe both surfaces (blade and slinger) with a clean rag.
 - A. The blade must **ALWAYS** rotate to the rear of the machine on the underside of the blade (see Diagram "D"). **Always check rotation before cutting a piece of material.**
3. Replace Outer Flange, P/N 200BM03 and nut as before and tighten (refer to Diagram "C"). Pull up with 15/16" wrench. Do not over-tighten. Snugging the blade is all that is necessary.
4. Replace Blade Guard Cover Assembly as before making sure Lower Blade Guard covers blade.

If blades were purchased from CTD, your machine has been set with your blades. If not, blade diameters may vary. Check to see if the blade contacts the base or disc in the down position. If repositioning is necessary, adjust down stop bolt located under Arm casting, P/N 200BC01L or R.

Diagram "C"

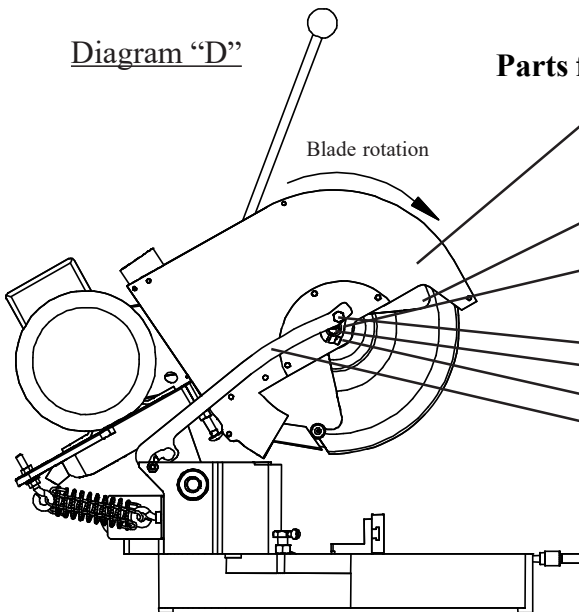


*These machines are general purpose in their design, therefore the **user** should attach any additional guarding to the blade guard or table base if the cutting application causes **unsafe blade exposure**.*

*This label is attached to the blade guard. **Never put hand or fingers near or under the moving blade.** Use a piece of wood to remove short pieces from saw.*



Diagram "D"



Parts for Blade Guard Assembly-See exploded views on pages 20 & 21

- | | | |
|-----|------------|---|
| 1. | 200F250R/L | 12" N.S. Blade Guard Cover-200 Series |
| | 300F250R/L | 12" Cover- CM325R |
| 2. | 200A26R/L | 12" Main Blade Guard, Rt. Or Lt. - 200Series |
| | 300A26R/L | Main Blade Guard - CM325R |
| 3. | 200A270 | Lower Rotating Blade Guard- 1/2" pin |
| 4. | 200M265R/L | Bearing Housing Blade Guard Assy. |
| 5. | 200M261 | Rotating Pawl |
| 6. | 2B2P09 | Rotation Bearing for Housing |
| 7. | 2BM13 | Spacer Washers (3) for Pin |
| 8. | 200B1P267 | Shoulder Bolt Pawl |
| 9. | 200B1P268 | External Tooth Lock Washer |
| 10. | 200B1P269 | Teflon Spacer Washer (outside) |
| 11. | 200M320 | N.S. Blade Guard Link/Puller-200 Series |
| | 300M32 | Link Puller- CM325R |
| 12. | 200B7P35 | Rear Bushing for Link/Puller |
| 13. | 200B7P36 | Front Bushing for Link/Puller |
| 14. | 200B2P30 | Roller Bearing Lower Blade Guard |
| 15. | 200M36R/L | Rear Blade Guard Channel Rt. or Lt.-200 Series |
| | 300M36R/L | Rear Channel Rt. or Lt.- CM325R |
| 16. | 200M35 | Top Dust Tube Main Blade Guard- 200 Series & CM325R |
| | 300M35 | Rear Dust Tube Connector - CM325R |
| | 300A12 | Rear Dust Outlet 4" CM325R |

Blade Guard:

The blade and belt drive are enclosed. When the saw arm is lowered, the lower blade guard rotates up into the main blade guard. The blade continues through the work as the lower blade guard rotates up.

NEVER remove any blade guard part, exposing the blade.

Electrical Installation:

The CTD 200R Series Cut-Off Saws use 2 H.P. single or three phase 3450 RPM, 60 HZ TEFC (totally enclosed fan cooled) motors on a NEMA 56Z Frame. CTD uses a speed up drive so that the blade will run at approximately 3700 RPM. The motor is turned “ON” and “OFF” using the manual overload starter located on the top of the motor.

Electrical installation should be performed by a qualified and certified electrician. It is highly recommended that a *lock-out* or *disconnect switch* be located close to the machine between your main electrical panel and the machine. This disconnect switch is used to shut off power to the machine and should be used whenever the blades are changed, or at any time the machine is serviced and the blade is exposed. A manual overload starter has been provided as a standard feature. The starter protects the motor from overheating and will not allow the motor to restart itself after power outages or undervoltage situations. A Magnetic Starter is also available as an optional accessory.

Electrical Installation of Power to Starter by a Qualified Electrician:

All wiring from the motor to the starter has been completed and tested at the factory several times.

The voltage has been clearly tagged. **DO NOT CONNECT ANY VOLTAGE THAT IS DIFFERENT THAN THE TAGGED VOLTAGE, AS THIS MAY CAUSE SEVERE DAMAGE AND DANGER.** Consult the factory if any changes are needed.

Bring power lines to the top of the Manual Overload Starter or Magnetic Starter. Use dust proof connectors if available.

Single Phase Motors:

Connect leads to L1 (line 1) and L2 for single phase motors. (See Wiring Diagram for Single Phase Motors below.) Green ground wire must be grounded to enclosure. If using type “SO” wire and plug, use a romex connector through starter box and a grounded plug. *Be sure to check rotation.* The blade must rotate down and to the rear on the underside of the blade (see Diagram “D” on Page No. 5). If a change in rotation is necessary, switch the #8 and #5 wires in the electrical box on the motor. Rotation is set at factory for single phase motors.

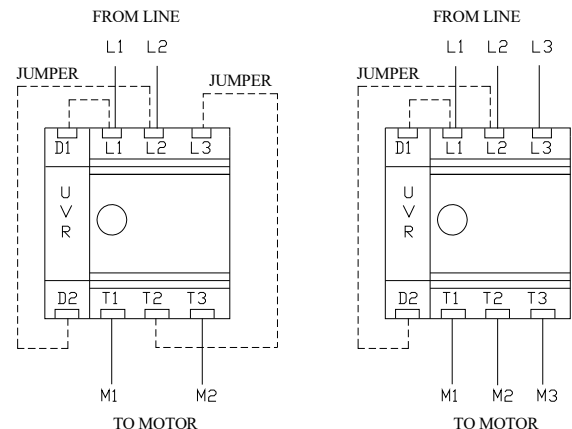
Three Phase Motors:

Connect incoming power line leads to L1 (line 1), L2 and L3. (See Wiring Diagram for Three Phase Motors below). Green ground wire must be grounded to enclosure. *Be sure to check rotation* as polarities may be different. The blade must rotate down and to the rear on the underside of the blade (see Diagram “D” on Page No. 5).

If a change in rotation is necessary, reverse any two of the incoming power wires. *Example: If the blades are running backwards and incoming wires are connected White L1, Black L2, Red L3, switch the Black wire with the Red so that Black is connected to L3 and Red is connected to L2. This will change the motor to rotate properly.*

MANUAL OVERLOAD STARTER

Motor Size	Motor Load Amperes		
	110 Volt	220 Volt	440 Volt
2 H.P. 1 Phase	25 amps	12.6 amps	N/A
2 H.P. 3 Phase	N/A	5.4 amp	2.7 amps
3 H.P. 3 Phase	N/A	7.4 amp	3.7 amps



SINGLE-PHASE WIRING

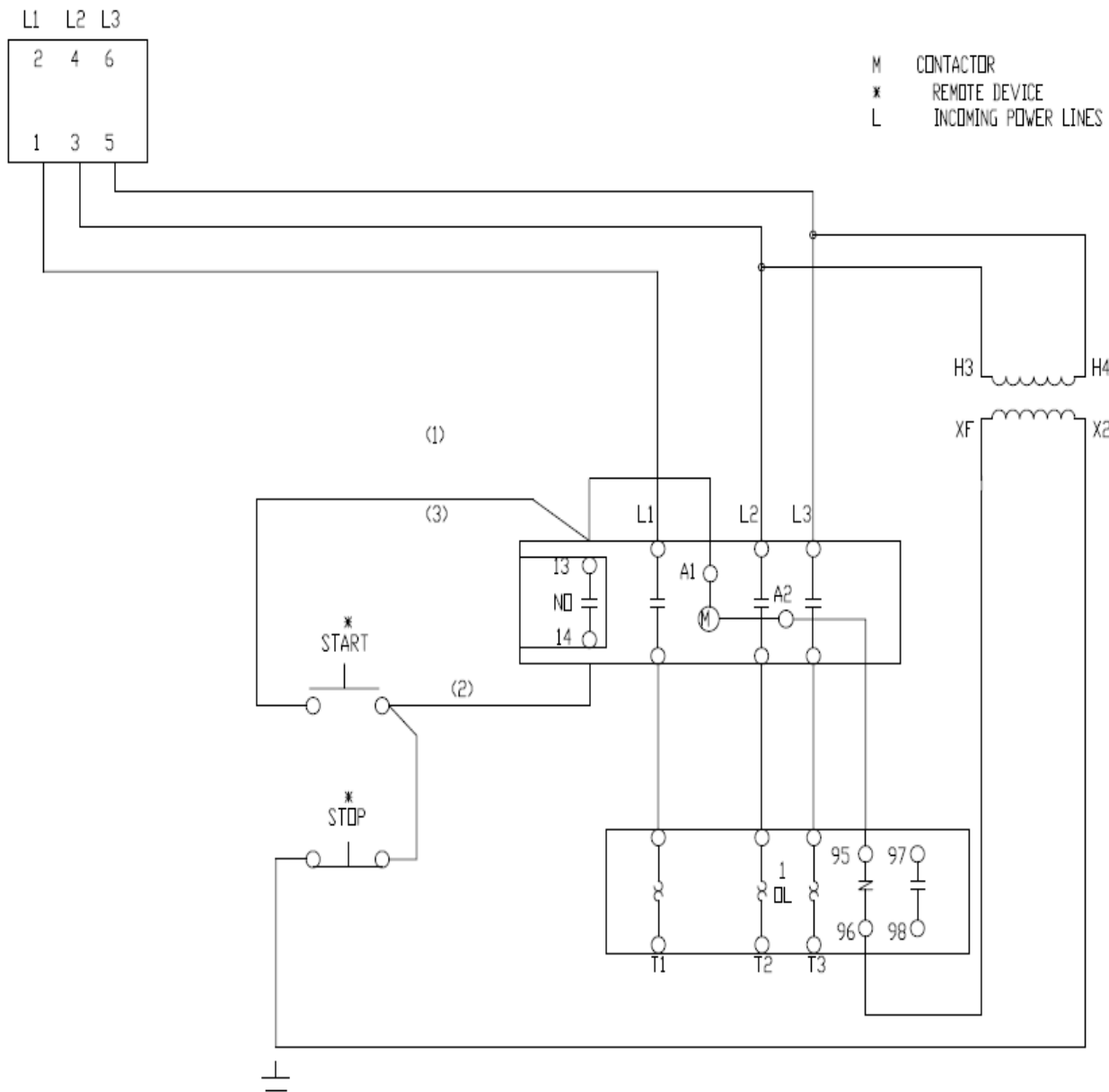
THREE-PHASE WIRING

Safety Instructions to the Operator:

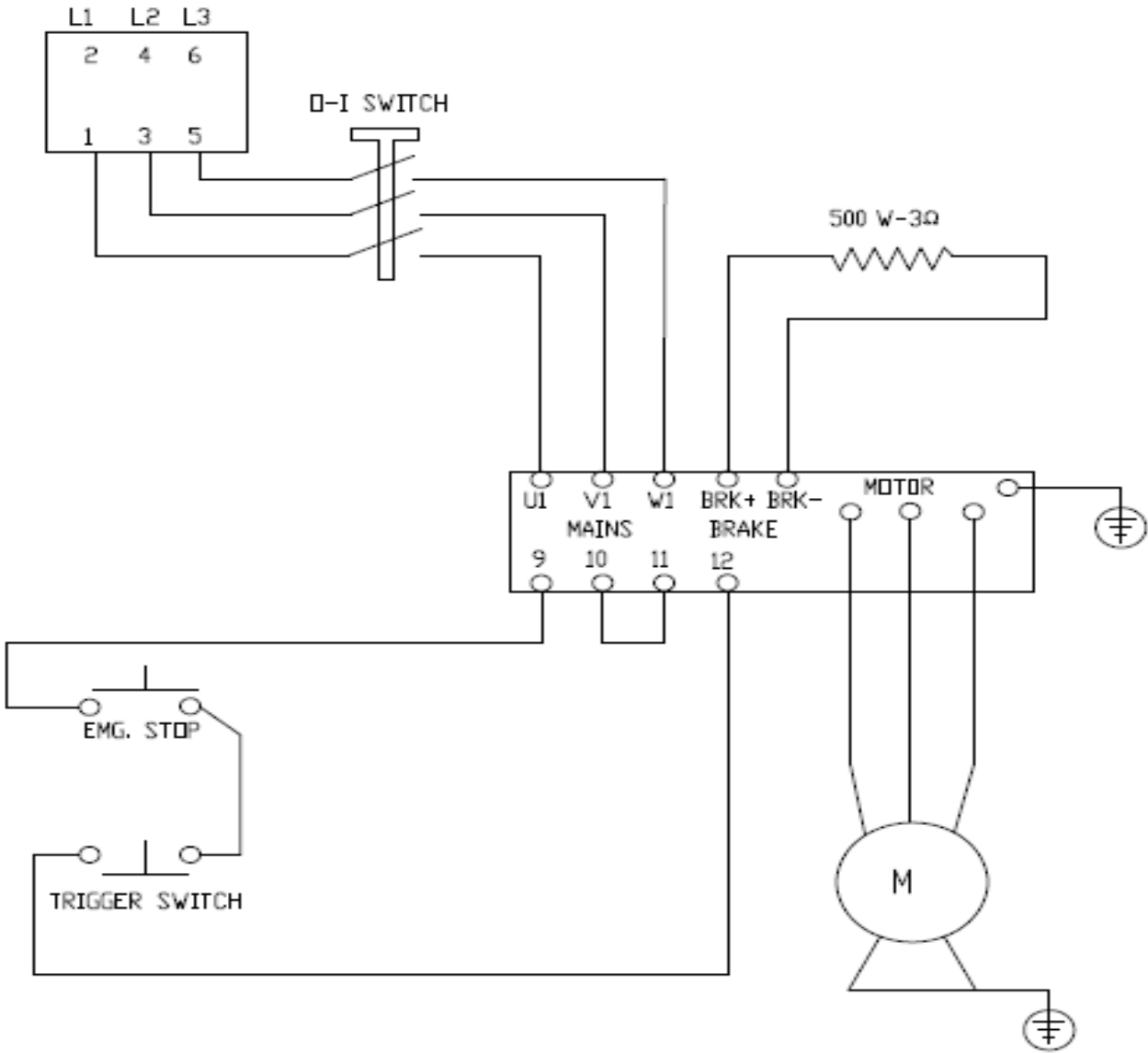
1. *KNOW YOUR CTD SAW.* Read this instruction manual carefully. Learn the operation, application, and limitations, as well as the specific potential hazards peculiar to this machine.
2. Avoid accidental starting. Make sure switch is **OFF** before plugging in power cord. A Magnetic Starter is provided as an optional accessory to give the operator added protection. (OSHA required by user.)
3. *Always* use a plug equipped with a ground.
4. *Always* keep blade guard in place. Do not wire-up or chain-up, so that blade is exposed.
5. Be sure all unnecessary tools are removed from machine before turning on power.
6. Use safety goggles. Also use a face or dust mask if operation is dusty.
7. Support work. To maintain control of work at all times, it is necessary that material be level with cutting surface.
8. Wear proper apparel. Do not wear loose clothing or jewelry. Do not wear a tie or gloves. These items can get caught in the moving parts of the machine.
9. Do not over-reach. Keep your proper footing and balance at all time.
10. Maintain your machine in top condition. Use proper blades. Clean machine weekly for proper maintenance.
11. Keep work area clean. Cluttered areas, benches and slippery floors invite accidents.
12. Avoid dangerous environments. Keep work area well illuminated.
13. Wear ear protection if exposed to long periods of very noisy shop operations.
14. Keep visitors away. All visitors should be kept a safe distance from work area.
15. Do not force the machine. The saw will do a better job and be safer to operate at the speed for which it was designed. Forcing the saw can be very hazardous to the operator.
16. Use recommended accessories. Use of other accessories may be hazardous. Use this instruction manual or consult CTD for the proper accessories available.
17. Do not drown the blade using a steady stream of coolant when cutting non-ferrous materials. Only spray the work to cool it.
18. Be sure to use the proper blade for the particular material to be cut.
19. Disconnect power cord before adjusting, servicing, and before changing belts, or for installing accessories.
20. Safety is a combination of operator *COMMON SENSE* and *ALERTNESS* at all times when the machine is being used.
21. ***WARNING!!! DO NOT ALLOW FAMILIARITY (GAINED FROM FREQUENT USE OF YOUR SAW) TO DULL YOUR AWARENESS!! ALWAYS REMEMBER THAT A CARELESS FRACTION OF A SECOND IS SUFFICIENT TO INFLICT SEVERE INJURY!!***

Wiring Diagrams

208 VOLT SINGLE MOTOR ONLY



F255 VFD WIRING



How to operate the 200R Series Single Cut-Off Saws:

Before operating the machine, please read the “SAFETY INSTRUCTIONS TO THE OPERATOR” above. Other important information and features need to be learned before operating the machine.

Rotation:

The blade must rotate to the rear of the machine on the underside of the blades (see Diagram “D” below).

Blade Guard:

The blade and belt drive are enclosed. When the saw arm is lowered, the lower blade guard rotates up into the main blade guard. The blade continues through the work as the lower blade guard rotates up. **NEVER remove any blade guard part, exposing the blade.** These machines are general purpose in their design, therefore the USER should attach additional guarding to the blade guard or table base if his cutting application causes **unsafe blade exposure**.

Positioning the Work:

Fences should be set so that the centerline of the work is either to the front, or on the centerline of the blade (see Diagram “D”). Fences must be adjusted so that short pieces cannot be trapped between the blade and the fences. The Fences are adjustable side to side to close the gap. Gap should be 1/16” to 1/8”. Fences must be in line with each other—front to back (see Diagram “E”). If very short pieces are to be cut, a piece of wood or aluminum can be fixed to the table to make a sub-table, which will stop pieces from being trapped between the blade and the saw slot (see Diagram “G” on Page No. 10). New machines are provided with a Chip Breaker which eliminates the need for a subtable.

Diagram “D” Blade Rotation

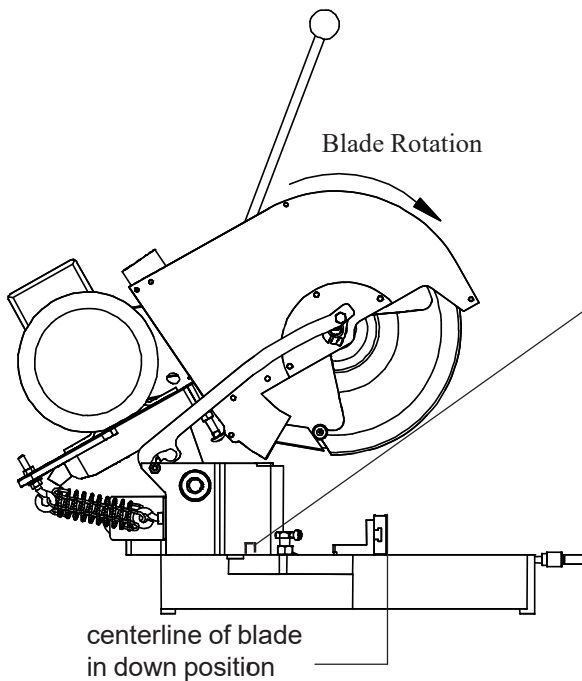
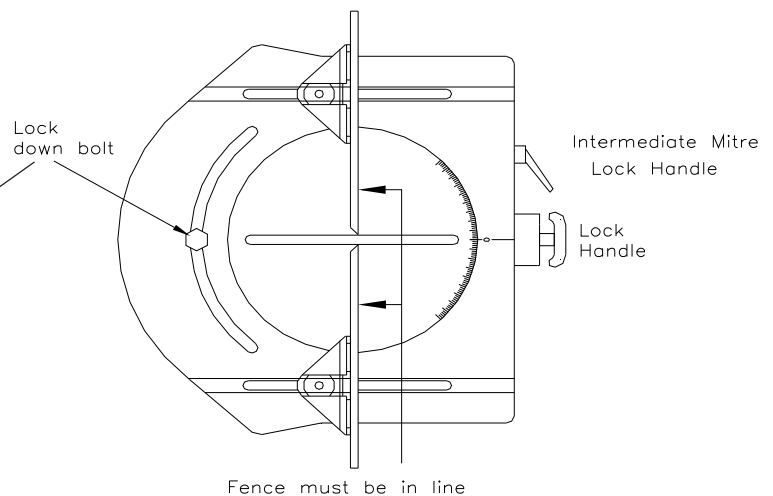


Diagram “E”



M25R BASE

Angle Adjustment on Model M25R:

To change the angle:

1. Pull back spring loaded mitre locking pin & handle assembly & rotate to the right or left. This prevents the pin from engaging. Mitre lock pin & handle will lock in the open position.
2. Make sure mitre lock down bolt (located in the center of the pivot bracket-see Diagram “D” & “E”) is loosened.
3. To lock in at preset angles, rotate sawhead and disc near the desired angle aligning with zero mark on base.

4. Turn mitre locking handle to center position, and the spring loaded pin & handle will automatically engage into preset angle settings. The preset angle settings are 45°, 30°, 22 ½°, 15°, 0° on both sides of the centerline or zero point. **Do not let the spring loaded mitre locking pin & handle engage in several degree settings as you rotate the mitre base disc. This will cause excess wear on preset angle settings.**
5. For all angles that are not preset, follow instructions under #1 to lock handle in the open position. Simply align degree quadrant on disc with zero mark on base and tighten down intermediate mitre lock handle located in base.

Hand Operated Machines and Cutting Speed:

The blade is rotating at approximately 3700 RPM. When moving the blade through the material, the blade must **NEVER** be allowed to dwell in the work. If fine finishes are required:

1. Use a sharp blade. **Do Not Force the Cutting Action**, causing the motor to stall.
2. Use a **constant, even pressure** when cutting through material.

Spring Return:

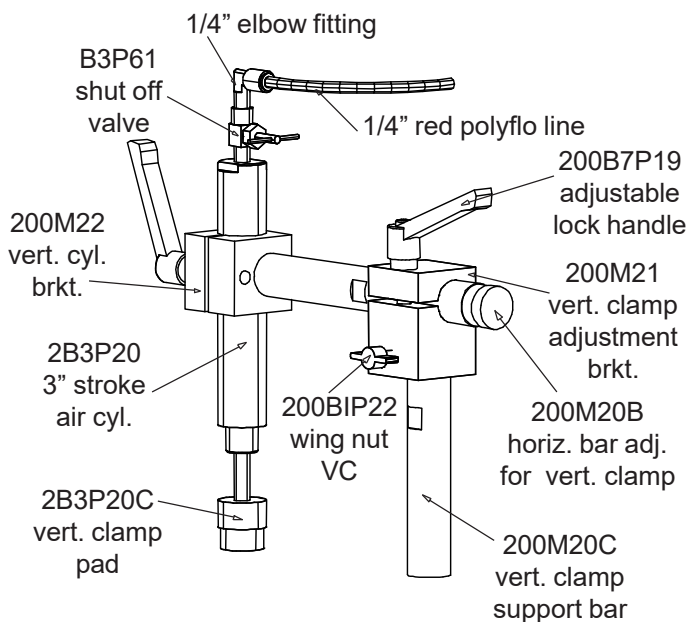
Each sawhead is equipped with a drawbar return spring. The function of the spring is to return the sawhead to the rest position upon release of the handle. **Do not adjust the spring pressure.** If the spring breaks, **Replace It Immediately!** *Make sure spring is attached properly (see Diagram "D" on Page No. 8) and Never use a hand operated machine without the return spring in place.*

Clamping and Work Slippage:

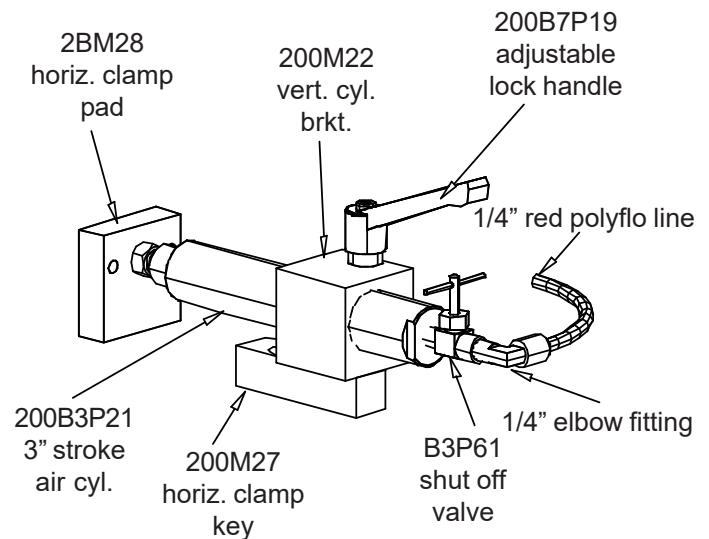
The work must never be allowed to move or vibrate as it is being cut. When the work is positioned against a stop, it **must be clamped** either by hand holding or by pneumatic air clamps. **Never allow unclamped work between the blade and the stop, as the blade can grab the material and throw it, thereby causing damage to the blade, the machine, and possibly harming the operator.**

CTD offers both Horizontal and Vertical Clamps. The Horizontal Clamp pushes the material backwards against the rear fence and is mounted in the keyways of the base. A Vertical Clamp holds the material down, against the table base, and is mounted through and on top of the fence bracket. Both clamps are offered as optional extras and are highly recommended. If you purchased your machine with an Air Downfeed of the saw, the clamps are actuated prior to activating saw head by depressing the Foot Valve. An Anti-Tie Down, Two Hand Control drives down the sawhead. If clamps are purchased using a hand operated machine, then the clamps will move into position by pulling the saw head down slightly. This releases the Automatic Valve (AV) to supply air to the clamps. **Be careful not to overtighten clamp cylinder bracket on the cylinder.** This will cause irregular function of the cylinder.

200R Vertical Clamp Assembly

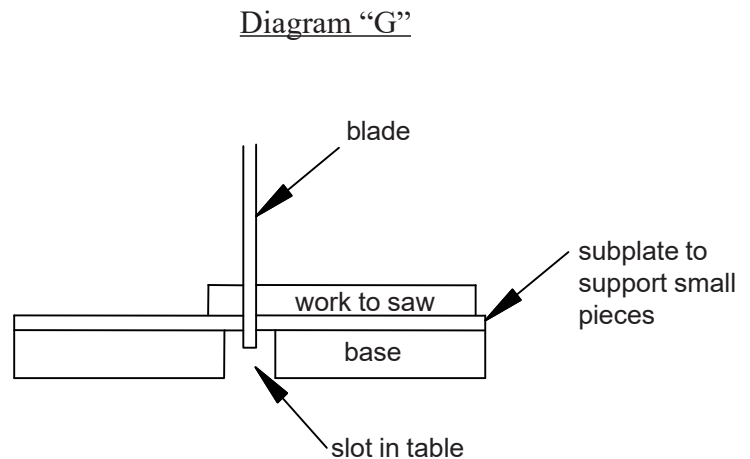
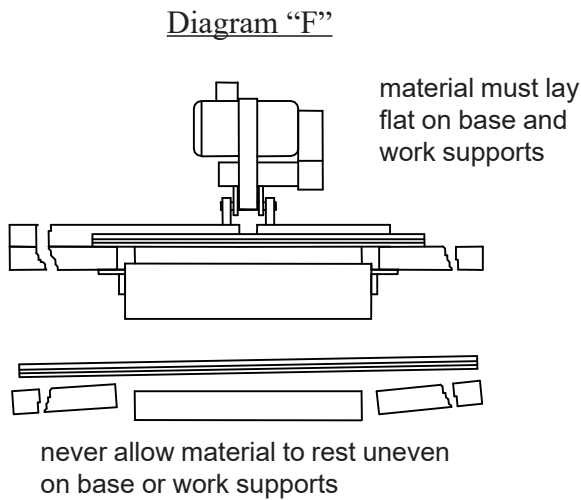


200R Horizontal Clamp Assembly



Cutting the Material:

The material to be cut (both the incoming pieces and the cut pieces) must lay flat on the table base, or the blade may bind the material. ***THIS CAN DAMAGE THE BLADE OR THROW THE CUT PIECE OUT OF THE SAW, POSSIBLY HARMING THE OPERATOR*** (see Diagram “F”).



Check your material for squareness using a 90 degree square. Material that is out of square will move when it is cut, causing irregular mitres. (See “**Irregular Mitres**” on Page No. 16.) Additional tooling may be required. Consult factory for more information.

Removing Material From the Blade:

If the machine is stalled while cutting, immediately shut saw off and disconnect power. ***NEVER attempt to free the blade while the motor is still on.*** If a piece is bound on the blade, do not attempt to raise the blade out of the material. Instead, tap the piece down on both sides of the blade with light pressure until the piece has freed the blade.

Cutting Wood:

While wood is generally soft and simpler to cut than aluminum, it requires that the material be held in place as the blade passes through the material. CTD suggests using a Carbide Blade with Alternate Top Bevel (AT) for lighter wood sections and picture frame mouldings. This type of blade gives the finest of finishes. No ***ONE*** blade will cut all materials perfectly. High lacquers or mica mouldings require a special modified blade for best results. Consult factory. ***Never use a wood blade to cut aluminum,*** as it will chip and fracture the carbide tips of the blade.

Cutting Aluminum:

As with cutting any material, it is important that aluminum be clamped properly. Precision blades are required for accurate cutting. CTD suggests and uses a Triple Chip Grind on all its non-ferrous Carbide Blades. When cutting aluminum, or other non-ferrous materials, it is essential that the blades be lubricated with a Sawblade Lubrication System or other blade lubricating system for the finest finish. See “**Sawblade Lubrication System**” or “**CTD Biolubrication System**” on Page No. 11 for more details.

Abrasive Cutting:

When abrasive cutting, cut at the fastest speed rate the motor will allow. ***Do not stall the motor.*** Blade will glaze as a result of too slow a feed rate, or too hard a composition. Abrasive blades may break due to movement of the work, twisting of the blades, or glazing of the cutting edge. Seldom do abrasive blades break because of too fast a feed rate. The thinnest section of material should be presented to the blade. ***For example, when cutting 1” x 2” stock, stand the piece up so the 1” edge is cut.*** Abrasive blades have the tendency to wander when lengths of less than 1/2” are cut. The burr will normally be heaviest on the cut piece. To eliminate this condition, the cut pieces should be clamped.

Cutting Plastic:

Plastic can be cut as easily as wood on the 200R Series Saws. However, because of its elastic properties, the material can deflect as the blade passes through. Therefore, it is important to clamp the material as close as possible to the blade and support it by use of fixtures. CTD offers Horizontal and Vertical clamps for this application (see Page No. 9) Additional tooling may be required. Special carbide blades are available for cutting plastics.

Combination Blades:

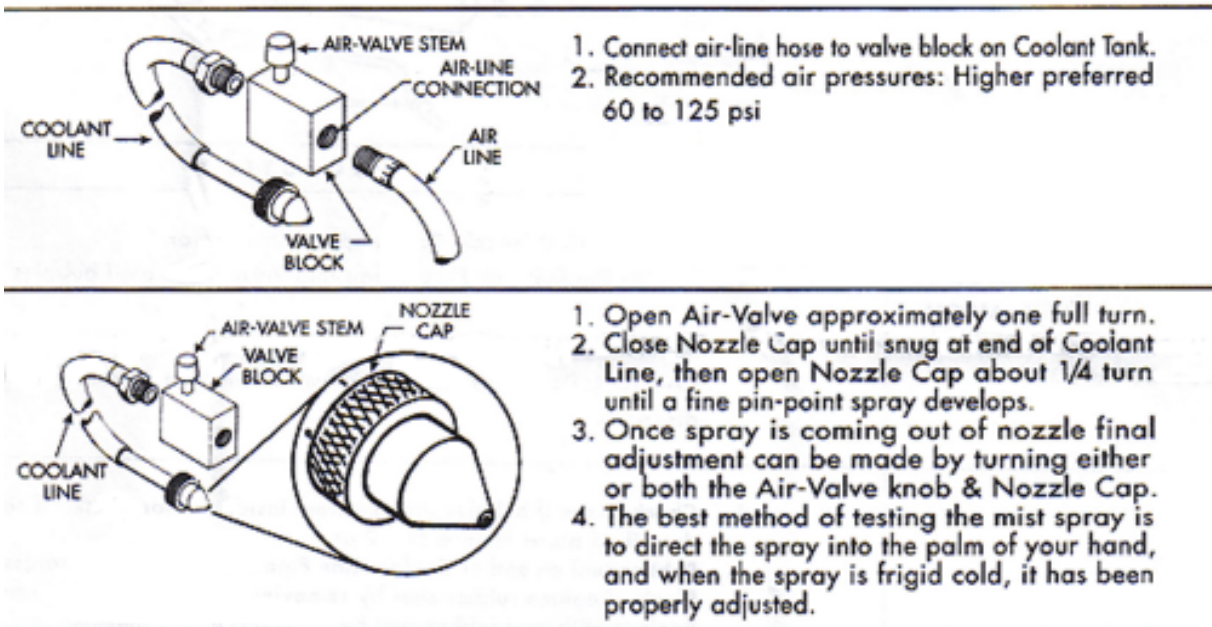
Any combination blade is basically an aluminum cutting blade. Significant blade life in between sharpenings will be lost if a blade is used for cutting both aluminum and wood. The amount of production for either wood or aluminum should be the determining factor in the assessment of the particular blade type to be used. Please consult factory.

Sound Levels:

During normal running of the machine without cutting, the typical sound range will be between 60-85 db. Due to the wide variety of blades available, CTD cannot warrant that maximum allowable OSHA sound limits can be met--particularly during the cutting cycle.

Sawblade Lubrication System:

The Sawblade Lubrication System is used when cutting aluminum or other non-ferrous materials. This system normally uses a Water Soluble Oil mixture of *10 parts water to one part oil*. The system operates by syphoning the lubrication up the line to the spray nozzle. Any air leak will cause inconsistent fluid flow to the spray nozzle. ***BE SURE*** your fluid is free from chips and other debris. A fluid container supplied with the machine contains a One-Way Check Valve, Part No. B3P96, at the end of the clear fluid line. This check valve helps to hold the lubrication in the line. However, after a couple of minutes, the lubrication or oil will back-flow into the container. Priming of the system may be necessary if the machine has been standing without use. The system may be shut off by closing the toggle valve next to the vacuum pump. The fluid must be clean or the Vacuum Pump will clog.



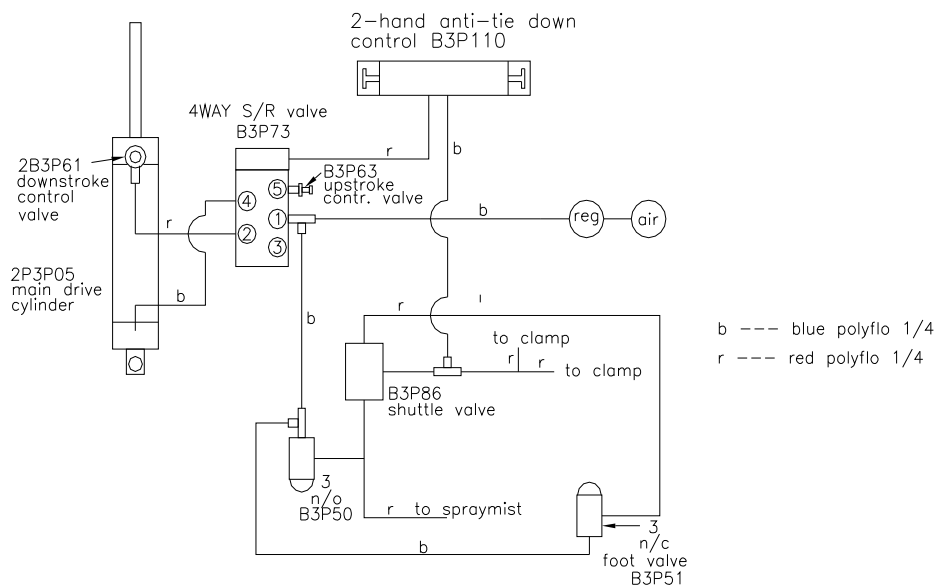
CTD Bio Lubrication System:

The CTD biodegradable lubrication system operates by pulse spraying a minute amount of biodegradable lubricant directly on to the saw teeth of the blade in time-measured increments. The majority of the lubricant then dissipates with the heat of the cutting action. Chips coming off the blade are hot and dry, and are more easily collected. (See specific instructions included with system.)

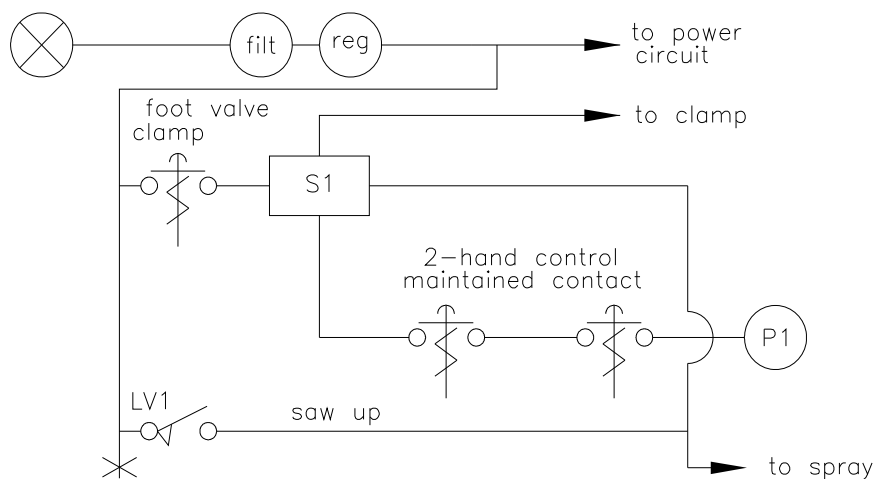
200R and 300R Series Air/Pneumatic System:

The air pneumatic system on the 200R Models and the CM325R is simple to use and understand, and easy to operate. The main components of the air system are shown below in the Air Circuit Piping Diagram. The system operates using a Two-Hand Anti-Tie Down Control for safety. Included with the Air Pneumatic System are the main drive Cylinder and Valves, an Air Filter/Regulator, and one Vertical Pneumatic Clamp. The Vertical Clamp is actuated prior to the activation of the saw head via a Foot Valve, P/N B3P53E, (recommended for safety) which in turn energizes the Two-Hand Control. Note: Pressure must be maintained on the Foot Valve until Two-Hand activation. The system will not allow unclamped material to be cut. The two hand buttons must be depressed at the same time for the saw head to travel downwards. The system operates first by depressing the Foot Valve, P/N B3P53E. This gives a signal to the Shuttle Valve, P/N B3P86, to allow air to pass to the Two Hand Anti-Tie Down Control, P/N B3P110. By depressing both palm buttons simultaneously (at the same time), a signal is given to the main 4-Way Control Valve, P/N B3P73 to change direction—allowing air to pass to the main drive Cylinder, P/N 2B3P05. The Cylinder pushes the saw head down. The speed of descent is controlled by the Speed Control Valve, P/N 2B3P61, located on the Cylinder. By releasing the Two-Hand palm buttons, air is shut off to the main 4-Way Valve, it shifts direction and the main drive cylinder reverses.

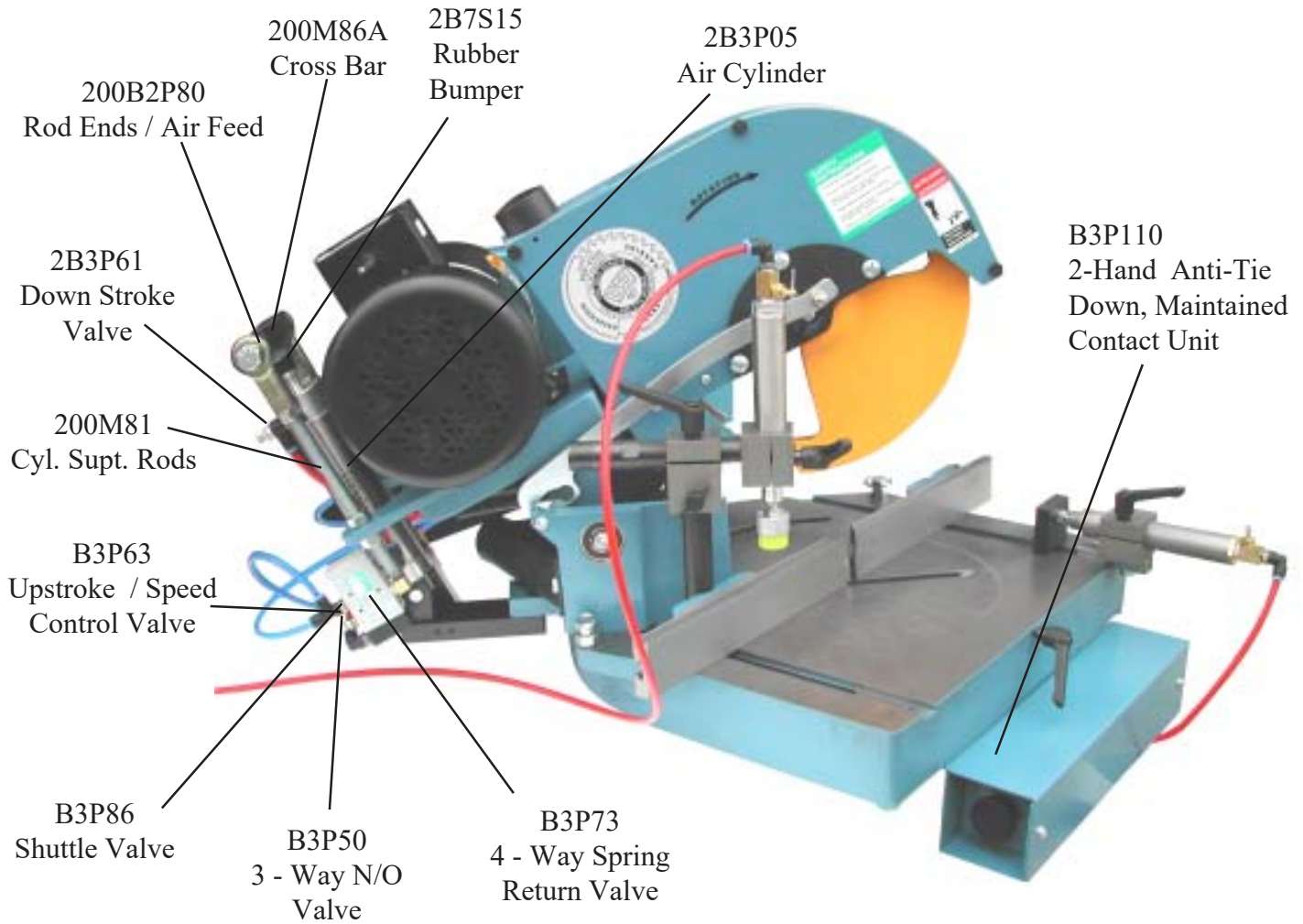
Air Circuit Piping Diagram



Air Schematic



200R Air/Pneumatic System Diagram



No.	Part No.	**	Description.
1	B3P110	2-Hand	2-Hand Anti-Tie Down Control Assembly
1	2B3P05		Air Cylinder, drive for saw head
1	2B3P61		Flow Control Valve, speed of saw down
1	B3P73	P1	4-Way Spring Return Valve, main control valve
1	B3P50	LV1	3-Way Normally Open (N/O) Valve, controls accessory items SLS and VC3
1	B3P63		Upstroke Valve, speed of saw up
1	2B7S15		Rubber Bumper
1	B3P154		FR Unit with Auto Drain
2	200M81		Cylinder Support Studs
2	200B2P80		Rod Ends / Air Feed
1	200M82		Cylinder Clevis
1	200M84		3 Way Valve Bracket
1	200M87		Power Feed Cylinder Support Bar
1	200M86A		Rotating Cross Bar for Cylinder
1	B3P86	S1	Shuttle Valve
1	B3P51	FV	3-Way Normally Closed — Foot Valve

See Exploded view on page 24 and additional Parts on Page No. 28

**Refer to Air Schematic on Page No. 12

Air Supply:

The air supply must be turned off and all electrics disconnected before making adjustments on the power feed. A working pressure of 75 PSI (pounds per square inch at 5.4 kg/cm²) is required. An industrial-type compressor of at least 3 CFM (cubic feet per minute) is recommended. An additional 3 CFM is required for Spray Mists. A conveniently located valve should be supplied by the user to shut off the air line. **Arms should be raised or lowered *by hand* when setting up machine.** The machine must use clean, filtered air. The speed of descent of the saw head will vary if the air pressure varies. An Air Filter/Regulator/Lubricator is essential.

Air Cushion Bearing System:

The machine you have purchased comes with a built-in air cushion bearing system that works off your air supply. If you have purchased an air/pneumatic system, then the air bearing will be charged when you add air to the machine.

If the machine you purchased is a manual machine, then the 1/4" blue air line at the back base of the machine must be connected to at least 75lb PSI of air pressure for the bearings to work properly.

The operator should have the air switch in the "off" position when not changing the mitering angles. The air bearing is self cleaning and self lubricating when used with the CTD air filter/regulator/lubricator. If the machine was bought without the FRL, then every 2 months, 3 drops of light machine oil should be placed into the blue 1/4" inlet air line at the back of the machine.

FR:

An Air Filter/Regulator is installed ahead of the air inlet to the machine. This system helps prevent foreign material from entering the system. It also provides lubrication in the air supply which helps prevent valves and cylinders from sticking. The FR is comprised of two different components.

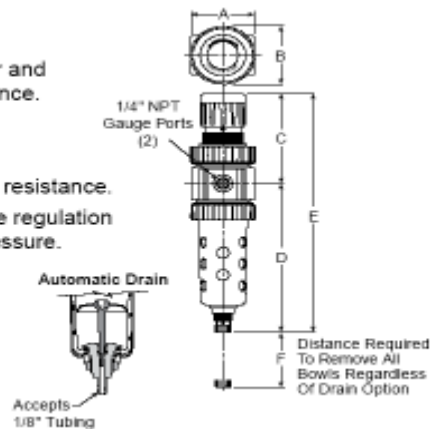
1. The Air Filter Bowl is located on the left side and is provided with an automatic drain. This collects and then releases foreign matter and condensation collected by the air filter.
2. The Pressure Regulator, which is located on top of the air filter, controls the amount of air pressure allowed into the system. An operating pressure of 75 PSI @ 5.4 kg/cm² is required. (This is set at the factory.)

Air Filter/Regulator



Features

- Space saving package offers both filter and regulator features for optimal performance.
- Excellent water removal efficiency.
- Rolling diaphragm for extended life.
- Removable non-rising knob for tamper resistance.
- Quick response, and accurate pressure regulation regardless of changing flow or inlet pressure.
- 40 micron filter element standard, 5 micron and adsorber available.
- High Flow: 1/4" - 30 SCFM[§]
3/8" - 40 SCFM[§]



Trouble Shooting the Pneumatic System for Downfeed of Saw Head:

If the Air Feed no longer has smooth action, check the Downstroke Control Valve, P/N 2B3P61. If there is no Speed Control, replace with Part No. 2B3P61. If air is leaking from the bottom of the cylinder, replace Cylinder with Part No. 2B3P05 (for 200R and CM325R).

4-Way Valve:

The 4-Way Valve is the main control, five port valve located on the Air Feed Unit. If the saw is sticking in the up or down position, the spool located in the valve probably is not shifting from side to side as necessary. This condition is caused by unclean air passing through the system. The internal parts become gummed up, and the air pressure can no longer shift the spool. A broken spring in the valve is another common cause. A 4-Way Valve Repair Kit, P/N B3P76, is available for the valve.

Air Hold Down Clamps for the Material:

Both Horizontal or Vertical Air Clamps are available and can be purchased as an optional accessory. These clamps pneumatically hold the material in place when the saw blades are cutting the material. If clamps are not purchased, the operator ***MUST HAND HOLD THE MATERIAL***. The clamps are controlled by a 3-Way Valve mounted on the bottom of the Power Feed Unit. When the machine is in the rest position, the Upstroke Stud contacts the 3-Way Valve, LV1. As soon as the Foot Valve is tripped, the clamps move into position. A manual shut-off for the clamps is provided should you not want to use the clamps for a particular material.

Foot Valve:

The Foot Valve, P/N B3P53E actuates the clamps into position. Once the Foot Valve is depressed, the Two Hand Anti-Tie Down Control is energized and ready to activate. As soon as the Two-Hand Control buttons are depressed, your foot can be removed from the Foot Valve. The clamp pressure will be maintained by Limit Valve #1, P/N B3P50.

Speed Control of Blade Movement:

The downstroke speed of the blades is controlled by the Speed Control Valve, P/N 2B3P61, located in the upper port of the main drive Cylinder, P/N 2B3P05. Adjust as required for best finish. The Upstroke Control Valve, P/N B3P63, is located in port No. 5 of the main control Valve, P/N B3P73. Simply loosen nut on machine screw (10-32 thread) and adjust *in* to slow down, or *out* to speed up.

Preventative Maintenance:

The 200R Series machines and CM325R are relatively easy machines to operate and maintain. Following is a weekly check list of General Maintenance items. The best preventative maintenance advice is to ***CLEAN THE MACHINE DAILY***, especially around the pivot points on the machine.

Lubrication and Adjustments of Bearings:

NO LUBRICATION OR ADJUSTMENTS ARE REQUIRED. All CTD cut-off saws are assembled using sealed, prelubricated ball bearings. The spindle and pivot assembly are constructed using preloaded belleville springs. These springs eliminate the need for adjustments of bearings and also greatly increase the life of the bearings. All air cylinders are “lube for life”.

General Maintenance Weekly Check List:

Always disconnect electrical power and air supply.

1. Keep machine clean—especially around pivot bracket and pivot bearings.
2. Blow off and clean around the cylinder
3. Check Air Filter Bowl for water and condensation build up.
4. Remove any scrap pieces and dust build up from inside floor stand (if purchased).
5. Check monthly;
 - A. For excessive belt wear
 - B. Make sure motor pulley set screws are tight.

Repair and Service:

Always use CTD factory authorized replacement parts and consult factory before making any repairs or adjustments which may be unclear.

Fence Alignment and 45° Angle Adjustment of Blades for M25R:

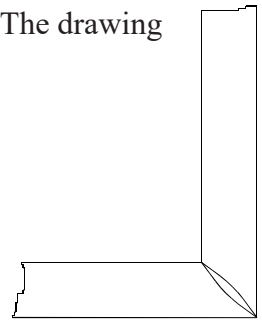
All machines are preset at the factory for perfect 90° and 45° mitre cuts. If any adjustments are necessary:

1. Check alignment of fences—left to right as shown in Diagram “E” on Page No. 8. Use a two foot steel scale or quality precision straight edge and lay flat on table base. Butt edge against fence bracket and long measuring gage (if purchased). Touch the outside corner of the straight edge. If one side of the straight edge pulls away from the fence, then the long fence gage is not in alignment with the left Fence, P/N 200M09.
2. Loosen 3/8-16 lock nut on Left Fence Bracket, P/N 200C05, and Fence Support Angle, P/N BF16. Clean all surfaces of dirt or dust, and re-assemble as before (see Diagrams “A” & “B” on Page No. 4).
3. Re-align right fence to left fence with your straight edge. Once you are sure both fences are in alignment, you now have a reference point to check your 90° mitre.

If adjustments of the 90° mitre settings are necessary, you will need a precision draftsman’s square. Check the 45° mitre by placing the square against the left fence and then sliding it over to contact the plate of the Carbide Blade. Touch the triangle against the steel plate of the blade—not against the tips. If an adjustment is necessary, please consult the factory

Irregular Mitres:

Irregular mitre cuts are almost always caused by out-of square material. Check your material with a 90° square and a straight edge. Material that has a high spot on the bottom will move, or roll forward as it is being cut (even with pneumatic hold down clamps), thereby causing the blade to cut more on the inside of the moulding than the outside. Another cause of irregular mitre cuts is too thin a blade plate thickness. Blade plate thickness should be .100 to .110 on 12” blades. Blades will find the easiest avenue to cut through material, and sometimes the blade plate will distort when cutting heavier sections. The drawing is an example of a cut when blade plate is too thin for the material being cut.



Other Repairs:

See specific areas within the manual for additional information on repairs and maintenance.

Instructions for Model CM325R:

To Change Angle for Mitre:

1. To change angle on machine, locate lock down bolt and loosen with standard 3/4” box wrench.
2. Manually rotate top base to desired degree setting, aligning angle mark with zero block. 45° and 90° stops are provided.
3. Tighten lock down bolt. If you desire to mitre beyond 45° to the right, then 45° stop must be removed.

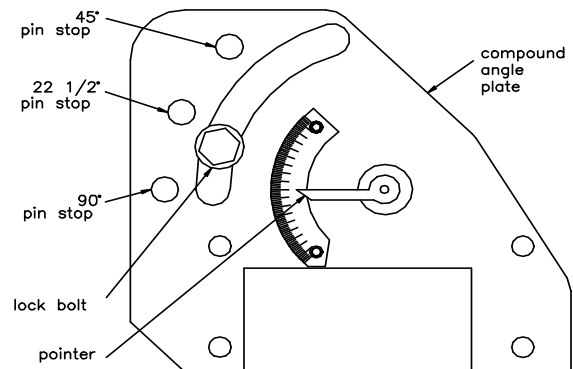
To Compound CM325R Saw Head:

1. Locate compound lock bolt on compound angle plate. Using a 3/4” Box Wrench (see Diagram “H”), loosen lock bolt.

2. Remove dowel pin from 90° position, located in pivot bracket.

3. Manually move saw head to desired compound degree setting by aligning pointer on degree quadrant. There are positive pin stops at 90° vertical, 22-1/2° and 45° compound. Tighten lock bolt.

Diagram “H”



200 Series and CM325R Spindle Assemblies and Bearing Installation Instructions:

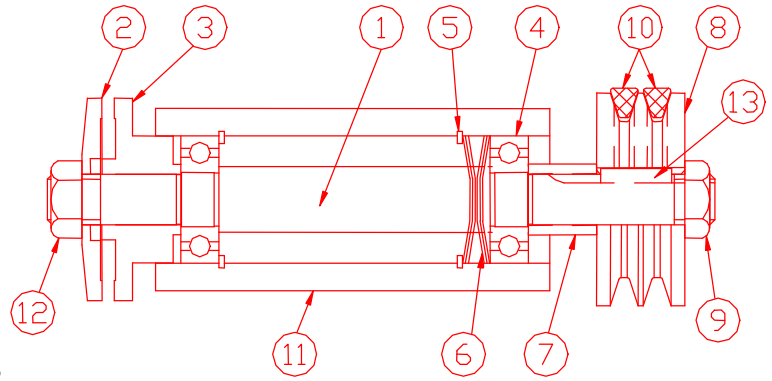
For Models M25R, F255R, and CM325R (refer to sketch on following page).

It is suggested that replacement spindle assemblies be purchased from CTD before disassembling. Old spindles can be returned for bearing replacement and slinger refacing for a nominal fee. The 200R Series and CM325R spindle assemblies provide for a “slip-fit” between the outer races of the bearing and the housing or arm casting, and a “press-fit” between the inner race and the spindle. Great care must be taken with ball bearings or the life of the bearings will be reduced. To remove the spindle assembly:

- A. Loosen motor and remove belts.
- B. Remove Spindle Pulley Nut #9 by holding pulley or slinger. Loosen set screws in pulley.
- C. Remove Pulley #8, Pulley Key #13, and Spindle Spacer #7 (200R Series only). Place Pulley Nut #9 back onto spindle to protect threads.
- D. With a soft hammer or rubber mallet, gently drive spindle towards blade side. Take care to protect pivot bearings by holding arm casting on blade side to overcome effects of hammer blows.
- E. Remove Pulley Nut #9, again.
- F. Spindle assembly, consisting of Spindle #1, Slinger #3, and Blade Bearing #4 will come out of housing. Outside bearing will slip out of housing. If a replacement spindle assembly was purchased, go to item “L”.
- G. If bearing on the blade side must be replaced, an arbor press must be used to disassemble the bearing and the slinger from the spindle. Great care must be used in disassembling, or the spindle will be scored or stripped by the slinger. Before pressing apart, scribe a line on the face of the spindle and the slinger so that they will be re-assembled in exactly the same position in relation to each other. Use an arbor press or pulley puller.
- H. Press off slinger and bearing from spindle.
- I. Press new bearing on to spindle, making sure spindle is square to the bore.
- J. Replace slinger, as above, making sure scored lines match.
- K. The face of the slinger must be checked to make sure the face (next to the blade) is running true. If it is not running true, it should be refaced. Slinger should indicate $< .001$. To reface:
 1. Partially assemble pulley bearing on spindle.
 2. Hold outer races of both bearings gently in a vise.
 3. Use the side of a surface grinder wheel to dress the face of the slinger by rotating spindle in bearings slowly against the direction of the grinding wheel.
- L. Clean bearing hole and slip new spindle assembly into arm casting up to snap ring. From the opposite side of the arm, make sure that belleville springs #6 are assembled in housing as shown in Diagram on Page No.18.
- M. To re-assemble spindle assembly, slide outside bearing #4 onto the spindle as far as it will go, being careful that bearing goes into housing square.
- N. Slide pulley onto shaft with pulley key and spacer (for 200R Series only--no spacer is required on the Model CM325R.)
- O. Hold slinger or spindle nut. Replace jam nut on spindle threads and slowly tighten pulley jam nut. This will push bearing onto shaft. Tighten thoroughly.
- P. Since motor was moved, the centerline of the motor shaft and spindle must be parallel. Both pulleys must be in line or belts will not wear evenly. This should be checked by placing a straight edge across both pulley grooves. Tighten motor.
- Q. Belt tension is of critical importance. To obtain proper tension, press down on top of belts with moderate amount of pressure. Belts should deflect approximately $1/4$ ".
- R. Tighten set screw in both pulleys. To check assembly after tightening belts, apply pressure in the direction of the blade on the pulley nut. A slight spring pressure should be felt. If spindle does not spring back, the belts may be too tight.

No.	Description	200R Part No.
1	Spindle, Right Hand Spindle, Left Hand	2BM02R 2BM02L
2	Flange	200BM03
3	Slinger	200BM04
4	Bearing (2 required)	2B2P05
5	Snap Rings (2 required)	2B2P06
6	Preload Belleville Springs (4 required)	2B2P07
7	Spindle Spacer	2BM05
8	Spindle Pulley	2B4P23
9	Pulley Jam Nut, Right Pulley Jam Nut, Left	151P16R 151P16L
10	3V335 Drive Belt, (2 required)	2B4P25
11	200 Series Arm, Right 200 Series Arm, Left	200BC01R 200BC01L
12	Spindle Nut, Right Thread** Spindle Nut, Left Thread**	2B1P36 2B1P37
13	Pulley Key	2BM23
14	Spindle Assembly, Left & Right	200BE21L&R (consists of Items No. 1 - 7,9 and 12 with precision ground Slinger)

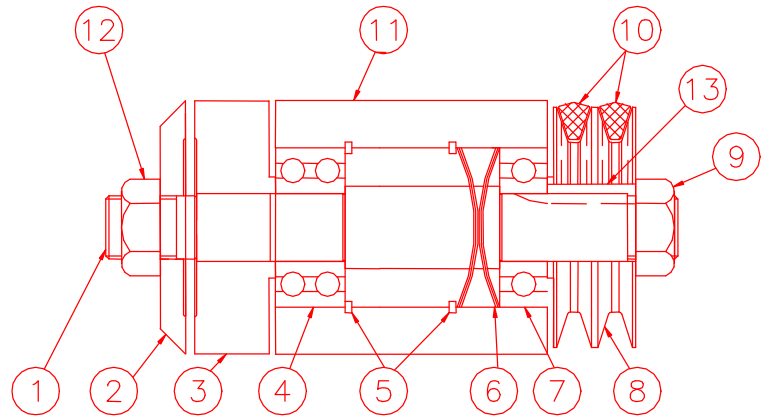
200R SPINDLE ASSEMBLY



Note: A Spindle Nut, **Left thread is used on the **Right hand saw**, facing it from the front.
Belt guard is on right side, blade guard is on left side.

No.	Description	Part No.
1	Spindle, Right Hand Spindle, Left Hand	30BM02R 30BM02L
2	Flange	30BM03
3	Slinger	30BM04
4	Inside Bearing	30B2P05
5	Snap Ring (2 required)	9B2P06
6	Belleville Spring (4 required)	9B2P05
7	Outside Bearing	9B2P04
8	Spindle Pulley	30B4P23
9	Pulley Jam Nut, Right Pulley Jam Nut, Left	151P16R 151P16L
10	3VX425 Drive Belt (2 required)	30B4P25
11	CM325R Arm, Right CM325R Arm, Left	30C01R 30C01L
12	Spindle Nut, Right Spindle Nut, Left	30B1P36R 30B1P37L
13	Pulley Key	2BM23
14	Spindle Assembly	30BE12L&R (consists of Items No. 1 - 7,9 and 12 with precision ground Slinger)

CM325R SPINDLE ASSEMBLY

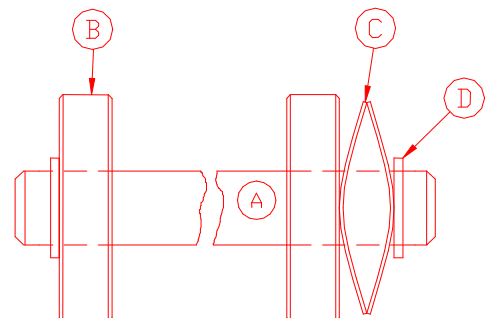


200R SERIES AND CM325R PIVOT SHAFT ASSEMBLY

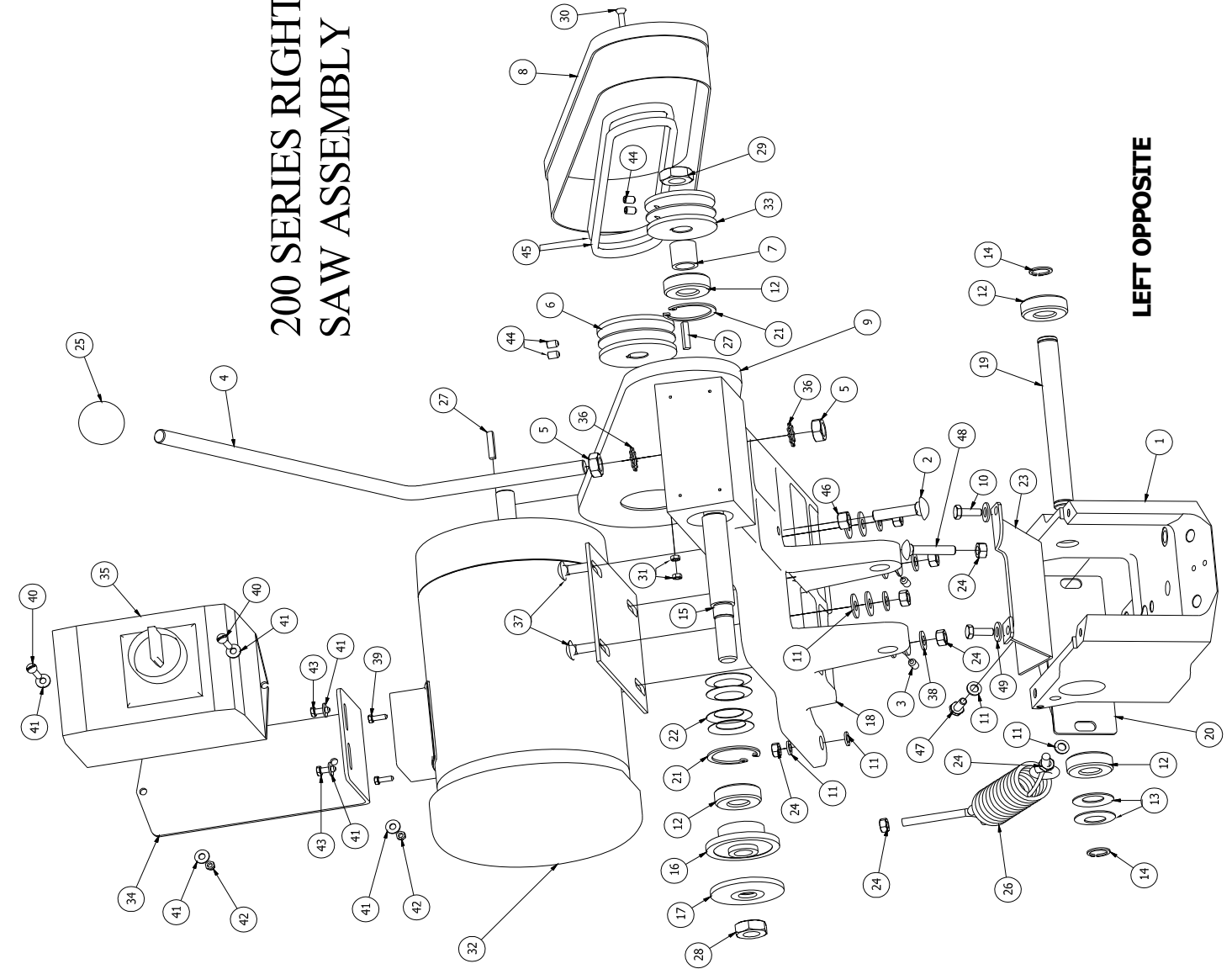
Assemble preload springs back-to-back as shown.

Pivot Shaft Parts:

- A. Pivot Shaft, P/N 3BM08
- B. Pivot Bearing, P/N 2B2P05 (2 required)
- C. Pivot Belleville Spring, P/N 3B2P10 (2 required)
- D. Pivot Snap Ring, P/N 3B2P11 (2 required)



200 SERIES RIGHT SAW ASSEMBLY



LEFT OPPOSITE

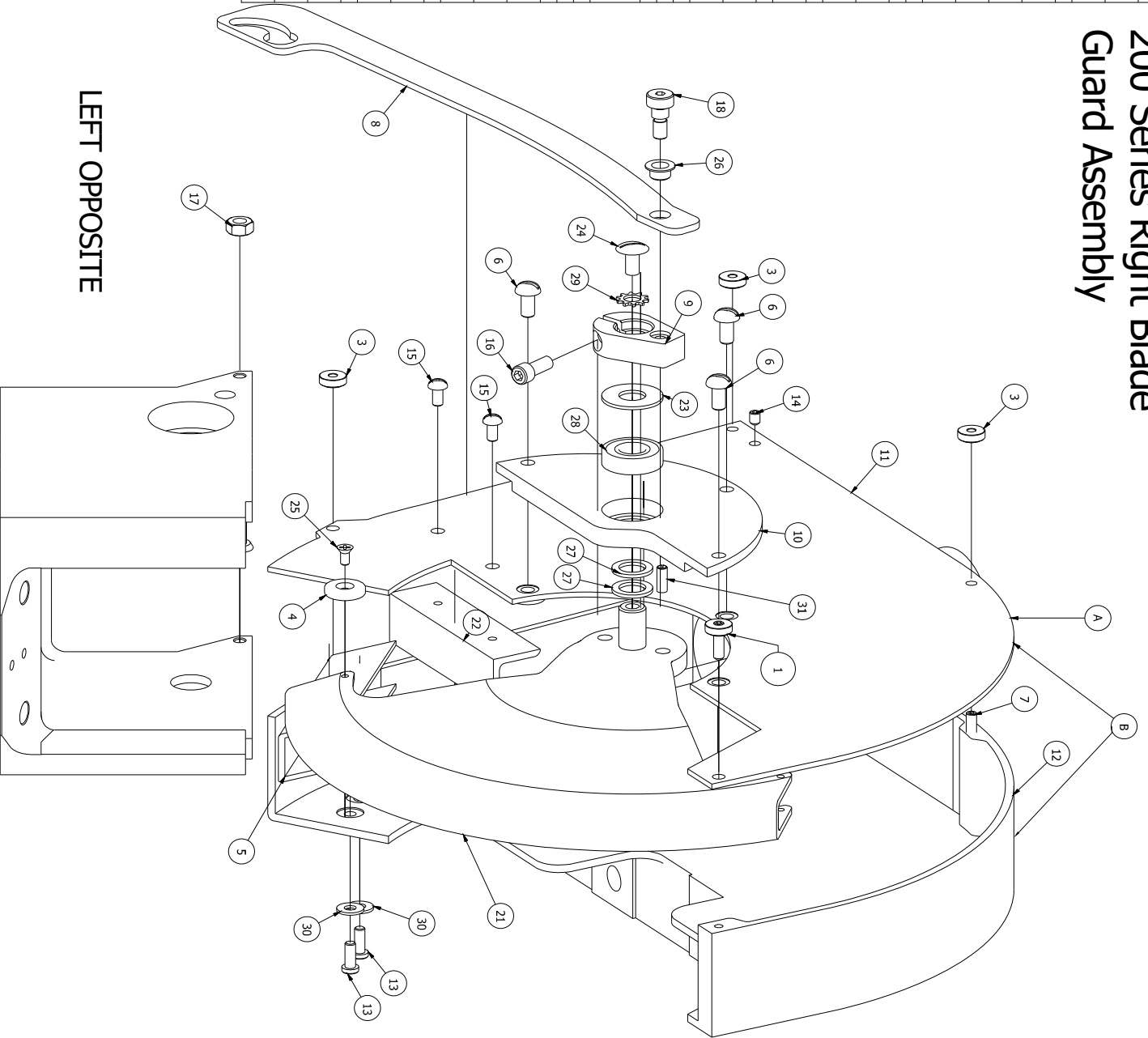
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	200DC21M/F	200S Pivot Bracket M/F
2	1	3/8-16 x 1.5 Carriage Bolt	Down Stop Bolt
3	2	1/4-20 x 1/2 Set Screw	Arm/Pivot Lock
4	1	2BM18	Pull Down Handle
5	2	1/2-13 Hex Nut	Handle Lock Nut
6	1	2B4P24	Motor Pulley
7	1	2BM05	Spindle Spacer
8	1	2BF31R/L	Belt Guard Cover, Rt. or Lt.
9	1	2BF29R/L	Belt Guard Backing Plate, Rt. or Lt.
10	2	1/4-20 x 3/4 Hex Bolt	1/4-20 x 3/4 Hex Bolt
11	12	5/16 Washer	5/16 Washer
12	4	2B2P05	Spindle / Pivot Bearing
13	2	3B2P10	Pivot Belleville Spring
14	2	3B2P11	Pivot Snap Ring
15	1	2BM02R/L	200S Spindle, Rt. or Lt.
16	1	200BM04	200S Slinger
17	1	200BM03	200S Flange
18	1	200BC01R/L	200S Arm, Rt. or Lt.
19	1	3BM08	Pivot Shaft
20	1	200F45A	2" Dust Outlet
21	2	2B2P06	Snap Ring Spindle
22	4	2B2P07	Preload Belleville Spring Washer
23	1	200F22	Dust Deflector
24	8	5/16-20 Hex Nut	5/16-20 Hex Nut
25	1	2B7P17	Hand Knob, Handle
26	1	200B7P16E	Return Spring Assy.
27	2	2BM23	Pulley/Spindle/Motor Key
28	1	2B1P37	Spindle Nut, Left Thread
29	1	151P16R	Pulley Jam Nut, Right
30	1	10-32 x 2.5 Slotted Flat Head Mach. Screw	Belt Guard Bolt
31	2	10-32 Hex Nut	Belt Guard Lock Nuts
32	1	2B6S05	2 H.P. 1 Phase Motor
		2B6S07	2 H.P. 3 Phase Motor
		2B6S08	3 H.P. 3 Phase Motor
33	1	2B4P23	Spindle Pulley
34	1	200BF96	Manual Overload Starter Bracket
35	1	Manual Overload Starter	Manual Overload Starter
36	2	1/2 Tooth Lock Washer	Handle Lock Washer
37	4	5/16-18 x 3/4 Carriage Bolt	Motor Mount Bolt
38	4	5/16 SAE Washer	5/16 SAE Washer
39	2	10-32 x 1/2 Hex Bolt	10-32 x 1/2 Hex Bolt
40	2	10-32 x 3/4 Slotted Rd. Head Mach. Screw	10-32 x 3/4 Slotted Rd. Head Mach. Screw
41	6	10 Washer	10 Washer
42	2	10-32 Hex Nut	10-32 Hex Nut
43	2	10-32 x 1/2 Hex Bolt	10-32 x 1/2 Hex Bolt
44	4	1/4-20 x 3/8 Set Screw	1/4-20 Set Screw for Motor/Spindle Pulley
45	2	2B4P25	3V335 Drive Belt
46	1	3/8-16 Hex Nut	3/8-16 Hex Nut
47	1	5/16-18 x 1/2 Hex Bolt	5/16-18 x 1/2 Hex Bolt
48	1	5/16-18 x 1.5 Carriage Bolt	5/16-18 x 1.5 Carriage Bolt
49	2	1/4 Washer	1/4 Washer

200 Series Right Blade Guard Assembly

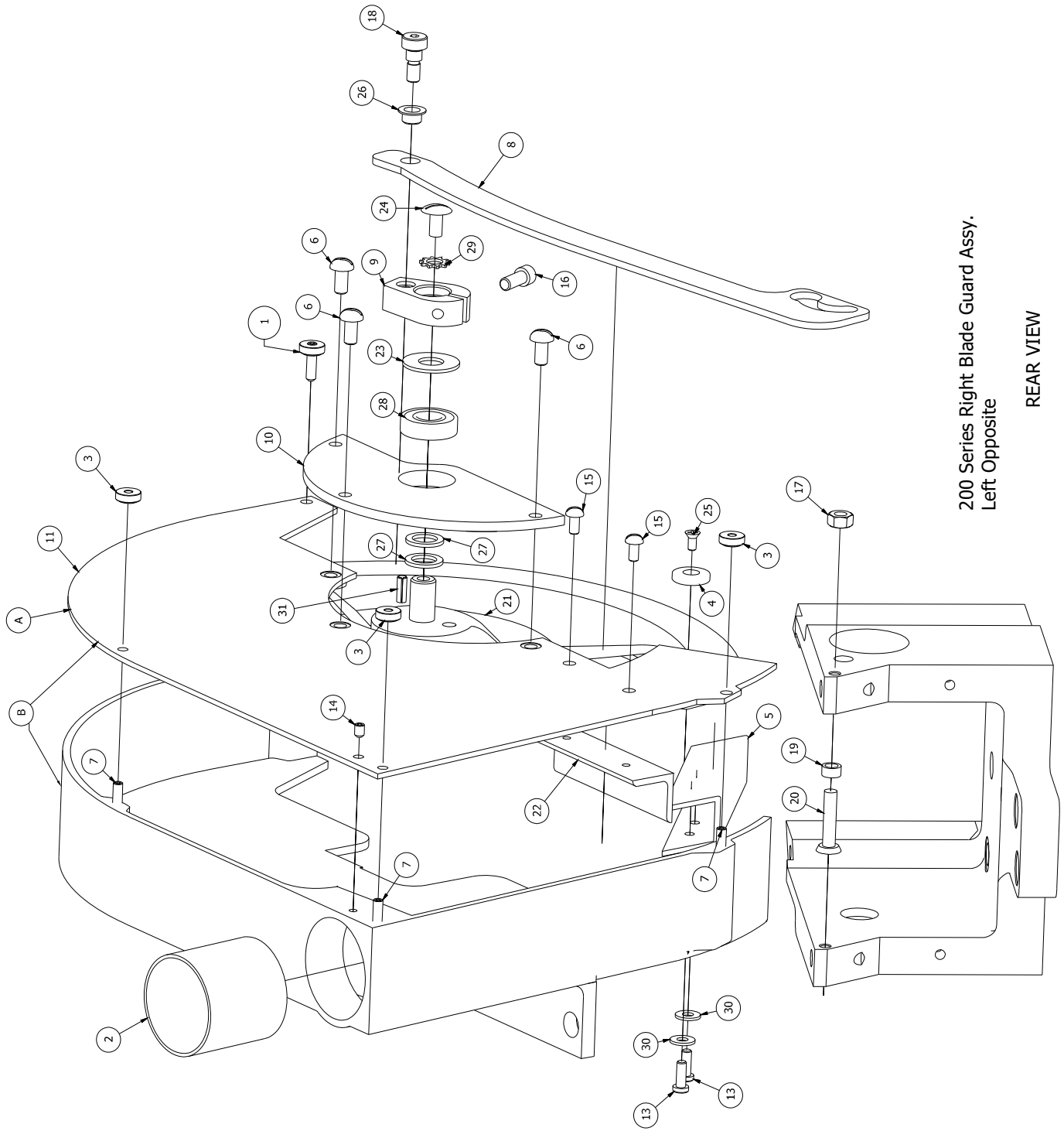
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	200B1P25A	Blade Guard Cover Knob w/ Stud
2	1	200M35	Top Dust Tube Main Blade Guard
3	3	200B1P25	Blade Guard Cover Lock Nut
4	1	200B2P30	Roller Bearing Lower Blade Guard
5	1	200M36R/L	Rear Blade Guard Channel, Rt. or Lt.
6	3	1/4-20 x 1/2 Slotted Rd. Head Mach. Screw	Bearing Housing Bolt
7	3	10-32 x 3/4 Set Screw	Blade Guard Cover Locating Studs
8	1	200M320	Blade Guard Link/Puller
9	1	200M261	Rotating Pawl
10	1	200M269R/L	Bearing Housing Blade Guard Assy, Rt. or Lt.
11	1	200F250R/L	Blade Guard Cover, Rt. or Lt.
12	1	200A26R/L	Main Blade Guard, Rt. or Lt.
13	2	10-32 x 1/2 Socket Head Screw	Screw Rear Blade Guard Channel
14	1	10-32 x 1/4 Set Screw	Dust Tube Lock Screw
15	2	10-32 x 3/4 Slotted Rd. Head Mach. Screw	Material Deflector Screw
16	1	1/4-20 x 5/8 Socket Head Screw	Lock screw Pawl
17	1	1/4-20 Hex Nut	Lock Nut Rear Puller Bolt
18	1	200B1P267	Pawl Shoulder Bolt
19	1	200B7P35	Rear Bushing for Link/Puller
20	1	1/4-20 x 1 Flat Head Phil. Undercut Mach. Screw, Plated	Rear Link Puller Screw
21	1	200A270	Lower Rotating Blade Guard
22	1	200M26	Material Deflector Angle
23	1	200B1P269	Teflon Space Washer
24	1	1/4-20 x 3/8 Truss Head Comb. Mach Screw, Plated	Pawl & Lower Blade Guard Lock Screw
25	1	8-32 x 3/8 Flat Head Phil. F-Thread-Cutting Screw	Roller Bearing Screw
26	1	200B7P36	Front Bushing for Link/Puller
27	2	2BM13	Spac Washers for Pin
28	1	2B2P09	Rotation Bearing for Housing
29	1	200B1P268	External Tooth Lock Washer
30	2	10 Washer	Rear Channel Screw Washer
31	1	3/16 x 1/2 Zinc Plated Rail Pin	Rotating Blade Guard Upper Stop Pin
A	1	200E250R/L	Lower B.G. Cover Assy, Lt. or Rt. 4.6,8-11,15-30
B	1	200E260R/L	Blade Guard Assy, Lt. or Rt. 1-30

Additional Parts:

- 200E260L Blade Guard Assy, Complete Lt
- 200E260R Blade Guard Assy, Complete Rt
- 200F250L 12" Blade Guard, Cover Left
- 200F250R 12" Blade Guard, Cover, Right
- 200A26L 12" Main Blade Guard, Left
- 200A26R 12" Main Blade Guard, Right
- 200E250L & R Cover & Lower Blade Guard Assy with Link Puller L&R
- 200M265L&R Bearing Housing Blade Guard Assy, L & R
- BS7501-06 Safety Decals



LEFT OPPOSITE



200 Series Right Blade Guard Assy.
Left Opposite

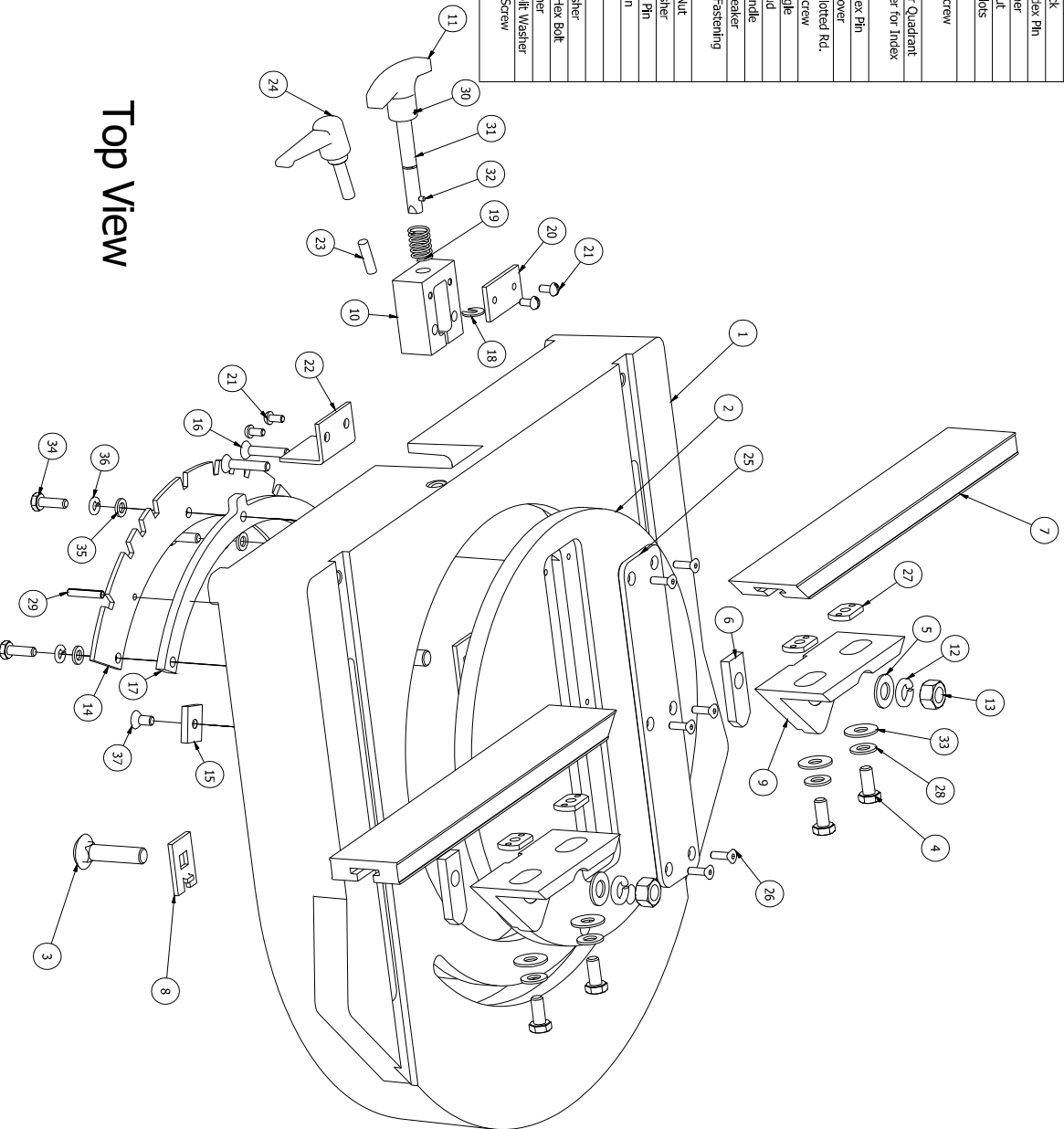
REAR VIEW

M25R Base Assembly Exploded View

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	250C05	M25R Base
2	1	22C03X	Disc
3	2	3/8-16 x 1.5 Carriage Bolt	Fence Brkt. Lock Bolt
4	4	5/16-18 x 3/4 Hex Bolt	Fence Bolt
5	2	3/8 USS Washer	3/8 USS Washer
6	2	200M02	Fence Key
7	2	200M09	Fence
8	2	BR-19	Tab Washer
9	2	200C05	Fence Bracket
10	1	200M40	Index Pin Block
11	1	200B7P45	Handle for Index Pin
12	2	3/8 SAE Washer	3/8 SAE Washer
13	2	3/8-16 Hex Nut	3/8-16 Hex Nut
14	1	200M46	Quadrant w/Slots
15	2	22M09A	Disc Support
16	2	1/4-20 x 1.25 Flat Head Screw	Index Block Screw
17	1	200M47	Spacer Bar for Quadrant
18	1	200B1P43	Slotted Washer for Index Pin
19	1	200B7P44	Spring for Index Pin
20	1	200M42	Index Block Cover
21	4	10-32 x 3/8 Slotted Rd. Head Mach. Screw	10-32 x 3/8 Slotted Rd. Head Mach. Screw
22	1	200M65	Base Filler Angle
23	1	22M12	Mitre Lock Stud
24	1	200B7P19	Mitre Lock Handle
25	1	250M03	M25R Chip Breaker
26	6	10-32 x 3/4 Flat Head Screw	Chip Breaker Fastening Screw
27	4	BRP51618	5/16-18 Tee Nut
28	4	5/16 SAE Washer	5/16 SAE Washer
29	2	.19 x 1 Roll Pin	Quadrant Roll Pin
30	1	1/8 x 3/4 Roll Pin	Handle Roll Pin
31	1	200M41	Indexing Pin
32	1	.1245 x 3/8 Dowel Pin	Index Pin
33	4	5/16 USS Washer	5/16 USS Washer
34	3	1/4-28 x 3/4 Hex Bolt	1/4-28 x 3/4 Hex Bolt
35	3	1/4 SAE Washer	1/4 SAE Washer
36	3	1/4 Helical Split Washer	1/4 Helical Split Washer
37	2	1/4-28 x 3/8 Flat Head Screw	Deck Support Screw

Additional Parts:

- 250E01 M25R Base & Disc Assy.
- 200E07 Fence and Bracket with fasteners

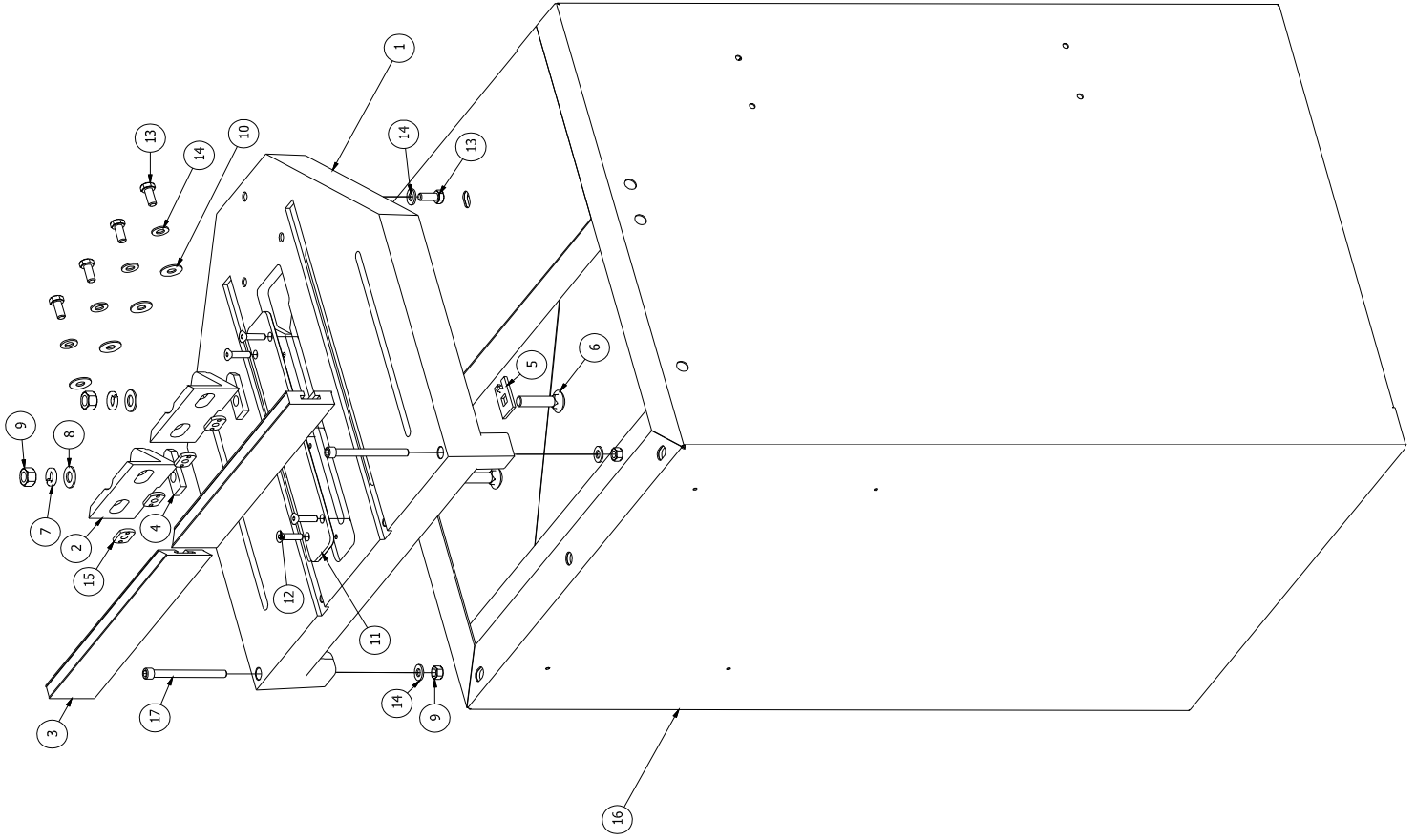


Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	25C01	F255R Base
2	2	200C05	Fence Bracket
3	2	200M09	Fence
4	2	200M07	Fence Key
5	2	BF19	Tab Washer
6	2	3/8-16 x 1.5 Carriage Bolt	Fence Brkt. Lock Bolt
7	2	3/8 Helical Split Washer	3/8 Helical Split Washer
8	2	3/8 SAE Washer	3/8 SAE Washer
9	2	3/8 Hex Nut	3/8 Hex Nut
10	2	5/16 USS Washer	5/16 USS Washer
11	1	200M03	Chip Breaker
12	6	10-32 x 3/4 UNF Flat Head Screw	Chip Breaker Fastening Screw
13	5	5/16-18 x 3/4 Hex Bolt	5/16-18 x 3/4 Hex Bolt
14	7	5/16 SAE Washer	5/16 SAE Washer
15	4	B1P51618	Tab Nut
16	1	2BF43	200S Floor Stand Assy
17	2	5/16-18 x 3.25 Socket Head Screw	Base to Floor Stand Screw

Additional Parts:

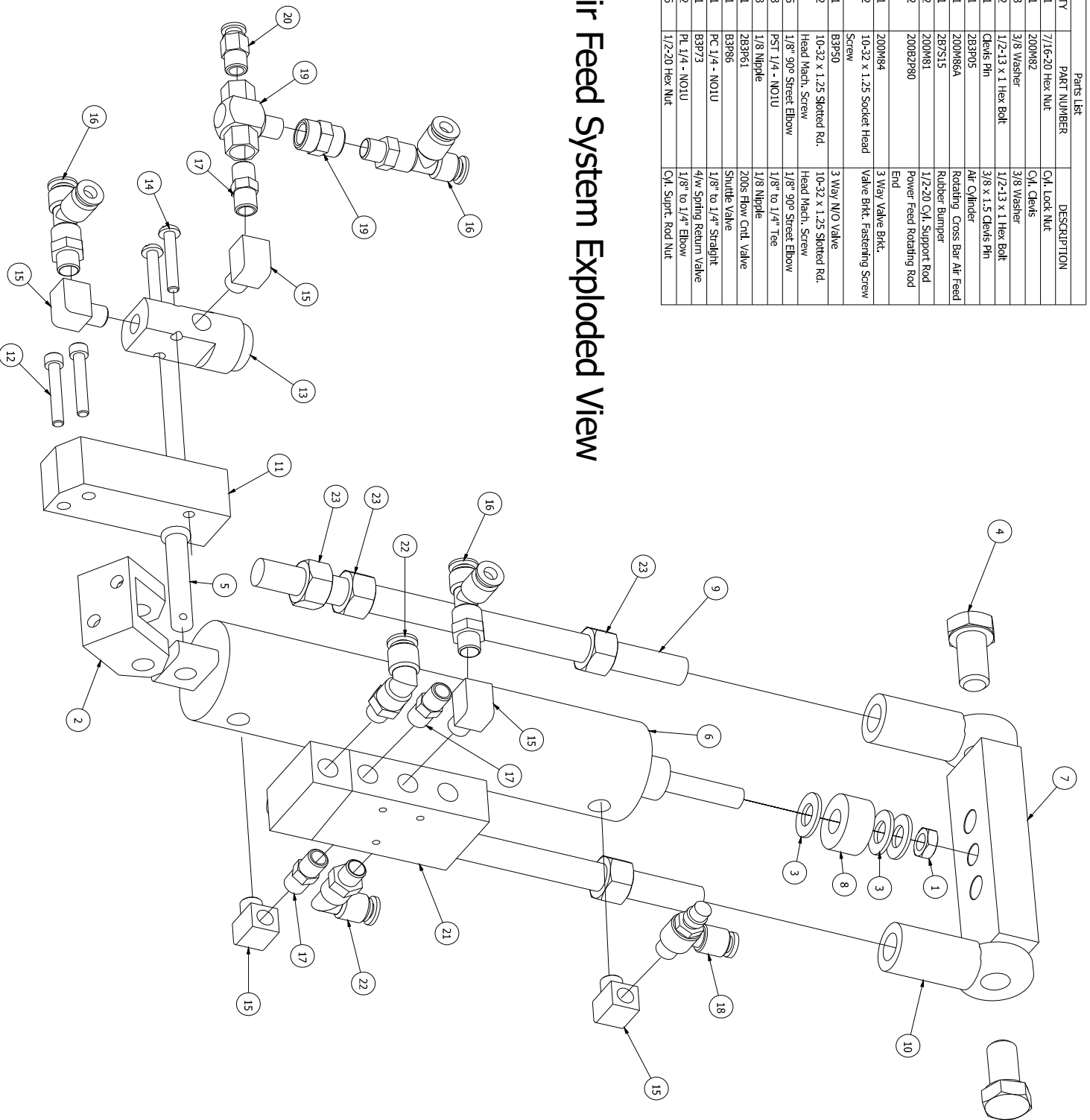
- 25E01 F255 Base Assy.
- 200E07 Fence and Bracket with fasteners

F255R Base and Floor Stand Exploded View

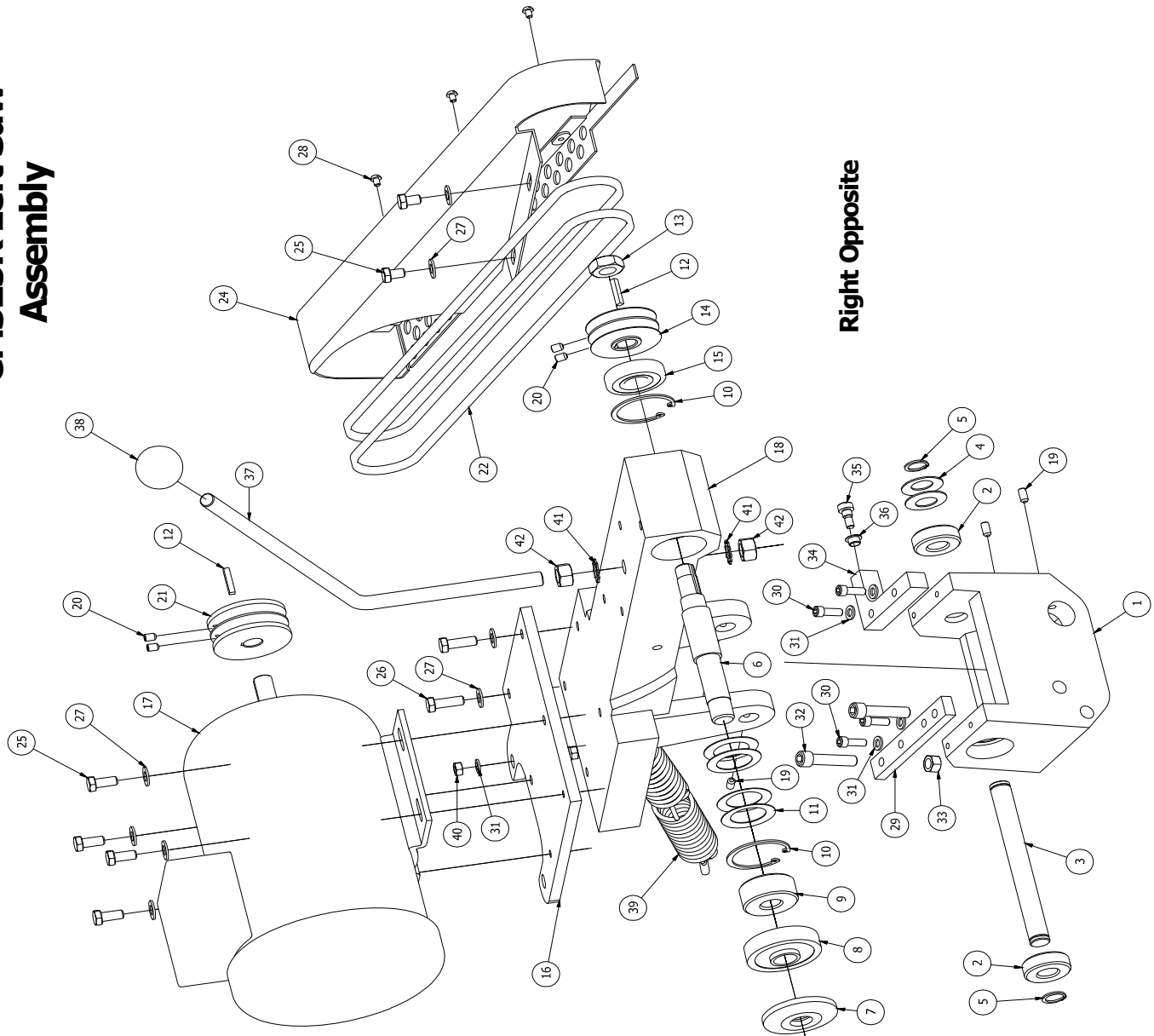


ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	7/16-20 Hex Nut	GM Lock Nut
2	1	200M82	GM Clevis
3	2	1/2-13 x 1 Hex Bolt	3/8 Washer
4	1	1/2-13 x 1 Hex Bolt	3/8 x 1.5 Clevis Pin
5	1	Clevis Pin	Air Cylinder
6	1	2B3P05	Rotating Cross Bar Air Feed
7	1	200M86A	Rubber Bumper
8	1	2B7S15	Power Feed Rotating Rod
9	2	200M81	End
10	2	200B2P80	3 Way Valve Bkct.
11	1	200M84	Valve Bkct. Fastening Screw
12	2	10-32 x 1.25 Socket Head	3 Way N/O Valve
13	1	B3P50	10-32 x 1.25 Slotted Rd. Head Mech. Screw
14	2	10-32 x 1.25 Slotted Rd. Head Mech. Screw	1/8" 90° Street Elbow
15	5	1/8" Street Elbow	1/8" to 1/4" Tee
16	3	PST 1/4 - NO1U	1/8 Nipple
17	3	1/8 Nipple	200s Flow Cnt. Valve
18	1	2B3P61	Shuttle Valve
19	1	B3P86	1/8" to 1/4" Straight
20	1	PC 1/4 - NO1U	4/W Spring Return Valve
21	1	B3P73	1/8" to 1/4" Elbow
22	2	PL 1/4 - NO1U	GM Supprt. Rod Nut
23	6	1/2-20 Hex Nut	

Air Feed System Exploded View



CM325R Left Saw Assembly



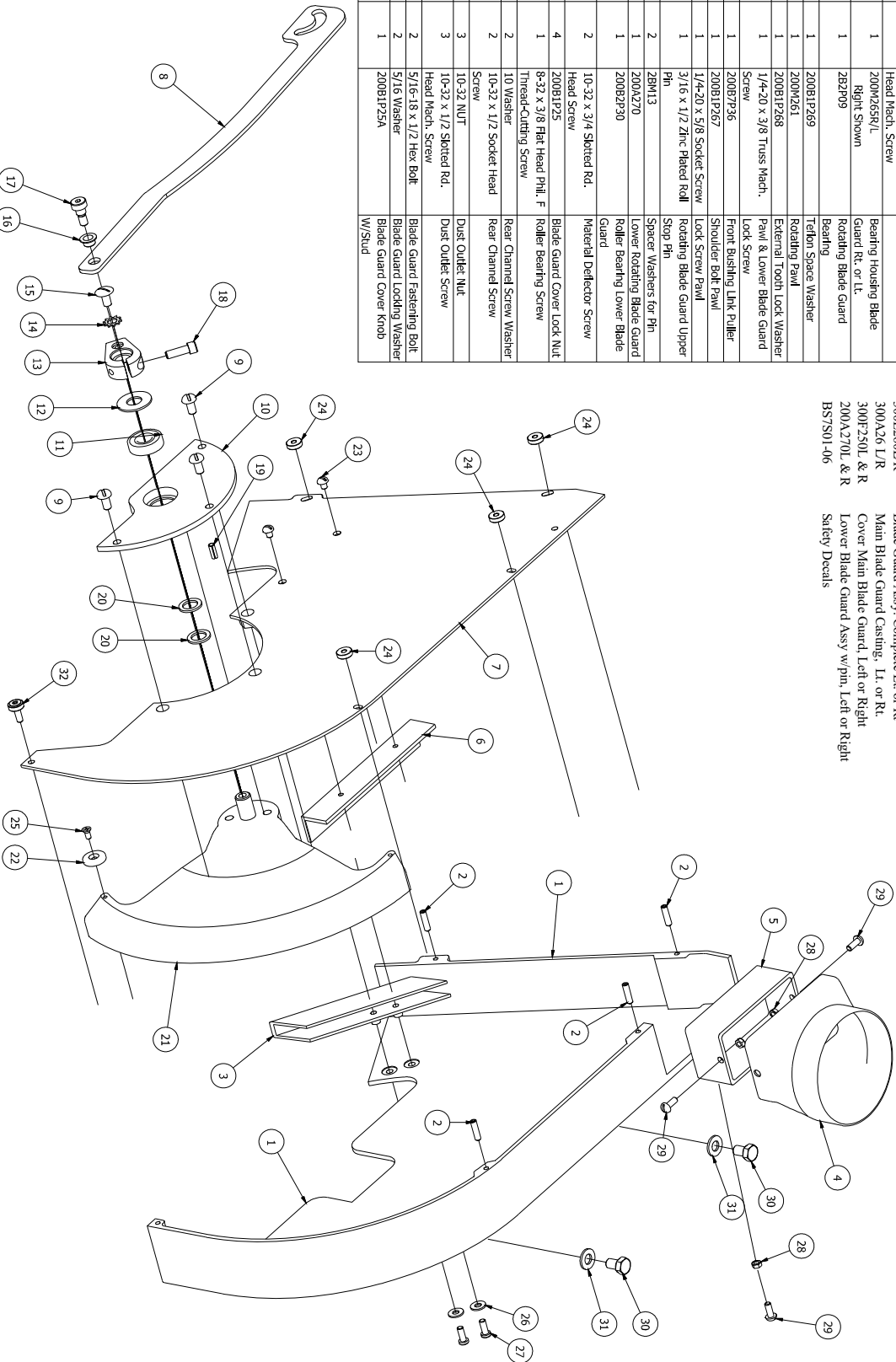
Right Opposite

Parts List		
ITEM	QTY	DESCRIPTION
1	1	30C02L/R Pivot Bracket, Lt. or Rt.
2	2	2B2P05 Pivot Bearing
3	1	3BM08 Pivot Shaft
4	2	3B2P10 Pivot Belleville Spring
5	2	3B2P11 Pivot Snap Ring
6	1	30BM02L/R 300S Spindle, Lt. or Rt.
7	1	30BM03 300S Flange
8	1	30BM04 300S Slinger
9	1	30B2P05 Spindle Inside Bearing
10	2	9B2P06 Snap Ring
11	4	9B2P05 Belleville Spring
12	2	2BM23 Pulley Key
13	1	151P16R/L Pulley Inn Nut, Rt. or Lt.
14	1	30B4P23 Spindle Pulley
15	1	9B2P04 Spindle Outside Bearing
16	1	30F06 Motor Mount Plate
17	1	2B6S05 2 H.P. 1 Phase Motor
18	1	2B6S07 2 H.P. 3 Phase Motor
19	1	2B6S08 3 H.P. 3 Phase Motor
20	1	30C01L/R Arm Casting, Lt. or Rt.
21	4	1/4-20 x 1/2 Set Screw Arm/Pivot Lock
22	4	1/4-20 x 3/8 Set Screw Motor/Spindle Pulley Lock
23	1	2B4P24 Motor Pulley
24	2	3VX425 Drive Belts
25	1	30B1P27L/R Spindle Nut, Lt. or Rt.
26	1	30F29 Belt Guard
27	6	5/16-18 x 3/4 Hex Bolt Motor Mount Bolt
28	2	5/16-18 x 1 Hex Bolt Motor Mount Plate Bolt
29	8	5/16 Washer Belt Guard Screw
30	3	10-32 x 1/4 Slotted Rd. Head Mach. Screw
31	1	30M38 Up/Down Stop Bar
32	4	1/4-20 x 3/4 Socket Head Screw
33	6	1/4 Washer 1/4-20 x 3/4 Socket Head Screw
34	2	3/8-16 x 2 Socket Head Screw
35	1	3/8-16 Hex Nut Up/Down Stop Screw
36	1	300M31 Blade Guard Link Support
37	1	200B1P267 5/16-20 x 1/4 Shoulder Bolt
38	1	200B7P36 Rear Bushing Link Puller
39	1	2BM18 Handle
40	1	2B7P17 Handle Knob
41	2	200B7P16E Return Spring Assy. w/Eye Bolts
42	2	1/4-20 Hex Nut Return Spring Fastening Nut
43	2	1/2" Tooth Lock Washer 1/2" Tooth Lock Washer
44	2	1/2-13 Hex Nut 1/2-13 Hex Nut

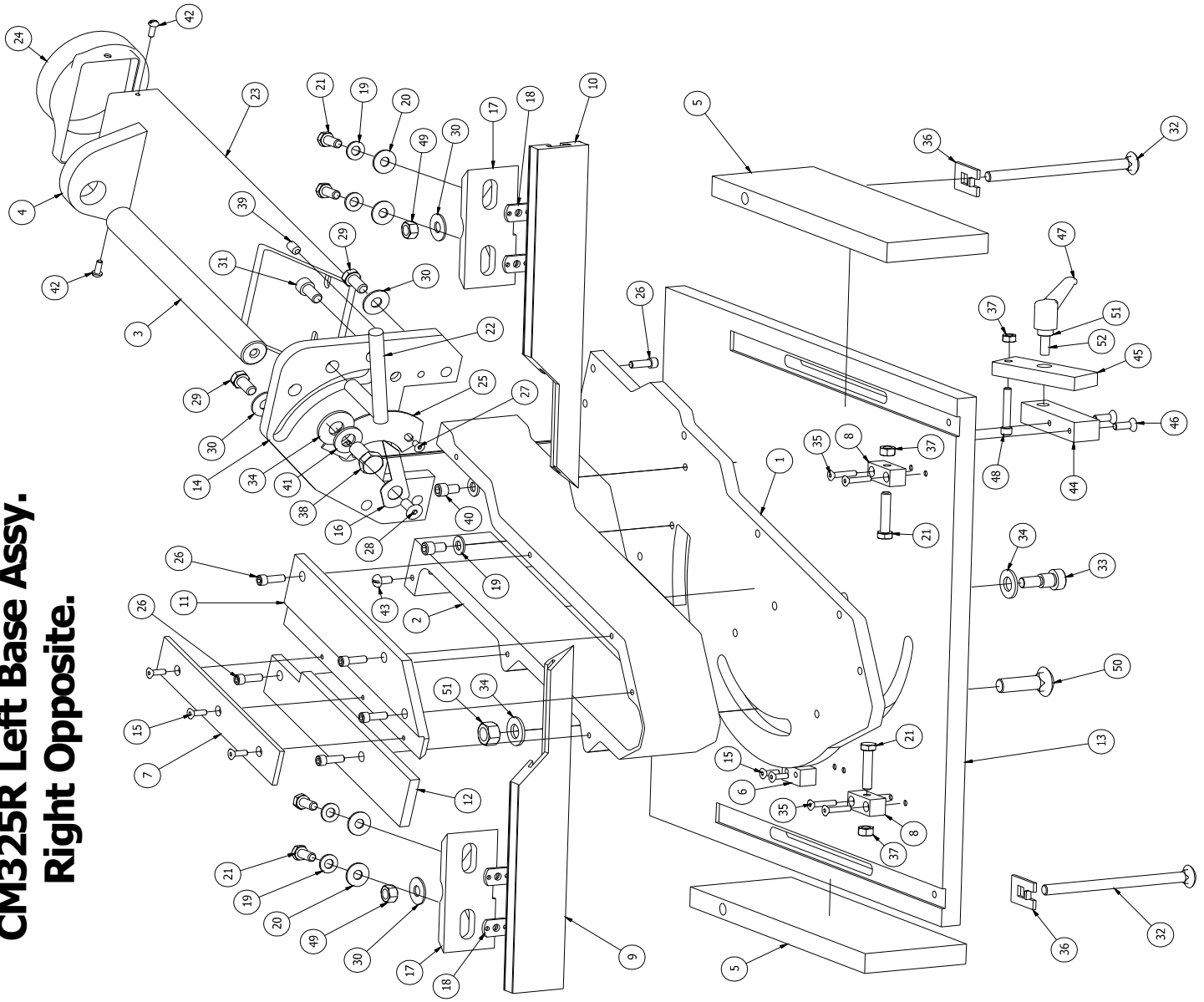
CM325R Left Blade Guard Exploded View

Additional Parts:
 300E260L/R Blade Guard Assy. Complete Lt. or Rt.
 300A26 L/R Main Blade Guard Casting, Lt. or Rt.
 300F250L & R Cover Main Blade Guard, Left or Right
 200A270L & R Lower Blade Guard Assy w/pin, Left or Right
 BS7501-06 Safety Decals

Parts List		
ITEM	QTY	DESCRIPTION
1	1	Main Blade Guard Casting, Lt. or Rt.
2	4	10-32 x 3/4 Set Screw
3	1	300M36L/R Rear Blade Guard Channel
4	1	30A12 Dust Outlet 4"
5	1	30M35 Dust Tube Connector
6	1	300M26 B.G. Mat. Deflector Angle
7	1	300F250L/R Cover Main Blade Guard Lt. or Rt.
8	1	300M32 Blade Guard Link/Puller
9	3	1/4-20 x 1/2 Slotted Rd. Bearing Housing Screw
10	1	Head Mech. Screw
11	1	200M259L/R Right Shown Bearing Housing Blade Guard Rt. or Lt.
12	1	200B1P269 Rotating Blade Guard Bearing
13	1	200M261 Teflon Space Washer
14	1	200B1P268 Rotating Pawl
15	1	1/4-20 x 3/8 Truss Mach. Pawl & Lower Blade Guard Lock Screw
16	1	200B736 Front Bushing Link Puller
17	1	200B1P267 Shoulder Bolt Pawl
18	1	1/4-20 x 5/8 Socket Screw Lock Screw Pawl
19	1	3/16 x 1/2 Zinc Plated Roll Rotating Blade Guard Upper Stop Pin
20	2	28M13 Spacer Washers for Pin
21	1	200A270 Lower Rotating Blade Guard
22	1	200B2930 Roller Bearing Lower Blade Guard
23	2	10-32 x 3/4 Slotted Rd. Material Deflector Screw
24	4	200B1P225 Head Screw
25	1	8-32 x 3/8 Flat Head Phil. F Roller Bearing Screw
26	2	Thread-Cutting Screw Rear Channel Screw Washer
27	2	10-32 x 1/2 Socket Head Rear Channel Screw
28	3	10-32 NUT Dust Outlet Nut
29	3	10-32 x 1/2 Slotted Rd. Dust Outlet Screw
30	2	Head Mech. Screw Blade Guard Fastening Bolt
31	2	5/16-18 x 1/2 Hex Bolt Blade Guard Locking Washer
32	1	200B1P25A Blade Guard Cover Knob W/SLUD

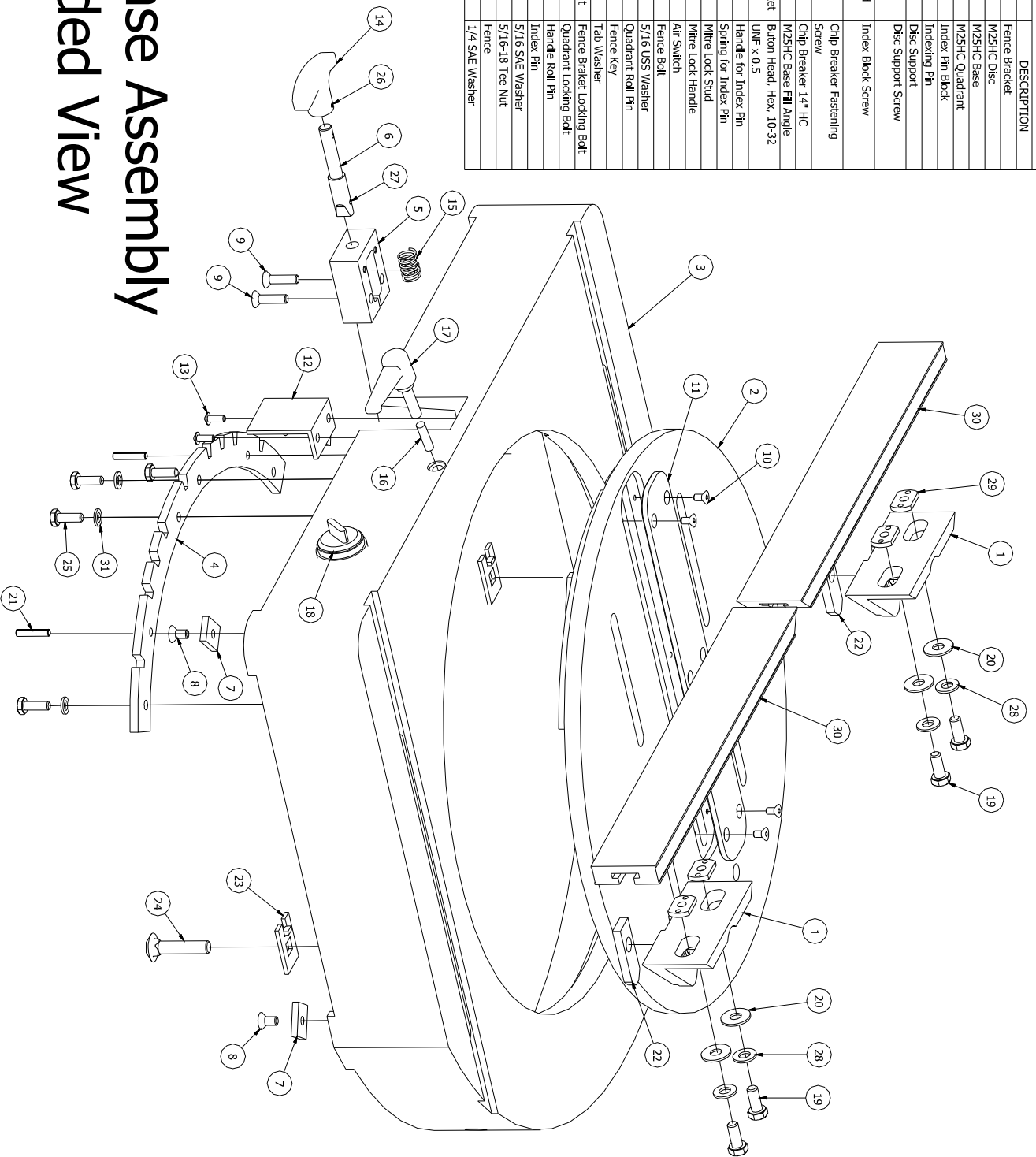


CM325R Left Base Assy. Right Opposite.



Parts List			DESCRIPTION
ITEM	QTY	PART NUMBER	
1	1	30M11L/R	Lower Table Pivot Plate, Lt. or Rt.
2	1	30A10	Aluminum Table Support
3	1	30M14	Compound Pivot Rod
4	1	30M16	Compound Pivot Rod Support
5	2	30M18	Outside Fence Key
6	1	30M27	Zero Block
7	1	30M60	Chip Breaker
8	2	223M44	45° Stop
9	1	30M23L	Outside Fence, Lt.
10	1	30M23R	Outside Fence, Rt.
11	1	30M15L/R	Table Top, Inside. Lt. or Rt.
12	1	30M20L/R	Table Top, Outside. Lt. or Rt.
13	1	30F101L/R	Base Plate, Lt. or Rt.
14	1	30M13L/R	Compound Plate, Lt. or Rt.
15	5	10-32 x 3/4 Flat Head Screw	Chip Breaker/Zero Block Screw
16	1	3CF17	Compound Pointer
17	2	20C005	Fence Bracket
18	4	B1P51618	5/16-18 Tee Nut
19	6	5/16 SAE Washer	5/16 SAE Washer
20	4	5/16 USS Washer	5/16 USS Washer
21	7	5/16-18 x 3/4 Hex Bolt	5/16-18 x 3/4 Hex Bolt
22	1	30M34	Compound Pin
23	1	30A12	Dust Tube Assy. Lt. or Rt.
24	1	30A12	Dust Outlet, 4"
25	1	3C7517	Compound Degree Quadrant
26	8	1/4-20 x 3/4 Socket Head Screw	Top Table Fastening Screw
27	2	10-32 x 3/16 Flat Head Screw	Compound Quadrant Fastening Screw
28	1	5/16 - 24 x 1/4 Flat Head Screw	Compound Pointer Fastening Screw
29	3	3/8-16 x 1 Hex Bolt	Compound Plate Fastening Bolt
30	5	3/8 Washer	3/8 Washer
31	1	3/8-16 x 3/4 Socket Head Screw	Compound Plate Fastening Screw
32	2	3/8-16 x 5.5 Carriage Bolt	Key Fastening Bolt
33	1	1/2-13 x 3/4 Shoulder Bolt	Top Base Pivot Bolt
34	2	1/2 USS Washer	1/2 USS Washer
35	4	10-32 x 1 Flat Head Screw	45° Stop Fastening Screw
36	2	BF19	Tab Washer
37	3	5/16 Hex Nut	5/16 Hex Nut
38	1	1/2-13 x 1 Hex Bolt	1/2-13 x 1 Hex Bolt
39	2	5/16-18 x 1/2 Cone Point Set Screw	Adjusting Set Screw
40	2	5/16-18 x 1/2 Socket Head Screw	Dust Tube Base Fastening Screw
41	1	1/2 SAE Washer	1/2 SAE Washer
42	2	10-32 x 1/2 Slotted Rd. Head Mech. Screw	Dust Outlet Fastening Screw
43	1	1/4-20 x 1/2 Slotted Rd. Head Mech. Screw	Compound Pin Chain Fastening Screw
44	1	30M65-A	90° Block Stop
45	1	30M65-B	90° Flip Stop
46	2	1/4-20 x 3/4 Flat Head Screw	Flip Stop Fastening Screw
47	1	98P738	90° Stop Handle
48	1	1/4-20 x 1.5 Socket Head Screw	90° Stop Adj. Screw
49	3	3/8-16 Hex Nut	Fence Bracket Lock Nut
50	1	1/2-13 x 1.5 Carriage Bolt	1/2-13 x 1.5 Carriage Bolt
51	2	1/2-13 Hex Nut	1/2-13 Hex Nut
52	1	1/2-13 x 2.25 Threaded Rod	1/2-13 x 2.25 Threaded Rod

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	200C05	Fence Bracket
2	1	22C03HC	M25HC Disc
3	1	250C05HC	M25HC Base
4	1	200M47	M25HC Quadrant
5	1	200M40	Index Pin Block
6	1	200M41	Indexing Pin
7	4	22M09A	Disc Support
8	4	1/4 + 28 x 3/8 Flat Head Screw	Disc Support Screw
9	2	1/4 - 28 x 1.25 Flat Head Screw	Index Block Screw
10	6	10 - 32 x 3/8 Flat Head Screw	Chip Breaker Fastening Screw
11	1	250M04	Chip Breaker 14" HC
12	1	200M65	M25HC Base Fill Angle
13	2	10-32 x 1/2 Button Socket Screw	Button Head, Hex, 10-32 UNF x 0.5
14	1	200E7P45	Handle for Index Pin
15	1	200E7P44	Spring for Index Pin
16	1	22M12	Wire Lock Stud
17	1	200E7P19	Wire Lock Handle
18	1	2E3P71	Air Switch
19	4	5/16-18 x 3/4 Hex Bolt	Fence Bolt
20	4	5/16 USS Washer	5/16 USS Washer
21	2	.19 x 1 Roll Pin	Quadrant Roll Pin
22	2	200M07	Fence Key
23	2	BE19	Tab Washer
24	2	3/8-16 x 1.5 Carriage Bolt	Fence Bracket Locking Bolt
25	4	1/4-28 x 3/4 Hex Bolt	Quadrant Locking Bolt
26	1	1/8 x 3/4 Roll Pin	Handle Roll Pin
27	1	.1245 x 3/8 Dowel Pin	Index Pin
28	4	5/16 SAE Washer	5/16 SAE Washer
29	4	B1P51618	5/16-18 Tee Nut
30	2	200M09HC	Fence
31	4	1/4 SAE Washer	1/4 SAE Washer

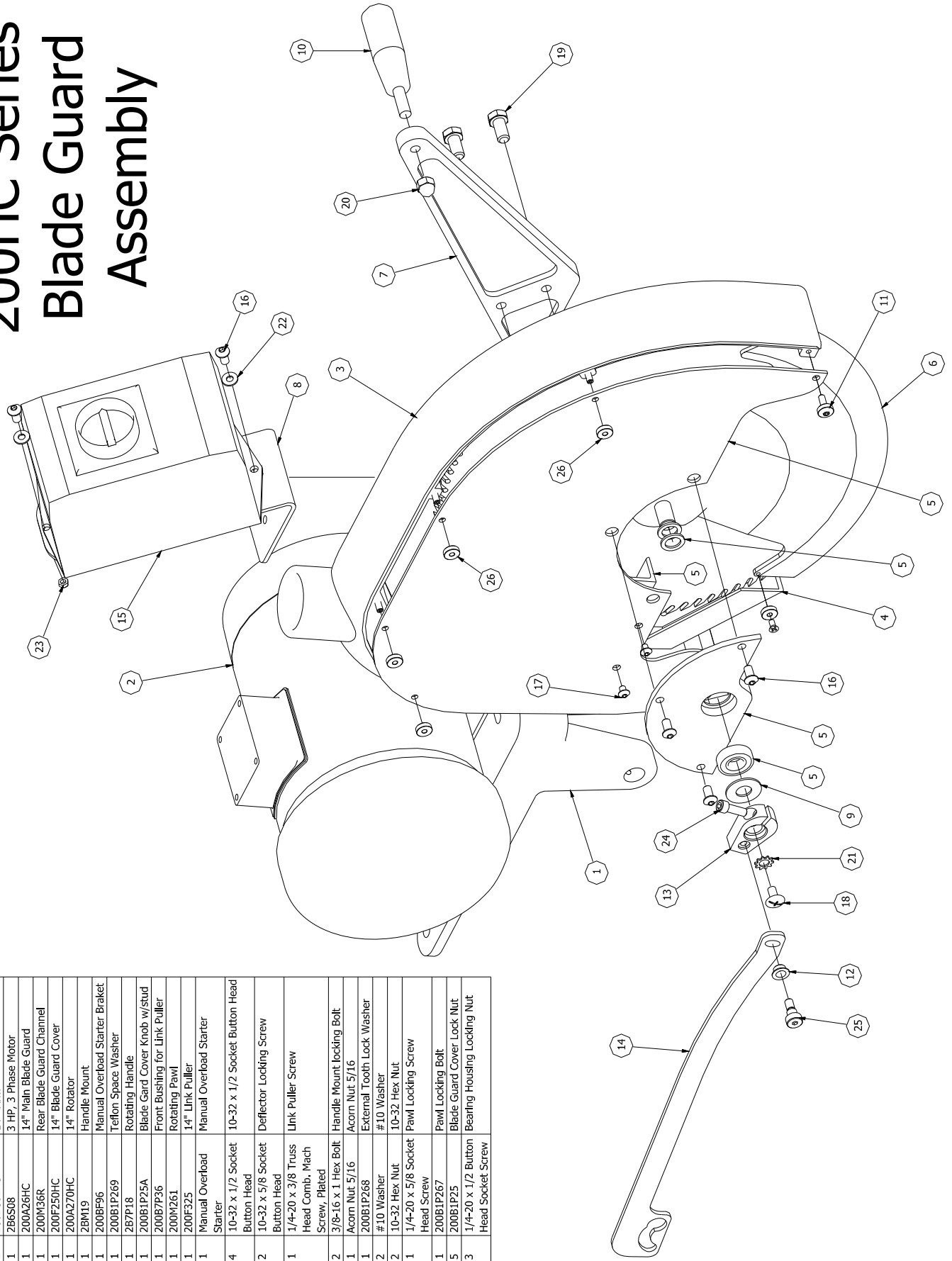


M25HC Base Assembly

Exploded View

200HC Series Blade Guard Assembly

Parts List		
ITEM	QTY	PART NUMBER DESCRIPTION
1	1	200BC01HC 14" Arm
2	1	2B6S08 3 HP, 3 Phase Motor
3	1	200A28HC 14" Main Blade Guard
4	1	200M36R Rear Blade Guard Channel
5	1	200F250HC 14" Blade Guard Cover
6	1	200A270HC 14" Rotator
7	1	2BMT19 Handle Mount
8	1	200BF96 Manual Overload Starter Bracket
9	1	200B1P269 Teflon Space Washer
10	1	2B7P18 Rotating Handle
11	1	200B1P25A Blade Guard Cover Knob w/stud
12	1	200B7P36 Front Bushing for Link Puller
13	1	200M261 Rotating Pawl
14	1	200F325 14" Link Puller
15	1	Manual Overload Starter
16	4	10-32 x 1/2 Socket Button Head
17	2	10-32 x 5/8 Socket Deflector Locking Screw
18	1	1/4-20 x 3/8 Truss Head Comb. Mech Screw, Plated
19	2	3/8-16 x 1 Hex Bolt Handle Mount locking Bolt
20	1	Acorn Nut 5/16 Acorn Nut 5/16
21	1	200B1P268 External Tooth Lock Washer
22	2	#10 Washer #10 Washer
23	2	10-32 Hex Nut 10-32 Hex Nut
24	1	1/4-20 x 5/8 Socket Pawl Locking Screw Head Screw
25	1	200B1P267 Pawl Locking Bolt
26	5	200B1P25 Blade Guard Cover Lock Nut
27	3	1/4-20 x 1/2 Button Bearing Housing Locking Nut Head Socket Screw



Additional Parts

Air Arm Power Feed Cylinder Parts:

2B3P05E	Air Feed Assembly with hardware
B3P76	4-Way Valve Repair Kit (Numatics)
B3P53E	Foot Valve Guard and fittings
B3P57	Bowl Kit
200M80	Cylinder Support Studs
B3P146	6" Hydrocheck
200M88	Hydrocheck Support Bar Top
200M89	Hydrocheck Support Bar Btm.

Air Parts for Model CM325R Only:

30M44	Cylinder Cross Bar
2B3P05	Air Cylinder
B3P73	4-Way Spring Return Valve
2B3P61	Flow Control Valve
B3P50	3-Way Normally Open Valve
B3P86	Shuttle Valve
B3P154	FR Unit with Auto Drain
B3P63	Upstroke Valve
2B7S15	Rubber Bumpers, 2 required
4BM81	2-Hand Control Stand
B3P110	2-Hand Control Assembly
30F45	Cylinder Bottom Clevis

Pneumatic Parts and Clamps:

2B3P20	3" Stroke Vertical Clamp Cylinder
200M20B	Vertical/Horizontal Clamp Support Bar
200M21	Vertical Clamp Adjustment Bar
200M22	Vertical/Horizontal Cylinder Brkt.
200B1P22	Wing Nut Stud
200B7P19	Adjusting Lock Handle
B3P61	Shut-Off Valve
200B3P21	3" Horizontal Clamp Cylinder
200M27	Key for Horizontal Clamp Support
2BM28	Horizontal Clamp Pad
2B3P22	Pressure Regulator for Clamps
2B3P20C	Vertical Clamp Pad Assembly
2B7S20	Polyurethane Clamp Pad Only
200M20C	Vertical Clamp Support Bar M25R & F255R

Miscellaneous Parts:

2D7SR	Right to Left Measuring Tape
2D7SL	Left to Right Measuring Tape
10P01	Soluble Oil, one gallon can
B5P01	Single Phase Toggle Switch
B5P02	Three Phase Toggle Switch
200BE38	Stop Assy w/handle & pointer
BF38	Work Stop
2BM39	Pointer for Work Stop
200B7P20	Adjustable Lock Handle/Stop

Motor Warranty:

Motors which fail during the warranty period of one (1) year must be returned to an authorized Baldor Service Representative for examination to determine whether the failure was caused by manufacturing. In the event a replacement is required before factory examination, a motor will be sold at the list price. If the factory authorizes replacement, CTD will credit customer's account for the replacement cost. All motors are shipped F.O.B. CTD, Los Angeles, CA Plant.

Guarantee:

CTD warrants that their cut-off machines and accessories are free from defect of material, workmanship, and title, and are of the kind of quality indicated and described in applicable specifications. The foregoing warranty is exclusive and in lieu of all other warranties, whether written or oral. CTD's obligation under the foregoing warranty is limited to the repair or replacement (at CTD's option) of the part which is defective in materials or workmanship for a period of one (1) year from the date of shipment to the original purchaser, whether for warranties, negligence, or otherwise, shall not in any way include consequential damages, or costs of removing or re-installing the products. All parts and machines are shipped F.O.B. CTD, Los Angeles, CA Plant.



CTD MACHINES

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