Metal Cutting Saws

Maintenance and Repair Manual

CA-350, CS-350, FA-350 and FS-350 Series Saws

Manual P/N KTS-04
Revised June, 1992

THIS OPERATING MANUAL SHOULD BE READ BY EVERYONE EXPECTED TO OPERATE OR SUPERVISE THE OPERATION OF THIS MACHINE. SPECIAL ATTENTION SHOULD BE FOCUSED ON THE PAGES CONCERNING SAFETY.

For your convenience when ordering parts, please fill in the following information when you receive your new KALAMAZOO saw.

MODEL ____________________________

SERIAL NO. ____________________________

KALAMAZOO has been committed to continuous product improvement since 1867. In keeping with this commitment, we reserve the right to change the information in this manual without notice. Every attempt has been made to insure the accuracy of this manual. Even so, KALAMAZOO assumes no responsibility for errors or omissions, nor is any liability assumed for damages resulting from the use of the information contained in this manual.

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MAINTENANCE AND REPAIR MANUAL

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LUBRICATION POINTS
CIRCULAR SAWs

figure 1.1

DAILY:

* Check the filters on the incoming air. Drain as needed.

* Clean any chips off the machined surfaces of the saw base and OIL as needed to help head rotation.

* Make sure all chips are out of the vise area before starting a cut. Chips may prevent proper clamping of the vise and create an unsafe condition.

* Pull out the plastic plug in the front of the Head Rotation casting and squirt oil into the hole to prevent rusting of the saw bed.

* Pump oil into both of the flush oiler fittings on the base of the vise support casting. This will help keep the vise pivot shaft from rusting and binding.

* Oil the round vise ways to help the vise slide in and out. Also oil the vise screw threads.

* On automatic saws, pump oil into the two flush oilers on the carriage vise as well as onto the carriage vise shafts and screw threads.

* Make sure any vise screw threads are free of chips.

* Clean and oil the barfeed carriage shafts on automatic saws.
GEARBOX LUBRICATION

The gearbox oil in CS-350 and FS-350 saws should be drained at the end of two weeks operation, and the gearbox flushed with a light flushing oil. If it is filtered, the drained oil may be re-used; otherwise use new oil. After this first change, the oil should be changed every six months or 2500 operating hours, whichever comes first. Under severe conditions, such as rapidly changing temperatures, damp, or dirty atmospheres, it may be necessary to change the oil every one to three months.

DO NOT allow the gearbox oil to become contaminated with water or dirt. This will contribute to the build-up of sludge in the oil, which will greatly reduce the life of the gearbox.

OILS AND LUBRICANTS

* GEARBOX (CS-350/FS-350 saws): Mobilgear #634 or SHC 634 (5 qts req'd)

* AIR/HYDRAULIC RESERVOIRS: Mobil 'Velocite #10' or equal (107 SUS @ 100°F)

    Head Feed: approx. 1 qt. for both

    Carriage Feed: approx. _ qts. for both

* PNEUMATIC LUBRICATOR (saws with power vise): Mobil 'Velocite #10' (5 ounces)

* OIL: 20W motor oil (as required for lubricating shafts, etc)
To refill the reservoirs, remove the plugs shown in the top of the reservoirs, and refill to the levels shown. Be sure to tighten the plugs when replacing them. If you are filling the reservoirs with the saw head down, the fill heights should be opposite of what is shown. The reservoirs are filled with Mobil 'Velocite 10' oil, which is available from your local Mobil distributor.

Under normal conditions, there should be no need to drain and flush the reservoirs. If it should become necessary, remove the screws that mount the reservoir subassembly to the base so that the unit can be raised. Remove the drain plugs, and drain as needed.
ELECTRICAL MOTOR MAINTENANCE

LUBRICATION: Most electric motors are greased with a polyurea grease. Examples of this type of grease include Shell 'Dolium R', Chevron 'SRI #2', and Texaco 'Premium RB'. These greases are NOT compatible with lithium-based greases, and should not be mixed.

LUBRICATION INTERVALS:

5000 hours of operation/year (two shifts/day): every 5 years
Continuous Normal Duty: every 2 years
Seasonal Service: (Motor is idle 6 mos.): grease before each season's use
Continuous High Temperature, Dirty, or Damp Conditions: every 6 months

LUBRICATION PROCEDURE: Overgreasing the bearings can cause premature bearing failure. Clean the tip of the grease fitting and apply 1 or 2 full strokes from a grease gun.

CAUTION: Keep the grease clean. Lubricate the motor at standstill. DO NOT mix petroleum greases with silicone greases.

![Changing Drive Belts CA-350/FA-350 Saws](image)

**figure 1.4**

1. Remove the three screws to the Belt Cover and remove it.

2. Loosen the two motor plate bolts (see illustration) and slide the motor towards the blade until the belts can be removed.

3. The belts are retensioned by pushing the motor away from the blade until a slight thumb pressure on the center of the belts produces a 5/8" deflection and then tightening the motor plate bolts.

1.4
# Maintenance & Trouble-Shooting Guide

## Seven Warning Signs of Short V-Belt Life (Causes and Suggested Corrections)

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<th>Rubbing Belt Guard</th>
<th>Worn Sheave Grooves</th>
<th>Sheave Diameter Too Small</th>
<th>Overloaded Drive</th>
<th>Mismatched Belts</th>
<th>V-Belt Slipping</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>* Check guard clearance</td>
<td>* Check groove sidewalls</td>
<td>* Redesign drive or use Cog-Belt</td>
<td>* Replace complete set of V-Belts</td>
<td>* Replace with matched set</td>
<td>* Increase tension or use Cog-Belt</td>
</tr>
<tr>
<td></td>
<td>Improper V-Belt Installation, Belts Pried over Sheaves</td>
<td>Belts Improperly Stored or in Storage too Long</td>
<td>Replacing one Belt in Multiple Drive</td>
<td>Consult local distributor</td>
<td>Oil or Heat Condition</td>
<td>Sheave Misalignment</td>
</tr>
<tr>
<td></td>
<td>Replace belts, do not pry belts over sheaves</td>
<td>Use new set of V-Belts</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 V-Belts turned Over in Sheave Groove</td>
<td>Broken Cords in V-Belt, Belts Pried over Sheaves</td>
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<td>Impulse Loads</td>
<td>Foreign Material in Grooves</td>
<td>Oily Belt Shield</td>
<td>Oily Drive Conditions</td>
</tr>
<tr>
<td></td>
<td>Replace belts, do not pry belts over sheaves</td>
<td>* Redesign drive or use Cog-Belt</td>
<td>* Use Vee-Band</td>
<td>* Improve Belt Shield</td>
<td></td>
<td>* (Where oil condition cannot be eliminated) Use Cog-Belt</td>
</tr>
<tr>
<td>3 V-Belt Slippage</td>
<td>Insufficient Tension</td>
<td>Overloaded Drive</td>
<td>Sheave Worn, Belts Bottoming in Groove, Shiny sheave groove bottom</td>
<td>Oily Drive (Leaking Bearings)</td>
<td>Oily Drive Conditions</td>
<td>Oily Drive Conditions</td>
</tr>
<tr>
<td></td>
<td>* Increase tension</td>
<td>* Redesign drive or use Cog-Belt</td>
<td>* Replace sheave</td>
<td>* Correct unnecessary oil or grease condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 V-Belt Squeal</td>
<td>Overloaded Drive</td>
<td>Insufficient Arc of Contact</td>
<td>Insufficient Tension</td>
<td>Belts Bottoming in Grooves</td>
<td>Bels Bottoming in Grooves</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Redesign drive or use Cog-Belt</td>
<td>* Increase center distance or use Cog-Belt</td>
<td>* Increase tension use gauge</td>
<td>* Replace sheave and/or belts</td>
<td>* Replace sheave and/or belts</td>
<td></td>
</tr>
<tr>
<td>5 Checked or Cracked V-Belts</td>
<td>Belt Slippage Causing Heat</td>
<td>Excessive Heat (Ambient)</td>
<td>Sheaves Too Small</td>
<td>Backside Idler</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Increase belt tension or use Cog-Belt</td>
<td>* Provide adequate ventilation or use Cog-Belt</td>
<td>* Redesign drive use Cog-Belt</td>
<td>Use Cog-Belt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Hat Bearings</td>
<td>Drive Over-Tensioned</td>
<td>Belt Slippage (causing heat)</td>
<td>Sheaves Too Far Away From Bearing</td>
<td>Sheaves Too Small</td>
<td>Poor Bearing Condition</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Check sheaves for wear-check tension</td>
<td>* Increase tension check sheaves</td>
<td>* Move sheaves closer to bearing</td>
<td>* Check NEMA Min. Diameters</td>
<td></td>
<td>* Check design &amp; maintenance</td>
</tr>
<tr>
<td>7 Repeated V-Belt Fracture</td>
<td>Shock Loads</td>
<td>Improper V-Belt Installation, Belts Pried Over Sheaves</td>
<td>Misplaced Slack</td>
<td>Foreign Object in Groove</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Check Design Use Cog-Belt</td>
<td>Replace belts, do not pry belts over sheaves</td>
<td>* Keep slack on one side when installing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
COOLANT SYSTEM MAINTENANCE

SPRAY MIST UNITS

CLEANING: Cleaning the reservoir occasionally will keep the mist unit working properly. The unit can be cleaned as follows:

1. Shut off the air supply to the saw.
2. Separate the cover and the reservoir by removing the screws on both sides of the unit.
3. Wash the reservoir with warm soapy water. This solution can be run through the system to clean the lines and nozzles. Remove the pickup tube assembly by sliding the locking tab and pulling the assembly from the pump. Clean the filter screen with a solvent and blow air through the tube to clean it out.
4. Re-assemble the unit.

NOZZLE REPLACEMENT (CA-350, CA-350PV, FA-350, and FA-350PV saws):

1. Remove the old or damaged nozzle by loosening the knurled nut at the end of the tubing.
2. Slide the black and yellow tubing from the end of the nozzle.
3. Take the new nozzle and slip the yellow tubing onto the shorter brass tube.
4. Slide the black tubing over the nozzle body and lock it in place by retightening the knurled nut over the black tubing.

NOZZLE TIP REPLACEMENT (FA-350SA and FA-350A saws):

1. Bend the nozzle sharply to snap the tip from the segmented casing.
2. Pull the tube from the barb inside the nozzle tip. DO NOT allow the tube to slip back into the casing.
3. Take the new tip and push the tube completely over the barb.
4. Snap the tip onto the casing.
COOLANT PUMP MAINTENANCE  
(Flood Coolant Systems)

CAUTION: DISCONNECT THE POWER BEFORE ATTEMPTING TO SERVICE OR REPLACE ANY COMPONENT!

1. This unit is self-lubricating. Oiling is not required.

2. Periodic cleaning of the pump parts will prolong the life and efficiency of the pump. Refer to the drawing below for the assembly and disassembly of the pumping head.

3. Lightly clean any corrosion or debris which may clog the impeller. Use a brush and penetrating oil and lightly scrape. NOTE: Do not allow sediment to build up to within 2" of the pump.

4. Turn the impeller by hand to make sure it is free. Turn on the power to see if the impeller will turn. If it does, replace the front, and the pump should operate as good as new.

PUMP TROUBLESHOOTING

1. Should the pump fail to operate, check the following:

   a) Power supply and connections
   b) Is the pump below the coolant level in the tank?
   c) Is air trapped in the pump head?
   d) Is there sediment build-up over the pump inlet?

2. An Air lock or bubble will prevent the pump from pumping. Trapped air can usually be removed by:

   a) Turning the pump off and re-starting
   b) Make sure the discharge line is sloping upward to prevent the formation of air pockets.

3. If for any reason these operations do not restore the pump to full service, call your dealer or service technician.

4. Do not, in any case, open the sealed part of the pump or remove the screws. this will void your warranty.

REPLACEMENT PARTS LIST

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Screen</td>
</tr>
<tr>
<td>2</td>
<td>Screws 8-18 x 1&quot;</td>
</tr>
<tr>
<td>3</td>
<td>Volute</td>
</tr>
<tr>
<td>4</td>
<td>Impeller Assembly</td>
</tr>
<tr>
<td>5</td>
<td>Screw 8-32 x 1-3/16&quot;</td>
</tr>
</tbody>
</table>

1.7
GEARBOX MAINTENANCE
CS-350/FS-350 SAW S

NOTE: Before performing any maintenance on the gearbox, turn the disconnect switch to the "OFF" position and lock it out for safety.

1. The gearbox oil level should be checked weekly and the recommended oil added as needed to maintain the proper level.

2. Oil changes should be done as indicated in the section on gearbox lubrication (page 1.2).

3. Keep the gearbox casting clean to allow maximum heat dissipation.

4. Check the mounting bolts for tightness after the first three months of use and annually thereafter.

BARFEED MAINTENANCE

LUBRICATION: Pump oil into the two oilers on the carriage vise and on the vise shafts and screw. Make sure the vise screw is free of chips. Clean and oil the barfeed ways regularly.

LIMIT SWITCHES: The Carriage Forward and Carriage Retracted limit switches can be adjusted by loosening the socket head screws on either side of the switch and sliding the switch and base as needed. The switches should be adjusted so that the switch just 'makes' as the carriage makes contact with the stop at either end of its travel.

The Carriage Out-of-Stock switch can be adjusted by loosening the screw in the switch arm. The arm should be set so that more than 3/16" to 1/4" of vise movement causes the switch to open (Input #200 on the programmable controller goes off).

The Barfeed Cover switch is adjusted in the same manner as the Out-of-Stock limit switch. It should be set so that the Barfeed Cover must be fully closed for the saw to operate.
VACUUM MAINTENANCE

NOTE: Before doing any maintenance or service, be sure that the vacuum unit is is disconnected from the power source to prevent accidental starting.

CAST ALUMINUM AND SHEET METAL FITTINGS:

The cast aluminum blower impeller, as well as all sheet metal fittings are maintenance free and should not require any maintenance during the life of the unit. In a very dirty environment the blower impeller should be cleaned with a wire brush to prevent a build-up that could unbalance the blower. After cleaning the impeller, inspect for possible cracks or excessive wear, which can cause an imbalance.

MOTOR MAINTENANCE:

1. REMOVING DUST AND DIRT: Blow off the motor with low pressure air to remove dust or dirt. Air pressure above 50 PSI should not be used as high pressure may damage insulation and blow dirt under loosened tape. The operator performing this maintenance should always wear eye protection. Dust can cause excessive insulation temperatures.

2. LUBRICATION: Under normal conditions ball bearing motors will operate for five years without re-lubrication. Under continuous operation at higher temperatures (above 104°F ambient), or in dusty atmospheres, re-lubricate after one year. To re-lubricate the motor bearings, dis-assemble the motor and housings. The bearings are located in the end shields of the motor. Re-pack each bearing and fill the cavity in the back of the bearings 1/3 full with 'Alvania Grease #2' (Shell Oil Co.)

TROUBLE SHOOTING CHART

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>POSSIBLE CAUSE(S)</th>
<th>CORRECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit will not operate</td>
<td>1. Improper electrical connection.</td>
<td>1. Turn the power off. Make sure the unit is wired per the electrical diagram.</td>
</tr>
<tr>
<td></td>
<td>2. Loose blower wheel.</td>
<td>2. Disconnect the power. Turn the head assembly over and spin the wheel by hand. Re-position and tighten the set screws as needed.</td>
</tr>
<tr>
<td>Low suction or flow rate</td>
<td>1. Incorrect Rotation</td>
<td>1. Turn the unit off and watch the motor cooling wheel rotation as it stops. Wire the motor if necessary.</td>
</tr>
</tbody>
</table>
TROUBLE SHOOTING CHART (continued)

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>POSSIBLE CAUSE(S)</th>
<th>CORRECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low suction or</td>
<td>2. Suction hose</td>
<td>2. Place the unit closer to the saw</td>
</tr>
<tr>
<td>flow rate</td>
<td>too long</td>
<td>and shorten the hose.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Filter Plugged</td>
</tr>
</tbody>
</table>

FILTER CLEANING:

If the air flow to the collector is reduced to the point that the pickup is marginal, the filter should be cleaned. The frequency of cleaning will depend on the size and type of material being picked up. Small and/or very fine chips may need cleaning more often.

Air flow and pickup will be retarded if the collection barrel is allowed to become too full. The level of dust/chips in the barrel should not be allowed to come closer than 12" from the bottom of the wire basket holder. Empty the barrel regularly. Check to see if chips have built up on the outside of the wire basket holder; brush these off with a brush. Do not use air; this may drive chips into the filter element. DO NOT use a wire brush; this may damage the filter element.

If the air flow is still reduced after emptying the barrel and cleaning the wire basket, the filter element should be cleaned. Remove the wire basket from the underside of the lid, take out both pieces of the filter element, clean them, and re-assemble the unit.

Remove the wire basket by removing the four bolts holding it to the bottom of the lid. Remove the two pieces of filter from the wire basket holder. Place the filters in warm soapy water and gently swirl the filters so as to dislodge any chips. Be careful not to distort the filter shapes. Rinse the filters in clean water and air dry. Lightly oil them with a lightweight motor oil.

Re-assemble the filters and wire basket to the lid. Be sure there is a good seal between the lid and the wire basket.

If cleaning the filter does not restore the air flow, it may be necessary to replace the filter elements. Contact your dealer or the factory for the new elements (Part No. CS-9011).
SPARE PARTS LIST
CA-350/FA-350 SAWS

Drive Belt (2 Req'd): CS-3468

Standard Vise Wear Plate (4 Total): CS-2470

Indicator Lamp Bulbs: CS-5031

Power Fuses (1-3FU): Bussman Type KTK-R
(FA-350 saws) Gould Type ATMR
Littlefuse Type KLKR

208V or 230V saws use 30A fuses; 460V saws use 12A

NOTE: Some early saws used Bussman type FNQ fuses.

Control Circuit Fuses (FA-350 saws):

4FU (Transformer): Bussman FNM 2 1/2
   Gould TRM 2 1/2
   Littlefuse FLM 2 1/2

5FU (Coolant Pump): Bussman FNM 1 1/4
(if equipped) Gould TRM 1 1/4
   Littlefuse FLM 1 1/4

6FU (Worklight): Bussman AGC 3/10
(if equipped) Gould GGC 3/10
   Littlefuse 3AG 3/10

8FU (Programmable controller): Bussman AGC 2
(FA-350A) Gould GGC 2
   Littlefuse 3AG 2

9FU (Programmable Counter): Bussman AGC 3/10
(FA-350A) Gould GGC 3/10
   Littlefuse 3AG 3/10

230V Motor Brake Fuses (If equipped): Bussman FWH-35
(Also work for 208V)
   Gould A25X35-4
   Littlefuse KLB-35
   (NOTE: 2 req'd)

460V Motor Brake Fuses (If equipped): Bussman FWH-15
   Gould A50P15-1
   Littlefuse KLB-15
   (NOTE: 2 req'd)

Vise Screw Brush (2 Req'd): CS-2467

1.11
SPARE PARTS LIST
CS-350/FS-350 SAWs

Blade Brush: SP-47

Standard Vise Wear Plate (4 Total): CS-2470-S

Indicator Lamp Bulbs: CS-5031

Power Fuses (1-3FU): Bussman Type KTK-R
Gould Type ATMR
Littlefuse Type KLK-R

208V or 230V saws use 30A fuses; 460V saws use 12A

NOTE: Some early saws used Bussman type FNQ fuses.

Coolant Pump Fuse (CS-350 saws): Bussman FNM 1 1/4

Control Circuit Fuses (FS-350 saws):

4FU (Transformer): Bussman FNM 2 1/2
Gould TRM 2 1/2
Littlefuse FLM 2 1/2

5FU (Coolant Pump): Bussman FNM 1 1/4
Gould TRM 1 1/4
Littlefuse FLM 1 1/4

6FU (Worklight): Bussman AGC 3/10
(if equipped) Gould GGC 3/10
Littlefuse 3AG 3/10

8FU (Programmable controller): Bussman AGC 2
(FS-350A) Gould GGC 2
Littlefuse 3AG 2

9FU (Programmable Counter): Bussman AGC 3/10
(FS-350A) Gould GGC 3/10
Littlefuse 3AG 3/10

Gearbox Oil (5 qts/change): Mobilgear #634 or SHC 634

Vise Screw Brush (2 Req’d): CS-2467
<table>
<thead>
<tr>
<th>CYLINDER P/N</th>
<th>SEAL KIT P/N</th>
<th>(Saw Vise Cylinder)</th>
<th>(Head Lift Cylinder)</th>
<th>(Carriage Feed Cylinder)</th>
<th>(Carriage Vise Cylinder)</th>
<th>(Carriage Feed Cylinder)</th>
<th>(Carriage Feed Cylinder)</th>
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<tbody>
<tr>
<td>CS-2316</td>
<td>CS-2316-PRK</td>
<td>CS-4014-PRK</td>
<td>CS-4014PRK</td>
<td>CS-4015-PRK</td>
<td>CS-4014-1-PRK</td>
<td>CS-4014P-PRK</td>
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<td>CS-4014</td>
<td></td>
<td>Hydroline Cylinders</td>
<td>Parker Cylinders</td>
<td>3 1/4&quot; bore: handwheel is on side of barfeed</td>
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<td>CS-4014-1</td>
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TROUBLESHOOTING GUIDE - GENERAL

1. MACHINE WILL NOT START
   a) Check the main and control fuses.
   b) Check your in-house wiring.
   c) Check that the incoming voltage matches the saw wiring.
   d) Check the motor brake fuses (if equipped).
   e) Overload relay tripped-fix cause and reset.

2. MOTOR WILL NOT START AND IS BLOWING FUSES
   a) Check for a short in the supply wiring.
   b) Check for a short in the motor windings or leads.
   c) Check for proper fuses or circuit breakers.

3. WORKLIGHT WILL NOT LIGHT (if equipped)
   a) Check the fuse inside the electrical enclosure (6FU).
   b) Check the bulb.

4. BLADE STRIPS TEETH
   a) Too many teeth, causing each tooth to overload.
   b) Blade too coarse.
   c) Head feed pressure too high.
   d) Blade speed too slow.
   e) Rectangular pieces should be cut on the shortest side.
   f) Vise clamping pressure too low.
   g) Head feed speed too high.
   h) Wrong blade for the job.

5. CROOKED CUTS
   a) Feed pressure too high.
   b) Wrong blade for the application.
   c) The blade grind may be worn on one side.
   d) Head feed speed too fast.
   e) Workpiece not squarely clamped in vise.
   f) The adjusting collar may be loose in the head support, allowing the head to shift on the pivot bar.

6. COOLANT WILL NOT FLOW
   a) Check the coolant level in the tank.
   b) Check the pump for blockage-clean if necessary
      (Refer to the maintenance sheets on the coolant pumps or spray mist units for details.
   c) Check for line blockage.
   d) Check the coolant pump fuse (5FU-flood coolant units)
   e) Make sure the flow valves are open (spray mist units)
   f) Make sure the coolant switch is on (if equipped)
TROUBLESHOOTING: M & PV SAWS

7. BLADE WILL NOT START
   a) Overload relay tripped - fix cause and reset.
   b) Safety switch in the handle not making contact (F-series saws only).

8. VISE WILL NOT CLAMP (PV saws)
   a) Air valve not releasing as the head is lowered.
   b) Make sure the air supply is on and the pressure regulator is set properly.

TROUBLESHOOTING: SEMI-AUTOMATIC SAWs

9. CYCLE LIGHT WILL NOT LIGHT
   a) Check the light bulb.
   b) Make sure the Head Up limit switch is tripped.
   c) Blade brake is still energized (if equipped)

10. CYCLE WILL NOT START
    a) Blade brake is still energized (if equipped)
    b) Timer 2TR is still energized to stop the last cycle.
    c) The Head Down limit switch is still tripped.

11. HEAD WILL NOT FEED
    a) The Head Down limit switch is still tripped.
    b) The Feed Speed valve is closed.
    c) The Feed Pressure is too low for the application.
    d) Make sure the air supply is on.
    e) The Head Raise solenoid is still energized.

12. HEAD WILL NOT RAISE
    a) The Head Down limit switch is not tripped.
    b) The Head Feed solenoid is still energized.
    c) The Head Up limit switch is still tripped.
    d) Make sure the air supply is on.
    e) Air pressure too low.

13. VISE WILL NOT CLAMP
    a) Solenoid valve is not energizing.
    b) Make sure the air supply is on.
    c) Air pressure too low.
    d) Check lines and fittings for leaks.
    e) Check seals for tears.
TROUBLESHOOTING: SEMI-AUTOMATIC SAWS
(continued)

14. VISE WILL NOT RELEASE
   a) Solenoid valve is not releasing.
   b) Timer 2TR is not energizing to stop the cycle.
   c) The Head Up limit switch is not tripped.

TROUBLESHOOTING: AUTOMATIC SAWS

15. CYCLE WILL NOT START
   a) Make sure the 'Operation' switch is in the 'Auto' position.
   b) The cycle will not start if the blade brake is on
   c) Make sure the Head Up limit switch is tripped.
   d) Make sure there is stock in the barfeed and that the
      carriage vise is set to within 3/32 to 1/8" of the
      stock to keep the Out of Stock limit switch tripped.
   e) The barfeed cover must be closed.
   f) The batch counter cannot read '0'.

16. HEAD WILL NOT FEED
   a) The Head Down limit switch is still tripped.
   b) The Feed Speed valve is closed.
   c) The Feed Pressure is too low for the application.
   d) Make sure the air supply is on.
   e) The Head Raise solenoid is still energized.
   f) The blade brake is still energized (if equipped).
   g) The Carriage Forward limit switch is not tripped.
   h) The Batch Counter has reached its preset value.
   i) The Stroke Counter has not reached its preset.

17. HEAD WILL NOT RAISE
   a) The Head Down limit switch is not tripped.
   b) The Head Up limit switch is not releasing.
   c) The Head Feed solenoid is still energized.
   d) Make sure the air supply is on.
   e) The air pressure is too low.

18. SAW VISE WILL NOT CLAMP
   a) The Carriage Forward limit switch is not tripped
   b) The blade brake is still energized (if equipped).
   c) The Saw Vise Clamp solenoid is not energized.
   d) Make sure the air supply is on.
   e) The clamping pressure is too low.
   f) Check lines and fittings for leaks.
   g) Check seals for tears.

2.3
TROUBLESHOOTING: AUTOMATIC SAWS
(continued)

19. SAW VISE WILL NOT OPEN

   a) The Saw Vise Clamp solenoid is still energized.
   b) The Head Up limit switch is not tripped.
   c) The Carriage Retracted limit switch was not tripped
      before feeding the stock.
   d) The saw did not finish making the cut (The Head Down
      limit switch was not tripped).
   e) The saw vise was manually clamped tight (No room for
      the cylinder to extend or retract).

20. CARRIAGE WILL NOT RETRACT

   a) The Carriage Forward limit switch is not tripped
   b) The blade brake is still energized
   c) The Carriage Vise Clamp solenoid is energized.
   d) Make sure the air supply is on.
   e) The air pressure is too low.
   f) The saw head is not feeding at the start of a cycle.
   g) The Carriage Retracted limit switch is tripped.
   h) The Stroke Counter has reached its preset value.
   i) The Carriage Feed solenoid is still energized.
   j) The Carriage Retract solenoid is not energized.

21. CARRIAGE WILL NOT FEED

   a) The Carriage Forward limit switch is tripped
   b) The Saw Vise Clamp solenoid is energized.
   c) Make sure the air supply is on.
   d) The air pressure is too low.
   e) The Carriage Retract solenoid is energized.
   f) The Head Up limit switch is not tripped.

22. CARRIAGE VISE WILL NOT CLAMP

   a) The Head Up limit switch is not tripped.
   b) The Carriage Retract solenoid is energized.
   c) The saw did not finish making the cut (The Head Down
      limit switch was not tripped).
   d) The Carriage Retracted limit switch is not tripped
   e) Make sure the air supply is on.
   f) The air pressure is too low.

23. CARRIAGE VISE WILL NOT OPEN

   a) The Carriage Vise Clamp solenoid is not releasing
   b) The Saw Vise Clamp solenoid is not energized.
   c) The Carriage Retract solenoid is still energized.
   d) The Carriage Vise is manually clamped tight (No room
      for the cylinder to extend or retract).
TOOL KIT
CIRCULAR SAWS

1. CS-1503  1 1/2 x 1 5/8 OPEN END WRENCH
2. CS-1504  5/8 x 3/4 OPEN END WRENCH
3. CS-1505  1/2" HEX KEY
4. CS-1506  3/8" HEX KEY W/SPRING
5. CS-1507  3/8" HEX KEY TEE WRENCH
6. CS-1508  1/4" HEX KEY
7. CS-1509  3/16" HEX KEY
8. CS-1510  5/32" HEX KEY
9. CS-1511  5/16" HEX KEY

CS-1500
FS SERIES
AUTO/SEMI-AUTO

CS-1500-1
FA SERIES
AUTO/SEMI-AUTO

CS-1500-2
FS/CS SERIES
PV/MANUAL

CS-1500-3
FA/CA SERIES
PV/MANUAL

CS-1504  CS-1503  CS-1507  CS-1503
CS-1505  CS-1504  CS-1505  CS-1506
CS-1511  CS-1505  CS-1506  CS-1506
CS-1507  CS-1508  CS-1508
CS-1509  CS-1509
CS-1510  CS-1510
CS-1511  CS-1511

3.1
CS-2310  VISE CYLINDER BODY
CS-2311  VISE CYLINDER CAP
CS-2312  VISE CYLINDER PISTON (INCLUDES ROD)
CS-2313  O-RING: PARKER #2-160 N674-70
CS-2314  O-RING: PARKER #2-325 N674-70
CS-2315  O-RING: PARKER #2-426 N674-70
CS-2315A ROD WIPER: PARKER #8600-0150-4181

1/4-20 x 1 SHCS (6)

CS-2316-PRK COMPLETE SEAL KIT: INCLUDES ITEMS
4, 5, 6, AND 7

CS-2316 COMPLETE CYLINDER ASSEMBLY

NOTE: CYLINDERS BUILT BEFORE MAY, 1991 HAVE 1/8-27 NPT PORTS
BACKSTOP ASSEMBLY
CIRCULAR SAWS

1. CS-3530  SWITCH MOUNTING PLATE
2. CS-6432  INSERT
3. CS-6400-1  BACKSTOP
4. V20-6105  LIMIT SWITCH: OMRON #D4C-1631
5. #10-24 x 7/8 SOCKET HEAD CAP SCREW (2)
6. #10-24 x 1 ROUND HEAD MACHINE SCREW (BRASS) (2)
7. 1/4-20 x 3/4 SOCKET HEAD CAP SCREW (2)
8. 5/8-11x2 1/2 SOCKET HEAD CAP SCREW
9. #10-24 BRASS HEX NUT (2)
10. 1/4 FLAT WASHER (MODIFIED) (2)
BARFEED CARRIAGE CIRCULAR SAWS

1. CS-6252  VISE WEAR PLATE (2) (FA-350A ONLY)
2. CS-6252-S VISE WEAR PLATE (2) (FS-350A ONLY)
3. CS-4016  CARRIAGE VISE CYLINDER
4. CS-5046  LIMIT SWITCH
5. CS-6100-1 BARFEED CARRIAGE
6. CS-6200-1 CARRIAGE VISE REAR JAW
7. CS-6210  MOVING VISE BLOCK
8. CS-6215  VISE BLOCK GUIDE PIN (2)
9. CS-6230  OUT OF STOCK TRIGGER
10. CS-6250-1 CARRIAGE VISE FRONT JAW
11. CS-6255  CARRIAGE VISE SCREW
12. CS-6260  BARFEED HANDWHEEL
13. CS-6270-1 VISE SHAFT (2)
14. V21-3234 BRONZE BEARING (4)
15. 3/16 x 1 1/4 ROLL PIN
BARFEED CARRIAGE
OVERHEAD ROLLER
CIRCULAR SAWs

1. CS-6335 BARFEED ROLLER
2. CS-6340 BRONZE BEARING: BOSTON #P50-6 (2)
3. CS-6550 OVERHEAD ROLLER SUPPORT PLATE
4. CS-6555 OVERHEAD ROLLER GUIDE (2)
5. CS-6556 OVERHEAD ROLLER TOP PLATE
6. CS-6558 OVERHEAD ROLLER SUPPORT BLOCK (2)
7. 1/8 x 1 1/4 ROLL PIN (2)
8. 1/4-20 x 1/2 SHCS (4)
9. 5/16-18 x 2 1/4 SHCS (2)
10. 3/8-16 x 1 1/4 SHCS (2)

3.7
STOCK STOP ASSEMBLY
CIRCULAR SAWs

CS-7000 COMPLETE ASSEMBLY

1  CS-7010  STOP BLOCK
2  CS-7015  STOP ROD ASSY.
3  CS-7030  STOP SUPPORT
4  CS-7040  STOP SHAFT
5  A8-18115 ADJUSTING KNOB

3.8
"P" SERIES STOCK STANDS

1. P-1001 STOCK STAND BASE
2. P-2 STOCK STAND YOKE
3. P-103 STOCK STAND NUT
4. P-104 STOCK STAND SCREW: 21"-30" STANDS
   P-114 STOCK STAND SCREW: 30"-39" STANDS
   P-124 STOCK STAND SCREW: 37"-46" STANDS
5. P-5 STOCK STAND ROLLER
6. 1/2 x 3 STEEL CLEVIS PIN
7. 1/8 x 1 COTTER PIN

16 SQUARE

21"-30" (P-10)
30"-39" (P-11)
37"-46" (P-12)
ROLLER TABLE
STOCK STOP
RTS-07

RT-0507 OR
RT-1007
ROLLER TABLE

1 8C-1915  TIGHTENER KNOB
2 RTS-071  STOCK STOP WELDMENT

3.11
1 CS-7610 WORKTABLE WELDMENT
2 CS-7615 WORKTABLE CENTER PLATE
3 5/8-11 x 5 1/2 SHCS (2)
CS-7500 COMPLETE ASSEMBLY

1. CS-7505 CYLINDER MOUNT
2. CS-7510 CLAMP BAR
3. CS-7515-1 CYLINDER: HUMPHREY #5-0-1/2
4. CS-7520 GUIDE RODS (2)
5. CS-7525 ADJUSTING NUT (4)

NOTE: SAWS BEFORE S/N 241 USE THE CS-7515 CYLINDER INSTEAD OF A CS-7515 CYLINDER
1. CS-7401 90 Deg. Wear Plate (FA/CA Saws Only) (3)
2. CS-7401-S 90 Deg. Wear Plate (FS/CS Saws Only) (3)
3. CS-7402 Stock Stop Wear Plate (FA/CA Saws Only)
4. CS-7402-S Stock Stop Wear Plate (FS/CS Saws Only)
5. CS-7403 Stock Stop Weldment
6. V20-7117A Pressure Gauge: Parker #P77413 (FA/CA Saws Only)
7. V20-7117B Pressure Regulator: Parker #14R113F (FA/CA Saws Only)
8. V20-7118 Mounting Bracket: Parker #PS4178 (FA/CA Saws Only)

Short Length Stock Stop Option

Stock stop slides in T-slot to any length desired.

Air ports to aid in part ejection (FA/CA Saws Only)

Note: Front wear plate not shown in this view.
BASE COMPONENTS
CA--350/CA--350PV

1  CS-1000  BASE CABINET
2  CS-1205  DOOR LATCH SPRING
3  CS-1208  DOOR GROMMET
4  8C-212    "KALAMAZOO" LOGO
5  9A-5040  MOTOR SWITCH ASSEMBLY (SEE PAGE 8.25)
6  V20-7300  SPRAY MIST UNIT - 1 OT. RESERVOIR
7  CS-2227  PLASTIC GRIP (CA-350/CA-350PV)
8  CS-2225  ARM
9  CS-2100  SAW BED
10 CS-2200  HEAD ROTATION CASTING
11 CS-3200  HEAD ASSEMBLY (SEE FIG. 4.6)
12 CS-3582  HEAD FRAME SUPPORT
13 CS-3800  HEAD RETURN SPRING
14 CS-3800  RETRACTOR BRACKET ASSEMBLY
15 CS-3810  RETRACTO R SHAFT ASSEMBLY
16 CS-3900  BLADE GUARD ASSEMBLY
17 CS-3910  BELT GUARD ASSEMBLY
18 V20-2202  3 HP MOTOR, 1750 RPM, 184 FRAME
19 CS-4013  FILTER/REGULATOR/LUBRICATOR (PV MODELS)
20 CS-2500  VISE ASSEMBLY (SEE FIG. 4.5)
21 CS-2510  SPLASH GUARD - MANUAL VISE (2)
22 CS-5054-1  LIMIT SWITCH TRIGGER (CA-350PV)
23 CS-4020-1  VISE CLAMP AIR VALVE (CA-350PV)

REVISED 6/5/92
BASE COMPONENTS
FA-350/FA-350PV

1  CS-1000  BASE CABINET
2  CS-1205  DOOR LATCH SPRING
3  CS-1208  DOOR GROMMET (3)
4  CS-2710  ANGLE STOP BLOCK (3)
5  CS-2100  SAW BED
6  CS-2200  HEAD ROTATION CASTING
7  HEAD ASSEMBLY (SEE FIG. 4.6)
8  CS-3200  HEAD FRAME SUPPORT
9  CS-3582  HEAD RETURN SPRING
10 CS-3600  HANDLE SWITCH ASSEMBLY
11 CS-3800  RETRACTOR BRACKET ASSEMBLY
12 CS-3810  RETRACTOR SHAFT ASSEMBLY
13 CS-3900  BLADE GUARD ASSEMBLY
14
15 CS-3910  BELT GUARD ASSEMBLY
16 CS-5000  SWITCH PANEL ASSEMBLY (SEE FIG. 8.3)
17 CS-7000  STOCK STOP ASSEMBLY (SEE FIG. 3.8)
18 BC-212  'KALAMAZOO' LOGO
19 V20-2202  3HP MOTOR, 1750 RPM, 184 FRAME
20 CS-4013  FILTER/REGULATOR/LUBRICATOR ASS'Y
21 V20-7300  SPRAY MIST UNIT (1 QT RESERVOIR)
22 CS-PV  VISE ASSEMBLY (SEE FIG. 4.5)
23 CS-2510  SPLASH GUARD - POWERED VISE (2)
24 CS-5054-1  LIMIT SWITCH TRIGGER
25 CS-4020-1  AIR VALVE
BASE COMPONENTS
FA-350SA

1. CS-1000 BASE CABINET
2. CS-1205 DOOR LATCH SPRING
3. CS-1208 DOOR GROMMET (3)
4. CS-2710 ANGLE STOP BLOCK (3)
5. CS-2100 SAW BED
6. CS-2200 HEAD ROTATION CASTING
7. HEAD ASSEMBLY (SEE FIG. 4.6)
8. CS-3200 HEAD FRAME SUPPORT
9. HEAD LIFT ASSEMBLY (SEE FIG. 4.9)
10. CS-5080 CONTROL CONSOLE ASS'Y (SEE FIG. 8.5)
11. CS-3800 RETRACTOR BRACKET ASSEMBLY
12. CS-3810 RETRACTOR SHAFT ASSEMBLY
13. CS-3900 BLADE GUARD ASSEMBLY
14. CS-3910 BELT GUARD ASSEMBLY
15. CS-7000 STOCK STOP ASSEMBLY (OPTION-SEE FIG. 3.8)
16. SC-212 'KALAMAZOO' LOGO
17. V20-2202 3HP MOTOR, 1750 RPM, 184 FRAME
18. CS-4013 FILTER/REGULATOR/LUBRICATOR ASSEMBLY
19. CS-4003-1 AIR/OIL RESERVOIR ASS'Y (SEE FIG. 7.1)
20. CS-5081 CONTROL CONSOLE BRACKET
21. CS-9062 SPRAY MIST UNIT-1 GAL RESERVOIR
22. CS-PV VISE ASSEMBLY (SEE FIG. 4.5)
23. CS-2510 SPLASH GUARD - POWERED VISE (2)
24. CS-4017-1 FEED SPEED VALVE
25. CS-4042 FEED SPEED OVERLAY

4.3
BASE COMPONENTS
FA-350A

1 CS-6700 BASE CABINET
2 CS-1205 DOOR LATCH SPRING (2)
3 CS-1208 DOOR GROMMET (4)
4 CS-2100 SAW BED
5 CS-2200 HEAD ROTATION CASTING
6 HEAD ASSEMBLY (SEE FIG. 4.6)
7 CS-3200 HEAD FRAME SUPPORT
8 POWERED HEAD LIFT PARTS (SEE FIG. 4.9)
9 CS-5002-1 CONTROL CONSOLE ASS'Y (SEE FIG. 8.6)
10 CS-3800 RETRACTOR BRACKET ASSEMBLY
11 CS-3810 RETRACTOR SHAFT ASSEMBLY
12 CS-3900 BLADE GUARD ASSEMBLY
13 CS-4042 FEED SPEED OVERLAY
14 CS-3910 BELT GUARD ASSY.
15 CS-7045 DISCHARGE SLIDE
16 H-15301 'KALAMAZOO' LOGO
17 V20-2202 3HP MOTOR, 1750 RPM, 184 FRAME
18 CS-4013 FILTER/REGULATOR/LUBRICATOR ASSEMBLY
19 CS-4003-1 HEAD LIFT AIR/OIR RESERVOIR ASS'Y (SEE FIG. 7.1)
20 CS-6770 BARFEED CARRIAGE COVER
21 CS-9062 SPRAY MIST UNIT-1 GAL RESERVOIR
22 $CS-PV VISE ASSEMBLY (SEE FIG. 4.5)
23 CS-2510 SPLASH GUARD - POWERED VISE (2)
24 CS-4017-1 FEED SPEED VALVE
25 CS-6000 BARFEED ASSY. (SEE FIG. 3.3)
26 CS-2710 ANGLE STOP BLOCK (2)
27 CS-5046 LIMIT SWITCH
28 CS-4060 CARRIAGE FEED AIR/OIR RESERVOIR ASS'Y (SEE FIG. 7.2).
NOTE: HANDWHEEL, ETC. OMITTED FOR CLARITY IN THIS VIEW

1. CS-2200 HEAD ROTATION CASTING
2. CS-2210 VISE PIVOT SHAFT
3. CS-2211 PIVOT SHAFT KEY
4. CS-2215 SHAFT LOCK BASE
5. CS-2220 SHAFT LOCK PLATE
6. CS-2225 SHAFT LOCK ARM
7. CS-2227 PLASTIC GRIP
8. CS-2710 ANGLE STOP BLOCK (3)
9. CS-2205 ANGLE SCALE
10. CS-8301 SCREW COVER (2)
11. CS-2300 VISE SUPPORT CASTING
12. CS-2316 VISE CYLINDER ASSY
   (MACHINES W/ POWER VISE)
13. CS-2320 FRONT VISE JAW
14. CS-2325 REAR VISE JAW
15. CS-2328 VISE SHAFT (2)
16. CS-2330 FRONT VISE JAW ADAPTER
   (MACHINES W/ MANUAL VISE)
17. CS-2450 VISE SCREW RETAINER
18. CS-2460 VISE SCREW ASSEMBLY
19. CS-2468 VISE SCREW COLLAR
20. CS-2470 WEAR PLATE (4) - ALUMINUM
21. 9A-11502 VISE HANDWHEEL
22. 9A-11504 HANDWHEEL NUT
23. H-40331B FLUSH OILER (2)
24. CS-8302 BUSHING
25. CS-8303 BUSHING
26. 5/8-11 x 4 1/2 SHCS (2)
27. 1/2 FLAT WASHER
28. 5/8-11 x 2 SHCS (4)
29. 5/8-11 SQUARE NUT (4)
30. 1/4-20 x 3 1/2 SHCS (2)
31. S-113 KEY
32. CS-2667 VISE SCREW BRUSH (2)
33. CS-2322 DRAG SCREW (5)
34. 1/4-20 x 1 1/4 SHSS
HEAD COMPONENTS
FA-350 SAWS

1. CS-3100 HEAD FRAME ASSEMBLY
2. CS-3300 MOTOR MOUNTING PLATE
3. CS-3465 DRIVE PULLEY
4. CS-3468 DRIVE BELT: DAYCO #3VX500 (2)
5. CS-3600 BLADE SWITCH HANDLE ASSEMBLY (FA-350/FA-350PV ONLY)
6. CS-2225 SHAFT LOCK ARM (CA-350/CA-350PV)
7. CS-2227 PLASTIC GRIP (CA-350/CA-350PV)
8. CS-3830 LOWER BLADE GUARD
9. CS-3900 BLADE GUARD ASSEMBLY
10. CS-3849 DEFLECTOR FLAP
11. CS-3910 BELT GUARD
12. CS-3920 BELT GUARD SUPPORT
13. CS-3930 BELT GUARD BACK PLATE
14. V20-2202 3 HP MOTOR: BALDOR #M3611
15. CS-3857 AIR BAFFLE
16. CS-3857A AIR BAFFLE BLADE (PLASTIC)
SPINDLE ASSY
FA-350 SAWS

NOTE PROPER ORIENTATION OF OFF-CENTER LOCATING HOLE:
"LONG" SIDE SHOULD BE TOWARD THE "BLADE" SIDE OF THE SPINDLE
(INSTEAD OF THE "PULLEY" SIDE)

CS-3401  BLADE SPINDLE SUB-ASSEMBLY
(INCLUDES ITEMS 1, 4, 5, AND 6)

1  CS-3400  BLADE SPINDLE
2  CS-3410  SPINDLE WASHER
3  CS-3420  SPINDLE NUT (NOTE: LEFT HAND THREAD)
4  CS-3430  OUTER BEARING SPACER
5  CS-3440  INNER BEARING SPACER
6  CS-3445  BEARING: SKF #62052RS (2)
7  CS-3450  PULLEY SPACER
8  CS-3460  DRIVEN PULLEY
9  V20-2142  KEY: 1/4 SQUARE x 7/8 LONG
10  7/8-9 LOCK NUT
11  CS-3100  HEAD FRAME CASTING (REF)
12  CS-3910  BELT GUARD (REF)

4.7
MANUAL HEAD LIFT
FA-350M

1 CS-3100 HEAD FRAME CASTING
2 CS-3150 CLEVIS BRACKET
3 CS-3200 HEAD SUPPORT CASTING
4 CS-3260 ADJUSTING RING COLLAR
5 CS-3265 ADJUSTING RING NUT
6 CS-3300 MOTOR MOUNTING PLATE
7 CS-3575 SNAP RING: TRUARC #X-5133-74
8 CS-3585 SPRING ROLLER
9 CS-3582 SPRING: ASSOCIATED #E1500-148-4500M
10 CS-3590 ROLLER BRACKET ASSEMBLY
11 CS-3596 SPRING SLEEVE
12 CS-3598 SPRING PIN
13 V20-2202 3 HP MOTOR
14 CS-3250 HEAD PIVOT SHAFT
POWERED HEAD LIFT
FA-350

1. CS-3100 HEAD FRAME CASTING
2. CS-3150 CLEVIS BRACKET
3. CS-3200 HEAD SUPPORT CASTING
4. CS-3260 ADJUSTING RING COLLAR
5. CS-3265 ADJUSTING RING NUT
6. CS-3300 MOTOR MOUNTING PLATE
7. CS-3510 CYLINDER MOUNTING BRACKET
8. CS-3520 CYLINDER MOUNT
9. CS-3530 SWITCH MOUNTING PLATE (2)
10. CS-3550 STOP COLLAR (2)
11. CS-3560 STOP ROD CLEVIS ASSEMBLY
12. CS-3570 CLEVIS PIN
13. CS-3575 SNAP RING: TRUARC #X-5133-74
14. CS-3580 CYLINDER CLEVIS: PARKER #50942
15. CS-4014 CYLINDER: 2 1/2" BORE x 3 3/4" STROKE
16. CS-5057 LIMIT SWITCH: OMRON #D4C-1603
17. V20-2202 3 HP MOTOR: 1750 RPM, 184 FRAME
18. 5/8 x 1 SOCKET HEAD SHOULDER SCREW
19. CS-3250 HEAD PIVOT SHAFT

4.9
1  CS-3100  HEAD FRAME CASTING (REF)
2  CS-3200  HEAD SUPPORT CASTING (REF)
3  CS-3300  MOTOR MOUNTING PLATE (REF)
4  CS-3600  RETRACOR BRACKET ASSY
5  CS-3610  RETRACOR SHAFT
6  CS-3620  RETRACOR ARM
7  CS-3825  1/4-20 ELASTIC STOP NUT
8  CS-3830  LOWER BLADE GUARD
9          
10 CS-3847  SNAP RING: TRUARC #5100-150
11 CS-3848  COOLANT ADAPTER
12 CS-3849  FLAP
13 CS-3900  BLADE GUARD ASSEMBLY
14 CS-3857  AIR BAFFLE (METAL)
15 CS-3857A AIR BAFFLE BLADE (PLASTIC)
16 V20-2202 3 HP MOTOR: 1750 RPM, 184 FRAME (REF)
17 CS-8222  BLADE CAUTION DECAL
18 CS-3839  WARNING DECAL
19 CS-3849A FLAP BRACKET
CHIP COLLECTOR PARTS
CA-350/FA-350 SAWS

1. CS-9005 CHIP COLLECTOR: CINCINNATI #300S
2. CS-9006 REDUCER: 6" x 4"
3. CS-9007 BUSHING: 4" x 2"
4. CS-9008 HOSE NIPPLE: 2"NPT x 2" HOSE
5. CS-9009 VACUUM HOSE: 2"ID x 6' LONG
6. CS-9010 55 GAL BARREL
7. CS-9011 REPLACEMENT FILTER ELEMENT
8. 9A-220B MOTOR SWITCH: 230V/3PH
9. 9A-220C MOTOR SWITCH: 460V
10. 9A-220E MOTOR SWITCH: 208V
1  CS-9002  CHIP COLLECTOR
2  CS-9003  RH SIDE COVER
3  CS-9004  LH SIDE COVER
4  CS-9008  HOSE NIPPLE: 2"NPT x 2" HOSE
5  CS-9009  VACUUM HOSE: 2" ID x 6' LONG
6  CS-9003A RH SIDE COVER EXTENSION
7  1/4-20 x 1/2 SHCS (3-NOT SHOWN)
BASE COMPONENTS
CS-350/CS-350PV

1 CS-1000 BASE CABINET
2 CS-1205 DOOR LATCH SPRING
3 CS-1208 DOOR GROMMET (3)
4 BC-212 'KALAMAZOO' LOGO
5 9A-5040 BLADE MOTOR SWITCH
6 CS-1705B COOLANT TANK SHELF
7 CS-1730 COOLANT TANK
8 CS-1735 SPLASH GUARD
   (AROUND COOLANT TANK)
9 CS-2100 SAW BED
10 CS-2200 HEAD ROTATION CASTING
11 HEAD ASSEMBLY
   (SEE FIGS. 5.11 AND 5.12)
12 CS-3210 HEAD FRAME SUPPORT
13 CS-8201 HEAD RETURN SPRING (2)
14 CS-3820 RETRACTOR ARM
15 CS-3822 RETRACTOR EXTENSION
16 CS-3905 BLADE GUARD ASSEMBLY
17
18 CS-8400-A BLADE BRUSH ASSEMBLY
   (SEE FIG. 5.8)
19 CS-8205A 3/1.5 HP MOTOR, 208/230V
CS-8205B 3/1.5 HP MOTOR, 460V
20 CS-4013 FILTER/REGULATIOR/LUBRICATOR
   (PV MODELS)
21 VISE ASSEMBLY (SEE FIG. 5.5)
22 CS-2500 SPLASH GUARD - MANUAL VISE (2)
23 CS-2510 SPLASH GUARD - POWERED VISE (2)
24 CS-5054-1 LIMIT SWITCH TRIGGER
25 CS-4020-1 VISE CLAMP AIR VALVE
26 CS-5064-1 MOTOR SPEED SWITCH (COMPLETE)
   CS-5064-1A SPEED SWITCH OVERLAY
   CS-5064-1B SPEED SWITCH OPERATOR
   CS-5064-1C SPEED SWITCH CONTACT BLOCK
26 CS-2227 PLASTIC GRIP
27 CS-2225 ARM

REVISED 6/5/92
## BASE COMPONENTS

**FS-350SA**

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>CS-1000 BASE CABINET</td>
</tr>
<tr>
<td>2</td>
<td>CS-1205 DOOR LATCH SPRING</td>
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<tr>
<td>3</td>
<td>CS-1208 DOOR GROMMET (3)</td>
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<tr>
<td>4</td>
<td>CS-1300S COOLANT TANK ASSEMBLY (SEE FIG. 5.6)</td>
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<tr>
<td>5</td>
<td>CS-2710 ANGLE STOP BLOCK (3)</td>
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<td>CS-2100 SAW BED</td>
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<td>7</td>
<td>CS-2200 HEAD ROTATION CASTING</td>
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<tr>
<td>8</td>
<td>CS-3210 HEAD ASSEMBLY (SEE FIG. 5.11 AND 5.12)</td>
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<tr>
<td>9</td>
<td>CS-3211 HEAD FRAME SUPPORT</td>
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<td>10</td>
<td>CS-8201 HEAD RETURN SPRING</td>
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<td>11</td>
<td>CS-8122 HEAD LIFT ASSY. (SEE FIG. 5.10)</td>
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<tr>
<td>12</td>
<td>CS-8220 RETRACTOR EXTENSION</td>
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<td>13</td>
<td>CS-8222 RETRACOR ARM</td>
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<td>14</td>
<td>CS-8159 BLADE GUARD ASSEMBLY</td>
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<td>15</td>
<td>CS-8400-A BLADE BRUSH ASSEMBLY (SEE FIG. 5.8)</td>
</tr>
<tr>
<td>16</td>
<td>CS-6013 FILTER/REGULATOR/LUBRICATOR ASSY.</td>
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<tr>
<td>17</td>
<td>CS-5080 CONTROL CONSOLE ASSEMBLY (SEE FIG. 8.5)</td>
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<td>18</td>
<td>CS-0000 STOCK STOP ASSEMBLY (OPTION: SEE FIG. 3.8)</td>
</tr>
<tr>
<td>19</td>
<td>CM-16 CHIP PAN</td>
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<tr>
<td>20</td>
<td>8C-212 'KALAMAZOO' LOGO</td>
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<tr>
<td>21</td>
<td>CS-8205A 3/1.5 HP MOTOR, 1750/825 RPM, 208/230V</td>
</tr>
<tr>
<td>22</td>
<td>CS-8205B 3/1.5 HP MOTOR, 1750/825 RPM, 460V</td>
</tr>
<tr>
<td>23</td>
<td>CS-2517 Drip Guard</td>
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<tr>
<td>24</td>
<td>CS-PVS VISE ASSEMBLY (SEE FIG. 5.5)</td>
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<tr>
<td>25</td>
<td>CS-2510 SPLASH GUARD - POWER VISE (2)</td>
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<td>26</td>
<td>CS-5081 CONTROL CONSOLE BRACKET</td>
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<td>27</td>
<td>CS-4003-1 AIR/OIL RESERVOIR ASSY. (SEE FIG. 7.1)</td>
</tr>
<tr>
<td>28</td>
<td>CS-4017-1 FEED SPEED VALVE</td>
</tr>
<tr>
<td>29</td>
<td>CS-4042 FEED SPEED OVERLAY</td>
</tr>
</tbody>
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5.3
BASE COMPONENTS
FS-350A

1. CS-6700  BASE CABINET
2. CS-1205  DOOR LATCH SPRING (2)
3. CS-1208  DOOR GROMMET (4)
4. CS-2100  SAW BED
5. CS-2200  HEAD ROTATION CASTING
6.        HEAD ASSEMBLY (SEE FIG. 5.11 AND 5.12)
7. CS-3210  HEAD FRAME SUPPORT
8.        HEAD LIFT ASSEMBLY (SEE FIG. 5.10)
9. CS-5002-1 CONTROL CONSOLE ASS'Y (SEE FIG. 8.6)
10. CS-3820  RETRACTOR ARM
11. CS-3822  RETRACTOR EXTENSION
12. CS-3905  BLADE GUARD ASSEMBLY
13.        
14. C-16  CHIP PAN
15. CS-7045  DISCHARGE SLIDE
16. H-15301  "KALAMAZOO" LOGO
17. CS-8205A  3/1.5 HP MOTOR. 1750/825 RPM. 208/230V
18. CS-8205B  3/1.5 HP MOTOR. 1750/825 RPM. 460V
19. CS-4013-1  FILTER/REGULATOR/LUBRICATOR ASSEMBLY
20.        HEAD AIR/OIR RESERVOIR ASS'Y (SEE FIG. 7.1)
21. CS-6770  BARFEED CARRIAGE COVER
22. CS-2517  DRIP GUARD
23. CS-PVS  VISE ASSEMBLY (SEE FIG. 5.5)
24. CS-2510  SPLASH GUARD - POWERED VISE (2)
25. CS-4017-1  FEED SPEED VALVE
26. CS-6000  BARFEED ASSY. (SEE FIG. 3.3)
27. CS-2710  ANGLE STOP BLOCK (2)
28. CS-13005  COOLANT TANK ASSY. (SEE FIG. 5.6)
29. CS-8400A  BLADE BRUSH ASSY. (SEE FIG. 5.8)
30. CS-4060  CARRIAGE AIR/OIR RESERVOIR ASS'Y (SEE FIG. 7.2)

5.4
COOLANT TANK ASSEMBLY
CIRCULAR SAWS

1 C-16 CHIP PAN
2 C-49 1/4 NPTF TO 3/8 HOSE FITTING
3 C-855 3/8 ID HOSE x 6' LONG
4 CS-1300 COOLANT TANK
5 CS-1308 COOLANT TANK SUPPORT
6 H3-3005 9/16 WIRE HOSE CLAMP (2)
7 JIC-431 COOLANT PUMP: LITTLE GIANT #1-YS
   (W/OUT SWITCH)
8 1/2 NPT PLUG
9 1/2 NPT PIPE COUPLING
10 1/2 NPT x 1 1/2 NIPPLE
11 1/2' CONDUIT NUT (2)

NOTE: UNITS WITH A FLUSHING HOSE USE
PUMP P/N H-106 IN PLACE OF P/N JIC-431

5.6
BLADE GUARD PARTS
CS-350/FS-350

1. CS-3822 RETRACT OR EXTENSION
2. CS-3820 RETRACT OR ARM
3. CS-3825 1/4-20 ELASTIC STOP NUT
4. CS-8620 LOWER BLADE GUARD
5. CS-3847 SNAP RING: TRUARC #5100-0150
6. CS-3905 BLADE GUARD ASSEMBLY
7. CS-8222 BLADE CAUTION DECAL
8. CS-8400-A BLADE BRUSH ASSEMBLY (SEE FIG. 5.8)
9. C-12 COOLANT VALVE
10. 3/8-16 THUMB SCREW (2)

S.7
BLADE BRUSH ASSEMBLY
CS-350/FS-350 SAWS

1 CS-8400  BLADE BRUSH BRACKET
2 SP-47   BLADE CLEANING BRUSH
3 9A-273  1/2 DIA x 5/8 LG.
          SOCKET HEAD SHOULDER SCREW
4 9A-272  BLADE BRUSH SPACER
5        3/8 FLAT WASHER
6        3/8 LOCK WASHER
7        3/8-16UNC x 3/4 WINGHEAD
          SHOULDER THUMB SCREW
8        3/8-16 UNC HEX NUT
HEAD FRAME PARTS
CS-350 / CS-350PV
FS-350 / FS-350PV

1 CS-3210 HEAD SUPPORT CASTING
2 CS-8610 PIVOT SHAFT
3 CS-3260 ADJUSTING RING COLLAR
4 CS-3265 ADJUSTING RING NUT
5 CS-3598 SPRING PIN
6 CS-3575 SNAP RING: TRUARC #X-5133-74 (2)
7 CS-3596 SPRING SLEEVE (2)
8 CS-4020-1 AIR VALVE
   (CS-350PV/FS-350PV ONLY)
9 CS-5054-1 LIMIT SWITCH TRIGGER
   (CS-350PV/FS-350PV ONLY)
10 CS-3150 CLEVIS BRACKET
11 CS-8201 HEAD RETURN SPRING
12 CS-8202-1 SPRING BRACKET
13 3/4 SAE FLAT WASHER (7)
POWERED HEAD PARTS
FS-350SA/FS-350A

1. CS-3210  HEAD SUPPORT CASTING
2. CS-8610  PIVOT SHAFT
3. CS-3260  ADJUSTING RING COLLAR
4. CS-3265  ADJUSTING RING NUT
5. CS-3510  CYLINDER MOUNT BRACKET
6. CS-3520  CYLINDER MOUNT
7. CS-3530  SWITCH MOUNTING PLATE (2)
8. CS-3550  STOP COLLAR (2)
9. CS-3560  STOP ROD CLEVIS ASSEMBLY
10. CS-3570  CLEVIS PIN
11. CS-3575  SNAP RING; TRUARC 3X-5133-74
12. CS-3580  CYLINDER CLEVIS; PARKER #50942
13. CS-8230  SPRING ROLLER (2)
14. CS-4014  CYLINDER; 2 1/2" BORE x 3 3/4" STROKE
15. CS-5057  LIMIT SWITCH; OMRON MD4C-1603 (2)
16. CS-8100-1 GEARBOX CASTING
17. CS-3150  CLEVIS BRACKET
18. CS-8201  HEAD RETURN SPRING
19. CS-8205A MOTOR: 1.5/3 HP (208/230V)
   CS-8205B MOTOR: 1.5/3 HP (460V)
20. CS-8203  ASSIST SPRING BRACKET
21. X-143  5/8 x 1 SOCKET HEAD SHOULDER SCREW
22. 5/8 x 1 1/2 SOCKET HEAD SHOULDER SCREW
23. 5/8 SAE FLAT WASHER (2)

5.10
GEARBOX ASSEMBLY

1. CS-8100  GEARBOX CASTING
2. CS-8154  WORM GEAR
3. CS-8156  LARGE BEARING ASSEMBLY
4. CS-8158  BEARING RETAINER
5. CS-8160  SPINDLE SHAFT
6. CS-8165  SPINDLE DRIVE PLATE
7. CS-8220  OIL FILLER PLUG
8. CS-8221  SIGHT LEVEL GAUGE
9. X-116    BACK COVER

10. X-124   BACK COVER SHIM
11. X-133   SMALL BEARING ASSEMBLY
12. 1/4-20 x 7/8 SHCS (4)
13. 3/8-16 x 7/8 HHCS (4)
14. 1/2-13 x 1 1/2 SHCS
15. #TX WOODRUFF KEY (3/8 x 2 NOMINAL)
16. CS-8171  RETAINING RING
17. CS-8172  OIL SEAL
18. CS-8173  O-RING
19. CS-8600  BUSHING (2)
1. Remove the saw blade and replace it with a plate similar to the one shown below. The critical dimensions for making this plate are those for the hole diameter and the flatness and parallelism.

2. The vise alignment may be adjusted by loosening the two vise retaining bolts. Once the vise jaws are square with the test plate as shown above, re-tighten the vise retaining bolts. Re-insert the rubber plugs over the retaining bolts to keep parts from 'catching' as stock feeds across the vise support.
SAW VISE CYLINDER REPLACEMENT

1/4-20 x 3 1/2 BOLT

HANDWHEEL
VISE CYLINDER
HANDWHEEL NUT
HANDWHEEL KEY
ROD WIPER

figure 6-3

TO REMOVE THE VISE CYLINDER:

1. Turn the electrical power off and remove the air supply to the saw.

2. Remove the handwheel nut, handwheel, key, and air lines from the vise.

3. Remove the 1/4-20 x 3 1/2" cap screws from inside the front vise jaw.

4. Rotate the vise cylinder counter-clockwise to unscrew the cylinder from the vise screw.

TO REPLACE THE VISE CYLINDER:

1. Make sure the cylinder rod is extending fully out of the front of the vise cylinder (port side).

2. Make sure the vise jaws are centered on the vise support.

3. Slide the rod wiper onto the cylinder rod as shown, up to the shoulder on the rod.

4. Screw the vise cylinder clockwise onto the vise screw until it makes contact with the vise jaw - make sure the ports are on the bottom of the cylinder.

5. Check to see that the vise jaws are still centered, and replace the 1/4-20 x 3 1/2 cap screws to connect the cylinder to the vise jaw.

6. Re-attach the air lines to the cylinder ports and turn the air supply back on. Check the vise operation to make sure the vise operates correctly. Reverse the lines if necessary.

7. If everything checks out correctly, remount the handwheel. The saw is again ready for operation.

6.2
1. Open the vise to allow access to the backside of the front vise jaw. Remove the two 1/4-20 x 3 1/2 cap screws that attach either the vise adapter (manual vise) or the vise cylinder (air vise) to the vise jaw.

2. Remove the handwheel and unscrew the vise adapter or vise cylinder (turn counter-clockwise).

3. Loosen the socket head screw in the vise collar - it may be necessary to rotate the vise screw to align the screw with the relief in the retainer block.

4. Replace the handwheel and key. It should not be necessary to tighten the nut. Turn the handwheel counter-clockwise until the rear vise jaw is off the screw. Pull the vise screw and front jaw off and set them aside.

5. Remove the two vise retaining bolts. Replace the retainer block, making sure that the top surface of the block is flush with the cutting surface of the vise support casting. Production variations may make it necessary to shim under the retaining block for proper alignment.

6. Reverse steps 1-4 to reassemble the vise. Check the vise alignment. If necessary, re-align the vise as shown in the section on 'Squaring the Vise' (page 6.1).
SPINDLE REPLACEMENT
FA-350 SAWS

NOTE PROPER ORIENTATION OF
OFF-CENTER LOCATING HOLE:
THIS HOLE MUST ALIGN WITH THE
CLEARANCE HOLE IN THE UNDERSIDE
OF THE HEAD CASTING

1. CS-3401 SPINDLE/BEARING SUB-ASSEMBLY
2. CS-3410 SPINDLE WASHER
3. CS-3420 SPINDLE NUT
4. CS-3450 PULLEY SPACER
5. V20-2142 KEY: 1/4 SQUARE x 7/8" LONG
6. CS-3460 DRIVEN PULLEY
7. 3/4-10 LOCK NUT

figure 6.5

1. Disconnect power to the saw.

2. Remove the blade guards, belt guard, drive belts, driven pulley, and pulley spacer.

3. Remove the socket head cap screw located in the bottom of the head casting under the spindle.

4. Using a rubber mallet, drive the old spindle assembly out of the casting, toward the blade flange. The right side bearing may stay in place when the spindle comes out - if this happens, finish removing the spindle, then drive the bearing out toward the belt guard side of the casting. NOTE: the belt guard back plate may need to be removed for this step.

5. Slide the new spindle in from the blade side of the casting. DO NOT USE EXCESSIVE FORCE. Be careful to align the hole in the center bearing spacer with the hole in the bottom of the head casting. When the holes align, replace the cap screw in the casting.

6. Replace the parts removed in step 2. Be careful to properly tighten the drive belts (see page 1.4 for details)

6.4
CHANGING THE DRIVE MOTOR
FS-350 SAWS

1. Disconnect the power and open the wiring box on the side of the motor. Disconnect the wiring and remove the cable and fitting from the old motor.

2. Drain the gearbox by removing the drain plug on the right side of the casting. If it is not time to change the gearbox oil, it may be strained and reused. Refer to page 1.2 for the recommended change intervals.

3. Loosen the four bolts that hold the motor plate to the gearbox, and remove the motor/plate combination.

4. Separate the motor plate from the motor by removing the four bolts on the inside of the motor plate. It may be necessary to pry slightly to break the seal between the motor and plate.

5. Remove the bolt that holds the drive gear on the motor shaft and slide the gear off the shaft. Do not lose the key that may come off with the gear.

6. Reverse steps 1-5 to reassemble the saw.

NOTES:

a) Be sure to use removable 'Loctite' on the bolt that secures the drive gear to the motor shaft.

b) Scrape away the silicone sealer on the mating face of the motor and plate. Use fresh sealer at assembly to stop leaks.

c) Make sure the O-ring is securely in the groove on the motor plate face that mates to the gear box. If necessary, use a dab of grease to keep it in place.

d) Re-wire the motor according to the schematics included in section 8 of this manual.
1. Loosen the four motor mounting bolts and the two motor plate bolts.

2. Slide the motor towards the blade until the belts can be removed.

3. Remove the three bushing bolts from the drive pulley and slide the pulley off of the motor shaft.

4. Slide the new pulley on the motor shaft and tighten the bushing bolts.

5. Install the new drive belts.

6. The belts are retensioned by pushing the motor away from the blade until a slight thumb pressure on the center of the belts produces a 5/8" deflection and then tightening the motor plate bolts.

7. Re-tighten the motor mounting bolts.
1. Drain the gearbox by removing the plug on the right side of the casting. If it is not time to change the gearbox oil, it may be strained and reused. Refer to page 1.2 for the recommended oil change intervals.

2. Loosen the four bolts that hold the motor plate to the gearbox and separate the motor/plate from the gearbox.

3. Remove the bolt that holds the drive gear on the motor shaft and slide the gear off the shaft. Do not lose the key that may come off with the gear.

4. The driven gear is removed by removing the retaining ring from the worm shaft and sliding the gear off. Be careful not to lose the arbor space that may be used with the gear.

5. Reverse steps 2-5 to re-assemble the gear case. Only tighten the four bolts through the motor plate finger-tight with the motor/plate combination at the bottom of the mounting holes. Refill the gearbox with oil and start the motor on low speed. Using a prybar, pry up on the motor until gear noise is heard. Tap the motor down until the noise stops. Finish tightening the motor mounting bolts.

NOTES:

a) Be sure to use removable 'Loctite' on the bolt that secures the drive gear to the motor shaft.

b) Make sure the O-ring is securely in the groove on the motor plate face that mates to the gearbox. If necessary, use a dab of grease to keep it in place.
1. Loosen the screws to open the counter enclosure.

2. Remove the wiring from the terminal strips. Note the position of the wires in the strip.

3. The counter is held against the panel by a wire spring. Release the spring by pushing up on the spring on each side of the counter. Pull the spring ends out of the counter to allow the counter to pass through the panel.

4. Set the switches on the sides of the counter (shown above). The switch numbers are molded into the counter case. Switches 1, 2, 9, 10, and 11 should be set 'on'-all others should be set 'off'. Set the power switch for 115V operation.

5. Remove the spring from the new counter and insert the counter through the panel opening. Re-install the spring in the counter and flip the spring against the panel, pushing it down to tension the counter against the panel.

6. Re-connect the wiring (ref. page 8.13), close the panel, and tighten the screws.
HEAD FEED
RESERVOIR ASSEMBLY
CIRCULAR SAWS

1 CS-4043 DOUBLE P.O. CHECK VALVE: SUN #KCC-XAN-YEB
2 V20-7114-1 VALVE MOUNTING PLATE
3 V20-7115 AIR/OIL RESERVOIR: LUBE DEVICES #/OR 1030-2 (2)
4 V20-8019 3/8 NPT x 1/2 HOSE ELBOW: ALKON #A069-PS-8x6 (3)
5 V20-8028 1/4 NPT x 3/8 HOSE ELBOW: ALKON #A069-PS-6x4 (2)
6 V20-8029 1/4 NPT x 1/2 HOSE ELBOW: ALKON #A069-PS-8x4 (2)
7 1/2 PLASTIC TUBE x 12" LG (REF #5)
8 1/2 PLASTIC TUBE x 12" LG (REF #12)
9 1/4-20 x 3/4 SHCS (4)
10 5/16-18 x 1 3/4 SHCS (2)
11 5/16-18 HEX NUT (2)
12 5/16 FLAT WASHER (2)
13 V20-8019 3/8 NPT x 1/2 HOSE ELBOW: ALKON #A069-PS-8x6 (FA-350 SAWs)
V20-8032 3/8 NPT x 1/4 HOSE ELBOW: ALKON #A069-PS-4x6 (FS-350 SAWs)
CARRIAGE FEED
RESERVOIR SUB-ASSEMBLY

- Line #20 to Carr Feed Valve (750L)
- Line #19 to Carr Retract Valve (850L)
- Line #21 to Carr Retract Port (Front)
- Note: Item 1 not shown in this view

1. C-11 Shutoff Valve: Parker #V402P-4-4 (2)
2. CS-4055 Valve Mounting Plate
3. CS-4056 Air/Oil Reservoir: Lube Devices #A/0R 2150-4 (2)
5. V20-8030 1/2 NPT x 1/2 Hose Elbow: Alkon #AG69-PS-8x8 (2)
6. 1/4-20 x 3/4 Socket Head Cap Screw (4)

Effective for machines built after S/N 241
PNEUMATIC VALVE PARTS
CS-350PV / FS-350PV

1  CS-4020-1  AIR VALVE
2  CS-5054-1  LIMIT SWITCH TRIGGER
3  V20-7122-1  MUFFLER: PARKER #EM12 (2)
4  V20-8027  1/8 NPT x 3/8 HOSE ELBOW:
           ALKON #AQ69-PS-6x2
5  10-24UNC x 1 1/2 SOCKET HEAD CAP SCREW (2)
6  1/4-20UNC x 3/8 SOCKET HEAD CAP SCREW
7  #10 FLAT WASHER (12) - 6 LOCATED BETWEEN
   THE VALVE AND THE HEAD FRAME ON EACH
   MOUNTING SCREW (ITEM 5)

NOTE: SOME EARLY SAWS USED 1/4" TUBING; THE
FITTING FOR THIS TUBING IS:

4  V20-8002  1/8 NPT x 1/4 HOSE ELBOW:
            ALKON #AQ69-PS-4x2

7.3
VALVE MANIFOLD ASSEMBLY
SEMI-AUTOMATIC SAWs

1 CS-4035 VALVE MANIFOLD WITH MUFFLERS
1A CS-4035A NUMATICS #L12B85520 SOLENOID VALVE
1B CS-4035B NUMATICS #L12BB6520 SOLENOID VALVE
1C CS-4035C NUMATICS #B-28 1/4 NPT MUFFLER
1D CS-4035D NUMATICS #230-366-SP 3 PIN PLUG W/LITE AND CORD
2 CS-4044 VALVE MOUNTING PLATE
3 CS-4045 M4 x 12 MM PHMS: MC MASTER CARR #90353A214 (2)
4 CS-5056A 6 COND 20AWG CABLE: ALPHA #5056C (8')
5 HA-15303 JUNCTION BOX: APPLETON #JIC-2
6 V20-8001 1/4 NPT x 1/4 HOSE ELBOW: ALKON #AQ69-PS-4X4 (2)
7 V20-8026 1/4 NPT x 3/8 HOSE CONN: ALKON #AQ68-P-6X4
8 V20-8028 1/4 NPT x 3/8 HOSE ELBOW: ALKON #AQ69-PS-6X4 (2)
9 REMKE #RSR-9106 CORD GRIP (5)
10
11
12 #8-32 x 3/8 SELF-TAPPING SCREW (2)
1  CS-4036  VALVE MANIFOLD WITH MUFFLERS
1A CS-4035A NUMATICS #12BB5520 SOLENOID VALVE
1B CS-4035B NUMATICS #12BB6520 SOLENOID VALVE
1C CS-4035C NUMATICS #8-28 1/4 NPT MUFLER
1D CS-4035D NUMATICS #230-366-SP 3 PIN PLUG W/LITE AND CORD
2  CS-4044  VALVE MOUNTING PLATE
3  CS-4045  M4 x 12 MM PHMS: MC MASTER CARR #90353A214 (2)
4  H3-3230  JUNCTION BOX: HOFFMAN #A6045C
5  H3-5037  10 COND 18AWG CABLE: ALPHA #5070C (8')
6  
7  V20-8026  1/4 NPT x 3/8 HOSE CONN: ALKON #A068-P-6X4 (8)
8  V20-8028  1/4 NPT x 3/8 HOSE ELBOW: ALKON #A069-PS-6X4
9  
10  REMKE #RSR-106 CORD GRIP (8)
11  REMKE #RSR-9106 CORD GRIP
12  
13  
14  #8-32 x 3/8 SELF-TAPPING SCREW (2)
FILTER/REGULATOR/LUBRICATOR ASSEMBLY

1. CS-4013A  PARKER #PS109 MOUNTING BRACKET (2)
2. CS-4013B  PARKER #16L118C LUBRICATOR
3. CS-4013B1 PARKER #PS125 BOWL KIT
4. CS-4013C  PARKER #11P11EA OIL REMOVAL FILTER
5. CS-4013C1 PARKER #PS105 BOWL KIT (2)
6. CS-4013D  PARKER #06E11A13AA FILTER/REGULATOR
7. CS-4013E  PARKER #P81642 0-160 PSI 2" DIAL GAUGE
8. CS-4013REK FILTER ELEMENT KIT - INCLUDES THE FOLLOWING:
   PARKER #PS101 FILTER ELEMENT
   PARKER #PS146 OIL REMOVAL FILTER ELEMENT

7.6
PNEUMATIC DIAGRAM
CA-350PV/CS-350PV
FA-350PV/FS-350PV

NOTE: FILL LUBRICATOR WITH
PETROLEUM BASED OIL
100-200 SSU VISCOSITY
AT 100°F AND AN ANALINE
POINT GREATER THAN 200°F
- 5 OZ. CAPACITY

DO NOT TRY TO FILL WITH
SYSTEM UNDER PRESSURE

DRAIN FILTERS REGULARLY

VARIABLE
VISE PRESSURE
(OPTION)

TO SPRAY MIST
COOLANT
CA-350PV/FA-350PV
SAWS ONLY

VISE
CLAMP

5 BORE
3/8 STROKE
1-1/2 THRU ROD

1 CS-4013 FILTER/REGULATOR/LUBRICATOR
2 CS-4022-1 CAM-OPERATED VALVE: WABCO #GB15002-0955
3 V20-7122-1 EXHAUST MUFFLER: PARKER #EM12
4 CS-2316 VISE CYLINDER: 5" BORE x 3/8" STROKE
5 V20-7117B PRESSURE REDUCING VALVE: PARKER #14R113F
6 V20-7117A PRESSURE GAUGE: PARKER #77413

NOTE: SAWS WITH SERIAL NUMBERS BELOW 104 USE PRESSURE GAUGE P/N CS-4025
INSTEAD OF P/N V20-7117A
HEAD LIFT CYLINDER
FITTINGS
CIRCULAR SAWS

1  CS-4014  HEAD LIFT CYLINDER (REF)
2  CS-4046  AIR VENT: WEATHERHEAD #705
3  CS-4047  STREET TEE: WEATHERHEAD #3750x6
4  CS-4048  3/8NPT x 1/8NPT BUSHING: WEATHERHEAD #3220x6x2
5  V20-8019  3/8NPT x 1/2 HOSE ELBOW: ALKON #AQ69-PS-8x6
6  V20-8032  3/8NPT x 1/4 HOSE ELBOW: ALKON #AQ69-PS-4x6

ALIGN HOLE SO THAT ANY OIL COMING OUT OF THE VENT IS DIRECTED AWAY FROM PERSONNEL

7.8
PNEUMATIC DIAGRAM
FA–350SA/FS–350SA

NOTE: FILL LUBRICATOR WITH PETROLEUM BASED OIL 100-200 SSU VISCOSITY AT 100°F AND AN ANALINE POINT GREATER THAN 200°F - 5 OZ. CAPACITY

DO NOT TRY TO FILL WITH SYSTEM UNDER PRESSURE

DRAIN FILTERS REGULARLY

RESERVOIRS A & B FILL WITH SAME OIL AS LUBRICATOR - APPROX. 1 QT. CAPACITY BETWEEN THE TWO RESERVOIRS, WITH THE SAW HEAD UP, THE REAR RESERVOIR (B) SHOULD BE FULL AND THE FRONT RESERVOIR (A) SHOULD HAVE ABOUT 2 INCHES OF OIL IN IT. IF THE SAW HEAD IS DOWN, THE LEVELS SHOULD BE REVERSED. DO NOT OVERFILL

1 CS–4013–1 FILTER/REGULATOR/LUBRICATOR ASSEMBLY
2 CS–4035 VALVE MANIFOLD ASSEMBLY
3 CS–2316 VISE CYLINDER ASSEMBLY; 5" BORE X 3/8" STROKE X 1 1/2" THRU ROD
4 V20–7117A PRESSURE GAUGE; PARKER #P77413 (OPTION)
5 V20–7117B PRESSURE REGULATOR; PARKER #4DR113F (OPTION)
6 V20–7115 AIR/OIL RESERVOIR; LUBE DEVICES #1030–2 (2)
7 CS–4043 DOUBLE P. O. CHECK VALVE; PARKER #CP0101A206P
8 CS–4017–1 FLOW CONTROL VALVE; DELTROL #EDF–25B
9 CS–4014–1 PNEUMATIC CYL; 2 1/2" BORE X 3 3/4" STROKE X 1"ROD-NFPA STYLE MX–3
10 CS–4046 AIR VENT; WEATHERHEAD #705

EFFECTIVE WITH SERIAL NO. 240

7.9
NOTES:

FILL RESERVOIRS WITH PETROLEUM BASED OIL 30-40 SSI VISCOITY AT 100°F AND AN ANALINE POINT GREATER THAN 200°F.
DO NOT TRY TO FILL WITH SYSTEM UNDER PRESSURE.
DRAIN FILTERS REGULARLY.


SEE PAGE 7.11 FOR PARTS LIST.

PNEUMATIC DIAGRAM

FA-350A/FS-350A

EFFECTIVE WITH SERIAL NO. 241
PARTS LIST
PNEUMATIC DIAGRAM
FA-350A/FS-350A

1  CS-4013-1  FILTER/REGULATOR/LUBRICATOR ASSEMBLY
2  CS-4036  VALVE MANIFOLD ASSEMBLY
3  CS-2316  VISE CYLINDER ASSEMBLY: 5" BORE x 3/8" STROKE
     x 1 1/2" THRU ROD
4  V20-7117A  PRESSURE GAUGE: PARKER #P77413 (OPTION)
5  V20-7117B  PRESSURE REGULATOR: PARKER #O4R113F (OPTION)
6  V20-7115  AIR/OIL RESERVOIR: LUBE DEVICES #A/OR1030-2
7  CS-4043  DOUBLE P. O. CHECK VALVE: PARKER #CDP101A206P
8  CS-4017-1  FLOW CONTROL VALVE: DELTROL #EDF-25B
9  CS-4014-1  PNEUMATIC CYL: 2 1/2 BORE x 3 3/4 STROKE x 1 ROD
     - NFPA STYLE MX-3
10 CS-4034  PNEUMATIC CYL: 2 1/2 BORE x 18 STROKE x 1 ROD
    - NFPA STYLE MX-3
11 CS-4016-1  PNEUMATIC CYL: 3 1/4 BORE x 1/2 STROKE x 1 ROD
    - NFPA STYLE MF-1
12 CS-7515-1  PNEUMATIC CYL: HUMPHREY #5-D-1/2: 1 1/2 BORE
    x 1/2 STROKE x 7/16 ROD (OPTION)
13 CS-4046  AIR VENT: WEATHERHEAD #705
14 CS-4056  AIR/OIL RESERVOIR: LUBE DEVICES #A/OR2150-4

7.11
ELECTRICAL CONTROLS
CA-350/CA-350PV
CS-350/CS-350PV
EFFECTIVE WITH S/N 382 (JUNE, 1992)

1 9A-5040A ALLEN-BRADLEY #100-A34ND3 CONTACTOR (120V)
2 9A-5040B ALLEN-BRADLEY #592-J0V16 OVERLOAD RELAY
3 9A-5040C ALLEN-BRADLEY #800E-MT4 MUSHROOM HEAD OPERATOR
4 9A-5040D ALLEN-BRADLEY #800E-XL01 1-N.C. CONTACT BLOCK
5 9A-5040F ALLEN-BRADLEY #800E-F3 GREEN P8 OPERATOR
6 9A-5040G ALLEN-BRADLEY #800E-XL10 1-N.O. CONTACT BLOCK
7 9A-5040J HOFFMAN #A1212CH CLAMP COVER ENCLOSURE
8 9A-5040K HOFFMAN #A12P12 ENCLOSURE PANEL
9 CS-5019 DONGAN #HC-0250-44 FKPS2S TRANSFORMER
10 CS-5019 ALLEN-BRADLEY #1492-H1 TERMINAL BLOCK
11 CS-5019 ALLEN-BRADLEY #1492-N36 END BARRIER
12 CS-5019 ALLEN-BRADLEY #1492-N42 INSULATED JUMPER
13 CS-5019 ALLEN-BRADLEY #1492-N2 RETAINING CLIP
14 CS-5019 ALLEN-BRADLEY #1492-N1 MOUNTING CHANNELx2 1/4'
15 CS-5064-1 MOTOR SPEED SWITCH ASSEMBLY (CS-350 SAWs ONLY:
   INCLUDES CS-5064-1A-1C BELOW)
16 CS-5064-1A MOTOR SPEED SWITCH LEGEND PLATE
17 CS-5064-1B MOTOR SPEED SWITCH OPERATOR HANDLE
18 CS-5064-1C MOTOR SPEED SWITCH CONTACT BLOCK
19
20
21
22
23 9A-5040N ALLEN-BRADLEY #800E-SM21 2 POS SS OPERATOR
24 9A-5040R SWITCH BOX OVERLAY

8.1
SWITCH PANEL ASSY
FA-350/FA-350PV
FS-350/FS-350PV

ON SAWS WITHOUT THIS SWITCH, USE ITEM #10

NUMBERS REFER TO WIRE NUMBERS ON SCHEMATIC CSE-5004

CONTACT BLOCK TERMINAL NUMBERS

INTERNAL WIRING

1. CS-5047  3 POS ENCLOSURE- HOFFMAN #E-3PBGX
2. CS-5022  SWITCH OPERATOR- SQUARE D #9001-D1C1R
3. CS-5024  PILOT LIGHT BODY- SQUARE D #9001-D1V1Y
4. CS-5025  LIGHT MODULE- SQUARE D #9001-DTSC
5. CS-5053  CONTACT BLOCK- SQUARE D #9001-DA02
6. CS-8207  PANEL OVERLAY- FS-350M/PV
7. CS-5031  LAMP- GE #1866
8. CS-5028  CONTACT BLOCK- SQUARE D #9001-DA10
9. CS-5034  SWITCH OPERATOR- SQUARE D #9001-D1G2S
10. CS-5062  CLOSING PLATE- SQUARE D #9001-Z33
FA-350SA/FS-350SA
SWITCH PANEL ASSEMBLY

LOCATED ON SIDE
OF ENCLOSURE
FA-350SA ONLY

1 CYCLE START
PUSH BOTH TO
START CYCLE

EMERGENCY
STOP
PUSH TO
STOP
TWIST TO
START

BLADE

CYCLE
STOP

UP HEAD

VISE
OPEN CLAMP

DOWN CYCLE START

1. CS-5080 SWITCH ENCLOSURE: HOFFMAN #E-9PBGX
2. CS-5082 SWITCH ENCLOSURE OVERLAY
3. CS-5022 SQUARE D #9001-D1C1R MUSHROOM HEAD SW. OPER.
4. CS-5027 SQUARE D #9001-DA01 N.C. CONTACT BLOCK
5. CS-5029 SQUARE D #9001-D1M3U DUAL FUNCTION OPERATOR
6. CS-5030 SQUARE D #9001-DTSC11 LIGHT MOD. (INCL. 1LT)
7. CS-5031 G.E. #1866 LAMP (2)
8. CS-5035 SQUARE D #9001-D1A3R RED PUSH BUTTON OPERATOR
9. CS-5028 SQUARE D #9001-DA10 N.O. CONTACT BLOCK (2)
10. CS-5032 SQUARE D #9001-D1Y1G GREEN PUSH BUTTON OPER.
11. CS-5030 SQUARE D #9001-DTSC11 LIGHT MOD. (INCL. 2LT)
12. CS-5033 SQUARE D #9001-D1G4S 3 POS. MOM. SWITCH OPER. (2)
13. CS-5037 SQUARE D #9001-DA20 2-N.O. CONTACT BLOCK (2)
14. CS-5065 SQUARE D #9001-D1A1U GREEN PUSH BUTTON OPER. (FA-350SA)
15. CS-5075 SECOND CYCLE START OVERLAY (FA-350SA)
ELECTRICAL ENCLOSURE PANEL
'F' SERIES CIRCULAR SAWS

1M  CS-5020A  MOTOR CONTACTOR: SQUARE D M8502 PE5.22E
1DISC  CS-5020D  DISCONNECT SWITCH BODY: STROMBERG M0ETL-NF90
1XFHR  CS-5020F  DISCONNECT SWITCH HANDLE: STROMBERG M0ETLX 44/90
1MB  CS-5019  FUSE BLOCK: MARATHON M0H40A35P
1MB  CS-7150C  TRANSFORMER: 250VA, 440/220/208V PRI=120V SEC
2M  CS-7150B  MOTOR BRAKE: SQUARE D M8922 EMB-20 440V/120V
2M  CS-5020A  MOTOR CONTACTOR: SQUARE D M8502 PE5.22E
1MOL  CS-5020B1  OVERLOAD RELAY: SQUARE D M9065-TE3.7 (440V)
1MOL  CS-5020B2  OVERLOAD RELAY: SQUARE D M9065-TE6 (220/208V)
1-3FU  BUSSMAN #KTK-R-30 FUSE (208/230V)
1-3FU  BUSSMAN #KTK-R-12 FUSE (460V)
1-3FU  BUSSMAN #FNM-2 1/2 FUSE
1-3FU  BUSSMAN #FNM-1 1/4 FUSE
1-3FU  BUSSMAN #AGC-2 FUSE
1-3FU  BUSSMAN #AGC-3/10 FUSE
10-11FU  CS-7151  BUSSMAN #FWM-15 SEMICONDUCTOR FUSE (440V)
10-11FU  CS-7151B  BUSSMAN #FWM-35 SEMICONDUCTOR FUSE (208/220V)
1-3CR  CS-5011  4PDT RELAY: OMRON #MY4US-AC120
1-2TR  CS-5013-1  TIMER: OMRON #H3G-8C-AC1105S
1-2TR  CS-5070  CIRCUIT BOARD (SEMI-AUTOMATIC SAWS ONLY)

1MB, 2M, 7FU, AND 8FU ARE ONLY USED ON MACHINES WITH THE ELECTRONIC MOTOR BRAKE OPTION

FUSES 8FU AND 9FU ARE ONLY USED ON AUTOMATIC SAWs

FUSES 10FU & 11FU ARE SHOWN AS 7FU & 8FU ON SEMI-AUTOMATIC SAWs

1-3CR AND 1-2TR ARE ONLY USED ON SEMI-AUTOMATIC SAWs (FA-3505A AND FS-3505A)
CHANGING OPERATING VOLTAGES
CA-350/CS-350 SAWS

To change between 208/230 and 460 volts, you must change the motor wiring (shown on the motor nameplate), the overload heater elements (shown on page 8.25), and the transformer wiring (shown on a decal on the transformer and on page 8.9). It is not necessary to change the transformer fusing.

NOTE: On CS-350 saws, the motor itself must be changed. See page 6.5 for directions.
CHANGING OPERATING VOLTAGES

If it should become necessary to change the operating voltage of your new KALAMAZOO circular saw, please note the following:

1. TURN OFF POWER AT THE SUPPLY!

2. POWER FUSES (1-3FU): Whenever voltages are changed, the fuse values should be adjusted accordingly. Improper fusing can lead to nuisance tripping or unprotected electrics.
   - 208V or 230V machines use Bussman KTK-R-30 fuses (or equal)
   - 460V machines use Bussman KTK-R-12 fuses (or equal)
   - 575V machines use Bussman KTK-R-10 fuses (FA-350 saws only)

3. TRANSFORMER (1XFMR): The standard transformer in your saw has a 'tri-voltage' primary. It can operate on 208V, 230V, or 460V by simply changing the primary leads. The four leads or terminals (depending on the transformer) are marked H1, H2, H3, and H4 and are at the top of the transformer. Proper connections are shown on page 8.9 and on the transformer nameplate. If there is any discrepancy between the manual and the nameplate, ALWAYS follow the nameplate instructions. If the transformer has primary leads, any unused leads should be insulated (separately) to prevent them from making electrical contact with the enclosure.

   The secondary leads (X1 and X2) do not change for different voltages.

4. OVERLOAD RELAY (1MOL): Depending on the operating voltage, the following overload relays are used:
   - 460V and 575V: KALAMAZOO P/N CS-5020B1 (Marked TE3.7)
   - 208V and 230V: KALAMAZOO P/N CS-5020B2 (Marked TE8)

   Changing between 208/230V and 460/575V requires a change of overload relays. Changing between 208V and 230V or between 460V and 575V requires only an adjustment of the trip current setting. Those settings are as follows:

<table>
<thead>
<tr>
<th>FA-350 saws</th>
<th>FS-350 saws</th>
</tr>
</thead>
<tbody>
<tr>
<td>208V: 9.5</td>
<td>208V: 8.0</td>
</tr>
<tr>
<td>230V: 9.0</td>
<td>230V: 8.0</td>
</tr>
<tr>
<td>460V: 4.5</td>
<td>460V: 4.0</td>
</tr>
<tr>
<td>575V: 3.7</td>
<td>not available at this voltage</td>
</tr>
</tbody>
</table>

Correct adjustment of the trip current setting will prevent nuisance tripping of the overload while protecting the motor.

To replace the overload relay, undo the wires from the bottom two rows of terminals on the overload, then loosen the four lower contactor screws (see illustration on page 8.8). The relay will drop away from the contactor. When installing the new contactor, make sure all screws are tight.
CHANGING OPERATING VOLTAGES
(continued)

If the overload relay is changed, the blue 'Reset' button must be pushed before the motor will operate.

5. ELECTRONIC MOTOR BRAKE (1MB): If your machine has a motor brake, it must be changed if you are changing between 460V and 208/230V. No changes are required between 208V and 230V. Consult the factory for help in making this change.
6. CS-350/FS-350 SAWS: To change these saws between 208V and 230V operation, just change the transformer primary connection.

To change between 208/230V and 460v operation, you must change the power fuses, overload relay, and transformer primary connections, and set the overload trip current as explained in steps 1-4 above. In addition, the drive motor must be changed. Refer to page 6.5 for details.

TRANSFORMER CONNECTIONS

DONGAN #HC-0250-44 TRANSFORMER

208V OPERATION: CONNECT TO H1 AND H2
230V OPERATION: CONNECT TO H1 AND H3
460V OPERATION: CONNECT TO H1 AND H4

MICRON #V250MBT13XK TRANSFORMER

208V OPERATION: CONNECT TO H3 AND H4
230V OPERATION: CONNECT TO H2 AND H4
460V OPERATION: CONNECT TO H1 AND H4
CHANGING INDICATOR LAMPS
FA-350/FS-350 SAWs

REF: 'Blade On' light (M and PV models), 'Cycle Start' light (SA and A saws), 'Blade On' light (SA and A saws), and the 'Power On' light (A saws)

1. Turn off the power at the disconnect switch.

2. Unscrew the cover to the switch enclosure.

3. In the middle of one side of the contact block is a plastic loop with a metal wire. A screwdriver inserted into the loop and pried down will lift the wire and separate the contact block and lamp body from the switch operator.

4. The lamp should be visible on the front of the light module. It is removed by pushing down and rotating counter-clockwise.

5. The new bulb is inserted and turned clockwise.

6. The contact block/light module is reattached by lining up the side wires with the grooves in the switch operator or lens and pushing it into place. You will feel the light module snap into place.

7. Turn the power back on and test the light, then close up the switch enclosure.

SWITCH OPERATOR/CONTACT BLOCK REPLACEMENT

If it should become necessary to replace either the contact block or switch operator, they are both accessed and removed as described in steps 1-3 above. To remove the switch operator from the panel, loosen the plastic nut and slide the operator through the front of the panel. When replacing the operator, take note of the tab on one side. This tab should fit into the notch in the panel and overlay to prevent switch rotation.

The contact block is re-installed as above.
MOTOR CONTACTOR MAINTENANCE
FA-350/FS-350 SAWS

INSTALLATION AND REMOVAL

To remove a contactor from the DIN rail, insert a screwdriver into the red clip at the top back of the contactor and pry downward to lift the clip. This will loosen the contactor from the rail. To replace the contactor, place the contactor over the top lip of the DIN rail and push down while rotating the bottom of the contactor down toward the rail.

COIL REPLACEMENT

The first step in replacing the contactor coil is removing the auxiliary contact block. Depress the red lever shown below and slide the block up. To replace, slip the tabs on the back of the block into the holes on the contactor face and push down.

To remove the coil, use a screwdriver to release the two metal clips as shown below and lift the housing assembly. Depress the coil and slide it down. Replace with Square D P/N 9998PD2C110A.
WIRE NUMBERS AND COLORS ARE REFERENCED ON THE ELECTRICAL SCHEMATICS

LOGIC CONTROLLER WIRING
FA-350A / FS-350A

NOTE: A VARISTOR (P/N H3-5023) IS CONNECTED BETWEEN THE AC INPUT TERMINALS
PARTS COUNTER WIRING
FA–350A/FS–350A

UNLESS OTHERWISE NOTED,
ALL WIRES ARE BLUE WITH
NUMBERS STAMPED IN WHITE

GREEN

42
WHT/BLK
X2
WHITE

SWITCH SETTINGS ON SIDE OF COUNTER
SWITCHES 1, 2, 9, 10, 11 SHOULD BE "ON"
ALL OTHER SWITCHES SHOULD BE "OFF"

POWER SWITCH SHOULD BE SET FOR 120V

8.13
NOTE: 3PB NOT USED ON FS-350SA SAWS. WIRE #2 CONNECTS TO TERMINAL #13 ON 4PB
WIRE COLOR CODE
25 CONDUCTOR CABLE

X2 WHITE
1 PINK
2 WHITE W/ORANGE TRACER
3 WHITE W/PURPLE
4 WHITE W/GRAY
20 WHITE W/BLUE
21 WHITE W/BROWN
22 WHITE W/GREEN
23 WHITE W/YELLOW
24 WHITE W/RED
28 WHITE W/BLACK & RED
29 BLACK
30 RED
31 ORANGE
32 BLUE
33 BROWN
34 YELLOW
35 VIOLET
36 GRAY
42 WHITE W/BLACK
GND GREEN

NOTE: THIS SWITCH NOT USED ON FS-350A SAWS. WIRE #8 NOT USED
FUSED DISCONNECT
SWITCH SUPPLIED
BY USER (IF DESIRED)

NOTE: INCOMING POWER
LEADS TO BE AWG 12
MINIMUM
3/8" CONDUIT (TRADE SIZED)

155
SPEED SELECT
OFF
LOW
HIGH

FULL LOAD AMPS

LEESON MOTORS
1725 RPM 850 RPM
1.2 HP 249
460V 3.0 3.5
W49

OVERLOAD
HEATERS

BALDOR MOTORS
8.8 F.L.A. @ 208/230V
4.4 F.L.A. @ 460V
W51
W44

NOTE: DIFFERENT
MOTORS REQUIRED
FOR 230 OR 460V
OPERATION

3 HP, 1725 RPM
1.5 HP, 850 RPM

TRANSFORMER CONNECTIONS
460V-CONNECT LEADS TO HI & H4
230V-CONNECT LEADS TO HI & H3
200V-CONNECT LEADS TO HI & H2

JUMPER
EMERG
STOP
ZPB
START

BLADE MOTOR STARTER

COOLANT PUMP
1/5 HP, 1/5 AMP

COOLANT
BROWN
BLUE

ZPS WORKLIGHT
OPTIONAL

7FU
3 AMP

WORKLIGHT
60W MAX
OPTIONAL

REVISED 6/92
NOTE: INCOMING POWER LEADS TO BE AWG 10 MINIMUM

1/2" CONDUIT (TRADE SIZE)

10DISC

1FU

1FU

L1

L2

L3

208V - 30 AMP
230V - 25 AMP
460V - 12 AMP

2FU

3FU

3 HP, 1730 RPM
208/230/460V
9.95/9/4.5 PLA

1MTR

1MOL

H1

H2

H3

H4

4FU

1 XFMR 250VA

CONNECT TRANSFORMER WIRING ACCORDING TO NAMEPLATE DIRECTIONS

XF 1 AMP

115V SEC

1P8 BLADE START

2PB SAFETY SWITCH (LOCATED ON HANDLE)

1MOL

BLADE MOTOR STARTER

1MOL

BLADE ON' LIGHT

1LT

AMBER

PUSH TO STOP TWIST TO RELEASE
3 PHASE ELECTRICAL SCHEMATIC
CHIP COLLECTION SYSTEM

NOTE: INCOMING LEADS TO BE AWG 14 MINIMUM
1/2" CONDUIT (TRADE SIZE)

MACHINE SHOULD BE INSTALLED IN ACCORDANCE
WITH THE NATIONAL ELECTRICAL CODE (NEC) AS
WELL AS ANY STATE OR LOCAL CODES THAT APPLY.

FUSED DISCONNECT RECOMMENDED
(INSTALLED BY USER)

<table>
<thead>
<tr>
<th>1MTR</th>
<th>3HP, 3450 RPM, TEFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>208/230/460V 60HZ, 3PH</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>1M</th>
<th>9A-220E</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALLEN-BRADLEY #609TU-AAH STARTER (208V)</td>
<td></td>
</tr>
<tr>
<td>9A-220B</td>
<td>ALLEN-BRADLEY #609TU-AAA STARTER (230V)</td>
</tr>
<tr>
<td>9A-220C</td>
<td>ALLEN-BRADLEY #609TU-AAB STARTER (460V)</td>
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</table>

<table>
<thead>
<tr>
<th>1MOL</th>
<th>ALLEN-BRADLEY #W47 HEATER ELEMENT (208/230V)</th>
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<tbody>
<tr>
<td>ALLEN-BRADLEY #W40 HEATER ELEMENT (460V)</td>
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</table>

8.24
## OVERLOAD HEATER ELEMENTS
### ALLEN-BRADLEY 609TU SWITCHES
#### SAWS WITH LEESON MOTORS

<table>
<thead>
<tr>
<th>MODEL(S)</th>
<th>VOLTAGE</th>
<th>HEATER(S)</th>
<th>FUSE SIZE AT SAW DISCONNECT</th>
<th>FUSE SIZE FOR WALL DISCONNECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-350 (ALL)</td>
<td>208/230</td>
<td>W50</td>
<td>NONE</td>
<td>9 AMP</td>
</tr>
<tr>
<td>(ALL)</td>
<td>460</td>
<td>W42</td>
<td>NONE</td>
<td>5 AMP</td>
</tr>
<tr>
<td>CA-350 (ALL)</td>
<td>208</td>
<td>W52</td>
<td>NONE</td>
<td>10 AMP</td>
</tr>
<tr>
<td>(ALL)</td>
<td>230</td>
<td>W51</td>
<td>NONE</td>
<td>10 AMP</td>
</tr>
<tr>
<td>(ALL)</td>
<td>460</td>
<td>W43</td>
<td>NONE</td>
<td>5 AMP</td>
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</table>

### SAWS WITH BALDOR MOTORS

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<td>W43</td>
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### SQUARE D CONTACTORS
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</thead>
<tbody>
<tr>
<td>FS-350 (ALL)</td>
<td>208/230</td>
<td>TE5.5</td>
<td>30AMP</td>
<td>10 AMP</td>
</tr>
<tr>
<td>(ALL)</td>
<td>460</td>
<td>TE3.7</td>
<td>12AMP</td>
<td>6 AMP</td>
</tr>
<tr>
<td>FA-350 (ALL)</td>
<td>208</td>
<td>TE8</td>
<td>30AMP</td>
<td>10 AMP</td>
</tr>
<tr>
<td>(ALL)</td>
<td>230</td>
<td>TE8</td>
<td>30AMP</td>
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