

4.0 OPERATING INSTRUCTIONS

NOTE: Following is a general overview of the operation for the 1256S-1 and 1656S-1.

The GBC Shredmaster 1256S-1 and 1656S-1 shredders can shred most office paper documents, staples, and standard paper clips. The shredding of other metal items will damage the cutting blades. Plastic materials such as charge cards, covers, inserts and film may be shredded on a very limited basis. However, extended shredding of such materials will prematurely dull the cutting blades.

The shredder control panel is shown in Figure 4-1. To start shredding, press the "ON" button then feed the material to be shredded into the throat of the shredder. Never exceed the maximum capacity of the shredder. To turn the shredder off press the "OFF/REVERSE" button.

When the shred bag becomes full, the bag full flap triggers a sensor which automatically turns the shredder off. To resume shredding, push the shreds down into the bag or install a new bag then press the "ON" button.

If too much paper is inserted into the feed throat, the shredder will automatically reverse ejecting the paper then turn off. To resume shredding, **REDUCE** the number of sheets in the lift then depress the "ON" button. To clear a severe jam that is not automatically ejected by the shredder, reverse the shredder by depressing the "OFF/REVERSE" button while pulling firmly on the paper in the throat. If there is not enough paper to grasp, rock the paper through the cutters by alternately depressing the "ON" and "OFF/REVERSE" buttons.



FIGURE 4-1

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5.1 Principles Of Operation

The shredder uses rapidly rotating cutting shafts driven by an electrical motor to shred paper. Both electrical and mechanical principles are involved.

5.1.1 Electrical Operation

The electrical schematic diagram is shown in Figure 5-1 and the electrical wiring diagram is shown in Figure 5-2. The electrical circuit is comprised of the following components.

1. ON Switch (S1). This push button switch controls the forward mode of operation. It is a single-pole, double-throw momentary switch rated for 20 Amperes, 125 VAC.

2. OFF/REVERSE Switch (S2). This push button switch controls the OFF mode of the shredder operation when depressed once then released. When the switch is depressed and held down the current is reversed causing a reverse rotation of the motor. It is a single-pole, double-throw momentary switch rated for 20 Amperes, 125 VAC.

3. Flap Switch (S4). This switch is opened and power removed from the motor and circuit board whenever the shred bag becomes filled enough to raise the Bag Full Flap.

4. Reverse Switch (S3) The reverse switch is used to stop the motor when the motor auto-reverses due to a jam. When the motor reverses the reverse switch actuator, mounted on the lower cutter shaft, causes the reverse switch to remove power from the solid state relay, in turn, creating an open in the hot leg of the circuit to the motor run windings.

5. Run Capacitor (C1). The run capacitor is rated at 10 MF, 250 VAC and assists the motor in starting and running.

6. Start Capacitor (C2) The start capacitor is rated at 150 MF, 125 VAC and assists the motor in starting.

7. Circuit Breaker (CB1) The 16 amp circuit breaker is only in the hot leg of the circuit to supply protection should the solid state relay (K2) fail in the "ON" state.

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5.1.1 Electrical Operation (Continued)

8. Motor (M1). The motor is a single phase, 400 Watt, continuous duty, AC gearmotor with start and run windings. A centrifugal switch, in series with the start winding, is closed when the motor is at rest and opens to disconnect power to the start capacitor when the motor reaches a predetermined speed. The centrifugal switch acts as the trigger to activate the auto-reverse feature of the shredder.

9. Printed Circuit Board (PCB1). The P.C. Board supplies 3 to 5 VDC to the solid state relay (K2) and 24 VDC to the coil of the contactor (K1) and is used to reduce arcing at the contact points of the contactor.

10. Contactor (K1). The 24 VDC contactor is activated in the start mode only. The coil of the contactor is energized momentarily by the "ON" switch through a circuit between terminals 6 and 8 of the printed circuit board (PCB1). When the contactor is activated, power is supplied to the start winding of the motor through the normally open contacts of the contactor.

11. Solid State Relay (K2) The solid state relay is controlled by a 3-5 VDC circuit from the printed circuit board (PCB1). The printed circuit board supplies the solid state relay with DC voltage allowing AC current from the hot side of the circuit to be supplied to the run winding, the right common side of the contactor (K1), and terminal #10 of the printed circuit board (PCB1).

When "ON" switch S1 is depressed, current momentarily flows from the hot side of the circuit through flap switch S4 and through one normally open side of S1 to terminal #6 of printed circuit board PCB1. The board then supplies 24 VDC from terminal #8 to the coil of contactor K1, closing the normally open contacts of K1.

Current also flows momentarily through the other normally open side of "ON" switch S1 to terminal #1 of printed circuit board PCB1. The board then supplies 3-5 VDC from terminal #7 to the positive side of solid state relay K2. A DC circuit is then completed between the negative side of K2 and terminal #13 of PCB1. K2 allows AC power to be supplied to the run and start windings of the motor through

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5.1.1 Electrical Operation (Continued)

the normally open contacts of contactor K1. Current flowing through the normally open contacts of K1 cause the motor to run in the forward direction. When the motor reaches a predetermined speed the centrifugal switch opens removing power from the start capacitor.

After "ON" switch S1 is released a time delay circuit on printed circuit board PCB1 removes current from the coil of contactor K1 returning the contacts to the normally open position.

With current flowing to the start windings, through the normally open contacts of K1, the motor is prepared to reverse should a jam occur. When a jam occurs the motor stops and the centrifugal switch closes. Power is supplied to the start capacitor causing the motor to rotate in the reverse direction. As the motor begins to reverse the reverse switch opens and power is removed from solid state relay K2 and the run winding of the motor. The motor stops running after reversing for a very short period of time.

After the motor has come to a stop, it may be reversed by holding "OFF/REV" switch S2 down. A circuit is then completed through one normally open side of S2 to solid state relay K2 allowing power to flow to the start and run windings of the motor. Power flows through the start winding in the direction that causes reverse rotation of the motor.

5.1.2 Mechanical Operation

During operation the lower cutter shaft is driven by the motor via a chain. The lower cutter drives the upper cutter via the cutter gears.

The upper and lower cutter shafts are machined so that when mated, there is a nominal gap of .001 of an inch between the cutting disks. Paper inserted between the cutting surfaces is sheared. If after use, the gap exceeds .004 of an inch, light lifts of paper (1 to 2 sheets) may pass through the cutters folded instead of shredded. To correct the incomplete shred a cutting shaft adjustment will have to be performed as explained in Section 6.0

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5.2 General Troubleshooting

Malfunction corrections are based on visual observations of the operator or technician. The cause of a malfunction can be isolated by noting at which point during the operating cycle the symptom occurs. The Principles of Operation paragraphs, electrical schematic diagrams, and electrical wiring diagrams will assist in pinpointing any malfunctions.

5.3 Troubleshooting Guide Chart

The Troubleshooting Guide Chart is arranged in order of normal operational sequence. When a malfunction occurs, read down the Symptom column until you reach the appropriate description for your symptom. Read the corresponding PROBABLE MALFUNCTION, then perform the recommended procedure in the CORRECTIVE ACTION column. When replacing electrical components which have push on type terminals, tag the electrical leads removed to ensure proper reconnection. Refer to the wiring diagram in Figure 5-2 to resolve any wiring difficulties that may occur.

WARNING: Always unplug the shredder to avoid possible severe electrical shock before attempting any repairs.

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5.3 Troubleshooting Guide Chart (Continued)

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Motor does not run. No indication of power.	Power cord disconnected.	Connect power cord to outlet.
	Shred bag full.	Replace shred bag.
	Bag Full Flap switch defective or misaligned.	Check continuity and replace if necessary or adjust switch.
	Circuit Breaker tripped or bad.	Reset or replace.
	Motor overheated.	Allow motor to cool.
	On switch defective.	Perform continuity check and replace if defective.
	Contactor bad.	Perform continuity test, replace if necessary.
	Defective P.C. Board.	With power to the unit and the "ON" switch depressed, check for 3-5 VDC at terminal #7. If incorrect, ensure the board is receiving 115 VAC at terminals #1, #6, and #14. If AC voltages are correct and DC voltage is incorrect, replace board.
	Solid State Relay bad	With "ON" switch depressed check for 3-5 VDC at terminals #3 and #4 and 0 VAC at terminals #1 and #2.

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5.3 Troubleshooting Guide Chart (Continued)

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Motor does not run. No indication of power (Continued).	Defective motor.	Check for shorted or open windings. Replace if neces- sary.
Motor hums but does not run.	Cutting head jammed.	Clear cutters.
	Defective wire term- ination.	Perform continuity checks and correct poor termination.
	Defective contactor.	Perform continuity tests, replace if test fails.
	Defective start capacitor.	Check and replace if necessary.
	Defective run capacitor.	Check and replace if necessary.
	Defective motor.	Check for shorted or open windings. Replace if neces- sary.
Motor does not run in reverse mode.	Defective "OFF/REV switch	Check continuity across terminals #4 and #5 with switch depressed.
	Contactor failing to return to home position.	Stuck "ON" switch. Obstacle in the path of contact.
	Defective contactor.	Make continuity check, replace if bad.
Motor does not auto- matically reverse during a jam.	Contactor failing to return to home position.	Stuck "ON" switch. Obstacle in the path of contact.
	Defective contactor.	Check continuity, replace if bad.

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5.3 Troubleshooting Guide Chart (Continued)

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Motor continues to run in reverse after a jam.	Defective Reverse switch	Perform continuity test, replace if bad.
	Solid state relay shorted.	Take voltage reading across terminals #1 and #2.
Motor starts forward then jerks into reverse.	Centrifugal switch defective or dirty.	Remove yellow wire from start capacitor and brown wire from run capacitor, should have continuity. Blow dust out of motor or replace.
Shred capacity has diminished.	Shredded waste jammed in cutters.	Clear cutters.
	Cutters too tight.	Adjust spanner nut on top cutter shaft.
	Cutters are bent.	Visually inspect for bent cutters, replace if necessary.
Shredder runs noisily.	Shredded waste jammed in cutters.	Clear cutters.
	Strippers damaged or rubbing on cutters.	Visually inspected for bent or rubbing strippers. Adjust or replace if necessary.

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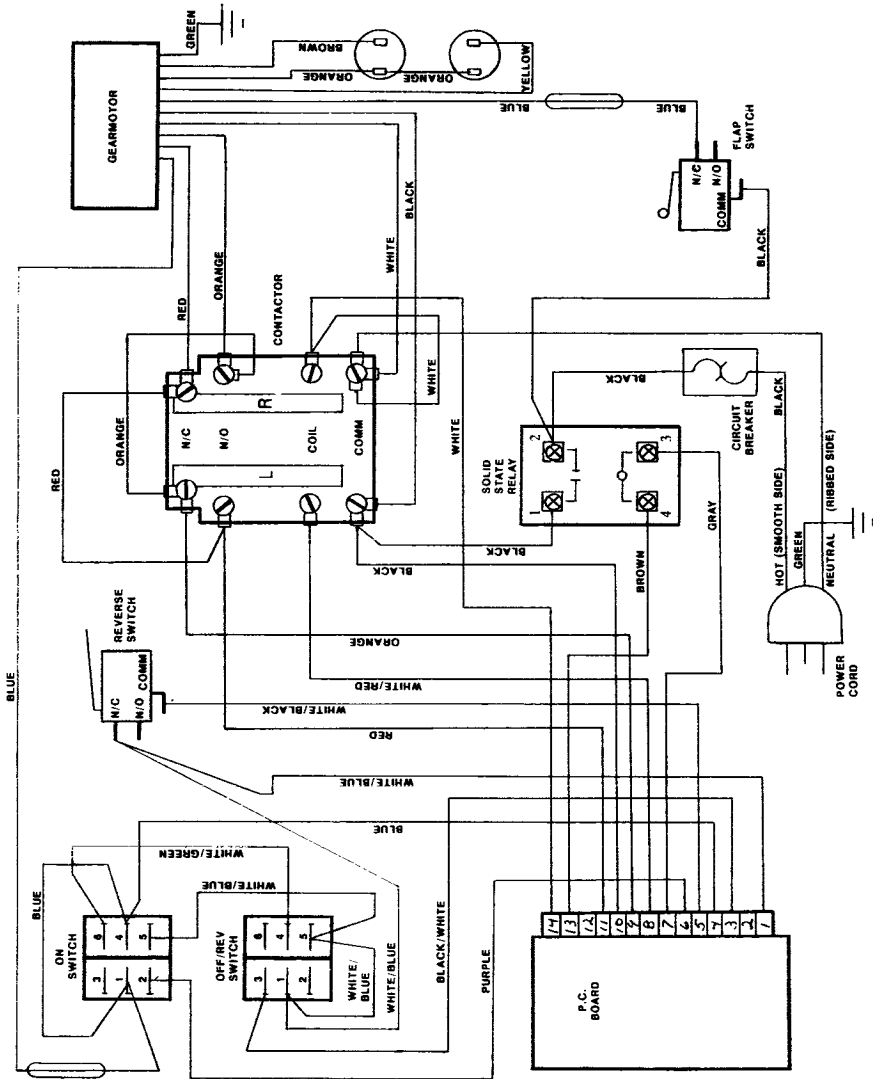


FIGURE 5-2 ELECTRICAL WIRING DIAGRAM