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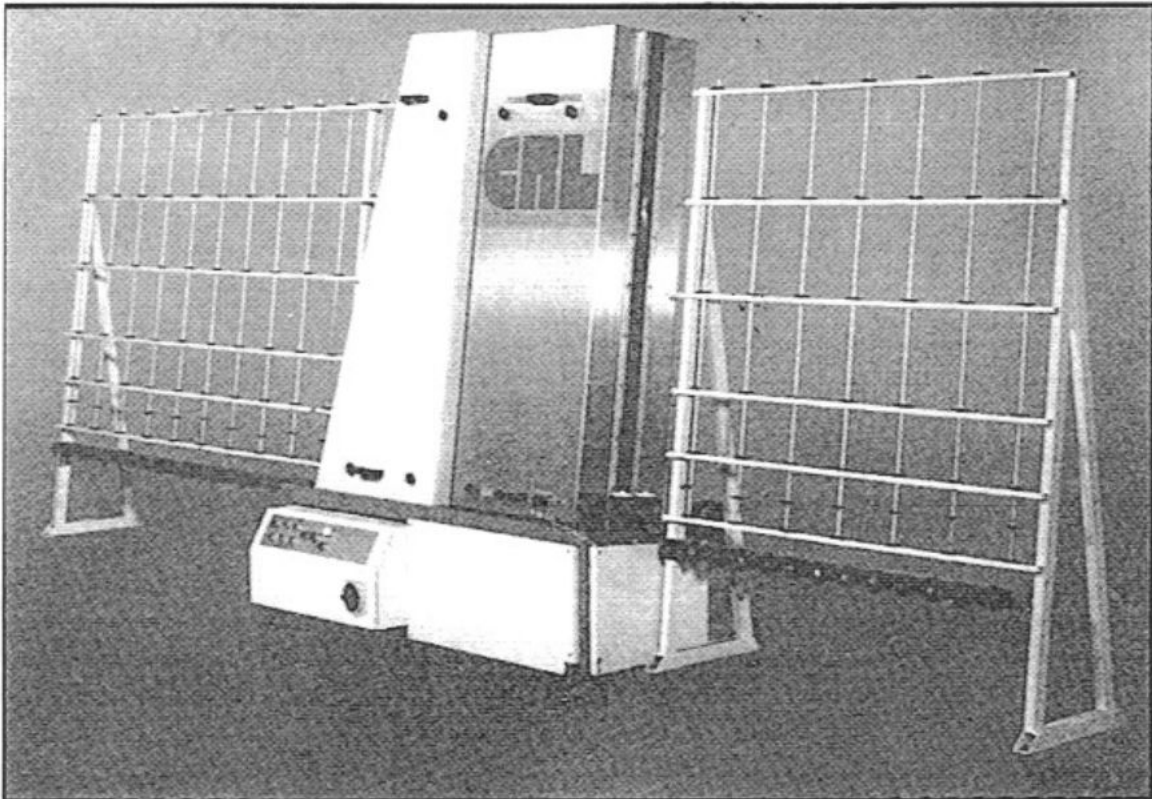
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C.R. Laurence

Vertical Glass Washing Machine Model No. 60VGW



Instruction Manual

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PREPARING FOR INSTALLATION

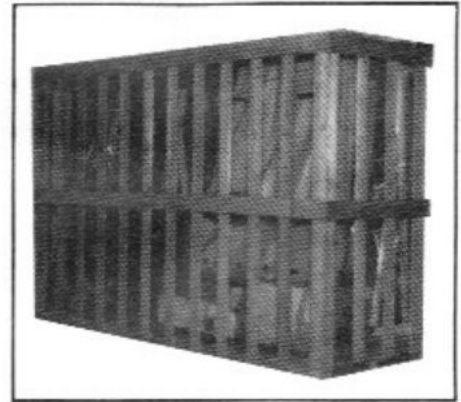
Your No. 60VGW Vertical Glass Washing Machine is delivered complete in one crate measuring 41" x 86" x 126", with a total weight of 2,866 pounds.

UNPACKING THE MACHINE

Remove the sides and top of the crate. A claw hammer and crowbar are ideal tools for this job. The water tank, beneath the washing and drying section, comes connected and should be left in place. The small parts will be found inside it.

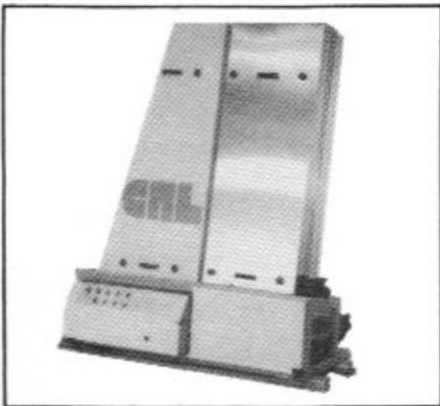
CHECK LIST

As they are removed from the crate, compare the parts of the machine against the following check list. If there are any parts missing or damaged, notify the CRL Machinery Division immediately. Replacement parts can be supplied to ensure your machine is ready when the installer arrives.

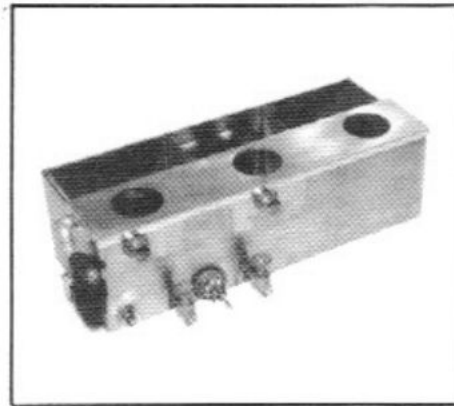


Crated Machine

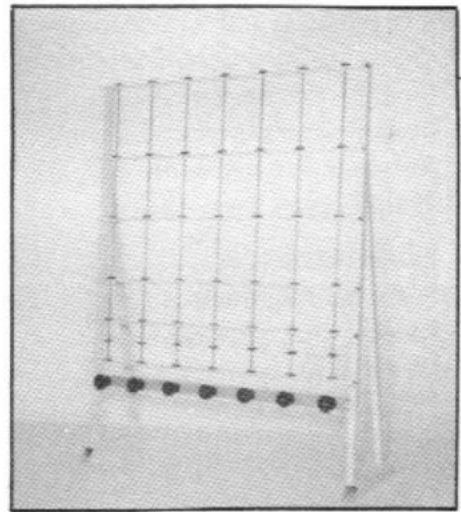
Photo #1



Washing and drying section *Photo #2*
(with protective plastic coating)

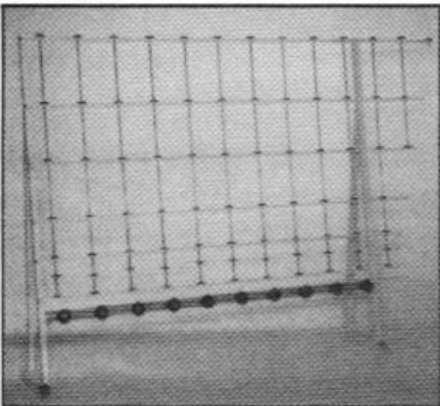


Water tank & pump bracket *Photo #3*
(shown separate from machine)



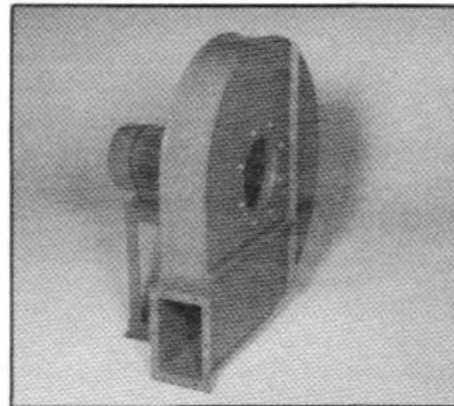
Infeed section (right side)

Photo #4



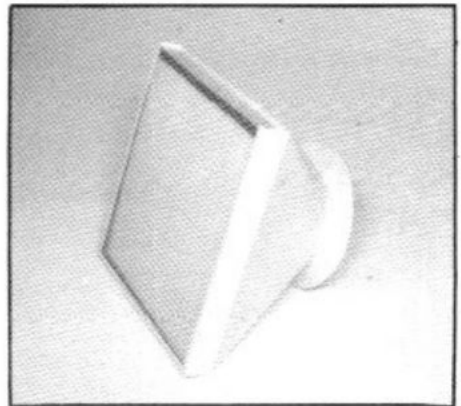
Outfeed section (left side)

Photo #5



Blower

Photo #6



Filter and manifold

Photo #7

ADDITIONAL TOOLS & EQUIPMENT

Additional tools and materials will be required to complete the installation. Having these materials assembled ahead of time will avoid delays in installing your washing machine.

Tools

Appropriate tools include:

- Level, approximately 8" long
- Large slotted screwdriver
- Small slotted electrical terminal screwdriver if you are going to connect your own power
- Electrical pliers
- Protractor level

These tools are not necessary, but will make the installation easier and faster:

- 13mm socket and ratchet drive
- Protractor level (see Photo #13)

Materials for Plumbing

Additional parts not supplied will be required to complete the plumbing installation. See page 9 for suggested plumbing procedure.

Recommended parts include:

- 1/2" I.D. rubber hose, of sufficient length to reach from water supply faucet to water tank
- 2 - 1/2" or 5/8" I.D. rubber hoses to reach from tank to drain
- 2 - 3/4" pipe thread adaptors
- 6 hose clamps
- Overflow drain manifold: (see Figure #2)
 - 2 - 1 1/2" I.D. rubber hoses, 3" long
 - 1 1/2" O.D. PVC pipe, approximately 16"
 - PVC connectors: 2 elbows and 1 tee
- 1 1/2" O.D. PVC pipe and connectors to reach floor drain, depending on location

Materials for Electrical Connection

See page 10 for wiring procedure. Recommended materials include:

- 4 lengths of 10's gauge wire and conduit, to reach from fuse box to control panel

Miscellaneous Supplies

- Work Site® No. 155X Glass Washing Machine Detergent (included with machine at no cost).
- Scrap wood blocks

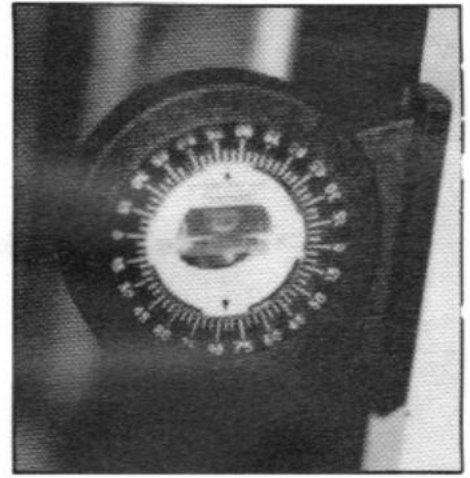


Photo #13

OVERFLOW DRAIN MANIFOLD

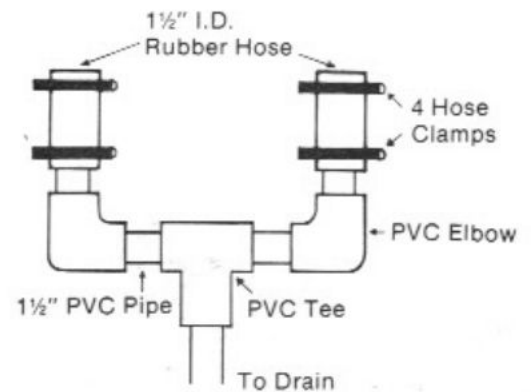
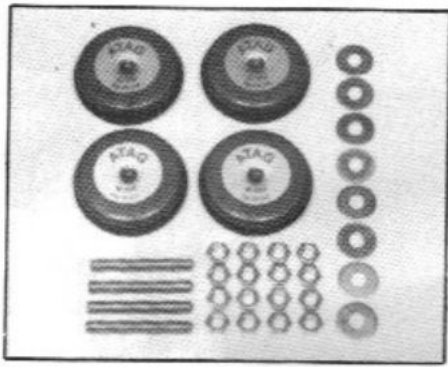
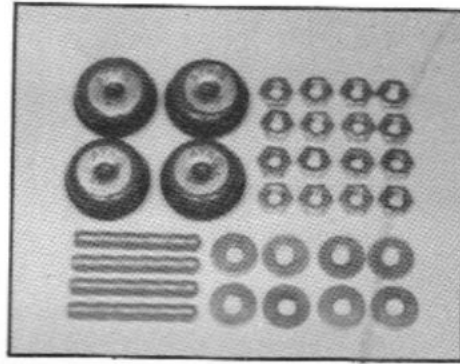


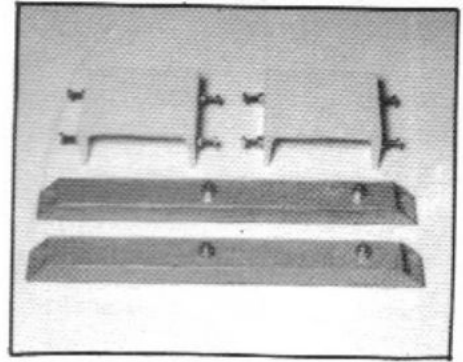
Figure #2



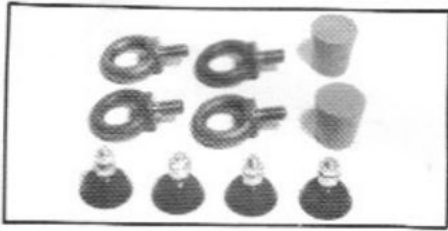
One box containing: *Photo #8*
 4 - #60VGW18 anti-vibration pads
 4 - 12mm studs, 3 1/2" long
 8 - 12mm plain washers
 12 - 12mm nuts



Two boxes, each containing: *Photo #9*
 4 - #60VGW17 anti-vibration pads
 4 - 10mm studs, 3 1/2" long
 8 - 10mm plain washers
 12 - 10mm nuts



Clamping plates
 Feet for blower *Photo #10*



4 - Eye bolts *Photo #11*
 2 - Rubber plugs for water tank
 4 - Studded leveling pads for blower



Tools supplied: *Photo #12*
 'C' wrench
 19mm and 17mm open end wrench
 13mm and 12mm open end wrench
 6mm Allen wrench
 4mm Allen wrench
 2mm Allen wrench

FLOOR PLAN DIAGRAM AND SUGGESTED FACILITY POINTS

- A 220V, 3 Phase, 40 amp breaker
(60 amp breaker if using phase converter)
- B Water Main Faucet
- C Drain
- D Overflow Pipes (1-1/2" dia.)
and Tank Drain Valves (3/4" pipe thread)
- E Water Connection to Machine
- F Electrical Connection Point

| Machine Dimensions | |
|--------------------|------------------|
| Total Length: | 198" |
| Total Width: | 53" |
| Total Height: | 84" |
| Weight: | 2,866 lbs. |
| Floor Space: | 16-1/2' x 4-1/2' |

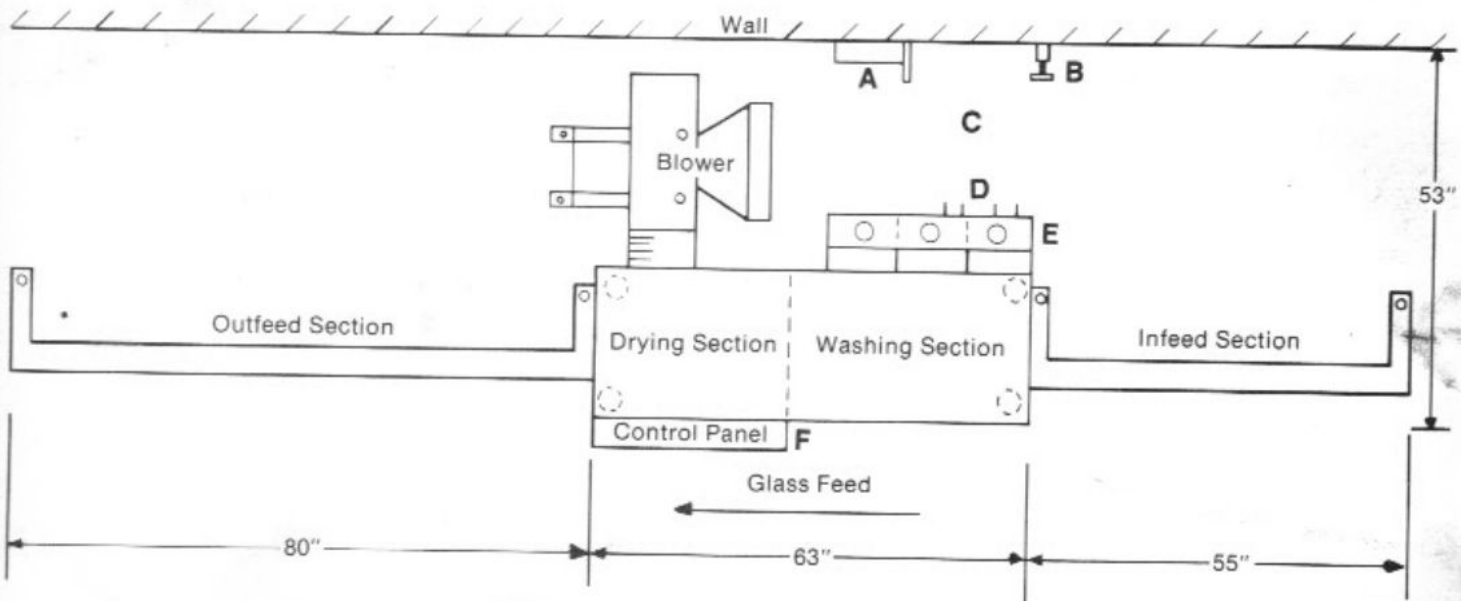


Figure #1

INSTALLATION

WASHING AND DRYING SECTION

Position the Machine

From the information provided in the Floor Plan Diagram (see *Figure #1, page 2*), determine where you will position the washing and drying section, and mark the location on the floor. If lifting from the base using a forklift, first use a lever to raise the machine enough off the skid to fit the forks under the bottom front support rail.

For an alternate method, the four eyebolts (see *Photo #11, page 2*), may be inserted into the threaded holes in the top of the main section to provide a means of lifting it from the top.

Place the main section in the marked position, setting it on four 3" (optimum) or 4" high wood blocks (see *Photo #14*). If you use 4" blocks, as shown here, you will need to lower the machine to the correct height before leveling it (see below).

Attach the Anti-Vibration Pads

Screw two nuts and one washer onto each of the four 12mm leveling studs, leaving the nuts near the slotted end of the stud (see *Photo #15*). Also prepare each of the four 10mm leveling studs in the same way, and set them aside until you are ready to attach the infeed and outfeed sections.

Using the 2mm Allen wrench, remove the bottom right front cover.

Position one of the large anti-vibration pads beneath one corner of the machine. Insert one of the 12mm studs through the hole and screw another washer and nut onto the bottom, seating the rounded end of the stud into the depression in the top of the pad. Repeat on each of the other three corners.

Adjust the Height of the Main Section

Using the 19mm wrench and a large screwdriver, raise the corners of the machine (see *Photo #16*) just enough to remove the wood blocks. Adjust the height of the machine prior to leveling so that it will match the height of the infeed and outfeed racks when they are attached. There should be approximately 2½"-3" clearance between the floor and the bottom support rail.



Photo #14

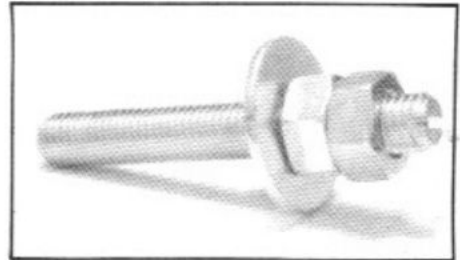


Photo #15

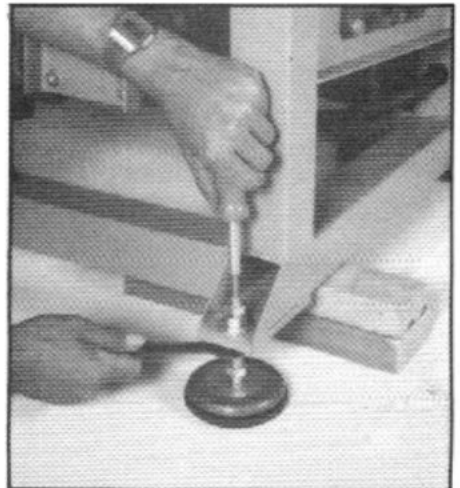


Photo #16

Level the Main Section

Level the machine in both directions. Place the level on the bottom rail, in front (*see Photo #17*) and on the right side (*see Photo #18*). When the machine is level, lock together the top two nuts on the leveling studs.

Washing and Drying Section Covers

Although the washing and drying section is shown here without the large top covers, it is not necessary to remove them for installation.

The right-hand side of the section, with the stainless steel cover, contains the washing brushes and rinsing nozzles (*see Photo #19*). For protection during shipping, this cover is coated with an opaque plastic film which may be removed by cutting around the edges with a utility knife and peeling it off. The left-hand side contains gripping rollers and the air knives for drying the glass.

To remove the covers, unscrew the black plastic knobs on the front. Lift the cover up and outward, being sure to clear it from the threaded holes for the eyebolts. (*see a, Photo #19*) To check inside the machine during operation, the cover can be partially removed by pulling it out at the top just enough to get a view of the inside.

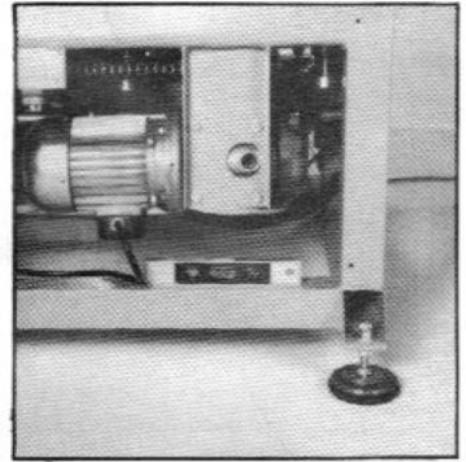


Photo #17



Photo #18

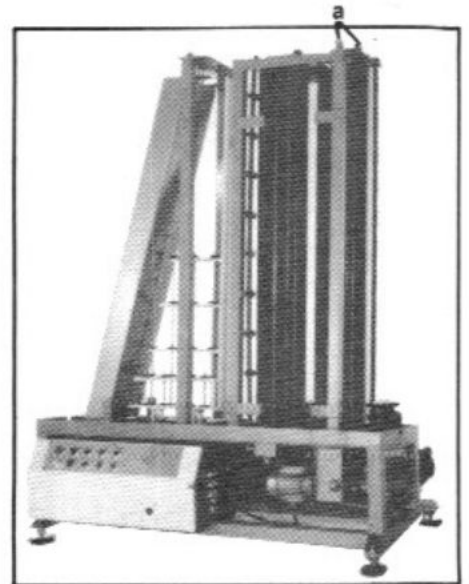


Photo #19

BLOWER

Attach Leveling Pads to Blower

If not already attached, bolt the blower feet (see *Photo #20*) to the blower base (see *Photo #25*).

Set the blower on two 2"x4" wood blocks in its approximate position behind the washing and drying section (see *Figure #1, Floor Plan Diagram, page 2*).

Remove the washer and nut from each of the studded leveling pads (see *Photo #21*), and insert a stud into the hole in the end of each foot. Replace the washers and nuts and remove the wood blocks. Adjust the leveling pads so that each one contacts the floor and the blower base is reasonably level.

Connect Blower to Air Output Manifold

The rectangular blower flange connects to the air output manifold at the back of main section (see *Photo #22*). Remove the ten 8mm bolts and washers from the air output manifold. Match the holes in the blower flange to those in the manifold, and bolt the two sections together using two 13mm wrenches or a 13mm socket and ratchet (see *Photo #23*).

Connect Filter Manifold to Blower

Remove the eight 8mm bolts from the side of the blower and use them to connect the filter manifold to the blower (see *Photo #24*), being sure the filter can be removed upward (see *Photo #25*).

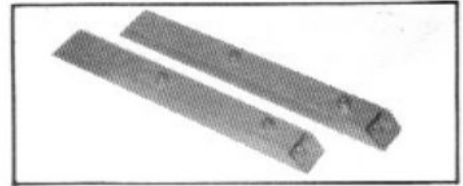


Photo #20



Photo #21

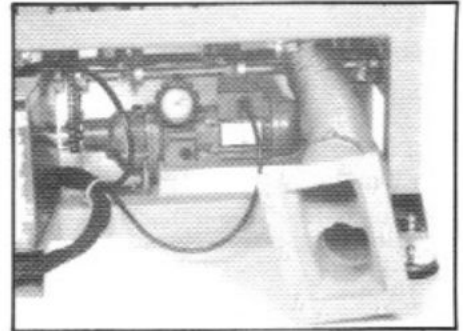


Photo #22

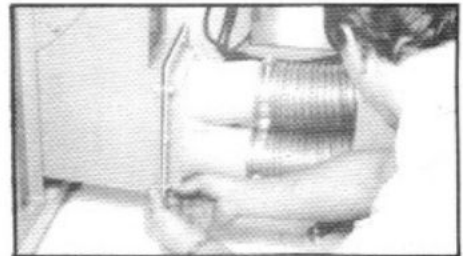


Photo #23



Photo #24



Photo #25

INFEED AND OUTFEED SECTIONS

Position the Infeed Section

Position the 55" long infeed section on four 2" or 3" wood blocks in its approximate place on the right-hand side of the main section.

To help align the infeed track correctly with the washing section, place a piece of glass on the black rubber support rollers. With the glass leaning on the back rest rollers of the infeed section, the leading glass edge should be able to ride smoothly into the center of the horizontal gripping feed rollers at the beginning of the washing section (see *Photo #26*). The height will be adjusted after the leveling pads are attached.

Using four of the small anti-vibration pads and four of the 10mm studs with nuts and washer, attach one assembly to each corner of the infeed section, following the same procedure as for the main section. Using a 17mm wrench and a screwdriver, raise the infeed section enough to remove the wood blocks (see *Photo #27*). The top surface of the bottom rails of the main and infeed sections should be the same height.

Adjust the height of the infeed section so that the glass is resting evenly on the black rubber support rollers of the infeed rack and the brown plastic glass support roller at the beginning of the washing section (see *Photo #28*).

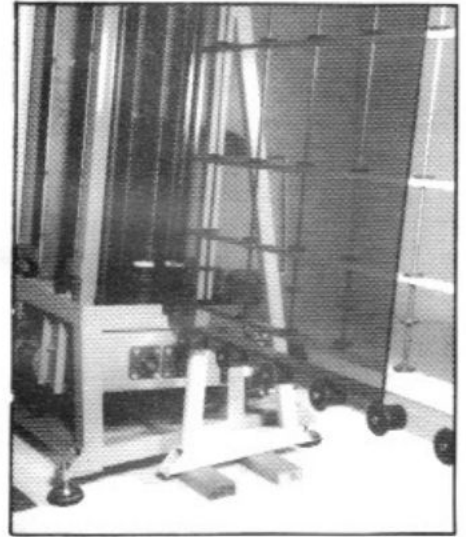


Photo #26



Photo #27

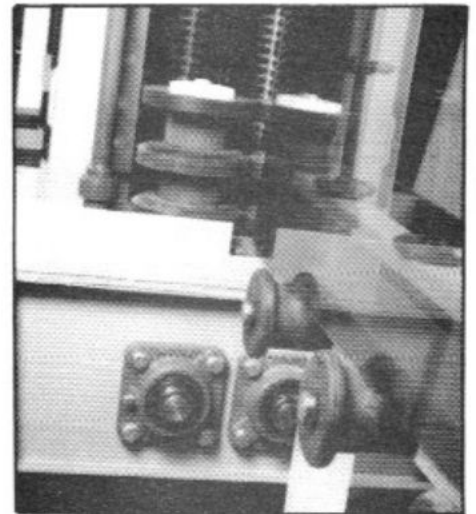


Photo #28

Level and Align the Infeed Section

Place the level on the back of the infeed section support rail (see *Photo #29*) and adjust the leveling studs so that the infeed rack is level horizontally.

Set the front to back tilt of the infeed section at the same angle as the washing section, by using a protractor level on the front of the right hand leg (see *Photo #30*), or by lining up the rack with the centerline of the brushes by eye.

To align the infeed section parallel to the main section, hold a long straight edge along the front of the washing and drying section, extending it the length of the infeed section (see *Figure #3*). Measure from the infeed section to the straight edge at both ends. Move the right side of the infeed section forward or backward until it is an equal distance from the straight edge at both ends.

Clamp Infeed and Main Sections Together

Before attaching the sections to one another, check to see that the bottom rails of the infeed and main sections line up along their lengths. Insert a shim if they do not (see *Figure #4*). Place the clamping plate (see *Photo #31*) over the two bottom rails (see *Photo #32*). Using a 13mm wrench, tighten and lock the bolts.

Attach Outfeed Section

Repeat the same procedures with the 80" long outfeed section.

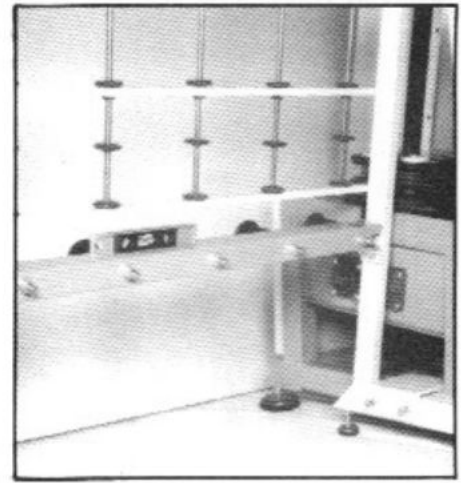


Photo #29



Photo #30

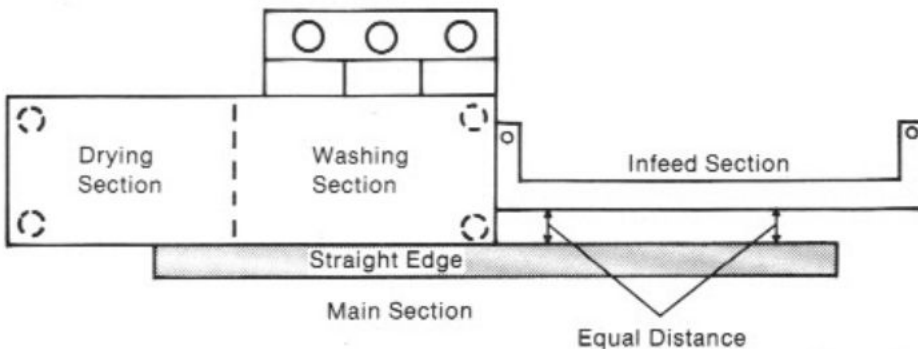


Figure #3

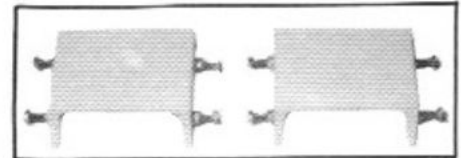


Photo #31

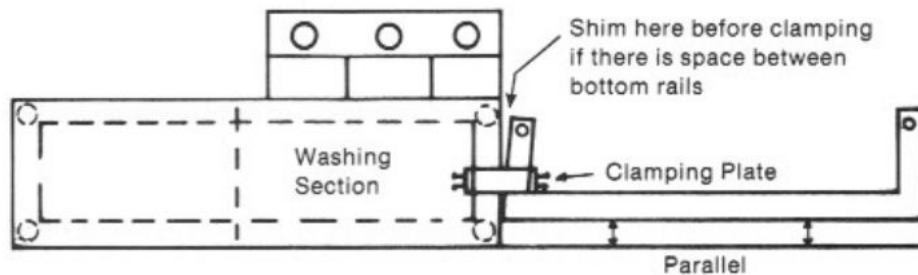


Figure #4

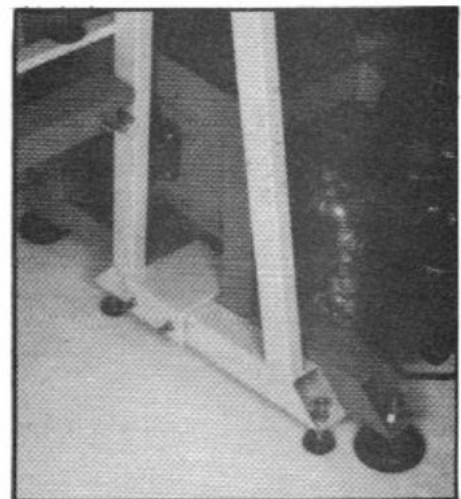


Photo #32

PLUMBING

The water tank comes in its place beneath the washing and rinsing section, with pumps and heater already connected to the machine. All you will need to do is connect your water supply and drain.

Plumbing parts are not supplied. Collect suggested parts (also listed in Section I, page 3) before your machine arrives. For water tank dimensions, see illustration below (*Figure #5*).

Connect the Water Supply

Using a hose clamp, connect a $\frac{1}{2}$ " I.D. rubber hose from your water supply faucet to the $\frac{1}{2}$ " O.D. brass bayonet fitting on the water filter. The filter is located on the left side of the stainless steel water tank, at the rear of the machine (see *Photos #33 and #34*).

The water tank has three compartments. The one on the left, with the heating element and float, is for the detergent/wash solution. Fill this compartment with water. Set the float so that the water shuts off approximately $1\frac{1}{2}$ " from the top of the compartment divider wall, and fasten the float in position with the small wing nut.

Use the two rubber plugs supplied to close the holes between the compartments. Fill the other two compartments with water from a hose.

The water used for the final rinse is clean water from your supply line. It is impossible to remove 100% of the water from the glass. If your water supply is not very good quality (i.e., mineral deposits in the water), or if you are using a water softener, because this adds salt, it will show on the glass surface when dry. We recommend that you use a Culligan Exchange service deionizer system, or the equivalent, on your final rinse water, Type Two-Bed strong base, 9-inch. See spec sheet for details. This unit can be purchased or rented from your local dealer.

Connect the Drain System

Several methods of connecting the drain system may be used. We have found the following to be the easiest:

Tank drain valves: Connect two hoses to the two drain valves at the back of the water tank with $\frac{3}{4}$ " pipe thread adaptors, and run the hoses to your drain.

Tank overflow parts: Using hose clamps, connect two $1\frac{1}{2}$ " I.D. rubber hoses, 3" long, onto the two $1\frac{1}{2}$ " O.D. stainless steel overflow pipes at the rear of the water tank. Make a manifold (see *Figure #2, page 3*), using $1\frac{1}{2}$ " O.D. PVC tubing and connectors, and connect it to the two rubber hoses on the overflow pipes. With a hose clamp, connect a $1\frac{1}{2}$ " O.D. rubber hose to the manifold, and run it to your drain. The overflow is a gravity drain system, so be sure to use this diameter hose; a smaller size will not be adequate to allow the water to flow from the tank.

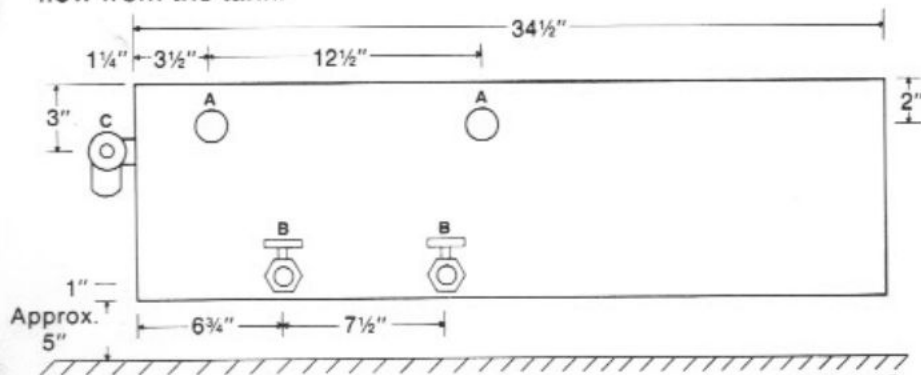


Figure #5



Photo #33

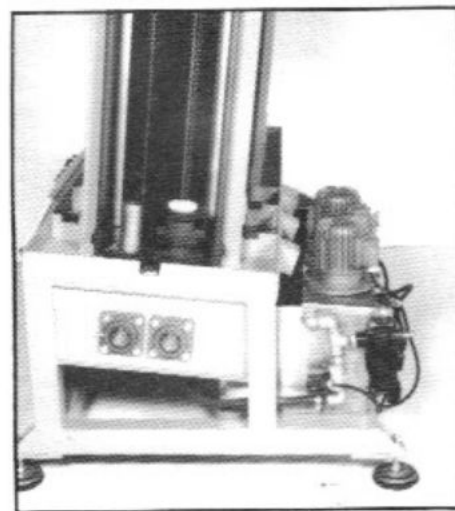


Photo #34

BACK VIEW OF WATER TANK

- A Overflow Pipes
1-1/2" O.D. x 1-1/2" Long
- B Tank Drain Valves
3/4" Pipe Thread Fittings
Attach hose going to drain here.
- C Connection for city water
1/2" O.D. bayonet fitting
Attach 1/2" I.D. hose and clamp here.

ELECTRICAL SYSTEM

The wiring of the machine is relatively simple. However, for those who are unfamiliar with the electrical wiring of machines, it is best to have a licensed electrician connect the power for you. Except for the blower motor, all the motors and pumps will have been wired before the machine is delivered.

Electrical Requirements

The No. 60VGW Glass Washing Machine is wired for 220V, 3 phase power. A 40 amp circuit breaker is needed (60 amp when using a phase converter). The ideal arrangement would be to have a wall mounted, fused disconnect panel located behind the machine, as shown in the Floor Plan Diagram (see Figure #1, page 2).

You will need 4 lengths of 10 gauge wire to reach from the fuse box to the control panel, and conduit or hard core flexible conduit (Sealtite).

Determine the Type of 3 Phase Power Supply

At the source of electric power to your building, use a voltmeter to take a reading on each of the 3 phase legs to ground.

Type a: Three phase wire system. Each of the legs usually carries equal voltage (115V) to ground, and 208V between any two legs. This is the most common type of wiring used in the U.S., and each of the legs can be connected to terminals R, S or T. In cases where one leg carries a higher voltage, make sure this leg is not one of the power lines feeding the 220V single phase transformer.

Type b: 240V 3 phase, 4 wire Delta system with bastard or stinger leg. Two of the legs will carry 120V to ground, the third 240V; and 260V between any two legs.

Type c: 240V 3 phase, 3 wire Delta system with grounded leg. Two of the legs will carry 220V to ground, the third 0 to ground; and 240V between any two legs.

For Types b and c power, we recommend you use a bucking transformer to reduce the voltage to 220V. Call CRL's Machinery Division for further information.

For phase converter hookup, two legs will carry 110V each and the third leg from the phase converter will be 240V. Make sure the two 110V legs are feeding the 220V one-phase transformer.

Connect the Electric Supply to the Machine

Inside the control panel are four terminals. The terminals marked R, S and T are the 3 phase power terminals, and the green one at the bottom is the ground (see R, S, T, and Gr, Control Board Diagram, Figure #11, page 23).

Connect the Blower Motor

Remove the two screws holding on the square lid of the terminal box on top of the blower motor. The blower motor is dual voltage, and can be set for either 220V or 380V electricity. Check that the three links inside the terminal box are in parallel position, as shown (see Photo #35), the correct setting for 220V power.

Using the connectors provided, attach the red, blue and black wires to terminals 1, 2, and 3. Attach the green and yellow ground wire to the screw in the upper left corner of the terminal box (see Figure #6).

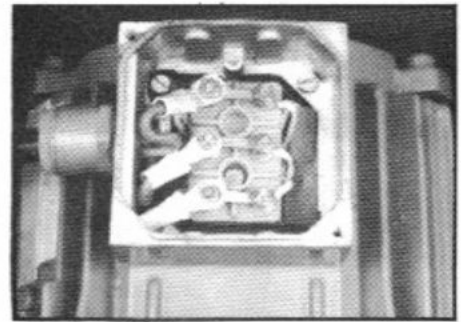


Photo #35

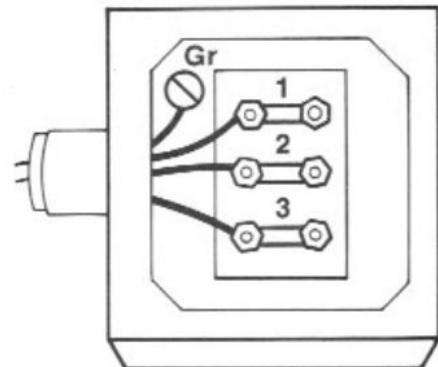


Figure #6

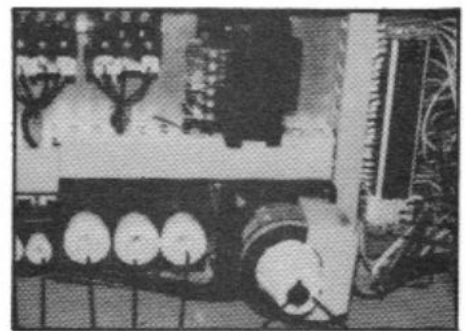


Photo #36

Connect the Isolator Switch

The electrical isolator switch has been stored inside the control panel during shipment to prevent damage. Take it out and disassemble it. Unscrew the slotted head screw in the center of the red section of the switch and take it off. Remove the two small screws that hold the outer yellow casing, and the four bolts and nuts.

Position the black switch plate over the hole in the front of the control panel door so that the spring-loaded bar and pin, with the pin in vertical position, protrude from the inside of the door and align with the opening in the power isolator (see a Photo #36). Close the door and screw on the yellow outer casing. Replace and screw on the red center handle (see Photo #37).

Turn the red handle in the switch one-quarter turn (to horizontal position) to lock the door and prevent it from being opened while the machine is running.

Check Motor Rotation

You are now ready to turn on the power and check for correct rotation of the motors. The white light labeled "Current Connected" (see control panel detail, Photo #38) will come on when the electrical current to the machine is switched on.

Press the button marked "Conveyor On". Without using the glass, check that the gripping feed rollers (see Photo #39) are turning so that they will guide the glass into the washing section; the front rollers should turn counterclockwise and the back ones clockwise. If they don't, first turn off the main electrical power to the machine; exchange two of the wires on the R, S, or T terminals in the control panel, and recheck.

Except for the blower motor, which was connected separately, all the motors have been checked for correct rotation. However, it is advisable to double check all the motors.

Push the button marked "Washing On" and compare both pumps with the direction arrow on the side. The front brushes should turn clockwise and the rear ones counterclockwise, so that they are rotating against the glass as it feeds through the washing section.

Press the "Blower On" and then "Off" buttons. Remove the filter from the blower manifold and check the rotation of the fan with the arrow on the side of the blower. If the rotation is correct, refasten the lid on the blower motor terminal box. If the rotation is incorrect, first turn off the main power to the machine; exchange two of the wires connected to the three terminals, and recheck. Refasten the lid.

Motor Overloads

All the motors are protected with overload fuses. If the red "Alarm" button on the front of the control panel starts to flash during the washing cycle, it means one of the motors has tripped the overload breaker, and must be reset. Open the control panel door and press the red reset button corresponding to the motor that has overloaded (see Control Panel Diagram, Figure #11, page 23).

Investigate the reason for the overload. A common cause is an incorrect setting on the circuit breaker (vibration during transit can cause the breaker setting to move). Check the setting on the circuit breaker through the small window on the front. The small red indicator inside the window (see a, Photo #40) should be positioned between the two vertical black marks, and set to the amp settings given with the Control Panel Diagram (see Figure #11, page 23). Adjust the breaker setting indicator by turning the thumb screw located beneath the breaker (see Photo #40).

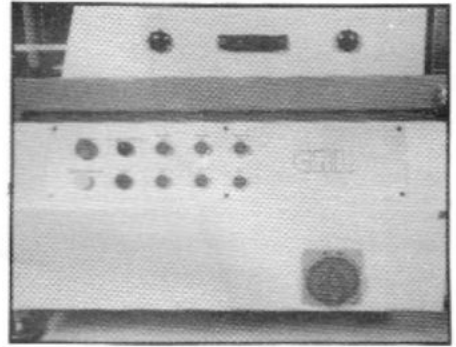


Photo #37

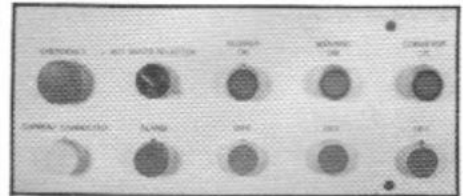


Photo #38

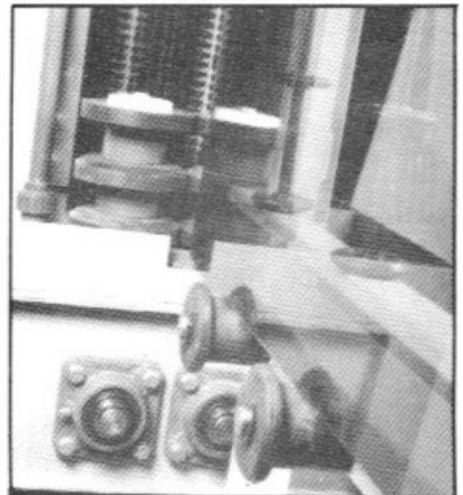
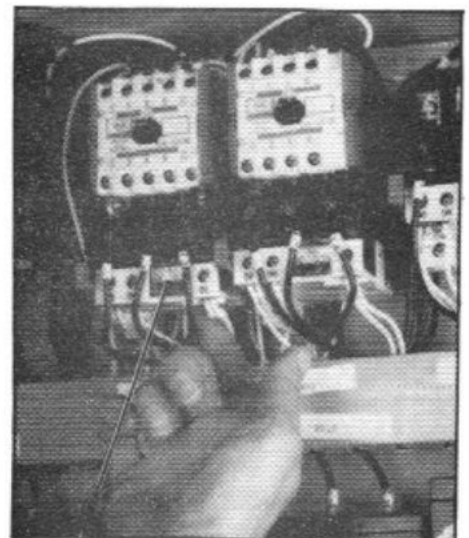


Photo #39



a

Photo #40

PREPARING FOR OPERATION

WASHING/DETERGENT COMPARTMENT

Water Heater

The heated left-hand compartment in the water tank is for the detergent washing solution. The water is heated by a 3kw heater, which is started by turning to the right the switch on the control panel marked "Hot Water Selector". A thermostat in the water tank maintains the solution at a temperature of approximately 90 degrees. A clicking noise may be heard during operation as the heater is automatically turned on and off.

To avoid damage to the water heater, always be sure water covers the heating element in the compartment before switching on the machine.

Detergent Solution

Two tablespoons of Work Site® No. 155X Glass Washing Machine Detergent should be added to this heated compartment at the start of the day. More may be added during the day as the detergent solution weakens, to maintain a layer of foam approximately 1/2" thick. The correct amount will vary, depending on water condition.

An automatic detergent dispensing unit is available to ensure the correct mixture at all times. Contact the CRL Machinery Division for more details.

FINAL RINSE SECTION

Clean water is allowed to pass through the spray jets in the final rinse section only when the conveyor is started, operating an electrical solenoid valve.

Determine Final Rinse Setting

Remove the four black plastic knobs fastening the front stainless steel cover over the washing and rinsing section. Without removing the cover, pull it out far enough to let you inspect the amount of spray coming out of the nozzles on the rinse tubes (see a, Photo #42). Adjust the water supply to get a fine mist, which is all the spray necessary for rinsing the glass.

At this rate of flow, the machine will use approximately 33 gallons of clean water per hour of use. A high water pressure can force two to three times this amount of water through the spray jets.

For efficiency and economy, make a mark on the water faucet to indicate this setting for future reference, and turn the faucet to this mark whenever the machine is in use.

Inspect Rinse Nozzles

Check that a spray of water is coming out of each of the spray jets. Remove the tip of any nozzles that are not operating, clean out the hole and slot with a fine piece of wire or an air hose, and replace.

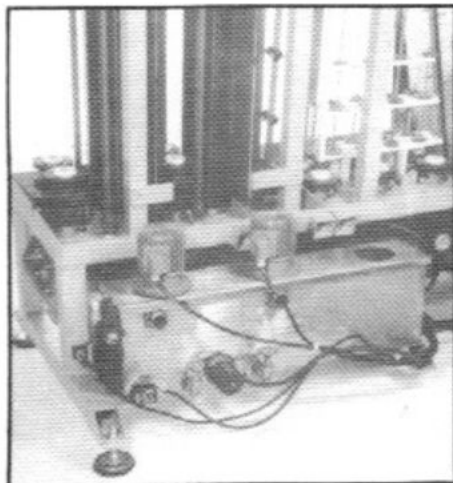


Photo #41

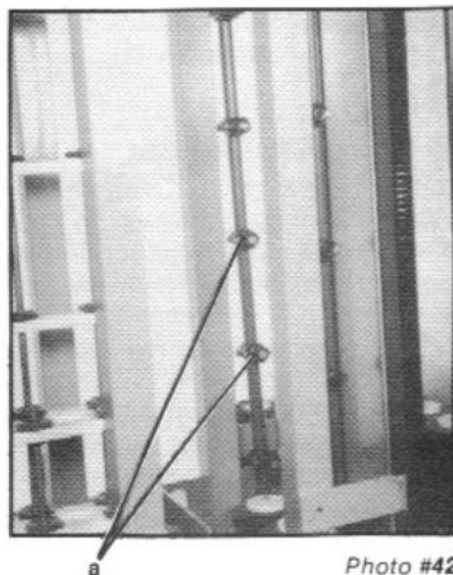


Photo #42

FINAL PREPARATIONS

Clean and Flush the Machine

Before starting production, remove the washing and drying section covers. Using a soft cloth and hot, clean water, clean the rubber feed gripping rollers (see Photo #43 and #44) along the entire track. Replace the covers.

Because dirt accumulates on the machine during transit, it is recommended to run the washing and rinsing cycles for a while to flush out and clean the inside of the machine. Then drain and refill the water tank with clean water.

Test the Track

You are now ready to test the machine operation using a piece of glass.

As the glass enters the washing section, check that the angle of the infeed section is correct. The glass should ride smoothly from the infeed rack into the center of the gripping rollers, and then between the rubber strips along the edges of the front and back covers, and into the center of the washing brushes inside.

Also check the angle of the outfeed rack as the glass leaves the drying section and transfers to the outfeed section.

Make any necessary adjustments to the infeed or outfeed sections.

Air Knife Adjustment

Inspect the glass after it has passed through the entire cycle. The two air knives should be set so that they both blow the water off the tail end of the glass together. If the knives are out of alignment, it will result in the water being blown around the trailing edge of the glass by the air knife set farthest to the left.

If the drops are on the back side of the glass, adjust the front air knife (see a, Photo #45) to the right, toward the rinsing section, until the cleft is in line with the rear one. If the water drops are on the front side of the glass, adjust the rear air knife to the right.

To adjust the incorrectly set air knife, loosen the two nuts on the bottom locating bracket (see b, Photo #45), and/or the two nuts on the top bracket (see a, Photo #46). Reposition the air knife and retighten the nuts.

Adjust the Track Speed

The conveyor speed of the glass washing machine is adjustable from 46" to 228" per minute. Adjust the track speed only while the conveyor is running, by turning the handwheel located on the conveyor motor at the rear of the machine (see a, Photo #47). Changing speeds when the conveyor is not running can damage the drive unit.

Varying weather conditions can affect the dryness of the glass. The track will need to be run at a slower speed in humid conditions.

Your No. 60VGW Vertical Glass Washing Machine is now ready for production.



Photo #43



Photo #44

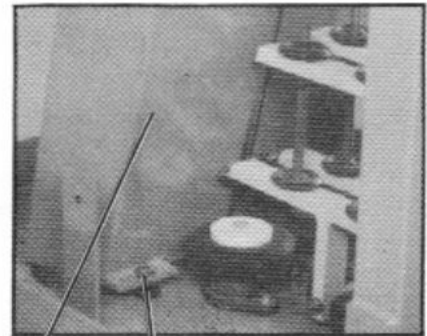


Photo #45



Photo #46

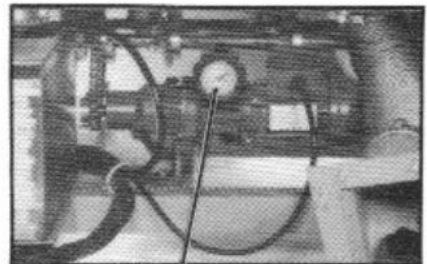


Photo #47

MAINTENANCE

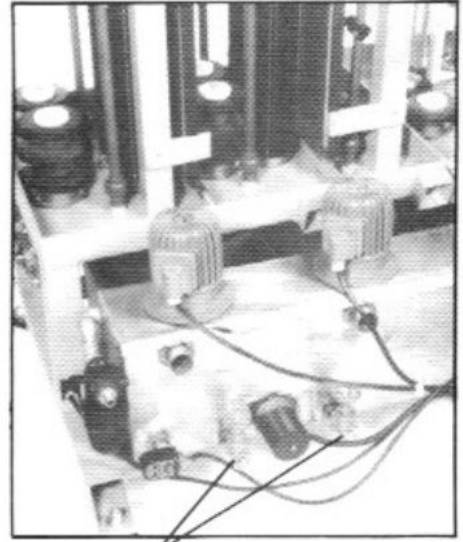
DAILY MAINTENANCE

Water Tank

For best results, we recommend draining and cleaning the water tank daily. In cases where excessively dirty or powdered glass is used, clean it twice daily.

Open the two drain valves at the bottom of the tank (see **a** *Photo #48*) to drain out the water. Remove the two rubber hoses from the pumps, lift the pumps clear of the tank, and remove the pump bracket/water tank lid. Sponge up the small amount of water remaining in the bottom of the tank, and wipe the inside clean. Reposition the mounting bracket and pumps. Refill the tank with water.

To avoid damage to the water heater, make sure water covers the heating element in the detergent compartment before switching on the machine.



Photo#48

WEEKLY MAINTENANCE

Air Filter

Check the air filter for dirt build-up. When the air filter needs cleaning, it may be removed and washed with mild household detergent and rinsed with clean water. It is a good practice to keep a spare air filter on hand to use while the dirty one is being cleaned.

Spray Jets

Remove the four knobs on the wash section cover and pull it open far enough so you can see the rinse nozzles. Turn on the conveyor and check to see that all the spray jets are delivering a fine spray of water. If any are not, remove the nozzle tip by unscrewing the plastic ring housing. Clean the nozzle hole and slot with a piece of fine wire or an air hose gun and replace.

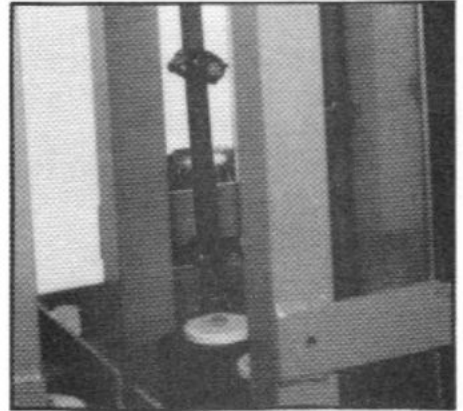


Photo #49

Water Filter

Remove the threaded bottom portion of the water filter (see *Photo #50*) and clean the stainless steel filter inside.

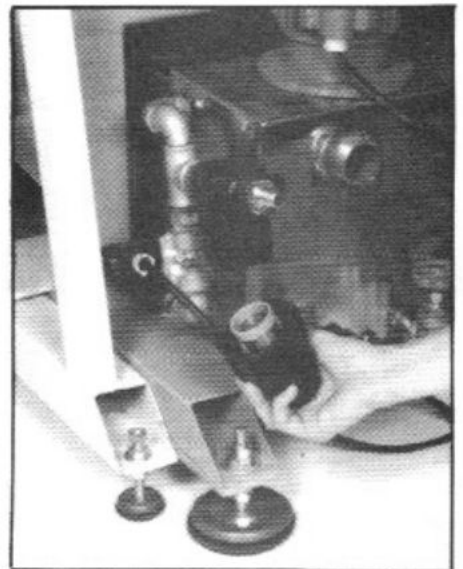


Photo #50

MONTHLY MAINTENANCE

Top Brush Bearings

Remove the stainless steel front cover of the washing section. Using a grease gun, grease the top brush bearings through the grease points on front and back (see a, Photo #51).

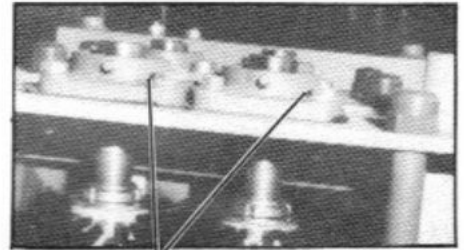


Photo #51

Conveyor Drive Bearings

Grease the four conveyor drive bearings (see a, Photo #52), two on each side of the machine.

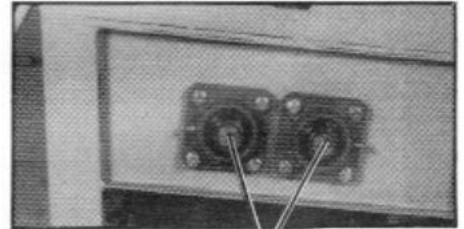


Photo #52

Conveyor Drive Gears

Remove the bottom front cover next to the control panel, giving access to the drive shaft from the front. Grease the 14 pairs of conveyor drive bevel gears and transfer drive gears (see a, Photos #53 and #54).

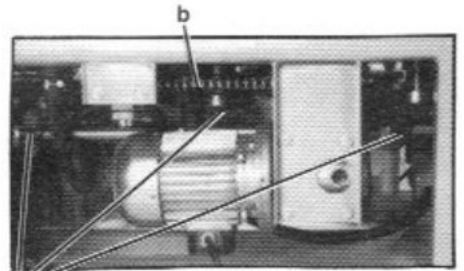


Photo #53

Brush Drive Chain

Start the washing cycle. Squirt a few drops of 20/40 weight oil on the brush drive chain (see b, Photo #53).

Conveyor Drive Chain

Start the conveyor drive. Squirt a few drops of 20/40 weight oil on the gear box drive chain (see b, Photo #54).

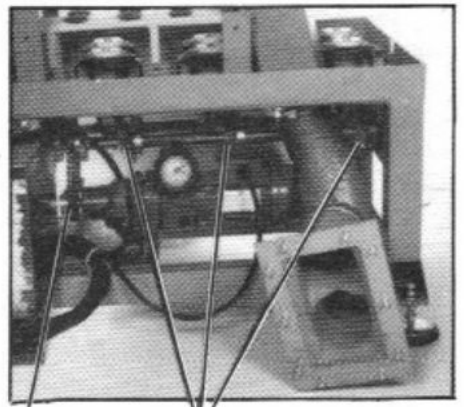


Photo #54

Glass Support Rollers

Lubricate the glass support rollers along the center of the washing and drying track. While spinning the roller (see a, Photo #55), apply a small amount of WD-40 or silicone spray to each one.

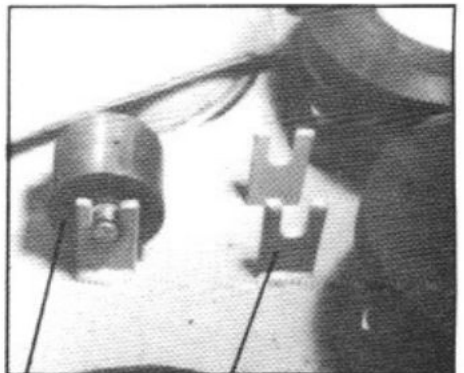


Photo #55

6-MONTH MAINTENANCE

Glass Support Rollers

Check the glass support rollers in the washing and drying sections for wear, and replace when necessary. Remove the rollers by pulling them up out of the two forked brackets (see b, Photo #55).

6-MONTH MAINTENANCE (cont.)

Conveyor Drive Gear Box

Check the window on the gear box (see **a**, *Photo #56*). The oil level should be approximately three-quarters full on the window plug. Top up the gear box with AL701 oil if it is low.

Brush Drive Gear Box

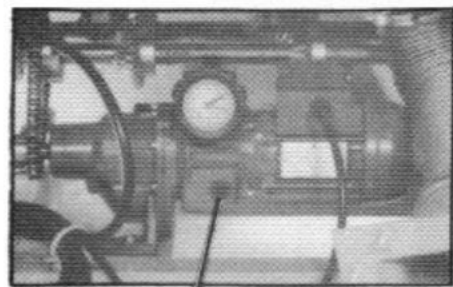
Check the window on the gear box (see **a**, *Photo #57*). The oil level should be approximately three-quarters full on the window plug. Top up the gear box with AL701 oil if it is low.

Brush Rotation

Each of the four brush poles is a shaft with four stacked tubular brush sections, one large and three smaller ones. The bottom sections of the brushes become worn sooner than the top ones, because they are used whether the size of glass being washed is large or small. To maintain an even wear pattern on the brushes, regularly inspect the wear on the bristles and rotate the four brush sections on each of the brush poles.

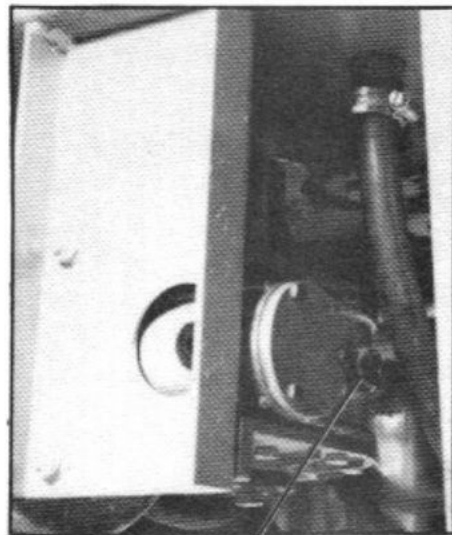
To remove the brushes, take off the front cover of the washing section. Remove the square top bearing on the brush pole by removing the four corner bolts on top of the bearing housing (see **a**, *Photo #58*), and loosening the two Allen head set screws (see **b**, *Photo #58*). Using the special 'C' wrench supplied, and holding the brush section to prevent its turning, loosen the large nut at the top of the pole (see **c**, *Photo #58*). Lift the bearing housing off the brush shaft and remove the square rubber gasket underneath.

Slide each of the four brush sections up the shaft and out through the hole in the top of the section (see *Photo #59*). Rotate the order of the brush sections and replace them on the shaft. Reassemble the top bearing.



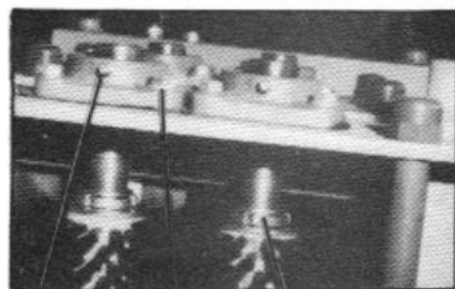
a

Photo #56



a

Photo #57



b

a

c

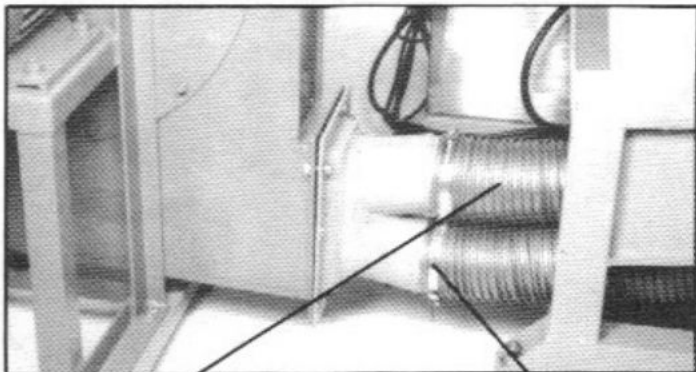
Photo #58



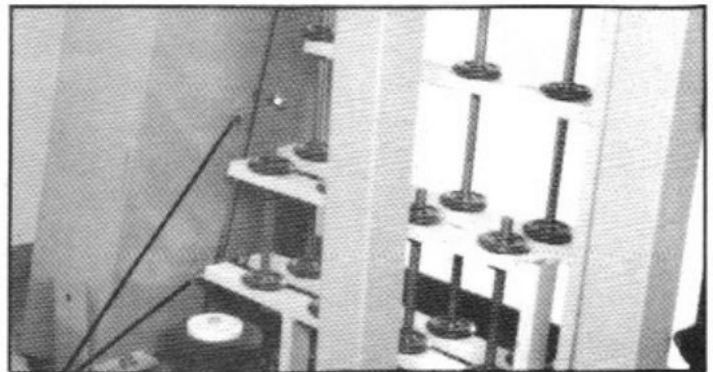
Photo #59

TROUBLESHOOTING

| PROBABLE CAUSE | CORRECTION |
|---|--|
| PROBLEM: Glass coming out dirty | |
| Spray jets blocked | Remove nozzle tips and clean (<i>see page 14</i>) |
| Spray jets not operating | Check that water faucet is open Check solenoid valve is operating |
| Weak solution in water tank | Add detergent |
| Detergent pump not operating | Check circuit breakers and fuses (<i>see page 23</i>) |
| Washing section not operating | Check circuit breakers and fuses |
| Brushes not operating | Check circuit breakers and fuses |
| Dirty water in detergent and washing tank | Clean out water tank |
| Brushes worn out, making no contact | Replace brush sections (<i>see page 16</i>) |
| PROBLEM: Red alarm button flashing on control panel | |
| One of the circuit breakers has tripped | Press reset button inside control panel (<i>see page 23</i>) |
| PROBLEM: Machine will not operate | |
| Control panel emergency button has been pressed | Turn button to RELEASE |
| No electricity | Check main breaker Check power isolator switch on control panel door Check main fuses inside control panel |
| PROBLEM: Glass coming out wet | |
| Insufficient air; filter blocked with dirt | Change air filter on blower |
| Environment cold and damp, or high humidity | Slow down conveyor track |
| Damaged connection hose from blower to air knife | Replace hose (<i>see a, Photo #60</i>) |
| Leaking connection hoses from blower to air knives | Tighten hose clamps (<i>see b, Photo #60</i>) |
| Air knives blocked with foreign particles | Clean out air knives by running a flat screwdriver blade along the cleft. |
| Incorrect air knife cleft setting | Reset cleft, using adjustment bolts (<i>see a, Photo #61</i>) |
| PROBLEM: Motors trip the circuit breakers for no apparent reason | |
| Incorrect setting on overload switches | Reset circuit breaker settings (<i>see page 23</i>) |



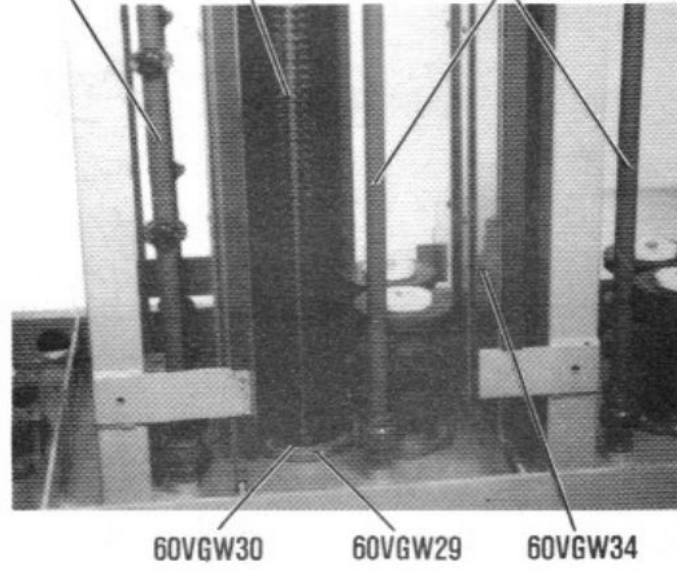
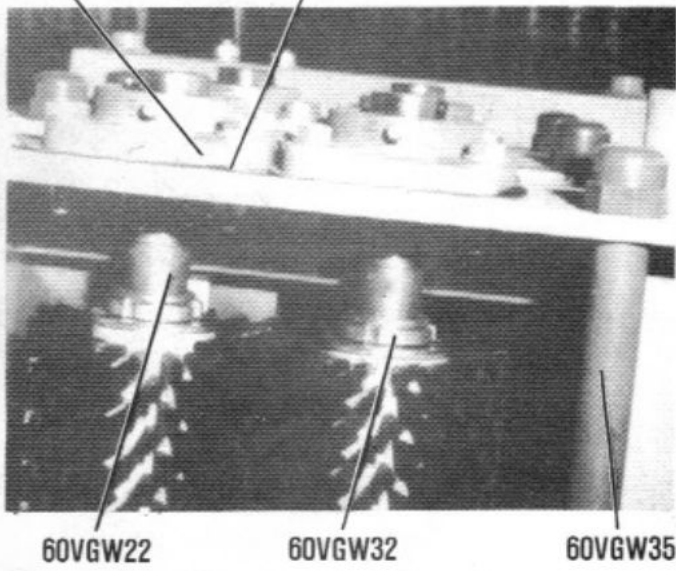
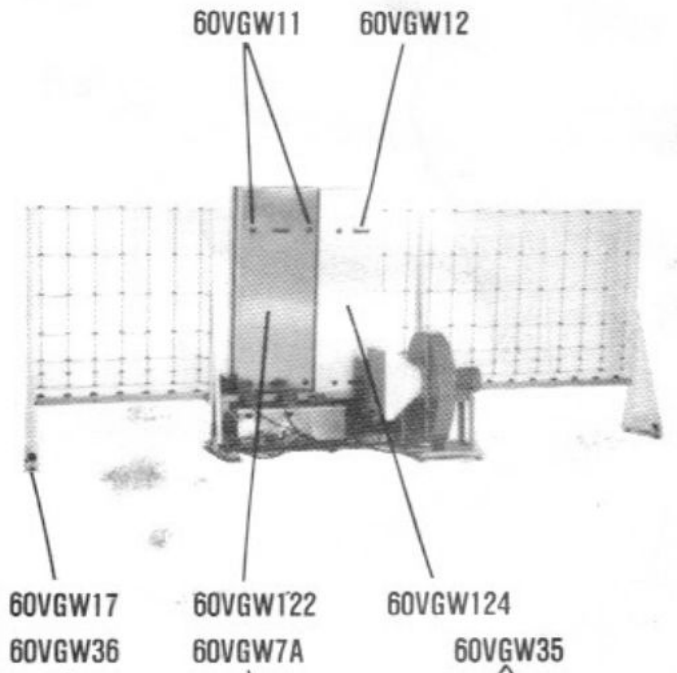
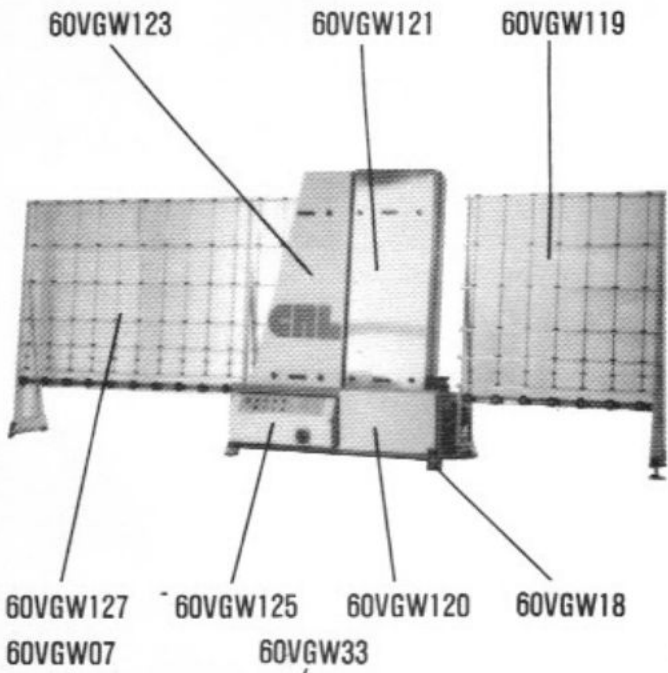
a b Photo #60



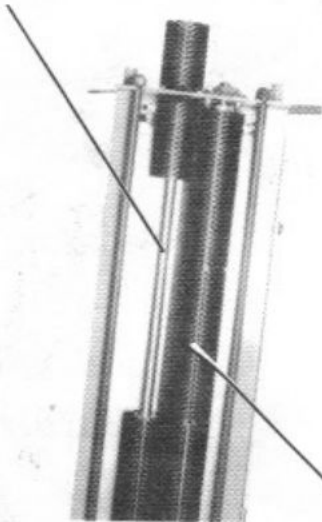
a Photo #61

PARTS LIST

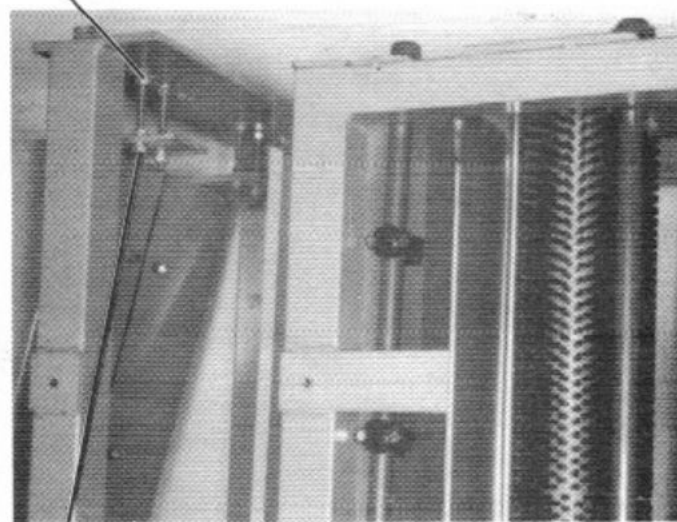
| Part # | Description | Part # | Description |
|---------|--|----------|--|
| 60VGW01 | Glass support rubber roller, rack | 60VGW45 | Washing pump hose |
| 60VGW03 | Glass support wheel, main section | 60VGW46 | Speed indicator |
| 60VGW04 | Brass pin | 60VGW47 | Shaft for drive rollers |
| 60VGW05 | Rubber drive disc | 60VGW48 | Glass support plastic wheel, frame |
| 60VGW06 | Lower bearing for brush shaft | 60VGW49 | Water tank |
| 60VGW07 | Square support, top brush bearing | 60VGW50 | Pump support bracket |
| 60VGW7A | Brush section, large, 21" | 60VGW52 | Bearing for drive rollers |
| 60VGW7B | Brush section, small, 13" | 60VGW53 | Oval support for drive roller bearing |
| 60VGW08 | Nozzles for rinsing spray tubes | 60VGW55 | Electrovalve |
| 60VGW09 | Rubber strip | 60VGW56 | Overflow pipe |
| 60VGW10 | Water pump | 60VGW57 | Water drain |
| 60VGW11 | Plastic knob for cover, round, M8 x 20 | 60VGW58 | Fan |
| 60VGW12 | Plastic handle for cover, type 443/140 | 60VGW60 | Air pipe fitting |
| 60VGW13 | Air filter | 60VGW61 | Air knife |
| 60VGW14 | Water filter | 60VGW62 | Air knife cleft regulator |
| 60VGW15 | Water heater | 60VGW63 | Air knife angle regulator |
| 60VGW16 | Thermostat | 60VGW64 | Air knife approaching regulator |
| 60VGW17 | Small anti-vibration pads, rack | 60VGW80 | Space bushing |
| 60VGW18 | Large anti-vibration pads, main section | 60VGW110 | Fan bearing set |
| 60VGW19 | Brush motor | 60VGW112 | Spur, gear (35T) |
| 60VGW22 | Brush shaft | 60VGW113 | Chain pinion, main conveyor drive shaft (1/2" 28 teeth) |
| 60VGW24 | Reduction gear unit, brush motor | 60VGW114 | Chain pinion, conveyor variator (1/2" 14 teeth) |
| 60VGW25 | Bevel gear pair | 60VGW115 | Chain for conveyor drive (1/2" pitch X 26" long) |
| 60VGW26 | Chain for brushes (1/2" pitch x 48" long) | 60VGW116 | Shaft for main conveyor drive |
| 60VGW28 | Seeger retaining ring | 60VGW117 | Square support |
| 60VGW29 | Oval rubber gasket | 60VGW118 | Small white plastic cover for drive roller |
| 60VGW30 | Oval bearing support | 60VGW119 | Infeed rack |
| 60VGW31 | Water protection disc for brushes | 60VGW120 | Washing and drying section |
| 60VGW32 | Securing nut for brushes | 60VGW121 | Front protection cover, washing section |
| 60VGW33 | Square rubber gasket | 60VGW122 | Back protection cover, washing section |
| 60VGW34 | Stainless steel baffle board | 60VGW123 | Front protection cover, drying section |
| 60VGW35 | Brush sprayer tubes | 60VGW124 | Back protection cover, drying section |
| 60VGW36 | Rinsing sprayer tubes | 60VGW125 | Control panel door |
| 60VGW37 | Chain tensioner | 60VGW126 | Fan motor |
| 60VGW38 | Chain-pinion, gear box & brushes (16T x 1/2" pitch) | 60VGW127 | Outfeed rack |
| 60VGW39 | Conveyor motor | 3122201 | Panel replacement bulb |
| 60VGW41 | Bottom spacer for drive roller | 3122202 | Panel bulb removal tool |
| 60VGW42 | Conveyor variator | | |
| 60VGW43 | Stud, clip & nuts for 60VGW01 roller | | |
| 60VGW44 | Detergent pump hose | | |



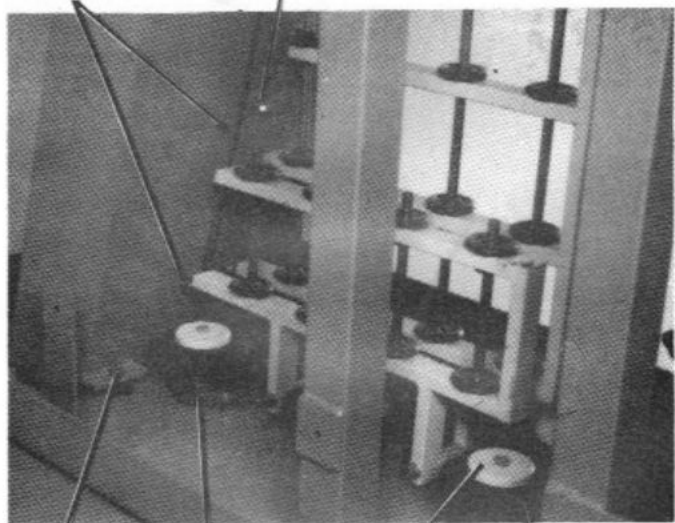
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60VGW63

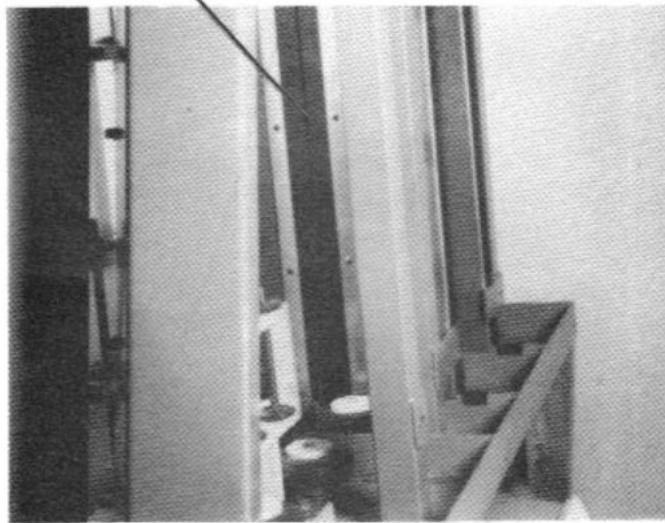


60VGW62 60VGW61

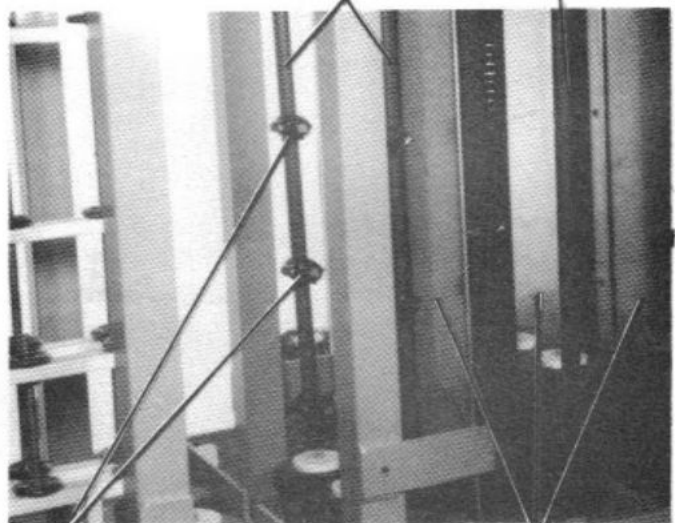


60VGW64 60VGW53 60VGW118 60VGW05

60VGW09

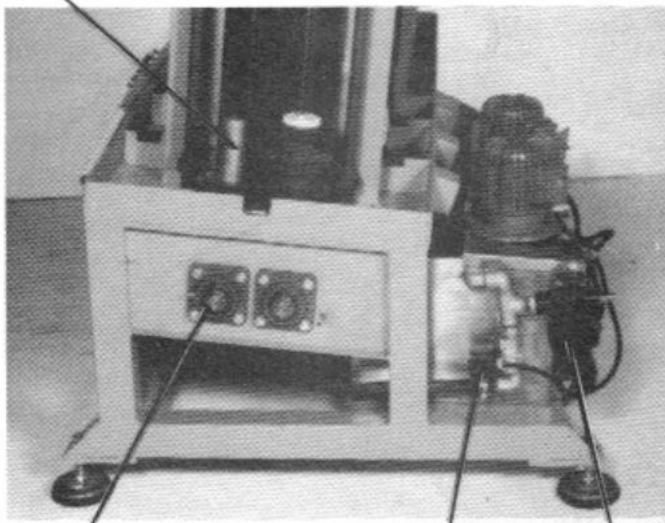


60VGW36 60VGW35



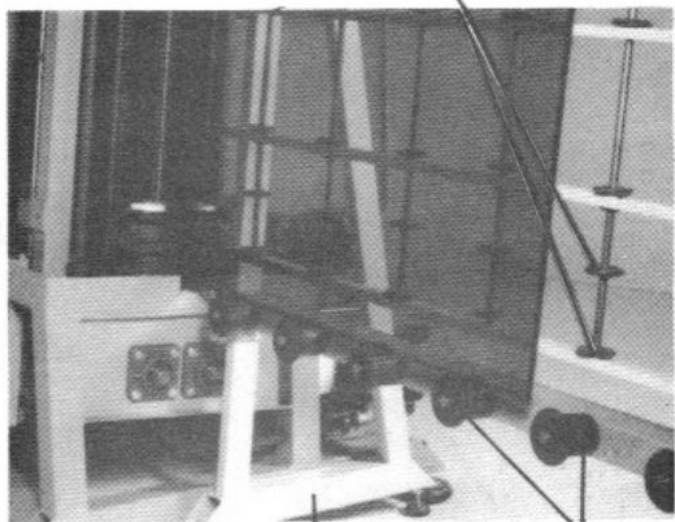
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60VGW47



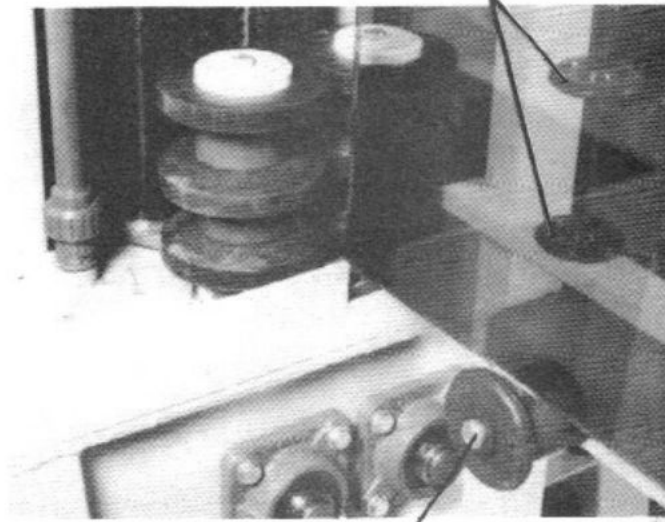
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60VGW48



60VGW119 60VGW01

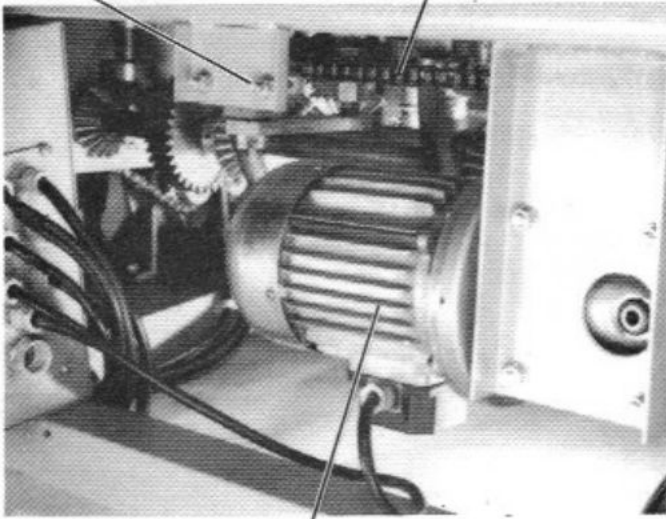
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60VGW43

60VGW37

60VGW26

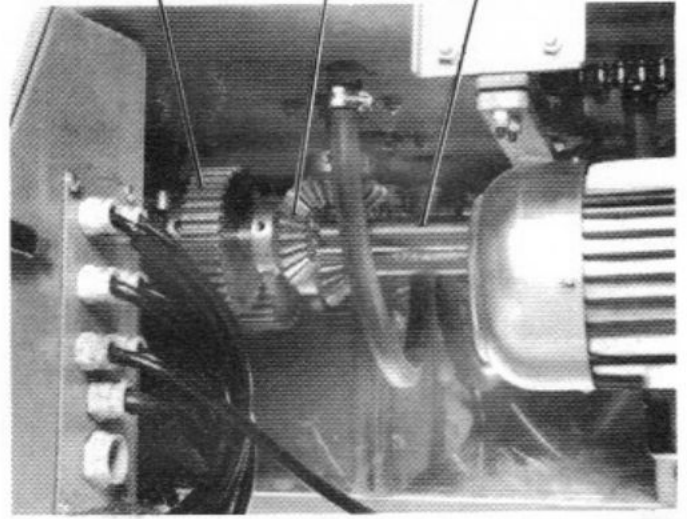


60VGW19

60VGW112

60VGW25

60VGW116

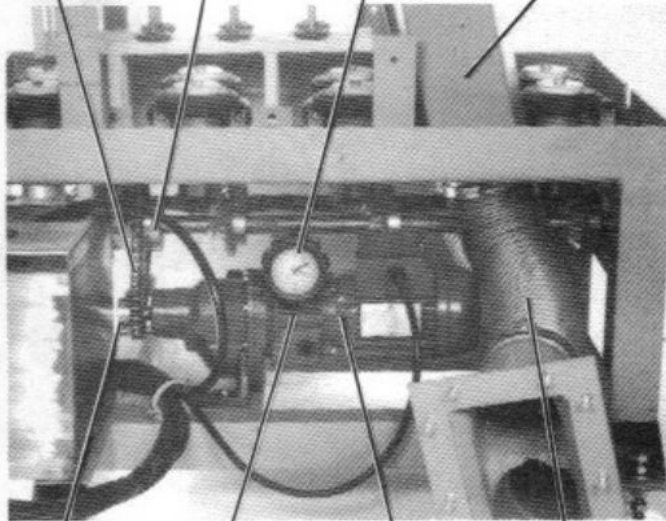


60VGW115

60VGW113

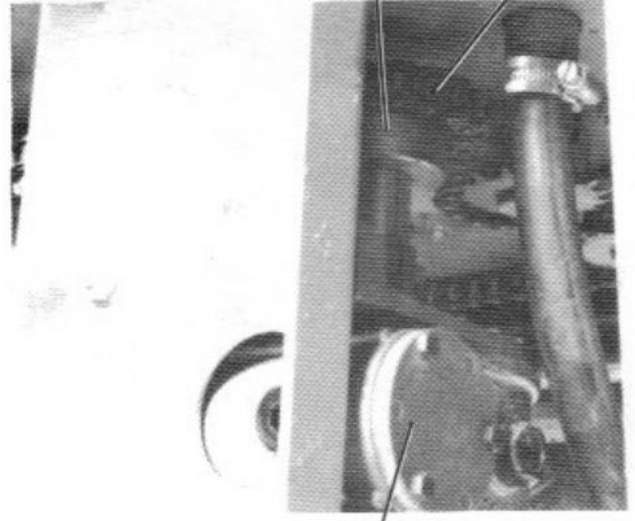
60VGW46

60VGW61



60VGW38

60VGW26



60VGW114

60VGW42

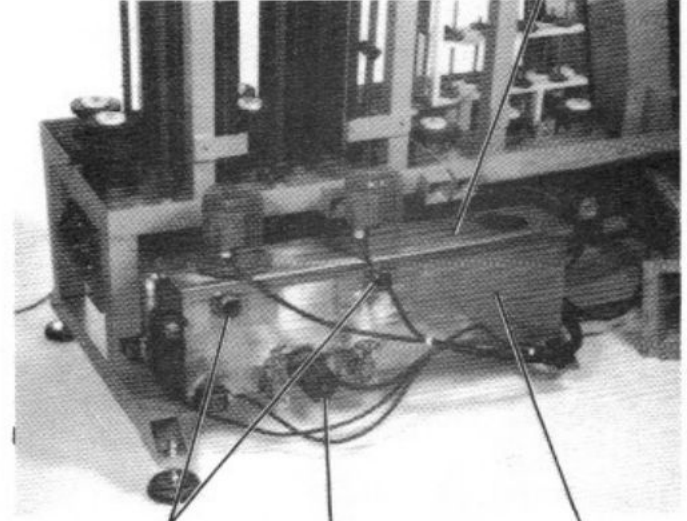
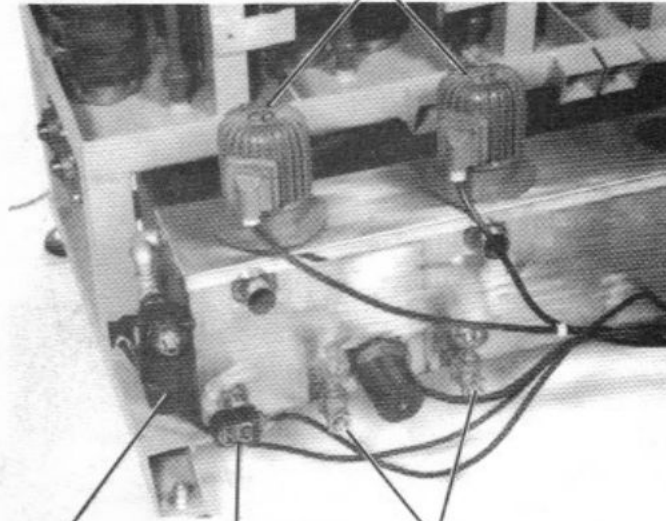
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60VGW60

60VGW24

60VGW10

60VGW50



60VGW14

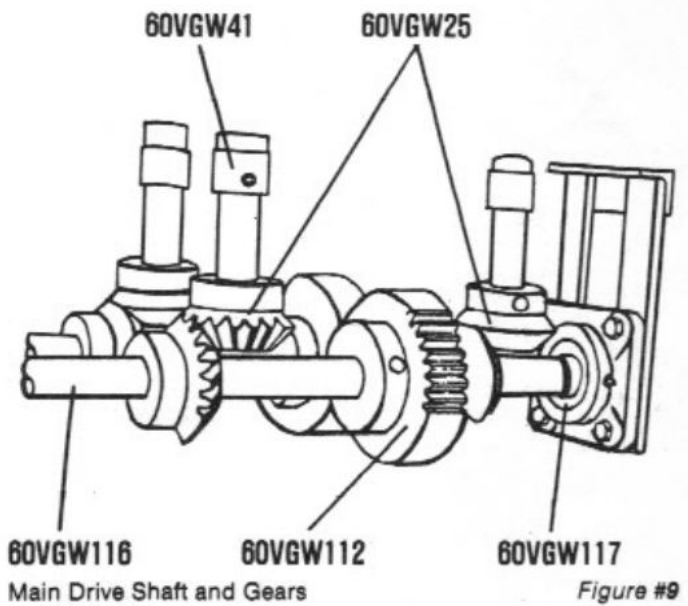
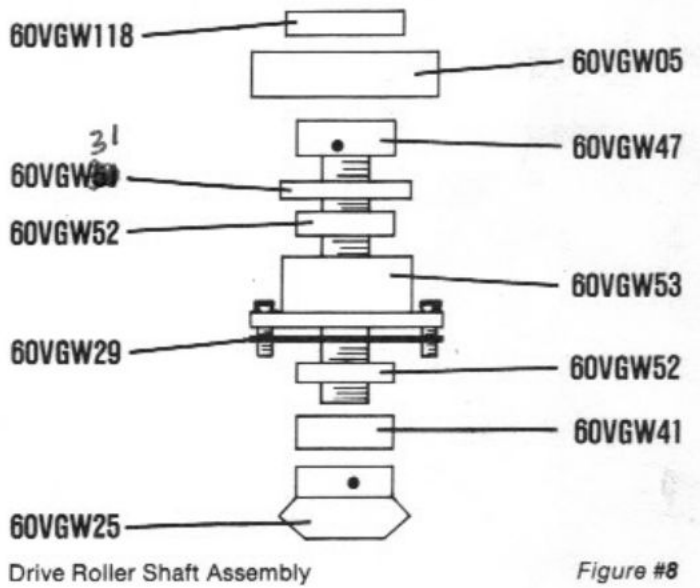
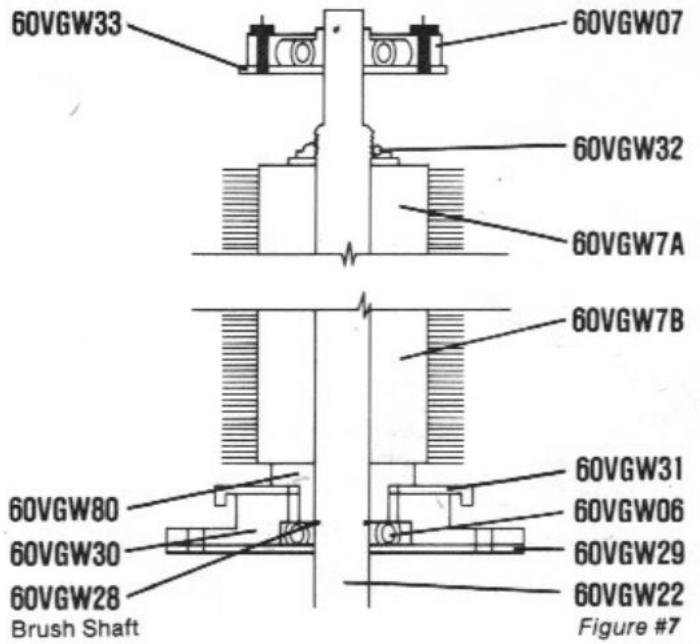
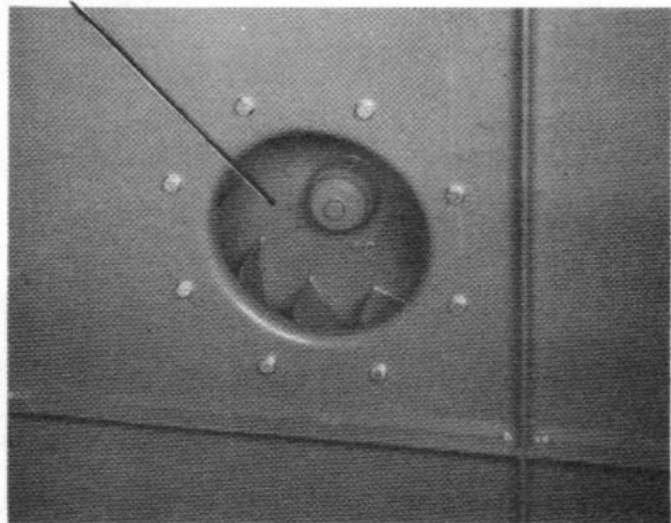
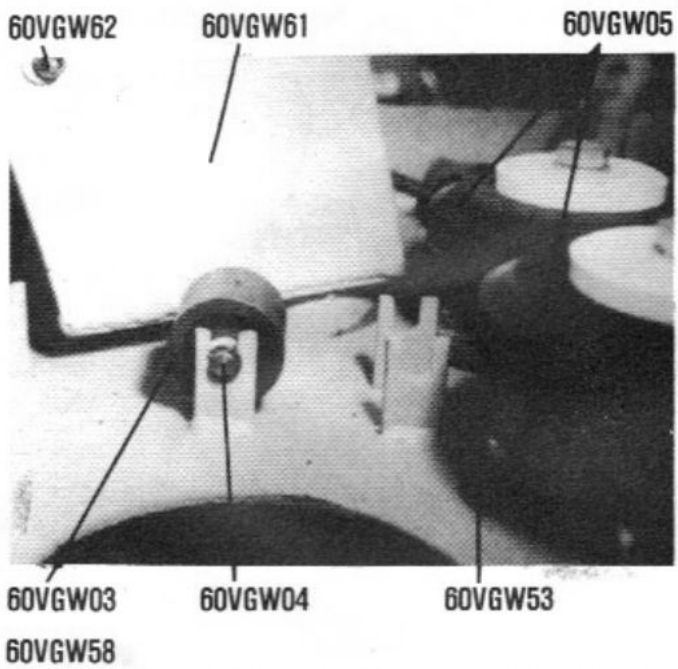
60VGW16

60VGW57

60VGW56

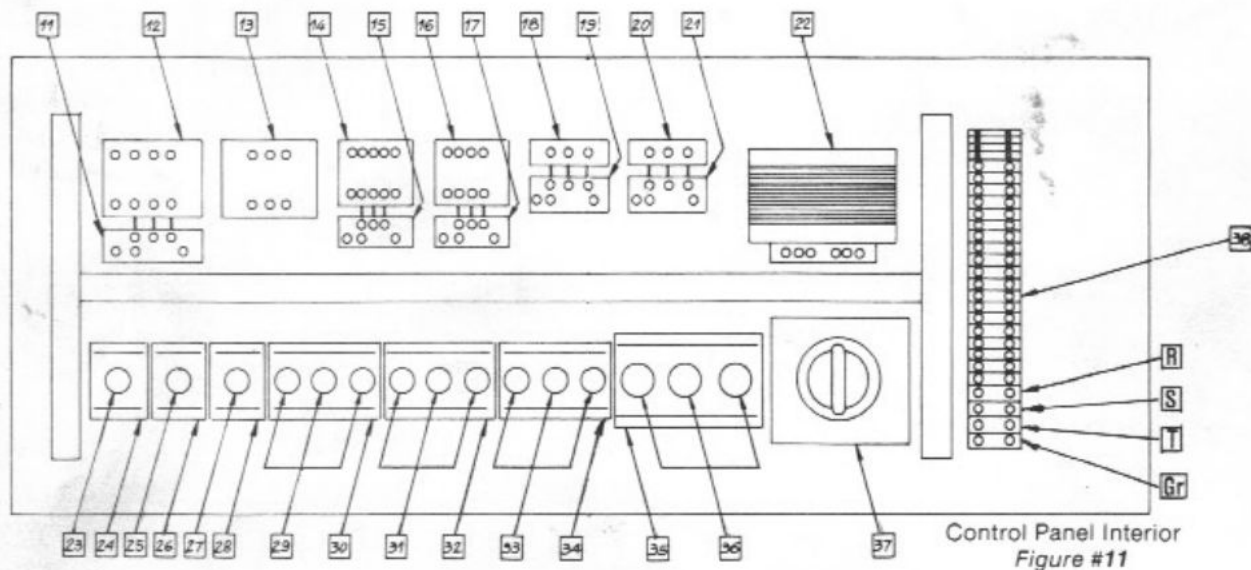
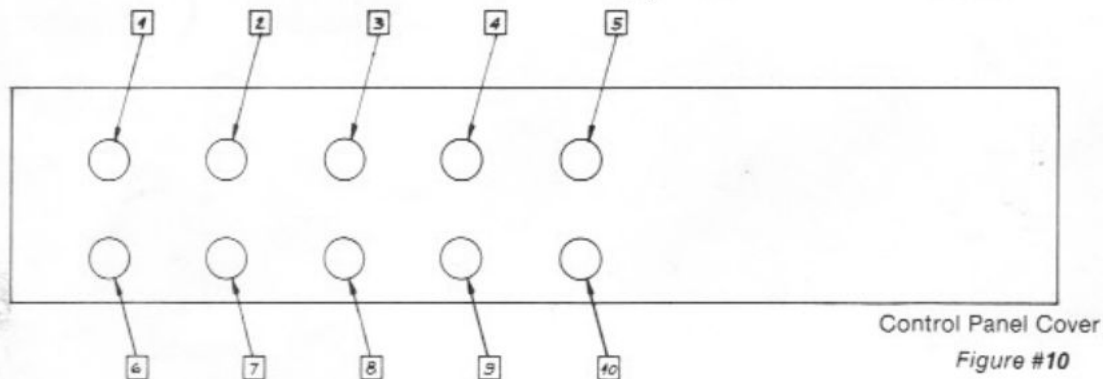
60VGW15

60VGW49



ELECTRICAL PARTS AND CONTROL PANEL

| Key | Part Number | Description | Key | Part Number | Description |
|-----|---------------|--|-----|-------------------|---|
| 1) | 60VGW080RER | Emergency stop button | 20) | ---- | Support for pump overload |
| 2) | 60VGW080SMDN | Water heater ON/OFF switch | 21) | 31220L1AMP | 1.0 Amp Pump motor overload Setting: 0.8 Amp |
| 3) | 3122080PLVG | Blower motor ON button | 22) | 312224V | 24 Volt transformer, 150 V.A. |
| 4) | 3122080PLVG | Brush/pump motor ON button | 23) | 5SA131 | 6 Amp Emergency stop fuse |
| 5) | 3122080PLVG | Conveyor motor ON button | 24) | 3122300 | Fuse holder |
| 6) | 60VGW0LSB | Current ON light | 25) | 5SA211 | 2 Amp Transformer fuse |
| 7) | 3122080LSR | Motor shut-down light | 26) | 3122300 | Fuse holder |
| 8) | 3122080PRG | Blower motor OFF button | 27) | 5SA211 | 2 Amp Transformer fuse |
| 9) | 3122080PRG | Brush/pump motor OFF button | 28) | 3122300 | Fuse holder |
| 10) | 3122080PRG | Conveyor motor OFF button | 29) | 5SA261 | 16 Amp Brush/pump fuses |
| 11) | 60VGW0L155AMP | 15.5 Amp Blower motor overload — Setting: 13.8 Amps | 30) | 3122300 | Fuse holder |
| 12) | 60VGWCA2D2B | Blower motor contactor | 31) | 5SA281 | 25 Amp Conveyor fuses |
| 13) | 60VGWCA2D1B | Water heater contactor | 32) | 3122300 | Fuse holder |
| 14) | 3122CA1D1B | Conveyor motor contactor | 33) | 5SA251 | 10 Amp Water heater fuses |
| 15) | 60VGW0L42AMP | 4.2 Amp Conveyor motor overload — Setting: 3.4 Amps | 34) | 3122300 | Fuse holder |
| 16) | 3122CA1D1B | Brush/pump motor contactor | 35) | 3122300 | Fuse holder |
| 17) | 60VGW0L42AMP | 4.2 Amp Brush motor overload Setting: 3.4 Amps | 36) | 5SB411 | 35 Amp Blower fuses |
| 18) | ---- | Support for pump overload | 37) | 60VGW23 | Isolator switch |
| 19) | 31220L1AMP | 1.0 Amp Pump motor overload Setting: 0.8 Amp | 38) | ---- | Terminal board |
| | | | R) | ---- | Three phase power terminal |
| | | | S) | ---- | Three phase power terminal |
| | | | T) | ---- | Three phase power terminal |
| | | | Gr) | ---- | Ground |



WIRING DIAGRAM

- A IG — Main switch 50 Amp
- B FU1 — Fuse, blower motor 50 Amp
- C FU2 — Fuse, conveyor motor 10 Amp
- D FU3 — Fuse, brush motor 16 Amp
- G FU6 — Fuse, heater 10 Amp
- H FU7 — Fuse, power entry 2 Amp
- L FU8 — Fuse, 24V low tension 6 Amp
- B, V K1 — Contactor 22 Amp
- C, T K2 — Contactor 9 Amp
- D, R K3 — Contactor 9 Amp
- G, H K6 — Contactor 16 Amp
- B, V RM1 — Overload release, blower motor 9.5 - 15.5 Amp
- C, T RM2 — Overload release, conveyor motor 4.2 - 2.5 Amp
- D, R RM3 — Overload release, brush motor 2.5 - 4.2 Amp
- E, P RM4 — Overload release, pump motor 0.6 - 1 Amp
- F, O RM5 — Overload release, pump motor 0.6 - 1 Amp
- B M1 — Blower motor, 5.5 HP
- C M2 — Conveyor motor, 0.25 HP
- D M3 — Brush motor, 0.50 HP
- E M4 — Pump motor, 0.12 HP
- F M5 — Pump motor, 0.12 HP

- G RE6 — Water heater, 3 KW
- I TR1 — 150 V.A. Transformer
- L Pe — Emergency push-button
- V Pm1 — ON push-button, blower motor
- T Pm2 — ON push-button, brush and pump motors
- R Pm3 — ON push-button, conveyor motor
- V Pa1 — OFF push-button, blower motor
- T Pa2 — OFF push-button, brush and pump motors
- R Pa3 — OFF push-button, conveyor motor
- M T — Thermostat
- H S6 — Selector, heater
- N EV1 — Electrovalve
- X L4 — Light signaling line is connected
- Z L5 — Light signaling motor shut-down
- U L1 — Light signaling blower motor is ON
- S L2 — Light signaling brush and pump motors are ON
- Q L3 — Light signaling conveyor motor is ON

