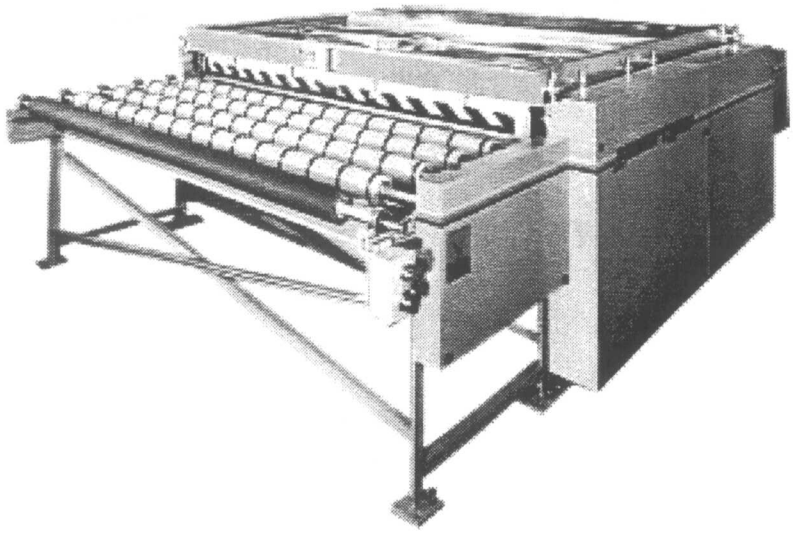
SOMACA
TILT TOP
GLASS WASHING
MACHINES

OPERATION AND MAINTENANCE MANUAL



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ATLANTA / CHICAGO / DALLAS / MOONACHIE / LOS ANGELES / SANTA CLARA

REORDER P/N MAN-TTW

This manual contains information pertaining to the following Somaca Glass Washing Machines:

TTW 366 36" Tilt Top Glass Washer

TTW 486 48" Tilt Top Glass Washer

TTW 604 60" Tilt Top Glass Washer

TTW 606 60" Tilt Top Glass Washer

TTW 726 72" Tilt Top Glass Washer

TTW 846 84" Tilt Top Glass Washer

TTW 966 96" Tilt Top Glass Washer

The photographs shown may not depict the size of machine you have purchased.

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SECTION 1
SAFETY

FAILURE TO OBSERVE THE WARNINGS, CAUTIONS, AND INSTRUCTIONS LISTED IN THIS MANUAL AND ON THE DECALS ATTACHED TO THE EQUIPMENT COULD CAUSE SERIOUS INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

GENERAL SAFETY INFORMATION

Introduction

This manual contains installation instructions and operating and maintenance procedures for the SOMACA Glass Washing Machine. The Washer must be operated and maintained at all times in accordance with the instructions and procedures contained in this manual and on the decals attached to the Washer. Only qualified personnel thoroughly familiar with the operating and maintenance instructions should operate and maintain this equipment.

Safe Operating Considerations

Safety must be observed through all facets of operations and maintenance. Proper tools and operating procedures must be used at all times to prevent accidents which could cause injury to personnel or damage to equipment.

Safe reliable operations and long service life are dependent upon three important considerations:

1. Care exercised during installation.
2. Quality and frequency of inspection and maintenance.
3. Common sense approach to operation.

NOTES, CAUTIONS AND WARNINGS

Notes

NOTE

The notes contained throughout this manual provide additional information to carry out the operating and maintenance procedures. Any particular note is listed just prior to the procedural step to which it applies. This is an example of their format.

Cautions

CAUTION

The cautions in this manual contain instructions and information about operations and maintenance procedures that could cause damage to equipment, parts, and facilities. Like notes, cautions are listed just prior to the steps to which they apply. This is an example of their format.

Warnings

WARNING

The warnings in this manual contain instructions and information about operation and maintenance procedures that could cause injury to personnel. Warnings also are listed just prior to the steps to which they apply. This is an example of their format.

GENERAL PRECAUTIONS

The precautions listed here are general in nature: however, failure to observe and follow them could result in personal injury or damage to property. These general precautions are not all-inclusive. Specific cautions and warnings are listed throughout this manual, and additional ones may occur to the user which are peculiar to a particular operation or industry. In addition, employers are subject to the federal Occupational Safety and Health Act (OSHA) of 1970, as amended, which requires that an employer keep abreast of regulations which will continue to be issued under its authority.

1. Always operate and maintain the Washer in accordance with the instructions and procedures in this manual.
2. Do not exceed the capacity of the Washer.
3. Do not open inspection doors while the Washer is operating, except in special circumstances which are addressed later in the manual.
4. Never work on the Washer or related components unless electrical power and motor drive has been locked out and tagged. The National Electrical Code requires a manual disconnect switch located within sight of the motor, or a controller disconnecting means capable of being locked if not within sight of the motor.
5. Do not use the Washer for any purpose for which it was not designed. It is to be used solely to wash sheets of glass.
6. Do not poke or prod into the openings of the Washer with a bar or stick.
7. Always maintain a clear view of the Washer's loading and unloading points and safety devices.
8. Keep the area around Washer, drive, and control station free of debris and obstacles.
9. Never operate the Washer without the guards and all safety devices in position and functioning.
10. Always allow the Washer to stop by itself. Do not attempt to artificially brake or slow the motion of the Washer.
11. Always wear safety goggles, proper gloves, and other necessary safety equipment while operating or maintaining the Washer. When in doubt, consult with your shop safety representative.
12. Provide adequate space for performing routine maintenance, as recommended in this manual.

SECTION 2
DESCRIPTION

GENERAL DESCRIPTION

All SOMACA Glass Washing Machines operate in basically the same way. The glass is scrubbed clean by cylindrical bristle brushes, as it is conveyed through the machine on rubber covered rollers. Spray pipes apply detergent water or plain water to both surfaces of the glass. After brush cleaning, the glass is air blast dried which removes the water from both surfaces, leaving the glass thoroughly dry.

Four brush models can be used with regular plant water to remove such contaminants as fingerprints, shop dust or glass grindings. Cold water is satisfactory in most cases, but warm water is preferred.

Six brush models with the recirculate detergent system are recommended for cutting oil, grease and heavier contaminants.

Four and six brush washers use the same air blast method. However, six brush washers typically have more air knives for drying, and a larger blower.

36" GLASS WASHING MACHINE

Model No. TTW 366, 6 Brush Washer

Capacity

Accepts 5-1/2" glass circles up to full width sheets from single strength to 1/4". Variable line speed is 0 to 35 feet per minute.

Brushes

Cylindrical bristle brushes are 3.5" O.D. by 37" long, mounted on stainless steel cores and individually adjusted for height. Brushes are V-belt driven by a common motor.

Drying System

10HP pressure blower with air intake filter connected to four air knives, two on the top and two on the bottom.

Rollers

Feed and pinch rollers are 1-1/2" diameter solid neoprene covered. The rollers are chain and sprocket driven by a 1/8HP DC gear motor.

Bearings

Brushes rest on ball bearings. The upper pinch rollers are mounted in pivoting brackets. The recessive action of the pivot smooths the movement of thicker pieces of glass through the machine.

Frame

One piece steel weldment with upper machined sidebars. Infeed and unloading conveyors are each two feet long. All wetted parts are plated, coated, or made from corrosion-resistant material.

Electrical

Machine-mounted control panel, with conduit wiring, built to NEMA 12 specifications to meet OSHA requirements. Every panel is UL approved. Power requirements are 3 phase, 60 cycle, 208, 230 or 460 volts. The electrical panel name plate specifies full load amperage.

Water

Water/detergent solution is applied through brass spray pipes - one per brush. Threaded plug at pipe ends allows easy cleaning. Water usage is about 3 gpm without the miser rinse; about 1-1/2 gpm with.

Options

The recirculated detergent system, miser rinse system, fresh water save, and hydraulic tilt-top are all options. All stainless steel wetted part construction is also available for use with de-ionized water.

Model Number	Style	Brush	Motors	Width	Length	Height	Blower HP	Heater
TTW 366	36"	6 Brush	One, 2 HP	4' 6"	6' 4"	3' 6"	10	5 kW

48" GLASS WASHING MACHINE

Model No. TTW 486, 6 Brush Washer

Capacity

Accepts single strength to 1/2" glass from 11" wide to a full width by any length 14" or over. Speeds up to 35 feet a minute are available as options.

Brushes

5" in diameter, with spiral-wound bristles in "dense-fill" construction. V-belt driven brushes can be quickly adjusted by raising the washer's top. Brushes can be individually adjusted to compensate for wear.

Drying System

The air blast drying system uses a pressure blower. It pressurizes ambient air and forces it through four air knives, two top and two bottom, to dry both surfaces of the glass. Baffled enclosure covered drying system reduces noise to acceptable levels.

Rollers

Solid rubber-covered feed and pinch rollers are used throughout the wet section. Ring rollers are used on the entry and exit conveyors and in the drying chamber. All rollers are 2-1/2" diameter, and made of heavy steel tubing. Lower rollers are chain and sprocket driven by a DC gear motor. The pinch rollers are wringer-gear driven from the lower rollers.

Bearings

The Washer uses ball bearings for rollers and brushes throughout the machine.

Frame

One piece steel weldment with upper machined sidebars. Infeed and unloading conveyors are each two feet long. All wetted parts are plated, coated, or made from corrosion-resistant material.

Electrical

Remote control panel, with conduit wiring, is built to NEMA 12 specifications to meet OSHA requirements. Every panel is UL approved. Power requirements are 3 phase, 60 cycle, 208, 230 or 460 volts. The electrical panel name plate specifies full load amperage.

Water

Water/detergent solution is applied through brass spray pipes - one per brush. Threaded plug at pipe ends allows easy cleaning. Water usage is about 4 gpm without the miser rinse; about 2 gpm with.

Materials

All wetted parts are coated to resist corrosion.

Options

The recirculated detergent system, miser rinse system, fresh water save, auto glass thickness adjustments, and hydraulic tilt-top are all options. All stainless steel wetted part construction is also available for use with de-ionized water.

Model Number	Style	Brush	Motors	Width	Length	Height	Blower HP	Heater
TTW 486	48"	6 Brush	One, 3 HP	6' 4"	9'	44"	15	10 kW

60" GLASS WASHING MACHINE

Model No. TTW 604, 4 Brush Washer

Model No. TTW 606, 6 Brush Washer

Capacity

Accepts single strength to 1/2" glass from 11" wide to a full width by any length 14" or over. Speeds up to 35 feet a minute are available as options.

Brushes

5" in diameter, with spiral-wound bristles in "dense-fill" construction. V-belt driven brushes can be quickly adjusted by raising the washer's top. Brushes can be individually adjusted to compensate for wear.

Drying System

In the 4 Brush Washer, a blower and two air knives, one top, one bottom, to dry both glass surfaces. In the 6 Brush Washer, a blower pressurizes air and forces it through four air knives, two top, two bottom, to dry both glass surfaces. Sound insulation lowers the noise level.

Rollers

Solid rubber-covered feed and pinch rollers are used throughout the wet section. Ring rollers are used on the entry and exit conveyors and in the drying chasmber. All rollers are 2-1/2" diameter, and made of heavy steel tubing. Lower rollers are chain and sprocket driven by a DC gear motor. The pinch rollers are wringer-gear driven from the lower rollers.

Bearings

The Washer uses ball bearings for rollers and brushes throughout the machine.

Frame

One piece steel weldment with upper machined sidebars. Infeed and unloading conveyors are each two feet long. All wetted parts are plated, coated, or made from corrosion-resistant material.

Electrical

Remote control panel, with conduit wiring, is built to NEMA 12 specifications to meet OSHA requirements. Every panel is UL approved. Power requirements are 3 phase, 60 cycle, 208, 230 or 460 volts. The electrrical panel name plate specifies full load amperage.

Water

Water/detergent solution is applied through brass spray pipes - one per brush. Threaded plug at pipe ends allows easy cleaning. Water usage is about 5 gpm without the miser rinse; about 3 gpm with.

Materials

All wetted parts are coated to resist corrosion.

Options

The recirculated detergent system, miser rinse system, fresh water save, auto glass thickness adjustments, and hydraulic tilt-top are all options. All stainless steel wetted part construction is also available for use with de-ionized water.

Model Number	Style	Brush	Motors	Width	Length	Height	Blower HP	Heater
TTW 604	60"	4 Brush	One, 2HP	7' 4"	7' 11"	44"	7-1/2 HP	10kW
TTW 606	60"	6 Brush	One, 3HP	7' 4"	9'	44"	15 HP	10kW

72" GLASS WASHING MACHINE

Model No. TTW 726, 6 Brush Washer

Capacity

Accepts single strength to 3/4" glass from 13" wide, to full width by 16" or longer lengths. Line speed is 0 to 35 feet per minute.

Brushes

Brushes are 6" in diameter by 73" long, with spiral-wound bristles. Brush height can be adjusted from the upper frame assembly. Brushes can also be individually adjusted for wear. Brushes are V-belt driven by one 5HP motor.

Drying System

The air blast drying system uses a pressure blower. It pressurizes ambient air and forces it through four air knives, two top and two bottom, to dry both surfaces of the glass. Baffled enclosure covered drying system reduces noise to acceptable levels.

Rollers

Solid rubber covered feed and pinch rollers are in the main washing section. Conveyor rollers are ring type, with rubber rings cemented to the core. All rollers are 3-7/8" with heavy wall steel tubing.

Bearings

The Washer uses ball bearings for rollers and brushes throughout the machine.

Frame

Frame is three part steel weldment, consisting of a 3' 2-1/2" entry conveyor, main washing section, and 3' 2-1/2" exit conveyor.

Electrical

Remote control panel, with conduit wiring, is built to NEMA 12 specifications to meet OSHA requirements. Every panel is UL approved. Power requirements are 3 phase, 60 cycle, 208, 230 or 460 volts. Full load amperage is indicated on the panel nameplate.

Water

Water/detergent solution is applied through brass spray pipes - one per brush. Threaded plug at pipe ends allows easy cleaning. Water usage is about 6 gpm without the miser rinse; about 3 gpm with.

Materials

All wetted parts are coated to resist corrosion. Collector pan is stainless steel. Aluminum covers and dividers.

Options

The recirculated detergent system, miser rinse system, fresh water save, auto glass thickness adjustments, and hydraulic tilt-top are all options. All stainless steel wetted part construction is also available for use with de-ionized water.

Model Number	Style	Brush	Motors	Width	Length	Height	Blower HP	Heater
TTW 726	72"	6 Brush	One, 5 HP	8' 2"	14' 0"	52"	20 HP	10kW

84" GLASS WASHING MACHINE

Model No. TTW 846, 84" 6 Brush Washer

Capacity

Accepts single strength to 3/4" glass from 13" wide, to full width by 16" or longer lengths. Line speed is 0 to 35 feet per minute.

Brushes

Brushes are 6" in diameter by 85" long, with spiral-wound bristles. Brush height can be adjusted from the upper frame assembly. Brushes can also be individually adjusted for wear. Brushes are V-belt driven by one 5HP motor.

Drying System

The air blast drying system uses a pressure blower. It pressurizes ambient air and forces it through four air knives, two top and two bottom, to dry both surfaces of the glass. Baffled enclosure covered drying system reduces noise to acceptable levels.

Rollers

Solid rubber covered feed and pinch rollers are in the main washing section. Conveyor rollers are ring type, with rubber rings cemented to the core. All rollers are 3-7/8" with heavy wall steel tubing.

Bearings

The Washer uses ball bearings for rollers and brushes throughout the machine.

Frame

Frame is three part steel weldment, consisting of a 3' 2-1/2" entry conveyor, main washing section, and 3' 2-1/2" exit conveyor.

Electrical

Remote control panel, with conduit wiring, is built to NEMA 12 specifications to meet OSHA requirements. Every panel is UL approved. Power requirements are 3 phase, 60 cycle, 208, 230 or 460 volts. Full load amperage is indicated on the panel nameplate.

Water

Water/detergent solution is applied through brass spray pipes 0 one per brush. Threaded plug at pipe ends allows easy cleaning. Water usage is about 7 gpm without the miser rinse; about 4 gpm with.

Materials

All wetted parts are coated to resist corrosion. Collector pan is stainless steel. Aluminum covers and dividers.

Options

The recirculated detergent system, miser rinse system, fresh water save, auto glass thickness adjustments, and hydraulic tilt-top are all options. All stainless steel wetted part construction is also available for use with de-ionized water.

Model Number	Style	Brush	Motors	Width	Length	Height	Blower HP	Heater
TTW 846	84"	6 Brush	One, 5 HP	9' 2"	14' 0"	52"	25 HP	10kW

96" GLASS WASHING MACHINE

Model No. TTW 966, 6 Brush Washer

Capacity

Accepts single strength to 3/4" glass from 13" wide, to full width by 16" or longer lengths. Line speed is 0 to 35 feet per minute.

Brushes

Brushes are 6" in diameter by 97" long, with spiral-wound bristles. Brush height can be adjusted from the upper frame assembly. Brushes can also be individually adjusted for wear. Brushes are V-belt driven by one 5HP motor.

Drying System

The air blast drying system uses a pressure blower. It pressurizes ambient air and forces it through four air knives, two top and two bottom, to dry both surfaces of the glass. Baffled enclosure covered drying system reduces noise to acceptable levels.

Rollers

Solid rubber covered feed and pinch rollers are in the main washing section. Conveyor rollers are ring type, with rubber rings cemented to the core. All rollers are 3-7/8" with heavy wall steel tubing.

Bearings

The Washer uses ball bearings for rollers and brushes throughout the machine.

Frame

Frame is three part steel weldment, consisting of a 3' 2-1/2" entry conveyor, main washing section, and 3' 2-1/2" exit conveyor.

Electrical

Remote control panel, with conduit wiring, is built to NEMA 12 specifications to meet OSHA requirements. Every panel is UL approved. Power requirements are 3 phase, 60 cycle, 208, 230 or 460 volts. Full load amperage is indicated on the panel nameplate.

Water

Water/detergent solution is applied through brass spray pipes - one per brush. Threaded plug at pipe ends allows easy cleaning. Water usage is about 8 gpm without the miser rinse; about 4 gpm with.

Materials

All wetted parts are coated to resist corrosion. Collector pan is stainless steel. Aluminum covers and dividers.

Options

The recirculated detergent system, miser rinse system, fresh water save, autoglass thichness adjustments, and hydraulic tilt-top are all options. All stainless steel wetted part construction is also available for use with de-ionized water.

Model Number	Style	Brush	Motors	Width	Length	Height	Blower HP	Heater
TTW 966	96"	6 Brush	One, 5 HP	10' 2"	14' 0"	52"	25 HP	12kW

SECTION 3
RECEIVING

UNCRATING

Before the Washer was crated for shipment, it had undergone successful testing and was in proper working condition. Therefore, proper uncrating and receiving inspection is of utmost importance to assure the Washer was received in exactly the same condition as when it left the factory.

WARNING

Use adequate equipment to lift and move the shipping crate.

Inspecting the Shipping Crate

Crate damage could indicate mishandling during shipment. If the crate is damaged, it's possible that the Washer could be damaged. It's important to inspect the crate for exterior damage. To inspect the exterior of the crate, follow these steps:

1. Check all surfaces of the crate for gouges, tears or holes that could have been caused by the blades of a fork lift or other lifting device.
2. Check for damaged corners and edges, which could indicate that the crate was dropped.
3. Check the support straps that position the Washer and components inside the crate. If a support strap has broken, the Washer could be damaged.

Removing the Shipping Crate

To uncrate the Washer, follow these steps:

1. Using a claw hammer and a crowbar, remove side and top of crate.

NOTE

Small parts and accessories are wrapped, boxed and attached to the washer's mounting skid.

2. The frame of the Washer is securely bolted and strapped to the main mounting skid for shipment. Unbolt the Washer and cut the straps.
3. Check the entire Washer and its components for damage.

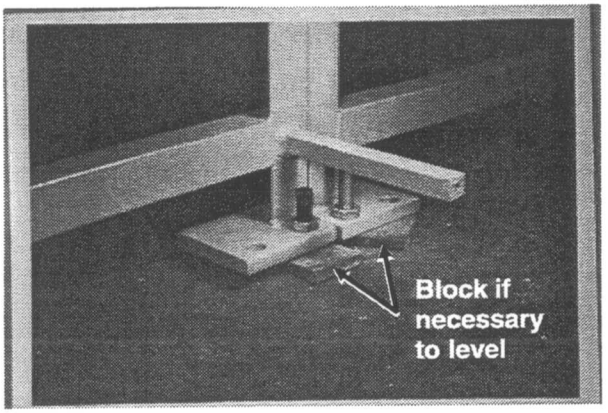


Figure 3-1

4. Carefully lift the Washer and components off the main skid. Move them to the location that you've chosen, and secure the Washer into position. Be certain Washer is level. If the floor is uneven, block the Washer to level it.

NOTIFICATION

Document any damage to the Washer and components, and notify the carrier and Sommer & Maca Industries, Inc.

SECTION 4
INSTALLATION

FACILITIES REQUIREMENT

Floor Area

Choose a location in a large enough area to permit the operator easy access around the Washer with no obstructions. The floor area should be clear of oil, grease, or water. See Washer Installation Drawings provided.

Electrical Requirements

WARNING

Make certain that all electrical connections and service lines do not come into contact with water.

Control panel should be wired as shown by wiring schematic supplied with Washer. The grounded power source should have a safety disconnect switch mounted remote from the Washer to shut off all power. This makes it easier to service or relocate the Washer, if necessary. The disconnect switch should be equal to or greater than the total current drawn by the Washer. Local electrical codes may require this type of switch. Be certain that the Washer has proper electrical ground connections.

CAUTION

Make sure that the Washer is wired for the same voltage as the voltage supplied to the machine. Remember that 208V is not the same as 230V!

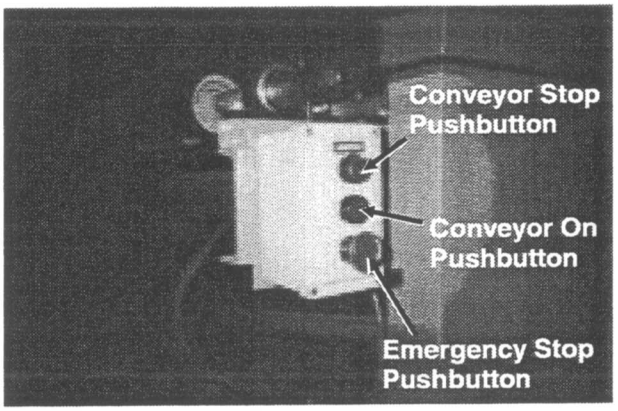


Figure 4-1

Once you have connected the Washer to power, turn on the brush motor switch. Open the detergent compartment and see if the upper brush rotates with glass flow. If it is moving in reverse, change any two of the main wire leads that feed the machine. This will change the direction of rotation.

Never change the wires that feed the starter motor. Doing so will make it necessary to change all the starters, as all motors would be reversed. Check the rotation of all motors and pumps to be sure they are wired correctly.

WARNING

Make sure that the machine is grounded to reduce static charges.

If the Washer's starters or heaters kick out, check for loose connections and for a low voltage supply.

Always check one motor to make sure that the Washer is properly wired for your applied voltage.

Plumbing

CAUTION

Before you connect the water supply lines, clean them to remove chips, pipe dope, and other debris. Debris from a water supply line can clog the Washer's spray holes.

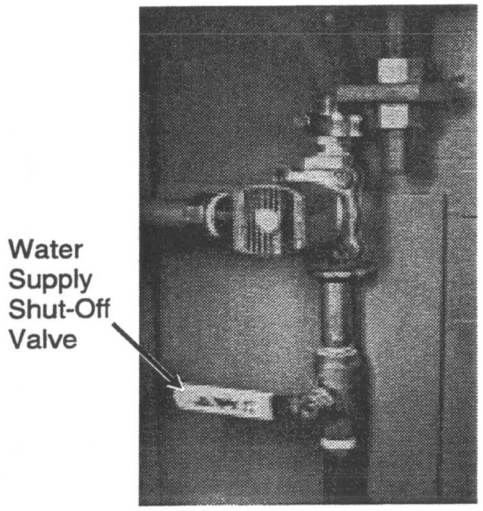


Figure 4-2

The supply line should feed the last rinse section with water 80° to 110° F. Cold water can be used, but under high humidity conditions, glass may not dry adequately.

Set up the Washer so that one shut-off valve will turn off all water to the Washer. If a temperature control valve is used, a hot and cold water line should feed to the correct side of that valve. If there is a separate shut-off valve for each hot and cold line, they can be left on one setting to maintain 100° F. Adjust the temperature by metering the hot and cold flow. A separate shut-off valve should control a hose to clean the Washer and fill the tank(s).

Most Washers use a recirculating water system. Water from the fresh water rinse collects in the recirculating tank. The tank has an overflow that must be connected to a drain.

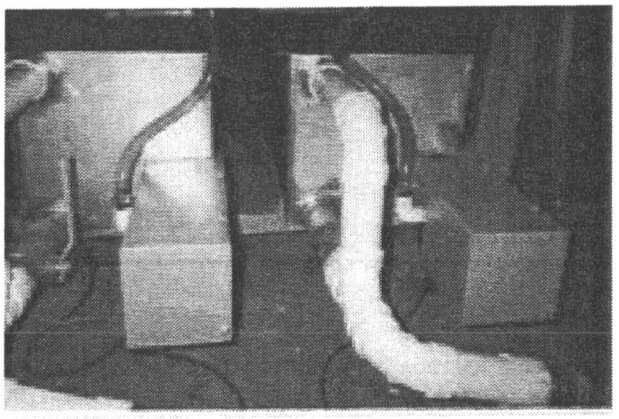


Figure 4-3

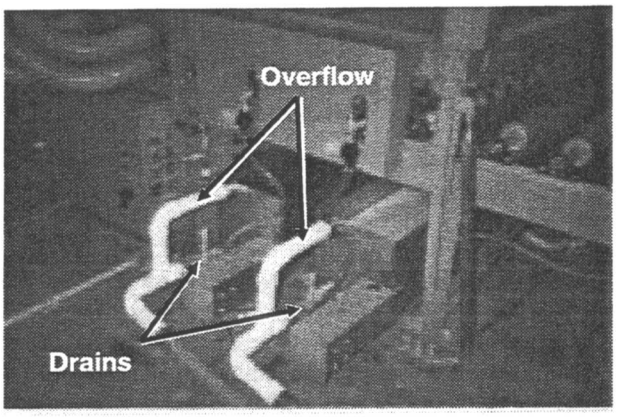


Figure 4-4

The drain lines from the drain pan and the recirculating tank should be adequately sized to prevent water from building up in the pan or the tank.

Both the detergent tank and the recirculating tank should be connected from the bottom coupling to the plant sewer. Install a shut-off valve to maintain the tank's water level. The level should be within 1/2" of the overflow coupling. If the overflow coupling has a direct connection to the plant sewer, no shut-off valve is required. Do not interconnect the overflow from two tanks so that one tank would drain into the other. The drains should use a union, so that the connection can easily be broken when you need to remove the tank for cleaning or other service functions.

Water Requirements

If the Washer uses de-ionized water, it is preferable to use stainless or PVS plastic pipes. Galvanized, brass, or PVC is satisfactory for most plant water or well water. "Fill" and "Rinse" lines can also be copper, although you can use rubber hose (minimal 3/4 inch I.D.) if you plan to move the machine in the near future.

If you use rubber hose, be certain to properly ground the Washer.

All connections should be water tight to prevent leaks and puddles.

If you use de-ionized water without installing stainless steel or PVC pipes in all the wet parts of the washer, excessive corrosion will severely shorten the life of the machine.

If you use softened water in the Washer, excessive corrosion will severely shorten the life of the machine. Using softened water will not necessarily improve the washing process.

Softened water replaces the metal ions in the water with sodium ions, which can leave salt spots and films on the glass. These salt spots and films may not be visible immediately, but may appear on the glass later. This is especially likely to happen on the inside of insulated glass units, after the desicant has absorbed all the moisture from the glass's inside surfaces.

Reverse osmosis treatment may improve water quality without the risk of damage to the Washer. Reverse osmosis is an ultra-filtration process that removes suspended compounds in water, such as hard salts and calcium. However, treated water will not remove dissolved ions.

SECTION 5
OPERATING INSTRUCTIONS

CAUTION

Do not wash rubber-covered rollers with products that contain high levels of petroleum.

CAUTION

If Washer has a water heater, make sure that the heating element is completely submerged in water before you turn on machine. Check the water level frequently during operation.

STARTING THE WASHER

1. Make sure that the Washer has the proper electrical ground connection.

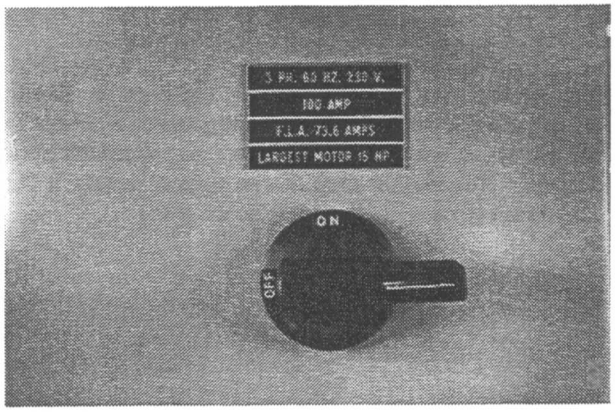


Figure 5-1

2. Turn on the main power switch at the control panel. (Figure 5-1)
3. Start the conveyor and adjust its speed to suit your operating conditions, generally at 10 to 12 feet per minute, or at about one-third speed is a good starting speed. (Figure 5-2)

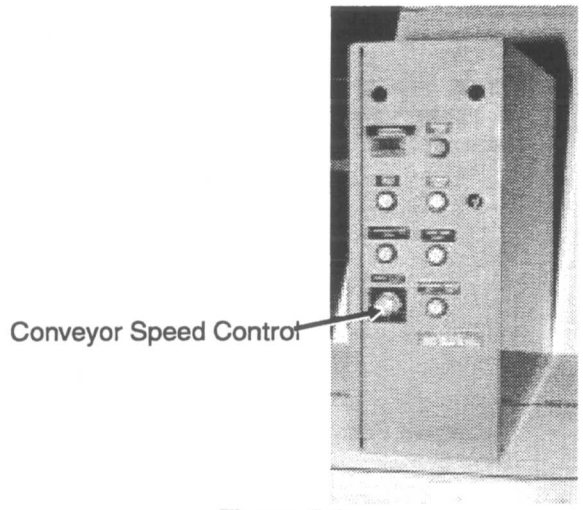


Figure 5-2

4. Adjust the brushes. For instructions, see **Section 6: Maintenance.**
5. To change the washer for thicker glass, adjust the upper frame only. Loosen the lower nuts and make the adjustment by turning the upper nuts.

Some Washer models have Somaca's patented air-activated glass thickness adjustments. The clearance bars are factory set to prevent the operator from inserting glass that is too thick. (Figure 5-3)

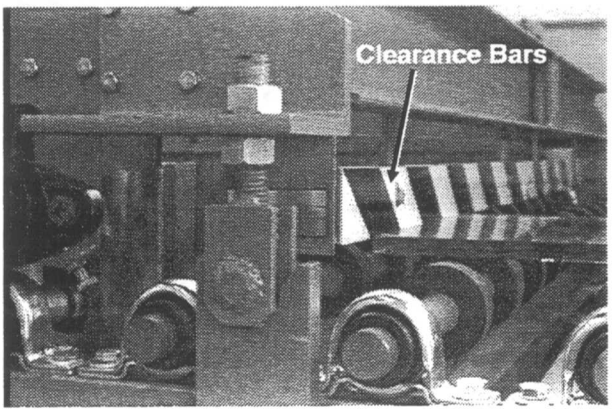


Figure 5-3

6. If the washer uses a detergent tank, make sure that the water level is above the pump intake. Push the detergent pump start button. Add enough detergent to clean the glass, according to manufacturer's recommendations. In some applications detergent may not be necessary to produce clean glass.

CAUTION

Strong solutions can damage rollers. Use a recommended detergent only at recommended level.

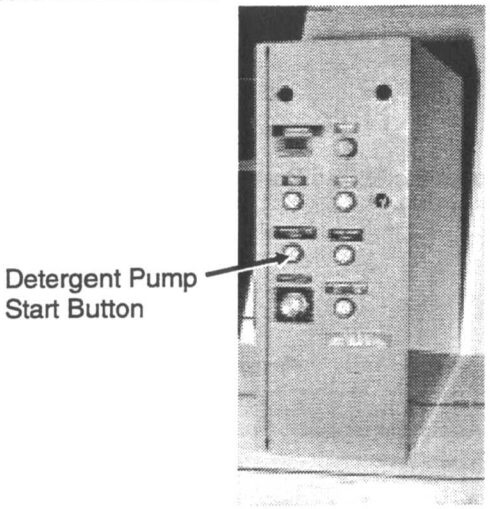


Figure 5-4

7. If Washer has a water heater, set the thermostat to maintain a temperature of 120°-130° F. Higher temperatures may result in "steaming". In any case, do not exceed 170° F. Higher temperatures will damage the rubber rollers.

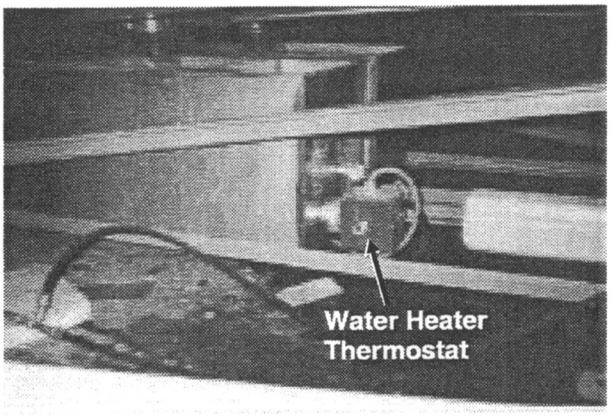


Figure 5-5

CAUTION

Make sure that the water level in each tank is correct.

8. Turn on the rinse water and adjust the flow of water. A "fine stream" setting helps reduce fresh water consumption. A mixing valve or hot and cold shut-offs should feed the rinse section with water at 80° to 110° F.

CAUTION

Too much water can cause poor drying.

9. Start the brushes.
10. Start the blower.
11. Run a sample piece of glass through the Washer. Then make any necessary adjustments.

Cleaning action depends primarily on these factors:

1. No detergent or too much detergent.
2. Conveyor speed.
3. Brush adjustment.
4. The cleanliness of the Washer and the water.
5. Proper adjustment of rinse water and detergent solution flow to brushes.

The operator can vary the cleaning action of the Washer by increasing brush pressure on the glass or by changing the conveyor speed, concentration and temperature of detergent. The washer should have approximately 3/4" of each brush surface in contact with the glass.

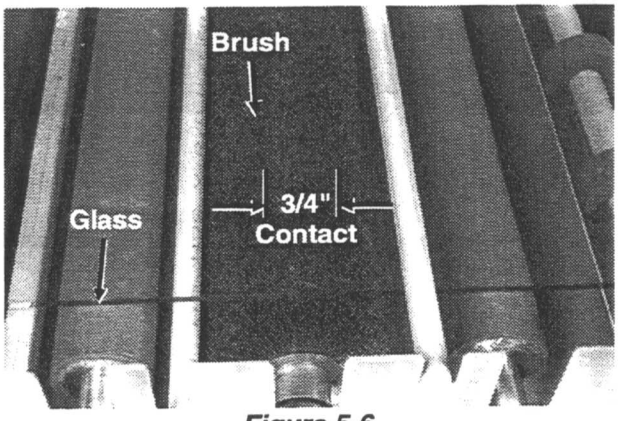


Figure 5-6

Make the brush adjustment at both ends of a brush by loosening the stop nuts and turning the adjustment nut to raise or lower the brush. In addition, the slower the conveyor speed, the longer the brushes can scrub the glass.

NOTE

Whenever possible, slow the conveyor speed to increase the Washer's cleaning effect, rather than adding more detergent or increasing water temperatures.

DETERGENT TEMPERATURE CONTROLLER

General

On Tilt Top Washers (TTW) equipped with detergent option, the temperature of the detergent solution will be regulated by a temperature controller located on the machine control panel, top row next to WASHER STOP pushbutton.

The temperature controller will display the detergent temperature, and remains on whenever the electrical power is on.

To heat the detergent solution to setpoint temperature the DETERGENT HEATER pushbutton must be pushed on.

Normal temperature control variation, when the washer is running, is ± 4°F. If the pumps and brushes are off, control is much closer.

Set Point Adjustment

The controller set point is factory adjusted to 130°F.

To change the temperature controller setpoint (See Figure 5-7):

Operation	Display
1. Power on	Detergent solution temperature
2. Press SEL key	Setpoint value: SV lamp is lit
3. Press UP or DOWN key	Setpoint value changes accordingly
4. Press SEL key to return to operational mode	Detergent solution temperature: SV lamp is off

Figure 5-7

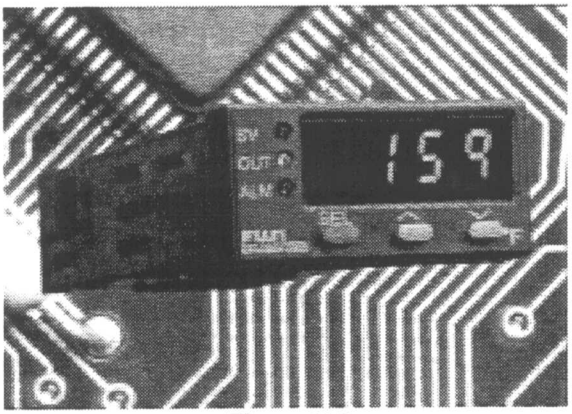


Figure 5-8

Auto-Tuning Procedure

The controller has been tuned at the time of machine assembly, in the event retuning is necessary, do the following steps:

Note

Autotuning is not necessary when set-point is adjusted.

Note

Autotuning may require as long as on and a half hours because of the high thermal inertia of water.

For more detailed instruction refer to manufacturer's manual (See Figure 5-8).

Operation	Display
1. Power on	Detergent temperature
2. Press DETERGENT HEATER pushbutton	Detergent temperature: pushbutton illuminated
3. Set desired setpoint using Setpoint Adjustment above.	
4. Allow one (1) hour for detergent temperature to stablize.	
5. Turn on Detergent Pump and Wash Pump and allow to run for fifteen (15) minutes.	
6. Press SEL key for three seconds	ALM light blinks
7. Press SEL key until Autotune parameter is reached	AT (appears as "A7")
8. If a "1" does not appear next to AT, press UP key	1 (appears as "A7 1") (autotune at 100% setpoint)
9. Press SEL key	Autotune indication lamp at lower right blinks (autotune running)
10. Autotune complete blinking	displays temperature and autotune indicaotion stops
11. Controller automatically returns to operating mode	

SECTION 6
MAINTENANCE INSTRUCTIONS

MAINTENANCE CONCEPT

This section is divided into four main parts: Daily, weekly, and monthly maintenance programs and less frequent maintenance tasks. The section includes information on lubrication frequency, adjustments, and minor repairs.

DAILY INSPECTION

A clean, well-maintained washer will always give you cleaner, better results. Follow these steps every day:

1. Turn on the conveyor and inspect the fresh water spray pipes. Clean them, if necessary.
2. After you inspect all the spray pipes, remove the covers that are over the air knives.
3. Run a piece of clean glass through the machine. Use a piece of glass that is wide enough to touch the entire width of the roller.
4. Make sure that the air knives are not plugged in any part of the top or bottom. If an air knife is blocked, you'll see a streak of water on the top or the bottom of the glass.

This daily inspection routine is especially important if you are washing glass in the process of manufacturing insulated glass units.

DAILY MAINTENANCE

Water Tank(s)

Make sure to drain and clean the water tank(s) every day. If the glass is excessively dirty or is powder-coated, clean the tank(s) twice a day or, if necessary, even more often.

Follow these steps for routine daily maintenance:

1. Drain the water from the tank(s). Couplings are provided for customer-supplied drain valves.
2. Sponge the remaining water from the bottom of the tank(s) and wipe the inside clean.
3. Clean debris from the return water tank's screen.
4. Clean the pump's discharge strainer.
5. Refill the tank(s).
6. Turn the pumps on and inspect the spray pipes. Clean out any clogged holes or nozzles.

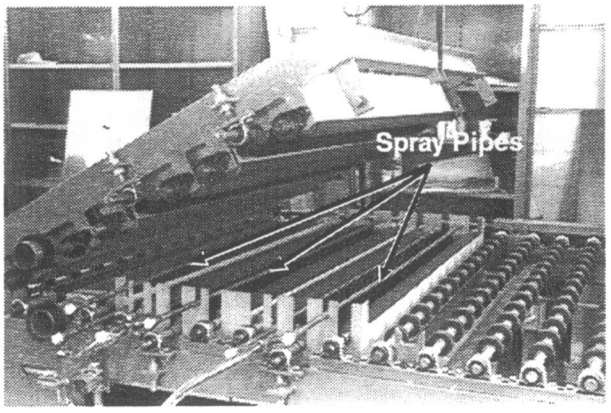


Figure 6-1

NOTE

Keep the washer covered whenever it's practical, especially the delivery conveyor rollers.

You should also clean the debris out of the return water tank's screen.

WEEKLY MAINTENANCE

Air Filter(s) Blower Intake

CAUTION

Replace air filter(s) immediately when damage is apparent.

Check the air filter(s) for dirt build-up. When the filter needs cleaning, remove and clean it with a vacuum. Do not use oiled filter units. The oil will eventually transfer to the glass through the drying system. A good practice is to keep a spare filter on hand to use while you clean the dirty filter.

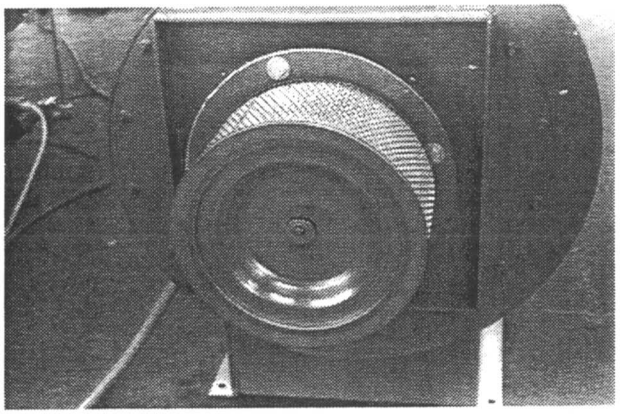


Figure 6-2

Conveyor Chain

Grease the entire conveyor chain using a mixture of lubricating oil and light bearing grease. Mix the oil and grease to a syrup-like consistency. Wipe off the surplus.

Bearings

Lubricate all pinch roller bearings. Lubricate each conveyor roller bearing, if they have grease fittings. Add waterproof general purpose grease slowly to the grease fitting with a grease gun until the grease begins to appear at the seals. Do not over grease!

For bearings that have bronze bushings, use a high quality molydisulphide spray lubricant that will wick into the bushing.

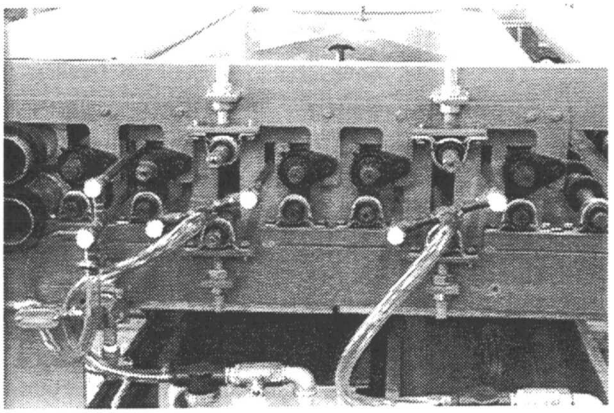


Figure 6-3

MONTHLY MAINTENANCE

Spray Pipes

Remove the pipe plug from the end of the water spray pipes and clean the pipe with a circular wire brush provided from Sommer and Maca. For information, see **Section 8, Parts List**. If the spray holes are plugged, remove the pipe and clean the holes with a nail or a small drill bit (0.047 Dia.).

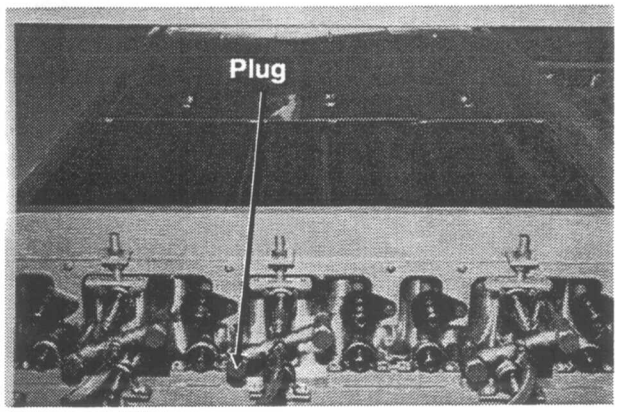


Figure 6-4

Washer Surfaces and Pans

Clean the entire Washer of excess grease and accumulated dirt. Remove broken glass and cullet from the pans.

Clean the dividers and covers. Scrape off built-up calcium and soap deposits. Flush the entire washer with clean water, using a garden hose nozzle.

Brush Adjustment

Brush Adjustment For Wear

1. Remove brush drive belts, and raise upper frame.
2. Measure and record the smallest diameters on the upper and lower brushes. (use a calipaer gauge or circumference tape) D_1 = lower brush; D_2 = upper brush.

Lower Brush Adjustment

1. Cover the brush and two adjacent rollers with a clear piece of glass the full width of the conveyor. Bar soap the bottom side of glass before placing over brush. (When using bar soap, brushes must be dry)
2. Loosen lower locking nuts on brush supports.
3. Use upper nuts to adjust brush position into the glass. Hold down on glass and spin the brush. Adjust each end of brush up or down until there is area of contact (flat stripe) is seen across the glass.
4. 21/32" wide stripe for 3.5" Diameter Brush
5. 25/32" wide stripe for 5.0" Diameter Brush
6. 7/8" wide stripe for 6.0" Diameter Brush
7. Measure the distance between the brush shaft and the lower frame rail. Make final adjustments until these dimensions are equal on both sides. Tighten lower locking nuts.
8. Adjust the glass thickness indicators to the lowest setting. (0-1/4)

Upper Brush Adjustment (Two Methods)

Method 1

1. Calculate the correct distance between the brush centers using this formula and the exact worn brush diameters measured previously:
2. Distance between Brush Centers = $\frac{D1 + D2}{2} + 1/16$
3. Adjust both ends of the upper brush until this center distance is obtained from the lower brush.

Method 2

1. Loosen lower locking nuts on brush supports. Use the upper locking nuts to raise or lower the brush.
2. Adjust brush until it touches the lower brush. Spin the brush. You will feel the resistance or see the lower brush rotate. Measure the distance between the brush journals. Adjust opposite end to match. Spin the upper brush shaft again and feel the resistance. If too much re-adjust locking nuts equally.
3. Tighten locking nuts.

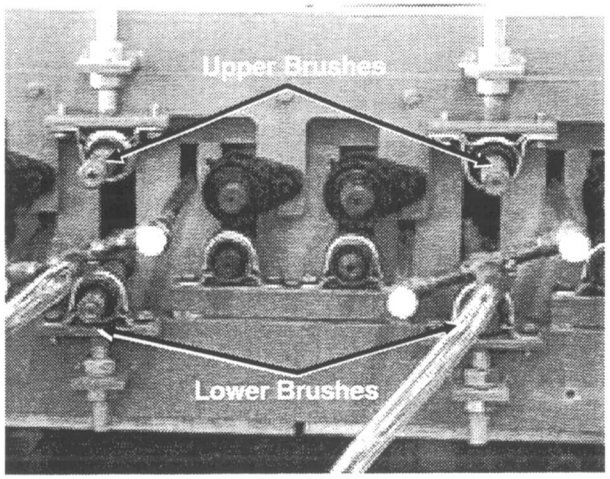


Figure 6-5

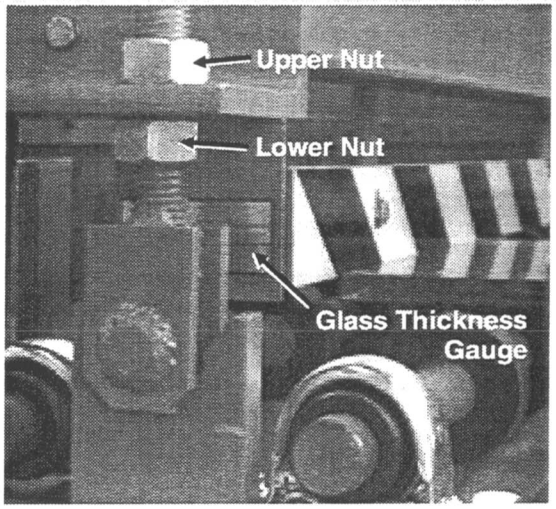


Figure 6-6

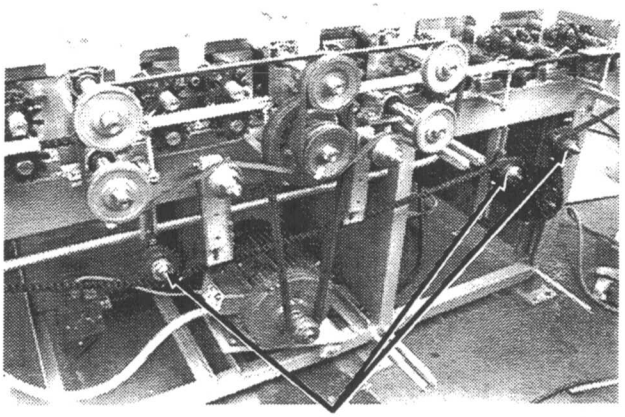
Glass Thickness Adjustment

The Washer lets you adjust the entire upper assembly to accomodate various thicknesses of glass. Use the gauge and printer provided to find this positional adjustment.

1. To adjust the brush height, loosen the jam nut on one corner of the machine. Then move the lower nut up or down.
2. When the indicator shows the glass thickness that you want, re-tighten the jam nut.
3. Repeat this adjustment at the other three corners of the machine.

Conveyor Chain Idler

Apply several drops of oil to all the conveyor chain idlers and take-up sprocket bushings. You can also lubricate the conveyor chain idlers with molybdenum disulfide spray lubricant.



Idlers

Figure 6-7

ADDITIONAL MAINTENANCE

Drive Chain

WARNING

Do not over-tighten the drive chain or you might permanently stretch the chain.

The drive chain will stretch with use. You should retighten it periodically. The take-up unit (located on the right side above the gear box) is an idler sprocket on a channel rod. Loosen the appropriate nuts and draw up enough to remove excess slack. If the chain should stretch beyond the take-up, simply remove a link and reconnect chain.

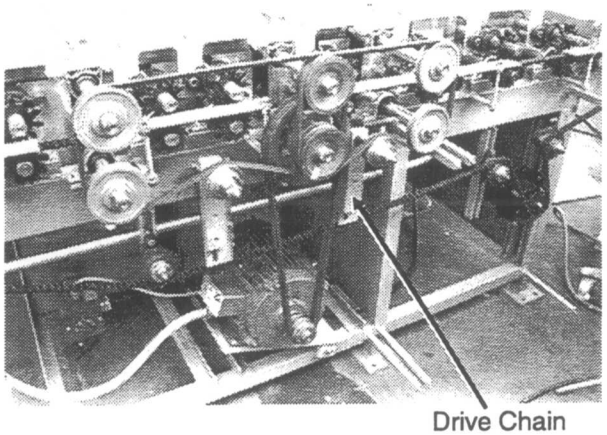


Figure 6-9

Blower Tube Adjustment

Blower Tubes (Air Knives) slots can be clogged due to contaminated air, in spite of the blower filter, If glass has wet stripes, clean slots by sliding flat piece of metal 1/32" thick or less through the slot and pushing particles out of the tube.

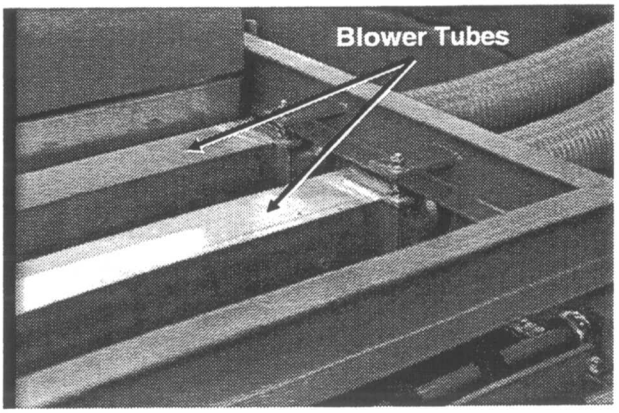


Figure 6-10

Belt Adjustment

All V-belts will stretch slightly with use and must be retensioned periodically to transmit full power without slippage. To take up slack on the brush drive belts, lower the motor base then lock it in place.

On machines with multiple belt drives, the belts themselves must be matched in length to assure even distribution of the load. Replace the belts with matched sets. Do not make a set by mixing old belts and new belts.

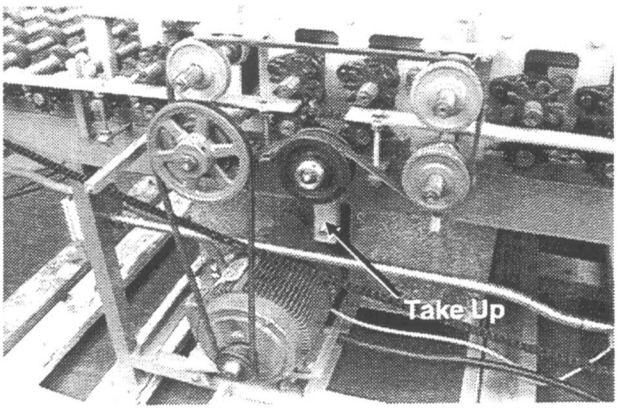


Figure 6-11

Some Washers use a spring-loaded take-up. You can adjust the spring tension using a multi-holed mounting bracket. If the belts appear to be slipping, adjust the bracket for more spring tension.

Control Panel

The control panel is relatively maintenance free. However, you might occasionally need to replace fuses, switches, and the relay (see Figure 6-12).

WARNING

Disconnect the main power to the washer before you perform any maintenance tasks on the control panel.

Use a fuse puller to replace any fuses. You can replace the circuit protector fuse by hand.

Before you replace any switch, first note where each wire attaches according to wire color and number. Then disconnect each wire to the switch. Remove the attaching screws and replace the old switch with a new one.

To replace the relay, simply unplug it by pulling it straight out, and plug in a new one.

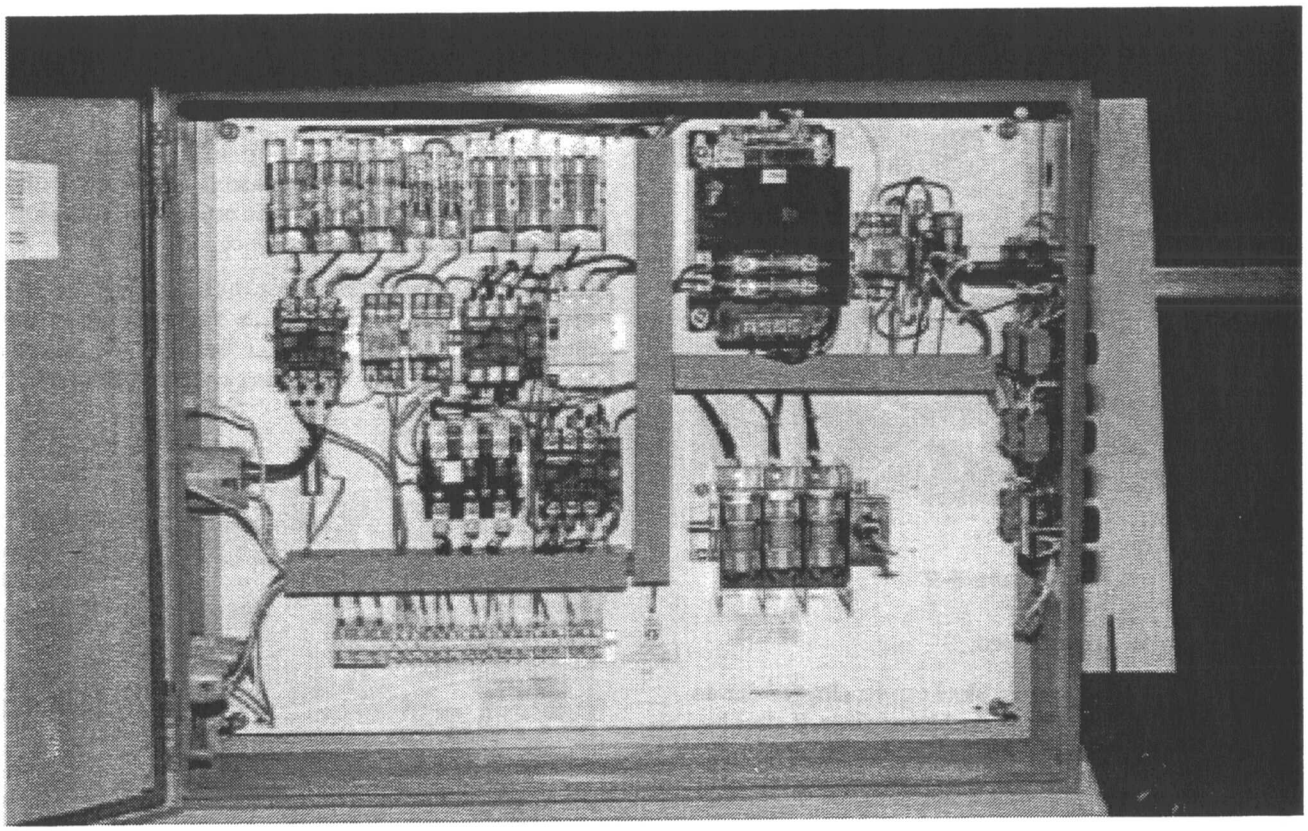


Figure 6-12

SECTION 7
TROUBLE SHOOTING

PROBLEM	CAUSE	POSSIBLE SOLUTION
Glass is not clean.	Brushes not contacting glass.	Adjust brushes for wear or for glass thickness. See maintenance section.
	Improper detergent concentration.	Consult manufacturer's recommendations for proper use of detergent.
	Cold water in detergent tank. Heater not functioning.	Check temperature setting. Check heater fuses. Allow sufficient warm-up time.
	Brushes not rotating or slowing down when glass is under them.	Check for broken belts. Check belt tension. Check motor fuse and/or circuit breaker.
	Spray bars plugged.	Clean tubes out with brush. Clean holes out with wire or drill bit.
	Brushes worn.	Adjust brushes so worn areas touch glass.
	Dirty detergent water or rinse water.	Clean thoroughly and rinse. Have final rinse water checked for hardness level. May need treatment.
Glass isn't drying or small water spots are present on glass.	Blower tube slots plugged.	See maintenance for cleaning of blower tube slots.
	Blower filter plugged.	Replace or clean.
	Blower tube slot out of adjustment.	Open to 0.032 to 0.045 width. Check blower motor amperage with ammeter to be sure you do not exceed maximum.
	Blower piping leaking or plugged.	Correct by replacing or unplugging. Piping should be a straight run. Do not install too long with excessive bends.
	Blower running backward.	Reverse any two blower motor leads in panel.
	Blower tubes not close enough to glass.	Adjust to 1/8" to 1/4" away from glass top and bottom.
	Blower tubes not in-line to each other top and bottom.	Slots should be adjacent to each other top to bottom with top very slightly forward of bottom so top trailing edge gets blown off last.
	Rinse water too cold.	Use mix of heated water and cold water if available. 110°F is ideal.

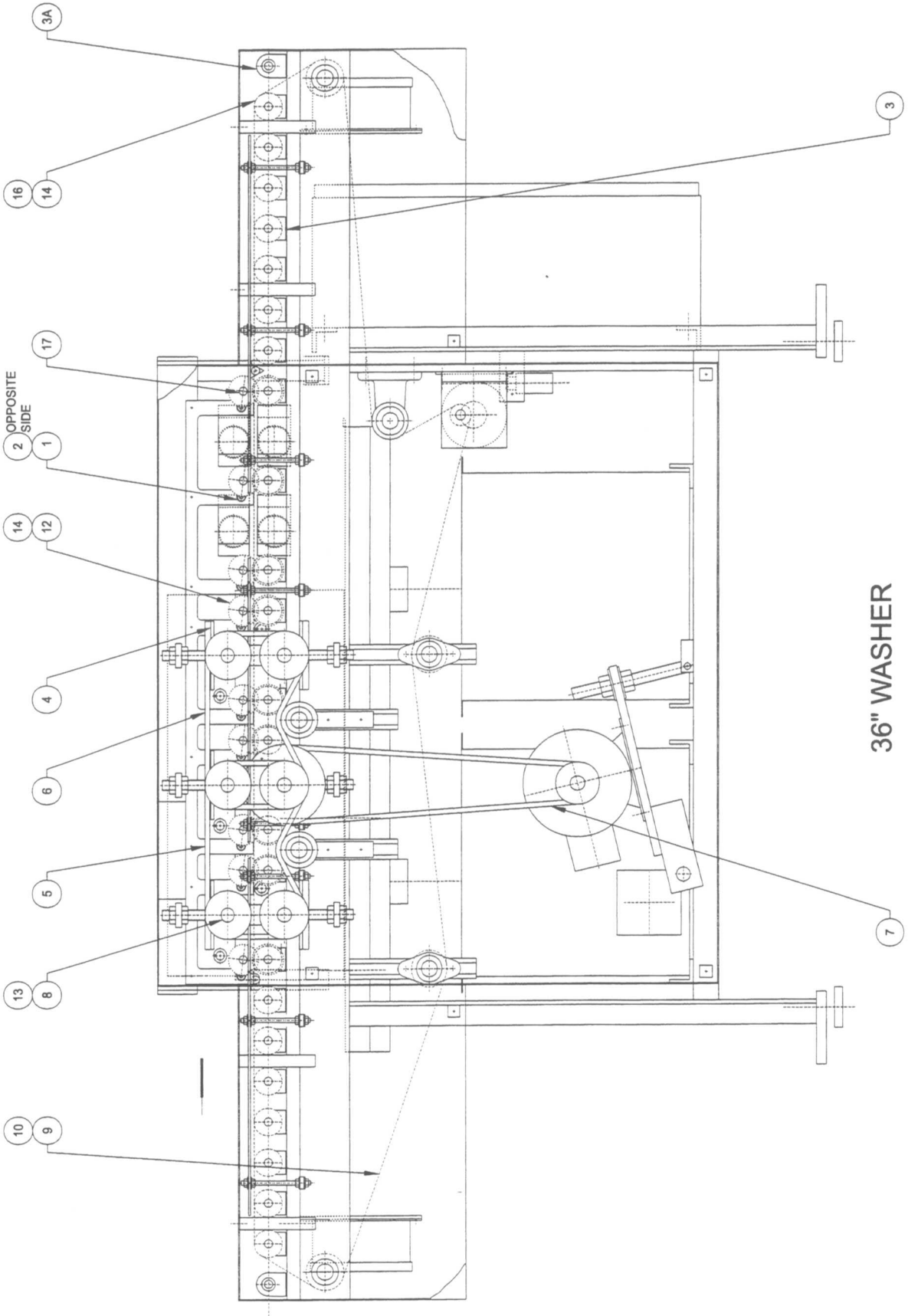
PROBLEM	CAUSE	POSSIBLE SOLUTION
Glass shows gray or white streaks.	Blower tubes have blockage in slot(s)	Run piece of glass with blower tube covers removed to see if blockage is present.
	Brushes worn in area of streaks.	Re-adjust so brush contacts glass at most worn area.
	Rinse water dirty.	Drain tank and clean - replenish.
	Rinse water alkaline or hard.	Drain and clean tank. Have hardness tested.
	Blower tube slots too far open or closed.	Check slot width. Must be .032" - .045".
	Rinse nozzles or holes are plugged.	Visually inspect and clean with cleanout brush and wire for holes.
Glass shows roll marks.	Dirty work area.	Clean rolls with hot soapy water and rinse thoroughly. Continuous running may eliminate this problem as all rolls will collect some lint, rubber marks or plasticizer bleeding overnight. Keeping washer exit area covered when not in use will help keep it clean. Drying area of washer is dirty and has too much air borne particles. Clean work area. Daily start up of washer in insulated glass operation, first glass out should be kept top side up, second piece should be flipped over as the top side will consistently be cleaner than the side contacting the rolls. After considerable operation (one to two hours) it is not necessary to flip glass, but it is still desirable for higher quality yield consistently.

SECTION 8
PARTS LIST

36" Washer
Parts List (Partial)*

Item	Part No.	Description
1	39333500	Bearing (Pinch, R)
2	39333500	Bearing (Pinch, L)
3	39333600	Pillow Block (Roll)
3A	44111175	Pillow Block, Relub (Roll)
4	44105181	Pillow Block (Brush)
5	13303081	Belt, 1st
6	13303081	Belt, 2nd
7	43300951	Belt, MTR
8	39332700	Brush
9	29900010	Chain (Per Ft)
10	43903040	Chain Link
11	46903480	Filter, Blower
12	30306202	Gear, Pinch
13	44305200	O-ring
14	45048791	Set Screw
15	N/A	Spring, Belt Tentioner
16	43001001	Sprocket
17	39332501	Roller, Solid
18	N/A	Roller, Ring

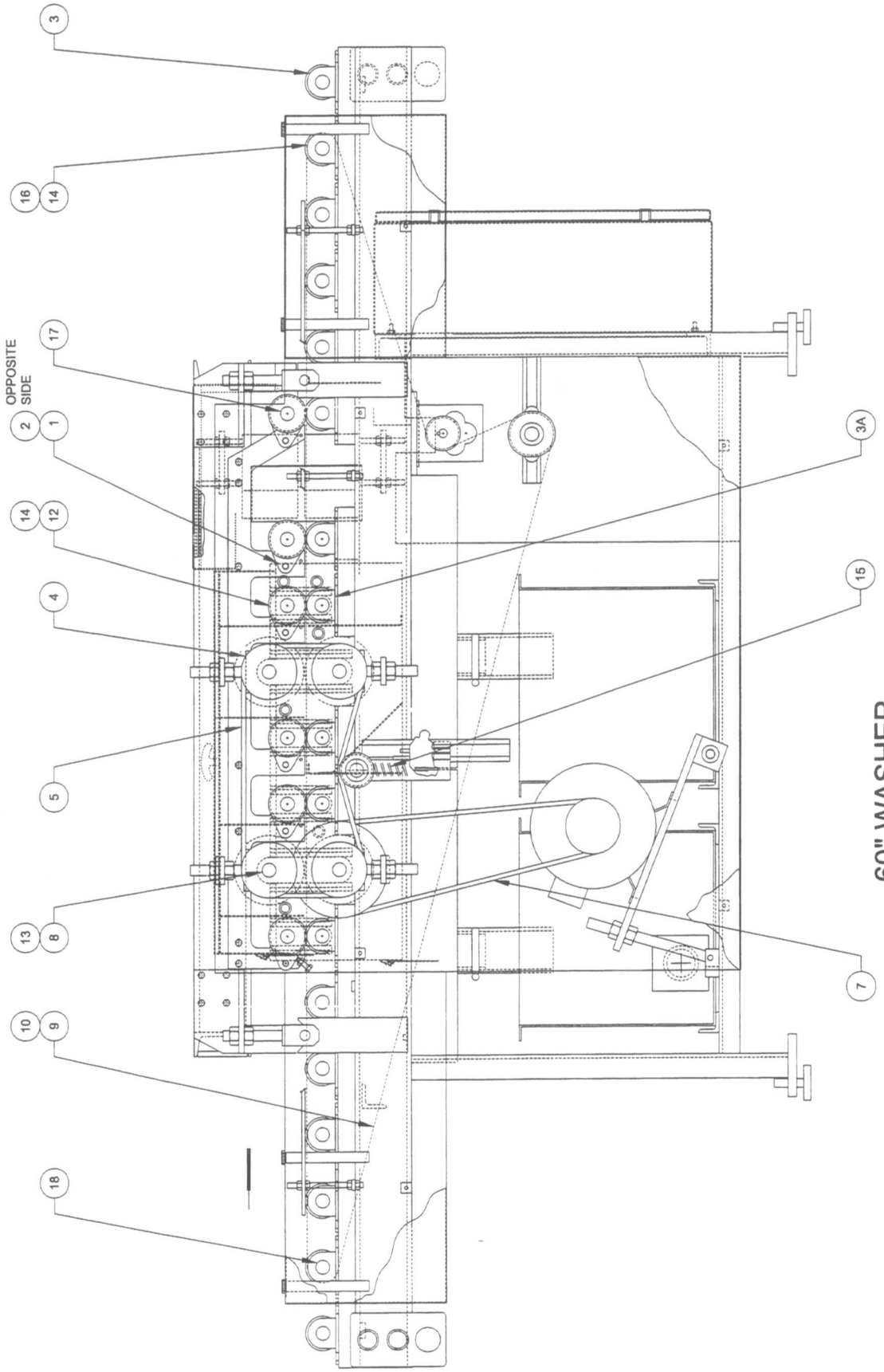
*-For complete parts list contact Sommer & Maca


3A
16
14
3
17
OPPOSITE SIDE
2
1
14
12
4
6
5
13
8
10
9
7
36" WASHER

60" Washer
4 Brushes
Parts List (Partial)*

Item	Part No.	Description
1	35302401	Bearing (Pinch, R)
2	35302402	Bearing (Pinch, L)
3	44111170	Pillow Block (Roll)
3A	39514000	Pillow Block, Relub (Roll)
4	44105191	Pillow Block (Brush)
5	43301151	Belt, 1st
6	N/A	Belt, 2nd
7	43301151	Belt, MTR
8	39372200	Brush
9	29900020	Chain (Per Ft)
10	13903010	Chain Link
11	46903480	Filter, Blower
12	39144500	Gear, Pinch
13	44305200	O-ring
14	45048791	Set Screw
15	46000440	Spring, Belt Tentioner
16	43002080	Sprocket
17	39266601	Roller, Solid
18	39266700	Roller, Ring

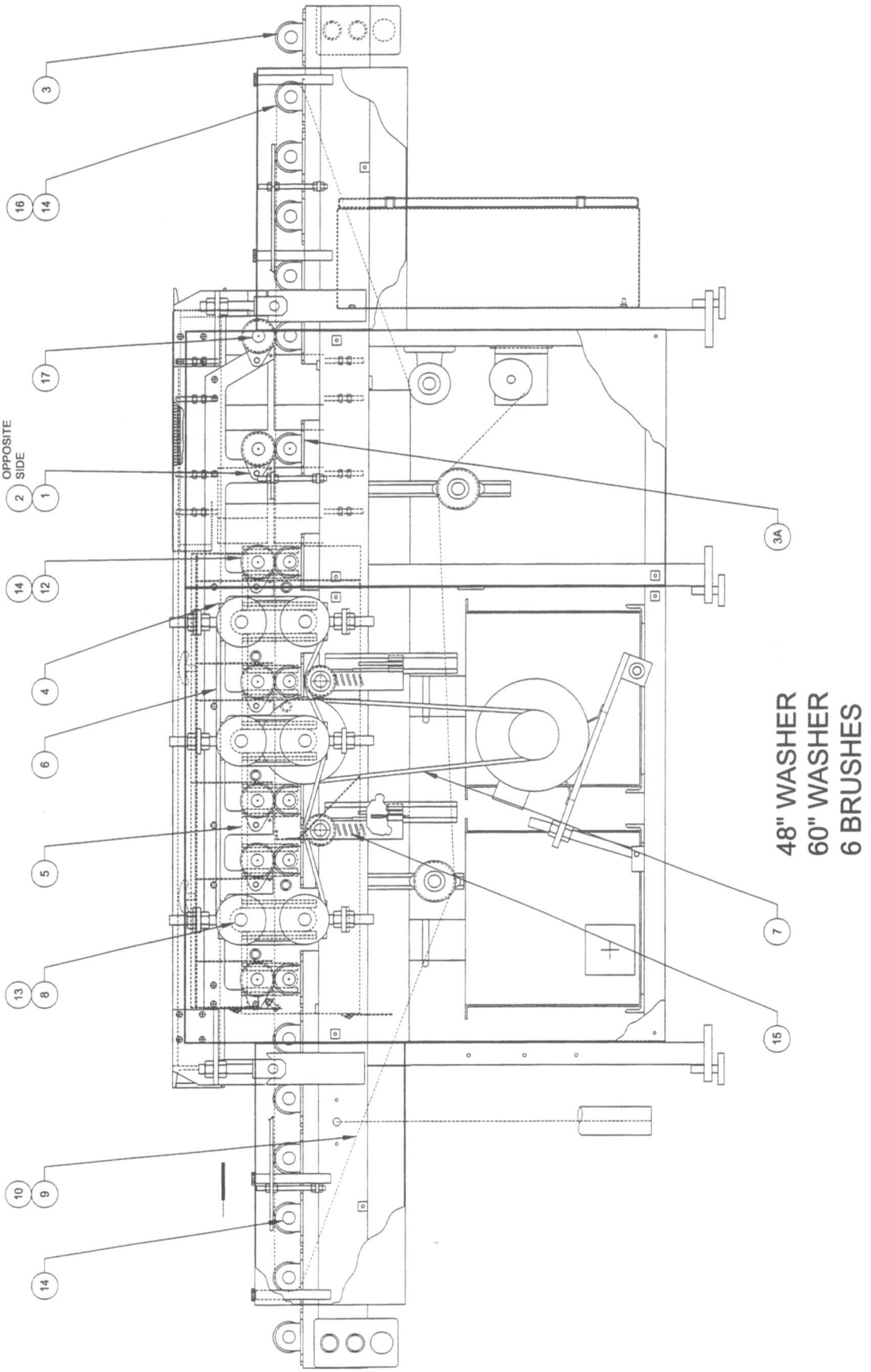
*-For complete parts list contact Sommer & Maca


3
16
14
17
OPPOSITE SIDE
2
1
14
12
4
5
13
8
10
9
18
3A
15
7
60" WASHER
4 BRUSHES

48" Washer
60" Washer
Parts List (Partial)*

Item	48" Part No.	60" Part No.	Description
1	35302401	35302401	Bearing (Pinch, R)
2	35302402	35302402	Bearing (Pinch, L)
3	44111170	44111170	Pillow Block (Roll)
3A	39514000	39514000	Pillow Block, Relub (Roll)
4	44105191	44105191	Pillow Block (Brush)
5	43301151	43301151	Belt, 1st
6	43301300	43301300	Belt, 2nd
7	43301151	43301151	Belt, MTR
8	39372203	39372200	Brush
9	29900020	29900020	Chain (Per Ft)
10	13903010	13903010	Chain Link
11	46903480	46903480	Filter, Blower
12	39144500	39144500	Gear, Pinch
13	44305200	44305200	O-ring
14	45048791	45048791	Set Screw
15	46000440	46000440	Spring, Belt Tentioner
16	43002080	43002080	Sprocket
17	39170701	39266601	Roller, Solid
18	39170802	39266700	Roller, Ring

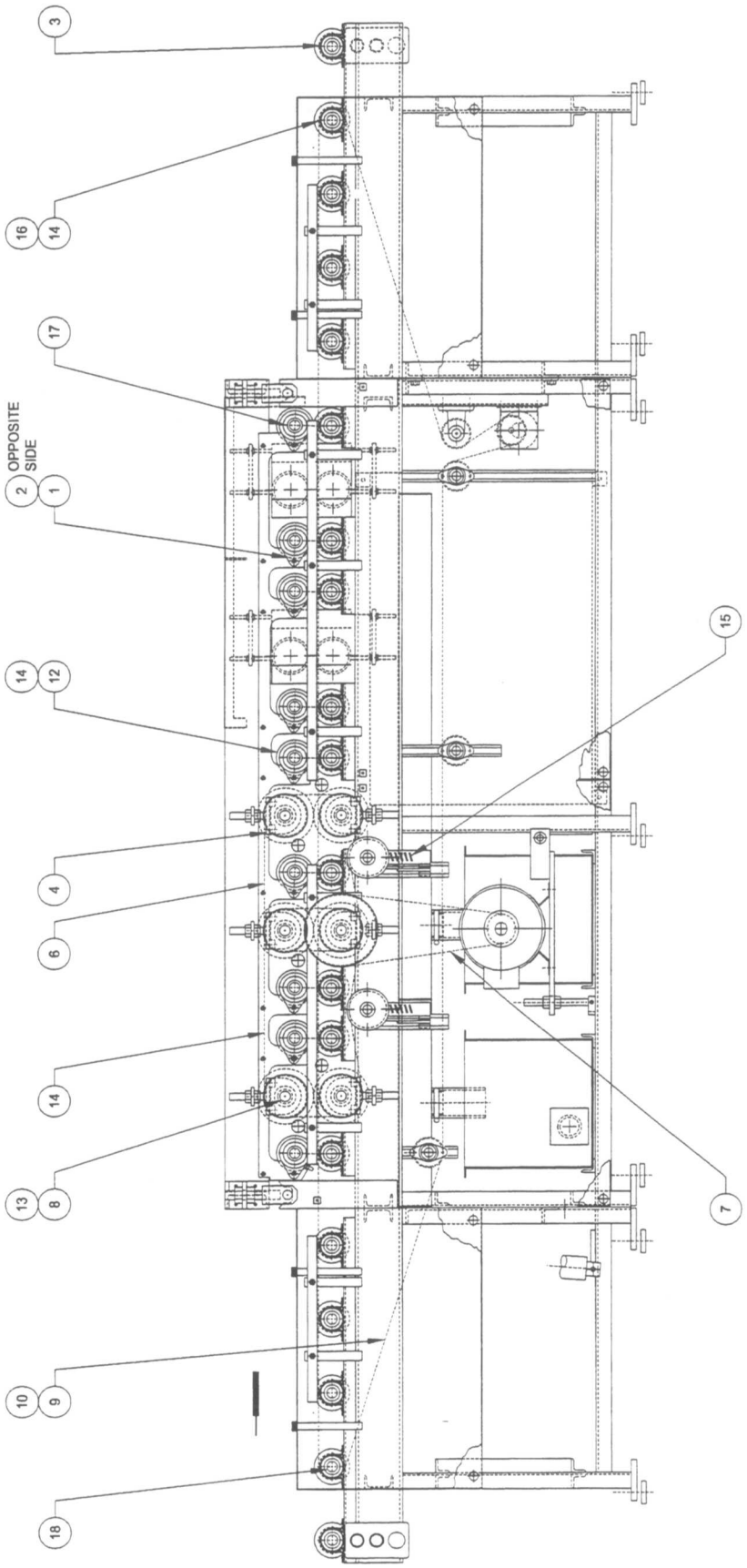
*-For complete parts list contact Sommer & Maca


OPPOSITE SIDE
48" WASHER
60" WASHER
6 BRUSHES

72" Washer
84" Washer
96" Washer
Parts List (Partial)*

Item	72" Part No.	84" Part No.	96" Part No.	Description
1	35033601	35033601	35033601	Bearing (Pinch, R)
2	35033602	35033602	35033602	Bearing (Pinch, L)
3	N/A	N/A	N/A	Pillow Block (Roll)
3A	39514100	39514100	39514100	Pillow Block, Relub (Roll)
4	44105111	44105111	44105111	Pillow Block (Brush)
5	43301250	43301250	43301250	Belt, 1st
6	43301200	43301200	43301200	Belt, 2nd
7	43301200	43301200	43301200	Belt, MTR
8	39188304	39188300	39373201	Brush
9	29900020	29900020	29900020	Chain (Per Ft)
10	13903010	13903010	13903010	Chain Link
11	16903500	16903500	16903500	Filter, Blower
12	39211100	39211100	39211100	Gear, Pinch
13	44305660	44305660	44305660	O-ring
14	45048812	45048812	45048812	Set Screw
15	46000440	46000440	46000440	Spring, Belt Tentioner
16	43002342	43002342	43002342	Sprocket
17	39188505	39188503	39188504	Roller, Solid
18	39188604	39188601	39388603	Roller, Ring

*-For complete parts list contact Sommer & Maca



72" WASHER
84" WASHER
96" WASHER

WARRANTY STATEMENT

Sommer & Maca Industries, Inc. (Seller) warrants products of its manufacture to be free from defects in materials and workmanship in normal use for six months from the date of shipment, unless a shorter period is provided elsewhere in this document. Seller's obligation and Buyer's exclusive remedy shall be limited to the repair or replacement, at Seller's option, of defective parts within the warranty period, provided Buyer gives Seller immediate written notice of such alleged defects, and, if requested by Seller, returns the defective parts to Seller's factory prepaid for Seller's inspection.

The warranties contained herein are in lieu of any other warranty, expressed or implied, including any warranty of MERCHANTABILITY OR FITNESS FOR PURPOSE.

In the case of equipment furnished by Seller but not of Seller's manufacture, Seller's liability to Buyer hereunder is limited to such adjustment as the manufacturer thereof makes to Seller. Seller shall in no event be liable for consequential damages.

Warranties hereunder shall not apply to any equipment that shall have been damaged by misuse, neglect, failure to perform maintenance, or accident after the shipment thereof by Seller. In addition thereto, this warranty shall be null and void if the (1) machine is used in a manner contrary to instructions or after malfunction is noticed, (2) Buyer does not honor terms of payment, and (3) machine is modified or altered without the agreement of Seller.