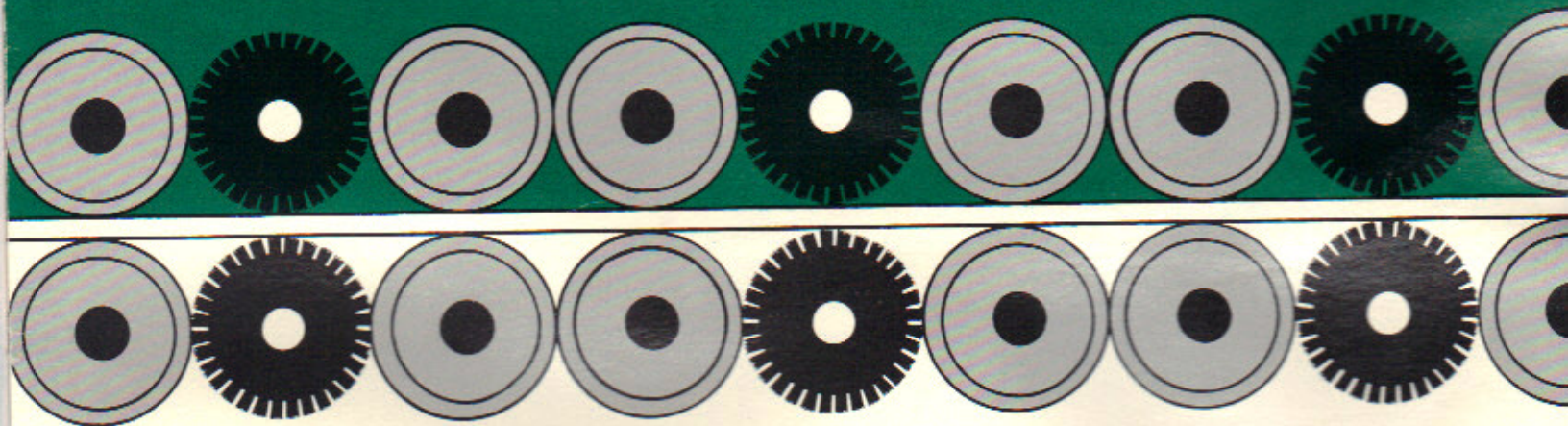


Billco **FlipTop** PAT.

**THE WORLD'S
MOST
RECOMMENDED
FLAT GLASS
WASHING
MACHINES**



Billco FlipTop

Years Ahead of the Competition

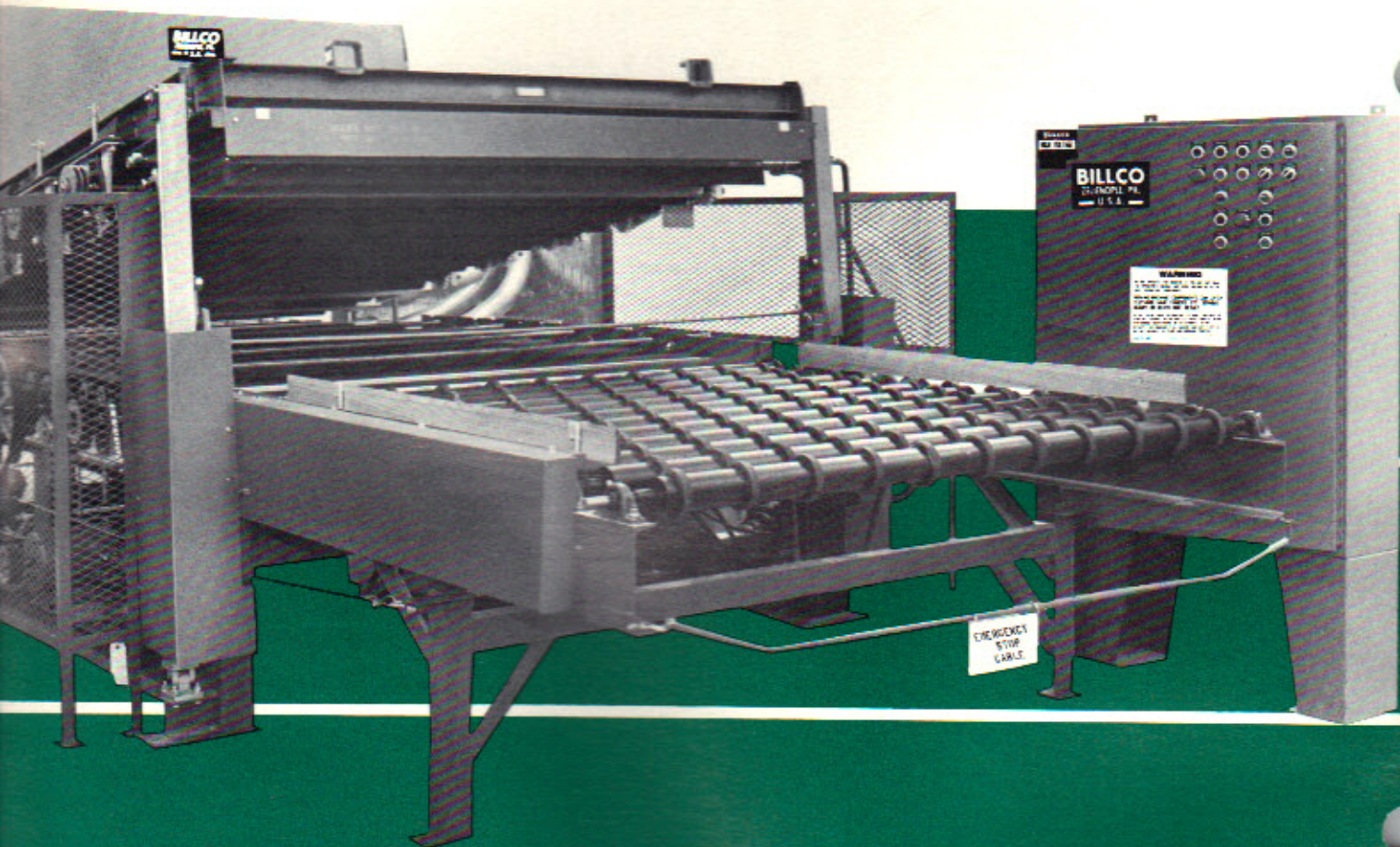
High production, at low operating cost is achieved with patented Billco "FlipTop" Glass Washers...the machines that make it possible to wash, rinse and dry in one easy operation.

The Billco "FlipTop," the world's most recommended flat glass washing and drying machine, offers many advantages:

- A patented "FlipTop" design which permits complete access in a few seconds, to all internal machine parts. This is a standard feature on all Billco horizontal glass washers.

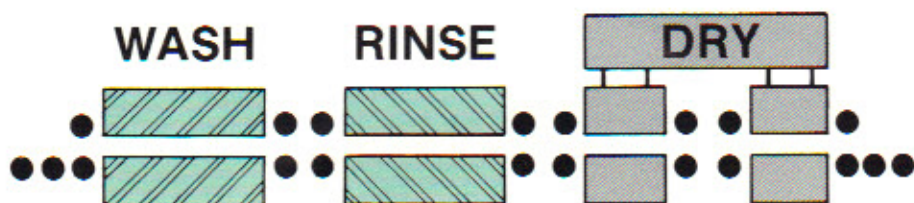
- Heavy duty frame construction and machine components to assure long lasting continuous duty operation.
- Completely dry glass, including the trailing edge, at standard production speeds up to 36 feet per minute (11 mpm.).

Throughout this brochure there are many more reasons why the Billco "FlipTop" Glass Washers remain...years ahead of the competition.



WASH, RINSE & DRY IN ONE EASY OPERATION

Billco glass washers are available in several wash, rinse and drying section configurations depending upon your requirements. The degree of glass cleanliness required and the speed of the machine dictates how many brushes are required. For most applications, our glass washers are furnished with 4, 6 or 8 brushes.



FIVE BASIC TYPES OF GLASS CLEANING APPLICATIONS

Glass Fabrication

In glass fabrication operations where drilling and edge work is performed, the glass must only be visibly clean for packing and shipment.

The main objective is to flush the grinding compounds off the glass and assure that it is completely dry. A standard glass washer with four (4) brushes, using clean plant water and no heated detergent solution, is sufficient.

Tempering & Insulating

General glass cleaning is necessary before tempering operations and low-speed insulating lines. The glass must be visibly clean and free from cutting oil, packing materials, finger marks, streaks or spots.

The glass washer used for this application is equipped with six (6) brushes and uses a recirculated, heated detergent solution on the first pair of brushes and clean rinse water on the second and third pair.

Insulating & Laminating

In high speed insulating operations or where visible and chemical cleanliness is required, such as laminating, additional detergent washing capability is necessary.

The glass washer recommended for these applications is an eight (8) brush unit, using detergent solution on the first and second pair of brushes, and rinse water on the third and fourth pair.

Silvering & Vacuum Coating

Glass prepared for the silvering and vacuum coating process must be chemically clean and absolutely free of surface impurities. For this application, an eight (8) brush

washer must be used. In addition, an oscillating scrubbing unit is used at the front of the eight brush washer. Billco Oscillating Scrubbers are described on page 10 of this booklet.

Special Processes

A standard glass washer can be modified to meet your particular cleaning requirements; for special processes, such as extremely high speeds, clinical cleanliness requirements or where special chemicals must be used in the

cleaning operation. This modification may include such things as extra brushes, additional drying capacity, special construction materials, high pressure spray sections, or whatever you require.

FlipTop...BUILT TOUGH TROUBLE-FREE

The patented "FlipTop" design permits complete access to all internal machine parts in a few seconds.

The FlipTop section may be raised from either end or completely removed. When raised, all the upper conveyor components are separated from the corresponding lower parts. This includes all upper pinch rolls, brushes, air knives, and splash guard. This completely exposes both upper and lower section components for maintenance and service.

The FlipTop section may be raised by an overhead hoist, lift truck boom, or optional, built-in hydraulic lift unit.

There are several important advantages of the FlipTop design:

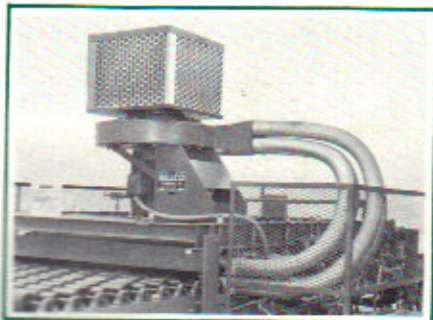
1. In the event a piece of glass runs or breaks while passing through the washer, it permits instant and complete removal of the broken glass to prevent costly roll or brush damage.
2. By providing fast, easy access to the internal parts of the machine, periodic, preventative maintenance and inspection is performed at a very low cost.
3. With the ability to easily inspect internal parts, small service items will be noticed and corrected before they become costly downtime problems.
4. Reduced maintenance and service time means less downtime and more production.

The patented Billco "FlipTop" Glass Washer is the only standard glass washer that you can raise all top section components to completely expose both upper and lower section parts for maintenance and service.

The machine shown is equipped with Hydraulic Top Lift and Sound Baffling System.

Drying

- Completely dry glass, including the trailing edge, at standard production speeds up to 36 feet per minute (11 mpm.).
- There is no need for hand wiping the glass after it passes through a Billco washer, the surfaces and all edges are completely dry.
- In some less efficient glass washer drying systems the glass is dried by using costly heated rinse water to evaporate the water from the glass. This causes water spotting and does not dry the edges of the glass.
- The Billco drying system virtually eliminates water spotting through the use of a high pressure blower and specially designed air knives. This scientifically balanced Billco drying system uses a "peeling" effect to blow the water and impurities from the glass. This system also permits the use of normal room temperature water for rinsing.



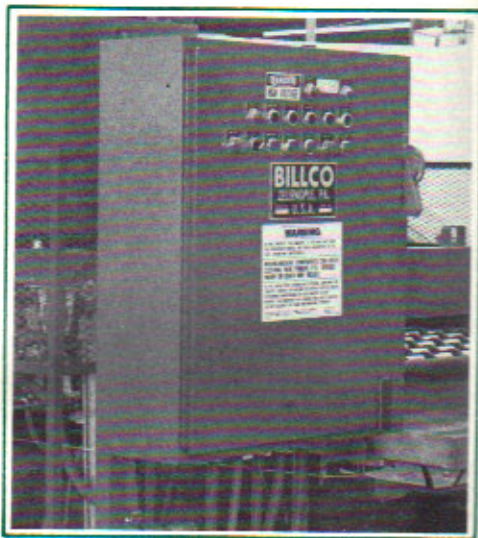
Electrical System

A complete electrical control panel, with fused disconnect, low voltage motor controls, and magnetic motor starters, is a standard feature on all Billco Glass Washers.

A 360° emergency stop pull cable encircles the washer, to protect personnel at all locations around the machine.

The electrical immersion heater in the detergent tank is protected by a built-in low water shut-off device, in case there would be insufficient water in the tank when the heater is turned on.

Liquid-tight, flexible wire covering is used to protect all wiring from electrical components to panel.



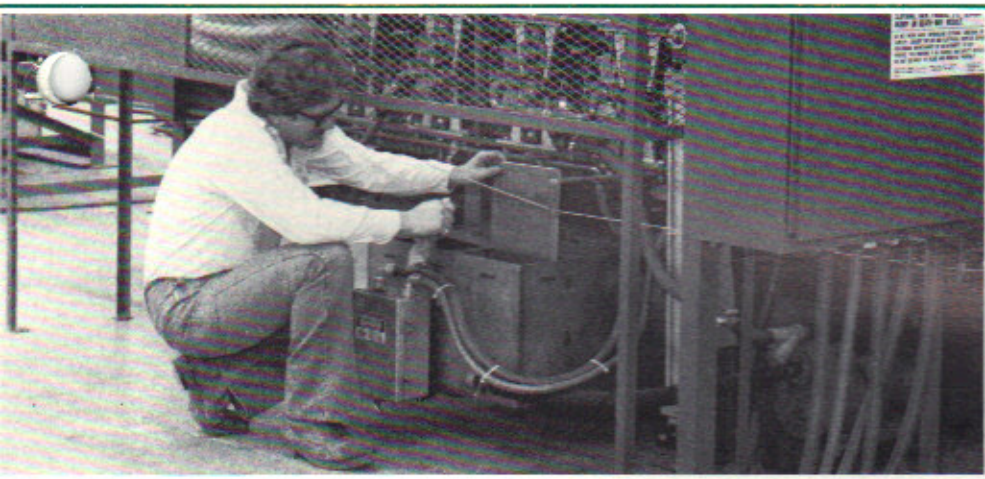
GH FOR DEPENDABLE PERFORMANCE

Easier Maintenance Means Better Maintenance

- Special features keep brushes and recirculating systems clean, which results in consistently clean glass.
- 1. All collection pans and tanks are mounted on rails for fast removal, clean out, and replacement.
- 2. All tanks have removable stainless steel screens to prevent foreign material from clogging pumps and spray lines.
- 3. Spray lines can be cleaned out by removing an external plug from one end and a cap from the opposite end.
- 4. All plumbing lines have line strainers with stainless screens to further insure against plugged water lines.
- "Open", expanded steel personnel guards permit operators and maintenance people to inspect internal machine parts during operation, while still providing protection.

A service problem can be detected and corrected before becoming a major down-time problem. Also, rugged steel guards will last the life of the machine, without becoming cracked, bent, or broken and discarded.

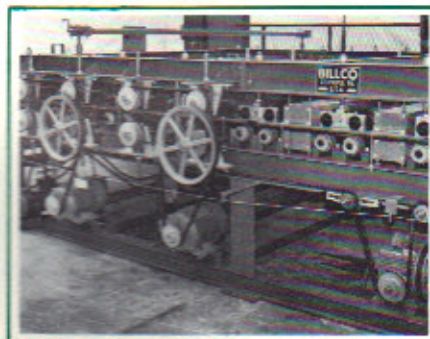
- External access to all grease fittings permits fast, easy machine lubrication.
- Lift-out air filter box design provides for quick filter removal and replacement.



Adjustments

Billco takes the guesswork out of keeping the machine adjusted properly.

- Brush adjustments are quickly made from the side of the machine. In addition, The FlipTop feature permits a periodic visual inspection of both the top and bottom brush adjustment and condition.
- Constant load, tensioning devices on brush drive belts and conveyor drive chain, eliminates the need for manual adjustment.
- Conveyor speed of the washer is easily adjusted by a handwheel at the side of the machine.
- No adjustments are required when processing glass from 1/16" (1.5 mm) to 1/4" (6 mm) in thickness. External adjustment cams, available for the FlipTop section, permits the operator to adjust the washer for processing glass thickness up to 3/4" (19mm) in seconds.

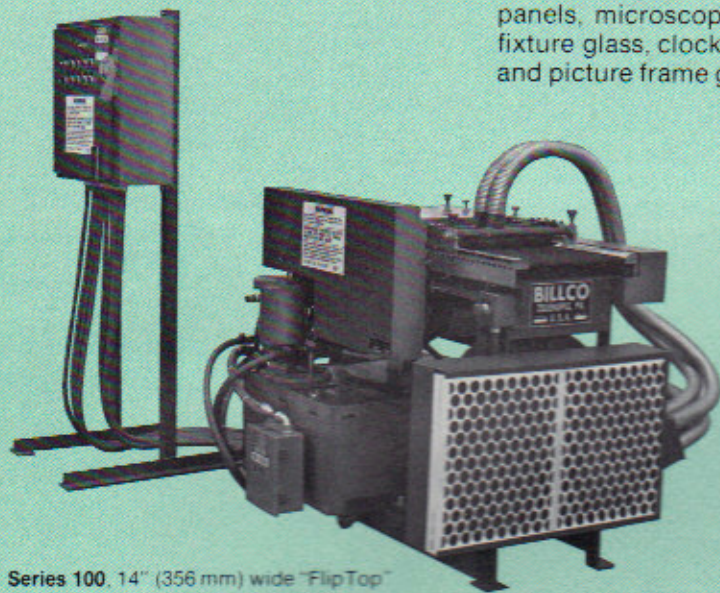


The above picture is for illustration purposes only. During operation the equipment must be operated with all personnel guards installed, electrical panels closed, and safety devices attached.

Whatever your flat glass clean Billco FlipTop Glass Washer d

SERIES 100, 200, 300

The Series 100, 200 and 300 Glass Washers are designed for cleaning small glass parts, such as appliance panels, microscope slides, lighting fixture glass, clock faces, flat lenses and picture frame glass.

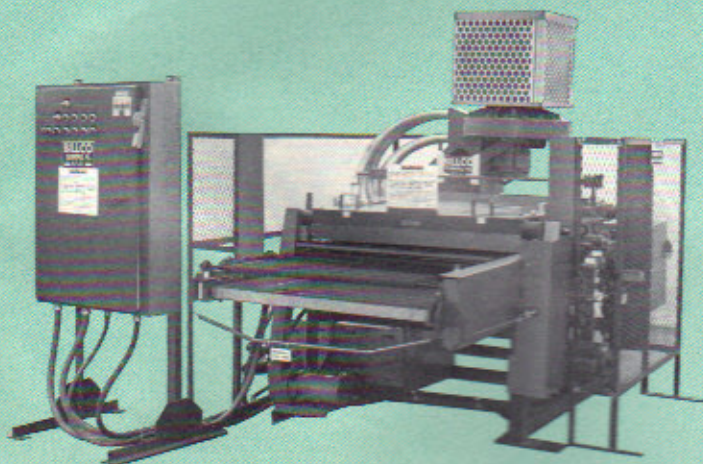


Series 100, 14" (356 mm) wide "FlipTop" Glass Washer with eight (8) brushes.

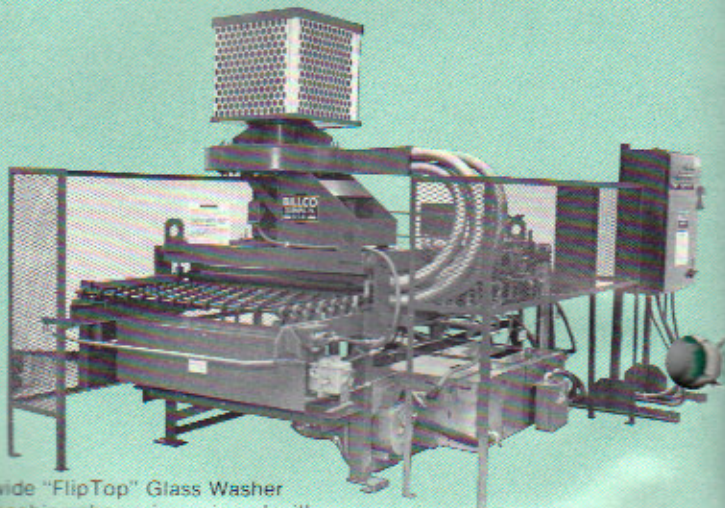
SERIES 400 & 600

The Series 400 and 600 Glass Washers are the most widely used in the world. With conveyor widths ranging from 24" (610 mm) to 108" (2743 mm) and unlimited machine configurations, there are Series 400 or 600 Billco Glass Washers for almost any flat glass fabricating process.

SERIES	CONVEYOR WIDTHS AND
100	14" (356 mm), 16" (406 mm)
200	24" (610 mm), 30" (762 mm), 36" (914 mm)
300	24" (610 mm), 36" (914 mm), 48" (1219 mm)
400	24" (610 mm), 30" (762 mm), 36" (914 mm), 42" (1067 mm), 48" (1219 mm), 60" (1524 mm), 66" (1676 mm)
500	24" (610 mm), 30" (762 mm), 36" (914 mm), 42" (1067 mm), 48" (1219 mm), 60" (1524 mm), 66" (1676 mm)
600	72" (1829 mm), 84" (2134 mm), 108" (2743 mm)
700	120" (3048 mm), 132" (3353 mm)



Series 200, 36" (914 mm) wide "FlipTop" Glass Washer with six (6) brushes.



Series 300, 36" (914 mm) wide "FlipTop" Glass Washer with six (6) brushes. The machine shown is equipped with optional recirculating rinse system and hydraulic top lift.

...meeting requirements...there is a machine designed to do the job.

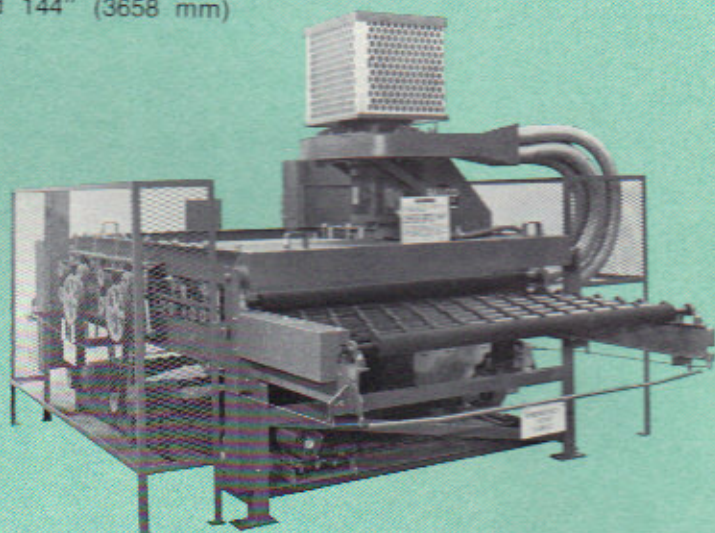
SERIES 500

The Series 500 Glass Washers are designed for continuous duty, in-line, industrial applications. These machines are equipped with features that permit on-line maintenance without stopping the production process.

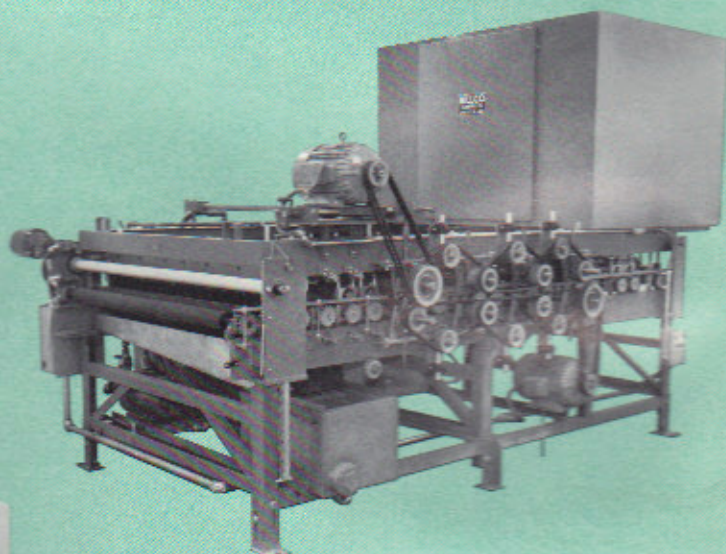
AVAILABLE	MINIMUM GLASS SIZE (DIAGONAL)
2" (50 mm)	2" (50 mm)
4" (1016 mm)	7" (178 mm)
6" (1524 mm), 8" (2032 mm)	7-3/4" (197 mm)
10" (2540 mm), 12" (3048 mm), 14" (3556 mm)	11-1/2" (292 mm)
16" (4064 mm), 18" (4572 mm), 20" (5080 mm)	11-1/2" (292 mm)
22" (5588 mm), 24" (6096 mm), 26" (6604 mm)	14-1/2" (368 mm)
28" (7112 mm), 30" (7620 mm), 32" (8128 mm)	20" (508 mm)

SERIES 700

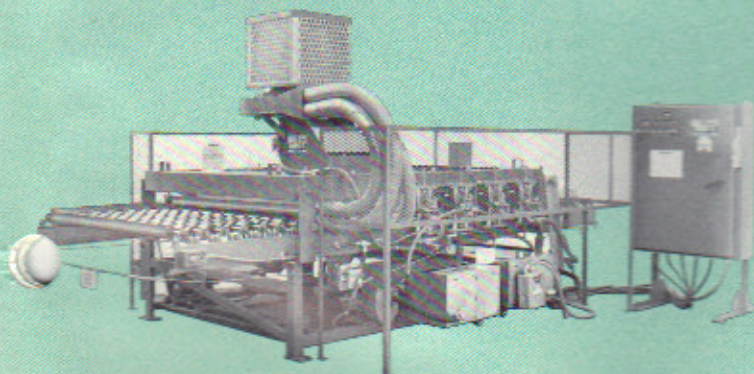
The Series 700 Glass Washers are the "giants" of the Billco line. They are available in 120" (3048 mm), 132" (3353 mm) and 144" (3658 mm) widths.



Series 600, 84" wide "FlipTop" Glass Washer with 8 brushes.



Series 500, 60" (1524 mm) wide, "FlipTop" Glass Washer with six (6) brushes. The machine shown is equipped with individual top and bottom brush drives, open chute drain pans, and sound baffling system.



Series 400, 60" (1524 mm) wide "FlipTop" Glass Washer with eight (8) brushes.

The above picture is for illustration purposes only. During operation the equipment must be operated with all personnel guards installed, electrical panels closed, and safety devices attached.

OPTIONAL FEATURES...that tailor a Billco FlipTop Washer to your needs

- **Recirculating Rinse System**

Provides clean plant rinse water on the final pair of brushes. Before going to drain, this water is reused on the first pair of rinse brushes. Therefore, rinse water consumption is reduced by 50%. Corresponding drain costs are also reduced.

- **Automatic Water Saver System**

Further reduces glass washer water consumption by automatically turning off the rinse water when there is no glass being processed through the machine.

- **Hydraulic Top Lift Mechanism**

Built-in lift mechanism can be added to the front of the machine so that the top section (FlipTop) can be raised by pressing a button.

- **Individual Top and Bottom Brush Drives**

The FlipTop may be opened without removing drive belts or other connections.

- **Custom Conveyors**

Special loading and unloading conveyor lengths with donut or solid covered rolls are available.

- **Static Elimination Bars**

- **Stainless Steel**

Roll Journals, Spray Lines, Splash Guards, Collection Pans and Solution Tanks.

- **Adjustment Cams**

For processing glass thicknesses up to 3/4" (19 mm).

- **High Efficiency Motors**

New lines of "high efficiency" motors are available in the sizes used on Billco glass washers. These motors use less electrical energy, run cooler, and provide longer insulation, lubrication and motor life.

- **Tank Insulation**

Billco glass washers are available with a double-wall, insulated detergent tank. One-inch insulation material is used between the side walls, bottom and top lids. This insulation feature drastically reduces heat loss from the heated detergent solution.

- **Solar Heating**

Using the technology and equipment of leading energy-oriented manufacturers, Billco offers a solar heating system for the glass washer detergent tank.

- **Open Chute Drain Pans**

To direct water and debris to side mounted clean-out tanks when a washer is installed in a production line.

- **Glass Washer Pre-Spray**

Detergent pre-spray section for flushing debris from glass prior to entering washer.

