

Back-Room Equipment & Support Equipment Guide

Use this guide as a resource for learning more about the different back-room equipment and support equipment that we use in the car wash, as well as important guidelines about the routine maintenance services they will require.

Tunnel Finishing Equipment

- ***Rinse Arch Manifolds***

- Used to deliver chemical infused rinse applications to a vehicle using low pressure water and used for different rinse applications also applied during a car wash.
- The water's **flow rate** is dependent on the number of rows of pre-drilled holes on the manifold.
- 1 Row = **2 GPM** (Spot-Free)
- 2 Rows = **4 GPM** (Drying agent, weather repellant applications, ceramic, hard water rinses, etc.)
- 3 Rows = **8 GPM**
- Controlled by **water solenoids** that regulate water use. Solenoids are **normally closed** and receive an electronic signal from the tunnel controller that tells them to open.
- Can also be controlled by the **Hydraflex Chemical Dispensing system**.



- ***Tire Seal Brushes Control Panel***

- Control panel supply pressure set at 80 PSI
- Solution Pump air regulators set at 40-70 PSI
- Driver Side Retract air regulator set at ~50 PSI
- Passenger Side Retract air regulator set ~60 PSI
- **Never** use any type of chemical directly on the tire brush when cleaning. Only use water. Chemicals will **destroy** the integrity of the brush material and cause uneven applications on customer's tires.
- To **flush** the chemical dispensing line, fill a bucket with **hot water** and insert **foot-valves** into the bucket to flush out residual tire shine.
- Due to the high volume of customer's purchasing tire shine with their wash package, these brushes will become **dirty** very quickly and leave **brown/black smear marks on rims**. It is essential to **thoroughly high pressure wash** the brushes **daily** to ensure customers leave our facility with clean, shiny, spot-free rims.

Tunnel Support Equipment

- ***Air Compressors***

- Without a functional air compressor, we are a hand wash. The air compressor is one of the most important pieces of equipment found in the pump room and it must always be 100% functional.
- Requires no routine adjustments other than regular servicing by a licensed professional.
- **Motor** is located on the left side of this piece of equipment that is **belt driven** to generate **air pressure**.
- Always listen for any types of "squealing" or "knocking" noises as this could indicate the **belt is damaged**.

- Air supplied by the air compressor leads to many different areas for tunnel equipment. The 3/8" poly air lines seen in the back room will lead either to a **mac valve** or an **air regulator** and from there to the equipment in the tunnel.
- **Mac Valve** – used for tunnel equipment in the operation of their **air cylinders**. Mac valves are **normally open** solenoids and will only **close** when given an electronic signal from the **tunnel controller**.
- **Air Regulator** – used for equipment like a 3-tank mixing station or the Hydrflex that requires a constant supply of **air pressure**.



● **Compressed Air Dryers**

- Use refrigeration to remove moisture from warm compressed air.
- Most air powered equipment failure results from **moisture** in compressed air.
- Requires no regular adjustments, but to deliver moisture free air to the wash tunnel you will need to make sure that it stays on and running at all times.



- **Anti-Collision Pad/M Gauge Sensor**

- Stops conveyor and all wash equipment in the event a customer's vehicle remains stopped above the loop detector and is used to **prevent tunnel collisions**.
- An **M gauge** is buried 3 feet beneath the concrete at the very exit of the tunnel, and is powered via a **control box** located in the back room. An **illuminated green LED light** on the control box indicates a vehicle detected above the M gauge.
- As soon as the vehicle clears the loop detector the tunnel will resume normal operation.

- **Sonny's Tunnel Controller**

- The tunnel controller is the “brain” of the car wash and will **activate/deactivate** various different **functions** and **tunnel equipment** in the car wash. Some examples of equipment that are controlled by this are:
 - LED Lights
 - Rinse Bars/Foam Applicators (via **solenoids**)
 - Tunnel Signs
 - Power Packs
 - Wrap/Brush air functions
 - Tunnel high pressure pumps
- Receives a **signal** from the **photo-eye switch** located at the **entrance** to the wash tunnel to begin the services that make up a wash package.
- Tunnel functions are located within the tunnel controller as numbered **relays** and within each relay is a **fuse** that establishes a power connection to allow the function to operate.
- **Potential safety hazard** if **unauthorized personnel** are working inside the cabinet.
- Any type of repair must be left to personnel trained on how to safely repair components.



- **Hydraulic Motor Power Packs**

- Supplies hydraulic fluid power to tunnel equipment through a **feed hose** and **return hose** that connect to the **hydraulic motors** on the equipment in the tunnel.
- **Power packs** are powered by electric motors that are controlled by the MCC.
- **Flow Control Switch** regulates the amount of hydraulic fluid that is sent through the hoses to tunnel equipment. A small **black** adjustable lever on the side will **increase the flow** or **decrease the flow** to the hydraulic motors on tunnel equipment.
- **If oil is needed** to be added to the tank, the green light on the front of the MCC that corresponds to the power pack will **not be illuminated**. Fill the tank with oil until the green light turns back on.



- **Motor Control Center**

- **Main electrical component** of the car wash. Has **full control of the power** sent to all **electric motors** used in the back room of the car wash, as well as the vacuums in the parking lot.
- **High Voltage** – **Authorized personnel ONLY**. Turning the outer knobs located on the doors of the MCC is safe, however anything located inside the MCC is off limits to employees due to the high risk of electrical shock and/or death.
- Knobs located on the front of the MCC will correspond to specific motors in the back room and can be switched on/off to power down equipment.



Water Treatment Equipment

- **Sobrite ERS-100 Reclaim System**

- Supplies **pressurized reclaim water** to tunnel for high pressure rinse applications.
- Water collected in the car wash trench drains into underground plumbing that leads to **3 separate tanks** underneath the parking lot, and to the city sewer. As the water passes through each tank, the **debris** and **sediments** in the water is **removed** while passing through the plumbing between each tank.
- The **3rd tank** is where the reclaim unit **pulls** the water used in the tunnel for high pressure applications.
- **UV lights** are used to “shock” the reclaim water and **remove any odor** causing bacteria from the reused water.
- A **rapidly** beeping red light indicates a **loss of suction** in from the water in the reclaim tanks and should read as NO FLOW.
- A **slowly** beeping red light indicates that the unit will need to be serviced (UV lights, check valves, air filter).
- Requires annual service on **UV lights, air filter** and **check valves**.
- **Under-Spray lines** coming from the 2 cyclones on the back of the unit are directed to the **1st reclaim tank** to keep water from becoming stagnant. There is also another larger underflow line that runs to the beginning of the car wash trench to keep water circulating there as well.
- Reclaim water with a **strong odor** indicates **UV light failure**, “trapped” water in a tunnel spigot line, or a bad air filter.
- Filter basket must be cleaned **daily** to prevent debris from entering water lines to applicators in the tunnel as the debris will **clog nozzles** and create **uneven flow patterns** or **flow loss**.



- **Spot-Free Reverse Osmosis System**

- Produces **spot-free water** by removing additional contaminants found in soft water such as sodium, chloride, chromium and lead by pumping the water through a series of **membranes** and a **carbon filter**. There is also an additional pump filter that will need to be changed out every 30-60 days.
- RO Membranes will need to be replaced **annually**, and a **loss of product flow** will indicate that the membranes have failed.
- **TDS PPM** must be below **10** to ensure water produced will leave no spots behind after vehicle dries.
- RO water used as a **spot-free** or **final rinse** displaces all residual chemical and untreated water from the vehicle to ensure a spot-free dry vehicle.
- There should be **no chlorine detected** in **weekly** water tests.



- **Water Softener System**

- **Softens water** by removing **calcium** and **magnesium** from hard water (city water) and is used in the tunnel for **chemical applications**.
- **Salt level** in the **brine tank** should typically be about half-way full. There should **never** be a time that the white screen located at the bottom of the brine tank be visible as this will indicate that during the regeneration cycle the water was not softened.



High Pressure Water Units

- **Arimitsu High Pressure Pumps**

- Used to generate **high pressure water** used in the prep bay and in the spray down gun for closing each day.
- Set at **1000 PSI** for thorough cleaning of wheel wells, car surfaces, etc.
- Will be either **belt driven** or **direct driven**.
- **Belt Driven** – pump is connected to the **electric motor** by a **series of belts** to generate high pressure water.
- **Direct Driven** – pump is **directly connected** to the **electric motor** by a shaft to generate high pressure water.
- **Leaks** generally indicate seal failure inside the **pump head**. If a leak has sprung, notify the maintenance team via **MaintainX** so that it can be repaired and turn the pump off at the MCC.



- **Hydracell Tunnel Rinse High Pressure Pumps**

- High pressure pumps used in conjunction with either the Sonny's Omni Rinses/Mirror Blasters/Wheel Blasters, etc in the tunnel.
- **Belt Driven**
- Pulls water from the tank located above the motor and pump to be used in the tunnel for high pressure water rinses.
- **In-Line Strainers** located on the feed line into the pump must be cleaned **daily** to **prevent** debris from clogging nozzles in the car wash tunnel.
- **Jobe Valve** located inside the tank **controls the water level** in the tank. If the jobe valve has failed the tank will either **overflow** or **not refill**.



Hydraflex Chemical Dispensing System

- The Hydraflex System uses **air**, **water**, and **chemicals** with a series of air solenoids, a booster pump, and individual ports to deliver soap to tunnel applicators when washing a car.
- Must maintain **80-120 PSI** on the main **air regulator** to operate properly.
- Must maintain **200 PSI** on the water gauge to operate properly.
- Loss of water pressure would indicate an issue with the **booster pump**.
- Loss of air pressure would indicate an issue with the **air compressor, air solenoid** or **air regulator** or in some cases the **plunger and spring** located inside of the individual manifold ports (BAM,MAM,etc.)
- The numbered individual ports located on the front of the Hydraflex will correspond to each tunnel applicator and will use a **Versadial** and **Injector** to control the amount of chemicals being used.
- A **Versadial** is used to control the **dilution** of chemical applied. Versadials are typically used in Thoroughbred Express car wash tunnels due to their capability to be set at a certain setting, and then left alone other than routine maintenance such as cleaning/swapping injector ports.
- An **Injector** is used to control the **rate** of water (GPM) that is used when applying soaps to a vehicle. It is also where the chemical and water is first mixed prior to being sent out to the tunnel.

