



Finish and Support Equipment Overview

Buff-n-Dry

1) Description

- a) This unit eliminates labor, increases speed of service, reduces laundry and can be installed with an online tire shine machine without retracts!

2) Adjustment

a) Buffing Pressure Adjustment

- (1) The buffing pressure applied against the vehicle is adjusted by moving the counterweight on the arm on the Top Brush.
- (2) Should be adjusted to obtain 3" to 4" brush penetration during normal operation.
- (3) Final adjustments should be made after observing the pressure applied during several car washes.

b) Rotation Speed Adjustment

- (1) If an electric motor is used, a Variable Frequency Drive (VFD) would be needed to adjust the speed.
- (2) Speed should be set to
 - (a) 75-85 Revolutions per Minute (RPM) for a conveyor speed of 60-99 Cars per Hour (CPH).
 - (b) 86-95 RPM for a conveyor speed of 100-150 CPH.

c) Retract Adjustment

- (1) The brush is held retracted by approximately 30-40PSI until a vehicle is about five feet away.
- (2) When the air pressure is released the counterweight is all that is needed to bring the brush into cleaning position.

3) Preventive Maintenance

a) DAILY

- (1) Check air fittings for leaks. Repair, or replace, as needed.





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- (2) Check brush for proper operation, listening for any unusual noises from the equipment.
- (3) Inspect brush cloth for cuts, grease, or oil. Remove and repair, or replace, any cloth panel if any of these conditions are found.
- (4) Check retract and extend for proper operation, smoothness and correct application pressure.

b) **WEEKLY**

- (1) Spray lubricant on the clevis pins on both ends of the retract cylinders.
- (2) Grease the brush shaft bearings. Do not allow grease to come in contact with brush cloth.
- (3) Drain water from FRL and check lubricant level in FRL.
- (4) Clean cloth using only water and mild detergent.

FOR THE FIRST MONTH OF OPERATION CHECK ALL HARDWARE AND FITTINGS FOR TIGHTNESS EACH WEEK. PERFORM THIS INSPECTION TO THE SCHEDULE SHOWN BELOW AFTER THE FIRST MONTH OF OPERATION.

c) **MONTHLY**

- (1) Inspecting all hardware and fittings for tightness.
- (2) Grease the UHMW pivot bearings. Do not allow grease to come in contact with brush cloth.
- (3) Inspect the bumper stops for wear to ensure the air cylinders have not reached the end of their travel. If bumper stops are worn, replace.
- (4) Thoroughly clean the equipment and framework.

d) **SEMI-ANNUALLY**

- (1) Carefully inspect brush equipment cloth for wear and damage. Replace as necessary.

e) **ANNUALLY** (only applies if electrically driven)

- (1) Have a licensed electrician measure and record, full load current readings from each of the three legs of each of the three phase electric motors.
 - (a) If the differential of current load exceeds 10% between the legs, or the balanced load current of all three legs has increased over 10% since the most recent measurements, order a replacement motor.



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- (b) Record readings in the annual log.
- (c) Grease all electric motors per manufacturers specifications.

2. Support Equipment

a. Air Compressors

- 1) Description
 - a) There are many pieces of equipment throughout the tunnel and equipment room which require compressed air.
 - b) A reliable source of compressed air is a must, and a backup source will prevent unexpected downtime.
- 2) Adjustments
 - a) The air compressor comes adjusted from the factory and doesn't require any routine adjustments.
 - b) If you find it necessary to adjust due to low or excessive pressure consult the manufacturer's manual.
- 3) Preventive Maintenance Requirements
 - a) **DAILY**
 - (1) Operational Checks
 - (a) Perform general examination of operation, listening for any unusual noises.
 - (b) Check for leaks around hoses and fittings. Repair any serious air leaks immediately.
 - (c) Check pressure gauge. It should come up to pressure and remain steady.
 - (2) During Closing Checks, open condensation drain valve and drain all liquid.
 - b) **WEEKLY**

Check lubricant level in pump and refill if necessary.
 - c) **MONTHLY**
 - (1) Check oil level in Filter Regulator Lubricator (FRL).
 - (2) Check all hardware and fittings for tightness and clean thoroughly.
 - (3) Check drive belts for wear or damage. Replace if necessary.
 - d) **SEMI-ANNUALLY**





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Replace air filter(s).

e) ANNUALLY (only applies if electrically driven)

- (1) Have a licensed electrician measure and record, full load current readings from each of the three legs of each of the three phase electric motors.
 - (a) If the differential of current load exceeds 10% between the legs, or the balanced load current of all three legs has increased over 10% since the most recent measurements, order a replacement motor.
 - (b) Record readings in the annual log.
- (2) Grease all electric motors per manufacturers specifications.
- (3) Drain, purge and refill crankcase with manufacturer's recommended oil.
- (4) Install manufacturer's maintenance pack to extend manufacturer's warranty.

Check manufacturer's manual for any other requirements.

b. Compressed Air Dryers

- 1) Description
 - a) Air dryers use refrigeration to remove moisture from compressed air.
 - b) Most air powered equipment failure is due to moisture in the compressed air, so the more that can be eliminated, the lower the repair costs.
- 2) Adjustments

The air dryer comes adjusted from the factory and doesn't requires any adjustments.
- 3) Preventive Maintenance Requirements



DAILY

Operational Checks

- (a) Perform general examination of operation, listening for any unusual noises. Check dryness indicator to ensure it's within normal operating range.
- (b) Check for leaks around hoses and fittings. Repair any serious air leaks immediately.

Check manufacturer's manual for any other requirements.

c. Motor Control Center (MCC)





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1) Description

- a) Each MCC is designed according to the needs at a specific tunnel.
- b) All motor control components are mounted in a single enclosure and pre-wired to terminals for connection to the tunnel controller and equipment.
- c) Designed with safety lock-out to prevent accidental activation of equipment while maintenance is being performed.
- d) Uses oil level switches on power packs to shut down equipment to prevent damage.

2) Adjustment

The MCC comes adjusted from the factory and doesn't require any adjustments.

3) Preventive Maintenance Requirements

NOTE: Even though the MCC Control Center is "finger-safe" any maintenance required should be performed by a licensed technician.

a) **SEMI-ANNUALLY**

- (1) Replace air filter

b) **ANNUALLY**

- (1) Have a licensed electrician tighten all terminal connectors.



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d. Variable Frequency Drive (VFD) Control Center

- 1) Description
 - a) Utilizes VFDs to regulate the speed of dryer motors and **reduce start up currents**, which in turn reduces your electrical costs and prolongs the life of the motors.
 - b) Substantial rebates are offered by most utility companies and some government programs which decreases the payback period.
- 2) Adjustment

The VFD Control Center comes adjusted from the factory and doesn't require any adjustments other than the speed setting of the corresponding equipment .
- 3) Preventive Maintenance Requirements
 - a) Annually, have a licensed electrician tighten all terminal connectors.
 - b) **Even though the VFD is "finger-safe" any maintenance required should be performed by a licensed technician.**



e. Booster Pump

- 1) Description

Designed to supply 30 GPM at 200PSI to supply constant pressure for even delivery.
- 2) Adjustment

See manufacturers specifications.
- 3) Preventive Maintenance Requirements
 - a) **DAILY**

Operational Checks

 - (a) Perform general examination of operation, listening for any unusual noises.
 - (b) Check for leaks around hoses and fittings. Repair any serious air leaks immediately.
 - b) **WEEKLY**

Close inspection of operating mechanisms and hoses for problems.





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f. Anti-Collision Control and Loop Detectors

- 1) Description
 - a) There are a variety of loop detectors that can be used for collision avoidance.
 - b) The objective is to stop the conveyor any time there is a vehicle stopped at the exit of the tunnel and another vehicle is ready to exit.
 - c) As soon as the vehicle has cleared the exit pad, the tunnel should return to normal operation without any human interaction.
- 2) Adjustment

The sensitivity of detectors can be adjusted to detect vehicles properly.
- 3) Preventive Maintenance Requirements

This device should be checked daily for normal operation. If it has failed, it could cause accidents. If it is inoperable the tunnel can be operated by placing an attendant at the exit, close to the Emergency Stop Switch.

g. CarWash Controls – Sonny's Tunnel Controller

- 1) Description
 - a) Used to program the desired wash package, print a customer receipt, and end-of-day reports for management.
 - b) Reconciles daily activity with actual tunnel activity.
 - c) Controls timing of equipment as vehicles pass through the tunnel.
 - d) Sends signals to MCC to turn on and off 3 phase equipment (power packs, HP pumps, etc)
- 2) Preventive Maintenance Requirements
 - a) No preventive maintenance recommended by the manufacturer at this time.





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h. Sonny's Point of Sale (POS)

- 1) Description
 - a) Expands the capabilities of the tunnel controller by adding POS (Point of Sale) capabilities, cash controls, labor management, time clock, customer tracking, accounting interface, and credit card clearing.
- 2) Preventive Maintenance Requirements
 - a) No preventive maintenance recommended by the manufacturer at this time.



i. Automated Pay Station

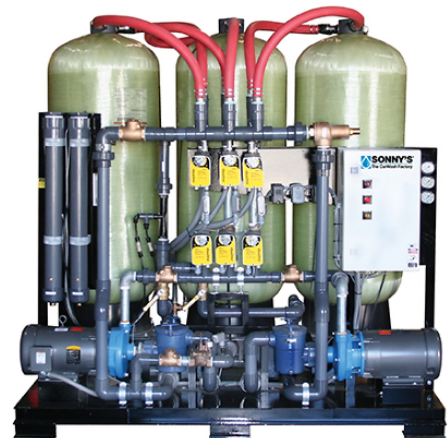
- 3) Description
 - a) Automates the sales process to reduce labor costs.
- 4) Preventive Maintenance Requirements
 - a) Check with manufacturer for maintenance requirements.



3. Water Systems

a. Reclaim and Odor Control System

- 1) Description
 - a) Supplies pressurized reclaim water to tunnel equipment when desired to reduce water usage and wastewater volume.
 - b) Odor control system reduces the bacteria which creates the odor in reclaimed water. Produces ozone by drawing fresh air across UV lamps and using Venturi Eductors to mix with water circulating through water tanks.
- 2) Adjustment





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a) Adjustment to the water flow in the recirculation system can be made to optimize the ozone injection.

3) Preventive Maintenance Requirements (determined by manufacturer)

a) **DAILY**

(1) Operational Checks

- (a) Check for leaks around hoses and fittings. Repair any serious leaks immediately.
- (b) Perform general examination of operation, listening for any unusual noises.
- (c) Check pressure gauges. It should come up to pressure and remain steady.

(2) Closing Checks

- (a) Check and clean inlet filter baskets on pumps.
- (b) Inspect optic lens for purple/blue glow. If a green glow is observed, turn off the power, remove and clean the lens. When reinstalling the lens, install according to manual or not as far in as it originally was.
- (c) Clean inlet filter baskets and odor pumps.

b) **WEEKLY**

- (1) Clean all filter and strainers thoroughly.
- (2) Close inspection of operating mechanisms and hoses for problems.
- (3) Manually override air solenoids and observe the Aquamatic valve stems for proper operation.

c) **MONTHLY**

- (1) Check oil level in the FRL.
- (2) Check all hardware and fittings for tightness and clean thoroughly.
- (3) Check emergency freshwater operation by manually turning off reclaim water supply.
- (4) Lubricate the O-Rings on the filter baskets with silicone lubricant.
- (5) Lubricate the T-Handle clamps.
- (6) Turn off the system and check the wiring harness for damage from ozone.

d) **SEMI-ANNUALLY**

- (1) Remove the UV (Ultraviolet) lamps from the chambers and visually inspect for any build up, film or dust.
- (2) Have a professional sewage company clean all the sediment tanks and oil separators.



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- (3) Check all plumbing to ensure that drainage is free flowing.

e) **ANNUALLY** (only applies if electrically driven)

- (1) Have a licensed electrician measure and record, full load current readings from each of the three legs of each of the three phase electric motors.
 - (a) If the differential of current load exceeds 10% between the legs, or the balanced load current of all three legs has increased over 10% since the most recent measurements, order a replacement motor.
 - (b) Record readings in the annual log.
- (2) Grease all electric motors per manufacturers specifications.
- (3) Replace ozone lamps as a set, and reset the lamp-life timer.
- (4) Replace all check valves.

b. Spot-Free Rinse System

1) Description

- a) Produces spot-free water to the car wash equipment for the final rinse water using a process called **reverse osmosis**, generally referred to as RO. This water normally has a Parts-per-Million (PPM) of 10 or less normally. Untreated water can range from 50 to 500 PPM depending on the source.
- b) Using RO water as a final rinse for the vehicles effectively displaces all residual chemical and mineral laden water from the surfaces of the vehicle allowing it to dry spot free.

c) Components

- (1) The Carbon Tank is to neutralize chlorine in the water supply. The RO membrane cannot tolerate even small amounts of chlorine. Organic matter is also removed by the carbon tank as it can cause fouling of the RO membrane.
- (2) Some carbon tanks have an automatic back flushing head that keeps the carbon media clean to increase the effectiveness of the carbon tank. If the





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system does not contain this head, the tank should be back flushed manually every three months.

- (3) If the membrane is damaged from chlorine, it will exhibit the following symptoms: Poor quality of product water and a significantly higher production rate of RO water.
- (4) The Pre-Filter is next in line to capture particulate matter, 5 microns or larger. If this filter is allowed to clog, it will cause the RO pump to starve and damage the pump.
- (5) The Water Stabilizer is next and is designed to prevent scaling of the RO membrane. It is made up of several dissimilar metals, the largest percentages being copper and nickel. It is cast with flutes in the outer edges and holes are drilled to promote turbulence as the water flows over the surface. The dissimilar metals freely give off electrons and these electrons attach to the dissolved minerals in the water. This acts as a catalyst to change the structure of the dissolved solids so that now they want to bond to each other instead of to the membranes. The water stabilizer is most effective when cleaned often.
- (6) The RO Membranes are housed in the long cylinders. They can remove approximately 97% of the particulate matter, are temperature sensitive and work best at 78° water. An RO membrane life is typically 2-5 years.
- (7) The RO Pump boosts the tap water pressure to 180PSI to force the water through the RO membrane. A pressure switch protects the pump from starvation by turning the pump off if inlet pressure drops below 3PSI.
- (8) The solenoids and valves control the operation of the RO system, maintaining efficient production of spot-free water. It should produce 1 gallon of spot-free water for each gallon of reject water.
- (9) Water produced by the RO system needs to be stored for use. It cannot produce water on demand. The reject water may also be stored to be reused by other systems requiring fresh water.
- (10) The Delivery Pump is used to pressurize the water held in the tanks to be used by the tunnel equipment. If reject water is stored, it would also require a delivery pump.
- (11) A Fresh Water Bypass protects the delivery pump and delivers fresh water to the pump in the event the RO system is not producing enough water to meet demand.



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2) Adjustment

- a) Use the procedures in the manufacturer's manual to ensure correct adjustment of the system.

3) Preventive Maintenance Requirements

a) **DAILY**

Operational Checks

- (a) Check for leaks around hoses and fittings. Repair any serious leaks immediately.
- (b) Perform general examination of operation, listening for any unusual noises.
- (c) Check pressure gauges. It should come up to pressure and remain steady.

b) **WEEKLY**

- (1) Check the prefilter and replace if contaminated. Membranes are much more expensive even when replacing the pre-filter every week. Clean the water stabilizer with a wire brush. If it needs more cleaning, a solution of 80% water and 20% Muriatic acid can be used, but extra caution should be taken when working with hazardous chemicals.
- (2) Close inspection of operating mechanisms and hoses for problems.

c) **MONTHLY**

- (1) Check all hardware and fittings for tightness and clean thoroughly.
- (2) Inlet pressure safety switch should be checked by shutting off water supply.
- (3) Chlorine level should be checked and if any chlorine is present call PurClean immediately for advice. Check the PPM using a Total Dissolved Solids (TDS) meter.

d) **ANNUALLY**

- (1) Have a licensed electrician measure and record, full load current readings from each of the three legs of each of the three phase electric motors.
 - (a) If the differential of current load exceeds 10% between the legs, or the balanced load current of all three legs has increased over 10% since the most recent measurements, order a replacement motor.



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- (b) Record readings in the annual log.
- (2) Replace carbon in tanks. Use Centaur carbon when replacing.

c. Water Softener System

- 1) Description
 - a) Softens the water used in the tunnel for cleaning.
 - b) Softened water does a much better job of cleaning in all detergent applicator systems.
 - c) Softened water is not needed for the high-pressure nozzles and for the rinse/wax/sealer applicators, as harder water actually works better.
 - d) System should be sized for maximum number of cars ever expected in a day.
- 2) Adjustments
 - a) Use the procedures in the manufacturer's manual to ensure correct adjustment of the system.
- 3) Preventive Maintenance Requirements

a) **DAILY**

Operational Checks

- (a) Remove lid from brine tank and check salt level.
- (b) Check for leaks around hoses and fittings. Repair any serious leaks immediately.
- (c) Perform general examination of operation, listening for any unusual noises.
- (d) Check pressure gauges. It should come up to pressure and remain steady.

b) **WEEKLY**

- (1) Check water hardness to ensure proper operation.

c) **MONTHLY**

- (1) Check all hardware and fittings for tightness and clean thoroughly.





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4. Miscellaneous Items

a. Washer – Extractor

- 1) Description
 - a) Industrial grade equipment to wash and dry towels used by attendants to dry vehicles at full-service tunnels.
 - b) Several models available.



a. Central Vacuums

- 1) Description
 - a) A durable and dependable system that offers several different options for configuration;
 - b) Vacuum Filter Separator, Water Separation Tank and Lift Kit.
 - c) Models
 - (1) 7.5 HP assembly capable of handling 2 vacuum drops.
 - (2) 10 HP assembly capable of handling 4 vacuum drops.
 - (3) 15 HP assembly capable of handling 6 vacuum drops.
 - (4) 20 HP assembly capable of handling 8 vacuum drops.
 - (5) 25 HP assembly capable of handling 10 vacuum drops.
 - (6) Dual 10 HP assembly capable of handling 6 vacuum drops.
 - (7) Dual 15 HP assembly capable of handling 10 vacuum drops.
 - (8) Dual 20 HP assembly capable of handling 12 vacuum drops.
 - d) Up to 9,000 square inches of filter area and filter bags are mildew and rot resistant.
 - e) Oversized dirt bucket is easy to remove, empty, and replace.
 - f) Motor and vacuum producer are direct coupled for efficient operation and bearings are easily accessible for maintenance.
 - g) **Exhaust muffler** available to reduce noise.





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2) Adjustments

Use the procedures in the manufacturer's manual to ensure correct adjustment of the system.

3) Preventive Maintenance Requirements

a) DAILY

(1) Operational Checks

Perform general examination of operation, listening for any unusual noises. Inspect vacuum hoses and tools for damage and trash blockage. Turn vacuum on and check all hose drops for proper operation.

(2) Closing Checks

Shake filter bags to discharge loose dirt and trash, and then empty the trash from the dirt canister. Inspect filter bags for damage and proper seating. Empty any water separators in the system.

b) WEEKLY

(1) Grease the producer shaft bearings. Apply only ONE shot per bearing of a quality, lithium base grease.(High temp resistant)

(2) Close inspection of operating mechanisms and hoses for problems. Check vacuum piping for leaks, cracks, and loose fittings. Inspect access door gaskets for cuts, wear, or leaks.

c) MONTHLY

(1) Spray lubricant on the access door latches and door knob threads.

(2) Check all hardware and fittings for tightness and clean thoroughly. Clean water separator tank and producer housings.

(3) Clean all filter bags thoroughly, replace if needed.

d) ANNUALLY (only applies if electrically driven)

(1) Have a licensed electrician measure and record, full load current readings from each of the three legs of each of the three phase electric motors.

(a) If the differential of current load exceeds 10% between the legs, or the balanced load current of all three legs has increased over 10% since the most recent measurements, order a replacement motor.

(b) Record readings in the annual log.

(2) Grease all electric motors per manufacturer's specifications.