



thoroughbredexpress

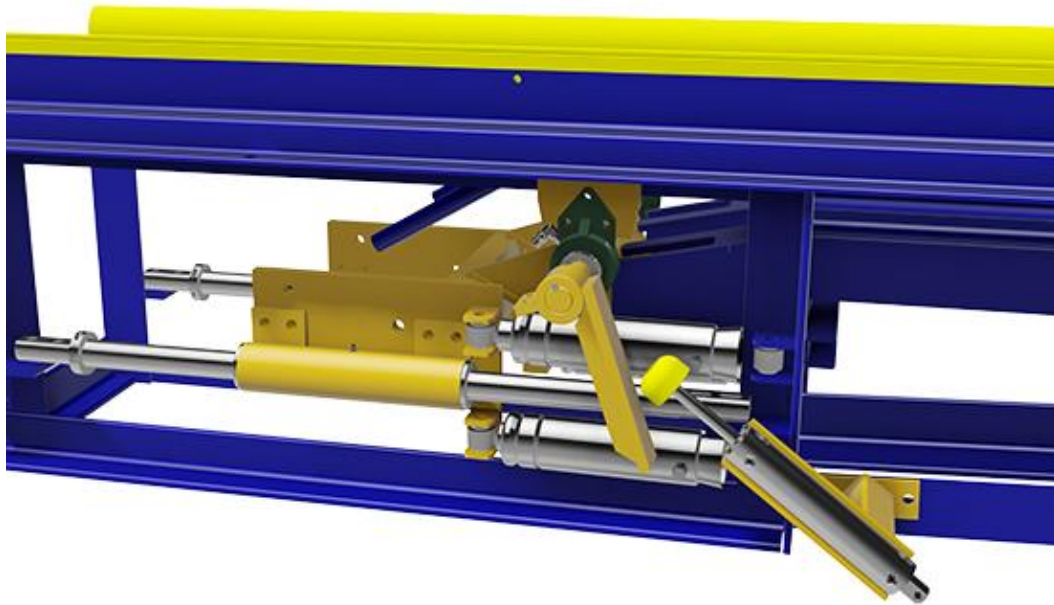
Tunnel Equipment Guide

Use this guide as a resource for learning more about the different types of tunnel equipment that we use in the car wash tunnel, as well as important guidelines about the routine maintenance services they will require.

Conveyor

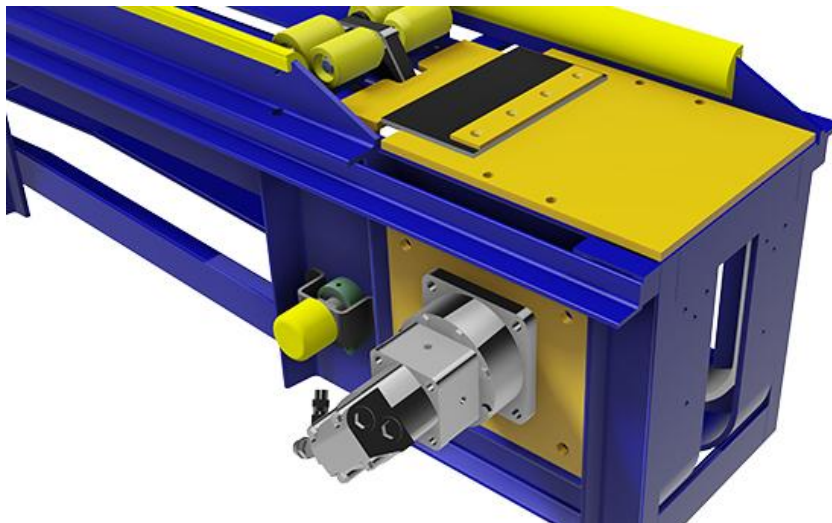
- Conveyor Style
 - Over/Under Rear Wheel Push. Hydraulic powered.
 - Rear Wheel Push - the roller comes up behind the back tire to push the car through the tunnel.
- Take-Up Section
 - The take-up section is located at the beginning of the conveyor, and consists of the following components: air cylinder, bump stop, take-up fork, 4 separate chain tension shocks, kick-plate, roller up plate, and a take-up drum.
 - **Air Cylinder** - Used to activate the **roller up fork** by extending upward against the **roller up plate** so that its forks turn up towards the conveyor and allows the rollers to carry over to the top of the track.
 - **Bump Stop** - Attached to the top of the air cylinder, protects the cylinder from impact and allows forks to reach full extension.
 - **Take-Up Fork** - Attached to the conveyor by 2 hanger bearings on its sides, the take-up fork is used to rotate upward to allow the rollers to carry over to the top of the track. Can be activated either **electronically** by the roller up button on **PBS**, or **manually** by the **kick plate** located on the right side of the entrance of the track. **Flange (hanger) bearings** require greasing **weekly**.
 - **Chain Tension Shocks** - There are 2 shocks (**4 total**) located on the bottom of both sides of the take up section that will extend toward the entrance when air pressure is applied and creates tension so the car wash can operate. The shocks are connected to the **Take-Up Slide Tube**. The air pressure can be shut off by flipping the **black shut off valve** on the air **control safety box** so that conveyor maintenance can occur.

- **Take-Up Drum** - Allows the chain to circulate while the Heco in the drive section turns the chain through the tunnel. The chain must roll directly between the two sides of the drum to keep straight. **Pillow-Block bearings** require greasing **monthly**.



- **Drive Section**

- The drive section is located at the **exit of the conveyor** and is the section of the conveyor that makes the chain move through the tunnel using hydraulic fluid power. It has a trap door, which opens to allow the roller to return to the lower level to transit to the entrance end of the tunnel. The **hydraulic motor and Heco gear box** in this section is used to **pull** the chain through the conveyor. The drive section may contain a **pulse switch** to send a signal to the **tunnel controller** and is used to **measure the movement** of the vehicle through the tunnel, or the pulse switch is located remotely in the equipment room.



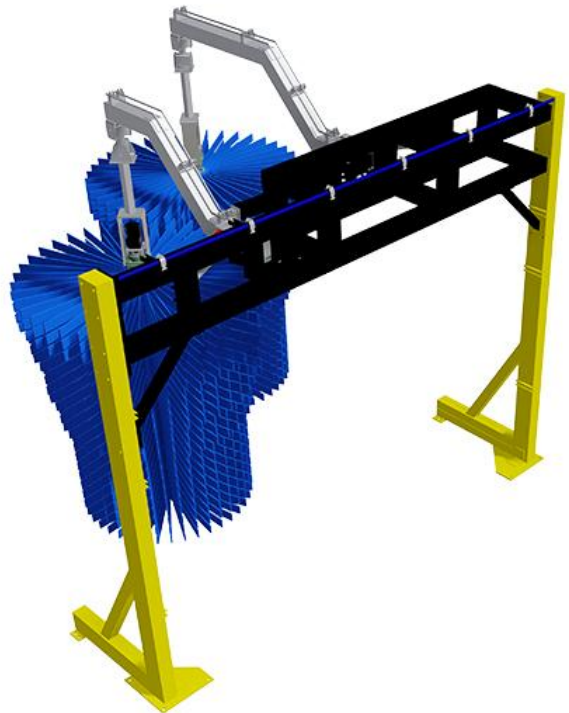
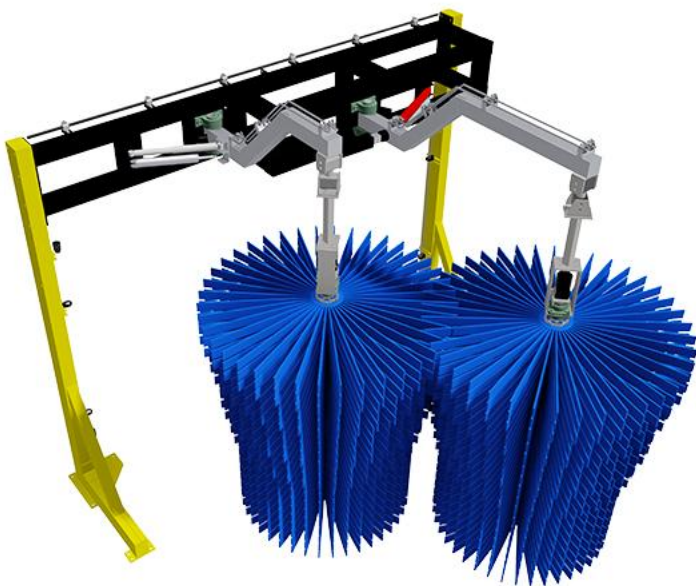
Compact Top Brush

- The compact top brush is an **electric powered** brush we use to clean the top surface of a vehicle.
- Up/Down movement of the top brush is controlled by an **air cylinder**.
- Should always rest in the up position.
- **VFD (Variable Frequency Drive)** for the top brush is located inside of the **MCC**. The VFD controls the speed that the top brush turns against the vehicle with.
- The **shock absorber** for the top brush is located on the side.
- Made of **Neoglide** material.
- Use caution when walking near the counter-weight end of this equipment, it may lower on your head during operation.
- Uses **flange** (rotational) bearings where the brush shaft connects to the motor. Requires greasing **weekly**.
- Uses **pillow-block** (pivotal) bearings where the brush arm is connected to the frame. Requires greasing **monthly**.



Entrance/Exit Wrap-around Wraps

- The entrance/exit wrap-around wraps are hydraulic fluid powered brushes that rotate **away** from the vehicle as it goes through them.
- Left/Right movement of the wraps is regulated by an **air cylinder**.
- Wraps will spin at a rate of **85-90 RPM** for conveyor speeds of **85-90 CPH**.
 - Driver Side Air Regulator set at 5-10 PSI; Passenger Side Air Regulator set at 5-15 PSI.
- Wraps will spin at a rate of **90-95 RPM** for conveyor speeds of **90-120 CPH**
 - Driver Side Air Regulator set at 10-15 PSI; Passenger Side Air Regulator set at 15-25 PSI
- When the air is shut **off**, the wraps will come **inward** toward the center of the tunnel.
- When the air is turned **on**, the wraps will move **outward** toward the walls of the tunnel.
- Made of **Neoglide** material.
- **Shocks** are located near the **air cylinder** for each brush, they are used to soften the return of the wraps outward/inward as air pressure is applied to the air cylinder.
- Uses **pillow-block** (pivotal) bearings where the brush arms connect to the frame. Requires greasing **monthly**.
- Uses **flange** (rotational) bearings where the brush core is connected to the hydraulic motor. Requires greasing **weekly**.
- Sometimes wraps will have a slight **inward** tilt that improves the performance cleaning the rear of vehicles. To add **tilt**, the **bottom** pillow block bearing for each wrap will need to be tapped $\frac{1}{8}$ " **toward** the tunnel walls.



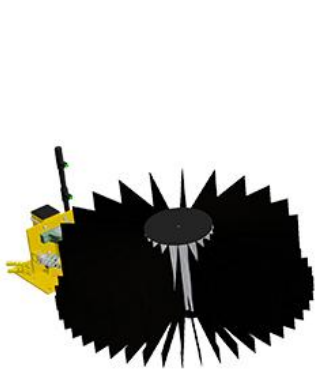
Tire Brushes

- The tire brushes are **blue and black, hard bristled**, and **hydraulic fluid powered** brushes that are fixed within the frame of the compact top brush and entrance/exit wraps at the beginning of the car wash tunnel.
- Rotate **downward** against the tire as a car is pushed by.
- The tire brush is connected to a metal frame that will extend inward toward the center of the tunnel against the vehicle's tires when air pressure is applied through an **air cylinder**.
- **Cobra style** Tire Brush
- Uses **flange** (rotational) bearings where the brush shaft connects to the hydraulic motor, and on the other end of the brush. Requires greasing **weekly**.
- Uses **pillow-block** (pivotal) bearings where each piece of the brush frame connects to the top brush frame, and to the brush attachment. Requires greasing **monthly**.
- Uses **shock absorbers** on each brush to ease the motion of brush during operation.

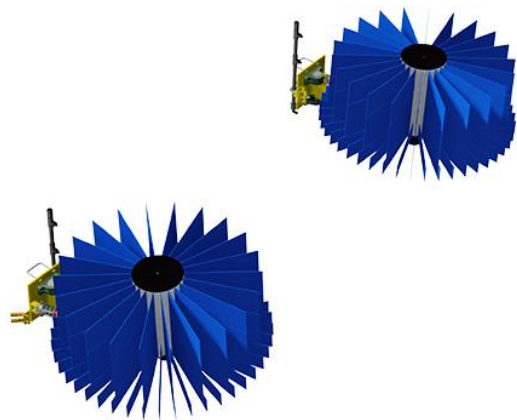
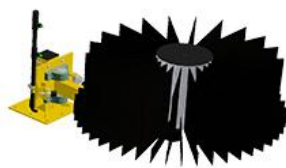


Rocker Brushes

- Typically shares a **hydraulic power pack** with the tire brushes.
- Rocker brushes will rotate **against** a vehicle as it passes through them.
- Rocker brushes will spin at a rate of **75-85 RPM** for conveyor speeds of **60-99 CPH**.
- Rocker brushes do not use an air cylinder, but the amount of travel is regulated using a **spring shock** that will compress as a vehicle is pressed against them.
- **Hydraulic motor** is located beneath the center of the brush core.
- Uses **flange bearings** (rotational) at the **hydraulic motor** connection.
- Uses **pillow-block bearings** (pivotal) where the brush arm connects to an arch.
- **Flange bearings** (rotational) will need **weekly** greasing.
- **Pillow-block bearings** (pivotal) will need **monthly** greasing.



**SFB 18in Hub
Side Washer**



**SFB 21in Hub
Side Washer**

Grill Brushes/Top Mounted Brushes

- **Grill brushes** are top mounted **hydraulic fluid powered** brushes that spin **against** the vehicle as it passes through them and have extra cleaning power on the grill of vehicles.
- The **inward** motion of the brush as a car approaches is controlled by an **air cylinder** attached on the tunnel wall side of the **brush arm**.
- As a car passes through the grill brushes, the **shock** will compress and allow the brush to swing back **outward** at its joint and still apply friction to the vehicle's surface.
- Uses **flange bearings** (rotational) at the connection of the **hydraulic motor** attached to the top of the brush. Requires greasing **weekly**.
- Uses **pillow-block bearings** (pivotal) where the brush arm connects to the arch. Requires greasing **monthly**.
- Brushes will spin at a rate of **75-85 RPM** at conveyor speeds of **60-99 CPH**.
- **Top Mounted Brushes** will not use an air cylinder, but still will utilize a spring shock to move outward as a vehicle passes through.



Front to Back Mitter Curtain

- The **Front to Back Mitter Curtains** hang from 2 **half-moon baskets** and will slowly rock back and forth on the **top surface** of a vehicle as it passes through them.
- The front-to-back motion of the mitters is driven by a **2HP electric motor** and **gearbox** mounted on the very top of the mitter arches.
- Due to the high rotation speed of the **electric motor**, the **gearbox** slows down the rotations to a slower pace and is connected to the baskets by a **drive arm**, so the **oil level** must be checked **weekly** to make sure the operation is working correctly.
- Uses **MicroClean** cloth for gentle top surface cleaning.
- **Rod End Bearings** on the ends of the **drive arm** attached to the gear reducer will need to be greased **weekly**.



Side to Side Mitter Curtains

- The **Side to Side Mitter Curtains** hang from 1 single basket and will slowly rock side to side over the top of a vehicle's surface as it passes through them.
- The side-to-side motion of the mitters is driven by a **2HP electric motor** and **gearbox** mounted on the very top of the mitter arches
- Due to the high rotation speed of the **electric motor**, the **gearbox** slows down the rotations to a slower pace and is connected to the baskets by a **drive arm**, so the **oil level** must be checked **weekly** to make sure the operation is working correctly.
- Uses **MicroClean** cloth for gentle top surface cleaning.
- **Rod End Bearings** on the ends of the **drive arm** attached to the gear reducer will need to be greased **weekly**.



Omni High Pressure Rinse/Wheel Blasters/Mirror Blasters

- The **Omni** high pressure rinse consists of **2 side manifolds** with each manifold having 10 nozzle tubes/nozzles, as well as **1 top manifold** that can either have 10 nozzle tubes/nozzles or 2 sets of 10 nozzle tubes/nozzles.
- Side manifolds will use 20 GPM combined.
- Top manifold uses 20 GPM.
- The omni manifolds are **hydraulic fluid powered** and will move **up/down (sides)** and **side-to-side (top)** as the **hydraulic motor** rotates the **drive arm**.
- The side-to-side motion of the **side omni manifolds** are controlled by an **air cylinder** and travels the side of the vehicle as it passes through to thoroughly rinse the vehicle.
- The back-and-forth motion of the **top manifold** is controlled by an **air cylinder** and will allow the manifold to remain directed at the vehicle as it passes through and will turn back toward the vehicle to rinse the back.
- **Wheel Blasters** are fixed to the tunnel ground and act similarly to the side omni manifolds, but instead utilize a **spinner** to create a circular effect to rinse wheels/wheel wells.
- **Mirror Blasters** are mounted at mirror level on the omni manifold arch and utilize high pressure water through either **spinners** or **turbo nozzles** to thoroughly rinse the mirrors/sides of vehicles.
- All high pressure tunnel equipment is set at **800 PSI** at the **Hydracell High Pressure Pump** located in the back room.



Tire Seal Tire Shine Brushes

- The **Tire Seal Tire Shine Brushes** apply tire dressing to a vehicle's tires using a stainless-steel manifold that drips chemical onto a rotating nylon brush.
- The brushes are **hydraulic fluid powered** and receive power from the **power pack** in the equipment room.
- The inward/outward motion of the tire shine brushes is controlled by an **air cylinder** that will extend when air pressure is applied, and will retract when signaled to by the **tunnel controller**.
- The air cylinder receives its air pressure from the **mac valves** mounted on the tire seal control panel.
- **FloJets** mounted on the tire shine control panel will regulate the amount of tire shine dressing that is pumped onto the brush based on programming set at the **PLC** on the control box.
- Typically applies tire dressing for 1.8 seconds every 3rd car.
- **Shocks** are mounted on the side frame of the tire seal brushes.
- **Flange bearings** (rotational) are located on the ends of each brush and will require **weekly** greasing.
- **Pillow-block bearings** (pivotal) are located where the frame connects to the steel manifold, as well as on the outer legs of the frame and will require **monthly** greasing.



Blowers/Mammoth Extensions/Gators/Flip-Nozzle

- Blowers are mounted on the blower arch frame and are used in drying the vehicle as it passes through them.
- Most blowers are powered by **15 HP electric motors** with the exception of the **flash dryer** which is powered by a **10 HP**.
- The **flash dryer** is fixed ~ 3' from the spot-free rinse and is designed to speed up the drying process while being in a wet environment.
- Each blower is equipped with a **gator** that is normally closed during operation by design to allow the blowers to ramp up faster when needed. When the **gator** receives a signal to open from the **tunnel controller**, its **air cylinder** will move the gator open to allow more air flow into the housing and create a stronger gust.
- **Flip-Nozzles** are nozzles designed to “flip” or move with the vehicle as it passes underneath using a small **air cylinder**.
- **Mammoth Trunk Extensions** are attached to blowers and have 36 individual trunks that are positioned closer to a vehicle so that the sides and rear dry better.
 - Mammoth trunk extensions can utilize an **air cylinder** to allow the trunks to follow the rear of the vehicle from side-to-side as it passes through them.
- Blowers receive their power to the motors from the **MCC**.



Double Arch

