BULLDOG WHEEL BRUSH INSTALLATION MANUAL
Part # WHEELBRUSHHYD01 - WHEELBRUSHHYD02
WHEELBRUSHELC01 - WHEELBRUSHELC02

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Equipment Utilities

<table>
<thead>
<tr>
<th>WHEELBRUSHHYD01 (Hydraulic Drive)</th>
<th>WHEELBRUSHHYD02 (W/Wheel Blaster)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOTORS: Not Applicable</td>
<td>MOTORS: 208VAC/4.8FLA-460VAC/2.2FLAS, 3PH</td>
</tr>
<tr>
<td>SIGNAL: 24 or 120VAC From CW Controller</td>
<td>SIGNAL: 24 or 120VAC From CW Controller</td>
</tr>
<tr>
<td>VALVE COIL: 2.9 WATTS</td>
<td>VALVE COIL: 2.9 WATTS UL® CERTIFIED</td>
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<table>
<thead>
<tr>
<th>PNEUMATICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 SCFM @ 100 PSI (max)</td>
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</table>

<table>
<thead>
<tr>
<th>HYDRAULIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>5GPM @ 1000PSI</td>
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<table>
<thead>
<tr>
<th>WATER</th>
</tr>
</thead>
<tbody>
<tr>
<td>8GPM @ 40PSI (For Brushes)</td>
</tr>
<tr>
<td>18GPM @ 1000PSI (For Optional HP Wheel Blasters)</td>
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</tbody>
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Equipment Specifications

☐ Two Bulldog Wheel Brushes (D-S and P-S)
☐ Powder Coated Aluminum Construction
☐ Unique Auto Retract Function
☐ Corrosion Resistant Bearings Throughout Equipment
☐ Hydraulic or Electric Drive
☐ Feather Tipped Brushes
☐ Ultra Low Lead-In and Exit Guide Rails
☐ 151” Tunnel Space Required for the Driver Side Applicator
☐ 116” Tunnel Space Required for the Passenger Side Applicator
☐ 24 or 120 VAC Air Panel

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<tr>
<td>WHEELBRUSHELC01 - WHEELBRUSHELC02</td>
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</tbody>
</table>

☐ 1 - Bulldog Wheel Brush Air Panel ................................................................ Pic #3
☐ 1 - Bulldog Wheel Brush Unit (D-S) ................................................................ Pic #1
☐ 1 - Bulldog Wheel Brush Unit (P-S) ................................................................ Pic #2
☐ 2 - Wheel Blaster Mounts (Optional) ................................................................. Pic #4
☐ 2 - Wheel Blaster (Optional) ............................................................................ Pic #5
Suggested Installation Tools and Materials

- Hammer Drill with 5/8” Drill bit
- Sledge Hammer
- Set of Standard Combo Wrenches
- Measuring Tape
- Standard Screw Drivers
- Air Lines 3/8” Red and Blue
- 1/2” Hydraulic Hose (for hydraulic driven unit)

- (16) Wedge Anchor Bolts 5/8” x 6”
- Fasteners (to secure panel to wall)
- Screw Gun
- Safety Goggles
- Torpedo Level
- 1/2” Water Hose
- 3/4” Hydraulic Hose (for Opt Wheel Blaster)

Notes and safety Symbols

Where necessary, important points will be highlighted in this manual, using the following symbols:

**NOTE:** PROVIDES FURTHER INFORMATION!

**STOP!** A PRECAUTION IN ORDER TO AVOID EQUIPMENT MALFUNCTION OR ERROR!

**WARNING!** DANGEROUS SITUATION WHICH MAY CAUSE EQUIPMENT DAMAGE, PERSONAL INJURIES OR FATALITIES!
**Installation Instructions for Applicators SUPERSHINER0001 for TUNNEL**

- Open all boxes and crates and verify that you have all the required components and all your installation materials.

- Locate the area where your MCWW Bulldog Wheel Brush will be installed and using picture #5, verify that sufficient room will be available for the required working envelope.

![Pic #5: Working Envelope](image)

**STOP!**

READ BELOW IF YOU HAVE PURCHASED A MCWW BULLDOG ELECTRIC DRIVE

YOUR MCWW BULLDOG ELECTRIC DRIVE IS SHIPPED WITH BOTH ELECTRICAL CORDS NOT CONNECTED TO THE MOTOR. IT IS HIGHLY RECOMMENDED TO CONNECT THE CORDS BEFORE INSTALLING THE UNIT ON THE FLOOR. ACCESS TO THE MOTOR’S JUNCTION BOX IS QUITE RESTRICTED AFTER UNIT IS INSTALLED ON THE FLOOR.

1- USING A FORK LIFT TRUCK OR SAW HORSES, BRING THE UNIT TO WORKING HEIGHT AND REMOVE THE GUARD SURROUNDING THE MOTOR.

2- SELECT THE PROPER ELECTRICAL SCHEMATIC, WHICH IS SHOWN IN THE MOTOR JUNCTION BOX. THE MOTOR CAN BE CONNECTED 208VAC OR 460VAC ONLY!

3- USE #6 RING TERMINALS TO CONNECT EACH WIRE TO THE MOTOR TERMINALS.

4- CLOSE THE MOTOR JUNCTION BOX AND REASSEMBLE THE MOTOR GUARD.
Position the Passenger Side Bulldog Brush 107” from the INSIDE EDGE OF THE INSIDE GUIDE RAIL to the BACK OF THE BRUSH BASE PLATE (as shown below on picture #6). Using a marker, mark the location of both exit and entrance base plates to the floor.

Position the driver’s side brush FULLY RETRACTED and make sure that both the EXIT TRAILING EDGE and the ENTRANCE LEADING EDGE of the plastic rail of the brush are LINED UP WITH THE INSIDE EDGE of THE OUTSIDE GUIDE RAIL. If the plastic rails of the brush are not perfectly aligned with the guide rail, move the base plate and relocate it. Using a marker, mark the location of both base plates to the floor.

Open and close each Bulldog Brush and check for any interference with any existing equipment in your wash bay.

Extend the driver's side brush completely and mark the conveyor outside guide rail on the Entrance End of the Brush where the guide rail will have to be cut off in order to clear the Brush push bar when fully extended.

Retract the brush and mark the conveyor outside guide rail on the Exit END of the brush when fully retracted. Verify again that the back edge of both brush plastic rails are aligned with the inside edge of the outside conveyor guide rail when the applicator is fully retracted (see Picture #7 below).
Cut the conveyor outside guide rail between the two marks.

If needed, weld some support to secure the guide rail properly. You may want to add a support weldment from the entrance guide rail to the base of the conveyor for added safety.

Fasten each brush to the floor using 5/8" X 5 or 6" WEDGE ANCHOR BOLTS. Extend the brush arms and level them by using the leveling bolts located in the front and in the back of the base plate. When leveled, fill the void under the base plate with SHIMS and tighten the anchor bolts (see Pic #8). The shims permit the entire base plate to firmly sit on solid ground, allowing a more stable base for the brush unit.

Adjust the height of the PASSENGER'S SIDE UNIT in align with the bottom of the brush, ABOUT 1/2" OFF THE FLOOR. Loosen the fasteners securing the bearings in each base plate, and raise or drop the bearings according to the required height.

Adjust the height of the DRIVER'S SIDE brush ABOUT 1/2" OFF THE CONVEYOR TOP BRIDGE. Verify that any dollies can ride freely under the brush frame without hitting it. If needed, SLIGHTLY RAISE THE BRUSH HIGHER. Loosen the fasteners securing the bearings in each base plate and raise or drop the bearings according to the required height.

Installation Instructions for the Bulldog Wheel Brushes Air Panel:

The Bulldog Wheel Brush Air Panel requires ONE ELECTRICAL CIRCUIT (CHANNEL) coming from the Car Wash Controller. The circuit has to be 24 or 120VAC.

NOTE: Verify the voltage on the side on the air solenoid valve before apply power to the unit.

The air panel also requires compressed Air at 100 PSI and capable of at least 2 SCFM (See Picture #9).
Mount the Air Panel in the mechanical room or on any wall in a CLEAN, DRY AREA. Remove the air panel from the frame by unscrewing the two front knobs.

Secure the frame to the wall using the two 1/4” mounting holes (as shown in Picture #10).

**Pneumatic Installation:**

Locate your source of compressed air and install a 3/8” AIRLINE TUBE from the supply air valve to the air panel inlet port (see picture #9).

**NOTE:** IT IS IMPERATIVE TO SUPPLY THE DELIVERY PANEL WITH CLEAN, DRY, COMPRESSED AIR. ANY AMOUNT OF MOISTURE, VAPORIZED OIL, OR ANY OTHER IMPURITIES WITHIN THE MAIN AIR SUPPLY MAY AFFECT THE PERFORMANCE OF THE EQUIPMENT AND LEAD TO PREMATURE WEAR OR MAJOR DAMAGES TO THE DELIVERY UNIT OR ITS COMPONENTS.

Using the schematic shown on Picture #11, pull and connect ONE 3/8” RED AIRLINE TUBE from the TEE FITTING MOUNTED ON THE 4 WAY VALVE on the air panel to the exit side base plate of the P-S BRUSH.

Pull and connect ONE 3/8” BLUE AIRLINE TUBE from the D-S EXTEND AIR REGULATOR located on the air Panel to the exit side base plate of the D-S BRUSH.

Pull and connect ONE 3/8” BLACK AIRLINE TUBE from the 4 WAY SOLENOID AIR VALVE to the wash bay, BETWEEN THE TWO BRUSHES and tee off to EACH BRUSH.

Connect ONE 3/8” BLACK AIRLINE TUBE from the 4 WAY SOLENOID AIR VALVE to the wash bay, BETWEEN THE TWO BRUSHES and tee off to EACH BRUSH.
Hydraulic Installation:

If you are installing a HYDRAULIC DRIVEN BULL DOG WHEEL BRUSH SYSTEM, pull a 1/2” HOSE SAE 2000 WP terminated with a 1/2” JIC FEMALE fitting from one power pack hydraulic outlet circuit capable of at least 5GPM @ 1000PSI, to the EXIT END OF THE D/S BRUSH (as shown in Picture #12) and connect it to the PRESSURE (inward) 1/2” JIC MALE FITTING mounted on the manifold block (see Picture #13 for Hydraulic Connection Fittings).

Pull and connect another 1/2” HYDRAULIC HOSE terminated with two 1/2” JIC FEMALE fittings from the RETURN (outward) 1/2” JIC MALE fitting located of the D/S BRUSH MANIFOLD to the PRESSURE (inward) 1/2” JIC MALE fitting located on the P/S BRUSH MANIFOLD.

Finally, pull and connect another 1/2” hose between the RETURN (outward) 1/2” JIC MALE fitting located of the P/S BRUSH MANIFOLD to the RETURN INLET of your hydraulic power pack as shown in Picture #12.
Water Supply Installation:

Each brush is equipped with a water manifold with 10 nozzles spraying directly to the brush. The volume required for each brush is about 5 GPM @ 40 PSI. Each Bulldog Brush Unit comes with a 1/2" HOSE BARB WATER FEED INLET FITTING located on the utility manifold (see Picture #13). From your water/chemical source, pull a 1/2" RUBBER HOSE and TEE-OFF TO EACH BRUSH as shown in Picture #14.
Optional Wheel Blaster Kit Installation:

- **Locate** the two *WHEEL BLASTER MOUNTING BRACKETS* and secure one on the exit side of each Bulldog Brush (as shown in Picture #15). Mount the *WHEEL BLASTER* unit on the bracket. The Wheel Blaster can be mounted in three locations; select the appropriate one depending on what coverage you may want to achieve: The furthest position from the vehicle to be washed will allow for larger coverage. The closest position will have a narrower coverage but also greater impact on the vehicle.

- **Locate** the two *JIC FITTINGS*, supplied with the Wheel Blaster kit, and install in the middle of the utility manifold between the two existing Hydraulic fittings (see Picture #13).

- **Turn** each Wheel Blaster inlet filter toward the utility manifold (as shown in picture #15) and install the appropriate *1/2" HYDRAULIC HOSE* supplied with the kit. The hose will be connected from the middle fitting located on the utility manifold to the Wheel Blaster Inlet fitting.

- **Pull** a *3/4" SAE 1250WP HYDRAULIC HOSE* from the pumping station and **TEE DOWN** to two *1/2" SAE HYDRAULIC HOSES* closed with *1/2" JIC FEMALE FITTING* (as shown in Picture #16).

- **Connect** each hose to the *HP WHEEL BLASTER INLET FITTING* which was previously installed and is located in the middle of the utility manifold (see Picture #13).
**Electrical Installation:**

- If you are installing an **ELECTRIC DRIVEN BULL DOG WHEEL BRUSH SYSTEM**, you may want to connect the **AIR PANEL SOLENOID VALVE** on to a circuit coming from **ONE CHANNEL** of the **CAR WASH CONTROLLER**. This will allow the brushes to be extended only when the car reaches the Bull Dog Brush area. It will also permit the operator to program the Bull Dog Brush as an optional service at the wash. The motor starters may also be connected to **ANOTHER CHANNEL** of the **CAR WASH CONTROLLER**. If desired, the motor starters may be also connected with the **CONVEYOR**, allowing the brushes to run only when the conveyor is also running. This method is the most preferable one, limiting the wear on the system generally caused by frequent START-AND-STOP of the units when cycled ON and OFF for each car.

**NOTES:** THE MATERIAL REQUIRED FOR CONNECTING THE AIR, AS WELL AS THE OPTIONAL STARTER PANEL, ARE THE CUSTOMER’S RESPONSIBILITY! ALL WORK HAS TO COMPLY WITH LOCAL AND NATIONAL CODES!

- Each **MOTOR** driving the brushes is a **1.5 HP 3 PHASES MOTOR** that can be either supplied at **208 VAC** or **460 VAC**. Each starter thermal overload protection will have to be set at the **FULL LOAD CURRENT (FLA)** value for the voltage used to power the motor (see table below). The FLA value of the motor can also be read off the motor name plate located on the side of the motor.

<table>
<thead>
<tr>
<th>HP</th>
<th>208V</th>
<th>460V</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2</td>
<td>4.0A</td>
<td>2.0A</td>
</tr>
</tbody>
</table>
**NOTE:** NEITHER OF THE MOTOR ELECTRICAL CABLES ARE CONNECTED TO THE MOTOR LEADS WHEN SHIPPED FROM THE MCWW FACTORY. OPEN THE MOTOR CONNECTION BOXES AND CONNECT TO THE MOTOR LEADS FOLLOWING THE APPROPRIATE CONNECTION DIAGRAM BELOW (PICTURE #17) OR ON THE MOTOR PLATE FOR PROPER VOLTAGE.

![Diagram of Motor Connection](image)

**WARNING!**
EACH MOTOR HAS TO BE PROTECTED WITH AN OVERLOAD RELAY SET AT THE MOTOR RATED FULL LOAD CURRENT FOR THE PROPER VOLTAGE:

- 4.0 AMPS @ 208 VAC - 3PH
- 3.8 AMPS @ 230 VAC – 3PH
- 2.0 AMPS @ 460 VAC – 3PH

**WARNING!**
EACH MOTOR STARTER AUXILIARY CONTACT HAS TO BE CONNECTED IN SERIES WITH THE AIR RETRACT PANEL (SEE PICTURE #18).
MCWW OVERDRIVE® INVERTER BOX INSTALLATION:

☐ If you have purchased the ELECTRIC DRIVE BULLDOG™ with the MCWW OVERDRIVE® INVERTER BOX, connect each motor to terminal #2 and terminal #3. Connect the box to an electrical supply of 120-208 VAC/3PH/30 AMPS CIRCUIT ONLY! (See picture #19)

☐ Connect the RUN SIGNAL INPUT (terminal #4) to one function of your car wash controller.

☐ Connect the air panel to one function of your car wash controller and through TERMINAL #5.
**Driver Side Positive Stop Installation:**

- **After** start up, verify the positive stop adjustment on the applicator when fully retracted. Make sure the exit end of the applicator is **FLUSH WITH THE INSIDE EDGE OF THE OUTSIDE GUIDE RAIL** (see Pic #20). Adjust the positive stop (mounted on the applicator) as needed.

- **Locate** the **FLOOR MOUNTED POSITIVE STOP** and position it behind the main beam on the exit end of the driver side applicator (see Pic 21 below).

- **Secure** the floor-mounted positive stop to the floor using wedge anchor bolts (see Picture #22). You may insert shims behind the bumper stop for adjustment or relocate the bumper stop like shown on Picture #25 for height adjustment.

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**Pic #20: Guide Rail**

**Pic #21: Floor Mounted Positive Stop**

**Pic #22: Anchors**

**Pic #23: Shims**

**Pic #24: Bumper Stop**

**Pic #25: Height Adjustment**
Start Up Procedures:

✓ ✏ Turn ON the air supply to the air panel and check for air leaks. Close the flow control fittings for both brushes and extend cylinders: TWO FITTINGS FOR EACH CYLINDER. Reopen each flow control fitting by unscrewing the knob 4 FULL TURNS. Push the air solenoid valve manual override button and set the DRIVER’S SIDE EXTEND REGULATOR AT 20 PSI and the P/S EXTEND REGULATOR AT 30 PSI (NO MORE THAN 40 PSI). Confirm that both Bulldog Wheel Brushes are extended. If one of the brushes is retracted, check for proper air line connection. Check for air leaks. Release the override button.

☐ Turn ON the water source to the two brushes and verify that no nozzles are clogged. Clean as needed.

STOP!
USING DETERGENT WITH GOOD LUBRICITY QUALITIES IN THE WATER IS RECOMMENDED FOR THE BRUSHES.
NOT DOING SO MAY CAUSE PREMATURE WEAR ON THE BRUSHES OR LEAD TO EXCESSIVE FORCES APPLIED ON THE DRIVE UNITS.

☐ For HYDRAULIC DRIVEN BRUSH, by-pass the hoses for each motor and turn ON the hydraulic unit to the brushes, increase the hydraulic flow and let it run for a minute. Stop the hydraulic unit and reconnect each motor to the hydraulic hoses and start the power unit again. Adjust the hydraulic flow until the brushes are spinning at about 180 to 220 RPM. Check for leaks. Check for proper rotation of both brushes:

WARNING!
THE BRUSHES HAVE TO ROTATE IN A DOWNWARD MOTION WHEN BRUSHING AGAINST THE VEHICLE’S WHEELS. IMPROPER ROTATION MAY RESULT IN EQUIPMENT AND/OR VEHICLE DAMMAGE.

☐ For ELECTRIC DRIVEN BRUSH, manually jog ON each starter by pushing a screwdriver in the starter front window (see Picture #18). Check for proper rotation (see notes above). In case of incorrect rotation, shut down the power to the starter unit and swap two wires coming from the starter to the motor and manually test again. While the motor is running, measure the current through each lead going to the motor by using an amp-meter. Verify that each motor is not pulling more current than specified on the motor name plate.

STOP! USING DETERGENT WITH GOOD LUBRICITY QUALITIES IN THE WATER IS RECOMMENDED FOR THE BRUSHES. NOT DOING SO MAY CAUSE PREMATURE WEAR ON THE BRUSHES OR LEAD TO EXCESSIVE FORCES APPLIED ON THE DRIVE UNITS.
For ELECTRIC DRIVEN BRUSH using MCWW OVERDRIVE INVERTER BOX, turn ON the output controlling the Bulldog motors and verify for proper rotation (see notes above). In case of incorrect rotation, shut off the power to the starter unit and swap two wires coming from the starter to the motor and manually test again. While the motor is running, measure the current through each lead going to the motor by using an Amp-meter.

Turn ON the car wash controller and verify that both brushes extend and water sprays at the manifolds. Program the controller to have the brush extending on the side of the vehicle to have the brush to meet the wheel on the side, not too soon. Do not time the controller to extend the brushes in front of the vehicle.

**WARNING!**
CONFIRM THAT THE BRUSHES ARE EXTENDING ON THE SIDE OF THE VEHICLE. EXTENDING THE BRUSHES BEFORE THE VEHICLE MAY DAMAGE YOUR EQUIPMENT OR ITS COMPONENTS AND MAY VOID YOUR WARRENTY!

Test with a car. Verify that the brushes extend and meet the front wheel on the side of the vehicle and do not penetrate too much on the vehicles wheels. Adjust the penetration into the wheel by changing the EXTEND AIR PRESSURE TO EACH BRUSH:

**WARNING!**
INCREASING THE AIR PRESSURE OF THE AIR REGULATOR WILL INCREASE THE PENETRATION OF THE BRUSH INTO THE WHEEL. DO NOT APPLY TOO MUCH PRESSURE TO THE WHEEL; DOING SO MAY LEAD TO PREMATURE WEAR OF THE BRUSH, DAMAGE TO YOUR EQUIPMENT OR ITS COMPONENTS, AND MAY VOID YOUR WARRANTY!

Pic #27 Visual Damages to the Brush
Lubrication Procedures:

- Grease all bearings ONCE A MONTH. See below for greasing points.

1. Entrance End Brush Bearing (1 Fitting)
2. Exit End Brush Bearing (1 Fitting)
3. Brush Arms Bearings (8 Fittings)

Warranty and Return Procedure:

Motor City Wash Works warrants this product to be free of defects in material and/or workmanship for a period of one year. During the warranty period MCWW will at its discretion, at no charge to the customer, repair or replace this product if found defective, with a new or refurbished unit, not to include costs of removal or installation. Any product returned to MCWW for warranty has to have a Return Material Authorization Number. All shipping costs to MCWW are assumed by the customer. This is only a summary of MCWW's Limited Warranty. Please, communicate with MCWW for our complete warranty.

Prior to returning any product to MCWW, the customer must call in for a Return Material Authorization Number and a copy of our Return Material Authorization Form must be completed. The RMA number must be written clearly on the outside of the shipping package and a copy of the form must be included in the package.