DEVELOPMENT PROGRAM

500

EQUIPMENT UPKEEP

Handouts

EQUIPMENT UPKEEP HANDOUTS

Contents

ADVANCED EQUIPMENT KNOWLEDGE-501

Advanced Equipment Knowledge Handout 1-Tunnel

Air Cylinders

Air cylinders are one of the most used pieces of equipment in the car wash tunnel, with much of the equipment relying on them to function correctly. Air cylinders function by using air to extend and retract the arm. The arm extends as air enters the cylinder, and as air is released, the arm retracts. As we review each piece of tunnel equipment, we will point out the pieces that utilize air cylinders.

Shocks

Like air cylinders, shocks are commonly used and found on multiple pieces of equipment in the tunnel. Depending on the piece of equipment, shocks are used to hold tension on a pivot arm or to help the equipment move smoothly back to its home position. As we review each piece of tunnel equipment, we will point out the pieces that utilize shocks.

Bearings

Rotational bearings attach to the equipment's shaft and rotate 360 degrees as the equipment spins. On the other hand, pivotal bearings do not make full rotations and have varying degrees of movement. Pivotal bearings are attached to a pivot arm and allow equipment to move toward, around and away from vehicles.

Applicators

In addition to the foam generator and CTA you've already learned about, three other applicators are used in our tunnels.

K-nozzle

K-nozzles dispense a light foamy product onto the vehicles in a V-pattern. The angle of the nozzle will vary depending on the product being dispensed.

Max Foamer

The max foamer dispenses products applied to the vehicle from the top of the arch on which it is mounted.

Banana Foamer

Banana foamers feature a curved tube that dispenses product through a series of holes in one side of the tube.

Motors

Throughout the tunnel, many pieces of equipment are powered by motors that rotate them. These motors can be either hydraulic or electric, but they both serve the same purpose.

Hydraulic

Hydraulic motors are powered by hydraulic oil flowing in and out. The hydraulic fluid is sent from a power pack in the equipment room to the motor in the tunnel and back again. This fluid cycling causes the motor to move and the attached equipment to spin.

Electric

Electric motors are powered by electricity and individually power the equipment on which they are mounted.

Conveyor

The conveyor is the workhorse of the car wash, and it is the most critical piece of equipment in the tunnel. The conveyor is responsible for moving vehicles through the tunnel and can move several full-sized vehicles simultaneously. When referring to the conveyor, multiple components make up the piece of equipment, and each piece is important to the overall functionality of the conveyor. In Module 204, Equipment Knowledge-Tunnel, you learned about the basic components of the conveyor, the chain

and rollers and the take-up and drive sections. Now, let's review some of the additional components of the conveyor.

Chain & Rollers

The chain is a series of interlocking links that travel the length of the conveyor in a loop, and the rollers are intertwined with the chain. The rollers sit behind the rear tire and move with the chain to push vehicles through the tunnel. At our locations, we have various types of chains and rollers, but regardless of type, they all serve the same purpose and function.

Conveyor Decks

The conveyor decks refer to the surfaces that the rollers move along as they go through the tunnel. The top deck is the deck rollers travel on when moving a vehicle. When the rollers are moving from the entrance to the exit of the tunnel, but they aren't behind the tire moving the vehicle, they are on the middle deck. When rollers on the top or middle deck reach the tunnel exit, they change direction and move along the bottom deck.

Take-up Section

The take-up section is at the tunnel entrance right after the correlators. It consists of the take-up drum, roller-up forks, shocks and an air cylinder.

Take-up Drum

The take-up drum is a free-spinning wheel that allows rollers to move from the bottom deck to the middle deck and back towards the tunnel exit.

Roller-up Forks

The roller-up forks sit just before the conveyor decks start and move rollers to the upper deck. When the back tire crosses the tire switch, a signal is sent to activate the air cylinder, which moves the forks into position. After the appropriate rollers have been moved to the top deck, the air cylinder disengages and the fork returns to their home position. When not engaged, the forks will lay flat, allowing rollers to move freely to the middle deck.

Drive Section

The drive section is the last part of the conveyor and is located at the exit end. It consists of the sprocket, HECO drive and, depending on your location, the pulse switch.

HECO Drive

The HECO drive is a gear reducer that allows the hydraulic or electric motor to attach to the sprocket.

Sprocket

The sprocket is like a gear with teeth that grip chain links as the motor turns. The sprocket style and configuration will differ based on the chain style, but the function remains unchanged. The sprocket holds onto the chain and moves it from the top or middle deck to the bottom and back toward the tunnel entrance.

Pulse Switch

The pulse switch calculates the conveyor's distance traveled. Attached to the sprocket or located in the equipment room, it measures the time the photo eyes are broken as the vehicle enters the tunnel. The appropriate timing for device operation on that vehicle can be configured from that data.

Blowers

As you already know. the blowers are used to dry the vehicle and are powered by individual motors that allow blowers to function independently of one another. Additionally, some blowers will have additional components.

Blower Gates

When blowers turn on and off, the initial ramp-up takes an incredible amount of electricity and can stress the blower motors unnecessarily. To help reduce the electricity needed and stress on the

motors, the blower gates allow the motors to start unloading. In other words, air isn't flowing through the blowers as they start, which leads to less strain on the motor. Once the vehicle reaches the appropriate point in the tunnel, the blower gate will open and allow the full flow of air through the blower.

Mufflers

Mufflers dampen the sound produced by the blowers. When activated, the blowers generate over 90 decibels of sound, and reducing the sound emitted by the blowers is necessary at some locations, especially those near residential areas.

Advanced Equipment Knowledge Handout 2-Equipment Room

Motor Control Center (MCC)

Motor Starters

A motor starter turns a motor ON or OFF in an instant. When engaged, the motor starter activates the motor and immediately stops the motor when disengaged.

Variable Frequency Drive (VFD)

A variable frequency drive, or VFD, is used to help regulate the flow of electricity to a motor. By regulating the flow of electricity, the speed of the equipment can be maintained. VFDs also allow for the ramp-up of a motor. Unlike a motor starter, with a VFD, you can control the rate at which a motor reaches maximum power, which helps prolong the motor's life.

Solenoid

Solenoids are used to control the flow of water or air. Controlled by a relay in the TC, solenoids activate to engage water and airflow. Solenoids are used for chemical pumps, low-pressure water applications, and air functions.

Water Manifold

The water manifold controls the flow of all low-pressure water in the tunnel. For example, all the rinse applications dispensed via rain bars use low-pressure water. Another example would be the water used to help lubricate the brushes and mitters. The water manifold uses a ball valve and solenoid to control the flow of the water. The ball valve dictates how much water flows. By adjusting the ball valve, the amount of water flowing increases or decreases. The solenoid dictates when the water flows. When the relay on the TC activates, the solenoid receives the signal and allows the water to flow.

Chemical Pumps

For water-driven pumps, a solenoid opens and activates the water flow to the pump. As the water flows, the chemical draws from its container and mixes. We utilize two types of water-driven chemical pumps. Let’s review each type and its components.

Chemical Mixing Station

A chemical mixing station comprises four main components: a hydrominder, float, holding tank and flojet pump. The holding tank contains the solution produced when water and chemicals are mixed and added to the tank. The hydrominder is used to control when the flow of water and chemical into the holding tank occurs. Attached to the hydrominder is a float that determines when the hydrominder engages. As the solution level in the tank drops, so does the float. When the solution level reaches the minimum threshold, the float causes the hydrominder to engage. When engaged, water flows, which draws the chemical to produce the solution. The solution is then sent to the tunnel using a Flojet pump, which draws the chemical solution into the pump and then out to the tunnel.

Chemical Injection Panel

The chemical injection panel is another water-driven pump that utilizes an air solenoid, a water solenoid and a centralized water source to create and dispense chemical solutions. With a chemical injection panel, the chemical is drawn, mixed with water and sent to the tunnel simultaneously. The panel is also used to send air to the foam generators in the tunnel to assist with foaming products before application.

When the relay dictates, the air solenoid engages and sends air through a line to a T-connector. One airline will go through the air regulator and out to the foam generator. Adjusting the regulator adjusts the amount of air going to the foam generator, which then adjusts the foaminess of a product. The regulator will be capped if a product doesn’t utilize a foam generator in the tunnel. The other airline on the T-connector goes to the water solenoid. Once the air reaches the water solenoid, it engages and allows water to flow. As the water flows, it passes through an injector where the chemical is combined with the water after being drawn through the metering tip.

Booster Pump

Like the high-pressure pump, booster pumps increase the pressure of the water coming into it. However, booster pumps do not generate high-pressure water; they regulate water pressure and ensure it stays constant.

The water running through our chemical dispensers must be maintained at a specific pressure to dispense and apply products to vehicles properly. The pressure of the water entering the building will fluctuate each day. The booster pump takes that water, boosts the pressure to the appropriate level, and ensures the pressure remains constant. Depending on location, the booster pumps may be fed from an above-ground tank, below-ground tank or directly from the city water source.

Air Manifold

The air manifold controls the air cylinders in the tunnel. It comprises a series of valves that connect to a specific piece of equipment. The air pressure for each piece is also regulated in the air manifold.

Air Dryer

As the compressor generates compressed air, the air is at a higher temperature than the inside of the holding tank. As the compressed air enters the tank, the temperature difference creates condensation, which builds up in the tank. This condensation then gets into the airlines and can cause equipment issues. The air dryer removes the moisture in compressed air to prevent these issues.

Reclaim

At some of our locations, we utilize a reclaim unit. The reclaim unit recaptures water used in the wash process, filters it, and reuses it in the tunnel. Once the water leaves the tunnel, it goes through a series of settling tanks that remove large debris and materials from the water. The water then goes through a final filtration in the reclaim unit before being used in the tunnel. Typically, reclaim water is used for high-pressure rinses and wheel blasters, among other things.

GREASING-502

Greasing Handout 1-Greasing Overview

Grease is a lubricant composed of a base oil, thickener, and additives. It reduces friction between moving parts, prevents corrosion, protects against contaminants, and acts as a seal to prevent dirt and moisture ingress. Completing greasing as scheduled ensures smooth equipment rotation and reduces friction, wear, and heat buildup in bearings. Additionally, greasing extends bearing life by reducing metal-to-metal contact, prevents rust and corrosion, and improves equipment efficiency by reducing power consumption.

Bearings

Bearings are mechanical components that support and guide rotating or sliding machine parts, reducing friction between moving surfaces. There are two types of bearings: ball bearings and roller bearings. Ball bearings use spherical balls as rolling elements, while roller bearings use cylindrical or tapered rollers.

Depending on their placement on equipment, bearings will function as rotational or pivotal bearings. The differences between the two are where they attach to the equipment and their degree of rotation. Rotational bearings are attached to the equipment's shaft and rotate 360 degrees as the equipment spins, whereas a pivotal bearing is attached to a pivot arm and has varying degrees of movement but never makes a full 360-degree rotation.

Greasing Schedule

At our locations, we perform the greasing procedure weekly. However, the bearings that are greased will vary depending on the week. This is due to pivotal bearings being greased less frequently than rotational bearings. Because pivotal bearings only have a limited rotation, the bearing does not use grease at the same pace as rotational bearing which are performing full rotations multiple times a day at high speeds. So, pivotal bearings are greased monthly while rotational bearings are greased weekly. Your management team will advise you on the exact schedule for your location.

Grease Zerk (Fitting)

A grease zerk is a small metal fitting that is used when injecting grease into equipment bearings. It provides a one-way valve to prevent contaminants from entering and enables the precise application of grease to bearings and other components.

Under-Greasing vs. Over-Greasing

Another key to greasing is ensuring that the right amount of grease is added to each bearing. Improper greasing can lead to premature wear and failure of a bearing. Under-greasing may lead to increased friction and heat, causing bearing damage. Over-greasing can cause excess heat due to the churning of the lubricant and lead to seal damage, resulting in lubricant leakage. To prevent over-greasing, apply grease gradually and stop once you feel any indication that the grease has reached the necessary areas within the bearing. Remember, it's always better to slightly under-grease than over-grease a bearing.

Greasing Handout 2-Greasing Procedure

The following are the steps for completing the greasing procedure:

Ensure all power is turned off and follow lockout/tagout procedures before starting greasing.

1. Load the grease gun with the appropriate grease and attach a flexible hose and coupler to the grease gun.
2. Locate grease fittings on the equipment and inspect the fittings for blockage or damage.
3. Use a cleaning rag to wipe away old grease and dirt from the fittings.
4. Securely attach the grease gun coupler to the grease fitting.
5. Gradually apply grease and stop once you feel any indication that the grease has reached the necessary areas within the bearing.
    - Remember to avoid over-greasing.
6. Inspect for leaks around the fittings after greasing.
7. Wipe away excess grease with a cleaning rag and dispose of used rags and cleaning materials properly after use.
8. Repeat Steps 2-7 for all appropriate grease fittings.

FOAMER & APPLICATOR MAINTENANCE-503

Foamer & Applicator Maintenance Handout

The following are the common maintenance tasks performed on foamers and applicators.

Cleaning Foam Generators

Foam generators are tubes that contain course, sponge-like material that chemicals move through once the chemical is dispensed from the equipment room. To ensure foam generators are always clean and functioning properly, perform the following steps:

1. Shut off the chemical using the TCS cabinet relay switch.
2. Disassemble the foam generator tube to expose the foaming pads.
3. Inspect for damage or wear. Replace as necessary.
4. Use a mild detergent and water to clean the pads.
5. Reassemble the applicators.

Cleaning Foot Valves

Foot valves filter out potential solids and keep chemical lines full. To maintain foot valves, perform the following steps:

1. Remove the stinger from the bucket.
2. Wipe built-up chemicals off the filter screen.
3. Check the foot valve screen for damage.
4. Replace if necessary.

Cleaning Applicators

Applicators are used to direct product towards a region(s) of the vehicle. To ensure that applicators do not get clogged, perform the following steps:

1. Use a tip cleaner to break up debris or coagulated chemicals.
2. Turn on the chemical to flush out the debris.
3. If necessary, remove and clean the applicator piece by piece with mild detergent and water.

SOLENOIDS-504

Solenoids Handout

Replacing a solenoid in a car wash system involves careful attention to detail to ensure the new solenoid functions correctly. The following are the steps to safely and effectively replace a worn or defective solenoid to ensure optimal performance and reliability.

1. Ensure the car wash system is powered off to prevent electrical shock or injury.
2. Close the ball valve on the water supply line and open a valve to relieve any pressure in the system.
3. Disconnect the power supply to the solenoid to avoid electrical hazards.
4. Label or take a picture of the electrical connections to ensure proper reconnection later.
5. Unscrew any mounting brackets or screws holding the solenoid in place using a screwdriver or wrench.
6. Gently remove the old solenoid from its position.
7. Inspect the new solenoid and ensure it is your system's correct type and configuration.
8. Apply Teflon tape or thread sealant to the threads of the new solenoid, if necessary.
9. Secure the new solenoid in the mounting position using screws or brackets.
10. Reconnect the electrical wires to the new solenoid, following the labels or reference picture.
11. Open the ball vale on the water supply line.
12. Turn the power supply back on to the solenoid and activate the solenoid to ensure it operates correctly, checking that it opens and closes as intended.
13. Ensure all electrical connections are secure.
14. Observe the solenoid during daily operations to confirm no issues.

INJECTORS-505

Injectors Handout

Replacing a solenoid in a car wash system involves careful attention to detail to ensure the new solenoid functions correctly. The following are the steps to safely and effectively replace a worn or defective injector to ensure optimal performance and reliability.

1. Turn off the relay in the Tunnel Controller for the injector you intend to replace.
2. Shut off the water supply to the injector.
3. Carefully note or label the tubing and hoses to ensure proper reconnection later.
4. Use a wrench or pliers to disconnect the tubing and hoses from the injector ports.
5. Carefully remove the old injector from the system. If the injector is mounted, unscrew it from its mounting position using a screwdriver or wrench.
6. Inspect the new injector to ensure its configuration is the correct type and configuration.
7. Apply Teflon tape or thread sealant to the threads of the new injector if required.
8. Secure the new injector in the mounting position using screws or bolts.
9. Reconnect the tubing and hoses to the appropriate ports, ensuring a secure fit.
10. Match the labels or notes during disconnection to ensure proper reconnection.
11. Turn on the water supply to the injector you replaced.
12. Turn on the relay in the Tunnel Controller for the injector you replaced.
13. Inspect the connections for any leaks.
14. Activate the injector to ensure it operates correctly and delivers the correct chemical mix.
15. Ensure all connections are secure and there are no signs of leaks.
16. Observe the system briefly to confirm the injector is functioning as expected.

MAC VALVES-506

MAC Valves Handout

Replacing a MAC valve involves several steps to ensure the process is performed safely and effectively. To replace a MAC valve, perform the following steps:

1. Turn off the relay in the Tunnel Controller for the MAC valve you intend to replace.
2. Disconnect the air supply to the valve you intend to replace.
3. Carefully note or label the electrical connections to ensure proper reconnection later.
4. Use a screwdriver or appropriate tool to disconnect the wires from the solenoid.
5. Use a wrench or pliers to disconnect the air tubing from the valve ports.
6. If the valve is mounted, unscrew it from its mounting position using a screwdriver or wrench.
7. **Prepare the New Valve**:
8. Inspect the new MAC valve to ensure its configuration is correct type and configuration.
9. Apply Teflon tape or thread sealant to the new valve's threads if required.
10. Secure the new valve in the mounting position using screws or bolts.
11. Reconnect the air tubing to the appropriate ports, ensuring a secure fit.
12. Reattach the electrical wires to the solenoid, matching the labels or notes taken during disconnection.
13. Reconnect the air supply to the valve you replaced.
14. Turn off the relay in the Tunnel Controller for the MAC valve you replaced.
15. Activate the valve to ensure it is operating correctly.
16. Ensure all connections are secure and no signs of air leaks.
17. Observe the system briefly to confirm the valve is functioning as expected.

WEEKLY PM CHECKLIST-507

Weekly PM Checklist Handout 1-Equipment Room Maintenance

The following are the tasks for the Equipment Room Maintenance section of the Weekly PM Checklist:

Salt Tank Level

Check if the salt in the salt tank is over halfway full.

- If you notice the salt level is low, fill the tank until it reaches above the halfway mark. This ensures the water softener functions correctly and prevents scale buildup in the equipment.

Oil Levels in Powerpacks

Use the sight gauge to check the oil level.

- If it's below the 3/4 mark, top it up with the recommended oil type until it reaches the desired level.

Air Compressor Settings

Ensure all air compressor tank drains are set to 10 seconds every 4 hours.

- Refer to the air compressor manual to adjust the timer settings to 10 seconds every 4 hours to prevent moisture buildup in the tanks.

Air Compressor Operation

Check all air compressors to ensure they are operating correctly and document any issues in the notes section if they are not operating correctly.

> ***Example:*** If pressing the test button does not activate the compressor, check for tripped breakers or loose connections and document the findings in the notes section for further action.

Air Compressor Pressure Range

Use the pressure gauge to check the PSI.

- If the pressure is outside the 140-175 PSI range, adjust the regulator until the correct pressure is achieved.

Air Compressor Oil Levels

Using the sight gauge, check if the oil in the air compressors is at the appropriate levels.

- If the sight gauge shows the oil level is low, add the recommended compressor oil until it reaches the correct level.

Air Compressor Oil Condition

Inspect the oil in the air compressors to ensure it is not milky.

- Replace the oil immediately if it is milky. Milky oil indicates water contamination. Drain the contaminated oil, replace it with fresh oil, and check for sources of water ingress.

Chemical Pumps

Open the drain valve on the air separators to release any accumulated water, ensuring the pumps operate efficiently.

Chemical Lines

Check if all chemical lines are free of backflow issues.

- If you notice air bubbles in the lines, use a priming pump to clear the lines of air and restore proper chemical flow.

Air Leaks

Listen for any air leaks in the equipment room.

- If leaks are detected, spray soapy water on suspected areas. If bubbles form, tighten fittings or replace damaged hoses to stop the leak.

Chemical Delivery Panels

Use a pressure gauge to check the PSI.

- Adjust the regulator to maintain a consistent pressure between 200-250 PSI.

Foot Valves

Remove and clean any debris from the foot valves and replace damaged valves to prevent leaks or blockages.

High-Pressure Pumps

Use a pressure gauge to check and adjust the high-pressure pumps to the specified PSI settings.

- Omni/Side Blaster: 500 PSI
- Prep: 1,200 PSI

Thermostat Settings

Check if the thermostat is set to the appropriate temperature (Winter: 55 degrees, Summer: 70 degrees).

- Adjust the thermostat if necessary.

Grit Trap

Pump excess water from the grit trap using the grit trap water removal guide and upload a picture of the water level if necessary.

Weekly PM Checklist Handout 2-Tunnel Maintenance

The following are the tasks for the Tunnel Maintenance section of the Weekly PM Checklist:

Entrance Photo Eyes

Gently wipe the photo eyes with a microfiber towel to remove any dust or debris that could interfere with their function.

Foam Generators

Disassemble the foam generators and clean the scrubbies to remove soap build-up, ensuring a consistent foam output.

VPD Functionality

Verify if the VPD is functioning properly.

- If the VPD is not working, check the power supply and connections. Refer to the troubleshooting guide to resolve common issues.

Tunnel Lights

Ensure all tunnel lights are functioning (overhead lights, colored LEDs, indicator lights, and signage).

- Replace or repair the lights if they are not functioning.

Timing Settings

Use the control panel to check and adjust the timing settings for different components to ensure they activate at the correct time.

Tunnel Camera Lenses

Wipe the camera lenses with a microfiber towel to remove any smudges or dirt that could obstruct the view.

Weekly PM Checklist Handout 3-Conveyor Maintenance

The following are the tasks for the Conveyor Maintenance section of the Weekly PM Checklist:

Chain Tension

Use a tension gauge to measure the chain tension.

- Adjust the tension system as necessary if it is outside the 70-80 PSI range.

Chain Tension Check

Check the position of the take-up carriage.

- If the take-up carriage is at the end of its travel, remove a few links from the chain to maintain proper tension.

Grates

Check all grates and reposition or replace them to ensure they are flat and secure, with the rough side facing up for better traction.

- Adjust or replace the grates if necessary.

Take-up Section

Verify if the take-up section plate is secure.

- Tighten any loose bolts or replace damaged components to secure the take-up section plate.

Take-up Door

Inspect the rubber pads for wear and tear.

- Replace any worn-out pads to maintain a proper seal.

Air Leaks

Listen for any air leaks in the take-up section.

- If leaks are detected, spray soapy water on suspected areas. If bubbles form, tighten fittings or replace damaged hoses to stop the leak.

Conveyor Decks

Clean all three conveyor decks at the take-up and drive sections and ensure they are free of debris.

Drive Section Plate

Check and tighten any loose bolts on the drive section plate to ensure it is firmly in place.

Bearings and Cylinders

Ensure proper lubrication and functioning.

- Apply grease to the bearings and Fluid Film to the air cylinder to maintain smooth operation based on the location greasing schedule.

Chain Inspection

Examine the chain closely and replace any damaged rollers or links to prevent further issues.

Weekly PM Checklist Handout 4-Brushes Maintenance

The following are the tasks for the Brushes Maintenance section of the Weekly PM Checklist:

Bearings

Ensure smooth operation of bearings

- Use a grease gun to apply grease to all rotational bearings, ensuring they move smoothly without resistance based on the location's greasing schedule.

Oil Reservoirs

Check if there is a sufficient amount of fluid in all oil reservoirs (Omni, Tire Shiner, Top Brush, Wraps).

- Open the oil reservoirs and add the appropriate oil if the levels are low.

Air Cylinders

Ensure proper lubrication and operation.

- Apply Fluid Film to all air cylinders to prevent rust and ensure smooth movement.

Tire Shiner Brushes

Check if the tire shiner brushes are receiving chemical at all sections and if there is any excess tire shine on the ground.

- If there is excess tire shine on the ground, adjust the chemical supply or fix any leaks to prevent wastage and ensure proper application.

Brush and Mitter Material

Inspect all brush and mitter material for worn or damaged brush material.

- Replace the material if it is not in good condition.

Brush Rotation and Retracts

Check that all brushes are rotating within the acceptable RPM range (70-80 RPM, site-specific), and that all retracts (front, side, and rear) are functioning.

Weekly PM Checklist Handout 5-Blowers Maintenance

The following are the tasks for the Blowers Maintenance section of the Weekly PM Checklist:

Blowers Functionality

- Verify if all blowers are functioning properly.
- Fix or replace blowers if they are not functioning.
    - Example: Check the power supply and connections for each blower. Repair or replace any blowers that do not operate correctly.

Blower Timing

Check if all blowers engage at the appropriate time.

- Adjust the timing settings if necessary.

Blower Gates

Check the operation of blower gates and adjust their timing or repair any faulty gates to ensure proper operation.

Blower Housings and Screens

Ensure all blower housings and inlet screens are clean and free of debris.

- Remove any debris from the blower housings and screens to maintain optimal airflow and performance.

Blower Position

Check the alignment and positioning of each blower and make adjustments to ensure they are aimed correctly for effective drying.

Weekly PM Checklist Handout 6-Central Vacuum Unit Maintenance

The following are the tasks for the Central Vacuum Unit Maintenance section of the Weekly PM Checklist:

Filter Bags

Inspect the filter bags and clean or replace them to ensure proper suction and prevent clogging.

Mini Separators

Remove the mini separators and clean out debris to maintain effective vacuum performance.

Separator Sections

Check if the top and bottom sections of the separator are clean and free of debris.

- Disassemble the separator and clean both the top and bottom sections to ensure unobstructed airflow.

Vacuum Functionality

Test each vacuum for proper operation

- Repair or replace any units that do not work.

Weekly PM Checklist Handout 7-Lot & Office Maintenance

Vacuum Stations

Test the suction at each station and clear any blockages or repair any issues to restore full suction power.

Vacuum Tools

Check for wear and tear on vacuum tools and replace any that are damaged to ensure effective cleaning.

Vacuum Hoses and Couplers

Ensure all vacuum hoses and couplers are attached securely.

- Tighten any loose connections and replace any damaged.

Mat Cleaners

Verify if all mat cleaners are clean and functioning properly.

- Clean the mat cleaners and repair any issues to ensure they operate effectively.

Air Guns

Check if all air guns are attached and in good condition and if they are functioning without air leaks.

- Fix the leaks or replace the air guns if necessary.

Spray Stations

Clean the spray nozzles and check the water supply to ensure the stations work as intended.

Trash Cans and Towel Baskets

Check the stability and condition of trash cans and towel baskets, repairing or replacing any that are damaged.

Vacuum Leaks

Listen for any vacuum leaks or noises.

- Use soapy water to locate vacuum leaks, tighten connections, or replace damaged hoses.

Office Maintenance

The following are the tasks for the Office Maintenance section of the Weekly PM Checklist:

HVAC Filter and Vents

Remove the HVAC filter and vents, clean them thoroughly to remove dust and debris, and replace them to ensure proper airflow.

TROUBLESHOOTING EQUIPMENT ISSUES-508

Troubleshooting Equipment Issues Handout

The following are common issues and their troubleshooting steps taken to ensure the equipment returns to proper function.

Conveyor

Conveyor Not Moving

Cause: Power issue, motor failure, or jammed belt.

Solution: Check the power supply, inspect the motor for faults, and remove any obstructions from the belt.

Chain Slippage

Cause: Worn or misaligned rollers.

Solution: Replace the belt if worn and realign the rollers as necessary.

Water Pumps

No Water Pressure

Cause: Blocked filter, damaged impeller, or air lock in the pump.

Solution: Clean or replace the filter, inspect and replace the impeller, and bleed the air from the pump.

Pump Overheating

Cause: Running dry, clogged intake, or inadequate ventilation.

Solution: Ensure the pump is always primed, clean the intake, and improve ventilation.

High-Pressure Rinse

Not Spraying

Cause: Clogged nozzle, faulty unloader valve, or pressure switch failure.

Solution: Clean or replace the nozzle, check and replace the unloader valve, and test the pressure switch.

Inconsistent Pressure

Cause: Air leaks, worn seals, or fluctuating water supply.

Solution: Seal any air leaks, replace worn seals, and ensure a steady water supply.

Chemical Dispensers

No Chemical Dispensing

Cause: Empty chemical tank, blocked dispenser line, or faulty solenoid.

Solution: Refill the tank, clean the dispenser line, and check the solenoid operation.

Incorrect Chemical Mixing

Cause: Calibration error, blocked mixing valve, or improper chemical supply.

Solution: Recalibrate the dispenser, clean the mixing valve, and verify the chemical supply.

Drying Systems

Blowers Not Working

Cause: Electrical issue, motor failure, or obstructed airflow.

Solution: Check electrical connections, inspect and replace the motor, and clear any obstructions in the airflow path.

Uneven Drying

Cause: Misaligned blowers, worn nozzles, or inconsistent air pressure.

Solution: Realign the blowers, replace worn nozzles, and ensure consistent air pressure.

Solenoids

No Response from Solenoid

Causes: Lack of power supply, blown fuse, or faulty wiring.

Solutions: Check the power supply, replace any blown fuses, and inspect the wiring for damage or loose connections.

Intermittent Operation

Causes: Poor electrical connections, loose wires, or fluctuating power supply.

Solution: Secure all electrical connections and ensure the power supply is stable.

Solenoid Stuck Open or Closed

Causes: Debris or sediment buildup, worn or damaged internal components, or a broken spring.

Solution: Disassemble the solenoid, clean out any debris, and replace worn or damaged parts.

Low Flow or No Flow

Causes: Partial blockage in the valve, insufficient water pressure, or incorrect solenoid size.

Solution: Clean any blockages, verify the water pressure is adequate, and ensure the solenoid is the correct size for the application.

Leaking Solenoid

Causes: Damaged or worn seals, improper installation, or cracks in the solenoid body.

Solution: Replace seals, ensure proper installation, and inspect the solenoid body for cracks or damage.

COME ALONG-509

Come Along Handout

Come-Along Safety

- A come-along should be checked for fraying or broken pieces before use. If the come-along cable or device is damaged, remove it from service.
- When in use, keep all body parts away from pinch points. Verify that all connections are thoroughly secure before tightening the device.
- Always exercise extreme caution when using the come-along, as it has many moving pieces and pinch points.
- Always adhere to the rated load capacity on the come-along to avoid accidents.
- Keep yourself and others clear of the path of the load to prevent injury in case of slippage or failure.
- Ensure the anchor point is strong enough to handle the load and won't give way under pressure.

Operating a Come Along

1. Ensure the come along is in good working condition, free from visible damage or wear.
2. Operate the ratcheting mechanism without a load to ensure it engages and releases properly.
3. Select a sturdy anchor point that can withstand the load, such as a post or solid structure.
4. Securely attach the hook or chain of the come-along to the anchor point. Ensure the connection is stable and will not slip.
5. Attach the other hook or chain to the load you intend to move.
6. Ensure the connection to the load is stable and secure, preventing any slippage during operation.
7. Extend the cable or strap that comes along to reach the load.
8. Ensure the ratcheting mechanism is engaged and ready to operate.
9. Place the handle properly to start ratcheting and pull the handle back and forth to engage the ratchet and move the load. Each handle motion will incrementally pull the load closer or lift it higher.
10. Keep tension on the cable or strap to ensure smooth and continuous movement.
11. Monitor the load's movement to ensure it progresses as intended.
12. If the load becomes unstable or you need to change direction, pause and make necessary adjustments.
13. Once the load is in the desired position, stable, and secure, carefully disengage the ratcheting mechanism to release tension on the cable or strap.
14. Safely detach the hooks or chains from the anchor point and the load.
15. After use, inspect the come-along for any signs of wear or damage.
16. Return the come along in a dry, secure location to prevent rust and damage.