WOLFE

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Wolfe Plow

Operator and Safety Manual

3: To the Owner

The safety, operation, maintenance and service of this machine are covered in the Wolfe Plows Operator and Safety Manual, the Caterpillar Operations and Maintenance Manual, and the Track One Use and Maintenance Manual with Square Parts. These manuals contain important information about the safe operation, service, adjustment, and maintenance of your Wolfe Plow.

At Wolfe, we are continually making improvements to the machines we build. Because of these minor changes, some of the illustrations in this manual may vary slightly depending on how your Wolfe Plow has been built. Consult your dealer for any further information or assistance about your machine. If you are unsure about something, please ask before operating on your machine.

WARNING: DO NOT operate or permit anyone to operate or service this machine until every person involved has completely read and understood the safety, operation, and maintenance instructions in the Wolfe Plows Operator and Safety Manual, the Caterpillar Operations and Maintenance manual, and the Track One Use and Maintenance Manual with Square Parts. Make sure that all personnel have been properly trained and understand the characteristics and hazards of operating or servicing the machine. Only trained operators or service personnel who have demonstrated the ability to operate and service this machine correctly and safely, are allowed to use, service, or repair this piece of equipment.

These manuals are to be stored in the machine and kept in good condition. Consult your dealer if extra copies of this manual are required.

4: Machine Safety

Most accidents involving machine operations and maintenance can be avoided by following basic rules and precautions. Read and understand all safety messages in this manual and all safety decals on the machine before you operate or service the machine. Consult your dealer if you have any questions.

Read this manual completely and make sure you understand the characteristics and operation of this machine before operating it.

This safety manual is to be stored in the machine and kept in good condition. Consult your dealer if extra copies of this manual are required.

DANGER: This signal word indicates an important safety message. When you see this message, carefully read the following message and be alerted of hazardous situations that will result in death or serious injury if not heeded.

WARNING: This signal word indicates an important safety message. When you see this message, carefully read the following message and be alerted of hazardous situations that could result in death or serious injury if not heeded.

CAUTION: This signal word indicates an important safety message. When you see this message, carefully read the following message and be alerted of hazardous situations or unsafe practices that could result in minor to moderate injury if not heeded.

IMPORTANT: This signal word indicates an important message. When you see this message, carefully read the following message and be alerted of situations or bad practices that could result in machine damages.

NOTE: This signal word indicates an important message. When you see this message, carefully read and remember the following message to be alerted of proper processes or extra note-worthy information.

Pictures in this manual may show protective shields and guards opened or removed for illustration purposes. Make sure that all shields and guards are in place and in good working order prior to operating this machine.

The safety information in this manual does not replace any safety codes, insurance regulations, federal / provincial / state or local laws. Make sure your machine has the correct safety equipment according to these rules, laws or regulations.

5: Utility Safety

Safety precautions must be followed when working near buried utility lines.

When operating this machine it is likely that you will be working around utility lines which may include, but not limited to:

- Electrical lines
- Gas lines
- Water Lines
- Communication Lines - Telephone or cable Television

Before beginning any construction work it is your responsibility to be aware of and avoid all utility lines that are buried in the area you are working. Always have all local utility companies mark the locations of their lines.

In Canada and the USA, call one of the “One Call System” services. If you do not know the local number, call the nation number (USA and Canada only) 1 888 258 0808.

Check with local authorities for laws, regulations requiring you to locate and avoid existing utilities.

Know the utility colour code (USA and Canada)

- Electric - Red
- Gas, Oil, or Petroleum - Yellow
- Television - Orange
- Water - Blue
- Sewer - Green/Brown
- Proposed Excavation - White
- Surveying - Pink
- Reclaimed Water and Slurry - Purple

After locating the utility lines, carefully dig a hole by hand and/or with automatic vacuum equipment down to the utility line. Verify the location and depth of the line.

6: Operator Safety Precautions

Personnel Safety Precautions

- Be prepared for emergencies. Always have a first aid kit and a working fire extinguisher with you. Know how to use each.
- Avoid wearing or having loose fitting clothing, loose or uncovered long hair, jewelry, and loose personnel articles that can snag on controls or on other parts of the machine.
- Know and use the protective equipment that is to be worn when operating the machine. Hard hats, protective glasses, protective shoes, gloves, reflector type vests, respirators and ear protection are examples of protective equipment that may be required.
- Protective equipment may need to be periodically replaced or renewed. Be sure that your protective equipment is current and in good working order. See the safety equipment manufacturer's recommendations.
- Do not rush. Walk, don't run.
- Know and use hand signals required for certain jobs. Know who has the responsibility of signaling.

Sound Safety Information

Hearing protection may need to be worn when operating or working around the machine. Noise levels may vary around different areas of the machine depending on the location of the machine relative to other equipment, buildings, or obstacles. Sound level checks should be done and hearing protection should be worn around the machine in accordance with all local regulations.

WARNING: DO NOT operate this machine or perform maintenance work if you have not been appropriately trained and have not fully read and understood the instructions and warnings in this manual.

General Safety Precautions

- It is the responsibility of the operator to read and understand the Operator Manual and other information provided with this machine.
- It is the operator's responsibility to use the correct operating procedures when using this machine.
- The operator must always wear the seat belt when operating this machine. Inspect the seat belt daily for any defects and to ensure its integrity.
- Do not permit riders on the machine while operating.
- Make sure that all protective devices and guards are in place and in working order prior to operating this machine.
- Remove all loose objects stored in the machine. Remove all objects which do not belong in or on the machine.

Seat Belt Safety Precautions

Before starting the engine ensure that your seat belt is securely fastened. The seat belt can help ensure your safety if it is used and properly maintained. Never wear the seat belt loose or with slack in the belt system. Never wear the seat belt with the belt twisted or pinched between the seat and structural members.

WARNING: Fasten seat belt before starting the engine.

To Latch the Seat Belt

- To latch the seat belt, pull the right belt strap from the retractor.
- Insert the metal end into the latch mechanism on the left side of the seat.
- Pull the seat belt to ensure that it is secured in the latch mechanism.

To Unlatch the Seat Belt

- To unlatch the seat belt press the button on the left side latch mechanism.
- The seat belt will automatically retract back into the retractor.

Mounting, Dismounting and Climbing Safety Precautions

- Always use the hand rails and steps when getting on and off the machine.
- Face the machine when using the steps and stairs to climb on and off the machine.
- Keep the steps and platforms clean: free from grease, ice, mud or debris which may cause slippery or tripping conditions.
- Do not jump off the machine.
- Do not mount or dismount while the machine is being operated or in motion.

Pinch Point Precaution (Parallel Link Plow Only)

WARNING: Due to the nature of the Parallel Link model machines, two hazardous pinch points exist. DO NOT have your feet or hands in these areas while the machine is being operated. Be careful not to step into these areas when stepping into the cab or when fueling the machine. Failure to do so could result in serious injury or death.

WARNING: Only walk or climb on areas that are designated for that purpose. Steps, stairs, platforms, or walk ways are to be used for walking on the machine or climbing onto the machine. Other areas of the machine may be slippery or may pose a trip hazard, which may cause personal injury or death.

Starting and Stopping Safety Precautions

WARNING: Before starting the engine, walk around the machine and warn all personnel who may be working around or in the machine's path. Do not start the machine until all personnel are clearly away from the machine and it is safe to do so.

- Before starting the machine make sure that all guards are in place and in good working order.
- Before starting the machine make sure that all the cab windows are clean and free of any debris that may obstruct your view.
- Before starting the machine make sure that you know what obstructions are around the machine. Walk around the machine to ensure that you are familiar with the work site, noting all the hazards and obstructions such as ditches, underground lines, overhead electrical wires, trees, cliffs or areas where there is danger of a slide.
- Before starting the machine, fasten your seat belt and make sure that your seat is adjusted so that you can operate all the controls and necessary functions of the machine. Always wear your seat belt when operating the machine. Do not operate the machine unless you are sitting in the operator's seat with your seatbelt secured. The seat belt should be inspected regularly to ensure that all parts and components are in good working order.
- If a warning tag is attached to the engine start switch or to the machine controls, do not start the engine and do not move any controls.
- Make sure that the reverse travel alarm and all other warning devices are functioning correctly.
- Check all cameras (if equipped) to make sure they are functioning correctly.
- Warm up engine and hydraulic oil before operating the machine. Operating the machine with a cold engine or hydraulic oil may be unsafe and can damage the machine.

WARNING: Use jumper cables only in the recommended manner. Improper use can result in battery explosion or unexpected machine motion that may cause personal injury. Batteries may be located in separate compartments.

NOTE: The electrical system is a 24 Volt DC with a negative ground. Refer to the Caterpillar Operation and Maintenance Manual for using jump start cables instruction.

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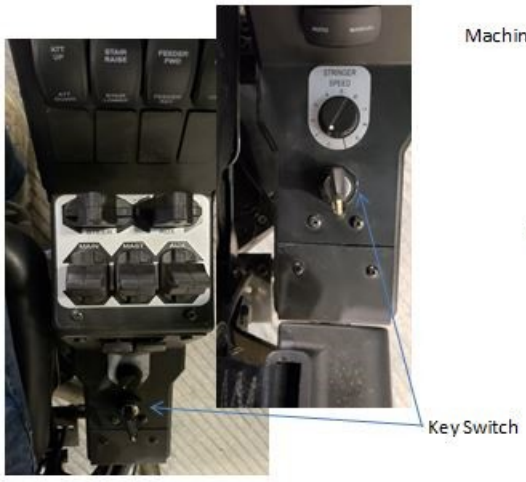
- Ventilate the battery area before using jumper cables. Make sure that using cables will not interfere or harm electronic processing or computer equipment.
- Never jump across the starter solenoid terminals in order to start the engine. Unexpected machine movement, damage to the machine or personal injury could result.

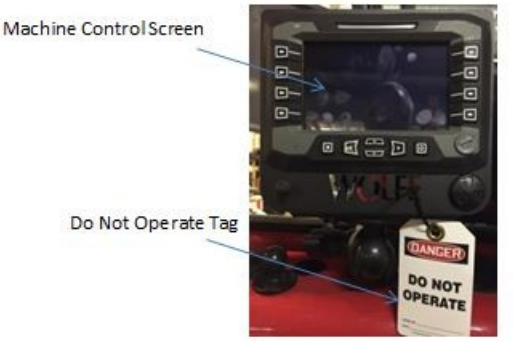
WARNING: Diesel engine exhaust contains products of combustion which can be harmful to your health. Always run the engine in a well-ventilated area. If you are in an enclosed area, vent the exhaust to outside. Do not operate the engine in an enclosed area without appropriate ventilation.

- Do not stop the engine immediately after the machine has been operated under load. This can cause damage to the machine. Refer to the Caterpillar Operation and Maintenance Manual for the stopping the engine procedure. Only park the machine on level ground. If you must park the machine on a grade securely, block the tracks to prevent the machine from unintended movement.
- Before leaving the operator's station, place the machine in anti-creep, lower the mole and any auxiliary equipment in the down position, and turn off the engine. Refer to the Caterpillar Operation and Maintenance Manual for stopping the engine procedure.
- Remove the starter key and turn off the master switch if the machine is going to be left unattended.
- Turning off the master switch will prevent the battery from draining by stopping any draw from certain electronic circuits.

Operating Safety Precautions

- To shut down the machine, refer to the parking the machine and stopping the engine section in this manual.
- After the machine has been started, check and operate all the machine controls and functions to insure proper operation before operating on the machine.
- Observe all gauges and/or warning instruments for proper operation. If any malfunction is found, shut the machine down, remove the key and turn the master switch off. Place a “DO NOT OPERATE” tag on the machine controls until the malfunction is corrected.





- If a failure that causes loss of control such as steering or control of the engine, stop the machine motion as quickly as possible, shut down the engine, remove the key and turn the main disconnect switch off. Place a “DO NOT OPERATE” tag on the machine controls until the malfunction is corrected.
- Only operate the machine while you are in the operator seat with your seat belt fastened.
- Understand the machine’s limitations and keep the machine under control.

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WARNING: Hillside operation can be dangerous. Rain, snow, ice, loose gravel or dirt, soft ground, etc. can be hazardous when operating this machine on a hillside or ramp. You must make sure that your machine can be safely operated on any hill side or ramp.

- Operate and drive the machine with care and at a speed that is compatible with the conditions or the type of operation you are using the machine for. Use extra caution when operating the machine over slippery, rough or uneven ground, on slopes, and while turning.
- Note and avoid all hazards and obstructions such as ditches, underground lines, overhead electrical wires, trees, cliffs, or areas where there is danger of a slide.
- Avoid any ground conditions that could cause the machine to tip. Tipping can occur when you are working on hills, banks, or on slopes. Tipping can also occur when you cross ditches, ridges, or other obstructions.
- Know and understand that job site conditions may change throughout the day. It is your responsibility to monitor these changes and operate the machine accordingly.
- You must judge if the conditions of the work site will not permit the safe operation of this machine. Do not operate this machine if the site conditions are not safe.
- Watch for bystanders and never allow anyone to be under or to reach through the machine and its equipment while operating.
- Do not allow riders on the machine.
- If crossing a road, use a signalman or flagman to monitor traffic and ensure that it is safe to cross. If a tow cable or chain is being used, keep people a safe distance away from the tow cable or chain.
- Make sure that the tow cable or chain is appropriately sized for the application that you are using it for.
- Inspect and make sure that tow cables, chains, clevises, towing eyes and any other devices that are used to tow the machine are rated for the proper loads and in good working order.
- Only pull or tow the machine from the tow eye that has been installed on the mole. DO NOT pull or tow this machine from any other location on the machine.
- DO NOT pull or tow this machine if it is disabled or non-functional.
- Before you operate the machine at night, check that all the lights illuminate as required. If the machine is not equipped with the lighting package do not operate the machine at night.
- If you operate the machine in an enclosed area make sure that the proper ventilation is used to extract the engine exhaust. Engine exhaust can cause death.
- Before operating the machine, make sure that all the cab windows are clean and free of any debris that may obstruct your view. If the windows become dirty throughout the day stop the machine and clean the windows before proceeding to operate the machine.

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- Dust, ice, fog, smoke, etc. can decrease your vision and cause an accident. Stop the machine until you can see clearly.
- Before beginning any construction work, it is your responsibility to be aware of all underground utility lines that are buried in the area that you are working and to avoid them.
- Always have all local utility companies mark the locations of their lines. It is your responsibility to know all federal, state/provincial, or local safety codes or regulations. Contact the appropriate authorities if required.
- Do not operate the machine if you do not feel well.
- Do not operate this machine if you are under the influence of alcohol, controlled substances or uncontrolled substances.

WARNING: Be alert and always know the location of all workers in your area. keep all other persons completely away from the machine. Injury or death can result if you do not follow these safety instructions.

Emergency Stop Button

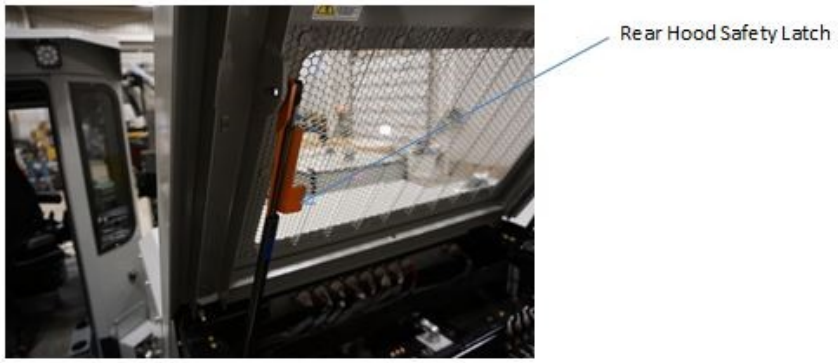
Emergency Stop Button located on the left hand side of operator's seat

WARNING: This machine is equipped with an Emergency Stop which can be used in an emergency situation. The Emergency Stop button will stop the machine and shut down the engine immediately.

Maintenance Safety Precautions

- Before servicing this machine, put a “DO NOT OPERATE” tag on the start key switch or machine controls. “DO NOT OPERATE” tags are available at your local dealer.
- When opening the Rear Hood, make sure that the Rear Hood Safety Latch is in the lock position to prevent the hood from accidentally falling closed. Do not work under this hood unless the safety latch is in the locked position. Failure to do so could result in personal injury.

WARNING: DO NOT attempt to repair this machine if you have not been properly trained. Refer to the manuals and experienced repair personnel for help. Make sure that you are aware of all the dangers that exist while servicing the machine: pinch points, crush-points, hot areas, and components that may be under pressure.



- Wear protective glasses / face shields and other required safety equipment when servicing or repairing this machine.
- Disconnect the battery before working on the electrical system. Know the consequences of disconnecting any electronic or computer devices.
- Never put maintenance fluids into glass containers. Drain all liquids into a suitable container.
- Obey all local regulations for the disposal of liquids and any other waste that may be produced during the maintenance of this machine.
- Use all cleaning solutions with care.
- Care must be taken in order to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the machine. Prepare to collect the fluid with suitable containers before opening any compartment or disassembling any component that contains fluids.

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- Avoid lubrication or mechanical adjustment with the machine in motion or the engine operating. If the engine must be running to make certain adjustments, place the machine into the anti-creep mode and use extreme caution. See machine controls section for instructions on how to place the machine into the anti-creep mode.

WARNING: Before servicing or repairing this machine, make sure that all machine components or auxiliary equipment are in the down or safe position. Support the components or auxiliary equipment properly before you perform any work or maintenance beneath the machine. NEVER work under a component or piece of equipment that is suspended by the hydraulic system. DO NOT depend on the hydraulic system to support a component or piece of equipment for you to work under. Securely block the machine or any component that may fall before working on the machine or component. If possible, use a back-up or secondary blocking device to ensure that the machine or component is safe to work on or under.

WARNING: Whenever there are equipment linkages, the clearance in the linkage area will change with the movement of the equipment or the machine, causing a pinch or crush point. Stay clear of linkages when moving the equipment or machine.

- Stay clear of any rotating or moving parts.
- Keep objects away from moving fan blades. Damage to the machine or personal injury could occur.
- When you strike a retainer pin with force, the retainer pin can fly out. The loose retainer pin can cause injury. Make sure that the area is clear of people when you strike a retainer pin. To avoid eye injury, wear protective glasses when you strike a retainer pin.
- Chips or other debris can fly off an object when you strike it. Make sure that no one can be injured by flying debris before striking any object.

WARNING: Never make repairs to components that are pressurized with hydraulic fluid, gas, air or mechanical pressure. Relieve the pressure or block up the mechanical pressure before doing any service or repair on the component or machine. Failure to do so could result in serious injury or death.

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WARNING: Pressure can be trapped in a hydraulic system. Releasing trapped pressure can cause sudden machine movement or attachment movement. Use caution if you disconnect hydraulic lines or fittings. High pressure oil that is released can cause a hose to whip. High pressure oil that is released can cause oil to spray. Fluid penetration can cause serious injury and possible death.

- Pressure can be trapped in the hydraulic circuit long after the engine has been stopped. Do not remove or disassemble any hydraulic components or parts until pressure has been relieved. Failure to do so could cause personal injury or death.
- To relieve the pressure in the hydraulic system, use the manual handles on the hydraulic valves with the engine not running. Move all of the handles **SLOWLY** in both directions. The machine components may move so make sure that everyone is clear before proceeding.

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- When loosening any hydraulic fittings, use safety glasses, safety shields, and gloves. Be sure to loosen the hydraulic fittings slowly (use caution) as there may be some residual pressure in the system.
- Bleed the compressed air using the drain valve on the bottom of the reservoir before servicing or repairing any of the pneumatic components on the machine.

WARNING: Use EXTREME CAUTION when removing spring loaded components, radiator caps, drain plugs, grease fittings, or pressure traps.

- Allow the machine to cool down before removing the radiator cap or any drain plugs.
- The track tensioners are spring loaded. Use EXTREME CAUTION when working around the track tensioners. Refer to the Track One Use and Maintenance Manual with Spare Parts for servicing the tracks.
- Replace all missing, illegible, or damaged safety decals. Keep all safety decals clean.
- Report all necessary or required repairs

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- Do not smoke when servicing the air conditioner or if refrigerant gas is present. Inhaling the fumes that are released from a flame that contains air conditioning refrigerant can cause bodily injury or death. Inhaling gas from an air conditioner refrigerant through a lighted cigarette can cause bodily harm or death.
- Pressurized air and/or water can cause debris and/or hot water to be blown out. This could result in personal injury. When pressurized air and/or pressurized water are used for cleaning, wear protective clothing, protective shoes, and eye protection. Eye protection includes goggles or a protective face shield. The maximum air pressure for cleaning purposes must be reduced to 205 kPa (30 psi) when the nozzle is deadheaded. The maximum water pressure for cleaning purposes must be below 275 kPa (40 psi).
- Never allow pressurized air or water to come in contact with your skin. Pressurized air and water can penetrate body tissue and cause bodily injury or death. If fluid or air is injected into your skin, you must get treatment immediately. Seek treatment from a doctor that is familiar with this type of injury.

Fueling Safety Precaution

- Use Diesel Fuel only
- Do not smoke or permit open flames while fueling or near fueling operations.
- Never allow fuel to spill on hot machine components.
- Never allow fuel to spill on the environment.
- To avoid spilling fuel, maintain control of the fuel filler nozzle when filling the tank.
- Do not fill fuel tank completely to the top. Allow room for expansion.
- Clean up spilled fuel immediately and dispose of contaminated material in an environmentally correct way.

- Tighten fuel tank cap securely. Should the fuel cap be lost, replace it only with the original manufacturers approved cap. Use of a non-approved cap without proper venting may result in pressurization of the tank.
- Never use fuel for cleaning purposes.
- Use correct fuel grade for the operating season.

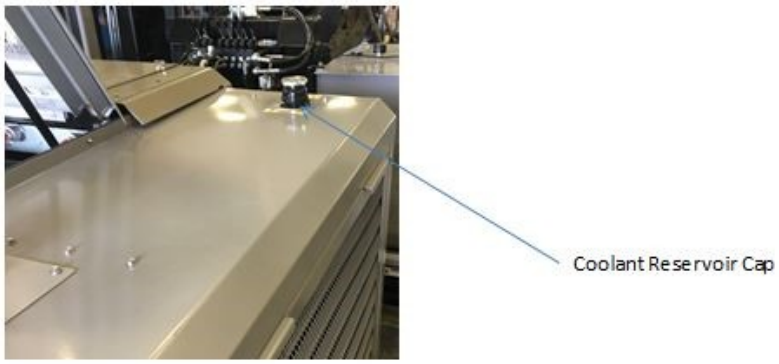
Burn Safety Prevention

Do not touch any part of the engine or other equipment on the machine that may be hot during operation. Allow the machine to cool before any maintenance is performed on the machine. Relieve all pressure in the air system, in the oil system, in the lubrication system, in the fuel system, or in the cooling system before any lines, fittings or related items are disconnected.

Coolant Safety Prevention

WARNING: Hot Coolant can cause severe burns.

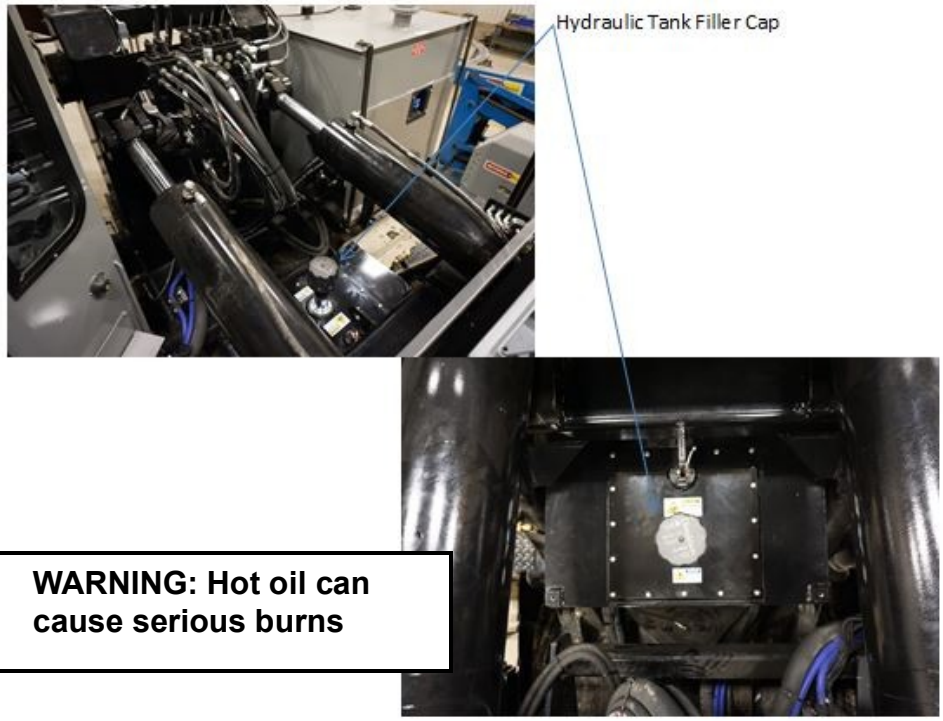
- When the engine is at operating temperature, the engine coolant is hot. The coolant is also under pressure. The radiator, reservoir and all lines to the heaters or to the engine contain hot coolant.
- Hot coolant can spray out if the reservoir cap is removed while the cooling system is hot. To remove the reservoir cap let the cooling system cool, turn the cap slowly ¼ turn to make sure there is not pressure behind the cap. If there is pressure, allow the pressure to release before turning further to remove the reservoir cap.



- Any contact with hot coolant or with steam can cause severe burns. Allow cooling system components to cool before the cooling system is drained.
- Check the coolant level only after the engine has been stopped and the cooling system has cooled down.
- Ensure that the filler cap is cool before removing. The filler cap must be cool enough to touch with a bare hand. Remove the filler cap slowly in order to relieve pressure.
- Cooling system conditioner contains alkali. Alkali can cause personal injury. Do not allow alkali to contact the skin, the eyes, or the mouth.

Oil Safety Precautions

- Allow machine oils to cool down before performing any service or repairs on machine
- Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.
- Remove the hydraulic tank filler cap only after the engine has been stopped and the system has cooled down. The filler cap must be cool enough to touch with a bare hand.



WARNING: Hot oil can cause serious burns

Batteries Safety Precautions

WARNING: Battery acid causes serious burns.

- Batteries contain sulfuric acid that can cause personal injury. Avoid contact with skin, eyes or clothing.
- Always wear eye protection and face shields when working with batteries.
- Wash hands after handling batteries or working around batteries.
- Always keep batteries out of the reach of children.

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- Antidote: External – Flush with clean water.
- Antidote: Internal – Drink large quantities of water or milk. DO NOT induce vomiting. Seek medical attention immediately.
- Eyes – Flush with water for 15 minutes and seek medical attention immediately.

WARNING: Machines may be equipped with two or four batteries. Four battery machines may have batteries located in the battery boxes on both sides of the machine, or all four in one battery box. Be sure to disconnect the negative battery terminals if servicing or repairing the electrical system on the machine. For the four battery systems, the negative cable will have to be disconnected from both battery sets. Failing to do so could result in damage to the machine or personal injury.

WARNING: Batteries produce explosive gases.

- Keep sparks or flames, away from batteries.
- DO NOT smoke near batteries.
- Ventilate when charging or using in enclosed area.
- Always wear eye protection and face shields when working with batteries.
- Wash hands after handling batteries or working around batteries.
- Always keep batteries out of the reach of children.

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WARNING: When the battery electrolyte is frozen, the battery can explode if you try to charge it or try to jump start the engine. To prevent the battery electrolyte from freezing, keep the battery fully charged. If you do not follow these instructions, you or others in the area can be injured.

NOTE: Refer to the Caterpillar Operation and Maintenance Manual for information and procedures for starting the machine engine with jump start cables.

Hazardous Chemical Safety Precautions

- If you are exposed or come in contact with hazardous chemicals, you can be seriously injured.
- The fluids, lubricants, paints, adhesives, coolants, etc. used in this machine, can be hazardous.
- Material Safety Data Sheets (MSDS) provide information about the chemical substances within a product. The MSDS sheets provide information on how to safely handle the product, first aid measures and procedures to be taken when the product is accidentally spilled or released.
- MSDS sheets are available online or from the manufacturer.
- Before servicing your machine, check the MSDS for each of the fluids, lubricants, and coolants etc. that are used in this machine. This information indicates what risks are and how to handle these products safely. Follow this information when servicing the machine.
- Always dispose of any waste fluids in an environmentally safe manner. Check with your local environmental or recycling center for correct disposal.

Fire and Explosion Prevention Safety Precautions

- All fuels, most lubricants, and some coolant mixtures are flammable.
- Flammable fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause a fire. Fire may cause personal injury and property damage.
- Remove all flammable materials such as fuel, oil, and debris from the machine. Do not allow any flammable materials to accumulate on or in the machine.
- Store fuels and lubricants in properly marked containers away from unauthorized persons.
- Store oily rags and any flammable materials in protective containers.
- Do not smoke in areas that are used for storing flammable materials.
- Do not operate the machine near any flame.

WARNING: Do not weld on lines or on tanks that contain flammable fluids. Do not flame cut lines or tanks that contain flammable fluid.

- Clean any such lines or tanks thoroughly with a non-flammable solvent prior to welding or flame cutting.
- Check all electrical wires daily. Repair any wires that are loose or frayed before you operate the machine.
- Clean and check all electrical connections and tighten all electrical connections as required.
- Inspect all lines and hoses for wear or for deterioration. The hoses must be properly routed.
- The lines and the hoses must have adequate support and secure clamps. Tighten all connections to the recommended torque. Leaks can cause fires.
- Use caution when you are refueling a machine. Do not smoke while you are refueling a machine. Do not refuel a machine near open flames or sparks.
- Always stop the engine before refueling.
- Fill the fuel tank outdoors.
- Gases from a battery can explode. Keep any open flames or sparks away from the batteries.
- Do not smoke close to the batteries.
- Never check the battery charge by placing a metal object across the terminal posts. Use a voltmeter or a hydrometer.
- Improper jumper cable connections can cause an explosion that can result in injury.
- Do not charge a frozen battery. This may cause an explosion.

Fire Extinguisher

- Make sure that a fire extinguisher is available. Be familiar with the operation of the fire extinguisher. Inspect the fire extinguisher and service the fire extinguisher regularly or as local regulations require. Obey the recommendations on the instruction plate. The recommended location for mounting the fire extinguisher is in the cab in an accessible location away from the operator's work area.
- It is recommended that you have a minimum 5 pound fire extinguisher that is approved for type A. B, and C type fires.

Ether and Cold Starting Safety Precautions

WARNING: Ether is explosive, flammable, and poisonous. Do not use aerosol types of starting aids, Such could result in an explosion and can causes personal injury or death.

NOTE: Refer to the Caterpillar Operation and Maintenance Manual for starting a cold engine.

Electrical Storm Injury Prevention and Safety Precautions

- When lightning is striking in the vicinity of the machine, the operator should never attempt to mount or dismount the machine.
- If you are in the operator's station during an electrical storm, stay in the operator's station until the storm has passed.
- If you are on the ground during an electrical storm, stay away from the vicinity of the machine until the storm has passed.

Lines, Tubes, and Hoses Safety Precautions

- Do not bend high pressure lines.
- Do not strike high pressure lines.
- Do not install any lines that are damaged.
- Repair any lines that are loose or damaged. Leaks can cause fires.
- Check lines, tubes and hoses carefully.
- Do not use your bare hand to check for leaks. Use cardboard to check for leaks.
- Tighten all connections to the recommended torque. Consult your dealer for further information.
- Make sure that all clamps, guards, and heat shields are installed correctly. During machine operation, this will help to prevent vibration, rubbing against other parts, and excessive heat.

Replace the parts if any of the following are present:

- End fittings are damaged, leaking or displaced.
- Outer coverings of hydraulic hoses are chafed or cut.
- Flexible parts of the hoses are kinked.
- If the outer coverings of wires are damaged and wires are exposed.
- If the outer coverings of wires are ballooning.
- If the outer coverings of wires are worn or have been pinched.

Track Safety Precautions

WARNING: The track system has track adjusting components and components that are spring loaded that use steel springs, liquid springs, grease or oil that can be under very high pressure. These components can be extremely dangerous if not worked on or handled appropriately. DO NOT attempt to adjust or repair the track systems unless you have read the Track One Use and Maintenance Manual with Spare Parts, have had proper training and understand all the dangers associated with servicing or repairing the track systems. Failure to do so can result in serious injury or death.

- Refer to track section of this manual for more information. Contact your dealer if you have any questions.
- Grease or oil coming out of the relief valve under high pressure, can penetrate the body causing injury or death.
- The pins and bushings in a track pin joint can become very hot. It is possible to burn the fingers or hands if there is more than brief contact with these components.

7: Safety and Notice Decals and Decal Locations

There are a number of specific safety and notice messages on this machine. The locations of the hazards and description of the hazards are reviewed in this manual. Please become familiar with all of the safety messages.

Safety and Notice Decals on this machine may use the words Danger, Warning, Caution or Notice which are defined as follows:

- **DANGER:** indicates a hazardous situation that, if not avoided will result in death or serious injury. The color associated with danger is red.
- **WARNING:** indicates a hazardous situation that, if not avoided could result in death or serious injury. The color associated with Warning is Orange.
- **CAUTION:** indicates a hazardous situation that, if not avoided could result in minor or moderate injury. The color associated with Caution is Yellow.
- **Notice:** indicates potential damage to the machine if not heeded.

Replace all missing, illegible, or damaged safety signs. Keep all safety signs clean. If a safety message is attached to a part that is replaced, install a safety message on the replacement part. Safety messages can be provided by your Wolfe dealer.

WARNING: Injury or death can result if you cannot read a safety decal or if a safety decal is missing. Replace any missing or damaged safety decals and keep all safety decals clean. Contact your dealer if you require new decals.

- Make sure that you read and understand all the safety and instructional decals.
- Check decals to make sure they are clean and can be read.
- Clean decals with soap and water. Do not use solvents or gasoline to clean decals.
- Replace any decal that is damaged, missing, or cannot be read. If a decal is on a part that is replaced, make sure the decal is on the new part. If the decal is not on the new part contact your dealer for replacement decals.
- See below for the location of all decals on the machine.

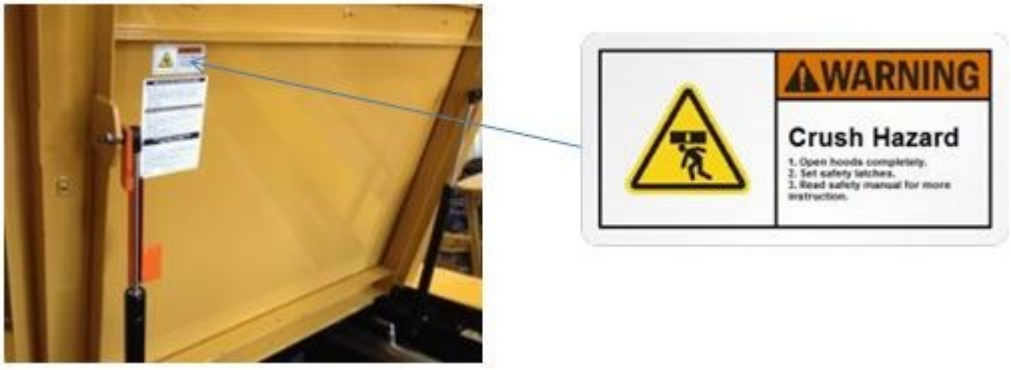
WARNING: Because machines can vary depending on customer's requirements the decal location may change slightly from machine to machine. The hazards and the decals warning of the hazards will still exist. Contact your dealer if you are not sure of what hazard is being identified by the decals on the machine.

Cab Decals

Decals are located on the rear left hand vertical post in the cab.

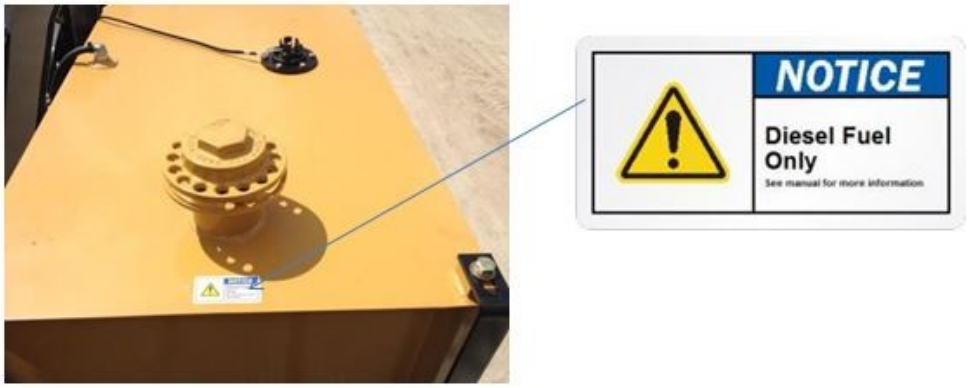
Hood Crush Hazard

Decal is located on the underside of the rear hood near the hood safety latch



Diesel Fuel Only Decal

Decal is located on the top of the fuel tank near the fill cap.

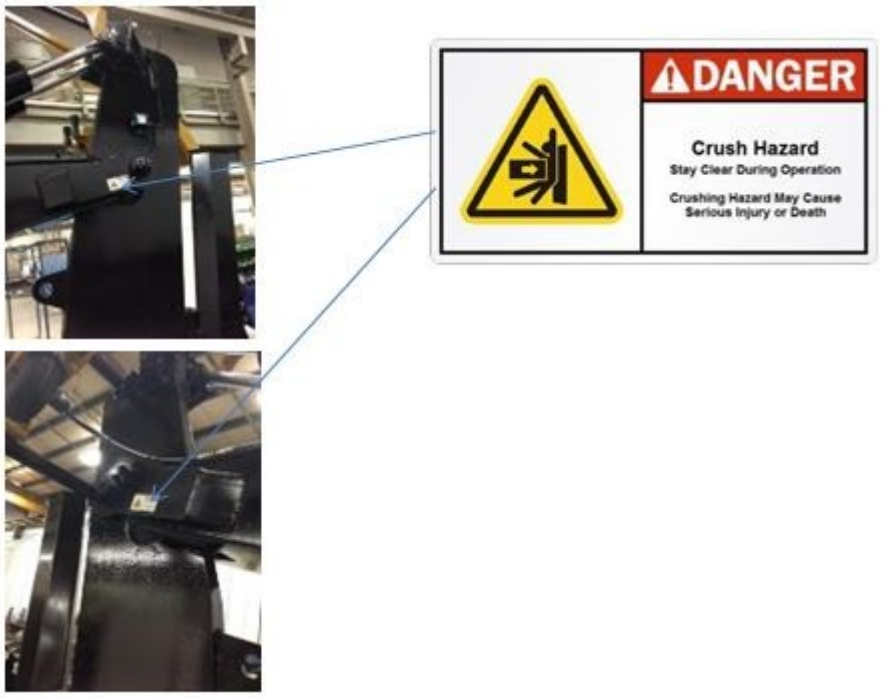


Crush Hazard Decals

- Decals are located at the front of the machine on the sides of the battery and tool box. (Some machines use both boxes for batteries)
- Decals are also located at the rear of the machine on the cab and fuel tank mount.

Crush Hazard Decals - Mole

Decals are located on each side of the mole, on the lower arm close to the mole pin.



Crush Hazard Decals (Parallel Link Only)

- Decals are located on the cab front door sill.
- Decals are also located on the front side of the fuel tank mount.

Battery Box Decals

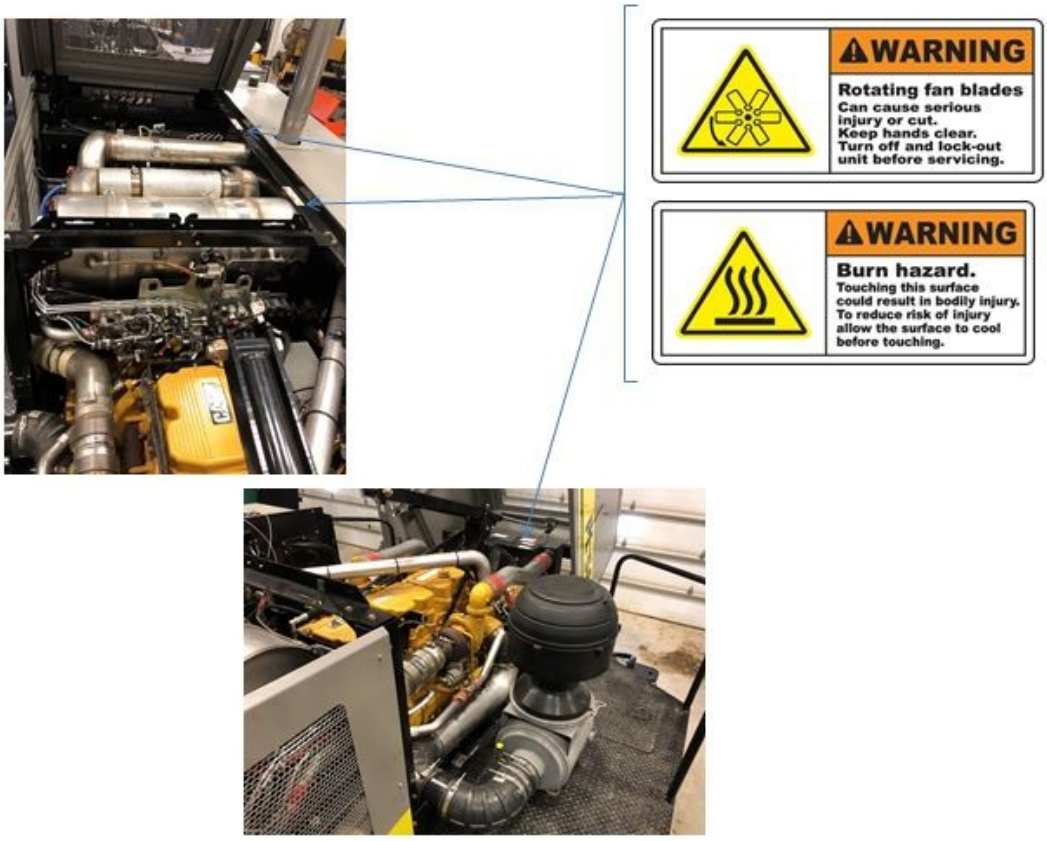
- Decals are located on the inside face of the battery box lid.
- Decals are also located on the front side of the fuel tank mount.

Burn Hazard Decal/Extended Life Coolant Only Decal

Decals are located on the rear hood close to the radiator reservoir cap.

Burn Hazard/Rotating Fan Blades Decals

Decals are located on the top of each radiator fan shroud.

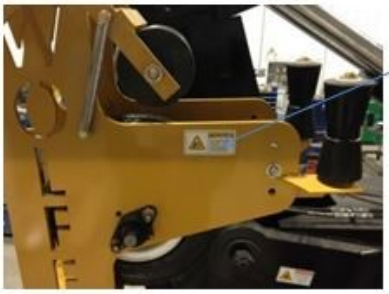


Burn Hazard Decal/Hydraulic Fluid Only Decal

Decals are located on the hydraulic oil tank near the fill cap.

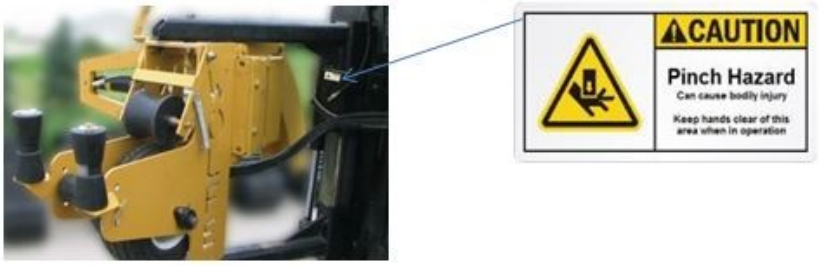
Entanglement Hazard Decal

Decals are located on the side of the tile feeder.



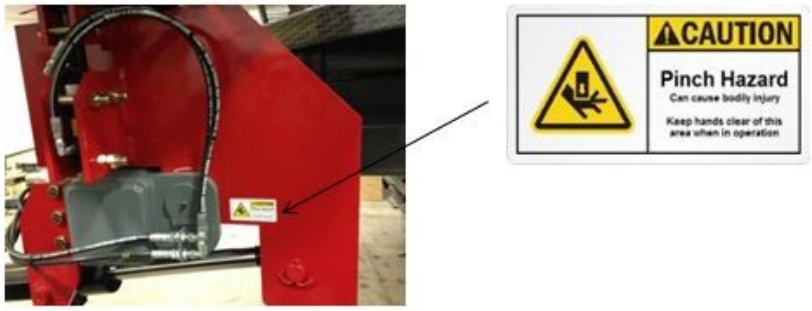
Pinch Hazard decal (if equipped with raise/lower tile feeder option)

Decals are located on the raise and lower slide keeper.



Pinch Hazard Decal (if equipped with tile stinger option)

Decals are located on the tilt forward bracket.

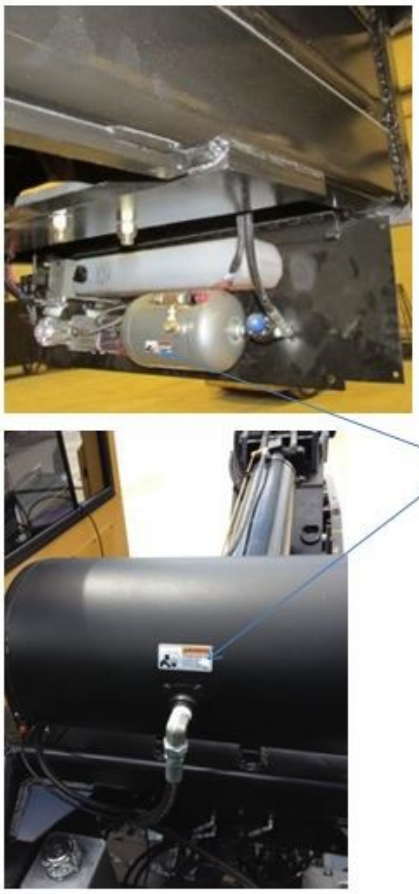


Crush Hazard Decal (if equipped with tile stinger option)

Decals are located on the top of the tile stringer swing arm

Compressed Air Decal

Decal is located on the compressor tank. The location and style of the tank may vary from machine to machine.



8: Machine Use

This machine, and the attachments and equipment available for use with this machine, are intended for closed trench installation of underground services. DO NOT use this machine for any application or purpose other than what the machine is intended for.

WARNING: Unauthorized electrical or mechanical modifications to this machine may cause serious injury or death. It may also cause damage to the machine. Anyone making unauthorized modifications is responsible for the consequences.

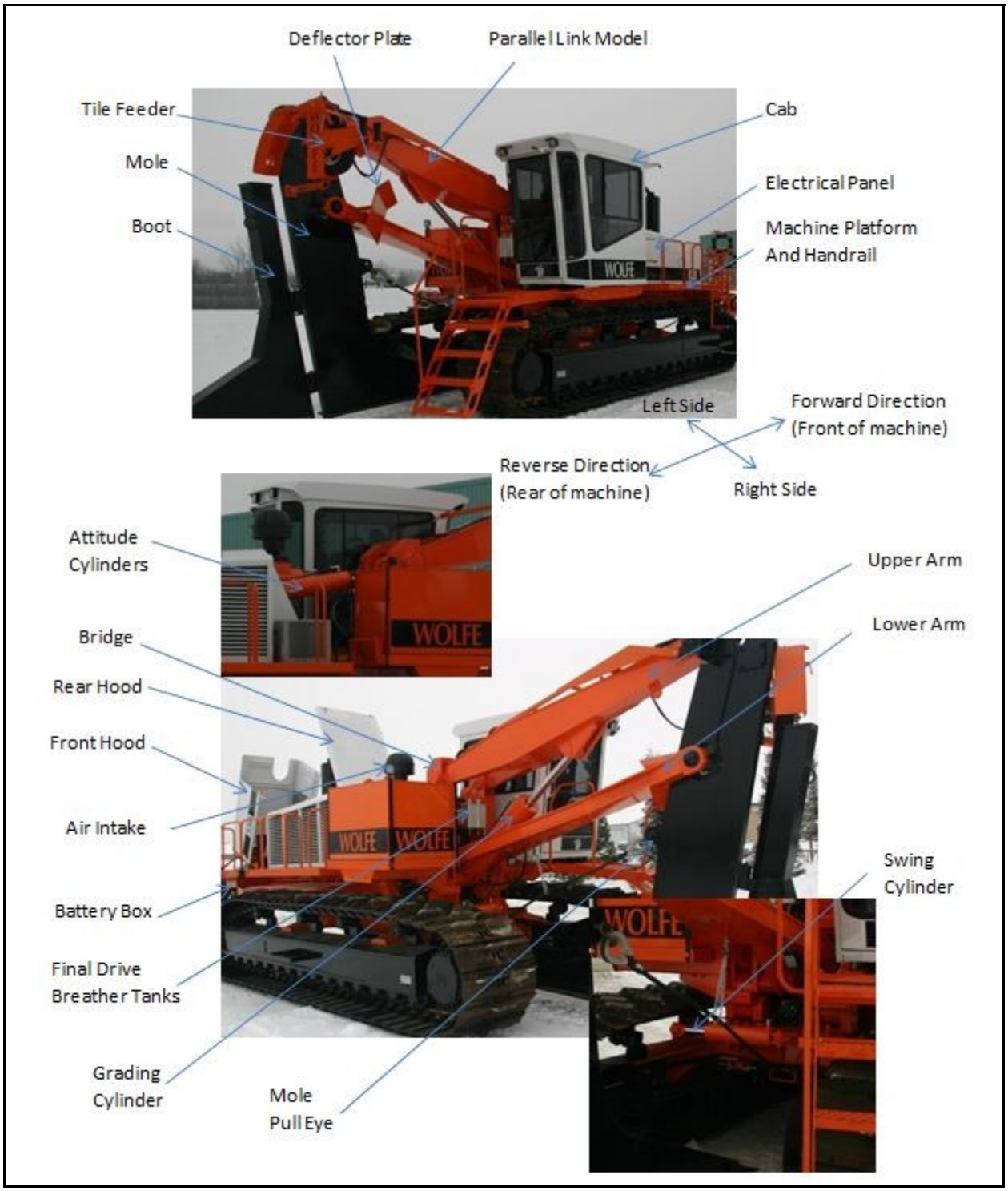
Consult your dealer for any further information or assistance about your machine. Your dealer has approved service parts.

Wolfe Heavy Equipment (Wolfe) cannot anticipate every possible circumstance involving a potential hazard. The warnings in this publication and on the machine are, therefore, not all inclusive. If a tool, procedure, work method, or operating technique is not specifically recommended by Wolfe is used, you must satisfy yourself that is safe for you and for others. Your should also ensure that the machine will not be damaged or be made unsafe by the operation, lubrication, maintenance, or repair procedures that you choose.

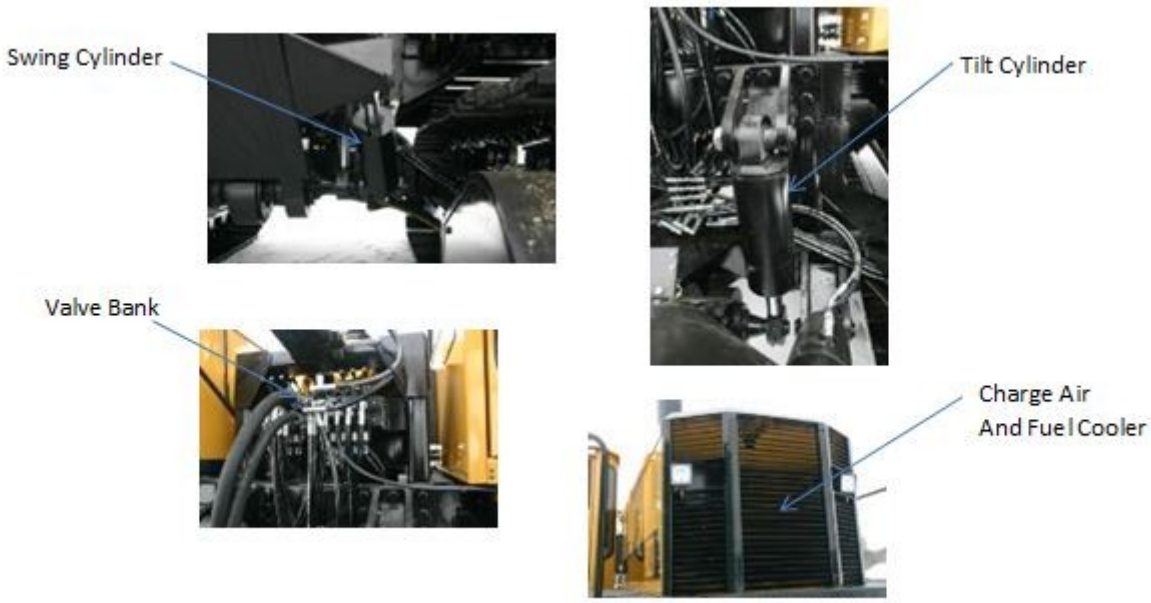
The information, specifications, and illustrations in this publication are on the basis of information that was available at the time the publication was written. The specifications, torques, pressures, measurements, adjustments, illustrations, and other items can change at any time, These changes can affect the service that is given to the product. Obtain the complete and most current information available. You can also download a copy of this manual from our website https://www.wolfeequipment.com/.

9: Machine Basics

This manual uses a number of terms and references for parts and components. These terms and references vary slightly throughout the industry. Below are illustrations to clarify some of the terms and references that are used in this manual. Some components are common between all plow models.




Single Arm Model
GPS Arm
Laser Arm
Engine and Hydraulic Oil Coolers
Grading Cylinders
Track Pads
Single Arm
Carrier Rollers
Track Undercarriage
Attitude Cylinder
Final Drive
Diesel Fuel Tank
Bottom Rollers
WOLFE
WOLFE


Swing Cylinder
Tilt Cylinder
Valve Bank
Charge Air And Fuel Cooler


Double Link Model
Double Link
Adjustable Mole
WOLFE
Attitude Cylinder
Grading Cylinder


Top Wear Plate
Mole Point
Rear Bottom
Wear Plate
c/w Groover
Front Bottom
Wear Plate


Mole Lock
Cylinder
Mole Holder
Bracket
Pitch Adjusting Pin


Swing Cylinder

10: Machine Options

Grouser Bar Extensions

Oscillating Tracks

7° Side Tilt
Parallel Link and Double link only

Raise and Lower Tile Feeder

Standard Cutter Crusher

In Boot Cutter Crusher

Laser Arm

Raise and Lower Boot

Tile Stringer

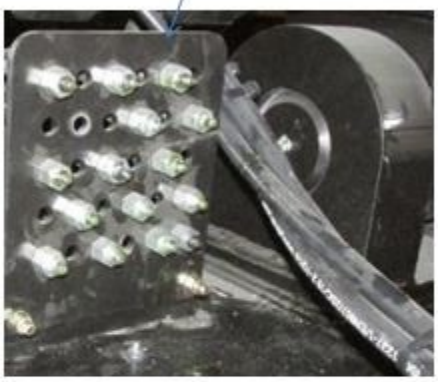
Back Step and Platform (hydraulic lift optional)

Tow Cable Package

Dual Joystick Control

Single Joystick Control

Central Grease Station

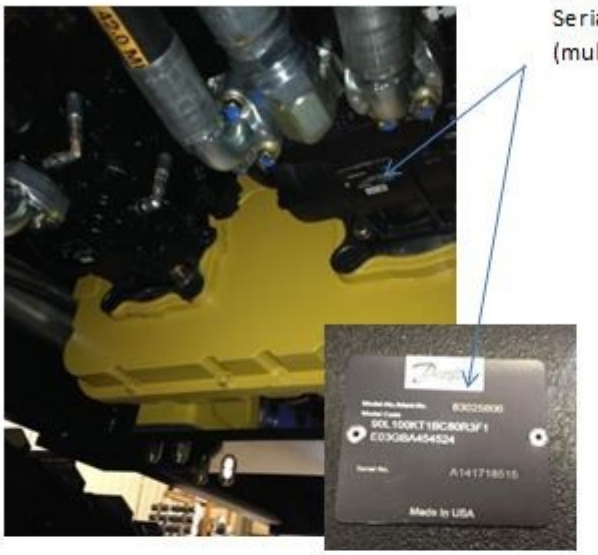


Auto Greaser

Light Package

Camera Package

11: Identification Numbers


Hydraulic Pump
Serial Number
(multiple pumps)
Made in USA


Pump Drive
Serial Number

Loading, Unloading and Transporting the Machine on a Trailer

Loading and Transporting the Machine

WARNING: If the machine is equipped with the side tilt option ensure that the cab is in the down position after the machine is loaded onto the trailer, before transporting. The machine will be over height if the cab is not in the down position.

WARNING: The machine can slip and fall from a trailer or ramp and cause serious injury or death. Make sure the trailer and ramps are not slippery. Carefully move the machine onto or off of the trailer with the machine centered on the trailer or ramp.

- Block or chock the front and rear of the trailer wheels.
- Lower the ramps and make sure that the spacing of the ramps are appropriate for loading the machine.
- Very carefully and slowly drive the machine onto the trailer
- Lower the mole and any other auxiliary equipment that is suspended by the hydraulic system.
- Ensure that all machinery and machine components are in their ship position.
- Turn the machine's Anti-Creep function on.
- Stop the engine.
- Make sure that all cab windows and doors are closed.
- Use the appropriate sized and rated chains and binders to fasten the machine to the trailer.
- Measure the width and height of the machine and trailer to ensure that you are within the local height and width restrictions.
- Make sure that you know the weight of your machine and that your trailer is rated accordingly.
- Know and abide by the rules, laws, regulations, and have the proper safety equipment necessary for transporting this machine on the road or highway.
- Never transport this machine without the proper tie down chains, binders and equipment in place to ensure the machine is securely fastened to the trailer.
- Ensure that the appropriate lights, flags and warning lights are used while transporting this machine.
- After you have driven a few miles stop and check your load. Make sure that the chains are still tight and that the machine has not moved on the trailer.

Unloading the Machine from a Trailer

- Block or chock the front and rear of the trailer wheels.
- Lower the ramps and make sure that the spacing of the ramps are appropriate for unloading the machine.
- Remove all the chains and binders.
- Start the engine. Refer to the Caterpillar Operations and Maintenance Manual for more instruction.
- Raise the mole and any auxiliary equipment as required.
- Very carefully drive machine off the trailer.

13: Towing or Pulling the Machine

Towing or Pulling an Enabled Machine

WARNING: When towing or pulling this machine, keep all personnel a safe distance away from the tow cable in case the towing hardware brakes. Failing to do so can cause serious injury or death.

- When towing or pulling an enabled machine make sure that the tow cable is appropriately sized for the application that you are using it for.
- Inspect and make sure that tow cables, clevises, towing eyes, and any other devices that are used to tow the machine are rated for the proper loads and in good working order.
- Do not use a chain to tow this machine.

WARNING: It is impossible for Wolfe to know what size of machine will be used to pull or tow your machine. It is the operator's responsibility to make sure that the tow equipment is the appropriate size for the application. Do not pull or tow this machine unless you are sure that you are using the appropriate towing equipment. Failing to do so can cause damage to the machine or cause personal injury.

IMPORTANT: Only pull or tow the machine (if it is functional and running) from the tow eye that has been installed on the mole. DO NOT pull or tow this machine from any other location on the machine. Failure to do so will cause damage to the machine.

IMPORTANT: DO NOT pull or tow this machine if it is disabled or non-functional

Towing or Pulling a Disabled Machine

WARNING: Personal injury or death could result when towing a disabled machine incorrectly. When towing or pulling this machine keep all personnel a safe distance away from the tow cable in case the towing hardware brakes. Failing to do so can cause serious injury or death. It is impossible for Wolfe to know what size of machine will be used to pull or tow your machine. It is the operator's responsibility to make sure that the tow equipment is the appropriate size for the application. Do not pull or tow this machine unless you are sure that you are using the appropriate towing equipment. Failing to do so can cause damage to the machine or cause personal injury.

WARNING: Do not use a chain to tow this machine. A chain link can break causing personal injury or death.

WARNING: Block the machine to prevent movement before final drives are disengaged. The machine can roll free if it is not block properly. With the final drives disengaged the machine cannot be stopped or steered.

WARNING: Relieve the hydraulic pressure before any disassembly. If the machine has been running the hydraulic fluid may be very hot and will cause server burns. Allow the hydraulic fluid to cool before loosening any fittings or removing hydraulic

IMPORTANT: DO NOT pull or tow this machine if it is disabled or non-functional without first disengaging both final drives. Damage to the hydraulic system will occur. Only pull or tow the machine from the tow eye that has been installed on the mole. DO NOT pull or tow this machine from any other location on the machine. Failure to do so will cause damage to the machine.

- These towing instructions are for moving a disabled machine for a short distance at low speed. Move the machine at a speed of 2 km/h – 1.2 mph or less to a convenient location for repair. These instructions are only for emergencies. Always haul the machine if long distance moving is required.
- Keep the tow angle to a minimum. Do not exceed a 30 degree angle from the straight ahead position.

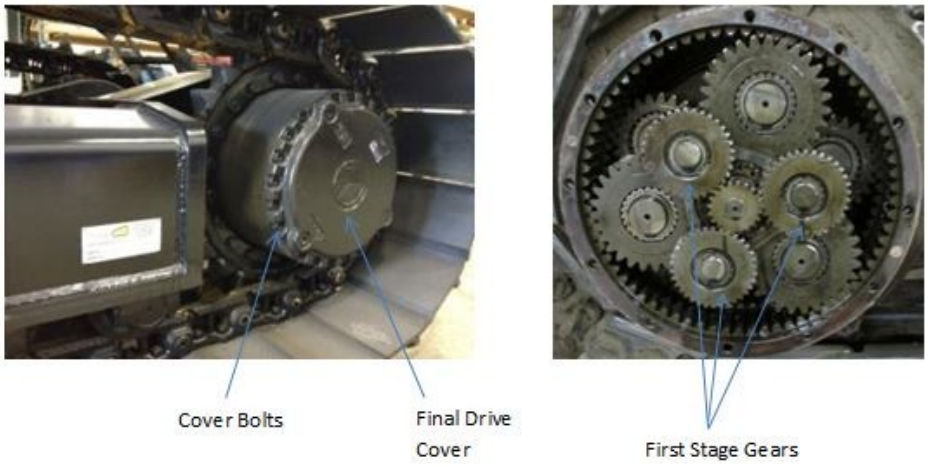
Continued on next page

- Quick machine movement could overload the tow cable or draw bar. This could cause the low line or draw bar to break. Gradual, steady machine movement will be more effective.
- Normally, the towing machine should be as large as or larger than the disabled machine.
- Make sure the towing machine has enough brake capacity, enough weight, and enough power. The towing machine has to be able to control both machines for the grade that involved and for the distance that is involved.
- You must provide sufficient control and sufficient braking when you are moving the disabled machine downhill. This may require a larger towing machine or additional machines that are connected to the rear of the disabled machine. This will prevent the disabled machine from rolling away out of control.

WARNING: All situations cannot be listed. It is the operator's responsibility to make sure that the tow equipment is the appropriate size for the application. Do not pull or tow this machine unless you are sure that you are using the appropriate towing equipment. Failing to do so, can cause damage to the machine or cause personal injury.

Disengaging Final Drives

IMPORTANT: DO NOT pull or tow this machine if it is disabled or non-functional without first disengaging both final drives. Damage to the hydraulic system will occur. Do not tow machine without oil in the final drive. Damage to the final drive will occur.



Continued on next page

- Refer to the track manual for exploded views and more information about the final drive.
- Thoroughly clean the area around the final drive. Make sure that you clean the track pads that are above the final drive as well to make sure that no dirt will falls into the final drive when disassembled.
- Drain final drive oil into a suitable container.
- Remove all the cover bolts from the final drive cover except one bolt at the top. Loosen the one bolt at the top but do not completely remove it at this time. This bolt is used to help support the cover while separating the cover from the final drive.
- Gently use a hammer and wedge to separate the cover from the final drive. The ring gear is bolted to the inside of the cover and will be removed as well.
- Remove the loose bolt while holding the cover.
- Completely remove the cover.
- Gently pry first stage gear assembly out of the final drive. The three gears are removed as an assembly.
- Replace the final drive cover and install the bolts.
- Fill the final drive with new oil.
- Repeat all steps for the other final drive.
- The machine is now ready for towing.

14: Machine Controls and Operations

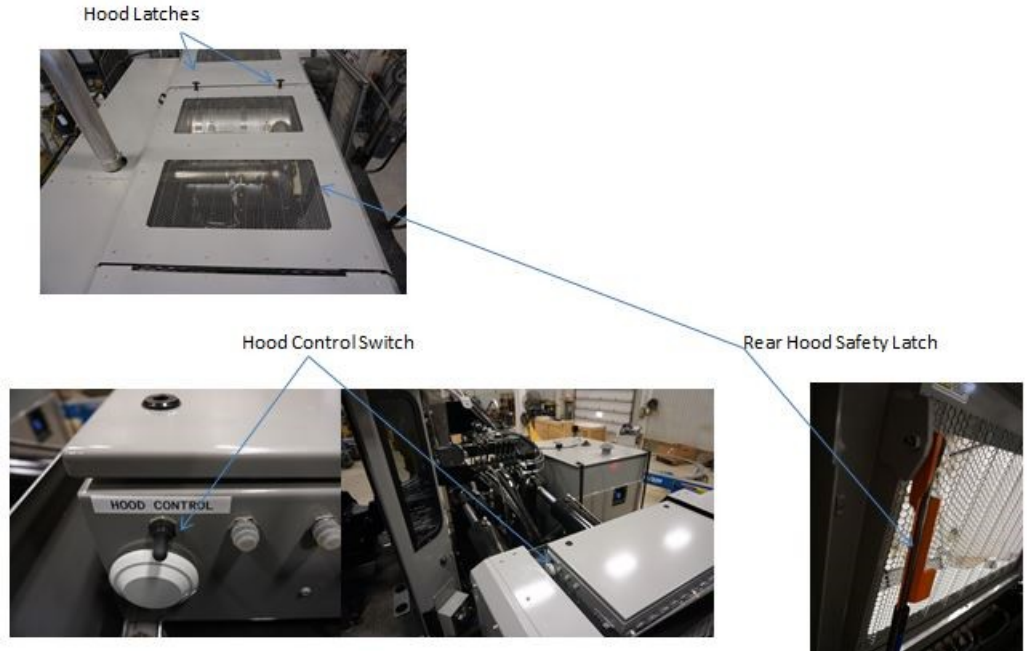
WARNING: The operator of this machine must familiarize themselves with the various controls and instruments provided for its operation. Though many operators may be familiar with the controls on similar machines, there may be important differences making it very important to read and understand this section regardless of their experience.

WARNING: DO NOT operate or permit anyone to operate this machine until all personnel have completely read and understand the safety and operation instructions in the Wolfe Plows Operator and Safety Manual, the Caterpillar Operations and Maintenance Manual, and the Track One Use and Maintenance Manual with Spare Parts. Make sure that all personnel have been properly trained and understand the characteristics and hazards of operating this machine. Only trained operators who have demonstrated the ability to operate this machine correctly and safely are allowed to use this piece of equipment.

WARNING: Before each period of operation, check the machine for correct operation of the steering, hydraulic controls, instruments and safety equipment. Check the neutral position of the joysticks. A machine that runs correctly can prevent accidents. Make all the necessary repairs or adjustments before you operate the machine.

WARNING: Jumping on or off the machine can cause an injury. Always face the machine, use the hand rails and steps, and get on and off the machine slowly.

Plow Hoods



IMPORTANT: To avoid damage to the hoods and hood components, close all hoods before moving the machine.

To Open

- Unlatch the two hood latches.
- Lift rear hood to the full open position.
- Ensure that the rear hood safety latch is in the lock position to prevent the hood from accidentally falling closed. Do not work under this hood unless the safety latch is in the locked position.
- Push the hood control switch up (located on the back of the electrical panel) to raise the front hood completely. Never work under the front hood unless it is in the completely open position.

To Close

- Push the hood control switch (located on the back of the electrical panel) down to completely close the front hood.
- Lift the rear hood safety latch.
- Push the rear hood down to close. Ensure not to drop the hood. Keep hands clear to prevent pinching or injury.
- Latch hood latches.

Master Switch

- Some machines may have a different brand of Main Disconnect Switch than what is shown in this picture
- To turn the main disconnect switch on push the top of the button. The button will illuminate.
- To turn the main disconnect switch off push the button of the button. The illumination on the button will turn off. All electronic equipment should power down.
- When the main Disconnect switch is in the off position all power is cut off to the machine controls and electronics. If the machine is going to sit for long periods of time the master disconnect switch should be turned off to prevent the batteries from draining due to the electronics drawing power from the system.
- The main disconnect switch should be in the off position if the machine is being serviced or repaired.

Yellow Purge Lamp

- Do not shut off the main disconnect switch when the yellow purge lamp is illuminated.
- When the lamp is illuminated, it indicates when the DEF (Diesel Exhaust Fluid) has been completely purged from the supply lines and drained back into the DEF (Diesel Exhaust Fluid) tank.

Bulkhead Controls

The bulkhead controls may vary depending on what options this machine is equipped with. The actual location of the bulkhead controls may vary slightly from machine to machine. Become familiar with these controls and their locations before operating this machine.

Bluetooth Radio

- This machine is equipped with a bluetooth radio.
- Refer to the radio manual for instructions on how to setup and use the settings and features.

Interior Light Switch

- The Interior Light Switch is a two position switch.
- Push the switch to the up position to turn the light on.
- Push the switch to the up position to turn the light off.
- The key switch does not control the power to the interior light so it is important too make sure the light is switched off before leaving the machine for long periods of time. Failing to do so with result in draining the battery.
- The interior light has a built in on/off switch. Make sure that the switch is in the on position

Exterior Light Switch

- The Exterior Light Switch is a two position switch.
- Push the switch to the up position to turn the lights on
- Push the switch to the down position to turn the lights off.
- The Key Switch does control the power to the exterior lights so it must be in the Run position in order to use the exterior lights.

GPS Arm

The GPS arm has an electric actuator to raise and lower the unit as required.

GPS Arm Raise and Lower Switch

- The actuator on the GPS arm is equipped with limit switches that will stop the arm in the raised and lowered position.
- The GPS raise and lower switch is a two position switch.
- Push the switch to the up position to raise the GPS arm
- Push the switch to the down position to lower the GPS arm.

Cab HVAC System

Heater and A/C Controls

Continued on next page

Fan Speed Control

- The fan speed control switch has four settings. Fan off, low, medium and high fan speed.
- Push the arrow up button to increase the fan speed.
- Push the arrow down button to decrease the fan speed.

Celsius/Fahrenheit Control

- The digital display can be set to read in C° or F°
- Push the button to set the system to C°
- Push the button again to set the system to F°

Digital Display

- The digital display indicates what the system temperature has been set to in C° or F°

Temperature Control

- The Temperature Control buttons are used to set the desired temperature.
- Watching the digital display push the arrow up button to increase the desired temperature.
- Watching the digital display push the arrow down button to decrease the desired temperature.

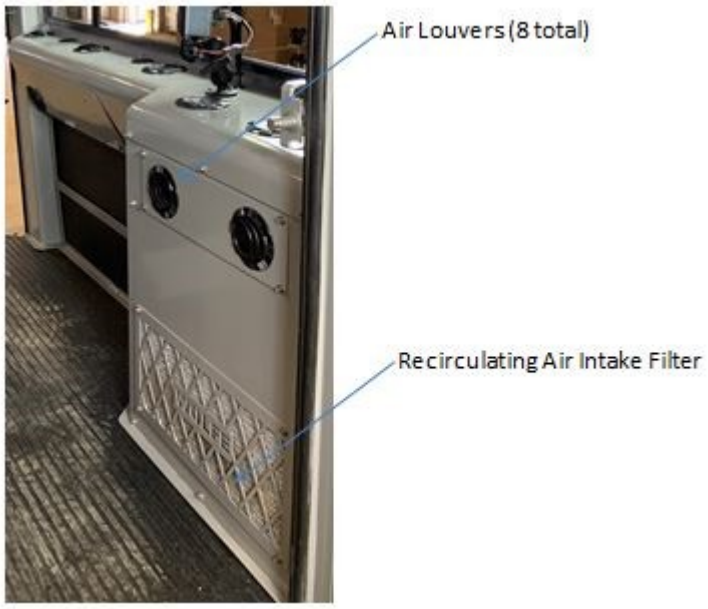
On/Off Control

The on / off control buttons are used to turn the system on or off.

Auto/Manual Control

- The auto / manual control is used to set the system to either auto or manual.
- Press the auto button to set the system to the auto setting. The fan will automatically increase and decrease speed to maintain the set temperature in the cab according to the digital display.
- Press the auto button again to set the system to manual. The operator will need to manually increase and decrease the fan speed using the fan speed control buttons.

Air Circulation Louvers and Filters



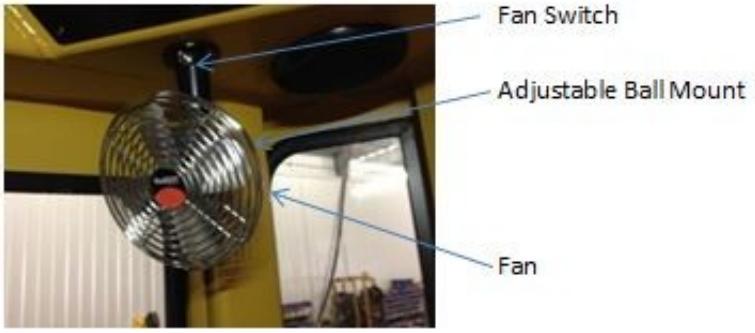
Air Louvers

- The air louvers can rotate, adjust angle and can be completely closed.
- Rotate each air louver so that the air blows in the desired direction.
- Adjust the angle of the louver bars.
- These louvers are intended to be used for defrosting the windows as required. If further window defrost is required the auxiliary fan can be used.

Recirculating Air Intake Filter

The recirculating air intake filter will clean the air that is being circulated through the cab.

Auxiliary Fan



Fan Switch

- The fan switch is a 3 position switch.
- Push to the left for low speed.
- Push to the middle for off.
- Push to the right for high speed.

Adjustable Ball Mount

- The fan is mounted on an adjustable ball mount allowing a range of adjustment.
- Rotate and tilt the fan to provide air movement in the desired location.

Fan

- The fan is used to circulate extra air through the cab if required.
- It can be adjusted to be used for defrosting the windows.
- In the summer, it can be adjusted to blow on the operator for extra cooling.

Sliding Windows

Opening and Closing Sliding Windows

- To open the sliding windows pinch the window latch and slide window open.
- To close slide window completely closed. The latch will automatically catch and hold the window in place.
- Ensure that windows are closed before transporting this machine at highway speeds.

Interior Door Latch

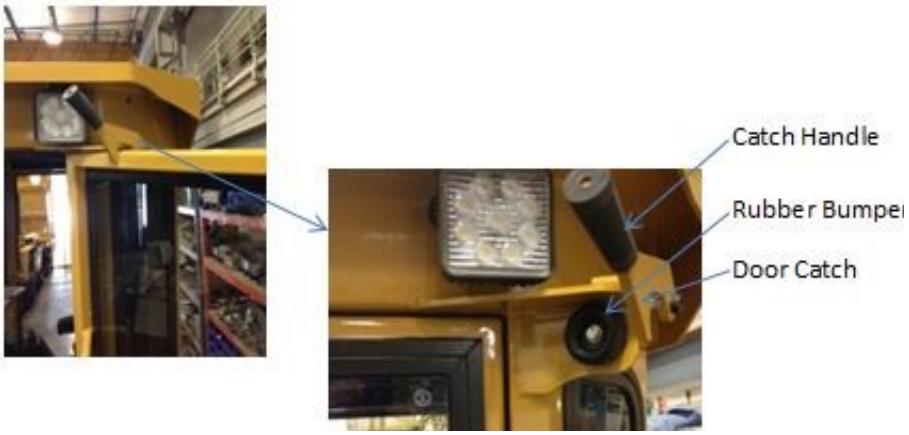
- To open the doors from the interior push down on the latch lever.

External Door Latch

- To open the doors form the exterior, push the button on the latch.
- The exterior door latch can be locked using the key.
- Insert key into button on latch.
- Rotate clockwise to lock.
- Rotate counter-clockwise to unlock.

Door Catch (for open door)

The door catches are used to hold the doors in the open position.



Door Bumper and Catch

- Push the door completely open until it meets the rubber bumper.
- The door catch will ride up over the edge of the door frame locking it in the open position.
- Lift the catch handle to release the door.

IMPORTANT: Do not operate the Parallel Link Plow (only) with the front door latched in the open position. Due to the parallel link design, the cab and cab door may be damaged if in the open position while machine is in operation.

12 Volt Outlets

The 12 V outlets are not controlled by the key switch. The outlets are continually supplied with 12V power.

Seat Console Controls

Track Control

Wolfe Plows can be ordered with either dual stick control or single stick control.

WARNING: The operator must completely familiarize themselves and understand the track controls before operating this machine. Failing to do so can cause unintended machine motion, serious injury, or death.

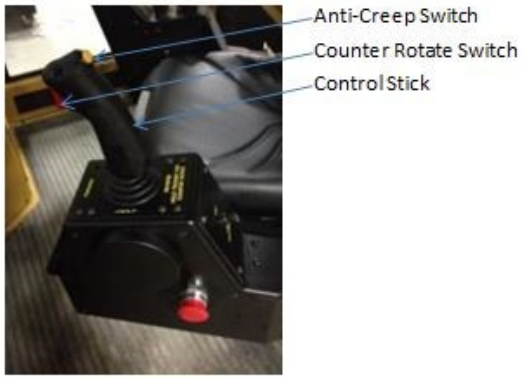
WARNING: Before operating this machine, walk around the machine and warn all personnel who may be working around the machine or in the machine's path. Do not move the machine until all personnel are clearly away from the machine and it is safe to do so.

WARNING: Move the control sticks gradually and smoothly. Excessive speed and quick control movements without regard for the conditions or circumstances can be hazardous and may cause serious injury or death.

Dual Joystick Controls

- Forward, reverse, speed, and turning maneuvers are accomplished by moving the control sticks.
- Each track is controlled by individual stick controls. The left stick controls the left track and the right stick controls the right track.
- If you push the stick forward the corresponding track will rotate in the forward direction. If you pull the stick back the corresponding track will rotate in the reverse direction.
- Each track control stick has a neutral position in the center of its stroke or travel. The track control sticks are NOT spring-return to neutral. The operator is required to move the control sticks to the neutral position in order to stop the track from rotating.
- The track control sticks provide infinite speed control to each individual track. Moving the control sticks further away from the neutral position in either direction steadily increases the speed of the track up to the maximum speed.
- To move the machine in a forward direction in a straight line, push both sticks equally in the forward direction.
- To move the machine in the reverse direction in a straight line, pull both sticks equally in the back direction.
- To move the machine forward and turn to the left, push the sticks forward with the right stick pushed further forward than the left stick.
- To move the machine forward and turn to the right push the sticks forward with the left stick pushed further forward than the right stick.
- To move the machine backward and turn to the right, pull the sticks back with the left stick pulled further back than the right stick.
- To move the machine backward and turn to the left, pull the sticks back with the right stick pull further back than the left stick.
- For very sharp turns to the left, push the right stick forward and pull the left stick back.
- For very sharp turns to the right, push the left stick forward and pull the right stick back.

Single Joystick Control



Anti-Creep Switch (single joystick only).

- Press the anti-creep button to turn the anti-creep function on (Anti-Creep ON will illuminate on the machine control system).
- Press the anti-creep button again to turn the anti-creep function off (Anti-Creep Off will illuminate on the machine control screen).
- When the anti-creep function is enabled all track functions are turned off.

WARNING: All hydraulic functions are active except the track hydraulics when the anti-creep function is enabled. Continue to keep all persons clear of the machine. Failing to do so could result in serious injury or death.

Control Stick

- Forward, reverse, speed and turning maneuvers are accomplished by moving the single stick control.
- Both tracks are controlled by a single stick control.
- The single stick control has a neutral position in the center of its stroke or travel. The control stick is NOT spring-return to neutral. The operator is required to move the control stick to the neutral position in order to stop the track from rotating.
- The single stick control provides infinite speed control. Moving the control stick further away from the neutral position in either direction, steadily increases the speed of the track up to the maximum speed.
- To move the machine in a forward direction, in a straight line, push the control stick in the forward direction.
- To move the machine in the reverse direction, in a straight line, pull the control stick in the back direction.
- To move the machine forward and turn to the left, push the control stick forward and to the left.
- To move the machine forward and turn to the right, push the control stick forward and to the right.

Continued on next page

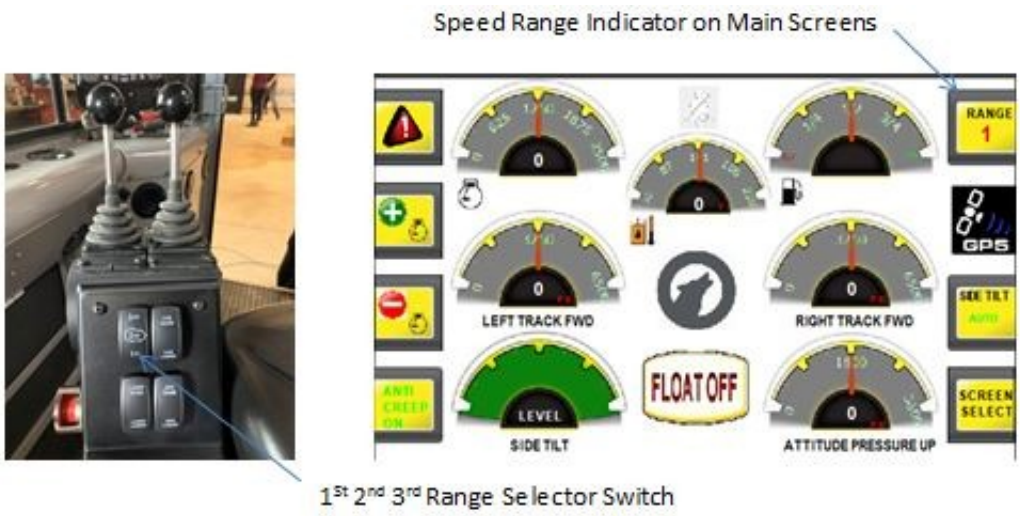
- To move the machine backward and turn to the right, pull the control stick back and to the right.
- To move the machine backward and turn to the left, pull the control stick back and to the left.

Counter Rotate Switch

- For very sharp turns to the left, move the control stick in the neutral position for a minimum of two seconds. Push the counter rotate button and move the control stick to the left. The right track will rotate in the forward direction and the left track will rotate in the reverse direction.
- For very sharp turns to the right, move the control stick in the neutral position for a minimum of two seconds. Push the counter rotate button and move the control stick to the right. The left track will rotate in the forward direction and the right track will rotate in the reverse direction.

Range Selector Switch

Ranges: 1st 2nd 3rd

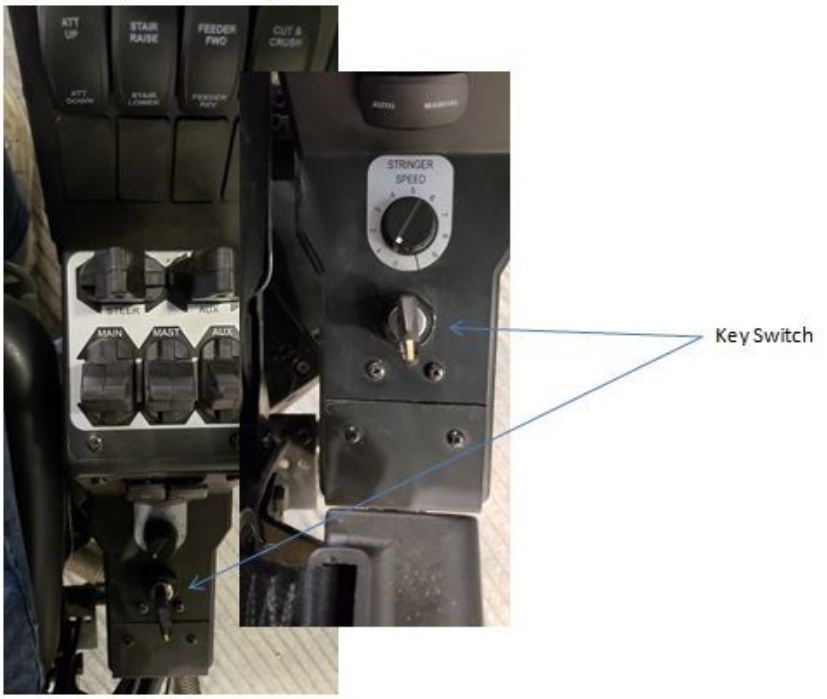


This machine is equipped with 3 separate speed ranges. The range selector switch is a 3 position switch for the operator to select the desired speed range.

- 1st range up to 135 ft/min
- 2nd range up to 270 ft/min
- 3rd range up to 370 ft/min

The selected range will illuminate on the main machine control screens.

Key Switch



- The Key Switch is located on the right hand seat console under the arm rest.
- When the Key Switch is turned to the run position the machine control screen will power up
- To start the engine the Key Switch needs to be turned to the run position with the electronics powered up. The starter push button is used to turn over the engine. (Refer to the Caterpillar Operation and Maintenance Manual for instruction on starting the engine)
- The Key Switch is turned to the off position to shut down the machine and power down the machine control screen. (Refer to the Caterpillar Operation and Maintenance Manual for instruction on stopping the engine)
- If the machine is being repaired or serviced the key should be removed and a Do Not Operate tag placed on the machine controls.
- A number of the electronic components have machine power supplied when the Key Switch is in the off position, making it important to turn the Master Switch off before servicing or repairing the machine. Damage could occur to the machine electronics if service or repair work is done while the electronics have power supplied to them.

NOTE: The Caterpillar Operation and Maintenance Manual refers to turning the key switch to the start position to turn over the engine.

Starting the Engine and Engine Operation

- Refer to the Caterpillar Operation and Maintenance Manual for all the engine related operation information and procedures.

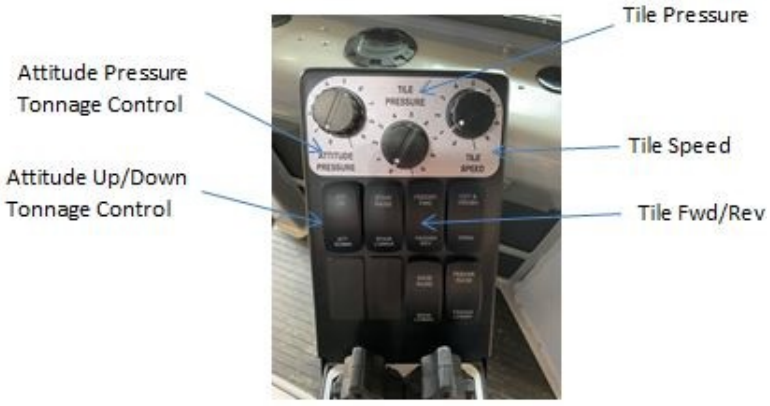
NOTE: Refer to the Caterpillar Operation and Maintenance Manual for information and procedures for starting the machine engine with jump start cables.

Parking the Machine and Stopping the Engine

- Move the machine to a level area. The machine must be on level ground before stopping the engine.
- As a last resort, if you must park the machine on a grade securely block the tracks to prevent the machine from unintended movement.
- Turn the machine's anti-creep function on.
- Lower the mole and any auxiliary equipment that is suspended by the hydraulic system completely.
- Refer to the Caterpillar Operation and Maintenance Manual for instruction on stopping the engine.
- If the machine is going to sit for long periods of time the Master Switch should be turned off to prevent the batteries from draining due to the electronics drawing power from the system.

Right Hand Upper Console

On the right hand upper console, there are a number of controls that may not be present depending on the options that were purchased with the machine.



Attitude Up/Down Tonnage Control

The Attitude Up/Down Tonnage Control function differs between the Parallel Link, Single Arm and Double Link machines.

Attitude Up/Down - Parallel Link Machine

This control is only active if the “Float On” is selected on the work screen.

NOTE: IF the float is activated, all auto attitude control is deactivated.

- This switch is a 3 position switch. Up/Lock/Down.
- The UP switch position gives you an attitude float with the option of variable attitude cylinder hydraulic pressure for attitude up by adjusting the attitude pressure dial.
- The LOCK (middle) switch position gives you NO float. (grading continues to be active).
- The Down switch position gives you an attitude float with the option of variable cylinder hydraulic pressure for attitude down by adjusting the attitude pressure dial.

Attitude Up/Down - Single Arm Machine

This control is only active if the “Float On” is selected on the work screen.

- This switch is a 3 position switch. Up/Lock/Down.
- The UP switch position gives you an attitude float with the option of variable attitude cylinder hydraulic pressure for attitude up by adjusting the attitude pressure dial.
- The Middle switch position gives you NO float. Both the grading and attitude circuits are active and work together but are less responsive. To increase the circuit responsiveness turn the float feature off.
- The Down switch position gives you an attitude float with the option of variable cylinder hydraulic pressure for attitude down by adjusting the attitude pressure dial.

Tonnage Control Attitude Up/Down - Double Link Machine

This control is only active if the “Float On” is selected on the work screen.

- This switch is a 3 position switch: Up/Lock/Down.
- The UP switch position gives you an attitude float with the option of variable tonnage control on the attitude cylinder hydraulic pressure for attitude up by adjusting the tonnage control attitude pressure dial.
- The Middle switch position gives you NO float. Both the grading and attitude circuits are active and work together but are less responsive. To increase the circuit responsiveness turn the float feature off.
- The Down switch position gives you an attitude float with the option of variable tonnage control on the cylinder hydraulic pressure for attitude down by adjusting the tonnage control attitude pressure dial.

Attitude Pressure Dial

- This dial is used to adjust the amount of hydraulic pressure that is applied to the attitude cylinders.
- This function is only active when the float is ON (screen #3) and the attitude Up/Down selector switch is either in the UP or DOWN position.
- Turn the dial clockwise to increase the hydraulic pressure and turn the dial counter-clockwise to decrease the hydraulic pressure.

Tile Pressure Dial

- This dial is used to adjust the amount of feeding force the tile feeder drive wheel will apply to the tile while feeding it into the boot.
- Turn the dial clockwise to increase the feeding force and turn the dial counter-clockwise to decrease the feeding force.
- The pressure is adjusted for the forward rotation of the feeder drive wheel only.

Tile Forward/Reverse Switch

- This switch is used to change the direction of rotation on the tile feeder drive wheel from forward to reverse.
- Push the switch to the left for forward direction to feed the tile into the boot.
- Push the switch to the right to reverse the rotation which will pull the tile out of the boot.

Tile Speed Dial

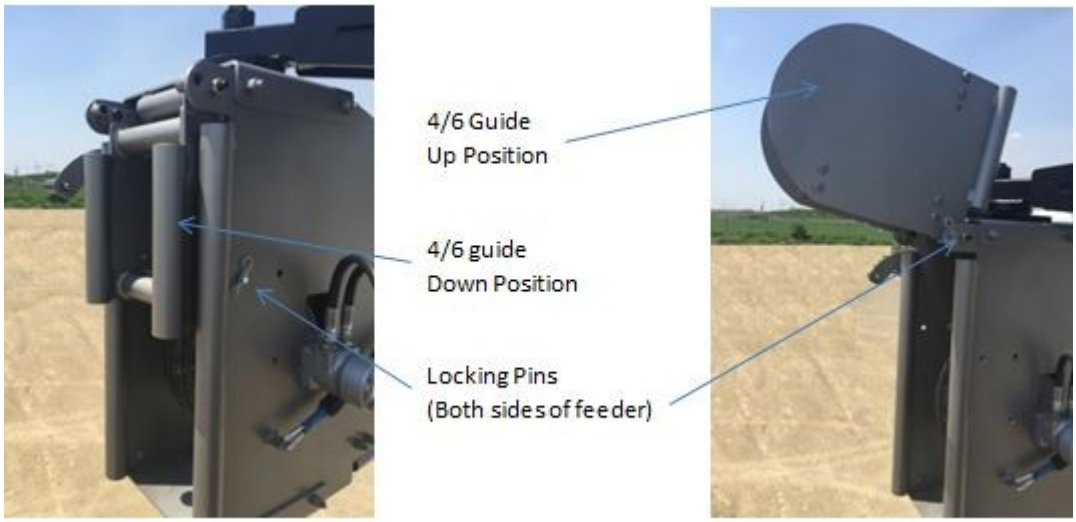
- This dial is used to adjust the tile feeder drive wheel speed.
- Turn the dial clockwise to increase the feeding speed.
- Turn the dial counter-clockwise to decrease the feeding speed.

Tile Feeder Unit (Actual Design May Vary)

Using the Tile Feeder

- Make sure the tile feeder main drive wheel is not rotating.
- Pull the pressure wheel lever on the tile feeder to raise the pressure wheel.
- Push the tile into the tile feeder so that it can be pinched between the pressure wheel and the main drive wheel.

4”/6”/8” Tile Feeder



The 4” / 6” / 8” tile feeder can be used to feed the three different sizes of tile. The 4” and 6” tile are fed with the 4/6 guide in the down position. The 8” tile is fed with the 4/6 guide in the up position.

Moving the 4/6 Guide

- Remove the cotter pins from the locking pins on both sides of the feeder.
- Remove the locking pins.
- Position the 4/6 guide in the desired location according to the size of tile that is being fed.
- Install the two locking pins.
- Install the cotter pins.

Right Hand Lower Console

The Right Hand Lower Console consists of five proportional control levers. Proportional control is a system where you have variable speed control for each of the hydraulic circuits. The further you push the control lever in either direction the faster the machine component that is hooked to that circuit will move (from zero to maximum speed).

Mole Swing Control

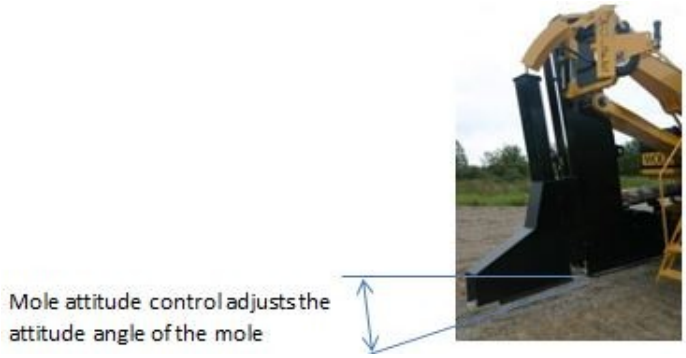
- This lever controls the mole swing from side to side.
- Push the lever to the left to move the mole left.
- Push the lever to the right to move the mole right

ole swing control rotates the mole from side to side

IMPORTANT: This function is not intended to be used while the mole is in the ground.

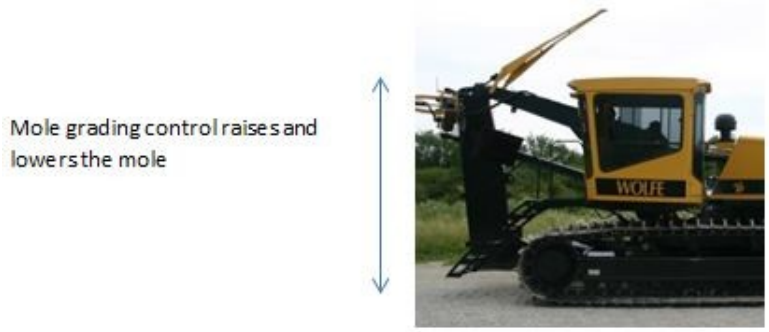
Mole Attitude Control

- This lever controls the attitude angle of the mole.
- Push the lever forward to tilt the front of the mole down.
- Pull the lever back to tilt the front of the mole up.



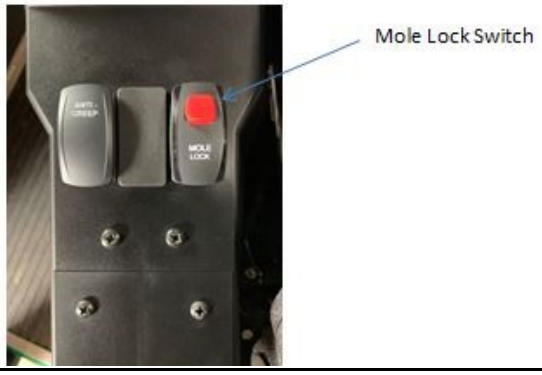
Mole Grading Control

- This lever is used to raise and lower the mole.
- Push the lever forward to lower the mole.
- Pull the lever back to raise the mole.



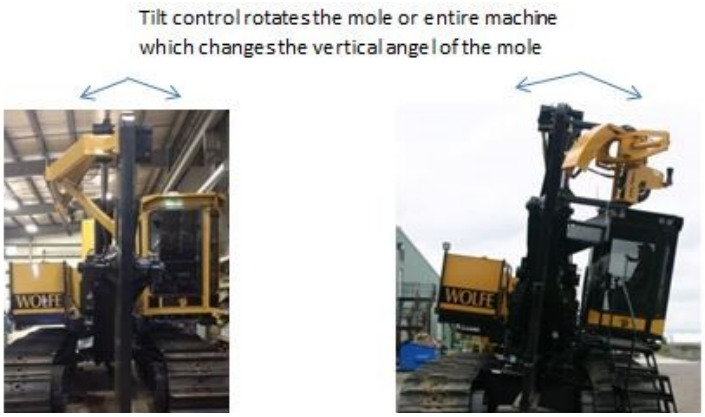
Mole Lock Switch

- Use the mole lock switch to lock the mole in the position that it is currently in.



Auxiliary Valve/Mole Tilt Control/Side Tilt - Manual Control

NOTE: When this control is being used for mole tilt or side tilt, it is only active when the machine is set in manual tilt mode - see the Machine Control Monitor section for selecting manual tilt mode.



- For a Single Arm machine this lever is used to tilt the vertical angle of the mole.
- Side tilt is optional on the Parallel Link and Double Link machines.
- Push the lever to the left to tilt the vertical angle of the mole to the left.
- Push the lever to the right to tilt the vertical angle of the mole to the right.
- For a Parallel Link and Double Link machine without side tilt this lever can be used to control a variety of hydraulic functions depending on what options your machine is equipped with.

WARNING: Always check and make sure that you are familiar with which hydraulic function this lever controls before operating this machine. Not knowing what function is connected to this Auxiliary Control can cause unexpected machine movement, serious injury, or death.

Auxiliary Valve

This lever can be used to control a variety of hydraulic functions depending on what options your machine is equipped with.

WARNING: Always check and make sure that you are familiar with which hydraulic function this lever controls before operating this machine. Not knowing what function is connected to this Auxiliary Control can cause unexpected machine movement, serious injury, or death.

Double Link Mole Lock - Adjusting the Mole

The actual location of the mole lock control switch may vary depending on what options the machine is equipped with.

WARNING: Always check and make sure that you are familiar with which control switch controls which hydraulic function before operating this machine. Not knowing what function is connected to each switch can cause unexpected machine movement, serious injury, or death.

Continued on next page

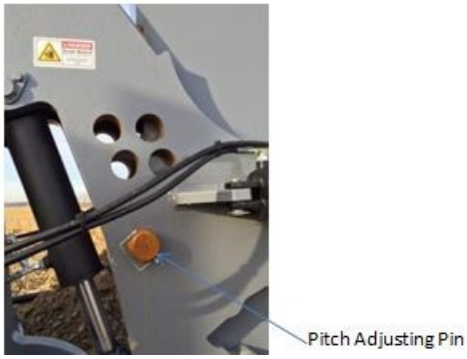
Adjusting the Double Link Mole

For optimal operation of the double link plow the mole should be set so that the lower arms are horizontal when the mole is at the desired installation depth.

- Lower the mole so that the bottom of the mole is horizontal and resting lightly on the ground.
- Do not apply any pressure on the ground.
- Push the mole lock control switch to release the locking plate. All three locking cylinders need to be at the stroke limit.
- Using the mole grading control lever raise or lower the mole holder bracket to the desire position.
- Fine adjust mole holder and ensure that the mole locking plate is lined up with one of the lock slots in the mole.
- Push the mole lock switch to lock the mole into place. All three locking cylinders need to lock.

Adjusting the Mole Pitch (Double Link Only)

With the modern GPS equipment the mole pitch should never need to be adjusted. Wolfe has included this adjustment for customers who may prefer a slightly different setup



- Lower the mole so that the bottom of the mole is horizontal and resting lightly on the ground.
- Do not apply any pressure on the ground.
- Push the mole lock control switch to release the locking plate. All three locking cylinders need to be at the stroke limit.
- Using the mole grading and pitch controls move the mole holder bracket until the pitch adjusting pin is loose and able to slide out.
- Remove the pitch adjusting pin.
- Using the mole grading and pitch controls move the mole holder bracket until the desired pitch hole is clear of the mole.
- Install the pitch adjusting pin.
- Using the mole grading control lever, raise or lower the mole holder bracket to the desire position.
- Fine adjust the mole holder and ensure that the mole locking plate is lined up with one of the lock slots in the mole.
- Push the mole lock switch to lock the mole into place. All three locking cylinders need to lock.

Rieker Inclinometer Display (Single Arm Only)

- The Rieker Inclinometer indicates the attitude angle of the mole in a percentage.
- If the digital display shows a percentage that is plus (+) the tip of the mole is tipped up.
- If the digital display shows a percentage that is negative (–) the tip of the mole is tipped down.

Machine Control Monitor

Fault Warning Buzzer

- This buzzer will only sound to indicate that the high pressure loop system pressure is low.
- After the buzzer sounds the machine will only run for 3 seconds and shutdown to protect the hydraulic system.

Bluetooth Radio Microphone

- This microphone is used when using the Bluetooth system to talk on your cell phone
- See the Bluetooth radio manual for setup and how to use instructions.

Screen Adjustment Stand

- To adjust the location of the machine control screen, loosen the large black wing nut while holding onto the screen (the screen will fall if not held onto). Move to the desired location and tighten the black wing nut.

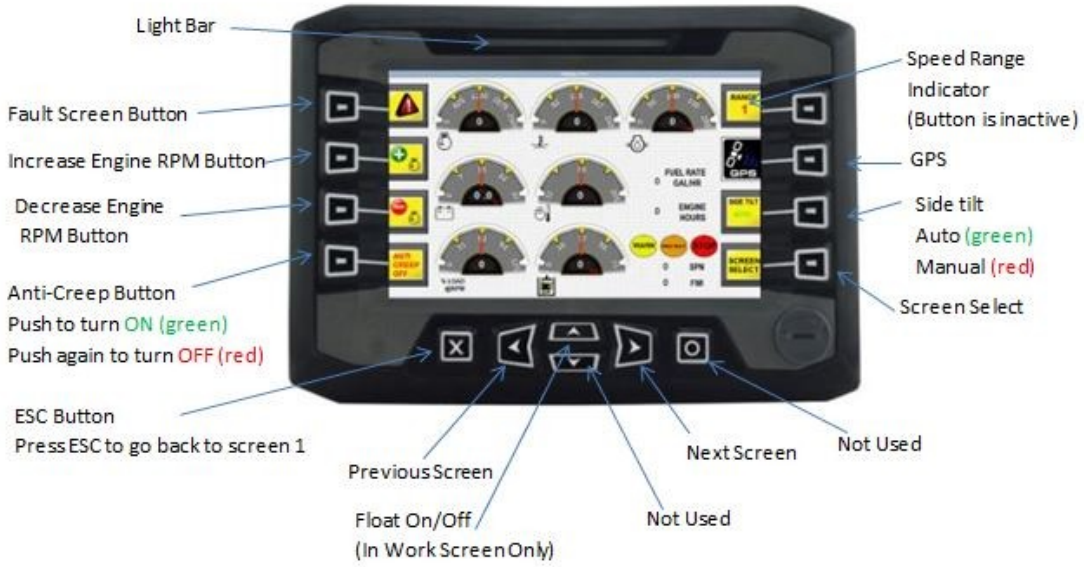
Machine Control Screens

NOTE: To move between screens, the operator has a choice to either use the active buttons that are located down each side of the display, or the active icons that are located on the touch screen display.

Main Screen

From the main screen, the operator can chose from the list of secondary screens.

NOTE: For the Engine, Tracks, and Work screens the buttons and icons down each side of the display remain the same, and have the same function. Either the buttons or the corresponding icons on the touch screen can be used to move through the screens.



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Light Bar

- The light bar with illuminate **red** when a fault has occurred.

Fault Screen Button

- Icon will illuminate in **green** when no faults exist.
- Icon will illuminate **red** if a fault has occurred.
- Press the fault screen button to view the list of machine faults.

Increase Engine RPM Button/Auto Idle

- Press the increase engine RPM button to increase the engine RPM (revolutions per minute).
- Each time you press the increase RPM button the engine RPM increases by 300 revolutions per minute.
- If the auto idle option is activated in the setup- machine configuration screen the machine will idle down after 5 seconds of no functions being used. The machine will automatically increase the RPM to the previous setting if any of the functions are activated.

Decrease Engine RPM Button

- Press the decrease engine RPM button to decrease the engine RPM (revolutions per minute).
- Each time you press the decrease RPM button the engine RPM decreases by 300 revolutions per minute.

Anti-Creep Button

- Press the anti-creep button to turn the anti-creep function on. (Anti-Creep ON will illuminate in **green**)
- Press the anti-creep button again to turn the anti-creep function off. (Anti-Creep Off will illuminate in **red**)
- When the anti-creep function is enabled all track functions are turned off.

WARNING: All hydraulic functions are active except the track hydraulics when the anti-creep function is enabled. Continue to keep all persons clear of the machine. Failing to do so could result in serious injury or death.

ESC Button

- Press the ESC button to go back one screen.
- This function is only active when the note “ESC to EXIT” existing on the lower left corner of the screen.

Continued on next page

Up/Down Buttons

- These buttons are used to scroll between the Engine, Tracks and Work Screens
- These buttons are also used to scroll between the fault pages
- Press the up button to view the next screen.
- Press the down button to view the previous screen.

Screen Select Button

- Press this button to go back to the main screen.
- This button is only active when the “Screen Select” icon is illuminated in the bottom right corner of the screen.

Side Tilt Auto/Manual (if equipped)

- This control is used to select auto/manual side tilt of the entire machine.
- Press the side tilt button to turn the side tilt function to auto. (Side Tilt AUTO will illuminate in **green**)
- Press the side tilt button again to turn the side tilt function off. (Side Tilt MANUAL will illuminate in **red**)
- When the side tilt function is in **AUTO**, the machine will automatically keep the machine vertical when the machine is being used on slopes.
- When the side tilt function is in **MANUAL**, the operator can manually tilt the machine by using the side control lever on the right hand lower console.

GPS Button

- Press this button to enable GPS Auto-steer CAN communication.
- Press this button again to deactivate GPS Auto-steer CAN Communication.

Speed Range Indicator

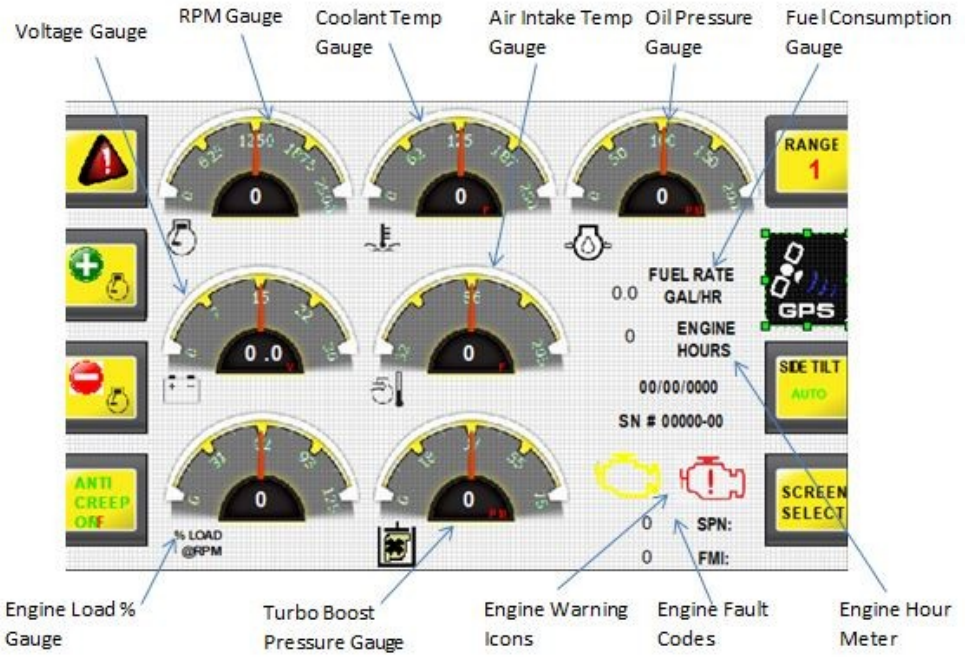
1st 2nd 3rd

This icon indicates which speed range the machine is set to operate in.

The selector switch on the lower left hand console is used to set the desired speed range:

- 1st range up to 135 ft/min
- 2nd range up to 270 ft/min
- 3rd range up to 370 ft/min

Engine Screen



Voltage Gauge

The voltage gauge shows system voltage of the machine.

RPM Gauge

The RPM gauge shows the speed of the engine in revolutions per minute.

Air Intake Temperature Gauge

The air intake temperature gauge shows the temperature of the air going into the engine in degrees F.

Coolant Temperature Gauge

The coolant temperature gauge shows the temperature of the coolant in degrees F.

Engine Oil Pressure Gauge

The engine oil pressure gauge shows the engine oil pressure in pounds per square inch (PSI).

Fuel Consumption Rate

The fuel consumption rate shows how much fuel is being used in gallons / hour.

Continued on next page

Engine Load % Gauge

The engine load % gauge shows the percentage of the maximum rated horsepower that the engine working at.

Turbo Boost Pressure Gauge

The turbo boost pressure gauge shows the turbo boost pressure inside the engine in pounds per square inch (PSI).

Engine Warning Icons

Engine Stop Icon

- The engine stop icon will illuminate in red when the engine detects a critical engine problem.
- The engine will shut down automatically if this occurs.
- Check the engine fault code on the bottom of screen.

Engine Warning Icon

- The engine warning icon will illuminate in yellow when the engine detects an engine problem which is not critical.
- The engine will continue to run but will need service to repair the issue.
- Check the engine fault code on the bottom of screen.

Engine Protection Icon

- The engine protect icon will illuminate in red when the engine detects an engine problem and the electronic controls de-rate the maximum output horsepower of the engine.
- The engine will continue to run but will need service to repair the issue.
- Check the engine fault code on the bottom of screen.

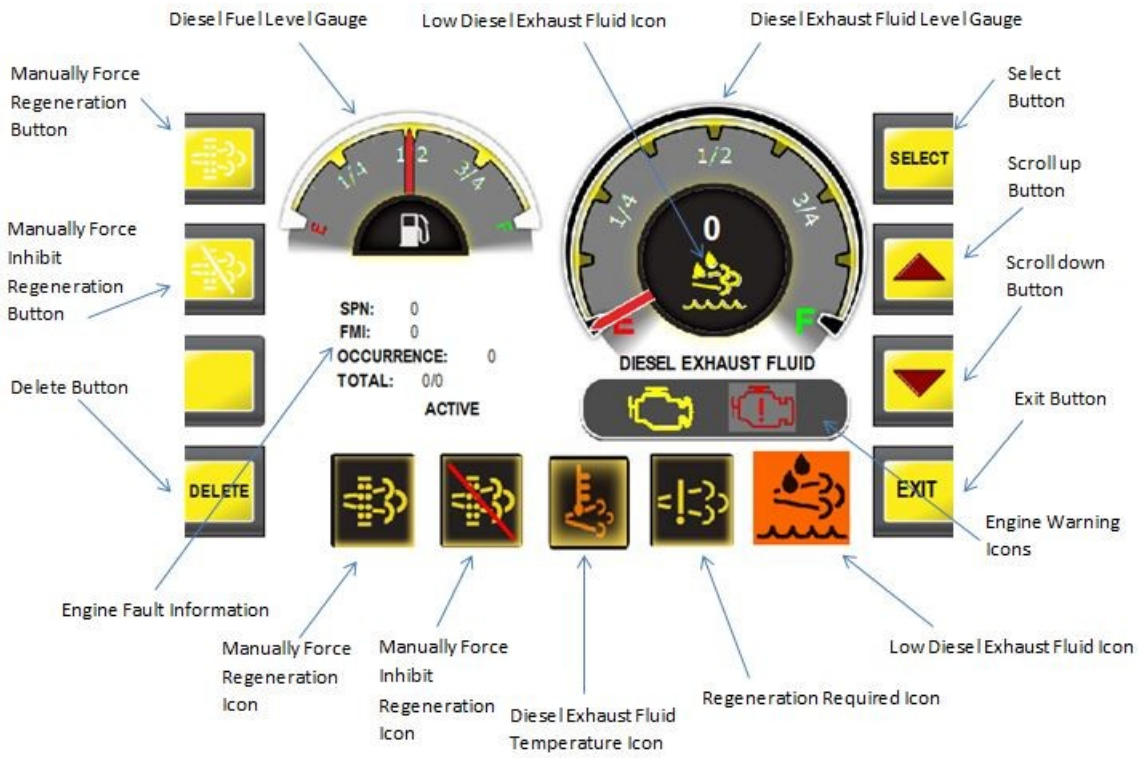
Engine Fault

- The engine fault codes show what fault the engine electronics is detecting.
- The fault codes are used to troubleshoot any issues with engine.
- See the fault code chart in the Caterpillar Operations and Maintenance Manual for more information.

Engine Hour Meter

The Hour meter shows how many hours the machine has to run.

Engine Regeneration Screen



Manually Force Regeneration Button
Press this button to manually force regeneration.

Manually Force Regeneration Icon
This icon will illuminate when manual regeneration is in progress.

Manually Force Inhibit Regeneration Button
Press this button to manually inhibit regeneration.

Manually Force Inhibit Regeneration Icon
This icon will illuminate when manual inhibition of regeneration is in progress.

Delete button
Clears inactive engine faults.

Continued on next page

Engine Fault information

- The engine fault codes show what fault the engine electronics is detecting.
- The fault codes are used to troubleshoot any issues with engine.
- See the fault code chart in the Caterpillar Operations and Maintenance Manual for more information.

Diesel Exhaust Fluid Temperature Icon

This icon will illuminate when the diesel exhaust is starting to get too hot.

Regeneration Required Icon

This icon will illuminate when regeneration is required.

Diesel Fuel Level Gauge

This gauge shows the amount of diesel fuel in the fuel tank.

Diesel Exhaust Fluid Level Gauge

This gauge shows the amount of Diesel Exhaust Fluid left in the Diesel Exhaust Fluid tank.

Low Diesel Exhaust Fluid Level Icon

This icon will illuminate when the diesel exhaust fluid is low. Stop machine safely and add diesel exhaust fluid.

Engine Stop Icon

- The engine stop icon will illuminate in red when the engine detects a critical engine problem.
- The engine will shut down automatically if this occurs.
- Check the engine fault code on the bottom of screen.

Engine Warning Icon

- The engine warning icon will illuminate in yellow when the engine detects an engine problem which is not critical.
- The engine will continue to run but will need service to repair the issue.
- Check the engine fault code on the bottom of screen.

Engine Protect Icon

- The engine protect icon will illuminate in red when the engine detects an engine problem and the electronic controls de-rate the maximum output horse power of the engine.
- The engine will continue to run but will need service to repair the issue.
- Check the engine fault code on the bottom of screen.

Continued on next page

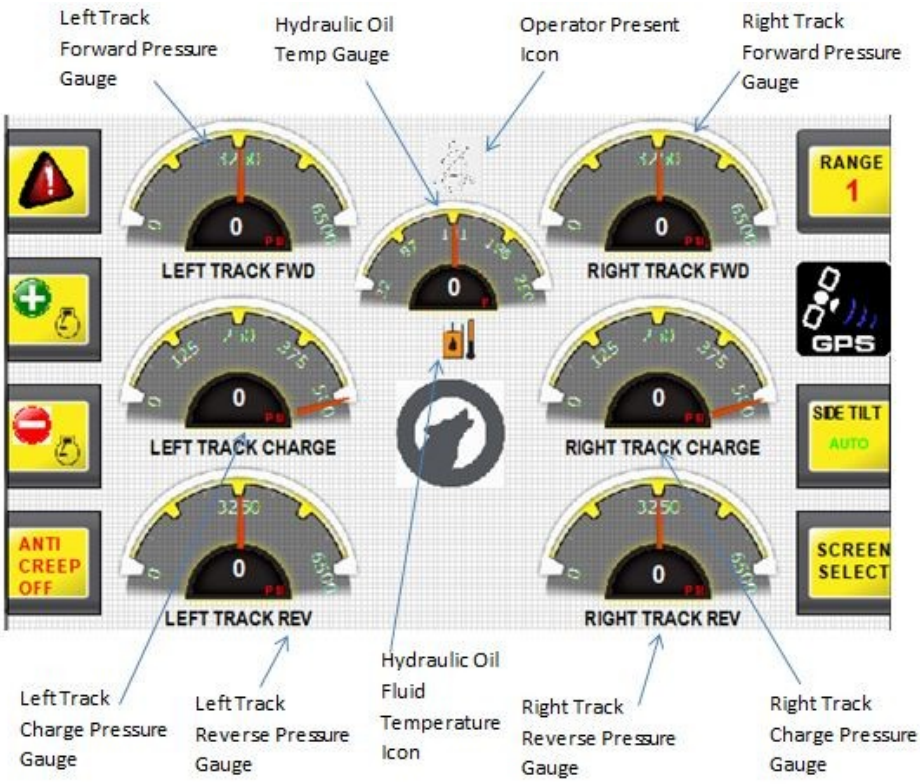
Select Button
Use this button to select either active or inactive engine faults.

Scroll Up Button
Use this button to scroll up either active or inactive faults..

Scroll Down Button
Use this button to scroll down either active or inactive faults..

Exit Button
Use this button to exit the current screen.

Track Screen



Left Track Forward Pressure Gauge

The left track forward pressure gauge shows the hydraulic pressure that is being used on the left track while the machine is moving forward in PSI (pounds per square inch).

Right Track Forward Pressure Gauge

The right track forward pressure gauge shows the hydraulic pressure that is being used on the right track while the machine is moving forward in PSI (pounds per square inch).

Hydraulic Oil Temperature Gauge

The hydraulic oil temperature gauge shoes the hydraulic oil temperature in degrees F.

Operator Present Icon

- The operator present icon flashes when the seat switch detects that the operator is NOT in the seat.
- If the operator leaves the seat while the machine is in motion the machine will stop after 5 seconds.

Continued on next page

Left Track Charge Pressure Gauge

The left track charge pressure gauge shows the left track pump charge pressure in pounds per square inch (PSI) for both the primary and secondary charge pumps.

Right Track Charge Pressure Gauge

The right track charge pressure gauge shows the right track pump charge pressure in pounds per square inch (PSI) for both the primary and secondary charge pumps.

Left Track Charge Pressure Gauge

The left track reverse pressure gauge shows the hydraulic pressure that is being used on the left track while the machine is moving in reverse in PSI (pounds per square inch).

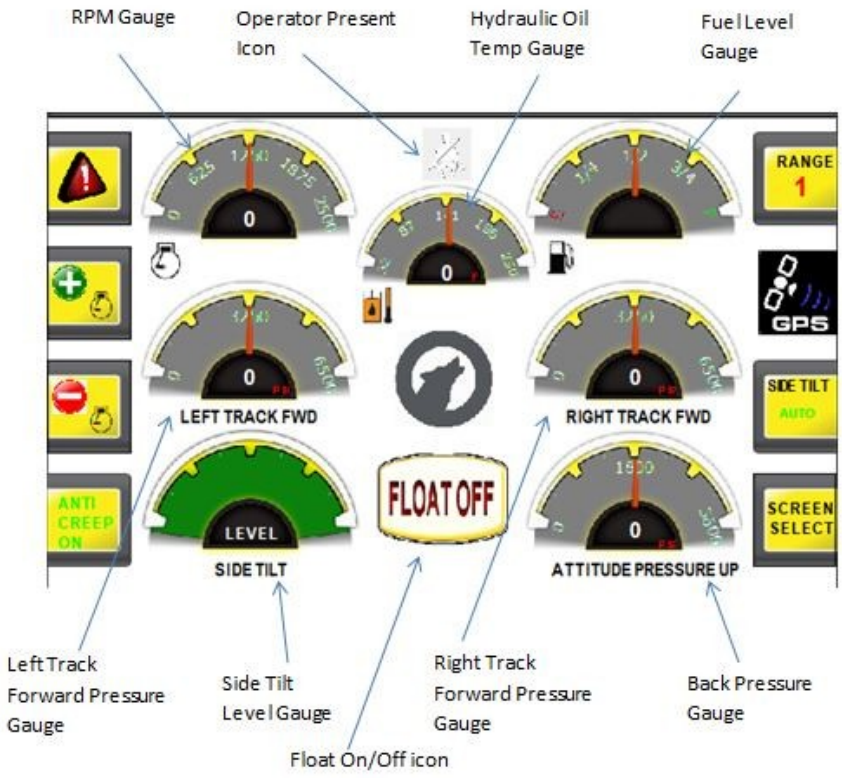
Right Track Charge Pressure Gauge

The right track reverse pressure gauge shows the hydraulic pressure that is being used on the right track while the machine is moving in reverse in PSI (pounds per square inch).

Hydraulic Oil fluid Temperature Icon

This icon will illuminate when the hydraulic oil fluid is starting to get too hot.

Work Screen



RPM Gauge

The RPM gauge shows the speed of the engine on revolutions per minute (RPM).

Operator Present Icon

- The operator present icon flashes when the seat switch detects that the operator is NOT in the seat.
- If the operator leaves the seat while the machine is in motion the machine will stop after 5 seconds.

Hydraulic Oil Temperature Gauge

The hydraulic temperature gauge shows the hydraulic oil temperature in degrees F.

Fuel Level Gauge

The fuel gauge shows the amount of fuel that is in the fuel tank.

Left track Forward Pressure Gauge

The left track forward pressure gauge shows the hydraulic pressure that is being used on the left track while the machine is moving forward in PSI (pound per square inch).

Continued on next page

Right Track Forward Pressure Gauge

The right track forward pressure gauge shows the hydraulic pressure that is being used on the right track while the machine is moving forward in PSI (pounds per square inch).

Side Tilt Gauge (if equipped)

The side tilt gauge shows when the mole is level (vertical) leaning to the right or leaning to the left.

Back Pressure Gauge (attitude circuit)

The attitude back pressure gauge shows the hydraulic pressure in the attitude cylinders in PSI (pounds per square inch)

Tile Stringer Screen

Fault Button
Navigate to fault page. Alert icon will flash if fault has been detected.

Calibration Instructions Button
Instructions on how to calibrate minimum value of the wand sensor.

Select Direct Button
Select direction of rotation of the tile stringer.

Calibrate Button
Select to enable minimum calibrated value of the wand sensor when in calibration mode.

Enter Button
Captures the minimum calibrated value of the wand sensor when in calibration mode.

Auto/Manual Icon
Shows if the tile stringer is in Auto Mode or Manual Mode.

Continued on next page

Wand Gauge

- Shows the MV sent from the sensor.
- Indicates where the speed control arm is relative to its full rotary stroke in volts DC.
- If there is a large tile droop and the speed control arm is down, the gauge will read closer to 0 and the tile reel rotation will slow down or stop.
- If there is a very small tile droop, the speed control arm will be high in its stroke and the gauge will read closer to 5 VDC and the tile reel will speed up.

Potentiometer Gauge

- Shows the MV sent from the potentiometer on the seat.
- The potentiometer gauge indicates the target position that you want the speed control arm to work in. Once you have this set, the machine will always try to feed the proper amount of tile to keep the speed control arm in that position; basically setting the center of the control arm working range.
- Every time the key power is turned off, the hose position will need to be set.

Changing the Setting While the Machine is Not Moving

- Switch the speed control selector switch on the seat console to manual (see below for information on the seat console controls).
- Lift the speed control arm to the center of the working range that you desire.
- Switch the speed control selector switch back to auto.
- The hose position will be set.
- If you switch the speed control back to manual this setting will be lost and will need to be reset.

Changing the Setting While the Machine is Installing Tile

- Switch the speed control selector switch on the seat console to manual.
- Turn the manual speed control dial to 0 to reset the speed control to manual.
- Using the manual speed control dial speed up or slow down the tile reel so that the speed control arm and the tile droop is in the center of the working range that you want.
- Switch the speed control selector switch on the seat console back to auto.
- The hose position will be set.
- If you switch the speed control back to manual this setting will be lost and will need to be reset.

Minimum Calibrated Value Display

- This number is captured when calibrating the wand.
- The wand gauge will show this number when the stringer stops all movement.

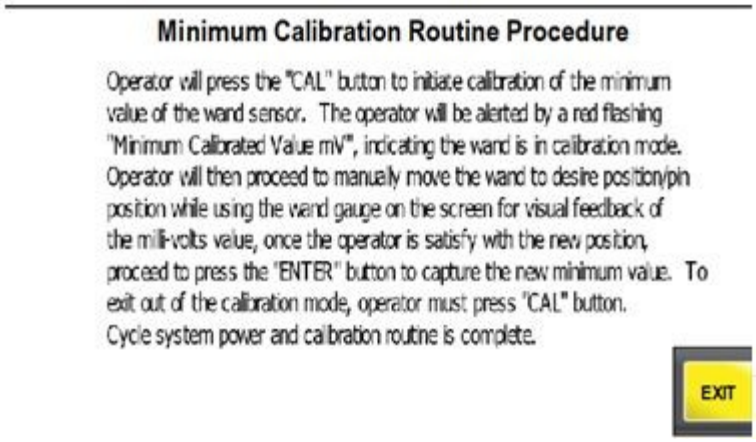
Continued on next page

Clockwise/Counter Clockwise Button

- Shows what direction the Tile Stringer is turning.
- Press the button multiple times to change the direction the Tile Stringer is turning.
- The clockwise/counter clockwise gauge indicates how fast the tile reel is rotating as a percentage of its speed range. As the gauge moves towards the 100%, the tile reel will rotate faster.

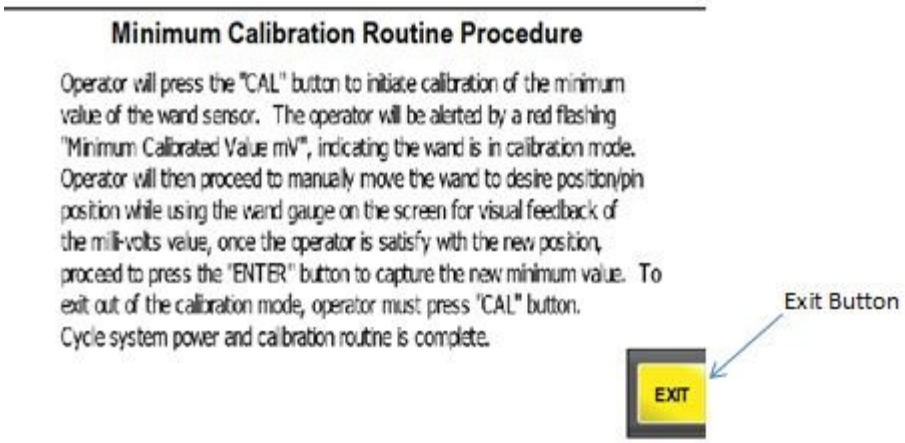
Tile Stringer Calibration Procedure

This screen outlines instruction on how to calibrate the minimum value of the wand (MCX) sensor or “pinned position”.



Exit Button

Use this button to return to the Tile stringer screen.



Active Faults Icon

- The active fault icon on the main screen will illuminate in red when a fault occurs.
- Press the icon to enter the fault screens.

Engine, Tracks, Work Screens - Fault Display

Light Bar

The Light bar will illuminate **red** when a fault has occurred.

Continued on next page

Fault Screen Button

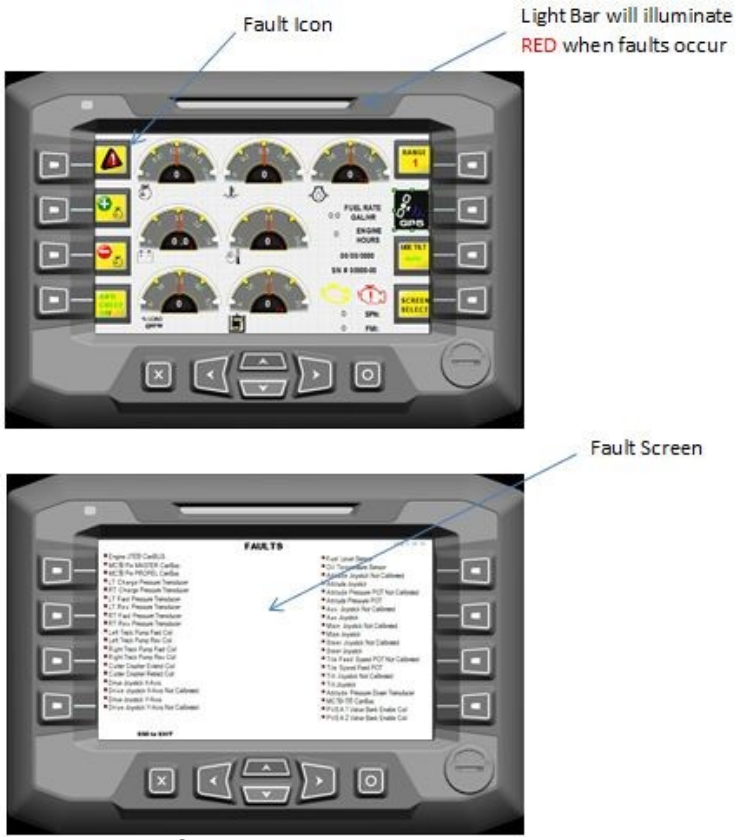
- A red triangle icon will illuminate if a fault has occurred.
- Press the fault screen icon to view the list of machine faults.

Fault Screens

- Active Faults will be indicated by a red square. Faults will be cleared once corrective action has been addressed to that particular fault and cycle key power. If faults are still active, issue has not been resolved.
- Refer to the troubleshooting reference guide and schedules for troubleshooting tips.
- Scroll between screen 1&2 by using the up/down buttons.

Calibrating Joysticks and Dial POTs

If an of the joysticks or dial pots need to be calibrated the fault triangle icon will illuminate in red.



- Press the fault icon to view the fault.
- The box beside the calibration that has the fault will illuminate in red.
- Press the according joystick completely forward or to the right. For dial POT calibration, rotate completely clockwise.
- Hold for 5 seconds (make sure the hold time is 5 seconds or the calibration will not work).
- Press the joystick completely rearward or to the left. For dial POT calibration, rotate completely counter-clockwise.
- Hold for 5 seconds.
- The calibration should be complete and the fault should be cleared on the fault screen.

Page 1

- Engine J1939 CanBus Fault – refer to schedule 1
- Mc 50 Pin CAB CanBus Fault – refer to schedule 2
- Mc 50 Pin PROPEL CanBus Fault – refer to schedule 2
- LH Charge Pressure Sensor Fault – refer to schedule 3
- RH Charge Pressure Sensor Fault – refer to schedule 3
- LH Fwd Pressure Sensor Fault – refer to schedule 3
- LH Rev Pressure Sensor Fault – refer to schedule 3
- RH Fwd Pressure Sensor Fault – refer to schedule 3
- RH Rev Pressure Sensor Fault – refer to schedule 3
- Left Track Pump 1 Fwd Coil Fault – refer to schedule 4
- Left Track Pump 1 Rev Coil Fault – refer to schedule 4
- Right Track Pump 1 Fwd Coil Fault – refer to schedule 4
- Right Track Pump 1 Rev Coil Fault – refer to schedule 4
- Cutter Crusher Extend Coil – refer to schedule 4
- Cutter Crusher Retract Coil – refer to schedule 4
- Drive Joystick X-Axis Fault – refer to schedule 5
- Drive Joystick X-Axis Not Calibrated – refer to schedule 6
- Drive Joystick Y-Axis Fault – refer to schedule 5
- Drive Joystick Y-Axis Not Calibrated – refer to schedule 6
- Fuel Level Sensor Fault – refer to schedule 3
- Oil Temperature Sensor Fault – refer to schedule 3
- Attitude Joystick Not Calibrated – refer to schedule 6
- Attitude Joystick Fault – refer to schedule 4
- Attitude Pot Not Calibrated – refer to schedule 6
- Attitude Pot Fault – refer to schedule 8
- AUX Joystick Not Calibrated – refer to schedule 6
- AUX Joystick Fault – refer to schedule 5
- Main Joystick Not Calibrated – refer to schedule 6
- Main Joystick Fault – refer to schedule 5
- Steer Joystick Not Calibrated – refer to schedule 6
- Steer Joystick Fault – refer to schedule 5
- Tile Feed Pot Not Calibrated – refer to schedule 6
- Tile Feed Pot Fault – refer to schedule 8
- Tilt Joystick Not Calibrated – refer to schedule 6
- Tilt Joystick Fault – refer to schedule 5
- Attitude Pressure Down Sensor Fault – refer to schedule 3
- MC 50-155 CanBus Fault – refer to schedule 2
- PVEA 1 Enable Coil – refer to schedule 4
- PVEA 2 Enable Coil – refer to schedule 4

Page 2

- Attitude Pressure Up Sensor Fault – refer to schedule 3
- SC Module C.A.N Offline – refer to schedule 7
- Attitude Pressure Up Coil Fault – refer to schedule 4
- Attitude Pressure Down Coil Fault – refer to schedule 4
- Oil Level Sender Fault – refer to schedule 3
- Tile Feed Pressure Pot Fault – refer to schedule 8
- Tile Feed Pressure Pot Not Calibrated – refer to schedule 6
- Tile Feed Pressure Coil Fault – refer to schedule 4
- High Speed Coil Fault – refer to schedule 4
- Main Return Pressure Sensor Fault – refer to schedule 3
- Cab 5V Sensor Power Fault – refer to schedule 3
- Propel 5V Sensor Power Fault – refer to schedule 3
- Oil Heater Coil Fault – refer to schedule 4
- Attitude Float Logic Coil A Fault – refer to schedule 4
- Attitude Float Logic Coil B Fault – refer to schedule 4
- MC50-155 Sensor Power Fault – refer to schedule 7
- Analog Throttle Sensor Fault – refer to schedule 8
- Analog Throttle Sensor Not Calibrated – refer to schedule 6
- Hydraulic Oil Fan Fwd Coil Fault – refer to schedule 4
- Hydraulic Oil Fan Rev Coil Fault – refer to schedule 4
- Coolant Fan Fwd Coil Fault – refer to schedule 4
- Coolant Fan Rev Coil Fault – refer to schedule 4
- CAC/Fuel Cooler Fan Fwd Coil Fault – refer to schedule 4
- CAC/Fuel Cooler Fan Rev Coil Fault – refer to schedule 4
- Back Up Alarm Coil Fault – refer to schedule 4
- Engage Push Button Fault – refer to schedule 9
- Wand Sensor Not Calibrated – refer to schedule 6
- Wand Sensor Fault – refer to schedule 3
- Hose Reel POT Not Calibrated – refer to schedule 6
- Hose Reel POT Sensor Fault – refer to schedule 3

Schedule 1

- Check connections
- Check continuity on cables
- Replace 50 pin module
- Check engine ECM

Schedule 2

- Check connections
- Check continuity on cables
- Replace 50 pin module
- Replace output module

Schedule 3

- Check connections
- Check continuity on cables
- Check supply voltage and ground
- Replace sensor

Schedule 4

- Check connections
- Check continuity on cables
- Check supply voltage and ground
- Replace coil

Schedule 5

- Check connections
- Check continuity on cables
- Check supply voltage and ground
- Replace joystick

Schedule 6

- Hold fwd or right for 5 seconds
- Hold rev or left for 5 seconds
- Calibration should be complete

Schedule 7

- Turn key to off position and back on
- check connections
- check continuity on cables
- check supply voltage and ground
- Replace module

Schedule 8

- Check connections
- Check continuity on cables
- Check supply voltage and ground
- Replace module

Schedule 9

- This alarm is for the Auto-steer option setup
- Hookup laptop
- Go into service tool
- Deactivate the Push button

Active Fault Banner

A fault banner will illuminate in **red** if the following faults occur.

!! ANTI-CREEP!! ENABLED	Anti-creep is on. Machine will not move. If you wish to move the machine, turn the Anti-creep off
!! JOYSTICK X-AXIS !! OUT OF NEUTRAL	X Axis joystick is out neutral. Move joystick to neutral. (Single joystick only)
!! JOYSTICK Y-AXIS !! OUT OF NEUTRAL	Y Axis joystick is out of neutral. Move joystick to neutral. (Single joystick only)
!! RIGHT JOYSTICK !! OUT OF NEUTRAL	Right joystick is out of neutral. Move joystick to neutral. (Dual joystick only).
!! LEFT JOYSTICK !! OUT OF NEUTRAL	Left joystick is out of neutral. Move joystick to neutral. (Dual joystick only)
!! HIGH COOLANT !! TEMPERATURE	Coolant temperature is high. Refer to manual for possible diagnosis and service instructions
	Low left track charge pressure. Refer to manual for possible diagnosis and service instructions
	High hydraulic oil temperature. Refer to manual for possible diagnosis and service instructions
	Low hydraulic oil level. Stop machine and safely add hydraulic oil as required

Continued on next page

Engine preheater is on – wait to start

Low engine oil – stop machine and safely add oil as required

Low coolant in engine radiator – stop machine, follow safety instructions in this manual and add coolant as required

Low voltage. Refer to manual for possible diagnosis and service instructions

Machine is excessively cold. Press the OK button for the cold starting procedure

Low right track charge pressure. Refer to manual for possible diagnosis or service instructions

Intake air temperature is high. Refer to manual for possible diagnosis and service instructions

The machine is in 3rd gear. Plowing is not recommended in this gear as it can potentially cause damage to the machine.

GPS module C.A.N communication fault (if equipped).

Raise cab to enable movement.

Clean or replace engine air intake filter.

Left motor overspeed.

Service open loop filter.

Clean or replace engine air filter immediately.

Clean or replace engine air filter immediately.

Oil heater on.

Continued on next page

Left pulse pickup sensor faulty.

Low diesel exhaust fuel. Stop machine safely and add diesel exhaust fuel.

Low diesel fuel. Stop machine safely and add diesel fuel.

Low loop shut down.

Raise cab warning (if equipped).

Replace left track pump charge filter.

Replace return filter when possible.

Replace return filter immediately. Stop machine safely and replace filter.

Replace right track pump charge filter.

Replace water separator filter.

Right motor overspeed.

Emergency stop on.

Right pulse pickup sensor faulty.

Auto steer module C.A.N communication fault (if equipped).

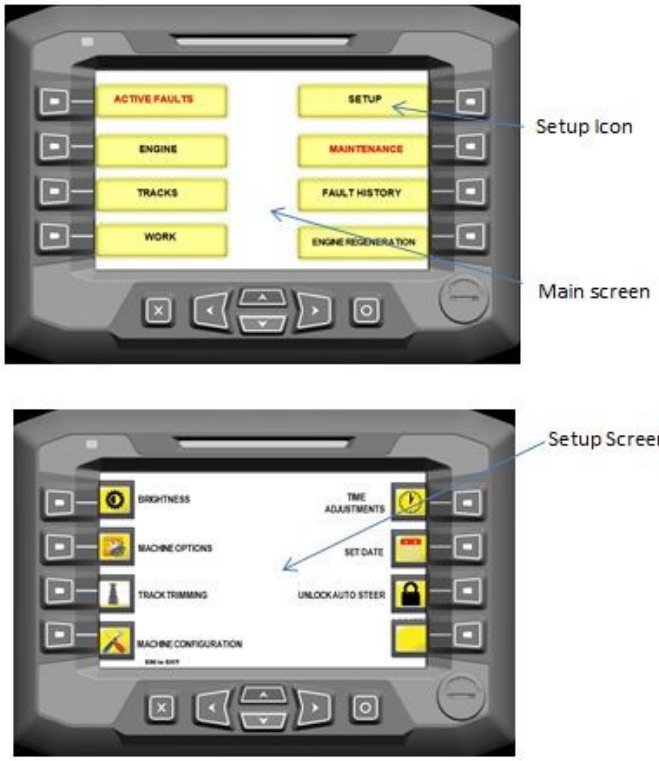
Service close loop filter.

Fault History Screen

Viewing The Fault History Screen

- From the main screen, press the fault history icon.
- The fault history screen will appear.
- You can scroll through the pages of the faults if there is more than one page using the up/down buttons.

Machine Setup



- From the main screen, press the setup icon.
- From the setup screen, the operator can select the required setup icon.

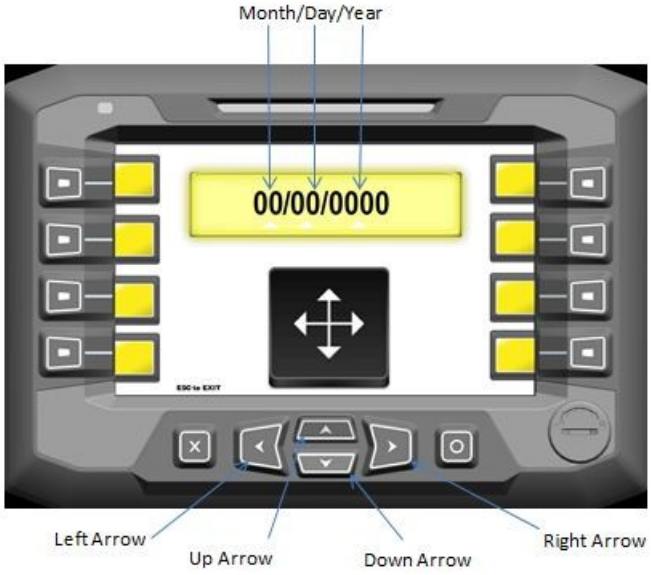
Screen Brightness Adjustment

Continued on next page

Adjusting the Screen Brightness

- To adjust the screen brightness, press the increase or decrease icon.
- Press ESC to exit screen.

Date Adjustment



Month/Day/Year

Indicates the month, day and year the screen has been set to.

Left Arrow

Select either month, day or year to change.

Right Arrow

Select either month, day or year to change.

Up Arrow

Increases the numeric value of the selected section

Down Arrow

Increases the numeric value of the selected section

Machine Options Screen

For each option press the pertaining icon multiple times to make the selection desired.

Grading Option

- Select the communications protocol that will be used with the GPS or laser control system by pressing the grading option button multiple times to select the desired setting.
- Setting options are: None, Ratio Metric, Digital.

Attitude Option

- Select the communications protocol that will be used with the GPS or laser control system by pressing the attitude option button multiple times to select the desired setting.
- Setting options are: None, Ratio Metric, Digital.

Increase Button (Single Joystick Only)

Press the increase button to increase the maximum steering percentage.

Decrease Button (Single Joystick Only)

Press the decrease button to decrease the maximum steering percentage.

Continued on next page

Maximum Steering Percentage (Single Joystick Only)

- The maximum steering percentage is a setting for how aggressive a machine with the single joystick option will steer when the control stick is pushed completely to the left or right.
- To increase the sensitivity of the joystick steering function, set the percentage to a higher number.
- To decrease the sensitivity of the joystick steering function, set the percentage to a lower number.

Auxiliary Valve Enable/Disable

- Press the auxiliary valve button to enable the auxiliary valve function.
- Press the auxiliary valve button again to disable the auxiliary valve function.

Laser Enable/Disable

- Press the laser button to enable the laser function.
- Press the laser button again to disable the laser function.

Load control Enable/Disable

- Press the load control button to enable the load control function.
- Press the load control button again to disable the load control function.

Backup Alarm Enable/Disable

- Press the backup alarm enable / disable button to enable the backup alarm function.
- Press the backup alarm enable / disable button again to disable the backup alarm function.

Track Trimming

- From the engine, tracks or work screen, select which range that you would like to trim.
- Press the screen select icon to bring you back to the main screen.
- Press the setup icon on the main screen.
- To enter the track trimming screen, press track trimming icon in the setup screen.
- At the bottom middle of the screen you will see which range you are calibrating.
- Track trimming adjustment can be made for both forward and reverse machine directions in all three ranges.
- Push the joystick forward.
- Increase or decrease the track speed percentages for the left and right tracks as required.
- Pull the joystick back for reverse.
- Increase or decrease the track speed percentages for the left and right as required.
- Repeat for each speed range as required.

Track Trimming Screen

Machine Configuration

Backup Alarm Enable/Disable

- Select the machine model (arm style) that your machine is equipped with.
- Press the button multiple times to select your setting.

GPS Enable/Disable

- Enable/disable the GPS as needed.
- Press the button multiple times to select your setting.

Infinite Throttle Enable/Disable

- Enable / Disable the infinite throttle. The machine must be equipped with the optional infinite throttle.
- Press the button multiple times to select your setting.

GPS Push Button Enable/Disable

- Enable / Disable GPS Auto-steer button.
- Press the button multiple times to select your setting.

Auto Idle Enable/Disable

- Enable / Disable the auto idle.
- Press the button multiple times to select your setting.
- When the auto idle is enabled the machine will idle down after 5 seconds of no functions being used. The machine will automatically increase the RPM to the previous setting if any of the functions are activated.

Continued on next page

Cutter Crusher Enable/Disable

- Enable / Disable the cutter crusher.
- Press the button multiple times to select your setting.
- The machine must be equipped with the optional cutter crusher.

Auto Shift (shift on the fly) Enable/Disable

- Enable / Disable the auto shift.
- Press the button multiple times to select your setting.

Cutter Crusher Time Adjustment

Increase time

- Increases the time the cutter crusher takes to extend.
- Press the physical button or on-screen button to increase the time in seconds.

Decrease time

- Decreases the time the cutter crusher takes to extend.
- Press the physical button or on-screen button to decrease the time in seconds.

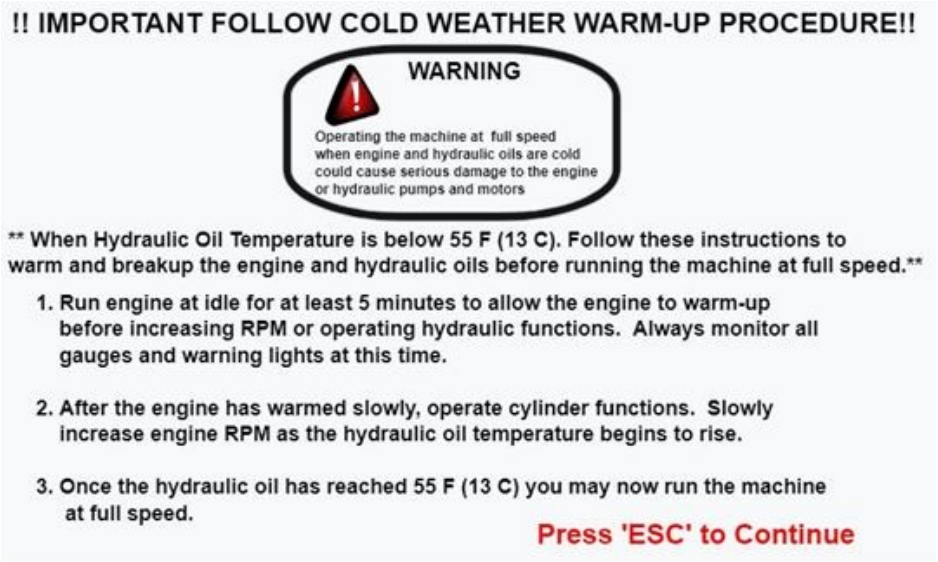
Select Crusher Extend/Retract Time

Use the up and down arrows to select if you want to adjust the cutter crusher, extend time or retract time.

Cold Weather Starting

- If the temperature is below 55F (13C) this warm up warning will appear on the machine control screen.
- Press the escape button to continue.

NOTE: Refer to the Caterpillar operation and maintenance manual for cold weather starting.



Cold Weather Operation

Cold weather conditions cause special problems. During these conditions your machine will require special attention to prevent serious damage. Cold weather maintenance will extend the service life of your machine.

WARNING: Operating this machine at full speed when the engine and hydraulic oils are cold could cause serious damage to the engine or hydraulic pumps and motors.

- Clean the batteries and make sure they are at full charge. A fully charge battery at 0°F (18°C) has only 40% of the normal cranking power. If the temperature is -20°F (-29°C) the batteries only have 18% of the normal cranking power.
- If you add water to the batteries, make sure that you charge the batteries completely to prevent freezing.

Continued on next page

- Inspect the battery cables and terminals. Clean the terminals and apply a coat of grease on each terminal to prevent corrosion.
- Make sure that you use the correct oil in all components and that the oil and filters are changed as indicated in the manual.
- Check with your fuel supplier for the correct cold weather fuel. Engine power will be reduced if wax particles are in the fuel filter. Make sure that the water separator is drained regularly and the fuel is changed as indicated in the manual.
- Obtain a coolant sample and test to ensure the coolant has the correct mixture to prevent freezing. Refer to the Caterpillar operation and maintenance manual for more instructions.
- When starting your machine in cold weather, follow the procedure in the Caterpillar operation and maintenance manual.
- After the engine has warmed up, slowly operate the cylinder functions. Slowly increase the RPM of the engine as the hydraulic oil temperature increases.
- After the hydraulic oil has reached 55°F (13°C) you may run the machine at full speed.

Hot Weather Operation

- Obtain a coolant sample and test to ensure the coolant has the correct mixture. This will ensure the coolant has the most efficient cooling capabilities. Refer to the Caterpillar Operation and Maintenance manual for more instructions.
- Test the radiator cap to make sure it is working within the proper pressure range. Refer to the Caterpillar Operation and Maintenance manual for more instructions.
- Check and clean all cooling radiators as indicated in this manual.
- Make sure that you use the correct oil in all components and that the oil and filters are changed as indicated in the manual.
- Check and clean the air intake filter. Refer to the Caterpillar Operation and Maintenance manual for more instructions.
- Check the HVAC system as indicated in this manual.

Maintenance Screens

Service Schedule Screens

- The service schedule screens will appear on the machine control monitor at the regular service intervals.
- Press ESC to acknowledge that the service will be completed.

Manual Reverse Fans

The fans automatically reverse clean all the coolers every 45 minutes provided the machine isn't under load. If the machine is under load, the fans will reverse clean at the earliest time when the machine is no longer under load.

- If the coolers require cleaning prior to the 45 minutes, stop the machine to ensure it is not under load.
- Push the manual fan reverse button while machine is not under load.
- The fans stop, then continue to run in reverse for approximately 10 seconds.

Air Ride Seat Adjustment

Armrest Adjustment

- The armrest may be folded completely up or completely down.
- The low arm rest position can be adjusted to tip up.
- Turn the knob clockwise to tip the armrest up.
- Turn the knob counter-clockwise to tip the armrest down.

Backrest Adjustment

- Sit in the seat and lift the backrest adjustment lever to adjust.
- The backrest is spring-loaded to tilt forward.
- Lean back or forward to adjust the backrest to the desired location. Keep in mind that the seat may need to be moved forward to prevent the backrest from contacting the window when rotating the seat.
- Release the lever and make sure the backrest is in the locked position.

Seat Cushion In/Out Adjustment

- Lift the seat cushion in/out lever.
- Move the seat cushion in or out to adjust to the desired setting.
- Release the lever and make sure the seat cushion is in the locked position.

Continued on next page

Seat Cushion Up/Down Adjustment

- The seat cushion front can tip up and down.
- Lift the seat cushion up/down lever.
- Move the seat cushion front up or down to the desired setting.
- Release the lever and make sure that the seat cushion is in the locked position.

Forward/Rearward Adjustment

- Lift the forward/rearward lever.
- Move the seat forward or rearward to the desired location. Keep in mind that the right hand console can contact the dash when rotating the seat if the seat is adjusted too far forward. The seat backrest can contact the window if the seat is adjusted too far rearward.
- Release the lever and make sure the seat is in the locked position.

Air Ride Adjustment

- Pull the air ride lever up to increase the air pressure in the air ride system. This will raise the seat and give a more firm ride.
- Push the air ride lever down to decrease the air pressure in the air ride system. This will lower the seat and give a less firm ride.

Seat Belt Safety Precautions

Before starting the engine ensure that your seat belt is securely fastened. The seat belt can help insure your safety if it is used and properly maintained. Never wear the seat belt loose or with slack in the belt system. Never wear the seat belt with the belt twisted or pinched between the seat and structural members.

WARNING: Fasten seatbelt before starting the engine.

To Latch the Seat Belt

- To latch the seat belt, pull the right belt strap from the retractor.
- Insert the metal end into the latch mechanism on the left side of the seat.
- Pull the seat belt to ensure that it is secured in the latch mechanism.

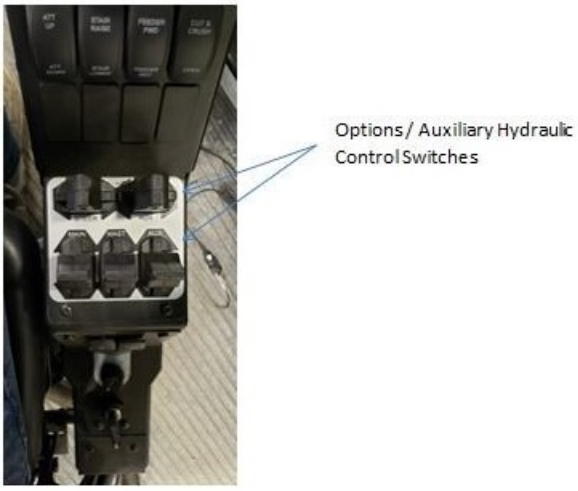
To Unlatch the Seat Belt

- To unlatch the seat belt, press the button on the left side latch mechanism.
- The seat belt will automatically retract back into the retractor.

15: Machine Options - Controls & Operations

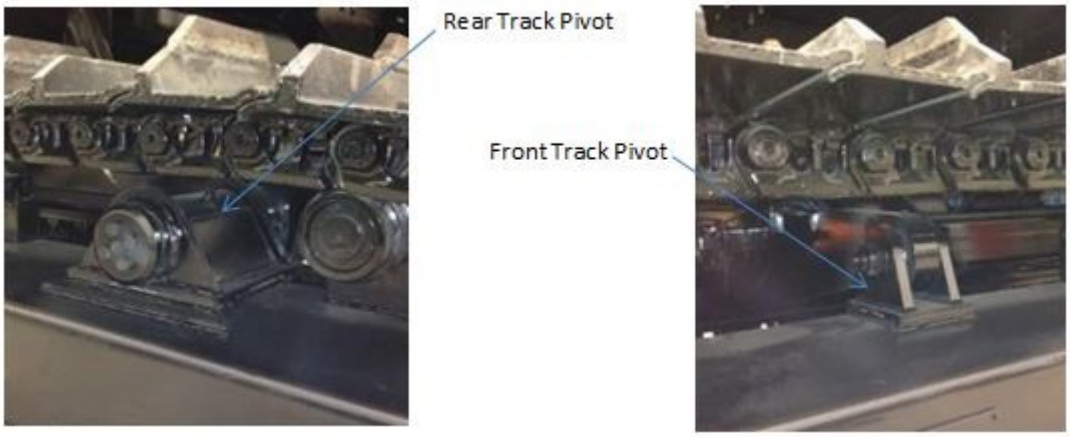
WARNING: Many of the machine options are controlled by the options/ auxiliary hydraulics control levers or switches. Depending on what functions the machine is equipped with, there may be more than one option/ auxiliary hydraulic valve and control. Always check and make sure that you are familiar with all the hydraulic functions before operating this machine. Not knowing what function is connected to the controls can cause unexpected machine movement, serious injury, or death.

The machine options – the controls and operation section gives instruction on the use of the options that your machine is equipped with. If the option has no instruction required (such as grouser bar extensions) there is no information provided.



Oscillating Tracks

The oscillating track options allows the front of the tracks to individually pivot, which provides a smoother ride when operating the machine on uneven ground.



7° Side Tilt - Raise/Lower Cab

The 7° side tilt option allows the machine to keep the mole vertical on side slopes up to 7°. This option is available on the Parallel Link and Double Link Plows.

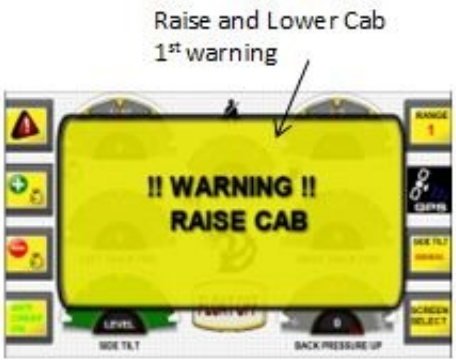
Raise/Lower Cab

If the machine is equipped with the side tilt option, it will have a raise and lower cab function as well. This is to prevent the underside of the cab from hitting the tracks when tilting to 7°.

IMPORTANT: If the machine is equipped with the side tilt option it will only function when the cab is in the raised position.

Continued on next page

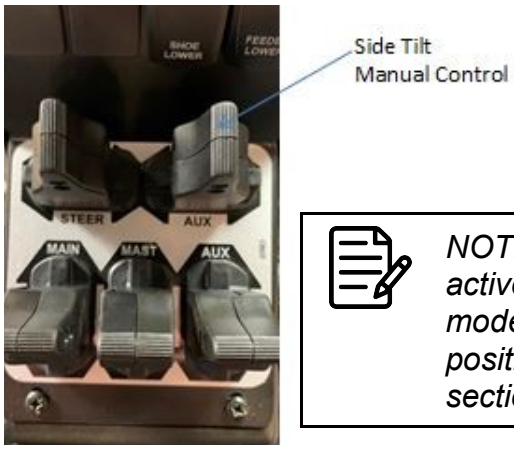
If the machine is being operated and the cab drifts off the 1st warning sensor the 1st warning banner will illuminate in **yellow**. If the machine drifts off the final warning sensor, all functions of the machine will stop and the final warning banner will illuminate in **red**.



- To raise the cab, push the Cab Raise Lower switch up.
- To lower the cab, push the Cab Raise Lower switch down.

IMPORTANT: If the machine is equipped with the side tilt option, ensure that the cab is in the down position after the machine is loaded onto the truck before shipping. The machine will be over height if it is not in the down position.

Side Tilt - Manual Control



NOTE: The manual side tilt control is only active when the machine is set to manual tilt mode and the cab is raised to its highest position - see the Machine Control Monitor section for selecting manual tilt mode.

- Adjust the cab to the raised position.
- On the main working screen, press the Side Tilt button to toggle to Manual mode.
- Push the lever to the left to tilt the vertical angle of the machine to the left.
- Push the lever to the right to tilt the vertical angle of the machine to the right.

Side Tilt - Auto Control

- In Auto Tilt Control, the machine will automatically keep the mole vertical up to 7°.
- Adjust the cab to the raised position.
- On the main working screen, press the Side Tilt button to toggle to Auto mode.
- The machine will adjust to level on a side grade of up to 7°.

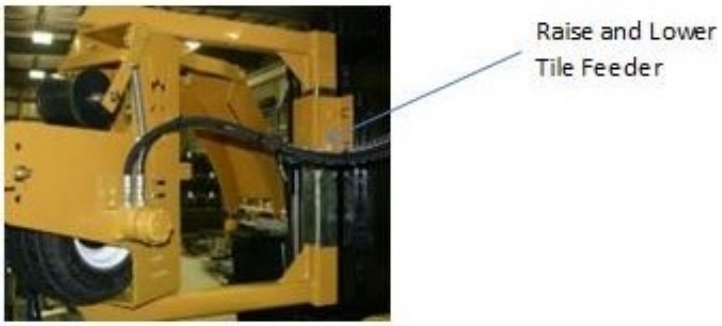
Raise and Lower Tile Feeder

The raise and lower tile feeder is used when the machine is installing product from 5’ to 7’ deep. The tile feeder can be raised 12” to keep it up away of the berm.

NOTE: The Hydraulic controls may differ slightly depending on the options that your machine is equipped with. There may be more than one options/ auxiliary hydraulic control switches on the console. Make sure that you are familiar with the control and how they are set up before you operate the machine.

Using the Raise and Lower Tile Feeder

- The raise and lower tile feeder is controlled by one of the options / auxiliary hydraulic control switches.
- Use the options /auxiliary hydraulic control switch to raise and lower the tile feeder by pushing the switch to the left and right as required.



Cutter Crusher

The cutter crusher is used to cut and crush the tile at the end of each run eliminating the need for the operator to manually cut and cap the tile.

DANGER: The Cutter-Crusher will cause serious injury or death if the proper precautions are not taken.

- **Do not operate the seat console switches if somebody is working near the Cutter-Crusher.**
- **Do not operate the seat console switches if a foreign object is stuck in the Cutter-Crusher.**
- **Do not attempt to work near the Cutter-Crusher if the machine is running.**
- **Do not put any part of your body into the Cutter-Crusher to load the tile or clear a jam.**
- **Be aware of your surroundings, other people and objects when using the Cutter-Crusher.**

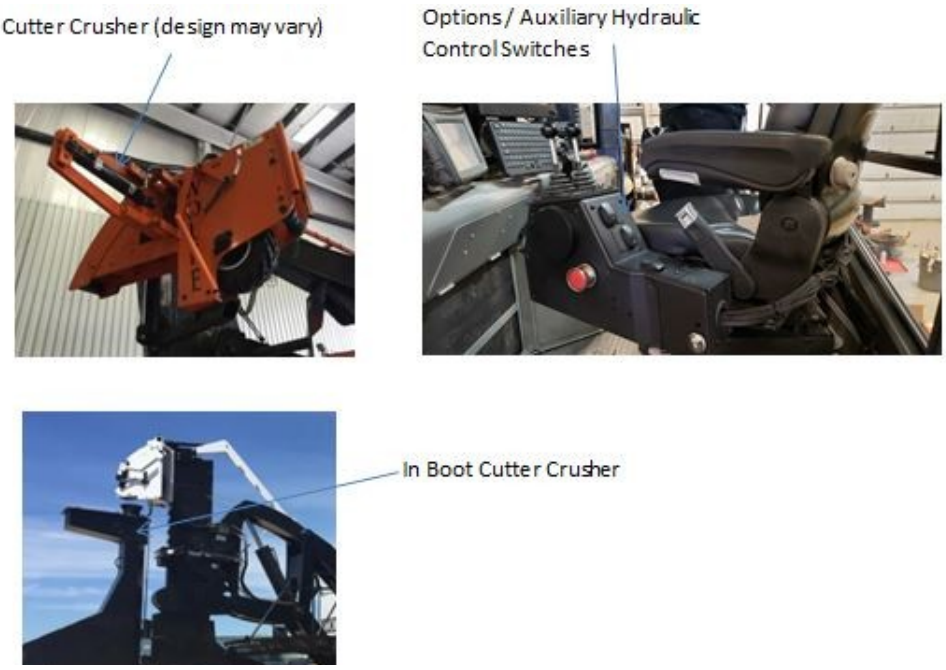
NOTE: The Hydraulic controls may differ slightly depending on the options that your machine is equipped with. There may be more than one option or auxiliary hydraulic control switch on the console. Make sure that you are familiar with the control and how they are set up before you operate the machine.

IMPORTANT: Some areas prohibit the use of the cutter crusher. Check with the local authorities and make sure to follow local rules, laws, or regulations.

Continued on next page

Cutter Crusher Operation

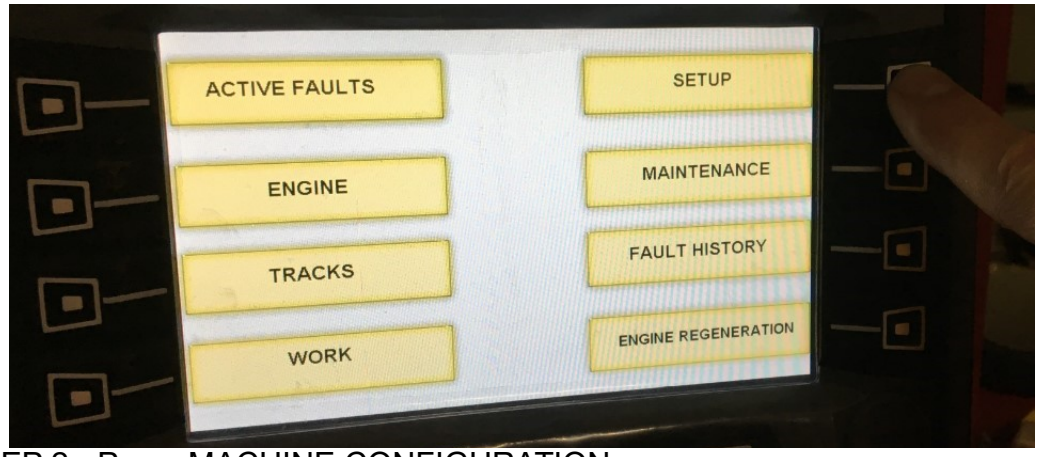
- The cutter crusher can either be tile feeder mounted or in-shoe mounted.
- The cutter crusher is controlled by one of the options / auxiliary hydraulic control switches.
- Use the options /auxiliary hydraulic control switch to cut and crush the tile then open the cutter crusher by pushing the switch to the left and right as required.



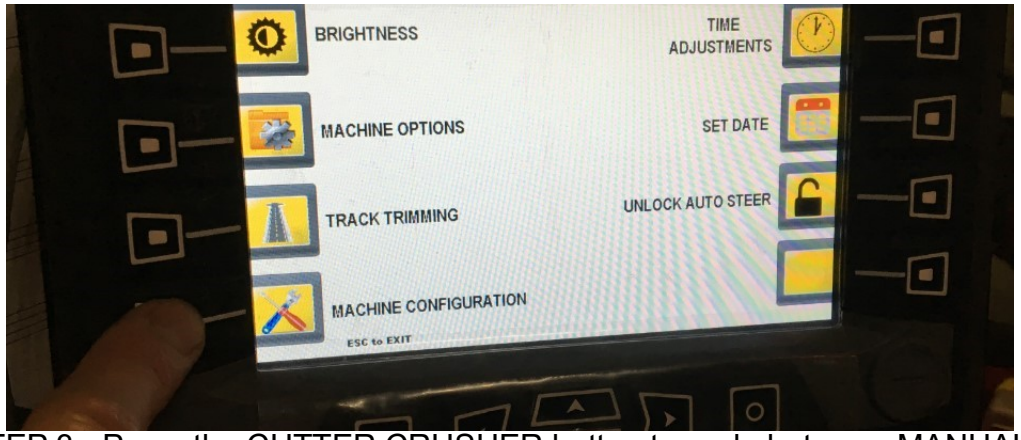
Auto and Manual Modes

The cutter crusher can be operated in either AUTO or MANUAL mode.

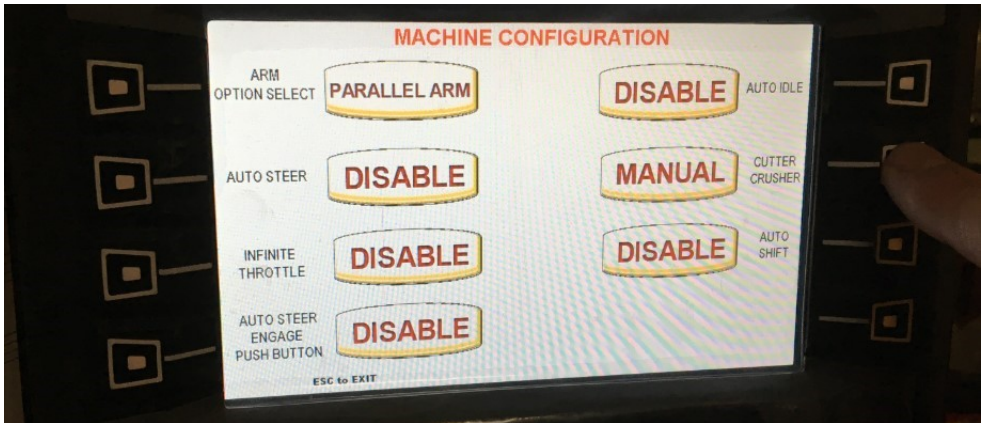
STEP 1 - Press SETUP.



STEP 2 - Press MACHINE CONFIGURATION.



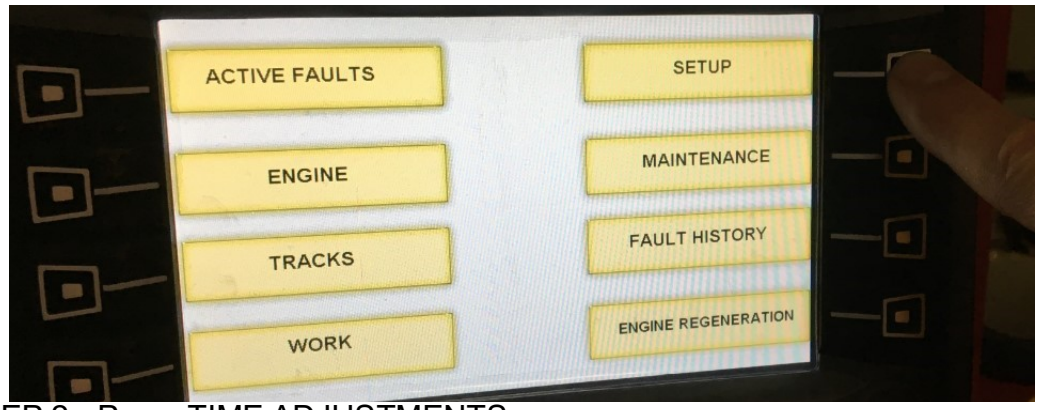
STEP 3 - Press the CUTTER CRUSHER button to cycle between MANUAL and AUTO modes.



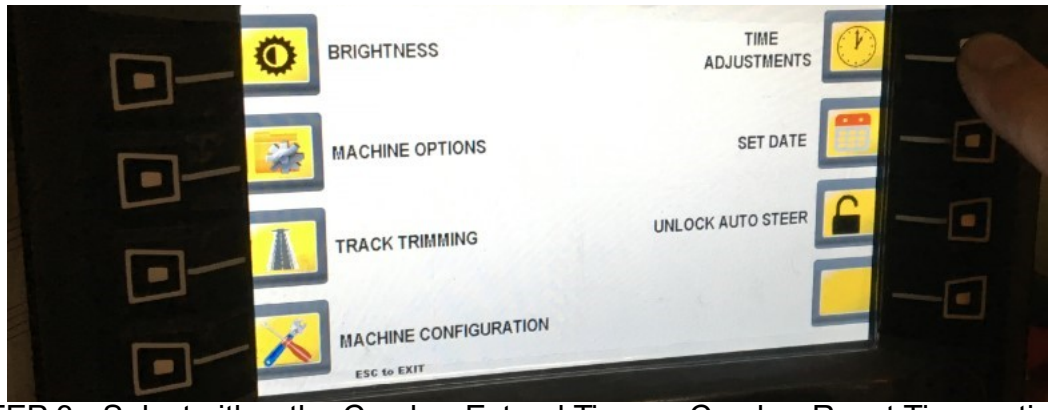
Auto Mode - Setup and Operation

There are timers set to control the Crusher Extend Time and Crusher Retract Time when using AUTO mode.

STEP 1 - Press SETUP.

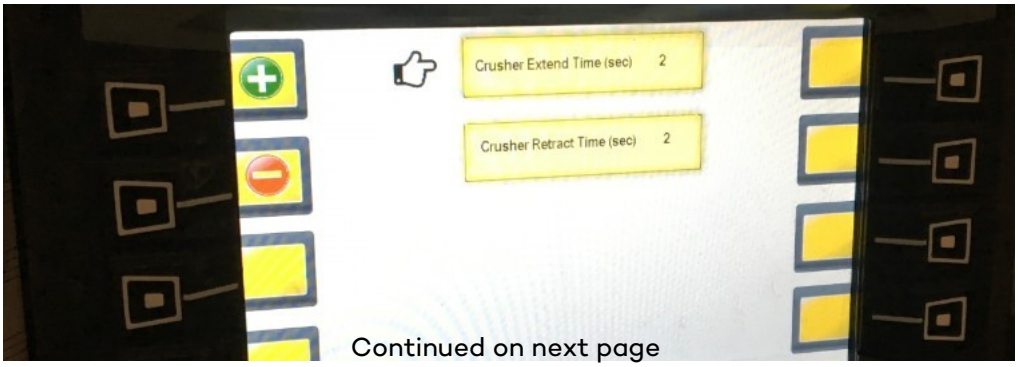


STEP 2 - Press TIME ADJUSTMENTS.



STEP 3 - Select either the Crusher Extend Time or Crusher React Time option by using the up and down arrows. Adjust the time in seconds by pressing the + or - buttons.

1. 5-7 seconds is a typical time used for Crusher Extend Time. This includes the time allowed for the cylinder to extend and to allow for a good crush.
2. 5-7 seconds is a typical time used for the Crusher Retract Time. Any extra time makes sure that the cylinder is fully retracted.



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Step 4 - In AUTO mode, the Cutter-Crusher is operated solely by pressing the CUT side of the switch on the seat console. A quick press and release (no need to hold the switch down) starts the process. The Cutter-Crusher is controlled by the timers. Once the Cutter-Crusher has fully extended for the set amount of time, it will automatically start retracting.

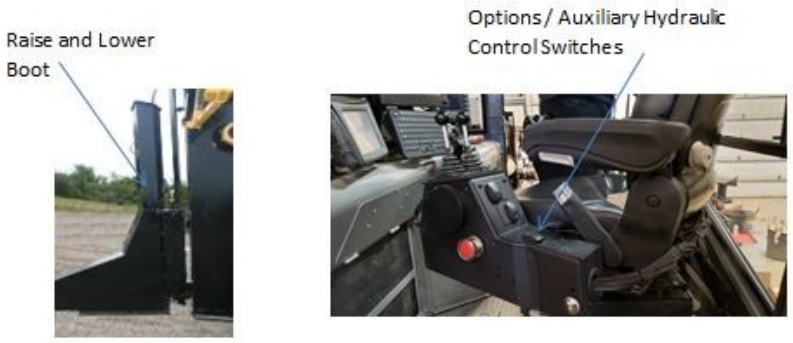
Step 5 - Press the OPEN side of the switch to stop the CUT cycle. This will stop the Cutter-Crusher from advancing. To retract, press and hold OPEN.

Manual Mode - Setup and Operation

When in MANUAL mode, the Cutter-Crusher is operated by pressing either CUT or OPEN on the seat console switch. The operator needs to press and hold the switch for the duration of the operation, whether it is in the CUT or OPEN direction.

Raise and Lower Boot

With a raise and lower boot a shorter start trench is required.



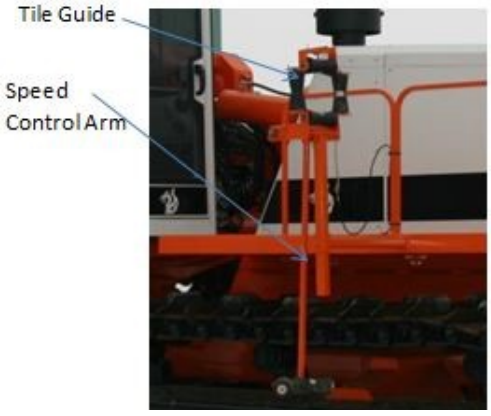
NOTE: The Hydraulic controls may differ slightly depending on the options that your machine is equipped with. There may be more than one options/ auxiliary hydraulic control switches on the console. Make sure that you are familiar with the control and how they are set up before you operate the

Using the Raise and Lower Boot

- The raise and lower boot is controlled by one of the options / auxiliary hydraulic control switches.
- Use the options /auxiliary hydraulic control switch to raise and lower the boot by pushing the switch to the left and right as required.

Tile Stringer

The tile stringer eliminates the need for an extra person to string tile prior to installation making the whole process much more efficient.



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Using the Tile Stringer

After the machine is delivered to the job site, there are a number of steps to setting up the tile stringer.

WARNING: The tile stringer has a number of moving parts that can cause pinch points or crush hazards. Make sure that you are familiar with all the moving parts, pinch points, crush hazards and areas that can cause personal injury. Keep your hands clear of the pinch points or crush hazard areas. Keep all personnel away from the tile stringer while it is being used. If you need any more information or instruction contact your local Wolfe Dealer.

Initial Setup

- Unlatch the safety chain from the swing arm.
- Using the swing arm in/out switch swing the arm out 180°.
- Lower each ironing board one at a time.
- Remove the upper hitch pin.
- Remove the lower hitch pin. Make sure that you support the ironing board while doing so.
- Fold the support arm up into the upper bracket.
- Install the upper hitch pin to lock the support arm in the folded up position.
- Lower the ironing board to the horizontal position.
- Install the lower hitch pin to lock the ironing board in the down position.
- Repeat for all the ironing boards.
- Using the manual speed control rotate the ironing boards so that the 2 piece ironing boards are pointing forward.
- Turn the brake on to stop the tile stringer from freewheeling while loading a roll of tile. When tilting the spear forward the drive plate will not contact the drive wheel allowing the unit to freewheel.
- Unlatch the spring loaded latches and fold the 2 ironing boards as shown below.
- Latch ironing boards in the folded position.
- Using the tilt controls tilt the spear forward.
- The spear is a 2 piece unit. Install the top cone onto the spear.
- Tilt the spear back to the working position.
- Unlatch the spring loaded latches to allow the ironing boards to unfold.
- Lift both folded ironing boards to the straight position until the spring loaded latches catch in the holes in the bracket. Make sure that both latches in each ironing board are latched.
- Loosen the tile guide adjustment bolts.

Continued on next page

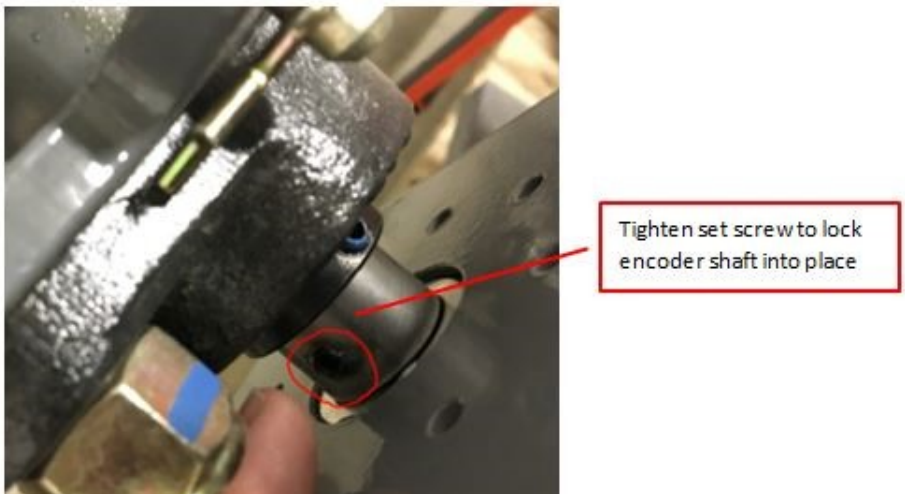
- Adjust each tile guides to the working position by moving the unit up/down in/out and rotate.
- Tighten the adjustment bolts.
- At this time you are ready load a roll of tile.
- Reverse this procedure for putting the tile stringer into the ship position.

Stringer Encoder Setup and Calibration

Follow the instructions below for:

- Initial encoder installation
- Encoder replacement
- Resetting due to unplugging the encoder

STEP 1 - Install the encoder and tighten the set screw to lock the shaft into place.



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STEP 2 - Do not install the bolts yet. Encoder is held into pace by the set screw on the shaft.

STEP 3 - Turn the ignition key to “RUN”.

STEP 4 - Plug in Encoder if it is not already plugged in.

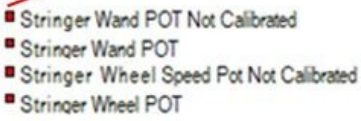
Continued on next page

STEP 5 - The DP720 screen in the cab.

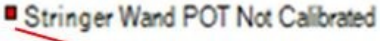
Flashing lights indicate a fault.

Click fault button to access the FAULTS page.

The red square before "Stringer Wand Pot NC" indicates that the Encoder is "NC" – Not Calibrated



The red square indicates that the encoder is not plugged in. This will disappear once the encoder is plugged in. (See step 2).



Only the red square on Stringer Wand Pot NC can be showing before continuing. If any other Fault is showing, please consult a service technician.

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STEP 6 - Return to stringer screen on the DP720 Screen.

STEP 7 - Pin the Stringer Wand in the up position. This is the starting position for calibrating the encoder.

STEP 8 - The encoder outputs a millivolt reading depending on the rotational position of the shaft. There is a dead band portion of the rotation that the voltage does not change as it rotates. The method below is meant to avoid that 'dead' zone, so that any movement of the stringer wand will change the speed of the stringer reel. The minimum encoder output is between 300-1100 millivolts. The maximum encoder output is 4000-4700 millivolts. With the wand in the UP position, the encoder needs to be set to the minimum range.

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STEP 9 - With someone watching the screen, slowly rotate the encoder in the direction such that the numbers on the screen decrease. When the numbers reach the lowest level, they will stop decreasing even as you keep turning the encoder. This is the dead band. At this point, rotate in the reverse direction so that the numbers start to increase again. Stop as soon as the numbers start to increase. If the numbers on the screen is lower than 1100 – **Install and tighten the bolts to hold the encoder in this position.**

STEP 10 - Pull the pin and drop the wand straight down. The voltage reading should now be 4000-4700. The red flashing fault lights should have also disappeared as the encoder is now calibrated.

Continued on next page

STEP 11 - Pin the wand in the SET position. The screen should read about 3500 millivolts.

STEP 12 - Set the STRIKER SPEED dial to 0.

STEP 13 - Switch to MANUAL mode using the AUTO/MANUAL switch.

Continued on next page

STEP 14 - To switch the tile stringer to auto mode, press the AUTO/MANUAL switch in the “AUTO” direction.

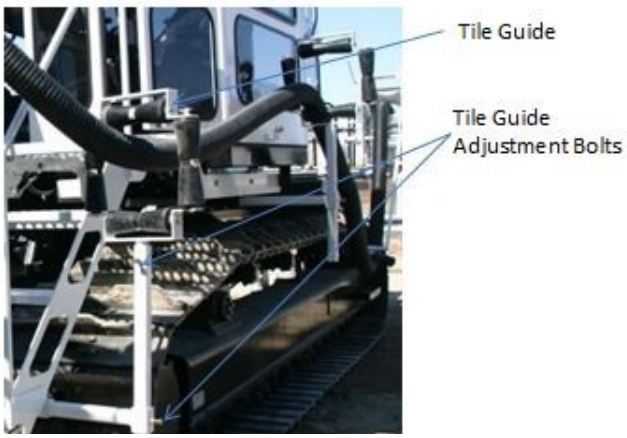
STEP 15 - Turn the stringer switch to the middle position so it is not in either AUTO or MANUAL mode. STRINGER SPEED dial should be at ZERO.

Testing

1. Pull the pin and lower the wand so it hangs completely down.
2. Start the engine and open the stinger arm so that the reel has room to spin.
3. On the seat console, switch to AUTO and set the STRINGER SPEED dial to ZERO.
4. Lift the wand by hand above the SET pin position. The stringer reel will slow down as you move the wand down, and speed up when you move the wand up.
5. Switch the seat console to MANUAL. Use the STRINGER SPEED dial to test increasing and decreasing the reel speed.
6. Return the STRINGER SPEED dial to ZERO. Switch the AUTP/MANUAL to the center position.
7. Testing is complete and the machine can be shut down.

Loading a Tile Roll Onto the Tile Stringer

IMPORTANT: Do not move this machine more than what's required to load a roll of tile with the ironing boards folded or the spear tilted forward. Damage could occur to the ironing boards if they contact the ground while the machine is moving.



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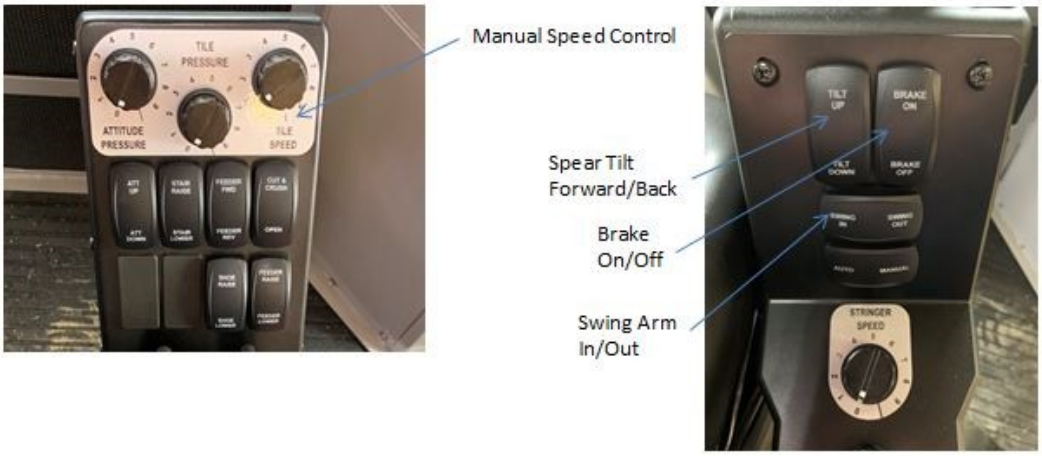
- Move the machine close to the tile roll that will be loaded.
- Using the manual speed control rotate the ironing boards so that the 2 piece ironing boards are pointing forward.
- Turn the brake on to stop the tile stringer from freewheeling while loading a roll of tile. When tilting the spear forward the drive plate will not contact the drive wheel allowing the unit to freewheel.
- Unlatch the spring loaded latches and fold the 2 ironing boards.
- Latch ironing boards in the folded position.
- Using the tilt controls tilt the spear forward.
- Move the machine forward so that the spears go all the way through the roll of tile.
- The tile roll should be loaded so that the roll will unwind closest to the machine.
- Slide the hold-down frame over the end of the spear and push against the roll of tile.
- Tilt the spear back to the working position.
- Unlatch the spring loaded latches to allow the ironing boards to unfold.
- Lift both folded ironing boards to the straight position until the spring loaded latches catch in the holes in the bracket. Make sure that both latches in each ironing board are latched.
- Cut the strings on the roll of tile and pull to remove.
- Tilt the spear forward slightly so that the drive plate is lifted off of the drive wheel.
- Turn the brake off so that the tile stringer can freewheel.
- Rotate the tile stringer by hand so that enough tile comes off the roll to reach the back of the machine.
- Fish the tile through all the tile guides.
- Make sure the tile feeder main drive wheel is not rotating.
- Pull the pressure wheel lever on the tile feeder to raise the pressure wheel.
- Push the tile into the tile feeder so that it can be pinched between the pressure wheel and the main drive wheel.
- Place the speed control arm over the top of the tile.
- Tilt the spear back to the working position.

Tile Stringer Seat Controls



Manual Speed Control - Auto/Manual Switch

- The manual speed control dial controls the speed that the tile stringer rotates.
- The manual speed control only works when the manual speed adjustment is selected.

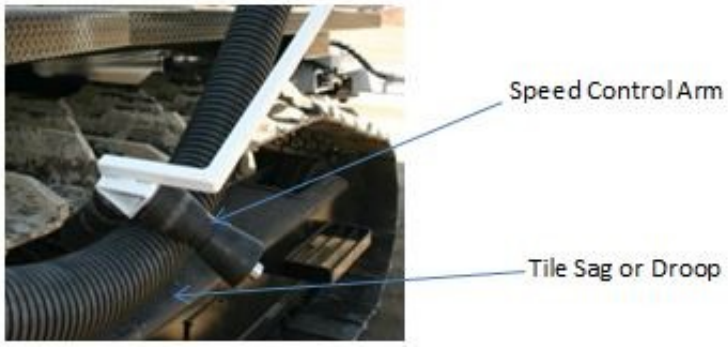
NOTE: If switching from auto to manual speed control, the manual speed control dial will need to be turned to 0 to reset manual control.

- Push the Auto/Manual speed control switch to the manual position.
- When the Auto/Manual speed control switch is in the manual position the speed control arm is disabled.
- Adjust the speed of the tile stringer rotation so that it unloads or dispenses tile at the same speed as the tile feeder is feeding tile into the boot.
- Remember that as the tile roll gets smaller, the speed of the tile stringer will need to be increased.
- As you speed up or slow down the plow, adjust the tile feeder and tile stringer speed to suit (see tile feeder speed adjustment in this manual).

Continued on next page

Auto Speed Control - Auto/Manual Switch

- Push the Auto/Manual speed control switch to the auto position.
- When the Auto/Manual speed control switch is in the auto position the speed control arm is enabled.
- If the tile sag increases the arm will drop and the speed of the tile stringer will decrease.
- If the tile sag decreases the arm will raise and the speed of the tile stringer will increase.



Break On/Off Switch

IMPORTANT: If switching from auto to manual speed control, the manual speed control dial will need to be turned to 0 to reset manual control.

- The brake on/off switch activates and deactivates the brake.

Turn the brake on to stop the tile stringer from freewheeling while loading a roll of tile. When tilting the spear forward the drive plate will not contact the drive wheel allowing the unit to freewheel.

Swing Arm In/Out Switch

WARNING: Make sure to latch the safety chain onto the swing arm prior to shipping. The arm could swing out during shipping if failure to do so.

IMPORTANT: Make sure to unlatch the safety chain from the swing arm before activating the swing arm switch.

The swing arm in/out switch is used to move the swing arm out 180° to the working position and fold it back into the ship position.

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Spear Tilt Forward/Back Switch

- The spear tilt forward/back switch is used to tilt the spear forward and backward.
- When the spear is tilted forward slightly, the drive plate is lifted off of the drive wheel, allowing the tile stringer to freewheel provided the brake is off.

Back Step and Platform

The back step is designed to pivot up individually from the platform. The bottom step can be folded up as well. The step is also designed and built angled away from the mole. This is to give clearance for the berm that is produced while plowing.

Parallel Link Machine Back Platform

On the parallel link machine, the cab will tilt back when cresting over a hill while installing. When the cab tilts back, the platform is designed to pivot up to help prevent it from hitting the machine tracks.

IMPORTANT: Since the cab moves with the bridge, it is important to make sure you keep the rear door of the cab closed or in the locked open position while installing. Failing to do so can result in the cab door hitting the platform if the machine is cresting over a hill.

Single Arm Machine Back Platform

The cab on the single arm machine is mounted solid to the machine frame. The platform is also mounted solid, making it non-pivoting.

Hydraulic Back Step Option

WARNING: Before raising or lowering the hydraulic back step, make sure that all personnel are clearly away. Do not allow anyone to stand under the step when it is raised. Failing to do so can cause personal injury.

The hydraulic back step allows you to raise the step up out of the way of the berm, mud or any other debris that the machine tracks may pull up. On the single arm machine, only the step raises. On the parallel link machine, the step and platform pivot up hydraulically.

Continued on next page

Using the Hydraulic Back Step Option

- The raise and lower back step will be controlled by one of the options / auxiliary hydraulic controls switches.
- Use the options /auxiliary hydraulic control switch to raise and lower the back step by pushing the switch to the left and right as required.

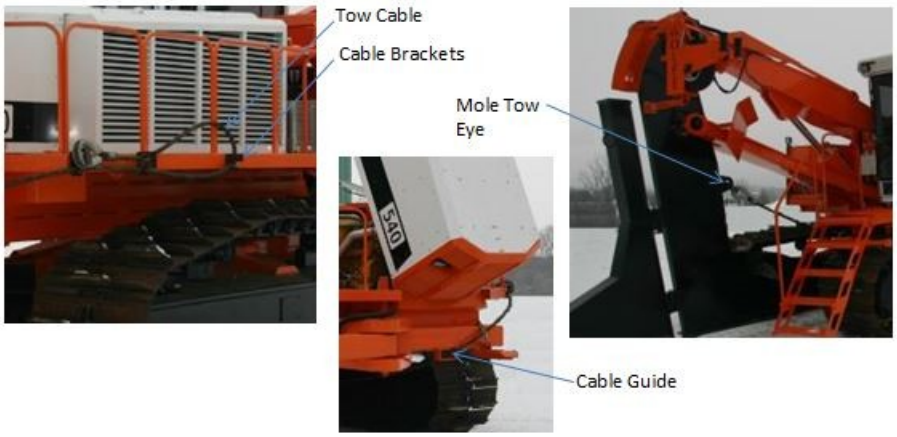
Tow Cable Package

WARNING: When towing or pulling this machine keep all personnel a safe distance away from the tow cable or chain in case the towing hardware brakes. Failing to do so can cause serious injury or death.

WARNING: It is impossible for us at Wolfe to know what size of machine will be used to pull or tow your Wolfe Plow. It is the operator's responsibility to make sure that the tow equipment is the appropriate size for the application. Do not pull or tow this machine unless you are sure that you are using the appropriate towing equipment. Failing to do so can cause damage to the machine or cause personal injury.

IMPORTANT: Only pull or tow the machine (if it's functional) from the tow eye that has been installed on the mole. DO NOT pull or tow this machine from any other location on the machine. Failure to do so will cause damage to the machine.

IMPORTANT: DO NOT pull or tow this machine if it is disabled or non-functional. Damage to the hydraulic system will occur.



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Using the Tow Cable

- Only pull the machine straight forward. The cable guides are not designed to pull the machine at an angle or sideways on purpose. Pulling the machine sideways can cause damage to the frame.
- The cable brackets are used to store the cable on the machine when the cable is not being used.

Dual Joystick Control

See the Machine Controls and Operation section of this manual for information on the dual joystick option.

Single Joystick Control

See the Machine Controls and Operation section of this manual for information on the dual joystick option.

Central Grease station

See the Fluids, Lubricants, Maintenance and Service section of this manual for information on the grease station option.

Auto Greaser

Refer to the Auto Greaser manual for information on programming and how to use the auto greaser system.

Camera Package

Refer to the Camera manual for more information on the use of the camera system.

Espar Heater

Refer to the Espar manual for information on programing and how to use the Espar heater.

Light Package

See the Machine Controls and Operation section of this manual for information on the light package option.

Auto-Steer (if equipped)

- Refer to your GPS provider's information for instructions on how to use the GPS auto-steer.
- To enable auto-steer, the operator must enter the correct six-digit numeric value, using the on-screen buttons.
- Wolfe will supply the six-digit numeric value if your machine is equipped with auto-steer.

16: Fluids and Lubricants - Service and Maintenance

WARNING: Improper service or repair can cause damage to this machine and could cause serious injury or death. If you do not understand the service procedures for this machine, contact your local Wolfe dealer.

The following information covers the servicing of this machine with recommended lubricants and coolants with intervals under normal working conditions. To ensure long service and efficient operation, follow the service intervals listed. Extreme working conditions require shorter service intervals. Contact your local Wolfe dealer if you have any questions regarding the service or maintenance of this machine.

WARNING: Read the safety decals and information decals on the machine. Read and understand this safety, operation and maintenance manual before servicing or repairing this machine.

Before you service or repair this machine, put on a “DO NOT OPERATE” tag on the controls of the machine. If you require additional tags contact your local Wolfe dealer.

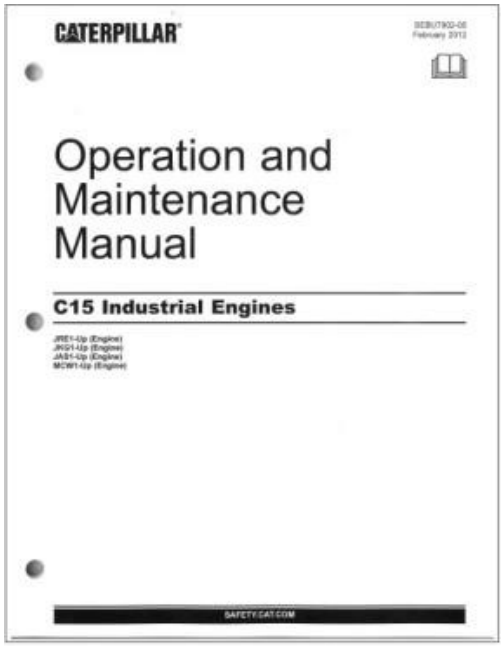
WARNING: Before attempting to service or repair this machine, it is your responsibility to understand related hazards. Be sure to properly release all hydraulic pressure, air pressure, and coolant pressure as required. Make sure that all machine components of auxiliary equipment are in the down or safe position. Support the components or auxiliary equipment properly before you perform any work or maintenance beneath the machine. NEVER work under a component or piece of equipment that is suspended by the hydraulic system. DO NOT depend on the hydraulic system to support a component or piece of equipment for you to work under. Securely block the machine or any component that may fall before working on the machine or component. If possible use a back-up or secondary blocking device to ensure the machine or component is safe to work on or under.

Engine Hour Meter

Service this machine at the intervals as indicated on the Service and Maintenance Intervals Chart. When you service your machine, use only high quality lubricants as suggested. Use the engine hour meter along with the Service and Maintenance Intervals Chart to service your machine at the correct time periods.

Caterpillar Industrial Engine Operation and Maintenance

A Caterpillar Industrial Engine Operation and Maintenance Manual has been provided with this machine. Refer to this manual for any of the safety, operation, maintenance or service information that you require for the Caterpillar engine.



C15 manual shown above. If your machine is equipped with a different engine, the appropriate manual will be supplied accordingly. This manual must be kept with the machine at all times. Additional Caterpillar Operation and Maintenance Manuals are available at your local Wolfe dealer.

Track One Use and Maintenance Manual With Spare Parts

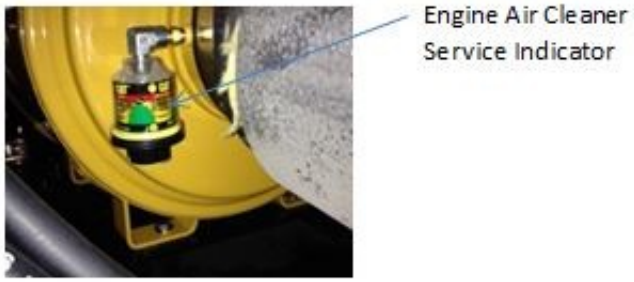
A Track One Use and Maintenance Manual With Spare Parts has been provided with this machine. Refer to this manual for any of the operation, maintenance or service information that you require for the Track one undercarriage.

This manual must be kept with the machine at all times. Additional Track One Use and Maintenance Manual With Spare Parts are available at your local Wolfe dealer.

Engine Air Intake Filter

The air intake filters should be cleaned or replaced as indicated in the Caterpillar Operation and Maintenance Manual.

IMPORTANT: Make sure the machine is not running when servicing the air filter system since this will allow dirt to enter the engine. Each time you service the air filter system, make sure both filters are seated properly and the cover is secure. Failing to do so can cause damage to the machine's engine. For more information on the servicing of the air cleaner elements, refer to the Caterpillar Operation and Maintenance Manual.



Engine Air Cleaner Service Indicator

Refer to the Caterpillar Operation and Maintenance Manual for information on the engine air cleaner service indicator.

Cleaning or Replacing the Air Intake Filter

- Make sure that machine is not running.
- Lift the lever and unhook both latches.
- Remove the cover.
- Remove the primary filter element.
- Remove the secondary filter element.
- Use a clean damp cloth to clean the inside of the filter body.
- For cleaning the primary and secondary filter elements refer to the Caterpillar Operation and Maintenance Manual for instructions.
- Install new or cleaned secondary filter element.
- Install new or cleaned primary filter element.
- Install the cover.
- Hook and press down both latch levers to secure the cover.
- Check to make sure the pre-cleaner clamp is in place properly and tight.

Air Intake System

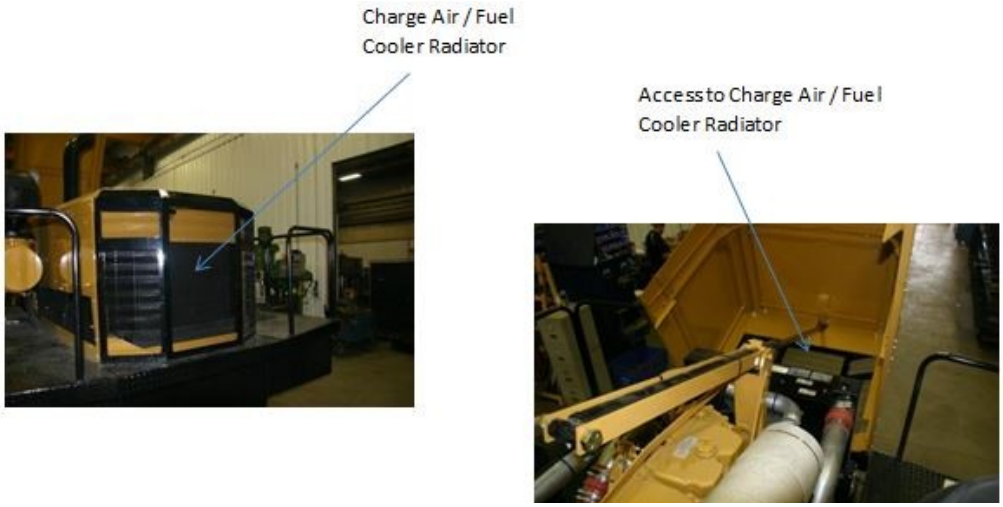
The air intake system should be inspected every 250 hours to make sure that no unfiltered air can enter the system.

Checking the Air Intake System

- Inspect the rubber elbows and couplers for cracks, splits or wear and replace if required.
- Check to make sure the clamps are in place, not damaged and tight. Replace if required.
- Inspect the air intake and charge air piping for cracks, splits or wear and replace if required.
- Inspect the air intake pipe insulation for damage and replace if required.

Charge Air/Fuel Cooler Radiator

The charge air / fuel cooler radiator should be checked every 10 hours to make sure that it is clean and not clogged with debris. If the machine is being used in dusty conditions, the radiator may need to be checked more frequently.



Checking and cleaning Charge Air/Fuel Cooler Radiator

- Open both the rear and front hoods (see Plow Hood section in this manual).
- Inspect charge air / fuel cooler radiator for debris.
- Remove any large debris.
- Blow clean from the back side of the radiator with compressed air.

WARNING: Make sure that the machine is NOT running. Allow the machine to cool before attempting to clean radiators. Wear proper safety glasses or face shield when using compressed air to clean radiators. Failing to heed to this warning can cause serious injury.

Fuel Filter

Replace the fuel filter as indicated in the Caterpillar Operation and Maintenance Manual.

IMPORTANT: Prior to changing the fuel filter turn the ball valve off on the fuel tank to prevent the tank from draining through the fuel filter head. Be sure to turn the ball valve on before priming and starting engine.

Changing The Fuel Filter/Fuel Priming Pump

- For information and instruction on how to change the fuel filter refer to the Caterpillar Operation and Maintenance Manual.
- For information and instruction on how to use the fuel primer pump refer to the Caterpillar Operation and Maintenance Manual.

Fuel System Water Separator

Drain or replace the fuel system water separator as indicated in the Caterpillar Operation and Maintenance Manual.

Drain or Replace the Fuel System Water Separator

IMPORTANT: Prior to changing the fuel system water separator, turn the ball valve off on the fuel tank to prevent the tank from draining through the fuel filter head. Be sure to turn the ball valve on before running the engine.

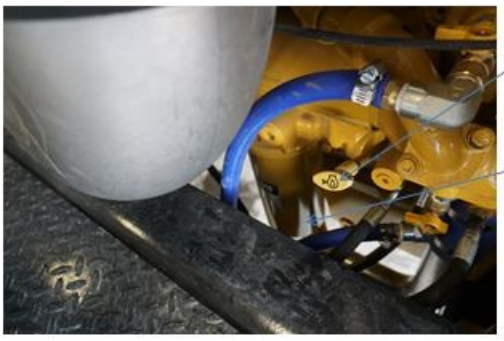
For information and instruction on how to drain or replace the fuel system water separator refer to the Caterpillar Operation and Maintenance Manual.

Engine Oil and Oil Filter

The engine oil level should be checked, the oil and oil filter changed as indicated in the Caterpillar Operation and Maintenance Manual.

IMPORTANT: Prior to changing the engine oil, be sure to remove the keys and place a "DO NOT OPERATE" tag on the controls to ensure that the engine is not started with no oil in the system. Failure to do so may result in damage to the machine's engine.

Oil Dipstick Access Panel (not equipped on all machines)



Oil Dipstick (may be located on either side of the machine)

Oil Filter (some engines have 2 oil filters)

Continued on next page

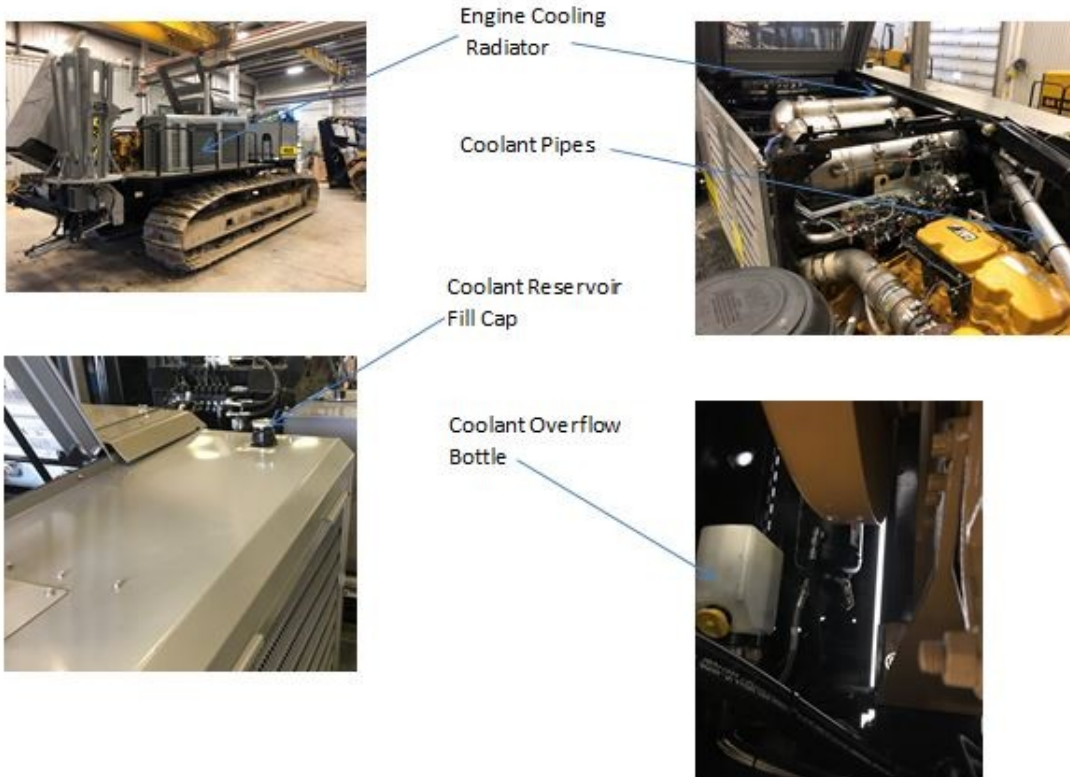
Changing the Oil and Replacing the Oil Filter

For information and instruction on how to change the engine oil and replace the oil filter refer to the Caterpillar Operation and Maintenance Manual.

Engine Cooling System

The engine cooling radiator should be check every 10 hours to make sure that it is clean and not clogged with debris. If the machine is being used in dusty conditions, the radiator may need to be checked more frequently.

IMPORTANT: Only use Extended Life Coolant as recommended by Caterpillar when topping up or replacing the coolant. Refer to Caterpillar Operation and Maintenance Manual for more information.



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Checking and Cleaning the Engine Cooling Radiator

- Inspect the radiator through the grill for debris and dust.
- Remove any large debris by hand.
- Blow clean from the back side of the radiator with compressed air.

WARNING: Make sure that the machine is NOT running. Allow the machine to cool before attempting to clean radiators. Wear proper safety glasses or face shield when using compressed air to clean radiators. Failing to heed to this warning can cause serious injury.

Coolant Level, Maintenance and Replacement

- The coolant reservoir is equipped with an electronic level sensor. A fault will appear on the machine control screen if the coolant falls below a satisfactory level.
- For coolant related information including but not limited to coolant level / top up, maintenance and replacement, refer to the Caterpillar Operation and Maintenance Manual.

WARNING: Pressurized System. Hot coolant can cause serious burns. To open that cooling system filler cap, stop the engine and wait until the cooling system components are cool. Loosen the cap slowly to in order to relieve the pressure.

Exhaust System

Check the exhaust system every 250 hours of operation.

NOTE: The design of the muffler box may vary from machine to machine.

Checking the Exhaust System

- Check the exhaust system for leaks or cracks every 250 hours.
- To identify leaks or cracks look for black residue where the exhaust may have been leaking out of the system.
- If you detect any leaks or cracks, repair as soon as possible.

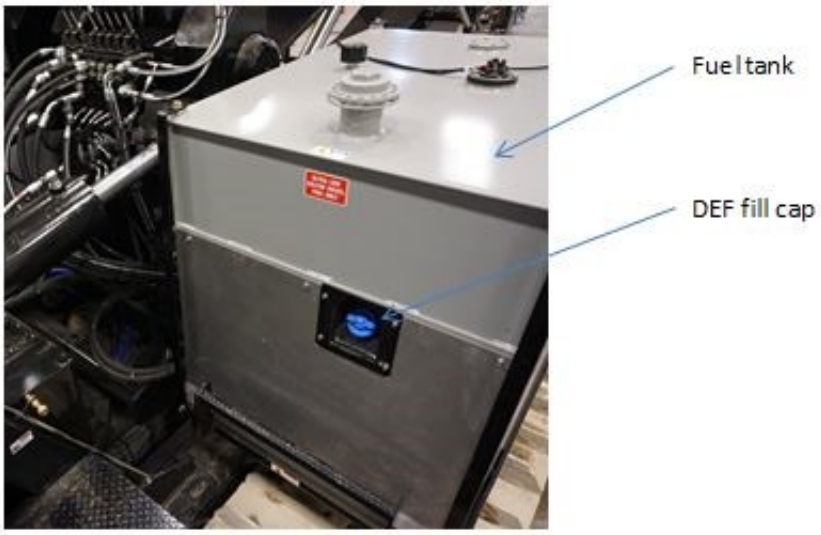
WARNING: If the machine has been running the exhaust system, components will be hot. Allow to cool before inspecting or servicing the exhaust system.

Diesel Exhaust Fluid (DEF)

Diesel Exhaust Fluid (DEF) is a precisely mixed solution of 32.5% high purity chemical grade urea and 67.5% de-ionized water that is injected into the exhaust system to reduce NOx (Nitrogen Oxide) emissions. DEF cleanliness is extremely important as contaminants can degrade the life of DEF and system components. Prior to filling the DEF tank, clean the blue colored DEF tank filler cap and surrounding area. Avoid filling the DEF tank from a contaminated container or funnel and overfilling of the tank.

IMPORTANT: Only a premixed solution of DEF (available from the supply base) should be used.

WARNING: DEF is corrosive to many different materials. Care should be taken when dispensing DEF. Spills should be cleaned immediately; machine or engine surfaces should be wiped clean and rinsed with water.



Hydraulic System

Clean hydraulic fluid is a very important part of keeping your machine running and operating as intended. The proper service and maintenance of the hydraulic system will ensure that your machine will give you years of service and reduce you overall cost of ownership.

NOTE: A Lubrication Analysis for the hydraulic oil is recommended every 1000 hours of operation or once per year, whichever comes first.

WARNING: Hydraulic fluid injected into your skin can cause severe injury or death. Keep your hands and body away from any pressurized leak. If fluid is injected into your skin see a doctor immediately.

WARNING: If the machine has been running, the hydraulic system components will be hot. Allow to cool before inspecting or servicing the hydraulic system. Failing to do so may cause serious burns.

IMPORTANT: Prior to changing the hydraulic oil be sure to remove the keys and place a Do Not Operate tag on the machine controls to ensure that the engine is not started with no oil in the system. Failure to do so may result in damage to the machines hydraulic system.

NOTE: When the hydraulic fluid level is low, a small amount of hydraulic fluid will remain on the lower part of the sight gauge window. This condition does not show a correct fluid level.

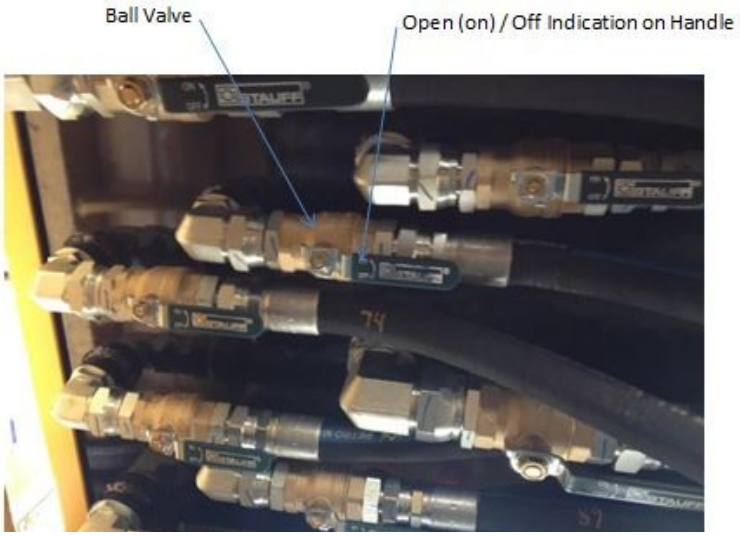
NOTE: If the hydraulic fluid supply to the pumps has been interrupted due to hydraulic fluid change, pump replacement, or a broken hydraulic line, the hydraulic system will need to be properly primed. See the Hydraulic System Priming procedure in this manual or call your location Wolfe dealer for more information.

IMPORTANT: Make sure that the hydraulic tank ball valves are in the open (or on) position before starting the machine. Failing to do so will cause severe damage to the machine's hydraulic system.

Hydraulic Tank Ball Valves

The hydraulic tank ball valves are located on the bottom of the hydraulic tank.

IMPORTANT: Make sure that the hydraulic tank ball valves are in the open (or on) position before starting the machine. Failing to do so will cause severe damage to the machine's hydraulic system.



Hydraulic System Priming

If the hydraulic fluid supply to the pumps has been interrupted due to hydraulic fluid change, pump replacement, or a broken hydraulic line the hydraulic system will need to be properly primed.

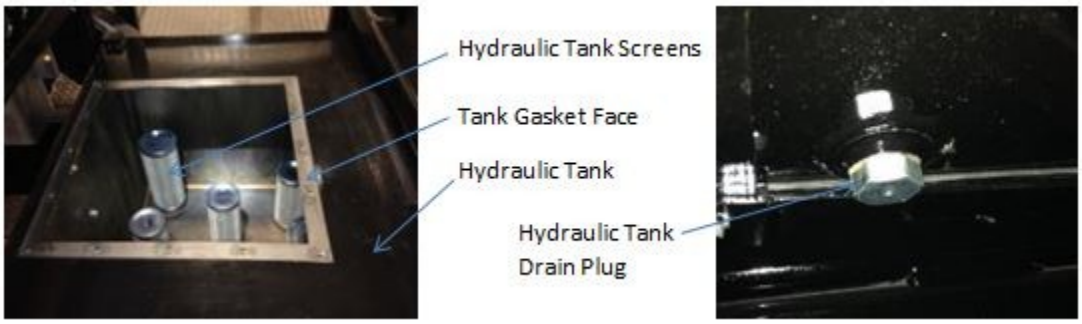
Continued on next page

Priming the hydraulic System

- Fill the hydraulic tank with oil.
- Ensure that all ball valves on the bottom of the hydraulic tank are open.
- Clean around the N port on top of the 4 high pressure pumps.
- Loosen the N port plugs. You may have to remove the plugs completely to allow all the air to escape.
- Allow the air to escape.
- Install the plug in each N port after the oil begins to flow out and tighten.
- Remove the electrical plug screw from the ECM connection plug.
- Unplug the ECM connection plug from the engine.
- Turn the master switch to the on position.
- Turn the key in the operator station to the run position.
- Go to screen #3 on the machine control monitor.
- Press the start button to roll over the engine until the charge pressures are at 250 psi.
- Plug the ECM connection plug into the engine.
- Install the electrical plug screw.
- Check the hydraulic oil level and top up as required.
- Start the engine and make sure that the charge pressures come up to 250 psi.

Hydraulic Tank Screens

Clean the hydraulic tank screens every 1000 hours of operation or once per year, whichever comes first. Replace screens as required.



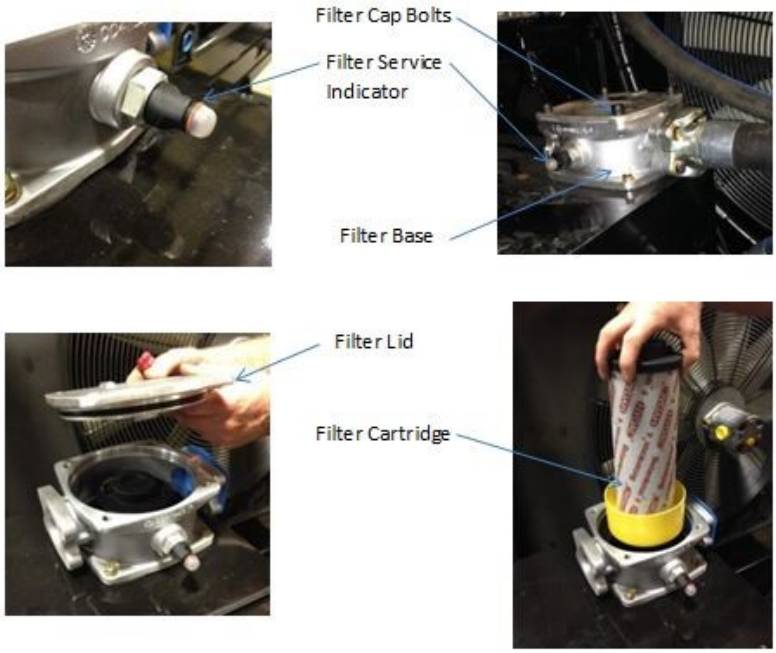
NOTE: If the hydraulic fluid supply to the pumps has been interrupted due to hydraulic fluid change, pump replacement, or a broken hydraulic line the hydraulic system will need to be properly primed. See the Hydraulic System Priming procedure in this manual or call your local Wolfe dealer for more information.

Cleaning the hydraulic Tank Screens

- In the winter if the oil is cold, the machine will need to be run until the hydraulic oil is warm to the touch (NOT HOT).
- Run the engine until the side of the hydraulic oil reservoir is warm.
- Place a container under the drain plug that will hold 450 liters (118 US Gallons).
- Clean around the fill cap and drain plug.
- Remove the fill cap and the drain plug from the hydraulic reservoir.
- Allow time for the hydraulic oil to completely drain.
- Clean the top of the hydraulic reservoir to ensure that no dirt can fall into the tank.
- Remove all the bolts on the access cover.
- When removing the access cover. Be careful not to damage the seal. If the seal is damaged, replace accordingly.
- With a clean rag, wipe the bottom of the tank to remove any sediment.
- Turn the screens counter-clockwise with a wrench to remove.
- Flush the screens using a cleaning solvent.
- Use compressed air, blow from the inside of the screen to the outside to remove any excess cleaning solvent. Blow off the treads on the screen and allow to dry.
- Apply Red Loctite to the threads on the cleaned or new screens.
- Install the cleaned or new screens, turn the screen clockwise and tighten with a wrench.
- Clean the gasket face on the tank and tank access cover.
- Inspect gasket on the access cover and replace if damaged.
- Install access cover and all bolts. Tighten with a wrench.
- Install the drain plug.
- Fill the reservoir until the oil level is a minimum of ¾ up the sight gauge window.
- Start the engine and operate all the hydraulic controls.
- Stop the engine, check the oil level and top up if necessary.
- Install the fill cap.

Return Line Filter

If the machine is new, replace the return line filter after 50 hours of use. Then replace the return line filter every 1000 hours, once per year, or if the filter service indicator shows service is required, whichever comes first.



Changing the Return Line Filter

- Clean the area around the filter cap.
- Remove the 4 filter cap bolts.
- Remove the filter cap.
- Remove the filter cartridge from the filter base.
- Insert new filter cartridge into the filter base.
- Clean the seal surfaces on the filter cap and filter base.
- Install the filter cap onto the filter base.
- Install the 4 filter cap bolts and tighten.

Open Loop Filter

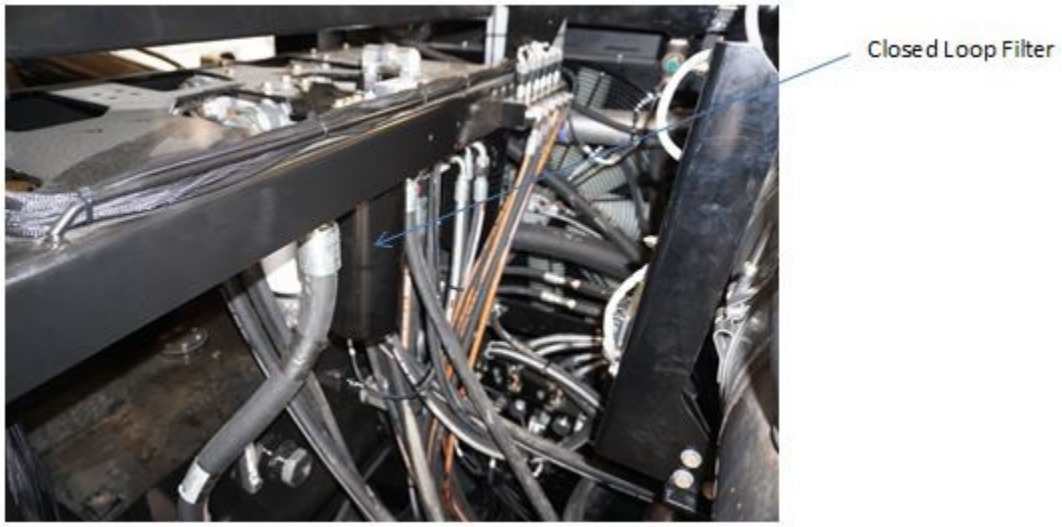
If the machine is new, replace the open loop filter after 50 hours of use. Then replace the open loop filter every 1000 hours, once per year, or if the filter service indicator shows service is required, whichever comes first.

Changing the Open Loop Filter

- Clean the area around the filter.
- Remove the filter.
- The filter head has a built in gasket. If required, install new filter head gasket (refer to chart above for part number).
- No other O-ring is required.
- Apply a small amount of hydraulic oil to the seal of the new filter.
- Install the new oil filter and tighten hand tight.

Closed Loop Filter

If the machine is new, replace the open loop filter after 50 hours of use. Then replace the closed loop filter every 1000 hours, once per year, or if the filter service indicator shows service is required, whichever comes first.



Changing the Closed Loop Filter

- Clean the area around the filter.
- Remove the filter.
- The filter head has a built in gasket. If required, install new filter head gasket (refer to chart above for part number).
- No other O-ring is required.
- Apply a small amount of hydraulic oil to the seal of the new filter.
- Install the new oil filter and tighten hand tight.

Oil/Water Separator

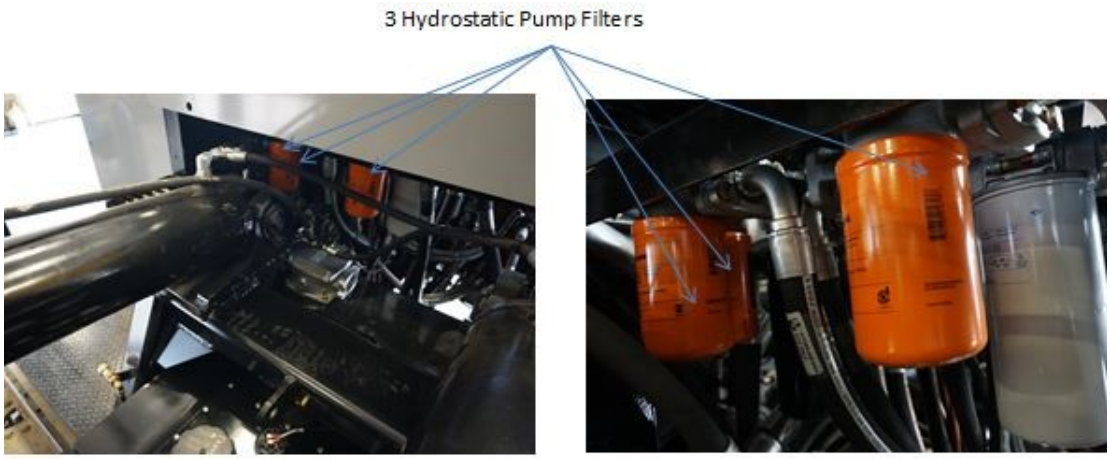
If the machine is new, replace the water separator filter after 50 hours of use. Then, replace the water separator filter every 1000 hours, once per year, or if the filter service indicator shows service is required, whichever comes first.

Changing the Oil/Water Separator Filter

- Clean the area around the filter.
- Remove the filter.
- Replace using the brown O-Ring supplied with the filter.
- No other gasket is required.
- Apply a small amount of hydraulic oil to the seal of the new filter.
- Install the new oil filter and tighten hand tight.

Hydrostatic Pump Filters

If the machine is new, the hydrostatic pump filters should be changed after 50 hours of operation. Then replace the filters after every 1000 hours of operation or once per year, whichever comes first.



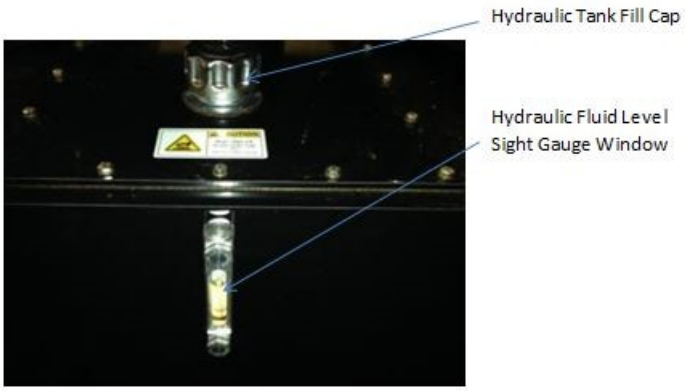
Changing the 3 Hydrostatic Pump Filters

- Clean the area around the filter and the filter base.
- Use a filter wrench to remove filter. Turn the filter counter-clockwise.
- Clean the sealing surface of the filter base. Ensure that all old seal material is removed.
- Apply clean engine oil to the rubber seal of the new filter.
- Install the new filter onto the filter base.
- Turn the new filter clockwise until the rubber seal on the filter contacts the sealing surface of the filter base.
- Turn an extra ½ turn by hand.

IMPORTANT: Do not tighten the oil filter with a filter wrench. Only tighten by hand. Over tightening may cause damage to the filter base and will make it difficult to remove the filter in the future.

Hydraulic Oil Level

Check the level of the hydraulic system every 50 hours of operation or each week, whichever comes first.



Checking the Hydraulic Oil Level

- The hydraulic fluid reservoir is equipped with an electronic level sensor. A fault will appear on the machine control screen if the hydraulic oil falls below a satisfactory level.
- The hydraulic fluid reservoir is equipped with a sight gauge window to visually check the hydraulic fluid level. The oil level should be no lower than ¾ up the sight gauge window.
- Allow the hydraulic fluid to cool.
- Clean the area around the fill cap.
- Remove the fill cap to top up the fluid level as required.
- Install the fill cap.

Changing the Hydraulic Oil

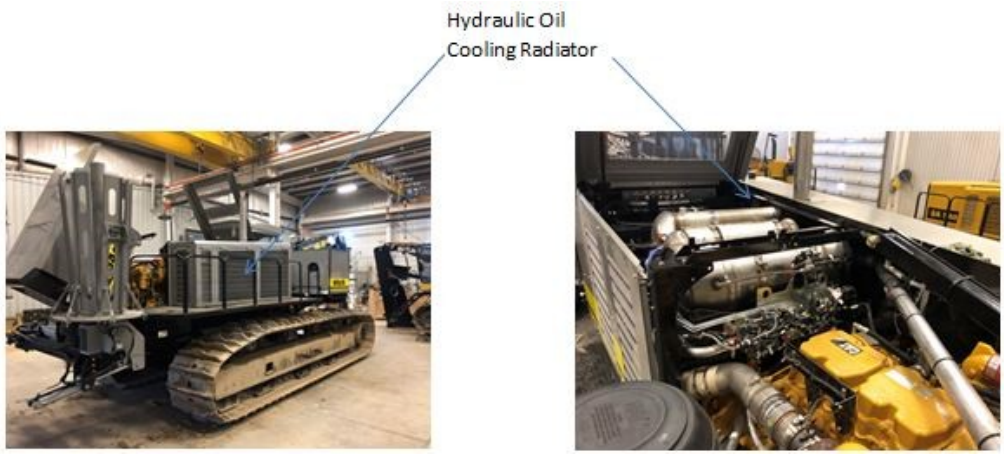
- In the winter if the oil is cold, the machine will need to be run until the hydraulic oil is warm to the touch (NOT HOT).
- Run the engine until the side of the hydraulic oil reservoir is warm.
- Place a container under the drain plug that will hold 450 liters (118 US Gallons).
- Clean around the fill cap and drain plug prior to removing.
- Remove the fill cap and the drain plug from the hydraulic reservoir.
- Allow time for the hydraulic oil to completely drain.
- Install the drain plug (make sure drain plug is clean).
- Fill the reservoir until the oil level is a minimum of ¾ up the sight gauge window.
- Start the engine and operate all the hydraulic controls.
- Stop the engine, check the oil level and top up if necessary.
- Install the fill cap.

IMPORTANT: Prior to changing the hydraulic oil, be sure to remove the keys and place a Do Not Operate tag on the machine controls to ensure that the engine is not started with no oil in the system. Failure to do so may result in damage to the machine's hydraulic system.

NOTE: When the hydraulic fluid level is low, a small amount of hydraulic fluid will remain on the lower part of the sight gauge window. This condition does not show a correct fluid level.

NOTE: If the hydraulic fluid supply to the pumps has been interrupted due to hydraulic fluid change, pump replacement, or a broken hydraulic line the hydraulic system will need to be properly primed. See the Hydraulic System Priming Procedure in this manual or call your location Wolfe dealer for more information.

Hydraulic Oil Cooling radiator



WARNING: Make sure that the machine is NOT running. Allow the machine to cool before attempting to clean radiators. Wear proper safety glasses or face shield when using compressed air to clean radiators. Failing to heed to this warning can cause serious injury.

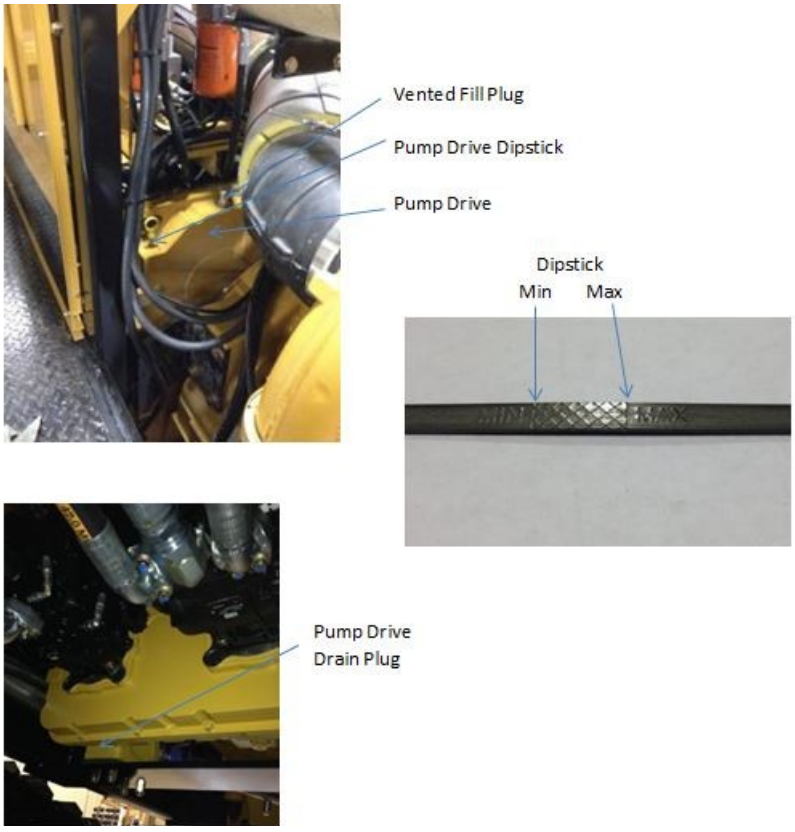
Checking and Cleaning the Hydraulic Oil Cooling Radiator

- Inspect the radiator through the grill for debris and dust.
- Remove any large debris by hand.
- Blow clean from the backside of the radiator with compressed air.

Pump Drive Maintenance

IMPORTANT: A Lubrication Analysis for the pump drive lubrication oil is recommended every 1000 hours of operation or once a year, whichever comes first

IMPORTANT: Prior to changing the pump drive oil, be sure to remove the keys and place a Do Not Operate tag on the controls to ensure that the engine is not started with no oil in the system. Failure to do so may result in damage to the machine's pump drive.



WARNING: Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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Checking the Pump Drive Oil Level

Check the pump drive oil level every 10 hours

- Clean the area around the dip stick.
- Remove the dipstick.
- Wipe dipstick with a clean rag.
- Install dipstick making sure it is seat properly into the dipstick tube.
- Remove the dipstick.
- The oil level should be between the min and max on the dipstick.
- Top up the oil level if required. Do not overfill the pump drive past the max mark on the dipstick.
- To add oil, clean around the vented fill plug to prevent any dirt from falling into the pump drive.
- Remove the fill plug with a wrench.
- Top up the oil as required.
- Install the fill plug (ensure that the fill plug is clean before installing).

Changing the Pump Drive Oil

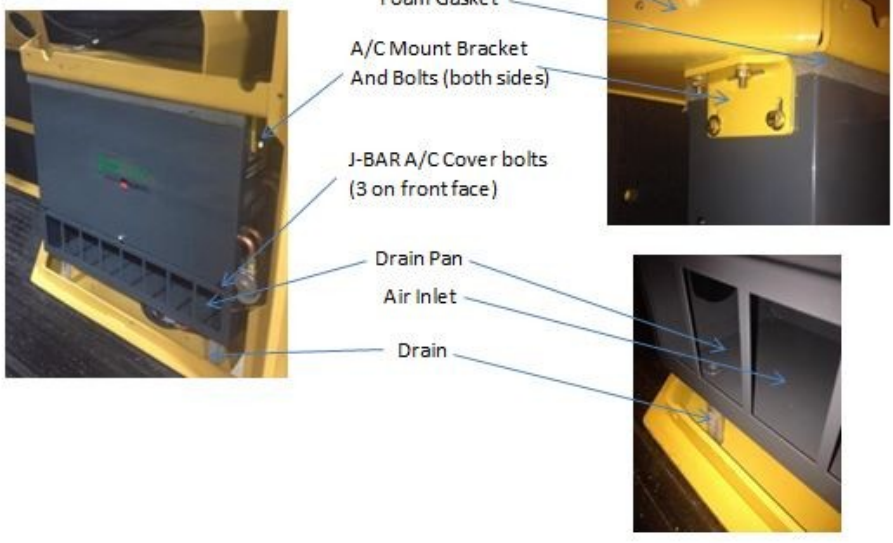
If the machine is new the pump drive oil should be changed after 50 hours of operation. Then replace the oil after every 1000 hours of operation or once per year, whichever comes first.

- In the winter if the oil is cold the machine will need to be run until the pump drive oil is warm to the touch (NOT HOT).
- Run the engine until the side of the pump drive is warm.
- Place a container under the drain plug that will hold 10 liters (10.7 US Quarts).
- Clean around the drain plug.
- Remove the drain plug from the pump drive.
- Allow time for the oil to completely drain.
- Install the drain plug.
- Clean around the fill plug.
- Remove the fill plug.
- Fill the reservoir until the oil level on the dipstick is between the min and max.
- Install the fill plug (ensure that the fill plug is clean before installing).

HVAC System

IMPORTANT: Regular service to cab HVAC system is important to ensure system works as efficiently as possible. A clogged filter or evaporator will reduce the airflow reducing the A/C or heating capacity of the unit.

Pictures with A/C Cover Panel Removed



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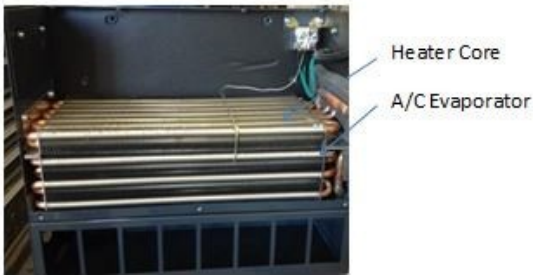
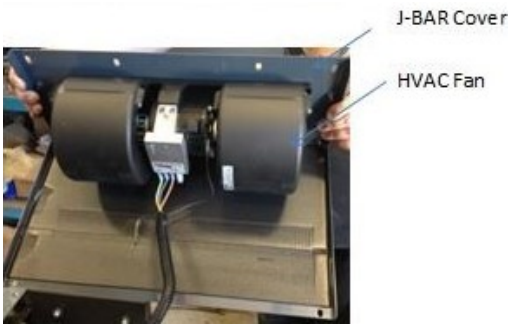
Pictures with the J-BAR cover removed





Cab Air Filter

Check the cab air filter every 50 hours and replace as required (The filter design may vary slightly from machine to machine).

Replacing the Cab Air Filter

- Remove the filter grille bolts.
- Remove the air filter grille and filter.
- Install new filter.
- Install grille.
- Install the grille bolts and tighten.

A/C Evaporator and Heater Core

Check the evaporator and heater core every 1000 hours of operation. Clean and service as required. If operating the machine in dusty conditions the service intervals may have to be more frequent.

Cleaning A/C Evaporator and Heater Core

- Remove the bolts from the A/C cover panel.
- Remove the A/C cover panel.
- Loosen the A/C mounting bracket bolts (both sides of the A/C unit) to allow the A/C unit to drop enough to have a small gap between the foam gasket and the A/C mount plate.

Continued on next page

- Remove the 7 J-BAR A/C cover bolts (4 on the top surface and 3 on the front surface).
  Slide the J-BAR A/C cover (L shaped cover) out from under the mounting plate. The foam gasket will come out with the J-BAR A/C cover.
- Clean the A/C evaporator and heater core as required using compressed air.
- Slide the J-BAR A/C cover back into place. Make sure the foam gasket does not bind or roll up as you are slide the cover into place.
- Install the 7 J-BAR A/C cover bolts.
- Push the A/C unit up so that the foam gasket seals on the bottom of the A/C mount plate.
- Tighten the A/C mounting bracket bolts.
- Replace the A/C cover panel.
- Install the A/C cover panel bolts and tighten.

WARNING: Wear proper safety glasses or face shield when using compressed air. Failing to heed to this warning can cause serious injury.

A/C Drip Pan and Drain

Check the A/C drip pan and drain every 250 hours of operation or once per year, whichever comes first. Clean as required.

Cleaning the A/C Drip Pan and Drain

- To clean the drip pan and drain remove the filter grill bolts.
- Remove the air filter grill and filter.
- Using a rag to wipe the bottom of the drip pan clean.
- Inspect the drain.
- To clean the drain use compressed air to gently blow out the drain and drain tubes. (2 places)
- Dirt should blow out of the drain tubes that comes out of the bottom of the cab.
- Install the air filter and grille.
- Install the filter grille bolts and tighten.

WARNING: Wear proper safety glasses or face shield when using compressed air. Failing to heed to this warning can cause serious injury.

A/C Condenser Radiator

Check the A/C condenser radiator every 10 hours of operation. Clean as required.

A/C Condenser Radiator (some machines are equipped with remote compressor and condenser units)

Checking and cleaning the A/C Condenser Radiator

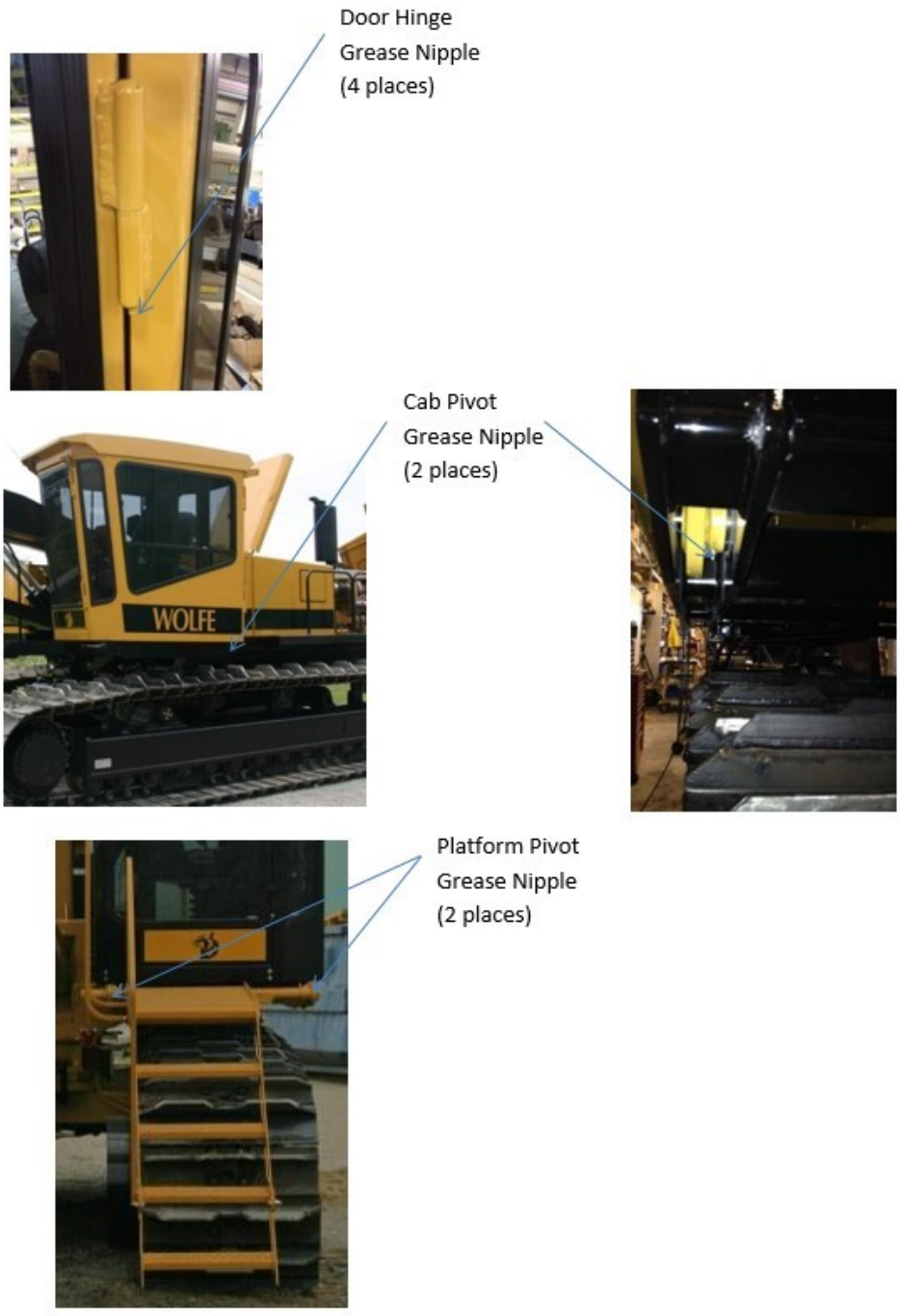
- Inspect the radiator through the grille for debris and dust.
- Remove any large debris by hand.
- Blow clean from the back side of the radiator with compressed air.

WARNING: Make sure that the machine is NOT running. Allow the machine to cool before attempting to clean radiators. Wear proper safety glasses or face shield when using compressed air to clean radiators. Failing to heed to this warning can cause serious injury.

Cab and Back Platform Lubrication

Seat Swivel, Doors, Back Platform (Parallel Link Machine only) and Cab Pivot Lubrication

Grease the seat swivel, door hinges, back platform pivot, and cab pivot points every 100 hours of operation.



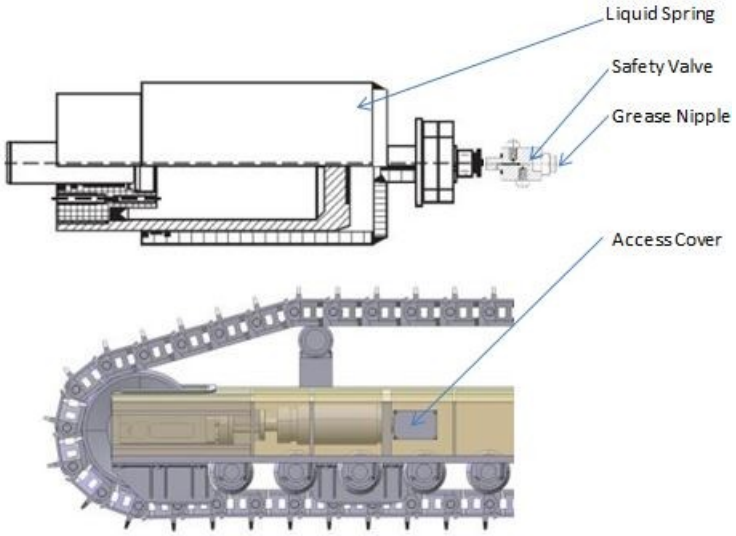
Track Undercarriage Maintenance

Inspect and service the Track One undercarriage as indicated in the Track One Use and Maintenance Manual with Spare Parts.

IMPORTANT: A Lubrication Analysis for the final drive oil is recommended every 1000 hours of operation or once per year, whichever comes first.

WARNING: The track system has track adjusting components and components that are spring loaded that use steel springs, liquid springs, grease or oil that can be under very high pressure. These components can be extremely dangerous if not worked on or handled appropriately. DO NOT attempt to adjust or repair the track systems unless you have read the Track One Use and Maintenance Manual with Spare Parts, have had proper training and understand all the dangers associated with servicing or repairing the track systems. Failure to do so can result in serious injury or death.

NOTE: Some illustrations in the Track One Use and Maintenance Manual with Spare Parts show a generic coil spring track tensioning system. The Wolfe Track One undercarriage is equipped with a liquid spring track tensioning system as illustrated below. The track tension adjustment procedure remains the same for either system. Follow the procedure in the manual for tensioning the tracks correctly.



IMPORTANT: Do not over-tighten the tracks. Over-tightening the track system will result in significant damage to a number of the track components. This shortens the life of the components significantly.

Track Pad Bolts

When the machine is new, check the track pad bolts every 50 hours of machine operation until the track pad bolts stay tight. Check track pad bolts every 250 hours of machine operation.

Torque the track pad bolts if required

¾ bolt threads are dry
- 479 ft/lbs (649 Nm)

¾ bolt threads are lubricated
- 450 ft/lbs (610 Nm)

7/8 bolt threads are dry
- 750 ft/lbs (1016 Nm)

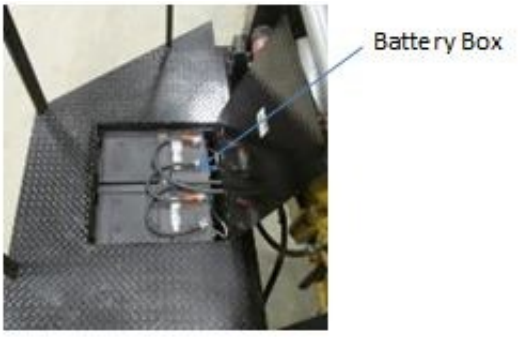
7/8 bolt threads are lubricated
- 650 ft/lbs (881 Nm)

Final Drive Breather Tanks

IMPORTANT: Do not add oil to the final drives through the final drive breather tanks. Over filling the final drives can cause damage to the machine. Refer to the Track One Use and Maintenance Manual with Spare Parts for instructions on servicing the final drives.

Batteries

Machines may be equipped with two or four batteries. Four battery machines have batteries located in the battery boxes on both sides of the machine. Clean the batteries, check the electrolyte levels and battery terminals for corrosion every 250 hours.



Continued on next page

WARNING: Machines: Always wear eye protection and face shields when working with batteries.

WARNING: Machines may be equipped with two or four batteries. Four battery machines have batteries located in the battery boxes on both sides of the machine. Be sure to disconnect the negative battery terminals if servicing or repairing the electrical system on the machine. For the four battery systems the negative cable will have to be disconnected from both battery sets. Failing to do so could result in damage to the machine or personal injury.

Checking the Battery Electrolyte

- Use a clean rag and battery cleaner to clean the batteries.
- Remove the battery caps.
- The electrolyte should be 3mm (1/8 inch) below the split ring at the bottom of each opening.
- Top up the electrolyte in each cell if required using clean distilled water.
- Replace the battery caps.
- If required use baking soda and flush the outside of the batteries with water.

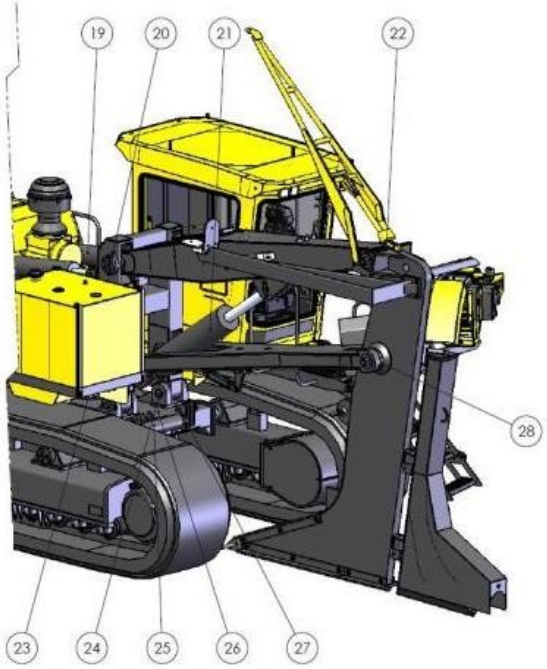
IMPORTANT: If the temperature is below 0 degrees C (32F) and you have added water to the batteries, connect a battery charger to the batteries or run the engine for approximately 2 hours to prevent the batteries from freezing.

IMPORTANT: Do not run the engine with the battery cables or alternator wires disconnected. Do not use a steam cleaner or cleaning solvent to clean the alternator.

IMPORTANT: Before using an electric welder to weld on the machine disconnect, the negative battery cables, the alternator wires, and turn the master switch off. Failing to do so may cause damage to the machine.

Grease Points

See the following charts for the grease points and intervals



NO.	QTY	DESCRIPTION	INTERVAL (HOURS)
1	2	REAR DOOR HINGE	100
2	1	SEAT BASE SWIVEL	100
3	2	FRONT DOOR HINGE	100
4	*1	RAISE/LOWER TILE FEEDER MOUNT	10
5	*2	CUTTER CRUSHER	10
6	1	TILE FEEDER BEARING	10
7	1	BACK PLATFORM CYLINDER MOUNT	50
8	2	BACK PLATFORM PIVOT	50
9	*2	REAR OSCILLATING TRACK PIVOT	10
10	2	CAB PIVOT	100
11	*1	FRONT OSCLLTNG WISHBONE PIVOT	10
12	*2	FRONT OSCILATING TRACK PIVOT	10
13	*2	TILE STRINGER SWING CYLINDER	10
14	*2	TILE STRINGER SWING SHAFT	10
15	*1	TILE STRINGER DRIVE WHEEL BEARING	10
16	*2	TILE STRINGER TILT CYLINDER	10
17	*1	TILE STRINGER TILT SHAFT	10
18	*1	TILE STRINGER MAIN SPEAR HUB	10
19	4	ATTITUDE CYLINDERS	10
20	4	ARM BRIDGE PINS	10
21	2	GRADING CYLINDER	10
22	1	UPPER ARM MOLE BUSHING	10
23	1	SWIVEL PLATE PIN	10
24	2	BRIDGE PINS	10
25	2	SWING CYLINDER	10
26	3	SWIVEL PLATE	10
27	4	SWIVEL PLATE KEEPERS	10
28	2	LOWER ARM MOLE BUSHINGS	10

*ONLY IF EQUIPMENT IS PRESENT

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/64 ON MACHINED SURFACES ±1/32 ON NON-MACHINED SURFACES
ANGULAR:
ONE PLACE DECIMAL ±.090
TWO PLACE DECIMAL ±.010
THREE PLACE DECIMAL ±.005
ALL DOWELS TO BE:

PROPRIETARY AND CONFIDENTIAL
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SCALE: 1:32
MATERIAL
FINISH
DO NOT SCALE DRAWING

GENERAL WELD NOTE:
1/4" FILLET WELD UNLESS OTHERWISE SPECIFIED

	COMPLETED	QTY.	NAME
DRAWN	6/4/2014		
CUT			
LATHE			
MILL			
GRIND			
WELD			

WOLFE
708 Wright St.
Strathroy, Ontario
N7G 4E2
Ph: (519)246-1030
Fax: (519)246-1104

PLOW - 540 PL OSC
GREASE - PL OSC
SIZE B | JOB #: | REV A
WEIGHT: | SHEET 2 OF 2

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/64 ON MACHINED SURFACES ±1/32 ON NON-MACHINED SURFACES
ANGULAR:
ONE PLACE DECIMAL ±.090
TWO PLACE DECIMAL ±.010
THREE PLACE DECIMAL ±.005
ALL DOWELS TO BE:

PROPRIETARY AND CONFIDENTIAL
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SCALE: 1:36
MATERIAL
FINISH
DO NOT SCALE DRAWING

GENERAL WELD NOTE:
1/4" FILLET WELD UNLESS OTHERWISE SPECIFIED

	COMPLETED	QTY.	NAME
DRAWN	6/4/2014		
CUT			
LATHE			
MILL			
GRIND			
WELD			

WOLFE
708 Wright St.
Strathroy, Ontario
N7G 4E2
Ph: (519)246-1030
Fax: (519)246-1104

PLOW - 540 PL OSC
GREASE - PL OSC
SIZE B | JOB #: | REV A
WEIGHT: | SHEET 1 OF 2

NO.	QTY	DESCRIPTION	INTERVAL (HOURS)
1	2	GRADING CYLINDER	10
2	4	ATTITUDE CYLINDER	10
3	4	ARM MOLE BUSHINGS	10
4	4	ARM SWING CYLINDERS	10
5	1	ARM BALL EYE	10
6	4	ARM TILT CYLINDERS	10
7	1	TILE FEEDER BEARING	10
8	2*	CUTTER CRUSHER	10
9	1*	RAISE/LOWER TILE FEEDER MOUNT	10
10	2	REAR DOOR HINGES	100
11	1	SEAT BASE SWIVEL	100
12	2	FRONT DOOR HINGES	100
13	2*	TILE STRINGER SWING CYLINDER	10
14	1*	TILE STRINGER DRIVE WHEEL BEARING	10
15	1*	TILE STRINGER MAIN SPEAR HUB	10
16	1*	TILE STRINGER TILT SHAFT	10
17	2*	TILE STRINGER TILT CYLINDER	10
18	2*	TILE STRINGER SWING SHAFT	10
19	2	FRONT OSCILLATING TRACK PIVOT	10
20	2*	FRONT OSCLLTNG WISHBONE PIVOT	10
21	1*	CAB PIVOT	10
22	2*	REAR OSCILLATING TRACK PIVOT	10

* ONLY IF EQUIPMENT IS PRESENT

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/64 ON MACHINED SURFACES ±1/32 ON NON-MACHINED SURFACES
ANGULAR ±1°
ONE PLACE DECIMAL ±.030
TWO PLACE DECIMAL ±.010
THREE PLACE DECIMAL ±.005
ALL DOWELS TO BE ±.001

PROPRIETARY AND CONFIDENTIAL
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SCALE: 1:32
MATERIAL
FINISH
DO NOT SCALE DRAWING

GENERAL WELD NOTE:
1/4" FILLET WELD UNLESS OTHERWISE SPECIFIED

	COMPLETED	QTY.	NAME
DRAWN	6/4/2014		
CUT			
LATHE			
MILL			
GRIND			
WELD			

WOLFE
705 Wright St.
Strathroy, Ontario
N7G 4L3
Ph. (519)246-1000
Fax (519)246-1104

PLOW - 540 SA OSC
GREASE - 5A OSC
SIZE B | JOB #: | REV A
WEIGHT: | SHEET 1 OF 2

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/64 ON MACHINED SURFACES ±1/32 ON NON-MACHINED SURFACES
ANGULAR ±1°
ONE PLACE DECIMAL ±.030
TWO PLACE DECIMAL ±.010
THREE PLACE DECIMAL ±.005
ALL DOWELS TO BE ±.001

PROPRIETARY AND CONFIDENTIAL
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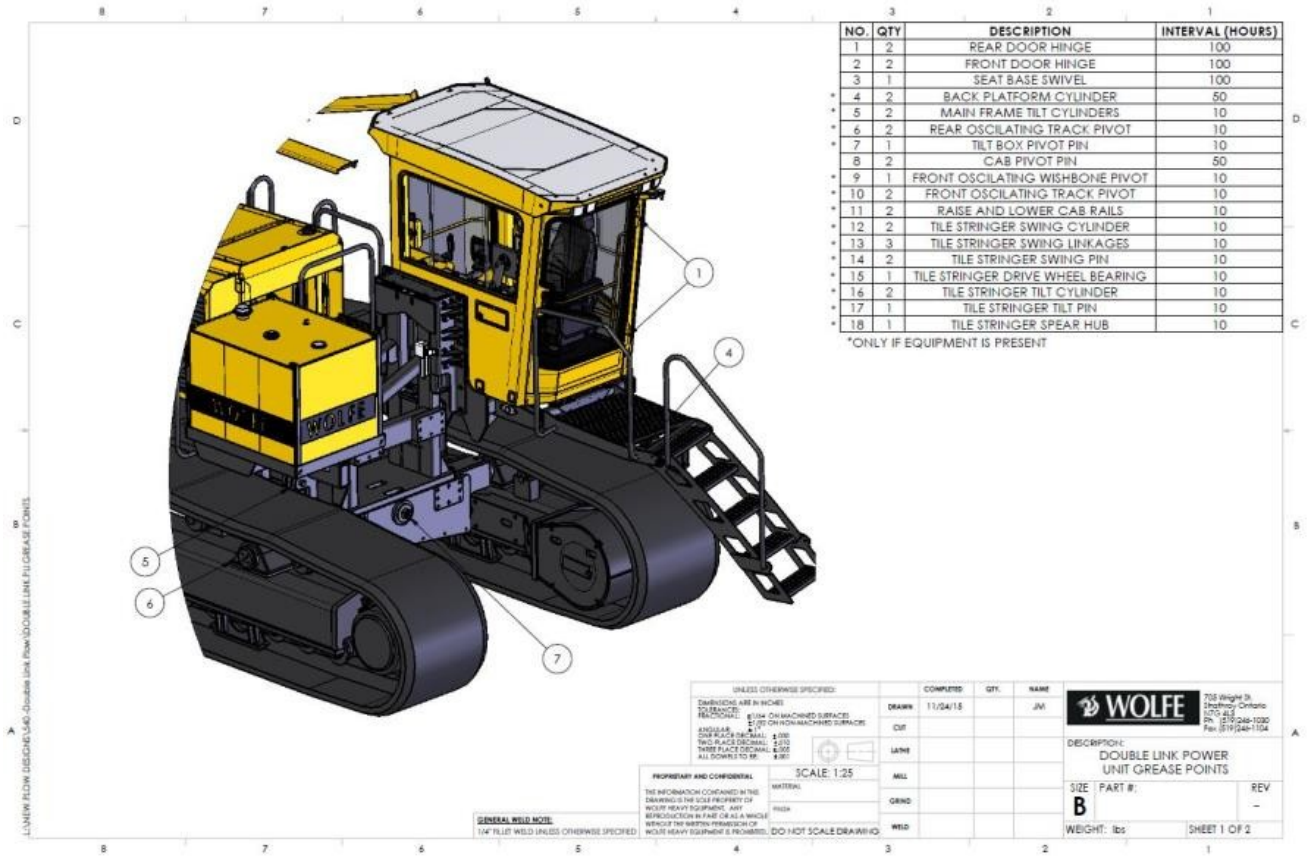
SCALE: 1:36
MATERIAL
FINISH
DO NOT SCALE DRAWING

GENERAL WELD NOTE:
1/4" FILLET WELD UNLESS OTHERWISE SPECIFIED

	COMPLETED	QTY.	NAME
DRAWN	6/4/2014		
CUT			
LATHE			
MILL			
GRIND			
WELD			

WOLFE
705 Wright St.
Strathroy, Ontario
N7G 4L3
Ph. (519)246-1000
Fax (519)246-1104

PLOW - 540 SA OSC
GREASE - 5A OSC
SIZE B | JOB #: | REV A
WEIGHT: | SHEET 2 OF 2



NO.	QTY	DESCRIPTION	INTERVAL (HOURS)
1	2	REAR DOOR HINGE	100
2	2	FRONT DOOR HINGE	100
3	1	SEAT BASE SWIVEL	100
* 4	2	BACK PLATFORM CYLINDER	50
* 5	2	MAIN FRAME TILT CYLINDERS	10
* 6	2	REAR OSCILATING TRACK PIVOT	10
* 7	1	TILT BOX PIVOT PIN	10
8	2	CAB PIVOT PIN	50
* 9	1	FRONT OSCILATING WISHBONE PIVOT	10
* 10	2	FRONT OSCILATING TRACK PIVOT	10
* 11	2	RAISE AND LOWER CAB RAILS	10
* 12	2	TILE STRINGER SWING CYLINDER	10
* 13	3	TILE STRINGER SWING LINKAGES	10
* 14	2	TILE STRINGER SWING PIN	10
* 15	1	TILE STRINGER DRIVE WHEEL BEARING	10
* 16	2	TILE STRINGER TILT CYLINDER	10
* 17	1	TILE STRINGER TILT PIN	10
* 18	1	TILE STRINGER SPEAR HUB	10

*ONLY IF EQUIPMENT IS PRESENT

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/64 ON MACHINED SURFACES ±1/32 ON NON-MACHINED SURFACES
ANGULAR ±1°
ONE PLACE DECIMAL ±.030
TWO PLACE DECIMAL ±.010
THREE PLACE DECIMAL ±.005
ALL DOWELS TO BE ±.001

	COMPLETED	QTY.	NAME
DRAWN	11/24/15		JM
CUT			
LATHE			
MILL			
GRIND			
WELD			

WOLFE
705 Wright St.
Strathroy, Ontario
N7G 4X1
Ph. (519)246-1030
Fax (519)246-1104

DESCRIPTION:
DOUBLE LINK POWER UNIT GREASE POINTS

SIZE B | PART #: | REV -

WEIGHT: lbs | SHEET 1 OF 2

SCALE: 1:25

PROPRIETARY AND CONFIDENTIAL
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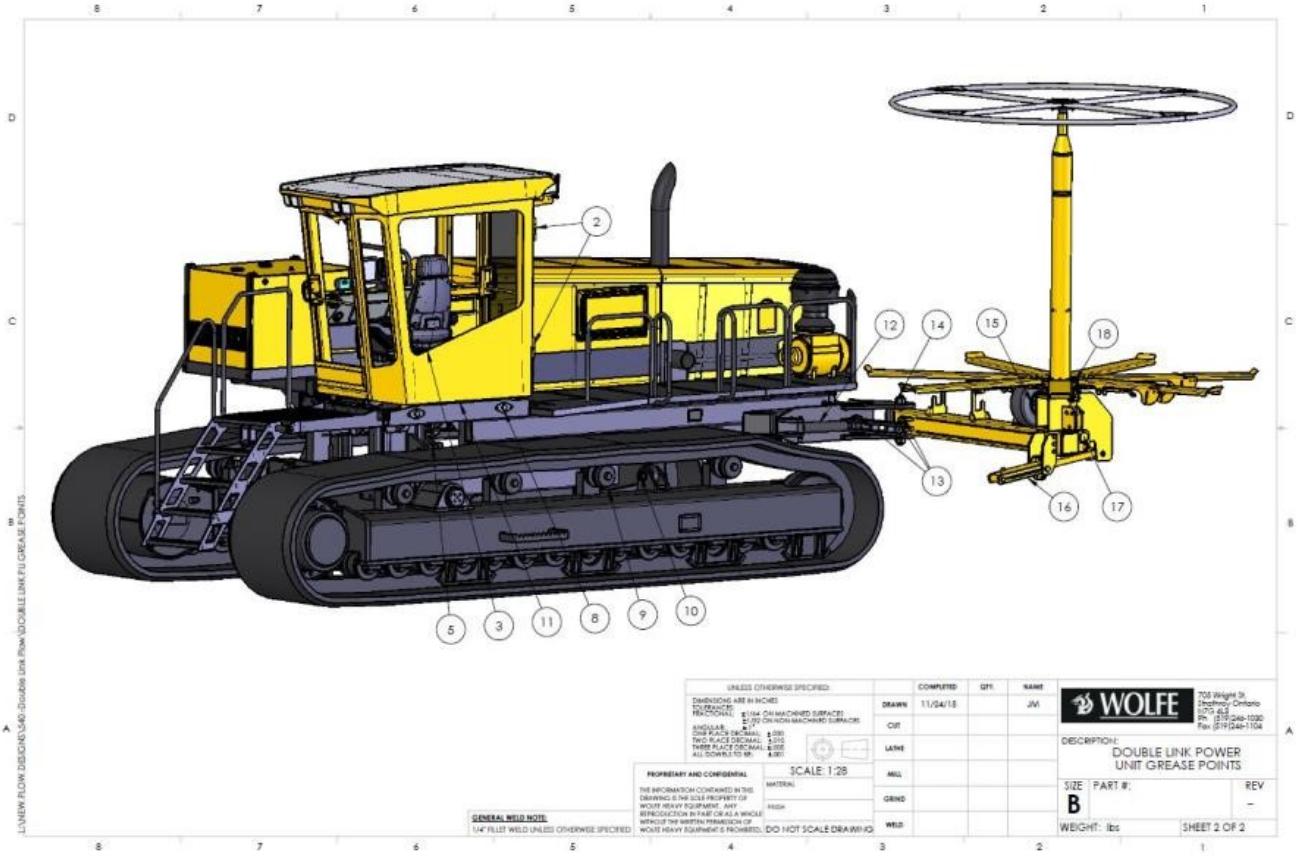
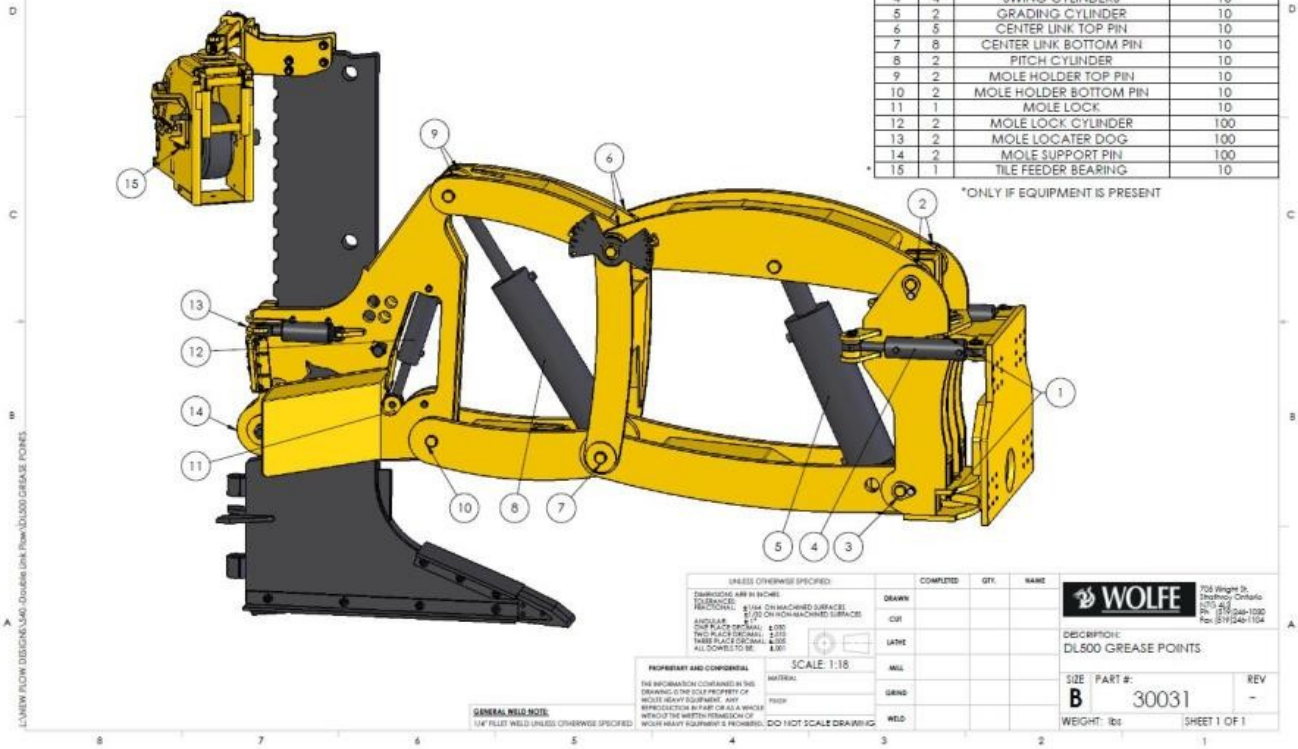
GENERAL WELD NOTE:
1/4" FILLET WELD UNLESS OTHERWISE SPECIFIED



NO.	QTY	DESCRIPTION	INTERVAL (HOURS)
1	2	ARM MOUNT SWIVEL PINS	10
2	2	TOP ARM MOUNT PINS	10
3	2	BOTTOM ARM MOUNT PINS	10
4	4	SWING CYLINDERS	10
5	2	GRADING CYLINDER	10
6	5	CENTER LINK TOP PIN	10
7	8	CENTER LINK BOTTOM PIN	10
8	2	PITCH CYLINDER	10
9	2	MOLE HOLDER TOP PIN	10
10	2	MOLE HOLDER BOTTOM PIN	10
11	1	MOLE LOCK	10
12	2	MOLE LOCK CYLINDER	100
13	2	MOLE LOCATER DOG	100
14	2	MOLE SUPPORT PIN	100
15	1	TILE FEEDER BEARING	10

*ONLY IF EQUIPMENT IS PRESENT



Grease Station (if equipped)

The purpose of the grease station, is to take the “hard to get at” grease points to an easy reach position on the machine.

See the following charts for the grease station information.

GREASE POINT	MACHINE LOCATION	
1	TOP CENTRE MOLE	STANDARD FRAME
2	BOTTOM LEFT MOLE	
3	BOTTOM RIGHT MOLE	
4	BACK MAIN CYL	
5	FRONT MAIN CYL	
6	LEFT SWIVEL PLATE KEEPER	
7	LEFT SWIVEL PLATE	
8	MIDDLE SWIVEL PLATE	
9	RIGHT SWIVEL PLATE KEEPER	
10	RIGHT SWIVEL PLATE	
11	LEFT STEP	
12	RIGHT STEP	
13	BOTTOM LEFT BRIDGE PIN	
14	BOTTOM RIGHT BRDIGE PIN	
15	BOTTOM LEFT ARM	
16	BOTTOM RIGHT ARM	
17	TOP LEFT ARM	
18	TOP RIGHT ARM	
19	LEFT CAB	
20	RIGHT CAB	
21	BACK LEFT BRIDGE CYL	
22	BACK RIGHT BRIDGE CYL	
23	FRONT LEFT BRIDGE CYL	
24	FRONT RIGHT BRIDGE CYL	
25	MAIN SWIVEL PIN	
26	LEFT REAR AXLE	OSCILLATING TRACKS OPTION
27	RIGHT REAR AXLE	
28	FRONT LEFT AXLE	
29	FRONT MIDDLE AXLE	
30	FRONT RIGHT AXLE	
31	BACK LEFT BACK AXLE	TILT FRAME WITH RAISE/LOWER CAB OPTION
32	BACK MAIN PIN	
33	BACK RIGHT BACK AXLE	
34	FRONT LEFT BACK AXLE	
35	FRONT MAIN PIN	
36	FRONT RIGHT BACK AXLE	
37	TOP LEFT TILT CYL	
38	BOTTOM LEFT TILT CYL	
39	TOP RIGHT TILT CYL	
40	BOTTOM RIGHT TILT CYL	
41	TOP OUTSIDE R/L CAB	
42	BOTTOM OUTSIDE R/L CAB	
43	R/L FEEDER	RAISE/LOWER FEEDER OPTION
44	CUTTER CRUSHER TOP	CUTTER-CRUSHER OPTION
45	CUTTER CRUSHER BOTTOM	
46	R/L SHOE TOP	RAISE/LOWER SHOE OPTION
47	R/L SHOE BOTTOM	
48	*BLANK*	

PARALLEL LINK
MANUAL GREASE BANK LOCATIONS

WOLFE
700 WRIGHT ST.
STRATHROY, ON
N7G 4H8
PH (519)289-2150
FAX (519)518-6477

DESCRIPTION
GREASE STATION BRACKET

PART NUMBER 11511 REV D

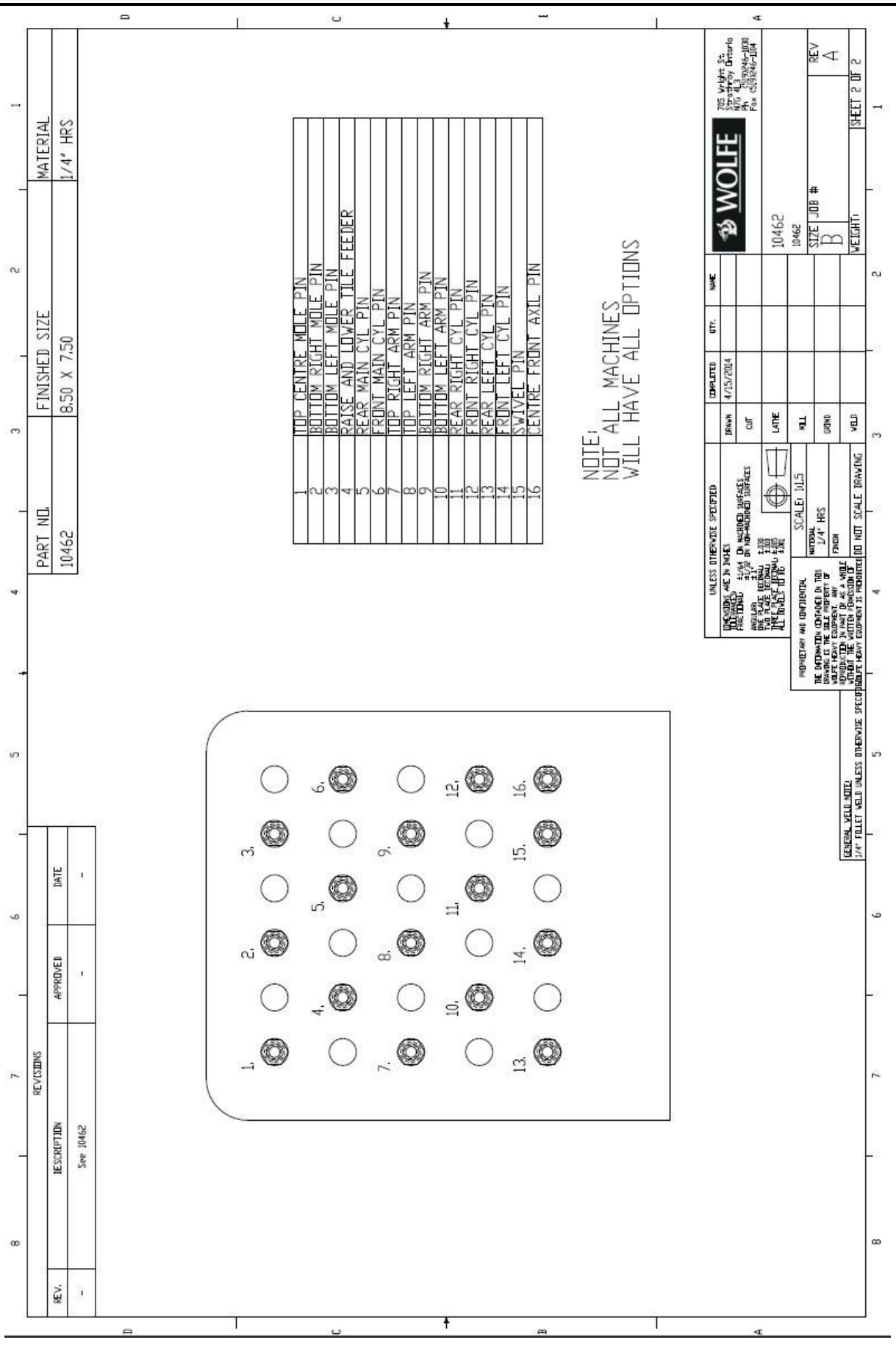
CREATED BY JV DATE 02/01/2019

APPROVED BY MG DATE 12/07/2020

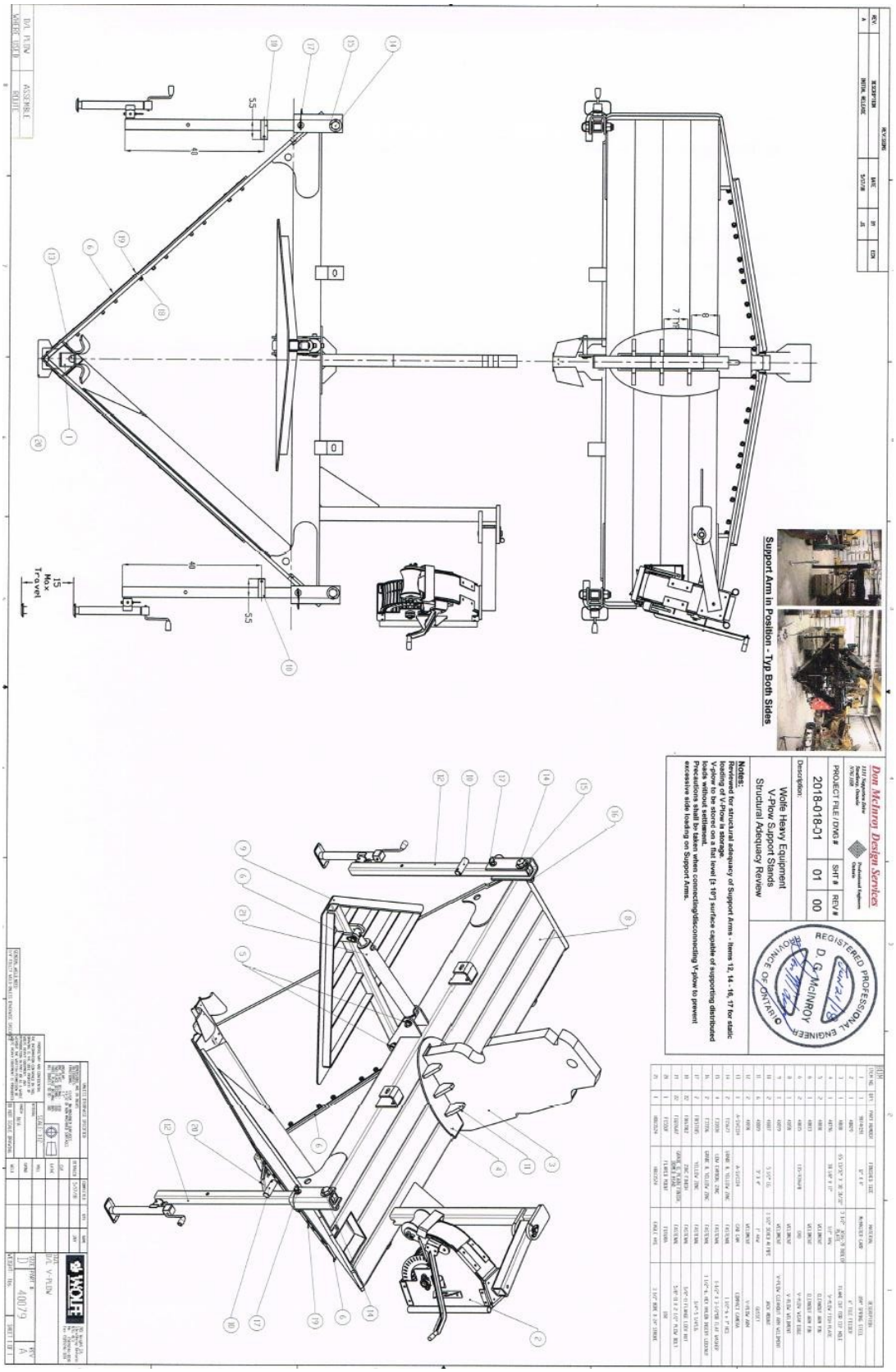
PART MARKING TO BE CNC OR CLEARLY STAMPED 1/4" TALL UNLESS OTHERWISE SPECIFIED.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
ANGULAR: ± 1°
FRACTIONAL: ± 1/32
ONE PLACE DECIMAL: ± .030
TWO PLACE DECIMAL: ± .010
THREE PLACE DECIMAL: ± .005
ALL DOWELS TO BE: ± .001

SHEET 3 OF 3


PART NO.
10462
FINISHED SIZE
8.50 X 7.50
MATERIAL
1/4" HRS
1 TOP CENTRE MOLE PIN
2 BOTTOM RIGHT MOLE PIN
3 BOTTOM LEFT MOLE PIN
4 RAISE AND LOWER TILE FEEDER
5 REAR MAIN CYL PIN
6 FRONT MAIN CYL PIN
7 TOP RIGHT ARM PIN
8 TOP LEFT ARM PIN
9 BOTTOM RIGHT ARM PIN
10 BOTTOM LEFT ARM PIN
11 REAR RIGHT CYL PIN
12 FRONT RIGHT CYL PIN
13 REAR LEFT CYL PIN
14 FRONT LEFT CYL PIN
15 SWIVEL PIN
16 CENTRE FRONT AXIL PIN
NOTE:
NOT ALL MACHINES
WILL HAVE ALL OPTIONS
REVISIONS
REV. DESCRIPTION APPROVED DATE
- See 10462 - -
WOLFE
705 Wright St.
Stratford Ontario
N5A 4L3
10462
SIZE JOB #
B
REV
A
SHEET 2 OF 2

V-Plow Attachment



17: Service and Maintenance

Service and Maintenance Specifications

The following charts provide information for certain service tasks and required maintenance parts.

Fluids & Lubricants Chart

Machine Component	Fluid Type	Approximate Capacity
Engine Crankcase	Refer to CAT Manual	Refer to CAT Manual 34-36 L (36-38 US QT)
Engine Cooling System	Refer to CAT Manual	120 L (32 US GAL)
Fuel Tank	Refer to CAT Manual (Ultra Low Sulphur Diesel Fuel)	750 L tank (200 US GAL)
Hydraulic System	Hydrex MV 68 HVI	8 L (8.5 US QT)
Pump Drive	SAE 80W-90 Gear Oil	8 L (8.5 US QT)
Track Final Drives	Traxon Synthetic 80W-140 Gear Oil	22 L (23 US QT)
Lower Rollers	SAE 80W-90 Gear Oil	As Required
Hood Lift Hydraulic System	Hydrex MV 68 HVI	6 L (6.3 US QT)
Machine Grease point (Standard)	Precision XL EP02	As Required
Manual Grease Station (Option)	Precision XL EP02	As Required
Auto Greaser (Option)	Precision XL EP00	4 L (1.0 US GAL) Tank + Lines as required
C13B DEF Tank	Refer to CAT Manual DEF fluid	65 L (17 US GAL)
C15/C18 DEF Tank	DEF fluid	30 L (7.9 US GAL)

Filter Chart

Filter Location	Part Number	Quantity Required
C13B Engine Oil Filter Element	CAT PN 1R-1808	1
C15 Engine Oil Filter Element	CAT PN 1R-1808	1
C18 Engine Oil Filter Element	CAT PN 249-2347	2
C13B/C15/C18 Engine Primary Fuel Filter Element (Fuel/Water Separator)	CAT PN 326-1643	1
C13B/C15/C18 Secondary Fuel Filter Element	CAT PN 1R-0749	2
Hydraulic Tank, In-Tank Return Filter Element	Wolfe PN 90189	1
Open Loop Filter Element	Wolfe PN 90046 (Filter) Wolfe PN 91273 (Gasket - See Note)	1 1
Closed Loop Filter Element	Wolfe PN 90046 (Filter) Wolfe PN 91273 (Gasket - See Note)	2 2
Oil/Water Separator Filter Element	Wolfe PN 90052	1
Charge Pump Filter Element	Wolfe PN 90054	4

Service and Maintenance Records

Fill out each of the following charts when the stated time is reached. These checklists are to be completed and sent to your dealer up until 2000 hours for warranty purposes.

Service at 50 Hour Break-In Period

Change

- ❑ Engine Oil
- ❑ Fuel/Water Separator
- ❑ Fuel Filter Change
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Sample

- ❑ Hydraulic Fluid Oil

Hours:	Date:	Work Carried Out By:

Send fluid sample information to your local dealer & info@wolfeequipment.com

Service at 250 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH

Check

- ❑ Coolant Anti-Freeze Concentration

Hours:	Date:	Work Carried Out By:

Send fluid sample information to your local dealer & info@wolfeequipment.com

Service at 500 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Send fluid sample information to your local dealer & info@wolfeequipment.com

Service at 1000 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator
- ❑ Hydraulic Oil

Hours:	Date:	Work Carried Out By:

Send fluid sample information to your local dealer & info@wolfeequipment.com

Service at 1500 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Send fluid sample information to your local dealer & info@wolfeequipment.com

Service at 2000 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator
- ❑ Hydraulic Oil
- ❑ Fumes Disposal Filter Element

Hours:	Date:	Work Carried Out By:

Send fluid sample information to your local dealer & info@wolfeequipment.com

Service at 2500 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration
- ❑ Engine Valve Lash

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Service at 3000 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Service at 3500 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Service at 4000 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator
- ❑ Hydraulic Oil
- ❑ Fumes Disposal Filter Element

Hours:	Date:	Work Carried Out By:

Service at 4500 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Service at 5000 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration
- ❑ Engine Valve Lash

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator
- ❑ Hydraulic Oil
- ❑ Fumes Disposal Filter Element
- ❑ DEF Filter
- ❑ DEF Injector

Clean

- ❑ ADR Spark Plug
- ❑ Diesel Particulate Filter

Hours:	Date:	Work Carried Out By:

Service at 5500 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Service at 6000 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator
- ❑ Hydraulic Oil
- ❑ Fumes Disposal Filter Element

Hours:	Date:	Work Carried Out By:

Service at 6500 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Service at 7000 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator
- ❑ Hydraulic Oil

Hours:	Date:	Work Carried Out By:

Service at 7500 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration
- ❑ Engine Valve Lash

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Service at 8000 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator
- ❑ Hydraulic Oil
- ❑ Fumes Disposal Filter Element

Hours:	Date:	Work Carried Out By:

Service at 8500 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Service at 9000 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator
- ❑ Hydraulic Oil

Hours:	Date:	Work Carried Out By:

Service at 9500 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Service at 10000 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration
- ❑ Engine Valve Lash

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator
- ❑ Hydraulic Oil
- ❑ Fumes Disposal Filter Element
- ❑ DEF Filter
- ❑ DEF Injector
- ❑ DEF Manifold Filters

Clean

- ❑ ADR Spark Plug
- ❑ Diesel Particulate Filter

Hours:	Date:	Work Carried Out By:

Service at 10500 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Service at 11000 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator
- ❑ Hydraulic Oil

Hours:	Date:	Work Carried Out By:

Service at 11500 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator

Hours:	Date:	Work Carried Out By:

Service at 12000 hours

Sample

- ❑ Engine Oil
- ❑ Pump Drive Oil
- ❑ Hydraulic Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Coolant

Check

- ❑ Coolant Anti-Freeze Concentration

Change

- ❑ Engine Oil and Filter
- ❑ Fuel Water/Separator Filter
- ❑ Fuel Filter
- ❑ Pump Drive Oil
- ❑ Final Drive Oil - LH & RH
- ❑ Open Loop Filter
- ❑ Closed Loop Filter
- ❑ In-Tank Return Filter
- ❑ Charge Pump Filter
- ❑ Water Separator
- ❑ Hydraulic Oil
- ❑ Fumes Disposal Filter Element

Hours:	Date:	Work Carried Out By:

Service and Maintenance Intervals

Do not reference the following lists as a checklist. This information only shows the different services required for different time intervals, and should only be used a reference point for those who wish to extend the checklist or create their own checklist.

Daily Service

Grease Machine Points
Check Engine Oil Level
Check Hydraulic Oil Level
Check Coolant Level
Check DEF Level
Check Engine Air Cleaner
Walk Around Inspection
Insure that Coolers are Clean and Free from Debris

50 Hour Break-In Period Only

Sample

Hydraulic Fluid Oil

Change

Engine Oil
Fuel/Water Separator
Fuel Filter Change
Pump Drive Oil
Final Drive Oil - LH & RH
Open Loop Filter
Closed Loop Filter
In-Tank Return Filter
Charge Pump Filter
Water Separator

250 Hour Samples

Sample

Engine Oil
Pump Drive Oil
Hydraulic Oil
Final Drive Oil - LH & RH

Check

Coolant Anti-Freeze Concentration

Service Every 500 hours

Sample

Coolant

Change

Engine Oil and Filter
Fuel Water/Separator Filter
Fuel Filter
Pump Drive Oil
Final Drive Oil - LH & RH
Open Loop Filter
Closed Loop Filter
In-Tank Return Filter
Charge Pump Filter
Water Separator

Service Every 1000 hours

Change

Hydraulic Oil

Service Every 2000 hours

Change

Fumes Disposal Filter Element

Service Every 2500 hours

Check

Engine Valve Lash

Service Every 5000 hours

Change

DEF Filter
DEF Injector

Clean

ADR Spark Plug
Diesel Particulate Filter

Service Every 10000 Hours

Change

DEF Manifold Filters

Service Every 12000 Hours

Change

Coolant

18: Electrical

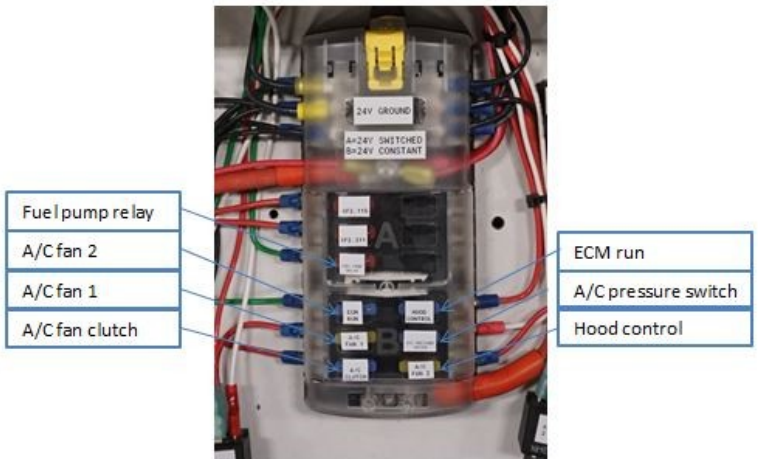
IMPORTANT: The electrical and electronic system on this machine has a number of different voltages ranging from 24VDC to 5VDC. If you have not been trained and are not familiar with the electrical system, do not attempt to service or repair this machine. Failing to do so can cause damage to this machine.

Electrical Panel

In the electrical panel, the master and the propel modules are stacked.

Panel - Fuse Panel

The 24 VDC fuse panels and the 12 volt inverter are located on the swing down panel. above the rear door.



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The 12 VDC fuse panels and the 24VDC Power bars are located on the swing down panel above the front door.

24 VDC Switched Power Fuse Panel

Seat Air Ride 10 amp		GPS Arm 15 amp
Stringer-Seat Power 15 amp		Exterior Lights 15 amp
GPS 15 amp		12 Pin Seat 15 amp
Heater Valve 15 amp		24 Pin Seat 15 amp
GPS Box 15 amp		Screen Power 15 amp
Tile Stringer Seat Power 15 amp		Reiker Power (single arm) 15 amp

24 VDC Constant Power Fuse Panel

Inverter 15 amp		Spare
GPS 15 amp		Spare
HVAC Blower 15 amp		Spare
Condenser Fans 15 map		Spare
Cab Aux. Fan 10 amp		Spare
Spare		Spare

12 VDC Switched Power Fuse Panel

Spare	Radio 15 amp
Spare	GPS 15 amp
Spare	Spare

12 VDC Constant Power Fuse Panel

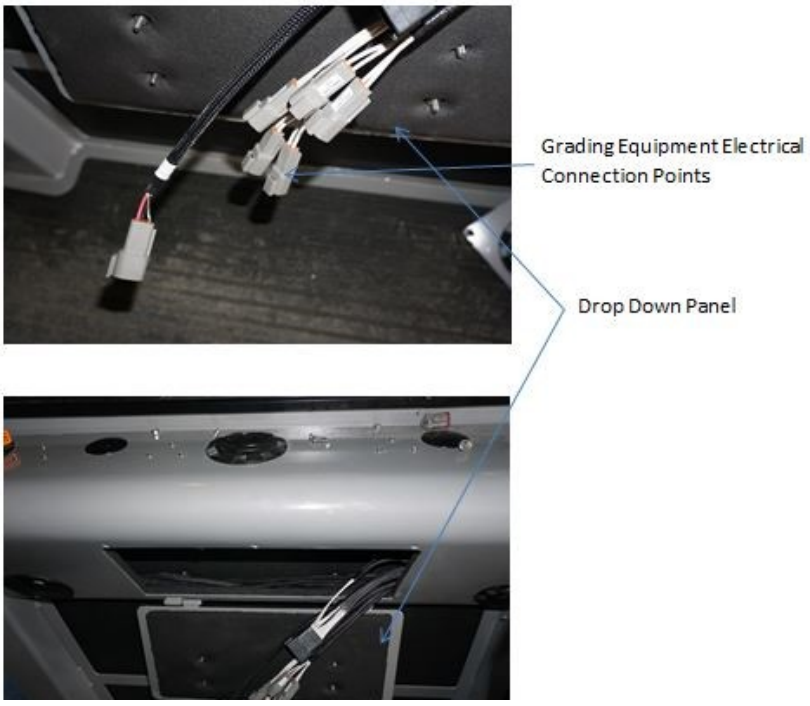
Interior Light 10 amp	Radio Memory 15 amp
Acc Outlet #1 15 amp	GPS 15 amp
Acc Outet #2 15 amp	Spare

Customer Electrical Connection Fuse Panels

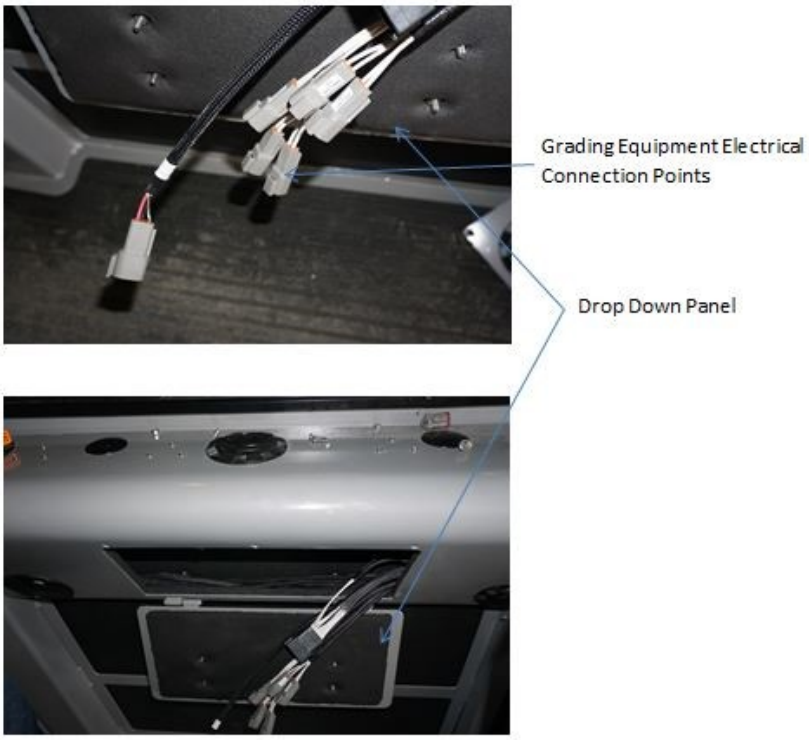
- The customer electrical connection fuse panels are located behind the access panel near the HVAC unit.
- These fuse panels separately supply 12 & 24 VDC switched and un-switched power for any auxiliary equipment such as CB or GPS which the customer requires in the cab.

NOTE: Ensure auxiliary equipment is connected to the proper voltage.

Grading Equipment Electrical Connection Points



Grading Equipment Electrical Connection Points



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Numerics

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