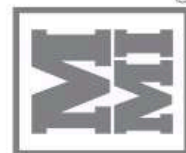


Tritan™ 560 Fusion Machine

Model: AT560P0950080



McELROY



www.mcelroy.com



Manual: T560P0998964
Revision: B 6/25
Original Language: English

Operator's Manual

Important Safety Information

Most accidents that involve product operation, maintenance and repair are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs. A person must be alert to potential hazards. This person should also have necessary training, skills and tools to perform these functions properly.

Advanced training is offered through McElroy University. Course offerings are meant to enhance your efficiency, productivity and safety in the proper use of McElroy equipment.

Improper operation, maintenance or repair of this product can be dangerous and could result in injury or death.

Do not operate this product until you have carefully read and understand all the sections of this manual and all other equipment manuals that will be used with it.

Follow all applicable federal, state, local, and industry specific regulations.

The hazards are identified by the "Safety Alert Symbol" and followed by a "Signal Word" such as "DANGER", "WARNING" or "CAUTION". The Safety Alerts are shown below.

The meaning of these safety alert symbols are as follows:

 **DANGER** - Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING** - Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION** - Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

Signal words "**NOTICE**" and "**IMPORTANT**" are used to bring attention to important information.

The meaning of these signal words are as follows:

"NOTICE" - Can keep you from doing something that might damage the machine or someone's property. It may also be used to alert against unsafe practices.

"IMPORTANT" - Can help you do a better job or make your job easier in some way.

McElroy cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this publication and on the product are, therefore, not all inclusive. If a tool, procedure, work method or operating technique that is not specifically recommended by McElroy is used, you must satisfy yourself that it is safe for you and for others. You should also ensure that the product will not be damaged or be made unsafe by the operation, maintenance or repair procedures that you choose.

The information, specifications, and illustrations in the publication are on the basis of information that was available at the time that the publication was written. The specifications, 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 before you start any job. The most current information is available at our website

www.mcelroy.com.

TX05337-04-18



Cancer and Reproductive Harm -
www.P65warnings.ca.gov

8163361



When replacement parts are required for this product McElroy recommends using McElroy replacement parts or parts with equivalent specifications including, but not limited to, physical dimensions, type, strength and material. Failure to heed this warning can lead to premature failures, product damage, personal injury or death.

TABLE OF CONTENTS

FOREWORD

Literature Information	1 - 1
Safety	1 - 1
Operation	1 - 1
Maintenance	1 - 1
McElroy University	1 - 1
Patent Information	1 - 2
Replacement Literature	1 - 2
Nameplate Location	1 - 2
Replacement Parts	1 - 2
Limited Warranty	1 - 3

SAFETY

General Safety	2 - 1
Safety Equipment	2 - 1
Do Not Operate in a Hazardous Environment	2 - 2
Fuel Handling	2 - 2
Unit With Engine	2 - 2
Carbon Monoxide	2 - 3
Pipe Handling Safety	2 - 3
Crush Points	2 - 3
Battery	2 - 4
Do Not Ride Machine	2 - 4
Electrical Safety	2 - 4
Unit With Hydraulics	2 - 4
Facer Blades Are Sharp	2 - 5
Positioning and Setting Fusion Machine	2 - 5
Stand Clear	2 - 5
Keep Machine Away From Edge of Ditch	2 - 6
Lifting Safety	2 - 6
Personal Lifting Safety	2 - 6
Heater is Hot	2 - 6
Hydraulic Lockout Bars	2 - 7
Sound Information	2 - 7
Fusion Procedures	2 - 7
Do Not Modify Machine	2 - 7

GENERAL INFORMATION

Theory of Butt Fusion	3 - 1
Nomenclature	3 - 2
Outboard Vehicle	3 - 2
Electrical Components	3 - 3
Boom Components	3 - 4

Carriage Assembly	3 - 5
Facer	3 - 7
Heater	3 - 8
Heater Bag Frame	3 - 8
Diesel Engine	3 - 9
Hydraulic Fluid Reservoir & Filters	3 - 10
Vehicle Display Navigation Map	3 - 11
Vehicle Display Screens	3 - 13
Machine Control Interface	3 - 37
Rain Mode	3 - 42

OPERATION - BUTT FUSION

Read Before Operating	4 - 1
Connecting the DataLogger	4 - 1
Starting Instructions	4 - 3
Control Hand-Off	4 - 4
Driving Vehicle	4 - 5
Boom Control	4 - 11
Prepare Heater	4 - 13
Carriage and Indexer	4 - 14
Jaws	4 - 15
Jaw Inserts	4 - 16
Approaching Pipe	4 - 17
Loading and Adjusting Pipe	4 - 17
Positioning Facer	4 - 18
Begin Facing	4 - 19
After Facing	4 - 20
Set Up Fusion Process	4 - 21
Level 3 Fusion Process	4 - 27
Level 2 Fusion Process	4 - 29
Level 1 Fusion Process	4 - 31
Joint Report	4 - 33

SPECIAL OPERATIONS

Special Operations Overview	5 - 1
Carriage Removal	5 - 1
Lifting Carriage	5 - 2
Rolling Carriage	5 - 3
Facer Removal	5 - 4
Heater Removal	5 - 6
3+1 Jaw Configuration	5 - 9

LIFTING AND TRANSPORT

Lifting Safety	6 - 1
Setting Up Machine for Lifting	6 - 1
Lifting Machine	6 - 2
Loading Machine for Transport	6 - 3
Securing Indexer for Transport	6 - 3
Securing Machine for Transport	6 - 3

DOORS AND COWLINGS

Service Door	7 - 1
Top Door	7 - 1
DataLogger Tablet Storage Access Door	7 - 2
DataLogger Tablet Battery Charger Access Door	7 - 2
Hydraulic Filter Access Door	7 - 2
Removing Wing Cowlings	7 - 3
Removing Front Cowling	7 - 3
Removing Grill Panels	7 - 4
Removing Center Hood	7 - 4

LABELS AND MARKINGS

Labels and Markings	8 - 1
---------------------------	-------

MAINTENANCE

Maintenance Task Schedule	9 - 1
Engine Maintenance Tasks	9 - 3
Active Regeneration	9 - 3
Parked Regeneration	9 - 3
Check Machine Operation	9 - 3
Inspect Facer Blades	9 - 3
Changing Heater Butt Plates	9 - 3
Grease	9 - 4
Check Track Tension	9 - 4
Adjusting Track Tension	9 - 4
Inspect Heater Butt Plates	9 - 5
Inspect Wiring and Cables	9 - 5
Inspect Hydraulic Components	9 - 5
Bleeding Air From Carriage Cylinders	9 - 5
Adjusting System Pressure	9 - 5
Check Fasteners Are Tight	9 - 6
Check Hydraulic Fluid	9 - 7
Changing Hydraulic Fluid and Filters	9 - 7
Replace Hydraulic Tank Breather	9 - 8
Check Track Gearbox Oil	9 - 8
Replacing Track Gearbox Oil	9 - 8

Clean Heater Surfaces	9 - 9
DataLogger Battery Charging.....	9 - 9
Battery Replacement and Charging	9 - 10
Preventative Maintenance	9 - 10
Clean Machine	9 - 10

GUIDED FIRMWARE UPDATE

Overview	10 - 1
Navigating to Update Firmware.....	10 - 1
Carriage Update Process	10 - 2
Vehicle Update Process	10 - 3
Vehicle Display Update Process	10 - 5
Wireless Receiver Update Process	10 - 7
Battery Charger Update Process	10 - 8
Offline Updating Procedure	10 - 9
Port Connection Issues.....	10 - 9
Editing Serial Numbers	10 - 10

HEATER DRY-OUT MODE

Heater Dry-Out Mode.....	11 - 1
--------------------------	--------

BATTERY CHARGER

Overview	12 - 1
LED Status Indications	12 - 1

FAULTS

Faults.....	13 - 1
-------------	--------

HYDRAULIC FLUIDS

Hydraulic Fluids	14 - 1
------------------------	--------

SPECIFICATIONS

Tritan™ 560 Specifications	15 - 1
----------------------------------	--------

NOTES

Notes:	16 - 1
--------------	--------

FOREWORD

Literature Information

This manual should be stored in a protected location for future reference. Use the literature holder if provided with the product. Digital copy contains hyperlinks. Press Alt + Left Arrow to return to the selected hyperlink.

This manual contains safety information, operation instructions, transportation information, lubrication information and maintenance information.

Some photographs or illustrations in this publication show details or equipment that can be different from your machine. Guards and covers might have been removed for illustrative purposes.

Continuing improvement and advancement of product design might have caused changes to your machine which are not included in this publication. Read, study and keep this manual with the machine.

Whenever a question arises regarding your machine, or this publication, please contact McElroy Technical Services at 918-831-9224 or techsupport@mcelroy.com

Safety

The safety section lists basic safety precautions. In addition, this section identifies the text and locations of warning signs and labels used on the machine.

Read and understand the basic precautions listed in the safety section before operating or performing maintenance and repair on this machine.

Operation

The operation section is a reference for the new operator and a refresher for the experienced operator. This section includes a discussion of gauges, switches, machine controls, accessories and transportation.

Photographs and illustrations guide the operator through correct procedures of setting up, checking and operating the machine.

Operating techniques outlined in this publication are basic. Proficiency develops as the operator gains knowledge and experience with the machine and its capabilities.

Maintenance

The maintenance section is a guide to equipment care. The maintenance schedule lists the items to be maintained at a specific service interval. Items without specific intervals are listed under the "As Needed" service interval. The schedule lists the page for the step-by-step instructions required to accomplish the scheduled maintenance. Use the schedule as an index for all maintenance procedures.

Some maintenance procedures may be referenced in a manual pertaining to that component of the machine. For example, maintenance for an engine component would have its intervals and procedures in the engine operator's manual.

Use the hour meter (if equipped) to determine servicing intervals. Calendar intervals will be used instead of hour meter intervals if no hour meter is equipped on a machine. Recommended service should always be performed at the interval that occurs first.

Under extremely severe, dusty or wet operating conditions, more frequent lubrication than is specified in the maintenance schedule might be necessary.

McElroy University



For more than 30 years, McElroy has been the only pipe fusion machine manufacturer to continuously offer advanced training. Course offerings are meant to enhance your efficiency, productivity and safety in the proper use of McElroy machines. McElroy University classes are structured so that the skills learned and the machines used in each class closely match the machines found on pipelining jobsites. We offer training at our facility or yours. Our uniquely qualified McElroy University course instructors offer years of industry experience.

Tuition for each course includes lunches, course materials and a certificate of completion. Online registration, as well as up-to-date course offerings and dates, is available at www.mcelroy.com/university

This manual is intended as a guide only and does not take the place of proper training by qualified instructors. The information in this manual is not all inclusive and can not encompass all possible situations that can be encountered during various operations.

Patent Information

This product and other products could be protected by patents or have patents pending. All the latest patent information is available at patent.mcelroy.com

Replacement Literature

This product is shipped with a printed operator's manual. If the manual becomes lost or damaged, order a replacement manual or download and print a copy of the manual at www.mcelroy.com.

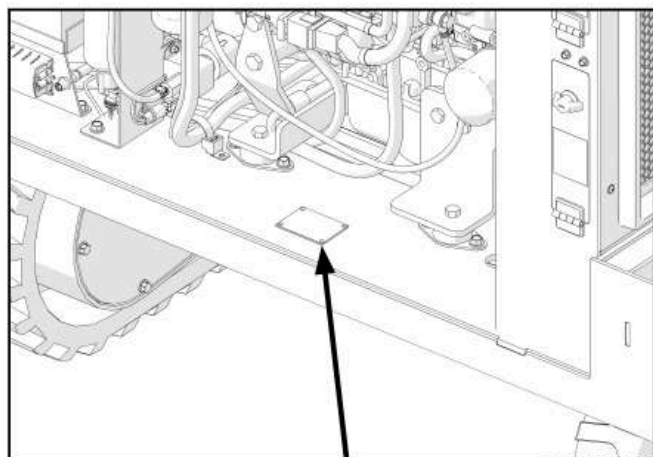
Nameplate Location

Every machine has a nameplate that includes the machine's model number, serial number, and power requirements. The model and serial numbers can be used to register the machine online and activate the warranty. Reference the warranty card for information on registering your product.

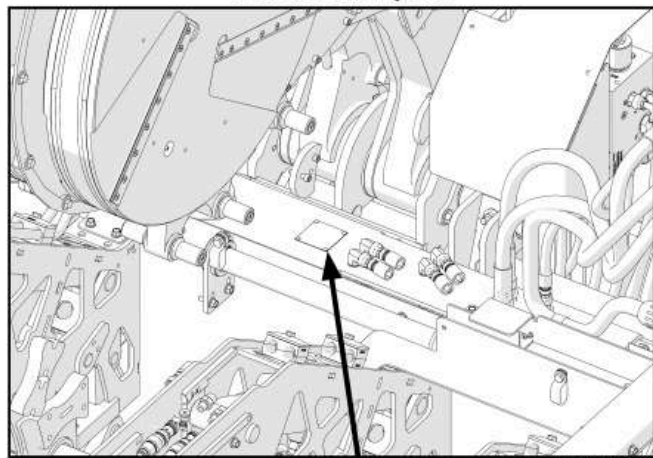
Replacement Parts

Refer to the McElroy parts finder at www.mcelroy.com to locate parts for purchase. Reference the model number on the nameplate of the machine when using the parts finder.

Contact your McElroy distributor to order replacement parts. Find your closest distributor on our website at www.mcelroy.com.



Vehicle Nameplate



Carriage Nameplate

TX05338-04-18

Limited Warranty

McElroy Manufacturing, Inc. (McElroy) warrants all products manufactured, sold and repaired by it to be free from defects in materials and workmanship, its obligation under this warranty being limited to repairing or replacing at its factory and new products, within **5 years** after shipment, with the exception of purchased items (such as electronic devices, pumps, switches, etc.), in which case that manufacturer's warranty applies. Warranty applies when returned freight is prepaid and which, upon examination, shall disclose to have been defective. This warranty does not apply to any product or component which has been repaired or altered by anyone other than McElroy or has become damaged due to misuse, negligence or casualty, or has not been operated or maintained according to McElroy's printed instructions and warnings. This warranty is expressly in lieu of all other warranties expressed or implied. The remedies of the Buyer are the exclusive and sole remedies available and Buyer shall not be entitled to receive any incidental or consequential damages. Buyer waives the benefit of any rule that disclaimer of warranty shall be construed against McElroy and agrees that such disclaimers herein shall be construed liberally in favor of McElroy.

Return of Goods

Buyer agrees not to return goods for any reason except upon the written consent of McElroy obtained in advance of such return, which consent, if given, shall specify the terms and conditions and charges upon which any such return may be made. Materials returned to McElroy for warranty work, repair, etc., **must have a Return Material Authorization (RMA) number**, and be so noted on the package at time of shipment. For assistance, inquiry shall be directed to:

McElroy Manufacturing, Inc.
P.O. Box 580550
833 North Fulton Street Tulsa, Oklahoma 74158-0550
PHONE: (918) 836-8611, FAX: (918) 831-9285.
EMAIL: fusion@McElroy.com

Note: Certain repairs, warranty work and inquiries may be directed, at McElroy's discretion, to an authorized service center or distributor.

Disclaimer of Liability

McElroy accepts no responsibility of liability for fusion joints. Operation and maintenance of the product is the responsibility of others. We recommend qualified joining procedures be followed when using McElroy fusion equipment.

McElroy makes no other warranty of any kind whatsoever, express or implied; and all implied warranties of merchantability and fitness for a particular purpose which exceed the aforestated obligation are hereby disclaimed by McElroy.

Product Improvement

McElroy reserves the right to make any changes in or improvements on its products without incurring any liability or obligation to update or change previously sold machines and/or the accessories thereto.

Information Disclosed

No information of knowledge heretofore or hereafter disclosed to McElroy in the performance of or in connection with the terms hereof, shall be deemed to be confidential or proprietary, unless otherwise expressly agreed to in writing by McElroy and any such information or knowledge shall be free from restrictions, other than a claim for patent infringement, is part of the consideration hereof.

Proprietary Rights

All proprietary rights pertaining to the equipment or the components of the equipment to be delivered by McElroy hereunder, and all patent rights therein, arising prior to, or in the course of, or as a result of the design or fabrication of the said product, are exclusively the property of McElroy.

Law Applicable

All sales shall be governed by the Uniform Commercial Code of Oklahoma, U.S.A.

Register your product online to activate your warranty: www.McElroy.com/fusion

(Copy information listed on the machine nameplate here for your records).

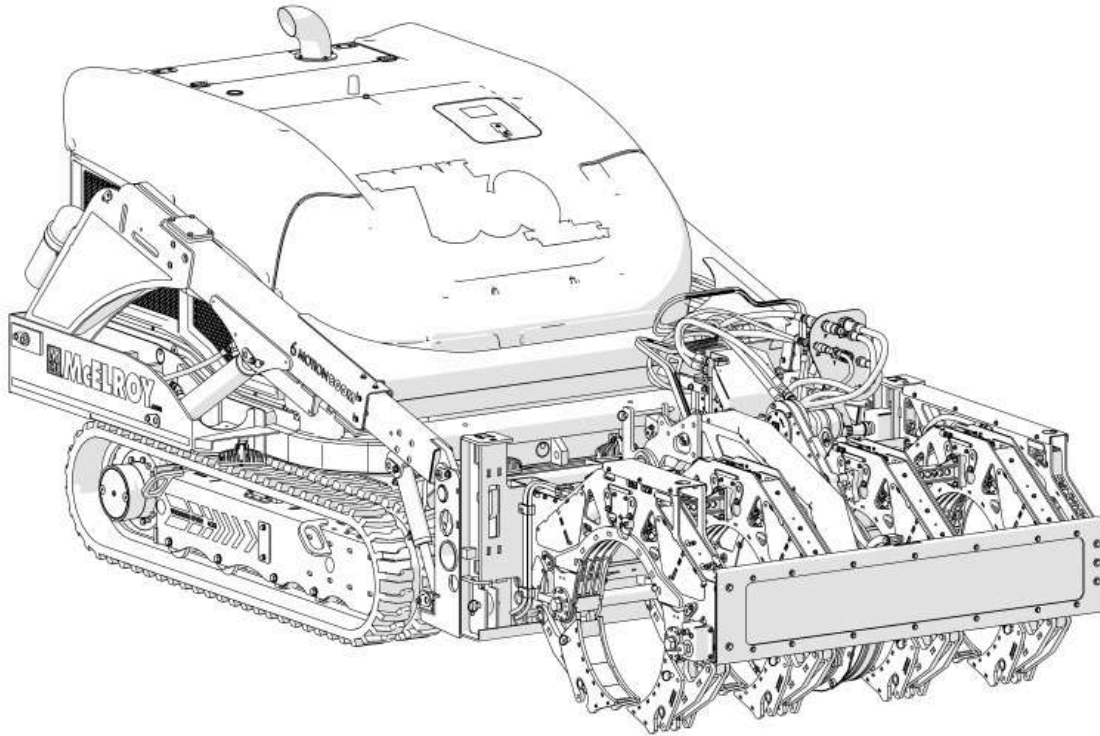
Model No. _____

Serial No. _____

Date Received _____

Distributor _____

SAFETY



CD03015-11-3-23

There can be several specific safety messages on this machine. The exact location of the hazards and the description of the hazards are reviewed in this section. Please become familiarized with all safety messages.

Make sure that all of the safety messages on the machine are legible. Clean the safety messages or replace the safety messages if you cannot read the words. Replace if the illustrations are not legible. When you clean the safety messages, use a cloth, water and soap. Do not use solvent, gasoline, or other harsh chemicals to clean the safety messages. Solvents, gasoline, or harsh chemicals could loosen the adhesive that secures the safety message or damage the print of the safety message.

Replace any safety messages that are damaged or missing. If a safety message is attached to a part that is replaced, install a safety message on the replacement part. New safety messages can be ordered from McElroy using the part number listed.

General Safety

Safety is important. Report anything unusual that you notice during set up or operation.

LISTEN for thumps, bumps, rattles, squeals, air leaks, or unusual sounds.

SMELL odors like burning insulation, hot metal, burning rubber, hot oil, or natural gas.

FEEL any changes in the way the equipment operates.

SEE problems with wiring and cables, hydraulic connections, or other equipment.

REPORT anything you see, feel, smell, or hear that is different from what you expect, or that you think may be unsafe.



SAFE1ST-5-22-23

Safety Equipment

Wear a hard hat, safety shoes, safety glasses, and other applicable personal protective equipment.

Remove jewelry and rings, and do not wear loose fitting clothing or long hair that could catch on controls or moving machinery. Remove any loose safety equipment during an operation that could be drawn into or caught in the machine.

Ensure proper fire prevention or other fire-fighting equipment is available and all personnel know how and when to use it.

Do Not Operate in a Hazardous Environment

⚠ DANGER

Electric motors and heaters are not explosion proof. Operation of these components in an explosive atmosphere will result in serious injury or death.

If operating in an explosive atmosphere, the carriage must be removed from the vehicle and the vehicle must be operated in a non-explosive atmosphere. The heater should be brought up to temperature in a non-explosive atmosphere, then unplugged before entering the explosive atmosphere for fusion.



WR00124-2-27-24

Fuel Handling

⚠ DANGER

Gasoline and diesel fuels are extremely flammable, and their vapors will explode if ignited.

⚠ WARNING

Ultra Low Sulfur Diesel (ULSD) poses a greater static ignition hazard than earlier diesel formulations with higher sulfur content. Avoid death or serious injury from fire or explosion; consult with your fuel or fuel system supplier to ensure the delivery system is in compliance with fueling standards for proper grounding and bonding practices.

Do not fill the fuel tank while the engine is hot or running as spilled fuel could ignite.

Always refuel on level ground.

Refuel in a well ventilated area. Do not smoke or allow flames or sparks in the area where the engine is refueled or where fuel is stored.

Do not start the engine near spilled fuel. Wipe up spills immediately.

Make sure the fuel tank cap is closed tightly and properly secured.

Avoid repeated or prolonged fuel contact with skin or breathing of fuel vapor.



Fuel-Handling-4-26-23

Unit With Engine

⚠ DANGER

Combustion engines can cause explosions when operated in an explosive atmosphere. Do not operate gas or diesel powered machines in an explosive atmosphere.

When operating in an explosive atmosphere, keep vehicle in a safe area by using hydraulic extension hoses to the carriage.

Help prevent fires by keeping machine clean of accumulated trash, debris and facer shavings.



WR00124-2-27-24

Carbon Monoxide



Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide can cause severe nausea, fainting and death. Avoid inhaling exhaust fumes, and never run the engine in a closed or confined area.



WR00093-5-15-23

Pipe Handling Safety



Do not position yourself or any other personnel under supported or raised pipe. Pipe is heavy and could fall unexpectedly.



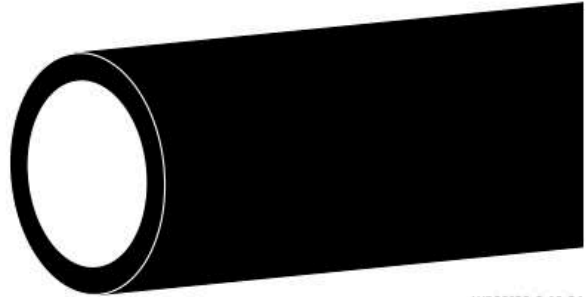
Pipe that is bent can store a great amount of energy. Do not bend and force the pipe into the machine. A bent pipe with stored energy can generate tremendous force when that energy is released.

It is recommended that the pipe is always held securely by either being clamped in the fusion machine jaws or properly attached to a lifting device.

NOTICE: Do not leave machine unattended to unauthorized personnel. Do not allow unauthorized personnel to operate the machine.

Keep persons that are not involved in handling pipe away from pipe handling operations. Keep away from the pipe when the pipe and handling equipment are in motion. When in motion, all persons involved in handling pipe should be able to see all other persons at all times. If any handling person is not in sight, immediately stop moving equipment and pipe and locate that person. Do not continue until all persons are accounted for and in sight.

Never push, roll, dump or drop pipe lengths, bundles or coils off the delivery truck, off handling equipment, or into a trench. Always use appropriate equipment to lift, move, and lower the pipe.

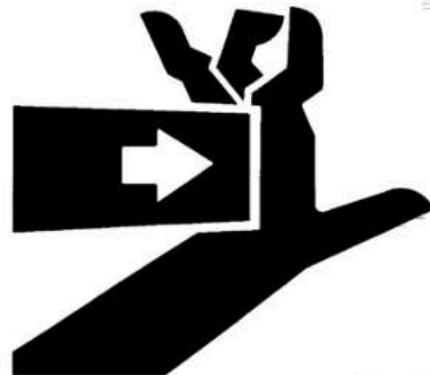


WR00123-2-15-24

Crush Points



Hydraulically operated equipment operates under high pressure and generates extremely high forces. Anything inadvertently caught in the machine will be crushed. Keep fingers, feet, arms, legs, and head out of the machine while hydraulics are activated. Always ensure machine power is off before entering the machine for any reason.



WR00012-5-23-23

Battery

⚠ WARNING

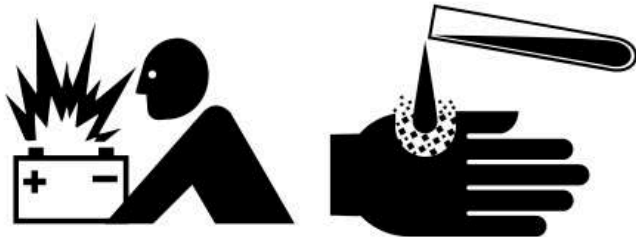
Do not expose the battery to flames or electrical sparks. Hydrogen gas generated by the battery is explosive. Serious injury can result from an exploding battery.

⚠ WARNING

The battery contains acid that can cause burns. Do not allow battery fluid to contact your skin, eyes, fabrics, or painted surfaces. After touching a battery or battery cap, do not touch or rub your eyes.

Eye Contact: Flush eyes with large amounts of water for at least 15 minutes. Seek immediate medical attention if eyes have been exposed directly to acid.

Skin Contact: Flush affected area(s) with large amounts of water using deluge emergency shower, if available, for at least 15 minutes. Remove contaminated clothing. If symptoms persist, seek medical attention.



WR00125-2-27-24

WR00126-2-27-24

Do Not Ride Machine

⚠ WARNING

Do not ride on the machine while it is moving. Riding on the machine could cause the person to fall from or into the machine. Do not drive or tow the machine while persons are on the machine.



Tritan-DNR-4-26-23

Electrical Safety

⚠ WARNING

Always ensure equipment is properly grounded. It is important to remember that you are working in a wet environment with electrical devices. Proper ground connections help to minimize the chances of an electrical shock.

Frequently inspect electrical cords and unit for damage. Have damaged components replaced and service performed by a qualified electrician.

NOTICE: Always connect units to the proper power source as listed on the unit, or in the owner's manual.

NOTICE: Disconnect the machine from the power source before attempting any maintenance or adjustment.



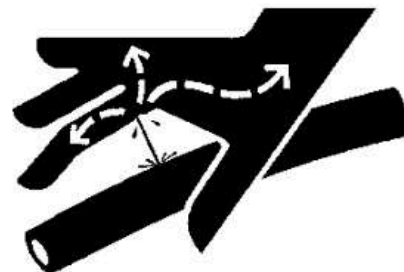
WR00065-5-22-23

Unit With Hydraulics

It is important to remember that a sudden hydraulic oil leak can cause serious injury and can even be fatal if the pressure or oil temperature is high enough.

⚠ WARNING

Escaping fluid under pressure can penetrate the skin causing serious injury. Keep hands and body away from pinholes which eject fluid under pressure. Use a piece of cardboard or paper to search for leaks. If any fluid is injected into the skin, it must be immediately removed by a doctor familiar with this type of injury.



WR00078-5-22-23

⚠ WARNING

Raised carriage boom could fall and result in serious injury or death if hydraulic pressure is released. Always engage the hydraulic lockout bars when access below a raised boom is needed.

Never stand beneath a raised boom without ensuring hydraulic lockout bars are engaged.



WR00120-6-8-23

Facer Blades Are Sharp

⚠ WARNING

Facer blades are sharp and can cut. Use care when operating the facer and when handling the unit.

NOTICE: Never extend the facer blades beyond the inner or outer circumference of the facer.



WR00122-11-27-23

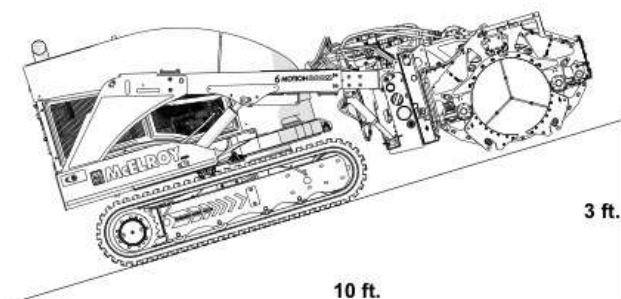
Positioning and Setting Fusion Machine

Position fusion machine on as level ground as possible.

If it is necessary to operate machine on an unlevel grade, make sure that the ground is stable. Some unstable conditions may be ice, snow, mud and loose gravel.

⚠ WARNING

For operation safety, never operate the machine on a grade steeper than 30% (A 3 foot elevation change in 10 feet).



CD02741-6-26-23

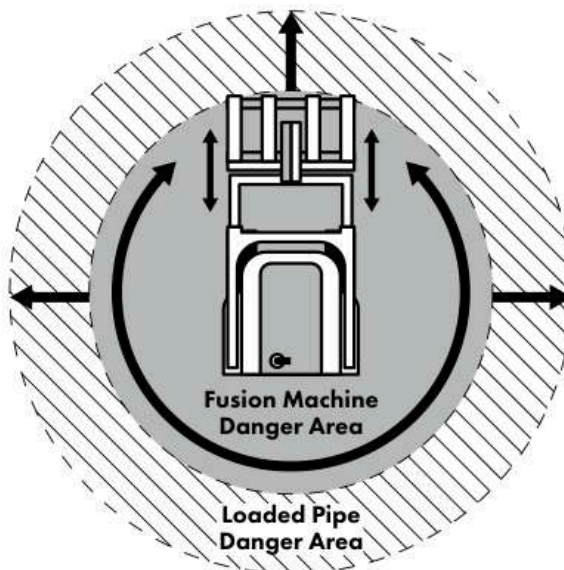
Stand Clear

⚠ WARNING

Vehicle and carriage swing rapidly and can cause severe bodily injury or death if someone is standing too close. All personnel must stand clear of the swinging and booming range of the machine when operating.

Be aware of yourself and others when operating this machine and when sections of pipe are being moved.

NOTICE: The range of the danger area increases when pipe is loaded into the machine.

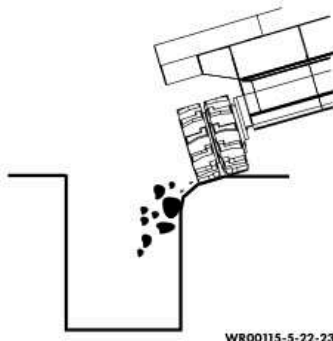


Triton-Stand-Clear-6-29-23

Keep Machine Away From Edge of Ditch

⚠ WARNING

Heavy equipment too close to a ditch can cause the walls of the ditch to cave-in. Keep the machine far enough away from the edge of the ditch to prevent personnel injury and equipment damage resulting from a cave-in.



WR00115-5-22-23

Lifting Safety

Follow all applicable federal, state, local, and industry specific regulations when lifting.

⚠ WARNING

Safety warnings:

1. Do not operate a damaged or malfunctioning lifting device.
2. Do not lift persons.
3. Do not lift a suspended load over persons.
4. Do not leave a suspended load unattended.
5. Do not remove or obscure warning labels.
6. Stay clear of the suspended load.
7. Lift loads only as high as necessary.
8. Employ generally accepted safe lifting practices.

Personal Lifting Safety

⚠ CAUTION

The machine components are heavy. Using one person to lift some machine components may result in an injury. Use two people to lift those machine components.



HeavyLifting-5-22-23

Heater is Hot

⚠ CAUTION

The heater is hot and will burn clothing and skin. Keep the heater protected from personnel when not in use and use care when handling heater and heating pipe.

NOTICE: Use only a clean, dry, lint-free, non-synthetic cloth to clean the heater butt plates.



Heater-Is-Hot-6-5-23

Hydraulic Lockout Bars

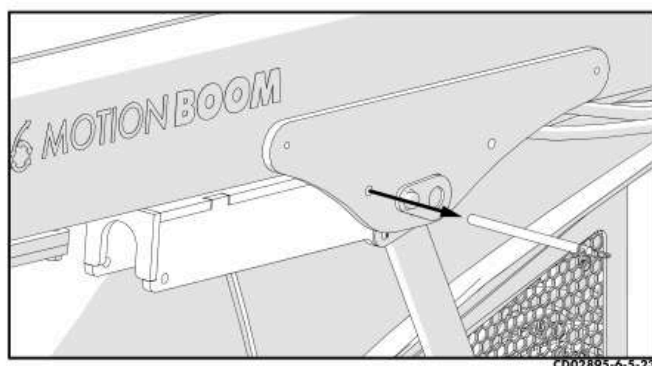
Some instances may require access below a raised boom. In these instances, utilize the hydraulic lockout bars to prevent the boom from collapsing due to an inadvertent release of pressure.

There is a yellow hydraulic lockout bar located on each side of the boom that are held in place by a detent pin.

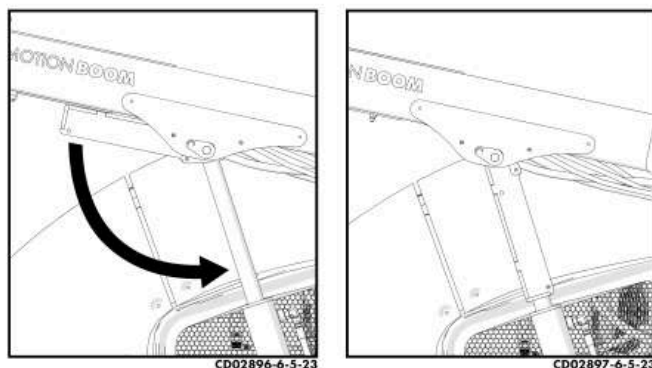
The boom must be raised completely in order to properly engage the lockout bars.

To engage the hydraulic lockout bars:

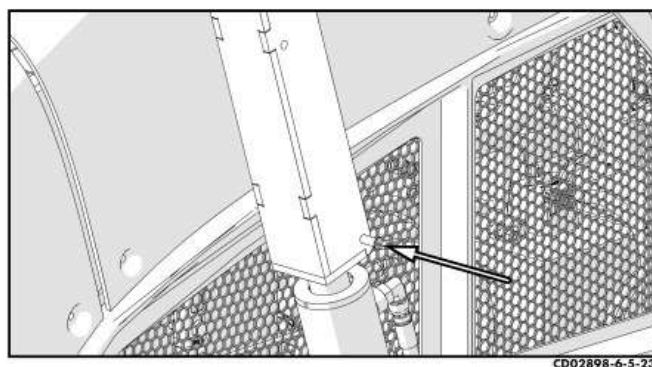
With the boom raised completely, unpin the lockout bars from their stowage position.



Swing the lockout bars down into the lockout position.



Re-pin the lockout bars in the lockout position.



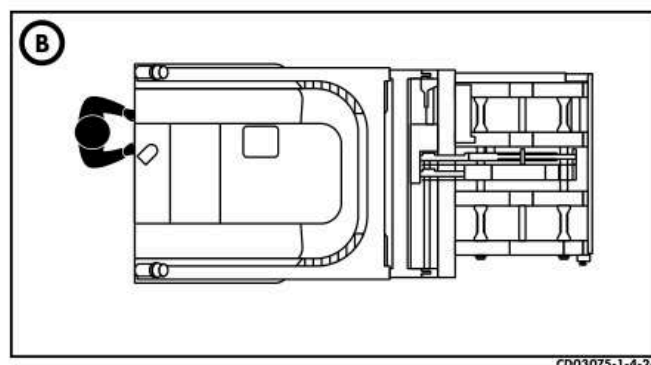
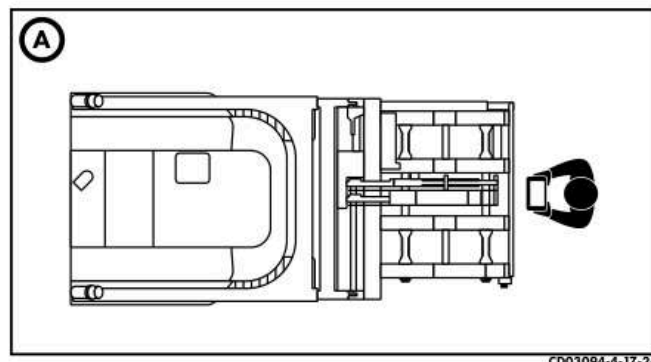
NOTICE: Ensure this process is completed on both sides of the machine.

Sound Information

The operator position Equivalent Sound Pressure Level is 84 dB(A) max at high engine RPM and 80 dB(A) max at low engine RPM. This is measured from the operator location at the carriage of the machine **(A)** under normal operating conditions.

At the vehicle console, the Equivalent Sound Pressure Level is 94 dB(A) max at high engine RPM and 87 dB(A) max at low engine RPM. This is measured from the operator location at the vehicle console **(B)** under normal operating conditions.

Hearing protection may be needed when the machine is operated at high engine RPM or in a noisy environment.



Fusion Procedures

Obtain a copy of the pipe manufacturer's fusion procedures or appropriate joining standard for the pipe being fused. Follow the procedure carefully, and adhere to all specified parameters.

NOTICE: Failure to follow the pipe manufacturer's fusion procedures or appropriate joining standard could result in a bad fusion joint.

Do Not Modify Machine

Make no modifications to your equipment unless specifically recommended or requested by McElroy.

TX05340-04-18

GENERAL INFORMATION

Theory of Butt Fusion

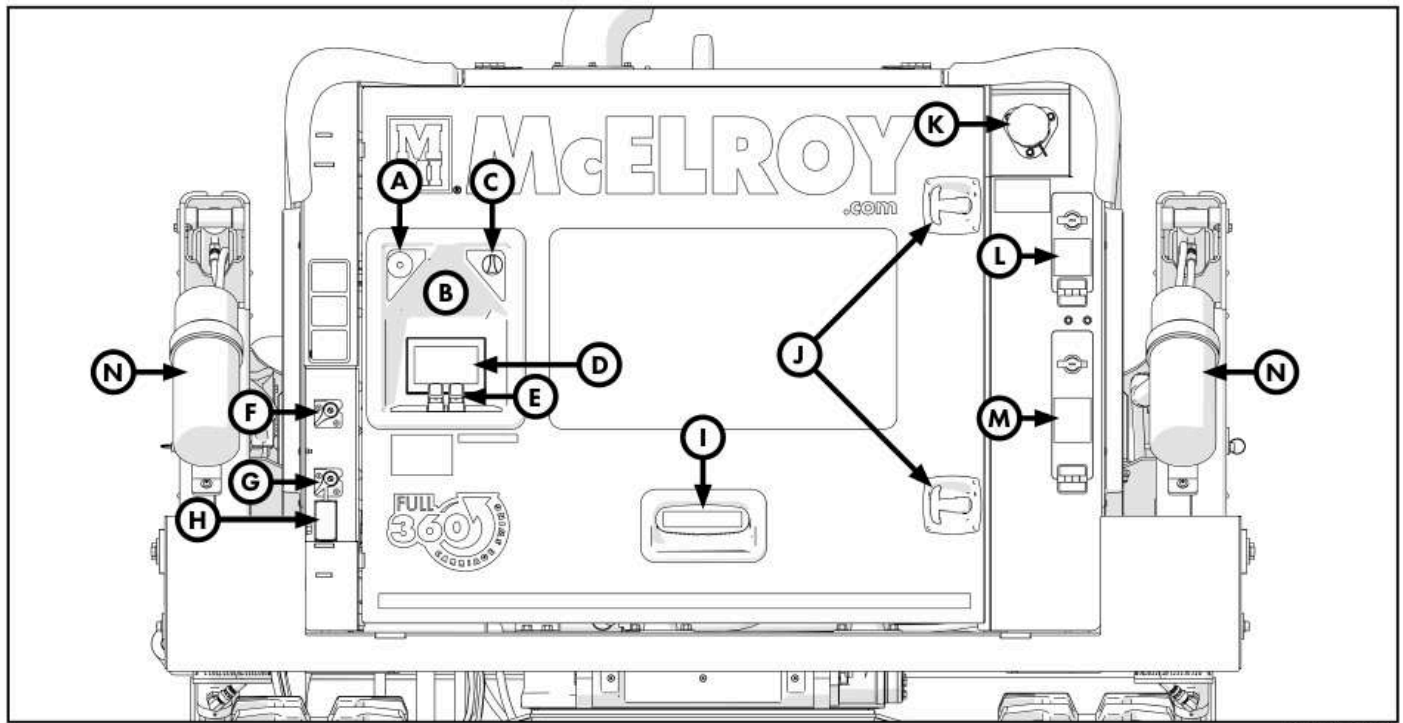
The principle of heat fusion is to heat two pipe surfaces to a designated temperature, and then fuse them together by application of force. This develops pressure which causes flow of the melted materials which causes mixing, and thus, fusion. When the thermoplastic material is heated, the molecular structure is transformed into an amorphous condition. When fusion pressure is applied, the molecules from each thermoplastic part mix. As the joint cools, the molecules return to their form, the original interfaces are gone, and the fitting and pipe have become one monolithic unit. A strong, fully leak tight connection is the result.

The principal operations include:

- | | |
|-------------------|--|
| Clamping | The pipe pieces are held axially and radially to allow all subsequent operations to take place. |
| Facing | The pipe ends are faced to establish clean, parallel mating surfaces perpendicular to the centerline of the pipes. |
| Aligning | The pipe ends are aligned with each other to minimize mismatch of the pipe walls. |
| Heating | A melt pattern that penetrates into the pipe is formed around both pipe ends. |
| Fusing | The melt patterns are joined with a specified force, which is constant around the pipe interfacial area. |
| Cooling | The fusion joint is held immobile with a specified force until adequately cooled. |
| Inspecting | Visually examine the entire circumference of the joint for compliance with the standard or fusion procedure used. |



PH01269-2-1-98



CD03032-11-15-23

Nomenclature

Outboard Vehicle

A - Emergency Stop Button

Button used to completely shut off and disable the machine in case of an emergency.

B - Vehicle Console

Contains all controls for operating the machine from the vehicle: E-Stop button, engine key switch, vehicle display and track drive paddle levers.

C - Engine Key Switch

Key switch used to power the vehicle on and off and start and stop the engine.

D - Vehicle Display

Touch screen that displays vehicle information and contains vehicle controls (refer to [Vehicle Display Screens](#) for an index of screens).

E - Track Drive Paddle Levers

Paddle levers used to drive the vehicle. The levers offer proportional control of the track movement. The track speed can be changed on the vehicle display.

F - Engine Starter Disconnect

Switch to disconnect the engine starter preventing starting of the engine. The switch is lockable for lockout/tagout and security.

G - Battery Disconnect

Switch to disconnect the battery power cutting off all power to machine electrical components.

H - Battery Charging Connection

Plug connection to allow charging of the machine's battery without having to access the battery. The plug connection is a quick disconnect battery connector.

The plug is an Anderson Power Products part number SB175.

I - Vehicle Drive Light

One vehicle drive light is attached to the service door. Lights are turned on and off from the vehicle display and the machine control interface on the DataLogger®.

J - Service Door Latch Handles

Unlatch to open service door. Latch when door is closed.

K - Diesel Fuel Cap

Diesel fuel tank cap. Use ultra low sulfur diesel fuel only.

L - DataLogger Tablet Storage Access Door

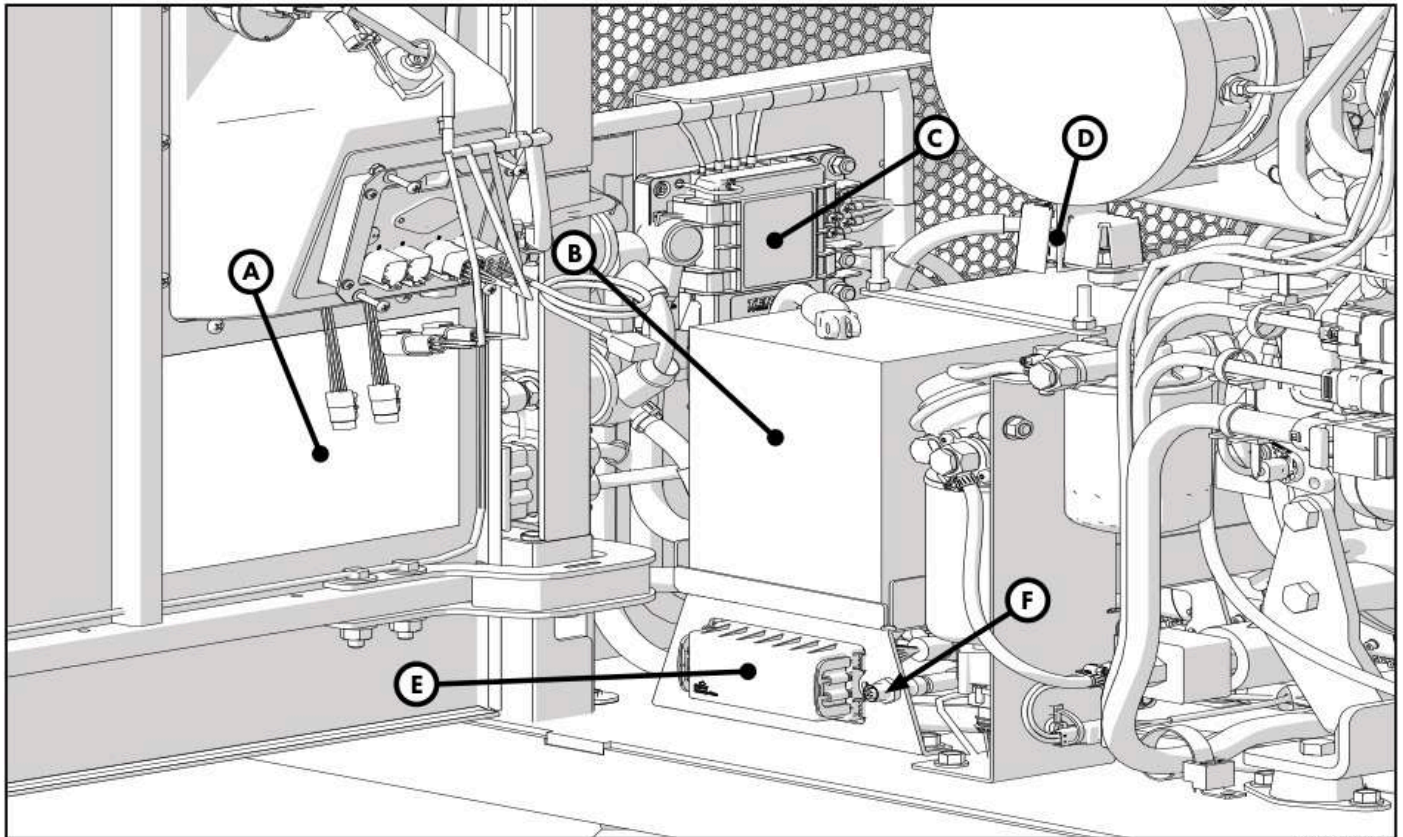
Access door to DataLogger tablet storage area for when the tablet is not in use.

M - DataLogger Tablet Battery Charger Access Door

Access door to DataLogger tablet battery charger. Allows for charging of spare tablet batteries.

N - Storage Tubes (2)

The literature tube (console left) stores the operator's manual, engine manual, and other important documents pertaining to the machine. The cable tube (console right) stores the tethering cable.



CD02734-6-8-23

Electrical Components

A - Fuse and Relay Diagram Label

Lists all the fuses and relays contained in this area. Each component is labeled with identifiers, names and any amperage information for fuses.

B - Battery

Powers electrical components.

C - Fuse Block

Contains several engine system related fuses.

D - Main System Fuse

Fuse located on battery connection.

E - Fuse and Relay Block

Contains several different fuses and relays for machine components.

F - Vehicle Diagnostic Port

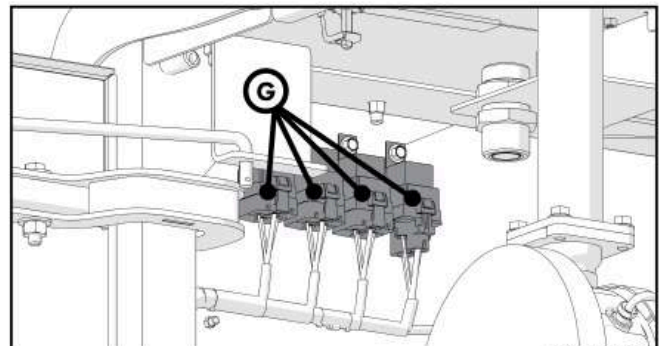
Used to connect to the vehicle controller for diagnostics and software updates.

G - Relays

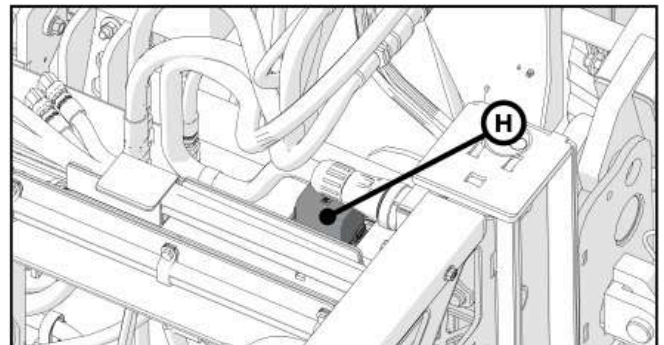
Four system relays.

H - Carriage Fuse and Relay Block

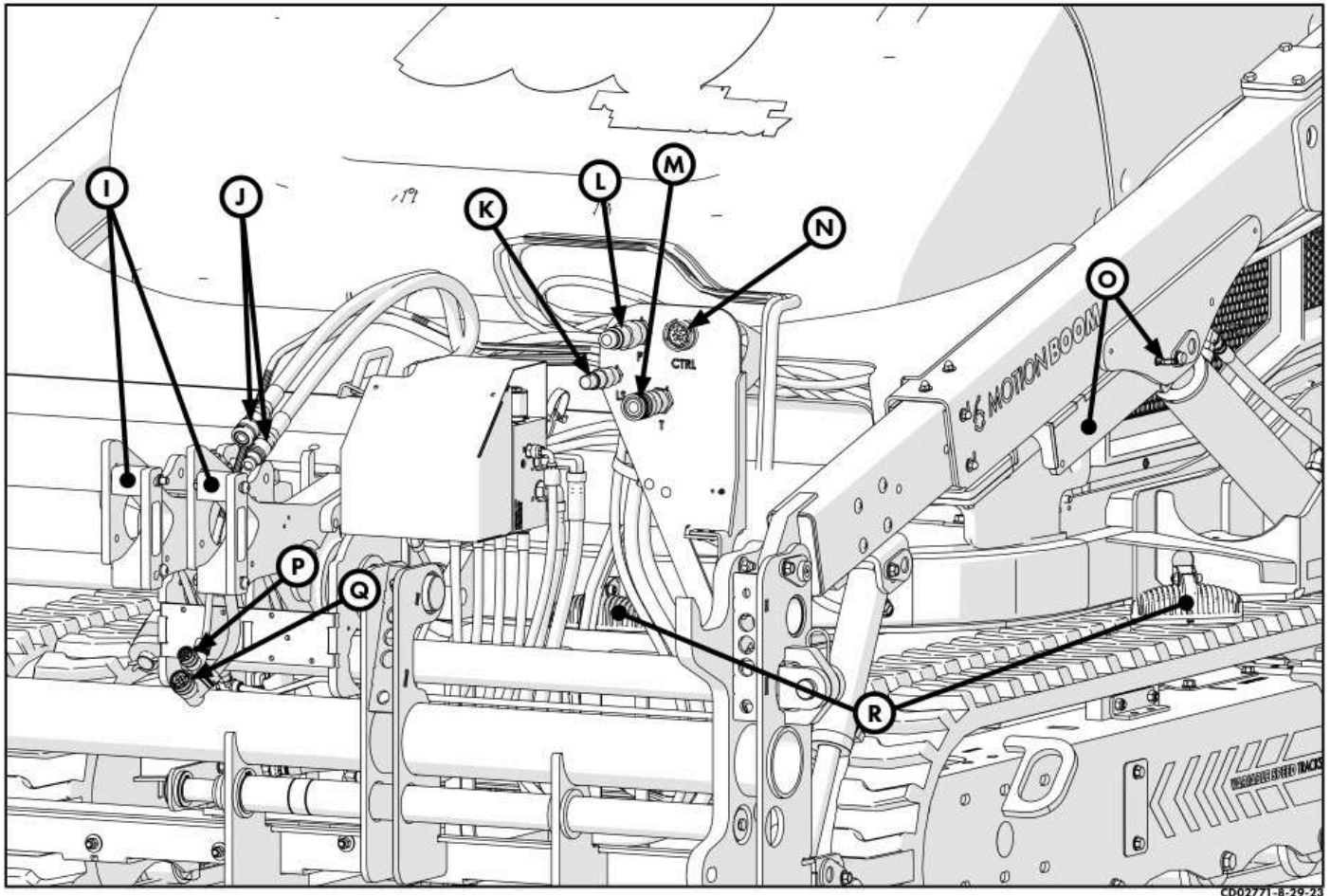
Contains several fuses and relays for carriage components. Located on the back plate of the fusion machine carriage.



CD03019-6-29-23



CD02742-6-29-23



Boom Components

I - Indexer-Mounted Pivot Arms

Pivots heater and facer in and out of the carriage.

J - Facer Hydraulic Quick Disconnects

Connects the pressure and return tank lines to supply hydraulic fluid to the facer.

K - Load Sense Hydraulic Quick Disconnect

Connects pump load sense line to the carriage for load feedback from carriage functions to pump.

L - Carriage Hydraulic Pressure Quick Disconnect

Connects the pressure line to supply hydraulic fluid to the carriage.

M - Carriage Hydraulic Return Tank Quick Disconnect

Connects the return tank line to return hydraulic fluid to the hydraulic tank.

N - Electrical Control Receptacle

Connects the electrical cable to the carriage for electrical control functions.

O - Hydraulic Lockout Bar

Swings down onto hydraulic cylinders to lock out a raised carriage boom and prevent collapse if loss of pressure occurs. Located on both sides of boom.

P - RTD Receptacle

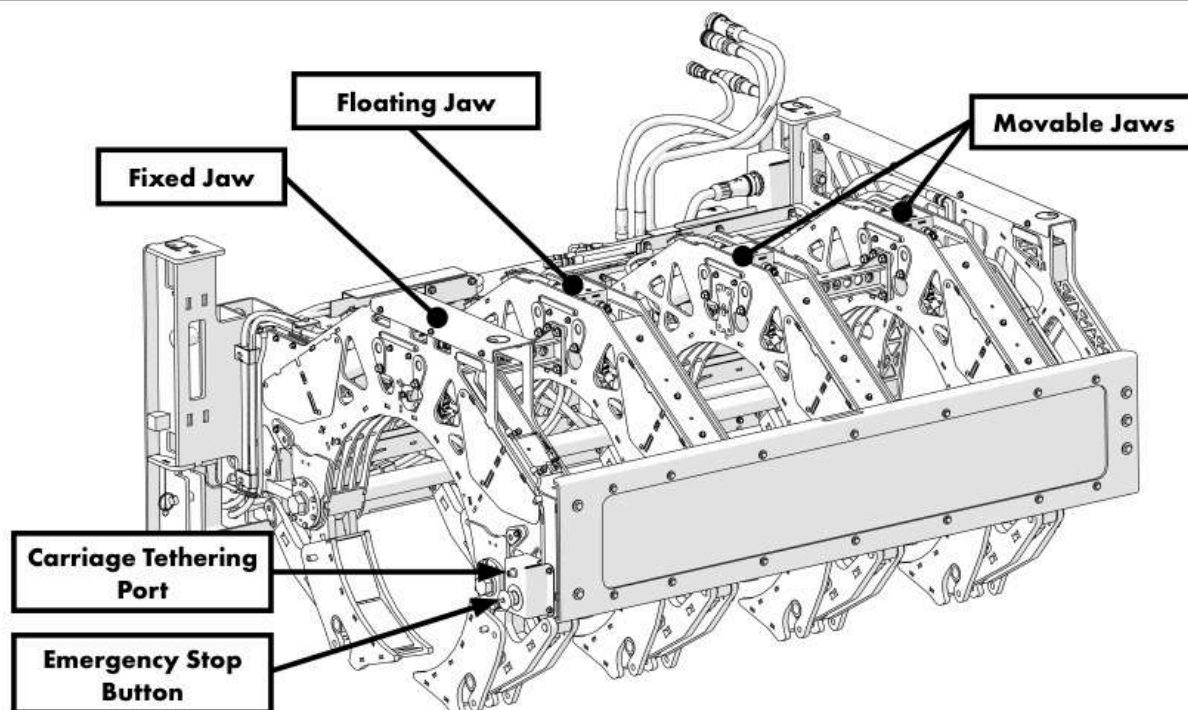
Connects the RTD cable to the carriage to measure heater temperature.

Q - Heater Power Receptacle

Connects the heater power to the carriage.

R - Vehicle Drive Lights

Vehicle drive lights are located above each track and on the front bumper of the vehicle. Lights are turned on and off from the vehicle display on the vehicle console and the tablet remote.



CD02763-8-28-23

Carriage Assembly

The carriage assembly consists of one fixed jaw, one floating jaw and two hydraulically operated movable jaws. The jaws can be set up in a 2+2 or 3+1 configuration. Refer to "[Special Operations](#)" for setting up 3+1 jaw configuration.

The carriage assembly can be removed from the vehicle for modular operation.

Carriage Tethering Port

Used to tether the DataLogger to the carriage for running diagnostics and performing software updates.

Emergency Stop Button

An additional emergency stop button is present on the carriage to completely shut off and disable the machine in case of an emergency.

Jaw Spacers

There are a total of six jaw spacers. Three spacers are installed between two jaws to allow interchanging between 2+2 and 3+1 configurations.

Upper Carriage Jaws

Upper region of the four jaws. Jaw spacers are installed between these as shown.

Lower Quarter Jaws

Lower, moving region of the four jaws. Quarter jaw inserts are installed onto these as shown.

Quarter Jaw Inserts

A set of eight inserts installed onto the lower quarter jaws.

WARNING

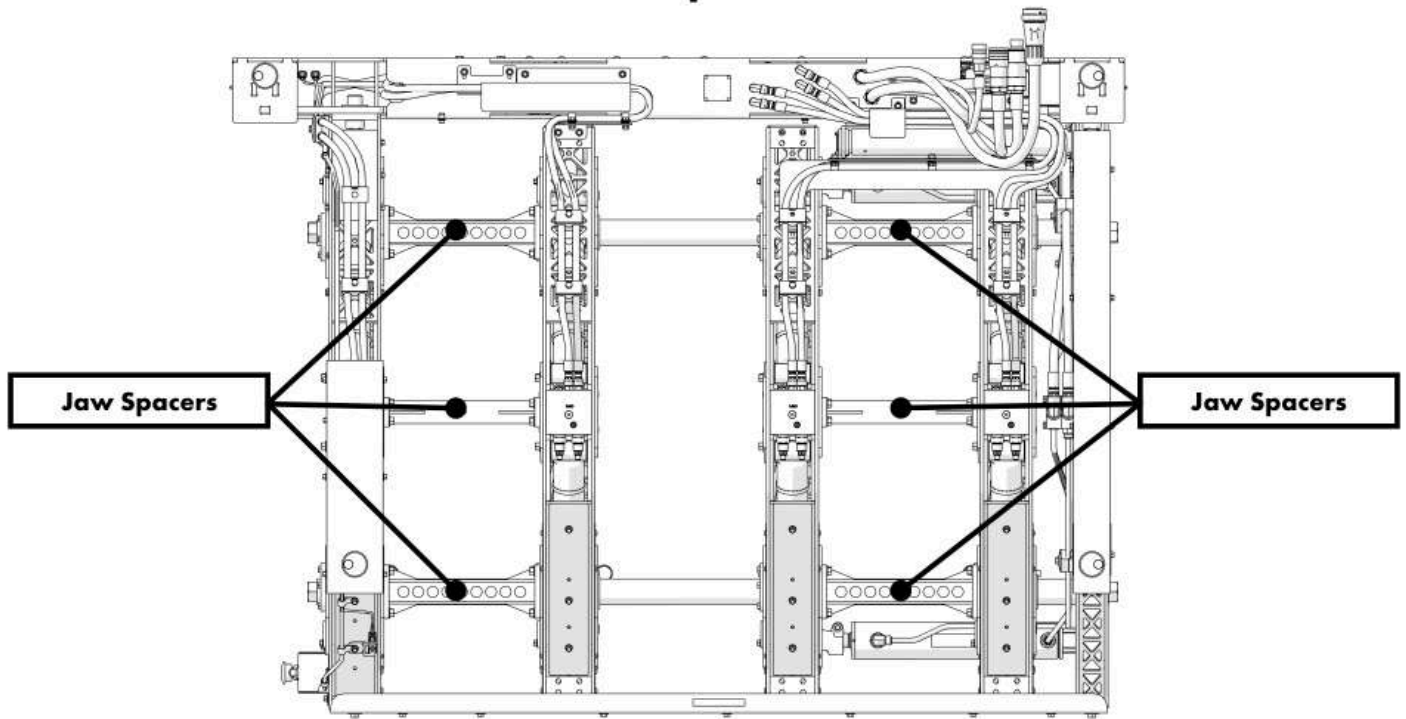
Hydraulically operated equipment operates under high pressure and generates extremely high forces. Anything inadvertently caught in the machine will be crushed. Keep fingers, feet, arms, legs, and head out of the machine while hydraulics are activated. Always ensure machine power is off before entering the machine for any reason.

NOTICE: The movement of the carriage and quarter jaws create crush points.



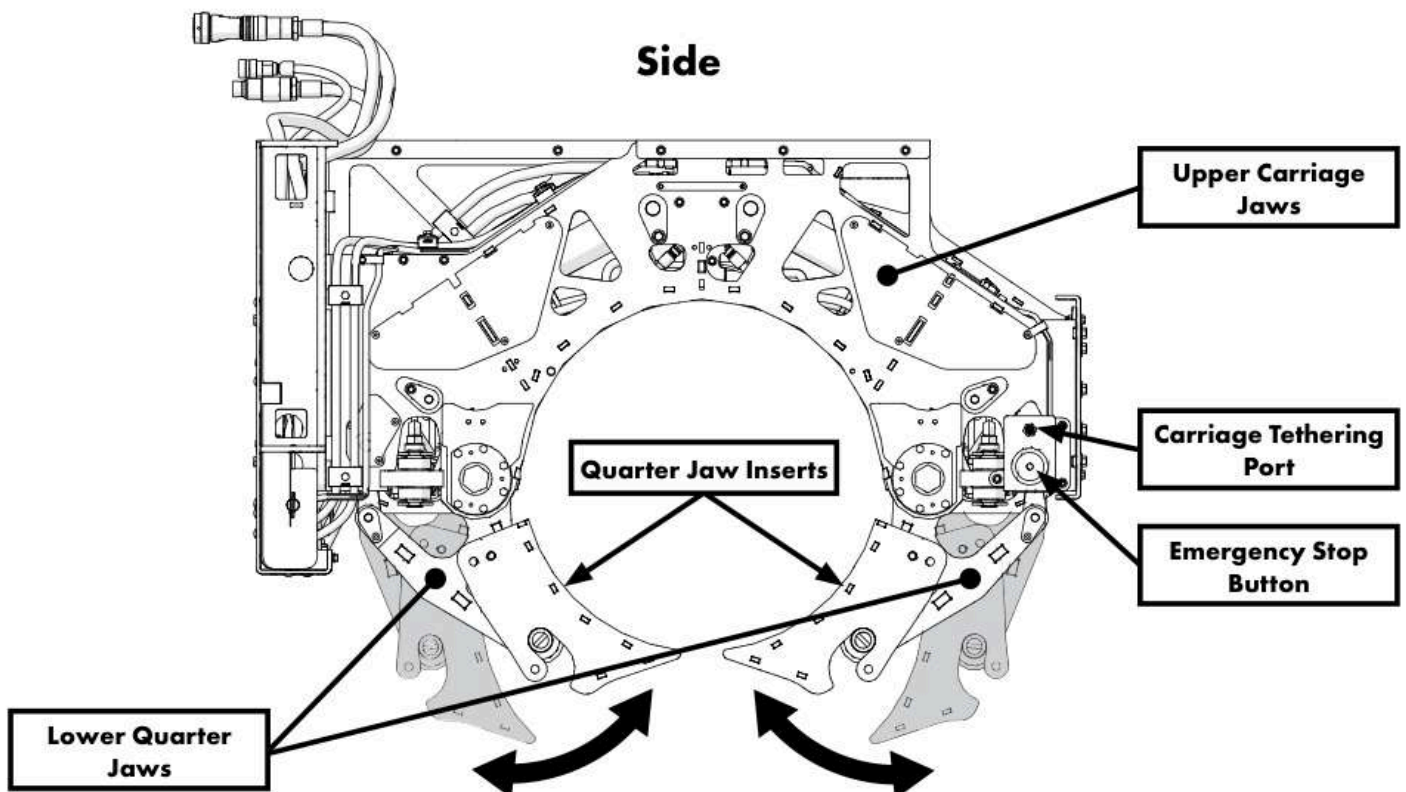
WR00012-5-23-23

Top

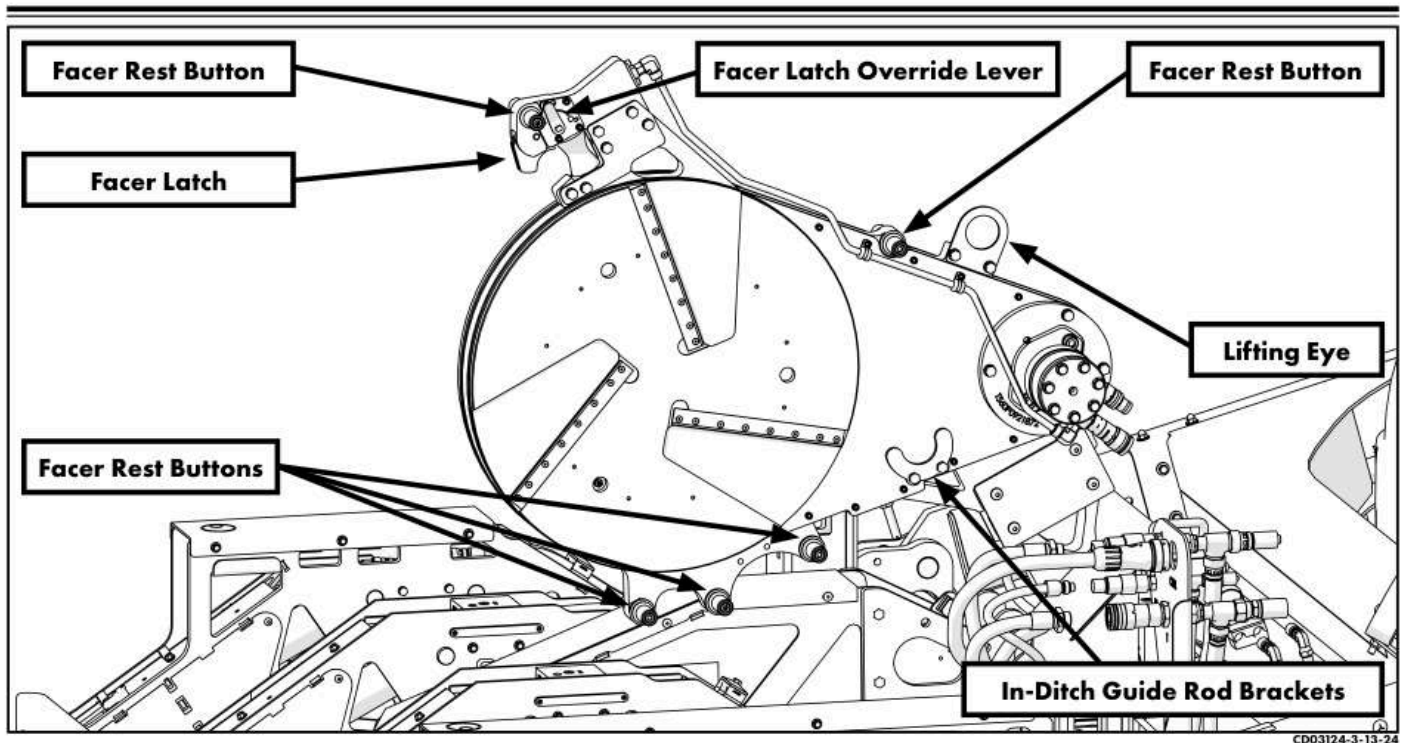


CD03020-6-22-23

Side



CD03021-6-22-23



CD03124-3-13-24

Facer

The facer is a rotating planer-block design. The blade holders each contain three blades and are chain driven (enclosed in lubricant) by a hydraulic motor.

Facer Rest Buttons

There are five facer rest buttons on each side of the facer that allow for a specific amount of faced pipe to protrude from the jaws.

Facer Latch

The facer latch secures the facer to the guide rod and locks onto the guide rod while facer is on.

Facer Latch Override Lever

The facer latch override lever allows manual locking and unlocking of the facer latch if needed.

Lifting Eye

When needed for in-ditch operation, the facer can be slung through the lifting eye and removed from its indexer-mounted pivot arm.

In-Ditch Guide Rod Brackets

Guide rod brackets are bolted to each side of the facer that allow it to be used for off-vehicle facing.

The optional extension kit is needed for off-vehicle facer operation.

NOTICE: For off-vehicle facing, the two in-ditch guide rod brackets must be unbolted from the storage location and bolted in the in-ditch position. When the facer is remounted to its pivot arm, the brackets must be moved back to the storage location (shown above) to prevent damage due to collision with the guide rod.

See [Facer Removal](#) in the Special Operations section for facer removal procedure.

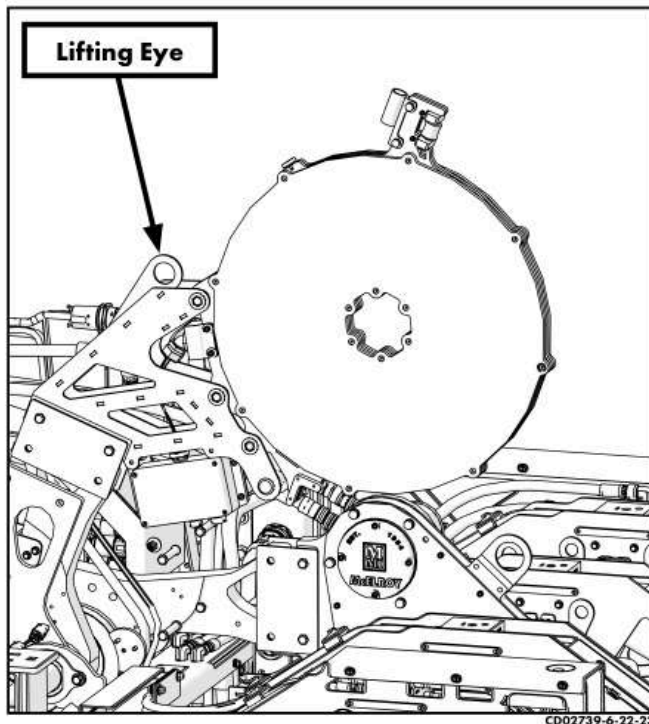
WARNING

Facer blades are sharp and can cut. Use care when operating the facer and when handling the unit.

NOTICE: Never extend the facer blades beyond the inner or outer circumference of the facer.



WR00122-11-27-23



Heater

The heater is equipped with heater butt plates coated with an anti-stick coating.

⚠ DANGER

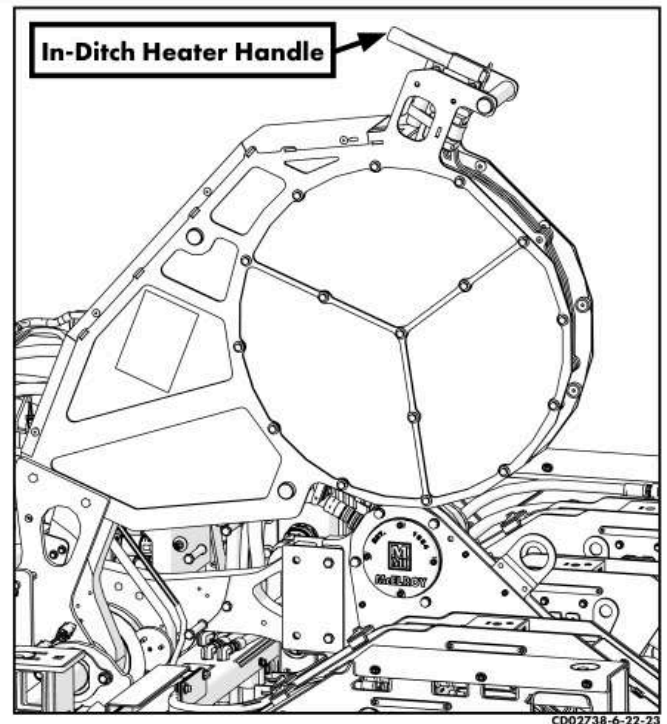
This heater is not explosion proof. Operation of heater in an explosive atmosphere without necessary safety precautions will result in serious injury or death.

When needed for off-vehicle operation, the heater can be slung through the lifting eye and removed from its indexer-mounted pivot arm.

The optional extension kit is needed for off- vehicle heater operation.

NOTICE: For off-vehicle heating, the in-ditch heater handle can be unpinned from the storage location on the heater bag frame and pinned in the in-ditch position on the heater.

See [Heater Removal](#) in the Special Operations section for heater removal procedure.

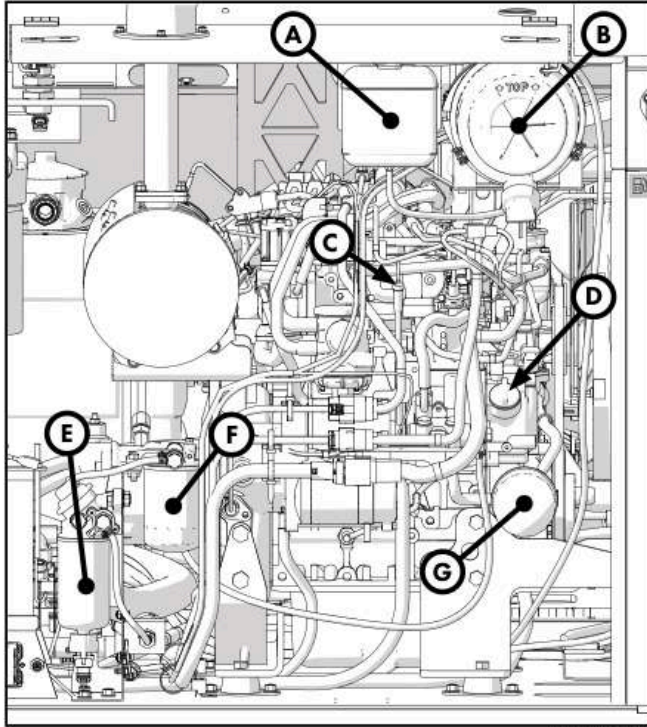


Heater Bag Frame

The heater bag frame protects and insulates the heater when the heater is not in use.

NOTICE: For fusing operation, the frame is pinned to the indexer in the pivot out position.

See [Prepare Heater](#) in the Operation section for pinning instructions.



CD02735-6-8-23

A - Engine Coolant Tank

Contains engine coolant. Refill engine coolant by raising the top hatch.

B - Air Filter Housing

Houses engine air filter. Open to replace air filter.

C - Engine Oil Dipstick

Use to check the oil level of the engine. Refer to engine operator's manual for checking oil and oil recommendations.

D - Engine Oil Fill

Filler neck for the engine oil. Refer to engine operator's manual for checking oil and oil recommendations.

E - Water Separator

Removes water from diesel fuel.

F - Fuel Filter

Filters diesel fuel.

G - Oil Filter

Filters engine oil.

Diesel Engine

Read and understand the engine owner's manual instructions before operating. The engine operator's manual is included with this machine and can be found inside the literature tube attached to the boom.

A machine with the Ultra Low Sulfur Diesel Fuel Only label has an engine that uses only ultra low sulfur diesel fuel.



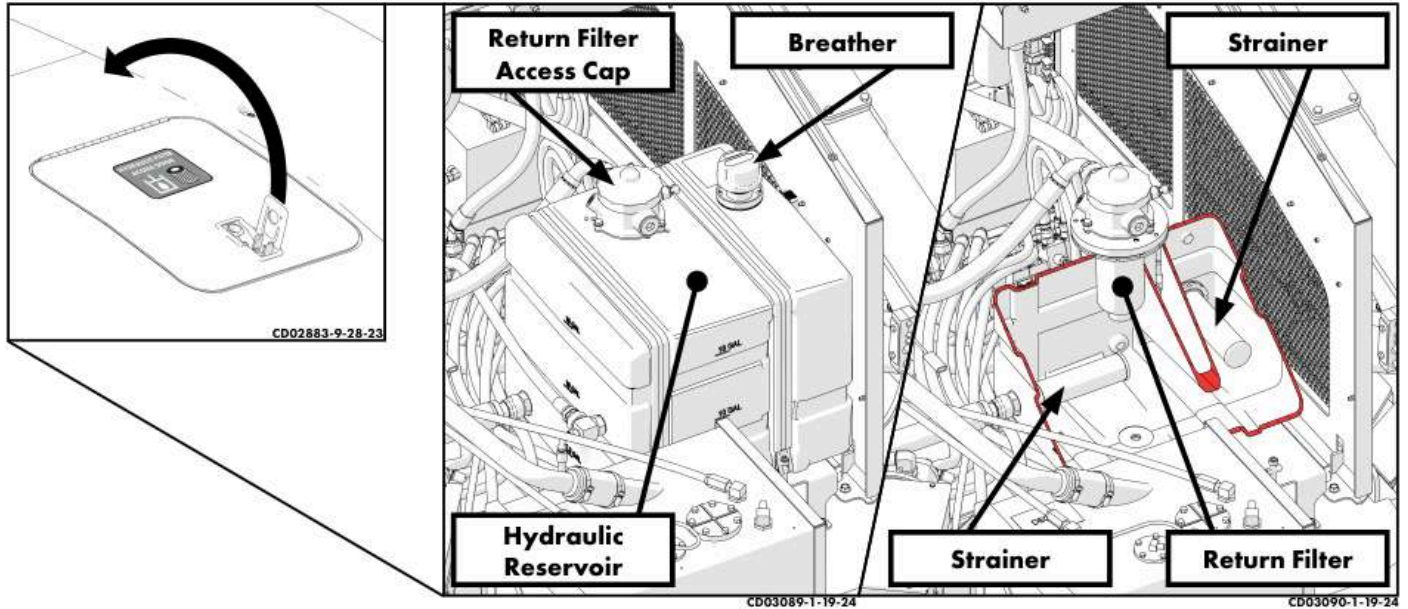
⚠ DANGER

Combustion engines can cause explosions and other unmanaged behavior when operated in an explosive atmosphere. Do not operate gas or diesel powered machines in an explosive atmosphere.

When operating in an explosive atmosphere, keep vehicle in a safe area by using hydraulic extension hoses to the carriage.

Help prevent fires by keeping machine clean of accumulated trash, debris and facer shavings.

The engine can be started using the key switch at the vehicle console.



Hydraulic Fluid Reservoir & Filters

The hydraulic fluid reservoir is located under the curved hood of the machine.

The fluid level sight gauge is located on the reservoir and can be seen through the side grill. A level sensor is installed in the reservoir.

This machine is equipped with a return filter, a pressure filter and two strainers. The return filter is located in the reservoir and the pressure filter is located behind the service door near the engine.

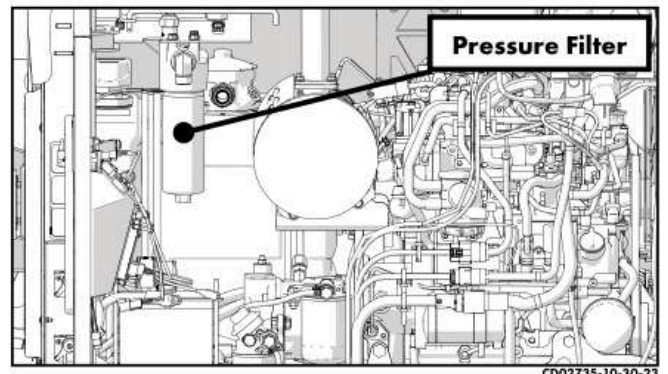
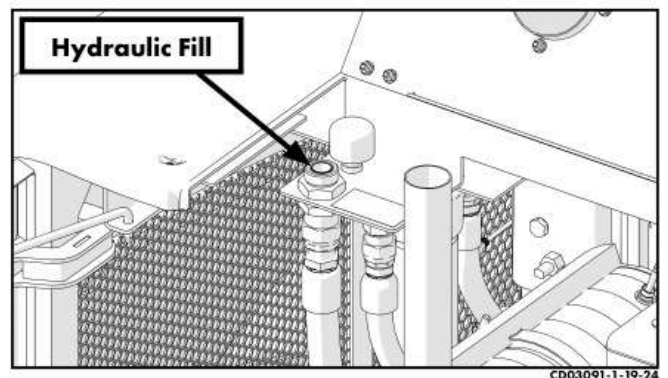
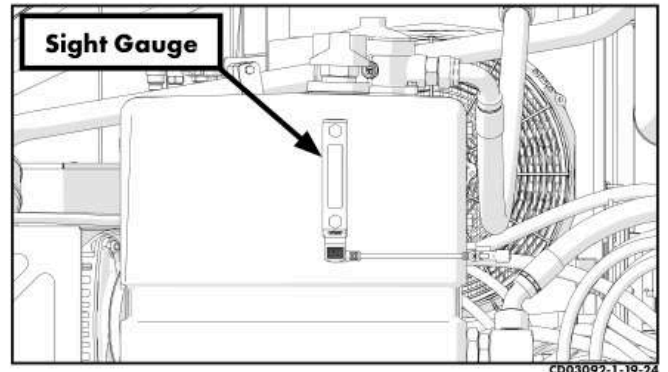
The strainers are located inside the reservoir and can be removed by unscrewing them from the suction ports inside the reservoir.

Refer to the ["Maintenance"](#) section of this manual for hydraulic filter and fluid procedures.

Refer to the ["Hydraulic Fluids"](#) section of this manual for hydraulic fluid recommendations.

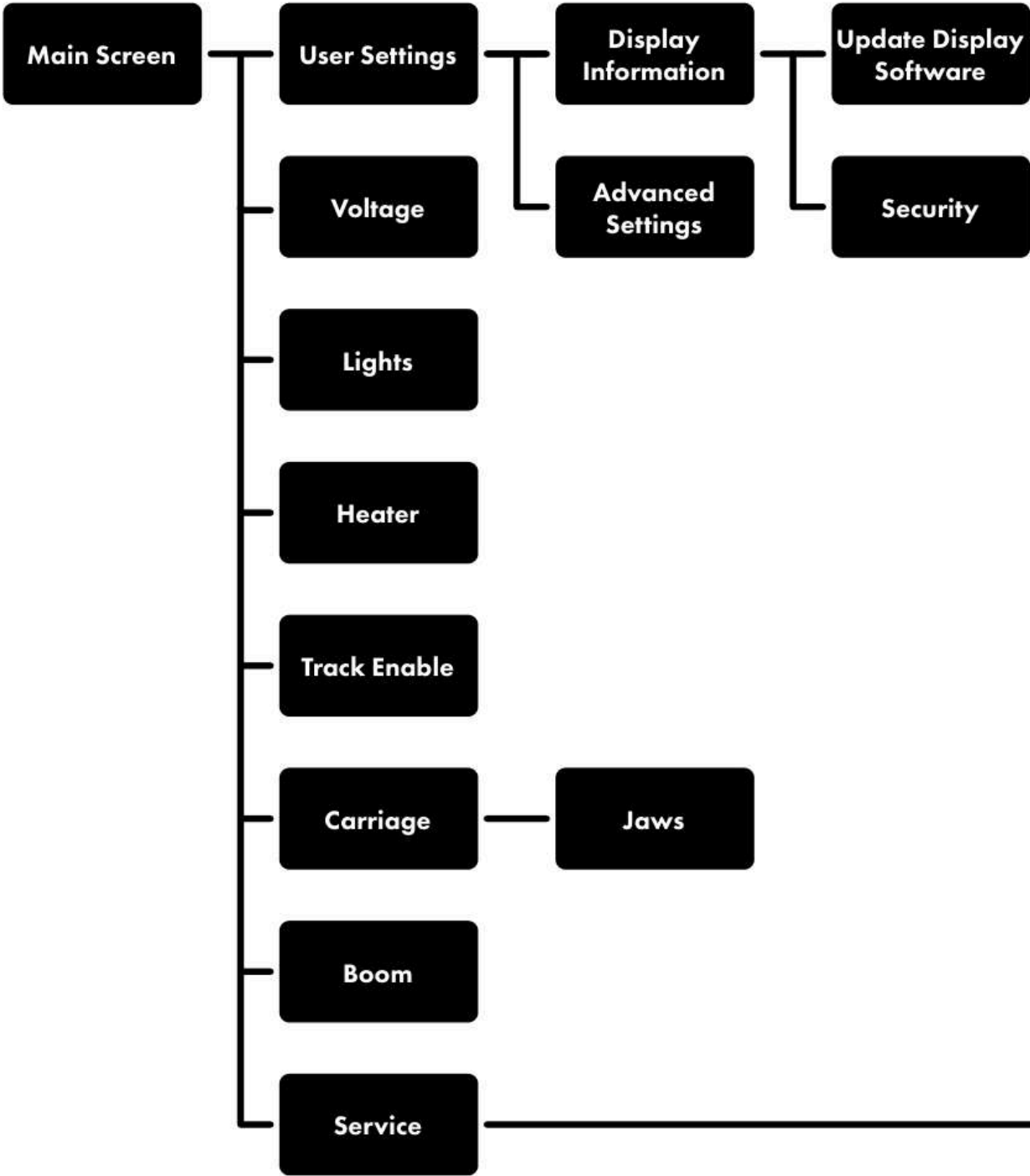
NOTICE: Only refill hydraulic fluid using the hydraulic fill or by removing the breather. Do not add hydraulic fluid through the return filter opening on the reservoir.

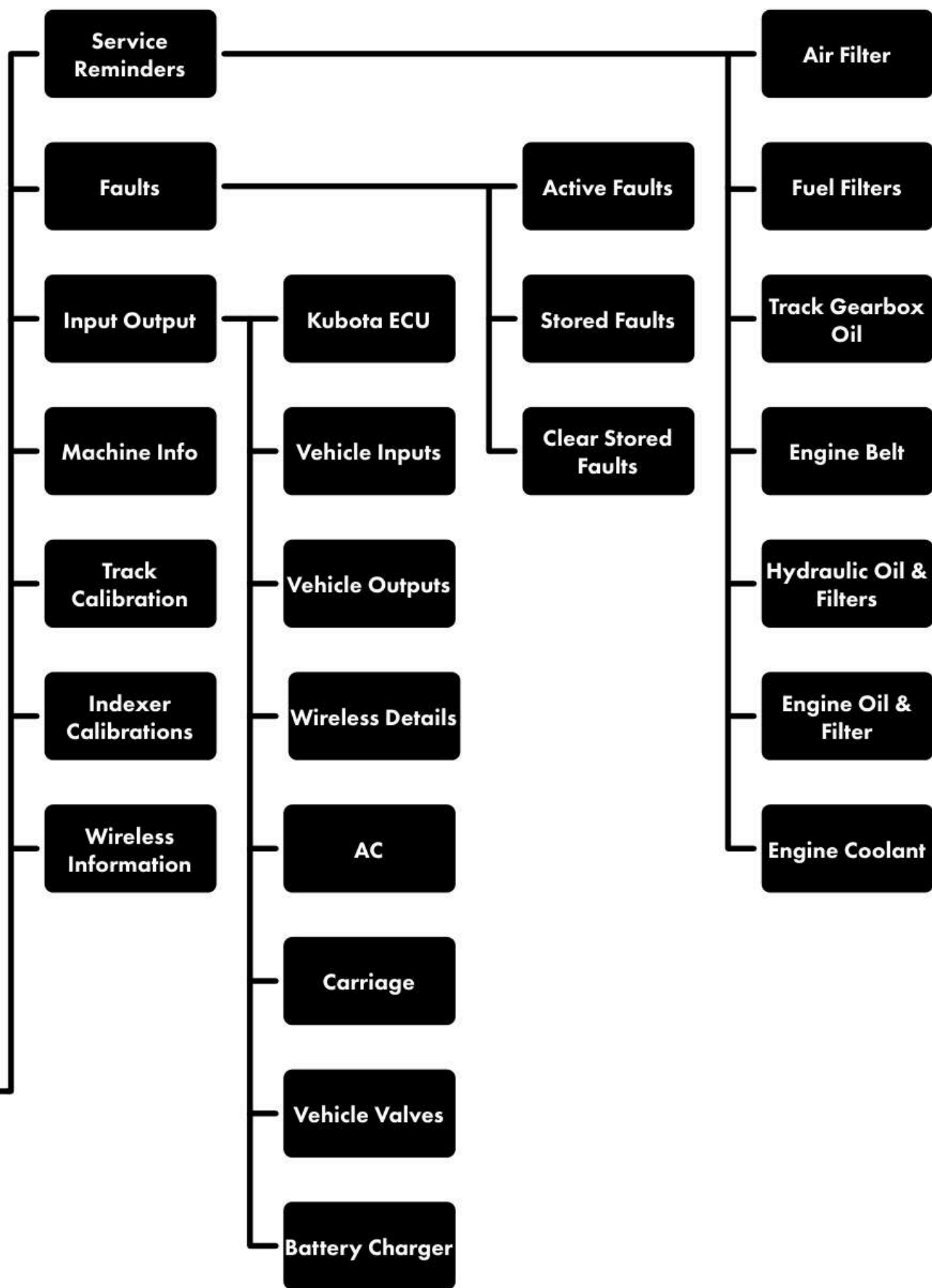
IMPORTANT: Drain hydraulic fluid before removing any component of the hydraulic system. A large amount of hydraulic fluid will leak from the system.

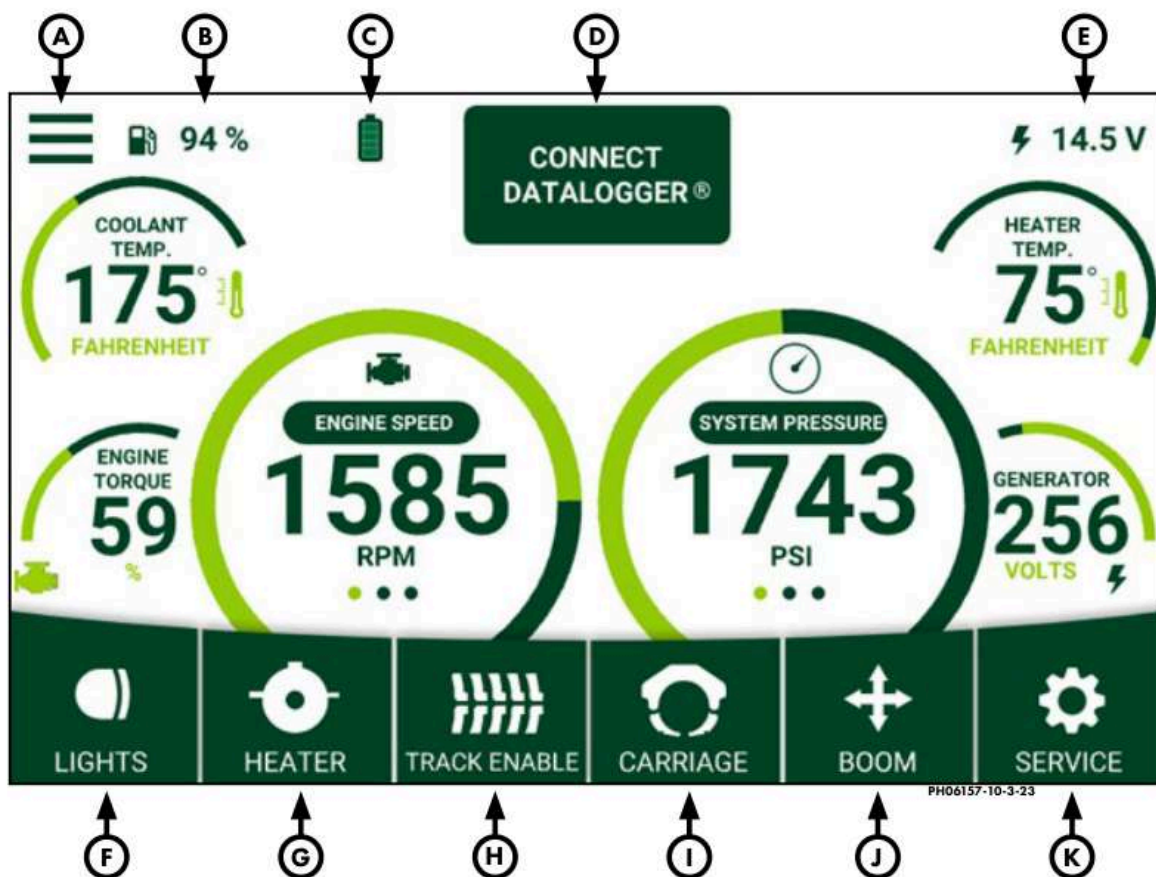


Vehicle Display Navigation Map

The map below illustrates the screen navigation for the vehicle display.







Vehicle Display Screens

Main Screen

Has live information on the engine and hydraulic systems of the machine. Screen navigation is achieved by tapping various buttons identified below. The units of measure can be changed on the user settings screen by tapping the menu button in the top left corner of the screen.

A - Menu Button

Opens the user settings screen.

B - Fuel Level

Displays the current fuel level percentage. Displays as green from 100%-25%, yellow from 25%-12% and red at 12%-0%.

C - Battery Charge Level

Displays charge level of DataLogger battery being charged.

D - Connect DataLogger Button

Displays the QR code and PIN required for DataLogger connection.

E - Battery Voltage

Displays the vehicle battery voltage.

F - Lights Button

Toggles the vehicle drive lights on and off.

G - Heater Button

Toggles the heater on and off.

H - Track Enable Button

Enables the track drive paddles and opens the tracks screen.

I - Carriage Button

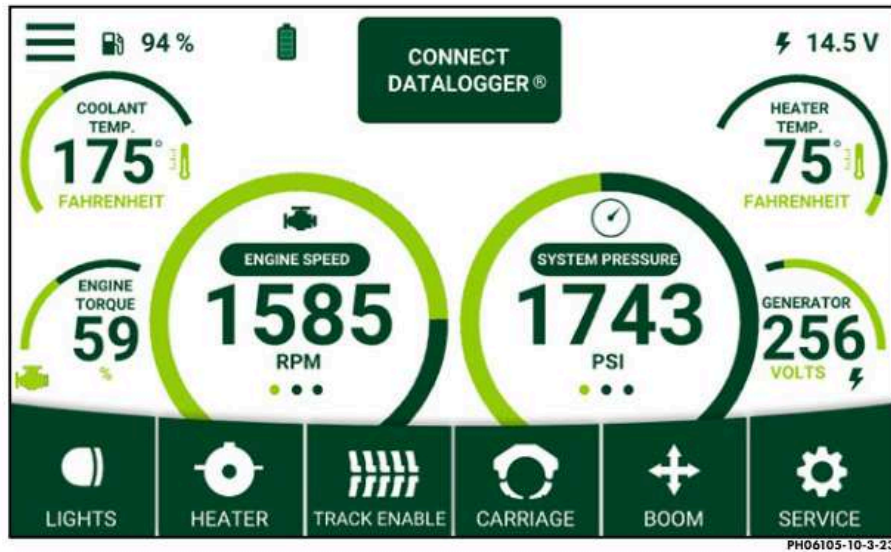
Opens the carriage screen.

J - Boom Button

Opens the boom control screen.

K - Service Menu Button

Opens the service menu screen.



Main Screen Gauges

The two large gauges can be swiped right or left to display other information.

Left Gauge (Engine Information):



Displays the current engine speed in (RPMs).



Displays the current fuel rate in (gal/hr or liters/hr).



Displays the current engine hours in (hours).

Right Gauge (Hydraulics Information):



Displays the current system pressure in (psi, bar or kPa).



Displays the current hydraulic level. (Normal/Low)



Displays the current hydraulic oil temperature in (°F or °C).

Other Gauges:



Displays the current engine coolant temperature in (°F or °C).



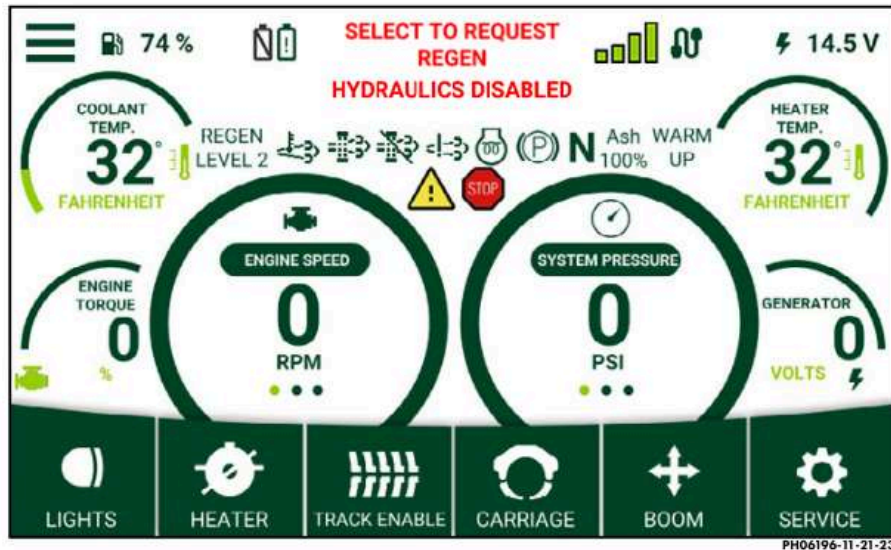
Displays the current engine torque in (percent).



Displays the current heater temperature in (°F or °C).



Displays the current generator voltage in (volts). Tapping the gauge opens the Voltage screen.



Main Screen Icons

Icons with various meanings and functions pertaining to the machine state will be displayed on the main screen of the vehicle display. The screen shown above is for informative purposes only and does not reflect a possible combination of displayed icons.



Indicates a battery is not being charged in the battery charger.



Indicates a battery error. View in faults.



Indicates a DataLogger connection and the strength of the connection.

**REGEN
LEVEL 2**

Indicates regeneration status level. Only present at level 2 and above.



Indicates that the exhaust system may be hot as a Diesel Particulate Filter (DPF) regeneration is active.



Indicates an active regeneration of the DPF.



Indicates that regeneration is inhibited. Regeneration is inhibited while tracking.

**SELECT TO REQUEST
REGEN**

Indicates regeneration level 2 has been reached. Tapping this will request parked regeneration.

HYDRAULICS DISABLED

Indicates the hydraulic system is disabled. Re-enable from the machine control interface.*



Indicates a failure of an emissions critical component.



Indicates preheat phase is active.



Indicates an active parking brake.

N

Indicates a neutral switch.

**Ash
100%**

Indicates current ash load percentage. Only present at 50% ash load and above. (Displays 50%, 75%, and 100%)

**WARM
UP**

Indicates a forced warm up.



Indicates an active fault. Tapping this icon will open the faults screen.

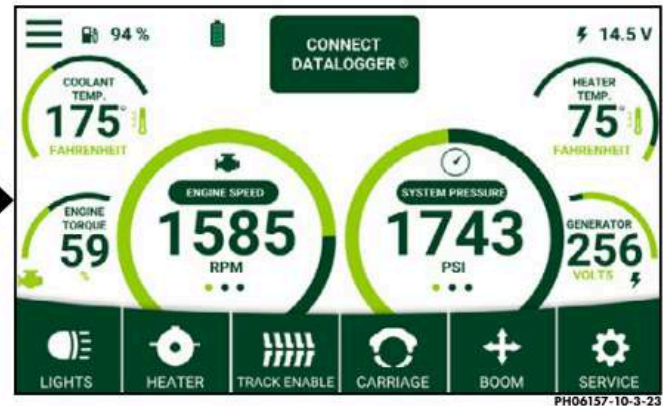
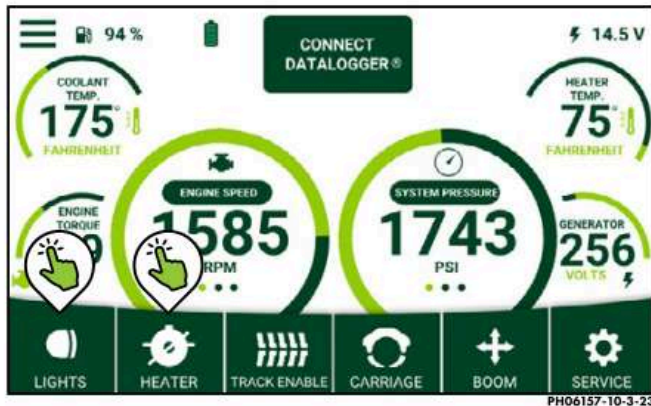


Indicates a shutdown level fault is active or the E-Stop button is pressed.



Indicates a tethered carriage connection.

*Hydraulics can only be disabled and re-enabled from the machine control interface on the DataLogger.



Lights Button

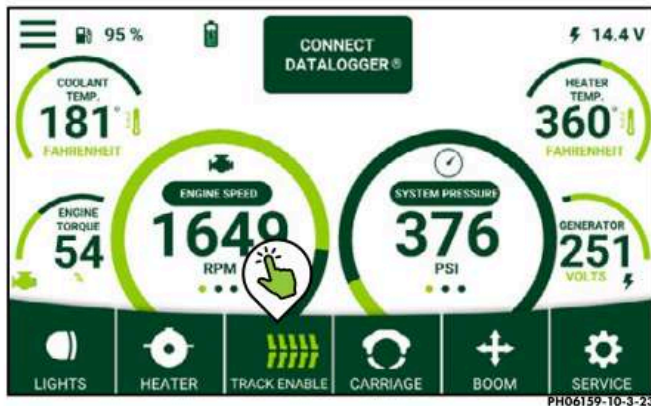
Tapping **LIGHTS** on the main screen turns the vehicle drive lights on and off.



Heater Button

Tapping **HEATER** on the main screen turns the heater on and off. A slash over the heater icon indicates the heater is off. When the slash is absent, the heater is on.

The heater button has a third state indicating that the heater has been disconnected.



Tracks Screen

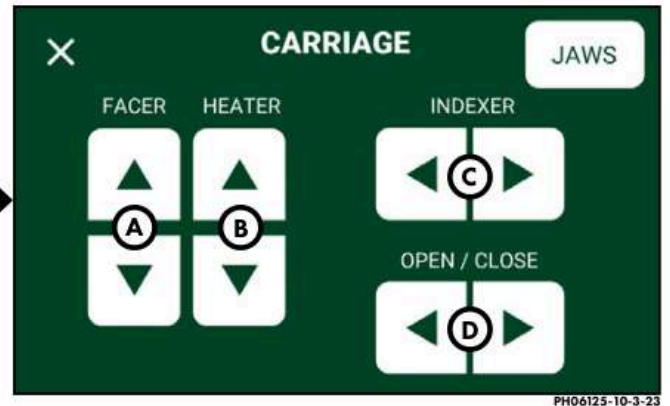
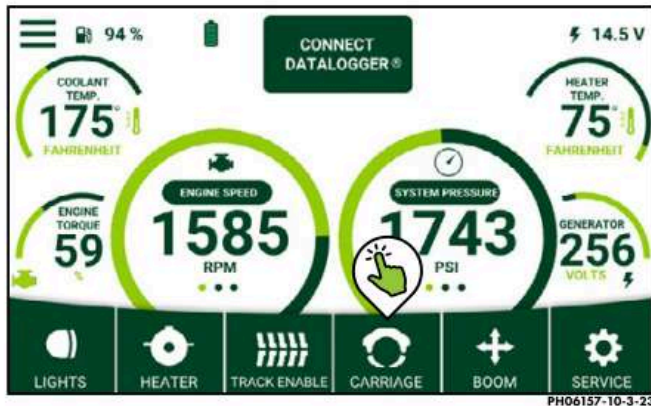
Tap **TRACK ENABLE** on the main screen to view the tracking speed toggle.

Drag the touch slider to toggle between **Normal** speed and **Crawl** speed.

If the vehicle has primary movement control, the track icon will be highlighted green and animate when tapped.

The track speeds can be calibrated from the Track Calibration screen in the Service Menu.

Tap the **X** to close this screen.



Carriage Control Screen

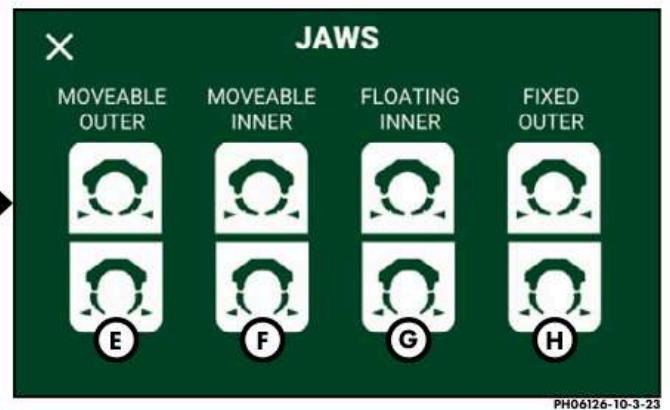
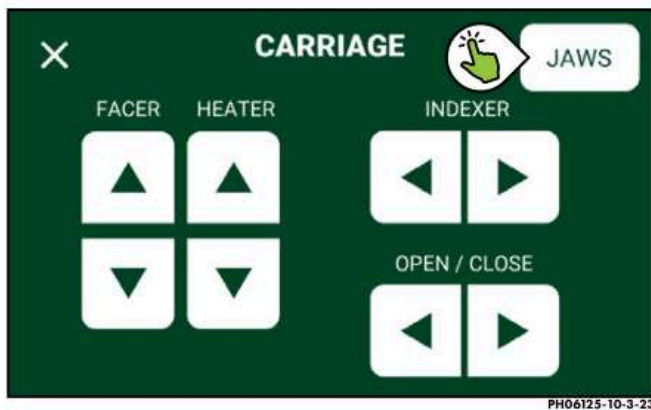
Accessed by tapping **CARRIAGE** on the main screen and displays the controls for opening and closing the carriage, indexing the heater and facer left and right and pivoting the heater and facer in and out of the carriage.

Tap and hold the directional touch pads to pivot the heater and facer in and out of the carriage, index left and right, and open and close the carriage. The **Up** arrows pivot out, and the **Down** arrows pivot in.

- A** Pivots the facer in and out.
- B** Pivots the heater in and out.
- C** Moves indexer left and right.
- D** Opens and closes carriage.

Tapping **JAWS** will open the jaws screen.

Tap the **X** to close this screen.



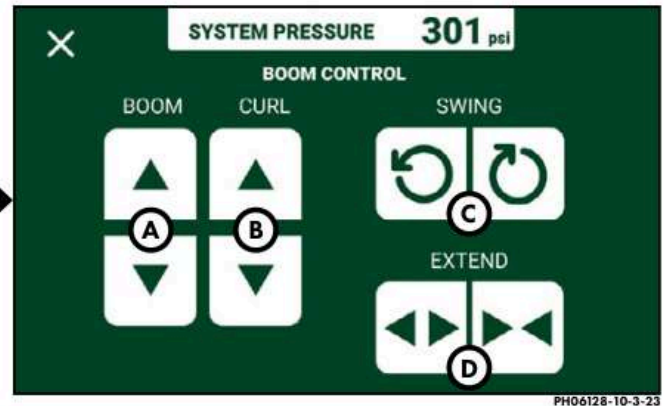
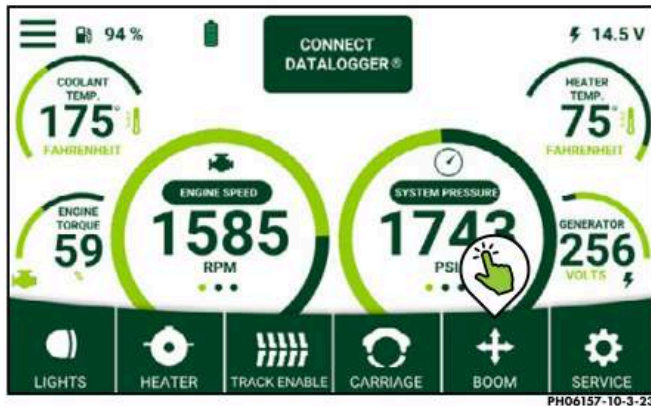
Jaws Control Screen

Accessed by tapping **JAWS** on the carriage screen and contains controls for opening and closing the jaws.

Tap and hold the jaw touch pads to open and close the designated jaws.

- E** Opens and closes outer movable jaw.
- F** Opens and closes inner movable jaw.
- G** Opens and closes inner floating jaw.
- H** Opens and closes outer fixed jaw.

Tap the **X** to close this screen.



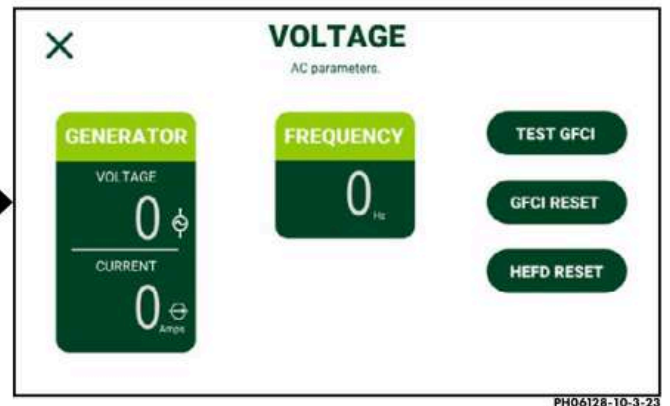
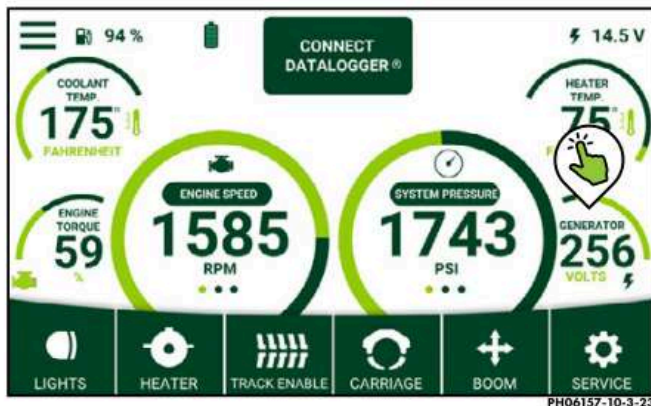
Boom Control Screen

Accessed by tapping **BOOM** on the main screen and displays the controls for swinging the vehicle, extending and retracting the boom, raising and lowering the boom and curling the carriage in and out.

Tap and hold the directional touch pads to perform the designated functions.

- A** Raises and lowers boom.
- B** Curls carriage up and down.
- C** Swings vehicle clockwise and counterclockwise.
- D** Extends and retracts boom.

Tap the **X** to close this screen.



Generator AC Parameters Screen

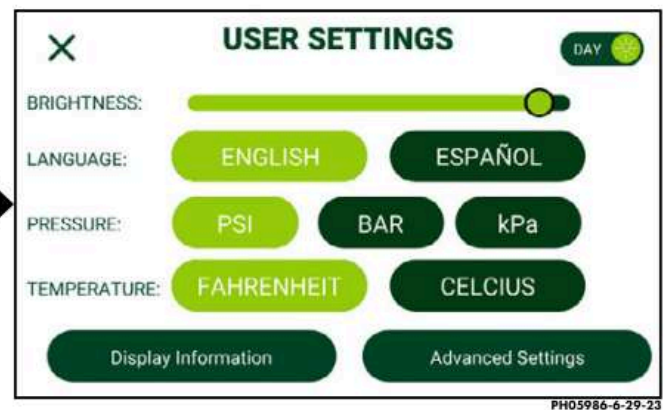
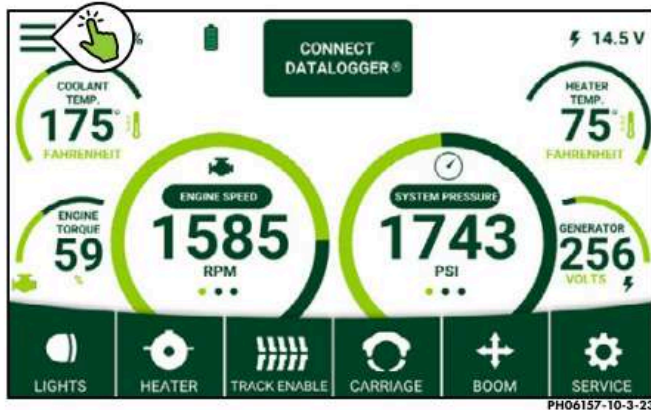
Accessed by tapping the **Generator** gauge on the main screen and has live information on the AC parameters of the machine. It displays the generator voltage and current as well as the frequency. This screen provides a means to test and reset the Ground Fault Circuit Interrupter (GFCI) and reset the Heater Element Failure Detection (HEFD).

To test the GFCI, tap the **TEST GFCI** button. A prompt displays to confirm the test. Tap continue to start the test. The GFCI will reset after the test is complete.

To reset the GFCI, tap the **GFCI RESET** button. A prompt displays to confirm the reset. Tap continue to reset.

To reset the HEFD, tap the **HEFD RESET** button. A prompt displays to confirm the reset. Tap continue to reset.

Tap the **X** to close this screen.



User Settings Screen

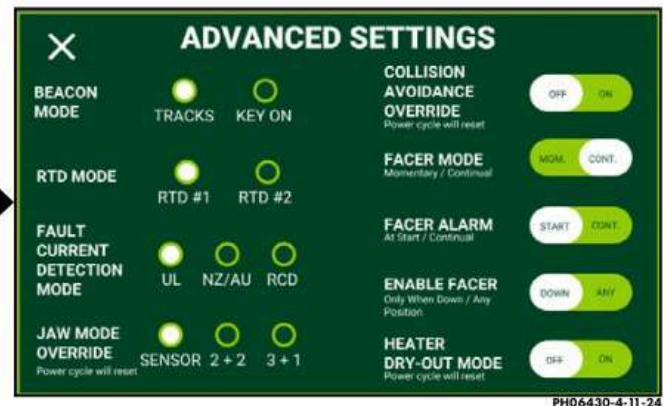
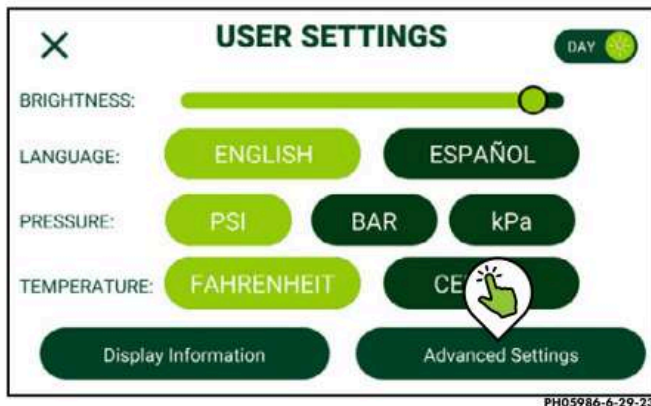
Accessed by tapping the **Menu** button in the top left of the main menu and contains user settings.

The two buttons at the bottom allow access to the **Display Information** and **Advanced Settings** screens.

Tap the **X** to close this screen.

User Settings:

- Display brightness
- Display language
- Pressure units of measure
- Temperature in °F or °C
- Display mode for Day or Night viewing



Advanced Settings Screen

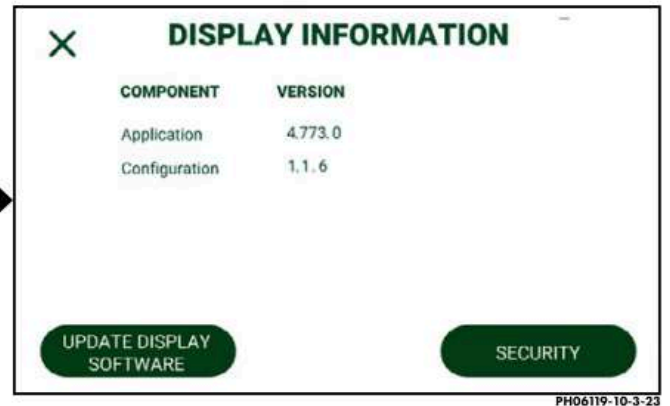
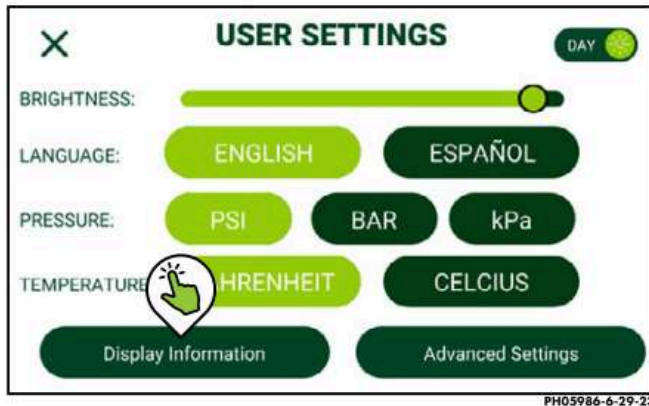
Accessed by tapping **Advanced Settings** in User Settings and contains selections for the Beacon, RTD, Fault Current Detection, and Facer.

Collision avoidance resets to "ON" when the machine is power cycled.

Tap the **X** to close this screen.

Advanced Settings:

- Beacon Mode [When tracking or When key on]
- RTD mode [RTD #1 or RTD #2]
- Change the fault current detection mode. The selected mode will be displayed on GFCI references.
UL: UL standard for GFCI
NZ/AU: New Zealand/Australia GFCI
RCD: Residual-Current Device (United Kingdom)
- Jaw Mode Override [Sensor, 2+2 or 3+1]
- Collision Avoidance Override [OFF / ON]
- Facer Mode [Momentary / Continuous]
- Facer Alarm [At Start / Continuous]
- Enable Facer [Only when down / Any position]
- Heater Dry-Out Mode [OFF / ON]

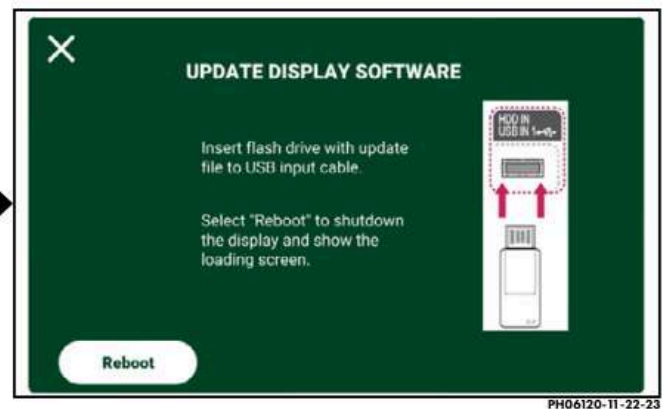
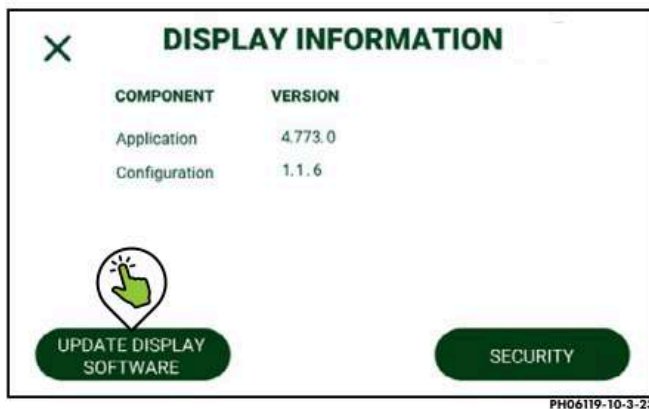


Display Information Screen

Accessed by tapping **Display Information** in User Settings and contains the application and configuration versions.

The two buttons at the bottom allow access to the **Update Display Software** and **Security Options** screens.

Tap the **X** to close this screen.

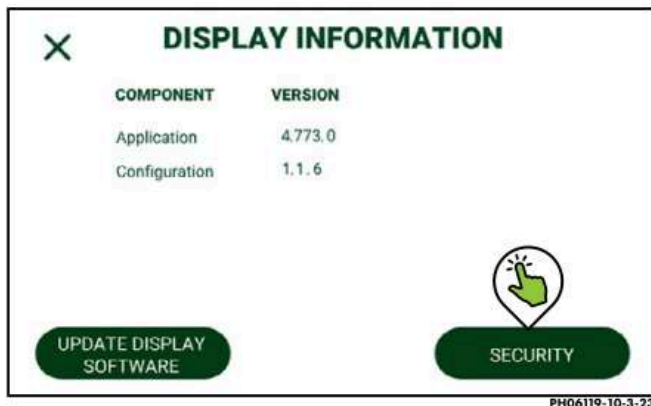


Update Display Software Screen

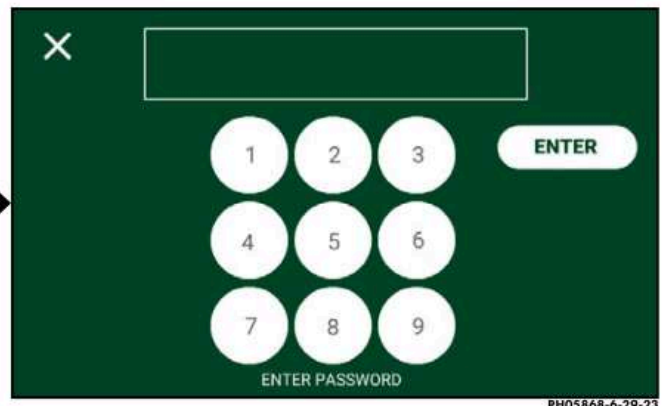
Accessed by tapping **Update Display Software** in Display Information and opens the Update Display Software screen.

Follow the on-screen instructions to update the display software.

Tap the **X** to close this screen.



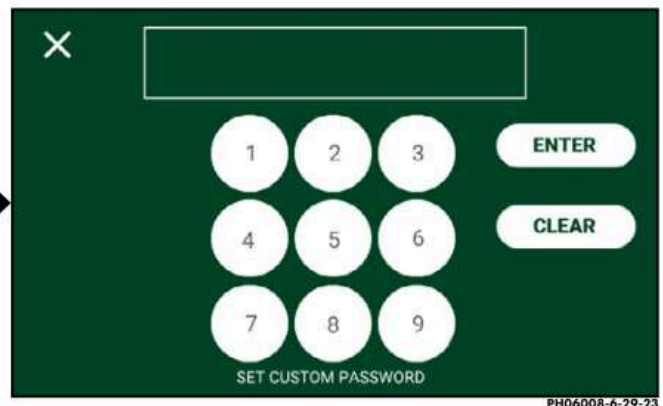
PH06119-10-3-23



PH05868-6-29-23



PH06431-4-11-24



PH06008-6-29-23

Security Options Screen

Accessed by tapping **Security** in Display Information and opens a keypad to enter a password. Enter the password and tap **ENTER** to gain access to the security options screen.

On the Security Options screen, the user can select which settings and functions of the machine require a password to change.

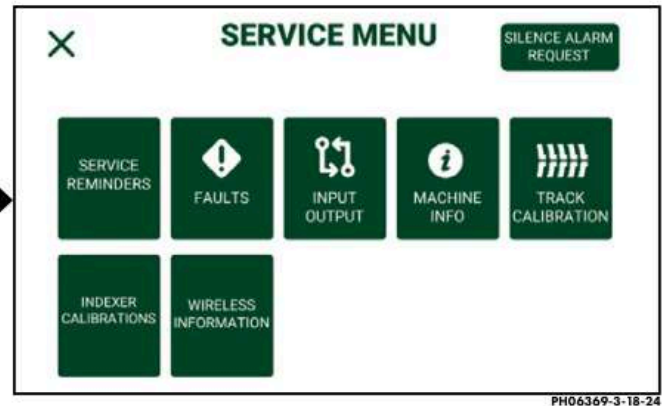
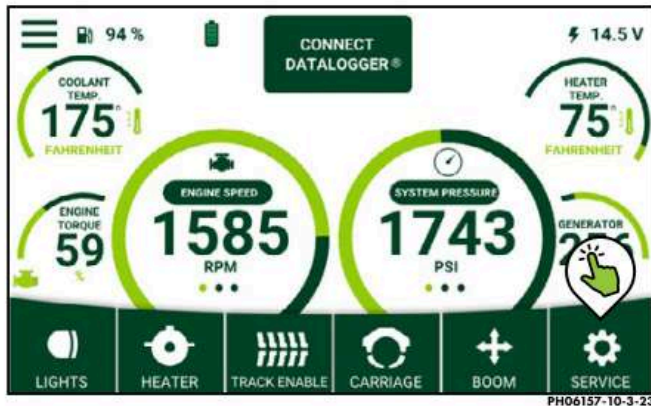
The settings that can be password protected are:

- Fault Current Detection Mode
- Collision Avoidance Override
- Facer Mode
- Facer Alarm
- RTD Mode
- Service Reminder Reset
- Service Reminder Selections
- Track Calibration
- Beacon Mode
- Jaw Mode Override
- Heater Dry-Out Mode
- Enable Facer

Tap **SET CUSTOM PASSWORD** to set a custom password.

If desired, enter custom password and press **ENTER**.

Tap the **X** to close these screens.



Service Menu Screen

Accessed by tapping **SERVICE** on the main screen and displays a menu of service items. Tapping a service item will open the designated service screen.

The alarm can also be silenced from this screen by tapping **SILENCE ALARM REQUEST**.

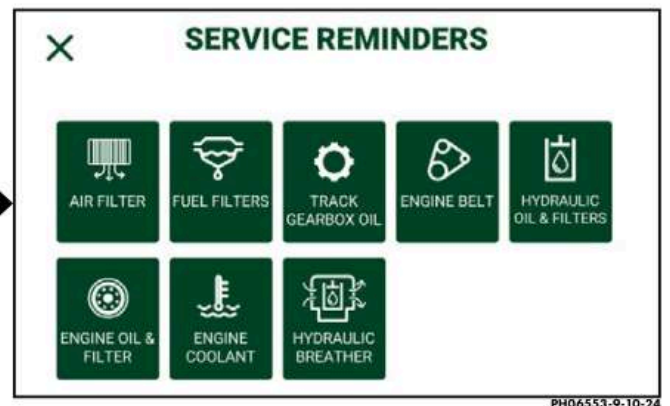
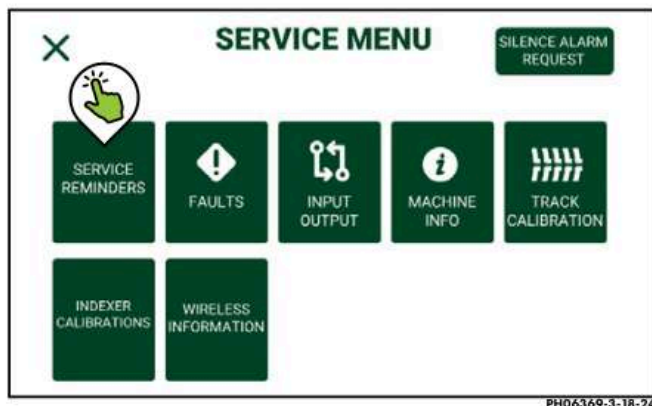


The alarm will only remain silenced until the machine is power cycled.

Tap the **X** to close this screen.

Service Menu Items:

- Service Reminders
- Faults
- Input / Output
- Machine Information
- Track Calibration
- Indexer Calibrations
- Wireless Information



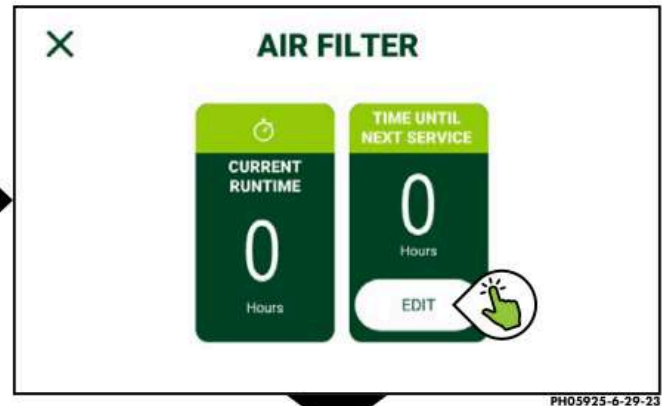
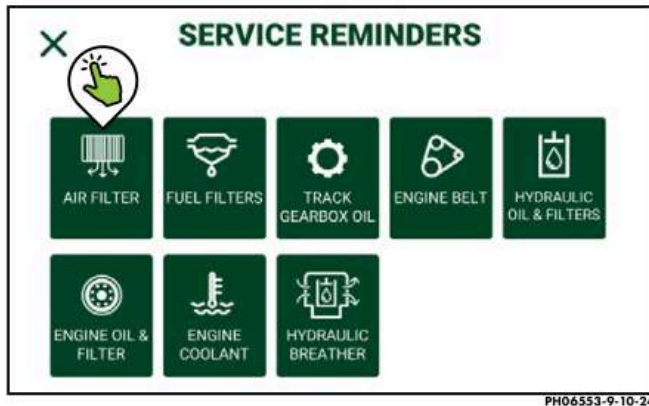
Service Reminders Screen

Accessed by tapping **SERVICE REMINDERS** in the Service Menu and displays a menu of reminders pertaining to the service of the machine. Tapping a reminder will open the designated reminder screen.

Tap the **X** to close this screen.

Service Reminder Items:

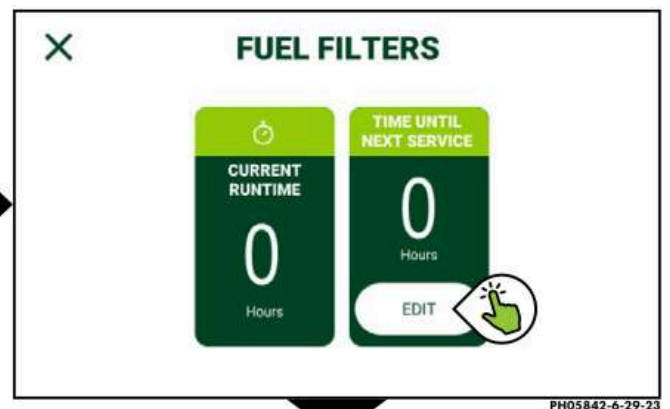
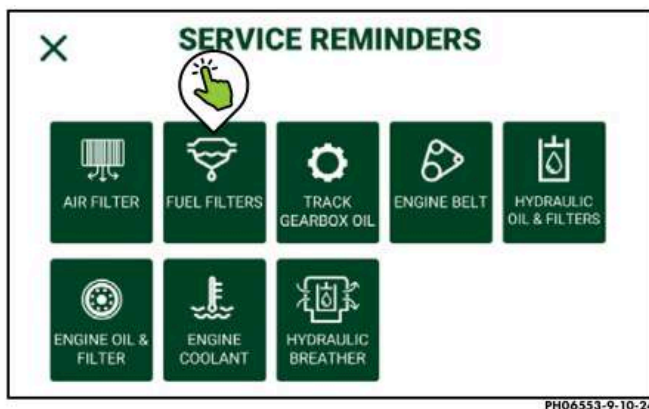
- Air Filter
- Fuel Filters
- Track Gearbox Oil
- Engine Belt
- Hydraulic Oil & Filters
- Engine Oil & Filter
- Engine Coolant
- Hydraulic Breather



Air Filter Screen

Displays live information about the current run time and the time until the next air filter service in (Hours). The time can be reset by tapping the **EDIT** button. Tap **RESET** and when the confirmation prompt appears, tap **CONTINUE** to reset the service schedule hours.

Tap the **X** to close this screen.

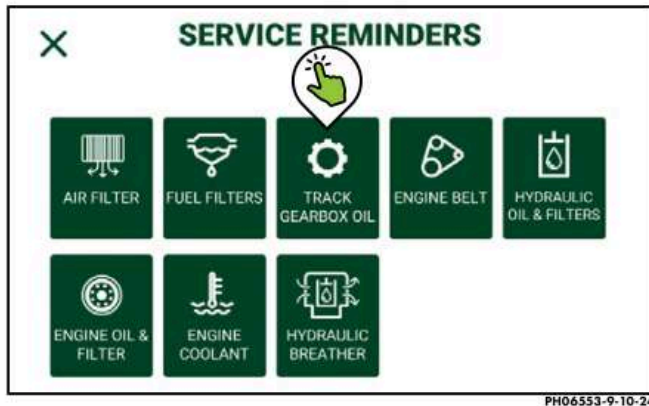


Fuel Filters Screen

Displays live information about the current run time and the time until the next fuel filter service in (Hours). The time can be reset by tapping the **EDIT** button. Tap **RESET** and when the confirmation prompt appears, tap **CONTINUE** to reset the service schedule hours.

Tap the **X** to close this screen.





PH06553-9-10-24

Track Gearbox Oil Screen

Displays the two intervals for gearbox oil service and allows for the resetting of the hours. Change the gearbox oil after the first 200 hours, then every year or 1000 hours.

Tap the **X** to close this screen.



PH05843-6-29-23



PH05737-6-29-23



PH06553-9-10-24

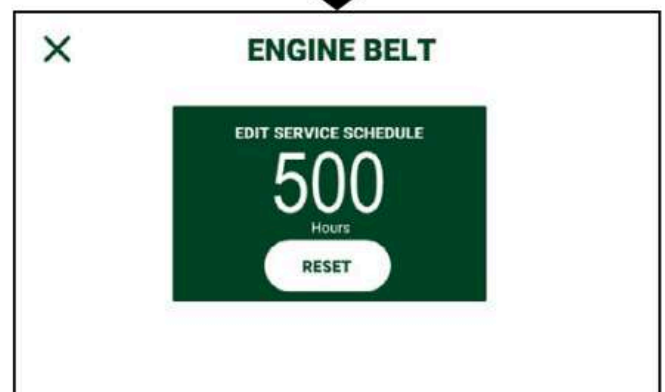
Engine Belt Screen

Displays live information about the current run time and the time until the next engine belt service in (Hours). The time can be reset by tapping the **EDIT** button. Tap **RESET** and when the confirmation prompt appears, tap **CONTINUE** to reset the service schedule hours.

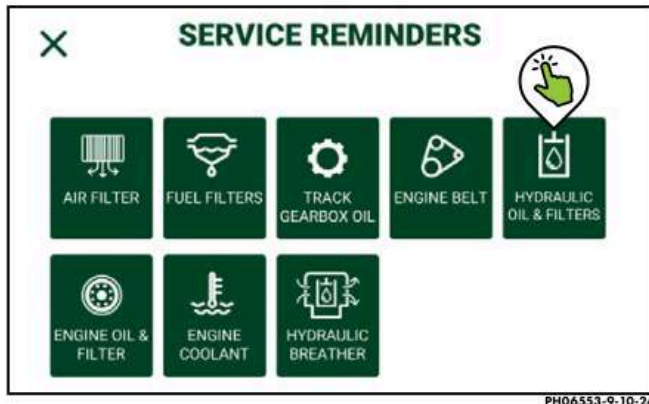
Tap the **X** to close this screen.



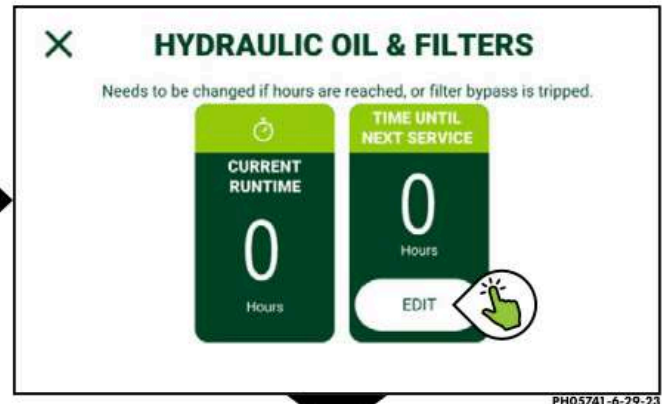
PH05844-6-29-23



PH05993-6-29-23



PH06553-9-10-24



PH05741-6-29-23

Hydraulic Oil & Filters Screen

Displays live information about the current run time and the time until the next hydraulic oil filter service in (Hours). The time can be reset by tapping the **EDIT** button. Tap **RESET** and when the confirmation prompt appears, tap **CONTINUE** to reset the service schedule hours.

Select the oil viscosity used to allow the system to shut down when there is a high oil temperature event. The different viscosities have different shut down temperatures.

Tap the **X** to close this screen.



PH05995-6-29-23



PH06553-9-10-24



PH05958-6-29-23

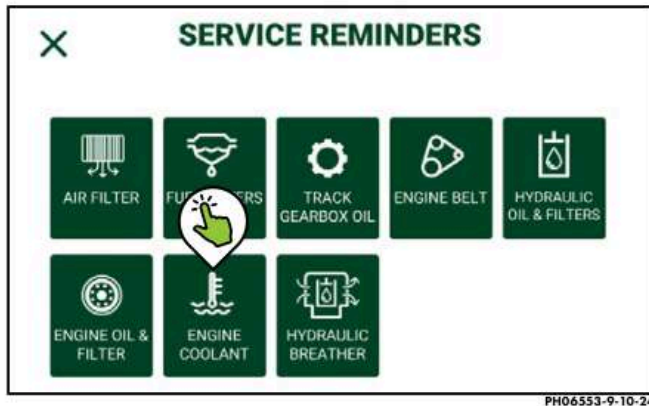
Engine Oil & Filter Screen

Displays live information about the current run time and the time until the next engine oil filter service in (Hours). The time can be reset by tapping the **EDIT** button. Tap **RESET** and when the confirmation prompt appears, tap **CONTINUE** to reset the service schedule hours.

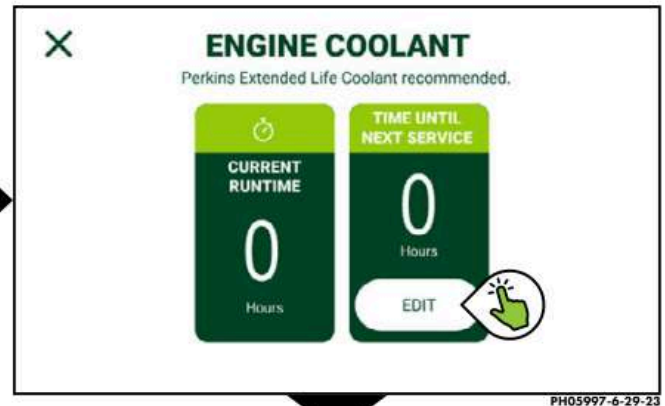
Tap the **X** to close this screen.



PH06423-4-10-24



PH06553-9-10-24



PH05997-6-29-23

Engine Coolant Screen

Displays live information about the current run time and the time until the next engine coolant service in (Hours). The time can be reset by tapping the **EDIT** button. Tap **RESET** and when the confirmation prompt appears, tap **CONTINUE** to reset the service schedule hours.

Use a 50/50 mix of ethylene-glycol coolant and clean, soft water. The machine is shipped from factory with IAT(green) coolant.

Tap the **X** to close this screen.



PH05998-6-29-23



PH06553-9-10-24



PH06584-1-23-25

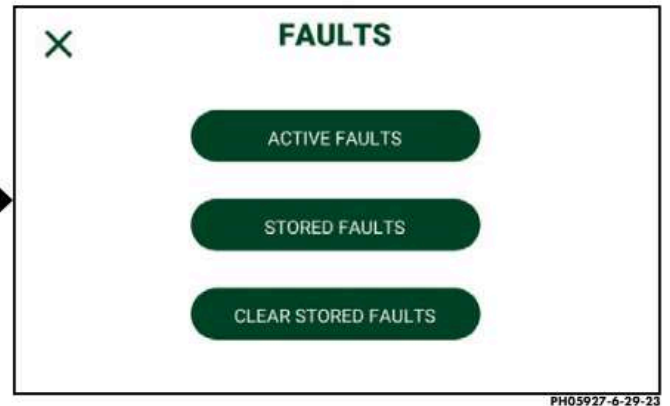
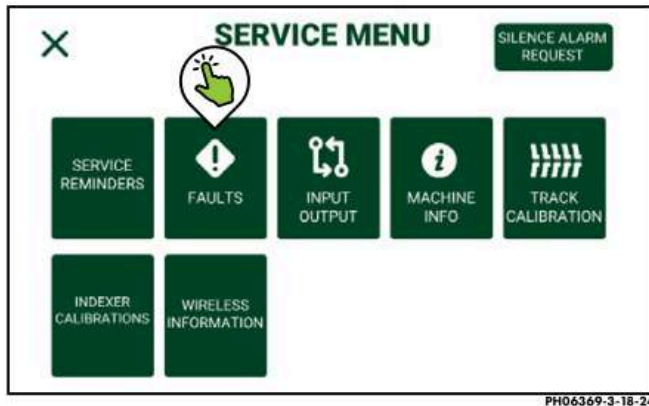
Hydraulic Breather Screen

Displays live information about the current run time and the time until the next hydraulic breather service in (Hours). The time can be reset by tapping the **EDIT** button. Tap **RESET** and when the confirmation prompt appears, tap **CONTINUE** to reset the service schedule hours.

Tap the **X** to close this screen.



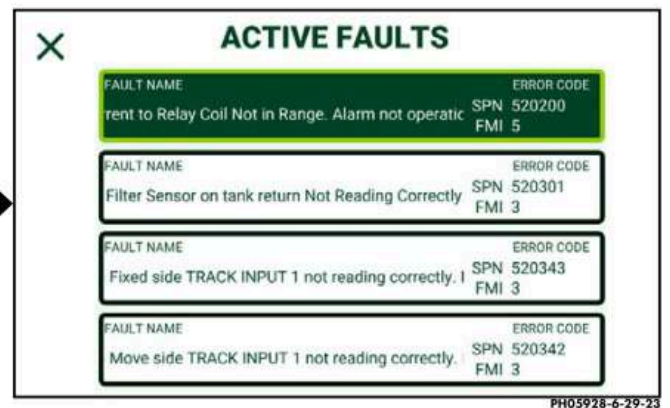
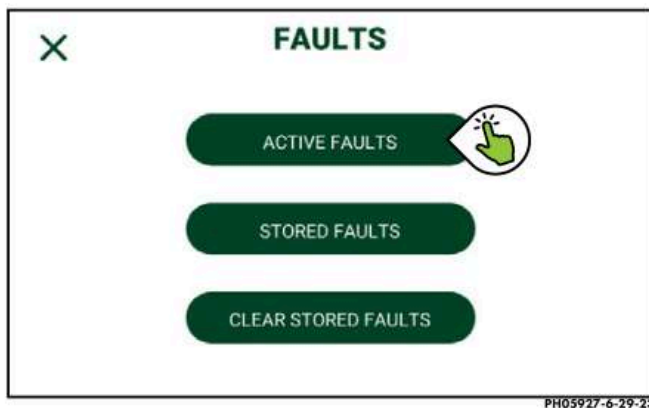
PH06585-1-23-25



Faults Screen

Accessed by tapping **FAULTS** in the Service Menu and displays menu for active faults, stored faults and clear stored faults. Touching any of the buttons will open the designated screen of that menu item.

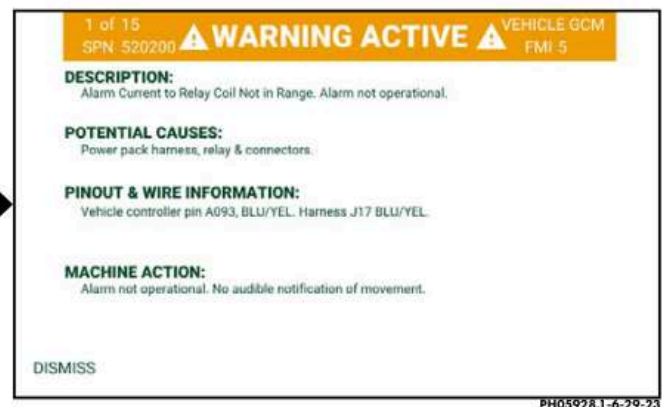
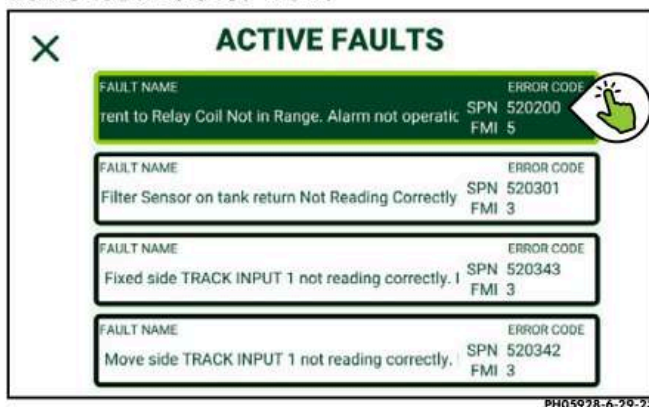
Tap the **X** to close any of these screens.



Active Faults Screen

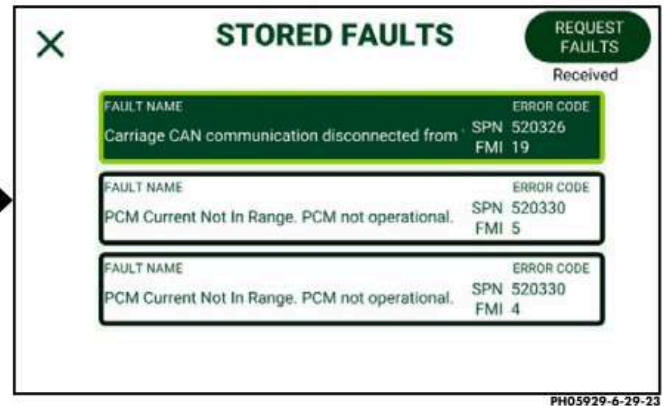
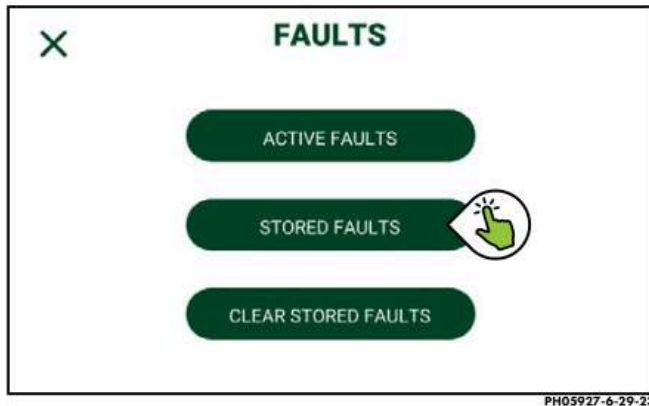
Tap **ACTIVE FAULTS** to view the list of active faults. Tap an active fault for a detailed view

Active Fault Detailed View:



Refer to the ["Faults"](#) section for more information regarding faults.

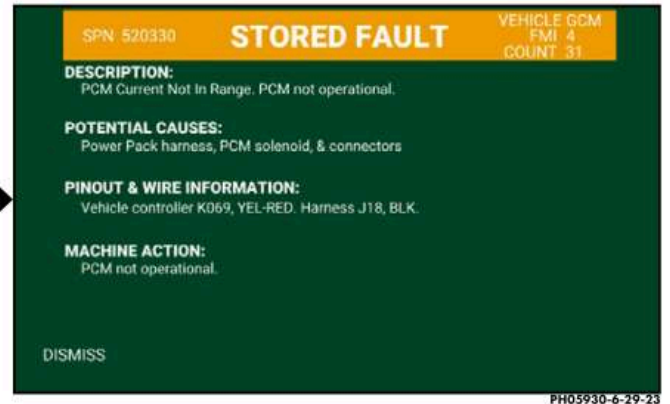
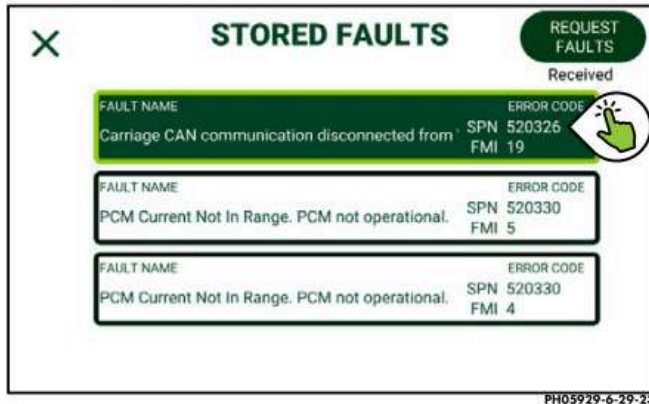
Tap **DISMISS** to close this view.



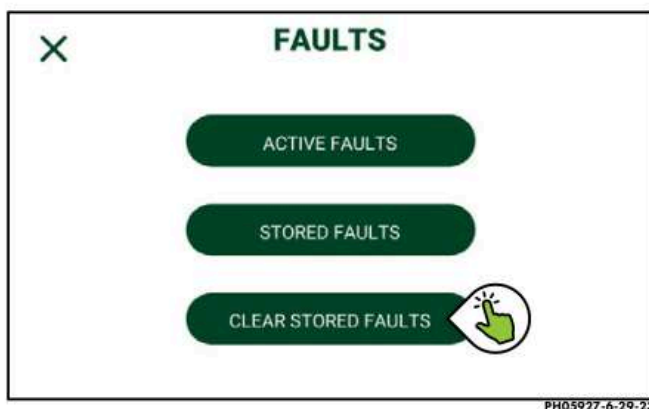
Stored Faults Screen

Tap **STORED FAULTS** to view the list of stored faults that the system has received. Tap a stored fault for a detailed view.

Stored Fault Detailed View:



Tap **DISMISS** to close this view.

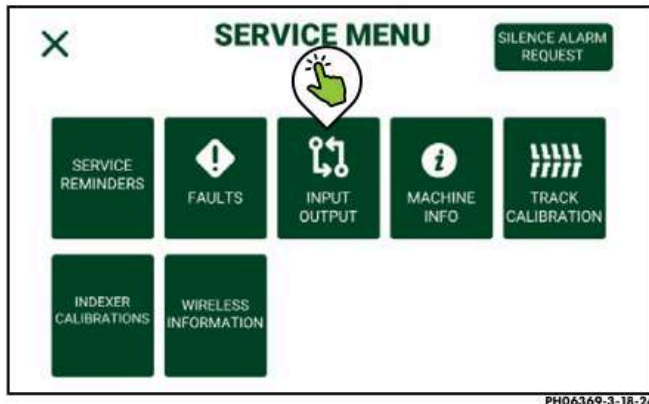


Clear Stored Faults Screen

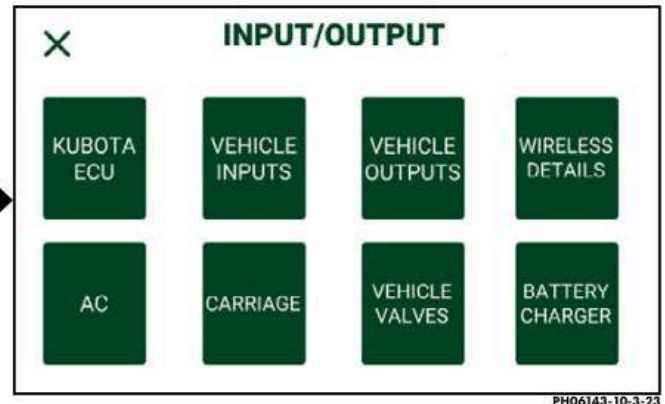
Tap **CLEAR STORED FAULTS** for the option to clear Kubota ECU, Vehicle GCM and Carriage GCM faults. Tapping the clear button will clear the appropriate fault codes.

IMPORTANT: Engine faults cannot be cleared while engine is running.

Tap the **X** to close this screen.



PH06369-3-18-24



PH06143-10-3-23

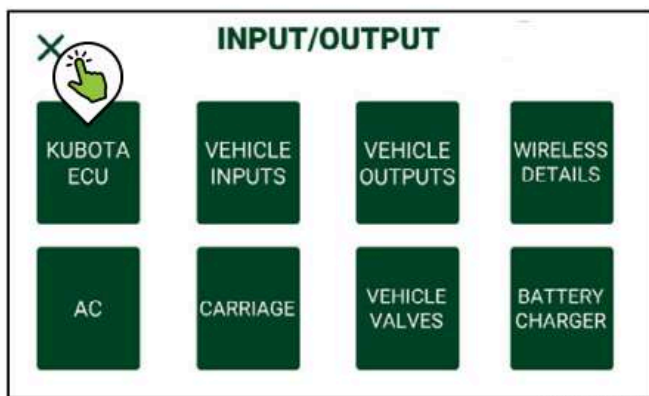
Input/Output Screen

Accessed by tapping **INPUT OUTPUT** in the Service Menu and displays different input/output sections of the machine. Tapping any of the buttons will open the designated screen providing information.

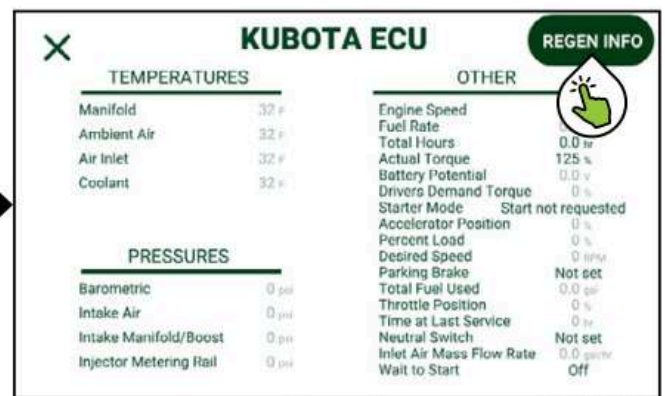
Tap the **X** to close any of these screens.

Input/Output Screen Items:

- Kubota ECU
- Vehicle Inputs
- Vehicle Outputs
- Wireless Details
- AC
- Carriage
- Vehicle Valves
- Battery Charger



PH06143-10-3-23



PH06144-10-3-23

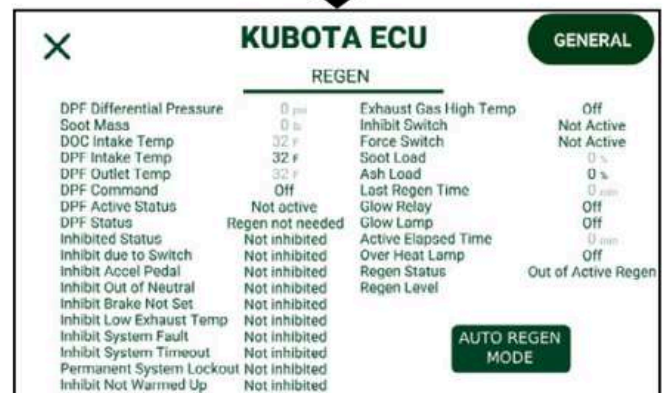
Kubota ECU Screen

Accessed by tapping **KUBOTA ECU** on the Input/Output screen and displays temperatures, pressures and other readings pertaining to the engine.

Tapping **REGEN INFO** in the Kubota ECU screen will display regen information and allow use of Auto Regen Mode.* Return to general Kubota ECU by tapping **GENERAL**.

NOTICE: It is not recommended to inhibit auto regen. The machine should be set and remain in auto regen mode at all times. This will allow the machine to perform and temporarily disable the auto regen capability when needed.

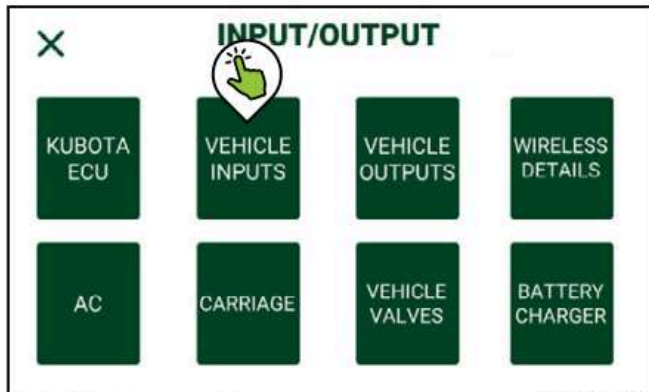
Refer to the "[Maintenance](#)" section for more information regarding regeneration.



PH06145-10-3-23

* Tapping **AUTO REGEN MODE** will inhibit auto regen. **INHIBIT REGEN MODE** button state (shown right) indicates auto regen is inhibited. Tapping again will re-enable auto regen mode.

INHIBIT REGEN MODE



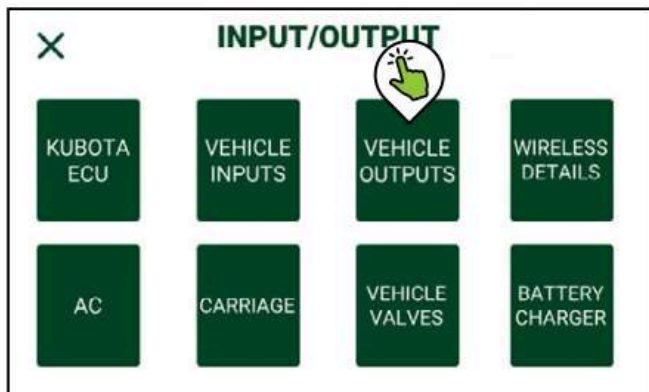
Vehicle Inputs Screen

PH06143-10-3-23

The data table for the Vehicle Inputs Screen, showing various vehicle parameters categorized by TEMPERATURES, OTHER, PRESSURES, TRACK, and LEVELS.

TEMPERATURES		OTHER	
Hydraulic Oil	123 F	EStop Dash	UP
RTD 1	73 F	Battery Volt	14.5 v
RTD 2	75 F	Sensor Volt	5.0 v
Ambient 1	100 F	Key Start	OFF
Datalogger Offset	12 F	TRACK	
PRESSURES		Right Reverse	48
Supply	1948 psi	Right Forward	50
Filter Bypass	0 psi	Left Reverse	49
Facer	8 psi	Left Forward	50
Air Filter	Not Tripped	LEVELS	
High Pressure Filter	Not Tripped	Fuel	74 %
		Hydraulic	NORMAL

PH06146-10-3-23



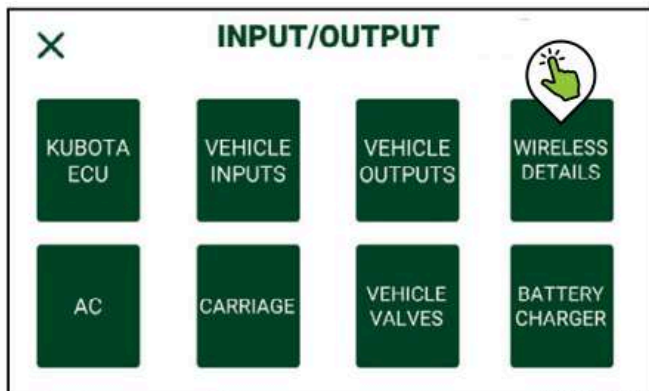
Vehicle Outputs Screen

PH06143-10-3-23

The data table for the Vehicle Outputs Screen, showing various vehicle outputs categorized by OTHER, TRACKS, and INDEXER.

OTHER		TRACKS	
Starter	OFF	Right Reverse	0
Alarm	OFF	Right Forward	0
Facer	OFF	Left Reverse	0
Gear Speed	LOW	Left Forward	0
Beacon	OFF	INDEXER	
Drive Light	OFF	Facer Out	OFF
EStop Override	OFF	Facer In	OFF
Fan	OFF	Heater Out	OFF
PCM	OFF	Heater In	OFF
Generator Motor	0 %	Index Right	OFF
Running Hours	0.0 hr	Index Left	OFF
		Index Lock	OFF

PH06147-12-6-23



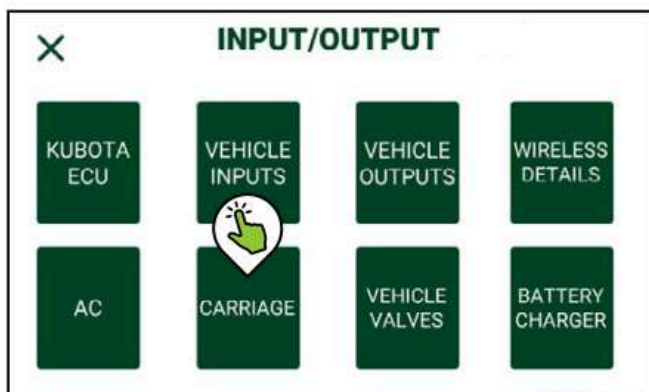
Wireless Details Screen

PH06143-10-3-23

The data table for the Wireless Details Screen, showing wireless status information categorized by CPV, SOC, WIFI, and SIGNAL.

WIRELESS DETAILS	
CPV	89.6 F
SOC	91.4 F
WIFI	104.0 F
SIGNAL	-56 dBm
SIGNAL AVG	-96 dBm

PH06153-10-3-23



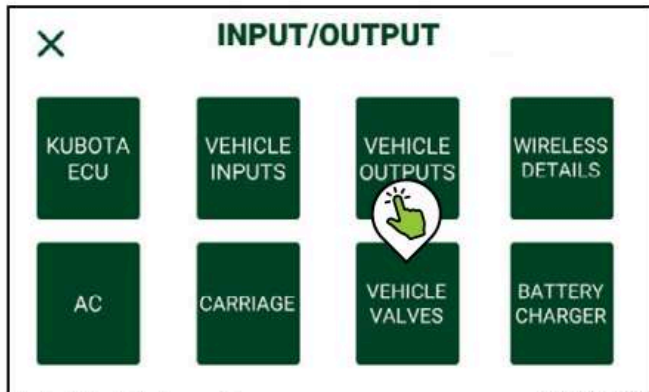
Carriage Screen

PH06143-10-3-23

The data table for the Carriage Screen, showing carriage status information categorized by INPUTS, JAWS, and OUTPUTS.

CARRIAGE	
INPUTS	
Carriage Position	0 %
Carriage Joystick	0 %
Indexer Position	0 %
Facer Position	0 %
Heater Position	0 %
Jaw Configuration	2 + 2
Port X High	0 psi
Port A	0 psi
EStop	UP
In Ditch	NOT DETECTED
OUTPUTS	
Alarm	OFF
Control Power	OFF
Carriage Open	0 %
Carriage Close	0 %
Indexer Left	0 %
Indexer Right	0 %
Work Light	OFF
JAWS	
Outer Fixed Close	OFF
Outer Fixed Open	OFF
Inner Floating Close	OFF
Inner Floating Open	OFF
Inner Movable Close	OFF
Inner Movable Open	OFF
Outer Movable Close	OFF
Outer Movable Open	OFF

PH06474-4-25-24



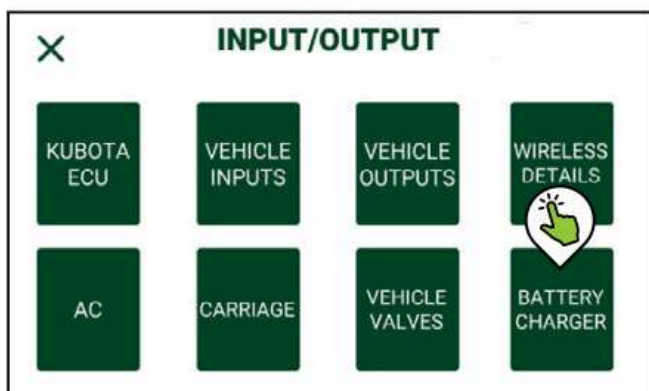
Vehicle Valves Screen

PH06143-10-3-23

VEHICLE VALVES					
VALVE	TEMPERATURE	FLOW A		FLOW B	
		Command/Receive		Command/Receive	
Left Track (Section 1)	32 F	0 %	0 %	0 %	0 %
Right Track (Section 2)	32 F	0 %	0 %	0 %	0 %
Gear Speed (Section 3)	32 F	0 %	0 %	N/A	
Swing (Section 4)	32 F	0 %	0 %	0 %	0 %
Boom (Section 5)	32 F	0 %	0 %	0 %	0 %
Curl (Section 6)	32 F	0 %	0 %	0 %	0 %
Extend (Section 7)	32 F	0 %	0 %	0 %	0 %
CLEAR		CLEAR		CLEAR	
CLEAR		CLEAR		CLEAR	
CLEAR		CLEAR		CLEAR	
CLEAR		CLEAR		CLEAR	

Left Track
(Section 1)

PH06250-1-12-24

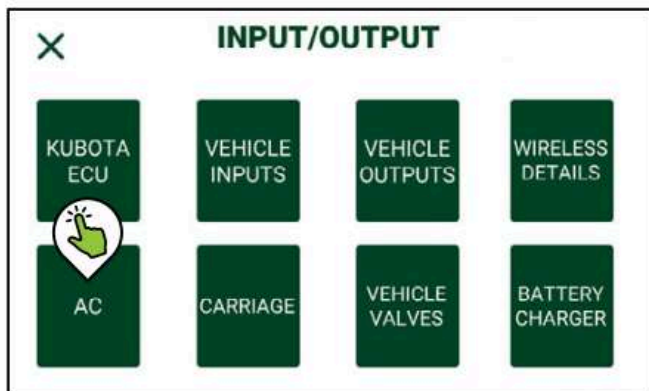


DataLogger Battery Charger Screen

PH06143-10-3-23

DATALOGGER® BATTERY CHARGER			
State of Charge	0 %	Battery Version	0
Time to Charge	0 min	Bootloader Version	0.0.0
Battery Temp	32.0 F		
Battery Voltage	0 mV		
Battery Install	Not Installed		
Cell 1 Voltage	0 mV		
Cell 2 Voltage	0 mV		
Battery Current	0 mA		
Board Temp	32.0 F		

PH06251-1-12-24



AC Screen

PH06143-10-3-23

AC	
RMS	
Generator Voltage	0 V
Generator Current	0 A
Generator Frequency	0 Hz
POWER	
Active	0 W
OTHER	
Board Temperature	79 F
Heater On Hrs	198.1 hr

PH06148-10-3-23

This screen allows the testing and resetting of the GFCI and the resetting of the HEFD.

IMPORTANT: The Fault Current Detection mode displayed during the test is based on the selection made from the **Advanced Settings** section of the **User Settings** screen.

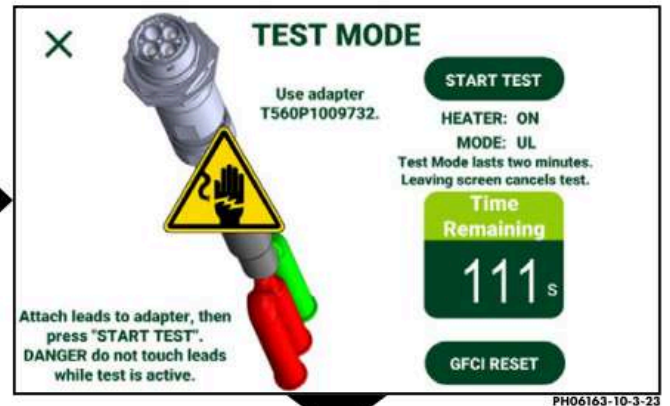
To test the GFCI, tap the **TEST GFCI** button. A prompt displays to confirm the test. Tap continue to start the test. The GFCI will reset after the test is complete.

To reset the GFCI, tap the **GFCI RESET** button. A prompt displays to confirm the reset. Tap continue to reset.

To reset the HEFD, tap the **HEFD RESET** button. A prompt displays to confirm the reset. Tap continue to reset.

Tapping **TEST MODE** on the AC screen will open the Test Mode screen. See next page for more information on the Test Mode screen.

Tap the **X** to close this screen.



AC - Test Mode

Accessed by tapping **TEST MODE** on the AC screen.

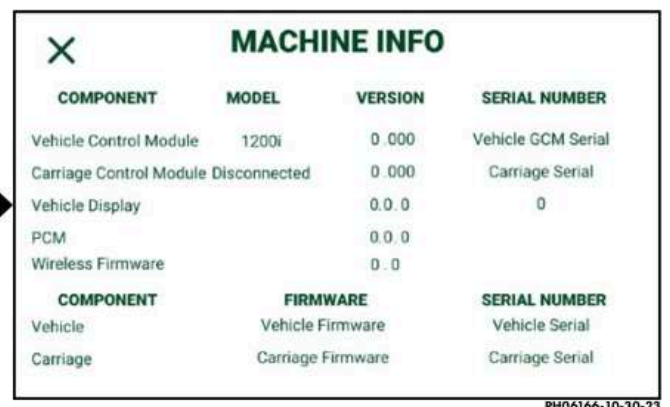
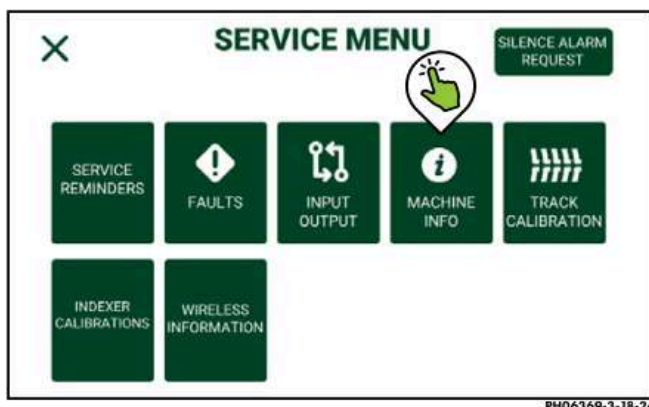
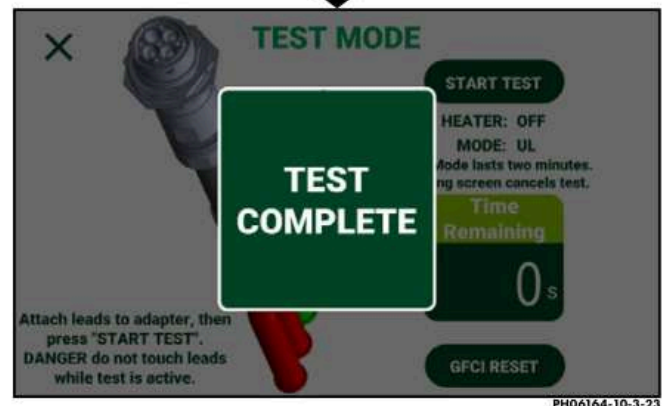
Attach the test leads and tap **START TEST** to begin test. The test lasts 2 minutes and leaving this screen will cancel a test in progress.

Do not touch the test leads during the test.

DANGER

Do not touch live heater connector pins. Doing so could result in electrical shock. Cancel or complete test before removing test leads.

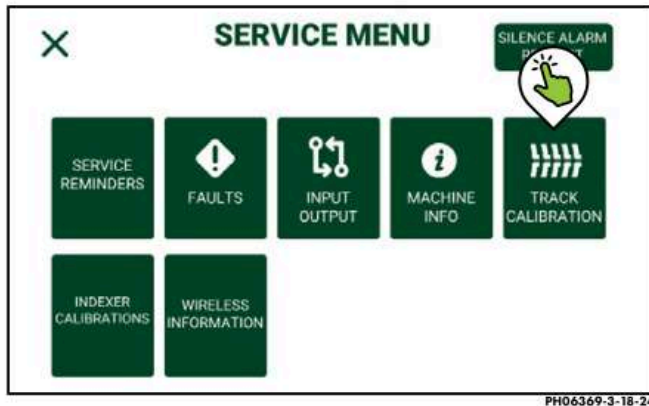
Screen will display "TEST COMPLETE" when the test has been completed.



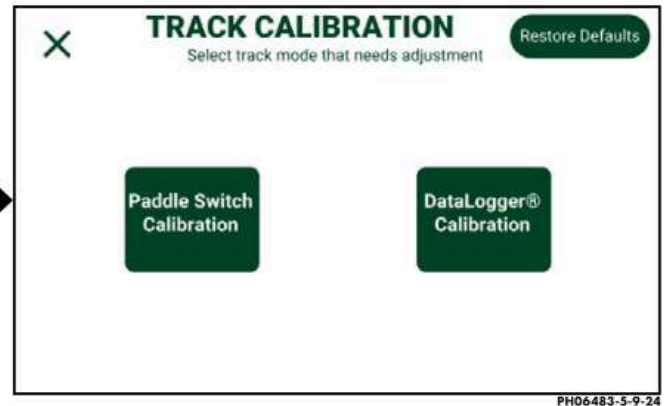
Machine Info Screen

Accessed by tapping **MACHINE INFO** in the Service Menu and displays machine information about the control and display components on the machine. This screen is often needed when troubleshooting.

Tap the **X** to close this screen.



PH06369-3-18-24



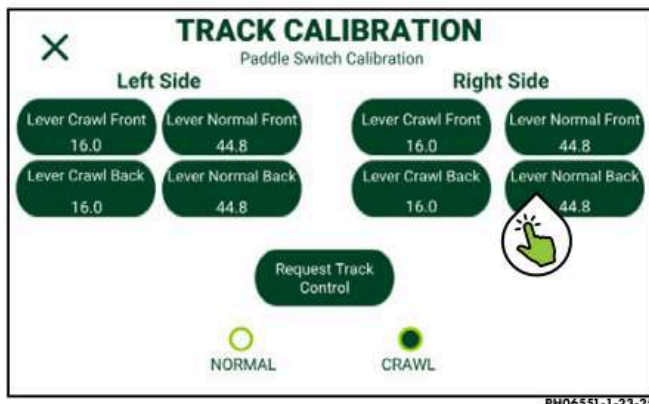
PH06483-5-9-24

Track Calibration Screen

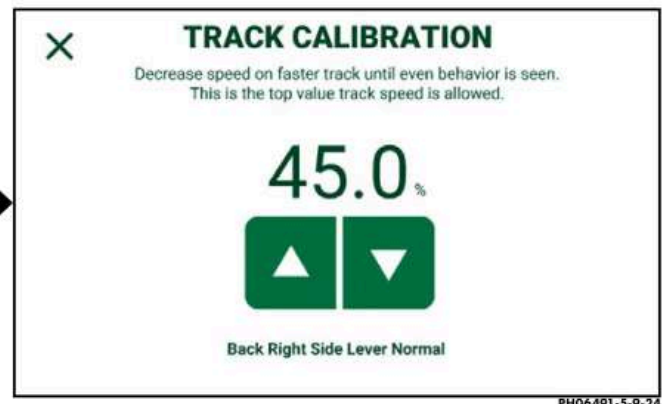
Accessed by tapping **TRACK CALIBRATION** in the Service Menu and allows track speed adjustment per track for each track speed selection. Speeds can be adjusted for the paddle lever controls and the DataLogger joystick control. Tap **Paddle Switch Calibration** for paddle lever track speed adjustment and **DataLogger Calibration** for DataLogger joystick track speed adjustment.

Tapping **Restore Defaults** will reset the speeds to the default values.

Tap the **X** to close this screen.



PH06551-1-23-25

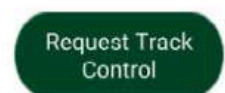


PH06491-5-9-24

Paddle Lever Track Calibration

Accessed by tapping **Paddle Switch Calibration** in the Track Calibration screen and displays paddle lever calibration settings for normal and crawl speeds on the left and right tracks. Tapping a track mode button will open an adjustment screen for changing the percent value of the selected tracks speed.

Tapping **Request Track Control** will enable track control from the paddle levers for testing speed adjustments. When track control is enabled this way, the **Request Track Control** button will change to display a tracking animation indicating paddle lever track control is active.



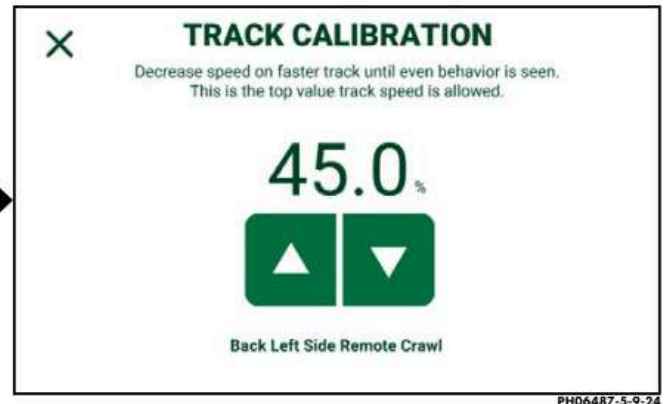
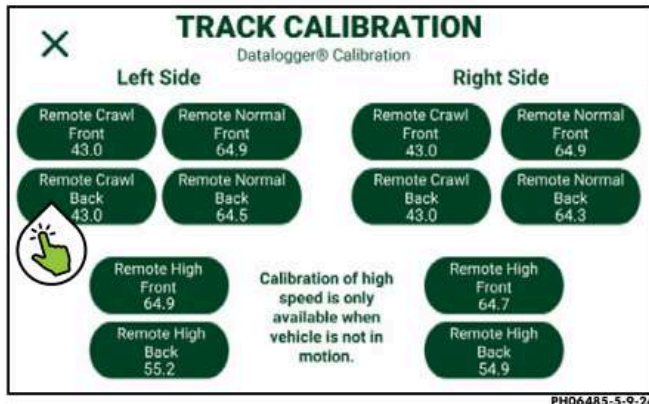
Paddle lever track control disabled



Paddle lever track control enabled

Switch between normal and crawl speeds by tapping the **NORMAL** or **CRAWL** nodes. A solid node indicates which speed is enabled.

Tap the **X** to close either screens.

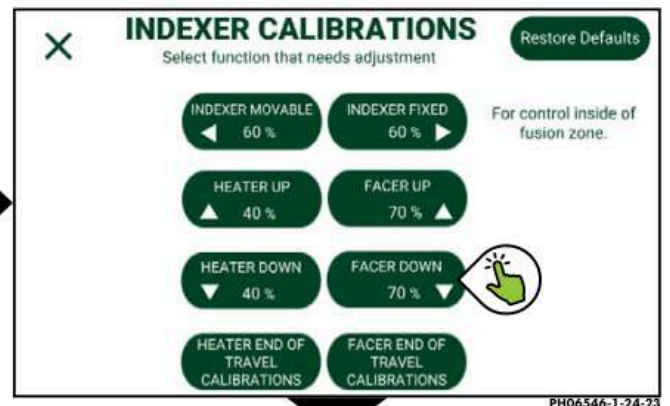
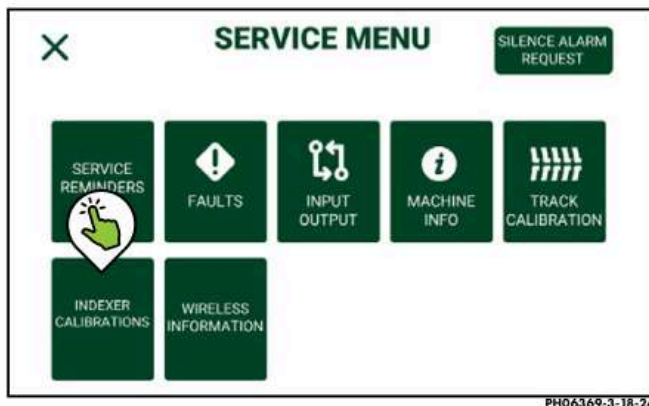


DataLogger Joystick Track Calibration

Accessed by tapping **DataLogger Calibration** in the Track Calibration screen and displays DataLogger joystick calibration settings for normal, crawl and high speeds on the left and right tracks. Tapping a track mode button will open an adjustment screen for changing the percent value of the selected tracks speed.

NOTICE: Calibration of high speed is only available when vehicle is not in motion.

Tap the **X** to close either screens.



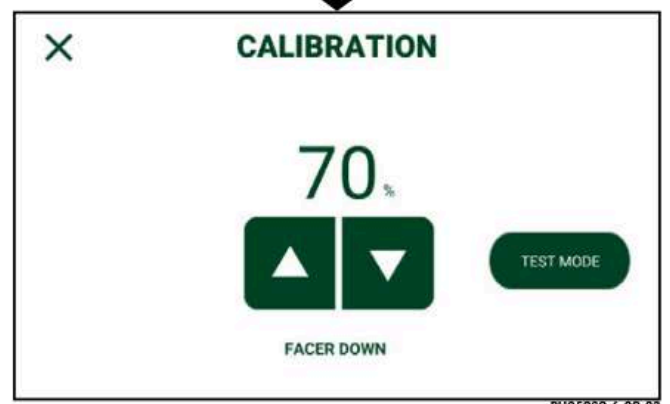
Indexer Calibrations Screen

Accessed by tapping **INDEXER CALIBRATIONS** in the Service Menu and displays a menu of indexer adjustment settings. These settings are used to adjust the speed at which the indexer moves from left to right as well as the speeds at which the heater and facer are pivoted in and out. Tapping an actuation speed button will open an adjustment screen for changing the percent value of the selected functions actuation speed.

There are also end-of-travel calibrations settings for the heater and facer. These are used to calibrate the up and down positions of the heater and facer to achieve proper collision avoidance behavior.

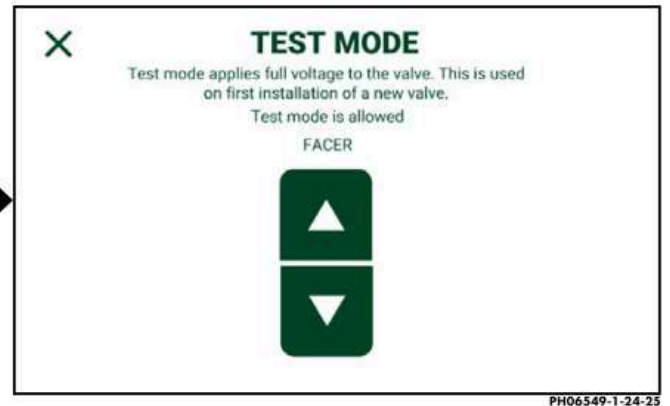
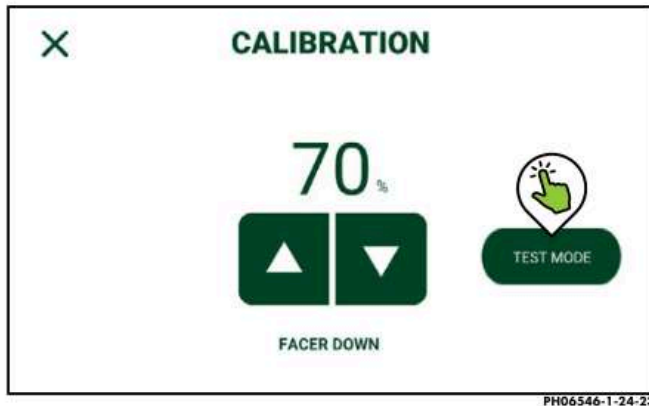
Tapping **Restore Defaults** will reset the actuation speeds and end of travel positions to the default values.

Tap the **X** to close this screen.



NOTICE: The carriage must be connected to the vehicle in order to edit indexer calibrations.

NOTICE: Heater or facer end-of-travel calibration may be needed if collision avoidance is not functioning properly.



Indexer Calibrations - Test Mode

Accessed by tapping **TEST MODE** in a heater or facer calibration adjustment screen.

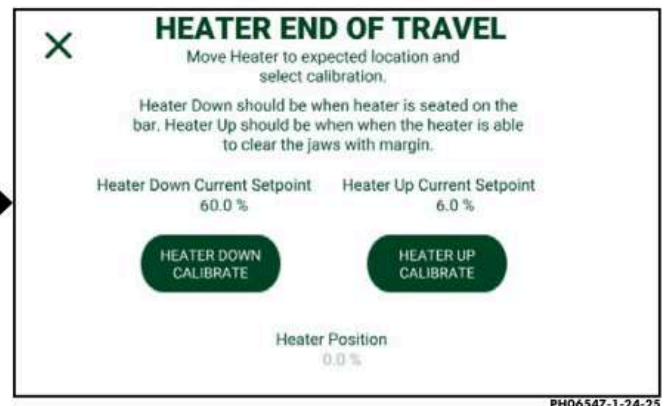
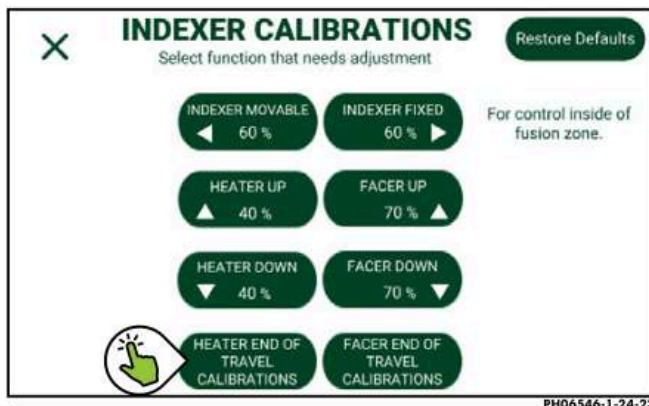
Test Mode is used to test the operation of a newly installed valve by applying full voltage to the valve specified. Use the directional pad in the Test Mode screen to fully actuate the valve in both directions following install.

NOTICE: Test mode is only available when the engine is off.

The Test Mode screen will indicate if test mode is disabled due to the engine running as shown below.

Test mode disabled while engine is running.

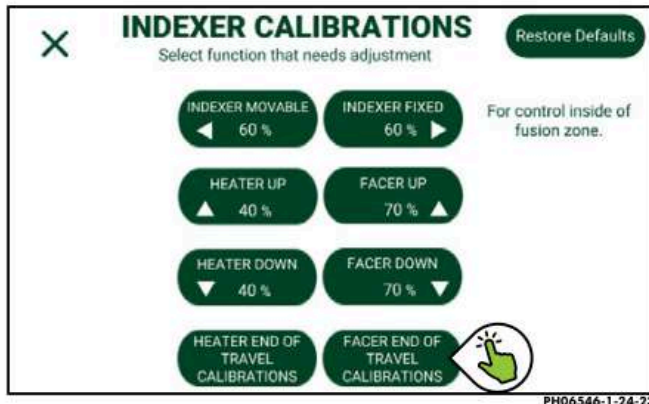
Tap the **X** to close this screen.



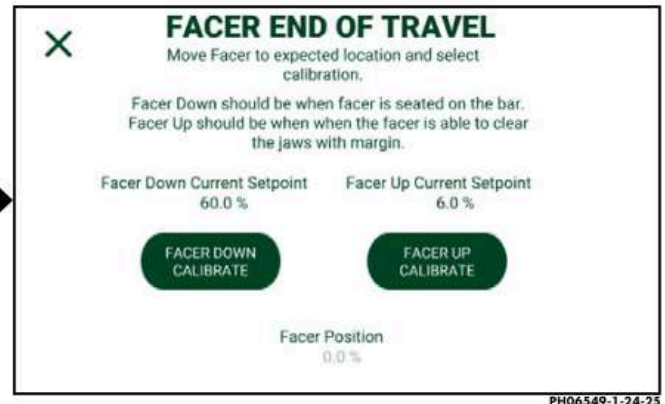
Heater End-of-Travel Calibrations

Tap **HEATER END OF TRAVEL CALIBRATIONS** to calibrate the heater up and down positions.

Use the machine control interface to pivot the heater down onto the guide rod, tap **HEATER DOWN CALIBRATE** on the vehicle display and tap **CONTINUE** on the confirmation prompt to capture the heater down setpoint. Then, pivot the heater completely up, tap **HEATER UP CALIBRATE** on the vehicle display and tap **CONTINUE** on the confirmation prompt to capture the heater up setpoint.



PH06546-1-24-23

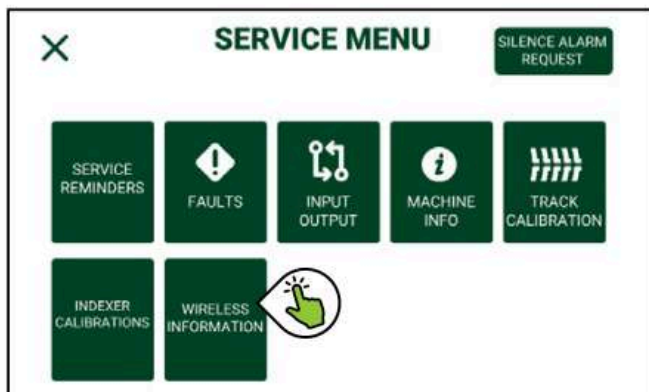


PH06549-1-24-23

Facer End-of-Travel Calibrations

Tap **FACER END OF TRAVEL CALIBRATIONS** to calibrate the facer up and down positions.

Use the machine control interface to pivot the facer down onto the guide rod, tap **FACER DOWN CALIBRATE** on the vehicle display and tap **CONTINUE** on the confirmation prompt to capture the facer down setpoint. Then, pivot the facer completely up, tap **FACER UP CALIBRATE** on the vehicle display and tap **CONTINUE** on the confirmation prompt to capture the facer up setpoint.



PH06369-3-18-24



PH06142-10-3-23

Wireless Information Screen

Accessed by tapping **Wireless Information** in the Service Menu and contains information required to connect to the Tritan™ from a DataLogger. The QR code allows the DataLogger to connect to the Tritan directly. The serial number and PIN code can be used to connect if environmental conditions prevent the DataLogger from reading the QR Code correctly. In this case, the DataLogger can connect to the Tritan by going into "Settings" > "System" > "Setup Connection". Then, choose the serial number from the selection list and enter the PIN code. Note that, as a security measure, the PIN and QR code changes every time the Tritan is power cycled.

The channel changing feature can be used to improve connectivity in environments with a large amount of wireless noise. If connectivity issues are encountered, changing to a different Wifi channel may resolve the problem. Note that the Tritan needs to be powered off completely and restarted (including DataLogger reconnection) for a channel change to take effect.

If a wireless connection is unsuccessful, the DataLogger can also be directly tethered to the data port on the carriage.

Tap the **X** to close this screen.



Machine Control Interface

Contains all vehicle and carriage function controls needed to operate and maneuver the machine from the DataLogger. The machine control interface consists of three panels: **Center Operations Panel**, **Left Control Panel** and **Right Control Panel**. The Center Operations Panel is static and contains status information and machine function buttons. The left and right control panels change depending on center operations panel selections and contain controls related to specific machine functions.

Center Operations Panel

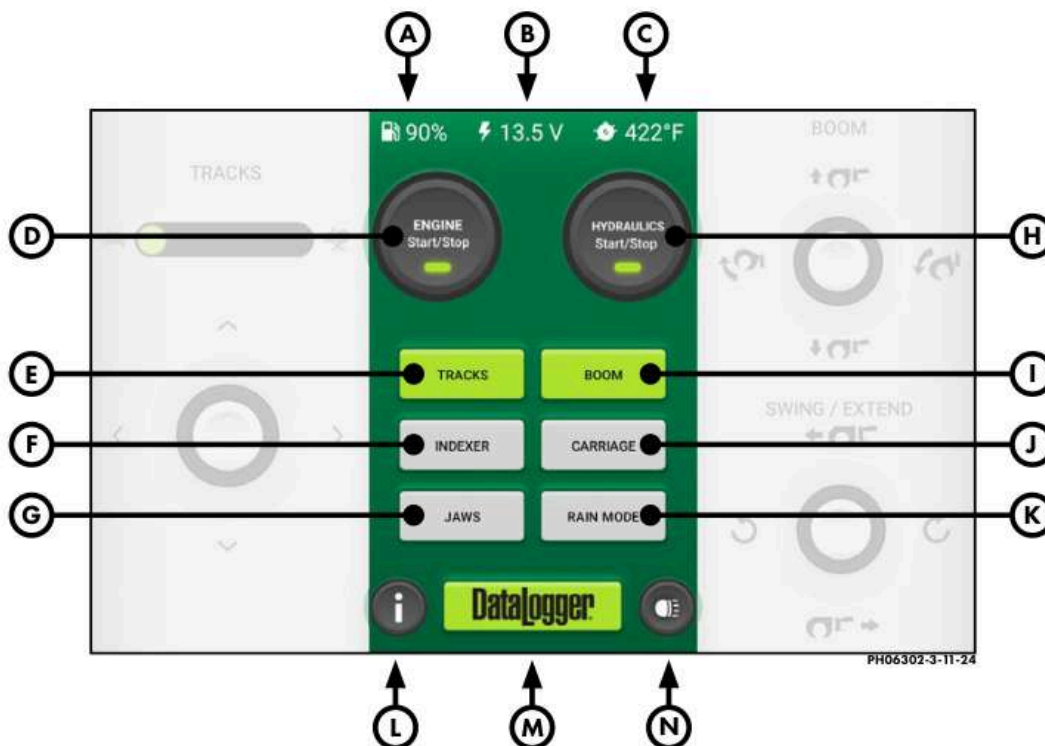
Contains a Start/Stop button for the engine and hydraulics system, status information, six function control buttons, an information button and a button to toggle vehicle lights. There is also a button to switch back to the DataLogger interface.

Left Control Panel

Contains controls for operating: **Tracks**, **Indexer** and **Jaws**.

Right Control Panel

Contains controls for operating: **Boom** and **Carriage**.



Center Operations Panel

A - Fuel Level

Displays fuel level percentage.

B - Battery Voltage

Displays vehicle battery voltage.

C - Heater Indicator

Indicates whether heater is on or off and displays heater temperature.

D - Engine Start/Stop

Starts and stops engine.

E - Tracks Button

Activates tracks control panel.

F - Indexer Button

Activates indexer control panel.

G - Jaws Button

Activates jaws control panel.

H - Hydraulics Start/Stop Button

Engages and disengages hydraulic system.

I - Boom Button

Activates boom control panel.

J - Carriage Button

Activates carriage control panel.

K - Rain Mode Button*

Opens the rain mode control function.

**This button is only present if Rain Mode has been enabled in Tritan Management.*

L - Information Button

Opens additional information window.

M - DataLogger Button

Opens the DataLogger interface.

N - Lights Button

Toggles vehicle drive lights on and off.



Tracks Control Panel

A - Tracking Speed Toggle

Toggles between three tracking speeds: **High**, **Normal** and **Crawl**.

B - Tracking Joystick

Engages the tracks on the left and right side of the machine.

Boom Control Panel

C - Boom Joystick

Raises and lowers boom and curls carriage up and down.

D - Swing/Extend Joystick

Extends and retracts boom and swings vehicle clockwise and counterclockwise.



Jaws Control Panel

E - Outer Fixed Jaw Touch Pad

Opens and closes the outer fixed jaw.

F - Inner Floating Jaw Touch Pad

Opens and closes the inner floating jaw.

G - Jaw Locking Toggle

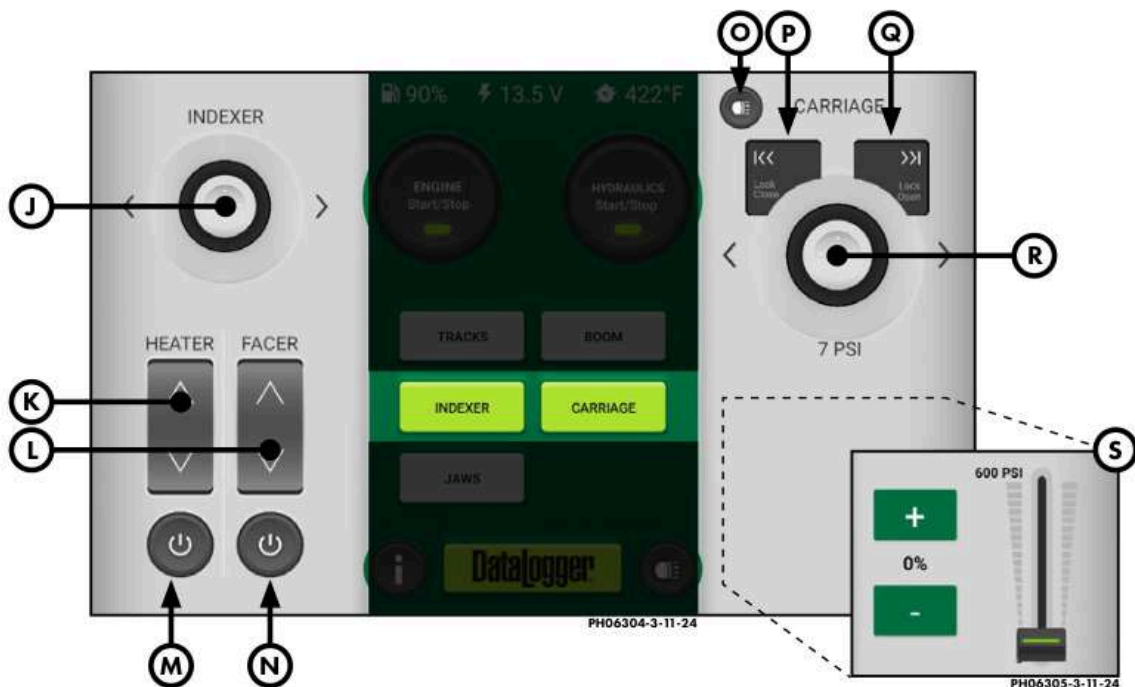
Locks jaws together to open and close simultaneously.

H - Inner Movable Jaw Touch Pad

Opens and closes the inner movable jaw.

I - Outer Movable Jaw Touch Pad

Opens and closes the outer movable jaw.



Indexer Control Panel

J - Indexer Joystick

Moves indexer left and right.

K - Heater Pivoting Touch Pad

Pivots the heater in and out of the carriage.

L - Facer Pivoting Touch Pad

Pivots the facer in and out of the carriage.

M - Heater On/Off Button

Toggles heater on and off.

N - Facer On/Off Button

Toggles facer on and off.

Carriage Control Panel

O - Carriage Lights Button

Toggles carriage lights on and off.

P - Carriage Lock Close Button

Locks carriage closed.

Q - Carriage Lock Open Button

Locks carriage open.

R - Carriage Joystick

Opens and closes carriage.

S - Pressure Control Slider*

Controls carriage pressure.

**This slider is only present when the facer is on, during pipe alignment verification and during manual drag measurement.*



PH06307-3-11-24

Additional Information

Tapping the information button in the center operations panel will open the additional information window. This window displays system pressure, engine RPM, carriage substate and other relevant system information for troubleshooting.

Tap **SILENCE ALARM** to temporarily disable alarm.

Tap **DISMISS** to hide window.

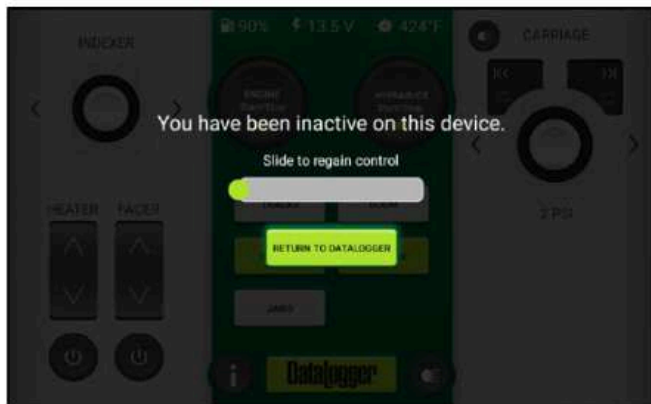


PH06308-3-11-24

Pressure Control Slider

This slider is present in the carriage control panel when the facer is on, during pipe alignment verification and during manual drag measurement. Slide up to increase carriage pressure, slide down to decrease carriage pressure, and make fine-tune adjustments with the +/- buttons.

NOTICE: The position of the slider does not directly correlate with carriage pressure. The percentage shown beside the slider is only indicative of slider position.



PH06365-3-12-24

Machine Control Timeout

As a safety measure, control from the machine control interface will time out after three minutes of inactivity.

To regain control, drag the touch slider to the right.

The option to switch to the DataLogger interface is also present on this screen.



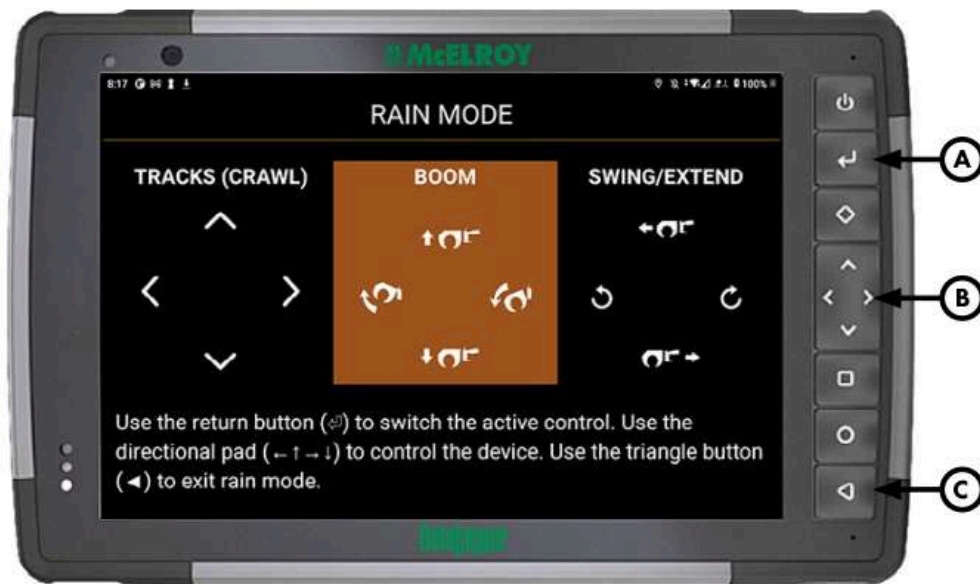
PH06302-3-11-24

Rain Mode Button

The Rain Mode button is present when enabled in [Tritan Management](#) on the DataLogger.

Tapping the **RAIN MODE** button in the center operations panel will activate the rain operation mode. This mode is for driving the vehicle and booming with the hard buttons on the tablet when precipitation that could interfere with touch screen controls is present.

Press  on the tablet to exit rain mode.



* Boom function control active.

Rain Mode

⚠ WARNING

Rain and other precipitation can cause unwanted actuation or loss of touch screen controls if it were to fall on the screen. Use Rain Mode in these conditions to prevent unwanted machine movement.

Accessed by tapping the **RAIN MODE** button on the machine control interface. Because the machine is operated with a touch screen from the machine control interface, rain and other precipitation can cause unwanted actuation of controls if it were to fall on the screen. Rain Mode allows the operator to use the physical buttons and directional pad on the DataLogger to control three vehicle movement functions: **Tracks (Normal, High Speed and Crawl)**, **Boom** and **Swing/Extend**.

An orange highlight indicates which function control is active.

Tracks

A - Return Button

Press once to engage high speed tracking. Press again to engage crawl tracking. Press a third time to change to boom function control.

B - Directional Pad

Engages the tracks on the left and right side of the machine in the selected speed.

C - Triangle Button

Exits rain mode.

Boom

A - Return Button

Changes to swing/extend function control.

B - Directional Pad

Raises and lowers boom and curls carriage in and out.

C - Triangle Button

Exits rain mode.

Swing/Extend

A - Return Button

Changes to tracking function control.

B - Directional Pad

Extends and retracts boom and swings vehicle clockwise and counterclockwise.

C - Triangle Button

Exits rain mode.

OPERATION - BUTT FUSION

Read Before Operating



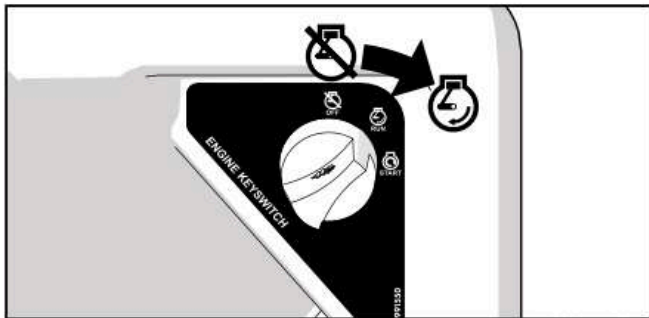
STOP-6-9-23

Before operating this machine, please read this manual thoroughly and keep a copy available for future reference.

Return manual to the literature tube when not in use. This manual is to be considered part of the machine.

Connecting the DataLogger

From the vehicle console, turn the key switch from **OFF** to **RUN** to allow the vehicle display to power on.



CD03001-10-30-23

Once the display is powered on, a prompt will appear on-screen to connect the DataLogger wirelessly via QR code.

In cases where this prompt has been dismissed, tap the **CONNECT DATALOGGER** button at the top of the main screen to redisplay the QR code.

The QR code can also be found on the [Wireless Information](#) screen.



PH06208-12-6-23

Connecting via QR code

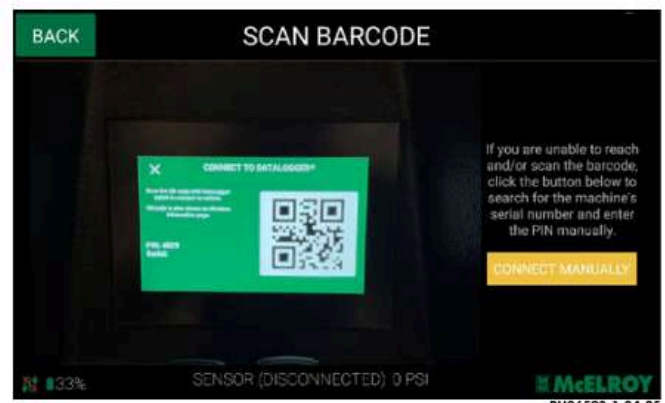
From the DataLogger home screen, tap **REMOTE CONNECT**.

NOTICE: The **REMOTE CONNECT** button is only present if a Tritan machine has been added to the Manage Machines screen found in DataLogger Settings.



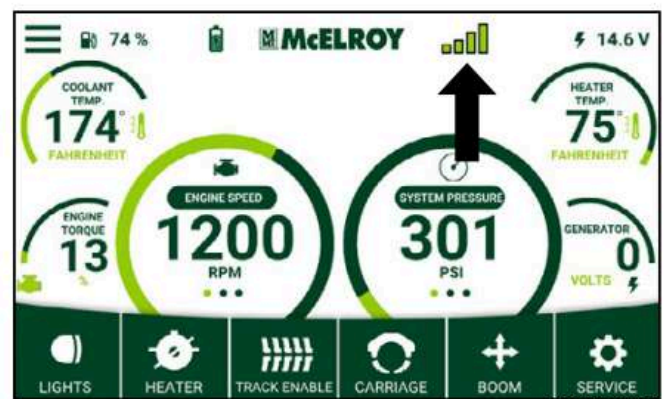
PH06022-6-9-23

Scan the QR code using the camera to pair.



PH06593-1-24-23

Once paired, a connection strength icon will appear on the vehicle display indicating that the DataLogger is connected. This icon also indicates the strength of the connection between the DataLogger and the machine.

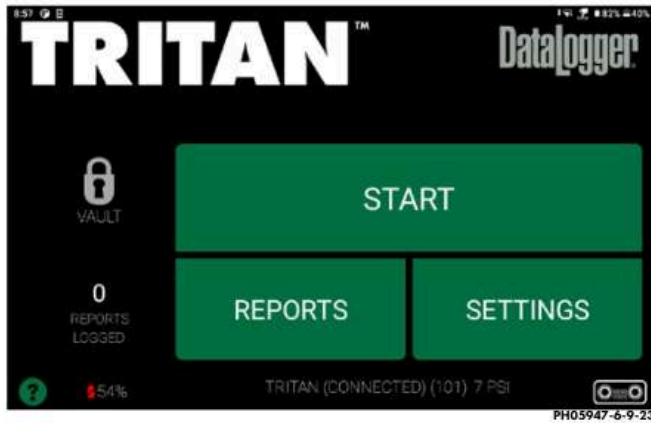


PH06103-10-3-23

IMPORTANT: Movement control must be enabled on the DataLogger in order to control machine functions from the machine control interface.

See [Control Hand-Off](#) in this section for instructions on enabling movement control.

The DataLogger home screen will also indicate that it is connected to the machine. The Tritan™ logo will be present at the top of the screen along with the machine control interface button in the bottom right of the screen.



Connecting via manual PIN entry

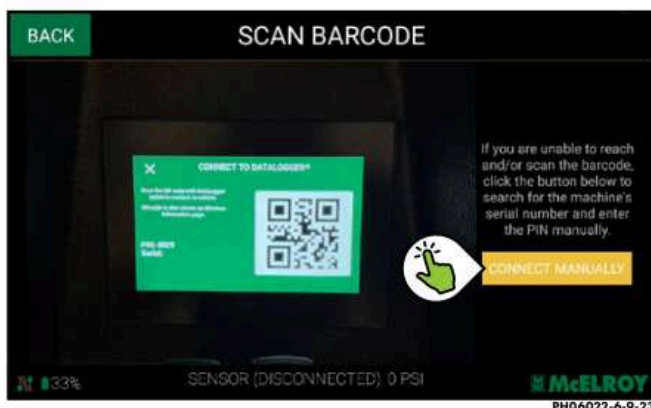
In cases where the QR code cannot be scanned, the DataLogger can be manually connected to the machine via PIN entry.

From the DataLogger home screen, tap **REMOTE CONNECT**.

NOTICE: The **REMOTE CONNECT** button is only present if a Tritan machine has been added to the Manage Machines screen found in DataLogger Settings.

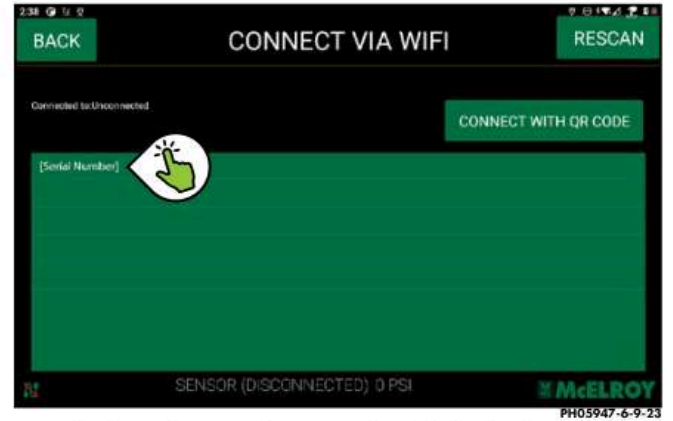


Tap **CONNECT MANUALLY** on the Scan Barcode screen.

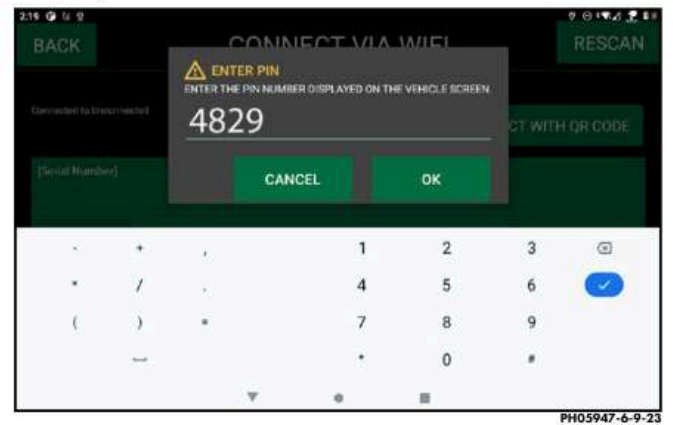


A list of serial numbers of machines connected to wifi will be presented. An option to return to the QR code connection method is also present on this screen.

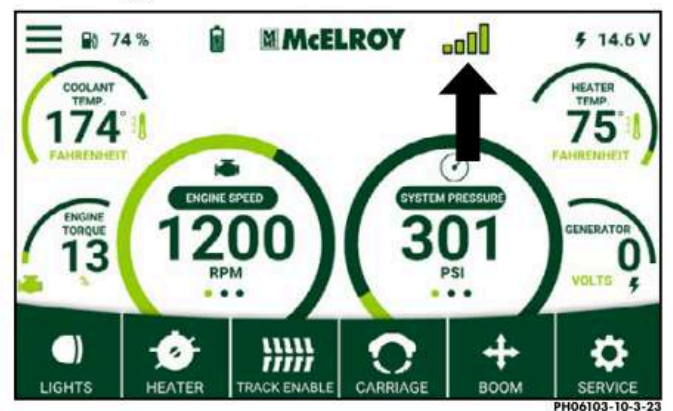
Tap the serial number of the machine intended for DataLogger connection.



Enter the four digit PIN shown on the vehicle display using the touch keyboard and tap **OK** to connect to the machine manually.



Once paired, a connection strength icon will appear on the vehicle display indicating that the DataLogger is connected. This icon also indicates the strength of the connection between the DataLogger and the machine.



IMPORTANT: Movement control must be enabled on the DataLogger in order to control machine functions from the machine control interface.

See [Control Hand-Off](#) in this section for instructions on enabling movement control.

The DataLogger home screen will also indicate that it is connected to the machine. The Tritan™ logo will be present at the top of the screen along with the machine control interface button in the bottom right of the screen.



Once paired, the machine can be started from the machine control interface.

Starting Instructions

Read and understand the engine owner's manual before operating.

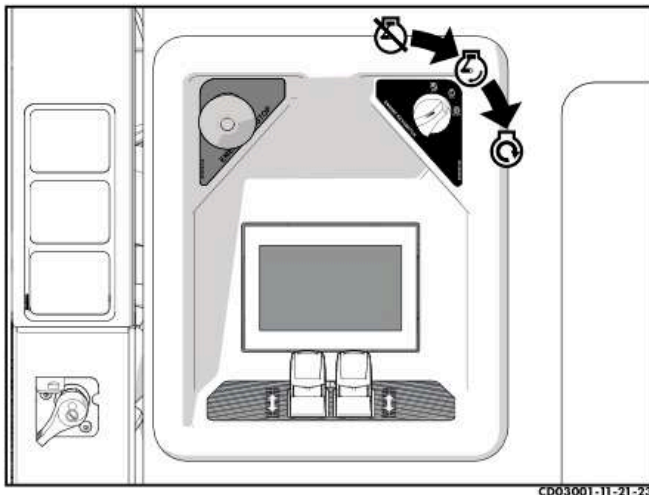
Starting at Vehicle Console

The ignition key switch has three positions: **OFF**, **RUN** and **START**.



Turn the key switch to **RUN** and allow time for the display to power on.

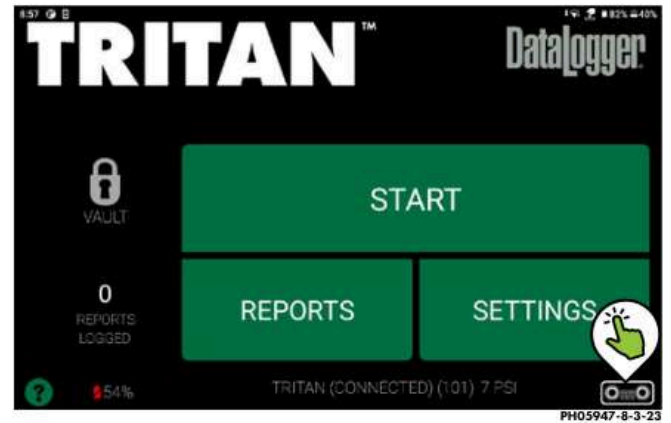
Once the display is on, turn the key switch to **START** to start the engine.



Starting from DataLogger

The key switch must be turned to **RUN** at the vehicle console in order to start the engine from the DataLogger.

From the DataLogger home screen, tap the machine control icon to open the machine control interface.



To start the engine from the DataLogger, tap the **Engine Start/Stop** button on the center operations panel of the machine control interface.



The green light on the button indicates the engine is running.

The same button is tapped to stop the engine.



Control Hand-Off

The movement and function of this machine can be controlled from the vehicle console and the DataLogger.

In order to gain primary control of the machine, it must be requested and confirmed from the vehicle display or the machine control interface on the DataLogger. Primary control can only be enabled at the vehicle console or the DataLogger at any given time and cannot be shared between the two.

IMPORTANT: This machine can only be controlled from the interface where primary control has been enabled.

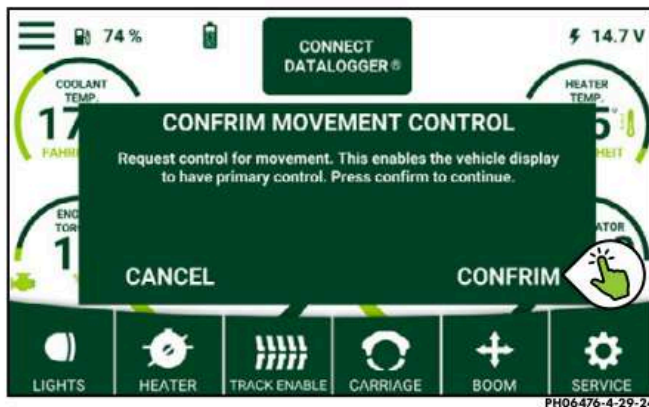
From Vehicle Console

In order to control the machine from the vehicle console, movement control must be enabled from the vehicle display.

Upon starting the engine, dismiss the DataLogger Connection prompt by tapping the **X**.



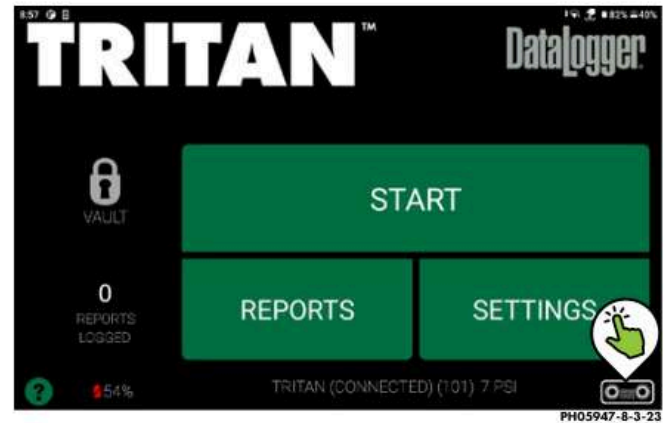
Tap any of the function buttons on the main screen. The movement control prompt will appear. Tapping **CONFIRM** will enable the operator to have primary control over the movement and function of the machine from the vehicle console.



From DataLogger

In order to control the machine from the DataLogger, the tablet must be connected and movement control must be enabled from the machine control interface.

From the DataLogger home screen, tap the machine control icon to open the machine control interface.



The movement control prompt will appear. Drag the touch slider to the right to confirm.



This enables the machine control interface on the DataLogger to have primary control over the movement and function of the machine.



Driving Vehicle

⚠ WARNING

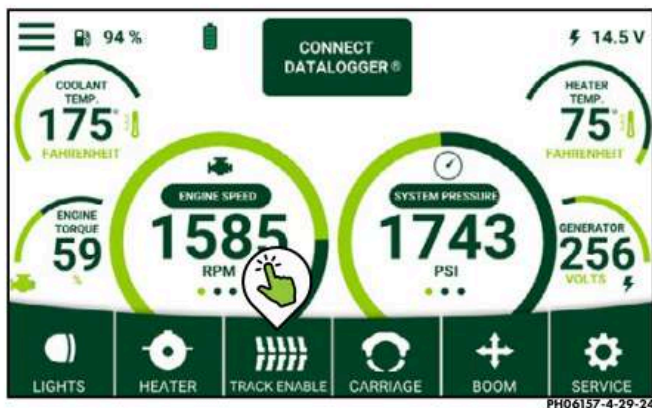
Before and while driving machine, ensure all jobsite personnel are visible to the machine operator at all times. If all personnel are not visible, stop machine movement and locate all personnel before proceeding.

From Vehicle Console

In order to drive the machine from the vehicle console, movement control must be enabled from the vehicle display.

There are two tracking speeds when driving from the vehicle console: **Normal** and **Crawl**

Tap **TRACK ENABLE** to view the tracking speed toggle.

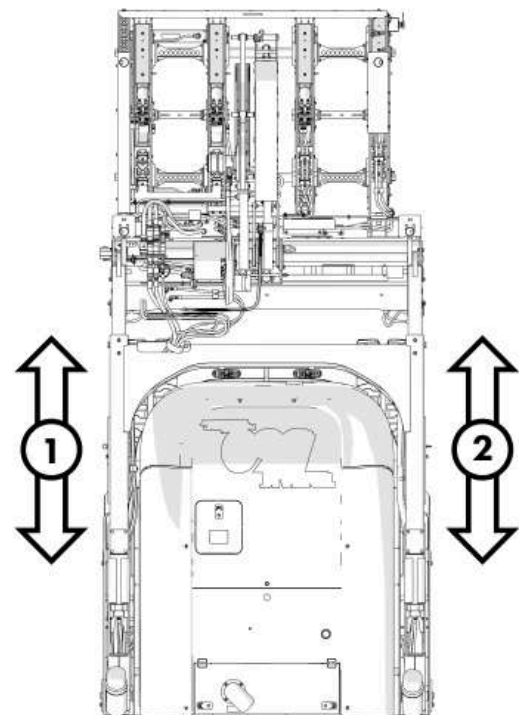
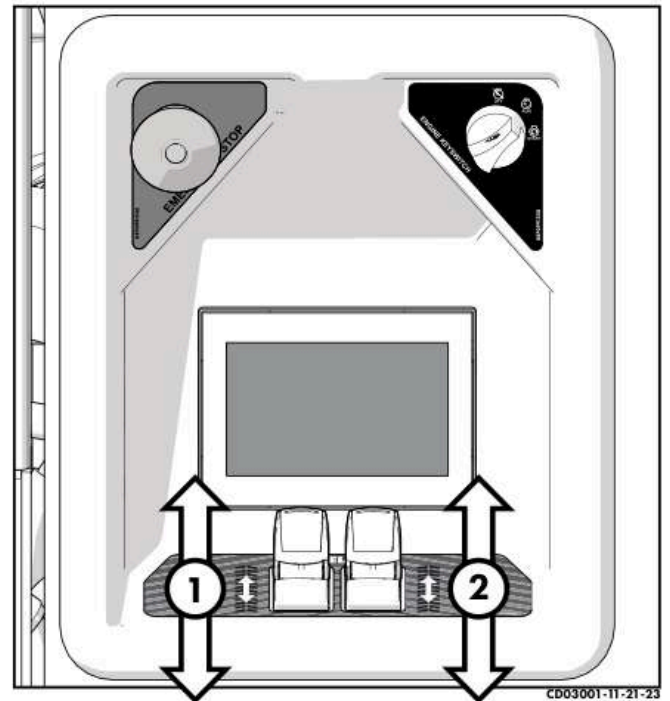


Drag the touch slider to toggle between **Normal** speed and **Crawl** speed.



IMPORTANT: The speed settings differ between the vehicle console and the machine control interface on the DataLogger. The rabbit symbol represents normal speed on the vehicle display and high speed on the machine control interface.

The tracks are operated by the paddle levers on the vehicle console. The left paddle lever (1) engages the track on the left side of the machine. The right paddle lever (2) engages the track on the right side of the machine.*



*The tracks in this depiction are in forward position relative to the vehicle console.

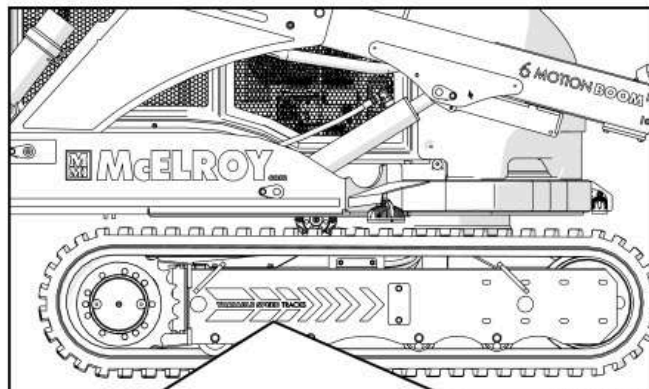
Track Directional Arrows

Be aware that driving the machine from the vehicle console in certain orientations can result in unexpected directional movement.

The directional arrow **(3)** on each track frame indicates forward movement of the tracks. Identify which direction these arrows are pointing before actuating the paddle levers to avoid unintended tracking direction.

In certain orientations, the tracking direction will be opposite the actuating direction of the paddle levers. Left and right paddle lever control will also be reversed in these orientations.

NOTICE: When the paddle levers are pushed forward towards the vehicle display, the tracks will always move in the direction the track arrow decal is pointing.

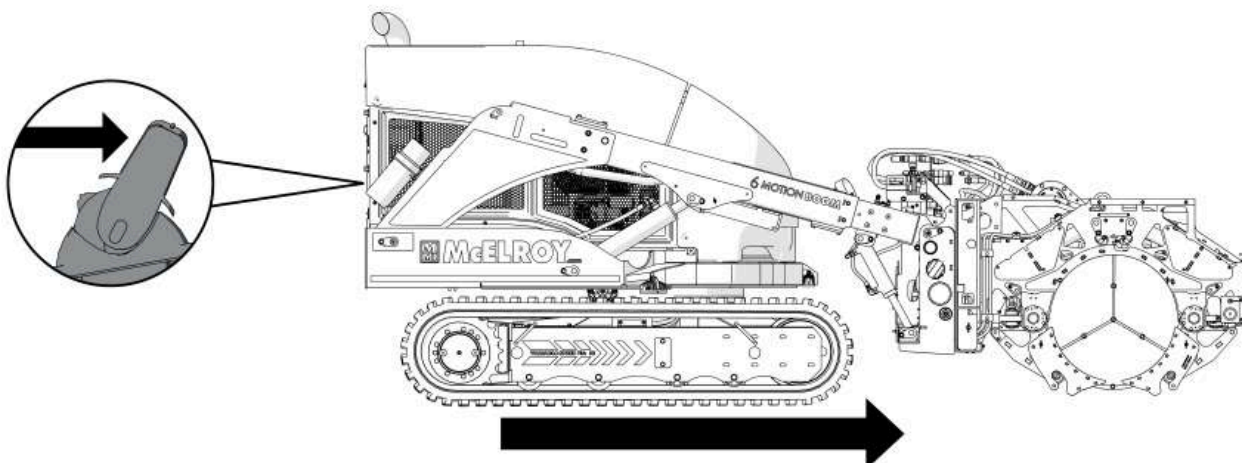


CD02827-6-9-23



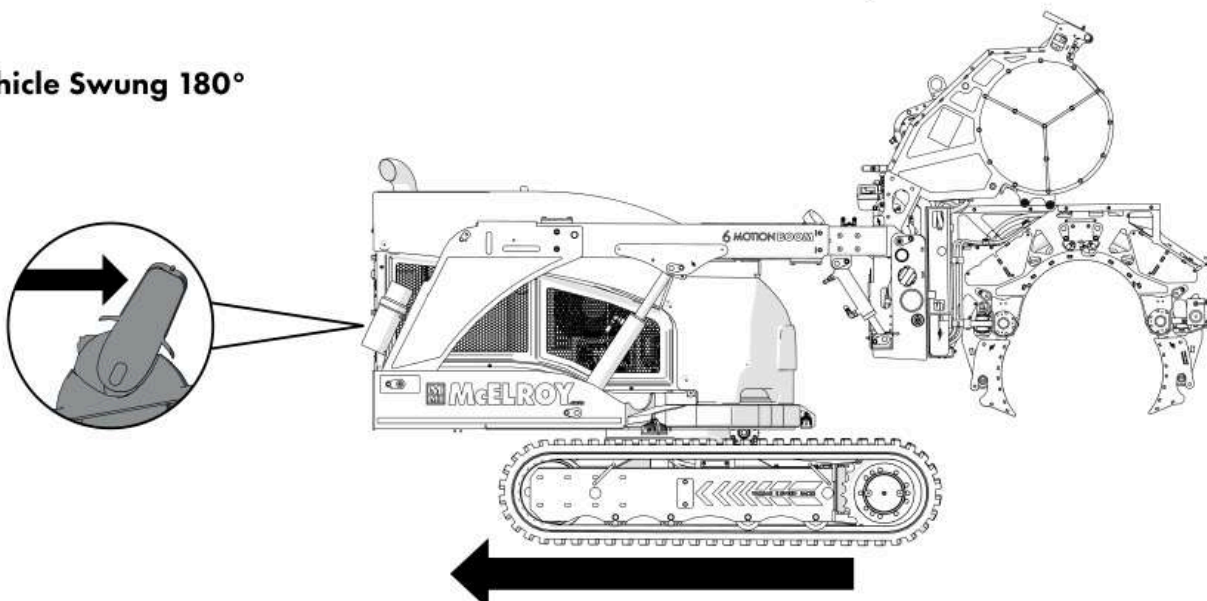
CD03028-11-21-23

Vehicle Forward



CD03072-1-4-24

Vehicle Swung 180°

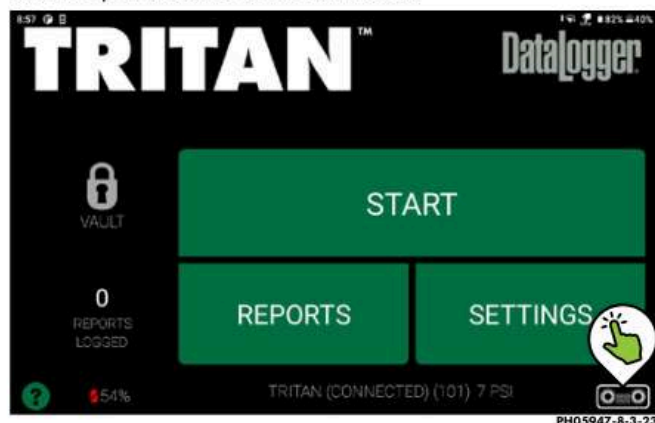


CD03073-1-4-24

From DataLogger

In order to drive the machine from the DataLogger, the tablet must be connected and movement control must be enabled from the machine control interface.

From the DataLogger home screen, tap the machine control icon to open machine control interface.

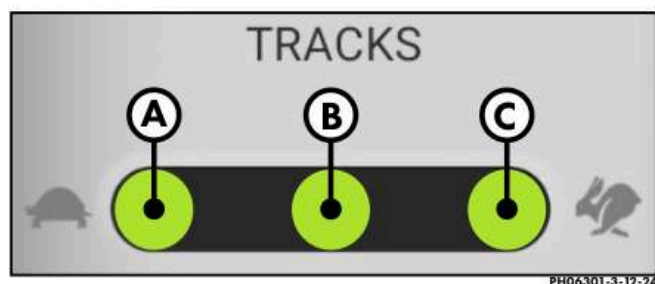


In the machine control interface, Tap the **TRACKS** button to access the track controls.



There are three tracking speeds when driving from the tablet: **Crawl**, **Normal** and **High** speed. High speed is exclusive to the tablet.

Tap the designated toggle position to select between **Crawl(A)**, **Normal(B)** and **High(C)** speed.



The tracks are operated by the joystick **(D)** in the **TRACKS** controls on the machine control interface.

The joystick engages the tracks on the left and right side of the machine. The directional movement of the machine depends on which direction the joystick is dragged.



IMPORTANT: Crawl mode is used to move the machine slowly and make fine steering adjustments in instances such as loading and offloading from a trailer or positioning around pipe.

IMPORTANT: The tracks may not have sufficient torque to turn the machine in all ground conditions when in the high speed/low torque setting. If so, switch to the low speed/high torque setting.

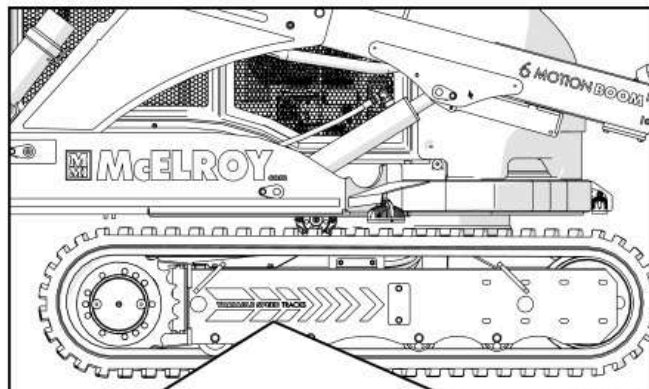
Track Directional Arrows

Be aware that driving the machine from the DataLogger in certain orientations can result in unexpected directional movement.

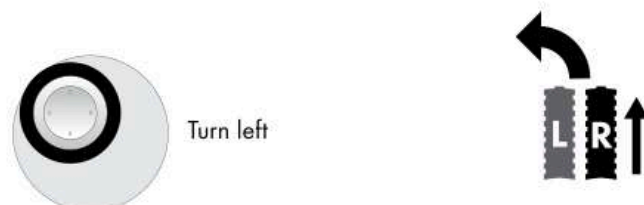
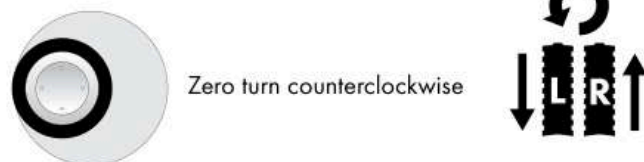
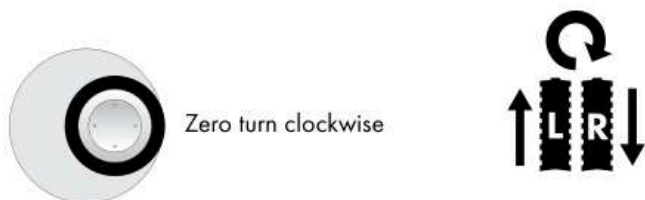
The directional arrow on each track frame indicates forward movement of the tracks. Identify which direction these arrows are pointing before actuating the joystick to avoid unintended tracking direction.

In certain orientations, the tracking direction will be opposite the actuating direction of the joystick. Left and right joystick control will also be reversed in these orientations.

NOTICE: When the joystick is dragged upwards, the tracks will always move in the direction the track arrow decal is pointing.



Joystick Maneuvering



Rain Mode

In order to drive the machine from the DataLogger, the tablet must be connected and movement control must be enabled from the machine control interface.

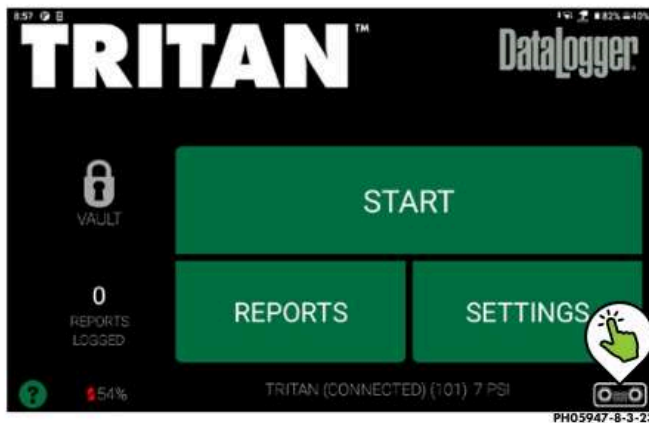


Rain and other precipitation can cause unwanted actuation of controls if it were to fall on the screen. Use Rain Mode in these conditions to prevent unwanted machine movement.

Rain Mode is enabled as a preference in Tritan Management on the DataLogger. Refer to "[Tritan Management](#)" in this section for enabling procedure.

Rain Mode allows the operator to use the physical buttons and directional pad on the DataLogger tablet to control machine movement in the case precipitation is present.

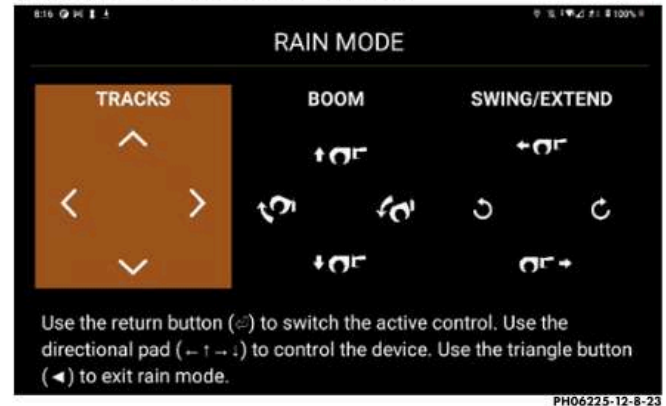
From the DataLogger home screen, tap the machine control icon to open the machine control interface.



In the machine control interface, Tap the **RAIN MODE** button to enter rain mode.

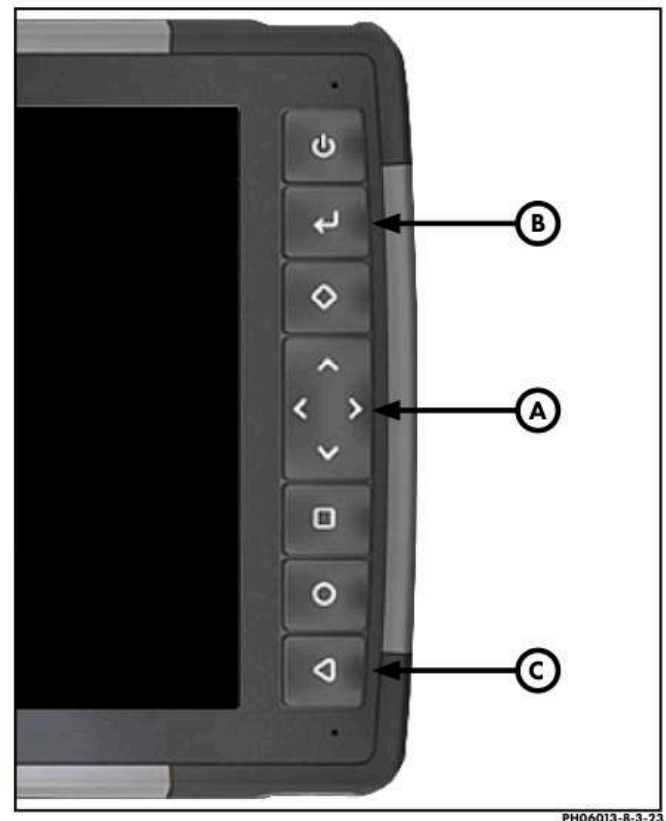


There are three functions you can control while in rain mode: **Tracks, Boom and Swing/Extend.**



These three functions are operated by the directional pad **(A)** on the DataLogger tablet.

Use the return button **(B)** to switch between the three functions and the triangle button **(C)** to exit rain mode.



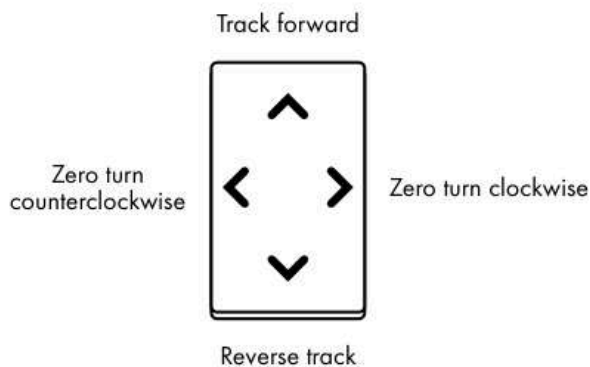
IMPORTANT: Machine movement behavior differs between joystick control and directional pad control.

Tracks (Normal, High Speed and Crawl) (Rain Mode)

These controls apply to normal tracking, high speed tracking and crawl tracking. Press the return button once with **TRACKS** active to engage high speed tracking and twice to engage crawl tracking.



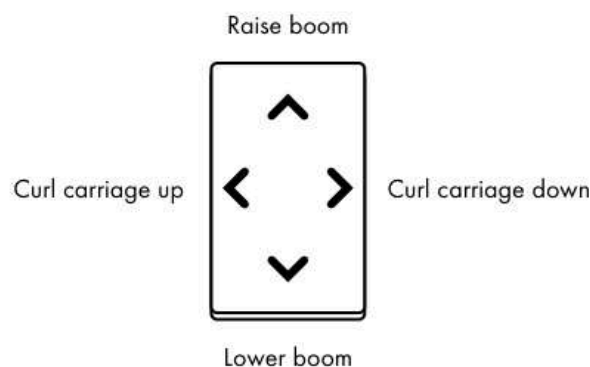
PH06232-12-8-23



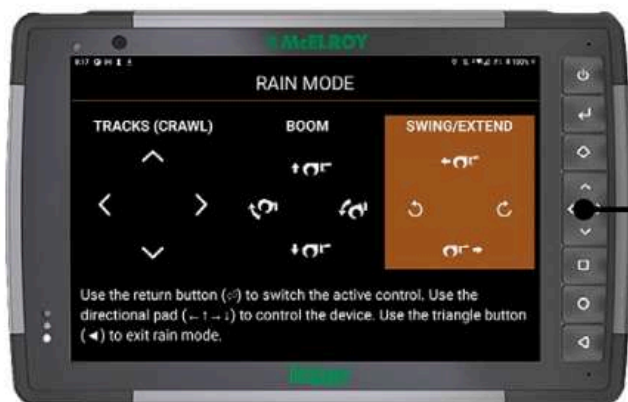
Boom (Rain Mode)



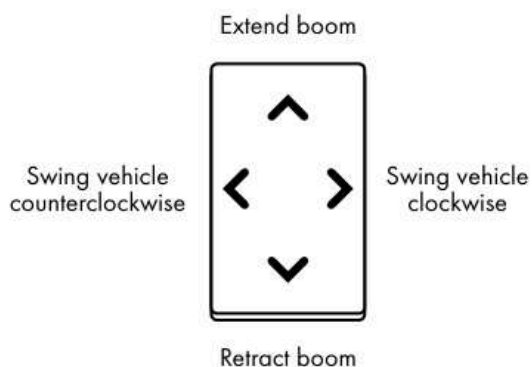
PH06234-12-8-23



Swing/Extend (Rain Mode)



PH06235-12-8-23



Boom Control

⚠ WARNING

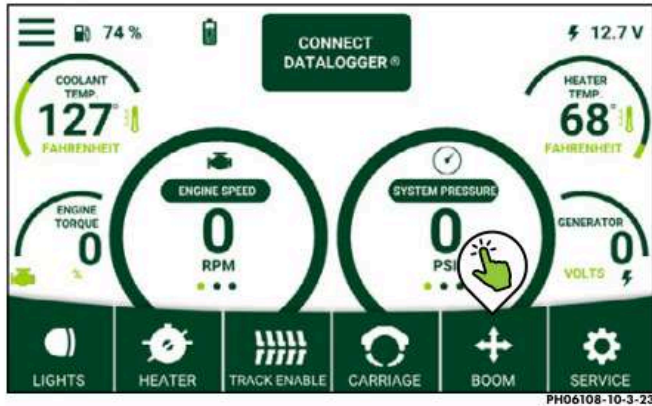
Vehicle and carriage swing rapidly and can cause severe bodily injury or death if someone is standing too close. All personnel must stand clear of the swinging and booming range of the machine when operating.

Be aware of yourself and others when operating this machine and when sections of pipe are being moved.

Boom functions can be controlled from the vehicle display or the machine control interface on the DataLogger.

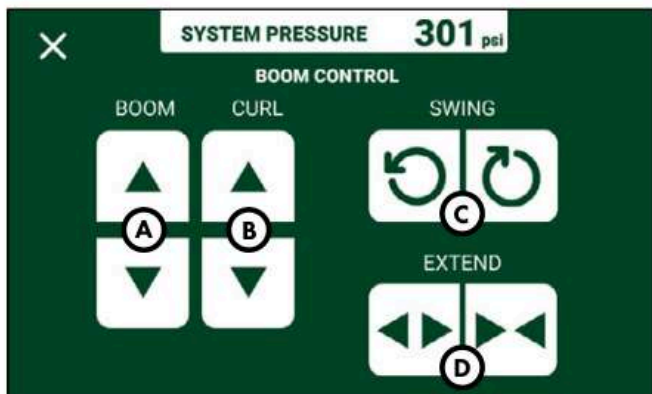
From Vehicle Display

On the main screen of the vehicle display, tap **BOOM** to view the boom control interface.



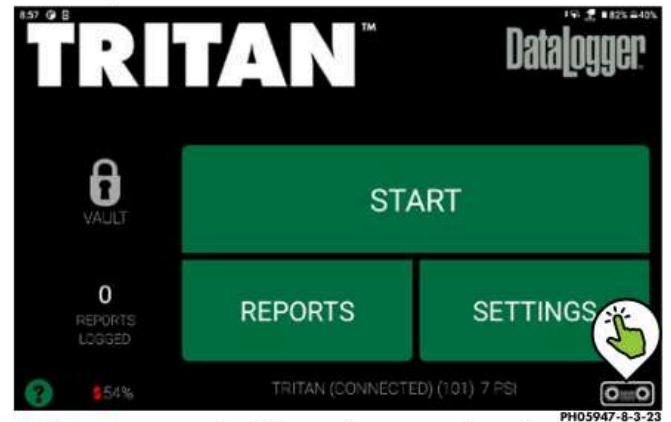
The boom control interface allows the operator to swing the vehicle 360 degrees, extend and retract the boom, raise and lower the boom, and curl the carriage up and down.

- A Raises and lowers boom.
- B Curls carriage up and down.
- C Swings vehicle clockwise and counterclockwise.
- D Extends and retracts boom.



From DataLogger

From the DataLogger home screen, tap the machine control icon to open the machine control interface.



In the **Boom** controls of the machine control interface, the two joysticks control all boom functions.

The boom joystick (E) allows the operator to raise and lower the boom and curl the carriage in or out. The swing/extend joystick (F) allows the operator to swing the vehicle 360 degrees and extend or retract the boom.



Boom Joystick

The boom joystick is used to raise and lower the boom and curl the carriage up and down. Dragging the joystick in a diagonal position between two functions allows for simultaneous booming and curling.



Raises boom.



Raises boom and curls carriage down.



Curls carriage down.



Lowers boom and curls carriage down.



Lowers boom.



Lowers boom and curls carriage up.



Curls carriage up.



Raises boom and curls carriage up.

Swing/Extend Joystick

The swing/extend joystick is used to swing the vehicle and extend or retract the boom. Dragging the joystick in a diagonal position between two functions allows for simultaneous swinging and extending.



Extends boom.



Extends boom and swings vehicle clockwise.



Swings vehicle clockwise.



Retracts boom and swings vehicle clockwise.



Retracts boom.



Retracts boom and swings vehicle counterclockwise.



Swings vehicle counterclockwise.



Extends boom and swings vehicle counterclockwise.

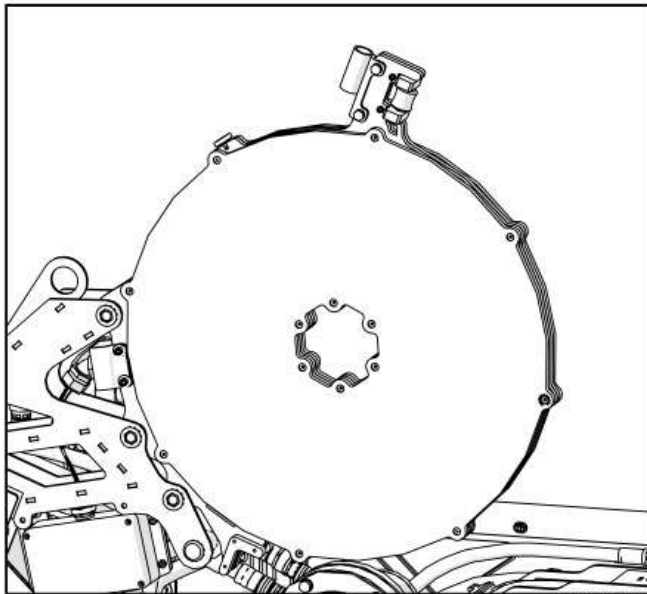
Prepare Heater

⚠ DANGER

Heater is not explosion proof. Operation of heater in an explosive atmosphere without necessary safety precautions will result in serious injury or death.

Make sure both heater butt plates are properly installed.

NOTICE: Non-coated heaters should never be used without both heater butt plates installed. Install heater butt plates before using the heater.



⚠ WARNING

Ensure heater power is off before connecting or disconnecting heater power cables. Failure to do so may result in electrical shock.

Ensure the heater power and RTD cables are plugged in at the heater receptacles on the heater junction box.

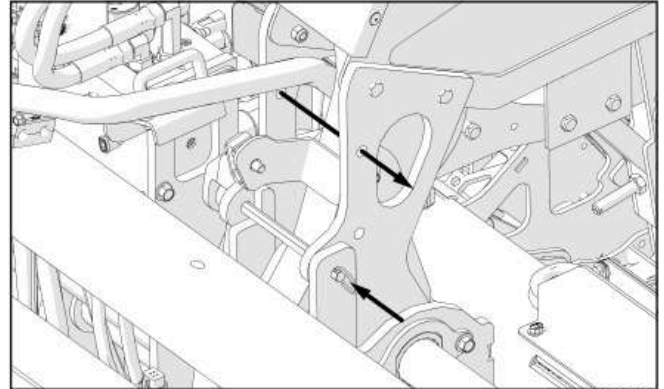
The heater bag frame pivots down with the heater unless it is pinned in the pivot out position.

To prepare heater for fusion:

Remove the heater bag frame pin from its storage location and pin the heater bag frame to the indexer as shown.

This will secure the heater bag frame in place and allow the heater to pivot independently.

NOTICE: Complete this step before turning on the heater.

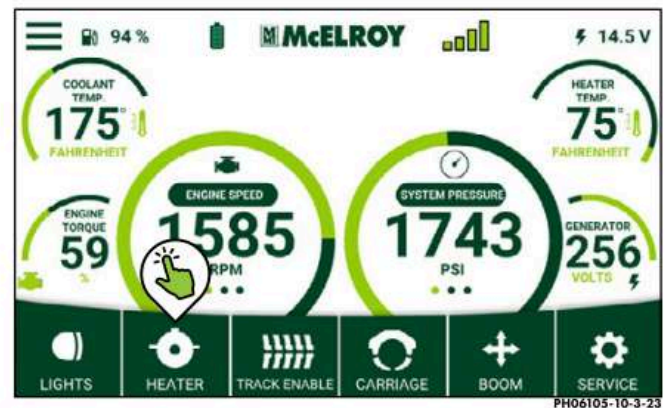


The heater can be turned on from the main screen of the vehicle display or the machine control interface on the DataLogger.

From Vehicle Display

On the main screen of the vehicle display, tap **HEATER** to turn heater on.

Heater temperature is displayed in the upper right gauge.



From DataLogger

In the **Indexer** controls of the machine control interface, tap the heater on/off button to turn heater on.



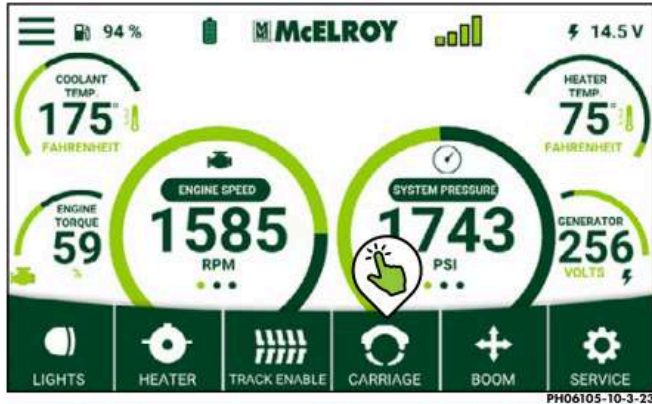
Refer to ["Temperatures"](#) in this section for information on how to adjust heater temperature.

Carriage and Indexer

The carriage and indexer can be controlled from the vehicle display or the machine control interface on the DataLogger.

From Vehicle Display

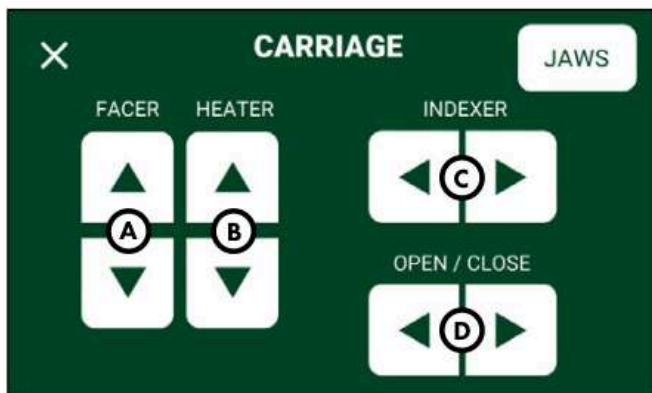
On the main screen of the vehicle display, tap **CARRIAGE** to open the carriage control screen.



PH06105-10-3-23

Tap and hold the pivoting touch pads to pivot the heater and facer in and out of the carriage. The **UP** arrows pivot out, and the **DOWN** arrows pivot in.

- A** Pivots the facer in and out of the carriage.
- B** Pivots the heater in and out of the carriage.
- C** Moves indexer left and right.
- D** Opens and closes carriage.



PH06165-10-30-23

From DataLogger

On the machine control interface, tap **INDEXER** and **CARRIAGE** to view the indexer and carriage controls.

- E** Moves indexer left and right.
- F** Pivots the heater in and out of the carriage.
- G** Pivots the facer in and out of the carriage.
- H** Locks carriage closed.
- I** Locks carriage open.
- J** Opens and closes carriage.



PH06330-3-11-24

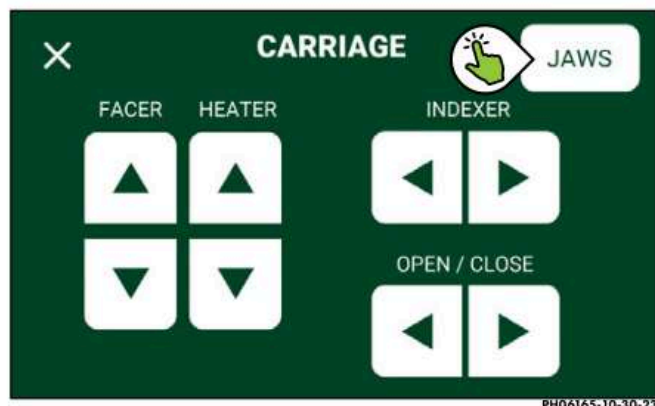
NOTICE: The heater bag frame pivots with the heater unless pinned to the indexer in the pivot out position.

Jaws

Jaws can be controlled from the vehicle display or the machine control interface on the DataLogger.

From Vehicle Display

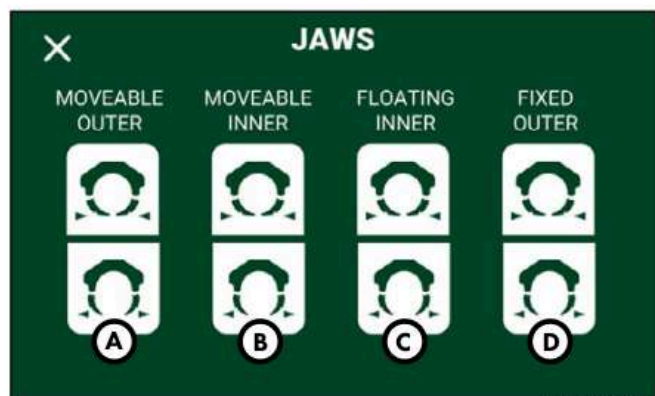
On the carriage control screen, tap **JAWS** to open the jaw controls.



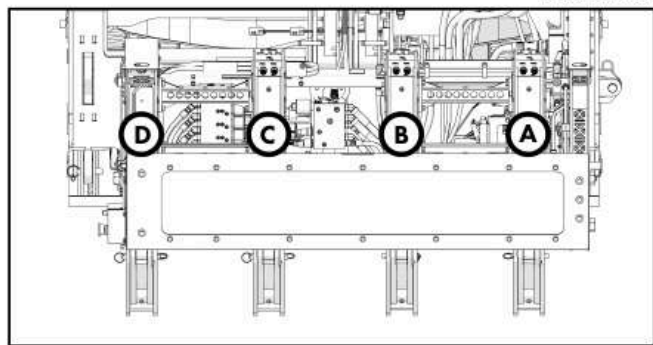
PH06165-10-30-23

Tap and hold the jaw touch pads to open and close the designated jaws.

- A** Opens and closes outer movable jaw.
- B** Opens and closes inner movable jaw.
- C** Opens and closes inner floating jaw.
- D** Opens and closes outer fixed jaw.



PH05920-8-24-23



CD03031-6-9-23

From DataLogger

On the machine control interface, tap **JAWS** to view the jaw controls.

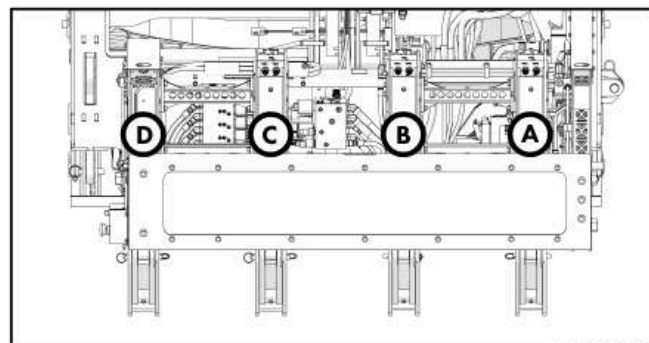
Jaws can be opened and closed individually or locked together to open and close simultaneously using the jaw locking toggle.

Tap and hold the jaw touch pads to open and close the designated jaws.

- E** Opens and closes outer fixed jaw.
- F** Opens and closes inner floating jaw.
- G** Opens and closes inner movable jaw.
- H** Opens and closes outer movable jaw.
- I** Jaw locking toggle.



PH06331-3-11-24



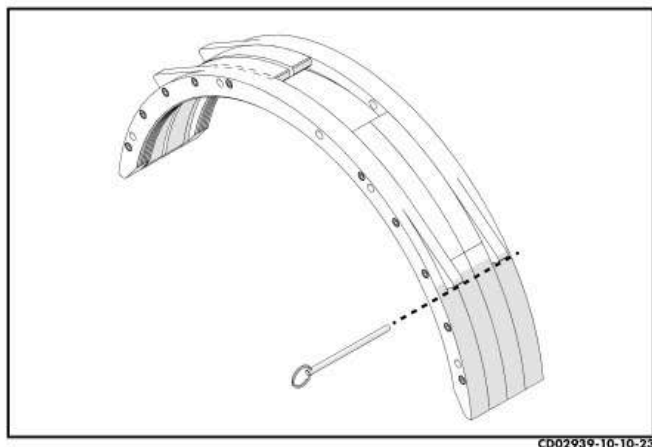
CD03031-6-9-23

Jaw Inserts

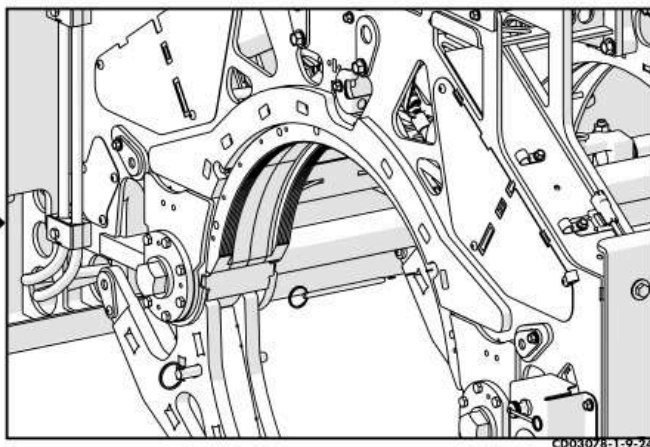
There are three types of jaw inserts for this machine: **Master Inserts**, **Upper Inserts** and **Quarter Jaw Inserts**. If required, install the appropriate size of jaw inserts for the pipe that is being fused. The inserts are held in place by detent pins.

Master Inserts

Master inserts are installed on each upper jaw of the carriage using a detent pin as shown below.



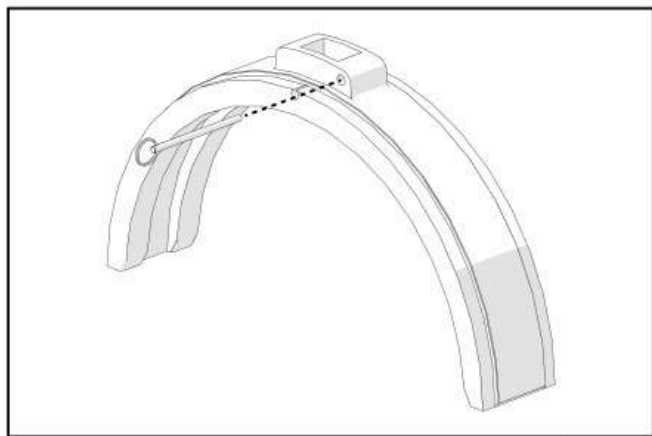
CD02939-10-10-23



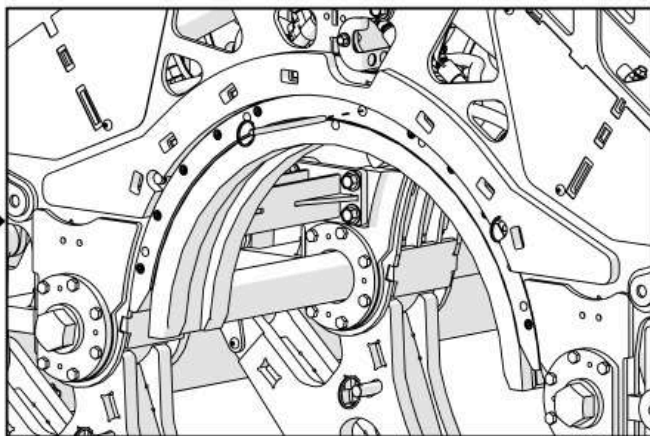
CD03078-1-9-24

Upper Inserts

Upper inserts are mounted into the master inserts using a detent pin as shown below.



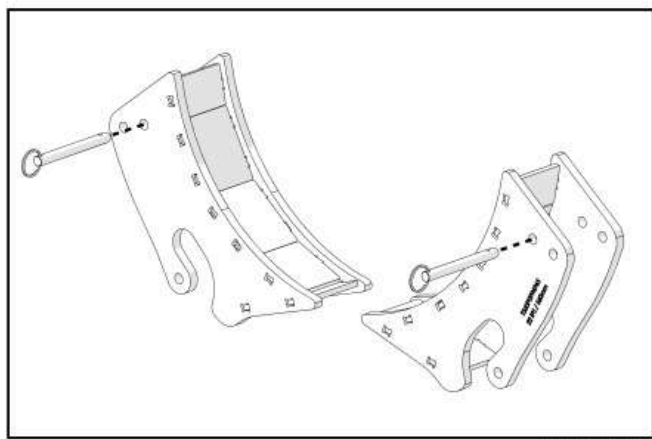
CD02937-10-10-23



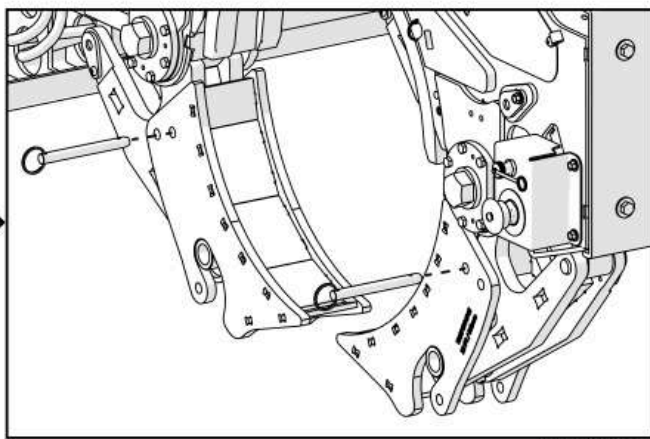
CD02941-10-10-23

Quarter Jaw Inserts

Quarter jaw inserts are installed on the lower quarter jaws of the carriage using detent pins as shown below.



CD02936-10-10-23



CD02942-10-10-23

Approaching Pipe

It is recommended to position the machine so that the tracks are parallel to the pipe that is to be fused. This will allow for maximum adjustability of the carriage and easier maneuverability.

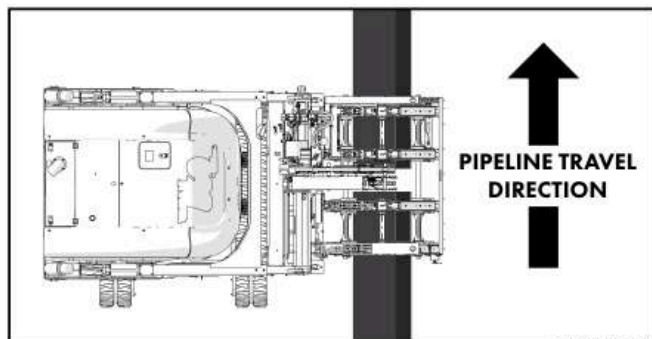
This will require the carriage to be raised, swung 90° and lowered onto the pipe for fusion.

Before approaching pipe with the machine, ensure that:

- The heater and facer are in the up position
- The boom is at mid-extension to provide room for adjustment
- The movable jaws are positioned at mid-stroke to allow room for pipe adjustment
- The carriage is swung 90° to the side of the machine that will face where the pipe is laid
- The boom is raised high enough to provide the carriage clearance of the pipe

Once these conditions are met, drive the machine into position so that the tracks are parallel to the pipe. Ensure that the direction of the track directional arrow decals match the direction of pipeline travel and the fixed end of the pipe is aligned with the fixed jaws of the carriage.

The machine should match the depiction below.



Use the jaw controls to open the quarter jaws wide enough to clear the pipe. Once enough clearance is achieved, lower the carriage onto the pipe sections with the pipe ends between the inner floating jaw and the inner movable jaw.

Extend or retract the boom and curl the carriage as needed.

Once the bottom of the quarter jaws are lower than 30% of the pipe height, the machine is in position to begin loading pipe into the carriage.

Loading and Adjusting Pipe

Loading the pipe will likely require the jaws to be closed individually. While loading pipe and making adjustments, ensure that enough pipe protrudes into the fusion zone to allow for complete facing of both pipe ends.

Fixed Pipe End:

Without fully clamping, begin closing the fixed jaws to cradle the fixed pipe.

Raise or lower the boom as needed until the carriage is approximately on the same plane as the fixed pipe.

Ensure the carriage guide rod is aligned squarely with the fixed pipe. If adjustment is needed, pivot the tracks slightly in crawl speed until alignment is achieved.

Without fully clamping, begin closing the fixed jaw with the largest gap between the top of the pipe and the upper jaw. Then, fully clamp the fixed jaw which had the smaller gap.

Fully clamp the remaining fixed jaw. The fixed end of the pipe should be fully clamped within the fixed jaws.

Movable Pipe End:

Using the carriage controls, position the movable jaws over the movable pipe.

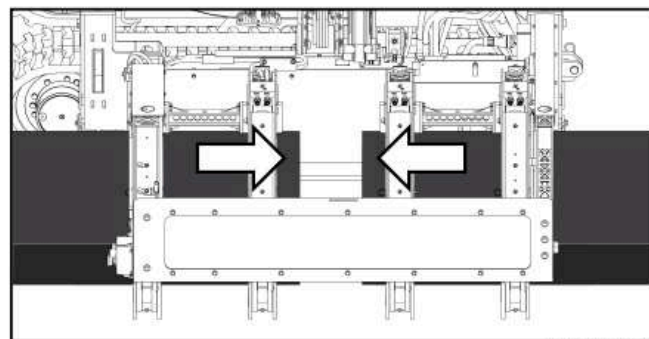
Without fully clamping, begin closing the movable jaws to cradle the movable pipe.

Raise or lower the boom as needed until the carriage is approximately on the same plane as the movable pipe.

Ensure the carriage guide rod is aligned squarely with the movable pipe. If adjustment is needed, pivot the tracks slightly in crawl speed until alignment is achieved.

Without fully clamping, begin closing the movable jaw with the largest gap between the top of the pipe and the upper jaw. Then, fully clamp the movable jaw which had the smaller gap.

Fully clamp the remaining movable jaw. The movable end of the pipe should be fully clamped within the movable jaws.



Make any minor final adjustments using the boom controls as needed.

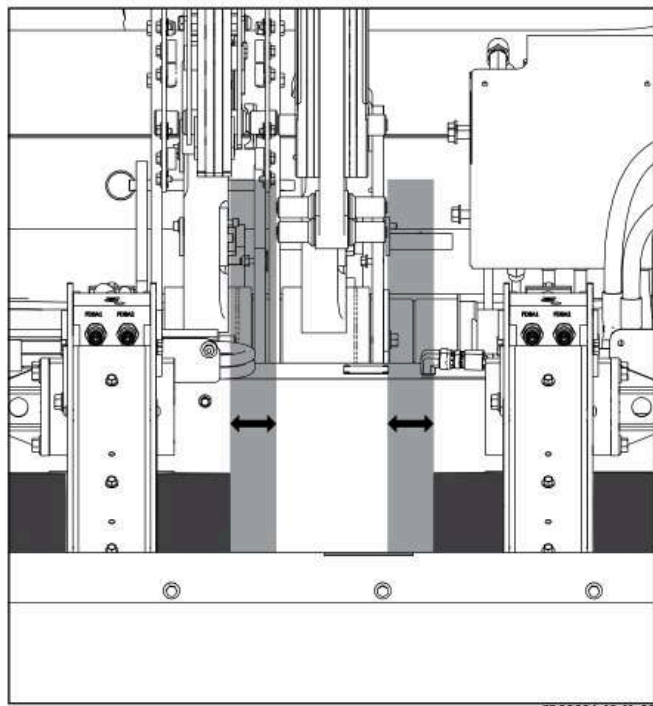
The use of pipe stands or other pipe support equipment is recommended to support pipe during fusion, reduce drag pressure and aid in alignment.

Positioning Facer

Once pipe has been loaded and adjusted into the carriage, the facer can be moved into position for facing. The facer can be indexed left and right and pivoted into and out of the carriage.

While indexing, ensure that there is enough clearance between the pipe ends and the facer stops on both sides before pivoting the facer in.

Open the carriage as needed.



CD03036-12-11-23

The facer can be indexed and pivoted into the carriage from the vehicle display or the machine control interface on the DataLogger. However, it is recommended to perform this step from the DataLogger as to have a clear visual of the facer position relative to the carriage and pipe ends.

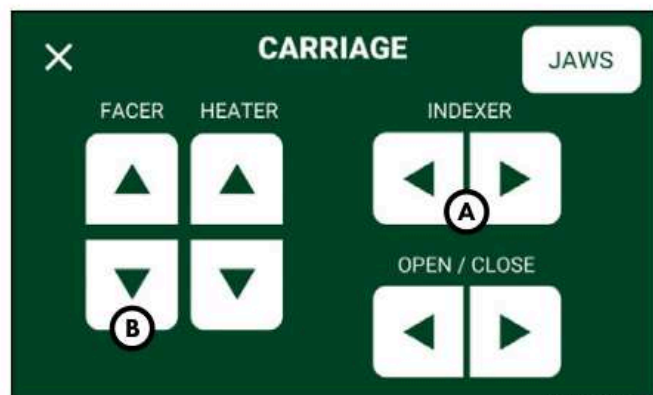
NOTICE: Collision avoidance may prevent these functions from actuating. Reposition indexer for more clearance between the heater and/or facer and carriage before reattempting these functions.

From Vehicle Display

Use the indexer directional touch pad **(A)** in carriage controls to index the facer between the pipe ends.

NOTICE: Ensure proper clearance between pipe ends and facer stops before pivoting facer in.

Tap and hold the down arrow on the facer pivoting touch pad **(B)** to pivot the facer down between the open pipe ends



PH06165-10-30-23

From DataLogger

Drag the indexer joystick **(C)** in indexer controls to position the facer between the pipe ends.

NOTICE: Ensure proper clearance between pipe ends and facer stops before pivoting facer in.

Tap and hold down on the facer directional touch pad **(D)** to pivot the facer between the open pipe ends.



PH06332-3-11-24

The remainder of the fusion process is performed solely from the DataLogger.

Begin Facing

Turn the facer on by tapping the facer on/off button. The button will be highlighted green to indicate the facer is spinning.

If the facer is set to momentary, press and hold the facer on/off button to keep the facer on.

When the facer is turned on, the facer latch locks onto the guide rod.

⚠ WARNING

Facer blades are sharp and can cut. Never attempt to remove shavings while the facer is running or is in the facing position between the jaws. Use care when operating the facer and when handling the facer.



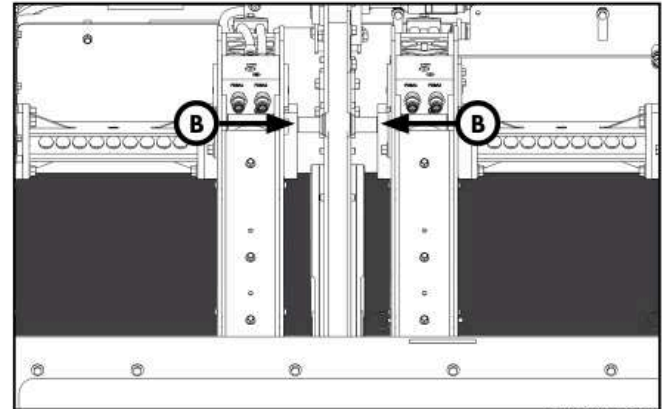
Turning on the facer enables the pressure control slider (A) in the carriage controls. The facing pressure can be adjusted by dragging the slider up or down. Fine tune pressure with the +/- buttons.

The facing pressure should be set as low as possible while still moving the carriage. Excessive facing pressure can damage the facer. It may be necessary to adjust the facing pressure.

Tap the **Lock Close** button in the carriage controls and begin facing.



Continue facing the pipe until the facer rest buttons contact the facer stops (B) on both the fixed jaw and movable jaw.



Turn the facer off by pressing the facer on/off button.

If the facer is set to momentary, release the facer on/off button to turn the facer off.

Turning the facer off unlocks the facer latch from the guide rod.

The facer on/off button will no longer be highlighted green indicating the facer has been turned off.



After Facing

Drag the carriage directional joystick (**A**) to the right and allow the carriage to open completely. The **Lock Open** button can also be used.

Drag the indexer directional joystick (**B**) to the right to center the facer in between the pipe ends to avoid striking the facer rest buttons on the pipe ends.

Tap and hold up on the facer directional touch pad (**C**) to pivot the facer out of the carriage.

If the facer latch did not unlock upon turning the facer off, use the [facer latch override lever](#) to unlock the facer latch from the guide rod.



PH06335-3-11-24

⚠ WARNING

Use the Hydraulics Start/Stop button to disable the hydraulics before entering the unit for maintenance or shaving removal. Serious injury or death could result if the hydraulic power remains on and the hydraulics are activated while personnel are between movable machine parts.

The green light on the **Hydraulics Start/Stop** button will turn off when tapped.



PH06330-3-11-24

Once the **Hydraulics Start/Stop** has been tapped, the **Hydraulic Lockout** screen will appear indicating hydraulic functions have been disabled.

If access to the DataLogger interface is needed, tap the **RETURN TO DATALOGGER** button.

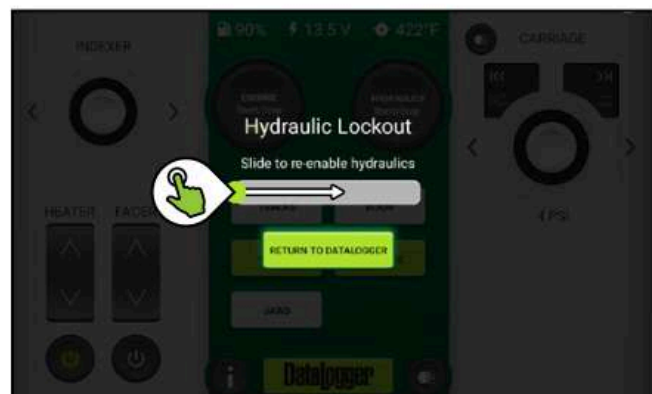


PH06336-3-11-24

Clean shavings out of pipe ends and from between the jaws.

Do not touch faced pipe ends.

To re-enable the hydraulics, drag the touch slider to the right.



PH06336-3-11-24

Tap the **DataLogger** button to switch to the DataLogger interface to verify pipe alignment and begin setting up the fusion process.

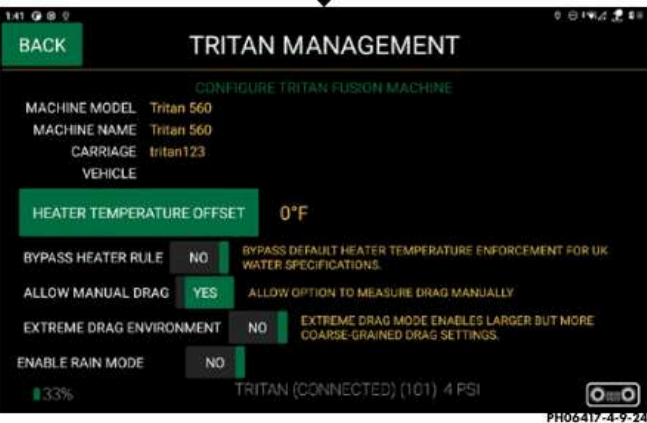
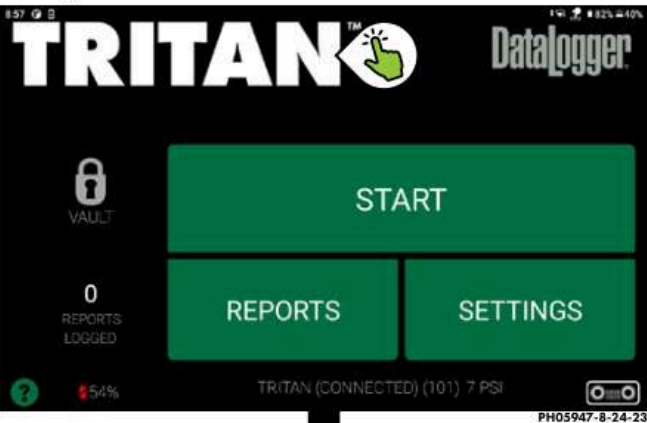


PH06330-3-11-24

Set Up Fusion Process

In order to verify pipe alignment, the user must begin setting up the fusion process in the DataLogger interface.

The main screen displays the connected machines logo in the top left corner. Tap the Tritan™ logo to open the Tritan Management screen.

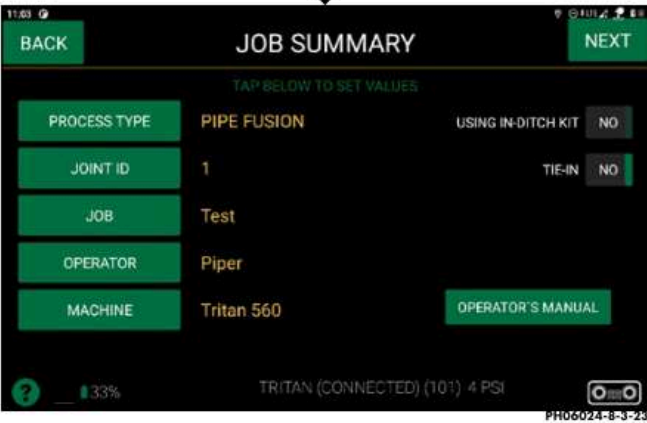
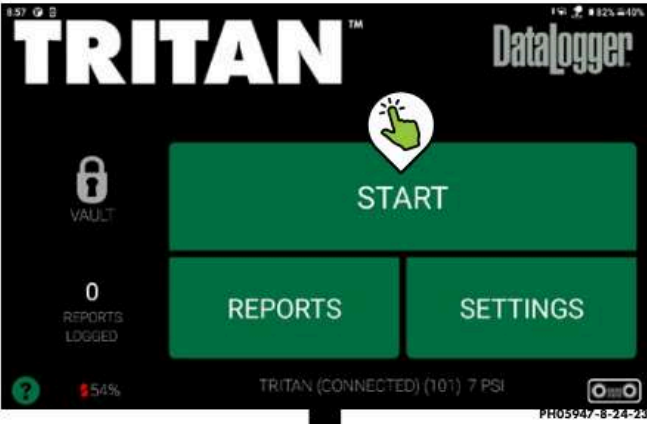


Tritan Management:

- Displays machine information and serial numbers.
- Tap **HEATER TEMPERATURE OFFSET** to change the offset temperature of the heater.
- Tap **BYPASS HEATER RULE** to bypass default heater temperature enforcement on certain standards.
- Tap **ALLOW MANUAL DRAG** to allow option to measure drag manually.
- Tap **EXTREME DRAG ENVIRONMENT** to enable larger but more coarse-grained drag settings.
- Tap **ENABLE RAIN MODE** to enable the rain mode button in the machine control interface.
- Tap **ENABLE DEMO OPTIONS** to enable the skip step button on the level 3 fusion logging screen.
- Tap **BACK** to return to the main screen.

To begin the fusion process, select **START** on the main menu.

Tapping **START** progresses the user to the Job Summary screen.



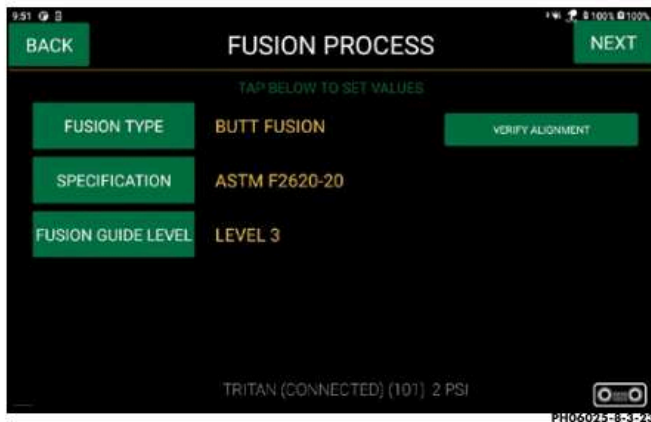
Job Summary:

Process Type:	Select the type of fusion to perform.
Joint ID:	Enter a joint ID number, this number will increase incrementally for every following fusion joint.
Job:	Job Description.
Operator:	Operator Identification.
Machine:	Displays machine tablet is connected to.
Using In-Ditch Kit:	Select if the fusion is utilizing an in-ditch kit. This will show in the joint report as a data point and also affects the way data is collected.
Tie-in:	Select if the fusion is a tie-in. This will show in the joint report as a data point and also affects the way data is collected.
Operator's Manual:	Opens a digital copy of the Tritan™ operator's manual.

Tap **NEXT** to proceed to the Fusion Process screen.

On the Fusion Process screen, tap each item to enter a value for **Fusion Type**, **Standard Specification**, and **Fusion Guide Level**.

This screen is also used to verify pipe alignment.



Fusion Process:

Fusion Type:	Select fusion type.
Specification:	Select the joining standard or specification to use.
Fusion Guide Level:	Select fusion guide level (see below): Level 3 - Automatic Operation Level 2 - Enhanced Guided Workflow Level 1 - Manual Operation
Verify Alignment	Select to adjust pressure and check alignment.

When in the Fusion Guide Level screen, tap **HELP ME DECIDE** if more information regarding what each fusion level entails is needed.



Tap **DONE** to return to the Fusion Process screen.

Tap **VERIFY ALIGNMENT** to check pipe alignment.

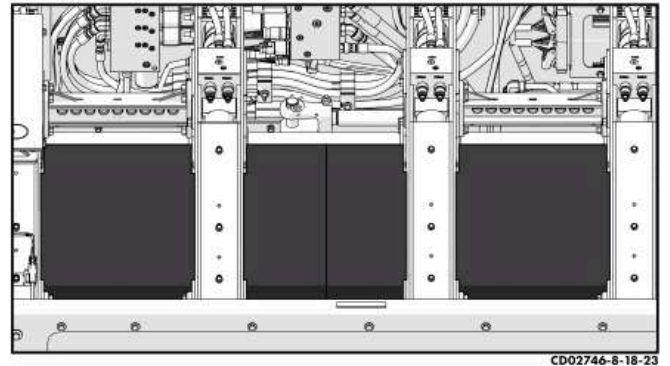
Check Pipe Alignment

On the Fusion Process screen, tap **VERIFY ALIGNMENT** to momentarily open the machine control interface with the Indexer and Carriage control panels active.

In the machine control interface, tap the carriage **Lock Close** button (A) to close the pipe ends together. Use the pressure control slider (B) to adjust pressure as needed according to set standard.



With the carriage closed completely and the pipe ends together, look across the top surface of the pipe ends to check alignment.



If there is misalignment between pipe ends, adjustments must be made. If alignment is acceptable, continue the fusion setup process.

To correct misalignment, use the Jaws and Boom control panels in the machine control interface to unclamp and re-clamp pipes until acceptable alignment is achieved.

Insert the facer and reface the pipe ends if adjustments are made. Check pipe alignment again and make further adjustments if necessary.

Ensure there is no unacceptable gap between the pipe ends. If there is an unacceptable gap, return to [Loading and Adjusting Pipe](#).

Once acceptable alignment is achieved, tap the **DATALOGGER** button in the machine control interface to return to the Fusion Process screen.

Tap **NEXT** after verifying pipe alignment to proceed to the Setup Photos screen.

The Setup Photos screen allows the user to take and annotate setup photos of the pipe to be fused. These can include carriage configuration and pipe alignment.

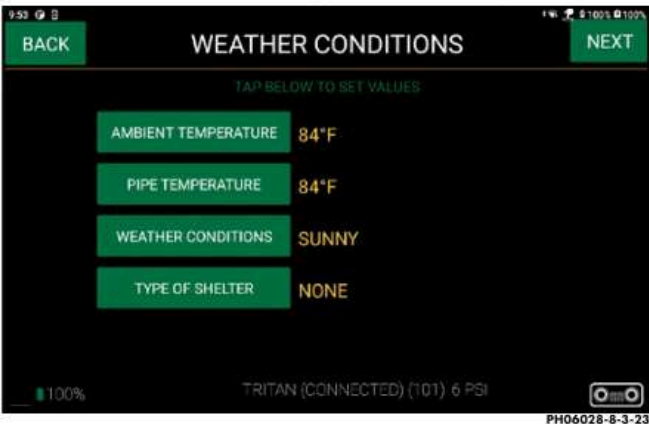


Setup Photos:

Add:	Tap the add icon to take a photo.
Annotate:	Tap an existing photo to annotate or delete it.

Tap **NEXT** to proceed to the Weather Conditions screen.

On the Weather Conditions screen, tap each item to enter a value for **Ambient Temperature**, **Pipe Temperature**, **Weather Conditions** and **Type of Shelter** if present.



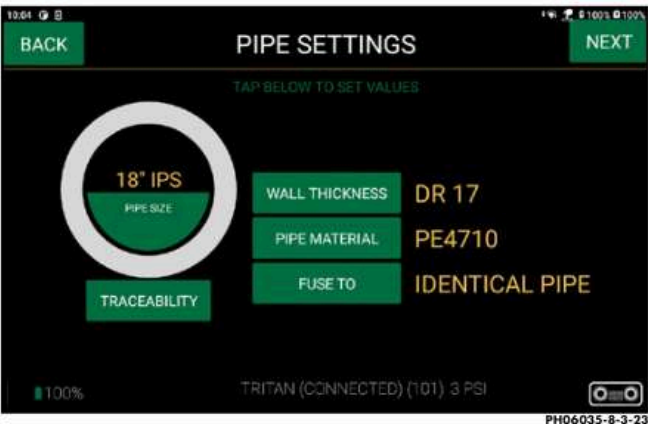
Weather Conditions:

Ambient Temperature:	Enter the ambient temperature.
Pipe Temperature:	Enter the temperature of the pipe.
Weather Conditions:	Enter the current weather conditions.
Type of Shelter:	Enter if a shelter is being used and what type.

Tap **NEXT** to proceed to the Pipe Settings screen.

In the Pipe Settings screen, tap each item to set values for **Pipe Size**, **Wall Thickness**, **Pipe Material** and what pipe will be fused in conjunction: **Identical** or **Dissimilar**.

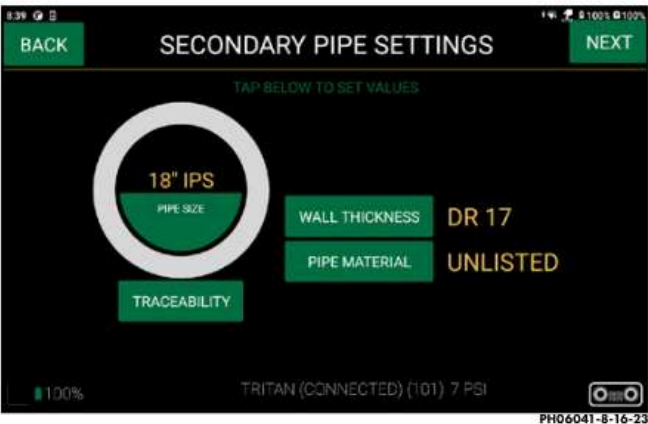
This screen also allows pipe traceability.



Pipe Settings:

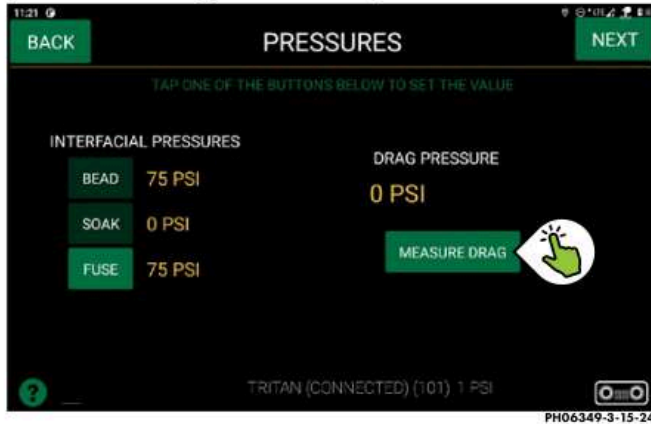
Pipe Size:	Select the pipe size being fused.
Traceability:	Select to enter traceability information either from the pipe barcode or manually.
Wall Thickness:	Enter the wall thickness of the pipe.
Pipe Material:	Enter the material of the pipe.
Fuse To:	Select if fusing to identical pipe or dissimilar pipe.

NOTICE: If fusing to dissimilar pipe, a Secondary Pipe Settings screen for entering secondary pipe values will follow.



Tap **NEXT** to proceed to the Pressures screen.

The Pressures screen requires the user to measure drag in order to obtain appropriate Heat/Soak and Fusion interfacial pressures according to standard in practice.



Pressures:

Bead:	Select to change value if needed.
Soak:	Select to change value if needed.
Fuse:	Select to change value if needed.
Measure Drag:	Start the Measure Drag process.

Tap **MEASURE DRAG** to allow the machine to start measuring drag pressure. In the confirmation prompt, tap **CONFIRM** to begin automatic drag measurement.



The machine will automatically measure the drag pressure and check for slippage. For automatic drag to function properly, the total amount of pipe in the fusion zone must not exceed 4.5" (A+B=4.5"). The measured drag will be displayed on the Pressures screen when complete.

Measure Drag Manually

If the **ALLOW MANUAL DRAG** option is enabled in Tritan Management, there will be a **MEASURE DRAG MANUALLY** button on the Pressures screen.

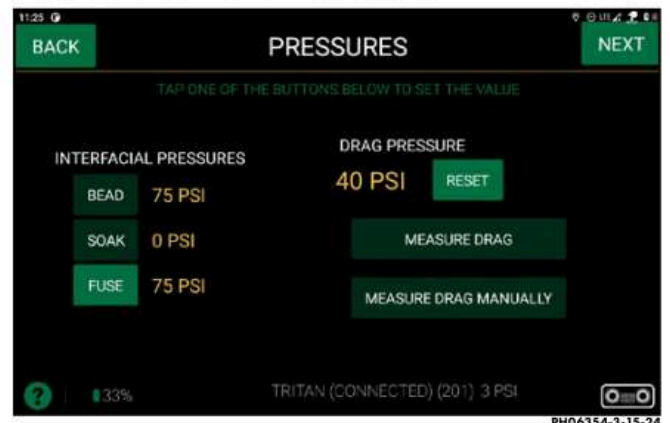
Move the carriage to the desired position to measure drag. Typically, 1.5"-2" from the pipe ends.

Tap the **MEASURE DRAG MANUALLY** button to open the machine control interface. The carriage control panel will be active with the pressure control slider present.



Tap **Lock Close (A)** and drag the pressure control slider **(B)** up until carriage movement is observed. Then, drag the slider down slowly until the carriage is barely moving.

Tap the **FINISH DRAG** button to record the drag pressure. Tap **CONFIRM** on the confirmation prompt to confirm drag pressure and return to the Pressures screen.



Pressures (After Drag Measurement):

Reset:	Select to reset drag pressure.
---------------	--------------------------------

Tap **NEXT** to proceed to the Temperatures screen.

Check Heater Temperature

CAUTION

The heater is hot and will burn clothing and skin. Keep the heater protected from personnel when not in use and use care when handling heater and heating pipe.

NOTICE: Incorrect heating temperature can result in questionable fusion joints. Check heater plates periodically with a pyrometer and make necessary adjustments.

WARNING

Use the Hydraulics Start/Stop button to turn the hydraulics off before entering the unit for maintenance or chip removal. Serious injury or death could result if the hydraulic power remains on and the hydraulics are activated while personnel are between movable machine parts.

Open the machine control interface, and lower the heater. Once the heater has been pivoted within reach, disable the hydraulics.



Check heater surface temperature where the pipe will contact the heater. Enter the recorded temperatures on the [Temperatures](#) screen during the Fusion Setup.

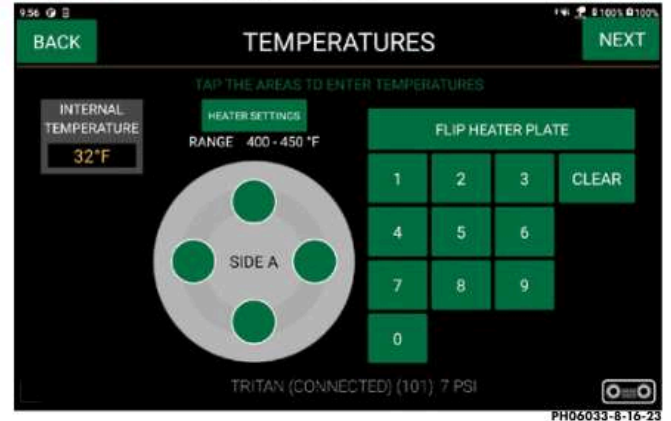
The dial thermometer on the heater body is for reference only and does not indicate heater butt plate surface temperature.

Refer to the pipe manufacturer's recommendations or appropriate joining standard for proper heater temperature.

Drag the touch slider on the Hydraulic Lockout screen to the right to re-enable hydraulics.

Tap the **DATALOGGER** button to return to the Temperatures screen.

In the Temperatures screen, enter the recorded heater temperatures in the designated slots.

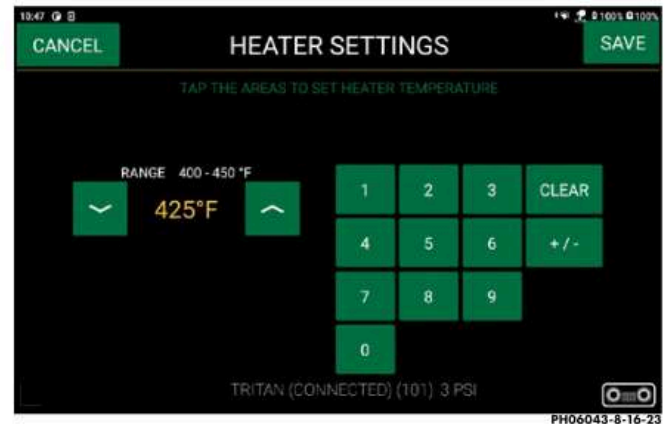


Temperatures:

Heater Settings: Change the set heater temperature. A heater temperature offset can be entered in Tritan Management.

Record the heater temperatures for each side of the heater plate. Clean the heater with a clean, dry, non-synthetic cloth.

Tap **HEATER SETTINGS** to enter the Heater Settings screen and adjust the heater set temperature.



Heater Settings:

Change the heater set temperature.

Once the heater temperature is set according to the standard in practice, tap **SAVE** to save the heater temperature and return to the Temperatures screen.

Tap **NEXT** to proceed to the Final Review screen.

Position Heater

Before starting the fusion, open the machine control interface and pivot the heater down into the carriage.



Index the heater towards the pipe end clamped by the fixed jaws without making contact.

NOTICE: Collision avoidance may prevent these functions from actuating. Reposition indexer for more clearance between the heater and/or facer and carriage before reattempting these functions.



With the heater in fusion position, tap **DATALOGGER** to return to the Final Review screen.

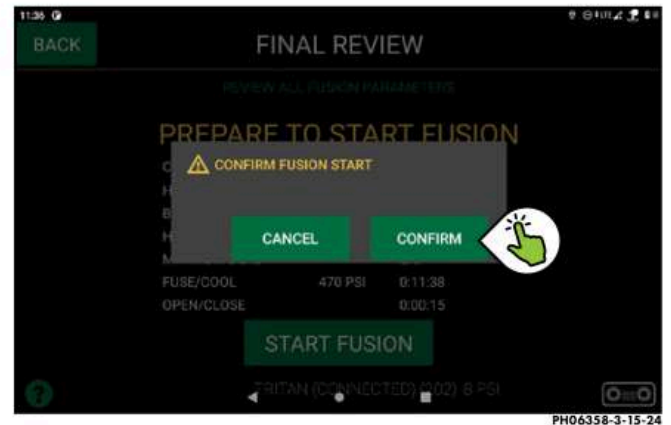
On the Final Review screen, verify that all fusion parameters are correct according to the standard in practice for the pending fusion.

If there are any incorrect values, tap **BACK** to navigate backwards to the appropriate screen to correct.

To start the fusion, tap **START FUSION**.



Tap **CONFIRM** to confirm the fusion start.



NOTICE: If the fusion is started and then aborted, drag measurement must be retaken.

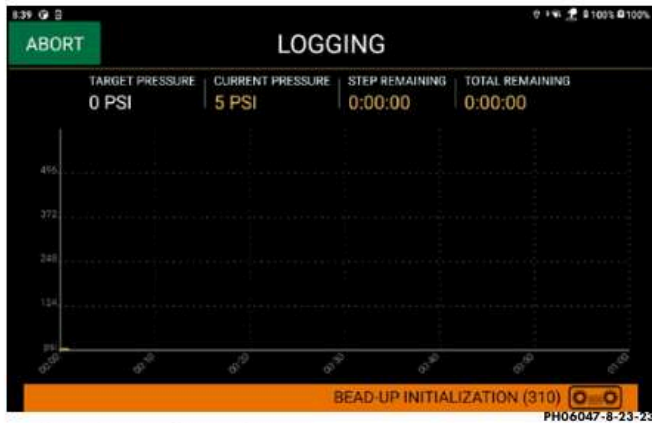
Turn to the selected fusion guide level:

Level 1 - [Pg. 4 - 30](#)

Level 2 - [Pg. 4 - 28](#)

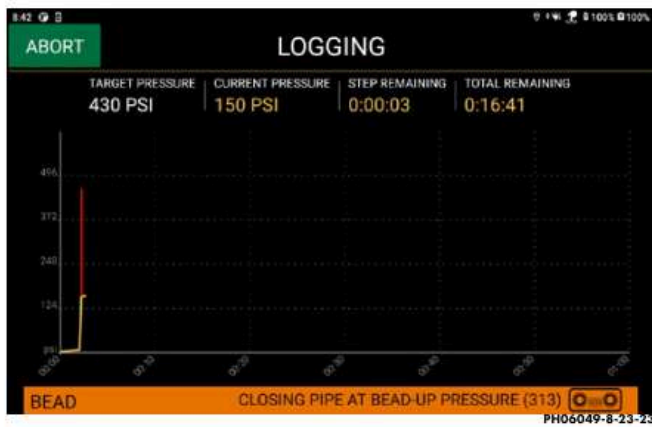
Level 3 - [Pg. 4 - 46](#)

Level 3 Fusion Process



1. The alarm will sound to alert machine movement.

IMPORTANT: Graphs shown on these screens are an example and may not reflect an actual graph of fusion performed to another standard.



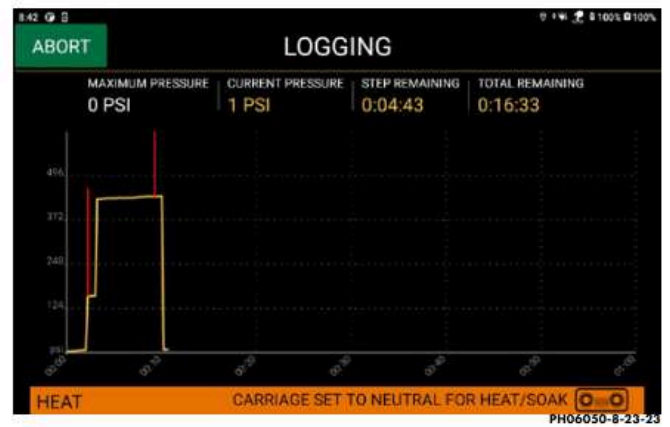
2. Carriage will close at bead-up pressure.



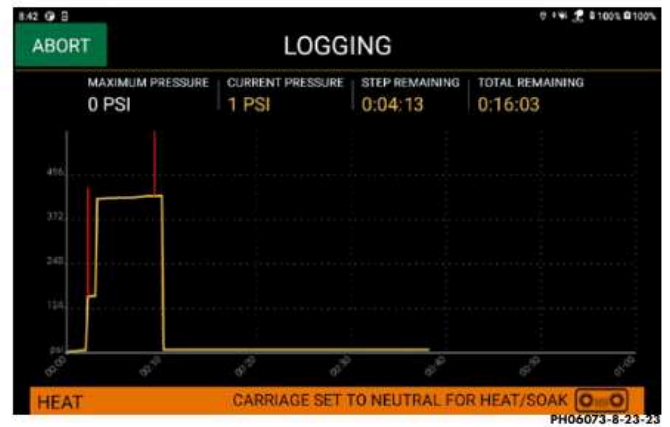
3. Bead-up will take place until bead-up conditions are met.



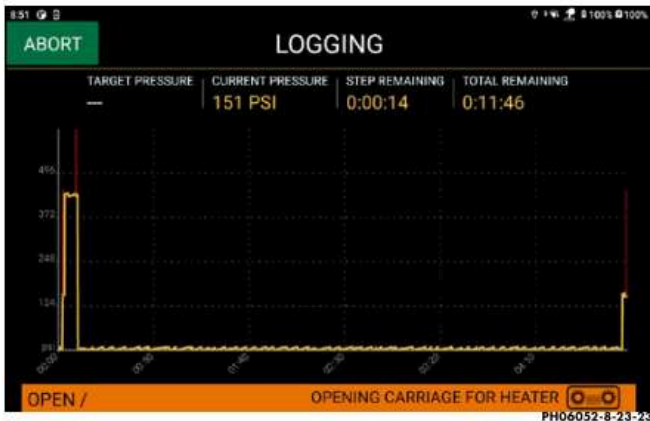
4. Heat/Soak cycle will start.



5. Pressure will drop to drag pressure for Heat/Soak.



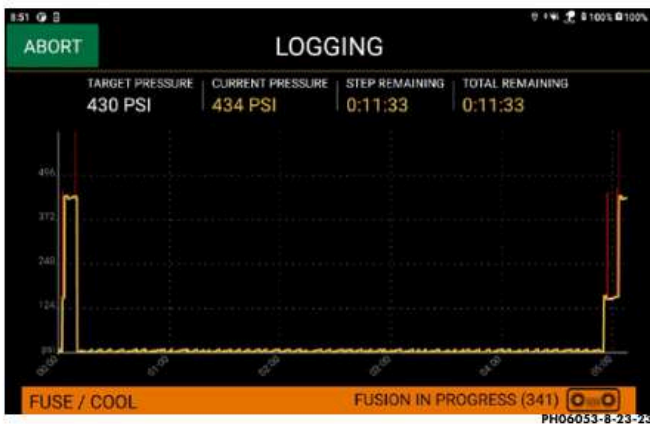
6. Carriage is set to neutral for the Heat/Soak.



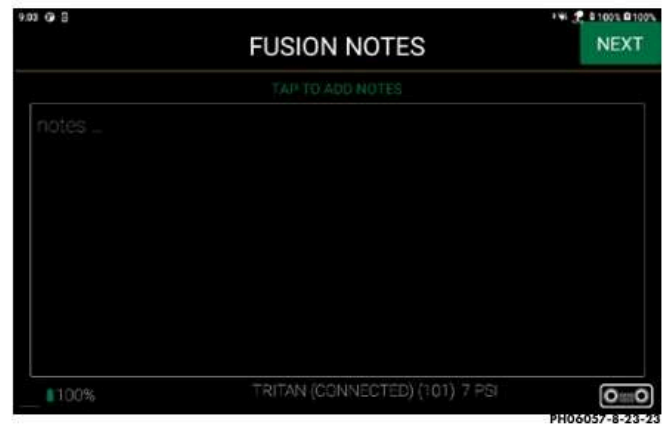
7. Carriage is opened, Indexer is moved right, and the heater is pivoted out.



10. When the Fuse/Cool cycle is complete, the "Fusion Process Complete" prompt will appear. Tap **OK** to accept completion and continue to the Fusion Notes screen.



8. The carriage is closed at fusion pressure.



11. Tap to add notes about the completed fusion in the Fusion Notes screen. Tap **NEXT** to continue to the Completion Photos screen.



9. The Fuse/Cool cycle starts.



12. Tap the camera icon to take photos of the completed fusion joint for reference.

Tap **NEXT** to view the [Joint Report](#).

Level 2 Fusion Process



View fuse settings by tapping the drop down arrow, and reset the timer by tapping **RESET TIMER** if needed.

1. Tap **START BEADUP** to begin bead-up. Tap **CONFIRM START BEADUP** to confirm start.

IMPORTANT: Graphs shown on these screens are an example and may not reflect an actual graph of fusion performed to another standard.



2. The alarm will sound to alert machine movement.



3. Carriage will close at bead-up pressure. Once bead-up conditions are met, tap **START SOAK** to begin Heat/Soak.



4. Heat/Soak cycle will start.



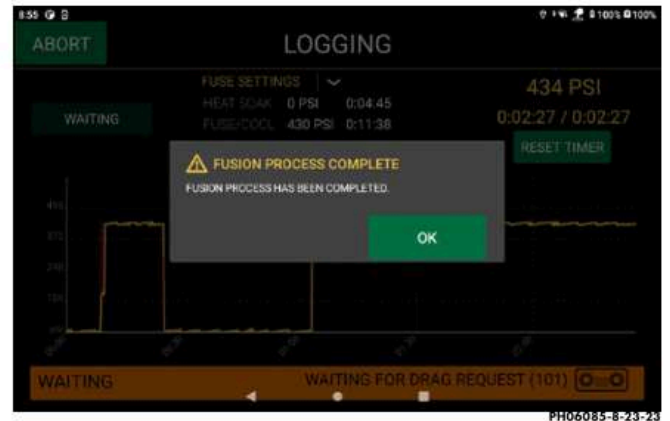
5. Pressure will drop to drag pressure for Heat/Soak. When Heat/Soak conditions are met, tap **START OPEN/CLOSE**. Tap **CONFIRM START OPEN/CLOSE** to begin Open/Close.



6. Open/Close will start.



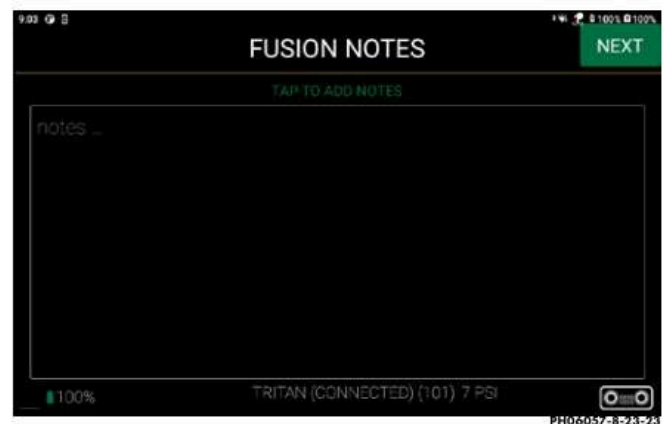
7. Carriage is opened, indexer is moved right and the heater is pivoted out.



10. The "Fusion Process Complete" prompt will appear. Tap **OK** to accept completion and continue to the Fusion Notes screen.



8. The carriage is closed at fusion pressure. Fuse/Cool cycle is started. Once Fuse/Cool conditions are met, tap **STOP COOL** to finish the fusion.



11. Tap to add notes about the completed fusion in the Fusion Notes screen. Tap **NEXT** to continue to the Completion Photos screen.



9. Confirm that the fusion joint is complete by tapping **YES** on the "Confirm Joint is Complete" prompt.

Tap **NO** to continue the Fuse/Cool cycle.



12. Tap the camera icon to take photos of the completed fusion joint for reference.

Tap **NEXT** to view the [Joint Report](#).

Level 1 Fusion Process



View fuse settings by tapping the drop down arrow, and reset the timer by tapping **RESET TIMER** if needed.

1. Waiting for carriage movement to start bead-up. The machine control interface will open.

IMPORTANT: Graphs shown on these screens are an example and may not reflect an actual graph of fusion performed to another standard.



2. Tap the **Lock Close** button in the Carriage control panel to close carriage for bead-up. Tap **DATALOGGER** to return to the Logging screen.



3. Carriage is closed at bead-up pressure. Once bead-up conditions are met, tap **START SOAK** to begin Heat/Soak.



4. Heat/Soak cycle will start.



5. Pressure will drop to drag pressure for Heat/Soak. When Heat/Soak conditions are met, tap **START OPEN/CLOSE**. The machine control interface will open.

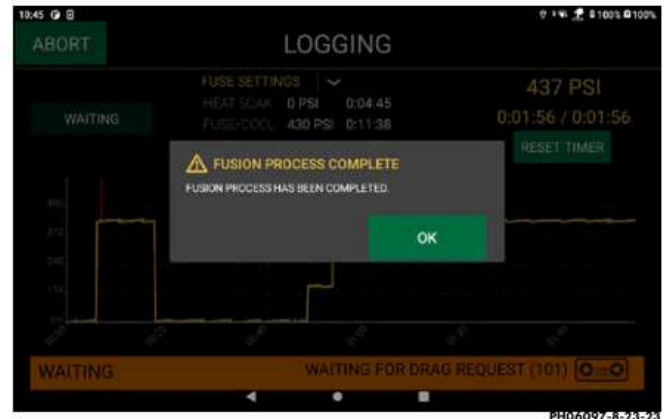


6. Tap the **Lock Open** button to open the carriage. Index to the right and pivot the heater out of the carriage. Once heater is clear of the jaws, tap **Lock Close**.



7. The carriage is closed at fusion pressure. Fuse/Cool cycle is started.

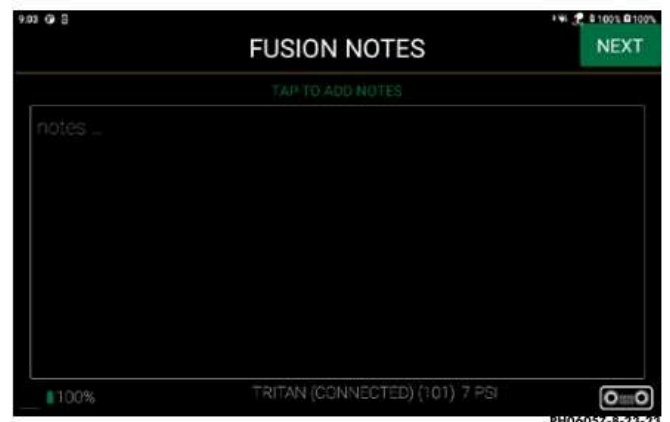
Allow Fuse/Cool cycle to run for the specified time.



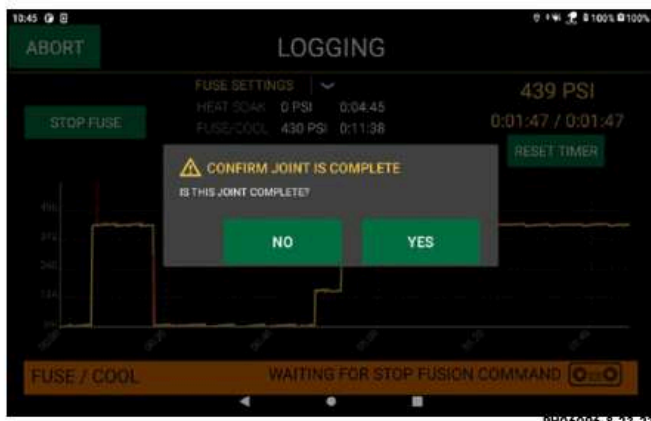
10. The "Fusion Process Complete" prompt will appear. Tap **OK** to accept completion and continue to the Fusion Notes screen.



8. Once Fuse/Cool conditions are met, tap **STOP FUSE** to finish the fusion.



11. Tap to add notes about the completed fusion in the Fusion Notes screen. Tap **NEXT** to continue to the Completion Photos screen.



9. Confirm that the fusion joint is complete by tapping **YES** on the "Confirm Joint is Complete" prompt.

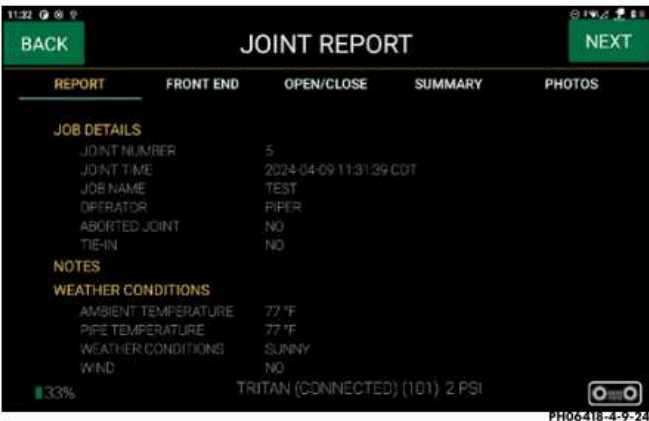
Tap **NO** to continue the Fuse/Cool cycle.



12. Tap the camera icon to take photos of the completed fusion joint for reference.

Tap **NEXT** to view the [Joint Report](#).

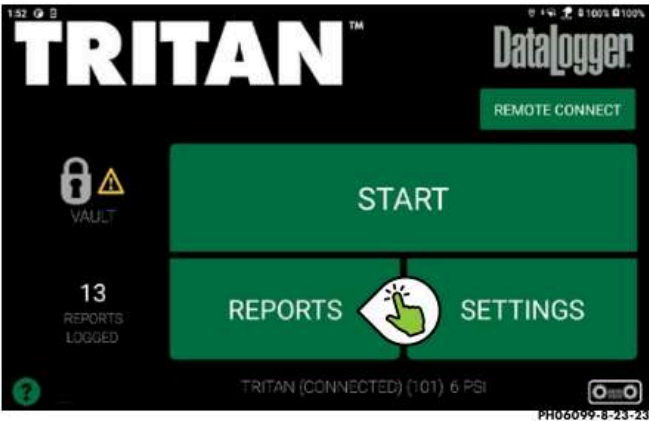
Joint Report



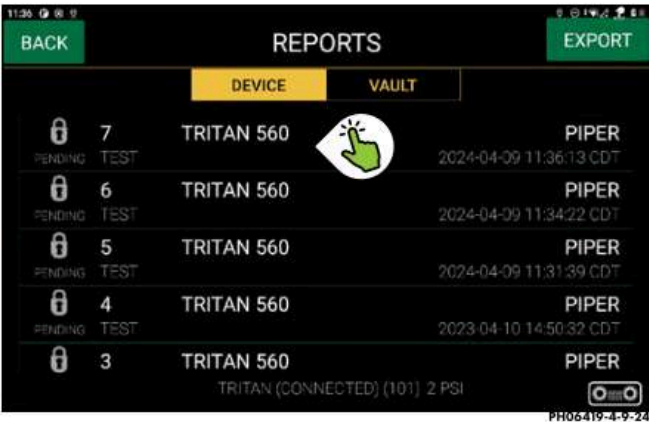
After each completed fusion, the Joint Report screen will appear.

The report, the three plots and any photos taken of the fusion can be viewed at this time.

Tap **NEXT** to return to the main screen.



To view previous reports, tap **REPORTS** in the main screen of the DataLogger.

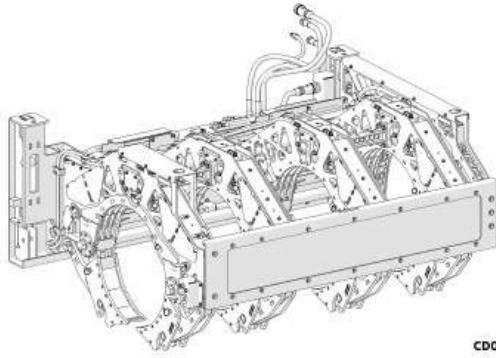


Tap a joint report to view.

SPECIAL OPERATIONS

Special Operations Overview

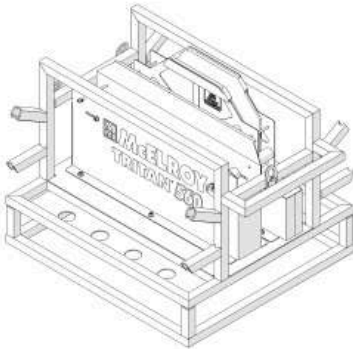
The carriage can be used in a 2+2 jaw configuration, a 3+1 jaw configuration or off the vehicle in either configuration for in-ditch, tie-ins and fusing tees or fittings that require more working space than is possible while the carriage is mounted on the vehicle.



CD03069-1-2-24

All off-vehicle operations require the extension kit which includes extension cables and hoses.

Keep the heater and facer clean by utilizing the optional heater/facer stand.



CD02812-9-15-23

The Special Operations section is divided into:

- **Carriage Removal** - For more compact, off-vehicle fusion operation.
- **Lifting Carriage** - For off-vehicle fusion operation.
- **Rolling Carriage** - For off-vehicle fusion operation. Allows for top-loading operation.
- **Facer Removal** - For off-vehicle fusion operation.
- **Heater Removal** - For off-vehicle fusion operation.
- **3 + 1 Jaw Configuration** - Allows more area to fuse tees and perform tie-ins.

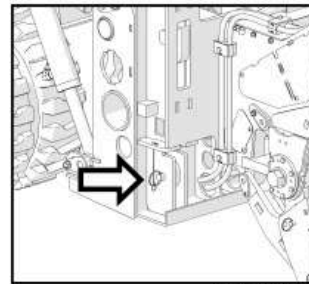
Carriage Removal

The carriage can be removed from the vehicle for off-vehicle fusion operation.

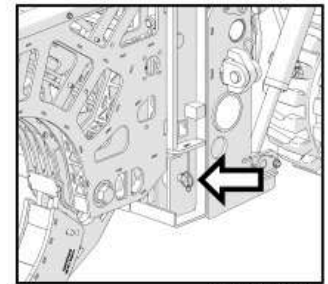
To prepare for carriage removal, open the jaws completely, open the carriage completely and extend the boom completely. Ensure the heater and facer are pivoted in the out position and are indexed over the fusion zone.

NOTICE: The carriage must be completely open in order for it to remain level and stand on its own when being removed from the vehicle.

Remove the two clevis pins at the bottom of the carriage back plate.

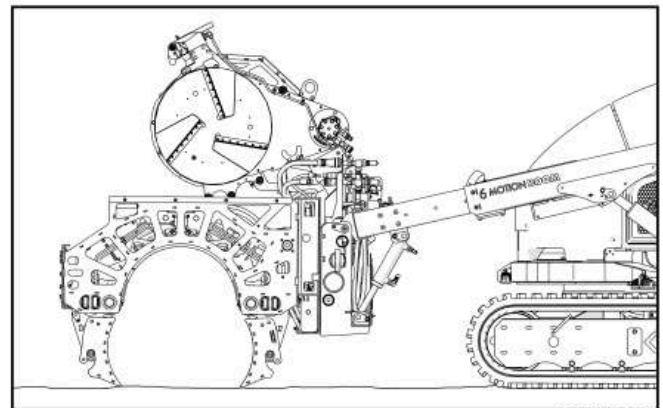


CD03017-8-29-23



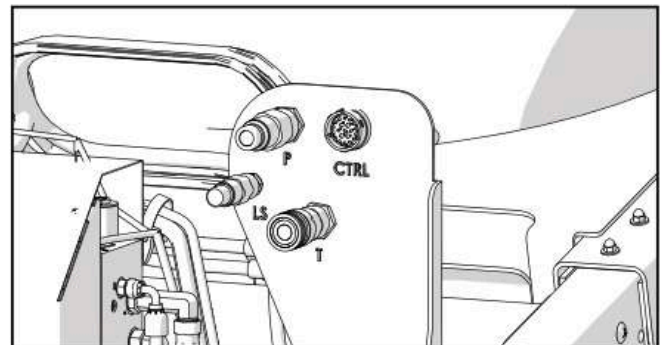
CD03018-8-29-23

Boom the carriage down until the tips of the quarter jaw inserts rest on the ground. Curl the carriage as needed while performing this step to ensure all quarter jaw inserts make contact with the ground.



CD03125-3-13-24

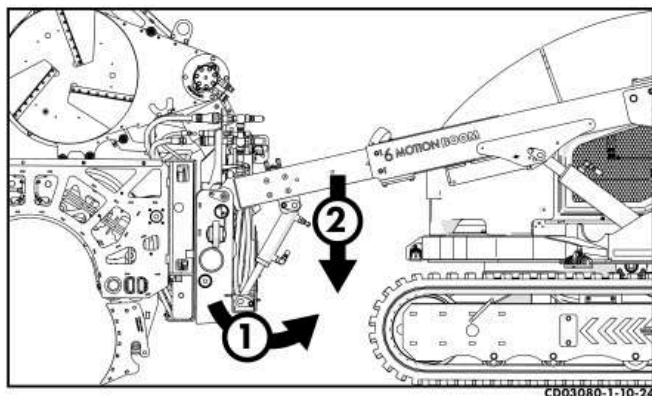
Disconnect all carriage hoses and cables using the quick disconnects on the vehicle bulkhead.



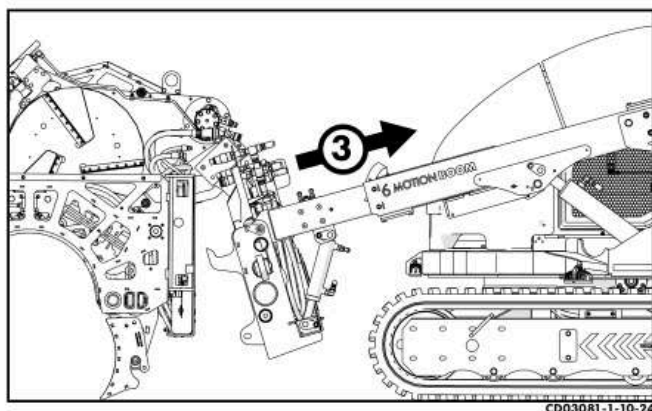
CD02737-08-29-23

With the two clevis pins removed and the carriage hoses and cables disconnected, curl down (1) then lower the boom (2) to unhook the boom from the carriage.

NOTICE: Use caution when curling and lowering the boom to avoid striking the heater and facer on the carriage.



Retract boom clear of the carriage (3).



Once the carriage has been disconnected and unhooked from the vehicle, raise the boom and drive the vehicle clear of the carriage.

IMPORTANT: Attach the hydraulic extension hoses from the in-ditch extension kit after the carriage has been moved into fusion position.

Attach the hydraulic extension hoses to the carriage connections and then to the vehicle bulkhead.

When the carriage is being operated off the vehicle, the heater and facer must be removed from the indexer and top-loaded into the carriage.

Perform the carriage removal steps in reverse to re-install the carriage onto the vehicle.

Lifting Carriage

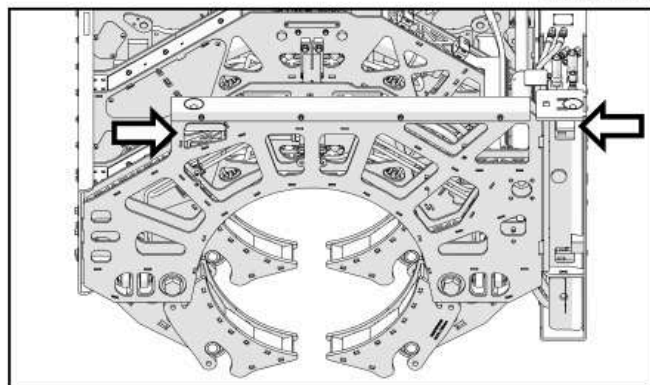
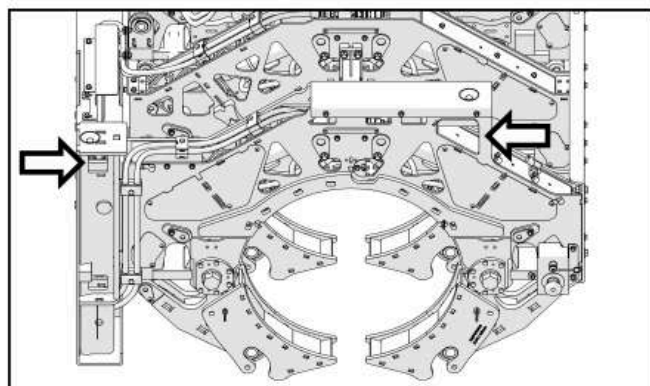
Maneuvering and positioning the carriage after it has been removed from the vehicle requires it to be lifted.

WARNING

Safety warnings:

1. Do not operate a damaged or malfunctioning lifting device.
2. Do not lift persons.
3. Do not lift a suspended load over persons.
4. Do not leave a suspended load unattended.
5. Do not remove or obscure warning labels.
6. Stay clear of the suspended load.
7. Lift loads only as high as necessary.
8. Employ generally accepted safe lifting practices.

Attach lifting slings of adequate load rating to each of the four lifting points on the top of the carriage.



Slowly lift the carriage using an overhead lifting device.

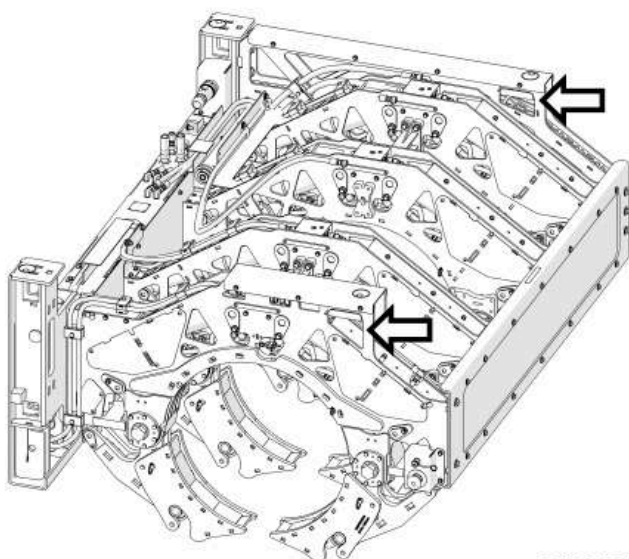
Rolling Carriage

In certain instances, the carriage may need to be rolled over to either be maneuvered onto pipe or be used in a top loading fashion.

Note that while it is recommended to remove the carriage with open jaws, rolling the carriage requires the jaws to be closed. When removing the carriage with the intent to roll, ensure the jaws are closed before doing so.

To roll the carriage, attach a lifting sling of adequate load rating to each of the two lifting points on the front of the carriage.

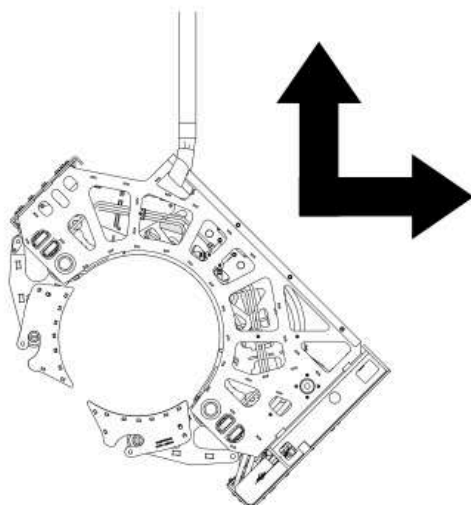
NOTICE: Ensure the jaws are closed for easier rolling.



CD03068-1-2-24

Slowly lift the front of the carriage using an overhead lifting device while also pulling the carriage backward.

Keep the lifting slings taut during the rolling process to ensure the carriage is supported.



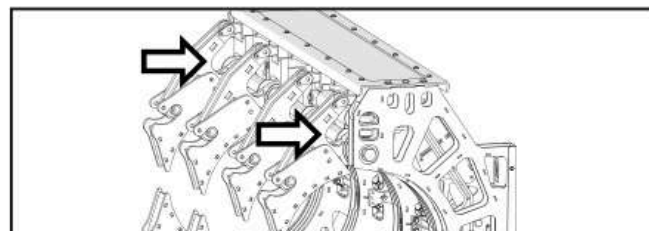
CD03062-12-27-23

Continue performing this step until the carriage has been rolled 90° and rests on the backplate like shown.



CD03063-12-27-23

With the carriage resting on the backplate, attach a lifting sling of adequate load rating to each lifting point on the outside, front jaws of the carriage.

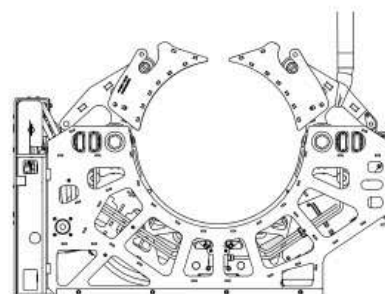


CD03064-12-28-23

Once this is done, remove the lifting slings attached to the top of the carriage.

Slowly pull and lower the lifting device to allow the carriage to roll the rest of the way backward. Manual guidance may be needed to ensure the carriage rolls in the correct direction.

Continue to lower the lifting device until the carriage rests on its top braces as shown below.



CD03065-12-28-23

Remove lifting slings.

IMPORTANT: When the carriage is in a top-loading orientation, jaw and carriage controls are reversed at the carriage operator position.

Perform these steps in reverse to roll the carriage back into its upright orientation.

Facer Removal

The facer must be removed from its indexer-mounted pivot arm and manually lowered into the carriage for off-vehicle fusion operation.

The facer can be removed before or after the carriage has been removed from the vehicle.

Keep the facer clean by utilizing the optional heater/facer stand.

⚠ WARNING

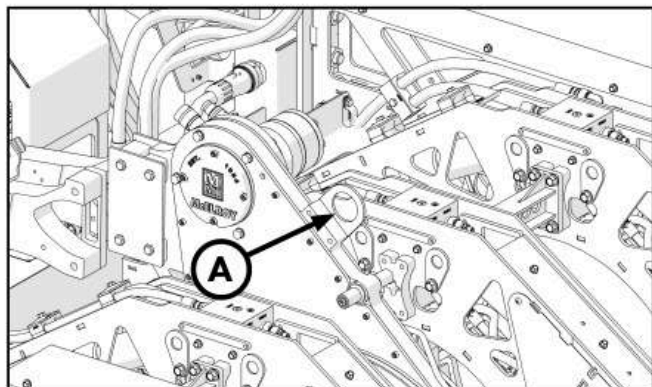
Facer blades are sharp and can cut. Never attempt to remove shavings while the facer is running or is in the facing position between the jaws. Use care when operating the facer and when handling the facer.

To remove the facer from the facer pivot arm:

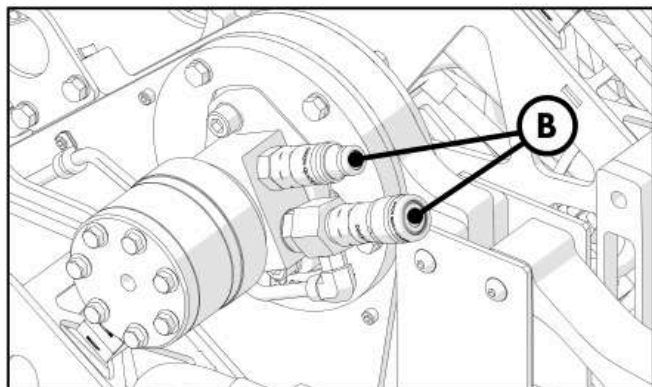
Pivot the facer down into the fusion zone.

Turn off the machine.

Attach a lifting sling of adequate load rating to the lifting eye on the top of the facer (A).



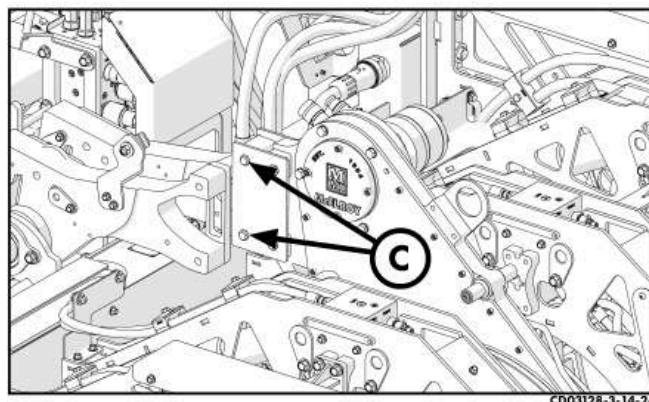
Disconnect the hydraulic hoses from the facer motor (B).



Remove the slack from the lifting sling to support the facer before it is unbolted.

Remove the facer pivot arm shoulder nuts and bolts (C).

NOTICE: Loosen all shoulder nuts for easier facer removal.

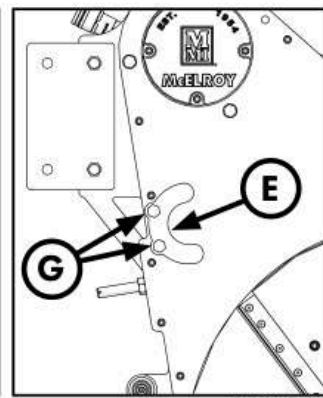
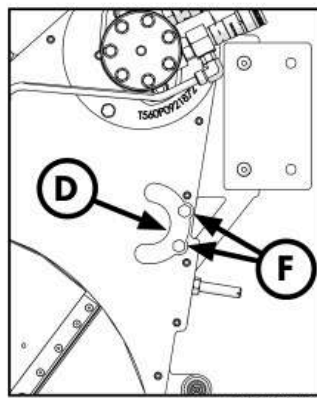


Slowly lift the facer using an overhead lifting device.

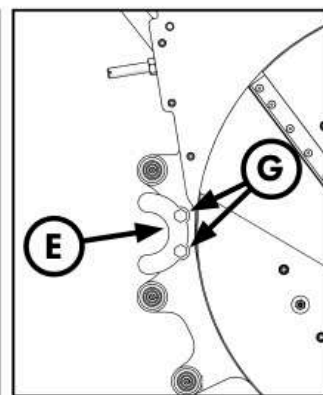
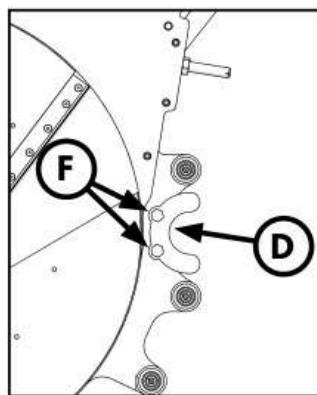
IMPORTANT: Lifting the facer in and out may cause the facer to spin around. Use a tagline to assist with facer handling.

Facer Setup:

Remove the in-ditch guide rod brackets (D&E) from the facer assembly by removing the mounting bolts (F&G).



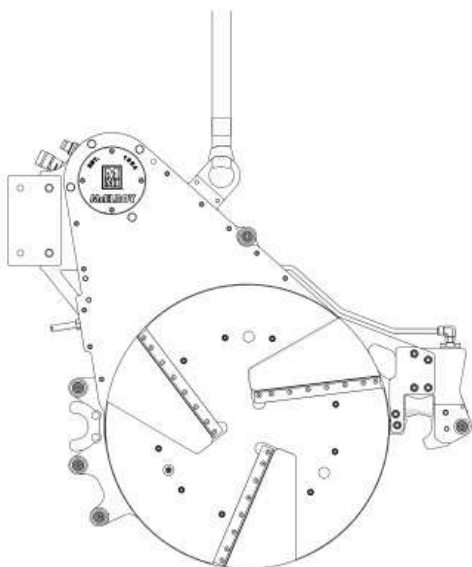
Install the guide rod brackets (D&E) onto the in-ditch location of the facer using the mounting bolts (F&G).



Attach the hydraulic extension hoses from the in-ditch extension kit to the facer motor and connect the other end to the vehicle bulkhead.

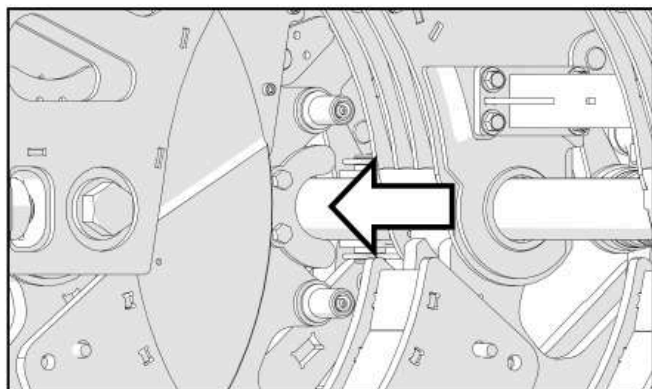
In-Ditch Facing:

When lowering the facer down into a detached carriage, use a tagline to support and guide the facer onto the guide rods.



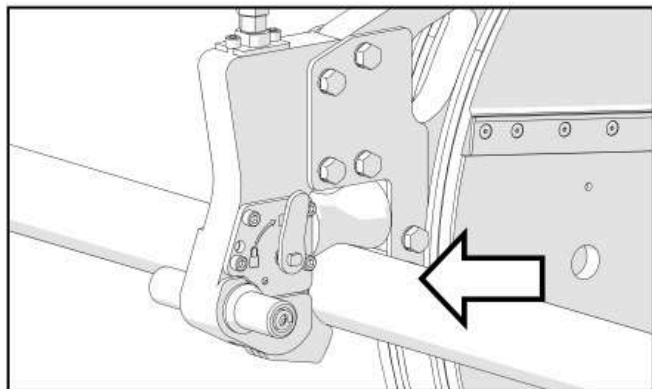
CD03114-3-5-24

Lower and guide the facer until the guide rod brackets rest on the back guide rod of the carriage as shown.



CD03122-3-12-24

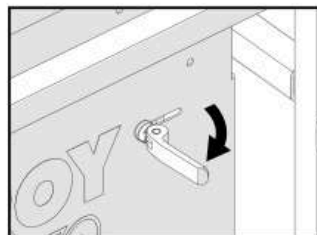
Once the facer is supported by the back guide rod, lower the facer further until the facer latch is secured onto the front guide rod.



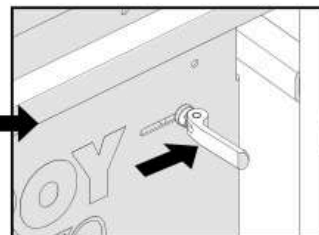
CD03131-3-15-24

When the facer is not being used, it may be stored in the optional heater/facer stand.

Set up the heater/facer stand by unlatching the back holding rod. Loosen and slide the back holding rod as shown to allow clearance for the facer to be lowered.



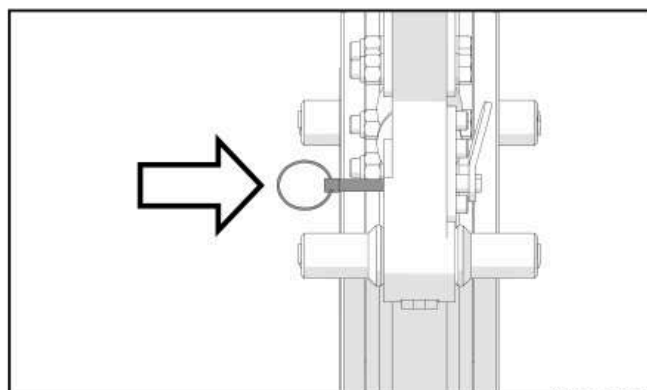
CD02976-10-13-23



CD02977-10-13-23

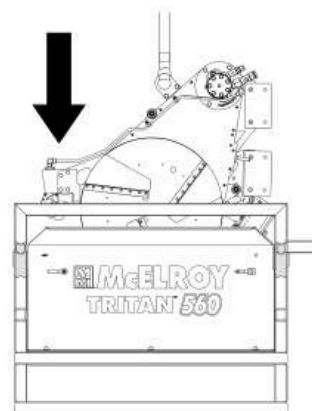
If the facer needs to be secured to the heater/facer stand for transport, place the facer latch detent pin into the designated slot on the facer latch assembly before lowering into the stand.

NOTICE: Do not push the detent pin completely into the slot. This is done after the facer is fully supported by the stand.



CD03140-4-10-24

Slowly lower the facer down into the designated slot. Use a tagline to support and guide the facer onto the front holding rod.

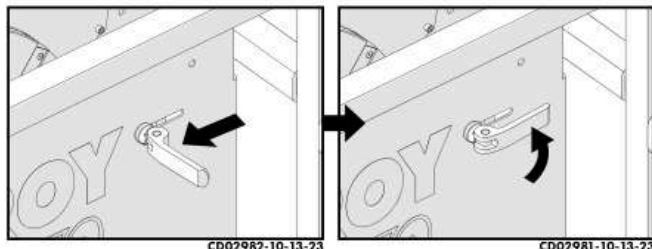


CD03123-3-12-24

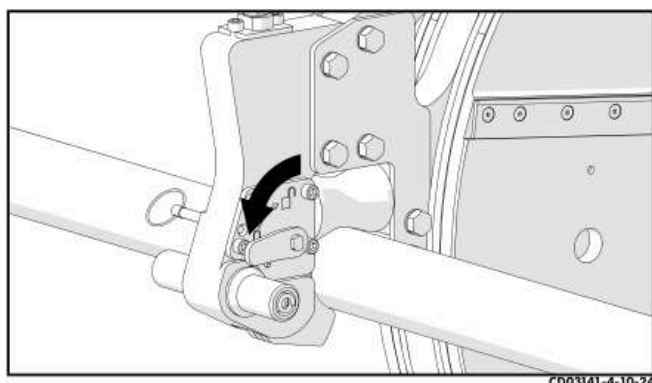
Lower until the facer latches onto the front holding rod of the heater/facer stand.

Before allowing any slack, slide the back holding rod into its original position while ensuring it supports the facer by the guide rod brackets.

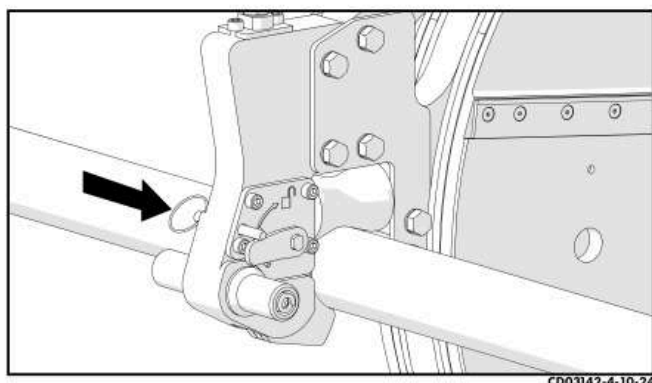
Once in place, tighten and re-latch the back holding rod so that it locks in place to fully support the facer.



Once fully supported by the stand, the facer can be unslung. To secure the facer to the stand, push the facer latch override lever down into the lock position.



With the facer latch override lever in the lock position, push the facer latch detent pin the rest of the way into the facer latch assembly.



The facer is secured to the heater/facer stand.

Perform the facer removal steps in reverse to re-install the facer onto its indexer pivot arm.

NOTICE: Remove the facer guide rod brackets and re-install in the storage location before re-installing the facer back onto the facer pivot arm.

Heater Removal

The heater must be removed from its indexer-mounted pivot arm and manually lowered into the carriage for off-vehicle fusion operation.

The heater can be removed before or after the carriage has been removed from the vehicle.

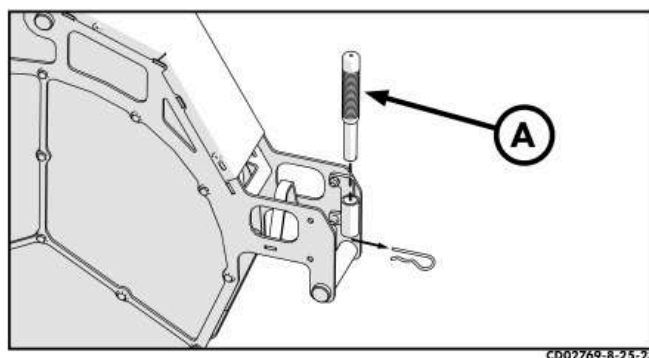
Keep the heater clean by utilizing the optional heater/facer stand.

CAUTION

The heater is hot and will burn clothing and skin. Keep the heater protected from personnel when not in use and use care when handling heater and heating pipe.

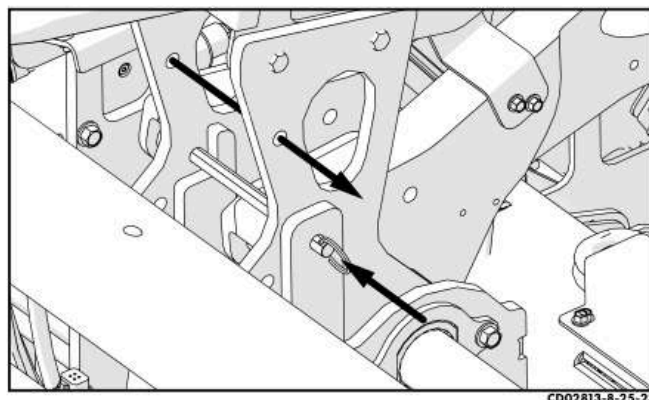
The heater and adjacent components are hot when heater power is on. Turn the heater off and ensure it has cooled before beginning this process.

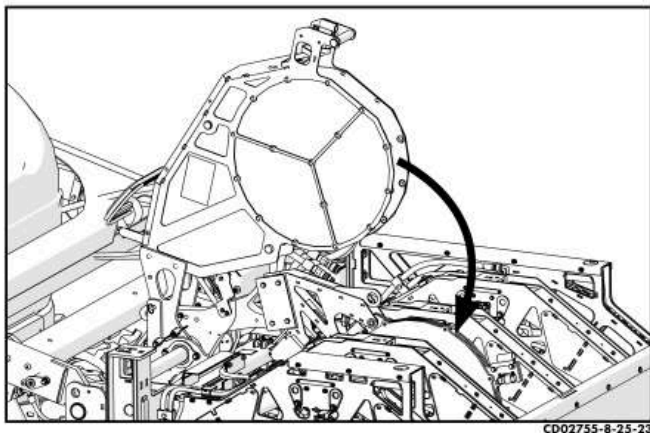
Unpin and remove the heater handle (A) from its storage location on the heater bag frame.



To remove the heater from the heater pivot arm:

Pin the heater bag frame in its highest position and pivot the heater down into the carriage.



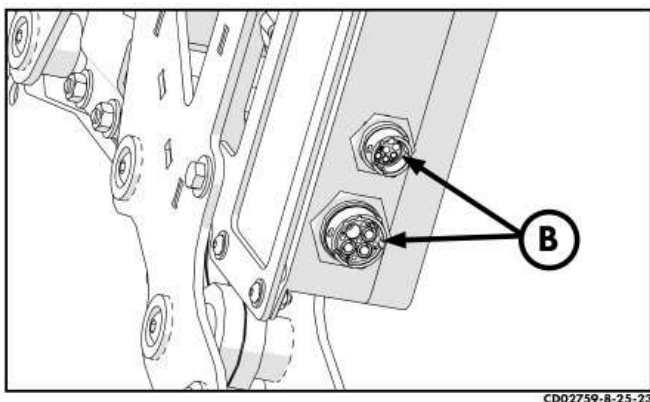


Turn the machine off.

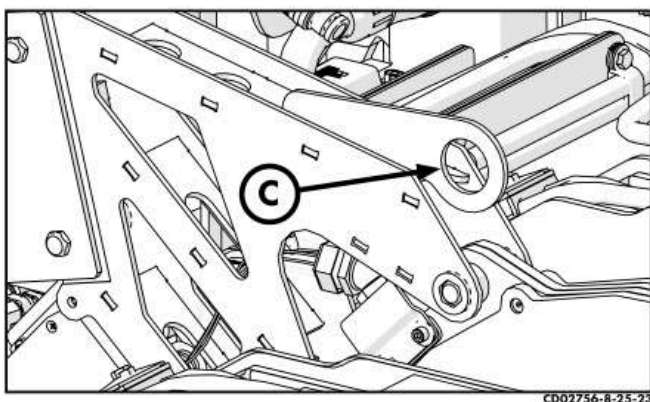
⚠ WARNING

Ensure heater power is off before connecting or disconnecting heater power cables. Failure to do so may result in electrical shock.

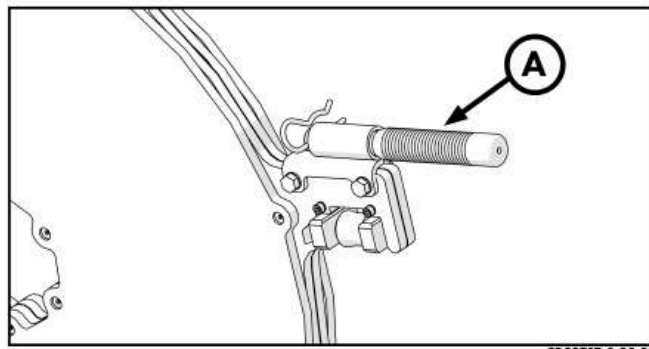
Unplug the heater power and RTD cables at the heater receptacles (B).



Attach a lifting sling of adequate load rating to the lifting eye on the top of the heater (C).



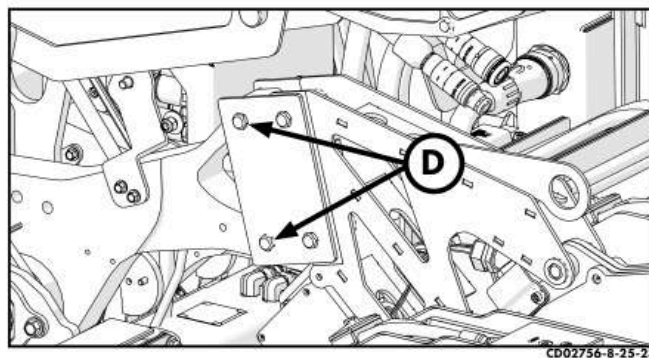
Install the heater handle (A) onto the heater to assist with handling the heater once it is removed.



Remove the slack from the lifting sling to support the heater before it is unbolted.

Remove the heater pivot arm shoulder nuts (D).

NOTICE: Loosen all shoulder nuts for easier heater removal.



Slowly lift the heater using an overhead lifting device.

IMPORTANT: Lifting the heater in and out may cause the heater to spin around. Use the heater handle to assist with heater handling.

Heater Setup:

⚠ WARNING

Ensure heater power is off before connecting or disconnecting heater power cables. Failure to do so may result in electrical shock.

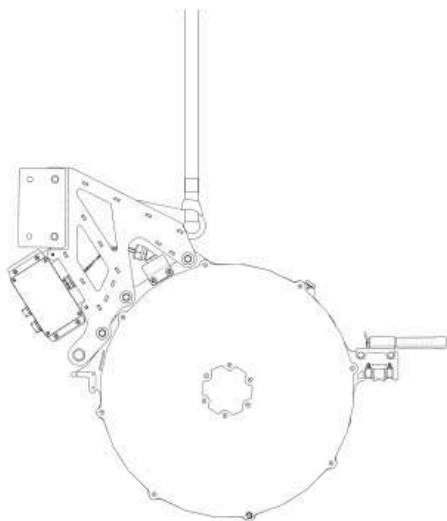
Attach heater power and RTD cables between the vehicle and heater using the extension kit.

The straight ends of the cables are plugged in at the vehicle bulkhead, and the angled ends are plugged into the heater receptacles.



In-Ditch Heating:

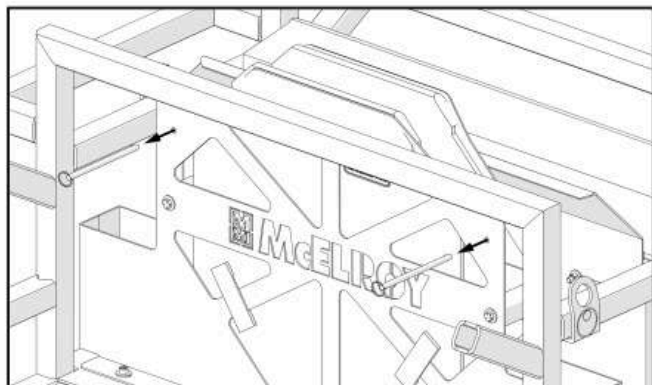
When lowering the heater down into a detached carriage, use the heater handle to guide the heater onto the guide rods.



CD02804-8-25-23

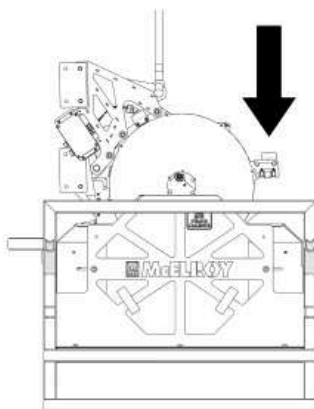
When the heater is not being used, it may be stored in the optional heater/facer stand.

To prepare the heater/facer stand to receive the heater, remove the two securing pins from the heater bag frame on the stand.



CD03137-4-10-24

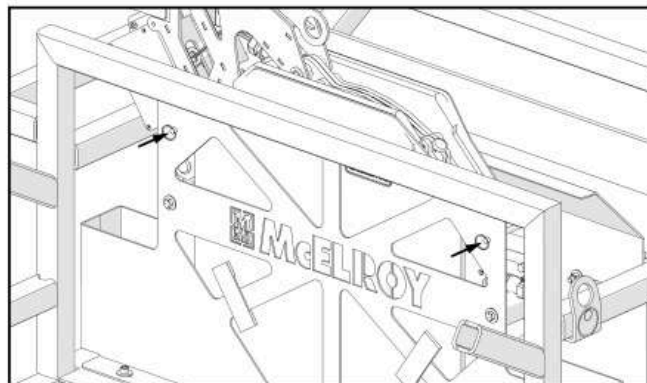
Lower and guide the heater into the heater bag frame on the heater/facer stand until it rests on the holding rods.



CD02947-10-13-23

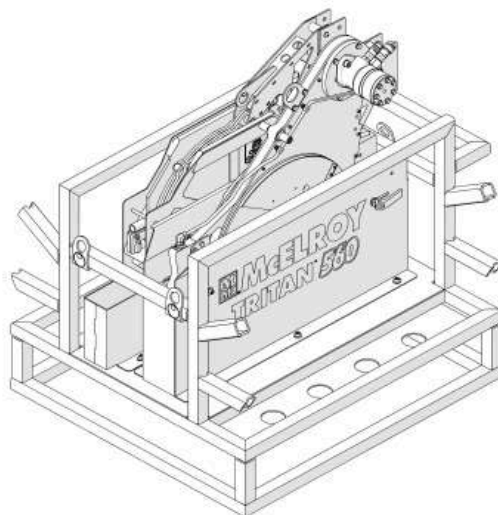
Once fully supported by the stand, the heater can be unslung.

To secure the heater to the stand, re-install the two securing pins to their original positions.



CD03143-4-10-24

Perform the heater removal steps in reverse to re-install the heater onto its indexer pivot arm.



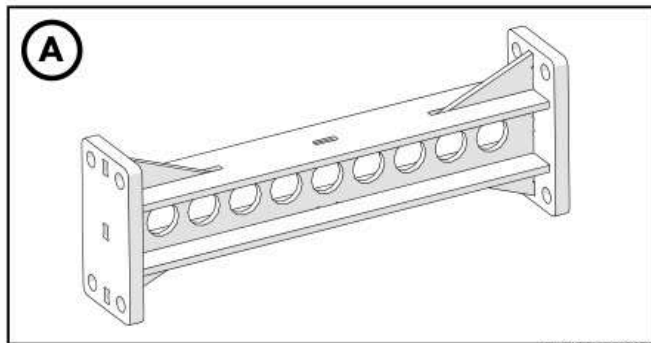
CD03144-4-10-24

3+1 Jaw Configuration

The carriage assembly consists of one fixed jaw, one floating jaw and two hydraulically operated movable jaws. Using jaw spacers, the jaws can be set up in a 3+1 configuration for fusing tees and performing tie-ins.

Jaw Spacers

There are a total of six jaw spacers (A). Three jaw spacers are installed between two jaws to allow interchanging between 2+2 and 3+1 jaw configurations.



CD02762-8-28-23

To switch to 3+1 jaw configuration:

Open the carriage fully.

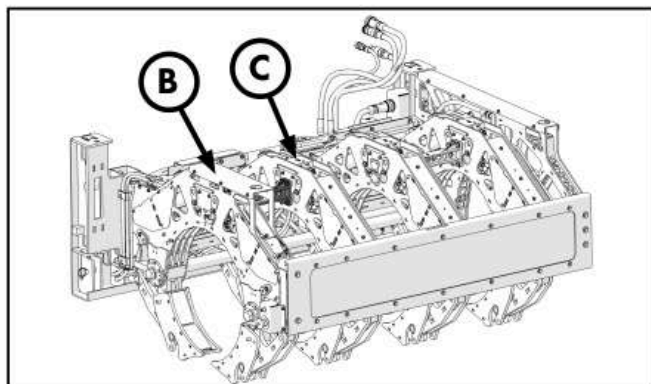
Disable hydraulics or turn the machine off.

⚠ WARNING

Hydraulically operated equipment operates under high pressure and generates extremely high forces. Anything inadvertently caught in the machine will be crushed. Keep fingers, feet, arms, legs, and head out of the machine while hydraulics are activated. Always ensure machine power is off before entering the machine for any reason.

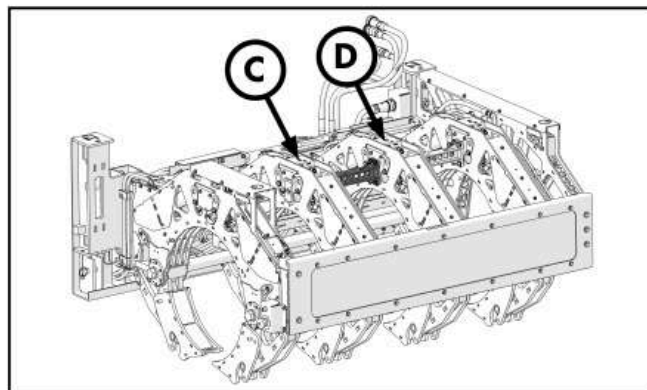
NOTICE: The movement of the carriage and quarter jaws create crush points.

Unbolt the three jaw spacers located between the outer fixed jaw (B) and the inner floating jaw (C).

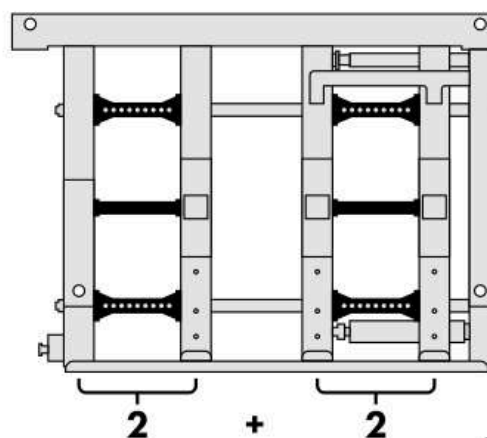


CD02765-8-28-23

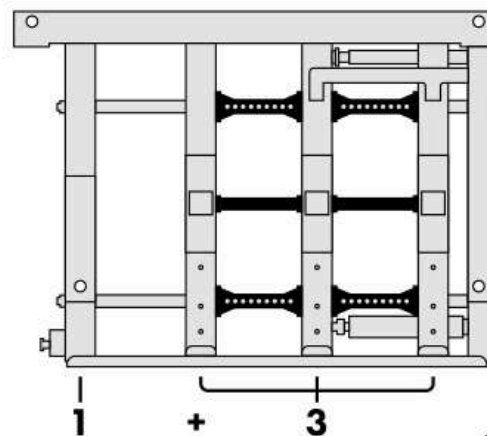
Install the three jaw spacers between the inner floating jaw (C) and the inner movable jaw (D) using the jaw spacer bolts.



CD02764-8-28-23



CD02767-8-28-23



CD02768-8-28-23

Once the three jaw spacers have been installed between the inner floating jaw and the inner movable jaw, the carriage will operate with three movable jaws and one fixed jaw.

Re-enable hydraulics or turn the machine back on.

To revert back to 2+2 jaw configuration, disable the hydraulics and perform this process in reverse.

LIFTING AND TRANSPORT

Lifting Safety

Follow all applicable federal, state, local and industry specific regulations when lifting.

⚠ WARNING

Safety warnings:

1. Do not operate a damaged or malfunctioning lifting device.
2. Do not lift persons.
3. Do not lift a suspended load over persons.
4. Do not leave a suspended load unattended.
5. Do not remove or obscure warning labels.
6. Stay clear of the suspended load.
7. Lift loads only as high as necessary.
8. Employ generally accepted safe lifting practices.

Setting Up Machine for Lifting

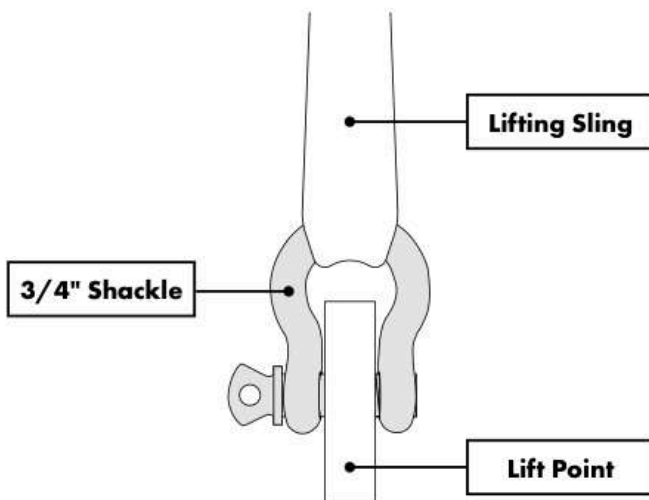
It is recommended to drive the machine in every instance it is feasible. Only lift the entire machine if it is absolutely necessary for recovery.

The machine has three lift points that are designed to fit 3/4" screw pin anchor shackles. Use shackles with a working load limit of 4.75 tons.

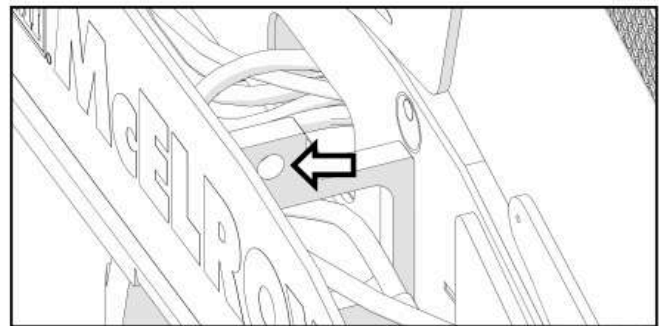
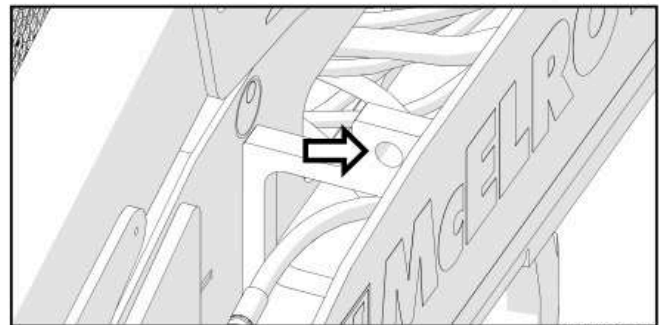
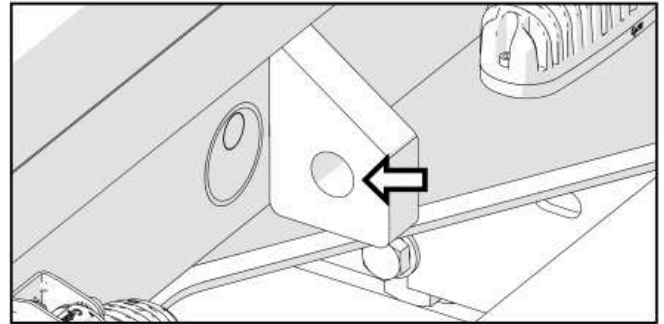
When setting up the machine to be lifted, a total of three lifting slings with a minimum length of 8 feet and minimum vertical rating of 8,800 lbs. must be used.

Loop the lifting slings onto the shackles before attaching the shackles to the lift points. Do not use a choked loop when lifting the machine.

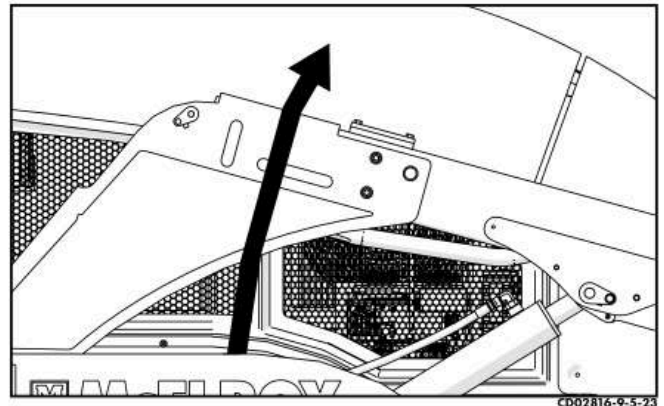
Use only a combination of lifting slings and shackles when lifting the entire machine. The use of chains, cables or any other method not stated is not recommended.



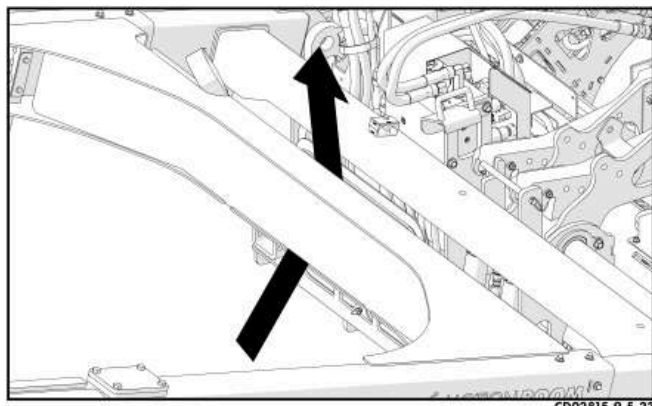
Attach shackles of specified size to each of the three lifting points. Lifting points are located on the front bumper of the vehicle and underneath each side of the boom.



Run the two lifting slings attached to the side lift points over the boom as shown.



Run the lifting sling attached to the front lift point over the front brace of the boom as shown.



NOTICE: When running slings up to the lifting device, avoid sharp edges on the machine that could cut or weaken the lifting slings.

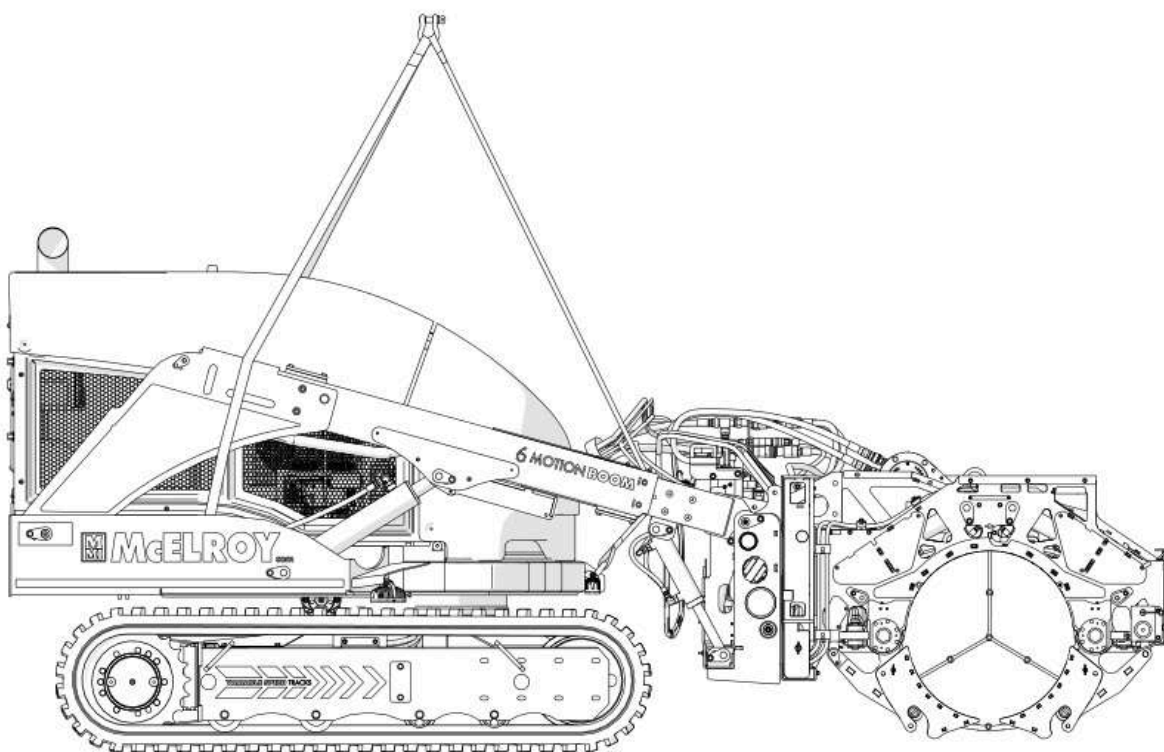
Loop all three ends of the lifting slings onto a single attachment point of an overhead lifting device as shown below.

If possible, retract the boom completely before lifting the machine.

Lifting Machine

Slowly lift the machine using an appropriate overhead lifting device.

Only lift the machine as high as needed.



WARNING

A raised machine could fall and result in serious injury or death if a lifting device fails. Always stand clear of a machine that is being lifted.

Never lift a machine over other personnel.

Never stand beneath a machine that is being lifted.



NOTICE: The configuration depicted below is ideal, but may not always be possible.

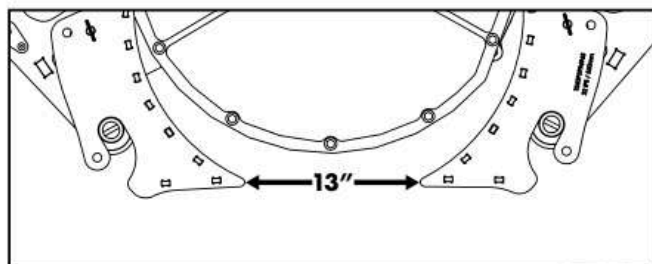
Loading Machine for Transport

When loading the machine onto a trailer, it is recommended to drive the machine forwards, carriage first as depicted below.

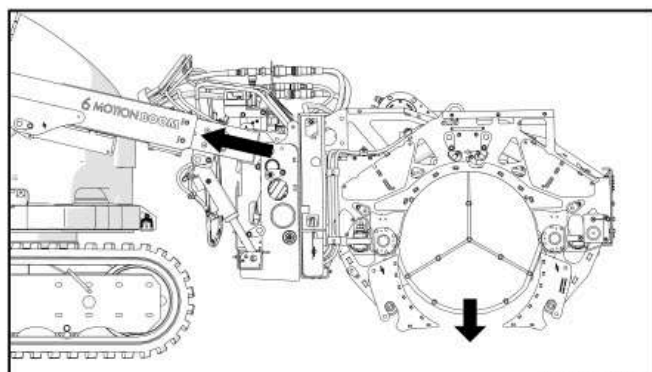
Use Crawl speed when loading and unloading the machine in order to drive the machine slowly and make fine steering adjustments.

IMPORTANT: Ensure the boom is raised high enough to avoid striking the carriage and other components on the ground when tracking on an incline.

Once the machine is in transport position, adjust the jaws until the tips of the quarter inserts are approximately 13" apart.



Then, retract the boom completely, lower the boom and curl the carriage as needed until the quarter jaw inserts rest on the trailer surface.



Securing Indexer for Transport

The heater, heater bag frame and facer must be secured to prevent machine damage during transport.

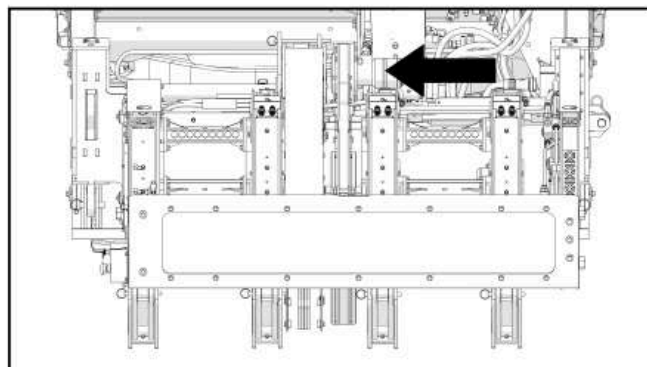
To secure these components into the stowage position, index heater and facer over the fusion zone. The fusion zone will vary depending on jaw configuration.

Ensure the heater bag frame is unpinned to allow pivoting with the heater.

Pivot the heater, heater bag frame, and facer down into the fusion zone as shown below.

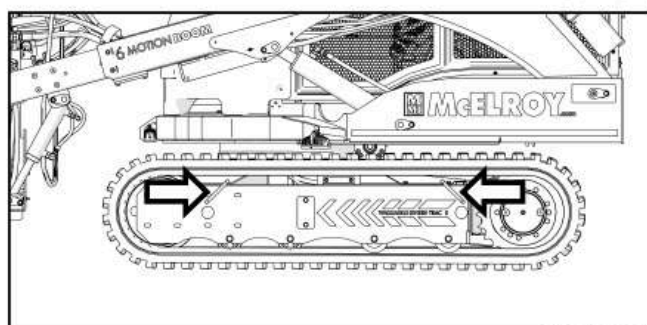
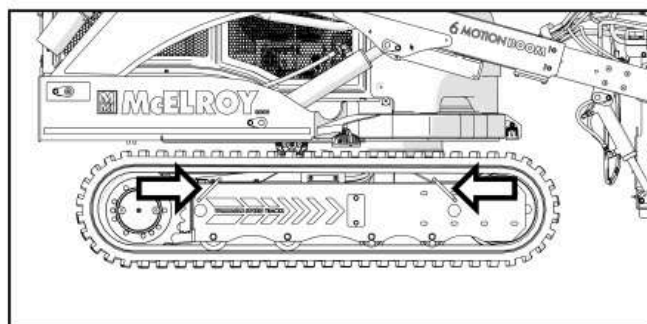
NOTICE: Collision avoidance may prevent these functions from actuating. Reposition indexer for more clearance between the heater and/or facer and carriage before reattempting these functions.

Close the carriage to secure the indexer components as depicted below.



Securing Machine for Transport

Secure the machine by tying it down to the trailer through the four tiedown points. There are two tiedown points on the outside of each track frame.



NOTICE: Do not transport the machine with a raised carriage, heater, heater bag frame or facer.

This page intentionally left blank.

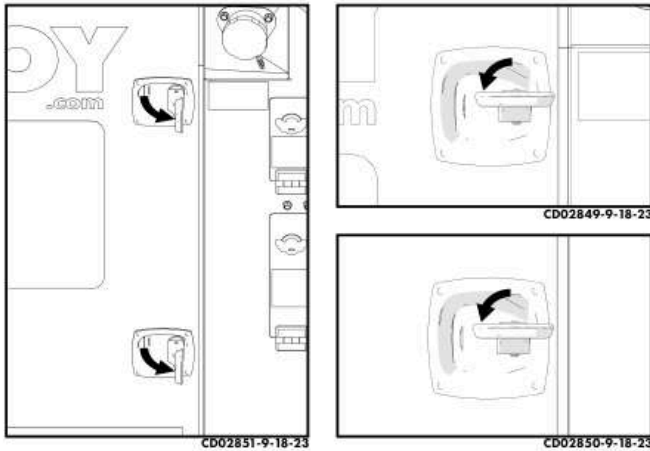
DOORS AND COWLINGS

Service Door

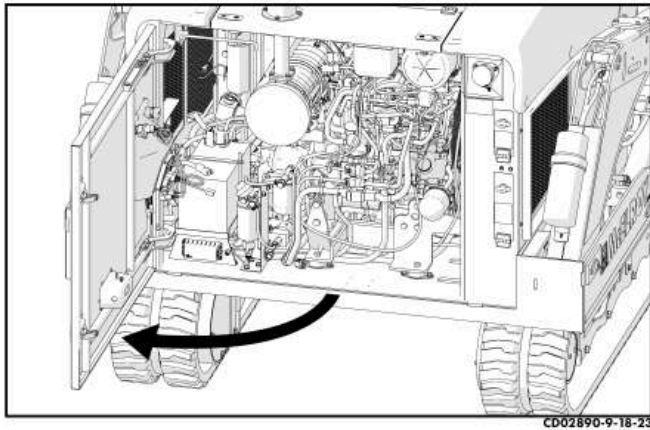
This machine has five doors that allow access to various internal components and service points.

The service door is located at the rear of the machine and allows access to the engine, battery, relays and fuse boxes.

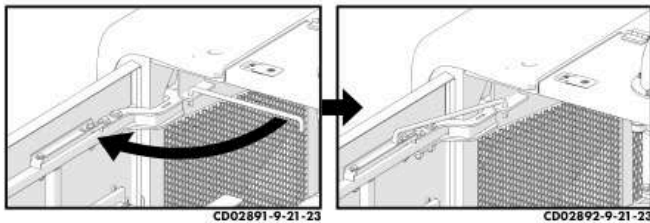
To open the service door, pull the two latch handles outward and turn counterclockwise as shown below.



Pull the service door open by the latch handles.



With the door fully open, swing the prop rod and connect it to the service door to prevent the door from being unintentionally closed.

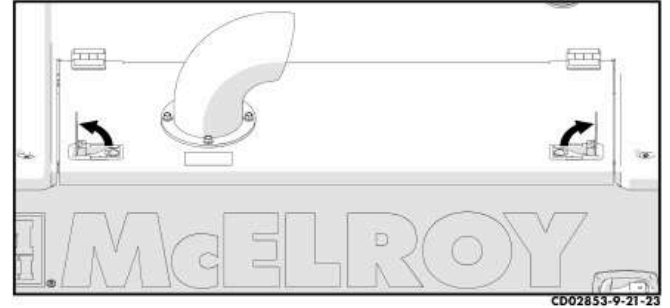


To close the service door, remove the prop rod, swing the service door shut and re-latch.

Top Door

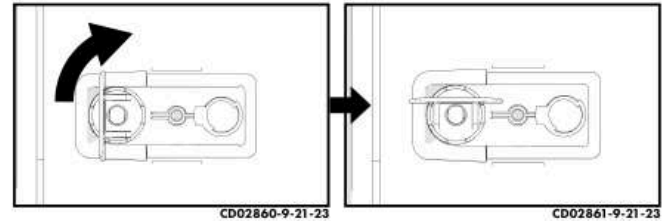
The top door is located at the rear of the machine above the service door and allows access to the hydraulic fluid fill.

To open the top door, lift the two latches as shown below.

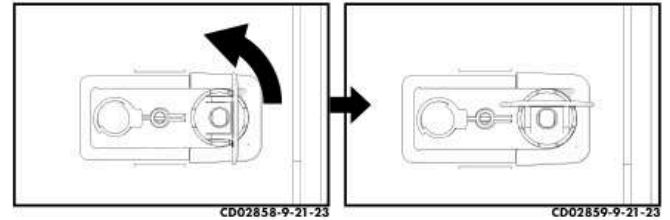


Turn each latch inward towards the exhaust as shown below to unlatch the top door.

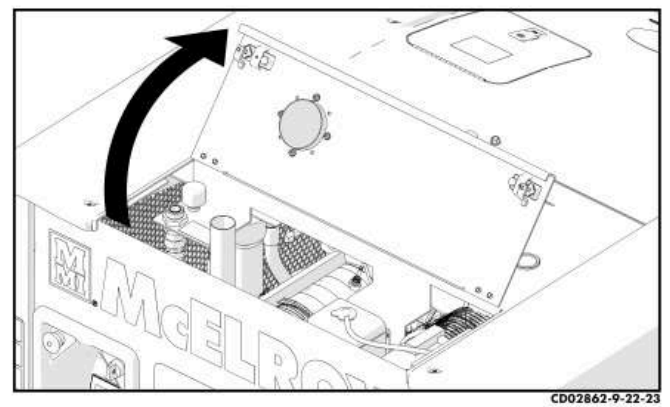
Left Latch:



Right Latch:



Once unlatched, the top door can be lifted open.



Re-latch the top door once it is closed.

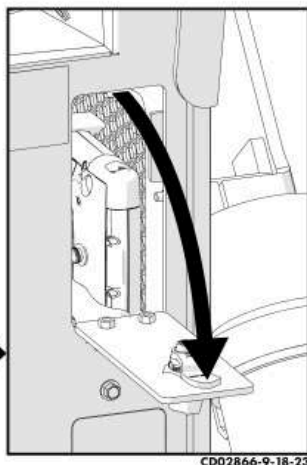
DataLogger Tablet Storage Access Door

The DataLogger tablet storage door is located at the rear of the machine adjacent to the service door and allows tablet storage for when the tablet is not in use.

This access door can be locked.

To open this access door, turn the knob 90° counterclockwise and pull.

Power off the DataLogger before storing.

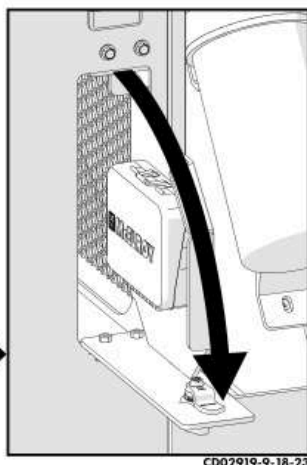


DataLogger Tablet Battery Charger Access Door

The DataLogger tablet battery charger access door is located directly beneath the tablet storage door and allows for charging of spare tablet batteries.

This access door can be locked.

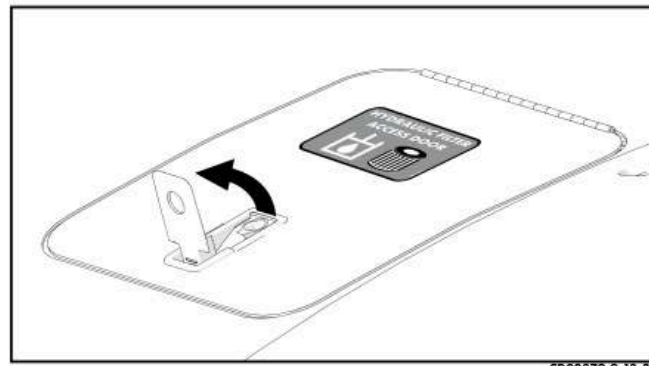
To open this access door, turn the knob 90° counterclockwise and pull.



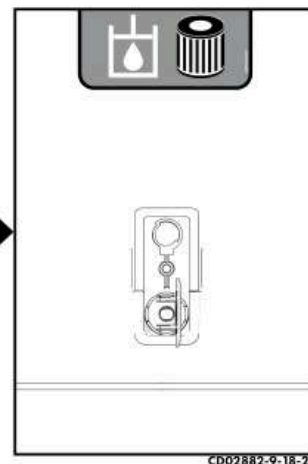
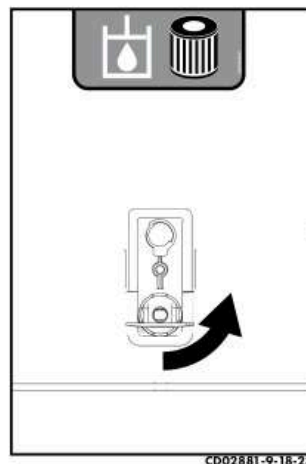
Hydraulic Filter Access Door

The hydraulic filter access door is located on the center hood of the machine and allows access to the hydraulic filter.

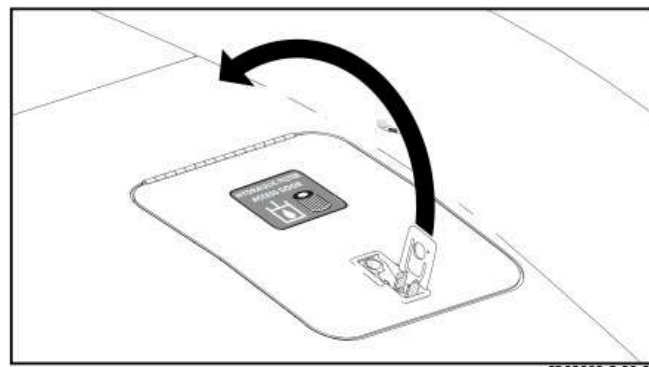
To open this door, lift up the latch as shown below.



Turn the latch counterclockwise to unlatch the door.



Once unlatched, the hydraulic filter access door can be lifted open.



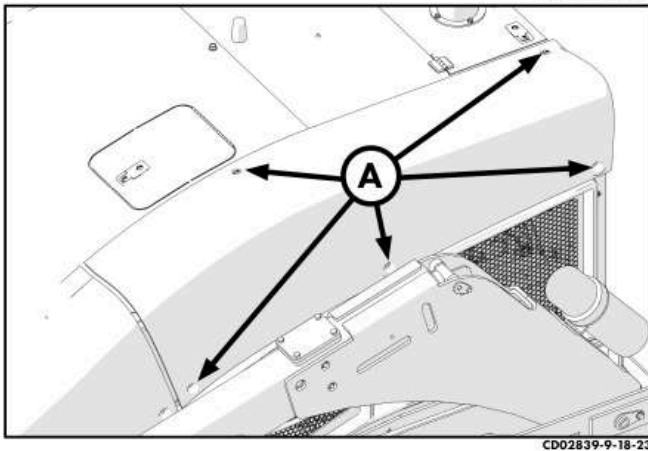
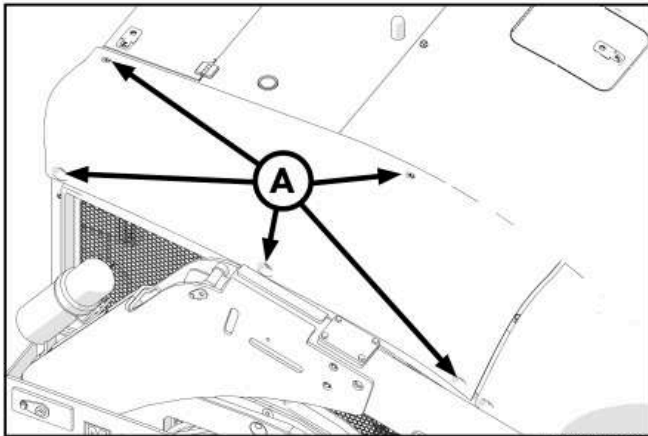
Re-latch the hydraulic filter access door once it is closed.

Removing Wing Cowlings

⚠ CAUTION

The machine components are heavy. Using one person to lift some machine components may result in an injury. Use two people to lift those machine components.

To remove wing cowlings, unscrew the five bolts (A) holding each wing cowling in place.



Once unbolted, slide the wing cowlings back towards the service door to ensure clearance for removal.

Remove wing cowlings from the machine and place them in an area where they will not be damaged.

Removing Front Cowling

Before removing the front cowling, raise the boom to allow room for front cowling removal.

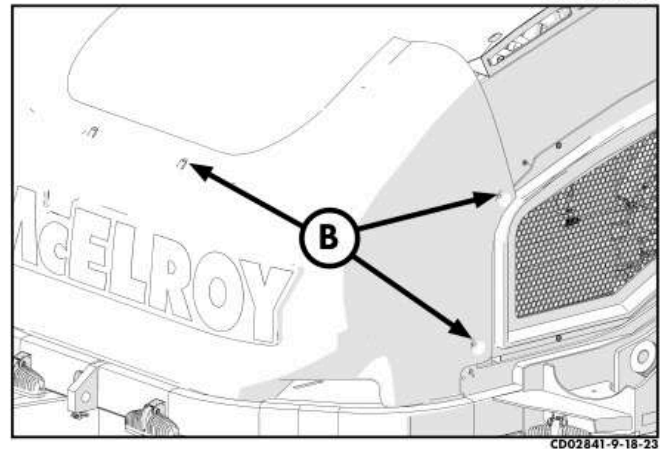
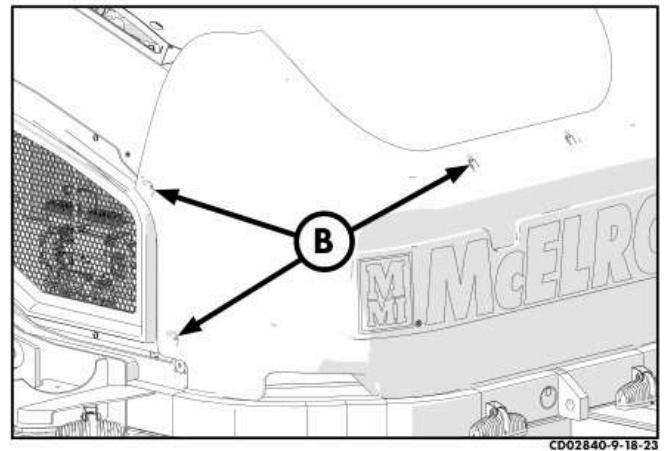
⚠ WARNING

Raised carriage boom could fall and result in serious injury or death if hydraulic pressure is released. Always engage the hydraulic lockout bars when access below a raised boom is needed.

Engage the hydraulic lockout bars.

Refer to "[Hydraulic Lockout Bars](#)" for lockout process.

Unscrew the six bolts (B) holding the front cowling in place.



Once unbolted, slide the front cowling forwards toward the carriage to ensure clearance for removal.

IMPORTANT: Use two people when removing the front cowling for easier removal.

Remove the front cowling from the machine and place it in an area where it will not be damaged.

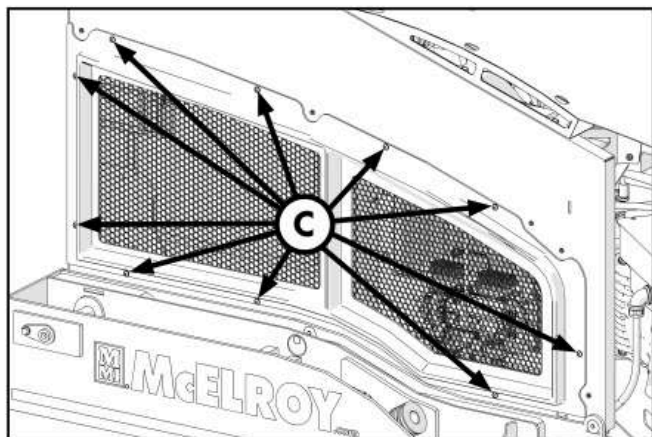
IMPORTANT: When re-installing cowlings, re-install the wing cowlings before the front cowling for easier installment.

Removing Grill Panels

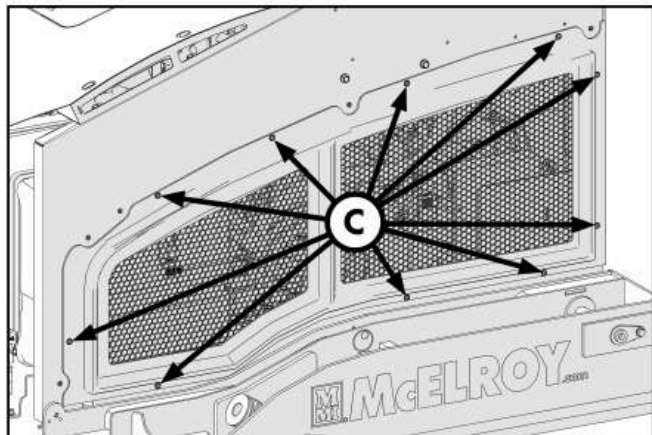
Cowlings must be removed before removing the two grill panels.

To remove grill panels, unscrew the ten bolts (C) holding each grill panel in place.

Raise or lower the boom as needed.



CD02884-9-18-23



CD02885-9-18-23

Remove grill panels from the machine and place them in an area where they will not be damaged.

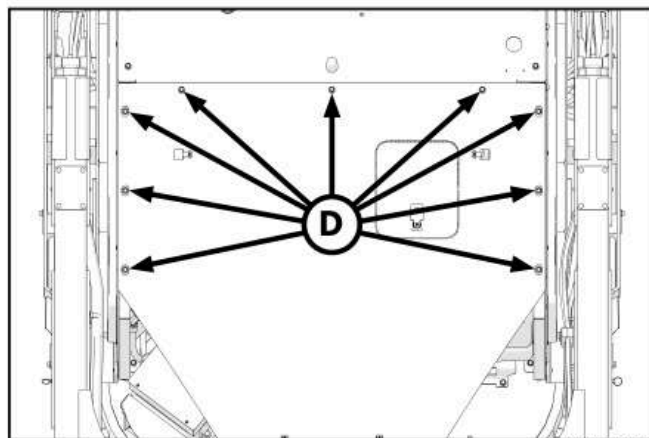
Removing Center Hood

Cowlings must be removed before removing the center hood.

⚠ CAUTION

The machine components are heavy. Using one person to lift some machine components may result in an injury. Use two people to lift those machine components.

To remove the center hood, unscrew the nine bolts (D) holding it in place.



CD02887-9-28-23

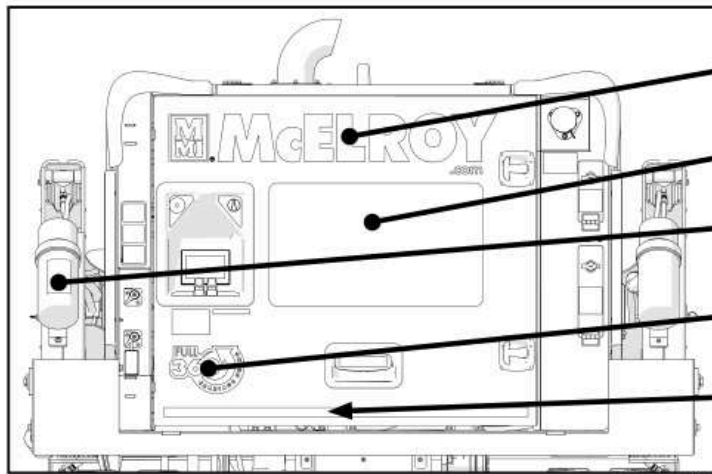
IMPORTANT: Use two people when removing the center hood for easier removal.

Remove the center hood from the machine and place it in an area where it will not be damaged.

Perform these steps in reverse to re-install the center hood.

LABELS AND MARKINGS

Labels and Markings



CD02826-9-14-23

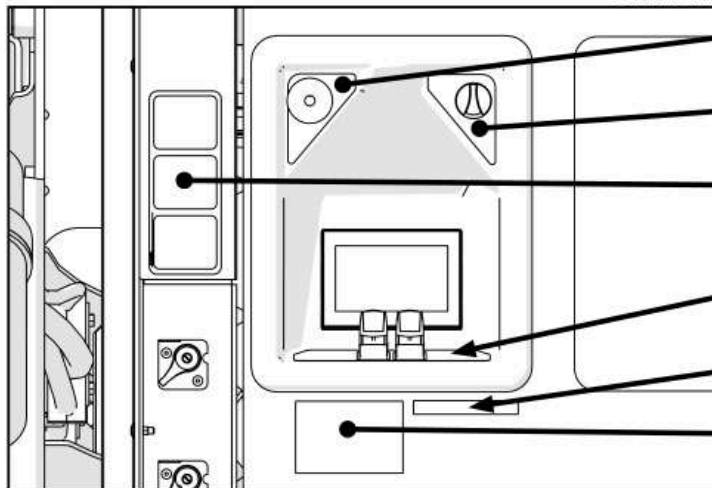
36" MCELROY BRANDING LABEL
Part Number - 08P0993364

TRITAN 560 BACK DOOR LABEL
Part Number - T560P0993384

SAFETY INSTRUCTIONS LABEL
Part Number - 816342

FULL 360 SWING LABEL
Part Number - T560P0993373

YELLOW REFLECTIVE TAPE
Part Number - MJQP0993570



CD02826-9-14-23

EMERGENCY STOP LABEL
Part Number - 08P0991536

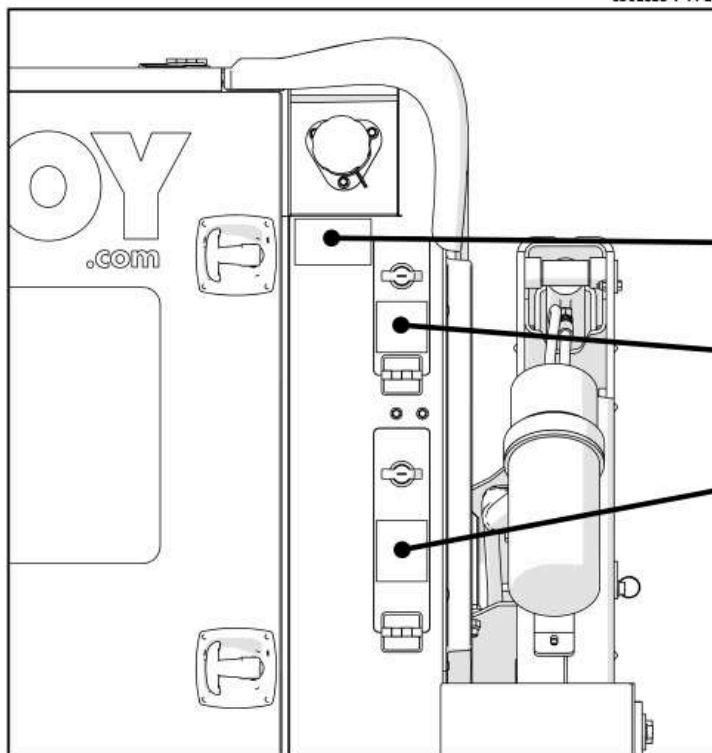
KEY SWITCH LABEL
Part Number - 08P0991550

ELECTRICAL SWITCHES LABEL
Part Number - 08P0858364

VEHICLE CONSOLE LABEL
Part Number - 08P0991558

PROP 65 BATTERY WARNING LABEL
Part Number - 8163361

PROP 65 DIESEL EXHAUST WARNING LABEL
Part Number - 8163362

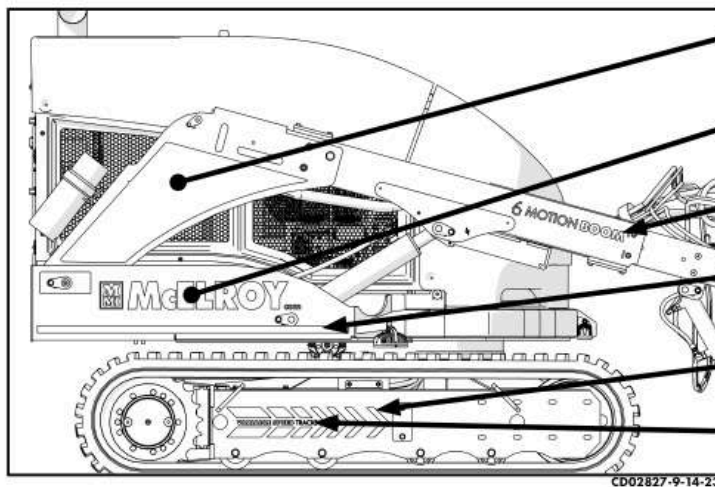


CD02826-9-14-23

ULTRA LOW SULFUR DIESEL FUEL ONLY LABEL
Part Number - 08P0991407

DATALOGGER TABLET STORAGE DOOR LABEL
Part Number - 08P0991448

DATALOGGER TABLET BATTERY CHARGER ACCESS DOOR LABEL
Part Number - 08P0991458



RIGHT TRITAN 560 ARM LABEL

Part Number - T560P0993465

28" MCELROY BRANDING LABEL

Part Number - 08P0993343

6 MOTION BOOM LABEL

Part Number - T560P0993286

43" YELLOW REFLECTIVE TAPE

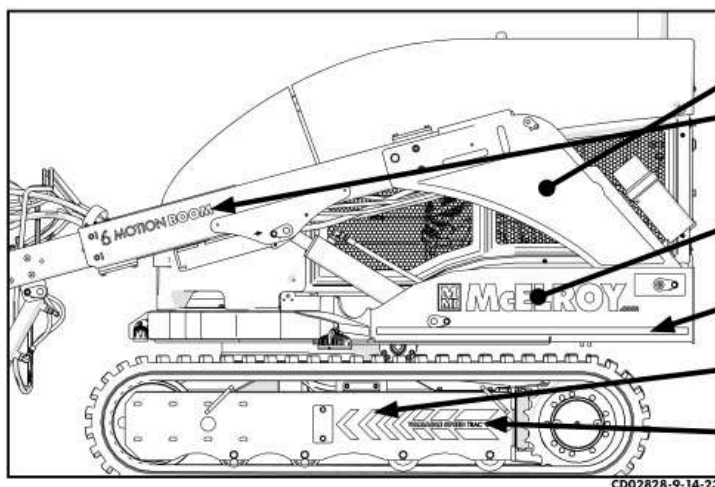
Part Number - MJQP0993570

TRACK DIRECTIONAL ARROW LABEL

Part Number - 08P0993269

VARIABLE SPEED TRACKS LABEL

Part Number - 08P0993279



LEFT TRITAN 560 ARM LABEL

Part Number - T560P0993432

6 MOTION BOOM LABEL

Part Number - T560P0993286

28" MCELROY BRANDING LABEL

Part Number - 08P0993343

43" YELLOW REFLECTIVE TAPE

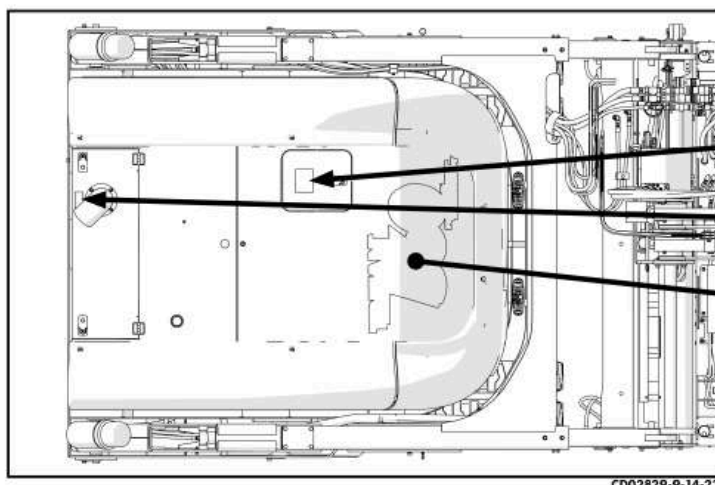
Part Number - MJQP0993570

TRACK DIRECTIONAL ARROW LABEL

Part Number - 08P0993269

VARIABLE SPEED TRACKS LABEL

Part Number - 08P0993279



HYDRAULIC FILTER ACCESS LABEL

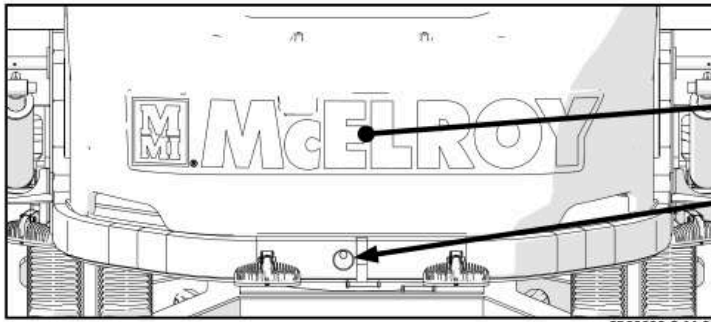
Part Number - 08P0992637

1¼x2½" CAUTION: HOT SURFACE LABEL

Part Number - MJQ00506

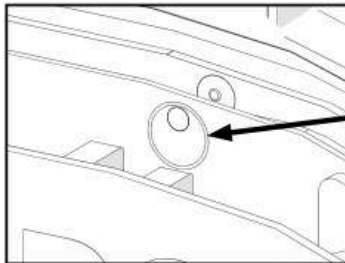
TRITAN 560 TOP COWLING LABEL

Part Number - T560P0993940

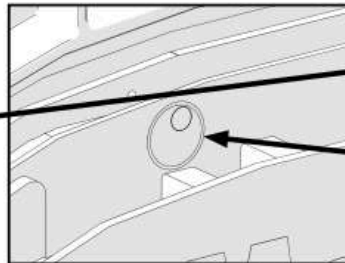


46" MCELROY BRANDING LABEL
Part Number - 08P0975932

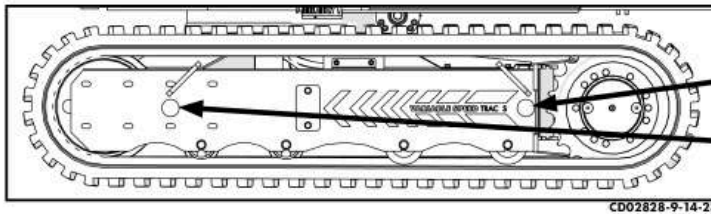
BLUE LIFT POINT LABEL
Part Number - MJQ00366



BLUE LIFT POINT LABEL
Part Number - MJQ00366

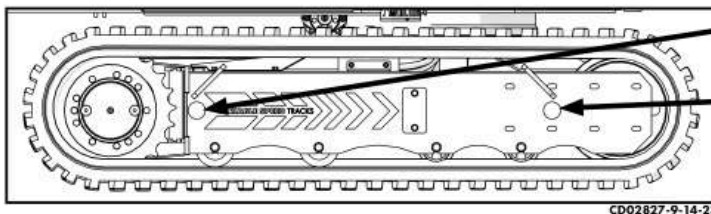


BLUE LIFT POINT LABEL
Part Number - MJQ00366



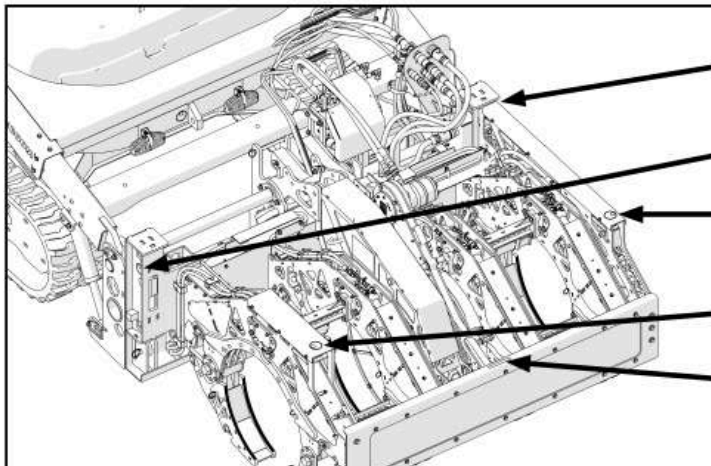
TIEDOWN LABEL
Part Number - 08P0992642

TIEDOWN LABEL
Part Number - 08P0992642



TIEDOWN LABEL
Part Number - 08P0992642

TIEDOWN LABEL
Part Number - 08P0992642



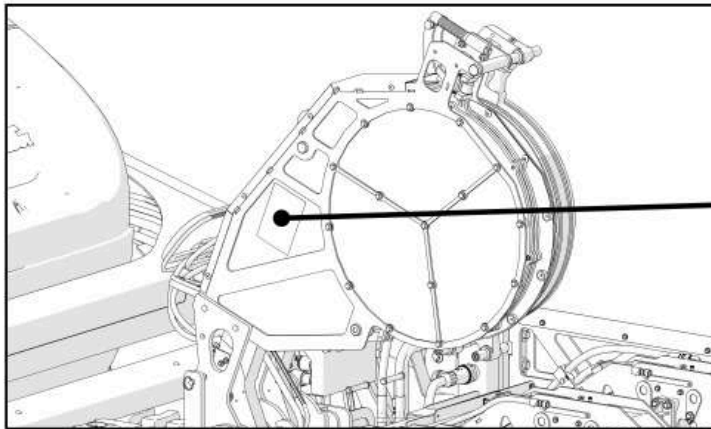
BLUE LIFT POINT LABEL
Part Number - MJQ00366

BLUE LIFT POINT LABEL
Part Number - MJQ00366

BLUE LIFT POINT LABEL
Part Number - MJQ00366

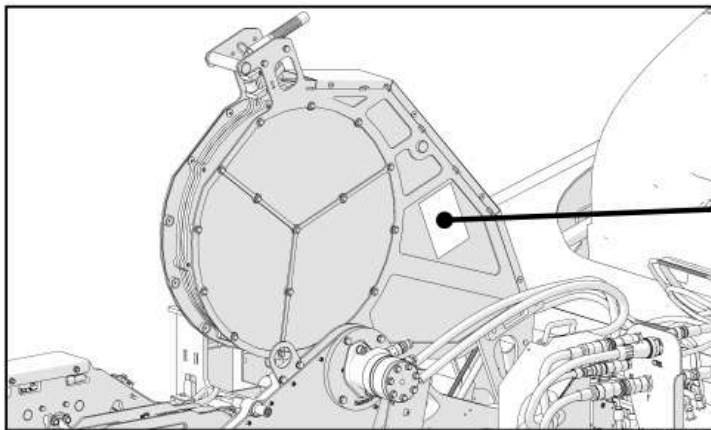
BLUE LIFT POINT LABEL
Part Number - MJQ00366

PROP 65 BATTERY WARNING LABEL
Part Number - 8163361



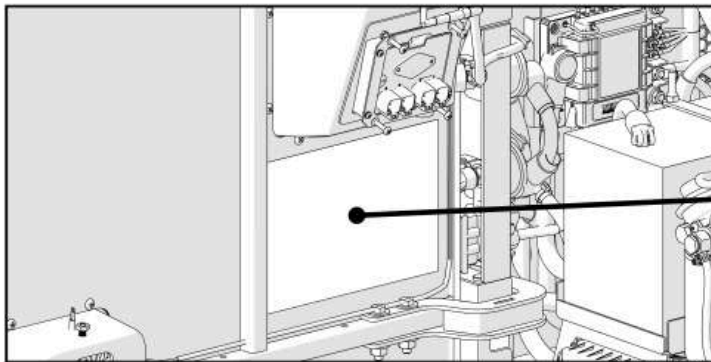
CD02846-9-14-23

6x4" CAUTION: HOT SURFACE LABEL
Part Number - MJQ00507



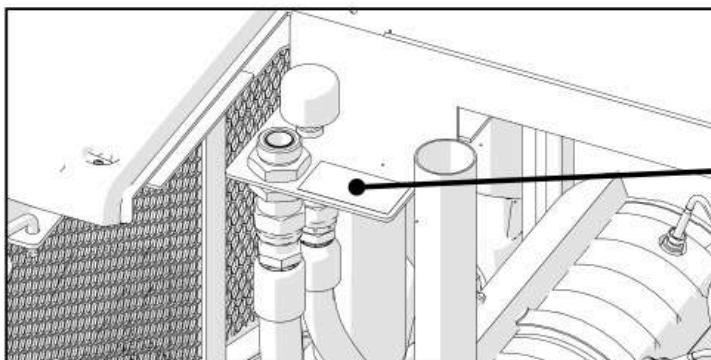
CB03002-10-31-23

6x4" CAUTION: HOT SURFACE LABEL
Part Number - MJQ00507



CD02837-9-14-23

FUSE AND RELAY DIAGRAM LABEL
Part Number - 08P0992602



CD02911-9-14-23

HYDRAULIC FLUID ONLY LABEL
Part Number - 8163106

MAINTENANCE

Maintenance Task Schedule

Task	As Needed	Daily	Weekly	50 Service Hours	250 Service Hours	500 Service Hours	1000 Service Hours	2000 Service Hours	Yearly	3000 Service Hours	4000 Service Hours	4500 Service Hours	Every 3 Years
Clean Machine	•												
Inspect Facer Blades	•												
Changing Heater Butt Plates/Adapters	•												
Replace Battery and Cables	•												
Inspect/Clean Engine Air Cleaner Element			•										
Check/Adjust Track Tension	•												
Bleed Air from Carriage Cylinders	•												
Adjust System Pressure	•												
Clean Engine	•												
Grease		•											
Replace Slew Drive Grease												•	
Check Hydraulic Fluid		•											
Check Machine Operation		•											
Inspect Heater Butt Plates		•											
Check Engine Coolant Level		•											
Check Engine Oil Level		•											
Inspect Engine Air Cleaner Service Indicator		•											
Drain Fuel System Primary Filter/Water Separator	•												
Check Fasteners Are Tight			•										
Inspect Wiring and Cables			•										

Engine Maintenance Task - Refer to engine operator's manual for maintenance instructions

Task													
	As Needed	Daily	Weekly	50 Service Hours	250 Service Hours	500 Service Hours	1000 Service Hours	2000 Service Hours	Yearly	3000 Service Hours	4000 Service Hours	4500 Service Hours	Every 3 Years
Inspect Hydraulic Components and Hoses			•										
Inspect/Replace Engine Hoses and Clamps			•										
Change Hydraulic Fluid and Filter					•								
Replace Hydraulic Tank Breather						•							
Change Engine Oil and Filter*				•									
Replace Fuel Pump Prefilter					•			•					
Replace Fuel System Primary Filter (Water Separator) Element					•			•					
Replace Fuel System Secondary Filter					•			•					
Replace Engine Air Cleaner				•				•					
Check/Change Track Gearbox Oil**						•		•					
Inspect Engine Mounts							•						
Change Coolant								•	•				

*Change engine oil and filter after the first 50 service hours and every 250 service hours thereafter.

**Change track gearbox oil after the first 200 service hours and then every 1,000 service hours or yearly. Whichever occurs first.

Some additional engine maintenance procedures are performed by Kubota. Consult your local Kubota dealer for those procedures.

Engine Maintenance Task - Refer to engine operator's manual for maintenance instructions

Engine Maintenance Tasks

All engine maintenance tasks are in the engine's operation and maintenance manual. Perform the appropriate engine maintenance task based on the correct interval in the maintenance task schedule. Engine maintenance tasks are indicated on the maintenance schedule with a gray background. Complete an engine maintenance task using the instructions in the engine's operation and maintenance manual.

The Kubota diesel engine operator's manual is included with this machine and can be found inside the literature tube attached the boom.

Active Regeneration

Active regeneration occurs in order to clean out the diesel particulate filter (DPF) of the engine during normal operation. Regeneration intervals depend on engine operating conditions. There are 5 DPF status levels. Active regeneration will take place automatically as needed up until level 2. If level 2 is reached, parked regeneration will be requested at the vehicle display.

Parked Regeneration

Parked regeneration occurs in order to clean out the DPF and requires the machine to be parked. Parked regeneration is requested once the DPF status has reached level 2 and will appear on the main screen of the vehicle display as shown.

**SELECT TO REQUEST
REGEN**

Tapping the above text on the main screen of the vehicle display will open the parked regeneration confirmation prompt.



Tapping **CONFIRM** will initiate parked regeneration. The heater is disabled, and the vehicle and carriage are not to be used during this time. If the vehicle is moved, the regeneration process will be stopped and must be requested again. Wait for this process to complete before operating again.

NOTICE: Failure to complete regeneration may result in serious harm to the engine.

Refer to the engine operator's manual for more details regarding regeneration.

Check Machine Operation

- 1) Drive the machine and check for proper track operation.
- 2) Operate the vehicle touchscreen to ensure the display is working properly.
- 3) Operate all carriage functions to check for proper operation. Open and close jaws. Move indexer and pivot the heater and facer in and out. Open and close the fusion carriage.

NOTICE: Collision avoidance may prevent these functions from actuating. Reposition indexer for more clearance between the heater and/or facer and carriage before reattempting these functions.

- 4) Turn on the facer power and check the facer for proper operation.
- 5) While the machine is running, turn on and check the heater to ensure it is heating up.

If any of the operations do not function properly, troubleshoot the issue and repair the operation.

Inspect Facer Blades

Blades bolt directly to the blade holder and should be inspected for damage and sharpness. Dull or chipped blades must be replaced.

NOTICE: Never extend the blades beyond the inner or outer circumference of the facer.

Changing Heater Butt Plates

⚠ CAUTION

The heater is hot and will burn clothing and skin. Keep the heater protected from personnel when not in use and use care when handling heater and heating pipe.

The heater body of this assembly is not coated. Coated heater butt plates/adapters are available for all fusion applications.

Heater butt plates are installed with stainless steel cap screws. Always use a high temperature, anti-seize compound on mounting screw threads for easier removal later.

Care should be taken to assure that the heater butt plates are seated on the heater body and that there is no foreign matter trapped between these surfaces.

IMPORTANT: Do not over-tighten the bolts.

The surface of the heater butt plates are coated with an anti-stick coating.

NOTICE: Only install heater butt plates when the heater is cool.

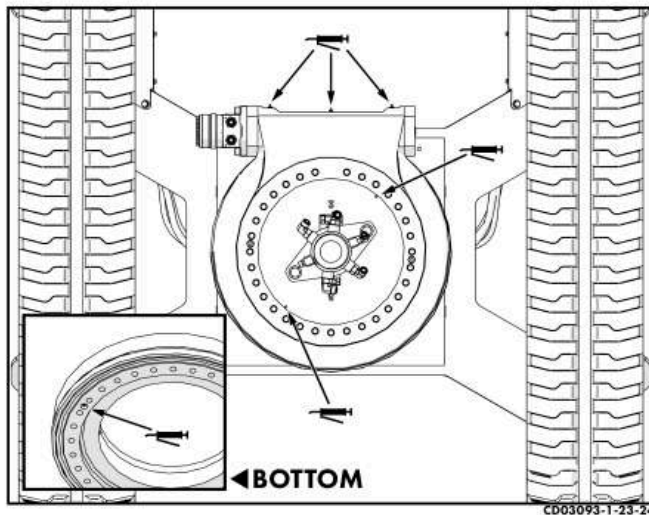
Grease

Keep moving parts well lubricated daily with a high quality grease, such as Mobil® XHP 462 grease. Apply grease through the grease zerk on the following components:

- Hydraulic cylinders
- Hydraulic cylinder pivot pins
- Slew drive
- Cam followers
- Facer

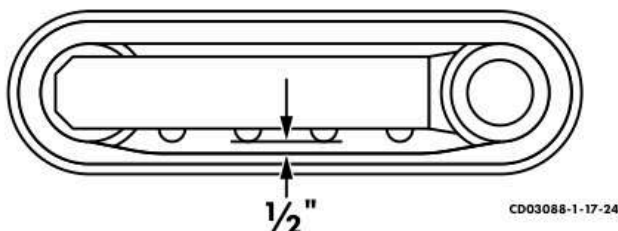
Slew drive grease should be completely replaced every three years. Replace slew drive grease by filling each cavity with new grease.

Slew drive grease zerk locations (6):



Check Track Tension

- 1) Park the machine on a flat, solid surface.
- 2) Use a lifting device to raise machine off the ground.
- 3) Place adequate supports under the bottom frame after lifting.
- 4) Measure the deflection between the bottom center rollers and the inside surface of the rubber track on both tracks. Track tension is normal when this distance is about 1/2". If the deflection is more or less than this, track tension adjustment is needed.



Adjusting Track Tension

⚠ CAUTION

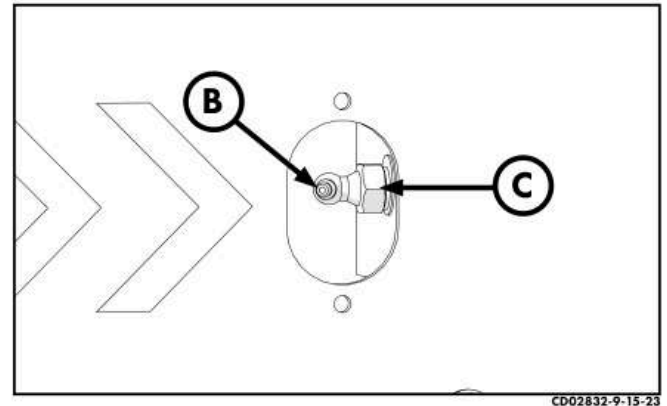
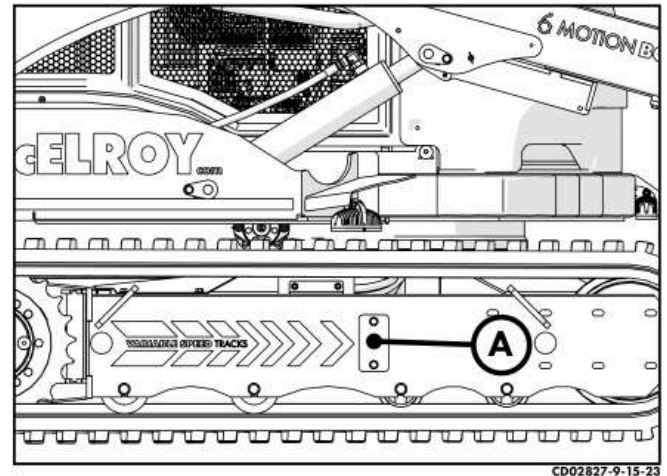
The grease in the track tension cylinder is pressurized. If the grease valve is loosened too far, the valve and grease can be expelled at high pressure and cause injury. Injury could also result if the grease zerk is loosened. Never loosen the grease zerk.

Remove screws and access cover (A) to access the track tension grease valve and zerk.

To tighten the track, connect a grease gun to the zerk (B) and add grease to the system. When the track stretches to the correct tension, stop adding grease. Clean off any excess grease.

To reduce track tension or to loosen and remove track, relieve pressure in the track tension cylinder by turning the hex-shaped valve (C) counterclockwise until grease begins to come out. When correct track tension is achieved, turn valve clockwise and tighten it. Clean off any expelled grease.

Replace access cover and tighten down screws.



Inspect Heater Butt Plates

Inspect the surface of the heater butt plates when the plates are cool. Inspect the plates for damage or deterioration of the coating on the surface.

Replace damaged heater butt plates.

Inspect Wiring and Cables

Inspect wiring and cables for fraying, damaged connectors, missing insulation, cuts or other damage.

Replace any damaged wiring or cables.

Inspect Hydraulic Components

Inspect hydraulic components, hoses and sleeves for any leaks or damage. Replace or repair any damaged or leaking hydraulic components, hoses or sleeves.

⚠ WARNING

Escaping fluid under pressure can penetrate the skin causing serious injury. Keep hands and body away from pinholes which eject fluid under pressure. Use a piece of cardboard or paper to search for leaks. If any fluid is injected into the skin, it must be immediately removed by a doctor familiar with this type of injury.

Bleeding Air From Carriage Cylinders

With the machine on level ground, cycle the carriage open and closed 10 times using the carriage joystick (A) or the **Lock Open/Lock Close** buttons on the machine control interface.



Adjusting System Pressure

⚠ CAUTION

Do not touch belts and rotating parts while the engine is running. Failure to do so could result in injury.

⚠ CAUTION

Engine component surfaces can be hot. Use caution when working around hot surfaces.

The main hydraulic pump on this machine is a load sense pump and has two valves that control its pressures. The load sense valve controls load sense pressure, and the compensator valve controls the compensator's pressure. When making adjustments, the load sense pressure must be adjusted first to ensure that the pump load sense margin is sufficient for the load sense controls to work as intended.

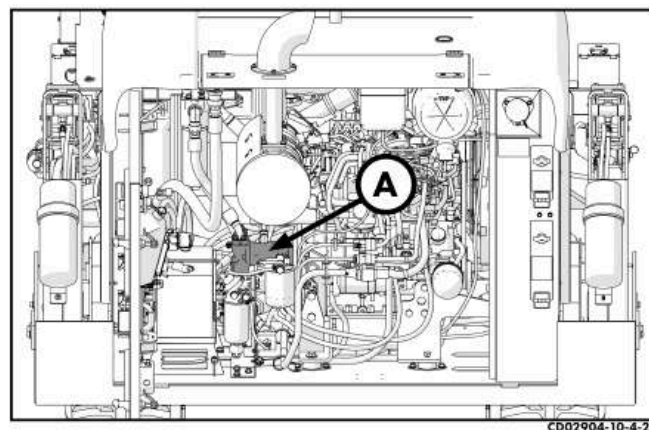
Start the engine.

Before performing any adjustments, check the load sense pressure by observing the pressure reading from the vehicle display. System pressure is displayed on the boom control screen. The load sense pressure should be set within a range between 290 - 310 psi. Then, check the maximum pressure by actuating a boom function fully and observing the pressure reading. The maximum pressure should be set to 3,250 psi. If both of these criteria are met, no adjustment is needed.

If either pressure reading is above or below the criteria stated above, adjustment is needed.

NOTICE: Do not run the pump while the compensator is at the minimum setting. This will reduce the level of lubrication in the pump and cause premature wear and potential failure.

To make adjustments to the system pressure, open the service door and locate the main pump (A).



Have another person at the vehicle display to read the system pressure as it is adjusted.

The tools needed for these procedures are as follows:

- Allen size: #3 (Metric)
- Nut Wrench size: #13 (Metric)

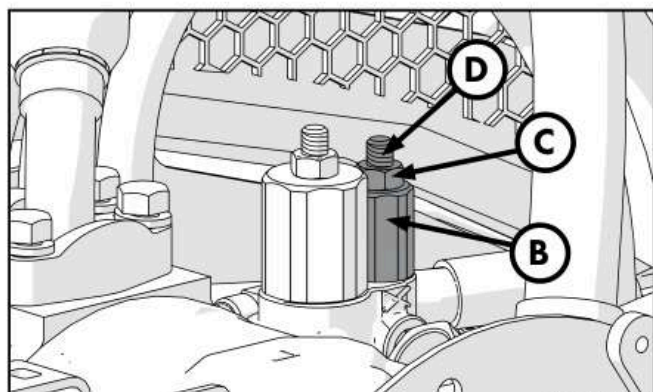
To adjust the load sense pressure:

NOTICE: Before adjusting the load sense valve (B), ensure the pressure compensator valve (E) is set above 600 psi.

Locate the load sense valve (B) on the main pump. This is the smaller of the two valves.

Loosen the nut (C) around the load sense adjustment screw (D) by turning it counterclockwise. Back the nut off enough to allow the tightening of the load sense adjustment screw.

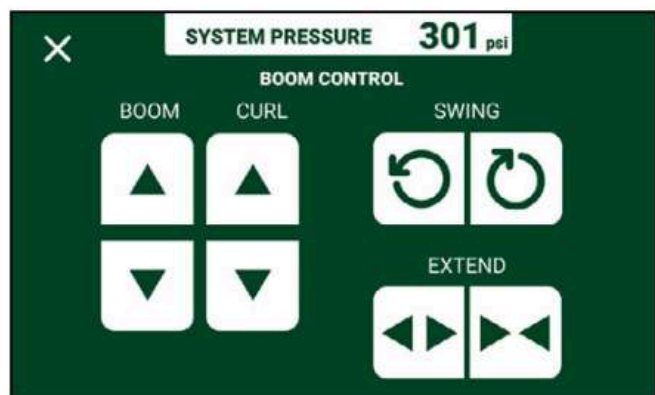
Using the allen wrench, turn the load sense adjustment screw clockwise in one-turn intervals. Observe the load sense pressure on the vehicle display between intervals.



Perform this step until standby pressure is within the acceptable range: 290 psi - 310 psi. Standby pressure is the pressure which is used to overcome line losses and provide pressure to push flow through the valves. It is also vital in ensuring the pump stays lubricated while not actively engaged.

Once acceptable standby pressure is met, ensure the nut around the load sense adjustment screw is tightened.

Verify the standby pressure is within the acceptable range at the vehicle display.



To adjust the maximum pump pressure:

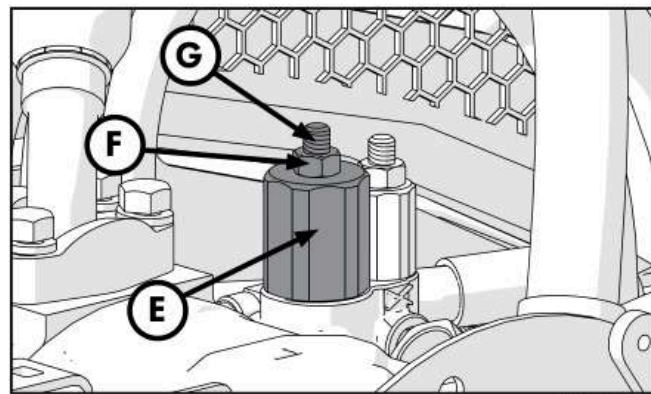
Locate the pressure compensator valve (E) on the main pump. This is the bigger of the two valves.

Loosen the nut (F) around the compensator adjustment screw (G) by turning it counterclockwise to allow adjustment of the compensator adjustment screw.

If the maximum pressure reading is lower than 3,250 psi, use an allen wrench to turn the compensator adjustment screw clockwise in one to two-turn intervals until a 3,250 psi maximum pressure reading is achieved.

If the maximum pressure reading is above 3,250 psi, use an allen wrench to turn the compensator adjustment screw counterclockwise in one-turn intervals until a 3,250 psi maximum pressure reading is achieved.

Check the maximum pressure between intervals by actuating a boom function fully and observing the pressure reading. This can be curling the carriage completely up or extending the boom completely.



Perform either step until a maximum pressure reading of 3,250 psi is observed.

Once an acceptable maximum pressure reading is attained, ensure the nut around the compensator adjustment screw is tightened.

Check Fasteners Are Tight

Check all nuts, bolts, and snap rings to make certain they are secure and in place.

Check Hydraulic Fluid

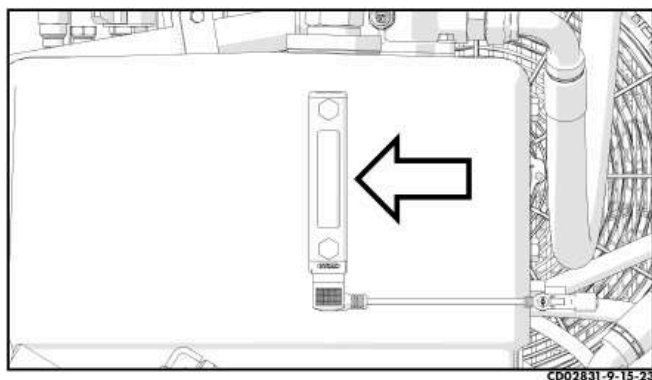
The hydraulic fluid level should be checked daily.

If hydraulic fluid is not visible in the sight gauge, fluid must be added.

NOTICE: Only add hydraulic fluid using the hydraulic fill or by removing the breather. Do not add hydraulic fluid through the return filter opening on the reservoir.

Fill to 5/16" from the top of the sight gauge with all cylinders retracted. Ensure the fluid is cool to allow for fluid volume expansion.

Refer to the ["Hydraulic Fluids"](#) section of this manual for hydraulic fluid recommendations.



Changing Hydraulic Fluid and Filters

To drain hydraulic fluid:

Ensure the machine is turned off.

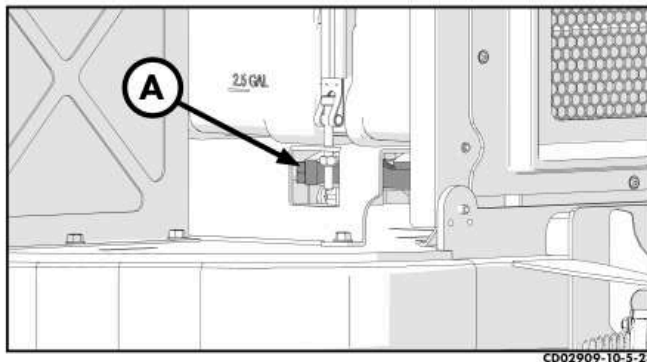
The hydraulic fluid and filters should be replaced approximately every 500 hours of operation or when the vehicle display indicates. Fluid should also be changed as extreme weather conditions dictate.

Disconnect the carriage before draining the unit.

IMPORTANT: Drain hydraulic fluid before removing any component of the hydraulic system. A large amount of hydraulic fluid will leak from the system.

To drain the hydraulic fluid from the reservoir, remove the plug (A) from the drain hose located at the bottom of the reservoir.

The front cowling must be removed to perform this step. See ["Front Cowling Removal"](#) in the Doors and Cowlings section.

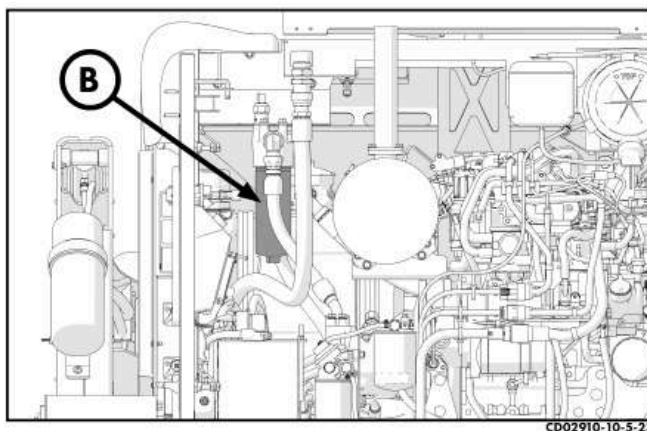


Allow all hydraulic fluid to drain from the reservoir.

To replace the pressure filter:

Ensure the machine is off and all hydraulic fluid has been drained.

Open the service door and locate the pressure filter (B). Use a wrench to unscrew the filter housing and replace the filter element.

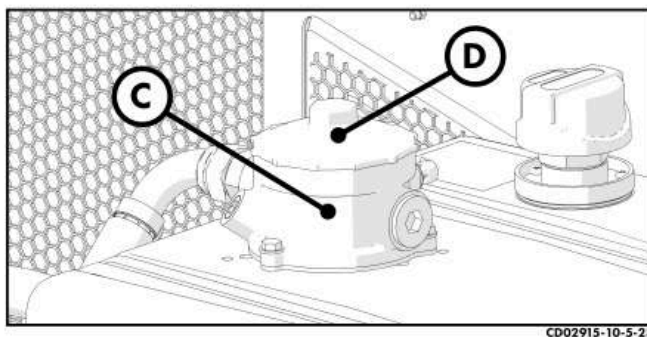


To replace the return filter:

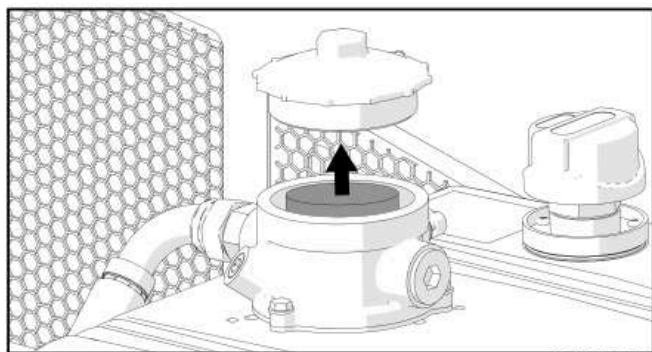
Ensure the machine is off and all hydraulic fluid has been drained.

Open the hydraulic filter access door and locate the return filter housing (C) on top of the hydraulic reservoir.

Use a wrench to unscrew the top cover of the filter housing (D).



Remove the top cover of the housing and lift the inner filter assembly out to replace the return filter element.



CD02916-10-5-23

When installing a new filter element, push it down until it seats around the circular securing ring inside the filter housing.

Replace the top cover and tighten.

Refer to the "[Hydraulic Fluids](#)" section of this manual for hydraulic fluid recommendations.

NOTICE: Only refill hydraulic fluid using the hydraulic fill or by removing the breather. Do not add hydraulic fluid through the return filter opening on the reservoir.

After replacing fluid, circulate fluid for 5 minutes to remove all air before reconnecting the carriage.

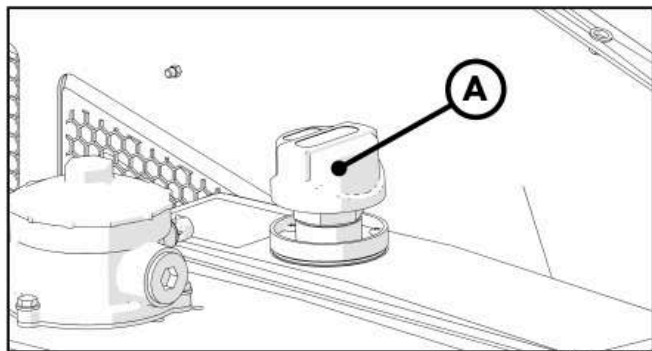
Replace Hydraulic Tank Breather

Ensure the machine is turned off.

The hydraulic tank breather should be replaced approximately every 1000 hours of operation or when the vehicle display indicates.

Open the hydraulic filter access door.

Unscrew and replace the hydraulic tank breather **(A)** located on top of the hydraulic reservoir.



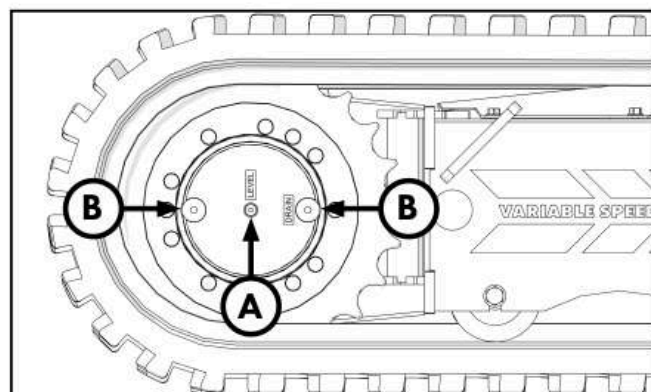
CD03718-1-27-25

Check Track Gearbox Oil

Check the oil level in both track gearboxes periodically.

To check the oil level, remove the center level plug **(A)** and check that the oil level is up to the plug hole. If oil needs to be added, fill through one of the holes **(B)** that is above the center plug until the oil level reaches the center plug hole.

Use SAE-30 oil to fill the gearbox.



CD03087-1-16-24

Replace the plugs and tighten.

Replacing Track Gearbox Oil

Replace the oil after the first 200 hours of operation.

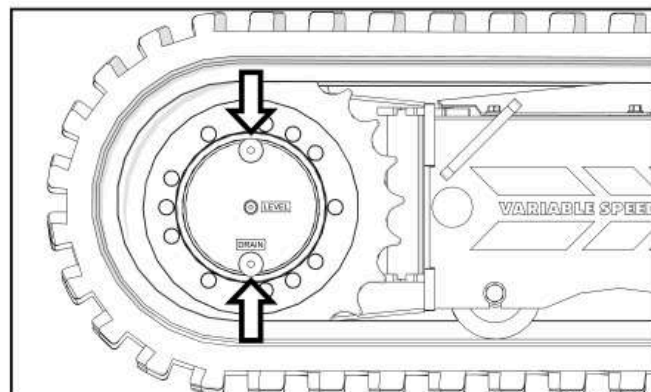
Subsequent oil changes should be scheduled at least once a year or every 1,000 operating hours.

To replace the oil, stop the gearbox with the fill/drain aligned vertically.

Remove all three plugs and drain out all oil. Once the oil is drained, replace the bottom drain plug.

Fill the gearbox through the top plug until the oil level is to the center plug.

Use SAE-30 oil to fill the gearbox.



CD03086-1-16-24

Replace the plugs and tighten.

Clean Heater Surfaces

⚠ CAUTION

The heater is hot and will burn clothing and skin. Keep the heater protected from personnel when not in use and use care when handling heater and heating pipe.

The butt fusion heater plate faces must be kept clean and free of any plastic build up or contamination. Plastic build up is best removed when the heater surfaces are at fusion temperature using a clean, dry, non-synthetic cloth. Synthetic cloths may melt to the heater surfaces under fusion temperature.

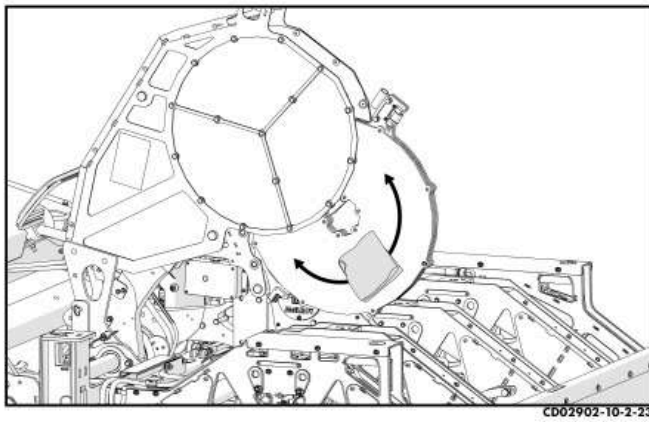
The surface of the butt fusion heater plates are coated with an anti-stick coating.

Before each fusion joint the heater surfaces must be wiped with a clean, dry, non-synthetic cloth.

NOTICE: Do not use any abrasive materials to clean heater surfaces. Use only a clean, dry, non-synthetic cloth to avoid damaging heater surfaces.

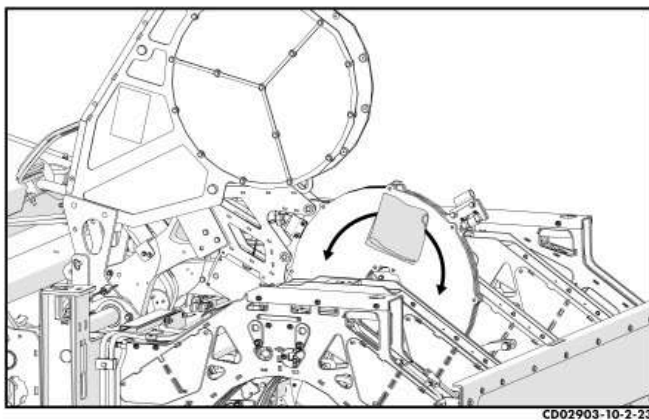
Pivot the heater down until the lower half is within reach.

Clean both sides of the lower half of the heater.



Pivot the heater lower until the upper half is within reach.

Clean both sides of the upper half of the heater.



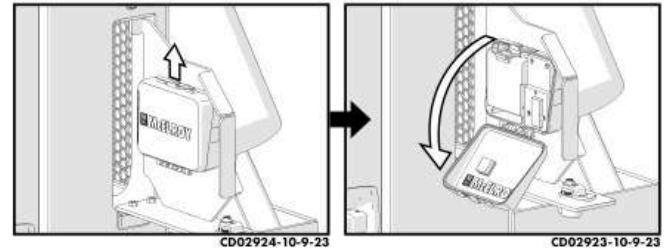
DataLogger Battery Charging

Always keep a spare DataLogger battery charging in the DataLogger battery charger.

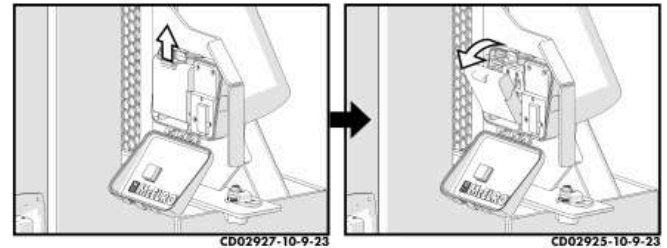
To retrieve a charged DataLogger battery:

Open the DataLogger tablet battery charger access door.

Open the battery charger box by lifting up the securing tab.



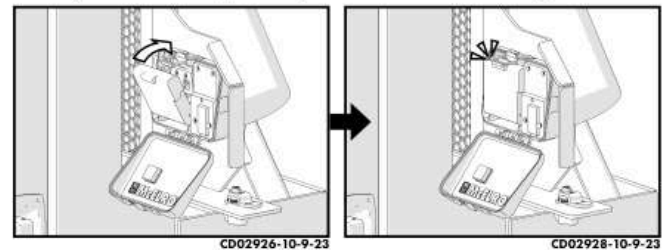
Remove the charged battery from the battery charger by lifting up on the battery securing tab and pulling the battery outward from the top.



To charge a drained DataLogger battery:

Remove the drained battery from the DataLogger.

With the battery charger box open, insert the bottom of the drained battery into the battery holder then push the top of the battery in until it snaps into place under the securing tab.



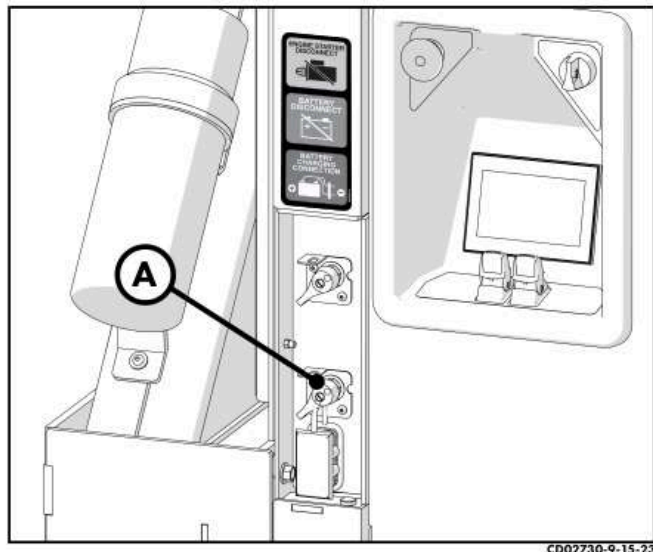
Close the DataLogger battery charger box then the DataLogger tablet battery charger access door. Latch the door closed.

When retrieving a charged battery, always replace it with a drained battery to ensure a spare is always charging and ready when needed.

Refer to the ["Battery Charger"](#) section of this manual for more information regarding the DataLogger battery charger.

Battery Replacement and Charging

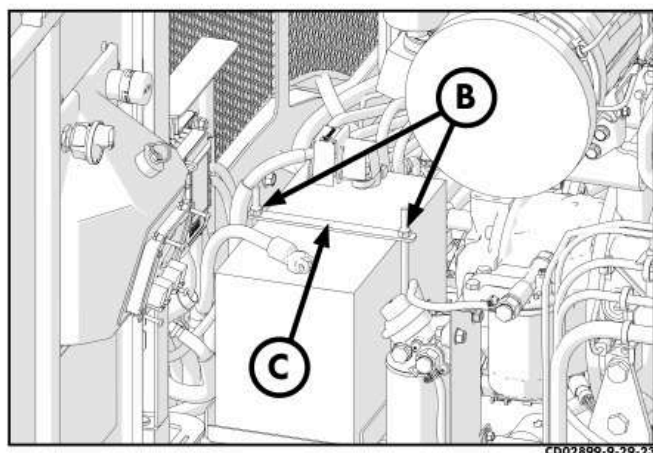
Disconnect battery power by turning the battery disconnect switch **(A)**.



Open the service door to access the battery.

Unscrew the bolts **(B)** holding the tiebar in place.

Remove the tiebar **(C)**.



Disconnect the battery by removing the negative (black) cable first. Then, remove the positive (red) cable.

Lift the battery out of the tray.

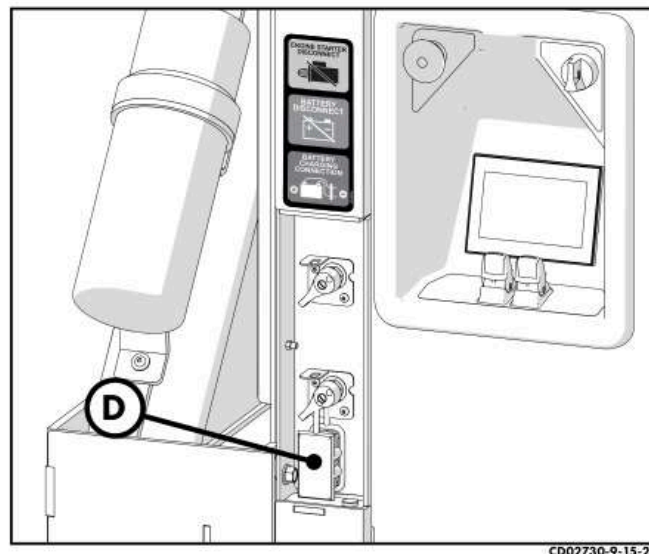
Replace the battery with one that meets all of the requirements listed below.

- Minimum capacity-cold soak at 0 F° (-18 C°) or above
- Engine only-cold cranking amperes: 850 (CCA)
- Engine only-reserve capacity: 135 min (RC)

Battery Charging Connection

The battery can be charged through a remote battery connector **(D)** mounted on the rear of the machine next to the service door. Ensure the connector has the dust cover on when not in use.

The plug type for the charging connection is an Anderson Power Products SB175 connector.



Preventative Maintenance

To ensure optimum performance, the machine must be kept clean and well maintained.

With reasonable care, this machine will give years of service. Therefore, it is important that a regular schedule of preventive maintenance be kept.

Store machine inside, out of the weather, whenever possible.

Clean Machine

Clean the machine with soap and water as needed.

Do not pressure wash.

GUIDED FIRMWARE UPDATE

Overview

The guided firmware update process allows users to update components which are controlled by firmware for operation.

The guided process, presented on the DataLogger 7, can be used as a step-by-step guide for updating machine components as new releases become available. Updating firmware is essential to ensuring the machine is running the latest version for continued enhancements and new features.

Other machine components not covered in this section may later become updatable.

The Guided Firmware Update section is divided into:

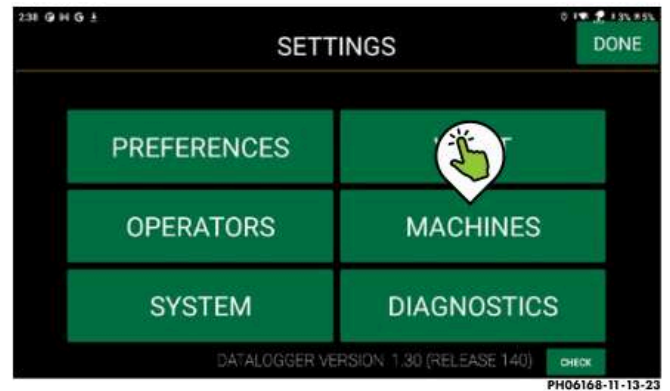
- **Navigating to Update Firmware** - Navigating to the Firmware Update screen.
- **Carriage Update Process** - Process for updating carriage firmware.
- **Vehicle Update Process** - Process for updating vehicle firmware.
- **Vehicle Display Update Process** - Process for updating vehicle display firmware.
- **Wireless Receiver Update Process** - Process for updating wireless receiver firmware.
- **Battery Charger Update Process** - Process for updating battery charger firmware.
- **Offline Updating Procedure** - Procedure for updating a component without an internet connection.
- **Port Connection Issues** - For troubleshooting a port connection issue.
- **Editing Serial Numbers** - Process for editing serial numbers.

Navigating to Update Firmware

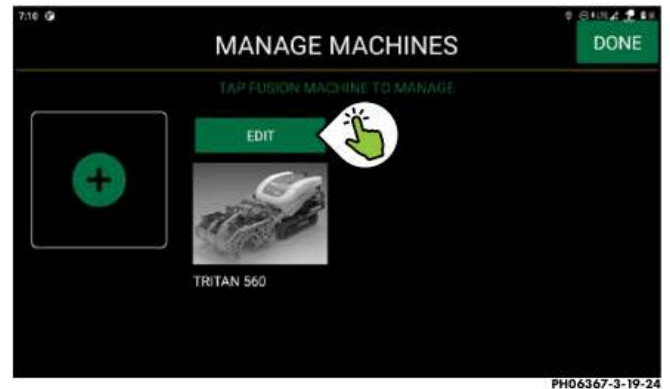
From the DataLogger home screen, tap **SETTINGS**.



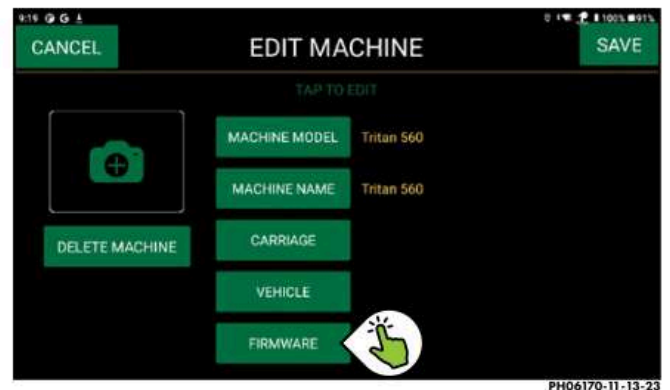
From the Settings screen, tap **MACHINES**.



In the Manage Machines screen, tap **EDIT** on the machine intended for an update.



In the Edit Machine screen, tap **FIRMWARE** to access the Firmware Update screen.



Turn to the desired update process:

[Carriage Update Process](#)

[Vehicle Update Process](#)

[Vehicle Display Update Process](#)

[Wireless Receiver Update Process](#)

[Battery Charger Update Process](#)

Carriage Update Process

The DataLogger must be connected to wifi to download a firmware update file. An internet connection is recommended while performing an update but can be performed offline if the update file has been downloaded onto the DataLogger.

Turn the machine on without starting the engine by turning the key to **RUN**. The engine should not be running for this process.

To begin the carriage update process, tap **Carriage** on the Firmware Update screen on the DataLogger.



This update is a four-step process.

Step 1: Connect the DataLogger to the tether port on the carriage using the tethering cable. The location of the carriage tether port is illustrated on-screen.

Ensure the machine is turned on before proceeding.

Once connected, tap **READY**.



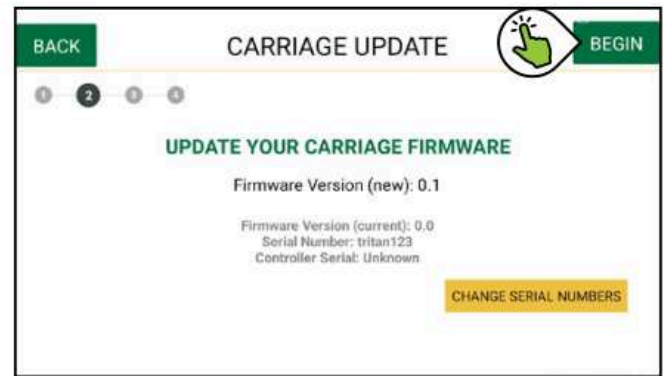
Step 2: Wait for the latest controller update to be found. This should take a few seconds.

The new firmware version will be displayed on-screen along with the existing firmware version and serial numbers of the carriage and controller.

Refer to ["Editing Serial Numbers"](#) if either serial number is incorrect.

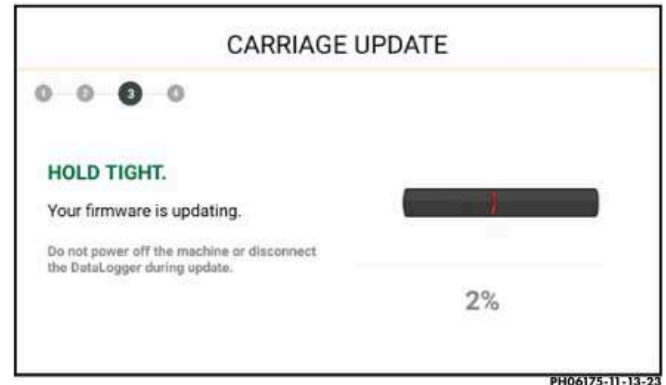
Refer to ["Port Connection Issues"](#) if a port connection issue is encountered.

Tap **BEGIN** to update the carriage firmware.

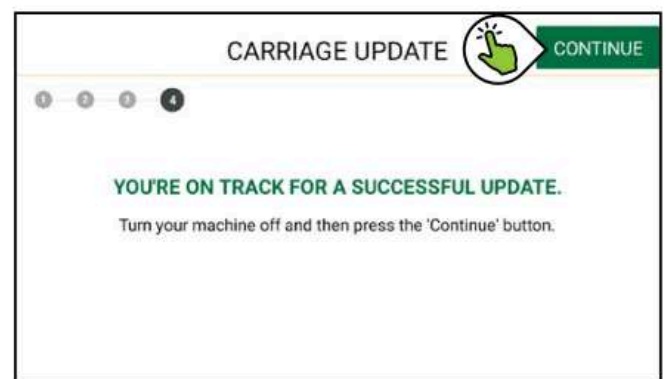


Step 3: Wait for the carriage firmware to update. A percentage to process completion is displayed under the loading animation.

Do not power off the machine or disconnect the DataLogger during the update.

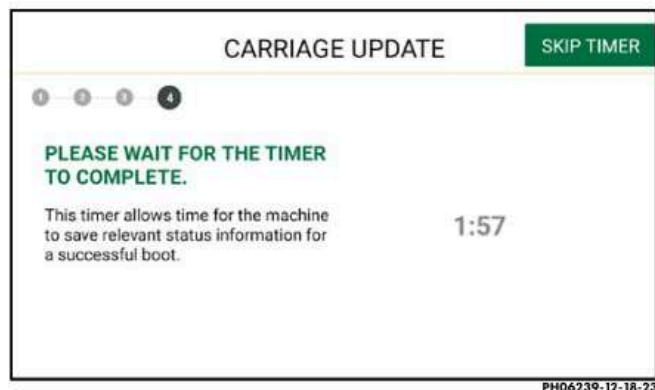


Step 4: Once the firmware has been updated, turn the machine off and tap **CONTINUE**.



Wait for the two-minute timer on the DataLogger screen to finish.

This timer allows time for the machine to save relevant status information for a successful boot.



Once the timer has elapsed, the update screen will indicate the carriage update was successful.

Tap **DONE** to return to the Firmware Update screen.



At this point, the machine can be restarted and normal operation can continue.

Vehicle Update Process

The DataLogger must be connected to wifi to download a firmware update file. An internet connection is recommended while performing an update but can be performed offline if the update file has been downloaded onto the DataLogger.

Turn the machine on without starting the engine by turning the key to **RUN**. The engine should not be running for this process.

To begin the vehicle update process, tap **Vehicle** on the Firmware Update screen on the DataLogger.



This update is a four-step process.

Step 1: Connect the DataLogger to the vehicle diagnostic port using the tethering cable. The location of the diagnostic port is illustrated on-screen.

Ensure the machine is turned on before proceeding.

Once connected, tap **READY**.



Step 2: Wait for the latest controller update to be found. This should take a few seconds.

The new firmware version will be displayed on-screen along with the existing firmware version and serial numbers of the vehicle and controller.

Refer to ["Editing Serial Numbers"](#) if either serial number is incorrect.

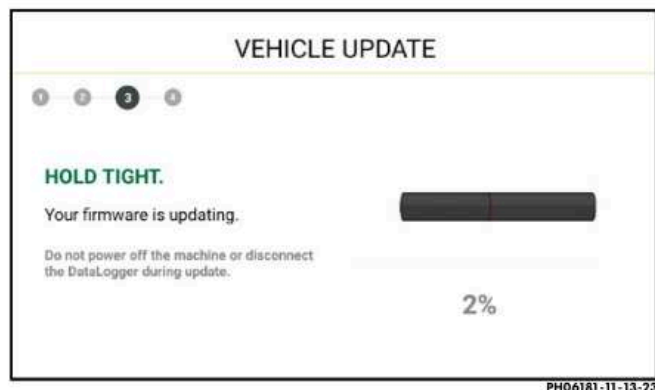
Refer to ["Port Connection Issues"](#) if a port connection issue is encountered.

Tap **BEGIN** to update the vehicle firmware.

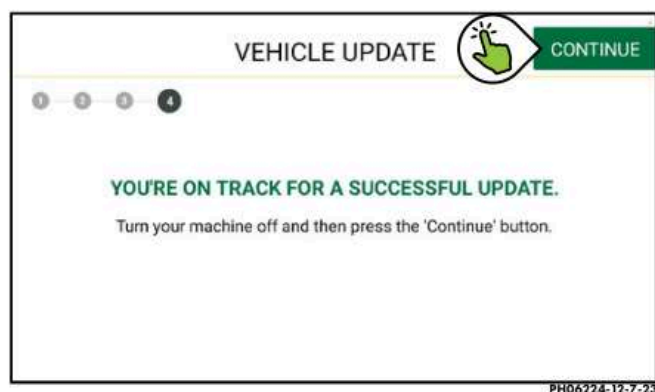


Step 3: Wait for the vehicle firmware to update. A percentage to process completion is displayed under the loading animation.

Do not power off the machine or disconnect the DataLogger during the update.

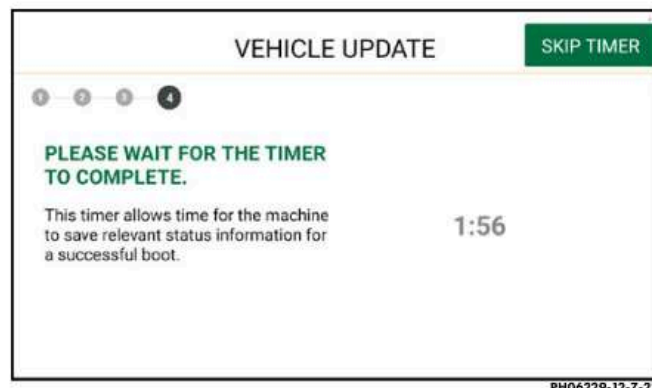


Step 4: Once the firmware has been updated, turn the machine off and tap **CONTINUE**.



Wait for the two-minute timer on the DataLogger screen to finish.

This timer allows time for the machine to save relevant status information for a successful boot.



Once the timer has elapsed, the update screen will indicate the vehicle update was successful.

Tap **DONE** to return to the Firmware Update screen.



At this point, the machine can be restarted and normal operation can continue.

Vehicle Display Update Process

The DataLogger must be connected to wifi to download a firmware update file. An internet connection is recommended while performing an update but can be performed offline if the update file has been downloaded onto the DataLogger.

Turn the machine on without starting the engine by turning the key to **RUN**. The engine should not be running for this process.

To begin the vehicle display update process, tap **Display** on the Firmware Update screen on the DataLogger.



This update is a four-step process and requires the use of the vehicle display.

Step 1: Insert a blank USB drive into the DataLogger USB port. The location of the USB port is illustrated on-screen. Ensure the USB drive is empty and formatted as FAT32 before proceeding.

Once inserted, tap **READY**.



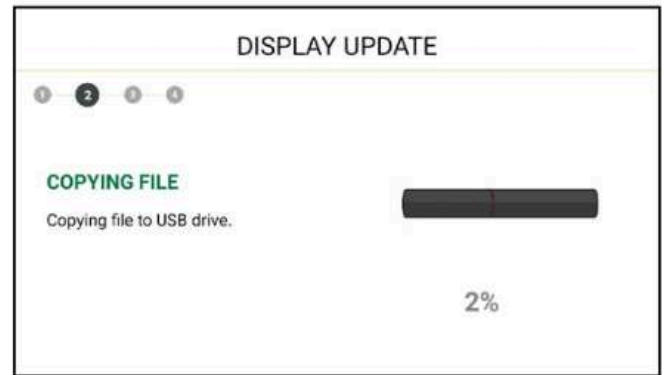
Step 2: Wait for the latest display update to be found. This should take a few seconds.

The new firmware version will be displayed on-screen.

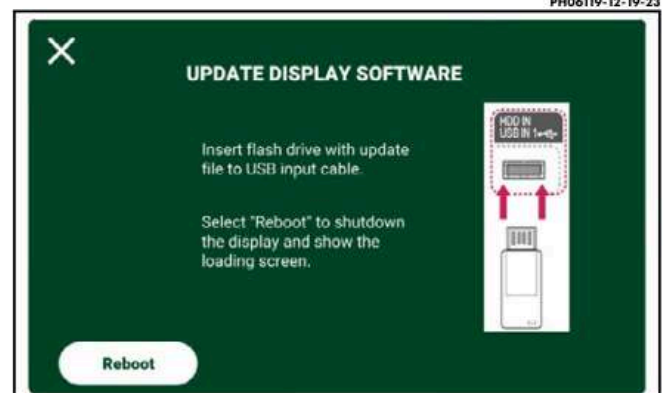
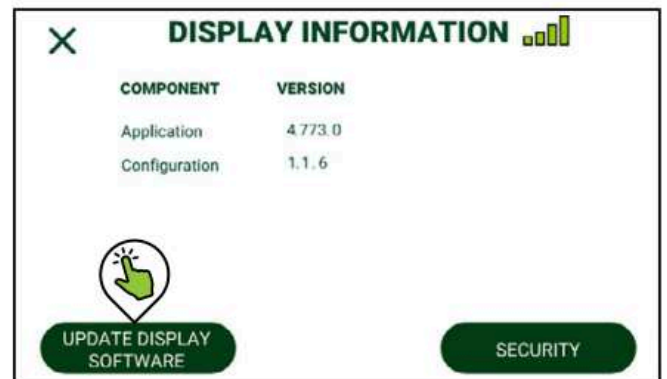
Tap **SAVE** to save the update file to the USB drive.



Wait for the update file to be copied to the USB drive.



While the file is being copied from the DataLogger to the USB drive, navigate to the [Display Information](#) screen on the vehicle display and tap **UPDATE DISPLAY SOFTWARE** to view the Update Display Software screen.



Step 3: Once the update file has been successfully copied, eject the USB drive from the DataLogger and tap **NEXT**.



Step 4: Insert the USB drive into the USB port on the back of the console. The location of the USB port is illustrated on-screen.

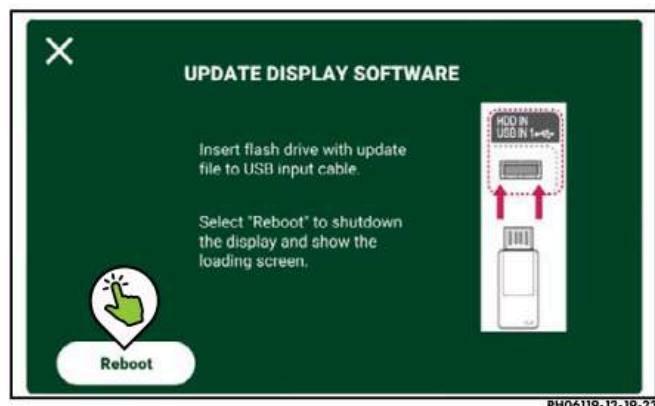
Once inserted, tap **NEXT**.



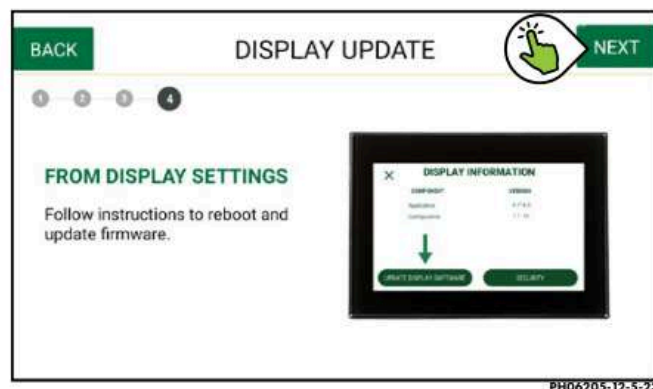
From this point, the rest of the display update process is completed at the vehicle display.

Follow the on-screen instructions on the vehicle display.

With the USB drive inserted into the back of the vehicle console, tap **Reboot** on the Update Display Software screen to reboot and update the display.



Once this is completed at the vehicle display, tap **NEXT** on the display update screen on the DataLogger.



Tap **DONE** to return to the Firmware Update screen.



Once the vehicle display has rebooted, the display update is complete and normal operation can continue.

Wireless Receiver Update Process

The DataLogger must be connected to wifi to download a firmware update file. An internet connection is recommended while performing an update but can be performed offline if the update file has been downloaded onto the DataLogger.

Turn the machine on without starting the engine by turning the key to **RUN**. The engine should not be running for this process.

To begin the wireless receiver update process, tap **Wireless Receiver** on the Firmware Update screen on the DataLogger.



This update is a four-step process.

Step 1: Connect the DataLogger to the vehicle diagnostic port using the tethering cable. The location of the diagnostic port is illustrated on-screen.

Ensure the machine is turned on before proceeding.

Once connected, tap **READY**.



Step 2: Wait for the latest wireless receiver update to be found. This should take a few seconds.

The new firmware version will be displayed on-screen.

Refer to "[Port Connection Issues](#)" if a port connection issue is encountered.

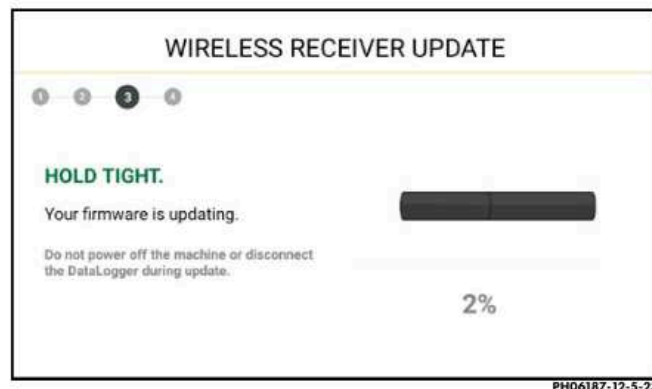
Tap **BEGIN** to update the wireless receiver firmware.



Step 3: Wait for the wireless receiver firmware to update.

A percentage to process completion is displayed under the loading animation.

Do not power off the machine or disconnect the DataLogger during the update.



Step 4: Once the firmware has been updated, turn the machine off and tap **DONE** to return to the Firmware Update screen.



At this point, the machine can be restarted and normal operation can continue.

Battery Charger Update Process

The DataLogger must be connected to wifi to download a firmware update file. An internet connection is recommended while performing an update but can be performed offline if the update file has been downloaded onto the DataLogger.

Turn the machine on without starting the engine by turning the key to **RUN**. The engine should not be running for this process.

To begin the battery charger update process, tap **Battery Charger** on the Firmware Update screen on the DataLogger.



This update is a four-step process.

Step 1: Connect the DataLogger to the vehicle diagnostic port using the tethering cable. The location of the diagnostic port is illustrated on-screen.

Ensure the machine is turned on before proceeding.

Once connected, tap **READY**.



Step 2: Wait for the latest battery charger update to be found. This should take a few seconds.

The new firmware version will be displayed on-screen.

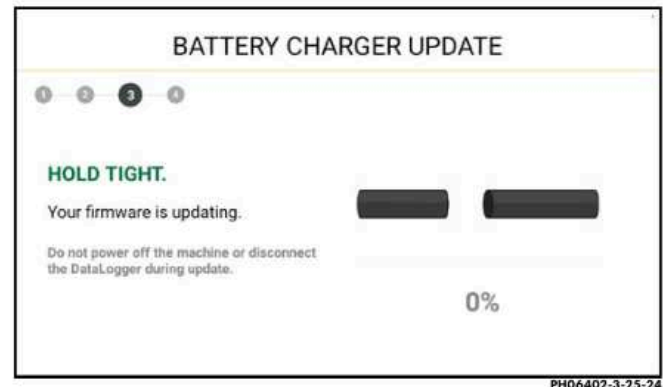
Refer to "[Port Connection Issues](#)" if a port connection issue is encountered.

Tap **BEGIN** to update the battery charger firmware.



Step 3: Wait for the battery charger firmware to update. A percentage to process completion is displayed under the loading animation.

Do not power off the machine or disconnect the DataLogger during the update.



Step 4: Once the firmware has been updated, turn the machine off and tap **DONE** to return to the Firmware Update screen.



At this point, the machine can be restarted and normal operation can continue.

Offline Updating Procedure

An internet connection is recommended while performing an update but may not always be available. An update can be performed offline if the update file has been downloaded onto the DataLogger.

In this case, an update file must be downloaded onto a DataLogger that has an internet connection. The DataLogger does not need to be connected to a machine for an update file to be downloaded.

Ensure the DataLogger is connected to the internet, and begin the process of performing an update as outlined below.

Navigate to the Firmware Update screen and tap on the desired update to be performed.



Once prompted to connect to the designated port, disregard and tap **READY**.



This will result in a port connection issue screen as no connection will be detected. However, arriving at this screen with an internet connection indicates the file for the update selected has been downloaded.

This procedure can be performed for additional machine components by navigating back to the Firmware Update screen and selecting a different component.

Once this procedure is complete, the DataLogger can be returned to the machine and updates can be performed offline using the processes outlined in the previous pages of this section.

Port Connection Issues

The DataLogger will detect if the wrong port has been connected to for an update process.

The DataLogger will also detect if it is not connected to any port on the machine.

In either case, a port connection issue will occur.



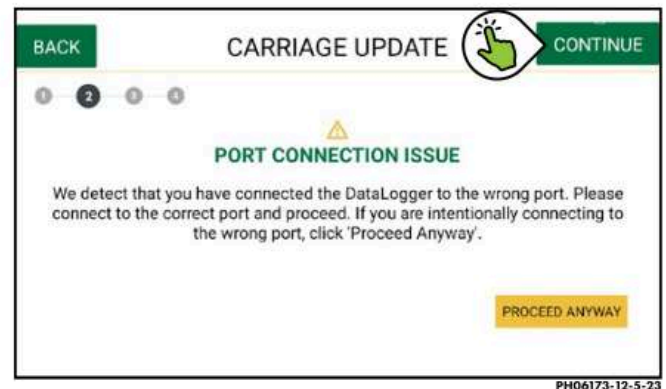
If a port connection issue is encountered, disconnect the DataLogger and connect to the correct port.

The ports pertaining to each update process are as listed:

- Carriage Update: Carriage Tether Port
- Vehicle Update: Vehicle Diagnostic Port
- Wireless Receiver Update: Vehicle Diagnostic Port

IMPORTANT: It is not recommended to tap **PROCEED ANYWAY** except in the instance a replacement controller is being updated.

Once the DataLogger has been connected to the correct port, tap **CONTINUE** to proceed with the update.



Editing Serial Numbers

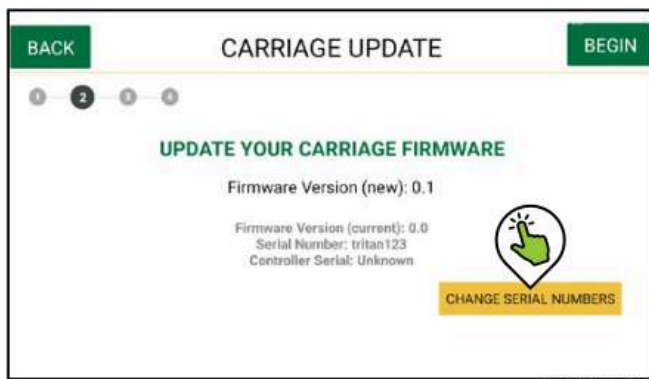
The serial numbers of the vehicle, carriage and controllers can be edited during the guided firmware update process.

The instances where editing the serial numbers may be necessary are:

- The serial number displayed does not match the serial number on the nameplate or controller.
- A new controller has been installed.

The option to change the serial numbers appears as a button on the second step of the guided firmware update process for the carriage and vehicle.

If needed, tap **CHANGE SERIAL NUMBERS**.



The option to edit the nameplate serial number is presented first. If the nameplate serial number displayed is correct, tap **CONTINUE** to proceed to the next screen.

If the nameplate serial number needs editing, tap **SCAN BARCODE** to open the camera. Using the camera, scan the QR code on the associated nameplate to obtain the correct serial number.

The serial number can also be entered manually.

Once the nameplate serial number is displayed correctly, tap **CONTINUE** to proceed to the next screen.



The next screen presents the option to edit the controller serial number. If the controller serial number displayed is correct, tap **CONTINUE** to return to step two of the update process.

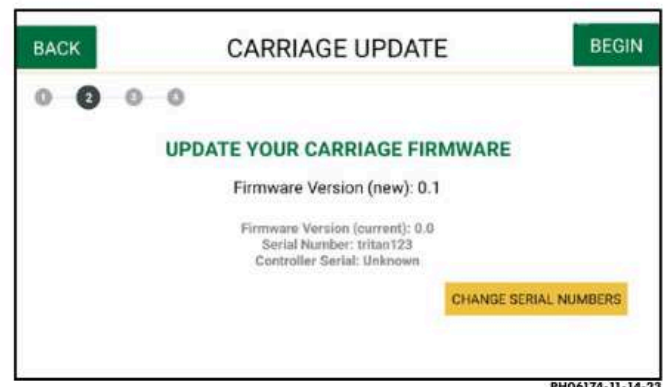
If the controller serial number needs editing, tap **SCAN BARCODE** to open the camera. Using the camera, scan the QR code on the label of the associated controller to obtain the correct serial number.

IMPORTANT: The controller serial number is not listed on the label and cannot be entered manually.

Once the controller serial number is displayed correctly, tap **CONTINUE** to return to step two of the update process.



If both serial numbers are displayed correctly on step two of the update process, proceed through the remainder of the process as normal.



HEATER DRY-OUT MODE

Heater Dry-Out Mode

Heater dry-out mode is a password protected option in the [Security Options](#) screen on the vehicle display.

Heater dry-out mode allows the machine to suspend low-level fault current trips and raise the temperature of the heater in order to evaporate any moisture present in the heater element.

This mode should only be used in circumstances in which repeated fault current trips are observed and moisture is suspected in the heater element.

NOTICE: Position the heater inside the heater bag frame when not in use to prevent exposure to precipitation.

When heater dry-out mode is active, it is important that no metal machine components are touched.

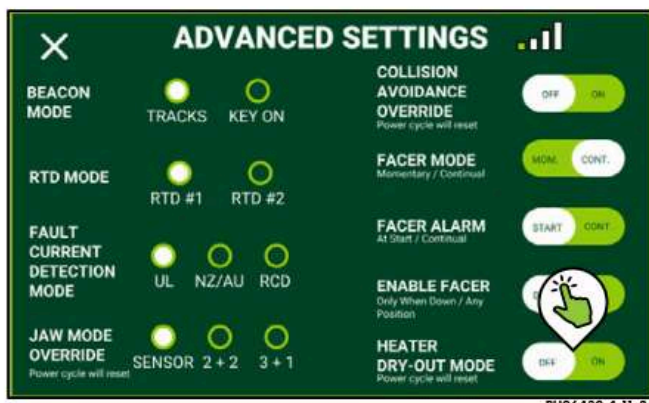
⚠ WARNING

Touching a metal component on the machine while heater dry-out mode is active could cause severe bodily injury or death. Do not touch any metal components of the machine while heater dry-out mode is active.

Heater dry-out mode is first enabled from the vehicle display while the remainder of the procedure is carried out from the DataLogger.

To enable heater dry-out mode from the vehicle display, tap **HEATER DRY-OUT MODE** in Advanced Settings.

This will reset back to **OFF** upon a power cycle.

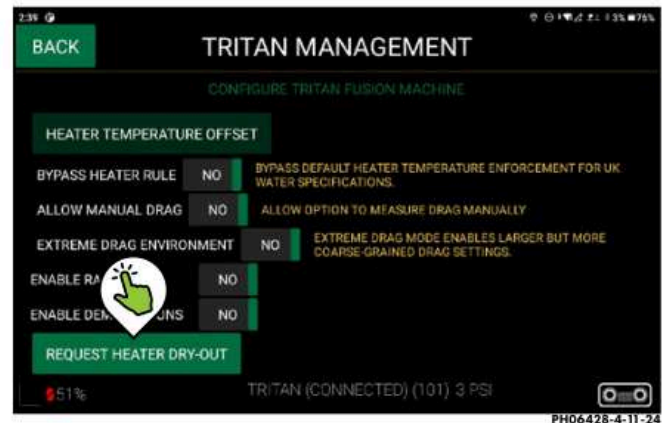


No further interaction with the vehicle display is necessary.

Once enabled at the vehicle display, the option to request heater dry-out mode is present in Tritan Management on the DataLogger.

REQUEST HEATER DRY-OUT

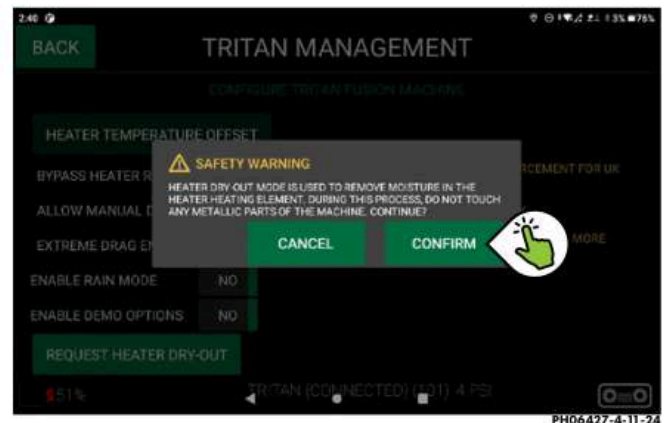
Tap **REQUEST HEATER DRY-OUT MODE** on the DataLogger.



This will prompt a safety warning. Ensure no personnel are touching the machine before proceeding.

NOTICE: Do not touch any metal components of the machine for the entire duration of this procedure.

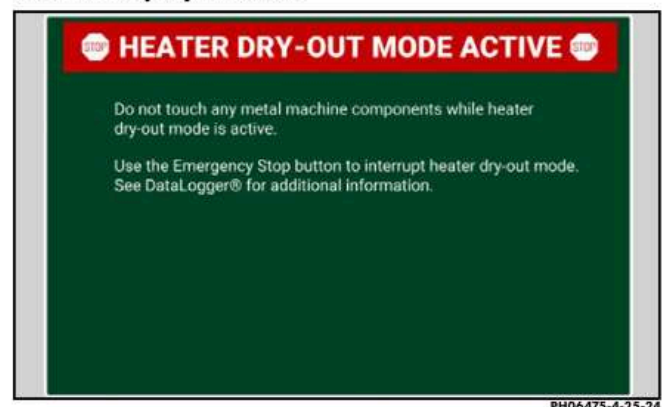
Tap **CONFIRM** to initiate heater dry-out mode.



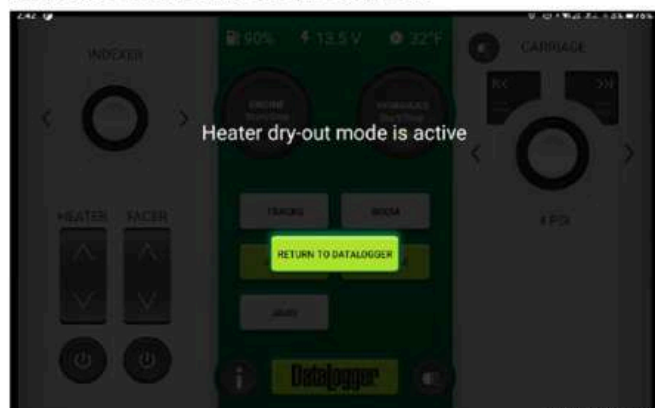
Upon initiation, the carriage and vehicle drive lights will blink and an alarm will sound indicating heater dry-out mode is active.

The vehicle display and the machine control interface on the DataLogger are locked out during this procedure.

Vehicle Display Lockout:



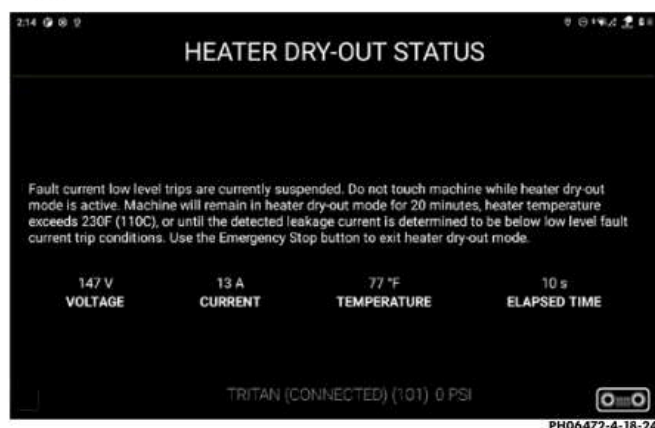
Machine Control Interface Lockout:



To cancel heater dry-out mode at any point during the procedure, press an **E-Stop** button on the machine.

Watch the DataLogger screen for information regarding heater dry-out mode status.

The DataLogger displays **GENERATOR VOLTAGE**, **GENERATOR CURRENT**, **HEATER TEMPERATURE** and **ELAPSED TIME** throughout the duration of heater dry-out mode.



The machine will remain in heater dry-out mode for 20 minutes unless heater temperature reaches 230°F (110°C), the fault current detection is tripped due to a high leakage current or the detected leakage current is determined to be below low-level fault current trip conditions.

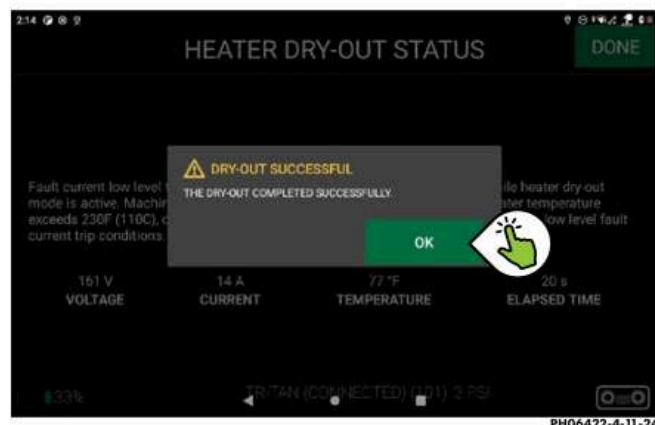
If an extreme amount of moisture is present in the heater element, the leakage current will be too high and the fault current will be tripped. In this case, heater dry-out mode is aborted.

In the event heater dry-out mode is aborted due to a fault current trip, other drying methods should be explored.

The DataLogger will indicate when heater dry-out mode is complete by displaying a success notification on-screen.

Final status information will remain on-screen until the success notification is dismissed.

Tap **OK** to dismiss the success notification and exit heater dry-out mode.



Upon heater dry-out mode success, normal operation can continue.

NOTICE: If the 20-minute timer expires before the success notification is observed, the heater may not be completely dry. In this case, heater dry-out mode can be initiated again.

NOTICE: If fault current detection trips persist following multiple heater dry-out mode successes, moisture in the heater element may not be the cause. Inspect heater wiring and cables for damage.

This page intentionally left blank.

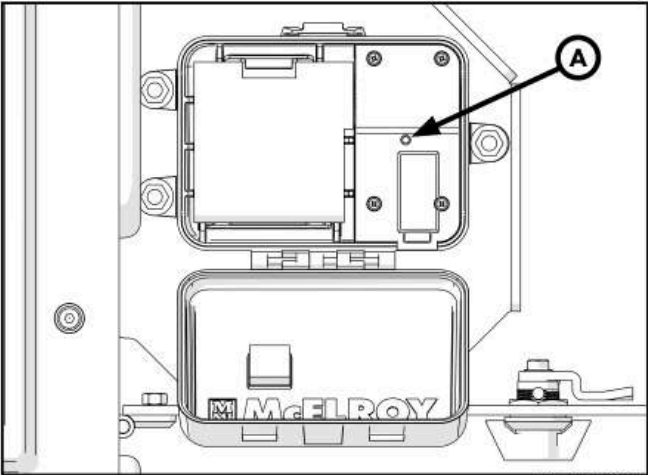
BATTERY CHARGER

Overview

The DataLogger battery charger is designed for DataLogger 7 lithium-ion batteries. It provides efficient charging and incorporates fault detection for over/under temperature, invalid firmware, Battery Management System (BMS) errors and time-out issues. The charger communicates via CAN protocol with the Tritan™.

LED Status Indications

The battery charger includes an LED (A) to provide visual status alerts. There are five possible LED states output by the battery charger board. The LED status indications are listed in the table below.

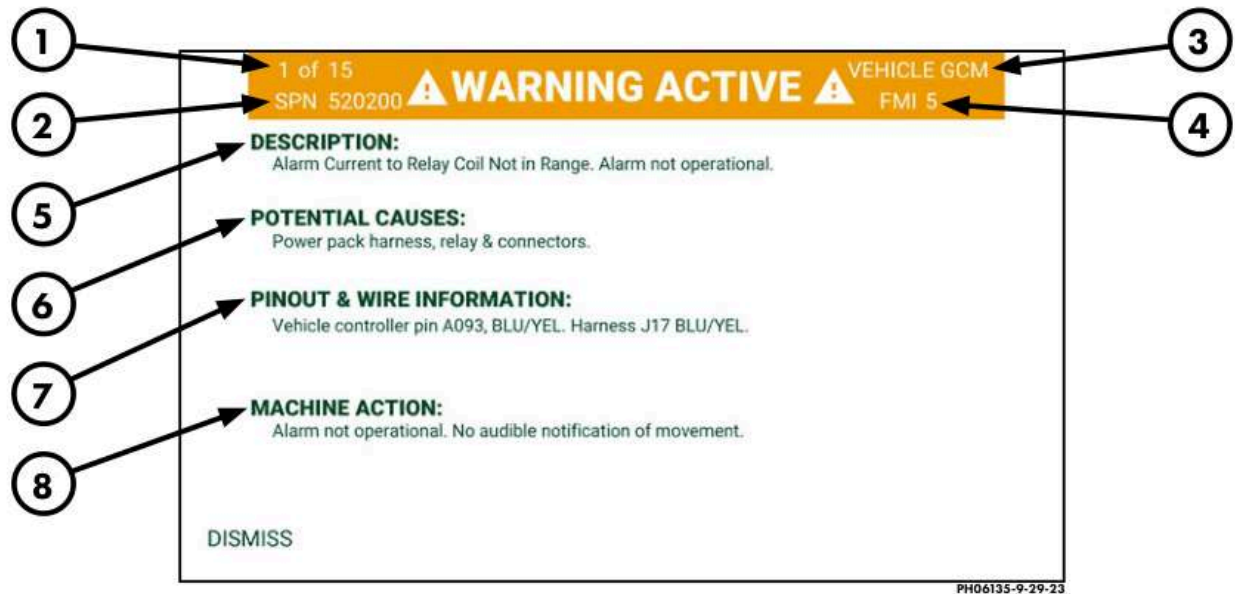


CD03056-12-21-23

LED State	Visual	Description
Blinking Blue		Indicates an idle state (board is on, but no battery is inserted).
Solid Green		Indicates a battery is fully charged.
Blinking Green		Indicates a battery is being charged.
Solid Red		Indicates a battery fault is active, no user action required.
Blinking Red		Indicates a critical battery fault is active, user action required.

FAULTS

Faults



1) Fault Views:

Viewing faults out of total amount of faults.

2) SPN (Suspect Parameter Number):

Identification number for a particular fault.

3) Fault Location:

Device or location where the fault has occurred.

4) FMI (Failure Mode Indicator):

Adds indication to type of fault received.

5) Fault Description:

Description of the active fault.

6) Symptoms/Causes:

Description of possible causes or symptoms of the active fault.

7) Problem Location/Pinout:

Description of the location or electrical pinout where the active fault is located.

8) Machine Action:

Description of the corrective information pertaining to the active fault.

HYDRAULIC FLUIDS

Hydraulic Fluids

The use of proper hydraulic fluid is mandatory to achieve maximum performance and machine life. Use a clean, high quality, anti-wear hydraulic fluid with a viscosity index (VI) of 135 minimum. It should have a maximum viscosity of 1000 cSt (5000 SSU) at startup (ambient temperature) and a minimum viscosity of 13 cSt (65 SSU) at the maximum fluid temperature (generally 30°F to 80°F above ambient). Using hydraulic fluids that do not meet these criteria may cause poor operation and/or damage to the hydraulic components.

The following table specifies the fluid temperature at various viscosities. Temperature rise of the hydraulic fluid can vary from 30°F to about 80°F over the ambient temperature depending on the pressure setting, age of the pump, wind, etc. VG46 hydraulic fluid is installed at our factory. The advantage of this fluid is a wider temperature range, however, this fluid should not be used for continuous operation below 10°F.

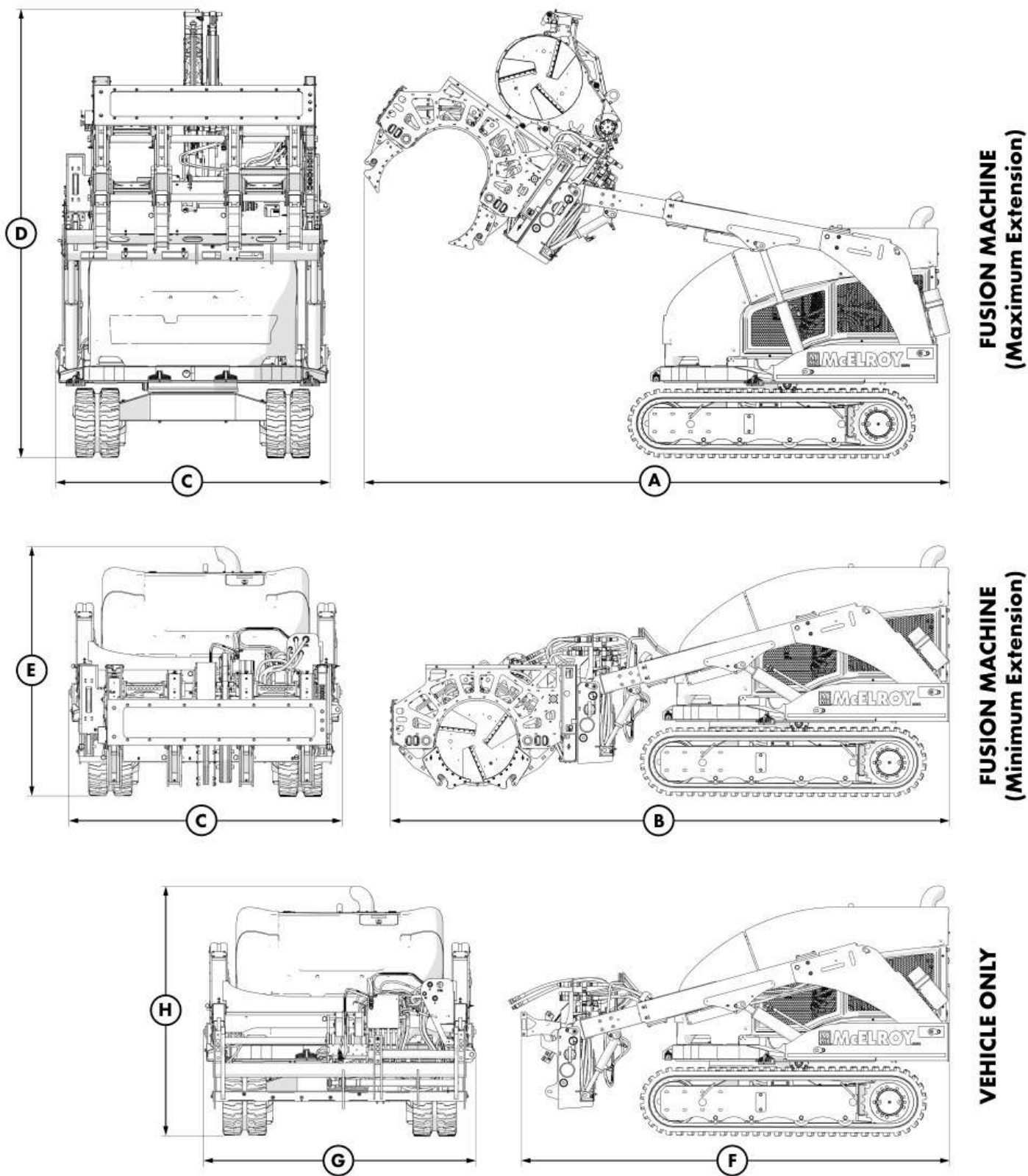
Hydraulic Fluid Characteristics																	
Manufacturer	Fluid Name	cSt 100F	cSt 210F	V.I.	-20F	-10F	0F	10F	30F	50F	70F	90F	110F	130F	150F	Range °F	Range °C
Mobil	DTE 10 Excel 15	15.8	4.1	168	.	.	.	.	.	.	.	.	.	.	.	-27 - 113	-33 - 45
	DTE 10 Excel 32	32.7	6.6	164			.	.	.	.	.	.	.	.	.	1 - 154	-17 - 68
	DTE 10 Excel 46	45.6	8.5	164				.	.	.	.	.	.	.	.	10 - 173	-12 - 78
	DTE 10 Excel 68	68.4	11.2	156				.	.	.	.	.	.	.	.	24 - 196	-4 - 91
	Univis N-32	34.9	6.9	164			.	.	.	.	.	.	.	.	.	3 - 150	16 - 66
	Univis N-46	46	8.5	163				.	.	.	.	.	.	.	.	10 - 166	-12 - 74
	Univis N-68	73.8	12.1	160				.	.	.	.	.	.	.	.	25 - 193	-4 - 89

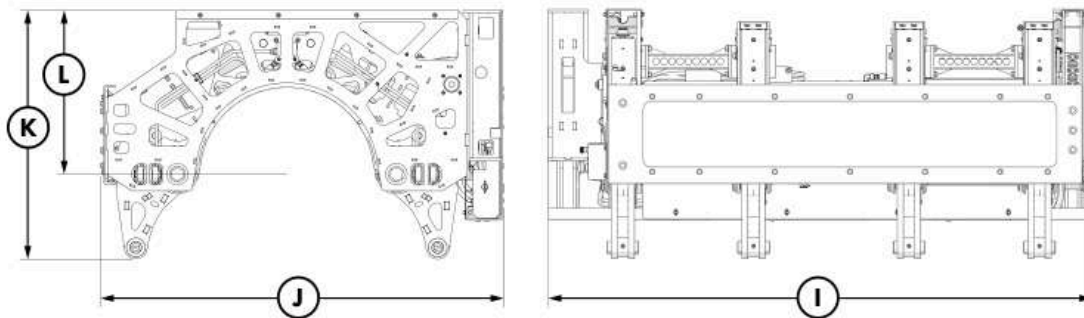
NOTE: This chart is based on pump manufacturer recommendations of 13 to 1000 cSt.

NOTE: Temperatures shown are fluid temperatures NOT ambient temperatures.

SPECIFICATIONS

Tritan™ 560 Specifications





CARRIAGE ONLY

CARRIAGE	Part Number		AT560P0950080
	Capabilities		12" IPS - 22" OD (315mm - 560mm)
	Cylinder Force Type - HF		HF
	High Force Total Effective Piston Area Maximum Force		TEPA: 9.81 sq in (63.3 sq cm), Max Force: 29,430 lbs. (13,349 kg)
WEIGHT	Machine Weight		9,775 lbs. (4,434 kg)
	Shipping Weight		9,800 lbs. (4,445 kg)
	Carriage Weight		1,638 lbs. (743 kg)
	Vehicle Weight		7,891 lbs. (3,579 kg)
	Heater Weight		91 lbs. (41 kg)
	Facer Weight		162 lbs. (73 kg)
DIMENSIONS	Machine Length (Max. Extension)	A	160" (4,064 mm)
	Machine Length (Min. Extension)	B	152" (3,861 mm)
	Machine Width	C	75" (1,905 mm)
	Machine Height (Max. Extension)	D	120" (3,048 mm)
	Machine Height (Min. Extension)	E	69" (1,753 mm)
	Vehicle Length (Boom Mid-Stroke)	F	117" (2,972 mm)
	Vehicle Width (Boom Mid-Stroke)	G	75" (1,905 mm)
	Vehicle Height (Boom Mid-Stroke)	H	68" (1,727 mm)
	Carriage Length (No Inserts)	I	69" (1,753 mm)
	Carriage Width (No Inserts)	J	51" (1,295 mm)
	Carriage Height (No Inserts)	K	32" (813 mm)
	Carriage Centerline Height (No Inserts)	L	21" (533 mm)
	Shipping Length (Min.)		152" (3,861 mm)
	Shipping Width (Min.)		75" (1,905 mm)
	Shipping Height (Min.)		69" (1,753 mm)

ENGINE	Engine Horse Power	49.6 hp
	Engine Fuel Tank Capacity	16 gallons (60 liters)
	Engine Fuel Type	Diesel
	Engine Operational Fuel Tank Capacity	18 hours
	Engine Starting System	Electric
HYDRAULIC	Fusion Pressure	3,000 psi (207 bar)
	Hydraulic System Pressure	3,250 psi (224 bar)
	Hydraulic Reservoir Capacity	18 gallons (68 liters)
	Facer Power	Hydraulic
MOBILITY	Mobility Transportation	Self-propelled
	Mobility Type	Rubber crawler tracks
	Mobility Vehicle Speed	2.75 mph (4.4 kph)
ELECTRICAL	Electrical Input	None, self-contained
	Heater Power	5,700 W
SOUND LEVELS	Operator Location at Carriage	84 dB(A)
	Operator Location at Vehicle Console	94 dB(A)

NOTES

Notes:

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal black lines across its entire width, typical of notebook or composition paper. The lines are uniform in thickness and spacing, providing a guide for handwriting. There are no margins, text, or other markings present on the page.

