



OPERATOR MANUAL

Arrow Hammer 1450 H

Serial Number 8100-

Manual# xxxx JUNE 2022 ENGLISH



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Introduction

Using This Manual

In this manual the right and left sides of the machine are determined by sitting in the operator seat and facing in the machine's forward travel direction.

This operator manual contains instructions to safely operate and perform basic service on your machine. Anyone who operates or services the machine must first read, understand and follow the instructions in this manual.

Additional operating or servicing information for the machine may be provided online, in video, or in other publications. This additional information does not replace, and is not a substitute for reading and following, the instructions in this manual.

The safety alert symbol is shown in **WARNING** statements to alert users to hazards which could cause death or injury. Carefully read and follow the messages.

IMPORTANT notices alert users to instructions which, if not followed, could result in machine damage. Carefully read and follow the messages.

There may be times when the machine shown in this manual may not be your exact model. The model shown will be close enough to your machine to accurately convey the information.

The most current information available is included in this manual. The publisher may revise this manual at any time and is not required to notify users of revisions.

Replacement Manuals

Be sure to include this operator manual if you sell or transfer ownership of the machine.

Contact Arrow-Master for a printed manual, or find a downloadable manual on our website.

Using The Machine

The machine is designed for scoring, cutting and breaking down concrete; as well as for post driving and post hole punching.

The manufacturer reserves the right to make improvements, and to discontinue or change specifications, models or design without notice and without incurring obligation.

Product Misuse

Product misuse can cause accidents, injury and death.

The manufacturer of the machine is not responsible for any harm or injury resulting from product misuse.

Product misuse includes operating or servicing the machine without following the instructions in this manual, using the machine in any way for which it was not designed, and modifying the machine.

Misuse includes but is not limited to using the machine to carry passengers who are not operating the machine, using the machine to tow or push other machines or vehicles, using the machine to lift or carry any materials or loads, or using the machine with any tools or attachments not specifically designed for the machine by the manufacturer.

Modifications

Do not modify the machine in any way.

Manufacturer Contact

Call Arrow-Master at (309)-752-1341, or email info@arrowhammer.net.

Product Identification

Identification Numbers

Record your information below to provide when you contact the dealer or manufacturer.

Arrow Hammer

Model 1450 H

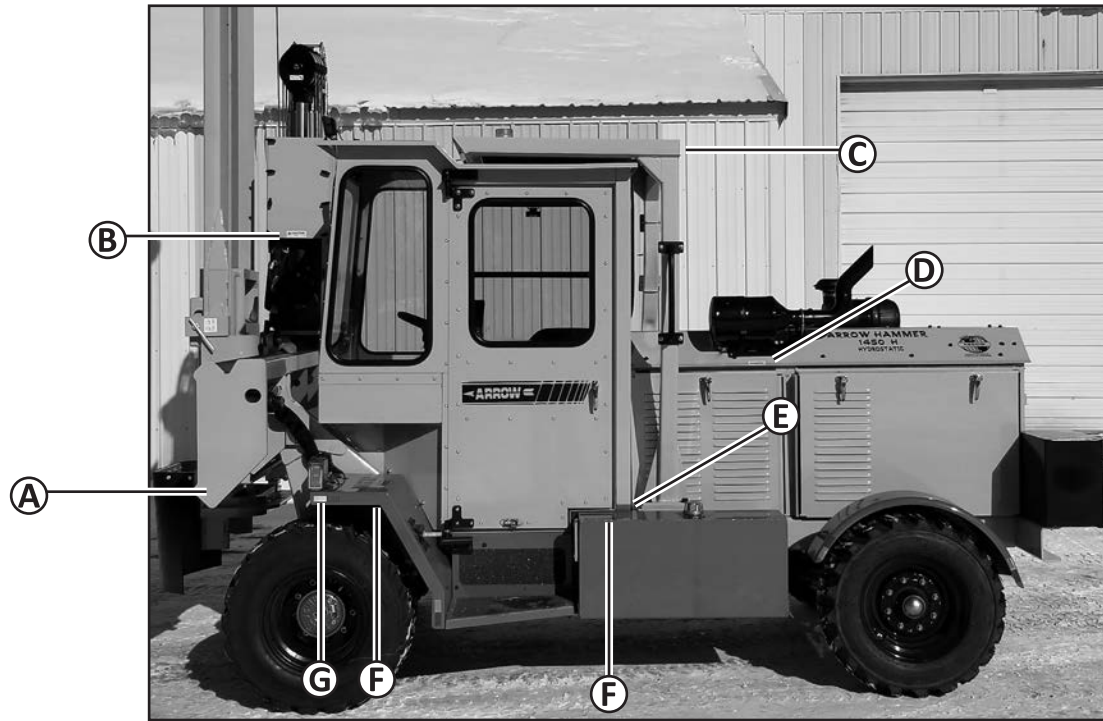
Serial Number 8100-

Serial Number Location (A)

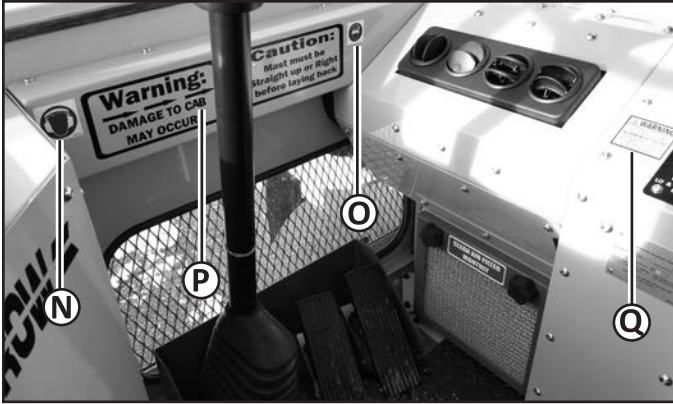


Purchase Date	
Dealer	
Dealer Phone	
Serial #	

Safety Decals



Safety Decals



Item	Description	Part No.	Qty.
A	Yellow Triangle Hand Pinch	4254005	2
B	Caution Hands Clear	4254001	2
C	Stay Back 100FT (ROPS)	4254006	1
D	Caution Hot Muffler	4254013	1
E	Fire Extinguisher Inside*	4254032	1
F	No Riders	4254011	2
G	No Step	4254016	3
H	Do Not Remove	4254019	1
I	Spring Under Tension	4254020	1
J	Warning/Attention/Mast	4254031	1
K	Cable Wrap Diagram	4254021	1
L	Keep Back 100FT (Weight)	4254023	1
M	ROPS Warning	4254033	1
N	Hearing Protection	4254009	1
O	Eye Protection	4254010	1
P	Warning/Caution in Cab*	4254030	1
Q	Warning/Alarm	4254007	1
*Installed on machines with cabs.			

Safety Decals

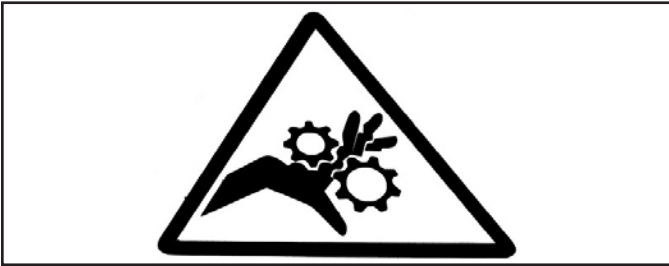
About Safety Decals

The decals shown in this manual are installed on your machine to warn about potential hazards and to provide important safety information.

Replace worn or damaged decals. Confirm decal placement and part numbers in the Decal Locations illustrations in this manual. Contact the manufacturer to order the following replacement decals.

Components or parts installed on the machine may have safety decals on them which are not included in this manual. Contact the component manufacturer to order replacement decals.

(A) YELLOW TRIANGLE HAND PINCH 4254005



HAND PINCH POINT AREA

(B) CAUTION HANDS CLEAR 4254001



CAUTION KEEP HANDS CLEAR

(C) STAY BACK 100FT (ROPS) 4254006



STAY BACK 100 FEET

(D) CAUTION HOT MUFFLER 4254013



THE MUFFLER AREA IS A HOT SURFACE.

(E) FIRE EXTINGUISHER INSIDE 4254032



FIRE EXTINGUISHER INSIDE

(F) NO RIDERS 4254011



NO RIDERS

(G) NO STEP 4254016



NO STEP

(H) DO NOT REMOVE 4254019



DO NOT REMOVE BOLTS WITH SPRING UNDER TENSION

Safety Decals

(I) SPRING UNDER TENSION 4254020



SPRING UNDER TENSION

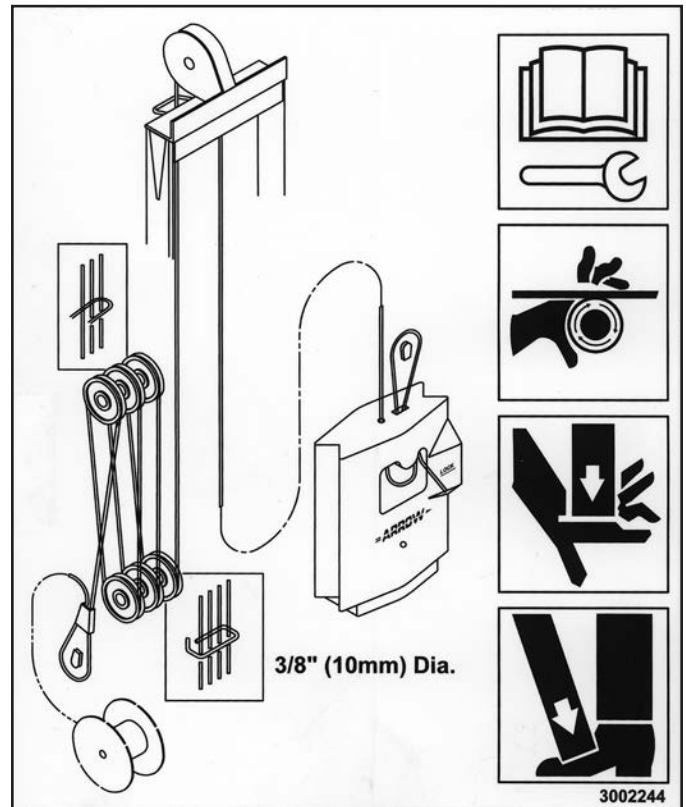
- FOLLOW INSTRUCTIONS TO REMOVE TENSION AND THE SPRING.

(J) WARNING/ATTENTION/MAST 4254031



DO NOT OPERATE WITHOUT GUARDS
MAST MUST BE BACK AGAINST RIGHT SIDE TO LAY BACK
ATTENTION: OPERATOR SHOULD STOP AUTO STROKE/
HAMMER WHILE WEIGHT IS ON GROUND

(K) CABLE WRAP DIAGRAM 4254021



- READ AND UNDERSTAND THE OPERATOR MANUAL BEFORE OPERATING OR SERVICING THE MACHINE.
- KEEP HANDS AWAY FROM MOVING PARTS.
- HAMMER WEIGHT CAN CRUSH. KEEP HANDS AND FEET AWAY.

(L) KEEP BACK 100FT (WEIGHT) 4254023



KEEP BACK 100 FEET

Safety Decals

(M) ROPS WARNING 4254033



THE PROTECTION OFFERED BY THIS ROPS WILL BE IMPAIRED IF IT HAS BEEN SUBJECT TO ANY MODIFICATION, STRUCTURAL DAMAGE, OR HAS BEEN INVOLVED IN AN OVERTURN INCIDENT. THIS ROPS MUST BE REPLACED AFTER A ROLLOVER. SEAT BELTS MUST BE WORN WHILE OPERATING VEHICLE.

(N) HEARING PROTECTION 4254009



ALWAYS WEAR HEARING PROTECTION WHEN OPERATING THE MACHINE.

(O) EYE PROTECTION 4254010



ALWAYS WEAR EYE PROTECTION WHEN OPERATING THE MACHINE.

(P) WARNING/CAUTION IN CAB 4254030



WARNING: DAMAGE TO CAB MAY OCCUR

CAUTION: MAST MUST BE STRAIGHT UP OR RIGHT BEFORE LAYING BACK

(Q) WARNING/ALARM 4254007



THIS VEHICLE IS EQUIPPED WITH A BACK-UP ALARM. ALARM MUST SOUND WHEN BACKING. OPERATOR MUST MAKE CERTAIN ALARM IS WORKING BEFORE OPERATING THIS VEHICLE.

Safety

Wear Protective Equipment

- Wear safety glasses or eye shields to protect from dust and debris.
- Wear ear plugs to protect from loud or high pitched noises.
- Wear gloves to protect hands from burns if hydraulic components become hot during operation.
- Never wear sandals or other light footwear when operating or servicing the machine. Wear protective footwear when handling heavy parts.
- Do not wear loose fitting clothing which may become entangled when operating or servicing the machine.

Parking Safely

1. Position the machine on level ground.
2. Fully shift the mast to the right.
3. Position the hammer and insert the hammer lock pin.
4. Fully lower the mast onto the mast rest and tilt the mast to contact the ROPS (Roll-Over Protective Structure).
5. Engage the park brake.
6. Turn the key switch to the OFF position and remove the key from the switch.

Operating Safely

- Do not allow anyone to operate the machine unless they have first read and understood the machine operator manual.
- Do not allow anyone to operate the machine unless they have first read and understood the safety and warning decals on the machine.
- The machine owner is responsible for training others to safely operate the machine, and is responsible for any injuries or harm which occurs while the machine is being operated.
- Do not operate the machine inside enclosed areas where carbon monoxide gas may build up.
- Before operating, replace any worn or damaged safety decals.
- Before operating, thoroughly inspect the machine to be sure all hardware (bolts, nuts, etc.) is installed and

tightened.

- Before operating, thoroughly inspect the machine to be sure it is in working order. If the machine is damaged or otherwise not in working order, do not operate until it has been repaired by a qualified technician.
- Do not operate the machine if you are under the influence of alcohol, drugs, or medications which may cause drowsiness.
- Do not allow children to operate the machine.
- Do not allow anyone who has not been trained to operate the machine.
- Inspect the work area before operation to remove any obstacles or mark them to avoid. Confirm no lines or pipes or other objects are just beneath the concrete surface.
- Confirm all guards are in place before operating.
- Keep hands, feet or other objects away from underneath the machine while operating.
- Never leave the machine unattended while the engine is running.
- Position the machine on level ground or surface when you are done operating.
- Allow the muffler and engine to cool before touching.
- Keep the muffler and engine area clean and free of debris.

Servicing Safely

- Park the machine safely and disconnect the negative battery terminal before performing any service.
- Do not allow anyone to service the machine unless they have first read and understood the machine operator or service manuals.
- Do not allow anyone to service the machine unless they have first read and understood the safety and warning decals on the machine.
- The machine owner is responsible for training others to safely service the machine, and is responsible for any injuries or harm which occurs while the machine is being serviced.
- Always securely block the machine after raising to inspect or service the machine.

Safety

Fuel Safety

- Allow the engine to cool several minutes before removing the fill cap.
- Do not allow open flames, sparks, heat or any other sources of ignition in the fuel area.
- Do not overfill the fuel tank. Allow any spills to evaporate before starting the engine.
- Always add or drain fuel outdoors.

Hydraulic Fluid Safety

- Read and understand the hydraulic safety information in the operator manual before operating or servicing the machine.
- Use cardboard or a board when you check for a leak.
- Fluid in hydraulic hoses is under extreme pressure. If fluid is injected into your skin seek medical treatment immediately.
- Do not handle any hydraulic components until pressure has been relieved from the system.

Safety Decals

Safety decals may be installed on the machine to warn users of safety hazards:

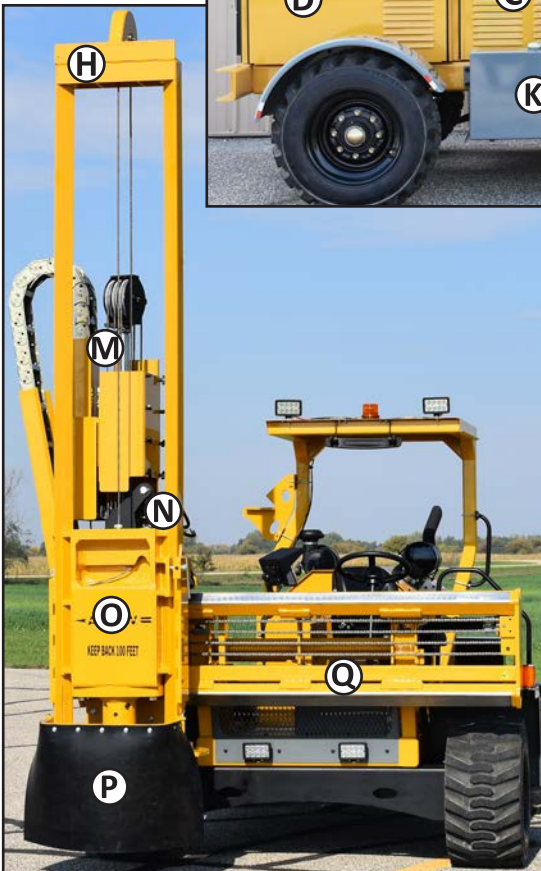
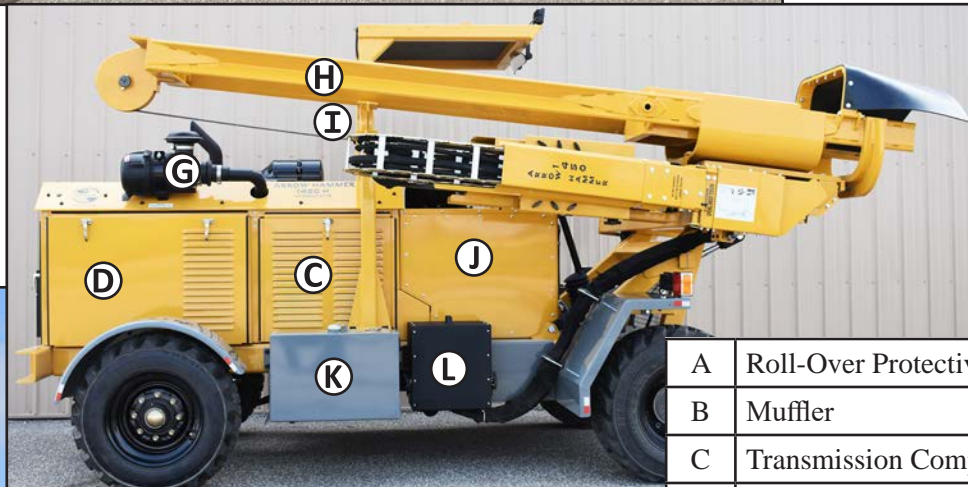
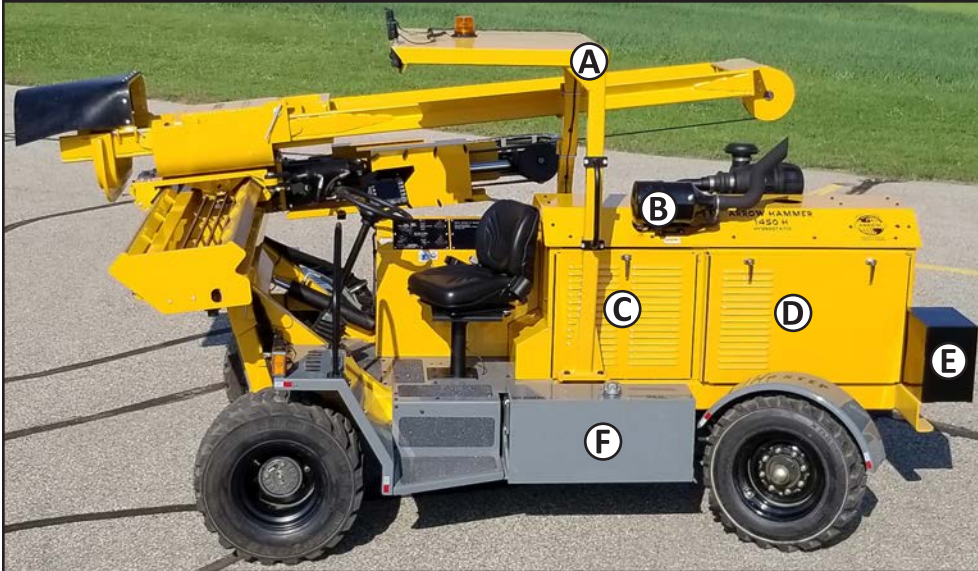
- **DANGER** decals provide warnings about hazardous situations which will result in death or serious injury if not avoided.
- **WARNING** decals provide warnings about hazardous situations which could result in death or serious injury if not avoided.
- **CAUTION** decals provide warnings about hazardous situations which could result in injury if not avoided.

Read and understand all safety decals before operating or servicing the machine.

See the Safety Decal Location illustration in this manual to confirm where decals are installed on the machine.

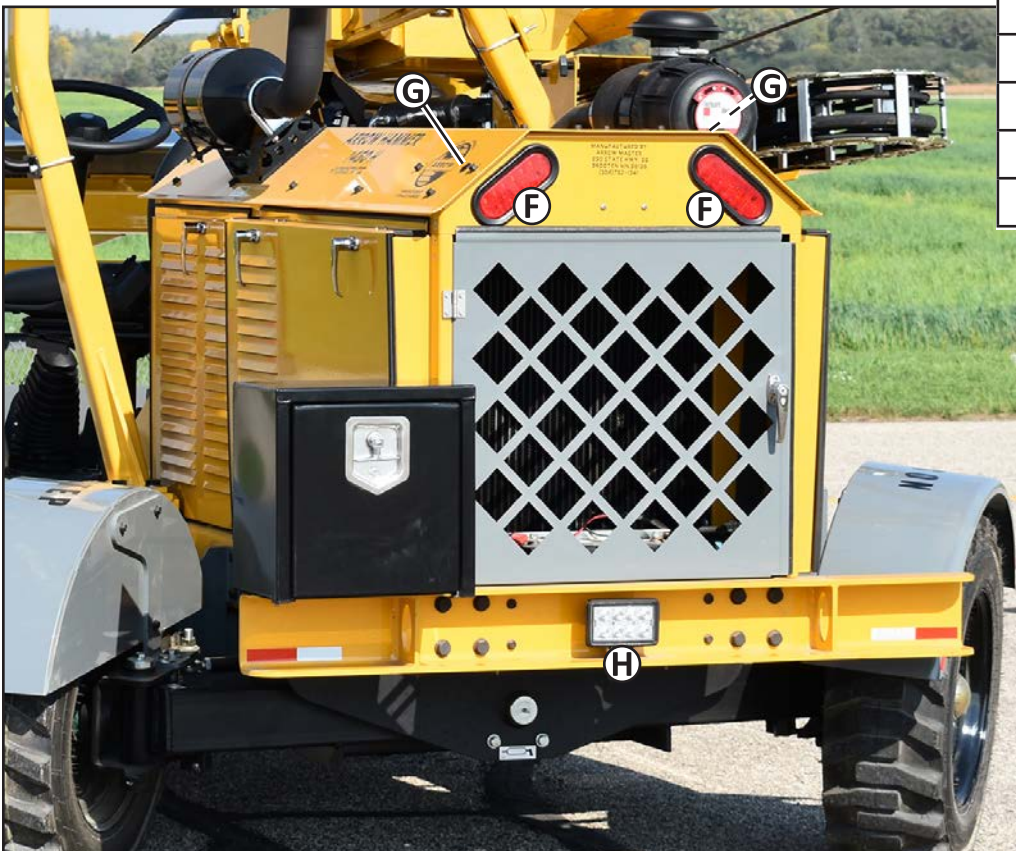
Safety decals which are missing, worn or faded must be replaced. Replacement safety decal part numbers are included in this manual. Contact the machine manufacturer for replacement decals.

Machine Components



A	Roll-Over Protective Structure (ROPS)
B	Muffler
C	Transmission Compartment
D	Engine Compartment
E	Tool Box
F	Hydraulic Fluid Tank
G	Air Cleaner
H	Mast
I	Mast Rest
J	Electrical Compartment
K	Fuel Tank
L	Encased Sectional Valves
M	Lift Cylinder
N	Tilt Cylinder
O	Hammer
P	Chip Guard
Q	Sideshift Slide

Machine Components

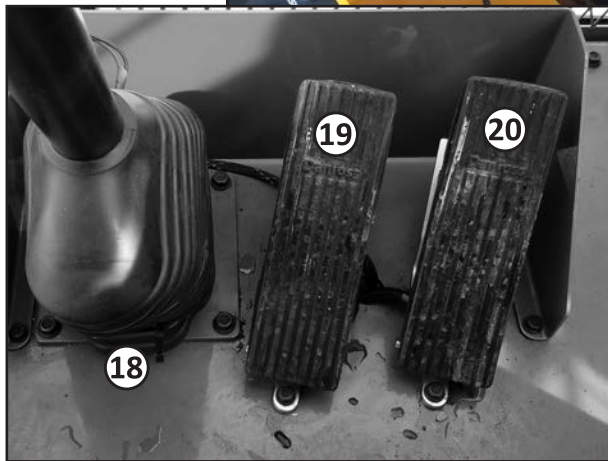


A	Cab Work Lights
B	Beacon Light
C	Turn Signal/Clearance Lights
D	Headlights
E	Front Frame Work Lights
F	Turn Signal/Taillights
G	Clearance Lights
H	Rear Frame Work Light

Machine Controls



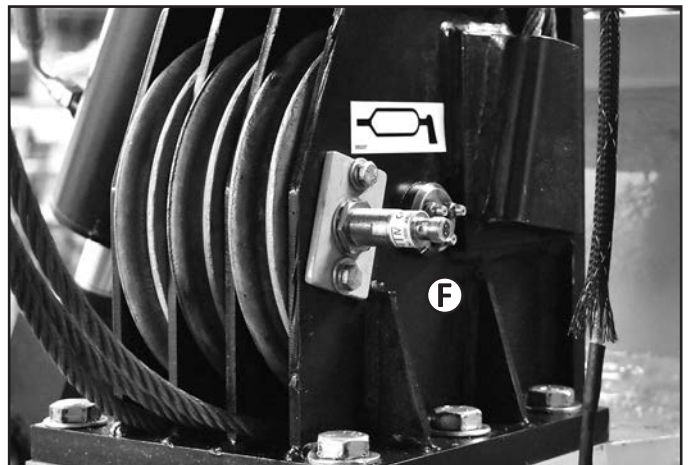
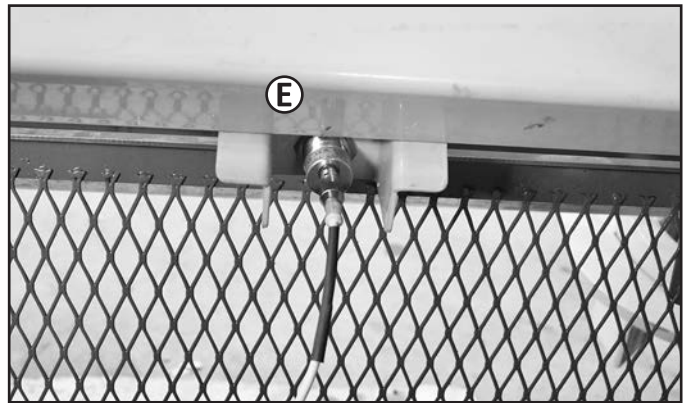
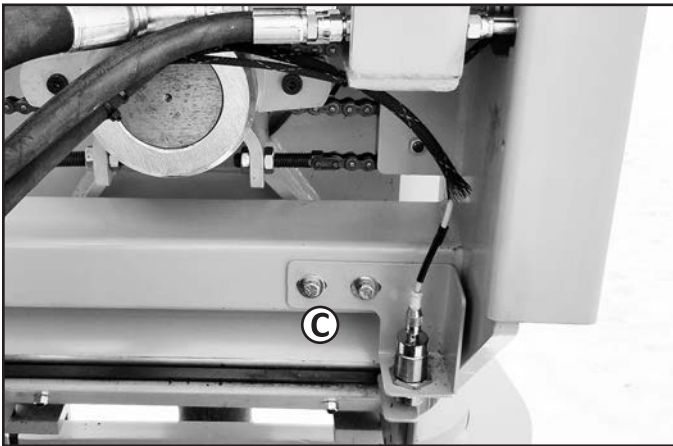
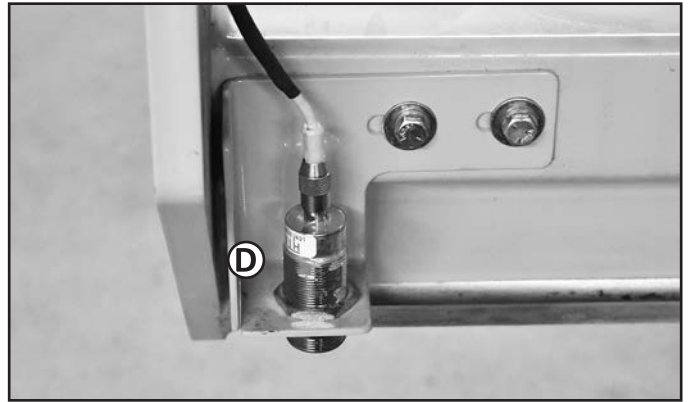
Control Panel	
1	User Interface
2	Park and Auto Mode Buttons
3	Adjusting Dial/Button
4	Travel Mode Buttons
5	Hammer Control
6	Sideshift Control
7	Tilt Control
8	Layback Control
9	Cab Climate Controls
10	Light Switches
11	Throttle Control
12	Key Switch
Operator Seat	
13	Weight Adjustment
14	Backrest Adjustment
15	Seat Belt Latch
16	Fore/Aft Adjustmnet
17	Swivel Lock
Travel Controls	
18	Steering Column Tile
19	Reverse Travel Pedal
20	Forward Travel Pedal
Optional Controls	
21	Cab Windshield Wiper



Gauges and Indicators



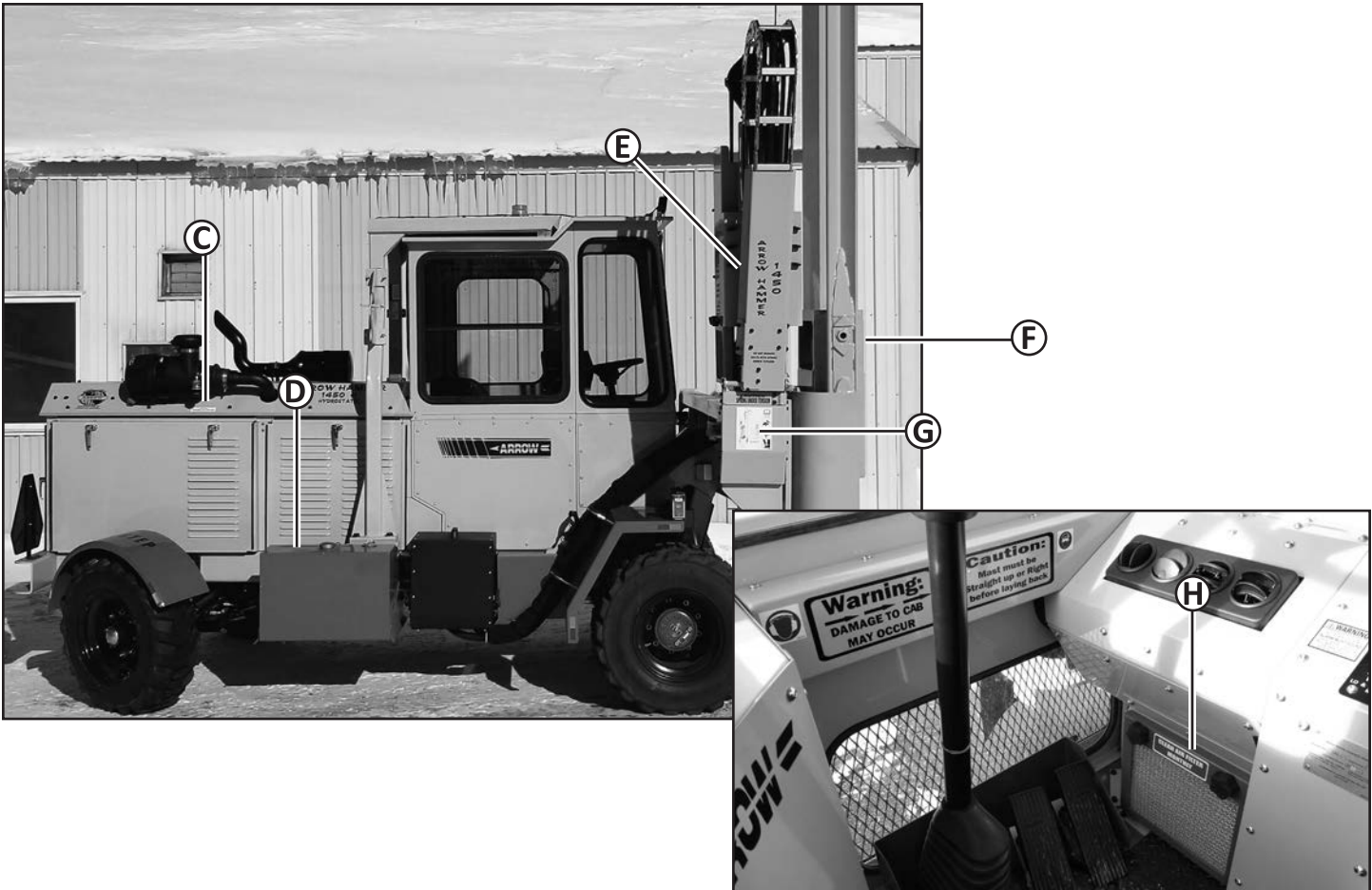
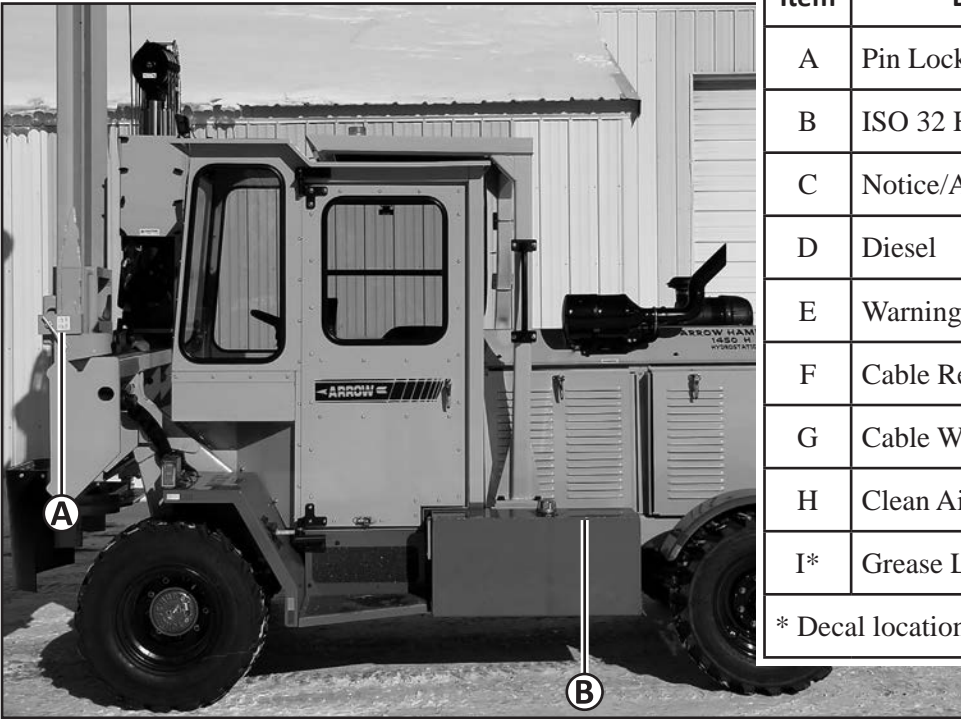
A	Hydraulic Oil Level Gauge
B	Engine Air Filter Gauge
C	Promixity Sensor (sideshift slide right)
D	Promixity Sensor (sideshift slide left)
E	Promixity Sensor (layback center)
F	Promixity Sensor (lift cylinder)



Operating & Service Decals

Item	Description	Part No.	Qty.
A	Pin Lock/Weight	4254026	1
B	ISO 32 Hyd. Oil	4254012	1
C	Notice/Air Filter	4254015	1
D	Diesel	4254017	1
E	Warning/Attention/Mast	4254031	1
F	Cable Retaining Clamp	4254028	1
G	Cable Wrap Diagram	4254021	1
H	Clean Air Filter	4254029	1
I*	Grease Locations	4254025	-

* Decal location not shown.



Operating & Service Decals

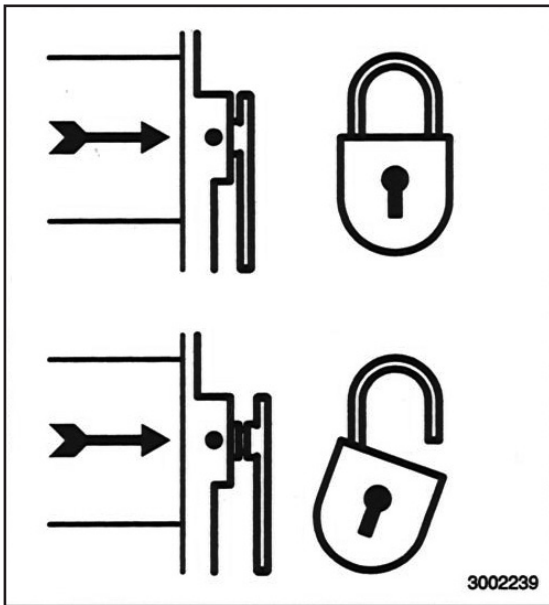
About Operating & Service Decals

The decals shown in this manual are installed on your machine to provide reminders of important information for operating and servicing the machine.

Replace worn or damaged decals. Confirm decal placement and part numbers in the Decal Locations illustrations in this manual. Contact the manufacturer to order the following replacement decals.

Components or parts installed on the machine may have decals on them which are not included in this manual. Contact the component manufacturer to order replacement decals.

(A) PIN LOCK/WEIGHT 4254026



- MOVE THE PIN IN TO LOCK THE HAMMER.
- MOVE THE PIN OUT TO UNLOCK THE HAMMER.

(B) ISO 32 HYD. OIL 4254012

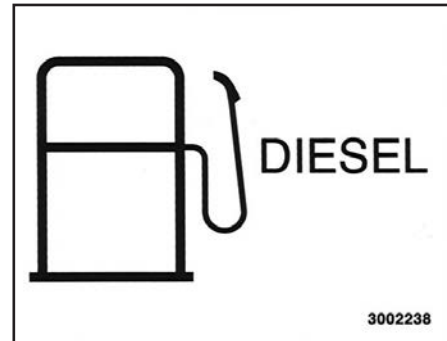


(C) NOTICE/AIR FILTER 4254015



HAMMER OPERATION MAY GENERATE SEVERE DUST CONDITIONS, REQUIRING SERVICE TO THE AIR CLEANER EVERY EIGHT HOURS OR LESS.

(D) DIESEL 4254017



USE CLEAN DIESEL FUEL ONLY.

(E) WARNING/ATTENTION/MAST 4254031



DO NOT OPERATE WITHOUT GUARDS
 MAST MUST BE BACK AGAINST RIGHT SIDE TO LAY BACK
 ATTENTION: OPERATOR SHOULD STOP AUTO STROKE/

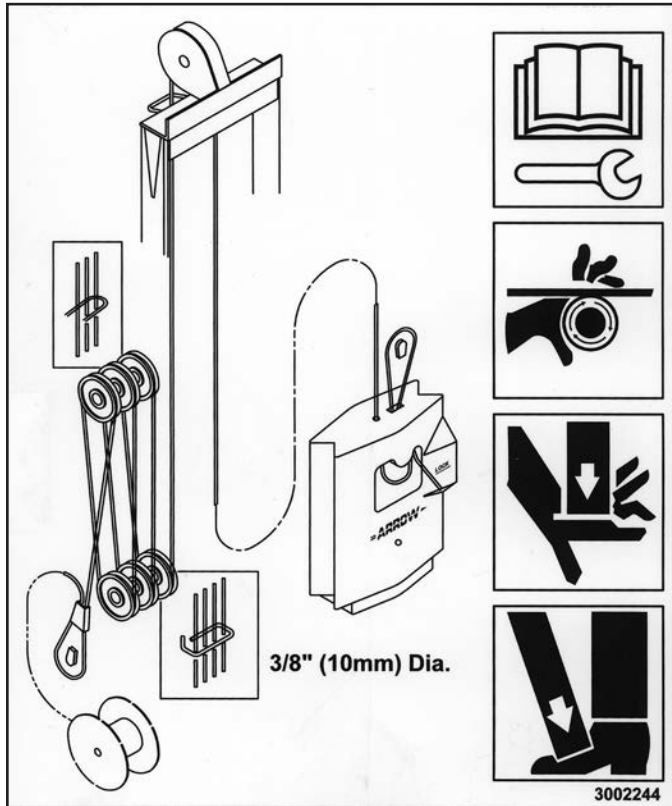
Operating & Service Decals

HAMMER WHILE WEIGHT IS ON GROUND

(F) CABLE RETAINING CLAMP 4254028

**CABLE RETAINING CLAMP
MUST BE USED AT ALL TIMES**

(G) CABLE WRAP DIAGRAM 4254021



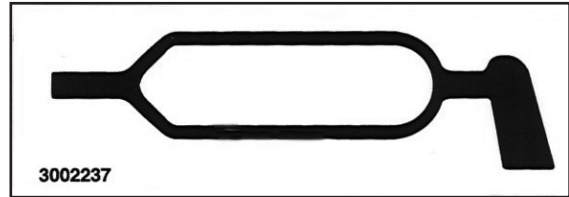
- READ AND UNDERSTAND THE OPERATOR MANUAL BEFORE OPERATING OR SERVICING THE MACHINE.
- KEEP HANDS AWAY FROM MOVING PARTS.
- HAMMER WEIGHT CAN CRUSH. KEEP HANDS AND FEET AWAY.

(H) CLEAN AIR FILTER 4254029

**CLEAN AIR FILTER
MONTHLY**

CLEAN AIR FILTER MONTHLY

(I) GREASE LOCATIONS 4254025



THIS DECAL IS INSTALLED NEAR EVERY GREASE ZERK LOCATION.

Operating

Theory of Operation

The Arrow Hammer is an hydraulic drop-hammer which uses an hydraulic cylinder and cable actuator system to lift a weight to a specified height and then release the weight to gravity free fall. The machine controls allow the lift and drop cycle to be repeated automatically. The machine can move itself in the work area.

The Arrow Hammer is generally used in three applications:

- Breaking and demolition of concrete, rock, asphalt or other hard materials by repeated hammer blows to reduce the size of the materials to allow for easy excavation and/or recovery.
- Cutting and sectioning asphalt or concrete areas into smaller sections before excavation.
- Compaction by impact in confined areas.

Daily Inspection Checklist

1. Check and tighten all bolts and nuts.
2. Check for frayed hydraulic lines and cables.
3. Check cross slide bearing adjustment.
4. Check oil levels.
5. Check and adjust cable properly; hammer should come within 8 to 10 inches from top of the mast at maximum cylinder extension.
6. Check all sheaves and bearings for free movement.
7. Check to make sure cable is threaded properly.

Pre-Operation Inspection

Before starting operation, inspect the work area and inspect the machine.

Inspect the Work Area

1. Confirm the area is clear of bystanders. Establish a safety zone by keeping bystanders beyond a 100 foot radius around the machine when operating.
2. Inspect the area to confirm there are no pipes, lines or other objects just beneath the work area surface.
3. Remove or mark any obstacles to avoid in the work area.

Inspect the Machine

1. Complete the Daily Inspection Checklist.
2. Inspect the machine to be sure it is in working order. If the machine is damaged or not in working order, do not operate until it has been repaired by a qualified technician.
3. Check the machine fuel level.

Note: See MACHINE COMPONENTS and MACHINE CONTROLS to identify the controls used to operate the machine.

Safety Systems Inspection

After completing the Pre-Operation Inspection, test the seat switch and backup alarm to be sure they are functioning properly.

Test the Seat Switch

1. Enter the operator station and start the engine.
2. Release the park brake.
3. Raise yourself off the seat.
4. Depress the forward travel pedal. The machine should not move and the park brake should engage.
 - a. If the machine moves, park the machine safely and check the seat switch electrical harness connections.
 - b. Test again. If the machine moves when you test again, contact the manufacturer.

Test the Backup Alarm

5. Turn the key switch to the RUN position.
6. Slightly press the reverse travel pedal. The alarm should sound.
 - a. If the alarm does not sound, park the machine safely and check the alarm electrical harness connections.
 - b. Test again. If the alarm will not sound when you test again, contact the manufacturer.

Operating

Entering/Exiting the Operator Station



1. Use the hand holds (A) to get into the operator seat.
2. Use the hand holds as you exit the operator station.

Using the Seat Belt



1. Grasp the connector (A) and pull it out and across your body.
2. Insert the connector into the latch (B) until it locks.
3. Adjust the belt to make it snug against your body.

Adjusting the Steering Wheel



1. Push down on the tilt locking lever (A) with your foot and tilt the steering column as needed.
2. Release the lever to lock the column in place.

Using the Park Brake



1. With the key switch in the RUN position or the engine running, push the park brake button (A) to engage the park brake.
 - When the park brake is engaged, the park brake button will light, and the park brake symbol (B) will flash on the user interface.
2. Push the park brake button again to disengage the park brake.

Operating

Using the Key Switch



1. Turn the key switch to the RUN position (B) to confirm the park brake is engaged.
2. Turn the key switch to the START position (C) and release to start the engine.
3. Turn the key switch to the OFF position (A) to stop the engine.

Starting the Engine

1. Enter the operator station.
2. Use the seat belt.
3. Turn the key switch to the RUN position to confirm the park brake is engaged.
 - When the park brake is engaged, the park brake button will light, and the park brake symbol will flash on the user interface.
4. If the park brake is not engaged, press the park brake button to engage the brake.



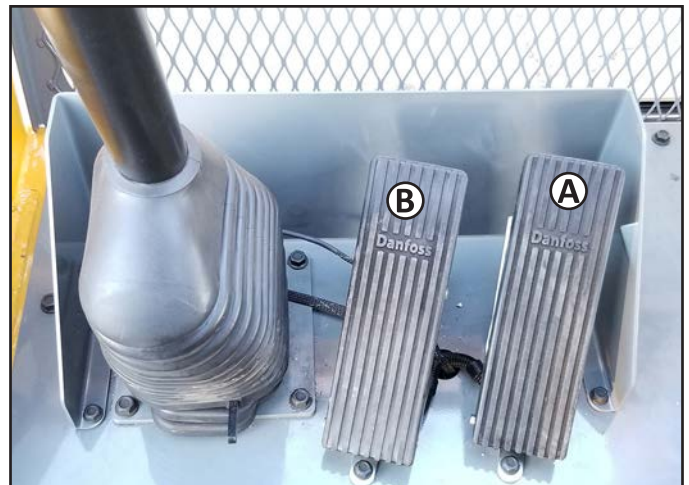
5. Wait for the indicator light (A) to dim before at-

tempting to start the engine. On some machines the light may turn off completely.

6. Turn the key switch to the START position and release to start the engine.
7. Allow hydraulic oil to warm up for approximately five minutes before operating.

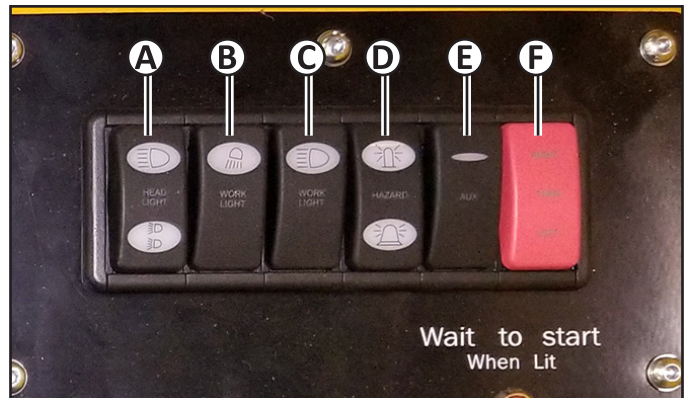
Using the Travel Pedals

There is no brake pedal on machines with a hydrostat transmission. The machine travels when you depress one of the travel pedals, and brakes or stops when you release the pedal.



- Depress the forward travel pedal (A) to move in forward direction.
- Depress the reverse travel pedal (B) to move in reverse or backward direction.

Using the Light Switches



Operating

Using the Headlights Switch

- Push the top of the switch (A) to activate the two low beam headlights. All turn signal/taillights will also activate.
- Push the bottom of the switch to activate the four high beam headlights. All turn signal/taillights will also activate.

Using the Cab/ROPS Work Lights Switch

- Push the top of the switch (B) to activate the two cab work lights.

Using the Frame Work Lights Switch

- Push the top of the switch (C) to activate the two front frame work lights and the one rear frame work light.

Using the Hazard Lights Switch

- Push the top of the switch (D) to activate the beacon light and all turn signal/taillights. All lights flash.
- Push the bottom of the switch to activate the flashing beacon light.

Using the Auxiliary Switch

- Push the top of the switch (E) to activate installed auxiliary components.

Using the Turn Signals Switch

- Push the top of the switch (F) to activate the left side turn signal/taillight and clearance light.
- Push the bottom of the switch to activate the right side turn signal/taillight and clearance light.

Stopping the Engine

1. Release your foot from the travel pedal.
2. Depress the park brake button to engage the park brake.
 - When the park brake is engaged, the park brake button will light, and the park brake symbol will flash on the user interface.
3. Turn the key switch fully to the OFF position.

Using the Hammer Lock

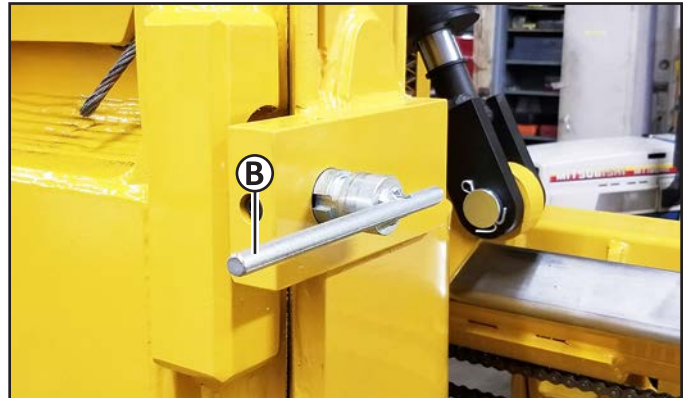


Picture Note: Pin (A) in locked position in the channel with the handle down.

1. Fully raise the mast.

Unlocking the Hammer

1. Use the hammer control to slightly raise the hammer so the weight is off the pin (A).



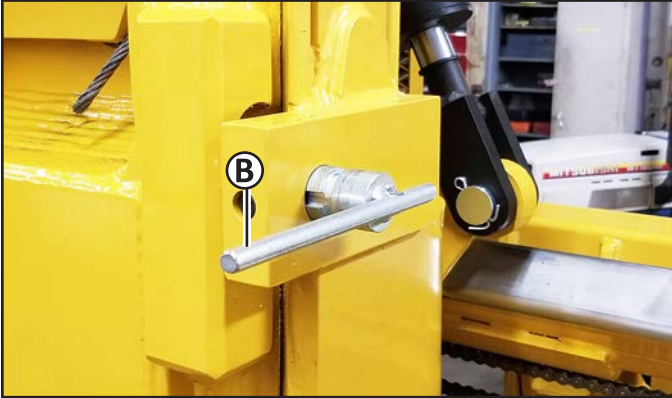
2. Grasp the handle (B), rotate up 90 degrees and pull the pin out to the position shown.



Operating

3. Rotate the handle down 90 degrees again to lock the pin out of the channel and allow the hammer to move freely.

Locking the Hammer



1. Rotate the handle (B) to the position shown.
2. Push the pin in and rotate the handle down 90 degrees to lock the pin in the channel so the hammer cannot raise or lower beyond the channel.

Operating

Using the Control Panel



Using the Throttle Control (A)

You can only operate the throttle control when the machine is in Creep travel mode.

- Push the control up for faster engine and travel speed.
- Push the control down for slower engine and travel speed.

Using the Layback Control (B)

Use the layback control to raise or lower the mast. Fully lower the mast onto the mast rest when you stop operation.

- Push the control to the left to raise the mast.
- Push the control to the right to lower the mast.

Note: You must fully lower the mast onto the mast rest to travel in LO or HI travel mode.

Using the Tilt Control (C)

Use the tilt control to tilt the raised mast to the left or to the right. Use the tilt control, after you fully lower the mast onto the mast rest, to tilt the mast to the left (toward the operator) until it is against the mast lock.

- Push the control up to tilt the mast to the right.
- Push the control down to tilt the mast to the left.

Using the Sideshift Control (D)

Fully shift the mast to the right before lowering the mast onto the mast rest.

- Push the control to the left to slide the mast to the left on the sideshift slide.
- Push the control to the right to slide the mast to the

right on the sideshift slide.

Using the Hammer Control (E)

- Push the control up to manually raise the hammer.
- Push the control down to manually lower the hammer.

Using the Park/Auto Stroke Modes

- Push the Park button (F) to engage and disengage the park brake.
- Push the Auto Hammer button (G) to start and stop operating in Auto Hammer mode.
- Push the 4-way Auto Stroke button (I) to start and stop operating in 4-Way Auto Stroke mode.

Setting the Travel Modes

- Push the Creep button (J) to travel in the slowest mode. You can adjust your travel speed using the throttle control and/or travel pedals.
- Push the LO button (K) to travel in low speed mode up to 7 mph.
 - a. Fully lower the mast onto the mast rest.
 - b. Release the park brake.
 - c. Adjust your travel speed using the travel pedals.
- Push the HI button (L) to travel in high speed mode.
 - a. Fully lower the mast onto the mast rest.
 - b. Release the park brake.
 - c. Adjust your travel speed using the travel pedals.

Operating

Changing Travel Modes

When you slow to a travel speed of 1 mph in high speed mode, the machine will shift to low speed mode.

You can switch travel modes by pushing the buttons while the machine is traveling.

Using the Adjusting Dial/Button

- Push the dial/button (H) to clear the Remove Hammer Lock Pin message on the user interface.
- Rotate the dial/button to adjust the auto hammer and 4-way auto stroke rates displayed on the user interface screens.
- Turn the dial counter-clockwise to lower or decrease the rate of operation.
- Turn the dial clockwise to raise or increase the rate of operation.
- Push the dial/button to select settings displayed on the user interface screens.
- Push the dial/button to engage cruise control.

Using Traction Lock

Traction lock provides more traction when drive wheels are slipping by forcing wheels to turn at the same speed. Using traction lock when turning, particularly on tar or concrete, is not recommended.

Traction lock is not available in HI travel mode.

Note: Traction lock remains on for 45 seconds then disengages.

1. Release the travel pedal to stop machine travel.
2. Select TRAC LOCK on the Main Screen of the user interface.
3. Continue machine travel.

Attaching and Removing Tools

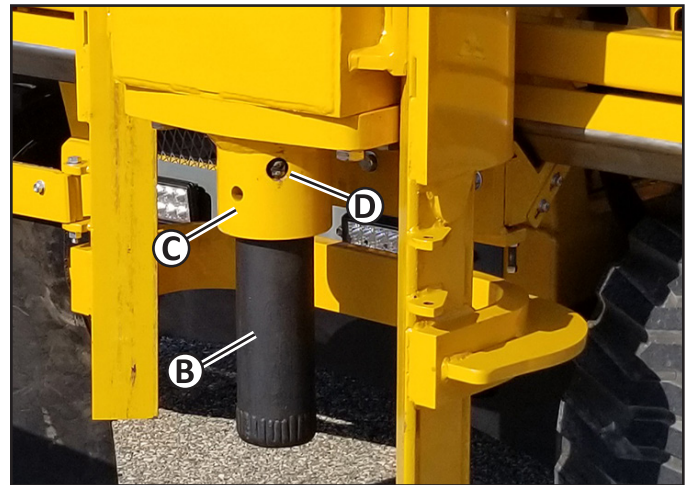
Use a safe lifting device to lift and position heavy tools to insert into the holder, or position the tool on the ground and lower the hammer onto the tool to insert into the tool holder.

1. Park the machine safely (See Parking Safely in SAFETY).



2. Remove the pin (A) and swing the chip guard open.

Attaching Tools



Picture Note: The pin (D) installs in different holes for other tool installations.

1. Insert the tool (B) into the tool holder (C) and install the pin (D).
2. Close the chip guard and install the pin.

Removing Tools

1. Lower the hammer with the installed tool to the ground.
2. Remove the pin from the tool and tool holder.

Operating

Using the User Interface (UI)

UI Control Buttons



Picture Note: Logo Screen

- Push select buttons (A) to choose displayed menu items.
- Push home button (B) to return to Main Screen.
- Push four arrow buttons (C) to move within screens.
- Push select button (D) to confirm selection or setting.

Startup Screens



Picture Note: Auto Cycle Screen

When the key switch is turned to the RUN position or the engine is started, the Logo Screen will turn on.

- If the mast is raised, this will be followed by the Auto Cycle Screen with the Remove Hammer Lock

Pin reminder. Push the Adjusting Dial/Button on the control panel to clear the reminder.

- If the mast is lowered, this will be followed by the Main Screen.

Operating

The Main Screen



Gauges on the Main Screen provide current system information including:

- Travel Speed (MPH)
- Engine Speed (RPM)
- Fuel Level
- Engine Temperature Level
- Battery Level
- Oil Pressure Level

Select TRAC LOCK to engage and disengage drive traction lock. Text in the display changes from white to green when traction lock is engaged.

Select PRODUCTION to go to the Job Selection Screen.

Select AUTO CYCLE to go to the Auto Cycle Screen and adjust the hammer, stroke, sideshift and travel settings.

Select CALIBRATION to go to the Calibration Screen

to check sensor calibration. Text in the display changes from white to red to indicate a calibration issue.

Select ENGINE to go to the Engine Screen to view engine data.

Select FAULTS to go to the Faults Screen to view and reset faults. Text in the display changes from white to red to indicate an active fault.

Propel Mode icons are displayed to indicate machine travel mode:

- Jackhammer (Creep)
- Turtle (LO)
- Rabbit (HI)

The Park Brake indicator flashes when the park brake is engaged.

Operating

The Auto Cycle Screen



Bar gauges on the Auto Cycle Screen display current operation settings including:

- Hammer Height - The height to which the hammer is set to raise on the mast before dropping.
- Hits Per Cycle - The number of times the hammer will be raised and dropped to hit the work surface.
- Travel Distance - The distance the machine will travel in one direction in the current cycle.
- Current SQ FT/HR - The number of square feet of the work area the machine will work through in an hour with the current settings.

Use the Adjusting Dial/Button on the control panel to make your settings. Rotate the dial to make your setting and push the button to set the value. The value will also be set in a couple seconds if you do not push the button.

Select ADJUST SIDE SHIFT and rotate the Adjusting Dial/Button on the control panel to incrementally increase or decrease the distance the mast will shift to the side.

Select ADJUST HAMMER HEIGHT and rotate the Adjusting Dial/Button on the control panel to incrementally increase or decrease the distance (1-10) the hammer will be raised on the mast.

Select ADJUST HITS PER CYCLE and rotate the Adjusting Dial/Button on the control panel to incrementally increase or decrease the number of times (1-10) the hammer will be raised and dropped to hit the work surface.

Select AUTO TRAVEL DISTANCE and rotate the Adjusting Dial/Button on the control panel to incrementally increase or decrease the distance the machine will travel (0-10) forward or in reverse in the current cycle.

Select AUTO TRAVEL FORWARD or AUTO TRAVEL REVERSE to move the machine in one direction without using the travel pedals.

Select HOME to go to the Main Screen.

Select SELECT JOB # to the Job Selection Screen to pick a job number to begin recording data as you begin operating with your current Auto Cycle Screen settings.

The Park Brake indicator flashes when the park brake is engaged.

Operating

The Job Selection Screen



On the Job Selection Screen select the job number under which you want to record the operation data. Once the data begins recording for that job, you can select that job number in the Job Selection Screen to view the screen

with information for that particular job.

The total square feet worked for the life of the machine is displayed on this screen.

The Job 1-8 Screens



Picture Note: Job 1 Screen shown.

Information recorded and displayed on each Job # Screen includes:

- SQ FT/HR production rate for the job.
- TOTAL SQUARE FEET production rate for the job.

Select CLEAR ALL and YES or NO to clear the job record and reuse that job number.

Operating

The Engine Screen



View engine information on the Engine Data Screen including:

- Engine Speed (RPM)
- Coolant Temperature
- Engine Load
- Oil Pressure Level
- Engine Hours (run time)
- Fuel Pressure Level

Select MESSAGE INC to display more engine related messages on the screen.

Select MESSAGE DECREASE to display fewer engine related messages on the screen.

Select SELECT to scroll through the service interval boxes.

Select SERVICE RESET to clear the selected service interval. Do this after you have completed the service for that interval reset and begin recording the hours to the next interval.

See The Engine Screen in SERVICE for more information about using this screen.

Operating

The Faults Screen



View fault messages on the Faults Screen. A red circle to the left of the fault description indicates there is not an active fault. A green X to the left of the fault description

indicates a fault has occurred.

See The Faults Screen in SERVICE for more information about using this screen.

The Calibration Screen



View calibration issues on the Sensor Calibration Screen. When a sensor needs calibration, a red X will display to the left of the sensor description. When a sensor is calibrated correctly, a green check mark will display to the

left of the sensor description.

See The Calibration Screen in SERVICE for more information about using this screen.

Operating

Note: See MACHINE COMPONENTS and MACHINE CONTROLS to identify the controls used to operate the machine.

Traveling with the Machine

The Slow Moving Vehicle sign must be installed for any public road travel.

If the machine is in Creep travel mode, adjust travel speed using the Throttle control. The machine will travel in Creep mode when the mast is raised.

If the machine is in LO or HI travel mode, adjust travel speed using the travel pedals. The mast must be fully lowered to travel in LO or HI travel modes.

Machine Setup

Prepare the Machine for Operation

1. Position the machine in the work area with the required tool attached.
2. Go through the Daily Inspection Checklist.
3. Complete the Pre-Operation Inspection.
4. Complete the Safety Systems Inspection.
5. Enter the operator station.
6. Use the seat belt.
7. Start the engine.
8. Check to be sure the park brake is engaged.

Raise the Mast and Unlock the Hammer

Note: The mast should be fully lowered onto the mast rest and moved against the mast lock when you stop operation.



1. Use the tilt control to move the mast a couple inches to the right to clear the mast lock (A).
2. Use the layback control to fully raise the mast.
3. Use the hammer control and unlock the hammer.

Check Hammer Height

IMPORTANT

AVOID DAMAGE

The hammer could strike the top of the mast during operation if the cable stretches or is not installed properly. Always check your cable length and confirm the hammer will not strike the top of the mast before beginning operation. Stop operation immediately and adjust the cable if the hammer hits the top of the mast.

Note: Each Hammer Height adjustment increment on the Auto Cycle screen raises or lowers the hammer height by roughly 6 inches.

1. Using the Hammer Height Control, slowly raise the hammer to confirm it stops raising about 6 inches before it reaches the top of the mast.
2. If the hammer strikes the mast, or stops at a distance of less than 6 inches, adjust the cable.

Check Left Cylinder Extension

IMPORTANT

AVOID DAMAGE

The hammer lift cylinder could "deadhead" during operation if the rod is fully extended when the machine is not being operated smoothly. Stop operation immediately and reduce your hammer height.

If the lift cylinder is fully extended in rough operating conditions, and the motor begins to labor and the hammer hangs for 0.5 seconds before falling, this indicates the cylinder may have "deadheaded".

Repeatedly allowing the cylinder to "deadhead" will cause part stress and wear, and may damage the cylinder, valves, pump, cable and other machine parts.

If the cylinder fully extends and "deadheads" during operation, adjust your hammer height.

Operating

Working the Surface (Manual Operation)

1. Use the sideshift control as needed to position the fully raised mast with the tool above the work surface.
2. Use the hammer control to manually raise and drop the hammer until you have reduced the concrete or other material as much as needed.
3. Use the sideshift control to reposition the mast as needed.
4. Use the forward or reverse travel pedals to move the machine as needed.

Working the Surface Using Hammer Mode

Use Hammer Mode when you want the hammer to raise to a set height and drop repeatedly.

1. Use the sideshift control as needed to position the fully raised mast with the tool above the work surface.
2. Estimate the height the hammer must be raised before dropping to achieve the desired result (breaking, cutting, compacting).
3. Use the hammer control to manually raise and drop the hammer until you have achieved the desired result.
4. On the Auto Cycle Screen on the User Interface, select ADJUST HAMMER HEIGHT and set your height.
5. Push the Auto Hammer Mode button on the control panel. The hammer will repeatedly raise to the height setting and drop.
6. Adjust the height setting as needed.
7. Sideshift or travel with the machine as needed while hammering continues.
8. To stop operation, push the Auto Hammer Mode button.

Working the Surface Using Four Way Auto Stroke Mode

Use Four Way Auto Stroke Mode when you want the mast to sideshift automatically and/or you want the machine to travel automatically in addition to programming the number of hammer hits. Enter a

value of "0" if you do not want the mast to sideshift or you do not want the machine to travel.

Note: The park brake will automatically disengage and engage as the machine travels and stops.

Estimate your auto cycle settings. Begin working the area to confirm your settings are correct or adjust as needed.

1. Follow the instructions for Working the Surface (Manual Operation) to estimate the settings needed to achieve your results.
 - a. Estimate the height the hammer must be raised before dropping to break down the material. Do you need to fully raise the hammer to the top of the mast, or will it be enough to raise the hammer to a lesser height and drop it?
 - b. Estimate the number of hits required to break down the material. How many times do you need to drop and raise the hammer from the confirmed height to break down the material as needed?
 - c. If you will be sideshifting the mast to continue working the surface sideways, estimate the distance you can move the tool to continue breaking down the material to the size you need.
 - d. If you will be moving the machine forward or backward to continue working the surface from your starting point, estimate the distance you can travel between hits which will allow you to continue breaking down the material to the size you need.
2. Stop operation and engage the park brake.
3. Go to the Auto Cycle Screen on the User Interface to enter the estimated settings.

Entering Settings on the Auto Cycle Screen

1. Select ADJUST HAMMER HEIGHT and set to your estimated height.
2. Select ADJUST HITS PER CYCLE and set to your estimated hit number.

Operating

3. If you require sideshifting the mast, select ADJUST SIDE SHIFT and set to your estimated shift.

If you require machine travel, select ADJUST TRAVEL DISTANCE and set to your estimated distance.

4. Select AUTO TRAVEL FORWARD or AUTO TRAVEL REVERSE.

Starting and Stopping Operation

1. Check your sideshift and machine travel paths to be sure the area is clear of bystanders or obstructions.
2. Push the 4 Way Auto Stroke Mode button on the control panel to start operation. Push the button to stop operation.

Note: The park brake will automatically disengage and engage as the machine travels and stops.

Adjusting Settings on the Auto Cycle Screen

You can adjust settings on the Auto Cycle screen as the machine is operating.

Using the Jobs Functions During Operation

You can record and view information for up to 8 jobs including the average number of square feet per hour the machine is working on each job, and the running total of square feet worked on each job.

1. Follow the Machine Setup instructions in OPERATING.
2. If you are NOT using Auto Cycle:
 - a. Go to the Job Selection Screen on the User Interface and select a Job # to record information for.
 - b. Follow Working the Surface Without Using Auto Cycle instructions in OPERATING.
3. If you are using Auto Cycle:
 - a. Follow Working the Surface Using Auto Cycle instructions in OPERATING.
 - b. Go to the Job Selection Screen on the User Interface and select a Job # to record information for.
4. Select another job when you have completed this job OR when you are starting a different job.
5. If you stop this job before completion, select this job again when you return to it to record the additional information.

Machine Operation Guidelines

Maintaining Smooth Operation

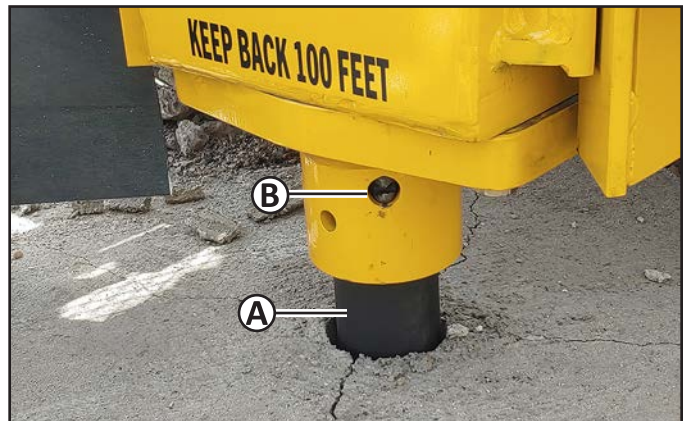
When operating, the machine travels forward or backward, the mast shifts to the side, and the hammer raises and drops. These motions may lead to rough operating conditions, especially when they occur at the same time, causing machine wear or damage.

Adjust the distances the machine will travel, the mast will side shift, and the distance the hammer will raise as well as the number of hits per cycle, to operate the machine as smoothly as possible. Reducing the distance of one movement while compensating by increasing the distance for another may enable smoother operation. For example:

- Reducing the hammer height while increasing the number of hits per cycle may result in smoother operation for some applications.
- Reducing the travel distance while increasing the hammer height and reducing the number of hits per cycle may result in smoother operation.

Experiment by adjusting your settings until the machine will operate as smoothly as possible for your application, to reduce machine wear or damage.

Avoid Punching Through Concrete



Punching holes in concrete rather than breaking it down may cause machine damage:

- As the hammer raises, if the tool (A) becomes lodged it may be damaged, or the flex pin (B) may break.

Operating



- If the concrete is not broken down, larger sections may resist raising the hammer and cause damage.

As you begin working the concrete in a new area, raise the hammer less than half way, and drop the hammer several times to make sure the concrete is breaking. Fully raising the hammer will more likely cause punching rather than breaking the concrete.

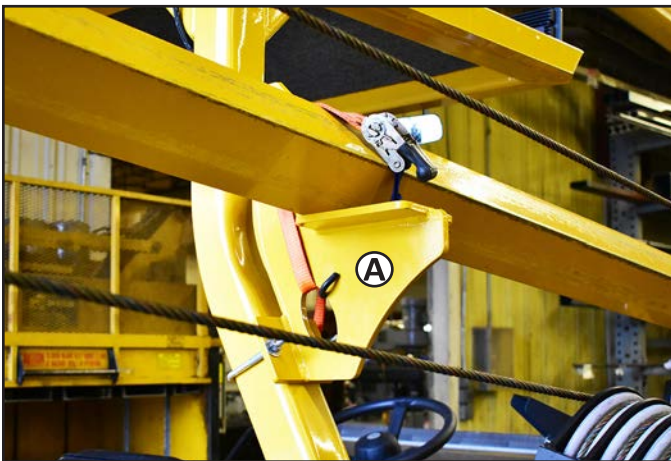
Check to be sure the concrete is breaking as you adjust the controls to operate the machine as smoothly as possible. If the hammer starts punching holes rather than breaking concrete, try reducing the side shift distance and increasing the number of hits.

Transporting the Machine

Securing the Mast

Note: The mast should be tied down to prevent damage from bouncing during travel.

1. Park the machine safely (See Parking Safely in SAFETY).



2. Fasten the mast post to the mast rest (A) with a chain or strap.



3. Fasten the track (B) to the mast post with a chain or strap.

Securing the Machine on the Trailer

Note: Backing the machine onto the trailer is recommended.

1. Engage traction lock.
2. With the machine in Creep or LO travel mode, drive onto the trailer.
3. Park the machine safely (See Parking Safely in SAFETY).
4. Fasten the machine to the trailer with chains or straps using the trailer and machine tie down areas.

Tie Down Locations



Picture Note: Route chains or straps through the front tie down areas (A) and the trailer tie down areas.

Operating



Picture Note: Route chains or straps through the rear tie down areas (B) and the trailer tie down areas.

Troubleshooting

Condition	Check	Action
Engine		
Engine will not crank.		Refer to engine manufacturer's manual for engine starting problems and service information.
Hydraulic		
Noisy hydraulic system.	Low oil level.	Add oil to correct level.
	Cold oil.	Allow the machine to idle until oil has warmed up sufficiently.
	Improper oil.	Refer to Recommended Lubricants in this manual.
	Contaminated oil.	Replace with new oil and filter. NEVER USE GASOLINE FOR SYSTEM CLEANING OR FLUSHING THE HYDRAULIC SYSTEM.
	Air entering hydraulic system. <i>Air can enter intake hoses at clamps or defective hoses between the oil reservoir and pump. Air entering the intake side of the pumps will make them noisy. Air in the system can be detected by the milky appearance of the oil. Sometimes the oil will foam. Air can enter a pump intake without a visible oil leak.</i>	Tighten connectors.
	Defective or worn hydraulic pumps.	Replace pumps.
Side shift will not work.	Defective or worn side shift motor.	Replace defective motor. Replacement of motor is recommended instead of attempting to make field repairs.
	Seized motor.	If the motor does not appear to rotate against the chain, remove the chain and attempt to rotate the motor by actuating the control lever. If it will not rotate, the motor bearings may be seized. Replace the motor.
	Cross-slide bearings too tight.	Adjust cross-slide bearings.
	Cross tubes bent or misaligned.	Repair or replace.
	Improper lubrication of the ways.	Clean ways with a suitable solvent and lubricate.
	Low or no hydraulic pressure.	Replace defective hoses. Repair or replace control valve.

Troubleshooting

Mast cannot be raised to working position.	Hammer weight not in proper position to raise mast.	Weight should be carried in locked position. If the mast is accidentally laid down with the hammer weight at the top of the mast, the weight can be slid forward by allowing a small amount of slack in the cable and stopping the machine abruptly while traveling slowly forward. DO NOT ALLOW AN EXCESSIVE AMOUNT OF SLACK IN THE CABLE.
	Low or no hydraulic pressure.	Replace defective hoses. Check for proper oil level and fill as needed.
Rapid and erratic layback action of the mast.	Air in the hydraulic lines.	If the oil has been drained for any reason, and no oil is present in either side of the cylinder, the operator should carefully actuate the layback cylinder a small amount in each direction until the air has been expelled.
Mast will not tilt.	Mast center pin is stuck.	Disassemble the mast from the cross-slide carriage and repair. Dress off pin if necessary. Check and replace center pin bushings if worn. Lubricate.
	Low or no hydraulic pressure.	Replace defective hoses. Repair or replace defective valve.
Tilt cylinder will not hold.	The control valve is not centering to the hold position.	Repair or replace.
	Worn or defective cylinder.	
Layback cylinder will not hold.	The control valve is not centering to the hold position.	Repair or replace.
	Worn or defective cylinder.	
Premature cable breakage.	Not using proper cable.	Install proper cable.
	Cable is too dry.	Lubricate the cable sparingly with standard cable lubricant.
	Cable is improperly threaded.	Rethread the cable.
	Defective sheave bearings.	Replace the sheave bearings.
	Worn cable sheaves.	Replace cable sheaves.
	Stopping the hammer weight on the downstroke with the hydraulic control.	Avoid stopping the weight whenever possible. This stresses the cable. Allow the tool to strike the ground. Avoid allowing the hammer weight to fall through the end of the cylinder travel.

Troubleshooting

On down stroke the valve does not reverse and raise the hammer weight.		Adjust stroke length.
Hammer weight drifts down.	Hammer control valve spool is binding.	Inspect and clean the hammer control valve. Excessively tightened mounting hardware can deflect the valve body enough to bind the spool. Loosen the mounting hardware and retighten.
Excessive stroke (Hammer weight hits the cross member on the mast).	Improper cable length.	Adjust cable length.
Weight fails to raise after the tool strikes the ground.		Adjust stroke length.
Electronic Stroke Control		
Erratic stroke at all settings of the Electronic Control Station.	Defective or improperly adjusted sheave sensor.	Check the sensor lead and connections. Replace defective sheave sensor. Check adjustment and make sure sensor is positioned from the sheave spokes.
	Disconnected or defective sensor cable.	Check all cable connections. Test sensor cable for broken wires and replace if necessary.
	Excessive side play of the mast sheave.	Shim the mast sheave as necessary to reduce sideplay. Badly worn mast sheaves must be replaced.
	Mast sheave not properly installed.	Check and make sure the casting letters on the mast sheave are positioned on the side opposite to the sheave sensor. Remove the mast sheave and reinstall properly.
	Loose electrical connection.	Check and tighten loose connections.
	Defective or improper wiring connection.	Consult factory for rewiring procedure.
Excessive stroke (Hammer weight hits the cross member on the mast).	Improper cable length.	Adjust cable length.
	Stroke length set too high.	Stroke is approximately 8 inches at maximum setting on the stroke control dial. If a very long too is used, there may not be enough stroke available. Set the stroke control dial to a lower value.
Weight fails to raise after the tool strikes the ground.	Sheave sensor out of adjustment.	Adjust stroke length.
	Defective sensor or sensor cable.	Check and replace sensor and/or cable.
Hammer reverses before the down stroke is completed.	Defective sensor or sensor cable.	Check and replace sensor and/or cable.
Short strokes.	Sheave sensor out of adjustment.	Adjust sensor.

Servicing: Lubrication

Recommended Lubricants

Grease

NAPA Premium Performance Multi-Purpose Wheel Bearing Grease

Oil

NAPA Premium AW32 Hydraulic Oil

NAPA Premium Performance 80W90 Gear Oil

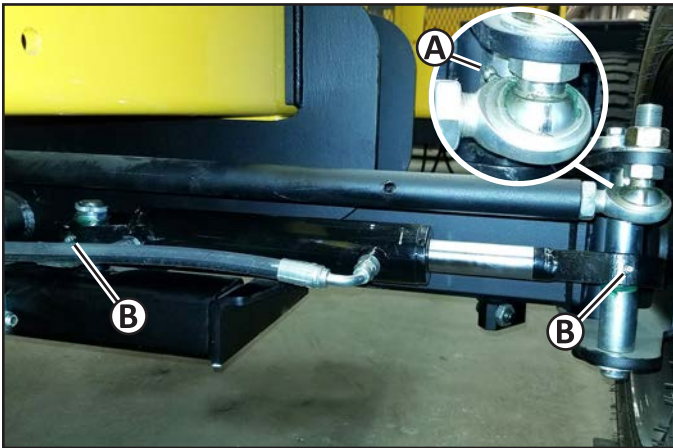
Applying Grease

See Service Intervals in Servicing to confirm when lubrication is required.

Using a grease gun, pump three times to apply grease.

Lubricating the Rear Axle

1. Park the machine safely (See Parking Safely in SAFETY).



2. Pump grease into the tie rod zerk (A) and the two steering cylinder zerks (B) on both sides of the machine.



3. Pump grease into the center axle pivot pin zerk (C).

Lubricating the Rear Wheels

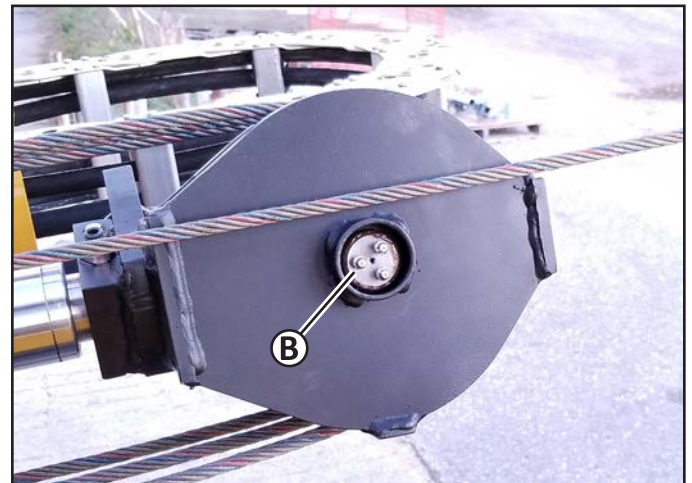
1. Park the machine safely (See Parking Safely in SAFETY).
2. Pump grease into the zerk (A) on both rear wheels.

Lubricating the Mast

1. Park the machine safely (See Parking Safely in SAFETY).

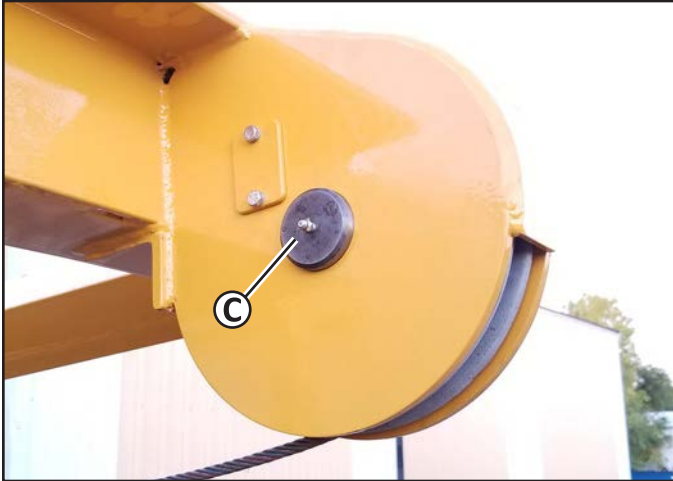


2. Pump grease into the three zerks (A) on the bottom pulley on the lift cylinder.

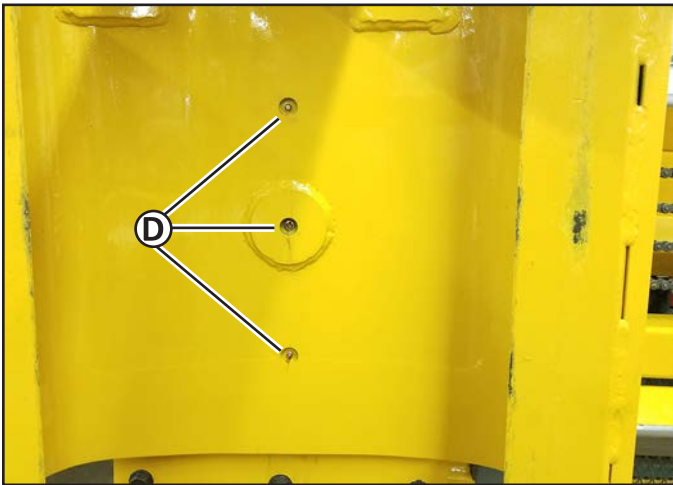


3. Pump grease into the three zerks (B) on the top pulley on the lift cylinder.

Servicing: Lubrication



4. Pump grease into the zerk (C) on the pulley on the top of the mast.
5. Grease the mast tilt plate:
 - a. Raise the hammer high enough to access the zerks.
 - b. Stop the engine and remove the key from the switch.
 - c. Block the hammer or the installed tool to prevent falling.



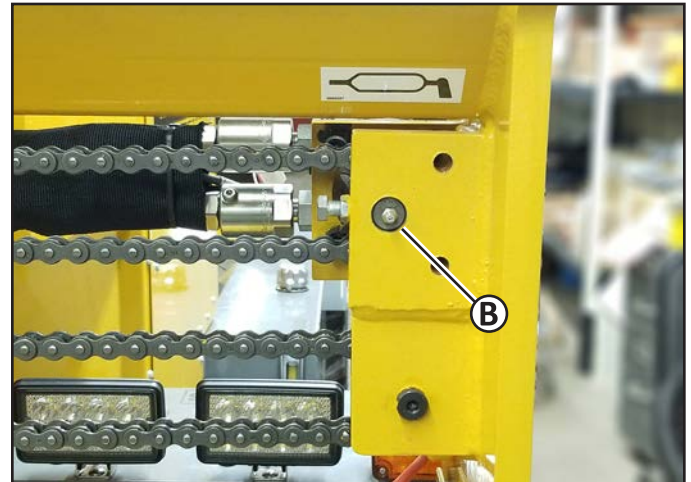
- d. Pump grease into the three zerks (D).

Lubricating the Sideshift Slide

1. Park the machine safely (See Parking Safely in SAFETY).



2. Pump grease into the two hinge pin zerks (A).



3. Pump grease into the sprocket bearing zerk (B) on the left side of the sideshift slide.

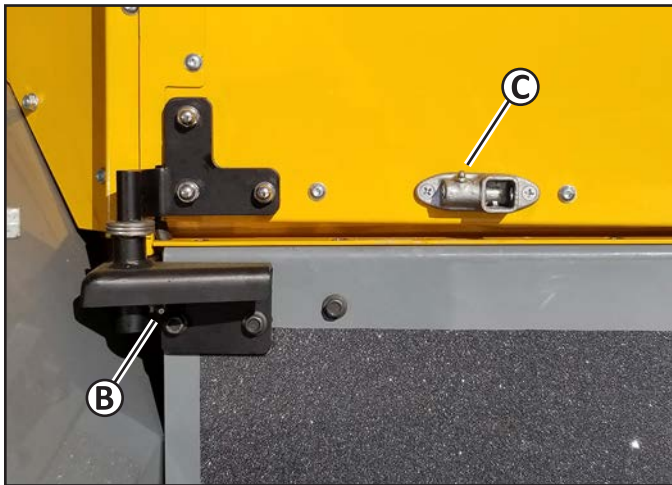
Servicing: Cab

Lubricating the Cab Door

1. Park the machine safely (See Parking Safely in SAFETY).



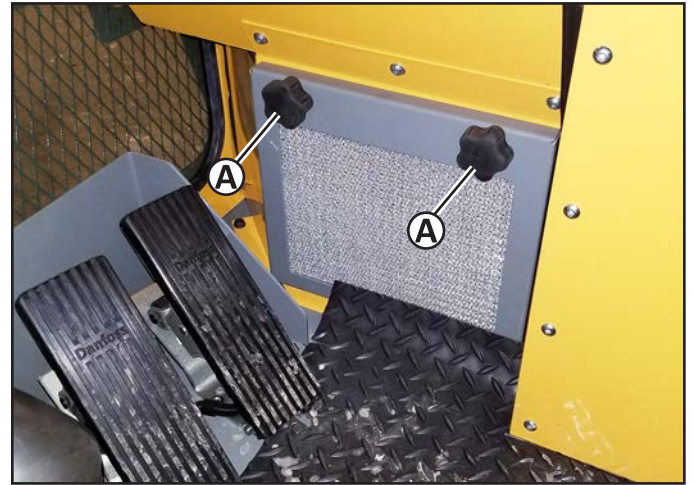
2. Pump grease into the top hinge zerk (A).



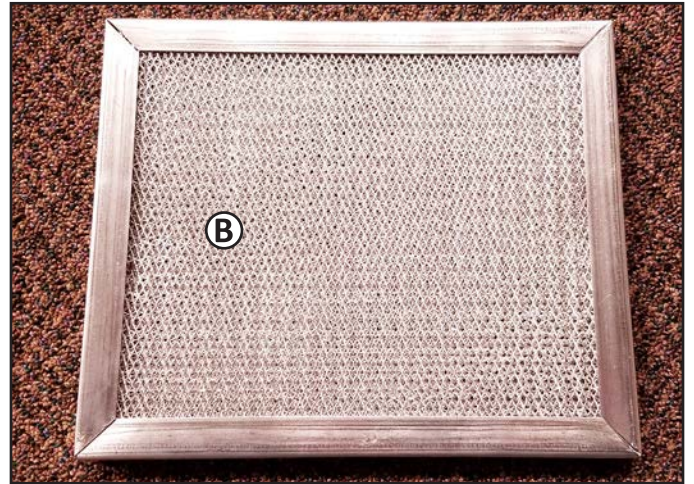
3. Pump grease into the bottom hinge zerk (B).
4. Pump grease into the door latch zerk (C).

Cleaning the Cab Air Filter

1. Park the machine safely (See Parking Safely in SAFETY).



2. Remove the two handles (A) and the air filter housing with the filter.



3. Wash or hose dirt or other materials from the filter (B).
4. Allow the filter to air dry before installing with the housing and handles.