

SETUP, ADJUSTMENTS AND CALIBRATIONS



***WHITEMAN* SERIES** **MODEL STXDF** **HYDRAULIC RIDE-ON TROWEL**

Revision #0 (11/05/18)

To find the latest revision of this
publication, visit our website at:
www.multiquip.com



PN: 13416

TABLE OF CONTENTS

STXDF Trowel

Machine Information And Maintenance Log	3	Laptop Configuration	18
Safety Information	4-9	Connection Procedure	18
Tools Needed.....	10	Loading Software.....	19-20
Machine Information	11	File Download Procedure	19
Model.....	11	Parameter File Transfer	20
Serial Number	11	Machine Setup And Calibration	21-23
General Procedures	12-13	Calibrate Foot Pedal	21
Setup Jumper Installation	12	Secondary Hydraulic Fill Procedures	21
Remove Setup Jumper (<i>If Installed</i>)	12	Steering Pressure Adjustment.....	21
Initial Check And Adjustments.....	14-15	Calibrate Pump Stroke	22
Hydraulic Oil Check	14	Pitch Sensor Calibration	23
Engine Oil	15	Inspection	24
Engine Coolant.....	15	Fluid Levels	24
Pitch Setup and Calibration	15	Mechanical	24
Service Tool Setup And Connection	16	Fuse Information.....	25
Whiteman Service Tool (WST) Installation	16		

MACHINE INFORMATION AND MAINTENANCE LOG

Technician _____

Date: _____

Machine Information			
MODEL		LH Motor Serial No.	
Machine Serial No.		RH Motor Serial No.	
Engine Serial No.		Program ID	
Pump Serial No.		Program Version	

Machine Setup and Calibration Information					
Hydraulic Pressure Settings <i>(Hydraulic Oil Temperature Below 125 °F)</i>		Calibration		Point 1/Left	Point 2/Right
Charge Pressure (psi)		Pump Threshold			
Steering Pressure (psi)		Pitch Sensors			
Calibration	Point 1/Left	Point 2/Right	Full Extend		
Foot Pedal 1			Neutral		
Foot Pedal 2					

Inspection				
Fuel Levels	✓	Leak Checks	✓	
Engine Oil		Engine		
Coolant		Coolant		
Hydraulic Oil		Hydraulics		
Mechanical	✓	Functional Checks	✓	
Grease Points		Hour Meter		
Stabilizer Rings		Seat Switch		
Hydraulics		Drift Test		
Retardant Spray System		Travel (Start/Stop)		
Electrical	✓	Initial Height (LH/RH)		
Cooling Fan		Final Height (LH/RH)		
Switches				
Lights and Indicators				

SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.



SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.

SAFETY SYMBOLS

! DANGER

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

! WARNING

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.

! CAUTION

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

NOTICE

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Rotating parts hazards
	Pressurized fluid hazards
	Hydraulic fluid hazards

SAFETY INFORMATION

DECALS

Decals associated with the operation of this equipment are defined below.

GENERAL SAFETY

CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- Avoid wearing jewelry or loose fitting clothes that may snag on the controls or moving parts as this can cause serious injury.

- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication.



- **NEVER** operate this equipment under the influence of drugs or alcohol.



- **ALWAYS** clear the work area of any debris, tools, etc. that would constitute a hazard while the equipment is in operation.

- No one other than the operator is to be in the working area when the equipment is in operation.

- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.

- Whenever necessary, replace nameplate, operation and

safety decals when they become difficult read.

- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.

- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.

- **ALWAYS** know the location of the nearest fire extinguisher.



- **ALWAYS** know the location of the nearest first aid kit.



- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor and fire department**. This information will be invaluable in the case of an emergency.



TROWEL SAFETY

DANGER

- Engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.

- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



SAFETY INFORMATION

- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.

WARNING

- If applicable, **NEVER** use your hand to find hydraulic leaks. Use a piece of wood or cardboard. Hydraulic fluid injected into the skin must be treated by a knowledgeable physician immediately or severe injury or death can occur.



- **ALWAYS** keep clear of rotating or moving parts while operating the trowel.



- **NEVER** disconnect any **emergency or safety devices**. These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.

CAUTION

- **NEVER** allow passengers or riders on the trowel during operation.
- **NEVER** lubricate components or attempt service on a running machine.
- **NEVER** place your feet or hands inside the guard rings while starting or operating this equipment.

NOTICE

- **ALWAYS** keep the machine in proper running condition.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.
- A safety manual for operating and maintenance personnel of concrete power trowels produced by the Association of Equipment Manufacturers (AEM) can be obtained for a fee by ordering through their website at

www.aem.org.

Order FORM PT-160

ENGINE SAFETY

WARNING

- **DO NOT** place hands or fingers inside engine compartment when engine is running.
- **NEVER** operate the engine with heat shields or guards removed.
- Keep fingers, hands hair and clothing away from all moving parts to prevent injury.
- **DO NOT** remove the radiator cap while the engine is hot. High pressure boiling water will gush out of the radiator and severely scald any persons in the general area of the trowel.
- **DO NOT** remove the coolant drain plug while the engine is hot. Hot coolant will gush out of the coolant tank and severely scald any persons in the general area of the trowel.



- **DO NOT** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the oil tank and severely scald any persons in the general area of the trowel.

CAUTION

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing equipment.



NOTICE

- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to




SAFETY INFORMATION

the engine or equipment can result if operating in speed ranges above the maximum allowable.


FUEL SAFETY

DANGER


- **DO NOT** start the engine near spilled fuel or combustible fluids. Fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with **flammable** liquids.
- **DO NOT** fill the fuel tank while the engine is running or hot.
- **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system.
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine. 


BATTERY SAFETY

DANGER

- **DO NOT** drop the battery. There is a possibility that the battery will explode.
- **DO NOT** expose the battery to open flames, sparks, cigarettes, etc. The battery contains combustible gases and liquids. If these gases and liquids come into contact with a flame or spark, an explosion could occur. 

WARNING

- **ALWAYS** wear safety glasses when handling the battery to avoid eye irritation. The battery contains acids that can cause injury to the eyes and skin. 
- Use well-insulated gloves when picking up the battery


- **ALWAYS** keep the battery charged. If the battery is not charged, combustible gas will build up.
- **DO NOT** charge battery if frozen. Battery can explode. When frozen, warm the battery to at least 61°F (16°C).
- **ALWAYS** recharge the battery in a well-ventilated environment to avoid the risk of a dangerous concentration of combustible gases.
- If the battery liquid (dilute sulfuric acid) comes into contact with **clothing or skin**, rinse skin or clothing immediately with plenty of water. 
- If the battery liquid (dilute sulfuric acid) comes into contact with **eyes**, rinse eyes immediately with plenty of water and contact the nearest doctor or hospital to seek medical attention.

CAUTION

- **ALWAYS** disconnect the **NEGATIVE battery terminal** before performing service on the equipment.
- **ALWAYS** keep battery cables in good working condition. Repair or replace all worn cables.

TRANSPORTING SAFETY

CAUTION

- **NEVER** allow any person or animal to stand underneath the equipment while lifting. 
- Ride-on trowels are very heavy and awkward to move around. Use proper heavy lifting procedures and **DO NOT** attempt to lift the trowel by the guard rings.
- **NEVER** lift trowel with the operator on the machine.

NOTICE

- The easiest way to lift the trowel is to use two lifting straps and the lift points indicated by the tie-down strap symbol on the left and right guard rings. Lifting at another point may result in machine or bodily injury.
- Lifting straps can be routed over the tie-down strap location, allowing a forklift or crane to lift the trowel up onto and off of a slab of concrete. Two straps should have a minimum of 2,700 pounds (1,225 kg) total lifting

SAFETY INFORMATION

capacity and the lifting gear must be capable of lifting at least this amount.

- **NEVER** transport trowel with float pans attached unless safety catches are used and are specifically cleared for such transport by the manufacturer.
- **NEVER** hoist the trowel more than three feet off the ground with float pans attached.
- Before lifting, make sure that the lift loops are not damaged.
- Always make sure crane or lifting device has been properly secured to the lift loops of the equipment.
- **ALWAYS** shutdown engine before transporting.
- **NEVER** lift the equipment while the engine is running.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- **DO NOT** lift machine to unnecessary heights.
- **ALWAYS** tie down equipment during transport by securing the equipment with straps. Inspect straps to make sure they are not frayed or damaged.

TOWING SAFETY

CAUTION

- Check with your local county or state safety towing regulations, in addition to meeting **Department of Transportation (DOT) Safety Towing Regulations**, before towing your trowel. 
- In order to reduce the possibility of an accident while transporting the trowel on public roads, **ALWAYS** make sure the trailer that supports the trowel and the towing vehicle are mechanically sound and in good operating condition.
- **ALWAYS** shutdown engine before transporting
- Make sure the hitch and coupling of the towing vehicle are rated equal to, or greater than the trailer “gross vehicle weight rating.”
- **ALWAYS** inspect the hitch and coupling for wear. **NEVER** tow a trailer with defective hitches, couplings, chains, etc.

- Check the tire air pressure on both towing vehicle and trailer. Check trailer information, or tire side wall for recommended tire pressure. Also check the tire tread wear on both vehicles.
- **ALWAYS** make sure the trailer is equipped with a **safety chain**.
- **ALWAYS** properly attach trailer’s safety chains to towing vehicle.
- **ALWAYS** make sure the vehicle and trailer directional, backup, brake and trailer lights are connected and working properly.
- DOT Requirements include the following:
 - Connect and test electric brake operation.
 - Secure portable power cables in cable tray with tie wraps.
- The maximum speed for highway towing is 55 MPH unless posted otherwise. Recommended off-road towing is not to exceed 15 MPH or less depending on type of terrain.
- Avoid sudden stops and starts. This can cause skidding, or jack-knifing. Smooth, gradual starts and stops will improve towing.
- Avoid sharp turns to prevent rolling.
- Trailer should be adjusted to a level position at all times when towing.
- Raise and lock trailer wheel stand in up position when towing.
- Place **chock blocks** underneath wheel to prevent rolling while parked.
- Place support blocks underneath the trailer’s bumper to prevent tipping while parked.
- Use the trailer’s swivel jack to adjust the trailer height to a level position while parked.

SAFETY INFORMATION

ENVIRONMENTAL SAFETY/DECOMMISSIONING

NOTICE

Decommissioning is a controlled process used to safely retire a piece of equipment that is no longer serviceable. If the equipment poses an unacceptable and unrepairable safety risk due to wear or damage or is no longer cost effective to maintain (beyond life-cycle reliability) and is to be decommissioned (demolition and dismantlement), be sure to follow rules below.

- **DO NOT** pour waste or oil directly onto the ground, down a drain or into any water source.
- Contact your country's Department of Public Works or recycling agency in your area and arrange for proper disposal of any electrical components, waste or oil associated with this equipment.
- When the life cycle of this equipment is over, remove battery and bring to appropriate facility for lead reclamation. Use safety precautions when handling batteries that contain sulfuric acid.
- When the life cycle of this equipment is over, it is recommended that the trowel frame and all other metal parts be sent to a recycling center.



Metal recycling involves the collection of metal from discarded products and its transformation into raw materials to use in manufacturing a new product.

Recyclers and manufacturers alike promote the process of recycling metal. Using a metal recycling center promotes energy cost savings.

EMISSIONS INFORMATION (DIESEL)

NOTICE

The diesel engine used in this equipment has been designed to reduce harmful levels of carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx) contained in diesel exhaust emissions.



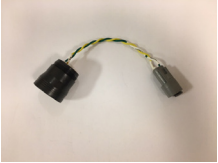
Attempting to modify or make adjustments to the engine emission system by unauthorized personnel without proper training could damage the equipment or create an unsafe condition.

Additionally, modifying the fuel system may adversely affect exhaust emissions, resulting in fines or other penalties.

TOOLS NEEDED

The specialized tools listed in Table 1 are required to maintain and service the STX6DF ride-on trowel. Fleet technicians and servicing dealers must have these tools for efficient unit setup and component calibration.

Table 1. Setup, Calibration, and Diagnostic Tools

TOOL	DESCRIPTION	PART NO.	QTY	
Tool Kit	Includes all tools listed below.	32061	1	
CAN Gateway Cable/Canbus Jumper		Required to interface to the trowel MCU. Required for foot pedal calibration, pitch sync calibration, stroke cylinder calibration, engine fault code reading, diagnostics, etc.	22882/ 22881	1
Set Up Jumper		Used to place the engine at full speed for component calibration and to simultaneously disable both the stroke follower and cold start mode.	42538	1
Service Tool (3 to 9 pin)		Required to interface to the Hatz ECU	42948	1

MACHINE INFORMATION

NOTICE

The following machine information should be recorded on Machine Information and Maintenance Log for unit service tracking and for filing any warranty claims.

MODEL

1. Enter appropriate model:

■ STXDF

SERIAL NUMBER

1. **Engine Serial Number** — as shown on serial tag located on engine (Figure 1). See Figure 2 for serial tag.

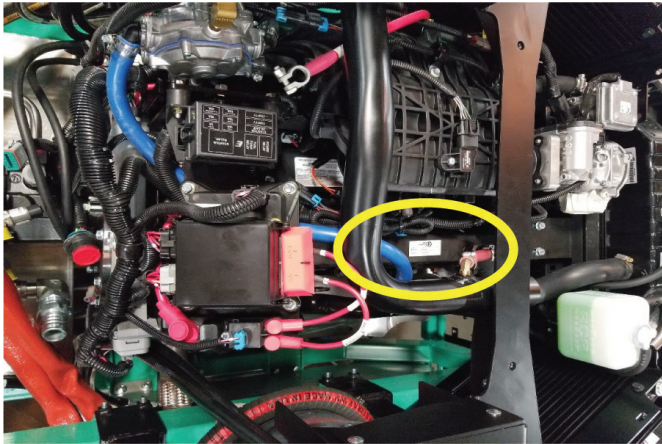


Figure 1. Engine Serial Tag Location



Figure 2. Engine Serial Tag

2. **Pump Serial Number** — located on sticker on pump (Figure 3). Lower number is the serial number.

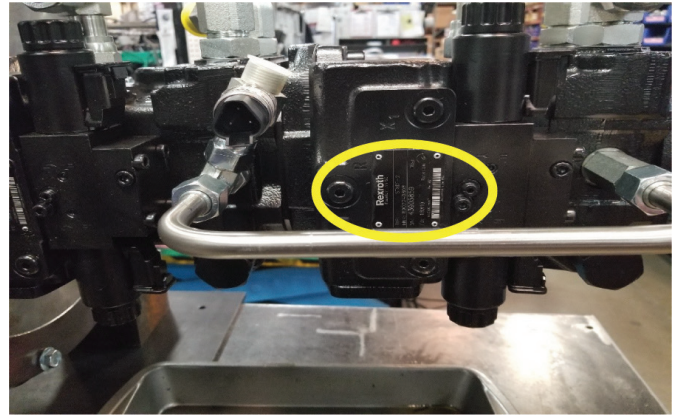


Figure 3. Pump Serial Number Location

3. **Motor Serial Number** — located on sticker on top of hydraulic motors (Figure 4).

NOTICE

If lot number is listed instead of the serial number, record lot number.



Figure 4. Motor Serial Number Location

GENERAL PROCEDURES

NOTICE

These general procedures will be referenced in other sections throughout the manual.

1. Remove plug (P/N: 42440) from J5 of main harness (under the seat: above and left of the cup holder).
2. Install Setup Jumper (P/N: 42538 on J5).

REMOVE SETUP JUMPER (If installed).

1. Remove Setup Jumper (P/N: 42538) from J5 of main harness.
2. Reinstall Plug (P/N: 42440) on J5 of main harness.

SETUP JUMPER INSTALLATION

NOTICE

Machine must be secured prior to installation. Installing setup jumper will:

- Disable Cold Start
- Increase Engine RPM to Full operating RPM
- Disable Stroke Follower

Table 2. Disable and Enable Options

DISABLE (If Setup Jumper is not installed)	Cold Start	1. Open service tool.
		2. Click "machine setup" button on main page.
		3. Click "Cold Start" button under Setup Menu.
		4. Click check box next to Disabled.
	Stroke Advanced Features	5. Press Download Button.
		1. Open service tool.
		2. Click "machine setup" button on main page.
		3. Click "Stroke Cont." button under Setup Menu.
	Fan Control	4. Click button "Disable Cruise, Ramp, Pwr Mang, Stroke Follower".
		1. Open service tool.
		2. Click "Machine Setup" button on main page.
		3. Click "Fan Control" button under Setup Menu.
	Battery Management	4. Click check box next to Disabled.
		5. Press Download Button.
		1. Open service tool.
		2. Click "Machine Setup" button on main page.
	Thermal Management	3. Click "Bat. Man." button under Setup Menu.
		4. Click check box next to Disabled.
		5. Press Download Button.
		1. Open service tool.
	Hydraulic Level Faults	2. Click "Enable Advanced Screens" on the main page.
		3. Click "Machine Setup" button on main page.
		4. Click "Stroke Cont." button under Setup Menu.
		5. Click "Thermal Management" under Advanced Functions.
		6. Click check box next to Thermal Management Bypass.
		7. Press Download Button.
		1. Open service tool.
		2. Click "Diagnostics" button on main page.
		3. Click "Sensor Diagnostics" button under input & Output Diagnostics.
		4. Click "Fluid Levels" under Sensor Diagnostics.
		5. Click check box next to Disabled under Parameters.
		6. Press Download Button.

GENERAL PROCEDURES

Table 2. Disable and Enable Options

DISABLE (Regardless of Setup Jumper)	Setup Function (This is the same functionality as installing the Setup Jumper)	1. Open service tool.
		2. Click "Machine Setup" button on main page.
		3. Click button "Disable Setup Functions".
ENABLE	Setup Function (This is the same functionality as installing the Setup Jumper)	1. Open service tool.
		2. Click "Machine Setup" button on main page.
		3. Click button "Enable Setup Functions".
RE-ENABLE (If disabled via service tool and setup jumper is not installed)	Cold Start	1. Open service tool.
		2. Click "machine setup" button on main page.
		3. Click "Cold Start" button under Setup Menu.
		4. Uncheck box next to Disable.
		5. Press Download Button.
	Stroke Advanced Features	1. Open service tool.
		2. Click "machine setup" button on main page.
		3. Click "Stroke Cont." button under Setup Menu.
RE-ENABLE (Regardless of setup jumper)	Fan Control	4. Click button "Enable Cruise, Ramp, Pwr Mang, Stroke Follower".
		1. Open service tool.
		2. Click "Machine Setup" button on main page.
		3. Click "Fan Control" button under Setup Menu.
		4. Uncheck the check box next to Disabled.
	Battery Management	5. Press Download Button.
		1. Open service tool.
		2. Click "Machine Setup" button on main page.
		3. Click "Bat. Man." button under Setup Menu.
		4. Uncheck the check box next to Disabled.
	Thermal Management	5. Press Download Button.
		1. Open service tool.
		2. Click "Enable Advanced Screens" on the main page.
		3. Click "Machine Setup" button on main page.
		4. Click "Stroke Cont." button under Setup Menu.
		5. Click " Thermal Management" under Advanced Functions.
		6. Uncheck the check box next to Thermal Management Bypass.
Hydraulic Level Faults	7. Press Download Button.	
	1. Open service tool.	
	2. Click "Diagnostics" button on main page.	
	3. Click "Sensor Diagnostics" button under Input & Output Diagnostics.	
	4. Click "Fluid Levels" under Sensor Diagnostics.	
	5. Uncheck the check box next to Disabled under Parameters.	
NOTE: Cold Start and Stroke Advanced Features will be re-enabled when the key is cycled. Setup functions will be disabled when the key is cycled.		6. Press Download Button.

INITIAL CHECK AND ADJUSTMENTS

HYDRAULIC OIL CHECK

1. Turn the ignition key to the **ON** position and press the **F3 button** to access the **machine information** screen.
2. Press the **down arrow button** to scroll downward until **HYD LEVEL** (Figure 5) is displayed on the screen. The hydraulic oil level should be 20–75% when the oil is cold.



Figure 5. Hydraulic Oil Level Display

3. If the hydraulic oil level is low, raise the lifting bail and open the main hood of the trowel as shown in Figure 6.

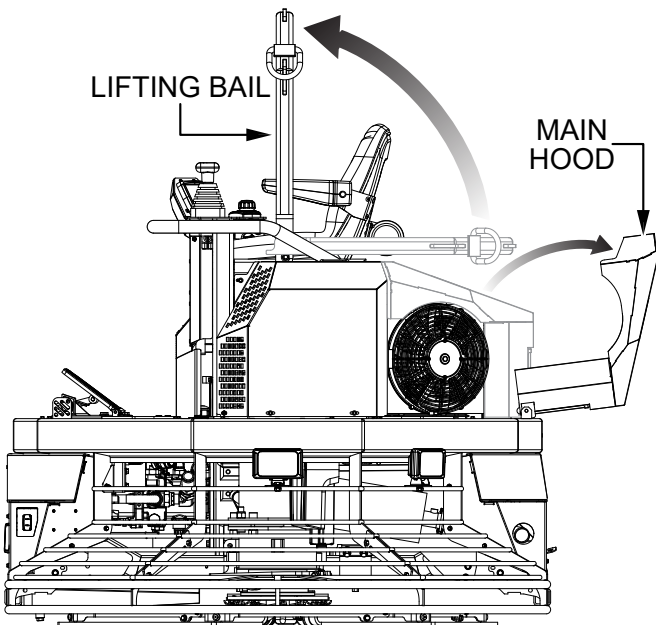


Figure 6. Lifting Bail and Main Hood

4. The hydraulic oil reservoir cover will need to be removed in order to access the hydraulic oil fill cap. Remove the five bolts securing the cover to the frame (Figure 7). Set the cover and bolts aside.

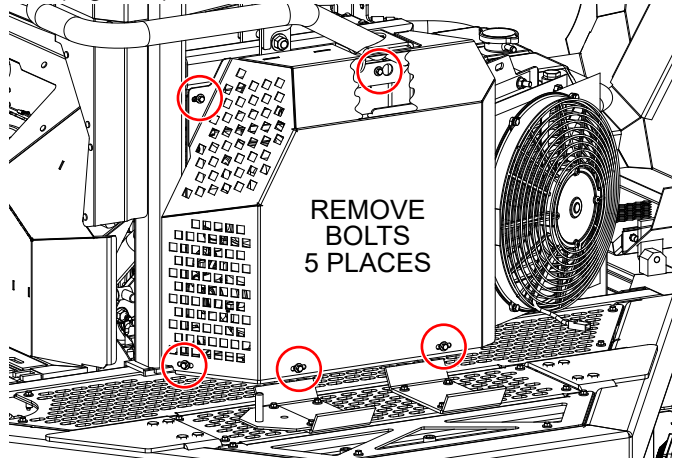


Figure 7. Hydraulic Oil Reservoir Cover Removal

5. Remove the hydraulic oil filler cap (Figure 8).

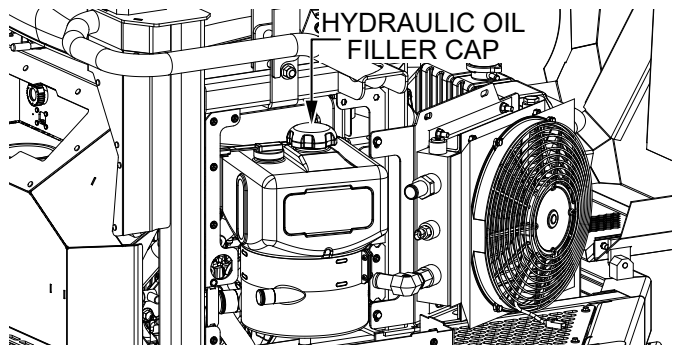
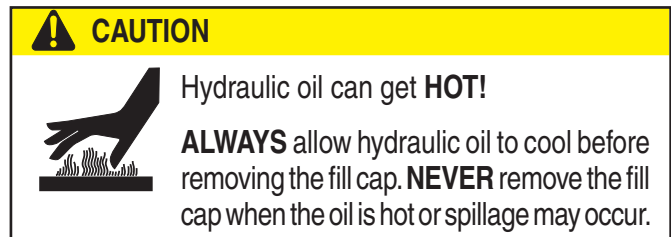


Figure 8. Hydraulic Oil Filler Cap

6. Add hydraulic oil up to a level midway between the **MIN** and **MAX** lines on the reservoir or 50% as shown on the digital display when the oil is cold. **DO NOT** overfill. Use only Parker DuraClean™ ISO 46 hydraulic oil. Replace the filler cap when finished.
7. Reinstall the hydraulic oil reservoir cover with the five bolts that were removed earlier.

INITIAL CHECK AND ADJUSTMENTS

ENGINE OIL

1. Pull the engine oil dipstick (Figure 9) out of its holder and wipe it with a clean rag.

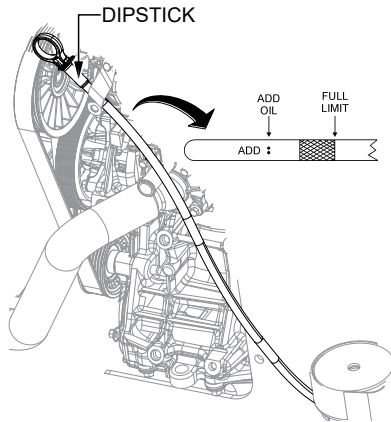


Figure 9. Engine Oil Dipstick

2. Fully insert the dipstick then remove it again.
3. Determine if engine oil is low. Oil should be between the upper and lower marks (Figure 9) on the dipstick.
4. If the oil is below the lower mark on the dipstick, remove the oil filler cap (Figure 10) and add engine oil up to the upper mark on the dipstick.

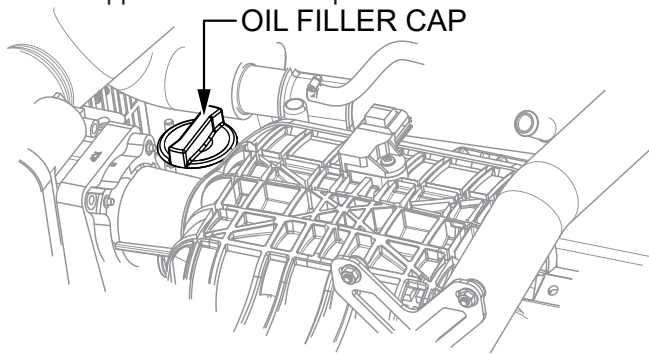


Figure 10. Oil Filler Cap

CAUTION

NEVER overfill the oil pan. **ALWAYS** allow time for any added oil to make its way to the oil pan before rechecking the level.

ENGINE COOLANT

CAUTION

Hot coolant can cause severe burns. **NEVER** remove the cap while the radiator is **HOT**.

1. Open the back hood to access radiator.
2. Verify that the radiator drain cock is closed.
3. Remove radiator cap.
4. Pour engine coolant (Dexcool or long life coolant only) slowly into the radiator (Figure 11) until it is even with the lip of the engine coolant filler port.

ADD COOLANT HERE



Figure 11. Adding Engine Coolant

5. Reinstall radiator cap.
6. Run the machine.
7. Once the engine is cool, remove radiator cap and refill.

PITCH SETUP AND CALIBRATION

1. With the pitch actuators fully retracted, set the yoke to clear the motor housing by .08 inch (Figure 12). A 14 GA shim should just fit between without binding.

.08-INCH CLEARANCE

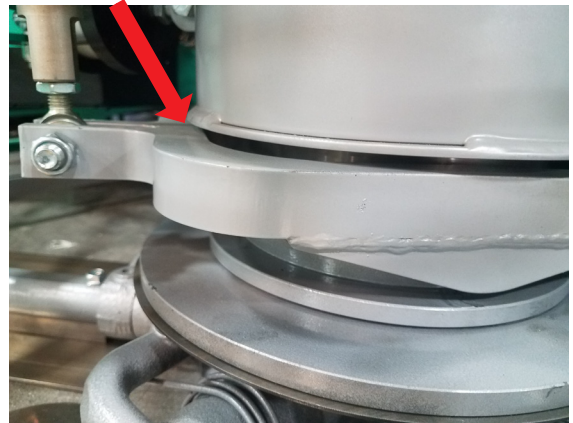


Figure 12. Yoke Clearance

2. Tighten jam nut once the yoke is attached to the actuator.
3. Calibrate pitch after making any adjustments to rod end positions.

SERVICE TOOL SETUP AND CONNECTION

WHITEMAN SERVICE TOOL (WST) INSTALLATION

NOTICE

Make sure that the Sauer Danfoss Plus +1 Software is already installed before proceeding with the Whiteman Service Tool (WST) installation.

1. Download the application specific Whiteman Service Tool (WST) file from the Whiteman Service Tool Page on the Multiquip service website:

<http://service.multiquip.com>

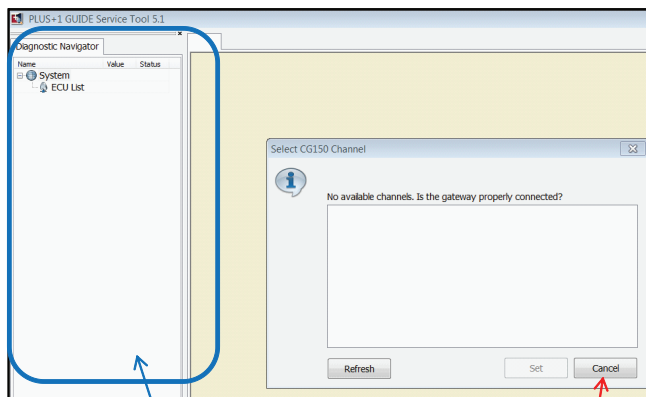
If you need assistance, contact Multiquip Technical Support or Field Service.

2. Also obtain software license key by completing the request form available on the Multiquip service website. The software license key will be sent to you as an attachment to an e-mail.
3. Extract the files from the downloaded service tool and save them to your desktop. Do not change the names of the files.
4. Locate and verify that the latest version of the WST application file (43053RevX.p1d) was saved to your desktop.

NOTICE

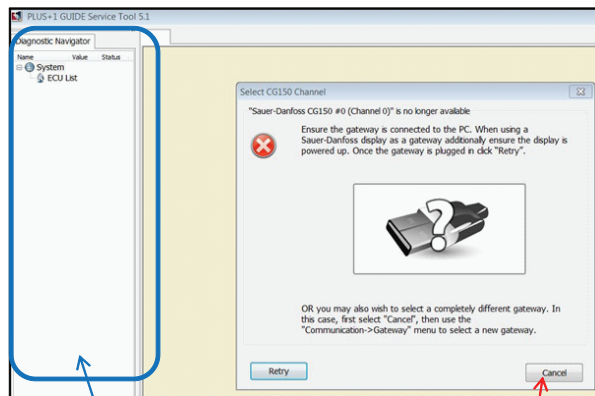
X indicates application version letter.

5. Double-click on the 43053RevX.p1d icon on your desktop. One of the screens shown in Figure 13 will appear. Click "Cancel".



Navigation Bar

Click "Cancel"



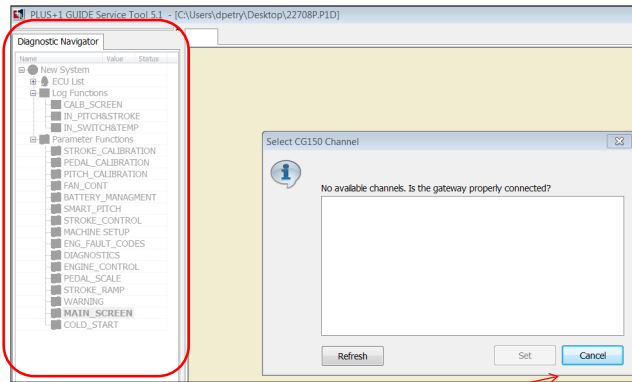
Navigation Bar
is not populated

Click "Cancel"

Figure 13. WST Navigation Bar (Not Populated)

SERVICE TOOL SETUP AND CONNECTION

- Click "Cancel" again when the new screen (Figure 14) comes up.



Click cancel

Figure 14. WST Navigation Bar (Populated)

- The new screen will have both navigation and tool bars active (Figure 15).

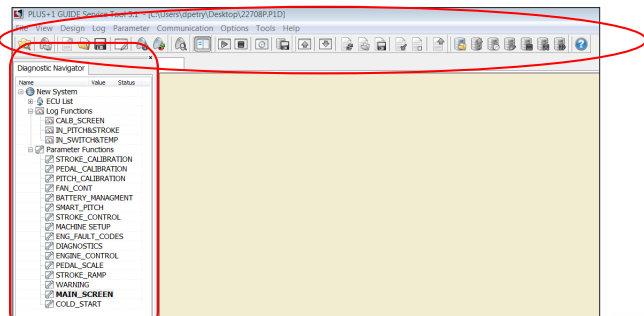


Figure 15. WST Tool Bar

- Click on "Tools". On the drop-down menu, click on "License Manager" (Figure 16).

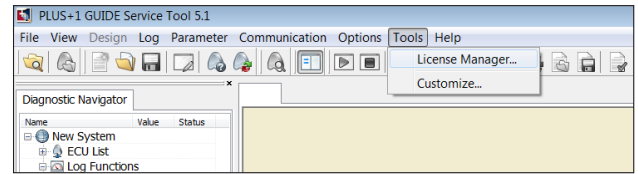


Figure 16. WST License Manager

- Input the license key obtained from Multiquip (Figure 17) and click "OK".

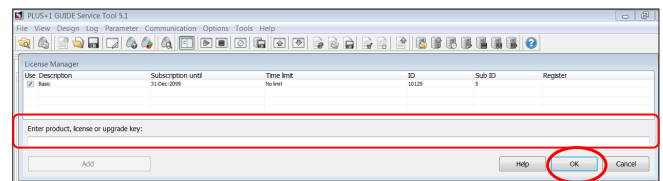


Figure 17. Entering License Key

LAPTOP CONFIGURATION

CONNECTION PROCEDURE

NOTICE

Make sure that the Sauer Danfoss Plus+1 Software and Whiteman Service Tool (WST) are installed before proceeding with the connection procedure.

1. Plug the CAN Gateway cable to the trowel at the service port (Figure 18). Do not connect laptop at this time.

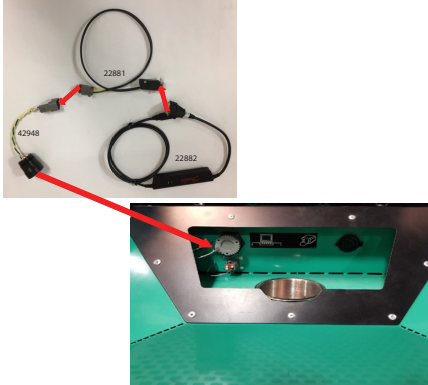


Figure 18. CAN Gateway Cable to Service Port

2. On the trowel, turn the ignition key to the ON position (Figure 19). This will turn on the MCU. It is not necessary to crank or turn on the engine.

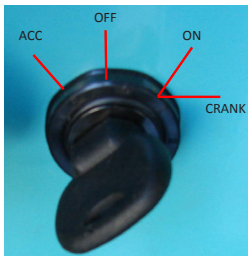


Figure 19. Ignition Key ON

3. Connect the USB connector of the CAN Gateway cable to the USB port of the laptop (Figure 20).



Figure 20. Connecting the Laptop

4. When the CAN Gateway cable is connected to the laptop for the first time, it is necessary to install the CAN driver software. The installation screen will appear (Figure 21). Click "Next" to install the software automatically (default).

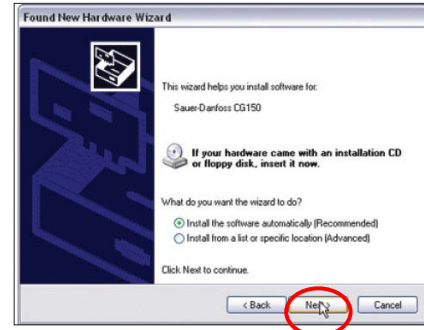


Figure 21. CAN Driver Installation

5. Click "Finish" on the next screen (Figure 22) to complete installation.

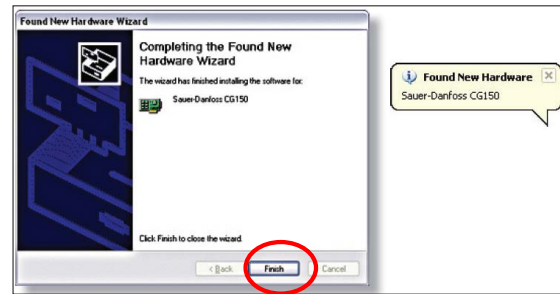


Figure 22. CAN Driver Installation Complete

6. On the Service Tool software on your laptop, the main screen should show Software info loaded from trowel MCU and the Machine Status box shows lamps lit (Figure 23).

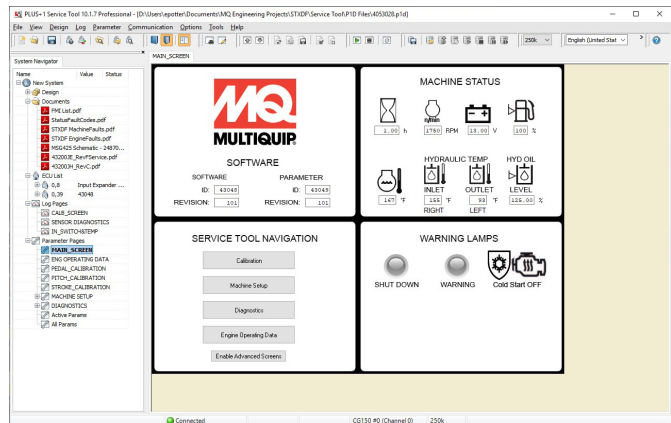


Figure 23. Service Tool Main Screen

LOADING SOFTWARE

FILE DOWNLOAD PROCEDURE

1. Make sure laptop and machine are connected. See Connection Procedure section.
2. Turn key on machine to RUN position but **DO NOT** start machine.
3. Open the service tool software (43053RevX.p1d) on your laptop.
4. On the service tool main screen (Figure 23), click "Machine Setup" button (Figure 24).

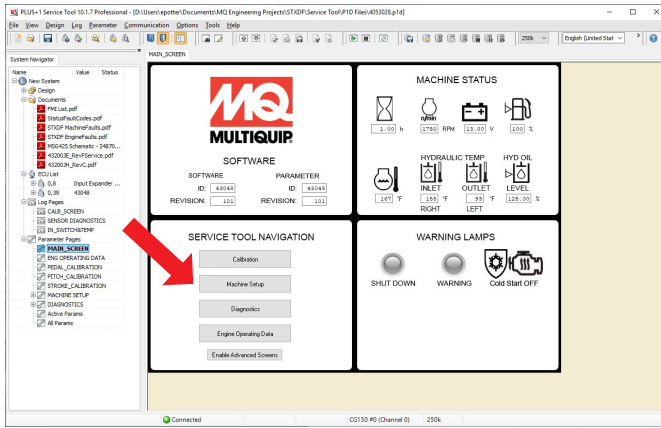


Figure 24. Machine Setup Screen

5. Click "Download Software to MCU" button (Figure 25).

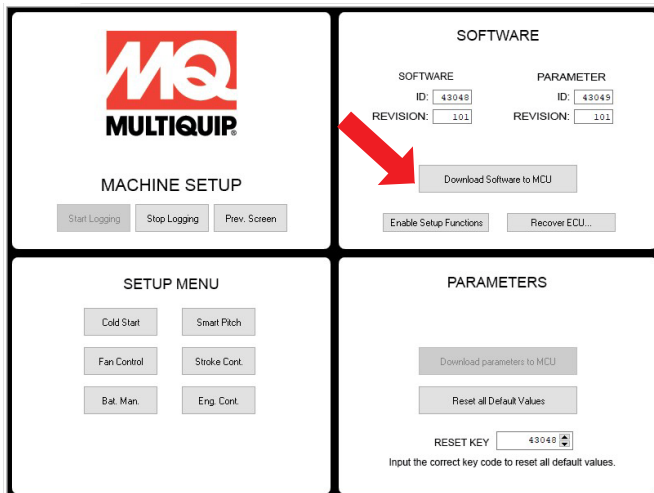


Figure 25. Download Software to MCU Screen

6. Select file 43048_*.LHX file (* represents current revision of file) and click open (Figure 26).

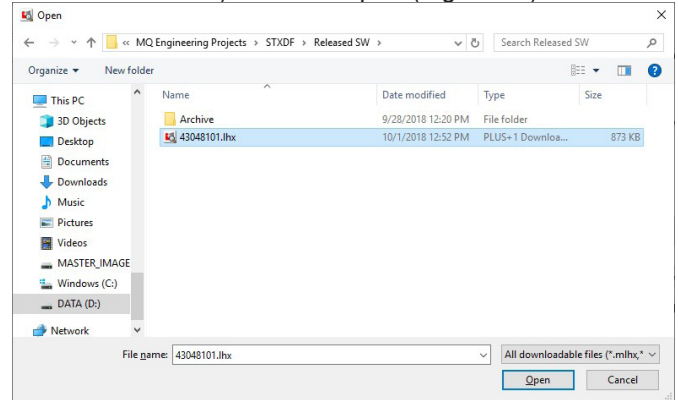


Figure 26. Select File 43048_ Screen

7. Click "Next" then "Start Download" button (Figure 27).

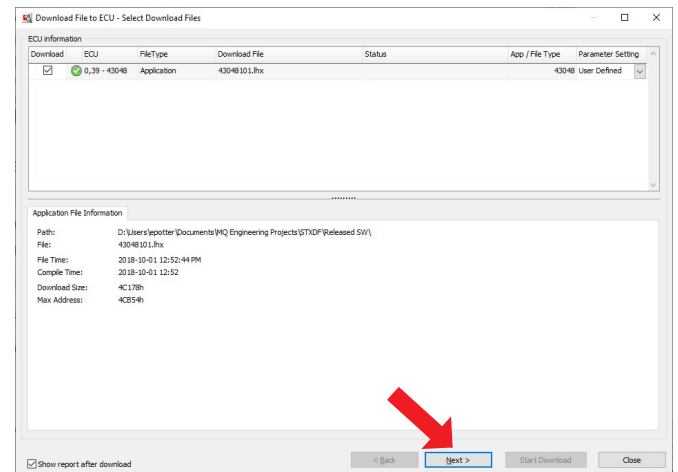


Figure 27. Start Download Screen

8. Verify that the download was successful and click "Close" button (Figure 28).

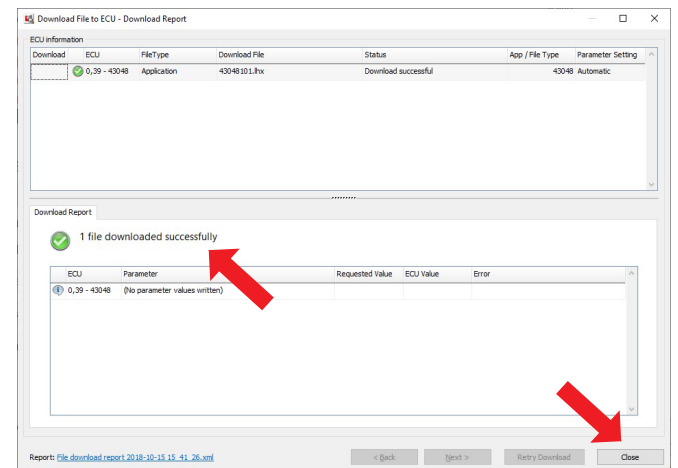


Figure 28. Download Successful Screen

LOADING SOFTWARE

- Record program ID and version on Machine Information and Maintenance Log on the front of this manual.
- Turn machine power off for at least 10 seconds prior to proceeding with machine setup.

PARAMETER FILE TRANSFER

- Turn key to RUN position but **DO NOT** start machine.
- Click on "Stop Logging" button (Figure 29).

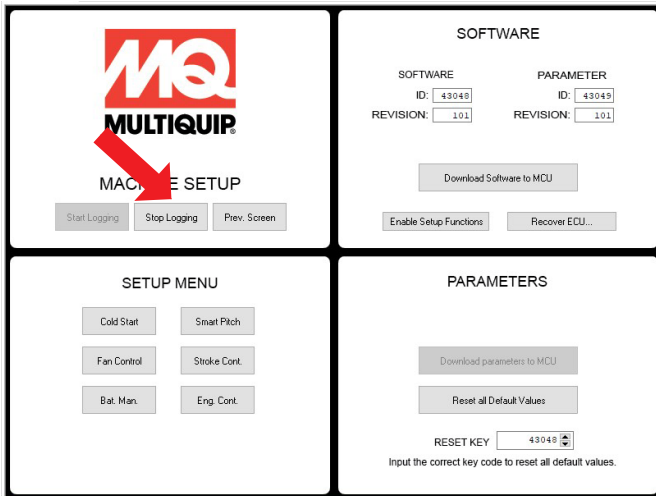


Figure 29. Stop Logging Screen

- Click "Download all parameter values" button.
- After selecting "Download parameters to MCU", a new dialog box will pop up (Figure 30).

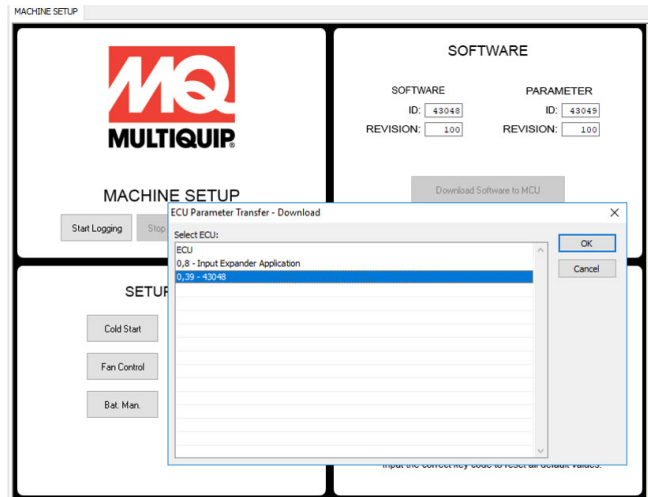


Figure 30. Download all Parameter Values Screen

- Select "0,39-43048" then click OK.
- Select 43049_*.p1t file and select open.
- Turn machine power off for at least 10 seconds prior to proceeding with machine setup.

MACHINE SETUP AND CALIBRATION

CALIBRATE FOOT PEDAL

1. Turn key to ON position but **DO NOT** start machine.
2. Click "CALIBRATION" button on machine setup page.
3. Click "PEDAL CALIBRATION SCREEN" button in "PEDAL SENSOR" frame (Figure 31).

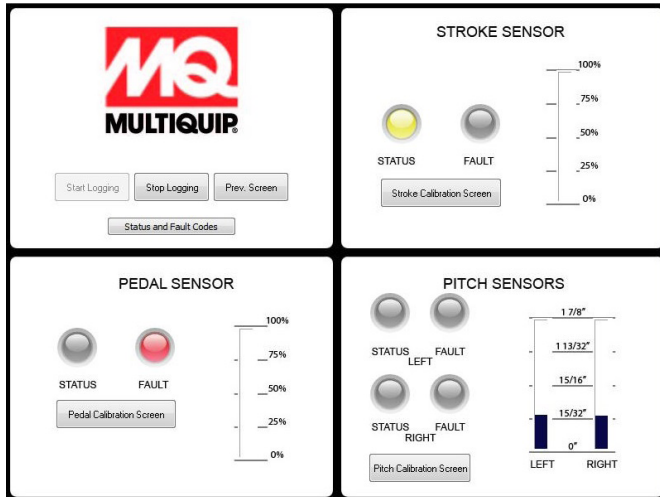


Figure 31. Calibration Button

NOTICE

Prior to calibration of the foot pedal sensor, ensure the mechanical movement is not restricted. It should smoothly depress to the hard stop and smoothly return to full released position.

Calibration

1. Set sensor zero position default:
 - a. Ensure that foot pedal is fully released.
 - b. Read % SENSOR VOLTAGE for both sensors 1 and 2.
 - c. Round % Sensor Voltage values to nearest percent and enter in RELEASED defaults for sensors 1 and 2.
 - d. Press "Download" button to update value in MCU.
2. Set sensor full position default:
 - a. Fully depress pedal.
 - b. Read % SENSOR VOLTAGE for both sensors 1 and 2 (Figure 32).

- c. Round % Sensor Voltage values to nearest percent and enter in DEPRESSED defaults for sensors 1 and 2.
- d. Press "Download button" to update value in MCU.

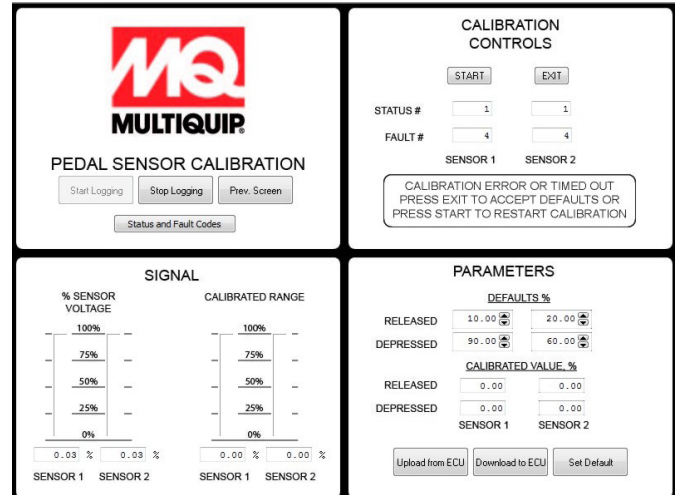


Figure 32. Start Pedal Sensor Calibration

3. Press "START" button to begin calibration and follow prompts.
4. Once calibrated, move pedal thru range, ensuring both calibrated signals move from 0 to 100% together.
5. Record Calibration Values on Machine Information and Maintenance Log.

SECONDARY HYDRAULIC FILL PROCEDURES

1. Elevate machine so blades are no longer contacting floor.
2. Start the unit and run the engine.
3. Check level and fill as needed.
4. Cycle steering for 5 minutes to bleed air from the system until fluid coming out bypass hose is free of air bubbles.
5. Turn off machine and lower.
6. Reinstall hydraulic reservoir cap.

STEERING PRESSURE ADJUSTMENT

1. Start machine.
2. From the main screen on the display, press F3 then arrow down to PG2 to display steering pressure.

MACHINE SETUP AND CALIBRATION

3. Increase engine rpm to full operating RPM.
4. Loosen 3/4" jam nut on steering valve (Figure 33).

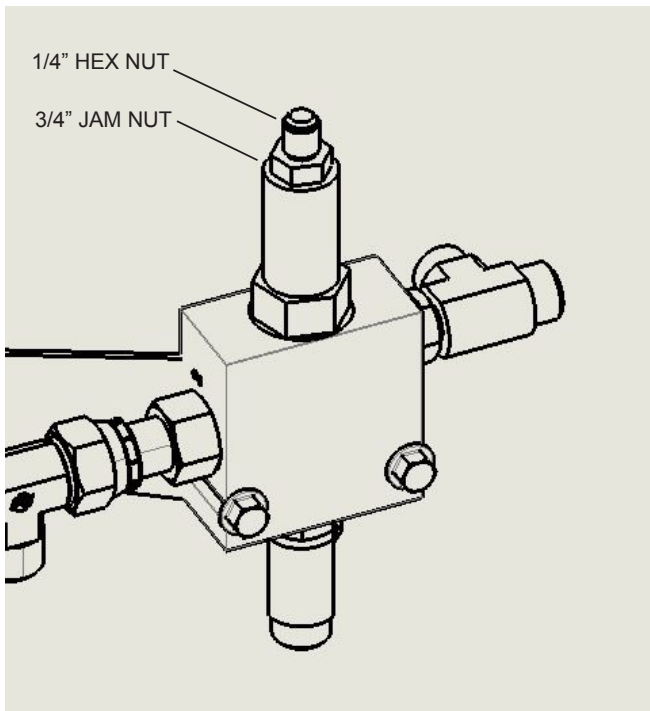


Figure 33. Steering Pressure Adjustment

5. Using a 1/4" allen wrench, adjust the small hex nut within the larger hex jam nut.
6. Adjust to proper steering pressure:
290 psi ± 10 psi
7. Retighten jam nut.
8. Return engine to idle.
9. Turn off machine.
10. Record Pressure on Machine Information and Maintenance Log.

CALIBRATE PUMP STROKE

CAUTION

Machine movement will occur during this step. Ensure machine is secure or operator is present in seat. All guards should be in place. Keep fingers, hands, hair, and clothing away from all moving parts to prevent injury.

1. Turn machine off for at least 10 seconds.
2. Restart machine.
3. Click "Calibration" button on machine setup page.

4. Click "Stroke Calibration Screen" button in PUMP STROKE section (Figure 34).

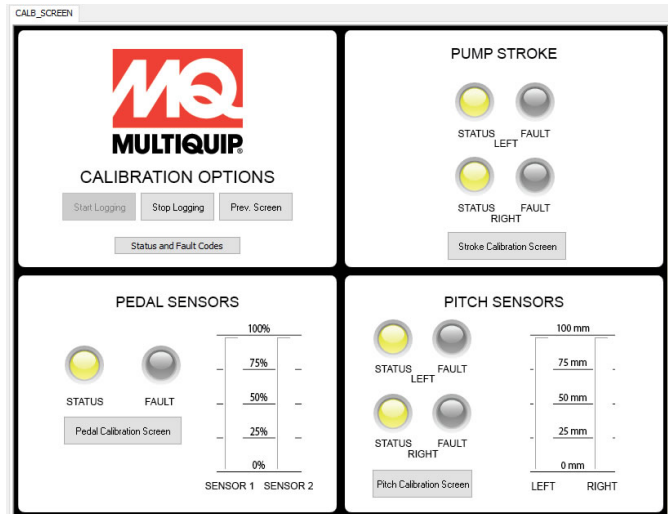


Figure 34. Calibrate Pump Stroke

5. Ensure foot pedal is fully released.
6. The operator must be on the unit to steer as needed. Have a second person press the "Start Pump Calibration" button (Figure 35) and indicate to the operator what the prompts are on the screen. The unit will slowly stroke pumps until both rotors start to turn, 8 times in a row, during this calibration.

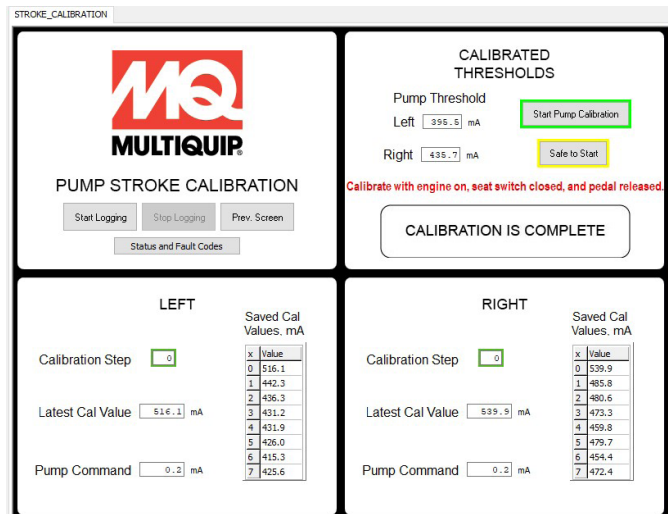


Figure 35. Start Pump Stroke Calibration

7. Click "Safe to Start" after verifying that the machine is in a safe position to turn rotors.
8. Once machine is calibrated, record values.

MACHINE SETUP AND CALIBRATION

PITCH SENSOR CALIBRATION

1. Make sure pitch actuator rod ends are screwed in far enough for the yoke to lift off the pressure plate when fully retracted.
2. Verify that pitch actuator rod end jam nuts are tight.
3. Turn machine off for at least 10 seconds and then restart machine.
4. On the service tool main screen (Figure 23), click the "Calibration" button.
5. Click the "Pitch Calibration Screen" button in Pitch Sensors section (Figure 36).

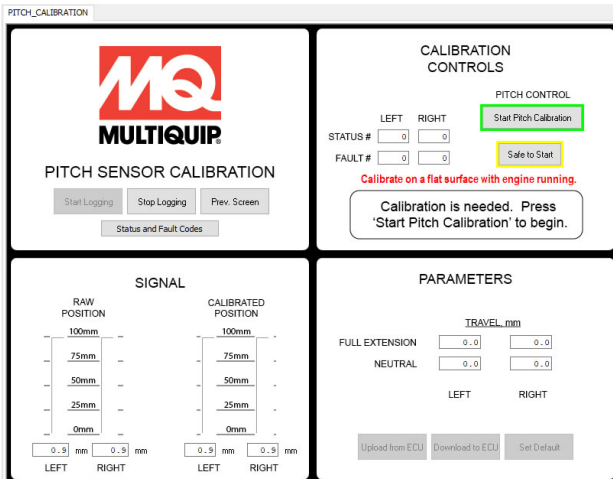


Figure 36. Pitch Sensor Calibration

6. Click "Start Pitch Calibration" button.
7. After verifying that it is safe for the complete machine to move up and down several inches, click "Safe to Start" to begin calibration.
8. Once done, record pitch calibration values.

9. Check that both left and right pitch neutral calibration points are at least 10.0 mm (Figure 37).

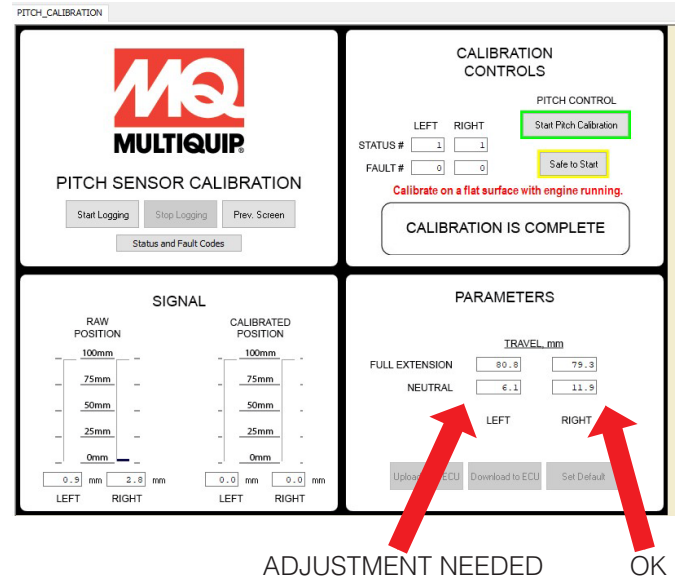


Figure 37. Neutral Calibration Points

10. If a neutral calibration point is not 10.0 mm or more, then the pitch actuator rod end for that side, left or right, must be screwed further into the actuator and pitch recalibrated.

FLUID LEVELS

Record the following fluid levels on Machine Information and Maintenance Log in Inspection section. Refer to Fluid Fill and Check section for procedure.

- Engine Oil
- Engine Coolant
- Hydraulic Oil

MECHANICAL

1. **Grease Points** — Ensure that the following Grease Points are greased, wiped down and capped:
 - Thrust Collar
 - Fingers
2. **Hydraulics**
 - Spot check paint marks on fittings.
 - Ensure that there are no leaks.
3. **Retardant Spray System**
 - Fill with water and perform operational check.
 - Verify no leaks.
4. **Electrical (Cooling Fan)**
 - Verify fan cycles on when key is turned on (will remain on for 10s).
 - Verify air flow direction is inward.
5. **Lights**
 - Verify operation of all 6 machine lights.
6. **Switches**
 - Verify proper operation of all switches.
7. **Diagnostic Display**
 - Turn the ignition key clockwise to the ON position. All diagnostic display functions should be available.
8. **Aesthetics**
 - Paint Quality
 - No bare spots
 - No scratches
 - Decals
 - Readable
 - Not torn or scratched

FUSE INFORMATION

Refer to Figure 38 for location on fuse panel.

Table 3. Fuses			
Fuse Number	Fuse Rating, Amps	Connector Pin #	Description
1	25	1F	RH Hyd Cooler Fan
2	25	1H	Open
3	10	1C	Open
4	10	1D	Left Lights
5	10	1B	Right Lights
6	5	2C	Accessory Power Port
7	30	2D	Left Pitch
8	25	1A	LH Hyd Cooler Fan
9	5	1E	Seat Switch
10	5	1G	Switches and Diagnostic Display
11	10	2B	Ignition Switched Power for Engine ECU, Fuse Box Signal and Machine Power Relays
12	10	2A	Service Tool Power: 9 pin OBD connector
13	20	2E	Fused MCU controller and I/O Module
14	30	2F	Right Pitch
15	20	2G	Spray Pumps
16	10	2H	Open

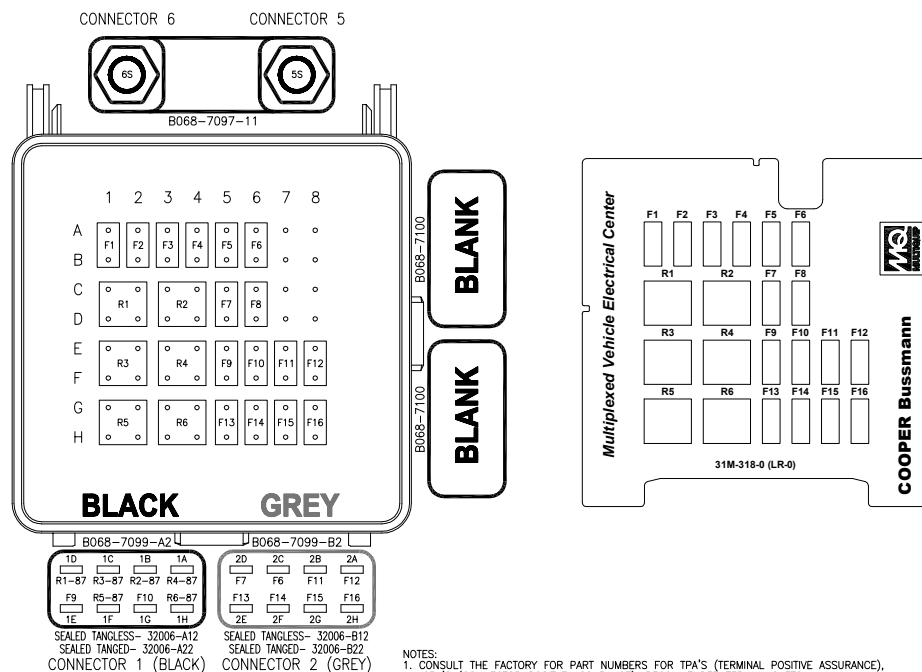


Figure 38. Fuse Location

SETUP, ADJUSTMENTS AND CALIBRATIONS

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL
NUMBER ON-HAND WHEN CALLING

UNITED STATES

Multiquip Corporate Office

18910 Wilmington Ave.
Carson, CA 90746
Contact: mq@multiquip.com

Tel. (800) 421-1244
Fax (310) 537-3927

MQ Parts Department

(800) 427-1244 Fax: (800) 672-7877
(310) 537-3700

Service Department

(800) 421-1244
(310) 537-3700

Warranty Department

(800) 421-1244 Fax: (310) 943-2249
(310) 537-3700

Technical Assistance

(800) 478-1244 Fax: (310) 943-2238

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4110 Industriel Boul.
Laval, Quebec, Canada H7L 6V3
Contact: infocanada@multiquip.com

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