Form No. 3398-121 Rev A

4050 Directional Drill

Model No. 23898—Serial No. 315000001 and Up

Model No. 23899—Serial No. 315000001 and Up

Software Guide

Read this information carefully to learn how to operate and maintain your product properly and to avoid injury and product damage. You are responsible for operating the product properly and safely.

Whenever you need service, genuine Toro parts, or additional information, contact an Authorized Service Dealer or Toro Customer Service and have the model and serial numbers of your product ready.

You may contact Toro directly at www.Toro.com for product safety and operation training materials, accessory information, help finding a dealer, or to register your product.

Monitor

Home Screen Options

Main Information Screen

This is the first screen that appears after the initial splash screen. To navigate between screens use the left and right arrows.

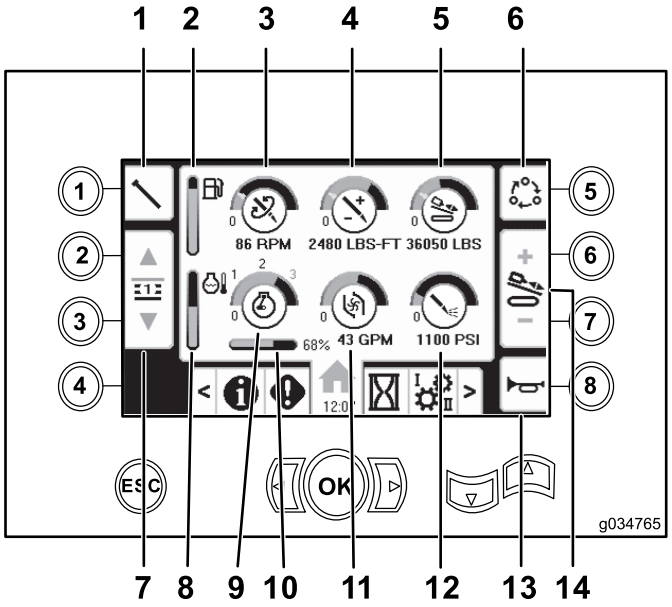

Figure 1

1. Pipe functions
2. Fuel gauge
3. Drill speed (rpm)
4. Rotary torque
5. Thrust force
6. Rotate options
7. Select pipe row
8. Engine temperature gauge
9. Engine speed (rpm)
10. Engine load
11. Mud flow rate (gallons per minute)
12. Mud pressure
13. Horn
14. Thrust force, drill speed (rpm), or Rotary torque adjustment

Push number 1 to switch between the pipe functions: pull pipe, push pipe, neutral.

Push number 5 to switch between thrust force, drill speed (rpm), and rotary torque.

Use the up and down arrows to set the limits for maximum drill speed (rpm), rotary torque, and thrust force.

- Thrust force: change the thrust force by pushing 6 or 7.
- Drill speed (rpm): change the thrust force by pushing 6 or 7.
- Rotary torque: change the thrust force by pushing 6 or 7.

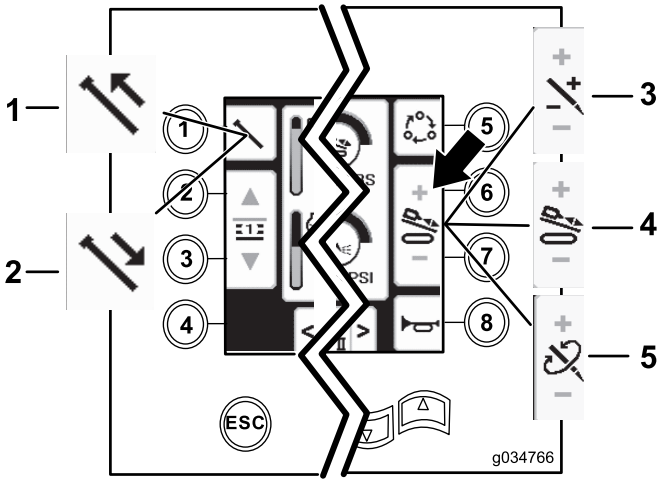

Figure 2

1. Pull pipe
2. Push pipe
3. Rotary torque
4. Thrust force
5. Drill speed (rpm)

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Register at www.Toro.com.

Original Instructions (EN)
Printed in the USA.

3398-121 A

Hours Screen Options

Machine Hours Screen

To access this screen press button 1 on the Hours screen.

This screen shows the operating hours of the machine. Machine 1 cannot be changed. Machine 2 can be reset.

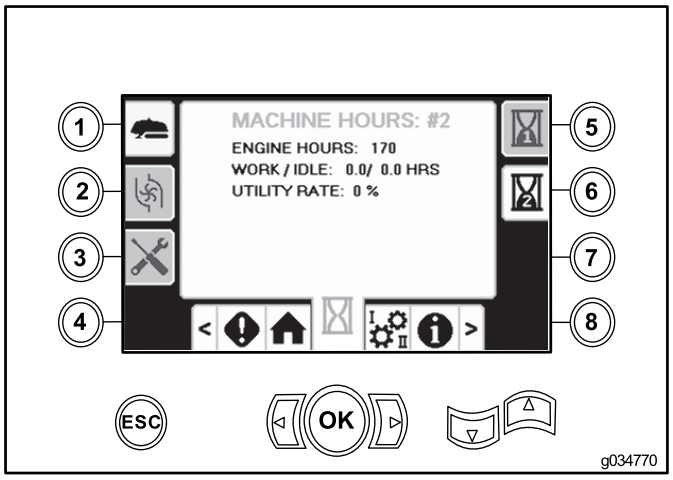

Figure 3

Mud Use Screen

To access this screen press button 2 on the Hours screen.

This screen shows the mud use (gallons) of the machine. Total mud cannot be changed. Daily mud can be reset.

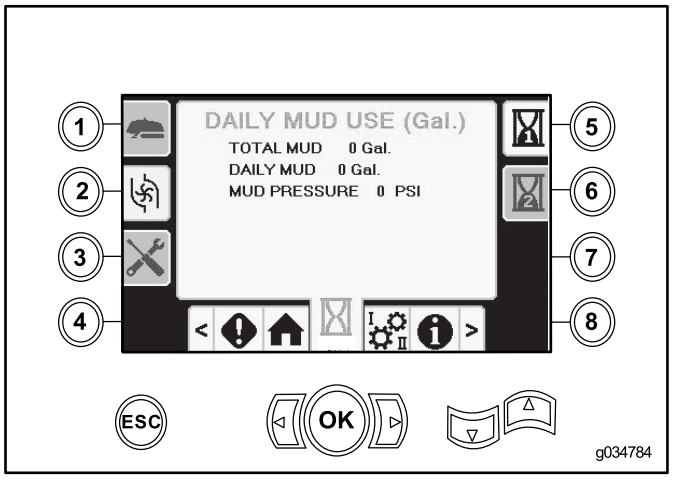

Figure 4

Lubrication and Maintenance Screens

To access this screen, press button number 3 on the Hours screen.

These screens provide the user with the daily maintenance schedules and the 50-hour, 250-hour, 500-hour, and 1,000-hour increments.

To reset the maintenance interval press button 5–8 for the corresponding service interval 3 times and enter pin **12356**.

Press the following buttons to attain the subsequent maintenance schedule:

- Button 3 — 10-hour/Daily maintenance schedule (Figure 5)
- Button 5—50-hour maintenance schedule (Figure 6)
- Button 6—250-hour maintenance schedule (Figure 7)
- Button 7—500-hour maintenance schedule (Figure 8)
- Button 8—1,000-hour maintenance schedule (Figure 9)

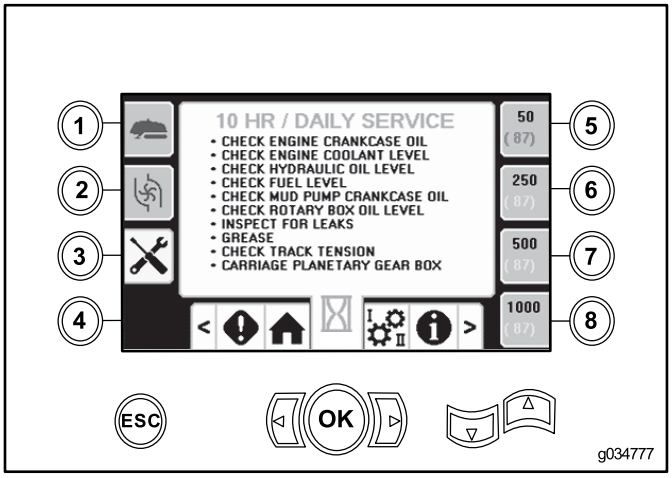

Figure 5

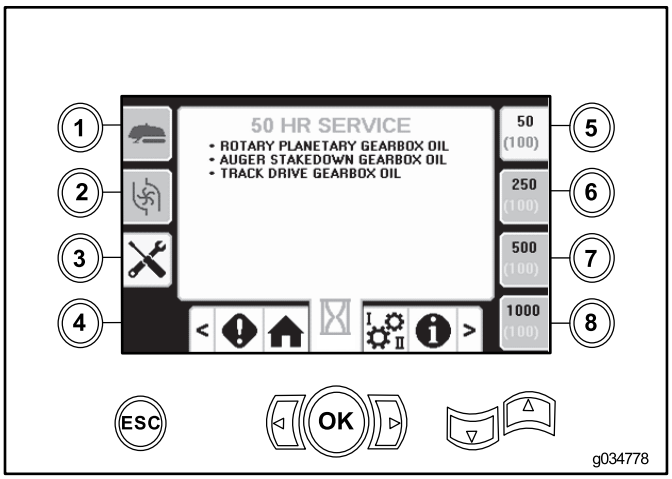

Figure 6

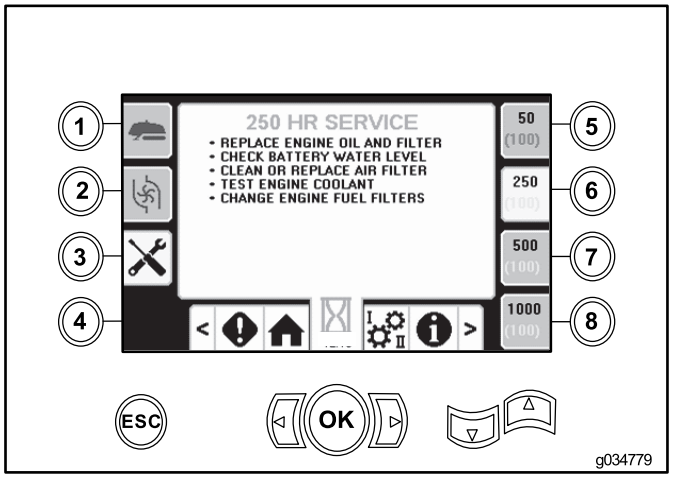

Figure 7

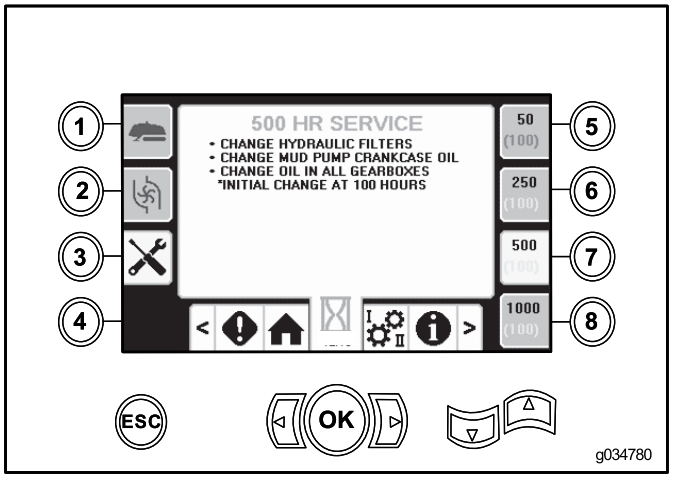

Figure 8

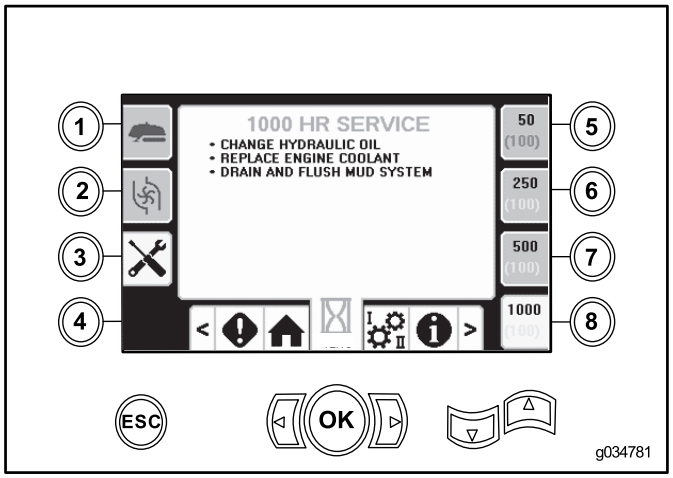

Figure 9

Settings Screen Options

Carriage Settings Screen

Push number 1 on the Settings screen.

Use this screen to change the carriage settings. Use the up and down arrows to rotate between: push pipe, pull pipe, and neutral.

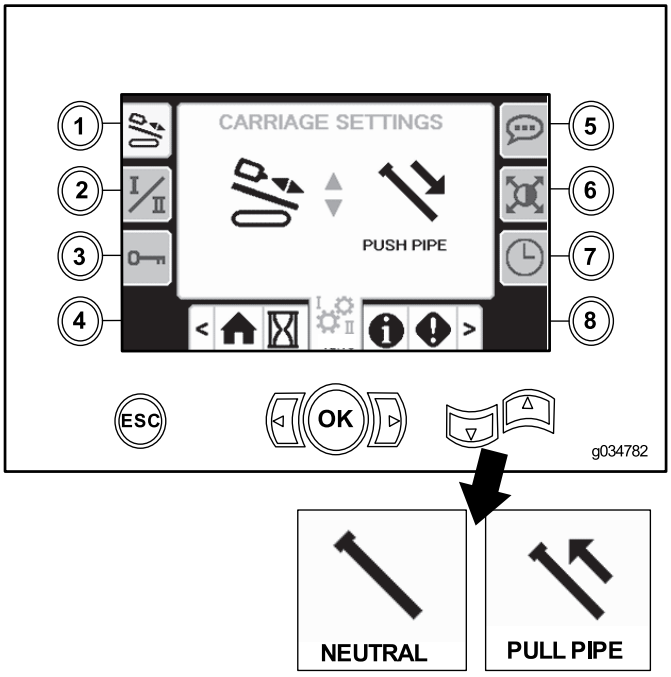

Figure 10

Push Pipe

- Rotate Cam to Load

  The cam stops at the assigned row position. Lower the elevator and rotate the cam and pipe to the load position. Actuate the pipe loader to bring the pipe toward the rack. As the pipe loader passes the grip point, the grippers will automatically close on the pipe.

- Return Cam to Home

  Once the pipe is secured to the mating pipe, retract the loader arm to the home position and raise the elevator. When the loader arm is retracted, the cam can be rotated to the home position without stopping.

- Carriage Back

  After the operator has pushed the new pipe all the way to the front and broken the pipe joint from the drill head, the carriage is allowed to travel all the way to the back passing through the load and wrench stop positions without stopping.

Pull Pipe

- Rotate Cam to Load

  The cam moves from the home position to the load position without stopping at the selected row. Extend the load arm and grip the pipe prior to completion of the pipe breaking from the drill string and pipe head. Retract the load arm and lower the elevator. The grips will automatically open as the pipe loader passes through the grip point of the cam.

- Return Cam to Home

  Rotate the cam toward the pipe box. The cam stops at the operator-selected row. Raise the elevator and return the cam to the home position.

- Carriage Back

  When pulling the pipe back, the carriage will stop at the wrench position to break the joint of the pipe and at the load position to align the pipe when return to the pipe basket.

Neutral

The cam stops at the selected pipe row while travelling in either direction and the carriage stops at the wrench and load positions.

Control Mode Screen

Push number 2 on the Settings screen.

Use this screen to select between the 2 joystick control options. Push button 2 to switch between Mode I and Mode II.

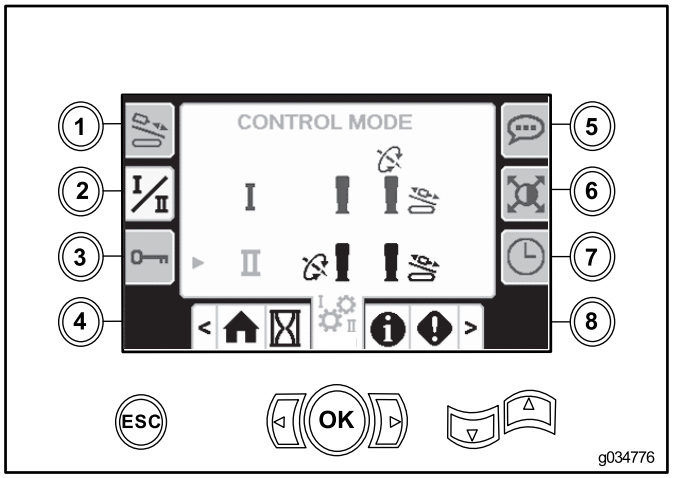

Figure 11

- Mode I—The right joystick controls the thrust and the rotation functions. The left joystick controls the wrench and pipe loader functions.
- Mode II—The right joystick controls the thrust and the pipe loader elevator function. The left joystick controls the rotation, wrench, and pipe loader functions.

Parameters Options Screen

Push number 3 on the Settings screen.

The pin number to change the parameters is **73236531**.

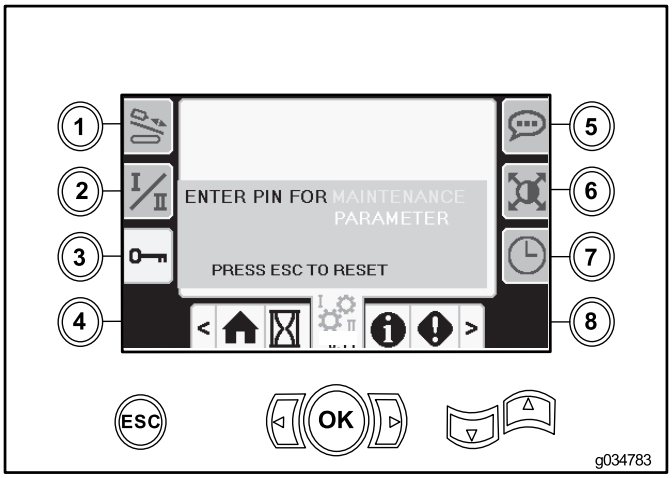

Figure 12

Language and Units Options Screen

Push number 5 on the Settings screen to switch between english units and metric units.

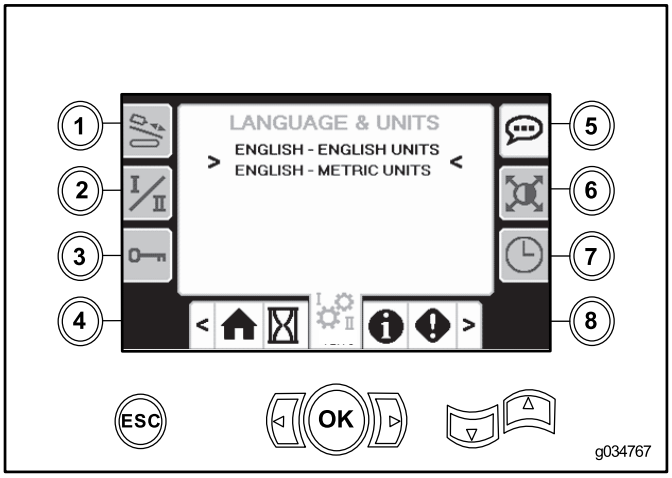

Figure 13

Screen Settings Screen

Push number 6 on the Settings screen to switch between zoom delay, brightness, and day or night mode. Use the up and down arrows to adjust the parameters.

The Main Drilling Screen zooms into the drilling functions. These settings adjust the delay on how long it takes to zoom.

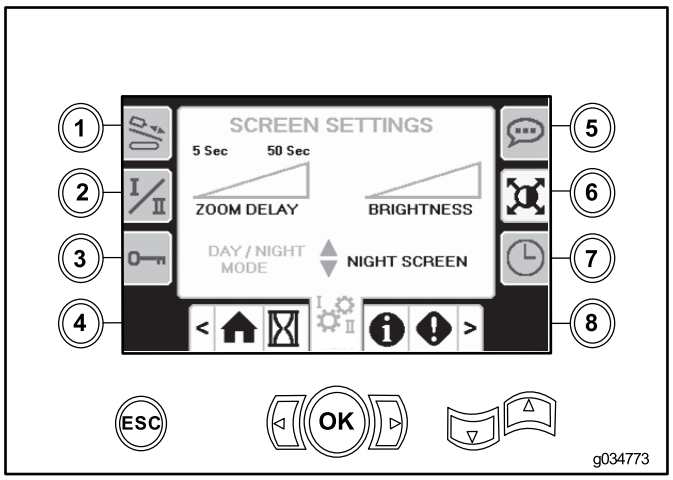

Figure 14

Clock Settings Screen

Push number 7 on the Settings screen to switch between the clock options. Use the up and down arrows to adjust the parameters.

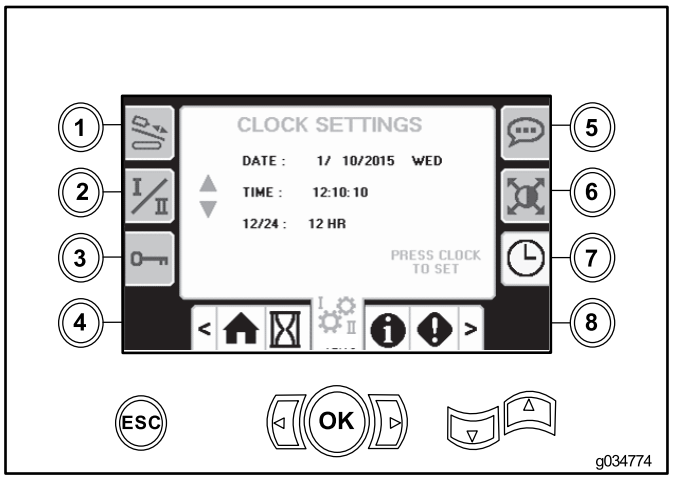

Figure 15

I/O Screens

Joystick I/O Screen

Push number 1 on the I/O screen to rotate between the Drill and Setup options. The icon turns green when the associated function is actuated.

When the rocker switch on the left control panel is in the Drill position, the upper left icon turns green and the joystick voltages can be checked as well as verify the 2–Speed, and Exit Side Lockout.

When the rocker switch is in the Setup position, the upper right icon is green. The setup position allows you to move the machine and prepare for drilling.

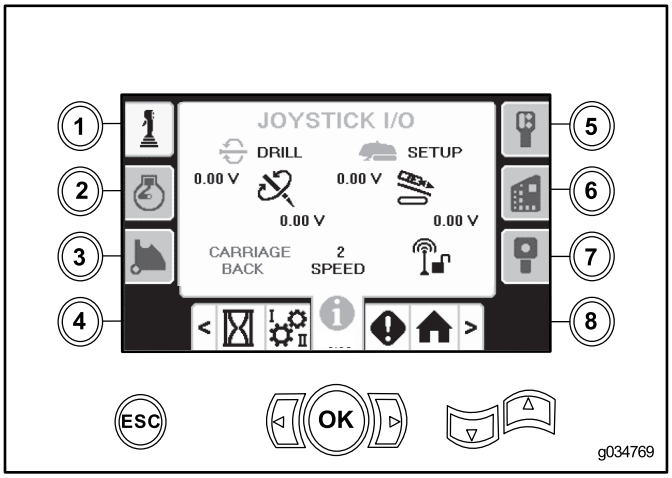

Figure 16

- The rotary voltage ranges from 0.0 to 8.5 volts and be present for either make (upper icon) or break (lower icon) as the selected rotary joystick is moved
- The carriage indicates a voltage range from 0.0 to 10.0 volts in the joystick selected direction for thrust or pullback.
- The lower left icon indicates the carriage position of wrench, load, or carriage back as the carriage moves to the most rearward positions.
- The lower center icon indicates if the 2-speed selection of the carriage speed has been selected.
- The lower right icon indicates the status of the Exit Side Lockout (ESL). If the indicator is black, the carriage and rotary actions are inhibited.

Engine I/O Screen

To access this screen push number 2 on the I/O screen.

This screen displays engine information.

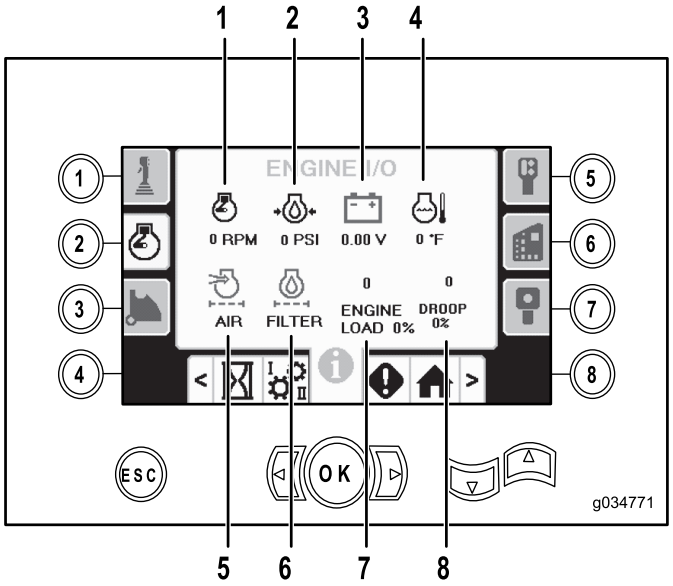

Figure 17

1. Engine speed (rpm)
2. Engine oil pressure
3. Battery voltage
4. Engine temperature
5. Air filter indicator
6. Hydraulic oil filter
7. Engine load
8. Engine droop

Engine speed (rpm): displays, in steps of 100, the engine speed (rpm).

Engine oil pressure: displays the engine oil pressure (bar or psi).

Battery voltage: displays the battery voltage.

- If the engine is off, the voltage is measured by the Toro controller.
- If the engine is running, the voltage is supplied by engine controller.

Engine temperature: displays the engine coolant temperature. The temperature drops to 40°F when the engine is off.

Air filter: the air filter icon is green unless the filter is plugged then the indicator is red.

Hydraulic oil filter: the hydraulic oil filter icon is green unless the filter is plugged then the indicator is red.

Engine load: displays the percent of the engine load.

Engine droop: select the maximum allowable engine droop in the range of 10 to 50 percent. The droop value is the lowest point below low-load speed (rpm) (under 75 percent load) that the engine may decrease before the drive to the rotary head is decreased to maintain the lowest value.

Cam Arm I/O Screen

To access this screen push number 3 on the I/O screen.

Use this screen to adjust the cam and pipe loader calibration options.

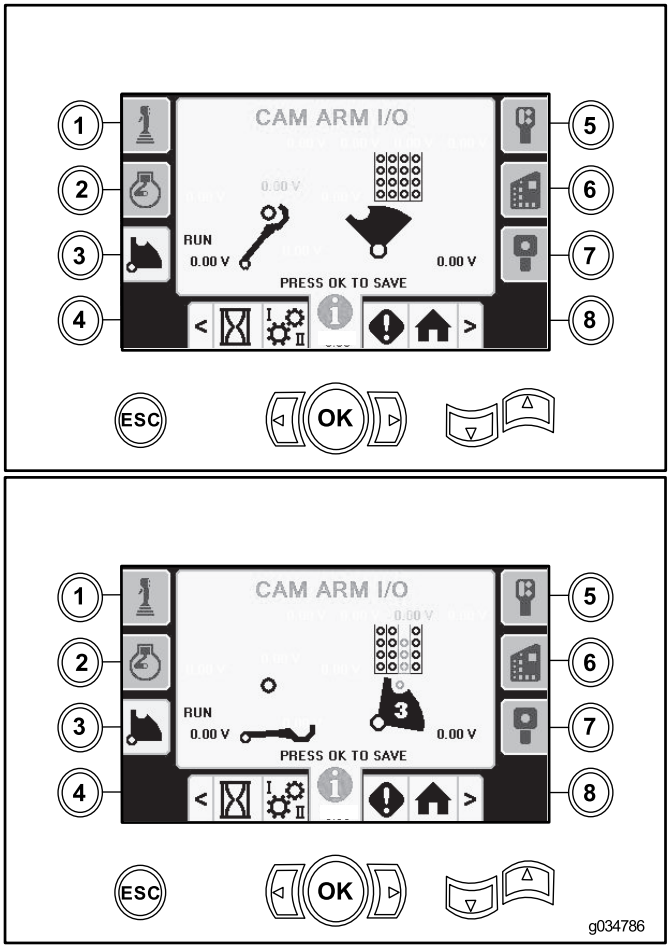

Figure 18

The figure shows 2 views. More views are possible.

The 2 voltages on the bottom indicates the loader arm and cam actual voltage from the sensors. The voltages range from 1.0 to 4.0 V. Any voltage higher or lower indicates either sensor failure or incorrect calibration.

Auxiliary I/O Screen

To access this screen push number 5 on the I/O screen.

All icons change from black to green when the associated functions are operated.

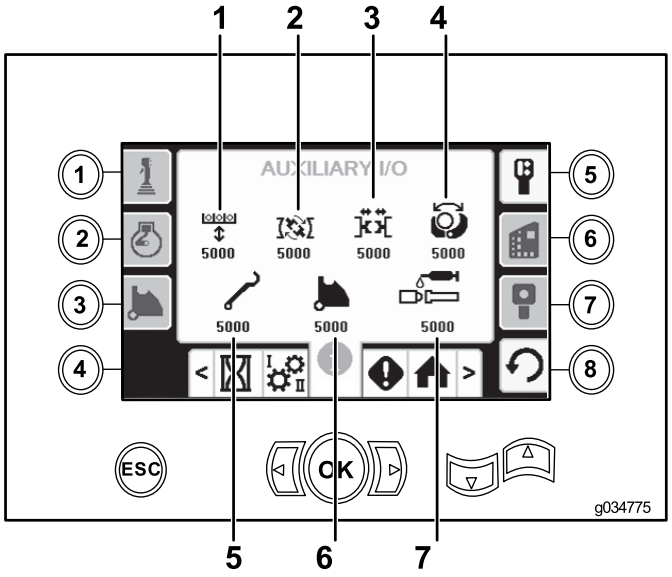

Figure 19

1. Raise/Lower elevator
2. Breakout wrench
3. Upper or lower wrench
4. Gripper
5. Loader arm
6. Rotate pipe cam
7. TJC grease

Controller I/O Screen

To access this screen push number 6 on the I/O screen.

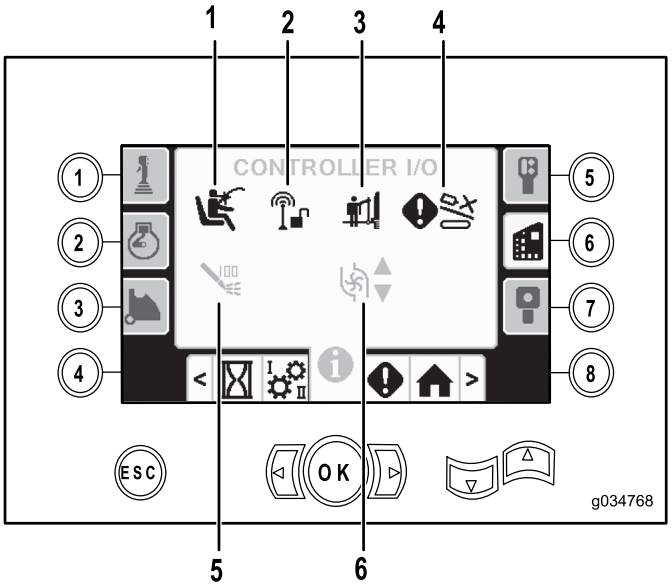

Figure 20

1. Seat switch
2. Exit side lockout
3. Pedestrian gate
4. Carriage crash warning
5. Mud pump status
6. Mud pump flow

Seat switch: shows an arrow out when nobody is present and a person in while operator is present.

Exit side lockout: changes from black to green when in operation.

Pedestrian gate: shows a figurine and the gate up when not in position for drilling. The gate shows a down state when the gate is lowered.

Carriage crash warning: is red when the carriage is inhibited either by the loader arm or pipe cam not in the rest (stowed) position or if the carriage is in the drill area and the operator tries to operate the cam or loader arm.

Mud pump status:

- Black icon: mud pump is off
- Yellow icon: mud pump is in standby
- Green icon: mud pump is in on
- Green icon with 100: mud pump is in max flow

Mud pump flow: indicates the mud flow rate.

- When the rocker switch is actuated up, the indicator turns green with a blue up/increase arrow.
- When the rocker switch is actuated down, the indicator turns green with a blue down/decrease arrow.
- The icon is black when the rocker switch is not pressed.

Travel Pendant I/O Screen

To access this screen push number 7 on the I/O screen.

The travel pendant screen shows the voltage and position of the joystick located on the pendant.

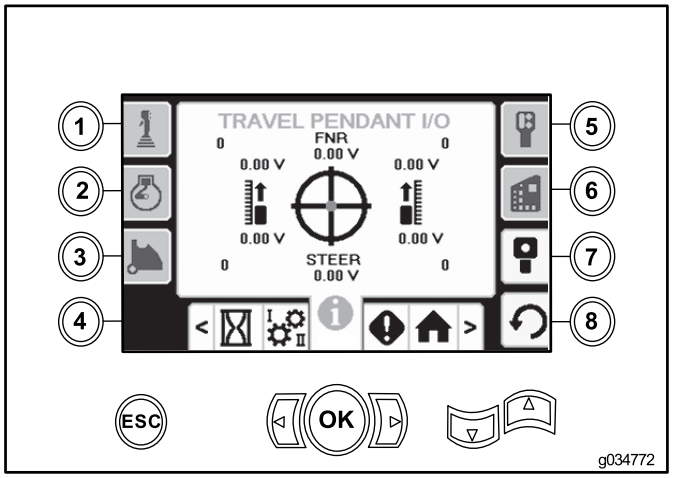

Figure 21

The red dot will be in the center of the target and the FNR (forward, neutral, reverse) and Steer voltage shows 2.5 V prior to allowing the drill to move. If the red dot travels outside of the outermost black ring, the pendant should be serviced or replaced with a new pendant. The indicators to the right and left of the circle show the direction of the track travel. The voltages show a range from 0 to 10.0 V.

Errors and Machine Information Screens

Drill Errors Screens

To access this screen push number 1 on the Errors and Machine Information screen.

This screen displays any drill errors.

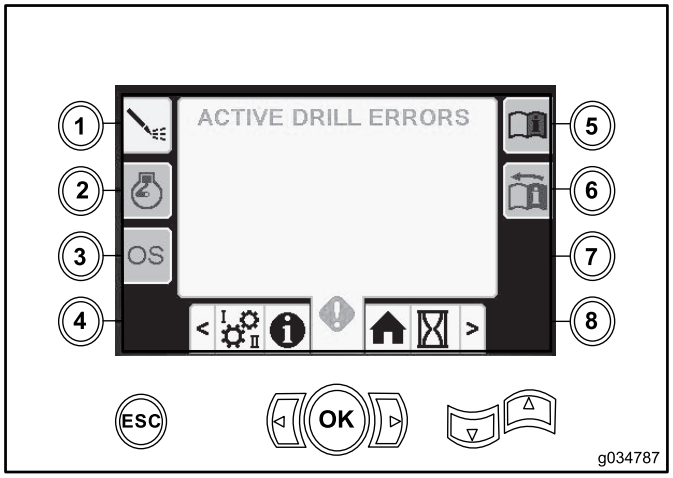

Figure 22

Engine Errors Screen

To access this screen push number 2 on the Errors and Machine Information screen.

This screen displays any engine errors.

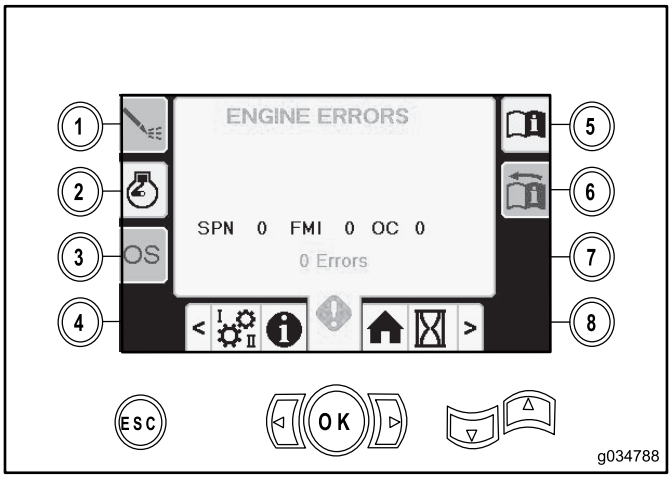

Figure 23

Machine Information Screen

To access this screen push number 3 on the Errors and Machine Information screen.

This screen displays the machine information including the model, serial number, and software version.

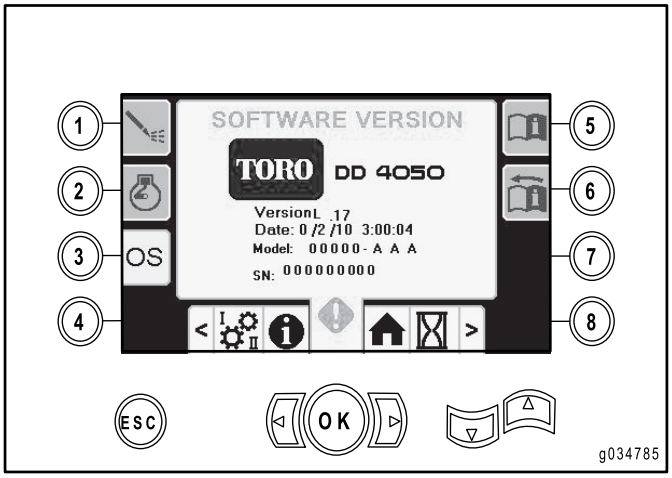

Figure 24