Section 4.1

Machine Operation - Operator's Cab

Figure 1: IQAN MDL display

IQAN MDL Display Screen

The machine is equipped with an IQAN MDL screen that can monitor and display vital engine and hydraulic information and provide feed back to the operator. The following items are displayed on the main screen of the IQAN MDL.

Hydraulic Oil Temperature Gauge

(Reference #1, Figure 1)

The hydraulic oil temperature gauge monitors the temperature of the hydraulic oil in the tank.

Max Operating Temp according to ISO rating

ISO 32 . . . . . 170°F (77°C)
ISO 46 . . . . . 190°F (88°C)
ISO 68 . . . . . 210°F (99°C)

If high hydraulic oil temperature is a re-occurring problem, check the oil cooler fins for debris or look for a possible pump or valve relief set too low that is allowing oil to dump over it and creating excessive heat.

Engine Tachometer

(Reference #2 Figure 1)

The engine tachometer monitors the engines revolutions per minute. The engine's RPM can be adjusted according to the operators preference. The maximum RPM of the engine should never exceed 1800 RPM.

Engine Oil Pressure Gauge

(Reference #3, Figure 1)

NOTICE

Operating the machine with low engine oil pressure will cause severe damage to the engine.

The engine oil pressure gauge monitors engine lubricating oil pressure.

Normal operation: . . . . . Varies
@ Cold idle. . . . . 70 - 80 PSI
. . . . . (480 - 550 kPa)
@ Hot idle. . . . . 35 - 40 PSI
. . . . . (210 - 275 kPa)

Engine Water Temperature Gauge

(Reference #4 Figure 1)

The engine water temperature gauge monitors the engine's cooling system temperature.

Normal operation:. . . . . 160° - 210°F
. . . . . (70° - 99°C)

If the engine water temperature gauge is higher than 210°F (99°C) , return the engine to an idle until it cools down. If engine overheating is a re-occurring problem, check the radiator/oil cooler fins for debris. Keep the area in front of the radiator clean for maximum cooling air flow.

Indicator Lights

System Voltage

(Reference #5, Figure 1)

The voltmeter monitors the condition of the machine's electrical charging system.

If a low battery charge is indicated, a red battery symbol will appear and warn the operator. The red battery symbol will also appear if the electrical system is over charging.

If the red battery symbol stays on, have the batteries and the engine's charging system checked. The machine can operate with a low battery charge, but IQAN controls may become unstable.

Low Fuel Warning

(Reference #6, Figure 1)

The Low Fuel Warning Light is used to warn the operator of a low fuel level in the fuel tank and help prevent the operator from running the machine out of fuel. The Low Fuel warning indicator is YELLOW.

Parking Brake Warning

(Reference #7, Figure 1)

The Parking Brake warning indicator is used to alarm the operator that the parking brake is "ON". The parking brake switch is located on the left joystick control pod. Pressing the parking brake switch will disable the parking brake and turn off the indicator light. When the indicator light is out the auto parking brake feature will be enabled and when either one of the travel pedals are pressed the parking brake will be released.

Hydraulic Motor Speed

(Reference #8, Figure 1)

The Hydraulic Motor Speed Indicator is used to tell the operator if the hydraulic wheel motor is in the Low (snail), or High (rabbit) speed condition.

Hydraulic Oil Level

(Reference #9, Figure 1)

The machine is equipped with two sensors which monitor the hydraulic oil level in the tank. The Fill Hydraulic Oil sensor and the Low Hydraulic Oil Sensor.

If the oil level is getting low a yellow indicator will light with a "ADD HYD OIL" message.

If the oil level is critically low then a red indicator will light with a "LOW HYD OIL" message and siren.

⚠ WARNING

low hydraulic oil level can expose suction filters to air and cause catastrophic damage to the pumps keep hydraulic oil level in the upper site glass sight gauge at operating temperature.

The hydraulic oil level can also be monitored by a visual inspection on the hydraulic tank using the two site glasses that can be viewed from the back of the hydraulic tank. It is a good policy for the operator to check oil level before and after every shift.

Hydraulic Filter Bypass Warnings

(Reference #10, Figure 1)

The hydraulic filter warning indicator will alert the operator of a possible plugged or contaminated hydraulic filter. If this condition exist the yellow filter indicator will illuminate and it will also tell the operator if it is the return, case drain or charge filter that is causing the problem.

⚠ WARNING

Preventing hydraulic filter bypass is very important. Unfiltered oil bypassing the filters will enter the hydraulic tank and begin to contaminate the entire hydraulic system.

Excessive hydraulic oil filter back pressure is the

result of a dirty filters or cold oil being forced through the filters. Change filters according to the preventive maintenance schedule in this manual and always after a major component failure. During cold starts, always allow the machine to reach normal operating temperature before running at full throttle. Following These simple rules will help prevent costly down-time and increase the life of your equipment.

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Upper Dash Controls:

Ignition Key Switch

(Reference #1, Figure 2)

NOTICE

Keep the ignition key in the "RUN" position while the engine is running. Do not turn the ignition key to the "START" position while the engine is running. Damage to the engine could result.

OFF - Turn the ignition key to the "OFF" position to shut down the engine. Insert and remove the ignition key from this position only. See Figure 3.

START - Turn the ignition key all the way to the right to crank engine. Release the key when the engine starts. Do not crank the engine for more than 30 seconds. If the engine doesn't start, return the ignition key to the "OFF" position and before trying again. Always wait for the "Wait to Start" light to turn off before cranking over engine.

RUN - The ignition key will automatically return to this position when it is released after the engine starts. (In extreme cold weather start-up make sure key returns to the run position after starting engine.)

Hydraulic Tank Vacuum / Vent Switch

(Reference #2, Figure 2)

This is a On / Off / "Momentary On" rotary switch with a red indicator light. When this switch is in the "Vacuum" position. The RED indicator light will be on, the vacuum pump will be activated, and the key switch will be disabled.

WARNING

The vacuum system is only meant to be used until a leak can be repaired. Never leave the machine unattended while the vacuum system is on.

Always make sure to vent the hydraulic tank for 60 seconds before start-up after using the vacuum system. Failure to do so could cause severe damage to the hydraulic system.

Turning on the vacuum pump when the machine is running could cause major damage to the hydraulic pumps. Always shut down engine first.

Figure 2: IQAN MDL display

The Hydraulic Tank Vacuum switch turns on a small vacuum pump located in the engine compartment. The vacuum pump can be used to minimize oil loss by pulling a vacuum on the hydraulic system. This is important if there is a hydraulic system leak or if hydraulic components need to be remove for service.

When the Vacuum / Vent switch is held in the Momentary position. This will activate the hydraulic tank vent system and will release any pressure or vacuum in the hydraulic tank.

NOTICE

It could take up to 60 seconds to fully vent the hydraulic tank.

The hydraulic tank is pressurized by the turbo of the engine. This is done to help stop cavitation problems with the hydraulic pumps and motors. If a leak occurs on the machine or repair is to be done on the machine that requires the removal of hydraulic hoses or components. The Vent switch can be rotated “clock-wise” and held until the pressure built up in the tank is released.

The vent should also be used after using the vacuum system to release any vacuum left in the hydraulic tank to prevent cavitation of hydraulic pumps upon start-up.

Exterior Lights “ON/OFF”

(Reference #3, Figure 2)

GREEN colored switch used to turn on the exterior work lights.

Push down on top of switch to turn the exterior lights “ON”. Push down on bottom of switch to turn exterior lights “OFF”.

Hour Meter

(Reference #4, Figure 2)

The hour meter displays the total hours of the machine. The engine running hours are also available on the engine screen of the IQAN MDL.

Radio

(Reference #5, Figure 2)

This is the Am/Fm and Weatherband Radio. The Radio controls are further explained on page 4.1.8.

MP3 / Aux Port

(Reference #6, Figure 2)

The MP3/Aux port is a place to connect your MP3 player or Aux audio player to the AM/FM radio. Pressing the AUX button on the radio will enable this port.

Headphone Jack

(Reference #7, Figure 2)

The headphone jack can be used to outfit the operator with headphones when listening to the AM/FM radio.

NOTICE

Using headphones can impair your ability to hear warning sirens and other noises.

Engine / Hydraulic Oil Pre-Heater

(Reference #8, Figure 2)

This is the control panel timer for the (Optional) pre-heater. See section 4.3 or the included manual on how to set the pre-heater timer.

MDL Screen Overview

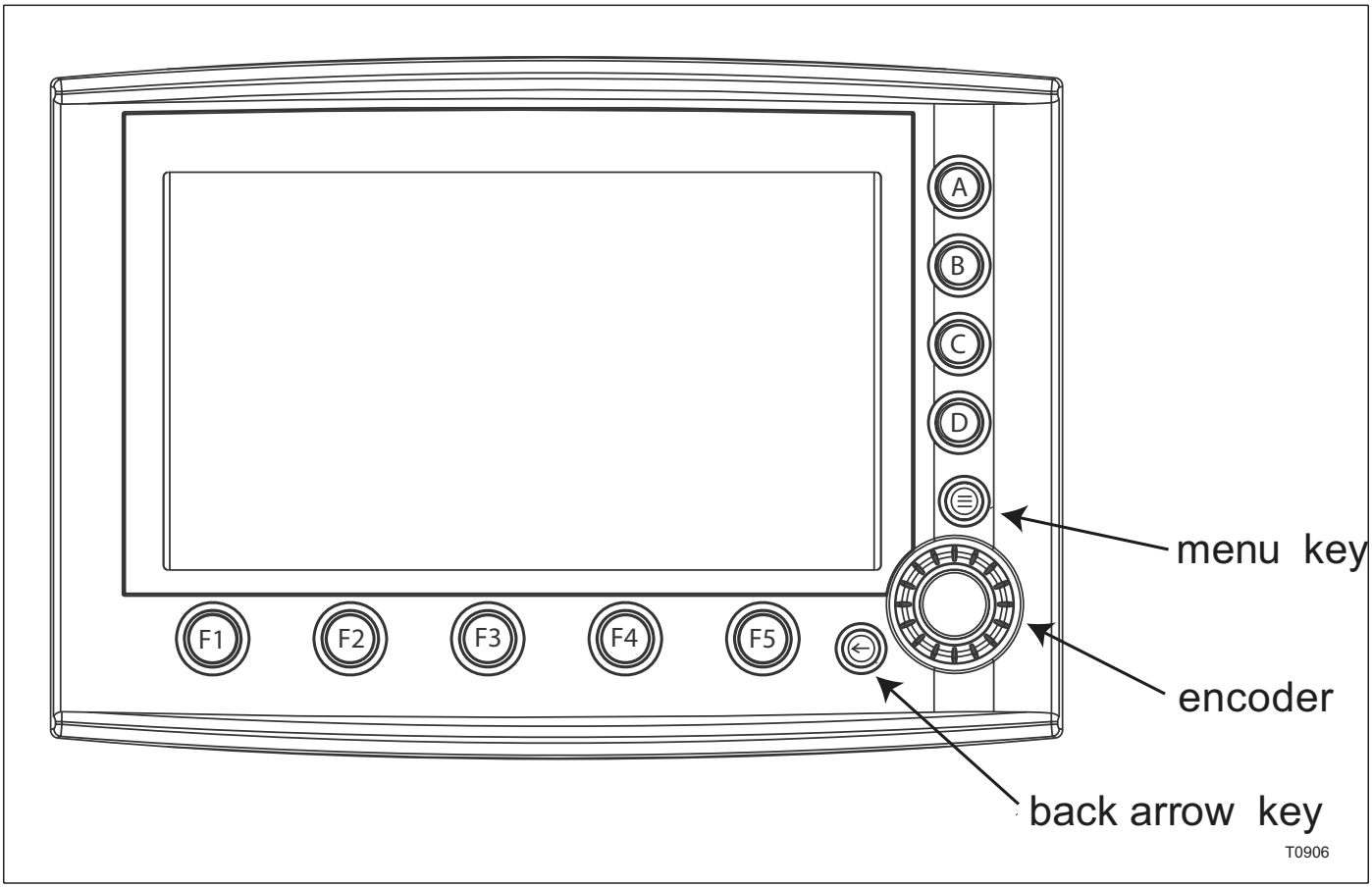


Figure 3: IQAN MDL display

Features

IQAN-MDL has a 6.5” transflective screen for easy readability in a wide range of ambient light conditions. There are eleven buttons and a rotary encoder knob for input and menu selection. The functionality of the different controls are listed below

Encoder

The encoder is of the Jog shuttle type (rotary knob with push button). Pushing the knob equals ’enter’. The knob can be programmed so that its push button feature can act as a virtual input button and perform some function depending on the current display page. Rotating the shuttle knob can be programmed to adjust values, select from items in a table or cycle thru display pages.

Buttons

The buttons are arranged on the bottom and right hand side of the display.

• F1 thru F5 function buttons.
Programmable ’soft keys’ that can be configured by the user to bring up a display page, bring up an adjustment group or act as a virtual input.

Below is a list of a standard button configuration. Some machines may have a custom configuration. Contact your dealer or TimberPro factory. If you have any questions.

F1 - Engine Information

Select F1 will allow you to see information about your engine. This will include: Pressure, Temps & Fuel Consumption.

F2 - Hydraulic Troubleshooting Information
Selecting (F2) will allow you to view troubleshooting information about the machines hydraulic control system. Included items would be: Hydraulic pressure, Oil Temps, and Information about the IQAN control system for each machine function.

F3 - Machine Control Layout Selection
Selecting (F3) will allow you to view information about the machines joystick and button configuration. Here you will be able to change to different operator control schemes.

F4 - Machine Service Information
Selecting (F4) will allow you to view information about the machine. The information displayed would be: Machine Model and Serial Number, Engine Model and Serial Number, Attachment Model and Serial Number, Fuse and Relay locations and Button Testing.

F5 - Operator Adjustments Screen
Selecting (F5) will be the most important information in reference to different adjustments and especially operator control. These adjustmetns would include:

- Reverse Fan Time
- Auto Parking Brake Time
- Auto Throttle Settings
- Operator Modes (1,2,3,4)
- Machine speed and ramp settings for each function.

When the machine leaves the factory all settings are for normal operation.
If a new operator wants to change any or all the controls to his liking he will push button “C” on the Operator Adjustments Screen to bring up control adjustment page. Then by selecting any of the control functions will bring up a dial on the screen.
On the bottom of the screen you will need to select the desired direction you would like to adjust.
On the right side of the screen in a vertical position opposite A,B, C,D will be the min, max, start & stop reaction time in milliseconds which can be changed within certain limits as indicated on the dial.
Once the desired function is adjusted to the likes of the operator click on the center of the encoder and this will set the function.
If you want to go back to factory settings push F3 to reset.

• **Menu button (three horizontal lines)**.
Always brings up the Menu page. The Menu Page will include things like:

Control Adjustments: Control adjustments are the operator can make adjustment to things like speed and ramp settings.

Measurement: The measurement feature is used to diagnose and trouble shoot IQAN system problems. Here you will be able to measure all inputs and outputs to the IQAN system.

Preferences: Preferences are where adjustments for the MDL screen can be made. Here things like backlighting, time and date, and languages can be set.

Info: Info is a place that machine and system information is stored and can be viewed.

• **Esc’ or BACK button (left arrow).**
Returns you to the previous display page.

⚠ WARNING

To avoid scratches, do not wipe or clean a dry display.

MDL Display Maintenance

Brightness
The brightness is easily adjusted by pressing the ’menu’ button and following the prompts to the backlight settings section.

Maintenance
The 6.5” transflective display is a high quality viewing interface and reasonable care should be taken to maintain it. The display can be cleaned with an LCD cleaning solution found in many stores. Use a lightly dampened lint-free, non-abrasive cloth when cleaning the display.

Radio

(Figure 4)

The Radio is a equipped with AM, FM and Weather Bands. It also has an auxiliary input located on the front face where a CD, MP3, or XM radio can be connected. The radio is also equipped with a job-site timer that can be used to keep track of working hours. The radio can also be converted to accept European radio frequencies.

1. Power Button (press to turn radio on or off)

2. Mute (press to mute radio)

3. Display Button (toggles between clock and radio functions)

4. LCD Display

5a. Axuiliary Input Button (press to listen to AUX Input)

5b. Axuiliary Input Jack (1/8” input jack to connect MP3, iPOD, portable CD player, or XM module)

6. Timer Button (press to access timer mode, press again to start timer, press button again to stop the timer, hold for 3 seconds to zero timer)

7a. Volume Up Button

7b. Volume Down Button

8. Setting the Clock (press display for three seconds to enter clock setting mode. press Tun- to adjust hours and Tun+ to adjust the minutes. when no adjustments have been made for 10 seconds the radio will return to normal operation)

9. Audio and Menu Adjustment Button (press once to enter audio adjustment mode. press and hold for three seconds to enter menu setup mode)

10. Band Select Button (press to select AM or FM)

11. Manual Frequency Tuning Buttons

12. Seek Frequency Button

13. Station Preset Buttons (to save frequency presets tune radio to desired station and hold desired button for three seconds)

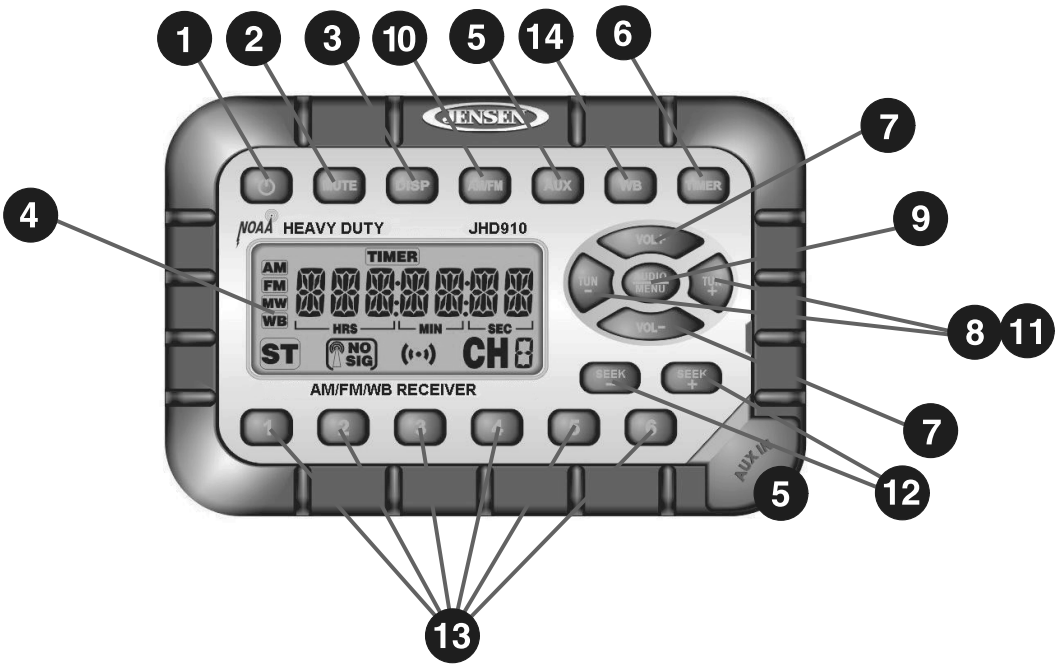


Figure 4: Radio Controls

T00010

A/C & Heater Control Panel

1) Engine Diagnostics Connector

The Engine Diagnostics Connector is supplied to give the engine technician a place to connect into the engines J1939 Can Bus system. In the event that there is an engine problem that requires a technician to connect a laptop to the engine please inform the technician of the location of this connector.

2) Power Point

The Power Point Socket gives the operator a place to plug in 12 volt devices such as: Cell Phones, GPS Systems, or even CB radios. The Power Point is fused at 5 amps.

3) Fan Speed Select

The Fan Speed Select switch controls the speed of the A/C and Heater fans. This is a three position rotary switch. The first position is Low fan speed, The second position is Medium fan speed and the third position is High fan speed.

4) A\C or Heater Mode Switch

The Mode switch controls if the Air Conditioning system or the Heater system is going to be active. This is a three position rotary switch. The first position is activates the Air Conditioning system. The second position turns everything off, even the fans. The third position activates the Heater system.

5) Climate Control Adjustment

The Climate Control Adjustment is used to increase or decrease the temperature of the operator's cabin. Turning the control counter-clockwise will lower the temperature and turning the control clockwise will increase the temperature in the operator's cabin.

6) Defrost

When Defrost is needed in the operators cab. Turning the A/C & Heater Mode switch to the A/C position and then turning the Climate control Adjustment to the Hot position will help dry out the operator's cabin. You may also want to turn on the defrost fan located at the top of the operator's cabin and help circulate air in the cabin.

T0848

Seat Controls

1) Lumbar Control Lever

The Lumbar Control Lever is a two way adjustable lever for lumbar back support.

2) Seat Belt

The Seat Belt must be worn at all times while operating the machine.

WARNING

Seat belt and mounting hardware must be inspected for wear or damage before operating the machine. Replace the belt or mounting hardware if worn or damaged.

3) Backrest Adjustment Knob

Turn the knob and adjust the backrest angle to desired position.

4) Seat Forward and Backward Adjustment Lever

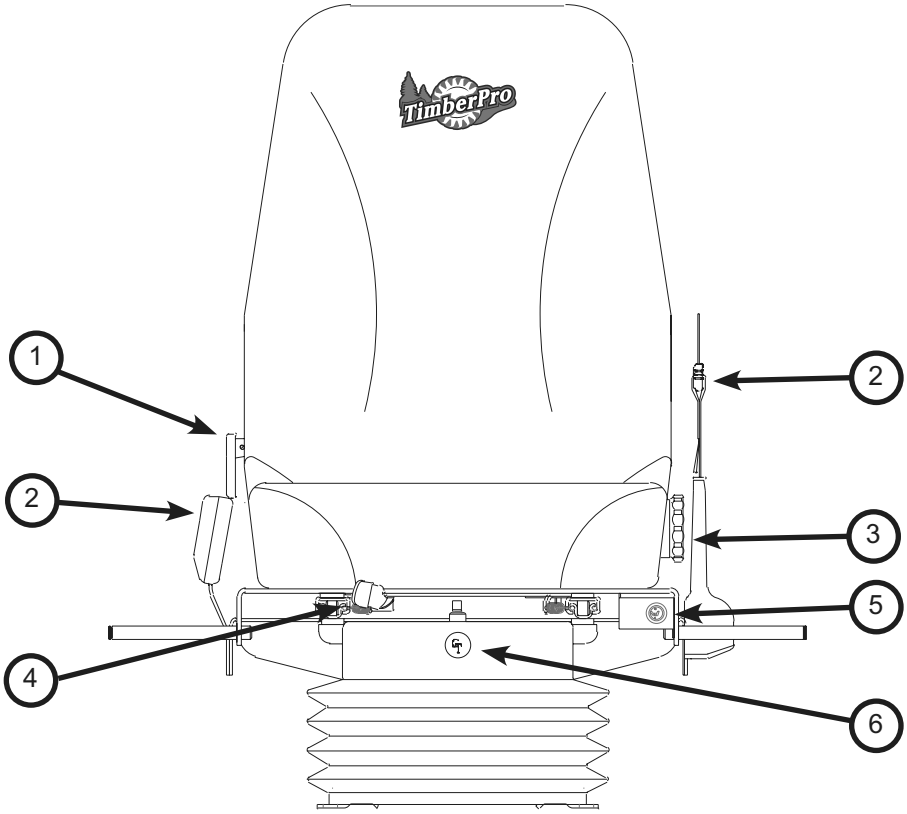
Push the lever to the left and slide the seat forward or backward to the desired position. Release the lever to lock the seat in place.

5) Seat Heater Switch (optional)

The Seat Heater is an available option. The heater has a three position switch for heat adjustment. The first position marked on the switch (II) is High. The second position marked on the switch (I) is Low. The center position of the switch is the Off position. The seat heater has a “one hour” automatic shut off. After one hour of continuous operation the seat heater will automatically shut off. The only way to restart the heater is to turn the switch to the off position and then back on again.

6) Seat Height Adjustment Knob

Push the knob in to increase air pressure and raise the seat. Pull knob out to decrease air pressure and lower the seat.



T00014

Figure 5: Seat Controls

Section 4.2

Machine Operation - Operator's Machine Controls

Engine Throttle Control

(See Figure 1)

WARNING

Operating the engine above an idle when cold can damage the piston rings and increase wear on all engine parts. Allow the engine to warm-up before operating above an idle.

The engine throttle control can be turned clockwise to increase the engine throttle. If the throttle control is rotated counter-clockwise it will return the engine to idle.

When operating machine never run the engine at a higher RPM than what is needed. Running the engine at high RPM's when not need can waste fuel and cause unnecessary wear on the engine and components.

System Arm Switch

(See Figure 1)

The System Arm switch is a momentary switch that signals the IQAN digital control system to activate the system controls. After making sure both the engine door and cab door are closed, pressing down on the arming switch will activate the system controls. At this time the System Armed message should be displayed on the MDL screen.

The system arm switch is part of the safety door interlock circuit. If the cab door or engine door is open the IQAN system will stop any output to control valves or the track drive pump.

Charge Heater Switch

(See Figure 1)

A wheel drive charge oil heater block is available as an option for helping to speed-up hydraulic system warming in colder climates. The Charge Heater uses track drive system charge oil and forces it across a relief warming the oil and recirculating it back to the hydraulic tank. The Charge Heater is set to shut off automatically at 70° F.

Press down on the "Charge Heater" switch to activate the charge oil heater. A message for the charge heater should now be displayed on the MDL screen. Push down on the charge heater switch again to de-activate the charge heater system.

NOTICE

NOTE: The IQAN digital control system is equipped with an interlock to prevent operation of the machine while the charge oil heater is ON. This must be done to prevent damage to the hydraulic system.

Parking Brake Switch

(See Figure 1)

The Parking Brake switch is used to activate the "auto parking brake feature". When the parking brake switch is pressed this will activate the auto parking brake and the parking brake indicator on the MDL should now be off. When the parking brake indicator is off anytime the track drive pedals are pressed the parking brake will be released, allowing the machine to move.

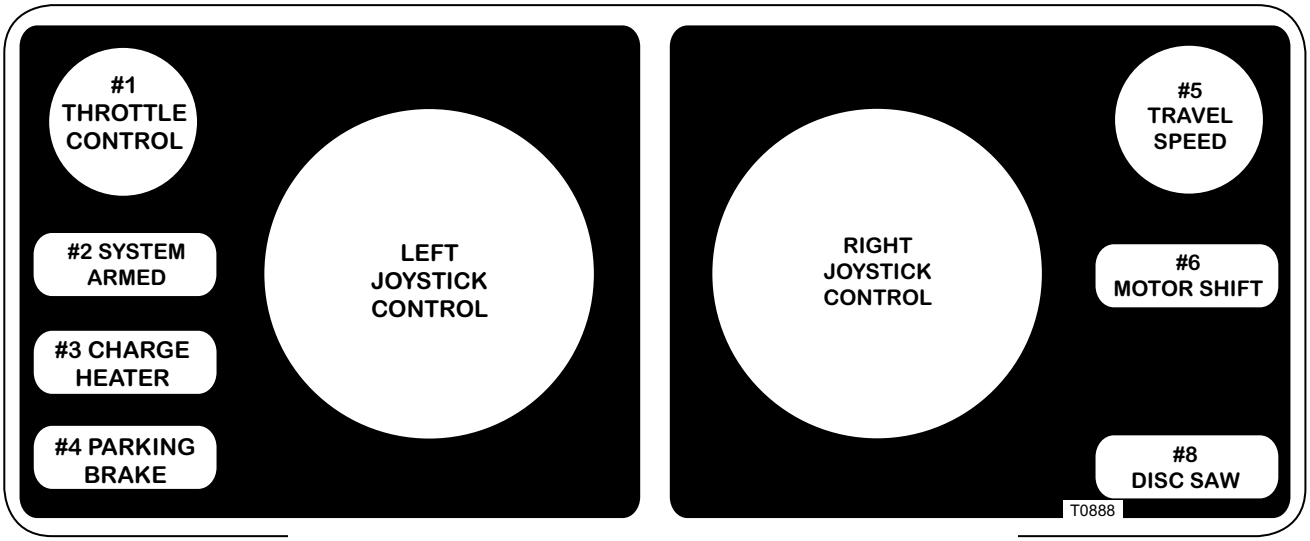


Figure 1: Machine Control Panels

Track Drive Speed Control

(See Figure 1)

The Track Drive Speed Control is used to fine tune the current output to the wheel drive pump. This feature is used to increase of decrease the speed of the machine.

If the control is rotated counter-clockwise the machines top speed will be slower. If the control is rotated clockwise the machines top speed will increase. This is very useful when traveling in harsh environments and maintaining a constant speed is difficult. Press the travel speed pedal down and then adjust the wheel drive speed control to the desired travel speed.

Hydraulic Motor Shift Switch

(See Figure 1)

The Hydraulic Motor Shift Switch used to shift the track drive motors between high and low displacement.

Push down the switch to move it to the “low” position for less speed and more power. Push the switch again to activate “HI” speed.

LOW - this setting is used for rough terrain, when loading the machine for transport and maneuvering the machine in tight places or near people.

HIGH - this setting can be used when traveling long distances over flat terrain.

Disc Saw Switch

(See Figure 1)

Push down on the switch to activate the disc saw circuit. Push down the switch again to move it to turn off the disc saw circuit.

⚠ WARNING

Always turn “Off” the Disc Saw switch and make sure the Disc Saw has come to a complete stop before exiting the machine. Read attachment operator’s manual for safety information and proper operation

Joysticks, Handles & Pedals

TimberPro prides itself on being able to provide custom machines with a variety of different attachments and controls handles. The following is just a brief view of some of the standard control layouts that TimberPro provides. Your machine controls may be setup different than the following diagrams. Please check the operator’s cab for your specific control layout.

⚠ WARNING

Changes to machine controls are done by making changes to the IQAN system program. Any changes to operator’s controls need to be done by an authorized TimberPro technician with permission from the TimberPro factory.

A few different standard handle and button configurations are available by making a selection using the MDL screen. By selecting the control icon (button F3).

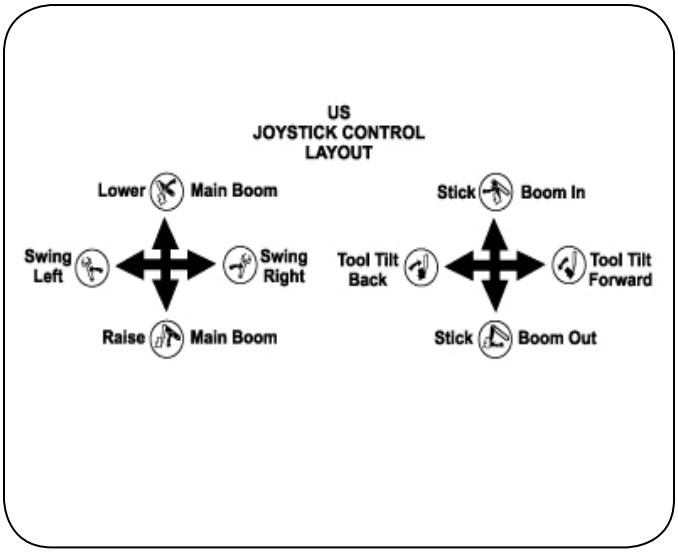


Figure 3: Joystick US Layout

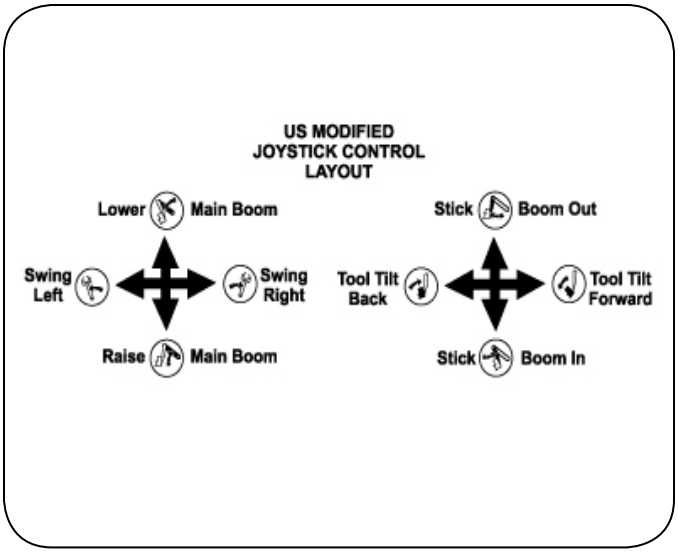


Figure 4: Joystick US Modified Layout

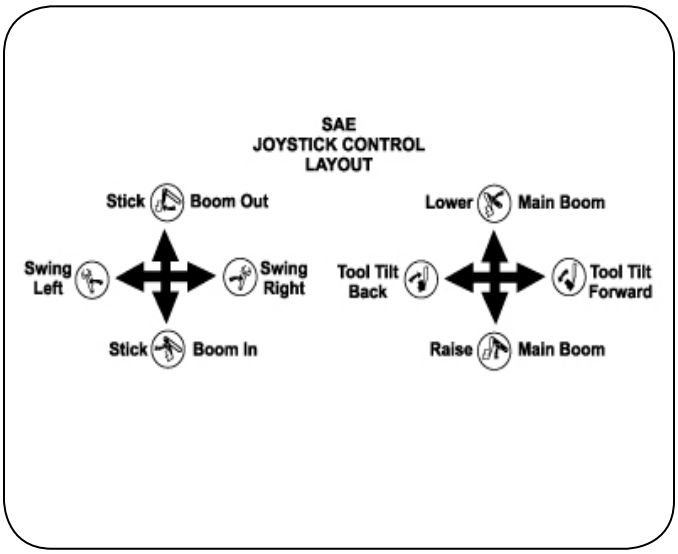


Figure 5: Joystick SAE Layout

Standard Cab Pedal Layout

The standard foot pedal control layout is as shown in figure 6. Pressing both foot pedals forward will cause the machine to move in the forward direction. Pressing both pedals down on the back of pedals will cause the machine to move in reverse. Pressing one pedal down in the forward direction and one in the reverse direction will make the machine counter-rotate.

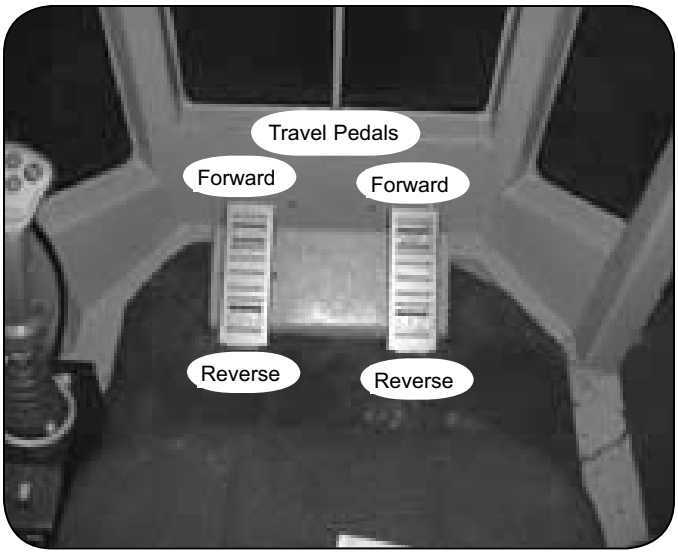


Figure 6: Cab Pedal Control Layout

WARNING

Controls can not be altered by changing the wiring of the joysticks, handles, or foot pedals. This needs to be done by making a program change by an authorized TimberPro technition. Making changes to the controls any other way can cause serious damage to the machine electronics.