

ProPilot

Electric Proportional Control System



IMPORTANT VERIFICATION OF WARRANTY REGISTRATION



DEALER WARRANTY INFORMATION & REGISTRATION VERIFICATION

It is imperative that the selling dealer registers this machine with Spearhead Machinery Limited before delivery to the end user – failure to do so may affect the validity of the machine warranty.

To register machines, go to the Spearhead Machinery Limited web site at www.spearheadmachinery.com, log onto 'Dealer Inside' and select the 'Machine Registration button' which can be found in the Service Section of the site. Confirm to the customer that the machine has been registered in the section below.

Should you experience any problems registering a machine in this manner please contact the Spearhead Service Department on 01789 491867.

Registration Verification

Dealer Name:
Dealer Address:
Customer Name:
Date of Warranty Registration:/...../..... Dealer Signature:

NOTE TO CUSTOMER / OWNER

Please ensure that the above section has been completed and signed by the selling dealer to verify that your machine has been registered with Spearhead Machinery Limited.

IMPORTANT: During the initial 'bedding in' period of a new machine it is the customer's responsibility to regularly inspect all nuts, bolts and hose connections for tightness and re-tighten if required. New hydraulic connections occasionally weep small amounts of oil as the seals and joints settle in – where this occurs it can be cured by re-tightening the connection – *refer to torque settings chart below*. The tasks stated above should be performed on an hourly basis during the first day of work and at least daily thereafter as part of the machines general maintenance procedure.

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Introduction

The PROPILOT control system is a fully proportional CAN control system with customisable speeds and joystick functions. The 10" high resolution touch screen has automatic brightness adjustment to ensure visibility in all light levels. This handbook details all the functions and procedures of the system to help you get the best out of your machine.

On start-up the screen will take a few seconds to load showing the loading screen below.



From any screen throughout the controls simply press the Spearhead logo in the top banner and that will take you back to the home screen. Icons that are off will be green, turning to yellow if activated and will be grey if not available/fitted.

12:34 1st January 2022

SPEARHEAD PROPILOT



Important Note

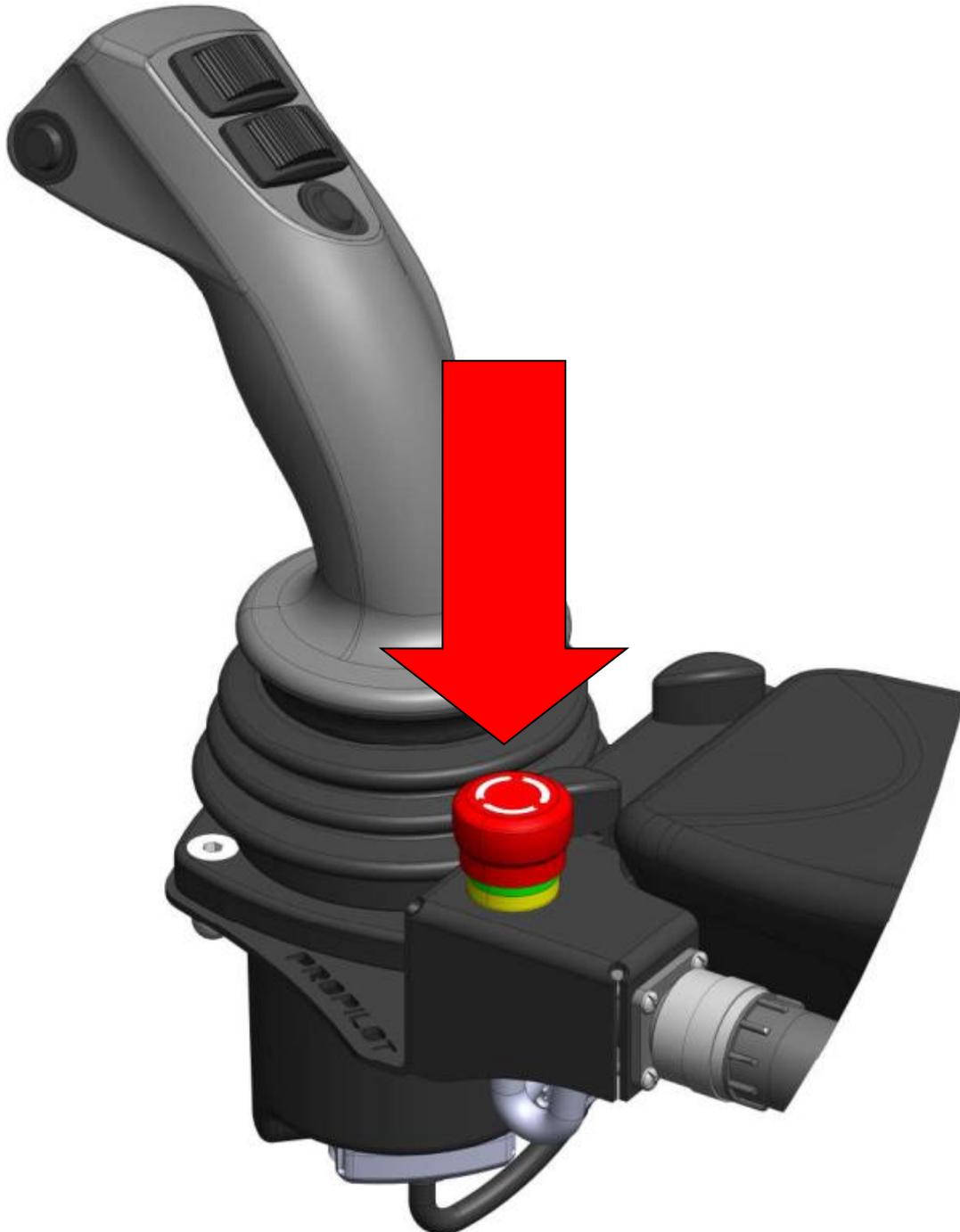
The information contained in this manual is correct at the time of publication. However, in the course of constant development, changes in specification are inevitable. Should you find the information given in this book different to the machine it relates to please contact the "After Sales Department" for advice.

Please ensure that this manual is handed to the operator before using the machine for the first time. The operator must fully understand the contents of this manual before using this machine.

(If the machine is resold the manual must be given to the new owner.)

Joystick

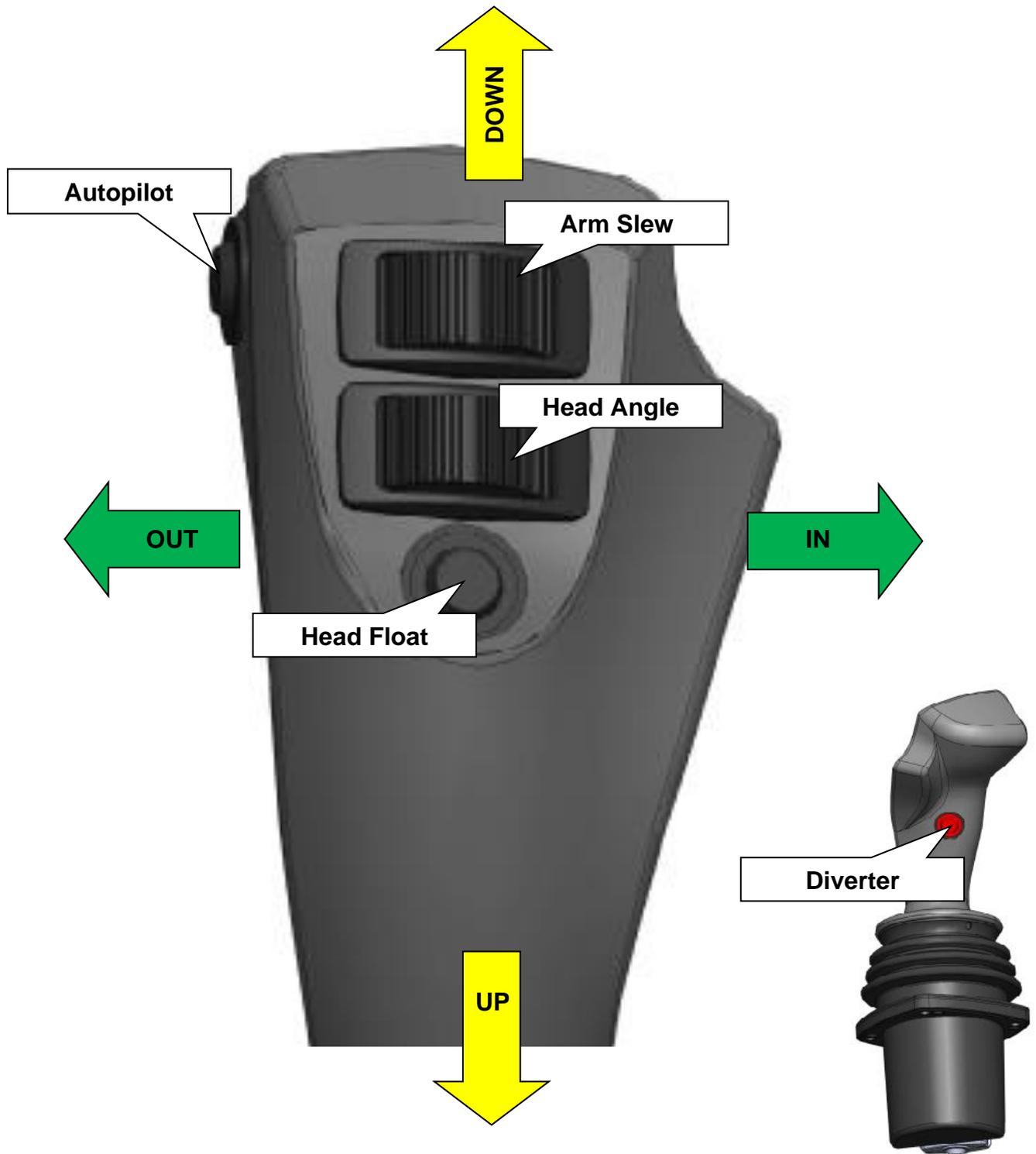
The joystick is mounted in at the end of the armrest near the Shut-Off button, this is to ensure if there are any issues the button can be depressed and the power to entire machine is isolated.



The joystick can be removed from the armrest via the two thumb screws and stored safely away in the carry case along with the screen and loom.

PROPILOT

The specific layout of the joystick is dependant on the mode selected, below is the standard mode A (LH) as the machine will leave the factory. Via the joystick configurator page, a further two option modes are available to customise operation.

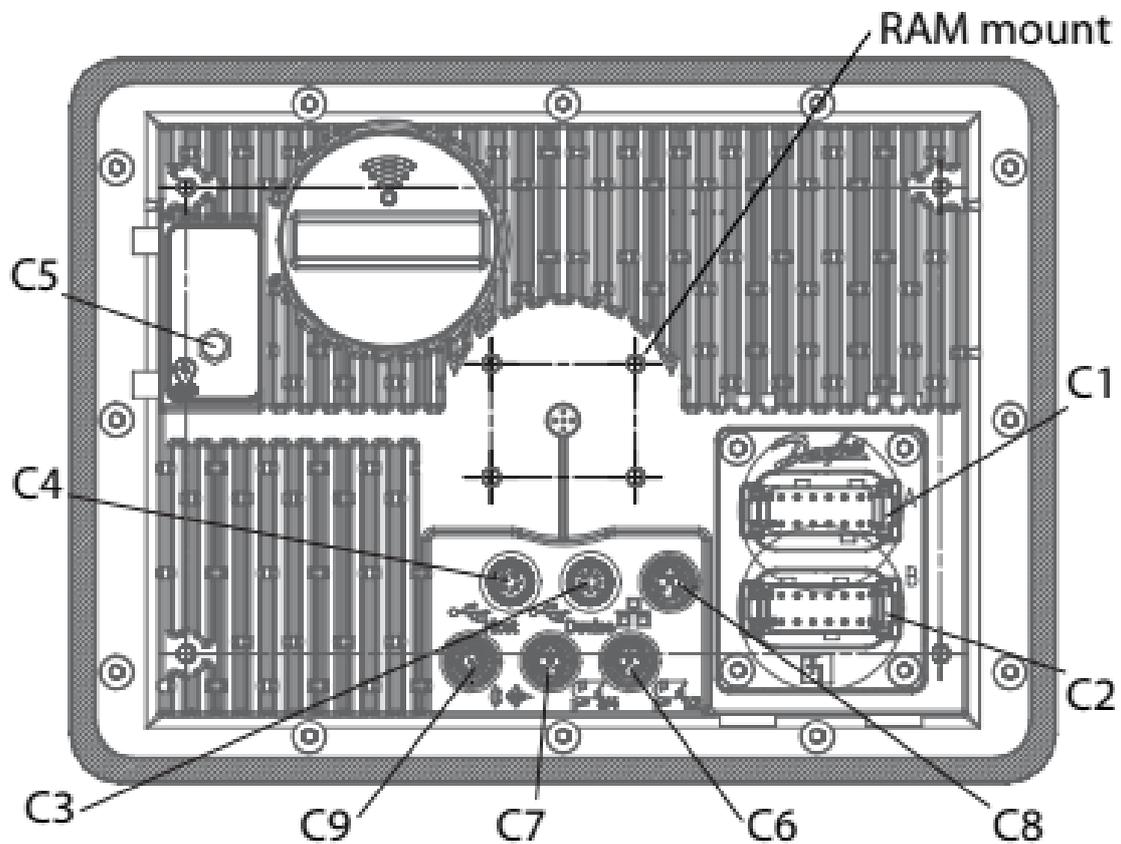
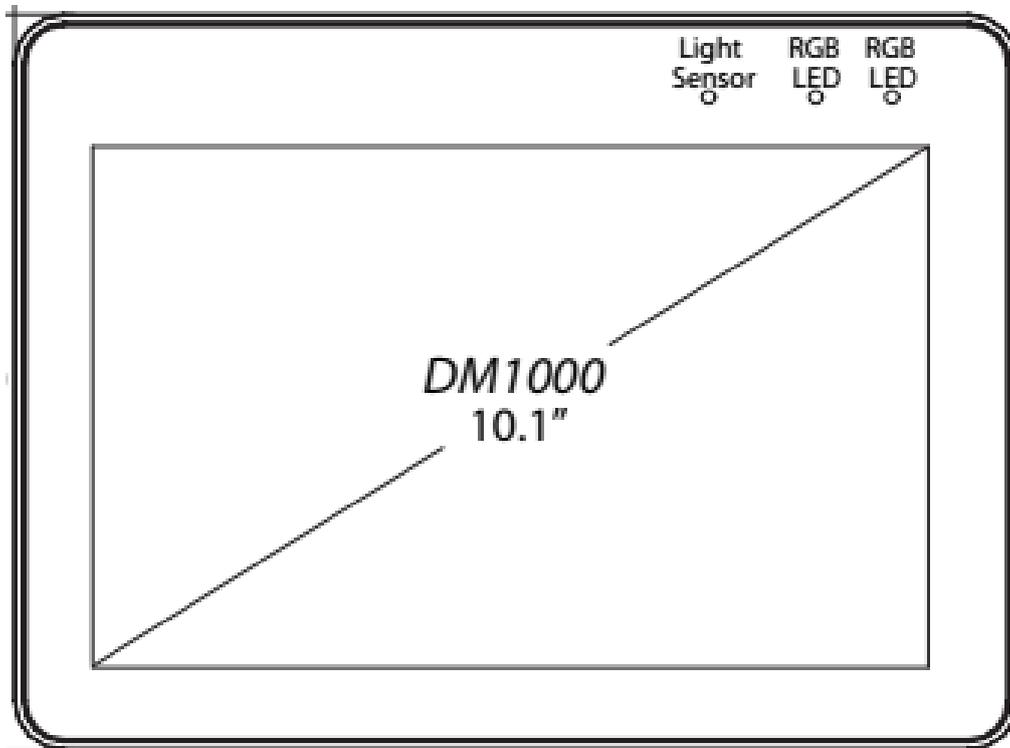


Located at the rear of the handgrip is the Diverter button (red), this allows more than one function to be shared by the same joystick input, different variations again can be selected via the joystick options.

PROPILOT

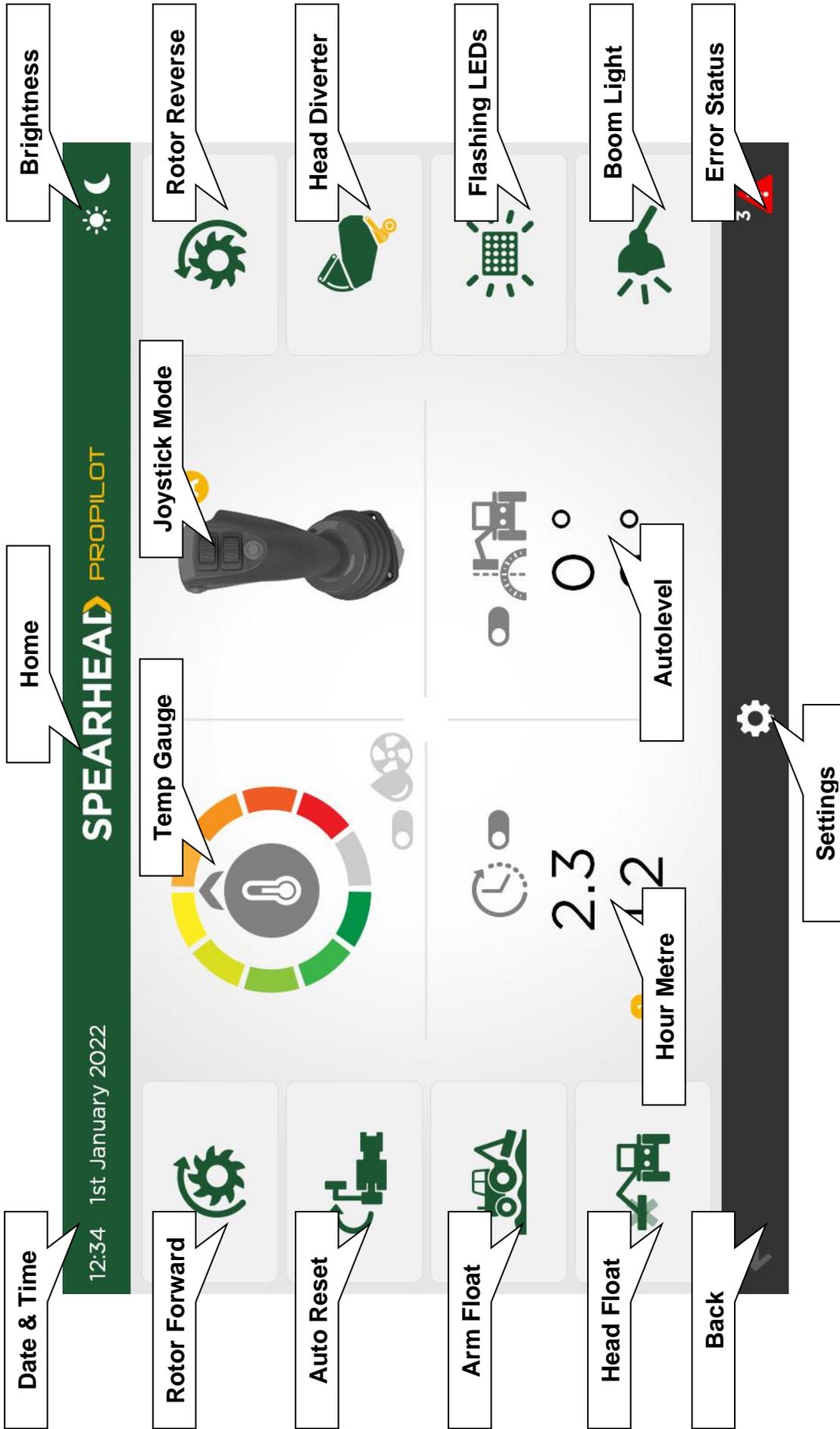
Screen

The large 10.1" touch screen can be mounted in a variety of locations due to the high-capacity triple RAM suction mount supplied.

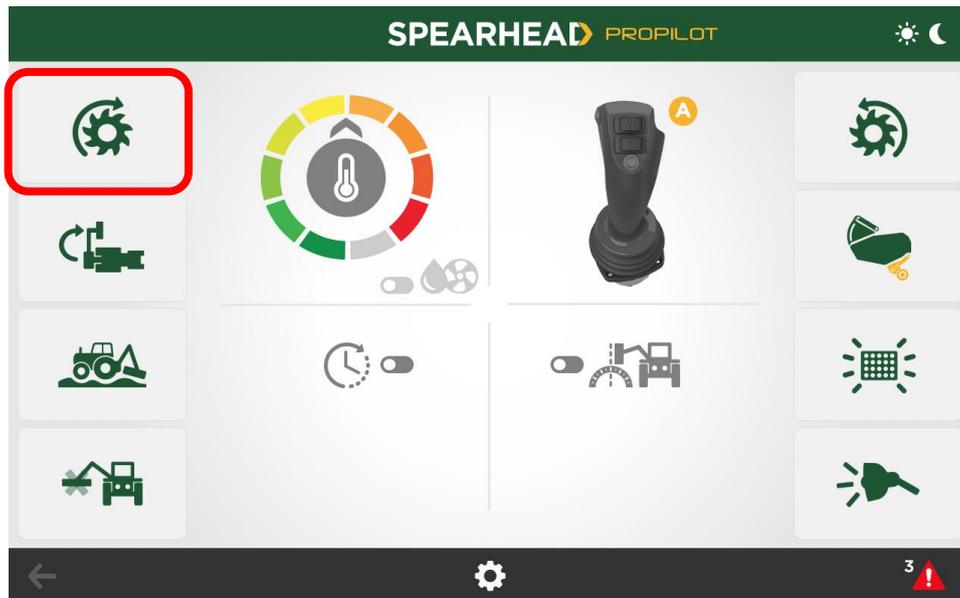


The 12-way connectors on the cab loom plug into ports C1 & C2 above.

PROPILOT

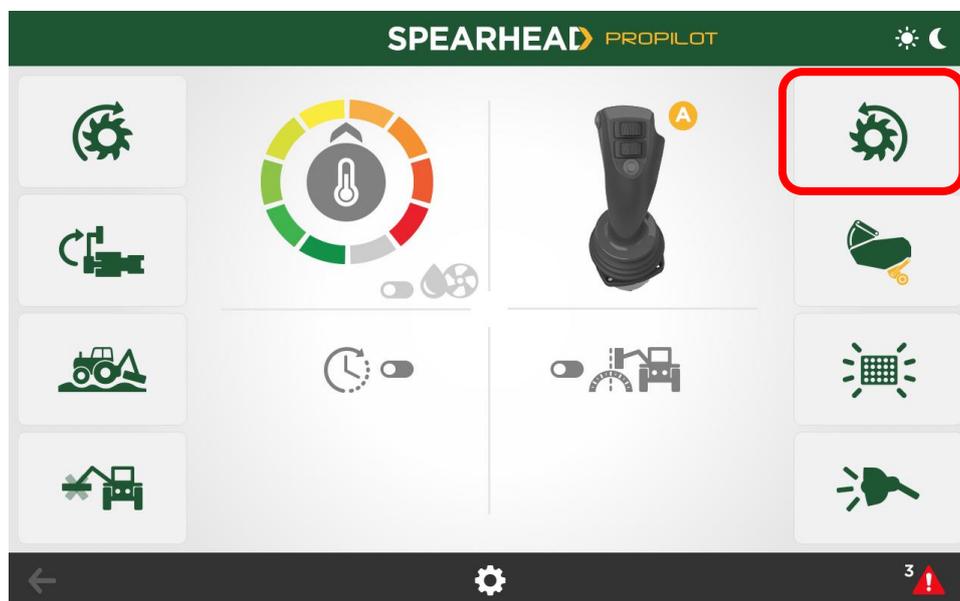


Rotor Forward



Press the Rotor Forward icon to activate, the icon will turn yellow. The cutting head valve will automatically ramp up over 5 seconds, this reduces the impact on the hydraulic and drive components. To deactivate just press the icon again, the icon will flash to signal the rotor is slowing.

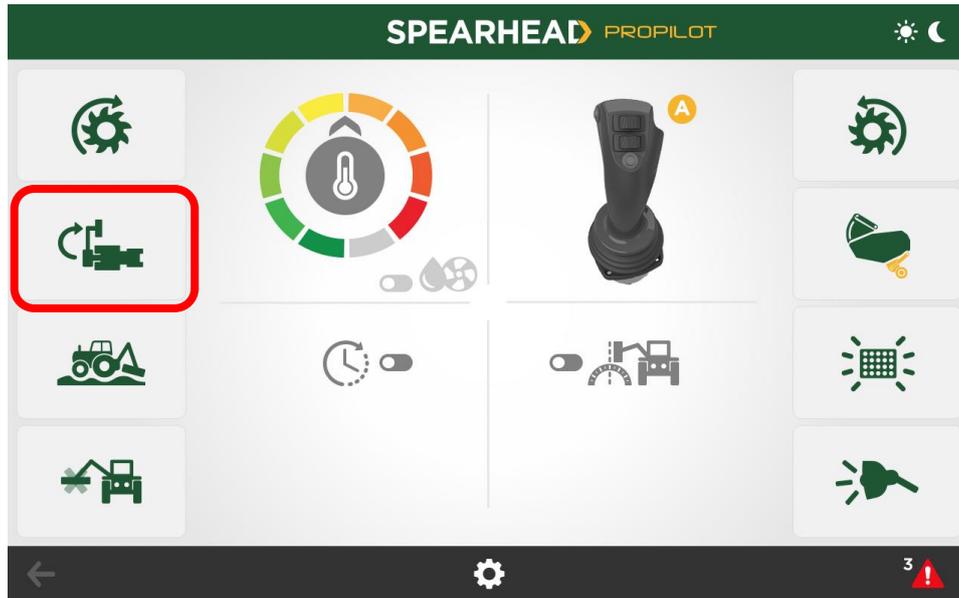
Rotor Reverse



The RR is activated and deactivated in the exact same way as the RF.

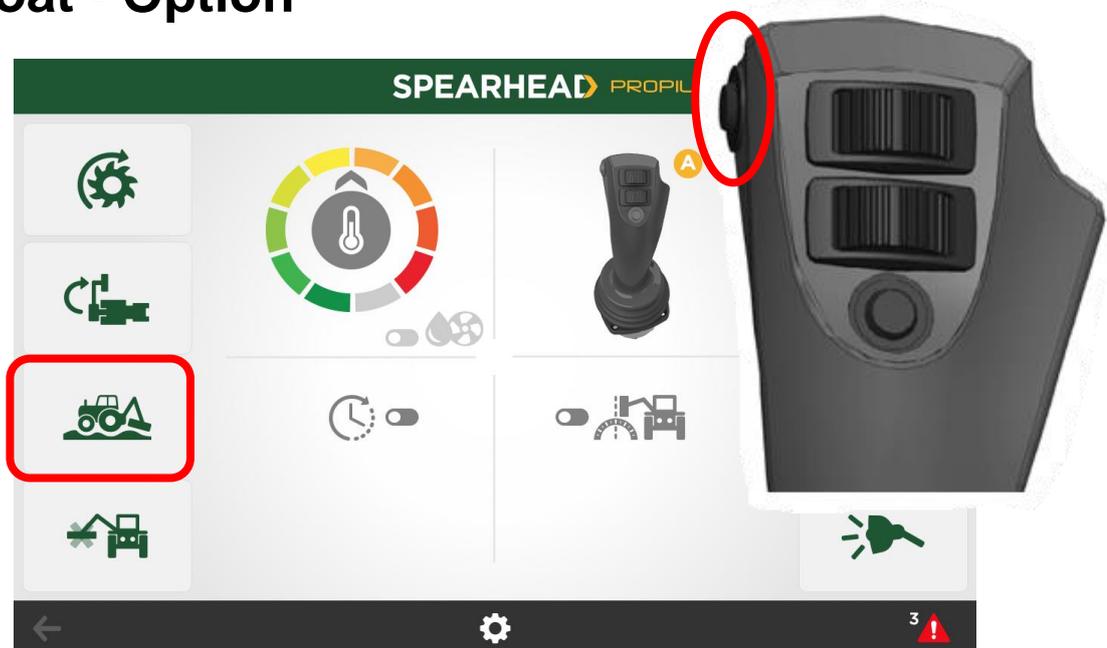
Warning! When either function is deactivated and the icon flashing, you will not be able to reactivate either as time must be given to the rotor to come to a complete stop. The rotor can continue to rotate or “freewheel” for up to 40 seconds on its own.

Autoreset



The Autoreset icon activates the AR valve, a safety feature to protect the structure of the machine and is best used when the cutting head is off the floor. The system is automatic, should you encounter an obstacle the arm can break back and up until cleared and the arm will “reset” back to the working position.

Arm Float - Option



Press the Arm Float icon to activate, the icon will turn yellow. This function allows the cutting head to follow the vertical contours of the ground whilst also taking some of the weight to lessen the stress on the cutting head. The function must be deactivated when packing up into transport. The function can also be activated/deactivated from the button on the joystick.

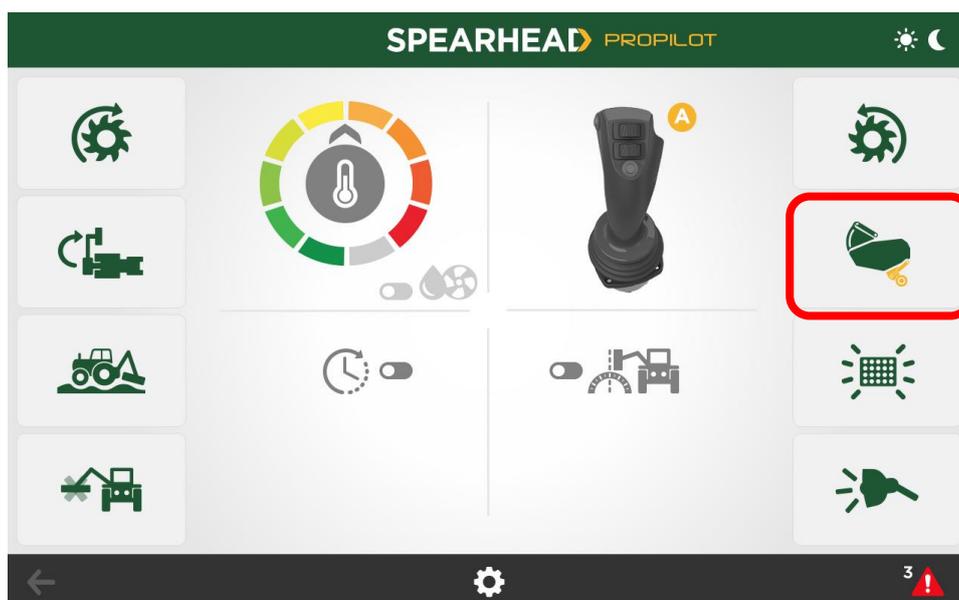
Head Float



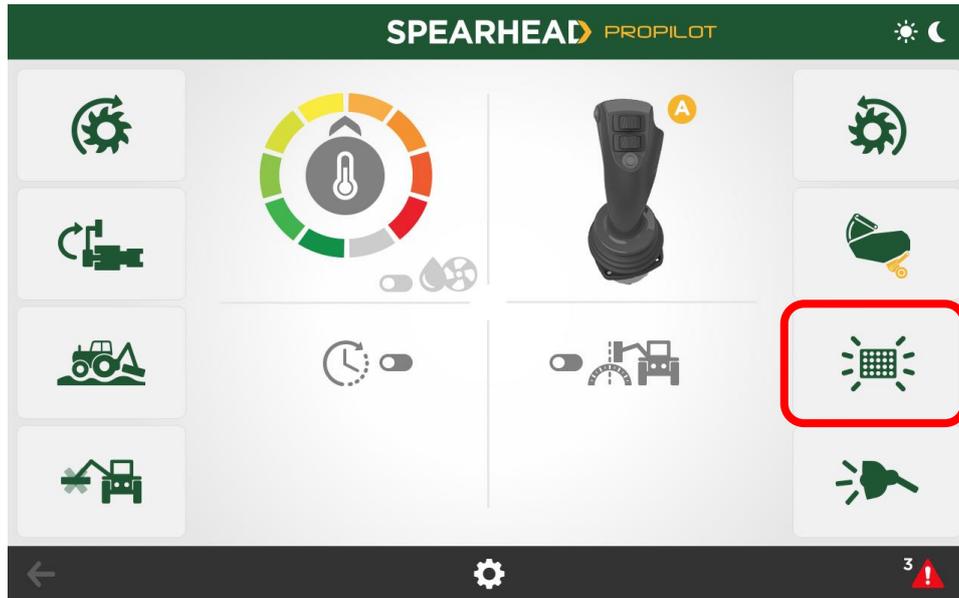
Press the Head Float icon to activate, the icon will turn yellow. This function allows the cutting head to follow the horizontal contours of the ground. The function must be deactivated when packing up into transport. If interrupted by operating the Head Angle the float will re-engage automatically. The function can also be activated/deactivated from the button on the joystick.

Head diverter - Option

The head diverter allows you to change between Hydraulic Roller and Hydraulic front hood. Press the icon once to cycle between HR and HFH, the relevant function will show as yellow.



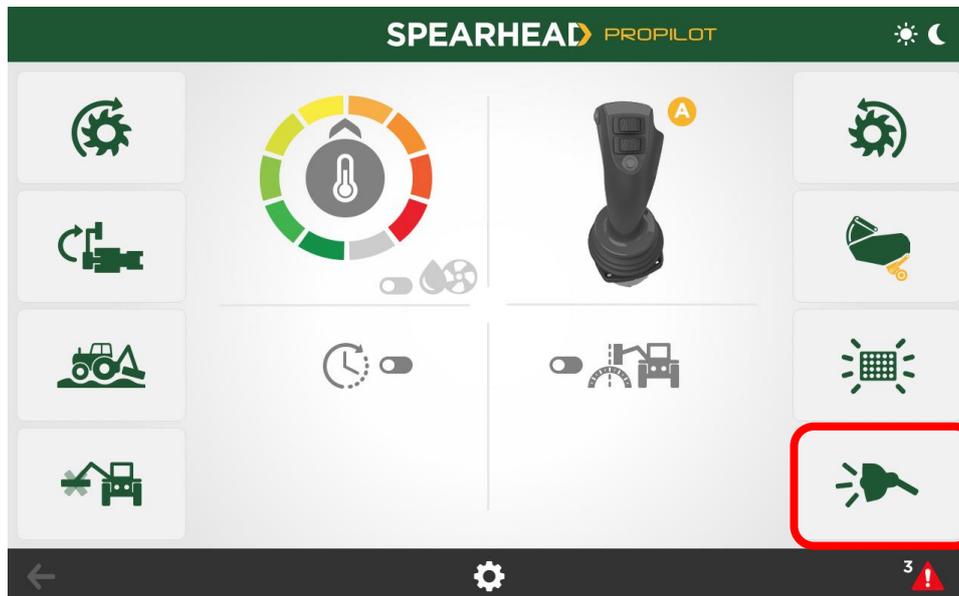
Flashing LEDs - Option



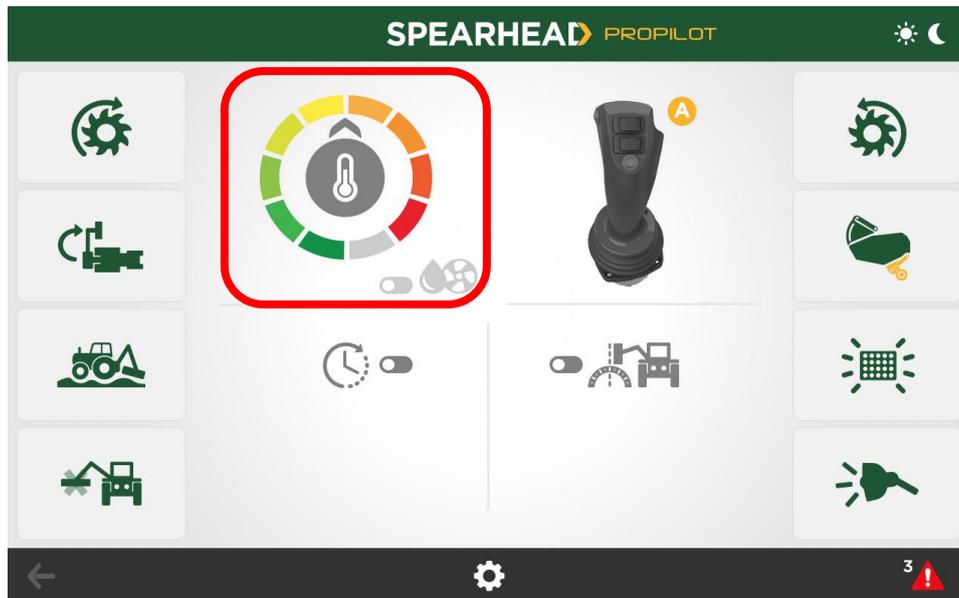
Press LED icon to activate flashing LEDs at rear of machine, the icon will turn yellow.

Boom Light - Option

The work light is situated on the second arm and is a dedicated light to illuminate the cutting head. Press once to activate, the icon will turn yellow.

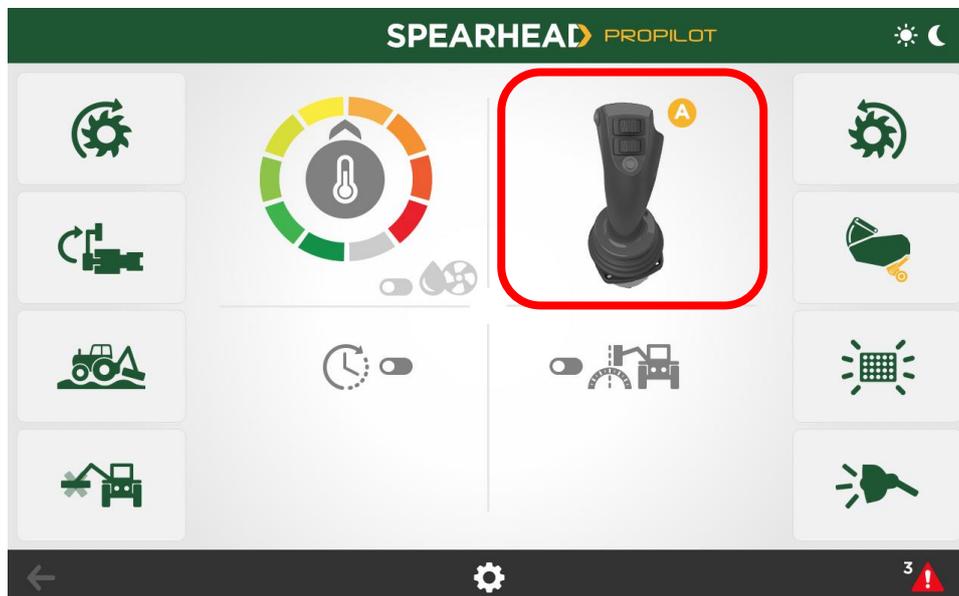


Temperature Gauge



A temperature sensor in the tank constantly monitors the oil temperature and displays the reading on the temperature gauge. The smaller icon allows you to monitor if the cooler is in operation.

Joystick Configurator



The Pro Pilot system allows you to select between three predetermined function patterns. This allows the operator to tailor the function positions to their own specific requirements. The letter in the top right signifies which mode you are in, to make a change tap the joystick and that will take you through to the options.

Option A



Option B

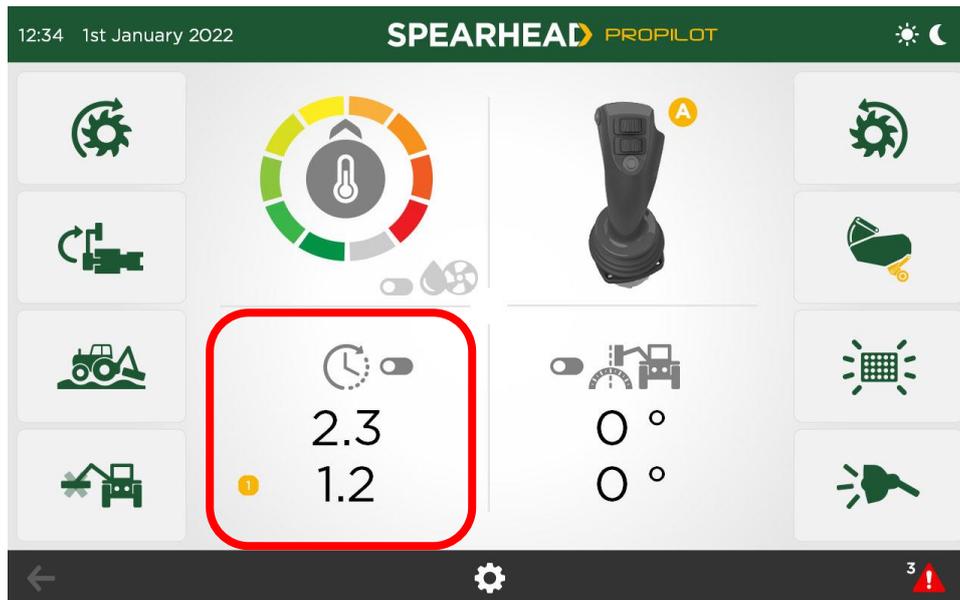


Option C



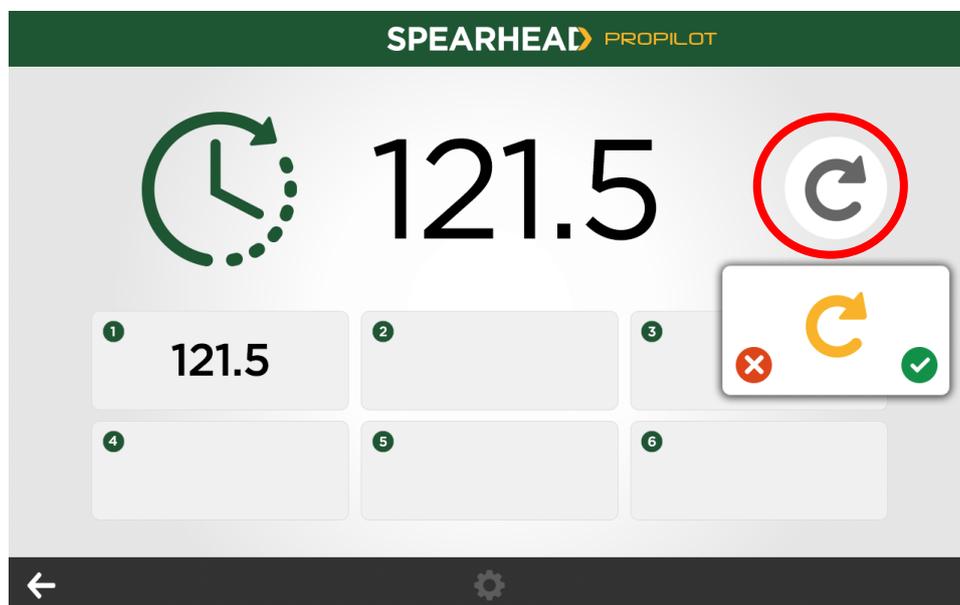
Use the arrow in the top right to scroll through the options, stop on the page showing your preferred option then press the Spearhead home or the back button and that option will be selected.

Hour Log



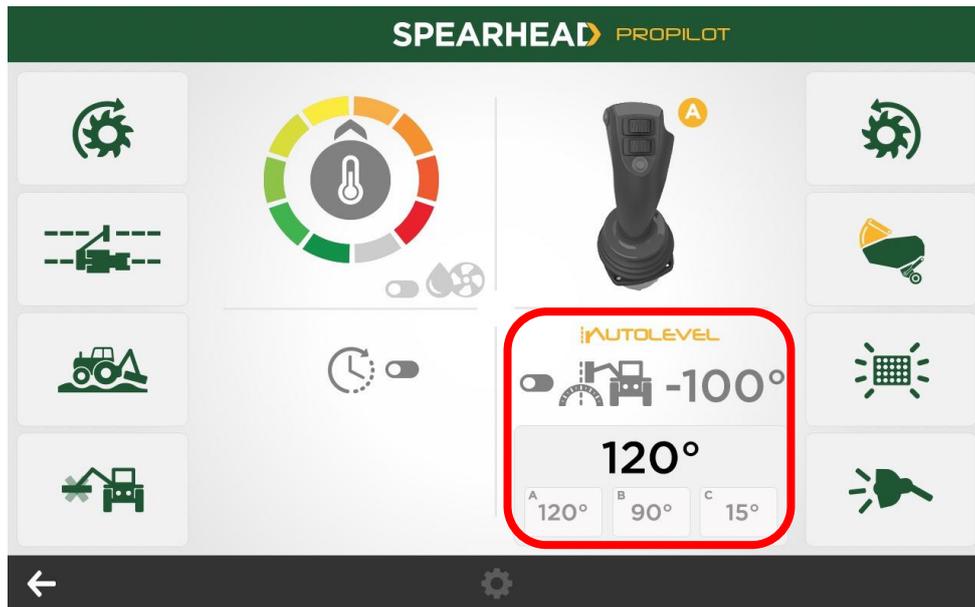
The hour log not only allows you to keep track of the total rotor hours but also allows you to keep a record of time spent on up to 6 jobs. When either rotor direction is selected the clock icon will turn yellow signifying the hours are being logged. This information is also used to assist with the service intervals of the machine.

Pressing the clock icon takes you through to the job screen.

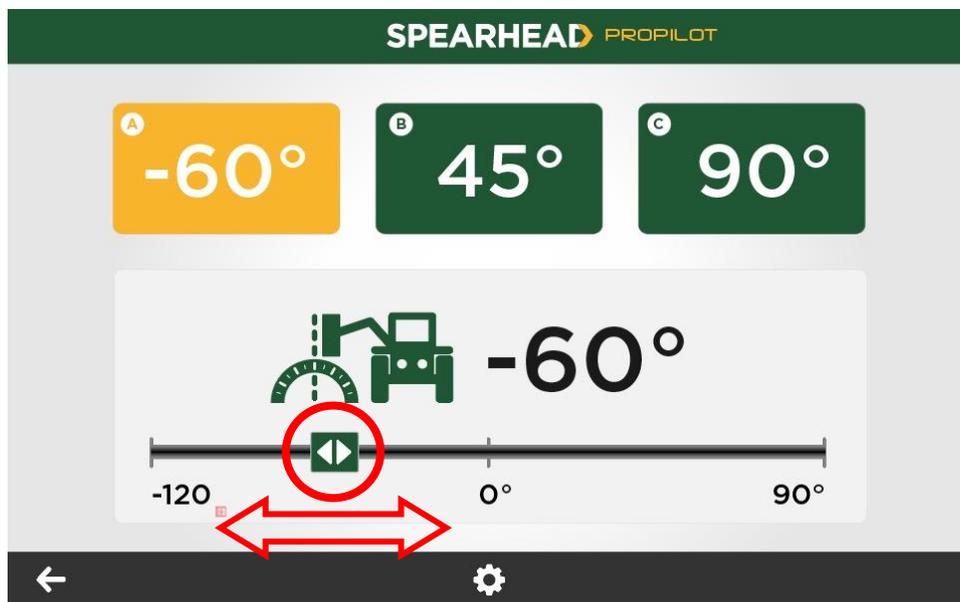


Press the desired number to activate that job and start recording, press again to deselect. To reset the count, ensure the job to reset is selected and press the reset button (circled) this will bring up the check box, press tick to reset or the cross to exit.

Autolevel

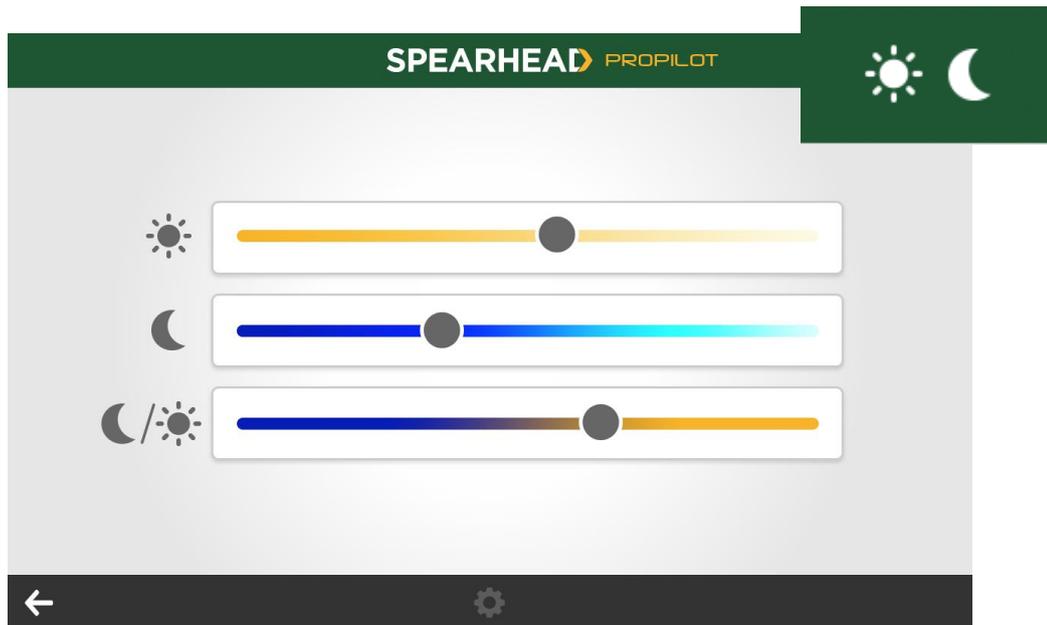


The Autolevel system not only allows you monitor the angle of the cutting head but also automatically control it at a pre-set value. To turn the function on press the top icon that will turn yellow. To set a value press the angle readout, that will take you to the settings screen.



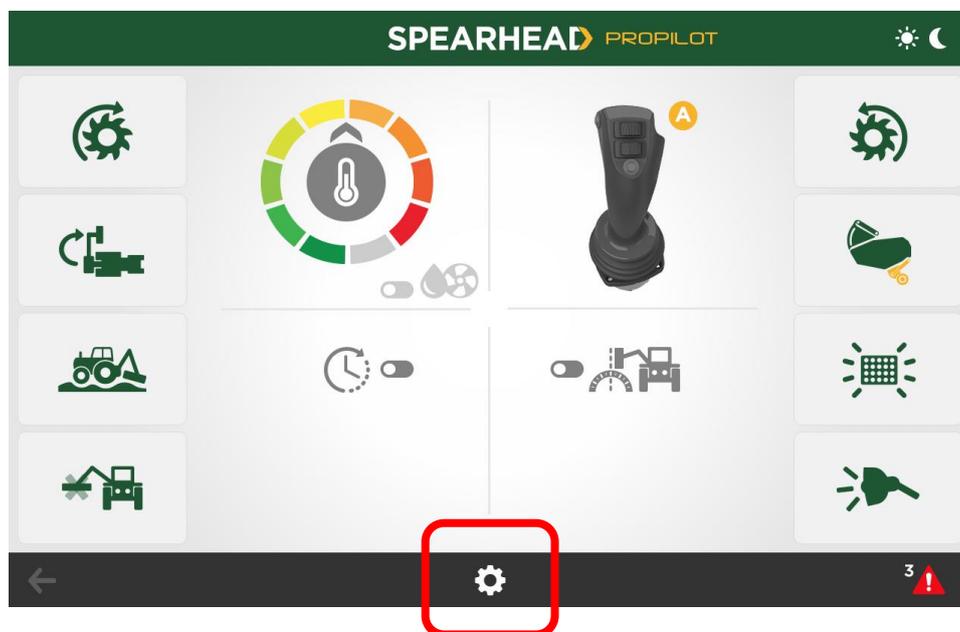
To set the system to maintain an angle, slide the dot along the bar to the desired angle shown on the readout. When satisfied with your selection use the back arrow to take you back to the home screen. Operating the Head Angle function at any time will deactivate the Autolevel and will require re-engaging if required. The function must be deactivated when packing up into transport. There is also the option to save three pre-set angles, simply move the pointer to the desired angle, press and hold one of the pre-set buttons and the angle will be saved. The pre-set angles can then be selected from the home screen.

Screen Brightness



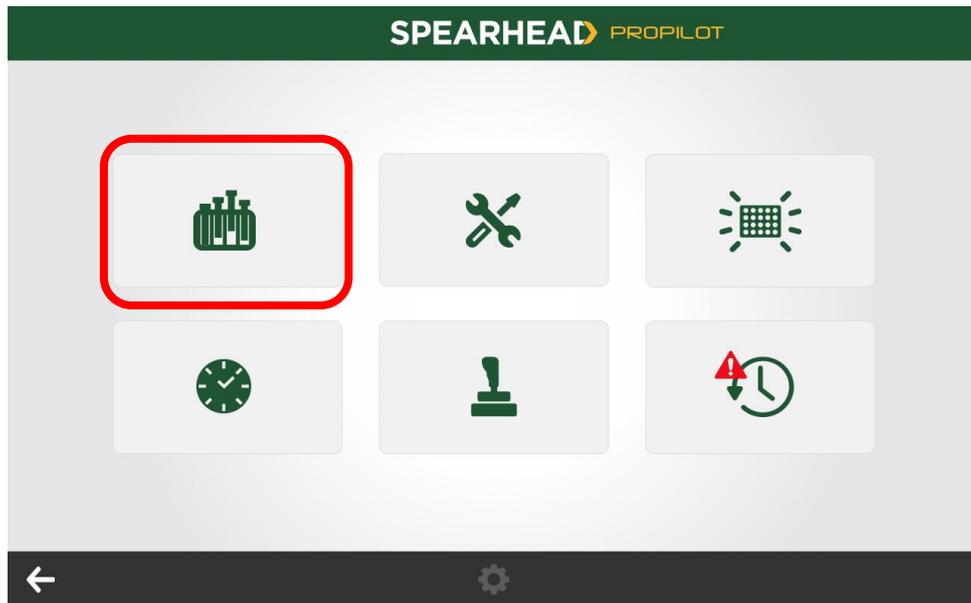
The screen has a sensor to monitor light levels and automatically changes the brightness to ensure the best visibility. If you do wish to tailor this to your own requirements it is possible to manually set the brightness for light and dark modes, as well as set the threshold for the change between the two. From the home screen press the sun/moon icon to take you to the adjustment screen.

Settings

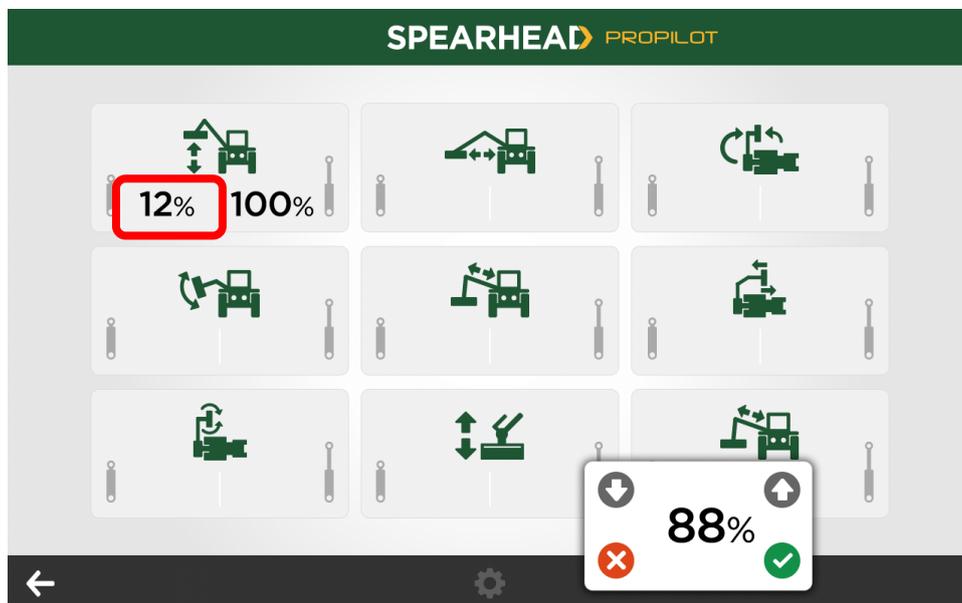


Several parameters and functions can be adjusted in the settings area, press the settings icon in the bottom banner to take you through to the settings screen.

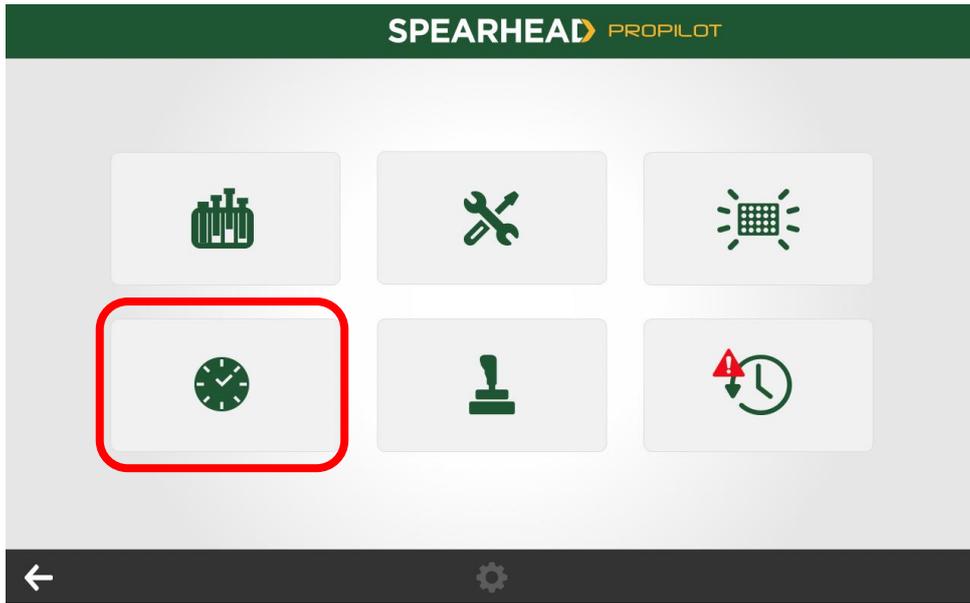
Valve Settings



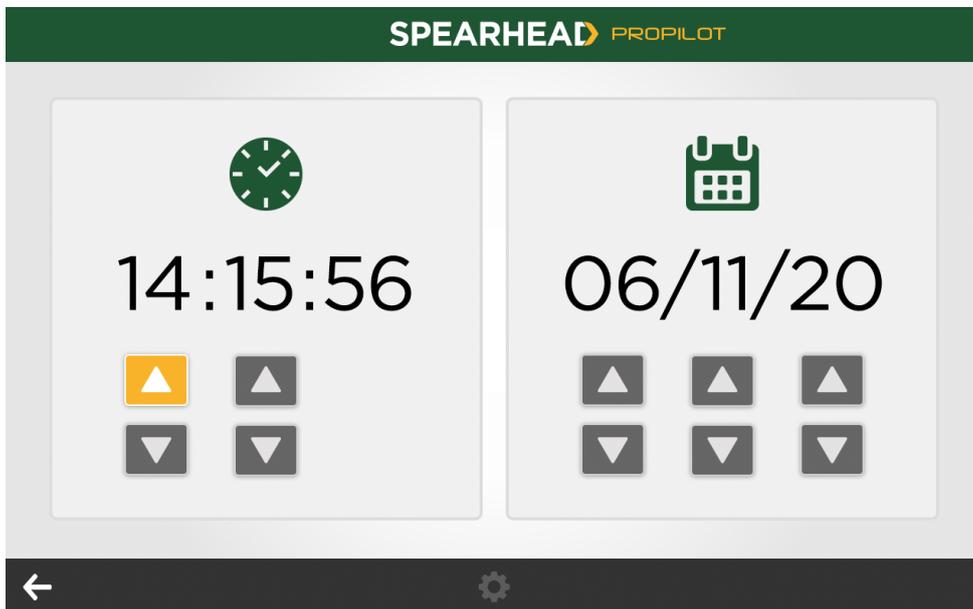
The speed of all the functions can be adjusted to ensure safe and optimum operation. In the valve settings screen select the function you wish to alter, this will bring up the adjustment box. Use the up and down arrows to get to the desired figure then press the tick. Try the function and continue to adjust as required, then use the back arrow or the Spearhead to take you back to the home screen.



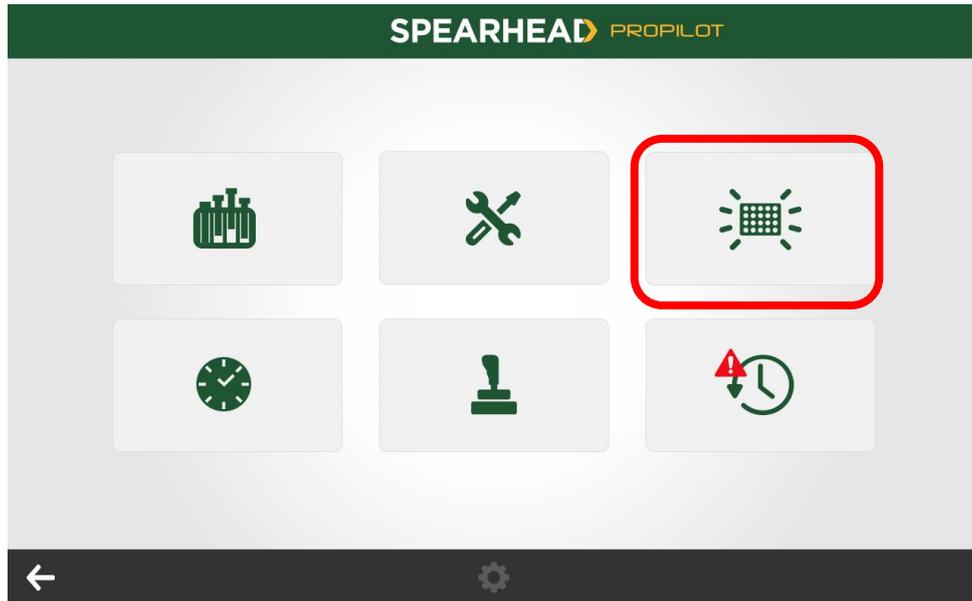
Time and Date



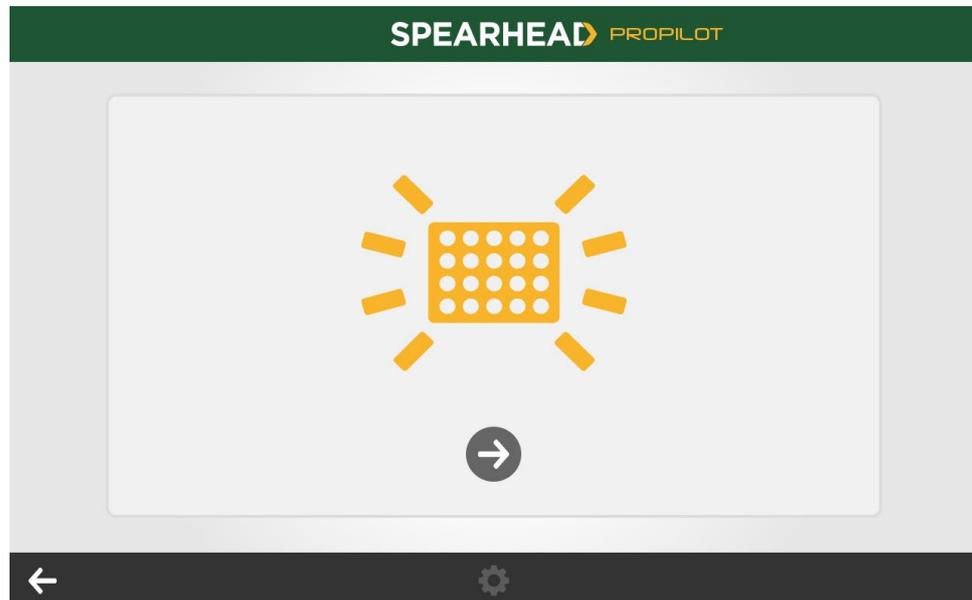
The time and date are shown in the left of the top banner. Both can be adjusted by pressing the clock icon which will take you through to the time and date screen. Use the up and down arrows to adjust the date or time as required, then use the back button to store your selection.



Flashing LEDs



There is a choice of 18 different flash patterns that can be selected through the service menu. Simply press the arrow button once to cycle onto the next pattern.

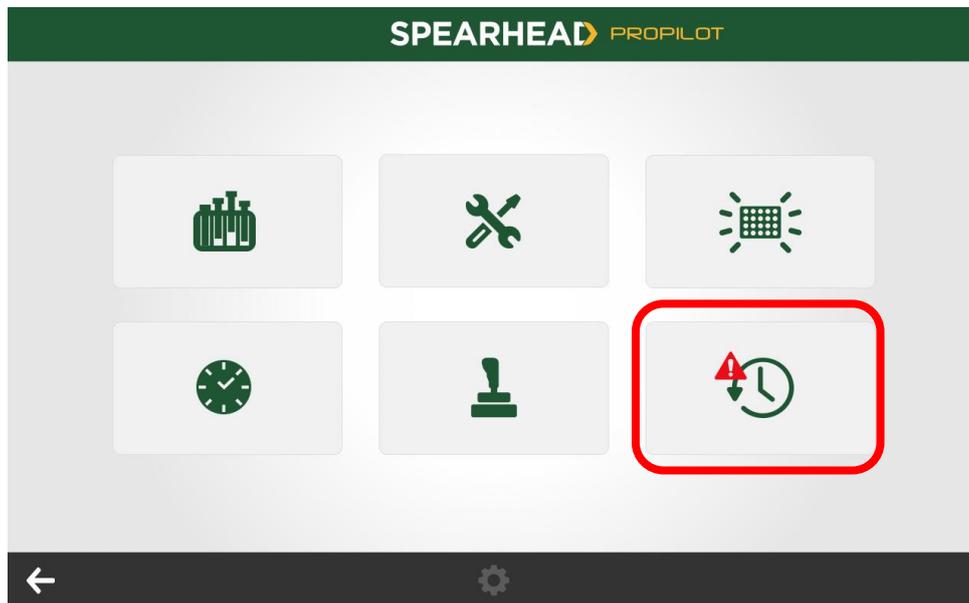


CAN Errors

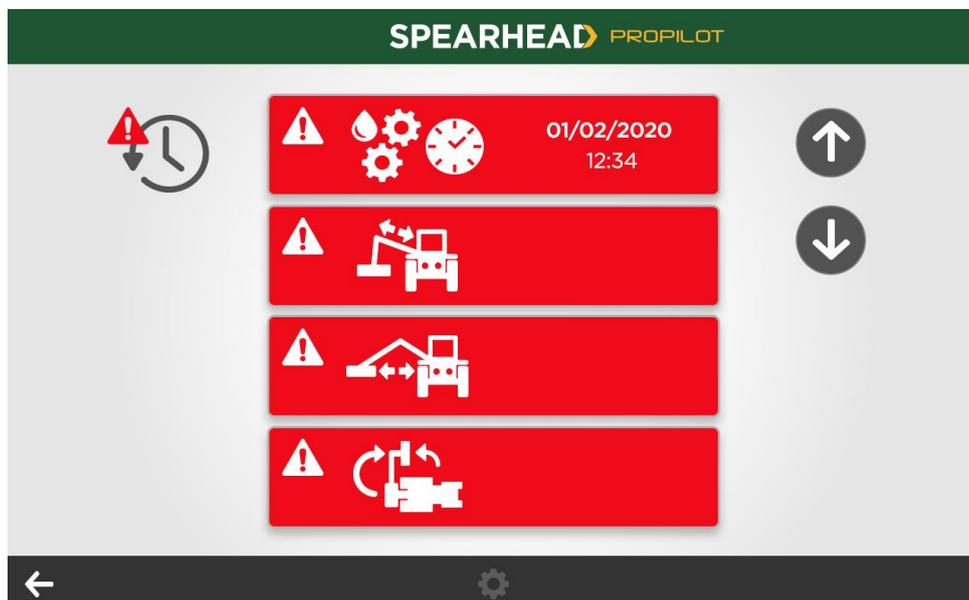
An advantage of the CAN control system is the ability to self-diagnose any electrical issues. During operation, should an error occur, an error pop-up will appear on the screen as well as an image on the bottom banner indicating the number of errors logged. If an error pop-up flashes up, then use the cross to acknowledge it.



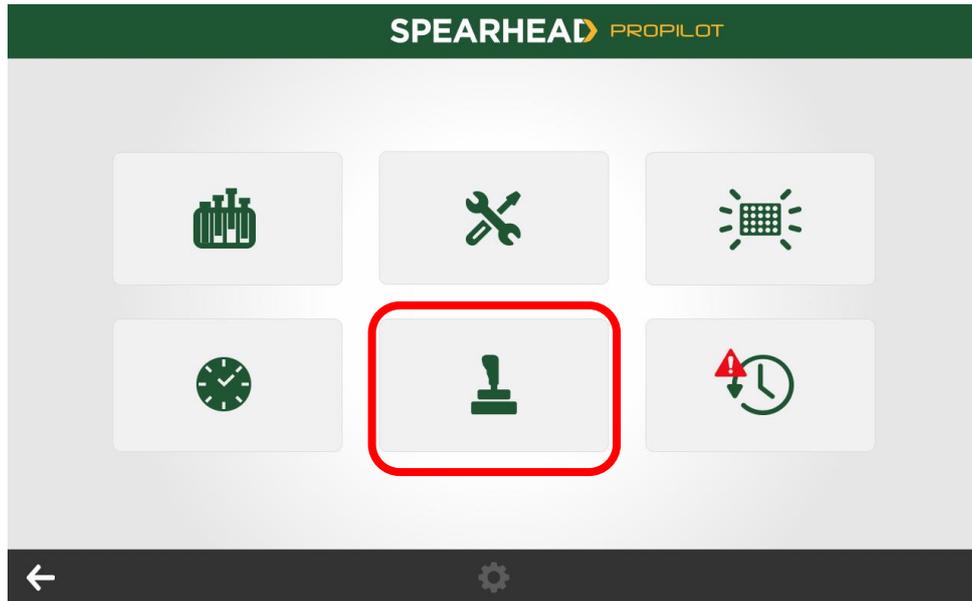
Using the setting screen, you can access the list of errors.



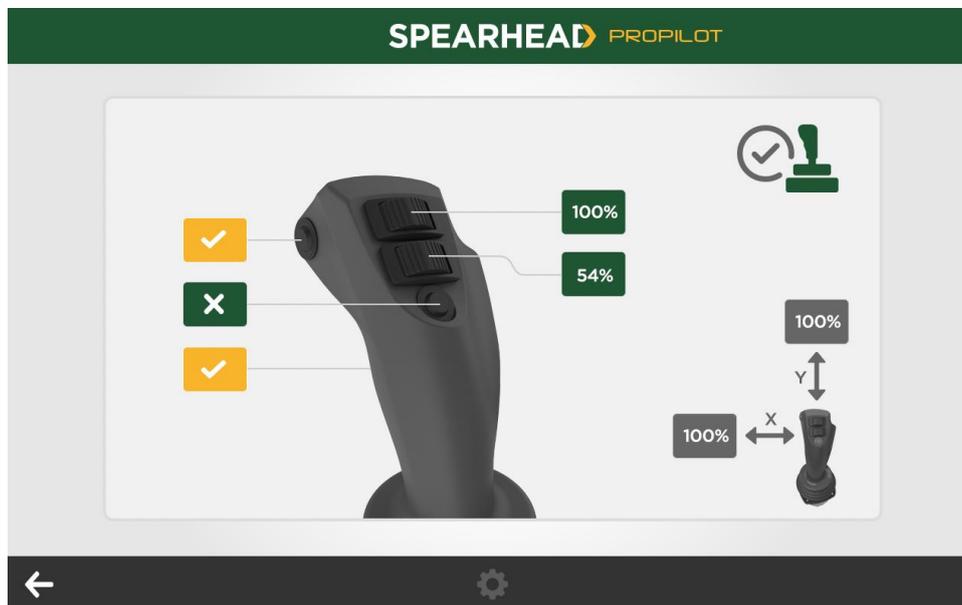
Use the up and down arrows to view if there are multiple errors, the time and date of which are shown. Most commonly this will be due to communication being lost usually from something being unplugged.



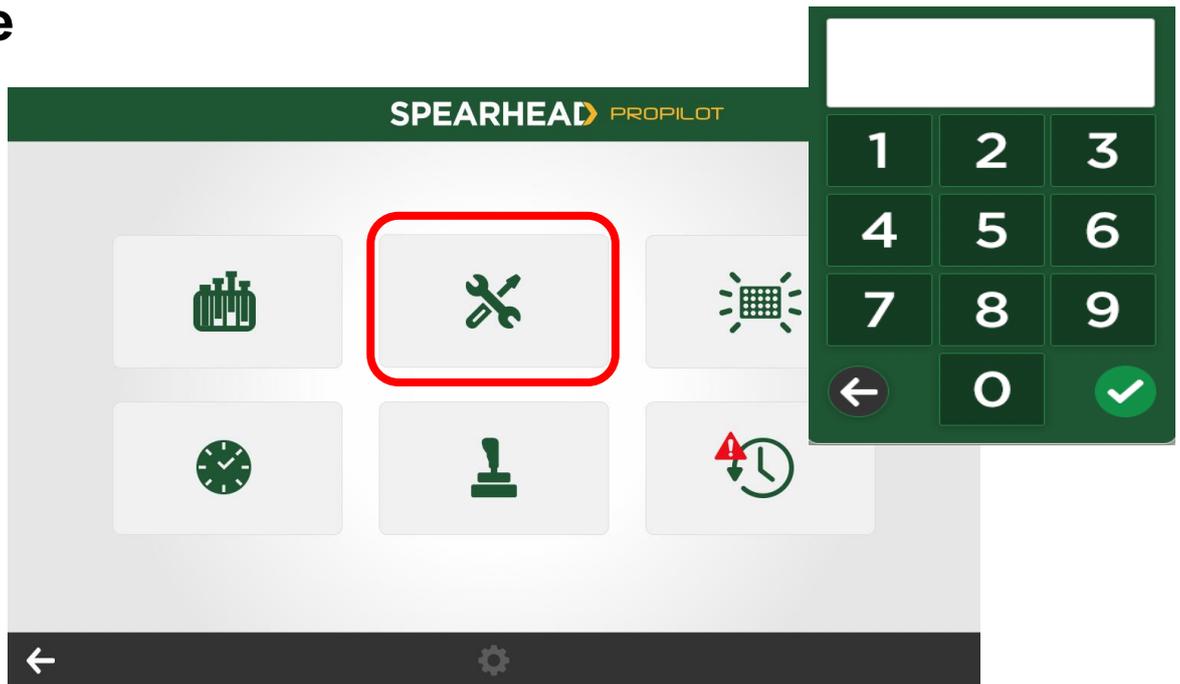
Joystick Monitor



The joystick monitor screen is a helpful tool to allow you to check the status of the joystick output. For example, if a joystick error was to pop-up, then viewing this screen can help diagnose what is at fault. Best done without the PTO running, it is possible to run through all the joystick functions to check there is full functionality on all.



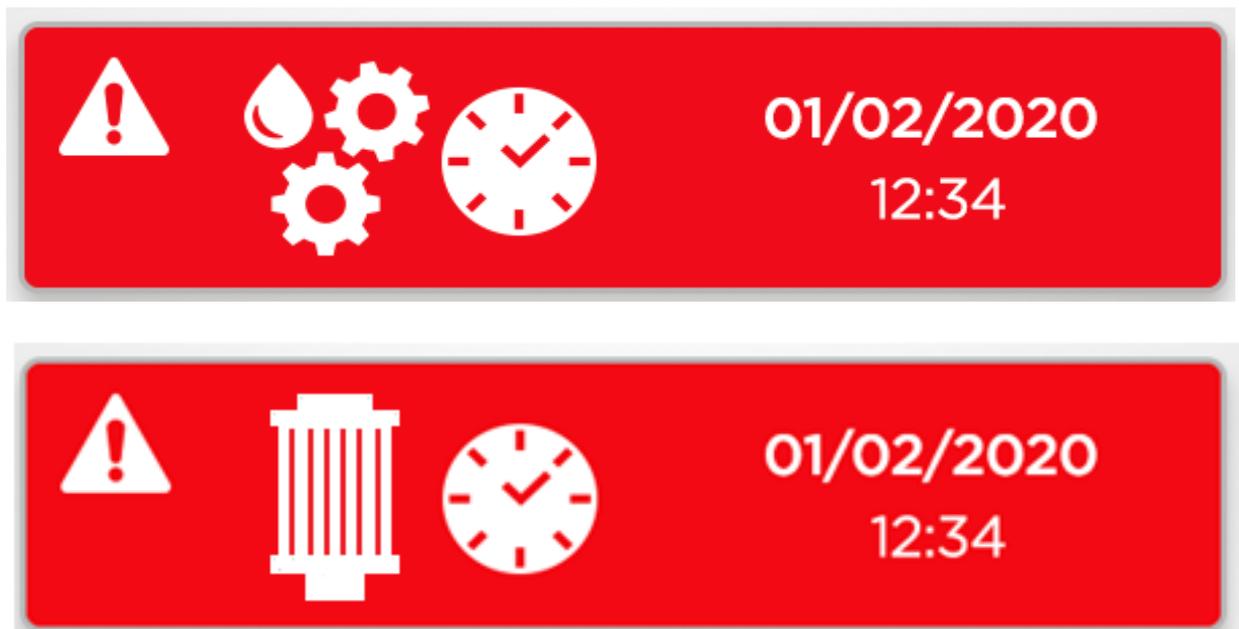
Service



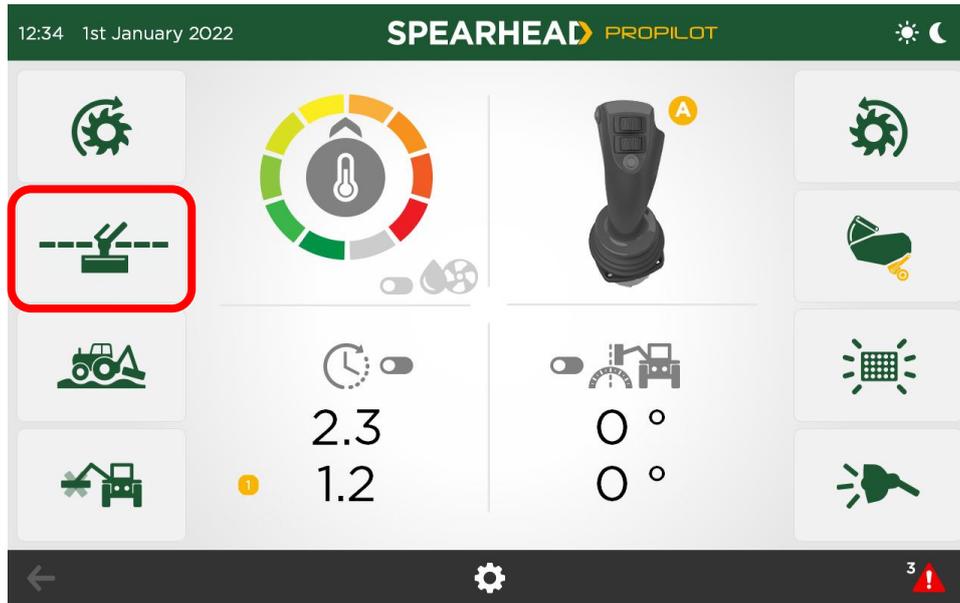
The service icon allows further adjustments and machine monitoring as well as the machine configurator which allows the activation of additional functions and options. This section however is passcode protected and only available to Spearhead and your supplying dealer.

Service Intervals

The system will automatically highlight when you have reached a service interval for either a gearbox oil change or a returns filter change.



Autoflex



Like the Autolevel function, Autoflex is another option to automatically control functions of the machine and is available on Flex models only. A sensor positioned within the Head Crowd bracket constantly monitors its angle. Pressing the Autoflex icon will turn it yellow and activate the function.

Head Crowd



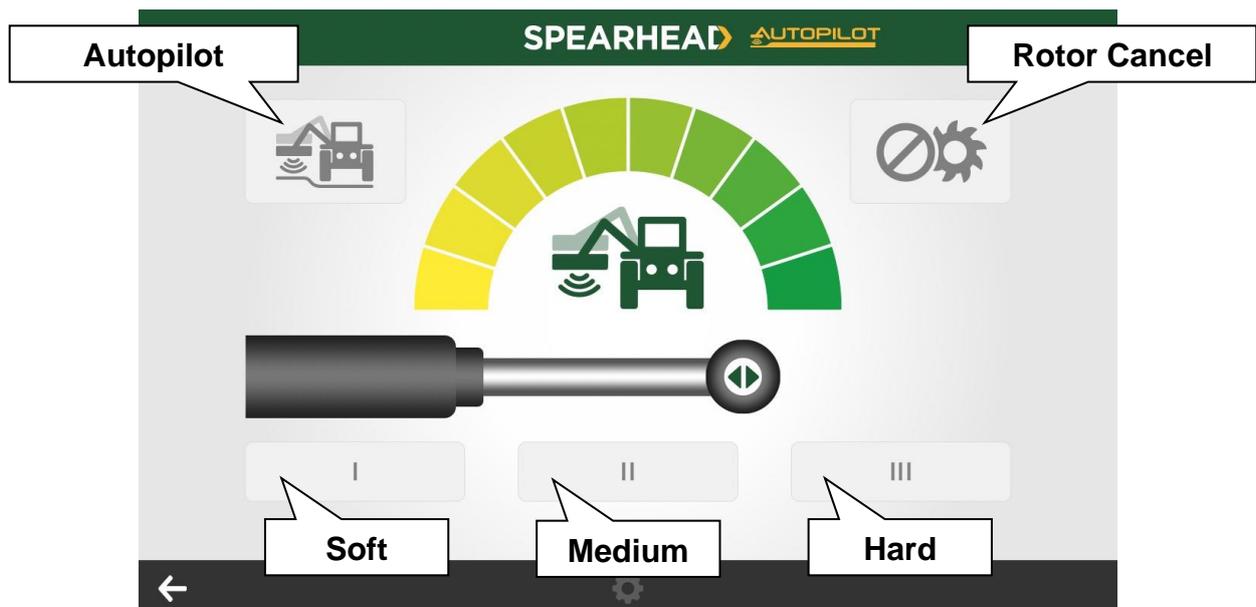
The function automatically controls the Head Crowd, the ram on top of the second arm to ensure the Head Crowd Bracket always remains vertical, in any position.

The function must be deactivated when positioning arm for transport.

Autopilot



This function allows the cutting head to follow the contours of the ground whilst also taking some of the weight to lessen the stress on the cutting head. Press the Autopilot icon and it will take you through to the Autopilot page. The system monitors the pressure in the lift ram shown on the dial and the reach of the dipper ram shown by the ram graphic, using this information the system can calculate the optimum pressure to maintain in the lift ram. The function can be activated/deactivated from the button on the Autopilot page or by the button on the side of the joystick. Activating Autopilot will also engage Head Float to ensure the head remains in contact with the ground, activation will also block Autoreset as it could interfere with the functionality.



To tailor the performance of the float there are three setting options, a soft, medium, and hard that allows you to fine tune depending on the conditions. The function must be deactivated when packing up into transport.

PROPILOT

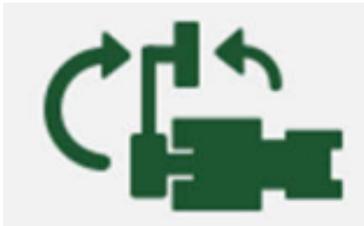
Icon Key



Lift – UP/DOWN



Reach – IN/OUT



Arm Slew – IN/OUT



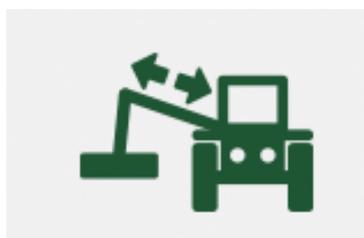
Head Angle – LH/RH



Telescopic – IN/OUT



VFR – FORWARDS/BACKWARDS



Hyd. Tie Bar – IN/OUT

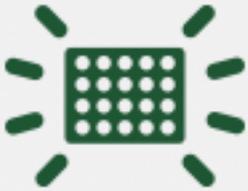
PROPILOT



Arm Float



Boom Light



Flashing LEDs



Autolevel



Autoflex



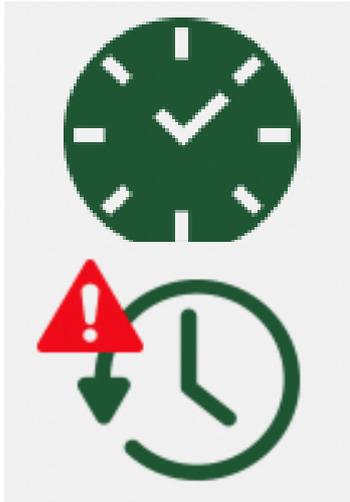
Head Slew – LH/RH



Head Crowd – IN/OUT



Valve Settings



Time and Date

CAN Errors



Joystick Monitor



Service



Diverter



Rotor Forward



Rotor Reverse

PROPILOT



Rotor Cancel



Autopilot

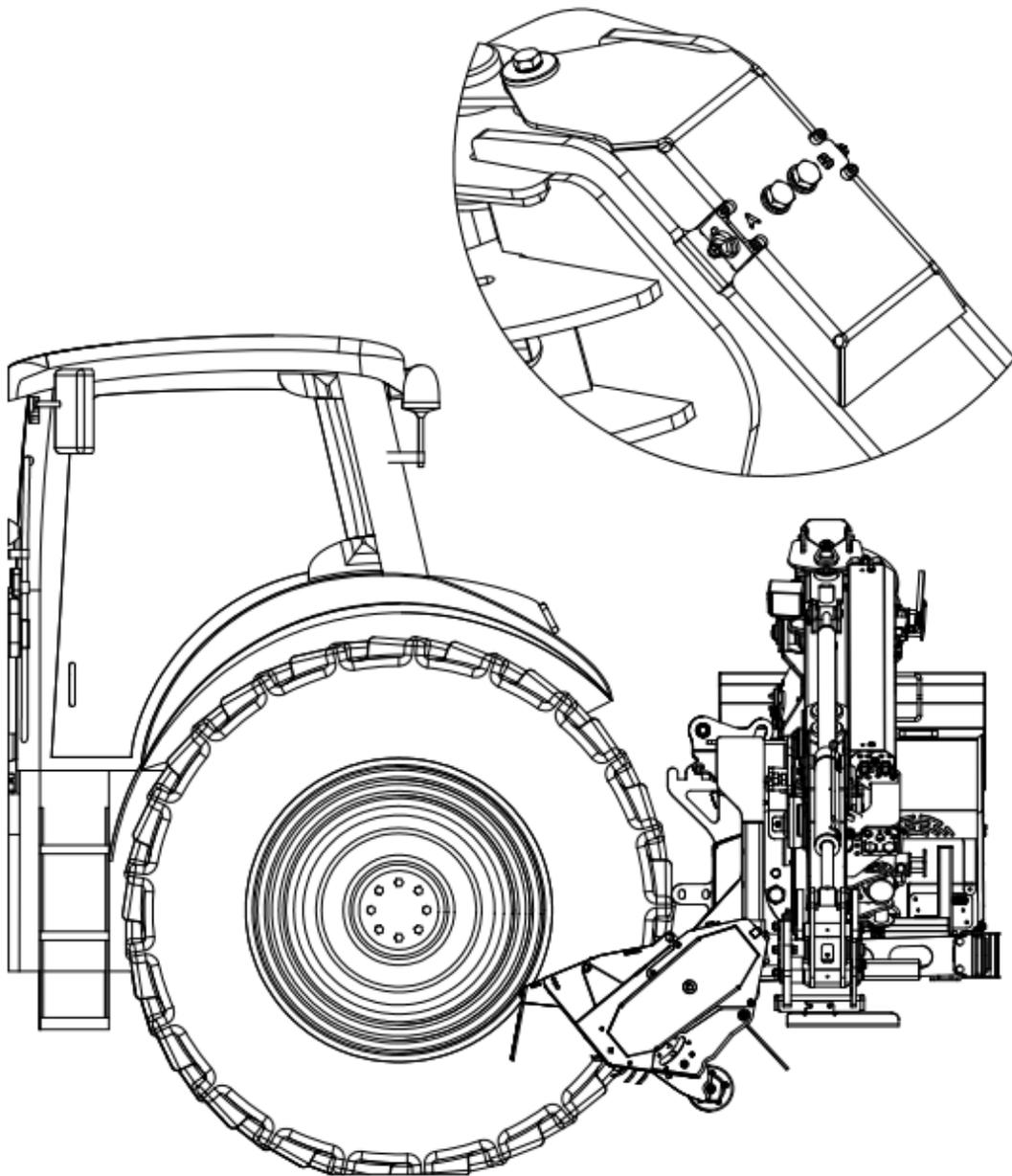


Flex – IN/OUT

VFRT Synchronising

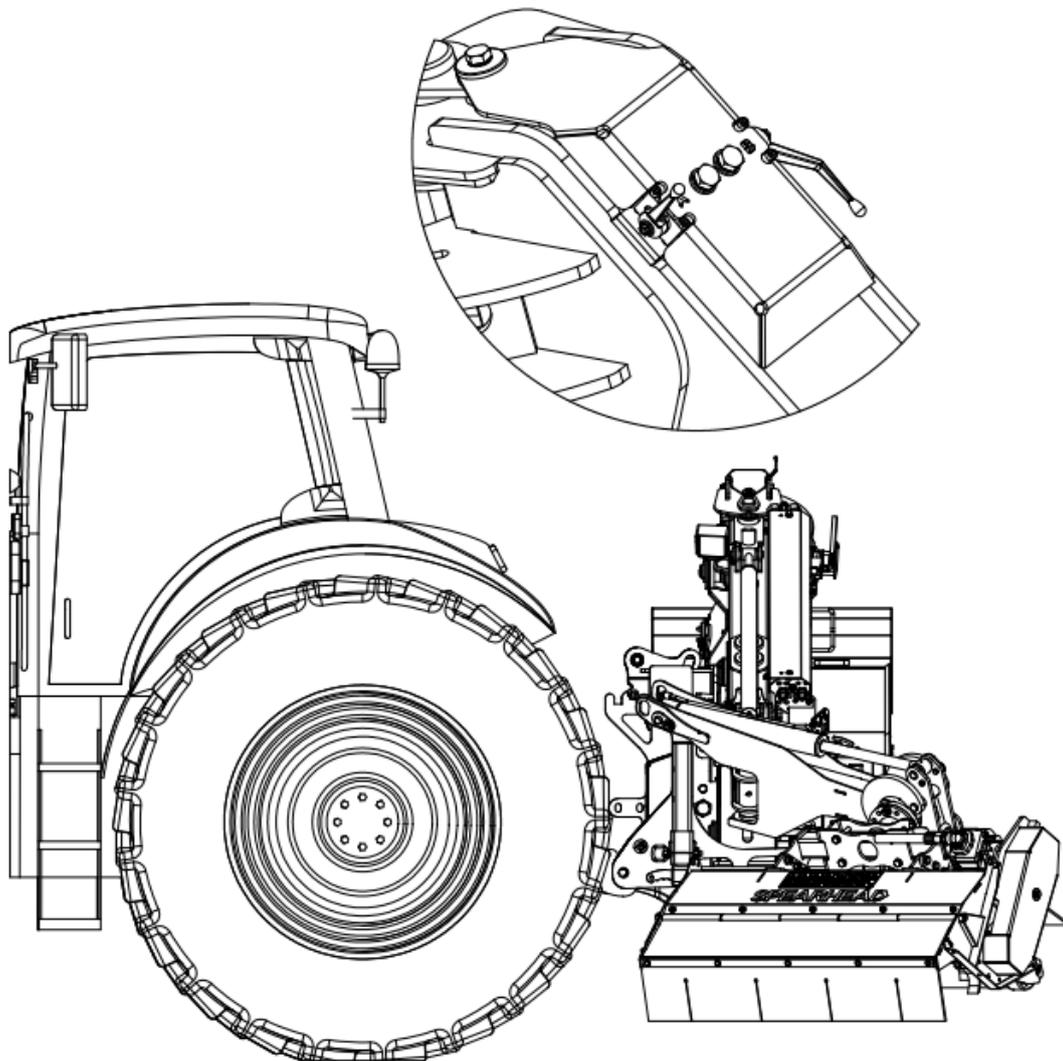
To ensure correct and parallel operation of the VFRT arms, it is sometimes necessary to synchronise the upper and lower arms. This is a simple procedure using the isolation taps mounted on top of the arm to purge air from the VFR system.

For normal operation both taps need to be shut, the handles have been removed and should be stowed in the toolbox.



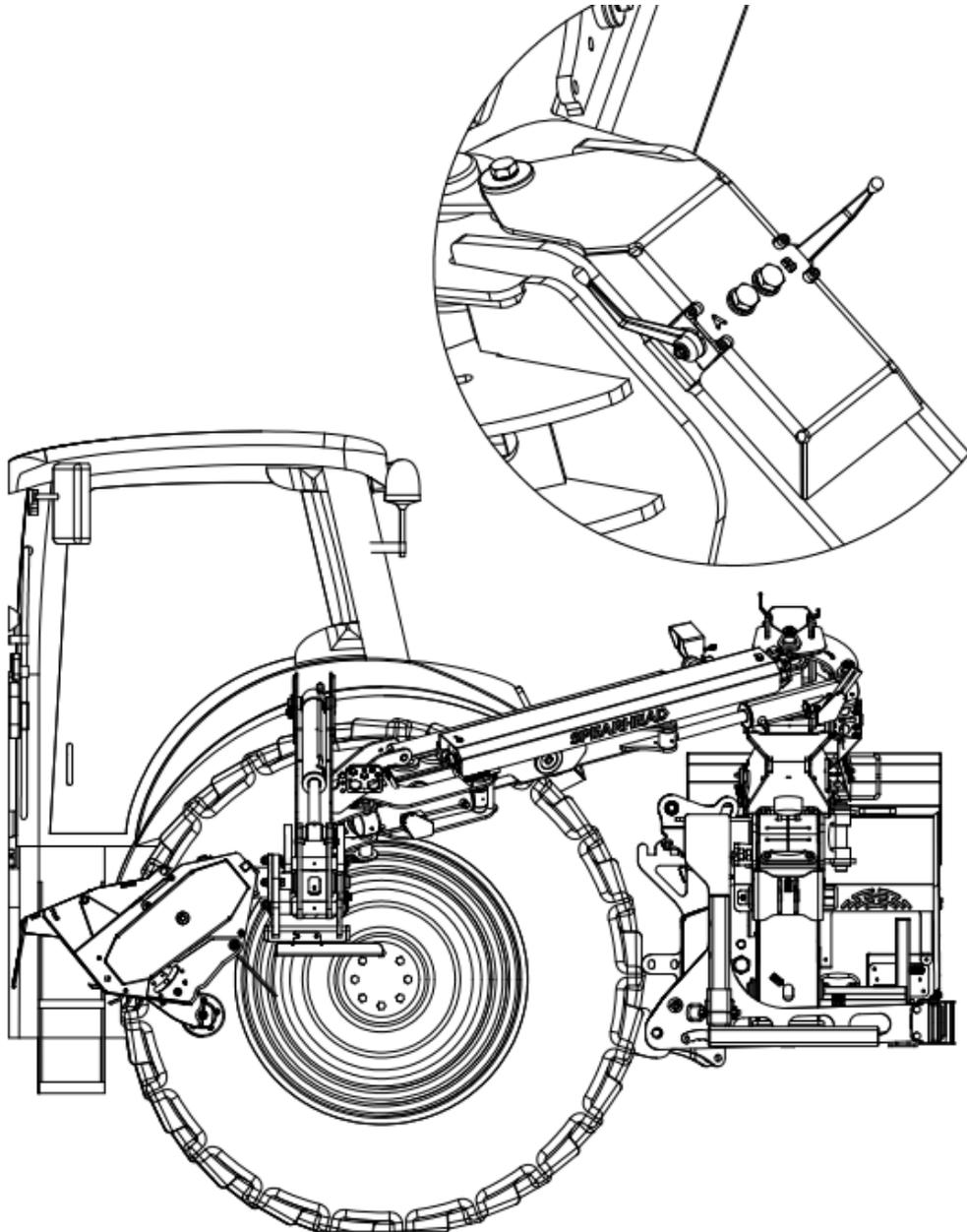
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Start with the arm in the central position then close tap A. Operate the VFR forward and this should bring the lower arm back. When the lower ram is fully retracted continue to push forward for around 5 seconds to allow any air to purge from the system.



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Next, shut tap A and open tap B. Operate the VFR forward and the upper ram will open, again when the ram is fully open continue to push forward for around 5 seconds to allow any air to purge from the system.



Close tap B and now the arms should be back in sync. To ensure the procedure has been successful bring the VFR arms backwards and forwards a couple of times to ensure the upper and lower sections are parallel. You can then remove the tap handles and continue operation.

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