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McCONNEL

VOYAGER

Power Arm Control System

Operation Manual

VOYAGER

CONTROL SYSTEM

For safety and performance…

ALWAYS READ THE BOOK FIRST

This manual should be read in conjunction with the operation manual for the machine

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WARRANTY POLICY

WARRANTY REGISTRATION

All machines must be registered, by the selling dealer with McConnel Ltd, before delivery to the end user. On receipt of the goods it is the buyer's responsibility to check that the Verification of Warranty Registration in the Operator's Manual has been completed by the selling dealer.

1. LIMITED WARRANTIES

1.01. All mounted machines supplied by McConnel Ltd are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 12 months, unless a different period is specified.
All Self Propelled Machines supplied by McConnel Ltd are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 12 months or 1500 hours. Engine warranty will be specific to the Manufacturer of that unit.

1.02. All spare parts supplied by McConnel Ltd and purchased by the end user are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 6 months. All parts warranty claims must be supported by a copy of the failed part invoice to the end user. We cannot consider claims for which sales invoices are not available.

1.03. The warranty offered by McConnel Ltd is limited to the making good by repair or replacement for the purchaser any part or parts found, upon examination at its factory, to be defective under normal use and service due to defects in material or workmanship. Returned parts must be complete and unexamined. Pack the component(s) carefully so that any transit damage is avoided. All ports on hydraulic items should be drained of oil and securely plugged to prevent seepage and foreign body ingress. Certain other components, electrical items for example, may require particular care when packing to avoid damage in transit.

1.04. This warranty does not extend to any product from which McConnel Ltd's serial number plate has been removed or altered.

1.05. The warranty policy is valid for machines registered in line with the terms and conditions detailed and on the basis that the machines do not extend a period of 24 months or greater since their original purchase date, that is the original invoice date from McConnel Limited.
Machines that are held in stock for more than 24 months cannot be registered for warranty.

1.06. This warranty does not apply to any part of the goods, which has been subjected to improper or abnormal use, negligence, alteration, modification, fitment of non-genuine parts, accident damage, or damage resulting from contact with overhead power lines, damage caused by foreign objects (e.g. stones, iron, material other than vegetation), failure due to lack of maintenance, use of incorrect oil or lubricants, contamination of the oil, or which has served its normal life. This warranty does not apply to any expendable items such as blades, belts, clutch linings, filter elements, flails, flap kits, skids, soil engaging parts, shields, guards, wear pads, pneumatic tyres or tracks.

1.07. Temporary repairs and consequential loss - i.e. oil, downtime and associated parts are specifically excluded from the warranty.

1.08. Warranty on hoses is limited to 12 months and does not include hoses which have suffered external damage. Only complete hoses may be returned under warranty, any which have been cut or repaired will be rejected.

1.09. Machines must be repaired immediately a problem arises. Continued use of the machine after a problem has occurred can result in further component failures, for which McConnel Ltd cannot be held liable, and may have safety implications.

1.10. If in exceptional circumstances a non McConnel Ltd part is used to effect a repair, warranty reimbursement will be at no more than McConnel Ltd's standard dealer cost for the genuine part.

1.11. Except as provided herein, no employee, agent, dealer or other person is authorised to give any warranties of any nature on behalf of McConnel Ltd.

1.12. For machine warranty periods in excess of 12 months the following additional exclusions shall apply:

1.12.1. Hoses, exposed pipes and hydraulic tank breathers.

1.12.2. Filters.

1.12.3. Rubber mountings.

1.12.4. External electric wiring.

1.12.5. Bearings and seals

1.12.6. External Cables, Linkages

1.12.7. Loose/Corroded Connections, Light Units, LED's

1.12.8. Comfort items such as Operator Seat, Ventilation, Audio Equipment

1.13. All service work, particularly filter changes, must be carried out in accordance with the manufacturer's service schedule. Failure to comply will invalidate the warranty. In the event of a claim, proof of the service work being carried out may be required.

1.14. Repeat or additional repairs resulting from incorrect diagnosis or poor quality previous repair work are excluded from warranty.

NB Warranty cover will be invalid if any non-genuine parts have been fitted or used. Use of non-genuine parts may seriously affect the machine's performance and safety. McConnel Ltd cannot be held responsible for any failures or safety implications that arise due to the use of non-genuine parts.

2. REMEDIES AND PROCEDURES

2.01. The warranty is not effective unless the Selling Dealer registers the machine, via the McConnel web site and confirms the registration to the purchaser by completing the confirmation form in the operator's manual.

2.02. Any fault must be reported to an authorised McConnel Ltd dealer as soon as it occurs. Continued use of a machine, after a fault has occurred, can result in further component failure for which McConnel Ltd cannot be held liable.

2.03. Repairs should be undertaken within two days of the failure. Claims submitted for repairs undertaken more than 2 weeks after a failure has occurred, or 2 days after the parts were supplied will be rejected, unless the delay has been authorised by McConnel Ltd. Please note that failure by the customer to release the machine for repair will not be accepted as a reason for delay in repair or submitting warranty claims.

2.04. All claims must be submitted, by an authorised McConnel Ltd Service Dealer, within 30 days of the date of repair.

2.05. Following examination of the claim and parts, McConnel Ltd will pay, at their discretion, for any valid claim the invoiced cost of any parts supplied by McConnel Ltd and appropriate labour and mileage allowances if applicable.

2.06. The submission of a claim is not a guarantee of payment.

2.07. Any decision reached by McConnel Ltd. is final.

3. LIMITATION OF LIABILITY

3.01. McConnel Ltd disclaims any express (except as set forth herein) and implied warranties with respect to the goods including, but not limited to, merchantability and fitness for a particular purpose.

3.02. McConnel Ltd makes no warranty as to the design, capability, capacity or suitability for use of the goods.

3.03. Except as provided herein, McConnel Ltd shall have no liability or responsibility to the purchaser or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by the goods including, but not limited to, any indirect, special, consequential, or incidental damages resulting from the use or operation of the goods or any breach of this warranty. Notwithstanding the above limitations and warranties, the manufacturer's liability hereunder for damages incurred by the purchaser or others shall not exceed the price of the goods.

3.04. No action arising out of any claimed breach of this warranty or transactions under this warranty may be brought more than one (1) year after the cause of the action has occurred.

4. MISCELLANEOUS

4.01. McConnel Ltd may waive compliance with any of the terms of this limited warranty, but no waiver of any terms shall be deemed to be a waiver of any other term.

4.02. If any provision of this limited warranty shall violate any applicable law and is held to be unenforceable, then the invalidity of such provision shall not invalidate any other provisions herein.

4.03. Applicable law may provide rights and benefits to the purchaser in addition to those provided herein.

McConnel Limited

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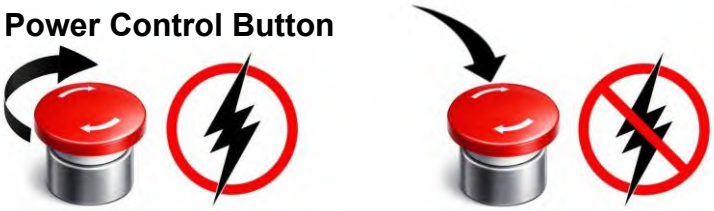
VOYAGER CONTROL UNIT

Power Control Button



Rotate to **Power ON**

Press to **Power OFF** (EMERGENCY STOP)

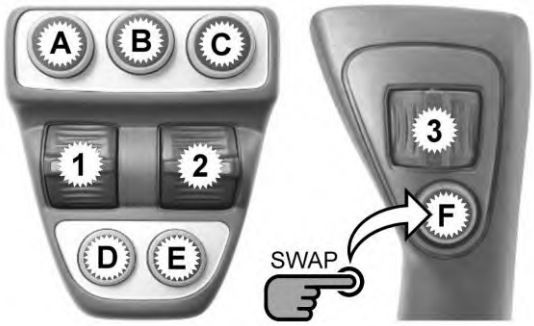
Thumbwheel Controls (Default)

STANDARD MACHINES
1. ANGLE
2. N/A (*)
3. SLEW

VFR MACHINES
1. ANGLE
2. VFR
3. SLEW

TELE MACHINES
1. ANGLE
2. TELE
3. SLEW

TELE-VFR MACHINES
1. ANGLE
2. TELE
3. **SLEW / VFR** with SWAP selected



Button Functions (Default)

A. Angle Float ON/OFF
B. Rotor STOP
C. Lift Float ON/OFF
D. Available for Customisation / *Advanced Float (-)
E. Available for Customisation / *Advanced Float (+)
F. Swap Key

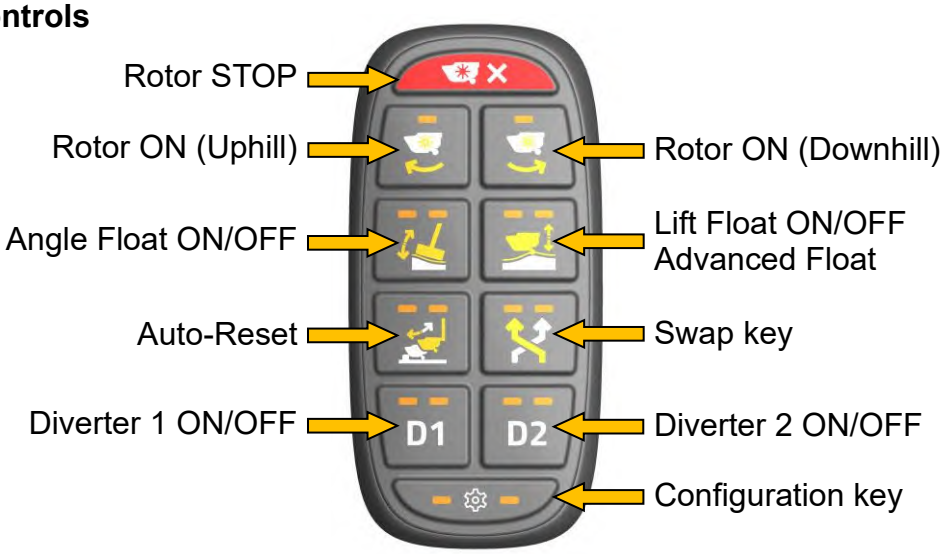
NOTE: On *applicable machines; Advanced Float (-) & (+) controls override any functions assigned to Buttons D & E when advanced float is active.

Joystick Controls

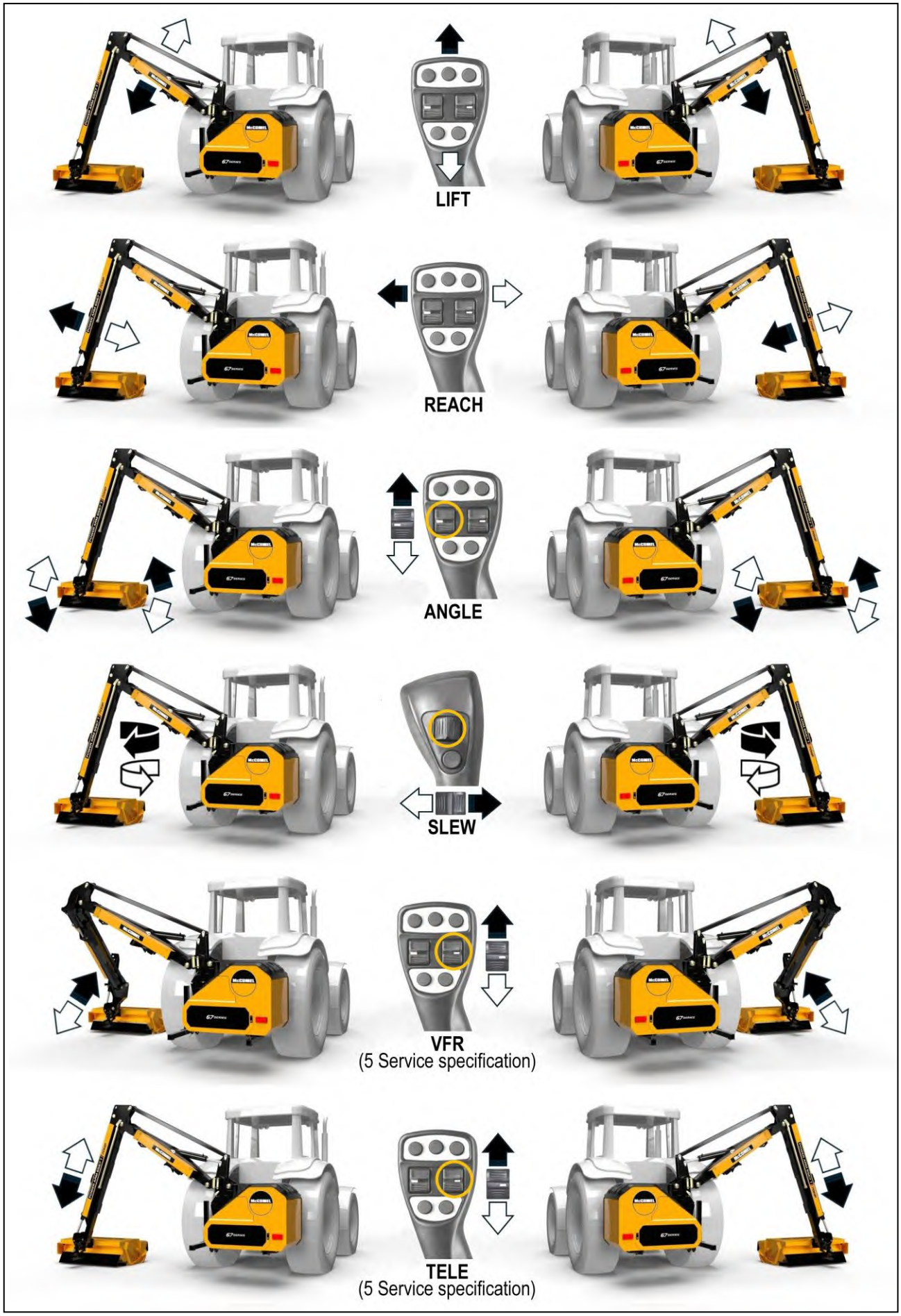
LIFT **REACH** **ANGLE** **VFR or TELE** **SLEW / ***

*Swap mode **6th SERVICE**

Keypad Controls



Armhead Controls (Default Configuration)

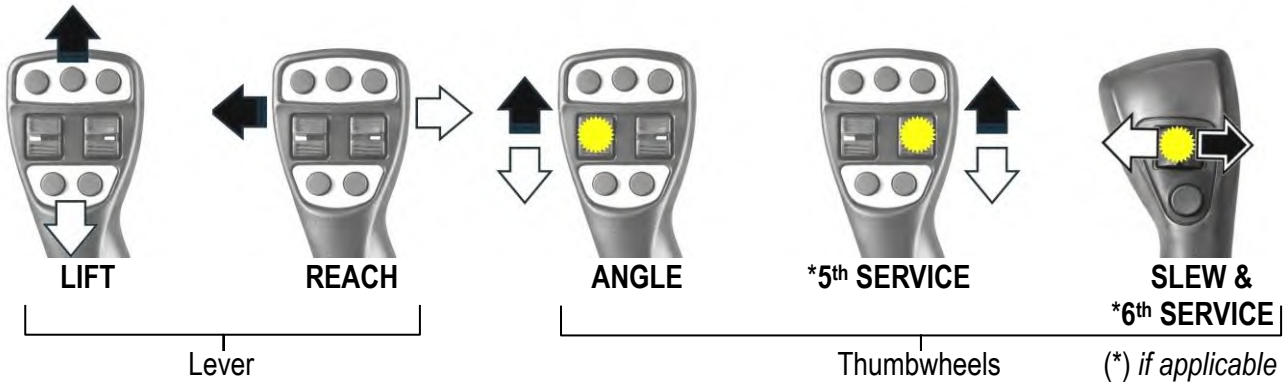


Control Unit Activation

Rotate power button clockwise to POWER ON the control unit; white LEDs on the keypad and thumbwheels confirm the control unit is active.

Joystick Lever

The Joystick lever controls the following machine functions; **LIFT** and **REACH**.



Joystick Thumbwheels

Depending on machine specification, joystick thumbwheels operate the following functions: **ANGLE, 5th SERVICE and SLEW / 6th SERVICE**; where 5th and 6th Services are used for **VFR** and/or **TELE**. Default assignments are shown above but can be customised if desired.

Joystick Buttons

In **factory default** configuration, joystick buttons are set to operate the following functions;

A. Angle Float ON/OFF

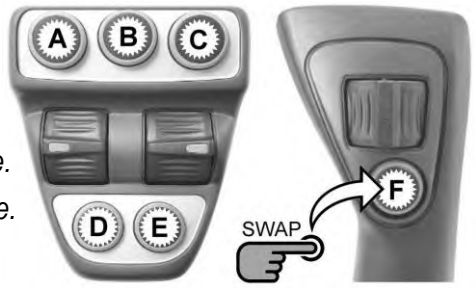
B. Rotor STOP

C. Lift Float ON/OFF

D. N/A(*) / Advanced Float (-) *if Advanced Float is present and active.*

E. N/A(*) / Advanced Float (+) *if Advanced Float is present and active.*

F. Swap Button



N/A(*) = *Not Assigned on builds without Advanced Float; available for customisation.*

Joystick buttons are configurable and can be customised to replicate any thumbwheel or keypad function.

Joystick Button Customisation

The procedure for customising joystick buttons is as follows;

- Press & hold '**Configuration**' button for **4-5 seconds**; *keypad LEDs start flashing blue - machine control is disabled.*
- Press '**Swap**' button once; *keypad LEDs stop flashing and right-hand LED on swap button starts flashing.*
- Press the **joystick button** you wish to customise; *the control unit will emit a single long 'beep' to confirm.*
- Press a keypad button **or** move a thumbwheel in the direction you want, to map and replicate that specific function to the selected joystick button; *control unit will emit a double long 'beep' to confirm before returning to configuration mode with all keypad LEDs flashing blue.*

To exit configuration mode, press and hold the '**Configuration**' button for **4-5 seconds** or power cycle the controls.

Joystick Button Unmap
The procedure for unmapping (clearing) a joystick button is as follows;

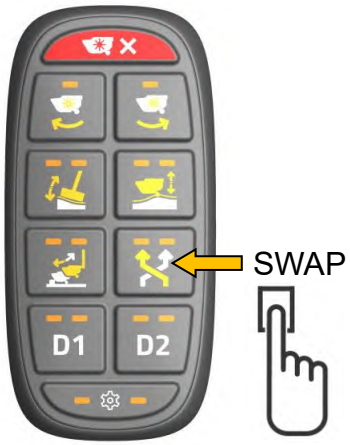
With the control unit turned ON

- Press & hold '**Configuration'** button for **4-5 seconds**: *keypad LEDs start flashing blue.*
- Press **'Swap'** button once**;** *keypad LEDs stop flashing and right-hand LED on swap button starts flashing.*
- Press the **joystick button** you wish to unmap*; the control unit will emit a single long 'beep' to confirm.*
- Press and release the '**Configuration'** button; *control unit will emit a double long 'beep' to confirm before returning to configuration mode with all keypad LEDs flashing blue.* Button mapping for the previously selected button has now been removed/cleared.

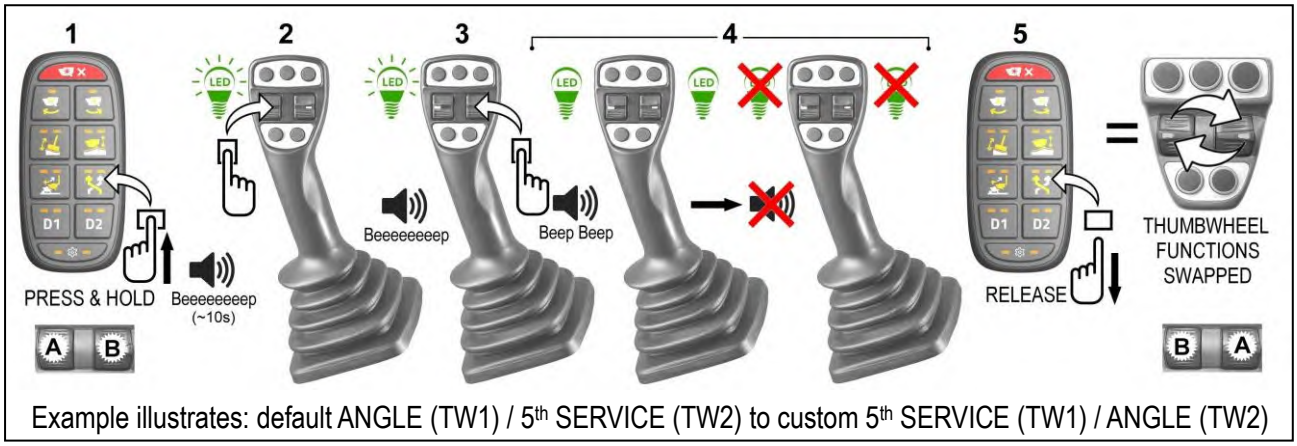
To exit configuration mode, press and hold the '**Configuration**' button for **4-5 seconds** or power cycle the controls.

Thumbwheel Customisation
The position of thumbwheel functions can be customised for operation preference.
Changing the functions of thumbwheels is performed via the 'Swap' button on the keypad.

Thumbwheel Customisation Procedure;



1. Press and hold '**Swap**' button on keypad until a continuous beep is heard (~10 seconds) … *continue holding swap button.*
2. During the beep, select (operate) the thumbwheel (function) you want to move; *GREEN LED on selected thumbwheel will 'flash' slowly.*
3. Select (operate) the thumbwheel you wish to swap (move) the function to.
4. Continuous beep will cease and a double beep is emitted to confirm the change; *both thumbwheels will display a static GREEN LED for 1-2 seconds.*
5. Release 'swap' button. The functions of the two selected thumbwheels have now been swapped.



Example illustrates: default ANGLE (TW1) / 5th SERVICE (TW2) to custom 5th SERVICE (TW1) / ANGLE (TW2)

Repeat the procedure for other thumbwheels (functions) you wish to customise (swap).

NOTE: Swap button must be held down continuously during the customisation procedure; if the button is released before completion the configuration mode will be exited and the customisation procedure aborted.

The thumbwheel configuration set by the operator will remain in the systems memory until subsequently changed; switching the unit off and on will not change the existing setting.

NOTE: Joystick buttons retain control of their assigned function irrespective of thumbwheel customisation.

LED Control Status Indicators
LED lights on the keypad and joystick buttons indicate a control mode or status.
Depending on the particular mode or status, the keypad LEDs will be lit White, Green, Blue or Red and may be ‘static’ or ‘flashing’.
Where applicable, the joystick frontal buttons illuminate Green to indicate the active status of that function; this will mimic the keypad light status it’s assigned to.

LED Colour Identification

Colour	Static LED(s)	Flashing LED(s)
WHITE	Power ON	N/A
GREEN	Function ON: Output Active	Function Paused or Activating
BLUE	N/A	Configuration Mode
RED	Severe Fault *(see fault codes)*	Temporary Fault *(see fault codes)*

Power ON
When control unit is powered ON, all keypad buttons and thumbwheels will display WHITE LEDs.

Rotor START
When a rotor START button is activated, that button will display a ‘flashing’ GREEN LED for 8-10 seconds whilst the rotor runs up to speed; this will then change to a ‘static’ GREEN LED to indicate that the rotor is ON and running.
The button the GREEN LED is displayed on signifies the active running direction.

Rotor STOP
When rotor STOP button is activated, both rotor start buttons will display ‘flashing’ GREEN LEDs for 8-10 seconds, this indicates the rotor has been switched OFF and is in ‘run down’ mode.

Note: Rotor must be at a complete standstill before restart is permitted.

Function ON
When a function is ON and active, the function button will display a ‘static’ GREEN LED.

Angle Float and Lift Float functions have a built-in feature that ‘pause’ their activity when certain other functions are being operated, on these specific controls, if output is paused the LED will change from a ‘static’ GREEN LED to a ‘flashing’ GREEN LED to indicate the function has been ‘paused’; they will return to a ‘static’ GREEN LED when that function becomes active again.

Configuration Mode
When configuration mode is entered, all keypad buttons will display ‘flashing’ BLUE LEDs; in this mode machine control is disabled.

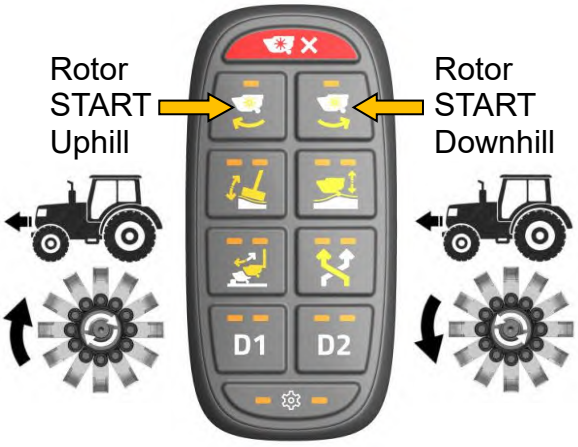
Fault Status
Red LED(s) displayed on the keypad indicate that a fault is detected; depending on the specific nature of the fault the LED(s) may be shown as ‘static’ or ‘flashing’.

If a fault is experienced, refer to the Fault Code Chart in this manual and/or contact your Local Dealer for further assistance or advice.

Rotor Start

To START the rotor, press the ROTOR START button for the cutting direction required.

Rotor Start will only activate if the rotor is stationary; operator must ensure the rotor is fully stopped before pressing the Rotor Start.



LED on selected Rotor Start button will 'flash' GREEN for 8-10 seconds as the rotor runs 'up to speed'.

LED will change to Static GREEN to indicate rotor ON/active direction

Rotor Stop

To STOP the rotor, press the red ROTOR STOP button on the keypad.

Rotor Stop can be activated during the rotor startup cycle and/or when fully running.

When rotor STOP is selected the LEDs on both rotor buttons will 'flash' GREEN for 8-10 seconds to indicate rotor has been switched off.

Rotor can take up to 40 seconds to stop completely.

⚠WARNING

When the rotor is 'SWITCHED OFF' it will continue to 'freewheel' under its own momentum for up to 40 seconds before finally coming to a standstill; DO NOT leave the tractor cab or attempt to approach the flailhead until the rotor has stopped turning completely.

Auto-Reset

Press Auto-Reset button on keypad to select AUTO-RESET.

Auto-Reset is automatically switched OFF when Slew is operated; if Auto-Reset is required it must be manually reselected after Slewing operations.

Outermost LED on button will be displayed ‘static’ GREEN to indicate that Auto-Reset is selected.

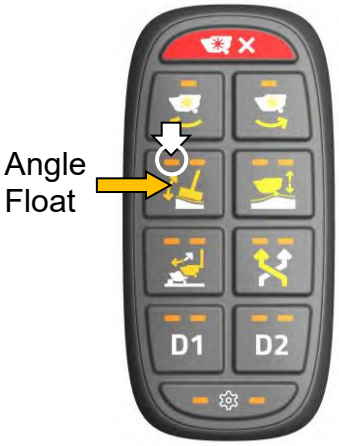
Angle & Lift Floats

Angle Float and Lift Float functions have an in-built feature that pause ‘float’ activity if the Angle and/or Lift controls on the joystick are operated.

When a float is selected (switched ON), an LED light on the keypad button will indicate the status of that float; a ‘static’ GREEN LED indicates the ‘float’ is ACTIVE’ and a ‘flashing’ GREEN LED indicates the ‘float’ is PAUSED’.

Angle Float

Press Angle Float button on keypad to select and activate ANGLE FLOAT.



Left LED on button will be displayed ‘static’ GREEN to indicate Angle Float is ON and ACTIVE.

LED ‘flashes’ GREEN if Angle control is manually operated to indicate that ‘Angle Float’ is PAUSED.

Lift Float (Standard Mode)

Press Lift Float button on keypad to select and activate LIFT FLOAT.

Right LED on button will be displayed ‘static’ GREEN to indicate Standard Lift Float is ON and ACTIVE.

LED ‘flashes’ GREEN if Lift control is manually operated to indicate that ‘Lift Float’ is PAUSED.

Advanced Lift Float
On machines equipped with 'Advanced Lift Float' the float mode can be switched between standard and advanced by **pressing and holding the lift float button for 5-10 seconds**; both LEDs on the button will flash, a long beep will be emitted, and the left or right LED on the button will illuminate for a few seconds to confirm the particular float mode selected.
Left LED indicates 'Advanced Float' enabled, Right LED indicates 'Standard Float' enabled.

Lift Float (Advanced Mode)
Press Lift Float button on keypad to select and activate ADVANCED LIFT FLOAT.

Lift Float

Left LED on button will be displayed 'static' GREEN to indicate Advanced Lift Float is ON and ACTIVE.

LED 'flashes' GREEN if Lift control is manually operated to indicate that 'Lift Float' is PAUSED.

Advanced Lift Float Operation
When advanced lift float is enabled and activated, the function of the two lower buttons on the joystick are overridden and are now used to control the lift float pressure; left button will decrease the pressure, right button will increase the pressure.
Turning off the lift float will restore the buttons to their previously assigned function; if these buttons have not been previously customised to assign a particular function, they will revert to their default state (no function assigned).

Advanced Lift Float ON

Lift Float ON

Joystick buttons adjust the lift float pressure

Left LED on button displayed 'static' GREEN

Advanced Lift Float OFF

Lift Float OFF

Joystick buttons return to previous assigned function (*)

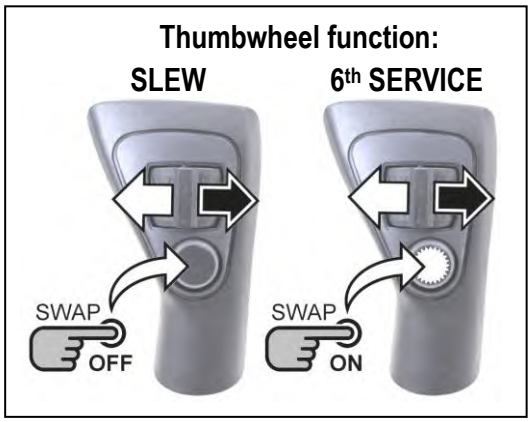
(*) *no function in default mode*

Left LED on button is unlit

Swap Function & 6th Service Operation

To enable operation of a 6th Service, the system incorporates a 'Swap' function that assigns control of this service to the Slew thumbwheel. The Swap function is activated by pressing the 'Swap' button located on the joystick or the keypad.

When the 'Swap' function is active, the right-hand LED on the keypad button illuminates with a static GREEN light to indicate that the mode is engaged.



Right-hand LED on button is displayed 'static' GREEN when 'Swap' is selected.

SWAP

Swap can be selected using keypad or joystick button.

Press the swap button again to exit swap mode and return the thumbwheel to normal 'Slew' control; the GREEN LED will turn off to indicate that swap mode is no longer active.

By default, the rear thumbwheel and button on the joystick are assigned to 'Slew' operation and 'Swap' activation respectively; however, if desired these functions can be customised and reassigned to an alternative thumbwheel and joystick button – *refer to thumbwheel and button customisation sections for further details.*

NOTE: On machines not equipped with a 6th Service, using the rear thumbwheel in 'Swap' mode will have no effect; however, the LED on the keypad will still illuminate to indicate that swap mode is selected.

Diverters

Keypad buttons D1 and D2 are ON/OFF outputs that can be utilised for operating hydraulic diverters on existing equipment or additional attachments.

If diverters exist, pressing button D1 or D2 will activate (switch ON) that specific diverter.

If Diverters are fitted, the outermost LED on the selected button will be displayed 'static' GREEN when the Diverter is active (switched ON).

Diverter D1

Diverter D2

On machines without hydraulic diverters, D1 and D2 buttons have no function assigned to them.

Factory Reset
Control unit can be reset to factory default settings by performing the following procedure;

Configuration Button

Press and hold 'Configuration' button for 20-30 seconds - unit will emit a long beep for 5 seconds, **continue holding the button down**; when reset is complete an audible sound will be emitted to confirm successful reset.

If the button is released for any reason during the 5 second beep, an unconfirmed audible sound will be emitted to indicate reset aborted.

When control unit is reset, all customised settings will be cleared and the unit reverts to the original factory settings.

Fault Codes

Control unit will display Red LEDs if a fault is detected, refer to table below for details.

LED Location	LED Status	Fault Information
Rotor Keys Up + Down	RED Static	Solenoid(s) short circuit or other severe fault
	RED Flashing	Oil temperature too high or sensor fault
Rotor Up Key	RED Static	Solenoid(s) short circuit or other severe fault
	RED Flashing	Solenoid(s) open load (not connected) or other generic fault
Rotor Down Key	RED Static	Solenoid(s) short circuit or other severe fault
	RED Flashing	Solenoid(s) open load (not connected) or other generic fault
Angle Float Key (Left Indicator)	RED Static	Solenoid(s) short circuit or other severe fault
	RED Flashing	Solenoid(s) open load (not connected) or other generic fault
Lift Float Key (Left Indicator)	RED Static	Lift sensor short circuit, disconnected, or reading out of bounds
	RED Flashing	Generic advanced float fault
Lift Float Key (Right Indicator)	RED Static	Solenoid(s) short circuit or other severe fault
	RED Flashing	Solenoid(s) open load (not connected) or other generic fault
Auto Reset Key (Left Indicator)	RED Static	Solenoid(s) short circuit or other severe fault
	RED Flashing	Solenoid(s) open load (not connected) or other generic fault
Swap Key (Right Indicator)	RED Static	-
	RED Flashing	-
Diverter 1 Key (Left Indicator)	RED Static	Solenoid(s) short circuit or other severe fault
	RED Flashing	Solenoid(s) open load (not connected) or other generic fault
Diverter 2 Key (Right Indicator)	RED Static	Solenoid(s) short circuit or other severe fault
	RED Flashing	Solenoid(s) open load (not connected) or other generic fault
Settings Key (Left Indicator)	RED Static	Generic Fault - Fault occurred not mentioned below
	RED Flash x1	Connection Fault - Connection to machine lost
	RED Flash x2	Input Fault - Input from Joystick or Thumbwheels out of range or invalid
	RED Flash x3	System Over Current High power or low power current exceed software threshold
	RED Flash x4	Channel Short Circuit - One or more channels are short circuit
	RED Flash x5	Over Temperature - System over temperature (internal to ACU only)
	RED Flash x6	Undervoltage - Input voltage below 10v
	RED Flash x7	Overvoltage - Input voltage exceeds 16v
	RED Flash x8	Calibration Fault - Joystick or sensor
	RED Flash x9	Watchdog Fault - Watchdog failed
	RED Flash x10	Data Fault - Failed to load settings (EEPROM error)
Settings Key (Right Indicator)	RED Static	Generic Fault
	RED Flash x1	-
	RED Flash x2	-
	RED Flash x3	-
	RED Flash x4	-
	RED Flash x5	-
	RED Flash x6	-
	RED Flash x7	-
	RED Flash x8	-
	RED Flash x9	-
	RED Flash x10	-

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