Publication: 920 September 2018 Part No. 24214.20 Revised: 04.08.20





V6 Revolution Controls Proportional Control System

Standard & Mini-Revolution Controls

Operation Manual





V6 Revolution Controls Proportional Control System



For Safety and Performance... ALWAYS READ THE BOOK FIRST

McCONNEL LIMITED

Temeside Works Ludlow Shropshire England

Telephone: 01584 873131 www.mcconnel.com

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

CE DECLARATION OF CONFORMITY Conforming to EU Machinery Directive 2006/42/EC

We,

McCONNEL LIMITED, Temeside Works, Ludlow, Shropshire SY8 1JL, UK

Hereby declare that:

The Product; Revolution Proportional Control System

Product Code; *MCPT*

Serial No. & Date

Manufactured in; United Kingdom

Complies with the required provisions of the Machinery Directive 2006/42/EC The machinery directive is supported by the following harmonized standards;

- BS EN ISO 12100 (2010) Safety of machinery General principles for design Risk assessment and risk reduction.
- BS EN 349 (1993) + A1 (2008) Safety of machinery Minimum distances to avoid the entrapment with human body parts.
- BS EN ISO 14120 (2015) Safety of machinery Guards general requirements for the design and construction of fixed and movable guards.
- BS EN 4413 (2010) Hydraulic fluid power. Safety requirements for systems and their components.

McCONNEL LIMITED operates an ISO 9001:2008 quality management system, certificate number: FM25970.

This system is continually assessed by the;

British Standards Institution (BSI), Beech House, Milton Keynes, MK14 6ES, UK BSI is accredited by UK Accreditation Service, accreditation number: UKAS 003. The EC declaration only applies if the machine stated above is used in accordance with the operating instructions.

Status: General Manager

Date: January 2018

Joystick : Overview	1
Joystick : Thumbwheels & Control Buttons	1
Slew Swap Button : Default Configurations	1
Thumbwheels & Buttons Identification	1
Mini Joystick : Overview	2
Mini Joystick : Thumbwheel & Control Buttons (Default Functions)	2
Slew Swap Button : Default Configurations	2
Thumbwheels & Buttons Identification	2
Joystick : Lever, Thumbwheel & Button Functions	3
Mini Joystick : Lever, Thumbwheel & Button Functions	4
Display Unit : Overview	5
Main Screens : Overview	5
Screen 1 : Joystick Screen (Home Screen)	6
Configuring Button Functions	6
Configuring Thumbwheel Functions	6
Rotor Operation	7
Starting the Rotor	7
Stopping the Rotor	7
Function Controls	8
Screen 2 : Feedback Screen	8
Screen 3 : Front Hours Screen	8
Screen 4 : Main Settings	9
EDS Settings : Master Activation & Report Screen	9
Display & Sound Menu : Visual & Audio Settings	9
Basic Valve Settings : Work Mode Selection	10
Advanced Valve Settings : Access to Valve Settings	10
Advanced Valve Settings : Valve Selection	10
Changing Valve Setting : Minimum Setting Value	10
Changing Valve Setting : Maximum Setting Value	11
Default Settings for Valve Bank #1	11
Test Screen : Access to Test Menu	13
Test Screen : Joystick Calibration	13
Test Screen : Thumbwheel Calibration	13
Test Screen : Button Cycle Count	13
Test Screen: Sensors	14
Test Screen: Calibrate	14
Information Screens: Setup Screen / Details Screens	14
Stops Screen: Reach Stops	15
Stops Screen: Slew Stops	15
Filters Screen : Service Information	15
Warning Screen : PTO Over Speed Warning	15
Warning Screen : ACB and/or Joystick Disconnected	16



JOYSTICK CONTROLS - REVOLUTION

Joystick : Overview Lift UP Reach Reach Reach Reach OUT OUT IN IN Lift DOWN LIFT REACH REACH

Joystick : Thumbwheels & Control Buttons (Default Functions)



Slew Swap Button : Default Configurations

Machine Build	Default Swap Function	Configuration Options
Standard Arm	No function configured	Can be configured in settings to control a chosen function
VFR Arm	VFR Control	Can be changed in settings to control an alternate function
Tele Arm	Tele Control	Can be changed in settings to control an alternate function
Tele / VFR Arm	VFR Control	Can be changed in settings to control an alternate function

Thumbwheels & Buttons Identification





Mini Joystick : Overview



Mini Joystick : Thumbwheel & Control Buttons (Default Functions)



Slew Swap Button : Default Configurations

Machine Build	Default Swap Function	Configuration Options
Standard Arm	No function configured	Can be configured in settings to control a chosen function
VFR Arm	VFR Control	Can be changed in settings to control an alternate function
Tele Arm	Tele Control	Can be changed in settings to control an alternate function
Tele / VFR Arm	VFR Control	Can be changed in settings to control an alternate function

Thumbwheels & Buttons Identification





REVOLUTION

Mini Joystick : Lever, Thumbwheel & Button Functions





Display Unit : Overview







Screen 1 : Joystick Screen (Home Screen)

Configuring Button Functions



On v6 controls, the button options that can be configured are B1, B2, B3 & B4 only; buttons B5 & B6 are not a valid selection on this control system.



Mini Revolution Buttons

Configuring Thumbwheel Functions



Revolution Buttons



On v6 controls, the thumbwheel options that can be configured are TW1 & TW2 only; thumbwheels TW3 & TW4 are not a valid selection on this control system.





Revolution Thumbwheels

'Slew' & 'Angle' are the only functions that can be operated by the thumbwheels; by default they are assigned to TW1 & TW2 respectively; if required these can be swapped in the settings to TW1 for 'Angle' and TW2 for 'Slew'.



Rotor Operation



When switched off a rotor can continue to 'freewheel' under its own momentum for up to 40 seconds before stopping.

screens.



Function Controls

1: Home Screen

Short touch of screen icon or short press of its adjacent soft key will activate/deactivate function.



Status Indicator; when a function is active (ON) the symbol for that function is 'highlighted' yellow.

Function Icons & Control Settings:

	EDS Soft / Medium / Hard (to						ggle)	
	Active Floats ON / OFF		<u>[]</u>	Angle Float ON / OFF	K Ja	Lift Float ON / OFF		
	0 +⁺+	Slew Swap ON / OFF		1	Auto-Reset ON / OFF			
	D1	Diverter 1 ON / OFF		D2	Diverter 2 ON / OFF			
Rotor ON Downhill		ţ	Rotor ON Uphill	\bigotimes	Rotor OFF			

Functions available will depend on machine specifications.

Screen 2 : Feedback Screen







Screen 4 : Main Settings





Sub-menus are accessed via Screen Icons or relevant Soft Keys Status Indicator; when a function is active (ON) the screen icon for that function is 'highlighted' yellow.



EDS Settings : Master Activation & Report Screen

EDS S	Status		Ģ	Factory/Dealer Settings]		
EDS : STANDARD ADJUSTMENT : BUTTO	CUTOUT : O	N	×	EDS Master Activation	EC OF	DS: FF	EDS: STANDARD (ON)
POSITION PRESSURE	REACH : 0 LIFT : 0		}})	Factory Default Reset]		Touch Screen or
LIFT VALVE SOFT : 36 - 140	MIN : 45 MED : 31 - 135	MAX : 120 HARD : 26 -130	\bigotimes	Rotor STOP			Soft Key Access

Display & Sound Menu : Visual & Audio Settings



Status Indicator; when ON/OFF functions are ON, the screen icon for that function will be 'highlighted' yellow.



Basic Valve Settings : Work Mode Selection

Work mode selection screen; available options are VERGE Mode or HEDGE Mode.



Advanced Valve Settings : Access to Valve Settings

With the required work mode selected touch 'ADVANCED' tab on the screen to access the advanced valve settings screen.





Changes to valve settings only alter the performance of Proportional Valves; changing the settings of the Bang-Bang Valves will not alter their performance.

Advanced Valve Settings : Valve Selection

Using 'on-screen' menu scroll the specific valve name to the top of screen then select the 'edit' icon to change the values in that valve.



Changing Valve Setting : Minimum Setting Value Enter numeric valve for the 'MINIMUM' setting.





Valve Max' setting screen for the same valve.

'Touch Screen'

input only



Changing Valve Setting : Maximum Setting Value

Enter numeric valve for the 'MAXIMUM' setting.





the Valve Selection screen.

Repeat this procedure for each valve you want to change.

Default Settings for Valve Bank #1

Valve Service	Min Value	Max Value	Valve Service	Min Value	Max Value			
Lift Up	55	180	Lift Down	55	250			
Reach In	60	180	Reach Out	60	200			
Angle CW	50	160	Angle A-CW	55	160			
Slew In	55	180	Slew Out	55	120			
Tele In	55	180	Tele Out	55	180			
6 th Service In	55	180	6 th Service Out	55	180			
7 th Service In	55	180	7th Service Out	55	180			
Values listed are recommended using a officer for normal ladge, sufficer an existing								

Values listed are recommended valve settings for normal hedge cutting operations.

The minimum and maximum settings relate to valve response times; values range between 0 and 255, the higher the value the faster the response time.





Diverter Menu : Information Screen & Symbol Customisation

The diverter menu screen lists and identifies the diverter valves. This screen also allows the user to replace the displayed diverter symbol with the symbol of the function currently assigned to the diverter; *the following illustrations show the procedure for changing a diverter symbol.*



AWARNING

<u>This procedure does not assign a function to the diverter</u>, it will only change the symbol displayed 'onscreen' for the particular diverter control; *always ensure that the symbol assigned to the diverter is the correct symbol for the currently assigned function.*



Test Screen : Access to Test Menu



Test Screen : Joystick Calibration

To test joystick calibration operate the control lever to its maximum positions in both the 'X' axis and the 'Y' axis; calibration is correct when the test screen reports '-1000' & '1000' at the opposing maximum positions in each axis, and '0' at it's mid-point position.



Test Screen : Thumbwheel Calibration

To test thumbwheel calibration operate each thumbwheel to it's maximum position in each direction; calibration is correct when the test screen reports '-1000' & '1000' at the opposing maximum positions and '0' at it's mid-point position.



Test Screen : Button Cycle Count

The control unit counts each operation of the joystick buttons; the running total for each button is recorded on the test screen.







Test Screen: Sensors

The sensors test screen displays 'active' machine sensors and reports their current status or a measured value. The types of sensors fitted will depend on machine specification.



Only sensors that are active will be displayed on this screen; for a sensor to be active it must be ticked (✓) in the 'Calibrate Test Screen'.

RCV Sensor will report one of the following depending on the current status: **OFF, CLOCKWISE, COUNTER CLOCKWISE** or **RUN DOWN**.

Position Sensors report a numeric value based on its current position.

Pressure Sensors report a measured pressure value.

Test Screen: Calibrate

The calibrate screen allows machine sensors to be activated or de-activated; sensors are 'active' when their respective box is ticked (\checkmark).



Information Screens: Setup Screen / Details Screens (Factory use)





Stops Screen: Reach Stops



Stops Screen: Slew Stops (VERSI Machines Only)



'Slew Stop' positions are factory pre-set at 90° to the tractor on both sides and at 12° forward of those positions.

Filters Screen : Service Information



Warning Screen : PTO Over Speed Warning





Warning Screen : ACB and/or Joystick Disconnected

ACB DISCONNECTED

JOYSTICK DISCONNECTED

RED SCREEN will be displayed with;

ACB DISCONNECTED' and/or '**JOYSTICK DISCONNECTED**' If one or both are not connected to the control unit.

If either or both of these warnings are displayed check the relevant components are connected.



McConnel Limited, Temeside Works, Ludlow, Shropshire SY8 1JL. England. Telephone: 01584 873131. Facsimile: 01584 876463. www.mcconnel.com