

Fastfeed D-96

FEEDER CONTROL BOX

INSTALLATION AND OPERATION
MANUAL

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OVERVIEW

The Fastfeed D-96 is the next generation feeder control capable of dispensing 1 to 15 rations to parlours up to 40-a-side. The Fastfeed D-96 will control either pulse or auger type feeders and offers the facility to calibrate individual feeders.

The feeders are controlled by remote relay cards that can be positioned above the feed dispensers on either side of the parlour or all housed in one enclosure at one point in the parlour. The relay cards and Fastfeed D-96 control panel are linked together (daisy-chained) using twisted pair cable for the data link and two core cable for the system power supply. The system incorporates its own switch mode power supply to provide power for the relay cards and the Fastfeed D-96 control panel.

1.0 FASTFEED D-96 KEYS



“TICK” Key used to accept commands or values.



“X” Key used to cancel commands or delete values.



“COW” Key for total cows fed.



“FEED” Key for total feed dispensed in units.



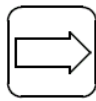
“CAL” Key for entering calibration menu.



“BATCH” Key for batch feeding cows.



“LEFT ARROW KEY” Key for selecting left side of parlour.



“RIGHT ARROW KEY” Key for selecting right side of parlour.



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Number keys for selecting feed rations.

2.0 SETTINGS MENU

2.1 To access the settings menu the operator must press and hold down the “Left Arrow” key and press the “Right Arrow” key once.

Once in the settings menu, the user can scroll the different settings by pressing the left arrow key or the right arrow key.

2.2 **Parlour size** can be altered from 1 to 40 stalls per side. To change the current setting the user needs to press the "X" key to clear the current value and then enter the new parlour size using the numeric keypad.

2.3 **Single shot** option can be enabled or disabled by pressing the "X" key to select either "YES" or "NO". This facility when activated encourages the first cow to stall 1 by dropping 1 unit of feed as the operator enters the cow numbers.

2.4 **Auger feeders/Pulse feeders** can be toggled by the user by pressing the "X" key.

2.5 **Pulse feeders On time** can be altered from 1 to 20 seconds. To change the current setting the user needs to press the "X" key to clear the current value and then enter a new value using the numeric keypad.

2.6 **Feed Group Size** can be changed by pressing the “X” key. The group sizes range from 1 stall at a time to 16 stalls at a time. This facility allows smaller transformers to be used on large parlours.

2.7 **Meal Time** allows feeding of a cows rations to be spread over a meal time duration (minutes). See section 7.0.

- 2.8 **Quick Feed** if set to ON will feed rations immediately to the stall once the operator has pressed a ration amount on the numeric keypad. This function can be toggled ON/OFF using the "X" key.
- 2.9 **Quick Feed Delay** provides a delay before feeding if set to a value (seconds) greater than zero. This feature is particularly useful when the Quick Feed feature is ON and the operator wants to prevent the cows stalling to feed when entering a side before they reach their own stall.

To Exit the settings menu the operator must press and hold down the "Left Arrow" key and press the "Right Arrow" key once. The Fastfeed D-96 will automatically exit the settings menu after 1 minute.

3.0 FEEDING

- 3.1 Assuming the Fastfeed D-96 is not in the settings screen the operator can initiate feeding by firstly selecting which side of the parlour to feed by pressing either the "left arrow" key or the "right arrow" key. The display will indicate which side is selected by the "<<" or ">>" arrows and the stall indicator "L01" or "R01".

As the cows are entering the parlour the operator can key in the desired feed values for each cow by pressing the numbered keys on the numerical keypad. As each feed value is entered the Fastfeed D-96 will increment the stalls automatically indicated by the stall indicator.

When the last feed value has been entered the Fastfeed D-96 will display the following message "Start Feed" followed by "Press X to clear". To start feeding the operator needs to press the "TICK" key, otherwise the operator can press the "X" to cancel the whole process.

Once the operator has pressed the "TICK" key to initiate feeding the Fastfeed D-96 will automatically switch over to the opposite side of the parlour. If the operator presses the appropriate arrow key to go back to the side he has just fed the Fastfeed D-96 will display "BUSY" indicating that feed is still being dispensed to that side.

If for any reason the operator needs to cancel feeding after starting the feed process, the operator needs to select the side feeding using the arrow keys and then press the “X” key to cancel feeding. The Fastfeed D-96 will then display the following message “STOP FEEDING?” followed by either “Left Side Y/N” or “Right Side Y/N”. Press the “TICK” key to cancel feeding or the “X” key to carry on feeding.

- 3.2 When the operator comes to feed the last side of cows, it is very unlikely that there will be exactly enough cows to fill the side. To skip any empty stalls the operator needs to press the “0” key until the “Start feed” message is displayed.

3.3 Cow Totalizer

Pressing the “Cow” key will result in the display showing the total number of cows fed since the counter was last reset. The bottom line of the display shows the message “Press X to clear”. If the operator wishes to leave the counter at its current value then they should press the “TICK” key. If the operator wishes to reset the counter then they should press the “X” key.

3.4 Feed Totalizer

In the same way, pressing the "Feed" key will indicate the total number of portions of feed dispensed since the counter was last reset. Again the operator has the option to leave the counter at its current value or to reset it to 0 either by pressing the "X" or the "TICK" keys.

4.0 INSTALLATION

4.1 Cables required for Fastfeed D-96 installation are:

Twisted pair 22AWG screened cable (RS485 Data cable).
Two core 0.5mm². Recommend 2192Y. (Power cable).

*Cable for feed dispensers needs to be selected according to what type of dispensers are being used and their current consumption on full load. Please refer to the manufacturers specification on the feed dispensers. Davlec cannot be held responsible for damage caused by inappropriate wiring considerations.

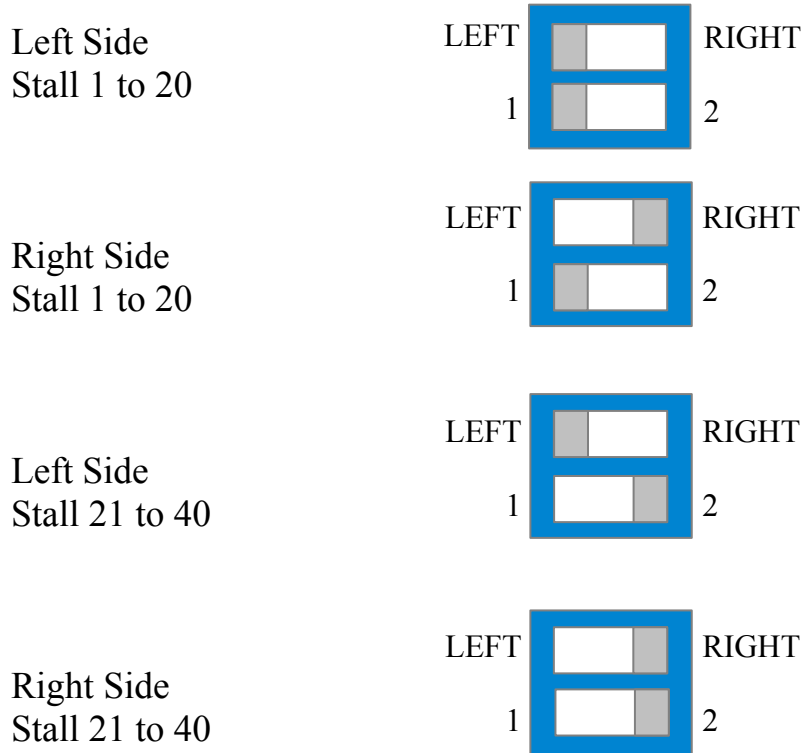
4.2 The Fastfeed D-96 is normally installed on the bridge arm at the cow entry end of the parlour. In certain circumstances, the customer may have special requirements regarding the positioning of the unit.

The relay cards are commonly housed in separate enclosures that are fitted to either side of the parlour above the feed dispensers. It is recommended that the enclosures are fitted to a flat surface and the fixing holes located in each corner of the enclosures are used. It is **not recommended** to drill fixing holes inside the enclosure as this prevents the enclosure from being water resistant.

Fastfeed D-96 and relay cards are housed in strong, splash proof enclosures. The water resistance of this enclosure is however, only as good as the arrangements that are made to connect conduit to it. 20mm conduit adapters are supplied to accommodate the conduit from the relay card enclosures to the Fastfeed D-96 enclosure. **It is strongly recommended that the adapters should be fitted on the underside of the enclosures to eliminate the possibility of water entering and damaging the electronics.**

4.3 The Fastfeed D-96 and relays are connected in a daisy-chain style of wiring, with the data cable and power cable looped from the first relay card with incorporated power supply, to the next relay card and then finally to the Fastfeed D-96 control box. Please refer to the enclosed wiring diagram (fig 1.0) located at the end of this manual.

4.4 The relay cards are identified as either left or right hand side using two dip switches as shown:



4.5 A push key batch feed for the left and right sides is also incorporated into the main Fastfeed D-96 control enclosure. These buttons are located on the left and right sides of the enclosure. Please also refer to the connection diagram.

4.6 Feed Dispenser Wiring

The Fastfeed D-96 relay cards can accommodate most types of feeders at various voltages e.g., D.C. and A.C. The relay card has two “Feeder Transformer +” connection studs (M5) for one phase of the feeder power supply. The reason the card has two studs is to share the overall load of the feeders on one relay card, therefore feeders 1 to 10 are connected to the stud just to the left of the connections and feeders 11 to 20 are connected to the stud just to the right of the connections.

Normally with a 12 volt D.C. system the negative connections on all the feeders are linked together and directly connected to the feeder power supply**. The positive on the feeder power supply is connected directly to the “Feeder Transformer +” stud on the relay cards and also a small connection from the “Feeder Transformer -” terminal on the relay card is connected to the feeder power supply negative. The positive connection on each feeder is then connected to each corresponding output connector on the relay card.

With positive ground system all the positives from each feeder are linked together and the feeder power supply negative is connected to the “Feeder Transformer +” stud on the relay card. The “Feeder Transformer -” connector is then connected to the feeder power supply positive. All the negative connections from the feeders are connected to the corresponding outputs on the relay card.

On an A.C. system, one phase would be linked on each feeder and the other phase switched on the relay card.

It is recommended that each feed dispenser is fused accordingly to the manufacturers specifications. Normally each feeder will be fused in-line between the relay card of the Fastfeed D-96 and the connection on the feeder. It is also recommended that D.C. feeders are suppressed using a diode.

4.7 Before switching on the power supply, the installing engineer should ensure that the polarity of the power cable and data cable is correct.

** Feeder power supply not included with Fastfeed D-96. Contact Davlec Ltd for further information on suitable power supplies.

5.0 FEEDER CALIBRATION

5.1 Auger Type Dispensers

To calibrate feeders press the “CAL” key. If the controller does not respond to the “CAL” key check that auger feeders have been selected in the settings menu (page 4).

The display should now have “Please confirm calibration? Y/N”. Press the “TICK” key to proceed or the “X” key to cancel the operation.

The next screen will show “Seconds/portion” and followed by “Auger 00.0 Secs”. To delete the previous value press the “X” key until the display shows only zero’s. Enter the new value in seconds of how long it takes for the feed dispenser to dispense 1 unit of feed. Press the “TICK” key to save the value.

The next screen will show “Grams/portion” followed by “Auger 000 Grms.”. To delete the previous value press the “X” key until the display shows only zero’s. Enter the new value in grams for 1 portion of feed. Press the “TICK” key to save the value.

The next screen will show “Calibrate all Feeders? Y/N”. To continue the calibration process press the “TICK” key or to cancel the calibration process press the “X” key. You will then be asked to “Calibrate Left” followed by “Press Y to start”, as soon as the “TICK” key is pressed the feeders will dispense 5 units of feed.

If for example the operator has entered 500 grams for the portion size then ideally each stall should have 2500 grams of feed dispensed, but realistically there will be differences between each stall. The Fastfeed D-96 can accommodate feeder variations up to +/- 20%, that is to say for example that if the feed amount weighed was 2000 grams instead of the expected 2500 grams the Fastfeed D-96 will compensate this error and run the feeder for an extra length of time until 2500 grams has been dispensed. Alternatively if the feeder dispensed 3000 grams instead of the expected 2500 grams then the Fastfeed D-96 will run the feeder for less time. If all feeders universally dispense more or less feed above the +/- 20% margin then the run time per portion needs to be altered accordingly.

When all the left side weights have been entered the Fastfeed D-96 will ask “Calibrate Right” followed by “Press Y to start”. Press the “TICK” key and again the right side will dispense 5 portions of feed. Weigh each feed amount and enter it into the Fastfeed D-96. Once the last weight has been entered the Fastfeed D-96 will resume normal feed mode.

5.2 PowerDos Dispensers

To calibrate feeders press the “CAL” key. If the controller does not respond to the “CAL” key check that PowerDos feeders have been selected in the settings menu (page 4).

The display should now have “Please confirm calibration? Y/N”. Press the “TICK” key to proceed or the “X” key to cancel the operation.

As the PowerDos feeder dispenses a fixed 50 gram portion, the Fastfeed enables the user to set a fixed number of portions per unit of feed. For example, in the PowerDos calibration if you enter '10' portions the Fastfeed will dispense 500 grams per one unit of feed, 1000 grams per two units of feed, 1500 grams per three units of feed, and so on.

To save the calibration settings and exit press the "TICK" key.

6.0 ROUTINE MAINTENANCE AND SERVICE

The Fastfeed D-96 is housed in a strong, splash proof enclosure. It must be noted however, that this enclosure is not suitable for washing with a high pressure hose. Any cleaning required should be done using warm soapy water and a soft cloth. Direct blows to the front of the unit should be avoided and sharp objects should not be allowed to come into contact with the splash proof membrane.

7.0 Meal Time

Meal Time allows the operator to feed a side of cows for a fixed length of time even though each cow may have a different size portion to feed on. For example, if Meal Time is set to 5 minutes all cows rations on that side will be spread over a 5 minute period.

The method in which the Fastfeed calculates the feed drops in Meal Time is as follows:

If the parameters Meal Time is set to 5 minutes and Pulse Time set to 2 seconds in the setup menu.

Feeders are Auger type and are set to feed 500 grams in 10 seconds.

A ration size of 3 kilograms fed to a cow will be fed as follows,

3000g divided by 500g gives 6.

Total feeding time is 10 seconds multiplied by 6 which gives 60 seconds (1 minute).

Meal Time of 5 minutes minus 1 minute total feeding time gives 4 minutes of no feeding time.

If Pulse Time is set to 2 seconds then the feeders will operate for 2 second drops, Therefore to calculate number of drops divide 60 seconds (total feeding time) by 2 (Pulse Time) which gives 30.

To find the delay between feed drops divide 4 minutes (no feeding time) which is 240 seconds by 30 (number of feed drops) which gives 8 seconds.

To summarise a cow fed 3 kilograms over a 5 minute Meal Time will get 30 x 2 second drops of feed with an 8 seconds delay between each feed drop.

If you want a longer feed dropping time then increase the Pulse Time parameter in the setup menu.