davlec LTD.
CYF.
ELECTRONIC ENGINEERING
PEIRIANWAITH ELECTRONEG

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Dialfeed

FEEDER CONTROL BOX

INSTALLATION AND OPERATION MANUAL

Company Registered in England No. 2373374. VAT No. 489 2350 15
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Declaration of Conformity

Davlec Ltd. declares that the product:

Dialfeed

conforms to the following EC Directive(s) and Norm(s)

EMC Directive 89/336/EEC

The following standards have been applied in full, or in part, as applicable:

BS EN 50081 Part 1
BS EN 50082 Part 1
BS EN 55022
IEC 801 Part 1
IEC 801 Part 2
IEC 801 Part 3
IEC 801 Part 4

In order to maintain compliance, this equipment must be installed and operated strictly in accordance with the instructions contained in this manual.

In order to maintain compliance, this equipment must only be used in conjunction with other compliant equipment.

CE

W. G. DAVIES
Managing Director

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1.0 PRODUCT SPECIFICATION

"Dialfeed" is a simple yet versatile controller which allows the operator to select feed ration by turning a rotary switch. The controller has eight such switches and a toggle switch to select right or left, and is therefore suitable for herringbone parlours up to eight a side. For larger parlours a second "Dialfeed" would be required. Each rotary switch can be set for up to ten units of feed, or for zero feed if required. As soon as the amounts for each stall have been set, the feeding process is initiated by pressing the "Start" button. The controller is also fitted with an "On/off" switch and a power indicator lamp.

1.1 The equipment comprises of two main working parts:-

a) The electronics card which is located in the lid of the unit.
b) The output relay card which is located at the rear of the unit.

Interconnection between these assemblies is via a ribbon cable which means that the lid is easily detachable from the base, for instance, during installation. All external connections are made to the output relay card.

There is a large variety of feed dispensers available, some operated by vacuum and others having a small "Auger" powered by an electric motor. Some feed dispensers require 12 volts D.C. and others require 24 volts D.C.. "Dialfeed" is designed to cope with as many of these variations as possible. The basic unit is fitted with an output relay card suitable for 12 volt D.C. operation. However, a 24 volt D.C. card is available upon request, at no extra charge. The electronics card will function at either voltage and is therefore completely interchangeable.

The electronics card has three additional controls which enhance the overall versatility of the unit.

1.2 The first of these is a switch which allows the installing engineer to select either "Pulse" or "Auger" type feed dispensers. In "Pulse" mode, the controller will send pulses of voltage to the dispenser to switch a solenoid on and off. Each time the solenoid is switched on and off again, the dispenser will dispense one unit of feed. In "Auger" mode, the controller will send voltage to the dispenser for a time interval proportional to the number of feed units set on the rotary switch.

1.3 The second control is a "X1-X2-X4" switch which in effect gives a course calibration. Most "Pulse" type feed dispensers are set to dispense 1 lb. or 0.5 kg of feed. Some dispensers however will only deliver a quarter or a half of this amount at each operation and some method is required of increasing the number of times the dispenser is operated, in order to dispense reasonable amounts of feed. When the "X1-X2-X4" switch is in the "X1" position, and the rotary switch for stall one is set for five units of feed, the "Dialfeed" will send five pulses to the feed dispenser when the "Start" button is pressed. If the "X1-X2-X4" switch is in the "X2" position, then the "Dialfeed" would send ten pulses to the feed dispenser when the "Start" button is pressed. In exactly the same way selecting "X4" will give twenty pulses. Where "Auger" type feed dispensers are being controlled, the "X1-X2-X4" switch can be used as a coarse calibration control. Setting the "Dialfeed" for "Auger" and "X2" will mean that the running time of the "Auger" per unit of feed will be doubled compared to the "X1" setting. In the same way selecting "X4" will multiply the running time by four compared to the "X1" setting.

1.4 The third control is a "Speed" potentiometer which allows the installing engineer to vary the feeding rate. Some "Pulse" type dispensers are much slower in operation than others and the speed control allows the "Dialfeed" to be set up to cope with any such variations. In the case of "Auger" type dispensers, the amount of feed dispensed is directly proportional to the running time and the "Speed" control is therefore necessary for fine calibration.

"Dialfeed" uses the very latest technology to give you a versatile and reliable controller at a realistic price. Where a "Dialfeed" is required to replace an existing controller, in the majority of cases a new power unit is not required. As outlined above, the electronics card will function at D.C. voltages in the range of 12 to 24 volts. Please note that if the power unit gives an unsmoothed full waved rectified output, the peak voltage should not exceed 24 volts, i.e. the R.M.S. voltage should not exceed 17 volts.

2.0 INSTALLATION AND CALIBRATION

The "Dialfeed" is normally installed on the bridge arm at the cow entry end of the parlour. On larger parlours, where two units are required, then the second "Dialfeed" should be fitted half way down the parlour. In certain circumstances, the customer may have special requirements regarding the siting of the unit.

2.1 "Dialfeed" is housed in a strong, waterproof enclosure. The waterproofing of this enclosure is however, only as good as the arrangements that are made to connect conduit to it. Two 20mm conduit adapters are supplied to accommodate the conduit from the feeders on each side of the parlour. It is strongly recommended that these adapters should be fitted at the back of the box as close as possible to the bottom. There is adequate space on both sides of the output relay card for this to be accomplished. In most cases the cables from the power unit can also be brought in via one of these 20mm conduits. In some cases it may be necessary to bring a two core cable from the power supply, and a compression gland is supplied for this purpose. Please note that if the compression gland is being used, a round sheaved two core cable should be used and not two individual wires. It is impossible for a compression gland to provide a waterproof seal around two individual wires. In the very rare and extreme cases where it is necessary to drill the top of the box, then all the conduit joints must be adequately sealed together with any inspection elbows or tees above the control box. A little care during this part of the installation process will pay dividends in terms of the long term reliability of the control box.

2.2 During the installation process, the lid of the control box may be detached from the output relay panel and taken to a safe place. The D.C. power supply should be connected to the terminals marked "+" and "-" at the bottom left hand corner of the output relay card, taking care to ensure that the correct polarity is observed. The size of the power cable will depend entirely on the types of feed dispensers. For "Pulse" type dispensers, where the solenoids are normally taking less than 1 amp each, then 2.5 mm square cable is perfectly adequate. In the case of "Auger" type dispensers, where the individual running current may be as high as 5 amps, a considerably larger cable may be required. It is advisable to follow the manufacturers recommendations on these cable sizes.

2.3 The common earth connections from each side of the parlour are connected to the terminals marked "E" again at the left hand corner of the output relay panel. In general, the earth wire should be of the same size as the power supply cable, i.e. for "Pulse" type dispensers 2.5mm square cable is normally adequate, with a larger conductor being required for "Auger" type feed dispensers. It should be noted that the larger the number of dispensers, the more current is required in the common earth connection and therefore the greater the cable diameter required.

2.4 The individual feeders may then be connected to their respective output terminals which are labelled quite clearly on the output relay card. The "Dialfeed" follows the conventional numbering system where stall "Left1" is the stall furthest away from the operator on the left hand side of the parlour, as viewed from the cow entry end of the parlour. In the case of "Pulse" type dispensers where the solenoid current is less than 1 amp, then 1 mm square cable is perfectly adequate. In the case of "Auger" type feed dispensers then the conductor needs to be larger. Again the manufacturers specification should be followed.

2.5 The output relay card is fitted with a 10 amp fuse which protects the control box and the feed dispensers. If the "Dialfeed" control box is being used to control "Auger" type dispensers then this fuse rating is obviously too low where there are more than three dispensers on each side of the parlour. In this case the fuse should be replaced with one of a higher rating or by a shorting link. The manufacturers of most types of "Auger" type dispensers recommend that each dispenser is fused individually and in-line fuse holders should be used for this purpose. "Auger" motors are also notoriously noisy especially when they are more than a few years old and your "Dialfeed" is supplied with suppressors to control this interference. These suppressors should be fitted across the motor terminal or as close as practically possible. Fitting the suppressors inside the "Dialfeed" control box will not give adequate suppression of interference. In any case, suppressors are already fitted on the output relay card to protect the relay contacts. Suppressors should also be fitted to solenoid valves on pulse type feeders. The suppression devices supplied are diodes and should be connected so that the white band around one end is to the positive terminal of the motor or solenoid.

2.6 Before any attempt is made to fit the "Dialfeed" lid, or to switch on the power supply, the installing engineer should ensure that the polarity of the supply is correct and that the unit is being supplied from a

D.C. source. In situations where existing control boxes are being replaced, and the existing power supply retained, then the installing engineer should ensure that a rectifier is fitted to the power supply where necessary. Some types of feed dispensers may have the rectifier built into the individual control box and in these cases the existing power unit may have an A.C. output. A suitable rectifier will be supplied free of charge upon request. Please note that the rectifier must be fitted to large metal surface to give the necessary heat dissipation.

The installing engineer must also make sure that the unit he is fitting is suitable for the supply voltage from the power supply. The "Dialfeed" lid will operate at any voltage between 12 and 24 volts and it is therefore only necessary to ensure that the correct voltage output relay panel is being used. The part number for a 12 volt relay panel is 0230885A and the part number for a 24 volt output relay panel is 0230885B.

2.7 The "Dialfeed" lid may now be re-connected to the output relay panel. The installing engineer should now set the switches on the "Dialfeed" lid to select "Pulse" or "Auger" type dispensers and "X1", "X2" or "X4" mode of operation. For "Pulse" type feeders, in most cases the factory setting of the output "Speed" will be suitable. In some cases however, where the feeder operates very slowly, then the "Speed" control potentiometer should be turned in a clockwise direction to increase the duration of the output pulse. In all cases the calibration of the feed dispenser should be checked by using the controller to dispense say five units of feed and weighing the amount of food dispensed. If the unit is set in "X1" mode and the quantity of food dispensed is insufficient and the feed dispenser cannot be calibrated to give the correct amount, then the "X1-X2-X4" switch can be moved to the "X2" position so that two pulses are given for each unit of feed set on the dial. In this case obviously the feed dispenser must be calibrated to give half the desired amount per unit set on the dial.

In the case of "Auger" type feed dispensers, the "Speed" control potentiometer will vary all the outputs simultaneously and can therefore be used as an overall density calibration. The individual feeders however, must be calibrated to give an identical amount of feed for the same running time. As noted earlier, in this case, the "X1-X2-X4" switch can be used as a coarse calibration.
As soon as the calibration process is complete, the lid of the control box may be replaced using the stainless steel screws provided. The installing

engineer should ensure that neither the lid gasket or the sealing edge of the base are damaged in any way. In the case of any difficulty, please contact the manufacturer.

The basic operation of the feeder has already been described. Once the rations have been set for one side of the parlour, the correct side of the parlour selected using the "Left/right" switch, and the "Start" button depressed, it is most important that the "Start" button should not be pressed again until the feeding process is complete. Pressing the "Start" button again may result in inaccuracies of the feed amounts being dispensed.

3.0 ROUTINE MAINTENANCE AND SERVICE

The "Dialfeed" is housed in a strong, waterproof enclosure. It must be noted however, that this enclosure is not suitable for washing with a high pressured hose. Any cleaning required should be done using luke warm soapy water and a soft cloth. Direct blows to the front of the unit, particularly to the rotary switch knobs should be avoided. A "Dialfeed" treated with care and respect will give years of trouble free service.

DIALFEED TO AUGER MOTORS WIRING DIAGRAM