Feedtronic 4004-A

User's Manual

Revision 1.12 15 July 2015

This user's manual is applicable to Feedtronic 4004-A with program versions 101 to 199 where the weight unit is kilogram.

This manual may contain mistakes and printing errors.
We accept no liability for technical mistakes or printing errors, or their consequences.

Revision Summery

Revision	Date	Done By	Chip Version	Change
1.01	26.6.2003	Y.K.	103 and later	*Alarm time maximum value is changed from 23:59 to 99:59 mm:ss. If user enters a value of 99:99, alarm is disabled.*
1.02	25.12.2003	Y.K.	NA	*Correct net name code on page 12*
1.03	17.3.2004	Y.K.	NA	*Remove parts table from page 4*
1.04	26.10.2004	Y.K.	NA	*Add FD4004A to Silo wiring*
1.05	15.11.2004	Y.K.	NA	*Change name of silo connection box to A/D SILO box*
1.06	17.07.2006	Y.K.	NA	*Change ALARMS passage and add CHECKING LOAD CELLS passage.*
1.07	01.04.2009	J.O.	NA	*Remove calibration by serial number.*
1.08	04.08.2010	J.O	NA	*Reedit manual*
1.09	31.01.2012	J.O	212 and up	*Adopt manual to the Pounds versions (212 and up)*
1.09.01	03.09.2013	J.O.	212 and up	*Add Joint unit Allen lock screw in silo installation.*
1.10	7.01.2015	Y.K	101-199	*Add A/D EXTRA SILO, installation update and change checking load cells*
1.11	14.01.2015	Y.K	101-199	*Editing of some sections; adding not about silo accuracy in full weight calibration*
1.12	15.05.2015	Y.K	101-199	*Add silo leveling instructions*

Table of Contents

Revision Summery *2*
General *5*
The Feedtronic 4004-A Parts *5*
Front Panel *6*
Principle Of Operation *7*
Free feed **7**
Restrictive feeding **7**
Manual feed mode **7**
Recalling and setting Data *8*
Recalling **8**
Setting data **8**
Starting new flock *9*
Function List *9*
Recalling and changing **9**
Weight **9**
Daily Quantity **9**
Total Quantity **9**
Fill **10**
Quantity **10**
Feeding Time **10**
Water Consumption **10**
Clock/Growing Day **11**
Skip A Day Counter **11**
Feeder Run Time **11**
Feeder Start Times **11**
Setup Function Codes *12*
Stop All **12**
Clearing History **12**
Checking the Feed Sensor Connection **12**
Quantity Error **12**

Number of feed times **13**
Alarm Time **13**
Reset Time **13**
Skip A Day setup **14**
Net Name- Pc Communication **14**
Number Of Feeder Operating Times **14**
Minimum Silo Weight **15**
Zero Data **15**
Load Cell Constant **15**
Manual Quantity **15**
Enter the number of days to skip (see **16**
Silo Calibration ***16***
Zero Calibration **16**
Alarms ***18***
Error numbers, descriptions and solutions. **18**
Solving Calibration Problems ***20***
Recall Zero Data **20**
Recall Load Cell Constant **20**
Re-Calibration When The Silo is Not Empty **20**
Zero Calibration: 20
Full Calibration: 21
Solving Installation Problems ***22***
Checking The Feedtronic 4004-A - A/D (EXTRA) SILO Box Communication **22**
Checking Load Cells **23**
Code Summery ***24***
Controller installation ***25***
Connecting Agro Logic's SW2 Feed Sensor to the controller **26**
Connecting A/D SILO box to the controller (Not applicable to A/D EXTRA SILO) **26**
Connecting A/D EXTRA SILO box to the controller (Not applicable to A/D SILO) **28**
Connecting load cells to the A/D (EXTRA) SILO box **32**
Silo Hardware Installation Guide ***33***
Main Parts **33**
Procedure **33**

General

The **Feedtronic 4004-A** is designed to weigh up to two silos and give an accurate weight of the feed in each silo.

The **Feedtronic 4004-A** records and saves daily feed consumption over a 9 day period.

The **Feedtronic 4004-A** records and saves total feed consumption over the entire flock.

The **Feedtronic 4004-A** will show the last fill for each silo.

The **Feedtronic 4004-A** can be used for restrictive feeding, giving out feed up to 8 times in a 24 hour cycle.

The **Feedtronic 4004-A** will operate 1 auger and 1 feed line motor.

The **Feedtronic 4004-A** can record water consumption if a water meter is connected.

The Feedtronic 4004-A Parts

- An electronic controller box.
- **A/D SILO** or **A/D EXTRA SILO** box.
  Note:
  The **A/D SILO** can accommodate up to 2 silos with 6 legs each and the **A/D EXTRA SILO** can accommodate up to 2 silos with 8 load cells each.
- Load cells and mounting assemblies according to the total amount of silo legs (maximum 2 silos per unit).

Note: whenever instructions in this user's manual are the same for the **A/D SILO** box and for the **A/D EXTRA SILO** box, the reference **A/D (EXTRA) SILO** box will be used.

Front Panel

The panel has these elements (see photo 1 above):

- The display that display the silo weight and function data.
- The Function list and Function lights that indicate which function is currently being viewed and or programmed.
- The Keyboard that is used to choose the different functions and program them.
- Relay lights indicate which relays are in operation.
- The Code and Error list that contain codes for programming and errors representing different alarms.

Principle Of Operation

The Feedtronic 4004-A is a stand-alone dual silo weighing control unit. It is possible to setup the Feedtronic 4004-A to run in 3 different feed modes.

Free feed

In this mode the **Feedtronic 4004-A** activates the feed auger motor using the feed sensor placed in the feed hopper. When the sensor senses that there is no feed in the hopper the auger motor will be activated and more feed will be moved into the house. Feed will be given out 24 hours a day.

To set the **Feedtronic 4004-A** to Free Feeding mode set a feed quantity of 9.999 (see *Quantity* function on page 10).

Restrictive feeding

In this mode it is possible to distribute a preset amount of feed up to 8 times over a 24 hour time period. The restrictive feed mode can be done daily, once every two days, once every three days or once every four days (see *Skip A Day* setup on page 14). When the preset start time is reached (see *Feeding Time* on page 10), the **Feedtronic 4004-A** will activate the feed auger motor and feed will be moved into the house. The amount moved into the house can be setup in the *Quantity* function on page 10. Once the preset feed quantity has been moved into the house the feed auger motor will stop. The feed lines can be run up to 8 times a day (see *Feeding Time* on page 10).

To set the **Feedtronic 4004-A** to restrictive feeding mode set the required feed quantity to be given in the *Quantity* setting on page 10.

Manual feed mode

It is possible to bring in a quantity of feed immediately after the user sets it (see setup function Manual Quantity on page 15).

Recalling and setting Data

It is possible to recall and change all data in the **Feedtronic 4004-A**.

Recalling

Each Press on the **DATA** button will scroll through the function list on the left side of the **Feedtronic 4004-A**. Each time you press on the **DATA** key a light will light next to the function displaying which function you have chosen. In some cases 2 lights will light up (see Function List on page 9).

Alternately you can use the shortcut keys to go directly to certain functions.

Each function shows the current stored data.

In certain functions, pressing again on the **DATA** will scroll through additional data stored within the function.

Setting data

Go to the function by pressing **DATA** or alternately use the shortcut keys.
The function chosen will show the current stored data.
Press on **PROG**, the first left hand side digit or letter will start to blink.
You can now change the data using the keyboard numbers.
Press on **ENTER** to store the new data.

- If the entered value is out of the permissible range, the letter **E** appears at the right-most digit of the display.

If while entering the information you would like to change or cancel, press on **DATA** to start over or **PROG** to exit without saving the entered value.

- Before running the control unit it is will be necessary to program all the data in both the *Function list* and the *Setup Function codes*. An explanation of the *Function List* came be found on page 9. An explanation of the Setup Function Codes can be found on page 12.

Starting new flock

At the beginning of a new flock please make sure you have setup all the functions as needed.

Please make sure you:

1. Clear history before starting a new flock (see Clearing History on page 12).
2. Always clear last fill quantities (see Fill function on page 10), daily and total quantities (see pages 9 and 9)
3. It is advisable to do STOP ALL whenever starting a new flock (see Stop All on page 12).

Function List

Recalling and changing

Weight

To view the current weight in silo A or B, press on the **DATA** key until the *Weight* light is on. On the left side of the display will appear the letter **A** for silo A. Silo A weight will be shown on the display. Press again on the **DATA** key to see silo **B** weight. Alternately you can use the shortcut keys 1 – 2 to display the silo weights.
The weight display is in tons.

Daily Quantity

To recall the daily feed consumption press on the **DATA** key until the *Daily Quantity* light is on or alternately press on shortcut key 3. Once you have entered the daily feed consumption, by pressing again on the **DATA** key you can scroll through the last 8 days of feed consumption.
To change the data in the *Daily Quantity*, press on **PROG**, the **0** on the left hand side of the display will start to blink. You can now change the data using the keyboard numbers. Press on **ENTER** to store the new data.
To clear the daily quantity, change the data to 0.
The quantity display is in tons.

Total Quantity

To recall the total feed consumption since the start of the growing period press on the **DATA** key until the *Total Quantity* light is on or alternately press on shortcut key 4.
To change the data in the *Total Quantity*, press on **PROG**, the **tL** on the left hand side of the display will start to blink. You can now change the data using the keyboard numbers. Press on **ENTER** to store the new data.
To clear the total quantity, change the data to 0.

Fill

To recall the amount of feed last put into silo **A** press on the **DATA** key until the *Fill* light is on or alternately press on shortcut key 5. Pressing on the **DATA** key again will recall the last fill for silo B.
To change the data in the *Fill*, press on **PROG**, the **A** on the left hand side of the display will start to blink. You can now change the data using the keyboard numbers. Press on **ENTER** to store the new data. Press again on **DATA** to recall and or change the *Fill* data for silo B.

The quantity display is in tons.

Quantity

To recall and set the feed quantity for restrictive feeding in kilograms, press the **DATA** key until the *Quantity* light is on or alternately press on shortcut key 6.
To change the data in the *Quantity*, press on **PROG**, the **F** on the left hand side of the display will start to blink. You can now change the data using the keyboard numbers. Press on **ENTER** to store the new data.
This is the amount of feed that is given when *Feeding Time* starts (see Feeding Time below).

Feeding Time

Feed can be brought into the house up to 8 times over a 24 hour period.

Enter here the time of day the feed will be brought into the house.

To create multiple feed times you must first setup this possibility. See Number of feed times on page 13 for more information.

To view and set the feeding times;

1. Press on the **DATA** key until the *Feeding Time* lights up or alternately press on shortcut key 7. To scroll through the different feeding times, press on **DATA.**
2. Use the **PROG** key to enter the current feed time and then use the keyboard to enter the time setting. Press on **ENTER** to store the set times.

At each preset time, the auger motor will start to give the preset quantity (see Quantity above).

If there is a power failure during the feeding time, the unit will remember the amount of feed given out before the power failure and will continue to give the remaining amount when the power returns.

Water Consumption

The **Feedtronic 4004-A** will count each pulse in *Water Count In* input as 1 litter.
To recall the daily water consumption, press on the **DATA** key until the Water Cons light lights up or alternately up or press on shortcut key 8. Each time you press the **DATA** key the previous days water consumption will be displayed. It is possible to recall up to the last 9 grow days.

Clock/Growing Day

To view the current clock setting, press on the **DATA** key until the *Clock/Growing Day* light goes on or alternately up or press on shortcut key 9.

1. To change the clock setting in the *Clock\Growing Day*, press on **PROG**, the **C** on the left hand side of the display will start to blink. You can now change the data using the keyboard numbers. Press on **ENTER** to store the new data.
2. To change the grow day in the *Clock\Growing Day*, press on the **DATA** key until the *Clock/Growing Day* light goes on or alternately up or press on key 9. Press again on the **DATA** key and the current grow day will appear on the display. Press on **PROG**, **Gr** on the left hand side of the display will start to blink. You can now change the data using the keyboard numbers. Press on **ENTER** to store the new data.

Skip A Day Counter

To view the number of days left until the next feeding day (see *Skip A Day* on page 14) press on the **DATA** key until **both** *Weight* and *Daily Quantity* lights go on.

Feeder Run Time

To operate the separate Feed line motor, the Feeder run time has to be set.
To recall the Feeder run time press the **DATA** key until **both** *Total Quantity* and *Fill* lights go on or alternately press on shortcut key 0.
To change the *Feeder Run Time*, press on **PROG**, the **rt** on the left hand side of the display will start to blink. You can now change the data using the keyboard numbers. Press on **ENTER** to store the new data.
The feeder run time setting is in minutes and seconds.

Feeder Start Times

To view the feeder start times (in 24-hour format) press on the **DATA** key until **both** Quantity and Feeding Time lights go on. Each press on the Data key will show the next feeder time.
To change the *Feeder Start Time*, press on **PROG**, the data on the display will start to blink. You can now change the data using the keyboard numbers. Press on **ENTER** to store the new data.
The number of times that the feed lines can be run depends on the setup value of *Number Of Feed Operating Times* on page 14.

Setup Function Codes

Stop All

It is possible in the restrictive mode to stop a batch during operation.

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The *Weight* light and the silo letter **A** or **b** start blinking. Press on the key **0**, on the display will appear and blink **FEED STOP**.
3. Press **ENTER** and on the display will appear **STOP**.

The Stop All function all feeding operations immediately. The **Feedtronic 4004-A** will restart again at the next preset feeding time.

- It is advisable to do STOP ALL whenever starting a new growing period.

Clearing History

When starting a new growing period it is advisable to clear feed and water history values.

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking. Enter the code **7000** and press **ENTER**. On the display will appear and blink **CLEAR.H**.
3. Press on **ENTER** to clear all history data.

Checking the Feed Sensor Connection

The Feed Sensor that is connected to **Feedtronic 4004-A** should output 0VAC when it detects feed and 220VAC when no feed is detected. To check that the sensor is connected correctly do as follows:

1. Press on the **DATA** key until the Weight light lights up or use short cut keys 1 or 2.
2. Press on **PROG**. The Weight light and the silo letter (**A** or **b**) start blinking.
3. Enter the code **7777** and press **ENTER**. On the display will appear **FEED.IN.** If feed is detected by the sensor, **FEED** will appear on the display. If no feed is detected then **no.FEED** will be shown on the display
4. Press on the **PROG** key to exit.

Quantity Error

To avoid flow after the auger motor stops in restrictive feeding mode, it is possible to set an amount of feed in kilograms that the auger motor will stop before reaching the total amount that was preset.

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.

2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking. Enter the code **8882** and press **ENTER**. On the display will appear **qnt.Err** and then **qE** will blink.
3. Enter the amount of feed to stop before reaching the total batch and then press **ENTER** to store the new data. The range allowed is 0-10 kilograms.

Number of feed times

To setup the number of feed times do as follows

1. Press the **DATA** key until the *Weight* light lights up or press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The *Weight* light and the silo letter (A or b) start blinking.
3. Enter the code **8883** and press **ENTER**. While entering the code the letters **Cd** blink.
4. On the display will appear **FEED.NO** and then **Ft X**. While entering the code the letters **Cd** blink.
5. Enter the number of feeding times (1 to 8) and press **ENTER**. The *Weight* light stops blinking and the display to the silo weight display.

Alarm Time

The **Feedtronic 4004-A** will activate the alarm relay and stop the auger motor if there is a request for feed but no weight decrease is sensed over a set time. Enter here a time period in minutes and seconds that will be used for this wait time.

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking. Enter the code **8884** and press **ENTER**. On the display will appear **aLARM.T** and then **AL** will blink.
3. Enter the time period that is to be used as the waiting time. Press **ENTER** to store the new data.

Note: To disable this function, enter the value 99:99

Reset Time

The reset time will reset the daily feed and water consumption automatically to zero and change the grow day.

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking. Enter the code **8885** and press **ENTER**. On the display will appear **rESET.T** and then **rt** will blink.
3. Enter the new reset time in 24 hours mode in (midnight is 00:00) and press **ENTER** to store the new data.

Skip A Day setup

It is possible to feed on every second, third or fourth day. See chart below.

Number	Fast days	Feed days
1	1	1
2	2	1
3	3	1

If feeding is required every day, enter the number 0.
To enter the skip a day setup function, do as follows:

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking. Enter the code **8886** and press **ENTER**. On the display will appear **Skip** and then **T** will blink.
3. Enter the number of days to skip, press **ENTER** to store the new data.

❖ Enter the value 9 to use the Manual Quantity mode (see page 15).

❖ It is not possible to set Skip a Day Counter value bigger than the value entered for Skip a Day.

Net Name- Pc Communication

It is possible to connect the **Feedtronic 4004-A** to a PC computer.
If the **Feedtronic 4004-A** is connected to the PC computer a net-name has to be set to help the computer program recognize each control unit.

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking. Enter the code **8887** and press **ENTER**. On the display will appear **nET** XX. Next **nt** will blink (XX represents a 2 digit net nam2).
3. Enter the net name for the unit and press on **ENTER** to store the new data.

Number Of Feeder Operating Times

It is possible to set up to 8 operating times for the feed lines.

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking. Enter the code **8888** and press **ENTER**. On the display will appear **FEEDEr** and then **Fr** will blink.
3. Enter the number of operating times (1 to 8) and press **ENTER** to store the new data.

The silo weight will reappear on the display.

Minimum Silo Weight

The **Feedtronic 4004-A** will activate an alarm if one of the silos' weights is under a preset value.

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking. Enter the code **8889** and press **ENTER**. On the display will appear **_**X.XXX and the character - **_** will blink (X.XXX represents a weight in tons.
3. Enter the minimum weight for each silo and press o**n ENTER** to store the new data.

Zero Data

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking. Enter the code **9991** and press **ENTER**. On the display will appear **ZERO** and then **A XXXX** or **b XXXX** (XXXX is the value of the Zero Data).
3. Press **PROG** to exit.

❖ Important

After zero calibration has been done, write down and save this value for future reference (see Zero calibration with full silo on page 20).

Load Cell Constant

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking.
3. Enter the code **9992** and press **ENTER**. On the display will appear **Ld.CELL** and then **A X.XXX** or **b X.XXX** (X.XXX is the value of the Load Cell Constant).
4. Press **PROG** to exit.

❖ Important

After full weight calibration has been done, write down and save the value of the Load Cell Constant for future reference (see Full weight calibration with full silo on page 21).

Manual Quantity

The **Feedtronic 4004-A** can bring in a quantity of feed immediately after the user sets it.

To enter *Manual* Mode do as follows:

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.

2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking. Enter the code **8886** and press **ENTER**. On the display will appear **SKIP** and – **XX** blink (XX represent a number).
3. Enter the number 9 and then **ENTER** to store the data.

To set the quantity to give out in manual mode, do as follows:

1. Press the **DATA** key until the *Quantity* light is on or alternately press on shortcut key 6.
2. Press on **PROG**, the **F** on the left hand side of the display will start to blink. Enter the quantity that is to be given in the manual mode then **ENTER** to store the data.
3. The amount entered is immediately given and the display shows the remaining amount of feed to be given. When all the quantity has been given out, the display will show 0.000".

To return to restricted feed mode do as follows:

4. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
5. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking.
6. Enter the code **8886** and press **ENTER**. On the display will appear **SKIP** and – **XX** blink (XX represent a number).

Enter the number of days to skip (see

7. Skip A Day setup on on page 14) and then press **ENTER** to store the new data.

Silo Calibration

Turn on the power and wait approximately 15 minutes before starting calibration. Make sure that the silo is completely empty.

There are 2 different steps to follow for calibrating the silos.

1. Zero calibration - Zero calibration is where we define the zero weight.
2. Full scale calibration - Full scale calibration is where we calibrate the silo with a known weight.

Zero Calibration

1. Choose the silo to be calibrated by pressing on shortcut key 1(silo 1) or shortcut key 2 (silo 2). Once you have chosen a silo to calibrate, the Weight light will go on.
2. If you chose silo 1, the letter A will appear on the display along with a weight.
3. If you chose silo 2, the letter B will appear on the display along with a weight.
4. Press on the **Prog** key. The silo letter (**A** or **b**) will start blinking.
5. Using the keyboard, enter the code **9999.** The letters **Cd** will appear on the display together with the code **9999.** Press the **ENTER** key.
6. On the display will appear **A_CAL1** (for silo 1) or **b_CAL1** (for silo 2).
7. Press the **0** key then **ENTER**.
8. On the display will appear **A_CAL2**" (for silo 1) or "b_CAL2 (for silo 2).
9. Press once again on the **0** key then **ENTER**. The calibration process starts.

10. While the calibration process is taking place, the display will show **_CAL_A** (silo 1) or **_CAL_b** (silo 2) with blinking underscores. After a half a minute the weight **0.000** should appear. The silo is zero calibrated.
11. You can stop the calibration at any time by pressing the **DATA** or **PROG** keys.

Full Weight Calibration

1. Place an accurate known weight on or in the silo (see 'Important note' below).
2. Choose the silo to be calibrated by pressing on key 1(silo 1) or key 2 (silo 2). Once you have chosen a silo to calibrate the Weight light will go on.
3. If you chose silo 1, the letter A will appear on the display along with a weight.
4. If you chose silo 2, the letter B will appear on the display along with a weight.
5. Press on the **Prog** key. The silo letter (**A** or **b**) start blinking.
6. Using the keyboard, enter the code **9998.** The letters **Cd** will appear on the display together with the code **9998.** Press the **ENTER** key. On the display will appear **A.FULL1** (silo 1) or **b.FULL1** (silo 2). After approximately 2 seconds the display will show **A 0000** (silo 1) or **B 0000**(silo 2).
7. Enter the known weight and Press **ENTER.** On the display will appear **AFULL2** (silo 1) or **bFULL2** (silo 2). Enter again the known weight and press **ENTER.**

During calibration, the display will show **¯ CAL¯ A** (silo 1) or **¯ CAL¯ b** (silo 2) with blinking hyphens.

After approximately half a minute the silo weight is displayed. The silo is now calibrated.

You can stop the calibration at any time by pressing the **DATA** or **PROG** keys.

If the letter **E** appears on the display, then you have not entered the same known weight twice. Enter again the correct weight and press on **ENTER.**

❖ Important note

The accuracy of the silo weighing depends on:

1. The accuracy of the known weight.
2. The percentage of the known weight value from the full weight value (truck fill).The best accuracy is achieved when calibration is done with a known weight which is 100% of the full weight.

For more information about solving calibration problems see Solving Calibration Problems on page 20.

Alarms

When an error occurs in the operation of the **Feedtronic 4004-A** the Alarm relay will switch from the NC (Normally Close) position to the NO (Normally Open) position thus causing an alarm to go off (if a separate Alarm System is connected). The number of the error appears on the display instead of the silo weight. The user can clear the error by pressing on any key other than the **ENTER** key.

If more than one error occurred, the number of the next error can be viewed by pressing on the **Enter\Next Error** short cut key before any other key is pressed. Certain errors stop feeding until the error condition ends or until the user cancel the error by pressing on any key as mentioned above.

Error numbers, descriptions and solutions.

Err 0: *Free Feeding Error*: This error occurs in *Free Feeding* mode only, and means that the control unit has sensed weight reduction from both feed silos.
Solution: close one of the silo hatches.
Note: This error doesn't affect feeding process.

Err 1: *Time Error*: This error occurs if the auger motor is running and control unit does not sense a weight reduction over a set time period (see Alarm Time on page 13).
Solution 1: Check that there is feed in the silo and that the auger motor is working properly
Solution 2: If there is feed in the silo and the auger motor is working properly, try increasing the Alarm Time setting (see Alarm Time on page 13).
Note; this error **stops** feeding in all modes.

Err 2: *Calibration Error:* This error occurs if the calibration process has failed, or the current silo weight is below 200 kilograms.
Solution 1: Try recalibrating the silo.
Solution 2: Check that the load cell wiring is not damaged.
Solution 3: Check that the load cells are not damaged (see on page 23).
Solution 4: Check that the A/D (EXTRA) SILO card is not damaged; replace if necessary (see Solving Installation Problems on page 22).
Note: this error **stops** feeding only in *Restrictive Feeding* mode if both silos have calibration errors.

Err 3: *Preset Data Error*: This error occurs if the previously entered data has been corrupted.
Solution: Check and if needed reenter all data; recalibrate the silos.
Note: this error **stops** feeding in Restrictive Feeding mode only.

Err 4: *Silo Data Error*: This error occurs when no data is received from the A/D (EXTRA) SILO card.
Solution 1: Replace the opto-coupler Q5 found on the main power card. This is a 4N25 opto-coupler.
Solution 2: Check the connection between the A/D (EXTRA) SILO card and the main control unit. Solution 3: Check that the load cell wiring is not damaged and connected properly to the A/D (EXTRA) SILO card.
Solution 4: Check that the A/D (EXTRA) SILO card is not damaged; replace if necessary (see Solving Installation Problems on page 22).
Solution 4: Check that the load cells are not damaged
Note: this error **stops** feeding in Restrictive Feeding mode only.

Err 5: *RAM Memory Error*: This error occurs if the RAM memory has a hardware error.
Solution: The **Feedtronic 4004-A** needs to be repaired by a qualified technician.
Note: this error **stops** feeding in Restrictive Feeding mode only.

Err 6: *EEPROM Memory Error*: This error occurs if the EEPROM memory has a hardware error.
Solution: The **Feedtronic 4004-A** needs to be repaired by a qualified technician.
Note: This error does not stop feeding.

Err 7: *Real Time Clock Error:* This error occurs if the component that saves the Real Time Clock fails when there is a power outage.
Solution: The **Feedtronic 4004-A** needs to be repaired by a qualified technician.
Note: this error **stops** feeding in Restrictive Feeding mode only.

Err 8: *Preset Non Critical Error:* This error occurs when non critical data is corrupted.
Example of non critical: Net Name; Minimum Silo Weight Set Point.
Solution: Reenter the data as needed.
Note: this error does not stop feeding.

Err 9: *Minimum Silo Weight Alarm:* This error occurs when the weight in one of silos is under the *Minimum Silo Weight* Set Point (see page 15).
Solution: Cancel the error by pressing on any key (except the **Enter** key). The alarm will be disabled until the silo is filled again.
Note: This error does not stop feeding.

❖ Important

The error number is displayed with the letter representing the silo number, for example, **A Err1** or **b Err3**.
All the errors except for Err 2 and Err 9 will be displayed for both silos. Err 2 and Err 9 will be displayed only for the silo that is in error.

Solving Calibration Problems

The **Feedtronic 4004-A** calculates the silo weight by converting the data it receives from the A/D (EXTRA) SILO box. For each silo a number between 0 and 65535 is received. This number is proportional to the weight: a higher weight gives a higher number. The weight is then calculated by this using this formula:

Silo weight = (Current Value of the Number - *Zero Data*) X *Load Cell Constant* where *Zero Data* is the number received when the silo is empty (tare value) and is registered in the **Feedtronic 4004-A** by doing the *Zero Calibration***.** The *Load Cell Constant* is calculated by doing the *Full weight Calibration.* After the calibration process is completed, it is advisable to record these two values from the **Feedtronic 4004-A**. These values can be used in the future if the silo is not empty and there is a need for a re-calibration.

Recall Zero Data

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking. Enter the code **9991** and press **ENTER**. On the display will appear **ZERO** and then **A X.XXX** or **b X.XXX** (X.XXX represents a weight). Write down and save this number for future use.
3. Press **PROG** to exit.

Recall Load Cell Constant

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2
2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking. Enter the code **9992** and press **ENTER**. On the display will appear **Ld.CELL** and then **A X.XXX** or **b X.XXX** (X.XXX represents a weight). Write down and save this number for future use.
3. Press **PROG** to exit.

If the error message **Err 2** is displayed, then the current value of the number received from the silo is smaller than the **Zero Data**. In this case the **Feedtronic 4004-A** needs to be re-calibrated.

Re-Calibration When The Silo is Not Empty

To re-calibrate the silo when the silo is not empty you can use the values of **Zero Data** and the **Load Cell Constant** that were saved by you after the last calibration.

Zero Calibration:

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.

2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking.
3. Enter the code **9991** and press **ENTER**. On the display will appear **ZERO** and then
4. **A X.XXX** or **b X.XXX** (X.XXX represents a weight).
5. Enter the previous Zero data value and press **ENTER.**

The calibration process starts. During the calibration the display will show **_CAL_A** or **_CAL_b** with blinking underscores. The calibration takes approximately 10 seconds, once completed the silo weight will once again be shown on the display.

Full Calibration:

1. Press the **DATA** key until the *Weight* light is on or alternately press on shortcut keys 1 or 2.
2. Press on the **PROG** key. The Weight light and the silo letter **A** or **b** start blinking.
3. Enter the code **9992** and press **ENTER**. On the display will appear **Ld.CELL** and then **A X.XXX** or **b X.XXX** (X.XXX represents a weight).
4. Enter the previous Load Cell Constant value and press **ENTER.**

The calibration process starts. During the calibration the display will show **_CAL_A** or **_CAL_b** with blinking underscores. The calibration takes approximately 10 seconds, once completed the silo weight will once again be shown on the display.

Solving Installation Problems

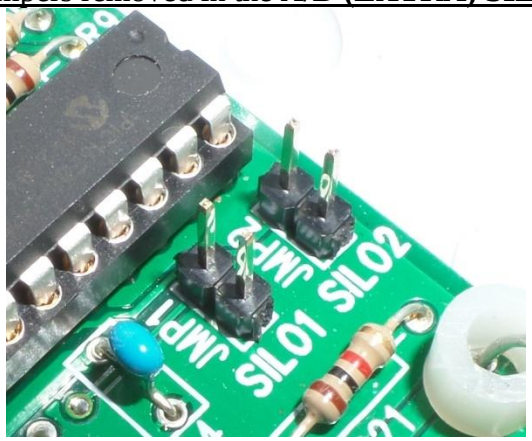
Checking The Feedtronic 4004-A - A/D (EXTRA) SILO Box Communication

You can verify that the wiring between the **Feedtronic 4004-A** and the **A/D (EXTRA) SILO** box has been done correctly and that the data received from the **A/D (EXTRA) SILO** box is without errors.

1. On the **A/D (EXTRA) SILO** box card remove the jumpers SILO1 and SILO2 (see photo 2 below).
2. In the **Feedtronic 4004-A** choose a silo by pressing on short cut keys 1 or 2.
3. Press **PROG**. The Weight light and the silo letter (**A** or **b**) start blinking.
4. Enter the code **8881** and press **ENTER**. On the display will appear **AD.Data** and then **AXXXXX** or **bXXXXX**, where XXXXX is the data received from the **A/D (EXTRA) SILO** card. The letters **A** or **b** blinks whenever a new data is received. While entering the code the letters **Cd** blink.
5. If the data for silo **A** is **1234** and for silo b **5678**, the connection with the **A/D (EXTRA) SILO** box is correct and the data received from the **A/D (EXTRA) SILO** box is without errors.
6. Press on the **PROG** key to exit.
7. Replace jumpers SILO1 and SILO2.

Note: The jumper SILO1 was called J11 and SILO2 was called J12 in older card versions.

Photo 2: Jumpers removed in the **A/D (EXTRA) SILO** box card

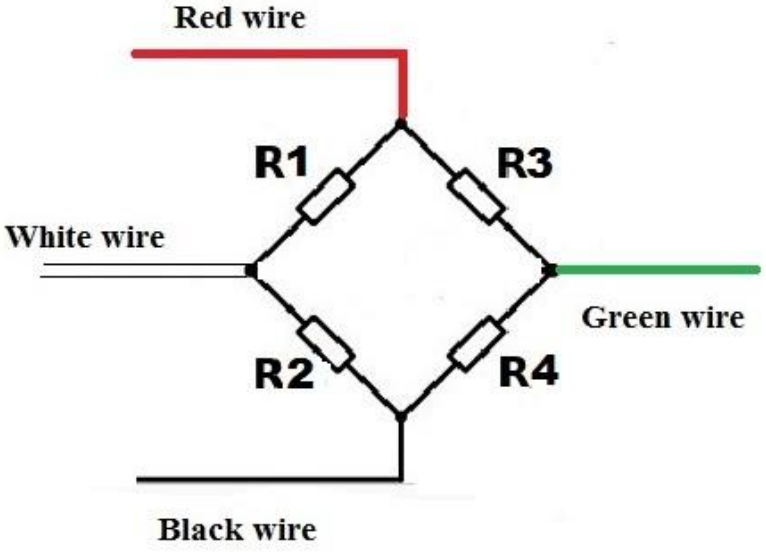


Checking Load Cells

The load cell is based electronically on 4 resistors connected as in the drawing 1 below. When the load cell is ok the value of the resistor R1 is equal to the value of the resistor R3 and the value of the resistor R2 is equal to the value of the resistor R4. If the load cell is damaged the resistance of these resistors is changed too.

To check that a load cell is damaged or not, disconnect all 4 wires from the connector and measure the resistance between pairs of wires as described below. There are two types of load cells, each with slightly different wire colours. Both have green, red, and black wires. The fourth wire may be either white or yellow, depending on the load cell type.

Drawing 1 – Load cell electrical diagram



Use a volt meter on the lowest range to measure the resistance between the red and white wires (Resistor R1) and compare it to the resistance between the red and green wires(Resistor R3).They should equal or different by no more than 1 ohm. If the difference is more than 1 ohm, then the load cell is faulty. Then measure resistance between the black and white wires (Resistor R2) and compare it to the resistance between the black and green wires(Resistor R4).They should equal or different by no more than 1 ohm. If the difference is more than 1 ohm, then the load cell is faulty. The measurements are summarized in this table:

Resistance between these wire colors (Resistor)	Compare to the resistance between these wire colors (Resistor)
Red – White (R1)	Red – Green (R3)
Black – White (R2)	Black – Green (R4)

Code Summery

These codes can be seen on the front panel

Code	Function	Range
7000	Clear History	Not Applicable
7777	View Feed Sensor Output	"FEEd"\"no.FEEd"
8880	View Software Version Number	1-9999
8881	View Silo Data	0-65535
8882	Set Quantity Error	0-10 kilograms
8883	Set Number Of Feed Times	1-8
8884	Set Alarm Time	00:30-99:59 mm:ss **99:99 disables alarm**
8885	Set Reset Time	00:00-23:59 hh:mm
8886	Set Skip Day\Manual Mode	0,1,2,9
8887	Set Net Name	1-99
8888	Set Number Of Feeder Times	1-8
8889	Set Silo Minimum Weight	0-32.767 tons
9991	Set Zero Data	0-65535
9992	Set Load Cell Constant	0-65535
9998	Full Weight Calibration	0.050-65.535 tons
9999	Zero Weight Calibration	Not Applicable

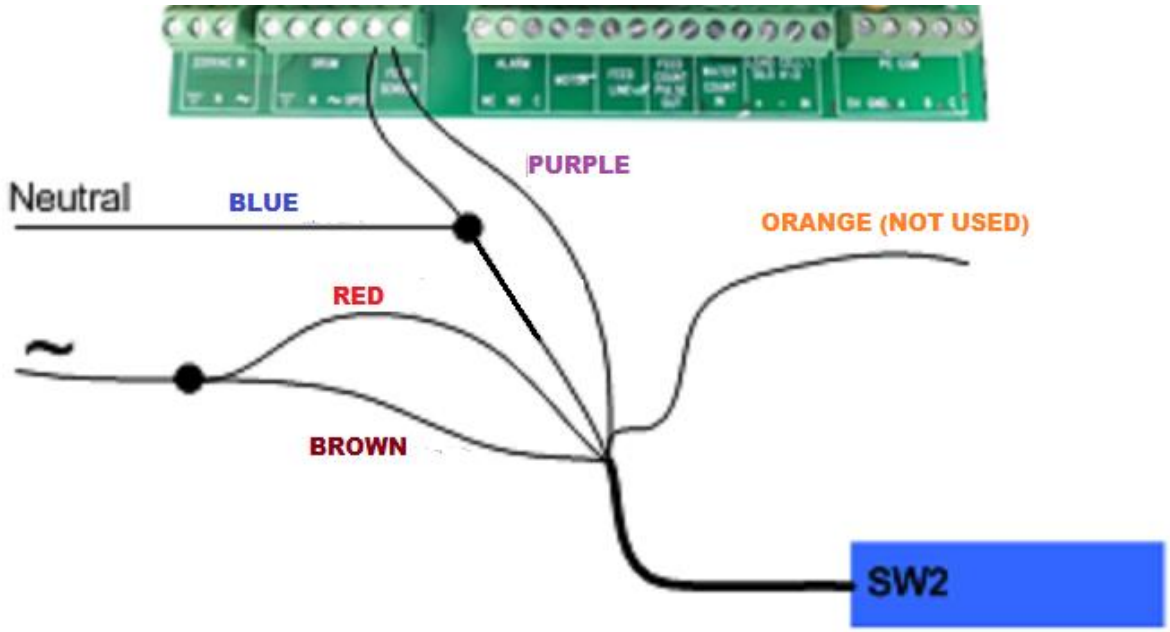
Controller installation

- Unscrew carefully the four big screws on the front panel of the controller. Disconnect the front panel by disconnecting the flat cable plug connecting the front panel to the mother board. Note, the plug must be tipped clear by pulling out the 2 locking wings sideways.
- Connect the box to the wall in a dry place.
- Hang the **A/D (EXTRA) SILO** box on the silo structure with the wire conducts facing down in order to prevent moisture from entering the **A/D (EXTRA) SILO** box.
- Connect an AC POWER cable to the 220V terminals in the main unit.
- Connect the auger motor relay to the MOTOR connector.
- Connect the feed line motor to the FEED LINE connector.
- Connect the water meter to the WATER COUNT IN connector.
- Connect the feed sensor (from the bottom hopper) to the FEED SENSOR connector. This connection must give output of 220V when the bottom hopper is empty (see below).
- Connect the **A/D (EXTRA) SILO** box card to the **LOAD CELL SILO A/D** connector (see on page 26).
- Connect the alarm output to an external alarm unit.

Connecting Agro Logic's SW2 Feed Sensor to the controller

Connect the sensor as in the drawing 2 below. The purple wire gets the phase of the AC power when feed is NOT detected.

Drawing 2 – Feed sensor connection



*Connecting **A/D SILO** box to the controller (Not applicable to A/D EXTRA SILO)*

Connect a 3-wire cable between the control unit and the A/D SILO box according to the Table 1 and photos 3 and 4 below.

Table 1: Wiring the controller to the **A/D SILO** box

Wire Color in the Photos 3 and 4 Below	Controller Contact Names (in the LOAD CELL SILO A/D connector)	**A/D SILO** Contact Names
Blue	-	-
Yellow	IN	OUT
Brown	+	+

Photo 3: Wiring the controller to the **A/D SILO** box– Controller Side

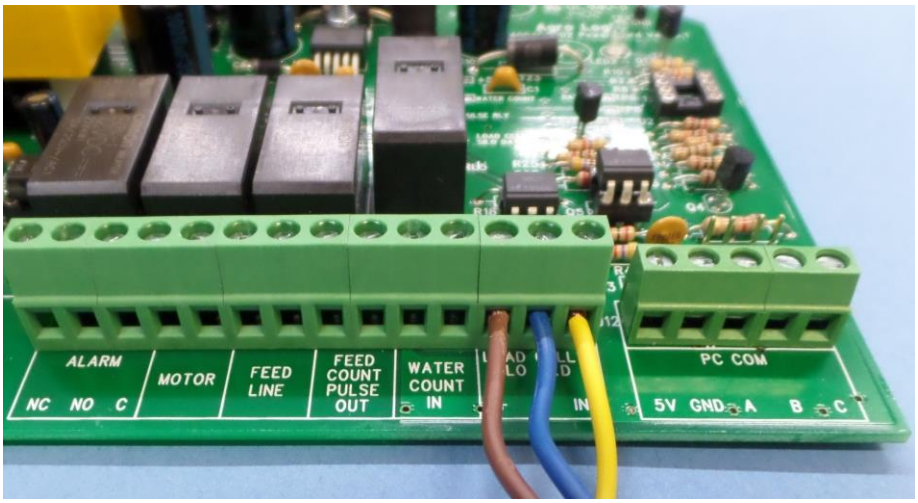
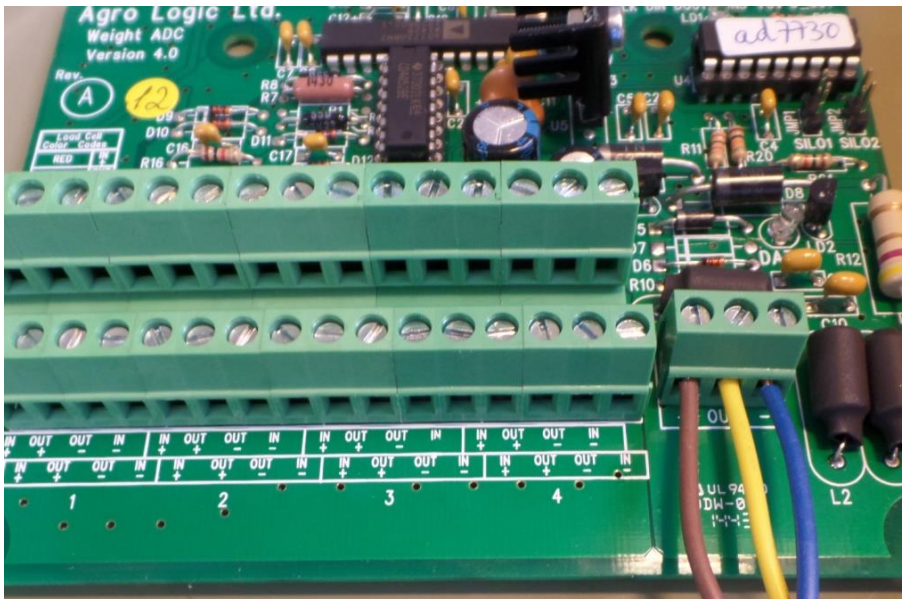


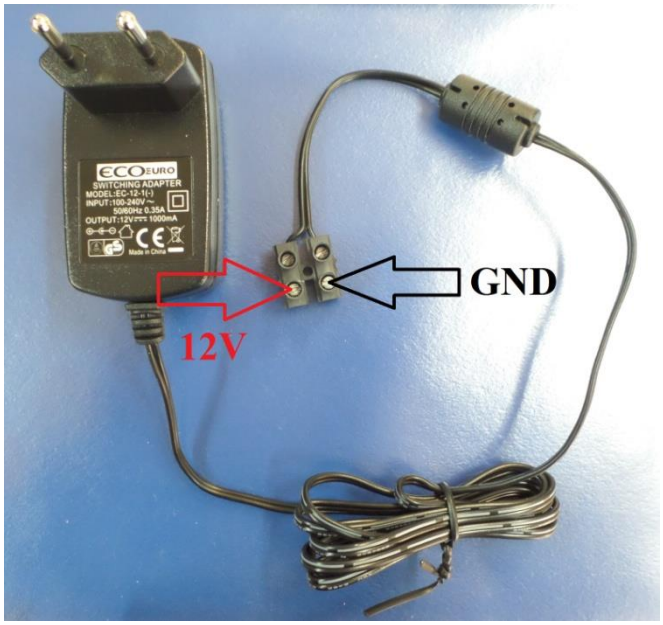
Photo 4: Wiring the controller to the **A/D SILO** box – **A/D SILO** box side



*Connecting **A/D EXTRA SILO** box to the controller (Not applicable to A/D SILO)*

The **A/D EXTRA SILO** box comes with an AC-DC power supply (see Photo 5 below). The power supply should be connected to a standard AC-power wall outlet. The output of the power supply is 12VDC. It has a built-in green light that lights up when it supplies power. If there is no AC POWER the light will be off and when the power supply output is shorted, the light flashes. The power supply has 2 contacts: GND and 12V.

Photo 5: **A/D EXTRA SILO** Power Supply



Connect a 3-wire cable and the supplied power supply between the control unit and the A/D SILO box as in photos 6 and 7 and Table 2 below.

Photo 6: Wiring the controller to the **A/D EXTRA SILO** – Controller Side

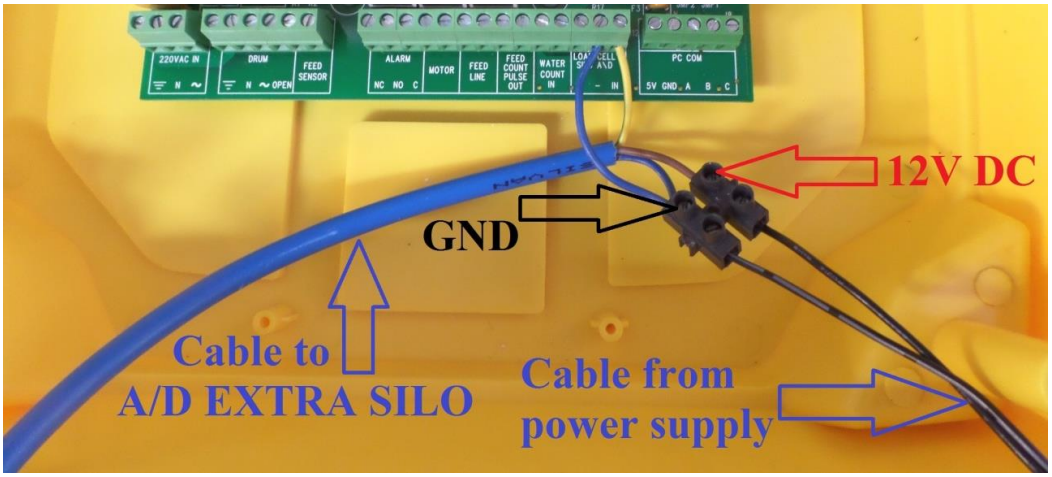


Photo 7: Wiring the controller to the **A/D EXTRA SILO** – **A/D EXTRA SILO** side

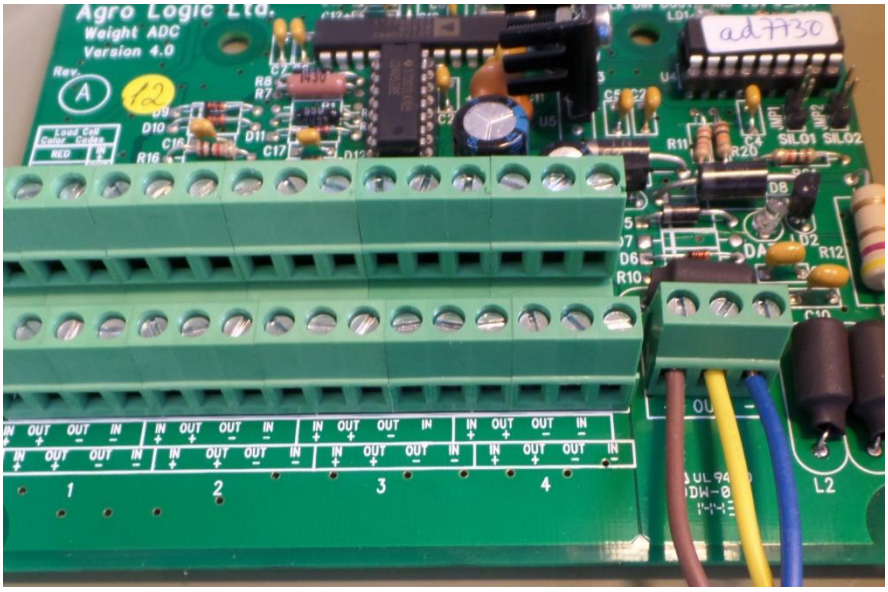


Table 2: Wiring the controller to the **A/D EXTRA SILO**

Wire Color in the Photos 6 and 7 Above	Controller Contact Names (in the LOAD CELL SILO A/D connector)	**A/D EXTRA SILO** Contact Names	Power Supply Contact Names
Blue	-	-	GND
Yellow	IN	OUT	Not connected
Brown	Not connected	+	12V

Size and Length of Cable Connecting the **A/D (EXTRA) SILO** Box to the Controller

The 3-wire cable connecting the controller to the **A/D Silo** box or to the **A/D Extra Silo** box must maintain these wire sizes and maximum length as in the table 3 below:

Table 3: Wire Size and Length

Wire AWG	Wire Cross Section (mm*mm)	Maximum Cable Length (Meters)
20	0.518	50
17	1.04	100
15	1.65	170

A/D (EXTRA) SILO Box Setup

- Make a short on jumper SILO1 if only silo 1 is connected (see photo 8 below).
- Make a short on jumper SILO2 if only silo 2 is connected (see photo 9 below).
- Make a short on jumpers SILO1 and jumper SILO2 if both silos are connected (see photo 10 below).

Note: On older card versions jumper SILO1 was called J11 and SILO2 was called J12.

Photo 8: Only silo 1 is connected

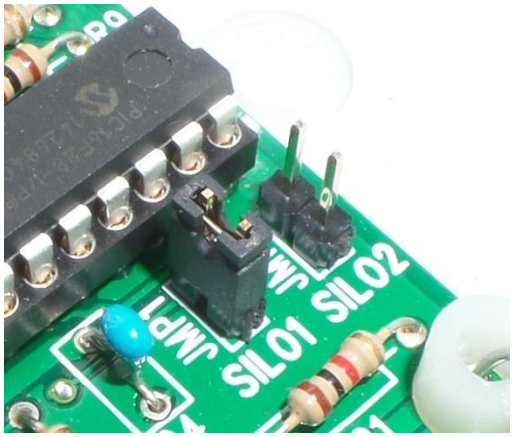


Photo 9: Only silo 2 is connected

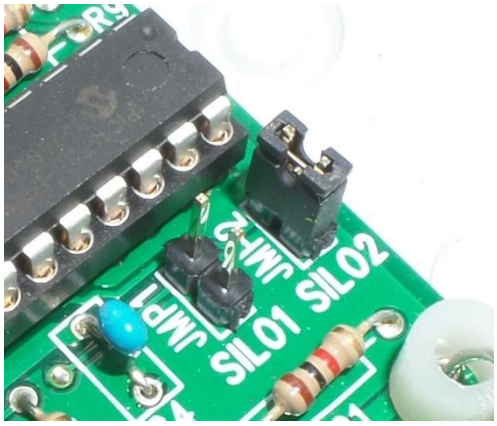
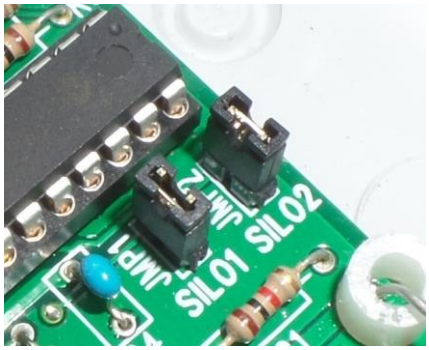


Photo 10: Both silos are connected



Note: when a jumper in the **A/D (EXTRA) SILO** box is not installed, the weight display will show "----" instead of the silo weight.

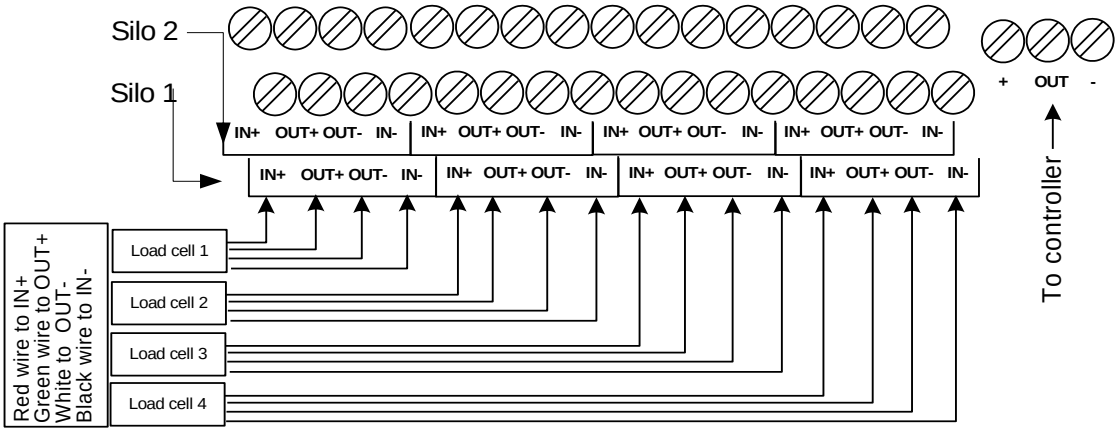
*Connecting load cells to the **A/D (EXTRA) SILO** box*

❖ Important

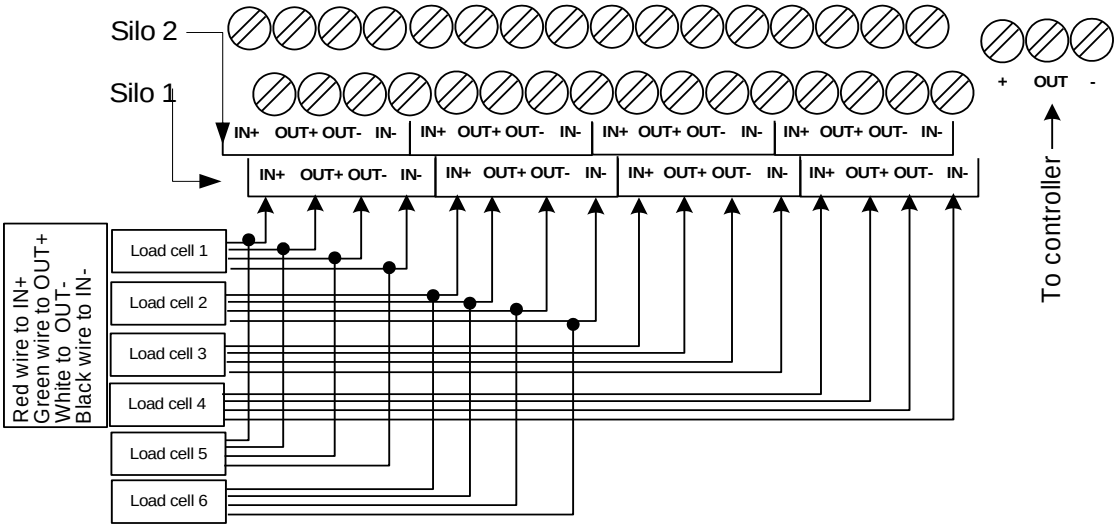
The maximum number of load cells that can be connected to the **A/D SILO** box is 12.
The maximum number of load cells that can be connected to the **A/D EXTRA SILO** box is 16.

Drawings 3 and 4 shows the how to connect the load cells to the **A/D (EXTRA) SILO** box.
Connect the 4 wires for each load cell to the **A/D (EXTRA) SILO** box.
Connect silo 1 load cell wires to the bottom row of connectors.
Connect silo 2 load cell wires to the top row of connectors.

Drawing 3 - A/D (EXTRA) SILO box - 1 silo 4 legs



Drawing 4 -**A/D (EXTRA) SILO** box - 1 silo 6 legs



Silo Hardware Installation Guide

Main Parts

Upper channel →

Base →

Load cell →

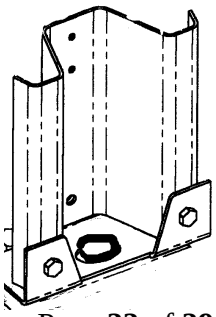
Joint unit →

Procedure

- Check that the concrete floor is levelled and has been built using high grade reinforced concrete.
- Stand the silo on the concrete. Be sure to take into account the angle and distance the feed auger will be from the house.

Using the holes in the silo leg plate, mark its location on the concrete floor.

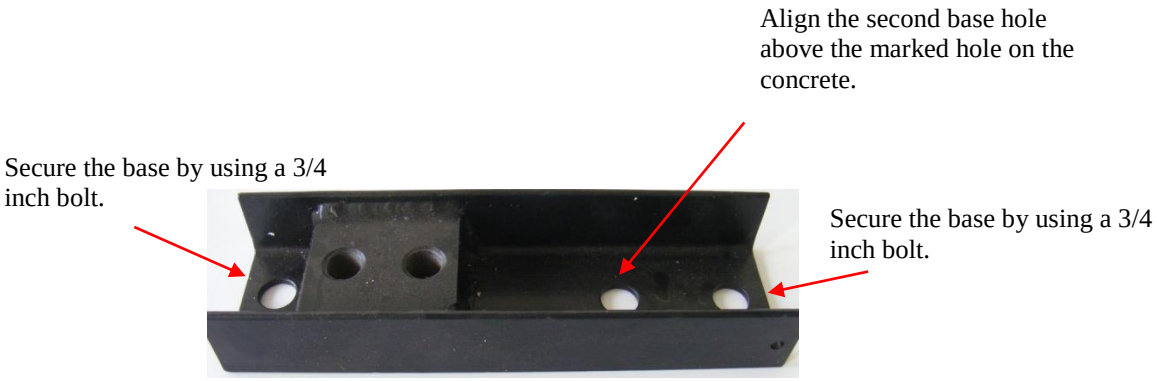
Drawing 5 – Silo leg plate



Remove the silo and place the supplied **Base** on the concrete floor.
Align the second hole with the marking on the concrete.
The base will be connected to the concrete floor using two ¾' bolts.

Base unit

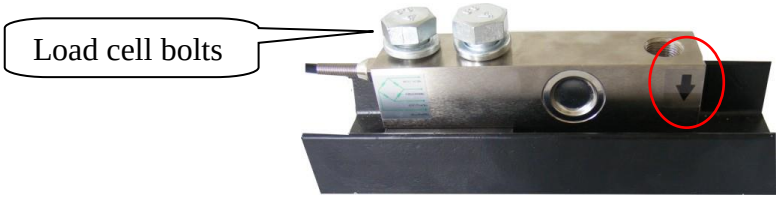
Photo 11 – Base unit installation



Connect the load cell to the base as shown below. Tighten down the bolts.

Be sure the arrow on the side or front of the load cell is pointing downwards as in photo 12 below.

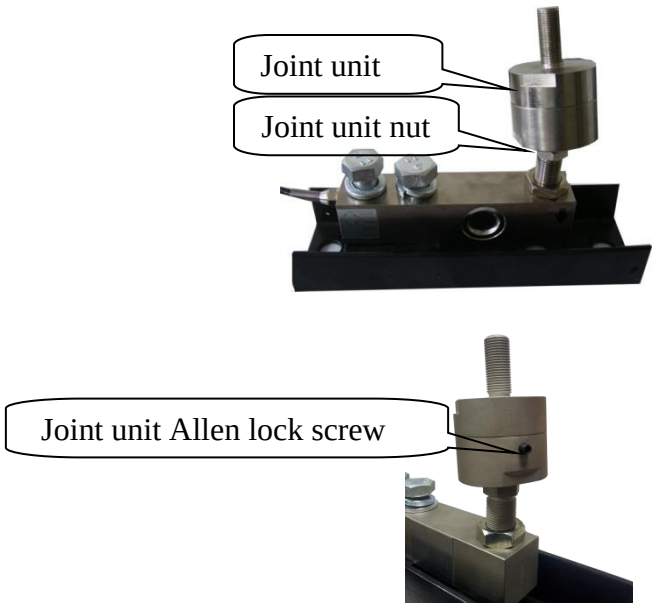
Photo 12 - Load Cell connected to base unit



Connect the Joint unit to the load cell.
Use a wrench to tighten the two half's of the Joint unit together.
Screw the Joint unit down until it is flush with the bottom side of the load cell. Once you place the silo leg on the Joint unit you can adjust its height to help make the silo leg level.
Tighten the Lower Joint nut to secure the Joint unit to the load cell.
Tighten the Joint unit Allen lock screw to lock the Joint units two half's.

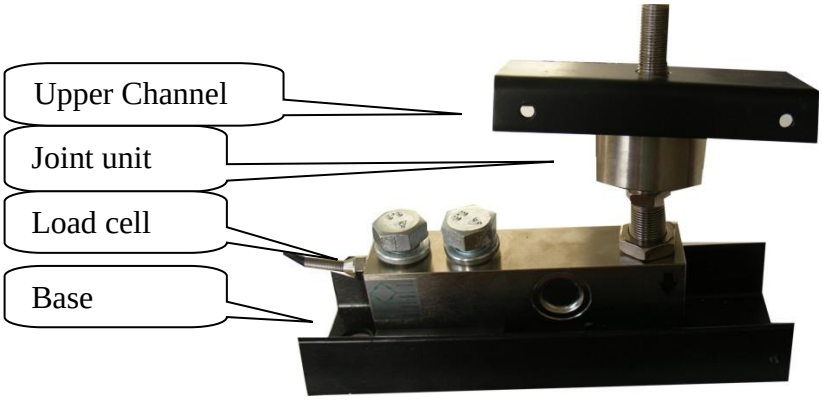
If your Joint unit does not have an Allen lock screw, please use Loctite or a similar thread locker to secure the two half's together.

Photo 13: Load cell, joint unit and base



Next place the Upper Channel plate on the Joint unit as seen photo 14 below.

Photo 14: Placing the upper channel



After all silo mount leg hardware has been assembled and fasten to the concrete floor, slowly lower the silo onto the silo mount.

Once the silo has been lowered, tighten down the upper joint nut that connects the silo to the silo mount. Make sure the silo is sitting on the Upper channel plate. Adjust the Joint unit height if needed.

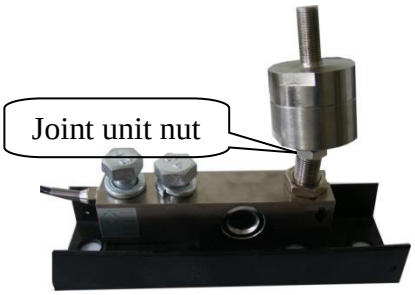
When tightening down the upper joint nuts, the nuts of every second leg have to be tightened first and after that, nuts of all other legs have to be tightened. That procedure insures that all legs of the silo pressing down rather than pulling up on the load cells.

Checking that the silo is vertically leveled

The silo has to be vertically leveled so that all load cells will experience about the same weight. To check that the silo is vertically leveled it is recommended to use a laser leveler such as the one seen in the photo 15 below. Position the laser leveler below the silo; operate it to project the laser beam on the legs just above the upper channel and check that the beam appears at the same height on all legs. Adjust the joint unit nut (see photo 16 below) to raise or to lower the legs as needed.

Photo 15: Laser Leveler

Photo 16: Joint unit nut



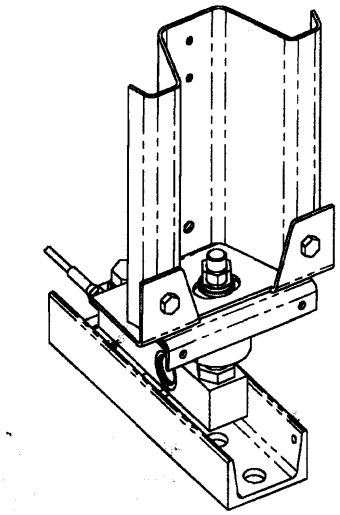
Connecting Grounding Wire

Please connect the base to a ground connection for protection against lightning as in the drawing 6 below.

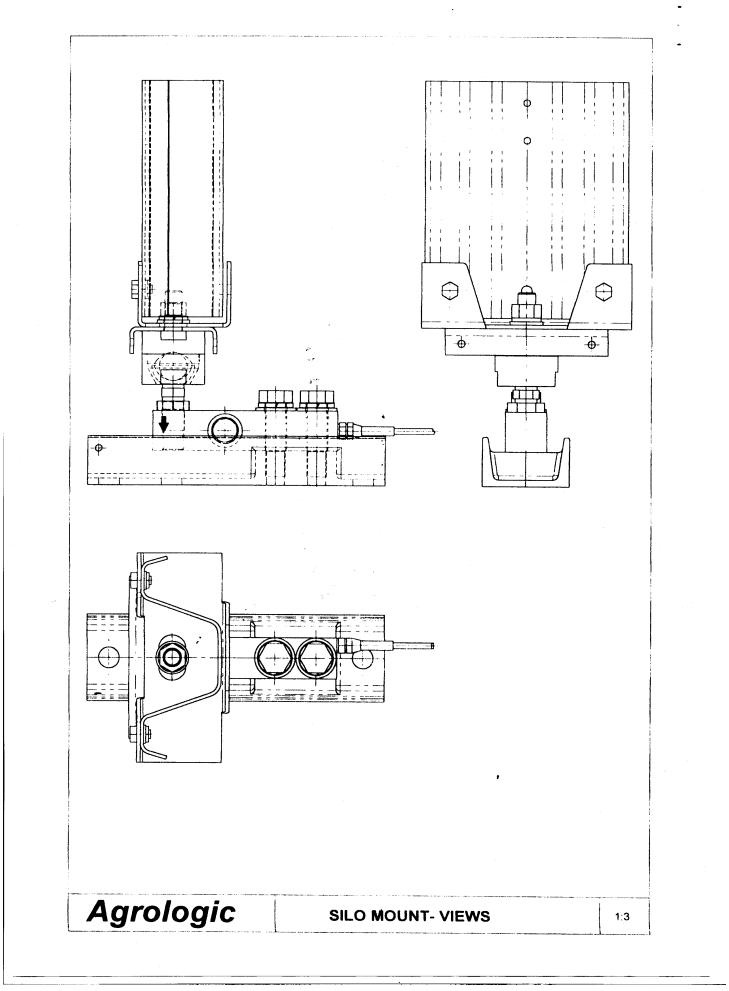
Drawing 6: Joint unit nut

Please check, and if necessary, tighten Joint units, bolts and nuts periodically!!

Drawing 7 of the Complete Leg Installation



Drawing 8 of the Complete Leg Installation



Drawing 9 of the Complete Leg Installation