Handbook
EC09 Electronic Platemeter

Made by JENQUIP
First in the Field

Jenquip Pasture Management Software is supplied with your platemeter on a USB stick. Manual entry of data is required, or users can enter data into 3rd party apps or the Jenquip App, which may be purchased separately. Use of the Jenquip App allows users to store paddock data for unlimited number of farms.

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Introduction

Congratulations on the purchase of your EC09 Platemeter. This platemeter is a highly engineered precision device for measuring the average height of pasture relative to density of the pasture.

This is directly relative to the quantity of dry matter present (kilograms of dry matter – kg DM/ha).

Your platemeter will become an invaluable tool in your farming operation for day-to-day feeding decisions and long term feed budgeting.

Important safety note

Read and understand all the instructions before using the platemeter. A copy of this user guide can be downloaded from www.jenquip.co.nz or www.nzagriworks.co.nz

Your platemeter is designed only for measuring pastures. Use it for no other purpose (e.g. it is not a walking stick.) This platemeter has been manufactured using quality materials and techniques, however, if faults do occur, have them corrected before you use the platemeter.

Be careful around electric fences. Parts of the platemeter will conduct electricity!

Store the plate correctly. Be careful that the wind does not blow the plate away. It is not to be thrown.

Water blasting or submerging the unit will void the warranty.

Assembly Instructions

The platemeter is supplied in three parts:

The plate

The plate sits on top of the pasture to establish average height and density. The area-to-weight ratio of the plate has been carefully calibrated.

The rod with meter

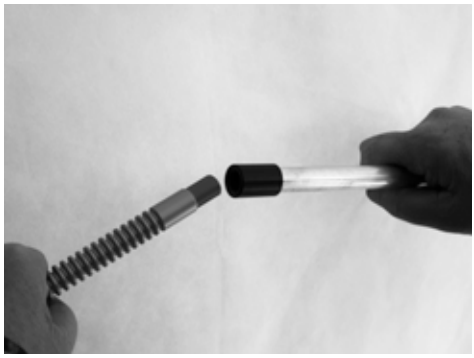
The grooved rod allows pasture to be measured in 0.5 cm intervals (clicks). The rod includes the electronic meter.

The handle

Attach top handle to the rod. Ensure that the rod does not fall through the counter as this will damage the gear and void warranty.

Top Handle assembly instructions

Screw top handle onto the top of the grooved rod where it comes out of the counter.

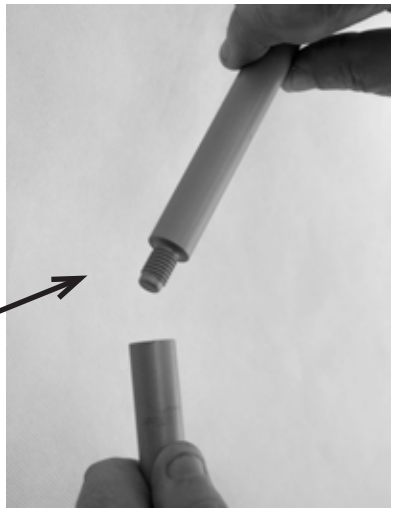


Grooved Rod Extension (for the 400mm model)

Turn upside down and slip off the O ring.

Put 4 drops of thread locker into the female end.

Screw threaded rod extension into grooved rod and do up firmly by hand,
wiping off any excess thread locker that may have leaked out with a dry cloth. Do not use tools as this will damage the grooved rod.
Refer to the handbook for zero calibration before use.



Operating the platemeter

Switching the unit on and off

The platemeter is switched on and off using the black switch at the back of the unit. Off is in the 'down' position. When the unit is off there are no numbers displayed on the LCD screen.

Front display buttons

The various functions of the platemeter are accessed by the two buttons on the front of the unit, labelled 'Height/Reset' and 'Count/Formula'. The words in bold type are the primary functions.

These are activated by a short press of the button. The secondary functions 'Reset' and 'Formula' are activated by holding the button down until the function operates. When the unit is first switched on, the display will show the current formula in use and the calculated kg DM/ha based on that formula, and any readings in memory. Pressing the 'Height' button will briefly display the average pasture height. This is often referred to as "clicks" (measured in 0.5cm) and will be displayed to one decimal place (i.e. 0.0 or 12.4)

1 click = 0.5 cm

The number of readings is displayed when the 'Count' button is pressed. The display will show a 'c' on the left side and the count on the right. The display will return to normal after two seconds.

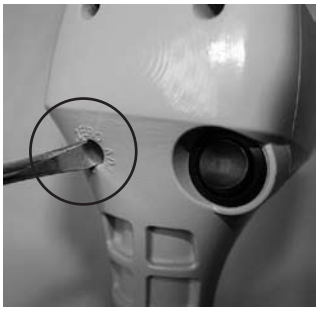
All readings can be cleared (reset) by holding down the 'Reset' button for approximately two seconds, then the display will change to "0".

Zero Calibration

To ensure that the platemeter accurately measures the compressed height of the pasture the platemeter must be calibrated. This requires setting a base level of zero so that measurements can be benchmarked against this. If the counter does not return to zero after each “plonk” it will not record the measurement – hence the counter will not beep.
If the counter is removed from the grooved rod or receives a severe knock it may jump a groove on the steel shaft which will put the counter out of calibration. It will need to be recalibrated.

To do this, work through the following steps:

1. Ensure the plate is fully down (place on a firm flat surface) and the unit is switched off.
2. Hold the “Count” button while switching the unit on. The display will change to “CAL” briefly and display a colon (:) followed by a number. Let’s assume you see “.5” when you switch on. Proceed as follows:
3. The colon signifies that it is in fine calibration mode. Remove the protective rubber bung by levering it out gently using a flat-bladed screwdriver. Use a flat bladed screwdriver and turn the plastic or steel shaft within the cog anti clockwise, until the display reads “0”.
   NB: the cog and steel shaft must remain stationary. DO NOT TURN THE SHAFT BEYOND THIS POINT OR YOU MAY DAMAGE THE POTENTIOMETER. Once the counter reads zero, move the counter up the full length of the shaft. The colon will disappear once it passes 9 and enter “clicks” mode. At the full height the display should read approximately “50” which is 50 half centimetres. The counter has now been calibrated successfully.



4. Switch off when you have finished, and then back on again without pressing any buttons.
5. Test the zero calibration by raising and lowering the plate several times. A beep should sound and the kgDM/ha displayed as the plate falls. If it does not, repeat the steps above and retest.

If calibration fails to hold, then the potentiometer, which the cog drives, may be damaged and will need replacing. This can occur with excessive wear, often compounded by dust and dirt entering the dry bearing of the potentiometer.

Start up/self test

1. Switch on
   The platemeter will beep and display the current formula setting.
   The formula will be displayed next with the '+' part of the equation first (default 500) and then the 'x' part second (default 140.)

2. The display will then show the kg DM/ha calculation based on that formula and any readings stored in memory.

3. To clear the readings, press and hold the 'Reset' button until the display shows '0.0' There is one default plate equation and one custom (user editable) equation. The former is built into the chip and cannot be replaced or modified. This equation is typically used between April and September in New Zealand.

During start up, if the battery charge is low it will display "lo" and give two beeps. It will still work for some time, however it would be a good idea to take a spare battery with you on the farm walk.

The original formulas developed for use with the platemeter were:

- Dairy Pasture (reasonably consistent rainfall areas height reading x 158 + 1000 = Cover (kg DM/ha)
- Dairy Pasture (moderate rainfall periods height reading x 158 + 200 = Cover (kg DM/ha)
- Sheep pastures: height reading x 158 = Cover (kg DM/ha)

The platemeter also provides an option for selecting your own equation or those recommended by consultants. Your platemeter will be set up for the Dairy NZ recommended equation for the autumn winter/months.

Selecting the factory default formula

(This is not normally required, as this is set as the default formula)
While the platemeter is switched on, hold down the 'Formula" button. The display shows "F--d" Press the 'Reset' button briefly. The display will then show (500) and then (140). The default formula has now been loaded and saved to memory.

Other formulas:

To better reflect the growth stages of pastures, these formulas were derived:

Seasonal variations of formulas

1	Winter & early spring- before stem growth	x125 + 640
2	Late spring & early summer- during stem growth	x130 + 990
3	Mid summer x165 + 1480	
4	Early autumn- before autumn rain	x159 + 1180
5	Late autumn- after rain	x 157 + 970

The above formulas are industry published. Jenquip does not provide agronomy advice.

Entering your own formula for displaying total covers

To enter your own cover equation or one that may have been recommended by a third party, such as your consultant or industry body, do the following:

1. While the unit is switched on, hold down the "Formula" button. "F--d" will display on the unit window. Press the formula button again briefly, then change the "d" (default) to "c" (custom). Press "Reset" briefly. "0---" will be displayed. This is the first of two numbers to be entered. The first number is the equation "add" number and the second the "multiply number. E.g. in equation two above, the first number (115) is the "multiply" number and the second (850) is the "add" number.

2. The "add" number is four digits long, and can range from 0 to 9999. Starting with the first digit, press the "Formula" button to change this digit to a value from 0 to 9. Press the "reset" button when it is correct. E.g., 850 would be

entered as (0850). Enter the next digit. Repeat this process until all four digits have been entered. The display then changes to the “multiply” number.

3. The “multiply” number has three digits and can range from 0 to 255. The first digit will appear. Press the “Formula” button to change this digit to a value of 0, 1, or 2. Press the “Reset” button when it is correct and the next digit will appear. Repeat this process until all digits are entered and the display returns to its normal state.

Entering your own formula for displaying available covers: changes to the EC09

Displays “Available” cover required in some markets.

All the current features of the EC09 are still there and function in exactly the same way.

There is now an extra option in the menu called “A---”
This is to allow the user to input a number that the platemeter will treat as a negative number.

The procedure for entering a number here is done in the same way you would enter a custom formula (same buttons pressed.)

For example: if the current formula was (h x 140) + 500 and the negative number entered was 1,000, then the new formula would be: “available cover” in kg = (h x 140) + 500 – 1000”

Where “h” equals the average height recorded by the platemeter.

Each model will leave the factory with the “A---” set at “0000”
This means that the EC09 will function straight out of the box exactly as they do now and this feature will have no effect, unless activated.

When the platemeter is switched on, it will display the default setting of:
140
500
0.0.0.0 (The decimal points will flash 3 times indicating a negative, of any number the user has entered and saved.)
Any changes to the formula will be retained and displayed next time the platemeter is switched on.

When the platemeter is used with a negative number activated and the result in kg of dry matter is < “0”, then the LCD will display “0000”. The platemeter will still beep with each plonk and continue to count. The hyphens will flash on and off with each beep. An “Actual” negative number cannot be displayed.

A positive number result after calculation will still show as a positive number as normal.

Examples:
Assume the formula used is (h x 140) + 500 – 1000

If the average “h” (height) = 4.0 then:
(4 x 140) + 500 – 1000 would result in a display of “60” kg

Any negative number entered by the user is saved to memory and ready to use next time. If, in the menu the “F-- d” option is selected, then all settings are reset to 140, 500, 0000

Using your platemeter

Technique

Practice the technique of an uninterrupted slow walking pace, taking care not to "roll" the meter. (This is where the plate is not square to the ground and it will provide a false HIGH reading.

Lowering the platemeter consistently rather than rolling it will provide a more accurate reading.

Farmwalk

The more regularly you take readings the better. Astute farmers will take readings weekly, sometimes more often during critical times of the year and less frequently during times of static conditions.

The more samples taken per paddock the less margin of error. We recommend 20 to 40 samples per paddock but if you have bad conditions i.e. pugged paddocks, more samples should be taken.

Most paddocks will have areas of good growth and areas of poor growth. If recently grazed, the pasture may be clumpy. Ensure that your walk includes representative samples of both areas. Avoid tracks, stock camp sites and other uncharacteristic areas.

Take samples every 3 paces or so, rather than choosing by eye the spot to sample. This removes operator preference for long or short patches.

Be consistent. Plan the same walk every time, although it can be done in reverse. This allows each walk to be compared with another.

Taking paddock readings (the pasture walk)

The platemeter displays the rolling average cover and this cannot be stored in the device. Users need to either manually record or manually enter into the Jenquip Android App if purchased separately, or other 3rd party mobile apps.

How to take paddock readings

1. Switch the counter on using the toggle switch at the back.

2. Reset by holding the 'Reset' button until the display changes to '0'. This should be accompanied by two short beeps.

3. Walk across the paddock taking readings every few paces. The counter will beep every time a reading is stored. The average Height is immediately recalculated and displayed. The number of samples (plonks) to be taken should range between 20 and 40 per paddock however this will be determined by the variance existing in the cover. The counter will give three short beeps when you have completed 29 plonks and one long beep when you reach 30. This is the recommended number of readings. Plonks need to be taken on a regular basis e.g. every three paces to even out any variations, however avoid stock camp areas, tracks, or uncharacteristic areas. The greater the variability the greater the number of plonks you should take.

4. If you need to negotiate an obstacle (e.g. fence or creek) switch the counter off so that no readings are taken if the plate moves. On the other side of the obstacle, switch the counter back on and continue taking readings.

5. When you have completed the paddock, record the rolling average displayed on screen. Read off the height of cover.

6. If you have purchased the Pasture App, enter the height against each paddock in the App.

7. Repeat instructions 4 to 8 until you have completed every paddock.

8. Switch the counter off using the toggle switch at the back when finished the walk.

Undo Feature: You can “undo” the last plonk or reading by holding down the “Height” button as you switch on the counter. The count will now be one less than what it was and the dry matter reading will also change to the previous reading. You can continue taking more readings if you wish.

Software

The Jenquip Pasture Management Software provided can be used, however this is only suitable for single farms. Jenquip recommends for multiple farm users the use of the Android App which can be purchased separately. It takes the information from your farm walk and produces ready-to-use reports.
The App can be found by looking up "Pasture App" in the Play Store for a 7 day free trial.

Jenquip Pasture Management Software is supplied with your platemeter on a USB stick, and does not require registration.

Use the Jenquip Pasture Management software to further process the platemeter readings and do your feed wedge.

Total Dry Matter = Kg Dry Matter per Hectare x Paddock Area

Growth Rate of Pasture

= Final Kg DM / Ha- Initial Kg DM/Ha (KgDM/Ha /day)

Number of days between samples

Maintenance

Your meter has been developed over a number of years to be simple, effective and reliable. However a little maintenance will ensure many years of trouble free use.

Before use

After assembling the plate onto the counter move the plate up and down a few times to ensure no binding occurs. If its movement is restricted the reason must be found and rectified before the meter is used.

After use

Remove the plate and wash it clean. Do NOT waterblast.
Wash / wipe and dry the area around the bottom of the meter.
Move the counter so that all dirt and accumulated grass can be washed away.

This is a precision instrument – look after it.
Water blasting or submerging the unit will void the warranty.

Replacing the battery

On start up if you get a “Lo” battery warning then the battery will need replacing over the next farm walk or two. A triangle icon in the top left hand corner also indicates a low battery. The electronic counter is powered by a single 9V battery. The use of an alkaline battery is recommended, though a standard heavy duty battery will still work well. An alkaline battery should give 40-50 hours continuous use. A NiCad rechargeable battery may also be used.

Before you replace the battery ensure the counter is switched off. Remove the screw on the front of the counter. The battery retainer will slide out towards you.

Do not pull on the battery snap wires as these will become dislodged from the electronics and will need to be sent in for repair. This will void the warranty.

Remove the battery and gently remove the battery snap connections (lever off with a screwdriver.) Fitting the new battery is the reverse of the removal procedure.

If your battery is near the end of its life it is a good idea to carry a spare.

Fault finding

There is no visual display

Check	Resolution
	Replace the battery
If you have just changed a battery you may have damaged the battery snap clip that attaches to the top of the battery.	Service: Send to your service agent.

The counter continuously beeps and eventually turns off

Check	Resolution
This is normally due to a low battery. The counter requires a given level of power to operate correctly. If the battery doesn't have sufficient power it may continuously beep to warn you. Remember if you turn the counter off for a few minutes it may recover slightly but the problem will not go away.	Change the battery Battery may be due for replacement

NOTE: Most problems are due to the counter being out of calibration (see following points as to why.) If in doubt it is worth Zero Calibrating just to make sure it is correct (see page 5)

The counter does not beep when taking a reading.

Check	Resolution
Potentiometer damaged. The Potentiometer is the shaft part that drives the cog. NB: Under no circumstances should you apply CRC or a light oil to the potentiometer. It is a dry bearing and any lubricant will render the potentiometer useless).	Send to your service agent for repair.

Check	Resolution
Check the metal shaft is coming right back into the base of the tube. Ensure there is no grass or soil build-up preventing it from doing so. Also check the washer at the bottom of the shaft is not catching on the bottom of the plate.	Clean the platemeter
Check This means that the platemeter does not know where the bottom is – therefore does not record the reading.	Refer to page 5 “Zero calibration”
Counter readings do not seem accurate	
Check The counter is like a calculator- it does not give false readings under normal circumstances.	**Resolution** Check the equation being used is correct and the calibration has been correctly set. (Zeroed)
Platemeter not running freely (low results)	
Check Metal shaft is bent	**Resolution** Straighten or request a replacement part from your service agent
Grass or soil build-up inside case	Clean the platemeter
Grooves on steel shaft have become filled with grass or soil	Clean the platemeter
Front panel (membrane problems)	
Check Buttons not clicking or activating	**Resolution** Service- membrane needs replacing. Send to your service agent.

How do I change a formula?

Check
The platemeter is switched on. If you wish to select the inbuilt default formula

Resolution
Hold down the ‘Formula’ button until the display changes to ‘F d’. While the ‘d’ is displayed, press the ‘Reset’ button. The following equation is used:
Cover (kg DM/ha) = 140 x height +500

Returning for service

Remove plate and handle or extra freight charges will result. Leave the counter on the grooved rod.