Flo-Master™ 2000 Milk Meter

∝ DE LAVAL

Introduction

The Flo-Master™ 2000 Milk Meter is designed for continuous in-line weighing of the milk. Compared to measuring the volume of the milk, weighing provides high accuracy and is independent of the air content or foam in the milk.

The weighing system consists of a meter body, an electronic stall unit, a parlor controller, a gate switch and a power supply (which must be on for milking and cleaning). The meter, attached at each stall, receives and weighs the individual milk yield of the cow as she is milked. This milk yield is then displayed on an LED digital display on the accompanying stall unit. The gate switch attached to the parlor exit gate signals the stall unit to send the final milk weight to the parlor controller.

The power supply for the system can provide power for as many as 24 stall units. An optional butterfat sampling device can be attached to the bottom of the milk meter for obtaining milk samples for butterfat analysis.

The parlor controller can print out daily milk yield information, based on manual cow identification. It can be upgraded to the ParlorMaster system, which provides for automatic cow identification and recording and a printout of daily yields. It can be upgraded further by linking to HerdMaster Galaxy dairy management software with the addition of a computer.

The Flo-Master™ 2000 Stand Alone Milk Meter consists of the same basic components, with the exception of the parlor controller. Each milk meter operates on its own and is not connected to a central controller for data collection and cow recording. Each stall unit can store up to 12 cows with their milk weights during a milking. At any time before the start of the next milking that information stored in memeory can be retrieved.

The Stand Alone units can be upgraded by adding a parlor controller and changing the program chips in each stall unit.
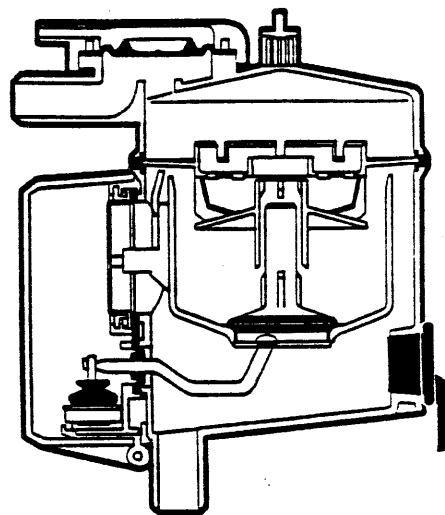
Description

The milk enters the meter from above (1) and is collected in the metering cup (2). The cup is connected to a strain gauge (3) which senses the weight.

When the cup is filled up to a certain level, the bottom valve opens (4) and the milk is let out. Milk continues to flow in at the top while it is let out at the bottom (5) until the valve closes.

To achieve accurate and reliable measurement, Flo-Master 2000 is equipped with advanced electronics (6), which process and calculate the information from the strain gauge, control the bottom valve and provide weight information to the stall unit.

The measurement is divided into two phases:
* Filling the metering cup.
  — Bottom valve closed.

* Emptying the metering cup.
  — Bottom valve open.

The actual weighing takes place during the filling phase. In the emptying phase, the weight is calculated by the electronics using the flow rate determined during the filling phase.
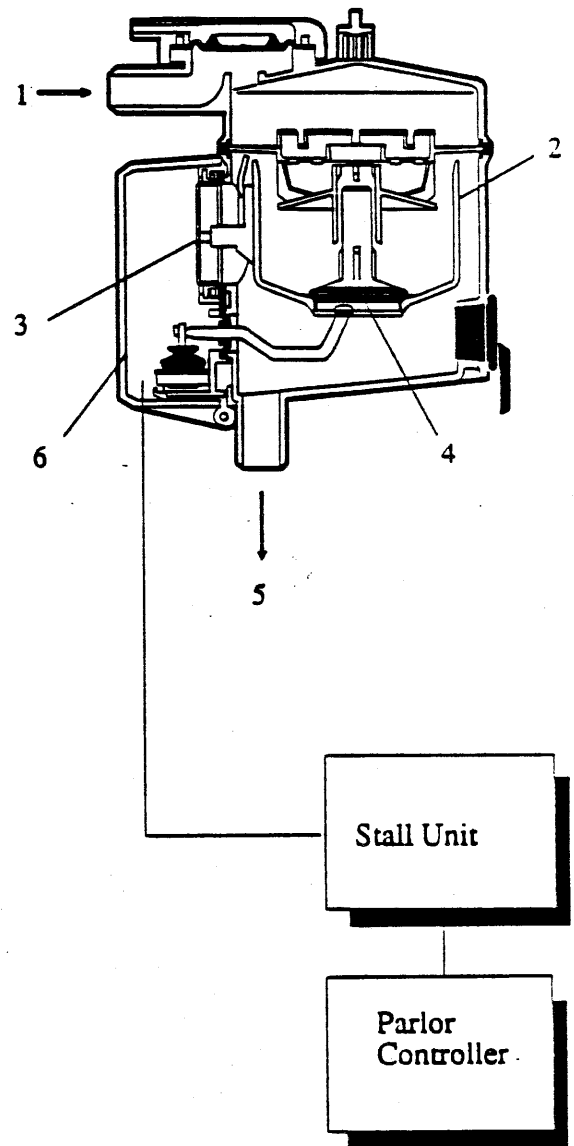
Filling phase

In the filling phase the bottom valve is closed (1).

While the metering cup is being filled (2), the electronics sense the increasing weight up to a thousand times. By dividing the weight of the milk in the cup with the filling time, the average milk flow is calculated.

When the weighed amount of milk in the cup exceeds a certain level, the emptying phase begins.

Emptying phase

When the emptying phase starts, the bottom valve opens (3) and lets the milk out. The milk continues to flow into, and through, the milk meter during this phase. Depending upon the flow rate of milk into the cup, the valve remains open for 1, 1.5 or 2 seconds. The emptying phase ends when the bottom valve has closed. Then a new tare weight is established for the cup and any milk in it as the filling phase begins.
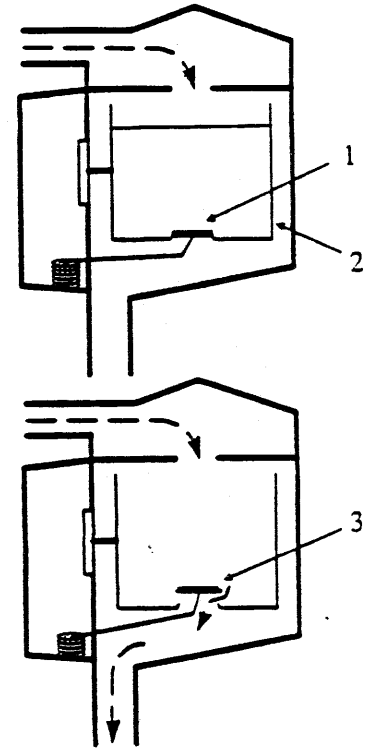
Milk weight calculating

The electronics calculate the weight of the milk coming into the cup during the emptying phase by multiplying the total emptying time (1, 1.5 or 2 seconds) by the calculated average milk flow.

The meter electronics is able to tell the difference between milk flow and an air blast. When it senses an air blast the valve is opened and closed to establish a new tare weight without adding any weight to the total.

The diagram on the next page shows how the total milk yield accumulates as the cup is continuously emptied and a new tare weight established.
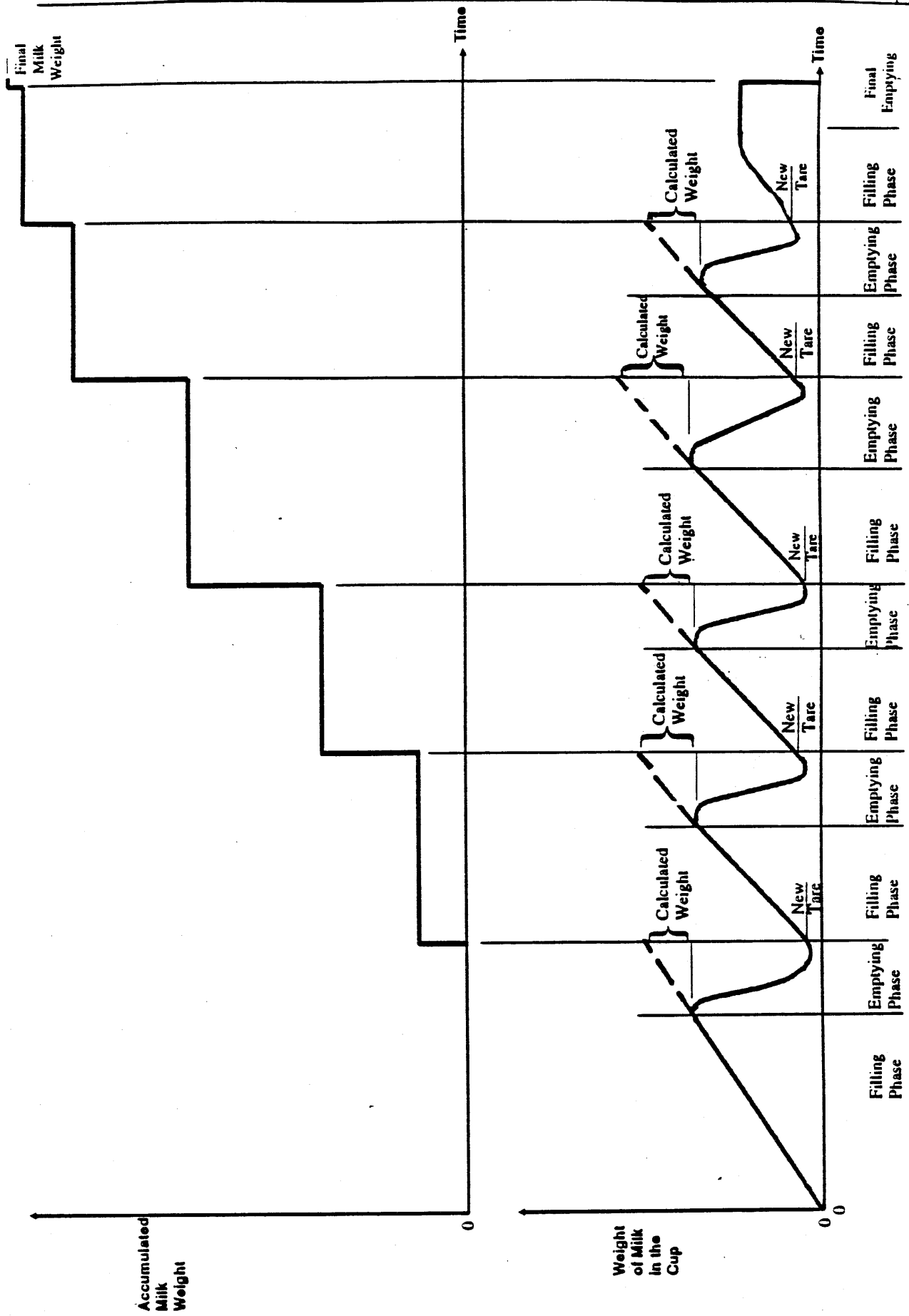
Low milk flow

The Flo-Master 2000 milk meter performs the function of the flow sensor. The meter continuously senses the milk flow, and when the flow is below a preset limit, usually 200 gram/minute [0.44 lbs/min.] (which is set in the stall unit), a low-flow message is sent to the stall unit. Optional adjustments for the low flow limit are 300, 400 or 500 grams/minute (0.66, 0.88 or 1.1 lb/min.)

A low flow indication (a square in the upper left corner) appears on the stall unit display and a low flow signal is sent to the take-off circuit board (just as a flow sensor would) to initiate claw removal.
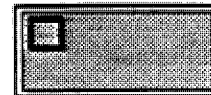

Diaphragm Cover

The Flo-Master 2000 milk meter is equipped with a diaphragm vacuum shut-off that interacts with an automatic take-off. The meter lid includes a diaphragm that acts on the passage of milking vacuum from the milk line to the claw. The chamber above the diaphragm is connected to control vacuum supplied by an automatic take-off.

The diaphragm can control two vacuum levels:
* Normal vacuum at normal milk flow.

* No vacuum at the automatic claw removal.

Normal milk flow

During normal milk flow, vacuum is supplied above the diaphragm. Since the milk line has approximately the same vacuum level, the diaphragm is kept in an open position. It is normal for the diaphragm to move slightly with milk flow.
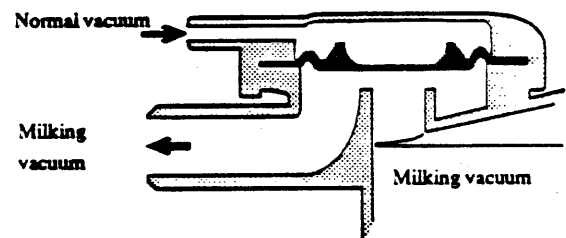
End of milk flow

When the milk flow has dropped to the low flow limit at the end of the milking, the automatic take-off initiates a positive shut-off. It supplies atmospheric pressure above the diaphragm, and presses the diaphragm down. The diaphragm covers the opening to the milk line and shuts off the vacuum to the claw. The claw releases from the teats and is removed by the take-off.
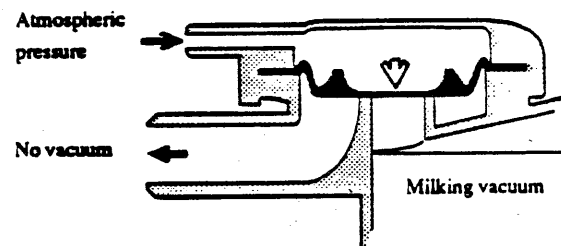
Milk meter electronics

The milk meter has four operating modes: standby, milking, cleaning and calibration mode.

Standby mode

The milk meter waits for a command to get into another mode.

Cleaning mode

The milk meter goes into cleaning mode when the cleaning signal from the washing system is sent to the stall unit.

The milk meter empties the cup 2 times per minute.

During cleaning, the bottom valve is closed for 25 seconds, then opened for 5 seconds. When the valve is closed, the cleaning liquid flows over the metering cup and cleans the entire milk meter. During the 5 seconds of opening, the liquid flows through the metering cup and cleans the bottom valve and the cup.

Calibration mode

The calibration mode is accessed from the stall unit to check meter accuracy or to recalibrate. A special calibration weight must be used to allow the meter to compare its calculated weight to the actual weight. This can be performed only by an authorized De Laval serviceman.

Milking mode

The milk meter goes into milking mode when F1↑ is entered on the stall unit.

Before milk flow:
   — Empties the cup once per minute, and tares.

During milk flow:
   — Sends accumulated weight, flow value, and information about the flow rate above or below the low flow limit to the stall unit at each emptying of the cup.

At no flow (after claw removal):
   — Empties the cup once per 2 minutes and sends a "No Flow" message to stall unit.

When the exit gate switch is activated to send a confirmed weight to the parlor controller:
   — Empties the cup.

   — Sends final milk yield to stall unit.
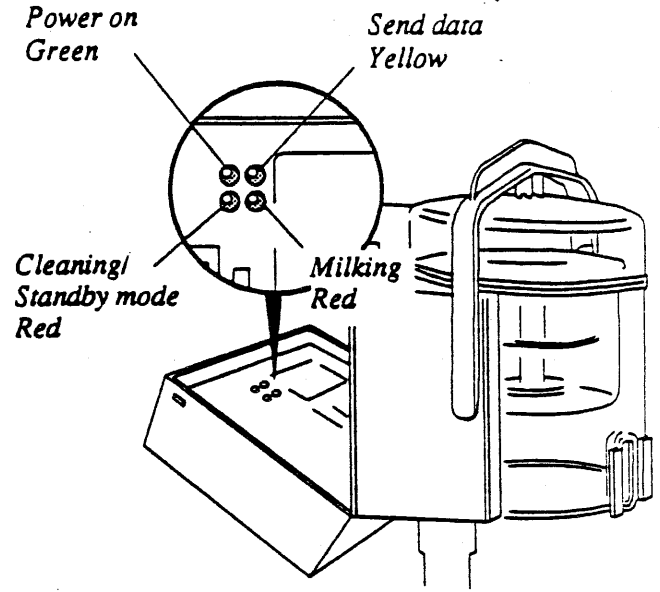
Diagnostic lights

There are four diagnostic lights in the milk meter electronic unit.

Green — Power on to the milk meter.

Yellow — Data is sent to the stall unit.

Red left — Cleaning or standby mode.

Red right — Milking mode.

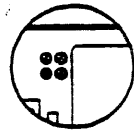*Power on Green* *Send data Yellow* *Cleaning/ Standby mode Red* *Milking Red*

Red lights

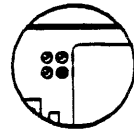In calibration mode, none of the red lights are lit.

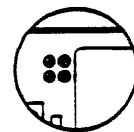If both red lights are lit, an error is indicated.
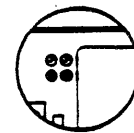

Cleaning or standby

Milking

Calibration

Error

Butterfat sampling

A butterfat sampler can be attached to the
Flo-Master 2000 milk meter. The sampler continu-
ously collects a proportional amount of the milk
throughout the milking. Since the sample is taken
out below the measuring cup, the sample weight is
included in the measured yield.

The sampler is designed for quick and easy han-
dling. When milking is finished, close the valve on
top of the sampler, unscrew the jar from the lid and
remove the jar with the milk sample. Mix the sam-
ple by pouring back and forth to another small con-
tainer two times (two pourings). Pour out the
sample, replace the jar, open the valve, and it is
ready for a new sample.

The butterfat sampler is NOT designed for clean-
ing in place. *It must be removed and manually
cleaned.*

Periodical check of accuracy (water test)

A periodical check according to official demands
can be performed by an authorized De Laval service-
man to verify the accuracy of the milk meter.

A test pipe and accurate scales are required to per-
form the test.
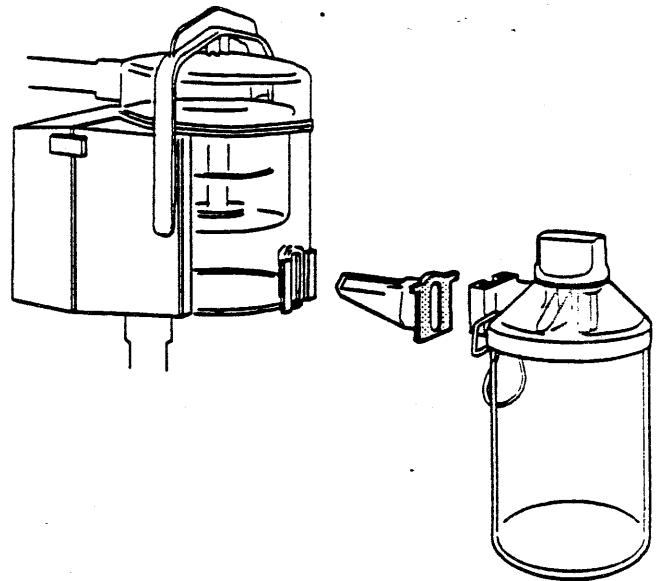
Stall Unit

A stall unit is connected to each milk meter. The stall unit records the milk yield of each cow and transfers it to the parlor controller. It is also the operator's link to the system during milking. The stall unit contains:

- Display: Cow number and milk yield are displayed during milking.

- Six status lights. Indicate different conditions of the cow.

- Keypad: Used by the operator to start and stop milking, and to enter or change cow identification at the stall.

- Other keypad functions & indicator lights on the control enclosure are described in the take-off Owner's Manual.

The operator can also use the stall unit to obtain information from the system, and to notify the system of individual cow changes.

With PLATO™ or SST™II Stainless Deluxe the stall unit circuit board is mounted in the same control enclosure as the take-off control board.
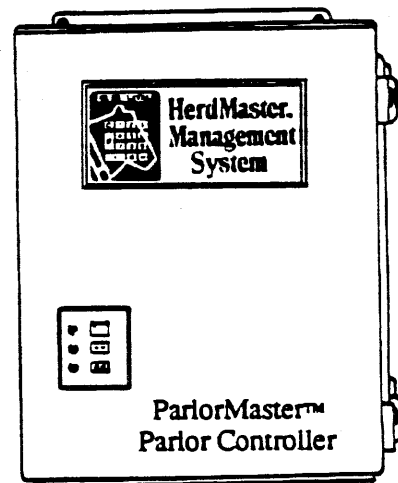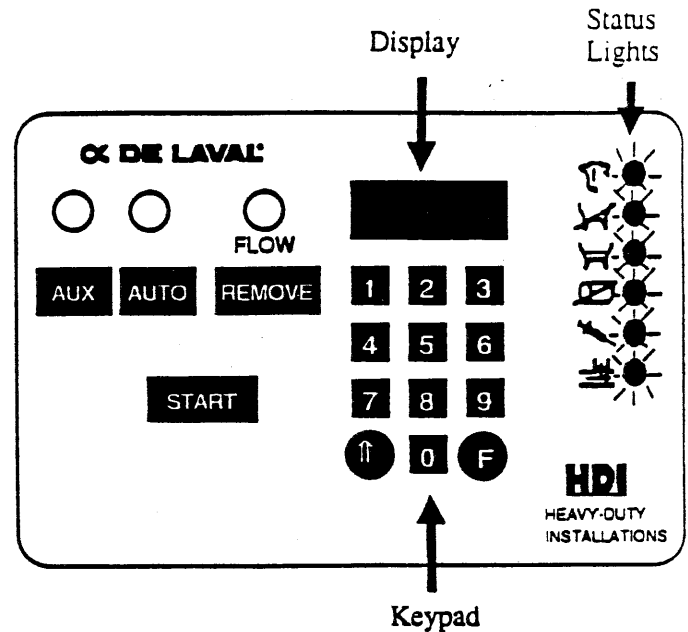
Parlor Controller

The parlor controller is the brain of the system. It collects, calculates and stores all information about the cows.

Each cow in the system has its own record (the cow file) in the parlor controller memory. The cow file contains information about the cow - her milk yield, transponder number, breeding status, special treatment, etc.

This information is stored in the parlor controller, and is available to the operator through lists that are printed out automatically or on request.

The parlor controller has a back-up battery to maintain stored data in case of power failure.
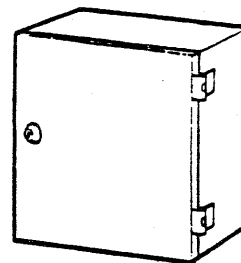
See ParlorMaster Milk Yield Recorder Owner's Manual SNF-7465 for information.

Display · Status Lights · Keypad

ParlorMaster™
Parlor Controller

Power Supply

The power supply transforms main voltage to 17 V DC and gives power to stall units and parlor controller.

A separate 24 VAC power supply provides power to the meter electronic unit.

Stall Unit — Stand Alone Milk Meter (Option)

The stand alone stall unit can store the cow numbers and milk weights for up to twelve (12) cows during each milking. If more than 12 cows are milked, information will be erased, starting with the first cow received.

The status lights give warnings when the 10th, 11th and 12th cows are milked to alert the operator when the memory is reaching capacity.

The information stored in memory can be displayed at any time prior to the next milking. Entering **F1**↑ to start milking clears the memory of the previous cows numbers and milk weights.

All information stored in memory will be lost in the event power to the stall unit is shut off.

Operation

The Flo-Master Stall Unit is the operator's interface to the Flo-Master system.

The Stall Unit contains:

Display

Cow number and milk yield are displayed during milking.

Keypad

Used by the operator to start and stop milking, and to enter or change cow identification at the stall, etc.

The operator can also use the stall unit to obtain information from the system, and to notify the system of individual cow changes.

Status lights

There are six status lights on the stall units that are used by the system to give the operator information about a cow. One or more of the lights can be lit at the same time. The status lights are used only with the ParlorMaster parlor controller.

- Alarm.

- Do not milk.

- Low yield is automatically turned "ON" or "OFF" based on the cow's average production.

- Dump milk.

- Treat cow.
  The cow needs some medical treatment.

- Separate cow after milking.
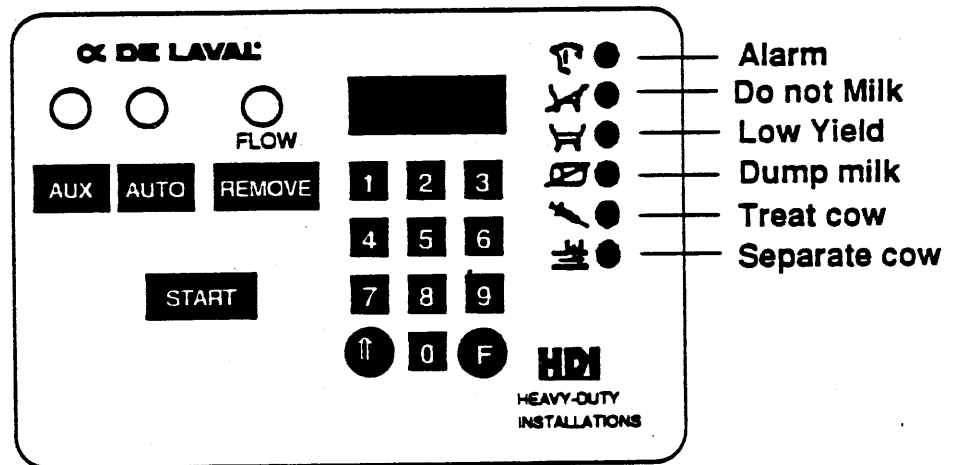
Stall Unit Functions — with Parlor Controller

The table below shows the functions that can be performed on the stall units.

See ParlorMaster Milk Yield Recorder Owner's Manual SNF-7465 for further information.

NOTE: *You can only use one stall unit at a time.*

Keypad	Display	Used stall unit	Action
F1↑	F1	Any stall unit	Starts milking. Sets the system in milking mode.
F2↑	F2	Any stall unit	All cows milked, end of milking. The system leaves milking mode and goes to standby mode.
F3↑	Number of cows/total yield	Any stall unit	Displays number of cows milked and total milk yield so far. Then goes back to previous information.
F4↑	F4, confirmed weight	Individual stall unit	Confirms that a cow is milked. Milk yield value for a single cow is transferred to the parlor controller & displayed on the stall unit.
F5↑↑	F5, confirmed weight	Any stall unit on that side	Simulates opening signal from exit gate switch (end of group, all cows on one side are milked). Milk yield values are transferred to the parlor controller. Normally used only if exit gate switch is defective.
F9↑	P A U S	Any stall unit	Pause. Used when you must interrupt the milking for more than 30 minutes. Press F1↑ again to start milking after the pause.
nnnn↑	Cow number	Individual stall unit	Enter cow number of 1-4 digits. Used for manual identification or to correct automatic identification. Cow number and milk yield displayed alternately.

> ⚠ **CAUTION!**
>
> *All components of the Flo-Master 2000 Milk Meter must be properly installed and assembled with all gaskets in place and milk and wash hoses attached before proper milking and metering operation can occur.*

Operating Procedure

After power is provided to the system, the code **PU** will be displayed on the stall unit until the first cow starts milking. This signifies that the unit has been "powered up" and is ready for milking. The status lights will also flash (the top two alternately with the bottom three) for a few seconds until communication is established between the stall unit and the meter.

Start Milking

- The cleaning signal from the automatic washer must be off.

- Press **F1↑** on any stall unit.
  This makes the system ready for cow identification and milk yield recording and empties the metering cup.

- Open the entrance gate and let the cows into the parlor.

Before the cows are identified all six status lights on all stall units are lit. When the identification is completed, only the individual programmed status lights (if any) for the cow are lit.

Identification

The cows can be identified by different systems:
- — Manual identification at the stall unit

- — Individual identification — See Owner's Manual SNF-7494-O.

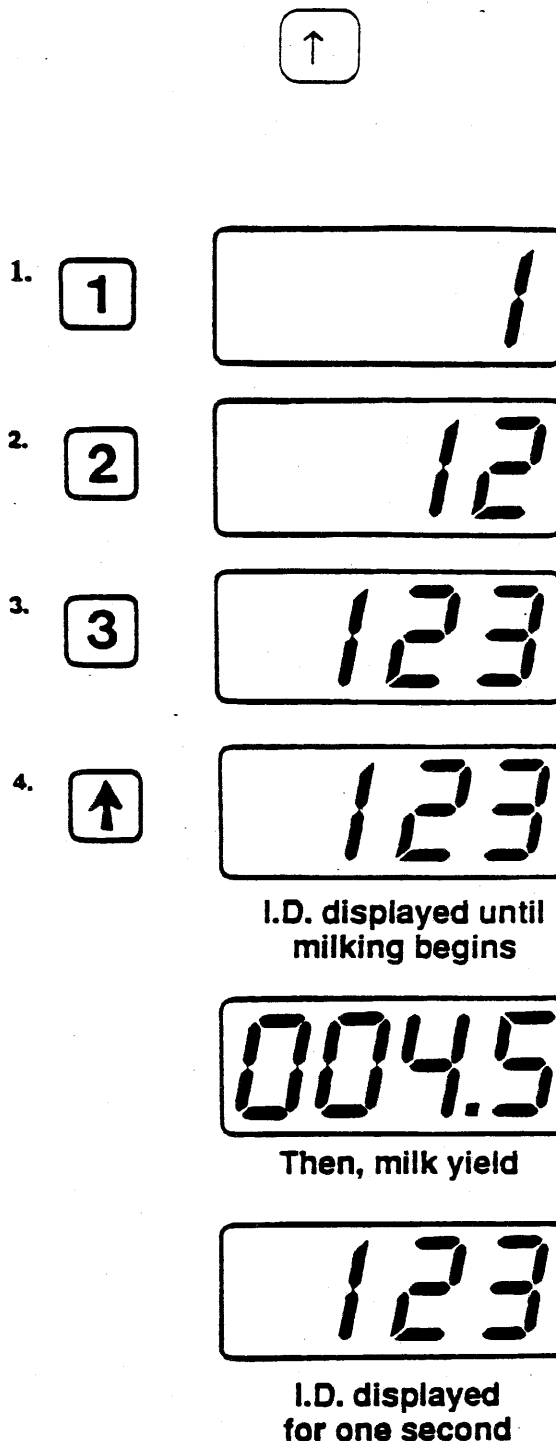- — Portal identification — See Owner's Manual SNF-7504-O.
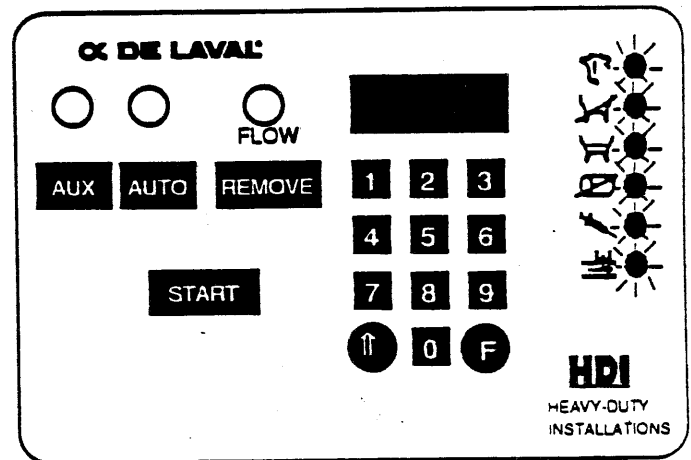
Manual Cow Entry

The manual cow entry command is an option which can simplify recording the milk weights. To enter the cow number, press the cow number on the keyboard. The digits will be displayed and shifted one digit to the left as they are entered. After the last digit has been entered, press the ↑ on the keypad. This will register the cow number, which will be displayed in an alternating sequence with the current milk yield, as soon as milking begins.

The cow number can be changed at any time during milking by using the procedure outlined previously. If a mistake is made during cow number entry, press ↑, then key in the correct cow number, then press ↑ again. This will update the display. If no cow number is entered, the milk yield display will alternate with a blank display.

Example:

Suppose cow number 123 is in milking position. The following steps show the sequence of entries and displays to manually identify the cow.

As soon as milking begins and the meter has dumped several times and weighed a minimum of about 1.5 pounds, the cow number and the milk yield will be displayed alternately. After the metering cup empties, the added milk yield will be calculated and displayed.

↑

1. [1]   *1*

2. [2]   *12*

3. [3]   *123*

4. [↑]   *123*

**I.D. displayed until
milking begins**

004.5

Then, milk yield

123

**I.D. displayed
for one second**

Milking

Milk the cows following the normal milking proce-
dure:

- Check to see if correct cow number is displayed.

- Check for any status attention, for example dump
  milk. If so, prepare the milk line for dumping.

- Prepare the cow, wipe off the udder.

- Milk out some milk in a fore milk cup and check
  the milk.

- Attach the milking unit. The cow number and the
  milked yield will be alternately displayed on the
  stall unit during milking.

Low flow indication

When the milk flow is lower than the preset low
flow limit, the milk meter sends a signal to the stall
unit which can then signal an automatic take-off
unit.

The low flow is also indicated on the stall unit by a
small square in the left part of the display.
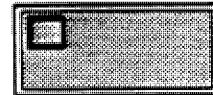
If milking is interrupted

If the milking unit has been removed, it can be put
on again, as long as the exit gate remains closed
(and **F4** or **F5** is not pressed). The milk yield record-
ing continues where it was interrupted.

Special actions

Pause F9↑

If you must interrupt the milking for more than 30 minutes, press **F9↑**. P A U S will be displayed on all stall units.

If you do not press **F9**, the system will assume that the milking is finished after 30 minutes. Press **F1** ↑ to start milking again after the pause.

| F | 9 | ↑ |

PAUS
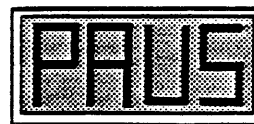
Total milk yield so far F3↑

This first displays the number of cows with confirmed milk weights, and after a few seconds, the total milk yield from those cows. Then the display goes back to what was shown before pressing **F3↑**.

| F | 3 | ↑ |

Butterfat sampling

NOTE: *The butterfat sampler is not designed to be cleaned in place. It must be completely disassembled and thoroughly cleaned, manually, with proper washing solution.*

Prior to installing the sampler, be certain that it has been properly cleaned and sanitized.

• Prepare for milk sampling before milking to avoid vacuum drop.
  — Remove the rubber plug (1) from the milk meter.

  — Insert the sampler inlet with seal (2).

  — Holding the spring clip by the ring, place the open rectangular-shaped section over the flange that attaches the sampler lid to the meter housing (3).

  — Pull the ring out and downward, flexing the spring until it is inside the rim of the sampler lid, pointing downward.

  — Slide the sampler flanges over the mating flanges on the meter housing until it stops, aligned with the inlet seal.

Open Closed
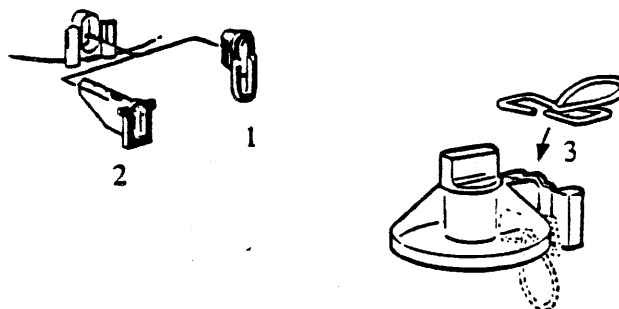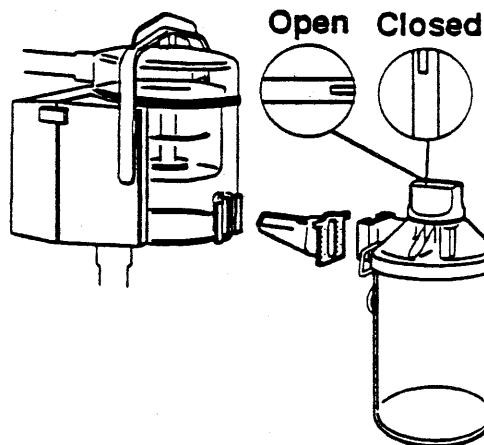
— Pull the spring clip ring down and out from under the rim of the sampler lid until one wire of the clip snaps into the recessed slot on the bottom edge of the meter housing (4 and 5).

— Attach the sampler jar to the lid.

— Open the valve on top of the milk sampler by turning in line with inlet.

• Start milking.

• When the milking is finished, close the valve by turning perpendicular to inlet, and turn the jar to release and dump. Mix the sample by pouring back and forth to another small container two times.
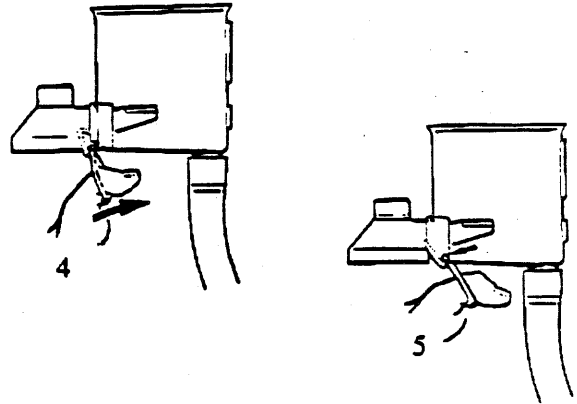
Dumping of milk

When milking a cow whose milk must be dumped, it is prefered to bypass the milk meter. Remove the milk hose from the meter inlet and connect to a bucket. If it is necessary to milk through the meter, remove the meter outlet hose at the milk line connection. Connect the tube from the milk meter to a bucket.

> Do not remove the milk tube from the meter outlet except for replacement, to avoid stress which could crack the meter outlet nipple or meter body.
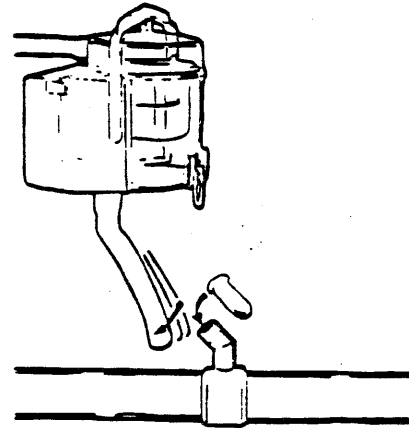
End of milking

Confirmed milk weight

When all cows in a group are milked, open the exit gate and let the cows out.

A "⊏ " in the display indicates that the milk yield values are transferred to the parlor controller after milking of a group. New cows can enter and are identified even if the transfer of confirmed milk is not ready. Their cow numbers are remembered and will show up as soon as the displays are free.
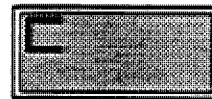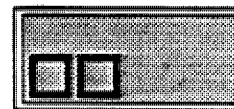
Defective gate switch

F5↑ ↑ confirms that the cows in that group are milked. Can be used if gate switch is defective.

Gate switch indication

When the exit gate is open, two rectangles are displayed on the stall unit at the exit.

Single cow

In some cases you might want to know the milked yield of a single cow, without waiting until all cows in the group are finished.

F4↑ confirms that the cow in the stall is milked and the confirmed milk weight is displayed. When the exit gate is then opened, that stall display will change to "⊏ 0.0".
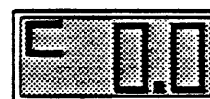
End of milking session

Press **F2↑**. This ends the milking of all cows, and starts system functions such as calculating, etc. The milk meter goes to standby mode.
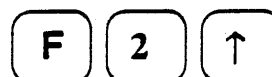
Stall Unit Functions — Stand Alone Milk Meter (Option)

The table below shows the functions that can be performed on the stall units.

NOTE: Each function affects only the stall unit upon which it was entered.

Keypad Entry	Display	Action
F1↑	F1	Starts milking. Sets the meter to milking mode and all 6 status lights go on. Clears cow numbers and milk weights in memory.
F2↑	F2	All cows milked, end of milking. Leaves milking mode and goes to standby mode.
F3↑	Number of cows/total yield	Displays number of cows milked and total milk yield so far on that stall unit.
F4↑	Confirmed Weight	Generates a final, confirmed milk weight.
F6↑	Cow number/milk yield	Recalls up to 12 cow numbers and milk yields from memory. Press 1 to step to next cow.
F80↑	F80	Reset milk meter.
F86↑	F86	Flow switch. Used to toggle the low flow signal from stall unit to take-off board on or off. When turned on, the FLOW light on the take-off is on.
nnnn↑	Cow number	Enter cow number of 1-4 digits. Cow number and milk yield displayed alternately.

Status lights — Stand Alone Milk Meter (Option)

In the stand alone milk meter, the status lights do not give any information about individual cows.

- Light 3 — Not valid low yield information. Goes off when milk yield is greater than 1.1 pound.

- Light 4 — A pre-warning for the cow memory. Switched on when 10 of 12 cows have been milked. Switched off when light 5 comes on.

- Light 5 — A pre-warning for the cow memory. Switched on when 11 of 12 cows have been milked. Switched off when light 6 comes on.

- Light 6 — Cow memory is full with 12 cows. The operator must perform function F6↑ and record information before continuing. Otherwise the information is erased starting with the first cow milked.

- All 6 Lights on — When F1↑ is entered to start milking, the cow memory is erased. The lights are switched off when the first cow number is entered or when the first milk weight is received from the milk meter.

Operating Procedure — Stand Alone Milk Meter (Option)

The operating procedure for stand alone milk meter is the same as for the system with the following exceptions.

Start Milking

F1↑ must be entered on each stall unit to put each milk meter into milking mode.

A 30 minute count-down timer in the stall unit is started by entering F1↑. Each time the exit gate switch is opened or F4↑ is entered. the timer is reset to 30 minutes. After 30 minutes without an exit gate switch signal or F4↑ the stall unit automatically generates an F2 function to end milking.

Special Actions

Cow yield recall F6↑

At any time during milking or cleaning — prior to the next start milking F1↑ — the cow number/milk yield information can be retrieved from memory. This must be performed on each stall unit.

Press F6↑. The display will alternate between the cow number and the milk yield. The information can then be recorded by the operator if desired. Press ↑ to display another cow. When all cows have been displayed. an "F" is displayed to indicate the recall is finished.

The information is sorted according to cow number order with the lowest cow number being displayed first. If a cow number is missing or the cow number is 0, it will be displayed last.

Search for a specific cow

It is also possible to search for a specific cow in the F6 function by entering the cow number on the keypad. If the cow was milked in that stall. her milk yield will be displayed. If not milked in that stall, the next cow number in order or "F" is displayed.

F4 Function

Performing function F4↑ to confirm a weight and then opening the exit gate switch will add a 0.0 pound weight with cow number 0 to the memory.

Service

Periodical check of accuracy — water test

Checking the milk meter's recording accuracy with water should be done each time the milk meter has been disassembled, or if you suspect incorrect yield recording.

Periodical checks should also be carried out according to requirements of regulating agencies.

Equipment needed:

— Test pipe (999100-80) or flow restrictor (8304601-01) which has a specially sized orifice and an air bleed to simulate a claw.

— Shutoff clip for the milk tube

— Electronic scale with an accuracy of ± 20 g (0.7 oz)

— Bucket with capacity of 5 gallons (40 pounds of water).
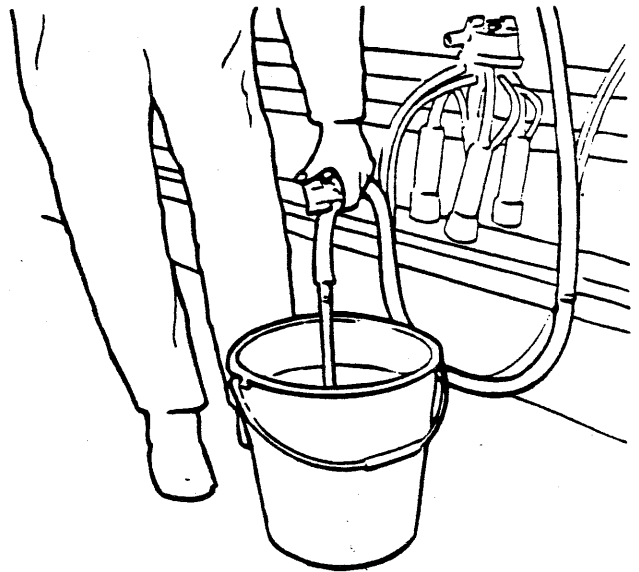
Test procedure

NOTE: *It is important that air is not sucked into the milk meter during or at the end of the test. The meter can differentiate between milk flow and an air blast and will not add weight to the total if it senses an air blast.*

- Remove the claw from the end of the long milk tube and apply a shutoff tube clip on the milk tube. Close the clip.

- Insert a test pipe into the milk tube.

- Start the vacuum pump.

- Fill a bucket with at least 20 lbs. of water.

- Weigh the bucket and make a note of the weight.

- Make sure that no cleaning mode signal is being sent to the stall units.

- Press **F1↑** on the stall unit to make the system ready for recording.

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- Put the pipe in the bucket and open the tube clip. (Press START on the take-off.)

NOTE! *Too great a flow rate — outside normal milk flow — will activate the air sweep blocking, and no recording will take place.*

- Watch the display. When about 10 kg (22 lbs) has been metered, shut off the water with the tube clip.

- Press REMOVE on the take-off.

- Make sure that no water remains in the tube. With milkline shutoff diaphragm closed, open the tube clip and drain water out of hose back into the bucket.

- Press **F4↑** to confirm the recorded weight.

  F   4   ↑

- Weigh the bucket with the remaining water, and subtract this from the original weight. This gives the actual weight of the water that has been measured by the meter.

- Compare the actual weight with the weight displayed on the meter with the following calculation.

$$\frac{\text{Meter reading}}{\text{Scale reading}} \times 100 = \text{p-value}$$

- Repeat the test again.

If both p-values are the same and they fall between 97 and 103 percent the meter is considered accurate.

If the two p-values differ, perform a third test. The meter is considered acceptable if no single p-value is outside the range of 90 to 110 percent of the recorded water weight AND if the average of the three p-values is within 97 to 103 percent.

If any of the p-values are outside the acceptable range, check the meter for vacuum leaks, valve leaks or other faults.

If everything seems correct and the meter still is out of tolerance, check the calibration. See next section "Calibration".

- Repeat the water test with all milkmeters, then press **F2↑** to leave the milking mode.

  F   2   ↑
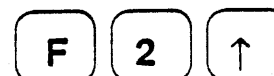
Calibration of milk meters

During calibration the milk meter setting is checked and adjusted so that the displayed value corresponds to the actual weight sensed by the strain gauge of the milk meter.

However, if there is a leakage or a fault in the milk meter function, the recorded milk yield may be wrong, even if the calibration is correct. Therefore, periodical checks must be performed, where the accuracy is checked by the water test.

Calibration Weight

Be careful always to keep the weight in its case. If it is scratched or chipped, it will no longer be a precise reference weight.

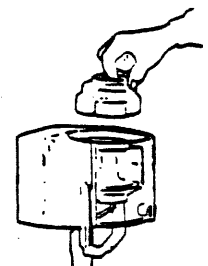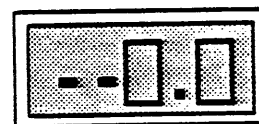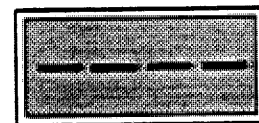The weight is stamped on the calibration weight (in grams).
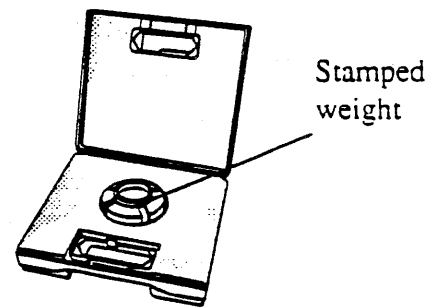
Check calibration

Check with a calibration weight that the milk meter displays the correct value.

The milk meter must not be in cleaning mode or milking mode. Make sure that no cleaning mode signal is received from the cleaning unit, and press F2↑ to leave milking mode.

- Remove meter cover and spoiler. (See "Disassembly") Do this on all meters that are to be checked.

- Press F89↑. This will set the milk meter in check calibration mode. The display shows "- - - -" for several seconds and then changes to "0.0".

- When "0.0" is displayed, carefully place the calibration weight in the metering cup with the slots over the four arms of the valve guide.

Stamped weight

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- The display (in grams) must be within ± 0.8g of the value stamped on the calibration weight.

If the weight difference is more than ± 0.8 g the meter must be recalibrated. See next section "Change Calibration".

- Remove the weight, wait for 0.0 to be displayed, and put the weight back again.

- Do this at least three times, or until you get good repeatability.

- Repeat the procedure on all meters to be checked.

- Leave the check calibration mode by pressing **F2** ↑ on each stall unit.
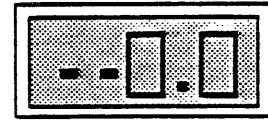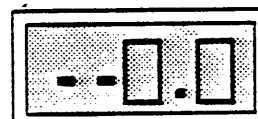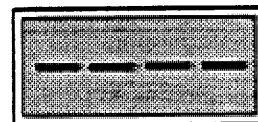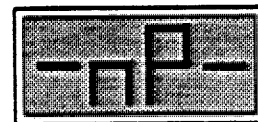
Change calibration

If the displayed weight is outside the limits for any of the milk meters, these must be re-calibrated.

- To enable the calibration mode, press **F72**↑ on any stall unit. The display will show 0000 or four digits.

- Enter the value stamped on the weight (rounded to four digits).

Example

— The weight is stamped with the value 142.34 g. Round off to 142.3 g. Press 1423↑ on the stall unit even if these numbers are already displayed.

— The status lights will come on momentarily. The system is now ready for calibration.

- Enter **F88** ↑ on the stall unit.

— If you have not entered the **F72** function, "-nP-" will be displayed. "-nP-"= no password

- If **F72** has been enabled , the stall unit first displays "- - - -", and then "0.0" for no weight, cup is empty.

- Carefully place the calibration weight in the metering cup.

The system now senses the weight of the calibration weight, compares it to the weight value entered during F72, and calculates and stores the correct calibration factor for this milk meter.

When this is ready, the stall unit displays " - c F -" (calibration finished) for a few seconds and then leaves the function F88.

The two upper lights and the three lower lights blink alternately when the calibration constant is downloaded in the milk meter after calibration is finished.

Now the milk meter is calibrated. To confirm, check calibration again with F89.

Repeat the calibration for other milk meters if necessary. Change calibration remains enabled until you press F1↑. After that you must enter F72↑ and the value stamped on the calibration weight again.

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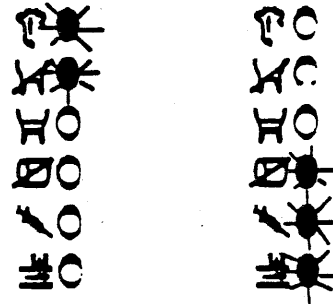
Change Calibration - Stand Alone Milk Meter

If the displayed weight is outside the limits for accuracy, the meter must be re-calibrated. Before entering the calibration mode make sure the milk meter is not in milking mode or cleaning mode.

- Enter **F88** ↑ on the stall unit. The display will show "-EP-".

- Enter the password "6285". If the correct password is entered the display will show "-EC-". If password is incorrect the display will continue to show "-EP-".

- Enter the value stamped on the calibration weight (rounded to four digits).

- The stall unit first displays "----", and then "--0.0".

- Carefully place the calibration weight in the metering cup.

The system now senses the weight of the calibration weight, compares it to the weight value entered above, and calculates and stores the correct calibration factor for this milk meter.

When this is ready, the stall unit displays "-cF-" (calibration finished) for a few seconds and then leaves the function F88.

The two upper lights and the three lower lights blink alternately when the calibration constant is downloaded in the milk meter after calibration is finished.

Now the milk meter is calibrated. To confirm, check calibration again with F89.