



THE GLOBAL STANDARD
FOR LIVESTOCK DATA

ICAR Guidelines for periodic checking of the milk meters

MMV Milk Meter

Version March, 2019

Network. Guidelines. Certification.

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1 Description

1.1 General

- The testing procedure with water should be carried out with milk meters that are cleaned properly.
- The periodic checking will be done at least once in every 12 months.
- Meters should be prepared to the test according to instructions in MMV technical manual (p/n 5620060)

1.2 Reference value

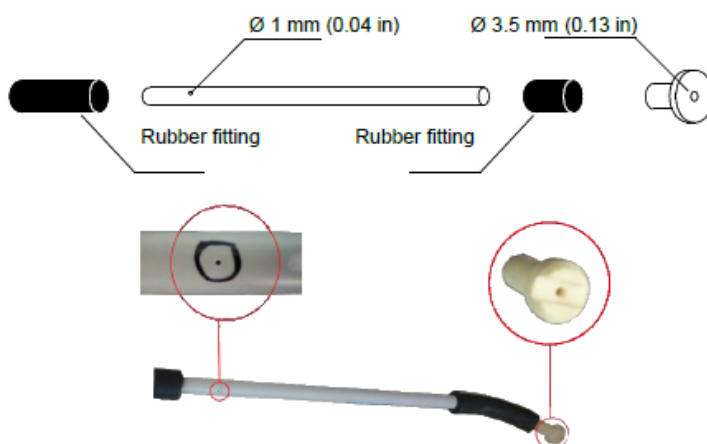
The "reference value" of the "MMV" milk meter is the average of the two measurements with water, found during the testing procedure with water of the installation test or a reference value determined later.

When proceeding to periodic checking, the reference values are handed over for support.

| | Test 1 | Test 2 | Ref. Value |
|------------|--------|--------|------------|
| Example #1 | 9.5 | 9.7 | 9.6 |
| Example #2 | 9.4 | 9.6 | 9.5 |

1.3 Required equipment

- Sucking set composed of:
 - Plastic pipe with Ø 3.5 mm (0.13 in) suction hole
 - Plastic pipe with 1 mm (0.04 in) air inlet
 - Rubber pipes



- Some buckets of sufficient capacity (more than 10l - 0.35 ft³)
- Electronic Scale (resolution at least 0.1Kg - 0.22 lb)
- Thermometer

1.4 Testing liquid

- Water with temperature of $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$
- No addition of salt or acids.

1.5 The principle of the test

- Fill a bucket with exactly 10 kg of testing liquid.
- Run a milking session and suck completely the testing liquid.
- Read and note the display value.

1.6 Quality of the observation/measuring

- If the first measurement value deviates no more than ± 0.2 kg from the reference value: meter is correct.
- If the first measurement value deviates more than ± 0.2 kg from the reference value, proceed to a second measurement.
- If duplicate measurements have an average deviation of 0.2 kg or less from the reference value: meter is correct.
- The difference between duplicate measurements should not exceed 0.2 kg.

1.7 Deviating meters

The deviating meters are subjected to a visual check and where possible simple faults are rectified. After this check, two measuring per meter are carried out. If the values that are found deviates no more than ± 0.2 kg, the meters are accepted. Of course, the duplicate values may not differ more than 0.2 kg.

1.8 Replacement or repair of meters

Meters that don't come up to the standard should be corrected or replaced (MMV should be repaired or replaced according to instructions in MMV technical manual p/n 5620060, chapter 10). When meters are replaced or when repairs influence the measuring, the meters are to be tested during the milking, after which the testing procedure with water should be carried out twice.

1.9 Reporting the results

The results of the periodic checking of the milk meters, as well as interim changes and the checks that go with these changes will be reported to those concerned, among others to the farmer, to the main supplier and to the national milk recording organization.

1.10 Sampling equipment

- Check the sampling equipment for cleanness and parts.
- See to it that the sampling equipment is stored in a dry place, free from dust.

1.11 Hints for the sample-taker and the farmer for correct sampling by means of milkrite|interpuls mmv**1.11.1 Before sampling**

See to it that:

- the air inlet in the milk claw or teat cups is opened
- the air inlet in the lid is opened (blockage delays the milk drainage)

- the equipment for the sample test contains no water residues

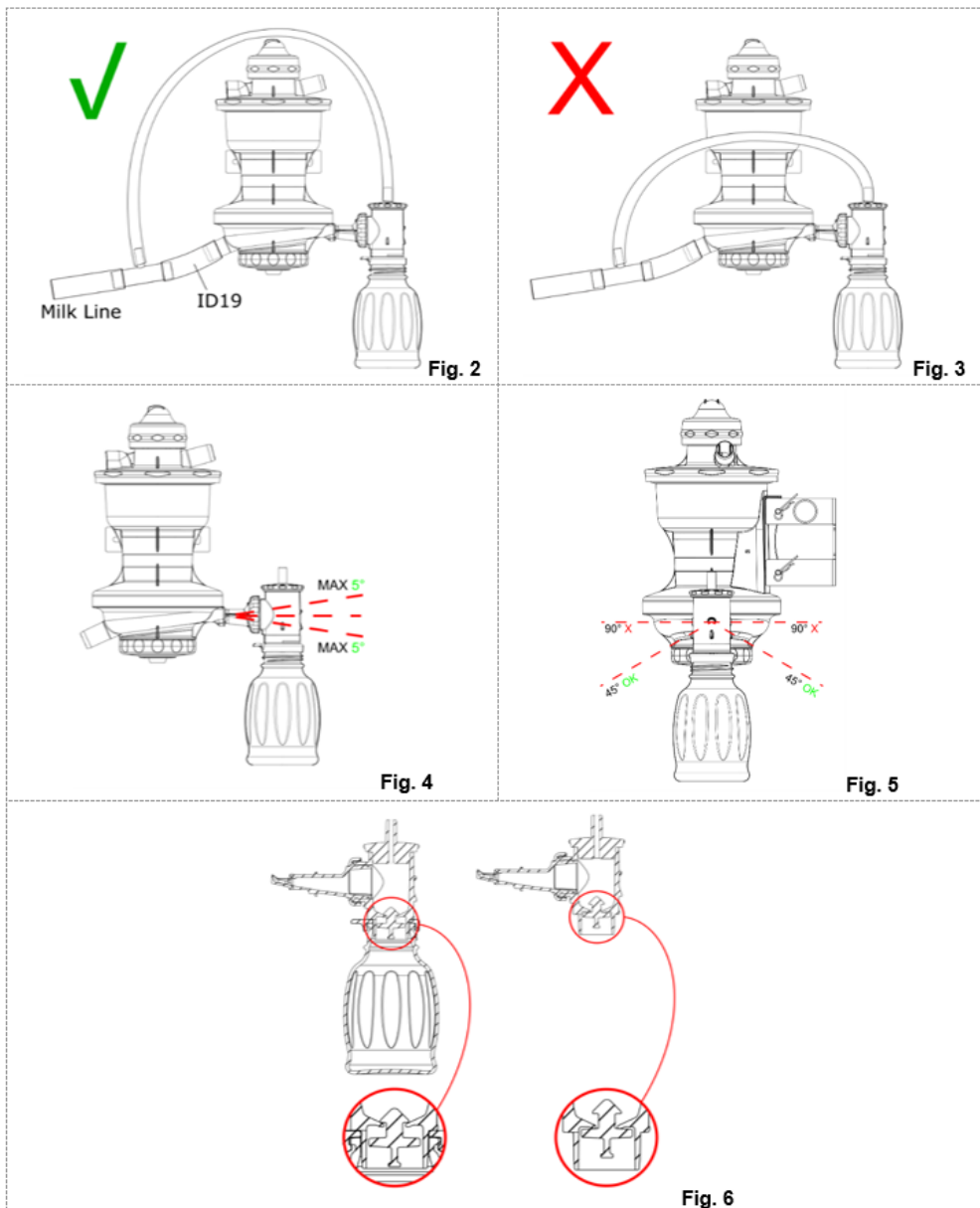
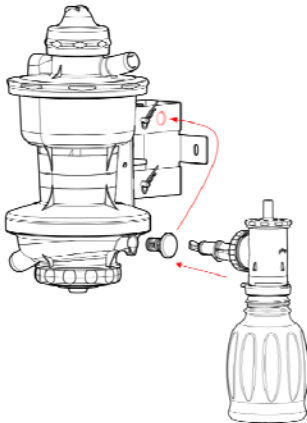
1.11.1.1 Connecting the sampling equipment

- Remove the plug from the MMV and place it on the bracket in order not to lose it (Figure 1).
- Mount the Sampler on the MMV as indicated in figure 1-5.
- Pay attention at the correct installation of the bypass (Figure 2 and 3).
- During the sampling operation the shut-off valve opens automatically (Figure 6)

1.11.2 After sampling

- At the end of sampling operations unscrew the bowl, mix the total milk, and collect the quantity requested for sampling.
- During this operations the shut off valve closes the vacuum (maximum vacuum consumption 10 l/min @50kPa (Fig. 6). The shut off valve opens again automatically and enables the milk transit for sampling only when the user screws the bowl.
- Store the sample test equipment till the following sample test on a dry place, free from dust.
- If the sampler does not collect milk, or does not collect enough milk or collect too much milk (above sampler capacity) it necessary a visual check and where possible a faults rectifying (according to instructions in MMV technical manual p/n 5620060, chapter 10)

1.12 Attachments



2 General maintenance



WARNING

Do not carry out any maintenance if the Volumetric Milk Meter is connected to the mains.

Before performing any maintenance, disconnect it from the mains.

The only daily maintenance that must be performed with the device connected to the mains is washing the milking system.

3 Daily

It is essential to adequately wash the Volumetric Milk Meter in order to remove bacteria left in the milk line and inside the sensor after each milking. Said bacteria can contaminate the milk, damage the equipment and cause detachment of the clusters, resulting in incorrect reading of the milk flow.

After each milking session, wash the milking clusters and each surface of the milking system machine in contact with the milk, as follows:

Fasten the cluster to the washing unit

Put each panel into washing mode

Start rinsing and proceed with washing using temperature between 60°C ÷ 90°C (140°F ÷ 194°F) for the main washing (as described in “Chapter 6 - Washing “of of the Instructions Manual)

4 Weekly

Three times a week wash with a solution of water + phosphoric or phosphonitric acid, in concentrations NOT exceeding 3%, or according to the instructions of the product's manufacturer (as described in “Chapter 6 - Washing “of of the Instructions Manual).

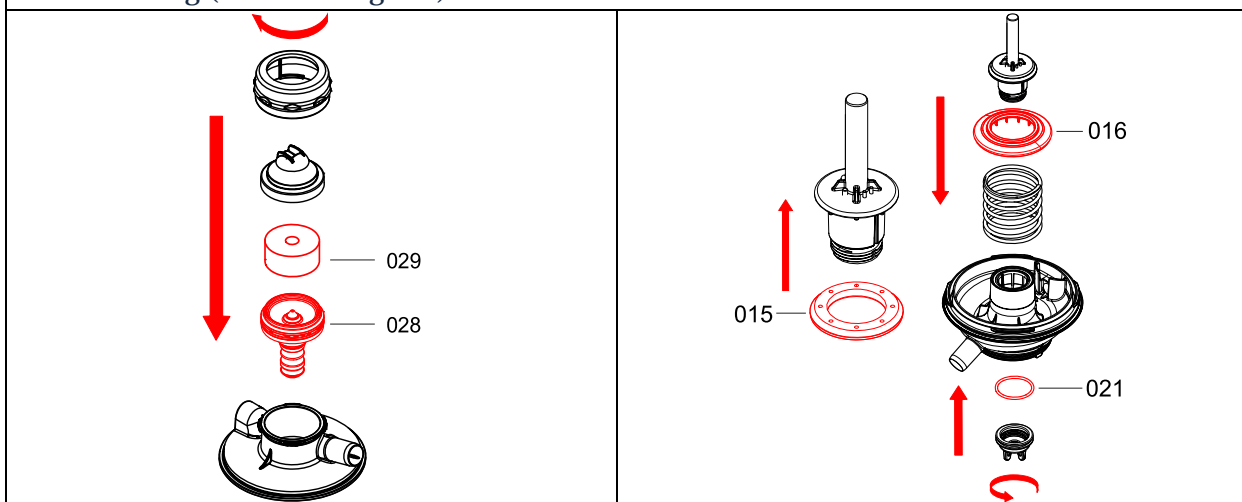
5 Every 1 year or every 3000 h of operation

For correct operation of the sensor, we recommend replacing the soft parts, especially the MMV moving parts, once every 1 years or every 3000 h of operation (the hours include milking and washing hours).

There are 2 types of MAINTENANCE KIT:

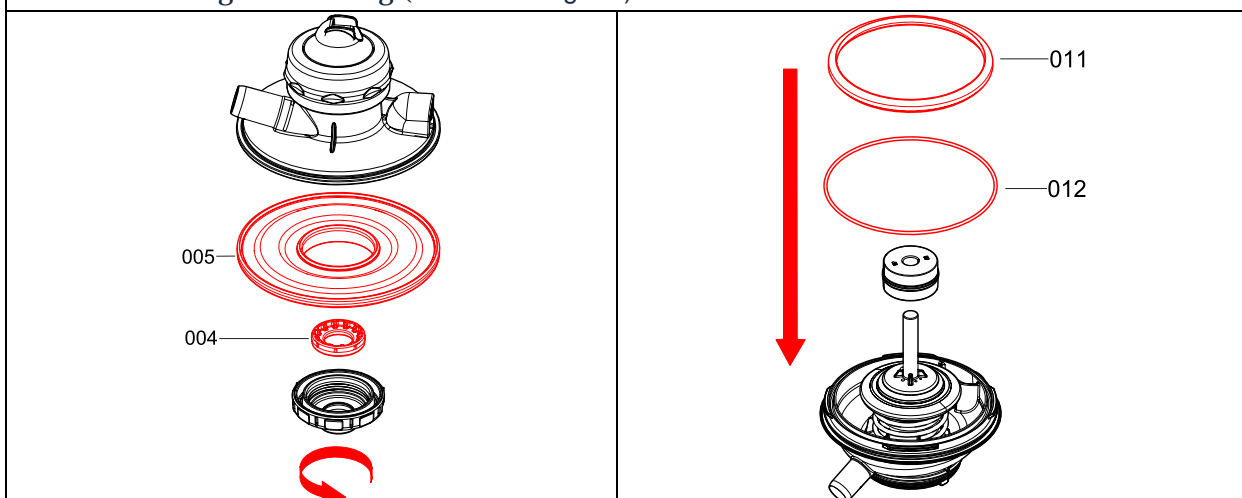
Maintenance Kit 1, including:

- Bottom shutter (ref. **016** diagram)
- Lip gasket (ref. **015** diagram)
- Shut off valve shutter (ref. **028** diagram)
- Filter media (ref. **029** diagram)
- O-ring (ref. **021** diagram)



Maintenance Kit 2, including:

- Sheath (ref. **005** diagram)
- Gasket sheath (ref. **004** diagram)
- Bottom gasket (ref. **011** diagram)
- Bottom gasket O-ring (ref. **012** diagram)





CAUTION

Special tools are not required for maintenance of the MMV, but we highly recommend retesting and recalibrating the meter after maintenance, as described in chapter [7 CALIBRATION](#) of the "User manual".

For correct maintenance of the sensor, we recommend a tightening torque of 400 ± 10 Ncm (35.4 ± 0.88 lbf·in).

6 Appendix I – Milk Sampler

6.1 Technical features

Technical Specifications

| | |
|---|---|
| Operating vacuum | From 20 to 60 kPa (from 5.9 to 17.71 "Hg) |
| Vacuum consumption | Max 10 l/min @ 50 kPa (max 0.35 ft ³ /min @ 14.76 "Hg) |
| Operating temperatures (environment) | Da +3°C a +40°C (from +37,4°F to +104°F) |
| Transport/storage temperatures | Da -20°C a +50°C (from -4°F to +122°F) |

6.2 Installation and operation

Remove the plug from the MMV and place it on the bracket in order not to lose it (Fig. 1).

Mount the Sampler on the MMV as indicated in fig. 1-5.



WARNING

Pay attention at the correct installation of the bypass (Fig. 2 and 3).

During the sampling operation the shut-off valve (ref.41) opens automatically (Fig. 6)

At the end of sampling operations unscrew the bowl, mix the total milk, and collect the quantity requested for sampling.

During this operation the shut off valve ref. 41 closes the vacuum (maximum vacuum consumption 10 l/min @50kPa (0.35 ft³/min @ 14.76 "Hg) – Fig. 6). The shut off valve opens again automatically and enables the milk transit for sampling only when the user screws the bowl.

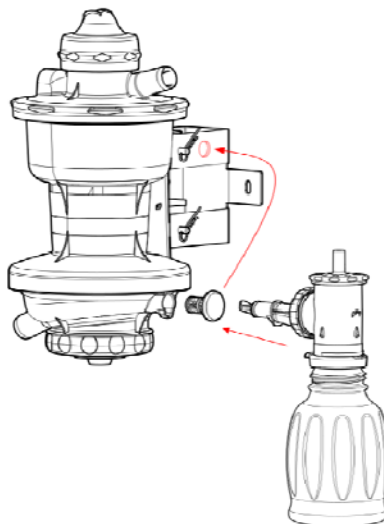


Fig. 1

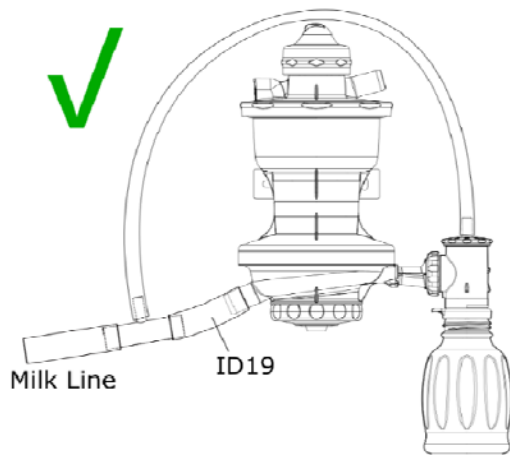


Fig. 2

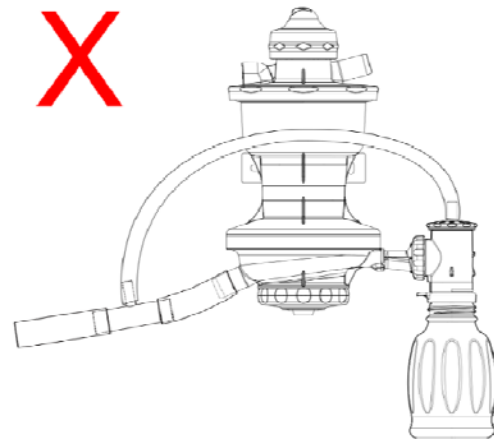


Fig. 3

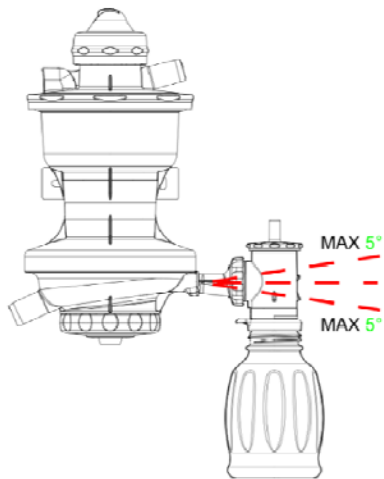


Fig. 4

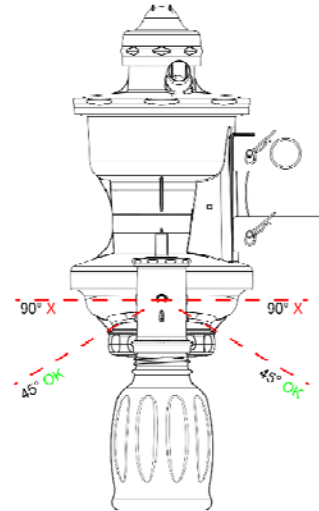


Fig. 5

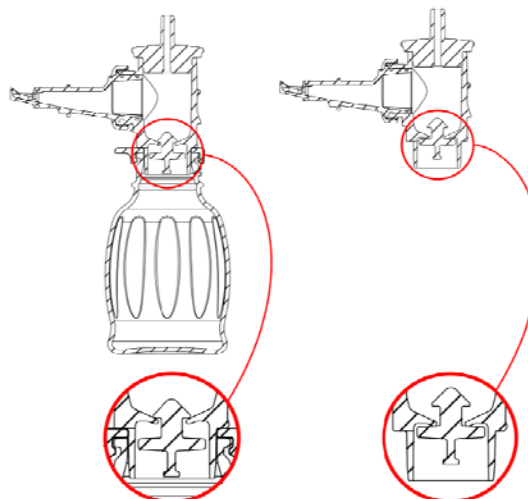


Fig. 6



NOTE

The residual quantity of milk available in the sampler that is not necessary for the analysis has to be re-introduced manually in the milk-line.



CAUTION

The Milk Sampler has been designed to work exclusively in combination with Milk Meter MMV Interpuls and according to the prescriptions available on the actual manual.

**Pay attention at the right way to mount the sampling nipple (one way mounting)
Before remounting the plug on the MMV, rinse it with copious water to prevent contaminations**

6.3 Washing

Milk Sampler washing must be realized manually at the end of each milking session in which Sampler Is used as follows:

Dis-mount the Sampler

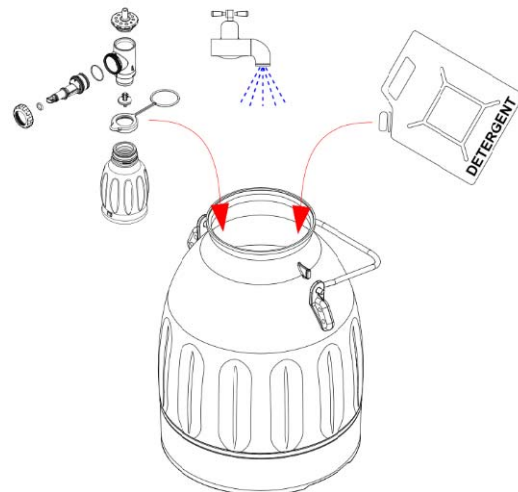
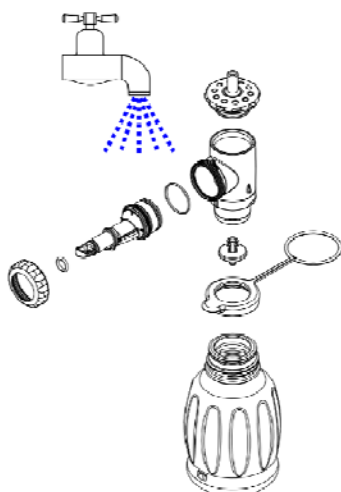
Pre-rinse with copious warm flowing water the parts

Place Sampler parts inside a bucket or a container with a solution of hot water and detergent to remove milk residuals.

If you notice solid milk residuals on the sampler, repeat the above washing procedure with phospho-nitric acid or phosphoric acid instead of detergent.

At the end run a final rinse with copious warm water

Dry the parts with absorbent paper





CAUTION

Use only washing chemicals that are suitable to wash milking parlour

Use concentrations and temperatures of the chemicals as indicated in the foreseen use reported on the chemical label

Use DPI during washing (gloves or goggles)

Never touch the washing solution

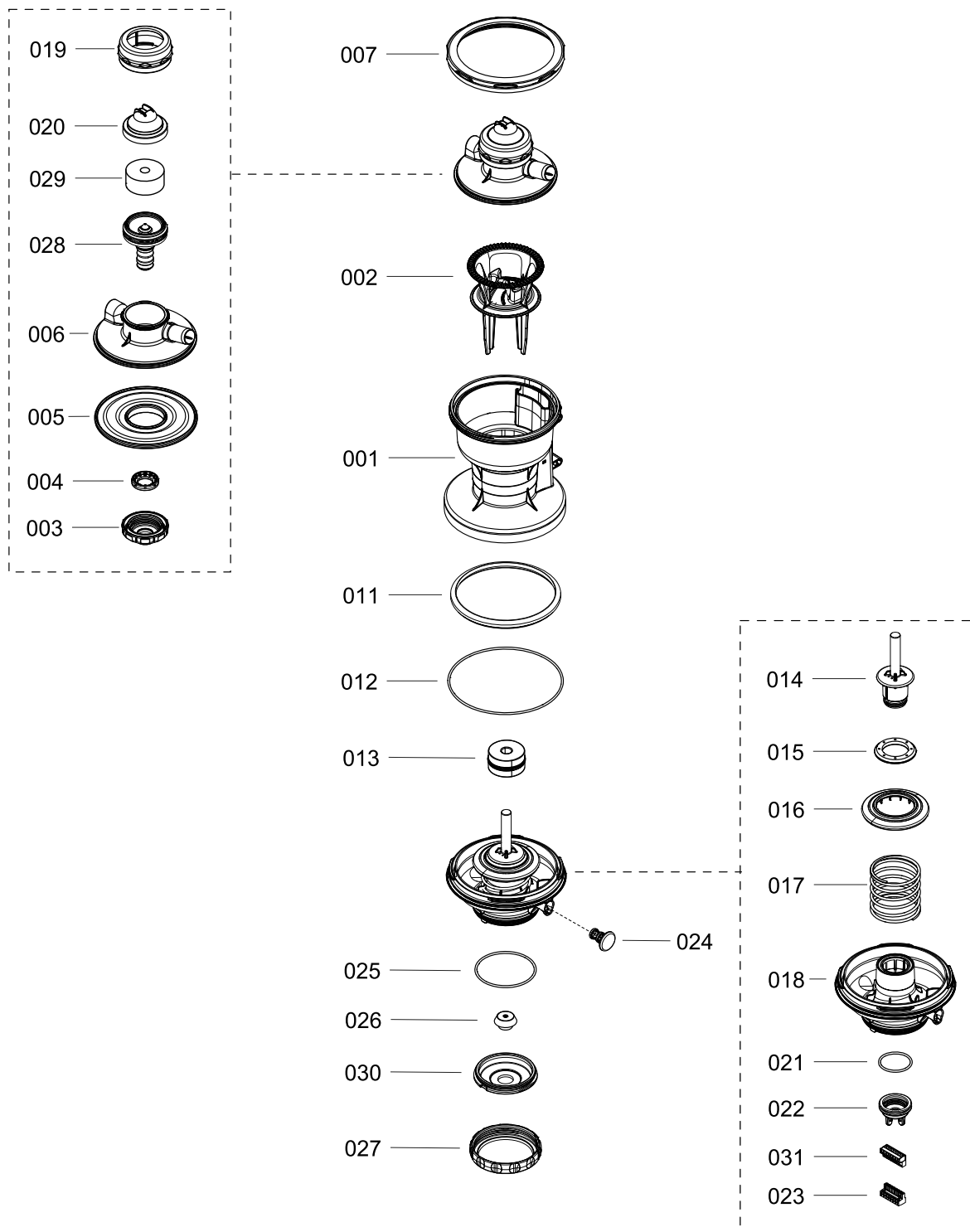
6.4 Maintenance

To ensure correct and efficient operations of the parts control the wear of the rubber parts once a year.

It's recommended to replace the parts of service kit in case the rubber parts show cracks or cracking and anyway it's recommended to replace the parts of the service kit once every 2 years.

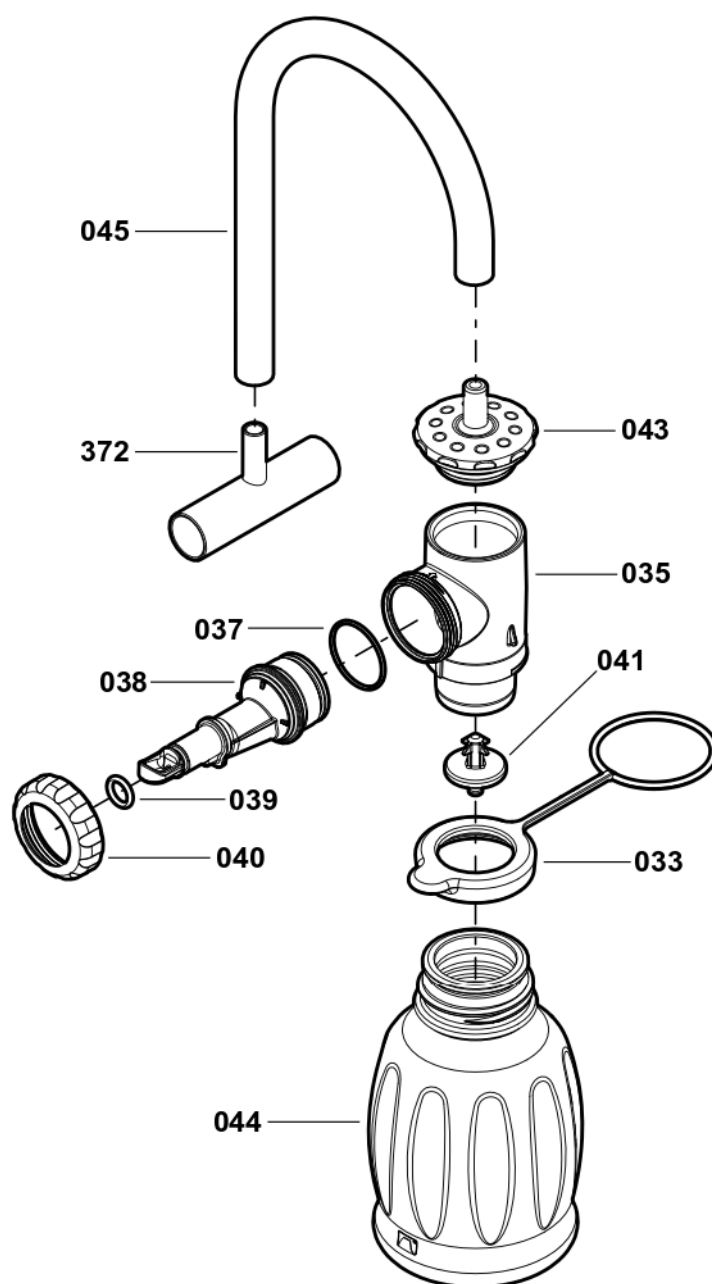
7 Spare parts diagram

7.1 Milk Meter MMV



Ref. 5620059 - 07/16

7.2 Milk Sampler



8 Troubleshooting

| Problem detected with MMV | Possible cause | Solution |
|--|--|--|
| MMV underestimated compared to the scales | Calibration parameter not set correctly | Repeat the calibration procedure (see chap. 7 CALIBRATION) In the event of underestimation compared to the scales, the calibration parameter needs to be increased. |
| MMV underestimated compared to the scales | Float does not slide freely on the rod | -Check for impurities or burrs in the hole on the float and try to remove them -If the problem persists replace the float |
| MMV underestimated compared to the scales | Float damaged (e.g. full of water) | Replace the float |
| MMV underestimated compared to the scales | Gasket (ref. 15 diagram) or shutter (ref. 16 diagram) do not guarantee the seal during milking (milk leakage in the bottom drain chamber when the shutter is closed) | -Try disassembling and reassembling the pieces (see paragraph entitled “Every 1 year or every 3000 h of operation for the warnings” in this file) - If the problem persists, replace both pieces (see paragraph entitled “Every 1 year or every 3000 h of operation for the warnings” in this file) |
| MMV underestimated compared to the scales and air bubbles escape from the bottom part during milking | Clamping locking ring (ref. 22 diagram) not screwed correctly with consequent vacuum loss | Screw the bottom locking ring again making sure the tightening torque is 400Ncm (35.4 lbf-in). |
| MMV underestimated compared to the scales | Clamping locking ring (ref. 7 diagram) not screwed correctly with consequent vacuum loss | Screw the locking ring again (after having put the plant into vacuum), being careful to not tighten it too much. |

| Problem detected with MMV | Possible cause | Solution |
|--|---|---|
| MMV underestimated compared to the scales | Pipe connecting the CV and the MMV dump valve is longer than recommended (max 3 m - 9.84 ft) | If possible, move the sensor nearer to the CV which controls the meter, otherwise repeat the calibration procedure decreasing the value to be achieved to 0.1Kg (0.22 lb) every meter. Example with 4 m (13.12 ft) of pipe between CV and MMV, the correct calibration value is $9.5 \pm 0.1 \text{ kg}$ ($20.94 \pm 0.22 \text{ lb}$) |
| MMV overestimated compared to the scales | Calibration parameter not set correctly | Repeat the calibration procedure (see chap. 7 Calibration in the User Manual) In the event of overestimation compared to the scales, the calibration parameter needs to be decreased. |
| MMV overestimated compared to the scales | Dump valve opening time insufficient to drain the entire quantity of the milk | Increase the opening time of the dump valve (for details refer to the manuals of the relative control panels) |
| MMV overestimated compared to the scales | Air admitted from the vent of the claw too high or you are using Impulse Air Vented liner | Set Parameter 1104 of iMilk600 to: LINER VENT 1 |
| MMV does not DUMP during milking or during washing | Presence of foreign bodies (straw or residual solids) which prevent the float from sliding freely | Open the Milk Meter and remove the foreign bodies. Check the free sliding of the floater before reassemble the MMV If this issue occurs frequently install a filter to prevent these foreign bodies from ending up in the MMV |
| MMV does not DUMP during milking or during washing | Cables not connected correctly or interrupted | Make sure the wiring at the bottom of the MMV is correct |
| MMV does not DUMP during milking or during washing | Float positioned upside down (make sure the writing "UP" is facing upwards) | Put the float with the writing "UP" facing upwards |

| Problem detected with MMV | Possible cause | Solution |
|--|---|--|
| MMV does not DUMP during milking or during washing | Damage to the meter board inside the probe ref. 14 diagram | Replace the entire probe (see paragraph "Every 1 year or every 3000 h of operation" for the warnings) |
| MMV does not DUMP at start of milking, then suddenly it unblocks and starts working properly | Float blocked on the rod due to ice | Pre-rinse with warm water before milking |
| Presence of water in the MMV at the end of the washing cycle | "EMPTY" and "FILL" times not set correctly | Lengthen the EMPTY times and/or reduce the FILL times (for details refer to the manuals of the relative control panels) |
| During the washing FILL phase, the meter does not completely fill | Not enough water reaches the sensor during washing | Increase the FILL parameter (for details refer to the manuals of the relative control panels) |
| Presence of water in the bottom containing the connection terminals | Clamping locking ring not screwed correctly, no O-ring, or cable gland not assembled correctly. | Ensure the O-ring is there, the cable gland is assembled properly, and tighten with force the locking ring. If, despite these controls, there are still water residues at the bottom of the MMV, then the presence of water is attributable to the formation of condensation. |
| Upper cover (ref. 006) rotating during milking operations | Clamping locking ring (ref. 007) not enough tightened | Tighten the clamping locking ring (re. 007) when the MMV is under vacuum paying attention that after this operation it's possible to untighten the ring only with the MMV under vacuum |
| Presence of residual milk in the upper part of diaphragm (ref. 005) | Clamping locking ring (ref. 007) not enough tightened | Tighten the clamping locking ring (ref. 007) when the MMV is under vacuum paying attention that after this operation it's possible to untighten the ring only with the MMV under vacuum |

| Problem detected with MMV | Possible cause | Solution |
|--|---|--|
| Milk Sampler does not collect milk | Vacuum leakage between vessel and main body of the sampler | <p>Ensure that the vessel is mounted properly and with the gasket (ref. 033) is mounted in the proper position</p> <p>Ensure the O-Ring (ref 037) and the Or-Ring (ref 039) is in place and they are not wearied</p> <p>If case the issue is not fixed replace the gasket (ref. 033) or the O-Ring</p> |
| Milk Sampler does not collect milk | Vacuum shut off valve (ref. 041) on the sampler blocked in closing position due to bonding or ice formation | <p>Unblock the vacuum shut off valve manually</p> <p>If case the issue is not fixed replace the vacuum shut off valve</p> |
| Milk Sampler does not collect enough milk | Tilting not within the limits allowed | Check the tilting of the MMV (ref. Wall bracket) or of the Sampler (ref. figure 4 and 5 Appendix I) |
| Milk Sampler collects too much milk (above the sampler capacity) | Air admitted from the vent of the claw too high | Check if the vacuum consumption of the vent of the claw is above ISO 5707 limit (12 l/min – 0,42 ft ³ /min) |