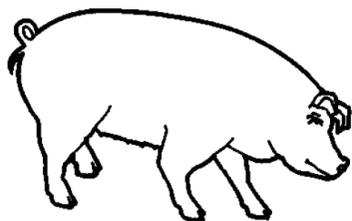


UT01 Backfat Tester User's Manual



XUZHOU KAIXIN Electronic Instrument Co., Ltd

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1. Introduction

Backfat tester is an instrument which can emit and receive ultrasound waves, when the emitted ultrasound waves travel into the body of the animal during measurement, the tester can receive the reflect signals from the backfat, the inner surfaces of skin and other tissues within the animal. The tester ignores the reflections from skin $\leq 3\text{mm}$ thick. The reflections from the backfat layers are calculated and a reading of the total thickness from the top of the skin to the bottom of the last layer to be measured will be displayed in the digital tube. The total backfat depth includes animals having 1, 2 or 3 layers of backfat, such as seals, swine, sheep and cattle. Total measurement range is 4-35mm (accuracy $\pm 1\text{mm}$).

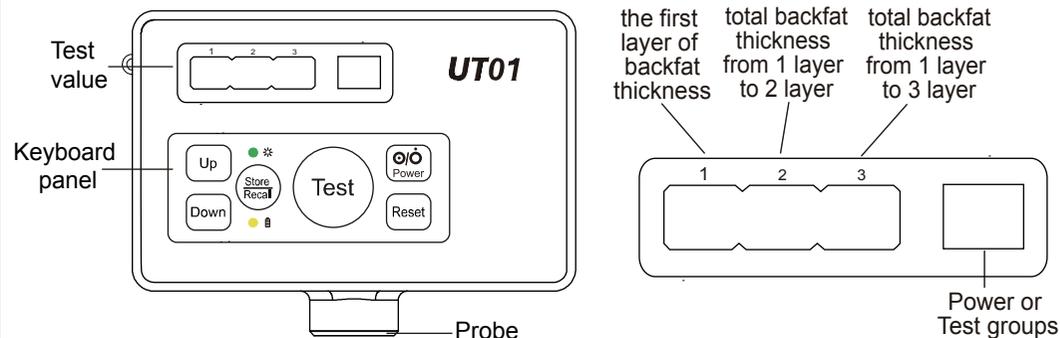
2. Technical specifications

- 1. Rated power: 5VA;
- 2. Dimensions: 104 * 73 * 25 mm³(L*W*H);
- 3. Weight: about 100g.

3. Primary functions

- 1. Test value: digital tube displays the backfat thickness;
- 2. Store data: store 99 groups of data;
- 3. Read data: read the stored data according to the No.;
- 4. Display charge: in standby mode, digital tube displays the remaining power.

4. Tester outline



SN	Key symbol	Key name	Key function
1		Power switch	Press key to turn off or turn on the machine
2		Reset	Press key to reset the machine
3		Test	Press key to test the backfat thickness
4		Up/Down selection	Press key to up/down select the record No.
5		Store/Read data	Press key to store/read data

5. Function operation

1. Startup and Shutdown

Press  key to turn on the tester, the power indicator is lit, left digital tube displays “HELLO”, later right digital tube displays the value of power “99”. It proves that the tester is normal.

Press  key again, left digital tube displays “End”, the tester will be shut down.
 Note: The tester will automatically shut down after 2 minutes without any operation.

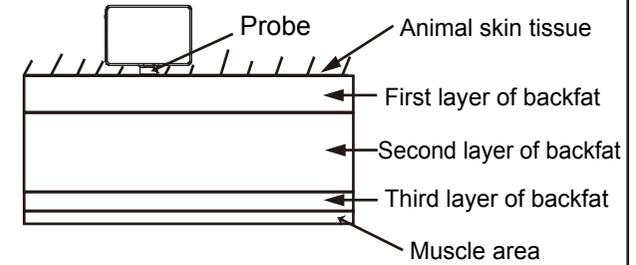
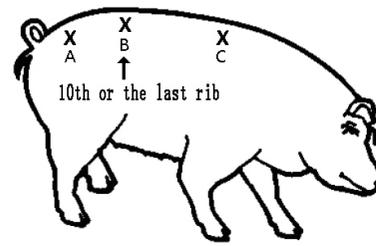
2. Reset

Press  key to reset, the left digital tube displays “HELLO”, it indicates that the tester function is normal.

3. Measurement method

(1) Before testing, put ultrasonic coupling gel to the appropriate site of swine’s back, in order to make good contact between swine skin and sound window. The probe is placed against the skin of the animal, move the probe gently, make sure no air bubbles between the skin and probe. The probe is kept perpendicular to the back; errors may result if probe is at an angle. Recommend using dedicated ultrasonic coupling gel, also can use vegetable oil.

(2) Measure swine’s backfat: The site B in following figure (the last rib site B) can give an accurate reading of the three layers of fat. Many hogs have the thin third layer of fat. As they increase in weight and age, the third layer becomes thicker and more wide spread over the body. Measurement at site C (the trailing edge of shoulder: about 4-5 rib, C-site) is more difficult and inconsistent. Site A (the lumbosacral junction, A-site) will give accurate measurement for two layers of fat but may not give an accurate measurement for three layers of fat due to the muscle tissue.



(3) Keep the swine quiet during the test (you can feed the swine during the test).

Note 1:

1. If the skin is less than 3mm thick, the skin thickness is also included within the reading; if more than 3mm, the skin thickness is often counted as 1 layer. In general, the skin is less than 3mm thick.
2. Correct values displayed on the digital tube indicate that the backfat measurement is success; if the values are not correctly, it indicates that the contact with skin is not good. Put amount of coupling gel, move the probe back and forth to remove the air bubbles and keep the probe perpendicular to the back. Probe coupling is very important for measurement result.
3. Small irregularities in the fat may block the beam of sound. Moving the probe slightly will allow the beam to bypass, and the correct reading to appear. Fat layers are not uniformly thick. Averaging two or three readings at adjacent sites insures greatest accuracy.

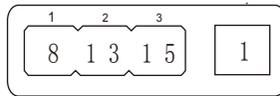
Note 2:

4. When measuring the older animal, if necessary, it needs to remove the hair at the site and wet the skin with hot water, then apply light oil to wet the skin one minute or two before measuring. Always keep the probe perpendicular to the animal’s back. If chooses the inaccurate site, such as animal shoulder or arm, the measured result is not accurate.
5. Many hogs have the thin third layer of fat at an early age. As they increase in weight and age, the third layer becomes thicker and wider spread over the body.
6. Applying unevenly ultrasonic coupling gel or testing on the palm or other parts of body, which may cause two digital tubes respectively display “E” and “1”, which is normal phenomenon.
7. Have a bad contact, first remove any possible manure, straw and excess hair, etc., which may cause a poor contact between the sound window and skin and leading to inaccurate measured results.
8. When the probe leaves the measuring point, it needs to reapply ultrasonic coupling gel evenly to continue measurement.

Example: Locating the best test site for swine's backfat

1. The most accurate measuring site: walk your fingers forward along the flank until you feel the last rib (determining the front and rear position), 6.5cm from either side of the backbone (determining the left and right position), put the coupling gel on the skin, make sure good contact between the probe and skin.

2. Press  key with thumb, left digital tube displays "8 13 15", right digital tube displays the No. "1", it indicates that have measured the first group of data. Namely, the first value represents: the backfat thickness of the first layer is 8mm; the second value represents: the total of thickness for the first layer plugging the second layer is 13mm; the third value represents: the total of thickness for the first layer plugging the second layer and plugging the third layer is 15mm. The display results are as figure:



Note:

1. When the thickness of the first layer ≤15mm thick, the three values displayed properly. If there is no third layer, the third value was displayed 0.

2. When the first layer of backfat thickness without any display, the second value directly displays the total thickness of the first layer and the second layer backfat, (if has the third layer) the third value is still display properly.

4. Save/Read data

(1) When the left digital tube displays backfat values, such as "8 13 15", press   key to select the stored No. such as selecting "3", press  key, the digital tube displays level "- - - - -", the measured data is saved in the No. "3"; press  key again to continue measuring, and select other No. for data storage.

(2) Press  key, press   key again to select the stored No. to view the stored data.

Note: The tester can store 99 groups of test data. New data will overwrite the original data after memory is full, the uncovered data will be remained.

5. Charging the battery and low power indication

(1) If the power displayed on the digital tube is less than "20" and the value of power is constantly flashing, it indicates that only a short power, please remind users to charge timely to avoid the data loss.

(2) Insert the data line equipped with the tester into the Micro-USB port on the top of tester, the other end of data line connect to charger, then put the charger into power supply socket. The charging indicator of tester lights and the tester starts to charge. The charging time is about 3.5 hours, the discharge time about 10 hours.

6. Maintenance

1. Make sure that the sound window part of Backfat Tester will not be hit, or it may cause the tester not to work normally.
2. Make sure that the sound window part of Backfat Tester will not be applied to corrosive liquid, or it may cause damage to sound window and the tester can not work normally.

7. Precautions

1. Unplug the charger when using the Backfat Tester.
2. The Backfat Tester is not waterproof and can not be submerged in water.
3. Do not use the Backfat Tester on human beings.
4. If you have any questions, please call us to ask our company.

Reference:

Backfat and reproductive performance analysis

1. The backfat thickness of gilts before breeding 15.5-20.0mm is beneficial to the number born alive and newborn broods.
2. The backfat thickness of gilts and sows before delivery being greater than 25mm have an adverse effect on the reproductive performance;
3. The backfat thickness of lactating sows at weaning being 17.5-22.5mm is beneficial to this fetal weaning to estrus interval and the next reproductive performance;
4. Backfat loss in sow lactation exceeds a certain range, such as greater than 5.5mm, may be affected sows estrus after weaning and reproductive performance of the next child.

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