QMAX

Digital NEEDLE DETECTOR

USER TRAINING COURSE

QMAX

Presented by

HCL Asia Ltd

since 2001 in Hong Kong

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My Profile

- professionally focusing on research in "**Needle Management**" since 1998
- having conducted dozens of times of **seminars** and **workshops** for many worldwide renowned retailers or QA professionals.
- continuously enhancing the code of practice and the knowledge in the area of needle control policy in clothing industry.

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Workshops

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Today you will learn…

- About all machine settings
- How to adjust threshold 0.8 / 1.0 / 1.2mm
- How to measure metal signal from garments and trims
- How to do 9-point test
- About double-detection

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Ferrous Test Samples

- 1.0mm ferrous test card will be used throughout the following video demo.
- QMAX special ferrous test sample block with different height (i.e., 10/20/30/40mm)

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Touch Screen

- Dual language interface: English / Chinese
- Touch to select language

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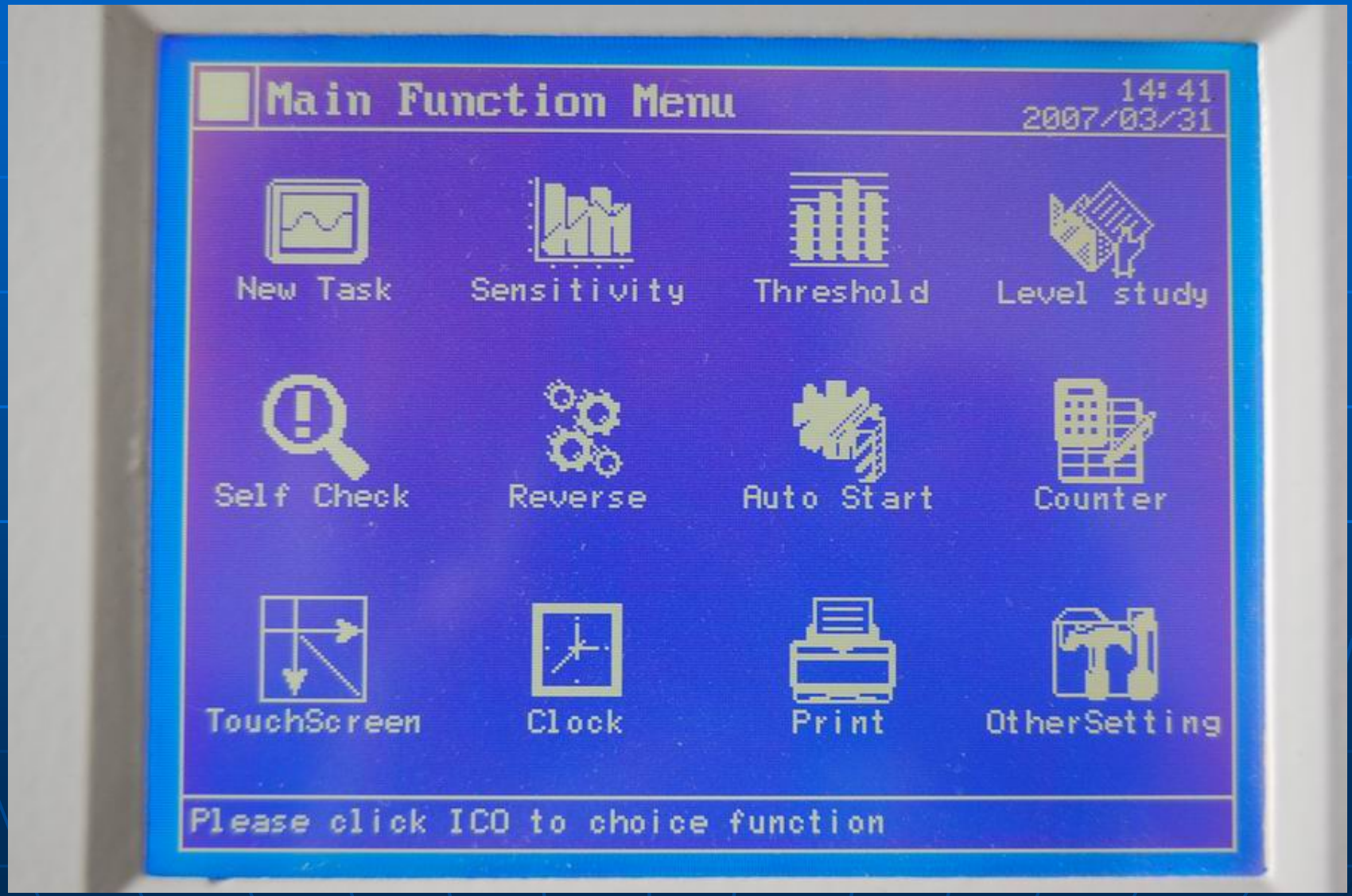
Main Function Menu



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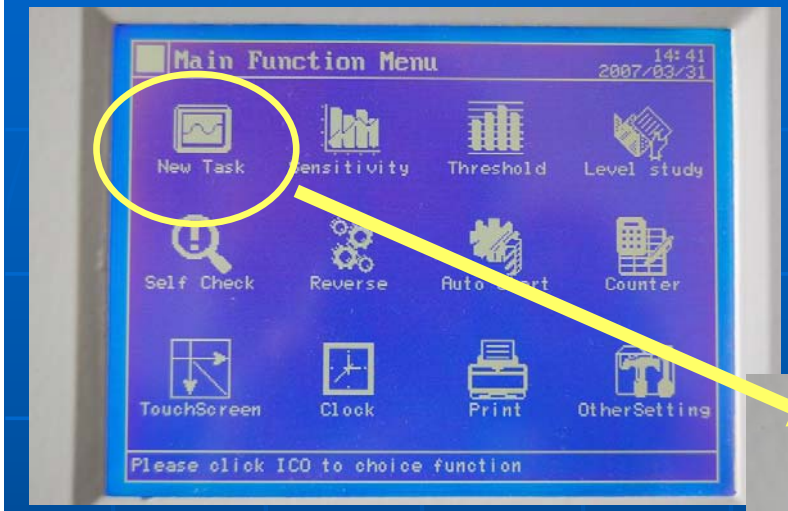
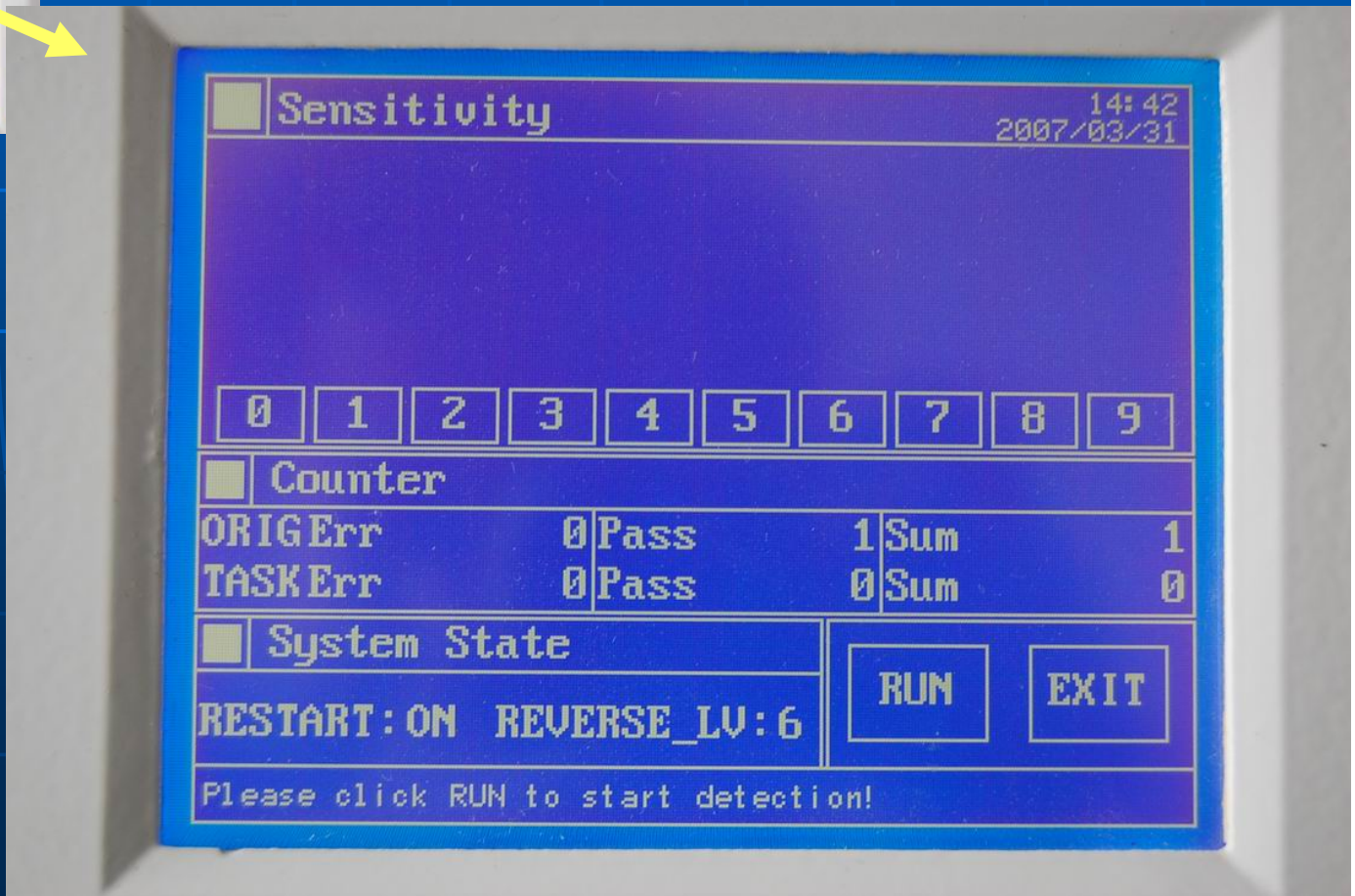
New Task





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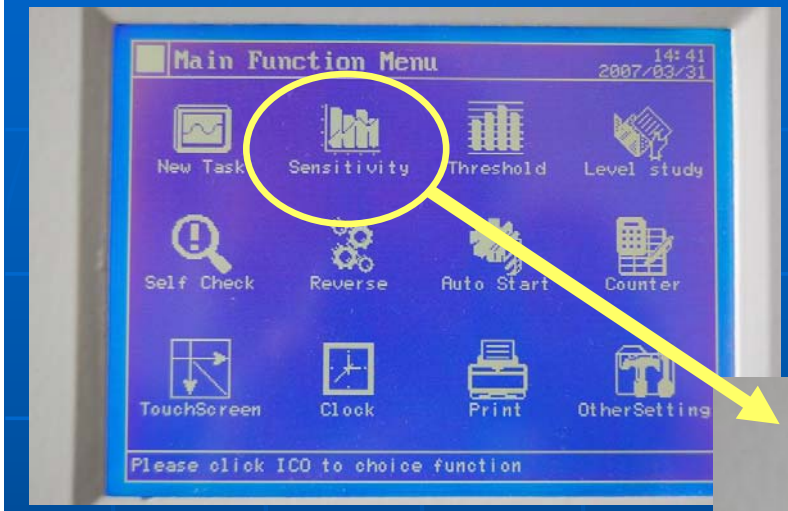
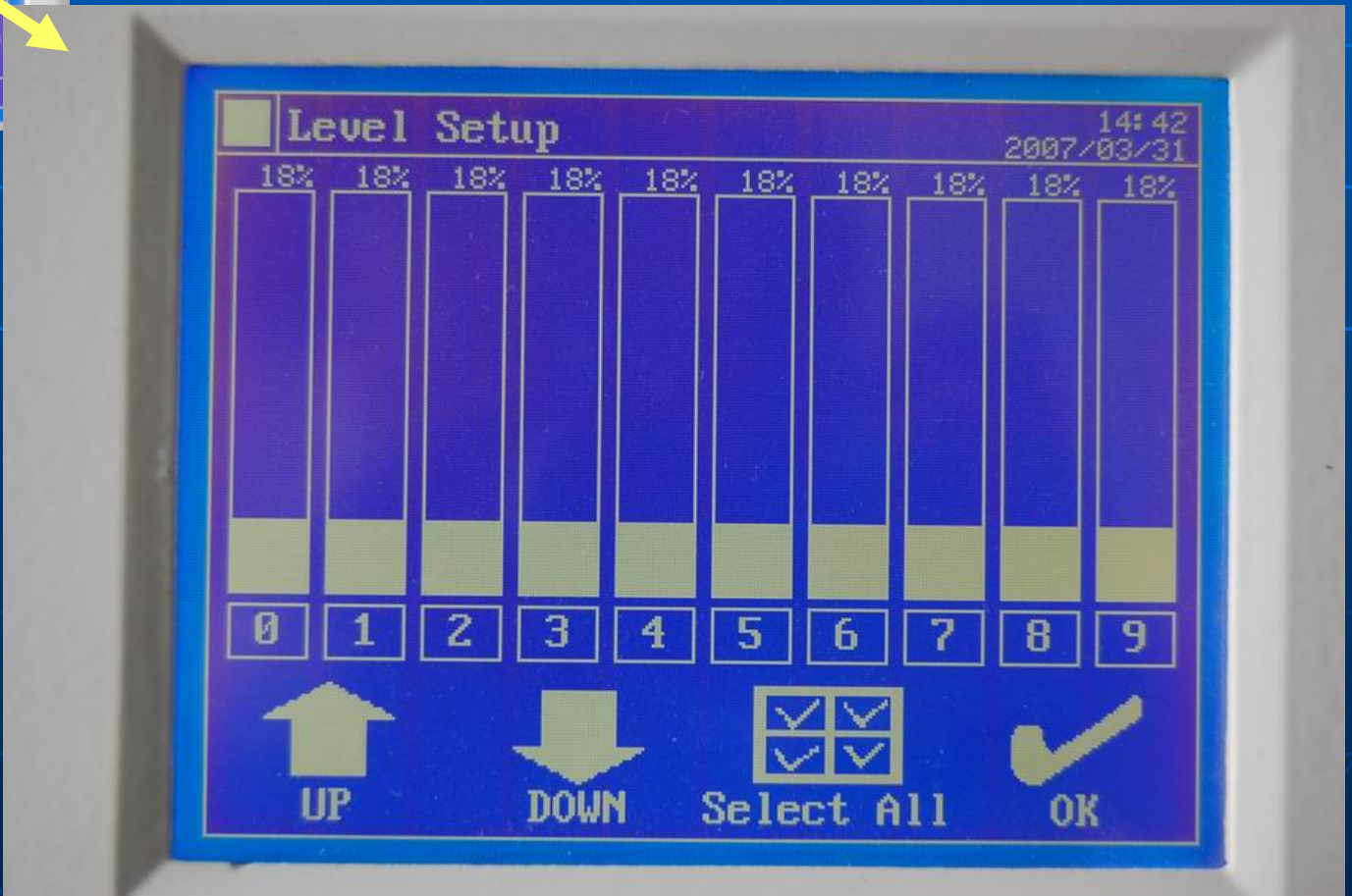
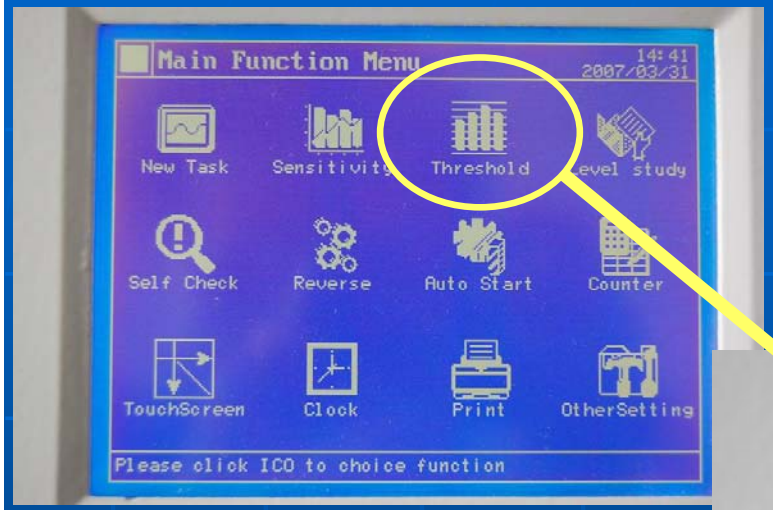
Sensitivity



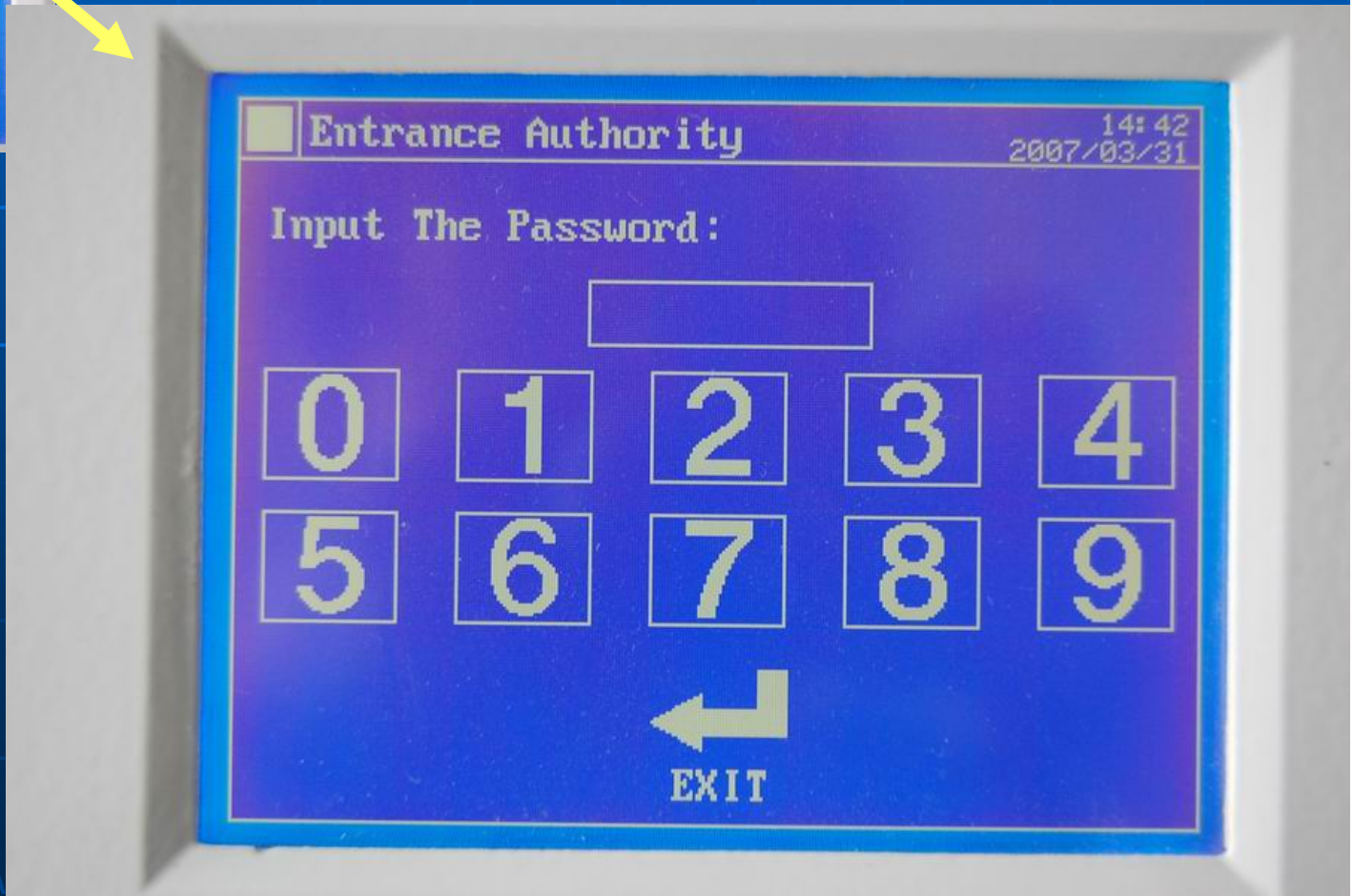


- showing threshold at 18% level
- Allowing 82% product signal to pass through without triggering the alarm

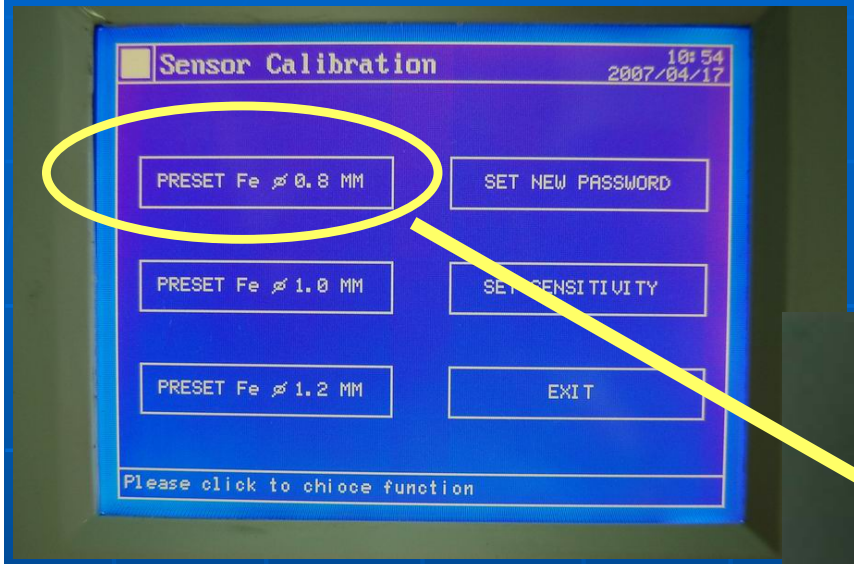
Threshold (1/4)



Enter password to select sensitivity

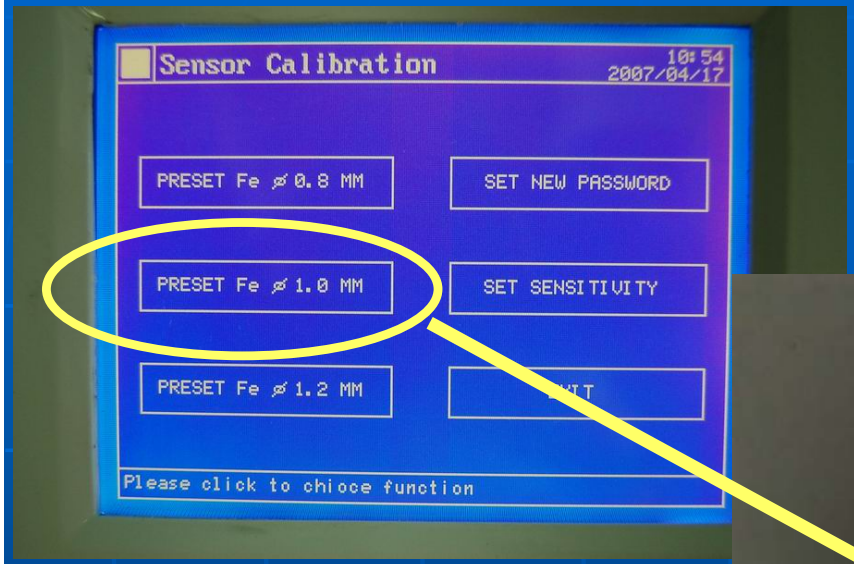


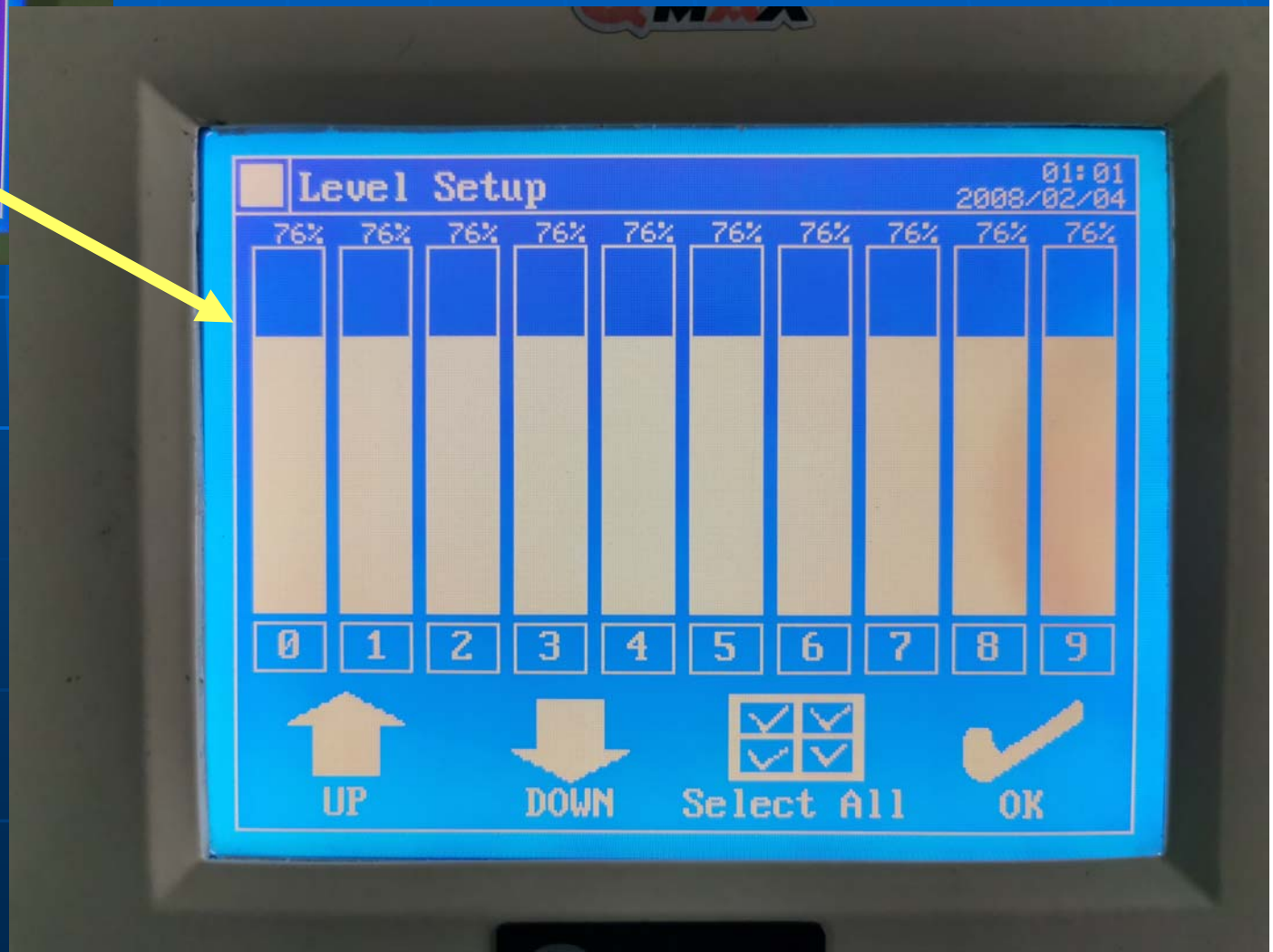
Threshold (2/4)



- selecting 0.8mm to set threshold at 92% level
- Allowing 8% product signal to pass through without triggering the alarm

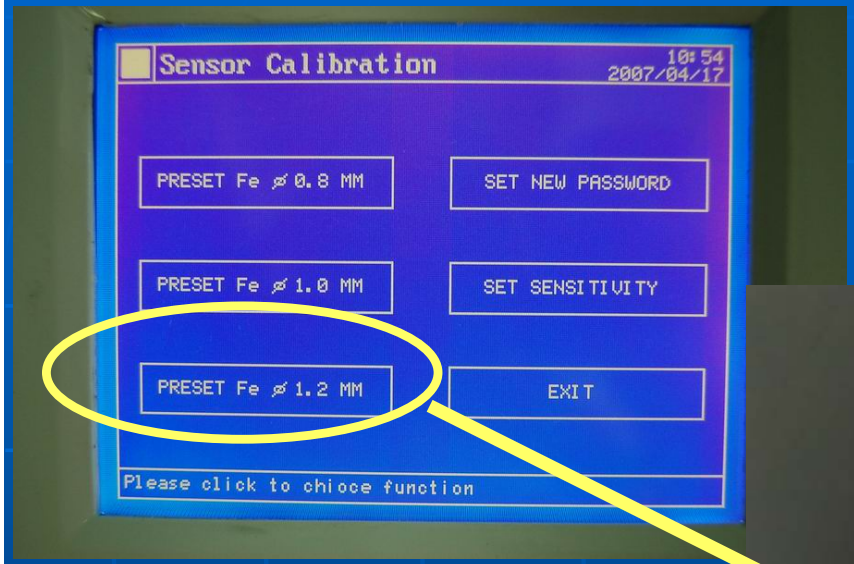
Threshold (3/4)

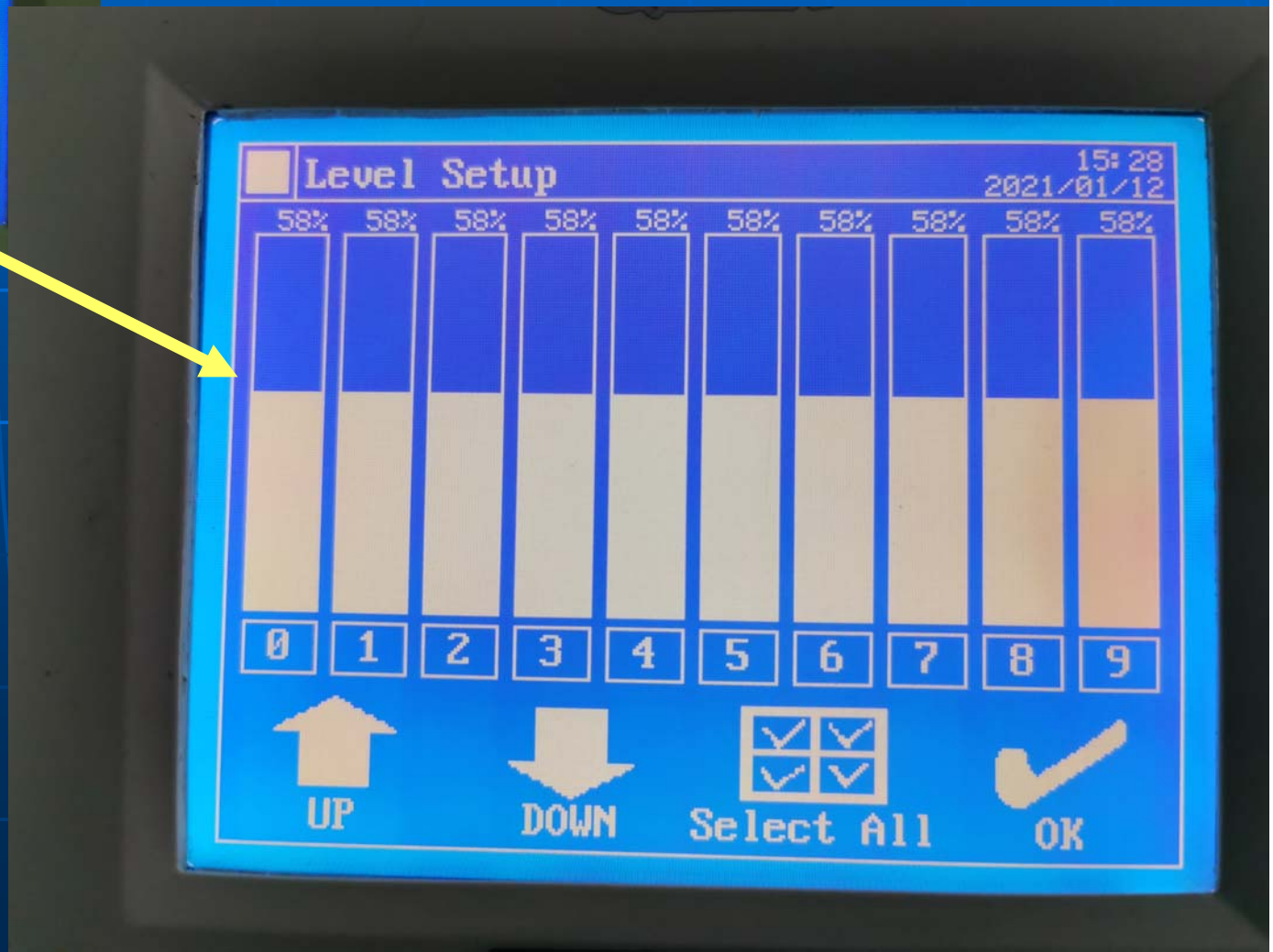




- selecting 1.0mm to set threshold at 76% level
- Allowing 24% product signal to pass through without triggering the alarm

Threshold (4/4)





- selecting 1.2mm to set threshold at 58% level
- Allowing 42% product signal to pass through without triggering the alarm

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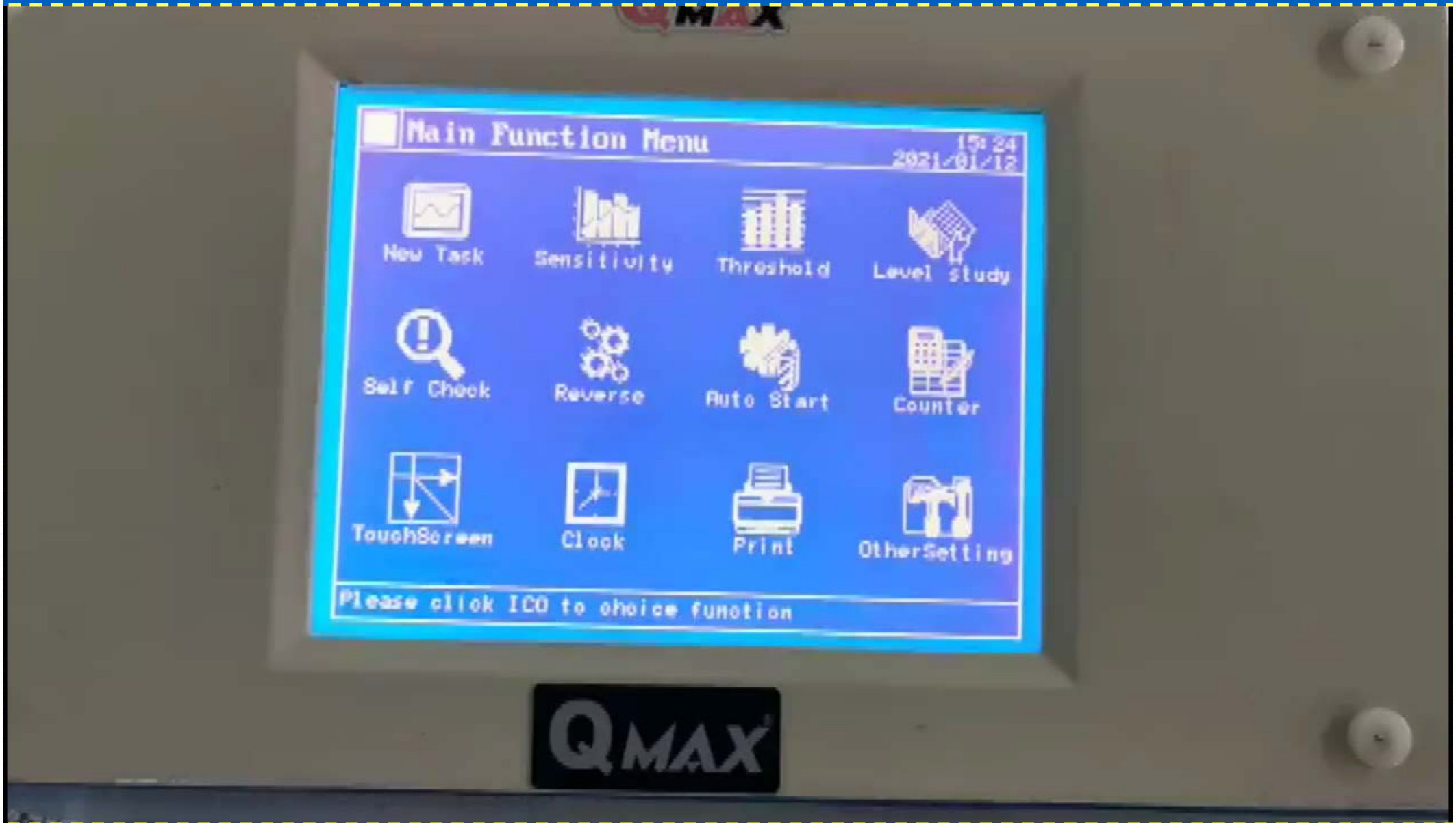
Threshold (VIDEO)

selecting different sensitivity to set threshold signal allowance



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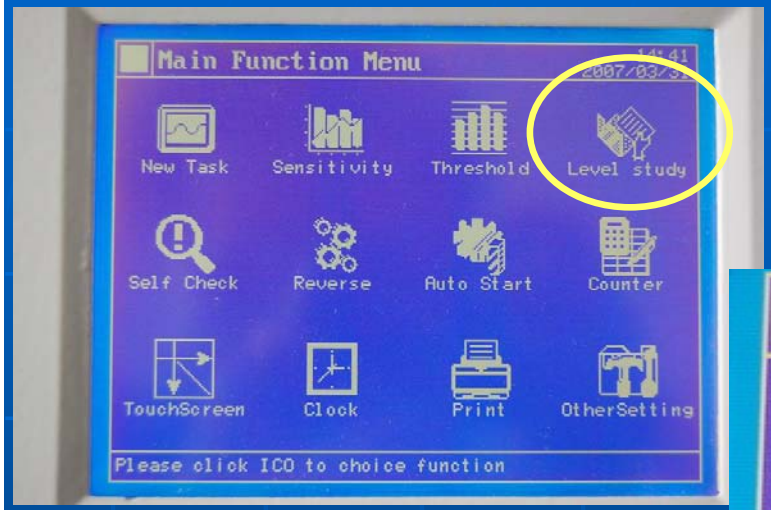
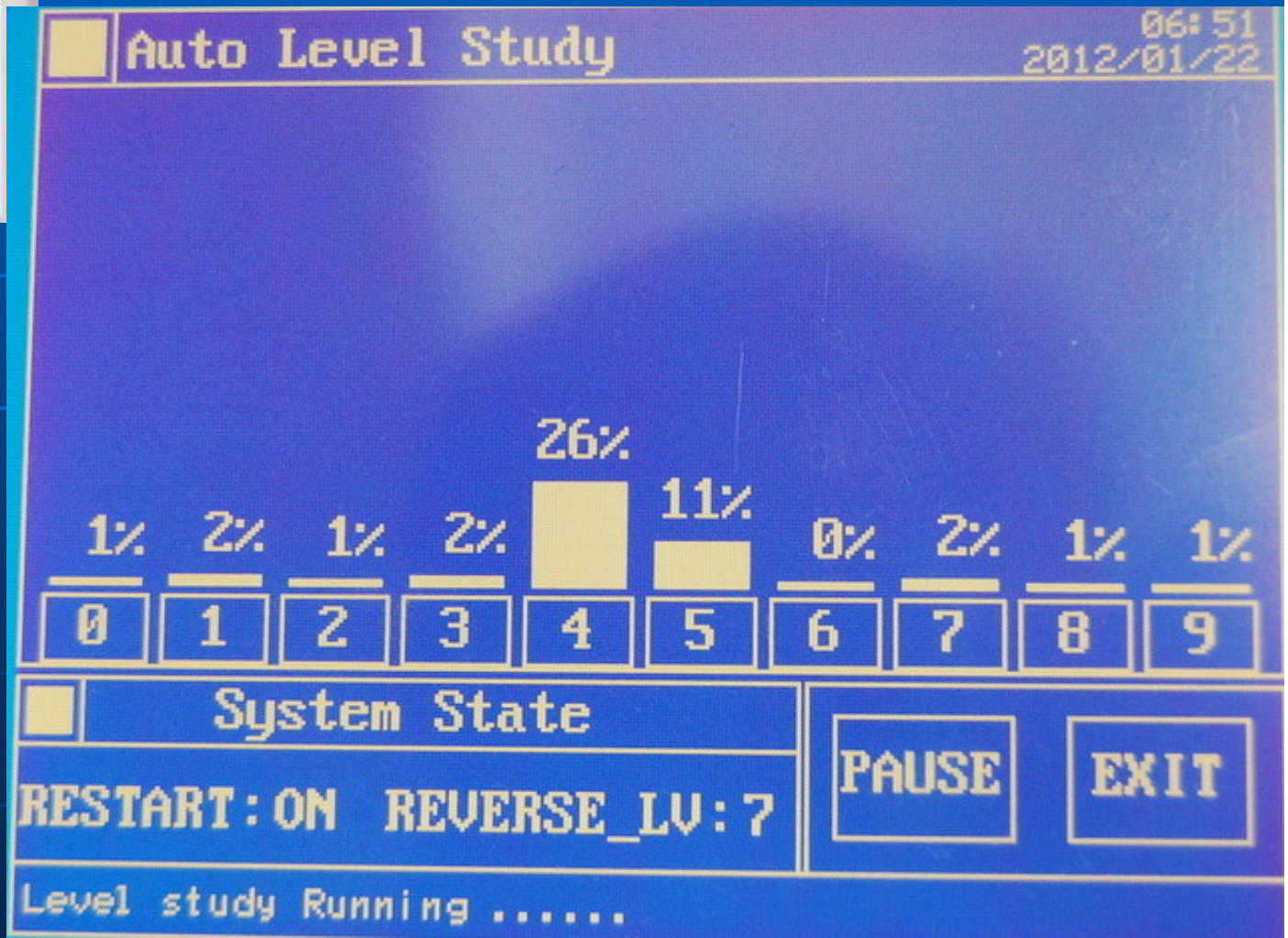
Level study (signal measuring)

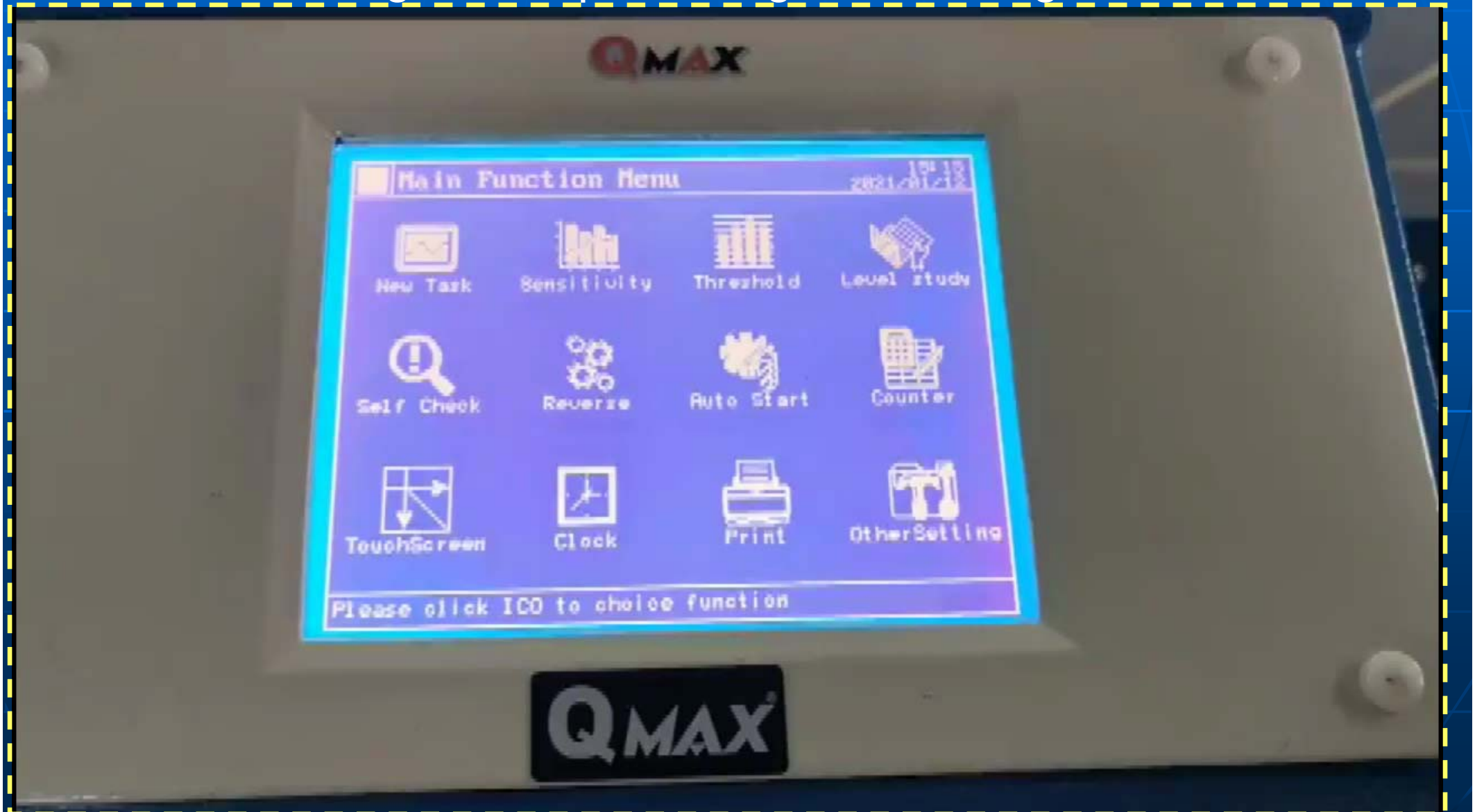


Presenting garment / trims / ferrous test card to measure the metal signal (%)

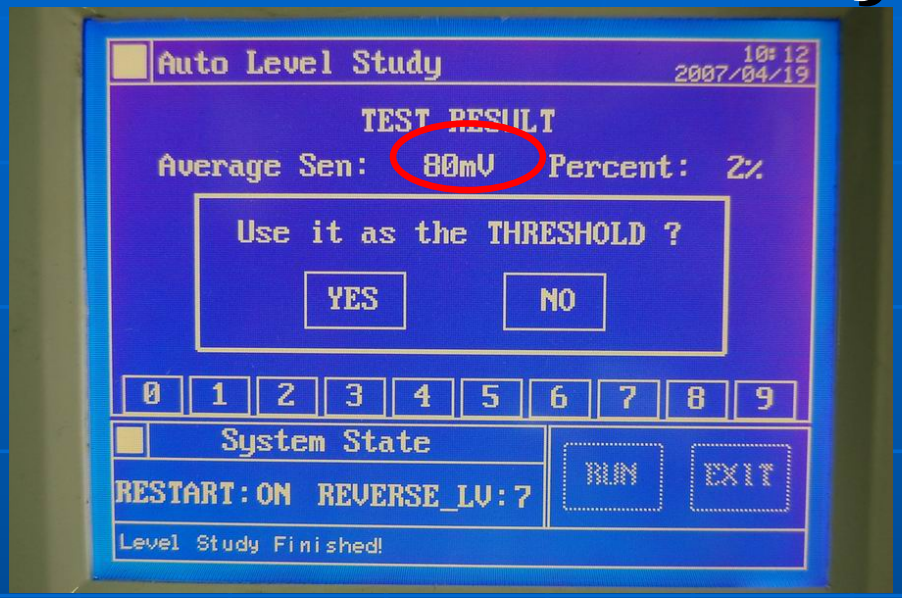


Level study (VIDEO)

Different garment producing different signal level



Level study (product learn)



- If inherent product signal is relatively high, using “Product Learn” can set a new threshold.
- The garment will be scanned three times during the learning process.
- Ideal for stone-washed garment, denim, difficult accessories, or with relatively high inherent product signal.

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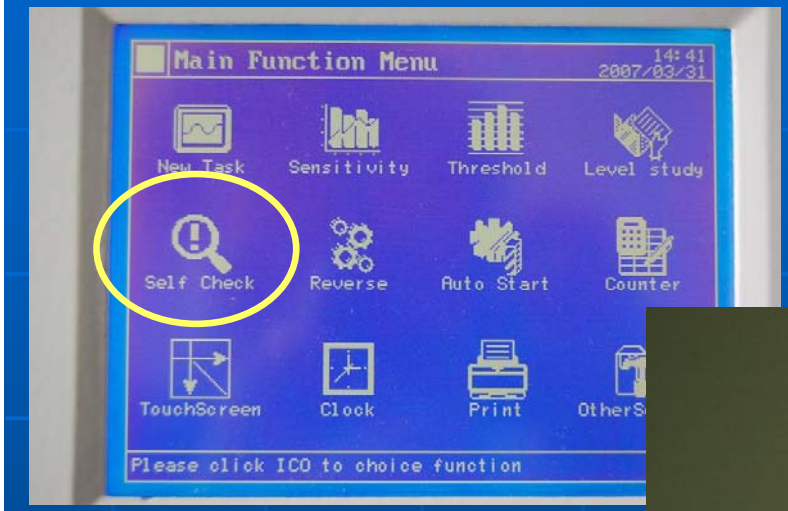
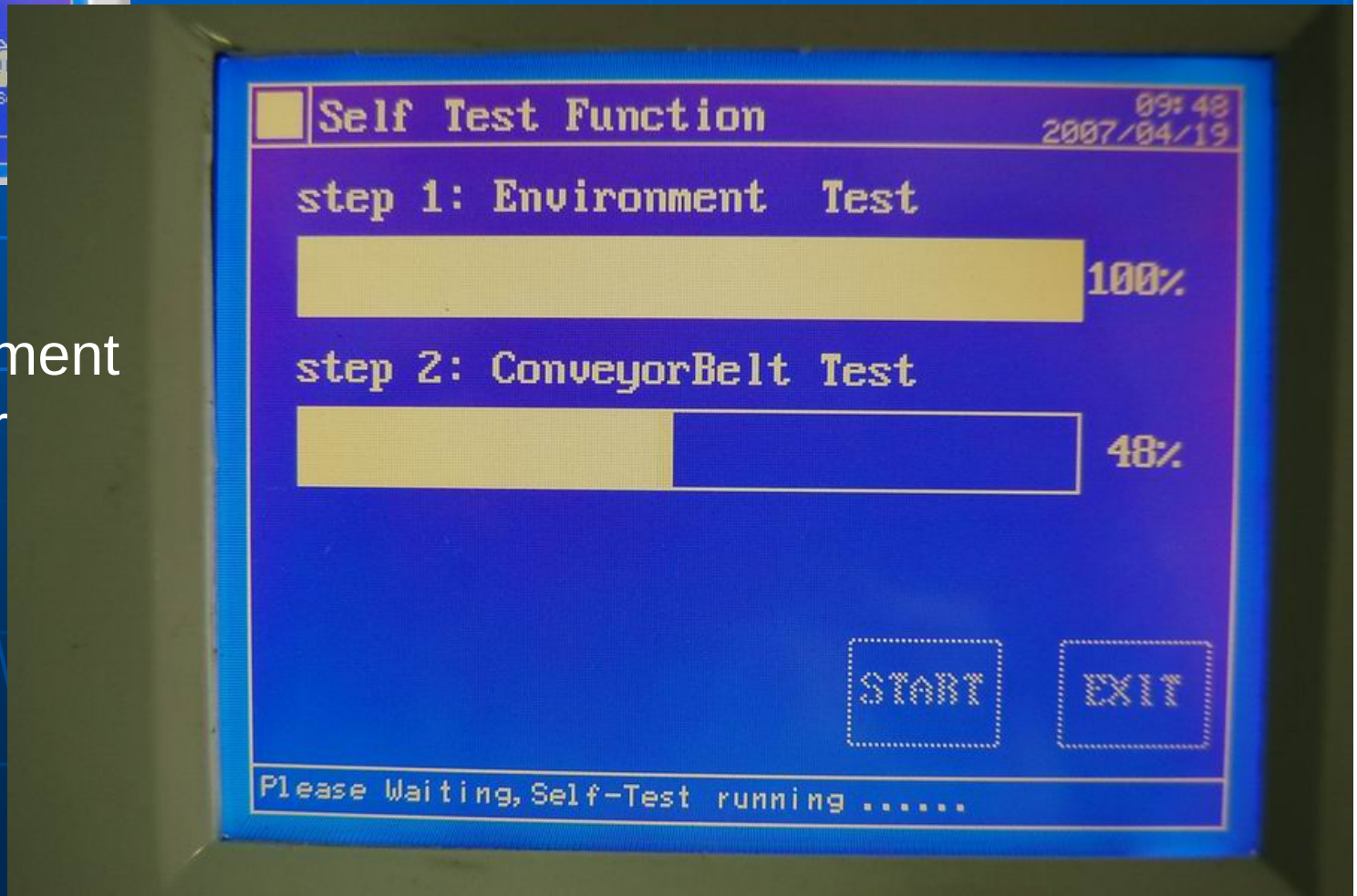
Self Check



Press START to activate (1) Environment Test & (2) Conveyor Belt Test



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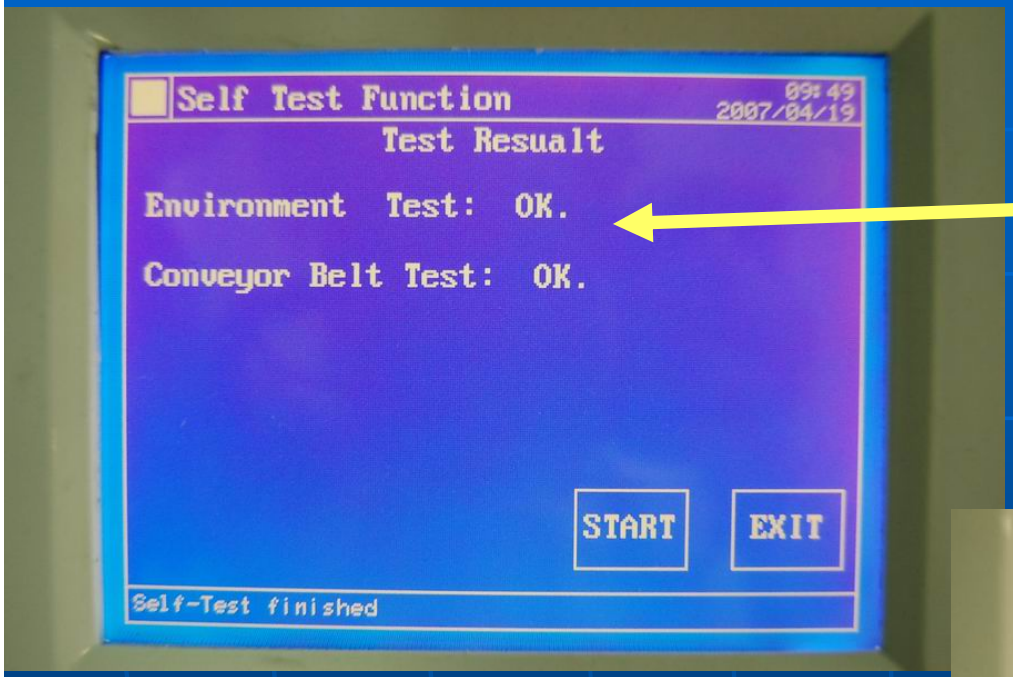
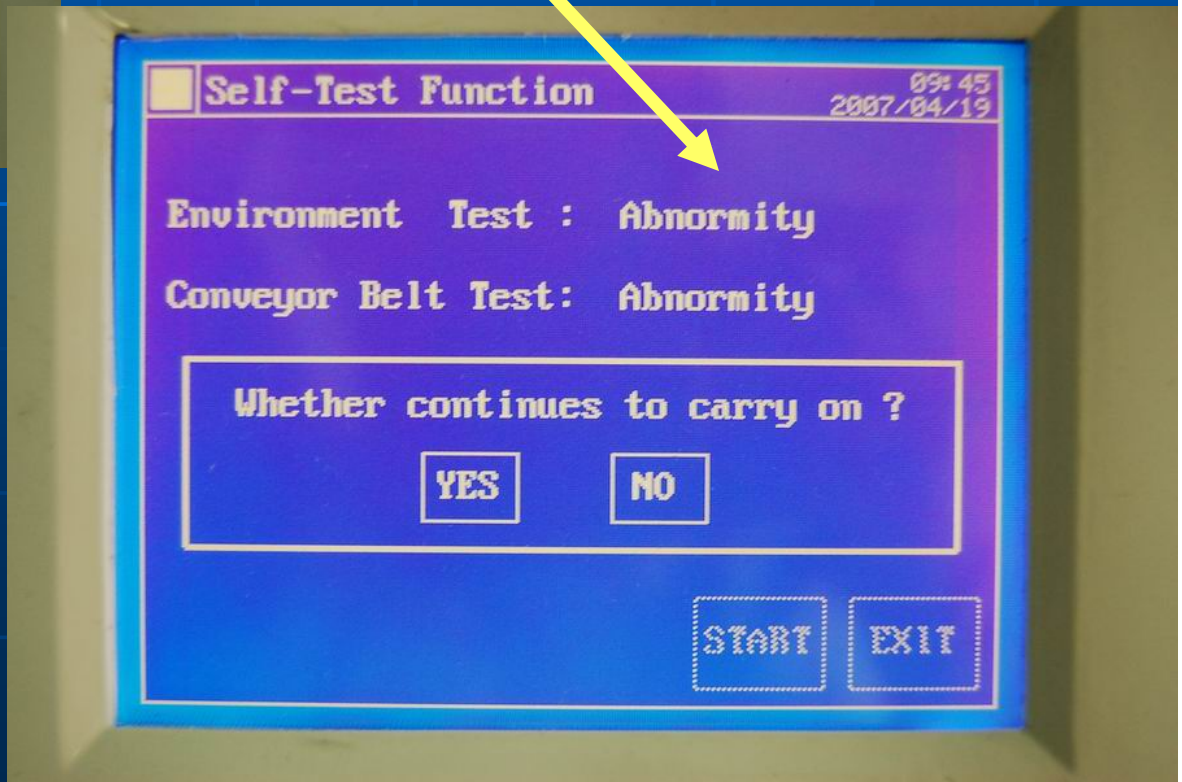
Self Check



Two Results:

1. OK

2. Abnormity (=fail)



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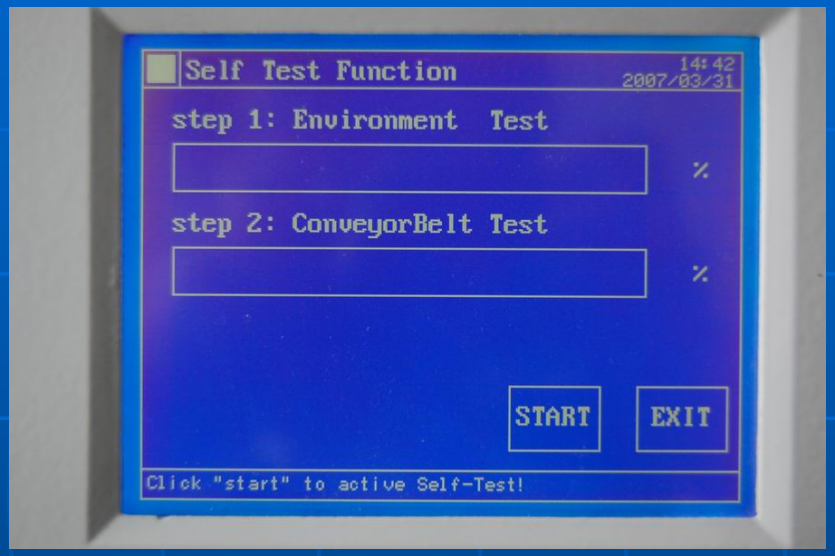
Self Check



- Self Test can be activated by user at anytime if needed
- Machine will carry out 2 tests:

1. Environment Test 2. Conveyor Belt Test

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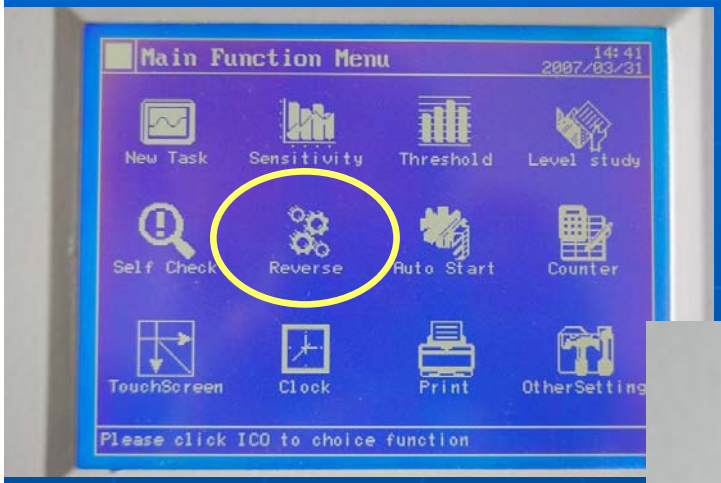
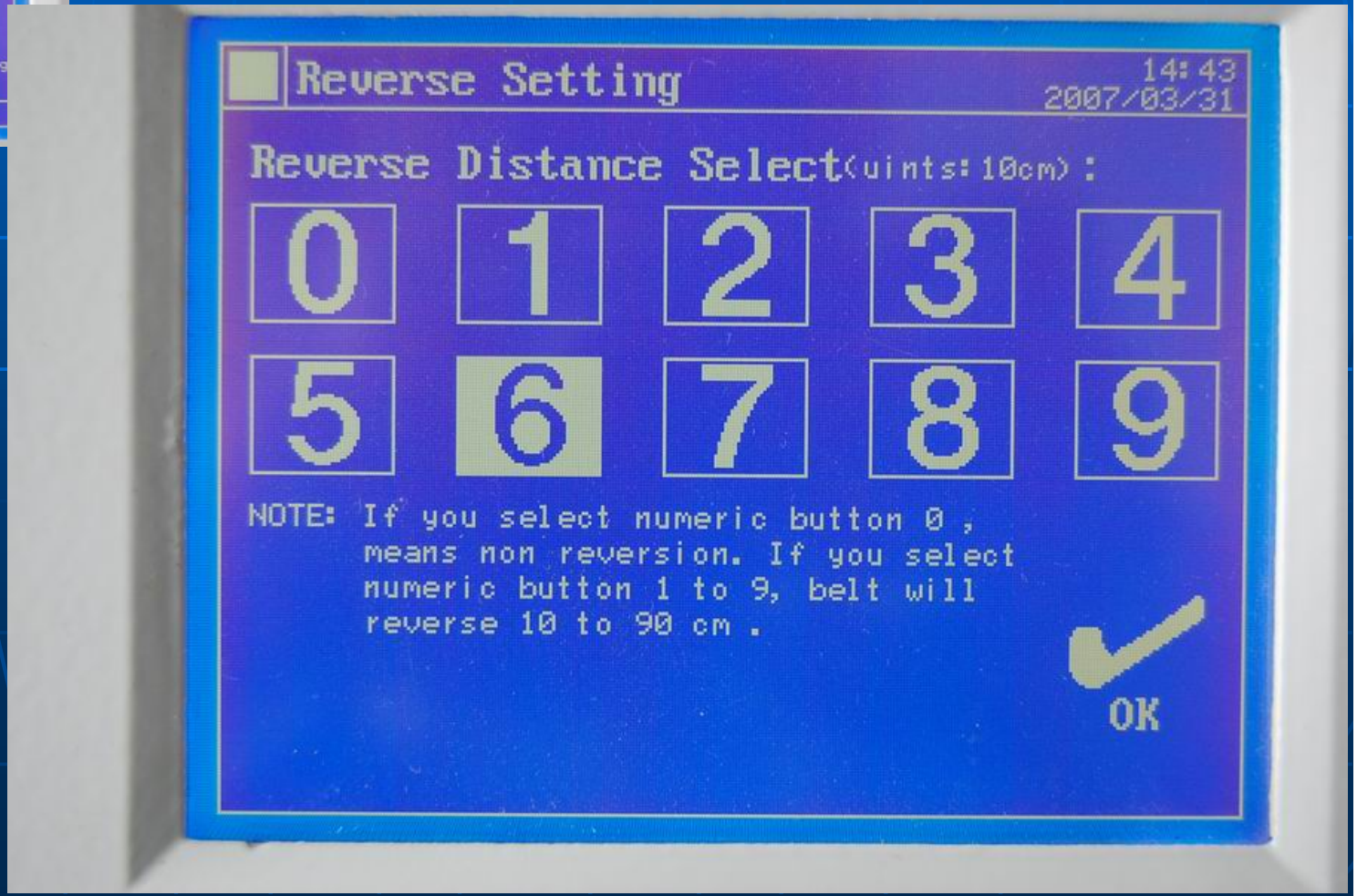
Reverse

Default reverse distance is 60cm





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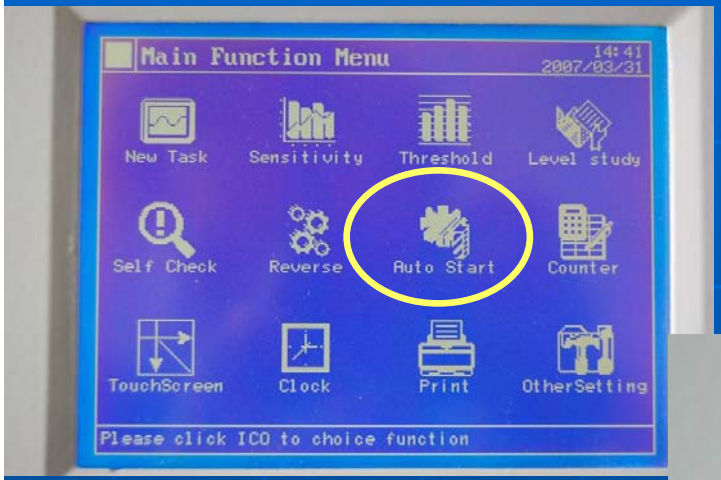
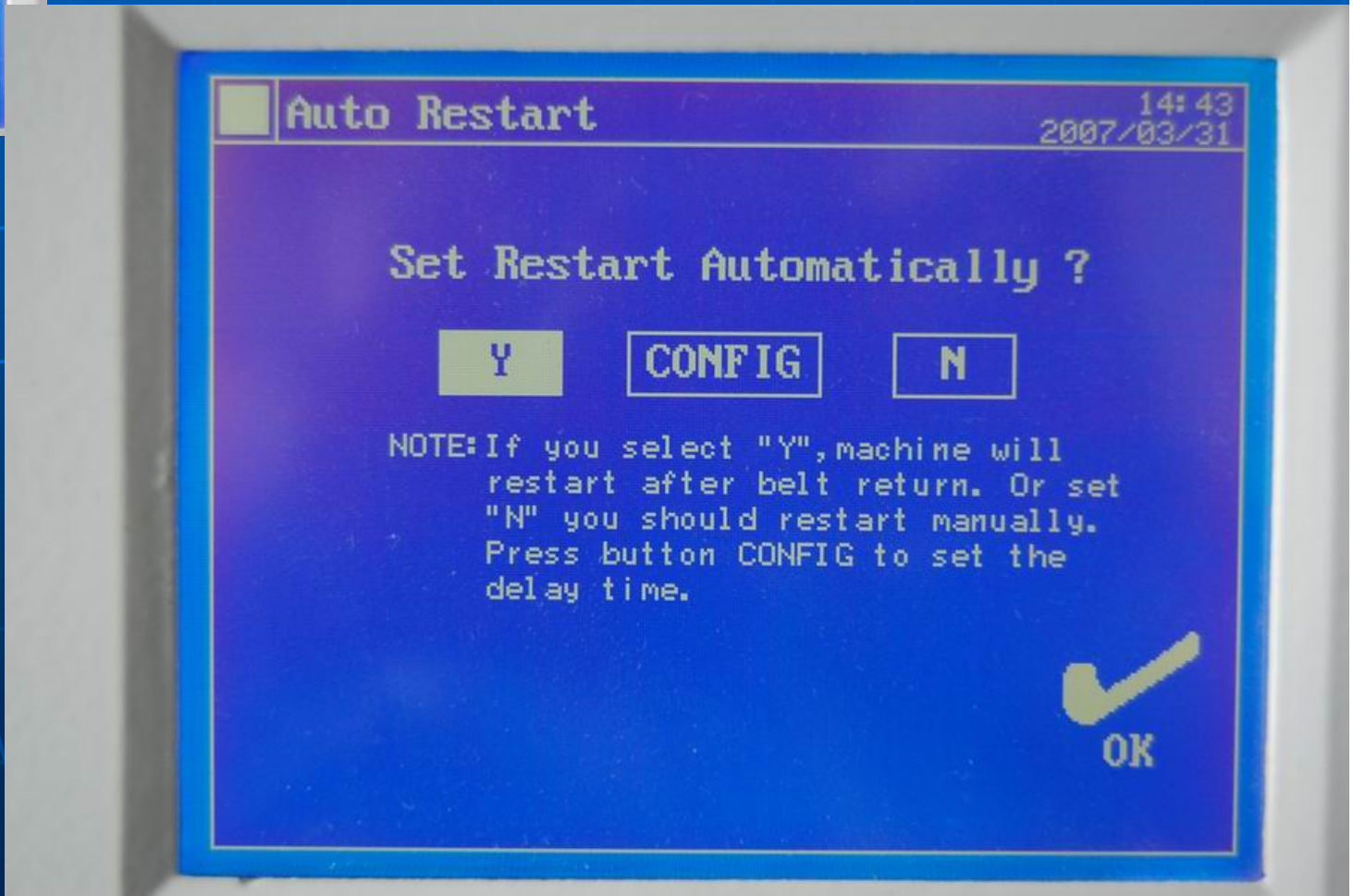
Auto Start



Default setting is YES [Y]

Select NO [N] to deactivate auto start



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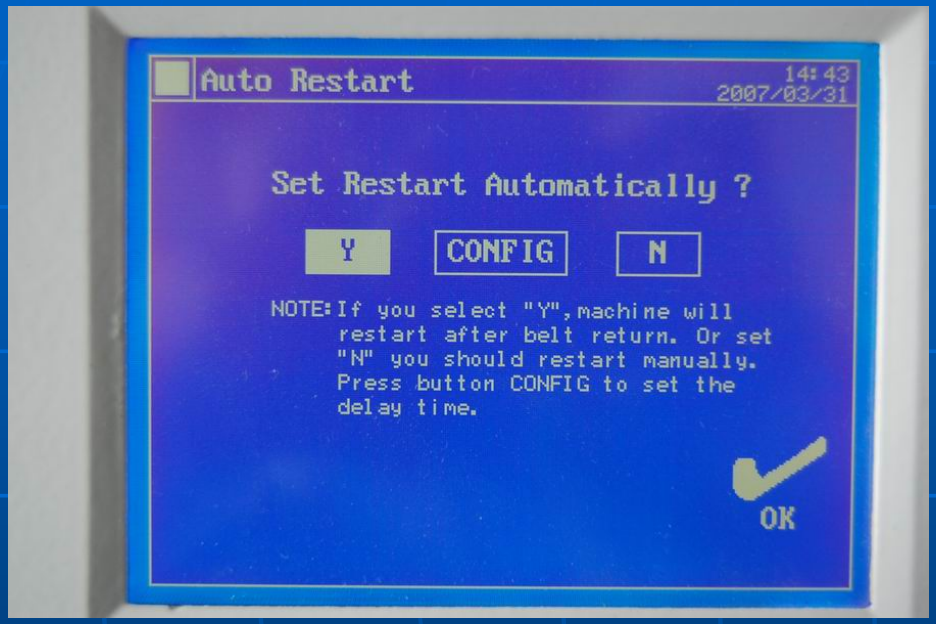
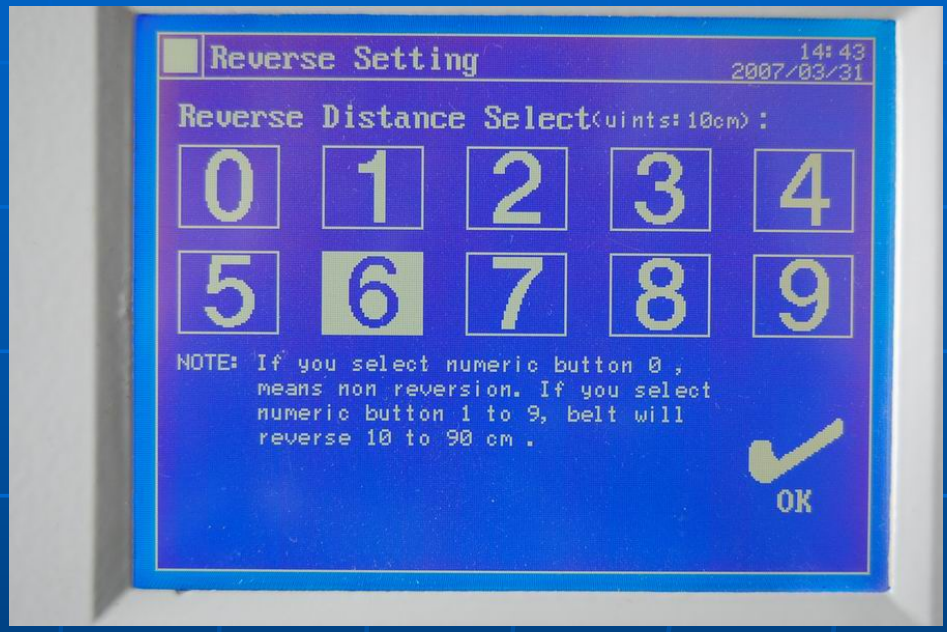
Auto Start & Auto-Retract





- Conveyor belt can be set to auto-start and / or auto-retract
- Help increase the productivity
- Belt speed: 32 m / min (50Hz)
- Hourly throughput : 2,000 pieces of garments

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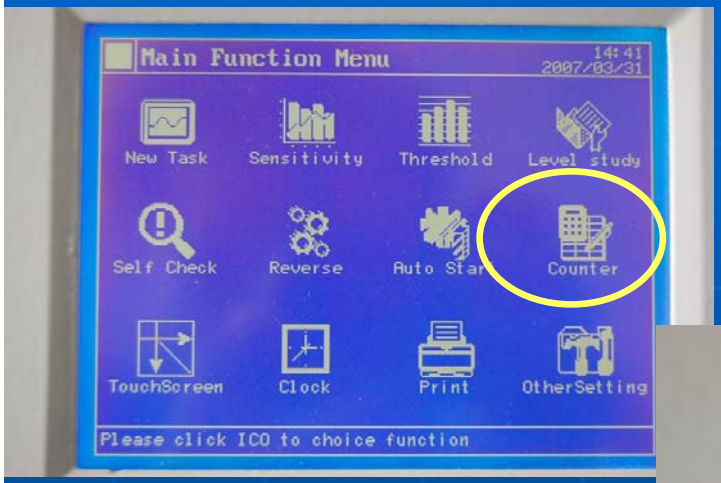
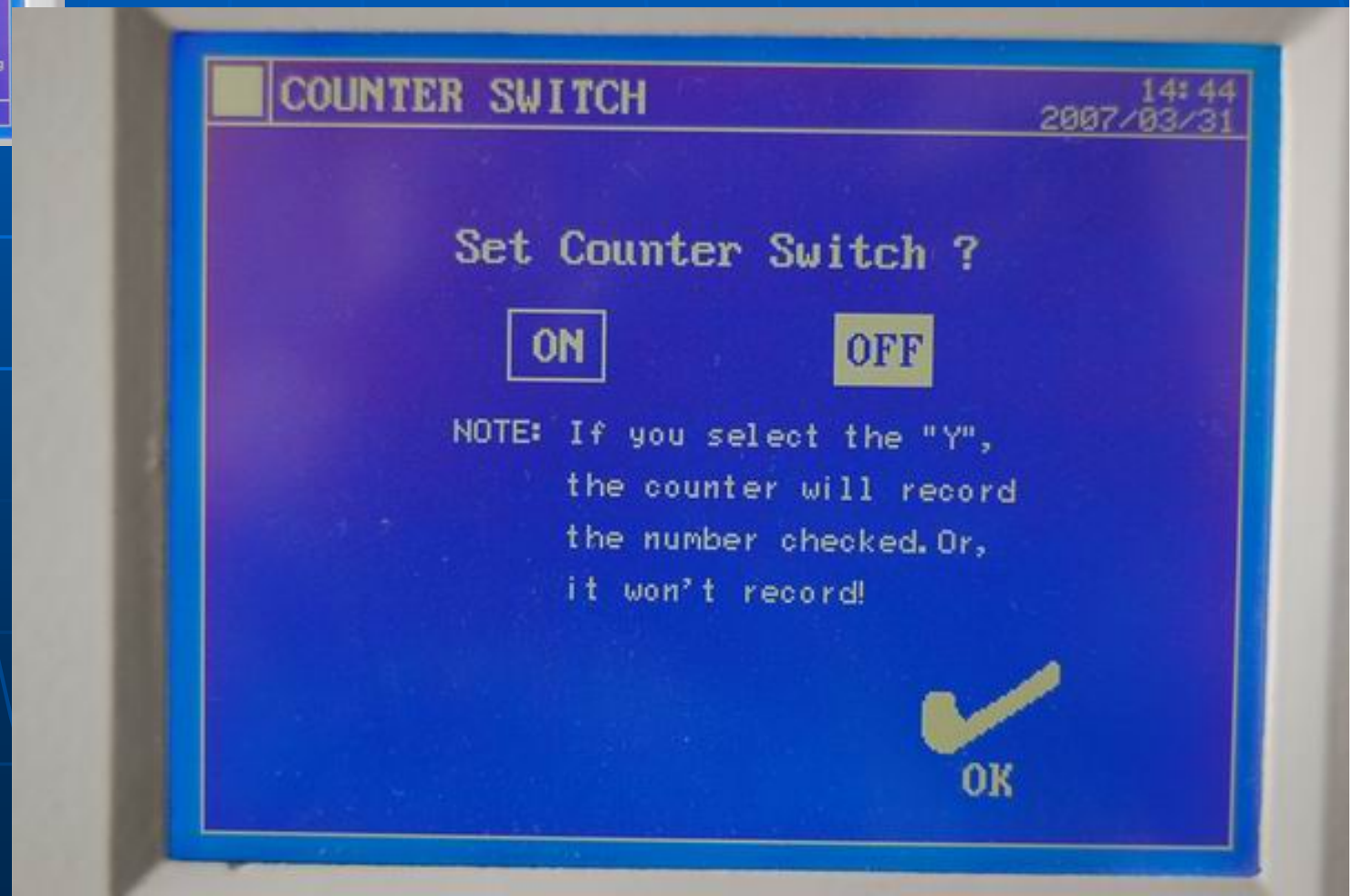
Counter



Default setting is ON

Select OFF to deactivate the counter.

Photo sensor will be turned off



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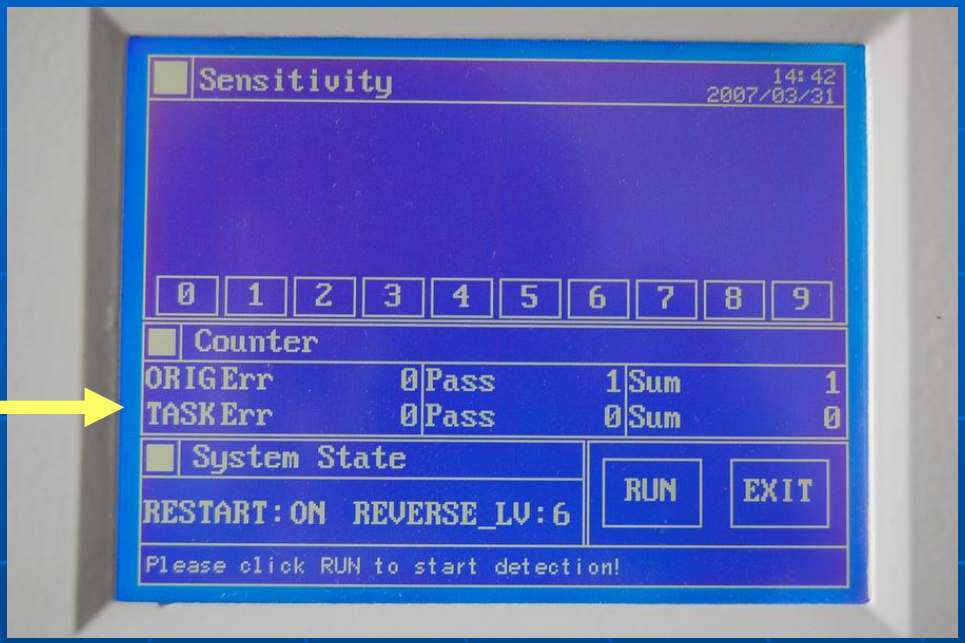
Counter



- No. of pieces PASSED (=PASS)
- No. of pieces DETECTED (=ERR)
- Total no. of pieces INSPECTED (= SUM)
- Record can be reset to zero at user's own choice
- Counter function can be switched OFF or ON at user's own choice

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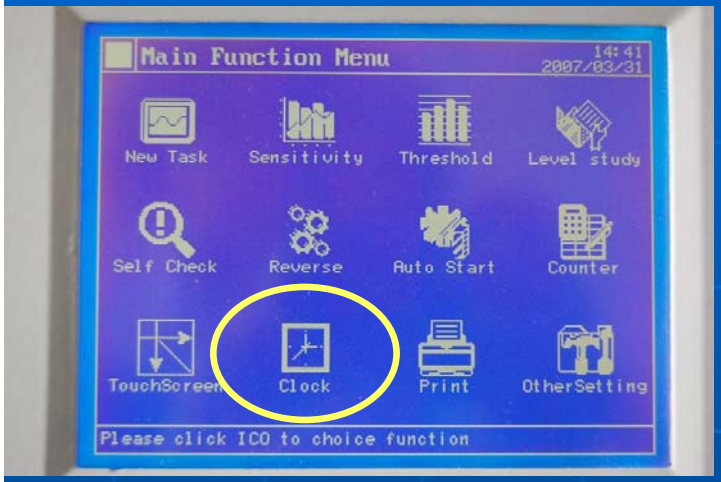
Clock



Press on the screen to select.
Press UP / DOWN to adjust.

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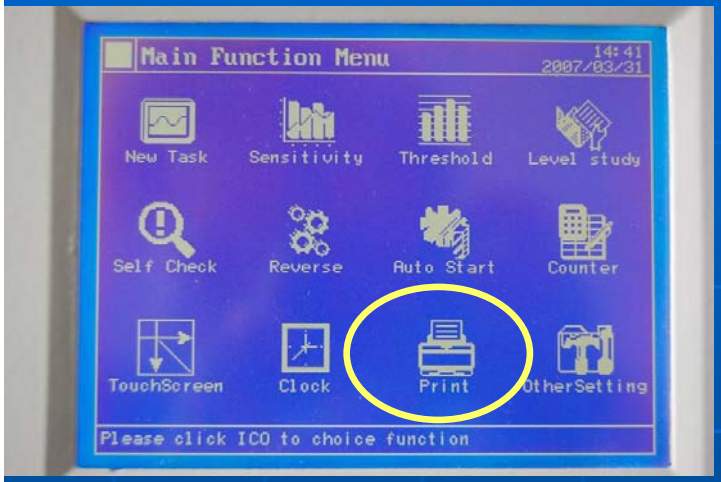
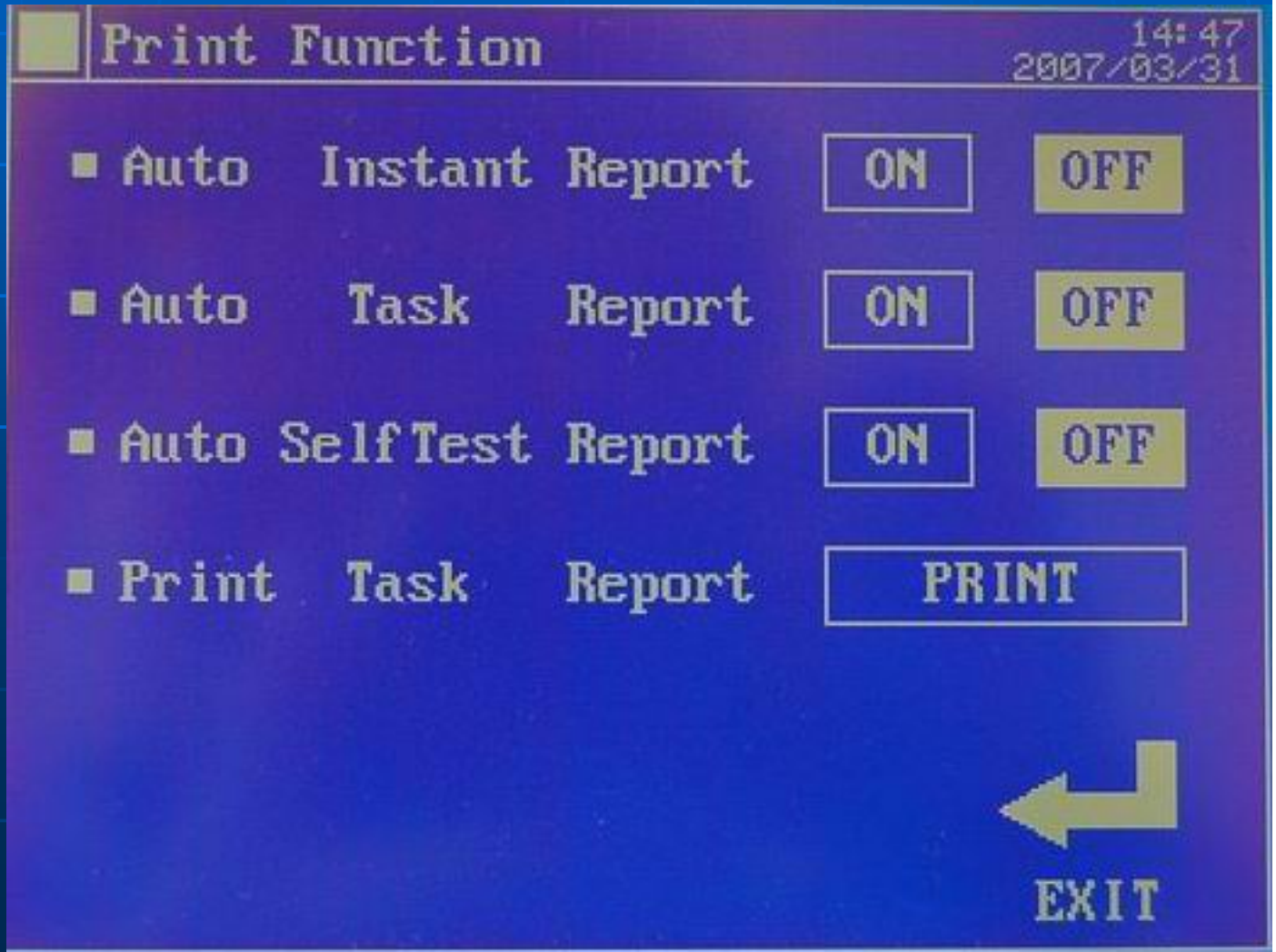
Print



Press PRINT to produce a paper report



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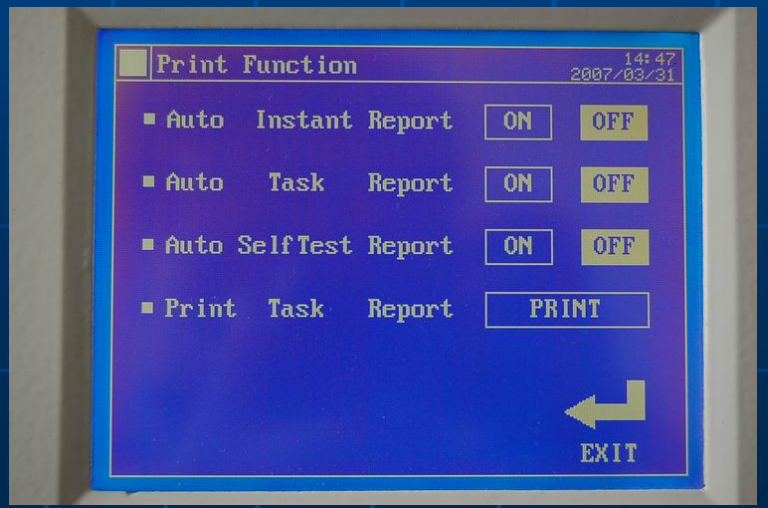
Print

```
          QMAX METAL DETECTOR
              TASK REPORT

************************************
TASK COUNTER
       Passed     :      285
       Detected   :      15
       Total      :      300
ORIGINAL COUNTER
       Passed     :      1150
       Detected   :      50
       Total      :      1200
************************************
        2005/12/02    13:18:14
```

- Printer is included
- No driver installation needed
- Normal print paper roll
- Ideal for data management / QA monitoring



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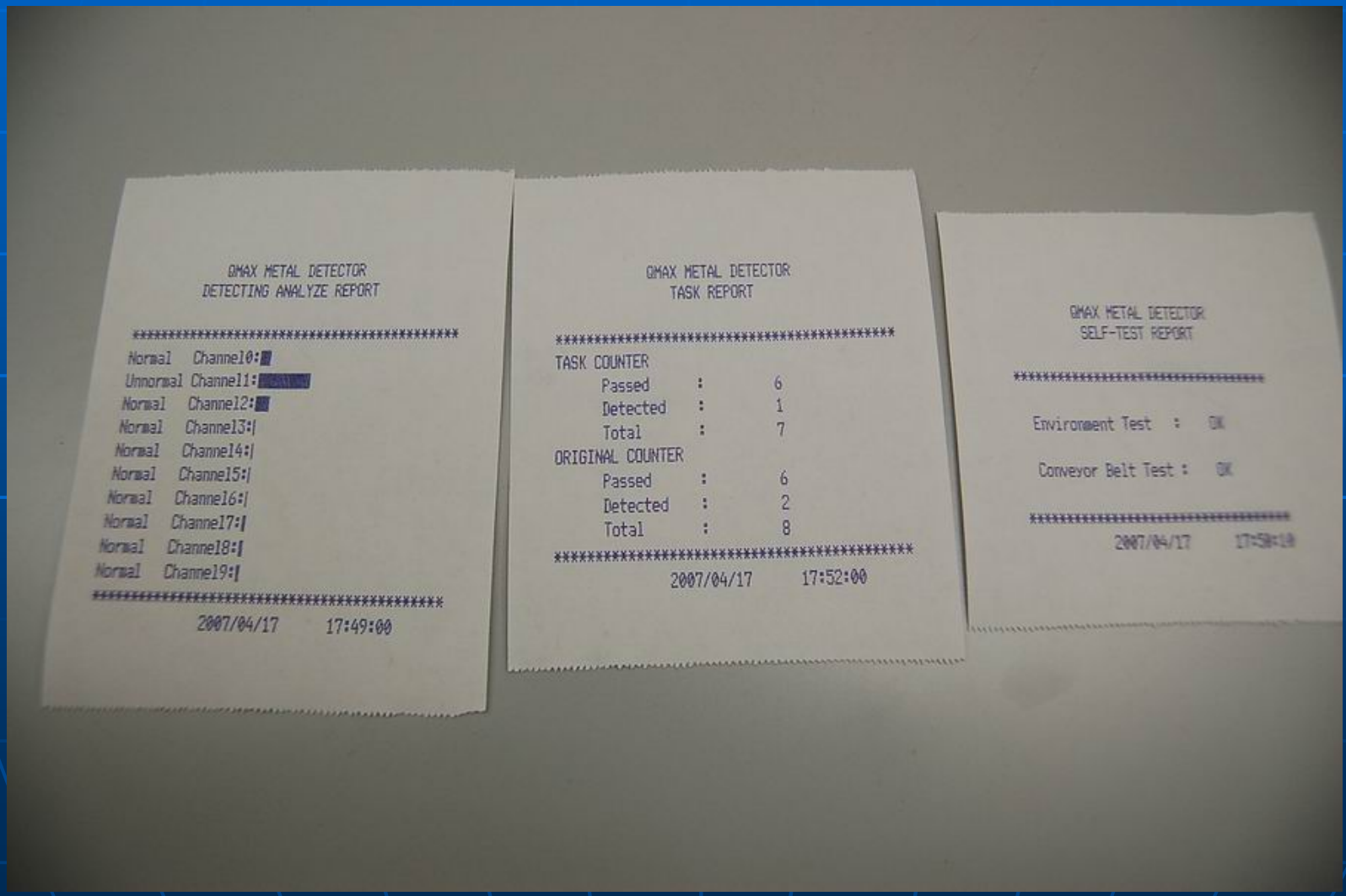
Print

Samples of Print Reports



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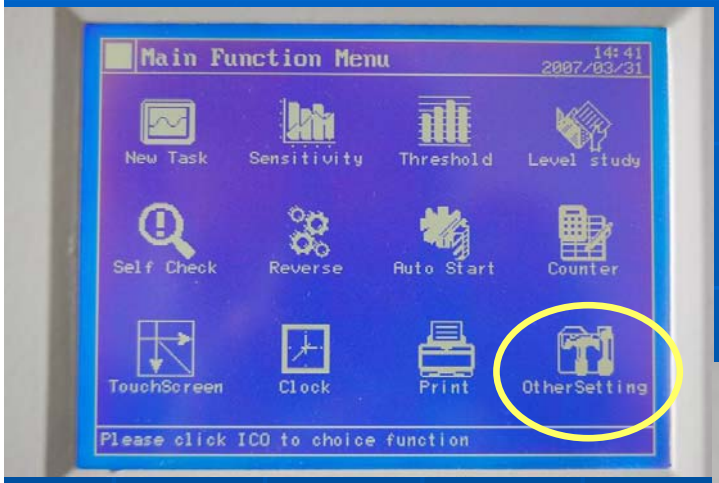
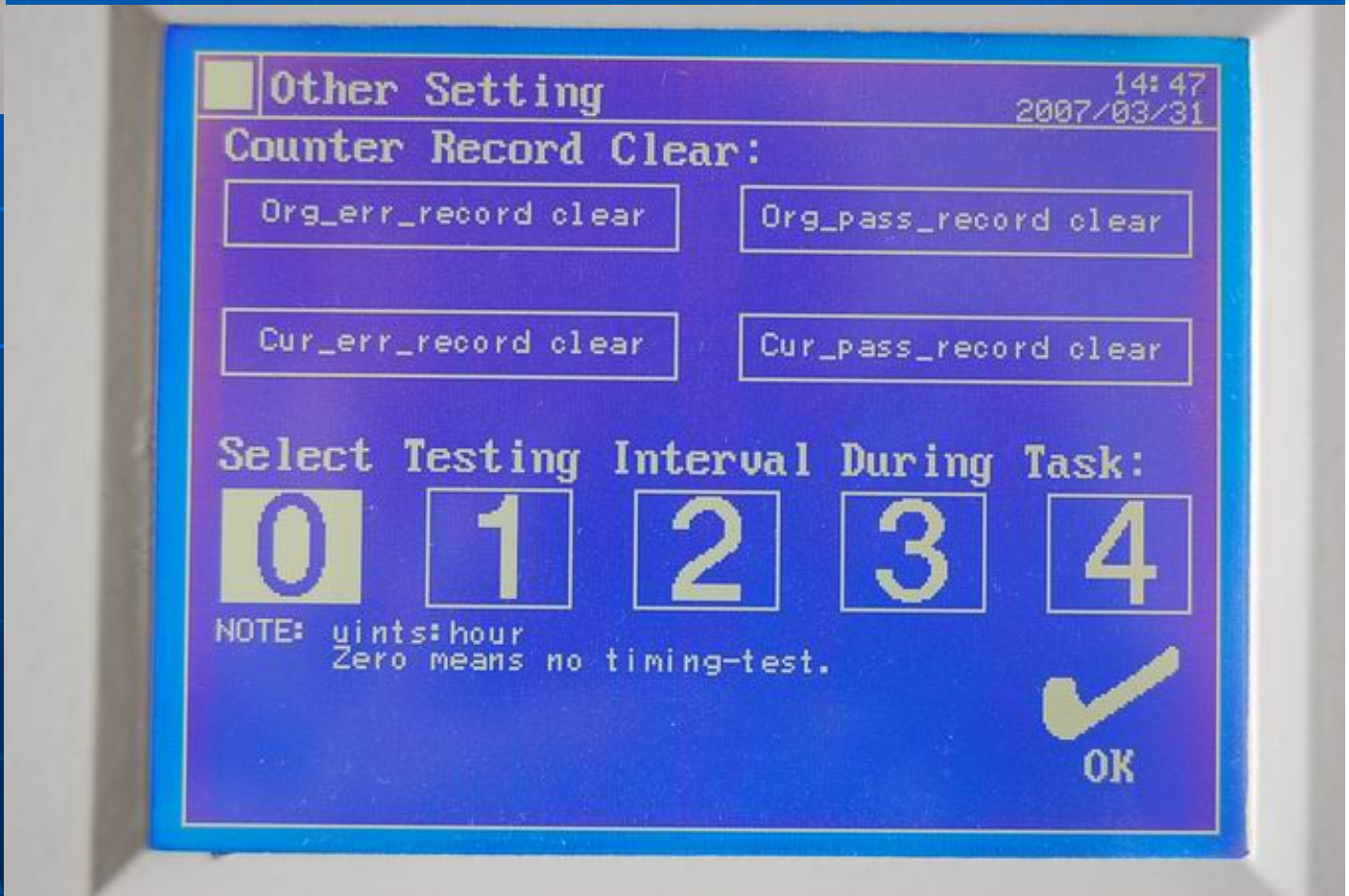
Other Settings



1. Counter record to be cleared.
2. Timer calibration setting from 0 to 4 hours interval (seldom used)



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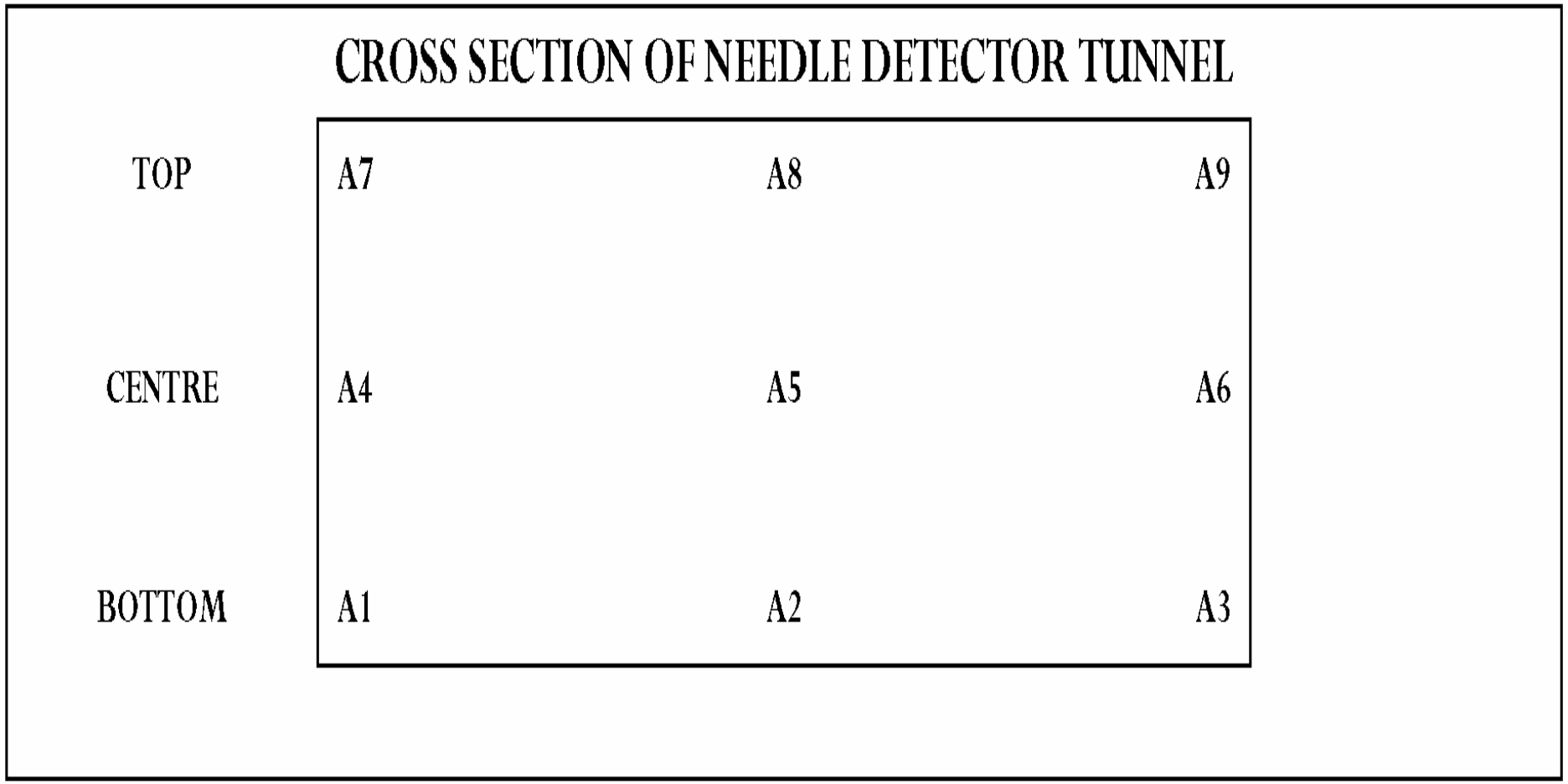
9 Point Test

9-point Position



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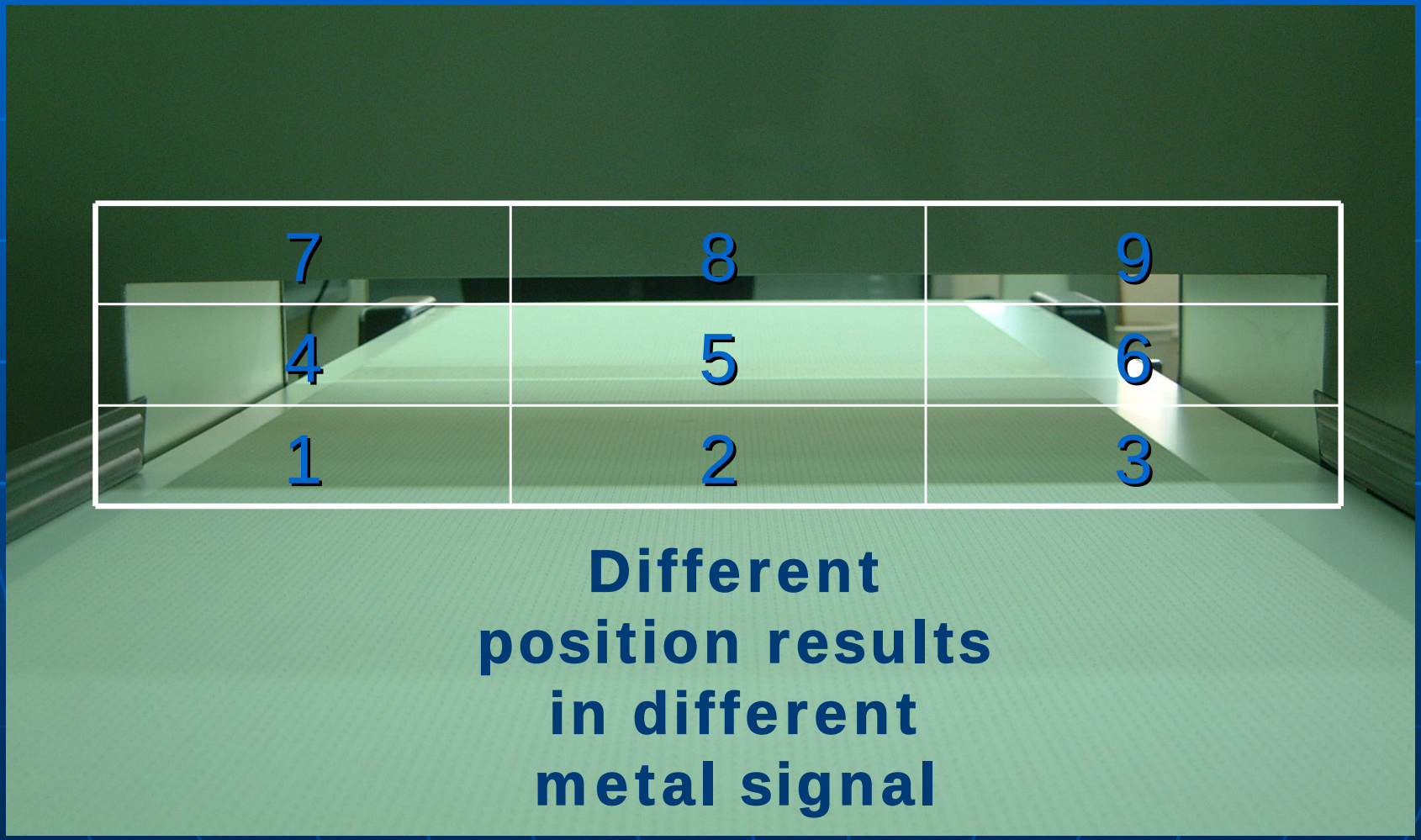
9 Point Test

9-Point Position



Different position results in different metal signal

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9 Point Test (VIDEO)

- Ferrous Test card & calibration block is used

9 Point Test (VIDEO)

- Ferrous test block is used

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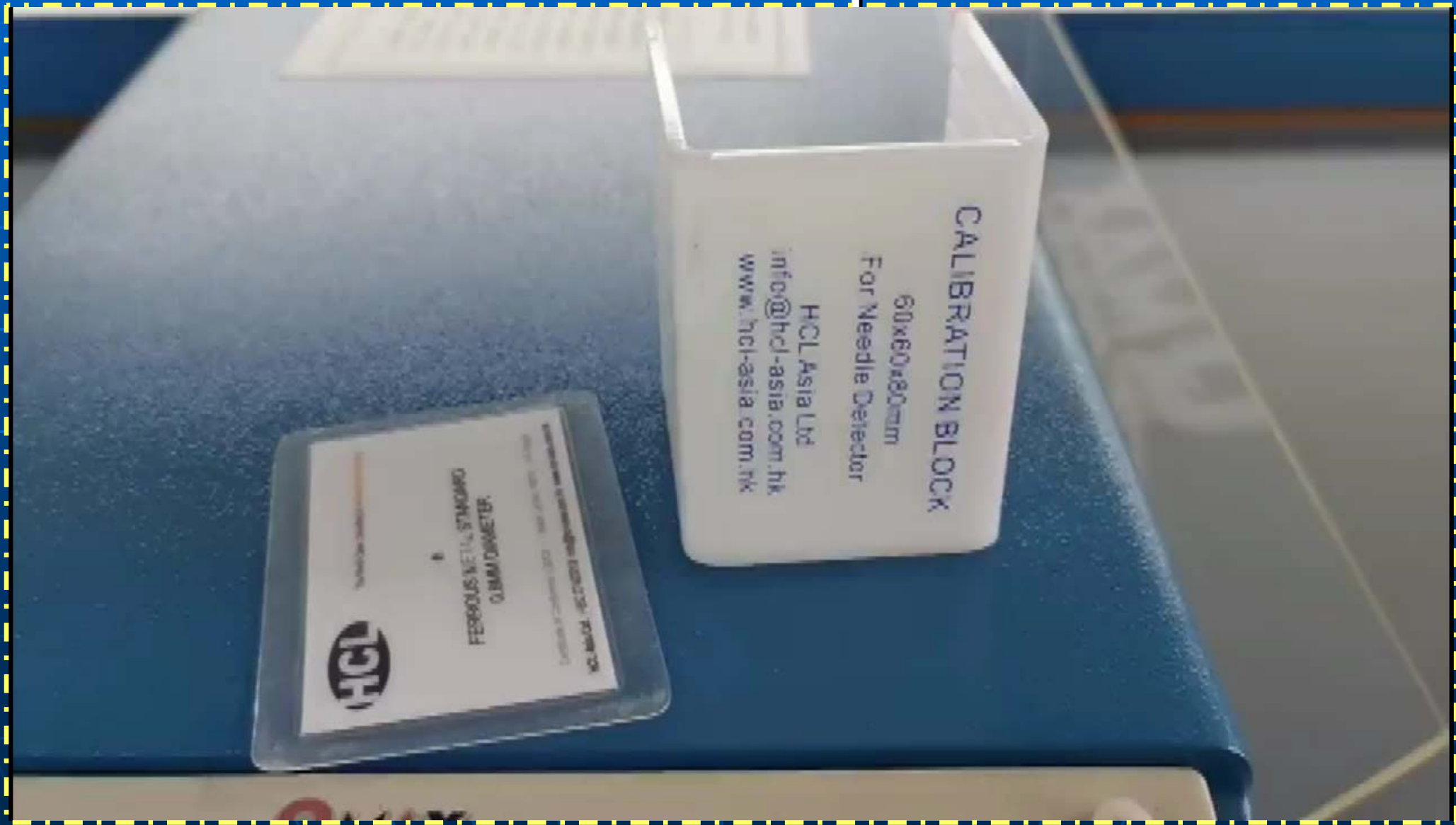
Different metal signal (video) at different point



Metal locator

- 10 detecting sensors (built-in from left to right naming from 0 to 9) across the aperture
- Needle fragment on the garment will be located
- LED indicator display (e.g.. **3X** = Sensor #3) shows the needle position
- Handheld needle detector can be a supplementary tool

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Deactivating Counter

before calibration

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Product too close to the detection head

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Handheld detector limitations

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Trims ferrous signal

- **Inherent Ferrous Signal on garments**
  - Metal Component of Various Trims: Zipper, Buttons, Buckles, etc.
  - Heavy Metal Dye-Stuff (esp. in Black color, Dark Navy) on Fabrics or Plastics
  - Shape or structure of metal trims (e.g. Loop effect)
  - Mineral elements from Stonewash or Garment-wash
  - Re-cycled papers

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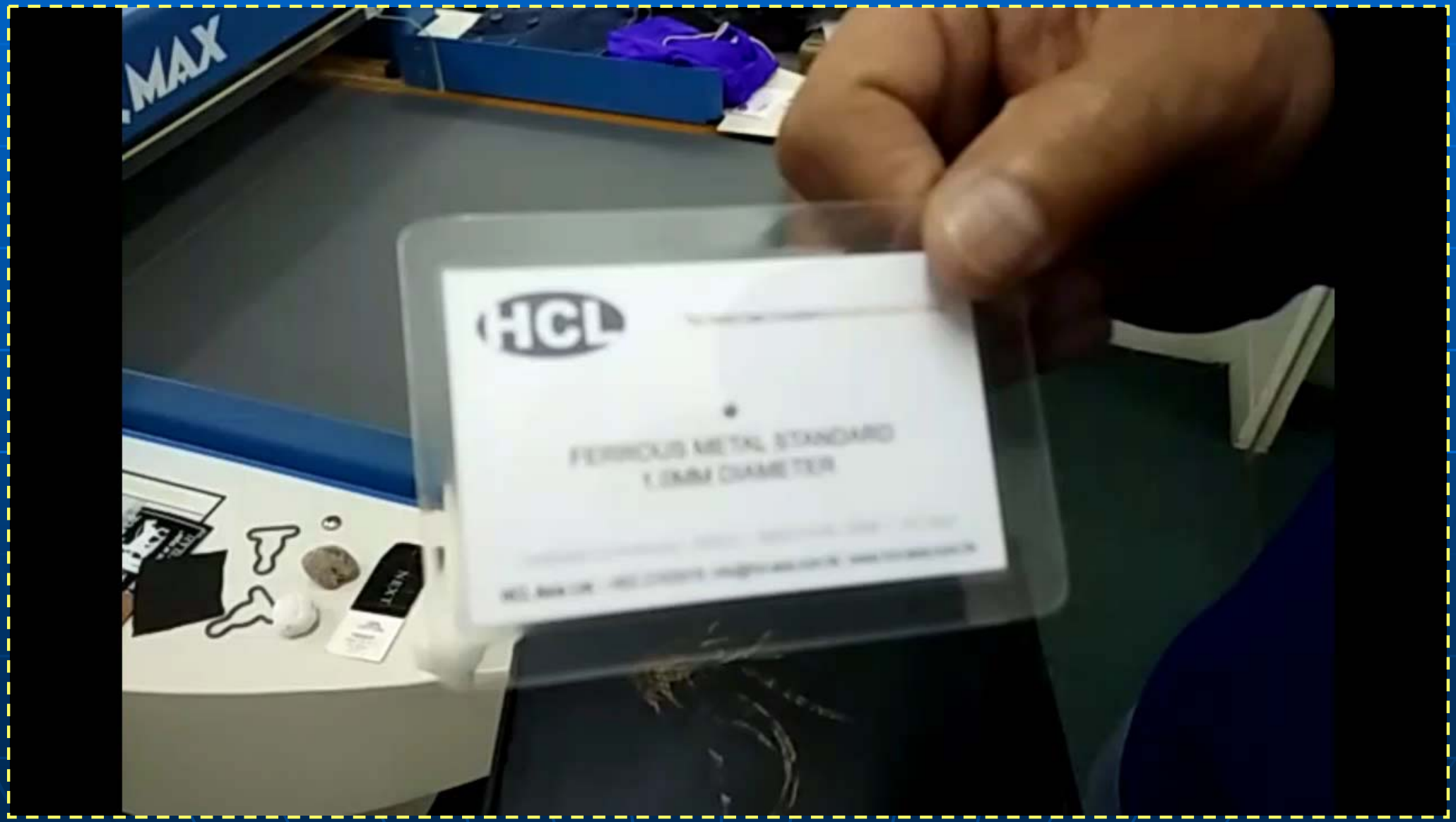
Trims ferrous signal (video)



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Ferrous Metal Standard

0.8mm / 1.0mm / 1.2mm

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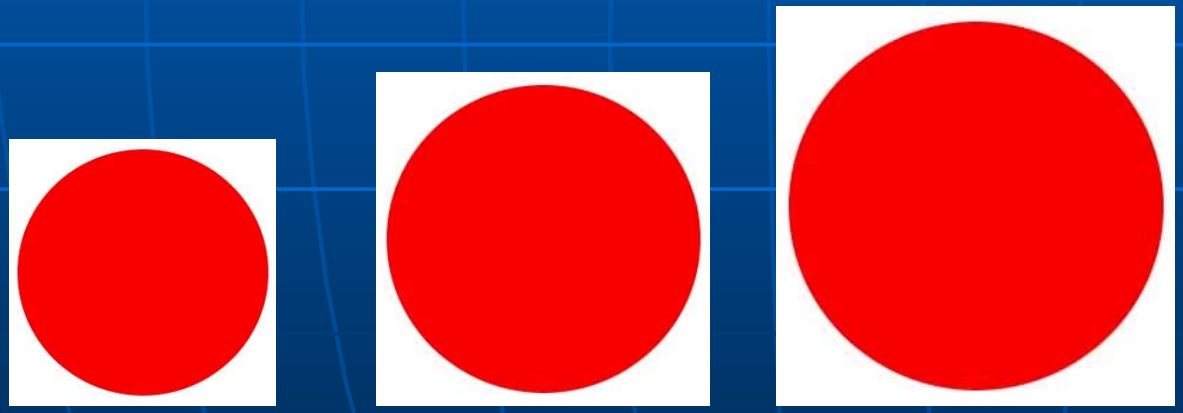
Ferrous Metal Standard

How different in % are their signals?



0.8mm 1.0mm 1.2mm

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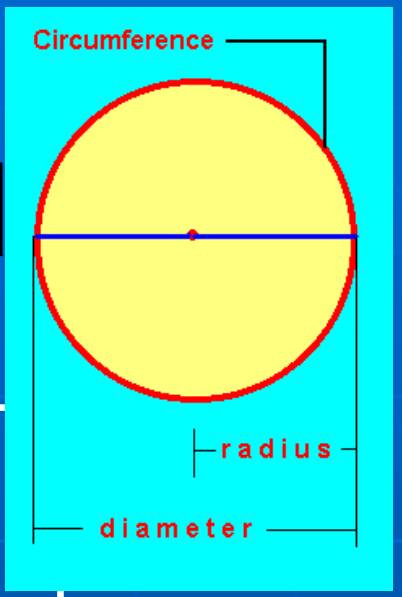
Ferrous Metal Standard



Metal Sphere Diameter (mm)	Sphere Volume* (mm^3)	Relative %**
0.8mm	$0.27mm^3$	52%
1.0mm	**$0.52mm^3$**	**100%**
1.2mm	$0.90mm^3$	173%
1.5mm	$1.77mm^3$	340%

* Sphere volume = $4/3 \cdot \pi \cdot r^3$

**100% = $0.52mm^3$

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Aperture Size vs Sensitivity

Which aperture is more sensitive?

Tunnel [A] : 20cm H x 65cm W
Tunnel [B] : 10cm H x 65cm W

A

B

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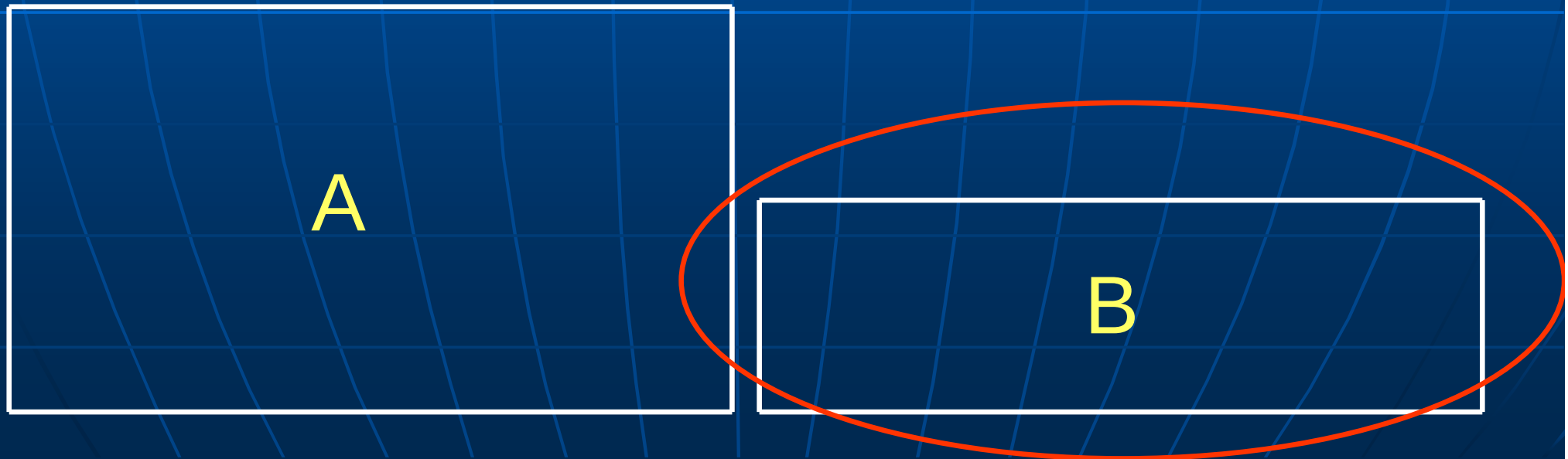
Aperture Size vs Sensitivity

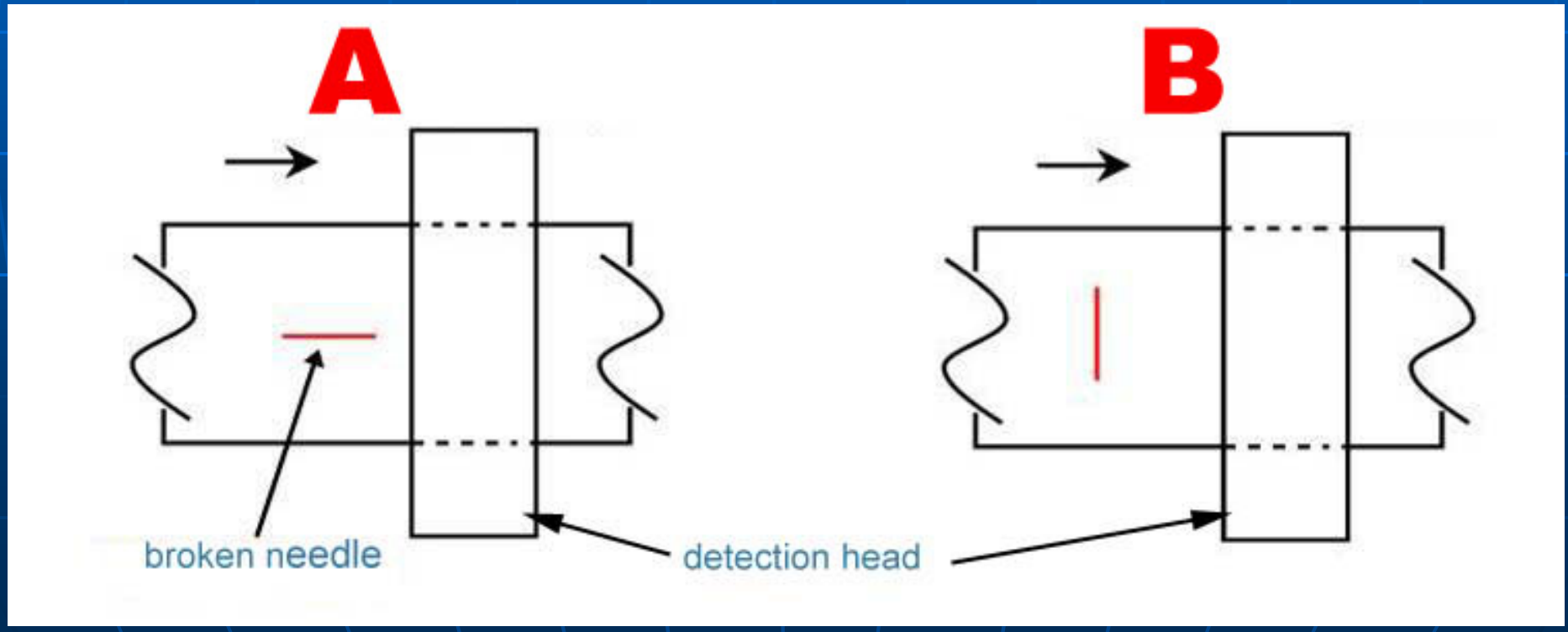
Which aperture is more sensitive?

Tunnel [A] : 20cm H x 65cm W
Tunnel [B] : 10cm H x 65cm W



Needle Orientation

Which one produces higher signal?



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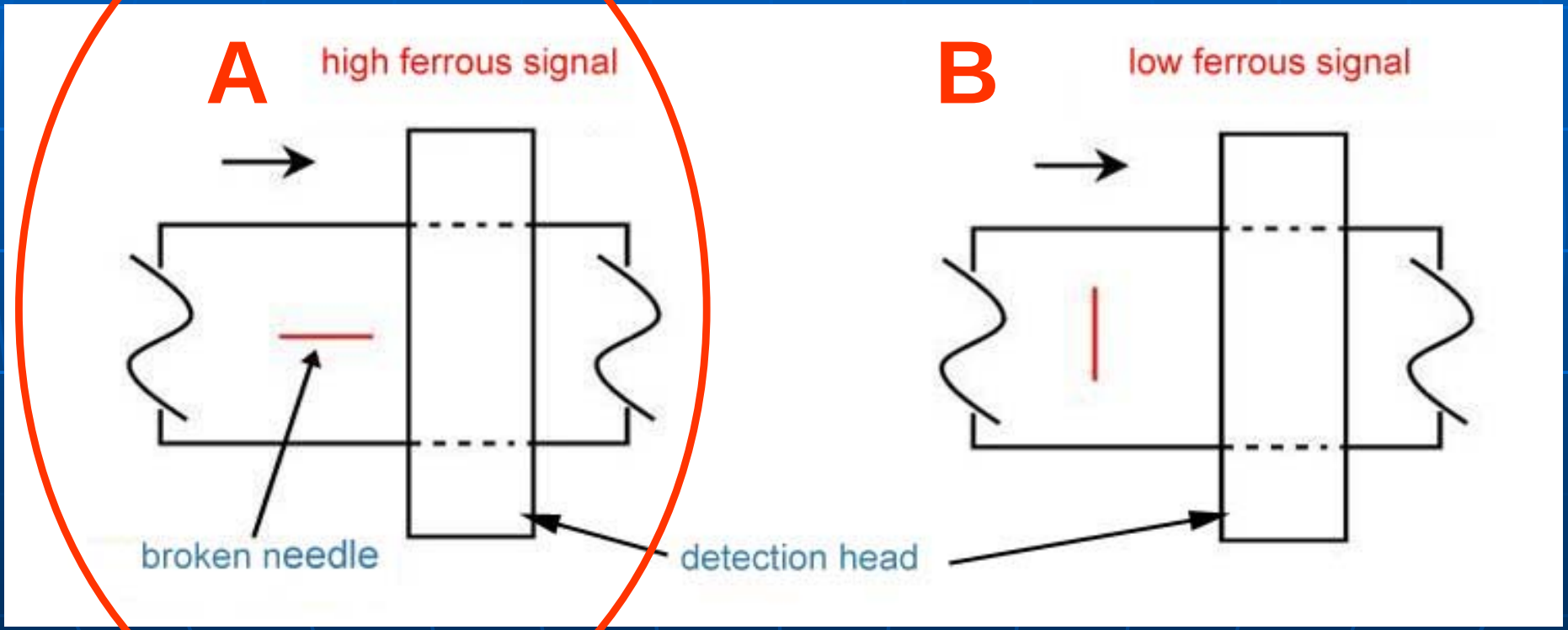
Needle Orientation



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Double-Detection

- 1st Check ✓
  - Standard Checking (minimum practice)
- 2nd Check ✓✓
  - Turn the garment 90° & "upside down", then check again (secure practice)

** Double-Detection can greatly reduce the risk of un-checked items **

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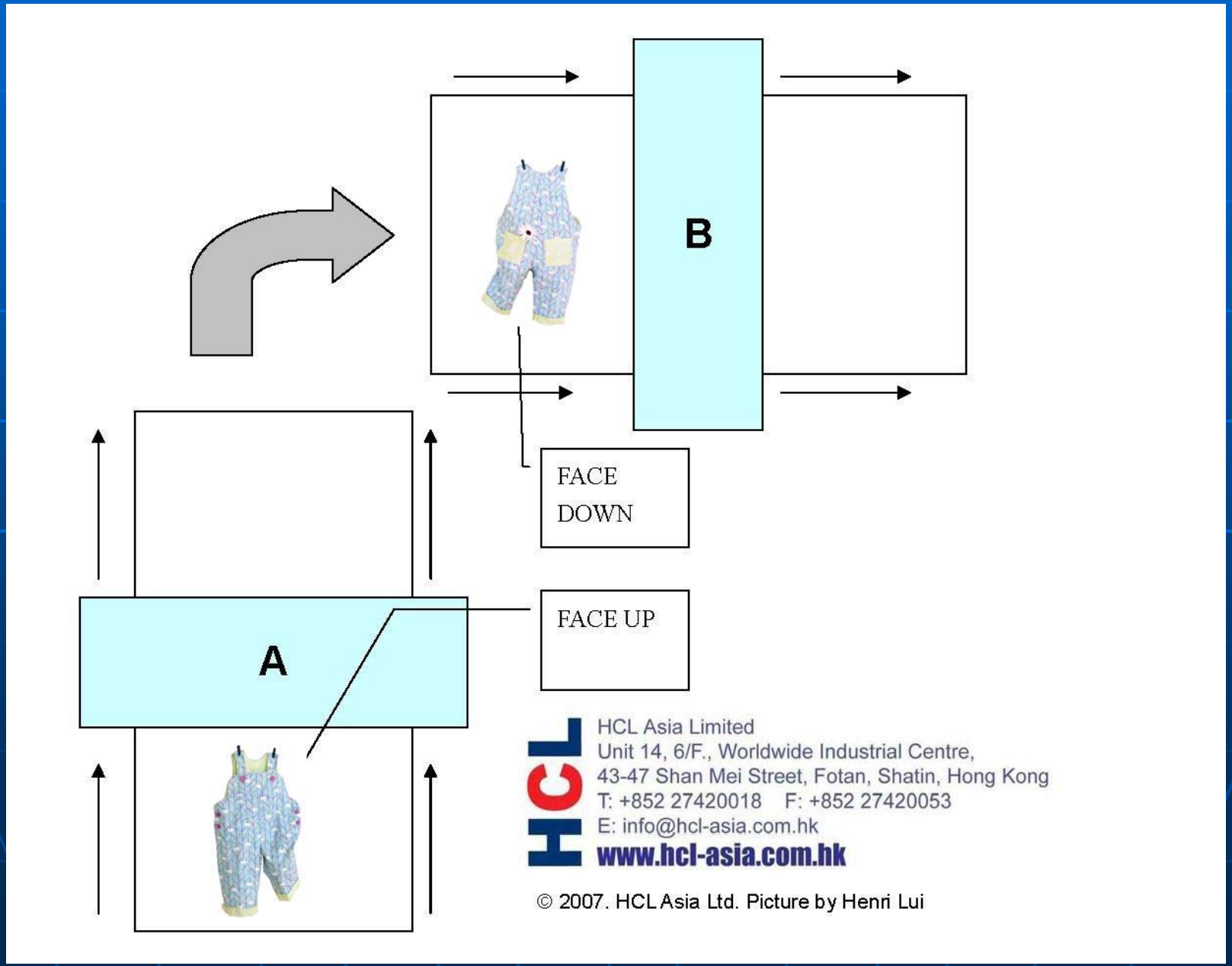
Double-Detection



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Double-Detection

2nd time

1st time

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Double Detection

QMAX

Double Detection

QMAX

Questionnaires

Use your mobile phone to scan this QR code to fill in the questionnaires

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Thank You!

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