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# English Manual

## Vertical Flammability Tester

(CA TB 117)



Model: TF-090

Power: 1 φ 220V 50Hz

## **Introduction**

Much appreciated that you buying our products, we provide the high quality goods and reliable after-sales service.

To ensure the personnel safety and equipment integrity, read the operation manual carefully and pay attention to the precautions of using before operation. This manual details the design principles, standards, structure, operation, calibration, maintenance, possible faults and solution, electrical diagram and so on. The “test rule”, “standard” mentioned in the manual are only for reference, if your company disagrees, just review the standards or data on you own.

Special Statement :

- This manual can not be used as the basis for any request to our company.
- Our company keeps the final interpretation right of this manual.


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## Safety Attention

### 1. Safety Sign:



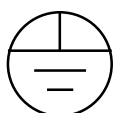
To prevent accidents and body injury, pay attention to the following warning notices:

	<p><b>Danger:</b> This shows if not do as requirement, the operator will be hurt.</p>
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	<p><b>Attention:</b> The project with this sign means that it may affect the test results and quality control.</p>
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	<p><b>【note】</b> the project with this mark means that the auxiliary use</p>
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### 2. The warning and attention sign of instrument.

	warning sign	this mark indicates the place that it need to follow the manual book to operate.
	dangerous voltage	high voltage.
	earth protection	ground terminal

## I. Introduction

一、 **Usage:** This instrument is used to test the flammability of filling toughness materials for sofa and such kind of upholstered furniture.

二、 **Principle:** Install the sample in sample holder and make it suspended vertically in the test instrument, burn the sample below by required height flame a certain time , observe the damage level of the sample and evaluate the performance of resistance burning, smoldering and scorching of filling toughness materials.

三、 **Applied standards:**

The instrument manufactured according to CA TB 117 (TECHNICAL BULLETIN 117) -SECTION A-Part I Resilient Cellular Materials.

## II. Instrument description

一、 **physical construction:**

1. **physical construction:** (figure 1)

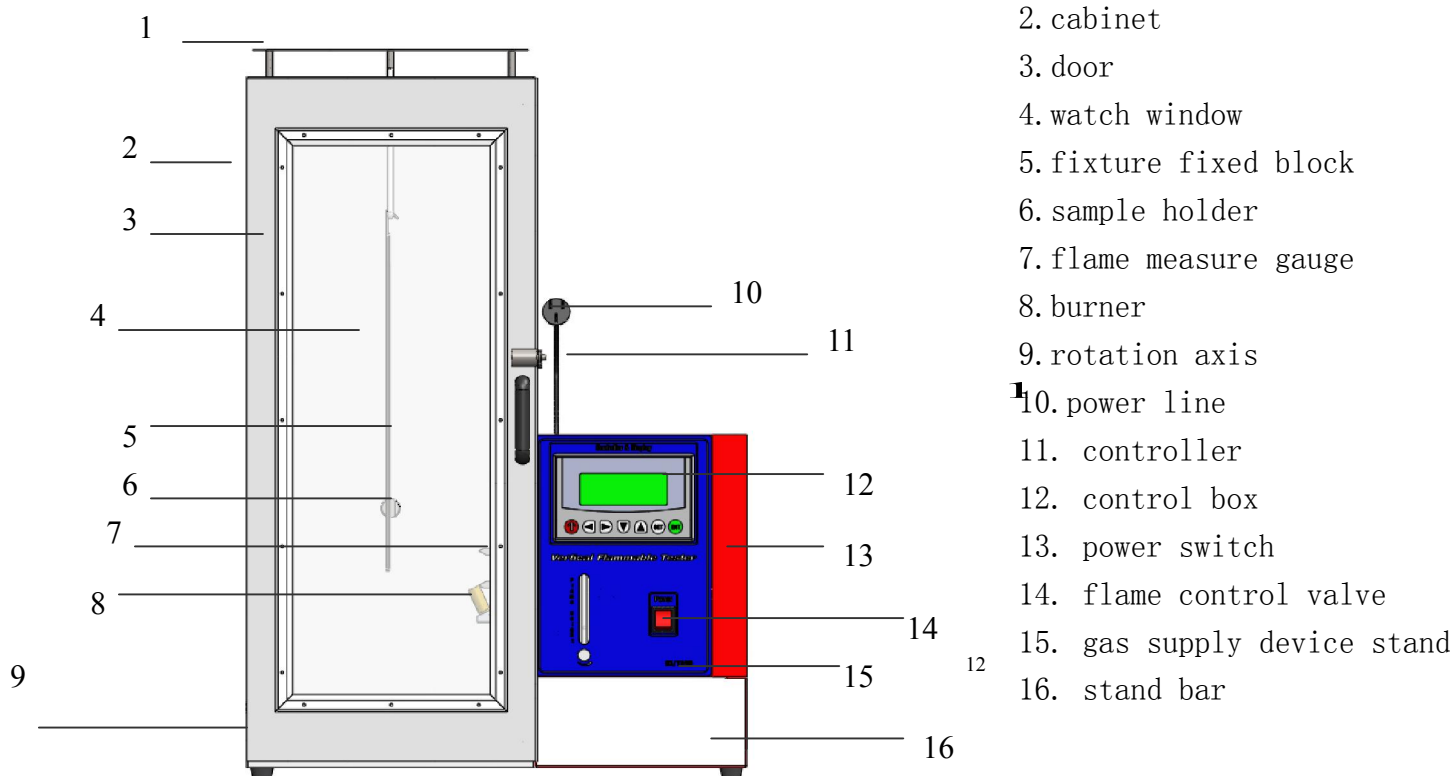


Figure 1

**2. function description:**

- Top slab: Reduce the air flow influence on the combustion flame
- Cabinet: the main body to provide a independent room for test
- Watch window: transparent and easy observation of the test process
- Fixture fixed block: to keep the sample vertical in the middle
- Sample holder: sample stationary fixture
- Flame measurement: flame height measurement scale
- burner: flame generator
- air vent: provide necessary air flow for the combustion test
- controller: operation guide and provide testing steps
- flame control vale: adjust the gas flow to achieve the required height of the flame.
- Position of Gas supply device: place the gas supply device.

**二、 Instrument specification(table 1):**

test sample	Rectangle of 12x3x1/2 inches
number of sample	10
distance between sample end to burner top	0.75''
burner tilted angle	Vertical direction
flame height	1. 5''
flame burning time	12s
burning gases	butane
volume(WxDxH)	60x36x85cm
weight(about)	≈30Kg
power	1 φ AC 220V 50Hz

Table 1

### III. Instrument installation

一、 **Power request:** please use correct power according to requirement of the machine nameplate.

**Danger**

■ Error range of input voltage should be within  $\pm 10\%$  and ensure that the machine grounded properly to prevent machine leakage.

二、 **Operation environment:** room temperature.

三、 Install the instrument on a stable platform in ground level, to make the machine stable.

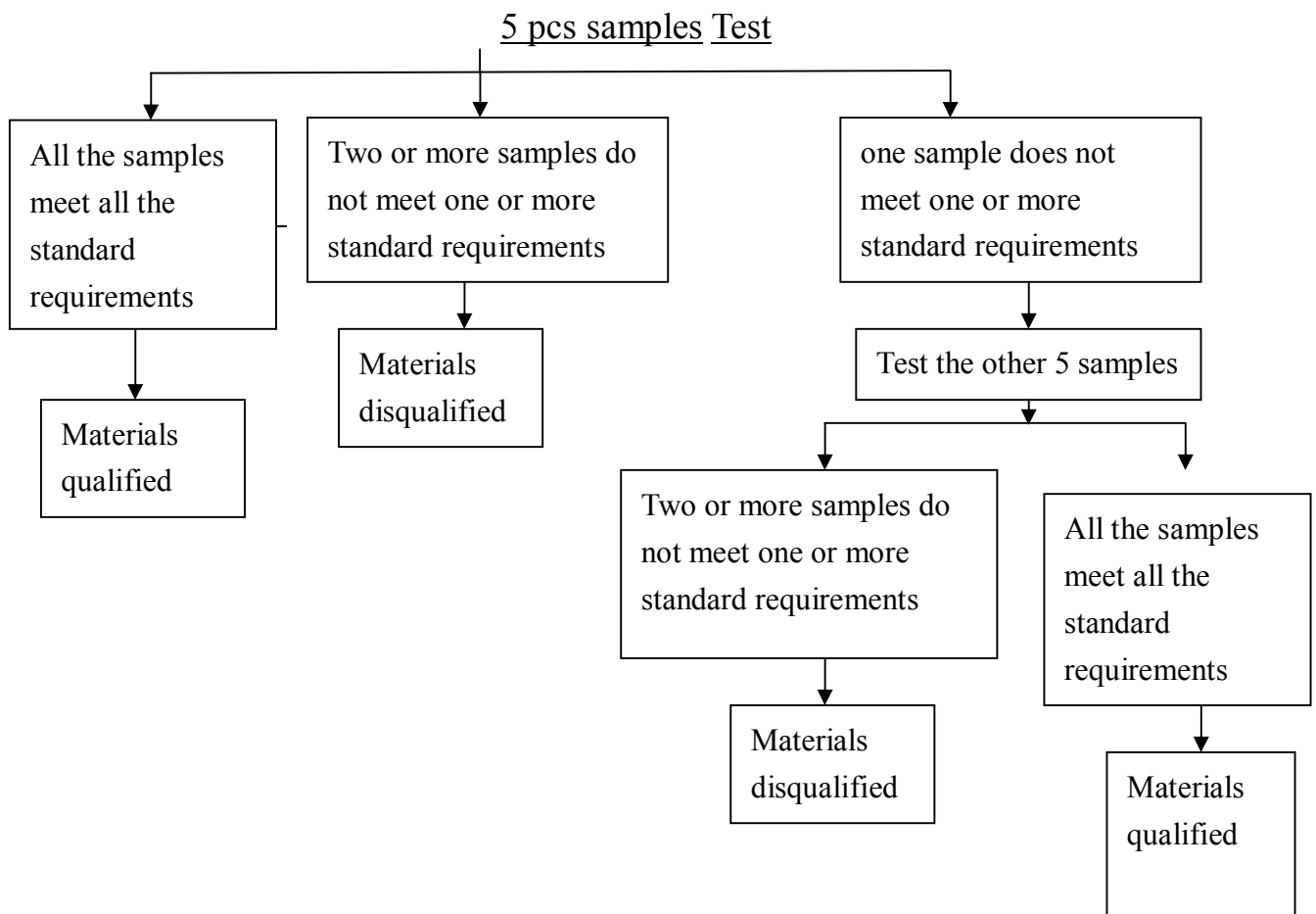
### IV. Operation Specification

一、 **Sample prepared:**

1. Environment: all the samples should be in the temperature of  $70 \pm 5^\circ\text{F}$ , less than 55% in relative humidity for at least 24 hours.

2. specimen preparation:

- get 10 pieces of rectangle in 12x3x1/2 inches from the testing sample.
- keep 5 of them in the ventilation oven at  $200^\circ\text{F}$  ( $104^\circ\text{C}$ ) for 24 hours, test 5 samples before stoving and the other 5 after stoving.
- The order of the 10 samples tested:



## 二、 Operation steps:

### 1. Things should be confirmed before operation:

- make sure the using power meet the requirements
- make sure the gas supply device prepared and the gas pipe connected correctly.

### 2. Specimen clamped:

2.1 open the door and take out the sample holder

2.2 take one prepared specimen and make it level on the internal of the sample holder.

2.3 Hang the sample holder again in the U-shaped frame, the sample holder close to the holding ring of the U-shaped frame and make it inside the fixture fixed block on vertical level, and its middle center coincides with burner center.



**【Attention】 :**



■ If the middle center does not coincide with the burner center, the position of the holding ring of the U-shaped frame can be adjusted.

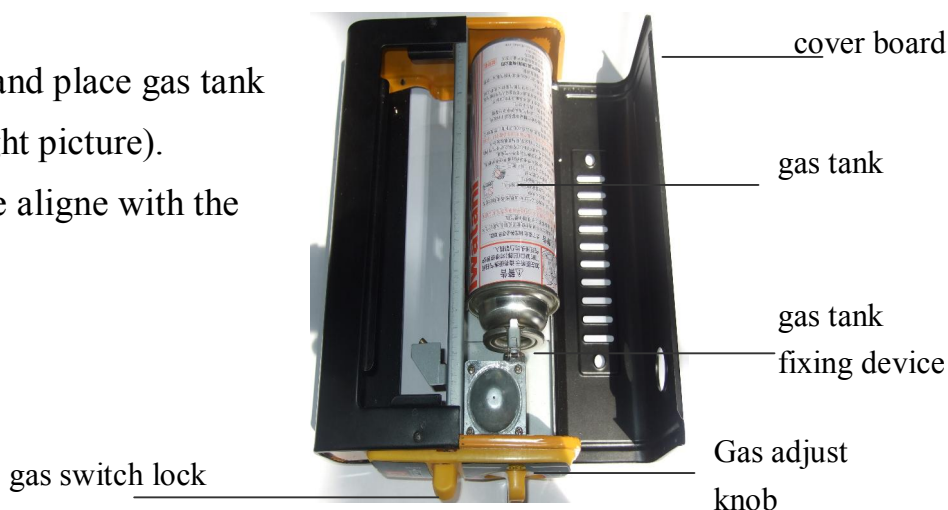
3. Gas prepared

3.1 open the cover board and place gas tank

In the device(shown at right picture).

3.2 make the fixing device aligne with the gap of gas tank.

3.3 close the cover board.



**Gas supply device**

**4.Test start:**

4.1 open the power

4.2 press gas switch lock, turn the gas adjust knob counterclockwise to appropriate position ( not too much at first)

4.3 press ▼ key shown on the start page text on display screen to the next step

4.4 display screen text: after installing the samples on the testing jig, set the ignition time for 12.3 seconds/press ENTER key for ignitor, adjust flame height and start to test.

- Press the SET key to set the ignition time; press / key to move cursor position to the left or right; press ▲/▼ key to increase/decrease the number, last press ENTER key to confirm the setting.
- Open the cabinet door, press the ENTER key to guide the gas entry(ring), rotate clockwise the flame regulator of the control cabinet and the copper knob

open air supply under the nozzles meanwhile move the flame close to the burner until it is lit.

- The flame adjust knob under the rotating nozzles is to adjust the flame height to the requirement(larger when counterclockwise, smaller when clockwise), the flame height can be directly measured by flame measure gauge(two cusp of the measure gauge is the standard value of CA TB117).
- press  key to start the burner, move the burner to sample for testing, the display screen show the text 4.6
- press  key to return if you want the burner go back to its initial position
- press  key to stop the burner moving if you want.

4.5 display screen text: (**firing time:0.0 second /flame time:0.0 second / smoldering time:0.0 second**      suspension      stop      reset▲)

- the burner will stop automatically when it move below the sample and the firing time start to timing, the burner will stop burning and return to its initial position the  when the setting time is over.
- the open fire timer starts to timing automatically when the flame goes out. Operator can observe the open fire burning condition by watch window, press  key quickly when sample open flame goes out, the timer will stop and keep the time.
- the smoldering timer starts to timing automatically when open fire timer stops, operator can observe the smoldering burning condition by watch window, press  key quickly when smoldering burning stops and the timer will stop and remain the time.

4.6 Then a sample test is finished.

- If the next sample test is needed, can directly press the  key back to the starting up text and repeat step 4.3~4.5 to test the next one.
- If there is no need to test next, turn off the gas supply device, turn the knob to ‘off’ and lift the gas switch lock, cut off power.

**Danger**



- If any unusual circumstances happen during the test, you must turn off gas supply first(lift the gas switch lock),then press the power key to stop the machine.

**三、 Record and Evaluation:**

1. Record

- Measure and record the scorching length of each sample, the data of which should be accurate to 0.1in, the time of afterflame and the smoldering time, the time should be accurate to 0.1s.
- Record the max scorching length, the time of afterflame and the smoldering time of each toughness material.

2. Evaluation

- The average scorching length of all the samples should not be over 6”.
- The max scorching length of any single sample should not be over 8”.
- The average time of afterflame should not be over 5s (including melt materials or other drop things from samples).
- The max time of afterflame of any single sample should not be over 10s (including melt materials or other drop things from samples).
- The average smoldering time should not be over 15s (including melt materials or other drop things from samples).

**【Notes】**



related definition:

- afterflame : the continued burning time is the time of sample continued to flame burning after the burner flame goes out. (including meltdown material or dripping from other sample)
- smoldering : smoldering hours is the time of sample flameless

combustion after the burning flame goes out.( including meltdown material or dripping from other sample)

- The length of scorching : the max distance of the scorching area of the materials in the specific direction.

## V. Calibration

一、 **Item:** time

二、 **Instrument:** electronic stopwatch

三、 **Calibration cycle:** one year

四、 **Steps:**

1. time calibration method:

1.1. make the stopwatch timing at once while the instrument display timer works.

1.2 stop the stopwatch immediately while the instrument display stop timing, and check whether the time of display equal to the stopwatch.

## VI. Maintenance

一、 Clean the machine surface before and after each test, regularly wipe clean the fixture by spraying anti-rust oil.

二、 Clean up the dirt after each test.

## VII. Malfunction solution

malfunction	reasons	solution
<ul style="list-style-type: none"> <li>• open power switch, light is not bright.</li> </ul>	<ul style="list-style-type: none"> <li>• Power not input.</li> <li>• Fuse burning.</li> </ul>	<ul style="list-style-type: none"> <li>• Check and repair the power line.</li> <li>• Change new as same capacity.</li> </ul>
<ul style="list-style-type: none"> <li>• Repeated blown fuses, can not be used</li> </ul>	<ul style="list-style-type: none"> <li>• Input voltage is abnormal.</li> <li>• Motor is abnormal.</li> </ul>	<ul style="list-style-type: none"> <li>• Check and repair by electrician.</li> <li>• Motor damage, repair or replace.</li> </ul>

## VIII. Quality Assurance

1. The maintenance service is free for one year(consumables is not free, excluding travel expenses).

2. Free service mainly vouchers: Warranty card issued by our company is the most important certification when the service is controversial.

Thus: a) please keep your warranty card well, if loss within a month, please contact our customer service department.

b) the card is invalid if any altered or no stamp added of our company.

3. Case of the following circumstance, we will also charge for technic and materials as appropriate in the warranty period:

- a) the nature disaster
- b) wrong operation or the user's fault
- c) do not use the power as required
- d) dismantle and repair without permission.
- e) error cause by lending to others
- f) make alterations
- g) self-correction that failed
- h) transfer or delivery, remote area service