

REVISED TEST MANUAL FOR ELECTRONIC COUNTER MACHINE.

Capacity: $\leq 50\text{kg}$

1.0.Construction

Has a flat top measuring about 45cm x 45cm, sometimes superimposed with a scoop.

Display is normally available on the front and back panels for instruments intended for in the presence of a buyer.

One display at the front is enough for instruments intended not to be used in the presence of the buyer.

An alternative design is the pole type where the display is mounted on a pole raised above the load receptor.

Has one load cell at the centre and may be fitted with an in-built printer either for ticket or label printing.

2.0.Application

Used in cross counter transactions involving light goods. Normally placed on counters or table tops.

3.0.Testing

The general tests specified for all instruments are carried out. For the eccentricity test however, the load applied is half the capacity of the instrument.

Note: Full load test is inherent in the weighing performance test

4.0.Sealing and Stamping

Sealing is done as per the approval directive for the model of the instrument.

ELECTRONIC COUNTER MACHINE EXAMINATION SHEET

RE- VERIFICATION AND INSPECTION

(I) EXAMINATION

Recognition: Model No.....

Approval No.....

Entirety: Name parts discernible from outside.....

Denomination: Accuracy Class.....

Capacity: Max.....

Min.....

Verification scale interval.....

Is the instrument properly classified(Does the declared verification scale interval, and Maximum capacity match the declared Accuracy class ?).....

Strength(Is instrument strong enough).....

(Is instrument suitable for application).....

(Is instrument suitably designed to allow for verification?).....

Individuality (any novel feature not initially included in the approved design likely to affect weighing ?)

Trade Mark : Indicate manufacturer's Name or mark.....

Sealing/Stamping:

Can the instrument be used fraudulently ?.....

Are all the access points to the metrological relevant parts sealable.....

Is there a provision for receiving a stamp?.....

(II) Determination of Maximum Permissible Errors (mpe)

Procedure:

Record the value of the load at which mpe is to be determined ----- L

Record the verification scale interval of the machine under test (e or d) -----d

Divide L by d and record the result ---n

Compare the resultant value (n) with the values in the table below as per the instrument class;

Values of maximum Permissible error on initial verification

Maximum permissible errors on initial verification	Class I	Class II	Class III	Class IIII
$\pm 0.5 e$	$0 \leq m \leq 50000$	$0 \leq m \leq 5\ 000$	$0 \leq m \leq 500$	$0 \leq m \leq 50$
$\pm 1.0 e$	$50000 < m \leq 200000$	$5\ 000 < m \leq 20\ 000$	$500 < m \leq 2\ 000$	$50 < m \leq 200$
$\pm 1.5 e$	$200000 < m$	$20000 < m \leq 100\ 000$	$2\ 000 < m \leq 10000$	$200 < m \leq 1\ 000$

The corresponding mpe factor is used to calculate the mpe at the given load.

Example:

Weighing instrument class – III

Weighing Instrument capacity –15kg

Load position being tested (L)...5,000g point.

Verification scale interval of machine (d or e) -5g

The mpe values is calculated as follows;

$$\begin{aligned}n &= L/d \\ &= 5000g/5g \\ n &= 1000\end{aligned}$$

Check in the table where the value 1000 falls within class III

Value falls in the second row range of between 500 to 2000.

Check for the corresponding value of the maximum permissible error under the Maximum permissible error column.

The value is $\pm 1.0 e$

Hence at the load of 5000g for a 15kg instrument with $d(e) = 5g$, the mpe is;

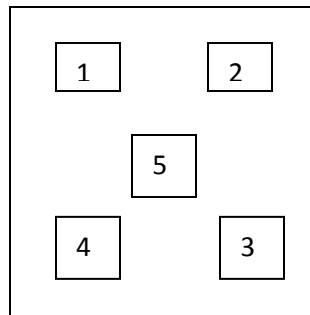
$$\pm 1.0 \times 5 = \pm 5.0 g$$

(III). TESTING

1. ECCENTRICITY TEST (Using weights)

Scale interval(d) ----

Load disposition positions on the load receptor



Location	Load,L (g)	Indication, I (g)	Error, E	mpe
1				
2				
3				
4				
5				

$$E = I - L$$

$$\text{If } |E| \leq |mpe|$$

Passed

Failed

2. WEIGHING PERFORMANCE TEST

Scale interval(d) ----

$$E = I - L$$

Load, L	Indication, I		Error, E		mpe
	↓	↑	↓	↑	

Check if $|E| \leq |mpe|$ then instrument is correct

Passed

Failed

3. DISCRIMINATION TEST

Scale interval (d) ----

Resolution during test (smaller than e): ---

Load, L	Indication, I_1	Extra load, = $1.4d$	Indication, I_2	$I_2 - I_1$
(Min)=.....				
1/2Max=				
Max=.....				

If $|I_2 - I_1| \geq d$ then instrument is correct

Passed

Failed

4. REPEATABILITY TEST

Scale interval(d) ----

$$E = I - L$$

Load(about 0.8Max)

	Indication of Load, I	E
1		
2		
3		

$E_{\max} - E_{\min}$ (weighing 1-3)

mpe

If a) $E \leq mpe$ and

b) $E_{\max} - E_{\min} \leq$ absolute value of mpe then instrument is correct

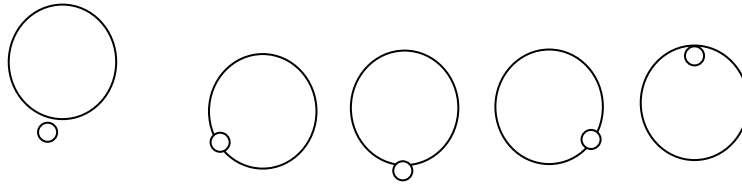
Passed

Failed

5. TILTING TEST

The instrument shall be set to zero in its reference position and two weighings shall be carried out at a load close to the lowest load where the maximum permissible error changes, and at a load close to Max. The instrument is then unloaded and tilted longitudinally and set to zero. The tilting shall be equal to the limiting value of tilting. Weighing tests as described above shall be performed. The test shall be repeated with transverse tilting.

Spirit Level Position:



Load, L		Reference Position	Tilted Position with limiting value of tilting				
		1	2	3	4	5	
Unloaded	I						
	E ₀						
Loaded	I						
	E						
Loaded (Max)	I						
	E						

2e =(unloaded)

mpe =..... (loaded)

Mpe.....(max)

|E₀₁ - E_{0n}|max =

|E₁ - E_n|max =

|E₁ - E_n |max =.....

where n =2,3,4,5

Note: E₀₁ & E₁₋ refer to errors at reference positions whereas E_{0n} & E_n refer to errors at tilted positions .

Check if the differences are a) ≤ 2 e for the unloaded instrument

b) ≤ absolute value of mpe for the loaded instrument

Passed

Failed

