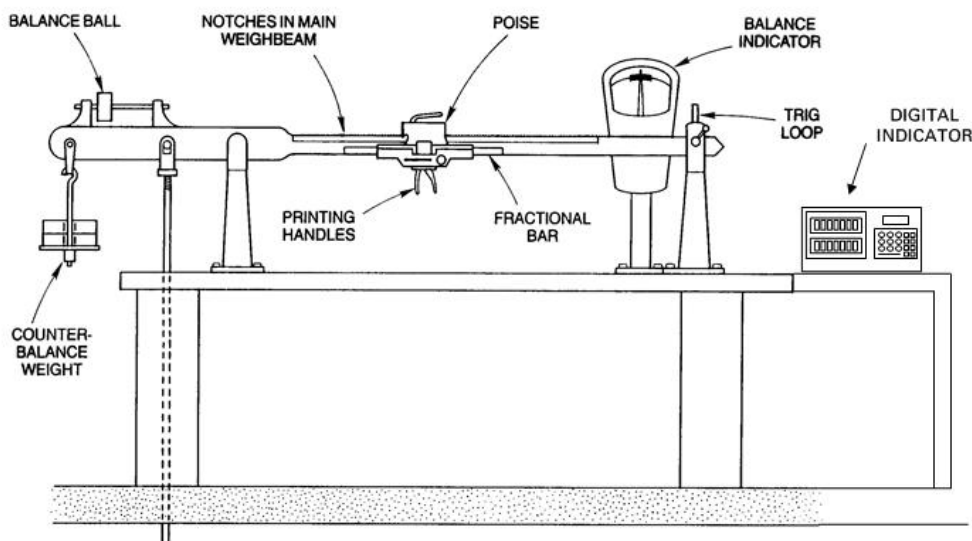


## Interpretations of the Handbook 44 Scale Code

**T.N.4. Agreement of Indications.** This handout will serve to interpret the three paragraphs of this section that apply to both marked and unmarked indicators and recorders.

**T.N.4.1. Multiple Indicating/Recording Elements.** – In the case of a scale or weighing system equipped with more than one indicating element or indicating element and recording element combination, where the indicators or indicator/recorder combination are intended to be used independently of one another, tolerances shall be applied independently to each indicator or indicator/recorder combination.

T.N.4.1. applies to an installation that includes two or more indicating and/or recording elements that are intended to be used independent of one another. An example is a scale equipped with a digital indicator (that is used in normal weighing), but which also has a “standby” or “backup” weighbeam or dial (which is intended to be used during power outages or other failures of the digital indicator). When this is the case, each of the indicators is to be tested separately, and tolerances are applied to each of the indicators independently. Thus, whichever indicator is in use, the scale will weigh within tolerance. It is not intended that the indicators “agree” with each other at any given test load.



**Figure 1**

### **Vehicle scale with digital indicator and weighbeam**

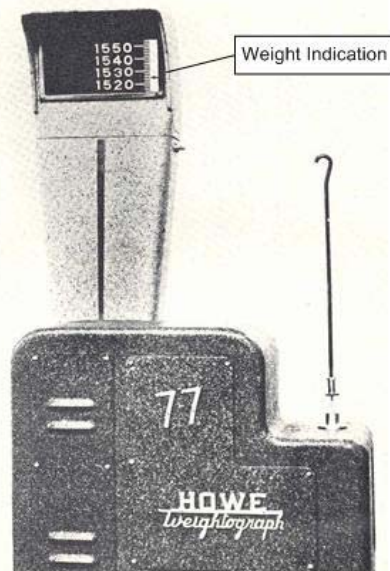
- Each indicator, or indicator/printer combination, is a separate element that can be used, balanced, and operated independently.
- The value of the scale division ( $d$ ) and the maximum number of scale divisions ( $n_{\max}$ ) on the indicators do not have to be equal as long as each complies with H44 specifications.
- Each indicator is tested separately and must be within applicable tolerances.

**T.N.4.2. Single Indicating/Recording Element.** – In the case of a scale or weighing system with a single indicating element or an indicating/recording element combination, and equipped with component parts such as unit weights, weighbeam and weights, or multiple weighbeams that can be used in combination to indicate a weight, the differences in the weight value indications of any load shall not be greater than the absolute value of the applicable tolerance for the load, and shall be within tolerance limits.

T.N.4.2. applies to a scale or weighing system that is equipped with two or more means of indicating the weight of the same load, and it is intended that these means be used in combination. In applying this paragraph, whatever combination of indications is used to determine the weight, the value obtained must be within applicable tolerances, and the difference between the combinations of indications must be insignificant.

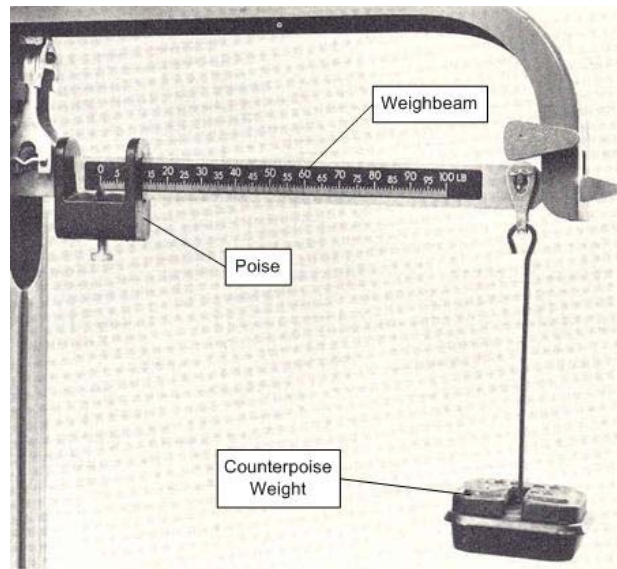
For example:

1. Weighbeams with a “weight-o-graph”
2. Weighbeams with counterpoise weights
3. Dials or fans equipped with tare and/or capacity bars
4. A dial equipped with “drop” or unit weights that increase the weighing capacity of the indicator.
5. Batching systems equipped with two or more weighbeams.



**Figure 2**  
**weight-o-graph**

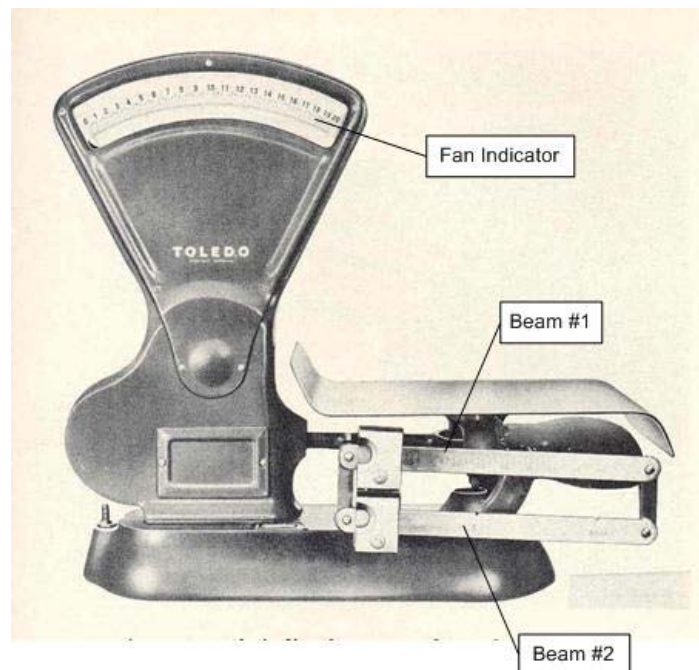
The weighbeam and weight-o-graph must both be within tolerance and must agree with one-another within the absolute value of the applicable tolerance.



**Figure 3**

**Beam with counterpoise weights**

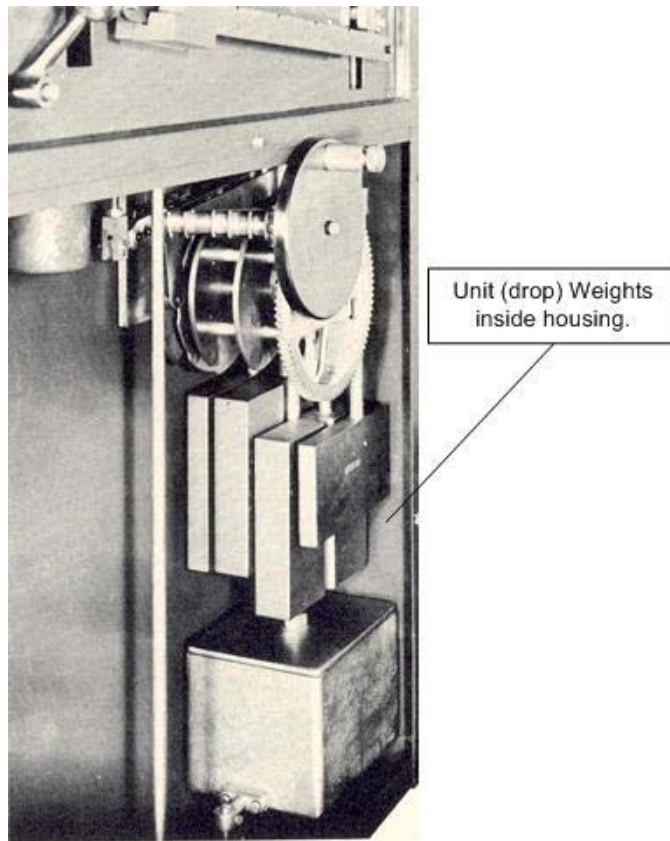
The beam indication must be within tolerance, and must agree with counterpoise indications within the absolute value of the applicable tolerance.



**Figure 4**

**Fan scale with two beams**

The fan, beam #1 and beam #2 must all be within tolerance, and must all agree within the absolute value of the applicable tolerance.

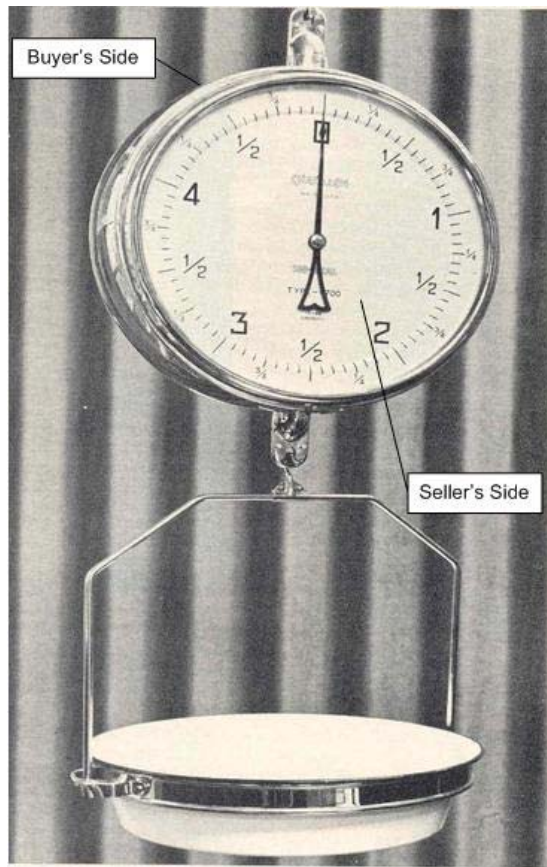


**Figure 5**  
**Unit (drop) weights**

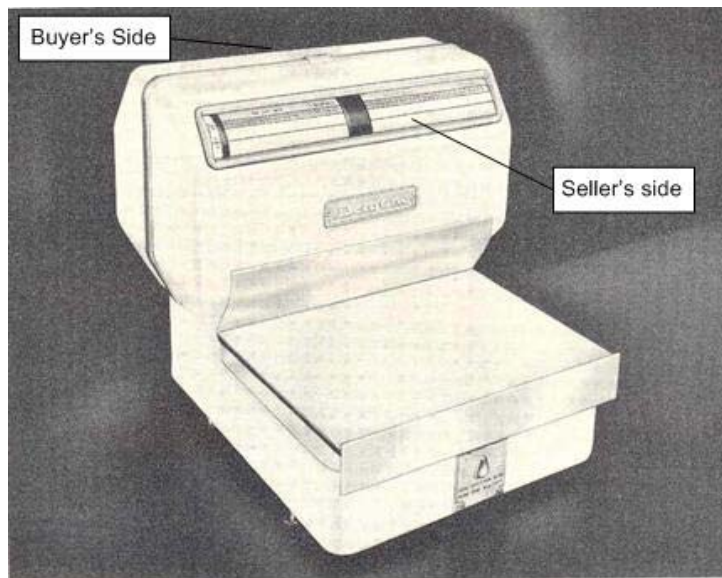
The individual components (fan, dial, beam, unit weights, etc.) must all be within tolerance, and must all agree within the absolute value of the applicable tolerance.

**T.N.4.3. Single Indicating Element/Multiple Indications.** – In the case of an analog indicating element equipped with two or more indicating means within the same element, the difference in the weight indications for any load other than zero shall not be greater than one-half the value of the scale division (d) and be within tolerance limits.

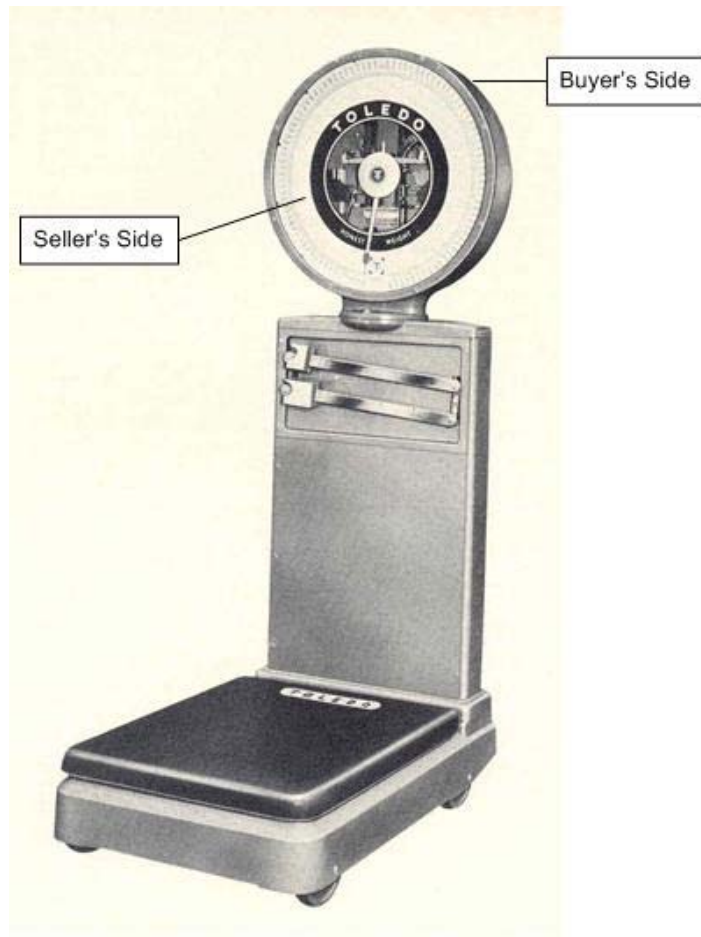
T.N.4.3. applies to a scale or weighing system with two analog indicators, both of which display the weight of the same load (usually there is one indicator for the buyer, and one for the seller). Since two different parties are observing a weight indication for the same load at the same time, the difference between the indications must be minimal. Since all analog indications for a given load are to be read to the closest graduation, the maximum difference to be allowed is  $\pm$  one-half scale division (d). Both values must be within the applicable tolerance.



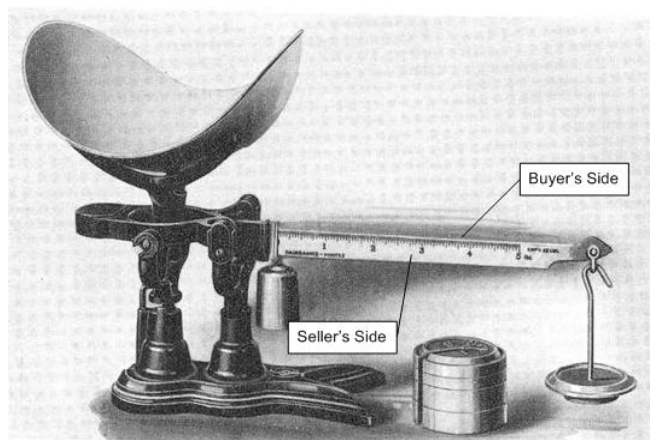
**Figure 6**  
**Hanging Scale**



**Figure 7**  
**Drum Computing Scale**



**Figure 8**  
**Portable Platform Scale**



**Figure 9**  
**Bench (Counter) Scale**

Other requirements for agreement.

In some circumstances there may be an analog indicator equipped with a printer. When this is the case, General Code § G-S.5.2.2.(b) requires that a digital value (recorded in this case) coincide with its associated analog value to the nearest scale division (d).

There are several circumstances where there may be two or more digital indications of the weight of a single load. For example: There could be two digital indicators (one for the seller and one for the buyer); or a digital indicator could be equipped with a printer. When this is the case, General Code § G-S.5.2.2.(a) requires the complete agreement of all digital values that indicate the weight of the same load.