

# PENKO Engineering B.V.

Your Partner for Fully Engineered Factory Solutions

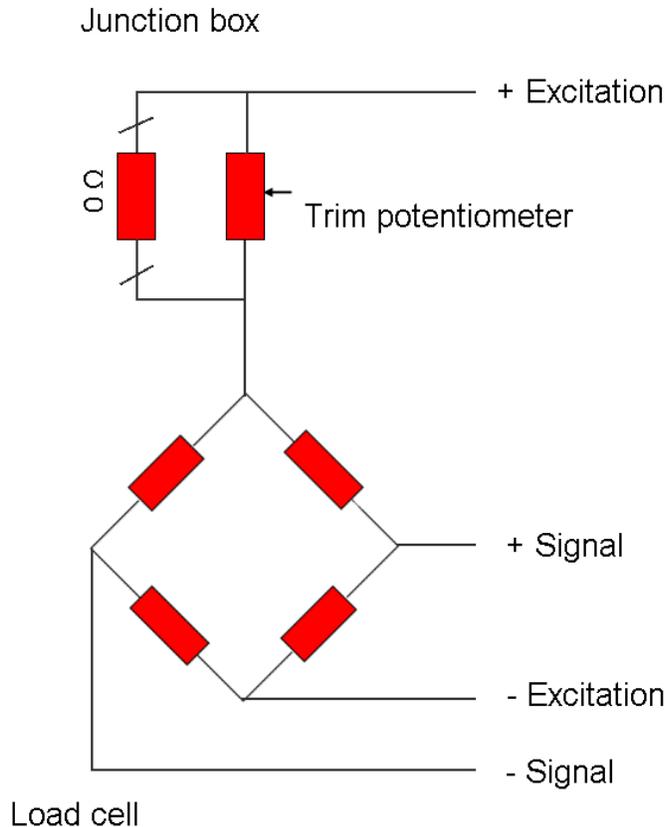


How to...  
Preform 'corner correction', and  
excitation trimming



**PENKO**

an ETC Company



**Corner correction** is used for platform weighing applications where all four load cells on a platform have to be identically trimmed to give a consistent output.

**Excitation trimming** is a simple and proven method of trimming load cells to achieve a common output response.

There are basically two methods of achieving an excitation trim procedure, and both methods in principle are the same.

Excitation trimming adds series resistance to the excitation circuit of the load cell. This is done by establishing which load cell has the lowest mV/V output, then correcting the other load cells with a series resistor. With the correct value resistance added, all the load cells behave equally and produce the same mV/V outputs.

The schematic diagram shows a part of the junction box, in this example a type KVD. In the excitation shows a resistor of 0 Ohm and a trim-potentiometer. Remove the 0 Ohm resistor to commence the cornering procedure. The potentiometer is adjusted to give the required value. When the setting is correct, the potentiometer is set with a locking fluid (nail varnish is OK).

We recommend that you keep careful notes of what has been done and retain these notes for future reference.

### Method A - With test weights:

This method can be used in field replacement of load cells or commissioning of weighing systems with light weighing capacities.

1. Check the system you want to calibrate carefully to ensure the wiring and the mechanics are correct.
2. Remove the 0 Ohm resistors.
3. Turn the potentiometer fully for all the load cells so that the resistance is as low as possible.
4. Put your calibrated test weights at a corner of your weighing system and note the result. Do this for each corner.
5. Once the lowest output corner is located, the other load cells are trimmed to match by physically loading with the same test weights again and adjusting the value with the potentiometers.
6. The load cells are now matched with the trim potentiometers and you may proceed with the normal zero and gain adjustment.

### Method B - By calculation.

For a "calculated trim" you need calibration certificates supplied with each cell by the manufacturer. After using these certificates, file them correctly since you may need them for future to reference. You will also need a very accurate voltmeter.

1. Measure the excitation voltage of the indicator you are using. You need this value for some simple calculations. As an example, let's use 10.017 V DC.
2. Note down the mV/V values of all the load cells you are using.  
For example:
  1. Load cell 1 = 1.999 mV/V
  2. Load cell2 = 2.003 mV/V
  3. Load cell3 = 1.997 mV/V
  4. Load cell4 = 2.001 mV/V.

*You can see that load cell 3 is the weakest of all the cells in use here. Thus cell number 3 will not be trimmed.*
3. Now you can calculate the excitation factor by multiplying the lowest mV/V by the measured excitation Voltage as follows:  $10.017 \text{ V} \times 1.997 \text{ mV/V} = 20.004 \text{ V}$ .
4. Calculate the excitation values required for the other load cells as follows:
  1. For load cell 1:  $20.004 \text{ V} / 1.999 \text{ mV/V} = 10,007 \text{ V}$ .
  2. For load cell 2:  $20.004 \text{ V} / 2.003 \text{ mV/V} = 9,987 \text{ V}$ .
  3. Leave load cell 3 alone
  4. For load cell 4:  $20.004 \text{ V} / 2.001 \text{ mV/V} = 9,997 \text{ V}$ .
5. Now change the excitation voltage for load cells 1,2 and 4 using the voltmeter to set the required value.
6. Your weighing system has been 'corner corrected' and we recommend that it is now checked with calibration weights.
7. The final step is to proceed with the usual zero and gain adjustments





## About PENKO

Our design expertise include systems for manufacturing plants, bulk weighing, check weighing, force measuring and process control. For over 35 years, PENKO Engineering B.V. has been at the forefront of development and production of high-accuracy, high-speed weighing systems and our solutions continue to help cut costs, increase ROI and drive profits for some of the largest global brands, such as Cargill, Sara Lee, Heinz, Kraft Foods and Unilever to name but a few.

Whether you are looking for a simple stand-alone weighing system or a high-speed weighing and dosing controller for a complex automated production line, PENKO has a comprehensive range of standard solutions you can rely on.

## Certifications

PENKO sets high standards for its products and product performance which are tested, certified and approved by independent expert and government organizations to ensure they meet – and even – exceed metrology industry guidelines. A library of testing certificates is available for reference on:

[http://penko.com/nl/publications\\_certificates.html](http://penko.com/nl/publications_certificates.html)



## PENKO Professional Services

PENKO is committed to ensuring every system is installed, tested, programmed, commissioned and operational to client specifications. Our engineers, at our weighing center in Ede, Netherlands, as well as our distributors around the world, strive to solve most weighing-system issues within the same day. On a monthly basis PENKO offers free training classes to anyone interested in exploring modern, high-speed weighing instruments and solutions. A schedule of training sessions is found on: [www.penko.com/training](http://www.penko.com/training)

## PENKO Alliances

PENKO's worldwide network: Australia, Belgium, Brazil, China, Denmark, Germany, Egypt, Finland, France, India, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Syria, Turkey, United Kingdom, South Africa, Slovakia Sweden, Switzerland and Singapore. A complete overview you will find on: [www.penko.com/dealers](http://www.penko.com/dealers)

