



WEB-TECH

Magnetic Pick Up Installation Notes.

Features Include.

- Self-Generating. No external power required.
- Wide operating temperature range.
- Epoxy encapsulated.
- Mechanically rugged.
- Impervious to dirt, oil and water.
- No maintenance required.



Conveyor belt scale electronic controllers (integrators) require two inputs from the field. The load cell signal, which is representative of the weight of product on the belt and the signal from the magnetic pick up device. The two signals are integrated by the controller to produce the instantaneous mass rate and accumulated total. If either is missing then the result will be zero mass rate and no total. If either is inaccurate the resulting mass rate and accumulated total will be inaccurate.

A Magnetic Pickup consists of a permanent magnet, a pole-piece, and a sensing coil all encapsulated in a cylindrical case. An object (*target*) of iron, steel, or other magnetic material, passing closely by its pole-piece causes distortion of the magnetic flux field passing through the sensing coil and pole piece, which in turn generates a signal voltage. The magnitude of the signal voltage depends on the relative size of the magnetic target, its speed of approach, and how close it approaches. The polarity of the signal depends on whether the target is moving toward or away from the pole-piece. The output from the magnetic pick up should look like the output voltage shown in the sketches below.

It is important that the magnetic pick up be installed correctly to avoid erroneous signal problems. The air gap must be set to 0.125mm ($1/8''$). Gaps greater than this can cause loss of signal or poor peak to peak voltages resulting in inaccurate product weighing. Poor sprocket alignment will result in a varying air gap, this could in turn will result in a varying output frequency and hence a varying calculated belt speed. Low sprocket speed will also result in either the device not working or vary in calculated belt speed.

The best method of testing the installation is to look at the resulting output wave form with an oscilloscope. If an oscilloscope is not available then looking at the tachometer frequency displayed in the controller, can provide an indication of correct magnetic pick up installation. A steady frequency display (note controllers show the signal to a precision of 3 decimal places, a variation of +/- 3Hz is acceptable.) over one whole belt revolution is normally indicative of a satisfactory magnetic pick up installation.

