



#### MONITOR NEWS

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## How Many Figs Does It Take To Equal 150 Newtons?

### Applications for Vibratory Bin Level Sensors



Vibratory point-level sensors or probes are great products for powder and bulk solids applications where the material being sensed has a very low dielectric constant that might be lower than an RF Capacitance probe could detect. They are also good alternatives for rotary paddle bin indicators in application with extremely low bulk density values. Expanded poly-styrene beads have a bulk density that is typically less than 2 lbs/ft<sup>3</sup> (.032g/cm<sup>3</sup>). Paddle type sensors and especially high level paddle type sensors would very likely cavitate when covered with material this light and give no indication that material is indeed present.

What if we have an application for a bin whose material frequently changes and we were using a rotary paddle bin indicator? If the bulk density decreases, at some point the paddle being used will start to cavitate and a paddle with a higher surface area (increasing the effective sensitivity) would need to be installed to allow the paddle type sensor to regain functionality. There will be a lower limit of bulk density vs. area of the paddle that once reached will ultimately render the paddle type sensor useless for the application in question. If an RF Capacitance probe is being used in silos, hoppers or bins and the material is changed to something with a radically different

OK, here come the Newtons. Our model PZP has two separate force limitations. The probe must be installed such that the narrow edge (knife edge if you will) of the probe is always pointing up. The PZP can withstand 1000 Newtons max in this plane but will only withstand a maximum fore of 150 Newtons along and perpendicular to the axis on the wide side of the probe. Our VibraRod probe is constructed using a hollow tube that is cylindrical shape and is rated at 500 Newtons max in any plane along and perpendicular to the axis.

Generally speaking, either probe should be shielded from direct impact from material falling directly on the probe during the filling process depending upon material characteristics. There are suggestions for doing so in our Installation & Operation Bulletins for these products.

So, when you need or want to use a vibratory probe, be mindful of all forces the probe will be exposed to during fill and also when material is being drawn out. How and where the probe is mounted to the vessel will have a direct influence on the amount of force the probe is subjected to when the material contained in the vessel is in a dynamic state. Mass flow silos and hoppers will produce more force against the probe than its funnel flow counterpart would exhibit. Properly placed baffles will correct this problem. Also determine if there will be any significant side or lateral horizontal loads that either require silo modification or require the selection of a different style of probe so ensure that maximum force specifications are never exceeded. If you find yourself needing or desiring a vibratory probe and you have determined a need to install protective baffles or shields but you are unable to install them, you should consider using a top mounted cable extension model or a rigid pipe extension model. A cable extended probe will allow the

## TRIVIA

### 1st Quarter Question:

At which university was the first NCAA Tournament championship game held at on March 27, 1939?

Win an item by E-mailing us the correct answer at [monitor@monitortech.com](mailto:monitor@monitortech.com)



dielectric constant, probe re-calibration might be required. This is where a vibratory probe is a great choice because there is no calibration per se. Many vibratory probes on the market do have a general sensitivity setting that can be changed but that is an adjustment the rarely needs to be set differently than the factory default.

The main downside of a vibratory probe is that it is generally more expensive than a paddle or RF Capacitance type of sensor. Another negative feature of a vibratory probe, and main point of this article, is that models that are high in sensitivity and able to detect materials with very low bulk densities are typically not as physically strong in comparison to other point level technologies. So when we use a vibratory probe, we must strictly adhere to the manufacturer's installation guidelines.

According to a conversion website I frequent:

150 Newtons = 33.7 pound-force.

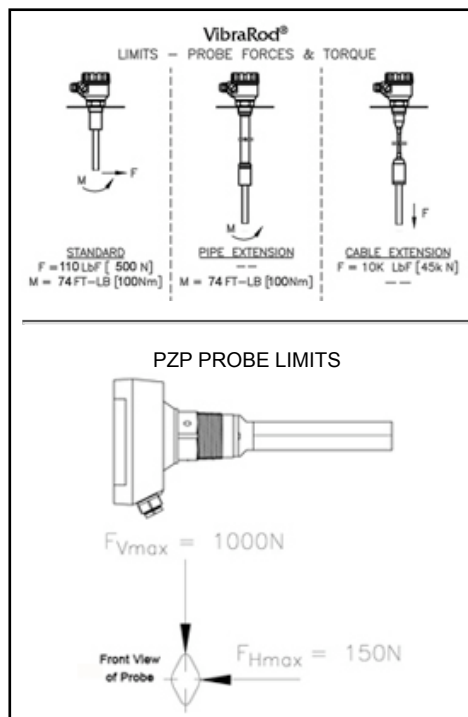
500 Newtons = 112.4 pound-force.

1000 Newtons = 224.8 pound-force.

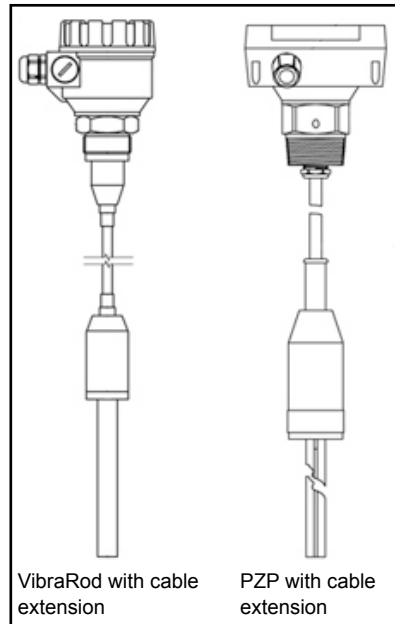
"So what?" you exclaim.

One of the most common reasons for vibratory probe failure is from the probe having been subjected to forces beyond their design limitations. Such a condition can actually bend the probe rendering it useless. Other modes of failure include broken components within the probe housing or within the probe element if it is a rod type or diamond shaped design.

Below are examples of parameters for vibratory probes.



actual sensing portion of the probe to hang freely at the desired point of material detection without exceeding specified lateral force limitations. See examples below.



Now if this seemed all too gloomy for you, relax. We have many successful applications in materials with bulk densities as high as 100 lbs/ft<sup>3</sup>. You just need to think about the application and install the probe in such a manner that its limitations are not exceeded. When in doubt, give our Technical Support department a call at 800-766-6486 for advice and guidance. We are here to assist you by providing practical solutions on and at every level we can.

For more information on VibraRod, please visit [http://www.monitortech.com/product\\_p\\_vrod.shtml](http://www.monitortech.com/product_p_vrod.shtml)

For more information on the PZP, please visit [http://www.monitortech.com/product\\_p\\_vpzp.shtml](http://www.monitortech.com/product_p_vpzp.shtml)

Or call us in the USA at 800-766-6486 or from anywhere at 630-365-9403. Also, check out our Level Measurement blog at <http://monitortech.typepad.com>.



Greg DeRudder  
Product Manager

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## Upcoming Shows

(Visit Monitor at the following tradeshows)

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[Visit show web site - www.ProcessTechExpo.com](http://www.ProcessTechExpo.com)

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## Tech Tip: Moving SiloTrack Inventory Management Software From One PC to Another

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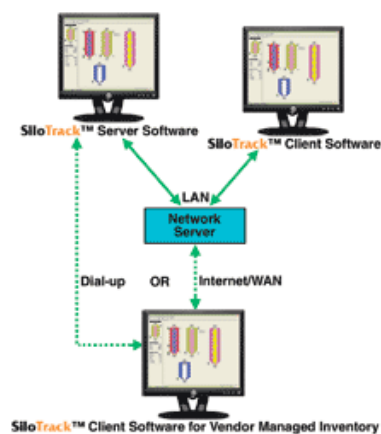
**SiloTrack™  
Inventory Management Software**

If it is time to up-grade your PC this brief will help you manage the re-installation of the SiloTrack inventory management program. A SiloTrack installation actually consists of hardware and software. When moving SiloTrack to a different PC the hardware must also be moved.

**SiloTrack consists of:**

- > Interface hardware which is the RS-485 communication converter/adapter
- > Security Key hardware
- > Application software; "The SiloTrack Server Program"
- > Data files

The interface hardware device allows the SiloPatrol sensor(s) to communicate with the PC. Older systems utilized an internal PCI serial card RS-485 adapter. Newer systems use an external



First, install the Sealevel drivers for the RS-485 converter/adapter for your particular model. Next, run the SiloTrack Server installation CD. Follow the Set Up Wizard to complete the installation if you wish to start over as if you were a first time user.

However, you can avoid needing to reprogram all of your silo dimensional information and other operational parameters by copying the following files from your old PC into the working SiloTrack directory of your new PC and into the C:/backup directory: silotrack3.mdb and silotrackdata.st3

USB to RS-485 converter 'box'/adapter. Simply uninstall the hardware from the old PC and prepare to install it on the new one. In all cases the drivers for the interface device will need to be installed onto the new PC before the hardware is physically installed/connected.

Remove the security key from the old PC. The older SiloTrack system utilized security key fit to the PC's parallel port. This small device has the appearance of a pass-through connector or gender change adapter. It will have to be physically moved to the new PC. In the event the new PC does not have a parallel port we do have a USB solution. Please contact Monitor if necessary.


The SiloTrack™ inventory management software can be used with Monitor's [SilPatrol®](#) cable-based level sensor and/or [Flexar®](#) guided wave radar continuous level sensor.

For more information on SiloTrack™, please visit:

[http://www.monitortech.com/product\\_c\\_c\\_st.shtml](http://www.monitortech.com/product_c_c_st.shtml)

Please visit our blog at . . .

<http://monitortech.typepad.com>

  
**Andy Bowman**  
Technical Services  
Manager



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## Featured Product:

### DustAlarm® Protects Filter Media & Blowers In Dust Collection Systems



The DustAlarm® particle emissions detector or "broken bag detector" is used for dust collection systems in a wide range of applications to monitor the exhaust of bag houses and other types of dust collection systems to identify when to replace filters in dust collectors due to a leak or failure. Detection of dust levels is critical to safety, maintenance, equipment operation, plant efficiency and perhaps most importantly, the environment. A bag house failure could possibly result in an expensive clean up, fines, damage control with your neighbors, and a loss of valuable material.

The DustAlarm broken bag detector uses time-proven triboelectric technology to continuously monitor the level of dust emission in dust collection system exhausts. Triboelectric measurement has been used for years to detect filter failures in bag houses. The triboelectric effect, also known as "particle impingement" or "frictional electrification", occurs when one material impacts or rubs another causing a charge transfer. When an increase in particle emission level exceeds the user adjusted setting an alarm is triggered as indicated by the unit's output relay changing state.

The DustAlarm has a unique extended insulator to guard against material build-up problems, as well as, a quick-disconnect mounting coupling to provide quick and easy installation and maintenance when needed.

For more information please visit:

[http://www.monitortech.com/product\\_pe\\_broken.shtml](http://www.monitortech.com/product_pe_broken.shtml)

[Click Here](#) to download a "Technical Tip" article regarding "**How to detect leaking or broken filters with a triboelectric monitor**".

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**SecureCare™** PROFILE

**Name:** Nikki Markel

**DEPT:** Manufacturing

**ANIV:** Oct 15, 1995



**Interview**

**Q:** Where are you from originally?

**A:** San Diego, CA but I have spent most of my life in Elburn, IL.

**Q:** What is your favorite food?

**A:** I enjoy having salads.

**Q:** What consumer item reminds you most of Monitor?

**A:** Corn.

**Q:** Previous positions you have held at Monitor?

**A:** I am currently working with the G Series diaphragm type level switches.

Before that I worked in "paddles".

**Q:** What is the best aspect of working at Monitor?

**A:** Everyone is very friendly.

**Q:** Current Projects?

**A:** I am learning to become more proficient on the computer.



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