

HENNING MOBILE WEIGHT WATCHER SYSTEM -- MUST READ INFORMATION

Consistent, reliable and repeatable tool for weighing installed elevator equipment AND equalizing loads on all suspension means (ropes and belts). Correct use of the tool ensures accuracy:

IMPORTANT THINGS TO KNOW AND DO AND A FEW NOT TO DO:

1. Ensure all users of this equipment are instructed on how to use the system; how to attach and care for the sensors. They are electronic measuring devices and must be handled with appropriate care. Henning and Wurtec provide manuals, quick guides (like this) and video tutorial support.
2. Never force Sensors onto rope or belt. If clamping is too tight, you are risking bending or breakage, do NOT force. Adjust knob setting to more open. Goal is to have a firm clamp (rope/belt deflection). Setting tape af fixed to the sensors is just a guide (and used only when the main clamp is in the full open position). Good practice to open the sensor enough to fit over the rope, turn knob to tighten so it gently holds, then try closing the clamp. This method gets very close to the firm clamp needed - confirmed by correct green ring position (see Manual MSM12 or later in this reference for more detail).
3. ALWAYS use correct sensor size (measuring range and type). Consider rope as well as suspension. Measuring a load outside of the sensor's range will invalidate your measured and total weight and may damage or distort your sensor. An LSM1 sensor attached to any rope with load as high as 2,000 lbs will likely need to be recalibrated. Typically in North America, LSM1 and LSM-XL sensors cover the range of normally installed ropes. LSM1's measure loads between 0 and 1,100 lbs. Remember that 2:1 reduces actual loads to one-half, LSM1 sensors are good to use on relatively lighter systems and ropes 5/8" or smaller. Knowing an estimate of total load you will measure (Car or CWT--which we know is heavier), divide that weight by number of ropes to get expected average load on your ropes. Keep in mind that un-equalized ropes and worn and unequal sheave groove depths can put a rope load outside of measuring range. LSM-XL sensors have measuring range between 400 lbs and 4400 lbs. Top end is almost never a factor, but having a load under 400 lbs. happens. For belt systems, be aware there is a completely different sensor for currently existing Otis belts and for Schindler belts.
4. Always attach one sensor on each and every rope or belt. It does not work to try to weigh with less sensors than ropes and then extrapolate; as each sensor deflection affects balancing and the total measurement. Mixing sensor types in one measurement may work but, be cautious about working within measuring ranges.
5. Be sure sensors are not attached in or too near (within ~ 8 inches/150mm) to any curvature of rope or belt (i.e. too close to hitch-point). It's also very important that sensors do not make contact with each other. Any contact will distort measurement. In tight hitch-plate arrangements, it's OK to stagger height attachment and go around side and backside of ropes. Whatever needs to be done to avoid touching.
6. Be aware that comparison to other methods of weighing can be misleading. Experience has shown other methods can be wrong. See article and other presented examples. When sensors are in good working condition, in calibration, and usage procedures are followed, you will measure weights within +/- 2.5% of Full Scale of these devices.

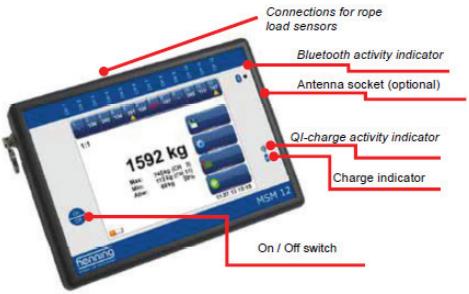
Benefits of Using the Weight Watcher System:

- Increase rope life
- Save time
- More convenient and accurate than traditional methods of tuning ropes (built in wizard)
- Reduce maintenance costs
- Improve ride quality
- Easy to take from job to job
- Weigh cars and counterweights without having to hang them

When tool system measurement capabilities are understood and tool use procedures are followed accuracy and reliability of the system can be assured.

STEP 1

- Prepare components and settings of the system for use:
- A. Before each day of work with this equipment, be sure MSM12 is fully charged. Li-Ion battery pack charges like a mobile phone. Check condition of sensors. Quick validation method is to plug sensors in one at a time and observe consistency of digital load for each sensor, or use Cal Checker rod for LSM-XL sensors.
 - B. **Rope Sensors**- Select correct size (LSM1 or LSM XL are most common) according to measurement and load range capability of the sensors. Assure attached USB cords are intact and there is NO visible damage.
 - C. **Power** - Hold the ON/OFF button for 3+ seconds.
 - D. Once main display screen appears, use the CONFIG button to select:
 - language, date, time, tensioning
 - appropriate settings for sensor type is automatically taken
 - select your preferred unit of measure. Note that full numbers for pounds will not be displayed on top line (not enough screen area); you will see a decimal number as a multiple of a short ton (2000 lbs.)
 - be sure to set suspension ratio of your system on the main screen



Tolerance level is set by the user. 5% recommended for 1:1 and 10% for 2:1

NOTE: Setting Tolerance: This sets the tolerance range that is acceptable to the relative range of rope equalization you would like to achieve. A smaller (tighter) tolerance (i.e. 5% or less means you will spend more time making adjustments to achieve the tolerance. If your elevator system is more demanding, you may set a lower tolerance. If time is a more important issue, set a higher tolerance. This setting simply sets ranges (dotted lines top and bottom) of the rope wizard. Tolerances should be reachable after one or two adjustments and a run of the elevator (see full manual for more detailed information). On some 2:1 systems it may not be possible to achieve better than 20% if the sheaves are badly worn.

STEP 2

IMPORTANT! An important part of the measurement process is the attachment and setting of the rope sensors (See diagrams and Step 3)

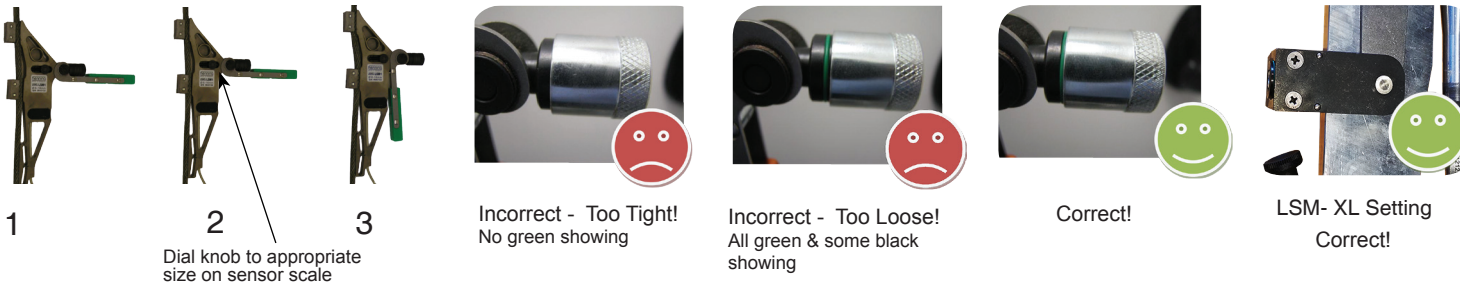
STEP 3

Ideal goal is to achieve a setting on, but not covering, the green line, in the middle, with no visible black area.

1. Each sensor should be fitted over the rope and adjusted first to the rope size with the **clamp open (DO NOT adjust when closed)**.
2. Dial the knob to appropriate size on the sensor scale i.e.(1/2" (12.7 mm) for 1/2" rope).
3. Close the sensor clamp into place and check your settings.
Note: If this does not result in acceptable alignment to the green line, open the sensor clamp and make small knob adjustments as needed. (DO NOT adjust when closed)



****IF CLAMP DOES NOT CLOSE RELATIVELY EASY, SOMETHING IS WRONG, DO NOT FORCE IT TO CLOSE.****

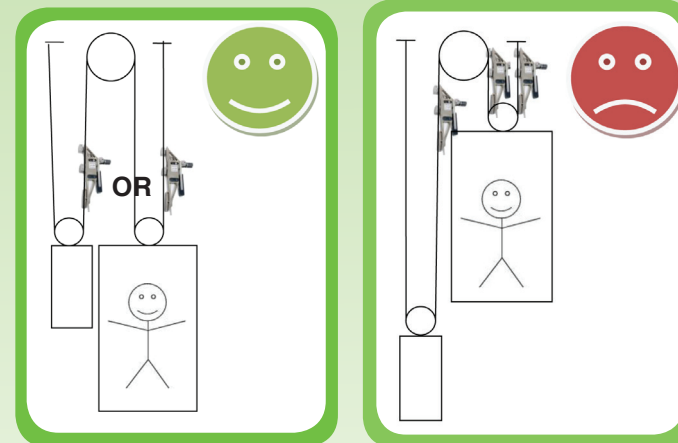


Henning has developed a range of sensors supporting this system. Visit the Specialty Products section at wurtec.com to view the different options.

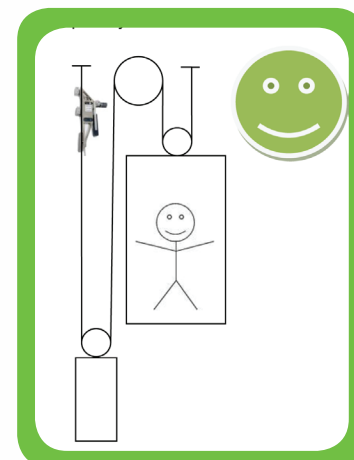
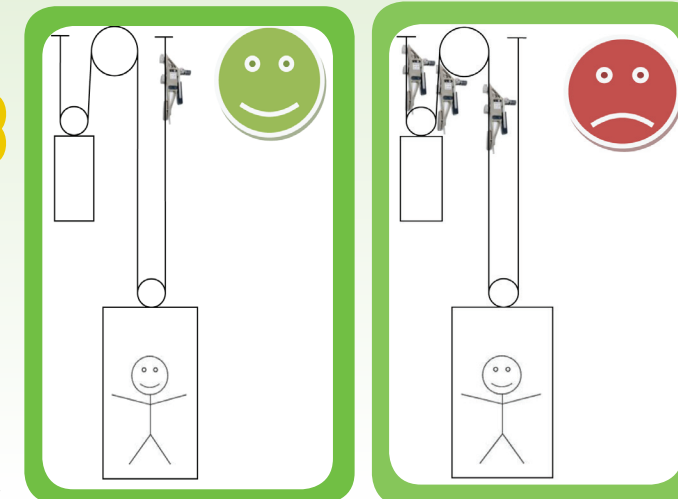
weight watcher

ROPELOAD MEASUREMENT SYSTEM

Weight Measurement



Rope Adjustment



NOTE: Similar principles apply to 1:1 Roped Systems.

STEP 4

NOTE! When using the LSM 1 sensors, 2.5% of 1,100 lbs. is 28 lbs. and with a 4 rope system, the total possible deviation could be 112 lbs. (Not a common occurrence with the normal expectation of combined plus and minus impacts. Though this may occur: For 2:1 roped elevator, after adjustments, run the car up and down to verify the load distribution. Repeat to verify the load distribution. The goal is, always to set the longest possible sections of rope.

IMPORTANT! Set the sensors at least 8 inches away from the rope hitch point (shackles) - be sure that the sensors are not attached in a section that has any curvature associated with the shackle.

TROUBLESHOOTING

False measurement may also be caused by friction on sliding guides and can change the weight by up to 20% of the rated car load. If an elevator has slide shoes, tension can remain in the guides and can change +/- the weight in the ropes displaying a false measurement.

Check the accuracy of the measurement by a firm jump or shake of the car and observe whether the measured weight changes noticeably.

The Weight Watcher User Manual describes how to account for this impact-travel up (or down) at inspection speed for a few feet (enough to reach speed and not just a jolt movement) and observe the total weight displayed. Then do the same in the opposite direction (down) and observe the displayed weight. Add the two weights together and divide by two and you will get the accurate weight with the friction effect eliminated.

When using LSM-XL sensors, be sure to carefully follow the rope attachment sequence (covered in the full MSM12 manual). The left side opening gate must be set on attachment button before attempting to close the carter/main clamp (first clamping step). Top and bottom clamps are closed last. Don't forget this step or weights measured will be wrong!

STEP 5

Pay attention to the measured weight displayed at top of screen for each individual sensor. Measurement range of the sensors is very important - maximum measurable load for LSM 1 sensors is 1,100 lbs. If the individual sensor weight reaches or exceeds 1,100 lbs., the total measured weight of the car **will not be accurate**. This can occur with a relatively heavier car and the apportioned weight for each rope is high and approaching the 1,100 lb. maximum. This is not a common occurrence in most systems, however, ending up outside the range is possible; if rope loads are not equalized. In some cases, where the average load on each rope should be about 700-800 lbs, for example, but without equal tensioning there is one rope with less than 500 lbs. and one rope is outside of the measurement range, you can expect the measured total weight to NOT be accurate within the expected 2.5% +/- deviation of the sensors.

henning

weight watcher

Mobile Rope Tension & Weight Measuring System

Quick Reference Guide



** Shown with Cal Checker device.

Used to check relative measurement accuracy in the field.

** Align red dots on cable plug and receptable.

DO NOT force or pins will be damaged.

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