

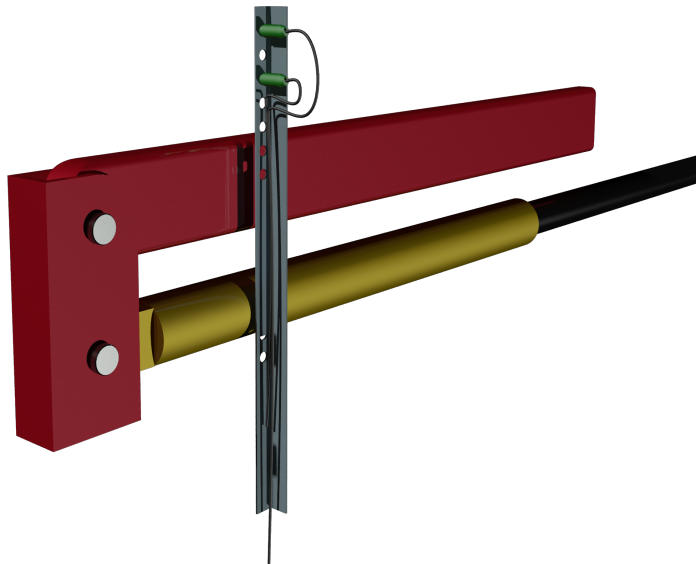
# Installation of dynamic PTE scales

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*The scales are supplied with 2 pieces of 250 bar pressure transmitters, PTE-S2 display unit, mounting foot, power cable, pressure transmitter cables, and 2 limit switches with aluminum rack and cables. The installation and basic settings of the display unit and the pressure transmitters must follow the operating instructions supplied with the scale. This section covers the installation of limit switches for dynamic wheel loader scales as well as settings related to dynamic weighing.*

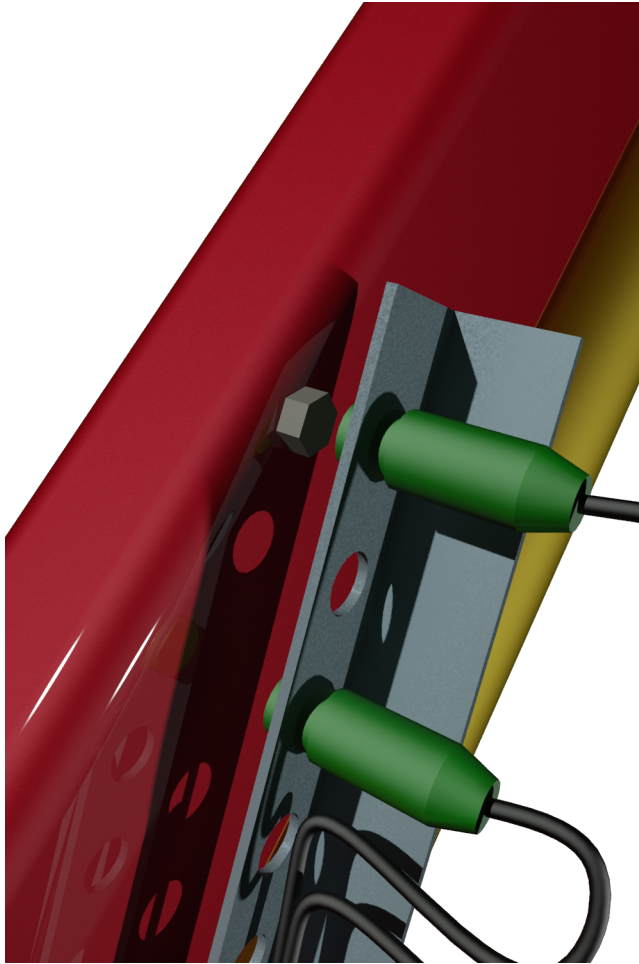
## Rack Installation

The limit switches are supported by an aluminum L-profile with holes for the limit switches so that the switching interval and height of the limit switches can be easily changed. Limit switches require a metallic "trigger part" as a counterpart. The possible trigger parts are, for example, a small welded plate or a nut welded to the boom, where a separate bolt is screwed. Thus, the contact distance of the inductive sensor can be adjusted. The trigger distance of the inductive limit switch is 8mm. Install the profile so that the lower limit switch and the trigger part face each other when the bucket is at least one meter from the ground. Weighing is to be started in a controlled manner with the bucket higher than normal running height. If the trigger part and the limit switch meet when the bucket is down, unnecessary weighing is constantly carried out. So consider what is the best height for weighing bucket and tiller.



## Installation of limit switches

The limit switches are wired so that the lower limit switch is marked "A" on the black branch connector and the upper mark is "B". The black splitter connector is connected to the 8-pin connector on the right side of the display unit with a separate supplied cable. The distance between the limit switches can be adjusted relative to one another by moving the limit switches between the holes. The distance between the switches affects the total weighing time. The final position of the limit switches should be tested experimentally.



## Settings in the menu

The settings in the menu are described in the operating instructions of the weighing scale, except for new changes to the dynamic wheel loader scale. These new changes include calibration and "dynamic" weighing mode. It is possible to use the same display device for several different weighing purposes and for this dynamic weighing purpose the fifth dynamic mode is used. In this weighing mode menu, pressure transmitter ranges are selected which are set to 250bar by default. In this menu, the area of the lifting cylinder is also set. Set the area ratio as calculated in the operating instructions. The "Dynamic" weighing mode menu can also be used to set the automatic load increase. This option is called AutoAdd.

In the calibration menu it is possible to select several different calibrations for different buckets or implements. By default, machine 1, which is not specifically named, is always used. To add a new implement or bucket, you must first change the implement in the calibration menu. Means that each setting that is changed in the menu changes to the current machine / tool memory location. For example, if you want to install a new bucket for which you want to make your own calibration, first select a new implement / tool from the calibration menu. Next, this particular machine / tool can be named. Then go back in the menu and select the rounding settings and other custom tuning values you want to use. It is important to remember to select a weighing mode to match that configuration. There are 5 weighing modes, of which the fifth is "dynamic". Check the area ratio.

Similarly to other PTE scales, the machine calibration is performed. Choose multiple calibration weights for your use. The more weights, the more accurate the scale becomes. Enter the number of weighing weights in the display unit. Zero weight is not counted as weight.

Warm up the system oils by lifting and lowering the bucket several times. The most important thing when calibrating and using the scale is that the lifting of the bucket is always done at the same speed. If there is any speed control feature for the lift, this is a good option to use. Otherwise, test the ratio of speed to accuracy. This means that you should try whether accuracy is better when lifting the load slowly with no gas or fast with the gas.

Calibrate the scale by starting with the zero point adjustment. This means that the bucket (or fork) is completely empty. Raise the bucket at the speed you choose and follow the on-screen instructions. Next, enter the mass of the first calibration weight on the screen and add the first (lighter to heavier) calibration weight to the bucket. Follow the on-screen instructions and lift the bucket at the same speed as before. Repeat this for each calibration weight. It is also possible for the calibration to be performed in reverse, so that the mass of the calibration weight is not displayed until the calibration has been performed for that particular weight. This allows calibration with unknown weights if it is possible to weigh the weights immediately after calibration. For example, there is a separate fixed weighing station, In this case, the load can be picked up during calibration, the calibration point tuned, the load placed on the weighing station and the weight displayed by the weighing station entered in the PTE scale display.

Calibration and weighing always indicate the elapsed time between the limit switches. This time is not seconds. This time can be used to compare the lifting speed. The goal is to keep this time as constant as possible, since the difference in lifting speed affects the accuracy of weighing.

## Quick installation guide for scales

1. Install pressure transducers on piston and rod side of lift cylinder.
2. Attach the pressure transmitter cables to the pressure transmitters and the other ends to the Y-splitter. The pressure side (piston) cable to connector number 1 and the counter-pressure side (rod) to connector number 2.
3. Connect the 5-pin cable with the angle connector to the display unit and the other end to the Y-splitter.
4. Connect the display power supply to the battery, behind the ignition key. Voltage range 8 - 30V. When using the printer, the operating voltage range is 12 - 30V.
5. Install the L-profile bar of the limit switches on the wheel loader frame so that the position of the limit switches is against the tiller.
6. Install the trigger part, such as the bolt, into the tiller so that the limit switches get contact with the part when the limit switch and the part are aligned and at the desired height. The trigger distance for the limit switch is 8mm.
7. Install the limit switch cables so that the upper limit switch is on the B terminal of the Y-splitter and the lower limit switch on the A terminal.
8. Connect the limit switch Y-splitter to the 8-pin connector on the display device.
9. Turn on the system and press the "OK" button for more than one second to enter the menu.
10. Navigate the menu with the + and - buttons. Go to menu item "calibration menu". Select tool / machine 1 and press "ok". Press the + or - button to move to "name the machine" and select the tool / machine number you want to name. Name the tools / machines with the name you want. For example, bucket, fork, etc.
11. Press the "CLEAR" button to return to the beginning of the menu. Go to "Weighing mode" and select mode 5. For standard delivery 250 bar pressure transmitters, press "OK" If another pressure transmitter is used, set the pressure range correctly. Set the cylinder area ratio using the formula on page 32 of the PTE Scales manual. Choose whether you want to use automatic weighting, Autoadd.
12. Test the scale by lifting and lowering the bucket. The display unit reads "weighing" when the lower limit switch is exceeded when going up. At the upper limit switch, the display indicates the weighing result and speed. If the speed is too fast, the display will read FAST and if the weighing is too slow, the display will read Timeout. If the everything is okay, calibration is performed. If necessary, change the height of the limit switches.

13. Go to the menu and select the calibration menu. Select the tool / machine where you want the calibration saved. Lower the bucket and select Calibration. Enter the number of calibration weights (1 to 9) and press "OK".
14. Raise the bucket empty at the selected weighing speed. Weighing should always be done at this same speed. You can check the speed reference value on the display after lifting.
15. After lifting, the display always shows the tuning value of the point in question, ie which pressure corresponds to which kilo. Press "OK" to move forward.
16. Use the + and - buttons to set the mass of the first calibration weight. When the weight is equal to the calibration weight. Press "OK". The mass of the calibration weight should be known as well as possible.
17. Lift the load and follow the on-screen instructions.
18. Repeat the above steps for all calibration weights.
19. If the calibration was successful, select Accept at the end. If there were errors in the calibration, or if you do not want to use the new calibration, select Discard.
20. The scale is ready for use.