



# CALIBRATION

## MANUAL

### LINESCALE-3



**LineGrip Corp. Ltd.**  
Hauptstr. 41  
67714 Waldfishbach  
Germany  
Phone: +49 - 6333 - 603 00 22  
Mobile: +49 - 170 - 996 91 92  
office@linegrip.com  
<https://www.linegrip.com>

Document ver. 1.1  
20.04.2023

## LineScale-3 Calibration

To perform a calibration you need a reliable (calibrated) reference scale and a tension rig that is capable of producing and holding the necessary loads precisely for at least 5-10 seconds.

The LineScale-3 offers two user calibration modes:

1. Simple Calibration with two calibration points 0 and x
2. Linear Calibration with 7 calibration points 0, and x1-x6

This manual covers an exemplified linear calibration cycle using 200 kgf increments (200, 400, 600, 800, 1000, 1200 kgf).

**Please note: calibration can only be done in kgf (kilograms force), so you must change your reference scale to this unit as well!**

You may use other increments to reduce or increase the max. calibration value. It is recommended to choose a max. calibration value (referred to as "End" point) slightly above the max. value you will probably be using the LineScale at. Refer to the suggested increments-table here:

7-Point calibration LS3									
Start	0	0	0	0	0	0	0	0	0
End	600	900	1200	1500	1800	2100	2400	2700	3000
Calibration points	0	0	0	0	0	0	0	0	0
	100	150	200	250	300	350	400	450	500
	200	300	400	500	600	700	800	900	1000
	300	450	600	750	900	1050	1200	1350	1500
	400	600	800	1000	1200	1400	1600	1800	2000
	500	750	1000	1250	1500	1750	2000	2250	2500
	600	900	1200	1500	1800	2100	2400	2700	3000

**It is highly recommended to use linear calibration points! Always use the same increment to the next calibration point. We use 200 kgf for the calibration example in this manual.**

Using alternating increments is possible but will not result in the highest precision calibration. Keep in mind that it's always better to have slightly deviating values, than incorrect values. Assuming your calibration method can't perfectly pin point each target value for whatever reason, so e.g. instead of reaching 200kgf you reach 213kgf, you must specify this exact load value 213kgf during calibration. It's better to deviate slightly than to give the LineScale "wrong" loads.

If you plan to never max out the 30 kN WLL of the LineScale you should choose to calibrate with a lower end point to get the best possible precision out of your unit.

For example: You know for sure that none of your use scenarios will ever exceed 15 kN load at the LineScale, then you should choose a calibration end point of 1800 or 2100 kgf. This will result in much smaller increments of 300 or 350kgf (as opposed to 500kgf), which will increase the precision between 0 and your end point. The LineScale will still show correct values above 21kN because the linear calibration is upscaled, but these might deviate slightly the closer you reach 30kN.

Using the 2-point simple calibration, where you give the LineScale beside the zero one other reference point (e.g. 20kN), will also result in good precision, albeit not the best achievable. Precision will still be good (0.5-1% error probably) but might not reach the max possible precision of 0.25% measure error.

The simple calibration procedure is the same as the linear procedure covered in this manual, except that you only specify one calibration point instead of 6.



Enter MENU (long press PWR button), and select "Service".  
(scroll w. arrow keys, press ZERO for enter)



Scroll down to "Linear Calibration" and select with the enter button.



Use arrow keys to change the prompt to "Yes" to confirm you really want to start the calibration cycle, and press enter.



Ensure the LineScale is completely unloaded, then press enter.  
**Please note: calibration can only be done in kgf (kilograms force), so you must change your reference scale to this unit as well!**



The LineScale is now calibrating the Zero-Point. Wait until the dotted line runs to the right.



The LineScale will then ask for the first calibration value. The default is set to 500 **kgf** (6x 500 kgf = 3000 kgf).  
You can change this to any other calibration load by pressing the "up" button to enter load edit mode.



In load edit mode, scroll to the desired digit using the enter button.



Then adjust the digit using the up/down buttons.



Confirm your change with the enter button. After the last digit the LineScale will exit the load edit mode, and wait for your confirmation to calibrate.



Increase the load to the set value and press the enter button to start calibrating this value.

**Note: You may also first increase the load, and then enter load edit mode in order to enter the exact load your calibration rig is at.**



Wait for the calibration of this value to complete.



After this value is calibrated, the LineScale will ask for the next calibration value. In this case, value #2 is preset to 1000 kgf.

Again you can change this as before to any desired value. **It is highly recommended to use linear values. Always use the same increments to the next calibration point!**



After the value is set, again confirm with enter, increase the load to the set value, and confirm the calibration start...



...repeat this to the final step "7 of 7".



After the final calibration step, the LineScale will exit to the main screen, showing the current load in the preset unit. If you had the unit set to kN it will now display in kN again, so make sure to change your reference scale to this unit as well to verify the calibration.

- end of calibration -

## Notes

- Calibration may be repeated at any time, as often as necessary.
- Whenever a calibration operation failed, possibly due to a non stable load (e.g. the load dropped significantly while the LineScale was calibrating / while the dots were counting), you must abort the calibration with the PWR button, and start over. A calibration step can't be repeated.
- It's better to perform a "simple calibration" with one single super precise calibration point slightly above the max used load, than to perform a fairly complicated "linear calibration" with 6 fairly unprecise calibration points. I.e. when your rig makes it impossible to precisely pin point and hold multiple load values repeatedly (like when you're using a rope pulley system between two strong trees), you should opt to doing the simple calibration because it's easier to precisely hit one single value once, than fiddling with 6 values. If only one of these 6 values is significantly off you must repeat the whole procedure from scratch