# RL-MFLS

*Forklift Scale*

# Installation Manual

11 September 2019

RICE LAKE WEIGHING SYSTEMS

PN 188782 Rev A

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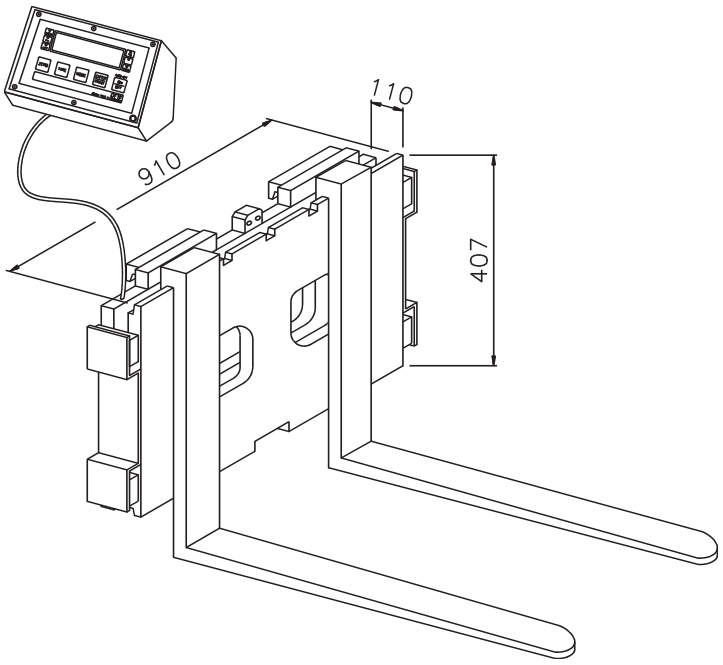
# ELECTRONIC WEIGHING SYSTEM RL-MFLS MODEL FOR LIFT TRUCKS

## GENERALITIES

The system is made up of 2 plates opposite each other in pantographed steel, in class FEM2 , assembled with 4 side hinges as constraints to the horizontal stress and with 2 load cells as constraints to the vertical stress; these are able to transform these stresses into analog signals which will be transformed into weight values by the connected indicator instrument.
The cells are of the shear-beam type with a nominal load of 2000 kg each.
Sealed steel hooks will substitute the cells in case that these accidentally brake.
**WEIGHING FIELD: 0-2500 kg Max.**

IMPORTANT WARNING

**Installing the RL-MFLS equipment on board of your lift truck will mean a modification of the original performance of the truck.**
**The maximum lifting capacity of the lift truck should not exceed the limit of 2500 kg** and cannot in any case exceed the value of the **RESIDUAL CAPACITY** of the lift truck in the various lifting conditions; this should be **calculated by the MANUFACTURER** of the lift truck, who will put a new plate with the lifting limits (See page 5).




## SYSTEM COMPOSITION

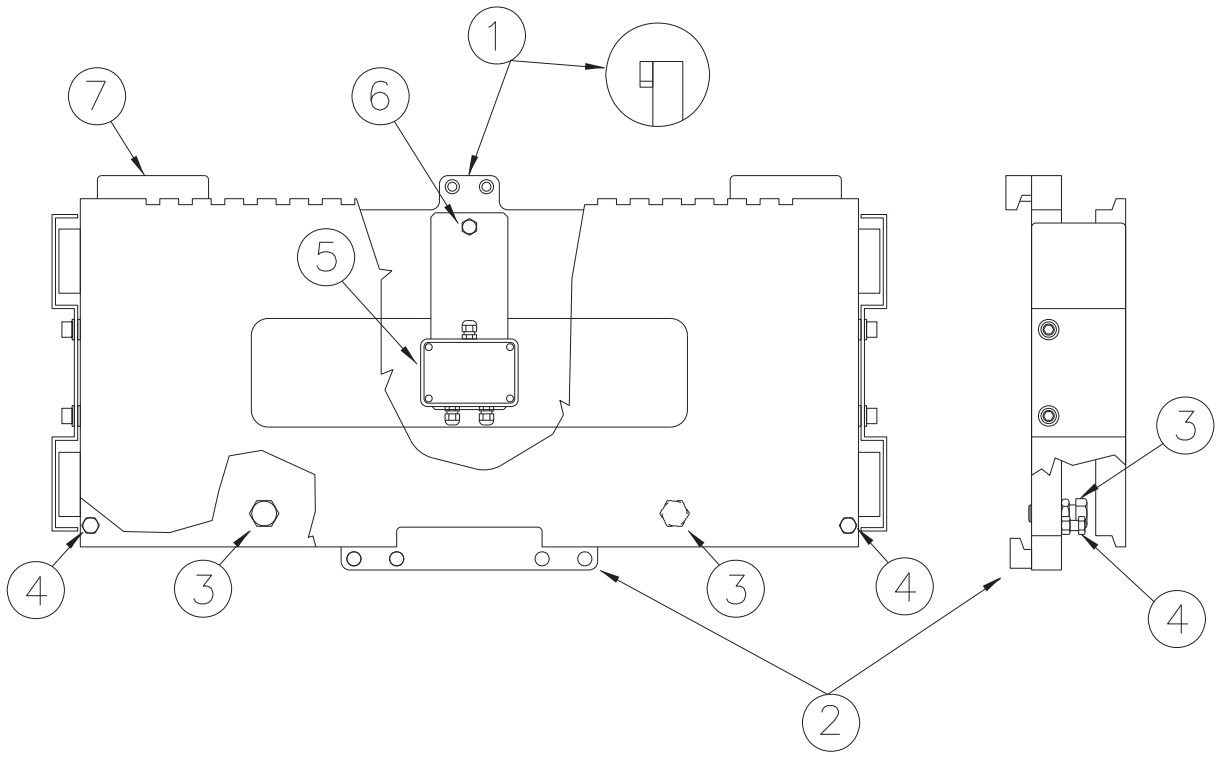
- **RL-MFLS** lifting plate with two IP67 shear-beam load cells and hermetic junction box.
- Screened flexible 4-pole cable with extension of about 6 m (total length is 12 m) and two fixing brackets with fairlead.
- Weight indicator with power supplied by rechargeable battery or 12Vdc.

# INSTALLATION NORMS

*With reference to drawing 1*

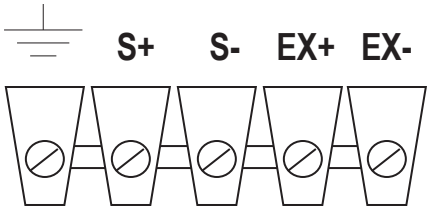
1) Take away the forks from the plate of the lift truck
2) Hook the **RL-MFLS** weighing plate to the FEM plate of the lift truck.
3) Fix the tooth of central reference (point 1 of Drawing 1) of the weighing plate to the centre of the FEM plate.
4) Fix the clamp of the lower locking (point 2 Drawing 1) with the 4 fitted bolts.
5) Tighten the system so that the FEM plate of the lift truck is even with the 2 M20 bolts (point 3 Drawing 1) and the 2 M12 bolts (point 4 Drawing 1), and block them with the corresponding lock nut.
   **CAREFUL!!**
   **Avoid to force the bolts, but simply bring them near the FEM plate.**
6) Reposition the lift truck forks on the plate.
7) Connect the flexible cable coming from the indicator inside the junction box (point 5 drawing 1) as shown in the scheme ***of drawing 2*** on page 4. To do this, take away the M10 bolt (point 6 drawing 1) and move the box to the side so that it is possible to open it. The cables could block the side movement of the box; untighten the two fairleads for the load cell input and move off a little the cables in order to ease the movement. After making the connections restore the original position by putting the cables back in and tightening the fairleads.
   **NOTE:** in the approved version one should connect the inclinometer to the inside of the junction box (see drawing 1, number 5) as shown in the scheme ***of drawing 2*** on page 4.
8) Fix the flexible cable to the structure of the lift truck so that it will NOT be damaged by the inclination, shifting and raising movements. Fix the cable coming from the junction box with the appropriate bracket at the point (point 7 drawing 1) of the **RL-MFLS** plate. The second fitted bracket must be fixed in a place that is suitable for satisfying the above mentioned requirements.

## DRAWING 1



## DRAWING 2

### CONNECTION TERMINAL:




### CONNECTING SCHEME OF JUNCTION BOX (JBOX)

| Terminal (JBOX) | Indicator connection cable | Load cells SBK model | Inclinometer (Just in the approved model) |
|---|---|---|---|
| EX+ | Brown | Brown | Brown |
| EX- | White | Green | White |
| S+ | Green | Yellow | Green |
| S- | Yellow | White | Not connected |
| ⏚ | Screen | Screen | Not connected |

**NOTE: THE CONNECTION CABLE TO THE INDICATOR MUST BE OF 4 POLES SPECIFIC FOR HANDLING.**

The cable coming from the instrument must be connected to the equalisation box inside the junction box and has 4 wires which meaning is shown in the table (the Brown, White, Green, and Yellow cables must be connected respectively to the Power supply +, Power supply – , Signal + and Signal - of the junction box). In case the weighing system is supplied without the indicator, the end of the cable to be connected has 4 wires with meaning as shown in the table and must be connected to the instrument. If the instrument needs as input a 6-wire cable, in other words, it needs also the wires of return of the power supply (REFERENCE and REFERENCE -), one have to connect the Brown wire to the POWER SUPPLY + and to REFERENCE +, and the white wire to POWER SUPPLY – and to REFERENCE -.

**NOTE: In the case the system is LEGAL FOR TRADE APPROVED, one should connect the inclinometer in the junction box which has 3 wires (the Brown, Grey and Pink wires must be respectively connected to the Power supply +, Power supply – and Signal + of the load cells).**

## WARNING !!

With the inclination in a perfect vertical position, **the forks MUST NOT TOUCH THE GROUND.** Otherwise a careful adjustment must be made by the manufacturer or service man of the lift truck. *A possible violent fall to the ground of the forks can cause unrepairable damages to the load cells which have been designed to sustain knocks and overloads from the top towards the bottom.*

# INSTALLATION & CONNECTION OF THE WEIGHT INDICATOR

1) Fix the weight indicator to the lift truck, through the fitted fixing bracket, so that this will be electrically isolated from the lift truck's structure.

2) Connect the cable coming from the junction box to the weight indicator, following the connections described in the instrument technical manual.

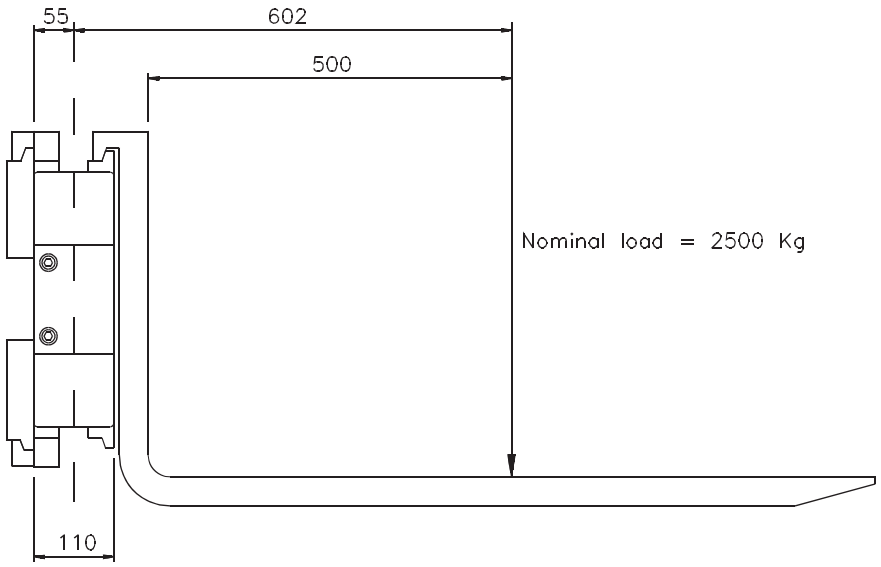
3) Electrically connect the braiding of the cable coming from the junction box to the stud bolt of the weight indicator case through a lead-in wire.

4) Electrically connect clamp 4 of the weight indicator board to the stud bolt of the case through a lead-in wire.

**WARNING!!!** The weighing system is supplied with the cable with which it is calibrated, therefore a length variation or a substitution of it will cause weighing errors; thus one should check the value shown by the weight indicator and if necessary recalibrate the weighing system.

## DATA FOR CALCULATING THE RESIDUAL CAPACITY OF THE LIFT TRUCK

**PLATE TYPE :** **FEM 2**
**THICKNESS :** **110 mm**
**BARYCENTRE :** **55 mm**
**EQUIPMENT WEIGHT :** **190 Kg**
**NOMINAL CAPACITY :** **2500 Kg with load at 500 mm of barycentre from the back of the forks.**




# USE AND MAINTENANCE

The RL-MFLS system of opposing plates has been designed and built for working in harsh conditions without compromising the accuracy and safety of the instrument.
It is in any case recommendable to respect some norms of use and maintenance in order to maintain in the long time the efficiency of the instrument.

- Do not expose the system for long periods to temperatures lower than – 10°C and above + 40°C
- Maintain the weighing plates clean from oils, greases, sand and corrosive and/or abrasive substances.
- DO NOT use the forks of the lift truck in an improper way, for example to push or move objects without lifting them.
- Detect the weight of the object maintaining the inclination of the forks perpendicular to the ground.
- Lift the load by making sure that the centre of gravity of the weight is maximum 500mm from the back of the forks (see the drawing above).

# EU DECLARATION OF CONFORMITY

*EU-KONFORMITÄTSERKLÄRUNG*
*DÉCLARATION UE DE CONFORMITÉ*

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RICE LAKE WEIGHING SYSTEMS

**Type/Typ/Type:** RL-MWF, RL-MFLS

English We declare under our sole responsibility that the products to which this declaration refers to, is in conformity with the following standard(s) or other regulations document(s).

Deutsch Wir erklären unter unserer alleinigen Verantwortung, dass die Produkte auf die sich diese Erklärung bezieht, den folgenden Normen und Regulierungsbestimmungen entsprechen.

Francais Nous déclarons sous notre responsabilité que les produits auxquels se rapporte la présente déclartion, sont conformes à la/aux norme/s suivante ou au/aux document/s normatif/s suivant/s.

| EU Directive | Certificates | Standards Used / Notified Body Involvement |
|---|---|---|
| 2014/30/EU EMC | - | EN 61000-6-2:2015, EN 61000-6-4:2007+A1:2011, EN61326-1:2013, EN55011:2009 +A1:2010 |
| 2014/35/EU LVD | - | EN 61010-1:2010 |
| 2011/65/EU RoHS | - | EN 50581:2012 |
| | | Devices marked with the legal metrology marking: / Geräte, die mit der gesetzlichen Messtechnik gekennzeichnet sind: / Appareils marqués du marquage métrologique légale: |
| 2014/31/EU NAWI | UK 3104 | EN 45501<br>Notified Body involved with module B and D: / Benannte Stelle, die an Modul B und D beteiligt ist: / Organisme notifié impliqué dans les modules B et D:<br>Module B: NMO - 0126<br>Module D: NMi Certin B.V. - 0122 |

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