

LOADTRONIC II

Approved according to OIML R51



Operator's Instruction Manual





LOADTRONIC II

Load Weighing System



Operator's Instruction Manual

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FOREWORD

This Operator's Instruction Manual provides a short description of the design and function of LOADTRONIC II and some simple instructions for its use.

The aim is to give the user a basic comprehension of how the system works, together with step by step instructions of how to operate the system.



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SECTION

1

1. PRESENTATION

LOADTRONIC II is an automatic and dynamic weighing system for wheel loaders. It is automatic in the respect that the load in the bucket is weighed without any involvement from the operator, and dynamic as the weighing is done while the machine operates normally without any interruption for weighing.

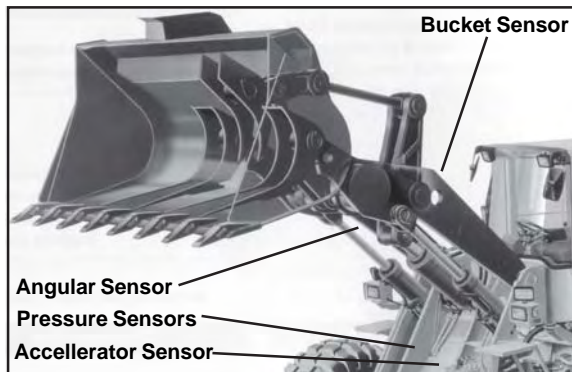
LOADTRONIC II is meeting the international recommendation, OIML R51, and is therefore equipped with a calibration enable switch on the bottom of the main unit. If the system is to be used as an approved equipment, the switch must be sealed and can only be opened by a representative from an approval organisation.

1.1. Sensors

LOADTRONIC II has two pressure sensors fitted to the hydraulics in the front frame of the wheel loader. These sensors measure the forces applied to the lifting arm system.

There are three further sensors in the system:

- >> One angular sensor (inclinometer) which measures the position of the lifting arms.
- >> One acceleration sensor which measures the movement (acceleration, retardation and the inclination of the machine).
- >> One position sensor to signal when the bucket is fully retracted.





1.2. Main unit

The main unit is a combined operator's display with an intergrated computer unit added to the back of the display. The main unit is mounted on the right corner post in the cabin, and has the following functions:

- >> Reads sensors
- >> Computes and analyses measured data
- >> Controls the automatic weighing function
- >> Records and reports the weighing results
- >> Carries out calibrating and similar functions when the calibration switch is set to the open position.

1.3. Display unit

The display unit is integrated in the main unit, and has the following functions:

- >> Shows results
- >> Is used for dialogue with the operator through a keypad.




1.4. Printer (optional equipment)

The printer is connected to the main unit and positioned as required (designed to be mounted in the radio slot in the upper left corner of the cabin roof).

The printer has the following functions:

- >> Prints a load receipt for each truck load.
- >> Prints reports about customer, truck, material, machine and load list.



If printer is connected, pressing  will print the load receipt. This will automatically cancel/zero the running accumulated total for this truck. See chapter 6.



1.5. *Remote wireless solution (optional equipment)*

The wireless solution is to be added. This will include developed software for up- and downloading data to and from the wheel loader. Feature available soon.

1.6. *Certified technical data*

Accuracy class	Y(b)
Verification scale interval	$e > 0.05t$
Number of verification scale interval	$n < 200$
Maximum capacity	Max $> 100e$
Minimum load	Min $> 10e$
Temperature range	-20°C to +50°C
Power supply	18 - 30 VDC



SECTION

2

2. LAY-OUT OF OPERATOR'S DISPLAY



Figure 2.0: Main unit - display keypad

The operator's display consists of 4 lines of alpha-numeric text. Each line has 20 characters. In normal operation mode, the following is displayed:
















- | | |
|-----------------------------------|--|
| Line 1 - LOADTRONIC II A2 | States the product and using attachment no.2 |
| Line 2 - Load : 8.10 t | The current load in the bucket |
| Line 3 - Remains : 10.30 t | The rest-weight to be loaded. |
| Line 4 - T:Volvo : 16.20 t | Total weight loaded onto truck "Volvo" (T:Volvo) |
| (n) | Number of buckets; Shown in lower right corner. |

LOADTRONIC II has 24 keys;
Four to the right of the display unit on the keypad. See Fig. 2.0



2.1. Key functions

The following information applies generally to the keys, but see also the separate functions for more accurate information and for any deviations from the general information:

- 
>Selects downward in the function group / record card column
- 
>Selects the next functions group or exits and returns the system to automatic weighing.
- 
>Selects / confirms (OK) displayed menu function / record card
- 
>Cancelling bucket weight / adjusting bucket weight.
- 
>Selection of material and reporting day total for this material
- 
>Selection of customer and reporting day total for this customer
- 
>Selection of truck and reporting of day total for this truck.
- 
->Manual zero point adjusting.
- 
>Changing attachment.
- 
>Used in text editing.
- 
>Start printout of load receipts when configured.
- 
>Increases the value in the indicated field by 1 or by increasing numbers, e.g. 20, if the key is kept pressed in.
- 
>Reduces the value in the indicated field by 1 or by decreasing numbers, e.g. 20, if the key is kept pressed in.
- 
>Moves the cursor to the next field within the same menu
- 
>Numeric keys. Can also be used for text entering. See definition in chapter 8.5.



SECTION

3

3. STARTING THE LOADTRONIC II

3.1. Start

9X XX XX

The ignition key in position 1 (running position)

1. The date for the display unit version is shown.
(The menu is shown for approx. 1 s).

DATA INSTRUMENT AS
LOADTRONIC II
OIML R51 CLASS Y(b)
VER.NO.: 1.XX

2. A pattern test is performed on the screen
(approx. 3 s) prior to showing the information
display (approx. 3 s). This is only done for an
OIML R51 approved system.

LOADTRONIC II
L120 A1
Self test OK 0
Sensors 2

3. Automatic self test. LOADTRONIC II checks
connections and that the sensors work.
(The menu is shown for approx. 2 s.)

LOADTRONIC II A1
Load : 0.00t
 : 0.00t
T:unspc : 0.00t

4. After completed the self test, the screen "Automatic
weighing" is shown.
LOADTRONIC II is now ready for automatic
weighing, see chapter 3.3.

ADJUST ZEROPOINT A1
Load : ***** †
 : 0.00t
T:unspc : 0.00t

NOTE: If the machine has been idle for more than one
hour, LOADTRONIC II will block weighing, and
request the operator to carry out a manual zero point
adjusting, see chapter 7.4.



3.2. System information, error codes

INFO: 1100202

Self test : fault 0
Sensors : 2

In case of a fault/error LOADTRONIC II provides a diagnose as follows:

- >>Error code (Interpretation of codes, ref.Chapter 11)
- >>Code for system error (Shown for approx. 10 s.)

Language :
Loader :
ID :
Units :

If serious faults arise, LOADTRONIC II commences with the "Select language" menu and shows the adjacent menu display.

NOTE: This may be correct the first time the system is started after installing the system. But if it occurs later, it is an indication of abnormal internal function of the LOADTRONIC II and a serviceman must be called.



3.3. Automatic weighing

Normally the LOADTRONIC II is in the mode for automatic weighing. In this mode the operation of the loader controls the functions of the LOADTRONIC II system.

Automatic weighing means that the operator can operate as usual. The LOADTRONIC II itself determines when a new bucket should be weighed. The weight of the bucket is automatically added to the existing total. Neither the moving of the machine or the lifting movement need to be interrupted for weighing the bucket and no key needs to be pressed to update the total weight. This applies to normal work such as loading trucks or transporting loads.

The automatic weighing is connected to the normal working cycle as shown in the illustrations below:

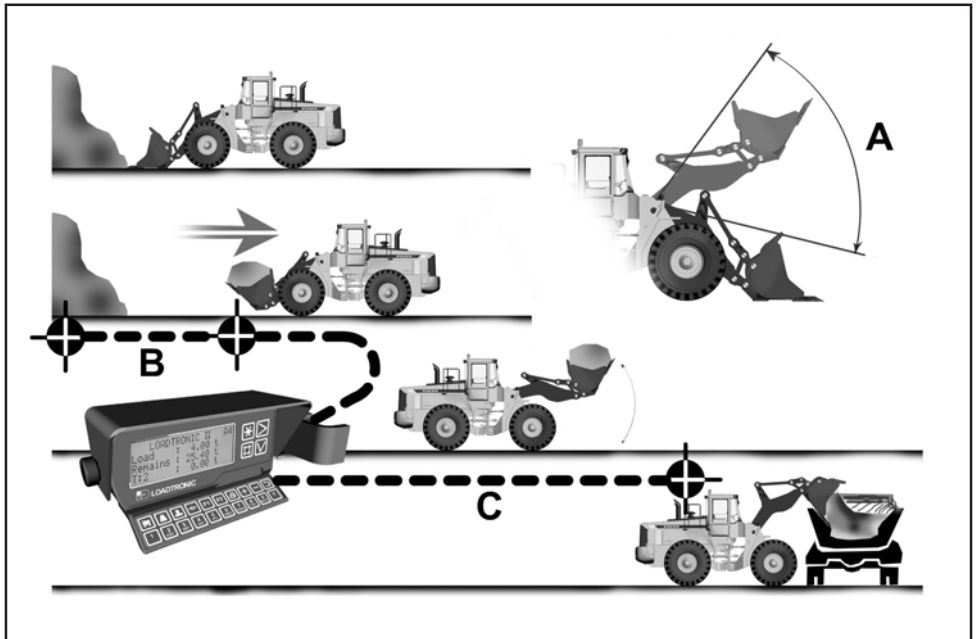


Figure 3.3: Automatic weighing sequence

A: -20° to +30° B: 2 seconds C: Weighing



During automatic weighing the display unit shows:

- >> Material weight, e.g. 7.50t
- >> Remains ("Rest" to be loaded (the required final weight - (minus) total load so far)), e.g. 20.80t
- >> Total weight loaded so far, e.g. 15.90t
- >> Number of buckets loaded so far, e.g. 2

LOADTRONIC II		A1
Load	:	7.50t
Remains	:	20.80t
T:unspc	:	15.90t
		2



NOTE: If the bucket is not fully tilted rearward, the message: "BUCKET" will be shown in place of the bucket weight (no weighing performed).

When


- >> The LOADTRONIC II is activated, the current material weight is shown.
- >> When weighing begins, the bucket weight will flash on the display unit.
- >> Weighing is completed when the flashing stops and the weight figure is stable.
- >> The total weight and the remaining weight to be loaded will be updated.
- >> The last material weight remains displayed until the next time loading begins.

3.3.1. Best result when weighing

Maximum function and accuracy is achieved by avoiding substantial deviations from the usual work cycle, while at the same time noting the following points:

- >> Before starting to load and some times between filling the bucket it may be necessary to move some material and tidy the work area. The operator should then put the LOADTRONIC II in the pause position by pressing . When this additional work has been completed and before starting to load, activate the LOADTRONIC II again with . (see chapter 4.3). If the LOADTRONIC II is not put in the pause position there is a risk, that some of the material will be weighed and thereby added to the total load. If the operator forgets to push the pause key, it is possible to use the cancel function to remove the weight of the last bucket, even if it may have been emptied, see chapter 4.5.3.
- >> The loading cycle begins by driving forward and pushing the bucket into the heap.
- >> The LOADTRONIC II is activated/made ready for weighing 2 seconds after the gear selector has been moved into reverse. During this time the bucket should be pulled out from the heap, from which the material is being taken, so that no friction forces between the heap and the bucket will affect the weighing result. This particularly applies if the bucket has been raised fairly high while filling it.
- >> The lifting arms must be moving upward to initiate the weighing.



- >> If it should happen that the LOADTRONIC II does not become activated / begin weighing, it is possible to activate manual weighing by pressing , see chapter 4.2.
- >> The bucket must be tilted rearward to it's end-stop when weighing, otherwise the message "BUCKET" will appear on the display.
- >> The lifting arms must be lifted sufficiently high, ref. Figure 3.3.
- >> The lifting arms must not be lowered so much that they push against the front frame or body of the machine when the weighing begins. This could cause false readings. This means that:
 - > During loading - carrying work, it is possible to control at which point in the work cycle the weighing should be done by waiting with the raising of the lifting arms until, for example, the machine is driven across level ground.
 - > When loading and transporting and dumping the load at a low height, e.g. down a slope, it is necessary to raise the bucket before emptying it to allow weighing to take place.
- >> When weighing on ground which is inclined more than 5 %, it is recommended that weighing should be avoided at low lifting angles particularly when the machine is pointing downhill. The system will only weigh when the tilt is less than 10 %.
- >> If the operator wants to weigh the load under controlled conditions (to achieve the best possible result or to weigh the load again when the first weighing result is doubtful), it is possible to use the cancel function or the manual activating function. If the bucket is empty, the cancel function must be used. At manual activation a new weighing sequence starts immediately. When cancelling before dumping, the system must also be activated for a renewed weighing by moving the gear selector from forward or neutral to reverse.

THE BEST RESULT IS ACHIEVED WHEN :

- > **The bucket is raised at an even speed from low to high (above the horizontal level)**
- > **The travelling speed of the machine is low**



SECTION

4




4. CHANGING THE SET-UP

For various reasons the operator may chose to re-weigh a load or do other changes to the system.

4.1. Target load, a pre-defined total pay load

The loader will deliver material bucket by bucket. Each bucket is weighed and Loadtronic II keeps track of the accumulated, running total. In most cases the truck or hauler have a maximum permitted load limit, due to axle pressure, road condition or other reasons. It could also be that the customer has pre-defined the amount of material he wants delivered.

In both cases Loadtronic II is prepared for this by simply programming the total load which is to be delivered. This is done in the following steps;

1. Complete the task described in 5.2. This will make the system ready for a new load cycle with unspecified records.
2. Press  and select the truck as described in 5.3/5.4 or continue with the unspecified record.
3. Press  once to position the cursor where you are allowed to type in the pre-defined/required total load by typing eg. 3500 which will predefine the load of 35.00 tonnes.
4. Press  and the Loadtronic II returns to the automatic weighing mode.
5. The display will now show the additional information, "Remains: 35.00, which will be updated/lowered each time a new bucket is loaded.

LOADTRONIC II		A1
Load	:	0.00t
Remains	:	35.00t
T:unspc	:	0.00t


Note 1: If this is a permanent target load, the pay-load, for the truck/hauler eg. the maximum load capacity of the vehicle, this may be programmed into the specification of the truck as described in chapter 8.5.

Note 2: To reach the target load, normally the "shake off" function in chapter 4.5.2 will have to be used.



4.2. Manual activation of weighing sequence

During normal operation the weighing sequence is done automatically when the wheel loader is reversed out from the material heap after the bucket has been filled. The weighing begins as soon as the bucket has moved within the weighing range and provided that the other signals are also acceptable.

Manually activation, however can be introduced simply by pressing , which activates the system immediately.

Manual activation is required for re-weighing material which has been lifted e.g.


- >> If part of the load falls off while moving
- >> When adjusting the loaded amount and then re-weighing

Manual activation means that any weighing which has started will be cancelled. This applies even if the weighing has been completed, but before the bucket has been emptied.


4.3. Pause function

Loadtronic II can be set in a "PAUSE" mode when tidying the work place or carrying out other work when the load in the bucket should not be weighed or recorded.

Pause is selected by

1. Pressing  (if you are in automatic weighing mode). When the LOADTRONIC II is in the pause mode no buckets will be weighed or recorded. The display will show a row of " - " signs, ref. Fig. 4.3.

The pause mode is ended by:

2. Pressing  (in pause mode). The LOADTRONIC II returns to automatic weighing. If the key is pressed after the loading/weighing has begun, the current bucket is cancelled.

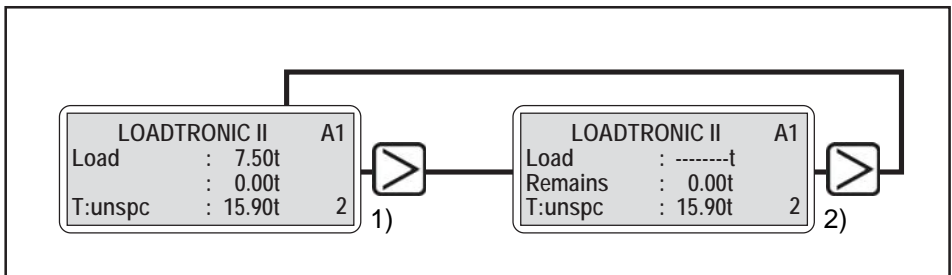



Figure 4.3: Selecting pause mode



4.4. Adjusting display backlight


When in the pause mode, the intensity of the background light of the display can be adjusted by pressing  once or several times.

4.5. Adjusting weight

4.5.1. Re-weighing material in the bucket


If the bucket has already been emptied, the cancellation must be confirmed, ref. Chapter 4.5.3.

Proceed as follows in order to re-weigh the material in the bucket:

1. Press  (the bucket weight is cancelled/subtracted from the running total weight, and the current approximate weight is shown on the display).
2. Move the gear selector to forward drive and then back to reverse, to initiate the weighing. The machine does not have to be moved.
3. Raise the bucket evenly from below the horizontal level and its load will be weighed again. Alternatively, the manual activation function can be used, see section 4.2.

4.5.2. Adjusting material weight (shake-off function)

Proceed as follows in order to adjust the material in the bucket:

1. Press  the current material weight is subtracted from the running accumulated total, and the current approximate weight is shown on the display).
2. Move the machine to a place to shake of the material until the display shows the approximate desired weight.

NOTE: The weight shown is lower than the actual weight, since the bucket is not tilted rearward.



3. Tilt the bucket rearward to stop and move the gear selector to reverse to initiate the weighing. Raise the bucket evenly from below the horizontal level and the load will be weighed again.

NOTE: Surplus material is dumped back into the bank of the material, the rest of load in the bucket must be re-weighed.



4.5.3. Cancelling/dumping last bucket

Proceed in the following way if the last bucket is not to be added to the load on the truck and should therefore be cancelled from the total weight, since the material is dumped back into the bank.

1. Empty the bucket and press  (the LOADTRONIC II requires acknowledgement that the weight of the bucket really is to be cancelled). See fig. 4.5.3.
2. Press  (The weight of the bucket is set to zero and is deducted from the total. The LOADTRONIC II returns to showing the automatic weighing.)

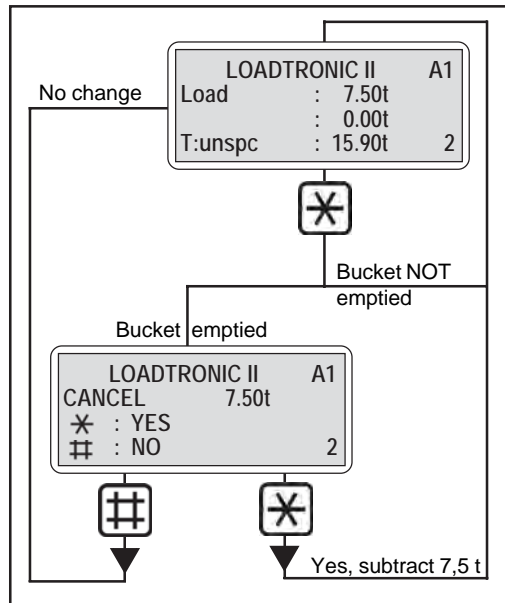


Figure 4.5.3: Cancelling weight




4.5.4. Immediate recording with specification


It could happen that the operator has missed the preparation stage when it comes to specifying or linking the load to a truck, material and/or a customer. The operator still has this opportunity as long as the material still is in the loader bucket (un-delivered). Although it appears on the display that the previous specification (truck, material and customer) is still in use, the following steps will help out in this situation. The same can obviously be done if an "unspecified record" is in use. A proper specification may still be achieved.

For example, the operator has loaded 6.30 tonnes which is currently in the bucket. The operator has continued to operate with the old specification (valid for the previous truck). It appears that truck identified as ST20468 is about to receive 6.30 tonnes of material, bringing the total up to 34.80 tonnes. The operator realizes that this is the wrong specification and needs to pull up a new specification.

LOADTRONIC II			A1
Load	:	6.30t	
	:	0.00t	
T:ST20468	:	34.80t	5

LOADTRONIC II			A1
Load	:	6.30t	
	:	0.00t	
T:FORD	:	6.30t	1

1. With the material in the bucket, press .
2. This will bring you into the menu described in section 5.4.
3. Select the new specification, linking the load to truck, material type or customer

When finished, press  to return to automatic weighing which now shows the specification which was selected.



4.6. Using several attachments

The Loadtronic II can be set-up to accept 5 different attachments. Please refer to section 8.1, which shows how to change between/select different attachments. The display layout in the automatic weighing mode indicates a reference code to which attachment is in use.

The first time a specific attachment is used the operators must;

- >> Tare the attachment as described in section 7.1
- >> Perform a basic calibration as described in section 7.2

	LOADTRONIC II	A1
Load	: 7.50t	
	: 0.00t	
T:unspc	: 15.90t	2

In this example, attachment no.1 is in use, indicated as “ **A1** ”

This is required for an accurate measurement. The tare function and basic calibration eliminates the dead weight of the attachment and compensates for any change of the centre of gravity.

If the attachment already is used and recognized by the system, the operator just selects the attachment by pressing **F1** as described in section 8.1.

Zero point adjustment is required when the attachment is changed. Access to this feature is done by pressing ***0*** as described in section 7.4.

ATTACM. : 1
Type : strt. buck.
+ : next v : 0-adj.
: OK > : (RT)

The system will block the automatic weighing and indicate the requirement with the normal message “Adjust Zeropoint” until the zeropoint adjustment has been done.



SECTION

5

5. RECORDING

Each time the loader is used to move material and the normal weighing sequence is carried out, figure 3.3, the Loadtronic II has made a recording. The recording is done with or without reference to a specific truck type, type of material or customer. The recording is done internally in the unit onto a record which is activated during the operation. This record may be inspected by identifying the truck, material or customer again at a later stage and a report may be printed.

5.1. Active record

LOADTRONIC II can differentiate between 1000 different trucks, 1000 different materials and 1000 different customers. Truck/material/customer number 0 is unspecified and is used when specification is not required. The remaining, 1 - 999, are used as reference numbers to identify trucks, materials, and customers. If desired, the number can also be replaced by text with up to twenty characters, which can be displayed instead of a number. See also chapter 8.5.

Each truck has a "record" tied to it. This record contains the total pay load / load capacity of the truck together with the material and customer which were specified the last time the truck was loaded.

A "record" is tied to each load. This record appears in the LOADTRONIC II in the form of a set of data called the "active record".

This record contains information, shown to the right. There is two types of information. One type is selected or programmed by the operator, and the other set of information is recorded by the Loadtronic II during the loading.

ACTIVE RECORD	
<u>Data which can be typed in by the operator before loading:</u>	
Truck	truck, hauler which is to transport the loaded material
Load	total weight of material for the truck
Material	sand, gravel, material which is loaded (and density)
Customer	customer, stockpile, who receives the material
<u>Data which is recorded by LOADTRONIC II while loading:</u>	
Bucket weight	weight of material in the bucket
Accumulated load weight	total weight of all buckets making up the truck load
Number of Buckets	number of buckets for the truck load



The record should be created or an existing record should be activated before starting the loading of the truck by specifying which truck is to be loaded and making changes or indicating new specifications for total payload, material, and customer on the “record” for the truck.

The loaded truck can remain “unspecified” or have a number from 1 to 999. The same applies to material and customer. When loading from several places, (e.g. with different owners) it is easy to distinguish between loading places by giving the different places a set of material numbers, e.g. 1 - 9 for one place and 10 - 19 for the next place (10 could be unspecified for loading place 2) and so on.


The accumulated weight and the number of buckets are set to zero when the record is set up. Then each bucket is added to the accumulated weight in the “Active record” when the weighing has been completed or the bucket is emptied.

Each load is recorded in the list together with the finishing time. Afterwards LOADTRONIC II can provide reports showing supplied material per truck, kind of material and customer.





5.2. Simple Recording of weight only, unspecified recording

Loadtronic will always store or make a record of the weight the loader has moved. If you do not have a requirement to specify the type of material, to who this is material is delivered or which truck transports the material, the unspecified record is to be used. Please proceed as follows to do or prepare for unspecified recording:

>> Press , this will prepare the system for a new loading cycle with no specification linked to the weight moved by the loader. At the same time the accumulated or total load shown on the display when you operate the key-pad, is stored in the system with the specification selected at the time.

or if a printer is connected and a printout is required;

>> Press , this will do as described above and at the same time create a printout (if the load is unequal to zero). When the load report is printed, you may either press  to return to automatic weighing, with a blank unspecified record selected, or select a specification as described in section 5.3/5.4.

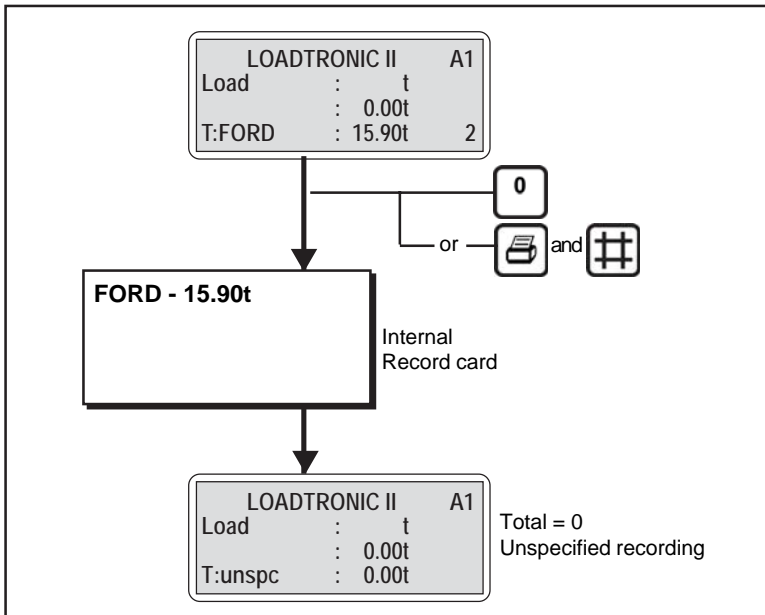


Figure 5.2: Simple recording



5.3. Recording of weight, linked to a specified truck/transporter

If the weight is to be linked to a specified truck, hauler or other means of transport, the following steps are required;

1. Press . This will give you entry to the top of a list of 1000 different trucks. The top entry, where you now are located, is the "unspecified truck".
2. You can select any truck from the list by simply scrolling from Truck 1 to the next by pressing or backwards by using . If you know the pre-defined truck number you can simply enter it now by typing the truck reference number (1 – 999). Until changed, a default specification is shown. See below note.
3. When finished, press to return to automatic weighing with the selected truck , T:- - , identified by name or number. The system is now ready to link delivered load to your specified truck. See fig. 5.3
4. When the loading is finished simply press or if a load receipt is required, press (and) . The system will return to automatic weighing mode, with a blank unspecified record selected waiting for your inputs or an unspecified load cycle.

Note: The identification of the means of transport eg. the name, number plate of the truck etc may be programmed into the Loadtronic II as described in chapter 8.5. Identification of this truck will then be displayed as programmed.

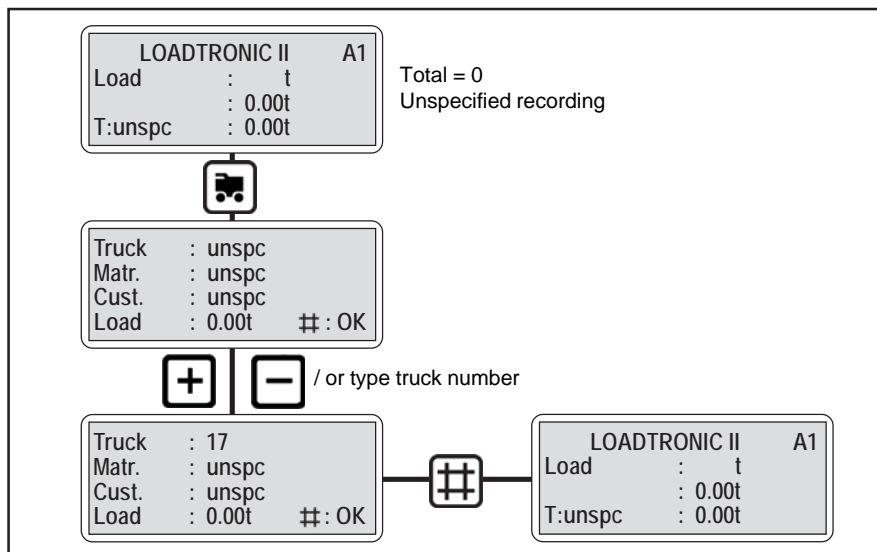


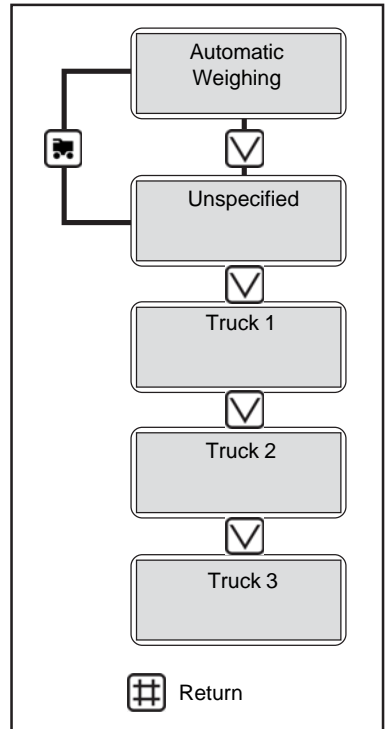
Figure 5.3: Recording to specified truck, truck "17" selected



5.4. Recording with full specification

Loadtronic II can make a record with a full specification. This means that you link the weight to the means of transportation (described in 5.3), identify the type of material delivered and the customers identification. This will be recorded and printed on the load receipt if a printer is connected.

1. Press . This will give you entry to the top of a list of 1000 different trucks. The top entry, where you now are located, is the "unspecified truck".
2. You can select any truck from the list by simply scrolling from Truck 1 to the next by pressing or backwards by using . If you know the predefined truck number you can enter it now by typing the truck reference number (1 – 999). Until changed, a default specification is shown. See note below.
3. When finished with the truck identification, press or alternatively the . This will give you entry to the top of a list of 1000 different materials. The top entry, where you now are located, is the "unspecified material".
4. You can select any material from the list by simply scrolling from Matr. 1 to the next by pressing or backwards by using . If you know the pre-defined material number you can simply enter it now by typing the reference number (1 – 999). Until changed, a default specification is shown. See note below.



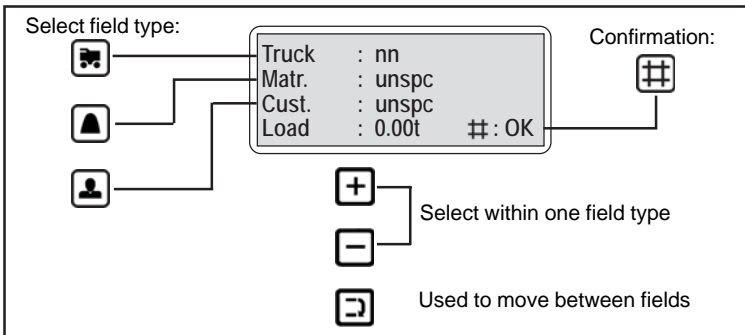
Part of Figure 13.2 App.B

5. When finished with the material identification, please press or alternatively the . This will give you entry to the top of a list of 1000 different customers. The toptentry, where you now are located, is the "unspecified customer".



6. You can select any customer from the list by simply scrolling from Cust. 1 to the next by pressing or backwards by using . If you know the pre-defined customer number you can simply enter it now by typing the reference number (1 – 999). Until changed, a default specification is shown. See note below.
7. If these specifications suit the job, press to return to automatic weighing with the selected truck. The system is now ready to link delivered load to your specified truck, material and customer. Material and Customer will only show on the printout or internal load record.
8. When the loading is finished simply press or if a load receipt is required, (and). The system will return to automatic weighing mode, with a blank unspecified record selected waiting for your inputs or an unspecified load cycle.

Select field to be changed (truck, material, customer):



Note: The identification of the means of transport eg. the name, number plate of the truck, the type of material (including its density) and the name or code of the customer may be programmed into the Loadtronic II as described in chapter 8.5, Customization, text editing. Identification of this truck will then be displayed as programmed. Material type and customer name/code will only show on the printout or internal load record.

If the truck, material or customer key is pressed again when the cursor is in the corresponding field, the text editor is entered directly. This will only work for fields different than “unspc”.

Example: To edit customer 450; press the , enter 450, and press again.

If the density is specified for a material, the corresponding volume of the load can be shown by

pressing the in the automatic weighing screen:



LOADTRONIC II		A1
Load	:	5.00qm
	:	0.00qm
T:unspc	:	10.60qm





SECTION




6



6. REPORTING


All material moved by the loader is recorded. This information may, at any time, be inspected and printed out. Following the instructions in figure 6 by operating  and then , you enter into the report file menu.


The display will now show the "Customer" menu. The display shows the total weight of all material delivered, the current date, to the "unspecified" customer. If you want to look at the weight delivered to a customer which was identified with a specification (code, text or number), simply scroll through the list up and down using  or .

If you do not want to look at "all" delivered material, but specific material types which are identified by code, text or number;

>> Press  to select the "Matr:" position on the display and simply scroll through the list up and down using  or  or just press material number, e.g "450".
If you want to look at the above data but delivered at a different date;


>> Press  to select the date position on the display and simply scroll through the dates the loader has been operated by using  to go backwards in time.


If you need a printout of this report, simply press  and a total of all "Customers" will be printed and the system returns to automatic weighing.

You are also able to generate the same kind of reports as described above but looking at "Material", "Truck" or the total usage of the "Loader" in stead of "Customer" as described above. Figure 6 shows that the different menus are accessed simply by operating .

The final report option is the "Load" report. When this menu is entered the last load handled by the machine is displayed. Typically this will show;

>> which number this record is out of the total, eg. L10; Load number 10 of today.
>> the date L10 was done
>> time of above
>> the weight of the material and the specification
>> the customer
>> which truck transported the material

This will re-generate the load receipt when  is pressed.

If a total load list of the selected day is to be printed, use  for this special print job.

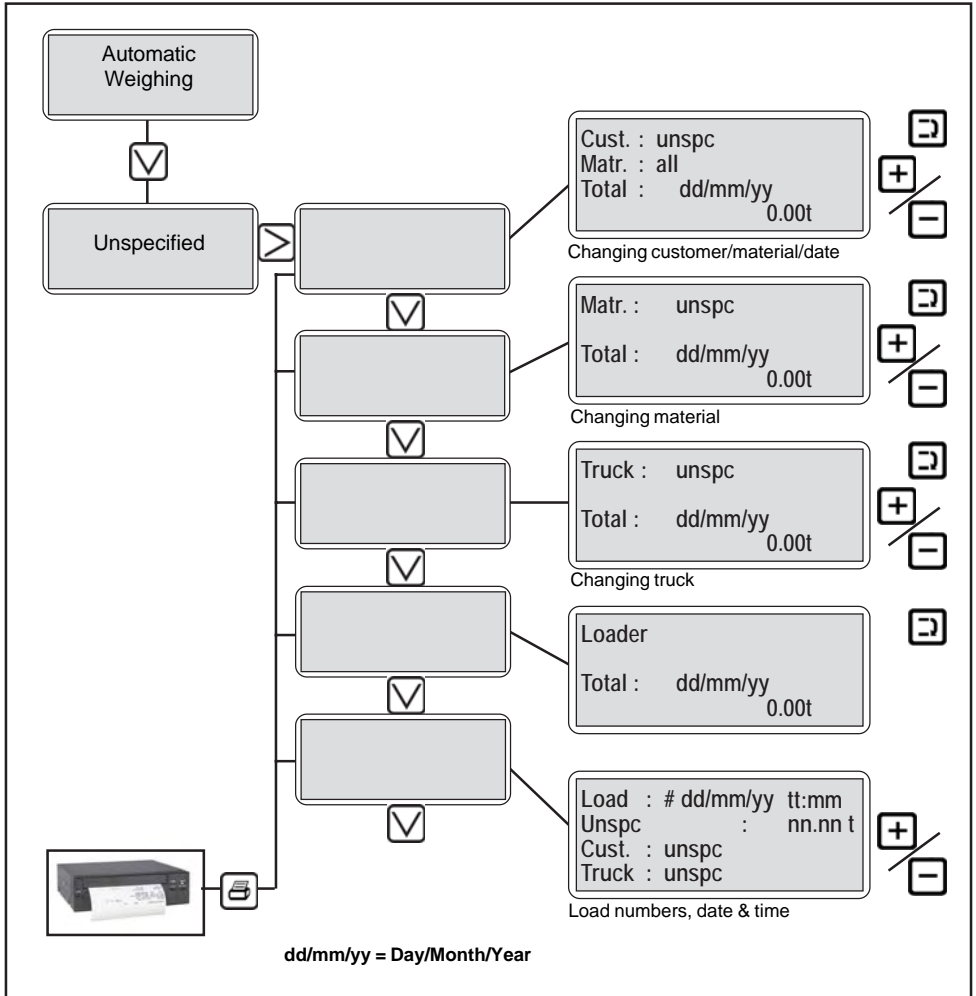


Figure 6.0: Reporting

Note: If of any reason wrong customer, material or truck was used for a load, this specific load can be renamed to “unspecified”. In the final Load report screen, use the key to find the wanted load to be renamed and press and hold the key for 10 seconds. All fields will be changed to “unspecified”.



SECTION
7

7. CALIBRATION FUNCTIONS

To perform the taring, calibration, or re-calibration functions, the calibration switch at the bottom main unit must be enabled. ***For an OIML R51 approved system, these functions can only be performed under supervision by an authorized approval organization.***

Tare Attachm	:	1	**
Type	:		
+	:	next	
#	:	OK	> : exit

If the switch is in the disable position, the calibration functions above will be blocked by showing '**' in the upper right corner of the respective menu (see adjacent example). Zero point adjustment is done with the switch in either position

If a hardware error has occurred, the functions are blocked by showing 'XX' in the upper right corner.

NOTE: Prior to all calibration functions, the machine should have normal operational temperature.

7.1. Taring attachment

Calibration must be enabled. Taring means zero-setting of the load readout with the attachment fitted.

(The computer will measure the deadweight of the selected attachment and only monitor the material carried by the attachment)

When taring, the LOADTRONIC II records the forces in the lifting arm system within the whole lifting range. The attachment must be empty and the computer stores a tare curve for the respective attachments.

1. Fit the attachment to the machine.
2. Check that the attachment is **EMPTY**.
3. Place the machine on level ground with the lifting arms horizontally. The attachment should be fully retracted against stop.(Regarding carrying position for pallet fork, see chapter 8.7)



4. Go to the taring function in the LOADTRONIC II:

Press: **0** and **√√**

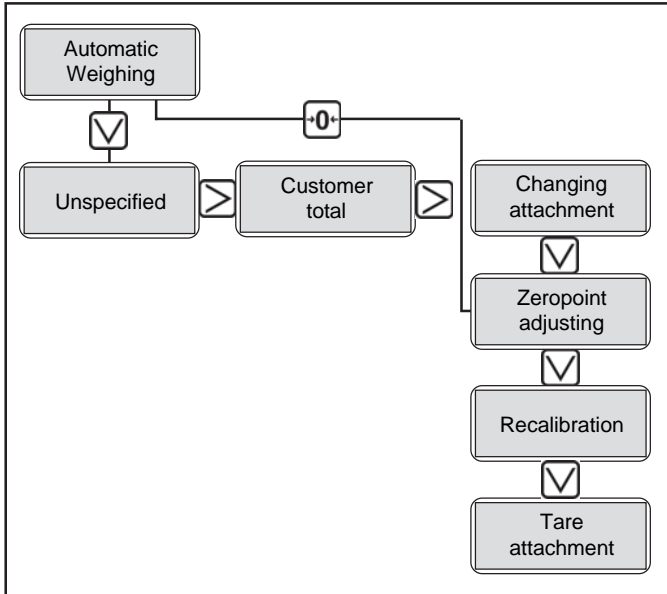
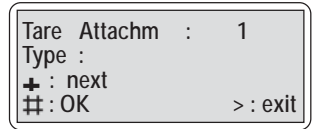


Figure 7.1: Taring

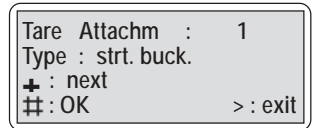
5. Select the number of the new attachment, using **+** to scroll through the list(1-5).

Note: See also chapter 8.1, Changing attachment



6. Confirm selection with : **⌘**

7. Make the text description of the new attachment appear: Press **+** to scroll through the list of description types



8. Confirm selection with : **⌘**



9. Press  to start

Tare Attachm	:	1	
Record		TARE	
Ref. Op.man.		7.1	
#	:	start	> : exit

Tare Attachm	:	1	
		ACTIVE	
Lower			> : exit

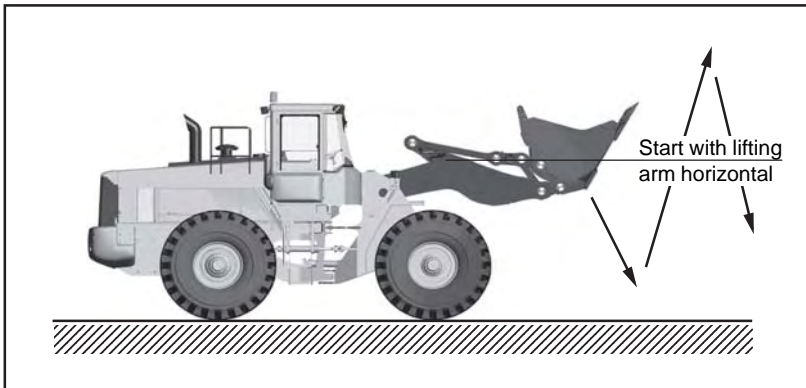


Figure 7.1.1: Tareing movements

10. Carry out tareing sequence of movements:

Down/up/down according to instruction on the display

Start carefully and lower/lift slowly.

Use approx. 30 sec to lift / 30 sec to lower

Avoid shaking and rocking

Do not lower the bucket so far that the lifting arms go against stop and so that the attachment (bucket) is forced out.



11. When the taring is OK, the LOADTRONIC II asks for the tare weight, which is the deadweight of the attachment + the approximate weight of the front part of the lifting mechanism (usually 1/5th of the weight of the standard bucket). Set the tare weight: The default value for the machine is shown (changeable). Default values for some machines are shown in the table below.

NOTE: This value is not of critical importance

Mashine	Kg	Lb
L 90	1200	2640
L 120	1500	3300
L 150	1800	3960
L 180	2400	5280
L 220	2900	6380
L 330	4400	9680
C 980	2400	5280

Example:
Taring a L120, the value to enter is 1500 kg.

12. Confirm the tare weight:

The LOADTRONIC II automatically returns to automatic weighing.

NOTE:

The basic calibration of the attachment must now be carried out before it can be used for weighing.

Tare Attachm : 1
Atc.Wght : 1.20t
: OK

13. If the taring **is not OK**, the adjacent menu will be displayed for approximately 10 s before returning to automatic weighing.

Probable cause:

Uneven movements and/or shaking of the lifting mechanism while carrying out taring.

Necessary action: Carry out a new taring of the attachment!

Tare Attachm : 1
NOT ACCEPTED
Ref. Op. Man. 7.1



7.2. Basic calibration

Calibration must be enabled. During the basic calibration the LOADTRONIC II records the forces in the lifting arm system within the whole lifting range with a full load in the bucket.

NOTE: Tareing of the attachment must be done before the basic calibration, see chapter 7.1.

1. If taring of the attachment was not done recently, a manual zero point adjustment should be carried out before calibration, see chapter 7.4
2. Fill the bucket with material. The bucket should be full or close to a typical load, and the load should be evenly distributed sideways. A known weight can be used if its centre of gravity corresponds to the centre of gravity of a symmetric load in the bucket.

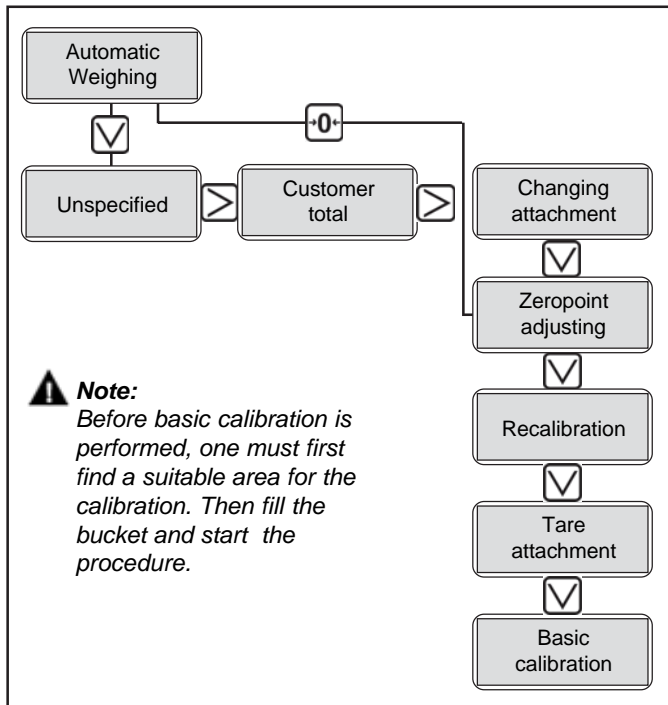


Figure 7.2: Basic calibration



3. Before the machine is moved or operated: go to the basic calibration function in LOADTRONIC II.

Press: and

BASIC CALIBRATE
Attachment: 1
Type : Strt. buck.
: OK > : time

4. Confirm basic calibration:

BASIC CALIBR. A1
Loader n.nn degrs.
Ref. Op.man. 7.2
: start > : exit

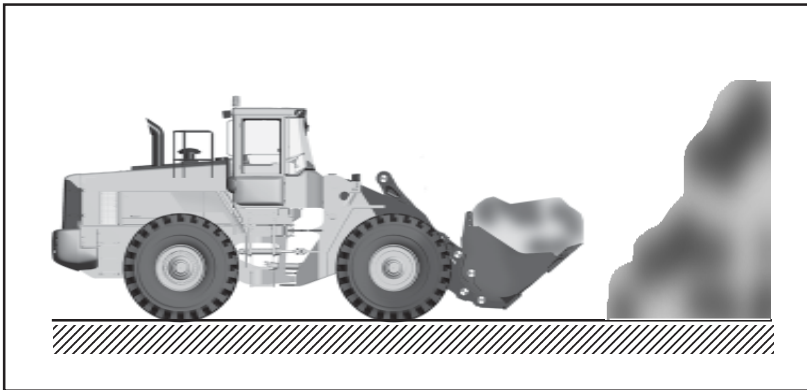


Figure 7.2.1: Filling the bucket

5. With reference to the loader angle shown on the screen above, position the machine on a horizontal (~0 degr.) ground with the lifting arms horizontal. The bucket should be fully tilted rearward. Pallet fork and material handling arm should be in carrying position. See chapter 8.7

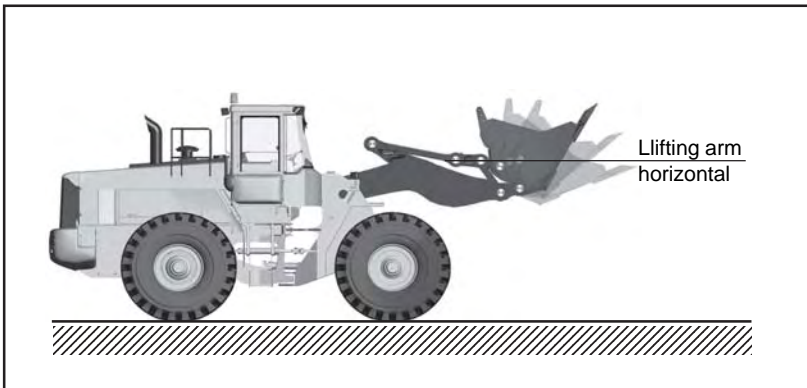



Figure 7.2.2: Lifting arm horizontal



- 6. Press  to start
- 7. Carry out the required sequence of movements to calibrate:

BASIC CALIBR. ACTIVE	A1
Lower	> : exit

Down/up according to instructions on the display
Start carefully and lower/lift slowly
Avoid shaking and rocking
Do not lower the bucket so far that the lifting arms go against stop, and so that the attachment (bucket) is forced out.

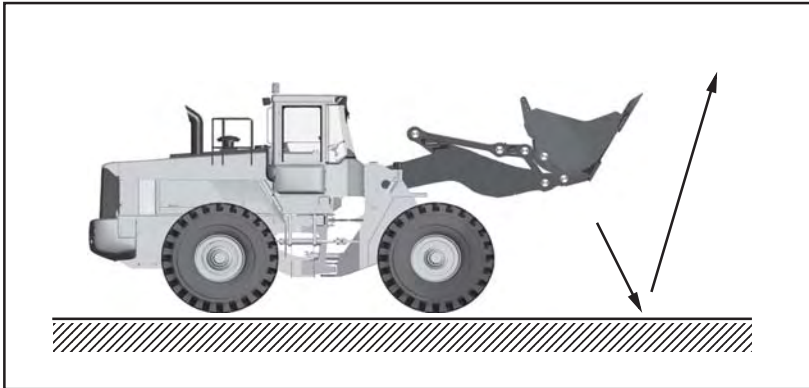



Figure 7.2.3: Calibration movements

- 8. When basic calibration is OK, the LOADTRONIC II asks for the reference weight, which is the weight of the material in the bucket.

BASIC CALIBRATE	A1
Ref. Load : XX.XX t	
 : OK	

Set the reference weight:


Alternative 1

The reference weight is known with an accuracy within 0.5 %, for example, when weighing on a weigh-bridge or using approved weights. Set this weight on the display unit (+/- or numeric keys). The calibration weight must weigh approx. 40 % of the tipping load of the machine.

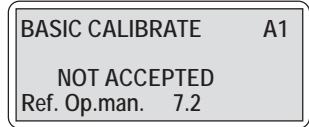
Alternative 2

If an accurate determination of the weight of the loose material in the bucket cannot be made, estimate the weight as carefully as possible and set the value. After the basic calibration has been done, the attachment must be recalibrated by testing with an accurately known weight, for example, a stone, before the calibration is complete. See chapter 7.3



9. Confirm reference weight: 
 LOADTRONIC II automatically returns to automatic weighing.

10. If the basic calibration **is not OK**, the adjacent menu will be displayed for approximately 10 s:



Probable cause:

Uneven movements and/or shaking of the lifting mechanism while carrying out the basic calibration.

Necessary action: Repeat the basic calibration!

11. Test the calibration by doing some test weightings. Smaller adjustments can be done by using the Recalibration function. See chapter 7.3.

12. Do a backup of the calibration. See chapter 8.2



7.3. Recalibration

Calibration must be enabled. Recalibration is carried out if the LOADTRONIC II constantly shows too high or too low weights in relation to a known weight over the weights area. If the error varies over the area, a basic calibration should be done, see chapter 7.2. For best result, do several test weighing using a known weight or a bridge weight, and calculate the average error in percentage.

1. Go to the recalibration function in the LOADTRONIC II.

Press: **0** and **√**.

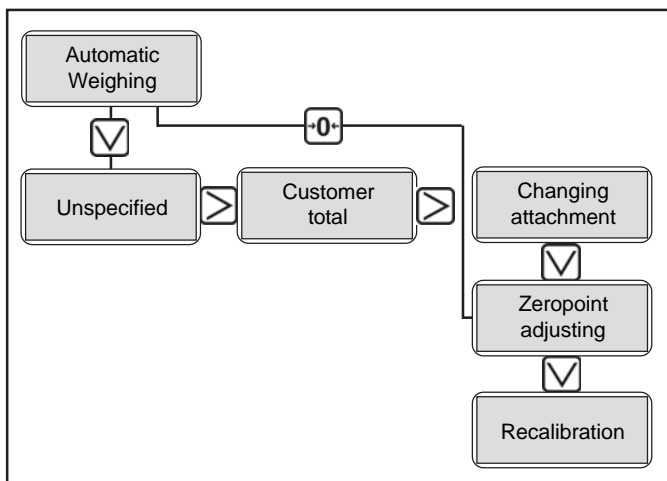
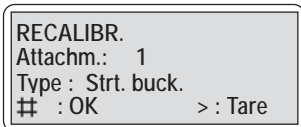
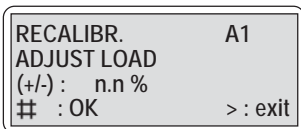


Figure 7.3: Re-calibration

2. Confirm recalibration with: **#**.



3. Based on the test weighing above, enter the correction (using the +/- keys) up to +/- 10%. If for example LOADTRONIC II weighs 2% too low, enter 2.0%, and weighs 2% too high, enter -2.0%.
4. Confirm recalibration with: **#**.
5. Test the calibration and repeat the recalibration if necessary.
6. Do a backup of the calibration. See chapter 8.2



7.4. Zero point adjusting

Prior to performing a zero point adjustment, make sure that the machine has normal working temperature. This will result in the most accurate adjustment.

Zero point adjusting should be carried out each time the machine has been idle for a while, or at least every hour. During normal operation, the zero point can be adjusted up to +/- 2% of max load.

After 50 minutes, the operator is shown a request on the display unit to carry out zero point adjusting. After 10 more minutes (total 1 hour) the system will block weighing until the zero point has been adjusted (the load will show "*****").

Zeropoint adjustment is performed in the following steps:

1. Check that the attachment is **EMPTY!**
2. Place the machine on level ground with the lifting arms horizontal. The attachment should be fully tilted rearward to stop. If not, the system shows the message "bucket" and aborts the function. Pallet fork should be in the carrying position, see chapter 8.7.

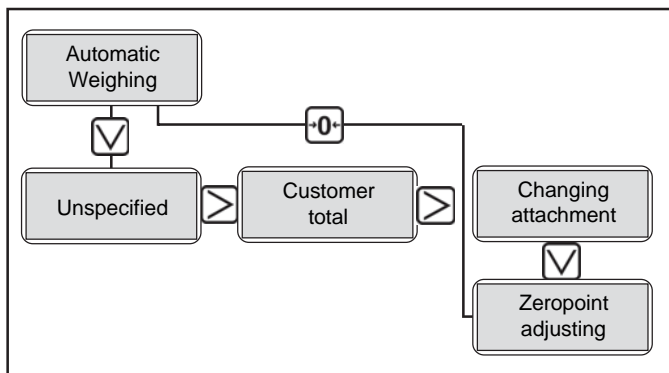




Figure 7.4: Zero point adjusting

3. Go to zero point adjusting: Press: .
4. Press  to start zero point adjusting.

ADJUST ZEROPOINT	A1
Load	: *****t
	: 0.00t
T: unspc.	: 0.00t

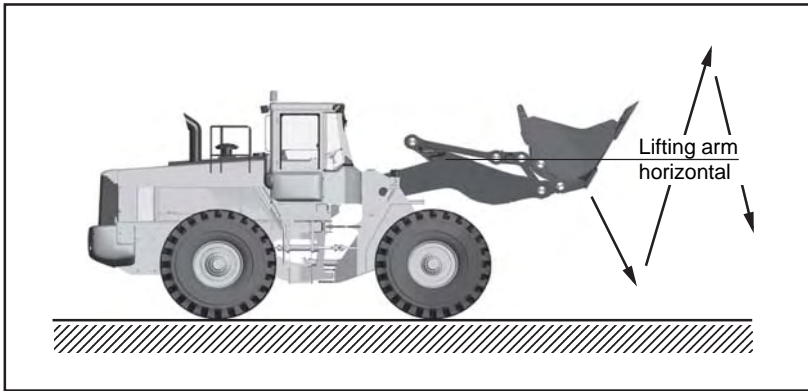


Figure 7.4.1: Zero point adjusting movements

5. Make a sequence of movements to initiate zero point adjusting:

(Down)/up/down according to instructions on the display. Start the movement carefully and lower/lift slowly Avoid shaking or rocking the machine.

6. When the zero point adjusting is OK the LOADTRONIC II automatically returns to automatic weighing after showing the adjustment in kg. Accumulated load will be continued.

7. If the zero point adjusting is not OK, the following screen will be displayed for approximately 10 sec. The system is showing number of kg it tried to adjust. See fig. 7.4.2.

```
ZEROPOINT ADJUSTING
Ref. Op.Manual 7.4
#: start >: exit
```


```
ZEROPOINT ADJUSTING
Ref. Op.Manual 7.4
ACTIVE
Lower >: exit
```

```
ZEROPOINT ADJUSTING
Ref. Op.Manual 7.4
NOT ACCEPTED
nnn kg
```

**Probable cause:**

- >> Uneven movements and/or shaking of the lifting arm mechanism during taring.
- >> The adjustment was more than +/- 2% of max load. The information indicates that the zero point of the sensor (sensors) has moved greatly in relation to the tare curve. This can happen if the machine has not been used for a while, or it has been serviced.

Necessary action:

- >> The zero adjustment can be initiated (allowing adjustment up to +/- 10% of max load by turning off and on the machine and pressing  when the display pattern screen is shown (see also chapter 3.1) This will bring up the screen, shown below. Follow instructions on screen. Repeat the zero point adjustment again.
- >> If the zero point initiation failed, service personnel should be contacted.

ZEROPOINT INITIALIZE
Ref. Op. Manual 7.4
: start > : exit



SECTION
8

8. SPECIAL FUNCTIONS

8.1. Changing attachment

Five different attachments (1-5) can be used on LOADTRONIC II.

ATTACM. : 1
 Type : strt. buck.
 + : next v : 0-adj.
 ## : OK > : (RT)

1. Fit the attachment to the machine.
2. Go to the “Changing attachment” function in the LOADTRONIC II: Press **F1**.
3. Select the number of the fitted attachment with **+**
4. Press **##**

Carry out a manual zero point adjusting.

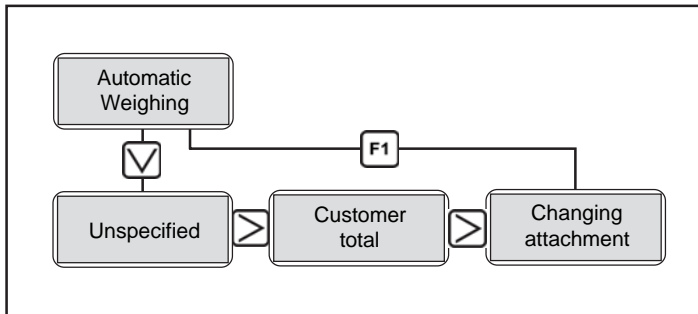


Figure 8.1: Changing attachment



8.2. Backup and restore attachments

An internally safety copy of all the attachments can be created and restored in the LOADTRONIC II.

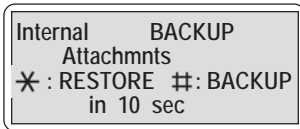
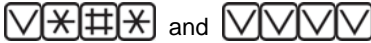
It is recommendable to do a backup after a calibration of an attachment. The saved attachments can then be retrieved using the restore function.

The function is also useful for retrieving the original calibration after a service/software upgrade of the system.

1. Go to the second configuration menu by pressing:



2. Go to the backup menu by the pressing:



3. Press [#] to backup or [x] to restore for about 10 seconds until **OK** is shown in the upper right corner.

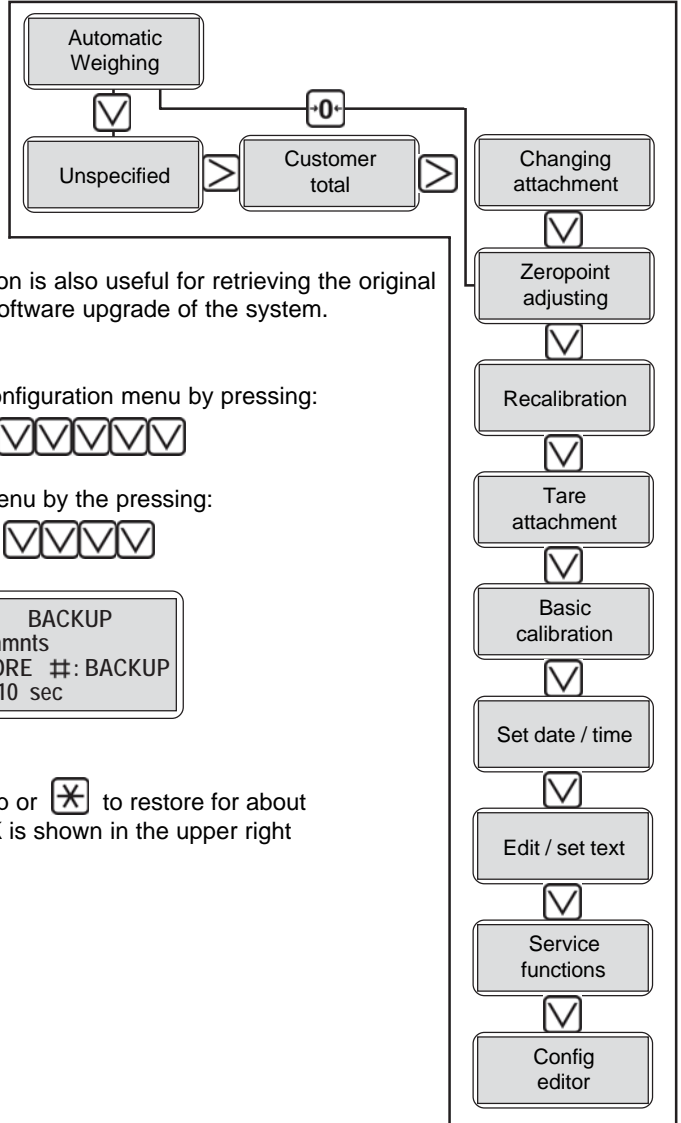
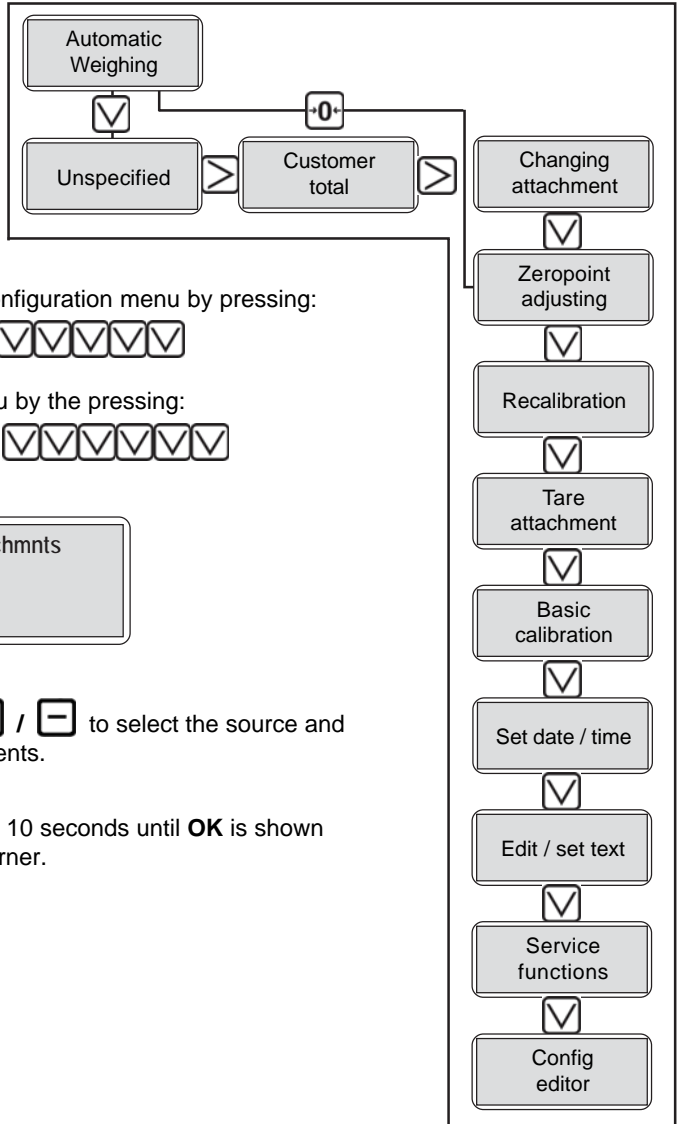


Figure 8.2:
Backup and restore



8.3. Copy attachments

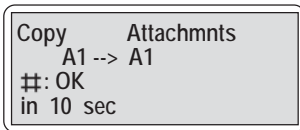
The copy attachment function is used to copy calibration data between the 5 different attachments. A dummy attachment 6 will always keep a copy of the previous attachment copied to.



1. Go to the second configuration menu by pressing:



2. Go to the copy menu by the pressing:



3. Use the [left] and [+ / -] to select the source and destination attachments.
4. Press [#] for about 10 seconds until **OK** is shown in the upper right corner.

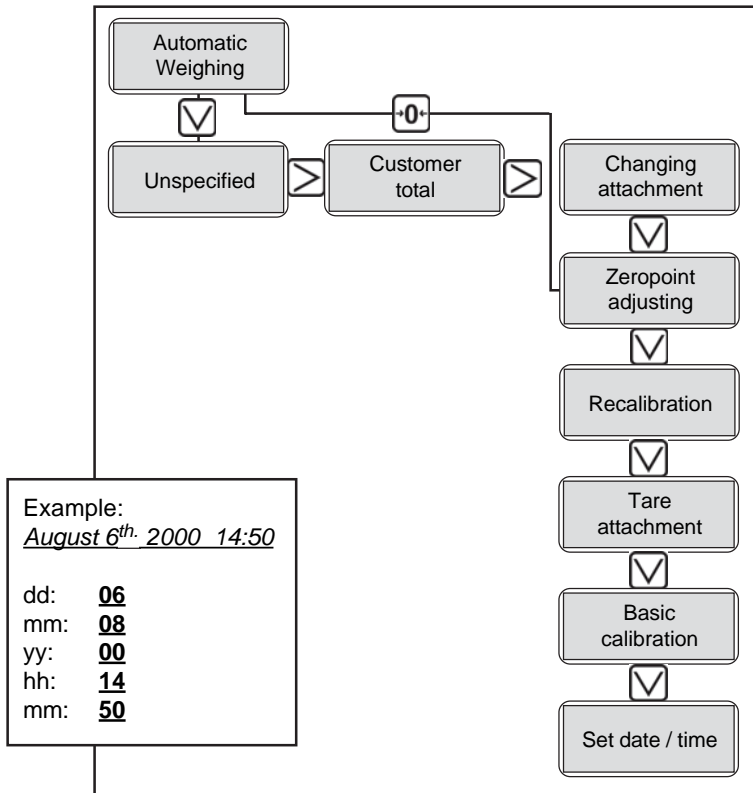
Figure 8.3: Copy attachments



8.4. Setting date and time

1. Press: **+0+** and **▽▽▽▽**
2. Move the cursor to the field to be changed, using **□**.
3. Change the digits with **+** / **-**.
4. Confirm the setting **⌘**:

SET DATE / TIME
 dd/mm/yy hh:mm
 □: next field
 ⌘: OK



Example:
August 6th. 2000 14:50

dd: **06**
 mm: **08**
 yy: **00**
 hh: **14**
 mm: **50**

Figure 8.4: Setting date and time

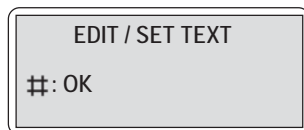


8.5. Customization, text editing

Setting of own designations for customers, materials and trucks and printing reports on printer

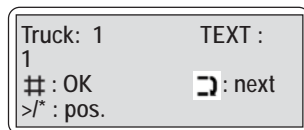
Customers, material and trucks are in principle identified with numbers between 1 and 999. A number may be replaced with text of up to twenty characters so that, for instance, material no. 1 can be shown as "sand", material no. 2 "0 - 16", customer no. 99 as Smith etc. In order to insert such designations for customers/materials/trucks no. 1 - 999 proceed as follows:

1. Press: and to enter text editing.



2. To change texts select:

NOTE: This function can also be accessed from the recording definition menus. See chapter 5.



3. To select text group press , or , , .
 - >> Truck.
 - >> Material.
 - >> Customer
 - >> Report header, four lines are available for inserting company name, telephone etc.

4. Select string of text within the group (no. 1 - 999) by pressing .

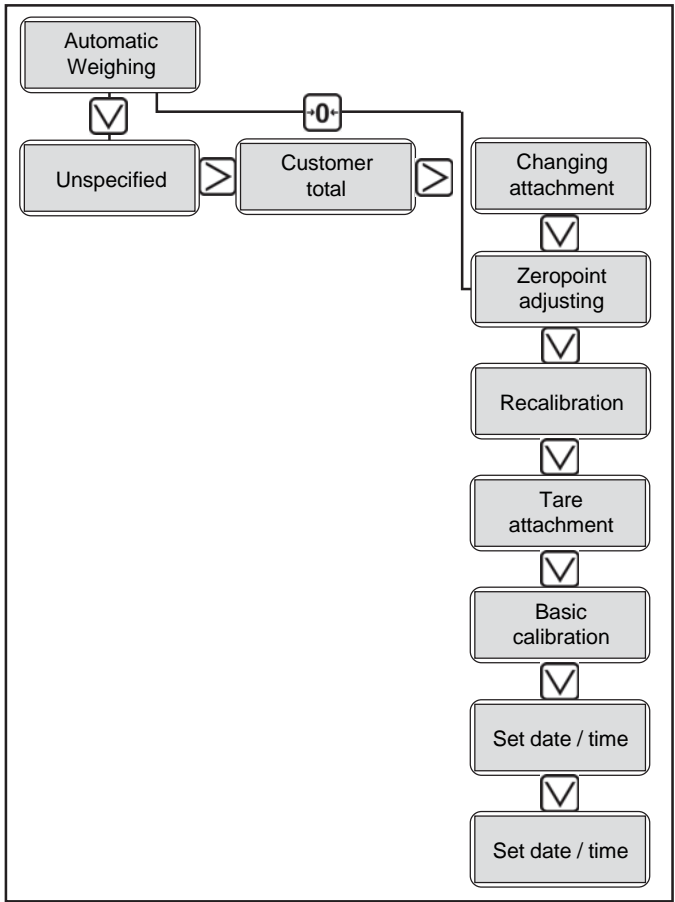


Figure 8.5: Text editing



5. Type in the text. (Character by character) Depress the number keys 0 – 9 as defined in the adjacent list. The same type of programming is commonly known on telephones. Alternatively +/- scrolls through all the characters.

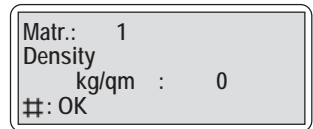
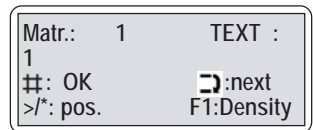
- moves to the next character field
- moves to the previous character field
- F2** set the whole field to its default (no. 1 - 999)

0	: (space), 0
1	: 1, ., + - & / ...!
2 ABC	: a, b, c, A, B, C, 2
3 DEF	: d, e, f, D, E, F, 3
4 GHI	: g, h, i, G, H, I, 4
5 JKL	: j, k, l, J, K, L, 5
6 MNO	: m, n, o, M, N, O, 6
7 PQRS	: p, q, r, s, P, Q, R, S, 7
8 TUV	: t, u, v, T, U, V, 8
9 WXYZ	: w, x, y, z, W, X, Y, Z, 9

NOTE: If the field to be edited has been previously used in the load list, the field is blocked for editing and **'**'** is shown in the upper right corner. A blocked field can be initialized by depressing and holding **F2** for 10 seconds. All entries for this field will then be changed to “unspecified” in the load list.

Figure 8.5.1: Text editing characters

6. Confirm the changes with .
7. Material density can be entered in the material text group as follows: Press the **F1** key. Enter the density and press to confirm.



8. Example on text editing:

For setting **material 1** to “Sand”, go to edit menu, shown above.

Then press , select material 1, and then press 8 times, 1 time, 2 times and 1 time. Confirm changes with .

For setting **customer 9** to “Smith”, go to edit menu, shown above.

Then press , select customer 9, and then press 8 times, 1 time, 3 times, 1 time and 2 times. Confirm changes with .



8.6. Setting language and units

The following settings are normally done during first time calibration of the system. With the exception of language, ID, and units, the calibration switch has to be enabled.

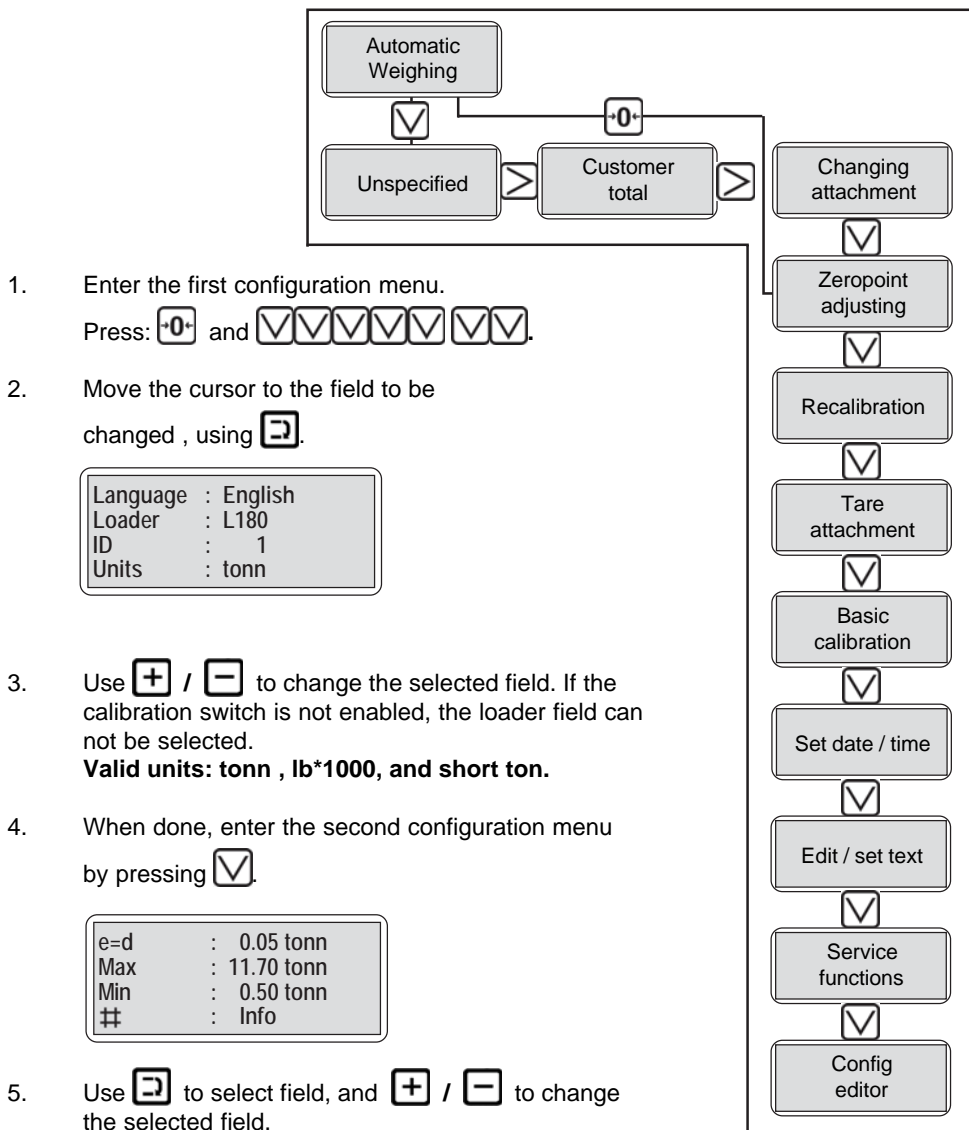


Figure 8.6:
Language and units





6. The scale(d) and verification(e) interval is default set to 0.05t. The Max load is set depending on the loader selected in the menu. Default max values for some machines are shown in the table below.

Mashine	tonn	Lb*1000
L 90	5.80	12.80
L 120	7.80	17.00
L 150	9.70	21.40
L 180	11.70	25.70
L 220	14.30	31.40
L 330	21.40	47.00
C 980	13.00	28.00

Min load is default 10*scale interval.

NOTE: Weights < Min and weights > Max + 9*scale interval will not be displayed or recorded.

7. By pressing , the system information display can be seen.
8. When finished, press  to return to automatic weighing.

DATAINSTRUMENT AS
 LOADTRONIC II
 OIML R51 CLASS Y (b)
 VER.NO. : 1.XX



8.7. Using pallet fork

During taring and basic calibration, the attachment should always be in the same position when weighing commences. When using a bucket, this position is when the bucket is tilted fully rearward (fully rolled back).

Pallet fork

When using a pallet fork, the induction sensor for the bucket positioner is used. The induction sensor is adjusted so that the pallet fork automatically takes up the carrying position (the same position as during taring and calibration).

NOTE: The position of the induction sensor must therefore be marked for the respective attachments.

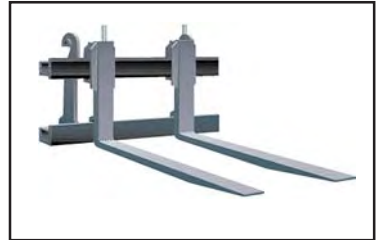


Figure 8.7: Pallet fork

8.7.1. Setting the Volvo induction sensor

- >> Place the attachment in the required position (carrying position).
- >> Turn off the engine, leave the ignition key in running position.
- >> Loosen screw (A) and displace the bracket (B) to its rear position.
- >> Press the switch for the bucket positioner.
- >> Move the tilting lever to the rear detent position.
- >> Displace bracket (B) with the switch towards the rod (C) until the tilting lever returns (is "kicked-out") to neutral position.
- >> Tighten screw (A).

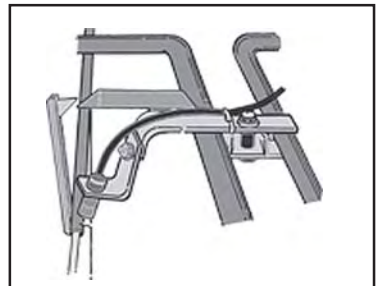


Figure 8.7: Induction sensor

Important!

The distance between the induction sensor and the actuating part of the machine should be 3 - 5 mm (0.12 - 0.20 in). See the adjacent figure.

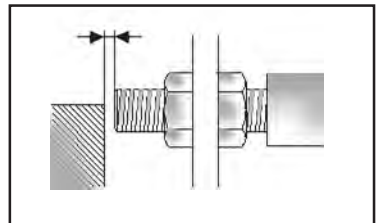


Figure 8.7.2: Induction sensor distance



8.8. Basic preventive maintenance

To safeguard correct weighing the following must be checked:

Daily

- >> Lubricate the upper bearing of the lifting arms and the bearings of the lifting cylinders.
- >> Adjust the zero point when starting work for the day, preferable when the machine has reached it's operational temperature, see chapter 7.4

Recommended weekly

- >> Check the calibration with a reference weight or a load weight.

NOTE:

Washing with high-pressure jet is not permitted for removing dirt and accumulated material around the sensors.



SECTION

9

9. EQUIPMENT

9.1. Printer (optional equipment)



The following report menus can be printed:

- >> Customer total
- >> Material total
- >> Truck total
- >> Loader total
- >> Load list





NOTE: Also previous load lists (earlier dates) can be printed, see reporting, chapter 6.


Printing reports:

1. Switch on the printer and check that the green power LED is lit. If the red error LED is lit, please make sure that the printer is closed, and not left open (e.g. after changing paper)
2. Select the required report menu (for example customer total).
3. Select the required customer.
4. Press  , after a couple of seconds the printer starts and the LOADTRONIC II returns to the initial display, when  is operated.

Printing load receipts:

1. Switch on the printer.
2. Press 
3. Finish with 

Multiple copies (max.4) are obtained by adjusting screen 50. See chapters 3 and 4 in installation guide.

Press  for each additional copy. Each copy can be removed separately.




SECTION

10


10. EXAMPLES ON HOW TO USE


10.1. Loading a truck


The operator knows that the machine has been stationary since the previous day. He therefore moves the wheel loader to a place which seems level, particularly sideways. While the machine is stationary he carries out a manual zero point adjustment as described in chapter 7.4.




Then he moves the machine to the place of loading. As neither truck, material or customer has to be specified this time the operator presses  to initiate an unspecified load, see section 5.2.

The loading begins and he fills the truck in the way he has always done before the LOADTRONIC II system was installed. However he avoids spilling material on the way from the heap to the truck. When the truck is full after three full buckets and a half, the display unit shows the total weight of the load on the truck on the bottom line.


The operator informs the truck driver of the weight and then presses  to make the system ready for the next truck to be loaded.

While he is waiting he intends to tidy up the work site and to dump the material back into the heap and therefore presses  while he is in the automatic weighing mode in order to pause the LOADTRONIC II, so that weighing is not continued until pause is removed. The line for the bucket weight only shows dashes, see section 4.3.


A new truck arrives. The machine operator re-activates the Loadtronic II from pause by once again pressing . He checks that the unspecified total value is 0.00 tonne and begins to load.

In the second bucket he discovers a large stone. The stone should not be included and he therefore dumps the whole bucket load to one side. The weight of this bucket should therefore not be included in the total. He therefore presses  to cancel the last bucket. The LOADTRONIC II does not know whether the bucket has been dumped onto the truck and therefore asks for confirmation in case the operator should have pressed  by mistake. The operator once again presses  and thereby confirms that the last bucket is not to be included. See section 4.5.3. for details.




When transporting the third bucket, some of the material falls off. The display shows the bucket weight as flashing number and the operator understands that weighing has been carried out both before and after he dropped a material. To determine the correct bucket weight he therefore presses  to manually activate the weighing again. He continues to slowly raise the lifting arms and drives a little slower to give the LOADTRONIC II time to weigh the bucket again. When the bucket weight begins to flash, the operator knows that the weighing has restarted and he can therefore concentrate on driving the loader up to the truck and empty the bucket. See section 4.2.


The fourth bucket weight was so heavy that the total permitted load capacity of the truck would be exceeded. The operator therefore does not dump the bucket load on the truck, but shakes off some of the




material to reduce the weight to a suitable amount. The operator drives the loader to a place where he can dump the superfluous material and presses  to abort the weighing. The LOADTRONIC II knows that the bucket has not been emptied and immediately cancels the recorded weight and instead shows the current weight of the bucket on the display. The operator shakes off some of the material until the display shows that the weight of the material in the bucket is equal to what remains to be loaded. The operator takes into account that the actual weight of the bucket load will be higher when the bucket is tilted rearward and reweighed. When the bucket is fully tilted rearward the operator reverses the machine, turns and drives up to the truck to empty the bucket. While driving, the adjusted bucket load is weighed in the usual way by raising the bucket evenly starting from below the horizontal level. The LOADTRONIC II is reactivated to carry out a new weighing operation approx. 2 seconds after the gear selector was moved to reverse. See section 3.3.
A new truck is already waiting. This time it is a customer which should be recorded together with all data.







The operator presses  in order to:

- >> Record the previous truck load
- >> Begin to specify next load.



As he has pressed the truck key, the cursor is in the truck field on the display. The number of this truck is 8 and he therefore presses .

The total weight (load capacity) for this truck has previously been given as slightly too high and must therefore be adjusted a little. The operator presses  to move the cursor to the field for total weight. The total weight is changed by using  / , or it can also be typed in using the numeric keys.

He presses  to move the cursor to the customer field.

It is customer no. 5, so the operator presses . Finally he selects the type of material by pressing  and the number of the material to be loaded. Thereby the record set-up is completed. He checks that it is correct and then presses  to prepare for loading.

The operator manages to load the truck without any hitches and after the last bucket is delivered,

he presses  to generate a load receipt printout. If there is no new truck waiting, he presses  to prepare for a new, unspecified load.

10.2. Material handling

The operator notices that the LOADTRONIC II shows the text "Adjust zero point", as too long a time has elapsed since the previous zero point adjustment. He therefore drives the wheel loader onto ground which seems level. It is important that the machine also stands horizontally sideways. While the machine is stationary the operator makes a manual zero point adjustment according to the instructions in 7.4.


The stone crusher is designated as customer no. 2 and the material to be crushed is given the designation no. 1. No truck is specified. The operator sets up the record for this and begins to fetch material in order to take it up to the crusher.




He picks up the material with the machine facing down steeper than 10%. Under these circumstances the machine operator will not raise the bucket to a height where the LOADTRONIC II records the weight. The operator also knows that accuracy is often not so good when weighing is done on a steep slope. Therefore he reverses up, turns the machine and drives towards the crusher. On level ground the operator raises the bucket a bit while driving so that the weighing operation begins. At the crusher the bucket is emptied in the hopper while at the same time the operator checks that the bucket load has been weighed.


Next time he does not raise the bucket while driving towards the crusher, but checks on the display that weighing begins when the bucket is raised before the load is emptied in the hopper. This method seems to work well and the operator continues in this way.

While taking a bucket load down the steep slope, the bucket was raised so high that the weighing operation started. The operator however does not trust the result completely and

therefore presses  when the machine is on level ground. This is to cause the bucket load to be weighed again when the bucket is raised before the load is dumped.

By the lunch break the operator has completed the work of carrying material up to the crusher and therefore presses  to store the weight of the supplied material.

After the lunch break the operator has to carry the different grades of crushed material and place them in separate heaps. The machine has then been stationary for a while and to be on the safe side the operator first carries out a zero point adjustment.



Then he sets up the record using the correct material number and customer number 1, as this is the designation given to the stock of ready material and then presses  to begin work.


The operator delivers the material by dumping it down a slope. In order to achieve an accurate and safe weighing the bucket must first be raised fairly high before, +30° above horizontal, it is tilted forward to dump the load.



10.3. Loading with pallet fork

See also section 8.7. After having worked with the bucket, the wheel loader is to be used for loading a truck with pallets. The machine operator therefore changes attachment and fits the pallet fork. He also changes the attachment in the LOADTRONIC II by

pressing **F1** (or ) and , as 2 is the attachment number of the pallet fork. See chapter 8.1.

The zero point should always be adjusted when changing attachment. The operator therefore drives the machine onto level ground and makes sure that the machine is standing horizontally, especially sideways. While the machine is stationary the operator carries out a manual zero point adjustment according to the instructions in 7.4. Then he drives the machine up to the first pallet, inserts the fork under it and raises it off the ground. Then he reverses, turns and drives up towards the truck while at the same time lifting the pallet higher. The LOADTRONIC II automatically weighs the pallet while the machine is moving. The next pallet is positioned so that the operator after having lifted it can continue driving forward. He therefore presses  to activate the LOADTRONIC II. Otherwise the gear selector must first be moved to reverse in order to trigger an automatic weighing. The load is then weighed when it is lifted before being placed on the truck.

NOTE: Best possible accuracy is achieved if the pallet always rests against stop on the pallet fork when the weighing commences.



SECTION

11

11. MESSAGES

The messages in the LOADTRONIC II are composed of three digit codes which should be interpreted as shown in the table below.

Function: 3 digits	Code: 2 digits	Position: 2 digits
100 Date	00 No errors	00 Completed operation
101 Start	01 Manual break	01 Pressure sensor
102 Changing	02 Noise	02 Pressure return sensor
103 Tareing	03 Data missing	03 Accelerometer
104 Recalibration	04 Data error	04 Clinometer for lifting arm
105 Basic calibration	05 Minimum limit	05 Data log
106 Manual zero point adjusting	06 Maximum limit	06 Trucks
107 Set date/time	07 Max. offset	07 Materials
108 Recording	08 Zero data	08 Customers
110 Periodical checking	09 Full	09 Load list
111 Sensor check	10 Almost full	10 Start
112 I2C checking	11 Not ACK	11 Error detection
113 Main card	12 Low voltage	12 I2C bus
114 Display unit	13 Check sum error	13 RAM battery
115 Printer	14 Read-write error	14 Not used
116 Remote terminal	15 Unspecified	15 PROM
117 Not used		16 RAM

EXAMPLE:
















INFO: **1110401** **111** : Sensor check
 04 : Data error
 01 : Pressure sensor



SECTION
12

12. QUICK REFERENCE

Key functions :

	Selects downward in the function group / record card column		Direct selection of manual zero point adjusting
	Selects the next functions group or exits and returns the system to automatic weighing		Direct selection of change of attachment
	Selects / confirms (OK) displayed menu function / record card		Used in editing text
	Cancelling bucket weight / adjusting bucket weight		Start printout of load receipts, when configured
	Selection of material to be delivered and reporting day total for this material		Increases the value in the indicated field by 1 or by increasing numbers, e.g. 20, if the key is kept pressed in
	Selection of customer to be supplied and reporting day total for this customer		Decreases the value in the indicated field by 1 or by decreasing numbers, e.g. 20, if the key is kept pressed in
	Selection of truck to be loaded and reporting day total for this truck		Moves the cursor to the next field within the same menu
	Prepares the Loadtronic II for a new loading cycle with no specification.		



Recording / report :

<p>A Recording load (unspecified) <i>Ref. 5.2</i></p> <ol style="list-style-type: none"> 1. Press 2. Begin loading 	<p>G Zero point adjusting <i>Ref. 7.4</i></p> <ol style="list-style-type: none"> 1. Press 2. Position the machine on level ground with the lifting arm below horizontal level. The bucket must be empty and fully tilted backward 3. Press 4. Follow (lower)/lift/lower instructions on display unit. System automatically returns to weighing position when zero point adjusting has been carried out
<p>B Recording selected truck <i>Ref. 5.3</i></p> <ol style="list-style-type: none"> 1. Press 2. Select truck number (01, 02,...999) 3. Press (return to weighing position) 4. Begin loading 	<p>H Changing attachment <i>Ref. 8.1</i></p> <ol style="list-style-type: none"> 1. Change the attachment on the machine 2. Press , select the attachment number with 3. Confirm selection with 4. Carry out manual zero point adjusting
<p>C Recording with full specifications <i>Ref. 5.4</i></p> <ol style="list-style-type: none"> 1. Press 2. Select truck number (01, 02,...999) 3. If anything has to be changed, use the keys for material, customer or the "next" function 4. Press (return to weighing position) 5. Begin loading 	<p>I Reports <i>Ref. 6</i></p> <p>Shows loaded material per day per customer, material, truck and machine, and separate loads from the load list</p> <p>For load receipts, press from the automatic weighing</p>
<p>D Shake-off function <i>Ref. 4.5.2</i></p> <ol style="list-style-type: none"> 1. Press 2. Empty the bucket until the required weight is shown on the display unit 3. Tilt the bucket against stop 4. Engage reverse (new weighing commences) 5. Raise the bucket from below horizontal level 6. Empty the bucket 	
<p>E Cancel the bucket weight <i>Ref. 4.5.3</i></p> <ol style="list-style-type: none"> 1. Press 2. Confirm cancellation with 	
<p>F Manual weighing <i>Ref. 4.2</i></p> <ol style="list-style-type: none"> 1. Press (weighing commences) 2. Lift the bucket above the horizontal level and read off the display unit when the weighing is completed 	



SECTION
13

13. APPENDIX

13.1. Appendix A – Principle of design

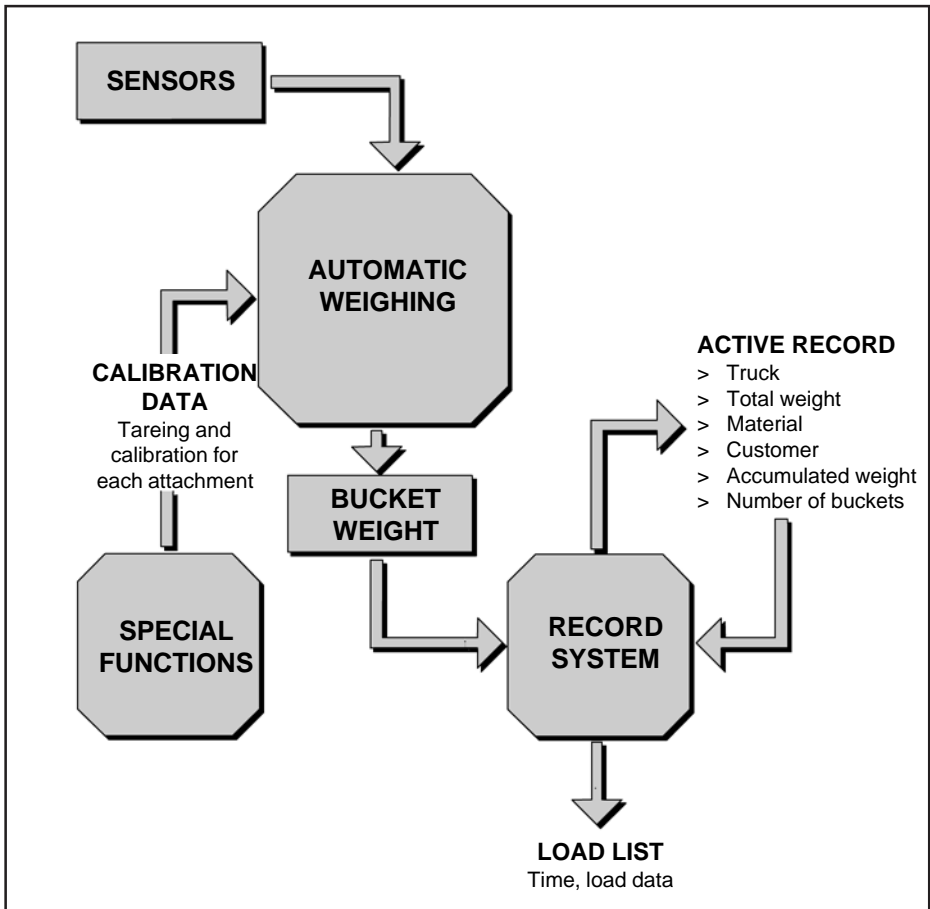


Figure 13.1: Principle of design



13.2. Appendix B – Menu functions

The functions of the LOADTRONIC II system are organized according to this block diagram. A description of the individual functions are given further in this manual.

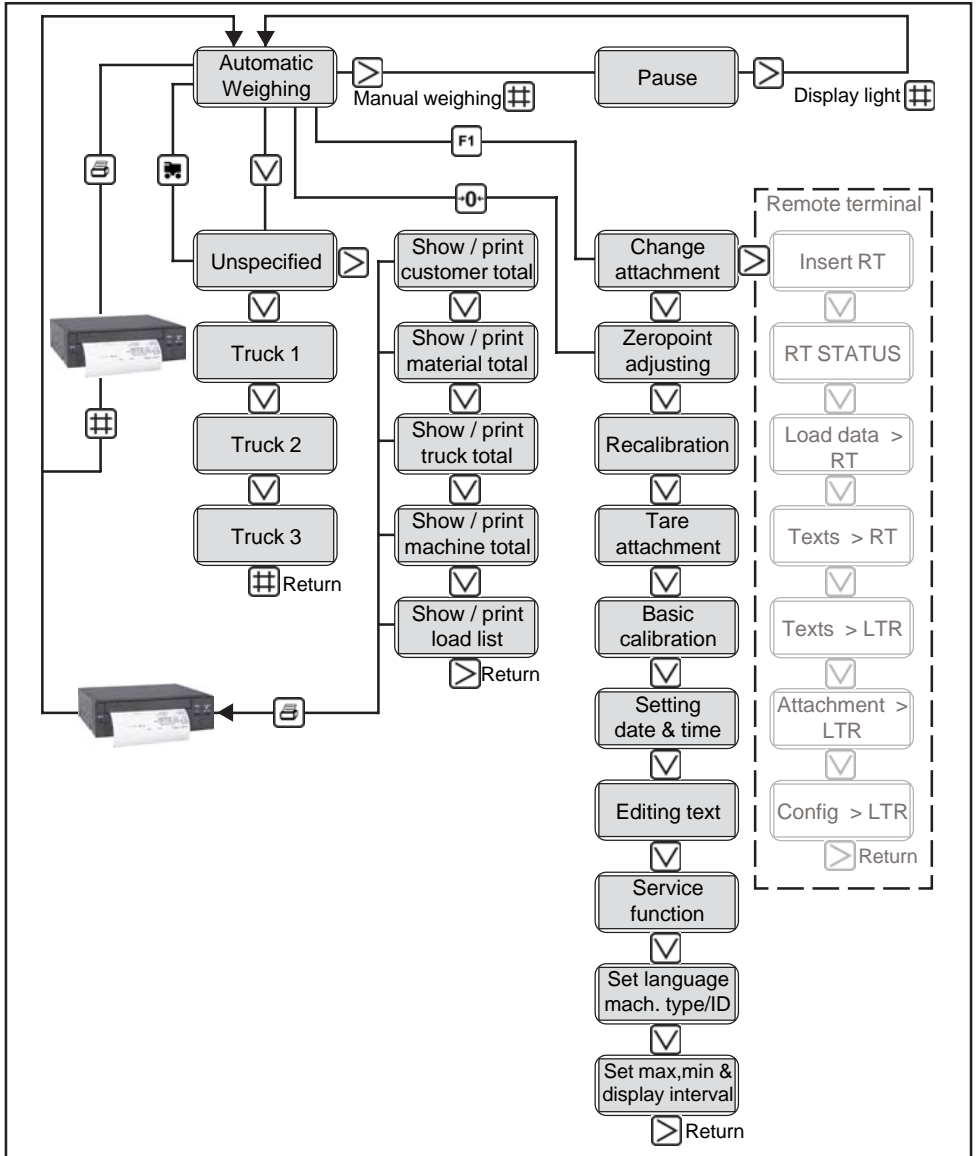


Figure 13.2: LOADTRONIC II function path - menu functions



Fairbanks Scales, Inc.
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