

**OPERATORS MANUAL &
FITTING INSTRUCTIONS
FOR THE
LH 865 CAPACITY INDICATOR**

LH No. 020-865-UK Version 2.00

LH Technologies Denmark ApS

Mølhavevej 2

9440 Aabybro

Denmark

Tel. +45 9696 2500

Fax. +45 9696 2501

Internet: <http://www.lh-agro.com/>

We have endeavoured to deliver a fault free product. To ensure optimal use of the equipment we ask that great attention be paid when reading the manual. We are more than happy to help should any queries arise, both when the product is used for the first time and at any later date. Regarding responsibility for use of the product we refer to our sales and delivery terms especially paragraph 7, which follows:

7. Product usage.
- 7.1 Any use of the product is at the sole risk of the buyer. The buyer is therefore not entitled to any form for compensation caused by, for example, any of the following:
 - Disturbance to/from any electronic services or products that do not confirm to the standards for CE marking,
 - Missing or poor signal coverage or a succession hereof from external transmitters/receivers, used by the buyer,
 - Functional faults, which apply to or from a PC-program or PC-equipment, not delivered by the seller,
 - Faults that may arise from the buyers negligence to react to warnings and fault messages from the product, or which can be traced to negligence and/or absent constant control of the work carried out in comparison to the planned job.
- 7.2 When implementing any new equipment the buyer must take great care and pay attention. Any doubts as to correct operation/use should result in contacting the sellers service department.

This manual may not be altered, copied or manipulated in any way. Unoriginal manuals can lead to operational faults damaging machines or crops as a consequence thereof. LH Agro can therefore not be held responsible for damages incurred, which can be traced to the use of unoriginal or manipulated manuals. Original manuals can be requisitioned at any time from LH Agro.

LH Technologies Denmark ApS

Mølhavevej 2

9440 Aabybro

Denmark

Tel. +45 9696 2500

Fax. +45 9696 2501

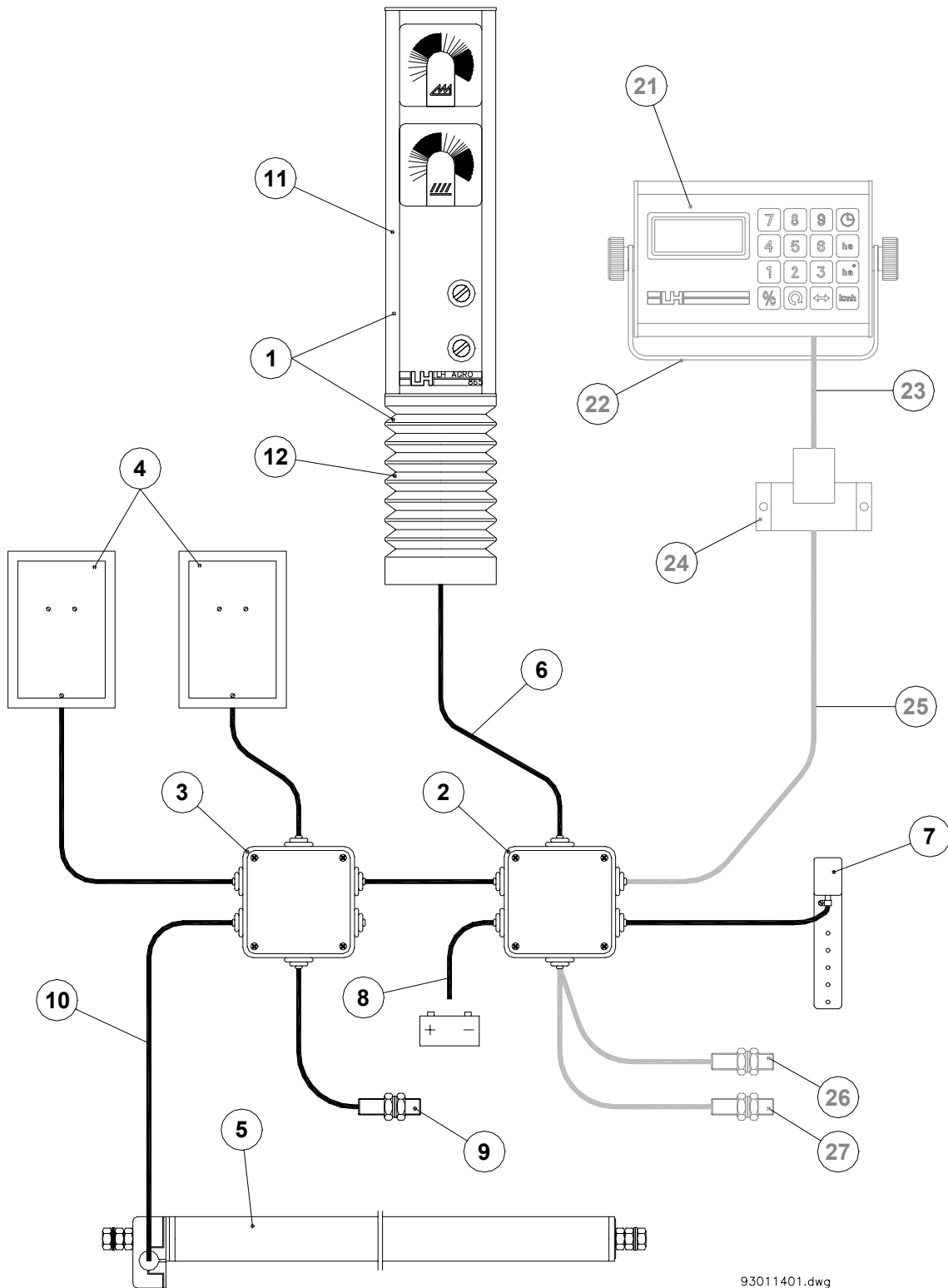
Internet: <http://www.lh-agro.com/>

Contents

THE LH 865 SYSTEM	4
GENERAL OVERVIEW	4
OPERATING.....	6
DISPLAY INDICATIONS	6
CALCULATION OF GRAIN LOSS	7
RULE OF THUMB	8
SETTING UP THE CAPACITY INDICATOR.....	9
FITTING INSTRUCTIONS FOR LH 865	10
FITTING AF MONITOR BOX	10
FITTING OF CONNECTING BOX 1	10
FITTING OF CONNECTING BOX 2.....	10
FITTING OF SUN SENSOR.....	10
SUPPLY VOLTAGE	11
MOUNTING OF WHEEL SENSOR	11
FITTING THE WALKER PADS	12
LEADING THE CABLES FROM THE WALKER PADS	13
FITTING THE SIEVE SENSOR	15
POSITION	15
SHORTENING THE SENSOR	16
LEADING THE CABLE FROM THE SIEVE SENSOR	17
NOTES	18

THE LH 865 SYSTEM

GENERAL OVERVIEW



93011401.dwg

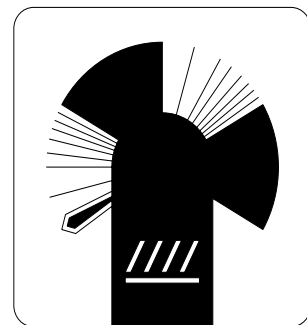
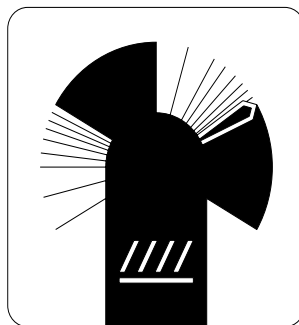
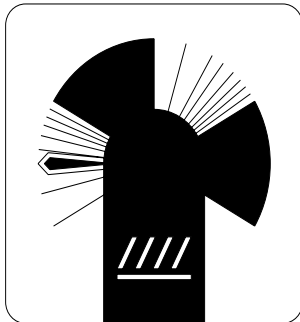
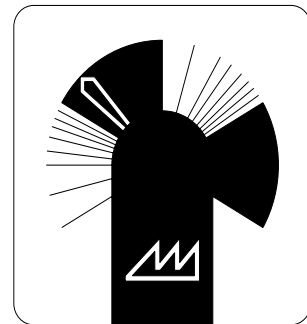
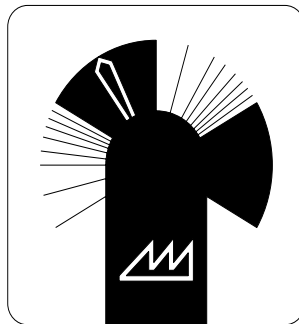
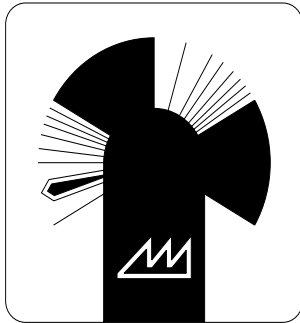
Pos.:	LH-part no.:	Text:
1	908-865	LH 865 grain loss monitor with foot
2	906-865	Connection box 1 for LH 865 system
3	866-012	Connection box 2 for LH 865 system
	900-013	Print for Connection box 2
4	907-012	Straw walker sensor set (2 integration sensors)
5	927-021	Sieve sensor
6	905-865	LH 865 main cable
7	900-708	Sun sensor
8	900-753	Power supply cable
9	900-982	Wheel sensor
10	198-312	Cable for sieve sensor
Can be purchased separately:		
11	915-865	LH 865 box (without foot)
12	903-865	Foot for LH 865 box

Extension possibilities:

Pos.:	LH-part no.:	Text:
21 a	901-102	Mounting set for LH 1000.
21 b	901-122	Mounting set for LH 1200.
22 a	843-102	Mounting bracket for LH 1000
22 b	843-122	Mounting bracket for LH 1200
23 a	900-100	Multi plug monitor part for LH 1000
23 b	900-121	Multi plug monitor part for LH 1200
24 a	900-101	Multi plug implement part for LH 1000
24 b	900-120	Multi plug implement part for LH 1200
25	955-122	Multi cable (5m 5 x 0,5 mm ²)
26	900-982	2 core sensor (area breaker)
27 a	930-983	3 core revolution sensor 5 m with accessories
27 b	931-983	3 core revolution sensor 10 m with accessories

OPERATING

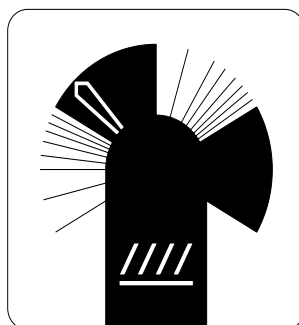
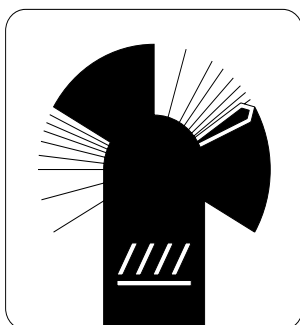
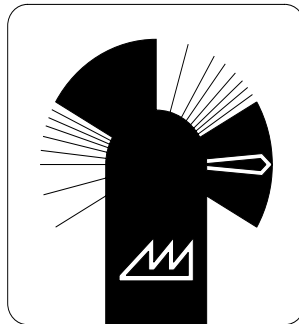
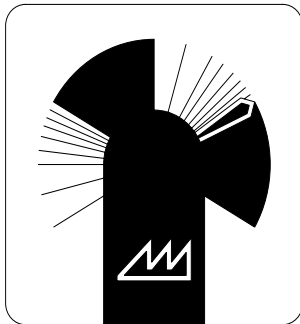
DISPLAY INDICATIONS



Both needles in white field at the same time.
No loss.
You can speed up.
(Higher capacity)

Loss over the sieves.
Too much air or blocking.

No or intermittent loss over the sieves.
Too little air under the sieves.



Both needles in red field at the same time.
Too much loss.
Slow down.

Loss over the straw walkers.
Straw walkers overloaded.
Slow down.

CALCULATION OF GRAIN LOSS

The figures in the below table states the number of seeds per current metre of straw behind the combine harvester when the loss is 1% in a field where the yield is 400 kg/ha.

Width of cut		Barley	Oats	Wheat	Rye
Foot	Cm	25 seeds=1 g	28 seeds=1 g	21 seeds=1 g	25 seeds=1 g
	100	100	112	84	100
6'	180	180	201	161	180
8'	240	240	268	201	240
8½'	265	265	296	222	265
10'	300	300	336	252	300
12'	360	360	403	302	360
14'	420	420	470	352	420
15'	450	450	504	378	450
17'	510	510	571	428	510
18'	570	570	638	478	570

In the table we assume that the yield is 4000 kg/ha. Considerable deviation from this requires correction.

Collect the lost seeds on a piece of canvas placed under the sieves. The length of it in the drive direction must be known exactly.

Examples:

1. Barley 12' width of cut, 220 seeds (yield 4000 kg/ha).

$$\text{Loss} = \frac{220}{360} = 0,6\%$$

2. Barley 12' width of cut, 220 seeds (yield 4800 kg/ha).

$$\text{Loss} = \frac{220}{360} \times \frac{4000}{4800} = 0,5 \%$$

3. Wheat 8½' width of cut, 200 seeds (yield 5000 kg/ha).

$$\text{Loss} = \frac{200}{265} \times \frac{4000}{5000} = 0,6 \%$$

Seeds that are lying on the field before the harvest shall of course *not* be included in the calculation.

RULE OF THUMB

From the above table it can be concluded that per 1 cm width of cut there may be 1 seed per driven metre.

As the loss usually lays in a 1 metre wide track behind the harvester the lost seeds cover app. 1 m².

A normal hand is about 1/100 m². Acceptable loss therefore will be 1/100 of the loss stated in the table.

Example:

A combine harvester of 17' is used in a barley field yielding as stated above.

From the table it appears that acceptable loss (1%) is 510 seeds per metre.

Under the palm of a hand the accepted volume of seeds then will be:

$$\frac{510}{100} = 5,1 \text{ seeds}$$

SETTING UP THE CAPACITY INDICATOR

Before putting the monitor into use, it is very important to realise, that not even the best capacity indicator can prevent grain from being lost.

The purpose of the monitor is to inform the operator about the amount of grain being lost.

Therefore the monitor must be adjusted as follows:

1. Adjust the combine harvester as usual to an acceptable loss (without using the capacity indicator).

NOTE! See the table calculation of grain loss on page 7

2. After control of the loss, proceed at the same speed.
3. Adjust the reading of the meters, **under the driving**, so that the needles are in the middle of the green area. Use a coin or a screwdriver for the adjusting screws for sieve and straw walker meters.

NOTE! The adjusting screws **can only be turned 270 degrees**. Do not use too much force, or the instrument may be damaged.

OBS! Under very favourable harvest conditions it can occur, that almost no loss is registered on one or both sensors. Under such conditions the reading of the meters cannot be adjusted into the green area.

The sensitivity adjustment on the straw walker sensor(s) – NORM-MAX-MIN – shall only be moved from the NORM position under very special conditions. Only in cases (special years or crops) where adjustment on the instrument is impossible, the sensor adjustment can be altered as follows:

NORM	=	normal sensitivity
MAX	=	maximum sensitivity (small seeds)
MIN	=	minimum sensitivity (big seeds)

NOTE! The sieve sensor can be moved in the three slots in the brackets, so that it is always positioned correct in the loss stream.

To obtain the optimum profit by having a correct adjustment of the capacity indicator, it is recommended to repeat the above setting up every time you change field or crop.

After being correctly adjusted the capacity indicator informs the operator, not only about the amount of loss but also whether the capacity of the combine is fully utilized or not.

It is recommended to control if the reading of the monitor is in accordance with the actual loss frequently. Especially when harvesting green and moist crops, as this may cause the sensors to be coated with a layer of dirt.

This layer must be removed as often as required. Hand cleaner is good for this purpose.

FITTING INSTRUCTIONS FOR LH 865

NOTE! See description of the system page 4

FITTING AF MONITOR BOX

Normally the grain loss monitor (the instrument box) is to place on the ground in the right corner of the driver's cab. This is the most practical place when the operator is to read the display.

1. When the mounting place is located this should be marked. The holes for the fixing and for the cables are drilled using the supplied drill gauge.
2. Put the cable through the hole and fix the foot.
3. Adjust the tilt position of the monitor. Raise the sleeve and the screws for the tilt adjustment to be tightened. Can the upper screws not be reached by raising the sleeve this can **carefully** be pulled down.

FITTING OF CONNECTING BOX 1

Connection box 1 should be mounted under the floor of the driver's cab where it will be well protected and where it at the same time is most suitable as regards connecting of power and possible extra equipment.

The cable from the instrument box is lead through the cable lead in and connected on the circuit board in accordance with the directions.

NB! When the cable leads in are adjusted it is most important that exact amount is cut off so that the lead in is tight around the cable.

FITTING OF CONNECTING BOX 2

Connection box 2 is mounted at the rear end of the combine harvester, normally on the right side. The box should be situated where it will be best possible protected and most suitable as regards the later cabling on the combine.

The cable connecting the two connecting boxes is mounted as instructed.

Lead the cable along the existing supply mains, alongside hydraulic tubes etc. to the connecting box 1. Attach it with the supplied cable clamps.

OBS: Beware of rotating parts, sharp edges and high temperatures (exhaust etc.).

FITTING OF SUN SENSOR

The sun sensor is mounted on the driver's cab or on the grain tank. It must be situated so that shadows will never fall on it.

Lead the cable to connecting box 1 where it is connected as shown. Where impossible to fasten the cable to wires, tubes, etc. the supplied cable brackets can be used.

SUPPLY VOLTAGE

The supply voltage is 12 Volt.

Connect the supply cable to 12 V in a way that the supply is switched off. When the ignition is switched off.

OBS: Blue cable to +
Brown cable to –

Lead the cable to the connection box and connect as shown on the circuit board.

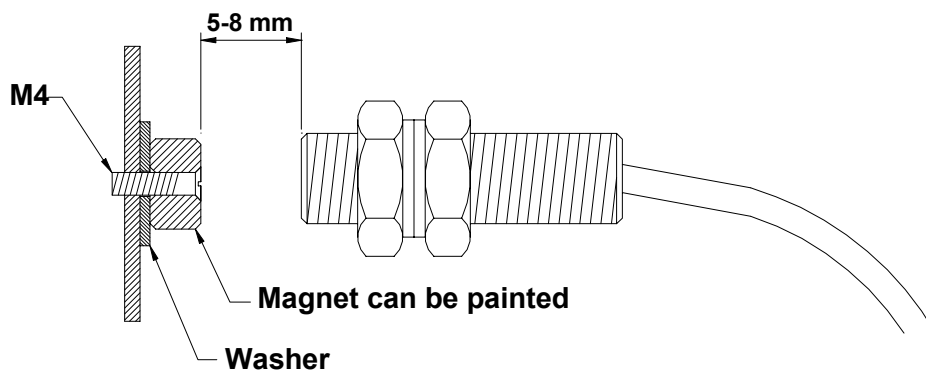
MOUNTING OF WHEEL SENSOR

Mount the sensor on one of the steering wheels.

The magnet is to mount direct on hub or rim. The supplied 20 mm collar **must** be used as support.

Mount as follows:

1. Mount the bracket for the sensor. (Screw or weld).
2. Mount the sensor in the bracket.
3. Mount the sensor as illustrated below (cut 4 mm thread).

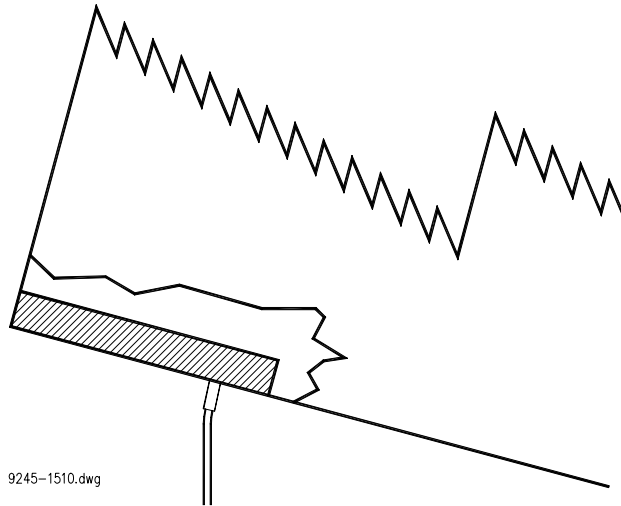


4. Turn the wheel and check the distance between sensor and magnet (5-8mm).
5. Lead the cable to connecting box 2 and connect it as described.
6. Fix the cable and control that it will not be squeezed or worn.

FITTING THE WALKER PADS

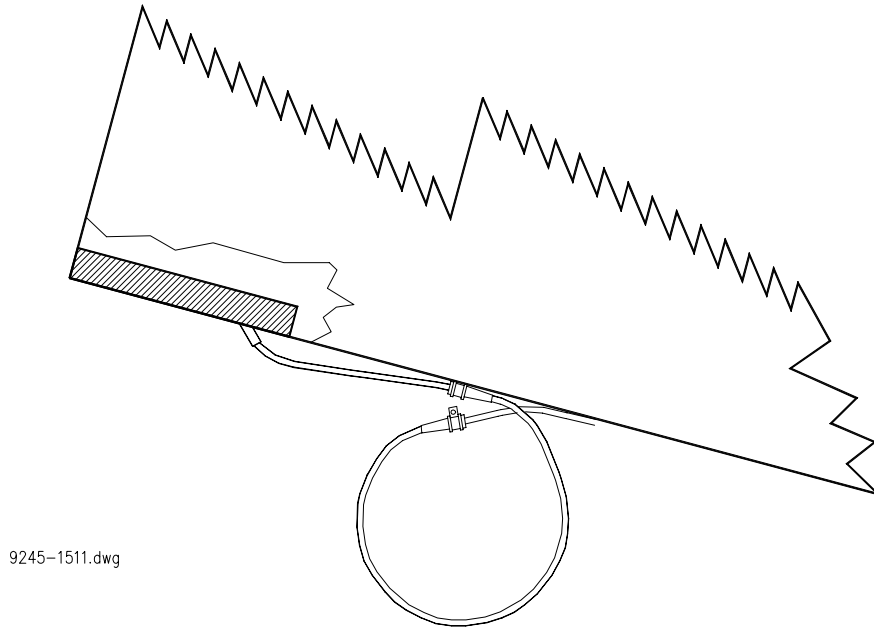
The two walker pads must be fitted at the rear of the two outside straw walkers. Stick the supplied adhesive template on the underside of the walkers with the **arrow pointing to the rear of the walkers** and drill the holes as shown on the template.

NOTE! Remember to take any reinforcements and walker extensions into consideration when positioning the walker pads.



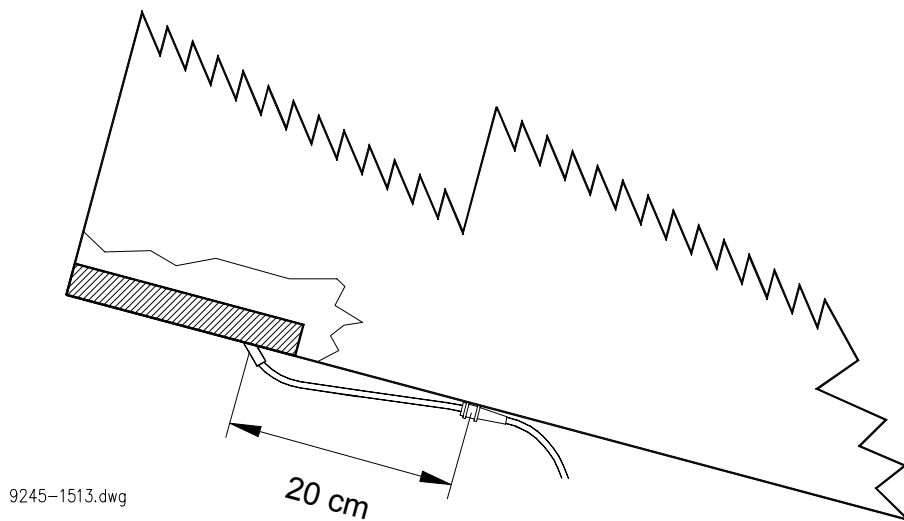
LEADING THE CABLES FROM THE WALKER PADS

There **must** be a loop in the cable between the walker and the machine side as shown on the following diagram. This loop must be large enough to "capture" the circular movement of the straw walkers, without affecting the cable too much (pull/push) when fixing the cable:

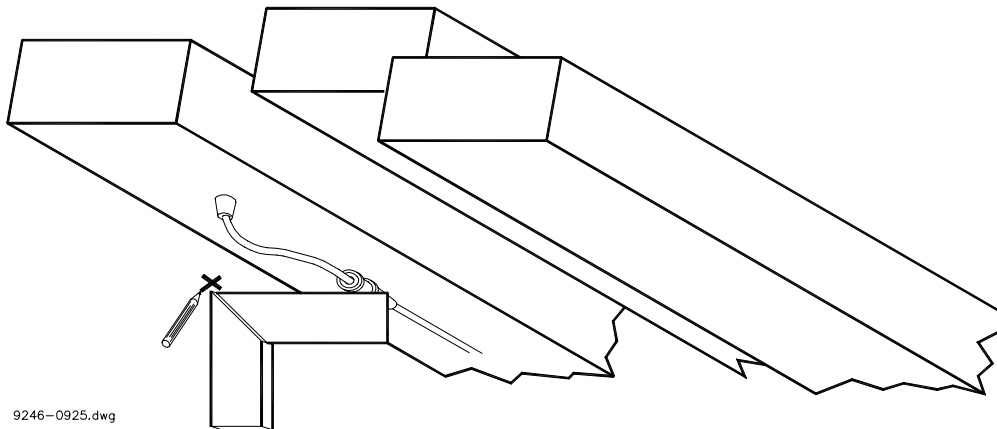


Do as follows to determine a suitable loop size:

1. Attach the cable on the underside of the walker approx. 20 cm from the point at which the cable comes through the walker, as shown hereunder. Be careful when attaching the cable fastener as this is important for the life of the cable (see diagram):



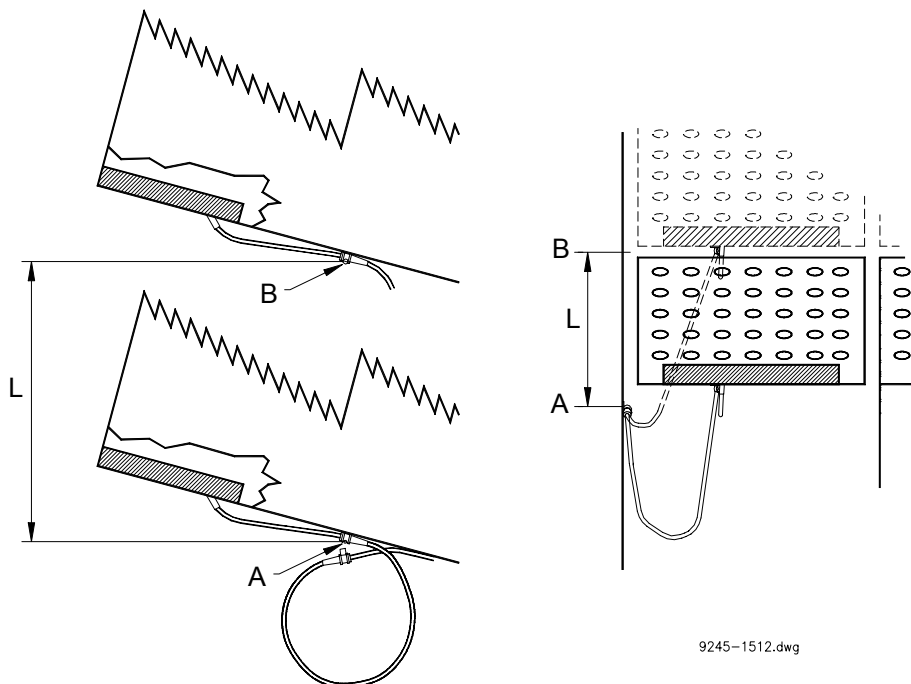
- Turn the walker to the **lowest** position and make a mark (**A**) on the side of the machine at a right angle to the fitted cable fastener.



Turn the walker to the **highest** position and make a mark (**B**) on the side of the machine.

The length of cable needed to make the "loop" is determined by measuring the distance (**L**) between the two marks (**A & B**) and multiplying this by 3.

Make a loop from the calculated cable length and attach the cable fastener 20 mm **under** the lower mark.



Use this procedure for both walker pads.

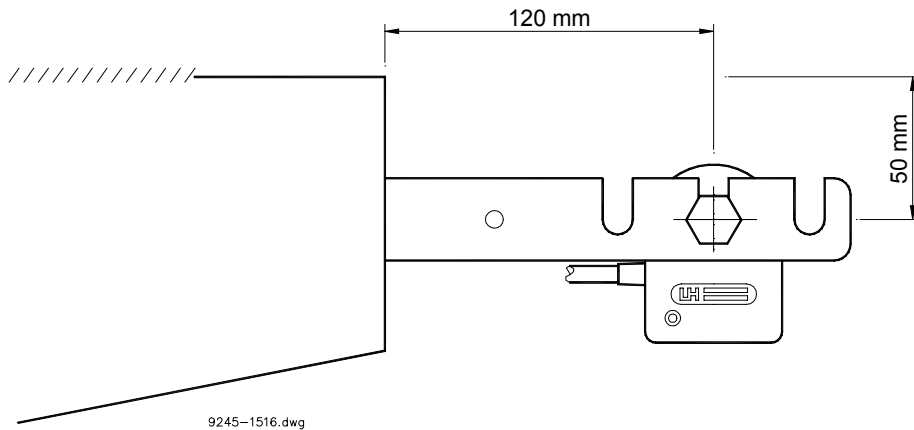
Lead the cable hereafter to the junction box. Lead the cable avoiding any sources that might damage the cable and fasten the cable with the supplied fastener/cable ties where possible to existing cables, hydraulic pipes, etc.

Connect the wires to the terminals as shown on the junction box PCB.

FITTING THE SIEVE SENSOR

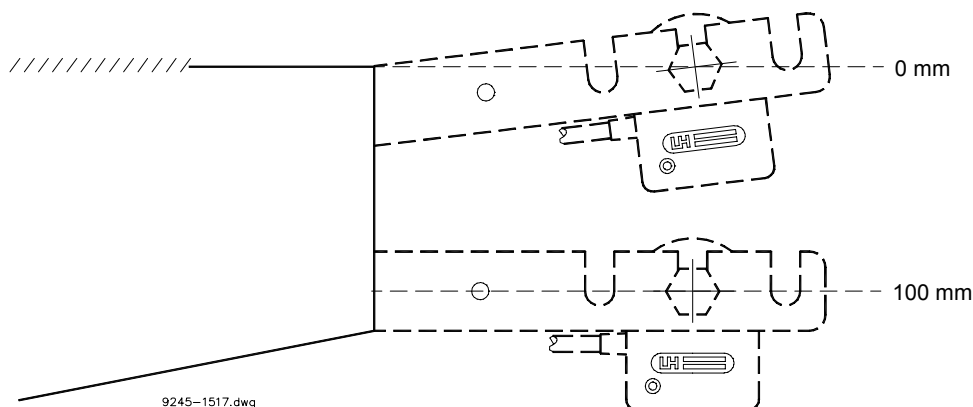
POSITION

The sieve sensor must be fitted so that it can measure the grain loss behind the sieves over the whole width of the sieves. The best position for normal grain types is 120 mm behind the rear edge of the sieves and 50 mm under the sieves (measured from the centre of the tube).



The supplied brackets have three slits, when fitting measure from the middle slit. This allows the sensor to be moved closer to the sieves when harvesting a crop where not much air is blown under the sieves, i.e. oil seed rape. If the crop being harvested needs a lot of air to be blown under the sieves the sensor can be moved further away.

On some machines it might not be possible to fit the sensor in the recommended position due to, e.g. the adjustment handle. In such cases it may be necessary to fit the sensor higher or lower than the height given in the above. The centre of the sensor must not be higher than the sieves or lower than 100 mm under the sieves.

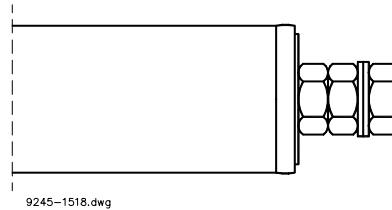


Once the correct position has been found the brackets can be welded or bolted to the sieves. The point at which the brackets are attached must be stable so that the sensor does not shake.

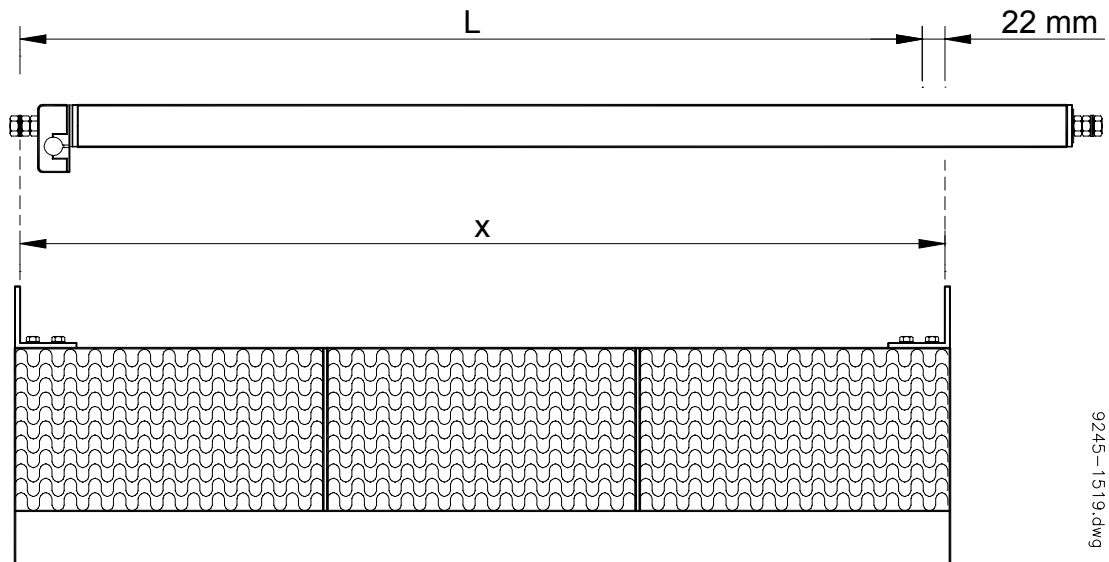
SHORTENING THE SENSOR

The steel tube can be shortened to the length between the two brackets thus:

- a. Remove the rubber bung (opposite the plug) by loosening all nuts. Remove the plastic spacer in the tube by loosening the allen screw.



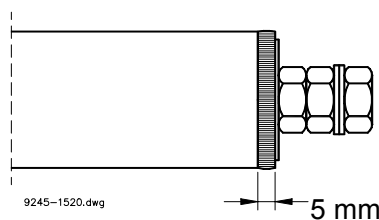
- b. Measure the distance (x) between the brackets exactly; reduce this length by 22 mm. This measurement (L) should be measured from in between the two washers as shown below. Cut the tube with a hacksaw. As the tube can be damaged easily avoid using a vice when cutting the tube.



NOTE! Remember to remove all of the cuttings from the tube before fitting the rubber bung.

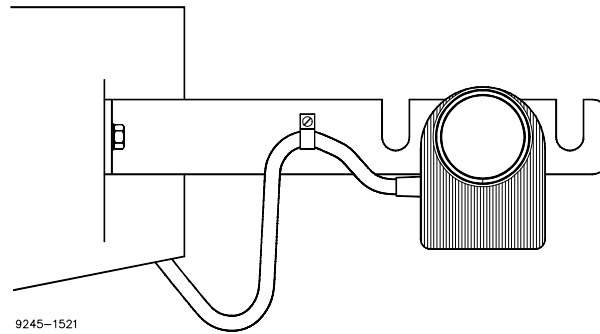
- c. Position the plastic spacer again so that it is approx. 5 mm from the end of the bolt in the rubber bung. Re-fit the rubber bung so that approx. 5 mm of the bung is outside the tube. Tighten the nuts so that the rubber swells slightly.

NOTE! The bolts in the bung **must not** touch the plastic spacer.

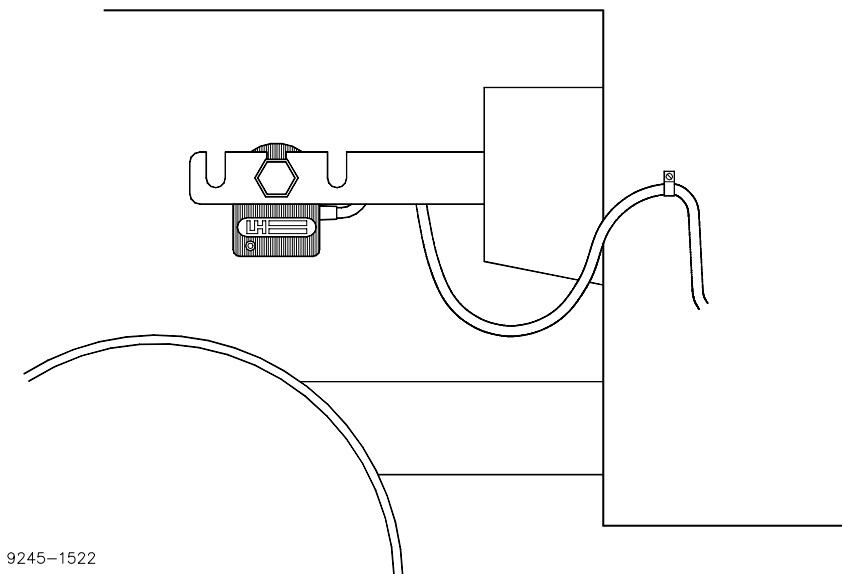


LEADING THE CABLE FROM THE SIEVE SENSOR

Connect the plug to the sensor and fit the cable fastener to the bracket as shown below. This fastener is important for the life of the cable.



Make a bend in the cable that is large enough to "capture" the movement of the sieves. Fit another cable fastener on the side of the machine.



Lead the cable hereafter to the junction box. Lead the cable avoiding any sources that might damage the cable and fasten the cable with the supplied fastener/cable ties where possible to existing cables, hydraulic pipes, etc.

Connect the wires to the terminals as shown on the junction box PCB.

NOTES
