User Manual UPI-200-LI interface

Used for Linde forklifts

(Last update (2013/06/17))

Date	Description	Rev.nr
2013/06/16	First release	

Table of Contents

1 Introduction

1.1 Use

The UPI-200-LI Interface and the UPC-100 Handset enable the user to amend the factory settings of certain Linde industrial trucks.

The UPI-200-LI Interface must be used together with the UPC-100 Handset. Any other use is not authorized.

Remark: Drawings and images in this UPI-200-LI Interface manual may differ from your model.

1.2 Warnings

Amending factory settings of an industrial truck can cause material and physical injury. Therefore, the UPI-200-LI Interface and the UPC-100 Handset must only be used by skilled, trained and authorized staff.

The users of the UPI-200-LI Interface must have access to the user manual at all times.

Read this UPI-200-LI Interface manual carefully before connecting, maintaining or using the UPI-200-LI interface.

Strictly follow the safety instructions in the truck manufacturer's maintenance manual prior to connecting the UPC-100 Handset and the UPI-200-LI Interface to the truck.

Warning: Failure to comply with the instructions and warnings in this manual could result in serious injury to the user or other persons in the vicinity of the truck.

1.3 Contents and first use

The package contains the UPI-200-LI Interface, a UPA-LI-OBD cable and a UPA-ST-RX cable.

2 Supported machines

The UPI-200-LI Interface fully or partially supports trucks of the types listed below.

Warning: The UPI-200-LI Interface does not fully support al truck configurations, in particular less common configurations. The UPI-200-LI Interface is under constant scrutiny, development and improvement and feedback of user experiences is extremely valuable. In case of doubt or concern, please contact UMS.

Type	Series		From	To	Serial	Comm	Remark
E	324/02	E12/15/16-02	06/1999	12/2007		OBD	
E	335	E14/16/18/20	09/1995	11/1999	H2X335...	OBD	
E	335/02	E14/16/18/20-02	02/1998	02/2007	H2X335...	OBD	
E	335/02	E16/20-02	02/2006	-	C1X335...	OBD	
E	336/02	E20/25/30-02	07/1999	09/2011	H2X336...	OBD	
E	336/03	E25/30-03	04/2002	09/2011	H2X336...	OBD	
E	336/03	E25/30-03	04/2007	-	C1X336...	OBD	
E	336	E20/25/30	05/1997	04/2000		OBD	
E	337	E35P-02/40P-02/48P-02	11/1995	10/2011		OBD	
E	386	E12/14/15/16/18/20	03/2006	-		CAN	
H+C 8t|->	359	H100/120/140/150/160/180-T2	08/2005	12/2007		CAN	
H+C 8t|->	359	H100/120/140/150/160/180-T3	11/2007	-		CAN	
H+S ->|8t	350/01	H12/16/18	10/1990	12/2000	H2X350...	OBD	
H+S ->|8t	350/02	H12/16/18	10/1990	12/2000	H2X350...	OBD	
H+S ->|8t	350/03	H12/16/18/20-03	09/1999	03/2007	H2X350...	OBD	
H+S ->|8t	350/03	H12/16/18/20-03	09/1999	03/2007	H2X350...	CAN	
H+S ->|8t	350/03	H12/16/18/20-03	12/2000	-	C1X350...	OBD	
H+S ->|8t	350/03	H12/16/18/20-03	12/2000	-	C1X350...	CAN	
H+S ->|8t	391/01	H14/16/18/20	10/2006	-		CAN	See 13.1
H+S ->|8t	392/02	H20/25	02/2002	-		CAN	See 13.2
H+S ->|8t	393/01	H25/30/35	11/2002	-		CAN	See 13.3
H+S ->|8t	394/01	H40/45/50	11/2003	-		CAN	See 13.4
H+S ->|8t	396/01	H50/60/70/80	04/2008	-		CAN	
H+S ->|8t	396/02	H50/60/70/80-02	04/2012	-		CAN	
L	133	L12/12L/12LHP/14/14L				CAN	
L	139	L12R/16R				OBD	
L	141	L12L/12LP				OBD	
L	372AP	L14/16	10/1998	-	to M02999	OBD	
L	372AP	L14/16/14AP/16/AP	-	-	from M03000	OBD	
L	379	L10/12/12AS	10/1995	05/2009		OBD	
L	1172	L10/12/12i	11/2008	-		CAN	
N+V	132	N20/24/20L/20LI	10/2005	-		CAN	
N+V	149	N20/25/20L/LI/LX	06/1998	03/2006		OBD	
N+V	149	N20V/20VI	02/2000	12/2009		OBD	
P+W	127/02	P250/W20	01/2008	02/2010		CAN	
P+W	1190	P30X/50C	03/2008	-		CAN	See 13.6
R	113/02	R14/16/16N/20/20N	06/1998	06/2000		OBD	
R	115/02	R14/16/20-02	06/2002	05/2007		CAN	
R	115/02C	R10C/12C/14C-02	04/2003	10/2007		CAN	
R	115/03	R14/16/20-03	05/2007	12/2009		CAN	
R	115/03C	R10C/12C/14C-03	10/2007	12/2009		CAN	

R	115/03G	R14G-03/16G-03/20G-03	09/2007	12/2009	CAN	
R	116	R14X/16X/17X/17XHD	01/2005	09/2007	CAN	
R	116/02	R14X/16X/17X/17XHD-02	09/2007	12/2009	CAN	
T	131AP/S	T20AP/20SP	09/2004	-	CAN	
T	131	T30	03/2005	-	CAN	
T	140	T20R	06/1996	-	OBD	
T	141AP	T20AP	04/1999	07/2005	OBD	
T	141	T20/30	11/1999	07/2005	OBD	
T	144	T20S/20SF	06/1996	-	OBD	
T	360	T16/18/20/16L	03/1997	05/2009	OBD	
T	1152	T16/18/20/16L	11/2008	-	CAN	See 13.5

3 Locating the service connector on the truck

3.1 Trucks with CANbus

The service connector for CANbus machines is a circular 7-pole AMP connector. Depending on the machine type, the connector can generally be found on following location:

- For pallet trucks, around the tiller arm. In some cases, the plastic cover must be removed
- For reach trucks, below the steering wheel
- For 39x series, behind the drivers seat on the driver's left-hand side

3.2 Trucks with OBD

Trucks with OBD have a service connector for each available controller (generally 1 for lift, 1 for traction and 1 for display). These service connectors are generally placed together. All service connectors are flat 4-pole AMP connectors. They are generally located left of the steering wheel.

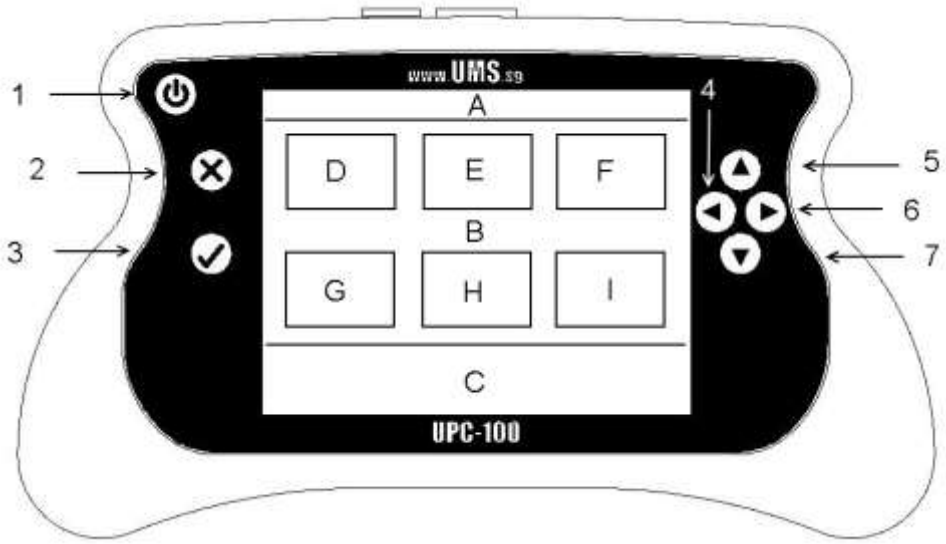
4 Starting up the UPC-100 handset

Carefully read the installation instructions in the UPC-100 Handset User Manual, before starting up the UPC-100 Handset.

Upon start-up, you are required to select the truck type on which you have connected the UPI-200-LI. Ensure you select the correct truck! After selection of the truck, the UPI-200-LI will verify that you have connected the correct cable.

After initialization, the UPC-100 Handset will expect you to confirm that all safety precautions described in the truck manufacturer's instructions have been taken (blocking up, jacking up, etc.). Press OK only if this is the case.

5 Structure of the menu



5.1 CANbus

5.1.1 Measurement (Zone D)

Diagnostics show the present condition of a given input/output (e.g. switch status, motor current, motor voltage ...). Values are read only. Highlight a value (or block of values) to refresh it.

5.1.2 Setup (Zone E)

In this menu, the user can read out as well as manipulate parameters that influence the behaviour of the truck.

Warning: wrongful manipulation of the parameters can result in uncontrolled behaviour of the truck, possibly causing severe injury or death.

Use the submenu ‘store/restore parameters’, to copy all truck parameters onto the UPI-200-LI Interface. These parameters can further be copied on any other truck of an identical type at any time. Use this functionality to set the parameters of all trucks in a fleet identical, instead of manually adjusting every single parameter over and over.

5.1.3 Calibration (Zone F)

On certain truck types, various components require calibration after replacement. Depending on the selected machine type, different calibration types are available.

For a range of trucks, required extra information is provided in this manual (see: Addendum).

5.1.4 Logbook (Zone G)

This menu has two main functionalities: reading the error logs, and clearing them. The error log displays all available information. This information depends on the truck type. Generally, this includes an error number and the working hours at the time of occurrence.

5.1.5 Console (Zone I)

(Consult the UPC-100 Handset User Manual)

5.2 OBD

5.2.1 Terminal (Zone D)

The OBD terminal works in the same way as the original Linde handset. The menu structures are provided by the truck, not by the UPI-200-LI.

The terminal is controlled by a virtual on-display keyboard. Select the correct numeric key using the arrows, and confirm with the OK-key.

5.2.2 Reset service hours (Zone E)

When selecting the menu ‘reset service hours’, the service hours are immediately reset. This operation may take several seconds to complete. A message is shown when the reset has been executed. Restart your truck after resetting the service hours.

5.2.3 Console (Zone I)

(Consult the UPC-100 Handset User Manual)

6 Cleaning the device

Only use a damp cloth to clean the housing and the cable. Do not use any solvents or liquid.

7 Maintenance

There are no user serviceable parts present in the UPI-200-LI Interface. Upon defect, the unit must be returned to UMS for repair. If the UPI-200-LI Interface is damaged, return it to UMS.

Any attempt to unscrew, alter, repair or interfere otherwise with the UPI-200-LI Interface, will invalidate any warranty.

8 Storage

The unit must be stored in a dry, frost-free room.

9 Problem solving

Problem	Solution
I only see the 'handset' icon in the main menu.	Make sure the cable towards the machine is connected to the interface
The display shows "can't locate the interface"	Make sure the cable towards the console is connected.

If your problem is not listed, try the FAQ section on www.UMS.sg.

10 Transport

When transporting the interface, make sure it is not connected to the console. The cables towards the machine must also be disconnected to prevent damage.

11 Regulatory compliance

This UPI-200-LI Interface complies with the Electromagnetic Compatibility Directive 2004/108/EC, in particular with the harmonized standards listed below:

- Emission: EN 55022 (2006) + A1 (2007), class B
- Immunity: EN 55024 (1998) + A1 (2001) + A2 (2003)
- Emission: EN 61000-3-2 (2006)
- Emission: EN 61000-3-3 (1995) + A1 (2001) + A2 (2005)

12 Warranty

UMS warrants the UPI-200-LI Interface for a period of six (6) months from the date of purchase. The warranty is strictly limited to the replacement or the repair of the UPI-200-LI Interface, or parts thereof, showing a manufacturing defect according to the final judgment of UMS.

UMS shall never accept a warranty claim if the user has carried out repairs or modifications to the UPI-200-LI Interface; or if the defect results from assembly, maintenance, storage or use in a manner which is inconsistent with the indications and recommendations by UMS, or from use for purposes other than those described in the User Manual, abnormal use, overloading, or normal wear; or if the original UMS identification, label or serial number has been removed; or if the warranty period has lapsed.

The warranty excludes all costs for transportation.

Warranty claims are administered through Universal Machine Solution Pte. Ltd.. Company registration number 201201400E.

Contact: www.ums.sg

13 Addendum

13.1 Tilt angle sensor calibration procedure for Linde BR391 trucks

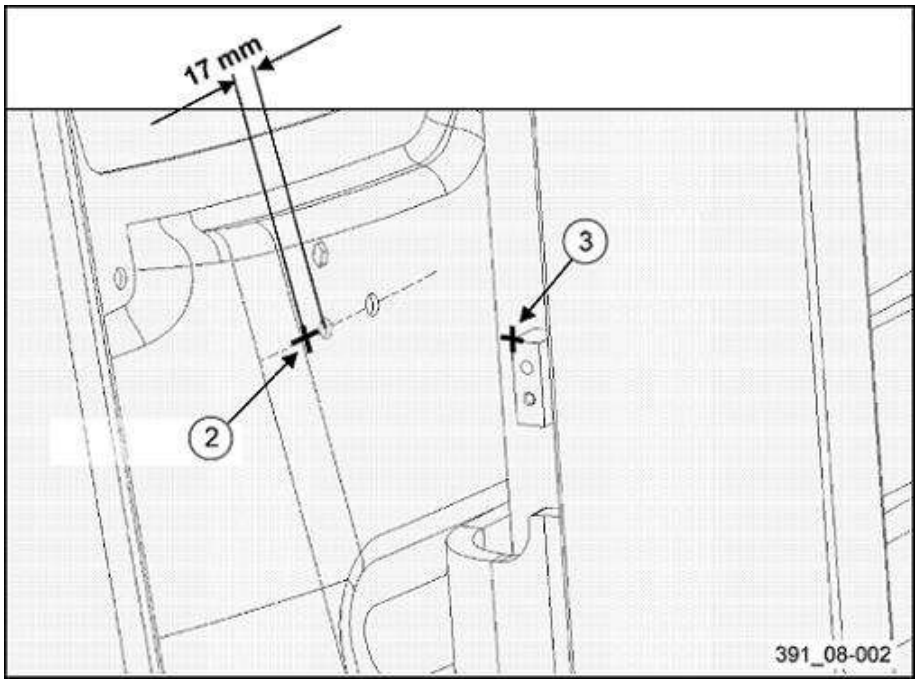
Adjustment of the tilt angle sensor

CAUTION!

When calibrating the tilt angle sensor the service engineer must pay attention to any restriction of the tilt angle of the truck. Non-observation of restriction of the tilt angle may cause the truck to overturn.

Calibration of the tilt angle sensor should be performed with no load on the truck! The forward tilt angle may be restricted depending on the tonnage, type of mast, lifting height, attachment devices and tyres.

Marking the reference points



Faceplate:

Draw a vertical line parallel to the A-column at a distance of 17 ± 2mm from the centre of the hole. Draw a horizontal line through the centres of the two holes.

The intersection of these two lines marks the reference point.

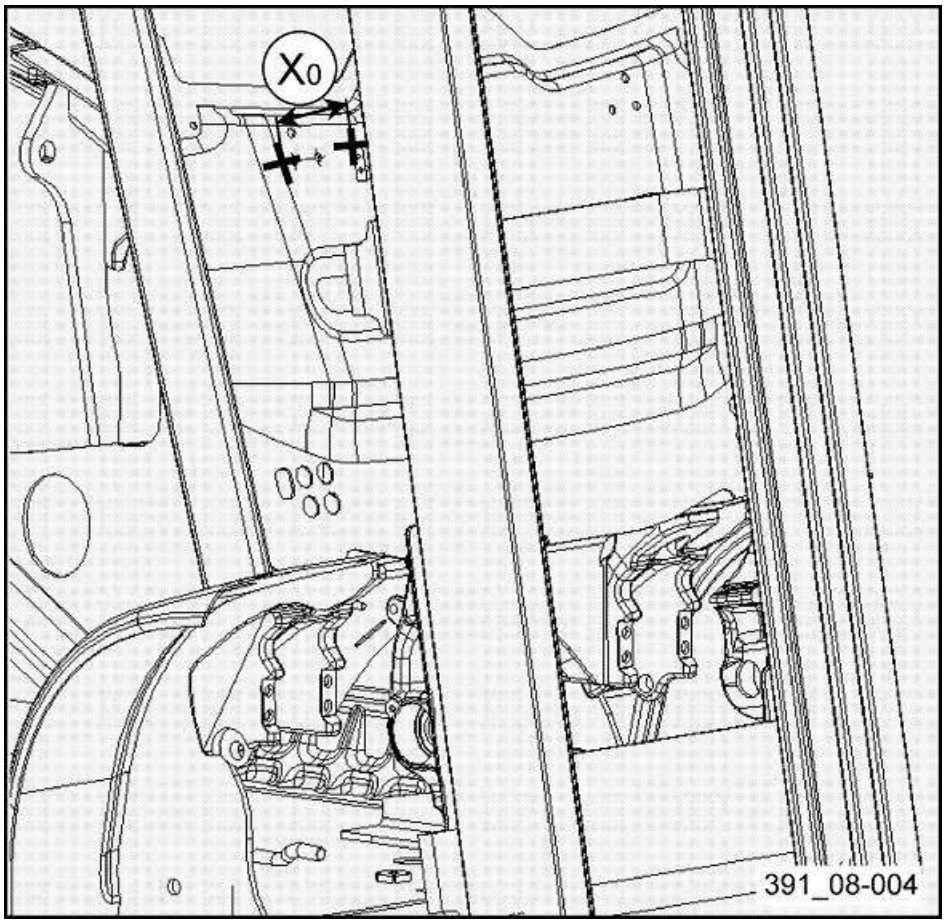
Mast:

The lift mast-side reference point is the outer upper corner of the lower support mounting.

Tilting the mast to the rear mechanical stop

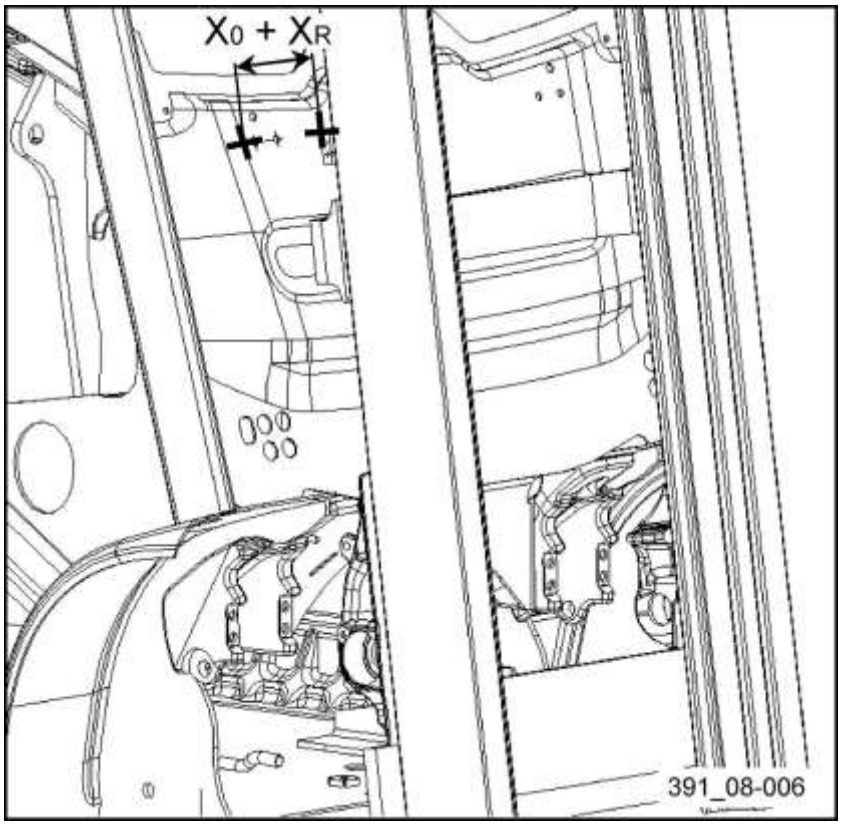
CAUTION!

When tilting the mast back against the mechanical limit stop, contact between mast and wiper arm may occur on trucks with front windscreen and wiper. If necessary, dismantle wiper arm



Tilt the mast to the rear mechanical stop. Measure the value X_0.

Tilting the mast to the rear tilt angle



From the rear mechanical limit, tilt the mast forward over a distance X_R, thus creating a total distance X_0 +X_R between the two reference points.

The value X_R is influenced by tonnage, type of mast, lifting height, attachments and tyres.

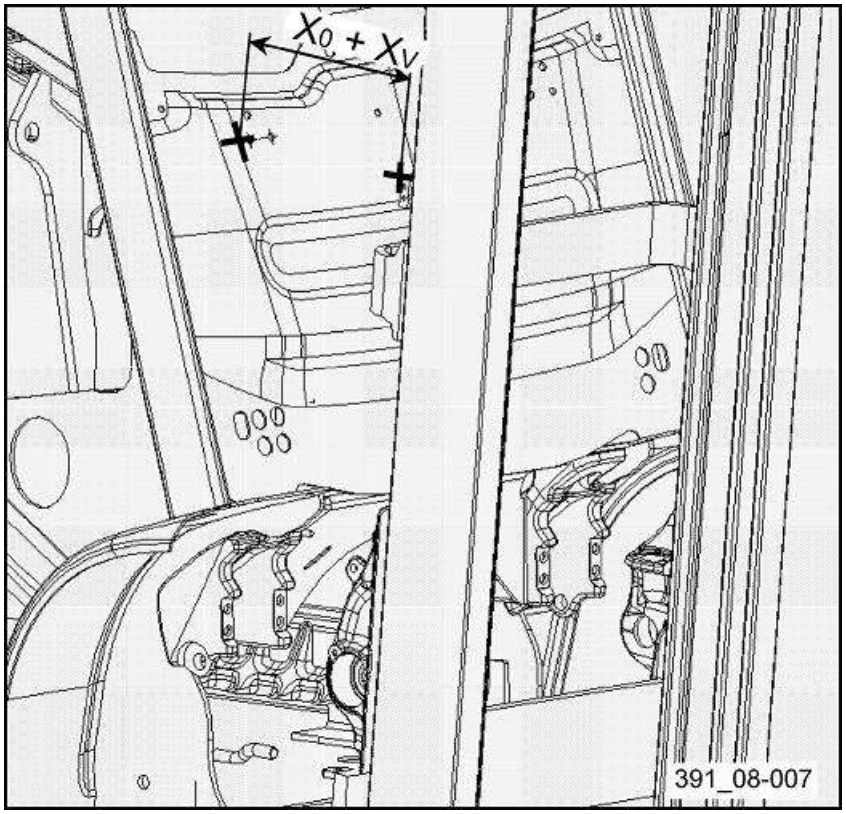
Please check the following table for the correct X_R value.

Nominal backward tilt (1)	**Lift mast series 181**
in°	**X_R in mm**
0.0	107 ± 1
0.5	102 ± 1
1.0	97 ± 1
1.5	91 ± 1
2.0	86 ± 1
2.5	80 ± 1
3.0	74 ± 1
3.5	69 ± 1
4.0	63 ± 1
4.5	57 ± 1
5.0	52 ± 1
5.5	45 ± 1
6.0	41 ± 1
6.5	35 ± 1
7.0	29 ± 1
7.5	24 ± 1 (1)
8.0	18 ± 1
8.5	13 ± 1
9.0	10 ± 1 (2)

(1): Restriction in function of tonnage, type of mast, lifting height, attachment and tyres.

(2): Maximum permitted setting if no restriction of the backward tilt applies!

Tilting the mast to the forward tilt angle



From the rear mechanical limit, tilt the mast forward over a distance X_V, thus creating a total distance X_0 +X_V between the two reference points.

The value X_V is influenced by tonnage, type of mast, lifting height, attachments and tyres.

Please check the following table for the correct X_V value

Nominal forward tilt (1)	**Lift mast series 181**
in°	**X_V in mm**
0.0	103 ± 1
0.5	109 ± 1
1.0	115 ± 1
1.5	120 ± 1
2.0	126 ± 1
2.5	131 ± 1
3.0	136 ± 1
3.5	143 ± 1
4.0	148 ± 1
4.5	153 ± 1
5.0	159 ± 1
5.5	164 ± 1
6.0	169 ± 1 (1)

(1): Maximum permitted setting if no restriction of the forward tilt applies!

13.2 Tilt angle sensor calibration procedure for Linde BR392 trucks

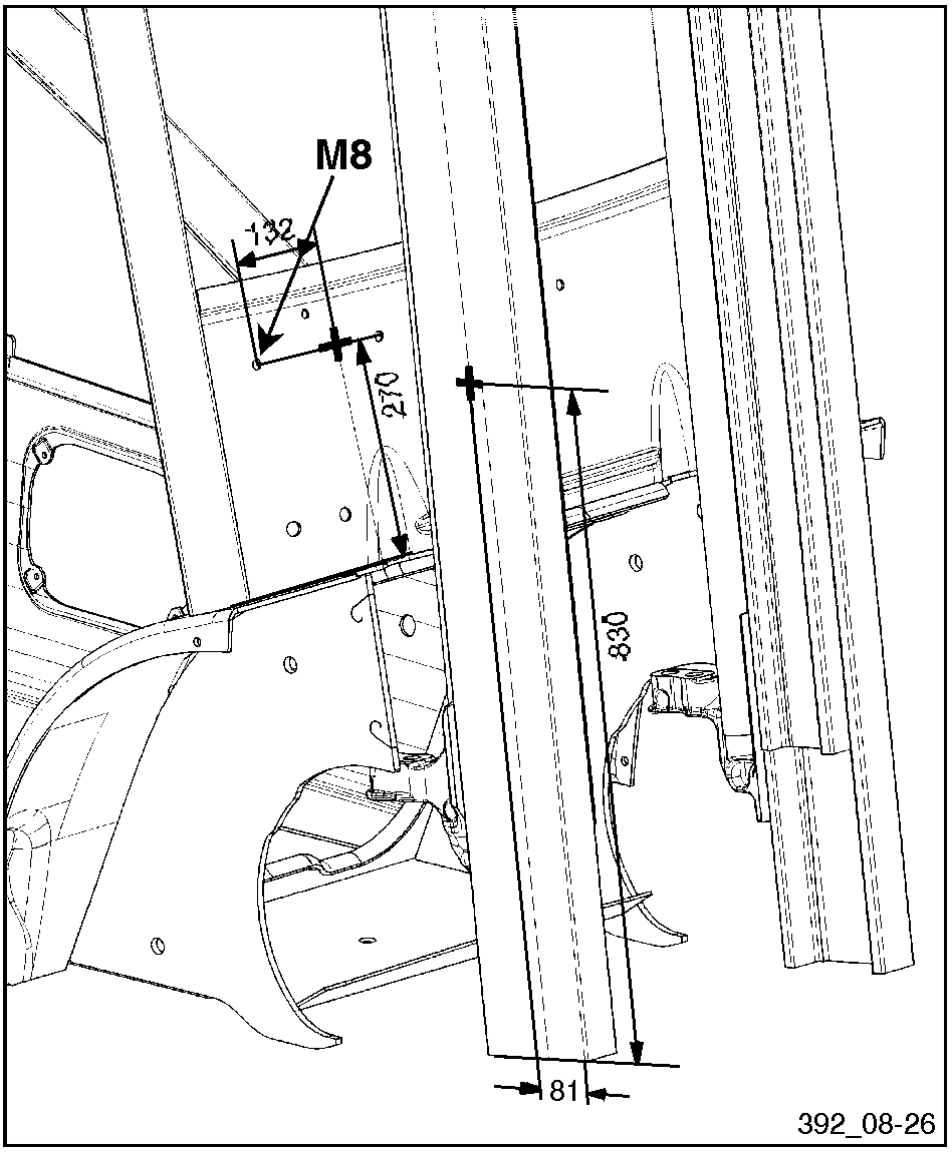
Adjustment of the tilt angle sensor

CAUTION !

When calibrating the tilt angle sensor the service engineer must pay attention to any restriction of the tilt angle of the truck. Non-observation of restriction of the tilt angle may cause the truck to overturn.

Calibration of the tilt angle sensor should be performed with no load on the truck! The forward tilt angle may be restricted depending on the tonnage, type of mast, lifting height, attachment devices and tyres.

Marking the reference points



Faceplate:

Draw a vertical line parallel to the A-column at a distance of 132 ± 2mm from the centre of the M8 bolt.

Draw a horizontal line parallel and at a distance of 270 ± 2mm from the fender.

The intersection of these two lines marks the reference point.

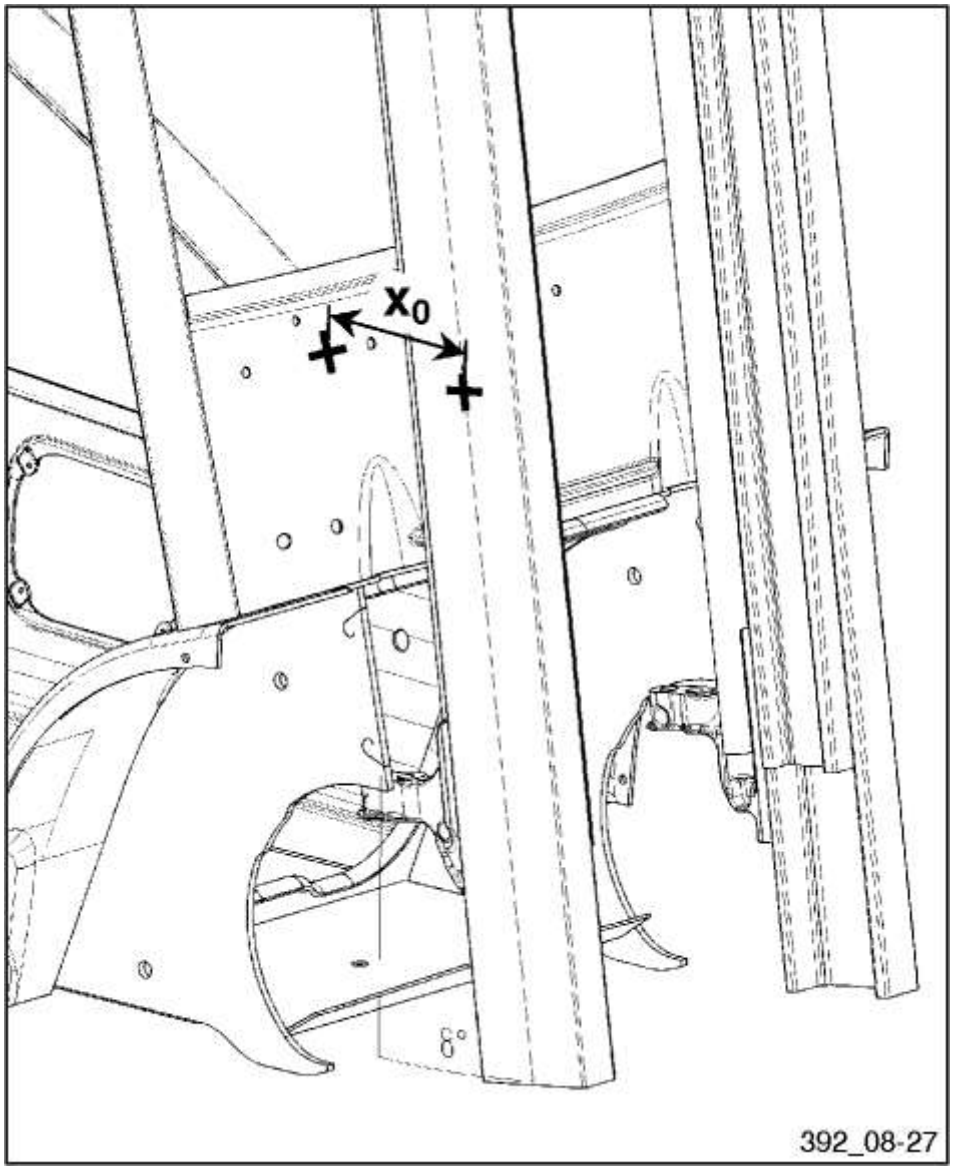
Mast:

The reference point is located at a distance of 830 ± 2 mm from the lower end and 81 ± 2 mm from the side of the external mast profile.

Tilting the mast to the rear mechanical stop

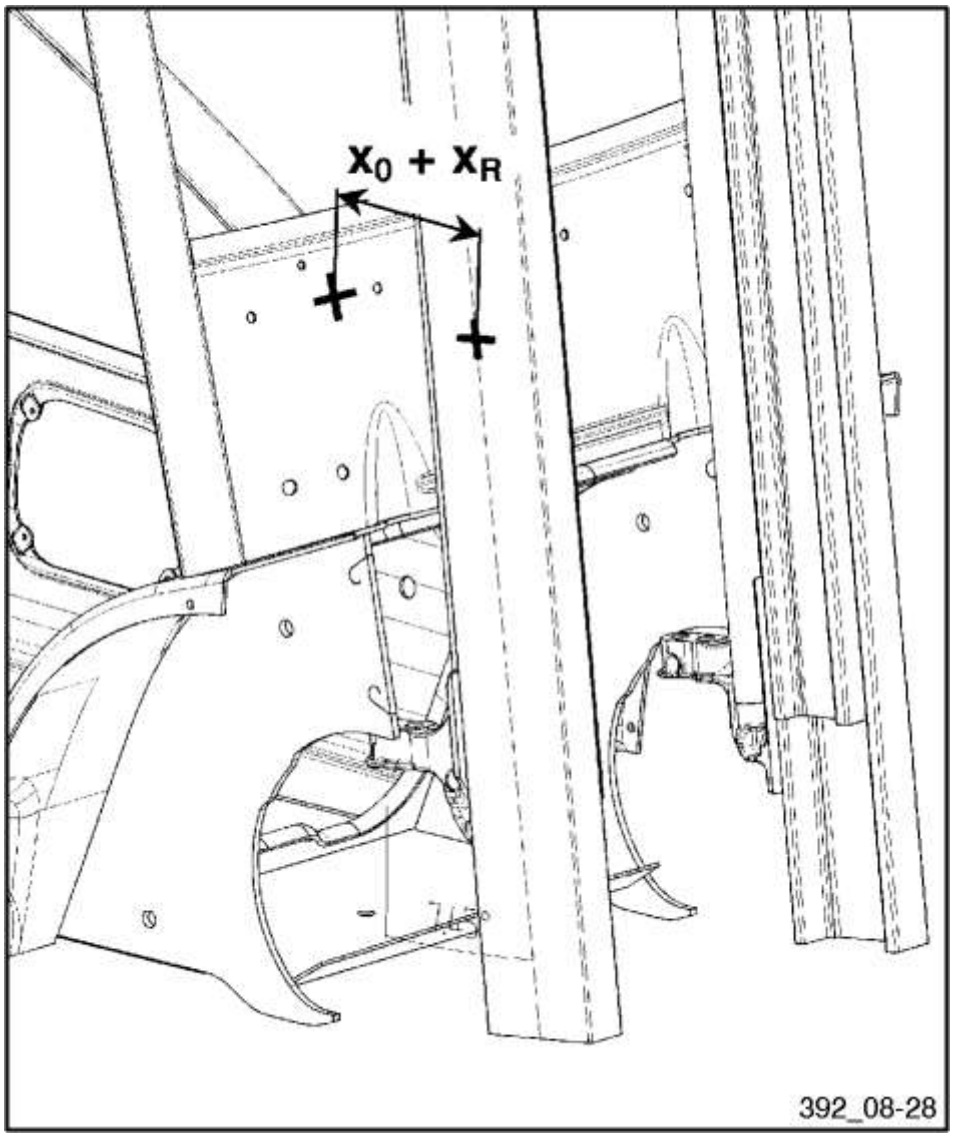
CAUTION !

When tilting the mast back against the mechanical limit stop, contact between mast and wiper arm may occur on trucks with front windscreen and wiper. If necessary, dismantle wiper arm.



Tilt the mast to the rear mechanical stop. Measure the value X_0.

Tilting the mast to the rear tilt angle



From the rear mechanical limit, tilt the mast forward over a distance X_R, thus creating a total distance X_0 $+X_R$ between the two reference points.

The value X_R is influenced by tonnage, type of mast, lifting height, attachments and tyres.

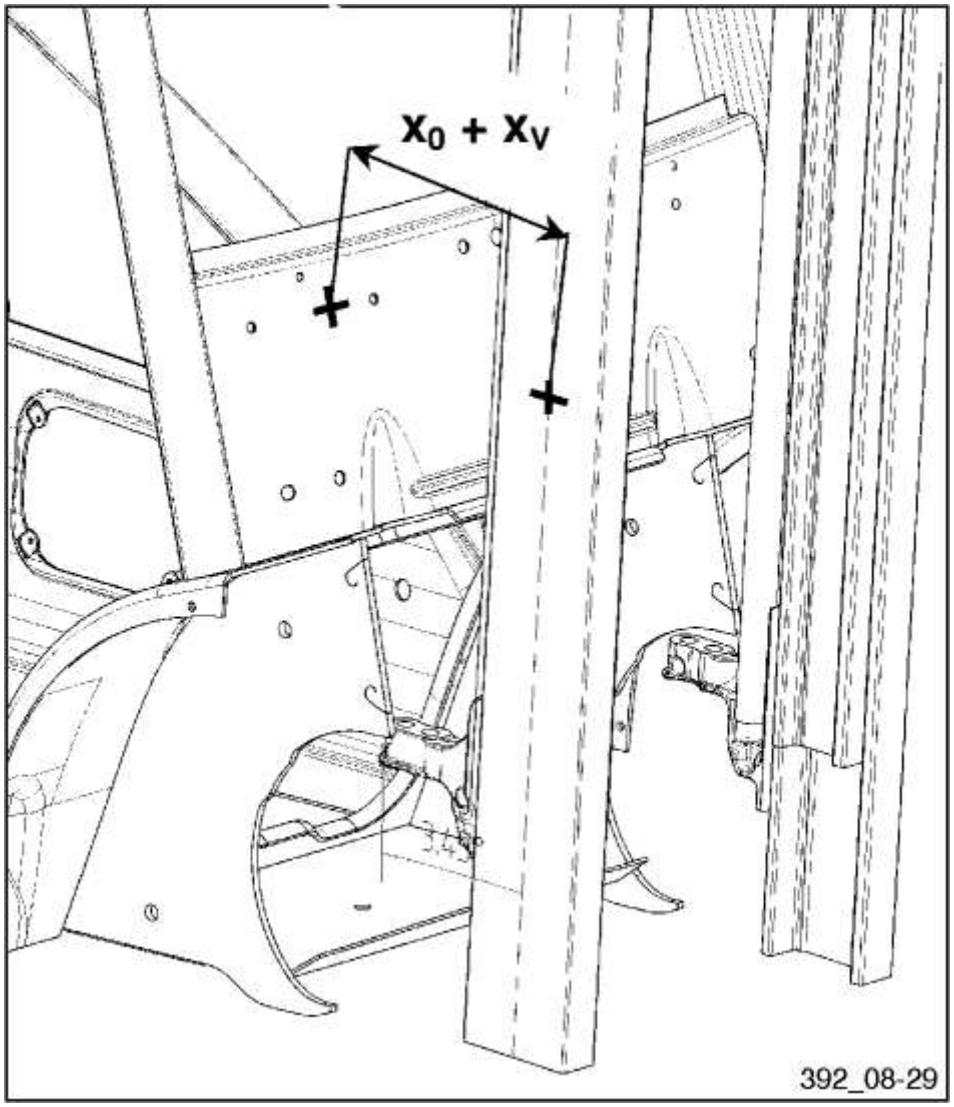
Please check the following table for the correct X_R value.

Nominal backward tilt [1]	**Mast of the same chassis height:** **185 ST 3150** **185 DU 3170** **185 TR 4715**	**Other masts series** **185**
in°	**X_R in mm**	**X_R in mm**
0.0	103 ± 1	109 ± 1
0.5	97 ± 1	103 ± 1
1.0	91 ± 1	97 ± 1
1.5	85 ± 1	91 ± 1
2.0	79 ± 1	85 ± 1
2.5	73 ± 1	79 ± 1
3.0	67 ± 1	73 ± 1
3.5	61 ± 1	67 ± 1
4.0	55 ± 1	61 ± 1

4.5	49 ± 1	55 ± 1
5.0	43 ± 1	49 ± 1
5.5	37 ± 1	43 ± 1
6.0	31 ± 1	37 ± 1
6.5	25 ± 1	31 ± 1
7.0	19 ± 1	25 ± 1
7.5	**13 ± 1** (2)	**19 ± 1** (2)
8.0	7 ± 1 (3)	13 ± 1
8.5		7 ± 1 (3)

(1): Restriction in function of tonnage, type of mast, lifting height, attachment and tyres.
(2): Default setting if no restriction of the backward tilt applies!
(3): Maximum permitted setting if no restriction of the backward tilt applies!

Tilting the mast to the forward tilt angle



From the rear mechanical limit, tilt the mast forward over a distance X_V, thus creating a total distance $X_0 + X_V$ between the two reference points.

The value X_V is influenced by tonnage, type of mast, lifting height, attachments and tyres.

Please check the following table for the correct X_V value.

Nominal forward tilt	**Mast of the same chassis height:** **185 ST 3150** **185 DU 3170** **185 TR 4715**	**Other masts series** **185**
in°	**X_V in mm**	**X_V in mm**
0.0	90 ± 1	96 ± 1
0.5	96 ± 1	102 ± 1
1.0	102 ± 1	108 ± 1
1.5	108 ± 1	114 ± 1
2.0	114 ± 1	120 ± 1
2.5	120 ± 1	126 ± 1
3.0	126 ± 1	132 ± 1
3.5	132 ± 1	138 ± 1
4.0 (1)	**138 ± 1**	**144 ± 1**
4.5	144 ± 1	150 ± 1
5.0 (2)	150 ± 1	156 ± 1

(1): Default setting if no restriction of the forward tilt applies!

(2): Maximum permitted setting if no restriction of the forward tilt applies!

13.3 Tilt angle sensor calibration procedure for Linde BR393 trucks

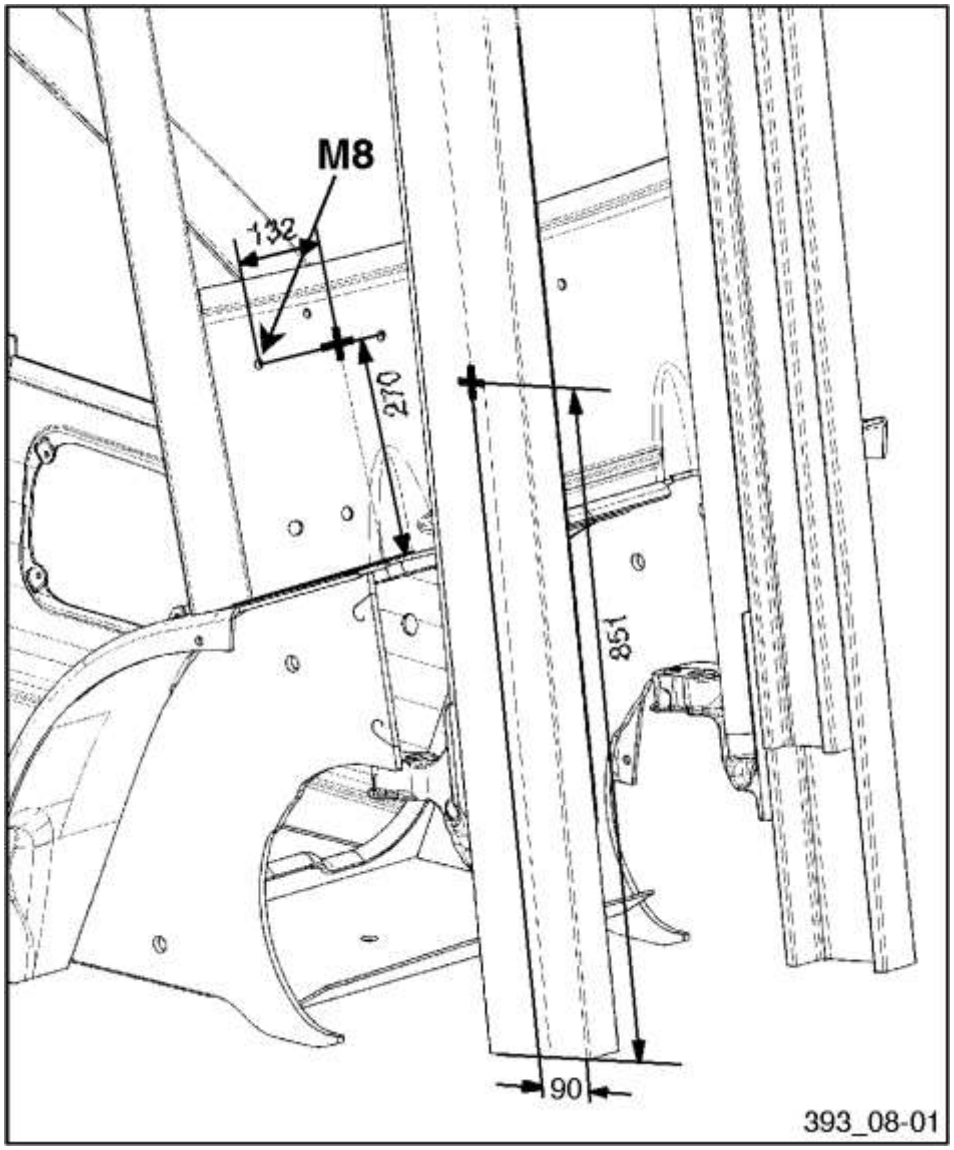
Adjustment of the tilt angle sensor

CAUTION !

When calibrating the tilt angle sensor the service engineer must pay attention to any restriction of the tilt angle of the truck. Non-observation of restriction of the tilt angle may cause the truck to overturn.

Calibration of the tilt angle sensor should be performed with no load on the truck! The forward tilt angle may be restricted depending on the tonnage, type of mast, lifting height, attachment devices and tyres.

Marking the reference points



Faceplate:

Draw a vertical line parallel to the A-column at a distance of 132 ± 2mm from the centre of the M8 bolt.

Draw a horizontal line parallel and at a distance of 270 ± 2mm from the fender.

The intersection of these two lines marks the reference point.

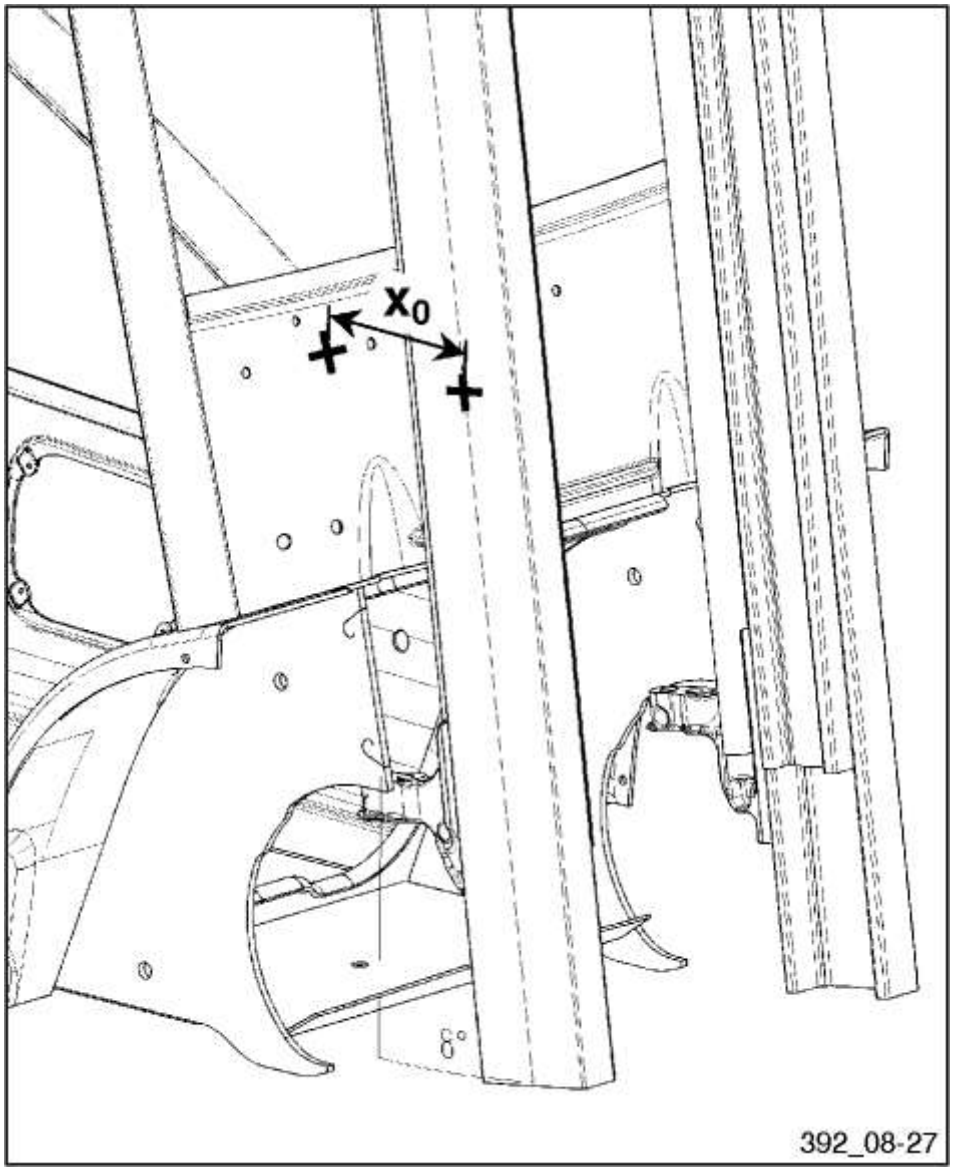
Mast:

The reference point is located at a distance of 851 ± 2 mm from the lower end and 90 ± 2 mm from the side of the external mast profile.

Tilting the mast to the rear mechanical stop

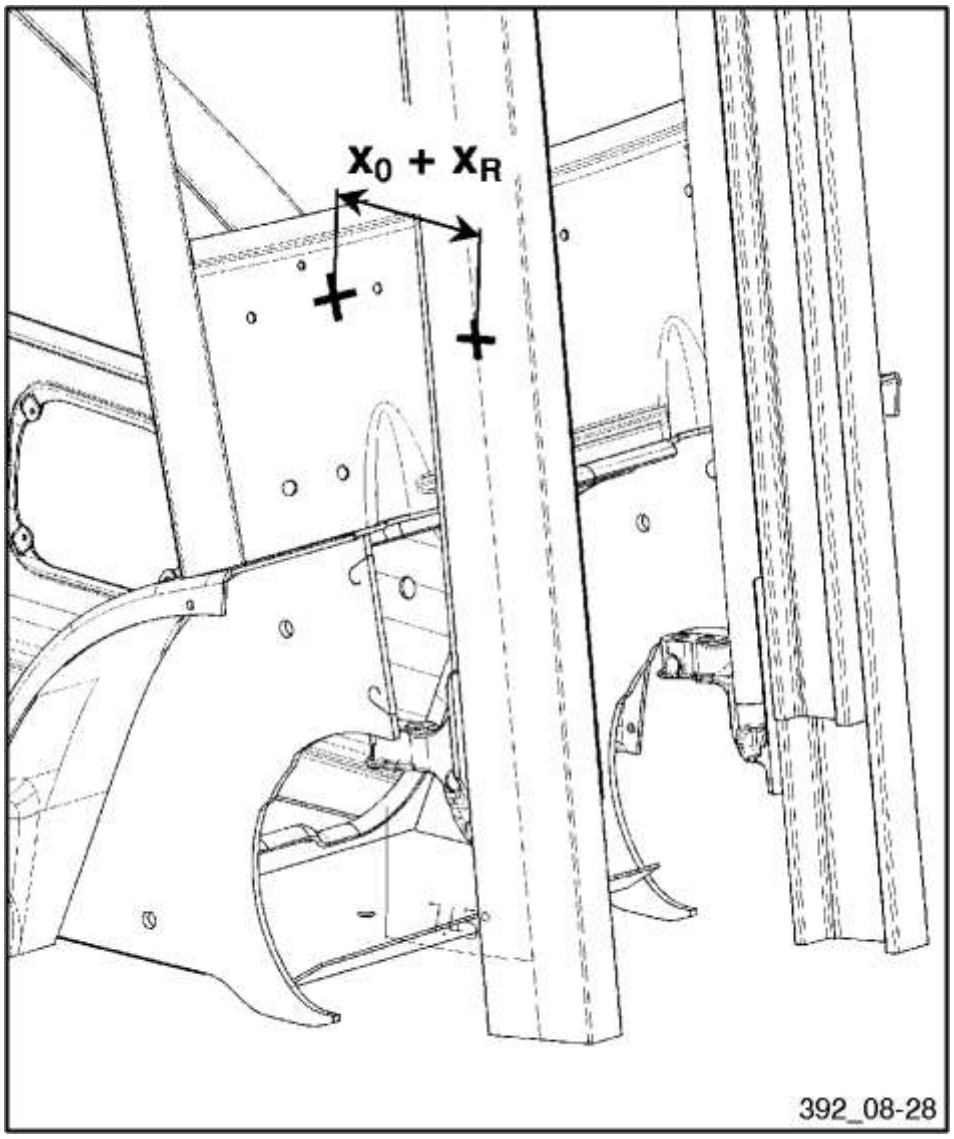
CAUTION !

When tilting the mast back against the mechanical limit stop, contact between mast and wiper arm may occur on trucks with front windscreen and wiper. If necessary, dismantle wiper arm.



Tilt the mast to the rear mechanical stop. Measure the value X_0.

Tilting the mast to the rear tilt angle



From the rear mechanical limit, tilt the mast forward over a distance X_R, thus creating a total distance $X_0 + X_R$ between the two reference points.

The value X_R is influenced by tonnage, type of mast, lifting height, attachments and tyres.

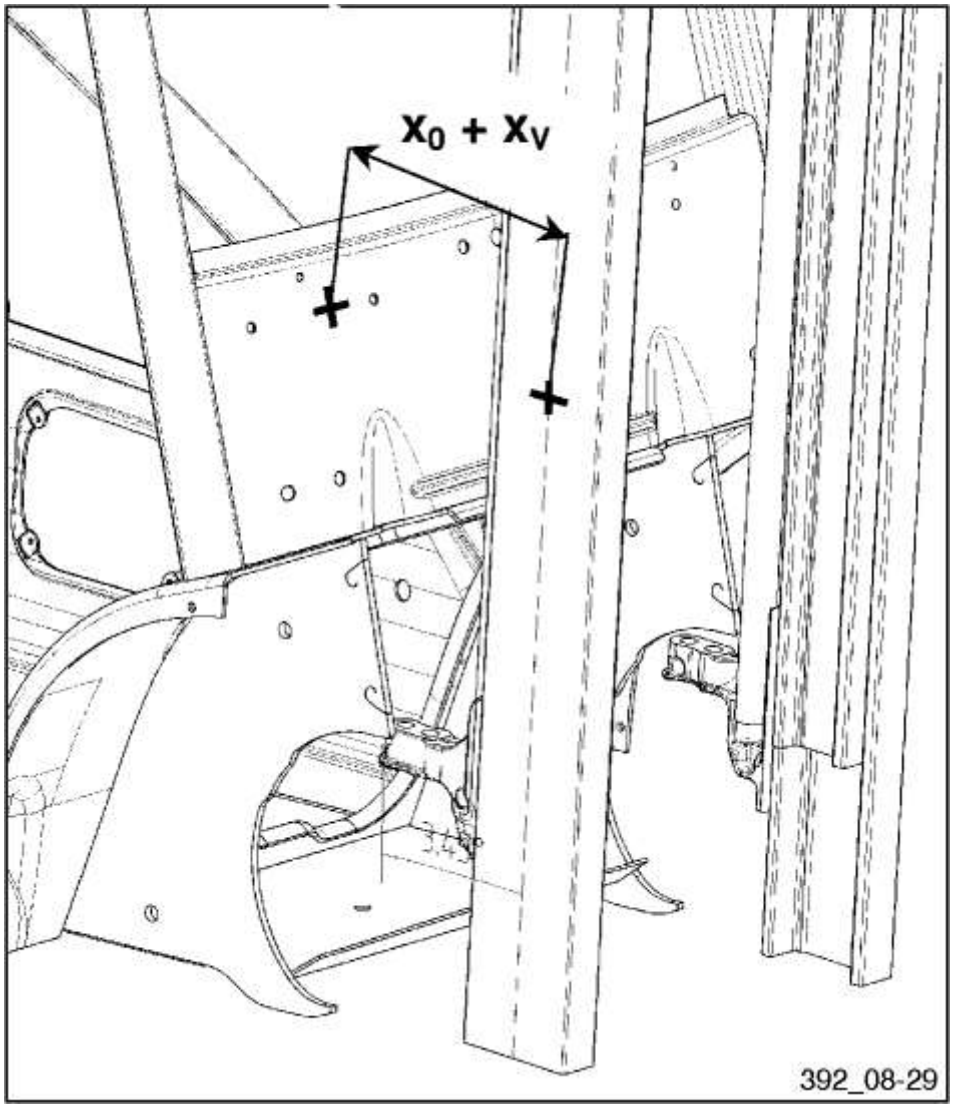
Please check the following table for the correct X_R value.

Nominal backward tilt [(1)]	**Masts of the same chassis height of series BR 188 lifting height 3150**	**Other masts series 188**
in°	**X_R in mm**	**X_R in mm**
0.0	104 ± 1	110 ± 1
0.5	98 ± 1	104 ± 1
1.0	92 ± 1	98 ± 1
1.5	86 ± 1	92 ± 1
2.0	81 ± 1	86 ± 1
2.5	75 ± 1	81 ± 1
3.0	69 ± 1	75 ± 1
3.5	63 ± 1	69 ± 1
4.0	57 ± 1	63 ± 1
4.5	51 ± 1	57 ± 1
5.0	45 ± 1	51 ± 1

5.5	39 ± 1	45 ± 1
6.0	33 ± 1	39 ± 1
6.5	27 ± 1	33 ± 1
7.0	21 ± 1	27 ± 1
7.5	14 ± 1	21 ± 1
8.0	13 ± 1 (2)	14 ± 1
8.5		13 ± 1 (2)

(1): Restriction in function of tonnage, type of mast, lifting height, attachment and tyres.
(2): Default setting if no restriction of the backward tilt applies!

Tilting the mast to the forward tilt angle



From the rear mechanical limit, tilt the mast forward over a distance X_V, thus creating a total distance $X_0 + X_V$ between the two reference points.

The value X_V is influenced by tonnage, type of mast, lifting height, attachments and tyres.

Please check the following table for the correct X_V value.

Nominal backward tilt (1)	**Masts of the same chassis height of series BR 188 lifting height 3150**	**Other masts series 188**
in°	**X_V in mm**	**X_V in mm**
0.0	90 ± 1	96 ± 1
0.5	96 ± 1	102 ± 1

1.0	102 ± 1	108 ± 1
1.5	108 ± 1	114 ± 1
2.0	114 ± 1	120 ± 1
2.5	120 ± 1	126 ± 1
3.0	126 ± 1	132 ± 1
3.5	132 ± 1	138 ± 1
4.0	138 ± 1	143 ± 1
4.5	143 ± 1	149 ± 1
5.0 (2)	149 ± 1	155 ± 1

(1): Restriction in function of tonnage, type of mast, lifting height, attachment and tyres.
(2): Default setting if no restriction of the backward tilt applies!

13.4 Tilt angle sensor calibration procedure for Linde BR394 trucks

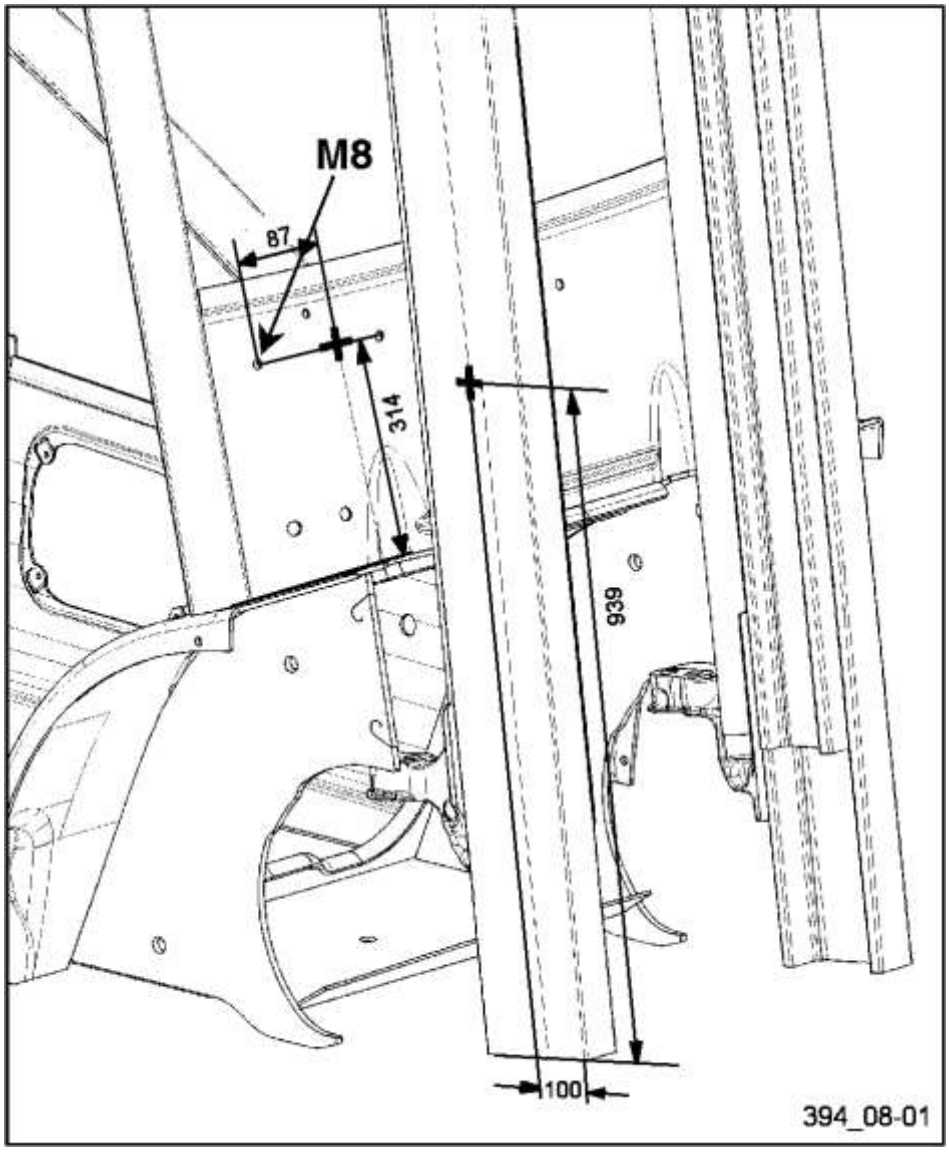
Adjustment of the tilt angle sensor

CAUTION !

When calibrating the tilt angle sensor the service engineer must pay attention to any restriction of the tilt angle of the truck. Non-observation of restriction of the tilt angle may cause the truck to overturn.

Calibration of the tilt angle sensor should be performed with no load on the truck! The forward tilt angle may be restricted depending on the tonnage, type of mast, lifting height, attachment devices and tyres.

Marking the reference points



Faceplate:

Draw a vertical line parallel to the A-column at a distance of 87 ± 2mm from the centre of the M8 bolt.

Draw a horizontal line parallel and at a distance of 314 ± 2mm from the fender.

The intersection of these two lines marks the reference point.

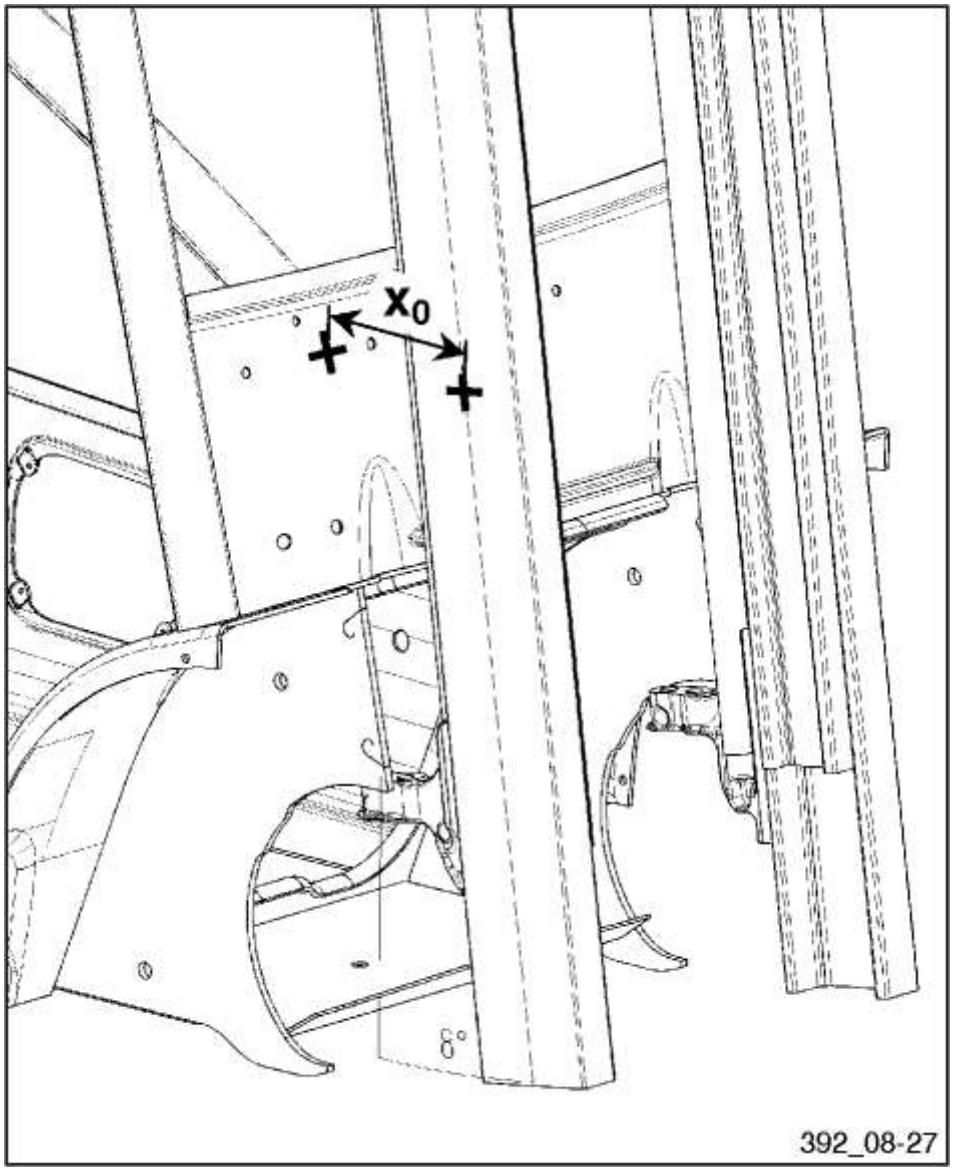
Mast:

The reference point is located at a distance of 939 ± 2 mm from the lower end and 100 ± 2 mm from the side of the external mast profile.

Tilting the mast to the rear mechanical stop

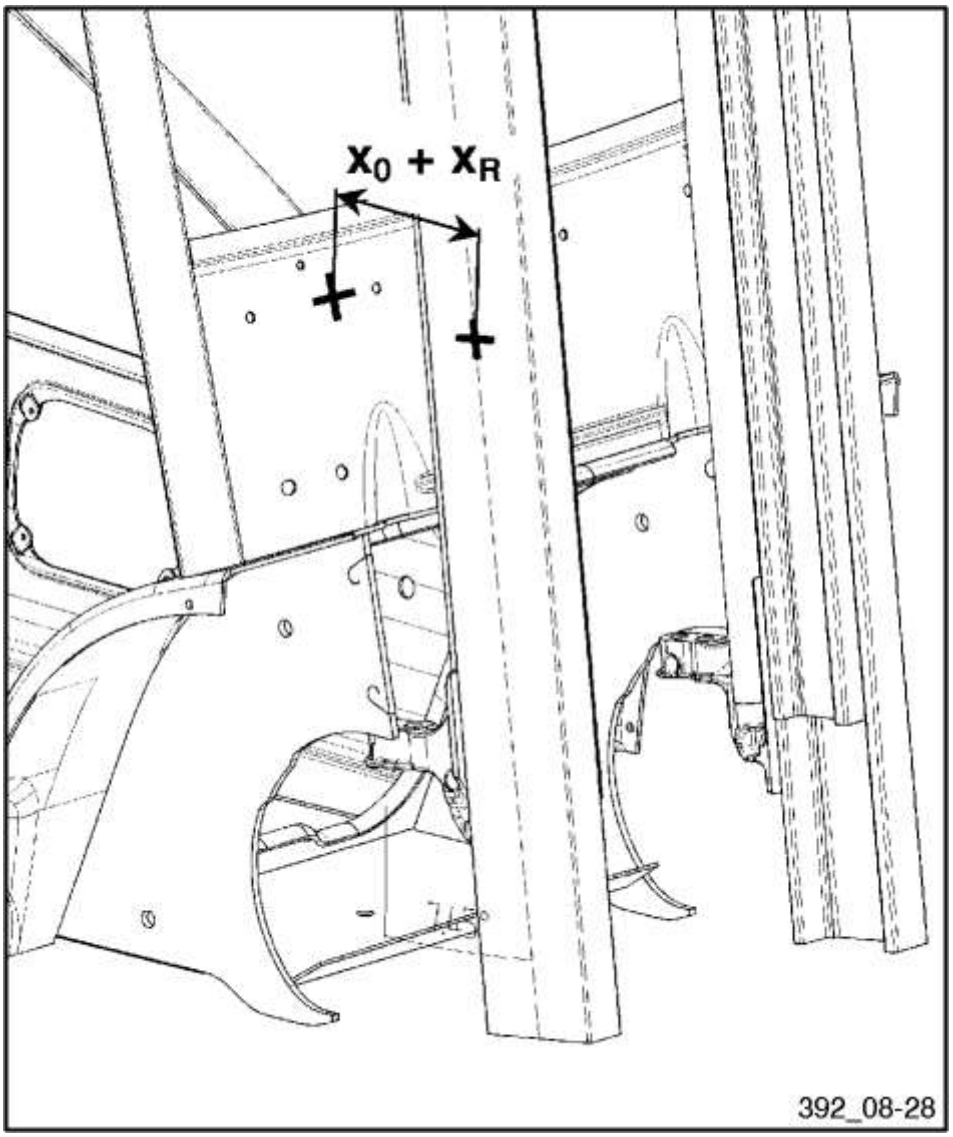
CAUTION !

When tilting the mast back against the mechanical limit stop, contact between mast and wiper arm may occur on trucks with front windscreen and wiper. If necessary, dismantle wiper arm.



Tilt the mast to the rear mechanical stop. Measure the value X_0.

Tilting the mast to the rear tilt angle



From the rear mechanical limit, tilt the mast forward over a distance X_R, thus creating a total distance $X_0 + X_R$ between the two reference points.

The value X_R is influenced by tonnage, type of mast, lifting height, attachments and tyres.

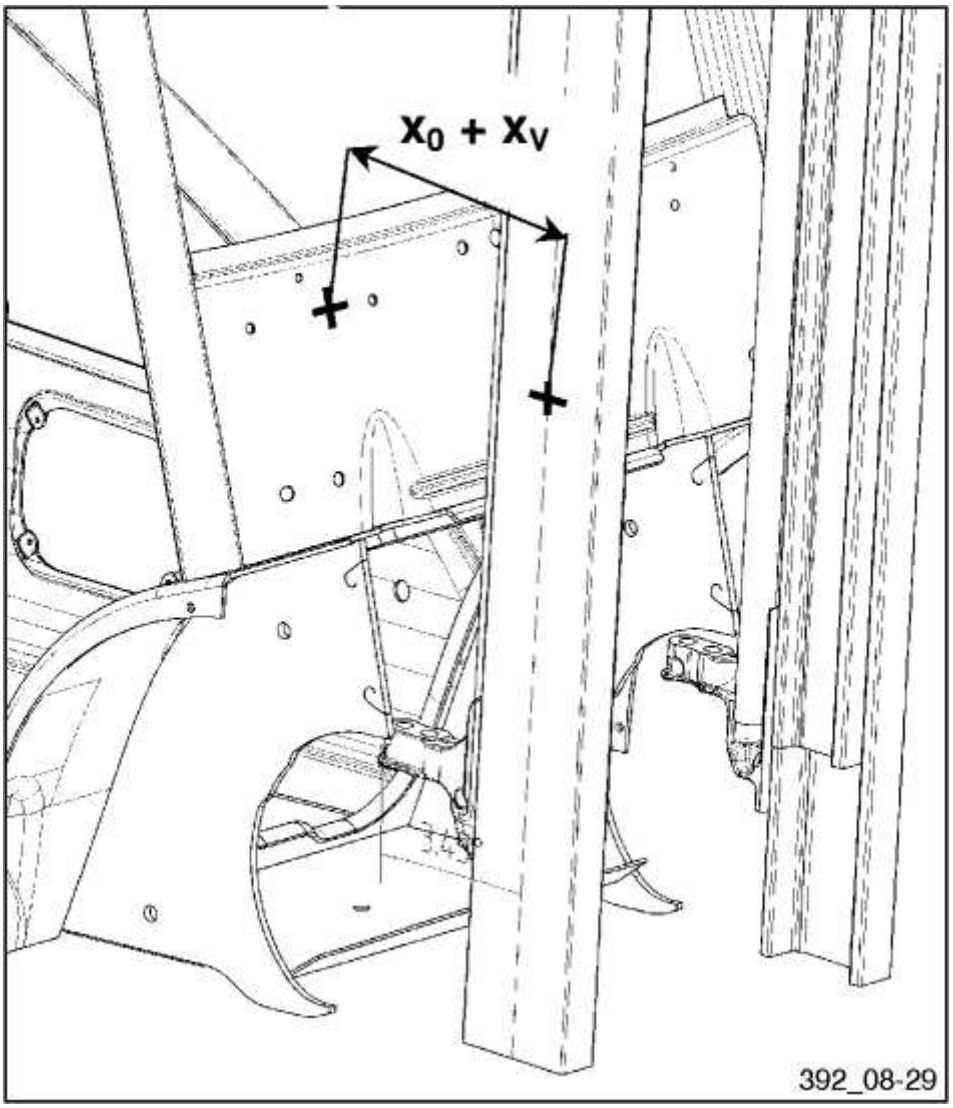
Please check the following table for the correct X_R value.

Nominal backward tilt [1]	**All other masts of series BR 189**	**H 40 Standard HH 3100 to HH 3500 at FSD 3 - 6**	**H 40 Standard HH 3000 at FSD 3 - 6**
in°	**X_R in mm**	**X_R in mm**	**X_R in mm**
0.0	143 ± 1	137 ± 1	130 ± 1
0.5	136 ± 1	130 ± 1	123 ± 1
1.0	129 ± 1	126 ± 1	116 ± 1
1.5	122 ± 1	116 ± 1	109 ± 1
2.0	115 ± 1	109 ± 1	102 ± 1
2.5	108 ± 1	102 ± 1	95 ± 1
3.0	101 ± 1	95 ± 1	88 ± 1
3.5	94 ± 1	88 ± 1	82 ± 1
4.0	87 ± 1	82 ± 1	75 ± 1
4.5	80 ± 1	75 ± 1	68 ± 1

5.0	73 ± 1	68 ± 1	61 ± 1
5.5	66 ± 1	61 ± 1	54 ± 1
6.0	59 ± 1	54 ± 1	46 ± 1
6.5	52 ± 1	46 ± 1	39 ± 1
7.0	45 ± 1	39 ± 1	32 ± 1
7.5	38 ± 1	32 ± 1	25 ± 1
8.0	31 ± 1	25 ± 1	18 ± 1
8.5	24 ± 1	18 ± 1	17 ± 1 (2)
9.0	23 ± 1	17 ± 1 (3)	

(1): Restriction in function of tonnage, type of mast, lifting height, attachment and tyres.
(2): Default setting if no restriction of the backward tilt applies!
(3): Default setting if no restriction of the backward tilt applies!

Tilting the mast to the forward tilt angle



From the rear mechanical limit, tilt the mast forward over a distance X_V, thus creating a total distance $X_0 + X_V$ between the two reference points.

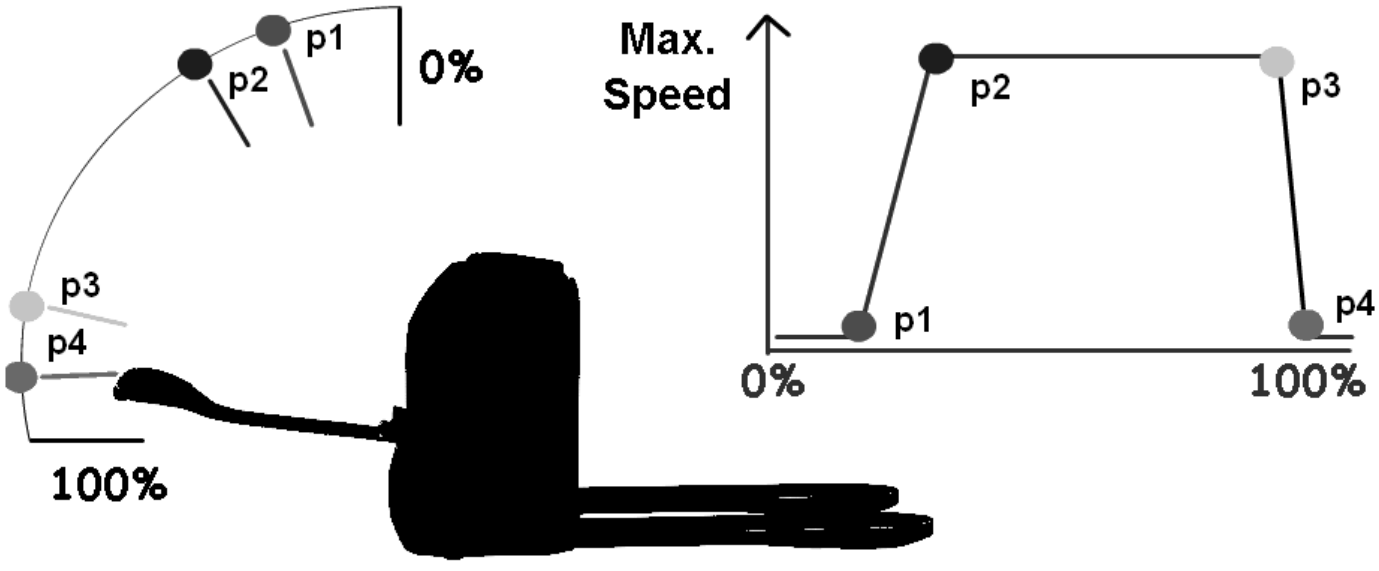
The value X_V is influenced by tonnage, type of mast, lifting height, attachments and tyres.

Please check the following table for the correct X_V value.

Nominal backward tilt (1)	All other masts of series BR 189	H 40 Standard HH 3100 to HH 3500 at FSD 3 - 6	H 40 Standard HH 3000 at FSD 3 - 6
in°	X_R in mm	X_R in mm	X_R in mm
0.0	123 ± 1	120 ± 1	113 ± 1
0.5	133 ± 1	127 ± 1	120 ± 1
1.0	140 ± 1	134 ± 1	127 ± 1
1.5	147 ± 1	141 ± 1	134 ± 1
2.0	154 ± 1	148 ± 1	141 ± 1
2.5	161 ± 1	155 ± 1	148 ± 1
3.0	168 ± 1	162 ± 1	155 ± 1
3.5	175 ± 1	169 ± 1	162 ± 1
4.0	181 ± 1	176 ± 1	169 ± 1
4.5	188 ± 1	183 ± 1	176 ± 1
5.0	195 ± 1	189 ± 1	182 ± 1

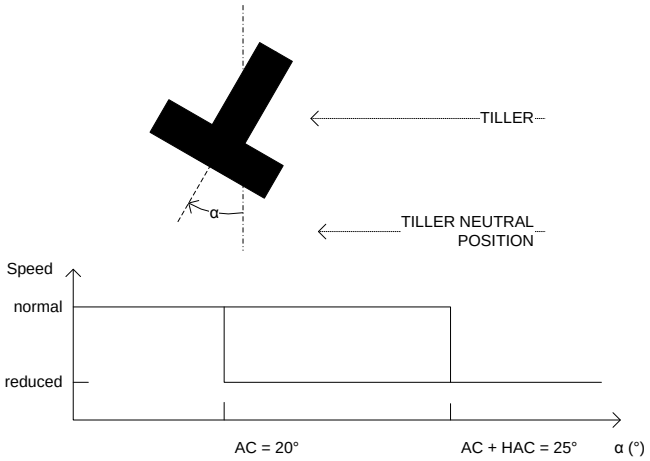
(1): Restriction in function of tonnage, type of mast, lifting height, attachment and tyres.
(2): Default setting if no restriction of the forward tilt applies!

13.5 Tiller foot poti setup for Linde BR1152 trucks



p1: Parameter AccDecStart_1
p2: Parameter PointVertical
p3: Parameter AccDecStart_2
p4: Parameter PointHorizontal

13.6 Speed reduction according to position of handlebar (tiller) for Linde BR1190 trucks



These thresholds define the angular positions of the handlebar/tiller from which speed reduction is activated and deactivated.

From center to AC+HAC =>	Normal Speed
After AC+HAC =>	Reduced Speed
Back to AC =>	Reduced Speed
From AC to center =>	Recovering normal Speed

Value AC+HAC can not be higher than 45 °!