

# MULTILIFT XR S

Hooklift XR3S / XR5S



INSTALLATION INSTRUCTIONS  
US  
January 2019



# **XR 3                      XR 5**

## **INSTALLATION INSTRUCTIONS**



**A Hiab Company**

**Date: 25.5.2005**

## **MOUNTING INSTRUCTIONS**

**XR3 XR5**

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**XR3 XR5**

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## **1. PREPARING FOR INSTALLATION**

### **1.1 Before starting installation**

Make sure that the XR-unit to be installed has been checked upon arrival for both transport damage and contents of the delivery.

Check that all the parts are available to complete the installation as planned.

Check the availability of the correct tools and lifting gear during the installation.

### **1.2 General safety precautions during installation**

Multilift XR demountable body lifting equipment may only be installed by qualified personnel.

XR-unit can only be installed on suitable truck chassis. Normally chassis have to be meant for tipping use.

Before installation and preferably before sale of the equipment, calculations should be made including gross vehicle weight, axle weight and any other weights and dimensions needed to ensure the overall economy of the combination.

Maximum permitted GVW and capacity of the unit must be in proportion to each other, and neither should be exceeded. Exceeding either maximum GVW or capacity may result in physical injury or material damage.

When installing the unit it must be ensured that the keys of the vehicle are in the possession of the person carrying out the installation.

During installation, a fixed working light is to be installed for operating with demountable body in dark or poorly lighted conditions.

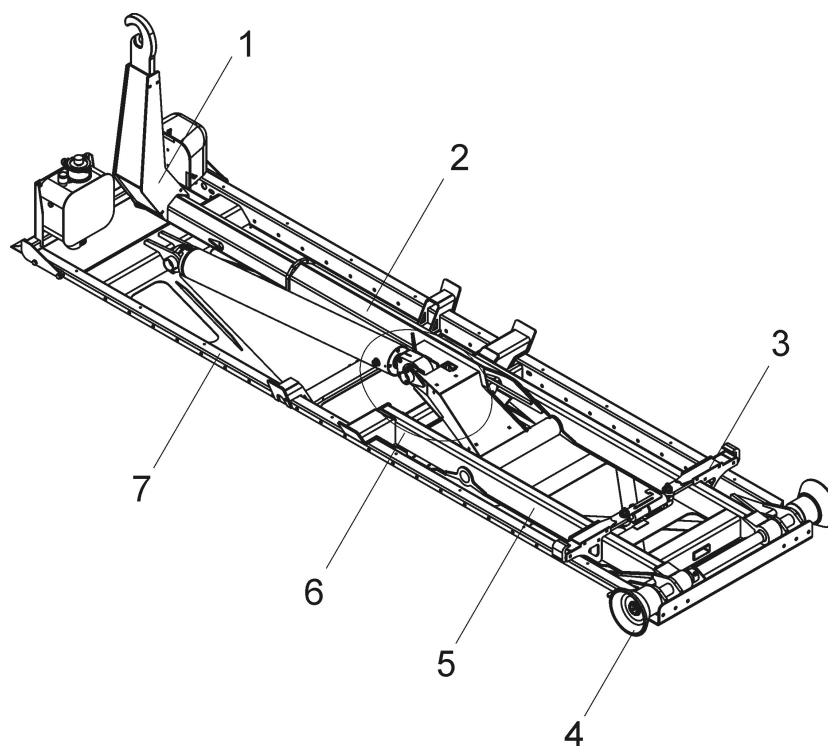
In all installation work general safety rules must be followed. Further information on these can be obtained from occupational safety personnel and the employer.

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**2 GENERAL****2.1 Main components of XR-unit**

Steel contructions:



1. Sliding arm
2. Middle frame
3. Hydraulic body locking (additional)
4. Rear roller
5. Rear frame
6. Tipping lock
7. Sub frame

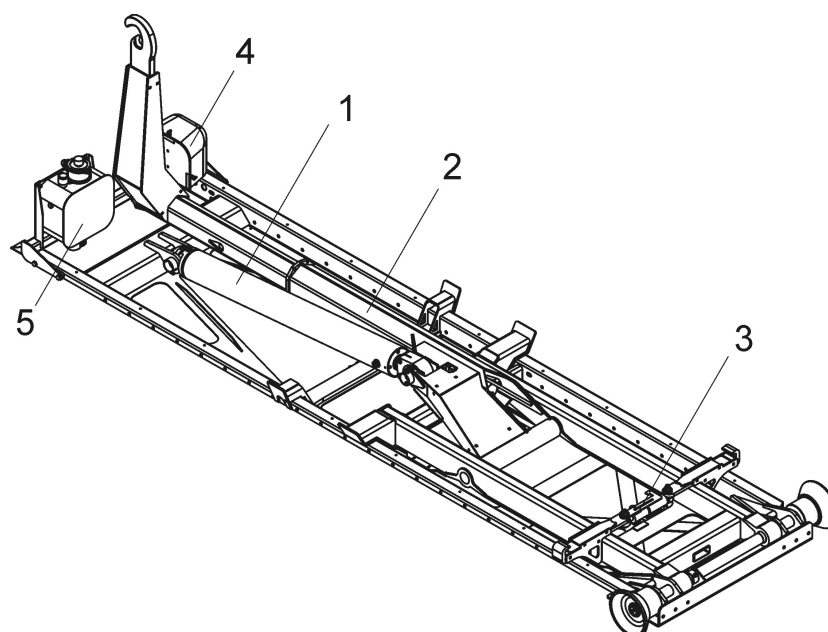
### XR3 XR5

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## 2. GENERAL

### 2.2 Main components of XR-unit

Hydraulic components:



- 1. Main cylinder
- 2. Hookarm cylinder
- 3. Hydraulic body locking cylinder (additional)
- 4. Control valve
- 5. Oil tank

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3 BODYBUILDING

3.1 Safety precautions when mounting the hooklift unit

Before any welding work is done, make sure the battery cables of the vehicle’s electrical system are detached. Check always instructions of chassis manufacturer, how the detach of battery can be done and what else should be noticed.

To prevent fire, make sure before flame cutting or welding that sparks can’t fly onto oil etc. in or around the unit.

The truck cabin must be protected well before any mounting work of hooklift.

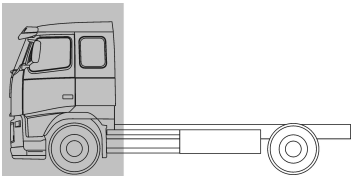
The hooklift system may only be lifted by body supports of subframe and rear rollers.

Check the condition and fastening of all hooks before lifting.

Check the condition and fastening gear before lifting. Also notice the maximum weight of the hooklift system, and the maximum capacity of the gear lift.

3.2 Extra subframe

Check if components like change gear box, cross members, and brake boosters (in highest position) project beyond the truck chassis. If these components contact container system elements, either remove them, if possible, or use extra subframe over the whole chassis frame length.



Unit weights

Type			
G-measure	2700	2950	3200
XR2S	860	900	950 lb
XR3S	880	925	970 lb
Type			
G-measure	3250	3650	4150
XR5S	1480	1565	1650 lb
XR7S	2050	2120	2185 lb
XR8S	2160	2230	2295 lb



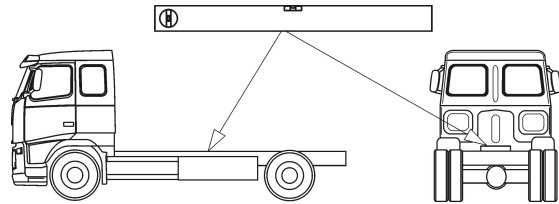


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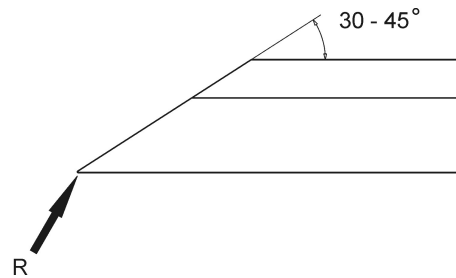
**3.3 Before mounting the subframe**

- Check that vehicle chassis is horizontal across its width  
-Use a level
- Set all wheels to straight forward
- Make sure the tyre pressure is correct
- If the vehicle is equipped with one or various facilities for prolonged reduction in load on a shaft or wheel, such as a lifting axle or trailing axle, all wheel should rest on the ground.

**3.4 Shorten the subframe front members**

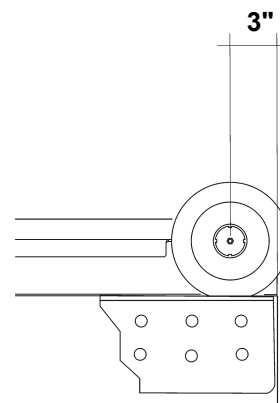
Shorten the subframe front members to the correct length before lowering the unit onto the vehicle. The subframe should come as far forward as possible, in any case in front of the front spring rear bracket. Cutting should be done in accordance with the adjacent drawing.

Note that the cut edge of the lower flange should be rounded off (see drawing).

**3.5 Shortening the chassis frame**

The vehicle manufacturer may have given specific instructions (in the manual for installing accessories) for choosing the cut-points for the vehicle. These instructions may include information about the rear spring brackets, anti-roll bars, cross-beams in the rear of the frame etc.

The chassis frame should be cut 3 in behind the centerline of the rear roller shaft (see drawing). There should remain a minimum clearance of 3 in between the cab and the unit



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The general principle is that the rear overhang should be kept to the minimum.

The aim is to position the unit longitudinally so that the center of gravity of the fully loaded body coincides with the center of gravity of the load on the vehicle loaded to full GVW.

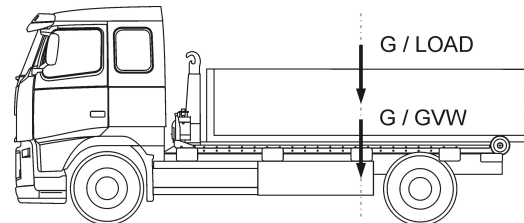
Ensure before cutting the chassis that electric and hydraulic lines will not be damaged and that the relocating of the chassis rear cross member and rear light assembly is allowed for and that the vehicle manufacturer's instructions for shortening the chassis are followed.

**See also superstructure welding instructions of chassis manufacturer.**

#### **Extending chassis rear overhang**

If the truck chassis frame is shorter than the hooklift system, it should be extended.

See also superstructure welding instructions of chassis manufacturer.



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**3.6 Where to put mounting plates?**

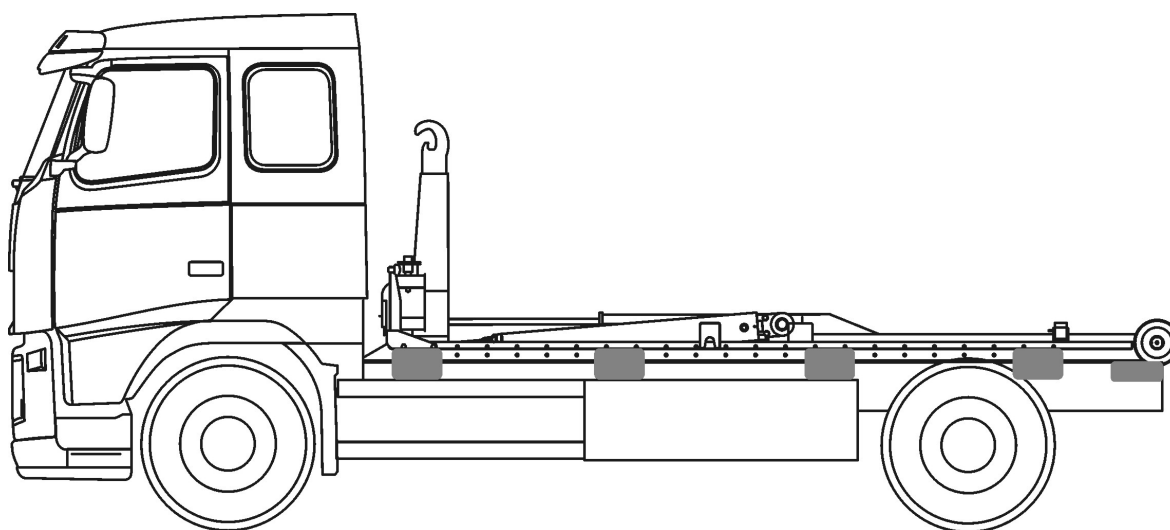
Please observe any instructions given by the vehicle manufacturer, which will affect the following Multilift installation instructions.

Multilift has available a variety of installation kits to suit a range of popular trucks (or vans). These kits include the necessary brackets, nuts and bolts to complete installation. The quality of bolts is 8.8 or 10.9 depending on vehicle manufacturers instructions. In Multilift mounting kits quality of the bolts are 8.8.

The subframe brackets are mounted to the chassis using the M12 hexagonal bolts and SL-nuts included in the installation package. The number of bolts used is very important, the minimum number of bolts per bracket shown in the table should thus be carefully observed. Locate the brackets as near cross members of subframe as possible. Existing holes in the subframe should be used.

	Bracket	Quantity	Fixing bolts in subframe	Fixing bolts in chassis frame
1	Rear end retainer plate	1 pair	3 pcs M12	6 pcs M12
2	Large rear retainer plate	1 pair	4 pcs M12	8 pcs M12
3	Retainer plate	3...4 pair	2 (4) pcs M12	2 pcs M12
4	Front retainer plate	1 pair	2 pcs M12	2 pcs M12

The following figure shows example at which intervals to attach the plates.



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**3.7 Mounting instructions when using other plates**

Use the existing holes in the chassis frame wherever possible. Choose the dimensions of the large rear retainer plate and shape the plate so that the plate can hold the minimum number of screws with required distances despite the bracket of rear spring or other such parts. (Drawing)

Drill holes of fitting bolts to fitting plates and to the chassis frame if necessary.

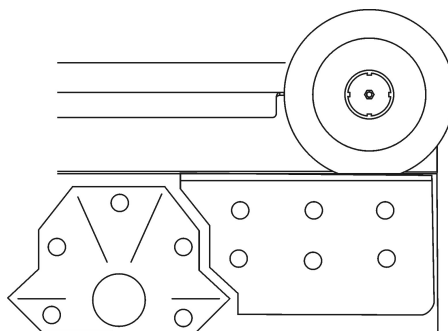
**About drilling of holes**

- Before drilling holes trough the chassis frame, ensure that no damage will result to any tubes or wiring etc.
- Drill holes as necessary in the chassis members. It's recommended to use an undersized drill, 0,47 in (11,9 mm) drill for M12 bolts, so that a play free joint is ensured.
- Never drill holes in the flanges of the side members.
- Never weld filler pieces in the holes of the chassis frame.
- Drilled holes must always be de-burred and treated with primer / paint.

Mount and tighten the bolts and SL-nuts of retainer plates.  
The torque of M12 bolts is 85 Nm

Mount to rear end plate subframe by three bolts and SL-nuts.  
Lower the XR-unit subframe onto the chassis (or the additional subframe) and check it's exact longitudinal location and center it in relation to the chassis. Once the hooklift system is accurately positioned, fix it to the vehicle chassis using clamps.

Fix the retainer plates to the subframe using M12-bolts and SL-nuts. Weld the rear end retainer

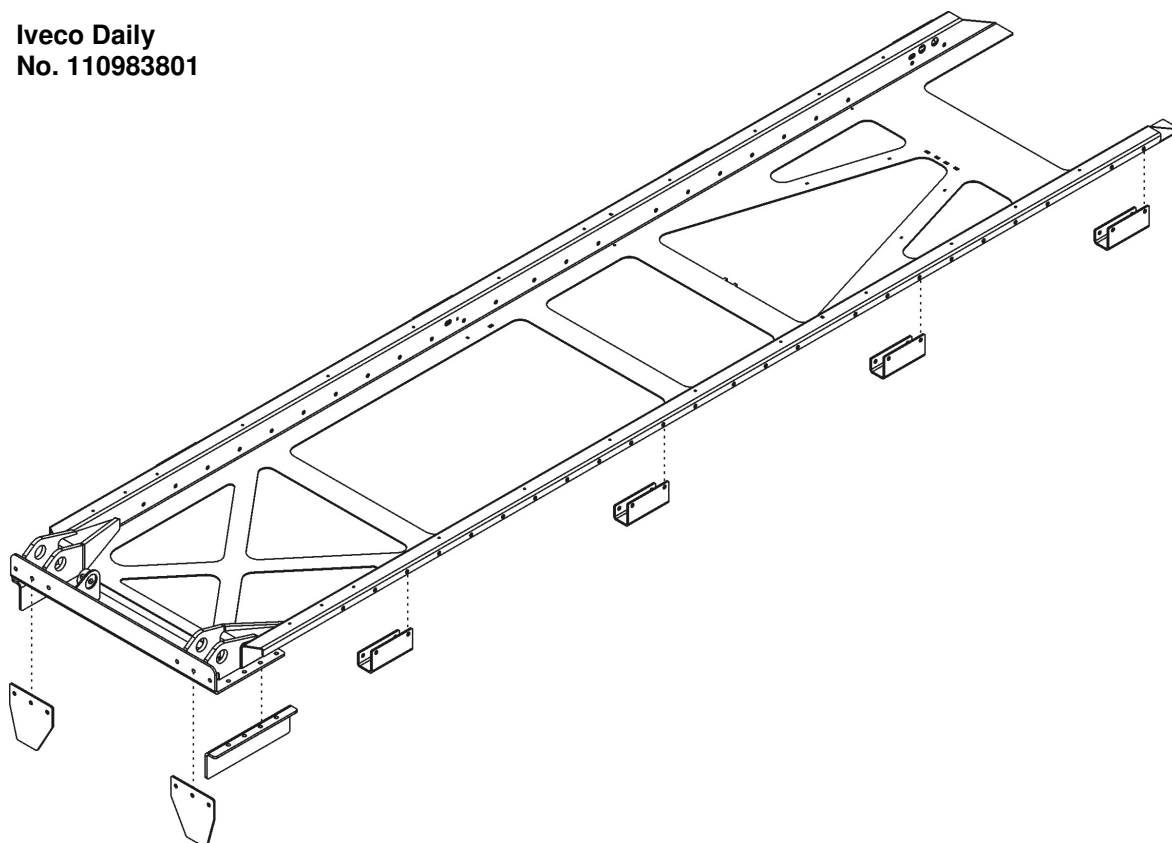


**XR3 XR5**

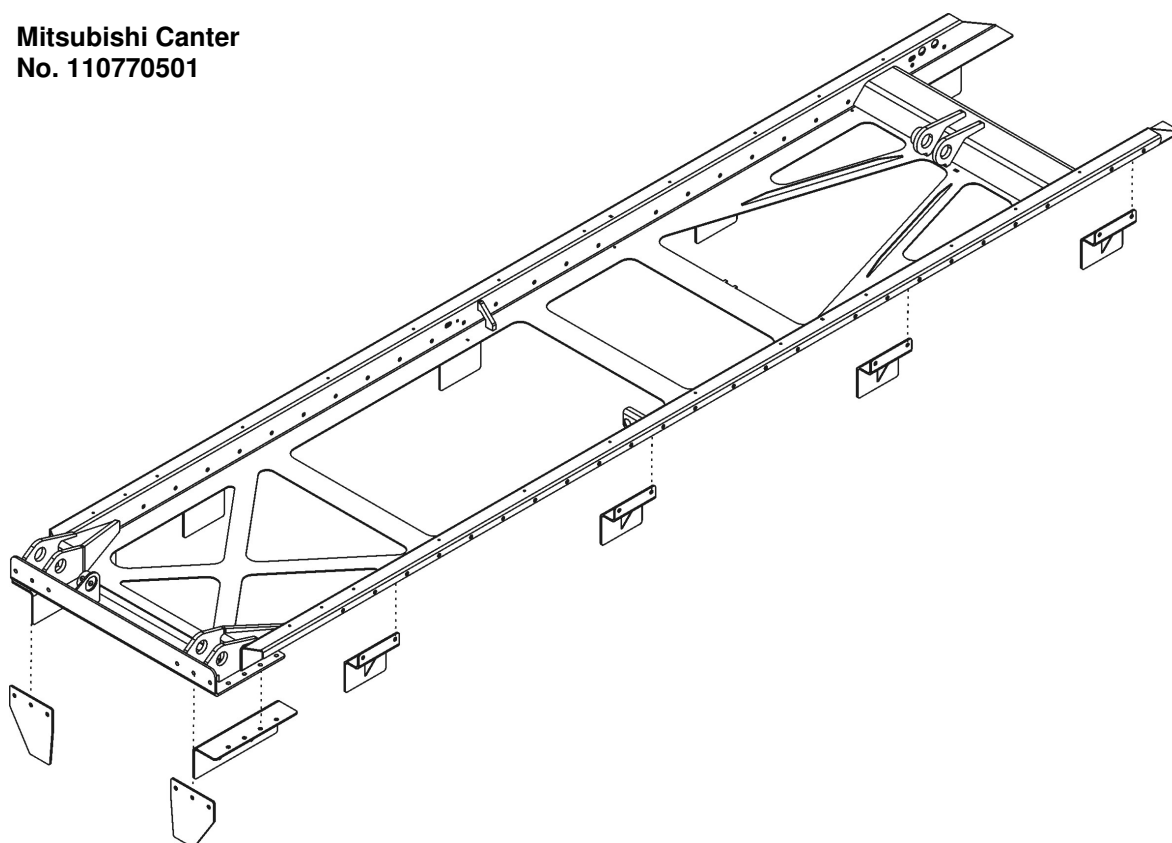
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**3.8 Multilift-kiinnityslevy sarjat, XR-5**

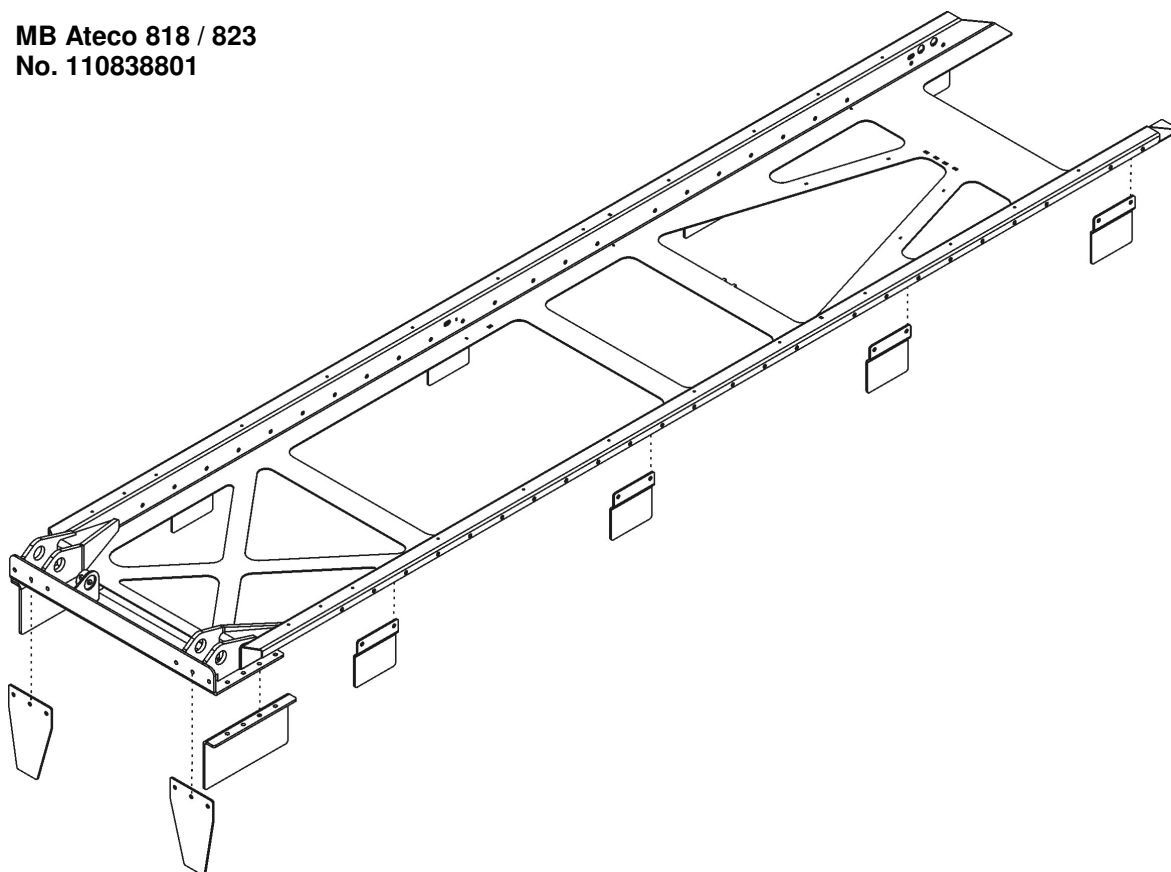
Iveco Daily  
No. 110983801



**Mitsubishi Canter**  
**No. 110770501**



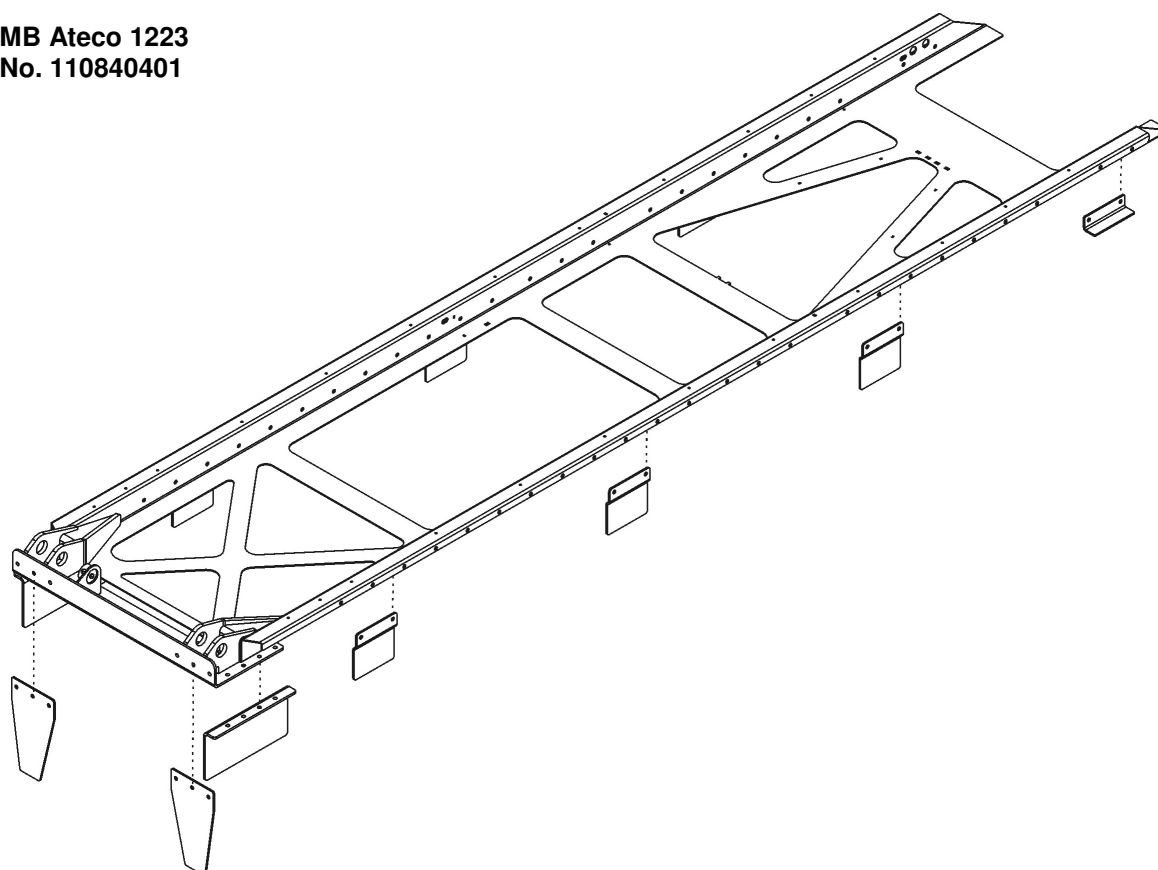
**MB Ateco 818 / 823**  
**No. 110838801**



**XR3 XR5**

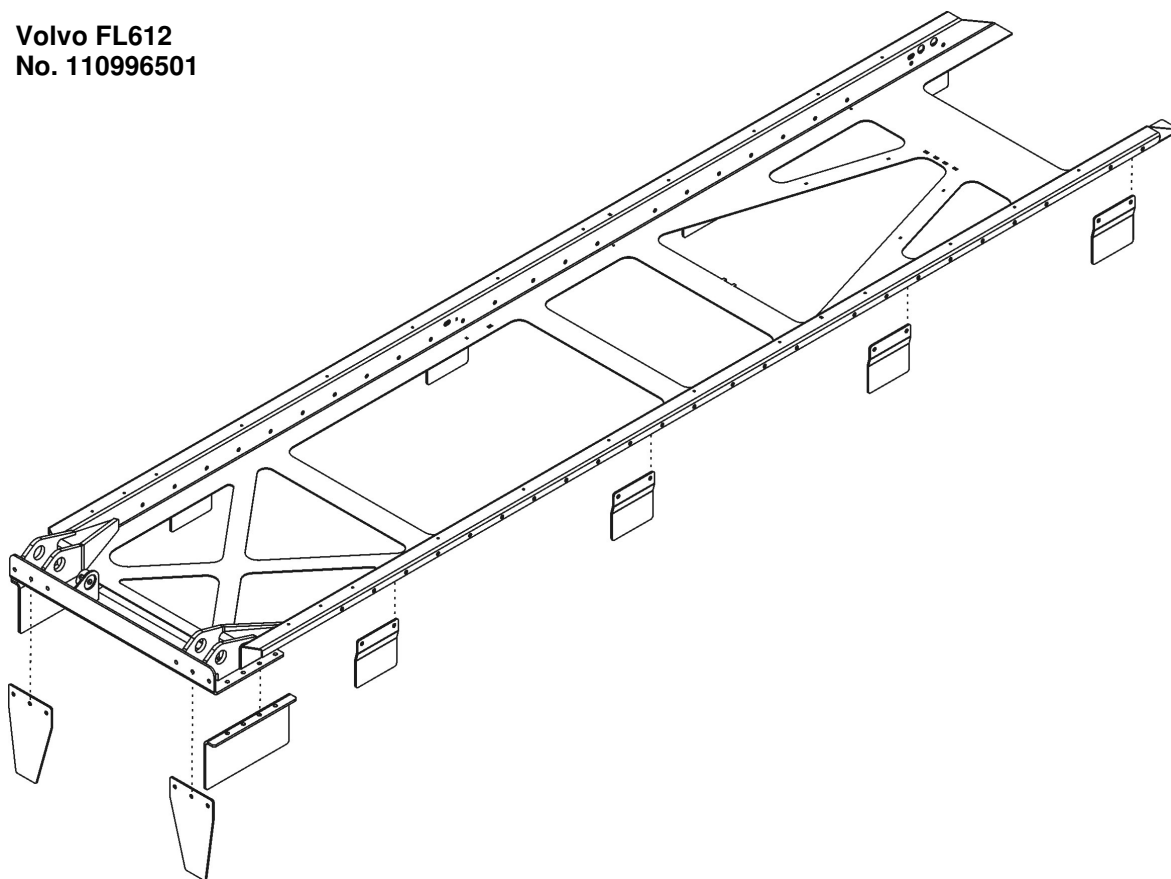
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**MB Ateco 1223**  
**No. 110840401**





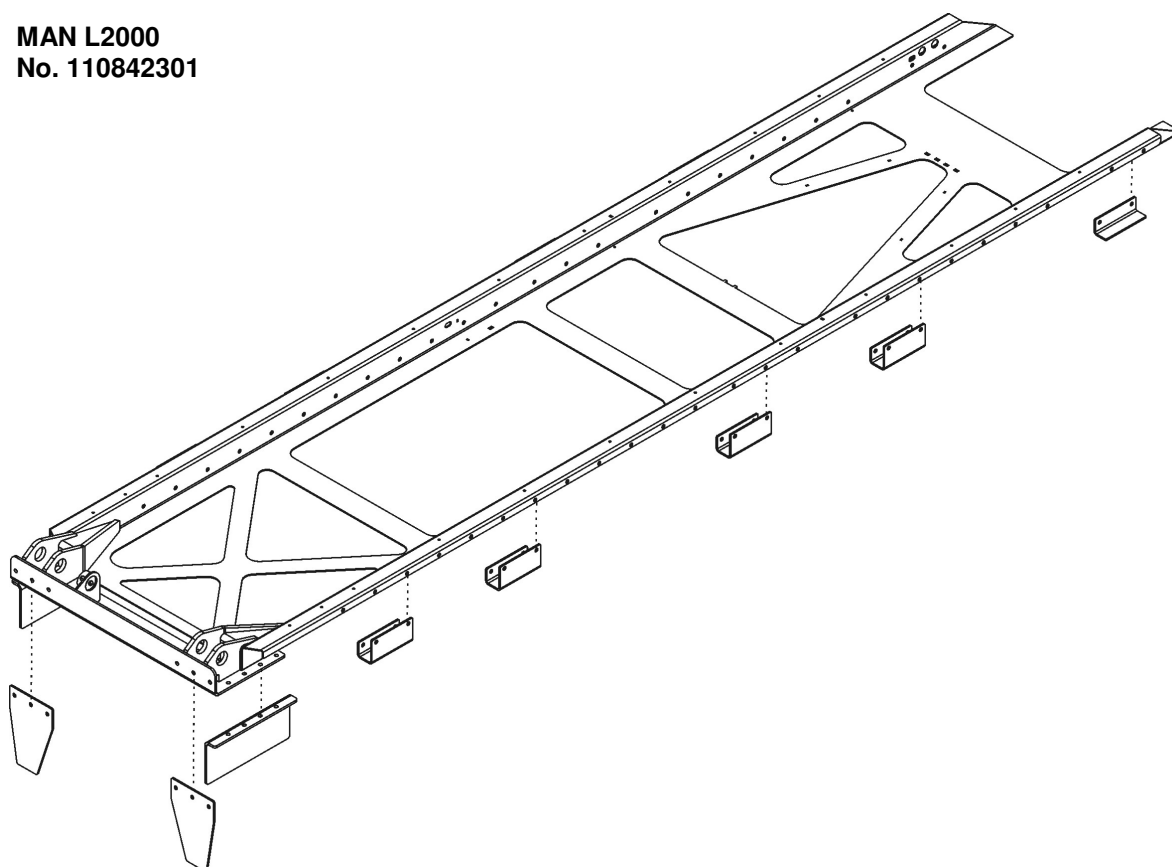
**Volvo FL612**  
**No. 110996501**



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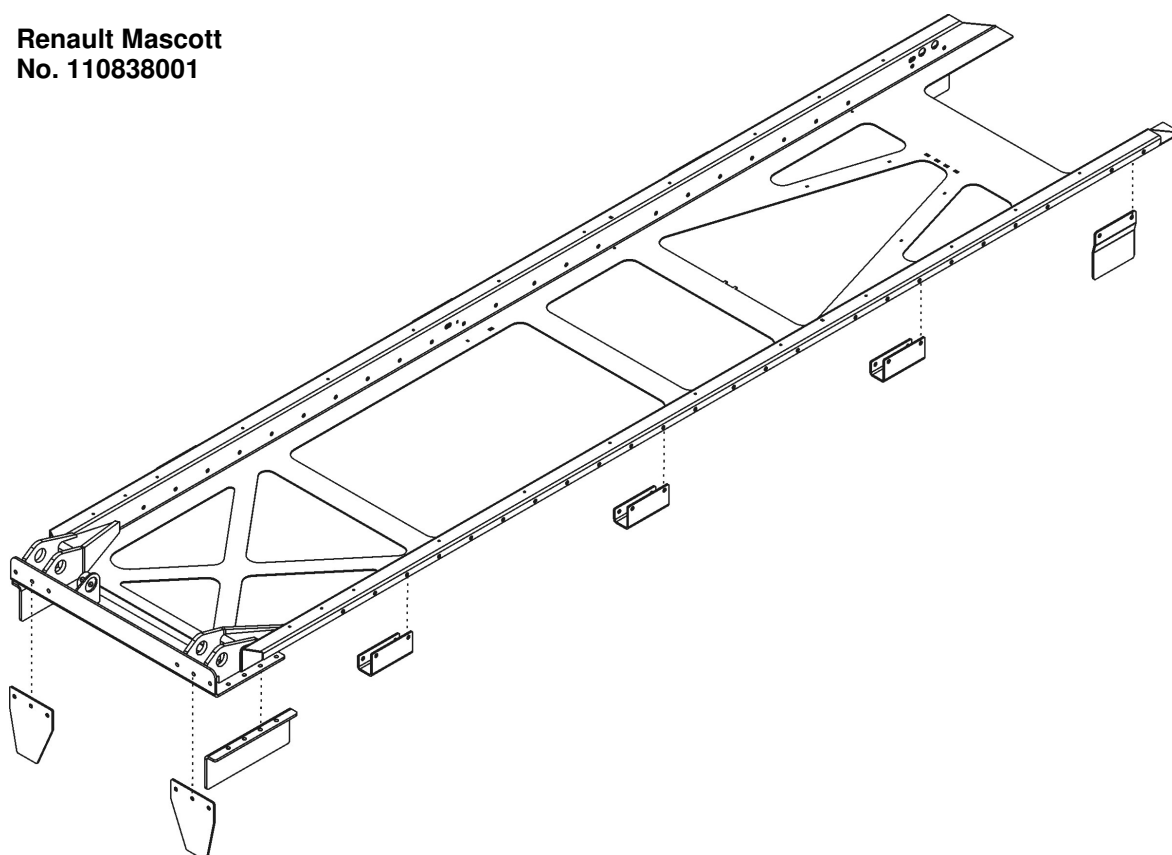
**MAN L2000**  
**No. 110842301**



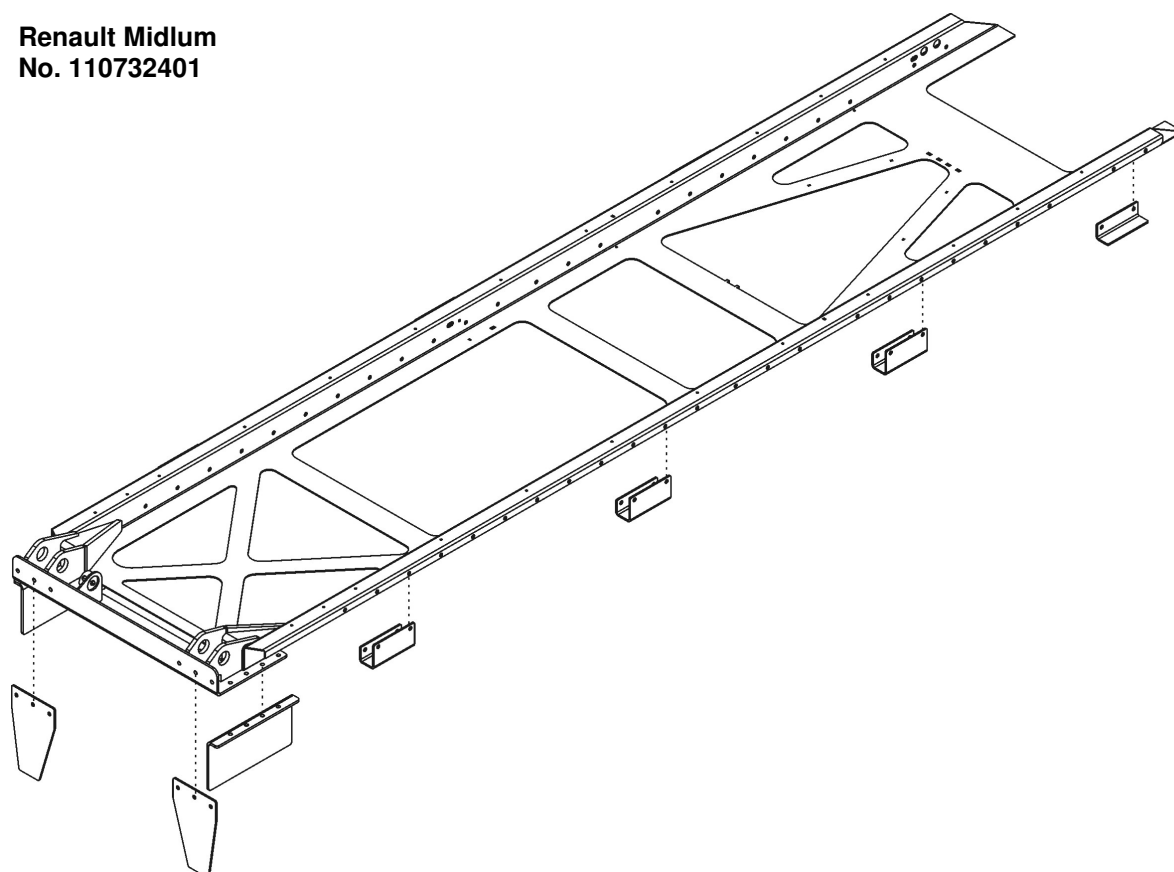
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**Renault Mascott**  
**No. 110838001**



**Renault Midlum**  
**No. 110732401**



**XR3 XR5****3.9 Mounting instructions when using other plates**

Fix XR-unit to the vehicle chassis using clamps. Locate the upper edge of brackets horizontal above the holes of the subframe that drilling of holes is possible. Use the existing holes in the chassis frame wherever possible. The holes of subframe are 1.38 in (35mm) above the lower edge of subframe.

Only the large rear retainer plate is mounted flush with the chassis member top. (Drawing)

Choose the dimensions of the large rear retainer plate and shape the plate so that the plate can hold the minimum number of screws with required distances despite the bracket of rear spring or other such parts. (Drawing)

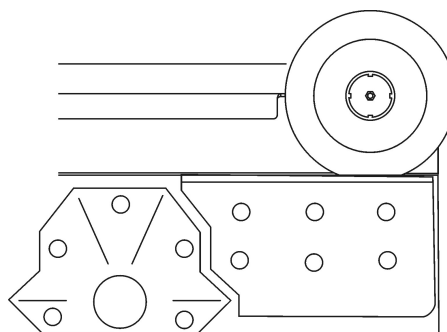
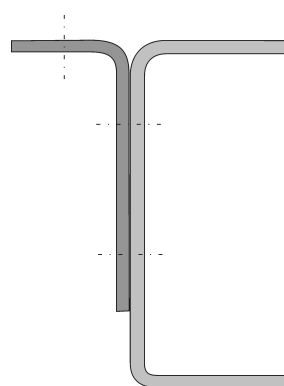
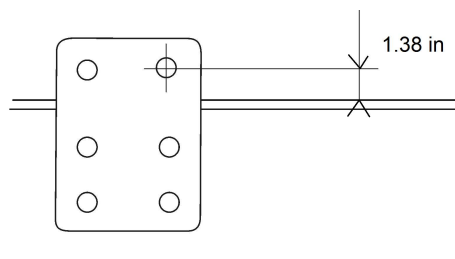
Drill holes of fitting bolts to fitting plates and to the chassis frame if necessary.

**About drilling of holes**

- Before drilling holes trough the chassis frame, ensure that no damage will result to any tubes or wiring etc.
- Drill holes as necessary in the chassis members. It's recommended to use an undersized drill, 0.55 in (13,9 mm) drill for M14 bolts, so that a play free joint is ensured.
- Never drill holes in the flanges of the side members.
- Never weld filler pieces in the holes of the chassis frame.
- Drilled holes must always be de-burred and treated with primer / paint.

Mount and tighten the bolts and nuts of retainer plates.

The torque of M12 bolts is 85 Nm



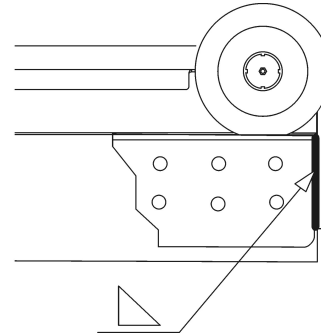
**XR3 XR5**

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Fix the rear end retainer plate to the subframe by three bolts an SL-nuts. Lower the XR-unit subframe onto the chassis (or the additional subframe) and check it's exact longitudinal location and center it in relation to the chassis. Once the hooklift system is accurately positioned, fix it to the vehicle chassis using clamps.

Fix the retainer plates to the subframe using M12-bolts and SL-nuts. Weld the rear end retainer plate to large rear retainer plate by picture.

**See also superstructure mounting instructions of chassis manufacturer.**

**3.10 Where to put all the components****Toolbox, spare wheel, sheet rack etc.**

If enough space is available, accommodate tool box, spare wheel and sheet rack in consultation with customer, while making allowance for accessibility of oil tank, valves and other truck components.

## 4 Hydraulic system

### 4.1 Safety precautions when installing the hydraulic system

**Observe the utmost cleanliness while installing the hydraulic system!**

The Multilift unit has been tested at the factory under maximum permitted operating pressure. The pressure limiting cartridges of the control valves are not to be changed or adjusted to give higher capacity. If use higher pressures the unit is likely to suffer structural damage and may cause injury to persons or property in the surrounding area.

The maximum operating pressure of hydraulic system is depending of the capacity of the unit, see table. Never touch the hoses or couplings when the hydraulic system is under pressure.

When raised to the tipping position or with the middle frame raised, the unit must always rest on a suitable strong support before working near the unit to prevent unintentional lowering of frame.

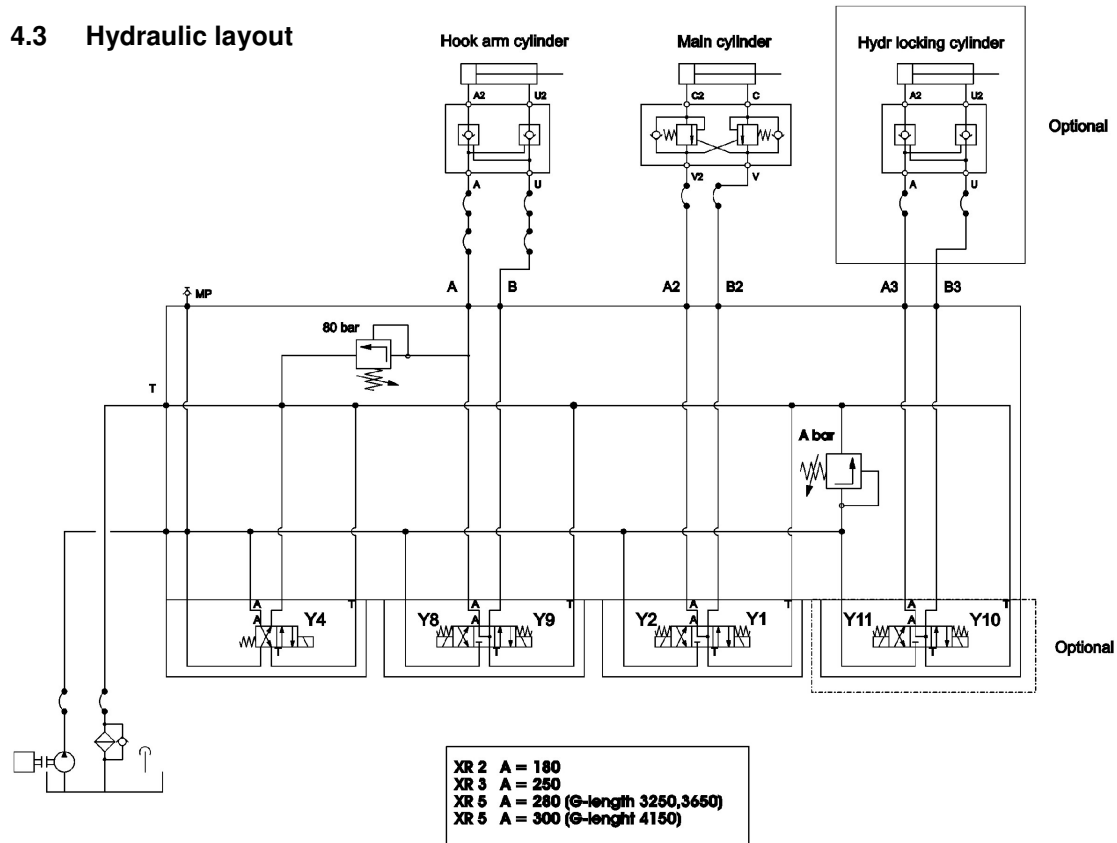
### 4.2 Technical data sheet

	XR3S 2700	XR3S 2950	XR3S 3200	XR5S 3250	XR5S 3650	XR5S 4150
Recommended oil flow gpm (1000 rpm)	4	4-5	5	5.5	5-6.5	5-6.5
Volume of oil reservoir (gal)	2.1	2.1	2.1	2.1	2.1	2.1
Oil volume of the unit						
without oil reservoir (gal)	ca. 2	ca. 2.2	ca. 2.4	ca. 3.4	ca. 4	ca. 4.5
with std oli resrvoir (gal)	ca. 4	ca. 4.3	ca. 4.5	ca. 5.5	ca. 6	ca. 6.6
Suction hose oil reservoir- pump	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
Pressure line (in)	0.63"	0.63"	0.63"	0.63"	0.63"	0.63"
Return line (in)	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"

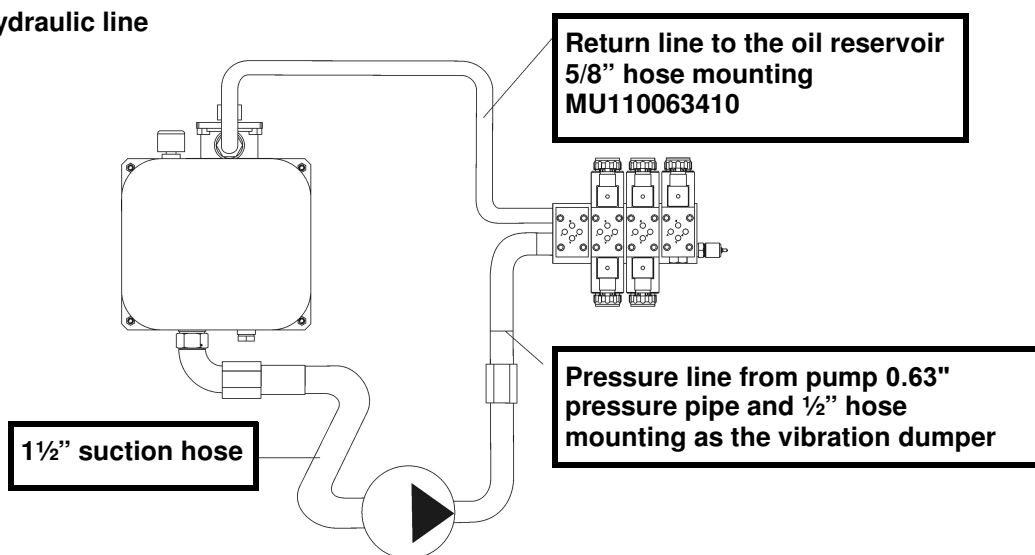
**XR-unit is delivered test driven and cylinders filled with oil.**

**Needed oil amount at installation is volume of oil reservoir + the oil amount of pump and suction line**

### 4.3 Hydraulic layout



### 4.4 Hydraulic line





### XR3 XR5

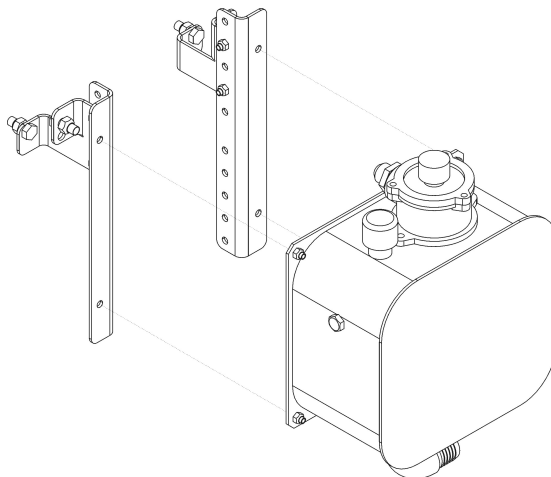
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#### 4.5 Oil tank installation

The XR-unit is generally provided with a oil tank to be mounted on the front of the unit, either on the top of the sub frame or on its side. A tank mounted on the top of the sub-frame is normally installed at the factory. The tank and mounting bracket for side mounting, left or right, are included in the delivery as an installation kit. The mounting brackets are fitted to the subframe with 4 M12 and 4 M8 bolts and nuts.

Oil tank should be installed higher than the pump as much as possible, that the tank oil level will be higher than the pump oil level.

**It's essential for the tank to be accessible for inspection, filling and draining.**



#### 4.6 Pump installation

If truck change gear box is equipped with a PTO for direct attachment (C-model) and there is enough space between driving shaft and cross members, direct pump attachment is possible.

First, however, check and, if required, adapt both direction of rotation and attachment standard of PTO and pump.

If a flanged PTO is used, which means the pump cannot be accommodated, a driving shaft flange may be applied. This implies the attachment of a flanged hub on the pump shaft and pump attachment on the truck chassis, using special support.

**The driving shaft has to be fixed by the supplier's instructions.**

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**Under specific circumstances the pump may be applied with an adapter between pump and PTO. A constraint, however, is the moment pressure is exerted on the PTO-casing by the pump weight.**

Remember that, on connection of the pump hydraulics, both pump and change gear box can move. This necessitates the use of a flexible hose for connection with the chassis piping system.

The airtight suction hose between tank and pump should have minimum inner diameter of 1½ inches, be as short as possible, and be installed in such a way that pipe resistance is minimized. Attach suction hose at various points between pump and tank, to prevent vibration.

**Protect the drive shaft in accordance with the government rules.**

#### 4.7 Hydraulic oil

The oil tank interior needs inspecting for impurities before the tank is filled with oil.

Fill the oil tank to the level indicated on sight glass. The oil level has to be checked with the vehicle in horizontal position and when the oil has cooled down.

**The oil level must not exceed the maximum level.**

The hooklift is originally delivered with mineral hydraulic oil which meets the requirements of the standards:

- ISO 6743/4 types HM and HV
- DIN 51525 type H-LP
- SMS norm for hydraulic oil (SS 155434)

The oil quality meets ISO VG with maximum contamination class 9, according to NAS 1638.

If unit has to work at very high or low temperatures, special attention must be paid to the oil grade used. Check the grade requirements with the oil supplier.

A equivalent oil is always used when refilling or changing the oil.

If an environmental friendlier oil (known as Bio-oils) is used after mounting of the hooklift the hydraulic system must be flushed thoroughly before filling the oil. Also when refilling the system it is very important to use exactly same type of oil.

The type of environmental friendlier oil must be synthetically one. The vegetable oils are not permitted.

The hydraulic oils, particularly mineral oils, are hazardous and must be disposed of in the proper manner. The disposal of the oil must always be carried out according to the local authority regulations. Polluted soil must always be collected and disposed of as per local authority regulations.

Hydraulic oils can irritate the skin and this may cause a serious skin condition. This is the same regardless whether mineral- or bio-oils are used. Always use hand protection against grease and oils. Clean your hands after service and use a hand cream to protect them.

## 5 CONTROL SYSTEM

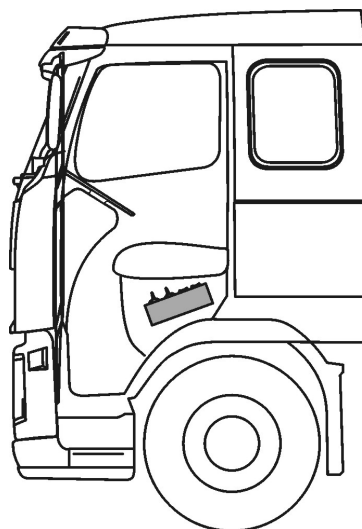
### 5.1 Installation of control unit

Choose a suitable location for the control unit in the vehicle's cabin. A suitable place is one where the operator can reach the controls and see the signal lights easily from driver's seat without straining and at the same time check the unit's movements through rear windows or mirrors.

A location that meets these requirements would be between driver's seat and the door, on the cab floor or attached to the seat frame. Or in the middle of cabin between the seats.

Position the control unit in such a way that it is impossible to touch them unintentionally or to have clothes caught by them.

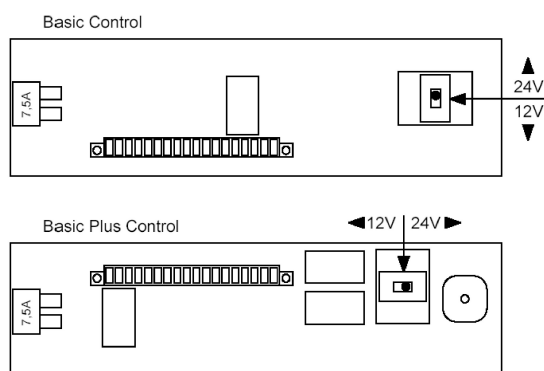
It is essential for the control system to function with door shut.



### 5.2 Installation of wiring loom

**Before power connection check the amperage and voltage of the truck's alternator.**

The hooklift is suitable for 12V or 24 V (max 26 V +10%) and excess of this voltage may cause failure. In the circuit card of control unit is voltage selecting switch. Check its settings before any installations. (Drawing)



## MOUNTING INTRUCTIONS

## CONTROL SYSTEM

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**Do not remove the connector from the cable or shorten the cable.**

Drill a hole 1.38" (35 mm) in the cab floor, (see drawing).

Run the main wiring from the control valve through the cab floor to the control unit. Protect the wiring with a grommet as it passes through the cab floor. Make sure that the grommets are sealed up.

If the vehicle has a tilting cab mechanism, then the cable should be run to the control unit via the mechanism axle, or (if there are holes available) in the front.

Connect the terminal block of the wire of the XR-unit to the control unit, and the power and the earth wire to the electrical system of vehicle.

Open the bottom of the control unit using screwdriver and connect terminal bar of wire harness to the terminal bar of circuit card. Put wires to the inlet holes so that cable ties is left inside the box.

When installing bottom plate be carefully not damage switches. Bottom plate will be closed when snags inside are in right position.

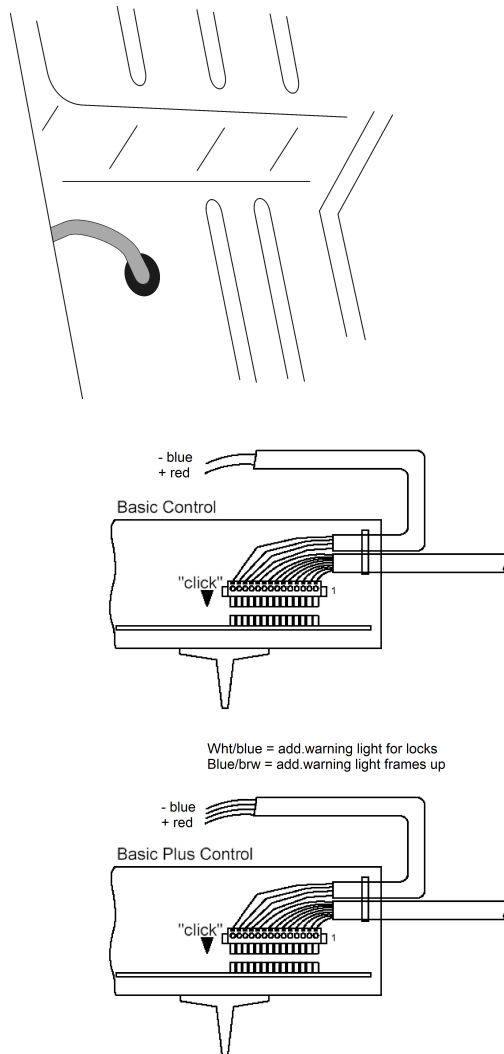
The best connection points for the voltage leads are as follows:

- voltage connector controlled by PTO switch
- control system voltage lead
- any auxiliary equipment connector which is only energized when the engine is running

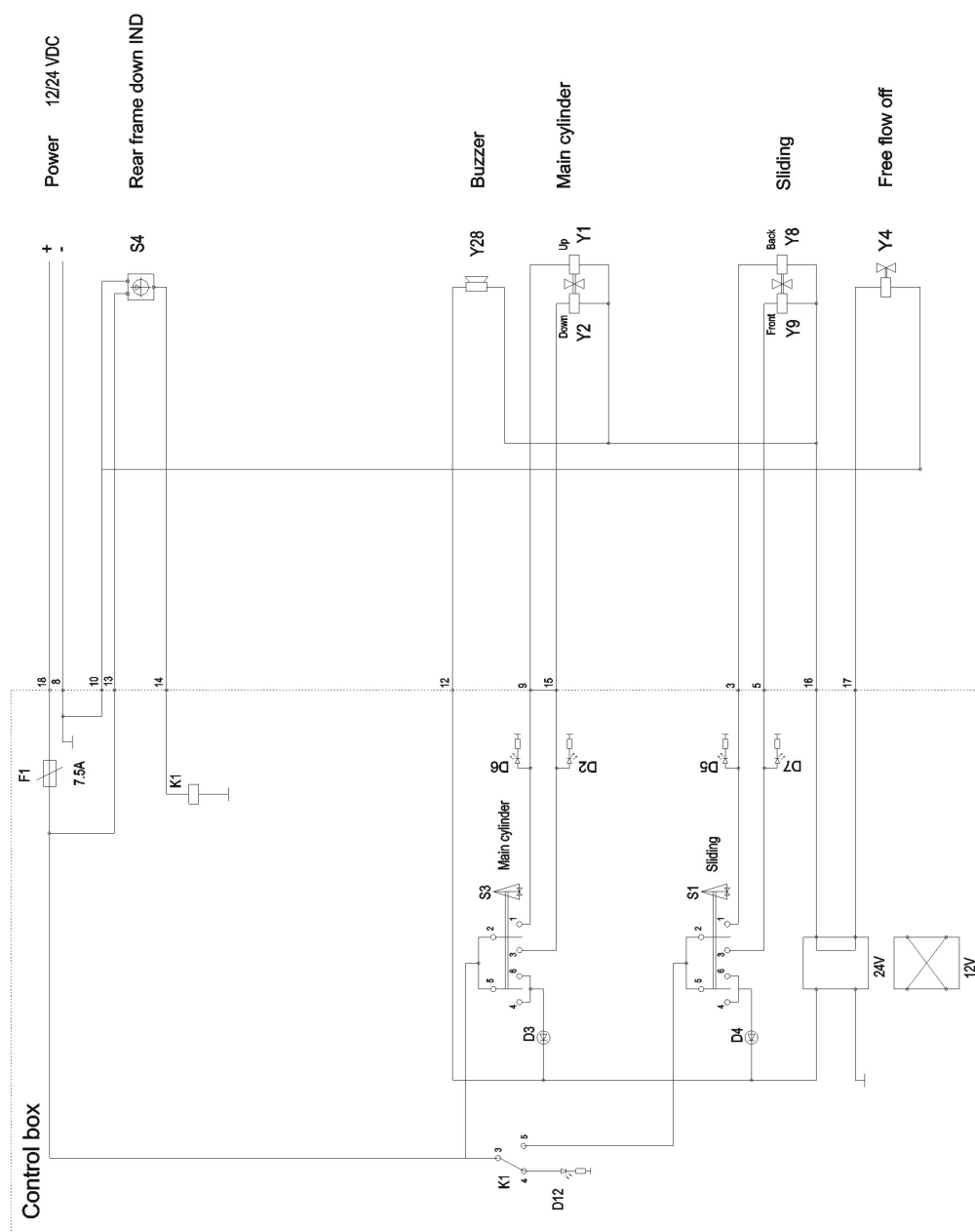
**Power must not in any circumstances be taken so that the hooklift system remains energized after the engine has been stopped.**

**Connect the power supply according to the vehicle manufacturer's instructions.**

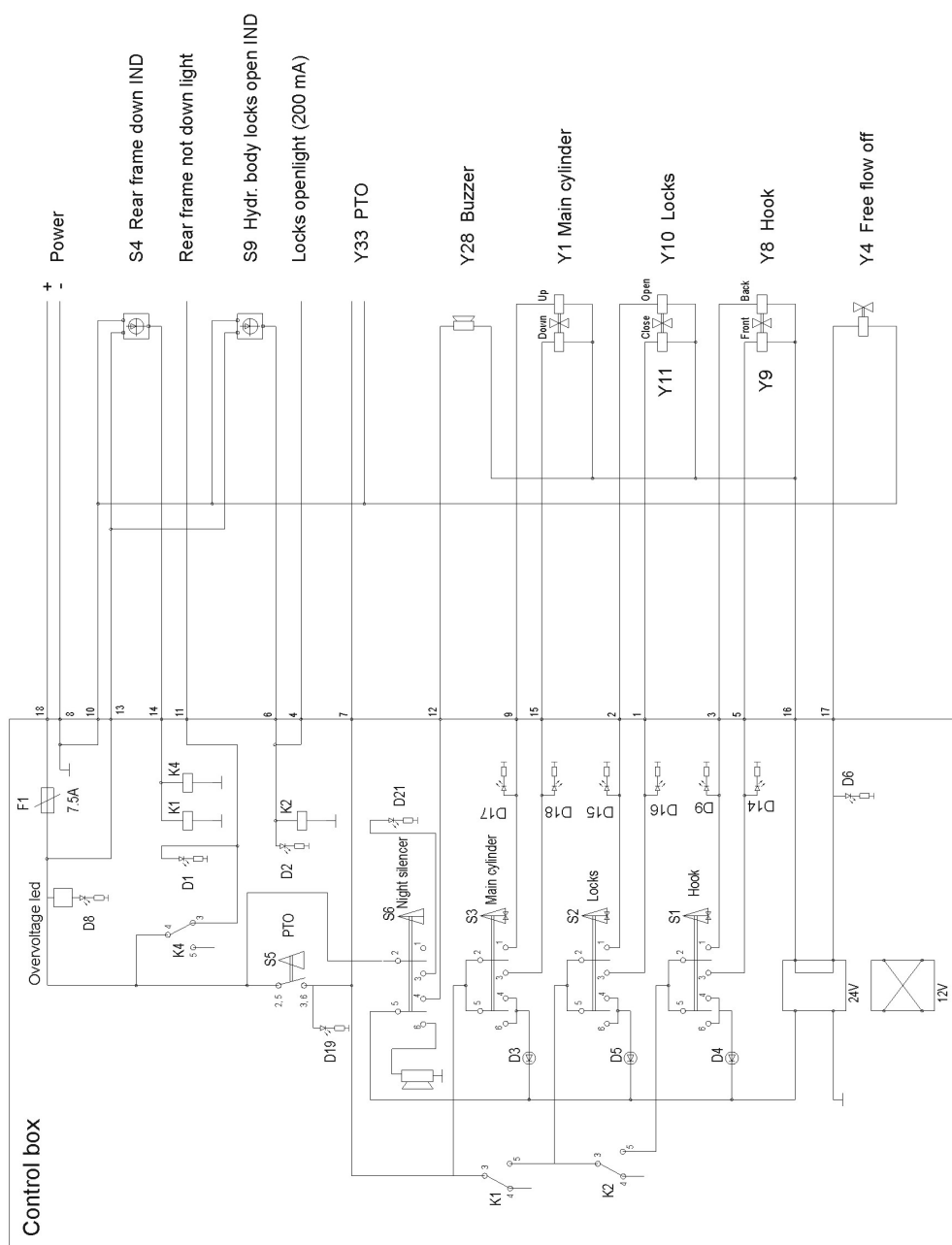
Install the wiring in such a way that it is impossible for them to be jammed or bend. Secure the wiring to the chassis frame with cable clamps (binder cable ties).



## 5.3 Electric system (Basic)



## 5.4 Electric system (Basic Plus)



## **6 TESTING THE UNIT**

### **6.1 Safety precautions when testing the hooklift system**

High pressure oil leaks can be life threatening, particularly direct sprays of oil. For that reason stay clear.

Never touch the hydraulic components under pressure.

All hydraulic leaks must be repaired immediately when noticed.

If two or more persons are involved in the installation work, they should always agree before starting the unit.

Make sure that there is sufficient free space around the hooklift system to perform all operations and that there is no-one near or liable to approach the unit during testing. Make sure you have read the operators manual and safety instructions before testing.

Controlling a trial run of the unit directly from the valve spools is only permitted if carried out trained personnel.

Always vent the hydraulic pump before starting. Check the procedure for in the pump manufacturer's installation instructions.

During the first testing the system movements must always be performed with extreme care. Watch all movements carefully to prevent any damage, possible collisions or friction of parts. Remember also that there is air in the hydraulic oil which may cause unexpected movements.

All operations should be tested several times without load. Most of the air can be vented from the system by driving the rams fully in and out 4 or 5 times, for about 5 seconds.

Make sure you keep out of range of the hooklift system moving parts to avoid being caught by them or by the PTO shaft.

It's recommended to test the hooklift system tipping stability to comply with the standards in force.

### **6.2 Testing control unit system**

The best moment for testing and adjustment is after assembly but before spraying and finishing.

All functions of hooklift should first be driven several times without load.

Check the oil level in the oil tank. Top up as necessary.

Check all hydraulic joints for leakage.

The control system is designed to prevent accidental operation. The system receives information on relative positions of the different components by means of the proximity switches.

**XR3 XR5**

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Take the following safety precautions before operating with a test load:

1. Ensure that tip and body locks cannot be opened during tipping (front of unit raised about 1.5 ft)
2. Ensure that the main rams do not move outwards when the hydraulic body lock is in the mid-position.
3. Ensure that hook operation is not possible with the locks closed.

Repeat the tests with a loaded body or test load.

When all the test have been performed acceptably, remember to attach the required CE labels etc.

**7 FINISHING****7.1 Cleaning vehicle combination**

- Protect electrical– and moving parts
- Clean all welding joints and cut surfaces
- Touch up exposed surfaces with primer
- Proper cleaning

**7.2 Painting**

The hooklift is painted with an alkyd primer. Finally painting with an alkyd paint or two component acrylic car paint, if:

- the primer has had least 7 days to cure at +20C° (after delivery)
- final painting is done in thin layers: 30 µm wet coats.

**The primer will not stand painting with amine-hardened epoxy paints, nor with paints containing “hard” solvents.**

Follow the paint manufacturer's directions during painting.

**Protect electrical– and moving parts**

**7.3 Finish up attachment**

Apply the rear lights, registration plate and marking plates in accordance with regulations.

**Remember to fill the delivery card in C-Care to ensure that the product warranty takes effect. Print a copy also to the customer.**



**DO NOT FORGET TO TRAIN THE OPERATOR!**

Stress the need to observe safety rules during operation.

Make sure, that the operator receives a Multilift instruction manual when the unit is handed over, and encourage him to study its contents before using the unit.

Check, that the unit's documents are in order deliver them to the customer.