Assembly instructions for BR 13x-2 / 14x-2 / 248-2

Substructures

MA-Substructures.GB

It is essential that this instruction is read through completely and carefully before you begin with the assembly.

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1. Introduction, important notes

These instructions explain the assembly of substructures for the box body kits BR13x-2, 14x-2 and 248-2, both as a kit as well as pre-assembled. The aluminium substructures are intended for the tonnage class up to 7.5 tonnes. The steel substructures are to be used for 14x-2 and 248-2 box body kits with a permitted gross vehicle weight of 7.5 - 26 tonnes.

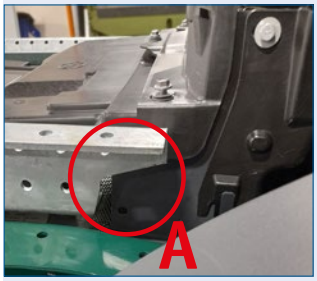
Therefore please adhere to the work instructions described here, particularly the following warning notes, otherwise the guarantee is void. Please note that coloured illustrations are for illustrative purposes only. Get in touch with us immediately in case of uncertainties.

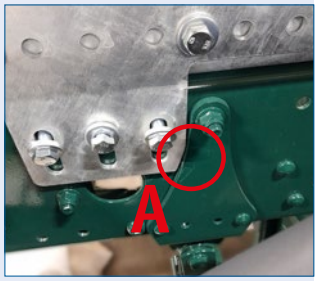
We recommend that you mount the substructure directly onto the chassis. The work requires 1-2 fitters with training as vehicle or body fitters or equivalent.

1.1 Warning notes

The intended purpose of the kit is generally not known exactly to AluTeam. You as the vehicle builder must coordinate the ordering and processing of the substructure with the requirements of your customer and the bodywork guidelines of the chassis manufacturers. It is also your responsibility to pay attention to the positioning as well as the type of connection, shear soft or shear stiff.

- Store the kit in a dry and clean place (not outdoors.) If necessary, secure components or the pre-assembled substructure from falling over.
- Never place screws at an angle. The screws may not be tilted. *Adhere to the torques* (*2.3*). Undershooting weakens the strength of the system. Significant overshooting can lead to damage to component parts!





Suspended loads on the crane

Objects falling-down

Tipping over parts or module assemblies

Dangerous material contents

AluTeam kits can be assembled in any well-equipped workshop. When unloading and assembling, be sure to observe the instructions listed here.

- Connect the component parts directly with the screws that are supplied. The contact surfaces must be free of dirt.
- At least the two front fastenings. On some chassis, the four front fastenings, must also be spring-mounted. Otherwise, forces occurring during driving, e.g. when cornering, load changes or uneven loading, will be transferred to the body. There they can cause damage to the body and/or substructure.
- The vehicle manufacturer is responsible for any necessary adaptation work, e.g. drilling/cranking in the longitudinal members and recesses in components (**A**). In this regard, complaints are excluded from the guarantee.

1.2 Notes on safety

Pay attention to your own safety and to that of your employees.
Working with construction sets involves hazards. Therefore caution is always advised, in particular you should absolutely:

... **Wear safety gloves. Use safety shoes, as heavy parts can fall off. In addition, wear hearing protection and goggles when working with pneumatic screwdrivers, drills, grinders, etc.**

... use a spreader bar when unloading or transporting the kit in the transport frame with a crane. When using a forklift truck, push the transport frame completely onto the forklift teeth.

... assembling the substructure without a crane or forklift truck is very time-consuming and it endangers the safety of your employees. Always assemble with the aid of a crane or forklift truck.

... Only lift assemblies vertically and not at an angle! Never step under lifted loads! The suspension in the crane must always be implemented over the module assembly centre of gravity!

... Only place kits on level surfaces and secure them against tilting, tipping or falling over.

Remove all packing straps in the specified order during assembly. Always remove the white packing straps first. The individual component parts and groups have a red packing band. Secure the part to be removed from tipping over before cutting the packing tape.

... Comply with the legal requirements such as StVZO, BGV D 29, BGV A1, BGG 915, BGG 916. The body builder bears the responsibility.

... Ensure that there is sufficient space during assembly. **In order to ensure safe and trouble-free assembly, you need at least three metres of free space on both sides, to the right and left of the vehicle and behind the vehicle!**

1.3 Required tools and equipment

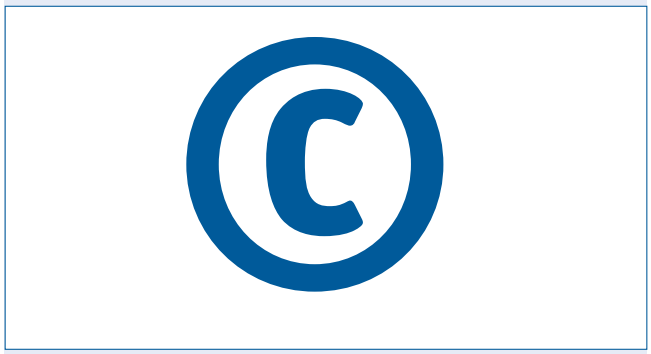
Place the following equipment correctly before the assembly:

- Measuring tape
- Compressed air or cordless screwdriver with appropriate inserts for hexagonal screws, and torque adjustment if necessary
- Drilling machine, set of different metal drills
- Ring spanner SW 17+19 (if necessary ratchet with sockets)
- Straightening rod or string
- Screw clamps
- Torque wrench up to 200 Nm

1.4 Tightening torques of the screws

The tightening torque for the screws with a hexagonal head is 80 Nm ± 5 Nm (thread dry).

Check the torque using appropriate measuring equipment.



1.5 Copyright

The copyright of these instructions lies with AluTeam. They are intended for the assembly company and its staff and either in whole or in part, may not be:

- duplicated
- disseminated or
- be communicated to others.

Contraventions may entail civil and legal penalties!

2. Assembly of the kit for an aluminium substructure

2.1 Scope of delivery for the aluminium substructure

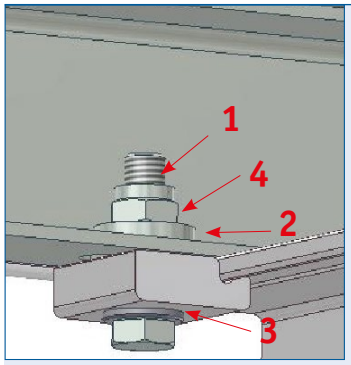
Please understand that we reserve the right to make changes to the scope of delivery in terms of its form, equipment and technology.

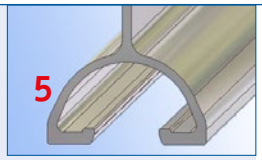
The scope of delivery of a kit for the aluminium substructure includes:

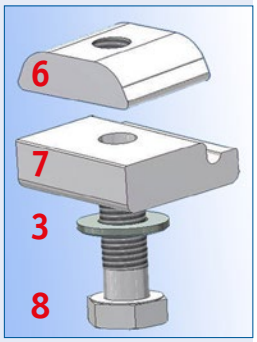
- 2 pcs. longitudinal member, length depending on the nominal length of the body, anodised aluminium
- 1 end member, hot-dip galvanised steel
- Number of cross members, depending on the nominal body length, anodised aluminium
- 1 pc. Hot-dip galvanised steel for BR 133-2 136-2, 137-2, 138-2, 139-2 or 2 brackets for BR 14x-2, hot-dip galvanised steel
- Clamping sets according to the number of cross members, consisting of:
  - Clamping plate, with hole, anodised aluminium
  - Threaded piece with thread, anodised aluminium
- Number of brackets, sliding plates and clamping plates depending on the nominal case length and the chassis version, hot-dip galvanised steel
- screws, washers and nuts, galvanised

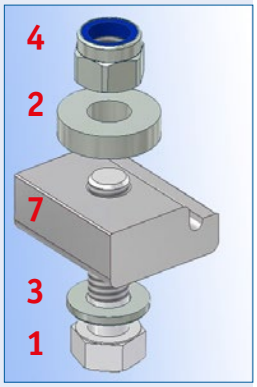
Attention: *The screws, washers and nuts for connecting the substructure and chassis are not included in the scope of delivery. The screws or rivets for connecting the subframe to the body are included in the assembly material for the body. Their use is described in the assembly instructions for the body.*

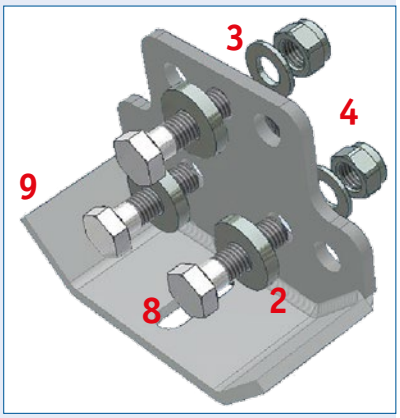
Check the dispatch with the enclosed packing list for completeness. Notify any damage incurred during transit immediately to the delivering forwarding agent.

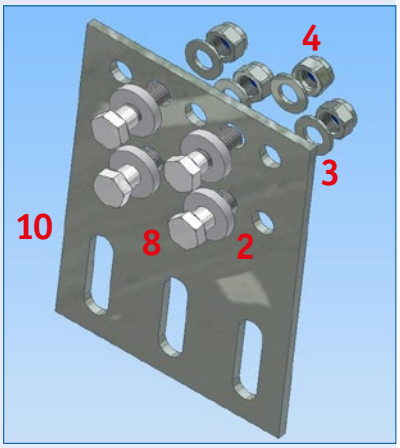












2.2 Fastening elements for the aluminium substructure

- A correct **screw connection** (clamping set) **from the longitudinal member to the front member and rear member** consists of:

  1 screw M12x45 DIN 931 10.9 VZ, item no. MD100236
  2 Washer DIN 7349 VZ top, item no. MD110032
  3 Washer DIN 125 bottom, item no. MD110020
  4 Lock nut M12 DIN 985, item no. MD120015

- The **clamping set for the cross member** for

  5 Rounded longitudinal member:
  6 Threaded piece, with M 12 thread, item no. VS100116
  7 Clamping plate, with hole ø13 mm, item no.. VS100070
  3 Washer DIN 125 bottom, item no. MD110020
  8 screw M12x40 DIN 933 10.9 VZ, item no. MD100152

- The **clamping set for the locking of the rear and front member** consists of:

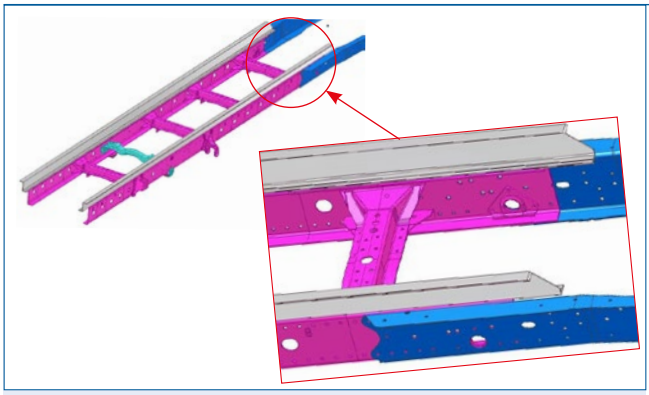
  4 Lock nut M12 DIN 985, item no. MD120015
  2 Washer DIN 7349 VZ top, item no. MD110032
  7 Clamping plate, with hole ø13 mm, item no. VS100070
  3 Washer DIN 125 bottom, item no. MD110020
  1 screw M12x45 DIN 931 10.9 VZ, item no. MD100236

- The screwing set **for connecting the mounting brackets to the substructure or chassis** consists of:

  9 System bracket Universal, item no.. VS100046
  4 Lock nut M12 DIN 985, item no. MD120015
  3 Washer DIN 125 bottom, item no. MD110020
  2 Washer DIN 7349 VZ top, item no. MD110032
  8 screw M12x40 DIN 933 10.9 VZ, item no. MD100152

- The screwing set **for connecting the mounting brackets to the substructure or chassis** consists of:

  4 Lock nut M12 DIN 985, item no. MD120015
  3 Washer DIN 125 bottom, item no. MD110020
  2 Washer DIN 7349 VZ top, item no. MD110032
  9 screw M12x40 DIN 933 10.9 VZ, item no. MD100152
  10 Push plate, item no. VS100089

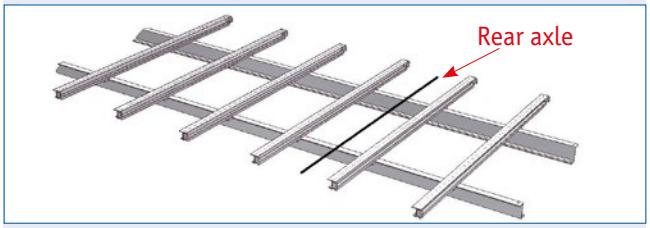


2.3 Assembly sequence for aluminium substructure

- Position the longitudinal members on the chassis so that the slope of the longitudinal member faces forward and the upper leg of the member faces outward.

  Align the longitudinal members and fix them with the screw clamps.

  The exact longitudinal positionof the members and as such, the distance between the body and the driver's cab **is determined by you** as the vehicle builder, taking into account the body guidelines of the respective chassis manufacturer.

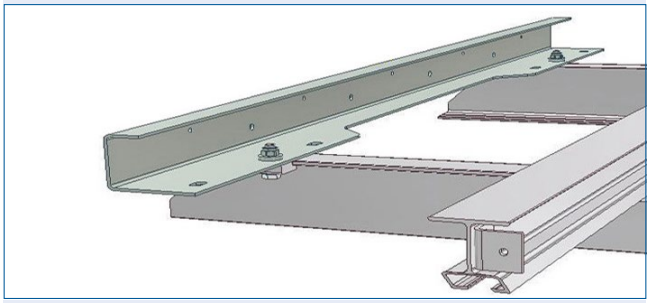


- Starting from the rear axle, mount the two middle cross members half the distance of a cross member to the front and half the distance of a cross member to the rear.

  Then fit the other middle cross members according to the dimensions given in the data sheet. Fix the members, however only hand-tight. Use a clamping set (p. 5) for this version.

- Align the cross members so that they are parallel and longitudinally aligned using a straightening rod or string.

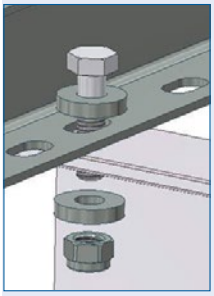
  Measure the diagonals of the substructure and correct the alignment if necessary, in order to be able to mount the floor panels correctly later. Screw the cross members tight with the appropriate torque.

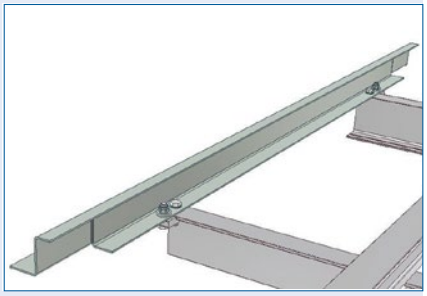


- Pre-assemble the end member. Align it at right angles to the longitudinal member. *Use a clamping set as on page 5*. Tighten the screws only slightly.

  Place the superstructure on the substructure and position it in relation to the driver's cab (follow the vehicle manufacturer's superstructure guidelines).

  After final alignment of the body, push the front member against the lower flange and screw it tight.

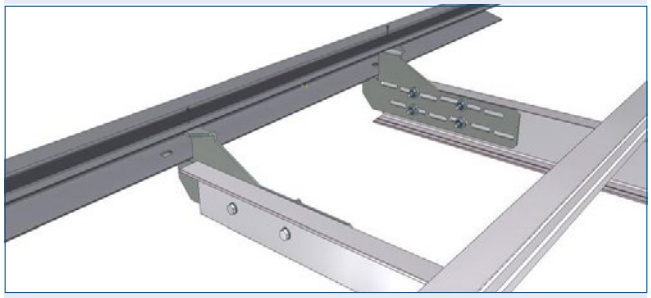




- To attach a **body kit with a roller shutter**,align the rear member parallel to the front member or at right angles to the longitudinal member.

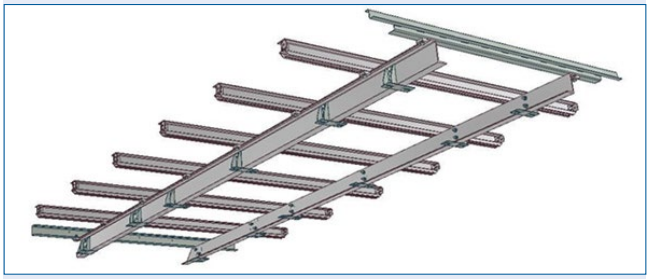
  Drill 1 hole ø13 mm in each longitudinal member. Use a connection as shown in the adjacent picture.

  In addition, screw the rear member to a longitudinal member using a clamping set (see p. 5 above).



- **In all other cases**, you have **mounting brackets for attaching the rear member**. Position these to match the mounted portal cross member of the body. Drill four holes ø13 in the longitudinal members. Secure the rear brackets to the inside of the member with four screws, washers and nuts each. The screw spacing in the longitudinal direction should be as large as possible.

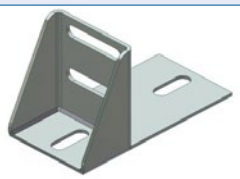
  The rear support leg of the bracket from below must also be screwed to the portal cross member, in each case with one screw, washer and nut.



- **Connect the brackets to the chassis in accordance with the vehicle manufacturer's installation guidelines**. These apply, in particular, to any holes that are required in the chassis longitudinal members.

Item no. VS100068

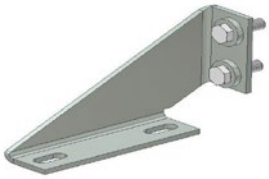
Item no. VS100048



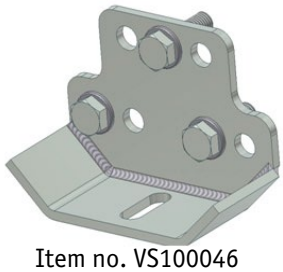
Item no. VS100066

Item no. VS100067

Item no. VS100115



Item no. VS100071



Item no. VS100046

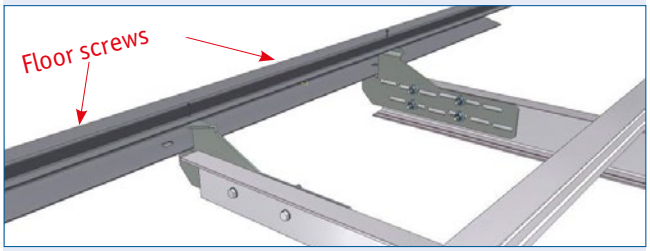
Item no. VS100089

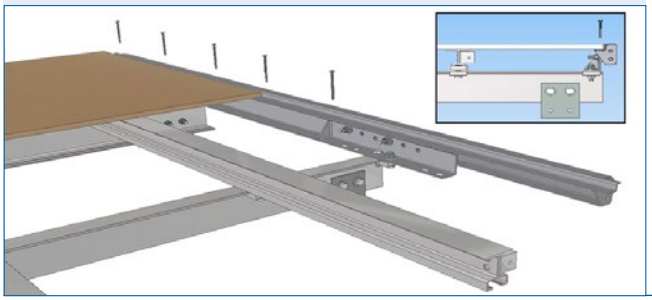
Item no. VS100072

Item no. VS100075

Item no. VS100079

Item no. VS100080





Depending on the vehicle type, the following brackets are available:

- **Mounting bracket VS100068**
  on the two front attachment points of the chassis for:
  MB Sprinter 3.5t/5t; VW Crafter old 3.5t/5t

- **Mounting bracket VS100048**
  on the two front attachment points of the chassis for:
  VW Crafter new 3.5t/5t; MAN TGE 3.5t/5t

- **Mounting bracket VS100066 with clamping plate VS100067**
  on the 1st fixing point of the chassis for:
  Ford Transit / Opel Movano / Renault Master 2010

  from the 3rd fixing point of the chassis for
  MB Sprinter 3.5t/5t; VW Crafter old 3.5t/5t
  Attention: *With this bracket, mount the clamping plate on the inside of the longitudinal member with the supplied screw, incl. washer and nut.*

- **Mounting bracket VS100115**
  above the rear axle in the vicinity of the crank, on the inside of the chassis for:
  VW Crafter new 5t / MAN TGE 5t

- **Mounting bracket VS100071**
  above the rear axle on the inside of the chassis for:
  VW Crafter new 5t / MAN TGE 5t

- **Mounting bracket VS100046**
  for the front area of the chassis for:
  Iveco Daily (Eurocargo) / Mitsubishi Fuso Cante / DAF
  MAN TGL, TGM, TGS, TGX, TGA from 7.5t / MB Atego 7.5t /
  Renault Mascott, Maxity/ Nissan Cabster / Scania

- **Thrust plate VS100089 in the axle area for**
  Iveco Daily (Eurocargo) / MAN 7.5t / DAF 7.5t /MB Atego 7.5t

- **Mounting bracket VS100072 with clamping plate VS100075**
  continuous, from the first mounting point for:
  VW Crafter new 5t / MAN TGE 5t

- **Mounting bracket VS100079**
  above the rear axle on the inside of the chassis for:
  Citroen Jumper / Fiat Ducato / Peugeot Boxer

- **Mounting bracket VS100080**
  above the rear axle on the inside of the chassis for:
  Renault Master 2010 / Opel Movano

  For the longitudinal member connection, 2 screws incl. washers and nuts are generally used for the brackets. Deviations and additions are explicitly noted with the brackets.

- **In the case of a substructure for BR 14x-2 kits,** additionally screw your rear floor plate with floor screws through the portal cross member and the support leg of the bracket, as shown in the adjacent picture.
- **In the case of a substructure for BR 13x-2 kits,** with a portal cross member and integrated floor rebate, the last end cross member must be screwed to the portal cross member. The screwing is done through the lug of the floor rebate.

Attention: ***Floor fixing screws are generally part of the vehicle builder's scope of delivery!***

3. Assembly of the kit for a steel substructure

Check the dispatch with the enclosed packing list for completeness. Notify any damage incurred during transit immediately to the delivering forwarding agent.

3.1 Scope of delivery for the steel substructure

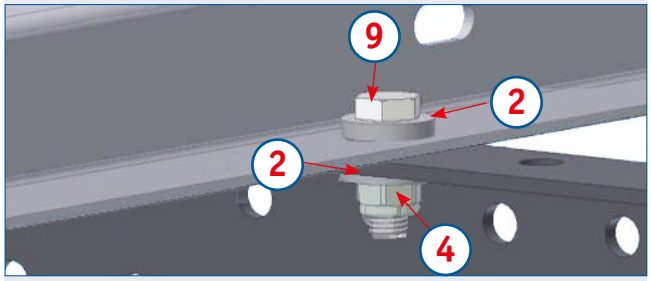
Please understand that we reserve the right to make changes to the scope of delivery in terms of its form, equipment and technology.

The scope of delivery of the kit for the steel substructure includes:

- 2 pcs. longitudinal beams, length depending on the nominal length of the body, perforated at the sides in 50 mm increments, perforated at the top in 62.5 mm increments, divided by a maximum of 1, hot-dip galvanised.
- 1 connecting cross member front, hot-dip galvanised
- Number of cross members in the middle, depending on the nominal length of the body, galvanised
- 1 cross member, over rear axle (only version ≥ 12 t), galvanised
- 1 rear end cross member, galvanised or 2 brackets, galvanised
- Corresponding number of brackets, thrust plates and various mounting parts, galvanised
- screws, washers and nuts, galvanised
- For BR 140-2 and 142-2 and on customer request:
  8 pcs. stiffening parts for substructure stiffening, galvanised

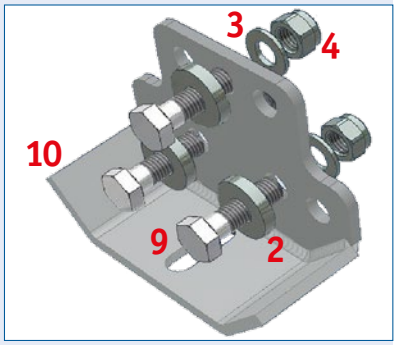
Attention: *The screws, washers and nuts for connecting the substructure and the chassis are not included in the delivery. The screws or rivets for connecting the subframe to the body are included in the assembly material for the body. Their use is described in the assembly instructions for the body.*

The large washer ∅ outer = 30 mm is used for slotted holes as well as for connecting cross beams/support beams.

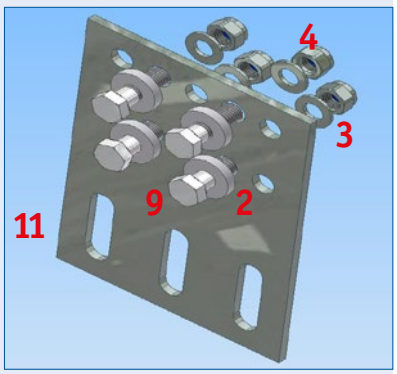


3.2 Fastening elements for the steel substructure

- Opposite you can see a correct screwed connection of longitudinal member and middle cross member, rear member and front member:
  - 9 screw M12x40 DIN 933 10.9 VZ, item no. MD100152
  - 2 Washer DIN 7349 VZ top, item no. MD110032
  - 2 Washer DIN 7349 VZ top, item no. MD110032
  - 4 Lock nut M12 DIN 985, item no. MD120015

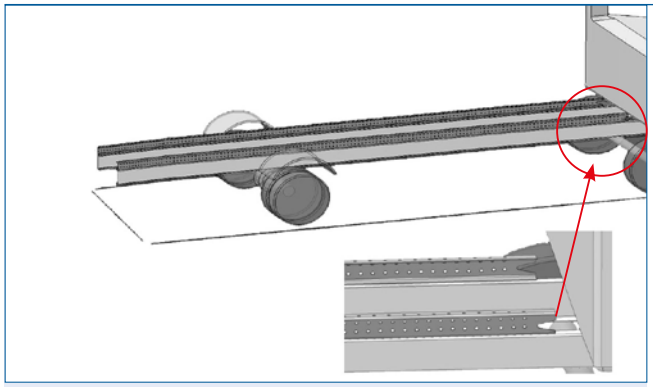


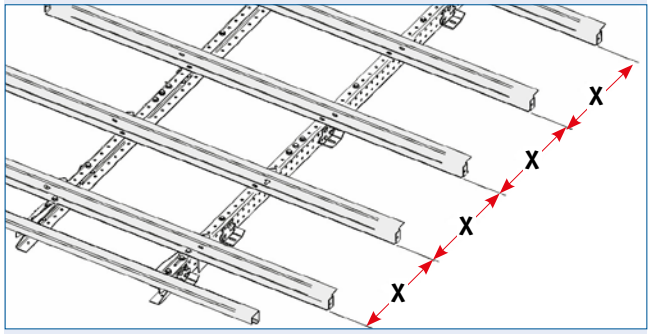
- The screwing set for connecting the mounting brackets to the substructure or chassis consists of:
  - 10 System bracket Universal, item no.. VS100046
  - 4 Lock nut M12 DIN 985, item no. MD120015
  - 3 Washer DIN 125 bottom, item no. MD110020
  - 2 Washer DIN 7349 VZ top, item no. MD110032
  - 9 screw M12x40 DIN 933 10.9 VZ, item no. MD100152

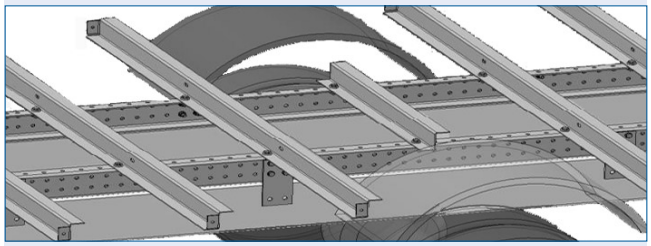


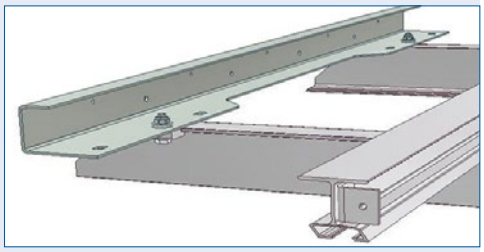
- The screwing set for connecting the push plates to the substructure or chassis: consists of:
  - 4 Lock nut M12 DIN 985, item no. MD120015
  - 3 Washer DIN 125 bottom, item no. MD110020
  - 2 Washer DIN 7349 VZ top, item no. MD110032
  - 9 screw M12x40 DIN 933 10.9 VZ, item no. MD100152
  - 11 Push plate, item no. VS100089

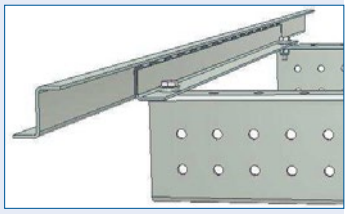
Attention: *Make sure that all screwed connections are tightened to the correct torque. screws that come loose all the time due to non-compliance with the torque specifications are not grounds for complaint.*

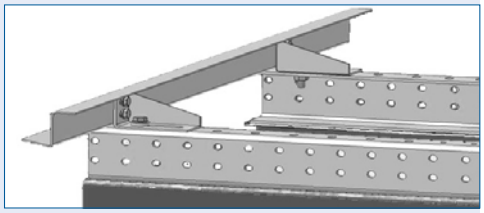












3.3 Assembly sequence for the steel substructure

- Place the longitudinal members on the chassis. The dovetail cut-out is facing forwards and the U-profile is open towards the inside.

  Align the longitudinal members and fix them with the screw clamps.

  Attention: ***The exact longitudinal position*** *of the members, and as such, the distance of the body from the cab is determined by you as the vehicle builder, taking into account the body guidelines of the respective vehicle manufacturer.*

- Starting from the rear axle, align the two middle cross members for wards and backwards, in each case by half the distance of cross member **X**. Screw the members slightly so that they are hand-tight.

Tonnage class	Cross member spacing „X“
up to 7,49 t	625.0 mm
from 7,5 bis 12 t	500.0 mm
from 12,1 to 17,9 t	375.0 mm
from 18 to 26 t	312.5 mm

Attention: *In the case of a* ***⩾ 12 tonne version (permitted gross vehicle weight)*** *insert a shortened cross member centred on the rear axle.*

- Align the other cross members parallel and in longitudinal alignment using a straightening rod or string. Use the cross member spacing **X** according to the table. Measure the diagonals of the substructure and if necessary, correct the alignment of the members in order to be able to mount the floor panels correctly later. **Screw all cross members with the appropriate torque.**

- Align the end member with the brackets that are shown (see photo on the left) at right angles to the longitudinal member. Only tighten the screws slightly *(cf. 3.2)*. Then place the superstructure on the substructure and position it in relation to the cab, **observing the superstructure guidelines of the respective vehicle manu facturer.**

  After aligning the body, push the front member against the lower flange of the body, drill and screw it tight.

- **To mount the rear carrier on bodies with doors or tail gate** (LBW) proceed as follows:

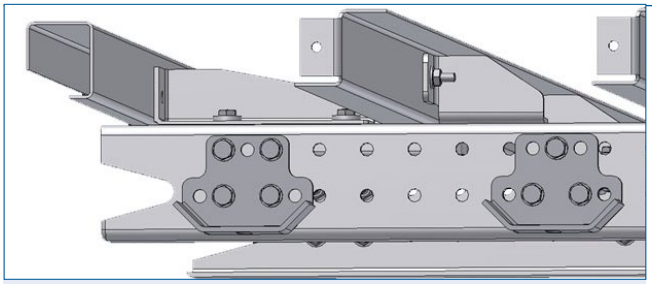
- **In the case of the BR 13x-2** (permitted gross vehicle weight up to 3.5 to.) align the rear carrier and screw it only slightly so that it is hand-tight. In each case, screw with the first hole from the rear in the upper row of holes.

- **In the case of the BR 14x-2**, position the mounting brackets to match the mounted portal cross member of the body. Secure the rear brackets to the inside of the longitudinal member in each case using four screws, washers and nuts. The brackets must be pre-punched to match the floor rebate. Use the largest possible screw spacing in the longitudinal direction!

  From below, the rear support leg of the bracket must also be screwed to the portal cross member, in each case using one screw, washer and nut.

- To attach a **body kit with a roller shutter**, place the rear carrier on top, align it and fix it according to the nominal length of the suitcase using the two slotted holes on each longitudinal member. Then slide on the portal cross member.

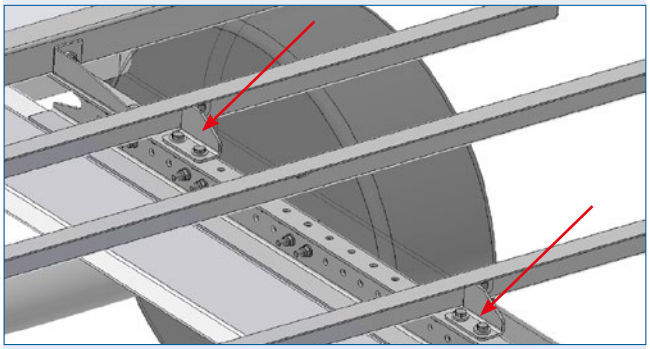
- Now connect the brackets and push plates *(cf. 3.2)* to the chassis **in accordance with the chassis manufacturer's assembly guidelines.**



- Fix the supplied brackets *(cf. 3.2)* to the longitudinal member every 25 mm with three or four screws.

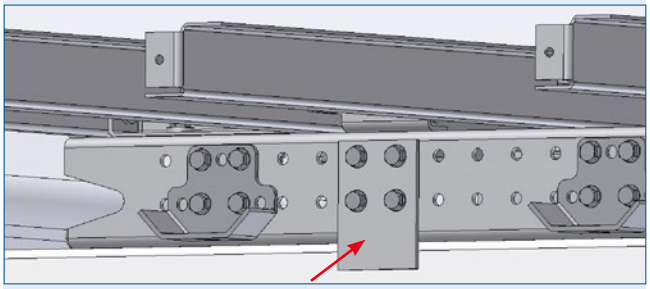
  On Mercedes Atego vehicles, for example, the holes in the chassis side member are also spaced at 50 mm mm intervals. On vehicles of other manufacturers the brackets on the vehicle side have slotted holes in the direction of travel.

  The installation guidelines of the chassis manufacturer are decisive.

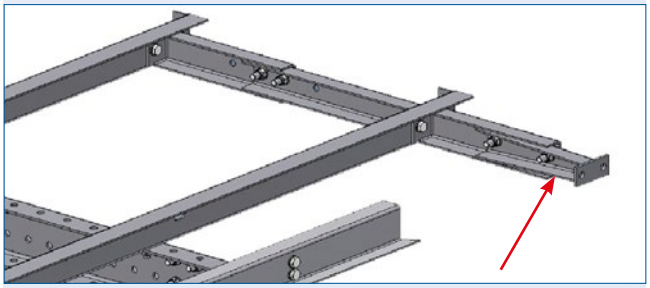


- Now mount the reinforcements :
  - In the case of **kits up to 7.5 tonnes,** screw *(cf.3.2)* the reinforcements to the first and third middle cross member.
  - In the case of **kits 7.5 to 12 tonnes**, screw *(cf. 3.2)* the reinforcements to the first, third and sixth middle cross member.
  - In the case of **kits over 12 tonnes**, screw *(cf. 3.2)* the reinforcements to the first, third, sixth and eighth middle cross member.

  Then bolt the floor plate to these cross members in order to specifically transfer the forces into the substructure!

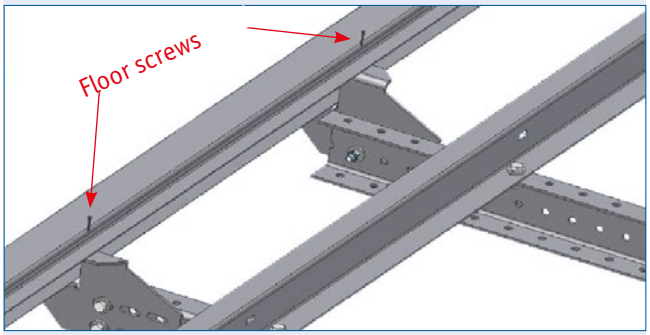


- Now mount the transverse fixation at the front left and right. To do this, use the screwing set for connecting the push plates to the substructure or chassis *(cf. 3.2)*.



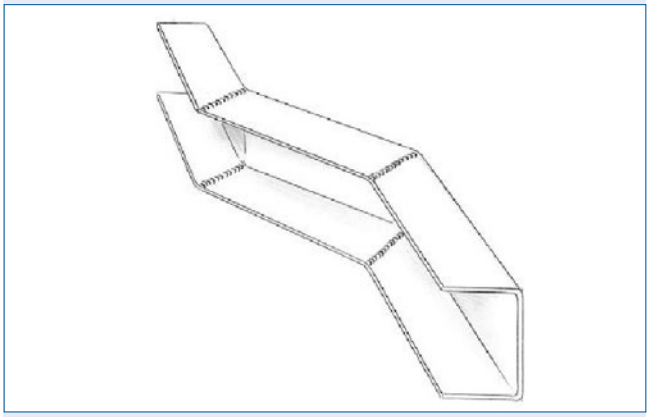
- In the case of the 140-2 and 142-2 series, 8 additional components are supplied for the longitudinal stiffening of the substructure (see arrow) including fixing material.

  Mount the components on the right and left side of the vehicle in the rear area as shown. To do this, drill 2 holes ∅ = 13 mm in each of the cross member ends for the screw connection. The component must protrude into the portal cross member and be drilled and screwed to it in order to specifically transfer forces into the subframe and not into the box body.



- In addition, screw your rear floor plate with floor screws through the portal cross member and the support leg of the bracket, as shown in the adjacent photo.

  The version shown describes our standard connection to the standard portal cross member.



- If the chassis frame is wider at the front than at the rear, the longitudinal members of the substructure must be cranked at the front, i.e. angled outwards, and straightened again at the front.

  To do this, the upper and lower flanges of the side member must be slit open in two places. The longitudinal member is then bent apart and/or towards each other as shown opposite. The slit ligaments must then be welded together.

  The machined areas must be professionally reworked with a corrosion protection agent such as zinc spray.

  The middle cross members in the vicinity of the crank must be detached from the longitudinal members and re-punched and bolted to fit. The vehicle manufacturer is responsible for the adjustment work described above; **adjustment work does not constitute grounds for complaint.**

4. Assembly of a pre-assembled substructure

Check the dispatch with the enclosed packing list for completeness. Notify any damage incurred during transit immediately to the delivering forwarding agent.

4.1 Scope of delivery for the pre-assembled substructure

Please understand that we reserve the right to make changes to the scope of delivery in terms of its form, equipment and technology.

The scope of delivery of the kit for the steel substructure includes:

- 2 longitudinal members, steel or anodised aluminium; length depends on the nominal length of the body and on the chassis version.
- specific number of cross members and brackets; anodised steel or aluminium; depending on the nominal length and on the chassis version as well as the customer's request.
- 1 front member, hot-dip galvanised steel
- 1 rear member, hot-dip galvanised steel for BR 133-2, 136-2, 137-2, 138-2, 139-2 or 2 brackets in the case of BR 14x-2 and BR 248-2, hot-dip galvanised steel
- In the case of BR 140x-2 and 142x-2 8 pcs stiffening parts for the substructure reinforcement, galvanised (except in the case of steel substructures)
- In the case of an aluminium substructure, clamping sets according to the number of cross members, consisting of:
  - Clamping plate, with hole, anodised aluminium
  - Threaded piece with thread, anodised aluminium

Attention: *The screws, washers and nuts for connecting the substructure and chassis are not included in the scope of delivery. The screws or rivets for connecting the subframe to the body are included in the assembly material for the body. Their use is described in the assembly instructions for the body.*

4.2 Assembly sequence for the pre-assembled substructure

If you have received a pre-assembled substructure, proceed as follows:

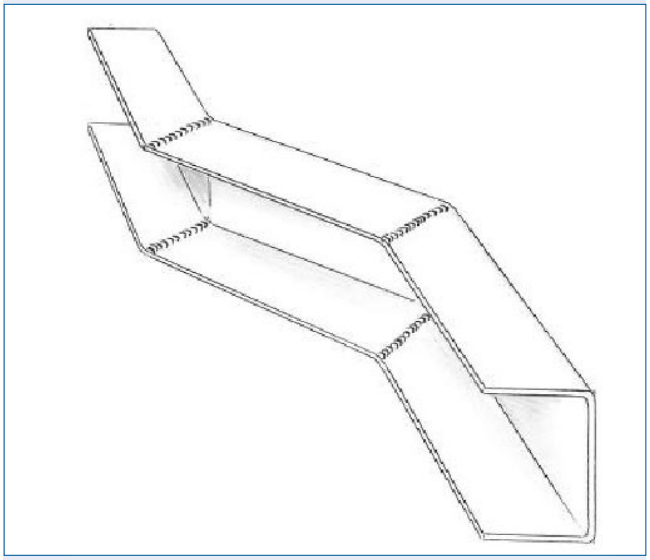
- Remove the substructure from the transport frame. For this, use lifting straps, a crane or a forklift and **observe the safety and warning instructions!**

- Lay the substructure flat on the ground and lift it onto the chassis using a crane (with four suspension points if possible!).

  Make sure that the substructure is correctly aligned in the longitudinal direction of the vehicle.

- As the substructure can become twisted during transport, it is essential to realign the diagonals and the straightness of the longitudinal beams or cross member outer surface.

  As a rule, the outer edge of the longitudinal members must be flush with the outer edge of the longitudinal members of the chassis. Also pay attention to the desired cab distance.



- If the chassis frame is wider at the front than at the rear, the longitudinal members of the substructure must be cranked at the front, i.e. angled outwards, and straightened again at the front.

  To do this, the upper and lower flanges of the side member must be slit open in two places. The longitudinal member is then bent apart and/or towards each other as shown opposite. The slit ligaments must then be welded together.

  The machined areas must be professionally reworked with a corrosion protection agent such as zinc spray.

  The middle cross members in the vicinity of the crank must be detached from the longitudinal members and re-punched and bolted to fit.

  The vehicle manufacturer is responsible for the adjustment work; adjustment work does not constitute grounds for complaint.

- As the assembly of the cross members is not necessary in the case of pre-assembled substructures, now screw the substructure and chas sis together.

  - If the aluminium substructure is pre-assembled, proceed as described on page 7 (centre).

  - In the case of a pre-assembled steel substructure, proceed as described on page 11.

5. Maintenance, service, disposal

For the maintenance of the substructure, check all screws for tightness at regular intervals, however at least once a year. Check the prescribed torque in this case.

In the case of queries related to the assembly,our **Kundendienst**will be glad to help you**:**
Tel.: +49 (0)521-41 73 11-30, e-mail: m.wismueller@aluteam.de

If you require **spare parts**, please either contact your responsible sales staff or call us at: +49 (0)521 - 41 73 11 - 10

Please send e-mails to: **info@aluteam.de**

You can treat the transportation frames of steel as scrap for recycling.