Bodybuilder Quick Reference Guide - Mechanical Interfaces

In this document we have collated several useful pieces of advice for mechanically interfacing with a Scania chassis. Where relevant we have linked to the Truck Bodybuilder Instructions, but should you have further questions please feel free to contact us via: Product.EngineeringUK@scania.com

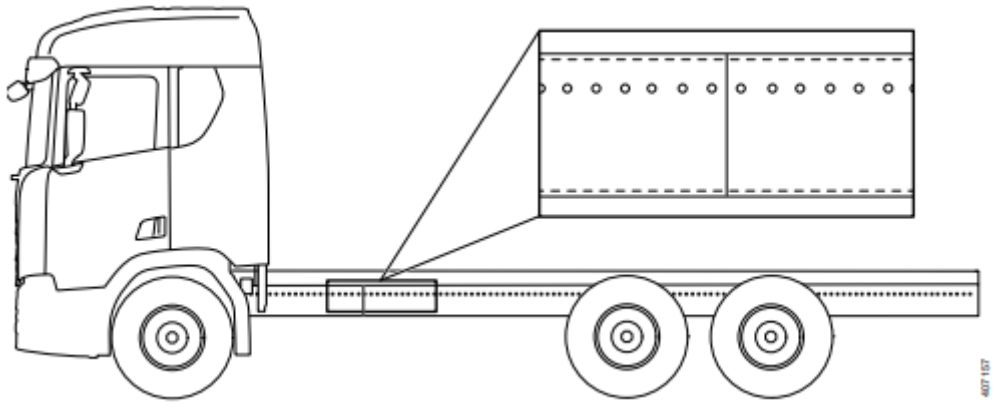
Chassis mounting

Pre-punched holes for body mounting

We offer a pre-punched top row of holes in the frame ex-factory to assist with mounting bodies and reduce the need for holes to be drilled in the frame rail at the bodybuilder.

The holes are positioned 50 mm centre-to-centre and are used to attach the bodywork in the truck's chassis frame. The centre of the hole is positioned 60 mm from the upper edge of the frame side member. The number of holes with which the chassis frame is fitted depends on the hole pattern that is ordered from the factory.

- The entire length of the frame (**variant code 7432A**) – this is the option generally used.
- Front section of the frame (**variant code 7432B**) - suitable for use with old bodywork that needs body adaptation brackets that do not fit the normal hole pattern.
- Predefined (**variant code 7432C**) - only used on vehicles with bodywork from the factory and for certain configurations, e.g. dump truck and box truck. This hole pattern only has a hole where the body adaptation brackets are to be positioned.



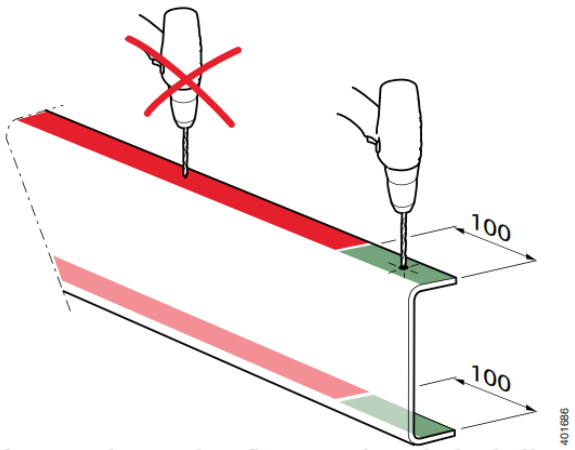
These options can be specified at point of chassis order – please advise your Scania Sales contact to add the relevant code if required.

For more information, see TBB Instruction document:
https://til.scania.com/w/bwm_0001005_01

Drilling holes in the chassis frame

All holes in the chassis frame increase the stress in the frame and therefore the risk of fractures.

Frame Side Member Flanges
The frame side member flanges are subject to the greatest stress, which is why you should only drill holes in the beam web. The drilling of holes in the flanges in the area extending 100mm in from the frame side member rear edge is permitted; see figure.



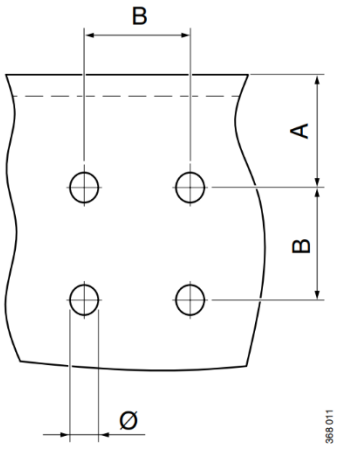
Area on the frame side member flanges where hole drilling is permitted.

Permitted hole patterns in the frame side member
Use the pre-drilled hole patterns in the frame side members if possible. Only drill new holes according to the described hole patterns and measurement instructions; see figure.

The figure shows the minimum permitted distance between hole and flange (A) and between holes (B). The largest permitted hole diameter (Ø) for holes drilled between the front and rear axles in the frame side member is 30 mm.

The smallest distances, (A) and (B), are calculated based on the hole diameter (Ø):

- (A) must be at least 3xØ, but should not be less than 60 mm (a shorter distance may be permitted, e.g. when fitting the tail lift – contact Sales Engineering for guidance). The exception is single-frame tractors, where the distance must not be less than 80 mm.
- (B) must be at least 3xØ, but should not be less than 50 mm.



Hole pattern in beam web.

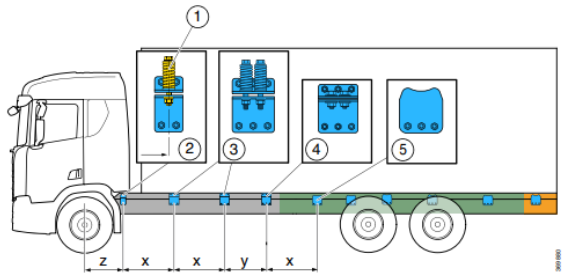
Weld up existing holes if new holes must be drilled nearer than what is permitted – information on welding the chassis frame can be found in the following TTB Instructions: https://til.scania.com/w/bwm_0001085_01

Scania body-mounting plates

Body mounting brackets can be fitted ex-factory to minimise prep-work required at the bodybuilder. There are 4 different types of attachments for the front section of the chassis frame:

- Rigid attachment
- Longitudinally flexible attachment
- Flexible attachment upwards and longitudinally
- Flexible attachment upwards and downwards

To counteract any frame oscillations, the foremost bodywork attachment point must be as close to the foremost front axle as possible. Maximum permitted distance between the centre of the foremost front axle and front attachment screw (1) in the subframe is 725 mm. This is particularly important on vehicles that have a front axle with air suspension. To avoid too high loading on the foremost rigid attachment (4), the distance to the rearmost flexible attachment (3) must be in the range of 500 mm and 900 mm.



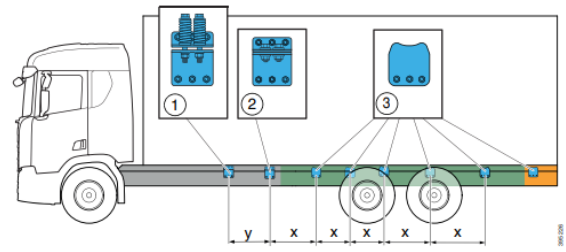
1. Foremost bracket's attachment screw.
2. Foremost flexible attachment.
3. Rearmost flexible attachment.
4. Foremost rigid attachment.
5. Rigid attachment with flat bracket

z = max 725 mm, x = max 900 mm, y = 500-900 mm.

There are 3 variants of attachments for the rear section of the chassis frame and the rear end:

- Rigid attachment
- Flexible upwards
- Flexible upwards and downwards

To avoid too high loading on the foremost rigid attachment (4), the distance to the rearmost flexible attachment (3) must be in the range of 500 mm and 900 mm.



1. Rearmost flexible attachment.
2. Foremost rigid attachment.
3. Rigid attachments with flat brackets.

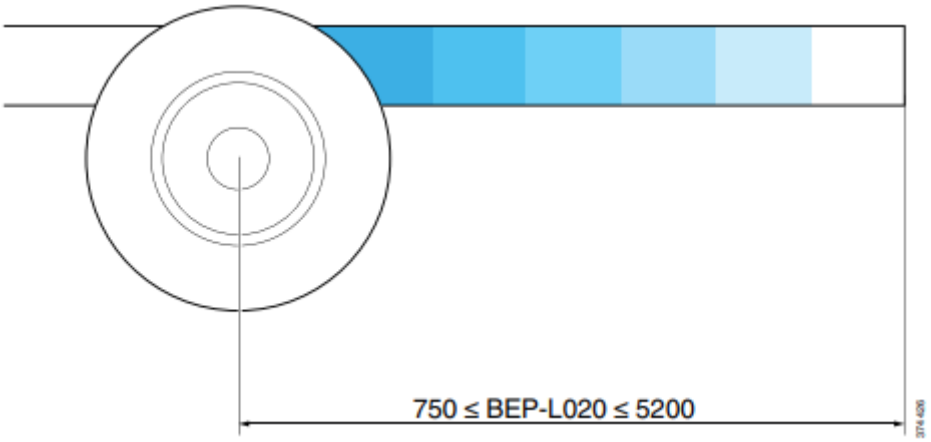
y = 500-900 mm, x = max 900 mm.

The distance between the body mounting attachments must not exceed 900 mm.

These options can be specified at point of chassis order – please advise your Scania Sales contact to add the relevant code if required. For more information, see TBB Instruction document: https://til.scania.com/w/bwm_0001005_01 and https://til.scania.com/w/bwm_0000998_01

Customizable overhang lengths ex-factory

The length of the rear overhang (BEP-L020) can be ordered from the factory in increments of 10 mm between the limit values of 750 mm and 5,200 mm, see diagram.



BEP-L020 means the distance between the centre of the foremost driven rear axle and the rearmost edge of the frame side member.

The permitted length of the rear overhang is governed by factors such as the wheel configuration and type of suspension. When the rear overhang is so short that the drawbeam will be co-mounted with other chassis components, e.g. mudguard stays, the selection of rear overhang length is limited to 50 mm increments.

Contact your Scania dealer for details of the dimensions that can be ordered for the vehicle in question.

Mounting of factory mudguards

Front mudguards

Mudguards are always supplied on Axle 1. For trucks with 2 front axles it is possible to order mudguards fitted at the second front axle. The mudguard has an internal radius of 625 mm and an internal width of 525 mm. The mudguard can be ordered for the following wheel configurations:

- 8x2
- 8x4
- 8x2*6
- 10x4*6

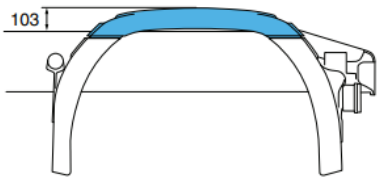
The mudguards are always delivered fitted at the highest position, i.e. 260 mm above the frame edge. The mudguard can be adjusted 120 mm vertically and 25 mm horizontally. The mudguard can be lowered from 260 mm above the frame edge to:

- 220 mm by turning the upper brackets on the inside of the mudflaps
- 180 mm by turning the lower brackets on the chassis frame
- 140 mm by turning both the upper and lower brackets

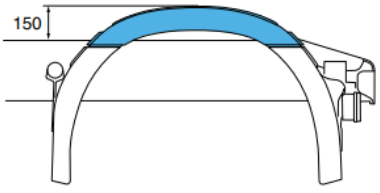
The mudflap length varies with the chassis height. When lowering the mudguard, the mudflap can get too close to the ground. When fitting the mudflap the relevant EU directives must be complied with.

Rear Mudguards

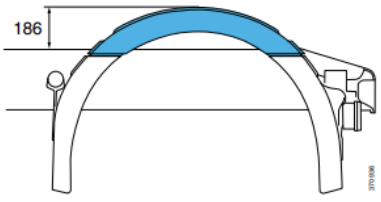
The rear mudguards can be ordered with two optional horizontal positions and a range of heights, depending on the width of the vehicle and wheel dimensions. To prevent the tyre and mudguard from rubbing against each other when the suspension moves, the upper part of the rear mudguards can be ordered in 3 different heights. The measurements (mm) apply to the distance between the upper edge of the mudguard and the upper edge of the chassis frame.



Low mudguard upper part.



Normal mudguard upper part.



High mudguard upper part.

Option	Alternative	Dimension	Variant code
Mudguard on second front axle	With		4050A
	Without		4050B
Mudguard rear	With		164A
	Without		164Z
Mudguard rear, version	Low upper part	103mm	514A
	High upper part	186mm	514B
	Normal upper part	150mm	514D
	Complete		514E
	Without upper part		514Z
	Only rear part		514G
Mudguard rear, location	Normal		1977A
	High		1977B

Mudguard rear, lateral location	Inner	2500mm width	3959A
	Outer	2550mm -2600mm width	3959B

These options can be specified at point of chassis order – please advise your Scania Sales contact to add the relevant code if required. For more information, see TBB Instruction document: https://til.scania.com/w/bwm_0001052_01

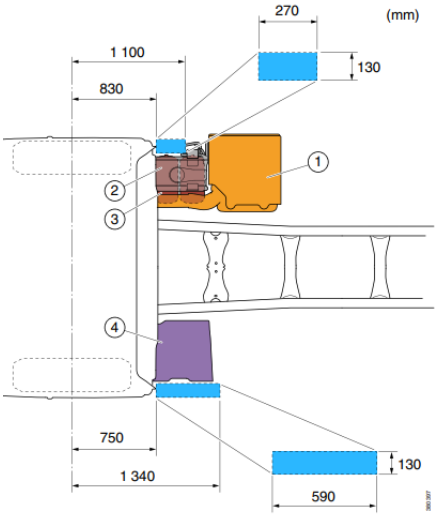
Crane Stabilizer leg prep. and front legs

It is possible to order free-space for fitting supporting legs ex-factory - the variant code is *5030A*.

Vehicle with 1 front axle

The vehicle can be ordered from the factory with space for supporting legs behind the cab by implementing the following adaptations:

- Right-hand side of the vehicle:
  - The silencer (1) is located 660 mm further back in the chassis frame.
  - The reductant tank (2) and compressed air tanks (3) are located in the silencer's normal position. The reductant tank volume is 47 l.
  - The reductant tank is rotated 90°, see the illustration.
- Left-hand side of the vehicle:
  - The vehicle is equipped with either 140 ampere-hours or 180 ampere-hours batteries (4).



Space for supporting legs on vehicle with 1 front axle.

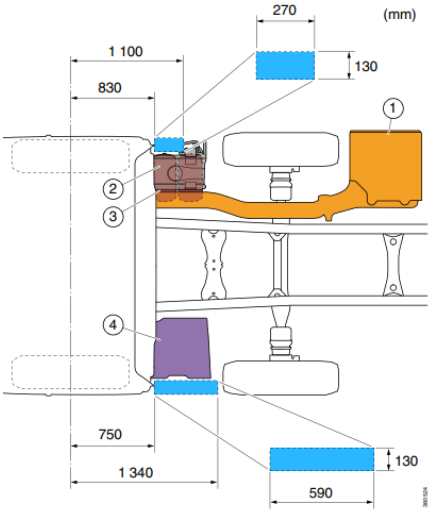
Conditions:

Engine:	5 or 6 cylinder, Euro 6
Wheel configuration:	B4x2A/B, B6x2A/B, 6x2*4 or B6x4A/B
Axle distance:	≥ 3,950 mm

Vehicle with 2 front axles

Depending on the design of the exhaust system, the vehicle can be ordered from the factory with space for supporting legs behind the cab by implementing the following adaptations:

- Right-hand side of the vehicle:
  - The silencer (1) is located behind the rear front axle.
  - The reductant tank (2) and compressed air tanks (3) are located in the silencer's normal position. The reductant tank volume is 47 l.
  - The reductant tank is rotated 90°, see the illustration.
- Left-hand side of the vehicle:
  - The vehicle is equipped with either 140 ampere-hour or 180 ampere-hour batteries (4).



Space for supporting legs on vehicle with 2 front axles.

Conditions:

Engine:	5 or 6 cylinder, Euro 6
Wheel configuration:	8x2, 8x2*6 8x4A/Z of 10x4*6

Front supporting leg

When using front supporting legs, the front section of the chassis is exposed to great forces.

Contact Scania for advice before designing and manufacturing the supporting legs.

For more information, see TBB Instruction document:
https://til.scania.com/w/bwm_0001144_01 and https://til.scania.com/w/bwm_0001182_01

Retrofitting a tail-lift

A tail lift subjects the truck's rear overhang to bending and twisting forces and should not come into contact with the frame side member's lower flange.

The need to reinforce the chassis frame should always be assessed on a case-by-case basis. The following factors are significant:

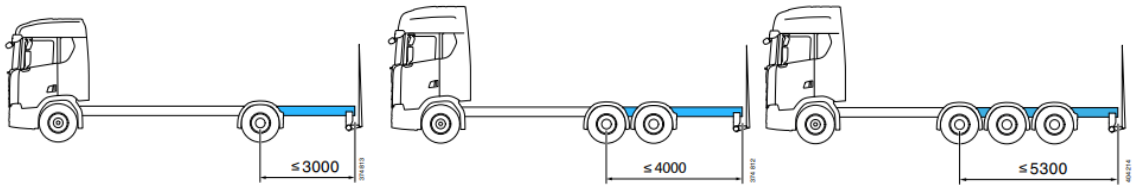
- Lifting capacity of tail lift
- Bodywork design, e.g. bending resistance of the subframe
- Length of rear overhang

In most cases, tail lifts with a lifting capacity of up to 2,000 kg do not require reinforcement of the chassis frame over and above the reinforcement provided by the bodywork and its attachment.

Cross-reinforcement of the chassis frame is recommended when using tail lifts with a lifting capacity of more than 2,000 kg

Longest recommended distances between front driving rear axle and rear edge of the chassis frame (BEP-L020), see diagrams:

- 3,000 mm for trucks with 4x2, 4x4, 6x2/2 or 6x2/4 wheel configuration
- 4,000 mm for trucks with 6x2, 6x2*4, 6x4, 6x6, 8x2, 8x2/4, 8x2*6, 8x4 or 8x4/4wheel configuration
- 5,300 mm for trucks with 8x2*4 or 10x4*6 wheel configuration



Follow the tail lift manufacturer's instructions for fitting the tail lift and testing its operation. The tail lift must be CE-marked on delivery to EU and EFTA markets and the documentation for this must accompany the vehicle.

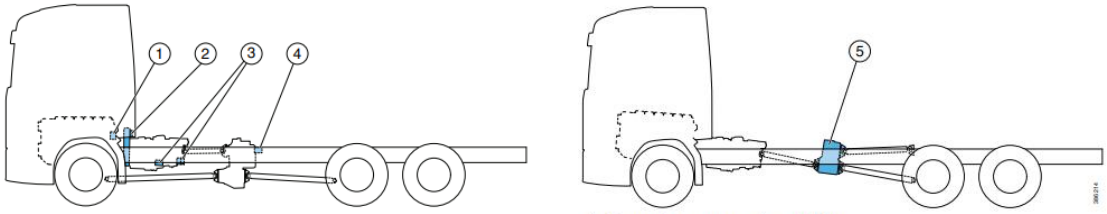
Further information on retrofitting tail lifts can be found in the following TBB instruction documents: https://til.scania.com/w/bwm_0001008_01

It is possible to order cantilever tail-lifts mounted ex-factory. Further information can be found in the following TBB instruction documents: https://til.scania.com/w/bwm_0001098_01 please speak with your Scania Sales contact for details.

Power Take-offs

Types of Scania PTO's

The illustration shows where the different types of power take-offs are normally located.



1. Engine-driven power take-off (ED).
2. Flywheel-driven power take-off (EK).
3. Gearbox-driven power take-off (EG).
4. Power take-offs on Scania's transfer gearbox for all-wheel drive (AWD).
5. Split shaft power take-off (split shaft).

Engine-driven power take-offs (ED)

Scania's engine-driven power take-offs sit on the timing gear housing of the engine and are clutch-independent. The power take-offs are mainly used to operate equipment when the vehicle is in motion.

ED power take-offs are intended for direct drive of the hydraulic pump, but the power take-off can also be ordered prepared for propeller shaft operation. The highest permitted bending moment for the connection to a hydraulic pump without support, including hydraulic hoses and oil, is 30 Nm.

Flywheel-driven power take-offs (EK)

Scania's flywheel-driven power take-offs are located on the vehicle's gearbox and are clutch-independent. The main area of use is to drive equipment when the vehicle is in motion and where the power requirement is large.

EK power take-offs are used on vehicles with GR875/905, GRS895/905 (EK730P) and GRSO905 (EK740F and EK750F) gearboxes. The highest permitted bending moment for the connection to a hydraulic pump without support is 20 Nm.

Gearbox-driven power take-offs (EG)

Scania's gearbox-driven power take-offs are clutch-dependent. This also applies to vehicles that are equipped with Opticruise.

EG power take-offs are located on the side or at the rear of the gearbox and they may be adapted for direct drive of a hydraulic pump (EGxxxP) or propeller shaft drive (EGxxxF). The power take-off is normally used when the vehicle is stationary, but it is possible to move the vehicle with the power take-off activated.

For vehicles with manual gearbox:

- The power take-off stops when the clutch is depressed during gear change, but starts to rotate once the clutch is released.

For vehicles with Opticruise:

• When activating the power take-off, the gearbox will not change gear but remains in the pre-selected gear. It is not possible to change gear then, so the desired gear must be engaged before activating the power take-off.

• If the vehicle has a 2-pedal Opticruise, there is no clutch pedal and the vehicle's automatic control manages the clutch.

• If the vehicle has a 3-pedal Opticruise, the function is the same as for vehicles with a manual gearbox. The power take-off stops when the clutch is depressed. However, the same thing applies as with 2-pedal Opticruise. When the power take-off has been activated, it is not possible to change gear.

Interfacing with Factory fitted PTO's & PTO control from the body

There are different conditions to activate the power take-off. Depending on the power take-off type there may be permanent activation conditions and selectable activation conditions. The selectable activation conditions' parameters can be set as required for the particular installation. The activation conditions are there to protect the bodywork equipment.

For the control of the power take-off to work correctly, the power take-off must always be connected via Scania's bodywork interface.

If all activation conditions are fulfilled, the function can be activated via BCI (Bodywork Configuration Interface) or external CAN interface.

Further information on interfacing with Factory fitted PTO's can be found in the following TBB instruction documents:

ED power take-off activation: https://til.scania.com/w/bwm_0000993_01
EG power take-off activation: https://til.scania.com/w/bwm_0000992_01

Information on delayed activation of power takeoffs.

The power take-off can have delayed activation. This delay cannot be affected and depends on the system sensing the engine speed and not engaging the power take-off until at a pre-defined engine speed. The delay usually lasts for 1-2.5 seconds but can be up to 7 seconds. The delay varies on EG power take-offs depending on how the vehicle has been programmed.

Retrofitting PTO's

Power take-off preparation from the factory

Vehicles can be ordered with different degrees of electrical preparation or complete factory-fitted power take-offs:

Engine with mechanical preparation for ED power take-off – variant code 852 + 3543

The engine can be ordered with a factory-fitted ED power take-off or with mechanical preparation for ED power take-off.

If the engine is ordered with mechanical preparation for an ED power take-off, an intermediate gear is fitted in the timing gear which allows retrofitting of a drive kit.

If the engine is ordered with a factory-fitted ED power take-off, a drive kit is already fitted on the engine which allows retrofitting of a hydraulic pump. The ED power take-off is delivered with a drive kit prepared for fitting the hydraulic pump.

ED power take-off - retrofitting a drive kit

If the vehicle has only been ordered with mechanical preparation for power take-offs from the factory, the following preparations must be carried out before a drive kit can be retrofitted:

- Cable harness and BCI control unit must be retrofitted and installed.
- The SOPS-file (Scania On-board Product Specification) must be updated.
- A drive kit for ED power take-off must be retrofitted on the engine.

Contact a Scania workshop for retrofitting of power take-off.

Note: Scania recommends retrofitting of a drive kit only on vehicles that have mechanical preparation for power take-offs. For vehicles without mechanical preparation for power take-offs, it entails very extensive work to retrofit the drive kit.

Retrofitting EG power take-offs – variant code 5498 + 3502

If the vehicle lacks power take-off preparation or a factory installed power take-off and a power take-off needs to be retrofitted, the following must be done:

- Cable harness and BCI control unit must be retrofitted and installed.
- The SOPS-file (Scania On-board Product Specification) must be updated.
- Solenoid valve V111 must be renewed with a solenoid valve for control of EG power take-offs.

Note: Due to the extent of the work, Scania recommends ordering the vehicle prepared for power take-off or with factory mounted power take-off. Contact a Scania workshop for retrofitting of power take-off.

The power take-offs or preparations for power take-offs that are included in the vehicle are described in the vehicle's chassis specification, ICS (Individual Chassis Specification). ICS can be downloaded from the website Scania Truck Bodybuilder.