



Globe Trucking

— A JCB Group Company —

BODY/EQUIPMENT MOUNTING DIRECTIVES FOR TRUCKS (HDT)

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Introduction

⚠ Caution

Do not modify any bolted connections relevant to safety for wheel alignment, steering or braking functions. Upon work completion make sure the connection corresponds again with the original condition of fastened bolt connections.

Welding work on the chassis/body to be carried out by trained personnel only. Modifications of the body, and equipment (installed or attached) must follow applicable laws and directives, work safety or accident prevention regulations, and accident insurer leaflets.

⚠ Caution

With all bodies make sure that no flammable object/liquids come into contact with hot assemblies (including the leakages in hydraulic system) such as the engine, gearbox, exhaust system, turbocharger etc.

Appropriate caps, seals and covers must be installed on the body to avoid catching fire.

📄 NOTICE:

Bodies require an effective cover (gearbox guard) when exposed to high levels of water, e.g. (flushing, overflowing etc.) to prevent abrupt cooling & water ingestion via the gearbox breather.

Mounting Frame

All bodies require a mounting frame or a substructure to ensure a reliable connection between the chassis and the body (except for self-supporting bodies and mounting frames acting as floor assemblies).

- The mounting frame longitudinal members must level on the upper flanges of chassis frame and follow the course of chassis frame.
- Position mounting-frame cross members above the chassis frame cross member.
- For the longitudinal members use flanged U-sections or commercially available U-sections for vehicle construction (not rolled steel sections).
- The dimensions of the longitudinal members are the function of the moment of resistance (W_x) required for the body and the chassis.
- The specified moments of resistance and section dimensions refer to longitudinal frame members subjected to identical loads on both the sides.

📄 NOTICE:

If more than one body is mounted on the same chassis (e.g. platform and loading tailgate), the bigger specified moments of resistance be used to determine the mounting frame.

Mounting Frame Material

Material quality of specified mounting frame:

- Mounting frame with U-bolt or bracket mounting (non-positive) = St 52 or S 380 MC.
- Mounting frame with rigid mounting (positive locking) via shackles (butt strap) = BSK 46.
- If high-strength steel (e.g. N-A-XTRA) is used for mounting frames, their strength must equal the steel mounting frames. The mounting must be non-positive.

Material	Tensile Strength (N/mm ²)	Yield Strength (N/mm ²)
S 380 MC (St 52.3)	>450	380
BSK 46	>600	460

NOTICE

Wooden runner between longitudinal frame members and mounting frame is not permitted.

The mounting runner of the auxiliary frame may also use hardwood. It must be strengthened properly with steel reinforcements to ensure structural strength.

Aluminium platform bodies:

- Follow instructions given by the aluminium manufacturer.
- The longitudinal members, plank floor, floor panels and cross members must form a self-supporting unit.

The suitability and the use of materials with low strength properties for the mounting frame can be done only by the departmental endorsement check.



BharatBenz recommendation:
Use prescribed materials or superior alternatives.

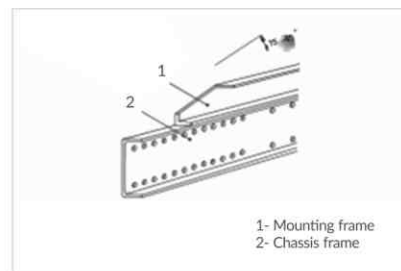
Mounting Frame Design

Maintain a gradual sectional transition at the forward ends of the longitudinal members. The edges should be deburred.

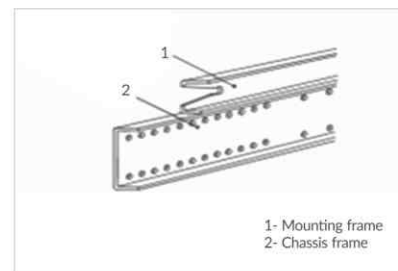
Continuous mounting frames are required for:

- Bodies with a high centre of gravity
- High point loading
- One-sided loading
- Superstructures extending over the cab

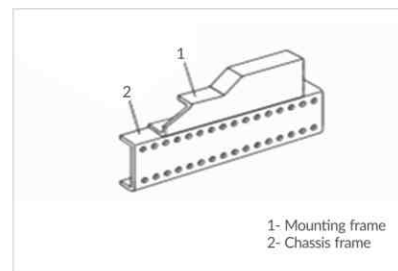
Example: For tipper bodies, glass transport frame bodies, towing bodies, loading cranes, hinged booms, loading tailgates, etc. The longitudinal body members must extend forward as far as possible, beyond the rear front spring brackets.



1- Mounting frame
2- Chassis frame



1- Mounting frame
2- Chassis frame

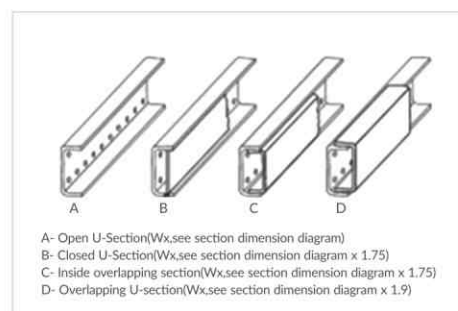


1- Mounting frame
2- Chassis frame

If very high longitudinal members are required or the frame height needs to be small, the U-section can be designed when the connections are non positive:

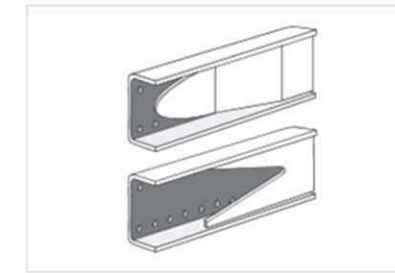
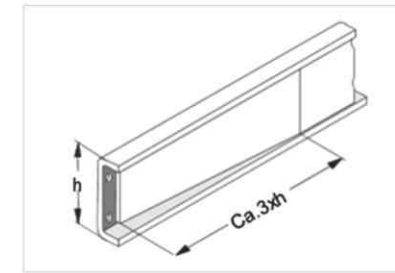
- Closed off like a box
- Nested (inside overlapping U-section), or
- Nested with an overlapping U-section

This increases the moment of resistance and torsional stability. Ensure a good transition from a closed longitudinal body member to an open U-section



A- Open U-Section(Wx see section dimension diagram)
B- Closed U-Section(Wx see section dimension diagram x 1.75)
C- Inside overlapping section(Wx see section dimension diagram x 1.75)
D- Overlapping U-section(Wx see section dimension diagram x 1.9)

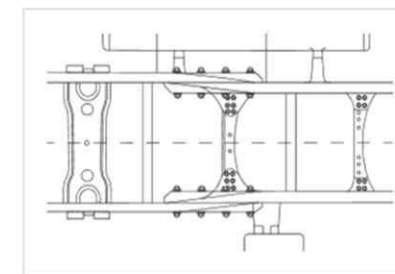
Mounting frame
U-section closing examples



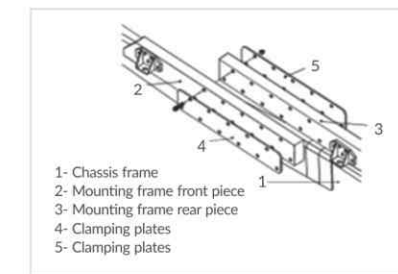
Examples of transition
from closed to open U-section

Wooden longitudinal body members

While using hard wood for longitudinal body members, ensure that the runner follows the chassis frame profile. Adopt suitable design for the runner at the joggle area.

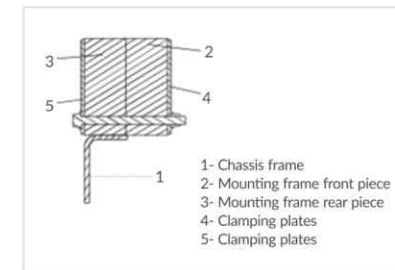


Examples for
wooden long
member in
mounting frame



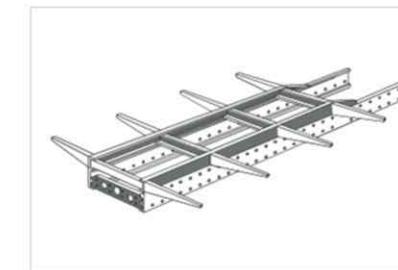
1- Chassis frame
2- Mounting frame front piece
3- Mounting frame rear piece
4- Clamping plates
5- Clamping plates

Wooden
long member
connection example



1- Chassis frame
2- Mounting frame front piece
3- Mounting frame rear piece
4- Clamping plates
5- Clamping plates

Wooden
long member
bolting example



Mounting
frame as
floor assembly

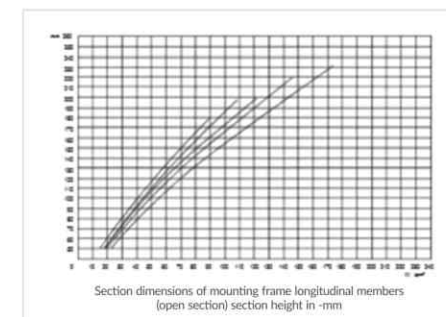
Environmental Note

As a responsible corporate entity, Daimler India Commercial Vehicles Pvt. Ltd. strongly recommends to avoid using hardwood for body building, in view of environmental protection.

A mounting frame with continuous longitudinal members is not required if the body floor assembly can assume the mounting frame function.

Section Dimensions

The mounting frame & the chassis frame should have the same material thickness and flange width.



Longitudinal member
section dimensions graph

Mounting Frame Attachment

Design the mounting depending on the chassis model, the intended body, and the conditions of use of the vehicle.

Proper mounting is critical for a good vehicle performance. Plan a sufficient number of mountings to absorb the braking and lateral forces.

Proper mounting is decisive for:

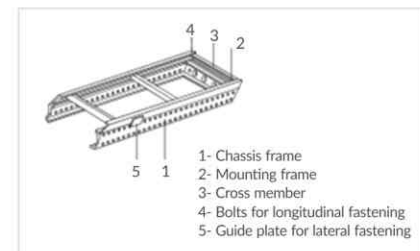
- The handling and operational safety of the vehicle.
- The service life of chassis frame and body

Friction Lock Connection

The longitudinal members must be fixed in both longitudinal and lateral directions for a friction locking connection.

Longitudinal fastening:

- Removing the end cross member securing bolts.
- Bolt the mounting frame, chassis frame and end cross member with flange head nuts and bolts complying with MBN standards 10105, 10112 and 13023.

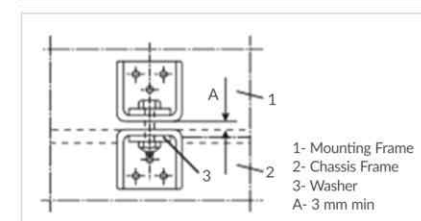
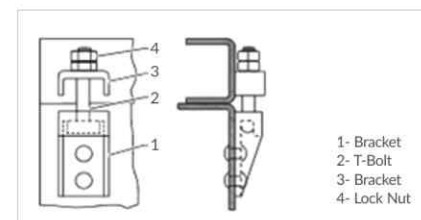
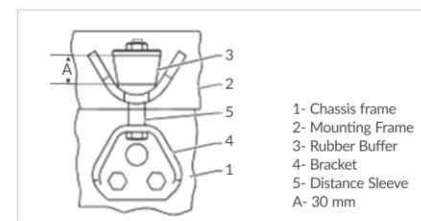
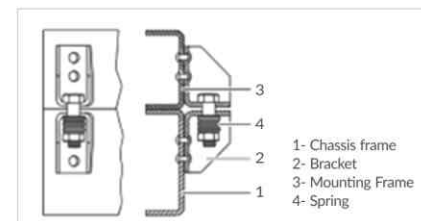


Cross attachment:

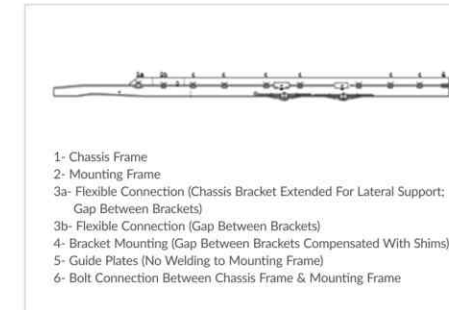
- Use sufficient sized guide plates (not to be welded to mounting frame).
- Leave no gap between the guide plates and mounting frame.
- Take production tolerances for the chassis frame width into consideration (+6/-3mm maximum) for pre-fabricated mounting frames.

Friction lock mounting:

- Limited movement of the longitudinal mounting frame member in relation to the longitudinal chassis member is permitted.
- Perform strength calculation separately for each longitudinal member.
- Distribute bending moment in accordance with moments of inertia.
- The first two mounting points (cup springs, rubber mountings) should be flexible.
- There must be a distance of at least 5 mm between the body and the chassis brackets.
- Compensate the gap with shims for all brackets other than mountings with spring.
- Use guide plates in the area of the rear axles and rear springs on the chassis frame (not to be welded to mounting frame).
- Do not twist mounting frame while tightening the bolts.



Friction lock mounting

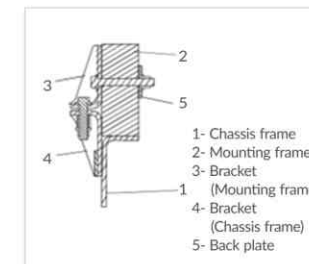


Concept of friction lock connection

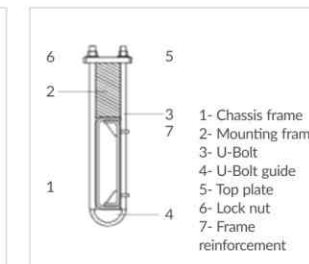
Friction Lock Connection U-Bolts

This mounting system should be used for bodywork and mounting frame with wood. Always use seasoned hardwood for making the mounting frame.

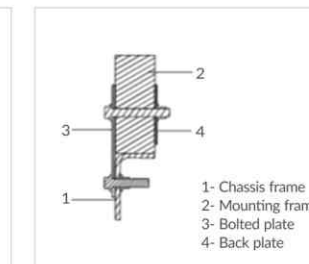
- The longitudinal members must be fixed in both longitudinal and lateral directions.
- Fixing for longitudinal direction may be done by a bolted plate at the rear end.
- Fixing for lateral to be done with the help of guide plates in front end (or extend the chassis frame bracket) and area of rear axles/rear springs.
- Use U-bolts on other areas for connecting chassis frame and mounting frame.
- Use U-bolt guide made of aluminium or malleable cast iron for protection of chassis frame.
- Wherever U-bolts cannot be positioned, use bracket mounting with flexible connection (cup springs, rubber mountings).
- When bolts are used for connection with wood, use steel plates on both sides to avoid fasteners coming in direct contact with wood.
- Reinforce chassis long member with proper section to avoid local deformation of the flanges.
- The U-bolts should not touch the chassis frame long member.
- Ensure that the U-bolts do not touch or damage any air/fuel pipes, electrical harness, leaf spring, etc.
- The U-bolts should not interfere with the brake pipe system and other chassis components.



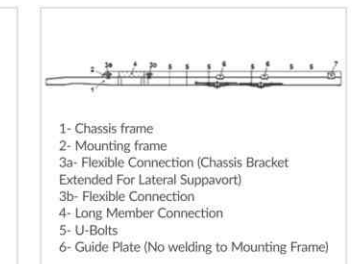
Friction lock connection with lateral stop



U-bolt connection



Wooden long member longitudinal fixing (bolted plate connection)

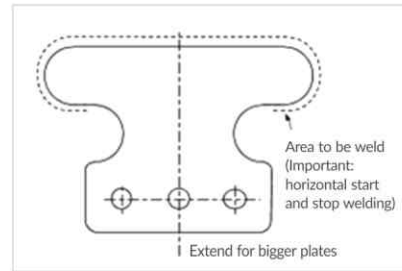


Concept of friction lock connection U-bolts

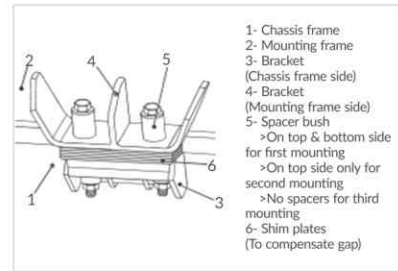
Form Lock Rigid Connection

- It is not possible to move the mounting frame longitudinal member in relation to the chassis longitudinal member.
- The longitudinal mounting frame member will move together with the chassis side member (bending, twisting).
- Both longitudinal members are considered as one component for strength calculations.
- The mounting frame must be attached to the chassis frame by a rigid connection on bodies for cement mixers, bodies with loading crane at the rear, rear dumpers and similar bodies.
- The mounting frame in the rear area must be sealed off and reinforced by a diagonal cross.
- Mount torsionally rigid bodies (e.g. box-type bodies, tanks) on the mounting frame behind the cab in resilient mountings. Continuous elastic mounting is not permitted.
- Fasten the butt straps on the chassis frame with at least 3 consecutive flange head bolts, in accordance with MBN 10105, 10112 and 13023.

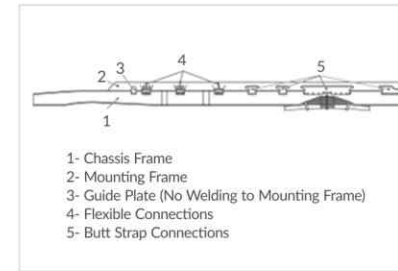
- Maintain maximum distance of 700 mm between butt straps.
- Match the material thickness of the butt straps to the strength and weight of the body. The butt straps should equal the thickness of the chassis frame.
- Use bracket mountings at the front.



Typical shackle (butt strap) design



Flexible connections behind cab



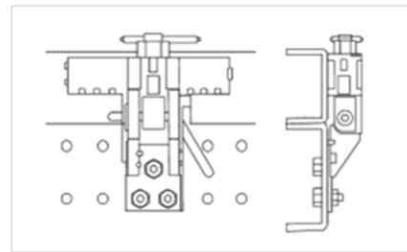
Concept of form lock rigid connection

Butt Strap Connection (Rigid Connection)

- For continuous use of butt strap mounting up to the cab (e.g. when assembling heavy loading cranes), a non-objection certificate is required from Daimler India Commercial Vehicles Pvt. Ltd.
- The mounting frame and the chassis frame should be of the same material.
- Fasten the butt straps on the chassis frame with at least 3 consecutive flange head bolts in accordance with MBN 10105, 10112 and 13023.
- A maximum distance of 700mm between the butt straps.

Quick-Release Lock for Demountable Bodies

- A sufficient number of quick-release locks must ensure that both braking and lateral forces can be fully absorbed.
- Ensure that the design and mounting are reliable.
- There must be no play when the body is locked on the mounting frame.



Self-Supporting Bodies

General

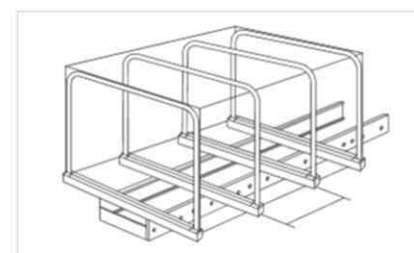
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Welding work on the chassis/body to be carried out by trained personnel only.

Modifications of the body, and equipment (installed or attached) must follow applicable laws and directives, work safety or accident prevention regulations, and accident insurer leaflets

Van and Box-Type Bodies

A mounting frame with continuous longitudinal members is not required on self-supporting panel van or box-type bodies if mounted cross members are less than 600 mm apart. In the rear axle fastening area, the maximum distance of 600 mm may be exceeded to realise tire clearances (jounce).



Van and box type body

Platform & Demountable Bodies

To ensure uniform loading of the chassis frame, the body must be attached to it by a mounting frame (U-section longitudinal members).

- The body must have a torsion-free attachment to the chassis frame longitudinal members.
- Place the vehicle on a flat, horizontal surface before mounting the body.
- If the standard platform is subjected to point loads (e.g. for the transportation of cable drums, coils, etc.), the substructure and the platform floor must be reinforced to support the load.
- Before mounting the body: weigh the chassis and define the body length.

Chassis with long cab:

- Shorten the frame overhang at the rear so that the permissible rear axle load does not exceed and the minimum front axle load is achieved.
- Attach reflectors to the body in accordance with legal regulations.
- Attach an air deflector behind the cab to prevent experiencing hot engine air.

Platform Body

Moment of resistance of mounting frame longitudinal member:

Vehicle	Moment of resistance for each longitudinal member (cm ³)
HDT (BMC400.2xx)	45

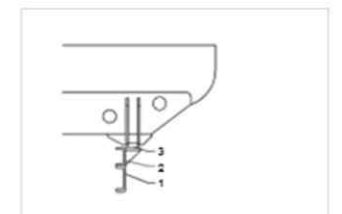
Demountable Body

Twist locks:

- Secure the extension to the chassis frame with six M14 flange head bolts.
- Ensure application of forces through pressure distribution plates. Use the existing holes on the chassis frame when required.

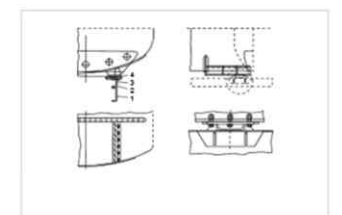
Tank and Dry-Bulk Bodies

- Observe the permissible centre of gravity heights
- Tank and dry-bulk bodies must be equipped with a continuous steel mounting frame.
- Make sure of twisting ability of the chassis frame is not impaired by the connection between the body and the mounting frame or between the chassis frame and the mounting frame.
- Position the tank or dry-bulk body mounts close to the spring brackets.
- Position the rigid mounts at the rear to ensure good handling characteristics.
- Do not exceed the distance dimensions from the centre of the rear axle to the body mount. Position the front body mounts closely behind the cab.



Moment of resistance of mounting frame and body mount distances

Vehicle	Max. distance from centre of rear axles to body amount behind rear axle	Moment of resistance for each longitudinal member (cm ³)
HDT(BM C400.2xx) 6x2	1000	70
HDT(BM C400.2xx) 8x2	1000	100



Flexible connections behind cab

All tilting bodies require a no objection certificate from the department responsible:

- When goods with different specific weights are transported: Mark filling levels on the tank so that the permissible filling capacity is visible. It is also possible to attach a load indicator to the rear axle which gives an audible or visual warning in the cab.
- On tank and dry-bulk bodies with separate compartments
- The loading and unloading plans must be attached to the vehicle where they are clearly visible.
- BharatBenz recommends equipping the vehicle with high CG pack wherever possible.

Tank and Dry-Bulk Bodies without Continuous Mounting Frames

- Equip the vehicle with reinforced springs and antiroll bars.
- Provide a base of a minimum of 1,000 mm for the front mounting frame section.
- Both sections should be designed as an edge profile (minimum dimensions 100x70x6 mm) with a reinforcement plate and smooth transition.
- Don't attach the tank directly without mounting frame sections.
- Attach the tank rigidly at the rear and elastically at the front.
- A mounting frame with appropriate fastenings is required, if there are vehicle vibrations after mounting

Van and Box-Type Bodies

- Mount and remove platform-mounted tanks only when empty.
- If a platform-mounted tank is mounted on a platform or tipper vehicle, the platform-mounted tank must be connected to the chassis frame by a friction-lock connection. Provide two fastening points in the rear axle area.
- Ensure tipping mechanism against tipping on tipper vehicles.

Vehicles for the Transport of Hazardous Goods

⚠ Caution

Follow safety regulations and country-specific guidelines while dealing with hazardous goods to avoid injury.

Include corresponding drawings with all the dimensions and data on weight in triplicate with the application.

📄 NOTICE:

A mandatory non-objection departmental certificate is required for modifications to the chassis

Legal Regulations

- For national approval in Republic of India:
- Any tank used for transport of hazardous material shall have a type approval (to be obtained from Chief Controller of Explosives) in addition to the base vehicle type approval obtained by Daimler India Commercial Vehicles Pvt. Ltd.
- It is expected that the vehicle body/conversion manufacturer is familiar with all the rules & regulations.

Vehicles for the Transport of Aggressive Substances

Vehicles transporting aggressive substances must have compressed air lines, brake lines, brake hoses and electrical wiring be chemically non reactive by the body manufacturer.

Cement Mixer Trucks

Cement mixers may only be mounted on intended chassis (cement mixer, tipper chassis). The mounting frame should be of closed section type from the rear up to the front of front mountings of the drum. The mounting frame should be rigidly connected (form-locking) to the chassis by shackles. The material to be used is BSK 46.

The container size must be suitable for the chassis load-bearing capacity. Please ensure that permissible axle loads are not exceeded.

Vehicle	Moment of resistance for each longitudinal member (cm ³)
HDT(BM 6x4 C400.2xx)	60
8x4	100



Globe Trucking
— A JCB Group Company —

Amritsar

Bathinda

Jalandhar

Ludhiana

Moga

Pathankot

Ropar