

## Diesel and Electric Locomotive Chassis Construction.

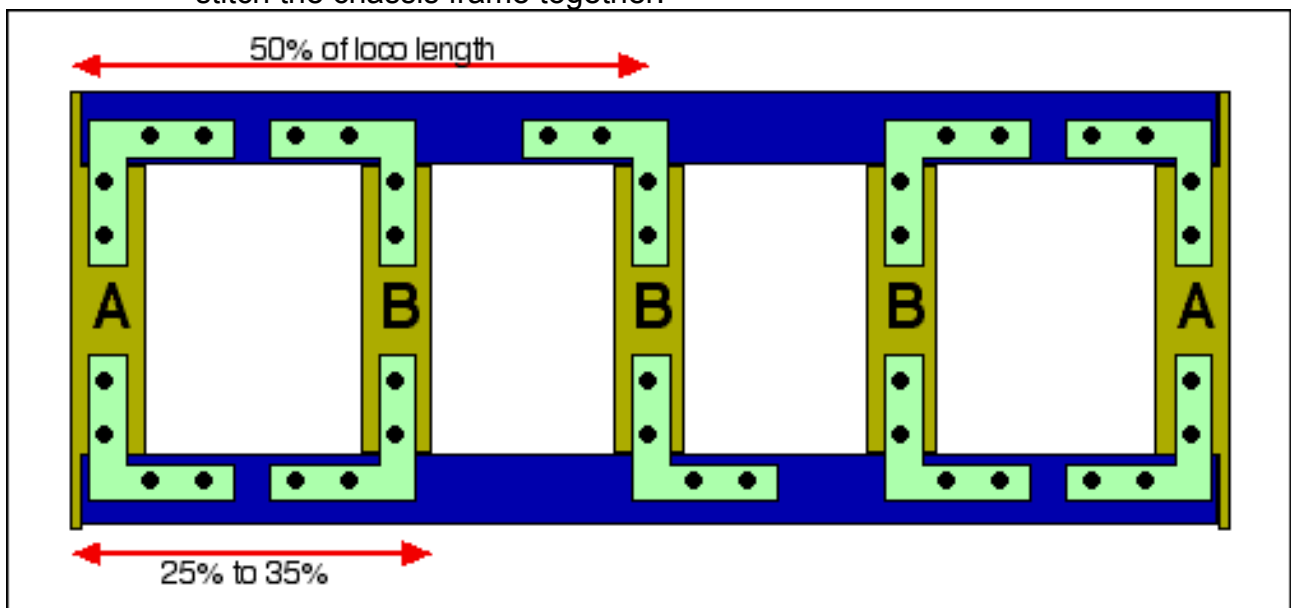
Because this type of loco normally uses one or more power bogies, which also pivot, the chassis construction is different to that used by a steam locomotive. The chassis has to be light rigid -yet strong enough to take the batteries and the torsional forces involved in cornering. The best chassis type is normally referred to as "The Ladder Chassis" as this is made from lengths of steel or aluminium U channel and ten L shaped brackets.

In this **Worked Example** we will assume the loco chassis is 900mm long by 120mm wide, the steel U channel is 20mm square and the metal is 2mm thick.

The cutting lists thus works out to be:

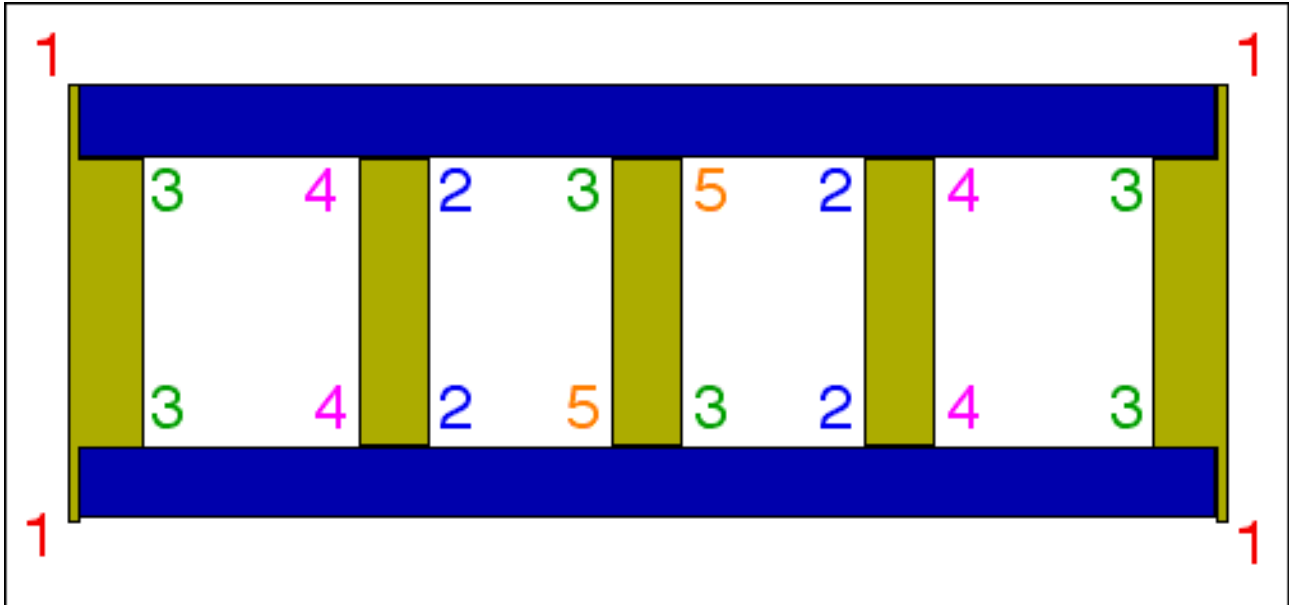
2pcs @ 896mm		These are chassis rails	900mm -4mm
2pcs @ 120mm	"A"	These are the end pieces	
3pcs @ 80mm	"B"	These are the rung pieces	

- Step 1.** Mark and cut off two 20mm pieces at each end of the "A" pieces so that one side of the U is 120mm long and the other side of the U is 80mm long. When the long face of the "A" piece butts up against the ends of the chassis rails it covers the end of the U. **This is structurally very important.**
- Step 2.** Mark and cut off one 20mm piece at each end of the chassis rail. When the chassis rail now butts up against the "A" piece there should be a place for the L bracket to now fit.
- Step 3.** Mark and cut out one 20mm square section on the chassis rails for the central "B" piece to fit.
- Step 4.** Mark and cut out two 20mm square section on each of the chassis rails for the remaining "B" pieces to fit. **NOTE:** The centre of the pivot of the bogies should ideally sit in the centre of the area.
- Step 5.** Position the L brackets in the base of the U as shown below and then use "superglue" to position them. Once the superglue has set drill 4mm holes through the L brackets and using 4mm steel (pref stainless steel) "pop" rivets stitch the chassis frame together.



The next sequence of operations depends on the user. The corners can be re-enforced by packing with glass fibre putty e.g. Isopon P40 or similar. Common practice is the seaming of the U section with either silver solder or MIG welding. If this used then a so called “self jigged” sequence has to be followed.

The Gauge '3' Society is grateful for the following instructions from “The Welding Institute”.



Follow the sequence of seams always working from the edge of the U towards the base of the U, (where the bracket is). Work the seams so that each one is the opposite end of the chassis i.e seam top left then seam bottom right, seam bottom left then seam top right.

Allow the work to cool to room temperature **NATURALLY** before beginning the next sequence of seams.

Invert the chassis so that the flat side of the U is uppermost.

Once the sequence is complete the final seams can be made in the frame following the same assembly sequence as above.