Straight Frame 51xx Instructions

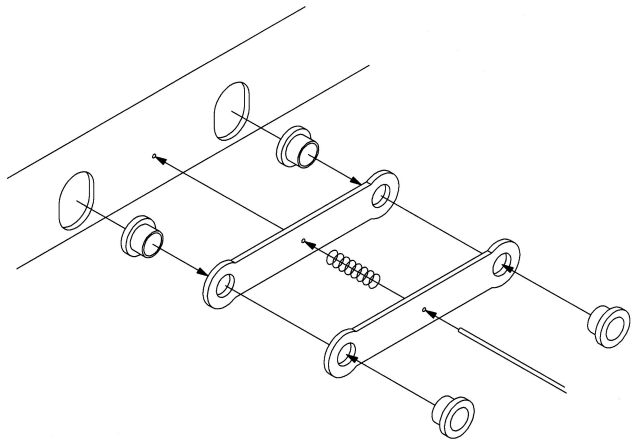
Fig. 1.

Chassis Assembly

The chassis can be built rigid or compensated, so decide now which one you are going to make. If building a compensated chassis remove the sections from the front and centre axle holes.

Take the main frames (1) and cut away the area marked blue at the front of the frames. There is a half etched line on the frames. Fold the main chassis frames up and solder the rear frame spacer (2) and centre spacer (3) in place making sure everything is square.

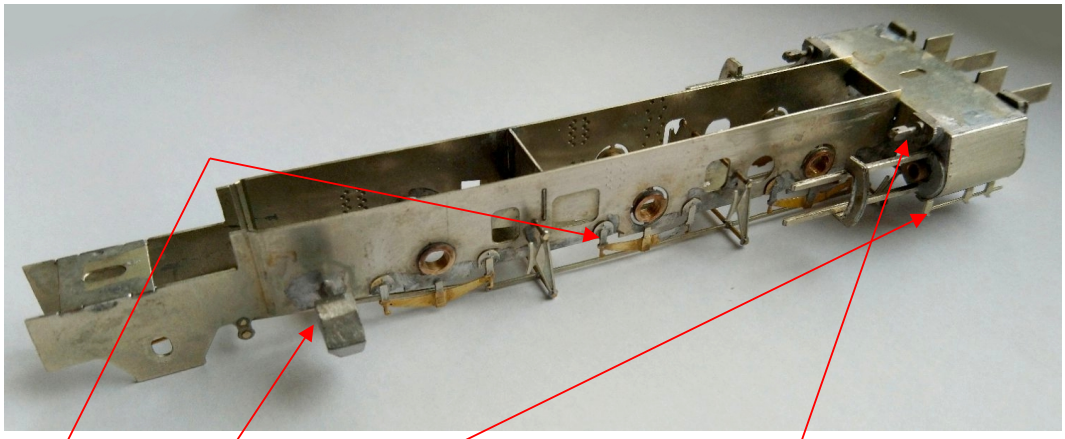
Compensated Chassis - Solder the axle bearings (4) into the compensating beams (5). Fit the compensating beams by passing brass wire through the frames, through one of the beams, then the spring (31), then the next beam and finally out the other side of the chassis. Hold the beams away from the chassis side while soldering the wire in place to prevent them being soldered to the frames. Trim the excess wire flush with the chassis side. Fit the wheels so you can test the compensating mechanism and when satisfied that it works OK remove the wheels and put them to one side.



Rigid Chassis - Solder the axle bearings (4) into the axle holes in the chassis (1).

Take the cylinders (6) and solder two 2mm bearings (7) into the large holes in the back of the cylinders. Fold down the front and rear and fit the cylinders into the recess at the front of the frames. Take the cylinder sides (8) and curve the bottom of the cylinder sides to match the shape of the cylinder front/rear. Solder the sides to the cylinders. Solder the front cylinder covers (9) in place.

Solder three lengths of the **0.7mm** brass wire (10) into the holes in the chassis to form the brake mountings. Take the brake hangers (11, 12, 13 & 14). Note that the front brakes are different and all are handed. Solder the brake hangers to the wire **2mm** from the frames. Pass brass wire through the bottom of the rear brakes and then through the rear pull rods (16). Solder all the joints. Pass more brass wire through the bottom of the front and centre brakes and then fit the outside brake rodding (15) to the ends of these wires. The outside rodding should be about **5mm** from the frames. Refer to the inset drawing and assemble the brake actuating rods and levers (17 & 18).



Solder the springs (23) in position under the axle holes. If you've used the compensating mechanism you will have to shorten the centre lug.

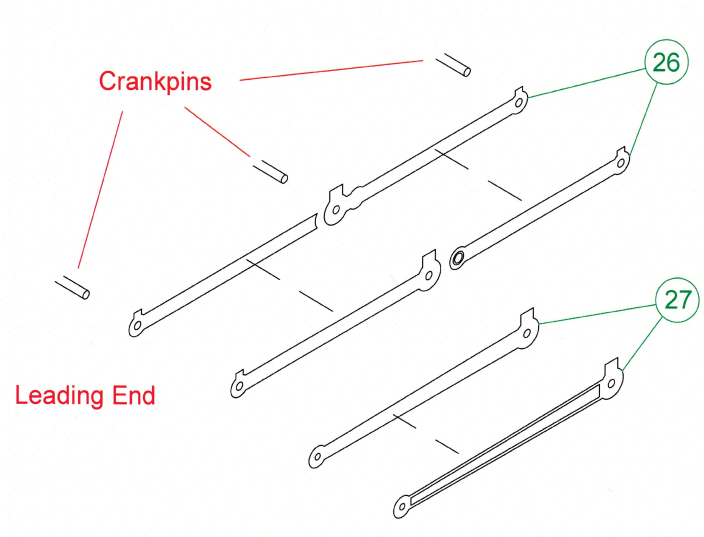
Solder the cylinder drain cocks (24) under the cylinders. Assemble the front pony truck (21 & 22). Solder the sandboxes (25) into their holes behind the rear wheels. Glue or solder the sandbox fillers (28) to the rear sandboxes. Make up the sand pipes with **0.7mm** brass wire and fit into the bottom of the sandboxes. Solder the rear (29) valve guides to the cylinders. The chassis and pony trucks can now be painted, taking care not to gum up moving parts.

Fit the wheels and motor to the chassis before fitting the slidebars. If you fit the slidebars first you won't be able to fit the front wheels!

Fold up the slidebars (19) as shown and solder the two sides together. Cut the end off of the prongs that go into the cylinders. Solder together the three parts of the motion brackets (20) and solder these into the notches on the slidebars. Now remove the stretcher at the rear of the slidebars. Slide them into the cylinders and over the 2mm bearings.

Coupling Rods

With the chassis painted and the wheels fitted permanently. Fit the crank pins and assemble the coupling rods (26) as shown. Take care in this as the rods need to move freely, both for side play and compensation.



The connecting rods (27) can also be assembled and crossheads (30) attached to the rods with the **14BA** nuts and screws. Check that the crossheads move OK in the slidebars before permanently fitting them.

Fig. 2.

Cut out the main running plate (1), the valances (2 & 3) and the rear bufferbeam (17). Fold the running plate to form the two levels. Check the fit of the valances under the running plate and then solder in place against the step in the running plate. Solder the rear bufferbeam into the recess in the running plate.

Take the two main body sides (4 & 6), curve the front ends round a 2mm bar. Check that the front curves match the curved mark on the running plate and tack one of them in place. Fit the cab rear (5) into the slots in the cab side and running plate and tack in place. Now take the cab floor (7) [on the chassis etch] and position it with the step protruding under the cab door. Don't solder it yet. The remaining main body side can now be tacked in place. Solder along all the seams, including the cab floor, but make sure the cab front (10) will fit in the slots.

Before fitting the cab front, take the bunker front (8) and fold it as in fig. 2. Fit the coal chute (9) to it. Solder it in place so that it sits just behind the cab door, [see the red line in fig.2]. When this is done fit the cab front in place.

Shape the bunker rear (11) to match the rear profile of the sides and solder in place. Tack the tank tops into the recesses in the sides. Once sure everything is square solder around all the seams.

Take the saddle front (12) and locate it onto the the tabs at the front of the running plate. Fit the front running plate (15) on top of the valances and slide it so that it interlocks with the saddle front. Solder the front bufferbeam (16) in place.

Solder two 8BA screws (18) into the two holes in the running plate. Solder the smokebox saddle rear (19) into the recesses. Form the saddle sides (20) to match the saddle front and rear.

Fold the splasher sides up. Curve the splasher tops (21) and solder to the splasher sides.

Leave the cab roof until the cab interior is done and move to fig. 3.

Fig. 3.

Cut out the tank side overlays (23 & 24) carefully. Clean off all the tabs and curve the front end to match the main sides. Tack the overlays in position making sure they stay flat. When satisfied that all is OK solder around the edges. Take the bunker side overlays (23a & 24a) and following the previous procedure, solder them in place. Form the bunker rear overlay (25) and solder in place. Use a fine file to put a radius on the edge where the sides and rear meet.

Solder the rivet strips (26 & 27) around the bottom of the tanks and bunker.

Punch through the rivets on the back of the motion bracket overlay (29) and solder it to the motion bracket back (28). Solder two steps (60) into the slots in the bracket.

Fit the motion bracket in position 0.5 mm from the tank front.

Now turn to the firebox top (32). Take the front and rear formers (30 & 31) and form the firebox top to match them [note that they are marked F + R]. Insert the lugs into the rearmost slot and the recess at the front [these keep the formers central]. Solder them in position making sure there is a good thickness of solder at the front join. Round off the front edge with a small fine file. Check the fit of the firebox top to the tank tops and then solder in place.

Curve the tapered boiler section (35) to match the formers (33 & 34) [note that they are marked F + R]. Insert the lugs into the slots and solder them in place. Before soldering the tapered section in place assemble the boiler/smokebox.

Solder along the bottom seam of the boiler/smokebox (36) [it's helpful to use wire around the the boiler to hold the seams together] and then solder the smokebox overlay (37) to the boiler.

Position the tapered boiler and front boiler/smokebox to check that they line up correctly, make any alterations and line up again. Tack the tapered boiler section in place, check the positioning. Now tack the boiler/smokebox to the saddle and to the tapered boiler, checking that it is level and the join is good. When you are happy all is lined up correctly solder them firmly in place. Fold up the step on the smokebox front (38). Solder this to the smokebox.

Solder the front and rear bufferbeam overlays (39 & 40) in place.

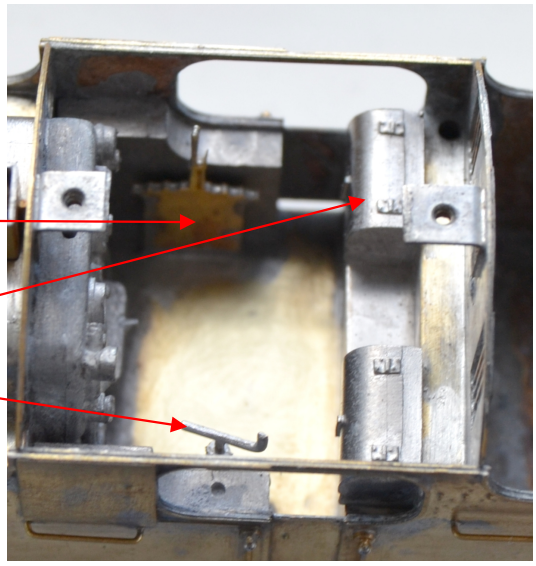
Take the front running plate overlay (41) and solder on to the front running plate.

Check the fit of the valance/cab step overlays (42 & 43), form the bottom steps and solder in position. Fold the intermediate steps (44) [two each side] and solder in place.

Cut out the front running plate steps (51). Solder them in position behind the front running plate valance and in line with the two handrail knob holes.

Solder the rear door (49) and rear window guards (50) in place.

Fit the inner tanks (52) against the cab sides and then fit the backhead (53). Take the etched reversing lever (54) and fold the two halves together. Clean off the fold tabs and solder it in place. Solder the toolboxes (55) in place. Drill a hole for the brake standard (56) and solder it in position.



Curve the tri-arch cab roof (45) and tack in position. When satisfied that it is positioned centrally solder around the seams. Fit the front and rear strips (46), the two rainstrips (48) and the cab roof shutter (47).

Form the bunker recess (57). Check the fit and when you are happy with it, solder it in place.

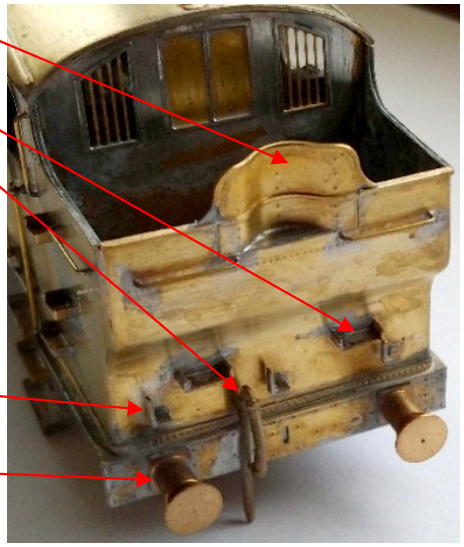
Solder the bunker rear steps (58) into their slots.

Solder a vacuum pipe (59) to the bufferbeam.

Clean out the handrail holes and fit the handrails from the **0.45mm** wire.

Fold the rear lamp brackets (60) and insert the narrow ends into the holes.

Fit the buffer shanks (61) [leave the heads until after painting].

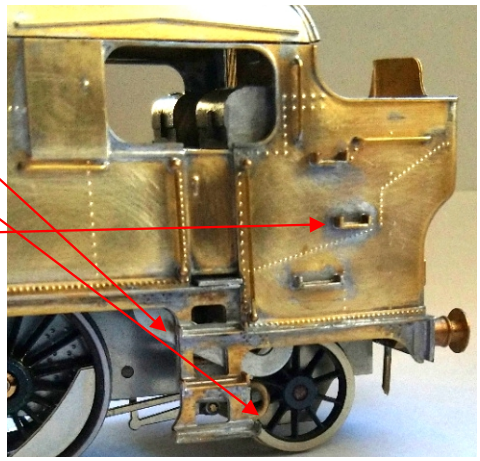


Solder the tank balance pipes (62) behind the cab steps.

Solder the Injectors (63) to the rear of the steps.

Fold up the nearside bunker steps (64) [two short, one longer and they have no tabs]. Solder them in place using the dimensions on the line drawing, fig. 5.
Check the dates that they were fitted.

Solder the boiler bands (65) in position using the dimensions on the line drawing.

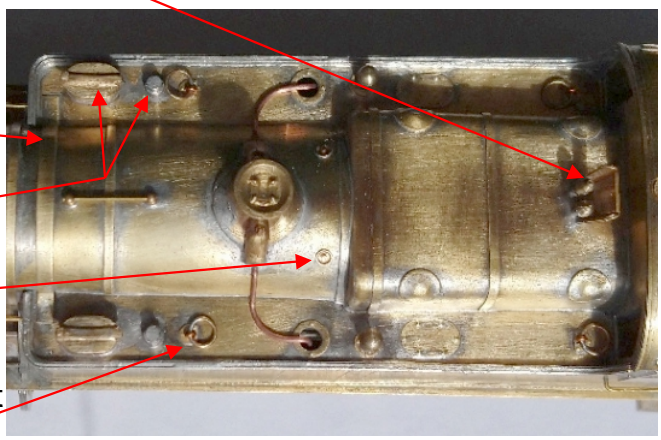


Fold the whistle guard (66) and glue or solder in the slot. The whistles (67) are best fitted after painting.

Shape the boiler strapping (68) and solder to the front of the tank tops.

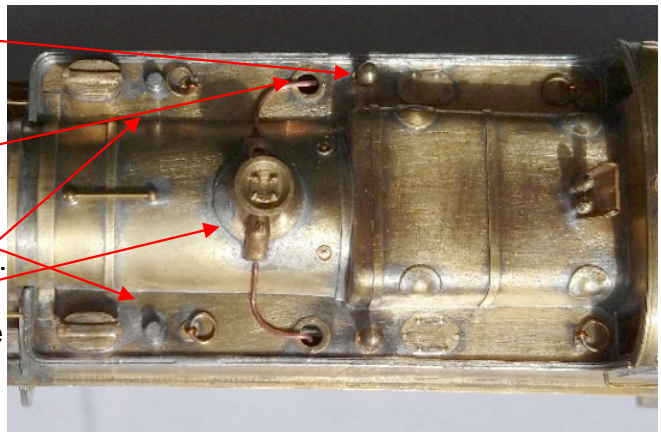
Solder the tank fillers (69) and oil breathers (70) in place.

Open out the holes for the washout plugs (71) and glue or solder in place.



With the lifting ring mountings (72) still in the fret drill through the holes from the back with a **0.4mm** drill. Do the same with the corresponding holes in the tank tops.
Line up the mountings with the holes on the tank top and solder in position. Clear out the holes with the **0.4mm** drill.

Solder the tank vent flanges (73) over the holes on the tank tops and solder the tank vents (74) into the holes.



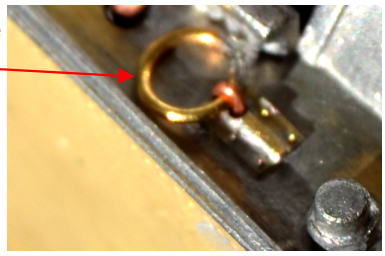
Solder the beading (75) over the holes for the top feed pipework.

Solder the tank top lubricators (76) in place here.

Fit the safety valve bonnet (77) in position. Make up the pipework from copper wire.

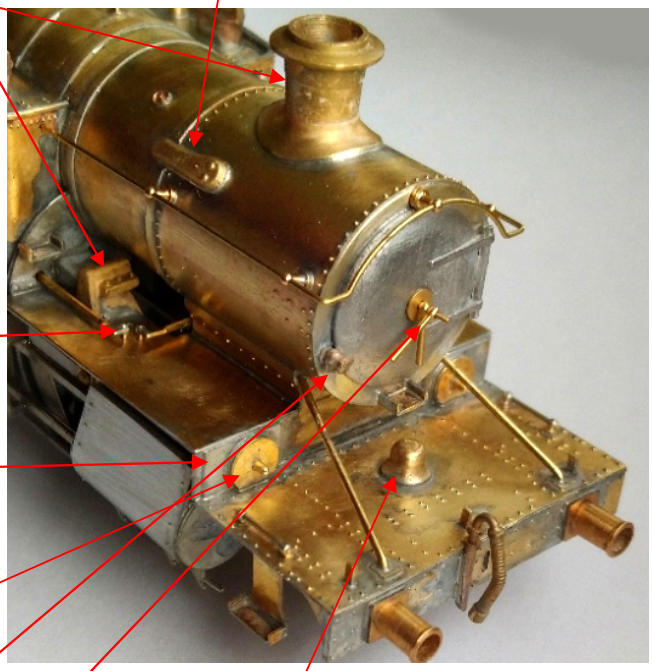
Glue the mudhole covers (78) in place.

Form the lifting rings using a piece of **0.45mm** brass wire. Wrap the wire around something about **2mm** in diameter, such as a needle file handle. Coil it as if you are making a spring. Cut through two coils and bend the two ends together. Put a dab of solder on the join. Use a piece of the fine copper wire and bend it like a split pin. Loop the lifting ring onto this and put the two ends of the copper wire through the holes in the lifting ring mounting. Twist the ends together inside the tanks.



Solder the chimney (79) in place. Also solder the superheater cover (80) in position.

Fit the brackets? (81) on top of the splashers.



Take two pieces of **0.45mm** wire, around **5mm** long. Bend them into an **L** shape and solder them into the holes for the sand operating rods from underneath. Take the sand operating rods (82) and twist them through **90°** about **1mm** of the way from the right angled end. Solder them, with about **0.5mm** gap to the two pieces of wire you have just fitted.

Open the holes in the drop of the running plate to take **0.9mm** wire. Do the same with the rectangular valve guide backs (83) and the four parts of the valve guides (84). Insert two pieces of wire into the holes and fit a back piece and two of the valve guides over the wire. Solder them all in place. Leave **2mm** of the wire protruding. Repeat for the other side.

Drill the marked hole and fit the lancecock (85).

Glue the smokebox door handle (86) base into the door and glue the handles to it. (The rear handle always points down). Solder the bogie spring holder (87) in position.

Drill a hole at the front of each tank **11.5mm** up from the running plate and solder the tank front steps (88) in place.

Bend up the front lamp brackets (89) and fit into the slots from underneath including the ones on the left of the running plate, just behind the steam pipe. Solder a vacuum pipe (59) to the bufferbeam.

Using the **0.45mm** wire make up the pipework along the running plate. Fit all the handrails.

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Chassis Parts List

1. Main Frames.
2. Rear Frame Spacer.
3. Centre Spacer.
4. 1/8th Chassis Bearings.
5. Compensating Beams.
6. Cylinders.
7. 2mm Bearings.
8. Cylinder Sides.
9. Front Cylinder Covers.
10. 0.7mm Brass Wire.
11. L/H Front Brake Block.
12. R/H Front Brake Block.
13. L/H Rear and Centre Brake Blocks.
14. R/H Rear and Centre Brake Blocks.
15. Outside Brake Rodding.
16. Rear Inside Brake Rodding.
17. 0.9mm Brass Wire.
18. Brake Actuating Lever.
19. Slidebars.
20. Motion Brackets.
21. Front Bogie.
22. Bogie Wheel Keeper and Guard Irons.
23. Springs.
24. Cylinder Drain Cocks.
25. Sandboxes.
26. Coupling Rods.
27. Connecting Rods.
28. Sandbox Fillers.
29. Rear Valve Guides.
30. Crossheads.
31. Compensation Spring.

Superstructure Parts List

1. Main Running Plate.
2. L/H Valance.
3. R/H Valance.
4. L/H Side.
5. Cab Rear.
6. R/H Side.
7. Cab Floor.
8. Bunker Rear.
9. Coal Chute.
10. Cab Front.
11. Bunker Rear.
12. Smokebox Saddle Front.
13. R/H Tank Top.
14. L/H Tank Top.
15. Front Running Plate.
16. Front Bufferbeam.
17. Rear Bufferbeam.
18. 8BA Nuts and Screws.
19. Smokebox Saddle Rear.
20. Smokebox Saddle Sides.
21. Splasher Tops.
22. .
23. R/H Side Overlay.

23a. R/H Bunker Side Overlay.

24. L/H Side Overlay.

24a. L/H Bunker Side Overlay

25. Bunker rear Overlay.
26. Tank Rivet Strip.
27. Bunker Rivet Strip.
28. Motion Bracket.
29. Motion Bracket Overlay.
30. Rear Firebox Former.
31. Front Firebox Former.
32. Firebox Top.
33. Rear Taper Boiler former.
34. Front Firebox Former.
35. Taper Boiler Top.
36. Boiler/Smokebox.
37. Smokebox Overlay.
38. Smokebox Front.
39. Front Bufferbeam Overlay.
40. Rear Bufferbeam Overlay.
41. Front Running Plate Overlay.
42. R/H Valance Overlay.
43. L/H Valance Overlay.
44. Cab Steps.
45. Cab Roof.
46. Front and Rear Roof Beading.
47. Cab roof Shutter.
48. Rainstrips.
49. Cab Rear Door.
50. Rear Window Coal Guards.
51. Front Running Plate Steps.
52. Inner Tanks.
53. Backhead.
54. Reversing Lever.
55. Toolboxes.
56. Brake Standard.
57. Bunker recess.
58. Bunker Rear Steps.
59. Vacuum pipes.
60. Rear Lamp brackets.
61. Buffers.
62. Tank Balance Pipes.
63. Injectors.
64. Nearside Bunker Steps.
65. Boiler Bands.
66. Whistle Guard.
67. Whistles.
68. Boiler Strapping.
69. Tank Fillers.
70. Oil Breathers?.
71. Washout Plugs.
72. Lifting Ring Mountings.
73. Tank Vent Flanges.
74. Tank Vents.
75. Round Beading.
76. Tank Top Lubricators.
77. Safety Valve and Top Feed.
78. Mudhole Covers.
79. Chimney.
80. Superheater Cover.
81. Brackets?.
82. Sand Operating Rods.
83. Valve Guide Backs.
84. Valve Guides.
85. Lancecock.
86. Smokebox Door Handle.
87. Bogie Spring Holder.
88. Tank Front Steps.
89. Front Lamp Brackets.
90. Handrail knobs.
91. 0.45mm Brass Wire.
92. 0.7mm Brass Wire.

Fig. 1. Straight Frame 51xx Chassis Construction.

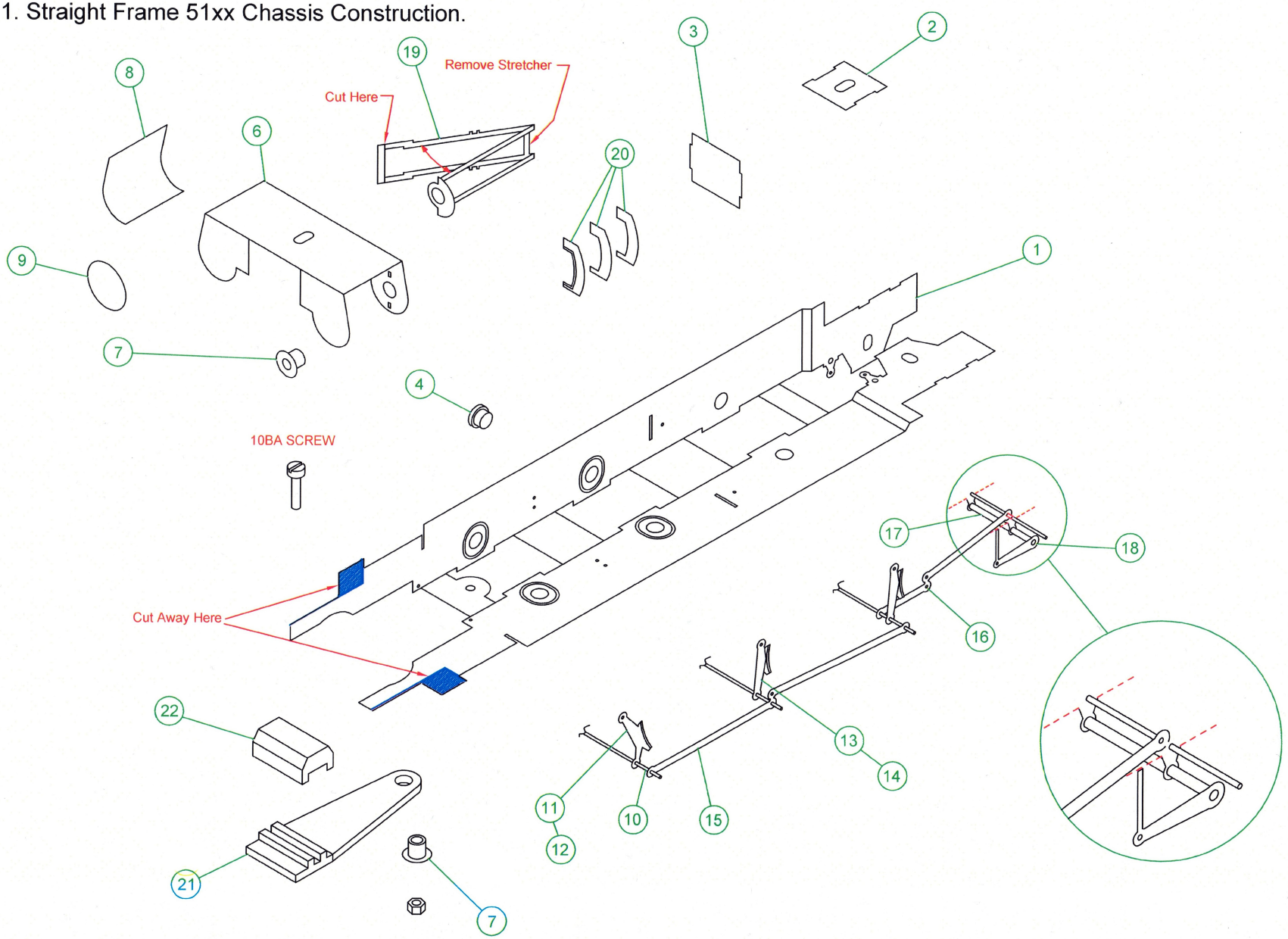

Fig. 2. Straight Frame 51xx Body Construction.

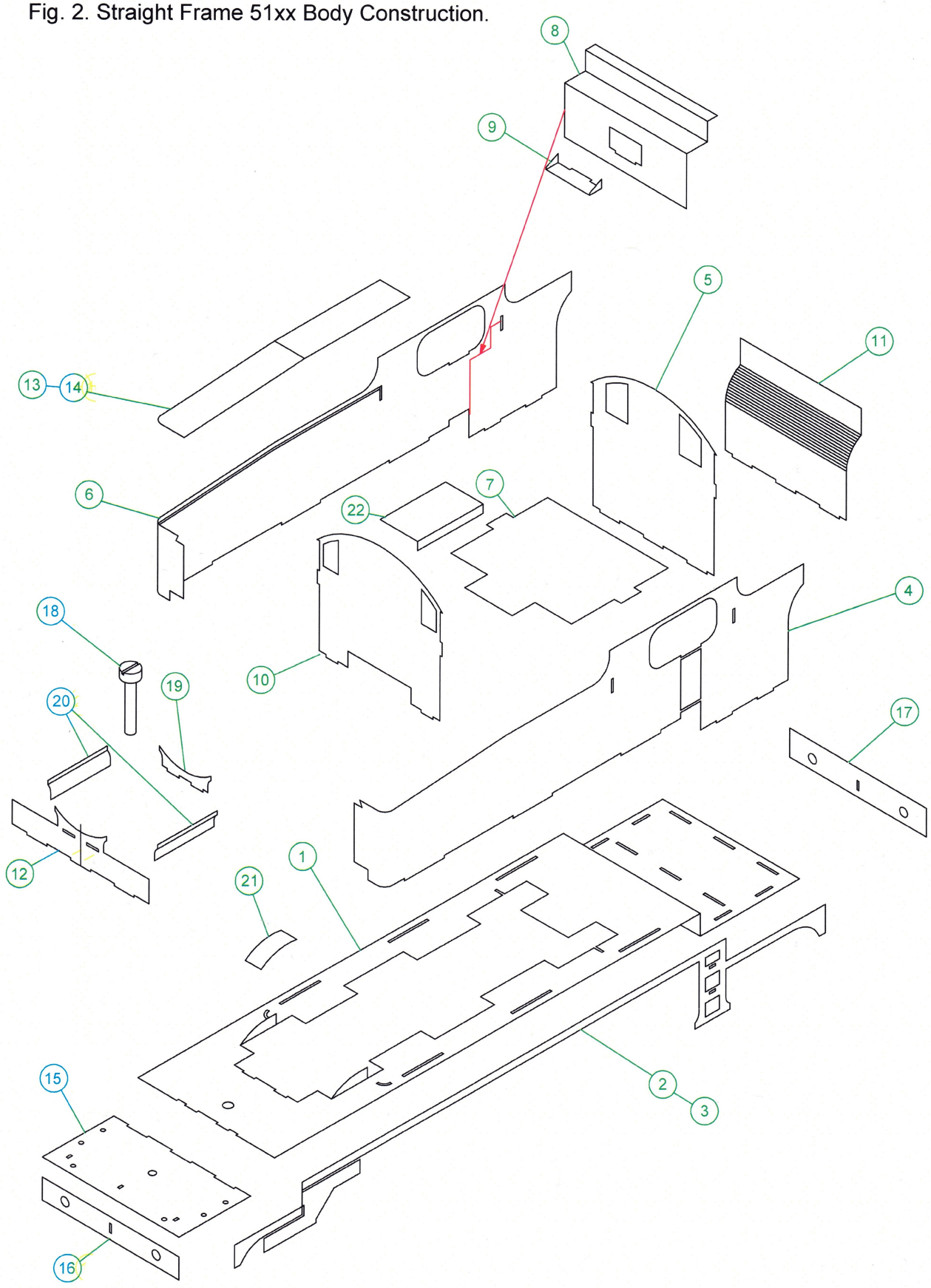

Fig. 3. Straight Frame 51xx Body Construction.

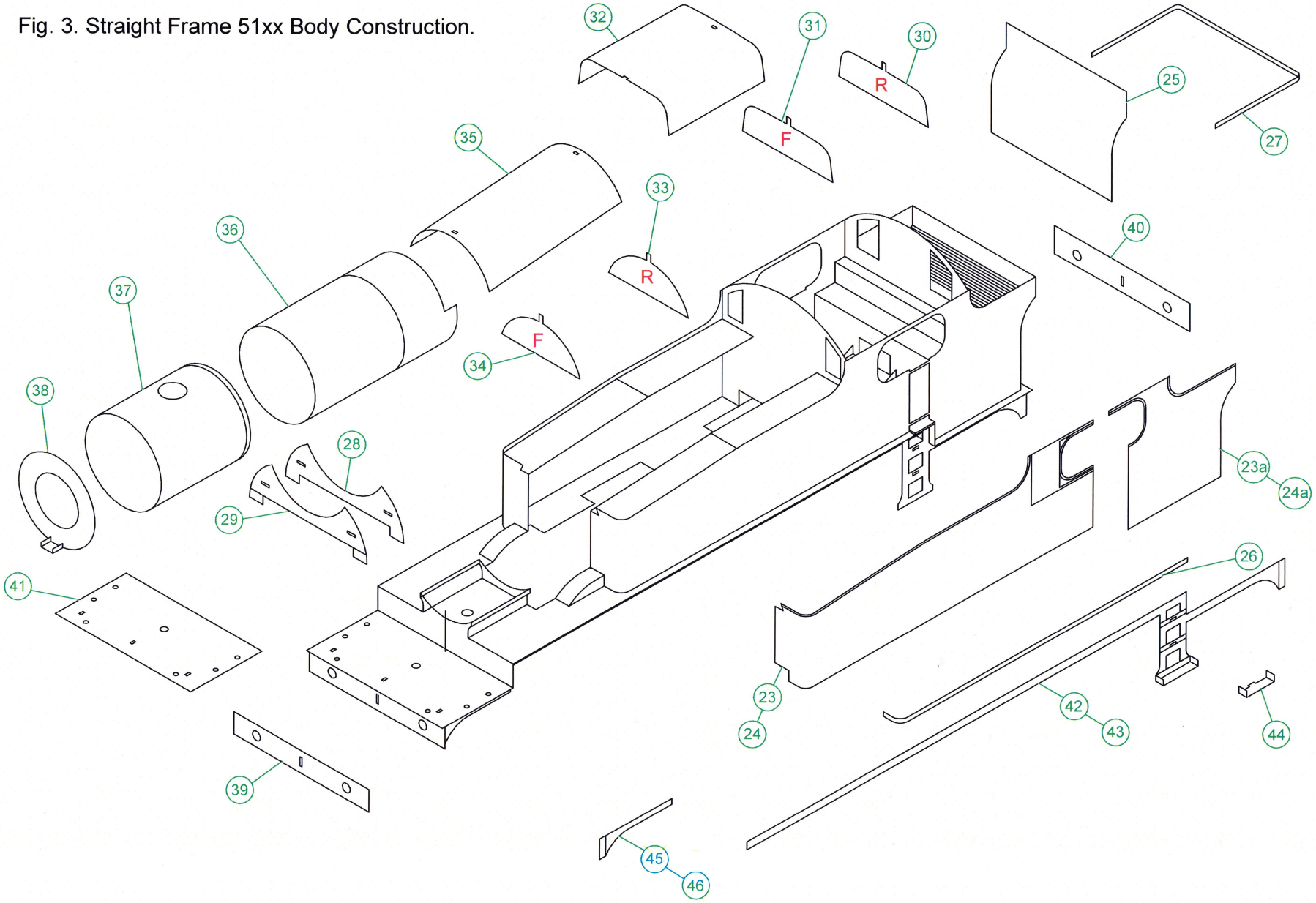

Fig. 4. Straight Frame 51xx Cab Roof Construction.