

2022 CHEVROLET CORVETTE SERVICE MANUAL

- **SEARCH**

1. **Body Repair**
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Front Rail Replacement

Materials

- Structural Adhesive Aluminum Panel Bonding
- Structural Rivet (SR3 3X) Fastener Specifications
- Countersunk Structural Blind Rivet (CR1 2X) Fastener Specifications
- Countersunk Structural Blind Rivet (CR2 1X) Fastener Specifications

Removal Procedure

1. Click here for full size
2. Warning:

Refer to Approved Equipment for Collision Repair Warning
3. Warning:

Refer to Collision Sectioning Warning
4. Warning:

Refer to Glass and Sheet Metal Handling Warning
5. Note:

The front rail assembly is made of cast aluminum. Aluminum
6. Note:

The front compartment inner side rail gusset is made of 6000 series aluminum. Aluminum
7. Note:

Three dimensional fixturing equipment required for installation.
8. Note:

Left shown, right similar.
9. Disable the SIR system. SIR Disabling and Enabling.
10. Remove all related panels and components.
11. Remove front bumper energy absorber. Front Bumper Energy Absorber Replacement
12. Remove the sealers and anti-corrosion materials from the repair area as necessary. Anti-Corrosion Treatment and Repair
13. Click here for full size
14. Remove flow drill screws (1). [12X] Fastener Specifications
15. Note:

Drill through first layer only as shown.
16. Remove spot welds (2). [3X] Fastener Specifications

17. [Click here for full size](#)
18. Note:

Drill through first layer only as shown.

19. Remove spot weld (1). [1X] Fastener Specifications
20. [Click here for full size](#)
21. Remove flow drill screws (1). [8X] Fastener Specifications
22. Note:

Drill through first layer only as shown.

23. Remove spot welds (2). [10X] Fastener Specifications
24. [Click here for full size](#)
25. Remove flow drill screws (1). [5X] Fastener Specifications
26. [Click here for full size](#)
27. Note:

View is from underside of body.

28. Remove flow drill screw (1). [1X] Fastener Specifications
29. Note:

Drill through first layer only as shown.

30. Remove spot welds (2). [7X] Fastener Specifications
31. [Click here for full size](#)
32. Note:

Do not damage or cut attaching panels and reinforcements.

33. Using reciprocating saw or equivalent tool cut through front rail casting at marked locations (1).
34. Remove section of front rail casting (2).
35. [Click here for full size](#)
36. Warning:

When separating the aluminum panels during collision repair, be sure to adhere to the following precautions:

- Do not use an open flame
- Focus heat onto panel being replaced and do not exceed 200°C (392°F) for 3 consecutive minutes
- Use care not to damage adjacent panel while prying the panels apart

Failure to follow the precautions may lead to vehicle damage or personal injury.

37. Apply heat to release adhesive (1).
38. [Click here for full size](#)
39. Note:

Excessive prying force may damage surrounding structure.

40. Apply heat to release adhesive (1).
41. Remove portion (1) front rail casting.
42. [Click here for full size](#)
43. Note:

Excessive prying force may damage surrounding structure.

44. Apply heat to release adhesive (1).

45. [Click here for full size](#)

46. Note:

View is from underside of body.

47. Note:

Excessive prying force may damage surrounding structure.

48. Apply heat to release adhesive (1).

49. [Click here for full size](#)

50. Note:

View is from underside of body.

51. Note:

Excessive prying force may damage surrounding structure.

52. Apply heat to release adhesive (1).

53. [Click here for full size](#)

54. Note:

Excessive prying force may damage surrounding structure.

55. Apply heat to release adhesive (1).

56. [Click here for full size](#)

57. Remove remaining portion of front rail casting assembly (1).

58. Note:

Do not damage body structure when removing adhesive.

59. Remove remaining adhesive from body structure.

Installation Procedure

1. [Click here for full size](#)

2. Note:

Temporarily install replacement part.

3. Position front compartment inner side rail gusset (1) on front rail casting assembly (2) using three-dimensional measuring equipment and clamp into place.

4. [Click here for full size](#)

5. Verify the front compartment inner side rail gusset (1) measurements three-dimensionally to ensure proper position to the front rail casting assembly (2).

6. [Click here for full size](#)

7. Note:

Drill pilot holes (1) at locations of previous flow drill screws.

8. Note:

If production screw holes (1) are in place, production flow drill screws may be reused.

9. Drill 4.0 mm (5/32") pilot holes (1) for flow drill screws (M5). [7X] Fastener Specifications

10. [Click here for full size](#)

11. Remove front compartment inner side rail gusset (1) from front rail casting assembly (2).

12. [Click here for full size](#)

13. Note:

Accurate and timely assembly methods must be used in order to meet proper bonding requirements.

14. Note:

Dry fit all parts with proper clamping devices prior to final assembly to ensure full understanding of the assembly process.

15. Note:

When using adhesive, ensure all necessary tools and materials are in place prior to final assembly.

16. Note:

Only remove E-coat where adhesive will be applied.

17. Clean and prepare mating surfaces on structure and replacement part according to adhesive manufacturer's recommendations.
Aluminum Panel Bonding

18. Apply structural adhesive (1) to mating surfaces on structure and replacement part according to adhesive manufacturer's recommendations. Aluminum Panel Bonding

19. [Click here for full size](#)

20. Position front compartment inner side rail gusset (1) on front rail casting assembly (2) using three-dimensional measuring equipment and clamp into place.

21. [Click here for full size](#)

22. Note:

Ensure screw is fully seated with a minimum torque of 5 Nm (4 lb ft) and not stripped.

23. Note:

Install fasteners from direction shown.

24. Install flow drill screws (2). [3X] Fastener Specifications

25. Install flow drill screws (1). [4X] Fastener Specifications

26. [Click here for full size](#)

27. Note:

Temporarily install replacement part.

28. Position front rail casting assembly (1) on vehicle using three-dimensional measuring equipment and clamp into place.

29. [Click here for full size](#)

30. Note:

Drill pilot holes (1) for flow drill screws at locations of previous spot welds.

31. Drill 4.0 mm (5/32") pilot holes (1) for flow drill screws (M5). [8X] Fastener Specifications

32. Note:

Drill pilot holes (2) at locations of previous flow drill screws.

33. Note:

If production screw holes (2) are in place, production flow drill screws may be reused.

34. Drill 4.0 mm (5/32") pilot holes (2) for flow drill screws (M5). [8X] Fastener Specifications

35. [Click here for full size](#)

36. Drill 6.7 mm (17/64") hole (1) for countersunk structural blind rivets. [1X]

37. Note:

Prepare rivet hole for countersunk structural rivet.

38. Using countersink cutting tool, countersink hole (1). [1X] Special Tools

39. [Click here for full size](#)

40. Drill 6.7 mm (17/64") holes (1) for structural blind rivets. [3X] Fastener Specifications

41. Note:

Drill pilot holes (2) at locations of previous flow drill screws.

42. Drill 4.0 mm (5/32") pilot holes (2) for flow drill screws (M5). [8X] Fastener Specifications

43. Drill 6.7 mm (17/64") holes (3) for countersunk structural blind rivets. [2X] Fastener Specifications

44. Note:

Prepare rivet holes for countersunk structural rivets.

45. Using countersink cutting tool, countersink holes (3). [2X] Special Tools

46. [Click here for full size](#)

47. Note:

Drill pilot holes at locations of clearance holes (1)

48. Drill 4.0 mm (5/32") pilot holes (1) for flow drill screws. [5X] Fastener Specifications

49. Note:

Drill pilot holes (2) for flow drill screws at locations of previous spot welds.

50. Drill 5.4 mm (7/32") pilot holes (2) for service flow drill screws (M6). [5X] Fastener Specifications

51. Note:

Clearance holes (3) are added for installation of front bumper energy absorber.

52. Drill 7.0 mm (9/32") clearance holes (3) through new front compartment side rail casting.

53. [Click here for full size](#)

54. Note:

Drill pilot holes (1) for flow drill screws at locations of previous spot welds.

55. Drill 5.4 mm (7/32") pilot holes (1) for service flow drill screws (M6). [2X] Fastener Specifications

56. Note:

Drill pilot holes (2) for flow drill screws at locations of previous spot welds.

57. Drill 4.0 mm (5/32") pilot holes (2) for flow drill screw. [1x] Fastener Specifications

58. Note:

After removal of new part and before final installation drill pilot hole in new casting.

59. Drill 7.0 mm (9/32") as a clearance hole (2) for flow drill screw. Fastener Specifications

60. [Click here for full size](#)

61. Remove front compartment side rail (1) from vehicle.

62. [Click here for full size](#)

63. Note:

Accurate and timely assembly methods must be used in order to meet proper bonding requirements.

64. Note:

Dry fit all parts with proper clamping devices prior to final assembly to ensure full understanding of the assembly process.

65. Note:

When using adhesive, ensure all necessary tools and materials are in place prior to final assembly.

66. Note:

Only remove E-coat where adhesive will be applied.

67. Note:

Ensure all bare metal is covered.

68. Clean and prepare mating surfaces on structure and replacement part according to adhesive manufacturer's recommendations. Aluminum Panel Bonding

69. Apply structural adhesive (1) to mating surfaces on structure and replacement part according to adhesive manufacturer's recommendations. Aluminum Panel Bonding

70. [Click here for full size](#)

71. Apply structural adhesive (1) to mating surfaces on structure and replacement part according to adhesive manufacturer's recommendations. Aluminum Panel Bonding

72. [Click here for full size](#)

73. Install front compartment side (1) on vehicle using three dimensional fixturing equipment and clamp into place.

74. [Click here for full size](#)

75. Note:

Install fasteners from direction shown.

76. Install countersunk structural blind rivet (1). [CR2 1X] Fastener Specifications

77. [Click here for full size](#)

78. Note:

Install fasteners from direction shown.

79. Install structural blind rivets (1). [SR3 3X] Fastener Specifications

80. Install countersunk structural blind rivets (2). [CR1 2X] Fastener Specifications

81. Note:

Ensure screw is fully seated with a minimum torque of 5N-m (4 lb ft) and not stripped.

82. Install flow drill screws (1). [12X] Fastener Specifications

83. [Click here for full size](#)

84. Note:

Ensure screw is fully seated with a minimum torque of 5 Nm (4 lb ft) and not stripped.

85. Note:

Install fasteners from direction shown.

86. Install flow drill screws (1). [12X] Fastener Specifications

87. [Click here for full size](#)

88. Note:

Ensure screw is fully seated with a minimum torque of 5 Nm (4 lb ft) and not stripped.

89. Note:

Install fasteners from direction shown.

90. Install flow drill screws (1). [12X] Fastener Specifications

91. Remove excess adhesive.
92. Seal countersunk and structural rivets with seam sealer
93. Apply the sealers and anti-corrosion materials to the repair area as necessary. Anti-Corrosion Treatment and Repair
94. Paint the repaired area. Basecoat/Clearcoat Paint Systems
95. Install front bumper energy absorber. Front Bumper Energy Absorber Replacement
96. Install all related panels and components.
97. Enable the SIR System. SIR Disabling and Enabling

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