

THE PENNSYLVANIA RAILROAD

LOCOMOTIVE MAINTENANCE INSTRUCTION NO. L-55

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Instructions for Servicing & Dismantling Streamlined S1 Locomotive No. 6100

SERVICING

Note:- For letters and numerals contained herein, refer to Maintenance Diagram shown on tracing A-415953.

1. AIR PUMP

Open door (o) in panel (O) both right and left sides of locomotive, by inserting a screw driver in latches and giving 1/4 turn. To remove pump, remove panel (O) right and left. (See Paragraph 41(a).

2. AIR PUMP STEAM SUPPLY MAIN VALVE

Open door (o) in panel (O) on left side of locomotive by inserting a screw driver in the latches and giving 1/4 turn. For individual valve for each pump, enter door (kk) in casing (KK) by inserting a screw driver.

3. AIR HORN AND RELAY VALVE

Located under smoke box front casing. Access for inspection and repair through door (kk) in casing (KK). Open door (kk) in smoke box front casing (KK) by inserting a screw driver in latches and giving 1/4 turn.

4. ASH PAN

To clean ash pan slope sheets, open grilles in panels (A-B-C) by using a screw driver and giving latches 1/4 turn. Use catch (x) to hold grille open while using hoe or air cleaning nozzle.

5. BELL

Located under smoke box front casing. Access for inspection and repair through door (kk) in casing (KK). Opened by inserting screw driver in latches and giving 1/4 turn.

6. BRIDGE PIPE

Open doors (bb) located in casing (BB) by inserting a screw driver in the latches and giving them a 1/4 turn. Use the trap door ring provided to raise the doors.

7. BLOWER CONNECTION

Open door (o) in panel (O) on left side of locomotive by inserting a screw driver in the latch and giving it 1/4 turn.

8. BOOSTER - THROTTLE AND CUT-OFF VALVE (WHEN BOOSTER IS APPLIED)

Open door (h) in panel (H-1) on left side of locomotive by inserting a screw driver in the latches and giving them 1/4 turn.

9. BOILER MANHOLE

Remove seventeen (17) machine screws (No.39) to take off cover (ff) in casing (FF) to provide access to boiler manhole cover.

10. COUPLER

(a) To operate the door (pp) covering the coupler, release two barrel bolts (No.1) on right and left sides of door frame, access to which can be had through doors (mm). Grasp handles of locks (No.2) at bottom of door and release same by giving them 1/4 turn. Pull outward and allow door to drop slightly before raising bottom and sliding door inward. Care must be taken to have the stops on the door drop between the lugs welded on the locomotive frame, to hold it in the open position. To close, reverse the above process and care must be taken to see that the locks (No.2) and barrel bolts (No.1) are securely fastened.

(b) To place the coupler in position after casing door is opened, remove pins (No.3) and move sliding bar (No.4) sideways until it is clear of the coupler shank (No.5). Raise coupler head into position and replace bar (No.4) and pins (NO.3). To fold coupler, reverse above process.

(c) Coupler release rigging handles can be reached through doors (mm) on right and left sides of the pilot casing.

11. DISTRIBUTING VALVE

Located on right side under firing deck, access can be secured through panel (aa).

12. FEED WATER HEATER

(a) Hot Water Pump. The hot water pump is located on the main frame in front of the smoke box. Access for inspection and repair can be had to it through door (kk) in smoke box front casing (KK).

(b) Hot Water Heater. Access is provided for inspection and repair through doors (nn) in top of smoke box front casing (KK). Insert a screw driver in latch and give 1/4 turn. Raise doors with trap door rings provided.

(c) Pump Check. Access is provided through cover (w) on left side of running board. Remove six (6) machine screws (No.38) to loosen cover (w).

13. HEADLIGHT

(a) To replace the pre-focused lamp, loosen wing nut securing the headlight door. Extra lamp is carried in carton located in cab.

(b) To adjust headlight reflector, enter casing (KK) through door (kk) in order to remove plate in back of headlight. Remove ten (10) machine screws and plate and loosen castellated nut on vertical bolt supporting reflector bracket. Move reflector to the desired position, tighten castellated nut and replace covering plate.

14. INJECTOR AND INJECTOR STARTING VALVE

Injector and injector starting valves are located on left side of locomotive under cab and may be reached through panel (aa) and up under cab skirt.

15. LUBRICATORS - MECHANICAL

(a) Air Pumps. To fill or prime, open door (p) in panel (P) on right and left sides of the locomotive by inserting a screw driver in the latches and giving 1/4 turn.

(b) Cylinders and Valves. Back unit, open door (e) in panel (E) on left side of locomotive by inserting a screw driver in latches and giving a 1/4 turn. Front unit, open door (v) in panel (L) on left side of locomotive by inserting a screw driver in latches and giving a 1/4 turn.

(c) Driving and Truck Box Pedestals. Open door (v) in Panel (L) on right side of locomotive by inserting a screw driver in latches and giving 1/4 turn.

16. LUBRICATOR TERMINAL CHECKS

(a) For Back Unit. Open door (j) in panel (J) on right side and panel (J-1) on left side, by inserting a screw driver in latch and give 1/4 turn.

(b) For Front Unit. Open door (m) in panel (M) right and left sides, by inserting a screw driver in latch and giving 1/4 turn.

17. MARKER AND NUMERAL LIGHTS

Open door (oo) containing the numerals, right and left sides of locomotive, by giving latch 1/4 turn. To display red or amber colors, raise turret about 1/2" and turn until pin in bottom of turret engages the proper hole located in base of turret support. Switches are located in the cab for each light.

18. PISTON VALVES

To replace rings on valve, it is necessary to remove panels (O) at front unit and (K) at back unit. This is done by removing two bolts (No.6) in each panel, raising panels until the notches on the angles are clear of the holding pins and then move panels to the side. (See Paragraph No.41 to remove panels (O) and (K).

19. POWER REVERSE GEAR

To lubricate, pack, or inspect, open door (h) in panel (H) on right side of locomotive. (See Paragraph No.40 to remove panel (H)).

20. PILOT STEP

Turn latch 1/4 turn and fold step (c) down for use.

21. RELEASE RIGGING - COUPLER

See Paragraph No. 10.

22. SAFETY VALVES

Safety valves are located in well (ee) in casing (EE).

23. SAFETY VALVE TEST COCK

Test cock is located in well (a) in casing (EE).

24. SNIFTING VALVE

Access to snifting valve can be had directly, as valve frame projects through the running board side panels and is level with their outside surface.

25. SMOKE BOX INSPECTION

Open door (kk) in right side of smoke box front casing (KK) by inserting a screw driver in latches and giving 1/4 turn, and raising door. Smoke box front door may then be unclamped and opened as in standard practice.

26. SUPERHEATER HEADER

Open doors (hh) in smoke box front casing (HH) by inserting a screw driver in the latches and giving 1/4 turn, raise doors by means of the trap door ring provided. Remove four (4) bolts (No.8) and angle. This allows superheater header cover to be unclamped and removed, providing access to the superheater header and clamp nuts.

27. SUPERHEATER UNIT JOINT SHIELD

Remove six (6) machine screws (No.35) to remove jacket iron cover (b). This allows shield cover to be removed and shield to be drawn out through the left side of the smoke box.

28. SAND BOXES AND TRAPS

(a) To fill the sand boxes, remove lids (r) located in running boards.

(b) Access to the sander trap for sand box in front of front cylinder can be had by reaching under edge of panel (O), right and left sides. To reach sander trap on box back of front cylinder, open door (v) or (m) in panel (L) or (M), right and left sides. To reach sander trap on box over back driver on right side, remove panel (F). To reach sander trap on box over back driver on left side, remove panel (E) by removing cotter pins and nut on eyebolt (No.7) allow panel to be lowered until clear of holding pins, then move to side.

29. THROTTLE COMPENSATING LEVER

To lubricate the compensating lever, open door (eee) in right side of casing (EE) by inserting a screw driver in the latch and giving 1/4 turn.

30. VALVE GEAR

To lubricate link bearing bushings, link blocks, lift rod, etc., using a grease gun, open doors (g) and (v) in panels (G) and (L) respectively. The upper end of the combining rod can be lubricated through doors (h) and (m) in panels (H), (H-1) and (M). The end bearings of the reach rods, etc., can be lubricated through doors (s) in running board.

31. WASHOUT PLUGS

To secure access to the boiler washout plugs, open doors (t) in casings (BB), (CC), (DD) and (HH) on right and left sides of the locomotive, by inserting a screw driver in latches and giving 1/4 turn.

Plugs at corners of mud ring can be reached by removing panels (aa) and (D) on right and left sides.

Plugs at side of firebox can be reached by removing panels (A) and (B).

DISMANTLING CASINGS

32. TO REMOVE FRONT END NOSE SECTION (KK)

1. Remove casing (JJ).
2. Remove twelve (12) bolts (No.9) securing center fin to pilot casing, right and left sides.
3. Remove sixteen (16) bolts (No.11) securing side angles to panel support, right and left sides.
4. Remove ten (10) bolts (No.12) securing front bottom angle to pilot casing, right and left sides.
5. Remove six (6) bolts (No.13) securing cross angles to the nose support angles on frame.
6. Remove eight (8) bolts (No.14) securing top fin supports to top of smoke box.
7. Remove eight (8) clamps (No.40) on smoke box front.
8. Remove twenty-four (24) machine screws (No.16) securing sheet to lagging angle on smoke box, right and left sides.
9. Remove fourteen (14) bolts (No.15) securing front section of running board to side panel supports, right and left sides.
10. Remove two (2) bolts (No.37) securing rear angle to lagging angle, right and left.
11. Disconnect cable for marker lights and headlight by removing plug.
12. Disconnect air pipes to horn, access to which is gained through door (kk).
13. Lift vertically by means of slings at headlight and at door over feed water heater.

33. TO REMOVE CASING (JJ)

1. Remove long handrails on right and left sides.
2. Remove thirty-two (32) machine screws (No.18); sixteen (16) on each side.
3. Lift vertically by slings on handrail columns.

34. TO REMOVE CASING (HH)

1. Remove long handrails on right and left sides.
2. Remove casings (JJ) and (GG).
3. Remove six (6) bolts (No.17), right and left.
4. Remove thirty-one (31) machine screws (No.18); fifteen (15) on right side, sixteen (16) on left side.
5. Lift vertically by slings on handrail columns.

35. TO REMOVE CASING (GG)

1. Remove long handrails on right and left sides.
2. Remove eighteen (18) machine screws (No.18); nine (9) on each side.
3. Lift vertically by slings on handrail columns.

36. TO REMOVE CASING (FF)

1. Remove long handrails on right and left sides.
2. Remove casings (EE) and (GG).
3. Remove four (4) bolts (No.19).
4. Remove twenty-six (26) machine screws (No.18); thirteen (13) on each side.
5. Lift vertically by slings on handrail columns.

37. TO REMOVE CASING (EE)

1. Remove long handrails on right and left sides.
2. Remove twenty-four (24) machine screws (No.18); thirteen (13) on left side and eleven (11) on right side.
3. Lift vertically by slings on handrail columns.

38. TO REMOVE CASING (DD)

1. Remove long handrails on right and left sides.
2. Remove casings (CC) and (EE).
3. Remove four (4) bolts (No.20) from brackets.
4. Remove thirty-two (32) machine screws (No.18); sixteen (16) on each side.
5. Lift vertically by means of slings on handrail columns.

39. TO REMOVE CASING (CC)

1. Remove long handrails from right and left sides.
2. Remove thirty-eight (38) machine screws (No.18); nineteen (19) on each side.
3. Lift vertically by means of slings on handrail columns.

40. TO REMOVE CASING (BB)

1. Remove long handrails on right and left sides.
2. Remove casing (CC).
3. Remove two (2) bolts (No.21) from brackets.
4. Remove thirty-six (36) machine screws (No.18); eighteen (18) on each side.
5. Lift vertically by slings on handrail columns.

41. TO REMOVE SIDE PANELS

- (a) Panels G, H, H-1, K, L, O, P
 1. Remove two (2) bolts (No.6) in each panel.
 2. Lift panel until clear of holding pin and move to side.
- (b) Panels A, B, D, E, F, M, aa
 1. Remove cotter pins from eyebolts (No.7).
 2. Remove nuts from eyebolts (No.7).
 3. Lower panel until clear of holding pin and move to side.
- (c) Panel J
 1. Remove panels (H) and (K).
 2. Remove thirteen (13) bolts (No.22).
 3. Lift panel to side.
- (d) Panel N
 1. Remove panels (M) and (O).
 2. Remove eleven (11) bolts (No.23) from each panel.
 3. Lift panel to side.
- (e) Panel J-1
 1. Remove panels (H-1) and (K).
 2. Remove fourteen (14) bolts (No.22).
 3. Lift panel to side.

42. TO REMOVE PILOT CASING (LL) (HALF-SECTION)

1. Remove coupler pocket door (pp) by opening and tilting sideways and drawing to the front clear of the casing. (See Paragraph No.10).
2. Remove six (6) 1/2" bolts from toe board brackets.
3. Remove toe board by pulling forward from sockets in casing (LL).
4. Remove six (6) bolts (No.9) on center curved angle.
5. Remove six (6) bolts (No.10) on center straight angle.
6. Remove five (5) bolts (No.12) on rear angle at top.
7. Remove four (4) bolts (No.34) on rear angle at side.
8. Remove one (1) bolt (No.24) from door rail.
9. Remove three (3) bolts (No.25) from support and side angle.
10. Remove two (2) bolts (No.26) from support and angle.
11. Remove two (2) bolts (No.27) from bracing angle.

12. Remove two (2) bolts (No.28) from bracing angle.
13. Remove two (2) bolts (No.29) from bracing angle.
14. Remove two (2) bolts (No.30) from bracing angle.
15. Remove one (1) tap bolt (No.31).
16. Remove two (2) tap bolts (No.32).
17. Remove one (1) bolt (No.33).
18. Remove one (1) bolt (No.36) from center of bottom angle.

43. RUBBER DIAPHRAGM BETWEEN LOCOMOTIVE AND TENDER

For application or removal of rubber diaphragm, see tracing C-414991.

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Chief of Motive Power.