

SINGLE CAR TESTING DEVICE

CODE OF TESTS

SPECIFIED BY THE
ASSOCIATION OF
AMERICAN RAILROADS

INSTRUCTION PAMPHLET

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U-12 Universal Valve, No. 3-E Control Valve and "L" Triple Valves By Means of Alternate Standard Passenger Single Car Testing Device

TEST CODE

The tests are to be made with the feed valve or reducing valve adjusted for 90 pounds. Before the test apparatus is attached to the supply line, the line must be blown out.

Test for Testing Device

Daily Test for Single Car Testing Device as in SECTION 2.3 must be performed at least once a day before testing brake system.

Connecting Device to Car

Connect the device end marked B. P., or the coupling end of the device outlet hose, to the brake pipe hose at one end of the car (preferably at "B" end of car).

Move device handle to position No. 1. With both angle cocks open, note that a continuous blow of air from the open hose occurs at the other end of the car. Couple on a dummy hose coupling and charge the brake pipe and reservoirs to 90 pounds pressure.

1. Brake Pipe Leakage Test

Move device handle to position No. 5, reducing brake pipe pressure 20 pounds, then return handle slowly to position No. 3 (Lap).

Observe the pressure on the brake pipe gage. Leakage in the brake pipe will be indicated by a drop in pressure, which must not exceed 1 pound per minute.

2. Auxiliary Reservoir and Graduating Valve Leakage

During the brake pipe leakage test, if the valve releases the brake in less than one minute with the device handle in position No. 3 (Lap), it indicates a leaky graduating valve, a leak from the auxiliary reservoir, or a leak into the brake pipe past the rotary valve of the test device.

3. Graduated Release Test

This test need not be made when Graduated release is not used.

Move the device handle to position No. 1 until brake pipe pressure has increased 5 to 6 pounds, then return handle to position No. 3 (Lap). Repeat the operation several times. At least three graduations must be obtained.

4. Application Test

Move the device handle to position No. 1 to recharge the brake system. Move the device handle to position No. 4, reducing the brake pipe pressure 10 pounds, then return handle to position No. 3 (Lap). The brake must apply before the brake pipe pressure is reduced the amount specified. Failure to apply indicates that the valve must be removed.

5. Release Test

If the brake applies, and the brake pipe reduction is made as specified in the Application Test, move the device handle to position No. 2. The piston and slide valve must move to release position within one minute. Failure to release in the time specified indicates that the valve must be removed.

During the release test, the feed valve or reducing valve pressure must not vary more than 2 pounds.

6. Service Stability and Slack Adjuster Tests

If the car is equipped with an automatic slack adjuster, increase the piston travel sufficiently to cause slack adjuster to operate.

Move the device handle to position No. 1 to recharge the brake system. Move device handle to position No. 5, Reducing the brake pipe pressure 20 pounds, then slowly return the handle to position No. 3 (Lap). This test must not produce emergency. If an emergency application is obtained, it would indicate that the valve must be removed.

If the automatic slack adjuster is of the pneumatic type, soap the slack adjuster and all piping and fittings between slack adjuster and brake cylinder with soap suds to detect leakage. No leakage is permitted. If leakage is detected, it must be corrected before proceeding with test.

Move device handle to position No. 1 to release the brake and recharge reservoirs to 90 pounds, noting that the slack adjuster functions. Make the necessary adjustments of the slack adjuster to set the piston travel to 7" or minimum travel for car or equipment. Check piston travel by repeating the application with a 20 pound reduction.

7. Emergency Test

Move the device handle to position No. 1 to recharge the brake system. When testing non-quick service universal (UC) valves, move device handle to position No. 6, reducing brake pipe pressure 30 pounds, except when testing valves on cars having 1" brake pipe, in which case a 20 pound brake pipe reduction must be made. When testing control valves (PC) and L triple valves, or a non-quick service universal valve on a car that is over 80 feet long and has 1-1/4" brake pipe with long branch pipes to universal valve, emergency-brake (conductors) valve, etc., move the device handle to position No. 3 (Lap). Open test device 3/8" cock (3/8" orifice) and reduce the brake pipe pressure 30 pounds. This test must produce emergency. If an emergency application is not obtained, it indicates that the valve must be removed.

8. Emergency – Brake (Conductor's) Valve Test

Close test device 3/8" cock, then move the device handle to position No. 1 to recharge the brake system. With the equipment completely charged, open the emergency – brake (conductor's) valve, observing carefully that there are no obstructions to the free and full movement of the valve handle, and that there is no binding of parts. The opening of the valve must produce an emergency application. If an emergency is not obtained, a restriction to air flow in the valve or valve pipe is indicated, which must be located and removed. It may also be due to failure of the application valve in the emergency – brake (conductor's) valve line to open, if the car is equipped with such.

Repeat the above operation for each emergency – brake (conductor's) valve if the car is equipped with more than one valve.

At the completion of the test, move the device handle to position No. 6,

NOTE — For Brake Cylinder and Retaining Valve Tests see Instructions beginning on Page 22.

U-12 universal, No. 3-E Control Valve and "L" Triple Valves By Means of Standard Passenger Single Car Testing Device with FLOWRATOR By-Pass Cock

TEST CODE

The tests are to be made with the feed valve or reducing valve adjusted for 90 pounds. Before the test apparatus is attached to the supply line, the line must be blown out.

Test for Testing Device (At Least Once Each Day)

Daily Test for Single Car Testing Device as in SECTION 2.3 must be performed at least once a day before testing brake system.

NOTE — It is important that the FLOWRATOR be within 15 degrees of vertical when readings are being made.

Connecting Device to Car

Connect the device end marked B.P. or the coupling end of the device outlet hose to the brake pipe hose at one end of the car (preferable at "B" end of car.) Move the device handle to position No. 1 after making sure that the FLOWRATOR by-pass cock is open. With both angle cocks open, note that a continuous blow of air from the open hose occurs at the other end of the car. Couple on a dummy hose coupling and charge the brake pipe and reservoirs to 90 pounds pressure.

System Leakage Test

Close the FLOWRATOR by-pass cock. If the float is not above the condemning line, open the FLOWRATOR by-pass cock and proceed directly to test No. 1. If any part of the float is above the condemning line, make a complete check for leakage (with soap suds when weather conditions permit) of all pipes and pipe connections, including angle cocks, hoses and auxiliary devices. If leakage is found, make repairs necessary to reduce it to where the float of the FLOWRATOR stays below the condemning line, then open the FLOWRATOR by-pass cock and proceed to test No. 1.

NOTE — Excessive brake system leakage may be caused by absorption of air by water raising system or other auxiliary devices.

1. Service Stability and Slack Adjuster Tests

If the car is equipped with an automatic slack adjuster, increase the piston travel sufficiently to cause slack adjuster to operate.

Move device handle to position No. 5, reducing the brake pipe pressure 20 pounds, then slowly return the handle to position No. 3 (Lap). This test must not produce emergency. If an emergency application is obtained, it would indicate that the valve must be removed.

If the automatic slack adjuster is of the pneumatic type, soap the slack adjuster and all piping and fittings between slack adjuster and brake cylinder with soap suds to detect leakage. No leakage is permitted. If leakage is detected, it must be corrected before proceeding with test.

Move device handle to position No. 1 to release the brake and recharge reservoirs to 90 pounds, noting that the slack adjuster functions. Make the necessary adjustment of the slack adjuster to set piston travel to 7", or minimum travel for car or equipment. Check piston travel by repeating the application with a 20 pound reduction.

2. Graduated Release Test

This test need not be made when Graduated Release is not used.

Move the device handle to position No. 1 until brake pipe pressure has increased 5 to 6 pounds, then return handle to position No. 3 (Lap). Repeat the operation several times. At least three graduations must be obtained.

3. Application Test

Move the device handle to position No. 1 to recharge the brake system. Move the device handle to position No. 4, reducing the brake pipe pressure 10 pounds, then return handle to position No. 3 (Lap). The brake must apply before the brake pipe pressure is reduced the amount specified. Failure to apply indicates that the valve must be removed.

4. Release Test

For cars 70' in length and over, move the device handle to position No. 2.

For cars under 70' in length or any car with 1 " brake pipe, close the FLOWRATOR by-pass cock and move device handle to position No. 2.

Brakes must start to release in not more than 90 seconds. Failure to release in the time specified indicates that the valve must be removed.

During the release test the feed valve or reducing valve pressure must not vary more than 2 pounds.

Open the FLOWRATOR by-pass cock, if closed.

Complete tests by continuing with test Nos. 7 and 8 beginning on page 26.

TYPES "P" and "PS" TRIPLE VALVES BY MEANS OF ALTERNATE STANDARD PASSENGER SINGLE CAR TESTING DEVICE

TEST CODE

The tests are to be made with the feed valve or reducing valve adjusted for 90 pounds. Before the test apparatus is attached to the supply line, the line must be blown out.

Test for Testing Device

Daily Test for Single Car Testing Device as in SECTION 2.3 must be performed at least once a day before testing brake system.

Connecting Device to Car

Connect the device end marked B. P., or the coupling end of the device outlet hose, to the brake pipe hose at one end of the car (preferably at "B" end of car).

Move device handle to position No. 1. With both angle cocks open, note that a continuous blow of air from the open hose occurs at the other end of the car. Couple on a dummy hose coupling and charge the brake pipe and reservoirs to 90 pounds pressure.

1. Brake Pipe Leakage Test

Move device handle to position No. 5, reducing brake pipe pressure 20 pounds, then return handle slowly to position No. 3 (Lap).

Observe the pressure on the brake pipe gage. Leakage in the brake pipe will be indicated by a drop in pressure, which must not exceed 1 pound per minute.

2. Auxiliary Reservoir and Graduating Valve Leakage

During the brake pipe leakage test, if the valve releases the brake in less than one minute with the device handle in position No. 3 (Lap), it indicates a leaky graduating valve, a leak from the auxiliary reservoir, or a leak into the brake pipe past the rotary valve of the test device.

3. Application Test

Move the device handle to position No. 1 to recharge the brake pipe and auxiliary reservoir. Move the device handle to position No. 5 when testing "P" Valves, or position No. 4 when testing "PS" Valves, reducing the brake pipe pressure 10 pounds, then return handle to position No. 3 (Lap). The brake must apply before the brake pipe pressure is reduced the amount specified. Failure to apply indicates that the valve must be removed.

4. Release Test

If the brake applies, and the brake pipe reduction is made as specified in the Application Test, move the device handle to position No. 2. The piston and slide valve must move to release position within one minute. Failure to release in the time specified indicates that the valve must be removed.

During the release test, the feed valve or reducing valve pressure must not vary more than 2 pounds.

5. Service Stability and Slack Adjuster Tests

If the car is equipped with an automatic slack adjuster, increase the piston travel sufficiently to cause slack adjuster to operate.

Move the device handle to position No. 1 to recharge the brake pipe and auxiliary reservoir. When testing "P" Valves, move the device handle to position No. 5, reducing the brake pipe pressure 20 pounds for 12" equipment, or 16 pounds for 14" and 16" equipment, then slowly return handle to position No. 3 (Lap). This test must not produce emergency. If emergency application is obtained, it would indicate that the valve must be removed.

When testing type "PS" Valves, move the device handle to position No. 5, reducing the brake pipe pressure 25 pounds, then slowly return handle to position No. 3 (Lap). This must not produce emergency either in the vent valve or the triple valve. If emergency action is initiated at the vent valve, it would indicate that this valve should be removed. If the vent valve does not produce emergency action but the triple moves to emergency position, indicated by the absence of any exhaust at the safety valve, it would indicate that the triple valve must be removed.

If the automatic slack adjuster is of the pneumatic type, soap the slack adjuster and all piping and fittings between slack adjuster and brake cylinder with soap suds to detect leakage. No leakage is permitted. If leakage is detected, it must be corrected before proceeding with test.

Move device handle to position No. 1 to release the brake and recharge reservoirs to 90 pounds, noting that the slack adjuster functions. Make the necessary adjustment of the slack adjuster to set piston travel to 7", or minimum travel for car or equipment. Check piston travel by repeating the application with a 20 pound reduction.

6. Emergency Test

Move the device handle to position No. 1 to recharge the brake pipe and auxiliary reservoir. When testing "P" Valves, move the device handle to position No. 3 (Lap). Open the test device 3/8" cock (3/8" orifice) and reduce brake pipe pressure 20 pounds for 12" and 14" equipment. When testing 16" equipment, move the device handle to position No. 6 and reduce brake pipe pressure 25 pounds. This must produce emergency. If an emergency application is not obtained, it indicates that the valve must be removed.

When testing type "PS" Valves, move the device handle to position No. 6 reducing the brake pipe pressure 20 pounds. This must produce emergency action of the vent valve. If emergency action is not obtained it indicates that the vent valve must be removed.

7. Emergency – Brake (Conductor's) Valve Test

Close the test device 3/8" cock, if open then move the device handle to position No. 1 to recharge the brake system. With the equipment completely charged, open the emergency – brake (conductor's) valve, observing carefully that there are no obstructions to the free and full movement of the handle, and that there is no binding of parts. The opening of the emergency – brake (conductor's) valve must produce an emergency application. If an emergency is not obtained, a restriction to air flow in the valve or valve pipe is indicated, which must be located and removed. It may also be due to failure of the application valve in the emergency – brake (conductor's) valve line to open, if the car is equipped with such.

Repeat the above operation for each emergency – brake (conductor's) valve if car is equipped with more than one valve.

At the completion of the test, move the device handle to position No. 6.

NOTE — For Brake Cylinder and retaining Valve Tests see Instructions on Page 22.

TYPES "P" and "PS" TRIPLE VALVES BY MEANS OF STANDARD PASSENGER SINGLE CAR TESTING DEVICE with FLOWRATOR BY-PASS COCK

TEST CODE

The tests are to be made with the feed valve or reducing valve adjusted for 90 pounds. Before the test apparatus is attached to the supply line, the line must be blown out.

Test for Testing Device (At Least Once Each Day)

Daily Test for Single Car Testing Device as in SECTION 2.3 must be performed at least once a day before testing brake system.

NOTE — It is important that the FLOWRATOR be within 15 degrees of vertical when readings are being made.

Connecting Device to Car

Connect the device end marked B. P., or the coupling end of the device outlet hose, to the brake pipe hose at one end of the car (preferably at "B" end of car). Move device handle to position No. 1 after making sure that the FLOWRATOR by-pass cock is open. With both angle cocks open, note that a continuous blow of air from the open hose occurs at the other end of the car. Couple on a dummy hose coupling and charge the brake pipe and reservoirs to 90 pounds pressure.

System Leakage Test

Close the FLOWRATOR by-pass cock. If the float is not above the condemning line, open the FLOWRATOR by-pass cock and proceed directly to test No. 1. If any part of the float is above the condemning line, make a complete check for leakage (with soap suds when weather conditions permit) of all pipes and pipe connections, including angle cocks, hoses and auxiliary devices. If leakage is found make repairs necessary to reduce it to where the float of the FLOWRATOR stays below the condemning line, then open the FLOWRATOR by-pass cock and proceed to test No. 1.

NOTE — Excessive brake system leakage may be caused by absorption of air by water raising system or other auxiliary devices.

1. Application Test

Move the device handle to position No. 5 when testing "P" Valves, or position No. 4 when testing "PS" Valves, reducing the brake pipe pressure 10 pounds, then return handle to position No. 3 (Lap). The brake must apply before the brake pipe pressure is reduced the amount specified. Failure to apply indicates that the valve must be removed.

2. Release Test

For cars 70' in length and over, move the device handle to position No. 2.

For cars under 70' in length or any car with 1" brake pipe close the FLOWRATOR by-pass cock and move device handle to position No. 2.

Brakes must start to release in not more than 90 seconds. Failure to release in the time specified indicates that the valve must be removed.

During the release test the feed valve or reducing valve pressure must not vary more than 2 pounds.

Open the FLOWRATOR by-pass cock, if closed.

3. Service Stability and Slack Adjuster Tests

If the car is equipped with an automatic slack adjuster, increase the piston travel sufficiently to cause slack adjuster to operate.

Move the device handle to position No. 1 to recharge the brake pipe and auxiliary reservoir. When testing "P" Valves, move the device handle to position No. 5, reducing the brake pipe pressure 20 pounds for 12" equipment, or 16 pounds for 14" and 16" equipment, then slowly return handle to position No. 3 (Lap). This test must not produce emergency. If emergency application is obtained, it would indicate that the valve must be removed.

When testing type "PS" Valves, move the device handle to position No. 5, reducing the brake pipe pressure 25 pounds, then slowly return handle to position No. 3 (Lap). This must not produce emergency either in the vent valve or the triple valve. If emergency action is initiated at the vent valve, it would indicate that this valve should be removed. If the vent valve does not produce emergency action but the triple moves to emergency position, indicated by the absence of any exhaust at the safety valve, it would indicate that the triple valve must be removed.

If the automatic slack adjuster is of the pneumatic type, soap the slack adjuster and all piping and fittings between slack adjuster and brake cylinder with soap suds to detect leakage. No leakage is permitted. If leakage is detected, it must be corrected before proceeding with test.

Move device handle to position No. 1 to release the brake and recharge reservoirs to 90 pounds, noting that the slack adjuster functions. Make the necessary adjustment of the slack adjuster to set piston travel to 7", or minimum travel for car or equipment. Check piston travel by repeating the application with a 20 pound reduction.

Complete tests by continuing with test Nos. 6 and 7 beginning on page 31.