CODE OF TESTS FOR GN, PS, K, L and P TRIPLE VALVES ON THE No. 3-T TEST RACK AS ADOPTED BY THE ASSOCIATION OF AMERICAN RAILROADS

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#### The No. 3-T Triple Valve Test Rack

To obtain the best results possible in air brake operation, it is essential that the unit devices comprising the complete equipment, and particularly the triple valve, be maintained at the highest practical efficiency. The Triple Valve Test Rack is employed for the purpose of determining, promptly and accurately, whether or not a triple valve is up to the proper standard of workmanship and general condition, and if not, wherein it deviates from the standard.

Figs. 2 and 13 show the No. 3-T Triple Valve Test Rack. Fig. 1 shows the accessories regularly furnished with the rack, which are as follows:

- Plate No. 1 for Types K-1, L-1, L-1-B, and P-1.
- Plate No. 2 for Types K-2, L-2, L-2-A, and P-2.
- Plate No. 3 for Type L-3 triple valve.
- Plate No. 4 for Plain Type triple valves.
- Three Double Beaded Gaskets for flanged joints between triple valve and plate.
- One Standard L-3 Triple Valve Gasket for use between plate and triple valve stand.
- Three 1"x¾" Union Studs for use with plain triple valves.
- One 3/4 "x36" Hose with 3/4" Nipples for use with plain triple values.
- One 1" Resistance Indicator for measuring piston and slide valve friction.
- One Wrench and a Set of Piston Stops for holding triple valve piston in proper position for ring leakage test

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Fig. 2. Front and Right Hand End View of the No. 3-T Rest Rack

#### **Description of Cocks**

Cock E—Controls air supply pressure to main reservoir. Used in service stability and emergency tests.

**Cock X**—Used in clamping triple value to triple value stand face plate, by admitting air to and exhausting it from the clamping cylinder. Also furnishes supply to operating value R.

Cock Y—Open for testing pipeless type triple valves, and closed for testing other types of triple valves.

**Cock Z**—Open if the triple valve is of the type having a brake pipe connection to check valve case to permit brake pipe air to flow to the triple valve, and closed with pipeless type triple valves.

Cock 2—Closed to obtain reduced auxiliary reservoir volume.

Cock 3-Closed to obtain reduced brake cylinder volume.

Cock 4-To exhaust air from the brake cylinder.

Cock 5—Used for making graduated release and bypass valve tests on triple valves that have this feature.

**Cock 6**—To exhaust air from the reduced brake cylinder volume through No. 70 (.028") drill choke.

NOTE—The brake pipe cut-out cock with side vent (known as cock No. 1) has been omitted from the No. 3-T Test Racks now being furnished. If customer's rack includes this cut-out cock, the latter should be opened and left in this position permanently.

#### DIAPHRAGM TYPE COCKS

Care should be exercised in operating the diaphragm type cocks in order to realize the benefits to be derived from the use of this improved type cock; that is, eliminating leakage (thereby giving consistent and dependable test results) and obviating the delay and annoyance incident to reseating, lubricating, and replacing tock keys.

When the test rack is not in use, all diaphragm cocks should be open. This practice will prolong the life of the diaphragm by preventing permanent set as the diaphragm is in normal position with the cock open, see Illustrations.

When closing the diaphragm cock with screw type handle, the handle should be turned only until slight resistance is felt. Heavy pressure on the diaphragm is not required to make a seal, and further turning of the handle after the diaphragm seals will result only in injury to the diaphragm.

#### OUICK OPENING DIAPHRAGM COCK

The distinctive features of this improved diaphragm cock (now supplied as standard with the No. 3-T test rack) are: (a) the quick opening lever type handle, the radial position of which is adjustable to any angle, and (b) controlled diaphragm deflection, by means of an



Fig. 3. Sectional View of the 1/2' Diaphragm Cock with Screw Type Handle

adjustment which regulates the amount of travel of the parts transmitting handle movement to the diaphragm.



Fig. 4 Sectional View of the Quick **Opening Diaphragm Cock with** Lever Type Handle

To adjust the diaphragm tension (or deflection), loosen the bolt which serves to clamp the split coupling on the threaded portion of the cover and screw down or back off the coupling to increase or decrease the diaphragm deflection until the force imparted to the diaphragm by the cam portion of the handle (through the medium of

plunger and disc) is just sufficient to prevent leakage past the diaphragm with the handle in closed position.

The clamping bolt should be tightened when the desired tension on the diaphragm is obtained. The handle position can then be adjusted to the desired angle by loosening three set screws in the handle fulcrum and rotating handle and fulcrum around the clamped coupling. The three set screws must be re-tightened to hold the handle in place and to permit proper operation of the diaphragm.



#### **Operating Valve "A" Positions**

- Position No. 1. Main reservoir connected to brake pipe through  $\frac{1}{4}''$  opening.
- Position No. 2. Main reservoir connected to brake pipe through .039" (No. 61 drill) opening; brake pipe pressure increased 0 to 50 lbs. in from 25 to 29 seconds.
- Position No. 3. Lap.
- Position No. 4. Brake Pipe pressure reduced through .055'' (No. 54 drill) opening; 80 to 60 lbs. in from  $4\frac{1}{2}$  to  $5\frac{1}{2}$  seconds.
- Position No. 5. Brake pipe pressure reduced through .082" (No. 45 drill) opening; 80 to 50 lbs. in from 3½ to 4½ seconds.

Position No. 6. Brake pipe pressure reduced through .089" (No. 43 drill) opening; 80 to 50 lbs. in from 2½ to 3 seconds.

- Position No. 7. Brake pipe pressure reduced through .1065" (No. 36 drill) opening; 80 to 50 lbs. in from 2 to 2½ seconds.
- Position No. 8. Brake pipe pressure reduced through .1285" (No. 30 drill) opening; 80 to 40 lbs. in from 2 to 2½ seconds.



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Fig. 6. Top View Triple Valve Stand Showing Operating Valve "R" Handle Positions

#### **Operating Valve "R" Positions**

- Position No. 1. Triple piston stop withdrawn to inoperative position, and exhausting air entirely from, or reducing pressure in auxiliary reservoir.
- Position No. 2. Lap. Triple valve stop withdrawn to inoperative position.
- Position No. 3. Triple piston stop in operative position to block triple piston in position for ring leakage test.
- Position No. 4. Triple piston stop in operative position, as in position No. 3, also reducing auxiliary reservoir pressure through No. 68 drill (.031") (13 lbs. in 55 to 62 seconds from 60 lbs.). Used for the Ring Test.
- Position No. 5. Triple piston stop in operative position, as in position No. 3. Also admits main reservoir pressure to auxiliary reservoir, through No. 33 drill (.113" port). (Builds up auxiliary reservoir 50 to 70 lbs. in 5 to 6 seconds.) Used for Quick Service Test.
- Position No. 6. Same as position No. 5 except main reservoir is admitted through No. 25 drill (.1495") port. (Builds up auxiliary reservoir 50 to 70 lbs. in 2 to 4 seconds.) Not used.
- Position No. 7. Triple piston stop withdrawn to inoperative position, admitting main reservoir pressure to auxiliary reservoir through port equivalent to a  $\frac{3}{4}$ " pipe. Used as a by-pass, and also to obtain maximum auxiliary reservoir volume for certain tests.

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Fig. 7. Front View of the Triple Valve Stand

#### NO. 3-T TRIPLE VALVE TEST RACK

#### RACK MAINTENANCE

To secure reliable and uniform results with the triple valve test rack, it must be kept free from leakage. When in daily use, Test Racks equipped with diaphragm cocks must be tested once per week, while racks with key type cocks must be tested daily for key leakage. Once a week tests must be made for valve "A" and valve "R" rotary valve leakage and triple valve stand leakage, and any leakage discovered should be corrected before additional triple valves are tested. Air gages should be checked weekly for accuracy.

If the rack is used only periodically and has been idle for more than a week, it must be tested at corresponding frequent intervals and the air gages must be checked before further valves are placed on the rack for test.

#### CLEANING AND LUBRICATION

The greatest freedom from wear and leakage in the operating parts of the rack will be obtained by keeping them properly lubricated. Once each week the rotary valves in operating valves A and R should be cleaned and lubricated. As often as service conditions may require, the cock keys should be removed, cleaned, and lubricated.

The piston stop as well as the clamping cylinder and its packing leather piston should be lubricated at such intervals as will prevent excessive friction and leakage. The orifices in the rotary valves of operating valves A and R should be examined occasionally to make certain they are not obstructed. Never use a metal instrument for cleaning any orifice. To insure proper opening of these orifices the valves should be subjected to the tests prescribed under "Operating Valve 'A' Positions" and "Operating Valve 'R' Positions."

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# s For Testing The 3-T Test Rack

ring to test the rack for leakage, remove spindle from the piston within the stand ry reservoir port union stud in plate No. lates No. 2 and No. 4 to the test stand,



using suitable gaskets. Close cock Z and open all other cocks.

Place valve "R" handle in position No. 1 and drain all auxiliary reservoir pressure. Move valve "A" handle to position No. 1 and charge the brake pipe reservoir to 80 pounds, then return valve "A" handle to position No. 3 (Lap). Allow two (2) minutes for temperature effect, then observe the brake pipe reservoir gage for one (1) minute. No drop in pressure is permitted. If a drop in pressure is noticable it indicates leakage from the brake pipe volume which may be caused by either a leaky rotary valve in operating valve "A", pipe connections, leaky cut-out cocks or a combination of these defects which may be found by coating the pipe fittings, cock keys, and operating valve "A" exhaust with soap suds. All leakage must be eliminated.

After completing the above test, reduce the brake pipe reservoir pressure to 50 pounds with valve "A" handle in position No. 4, then return valve "A" handle to position No. 3 (Lap). Allow two (2) minutes for temperature effect, then observe the brake pipe reservoir gage for one (1) minute to detect any increase in pressure, which may be due to valve "A" rotary valve leakage, permitting main reservoir air to leak into the brake pipe reservoir. All leakage must be eliminated.

At the completion of the above test move valve "A" handle to position No. 1 and proceed as follows to determine leakage in valve "R" and auxiliary reservoir piping.

Move valve "R" handle to position No. 6 and charge the auxiliary reservoir to 80 pounds, then return the handle to position No. 2. Allow two (2) minutes for

No.

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ect, then observe the auxiliary reservoir rop in pressure which indicates leakage ary reservoir volume. This drop in presxceed one (1) pound in one (1) minute. than that specified may be due to either ections, leakage around the key of cock 2 ecks are used), valve "R" rotary valve ombination of these defects. Soap suds detect leakage.

"R" handle to position No. 1 and reduce ervoir pressure to sixty-five (65) pounds, re "R" handle to position No. 3. Allow for temperature effect, then close cock 2 e auxiliary reservoir gage to detect any sure, which indicates leakage from main uxiliary reservoir past valve "R" rotary n stop holder seal. This increase in presceed one (1) pound per minute.

2. Move valve "R" handle to position luce auxiliary reservoir pressure to 60 turn the handle to position No. 3. Allow for temperature effect, then move valve position No. 4 and note that the auxiliary re reduces from 60 to 47 pounds in 55

pletion of test return valve "R" handle 3.

"R" handle to position No. 5 and note ry reservoir charges from 50 to 70 pounds is. At completion of this test move valve position No. 2.

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Further instructions covering the function of valve "R" and operating valve "A" are given on pages 13 and 11 respectively.

Check brake pipe volume pressure build-up and reduction times as specified for the various positions of valve "A" as shown on page 11. Then leave valve "A" handle to position No. 8. Close cock "Y", open cock "Z".

At the completion of the above test move valve "R" handle to position No. 1. After all auxiliary reservoir pressure is drained, close cock 2 and move valve "R" handle to position No. 7 and when the auxiliary reservoir gage registers 80 pounds, return valve "R" handle to position No. 2. Allow two minutes for temperature effect, then observe the auxiliary reservoir gage for any drop in pressure which may be caused by cock 2 leakage. No leakage is permitted.

Move valve "R" handle to position No. 1 and open cock 2. Remove plate No. 4. Clamp a triple valve to the stand and charge the brake pipe and auxiliary reservoirs to 80 pounds by moving valve "A" handle to position No. 1 and valve "R" handle to position No. 7. Coat the brake pipe hose and hose connection with soap suds to detect leakage. No leakage is permitted.

Close cock 3 and move valve "A" handle to position No. 8. With cock 4 open, place a soap bubble over the opening of this cock to detect cock 3 leakage. No leakage is permitted: Close cock 4 and open cock 3 and charge the brake cylinder to 80 pounds, then coat the auxiliary reservoir and brake cylinder pipe connections as well as cock 6 with soap suds to detect leakage. No leakage is permitted. Coat again cock 4 opening with soap suds to detect cock 4 leakage. No leakage is permitted.

"A" handle to position No. 1. Move le partly into position No. 1 until the es to release position, then return valve position No. 2 and open cock 4. After or pressure has drained, close cock 4 and er pressure has drained, close cock 4 and on No. 4 until about 40 pounds brake on No. 4 until about 40 pounds brake on No. 3 (Lap). Open cock 6 and note cylinder pressure reduces from 40 to 35 16 seconds. Close cock 6.

letion of test move valve "A" handle to and valve "R" handle to position No. 7. e valve "R" handle to position No. 1. e valve "R" handle to position No. 1. e triple valve from the test stand and e triple valve from the test stand and servoir port and at the end of the brake servoir port and at the end of the brake Open cock 3 and move valve "R" handle Den cock 3 and move valve "R" handle auxiliary reservoir port union with soap

eakage. No leakage is permitted. pletion of test move valve "R" handle to and open cock 4.

#### Air Gages

nust be checked weekly for accuracy and tained in a condition to insure accurate thin the ranges of pressure in which they must be sensitive to slight variations of duplex gage for auxiliary reservoir and ervoir pressures must be especially accurate ge from 45 to 65 pounds.

### Code of Tests

The A. A. R. recommends that valves should be removed for cleaning as often as conditions require to maintain them in a safe and suitable condition for service, but not less frequently than once every twelve months for triple valves on passenger cars or once every fifteen months for triple valves on freight cars, or once every six months for triple valves on locomotives.

The Single Car Testing Device Code of Tests, covered by Instruction Pamphlet 5039-4, Sup. 1, should be employed for determining when triple valves should be removed for cleaning.

The following is a code of tests and instructions for operating the No. 3-T Test Rack. The instructions are complete for each specified test without reference to any other test. The sequence of the tests, however, should be followed as given, in order that defects may be disclosed and corrected before making subsequent tests, which may be adversely affected by the defects.

Valves must be within the limits of all tests prescribed in this code, to insure proper service operation.

This test code includes limits for new and repaired valves, and cleaned valves not new and not repaired, thus insuring the quality of workmanship for new and repaired valves, as well as the maximum wear the valve may have before repairs are necessary.

ork should be made to pass the tests w work.

ng to pass the cleaner's limit are to be being returned to service.

one test limit is given, the same limit repaired, and cleaned valves.

feed valve must be set to close at 80

is found necessary to repeat any test which has uction of auxiliary reservoir pressure, move valve 3, hesitating a moment here to prevent the piston hard against the seal, then move valve R to posiprovides a by-pass from the main reservoir to the , thereby permitting a quick recharge.

# Westinghouse Triple Valves

Effective January 1, 1935, K-2 triple valves must be equipped with the heavier type graduating springs (Pc. QT-369 or Pc. 18286). (*The A.A.R. have ruled that no additional charge for same is* permissible).

## Test No. 1—Resistance Test

The resistance to movement of the triple valve piston and slide valve must be measured before the triple valve is clamped on the stand, using the resistance indicator furnished with each rack. At the start of this test, the triple valve piston and slide valve must be in release position. To insure that these parts are in release position, bump the triple valve lightly against the bench a few times with the bolting face downward. Then, with the triple valve in position so that the piston moves horizontally with the slide valve resting on its seat, place ton and force the handle inward. The force required to overcome the resistance of the piston and slide valve will be registered by the indicator, which is graduated in pounds.

The scarf of the piston packing ring should be placed approximately 34'' either side of the feed groove.

The following table specifies the resistance in pounds allowable for various size pistons.

	3½" and under Over 3½" (incl. 4") Over 4" (incl. 4¾")	DIAMETER OF PISTON
•	5 lbs. 7 lbs. 8 lbs.	Resistance with Slide Valve in Place
	4 lbs. 6 lbs. 7 lbs.	Resistance of Piston alone in the Bush

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3-T TRIPLE	VALVE TEST	RACK
PISTON S	TOP TABLE	
	0   -	¥
PISTO	N STOP	
NYAB	WAB	Piston Stop
Pc. No.	Pc. No.	Length "C"
TA-594	64630	5 <u>3</u> "
TA-593	64629	5 <u>41</u> "
TA-674	64640	6 <u>3</u> ″
TA-596	64627	5 <u>25</u> "
TA-597	64628	5 <u>47</u> "
TA-591	64624	5 <u>17</u> "
TA-592	64625	5 <u>39</u> "

# WESTINGHOUSE TRIPLE VALVE TEST CODE

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scures observation. This method will have to be folvalve is completely assembled, especially for the Type K triple Valve, where the retarded release device oblowed for plain triple valves. This resistance can best be measured before the triple

## APPLYING PISTON STOPS

stand. See piston stop table. shoulder in the small piston within the triple valve proper piston stop spindle should be screwed in up to the Before placing the triple valve on the stand, the

# MOUNTING TRIPLE VALVES FOR TESTING

open, while the triple valve is on the stand for test. of these two cocks should always be closed and the other with the union hose, and open cock Z. One or the other connections, connect the brake pipe to the triple valve less type, open cock Y. If it is of the type arranged for pipe and X. Then if the triple valve to be tested is of the pipegasket to the triple valve flange, place the latter against the testing stand in a vertical position, and open cocks E When mounting triple valves on the stand, apply the

### Test for Checking Feed Groove **Relation to Release Port**

handle to position No. 5, charging the auxiliary reservoir and brake cylinder to 10 pounds after which return valve be moved to application position, then move valve "R" wise direction outward, until the triple valve piston can the adjusting screw of the test device in a counter clockmove the cylinder cover and replace it with the Test Device, 144-TA, Fig. 9 (W. A. B. Co. Pc. 92915). Turn With the triple valve assembled on the test rack, re-

ned in the following manner: First coat auxiliary reservoir pressure reduces. This rake cylinder pressure commences to revice in a clockwise direction inward, and osition No. 2. Turn the adjusting screw of

ler ex-

with

then



f air is ns way ike the caping cated, e feed at the on the

feed

ting to ylinder gshows at the

feed

Fig. 9. Test Device for Checking the Relationship of Feed Groove and Release Port Opening.

urer.

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# Test No. 2—Charging Test For All Triple Valves

empty and main reservoir charged to 80 pounds. valve R handle in position No. 1, auxiliary reservoir numbered cocks closed, valve A handle in position No. 8, Commence test with cocks 2 and 3 open, all other

as given in the table for the various triple valves. charge the auxiliary reservoir to the specified pressure, maintained at 80 pounds, note the time required to handle to position No. 1 and with brake pipe pressure Move valve R handle to position No. 2 and valve A

Limits for Charging Test	Be
its for Charging Test	Limi
for Charging Test	Ċ,
Charging Test	for
Test	Charging
	Test

Triple	Time	in Seconds to cha	rge Auxiliary Res	ervoir
Туре	0 to 30 lbs.	0 to 70 lbs.	0 to 30 lbs.	0 to 70 lbs.
K-1 (new)	35 to 50	90 to 130	30 to 60	60 to 155
K-2 (new)	20 to 30	55 to 85	18 to 35	50 to 95
K-1 (rep.)	32 to 50			Ì
K-2 (rep.)	19 to 30			
L-1-B		16 to 26		14 to 28
L-2-A		12 to 15	Ň	11 to 16
<b>L-</b> 3		9 to 12		8 to 13
P-1 (F-27)	13 to 17	40 to 52	11 to 19	34 to 58
P-2 (F-29)		20 to 26		18 to 28

save time in making the test. NOTE—The charging times given from 0 to 30 lbs. and from 0 to 70 lbs. are equivalent, and either may be used; the former is to

### Test No. 3-Leakage

and 3 open, all other numbered cocks closed, valve A 2, and auxiliary reservoir charged to 80 pounds. handle in position No. 1, valve R handle in position No. Commence each section of Test No. 3 with cocks 2

peated, after the leakage is eliminated. considerable leakage is discovered, the charging test must be re-NOTE-If, during this test or test No.2 (Charging Test), any



raphic View of the Leakage Indicator arranged e valves having direct brake pipe connection.

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When leakage indicator is used, it must be filled with water up to the first graduation, and the cock furnished with the leakage indicator should be inserted into the exhaust port of the triple valve under test. No tests should be made until the triple valve has been operated several times, and at no time should the leakage in release position be noted after an emergency application; that is, the release position test should be preceded by a service application and release.

#### SECTION A.

### LEAKAGE IN EMERGENCY POSITION CHECK VALVE AND CYLINDER CAP GASKET LEAKAGE

Operate the triple valve several times in quick succession by moving valve A handle between positions Nos. 1 and 8, finally leaving valve A in position No. 8.

On racks with diaphragm type cocks, operate the triple valve by closing and opening cock Z, finally leaving cock Z closed. When testing pipeless triple valves use cock Y.

Coat the exhaust port of the triple valve with soap suds to ascertain whether leakage exists past the slide valve, or bushing to the exhaust. A  $\frac{1}{2}$ " bubble in not less than 5 seconds is permitted. When using leakage indicator, press the hose nozzle of the leakage indicator against the exhaust cock and note the time required for the water to rise from the second to the third graduation, which must not be less than 7 seconds for new and repaired valves.



praphic View of the Leakage Indicator arranged r testing "pipeless" triple valves.

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For cleaned values, the time required for the water to rise from the second to the fourth graduation must not be less than 4 seconds.

ing the piston to ascertain if it is straight, and repeating seconds, by applying a new cylinder cap gasket known to cap and check valve leakage combined is greater than only. Then note the rate of pressure drop on the brake cleaned valves, not new, and not repaired, close cock 2 combined leakage gives the cylinder cap gasket leakage in 10 seconds. Deducting check valve leakage from the will then be indicated, which must not exceed 5 pounds the test with the new gasket. Check valve leakage only be free from leakage in place of the one under test, checkindividual leakage is not greater than 5 pounds in 10 5 pounds in 10 seconds, it should be ascertained that the must not exceed 5 pounds in 10 seconds. If the cylinder age will produce a drop in brake cylinder pressure, which cylinder gage. Check valve and cylinder cap gasket leakwhich also must not exceed 5 pounds in 10 seconds. For new and repaired valves, close cocks 2 and 3; for

When "L" triple valves are under test, remove the safety valve and coat the safety valve connection of the triple valve with soap suds. A 1" bubble in not less than 2 seconds is permitted.

Open cock 2, if closed, and cock 3.

Insert a pipe plug into the exhaust connection, move valve "A" handle to position No. 1 and coat the entire valve with soap suds to locate leakage through the body, or at the gaskets:



or, close the cock in the exhaust port or, close the cock in the exhaust port ok Z and coat the triple valve with soap ody or gasket leakage.

pletion of this test, open cock 4 and replug from triple valve exhaust. (Open or exhaust port cock, if used).

EAKAGE IN RELEASE POSITION VE AND EMERGENCY VALVE LEAKAGE

"A" handle to position No. 5, making a re pipe reduction, then release by returnnandle to position No. 1.

ake cylinder pressure is exhausted, close ain coat the exhaust port with soap suds ide valve leakage in release position from servoir to the brake cylinder, or leakage ency valve from the brake pipe to the A 1" bubble in not less than 3 seconds

leakage indicator, place the hose nozzle aust cock and note the time required for se from the second to the fourth graduanot be less than the following:

nd Repaired Valves: 10 seconds 1 Valves: 4 seconds 2 pletion of the test open cock 3.

the triple valve exhaust in release posileakage of slide valve or rubber seated

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emergency valve. With graduated release triple valves, leakage of the graduating valve also may cause a leak at the exhaust.

To separate these leakages, in order that the defect may be located and remedied, it is necessary to have available a complete triple valve check case with all its parts in good condition. Substituting this good check case for the one on the defective triple valve and repeating the test, will enable locating the source of the leakage.

When L type triple valves are under test, coat the safety valve connection of triple valve with soapsuds to detect slide valve leakage. A 1" bubble in not less than 4 seconds is permissible for new and repaired valves or 2 seconds for cleaned valves. At completion of the test, replace safety valve.

SECTION C.

## EMERGENCY VALVE LEAKAGE

Close cock 4 and move valve A handle to position No. 3 (Lap), then move valve R handle to position No. 1 and reduce auxiliary reservoir and brake pipe pressures to 55 pounds, after which return valve R handle to position No. 2.

Move valve A handle to position No. 4 and reduce brake pipe reservoir pressure to 40 pounds, then return valve A handle to position No. 3 (Lap).

NOTE—When testing "P" type triple valves, the reduction should be made with valve "A" handle in position No. 5.

Open cock 6. If the brake pipe reservoir pressure reduces with the brake cylinder, it indicates that the emergency valve is not seating properly.

letion of this test, close cock 6 and return lle to position No. 1. Move valve "R" on No. 7 and recharge the auxiliary resunds, then move valve "R" handle to

RAGE IN SERVICE LAP POSITION RADUATING VALVE LEAKAGE

"A" handle to position No. 5, making a pipe reduction, then return valve "A" on No. 3 (Lap). Open cock 4 and reduce der pressure to 30 pounds, then close ck 3, then open cock 4.

pressure on brake cylinder gage. An sure indicates graduating valve leakage tances, slide valve leakage). The rate of ke cylinder must not exceed the limits

Lepaired Valves:8 lb. in 20 secondslves:12 lb. in 20 seconds

LEAKAGE AT EXHAUST PORT

naust port with soap suds. Leakage must v bubble in 5 seconds.

the leakage indicator, the time required rise from the second to the third graduabe less than the following:

d Repaired Valves: 11 seconds | Valves: 5 seconds

etion of the test open cock 3. Close cock alve "A" handle to position No. 1 and lle to position No. 7.

### Test No. 4

# (A) Release Test For All Triple Valves

Commence test with cocks 2 and 3 open, other numbered cocks closed, valve "A" handle in position No. 1 and valve "R" handle in position No. 7. Move valve "R" handle to position No. 2.

Make a 15 pound brake pipe reduction with valve "A" handle in position No. 5, then return valve "A" handle to position No. 3 (Lap). Open cock 4 and reduce the brake cylinder pressure to 40 lb., then close cock 4. Move valve "A" handle to position No. 2. This must move the triple valve piston and slide valve to full release position.

The time required for the brake cylinder pressure to reduce from 40 to 10 pounds must not exceed the limit specified for the respective triple valve under test.

4 seconds for K-1\*, K-2\*, L-1-B. 3 seconds for P-1, L-2-A. 2 seconds for P-2, L-3.

A longer release time than the above indicates a restriction in the exhaust passage.

Recharge the brake pipe and auxiliary reservoirs to 80 pounds by moving valve "A" handle to position No. 1 and valve "R" handle to position No. 7.

\*NOTE—A longer release time than 4 seconds for the K-1 and K-2 Triple Valves may indicate that the retarding device spring is broken, or that the retarding device has excessive friction and is sticking in retarded release position.

### Release Test For Type K Triple Valves Only

ake pipe and auxiliary reservoirs charged nove valve "R" handle to position No. 2, ve "A" handle to position No. 5 until a ce pipe reservoir reduction is obtained, lve "A" handle to position No. 3 (Lap). lve "A" handle to position No. 3 (Lap). k 4 reduce the brake cylinder pressure to a close cock 4 and move valve "A" handle 1.

valve piston and slide valve should be ded release position, indicated by a slow e cylinder pressure. The time of release of re from 40 to 10 pounds must be:

conds for K-2,

conds for K-1.

set the time is shorter than specified, the de valve are stopping short of retarded 1, and it indicates that the retarding deexcessive resistance, which is most likely y the retarding device sticking in the cap. ion of this test open cock 4.

## Io. 5—Quick Service Port Test

le Valves Equipped With This Feature)

test with cocks 2, 3 and 4 open, all other ks closed, valve "A" handle in position e "R" handle in position No. 2.

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Move valve "A" handle in position No. 3 (Lap). Move valve "R" handle to position No. 1 and reduce both auxiliary and brake pipe reservoir pressures to 60 pounds, then move valve "R" handle to position No. 5

The brake pipe pressure must drop 5 pounds in not more than 4 seconds. If, however, the triple valve piston moves to full service position before the 4 seconds time has elapsed, the triple valve should be passed, provided the brake pipe pressure has been reduced  $2\frac{1}{2}$  pounds or more.

NOTE—In making this test it will be noticed that a slight rise occurs in brake pipe pressure due to the displacement of the triple valve piston as it moves toward service position. The measurement of time and pressure should start with the attainment of the maximum pressure in the brake pipe.

If the requirements of this test are not met, the quick service port must be restricted.

At the completion of this test, move valve "A" handle to position No. 1 and valve "R" handle to position No. 7. After the auxiliary and brake pipe reservoirs are recharged to 80 pounds, close cock 3.

# Test No. 6-Piston Ring Leakage

Commence test with cocks 2 and 4 open, other numbered cocks closed, valve "A" handle in position No. 1, and valve "R" handle in position No. 7.

Move valve "R" handle to position No. 3. Move valve "A" handle to position No. 8 and reduce brake pipe reservoir pressure to 64 pounds, then return valve "A" handle to position No. 3 (Lap). Open cock 6. Partly open cock 3 and reduce the auxiliary reservoir pressure to 66 pounds, then close cock 3. Move valve "R" handle

4 and reduce auxiliary reservoir pressure hen return valve "R" handle to position the brake pipe reservoir pressure to 60 lve "A" handle in position No. 4, then A" handle to position No. 3 (Lap). It is auxiliary reservoir and brake pipe presd to agree at exactly 60 pounds. If the pressure fails to reduce to zero it may be cy valve leakage; if equipped with such.

R handle to position No. 4 and note the ipe reservoir pressure.

nust not exceed 4 pounds in one minute. e to repeat this test once or twice if the on a margin of one pound or less, and if it le test, the ring should be approved.

etion of this test, move valve R handle to valve A handle to position No. 1 and ose cock 6.

pecification is correct for all triple valves A, and the L-3. These should be tested

test with cocks 2 and 4 open, other s closed, valve A handle in position No. 1, andle in position No. 7. Move valve A tion No. 8 and reduce the brake pipe pounds, then return valve "A" handle to (Lap). Move valve "R" handle to and open cock 6. Partly open cock 3 and y reservoir pressure to 66 pounds, then I ove valve "R" handle to position No. 4

and reduce auxiliary reservoir pressure to 60 pounds, then return valve "R" handle to position No. 3. Reduce the brake pipe pressure to 60 pounds with valve "A" handle in position No. 4, then return valve "A" handle to position No. 3 (Lap). It is important that auxiliary reservoir and brake pipe pressures be reduced to agree at exactly 60 pounds. Move valve "R" handle to position No. 4, and note the drop in brake pipe reservoir pressure. The limits are the same as those specified above for the other valves.

At the completion of test open cock 3 and close cock 6. Move valve "A" handle to position No. 1 and valve "R" handle to position No. 7.

## Test No. 7 Emergency Test

Commence test with cocks 2, 3 and 4 open, other numbered cocks closed, valve "R" handle in position No. 7 and valve "A" handle in position No. 1.

Move valve "R" handle to position No. 2, then move valve "A" handle from position No. 1 to position listed for the triple valve under test.

Position No. 7 for K-1 (P-1 with  $\frac{3}{16}$ " service Port).

Position No. 8 for K-2, L-1-B, and P-1.

For the following types of triple valves, place valve "R" handle in position No. 7, close cock E and move valve "A" handle to the position listed for the valve undergoing test.

Position No. 4 for L-2-A. Position No. 5 for P-2. Position No. 7 for L-3.



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This test must produce an emergency application with a brake pipe pressure reduction of not more than 20 pounds. Failure to produce emergency indicates improper fitting or assembly of the emergency piston or bush.

At the completion of this test, move valve "A" handle to position No. 2, open cock E if it was closed in this test, move valve "R" handle to position No. 2, and observe that the quick action parts close, which will be indicated by the brake pipe reservoir commencing to recharge, then move valve "A" handle to position No. 1 and valve "R" handle to position No. 7.

#### Test No. 7-A

### Emergency Test For Triple Valves With Heavy Graduating Springs

Commence test with cocks 2, 3 and 4 open, other numbered cocks closed, valve "A" handle in position No. 1, valve "R" handle in position No. 7. Close cock E and move valve "A" handle to the position listed for the triple valve under test.

Position No. 4 for P-1 triple valves.

Position No. 5 for P-2 and L-2-A triple valves.

Position No. 8 for L-3 triple valves.

This test must produce an emergency application with a brake pipe pressure reduction of not more than 20 pounds. Failure to produce emergency indicates improper fitting or assembly of the emergency piston or bush.

### Front and Left-hand End View of the No. 3-T Test Rack

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pletion of this test, move valve "A" handle . 2, open cock E and move valve "R" tion No. 2. Note that the quick action inch will be indicated by the brake pipe nencing to recharge, then move valve position No. 1 and valve "R" handle to

### Test No. 8

### Service Stability

test with cocks 2, 3 and 4 open, other as closed, valve "A" handle in position e "R" handle in position No. 7.

"R" handle to position No. 2, then move idle from position No. 1 to the position iple valve undergoing test.

o. 4 for P-1 with  $\frac{3}{16}$ " service port.

o. 5 for L-1-B.

o. 6 for K-1, and P-1.

o. 7 for L-2-A, and K-2.

d P-2 type of triple valves, commence the h cocks 2, 3 and 4 open, and valve "R" tion No. 7. Close cock E and move valve position No. 4.

valve must not go to emergency before the ssure is reduced 20 pounds. If it does, it tricted service port, or a weak graduating

# WESTINGHOUSE TRIPLE VALVE TEST CODE

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At the completion of this test, move valve "A" handle to position No. 1, open cock E if it was closed in this test, and move valve "R" handle to position No. 7, if not already in position No. 7, then close cock 4.

#### Test No. 9

## By-Pass Valve, By-Pass Piston Safety Valve Tests (For Triple Valves Equipped With These Features)

Commence each of the three sections of this test with cocks 2 and 3 open, all other numbered cocks closed, valve "A" handle in position No. 1, and valve "R" handle in position No. 7.

#### SECTION A.

### BY-PASS VALVE

Move valve "R" handle to position No. 2, then move valve "A" handle to position No. 8. Partly open cock 4 and reduce auxiliary reservoir and brake cylinder pressures to 50 pounds, then close cocks 4, 2 and 3. Open cock 5, and observe the pressure on brake cylinder gage. By-Pass valve leakage will be indicated by an increase in brake cylinder pressure, which must not exceed the amount specified:

New and Repaired Valves: 9 lb. in 10 seconds Cleaned Valves: 13 lb. in 10 seconds

Cleaned Valves: 13 lb. in 10 seconds At the completion of this test open cocks 2 and 3, move valve "A" handle to position No. 1 and valve "R"

SECTION B.

handle to position No. 7.

### BY-PASS PISTON TEST

Move valve "R" handle to position No. 2, then move valve "A" handle to position No. 3 (Lap). Open cock Z

ure is less than 70 pounds, it may be due ) pounds or not more than 75 pounds. the brake cylinder charges promptly to

se defects. piston auxiliary reservoir ports, or a coma worn by-pass piston guide, restriction proper fitted or worn piston ring in the

position No. 1 and valve "R" handle to pletion of test, close cock Z, move valve 7e, or a weak by-pass valve spring. sistance in the movement of the by-pass ure is more than 75 pounds, it may be due

### SAFETY VALVE

rom the spring chamber by means of the asing or decreasing the area of the disre. The range of the safety valve is reguted to open at 62 pounds and close at 58 es of the safety valve. The safety valve position No. 5 and note the opening and dle to position No. 3 (Lap). Move valve of 35 to 40 pounds is obtained, then return ndle to position No. 5 until a brake cyle "R" handle to position No. 2. Move

alve with soap suds to determine leakage e and triple valve body around the passage e "R" handle to position No. 2 and coat

nsure proper operation of the safety valve it must dividual test rack designed for testing safety valves.

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completion of test, move valve "A" handle to position past the safety valve or safety valve connection. At the No. 1 and valve "R" handle to position No. 7.

#### Test No. 10

### (For Triple Valves Equipped With This Feature) **Graduated Release**

exhaust simultaneously with the movement of valve sensitiveness for graduated release, it will close the "A" handle from position No. 1 to position No. 3. At graduated release action, move valve "A" handle from return the handle to position No. 3 (Lap). When the triple valve moves to release position, then immediately tion No. 7. Move valve "R" handle to position No. 2, handle in position No. 1 and valve "R" handle in posiposition No. 3 (Lap) to position No. 1 and back to posibrake cylinder pressure ceases to exhaust due to the then move valve "A" handle to position No. 1 until the brake cylinder pressure of 45 to 50 pounds is obtained, then move valve "A" handle to position No. 6 until a the cylinder pressure is entirely exhausted. least four release graduations must be obtained before tion No. 3 (Lap). If the triple valve has the required Commence test with cocks 2, 3 and 5 open, valve "A"

the auxiliary reservoir, graduating valve friction, piston friction or a combination of these defects. mentary reservoir opening through the triple valve to release operations indicates a restriction of the supple-A failure to obtain the required number of graduated

to position No. 1. valve "A" handle to position No. 8 and valve "R" handle At the completion of this test close cock 5, move

## V York Triple Valves

### CODE OF TESTS

ng is a code of tests and instructions for o. 3-T Test Rack when testing New York The instructions are complete for each rithout reference to any other. The sests, however, should be followed as given ach test may reveal one thing at a time several variables.

ode includes limits for new and repaired aned valves not new and not repaired, he quality of workmanship for new and , as well as the maximum wear the valve re repairs are necessary.

vork should be made to pass the tests w work.

ing to pass the cleaner's limit are to be returning to service.

r one test limit is given, the same limit repaired, and cleaned valves.

Car Testing Device Code of Tests, truction Pamphlet 5039-4, Sup. 1, should or determining when triple valves should cleaning.

is found necessary to repeat any test which has inction of auxiliary reservoir pressure, move valve 3, hesitating a moment here to prevent the piston hard against the leather seal, then move valve R which provides a by-pass from the main reservoir servoir, thereby permitting a quick recharge.

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The following plates are used when testing New York triple valves. Plate No. 1 for Type GN-1, Plate No. 2 for Types GN-2, and PS triple valves.

The brake pipe pressure to be carried is 80 pounds.

#### Test No. 1 Resistance Test

come the resistance of the piston and slide valve will and force the handle inward. The force required to overthe measuring device against the spider end of the piston few times with the bolting face downward. Then, with position. To insure that these parts are in release positriple valve piston and slide valve must be in release nished with each rack. At the start of this test, the clamped on the stand, using the measuring device furand slide valve is measured before the triple valve is in pounds allowable for various size pistons. pounds. The table that follows specifies the resistance be registered by the indicator, which is graduated in horizontally with the slide valve resting on its seat, place the triple valve in position so that the piston moves tion, bump the triple valve lightly against the bench a The resistance to movement of the triple valve piston

The scarf of the piston packing ring should be placed 34 " either side of the feed groove.

3½" and under Over 3½" (incl. 4")	DIAMETER OF PISTON
5 lbs. 7 lbs.	Resistance with Slide Valve in Place
4 lbs. 6 lbs.	Resistance of Piston alone in the Bush

ance must best be measured before the completely assembled.

## APPLYING PISTON STOPS

stop spindle, piece numbers of which are nould not be put in place until directed.

### PISTON STOP TABLE



		1
TA 675 TA 672	Piston Stop N. Y. A. B. Co. Pc. No.	
64641 64638	Piston Stop W. A. B. Co. Pc. No.	
7 <u>5</u> " 6 <u>13</u> "	Piston Stop Length "C"	

# NG TRIPLE VALVES FOR TESTING

nting triple valves on stand, apply gasket ralve flange, place the latter against the n a vertical position, and open cocks E and e triple valve to be tested is of the pipeless n cock Y. If it is of the type arranged for ns, connect the brake pipe to the triple union hose, and open cock Z. One or the two cocks should always be closed and n, while the triple valve is on the stand

#### Test No. 2

# Charging Test For All Triple Valves

NOTE—If, during this test, or Test No. 3 (Leakage Test), any considerable leakage is discovered, the charging test must be repeated after the leakage is eliminated.

Commencing the test with cocks 2 and 3 open, all other numbered cocks closed, valve A in position No. 8, valve R in position No. 1, auxiliary reservoir empty and main reservoir pressure 80 pounds, proceed as follows:

Move valve R to position No. 2 and valve A to position No. 1, and with brake pipe pressure maintained at 80 pounds note the time required by the various triple valves to charge the auxiliary reservoir to the specified pressure as given in the following table:

## **Time Limits for Charging Test**

NOTE—Only one PS triple valve is used for all sizes of brake cylinders. The charging time for the different size equipment is regulated by using the proper charging plug for the size auxiliary reservoir with which the triple valve is to be used. There are three different charging plugs used and the size of the brake cylinders with which each plug is to be used is stamped on the end of the plug.

	PS 16" ai	PS 12" ai	PS 8″ ai	GN-2	GN-1	Type of Triple Valve	
0	nd 18" Charging Plug	nd 14" Charging Plug	nd 10" Charging Plug	.19 to 24	32 to 42	Time in Seconds to Charge Aux. Res. from 0 to 30 lbs.	
	10 to 13	12 to 15	20 to 26	55 to 85	90 to 130	Time in Seconds to Charge Aux. Res from 0 to 70 lbs.	

NOTE—The charging times given from 0 to 30 lbs. and from 0 to 70 lbs. are equivalent and either may be used; the former is to save time in making the test.

## est No. 3-Leakage Test

g each of the sections of Test No. 3 with 3 open, all other numbered cocks closed, ion No. 1, valve R in position No. 2, and roir charged to 80 pounds proceed as

ge indicator is used, it should be filled to the first graduation, and the cock furport of the triple valve under test. No made until the triple valve has been optimes, and at no time should the leakage to be noted after an emergency applicate release position test should be preceded plication and release.

#### AKAGE IN EMERGENCY POSITION YLINDER CAP GASKET LEAKAGE

e triple valve two or three times in quick moving valve A between positions Nos. 1 saving valve A in position No. 8.

chaust port of the triple valve with soapain whether leakage exists past the slide ing to the exhaust. When using leakage hose nozzle against the exhaust cock required for the rise of water from the tion to the third graduation, which should n the following:

nd Repaired Valves: 7 seconds of Valves: 5 seconds

NEW YORK TRIPLE VALVE TEST CODE

For new and repaired valves, except PS triple valves, close cocks 2 and 3; for cleaned valves, not new, and not repaired, close cock 2 only. Then note the rate of fall of pressure on brake cylinder gage. Cylinder cap gasket leakage will produce a drop in brake cylinder pressure, which should not exceed 5 pounds in 10 seconds.

When PS triple valves are being tested, close cocks 2 and 3, and note the rate of fall of pressure on the brake cylinder gage. Cylinder cap gasket leakage will produce a drop in brake cylinder pressure, which should not exceed 5 pounds in 10 seconds. Remove the safety valve and coat with soapsuds the safety valve connection of triple valve. A 1" bubble not less than 2 seconds is permissible.

Screw pipe plug in exhaust connection (with leakage indicator, close cock in exhaust port), move valve A to position No. 1, and coat the entire valve with soapsuds to locate leakage through the body, or at the gaskets.

At the completion of this test open cocks 2, 3, and 4 (if closed) in the order given, and remove the pipe plug from the triple valve exhaust. (Open leakage indicator exhaust port cock).

#### SECTION B.

### LEAKAGE IN RELEASE POSITION SLIDE VALVE, AND VENT VALVE LEAKAGE

Move value A to position No. 4 or No. 5, making a 10 lb. reduction, then release by returning value A to position No. 1.

ake cylinder pressure is exhausted, close n coat the exhaust port with soapsuds to age by the slide valve in release position ary reservoir to the brake cylinder. Also gency vent port to ascertain if leakage nt valve.

leakage indicator close cock 3, then place against the exhaust cock and note the r the water to rise from the second to the on. This should be not less than the fol-

d Repaired Valves: 10 seconds 1 Valves: 4 seconds

oletion of this test, open cock 3 and close

rpe triple valves are under test, coat the nnection of triple valve with soapsuds to ve leakage. A 1" bubble in not less than rmissible for new or repaired valves, or 2 aned valves. At completion of the test, valve.

EAKAGE IN SERVICE LAP POSITION GRADUATING VALVE LEAKAGE

A to position No. 4 or No. 5, making a tion, then return valve A to position No. ially open cock 4 and reduce the brake tre to 30 pounds. Then close cock 3, to remain open.

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Observe the pressure on brake cylinder gage. An increase in pressure indicates graduating valve leakage (and in rare instances, slide valve leakage). The rate of increase in brake cylinder pressure should not exceed the limits specified:

New and Repaired Valves: 8 lbs. in 20 seconds Cleaned Valves: 12 lbs. in 20 seconds

The time for leakage indicated by the leakage indicator for the rise of water from the second to the third graduation should not be less than the following:

New and Repaired Valves: 11 seconds Cleaned Valves: 5 seconds

Upon the completion of the test, open cock 3 and close cock 4. Move valve A to position No. 1.

#### Test No. 4

# (A) Release Test For All Triple Valves

Commencing the test with cocks 2 and 3 open, other numbered cocks closed, auxiliary reservoir charged to 80 pounds, valve A in position No. 1, valve R in position No. 2, proceed as follows:

Make a 15 pound reduction with valve A in position No. 5, then return to position No. 3. Reduce brake cylinder pressure to 40 pounds by opening cock 4, and closing cock 4 after the required pressure is obtained. Move valve A to position No. 2. This should move the triple valve piston and slide valve to full release position.

release of brake cylinder pressure from s for the respective triple valves should

r GN-1, GN-2.

r PS.

ase times than the above indicate a reexhaust passage.

ger release time than 4 seconds for the GN-1 and es may indicate that the retarding device spring the retarding device has excessive friction and is d release position.

his test recharge the system to 80 pounds e A to position No. 1.

### arded Release Test for Type GN Triple Valve Only

pipe and auxiliary reservoir charged to ve valve A to position No. 5 making a 15 nipe reduction, then return valve A to By opening cock 4 reduce brake cylinder pounds, then close cock 4 and move valve Vo. 1.

valve piston and slide valve should be ded release position, indicated by a slow e cylinder pressure. The time of release sure from 40 to 10 pounds should be withy limits:

NEW YORK TRIPLE VALVE TEST CODE

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GN-1, 12 to 18 seconds GN-2, 9 to 15 seconds

If in this test the time is shorter than specified, the piston and slide valve are stopping short of retarded release position, and it indicates that the retarding device is offering excessive resistance, which is most likely to be caused by the retarding device sticking in the cap.

#### Test No. 5

### **Quick Service Port Test**

Commencing test with cocks 2 and 3 open, all other numbered cocks closed, valve A in position No. 1, valve R in position No. 2, proceed as follows:

Move valve A to position No. 4 making a 10 pound reduction of brake pipe pressure. Return valve A to position No. 3. This will have made a service application of the triple valve and connected the brake pipe with the quick service chamber through the quick service port, permitting brake pipe pressure to flow to and equalize in the quick service chamber (at the same time a service application of brake cylinder pressure has been made). Exhaust all air from the brake cylinder by opening cock 4, then move valve A to position No. 1 and note that there is a distinct exhaust of air from the triple valve exhaust port. This indicates that both the admission and exhaust quick service ports are open.

### Test No. 6

### cking Ring Leakage Test

of the retarding device is necessary to stop in the triple valve stand to engage alve piston. Close cock 2, open cock 4, "A" handle to position No. 8. Then close ove the triple valve from the stand. The op should be inserted in the triple valve retarding device is removed from the d before the triple valve is clamped in nd as specified on page 50.

A handle to position No. 1, open cock 2

the test with cocks 2 and 4 open, other closed, valve A in position No. 1, place tion No. 3 and reduce brake pipe presf valve A in position listed for the triple ng test until the brake pipe gage hand f pounds, returning valve A to position

### 5 for GN-1 and GN-2.

8 for PS.

as follows: Open cock 6 and cock 3
auxiliary reservoir pressure to 66 pounds,
and complete the auxiliary reservoir
pounds with cock 6 open and valve R

in position No. 4. Close cock 6 and move valve R to position No. 3. Move valve A handle to position No. 4, reducing brake pipe pressure to 60 pounds, then return valve A handle to position No. 3 (Lap). It is important that auxiliary reservoir and brake pipe pressures be reduced to agree exactly at 60 lbs.

Move value R to position No. 4 noting the rate of brake pipe pressure drop.

For new and newly repaired triple valves, this drop should not exceed 4 pounds in one minute. It is permissible to repeat this test once or twice if the ring has failed on a margin of one pound or less, and if it passes any single test the ring should be approved.

At the completion of this test, move valve R handle to position No. 2, valve A handle to position No. 1 and open cock 3.

## Test No. 7—Emergency Test

(A) Quick Action Valves

With cocks 2, 3, and 4 open, other numbered cocks closed, and valve R in position No. 2, move valve Aquickly from position No. 1 to position listed for the triple valve under test. When the triple valve vents, move valve A to position No. 3 so as to determine the amount of brake pipe reduction caused by the vent of the triple valve.

Position No. 8 for GN-1 and GN-2.

cause the triple valve to produce emerthe brake pipe pressure from 80 to 40 . If the brake pipe pressure is not vented indicates too poor a fit of the Vent Piston ints the brake pipe pressure to zero it pht a fit of the Vent Piston Ring in the

letion of the test, place valve A in position e R in position No. 2, and note that the urts close, then move valve A handle to

### (B) PS Triple Valve

ng PS triple valves, remove the safety cks 2, 3 and 4 open, other numbered cocks lve R handle to position No. 7, close cock ralve A handle to position No. 6. The ould move to emergency position before pressure has dropped 20 pounds, which d by a sudden termination of air exhaustfety valve connection.

letion of the test, move valve R handle to open cock E and move valve A handle to

#### Test No. 8

### Service Stability Test

With cocks 2, 3, and 4 open, other numbered cocks closed, and valve R in position No. 2, move valve A from position No. 1 to the position listed for the triple valve undergoing test.

Position No. 5 for GN-1 and GN-2.

Position No. 8 for PS.

The triple valve must not go to emergency before the brake pipe pressure is reduced 20 pounds. If it does go to emergency, it indicates too close a fit of the vent valve piston ring or a restriction in the vent port in the piston stem.

When testing PS triple valves. a continuous exhaust of air from the safety valve connection will indicate that the piston and slide valve have assumed service position and have not moved to emergency position. If the exhaust suddenly stops before the brake pipe pressure has dropped 20 pounds, it indicates a restricted service port or a weak graduating spring.

At the completion of this test on all except PS triple valves, move valve A handle to position No. 8, close cock X, and remove the triple valve from the stand. Replace the retarding device.

When testing PS triple valves, move valve A handle to position No. 1 and replace the safety valve. Then close cock 4.

Test No. 9

alve Test—PS Triple Valve Only

A in position No. 5 until a brake cylinderto 40 pounds is obtained. Then return it3. Move valve R to position No. 5 anding and closing pressures of the safety

valve should be adjusted to open at 62 3 pounds. The range of the safety valve 7 increasing or decreasing the area of the 8 from the spring chamber by means of ring.

e R to position No. 2. Reduce brake re to 55 pounds by opening cock 4 and ty valve and triple valve body around fety valve with soapsuds to determine ty valve or connection. At completion of valve A to position No. 8, open cock 4, nd remove the triple valve from the stand.





