INSTRUCTION PAMPHLET

No. 5039-3

FEBRUARY, 1938

The No. 3-T TRIPLE VALVE TEST RACK

CODE OF TESTS

THE
NEW YORK AIR BRAKE
COMPANY
NEW YORK, N.Y.

CODE OF TESTS

FOR

WESTINGHOUSE AND NEW YORK

TRIPLE VALVES

ON THE

No. 3-T TEST RACK

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(SUPERSEDING ISSUE OF AUGUST, 1932)

THE
NEW YORK AIR BRAKE
COMPANY
420 LEXINGTON AVENUE
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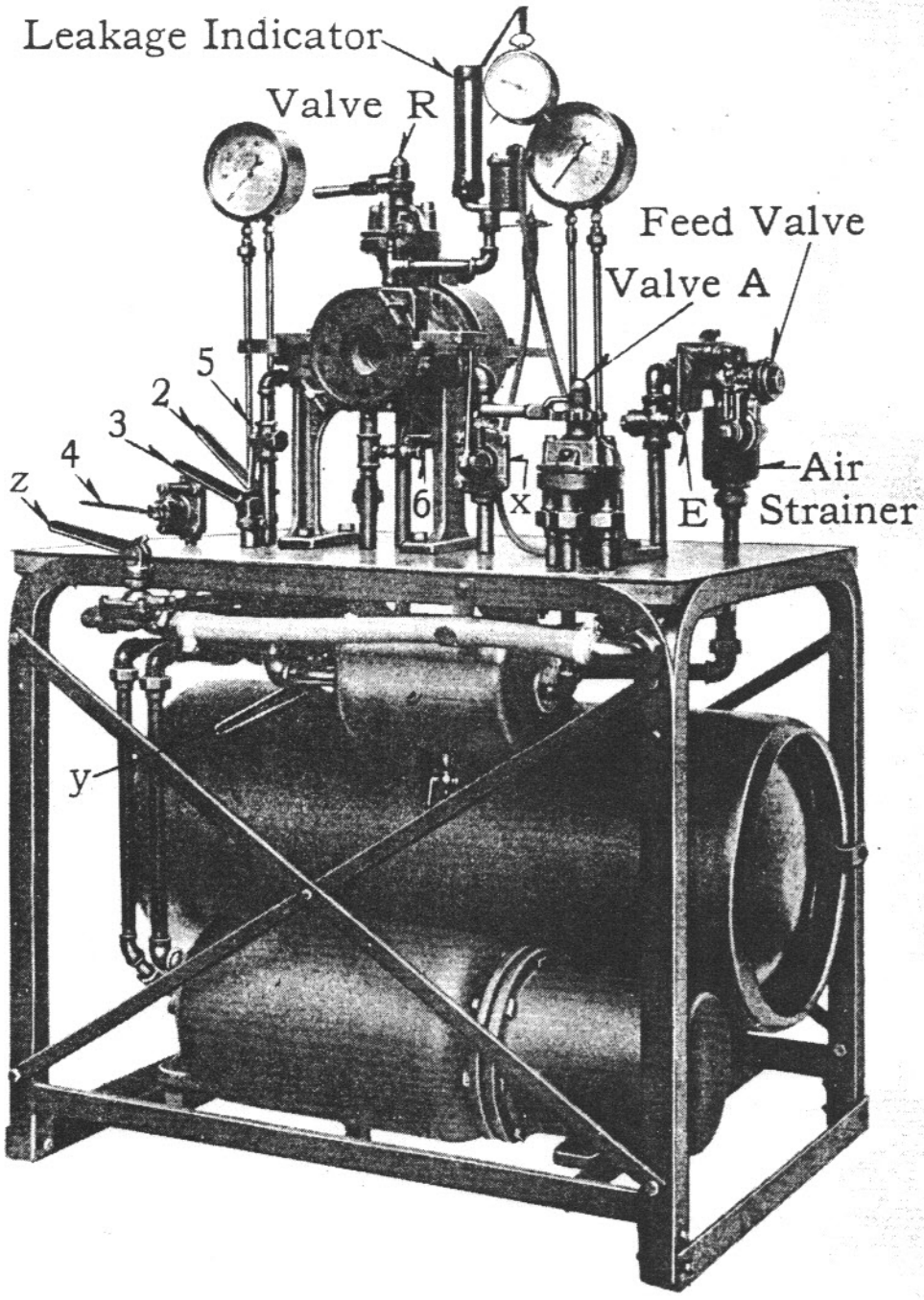

Fig. 1. Front and Right Hand End View of the No. 3-T Rest Rack

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. 1 and 4 show the No. 3-T Triple Valve Test Rack. Fig. 9 shows the accessories regularly furnished with the rack, which are as follows:

Plate No. 1 for Types H-1, K-1, L-1, M-1, P-1 and R-1.

Plate No. 2 for Types H-2, K-2, L-2, M-2, P-2 and R-2.

Plate No. 3 for Types L-3 and R-3 triple valves.

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 ¾″x36″ Hose with ¾″ Nipples for use with plain triple valves.

One 1″ Resistance Indicator for measuring piston ring friction.

One Wrench and a Set of Piston Stops for holding triple valve piston in proper position for ring leakage test.

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 cock 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.

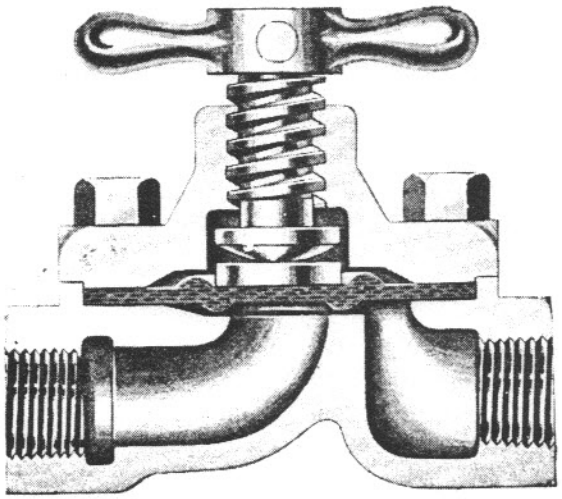

Fig. 2. Sectional View of the ½″ Diaphragm Cock with Screw Type Handle

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

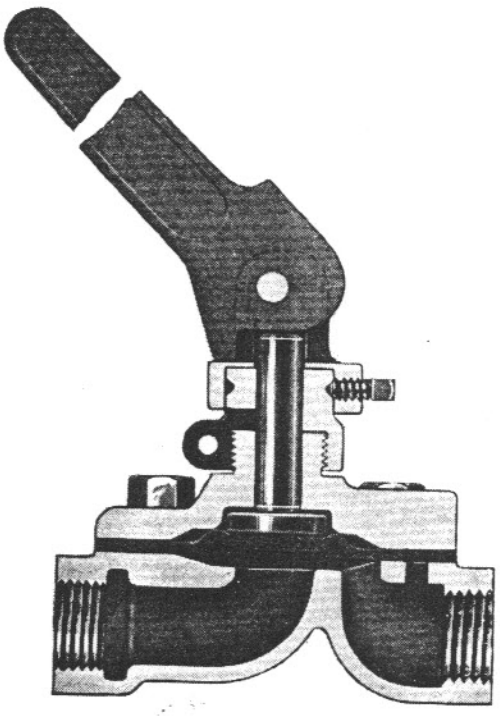

Fig. 3 Sectional View of the Quick Opening Diaphragm Cock with Lever Type Handle

To adjust the diaphragm tension (or deflection), loosen the cap screw 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 cap screw should be tightened when the

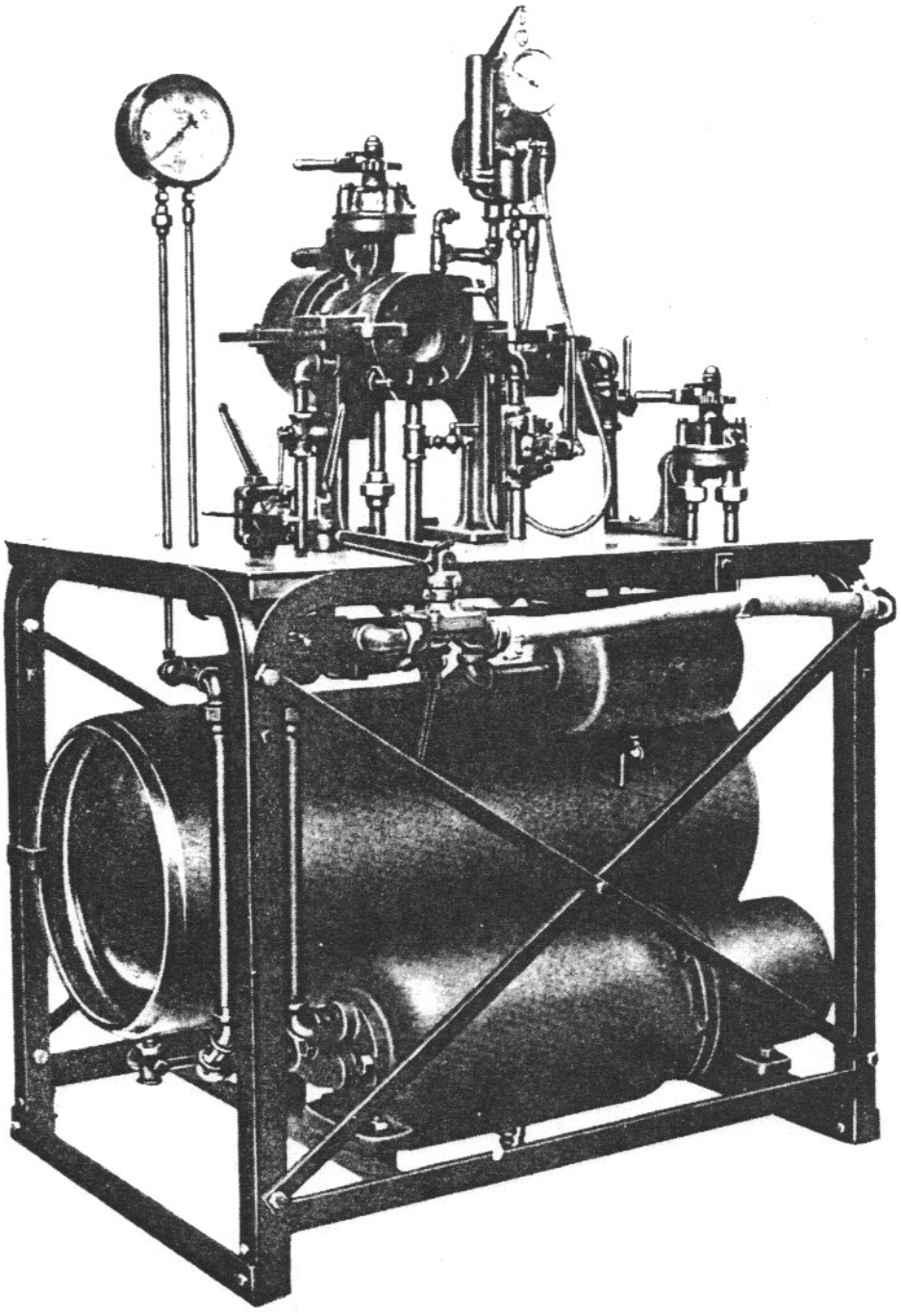

Fig. 4. Front and Left-hand End View of the No. 3-T Test Rack

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.

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 valve to triple valve stand face plate, by admitting air to and exhausting it from the clamping cylinder. Also furnishes supply to operating valve *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 by-pass valve tests on triple valves that have this feature.

Cock 6—To exhaust air from the reduced brake cylinder volume through No. 70 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.

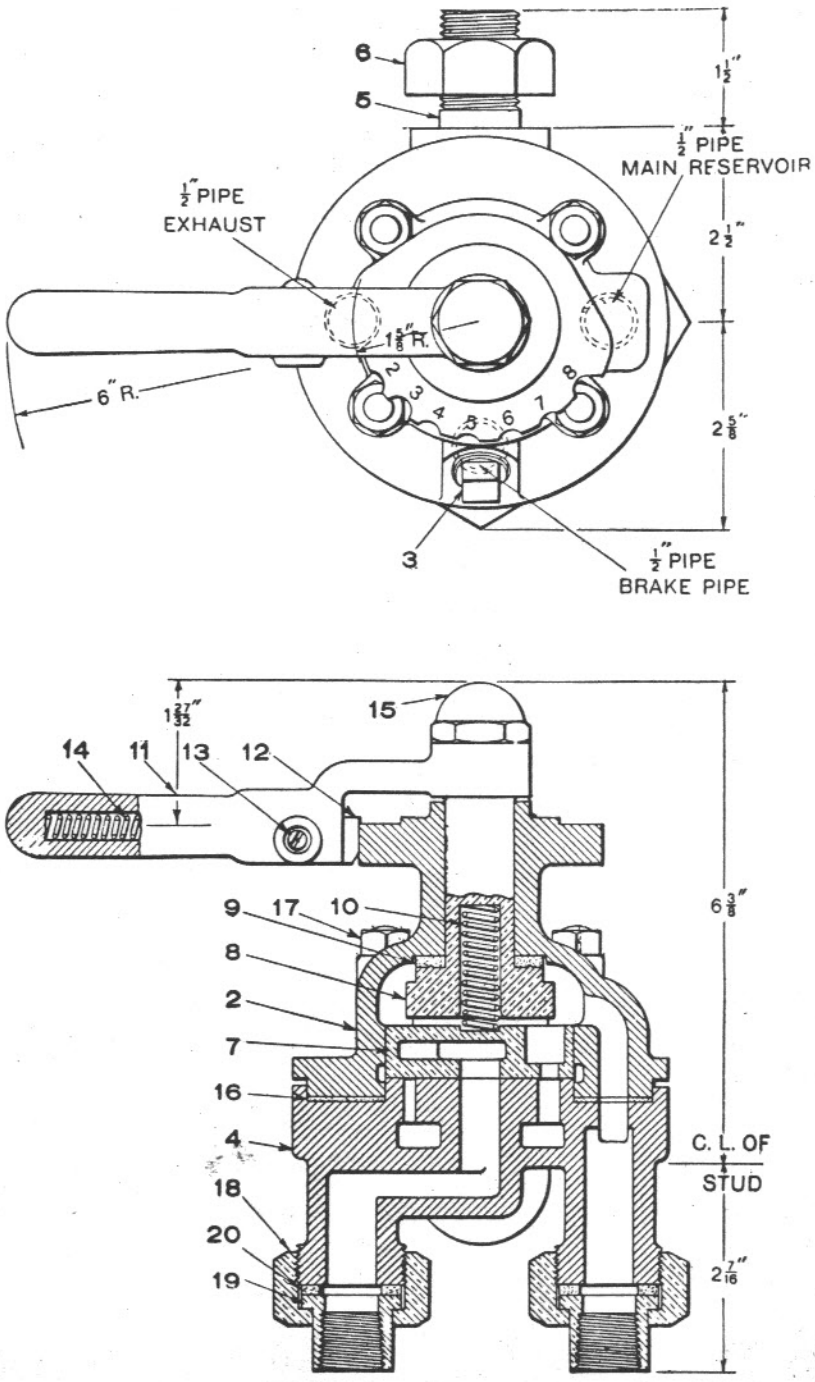

Fig. 5. Plan and Sectional Views of Operating Valve "A"

Operating Valve "A" Positions

Position No. 1. Main reservoir connected to brake pipe through ¼" 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 4½ to 5½ 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.

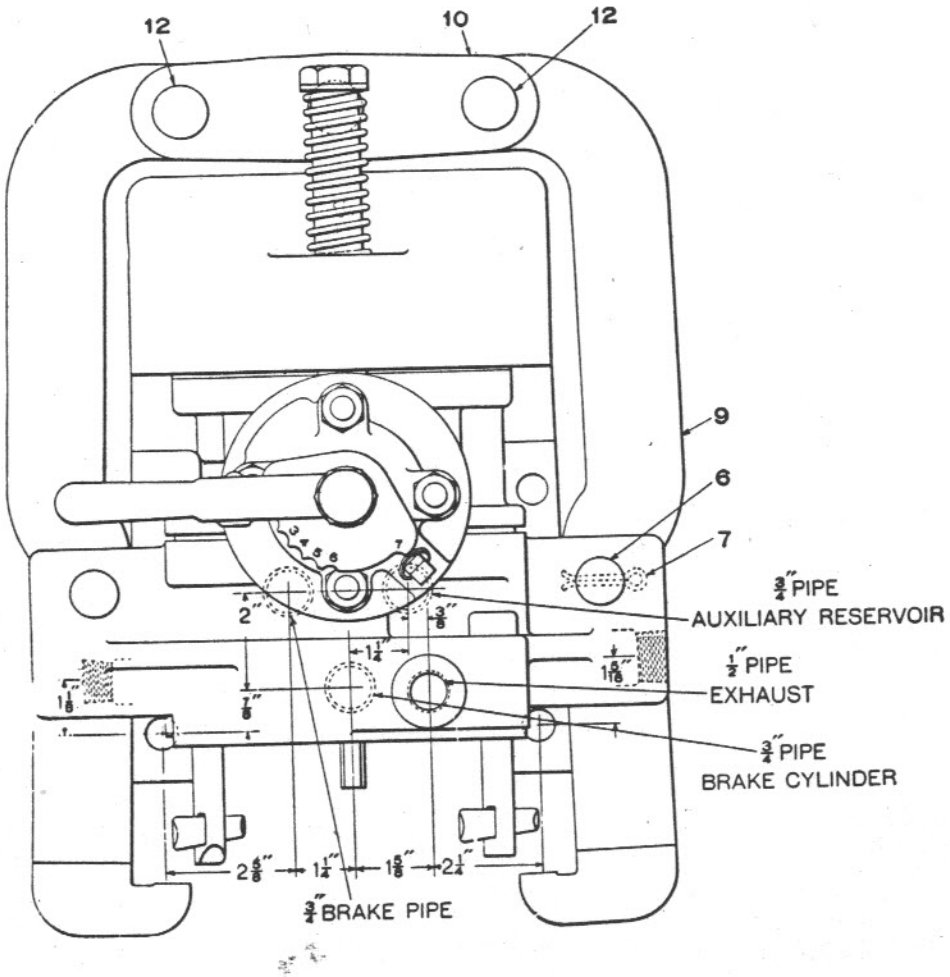

Fig. 6. Top View Triple Valve Stand Showing Operating Valve "R" Handle Positions

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 (.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 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 ¾″ pipe. Used as a by-pass, and also to obtain maximum auxiliary reservoir volume for certain tests.

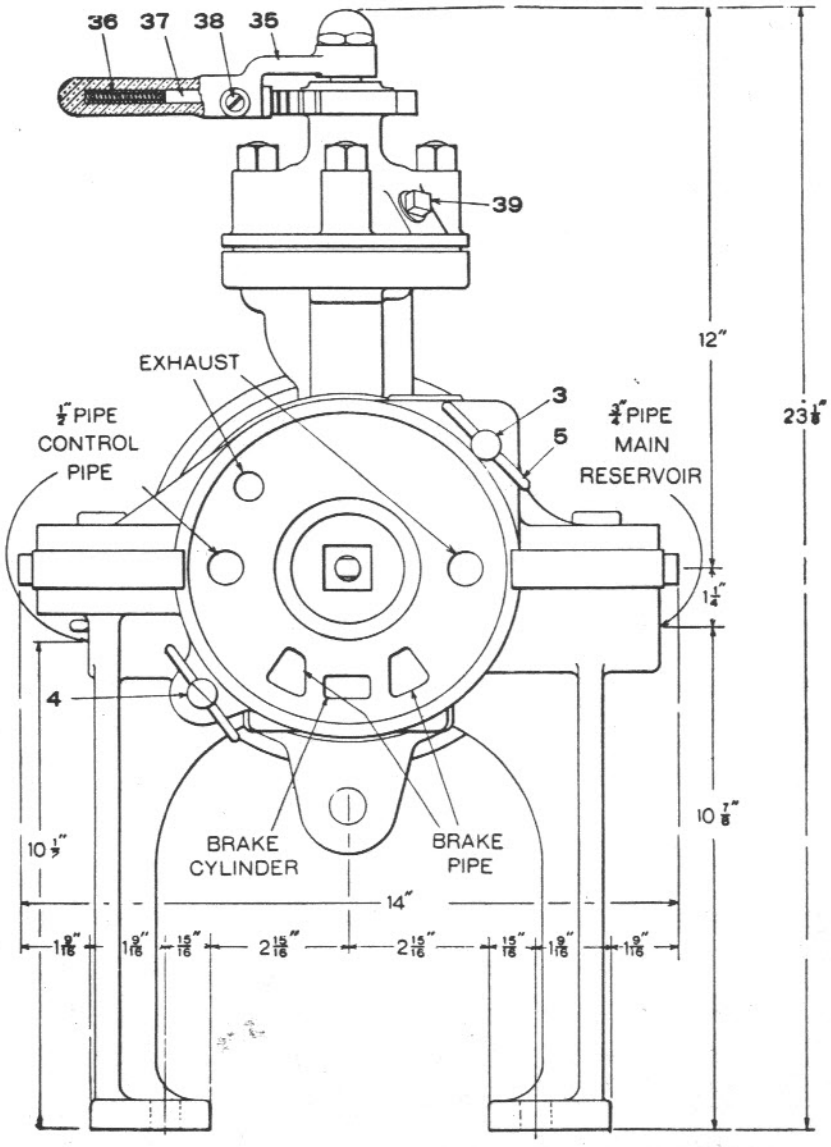

Fig. 7. Front View of the Triple Valve Stand

RACK MAINTENANCE

To secure reliable and uniform results with the triple valve test rack, it must be kept free from leakage. 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.

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 with graphite grease. As often as service conditions may require, the cock keys should be removed, cleaned, and lubricated, either with mutton tallow containing a very small percentage of beeswax, or with graphite grease.

The piston stop valve should be lubricated with dry graphite. The clamping cylinder and its packing leather should be lubricated with brake cylinder lubricant 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.*

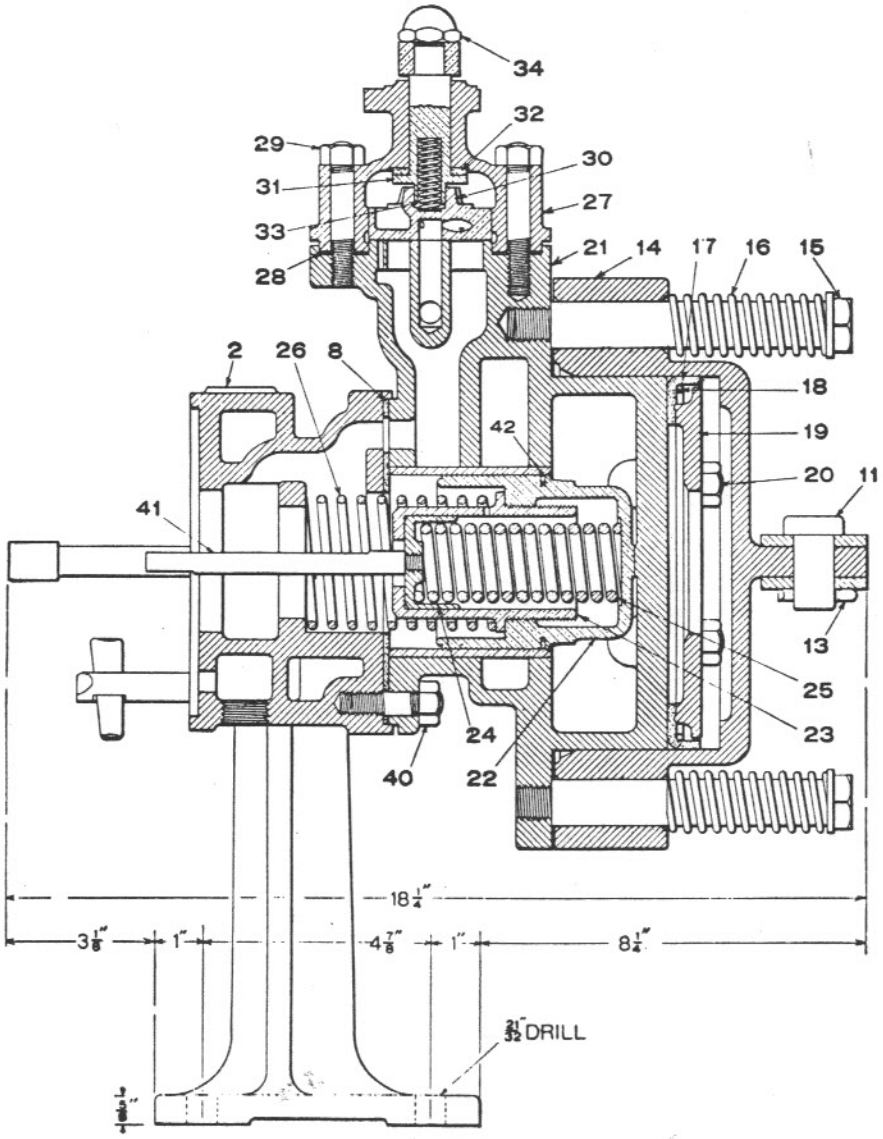

Fig. 8. Sectional View of the Triple Valve Stand

TESTING THE RACK FOR LEAKAGE

When preparing to test the rack for leakage, remove the piston stop spindle from the piston within the stand, plug the opening in plate No. 4 and clamp plates No. 2 and No. 4 on the stand, using suitable gaskets. Close cock *Z*, and open all other cocks.

Place valve *R* in position No. 1 exhausting auxiliary reservoir pressure, and place valve *A* in position No. 1, charging brake pipe to 80 pounds, then move valve *A* to position No. 3. Allow five (5) minutes for temperature effect in all cases before measuring the leakage, then observe the brake pipe gage for one (1) minute. Drop in pressure indicates leakage from the brake pipe volume, and may be caused by either a leaky rotary valve in operating valve *A*, pipe connections, leaky cut-out cocks or hose connections, or a combination of these defects, which may be found by coating with soapsuds the pipe fittings, cock keys, hose connections and the operating valve exhaust. All leakage should be eliminated.

After completing the above test, reduce the brake pipe pressure with valve *A* in position No. 4, to fifty (50) pounds, then place valve *A* in position No. 3. Allow five (5) minutes for temperature effect, then observe the brake pipe gage for one (1) minute, for any increase in pressure due to leaky rotary valve in valve *A*, which will permit main reservoir air to leak into brake pipe. All leakage should be eliminated.

At the completion of the above test, place valve A in position No. 1, and proceed as follows in determining leakage in auxiliary reservoir piping and valve *R*.

Move valve *R* to position No. 6, charging the auxiliary reservoir to 80 pounds, then return handle to position No. 2. Allow five (5) minutes for temperature effect, then observe the auxiliary reservoir gage for one (1) minute. Drop in pressure indicates leakage from the auxiliary reservoir volume, which should not exceed one (1) pound in the time specified. Leakage greater than specified will be in either the pipe connections, around cock key of cock 2, or rotary valve in valve *R*, or a combination of these defects. Use soapsuds for detecting leakage.

At the completion of the above test, reduce the auxiliary reservoir pressure to sixty-five (65) pounds by moving valve *R* to position No. 1, then return handle to position No. 3. Allow five (5) minutes for temperature effect, then close cock 2 and observe the auxiliary reservoir gage for one (1) minute for any increase in auxiliary reservoir pressure. Increase in pressure indicates leakage from main reservoir into auxiliary reservoir past the rotary valve of valve *R*, and piston stop holder seal. Leakage should not exceed one (1) pound in the time specified.

The auxiliary reservoir blow down test should be made, provided all leakages that exceed the limits specified have been remedied. Charge the auxiliary reservoir to 60 pounds, cock 2 open. Allow five (5) minutes for temperature effect in all cases before commencing test. Place valve *R* in position No. 4, and note the time required for the auxiliary reservoir pressure to reduce from 60 to 47 pounds. This should be between 55 and 62 seconds.

The rate of rise in the auxiliary reservoir pressure with valve *R* in position No. 5 should be from 50 to 70 pounds in 5 to 6 seconds. In position No. 6, 50 to 70 pounds in 2 to 4 seconds.

Clamp a triple valve to the stand and charge the brake pipe and auxiliary reservoir to 80 pounds. Place valve *R* in position No. 7. Coat with soapsuds the brake pipe hose and hose connection for leakage. Close cock 4. Move valve *A* to position No. 8 and coat with soapsuds the auxiliary reservoir, and brake cylinder connections. Close cock 3. Open cock 4 and place a bubble on the opening to detect leakage past cock 3.

Close cock 4 and open cock 3 and charge the brake cylinder to 80 pounds, close cock 3 and move valve *R* to position No. 1. Remove the triple valve and apply in its place the plain triple valve test plate, then screw ¾″x1″ stud (capped at ¾″ end) into the brake cylinder and auxiliary reservoir hose connections. Open cock 3 and move valve *R* to position No. 5, soap the test plate, hose and hose connections for leakage.

AIR GAGES

Air gages must be maintained in a condition to insure their registering accurately within the ranges of pressure in which they are used, and must be sensitive to slight increases or decreases in pressure. The duplex gage for auxiliary and brake pipe pressures must be especially accurate in the range of 65 to 45 pounds.

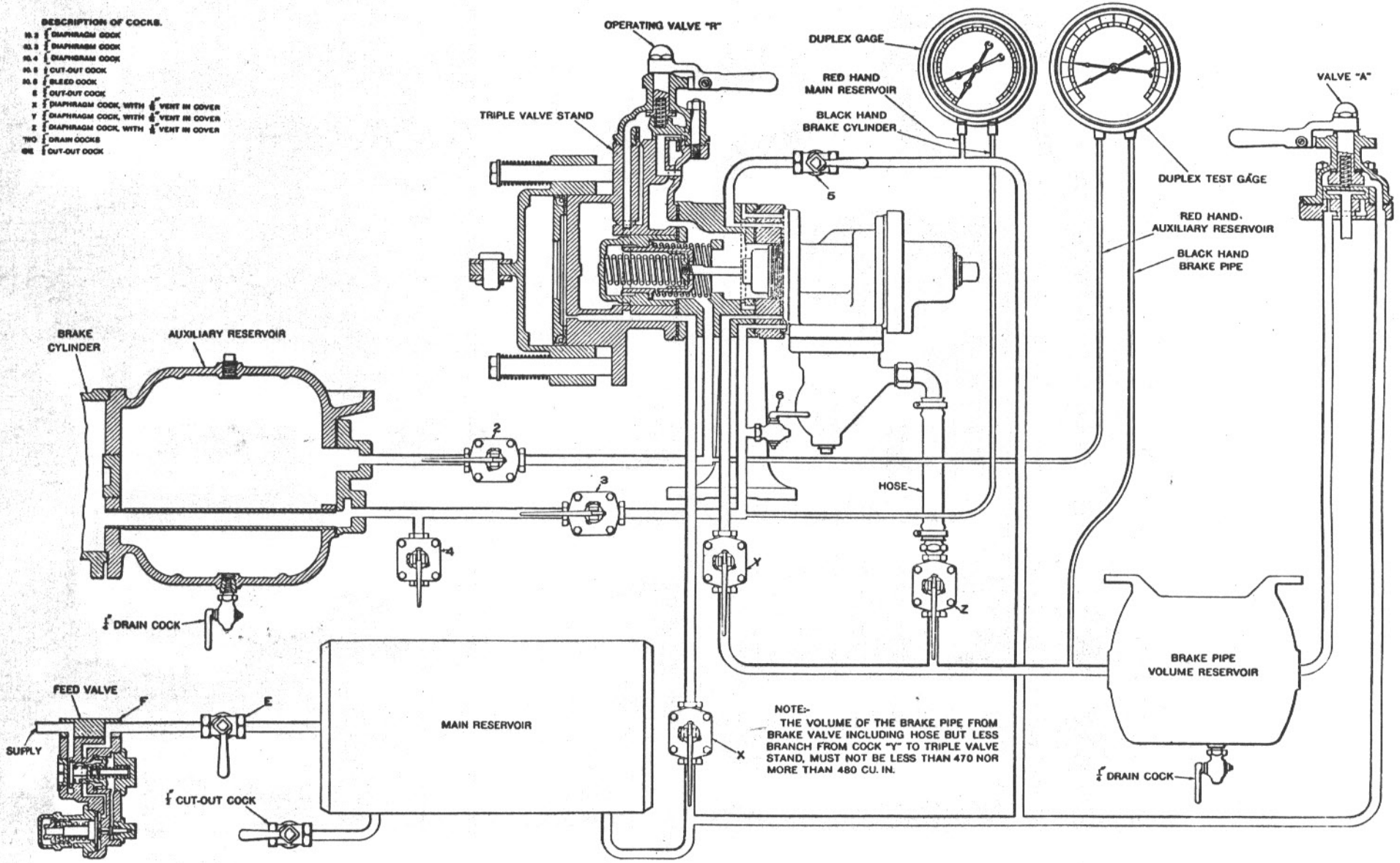

Fig. 14. No. 3-T Triple Valve Test Rack. Sectional Diagrammatic View