Crown Metal Products Co.

WYANO, PA. — U.S.A.

Telephone 872-8720
Area Code 412

AUXILIARY DEVICES GOVERNORS

PC. NOS. 58698 AND 59063

TEMPORARY PART CATALOG

NO. 3205, SUP. 2A MAY, 1951

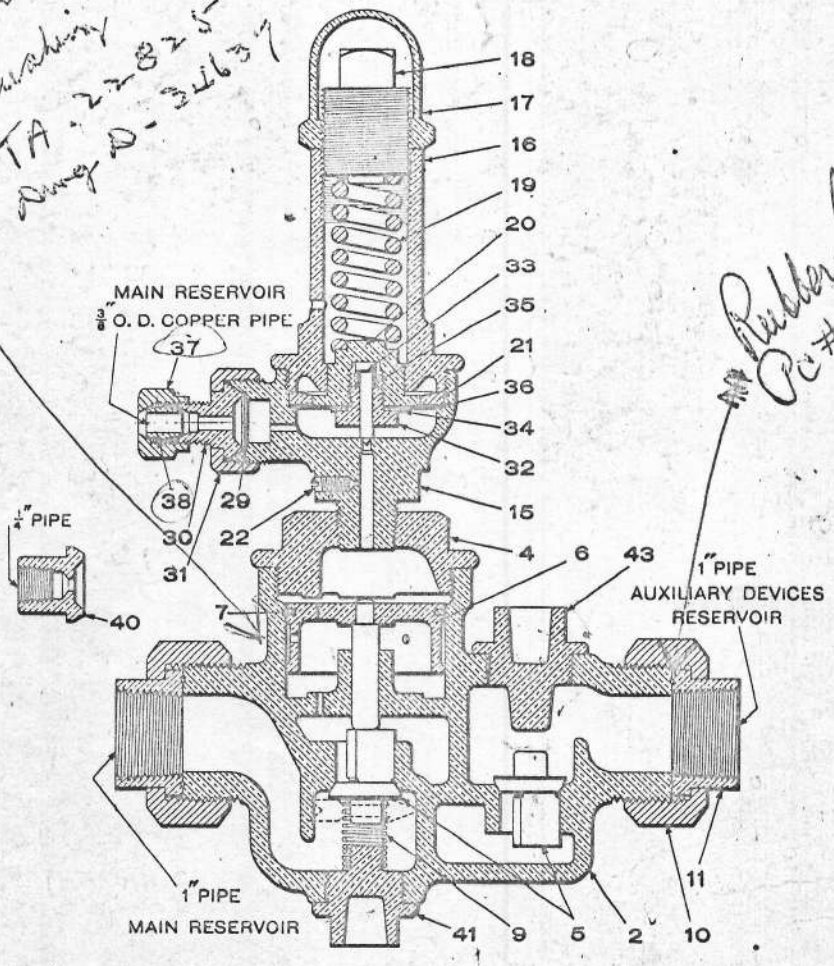
(Superseding Piece Lists A-1882-1 and A-1882-2)

13" x 9" x 3 1/8" wt 18 3/4#

AUXILIARY DEVICES GOVERNOR

Pc# 67160
Seater Bushing
Body TA-2-825
Assy D-34637

Rubber Gasket
Pc# 87726
order
Hobe



Pc# 5H4825 Needs Air Valve Pc# H4791
Upper & Lower.

Pc#59063 Ships without Typ-Valve Pc# 44291

AUXILIARY DEVICES GOVERNORS

Pc.No.	Ref.No.	
		(Pc 544825
58698		Auxiliary Devices Governor, Complete, with Down-Return Check Valve
59063		Auxiliary Devices Governor, Complete, less Down-Return Check Valve
20782		Diaphragm Portion, Complete (Includes Ref. Nos. 15 through 21, 29 through 38)
67459	2	Body — Pc# 545136
67151	4	Cylinder Cap — Pc# 545135 cadmium plated
44291	5	Check Valve (2 Req'd for Pc. 58698; 1 Req'd for Pc. 59063)
58705		Piston and Rod, Complete (Includes 6, 7 and Rod)
25861		Piston, Complete, with Ring (Includes 6 and 7)
25860	6	Piston, less Ring
81223	7	Piston Ring (1st Repair)
2026	7	Piston Ring (2nd Repair)
15013	7	Piston Ring (3rd Repair)
28101	9	Check Valve Spring
1948	10	1" Union Nut (2 Req'd)
1949	11	1" Union Swivel (2 Req'd)
87726		1" Union Gasket (2 Req'd)
9033	15	Diaphragm Body (Includes 29)
2033	16	Spring Box
2034	17	Check Nut
2035	18	Regulating Nut — Pc# 545073 - S
2036	19	Regulating Spring
2043	20	Diaphragm, Complete (Includes 32, 33, 34, 35 and two of 36) + 2037 DIA. SPINDLE
1064	21	Diaphragm Ring
6868	22	Vent Port Screw
2046	29	Strainer
86767		Union Swivel, Complete (Includes 30, 37 and 38) & 31
86766	30	Union Swivel (3/8" O.D. Tube)
15291	31	Air Union Nut
2041	32	Diaphragm Nut
2039	33	Diaphragm Valve
2040	34	Diaphragm Washer
2042	35	Diaphragm Valve Spring
2038	36	Diaphragm (2 Req'd)
71728	37	Union Nut — Pc# 545061
71727	38	Sleeve
44292	41	Cap Nut
58703	43	Cap Nut

Prices will be quoted upon application.
Orders should give PIECE NUMBER and NAME of part wanted.

5-17-51
5-C-1
Printed in U.S.A.
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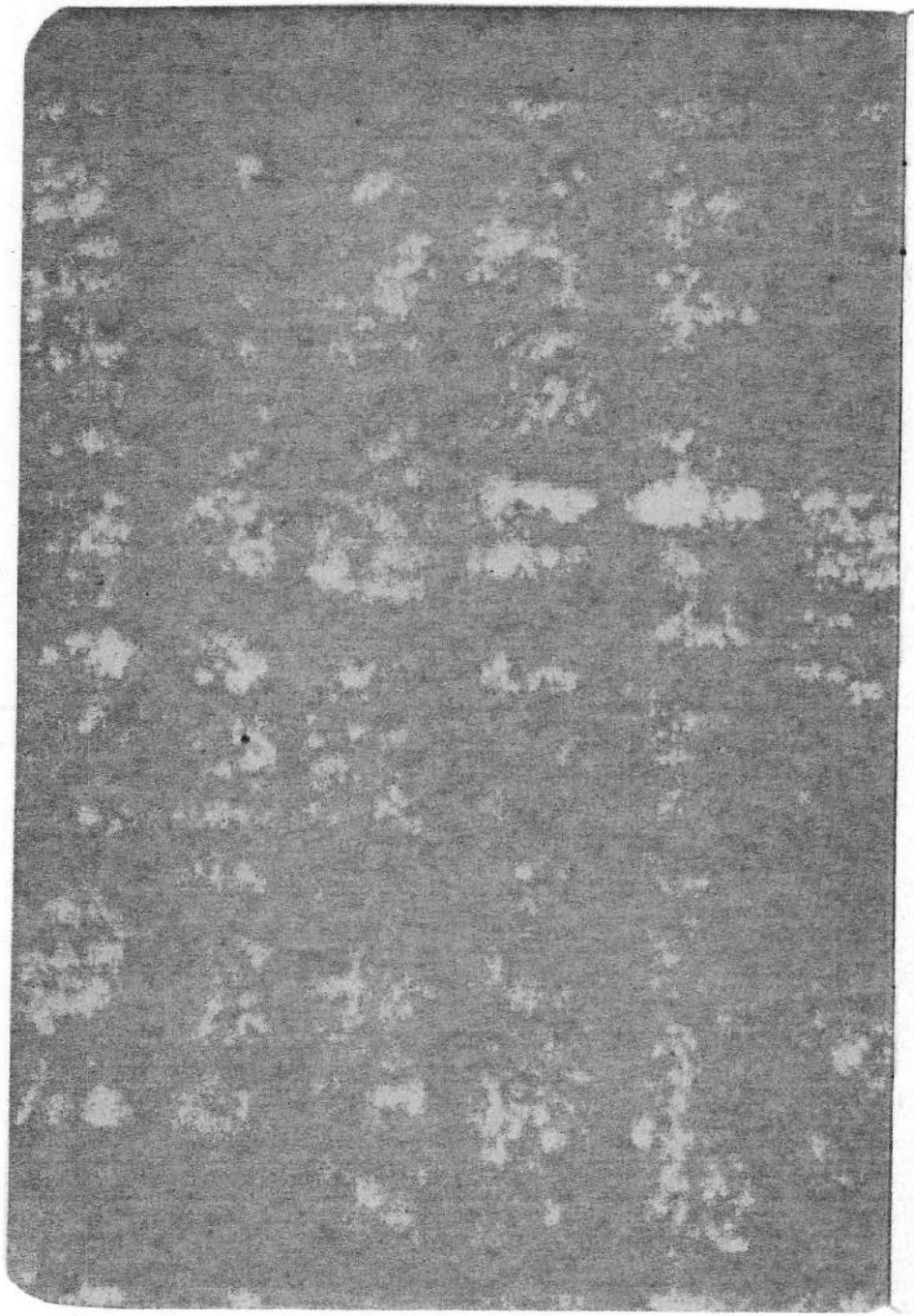
INSTRUCTION LEAFLET

No. 2360

JUNE, 1942

INSTALLATION AND CARE OF THE AUXILIARY DEVICES GOVERNOR

WESTINGHOUSE
AIR BRAKE COMPANY
PITTSBURGH, PA., U. S. A.



DESCRIPTION AND INSTRUCTIONS FOR INSTALLATION AND CARE OF THE AUXILIARY DEVICES GOVERNOR

INSTRUCTION LEAFLET

No. 2360

JUNE , 1942

(SUPERSEDING ISSUE OF SEPTEMBER, 1937)

WESTINGHOUSE
AIR BRAKE COMPANY
PITTSBURGH, PA., U. S. A.

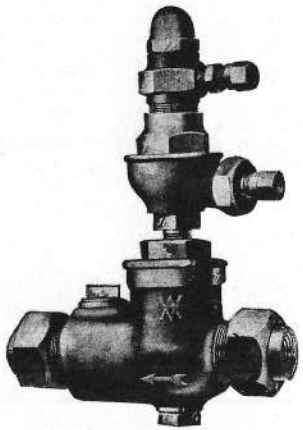


Fig. 1. Exterior View of the Auxiliary Devices Governor

AUXILIARY DEVICES GOVERNOR

(With Excess Pressure Regulating Portion)

The use of compressed air on locomotives for pneumatic devices other than air brake, such as Reverse Gear, Bell Ringers, Fire Door Operations, Sanders, Water Scoops, etc., has reached a stage where it is necessary to protect the air supply for brake operation from becoming depleted by the operation and leakage of these devices.

To secure this protection, the Auxiliary Devices Governor was developed, which is so designed as to permit charging of an Auxiliary Devices Reservoir (from which the air operated Auxiliary Devices are directly supplied) from the main reservoir of the brake system. The charging of this reservoir is permitted only after the main reservoir has charged to a predetermined amount above the feed valve pipe pressure, when the automatic brake valve is in running or holding positions. The air operated devices on the locomotive are thereby prevented from drawing air from the brake system in such quantities as to reduce the pressure in the brake system below that necessary for safe and proper operation of the brakes. This governor also protects the air supply for the auxiliary devices against depletion (for a time depending upon the tightness of the auxiliary devices and connections) should any of the main reservoir connections be broken or the main reservoir pressure reduced abnormally from any cause, thereby making it possible to operate the auxiliary apparatus.

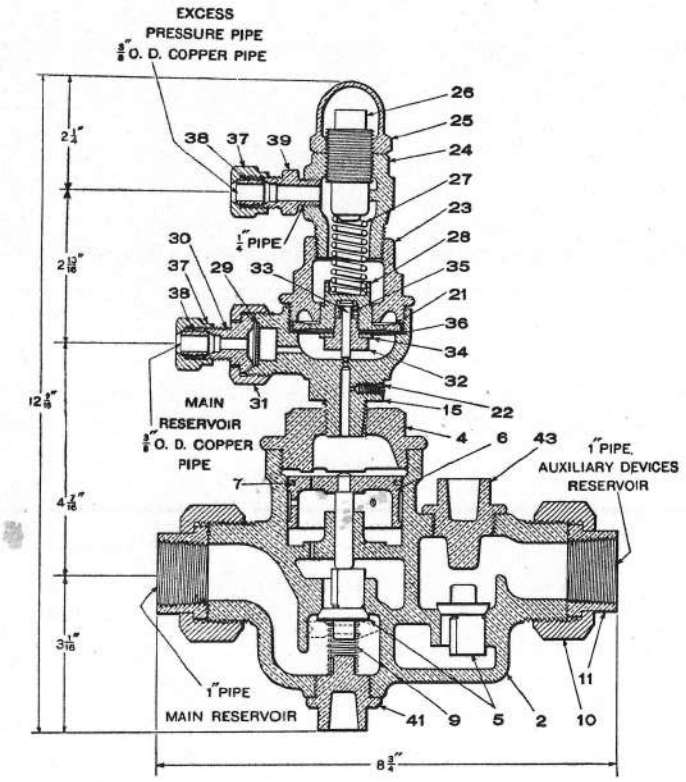


Fig. 2. Sectional View of the Auxiliary Devices Governor

Description and Operation

When the main reservoir has charged to the predetermined amount higher (usually 15 lbs. depending upon the governor adjustment) than the feed valve pressure, this governor opens communication between the main reservoir and the auxiliary devices reservoir, permitting the latter to charge until pressures in these two reservoirs equalize. However, should main reservoir pressure be reduced from any cause during this charging operation below the governor adjustment, the governor will close and prevent further charging of the auxiliary devices reservoir.

When air is drawn from the auxiliary devices reservoir for the operation of the auxiliary apparatus, the pressure will fall a like amount in both it and the main reservoir until the pressure reaches that point for which the governor head is adjusted, depending on the feed valve setting. When this point is reached the governor closes and cuts off communication between the two reservoirs.

This governor, Figs. 1 and 2, consists of a diaphragm portion which is identical with the excess pressure portion of the SF steam compressor governor and a body or supply portion which embodies a piston 6, a supply valve 5 (at the left) and spring, and a non-return check valve 5 (at the right). Pipe connections are made, as shown in Fig. 3, from the main reservoir to the diaphragm chamber underneath the diaphragm and from the feed valve pipe to the top side of diaphragm; connections are also made from the main reservoir and the auxiliary devices reservoir to the body portion.

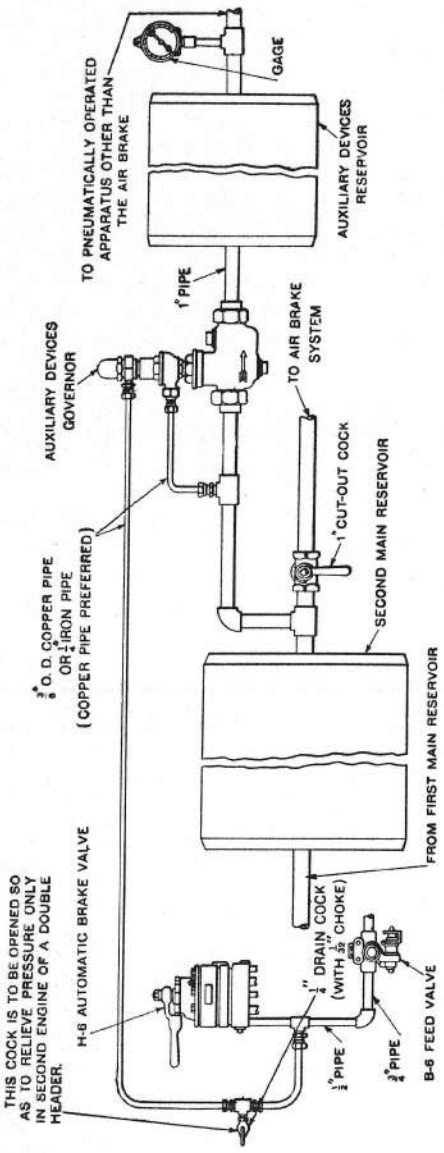


Fig. 3. Installation of Auxiliary Devices Governor

With pedestal brake valves (where the feed valve is attached to the pedestal), a plug can be removed to provide a connection beyond the feed valve for pressure supply to the auxiliary devices governor top.

NOTE:—When a locomotive having an auxiliary devices governor is used as a second locomotive, double heading or other than the one controlling the brakes, with the double heading cock closed, the ¼" drain cock should be opened. This is to relieve pressure that would build up above feed valve pressure in the small volume of the feed valve pipe to the governor, on account of main reservoir leaks from the brake valve or feed valve. Main reservoir air in the feed valve pipe would prevent the supply of air reaching the auxiliary devices reservoir. The choke in the drain cock is of such size as to keep the feed valve pipe pressure to that of the feed valve.

When charging the auxiliary devices reservoir, main reservoir air will flow to the lower side of the diaphragm and feed valve pipe air will flow to the upper side of diaphragm, adding to the spring tension already exerted by the regulating spring 27 in holding the diaphragm down and the diaphragm valve 33 to its seat. The diaphragm valve will remain seated until main reservoir pressure exceeds feed valve pipe pressure by an amount equal to the tension of the regulating spring (the regulating spring tension may vary between 10 and 30 lbs., but is usually adjusted to 15 lbs.). When this point is reached, the diaphragm valve will unseat, allowing main reservoir air to flow to the top of piston 6, moving the piston downward and unseating valve 5 (at the left). Main reservoir air will then unseat non-return check valve 5 and flow direct into the auxiliary devices reservoir. This charging will continue until the main reservoir pressure equalizes with the auxiliary devices reservoir or until the main reservoir pressure should be reduced from other cause, slightly below the adjustment of this governor. In the latter event communication will then be cut off between the main reservoir and the auxiliary devices reservoir and no further supply will be delivered to the latter reservoir until the main reservoir pressure is again restored to a slightly greater amount than that for which the governor is regulated.

When air is being drawn from the auxiliary devices reservoir for the operation of the various auxiliary devices, main reservoir pressure will reduce at the same rate until it is slightly less than the adjustment of the governor regulating head, depending upon the pressure in the feed valve pipe. Main reservoir pressure being

on the under side of the diaphragm and feed valve pipe pressure on the top side, the difference of pressure will force the diaphragm down and the attached regulating valve to its seat. The pressure which has been holding the piston 6 down will now equalize with the pressure under the piston, through the small passage in the piston, and the supply valve spring will then force the piston up, allowing the supply valve to seat and thereby prevent further supply from the main reservoir.

It is clear from the above description that this governor does not control the maximum pressure to be supplied to the auxiliary devices reservoir, but does control the pressure below which the main reservoir ceases to supply the auxiliary devices reservoir, which is that determined by the adjustment of the excess pressure regulating spring of the device. (The governor, however, is cut out of operation when the automatic brake valve is in Lap, Service and Emergency positions. In these three positions of the brake valve, main reservoir pressure is delivered into the feed valve pipe which is connected to the top side of diaphragm of the regulating head of this governor. Since main reservoir pressure is now on both sides of the diaphragm, the regulating spring tension will keep the diaphragm valve on its seat and thereby cut off the main reservoir supply to the auxiliary devices reservoir.)

The excess pressure head provides a desirable feature, in that when locomotives are transferred from one class of service to another which necessitates a change in brake pipe pressure, it is not necessary to re-adjust the governor. When the initial adjustment has been properly

made, the pressure at which the auxiliary devices governor prevents air flowing from the main reservoir to the auxiliary devices reservoir is automatically maintained due to the fact that the feed valve pipe pressure is connected to the top side of the diaphragm in conjunction with a regulating spring, and any change of feed valve pipe pressure automatically changes the pressure controlled by this governor.

The primary function of the auxiliary devices governor is to protect the brake system against depletion of the air supply required for braking, from any excessive demand for air by the auxiliary apparatus during operation or when a pipe is broken. In addition to this it will hold, for a time, (depending on the tightness of the auxiliary devices and connections) a reserve supply of air for the use of the auxiliary devices when any of the main reservoir connections are broken or the main reservoir pressure reduced abnormally from any cause. This makes it possible to reverse the engine if provided with a pneumatic reversing gear or to operate other auxiliary apparatus.

Adjustment, Etc.

To determine whether or not the excess pressure top spring of the auxiliary devices governor is correctly adjusted, place the brake valve handle in running position when the main reservoir pressure is less than the normal feed valve adjustment. As the pressure rises note the differential between brake pipe pressure and main reservoir pressure at the time the red hand of the large duplex gage indicates by a pause in the rise of main

reservoir pressure and perhaps a slight fluctuation of this hand, that the auxiliary devices governor has just opened. If this differential is less than the required amount (usually 15 lbs.) screw down on the adjusting nut. If greater, slack off the necessary amount.

It is important that the spring adjustment of the excess pressure head of the compressor governor be such as to give 30 lbs. excess pressure. Unless this adjustment is made, there will be insufficient differential between the setting of the auxiliary devices governor and main reservoir pressure to permit charging of the auxiliary devices reservoir.

To charge the auxiliary devices reservoir on locomotive having insufficient steam pressure to produce at least 85 lbs. main reservoir pressure, proceed as follows: Place the brake valve handle in holding position until main reservoir pressure ceases to rise, after which place it in Emergency position, then return it to Holding position and leave it there thirty (30) seconds; then repeat the operation. This should admit sufficient air into the auxiliary devices reservoir to permit of the operation of the reverse gear, but if not, it should be repeated with a longer time in holding position to permit accumulation of a higher main reservoir pressure. The action that takes place is as follows: By placing the brake valve handle in Emergency position the brake pipe is vented to atmosphere. Now, if the brake valve handle is brought back to Holding position, the feed valve pipe is connected to the brake pipe, and as the brake pipe is then empty, there will be a drop in feed valve pipe pressure which will momentarily relieve the

air pressure from the top of the auxiliary devices governor diaphragm and permit main reservoir pressure underneath the diaphragm to raise it and open the pin valve. This admits air to the top of the piston which is forced downward, thereby opening the spring loaded check valve and admitting air to the auxiliary devices reservoir.

In winter weather, in the event of a lack of sufficient air in the auxiliary devices reservoir to properly operate the auxiliary devices, when there is no lack of main reservoir pressure, it will be inferred that the diaphragm portion on the pipe leading to this portion from the main reservoir pipe is frozen and obviously should be thawed out.

To guard against freezing during extremely cold weather, it is recommended that the governor be located at some convenient place inside the locomotive cab.

The air-using auxiliary devices commonly used on modern locomotives consume in the aggregate a considerable amount of air even when they and their connections are tight against leakage. However, if they are allowed to become leaky, they may consume an excessive amount of air and thereby impose abnormally severe duty on the compressor. Obviously, therefore, for satisfactory and economic operation, these leaks should be reduced to a minimum.

WESTINGHOUSE AIR BRAKE COMPANY

Pittsburgh, Pa., U. S. A.

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