



CATALOGUE Z.1449

WESTINGHOUSE
STRAIGHT AIR BRAKE EQUIPMENT
WITH AIR OPERATED ANCILLARY FITTINGS
FOR
A DIESEL SHUNTING LOCOMOTIVE

JULY 1967

WESTINGHOUSE BRAKE AND SIGNAL Co. Ltd.

82, YORK WAY, KING'S CROSS, LONDON, N.1

Cables and Telegrams:

Telephone:

"Westinghouse, London, Telex."

Terminus 6432 (22 Lines)

WORKS: CHIPPENHAM, WILTS. X

4.141

WESTINGHOUSE BRAKE AND SIGNAL CO. LTD.
82, York Way, King's Cross, LONDON N.1.

GRB/MEH
26th JULY, 1967

CATALOGUE Z.1449

WESTINGHOUSE
STRAIGHT AIR BRAKE EQUIPMENT
WITH AIR OPERATED ANCILLARY FITTINGS
FOR
A DIESEL SHUNTING LOCOMOTIVE

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82, York Way, King's Cross, LONDON N.1.

GRB/MEH
 26th JULY, 1967

CATALOGUE Z.1449

Sheet No. 1
 Total No. 2

SCHEDULE OF FITTINGS

No. Per Set	Name of Complete Fitting	Type	Part No.& Component Parts List	Drg.No. Shown on Diagram DA9974/1	Pamphlet No.
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COMPRESSOR AND MAIN RESERVOIR FITTINGS

1	Combined Governor Unloader and Check Valve (set to Unload at 100 lb/sq.in.)		Z13/2	DX56	} RB414/6 }
2	1/2" Drain Cock for Main Reservoir	RD	6142	D253	}A534/1 }and }A534/1A }Fig.3
1	1/2" Centrifugal Dirt Collector with Drain Cock		29278	D344/1	}A573/1 }and }A573/1A }Fig.1
1	1/2" Safety Valve set 110 lb/sq.in.	T2	J70929/18	DB6860/1	}A761/1 }

DRIVER'S CONTROL FITTINGS

1	Driver's Straight Air Brake Valve set 65 lb/sq.in.	SA1	J74005/6	DA9430/1	}A578/7 }and }A578/7A
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MAIN FRAME FITTINGS

1	1/2" Isolating Cock with Vent		12597	DA4239	}A534/1 }A534/1A }Fig.1 }and }A534/5
1	Air Line Filter		A87679/1	DB5325	C21/2

WESTINGHOUSE BRAKE AND SIGNAL CO. LTD.

26th JULY, 1967

CATALOGUE Z.1449

Sheet No. 2
Total No. 2

SCHEDULE OF FITTINGS

No. Per Set	Name of Complete Fitting	Type	Part No.& Component Parts List	Drg.No. Shown on Diagram DA9974/1	Pamphlet No.
<u>BRAKE CYLINDER FITTINGS</u>					
2	12" x 8" Brake Cylinder without Leakage Groove	JP	B79396/2	DB9330/2)A545/17)and)A545/17A
*2	Rigging Return Spring		590	D178	A735/1
<u>SANDING FITTINGS</u>					
4	Sand Ejector	SAR	B73753/1	DB5758)A762/4)and)A762/4A

WESTINGHOUSE BRAKE AND SIGNAL CO. LTD.

8/1/67

HOW TO ORDER SPARE PARTS

HOW TO ORDER SPARE PARTS

COMPONENT PARTS LISTS* giving manufacturing part numbers are included in this Catalogue for your convenience. Reference numbers shown in the descriptive pamphlets need not be given when ordering and the following procedure will help us to meet your requirements correctly:-

WHEN ORDERING COMPLETE FITTINGS, please state

- a). The Catalogue Z. number.
- b). The part number and name of the fitting required.

WHEN ORDERING COMPONENTS, please state

- c). The Catalogue Z. number.
- d). †The part number and name of the part required, together with the part number and name of the complete fitting for which it is required.
- e). The amount oversize or undersize if required.

NOTE:—Spares are supplied to standard size unless otherwise specified.

*Items marked with an asterisk in the “Schedule of Fittings” are supplied as complete items. Component Parts Lists are therefore not included for these items.

†Where no part number is shown, the name of the part only will suffice, together with the part number and name of the complete fitting for which it is required.

WESTINGHOUSE BRAKE AND SIGNAL CO. LTD.
82, York Way, King's Cross, LONDON N.1.

SHG/MEH
11th JULY, 1967.

BRAKE DESCRIPTION NO. 702276

Sheet No. 1
Total No. 2

WESTINGHOUSE
STRAIGHT AIR BRAKE EQUIPMENT
WITH AIR OPERATED ANCILLARY FITTINGS
FOR
A DIESEL SHUNTING LOCOMOTIVE.

DIAGRAMMATIC ARRANGEMENT DRAWING NO. DA.9974/1

GENERAL

The equipment comprises a straight air brake for the locomotive together with pneumatic sanding fittings. A supply of air is provided for a warning horn and also for engine and transmission controls.

THE BRAKE SYSTEM

Compressed air for the operation of the brake and auxiliary systems is stored in the main reservoirs. The supply of air from the compressor to these reservoirs is under the control of a governor, incorporated in the combined governor, unloader and check valve unit, and which is adjusted to ensure that the pressure in the reservoirs is maintained within selected limits. A safety valve is included to prevent an excessive pressure being obtained in the main reservoir system should the governor fail to operate.

Application and release of the air brake is controlled by a driver's straight air brake valve which allows compressed air to pass to the brake cylinders when the brake is applied and which exhausts this air to the atmosphere when the brake is released. The pressure in the brake cylinders and therefore the degree of braking force which is obtained, is controlled by the mechanism within the brake valve and corresponds to the position in which the handle is placed. The maximum brake cylinder pressure which can be obtained, is the setting of the brake valve.

The pressures in the main reservoir and the brake cylinder are indicated by a pressure gauge in the locomotive cab.

PRESSURE SETTINGS

The following are the correct pressure settings applicable to this equipment.

1. Maximum main reservoir pressure
(Governor cut-out pressure setting) - 100 lb/sq.in.

WESTINGHOUSE BRAKE AND SIGNAL CO. LTD.

11th JULY, 1967.

BRAKE DESCRIPTION NO. 702276

Sheet No. 2

- | | | | |
|----|---|---|---------------------|
| 2. | Minimum main reservoir pressure
(Governor cut-in pressure setting) | - | Approx. 85 lb/sq.in |
| 3. | Safety valve pressure setting | - | 110 lb/sq.in. |
| 4. | Brake cylinder pressure with brake
valve handle in "Full Service"
position (Brake valve pressure
setting). | - | 65 lb/sq.in. |

STRAIGHT AIR BRAKE EQUIPMENT
TESTS BEFORE ENTERING SERVICE

(These instructions should be read in conjunction with the
Operating Authorities' Regulations).

NOTE: ALL RESERVOIRS MUST BE DRAINED DAILY.

- i. See that the handbrake is applied and that the brake valve handle is in the "Release" position.
- ii. Start the compressor and check that air is delivered to the main reservoirs. Check that the governor operates to cut off the air supply from the compressor at the correct main reservoir pressure.
- iii. Release the handbrake and move the brake valve handle in steps towards the "Full Service" position. Check that the brake cylinder pressure rises each time the handle is moved.
- iv. Move the brake valve handle to the "Full Service" position and check that the correct brake cylinder pressure is obtained. Check that the brake blocks are applied to the wheels.
- v. Return the handle towards the "Release" position in steps and check that the brake cylinder pressure falls each time the handle is moved. When the handle is in the "Release" position, check that the blocks are withdrawn from the wheels and that the brake cylinder pressure gauge indicates zero.
- vi. Re-apply the handbrake.
- vii. During the foregoing tests, note that as air is used, the main reservoir pressure is maintained between the correct limits by the action of the governor.
- viii. Check the operation of any other air operated device with which the locomotive is fitted.

WESTINGHOUSE BRAKE AND SIGNAL CO. LTD.

A. Osborne

Westinghouse

C 21/2
ISSUE 1.

AIR LINE FILTERS



Filters are fitted in a circuit to ensure that any foreign particles are prevented from entering valves in the system, thus damaging valve seats, etc.

CONSTRUCTION

To a basic body can be fitted several types of filter, such as a porous bronze disc or woven wire mesh plates. These filters are retained in place by a spring which in turn is retained by the cover. In the base of the body either a plug or drain cock can be fitted to drain off moisture.

MAINTENANCE

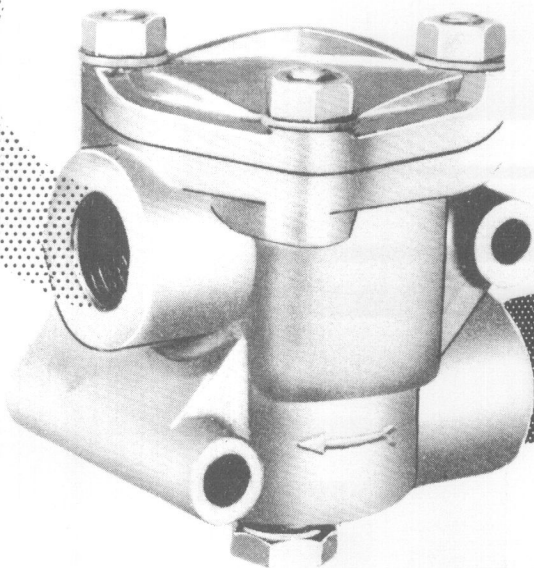
Periodically drain off moisture; the frequency of this operation depends on operating conditions.

To clean the filter first remove the cover, some resistance may be felt as jointing compound is used between the cover and the body. If a porous bronze disc is fitted wash in carbon tetrachloride and blow dry with an air jet from the reverse direction of the normal operational flow. If a wire mesh filter is fitted, wash in carbon tetrachloride or paraffin, allowing it to dry before re-assembly. Check the spring to see it has sufficient tension to retain the filter on its seat, check the drain washer and renew if leakage is apparent.

Renew the gasket, and on re-assembly use jointing compound to obtain a perfect seal between the body and the cover.

ORDERING A FILTER

Enquiries for any specific application should enclose full details of the proposed method of operation. Component parts lists for ordering spares are available on request.

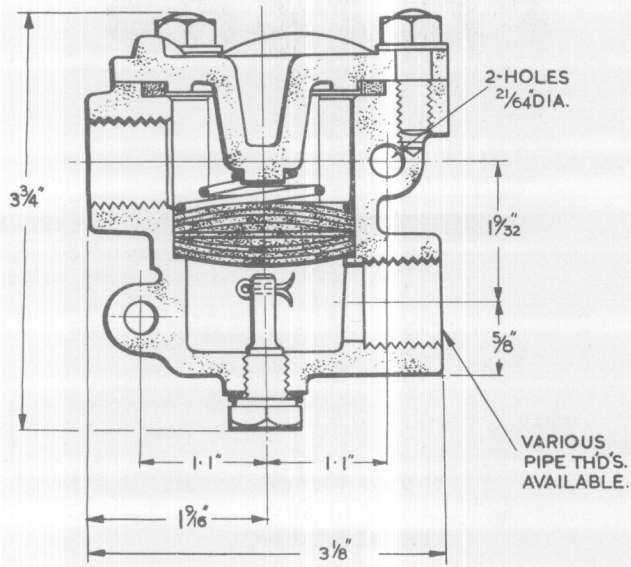


WESTINGHOUSE BRAKE & SIGNAL COMPANY LIMITED

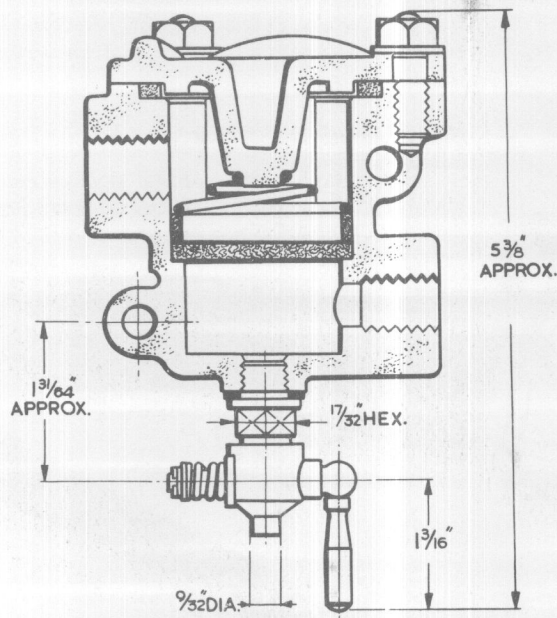
Marine and Industrial Controls Division, Chippenham, Wilts.

Tel: Chippenham 2881.

HEAD OFFICE: 82 YORK WAY, KING'S CROSS, LONDON



AIR LINE FILTER
with wire mesh plates



AIR LINE FILTER
With Drain Cock
and porous bronze disc

8/61
C21/2

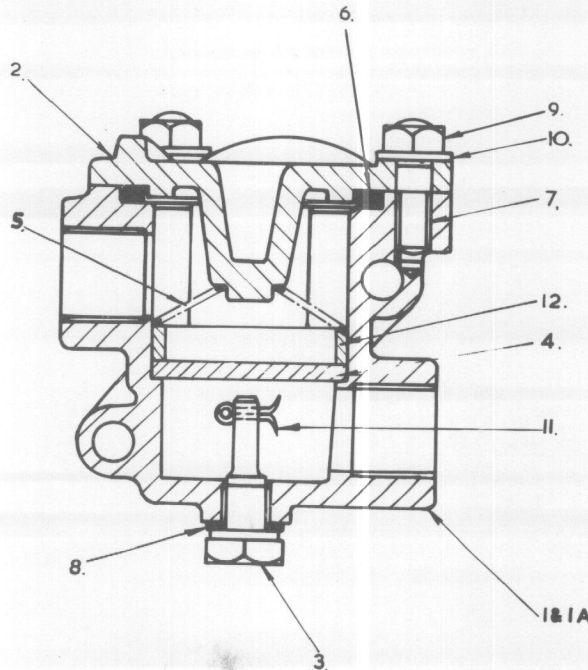
PARTS LIST
A87679



AIR LINE FILTER

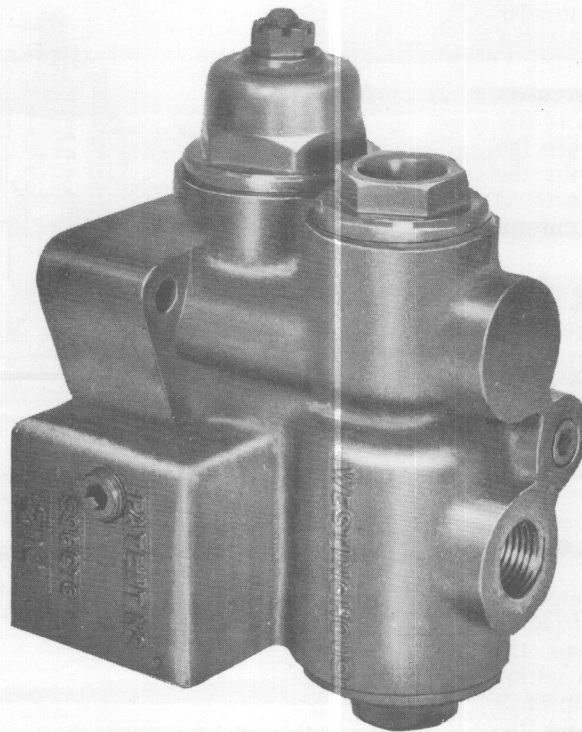
Complete Part No. A.87679/2/3.***

Recommended spares to be held in stock at all times are
marked thus *100% **25% ***5%



<u>Ref.No.</u>	<u>Part No.</u>	<u>Name of Part</u>	
1	B.75671/2	Body, for complete Part No.A.87679/2	
1A	B.75671/1	Body, for complete Part No.A.87679/3	
2	A.87680/1	Cover	
3	A.87681/1	Plug	
** 4	KW.572/13	Filter	
*** 5	A.80474/2	Spring	
* 6	A.82686/8	Gasket	
7	A.83458/18	Stud	(3)
** 8	A.83256/1	Washer	
9	DK.77/4	5/16" B.S.F. hex. nut	(3)
10	DK.215/1	5/16" dia. bright washer	(3)
11	DK.125/1	Split Pin, 3/32" x 5/8" long	
12	J.30056/14	Spacer	

UNLOADER VALVE



WESTINGHOUSE BRAKE AND SIGNAL Co. Ltd.

AUTOMOTIVE AND INDUSTRIAL PRODUCTS DIVISION

**HANHAM ROAD,
KINGSWOOD,
BRISTOL**

Telegrams and Cables:
Westinghouse—Bristol

Telephone:
Bristol 67-1781

UNLOADER VALVE

The unloader valve is mounted in the air pressure system between the compressor and reservoir to control pressure of air in the reservoir. It can be arranged for reservoir or pipe line mounting. The unloader, relieving the compressor of its load once the unloader cut-out pressure is obtained, seals the reservoir when the compressor has built up a

pressure, depending upon the setting of the adjusting screw, which is normally between 80 and 100 lb./sq. in. It then diverts the air delivered by the compressor to atmosphere, thus allowing the compressor to run light while the reservoir contains an adequate supply of air.

OPERATION

The air passages in the unloader are shown in Fig. 1, the principle of operation being as follows:—

Air from the compressor enters the unloader via the inlet port and passes through the strainer, lifts the check valve and passes into the reservoir, where the pressure is built up until it reaches the cut-out setting.

At the same time the air pressure from the compressor passes to the underside of the relay valve and feeds into the spring chamber above it via the very small annular clearance between the relay valve piston and its guide bush, so that at all times pressure above and below the relay valve is in equilibrium, the valve being forced on to its seat by the spring acting above it on the pilot valve.

Air pressure from the reservoir is also acting on the underside of the control piston. When the pressure reaches the cut-out setting the control piston, forcing upwards against the pilot valve and the spring, will lift the pilot valve, thus allowing the air pressure above the pilot valve to be exhausted to atmosphere.

Instantly this occurs the air pressure acting below the relay valve will force it upwards against the pilot valve, and the air from the compressor will then be vented to atmosphere, via the exhaust strainer.

The air pressure stored in the reservoir will close the check valve, and seal it off until the reservoir pressure is reduced by approximately 20 lb./sq. in. below the unloader cut-out setting.

The control spring then overcomes the reduced

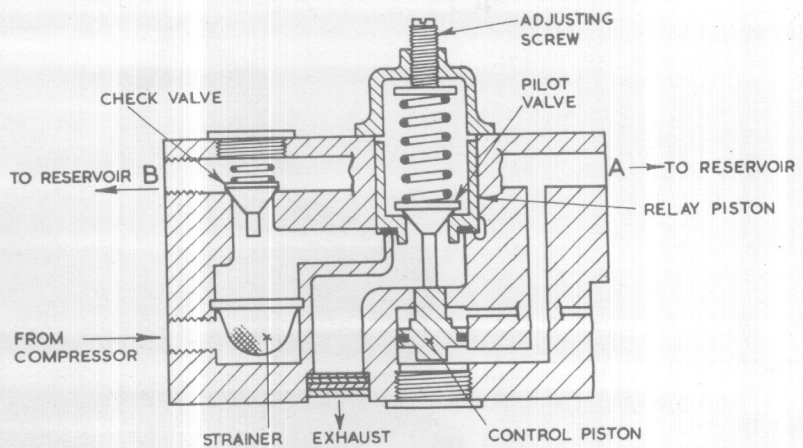


Fig. 1. For Pipe Line Mounting
Port "B" is drilled and tapped
Port "A" is plugged
For Reservoir Mounting
Port "A" is drilled
Port "B" is omitted

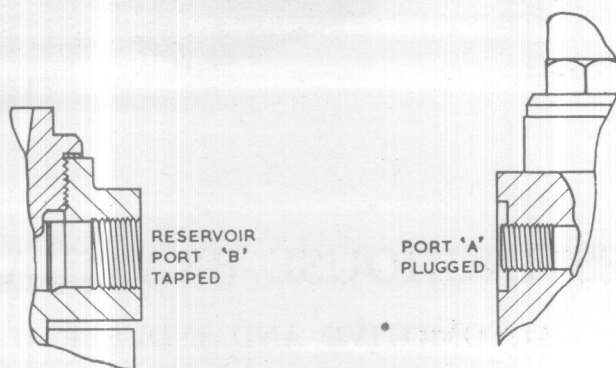


Fig. 2. Alternative arrangement for Pipe Line Mounted Unloader

air pressure on the control piston, and returns the pilot and relay valves to their original positions when the compressor will recommence charging the reservoir.

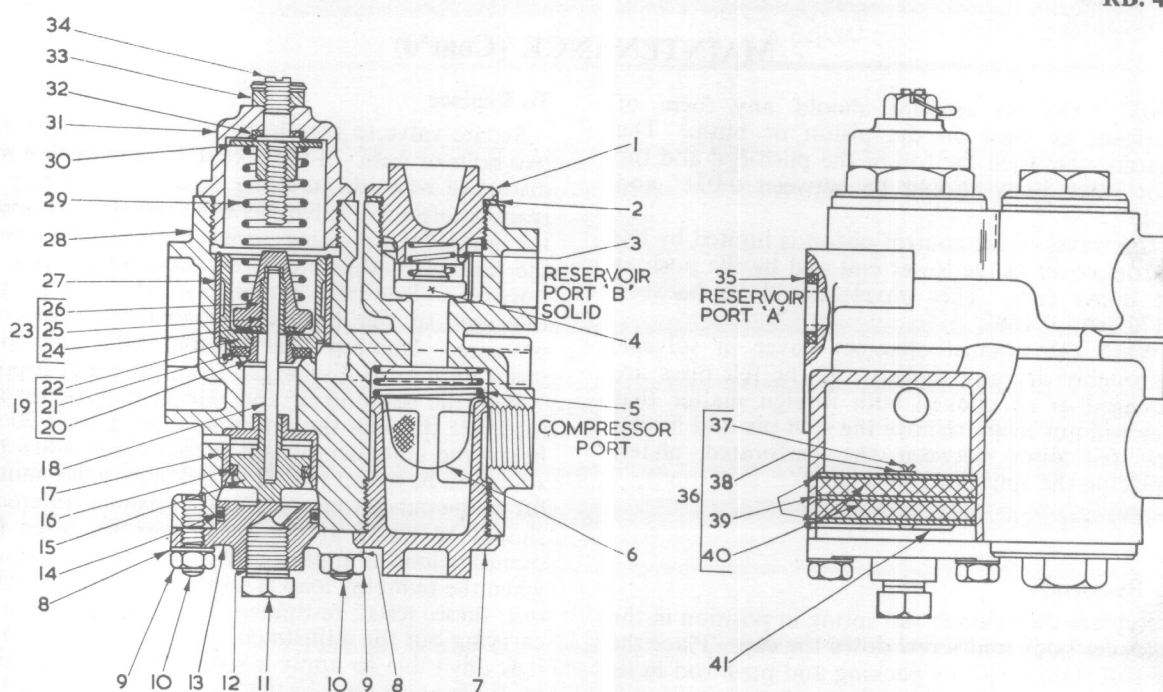


Fig. 3. Reservoir Mounted Unloader

MAINTENANCE

The only maintenance normally required is at overhaul periods, except for a periodic check that the valves are functioning correctly. It is recommended that these checks are carried out at monthly intervals.

Charge up the reservoir, check the unloader cut-out pressure. If the pressure is incorrect slacken the locknut 33 and turn the adjusting screw 34, R.H. to increase and L.H. to decrease the pressure. Tighten the locknut, repeat the test, readjust if necessary, operate the brake foot pedal several times to release the pressure in the reservoir and note the cut-in pressure, i.e. normally approximately 20 p.s.i. below the cut-out pressure. When the unloader cuts out again stop the engine, apply soap and water to the small vent in the rear of the body, to test the control piston for leakage. Restart the engine, reduce the pressure by applying the foot brake and when the compressor is pumping, test the exhaust port again with soap and water for leakage past the relay or pilot valve. If difficulty is found in adjusting the valve to the correct pressure, or a leakage is found, remove the valve, dismantle and examine for faulty parts.

To Remove Unloader

Open the drain cock in the air pressure reservoir to ensure that all pressure is released from the system. Disconnect all pipe unions to the unloader and undo the two fixing bolts or nuts securing the valve to the vehicle or reservoir.

To Dismantle

Unscrew the cap 31 above the adjusting spring 29 and withdraw the adjusting spring and relay piston 19, together with the pilot valve 23; unscrew and remove the two nuts and spring washers 8 and 9 securing the bottom cover 13 and lift off the cover. Withdraw the control piston 15 complete with its packing and push rod. Unscrew the check valve cap 1 and remove spring 3 and check valve 4. Unscrew the strainer cap 7 and remove strainer 6 and strainer spring 5. Remove the exhaust chamber clip 41 and withdraw the exhaust chamber cover 36.

Inspection of Dismantled Parts

Examine the adjusting spring, renew if any signs of deterioration are apparent. All packings and gaskets should be renewed, as also should all valve rubbers if they appear damaged in any way. In removing old rubbers and fitting new ones, care should be taken not to distort or damage the holder. In the case of the check valve rubber, this cannot be replaced, and a complete new check valve assembly should be fitted. The metal check valve, relay valve and pilot valve seats may be refaced, if they are damaged, with suitable cutters, although it is preferable to replace the pilot valve seat. Check that the relay valve piston is a smooth push fit in its bush. The piston "lift," i.e. the travel until movement is arrested by a top cap, should be 0.095". The relay piston should be free to rotate in its bush, but the clearance should not exceed

MAINTENANCE (Cont'd)

0.003". On no account should any form of lubricant be used on the piston or bush. The clearance between the top of the push rod and the pilot valve body should be between 0.031" and 0.047".

The travel of the control piston is limited by the bottom cover at the lower end and by the push at the upper end. This travel should be between 0.172" and 0.188".

Wash the exhaust chamber cover in solvent, thoroughly dry and replace. If the felt discs are damaged or so choked with foreign matter that they will not clean, remove the split pin and fit two new felt discs between the perforated plates, replacing the split pin and washer.

To Reassemble

Replace the strainer and spring in position in the unloader body and screw down the cap. Place the control piston with its packing and push rod in its location and replace the bottom cover, securing it with the two nuts, with spring washers under the head of each. Replace the relay piston in the unloader valve location and refit the pilot valve and adjusting spring; replace the top cap, screwing it down securely. Replace the check valve, spring and cap, screwing the cap down securely. Refit the exhaust chamber cover and clip.

To Replace

Secure valve to the chassis or reservoir with the two bolts or nuts. If the unloader valve setting was disturbed when dismantling it will be necessary to readjust after the valve has been refitted. Loosen the unloader adjusting screw locknut and screw the unloader adjusting screw clockwise as far as possible. Run the compressor and charge the reservoir to the normal unloader valve cut-out pressure. Unscrew the unloader valve adjusting screw until air is discharged from the exhaust port.

Run the compressor and release pressure in the reservoir through the drain cock to at least 20 lb. below the unloader cut-out pressure and allow the system to be recharged. The unloader valve should lift at the cut-out pressure and a distinct difference should be noted at the lower pressure when the pumping load is applied and at the higher pressure when the pumping load is removed. After carrying out these tests, re-tighten the locknut. Whilst carrying out the adjustments to the unloader valve it is advisable to apply a soap and water solution to the exhaust vent in the body to test the control piston for leakage. This test should be carried out when the unloader has cut out and the compressor is not running. When the compressor is actually running, test the exhaust port again with soap and water solution for leakage past the relay and pilot valve. After ensuring that all adjustments are in order, re-seal the unloader.



WESTINGHOUSE

PARTS LIST
Z.13/2

UNLOADER VALVE

(FOR PIPE LINE MOUNTING)

Complete Part No. Z.13/2 ***

Spares recommendations marked thus:- *100%, ** 25%, *** 5%.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Name of Part</u>	
1	A.89663/1	Cap (Check Valve Chamber)	
2*	A.73211/152	Gasket	
3**	A.87822/38	Spring (Check Valve)	
4	A.89655/1	Check Valve	
5**	Pc.13907	Spring (Strainer)	
6***	A.80748/3	Strainer	
7	W.87/1	Strainer Cap	
8	DK.232/1	Washer	(2)
9	DK. 76/6	Hex. Nuts	(2)
10	A.85020/1	Stud	(2)
11	A.82089/1	Plug	(2)
12	A.83256/2	Copper and Asbestos Washer	
13	W.273/1	Bottom Cover	
14*	A.83291/9	'O' Ring	
15	A.88868/1	Control Piston	
16*	A.82331/7	Piston Packing	
17	A.82769/4	Bush (Small)	
18	A.75326/110	Push Rod	
19***	A.88865/1	Relay Piston complete. Comprising Refs. 20, 21 and 22.	
20	A.88866/1	Pilot Valve Seat	
21	A.76912/14	Valve Washer	
22	A.88867/1	Relay Piston	
23***	A.88862/1	Pilot Valve complete. Comprising Refs. 24, 25 and 26.	
24	A.76912/10	Valve Washer	
25	A.88863/1	Retaining Screw	
26	A.88864/1	Pilot Valve Body	
27	A.82768/2	Bush (Large)	
28***	X.31/2	Unloader Body complete includes Refs. 8, 9, 10, 17 and 27.	
29**	A.83051	Adjusting Spring	
30	A.82780	Adjusting Nut	
31	A.82781	Top Cap	
32*	Pc.18556	Gasket for Top Cap	
33	DK.85/8	Nut	
34	A.80996/1	Adjusting Screw	

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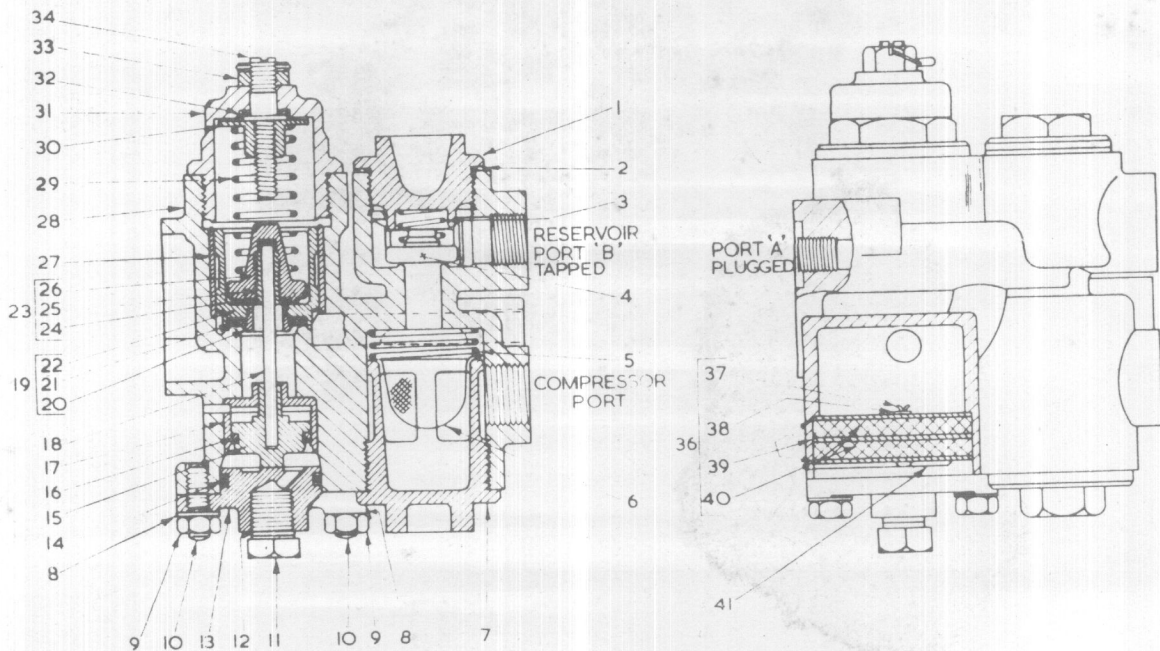
WESTINGHOUSE BRAKE & SIGNAL CO., LTD. KINGSWOOD, BRISTOL.

Tel. Bristol 671781

<u>Ref. No.</u>	<u>Part No.</u>	<u>Name of Part</u>	
36***	W.134/1	Exhaust Chamber Cover complete comprising Refs. 37, 38, 39 and 40.	
37	W.73/2	Bifurcated Rivet	
38	DK.227/3	Washer	(3)
39	W.89/1	Exhaust Chamber Plate	(2)
40	W.90/1	Exhaust Chamber Pad	
41	W.91/1	Exhaust Chamber Clip.	

When ordering SPARE PARTS, please include the following details :-

- (a) Name, Pt. No. and Illustration Ref. No. of the components required.
- (b) Name, and Pt. No. of complete Item to which fitted.



TAPER-PLUG COCKS

A wide range of Taper-Plug Cocks can be supplied to meet all railway pneumatic brake requirements. Types of taper-plug cocks suitable for Isolating, Coupling and Draining are illustrated in this pamphlet.

COUPLING COCKS

Coupling cocks are provided at the ends of every vehicle fitted with air brakes to close the train pipes at both ends of the train and to enable the hose couplings to be coupled and uncoupled.

Coupling cocks have screwed sockets for direct attachment to the train pipe (usually 1" for the brake pipe and $\frac{3}{4}$ " for the main reservoir pipe), and the outlet end of the cock also has a screwed socket to take a standard hose coupling nipple.

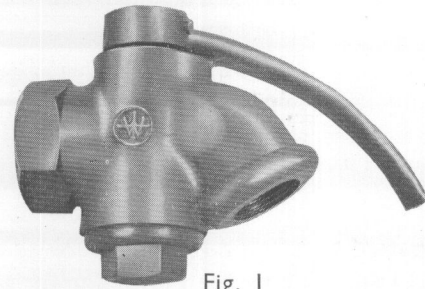


Fig. 1

Fig. 1. Bent Coupling Cock

This is a conventional taper-plug cock with the outlet end bent to allow the hose coupling to hang without kinking. The handle is turned horizontally and cocks can be supplied with the handle Open (O.L.P.) or Closed (C.L.P.) in Line of Pipe as required, with either Right or Left hand operation.

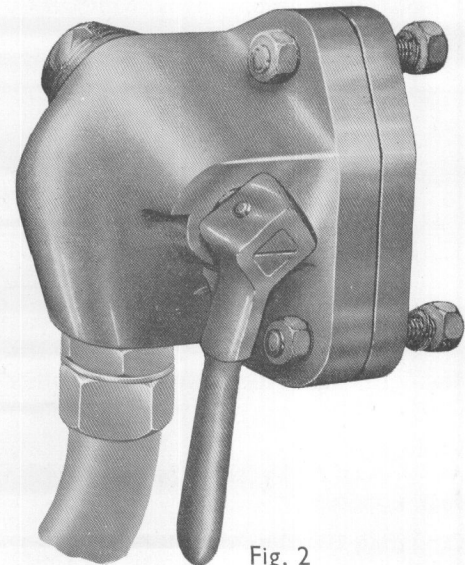


Fig. 2

Fig. 2. Flanged Coupling Cock

This cock is carried on a mounting bracket which is screwed on to the train pipe and attached to the vehicle by studs and nuts. The cock is attached to the mounting bracket by extensions on these studs and can be removed for maintenance without disturbing the permanent pipe joint. The joint between the cock and the mounting bracket is sealed by a gasket. The handle of this cock is moved vertically; the cock is open when the handle is vertically downwards. Alternative types allow the handle to be fitted either on the Right or Left hand side of the cock.

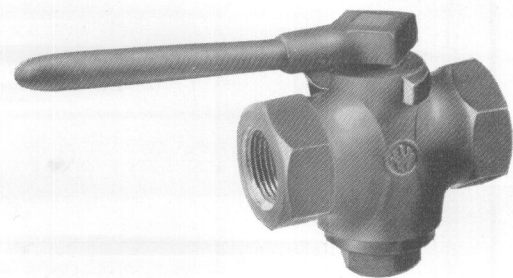


Fig. 3

Fig. 3. Straight Coupling Cock

This is a conventional taper-plug cock, used where the train pipe to which it is attached is bent or where bent nipples are used to allow the coupling hose to hang without kinking. This type of cock can be fitted horizontally or vertically. Cocks can be supplied O.L.P. or C.L.P. as required with either Right or Left hand handle movement.

SPECIAL TYPES

Taper-plug coupling cocks can be supplied with a screwed boss on the hose coupling side of the cock for connecting to detecting equipment.

Coupling cocks complying with U.I.C. standards

are available; please give details of requirements when ordering.

Spherical Plug Coupling Cocks with synthetic rubber seats are also available; details will be supplied on request.

WESTINGHOUSE BRAKE AND SIGNAL COMPANY LIMITED
82 YORK WAY, KING'S CROSS, LONDON, N.I.

Telegrams: "Westinghouse, London, Telex"

Telephone: TERminus 6432 (22 lines)

ISOLATING COCKS

Fig. 4. Straight Isolating Cock

This is the most usual type of isolating cock in use, with screwed sockets at each end for fitting to the pipework. Further details are given below.

SPECIAL TYPES

Isolating cocks suitable for pipe bracket mounting are available.

'A'. Provided with a machined face for mounting on a pipe bracket carrying other equipment (brake units, etc.).

'B'. Supplied mounted on a pipe bracket which can be screwed permanently in the pipework.

These cocks can be removed for maintenance without disturbing the permanent pipe joints. Further details of these cocks will be supplied on request.

Taper-plug isolating cocks can be supplied with an additional small-bore tapped connection for a pressure gauge or other equipment.

Cocks are available with provision for sealing either open or closed by wire and lead seals.

Isolating cocks complying with U.I.C. standards are available. Please give details of requirements when ordering.

3-way and 4-way cocks are also available. Details will be supplied on request.

Standard cocks and handles are painted black; special finishes are available to order.

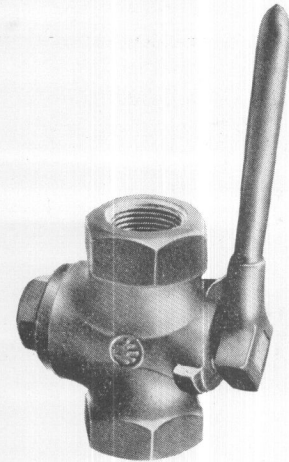


Fig. 4

COUPLING AND ISOLATING COCKS

GENERAL INFORMATION

Size Range

The **Nominal Size** of cocks is the nominal size of the screw thread provided for attaching the cock to the pipe.

Size Range—Coupling Cocks	$\frac{1}{2}$ ", $\frac{3}{4}$ ", 1", $1\frac{1}{4}$ ", 2".
Isolating Cocks	$\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1", $1\frac{1}{4}$ ", 2".

Screwing Systems

Standard cocks are screwed B.S.P.; other screwing systems e.g. Briggs, Metric, etc. can be supplied to special order.

Venting

All types of cocks can be provided with vents when it is necessary for one connection to be vented when the cock is closed.

Operating Handles

All cocks can be supplied with or without operating handles, and the size and shape of the handles can be varied to suit particular requirements. Alternatively cocks can be fitted with an extension piece for use with an extension handle or key.

Extended Spindles

Extension spindles can also be supplied; any type of handle can be fitted to extension spindles.

"Handed" Operation

All cocks are available arranged for either "right hand" or "left hand" operation and with the operating handle "open in line of pipe" (O.L.P.) or "closed in line of pipe" (C.L.P.) as required.

Handle Stops

Cocks are fitted with handle stops to ensure positive movement into the open or closed position, the handle stops can be omitted to meet special requirements.

Installation Notes

It is usually preferable to mount isolating and coupling cocks horizontally when possible. When fitted vertically the type of cock chosen must be such that the handle will fall to the "safe" position if it should move under the influence of vibration.

Avoid distorting the cock during installation by applying the pipe wrench to the end adjacent to the joint being made. This will prevent subsequent leakage. When installing cocks which have a mounting bracket (Fig. 2) the cock should be removed, the mounting bracket fitted to the pipework and the cock re-assembled to the pipe bracket when the permanent joint has been completed.

DRAIN COCKS

Drain cocks are fitted at the lowest point of reservoirs, drip cups, dirt collectors and other fittings to enable water, oil or dirt to be drained off. The most usual type of taper-plug drain cock is illustrated.

Fig. 6. This type of cock is intended for vertical installation, i.e. screwed directly into the lowest point of a fitting. Handle Movement—Closed when pointing downwards in line with the drain nipple, Open when moved into the horizontal position.

This type of cock is also available for horizontal mounting when it may be screwed into a boss on the end of a reservoir or at the end of a horizontal drain pipe. Handle movement—Open when in line with the cock.

Size Range

The standard range of sizes is:— $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{1}{2}$ " and 1" B.S.P. Special sizes can be supplied.

Operating Handles

Standard drain cocks are supplied with a short handle but the size and shape of the handle can be varied to suit customer's requirements.

The larger sizes of drain cocks ($\frac{1}{2}$ " and upwards) are fitted with handle stops to ensure positive movement into the open or closed position.

Screwing Systems

Standard cocks are screwed B.S.P.; other screwing systems, e.g. Briggs, Metric, etc. can be supplied to special order.

Drain cocks are supplied with a male screwed extension to fit the drain bosses of reservoirs, etc. Drain nipples (which are not screwed) are fitted on the outlet.

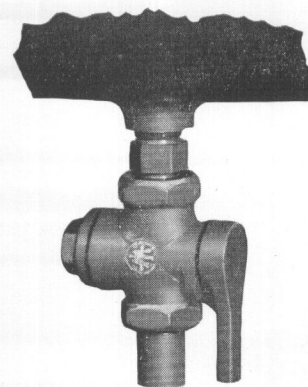


Fig. 6

MAINTENANCE FOR TAPER-PLUG COCKS

Cocks should be regularly examined and tested for stiffness of movement and leakage. If stiff or leaking, the cock should be dismantled, thoroughly cleaned and the plug lightly greased with graphite grease before re-assembly. Should leakage persist after re-assembly, the plug should be re-ground on its seating to give a pressure tight joint; before re-assembly remove all traces of grinding compound and lubricate with graphite grease.

When re-assembling, ensure that the handle and plug are correctly assembled and that the vent holes in the body and plug (if provided) are clear.

Renew the plug spring if defective.

When refitting cocks mounted on a pipe bracket ensure that the jointing face gaskets are serviceable.

When re-erecting take care to avoid distorting the bodies of cocks which are directly attached to pipe work.

TESTING OF TAPER-PLUG COCKS

Apply compressed air to the supply side of the cock and with the handle in the closed position test with soap and water for leakage at—

- | | |
|---------------------------------|--|
| (a) The handle end of the plug. | (b) The cap joint. |
| (c) The open end connections. | (d) The vent hole in the body (if provided). |

There should not be any leakage at the plug or cap, but a slight bubble, which does not burst in less than 15 seconds, is permissible at the open connection or vent.

Plug the open connection and open the cock. Test at the cock plug, cap and vent (if provided) for leakage as above.

Remove the plug and check that the flow of air through the cock is not restricted.

When testing vented cocks, apply air to the vented side and check that operation is correct when the cock is closed.

When mounting flanged cocks on a pipe bracket check for leakage at the jointing faces with soap and water.

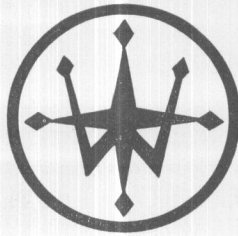
COMPONENT PARTS LISTS

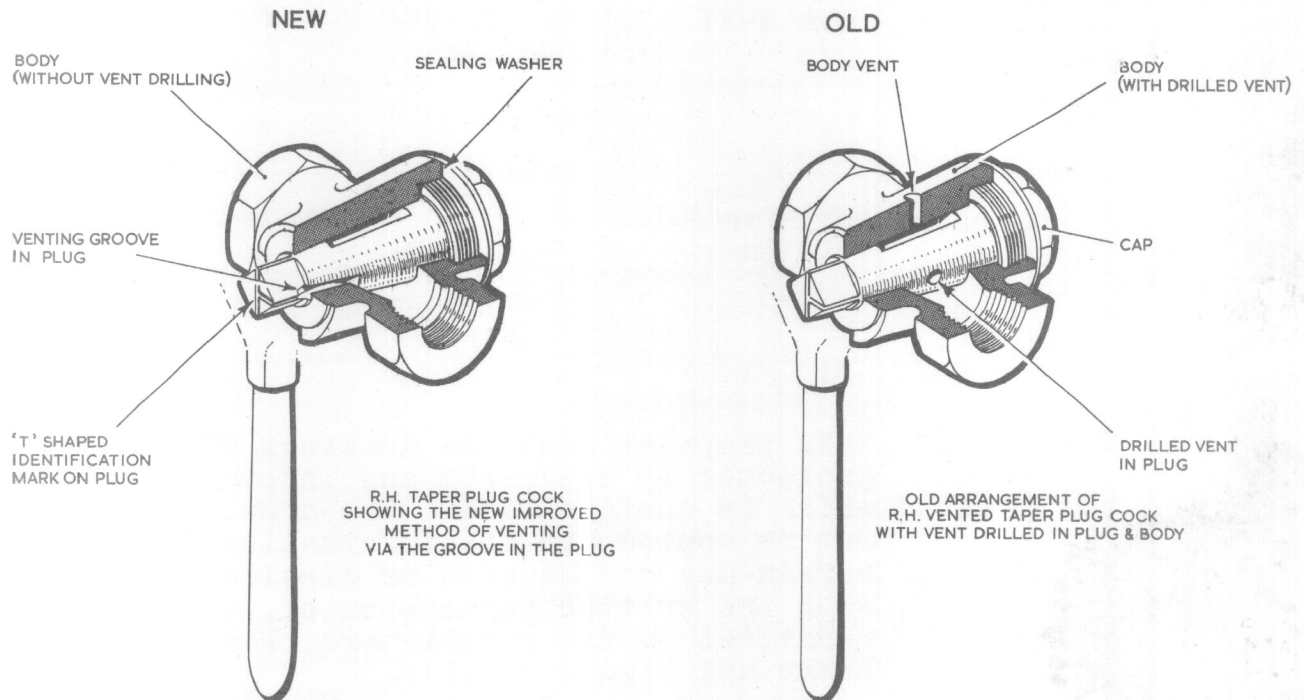
Illustrations for identifying the components are contained in a separate pamphlet.

In addition Component Parts Lists giving the name and manufacturing part numbers for ordering spares are available or are contained in Equipment Catalogues which are issued for specific contracts on request.

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NEW IMPROVED METHOD OF VENTING FOR
WESTINGHOUSE VENTED TAPER PLUG COCKS

NEW IMPROVED METHOD OF VENTING FOR WESTINGHOUSE VENTED TAPER PLUG COCKS

When existing stocks are exhausted, all future supplies of Westinghouse vented taper plug cocks will include the new improved venting arrangement shown in the left hand illustration above. In addition the cocks will include a sealing washer between the cap and body.

Cocks with the improved venting arrangement can only be identified by the 'T' shaped mark which is provided in the plug end to indicate the position of the vent.

For spares purposes, a plug with a venting groove will function correctly when fitted to an old type body, and in accordance with our normal practice new bodies will be supplied complete with plug. On no account must an old type plug be used in a new body otherwise the vent will be obstructed.

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ISSUE 9

COMPONENT PARTS LIST

PAMPHLET A534/1A
Fig.1 or DP.98

1/2" ISOLATING COCK (WITH VENT)

SHEET No. 1

PART NO. 12597

TOTAL No. 1

NAME OF PART	TOTAL PER UNIT	REF. No.	PART NUMBER
1/2" Isolating Cock with Vent	-	-	12597
Body) Normally	1	1	3400
Plug) supplied	1	2	J75161/1
Spring) together	1	3	3394
Cap	1	4	3395
Handle	1	5	3402
Mills Pin 5/32" x 1.1/8" long Type GP1 - Steel	1	6	-
Washer - Cap to Body - Not Illustrated	1	-	A70115/61

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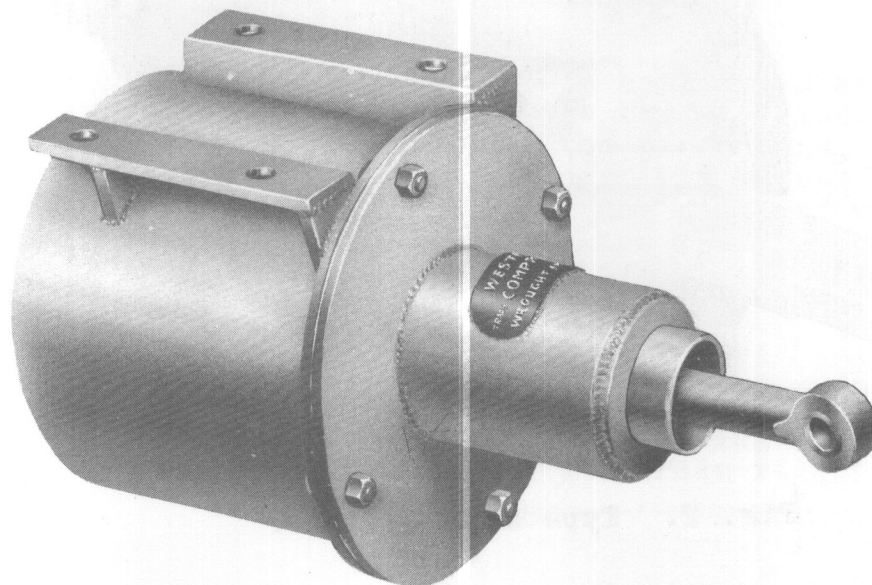
COMPRESSOR BRAKE CYLINDER TYPE J
WITH SNAP-ON PISTON PACKING
AND WITH OR WITHOUT FULCRUM BRACKET

Fig.1. Type J.P. Cylinder.

Brake cylinders are provided on railway rolling stock fitted with pneumatic brake equipment, to convert air pressure into mechanical force and motion to apply the brakes.

Fig.1 shows a type J.P. cylinder suitable for horizontal mounting and provided with a plugged grease hole and a tapped port for the air connection. Fig.2 shows a type J.F. cylinder which is similar to the type J.P. but also includes a fulcrum bracket welded to the cylinder, whilst Figs. 3 and 4 are sectional illustrations which identify the parts.

A data sheet which gives the fixing dimensions and other relevant information for each particular type of cylinder is available. Cylinders which include a leakage groove cut in the cylinder wall or which include a push rod end only, may be supplied if required.

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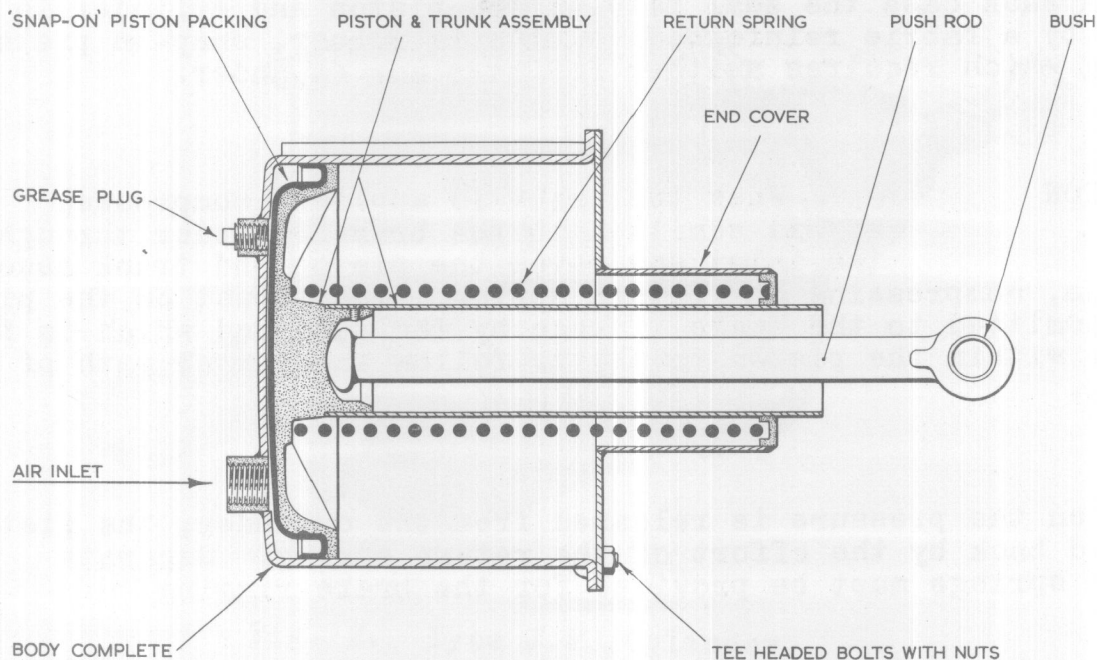


FIG.4. BRAKE CYLINDER TYPE 'J.P.'

MAINTENANCE INSTRUCTIONS AND COMPONENTS PARTS LIST

Maintenance Instructions and illustrations for identifying the components are contained in a separate pamphlet.

In addition, Component Parts Lists giving the names and manufacturing part numbers for ordering spares are available or are contained in Equipment Catalogues which are issued for specific contracts on request.

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1st Edition - 250 - April 1965

MAINTENANCE INSTRUCTIONS
BRAKE CYLINDERS TYPE H AND J WITH
SNAP-ON PISTON PACKINGS

INTRODUCTION

This pamphlet contains the maintenance instructions for type H and type J brake cylinders fitted with snap-on piston packings, and contains illustrations of typical cylinders of both conventional and fabricated construction. Type 'H' cylinders are shown in Figs. 1 and 2, and type 'J' cylinders in Figs. 3, 4 and 5.

PERIODICAL
SERVICING

The brake cylinder will be checked for correct operation during the functional tests called for by the Railway Authority's regulations. If a cylinder is suspected of faulty operation, the cause must be investigated and the fault rectified. The servicing procedure is described under the heading 'OVERHAUL', below.

For vehicles operating under normal conditions, it is anticipated that the greasing carried out during manufacture or overhaul, should be sufficient to provide adequate lubrication for the 'between overhaul' periods. However, on vehicles such as coal wagons, which are operating under extremely dusty or dirty conditions, or on vehicles operating under unusually arduous climatic conditions, it is advisable to inject a small quantity of grease into the brake cylinders occasionally through the plugged grease hole or elbowed grease connections provided in the back of the cylinder body. 'OSMOLIN' (previously Arctic Paragon) grease is recommended and it is suggested that the greasing should be carried out at six monthly or 12 monthly intervals depending upon service conditions and at the discretion of the Engineer in charge of Maintenance. After adding grease, operate the air brake several times to distribute the lubricant.

OVERHAUL

If practicable, the brake cylinders may be serviced on the vehicle. Alternatively the cylinders must be removed in which case serviceable replacements may be fitted. The mountings on the vehicle should be cleaned before the replacement is fitted and the exposed pipe connections should be blanked off until ready for reconnection.

GENERAL

Cleanliness is most important and the external surfaces of the cylinder should be cleaned before dismantling commences. The piston and rod or trunk assembly should be handled carefully to avoid accidental damage.

DISMANTLING

The following sequence is suggested for guidance but may be modified to suit service conditions:-

Type J Brake Cylinders

1. Disconnect the push rod 7A from the brake levers and withdraw the push rod.
2. The piston return spring 5 is under compression and it may be advisable to remove two diametrically opposite cover fixing bolts 9 and replace them by two longer bolts, threaded over their full length. The remaining tee headed bolts and nuts can then be

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removed, and the nuts on the two longer bolts can be wound off evenly until the spring tension is relaxed.

Remove the nuts and bolts, take off the end cover 6, remove the return spring 5, and withdraw the piston assembly 4A.

3. Remove the piston packing 3 from the piston.

Type H Brake Cylinders

1. Disconnect the crosshead from the brake levers.
2. If it is practicable to remove the crosshead complete with the piston 4A, piston return spring 5, and end cover 6, undo and remove the tee head bolts 9 securing the end cover to the cylinder body and withdraw the complete assembly. Dismantle the assembly on the bench, holding the cover in position against the return spring whilst removing the crosshead pin 12, the crosshead 13A or 13B, and end cover 6.

If the above is not practicable, it will be necessary to remove the crosshead pin 12 and separate crosshead 13A or 13B from the piston rod, then remove the end cover, piston, and the return spring as described under paragraph 2 of the dismantling sequence for type 'J' cylinders.

3. Remove the piston packing 3, from the piston.

CLEANING

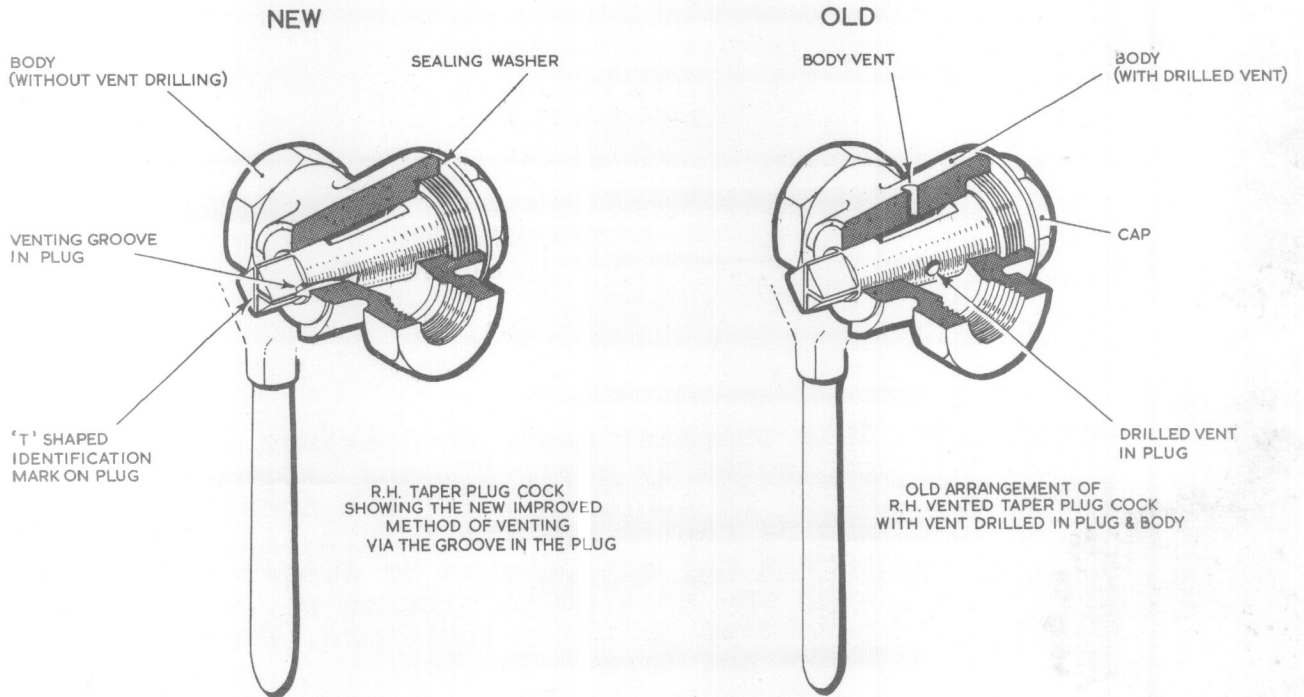
AND INSPECTION

When the brake cylinder has been completely dismantled, all metal parts should be cleaned and degreased with a suitable solvent and then dried, preferably using a jet of clean, dry compressed air. If degreasing plant is used, the Railway Authority's regulations regarding the use of the plant and fluids must be strictly observed.

After thorough cleaning, examine all parts including the cylinder bore. This should be smooth, clean and true. On cylinders which are dismantled on the vehicle, the bore should be greased immediately after cleaning. This will prevent the formation of rust whilst the bore is exposed to the atmosphere.

It is recommended that a new piston packing should be fitted at each overhaul period, and it is important that the correct replacement is used. The packing is a snap-on fit on the piston.

Ensure that the piston 4A is clean and that the radii on the piston blend smoothly. There should be no sharp edges which might damage the piston packing. If the piston is damaged it must be renewed and for spares purposes replacements for type 'H' cylinders are supplied complete with the piston rod, whilst replacements for type 'J' cylinders include the piston trunk.

**NEW IMPROVED METHOD OF VENTING FOR
WESTINGHOUSE VENTED TAPER PLUG COCKS**

NEW IMPROVED METHOD OF VENTING FOR WESTINGHOUSE VENTED TAPER PLUG COCKS

When existing stocks are exhausted, all future supplies of Westinghouse vented taper plug cocks will include the new improved venting arrangement shown in the left hand illustration above. In addition the cocks will include a sealing washer between the cap and body.

Cocks with the improved venting arrangement can only be identified by the 'T' shaped mark which is provided in the plug end to indicate the position of the vent.

For spares purposes, a plug with a venting groove will function correctly when fitted to an old type body, and in accordance with our normal practice new bodies will be supplied complete with plug. On no account must an old type plug be used in a new body otherwise the vent will be obstructed.

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1st Edition - 1,000 - October 1966.



ISSUE - 6

COMPONENT PARTS LIST

PAMPHLET A534/1A
Fig. 3 or
DP. 68

1/2" DRAIN COCK TYPE R.D.
PART NO. 6142

SHEET No. 1

TOTAL No. 1

NAME OF PART	TOTAL PER UNIT	REF. No.	PART NUMBER
1/2" Drain Cock Type RD	-	-	6142
Body) Normally	1	1	3400
Plug) supplied	1	2	3401
Spring	1	3	3394
Cap	1	4	3395
Handle	1	5	16059
Handle Pin - Mills Pin Type GP1 5/32" dia. x 1.1/4" long-Steel	1	6	-
Union Nipple	1	10	2314
Drain Nipple	1	11	6178
Washer - Cap to Body - Not Illustrated	1	-	A70115/6

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ISSUE 9

COMPONENT PARTS LIST

PAMPHLET A534/1A
Fig.1 or DP.98

1/2" ISOLATING COCK (WITH VENT)

PART NO. 12597

SHEET No. 1

TOTAL No. 1

NAME OF PART	TOTAL PER UNIT	REF. No.	PART NUMBER
1/2" Isolating Cock with Vent	-	-	12597
Body) Normally	1	1	3400
) supplied			
Plug) together	1	2	J75161/1
Spring	1	3	3394
Cap	1	4	3395
Handle	1	5	3402
Mills Pin 5/32" x 1.1/8" long Type GP1 - Steel	1	6	-
Washer - Cap to Body - Not Illustrated	1	-	A70115/61

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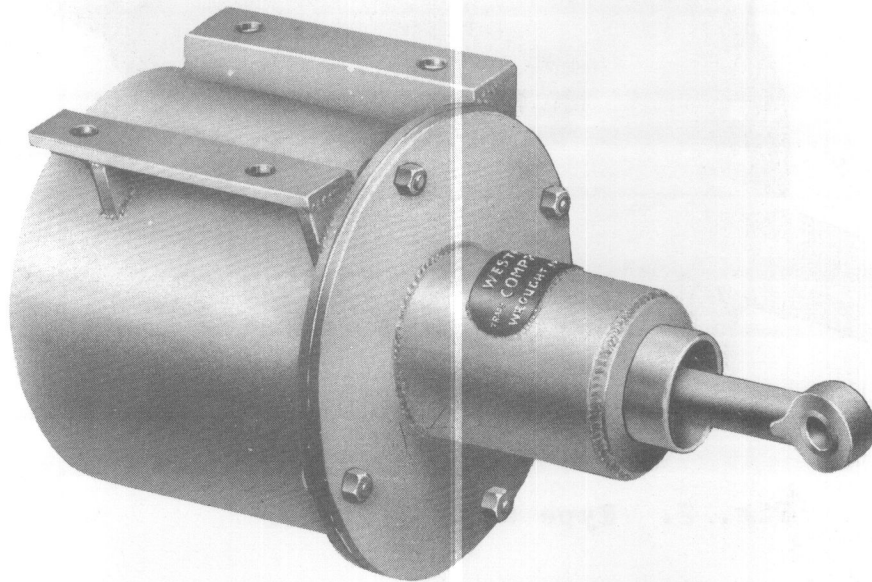
COMPRESTALL BRAKE CYLINDER TYPE J
WITH SNAP-ON PISTON PACKING
AND WITH OR WITHOUT FULCRUM BRACKET

Fig.1. Type J.P. Cylinder.

Brake cylinders are provided on railway rolling stock fitted with pneumatic brake equipment, to convert air pressure into mechanical force and motion to apply the brakes.

Fig.1 shows a type J.P. cylinder suitable for horizontal mounting and provided with a plugged grease hole and a tapped port for the air connection. Fig.2 shows a type J.F. cylinder which is similar to the type J.P. but also includes a fulcrum bracket welded to the cylinder, whilst Figs. 3 and 4 are sectional illustrations which identify the parts.

A data sheet which gives the fixing dimensions and other relevant information for each particular type of cylinder is available. Cylinders which include a leakage groove cut in the cylinder wall or which include a push rod end only, may be supplied if required.

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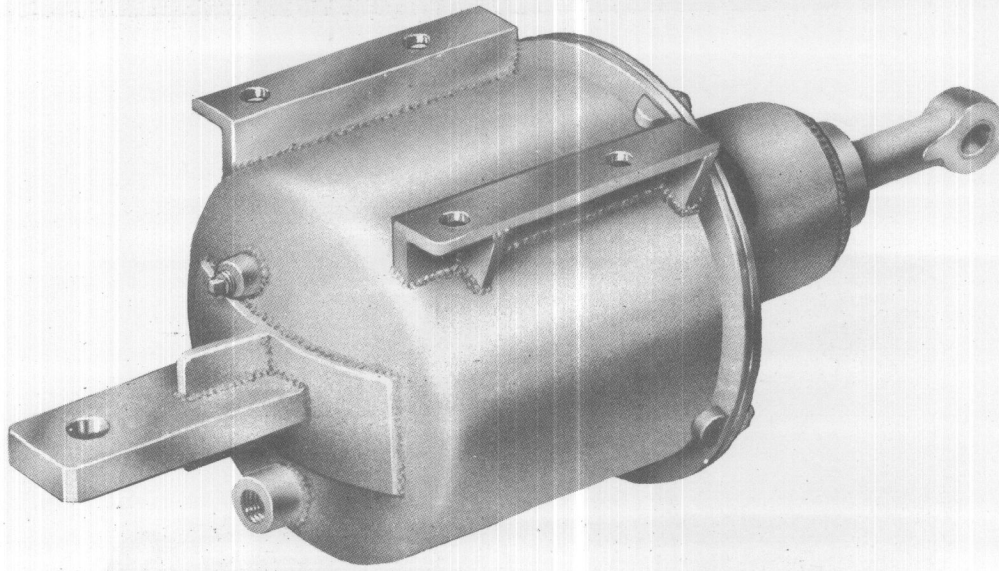


Fig. 2. Type J.F. Cylinder

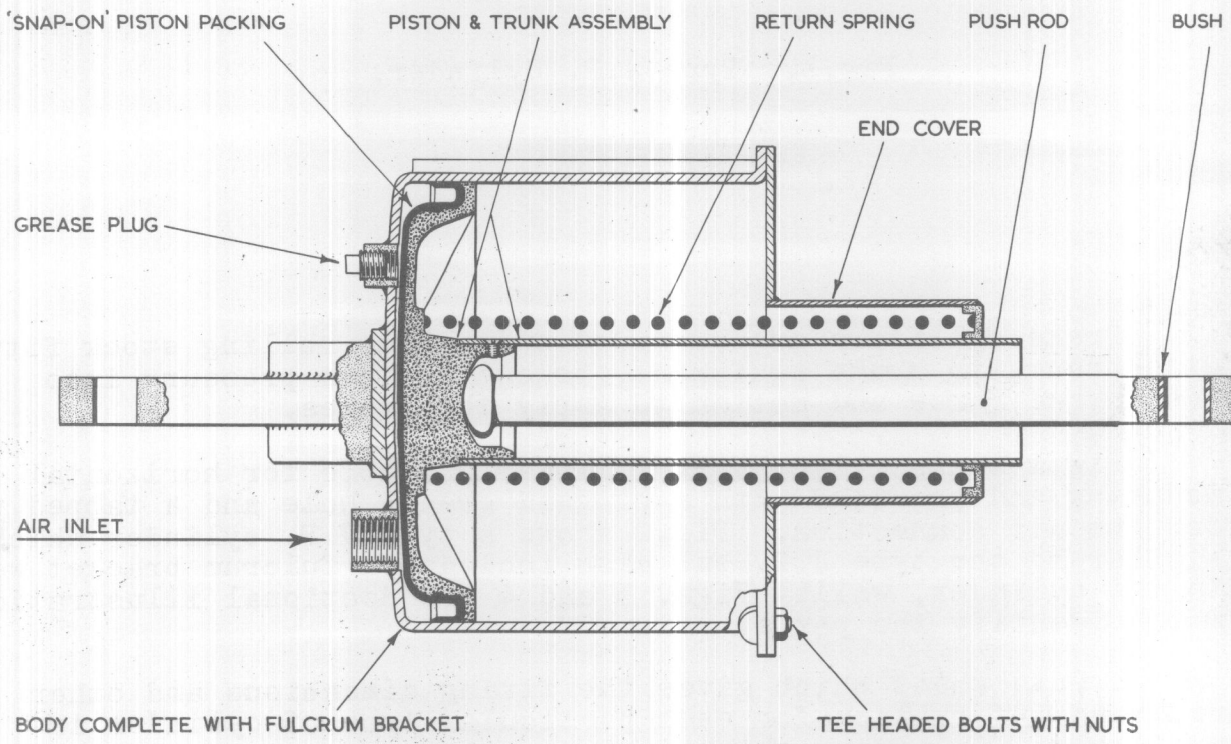


FIG. 3.

BRAKE CYLINDER WITH FULCRUM BRACKET

In each case the seal between the piston and cylinder is formed by a fabric reinforced, synthetic rubber, snap-on piston packing which requires neither follower nor expander.

OPERATION

When the brake is applied, compressed air is admitted to the brake cylinder through the inlet and moves the piston and trunk assembly outwards, compressing the return spring. The thrust on the piston is transmitted to the brake linkage by the push rod which is free to move within the piston trunk, to follow the curved path of the rigging.

When the pressure is released from the cylinder, the piston is moved back by the effort of the return spring. Separate release springs must be provided for the brake rigging.

CONSTRUCTION

These brake cylinders are of simple design and construction, and consist of a seamless steel body to which the mounting brackets, greasing socket, and air connection are welded. On type J.F. cylinders the fulcrum bracket is also welded to the end of the cylinder and in each case the grease hole is plugged.

The piston is of cast iron and the steel trunk is secured to the piston by three screws which are permanently locked in position. A snap-on piston packing is employed and this requires neither follower nor expander. The packing is made from fabric reinforced synthetic rubber, which is oil resisting and withstands ageing and extremes of temperature.

One end of the piston return spring is located on a shoulder formed on the piston, whilst the opposite end is located in an annular groove formed in the end cover. The end cover carries the nameplate and is of welded steel construction; it is secured to the open end of the body by four tee head bolts and nuts, and guides the piston trunk.

Each cylinder is provided with either a steel push rod or a push rod end, to suit the customers requirements. Where the complete push rod is supplied, this includes a hardened steel bush to accept the rigging pin.

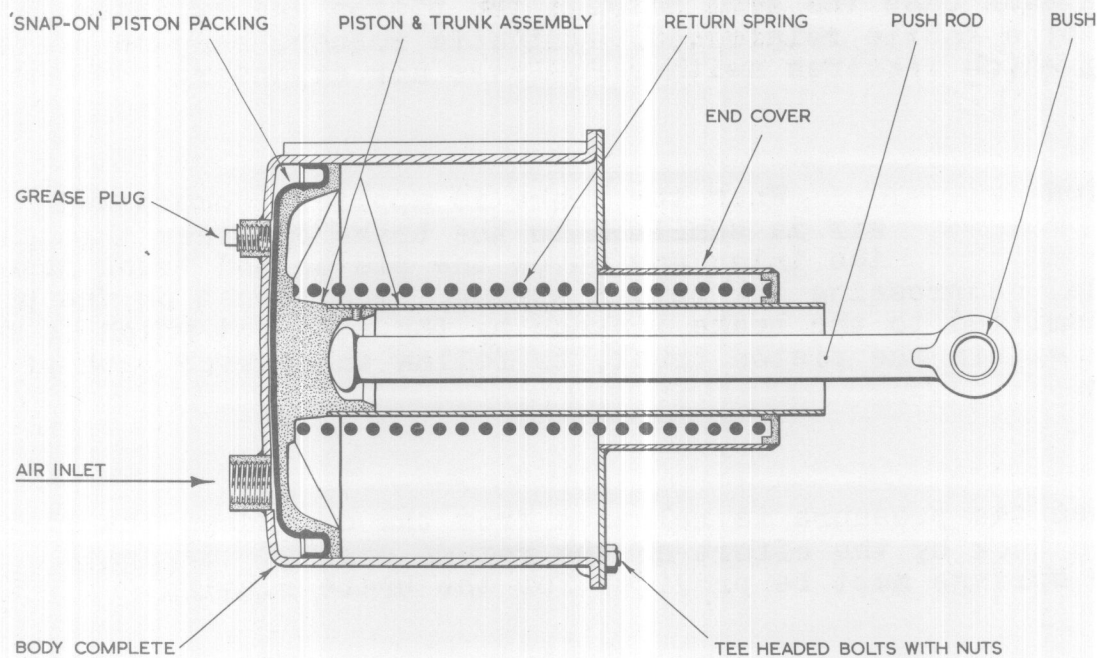


FIG. 4. BRAKE CYLINDER TYPE 'J.P.'

MAINTENANCE INSTRUCTIONS AND COMPONENTS PARTS LIST

Maintenance Instructions and illustrations for identifying the components are contained in a separate pamphlet.

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1st Edition - 250 - April 1965

**MAINTENANCE INSTRUCTIONS
BRAKE CYLINDERS TYPE H AND J WITH
SNAP-ON PISTON PACKINGS****INTRODUCTION**

This pamphlet contains the maintenance instructions for type H and type J brake cylinders fitted with snap-on piston packings, and contains illustrations of typical cylinders of both conventional and fabricated construction. Type 'H' cylinders are shown in Figs. 1 and 2, and type 'J' cylinders in Figs. 3, 4 and 5.

**PERIODICAL
SERVICING**

The brake cylinder will be checked for correct operation during the functional tests called for by the Railway Authority's regulations. If a cylinder is suspected of faulty operation, the cause must be investigated and the fault rectified. The servicing procedure is described under the heading 'OVERHAUL', below.

For vehicles operating under normal conditions, it is anticipated that the greasing carried out during manufacture or overhaul, should be sufficient to provide adequate lubrication for the 'between overhaul' periods. However, on vehicles such as coal wagons, which are operating under extremely dusty or dirty conditions, or on vehicles operating under unusually arduous climatic conditions, it is advisable to inject a small quantity of grease into the brake cylinders occasionally through the plugged grease hole or elbowed grease connections provided in the back of the cylinder body. 'OSMOLIN' (previously Arctic Paragon) grease is recommended and it is suggested that the greasing should be carried out at six monthly or 12 monthly intervals depending upon service conditions and at the discretion of the Engineer in charge of Maintenance. After adding grease, operate the air brake several times to distribute the lubricant.

OVERHAUL

If practicable, the brake cylinders may be serviced on the vehicle. Alternatively the cylinders must be removed in which case serviceable replacements may be fitted. The mountings on the vehicle should be cleaned before the replacement is fitted and the exposed pipe connections should be blanked off until ready for reconnection.

GENERAL

Cleanliness is most important and the external surfaces of the cylinder should be cleaned before dismantling commences. The piston and rod or trunk assembly should be handled carefully to avoid accidental damage.

DISMANTLING

The following sequence is suggested for guidance but may be modified to suit service conditions:-

Type J Brake Cylinders

1. Disconnect the push rod 7A from the brake levers and withdraw the push rod.
2. The piston return spring 5 is under compression and it may be advisable to remove two diametrically opposite cover fixing bolts 9 and replace them by two longer bolts, threaded over their full length. The remaining tee headed bolts and nuts can then be

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removed, and the nuts on the two longer bolts can be wound off evenly until the spring tension is relaxed.

Remove the nuts and bolts, take off the end cover 6, remove the return spring 5, and withdraw the piston assembly 4A.

3. Remove the piston packing 3 from the piston.

Type H Brake Cylinders

1. Disconnect the crosshead from the brake levers.
2. If it is practicable to remove the crosshead complete with the piston 4A, piston return spring 5, and end cover 6, undo and remove the tee head bolts 9 securing the end cover to the cylinder body and withdraw the complete assembly. Dismantle the assembly on the bench, holding the cover in position against the return spring whilst removing the crosshead pin 12, the crosshead 13A or 13B, and end cover 6.

If the above is not practicable, it will be necessary to remove the crosshead pin 12 and separate crosshead 13A or 13B from the piston rod, then remove the end cover, piston, and the return spring as described under paragraph 2 of the dismantling sequence for type 'J' cylinders.

3. Remove the piston packing 3, from the piston.

CLEANING

AND

INSPECTION

When the brake cylinder has been completely dismantled, all metal parts should be cleaned and degreased with a suitable solvent and then dried, preferably using a jet of clean, dry compressed air.

If degreasing plant is used, the Railway Authority's regulations regarding the use of the plant and fluids must be strictly observed.

After thorough cleaning, examine all parts including the cylinder bore. This should be smooth, clean and true. On cylinders which are dismantled on the vehicle, the bore should be greased immediately after cleaning. This will prevent the formation of rust whilst the bore is exposed to the atmosphere.

It is recommended that a new piston packing should be fitted at each overhaul period, and it is important that the correct replacement is used. The packing is a snap-on fit on the piston.

Ensure that the piston 4A is clean and that the radii on the piston blend smoothly. There should be no sharp edges which might damage the piston packing. If the piston is damaged it must be renewed and for spares purposes replacements for type 'H' cylinders are supplied complete with the piston rod, whilst replacements for type 'J' cylinders include the piston trunk.

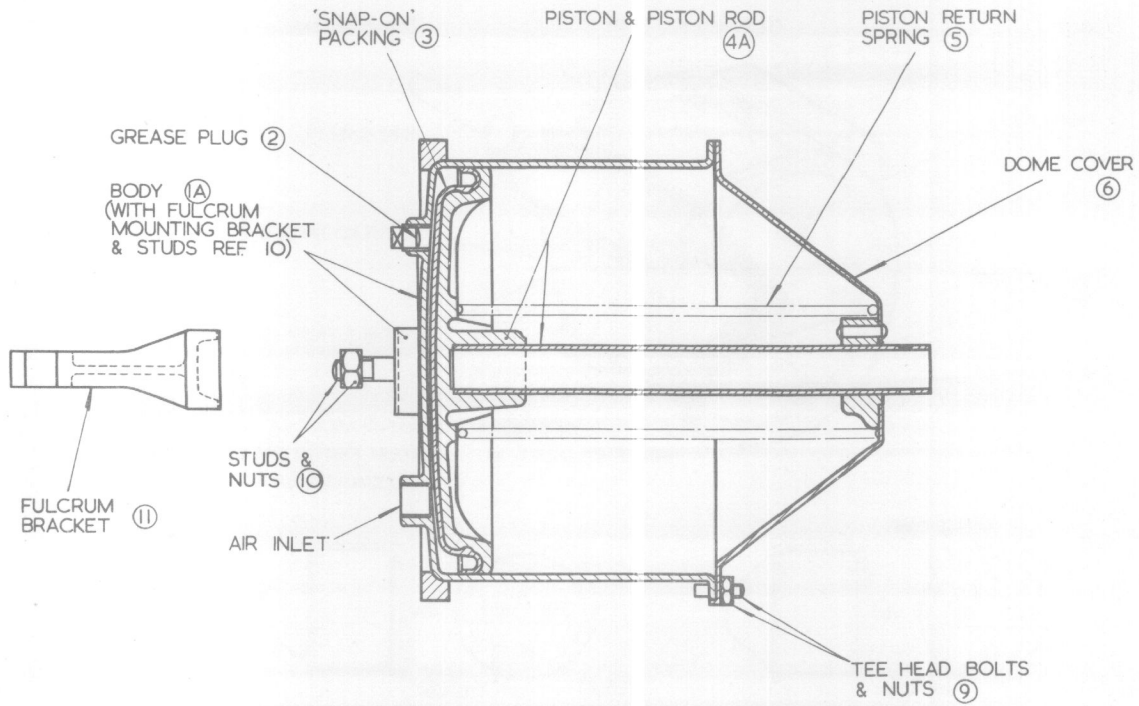


FIG.1. TYPICAL BRAKE CYLINDER TYPE H.F. (WITH DOMED END COVER)

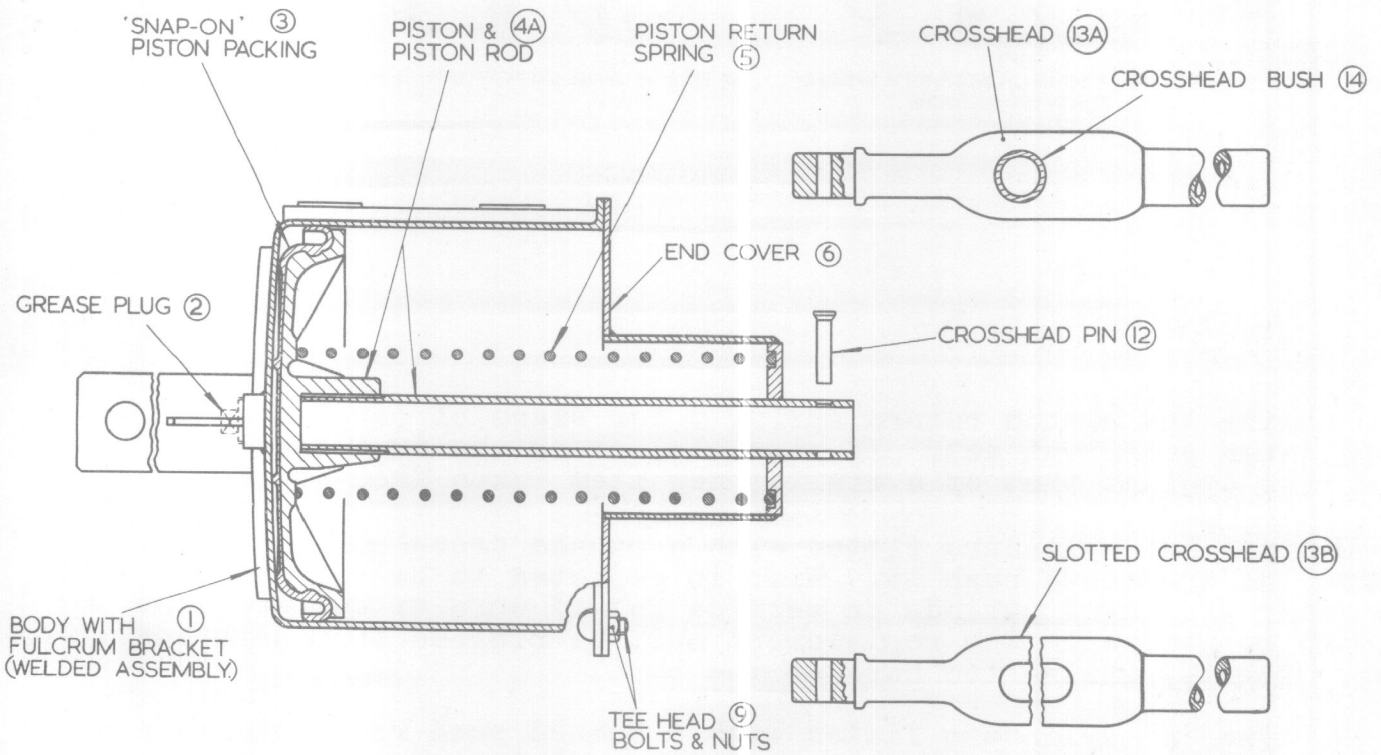


FIG.2. BRAKE CYLINDER TYPE H.F. WITH CROSSHEADS. (FULCRUM BRACKET INTEGRAL WITH CYLINDER BODY)

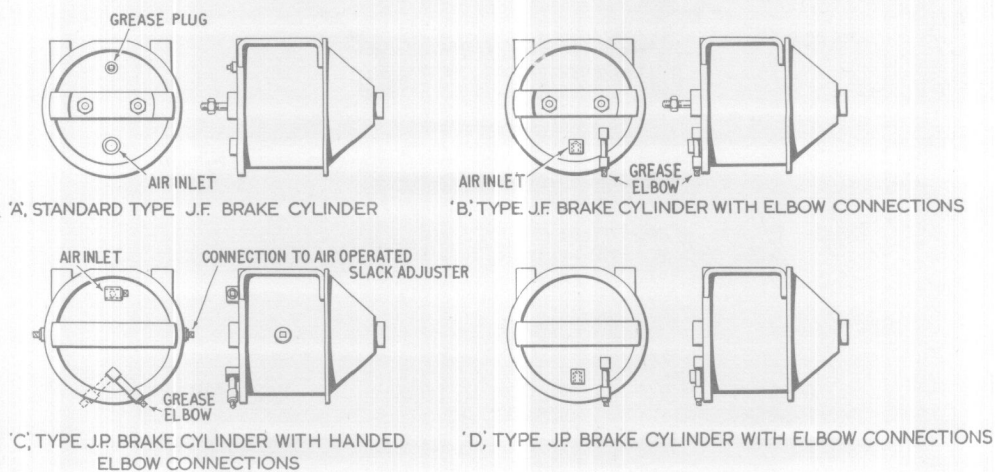
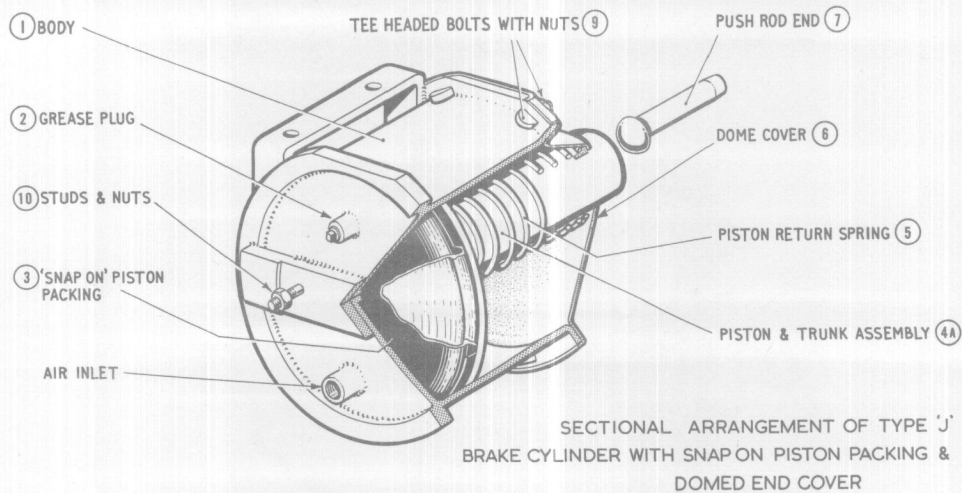


Fig. 3.

Examine the piston return spring 5 for signs of corrosion or having taken permanent set. If possible, check the free height of the spring against that of a similar new item taken from stock.

On type 'H' cylinders fitted with a bushed crosshead 13A (Fig. 2) examine the crosshead bush 14. Wear is expected to be very slight even after prolonged periods in service but if worn or damaged, the bush can be removed. The replacement must be pressed in square and flush. Lightly grease the bore of the bush.

On type 'J' cylinders fitted with a bushed push rod (Figs. 4 and 5), examine the bush 8. These are usually oil impregnated and wear is expected to be slight. However, the bush can be removed if damaged or worn and the replacement should be pressed in square and flush. Add two or three drops of good quality lubricating oil to the bore of the bush.

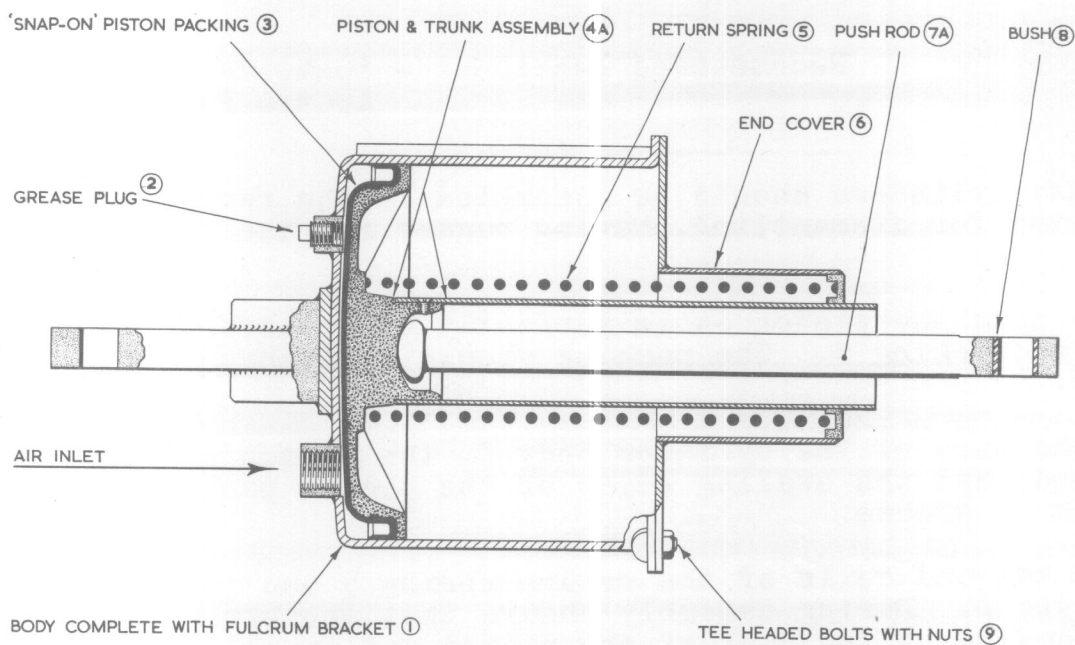


FIG. 4. BRAKE CYLINDER WITH FULCRUM BRACKET (FABRICATED CONSTRUCTION)

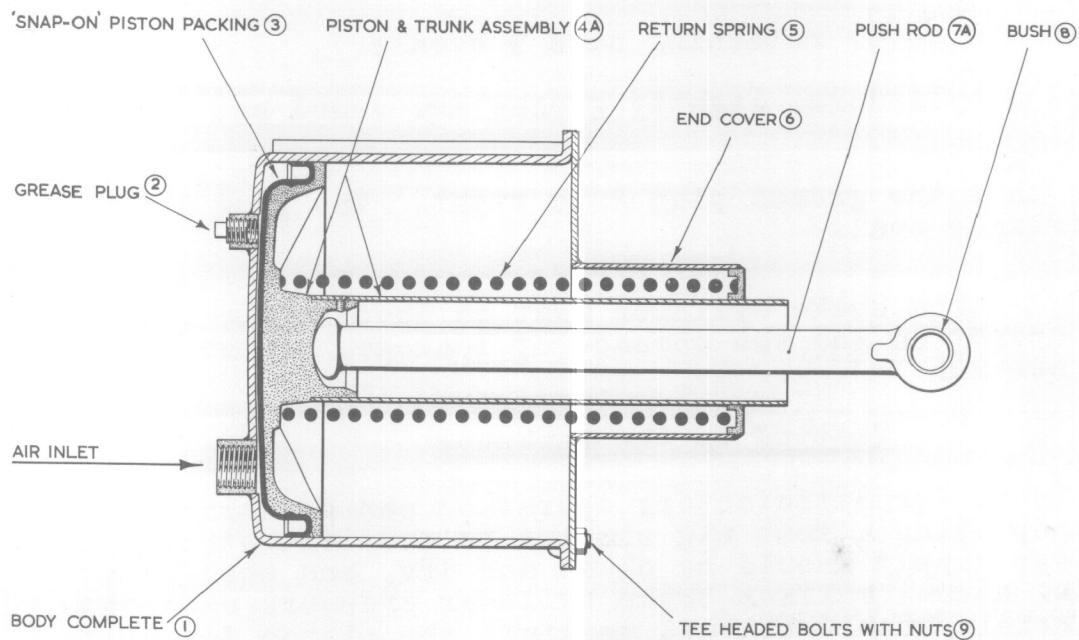


FIG. 5. BRAKE CYLINDER TYPE 'J.P.' FABRICATED CONSTRUCTION

A545/17A

ASSEMBLY
AND
LUBRICATION

Recommended Lubricant - 'OSMOLIN' (previously
Arctic Paragon Grease).

The brake cylinders should be assembled in the reverse order to that adopted for dismantling, having regard for the following points:-

1. Ensure that the piston 4A is perfectly clean before fitting a new piston packing 3. The packing should be a snap-on fit on the piston.
2. Coat the bore of the cylinder body 1, the piston and piston trunk or rod, and the sealing edges of the piston packing with a thin film of grease.
3. Grease the end coils of the return spring 5 and the bore in the end cover 6. During assembly ensure that the spring is properly located on the back of the piston and in the end cover.
4. When entering the piston and piston packing into the cylinder bore, ensure that the packing is not damaged.
5. On type H cylinders, fit a new crosshead retaining pin 12 when fitting the crosshead to the piston rod. The end of the retaining pin is slotted and the legs should be spread to prevent the pin from falling out.
6. Tighten the cover retaining nuts 9 evenly.
7. On type J cylinders, lightly grease the domed end of the push rod 7.
8. Ensure that the grease plug 2 is tight. The plug must form an airtight seal.

TESTING

The brake cylinder must be checked for correct operation and the absence of leakage, before being returned to service.

Testing in the Workshop

Simple tests for satisfactory operation can be carried out in the workshop using a test rig similar to that illustrated in Fig.6. The air supply should be clean and dry, and should be limited to the normal maximum brake cylinder pressure used in service. A bridle should be used to limit the piston travel to its normal maximum working stroke and the test rig must be made leakproof before testing commences.

A. LEAKAGE TEST

1. Open cock 1 and charge the reservoir to the limited supply pressure.

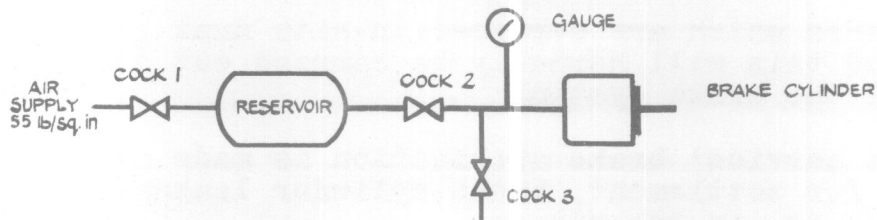


FIG. 6. TEST RIG.

2. Open cock 2 slowly and charge the brake cylinder to 10 lb/sq.in. Close cock 2 and after allowing one minute for settlement, check that the pressure drop does not exceed 1 lb/sq.in. in one minute.
3. Repeat the leakage test with the brake cylinder charged to the limited supply pressure.

NOTE: If an excessive leakage occurs, check with soap and water solution at the plug 2 and around the air connection. If there is no leakage at these points, apply soap and water around the joint between the end cover 6 and the cylinder body; around each of the cover retaining bolts 9; and around the joint between the piston trunk or piston rod 4A, where it protrudes through the end cover 6. These last points must be covered with soapy lather simultaneously. Leakage at these points indicates leakage past the piston packing and this must be corrected.

4. Close cock 2, and open cock 3 to discharge the pressure from the brake cylinder.

B. OPERATION

1. Open and close cocks 2 and 3 alternatively to operate the cylinder. Check that the piston moves out to its full maximum working stroke and returns smoothly to the extreme inward position.
2. Close cock 1 and open cocks 2 and 3 to discharge the pressure, then disconnect the cylinder. Blank off the air connection.

Testing on the Vehicle

Brake Cylinders which are serviced in-situ must be tested on the vehicle and this will normally be carried out during the static testing of the brake system.

When a 'full service' brake application is made and time has been allowed for settlement, brake cylinder leakage should not exceed 1 lb/sq.in. in one minute.

Check that the brake blocks are moved tightly against the wheels when the pneumatic brake is applied, and that the blocks are clear of the wheels when the brake is released. Repeat the functional tests several times and check for consistent operation.

SPARE PARTS

Component Parts Lists are included in Equipment Catalogues. When ordering spare parts please state the name and part number given on the components parts list. Where no part numbers are shown, the name of the item as shown on the components parts list will suffice.

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1st Edition - 350 - October 1966.



ISSUE 1

COMPONENT PARTS LIST

PAMPHLET A545/17A

12" x 8" BRAKE CYLINDER TYPE JP
WITH SNAP ON PACKING
PART NO. B.79396/2

SHEET No. 1

TOTAL No. 1

NAME OF PART	TOTAL PER UNIT	REF. No.	PART NUMBER
12" x 8" Brake Cylinder Type JP with Snap on Packing	-	-	B79396/2
Body Complete (Welded Assembly)	1	1	C75539/10
Grease Plug (1/2" BS Pipe Plug to BS 1740 (1951) - Table 15 - Steel Snap On Packing	1	2	-
	1	3	C74906/2
Piston and Piston Trunk Assembly	1	4A	C75510/1
Piston Return Spring	1	5	2928
Dome Cover (Welded Assembly)	1	6	C75529/10
Piston Rod Complete comprising:-	1	7A	B74011/8
1 - Piston Rod	-	-	B74011/9
1 - Bush	-	8	J71655/6
Bush	1	8	J71655/6
Tee Head Bolt	4)	9	A70297/6
Hexagon Nut - 1/2" BSW (black) - Steel	4)		-

WESTINGHOUSE BRAKE AND SIGNAL CO. LTD.

CENTRIFUGAL DIRT COLLECTORS AND BRANCH TEES

Centrifugal Dirt Collectors fitted in pipelines prevent debris or water from entering components of pneumatic brake equipments.

The air-stream is directed tangentially into a swirl chamber from which it passes through a central collecting nozzle to the outlet. The solid particles and water droplets impinge upon the inner surface of the swirl chamber and fall to the collecting chamber from which re-entry into the swirl chamber is prevented by a deflector baffle.

Accumulated solid matter and water is removed through the drain cock, plug or cover plate at the bottom of the unit.

Centrifugal dirt collectors may also include a hair strainer to remove small solid particles.

Should the hair strainer become excessively choked, the air pressure on the hair container will lift it from its seat against a stainless steel spring and allow air to pass round the outside of the strainer to the outlet.

Centrifugal Dirt Collectors and Dirt Collector Tees without hair strainers and with drain plugs fitted (Figs. 1, 3 and 4) are recommended for inclusion in the Brake Pipe Systems of pneumatic brake equipments.

Centrifugal Dirt Collectors and Dirt Collector Tees with hair strainers (Figs. 2 and 5) are suitable for equipments where the air-flow is uni-directional. They are not recommended for the Brake Pipe Systems of pneumatic brake equipments.

"Straight Through" Type Centrifugal Dirt Collectors Figs. 1 and 2

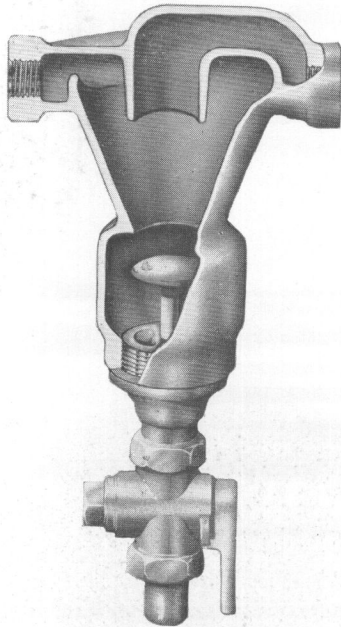


Fig. 1. Centrifugal Dirt Collector. This dirt collector can be fitted with a drain cock as illustrated or alternatively with a removable plug, for draining and cleaning.

This type of dirt collector is fitted in the air pipes leading to brake equipment components.

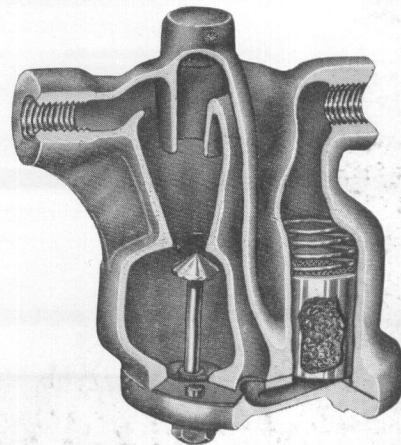


Fig. 2. Centrifugal Dirt Collector and Strainer. Similar to Fig. 1 but incorporating a hair strainer and a removable cover plate which gives access to both the collector chamber and the strainer for emptying.

Continued

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Branch Tee Type Centrifugal Collectors Figs. 3, 4 and 5

In this type of dirt collector the cleaned air is taken to a junction connection.

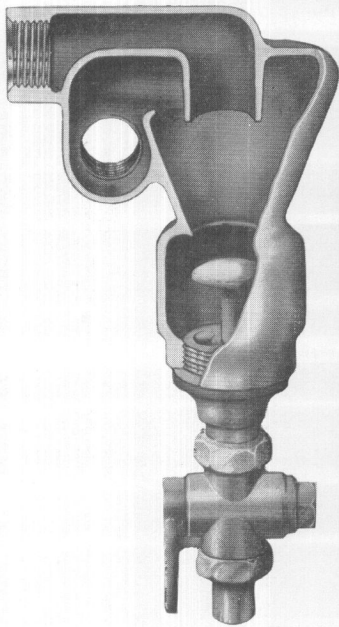


Fig. 3. Centrifugal Dirt Collector Tee. This type of branch tee dirt collector can be fitted with a drain cock as illustrated or alternatively with a removable drain plug.



Fig. 4. Collector Branch Tee. Shows a similar unit with the branch connection turned downwards and a removable drain plug fitted.

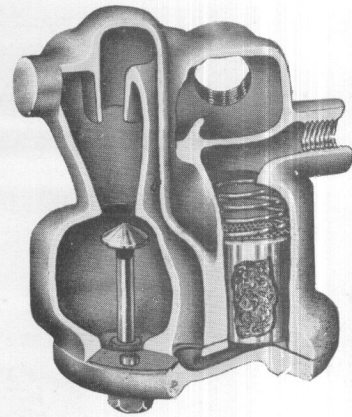


Fig. 5. Centrifugal Dirt Collector Tee and Strainer. Shows a branch tee dirt collector incorporating a hair strainer and a removable cover plate.

Branch Tee Fig. 6

The branch tee illustrated, when mounted as shown, prevents water from draining into the branch from the through-pipe. Branch tees with a horizontal branch pipe can also be supplied.

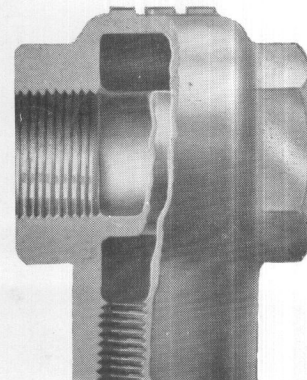


Fig. 6

Standard Sizes

Standard centrifugal dirt collectors are available with connections tapped in the B.S.P. sizes commonly used on pneumatic brake equipments. Unusual sizes can be supplied to special order.

MAINTENANCE

Routine Examination. The collector chamber should be drained at intervals which can only be determined by operating experience.

Vehicle Overhaul Periods. At Vehicle overhaul periods the collector chamber should be thoroughly cleaned.

Hair strainers (where fitted) should be removed and the hair washed in a suitable solvent and thoroughly dried before replacement.

Inspect the sealing gasket (where fitted) and check for leakage at jointing faces and pipe joints with soap and water.

SPARE PARTS

Component Parts Lists which identify all parts are included in Equipment Catalogues.

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"STRAIGHT THROUGH" TYPE CENTRIFUGAL DIRT COLLECTORS

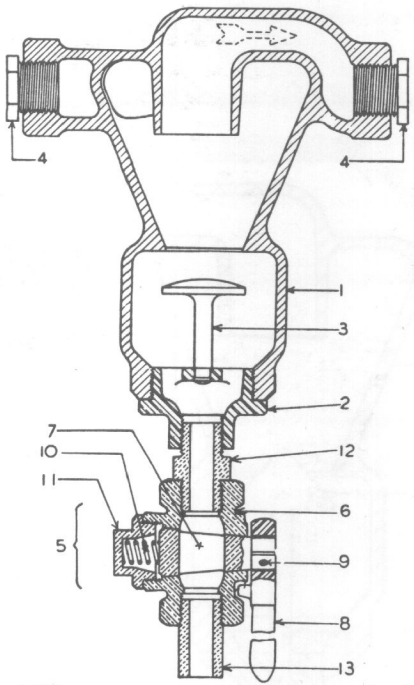


Fig. 1.

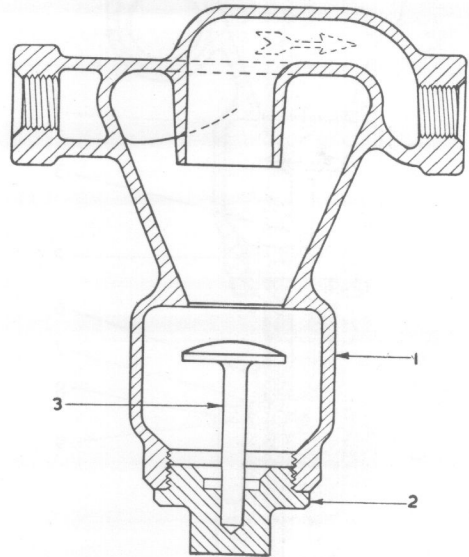


Fig. 2.

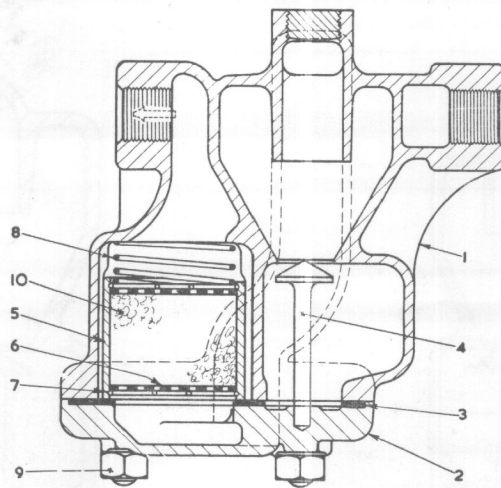


Fig. 3.

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BRANCH TEE TYPE CENTRIFUGAL DIRT COLLECTORS

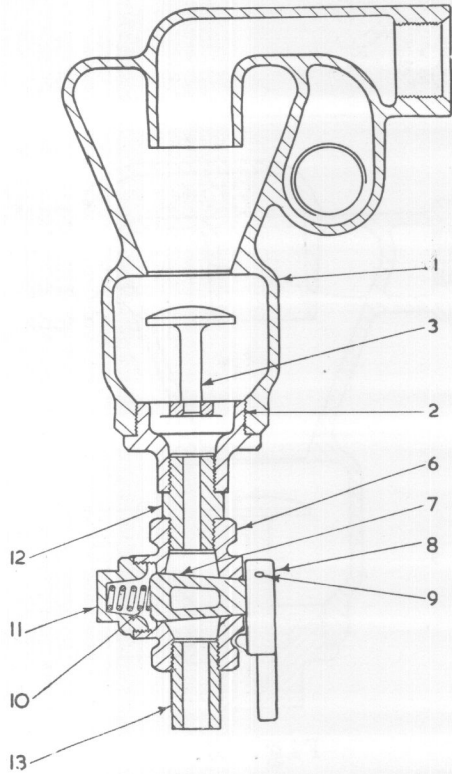


Fig. 4.

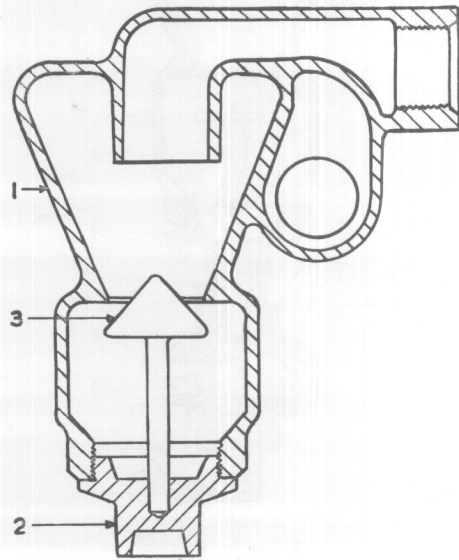


Fig. 5.

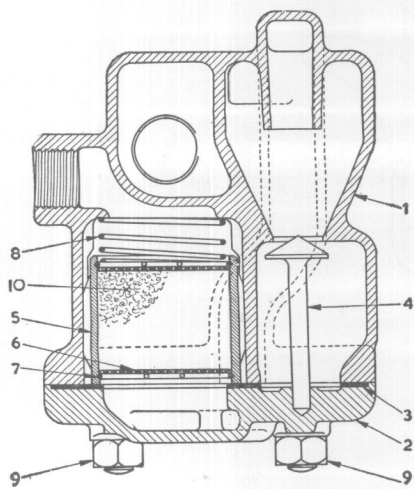


Fig. 6.

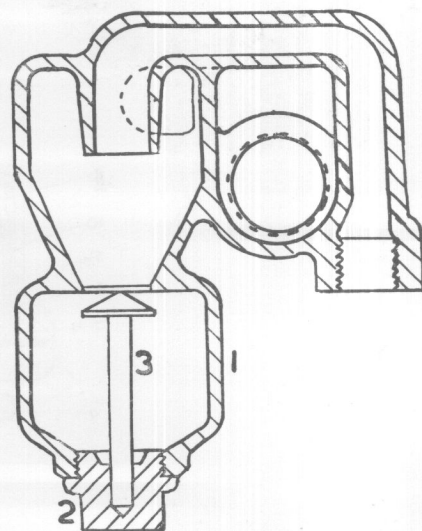


Fig. 7.



ISSUE 6

COMPONENT PARTS LIST

PAMPHLET A573/1A
Fig. 1 or
DP. 115

1/2" CENTRIFUGAL DIRT COLLECTOR
PT. NO. 29278

SHEET No. 1

TOTAL No. 1

NAME OF PART	TOTAL PER UNIT	REF. No.	PART NUMBER
1/2" Centrifugal Dirt Collector	-	-	29278
Body	1	1	18377
Cap Complete comprising:-	1	2	
1 - Cap	-	-	15358
1 - Deflector	-	3	15359
Deflector	1	3	15359
1/2" Drain Cock	1	5	6142
Cock Body) Normally supplied	1	6	3400
Cock Plug) together	1	7	3401
Cock Handle	1	8	16059
Cock Handle Pin Mills Type GP1 5/32" x 1.1/4" - Steel	1	9	-
Cock Spring	1	10	3394
Cock Cap	1	11	3395
Hexagon Union Nipple	1	12	2314
Drain Nipple	1	13	6178

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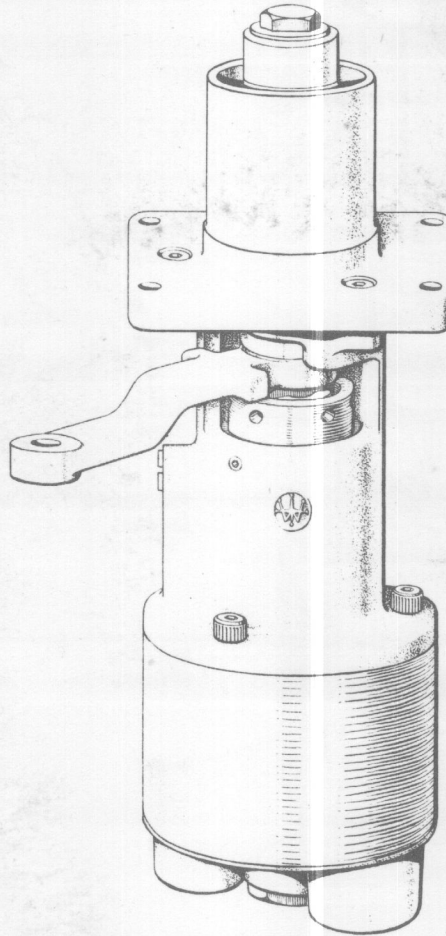
DRIVER'S STRAIGHT AIR BRAKE VALVE
(TYPE S.A.1. WITHOUT HANDLE)

FIG.1. DRIVER'S BRAKE VALVE TYPE, S.A.1

The Type S.A.1. Driver's Brake Valve is used to operate the straight air brake equipment on locomotives. Adapted for use with Dual Control Handles the valve is mounted remote from the driving positions to suit the layout of the control desk.

Standard valves can be provided to supply any specified maximum pressure to the brake cylinders within the range 50-75 p.s.i. Valves delivering other pressures can be supplied to special order.

An 'EMERGENCY' position can be provided on the Driver's Brake Valve in which the supply is directly connected with the brake cylinder and the way through held open so that the valve cannot lap off. The 'EMERGENCY' position is omitted when not required.

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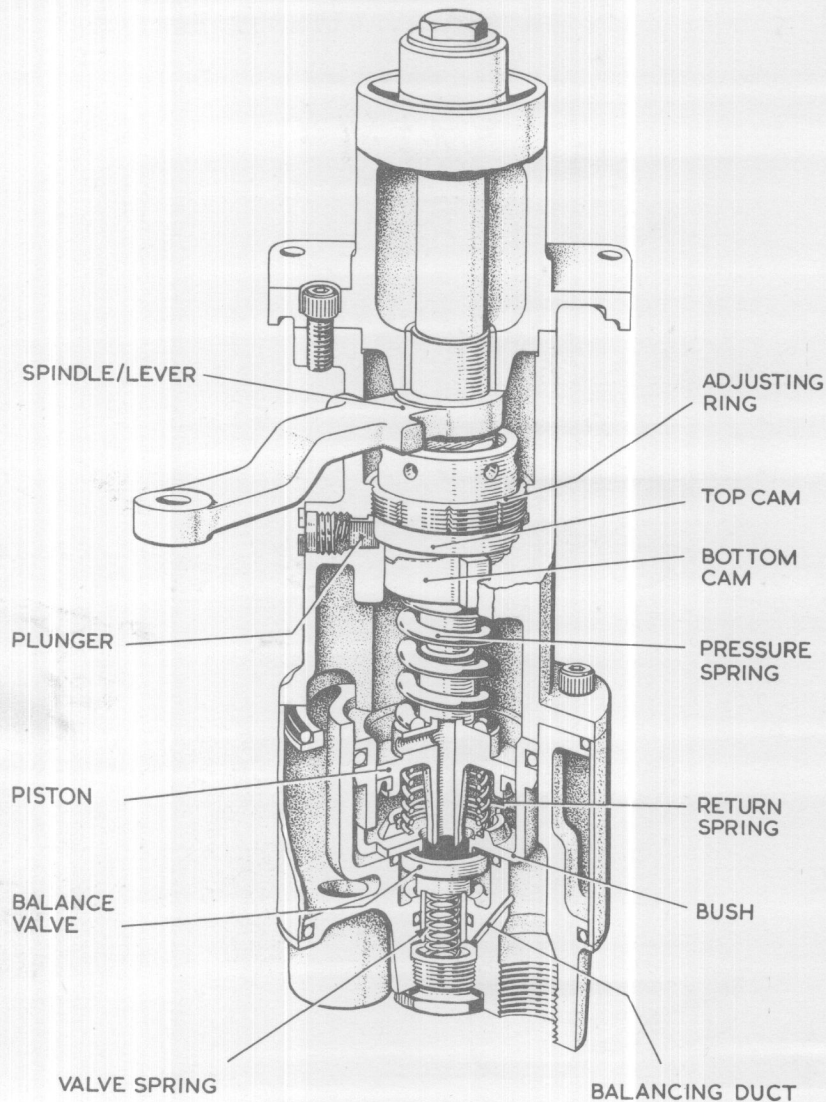


FIG. 2. SECTIONAL VIEW OF
DRIVER'S BRAKE VALVE TYPE, S.A.1.

PRINCIPAL
DESIGN
FEATURES

The Driver's Brake Valve is self-lapping and automatically compensates for any losses in brake cylinder pressure resulting from leakage. It always maintains the desired brake cylinder pressure appropriate to the position of the control handle.

The valve is designed to permit graduated application or release so that any desired variation in the braking effort may be achieved by a straight movement of the control handle.

The use of sintered materials in the cams and of flexible valve seats reduces wear and maintenance problems.

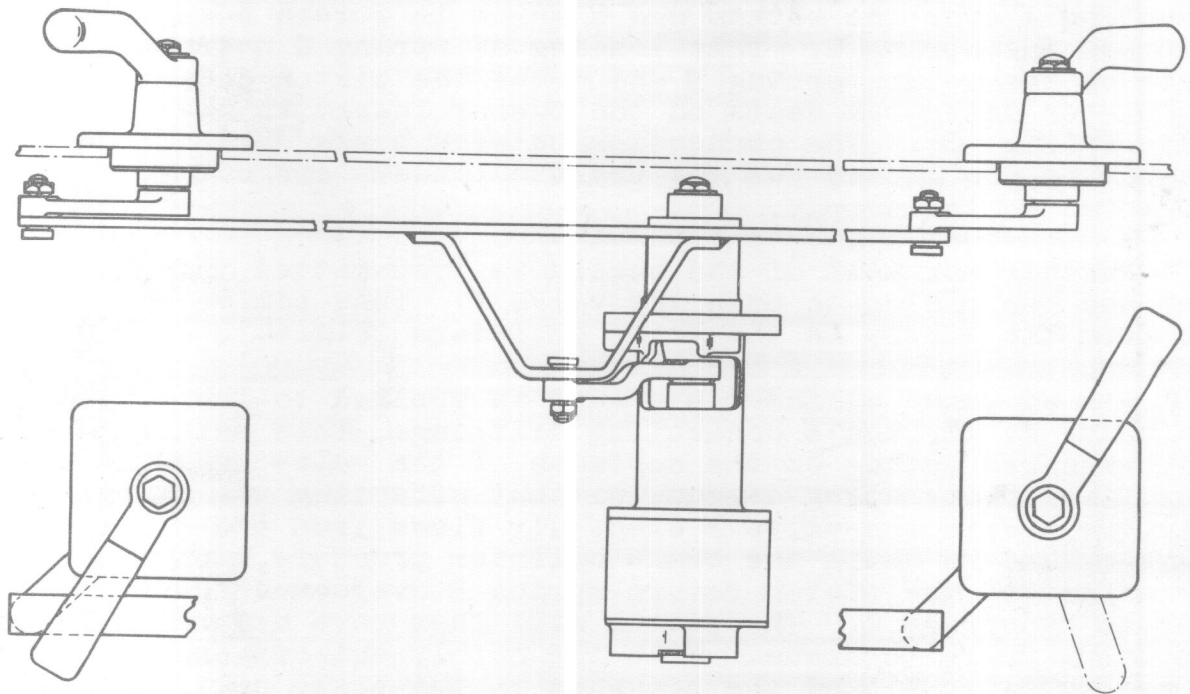


FIG. 3. TYPICAL INSTALLATION SHOWING DUAL CONTROL HANDLES.

DUAL
CONTROL
HANDLES

desk layout.

The Dual Control Handles are connected to the Driver's Brake Valve through a mechanical linkage. Westinghouse Brake and Signal Co.Ltd. will be pleased to advise on a linkage to suit any particular control

LIMIT
STOPS
AND
PLUNGER

The overall movement of the valve is limited by fixed stops. Between limit stops a spring loaded plunger, fixed in the housing, exerts pressure on the moveable cam in the valve to provide the necessary damping.

In valves which have the optional 'EMERGENCY' position, the plunger engages with a projection on the cam at the 'FULL SERVICE' position, and must ride over this projection before 'EMERGENCY' can be selected. This prevents the inadvertent selection of 'EMERGENCY' during normal operation of the valve.

A.578/7.

OPERATION

The top cam A is rotated by the movement of the spindle, which is connected to the control handle. When the handle is turned in an anti-clockwise direction from the 'RELEASE' position (Fig.4A) it moves cam A over the bottom cam B which is forced down to partially compress the spring C. This loading on spring C overcomes the force of the return spring E and moves the piston downwards until the piston extension seats on the rubber insert in the balance valve F (Fig.4B). The connection between brake cylinders and exhaust is now closed but the brake cylinders are not yet connected to the supply.

Further movement of the handle is transmitted through the cams and the piston to open the valve F. This admits compressed air from the supply to the brake cylinders (Fig.4C).

Air at brake cylinder pressure is applied to the bottom of the valve F, through a connecting drilling. This balancing of the pressures acting on the surfaces of the valve makes it more sensitive to operating demands without affecting its stability (Fig.4B). With the valve F open, air flows from the supply to the brake cylinders until the brake cylinder pressure, combined with the effort of the piston return spring E overcomes the force exerted by spring C. The piston will then move upwards allowing the inlet valve to close. With the supply cut-off and the passage to exhaust also closed the pressure in the brake cylinders is maintained (Fig.4B).

Each time the control handle is advanced to give an increase in braking effort the same sequence takes place. Thus, the braking effort may be increased gradually and maintained at any desired value, until the maximum effort is applied at the 'FULL SERVICE' position. The piston spring C is designed to give the maximum brake cylinder pressure in this position.

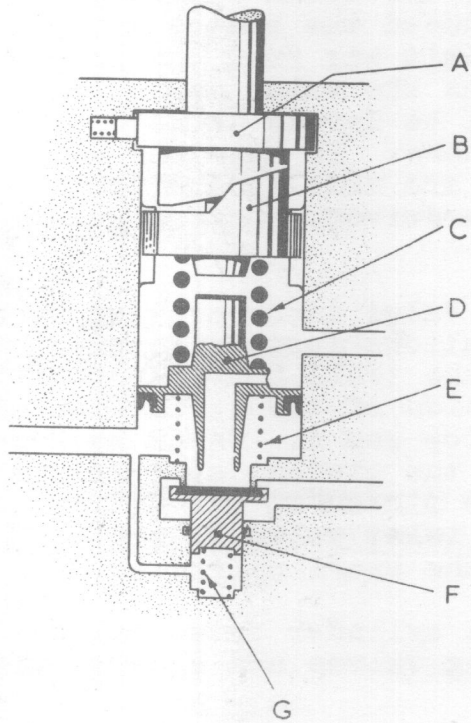
To release the brakes the control handle is turned in a clockwise direction decreasing the loading on the spring C.

The existing pressure in the brake cylinders is therefore able to move the piston upwards and open the exhaust passage. Air is released from the brake cylinders until the pressure remaining is less than that exerted by the spring C. The piston moves down, closes the exhaust and maintains the brake cylinder pressure selected by the position of the control handle.

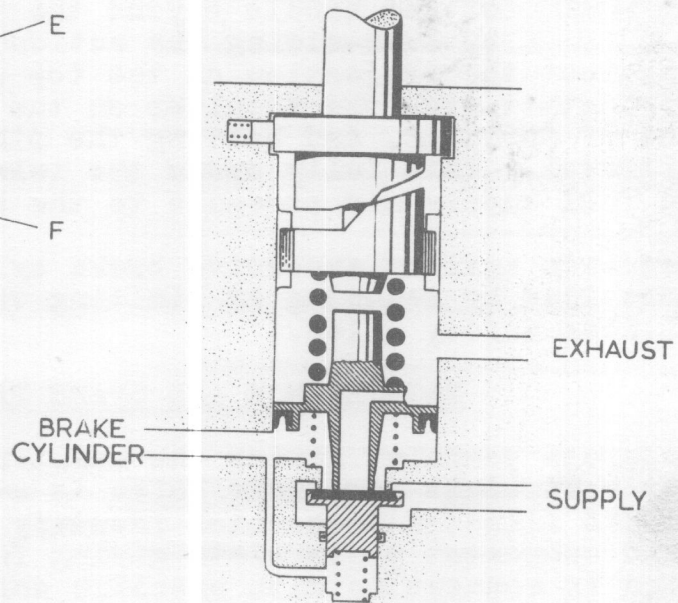
Thus, the braking effort may be reduced gradually until the handle moves into the 'RELEASE' position. In this position the unaided effort of return spring E is sufficient to hold the exhaust open and the brake cylinder pressure remains at zero.

Immediate release of brake cylinder pressure may be achieved by moving the control handle directly into the 'RELEASE' position.

(A) RELEASE POSITION



(B) CLOSED POSITION



(C) APPLICATION POSITION

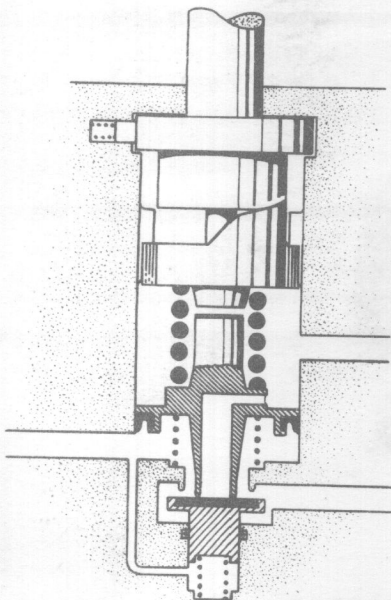


FIG. 4. DIAGRAMS OF OPERATION.

SELF-LAPPING

The Driver's Brake Valve automatically compensates for leakage in the system during a brake application. If the brake cylinder pressure acting below the piston is reduced the piston will move down opening the inlet valve to admit air from the supply. When the brake cylinder pressure regains the value appropriate to the handle position, the piston will be forced to move upwards and allow the inlet valve to close. In this way all pressure losses resulting from leakage are made good without the need for manual compensation by the driver.

EMERGENCY POSITION

A Driver's Brake Valve incorporating an 'EMERGENCY' position allows further movement of the handle beyond the 'FULL SERVICE' position by over-riding the action of the spring-loaded plunger against the projection on the top cam A. Cam B is forced down into contact with the shoulder on the piston, so eliminating the effect of spring C, and holding the piston at its extreme of downward travel. This fully opens the inlet valve F, rapidly admitting full supply air pressure to the brake cylinders.

Safeguards against excessive brake cylinder pressures are usually provided by reducing or limiting valves and also by the brake cylinder safety valve.

MAINTENANCE AND SPARE PARTS

A separate pamphlet giving the maintenance instructions for the Driver's Straight Air Brake Valve is available. The pamphlet also includes illustrations which identify the parts when ordering spares, and component parts lists giving full ordering details will be supplied in connection with specific contracts, or are included in Equipment Catalogues.

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1st Edition - 250 - April 1964.

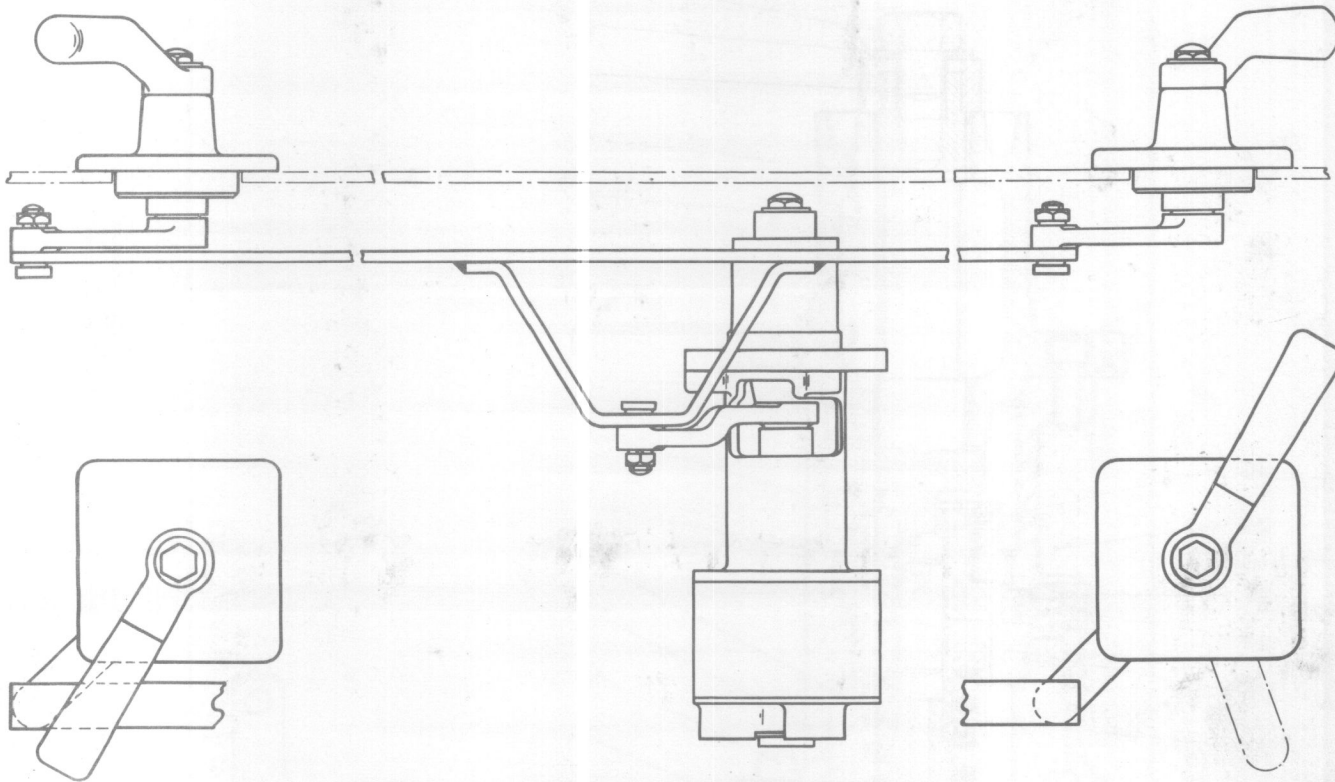
DRIVER'S STRAIGHT AIR BRAKE VALVE
(TYPE S.A.1. WITHOUT HANDLE)
MAINTENANCE INSTRUCTIONS

FIG.1. TYPICAL INSTALLATION SHOWING DUAL CONTROL HANDLES.

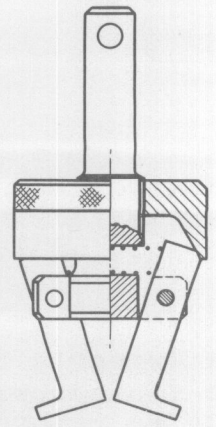
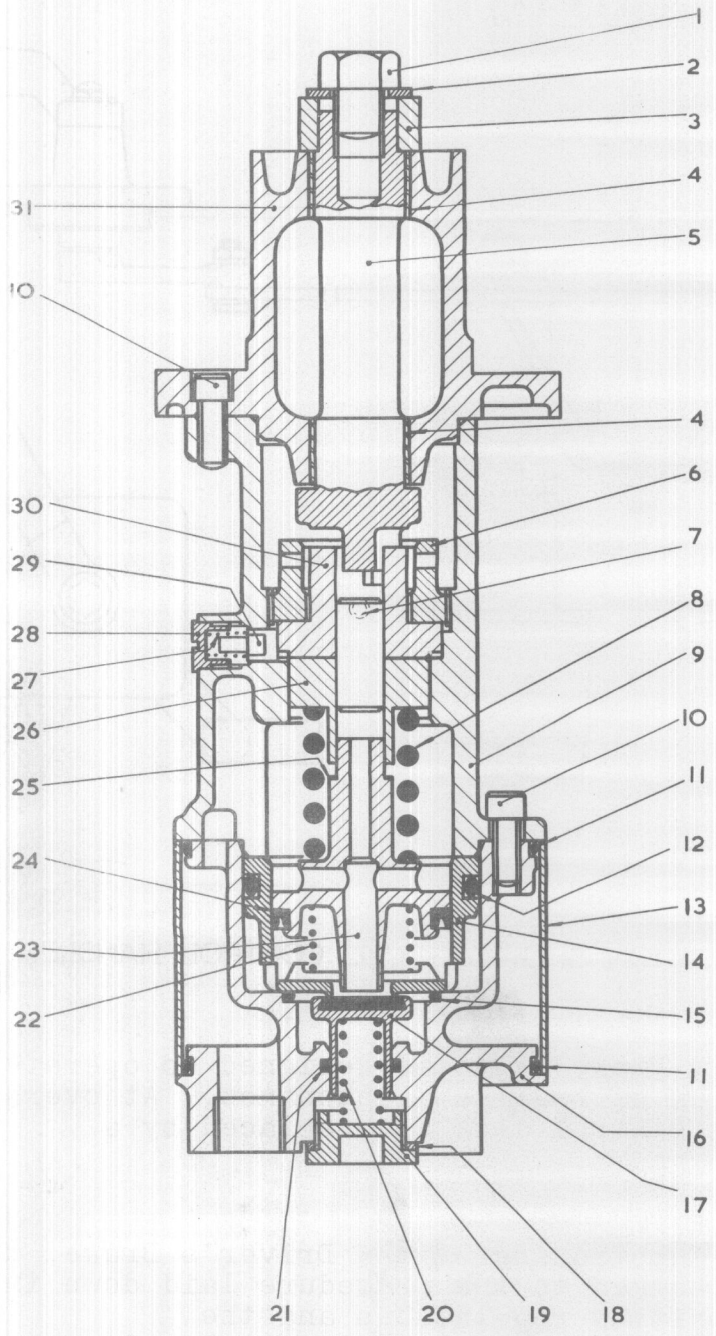
The Driver's Straight Air Brake Valve is designed to operate for long periods with a minimum of routine maintenance. At overhaul the valve is removed from the control desk and replaced by a serviceable unit.

DAILY The correct functioning of the Driver's Brake Valve should be checked to the procedure laid down in the Railway Authorities regulations and the appropriate action taken if any malfunctioning is disclosed.

OVERHAUL At overhaul the Brake Valve should be dismantled and the component parts examined for wear or damage. Care should be taken to exclude all foreign matter and the recommended degreasing procedure should be observed.

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EXTRACTOR FOR BUSH.

FIG. 2. DRIVERS STRAIGHT AIR BRAKE VALVE.

DISMANTLING

The following dismantling sequence is recommended but may be varied at the discretion of the engineer in charge of maintenance.

1. Remove three socket headed screws (10) and separate the housing (31) and the upper body (9).
2. Remove the plug (1) washer (2) and spacer (3). Draw the spindle (5) from the housing (31). If the bushes (4) evidence signs of wear they should be pressed from the housing.
3. Remove three socket headed screws (10) and separate the upper body (9) from the lower body (16). The bottom cam (26) will remain resting on the spring (8).
4. Remove the cam (26) the spring (8), the cover (13) and the 'O' rings (11).
5. Remove the cap (28), the spring (27) and the plunger (29).
6. Remove the locking screw (7) and unscrew the adjusting ring (6).
7. Remove the top cam (30). Note: The cams are of sintered material and should not be degreased with a solvent. Remove the shim (25) if fitted, and note its part number and thickness to ensure correct re-assembly.
8. Remove the piston (23) and the spring (22) from the lower body (16). Remove the packing (24) from the piston.
9. Remove the end cap (19) the sealing washer (18) and the spring (20).
10. Draw the bush (14) from the body (16) using the special tool shown in Fig. 2. Remove the 'O' ring (12) and the 'O' ring (15).
11. Remove the balance valve (17), and the 'O' ring (21).

INSPECTION

Inspect all the dismantled components and replace those no longer serviceable by the approved part. It is recommended that the following components be renewed at overhaul.

Description	Reference No.
Balance Valve Complete	17
'O' ring	11
'O' ring	12
'O' ring	15
Piston packing	24

Springs which show evidence of deterioration should be replaced by the approved spare part.

Description	Free length	Reference No.
Spring	1.25 ins.	22
Spring	1.672 ins.	20
Spring	1.718 ins.	8

RE-ASSEMBLY

Impregnate the cams with Shell Talpa Oil (or an approved equivalent). Lubricate all other moving parts with Arctic 'Paragon' grease.

Assemble the components in the reverse order to that detailed in the dismantling sequence.

TESTING

Details of the procedure to be adopted for testing should be requested from Westinghouse Brake and Signal Co. Ltd.

SPARE PARTS

Component Parts Lists are included in Equipment Catalogues. When ordering spare parts please state the name and part number given on the component parts list. Where no part numbers are shown, the name of the item as shown on the components parts list will suffice.

The reference numbers shown on the illustrations are for identifying the parts and should not be quoted when ordering.

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1st Edition - 250 - March 1964.



ISSUE 1

COMPONENT PARTS LIST

PAMPHLET A578/7A

DRIVER'S BRAKE VALVE TYPE SA1 FOR DUAL
CONTROL (WITHOUT HANDLE) WORKING
PRESSURE 65 LB/SQ.IN.
PART NO. J.74005/6

SHEET No. 1

TOTAL No. 2

NAME OF PART	TOTAL PER UNIT	REF. No.	PART NUMBER
Driver's Brake Valve Type SA1 for Dual Control without Handle Working Pressure 65 lb/sq.in.	-	-	J74005/6
Plug	1	1	A82089/29
Washer - 9/16" dia. - Brass Dull Chromed	1	2	-
Spacer	1	3	A70021/76
Oilite Bush	2	4	A83599/38
Spindle and Lever	1	5	B79278/3
Adjusting Ring	1	6	J70409/2
Cone Point Socket Screw - No. 2BA x 1/4" long - "Unbrako" Series 'SC' or Equal - Steel	1	7	-
Spring	1	8	A87823/103
Upper Body	1	9	C75462/2
Socket Head Screw - 5/16" Whit x 3/4" long - "Unbrako" Series 'C' or Equal - Steel	6	10	-
'O' Ring - Lower Body to Cover	2	11	J72056/18 X
'O' Ring - Bush to Lower Body	1	12	J72050/34 X
Cover	1	13	J70394/1
Piston Bush	1	14	J70410/1
'O' Ring - Bush to Lower Body	1	15	J72050/27 X
Lower Body	1	16	J74007/1
Balance Valve complete	1	17	J70392/1 X
Washer	1	18	A73211/269
Bottom Cap	1	19	J70393/1
Balance Valve Spring	1	20	A87821/110
'O' Ring - Balance Valve to Lower Body	1	21	J72050/13
Piston Release Spring	1	22	A82877
Piston	1	23	J70390/1
Piston Packing	1	24	A82741/1 X



ISSUE 1

COMPONENT PARTS LIST

PAMPHLET A578/7A

DRIVER'S BRAKE VALVE TYPE SA1 FOR DUAL
CONTROL (WITHOUT HANDLE) WORKING
PRESSURE 65 LB/SQ.IN.
PART NO. J.74005/6

SHEET No. 2

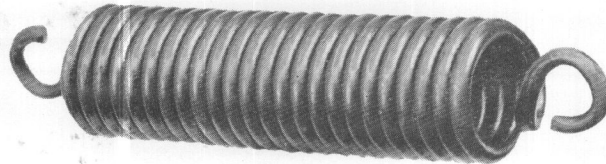
TOTAL No. 2

NAME OF PART	TOTAL PER UNIT	REF. No.	PART NUMBER
Bottom Cam complete	1	26	C74924/1
Ratchet Spring	1	27	A87821/229
Ratchet Cap	1	28	J72001/1
Ratchet Plunger	1	29	A86527
Top Cam	1	30	C74924/4
Handle Housing	1	31	B79279/1
<u>NOTE:</u> Bushes Ref. 4 should be ordered if spare Handle Housing is required.			
<u>SPECIAL TOOLS</u>			
Bush Extractor - For Piston Bush Ref. No. 14	-	-	J73481/32
<u>NOTE:</u> Shim for Spindle Ref.25 shown on Pamphlet A578/7A not required for Part No. J74005/6			

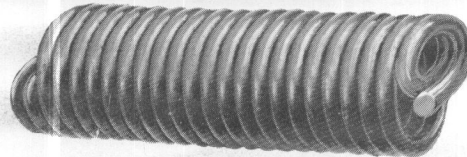
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RELEASE SPRINGS

PULL TYPE

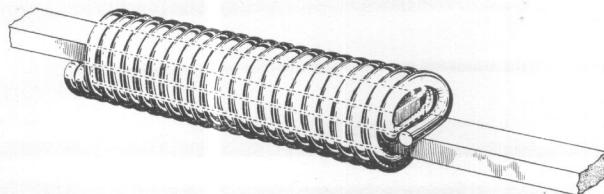


PUSH TYPE



Release springs are connected in the brake rigging of Railway Vehicles to return it to the release position when the brakes are being released.

“Pull” type springs are usually preferred, but, when the design of the vehicle and brake rigging prohibits the use of this type, the “Push” type spring can usually be accommodated. The sketch shows the usual installation arrangement.



Standard springs of both types are available in two sizes which meet most brake rigging requirements.

Special springs, as may be specified by customers, can be supplied to special order.

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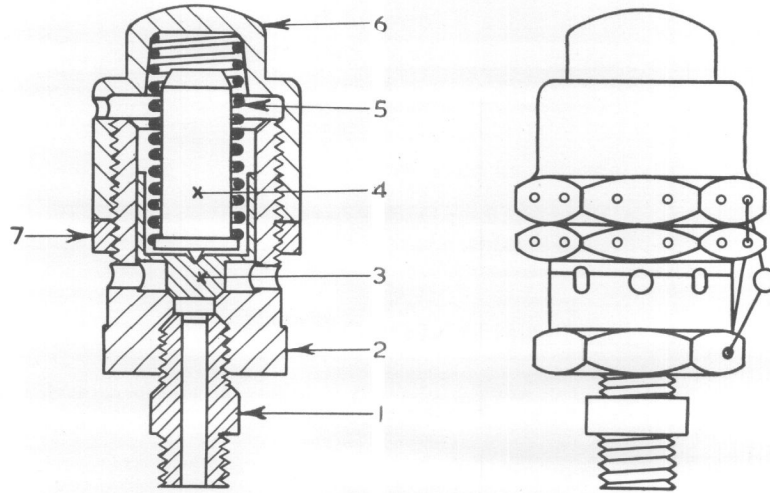
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SAFETY VALVE TYPE T.2.



The type T.2 Safety Valve is a small compact safety valve used for protecting compressed air reservoirs or other equipment against excess pressure. Valves are available to cover pressures set between 5 and 180 lb/sq. in. Standard nipples are screwed $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ " or 1" B.S.P. (Taper) thread, but other sizes can be supplied according to requirements.

OPERATION

Air enters the valve through nipple 1 and passes into the chamber under valve 3, which is held closed by spring 5 acting on pivot 4. When the pressure exceeds the value for which the spring is adjusted, it lifts valve 3 and the air flows to atmosphere through the holes in body 2. The escaping air also reacts upon the large area of the valve in the "escape" chamber, to provide a positive upward movement or 'pop' action of the valve. When the pressure has been reduced sufficiently, the spring 5 closes valve 3 and prevents further loss of air.

MAINTENANCE

PERIODICAL

It is recommended that the safety valve should be checked for correct operation at monthly intervals. It is usually possible to arrange for compressed air at 'blow off' pressure to be applied to the safety valves without removing them from the equipment which they protect. When this is not possible a simple test fixture and pressure gauge will be required.

If the safety valve fails to blow off at the correct pressure, the test pressure must be blown down before the valve is dismantled, the fault located and rectified. The valve should then be adjusted and set as described under "Testing and Adjustment".

If at any time the safety valve is suspected of leakage, it is recommended that a replacement valve is fitted and the faulty valve rectified as described under "Overhaul".

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OVERHAUL

At overhaul periods the safety valve should be removed and completely dismantled.

Thoroughly clean all parts and ensure that the ports in body 2, valve 3 and cap 6 are free from obstruction. Examine the spring and renew if corroded or defective.

If necessary the valve 3 can be re-lapped on its seat using a fine grinding compound such as metal polish, or in the case of a badly pitted seat, the seat can be refaced using the cutter illustrated below. Relap the valve to its seat after using the cutter.

On re-assembly lightly lubricate all parts with Arctic Paragon grease but avoid *over-greasing*.

When re-assembling, the valve cap must be rotated through five complete turns, so that the cap is secured to the body by at least five full threads. *On no account must the minimum of five threads be reduced.*

TESTING AND ADJUSTMENT

For test purposes, a pressure gauge of known accuracy is required to record the pressure of the compressed air supply.

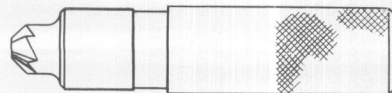
Check that the cap is secured to the body by five complete threads. Increase the supply pressure slowly and note the value at which the valve "blows-off". Adjust by screwing the valve cap 6 clockwise, whilst at the same time progressively increasing the supply pressure, until the correct blow-off pressure is obtained.

NOTE: Adjustments must always be made with air pressure rising and *not* when the pressure is being reduced.

Hold the valve cap 6 with a suitable spanner to prevent it from turning and tighten the locknut 7. Re-test to ensure that the setting has not altered.

Leak Test—Reduce the supply pressure until the valve closes and carry out a leak test using a solution of soap and water. Leakage, indicated by the formation of bubbles, should be negligible. Reseal the valve.

SPECIAL TOOLS



Cutter for Valve Seat in Body Ref. 2.

COMPONENT PARTS LISTS

Component Parts Lists giving the names and manufacturing part numbers for ordering spares are available or are contained in Equipment Catalogues which are issued for specific contracts on request.

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ISSUE 3

COMPONENT PARTS LIST

PAMPHLET A761/1

SAFETY VALVE TYPE T2
RANGE 80-120 LB/SQ. IN.
PT. NO. J.70929/18

SHEET No. 1

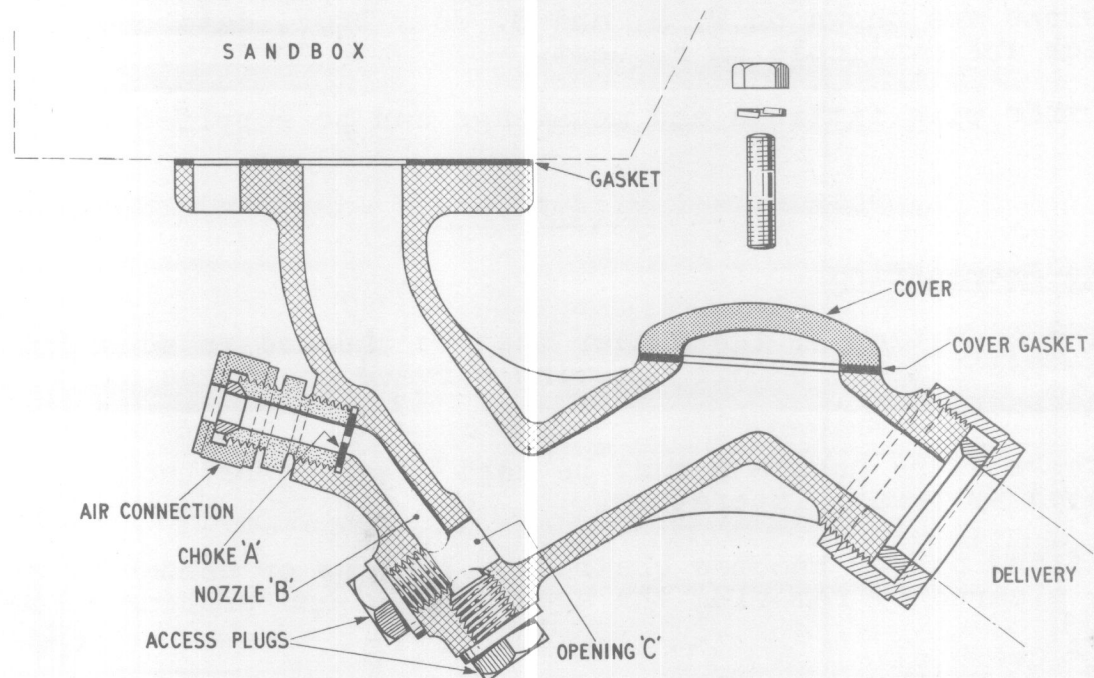
TOTAL No. 1

NAME OF PART	TOTAL PER UNIT	REF. No.	PART NUMBER
Safety Valve Type T2 set lb/sq.in.	-	-	J70929/18
Nipple 1/4" BSP Taper x 1/2" BSP Taper	1	1	A74804/11
Body	1	2	J70920/1
Valve	1	3	J70919/1
Pivot	1	4	J70921/1
Adjusting Spring	1	5	A87822/76
Cap	1	6	J70922/1
Locknut	1	7	A84202/1
<u>SPECIAL TOOLS</u>			
Valve Seating Cutter (for Valve Seats embodied in Valve Body)	1	-	J73481/59

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CPB

SAND EJECTOR



Sand Ejectors are suitable for all types of locomotives and powered vehicles equipped with compressed air systems capable of providing the compressed air necessary to operate them. Sand Ejectors are mounted on the bottom of the sand box, and the sand is conveyed to the delivery nozzles through rigid or flexible pipes. Rigid sand delivery pipes and nozzles are usually supplied by the vehicle builders.

OPERATION

Sand Ejectors are usually controlled by sanding valves installed at the driving position, which admit compressed air to the inlet. The supply air flows through choke A to air nozzle B and opening C. Air from opening C directs sand up the sloping neck of the ejector and downwards out of the delivery connection.

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Installation.

Pipe Fittings suitable for 3/8" o/d copper or 1/4" nominal bore steel air pipes and 3/4" or 1" steel sand delivery pipes are supplied to suit customers requirements. Details of pipe fittings and fixing dimensions are shown on W. B. and S. Co., Ltd., data sheets, copies of which are available on request.

Other pipe fittings and mountings can be supplied to special order.

MAINTENANCE.

Routine Examination.

The operation of the sander must be checked in accordance with Railway Regulations before entering service on routes where sanding is necessary.

Choke A and nozzle B must be kept clear. Obstruction is usually indicated by erratic operation.

If the sander becomes obstructed by damp or compacted sand it may be cleared by removing the access plugs and probing if necessary.

Vehicle Overhaul.

Dismantle the sander and clean thoroughly. Renew any worn or damaged parts.

TESTING.

Sand Ejectors should be tested for correct operation and absence of leakage before being returned to service after overhaul.

SPARE PARTS.

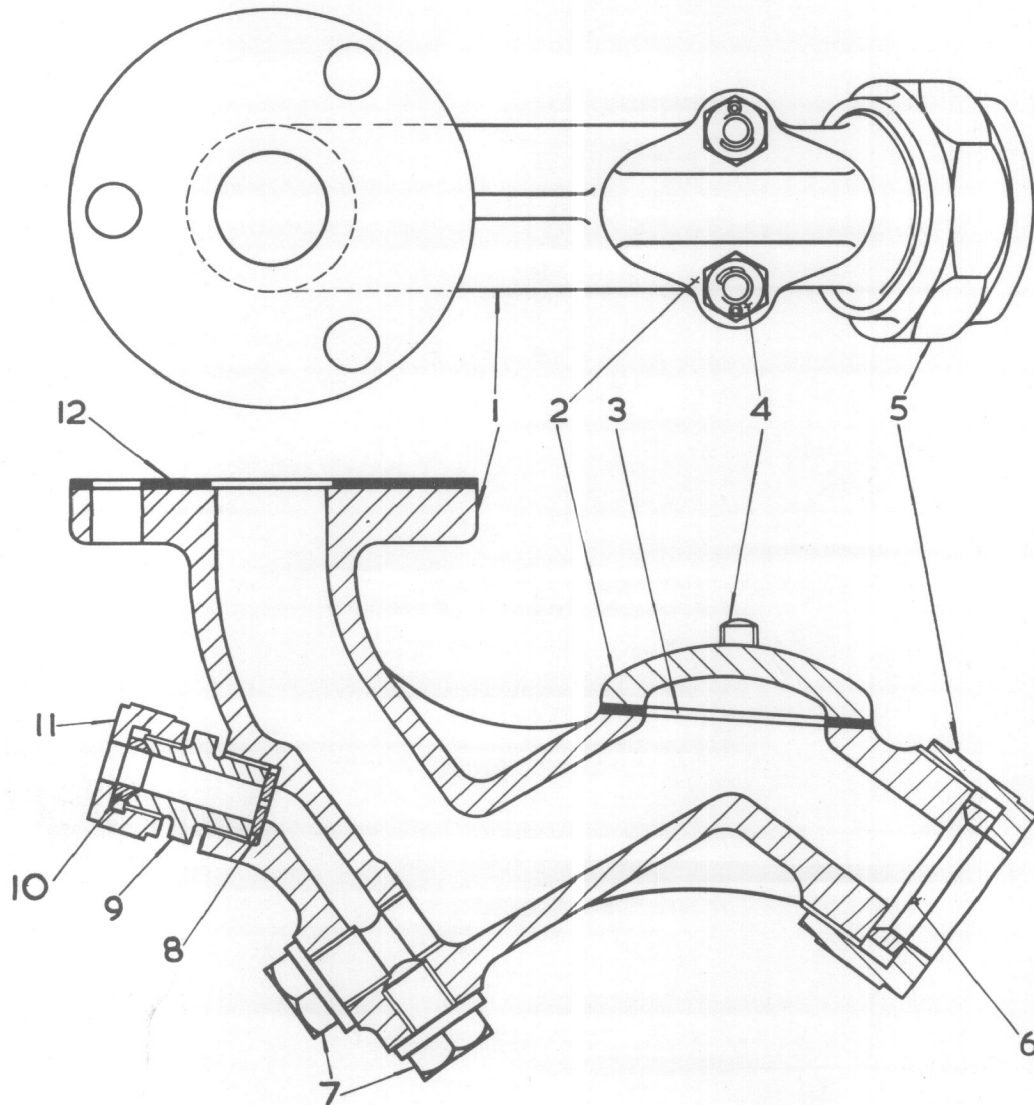
Component Parts Lists which identify all parts are included in equipment catalogues or copies will be supplied on request.

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PNEUMATIC SAND EJECTOR TYPE S. A. R.



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ISSUE 7.

COMPONENT PARTS LIST

PAMPHLET A762/4A

SHEET No. 1

SAND EJECTOR TYPE S.A.R.
PT.NO.B.73753/1.

TOTAL No.1

NAME OF PART	TOTAL PER UNIT	REF. No.	PART NUMBER
Sand Ejector Type S.A.R.	-	-	B73753/1
Body	1	1	B73516
Cover	1	2	A80400
Cover Gasket	1	3	A80403
Stud with Nut and Split Pin complete each comprising:-	2	4	-
1 Stud	-	-	A85001/3
1 Hexagon Nut 5/16" BSW - Steel	-	-	-
1 Spring Washer 5/16" dia. - Steel	-	-	-
Union Nut for Outlet	1	5	A82258/2
Pipe Collar	1	6	A80401/1
Plug	2	7	A82259
Choke Washer	1	8	A76619/14
Union Nipple	1	9	A70175/2
Pipe Collar	1	10	A80401/2
Union Nut for Inlet	1	11	A82258/1
Gasket - Sand Ejector to Sand Box	1	12	A82260

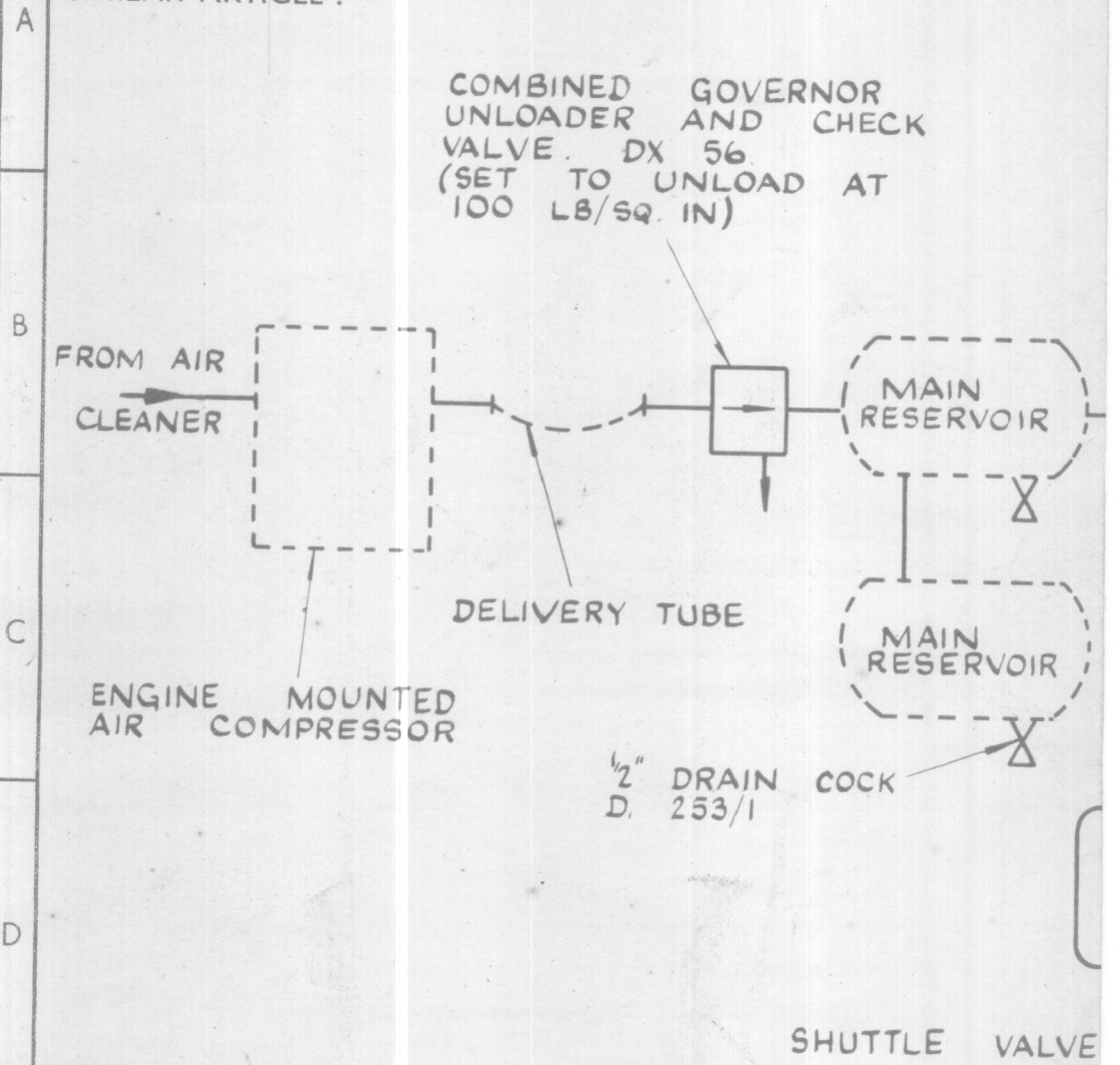
No. SHEET

DA 9974/1

THIRD ANGLE

SIMILAR ARTICLE :

COMBINED GOVERNOR UNLOADER AND CHECK VALVE. DX 56 (SET TO UNLOAD AT 100 LB/SQ. IN)



NOTE

ITEMS SHOWN DOTTED NOT SUPPLIED BY WESTINGHOUSE BRAKE & SIGNAL CO. LTD.

SAND EJECTOR TYPE S.A.R DB. 5758

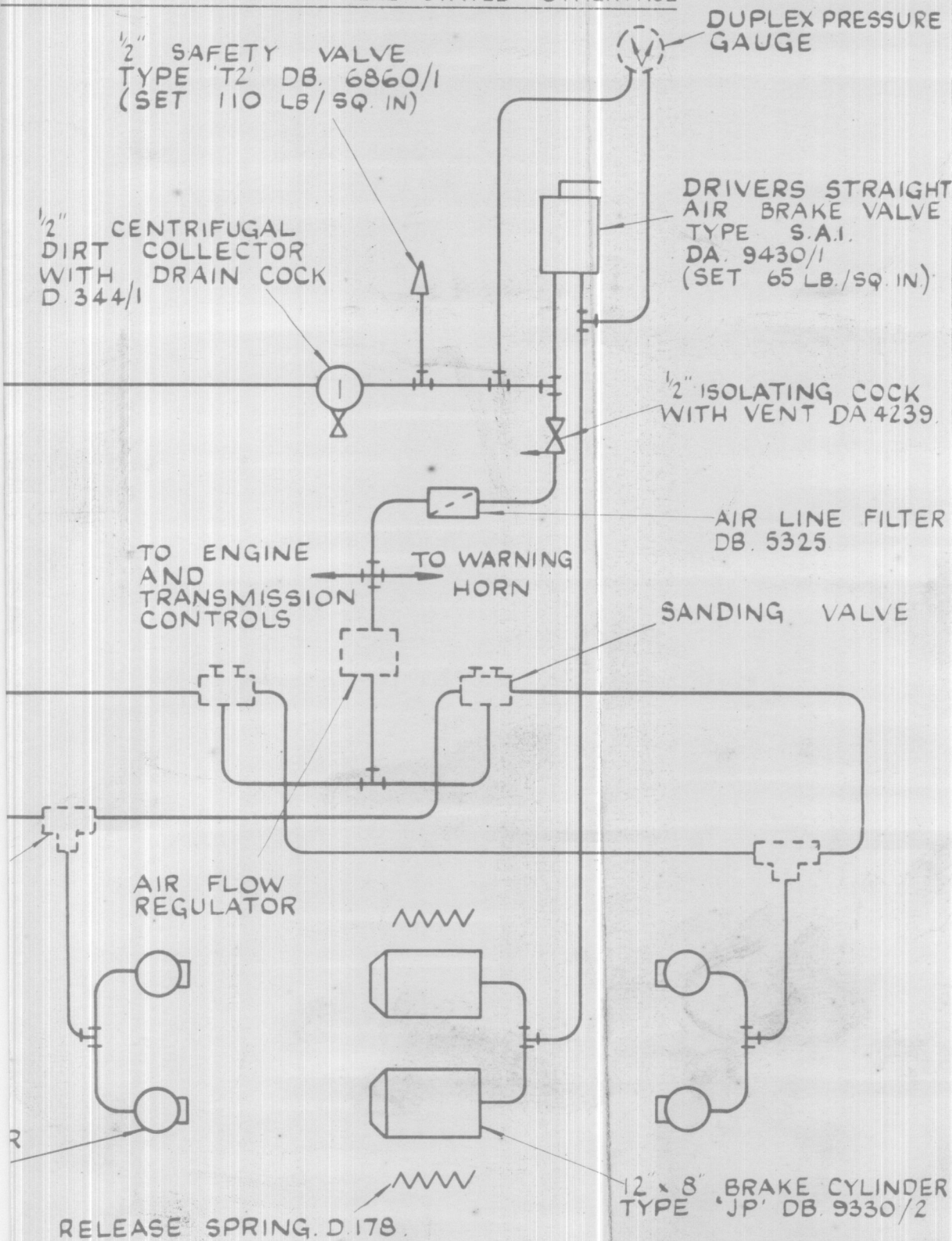
T. 16008/1

WESTINGHOUSE STRAIGHT AIR BRAKE EQUIPMENT WITH AIR OPERATED ANCILLARY FITTINGS FOR A DIESEL SHUNTING LOCOMOTIVE.

SCALE

PROJECTION EXCEPT WHERE STATED OTHERWISE

ALTERATIONS



A

B

C

D

B.4

E

SEPSEIAWH
DISTRIBUTION.

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DRAWING No.

Sheet No. Cont. on Sheet No.

F

REF.	DRN.	TCD.	CHKD.	APPD.	DATE
Q. 3875. F. 3.		J.M.H.			67.67

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