# AP105B-0560-13

(Formerly AP105B-0560-1
and AP4515C, Vol. 3
Part 1, Sect. 2, Chap. 63)

# Mk.3 BRAKE CONTROL VALVE DUNLOP PART No. AC 60692, AC 12734

## GENERAL AND TECHNICAL INFORMATION

## PARTS CATALOGUE AND RELATED INFORMATION



BY COMMAND OF THE DEFENCE COUNCIL

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# MK.3 BRAKE CONTROL VALVE

## DUNLOP PART NOS.AC60692 AND AC12734

## CONTENTS



## TABLE



## ILLUSTRATIONS



## LEADING PARTICULARS

| | |
|---|---|
| Supply pressure | 3000 lbf/in² |
| Delivery pressure | 1550/1700 lbf/in² |
| Hydraulic fluid | OM-15 |
| Overall dimensions (in.) | 5.4 x 4.3 x 3.7 |
| Weight of unit | 3.219 lbf. |

Unit type reference S30 M 15 is identified as follows

S denotes steerable control
30 denotes supply pressure in hundreds
15 denotes delivery pressure in hundreds
M denotes mineral fluid

## DESCRIPTION

1. These units are similar in every respect with the exception of AC60692 which has upgraded internal parts.

2. This unit is cable operated from the pilot's control handle and regulates the delivery pressure to the wheel brake units. The unit comprises two identical variable pressure reducing valve elements which are operated together for straight braking or independently for differential braking. Differential braking is effected by a steering mechanism linked with the rudder control.

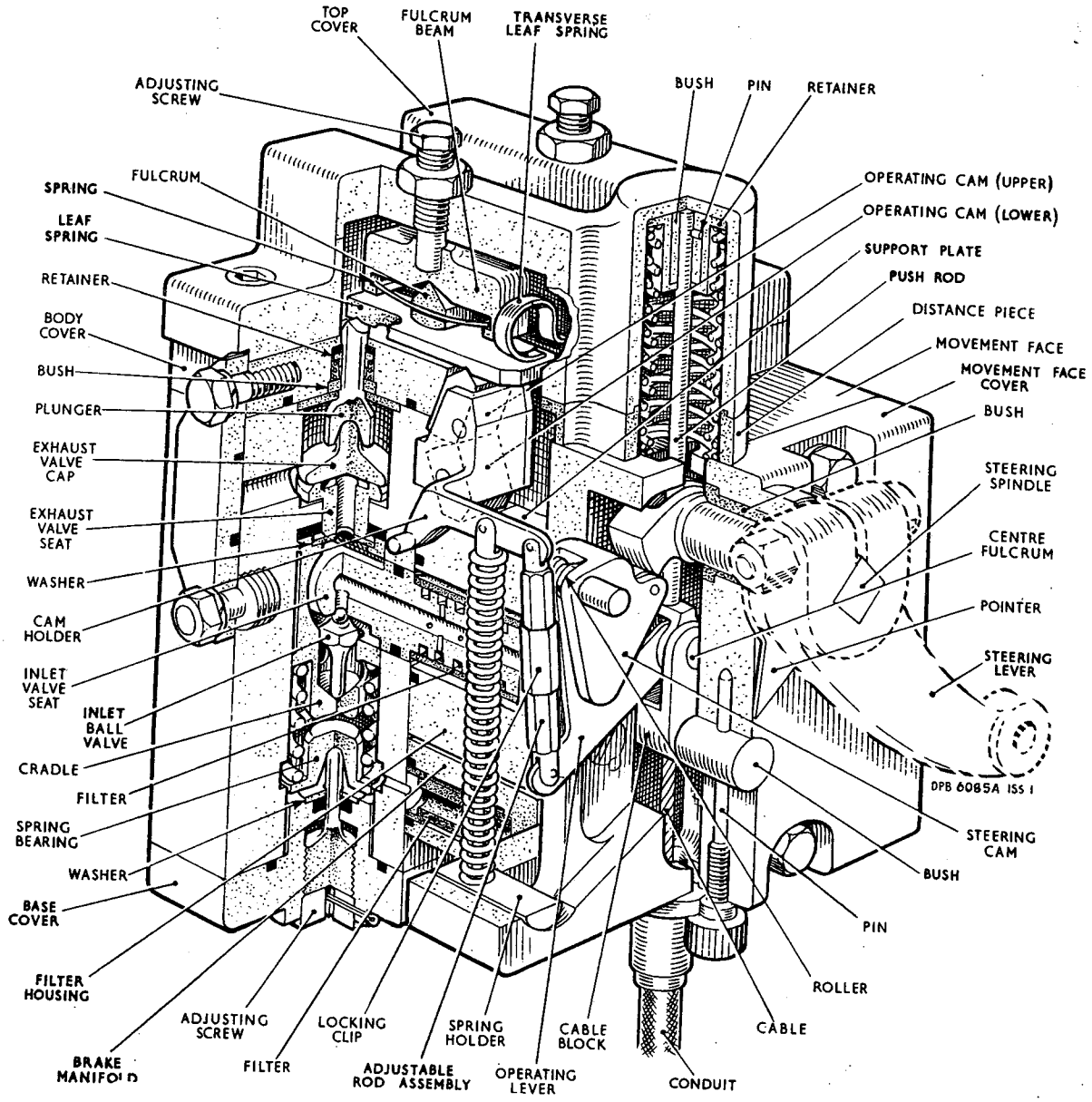


Fig. 1 Details of the brake control valve

## OPERATION

2. In the brakes OFF position the operating mechanism is disposed as shown in fig.2A. The exhaust valve caps are unloaded and the supply pressure is isolated by the inlet valves (fig.3A).

3. When the brakes are applied with the steering spindle in the neutral position, the operating cable moves simultaneously the port and starboard mechanism to obtain straight braking (fig.2B) and the fulcrum operated leaf springs load the exhaust valve caps.

4. The exhaust valves and cradles are forced down, unseating the inlet valves and allowing the supply fluid to be delivered to the brake units as shown in fig.3B. Delivery continues until fluid pressure under the exhaust valve caps neutralizes the load applied by the leaf springs and the inlet valves are permitted to reseat under the influence of the cradle spring. The supply is isolated and a balanced condition is produced as shown in fig.3C.

5. Subsequent to load variation, either excess pressure is relieved past the exhaust valve caps to reduce delivery, or the inlet valves are unseated to increase delivery. In either case the balanced condition (fig.3C) is restored when the selected delivery pressure is reached.

6. When the brakes are released, pressure in the brake units is dissipated into the return line past the unloaded exhaust valve caps (fig.3D) and the unit returns to the brakes OFF condition.

7. When the brakes are applied in differential braking, movement of the rudder control to port or starboard changes the attitude of the steering spindle arms relative to the steering cams. The position of one cam is maintained with the full load applied to the associated exhaust valve cap. The other cam is moved and the movement of the operating lever results in a decrease of the load applied to the other exhaust valve cap (fig.2C).

8. Continued steering spindle movement maintains the delivery pressure to the selected brake and progressively reduces the pressure on the other brake. When full travel movement is obtained, the other brake is in the OFF condition as shown in fig.2D and the pressure is reduced to zero past the unloaded exhaust valve cap (fig.3D).

## SERVICING

9. The following special tools are required for complete overhaul:-

| | |
|---|---|
| AO.45524 | Valve seat extractor |
| AO.45525 | Ball race extractor |
| AO.45526 | Ball race pressing-in tool |

### DISMANTLING

10. Scrupulous cleanliness must be observed at all times in handling the unit. All components as they are dismantled must be placed on a specially clean bench away from tools and equipment likely to cause damage. Duplicated components once used, are no longer regarded as interchangeable, therefore during dismantling and overhaul, they must be identified to ensure that on assembly they are replaced in their original positions.

(1) Remove the steering lever and lift off the pointer.

(2) Remove the exhaust connection and the blanking plate. Remove the non-return valve and spring.

(3) Unlock and remove the screws securing the plugs fitted between the top cover and the filter housing. Withdraw the plugs.

(4) Unlock and remove from the top cover the adjusting screws and locknuts.

(5) Withdraw the screws securing the top cover, lift off the top cover and the distance piece. Extract the transverse leaf springs from the slot in the top cover.

(6) Remove the fulcrum beams and the valve operating leaf springs. Separate the fulcrums and springs from the beams.

(7) Lift out the upper operating cams.

(8) Take off the body cover and withdraw the plungers, the washers, the bushes, the springs, the seal retainers and the sealing rings. Remove the exhaust valve caps.

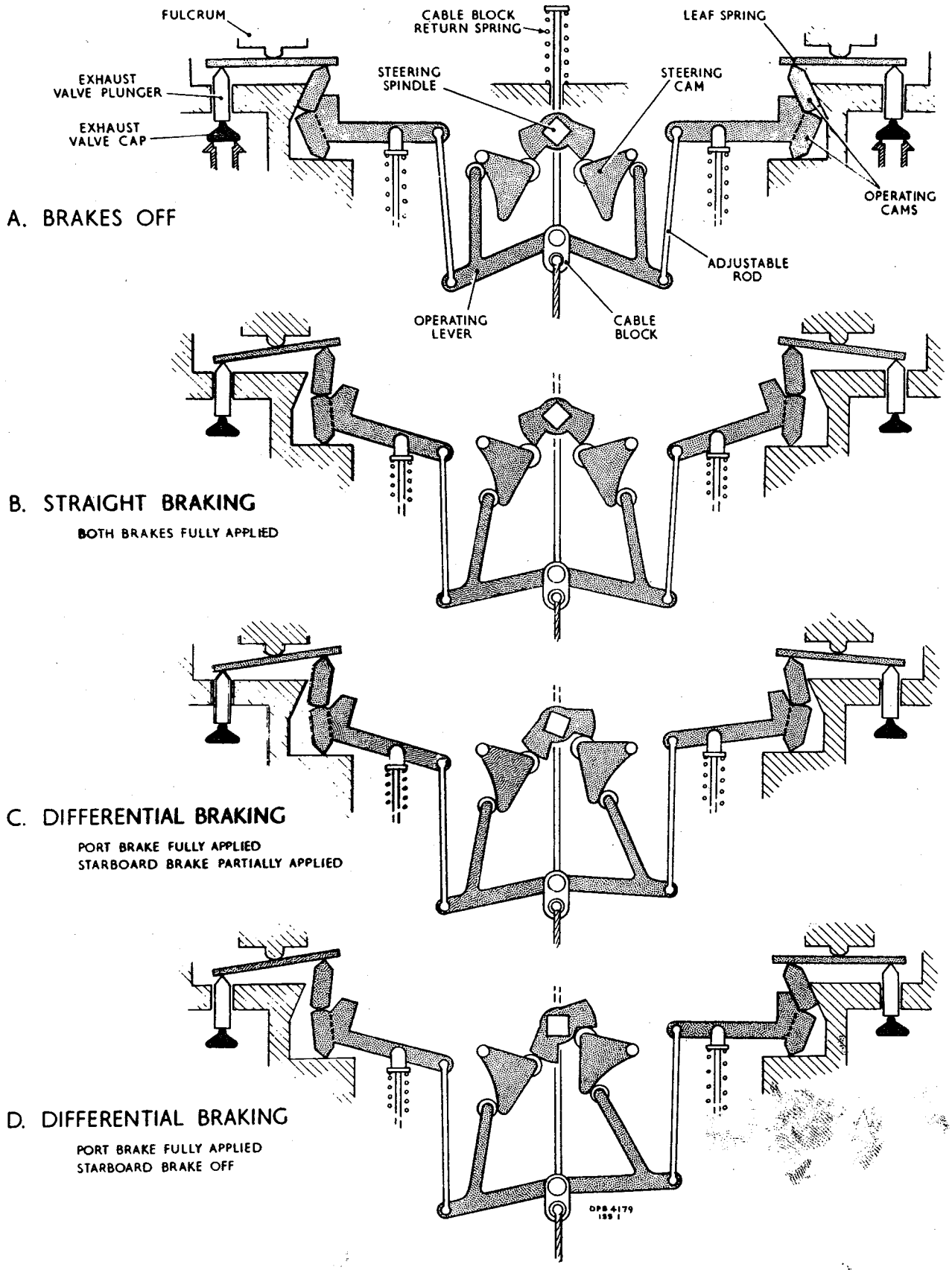


Fig.2 Functional diagram of operating mechanism

(9) Press down the cable block spring retainer, withdraw the pin and remove the bush, the retainer and the springs from the push rod.

(10) Remove the pin, the dust cover and the bush from the movement case cover.

(11) Remove the bolts and washers securing the movement face cover and lift off the cover.

(12) Screw a 10 BA screw into the centre fulcrum and extract the fulcrum from the cable block. Remove the cable block, the steering spindle and the return spring push rod.

(13) Disengage the operating levers from the steering cams and lift out the cams. Remove the rollers and spindles from the operating levers.

(14) Slide back the adjustable rod locking clips, lift and turn the operating levers to align them with the slots in the movement face.

(15) Disengage the return spring holders from the movement face and remove the spring spindles, the spring holders and the springs.

(16) Remove the two cheesehead screws and lift off the movement face.

(17) Remove the lower cam support plates and packings from the filter housing. Disengage the cam holders from the filter housing bearings and remove the cam holder assemblies complete with adjustable rods, operating levers and spring retainers.

(18) Remove the screws securing the filter housing and brake manifold to the valve body. Remove the housings, the filters and the sealing rings.

Note...

Do not disturb the ball races and plugs unless wear or damage necessitates their renewal.

(19) Extract the split pins and remove the adjusting screws from the base cover.

(20) Remove the screws retaining the base cover. Withdraw the base cover, the spring bearings and the cradle springs. Extract the washers and the sealing rings from the base cover.

(21) Using the special tool, extract the inlet valve seats and remove the sealing rings.

(22) Remove the cradles, the inlet ball valves and the exhaust valve seat washers from the valve body.

(23) Push the exhaust valve seats out of the top of the valve body and withdraw the sealing rings.

Note...

No further dismantling should be undertaken, except for renewal of components found defective during examination.

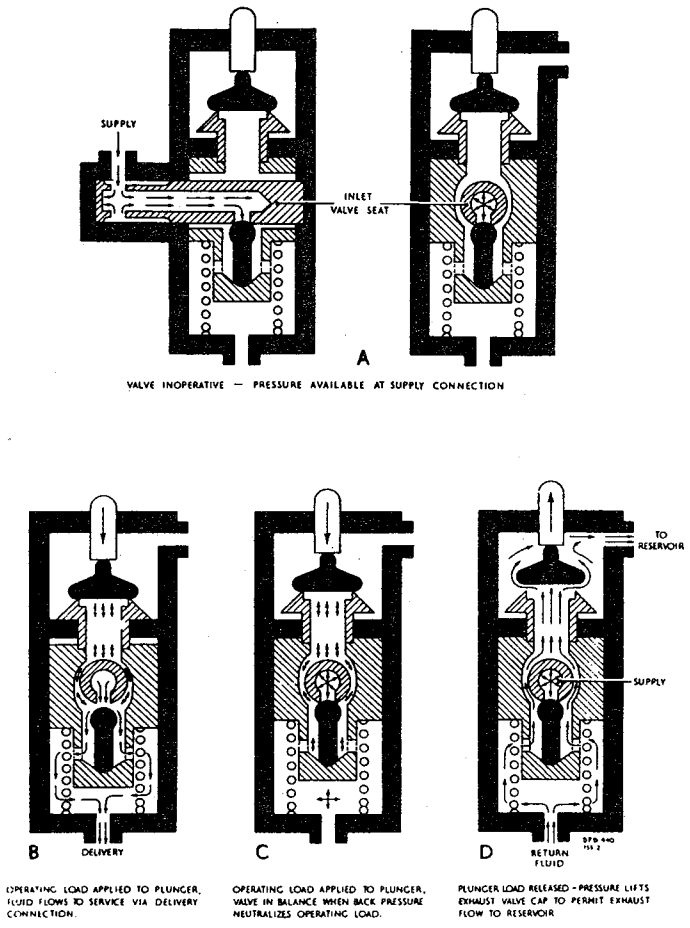


Fig.3 Functional diagram of a valve element

CLEANING

11. (1) Thoroughly clean and dry all metallic components. System fluid is normally suitable for this purpose unless otherwise stated.

CAUTION...

If chemical grease solvents are used for cleaning, ensure that they do not come into contact with the rubber components.

(2) Clean the porous metal filters with a pressurized flow or spray of commercial methylated spirit (Ref.No.34D/312) preferably in the reverse direction to the normal flow. A filter which remains totally or partially blocked after cleaning must be renewed. Do not attempt to clean or dry filters with cloth.

EXAMINATION

12. Before assembling all parts must be cleaned and examined for defects.

(1) Examine the aluminium alloy components for damage and corrosion. Slight external damage or corrosion may be polished out with a smooth hone or grade 00 carborundum. Clean and degrease the dressed area. Treat the bare metal with Alocrom 1200 in accordance with AP 119A-0600-1, Sect.3, Chap.5.

(2) Check the exhaust valve seat orifices in the valve body for wear.

If the bore diameter exceeds 0·2865 in. at any point the valve body is unserviceable.

(3) With the aid of a magnifying lens make a careful examination of the exhaust valve seats and caps, the inlet valve seats and the ball valves. These components must not be pitted, scratched or chipped. The inlet ball valves and the exhaust valve caps must bear only a light annular mark at their seating contact areas. Defective components must be renewed.

(4) Examine the cam holder bearings in the filter housings for damage, corrosion and security. Renew defective bearings (para.13).

(5) Check the attached linkage of each cam holder assembly for damage, corrosion, security and freedom of movement. Check that the lower cam and the cover plate are securely attached to the cam holder and that the cam drive tooth is secure and undamaged.

(6) Examine all springs for damage, corrosion and subject them to the following appropriate tests. Springs which fail to conform with the requirements must be renewed:-

| Spring | Load | Length (in) |
|---|---|---|
| Inner | 46·5/49·5 ozf. | 1·306 |
| Outer | 77·5/82·5 ozf. | 1·306 |
| Return (cam holder) | 45·5/50·5 ozf. | 1·365 |
| Cradle | 43/53 lbf | 0·741 |
| Non-return valve | 5½/6½ ozf. | 1·107 |
| Plunger | 15/17 ozf. | 0·180 |
| Transverse leaf | Test the spring on its free ends on a surface table. Check that the dimension between the upper surface of the central curved portion and the surface table is 0·110/0·140 in. | |
| Valve operating leaf | Place the spring on a surface table, with the grooves uppermost. Check for flatness with a 0·004 in. feeler gauge. | |
| Fulcrum beam | Check for straightness and permanent set. | |

(7) Sealing rings which have not been removed from their grooves and sealing rings which have been removed from the unit but which were not accommodated in grooves must be examined for damage, deterioration and embedded foreign matter. Renew defective sealing rings and sealing rings which have been removed from their grooves.

(8) Examine all remaining components for damage and corrosion. Renew if defective. Check that all threads are in good condition.

RENEWAL OF BEARINGS IN FILTER HOUSING

13. (1) Using the special tool press the bearing and the plug out of the filter housing.

(2) With the special tool press the new bearing fully home into the housing.

(3) Fit the plug to the housing by peening at four equidistant points.

ASSEMBLING

14. The assembly compounds must be smeared sparingly on the relevant components and the residue wiped off to leave only a fine surface film. The amount of compound used must be such that during assembly there is no surplus to exude into the unit. Do not use lanolin where it may contaminate adjacent rubber seals. On assembling avoid trapping the seals and causing subsequent leakage. The assembly compounds are as follows:-

| | |
|---|---|
| Lanolin (Ref.No.33C/511) or Grease XG-315 (Ref.No.34B/9100519) | Screw threads |
| System fluid (Ref.No.34B/9100572) | Rubber sealing rings |
| Anti-freeze grease D.T.D.825 | For all moving parts with the exception of those comprising the valve elements |

(1) Position the exhaust valve seat sealing rings in the valve body.

(2) Place each inlet ball valve and washer in its cradle.

(3) Fit the sealing rings to the inlet valve seats.

(4) Place one cradle in the valve body. Position the corresponding inlet valve seat and ensure that the valve seat locating peg is correctly engaged in the valve body wall drilling, before fully inserting the valve seat.

(5) Repeat operation (4) for the other cradle and inlet valve seat.

(6) Position the sealing rings and the retaining washers in the base cover. Retain the washers by peening at four equidistant points. Screw in the adjusting screws until the shank of each screw protrudes slightly through the retaining washer.

(7) Insert the cradle springs in the valve body and position a spring bearing in the end of each spring. With the screws secure the base cover to the valve body.

(8) Screw in each adjusting screw until the slotted head is approximately 1/16 in. proud of the cover.

(9) Pack the filter housing bearings with the specified grease and accommodate the sealing rings in the joint face. Position the filters in the housing and with the screws secure the housings to the valve body.

(10) Position the sealing rings in the brake manifold. House the filters in the manifold and with the screws secure the manifold to the valve body.

Note...
At this stage of assembly, it is recommended that the inlet valves be set as detailed in Testing, para.16.

(11) Locate the cam holder shafts in the filter housing bearings. Position a packing and support plate under each lower operating cam so that the cam knife-edges are aligned with the grooves in the support plates.

(12) Feed the adjustable rods and operating levers through the movement face slots and locate the movement face on the filter housing. Fit the two cheesehead screws, tighten and lock the screws by lightly peening the movement face into the screw slots.

(13) Fit a spring, spring holder and spring spindle to each cam holder spring retainer and slide the spring holders into the movement face.

(14) Ensure that the adjustment screw of each adjustable rod is positioned centrally between the upper and lower sleeves and align the operating levers with the movement face. Set the dimensions between the adjustable rod pivot centres to 1·375 in. (one complete turn of the centre adjustment screw produces an overall adjustment in length of 0·005 in.). Leave the adjustable rod clips disengaged from the centre adjustment screws.

(15) Locate the steering cams in the movement face bushes. Assemble a spindle and two rollers to each operating lever, retain in position with grease and engage the rollers in the slots of the steering cams.

(16) Locate the steering spindle in the movement face bush and position the push rod through the steering spindle slot. Locate the springs, the retainer and the bush on the push rod. Press down the retainer and insert the pin to secure the bush to the push rod.

(17) Locate the cable block in the movement face groove. Connect the operating levers and the push rod to the cable block with the centre fulcrum. Ensure that the operating levers lie in the same plane when they are connected to the cable block.

(18) Insert the exhaust valve seats into the valve body bores and position the exhaust valve caps centrally upon the seats.

(19) Assemble a washer, a bush, a spring and a seal retainer to each plunger. Position the assemblies on the exhaust valve caps and locate the washers in the valve body bores. Fit the sealing rings to the body cover and position the cover on the valve body, ensuring that the plunger knife-edges are correctly aligned and that the plunger sealing rings are not damaged by the knife-edges.

(20) Position the sealing ring in the blanking plate groove. Fit the sealing ring, the spring and the non-return valve to the exhaust connection. Secure the blanking plate and the exhaust connection to the unit.

(21) Locate the upper cams on the drive teeth of the lower cams.

CAUTION...

Ensure that each upper cam is positioned so that the centre pop marks adjacent to the knife-edge are on the side which contacts the angled face of the valve body cover.

(22) Check that the cable block is abutting the movement face stop and that the adjustable rod locking clips are clear of the centre adjustment screws.

(23) Restrain the steering spindle in the central position with the spindle arms touching the steering cam rollers. Rotate the centre adjustment screws of the adjustable rods until the upper operating cams are firmly held against the angled faces of the valve body cover, and the operating levers are in contact with the steering cams. Move the cable block away from its stop and check that both cam holder assemblies immediately move together. Release the cable block and check that it returns to engage the movement face stop. Release the steering spindle and engage the locking clips in position over the centre adjustment screws of the adjustable rods.

(24) Secure the locknuts and adjusting screws to the top cover. Assemble a fulcrum and spring to each fulcrum beam and position the assemblies in the top cover, ensuring that the fulcrum beams are engaged with the adjustment screws.

(25) Position the transverse leaf spring in the slot across the top cover (refer to fig.1).

(26) Ensure that the plunger knife-edges are correctly aligned and locate the valve operating leaf springs on the cam and plunger knife-edges.

CAUTION...

The flat bottomed groove of the leaf spring must engage the plunger knife-edge.

(27) Locate the distance piece on the top cover and secure the top cover to the valve body. Insert a plug on either side of the top cover and temporarily fit the retaining screws.

(28) Locate and secure the cover to the movement face. Position the bush in the cover and fit the retaining pin. Fit the pointer and the steering lever to the steering spindle.

(29) After satisfactory testing lock the attachment screws by peening the surrounding metal into the screw heads at two diametrically opposed points. Using lockwire Ref.No.30A/9437135 secure together the two top adjusting screws and plug screws.

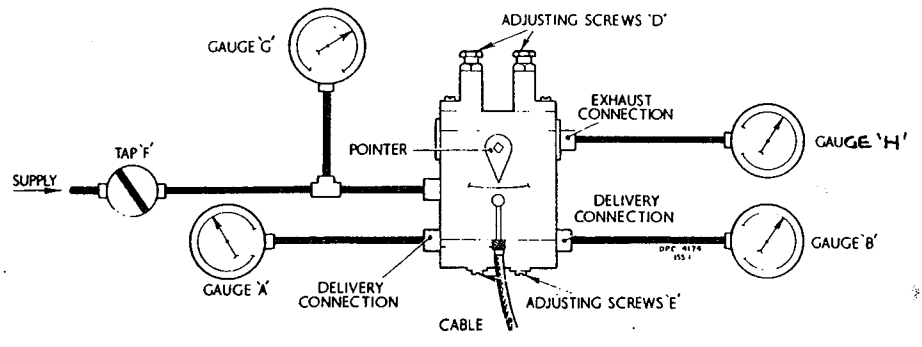


Fig.4 Test rig

TESTING AND ADJUSTING

15. After any servicing operation which involves dismantling the following tests and adjustments must be applied. The unit must be fitted in an upright position to the test rig. Use system fluid OM-15.

Setting the inlet valves

16. (1) Apply a supply pressure of 3000 lbf/in$^2$. Unscrew the adjusting screws E and allow a large volume of fluid to escape thereby bleeding the valve elements. Screw in the adjusting screws until the leakage ceases.

(2) Apply a supply pressure of 3000 lbf/in$^2$ and stop the pump in order to produce a static fluid condition. Keep the supply pressure constant during the following setting operation.

(3) Slowly unscrew one adjusting screw E until fluid starts to leak through the delivery connection. Tighten the adjusting screw until the leakage ceases, this should be within $\frac{1}{4}$ turn. If the leakage persists the inlet valve is faulty.

(4) Repeat operation (3) for the other adjusting screw.

(5) Tighten each adjusting screw E an amount necessary to align the nearest locking hole and lock with a split pin.

Setting the unit

17. (1) Connect a suitable operating cable to the unit. Leave gauge H disconnected.

(2) Remove the plugs from the relevant sides of the top cover. Restrain the steering lever to lock the pointer in the centre position.

(3) Raise the supply pressure to 3000 lbf/in$^2$ and operate the cable to bleed the system.

(4) With 3000 lbf/in$^2$ applied, screw in the adjusting screws D until both valves 'crack' and pressure is registered on gauges A and B. Slowly unscrew the adjusting screws D until both gauges register zero. Lock each adjusting screw with the locknut. Refer to the Note before para.18 and if applicable carry out the cycling test.

(5) Slowly operate the cable and check that the cable stroke is 0·625 in. Ensure that the operating mechanism and linkage move freely.

(6) During operation (5) check that both valves 'crack' together within 150 lbf/in$^2$ and that the 'cracking' pressures registered on gauges A and B do not exceed 250 lbf/in$^2$. Check that in the fully operated condition both gauges register within the limits of 1550/1700 lbf/in$^2$.

(7) Slowly release the cable and check that gauges A and B exhaust to zero. Check that the upper operating cam knife-edges are correctly located in the leaf spring slots, as viewed through the plug recesses in the top cover. Refit the plugs and retaining screws to the top cover.

Note...

This cycling test is only applicable when any components of the

valve operating mechanisms have been renewed i.e., plunger operating cams, leaf springs and fulcrums.

After setting checks

18. (1) After setting the unit as detailed in sub-para.17(4), position the unit in the test rig so that it is mounted flat on its back face, with the small slots in the back of the top cover readily visible.

(2) Carry out the operations detailed in sub-paras.17(2) and 17(3) and fit a low pressure gauge at H.

(3) With 3000 lbf/in$^2$ applied, fully operate the cable for 1000 cycles at 15 cycles per minute. During the first 500 cycles maintain a back pressure of 40 lbf/in$^2$ on gauge H. During the remaining 500 cycles maintain a back pressure of 2 lbf/in$^2$ on gauge H. Check for leakage from the top cover slots. Leakage is not permitted.

(4) After completion of operation (3) disconnect gauge H and reset the unit as detailed in sub-para.17(4).

Functional test

19. (1) Mount the unit in the test rig (fig.4). Fit low pressure gauges (0-500 lbf/in$^2$) at A and B, leave gauge H disconnected.

(2) Restrain the steering lever to lock the pointer in the centre position and raise the supply pressure to 3000 lbf/in$^2$. Operate the cable until gauges A and B show 300 lbf/in$^2$, limit the cable travel so that this delivery pressure cannot be exceeded and operate the cable several times to bleed the system. Release the cable and check that both gauges completely exhaust to zero.

(3) Release the steering lever. Operate the cable until gauges A and B show 300 lbf/in$^2$ and check that when the steering pointer is aligned with either 45 deg. mark one gauge exhausts to zero.

(4) Disconnect the low pressure gauges and fit the normal gauges at A and B. Remove the device restricting the limit of cable travel.

(5) Restrain the steering lever to lock the pointer in the centre position and raise the supply pressure to 3000 lbf/in$^2$. Operate the cable to bleed the system.

(6) Operate the cable and check that the cable stroke is 0·625 in. Ensure that the operating mechanism and linkage move freely.

(7) During operation (6) check that both valves start recording pressure simultaneously (i.e. both valves 'crack' together) within 150 lbf/in$^2$ and that the 'cracking' pressures registered on gauges A and B do not exceed 250 lbf/in$^2$. Check that the pressures registered on both gauges are fully progressive with cable movement and are synchronised to within 100 lbf/in$^2$ and that in the fully operated position both gauges register within the limits of 1550/1700 lbf/in$^2$.

(8) Rapidly operate the cable and check that gauges A and B register within the limits of 1550/1700 lbf/in$^2$ in the fully operated position.

Note ...

The momentary increase in pressure above the maximum delivery pressure due to surge must not exceed 100 lbf/in$^2$; the delivery pressures must then settle to within the limits of 1550/1700 lbf/in$^2$.

(9) Operate the cable, making five rapid and five slow continuous applications. During each application check that the pressures shown on gauges A and B are synchronised to within the limits quoted in operation (7).

(10) Release the steering lever and restrain the cable in the fully operated position. Check that when the steering pointer is aligned with either 45 deg. mark, one gauge exhaust to zero and the other shown pressure within the limits of 1550/1700 lbf/in$^2$. Centralize the steering pointer, slowly release the cable and check that gauges A and B exhaust to zero.

Leakage test

20. (1) Restrain the steering lever to lock the pointer in the centre position and raise the supply pressure to 3000 lbf/in$^2$. Operate the cable until gauges A and B show 1550/1700 lbf/in$^2$. Leave the unit on test for five minutes and at the end of this period check that any leakage from the exhaust connection is limited to 4 drops (0.2 cc) per minute.

(2) Remove gauges A and B. With 3000 lbf/in$^2$ supply pressure applied, close tap F and check that there is no loss of pressure from gauge G due to leakage.

▶ Cable locking pins security test

21. Apply finger pressure to the brake cable locating pins and ensure no movement is apparent.

Note ...

If the locating pins are loose, remove from the block and resecure using a thin film of araldite DTD900/4713. ◀

TABLE 1
Faults, causes and remedies

| Fault | Cause | Remedy |
|---|---|---|
| Leakage from joint faces | Loose attachment screws or faulty sealing rings | Tighten screws but not excessively. If leakage persists renew faulty sealing rings |
| Leakage from around base cover adjusting screw threads | Faulty sealing ring(s) | Detach base cover and renew sealing ring(s) |
| Leakage from top cover | Faulty plunger sealing ring(s) | Dismantle and renew plunger sealing ring(s) |
| Internal leakage | Faulty inlet valve, exhaust valve, or exhaust valve seat sealing ring<br><br><u>To trace the faulty component</u><br><br>(1) Apply maximum supply pressure<br><br>(2) Continuous leakage from either delivery connection will indicate a faulty inlet valve<br><br>(3) Blank off both delivery connections. Apply approximately two thirds full cable travel for a period of 5 minutes. Leakage from the exhaust connection will indicate a faulty exhaust valve or valve seat sealing ring.<br><br>(4) Trace the faulty exhaust valve by moving the steering pointer to each 45 deg. mark in turn. Leakage from the exhaust connection will indicate the faulty exhaust valve | Dismantle for inspection and rectification of components as detailed under Examination procedure |
| Valve elements not synchronised within the limits | Incorrect setting of top cover adjustment screws and/or adjustable rod | Reset the unit as detailed in para.17. If fault persists, dismantle and check setting of adjustable rods as detailed in sub-para. 14(23) |



BPCC/21818/8271522/MAY.86/2630

# PARTS CATALOGUE AND RELATED INFORMATION (-3)

MODIFICATION RECORD

| Mod No | AL No | Mod No | AL No | Mod No | AL No | Mod No | AL No | Mod No | AL No | Mod No | AL No |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3944 | | | | | | | | | | | |

* Incorporated in initial issue of catalogue
NA Mod not applicable to this catalogue
C Mod cancelled
AS Amendment Sheet

PREFACE

Demands

1 Requirements for demands are:

1.1 The demand must quote the appropriate Vocabulary Section and Reference/Stock Number for each item. Unreferenced parts are not normally provisioned as spares and demands for such items must quote the Vocabulary Section, Maker's Part Number, and the name and type of the equipment. The location of each part within the equipment should be clearly indicated.

1.2 Demands are to be prepared in accordance with the procedure laid down in AP 830 Volume 1 or BR4.

Local manufacture

2 Parts annotated 'LM' are to be manufactured from local resources. If the manufacture of such items is beyond the capacity of the Unit, the demand is to be endorsed 'Unable to manufacture locally'.

Major repair

3 'MR' indicates that an item is required for major repair purposes only and will not normally be held in store by Units other than those authorised to undertake major repair of the equipment.

Units per assembly

4 The number quoted is the quantity required per next higher assembly in the position shown except 'attaching parts' which quote the quantity required to attach one item. The letters 'AR' in the 'Units per Assy' column indicate that the quantity is 'as required'. Where applicable the quantity normally fitted is shown as a nominal figure, e.g. (Nom 3). Where an item is listed only for reference purposes the letters 'RF' are quoted.

Classification of equipment

5 The Class of Store is indicated by a single letter as laid down in AP 830 Volume 1 or BR4.

Condition of Supply (Interchangeability Code)

6 Condition of Supply is indicated by one of the following letters and is only quoted against parts which are not directly interchangeable:

V Open up holes on assembly
W Partially assembled
X Ream or machine on assembly
Y Drill or drill and tap on assembly
Z Trim on assembly

Obsolescent stock

7 An asterisk in the 'Part No.' column indicates that no further purchases of the item will be made but the part is to be used until stocks are exhausted.

Modifications

8 When items are affected by a modification the 'Mod No.' is quoted in the Nomenclature. Modifications incorporated in the catalogue are listed in the Modification Record.

INDEX OF NATO STOCK NUMBERS

| Vocab Sect. | NATO Stock No. | Part Number | Chap. No. | Fig/ Index No. | ICY MR | C of S |
|---|---|---|---|---|---|---|
| 28F | 4730-99-101-3959 | AGS 1236/B | | 1/8 | | C |
| 27G | 5330-99-461-7658 | ACO 4710 | | 1/5 | | C |
| 27G | 1630-99-461-7707 | ACO 8639 | | 1/6 | | C |
| 27G | 5360-99-461-7708 | ACO 8638 | | 1/7 | | C |
| 27G | 1650-99-461-7713 | ACO 8693 | | 1/4 | | C |
| 27G | 1650-99-461-7745 | AC 12734 | | 1/- | | P |
| 27G | 1630-99-461-9004 | ACO 9645 | | 1/9 | | C |
| 27G | 1630-99-632-5490 | AC 60692 | | 1/- | | P |
| 28M | 5320-99-940-3520 | A27/CP | | 1/2 | | C |
| | | DSR 361/3 | | 1/2 | | C |
| 28W | 5310-99-941-6643 | SP 47/C | | 1/3 | | C |
| | | DSR 163/6 | | 1/3 | | C |
| 28D | 5305-99-943-6920 | A25/1C | | 1/1 | | C |
| 28F | 4730-99-944-0887 | AGS 2111 | | 1/11 | | C |
| 28P | 5315-99-948-6478 | SP 90/C5 | | 1/10 | | C |
| | | DSR 232/4 | | 1/10 | | C |

INDEX OF PART NUMBERS

| Part Number | Vocab Sect. | NATO Stock No., Ref. No. or LM | Chap. No. | Fig./ Index No. |
|---|---|---|---|---|
| ACO 4710 | 27G | 5330-99-461-7658 | | 1/5 |
| ACO 8638 | 27G | 5360-99-461-7708 | | 1/7 |
| ACO 8639 | 27G | 1630-99-461-7707 | | 1/6 |
| ACO 8693 | 27G | 1650-99-461-7713 | | 1/4 |
| ACO 9645 | 27G | 1630-99-461-9004 | | 1/9 |
| AC 12734 | 27G | 1650-99-461-7745 | | 1/- |
| AC 60692 | 27G | 1630-99-632-5490 | | 1/- |
| AGS 1236/B | 28F | 4730-99-101-3959 | | 1/8 |
| AGS 2111 | 28F | 4730-99-944-0887 | | 1/11 |
| A 25/1C | 28D | 5305-99-943-6920 | | 1/1 |
| A 27/CP | 28M | 5310-99-940-3520 | | 1/2 |
| DSR 163/6 | 28W | 5310-99-941-6643 | | 1/3 |
| DSR 232/4 | 28P | 5315-99-948-6478 | | 1/10 |
| DSR 361/3 | 28M | 5310-99-940-3520 | | 1/2 |
| SP 47/C | 28W | 5310-99-941-6643 | | 1/3 |
| SP 90/C5 | 28P | 5315-99-948-6478 | | 1/10 |

# DETAILED PARTS LIST

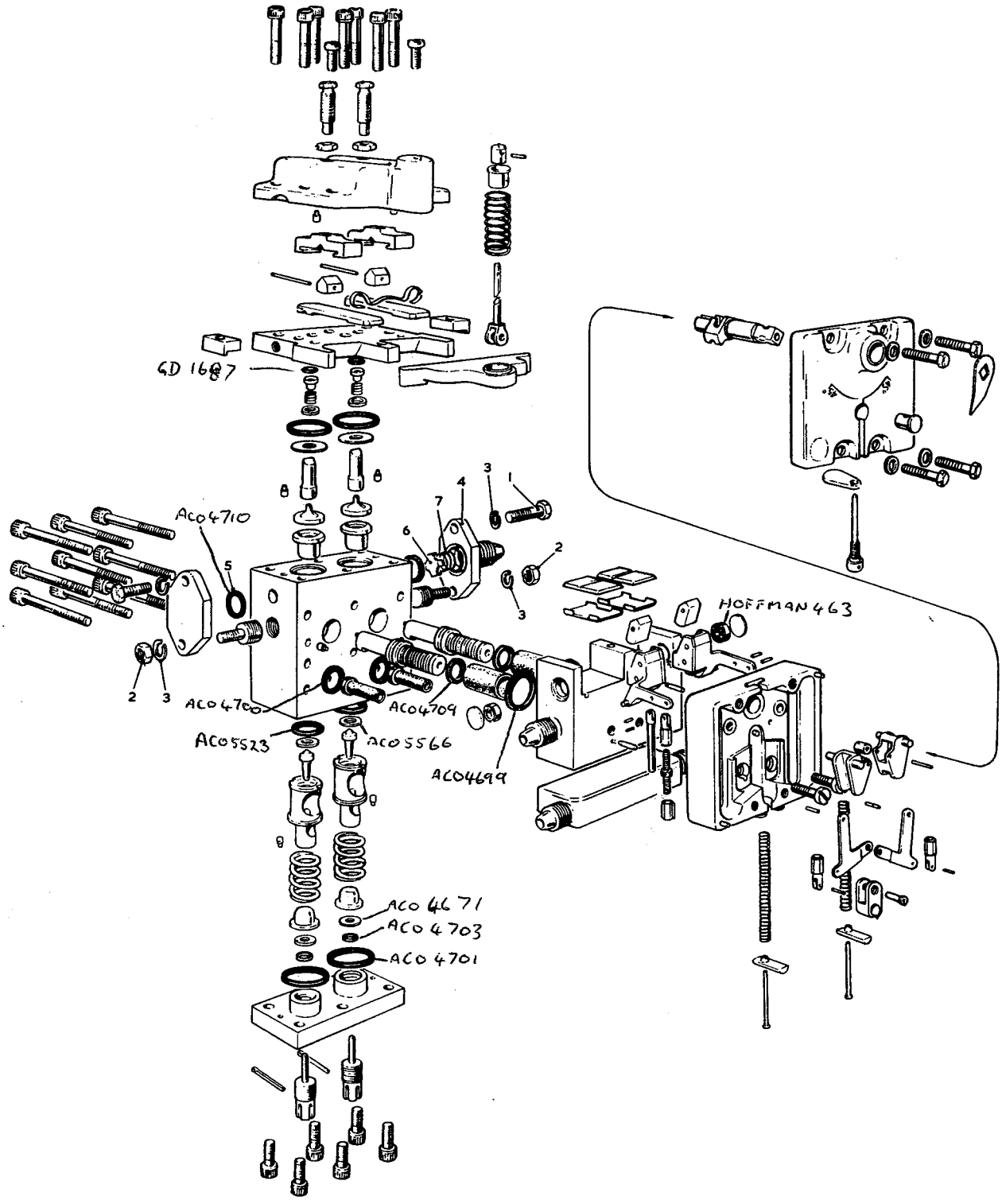


Fig. 1 Hydraulic brake control valve assembly, Mk.3

DETAILED PARTS LISTS

BRAKE CONTROL VALVE ASSEMBLY (HYDRAULIC) Mk.3

| Fig./ Index No. | Part No. | Nomenclature 1 2 3 4 5 6 . . . . . | Usage Code | Units per Assy. |
|---|---|---|---|---|
| 1- | AC 12734 | Valve, brake control (hydraulic) Mk.3 assembly (Pre-Dunlop Mod. 3944) | | |
| 1- | AC 60692 | Valve, brake control (hydraulic) Mk.3 assembly (Dunlop Mod 3944) | | |
| -1 | A 25/1C | . Bolt, 2 B.A., securing connection blanking plate and front cover (DSR 172/2) | | 2 |
| -2 | A 27/CP | . Nut, 2 B.A., at studs securing exhaust connection (DSR 361/3) | | 2 |
| -3 | SP 47/C | . Washer, spring (DSR 163/6) | | 4 |
| -4 | ACO 8693 | . Connection, exhaust | | 1 |
| -5 | ACO 4710 | . Ring, sealing | | 2 |
| -6 | ACO 8639 | . Valve, non-return | | 1 |
| -7 | ACO 8638 | . Spring, valve, non-return | | 1 |
| | | TRANSPORTATION AND STORAGE | | |
| -8+ | AGS 1236/B | . Cap, cone | | 4 |
| -9+ | ACO 9645 | . Cover, dust | | 1 |
| -10+ | SP 90/C5 | . Pin, split (DSR 232/4) | | 4 |
| -11+ | AGS 2111 | . Sleeve, outer | | 4 |

+ Item not illustrated