

SERVICE BULLETIN

MARCH 20, 1978

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No. Q95 under BRAKES

FOR BRANCHES, DISTRIBUTORS AND CUSTOMERS.

CHASSIS AFFECTED ALLENTOWN ☒ HAYWARD ☒ OAKVILLE ☒

BRAKE IMPROVEMENTS

(All With Air Over Hydraulic Disc Brakes)

PURPOSE To advise of improvements to increase disc brake service life and to provide part numbers for disc brake service kits and replacement parts.

RECOMMENDATION The improvements described in this bulletin will increase service life of disc brakes. Due to a recent change in motor vehicle safety standard 121, older MVSS121 equipped vehicles can incorporate these improvements if the operator desires. These changes are not mandatory however, and are to be made at the operators request and expense.

INFORMATION One of the original stopping requirements for vehicles subject to MVSS121 requirements was 243 feet from 60 mph on dry roads. A revised standard, now in effect, increased the allowable stopping distance to 293 feet under the same conditions. Some Mack vehicles built to comply with the original standard, utilized disc brakes at the front wheels to achieve the high braking force required.

It has been found that short life of these disc brakes can result from failure to keep the rear brakes in adjustment. Disc brakes are self-adjusting and operate at minimum lining to-rotor clearance at all times. As a result, they provide the major portion of the braking force under light braking conditions if the rear wheel brakes are out of adjustment.

If a particular operation entails considerable light braking, disc brake life can be increased by installing a metering valve in the hydraulic system. The metering valve reduces pressure to the disc brakes under low application pressure, causing the rear brakes to assume a larger proportion of the braking effort. At higher application pressure, normal pressure is restored to the disc brakes.

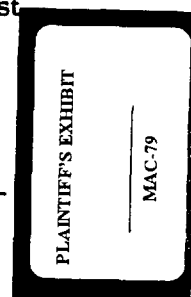
Installation of 17 to 1 ratio intensifier in place of a 23 to 1 ratio unit will increase disc brake life. This modification is permissible on highway vehicles equipped with a bogie rated at 55,000 pounds or less. The intensifier uses brake system air pressure to develop hydraulic pressure for the disc brakes. With a 17 to 1 intensifier, 100 psi of air pressure will generate 1700 psi hydraulic pressure. With a 23 to 1 intensifier, 100 psi air pressure will generate 2300 psi hydraulic pressure.

Longer lining life can also be achieved by installing current service linings. The less stringent stopping requirements now in effect make it possible to use a different lining material which has better wear characteristics than the material originally required.

Correct adjustment of rear axle manual slack adjusters is essential for achieving correct balance between front and rear brakes. If the operator prefers, automatic slack adjusters can be installed on the SW56, 57, 571, 573 and 76 series bogies to aid in maintaining correct adjustment.

(Continued Over)

Service Manager	
Shop Foreman	
Night Foreman	
Night Foreman	
Inspector Leadman	
Inspector Leadman	
Inspector Leadman	
Unit Over-haul Room	
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Mack

Procedure

1. Installing metering valve 20QE2191R. See Figure 1 (R.U. and DM) and Figure 2 (MB).
 - a. Remove ratio valve 20QE3109R installed in air line between brake application valve and anti-wheel lock controller or quick release valve. This valve is not used when a metering valve is installed. Install a new air line from brake application valve to controller or quick release valve.
 - b. Remove the tee fitting to which the intensifier unit and caliper hydraulic lines are connected. Install the metering valve into these lines in place of the tee. Connect the "M" port to intensifier unit and "F" ports (two) to the brake calipers.

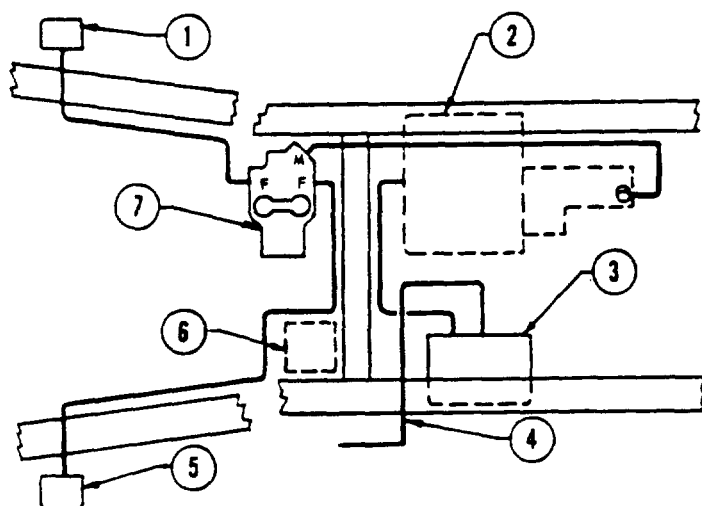
NOTE

The metering valve must be installed vertically with ports facing up and the pin facing down.

- c. Fabricate a suitable metering valve mounting bracket locally. Utilize any convenient bolts or holes to secure the bracket.

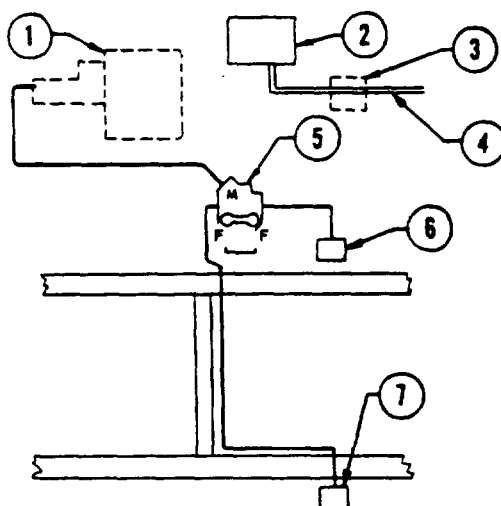
Parts required:

Qty.	Part Number	Description
1	20QE2191R	Pressure Metering Valve
3	63AX606	Nut, Inverted Flare



1. FRONT BRAKE CYLINDER, R.H.
2. INTENSIFIER
3. FRONT BRAKE CONTROLLER
4. AIR LINE - CONTROLLER TO BRAKE APPLICATION VALVE
5. FRONT BRAKE CYLINDER, L.H.
6. RATIO VALVE - REMOVE
7. METERING VALVE 20QE 2191R

FIGURE 1



1. INTENSIFIER
2. FRONT BRAKE CONTROLLER
3. RATIO VALVE - REMOVE
4. AIR LINE - CONTROLLER TO BRAKE APPLICATION VALVE
5. METERING VALVE
6. FRONT BRAKE CYLINDER, R.H.
7. FRONT BRAKE CYLINDER, L.H.

FIGURE 2

2. Installing low ratio intensifier

(a) The 17 to 1 intensifier is directly interchangeable with the 23 to 1 intensifier.

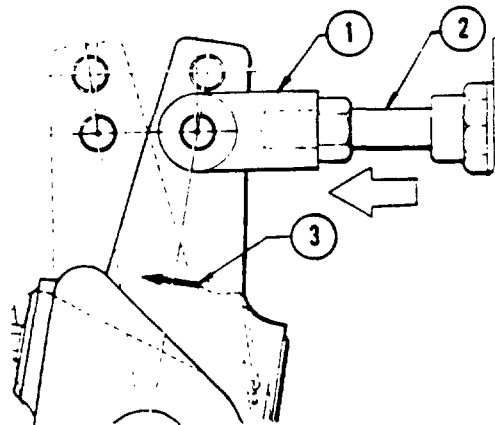
Parts required:

Qty.	New Part	Description	Replaces
1	8QE429R(17 to 1)	Intensifier	8QE430R(23 to 1)

3. Installing automatic slack adjusters on SW56, 57, 571, 573 and 76 series bogies.

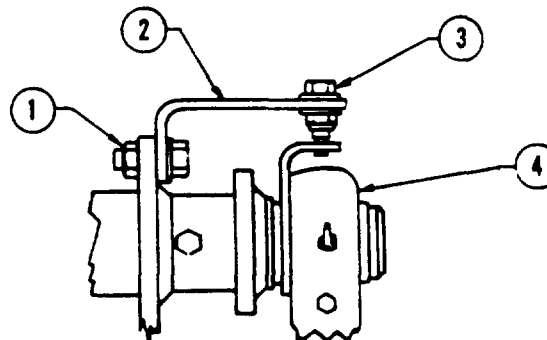
a. Remove existing slack adjusters.

b. Install new slack adjuster on brake camshaft. Be sure arrow on adjuster points in direction unit rotates for a brake application. See Figure 3.



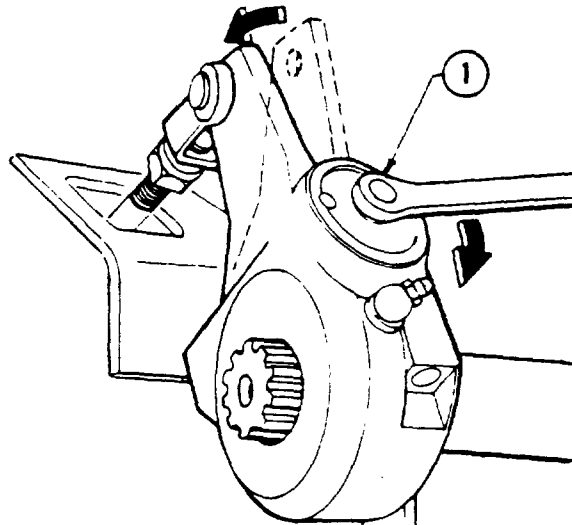
1. CLEVIS
2. PUSH ROD
3. DIRECTION OF BRAKE APPLICATION
FIGURE 3

c. Install slack adjuster retainer bracket on brake assembly using existing spider mounting bolts as shown in Figure 4. Do not tighten the bolts. Align clevis pin hole in slack adjuster with push rod clevis by turning worm adjusting nut as shown in Figure 5 and install clevis pin.



1. EXISTING SPIDER MOUNTING BOLTS
2. BRACKET 72RU 2861-P5, P6
3. SETSCREW 7AX 262Z, WASHER 37AX 473, NUT 21AX 317
4. SLACK ADJUSTER

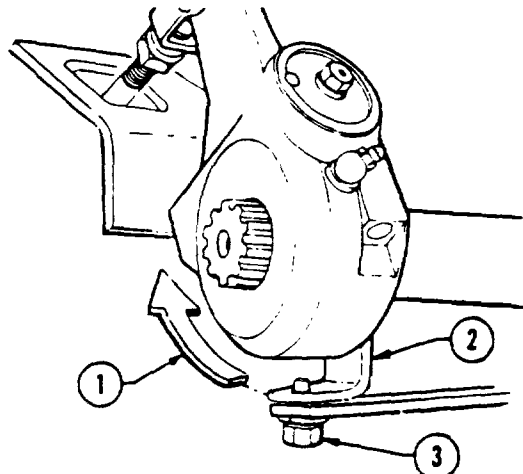
FIGURE 4



1. TURN WORM ADJUSTMENT NUT TO MOVE
ARM INTO CLEVIS

FIGURE 5

- d. Move slack adjuster control arm in direction shown in Figure 6 to be sure it is in contact with the internal stop. Proper operation depends on control arm being correctly positioned against stop.



1. MOVE CONTROL ARM IN THIS DIRECTION
2. CONTROL ARM
3. SETSCREW

FIGURE 6

- e. Install control arm setscrew as shown in Figure 4 and tighten retainer bracket screws. Be sure control arm does not move when retainer screws are tightened.
- f. Check operation of slack adjuster by operating brakes and observing if adjusting nut rotates. After establishing that operation is satisfactory, uncage spring brakes, if used.

Parts required per bogie:

Qty.	Part Number	Description
4	25QDA335-P6	Slack Adjuster
2	72RU2861-P5	Slack Adjuster Retainer Bracket
2	72RU2861-P6	Slack Adjuster Retainer Bracket
4	7AX262Z	Setscrew
4	21AX317	Nut
8	37AX473	Washer

3. Servicing the disc brake caliper.

Various components and service kits are available to expedite overhaul of these units. These items are shown in accompanying parts list.

General repair procedures are given in Highway Vehicle Service Manual TS442. Follow these procedures, taking particular care to observe the following points:

- a. Minor corrosion and stains in the piston bores can be polished with crocus cloth. Do not use emery cloth or other abrasives.

Also check seal groove for scoring, nicks or corrosion. If any defects are noted, replace caliper.

- b. The piston's outer diameter is plated and sized to a very close tolerance and must not be refinished by any means. If the O.D is scored, knicked, corroded or the plating is worn or damaged, the piston must be replaced.

Parts required:

Qty.	Part Number	Description
*	4891-09726602	Kit, Boot and Seal
**	4891-09906101	Kit, Shoe and Lining
***	4891-09829401	Piston
	4891-0929501	Lining Holdown Kit

* Services one caliper

** Service two calipers

*** As required