

## 1.0 INTRODUCTION

The shaft brake mechanisms are used to stop the vehicle from a few mph down to a complete stop and must hold the vehicle stationary. If dynamic brake fails, the shaft brake becomes the main braking system. There are four brake actuators and brake shoe assemblies per car. The brake actuator is mounted on the outside of the truck frame and the shaft brake is mounted on the traction motor end frame. All brake actuators are SE2A and SE2AL models and are serviced similarly. Shaft brakes fall into two categories. Type one is an internal shoe model, and is the WABCO A-2 brake. Type two is an external shoe model, and is a CLARK brake.

The mechanic must follow these procedures without exception. There are some new processes and some old "lost" methods. Any deviation from them will result in poor operation, an under braked vehicle and frustration on the part of the mechanic. If in doubt about any part of the procedure or encounter difficulties, do not guess at solutions. See your shop foreman AND shop engineer for safe, corrective action.

### OTHER NOTES

- 1) Part callout and parts lists are provided in Attachments 4.1, 4.2 and 4.3.
- 2) A number in parenthesis may follow the part name. This number is the key number for identifying parts in Attachments 4.1, 4.2 and 4.3. This is intended to familiarize the mechanic with the various parts.
- 3) Part names will be printed in CAPITAL LETTERS.
- 4) Read the entire step BEFORE doing anything. Often important information will follow an instruction.
- 5) Class and lot numbers will follow part names in parentheses.
- 6) A step and a related figure will have the same number.

### 1.1 Safety Notice

All work shall be performed in accordance with the latest rules, regulations, procedures and safe practices of SEPTA, whether published, posted, or verbally directed. When conditions arise which are not specifically covered by rules, employees are expected to use sound judgement in the application of safety principles.

## 2.0 APPLICABLE DOCUMENTS

SMI 2-1005 WABCO Brake Actuator Overhaul

## 3.0 PROCEDURE

### 3.1 "B" Inspection Work (Brake Inspection and Adjustment)

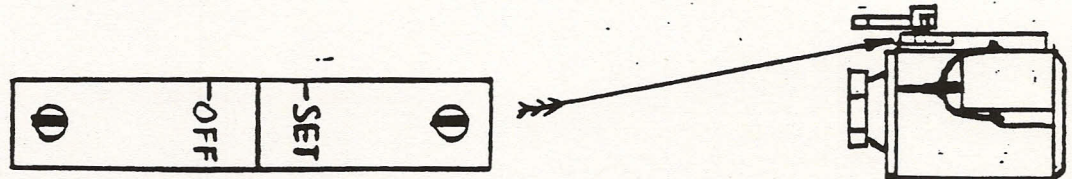
1. Check lining thickness. The lining thickness may be checked by two methods. The first is by how far the ROD (111) moves. Remove PIN (110) and separate CLEVIS (114) from actuating LEVER (14). Push the ROD all the way into the released position. Using a rule, held steady from any non-moving part of the truck frame, pull the ROD out and measure the distance on the rule. Maximum for WABCO linings is 2-7/8" and 2-3/8" for CLARK linings. (Another method that can be used in the future will be



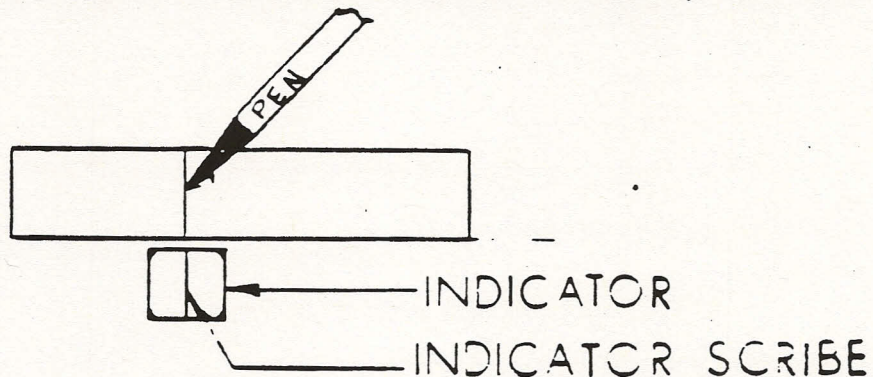
## 3.1 "B" Inspection Work (Brake Inspection and Adjustment (Cont.)

to check linings by a wear mark that will be cut into the edge of the lining. When worn to this line, there is only 1/64" of lining left before the drum is scored by the rivets. At this point the shoes must be changed out.) Replace worn out linings per section 3.4 for WABCO linings or 3.5 for Clark linings.

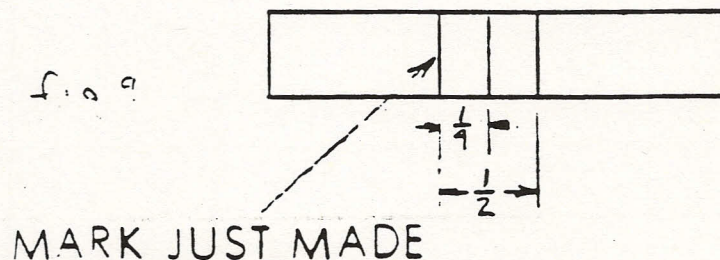
2. If the ESCUTCHEON (as shown in figure 2) is readable, go to step 17.



3. If the ESCUTCHEON(9) is unreadable and SCREWS(8) can be removed to replace it, go to step 10.
4. If the ESCUTCHEON(9) cannot be replaced due to mounting SCREW(8) problems, continue as follows.
5. Unlatch RELEASE LEVER(4).
6. Remove PIN (110) that connects actuator to ROD(111) and separate.
7. Latch RELEASE LEVER(4).
8. Using a suitable marking pen, mark a line on the escutcheon surface exactly in line with the indicator scribe, as shown in figure 8. On slack adjuster models push the indicator to the right (this is in case the indicator is loose), then mark.



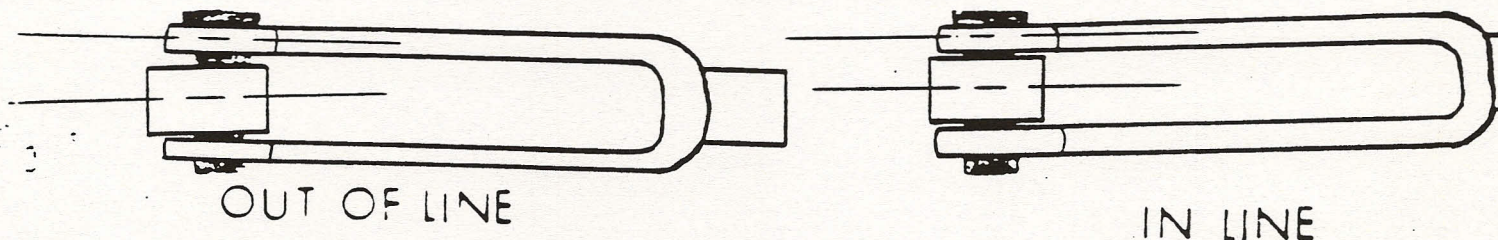
9. Measure from the mark just made, to the right, 1/4" and 1/2" and make full lines as shown in figure 9. Go to step 14.



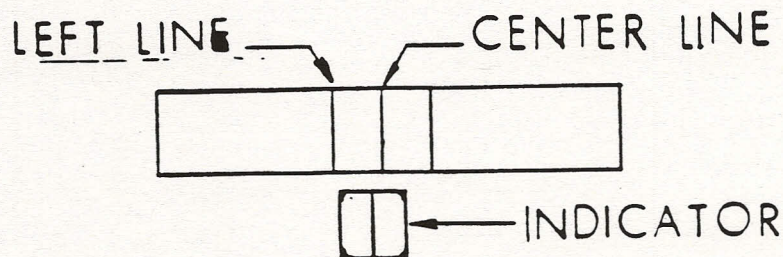


## 3.1 (Continued)

10. Remove two SCREWS(8) and old ESCUTCHEON(9).
11. Use correct new ESCUTCHEON 36-3629 (short 2-1/8") or 53-1302 (long 3-1/8") and two #6-32x1/4" stainless steel pan head SCREWS (65-8035-S02) and two #6 stainless steel external star lock WASHERS (40-9997-S10) and reassemble.
12. Unlatch RELEASE LEVER(4), remove PIN(110) that connects actuator and ROD (111) and separate.
13. Latch RELEASE LEVER (4) and align "SET" line of ESCUTCHEON(4) with indicator scribe line and tighten SCREWS(8).
14. Check the PIN(110). If worn, replace only with PIN(90-10660). (The new pin is hardened and plated to resist corrosion).
15. Unlatch RELEASE LEVER(4) and reconnect actuator and ROD(111) with PIN(110). NOTE: If PIN does not fit bushing, use the 1/2" reamer and ream the bushing by hand, in LEVER(14) (many were shipped unreamed). If PIN still will not fit through CLEVIS and LEVER, CLEVIS is out of line with LEVER. See figure 15. Bend ROD slightly to line up. PIN must slip in.



16. Latch RELEASE LEVER(4).
17. With the RELEASE LEVER(4) latched, the indicator should be between the center line and the left line. See figure 17. If it is less than halfway towards the left line, it may be left alone as it will probably make it to the next inspection period before needing adjustment. If more than halfway, adjust as follows:

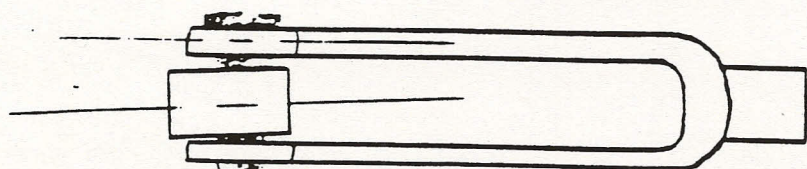


18. Loosen dust boot CLAMPS (113) and slide back dust BOOT (112) if present.
19. Loosen clevis NUT (115).
20. Unlatch RELEASE LEVER(4).
21. Remove PIN(110) that connects actuator and ROD(111).
22. Check the PIN(110), if not previously done. If worn, replace only with PIN (90-10660). (The new pin is hardened and plated to resist corrosion).

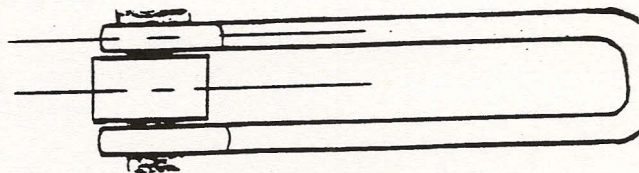


## 3.1 (Continued)

23. Tighten CLEVIS(114) a few turns. If clevis is difficult to turn, spray with penetrating spray (67-829-B) and remove CLEVIS. Wire brush to clean threads and then coat threads with anti-sieze (61-329) and install clevis.
24. Reconnect actuator and ROD(111) with PIN(110). NOTE: If PIN does not fit bushing, use the 1/2" reamer and ream the bushing by hand, in LEVER (14) (many were shipped unreamed). If PIN still will not fit through CLEVIS and LEVER, CLEVIS is out of line with LEVER. See figure 24. Bend ROD slightly to line up. PIN must slip in.



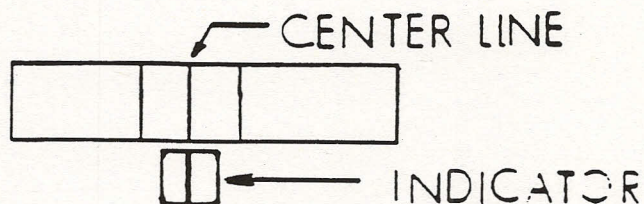
OUT OF LINE



IN LINE

25. Latch RELEASE LEVER(4).
26. When the brake is correctly adjusted, the indicator will line up with the center line as shown in figure 26. Repeat the adjustment until it does. Adjusting in this manner will provide proper running clearance and will allow for normal wear of the linings.

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27. When finished, tighten clevis NUT(115), slip the dust BOOT(112) down and tighten CLAMPS(113).
28. Install PIN(110) and cotter PIN (65-2675).
29. After checking/adjusting all brakes, chock the wheels, electrically release the brakes, go under car and try turning brake drum by hand - it should move freely. Another way is to tap the drum lightly with the small hammer, the drum will ring if shoes are clear. NOTE: Checking brake clearance by unlatching RELEASE LEVER(4) will not simulate true release conditions.
30. Examine the RELEASE LEVER(4) and the SPRING LATCH LEVER(7). If either is bent or cracked, replace, and check torque per C2 Inspection, steps 22-32. Also check that the round reinforcing bar(if so equipped) does not hit the tail of the SPRING LATCH LEVER. If it does, replace RELEASE LEVER and check torque.

3.2 "C1" Inspection Work - Actuator/Brake Inspection, Lube & Adjustment

1. Unlatch RELEASE LATCH(4).
2. Remove PIN(110) that connects the actuator to rod(111) and separate.