Burnish the brakes by making 500 snubs between 64 km/h (40 mph) km/h (20 mph) at a deceleration rate of 3 mpsps (10 fpsps). Except in adjustment is specified, after each brake application accelerate to 64 (0 mph) and maintain that speed until making the next brake application oint 1.6 km (1 mile) from the initial point of the previous brake tion. If the vehicle cannot obtain a speed of 64 km/h (40 mph) in 1.6 km ), continue to accelerate until the vehicle reaches 64 km/h (40 mph) or e vehicle has traveled 2.4 km (1.5 miles) from the initial point of the brake application, whichever occurs first.

The brakes may be adjusted three times during the burnish, in we with the manufacturer's recommendations. Manual and automatic ent brakes shall be manually adjusted after burnish at a lining ure of less than 65 °C (150 °F).

Check brake and vehicle function by making three stops from 48 km/h h) at 3 mpsps (10 fpsps) and 93 °C  $\pm$  14 °C (200 °F  $\pm$  25 °F) for the brake; record pedal force or line pressure.

For hydraulic brakes, make a service brake application at 667 N (150 al force and hold for 30 s, or for air service brakes, make a full service notion and hold for 3 min with the engine off. Record pedal position and pressure at beginning and end of application.

13 Structural Endurance Test-Automatic adjustment may be disabled doperational de-adjustment is prevented.

Perform 80 cycles of the following:

3.1.1 24 complete stops from 80 km/h (50 mph) at 3.7 mpsps (12 fpsps) ation at 4.8 km (3 mile) intervals.

63.1.2 1 reverse spike stop from 8 to 16 km/h (5 to 10 mph) estimated.

\$3.1.3 1 maximum effort (without wheel lock) stop from 80 km/h (50 mph). 2 Wheel slip brake control system cycling permitted if so equipped. All

re with full rock-back. After the first, and after every 24th 3.7 mpsps (12 stop, record line pressure, pedal force (hydraulic brake), deceleration rate, and final temperatures. Record driver comments on brake operation. tbrake adjustment if 3.7 mpsps (12 fpsps) cannot be maintained. Adjust

brakes per manufacturer's specifications after 20, 40, 60, and 80 cycles. Record brake adjustments performed throughout the test.

6.3.3 Check brake and vehicle function by making three stops from 48 km/h (30 mph) at 3 mpsps (10 fpsps) and 93 °C  $\pm$  14 °C (200 °F  $\pm$  25 °F) for the hottest brake; record pedal force or line pressure.

6.3.4 For hydraulic brakes, make a service brake application at 667 N (150 lb) pedal force and hold for 30 s, or for air service brakes, make a full service application and hold for 3 min with the engine off. Record pedal position and service pressure at beginning and end of application.

## 6.4 Inspection 1

6.4.1 (Optional) Check and record wheel geometry of all axles.

- 6.4.2 Check and record torque of all brake fasteners.
- 6.4.3 Inspect all components of the brake system.

6.4.4 Reassemble and adjust brakes per manufacturer's specifications. Manual and automatic adjustment brakes are to be manually adjusted as specified at a lining temperature of less than 65 °C (150 °F). Automatic adjustment may be disabled provided operational de-adjustment is prevented.

6.5 Structural Ultimate Strength Test

6.5.1 Make fifty 32 to 0 km/h (20 to 0 mph) forward spike stops, each forward spike stop to be followed by a reverse spike stop from 8 to 16 km/h (5 to 10 mph) estimated. Initial brake temperature for each spike stop should be 93 °C ± 14 °C (200 °F ± 25 °F) for the hottest brake. All stops are with full rock-back.

6.5.2 Check brake and vehicle function by making three stops from 48 km/h (30 mph) at 3 mpsps (10 fpsps) and 93 °C ± 14 °C (200 °F ± 25 °F) for the hottest brake; record pedal force or line pressure.

6.5.3 For hydraulic brakes, make a service brake application at 667 N (150 lb) pedal force for hydraulic brakes and hold for 30 s, or for air service brakes, make a full service application and hold for 3 min with the engine off. Record pedal position and service pressure at beginning and end of application. 6.6 Inspection 2

6.6.1 (Optional) Check and record wheel geometry of all axles.

6.6.2 Check and record torque of all brake fasteners.

6.6.3 Inspect all components of the brake system.

## **DMOTIVE AIR BRAKE LINE COUPLERS** DHANDS)—SAE J318 AUG97

# SAE Recommended Practice

the Bake Committee, approved November 1967, editorial change November 1970, reaffirmed without change September 1980. Completely revised by the SAE Truck and Supply and Control Components Subcommittee of the SAE Truck and Bus Brake Committee August 1997.

the This SAE Recommended Practice is intended to provide design, geability dimensions, testing procedures, performance requirements, imum identification for gladhand-type air line couplers used to connect systems of trucks, truck-tractors, trailers, and dollies when these vehijoined to operate as a combination unit.

1 Purpose—The purpose is to provide coupler halves for brake lines on ice that will be identified and compatible with the coupler halves on the tes of another vehicle.

Applicable Publication—The following publication forms a part of the ion to the extent specified herein.

ASTM PUBLICATION—Available from ASTM, 100 Barr Harbor Drive, shohocken, PA 19428-2959.

B117—Standard Method of Salt Spray (Fog) Testing

**Iten and Interchange Ability Dimensions** Design is limited only to those areas having dimensions that insure geability. Any material may be used, providing that the coupler meet the nce requirements. Other devices may be included in the gladhand, such ick-release valve or shut-off valve. Recommended practices for these re not included in this document.

General design and interchangeability dimensions are shown for polarhon-polarized couplers as follows in Figures 1 to 3.

Use of non-polarized couplings is not recommended because they will mate with either polarized couplings which could result in incorrect connections between vehicles.

4. Test Procedure

4.1 Corrosion Resistance Test-Two new pairs of couplers (one pair properly coupled with the threaded ports(s) plugged and without internal pressure, and one pair uncoupled) shall be subjected to ASTM B117 for 96 h.

4.2 Endurance Test-A new pair of couplers shall be coupled and uncoupled in the normal manner for 2500 complete cycles at a rate (speed) of 15 to 25 cycles per minute. One complete cycle shall consist of one coupling and one uncoupling.

4.3 Break Away Test-Properly joined, a new pair of couples shall be pulled apart (10) times when connected to a line having 827 kPa ± 34 kPa (120 psi ± 5 psi) air pressure under a gradually applied load of not less than 222 N (50 lbf) nor more than 1334 N (300 lbf) along the hose axis.

4.4 Drop Test-Two new couplers shall be dropped from 1.8 m (6 ft) minimum onto concrete surface immediately after exposure to a temperature of -40 °C  $\pm$  3 °C (40 °F  $\pm$  5 °F) for a minimum of 6 h. Orientation of the couplers shall be such that the couplers impact the concrete surface at points A and B as indicated in Figures 1 to 3.



FIGURE 1-CONTROL (SERVICE) AIR BRAKE COUPLER



FIGURE 2-SUPPLY (EMERGENCY) AIR BRAKE COUPLER





4.5 Elevated Temperature—Two new pairs of couplers (one properly coupled and one uncoupled) shall be exposed to a temperature of +70 °C  $\pm$  3 °C (+158 °F  $\pm$  5 °F) for a minimum of 24 h.

4.6 Low Temperature—Two new pairs of couplers (one properly coupled and one uncoupled) shall be exposed to a temperature of -40 °C  $\pm$  3 °C (-40 °F  $\pm$  5 °F) for a minimum of 6 h.

5. Performance Requirements—After standard completion of each test procedure shown under Section 4, the coupler(s) shall satisfy each of the following performance requirements.

5.1 Coupling and Uncoupling Torque Performance—The torque required to uncouple a pair of couplers in a normal manner at an ambient temperature of +24 °C  $\pm 8$  °C (+75 °F  $\pm 15$  °F) and at 689 kPa  $\pm 34$  kPa (100 psi  $\pm 5$  psi) air pressure shall be 11.3 Nm  $\pm 5.6$  Nm (100 lbf-in  $\pm 50$  lbf-in). The torque required to couple and uncouple a pair of couplers at an ambient temperature of +24 °C  $\pm 8$  °C (+75 °F  $\pm 15$  °F) and at 0 kPa (0 psi) air pressure shall be 11.3 Nm  $\pm 5.6$  Nm (100 lbf-in  $\pm 50$  lbf-in).

5.2 Leak Rate—A pair of coupler halves, when joined properly is allowed a maximum leak rate of 50 SCCM of free air at 827 kPa  $\pm$  34 kPa (120 psi  $\pm$  5 psi) air pressure and ambient temperature of +24 °C  $\pm$  8 °C (+75 °F  $\pm$  15 °F).

6. Performance Test

6.1 Corrosion Resistance—After being tested per 4.1, the couplers shall meet the coupling and uncoupling torque requirements per 5.1 and leak rate requirements per 5.2.

6.2 Endurance Cycle—After being tested per 4.2, the couples shall meet the coupling and uncoupling torque requirements per 5.1 and leak rate requirements per 5.2.

6.3 Breakaway—After being tested per 4.3, the couplers shall meet the coupling and uncoupling torque requirements per 5.1 and leak rate requirements per 5.2.

6.4 Drop Test—After being tested per 4.4, the couplers shall meet the coupling and uncoupling torque requirements per 5.1 and leak rate requirements per 5.2.

6.5 Elevated Temperature Test—While still at temperature, after being tested per 4.5, the couplers shall meet the coupling and uncoupling torque performance per 5.1 on the uncoupled pair and the leak rate performance per 5.2 on the coupled pair.

6.6 Low-Temperature Test—While still at temperature after being tested per 4.6, the coupling and subsequent uncoupling torque on the uncoupled pair shall be 11.3 Nm  $\pm$  5.6 Nm (100 lbf-in  $\pm$  50 lbf-in) at 0 kPa (0 psi) air line pressure. While still at temperature after 4.6, the coupled pair shall meet the leak rate performance per 5.2.

7. Identification

7.1 The coupler halves shall be permanently marked for identification purpose by using embossed lettering or other suitable means insuring in indelibility and durability of the lettering.

7.2 Function identification for the three types of couple halves shown under 3.1 shall be as follows or abbreviations of the following:

"CONTROL" or "SERVICE" per Figure 1

"SUPPLY" or "EMERGENCY" per Figure 2

"UNIVERSAL" per Figure 3

7.3 Optional manufacturer's identification may consist of the manufacturer's name, code number, and part number.

7.4 When the color coding is utilized for additional function identification, the colors shall be red for the supply or emergency coupler, blue for the control or service coupler, and no color or any color other than red or blue for universal couplers.

### 8. Remarks

**8.1** The United States Army Tank Automotive Command in Warren, Michigan, has acknowledged this document unit under their commercial item description (C.I.D.) number AA-52484, superseding AA-52154, MS 35746F and MIL-C 62005A.

**8.2** International Standard ISO 1728-1980 specifies only dimensions for supply and control of pneumatic brake couplers, only to ensure interchange ability and compatibility between ISO couplers. While the ISO couplings are similar to, and have the same purpose as SAE J318 couplings, they are not compatible with SAE J318 couplings.

**8.3** When using the Universal SAE J318 couplers as shown on Figure 3, the user has to be aware of the universal non-polarizing feature of this coupler in reference to the total air brake system functions and performances.