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SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J109

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Submitted for recognition as an American National Standard

Service Brake System Performance Requirements—Motorcycles and Motor-Driven Cycles

Foreword—This Document has not changed other than to put it into the new SAE Technical Standards Board Format. References were added as Section 2. All other section numbers have changed accordingly.

1. Scope—This SAE Recommended Practice establishes performance requirements for the service brake systems of all classes of motorcycles intended for highway use.

2. Reference

2.1 Applicable Publication—The following publication forms a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of the SAE publication shall apply.

SAE J108—Brake System Road Test Code-Motorcycles

3. Performance Requirements—When subjected to the test procedures in SAE J108, by a skilled rider, the following requirements must be satisfied by the service brake system:

1. Preburnish Check
   a. Deceleration shall be not less than 9.5 fpsps.
   b. Brake system shall be free from any unusual conditions.
2. First Effectiveness Test
   a. Shall meet the requirements specified in Table 1 and Table 2 when equipped with independent brake controls for front and rear.
   b. During all phases of the test, no condition shall be permitted to cause the vehicle to lose stability due to wheel skid, to overturn, or to pull or swerve out of the specified width roadway lane.
3. Burnish Test—No unusual dispersion in deceleration values versus brake input at any stop shall be permissible.
4. Second Effectiveness Test—Same as in item 2 - First Effectiveness Test.

5. First Fade and Recovery Test

   a. First Fade Test—First eight stops shall be achieved with a deceleration of not less than 11 fpsps, and not less than 9.5 fpsps on the ninth and tenth stops.
   b. First Recovery Test—First five stops shall be achieved with deceleration not less than 9.5 fpsps and on sixth and after, not less than 11 fpsps.

6. First Effectiveness Spot Check—No unusual deceleration value versus brake input shall be permissible.

7. First Reburnish

   a. No unusual dispersion in deceleration values versus brake input shall be permissible.
   b. No unusual condition shall be permissible on the brake system.

8. Second Fade and Recovery Test

   a. Second Fade Test—First eight stops shall be achieved with a deceleration of not less than 11 fpsps, and not less than 9.5 fpsps on ninth and tenth stops.
   b. Second Recovery Test—First five stops shall be achieved with deceleration not less than 9.5 fpsps and on sixth and after, not less than 10 fpsps.

9. Second Effectiveness Spot Check—No unusual deceleration value versus brake input shall be permissible.

10. Second Reburnish—Same as in item 7, First Reburnish.

11. Final Effectiveness Test—Same as in item 2, First Effectiveness Test, and item 4, Second Effectiveness Test.

12. Final Inspection

    a. Lining shall be firmly attached and intact on shoes. (Minor cracks that do not impair attachment are acceptable.)
    b. No unusual wear that may interfere with braking function shall be permissible on lining.
    c. Scores or cracks that may interfere with brake action shall not develop on drums.
    d. All components of the brake system shall be intact and functional.

13. Water Recovery Test—Deceleration at all stops shall be within 35 to 120% of the average of deceleration values of the baseline check stops. Also, brakes shall recover a minimum of 80% of the average of deceleration values of the baseline check stops before the final stop.

TABLE 1—TOTAL BRAKE SYSTEM PERFORMANCE

Initial Speed, mpg	Brake Input, lb Lever Force	Brake Input, lb Pedal Force	Deceleration, fpsps (more than)	Braking Distance, ft
20	5-55	10-90	20	20
30	5-55	10-90	20	50
50	5-55	10-90	20	135
70	5-55	10-90	20	265

TABLE 2—SINGLE BRAKE PERFORMANCE

Initial Speed, mph	Brake Input, lb Lever Force	Brake Input, lb Pedal Force	Deceleration, fpsps (more than)	Braking Distance, ft
20	5-55	10-90	6.0	70
30	5-55	10-90	6.0	160
50	5-55	10-90	6.0	450
70	5-55	10-90	6.0	880

PREPARED BY THE SAE MOTORCYCLE COMMITTEE