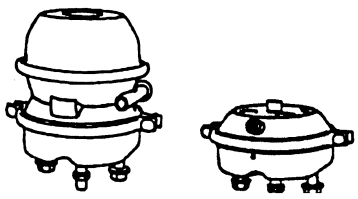


MGM Brakes
A Division of Indian Head Industries, Inc.

TECHNICAL BULLETIN

SUBJECT: EB 19-005 Service Recommendation for Submerged S-CAM Drum and Disc Brake Actuators

This bulletin provides a recommendation for inspection and service of MGM Brake's brake actuator products which may have been exposed to flood water conditions or submersion in water. Most MGM brake actuators are not designed for use while submerged in water. Care must be taken to ensure brake actuators which may have been exposed to water submersion are safe for use prior to operating the vehicle. MGM Brakes offers a specific vented configuration for select brake actuator models which allows for operation during water fording situations. This is a specific configuration which must be requested and is not commonly used with on-road applications.

***WARNING* – Before performing any work on the vehicle's air brake system, or any pressurized component, understand and follow the vehicle manufacturer's recommendations for placing the vehicle in a safe working condition.**

***WARNING* – Always block wheels to prevent vehicle rollaway when performing any brake maintenance.**

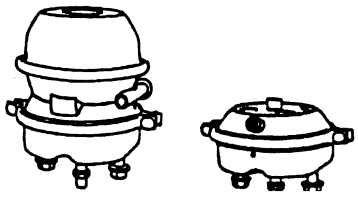
***WARNING* – Do not attempt to remove or install any brake actuator until you understand the recommended procedure. Use only the proper tools and observe all precautions pertaining to the use of those tools.**

***WARNING* – Replace any damaged or failed brake actuator with an approved replacement brake actuator of the same size, and type as originally installed on the vehicle.**

***WARNING* – Follow the vehicle or equipment manufacturer's recommendations for inspection and service of brake systems which may have been submerged in water prior to operating. The air system should be inspected and serviced before or during the time of the brake actuator inspection.**

***WARNING* – Always follow safety precautions and use appropriate protective safety gear when working with equipment which may have been exposed to flood waters as hazardous materials may be present.**

***WARNING* – Do not attempt to perform inspection or service unless you are qualified to do so.**



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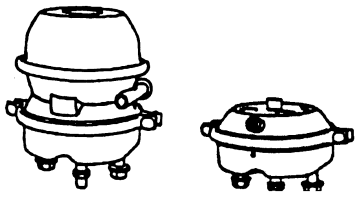
The following matrix provides direction for inspection and service for each type of brake actuator.

MGM Brakes Inspection & Service Matrix for Submerged Actuators						
Application	Brake Actuator Type	Model Designator	Breather Tube	Exposed to Water Submersion but Air System is Dry Inside	Exposed to Water Submersion and Water Present Inside Air-System	MGM Brakes Service Bulletin
S-Cam / Drum Brake Actuators	Service Chambers	C, CL, CS	No	Proceed with Inspection A	Replace	EB 24-001
	Double Diaphragm Parking Actuators	TR, TR-HD, TR-HDW, TR-LP3 / TR-L3, TR-LP3HD	No	Proceed with Inspection B	Replace	EB 24-001
		TR-T, TR-THD, TR-THDW, TR-TS, TR-TSHD, TR-TSHDW, TR-LP3T / TR-L3T, TR-LP3THD, TR-LP3THDW, TR-LP3TS, TR-LP3TSHD, TR-LP3TSHDW	Yes	Proceed with Inspection B	Replace	EB 24-001
	Double Diaphragm Parking Actuators with Integrated Release Bolt	LTR-L3, LTR-L3W	No	Proceed with Inspection B	Replace	5042
		LTR-T, LTR-L3T	Yes	Replace	Replace	5042
	Piston Type (J-Series, Magnum, Performance Plus) Parking Actuators with Integrated Release Bolt	MJS	Yes	Replace	Replace	EB 24-001
	Piston Type (G-Series, Magnum) Parking Actuator with Integrated Release Bolt	MB-T, MG-T	Yes	Replace	Replace	5009
Air Disc Brake Actuators	Service Chambers	CSB	No	Proceed with Inspection A	Replace	EB 24-001
	Double Diaphragm Parking Actuators	TRB	Yes	Proceed with Inspection B	Replace	
	Piston Type (J-Series, Magnum, Performance Plus) Parking Actuators with Integrated Release Bolt	MJB	Yes	Replace	Replace	



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It is important to establish the following information about the vehicle or equipment condition and flood water condition prior to proceeding with the inspection:

- Was the brake actuator submerged in flood waters containing salt, sea water, fuel, chemicals or debris such as sand, dirt or silt?

  Brake actuators are designed to operate in climates where corrosive deicing agents are used on the roadways; however typical use does not include submersion in the corrosive agents. Submersion could allow these corrosive agents to become trapped inside the actuator promoting corrosion of internal components, decreased performance and degradation of necessary lubricants.

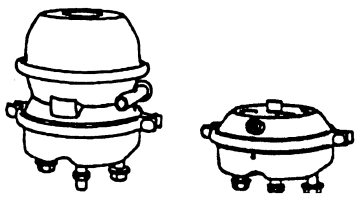
- Was the vehicle or equipment operated while the actuator was submerged in water?

  Operating a brake actuator under water will draw water into the actuator housings through the vents. The presence of water inside the actuator could produce a condition called "hydro-locking" which could prevent the service or parking brakes from properly operating. The non-pressure side of the actuator housing is designed to vent and equalize air pressure when the brake actuator cycles. The service side chamber is designed to drain water which collects from normal use. Parking chambers with breather tubes are designed to vent through the service chamber housing and do not have an automatic draining feature. Water can be ingested into the spring chamber when releasing the parking spring while the actuator is submerged.

- Is water present in the vehicle air system?

  Water which has collected in the vehicle air system may migrate into the brake actuator service or parking pressure chambers. This could produce a condition called "hydro-locking" which could prevent the service or parking brakes from properly operating. This trapped water could also freeze and prevent the actuator from properly functioning. In addition, trapped water inside the pressure side of the actuator may migrate back into the vehicle air system after the vehicle is returned to service.

If the answer is YES to any of the above questions, then the brake actuator should be replaced.



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Actuator Inspection Procedures:

1. Ensure the vehicle is parked on a level surface with the wheels blocked to prevent movement during inspection.

2. Reference the appropriate MGM Brakes technical service bulletin for proper service procedures for the actuator type which is being inspected.

   Service bulletins are available on www.mgmbrakes.com.

3. This inspection procedure must be conducted while the vehicle and actuators are above freezing temperatures. Ensure the actuator is allowed time to warm up if it has been stored in below freezing temperatures.

4. Visually inspect the exterior surfaces of the actuator for signs of damage. Carefully remove and replace the actuator if any damage is suspected.

5. Inspect the vehicle air system for the presence of water by following the vehicle manufacturer's service recommendation. This is typically accomplished by applying low pressure compressed air through the air system plumbing and watching for water to exit at the end of the airlines.

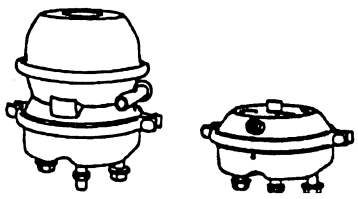
Inspection Procedure A: Service Chambers

6. Remove the service chamber from the vehicle. Ensure the airlines and fittings are removed from the actuator air ports.

7. Orient the actuator air ports downward and inspect for water draining from inside the pressure chamber.

8. Service chambers have drain holes which will automatically drain water from the non pressure chamber. Carefully shake the actuator and listen for the sound of water moving around or "sloshing".

9. Replace the actuator if water is found to be present inside the pressure chamber or suspected to be trapped in the non pressure chamber.



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Inspection Procedure B: Parking Actuators

Warning **- It is important to properly cage the parking spring prior to removal of the brake actuator from the vehicle. Failure to properly cage the parking spring could lead to injury or death. Reference the appropriate MGM Brakes technical service bulletin for model specific parking spring caging instructions.**

10. Manually cage the parking spring using the supplied caging bolt prior to removing the actuator. Do not use the vehicle parking air circuit to release the parking spring unless it has been verified to be clear of water contamination.

11. Remove the parking actuators from the vehicle. Ensure the airlines and fittings are removed from the actuator air ports.

12. Orient the actuator air ports downward and inspect for water draining from inside of the service or parking chambers.

13. Remove the breather tube from the parking chamber housing. Orient the tube hole downward and inspect for water draining from inside the chamber.

    Note: Parking actuators which do not include a breather tube have drain holes in the actuator housing which will automatically drain water from the non pressure side of the service and spring chambers.

14. Carefully shake the actuator and listen for the sound of water moving around or “sloshing”.

15. Replace the actuator if water is found to be present inside the service or parking pressure chambers or suspected to be trapped in either of the non pressure chambers.

16. Always follow the appropriate MGM technical bulletin for proper installation procedures after the completion of the inspection.