

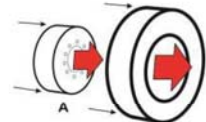
Section 3 – Brake Systems

A. OPTIONS FOR INSPECTING INTERNAL BRAKE COMPONENTS OF HYDRAULIC AND AIR BRAKE SYSTEMS**1. Types of Brake Inspections**

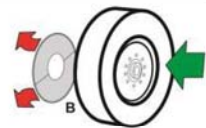
This standard supports several different types of brake inspections depending on the age of a vehicle, the type of brakes being inspected, the required cycle of inspections that applies to a vehicle, i.e.: 12 month or 6 months, and the type of inspection previously completed.

There are three types of inspection for drum brakes:

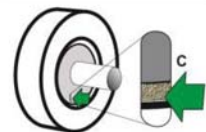
- A. *Full inspection with drum removed* (this is a detailed inspection of all internal components {listed in Section 3H 12 and 3A 15 & 16} and includes measuring drums and shoe lining)



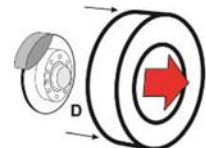
- B. *Wheel-on full inspection* (this is only available for cam-type drum brakes with removable dust shields and involves an inspection of the internal components {listed in Section 3A 15 & 16} with the dust shields removed, it includes measuring drums and shoe lining)



- C. *Limited-inspection of drum brake* (this is an inspection through inspection holes and involves a measurement of shoe lining only)

**There are two types of inspection for disc brakes**

- D. *Full inspection with wheel(s) removed* (this is a detailed inspection of all internal components {listed in Section 3H 13 and 3A 18} and includes measuring rotor and pad friction material thickness)



- E. *Limited-inspection of disc brake* (this is an inspection of visually accessible components and measurement of the friction material of one brake pad)



To determine what inspection must be conducted, refer to the following instructions.

2. Disassembly of Wheels and/or Drums for Inspection

Disassembly of brakes provides access to ensure all components are fully inspected. Full inspection with either drum or wheel removal is required when any defect is suspected or found during an inspection.

Suspecting a defect of any wheel brake must be based on some visible evidence that could indicate the presence of a problem or abnormal condition. The following conditions are those that should cause a technician-inspector to suspect a brake defect:

- abnormal wear of friction material
- signs of overheating
- evidence of negative effects of corrosion (“rust-jacking”, friction material lifting due to rust build-up, shoe table deformation, friction material separating from backing material)

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

- abnormal wear of the brake drum or rotor
- abnormal appearance, glazing, discolouration or contamination of brake friction material
- damage, distortion or shifting out of place of any brake component
- abnormal noise or response upon application or release of the brakes
- the age of the brake components, or the previous measurements of wear compared to current measurements, indicate that a drum or rotor, or friction material, is likely to be worn beyond the allowable limit

Note: When any of these conditions is evident or is suspected, that brake does not qualify for a “wheel-on full inspection” or a “limited inspection”. A “full inspection with drum removed” is required in the case of drum brakes and a “full inspection with wheel(s) removed” is required in the case of disc brakes.

3. Exemptions from Brake Disassembly for Drum Brakes

When a “full inspection with drum removed (‘A’)” is conducted on a truck or trailer having drum brakes, and the proper documentation is completed, the brake can qualify for a “limited inspection (‘C’)” for a period of 19 months. Buses with drum brakes, only qualify for a limited inspection for 7 months following a “full inspection with drum removed”. A “limited inspection (‘C’)” can only be conducted during the respective 7 or 19 month qualifying period after completing a “full inspection with drum removed”; but only when such inspection is properly documented.

A cam-type drum brake with removable dust cover/shields also qualifies for a “*wheel-on full inspection (‘B’)*” at each inspection. This option is only available for cam type drum brakes; but only when the dust cover/shields are left off the vehicle or are removed to facilitate the inspection.

4. Exemptions from Wheel Disassembly for Disc Brakes

Disc brakes require a “full inspection with wheel(s) removed (‘D’)” at least every 12 months. When a “full inspection with wheel(s) removed (‘D’)” is conducted on a disc brake, and the proper documentation is completed, the brake can qualify for a “*limited inspection (‘E’)*” for a period of 7 months.

5. Exemptions from Brake/Wheel Disassembly for New Vehicles

Brakes are exempt from the requirement to disassemble when vehicles are new. The exemption period depends on the type of brake used and is based on the vehicle manufacture date or in-service date. Trucks and trailers using drum brakes qualify for a “*limited inspection (‘C’)*” for a period of 19 months. Trucks and trailers with disc brakes, and all buses qualify for a “*limited inspection (‘C’) or (‘E’)*” for a period of 7 months.

Note: All inspection procedures are visual unless additional inspection procedures are indicated. Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

6. Summary of Inspection Requirements for Trucks and Trailers on 12-Month Inspection Cycle

INSPECTION REQUIRED FOR NEW TRUCKS AND TRAILERS on 12 month inspection cycle

Brake used	Inspection required when vehicle is	
	12 mo. old	24 mo. old
Drum with <u>removable dust shields</u>	C	A or B
Drum with <u>rigid backing plate</u>	C	A
Disc	D	D

ONGOING BRAKE INSPECTION OPTIONS for Truck & Trailer on 12 month inspection cycle

Brake used	Type of inspection last completed (Starting Month)	Inspection required ¹	
		12 mo. later	24 mo. later
Drum with <u>removable dust shields</u>	<i>full inspection with drum removed (A)</i>	C ²	A or B
	<i>wheel-on full inspection (B)</i>	B	B
Drum with <u>rigid backing plate</u>	<i>full inspection with drum removed (A)</i>	C ²	A
Disc	<i>full inspection with wheel(s) removed (D)</i>	D	D

¹ This is the minimum inspection that is permitted. A full inspection is always permitted.

² A *limited inspection* is only permitted when proper documentation of a *full inspection with drum or wheel(s) removed* is provided.

Types of inspections

Drum	<i>full inspection with drum removed</i>	'A'
Brakes	<i>wheel-on full inspection</i>	'B'
	<i>limited-inspection of drum brake</i>	'C'
Disc	<i>full inspection with wheel(s) removed</i>	'D'
Brakes	<i>limited-inspection of Disc brake</i>	'E'

7. Summary of Inspection Requirements for Trucks on 6-Month Inspection Cycle

Note: Only applicable in YK, BC, SK & MB.

INSPECTION REQUIRED FOR NEW TRUCK on 6 month inspection cycle

Brake used	Inspection required when vehicle is			
	6 mo. old	12 mo. old	18 mo. old	24 mo. old
Drum with <u>removable dust shields</u>	C	C	C	A or B
Drum with <u>rigid backing plate</u>	C	C	C	A
Disc	E	D	E	D

Note: All inspection procedures are visual unless additional inspection procedures are indicated. Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ONGOING BRAKE INSPECTION OPTIONS for Truck on 6 month inspection cycle

Brake used	Type of inspection last completed (Starting Month)	Inspection required ¹			
		6 mo. later	12 mo. later	18 mo. later	24 mo. later
Drum with <u>removable dust shields</u>	<i>full inspection with drum removed (A)</i>	C ²	C ²	C ²	A
	<i>wheel-on full inspection (B)</i>	B	B	B	B
Drum with <u>rigid backing plate</u>	<i>full inspection with drum removed (A)</i>	C ²	C ²	C ²	A
Disc	<i>full inspection with wheel(s) removed (D)</i>	E ²	D	E ²	D

- ¹ This is the minimum inspection that is permitted. A full inspection is always permitted.
- ² A *limited inspection* is only permitted when proper documentation of a *full inspection with drum or wheel(s) removed* is provided.

8. Summary of Inspection Requirements for Buses

INSPECTION REQUIRED FOR NEW Bus

Brake used	Inspection required when vehicle is			
	6 mo. later	12 mo. later	18 mo. later	24 mo. later
Drum with <u>removable dust shields</u>	C	A	C	A
	C	B	B	B
Drum with <u>rigid backing plate</u>	C	A	C	A
Disc	E	D	E	D

ONGOING BRAKE INSPECTION OPTIONS for Buses

Brake used	Type of inspection last completed (Starting Month)	Inspection required ¹			
		6 mo. later	12 mo. later	18 mo. later	24 mo. later
Drum with <u>removable dust shields</u>	<i>full inspection with drum removed (A)</i>	C ²	A	C ²	A
	<i>wheel-on full inspection (B)</i>	B	B	B	B
Drum with <u>rigid backing plate</u>	<i>full inspection with drum removed (A)</i>	C ²	A	C ²	A
Disc	<i>full inspection with wheel(s) removed (D)</i>	E ²	D	E ²	D

- ¹ This is the minimum inspection that is permitted. A full inspection is always permitted.
- ² A *limited inspection* is only permitted when proper documentation of a *full inspection with drum or wheel(s) removed* is provided.

Types of inspections

Drum	<i>full inspection with drum removed</i>	'A'
Brakes	<i>wheel-on full inspection</i>	'B'
	<i>limited-inspection of drum brake</i>	'C'
Disc	<i>full inspection with wheel(s) removed</i>	'D'
Brakes	<i>limited-inspection of Disc brake</i>	'E'

Note: All inspection procedures are visual unless additional inspection procedures are indicated. Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

B. REQUIRED MEASUREMENT OF BRAKE COMPONENTS

Brake inspections require certain components to be measured and these measurements are required to be recorded on a record/report of the inspection. The items that must be measured for each type of brake are as follows:

1. Drum Brake Systems

For drum brakes, the brake shoe lining thickness and brake drum diameter must be measured during every “*full inspection with drum removed (‘A’)*” and every “*wheel-on full inspection (‘B’)*”.

When a “*limited-inspection (‘C’)*” of drum brakes is conducted, the lining thickness of one brake shoe must be recorded. The measurement must be taken of the thinnest accessible portion of the thinnest brake shoe lining.

2. Disc Brake Systems

For disc brakes, the rotor thickness and pad friction material thickness of the inner and outer brake pad must be measured and recorded at every inspection, unless the brake qualifies for a “*limited-inspection (‘E’)*”.

When a “*limited-inspection (‘E’)*” of disc brakes is conducted, the thickness of the friction material of one of the pads must be recorded. Normally this will be the inner pad.

Friction material thickness can be determined by measuring the friction material itself or by measuring the combined thickness of the friction material and pad backing plate, then deducting the thickness of the backing plate. Always record the thickness of the friction material only.

C. DOCUMENTS REQUIRED FOR QUALIFYING A PRIOR INSPECTION OF INTERNAL BRAKE COMPONENTS

Qualifying a prior inspection with respect to a wheel brake requires an original of a document containing the information listed below to be submitted to the inspecting technician and inspection facility conducting a current inspection. A legible copy of the required document must also be submitted to the inspection facility for attachment to the inspection report. The technician-inspector and inspection facility must be satisfied with the documentation provided.

Information to be Included on the Proof of Brake Inspection Document:

The information that must be included on a document used to prove a prior inspection includes information common to all brakes and information specific to drum and disc brakes, as follows:

1. Common Information

- Date of inspection
- Odometer reading (Optional for trailers. Record either the hub-odometer or ABS ECU mileage, if either is available, including which source was used.)
- VIN
- Authorized technician/inspector’s name and/or number and signature (in written or electronic form).
- Inspection station name and number, or name and location of repair facility (based on jurisdictional requirements).

2. Additional Information Required for Drum Brakes

- If new brake shoe lining and/or brake drums were installed, the document must show them as ‘new’ and be supported by documentation, such as purchase invoice, work order, etc.
- Internal diameter of the brake drum.
- Thickness of the brake shoe lining taken at the edge of the lining near the centre of the brake shoe. The measurement must be taken of the thinner brake shoe lining, when there is a difference in thickness.
- The document must include a declaration stating that the brake drum was removed and a “*full inspection with drum removed (‘A’)*” was conducted, and that no defective component was present at the completion of the inspection.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

3. Additional Information Required for Disc Brakes

- If new brake pads and/or rotor were installed, the document must show them as 'new' and be supported by documentation, such as purchase invoice, work order, etc.
- Thickness of the rotor.
- Thickness of the thinnest pad friction material.
- Brake pad friction material measurements must be taken at the thinnest point of the material.
- The document must include a declaration stating that the wheel(s) was/were removed and a "full inspection with wheel(s) removed ('D')" was conducted, and that no defective component was present at the completion of the inspection.

D. PROHIBITION ON REMOVAL OF BRAKES FROM A VEHICLE

Axles fitted with brakes by the *manufacturer* as original equipment must have those brakes in proper working order, and the brakes must be inspected in accordance with this standard. Brakes must not be disabled or removed from a vehicle.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.