C-Inspection Manual
Task 20
Trucks/Couplers

7000 SERIES

WMATA
Vehicle Program Services (CENV)
CENV WI 14CISP - C-Inspection – 7000 Series – Rev-8.0– 11/30/2020

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VERSION RECORD

Revision	Reason	Performed By	Revision Date
0.0	Initial Release	CENV	4/21/2017
1.0	Changed Title to "C-Inspection"	CENV	6/9/2017
2.0	Add SBF054 to §20.26,	CENV	1/26/2018
2.0	§20.3, Verification of Holding Brake Operation	CENV	1/26/2018
2.0	§20.13 Added illustration of Safety Support.	CENV	1/26/2018
2.0	§20.32 Added Front Coupler Locking Device Clevis Pin.	CENV	1/26/2018
2.0	Moved §20.24 to Task 10, §10.4.	CENV	1/26/2018
2.0	Update Special Tools & added Torque Value Alert Box / Minor Formatting	CENV	1/26/2018
3.0	Removed Checklist from source document and the TOC	CENV	4/27/2018
4.0	Updated Collector Shoe HDW in Parts List	CENV	7/27/2018
5.0	ECN 140010: Changes §20.5: Steps 26/33/38, Figure 20-12, Hollow Wear Criteria from 0.08" (2mm) to 0.157" (4mm)	CENV	1/31/2019
5.0	SBF-075: §20.20, Fourth (4th) Special Instructions Box, Replaced Yellow Paint Pen w/ Dykem DALO (Red) Industrial Marker, Updated Figure 20-29, Added Figure 20-30, Added P/N R80-10-0023 to Parts List.	CENV	1/31/2019
5.0	Added procedure 20.16: Lubricate Flexible Coupling. Added Figure 20-26: Coupling Lubrication. Added Grease, Klüberlub, BE 41-1501 to Parts List. Update TOC.	CENV	1/31/2019
6.0	§20.20. Fourth (4th) Special Instructions Box, updated notice to include "All Collector Shoes."	CENV	4/30/2019
6.0	§20.47: Added "Replace Air Dryer Desiccant Canisters (Silver: Oiled ASU Only)." Added Figure 20-62, renumber all sub-sequent Figures, reset TOC.	CENV	4/30/2019
6.0	Parts Lists: Replaced Grease P/N: Renolit HLT2-KB with Renolit HLT2-KB-N12006-1.1	CENV	4/30/2019

Revision	Reason	Performed By	Revision Date
7.0	SCOPE: Removed the Y-Inspection from the Inspection Interval Table	CENV	4/30/2020
8.0	Added Document Ctrl. # WI 14CISP & Corrected "Imminent" In Danger Alert Box	CENV	11/30/2020
8.0	ECN 140013: §20.6, Removed all instances of "Method 1" instructions and the T-Shaped Straight Edge.	CENV	11/30/2020

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INFORMATION

SCOPE

This manual describes the procedures used to perform the C-Inspection on the 7000 Series rail cars, which are owned and operated by Washington Metropolitan Area Transit Authority (WMATA). Periodic inspection procedures are vital to providing safe, clean, and reliable transportation to the customers of WMATA.

The rail car should be left in a condition which is immediately ready for revenue service after the procedure has been completed. All deficiencies found as a result of this inspection are expected to be repaired or reported.

This procedure is to take place in a shop over a pit, raised on a lift, or under scaffolding. It is written as if inspecting a single car, but it is to be performed on both cars in the married pair.

The 7000 Series inspection schedule is as follows:

Inspection Type	Interval
A – 90-Day PI	30 Days
B – 180-Day PI	30 Days
A – 90-Day PI	30 Days
C – Annual PI	30 Days

PREREQUISITE KNOWLEDGE

This inspection procedure assumes that the inspector has been adequately trained and is familiar with the latest edition of the Metrorail Safety Rules and Procedures Handbook (MSRPH). The inspector should be familiar with the operation of the car and be able to detect irregularities in the operation and installation of all car systems.

Applicable Maintenance Service Instructions (MSIs) and Service Bulletins (SBs) have been incorporated into this document as of the publication date and are listed as an appendix.

GENERAL GUIDELINES

A general inspection shall be made of all equipment mentioned in this manual section. The inspector shall be observant of any abnormal conditions and take appropriate corrective action, including notifying the Supervisor, when appropriate.

Equipment shall be inspected for damage from foreign object impact, collisions with wayside equipment, excessive wear, improper installation, cleanliness, corrosion, cracking, melting, discoloration from overheating, etc.

Components shall be inspected for broken, loose, or missing fasteners or hardware. Verify safety wires are not missing or broken, and check condition of ground straps.

Cables, wires, hoses, braided shunts shall be inspected for leaks, twists, kinks, signs of wear, missing cleats/clamps, and adequate slack. Check for copper shunts that are no longer flexible. Look for any contact or potential contact that may cause the above conditions.

Safety hanger and components shall be inspected for corrosion, presence, and security whenever valance covers are opened.

High current connections shall be inspected for tightness and signs of arcing or high temperature damage.

Components shall be inspected for leaking air, oil, grease, water, or hydraulic fluid.

Compressed air shall only be used when specified. When specified for use, it must not be above 30 psi.

Confirm that all danger placards and warning labels are in place and legible.

SAFETY CONSIDERATIONS

The periodic inspection instructions must be performed in strict accordance with all applicable Standard Operating Procedures (SOPs) and the MSRPH.

All warning and safety labels must be legible at all times. If labels are found to be in an unsuitable condition, they must be cleaned (with a soft cloth, approved cleaner, and water), then re-stenciled, re-painted, or replaced, as required.

ENVIRONMENTAL CONSIDERATIONS

All contaminated oil, grease, solvents, waste material, and waste fluids are to be handled per current shop Hazardous Materials (HAZMAT) directives. A list of chemicals used in this procedure can be found in the parts appendix.

CONTINUOUS IMPROVEMENT

Maintenance procedures are a continuous improvement process. Inputs, comments, and suggestions are strongly encouraged. Please forward any ideas to your immediate supervisor.

DOCUMENT CONTROL

Proposed revisions that are **safety** related or will heavily impact the maintenance procedures will be dealt with immediately with a **service bulletin**.

ALERT BOXES

Throughout these procedures will be alert boxes containing important information. Care should be taken to read and understand these alerts prior to beginning a step or procedure. Examples of these boxes and the hierarchy are shown below:

Danger: Harm to person or equipment is imminent.

Caution: Care should be taken to avoid harm to person or equipment.

Personal Protective Equipment: Equipment necessary to prevent harm to person.

Torque Value: The value of rotational force on an object (fastener) at a determined distance causing rotation; expressed in units (i.e., inch-pounds, foot-pounds, newton-meters).

Special Instruction: Special considerations or information necessary to step or procedure.

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20. TRUCKS/COUPLERS

PARTS LIST

WMATA Part Number	Description	QTY
R80-30-0043	Torque Stripe	A/R
C18-35-6088	Nut, Caliper Mounting	A/R
C18-35-6087	Bolt, Caliper Mounting	A/R
999-65-1026	Anti-Seize Compound	A/R
999-65-0172	Loctite 592 PST	A/R
	Cantesco Leak Detector	A/R
	Loctite 569 Hydraulic Sealant	A/R
K18-32-4103	Brake Pad	A/R
R79-30-0117	Citrus Clean Degreaser	A/R
R79-30-0084	Isopropyl Alcohol	A/R
K18-35-4656	Bolt, Collector Shoe	A/R
K18-35-4658	Nut, Collector Shoe	A/R
K18-35-4617	Washer, Collector Shoe Flat	A/R
K18-35-4641	Nut, Collector Shoe Lock	A/R
K18-35-4015	Summer Collector Shoe	A/R
K18-35-4016	Winter Collector Shoe	A/R
R18-35-0279	Ice Scraper Shoe	A/R
R99-99-0024	UV Resistant Tie-Wraps	A/R
	Paint, Semi-Permanent Coupler	A/R
	Safety Wire	A/R
C18-35-6062	Vinyl Coated Safety Wire	A/R
C18-35-6061	Crimp Sleeve	A/R
R91-50-0012	Molykote G Paste	A/R
	Filter Element, ASFLT1/2/MRFLT	12
	O-ring, ASFLT1/2/MRFLT	12
	Filter Element, BCFLT	4
	O-ring, BCFLT	4
	Filter Element, Coupler Air	A/R
	Desiccant Cartridge	2
	Grease, Renolit HLT2-KB-N12006-1.1	A/R
	O-ring, Desiccant Cartridge	2
	Filter Element, ASU Intake	2
	Filter Element, Air Suspension	2
	Sealing Ring, ASU Intercooler Drain	1
R80-10-0023	Dykem DALO (Red) Industrial Marker	A/R
	Grease, Klüberlub, BE 41-1501	A/R
K18-32-41242	O-Ring (Silver Desiccant Canister)	2

SPECIAL TOOLS

WMATA Reference Number	Description
	AAR Narrow Flange Steel Wheel Gauge
	Torque Wrench
	Calibrated Back-to-Back Gauge
WDE000837	Brake Pad Slack Adjuster Go/No-Go Gauge
WDE000634	Brake Pad Thickness Go/No-Go Gauge
WDE000548	Pin Gauge Set
	Calipers
	Pi Tape
WDE000733	Shoe Height Tool – 3.5"
	Stopwatch
	0.005 in Feeler Gauge (Extended)
	Straight Edge
	Dial Indicator
WDE000554	Coupler Hook Buff & Pull Go Gauge
WDE000619	Coupler Hook Buff & Pull No-Go Gauge
WDE000620	Coupler Hook "No-Go" Gauge
WDE000553	Throat Opening "No-Go" Gauge
7K	Parallel Gauge Tool
WDE000552	Guide Pin Go-No-Go Gauges
WDE000695	Coupler Hook Extension Tool
	Calibrated Spring Scale (50 lbs. range) for use w/ WDE000695

ABBREVIATIONS AND ACRONYMS

AAR	Association of American Railroads
ACP	Auxiliary Control Panel
ADU	Aspect Display Unit
AIR COMP	Air Compressor
ASCO1	Air Suspension Cut-Out Valve 1
ASCO2	Air Suspension Cut-Out Valve 2
ASFLT1	Air Suspension Filter 1
ASFLT2	Air Suspension Filter 2
ASU	Air Supply Unit

ABBREVIATIONS AND ACRONYMS (cont.)

AWG	American Wire Gauge
BCFLT	Brake Cylinder Filter
BCO	Brake Cut-Out
BCCO	Brake Cylinder Cut-Out
BPTCO	Brake Pipe Trainline Cut-Out
CCIC	Coupler Control Isolation Cut-Out
EPCU	Emergency Pipe Control Unit
HCP	Hostler Control Panel
HCO	Horn Cut-Out
KL	Cab Panel
LCU	Logic Control Unit
LOTO	Lock-Out/Tag-Out
MAXIMO	Rolling Stock Asset documentation system
mg	Mechanical Ground
MR	Main Reservoir
MRCO	Main Reservoir Cut-Out
MRFLT	Main Reservoir Filter
MSRPH	Metrorail Safety Rules and Procedures Handbook
OOS	Out of Service
PI	Periodic Inspection
PPE	Personal Protective Equipment
SUSP	Suspension
TCD	Train Control Display
TCU	Truck Control Unit
V/TI	Vehicle/Track Interface
VMDS	Vehicle Monitoring and Diagnostic System
WMATA	Washington Metropolitan Area Transit Authority

GENERAL SAFETY ALERTS

Danger: Coordinate maintenance such that at least one holding brake is applied at all times.

Caution: Brake disc and surrounding equipment may be extremely hot. Use caution when working in brake disc area or burn injuries may occur. Never place any body part between brake pad and brake disc. If brakes are accidentally applied, crushing injuries may occur.

Caution: Venting air is extremely loud and may cause hearing damage. Wear ear and eye protection or injury may result.

20.1 INSPECT WHEELS

1) Inspect for wheel defects such as cracked or broken flange, tread, rim, plate or hub.

2) Use the AAR Narrow Flange (NF) Steel Wheel Gauge (Finger Gauge) and measure the flange wear. Verify flange wear on each wheel of the truck is within 1/4 in. of one another.

20.2 MEASURE CRITICAL WHEEL DIMENSIONS

Special Instruction: An incremental back to back gauge is required for this task. It will be considered the **primary** tool for measuring the wheel gauge parameter. A back up Go/No-Go gauge will serve as the **secondary** gauge when the primary is Out of Service (OOS) for re-calibration. Please note that if a secondary gauge is used, the primary gauge must be used during the next scheduled PI for that truck.

1) Using a calibrated **Back-to-Back Gauge Tool (A)**, measure the wheel's back to back measurement (**Figure 20-1**). The measurement shall be 53-5/16 ± 1/16 inches.

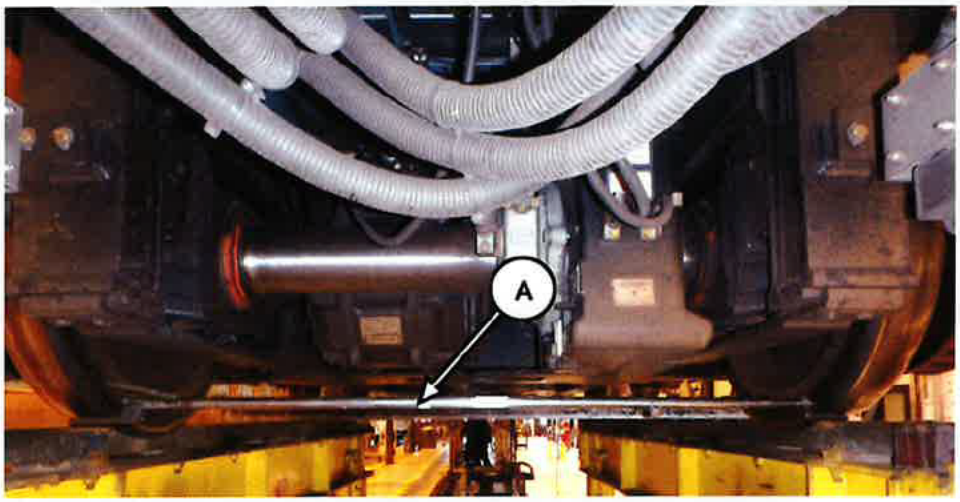

Figure 20-1: Back-to-Back Measurement

A. Back-to-Back Gauge Tool

2) If the above measurement is not within tolerance, document accordingly.

3) Ensure all measurements are recorded in the Task Checklist as actual measurement with primary gauge or Go/No-Go with secondary gauge. An example of the table is below (**Table 1**).

Table 1: Wheel Back-to-Back Measurements

Car Number				
Truck Serial Number	Front		Rear	
Axle Number	1	2	3	4
Back-to-Back Measurement – Primary Gauge or Go/No-Go Secondary Gauge				

4) Verify wheels on the same axle are within 0.0625 in. diameter and all wheels are greater than 25 in. diameter. Verify wheels on different axles of the same truck are within 0.25 in. diameter. Verify wheels on different trucks of the same car are within 0.5 in. diameter. If these criteria are not met, document accordingly. Record measurements in the tables provided in Task Checklist.

5) Mark wheel diameter on wheel using grease pencil.

20.3 VERIFICATION OF HOLDING BRAKE OPERATION (VERIFY ACTUAL APPLICATION OF HOLDING BRAKE AGAINST BRAKE DISC

Danger: This procedure must be performed on a single car of a married pair at a time.

- Ensure brakes on the other car is applied or wheels are chocked to prevent train movement.
- Ensure NO other Friction Brake maintenance task are performed on the cars.
- Stand clear of the Brake Calipers when operating the Holding Brake.
- Ensure to make PA announcements during application of Holding Brake.

Caution: Verify all the Friction Brakes are normalized (Holding Brake Cut-out in Cut-in position) on both cars of married pair before performing this procedure.

1) With Control Key **OFF** position:

- Cut out BCO on Front and Rear Trucks of one car of married pair.
- Visually inspect brakes are released on calipers without holding brakes and applied on calipers with holding brakes on Front and Rear Trucks.

2) Turn the Key to **ON** position:

- Visually inspect brakes are released on all calipers including ones with holding brakes.
- From Holding Brake APPLY, RELEASE switch on Auxiliary Control Panel (ACP), Turn to APPLY. Ensure RED apply LED is illuminated.
- Visually inspect Holding Brakes are applied on holding brake calipers on both Front and Rear Trucks.
- From Holding Brake APPLY, RELEASE switch on Auxiliary Control Panel (ACP), Turn to RELEASE. Ensure GREEN release LED is illuminated.
- Visually inspect Holding Brakes are released on all holding brake calipers on both Front and Rear Trucks.

3) Turn the Control Key to OFF position:

- Visually inspect Holding Brakes are applied on holding brake calipers on both Front and Rear Trucks.
- Activate Holding Brake Pull Release handle on both Front and Rear Trucks.
- Visually inspect Holding Brakes are released on holding brake calipers on both Front and Rear Trucks.

4) Normalize the Car:

- Normalize BCO cut-out and Holding Brake Pull Release handles on both Front and Rear Trucks.
- Key the car up, wait for TCD screen to come on and key down. This step allows the holding brake to reset from the emergency release condition.
- Visually inspect ALL the Brakes on both Front and Rear Trucks are applied on the car.

5) Verification of the Car of the Married Pair:

- Repeat steps 1 through 4 to verify Holding Brake operation of the other car of the married pair.

20.4 INSPECT BRAKE ACTUATORS AND CALIPERS

Caution: Observe all safety rules when working on or around brake equipment. Before removing or loosening any component or fitting, ensure that the system is disabled and depressurized:

- Ensure that the wheels are chocked to prevent train movement and that at least one parking brake is set in the married pair at all times.
- Cut out the truck being serviced and apply LOTO.

Caution: When performing maintenance that requires the release of the brake cylinder pressure, for example changing the brake pads, the **Holding Brake Air Supply Cut-Out Cock (A) must be closed (cutout) prior** to actuating the **Holding Brake Release Handle (B)** and brake cut out handle (**Figure 20-2**). This will ensure that the holding brake cannot be applied while maintenance is being performed on the friction brake system. Injury to personnel could occur if this process is not followed.

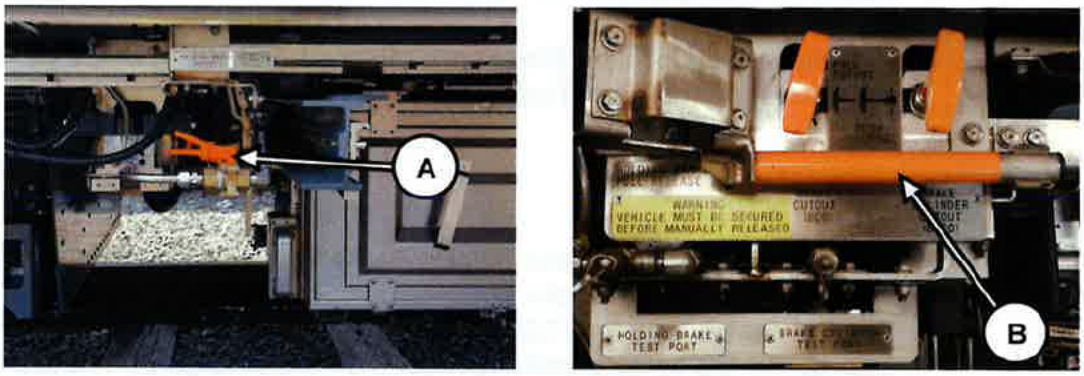

Figure 20-2: Holding Brake Front or Rear

A. Holding Brake Air Supply Cut-Out Cock **B.** Holding Brake Release Handle

1) Verify that all hardware is in place and that there are no broken torque stripes.

2) Re-secure and reapply torque stripes as necessary.

3) Check for air leaks from the brake actuator assemblies and associated hose connections.

4) Inspect hoses for chaffing or signs of rubbing. If metal strands are visible, document defect accordingly.

5) Verify the caliper mounting studs are securely tightened. If loose, document accordingly.

6) Inspect brake caliper assembly for damage such as dents, which could affect proper operation.

7) Clean the **Bellows (A)** with a lint-free rag and inspect for damage (**Figure 20-3**). Any tears or holes are unacceptable and shall be documented accordingly.

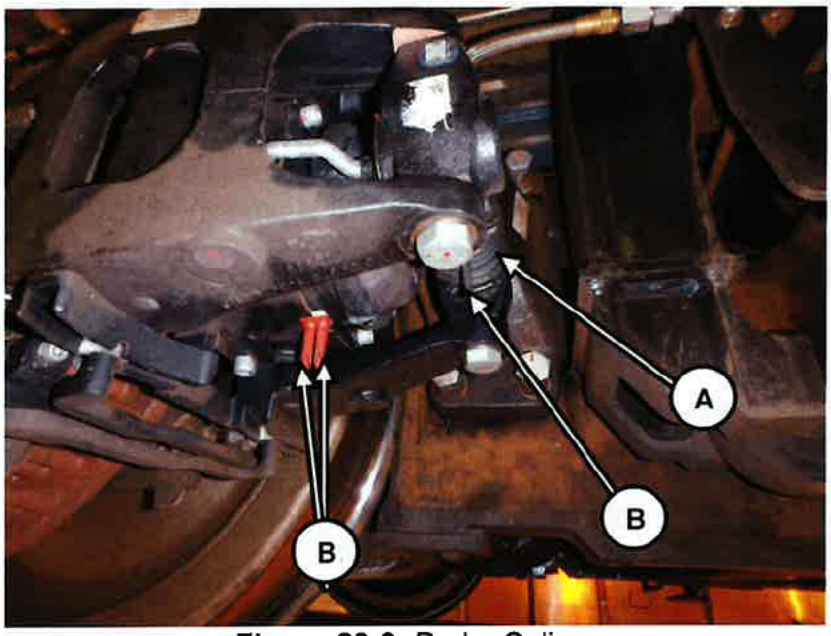

Figure 20-3: Brake Caliper

A. Bellows **B.** Drain Tubes

Special Instruction: Figure 20-3 depicts an active-only brake caliper, but it also applies for an active/passive brake caliper with a holding brake spring actuator.

8) Ensure **Drain Tubes (B)** are clear (**Figure 20-3**). Remove any dirt or debris.

Special Instruction: Verify holding brake has been disabled.

9) Release the brakes at the pertinent truck by pulling the brake cylinder cut-out handle to the cut out position.

10) Inspect the caliper support bushings. For each caliper on the train, attempt to move the caliper in a vertical motion. Check for play in the support bushings while moving the caliper; document any excessive movement. If there is not free movement of the caliper with the truck cut-out, check the slack adjuster on the brake caliper for proper operation.

20.5 INSPECT BRAKE PADS

1) Using a flashlight, perform a general inspection of the brake pad, looking for damage (scorching or material deposits) uneven wear (one end or side is thinner than the other side of the same pad) or if one pad appears to wear thinner than the mating pad on the other side of disk. If brake pads appear damaged or if the friction material has separated from the shoe plate, change as required.

2) Inspect the pads for a minimum thickness of 1/2 in. from the backing plate (**Figure 20-4**). Replace pads that do not meet this dimension along any point of the pad surface, or if the inboard pads are thinner than the outboard pads and still within specification, swap with outer pad. Ensure the brake pad snap lock gate is properly secured.

Special Instruction: Steps 3) and 4) are only necessary if changing out brake pads.

3) To change brake pad, turn slack adjuster **Reset Head (A)** with wrench, in the clockwise direction, until it bottoms out. Retract **Brake Pad Holders (B)** (**Figure 20-4**).

4) With a Brake Pad Go/No Go Gauge, close the caliper gap using the reset head to the correct distance using the gauge. If a gauge is not available, pull the caliper assembly towards the outside of the car so that the back pad seats against the disc. Close the calipers using the reset head until the gap between the brake pad and the brake disc is 0.118 in. (3 mm). Release the calipers and measure the total gap for both sides of the disc are set to 0.059 in. ± 0.020 in. (1.5 mm ± .5 mm).

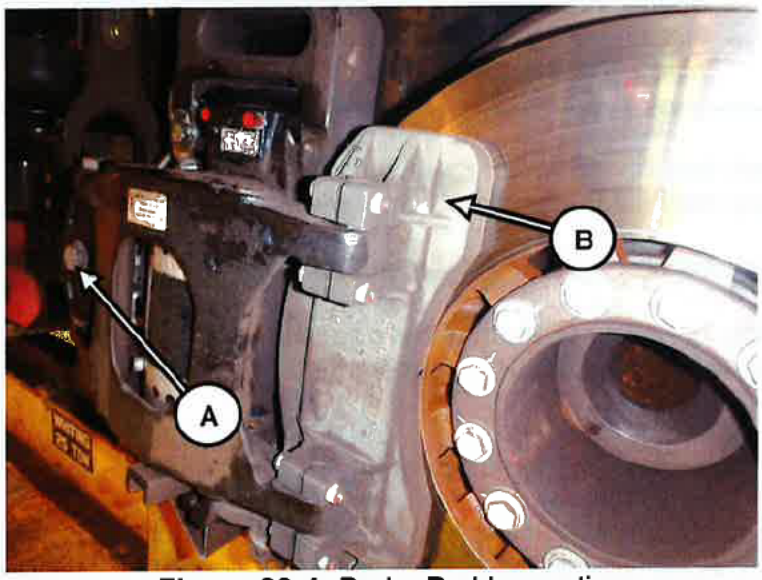

Figure 20-4: Brake Pad Inspection

A. Reset Head **B.** Brake Pad Holders

20.6 INSPECT BRAKE DISCS

Special Instruction: Proper visual inspection requires that overall disc surface be clear of excessive dirt accumulation. Clean hub, cooling fin and friction surface areas as required to correctly evaluate disc condition. Use adequate lighting where necessary to reveal possible surface defects and wear patterns.

Special Instruction: The decision as to whether the friction disc will be reconditioned or removed and replaced depends on the amount of wear and the condition of the friction disc as established through implementation of the following inspection criteria.

Special Instruction: After inspection is complete, apply the brakes at the pertinent truck by turning the brake cylinder cut-out handle to the cut in position.

1) Check that disc to wheel mounting interface assembly is free of dirt, debris, or any material that could obstruct a visual inspection.

2) Check exterior surface for signs of damage or defects.

3) Check for hollow wear, material deposits (build-up), gouging, and scoring. If wear appears excessive, measure the defects following Steps 19) through 29).

4) Inspect cooling fins for dirt or debris accumulation.

5) Inspect that all bolts are properly secured and torque stripes are in place. Verify safety wire is present on disc to hub mounting hardware. Document discrepancies accordingly.

6) Inspect **Hub (A)**, **Cooling Pins (B)**, and **Spokes (C)** for cracks (**Figure 20-5**). Hub must not be cracked in any way. If cracked, document accordingly.

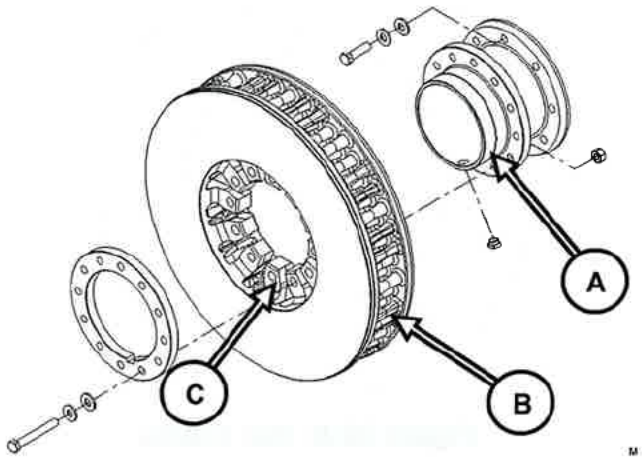

Figure 20-5: Brake Disc

A. Hub
B. Cooling Pins
C. Spokes

7) Measure the total wear limit on the brake disc using a depth gauge at most concave point. Brake discs exceeding the wear mark on either side must be condemned. If measurements were obtained in Step 3), the following criteria must be met:

- total wear limit *minus* hollow wear depth > 0
- total wear limit *minus* scoring depth > 0
- total wear limit *minus* gouging depth > 0

8) Inspect brake disc for hair cracks (**Figure 20-6**). Hair cracks are finely ramified cracks found on the friction rings of axle-mounted brake discs due to the exposure of severe thermal stresses. Although hair cracks give the appearance of a crack on the friction ring surface, there is no actual penetration into the metal. Randomly arranged hair cracks of unlimited number are acceptable in the friction surfaces of both rings.

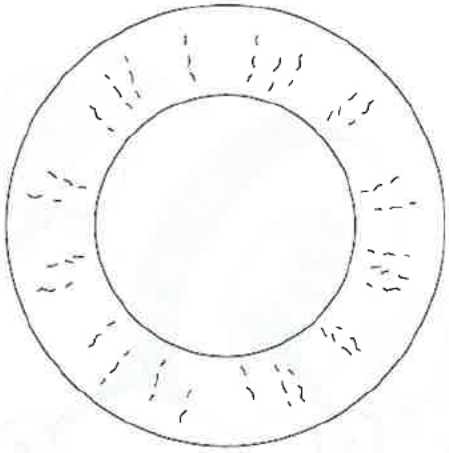

Figure 20-6: Hair Cracks

9) Inspect brake disc for incipient cracks (**Figure 20-7**). Incipient cracks are cracks that do not extend from the inside diameter of the friction ring to the outside diameter of the friction ring. The friction ring may contain several randomly arranged incipient cracks. Replace disc if:

- Incipient cracks are 3.15 in. (80 mm) long or longer and extend to the inner or outer edge of the disc
- Incipient cracks that are located within the inner and outer disc edges are 3.94 in. (100 mm) long or longer

For incipient cracks with leading edges that do not cross:

- Replace disc if an incipient crack radiating from the inner disc diameter is within 0.28 in. (7 mm) of another incipient crack that is in the middle of the disc and the total length of the two cracks is equal to or greater than 3.94 in. (100 mm).
- Replace disc if any incipient cracks within the inner and outer disc edges are found within 0.59 in. (15 mm) of one another.
- Replace disc if the interior edge of an incipient crack radiating from the inner or outer surface of the disc comes within 1.18 in (30 mm) of another incipient crack.

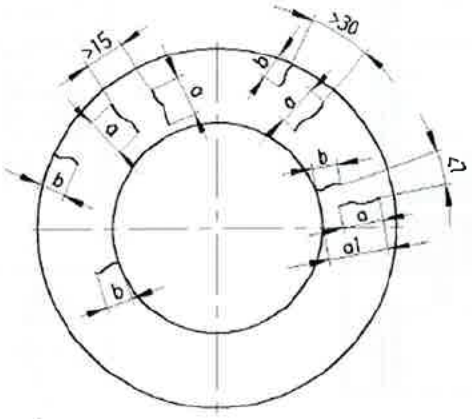

Figure 20-7: Incipient Cracks

10) Inspect brake disc, joining bars, and connecting flanges of split friction rings for through-cracks (**Figure 20-8** through **Figure 20-10**).

- A through-crack is a crack that reaches from the inner friction ring diameter to the outer friction ring diameter or one friction ring side. Through-cracks are not acceptable in the friction rings.
- Through-cracks are not acceptable in the joining bars of the brake disc.
- Through-cracks are not acceptable at the connecting flanges of split friction rings.

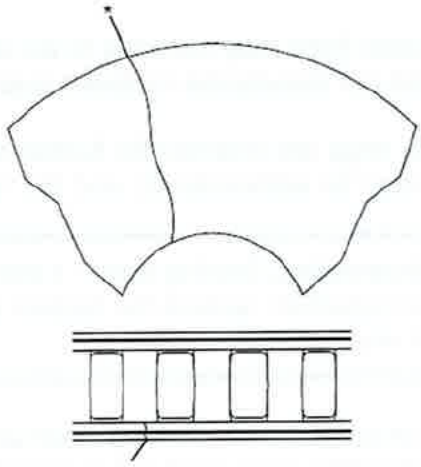

Figure 20-8: Through-Cracks

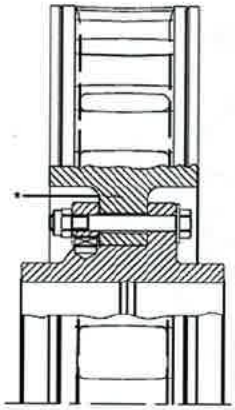

Figure 20-9: Through-Crack in Tie Bar

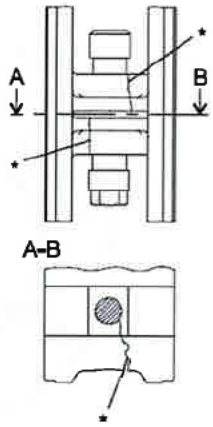

Figure 20-10: Through-Crack in Connecting Flange

Special Instruction: Scorch marks are caused by quickly rising friction ring temperatures in conjunction with inadequate heat dissipation. The cause of the scorching must be traced and corrective action must be taken before resuming service.

11) Inspect friction rings for scorch marks or bluing. Scorch marks will appear as a black or gray discoloration in a concentrated area on the surface of the friction ring. Scorch marks can be of varying size or shape.

- Scorched friction rings may continue to be used if they contain neither through-cracks nor substantial incipient cracks.
- If such friction rings are retained for further service, daily visual inspections must be administered, and the Supervisor notified.

Special Instruction: Slanting wear – If slanting wear is identified during the inspection, recheck the calipers and pads to ensure proper alignment and operation.

12) Inspect the friction surfaces for slanting wear using Steps 13) through 18) (**Figure 20-11**). Slanting wear shall not exceed 0.08 in (2 mm) measured from the inner to the outer edge or from the outer to the inner edge. Document slanting wear accordingly.

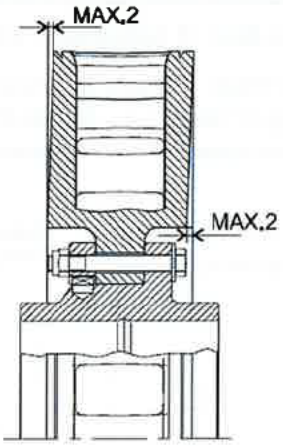

Figure 20-11: Slanting Wear of Friction Ring

13) **Slanting Wear:** Position the straight edge so that it makes contact with the inner diameter circumferential edges of the disc face (2 places) or the outer diameter circumferential edges of the disc face (2 places).

14) Make sure the straight edges are firmly and flatly seated on the disc edges.

15) Using a set of wire gauges, measure the gap between the disc face and the straight edge.

16) Record deepest point measurement value.

17) Repeat steps 13) to 16) on the opposite friction face to establish wear parallelism and confirm slanting wear

18) If slant measurement is greater than 0.08 in. (2mm), document defect accordingly.

19) If necessary, measure the friction ring surfaces for hollow wear, scoring and gouging. If visual inspection does not warrant measurements, proceed to next Section. Hollow wear up to 0.157 in (4 mm) is acceptable. Scoring and gouging up to approximately 0.04 in (1mm) deep is acceptable. If the above limits are exceeded, document accordingly (**Figure 20-12**).

Special Instruction: If necessary, follow Steps to measure:

- Hollow Wear – Steps 20) through 24)
- Scoring or Gouging – Steps 25) through 29)

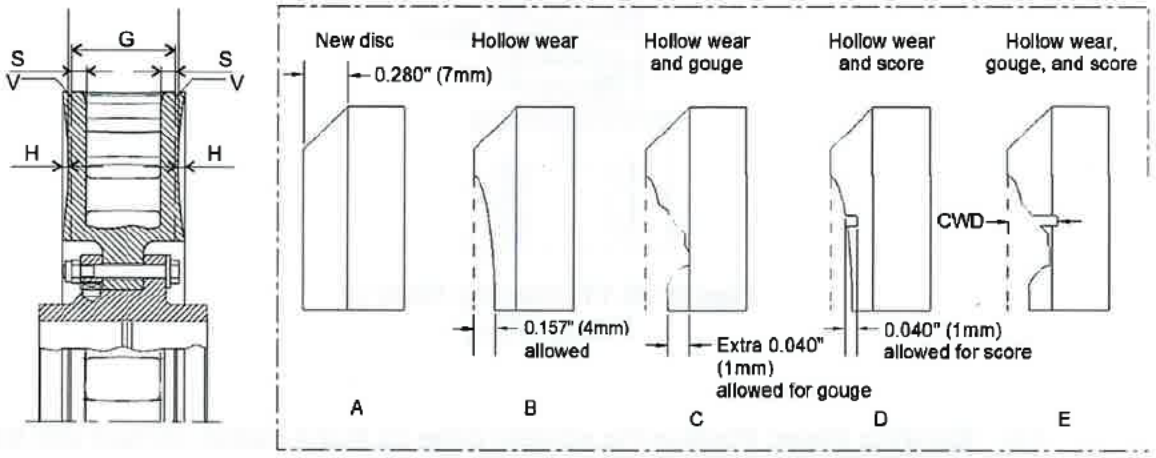

Figure 20-12: Wear Limits of Friction Ring

Special Instruction: The cause of scoring must be corrected. Inspect the brake pads. If hard inclusions or material deposits are found, replace the brake. Facing off may be continually repeated until the friction ring's condemning limit (G) is reached at the wear identification grooves (V) (7 mm from friction surface to wear identification grooves). If a friction ring is machined down to within ± 0.011 in (0.3 mm) of its condemning limit, it may continue to be used for another 0.019 in (0.5 mm) of wear on either friction surface, provided that there are no incipient cracks and the residual thickness (S) on both sides is at least 0.55 in (14 mm) (**Figure 20-12**).

Special Instruction: If necessary, inspect for hollow wear. Using a straight edge and gauges. Use the following Steps to inspect for hollow wear:

- Steps 20) through 24)

20) **Hollow Wear:** Position the straight edge so it makes contact with the inner diameter circumferential edges of the disc face (2 place) and not the outer edges of the disc face.

21) Make sure the straight edges are firmly and flatly seated on the disc edges.

22) Using a set of wire gauges, measure the gap between the disc face and the straight edge.

23) Record the deepest point measurement value.

24) If hollow wear measurement is deeper than 0.157 in (4 mm), document accordingly.

Special Instruction: If necessary, inspect for scoring or gouging. Using a straight edge and gauges. Use the following Steps to inspect for scoring or gouging:

- Steps 25) through 29)

25) **Scoring or Gouging:** Position the straight edge so that it makes contact with the inner diameter circumferential edges of the disc face (2 places) and the outer portions extend over the disc but does not contact the outer edge.

26) Make sure the straight edges are firmly and flatly seated on the disc inner diameter disc face edge.

27) Using a set of wire gauges, measure the gap between the disc face and the straight edge.

28) Record deepest point measurement value.

29) If score or gouge wear measurement is deeper than 0.04 in. (1 mm), document defect accordingly.

20.7 INSPECT AND MEASURE JOURNAL BEARINGS

1) Closely inspect the **Journal Bearings (A)** for signs of leaking grease or grease build-up. Document all discrepancies accordingly (**Figure 20-13**).

> **Special Instruction: Do not** remove any grease that has leaked from the journal bearings during the inspection. The accumulation of grease about a journal bearing could indicate deterioration of the bearing, and must be monitored over time. Some grease leakage around the seals may be expected during the initial break-in period, but this should reduce to normal weeping within the first six months of service.

2) Inspect seal for physical damage (from impact or contact) and for seal cocked out of position. If seals are damaged or cocked out of position, document accordingly.

3) The journal bearings shall be condemned if any of the following characteristics are found.

- Appearance of liquefied grease
- Any grease coating on the outboard seal that extends beyond the wheel hub onto the wheel web
- Any grease coating on the inboard seal, extending more than 3 in. along the axle
- Any signs of discoloration caused by heat, or burnt odor in the vicinity of the bearings.

4) Verify journal bearings are fully seated into journal box.

5) Using a 0.005 in. feeler gauge, measure the gap between the journal bearing and the wheel hub.

6) If the 0.005 in. feeler gauge fits, notify your supervisor.

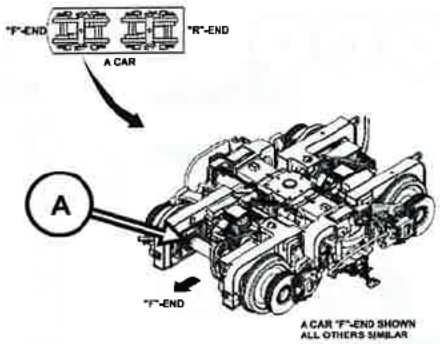

Figure 20-13: Journal Bearing Inspection
A. Journal Bearing

20.8 INSPECT AXLES AND SENSORS

1) Inspect each axle for cracks, corrosion, and other damage. Document damage accordingly.

2) Closely inspect axle body for rub marks or signs of arcing from fallen cables, or any other damage. Determine reason for rub marks or arcing and document accordingly.

3) Inspect axle for string, wire or other foreign material that has wrapped around any portion of axle. Remove if present, then check for damage to axle. If axle is damaged, document accordingly.

4) Inspect the following sensors for damage to cables or housing, connectivity, and tightness. Tighten bolts if necessary and document damage accordingly (**Figure 20-14** and **Figure 20-15**).

   - **Brake Sensors (A)** – Located each axle (A-Car, B-Car, and B1-Car).
   - **Event Recorder Sensor (B)** – Located at axle 1 (A-Car).
   - **LCU/VMDS Sensor (C)** – Located at axle 2, car center side.
   - **ATC Sensor (D)** – Located at axles 3 and 4 (A-Car).
   - **Propulsion Sensors (E)** – Located at each traction motor.

5) Inspect for presence of **Dummy Plug (F)** on B-cars (**Figure 20-14**). Tighten loose hardware as necessary. Document any missing or damaged dummy plugs.

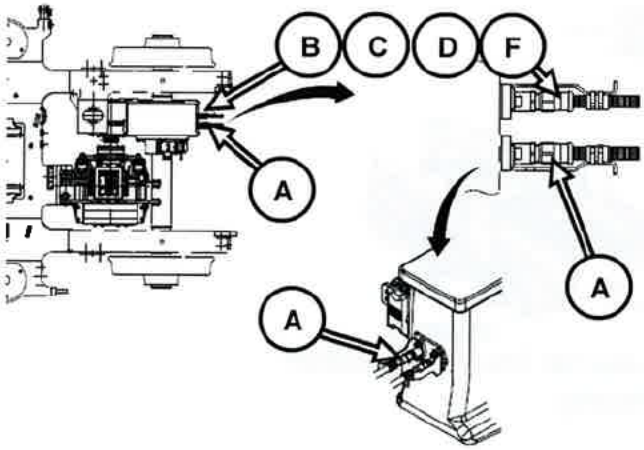

Figure 20-14: Gearbox Unit Sensor Locations
A. Brake Sensors
B. Event Recorder Sensors
C. LCU/VMDS Sensor
D. ATC Sensors
F. Dummy Plug

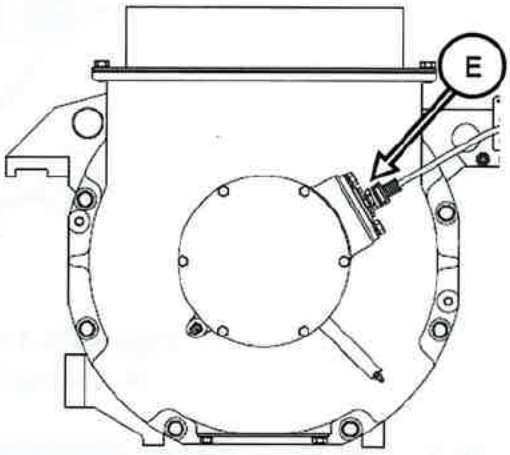

Figure 20-15: Motor Speed Sensor
E. Propulsion Sensors

20.9 INSPECT V/TI SENSORS

Inspect the following sensors for damage to cables or housing, connectivity, and tightness. Tighten bolts if necessary and document damage accordingly (**Figure 20-16**).

- **V/TI Axle Sensors (A & B)** – Located both ends of axle 4 (B-Car).
- **V/TI Truck Sensor (C)** – Located at "F"-end (B-Car).
- **Carbody Sensor (D)** – Located on bottom side of carbody

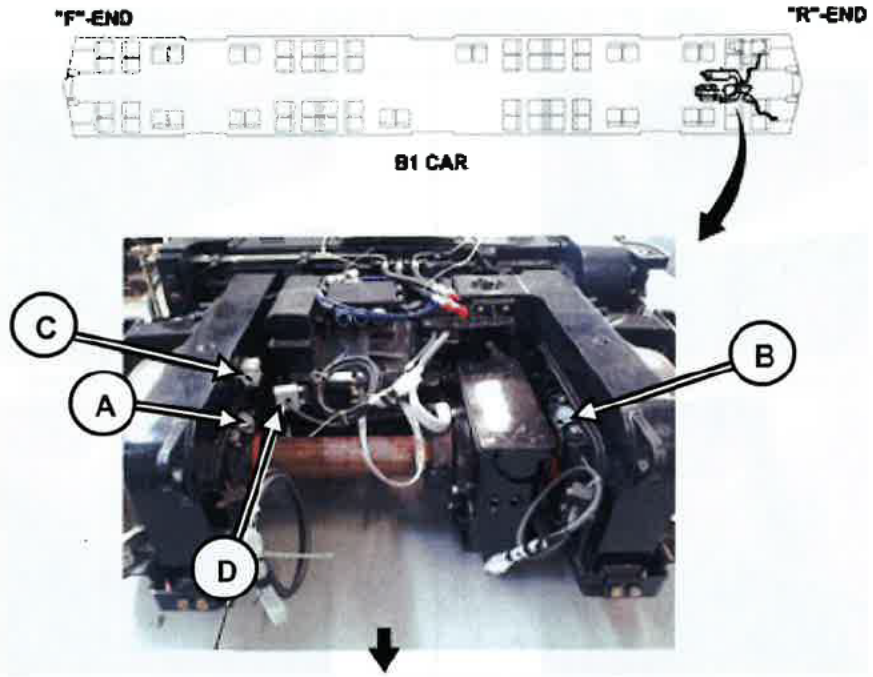

Figure 20-16: V/TI Sensor Arrangement
A, B. V/TI Axle Sensors **D.** Carbody Sensor
C. V/TI Truck Sensor

20.10 INSPECT CHEVRON SPRINGS

Special Instruction: Two types of chevron springs are used on 7000 Series fleet (without or with shim). In addition, if a color appears on a chevron, each truck must have matching color chevron types (white, yellow, red) installed in all locations. Chevrons shall not be mixed by color or shim status, per truck.

Special Instruction: Do not push in the ruler or pick forcefully to the rubber surface during inspection

1) Check chevron spring sets for cracks, crushes, delamination, and collapsed conditions (**Table 2**). Document defects accordingly.

Table 2: Chevron Spring Crack Identification

Wrinkle	Crack
	
The ruler does not enter the crack	The ruler goes into the crack
	
Wrinkle does not open when the surface is pushed by the pick with round tip	The crack opens when the surface is pushed by the pick with round tip
	
	
The surface of the rubber is not ripped	The surface of the rubber is ripped and a gap is created

Special Instruction: Spring stopper and pedestal tie bar hardware require Molykote to be applied to one-third of the end threads. Bracket stopper hardware requires thread locker to be applied to the threads.

2) Inspect for missing, loose, or damaged (such as cracks) chevron **Spring Stoppers (A)**, chevron **Bracket Stoppers (B)**, **Pedestal Tie Bar (C)**, and **Locking Plates (D)** (**Figure 20-17**). If component is damaged or missing, document accordingly.

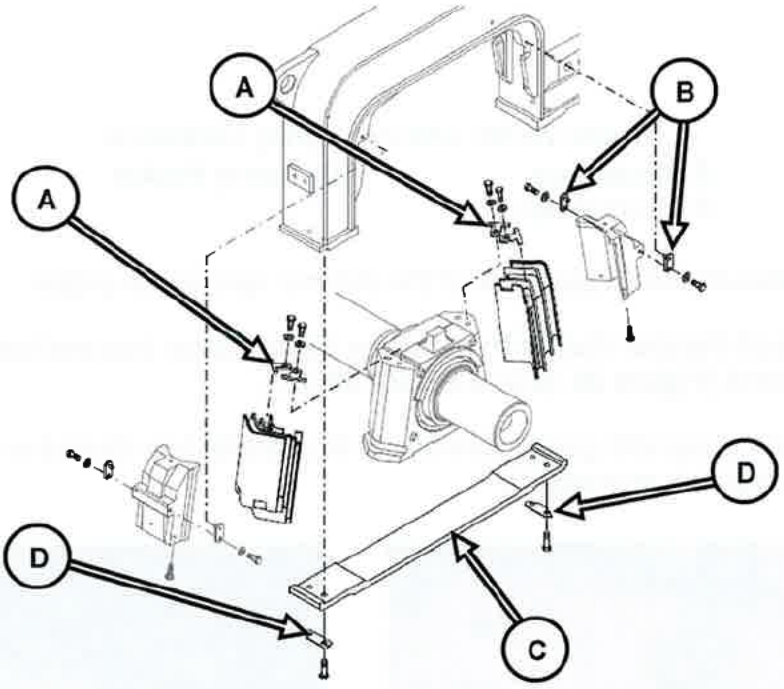

Figure 20-17: Chevron Spring Hardware

A. Spring Stoppers
B. Bracket Stoppers
C. Pedestal Tie Bar
D Locking Plates

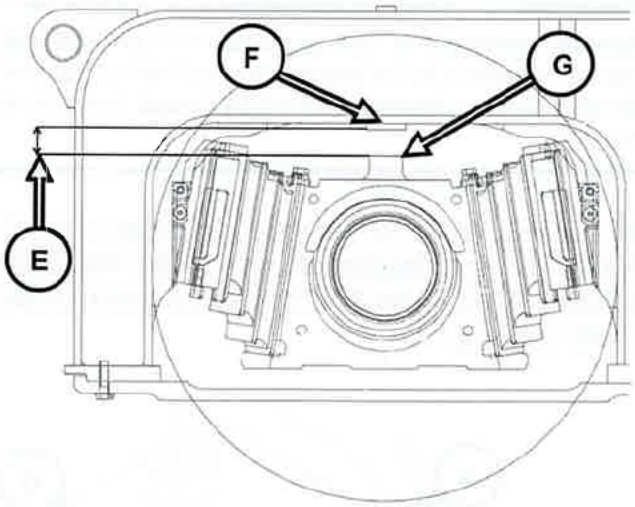

Figure 20-18: Chevron Spring Clearance
E. Clearance **G.** Spring Pocket
F. Journal Box

3) Measure the temperature of the chevron spring with probe.

4) Insert **Parallel Gauge (H)** between top of journal box and bottom of spring pocket (**Figure 20-18** and **Figure 20-19**).

5) Pull out parallel gauge carefully. If the parallel has slipped or slid while pulling out, re-measure.

Figure 20-19: Chevron Spring (with shim) Clearance
H. Parallel Gauge

6) Using a caliper gauge, measure the width of parallel gauge.

7) Use **Table 3** to determine minimum height for measured temperature range. Document deterioration accordingly.

Table 3: Chevron Minimum Measurement Criteria

Temperature Range	E-dimension Limit (in)
50°F – above	1.26
40°F – 49.9°F	1.21
30°F – 39.9°F	1.17
20°F – 29.9°F	1.12
10°F – 19.9°F	1.07
0°F – 9.9°F	1.02

20.11 INSPECT AXLE GROUND BRUSH HOLDER AND RING ASSEMBLY

Danger: Shop power returns to ground through the ground brushes. Only open one ground brush box at a time for inspection. If it is necessary to open more than one box at the same time, then a grounding cable (2/0 awg or larger with suitable connectors) must be installed between the car's ground plate (mg) and the running rail to ensure that the carbody is grounded while the brushes are serviced.

1) Check the axle ground brush box exterior for cracks, damage, worn areas, and excessive dirt. Clean with Citrus Clean Degreaser as necessary.

2) Ensure that all foreign material is clear of the ground ring drain hole.

3) Remove the **Hardware (A)** securing the **Cover (B)** to the housing (**Figure 20-20**).

Caution: The plate is spring loaded.

4) Carefully lift the cover assembly straight upward from the housing, using care not to damage the gasket. This action releases the pressure on the **Ground Brush (C)** (**Figure 20-20**).

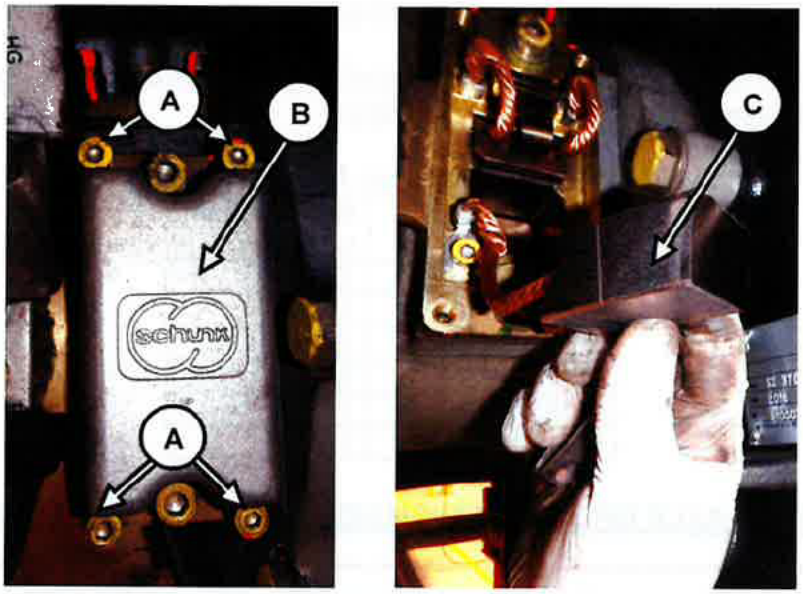

Figure 20-20: Ground Brush Unit
A. Hardware **C.** Ground Brush
B. Cover

5) Visually check for frayed or damaged wiring. Inspect for loose or missing hardware. Replace or tighten as necessary. Replace shunts if any of the following criteria are met:

- Any one of the seven strands is completely cut/disconnected
- Three strands are 50% or more cut/disconnected
- There are any signs of burning
- The connection to the lug is severed or burned

6) Check the spring action to see if the brush moves freely. Inspect the spring for bluing or other discoloration from overheating. Replace if defective.

7) Remove the brush from the housing. Replace any brushes with cracks or uneven wear.

8) Measure from the **Wear Mark (D)** to the worn end of brush (**Figure 20-21**). Replace the brush if wear is within a 1/4 in. of the wear line. If the wear mark extends to tip of brush, the brush is beyond wear limits and must be replaced.

Special Instruction: Notify Supervisor if any of the wear brushes have exceeded their wear marks.

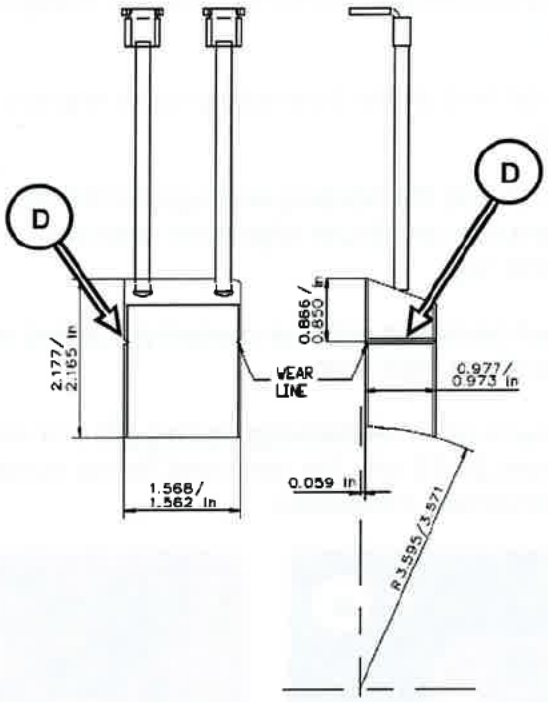

Figure 20-21: Ground Brush Wear Limits
D. Wear Mark

9) Look through the openings in the housing to inspect the grounding ring for grooves, nicks, or presence of grease or oil contamination. If contamination or damage exists, document accordingly.

Caution: If excess oil is found in the ground ring cavity, then the gearbox has been overfilled. The ground ring and the cavity must be cleaned of all traces of oil using isopropyl alcohol, and then the gear box oil must be changed.

10) Inspect the copper brush pigtail. A slight pull on the pigtail will test its bond to the brush and verify that the brush is free in the body. Clean the body with a wiping rag.

11) Inspect the terminal lug for good connection to shunt. If connection is suspect, notify Supervisor. Verify terminal lug prongs are straight and free of any damage.

12) Clean loose dirt and debris from axle ground ring and brush holder with clean dry rag.

13) Guide the brush into the housing and against the grounding ring. Ensure that the ground ring and brush alignment is correct. Brush must have full contact with the ring.

14) Align the brush terminals with the contact piece and secure in place by tightening the shunt lead screws.

15) Install the ground brush **Retaining Spring (E)** and verify orientation matches **Figure 20-22** with the open end facing outward. **Figure 20-23** displays an **incorrect** installation.

Figure 20-22: Correct Ground Brush Spring Installation
E. Retaining Spring

Figure 20-23: Incorrect Ground Brush Spring Installation

16) Inspect the gasket for damage. If the gasket is damaged, replace the gasket.

17) Align the cover assembly with the housing, making sure that the pressure device seats on top of the brush. Secure the cover assembly in place with screws and lock washers. Torque to spec below, and apply torque stripe.

Torque Value: Tighten Cover Screws to **12** ft-lb.

18) Inspect car wiring and shunt bar between brush holders. Document accordingly.

19) Repeat Steps 1) through 18) for all ground brushes.

20.12 INSPECT GEARBOX REACTION ROD

1) Verify gearbox unit mounting hardware tightness and attachment to truck frame traction motor is secure.

2) Inspect reaction rod for worn or damaged conditions. Document accordingly.

3) Inspect reaction rod for loose hardware. Tighten as necessary according to the torque specification below and re-apply safety wire and torque stripe.

Torque Value: Tighten mounting hardware to **140** ft-lb.

4) Inspect reaction rod bushings for cracking, signs of heat damage, or have grease or other petroleum products applied. Document accordingly.

5) Repeat Steps 1) through 4) for all gearbox reaction rods on both A and B-Cars.

20.13 INSPECT SAFETY SUPPORT

1) Visually inspect **Safety Support (A)** for damage **(Figure 20-24)**.

2) Verify **Mounting Hardware (B)** is securely fastened. Document defects accordingly **(Figure 20-24)**.

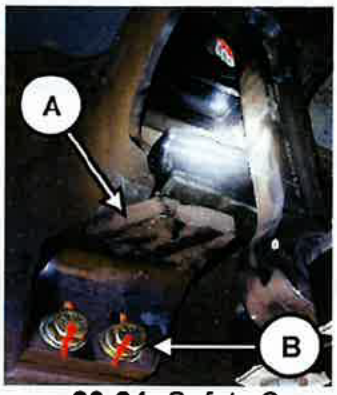

Figure 20-24: Safety Support

A. Safety Support

B. Mounting Hardware

20.14 INSPECT TRACTION MOTORS

1) Inspect traction motor mounting hardware torque mark alignment and attachment to truck.

2) If torque mark is missing or misaligned, tighten bolts to specification and apply new torque mark lacquer.

3) Visually inspect traction motor for signs of wear or damage.

4) Visually inspect traction motor for signs of overheating.

5) Visually inspect for accumulation of dirt.

6) If necessary, clean with clean soft cloth.

7) Inspect traction motor **Air Inlet (A)** and **Air Outlets (B)** for obstructions (**Figure 20-25**). Remove obstructions as required.

8) Inspect air inlet screen for signs of damage.

9) Repeat Steps 1) through 8) for all traction motors.

10) Document accordingly if any of the above conditions are found.

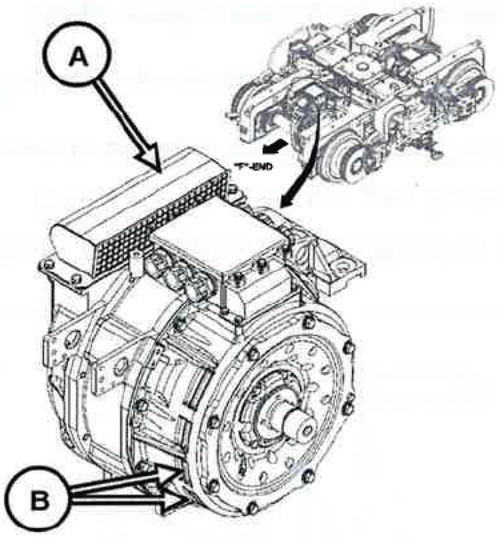

Figure 20-25: Traction Motor
A. Air Inlet **B.** Air Outlets

20.15 INSPECT FLEXIBLE COUPLING

1) Check for grease leaks. Small amounts of grease wetting are permissible.
2) Visually inspect for loose or missing hardware. If any bolt is loose, document accordingly.
3) Clean coupling halves and inspect for damage, cracks, and/or corrosion.
4) Inspect contact surfaces of coupling parts with sealing rings for damage.
5) Repeat Steps 1) through 4) for all flexible couplings.

20.16 LUBRICATE FLEXIBLE COUPLING

Caution: Some parts remain hot after the system is de-energized, and may cause burns if touched. Allow approximately 30 minutes for components to sufficiently cool before performing any tasks.

Special Instruction: The motor and gear unit coupling halves are each fitted with two grease nipples offset 180 degrees. Refilling of each coupling half is done via either one of the grease nipples. The coupling does NOT need to be removed.

1) Clean **Grease Nipple Head (A) (see Figure 20-26)**.
2) Place sliding coupling on **Grease Nipple (A) (see Figure 20-26)**.
3) Apply the following grease quantities using hand lever grease gun:
   a. Motor side coupling half: 0.5 +0.35 oz (15 +10 g).
   b. Gear unit side coupling half: 0.7 +0.35 oz (20 +10 g).

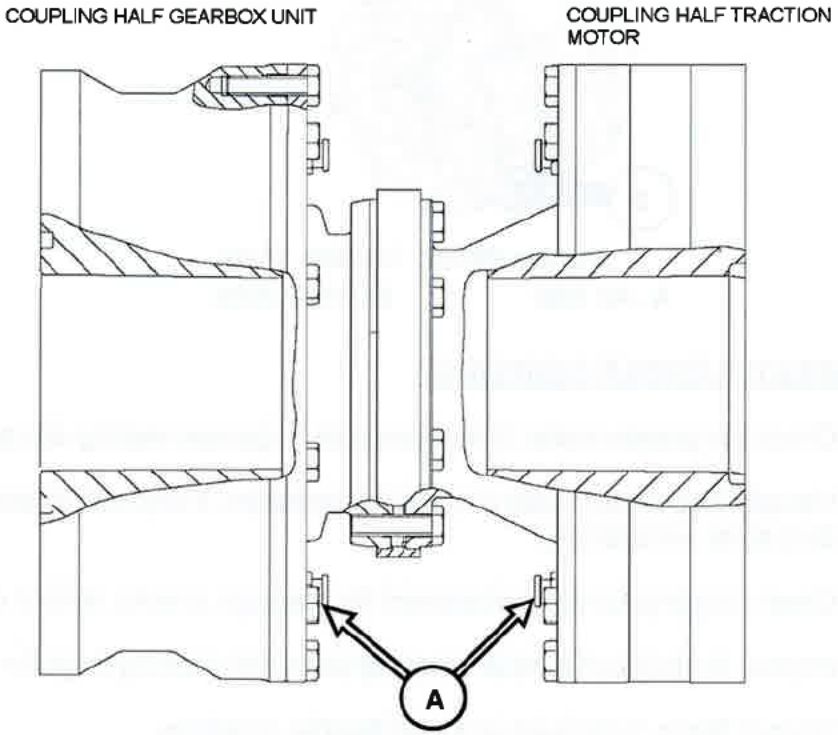

Figure 20-26: Coupling Lubrication
A. Grease Nipple Head

20.17 INSPECT TRUCK FRAME AND BOLSTER

1) Inspect for propagating cracks in truck frame and bolster (**Figure 20-27**).

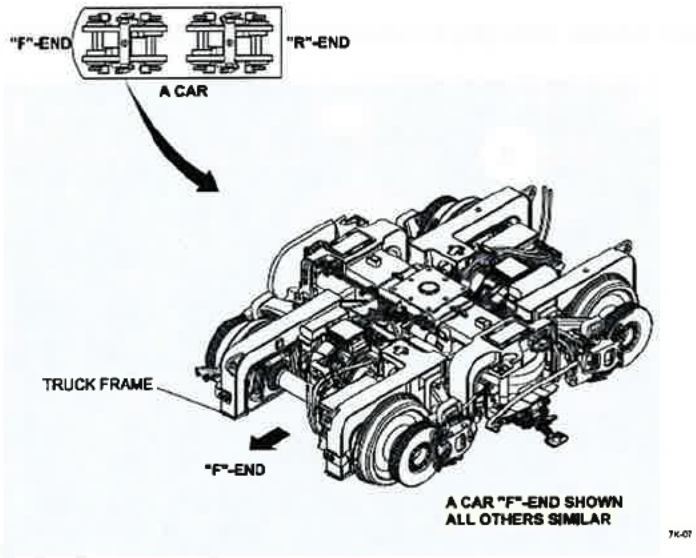

Figure 20-27: Truck Frame

2) Visually inspect frame contact points for rubbing or damage relating to wear.

3) Visually inspect welds and heat affected zones near welds for stress induced cracks.

4) Visually inspect load bearing areas for fatigue induced cracks.

5) Check truck frame for properly dressed and secured wiring and hoses. Ensure that truck cablings and related hardware are in good condition and are properly secured. Look for signs of chaffing, arcing, and improper routing.

6) Inspect air piping for leaks, dents, and other damage.

7) Document all defects accordingly.

20.18 INSPECT CENTER LOCKING PIN

1) Inspect **Center Locking Pin (A)** for wear and damage (**Figure 20-28**). If damaged, document accordingly.

2) Ensure **Cotter Pin (B)** is installed (**Figure 20-28**). Replace if missing.

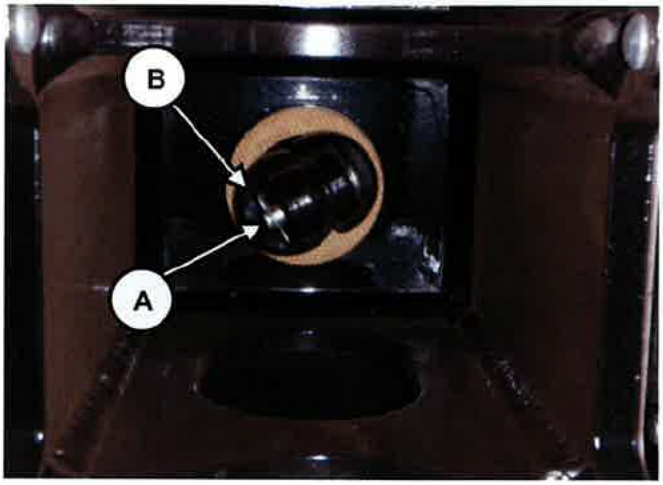

Figure 20-28: Center Locking Pin Inspection
A. Center Locking Pin **B.** Cotter Pin

20.19 INSPECT BOLSTER ANCHOR

1) Inspect **Bolster Anchor (A)**, and **Rubber Bushings (B)** for wear and damage (**Figure 20-29**).

2) Inspect for loose or missing hardware. Tighten or replace as necessary.

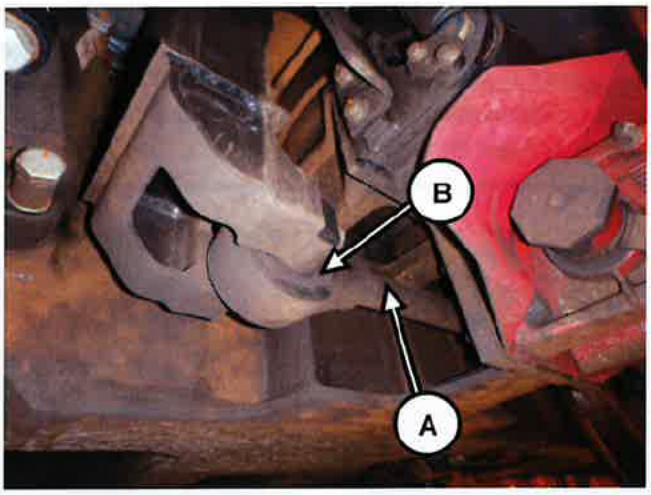

Figure 20-29: Bolster Anchor Inspection
A. Bolster Anchor **B.** Rubber Bushings

20.20 INSPECT COLLECTOR SHOES

Special Instruction: After any shoe is replaced, the collector assembly must have the on- and off-rail height and the shoe pressure checked. Failure to adjust the collector assembly properly may cause shoes to snap off at gaps in the third rail.

Special Instruction: Ice Scraper Shoes are to be installed on the "A" Car Only, according to the schedule provided by Maintenance Planning (generally installed October 15 and removed April 15). Only two shoes will be installed, one on the "F"-end, non-operator side collector, and one on the "R"-end, operator-side collector.

Special Instruction: If collector shoe is missing prior to inspection, document accordingly

Special Instruction: All collector shoes (existing or newly installed) shall be marked in accordance with **Figure 20-30**. Marking shall identify car number and installation date. **Only** use the Dykem DALO (Red) Industrial Marker to mark shoe (P/N R80-10-0023) (**Figure 20-31**).

Figure 20-30: Collector Shoe Marking

Figure 20-31: Dykem DALO (Red) Industrial Marker (P/N R80-10-0023)

1) Visually inspect collector shoes for secure mounting and wear. If light can be seen through any portion of the wear indicator (circular depression in the center of the shoe), the shoe must be replaced. If one-third or more of the shoe width has been worn away (leading and trailing edges combined), the shoe must be replaced.

Special Instruction: If collector assembly is fitted with Ice Scraper Shoe: Measure the ice scraper shoe tread in the center of the shoe from the deepest part of the cut to the worn surface. Shoes which measure 3/32 in or less should be replaced. Condemned shoes may be re-used during non-snow periods of the year, or at other locations which do not require ice scraper shoes. (October 15 through April 15 only).

2) Inspect the paddles for non-uniform wear and excessive burning. If the paddle is wearing more at the toe or heel, the running height must be rechecked for proper adjustment. If there is excessive burning, the paddle pressure and off-rail height must be rechecked.

3) Inspect the collector shoe mounting hardware. The correct configuration (**Figure 20-32**) is as follows (listed in the order of installation):

- **Bolt (A)**, Hex Head (inserted upwards into the torsion mount underside)
- **Washer, Heavy Hardened (B)**, Flat (installed over shoe)
- **Nut, Hex (C)**, 7/8 in.
- **Nut, Lock (D)** (installed last)

4) If the torque stripes are broken, remove the stripes and hardware. Torque the lower hex nut (not the bolt head) to specification below, then torque the upper lock nut to specification below. Re-apply the torque stripe.

Torque Value: Torque hex nut to **45-50** ft-lbs., dry.
Torque locknut to **45-50** ft-lbs., dry.

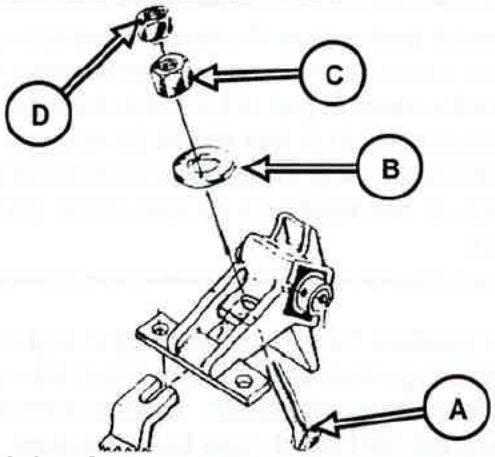

Figure 20-32: Collector Shoe Mounting Hardware

A. Bolt
B. Washer, Heavy Hardened
C. Nut, Hex
D. Nut, Lock

20.21 CHECK COLLECTOR SHOE HEIGHTS

1) Place the shoe height tool across the running rails. Position it so that the "measuring end" is under the shoe to be checked.

2) The shoe should be level when resting on the top horizontal edge, 4-1/2 in above the running rail. If not level, loosen the 3/8 in locknut and the 3/4 in locknut sufficiently to allow vertical positioning of the collector paddle mount assembly. Adjust the shoe to a position 4-1/2 in as measured from the top of the running rail to the bottom of the shoe when the shoe bottom is flat and parallel with the running rail. Tighten nuts sufficiently to secure the collector paddle mount assembly at this height. Tighten the locknuts to specifications below.

	**Torque Value:**	Torque 3/8 in locknut to **15-20** ft-lbs., dry. Torque 3/4 in locknut to **35** ft-lbs., dry.

3) Now move the shoe height tool so that the shoe is over the lower horizontal edge, 3-1/2 in above the running rail, and measure off-rail height.

4) The shoe should just touch this edge. If it doesn't, loosen the 5/8 in jam nut, then turn the stop bolt until the paddle touches the shoe height tool. Re-tighten the 5/8 in jam nut. Two holes are provided in the bracket assembly to permit vertical movement of the stop bolt. Use the hole that provides the most stop area.

20.22 CHECK COLLECTOR SHOE PRESSURE

1) Using the spring scale, measuring at the longitudinal center of the shoe, measure the force required to raise the shoe 1 in (to the on-rail height.) The force at this point should be 19 to 25 lbs. If not, adjust per the following procedure:

2) Loosen the 3/4 in locknut and the 3/8 in locknut until the torsional shaft is free to rotate.

3) With a spring scale attached to the center of the paddle (a bent wire harness may be used to achieve this), rotate the torsion shaft counterclockwise until a load of 19 to 25 pounds is obtained with the paddle raised 4-1/2 in ± 1/16 in above the running rails.

4) While maintaining the load on the paddle, tighten the 3/8 in and 3/4 in locknuts to spec. Re-check the pressure after the nuts have been tightened.

Torque Value: Torque 3/8 in locknut to **15-20** ft-lbs., dry.
Torque 3/4 in locknut to **35** ft-lbs., dry.

20.23 CHECK TORSION UNIT SPRING RATE

1) To check the spring rate of the torsion unit, use the spring scale mounted at the same location as used in the collector shoe pressure check and measure the force required to raise the paddle 4 in. from the off-rail height. Make a note of the reading, then lower the paddle 4 in. so that it comes as close as possible to the stop-bolt without actually touching it. The value of the force at this point should differ from the previous value by 20 lbs. or more (indicating a spring rate of 5.0 lbs./in. or greater). If not, replace the torsion unit.

2) Use a flashlight to inspect any exposed surfaces of the rubber torsion units. Look for signs of wear, deterioration, or other damage. Document accordingly.

20.24 INSPECT SHUNT

Special Instruction: This shunt should be a rope-type shunt.

1) Visually check collector **Shunts (A)** for fraying, swelling from strain hardening, and other damage (**Figure 20-33**). When 30% or more of the strands are broken or frayed (based on original thickness), the shunts must be replaced.

2) Ensure that the shunt is properly mounted with the correct hardware and black, Ultraviolet **(UV)-Resistant Tie-Wraps (B)** to hold the shunt strands together. Position the shunt to prevent it from being damaged by any foreign objects that might be close to the third rail. Verify that the shunt is installed properly. The shunt should be installed so that it projects out from the **Paddle Mount (C)** parallel to the third rail. The other end of the shunt is attached to the bus bar **Mounting Bracket (D)** joint so that the end of the shunt is perpendicular to the bus bar (**Figure 20-33**).

3) Check the terminal bolts for tightness. Shunt terminal nuts are torqued to spec.

Torque Value: Torque terminal nuts to **30** ft-lbs., dry.

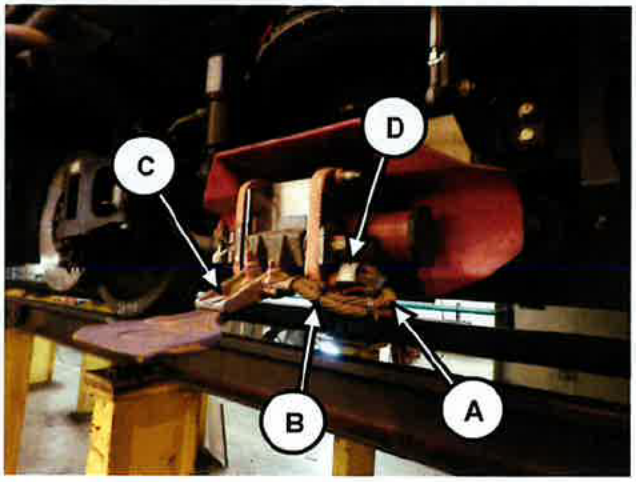

Figure 20-33: Collector Assembly

A. Shunt
B. UV Resistant Tie Wraps
C. Paddle Mount
D. Mounting Bracket

20.25 INSPECT AIR SUSPENSION SUBSYSTEM

1) Visually inspect the leveling valves and related hardware for security and damage.

2) Inspect the valve arm for binding, warping, or other deformation.

3) Perform a general inspection of the air bag assemblies. Small surface cracks in the outer cover of the air bag are not condemnable. If any cords in the next ply become raised or snapped, notify your Supervisor.

20.26 CHECK VERTICAL AND LATERAL SHOCK ABSORBER

1) Inspect the shock absorbers for signs of leakage. Weeping fluid is normal, but excessive leaking should be reported, see **Figure 20-34** and **Table 4**.

2) Inspect all rubber bushings of the end mounts of the lateral and vertical shock absorbers. Severe erosion or extrusion of the rubber components may indicate excessive overload or elastomer deterioration.

Table 4: Shock Absorber Conditions

Weeping **Normal Condition**	**Leaking** **Abnormal Condition**
Dirt staining on a shock absorber, particularly near the top.	Fluid dripping off the bottom.
The first indications of oil on the outside of the shock, particularly if the weather is cold.	Fluid "pumping" from the shock absorber, as it operates.
Dry or semi-dry collections of contaminants.	A thick buildup of contaminants on the shock absorber, which is visibly saturated with fluid.
More likely to occur in cold weather.	

3) Clean any accumulated dirt on housing with clean cloth.

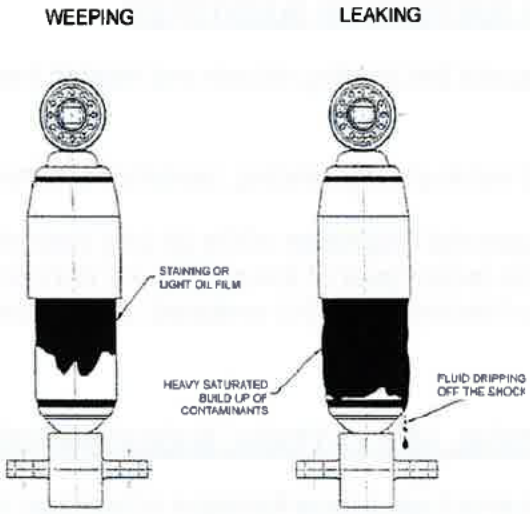

Figure 20-34: Shock Absorbers – Weeping and Leaking

20.27 INSPECT SIDE BEARINGS AND LIFTING BLOCKS

Special Instruction: The use of an inspection mirror may be required for a more thorough inspection.

1) Verify **Side Bearings (A)** are correctly positioned (**Figure 20-35**). Document missing or defective components accordingly.

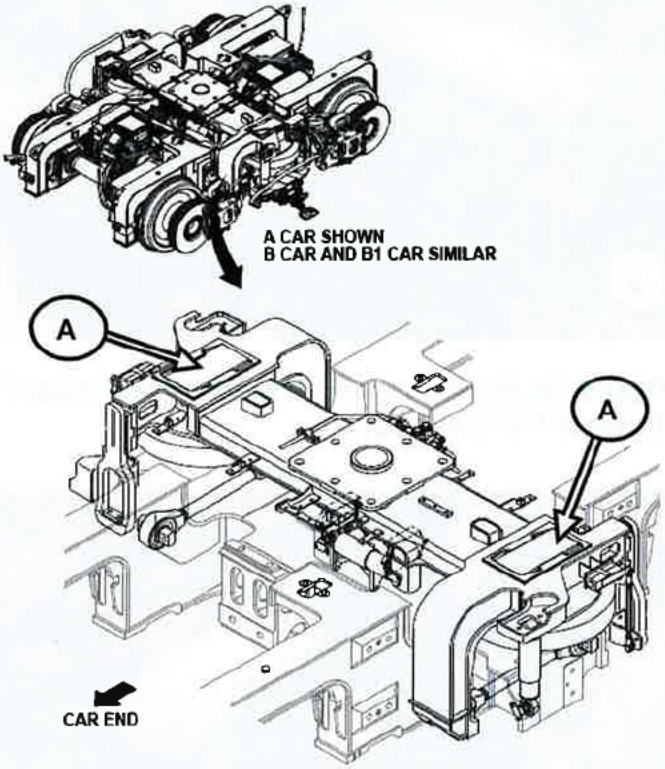

Figure 20-35: Truck Side Bearings
A. Side Bearings

Special Instruction: The wear pads for the 7K side bearings are not secured in place and can become misaligned during a lifting operation using body jacks. Therefore, it must be verified that the side bearing wear pads are correctly positioned on the truck bolster whenever a car is lifted on body jacks.

2) Alignment of 7K Truck Side Bearing Pads:

Whenever a car is lifted on a body jacks, validate and ensure that the **Wear Pads (B)** and **(C)** for the side bearings are properly aligned and seated in the pockets on the truck bolster **(Figure 20-36 and Figure 20-37)**.

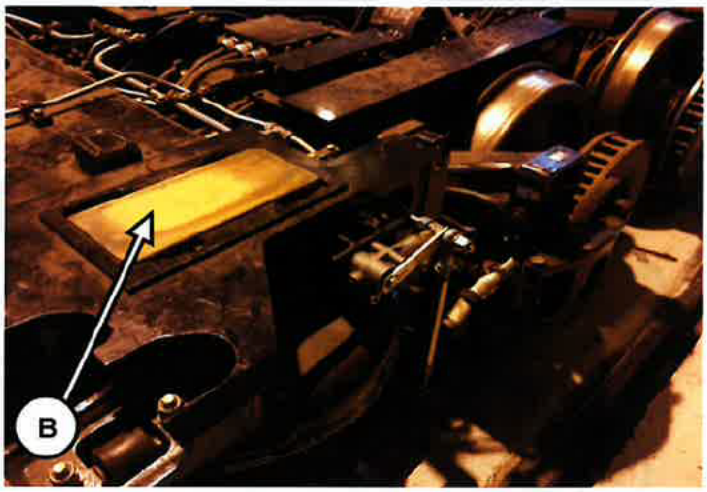

Figure 20-36: Aligned Truck Side Bearing Wear Pad
B: Wear Pad (Aligned)

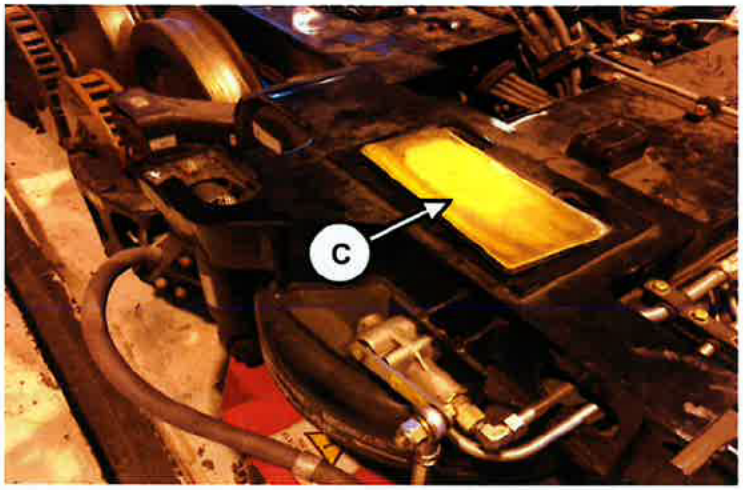

Figure 20-37: Misaligned Truck Side Bearing Wear Pad
C: Wear Pad (Misaligned)

3) Inspect **Lifting Blocks (D)** for cracks, looseness, or any other damage (**Figure 20-38**). Tighten loose hardware and document defects accordingly.

4) Inspect lifting block spacer for loose, damaged, or missing attachment hardware. Replace loose, damaged, or missing hardware.

5) Inspect lifting block **Wear Plate (E)** for cracks and excessive wear **(Figure 20-38)**. Document accordingly.

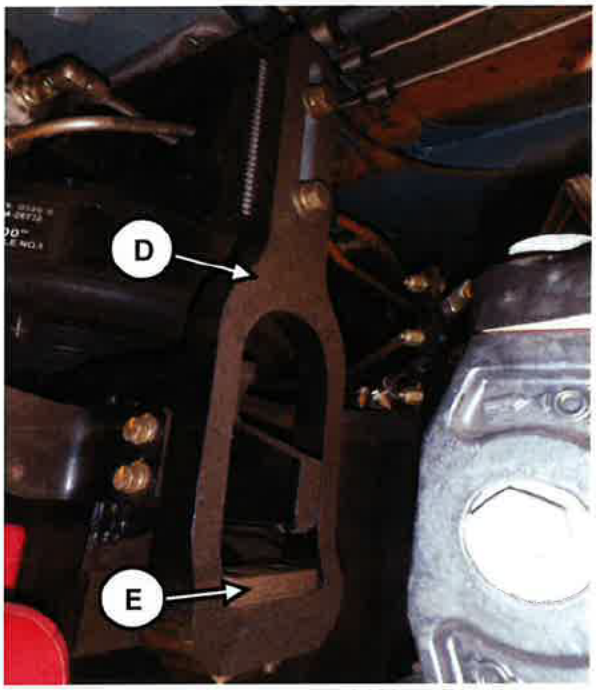

Figure 20-38: Truck Lifting Blocks
D. Lifting Blocks
E. Wear Plate

20.28 INSPECT LATERAL STOP BUFFERS

1) Inspect **Lateral Stop Buffer (A)** for cracks, deformation, or other damage, such as missing part of lateral stop buffer (**Figure 20-39**). Document damage accordingly.

2) Inspect for loose, missing, or damaged hardware. Document accordingly.