

Vehicle Maintenance Bulletin

UNITED STATES POSTAL SERVICE VEHICLE MAINTENANCE

LLV FRAME INSPECTION

I. Introduction

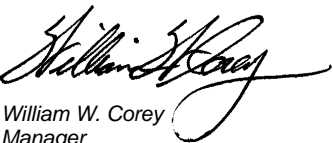
The service life of approximately 142,000 Long Life Vehicles (LLVs) has been extended. The oldest LLVs have been in service and exposed to the elements for more than 20 years. Due to the high concentration of road chemicals, salt air, and environmental conditions, several areas of the country have been identified as high risk for corrosion. Selected Vehicle Maintenance Facility (VMF) personnel in these locations will be responsible for testing, evaluating, and documenting the condition of LLV frames.

The purpose of the LLV frame evaluation is to determine the stage of corrosion and to aid in determining the remaining service life of the vehicle's frame. By using visual inspection and ultrasonic testing, VMFs now have a standardized process for evaluating and rating LLV frames. An annual reevaluation of the frame will be conducted in conjunction with the Preventative Maintenance Inspection (PMI) based on the result of the inspection.

The evaluation requires that a designated inspector visually inspect and ultrasonically measure the LLV frame at critical locations to determine a final frame rating. The designated inspector records all visual ratings and ultrasonic measurements on the LLV Frame Inspection Form, attaches the LLV Frame Inspection Form to PS Form 4543, *Vehicle Maintenance Work Order*, and then stores both forms in the vehicle jacket. Then the manager or designee transfers the data from the completed LLV Frame Inspection Form to a Microsoft Excel Frame Inspection Report spreadsheet and e-mails the spreadsheet to Headquarters Vehicle Operations. The final frame rating and date of inspection is retained permanently in the vehicle jacket.

If the final rating of the LLV frame evaluation requires that the frame be replaced, the manager or designee must first receive district and area authorization before requesting the frame from Wheeler Brothers Inc. The manager or designee must complete PS Form 4587, *Request to Repair, Replace, or Dispose of Postal-Owned Vehicle*, and submit it to the district manager of Operations Programs Support and to the area vehicle maintenance program analyst (VMPA) for approval. Upon receiving district and area approvals, the manager or designee forwards a completed and signed PS Form 4587 to Headquarters Vehicle Operations.

Date: September 30, 2008
Number: V-02-08
Subject: LLV Frame Inspection
To: Managers, Operations Programs Support
Attn: Managers, Vehicle Maintenance
Managers, Vehicle Maintenance Facilities



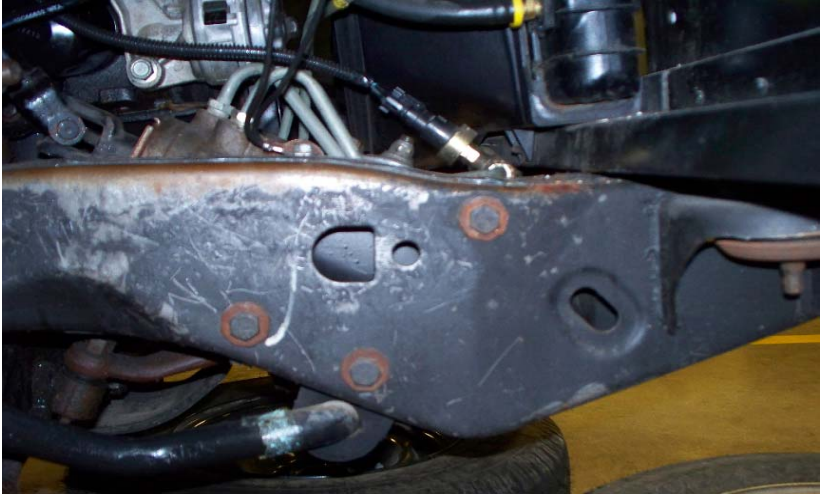

William W. Corey
Manager
Vehicle Operations

Contents:

| | |
|--|---|
| I. Introduction | 1 |
| II. Visual Corrosion Rating System | 2 |
| III. Principals Behind Ultrasonic Measurements | 5 |
| IV. Frame Rail Inspection Equipment, Information, and Procedures | 5 |
| V. Final Rating Scale for LLV Frame Rails | 7 |
| VI. Frame Ordering | 7 |
| VII. Attachment – LLV Frame Inspection Report | 8 |

II. Visual Corrosion Rating System

Refer to the LLV Frame Inspection Report (see the Attachment to this VMB) and visually inspect the five sections of the frame. For each section, determine the stage of corrosion (stage 0 through stage 4) as described and illustrated below. Then document the inspection results on the LLV Frame Inspection Report.

| | |
|--|--|
| <p>Stage 0</p> <ul style="list-style-type: none"> ■ No Visible sign of corrosion or blistering. ■ Discoloration of a coating system (if not caused by corrosion). | <p>Stage 0 Visual Corrosion Rating System</p>  |
| <p>Stage 1</p> <ul style="list-style-type: none"> ■ General surface corrosion (red and/or black). ■ Minor blistering of the coating. | <p>Stage 1 Visual Corrosion Rating System</p>  |

Stage 2

- Heavy corrosion on the surface.
- Some loss of base metal, but not yet significant.
- Moderate red and/or black corrosion.
- Severe blistering of the coating.

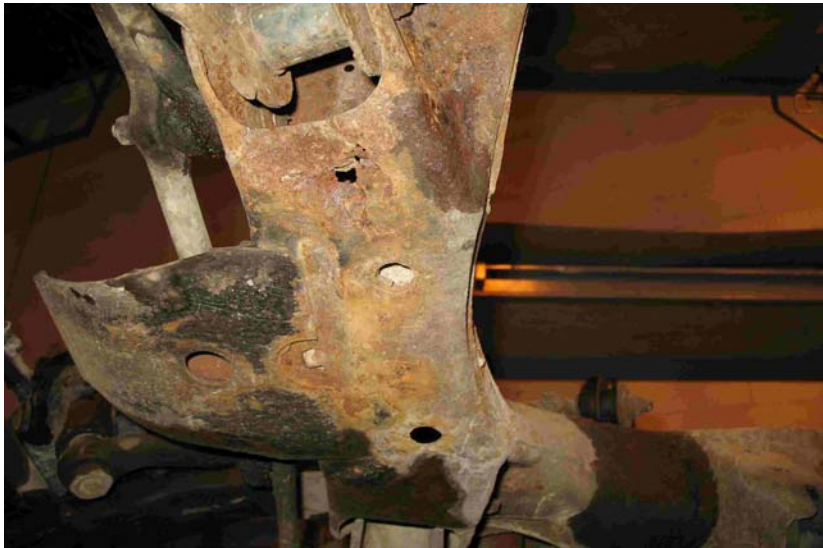
Stage 2 Visual Corrosion Rating System**Stage 3**

- Significant loss of base metal due to scaling.
- Major red and/or black corrosion.
- Compromised structural integrity of the component.

Stage 3 Visual Corrosion Rating System

Stage 4

- Holes in or perforation of the base metal.
- Severe corrosion and significant loss of metal.
- Loss of structural integrity of the component.

Stage 4 Visual Corrosion Rating System

III. Principals Behind Ultrasonic Measurements

The ultrasonic measurement of the frame rails accurately assesses the thickness of the steel in selected locations. The gage consists of a probe that emits a “ping” and records when the “ping” returns after traveling through a metal substrate, thereby determining the thickness of the metal. The Panametric-NDT MG2-DL (shown in the accompanying photo) utilizes the principle of multiple echoes to discriminate between solid metal substrates and corroded metal.

Listed below are some features of the Panametric-NDT MG2-DL gage:

- Uses high-frequency sound waves.
- Measures thickness from one side.
- Is non-destructive.



VMFs can order a Panametric-NDT MG2-DL gage by contacting Olympus NDT Inc. as follows:

OLYMPUS NDT INC.
48 WOERD AVE
WALTHAM MA 02453
TELEPHONE: 781-419-3900
FAX: 781-419-3980
WEB: WWW.OLYMPUSNDT.COM

IV. Frame Rail Inspection Equipment, Information, and Procedures

A. Equipment and Materials

- LLV Frame Inspection Report.
- Flashlight or electric trouble light.
- Panametrics-NDT MG2-DL Gage.
- Scotch Brite Disc.

B. LLV Frame Rail Thickness

- Nominal metal thickness of a new clean frame is 0.125”.
- An acceptable frame thickness reading is 0.080”–0.130”.
- A reading below 0.080” indicates severe loss of metal.
- A reading above 0.130” indicates massive corrosion within the frame rail or an inaccurate measurement.

C. Procedures

1. Inspector Procedures

1. Before starting the inspection, have available for completion an LLV Frame Inspection Report (see the Attachment to this VMB) — the VMF must prepare a report for each vehicle inspected.
2. Raise the vehicle and thoroughly clean the chassis. Remove all mud build-up in the control arms, chassis cross-members, body mounts, springs, and spring seats, and clean inside the box section of the frame.
3. Place the vehicle on a hoist with sufficient clearance to permit an inspector to stand under the vehicle. With a flashlight or electric trouble light, visually inspect the frame rails and record the rating as identified in the LLV Frame Inspection Report.

Note: If any area of the frame is rated at a Stage 4, the frame must be replaced. No further inspection is required — proceed to Step 7.

4. Calibrate the Panametrics-NDT MG2-DL ultrasonic thickness gage using the provided calibration sample before recording frame rail values.

Note: The Panametrics-NDT MG2-DL has a Thru-Coat technology, so it is not necessary to remove the black undercoating if it is good. Remove only the surface rust for measurement. A flat, clean surface is desired when measuring with this gage.

5. Clean the locations designated on the LLV Frame Inspection Report with a nonabrasive Scotch Brite disc. Measure the frame thickness with the Panametrics-NDT MG2-DL gage, using the locations and dimensions shown on the LLV Frame Inspection Report.
 - a. At each location, identify the thinnest point within a 1" diameter.
 - b. Record the lowest reading on the frame inspection report. If any of measurement is less than .080" with no holes, schedule a frame replacement within the next 6 months, but not to extend past the next scheduled maintenance date. No further inspection is required — proceed to Step 7.
 - c. If all the measurements are greater than .080", continue with the inspection process.
6. Remove the pair of body mount cushions directly behind the front wheels and check for deterioration. If deterioration exists, continue the inspection of the remainder of the body mounts. Repair the body mount as necessary with approved repair kits. If deterioration is not present, reassemble the body mounts. This completes the inspection.

2. Manager/Designee Procedures

1. Review the LLV Frame Inspection Report and sign the LLV Frame Inspection Report in the designated box. Also, if a frame is needed, the manager must initiate the PS Form 4587 process.
2. Transfer the frame measurement to the Microsoft Excel Frame Inspection Report spreadsheet for future tracking.
3. File the LLV Frame Inspection Report with PS Form 4543 in the vehicle jacket and document the final frame rating (see Section V) on the permanent section of the vehicle jacket.

Note: If a final frame rating is "E," the VMF must replace the frame before returning the vehicle to service.

V. Final Rating Scale for LLV Frame Rails

Listed below are the final ratings for LLV frame rails:

- **Level A:** No problems found: minimal surface corrosion/rust.
- **Level B:** Heavy surface corrosion/rust: all body mounts are in good structural condition.
- **Level C:** Heavy surface corrosion/rust: ultrasonic measurements are within specification. Rear spring hanger and/or body mounts need replacement. Perform a follow-up evaluation in 1 year. Repair body mounts and spring hangers with the available kit as necessary.
- **Level D:** Severe corrosion/rust: ultrasonic measurements are below specification, but no visual holes/perforations are present. Schedule a frame replacement by the next PMI.
- **Level E:** Severe corrosion, perforation of the base metal, no metal remains at the point of severest corrosive attack, and the component has lost structural integrity. Replace the frame before returning the vehicle to service.

VI. Frame Ordering

Before ordering a replacement frame from Wheeler Brothers Inc., the manager or designee must first follow existing guidelines — i.e., complete PS Form 4587 and submit it to the district manager of Operations Programs Support and to the area VMPA for approval. Upon receiving district and area approvals, the manager or designee forwards a completed and signed PS Form 4587 to Headquarters Vehicle Operations.

VII. Attachment — LLV Frame Inspection Report


LLV Frame Inspection Report

Date of Inspection: _____ Inspector: _____

LLV Number: _____ Mileage: _____

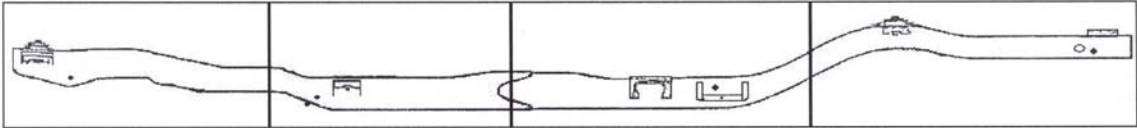
Visual Rating Inside and Out

| | |
|---|---------------------------------|
| 0 | Good |
| 1 | Surface rust |
| 2 | Heavy surface rust with pitting |
| 3 | Heavy surface rust with scaling |
| 4 | Holes and perforations |



Visual Section:

| | | | |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
|---|---|---|---|

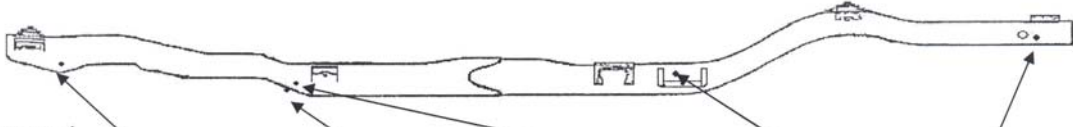


Section: 5 Front Crossmember

Visual Section:

| | | | | | |
|-------|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Right | | | | | |
| Left | | | | | |

Ultrasonic Measurements



Measurement Location:

| | | | | | |
|-------|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Right | | | | | |
| Left | | | | | |

Location: 6 Front Crossmember

| | | | |
|--|-------|------|--|
| | Right | Left | |
| | | | |

Pass / Fail Criteria

Acceptable frame rail material thickness shall be between 0.080" and 0.130", inclusive. If any of the measurements at any location is less than 0.080", the frame rail shall be deemed to have failed the inspection.

Note: Follow the Frame Inspection process for when to replace the frame.
 Note: Transfer all measurement information to the Excel spread sheet and file the inspection form in the vehicle jacket.

Location: (1) Measure 1.5" from the bottom of the frame.
 Location: (2) Measure the bottom of the frame away from the edge.
 Location: (3) Measure 1.5" from the bottom of the frame.
 Location: (4) Measure above the frame hanger.
 Location: (5) Measure 1.5" from the bottom of the frame, near the spring bushing.
 Location: (6) Measure the bottom of the front crossmember.

| | | | | | |
|---------------------|---|---|---|---|---|
| Final Rating | | | | | |
| Rating | A | B | C | D | E |
| Notes: | | | | | |
| Manager | | | | | |
| Signature : | | | | | |