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OFFICE OF DEFECTS
INVESTIGATION/RMD

07V-024
(19 pages)

Safety Defect and Noncompliance Report Guide for Vehicles

PART 573 Defect and Noncompliance Report

On January 26, 2007 **,** DaimlerChrysler Commercial Buses North America (DCCBNA) **decided that a safety related defect exits in the motor vehicles listed below, and is furnishing notification to the National Highway Traffic Safety Administration in accordance with 49 CFR Part 573 Defect and Noncompliance Reports.**

Date this report was prepared: **January 26, 2007**
Furnish the manufacturer's identification code for this recall (if applicable): **NHTSA recall #** 06E-093

1. Identify the full corporate name of the fabricating manufacturer of the vehicle being recalled. If the recalled vehicle is imported, provide the name and mailing address of the designated agent as prescribed by 49 U.S.C. §30164.

ORION BUS INDUSTRIES

Identify the corporate official, by name and title, whom the agency should contact with respect to this recall.

Joe Labonte
Compliance and Safety Officer
Telephone Number: (905) 403-7807 Fax No.: (905)403-8808

Name and Title of Person who prepared this report.

Joe Labonte
Compliance and Safety Officer
DaimlerChrysler Commercial Buses North America

Signed: _____

I. Identify the Vehicle Models Involved in the Recall

2. Identify the Vehicles Involved in the Recall, ***for each make and model or applicable vehicle line (provide illustrations or photographs as necessary to describe the vehicle), provide*****:**

Make(s): Orion Model Years Involved: 1987 – 1998 Model(s): I & V

Production Dates: Beginning: November 1987 Ending: April 1998

VIN Range: TBD

Vehicle Type: Bus Bodystyle: I, V

Descriptive information which characterizes/distinguishes the recalled vehicles from those model vehicles not included in the recall:

Vehicle model Orion I, and V

Identify the approximate percentage of the production of all the recalled models manufactured by your company between the inclusive dates of manufacture provided above, that the recalled model population represents. For example, if the recall involved Widgets equipped with certain items of equipment from January 1, 1996 through April 1, 1997, then what was the percentage of the recalled Widgets of all Widgets manufactured during that time period.

73% of the buses having the identified Wheelchair Lift installed.

II. Identify the Recall Population

3. Furnish the total number of vehicles recalled potentially containing the defect or noncompliance.

Model	Year	Number of Vehicles Potentially Involved
I	1987-1993	1110
V	1990-1998	2527

Total Number Potentially Affected by the Recall: 3637

4. **Furnish the approximate percentage of the total number of vehicles estimated to actually contain the defect or noncompliance**:

76%. See equipment manufacturer's Part 573 report related to NHTSA recall #06E-093

Identify and describe how the recall population was determined--in particular how the recalled models were selected and the basis for the beginning and final dates of manufacture of the recalled vehicles:

All buses manufactured having a supplier wheelchair lift as defined in the supplier's Part 573 report related to NHTSA recall #06E-093.

III. Describe the Defect or Noncompliance

5. Describe the defect or noncompliance. The description should address the nature and physical location of the defect or noncompliance. Illustrations should be provided as appropriate.

See equipment manufacturer's Part 573 report related to NHTSA recall #06E-093.

Describe the cause(s) of the defect or noncompliance condition.

See equipment manufacturer's Part 573 report related to NHTSA recall #06E-093.

Describe the consequence(s) of the defect or noncompliance condition.

See equipment manufacturer's Part 573 report related to NHTSA recall #06E-093.

Identify any warning which can (a) precede or (b) occur.

See equipment manufacturer's Part 573 report related to NHTSA recall #06E-093.

If the defect or noncompliance is in a component or assembly purchased from a supplier, identify the supplier by corporate name and address.

Lift-U division of Hogan MFG., Inc.
P.O. Box 398
Escalon, CA 95320

Identify the name and title of the chief executive officer or knowledgeable representative of the supplier:

Paul Reichmuth
General Manager

IV. Provide the Chronology in Determining the Defect/Noncompliance

If the recall is for a defect, complete item 6, otherwise item 7.

6. With respect to a defect, furnish a chronological summary (including dates) of all the principle events that were the basis for the determination of the defect. The summary should include, but not be limited to, the number of reports, accidents, injuries, fatalities, and warranty claims.

See equipment manufacturer's Part 573 report related to NHTSA recall #06E-093.

7. With respect to a noncompliance, identify and provide the test results or other data (in chronological order and including dates) on which the noncompliance was determined.

V. Identify the Remedy

8. Furnish a description of the manufacturer's remedy for the defect or noncompliance. Clearly describe the differences between the recall condition and the remedy.

See equipment manufacturer's Part 573 report related to NHTSA recall #06E-093.

Clearly describe the distinguishing characteristics of the remedy component/assembly versus the recalled component/assembly.

See equipment manufacturer's Part 573 report related to NHTSA recall #06E-093.

Identify and describe how and when the recall condition was corrected in production. If the production remedy was identical to the recall remedy in the field, so state. If the product was discontinued, so state.

See equipment manufacturer's Part 573 report related to NHTSA recall #06E-093.

VI. Identify the Recall Schedule

Furnish a schedule or agenda (with specific dates) for notification to other manufacturers, dealers/retailers, and purchasers. Please, identify any foreseeable problems with implementing the recall.

See equipment manufacturer's Part 573 report related to NHTSA recall #06E-093. Lift-U division of Hogan MFG., Inc. is administrating all matters regarding this recall on behalf of DCCBNA.

VII. Furnish Recall Communications

9. Furnish a final copy of all notices, bulletins, and other communications that relate directly to the defect or noncompliance and which are sent to more than one manufacturer, distributor, or purchaser. This includes all communications (including both original and follow-up) concerning this recall from the time your company determines the defect or noncompliance condition on, not just the initial notification. ***A DRAFT copy of the notification documents should be submitted to this office by Fax (202-366-7882) for review prior to mailing.***

See equipment manufacturer's Part 573 report related to NHTSA recall #06E-093. Lift-U division of Hogan MFG., Inc. is administrating all matters regarding this recall on behalf of DCCBNA.

October 18, 2006

Ms. Kathleen Demeter, Director
Office of Defects Investigation
National Traffic Safety Administration
400 Seventh Street S.W., Room 5326
Washington, DC 20590

Dear Ms. Demeter:

Please find enclosed information on a potential defect with our proposed remedy. The equipment is 10 to 20 years old. We propose to furnish parts and have the owners install.

Very truly yours,

Paul Reichmuth
General Manager

PR/pg

LIFT-U
DIVISION OF
HOGAN MFG., INC.
P. O. BOX 398, ESCALON, CALIFORNIA 95320-0398
TELEPHONE: 209 / 838-2400
FAX NOS.: 209 / 838-7329
209 / 838-8648

Safety Defect and Noncompliance Report Guide for Equipment

PART 573 Defect and Noncompliance Report[4]

On NOV 11, 2006, ~~2001,~~ XXXXX LIFT-U **[MFR] decided that (a defect which relates to motor vehicle safety)(a noncompliance with Federal Motor Vehicle Safety Standard No. _____) exits in items of motor vehicle equipment listed below, and is furnishing notification to the National Highway Traffic Safety Administration in accordance with 49 CFR Part 573 Defect and Noncompliance Reports.**

Date this report was prepared: NOV. 11, 2006

Furnish the manufacturer's identification code for this recall (if applicable): _____

1. Identify the full corporate name of the fabricating manufacturer/brand name/trademark owner of the recalled item of equipment. If the recalled item of equipment is imported, provide the name and mailing address of the designated agent as prescribed by 49 U.S.C. §30164.

LIFT-U DIV OF HOGAN MFG., INC.

P.O. BOX 398

ESCALON, CA 95320

Identify the corporate official, by name and title, whom the agency should contact with respect to this recall.

PAUL REICHMUTH

GENERAL MANAGER

Telephone Number: 209-838-2400 **Fax No.:** 209-838-6283

Name and Title of Person who prepared this report.

PAUL REICHMUTH

GENERAL MANAGER

Signed: Paul Reichmuth

[4]Each manufacturer must furnish a report, to the Associate Administrator for Safety Assurance, for each defect or noncompliance condition which relates to motor vehicle safety.

This guide was developed from 49 CFR Part 573, "Defect and Noncompliance Reports" and also outlines information currently requested. Any questions, please consult the complete Part 573 or contact Mr. Jon White at (202) 366-5226 or by FAX at (202) 366-7882.

I. Identify the Recalled Items of Equipment

2. Identify the Items of Equipment Involved in this Recall, *for each make and model or applicable item of equipment product line (provide illustrations or photographs as necessary to describe the item of equipment), provide*:

Generic name of the item: SOLID BAR LINKAGE ON WHEELCHAIR LIFT

Make: _____ Model: _____

Part Number: _____ Size: _____

Function: BARRIER LINKAGE

Other information which characterizes/distinguishes the items of equipment to be recalled:
PARTS 184-0042, 184-0041, 123-0288 AND 123-0287 WHICH MAKE UP THE SOLID BAR LINKAGE AS SHOWN ON ASSEMBLY DRAWING 184-0060

Make: _____ Model: _____

Part Number: _____ Size: _____

Function: _____

Other information which characterizes/distinguishes the items of equipment to be recalled:

_____

_____

Make: _____ Model: _____

Part Number: _____ Size: _____

Function: _____

Model Years Involved: _____

Other information which characterizes/distinguishes the items of equipment to be recalled:

_____

_____

Make: _____ Model: _____

Part Number: _____ Size: _____

Function: _____

Other information which characterizes/distinguishes the items of equipment to be recalled:

_____

_____

Identify the approximate percentage of the production of all the recalled models manufactured by your company between the inclusive dates of manufacture provided above, that the recalled model population represents. For example, if the recall involved Widgets equipped with certain items of equipment from January 1, 1996, through April 1, 1997, then what was the percentage of the recalled Widgets of all Widgets manufactured during that time period.

100 %

II. Identifying the Recall Population

3. Furnish the total number of items of equipment recalled potentially containing the defect or noncompliance.

Model	Year	Number of Items Potentially Involved
SOLID BAR LINKAGE	1986 THROUGH 1996	18,093

Total Number Potentially Affected by the Recall: 18,093

4. Furnish the approximate percentage of the total number of items of equipment estimated to actually contain the defect or noncompliance: 100%

Identify and describe how the recall population was determined--in particular how the recalled models were selected and the basis for the beginning and final dates of manufacture of the recalled items of equipment:

FIRST MANUFACTURED IN 1986 - NEWER MODEL LIFTS SUPPLIED WITH FLATBAR LINKAGE BEGINING IN 1996.

III. Describe the Defect or Noncompliance

5. Describe the defect or noncompliance. The description should address the nature and physical location of the defect or noncompliance. Illustrations should be provided as appropriate.

SEE ATTACHED REPORT DATED 9-18-06

Describe the cause(s) of the defect or noncompliance condition.

Describe the consequence(s) of the defect or noncompliance condition.

Identify any warning which can (a) precede or (b) occur.

If the defect or noncompliance is in a component or assembly purchased from a supplier, identify the supplier by corporate name and address.

Identify the name and title of the chief executive officer or knowledgeable representative of the supplier:

IV. Provide the Chronology in Determining the Defect/Noncompliance

If the recall is for a defect, complete item 6, otherwise item 7.

6. With respect to a defect, furnish a chronological summary (including dates) of all the principle events that were the basis for the determination of the defect. The summary should include, but not be limited to, the number of reports, accidents, injuries, fatalities, and warranty claims.

7. With respect to a noncompliance, identify and provide the test results or other data (in chronological order and including dates) on which the noncompliance was determined.

SEE ATTACHED REPORT DATED 9-18-06.

V. Identify the Remedy

8. Furnish a description of the manufacturer's remedy for the defect or noncompliance. Clearly describe the differences between the recall condition and the remedy.

SEE ITEM 6.4 ON ATTACHED REPORT DATED 9-18-06. THE WORK TO BE DONE IS OUTLINED ON DRAWING 123-1033 ALONG WITH PARTS DETAILED ON DRAWING 123-1029, 123-1032 AND 524-0197.

Clearly describe the distinguishing characteristics of the remedy component/assembly versus the recalled component/assembly.

Identify and describe how and when the recall condition was corrected in production. If the production remedy was identical to the recall remedy in the field, so state. If the product was discontinued, so state.

SOLID BAR LINKAGE DISCONTINED ON NEW LIFTS IN 1996.

VI. Identify the Recall Schedule

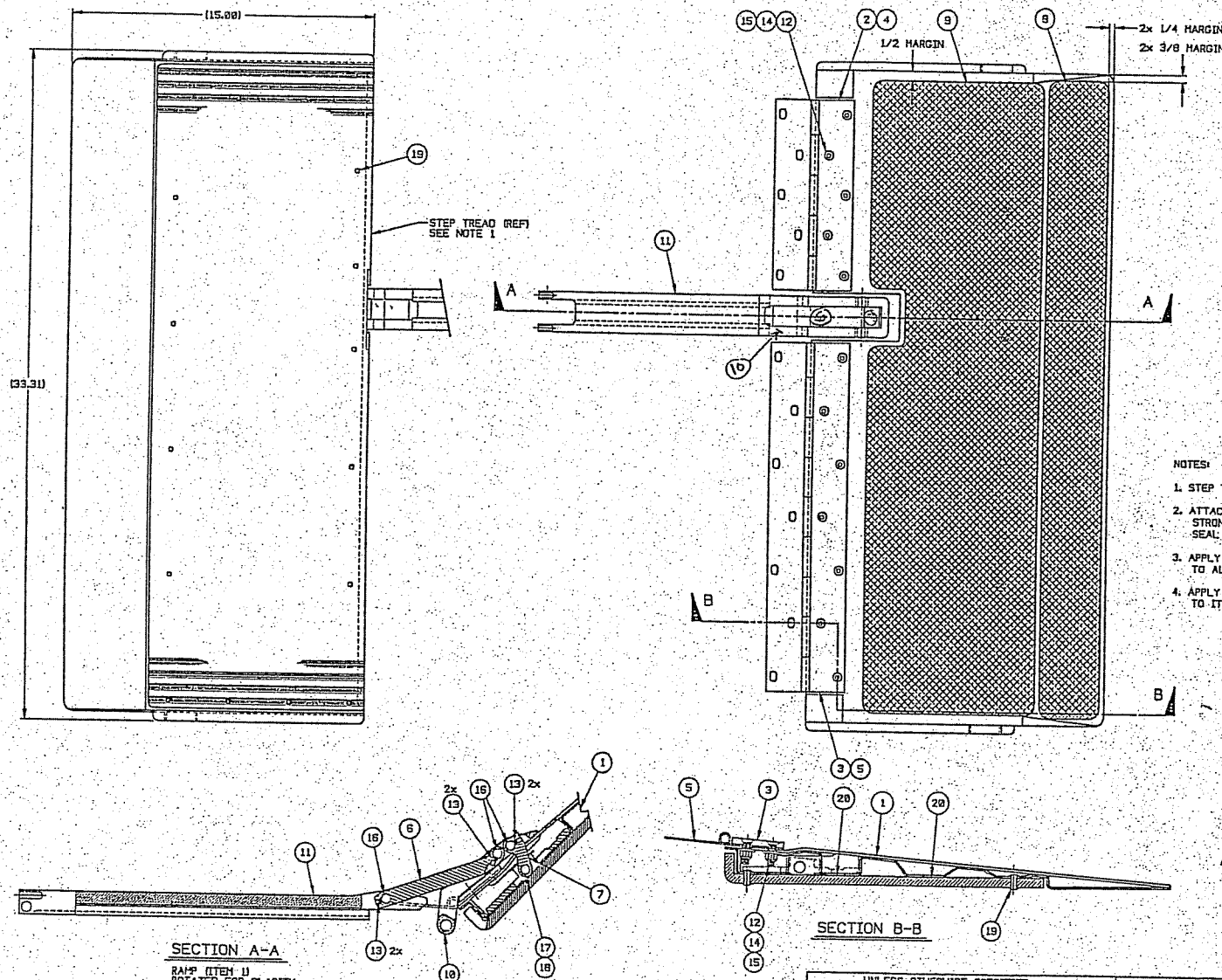
Furnish a schedule or agenda (with specific dates) for notification to other manufacturers, dealers/retailers, and purchasers. Please, identify any foreseeable problems with implementing the recall.

PLAN TO START RECALL WITHIN 30 DAYS AFTER REVIEW BY NHTSA.

VII. Furnish Recall Communications

9. Furnish a final copy of all notices, bulletins, and other communications that relate directly to the defect or noncompliance and which are sent to more than one manufacturer, distributor, or purchaser. This includes all communications (including both original and follow-up) concerning this recall from the time your company determines the defect or noncompliance condition on, not just the initial notification. *A DRAFT copy of the notification documents should be submitted to this office by Fax (202-366-7882) for review prior to mailing.*

Note: These documents are to be submitted separately from those provided in accordance with Part 573.8 requirements.



REVISIONS

LTR	ECO	APPD	DATE	DESCRIPTION	DFTR	DATE	CHKR	DATE
A	3332	BSA	03-10-92	RELEASED	AJV	02-19-92	SI	02-28-92
B	3352	SI	04-10-92	ITEM 14 WAS P423-2403	AJV	04-03-92	SI	04-10-92
C	3358	BSA	04-29-92	REDESIGNED WELDMENT, ITEM 1 WAS 0129-0029	RTR	04-28-92	SI	04-29-92
D	3393	GSV	10-30-92	CHANGE TO HINGES & CLAMP BARS WITHOUT NOTCHES	RTR	10-22-92	GSV	10-28-92
E	3395	BSA	11-16-92	ITEM 13 WAS P417-1153 & QTY WAS 3, ADDED ITEM 20 & REV NOTE 2.	ROF	11-12-92	BSA	11-16-92
F	3491	BSA	12-09-93	ITEM 12 WAS P413-2406	BSA	12-09-93	BSA	12-09-93
G	4393	AL	10-27-11	ITEM 8 WAS 123-0723	DAA	10-25-99	AL	10-27-11

NOTES:

1. STEP TREAD PART NUMBER AND COLOR IS INDICATED ON LIFT PACKAGE.
2. ATTACH STEP TREAD BY USING TWO-SIDED TAPE (ITEM 20) AT CENTER RIBS OF STRONGBACK PLATE THEN USE ITEM 19 AT PERIMETER TO HOLD IN PLACE. SEAL EDGES WITH BLACK SILICONE CAULKING (LIFT-U P/N 517-0001).
3. APPLY LOCTITE NO. 242, BLUE (LIFT-U P/N 516-0010) TO ALL SETSCREWS PER MANUFACTURER'S INSTRUCTIONS.
4. APPLY COMMERCIAL ANTI-SEIZE LUBRICANT (LIFT-U P/N 515-0007) TO ITEMS 16 AND 17 PRIOR TO ASSEMBLY.

ITEM	PART NO.	QTY	DESCRIPTION
20	516-0013	A/R	TWO-SIDED TAPE; 2" WIDE, 66'L
19	440-0002	13	BLIND RIVET, DOME HD, 3/16"DIA, .251-.375" GRIP, SST
18	434-2003	2	COTTER PIN; SST, 3/32" DIA, 3/4"L
17	434-1505	1	RAMP/BARRIER PIVOT PIN
16	434-1411	3	PIVOT PIN, 2"
15	426-2104	12	SAE WASHER; 1/4, PLD
14	423-2401	12	NYL INSR LOCKNUT, LT, 1/4-28, PLD
13	417-0001	6	ALLOY SOCKET SET SCREW; OVAL PT; #8-32, 1/4"L, PLD
12	413-2408	12	HEX SOC FLTHD CAPSCREW; 1/4-28, 1"L, PLD
11	184-0042	1	SLIDING LINK ASSEMBLY
10	184-0041	1	PIVOT LINK ASSEMBLY
9	123-0724	1	RAMP SAFETY WALK
8	123-0725	1	RAMP SAFETY WALK, EDGE
7	123-0288	1	FLOATING LINK
6	123-0287	1	DRIVE LINK
5	123-0746	1	RAMP HINGE, REAR
4	123-0745	1	RAMP HINGE, FORWARD
3	123-0744	1	HINGE CLAMP BAR, REAR
2	123-0743	1	HINGE CLAMP BAR, FORWARD
1	128-8031	1	RAMP/BARRIER WELDMENT

UNLESS OTHERWISE SPECIFIED:
- INTERPRET DRAWING PER ANSI Y14, CURRENT REV.
- DIMENSIONS ARE IN INCHES.
- FINISH ALL PROCESSED SURFACES TO 125 MAX.
- DIMENSIONS APPLY TO FINISHED PART, BEFORE PAINTING.
- DEBURR ALL SURFACES AND BREAK ALL EDGES.
- TOLERANCES (+ OR -):
  DECIMAL: XX — .03 FRACTION: 1/16
  XXX — .010 ANGLE: 1/2 DEGREE

COATING/FINISH
DESC: NONE
SPEC: NONE

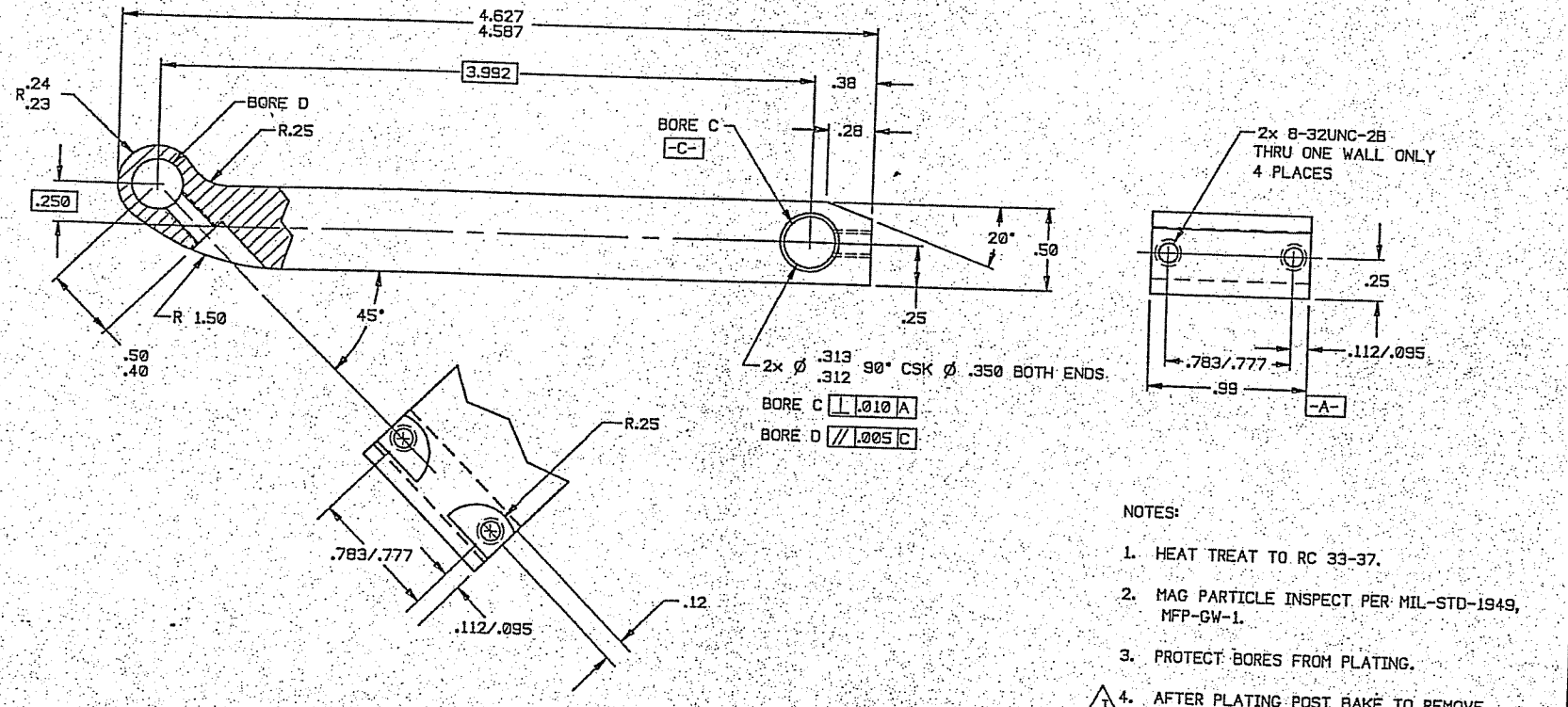
FIRST USE
MODEL NO LU028
SCALE 3/8" = 1" WGT —

LIFT-U
A DIVISION OF HOGAN MFG., INC.
ESCALON, CALIFORNIA

TITLE: RAMP/BARRIER ASSEMBLY

DOC NO D 184-0060 REV G

REVISIONS								
LTR	ECO	APPD	DATE	DESCRIPTION	DFTR	DATE	CHKR	DATE
G	3395	BSA	11-16-92	REDESIGNED FOR 4 SET SCREWS	RCF	11-12-92	BSA	11-16-92
H	3395	BSA	11-18-92	.112/.095 WAS .105/.100	BSA	11-18-92	BSA	11-18-92
I	3692	BSA	10-21-96	ADD NOTE 3	TCB	10-07-96	BSA	10-21-96
J	—	BA	3-22-01	REVISED PLATING SPEC.	WAC	03-22-01	BA	3-22-01



NOTES:

1. HEAT TREAT TO RC 33-37.
2. MAG PARTICLE INSPECT PER MIL-STD-1949, MFP-GW-1.
3. PROTECT BORES FROM PLATING.
4. (J) AFTER PLATING POST BAKE TO REMOVE HYDROGEN EMBRITTLEMENT.

UNLESS OTHERWISE SPECIFIED:
-INTERPRET DRAWING PER ANSI Y14, CURRENT REV.
-DIMENSIONS ARE IN INCHES.
-FINISH ALL PROCESSED SURFACES TO 125 MAX.
-DIMENSIONS APPLY TO FINISHED PART, BEFORE PAINTING.
-DEBURR ALL SURFACES AND BREAK ALL EDGES.
-TOLERANCES (+ OR -):
DECIMAL: .XX — .03 FRACTION: 1/16
.XXX — .010 ANGLE: 1/2 DEGREE

(J) COATING/FINISH
DESC: ELECTROLESS NICKEL PLATING
SPEC: AMS 2404C (.0005 THK)
FIRST USE
MODEL NO 9035
SCALE NONE WGT —

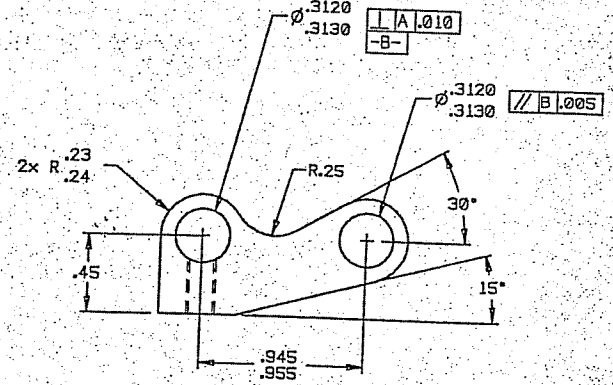
ALLOY STEEL, CF; 3/4 x .99 x 4.63	4140, AIRCRAFT QUALITY
DESCRIPTION	SPEC

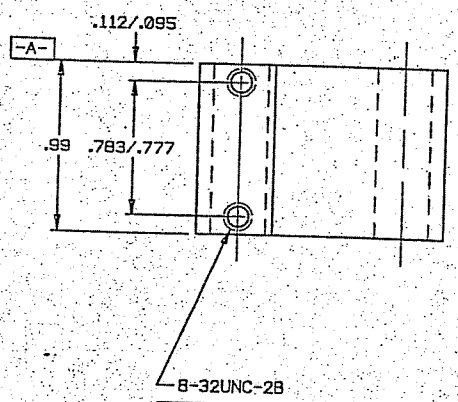
LIFT - U
A DIVISION OF HOGAN MFG., INC.
ESCALON, CALIFORNIA

TITLE DRIVE LINK

DOC NO 123-0287 REV J

REVISIONS								
LTR	ECO	APPD	DATE	DESCRIPTION	DFTR	DATE	CHKR	DATE
E	3395	BSA	11-16-92	REDESIGNED FOR 2 SET SCREWS	RCF	11-12-92	BSA	11-16-92
F	3395	BSA	11-18-92	.112/.095 WAS .105/.100	BSA	11-18-92	BSA	11-18-92
G	3892	BSA	10-21-96	ADD NOTE 3	TCB	10-17-96	BSA	10-21-96
H	—	BSA	3-22-01	REVISED PLATING SPEC.	WAC	03-22-01	BSA	5-22-01





NOTES:

1. HEAT TREAT TO RC 33-37.
2. MAG PARTICLE INSPECT PER MIL-STD-1949, MFP-GW-1.
3. PROTECT BORES FROM PLATING.
4. (H) AFTER PLATING POST BAKE TO REMOVE HYDROGEN EMBRITTLEMENT.

UNLESS OTHERWISE SPECIFIED:

- -INTERPRET DRAWING PER ANSI Y14, CURRENT REV.
- -DIMENSIONS ARE IN INCHES.
- -FINISH ALL PROCESSED SURFACES TO 125/ MAX.
- -DIMENSIONS APPLY TO FINISHED PART, BEFORE PAINTING.
- -DEBURR ALL SURFACES AND BREAK ALL EDGES.
- -TOLERANCES (+ OR -):

DECIMAL: .XX —— .03 FRACTION: 1/16
.XXX —— .010 ANGLE: 1/2 DEGREE

(H)

COATING/FINISH

DESC: ELECTROLESS NICKEL PLATING
SPEC: AMS 2404C (.0005 THK)

FIRST USE

MODEL NO 9035

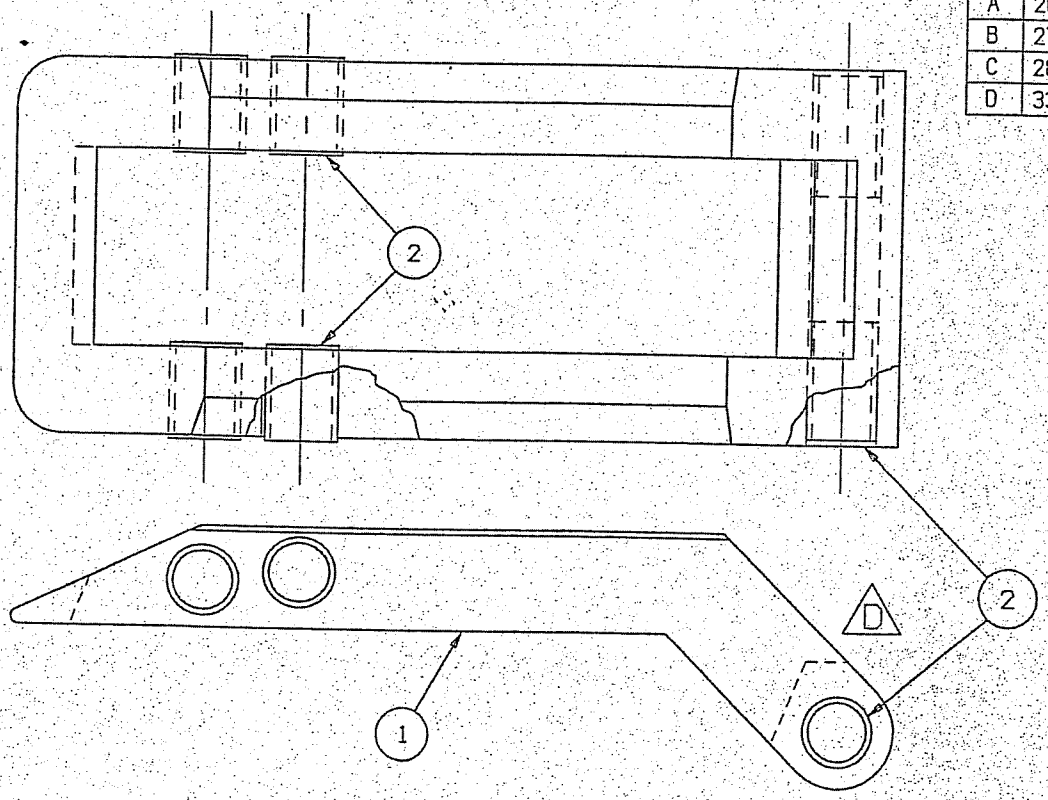
SCALE NONE WGT —

DESCRIPTION	SPEC
ALLOY STEEL, CF; 3/4 x .99 x 1.44	4140, AIRCRAFT QUALITY

LIFT - U
A DIVISION OF HOGAN MFG., INC.
ESCALON, CALIFORNIA

TITLE FLOATING LINK

DOC NO 123-0288 REV H



REVISIONS

LTR	ECO	APPD	DATE	DESCRIPTION	DFTR	DATE	CHKR	DATE
A	2652	CL	12-07-87	RELEASED	BSA	12-07-87	CL	12-09-87
B	2728	CL	05-23-88	ADDED RADIUS IN PLACE OF SQUARE CORNER	BSA	05-23-88	CL	05-23-88
C	2850	BSA	04-26-89	REDRAWN & REVISED	B.B.	04-04-89	BSA	04-21-89
D	3322	JL	1.23.92	PIVOT LINK DESIGN CHANGE	AJW	12-20-91	JL	1.23.92

ITEM	PART NO.	QTY	DESCRIPTION
2	P 153-0078	6	SLEEVE BEARING
1	C 123-0286	1	PIVOT LINK

UNLESS OTHERWISE SPECIFIED:

-INTERPRET DRAWING PER ANSI Y14, CURRENT REV.
-DIMENSIONS ARE IN INCHES.
-FINISH ALL PROCESSED SURFACES TO 125 MAX.
-DIMENSIONS APPLY TO FINISHED PART, BEFORE PAINTING.
-DEBURR ALL SURFACES AND BREAK ALL EDGES.
-TOLERANCES (+ OR -):
DECIMAL: .XX ---- .03 FRACTION: 1/16
.XXX --- .010 ANGLE: 1/2 DEGREE

COATING/FINISH

DESC: NONE
SPEC: NONE

FIRST USE

MODEL NO 9035

SCALE 1 1/2" = 1" | WGT ____

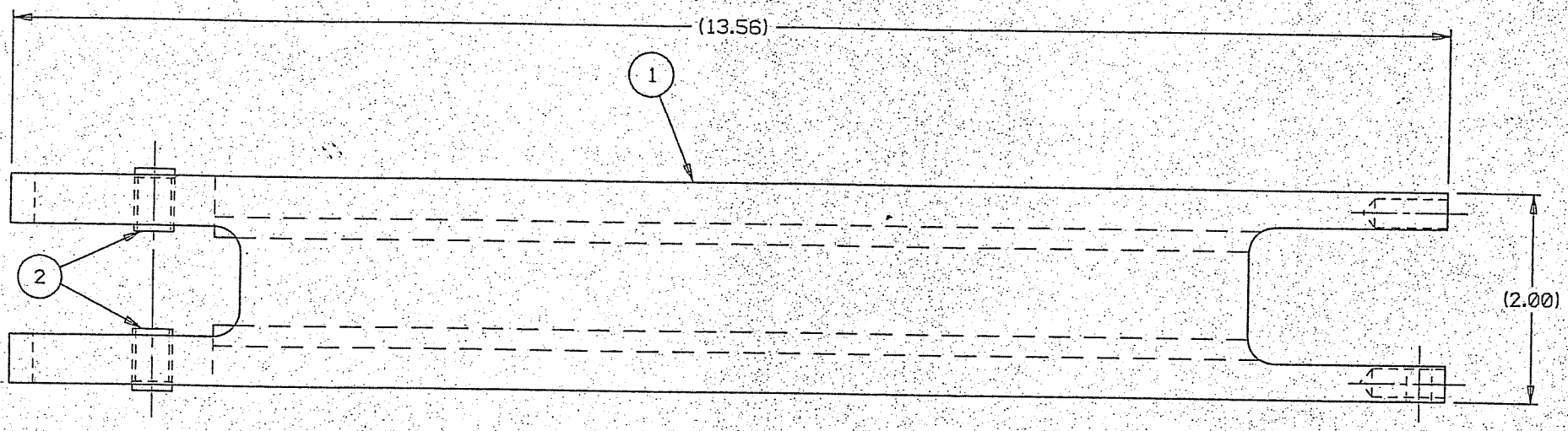
LIFT - U
A DIVISION OF
HOGAN MFG., INC.
ESCALON, CALIFORNIA

TITLE PIVOT LINK ASSEMBLY

DOC NO B 184-0041 REV D

REVISIONS

LTR	ECO	APPD	DATE	DESCRIPTION	DFTR	DATE	CHKR	DATE
A	2652	CL	12-07-87	RELEASED	BSA	12-07-87	CL	12-09-87
B	2850	BSA	04-26-89	REDRAWN & REVISED	B.B.	04-04-89	BSA	04-21-89



ITEM	PART NO.	QTY	DESCRIPTION
2	P 153-0078	2	SLEEVE BEARING
1	C 123-0289	1	SLIDE LINK

UNLESS OTHERWISE SPECIFIED:

-INTERPRET DRAWING PER ANSI Y14, CURRENT REV.
-DIMENSIONS ARE IN INCHES.
-FINISH ALL PROCESSED SURFACES TO $\frac{125}{\nabla}$ MAX.
-DIMENSIONS APPLY TO FINISHED PART, BEFORE PAINTING.
-DEBURR ALL SURFACES AND BREAK ALL EDGES.
-TOLERANCES (+ OR -):
DECIMAL: .XX ---- .03 FRACTION: 1/16
.XXX --- .010 ANGLE: 1/2 DEGREE

COATING/FINISH

DESC: NONE
SPEC: NONE

FIRST USE

MODEL NO 9035

SCALE 1" = 1" WGT ____

LIFT - U
A DIVISION OF
HOGAN MFG., INC.
ESCALON, CALIFORNIA

TITLE SLIDING LINK ASSEMBLY

DOC NO B 184-0042 REV B

9/18/06 SOLID BAR LINKAGE REPORT

Review and development of a potential modification to solid bar ramp barrier linkage

1. Reasons for the review

1.1 Three incidents have occurred where a passenger discovered bleeding from their big toe after they had used a lift. How and where the cut occurred was never witnessed by the passenger or others. The exact cause of the incidents has not been verified.

2. Passengers condition when the incidents occurred

2.1 No feeling in the foot
2.2 No control of the foot
2.3 Wearing only a sock, no shoes
2.4 Passengers did not have their foot on the wheelchair foot rest
2.5 Discovered bleeding through the sock some time after leaving the lift and the bus had continued on its route.
2.6 Required medical treatment for damage to the end of the big toe

3. Lift

3.1 Incidents occurred in connection with lifts with the solid bar linkage system
3.2 The solid bar linkage was on production lifts shipped from 1986 through 1996
3.3 (18093) units have been shipped with this linkage system
3.4 Flat bar linkage system has been used for production since 1996. Over 16781 units of this design have shipped. No reported incidents have occurred in connection with the flat bar linkage.
3.5 We estimate 72,331,800 uses have occurred on the solid bar linkage system
3.6 We estimate 14,871 uses per day are occurring currently with the solid bar linkage depending on how many units are still in service. Units are 10 to 20 years old.

4. Evaluation

4.1 The action of the toe being cut was not observed. The bloody sock after the action made the passenger aware that the act had occurred.
4.2 There were traces of blood around the linkage area so we assume it could have happened in that area.
4.3 The current flat bar linkage has not experienced any incidents. In comparing the two linkages we see that the flat bar linkage has less open space under the linkage than does the solid bar linkage.

5. Testing

5.1 We attempted to simulate a toe getting under the linkage
5.1.1 We were unable to duplicate the incident with anyone who has control of their feet. The space under the link is 90 degrees to a person's leg and foot when in a wheelchair. The twisting required to force the toe into that space was not possible by any of our testers.

5.1.2 For a toe to be positioned under the link it must be rotated approximately 70 degrees, uncovered not in a shoe, the toe pointing down approximately 20 degrees, not on a foot rest of a wheelchair, and then forced under the link and only to the depth allowed by the size of the toe.

6. Conclusion

6.1 When the incident happened in 1994 the information and observations made were inconclusive. We could not confirm how the incident happened on the lift. Also this was one incident after millions of use.

6.2 After the second incident we revisited and still were inconclusive of what happened. At this point we began searching for possible ways to identify what could happen so we could develop a cure.

6.3 We have discovered that we can add a filler piece to our linkage that would reduce the space under the linkage and make the solid bar linkage similar to the flat bar linkage that has a clear history.

6.4 We are proposing to notify the properties that were sold lifts with solid bar links that we will supply the parts and instructions for them to rivet the part to the linkage and potentially eliminate the possibility of the solid bar linkage being the issue.