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04E-066 (2095)

September 10, 2004

VIA FACSIMILE AND U.S. MAIL
202.366.7882

Mr. Kenneth N. Weinstein
Associate Administrator for Safety Assurance
National Highway Traffic Safety Administration
400 7th Street, SW
Washington, DC 20590

Mr. Jon White, Chief
Defects and Recall Information Analysis Division
National Highway Traffic Safety Administration
400 7th Street, SW
Washington, DC 20590

Re: Recall #04E-066

Dear Messrs. Weinstein and White:

Enclosed please find the Part 573 Defect and Noncompliance Report for Equipment, which I submit on behalf Eaton Hydraulics Inc.

Please call should you have any questions.

Sincerely,

QUARLES & BRADY LLP

Daniel I. Hanrahan
on behalf of Eaton Hydraulics Inc.

DIH/mkr
Enclosures

QBMKE\5630690.1

cc: Gail L. Cudak, Esq., Eaton Corporation (w/enc.)
Brian Wadnal, Eaton Hydraulics Inc. (w/enc.)
[redacted]

Form Approved: O.M.B. No. 2127-0004

Safety Defect and Noncompliance Report Guide for Equipment
PART 573 Defect and Noncompliance Report[1]

On August 31, 2004, Eaton Hydraulics Inc. decided that a defect which relates to motor vehicle safety exits in the item 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: September 10, 2004.

Furnish the manufacturer's identification code for this recall (if applicable): Recall # 04E-066.

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.

Corporate Name of Fabricating Manufacturer: Eaton Hydraulics Inc. (a Delaware Corporation), 1111 Superior Avenue, Cleveland, Ohio, 44114.

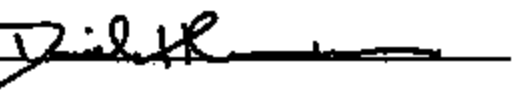
Identify the corporate official, by name and title, whom the agency should contact with respect to this recall.

Corporate Official to Contact (other than primary contact, Daniel Hanrahan): Gail L. Cudak, Senior Attorney, Eaton Corporation, 1111 Superior Avenue, Cleveland, Ohio, 44114.

Telephone Number: (216) 523-4077 **Fax No.:** (216) 479-7122

Name and Title of Person who prepared this report.

Outside Counsel on behalf of Eaton Hydraulics Inc. and the Eaton Corporation: Daniel Hanrahan, Quarles & Brady LLP, 411 East Wisconsin Avenue, Milwaukee, Wisconsin, 53202. Telephone (414) 277-5117. Fax (414) 978-8640.

Signed: 

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[1]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: Motor-Manifold Assembly

Make: N/A **Model:** N/A

Part Number: 100AT00002A

Size: N/A

Function: Fan Drive & Power Steering Assist

Other information which characterizes/distinguishes the items of equipment to be recalled:
Eaton model MCD 7810, Rev "G", part number 02-198616, part of motor-manifold assembly 100AT00002A

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% of the specific Eaton motor-manifold assemblies, model MCD 7810, Rev "G", part number 02-198616, part of motor-manifold assembly 100AT00002A, will be recalled and retrofitted.

II. Identifying the Recall Population

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

Model: Manifolds built to design level "G"- specifically Eaton model MCD 7810, Rev "G", part number 02-198616, part of motor-manifold assembly 100AT00002A

Year: 2004

Number of Items Potentially Involved: 300

Total Number Potentially Affected by the Recall: 300

4. Furnish the approximate percentage of the total number of items of equipment estimated to actually contain the defect or noncompliance: Eaton anticipates that approximately 200 of the potentially affected 300 buses (66.7%) will actually contain the motor-manifold assemblies in question, Eaton model MCD 7810, Rev "G", part number 02-198616, part of motor-manifold assembly 100AT00002A.

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:

The production run of motor-manifold assemblies that incorporated the assembly in question - Eaton model MCD 7810, Rev "G", part number 02-198616, part of motor-manifold assembly 100AT00002A - was conducted from approximately December 2002 to March 2004. This production run of motor-manifold assemblies was completed specifically for North American Bus Industries, Inc. (NABI), which incorporated the manifolds into buses it sold to the Massachusetts Bay Transit Authority (MBTA). The production run of motor-manifold assemblies sold to NABI for use on MBTA buses contained a total of approximately 300 motor-manifold assemblies, but after March 23, 2004, Eaton began manufacturing the motor-manifold assembly to design level "J", which requires no rework action because that design includes an orifice.

Therefore, although Eaton will inspect all 300 buses in question to verify whether the motor-manifold assembly was designed to design level "J", which includes the orifice, or design level "G" - specifically model MCD 7810, Rev "G", part number 02-198616, part of motor-manifold assembly 100AT00002A - which does not include the orifice, it anticipates that approximately 200 buses will contain the design level "G" assembly in question.

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.

Hydraulic system instability caused by the lack of an orifice in the proportional valve manifold assembly, Eaton model MCD 7810, Rev "G", part number 02-198616, part of motor-manifold assembly 100AT00002A

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

Hydraulic system dynamics

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

System instability, which leads to pressure oscillations, which may ultimately lead to a degradation of power-assisted steering

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

Degradation of power-assisted steering

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

N/A

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

N/A

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.

Please see "Attachment A"

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.

N/A

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.

Manifolds built to design level "G", specifically Eaton model MCD 7810, Rev "G", part number 02-198616, part of motor-manifold assembly 100AT00002A, should be reworked by installing the orifice (02-163136 or equivalent).

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

Addition of the orifice.

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.

MPS 61348 "A", which was written and implemented on March 23, 2004, added an orifice to MCD 7810. This production remedy is the same as the field remedy.

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.

The agenda is to update existing manifolds containing model number MCD 7810, Rev "G", part number 02-198616, part of motor manifold assembly 100AT00002A, by installing an orifice. Eaton Hydraulics Inc. (Eaton) has already had communications with the distributor, Cross Fluid Power (Cross), as well as NABI and MBTA, regarding the proposed remedy. Also, Eaton has already prepared and forwarded a service bulletin to Cross (attached as "Attachment B"), which Cross forwarded to NABI and MBTA.

Finally, in accordance with 49 C.F.R. sec. 573.6 (9) and (10), Eaton hereby submits a copy of its proposed owner notification letter (attached as "Attachment C"), which it will mail to owners in five business days from submission of this report.

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.

In addition to the service bulletin ("Attachment B") and proposed owner notification letter ("Attachment C"), please see the attached letter dated September 7, 2004 from Eaton to NABI concerning the schedule for performing the proposed recall ("Attachment D").

The Privacy Act of 1974 - Public Law 93-579, As Amended: This information is requested pursuant to the authority vested in the National Highway Traffic Safety Act and subsequent amendments. You are under no obligation to respond to this questionnaire. Your response maybe used to assist the NHTSA in determining whether a manufacturer should take appropriate action to correct a safety defect. If the NHTSA proceeds with administration enforcement or litigation against a manufacturer, your response, or statistical summary thereof, may be used in support of the agency's action.

ATTACHMENT A

Jan. 04 – Eaton Hydraulics Inc. (Eaton) notified of minor shaft seal leakage – investigation concentrated around shaft seal area.

1/27/04 – Eaton informed North American Bus Industries, Inc. (NABI) of minor weepage, *i.e.*, an acceptable amount of wetting or dampening around the shaft seal that is expected to stop once the hydraulic fluid temperature reaches operating temperature.

2/16/04 – Eaton (Paul Fiecke) visited end-customer and identified system instability.

2/19/04 – Eaton communicated the discovery of system instability to Cross Fluid Power (Cross) Sales.

2/19/04 – 4/27/04 – Cross and Eaton conducted testing to determine source of instability. On 3/23/04, MCD 7810 was revised to add an orifice to production units. By 4/27/04, Eaton was satisfied that the lack of an orifice on the model MCD 7810, Rev "G", part number 02-198616, part of motor manifold assembly 100AT00002A, was a cause of system instability.

4/27/04 – Cross sent a letter to NABI explaining the potential cause of instability issues and set forth a proposed remedy.

5/12/04 – Cross retrofitted MCD 7810 manifolds in their stock to add an orifice and sent a memorandum to Brian Wadnal of Eaton to indicate how these were identified.

5/14/04 – Eaton proposed to upgrade any MCD 7810 currently in the field by adding the orifice. This was to be conducted at the customer site. NABI requested to delay this rework until later in the year.

8/04 – Received complaints of loss of power assist steering from Massachusetts Bay Transit Authority (MBTA).

8/13/04 – Eaton evaluated priority flow-control valve and found excessive wear.

8/27/04 – Eaton first contacted outside counsel with respect to MCD 7810.

8/31/04 – In consultation with outside counsel, Eaton determined that MCD 7810 Rev "G", part number 02-198616, part of motor-manifold assembly 100AT00002A, may contain a "defect" that is related to "motor vehicle safety," as those terms are defined in 49 U.S.C. secs. 30102 and 30118.

9/3/04 – Service Bulletin issued.

9/7/04 – Letter to NABI ("Attachment D")

ATTACHMENT B

Service Bulletin

E·T·N Vickers

Subject: Eaton Detects Stability Issue
Notification #RY-04-0016
Vickers Manifold Valve MCD 7810, Part Number 02-196616 Revision "G"

Eaton Hydraulics (Eaton) has detected a stability issue that may result in the reduction of power assisted steering in NABI buses, but does not affect manual steering control. Eaton has taken the appropriate steps to correct the problem. Eaton has implemented a design change, adding an orifice to the manifold (Model MCD 7810) that eliminates the stability issue.

Specific manifold products MCD 7810, design level "G" may exhibit this problem.

The revision letter is on the nameplate on the manifold.

Requested Customer Action:

Suggested customer action: All buses should be inspected to verify that the manifolds are built to design level "J" . Buses built with design level "J" manifolds require no rework action. Only manifolds built to design level "G", specifically Eaton model MCD 7810, Rev "G", part number 02-196616, part of motor manifold assembly 100AT00002A should either be reworked by installing the orifice (02-183136 or equivalent) or replaced and returned to Eaton. Eaton recommends that, after installing the orifice, the repair person check the proportional pressure valve and reset it to 2000 PSI - 2100 PSI.

Eaton suggests that customers review its applications, inspect manifold revision level, and determine if they should be returned.

Contact your Eaton Customer Support Representative for a Return Material Authorization Number and shipping instructions if you decide to return the product. Affected product should be tagged and returned to Eaton Hydraulics.

Direct any questions that you may have to your Eaton Customer Support Representative or the Eaton Warranty Department.

Milt Wendt

Milt Wendt
Warranty Analyst
Eaton Hydraulics
Phone: 952-937-7162
Fax: 952-974-5398
Email: MiltonDWendt@eaton.com

ATTACHMENT C

EATON

Hydraulics Division

Eaton Hydraulics Inc.
14615 Lone Oak Road
Eden Prairie, MN 55344-2287
tel: (888) 259-0222
fax: (952) 974-7722

VIA CERTIFIED MAIL

September 20, 2004

SPECIFIC CONTACT PERSON TO BE DETERMINED
Massachusetts Bay Transit Authority
SPECIFIC ADDRESS TO BE DETERMINED

Subject: Notice of Recall # 04E-066

This notice is sent to you in accordance with the requirements of the National Traffic and Motor Vehicle Safety Act.

REASON FOR THIS RECALL

Eaton Hydraulics Inc. (Eaton) has determined that a defect which relates to motor vehicle safety exists in certain Eaton-manufactured hydraulic valves, model number MCD 7810, Rev "G", part number 02-198816, part of motor-manifold assembly 100AT00002A. These valves should be reworked by installing an orifice (02-163[illegible]6 or equivalent).

WHAT WE WILL DO

To remedy this problem, Eaton will do the following:

- Arrive on the afternoon of October 4, 2004 and depart on the afternoon of October 8, 2004.
- Both Eaton and Cross will send one person each. Eaton is not clear as to whether any NABI personnel will be present.
- Pay the rate for one UAW union person to actively participate in the retrofitting procedure. This individual would be trained and supervised by the Eaton person on site.
- Visually inspect all 300 buses at issue, which were manufactured by North American Bus Industries, Inc. (NABI), that may include the manifold valve in question.
  - If the bus has a revision "J" manifold attached to the motor, Eaton will document that fact and do nothing else, because revision "J" manifolds already have an orifice, and therefore do not require the retrofit.
  - If the bus has a manifold with a revision earlier than "J", but marked by Cross Fluid Power (Cross) Sales as having the orifice installed by them (via the addition of the letter "D" at the end of the model code), we will do a maximum pressure setting check and make any necessary adjustments. That is because these were manifolds that Cross had in their stock, to which Cross already added the orifice prior to delivering to NABI. This will require that the bus be running and will take approximately 10 minutes per bus.

EATON

Hydraulics Division

Eaton Hydraulics Inc.
14615 Lone Oak Road
Eden Prairie, MN 55344-2287
tel: (952) 294-0222
fax: (952) 974-7722

- If the bus does not fit into either one of the above categories, then Eaton will verify that the bus contains a proportional manifold valve with model number MCD 7[illegible], Rev "G", part number 02-198616, part of motor-manifold assembly 1[illegible]2A, and will then retrofit the manifold by doing the following:
  - Removing the proportional valve from the manifold and [illegible] an orifice in the valve cavity.
  - Re-installing the proportional valve.
  - Removing the flow control valve and replacing it with a new [illegible]
  - With the engine running, performing a maximum pressure check [illegible] pressure as necessary.
  - The total estimated time per bus is 20 min[illegible]

Eaton will perform this service at no charge to the Massachusetts Bay Transit Authority (MBTA).

WHAT YOU [illegible] TO DO

Please contact Eaton as soon as possible to confirm the [illegible] dates and so Eaton may secure the necessary parts and labor for the retrofitting.

We are sorry to cause this inconvenience; however, we have taken this action in the interest of your safety and continued satisfaction with our products.

If I can be of [illegible] further assistance, please do not hesitate to contact me.

Thank You,

Brian Wadnal
Eaton Hydraulics Inc.
Warranty and Service Manager
14615 Lone Oak Road
Eden Prairie, MN 55344
952-937-7168
[illegible]@eaton.com

CC: Mike McVay – Cross Fluid Power
Mike Hart – Cross Fluid Power
Rock Able – Cross Fluid Power
Aledia Combs – North American Bus Industries, Inc.

ATTACHMENT D

EATON

Hydraulics Operations

Eaton Corporation
14615 Lone Oak Road
Eden Prairie, MN 55344-2287
tel: (888) 258-0222
fax: (952) 974-7722

September 7, 2004

Mrs. Aledia Combs
North American Bus Industries
106 National Drive
Anniston, AL 36201

Subject: Boston Fan Drive System

Reference 1) Letter dated May 14, 2004 from J.Shannon Melton to Aledia Couch (Combs). Subject: Addition of Orifice to Boston Motor/Manifold.

Aledia,

Cross Sales has communicated seven issues that were raised by Massachusetts Bay Transit Authority (Boston) regarding the fan drive systems retrofit Eaton proposed via Reference 1. I will address these in the order they were presented to Eaton.

1) **State a firm date when we intend to be on site** – Arriving Monday afternoon, October 4, 2004 and departing Friday afternoon, October 8, 2004.
2) **State exactly the work we plan to do** - We will visually inspect all 300 buses and will do one of the following:
    a. If the bus has a revision "J" manifold attached to the motor we will document that fact and do nothing. This is because the orifice was included in the manifold from Eaton and does not require the retrofit.
    b. If the bus has a manifold with a revision earlier than "J", but marked by Cross Sales has having the orifice install by them (via the addition of the letter "D" at the end of the model code), we will do a maximum pressure setting check and make any necessary adjustments. These were manifolds that Cross had in their stock. Cross added the orifice to these manifolds prior to delivering to NABI. This will require that the bus be running and it is estimated this will take 10 minutes per bus.
    c. If the bus does not fit into category "a" or "b" above, we will retrofit the manifold by doing the following:
        i. Remove the proportional valve from the manifold and install an orifice in the valve cavity. We will re-install the proportional valve.
        ii. Remove the flow control valve and replace it with a new one. This step goes beyond the requirements of Service Bulletin #RY-04-0016. These valves may have experienced wear caused by accelerated cycling due to the instability.
        iii. With the engine running, perform a maximum pressure check and adjust as necessary.
        iv. The total estimated time per bus is 20 minutes.
    d. We will gather several fluid samples from those buses that require the retrofit, and those that do not. These samples will be sent to Eaton's Fluid Lab for analysis.
3) **Do the Bucher valves (proportional valves) need to go through the bleed procedure** – This procedure was tried with minor success prior to the addition of the orifice. We believe that the addition of the orifice will resolve the instability issue without bleeding the Bucher valve.

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Hydraulics Operations

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4) **Are we generating any contamination or had any pump failures due to contamination** – We believe that Eaton's system is not generating contamination beyond the normal capabilities of the system. This system has filtration installed and Eaton has published the cleanliness requirements for our products. Based on our experience, we do not expect to find a significant difference in the fluid cleanliness levels between the buses requiring the retrofit and those that do not. This would verify our contention that we are not generating contamination. If there is a significant difference in cleanliness levels, we will address what those levels are and determine if any corrective action is required. Cross Sales has verified that there have been no pump failure returns from Boston that were contamination related.
5) **How many people will be on site and how long will it take** - Both Eaton and Cross will send one person each. We would plan on being there one week and working each day as long as we have access to buses. We would expect to work at night to have an opportunity to access a portion of the buses. Eaton is not clear on whether or not any NABI personnel will be present.
6) **Should the entire fan drive system be replaced** – There is no evidence that indicates the entire fan drive system is at risk. We have identified an isolated issue that can be easily addressed. There have been no reported incidences of other component failures.
7) **Boston is requiring a union representative be present at $70.00 per hour** – Eaton is willing to pay the rate for a union person who will actively participate in retrofit procedure. This individual would be trained and supervised by the Eaton person on site. We would expect this individual to be trained to perform this procedure so that they could inspect and retrofit any "straggler" buses. It is also highly desirable that an on site NABI representative be trained.

If I can be of any further assistance, please do not hesitate to contact me.

Thank You,

J. Shannon Melton
Eaton Hydraulics Inc.
Product Sales Manager
251-990-8401
ShannonMelton@eaton.com

CC: Mike McVay – Cross Fluid Power
Mike Hart – Cross Fluid Power
Rock Able – Cross Fluid Power