



06 November, 2008

George Person
Head - Recall Management Division
US DOT – National Highway Traffic Safety Administration
Office of Defects Investigation (NVS-215)
1200 New Jersey Ave. SE,
Washington, DC 20590

Subject: **Safety Recall – Premature Failure, Alternator Bearings.**

Dear Mr. Person:

This letter is written to inform you of New Flyer Industries Canada ULC (New Flyer)'s intention to conduct a recall on all New Flyer heavy duty transit buses which were equipped with a CE Niehoff model C701A or C703A alternator, coupled to Cummins Inc. model ISM heavy duty diesel engine. These model alternators are received by New Flyer production facilities, already installed on the Cummins ISM engine.

This defect has resulted in several minor engine compartment fires. Post fire analysis and problem solving conducted by engineering groups of the three manufactures indicate that when the alternator bearings fail, the alternator shaft drops and eventually seizes. Belt dust is then created by the accessory drive belt passing over a stationary pulley. The fire occurs because the very high internal temperatures (in excess of 750° F) of the front bearing assembly in the failed alternator. Once the belt dust ignites, fire can spread to other consumables in the engine compartment.

Analysis has indicated that the bearings may not be of sufficient quality to withstand the forces applied by the ISM engine accessory drive.

The corrective action will involve the incorporation of a belt tensioner with lower internal spring loading, to reduce the stress and possibly increase the longevity of the alternator bearings. Additionally, a narrower drive belt (8 groove vs. 10 groove) will be installed to prevent ignition in the event of a bearing failure. Testing has demonstrated that the narrower belt will fail (or shred) rather than continue to run over a stationary alternator pulley.

**Headquarters/
Winnipeg Facility**

711 Kernaghan Ave
Winnipeg, Manitoba
R3C 3T4 Canada

Ph (204) 224-1251
Fx (204) 224-0551
e-mail: bussales@newflyer.com

**Customer
Services**

25 DeBaets St.
Winnipeg, Manitoba
R2J 4G5 Canada

Ph (204) 982-8400

**New Jersey Service
Support Center**

808 Garfield Ave.
Jersey City, New Jersey
07305-4423 USA

Ph: (201) 369-1200
Fx: (201) 369-0345

**New Product
Development**

Unit 7, 45 Beghin Ave.
Winnipeg, Manitoba
R2J 4B9 Canada

Ph: (204) 982-8413
Fx: (204) 654-4941

**Crookston
Facility**

214 5th Ave SW
Crookston, Minnesota
56716 USA

Ph: (218) 281-5752
Fx: (218) 281-5672

**St. Cloud
Facility**

6200 Glenn Carlson Dr
St. Cloud, Minnesota
56301 USA

Ph: (320) 203-0576
Fx: (320) 203-0584

Although CE Niehoff does not agree that there is a design or performance issue with their bearings, all three engineering groups have agreed that the incorporation of the modified engine accessory drive will prevent any further thermal events.

The recall population was based on all production with a Cummins ISM engine coupled to a Niehoff C701A or C703A alternator.

New Flyer will contact the customers who purchased buses identified as having the fault, with parts and instructions on how to complete this recall.

New Flyer is filing the appropriate 573 defect report (see attached) and will manage all quarterly reporting for this recall.

If you have any further questions please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kerry Legg', written in a cursive style.

Kerry Legg
Safety & Compliance Manager
Customer Services Head Office

cc: H. Peper, C. Murray, A. Farrant, D. Bean, S. Halbesma, T. Sutherland

Attachments: 573 Defect Report,
Sample Letter to Customer,

Safety Defect and Noncompliance Report Guide for Vehicles
PART 573 Defect and Noncompliance Report¹

On 3 November, 2008, New Flyer Industries Canada ULC (New Flyer) decided that a defect which relates to motor vehicle safety exists 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: 4 November 2008

Furnish the manufacturer's identification code for this recall (if applicable): R08-016

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 USC §30164.

New Flyer Industries Canada ULC, 25 DeBaets St., Winnipeg, Manitoba, Canada, R2J 4G5

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

Kerry Legg
Safety & Compliance Manager
PH: 204-934-4876
Fax: 204-224-0248

Name and Title of Person who prepared this report.

Kerry Legg, Safety & Compliance Manager

Signed:

¹Each 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) 366-5227 or by FAX at (202) 366-7882.

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: New Flyer **Model Years Involved:** 2004 - 2007 **Model(s):** D40LF

Production Dates: Beginning: 16 Nov 04 **Ending:** 28 Mar 08

VIN Range: Beginning: 027196

VIN Range: Beginning: 027306 **Ending:**

VIN Range: Beginning: 027380 **Ending:**

VIN Range: Beginning: 028048 **Ending:**

VIN Range: Beginning: 028549

VIN Range: Beginning: 029081 **Ending:**

VIN Range: Beginning: 029657 **Ending:**

VIN Range: Beginning: 029773 **Ending:**

VIN Range: Beginning: 030547 **Ending:**

VIN Range: Beginning: 031602

VIN Range: Beginning: 031793 **Ending:**

Vehicle Type: Heavy Duty Transit Bus **Body style:** Diesel Forty Foot Low Floor

Descriptive information which characterizes/distinguishes the recalled vehicles from those model vehicles not included in the recall: Recalled vehicles have a Cummins ISM engine with a CE Niehoff C701A or C703A Alternator.

Make: New Flyer **Model Years Involved:** 2006 **Model(s):** D40LFR

Production Dates: Beginning: 27 Feb 06 **Ending:** 19 Sep 06

VIN Range: Beginning: 029415 **Ending:**

VIN Range: Beginning: 030157 **Ending:**

Vehicle Type: Heavy Duty Transit Bus **Body style:** Diesel Forty Foot Low Floor Restyled

Descriptive information which characterizes/distinguishes the recalled vehicles from those model vehicles not included in the recall: Recalled vehicles have a Cummins ISM engine with a CE Niehoff C701A or C703A Alternator.

Make: New Flyer **Model Years Involved:** 2007 - 2008 **Model(s):** D60LFR

Production Dates: Beginning: 15 Jun 07 **Ending:** 21 Apr 08

VIN Range: Beginning: 031739 **Ending:** (

VIN Range: Beginning: 032586 **Ending:**

VIN Range: Beginning: 032858 **Ending:**

Vehicle Type: Heavy Duty Transit Bus **Body style:** Diesel Sixty Foot Low Floor Restyled

Descriptive information which characterizes/distinguishes the recalled vehicles from those model vehicles not included in the recall: Recalled vehicles have a Cummins ISM engine with a CE Niehoff C701A or C703A Alternator.

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.

18.2%

II. Identify the Recall Population

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

<u>Model</u>	<u>Year</u>	<u>Number of Vehicles Potentially Involved</u>
D40LF	2004 - 2007	850
D40LFR	2005	117
D60LFR	2007 – 2008	34

Total Number Potentially Affected by the Recall: 1001

4. Furnish the approximate percentage of the total number of vehicles 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 vehicles:

Recall population consists of all New Flyer product manufactured with a CE Niehoff C701A or C703A alternator coupled to a Cummins ISM heavy duty diesel engine. To our knowledge, no instances or events of this nature have occurred with these subject alternators when coupled to other engine models/types.

III. Describe the Defect or Noncompliance

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

CE Niehoff C701A or C703A Alternator bearing premature failures may result in engine compartment fires.

Describe the cause(s) of the defect condition.

Alternator bearings are failing prematurely, failure results in a drop of the alternator rotating shaft and eventual seizure of the shaft and attached pulley. Internal temperatures at the point of shaft seizure have been recorded in excess of 750° F (399° C), which is sufficient to ignite the resulting belt dust produced as the belt continues to pass over the stationary pulley.

Describe the consequence(s) of the defect condition.

The ignition of the belt dust and radiant energy from the alternator may ignite other flammable materials in the engine compartment in close proximity to the overheated alternator.

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

"Battery Not Charging" and "Check Engine" driver indicator lights and check engine warning buzzer will come on shortly after alternator shaft displacement and prior to shaft seizure. Fire occurs very shortly after shaft seizure.

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

Cummins Inc.
500 Jackson St.
Columbus, IN 47201

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

Steve Butler
Recalls Officer

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.

- Fall 2006 – a higher than average alternator failure rate was determined on the Cummins ISM engines equipped with Niehoff C703A alternators on one specific fleet of newly delivered vehicles.
- 16 Jan 2007 – First thermal event is reported. Vehicle is inspected by New Flyer two days later, alternator had failed but source of ignition was not fully determined.
- 24 Jan 2007 – Full disassembly and analysis of failed alternator at CE Niehoff, discussion regarding bearing sub-suppliers, correlation of failures to bearing type to be determined. Fire is believed by New Flyer to have been initiated by radiant energy of the failed alternator.
- 2 Feb 2007 – Forensic evaluation of bus is done by independent engineering firm, final report indicated a “catastrophic failure of the front bearing assembly”, and a “manufacturing defect within the bearing assembly or it’s installation”.
- 23 May 2007 – New Flyer informs Niehoff they are to pay for repair costs to the bus. Vehicle is repaired under warranty.
- 24 May 2007 – Second thermal event is reported. Vehicle is visually examined the following day by New Flyer and Niehoff.
- 1 Jun 2007 – Formal forensic evaluation is conducted on second vehicle, damage is similar to first event.
- 25 Jun 2006 – Post fire examinations of both alternators are conducted at a private test facility, final report indicates the fire cause was the same in both events, thermal energy created by an internal failure of the alternator bearings. Vehicle is repaired under warranty.
- Aug 2007 – CE Niehoff initiates a campaign to replace all existing alternator bearing assemblies from a specific sub-supplier.
- 13 Aug 2007 – Third thermal event occurs on a different fleet of buses, but is not determined to be related until several months later.
- 13 Feb 2008 – Fourth thermal event occurs, occurs on a bus in which the alternator bearings have been replaced. Vehicle is inspected and repaired under warranty.
- 18 Feb 2008 – Three engineering groups begin a several week long in-depth evaluation of bearings (new and old) and any other conditions which may result in or aggravate a potential fire condition.
- CE Niehoff indicates that the belt drive is too aggressive for the alternator, that the belt tension results in premature failure of the bearings. Niehoff is advised that New Flyer also installs a competitor's Alternator on the ISM engine, which does not have issue with the belt drive or belt tension and has a low/normal failure rate. Fleet inspection of belt tensions are conducted, tension recorded are less than those specified in CE Niehoff installation instruction I10019C.
- CE Niehoff indicates that the samples of loom material they removed and tested from the buses supported combustion. A formal test was conducted by New Flyer on 3 Jun 08 (and video taped) which indicates the loom materials installed by New Flyer do not support or initiate combustion and are self-extinguishing therefore meeting the national standard for loom in this application. Other items which will burn when temperatures exceed 600° F, consist of the identification labels on power cables, heat shrink used at terminal ends, and the terminal covers for battery power cables.
- CE Niehoff indicates that the belt tensioners on the engine are failing at an extreme rate, thus effecting the load applied to the alternator bearings. Testing is conducted by the tensioner manufacture on 63 tensioners removed from buses, only one is found damaged, another was submitted incomplete and could not be tested.
- 15 May 2008 – Fifth thermal event occurs. Vehicle is inspected and repaired under warranty.
- 21 May 2008 – New Flyer initiates monthly inspection of all alternators and drive circuits at effected customer. Suspect alternators are replaced and returned for further inspection. Inspections to continue until corrective action can be incorporated.
- 10 June 2008 – It is proposed by New Flyer to incorporate a temperature sensor to shut down the bus through the on-board PLC system, in the event of a severe overheat of the alternator due to bearing failure.
- 11 Jul 2008 – New Flyer requests that Niehoff declare recall on their product. Testing is scheduled to prove out the temperature sensor as a corrective action. CE Niehoff recommends the incorporation of a lower tension, tensioner and a lighter duty drive belt as an alternate corrective action.
- 5 Aug 2008 - A test of the temperature sensor is conducted by operation-to-failure of an alternator, a fire is created (as described in Part III, 5), but the sensor is ineffective in shutting off the vehicle due to improper positioning of the sensor.
- 7 Aug 2008 - A second test is conducted by operation-to-failure, this time utilizing the modified belt drive. The drive belt failed (shredded) after the alternator shaft seized and prior to ignition (this would be considered a normal failure mode), bearing took longer to induce failure and temperatures were also lower (500° F range) at time of failure. Test

results are shared and reviewed, potential corrective actions are discussed.

18 Sep 2008 - There was an agreement by the engineering departments of all three manufactures that the results of the second test could be considered as an effective preventative measure for thermal events in this application. Although New Flyer and Cummins do not believe the corrective action addresses the root cause of the failures, the final corrective action was proposed and accepted as a preventative measure. CE Niehoff maintains there is no design or manufacturing issue with their bearings. As there is no appreciable difference between the C703A and the C701A alternators, buses with Cummins ISM/Niehoff C701A are added to the recall population.

25 Sep 2008 – New Flyer again requested that CE Niehoff declare recall on their product by 1 Nov 2008.

6 Nov 2008 – New Flyer declares recall on the Cummins ISM/Niehoff C701A or C703A installation.

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. Clearly describe the differences between the recall condition and the remedy.

To increase the potential longevity of the alternator bearings, a lower tension belt tensioner will be incorporated. To prevent thermal ignition in the event of an bearing failure, a lighter duty (narrower) belt will be incorporated. Testing has indicated that after a bearing failure and a seizure of the alternator shaft, the narrower belt will shred rather than continue to run over the stationary pulley.

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

Cummins will supply an 8 groove belt vs. the original 10 groove belt and the new lower tension belt tensioner from a sub-supplier. CE Niehoff will supply a new 8 groove pulley to accommodate the narrower belt.

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.

The same remedy was incorporated for any current production. There are no plans for any future production using these two coupled components.

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.

Customer letters (sample attached) will go out once the recall code is assigned by NHTSA. The campaign to replace the components will start as soon as the parts are available.

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 that these documents are to be submitted separately from those provided in accordance with Part 573.8 requirements.

XX November, 2008

<<Name>>
<<Title>>
<<Property Name>>
<<Address 1>>
<<Address 2>>

Re: Recall 08V-XXX – Premature Alternator Bearing Failures – Fire Potential

Dear <<Name>>,

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

New Flyer Industries Canada ULC (New Flyer) has determined that a defect which relates to motor vehicle safety, exists in certain New Flyer transit vehicles. Further investigation has revealed that the following vehicles, operated by <<Property Name>> are affected:

Make: New Flyer Transit Vehicle

Model: <<Model>>

VIN Range (last 6 digits): XXXXXX to XXXXXX.

New Flyer has determined that certain models of bus have a Cummins Inc. ISM model diesel engine equipped with CE Niehoff C701A or C703A model Alternator.

Bearing assemblies in these alternators have been failing prematurely, with a potential for engine fire to occur.

Failure of the forward alternator bearing may result in a drop and seizure of the rotating alternator shaft and pulley. Once the pulley is stationary, the alternator drive belt continues to pass over the pulley creating high quantities of belt dust. Due to the very high internal temperatures created at the bearing during shaft seizure, the belt dust may ignite, resulting in an engine compartment fire.

New Flyer proposes to incorporate a belt tensioner with a lower spring force to reduce the stress load on the bearings. This modification is anticipated to extend the life of the alternator bearings beyond the recommended two year Preventative Maintenance scheduled bearing replacement cycle. Additionally, a narrower drive belt will be incorporated which has been shown to fail or shred in the event it is run over a stationary pulley of a failed alternator.

We regret any inconvenience which this action may cause you, however, we are concerned about your safety. Attached is a copy of the Instruction to Service (ITS3768) which contains the specific instruction on how to complete this modification. For information or assistance with regards to this defect, contact either your Regional Product Support Manager <<RPSM>>, or New Flyer Customer Services at (204) 934-4874.

If you no longer own this vehicle, please inform us when you call.

Federal regulations require that any vehicle leasor receiving this notice, must forward a copy of this notice to the lessee within ten days.

This recall is being managed by New Flyer. Parts and labor required to accomplish the recall in accordance with the attached instructions will be provided. The alternator belt drive retrofit action should take approximately 0.5 hours per vehicle to complete.

If you had this repair performed before you received this letter, you may be eligible to receive reimbursement for the cost of obtaining a pre-notification remedy of the problem associated with this recall. For more information please contact the New Flyer Warranty Department at (204) 934-4803.

If we fail, or we are unable to remedy this defect without charge and within a reasonable time, you may submit a written complaint to:

The Administrator
National Highway Traffic Safety Administration
1200 New Jersey Ave. SE.,
Washington, DC, 20590

or call the toll-free Vehicle Safety Hotline at 1-888-327-4236 (TTY: 1-800-424-9153);
or go to: <http://www.safercar.gov> .

Thank you for your attention to this important matter.

Sincerely,

Kerry Legg
Safety & Compliance Manager
Customer Service Support

cc: <<RPSM>>, Hans Peper, Cliff Murray, Don Bean, Scott Halbesma, Alan Farrant
Todd Sutherland.

Attachment: ITS3768



THIS DOCUMENT AND ITS SUBJECT MATTER ARE DISCLOSED IN CONFIDENCE. IT MUST BE RETURNED UPON REQUEST AND SHALL NOT BE DISCLOSED TO OTHERS WITHOUT THE WRITTEN CONSENT OF NEW FLYER INDUSTRIES LTD.

INSTRUCTION TO SERVICE ITS: 3768

SECTION: 219 Engine & Transmission	MODEL: <input type="checkbox"/> 30FT <input type="checkbox"/> 35FT <input checked="" type="checkbox"/> 40FT <input checked="" type="checkbox"/> 60FT <input checked="" type="checkbox"/> DSL <input type="checkbox"/> CNG <input type="checkbox"/> LNG <input type="checkbox"/> ELEC	TYPE: <input type="checkbox"/> HIGH FLOOR <input checked="" type="checkbox"/> LOW FLOOR	WRITTEN BY: Carlitos Cura
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OBJECTIVE/SUBJECT:

Remove and replace alternator tensioner and belt.

PROCEDURE:

1. Turn the main battery disconnect switch to the "OFF" position.
2. Open the rear engine access door.
3. Open belt guard cover.
4. Use a 1/2" drive breaker bar to rotate the tensioner away from the belt until it stops and relieve belt tension. See Fig. 1 below.

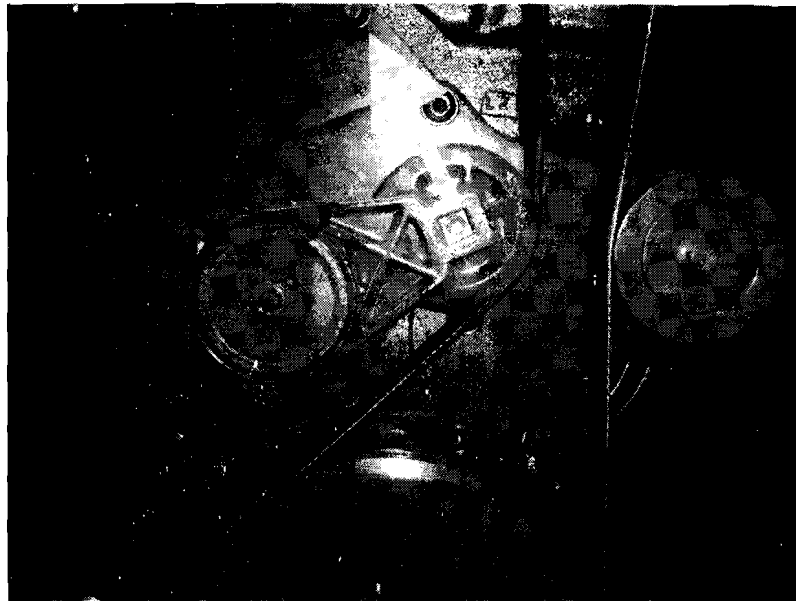


Fig. 1: Alternator Mounting



5. Remove the alternator belt while holding the tensioner. Discard the 10-rib belt.
6. Remove tensioner NF P/N 6329037. Discard the tensioner and hex nut.
7. Install new 97 lbf tensioner NF P/N 6361573 (Cummins P/N 2862082). Use new hex nut P/N 6355726. **Tighten nut to 32 FT-LB (43 N-m).**
8. Remove the 10-groove pulley from alternator using pulley tool P/N 6358951 (CEN P/N A10-135). Discard pulley and nut. See Fig. 2.

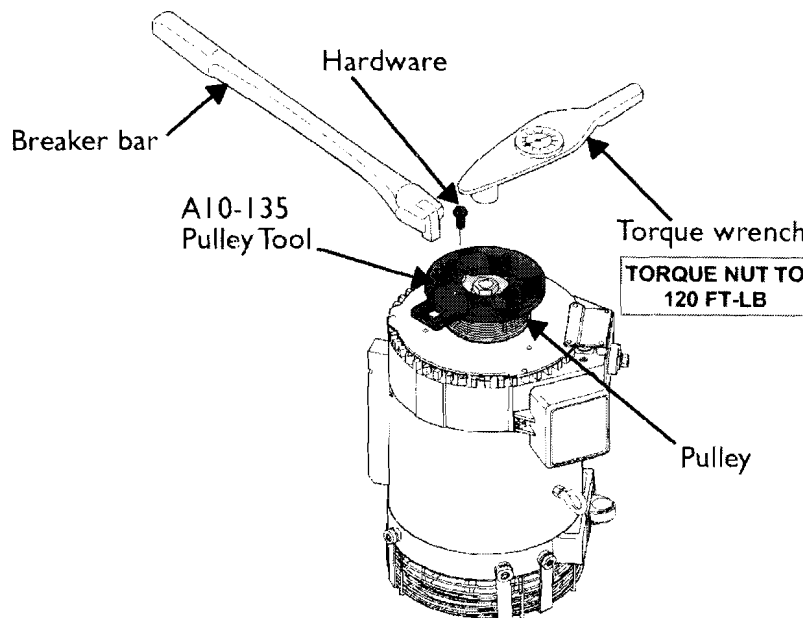


Fig. 2: Pulley Removal and Installation

9. Install new 8-groove pulley P/N 6361571 (CEN P/N A3-214) using pulley tool. See Fig. 2. Use new nut P/N 6352617. **Torque nut to 120 FT-LB (163 N-m).**
10. Install new 8-rib belt P/N 6361572 (Cummins P/N 3288933) over the pulleys while holding the tensioner back. Be careful not to damage the belt while working it over the flanged pulleys and make sure that the belt is properly aligned. Release the tensioner.
11. Close and secure belt guard.
12. Close the rear engine access door.
13. Turn the main battery disconnect switch to the "ON" position.

LABOUR ESTIMATE				
	Operation	Men	Hours	Labour Time M X HR
1	Remove and replace alternator tensioner and belt.	1	0.5	0.5

PARTS REQUIRED					
Item	Part Number	Description	Qty. per Coach	Units	Notes
1	353904	PULLEY, 8 GROOVE	1	EA	
2	353911	BELT, ALTERNATOR 8 RIB	1	EA	
3	353910	TENSIONER, BELT 97LBF	1	EA	
4	6352617	NUT M20X1.5MM	1	EA	
5	6355726	NUT, HEX FLANGE	1	EA	

SPECIAL TOOLS REQUIRED					
Item	Part Number	Description	Qty. per Coach	Unit of Measure	Notes
1	6358951	TOOL PULLEY NUT TORQUE (A10-135)			ORDER 1 PER PROPERTY