



## FIX-N-FAX

Equipment Standard

Informational  
May 2012

Number 87

### **MODEL #14 LOCKING HUBS (Only for those engines listed in this Fix n Fax)**

#### **History**

Certain Model # 14 Fire Engines (see list of affected engines on page 6) designed and manufactured between 2000 and 2002 were equipped with a Fabco transfer case and front differential. During the design and construction of these chassis, Navistar miss-engineered the working angles of the driveshaft universal joints between the transfer case and front differential. This caused a rotational distortion of the driveshaft which was beyond the accepted standard allowances. The outcome was a driveshaft in which excessive rotational vibrations at higher driveshaft speeds developed. CAL FIRE incurred two initial high speed driveshaft failures as a result. Navistar initiated Safety Recall 05501 to replace the existing driveshafts with Double Cardan constant velocity universal joints at both ends. The intent was to provide a heavy duty driveshaft with universal joints designed to operate at higher speeds, at a steeper working angle.

In 2009 one of the Model #14s equipped with the updated Double Cardan driveshaft experienced a high speed highway failure causing extensive damage to the driveshaft and front differential. It was determined the cause of the failure was the compromising of the constant velocity indexing ball boot resulting in a loss of lubrication. Navistar agreed to replace all 23 CAL FIRE Model #14 Double Cardan driveshafts with new driveshafts and install a hub lock system to ensure the high highway speeds would no longer affect the front driveshaft, thus eliminating the occurrence of catastrophic failure.

**THE MAIN COMPONENTS** of the hub lock system are the front axle locking hubs, an “Operator Acknowledgment Light”, and a “Driveline Rotational Warning Light” with warning buzzer.

- The “hub locks” are designed to disengage the front outer axle shafts so the rotation of the front tires will not cause the differential and driveshaft to rotate, thus eliminating high speed driveshaft rotation.
- The “Operator Acknowledgment Light” will illuminate each time for the following; the transfer case is engaged or disengaged, the key is switched off and then on, and

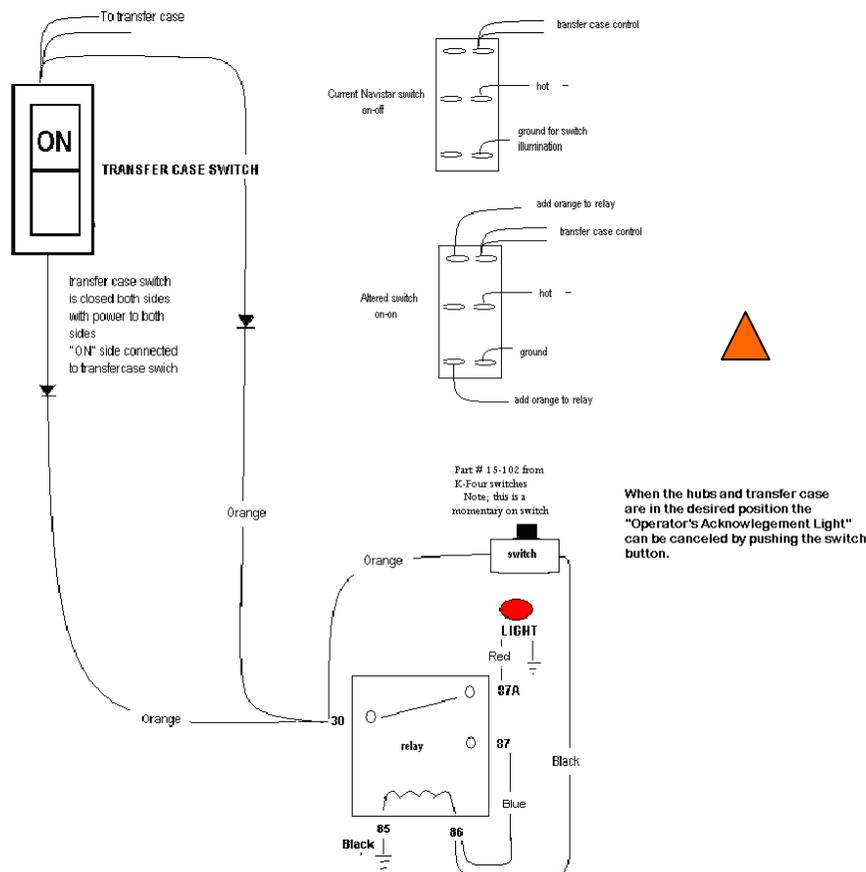
each time the battery disconnect switch is cycled. This light requires the operator to acknowledge the hubs and transfer case are in the proper position for the desired operation by pushing a reset switch button.

- The “Driveshaft Rotation Warning Light” and buzzer will indicate that the hub locks are still in the locked position after the transfer case has been shifted to two wheel drive, (2WD). The light and buzzer will activate at approximately 6 to 10 mph with the hub locks in the locked position and the front axle switch in the “OUT” position. This will warn the operator that the hub locks are still in the locked position. The warning light and buzzer will not activate during 2WD operation with hub locks in the free position or during four wheel drive, (4WD) operation. If the warning light and buzzer are activated the battery disconnect switch must be cycled off and then on to reset the Electronic Control Module, (ECM).

**Free wheel hub kit** (complete axle) is Fabco part number: 482-0303-001

### **Operator Acknowledgment Light**

The Operator Acknowledgment light and harness were developed by CAL FIRE Mobile Equipment Management. The harness can be obtained through either Davis Mobile Equipment or Cal Rewire (Roy 916-638-1524). Parts can be purchased from Lehr Automotive Electric (916-646-6626).



**Note: The transfer case switch has been internally altered from its original**

configuration. Replacements can be obtained from Davis Mobile Equipment.

### **Driveshaft Rotation warning light and buzzer**

The Driveshaft Rotation warning light and buzzer harness consists of an ECM, driveshaft rotation sensor, warning light and buzzer. The harness and driveshaft rotation sensor can be obtained through Fabco (800-967-8838).

- **Alarm Harness kit is Fabco part number: 248-0301-001**



**The driveshaft rotation sensor must maintain a minimum .125 clearance between the sensor and the driveline lugs**

**Note: The warning light and buzzer will also activate if there is a broken wire or bad connection in the harness. There is a broken wire logic built into the ECM.**

# Hub Lock Operating Instructions

## **SAFETY AND OPERATIONAL WARNINGS !!!!!**

- **USE ONLY YOUR FINGERS** to turn the hub lock dial. **Do not use tools such as pliers or wrenches.**
- Set hub locks dials to “FREE” and transfer case to two wheel drive (2WD) for all driving (**at highway speeds**) that does not require low speed four wheel drive (4WD).
- **DO NOT!** operate the vehicle on hard surface roads with the hub locks in “LOCK” and transfer case in 4WD.
- Return the transfer case to 2WD before disengaging hub locks.
- Do not move the vehicle if the hub locks are not **both completely in “LOCK” or “FREE”**.
- Driving with the hub locks in “FREE” and transfer case in 4WD low range **may cause drivetrain damage.**

Four wheel drive (4WD) supplies power and traction to both the front and rear wheels at the same time. The 4WD system uses hub locks that can be engaged and disengaged by manually rotating the selector dial on the hub locks.

To engage the front drive axle into 4WD

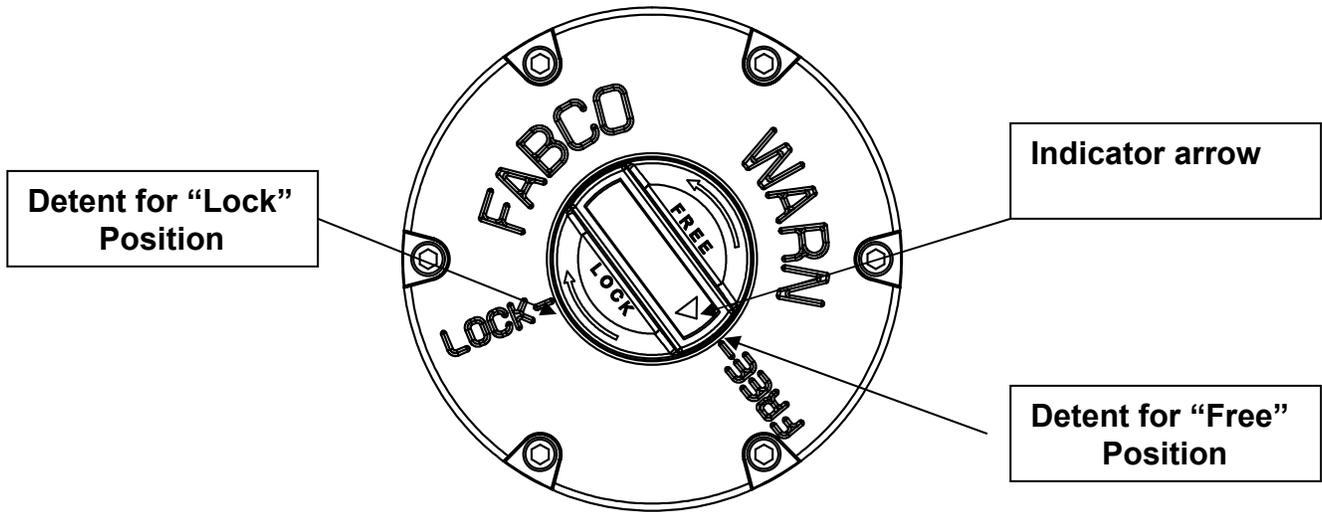
1. Move the vehicle to a level surface, shift the transmission to neutral, set the parking brake, chock the tires, and rotate the indicator on both hubs to the “LOCK” position.
2. Shift the transfer case into 4WD

To disengage the front axle from 4WD

1. Move the vehicle to a level surface, shift the transmission into neutral, set the parking brake, chock the tires, shift the transfer case into 2WD, and then rotate the indicator on both hubs to the “FREE” position. (see figure#1)

**CAUTION:** For proper operation, and **TO AVOID DAMAGE**, make sure the arrow and indicator mark on the hub lock are fully aligned and that both hub locks are set to the same position (**both set to “LOCK” or both set to “FREE”**).

Figure 1



**INTERNATIONAL MODEL #14 with locking hubs**

<b>X NO.</b>	<b>YR</b>	<b>VIN</b>	<b>LICENSE</b>	<b>UNIT</b>
04X003	2001	1HTSEAAN21H359656	1125378	SAN LUIS OBISPO
04X005	2000	1HTSEAAN61H359661	1125381	SAN LUIS OBISPO
04X246	2000	1HTSEAAN41H359657	1125379	TULARE
04X121	2000	1HTSEAAN01H359655	1125376	TULARE
04X033	2001	1HTSEAAN01H359705	1125416	RIVERSIDE
04X171	2002	1HTSEAAN52H559075	1143814	SAN BERNARDINO
04X011	2002	1HTSEAAN72H559076	1165938	TUOLUMNE-CALAVERAS
04X126	2002	1HTSEAANX2H505318	1143686	TUOLUMNE-CALAVERAS
04X120	2001	1HTSEAAN81H359662	1125440	LAKE-NAPA
04X124	2001	1HTSEAAN91H359654	1125385	LAKE-NAPA
04X128	2002	1HTSEAAN82H505320	1133769	LAKE-NAPA
04X131	2002	1HTSEAANX2H505321	1133770	LAKE-NAPA
04X227	2002	1HTSEAAN82H505317	1143685	SANTA CLARA
04X169	2002	1HTSEAAN62H505316	1133768	MENDOCINO
04X215	2002	1HTSEAAN92H559077	1165933	MENDOCINO
04X129	2002	1HTSEAAN12H505322	1133771	NEVADA-YUBA-PLACER
04X127	2002	1HTSEAAN12H505319	1143687	NEVADA-YUBA-PLACER
04X139	2001	1HTSEAAN41H359660	1125441	NEVADA-YUBA-PLACER
04X122	2001	1HTSEAAN81H359659	1125386	AMADOR-EL DORADO
04X222	2002	1HTSEAAN22H559079	1165934	AMADOR-EL DORADO
04X064	2002	1HTSEAAN02H559078	1165932	LASSEN-MODOC
04X256	2002	1HTSEAAN32H505323	1133767	TEHAMA-GLENN
04X125	2001	1HTSEAAN41H366544	1125442	ACADEMY

**NOTE: HUB LOCK SYSTEM INSTALLATIONS ON ENGINES OTHER THAN THOSE LISTED ABOVE SHALL BE CONSIDERED A VEHICLE MODIFICATION AND MUST HAVE A VEHICLE MODIFICATION REQUEST APPROVED BEFORE THE INSTALLATION CAN BE STARTED.**

Reference: Procedures Handbook 6700 Section 6820-6821