

## FIX-N-FAX #28

### CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION

No. 28

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#### **Counterfeit Bolts**

Counterfeit fasteners have been identified on vehicles manufactured prior to 1990 and found in critical areas such as on turntables and suspension systems.

These bolts may not fail immediately. The bolts may only stretch. This results in vehicle assemblies loosening – promoting fatigue, cracking, and component failure. Field personnel may not know what to look for in counterfeit fasteners. These fasteners can result in cost overruns due to repeated repairs caused by continued fastener failures.

The counterfeit bolts were identified in 1985. U. S. officials discovered national and international manufacturers improperly marking and exporting Grade 8.2 boron steel (low carbon martensite) bolts and hex head cap screws marked with six radial lines (60 degrees apart), implying they were really Grade 8 alloy.

According to an excerpt from Fastener Technology magazine:

“The heat resistance of low carbon boron steel is considerably less than that of medium carbon alloy steels as is evidenced by the stress relaxation behavior of the bolts. Thus, great care must be made in distinguishing the two grades and their intended service environment. Bolts made of low carbon martensite steel with false Grade 8 marking will relax and lost their ability to fasten joints before Grade 8 medium carbon alloy bolts. Thus, serious risks of failure exist when bolts have been marked improperly since field personnel have no way to know fasteners will not perform as the grade markings indicated.”

In 1987, a Congressional investigation was launched which resulted in the Fastener Quality Act, Public Law 101-592. Although this issue has been addressed on a national basis, it seems to have bypassed the emergency response community.

If a vehicle was built prior to 1990, there are possibilities that counterfeit or substandard bolts were used. All vehicles manufactured after 1990 should likely contain fasteners manufactured under the new standards. Also, existing stock should be examined and verified for certification.

Public Law 101-592 requires the manufacturer to certify fasteners manufactured after 1990 to meet specific requirements. The bill also requires that the manufacturer must provide proof of the certification upon request at no cost. If you purchased fasteners after 1990, or if you cannot confirm the manufacturing date and certification of your fasteners, it is recommended that you consult with the manufacturer.

For further information, you can contact the following:

- NHTSA Auto Safety Hotline at (800) 424-9397
- Fastener distributor
- Vehicle manufacturer
- National Institute of Emergency Vehicle Safety at (301) 916-2300

### NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION SUSPECT BOLT HEADMARK LIST DECEMBER 1990

The following is a list of manufacturers that have produced bolts that have failed S.A.E. J429 specifications when tested to the standards specified for the grade headmarking on the tested bolt. The purpose of this list is to identify the manufacturers that have produced sub-standard products. All listed below have failed tests on bolts marked Grade 8, and some on bolts marked Grade 5. It is important to understand that only samples of each manufacturer's bolts were tested, not all sizes and grades. As a result, it is recommended that products of ANY SIZE AND GRADE with any of the following headmarks not be used in safety critical applications unless tested and certified by a reputable independent testing laboratory. In addition, all bolts that do not bear any manufacturer's headmark and have Grade 5 or Grade 8 headmarkings should be considered suspect (see figures 1 and 2).



MARK	MANUFACTURER	MARK	MANUFACTURER	MARK	MANUFACTURER
1.	Juan Her Taiwan	2.	Kosaka Kogyo Japan		Kosaka Kogyo Japan
4.	Teikokuon Japan	5.	Nippon Fasteners Japan	6.	Takai Ltd. Japan
7.	Unvite Japan	8.	Fastener Co. of Japan	9.	Minato Kogyo Japan
10.	Asahi Mfg. Japan	11.	Mida Sievou Japan	12.	Daito Japan
13.	Hiroshono Metal Japan	14.	Kyoco Mfg Japan	15.	INJASCO Canada Japan Taiwan (*) see below

In December 1989, NHTSA published its first listing of suspect bolt manufacturers. It was based on the best information available at that time. This more current list is based on the latest information furnished by the U.S. Customs Service and supersedes and replaces our previous list. A manufacturer's inclusion on this list does not mean they are the subject of any official investigation by NHTSA.

(\*) Note: The hollow triangle (a raised outline of a triangle) indicates that the bolt may be made of 1541 medium carbon steel (called "Fastalloy" by Infasco), not the alloy steel required for a bolt to pass the requirements of SAE J429. Infasco also manufacturers alloy bolts identified with a raised solid triangle marking are NOT suspect.

*Information gathered from the following: National Institute of Emergency Vehicle Safety & California Department of Forestry Employees Association.*

[\(see FIX-N-FAX INDEX\)](#)