

SAE J1554 NOV85

Identifying and Repairing High Strength Steel Vehicle Components

**SAE Recommended Practice
Issued November 1985**

SAE
LIBRARY

**No part of this publication may be reproduced in any form,
in an electronic retrieval system or otherwise, without the
prior written permission of the publisher.**

Copyright 1986 Society of Automotive Engineers, Inc.

**IDENTIFYING AND REPAIRING HIGH STRENGTH STEEL
VEHICLE COMPONENTS**

1. **PURPOSE:** The intent of this SAE Recommended Practice is to provide guidance to automobile repair shops and personnel in identifying high strength steel where used in vehicle components and in repairing these components when damaged.
2. **INTRODUCTION:** The term "high strength steel" has been used arbitrarily to describe types of steel having higher strength than "mild", or low carbon steel that has been used for most automotive structural applications for many years.

In the mid 1970's, automakers were faced with solving the problem of reducing vehicle weight to improve fuel economy. The new unitized body vehicles being designed were usually smaller than those they replaced. Front structures were designed to handle potentially far greater load carrying and energy absorption requirements. Higher strength steel was used to solve both problems.

Today's unitized construction means that a component such as an apron or rail assembly, which is no longer just a splash shield, has to not only be light weight but also carry a portion of the suspension reaction load, support a transverse mounted engine, battery, ignition module, and bumper system. It is also designed with buckling sections to limit damage transmitted to the passenger compartment. In order to successfully achieve these objectives, many manufacturers made this new apron/rail assembly of stronger, lighter weight, "high strength steel."

However, these same properties that contribute strength and reduce weight offer some unique challenges to the repair industry. When high strength steel is deformed on impact, it is more difficult to dimensionally restore than mild steel. Normal repair procedures which dictate using heat to aid either in relieving the stress of pulling, or welding in a new part, must be carefully controlled, or not used at all, to avoid risk of structural damage to the part.

SAE Technical Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

Comments on this Recommended Practice are invited from interested parties and can be submitted in writing to SAE Headquarters.