

SID IIs DUMMY DURABILITY

SAE Government/Industry Meeting

May 2002

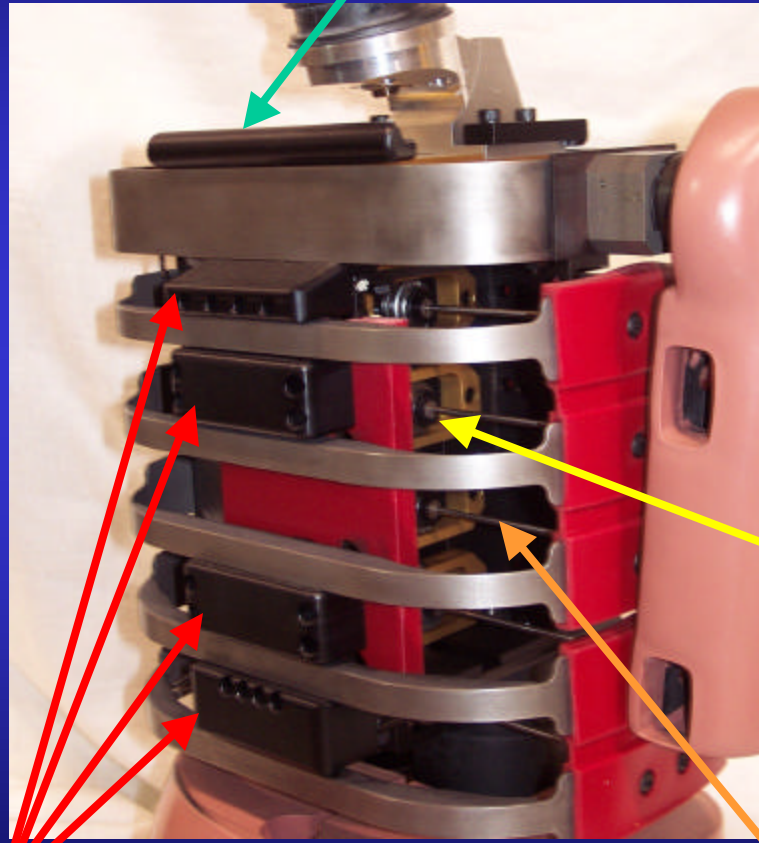
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National Highway Traffic Safety Administration
Vehicle Research and Test Center***

SID II's Dummy



Shoulder Rib Guide



Pot Housing

Pot Shaft

Thorax & Abdomen Rib Guides

Overview of Durability Issues

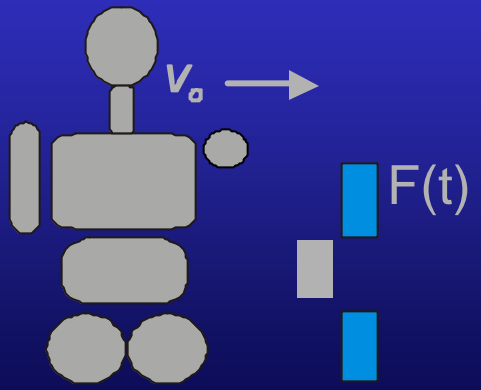
- **Extensive testing revealed several durability issues**
 - Pot shafts bent at rib-end
 - Pot shafts bent mid-shaft
 - Pot housing crushed
 - Pot housing inset
 - Ribs deformed
 - Damping material separated from rib
- **Mechanism of damage identified**
- **Modification concepts by VRTC appear promising**
- **OSRP, FTSS and NHTSA working toward a solution**

Pot Bottom-out

Mechanism
-ribs @ max deflection \Rightarrow pot bottom-out



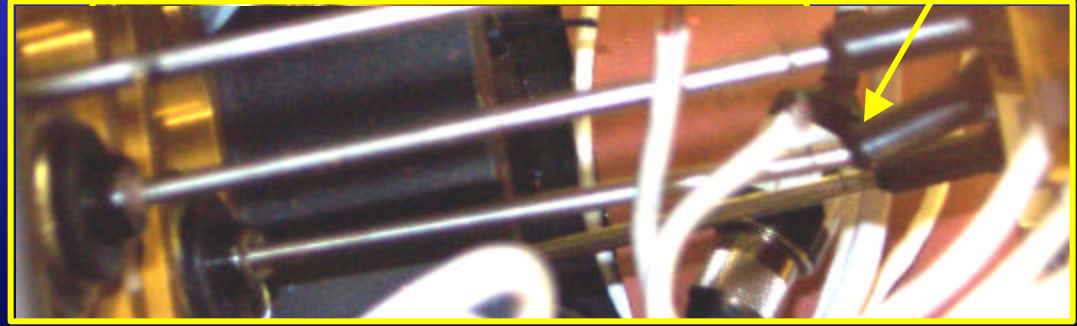
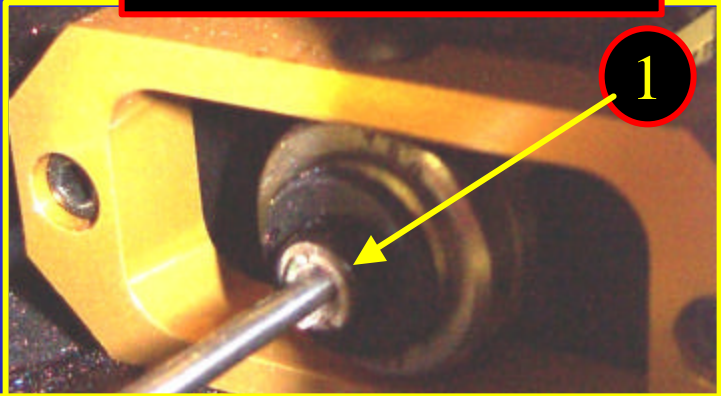
Test condition



15 mph Rigid Abdomen Plate Offset

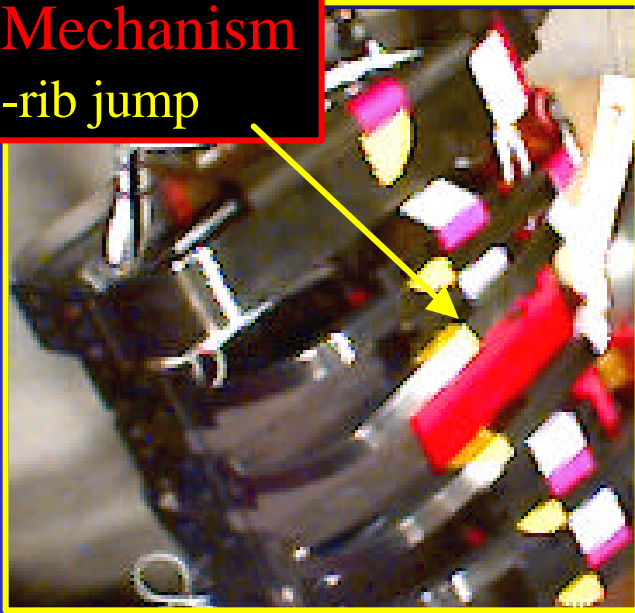
Damages

- 1. Pot housing crushed
- 2. Pot shaft bent



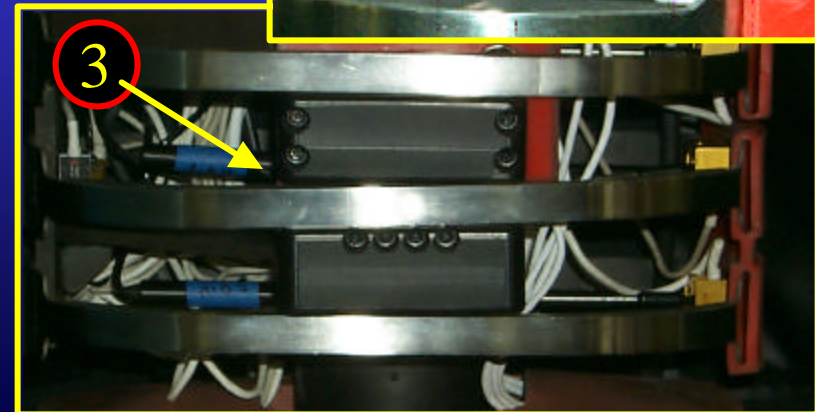
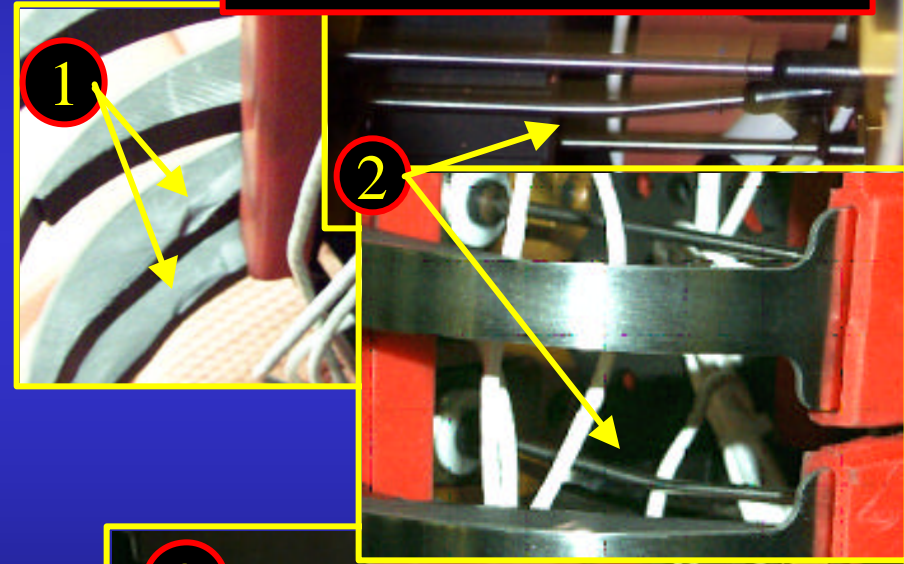
Thorax & Abdomen Rib Jump

Mechanism
-rib jump

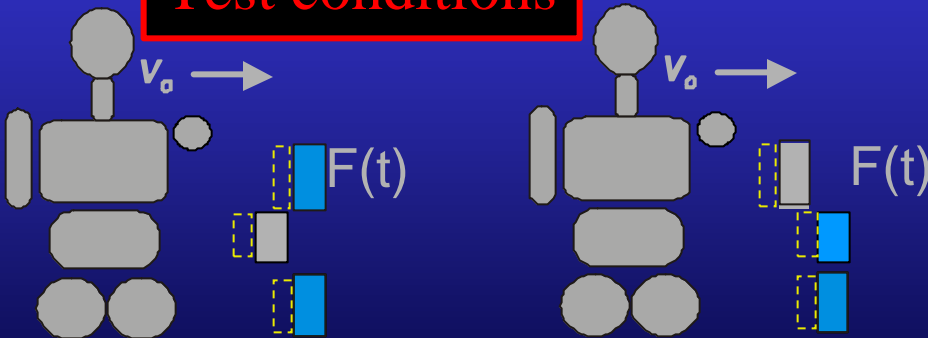


Damages

1. Gouges in damping material
2. Pot shaft bent
3. Ribs deformed



Test conditions

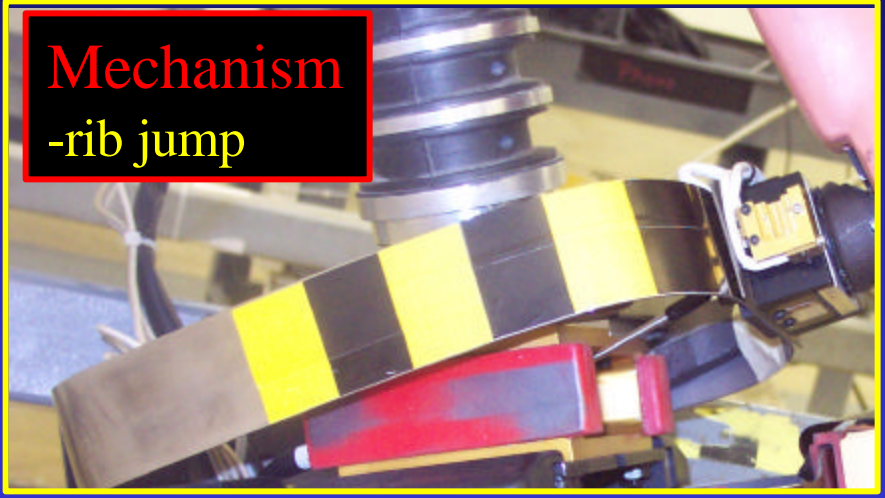


15 mph Rigid & Padded
Abdomen Plate Offset

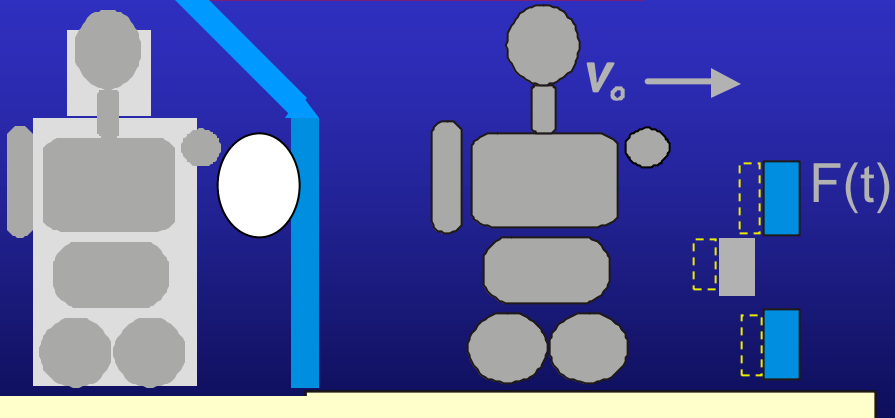
15 mph Rigid & Padded
Thorax Plate Offset

Shoulder Rib Jump

Mechanism
-rib jump



Test conditions

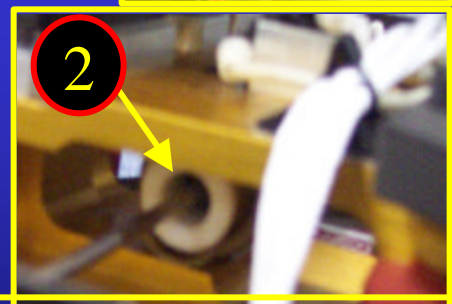
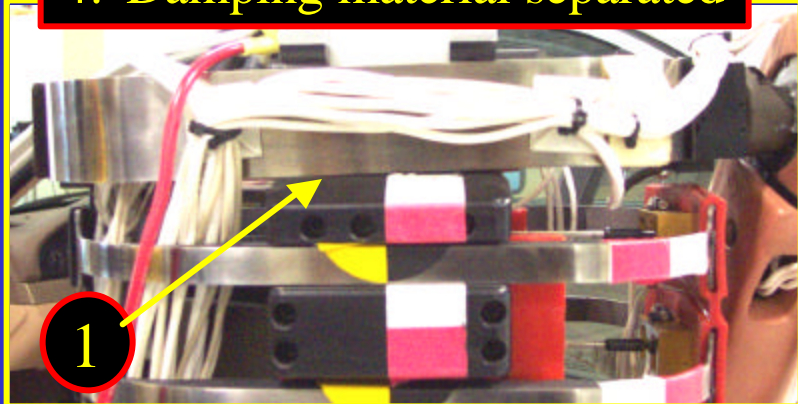


In-vehicle static
airbag OOP

15 mph Padded
Abdomen Plate Offset

Damages

1. Rib deformation
2. Pot housing inset
3. Pot shaft bent
4. Damping material separated



Summary

- SID-IIs dummy has durability problems
- Mechanisms causing damage are:
 - Potentiometer bottom-out
 - Thorax & abdomen rib jump
 - Shoulder rib jump
- VRTC has suggested possible minimally invasive modifications to remedy situation
- OSRP, FTSS and NHTSA working toward resolving durability problems

Thank You