



## Limit Switch Retrofit

Application Note

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Power and Free Conveyor



Limit Switch during actuation.

### General Description

Automotive Assembly plants use heavy-duty industrial conveyor systems to move car or truck bodies between the many assembly steps required to transform a bare shell into a finished vehicle ready for dealer delivery. The partially-built vehicles ride the conveyor system between stations on a metal frame called a "sled" while various parts or subassemblies are affixed. Because the assembly process at each station is unique, the sleds are sped-up, slowed-down, raised and lowered by the conveyor control system to compensate production flow between stations and provide a steady plant output of finished vehicles. Mechanical limit switches input each sleds' exact position to the control system and are activated by the sled as it progresses through the plant. The control system maps the sleds into 100 zones and calculates production speed at each of the stations. This data is used to determine the optimum conveyor speed for maximum plant output of finished vehicles.

### Problem

Under such extreme-duty conditions, mechanical limit switches have a very limited lifespan. Because these limit switch's lack redundancy, failures disrupt the control system's ability to accurately map the sleds and dynamically control the conveyor system. The result is significant lost production.

### Solution

After some investigation, the Ford Twin Cities Assembly Plant (where Rangers are made) decided to retrofit the 100+ mechanical limit switches with the Eaton C-H E51 Limit Switch Style Inductive Proximity Sensor. Because the E51 senses sled position without mechanical wear, it lasts longer and causes less production disruption than the original limit switch. Payback for this conversion is measured in weeks and is further simplified because the E51 uses the same mounting as the original.

### For More Information

For additional application details and a Ford reference, contact:

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