



## Introducing the *Smartmatic*<sup>™</sup> 4WD Transfer Case

Once again, SDTL has a design concept which delivers new levels of function and performance in the field of transmission design.

As manufacturers around the world search for ways to enable shifting between high and low ratio in 4WD “on the fly” (which means – without the need to stop the vehicle), SDTL has designed a transfer case which not only allows this to take place but adds the ability to shift between Front Wheel Drive (FWD), Rear Wheel Drive (RWD) and Four Wheel Drive (4WD), ALL “on the fly”!

In other words, the *Smartmatic*<sup>™</sup> transfer case allows the following modes to all be selected automatically on the fly.

FWD Low Ratio  
FWD High Ratio  
RWD High Ratio  
4WD Low Ratio  
4WD High Ratio

This is a feature not seen in any competitive product to date and lends itself to full integration into a vehicles Electronic Stability Control System (ESCS).

ESCS is becoming more and more popular as advanced systems permit the automation of changes to a vehicles dynamics in a wide range of weather and road conditions for greatly increased safety of the vehicle’s occupants. The ability to select any of the modes listed above when added to an ESCS, would provide significant additional enhancement over what is available today.

In our last meetings with the world’s car industry majors, there was a strong interest expressed in just getting a transfer case that permitted the shifting between 4WD high and low ratios “on the fly”. The traditional transfer case technologies make this quite difficult, however, incorporation of the *Smartmatic*<sup>™</sup> multi-cone selectors into a new transfer case design delivers much more than the industry majors asked for.

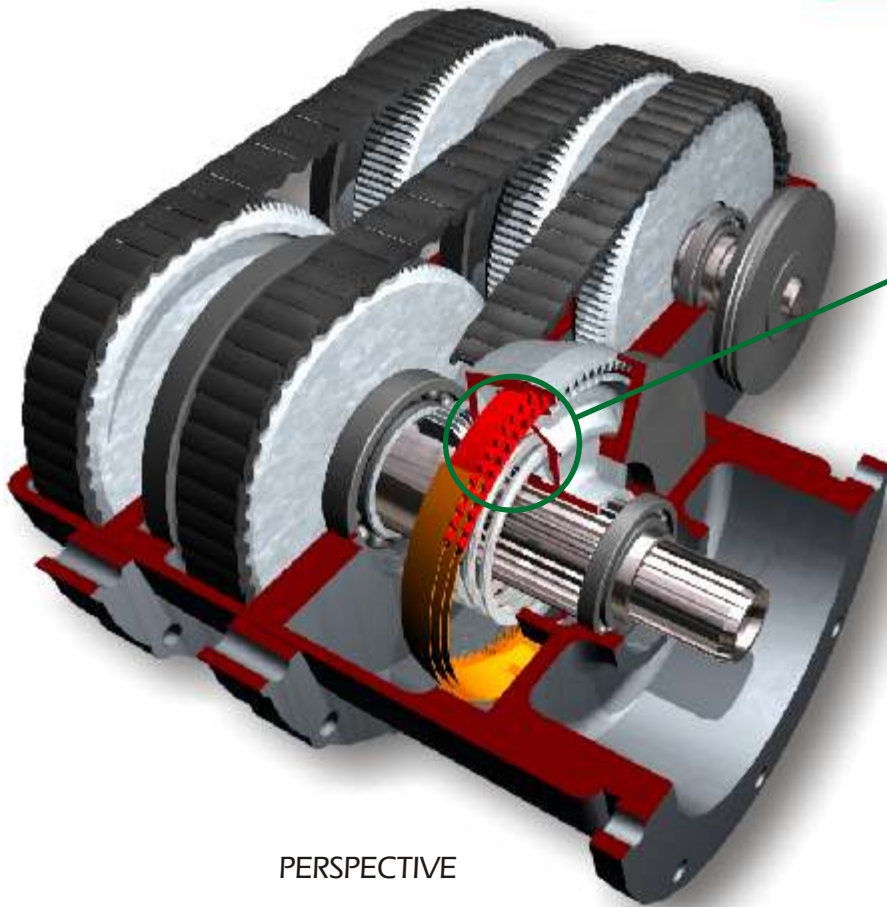
The general arrangement for a prototype *Smartmatic*<sup>™</sup> transfer case to go into a Ford Explorer is attached. This will form the basis of a prototype program with the Southwest Research Institute (SwRI). A transfer case of this basic design will be made and fitted to a Ford Explorer demonstration vehicle, in a prototype program which is only a fraction of the time and cost for a full working *Smartmatic*<sup>™</sup> 6 speed transmission.

# Smartmatic Transfer Case Concept

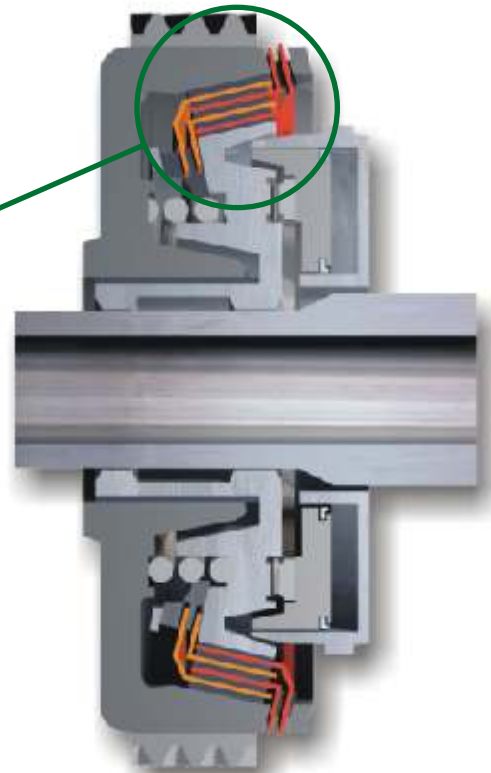
Chain Drive:

Chains and Multi-cone arrangements for 2WD and 4WD for Low and High Drive.

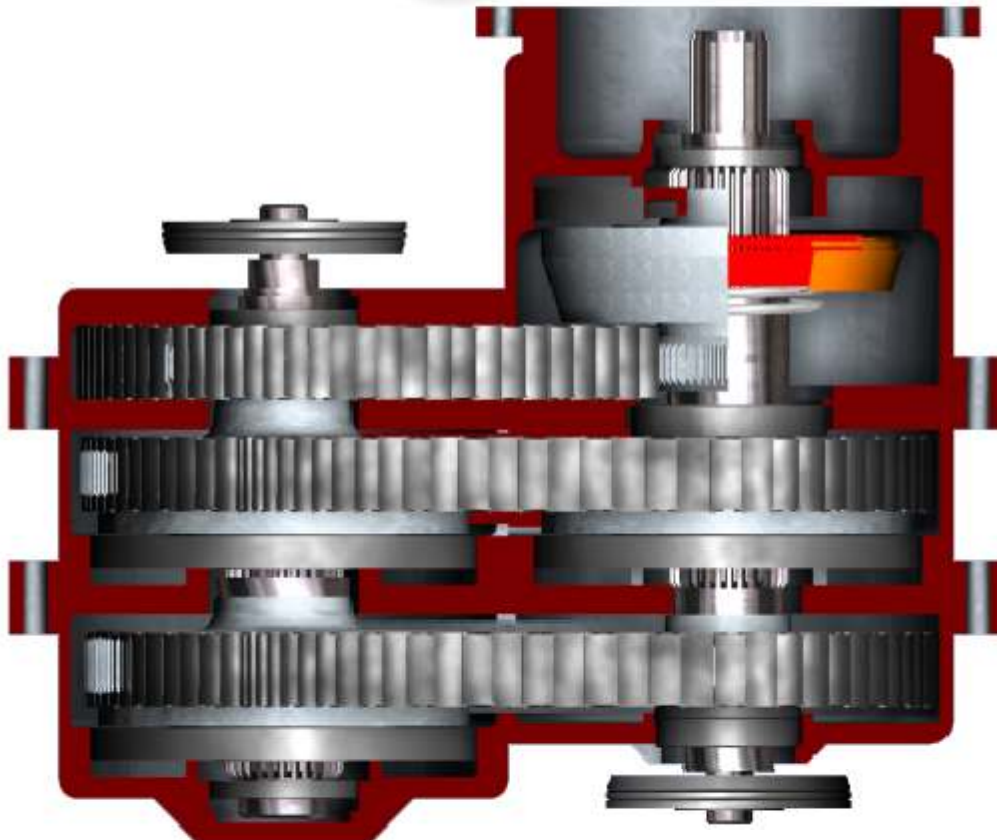
Low Ratio Range: 2.5 - 3.1.



PERSPECTIVE



SMARTMATIC SELECTOR SECTION

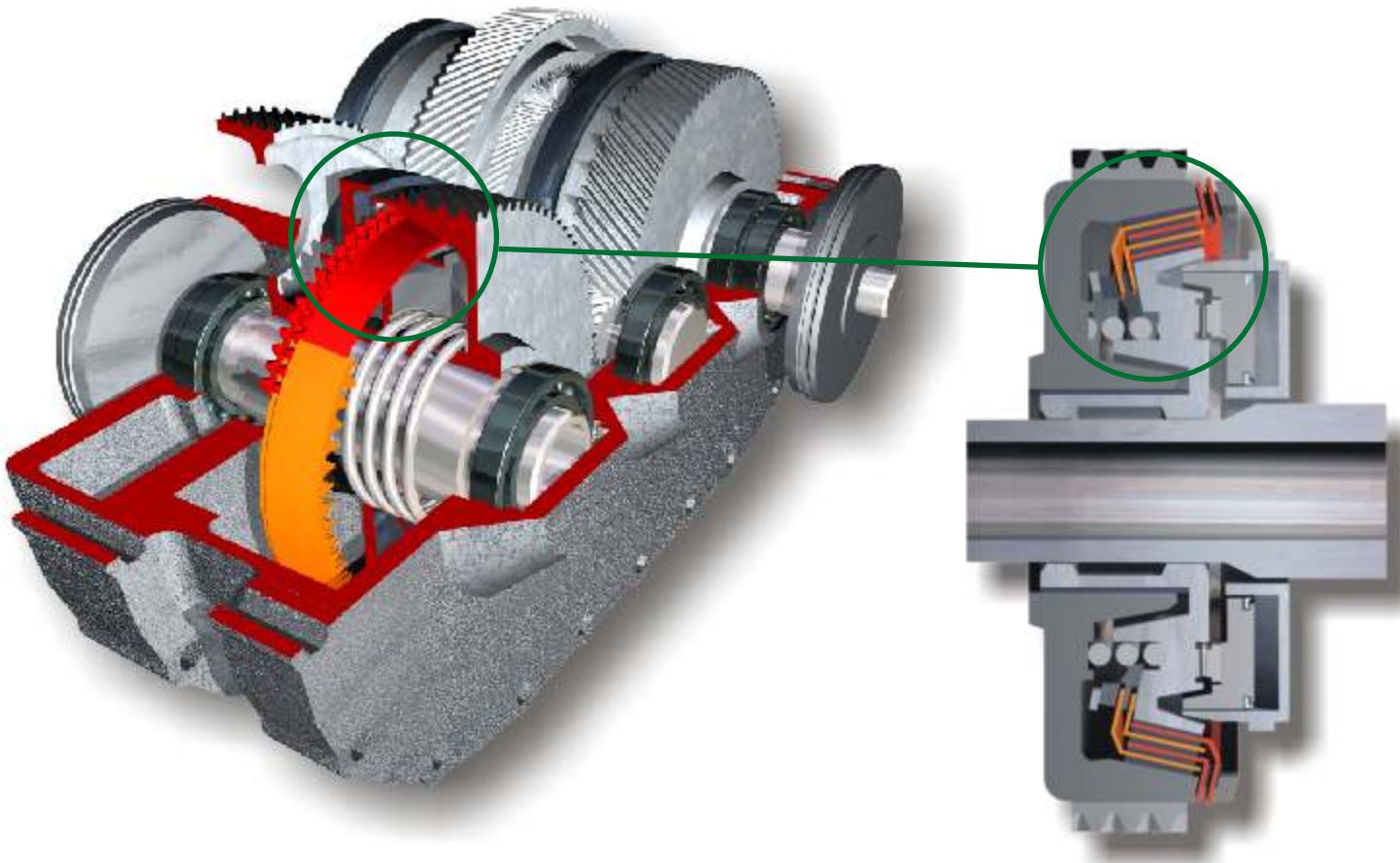


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# Smartmatic Transfer Case Concept

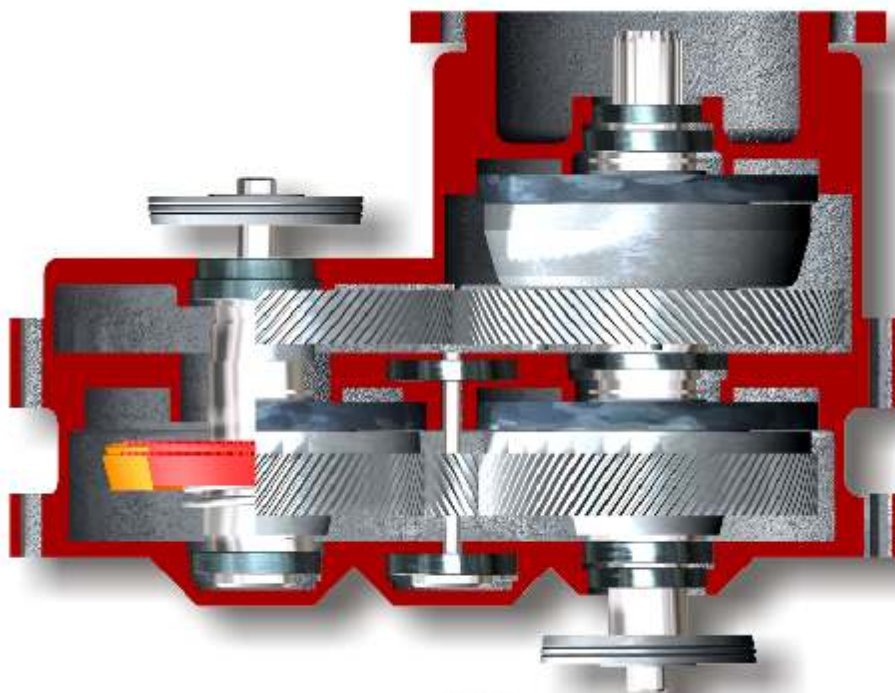
Direct Drive:

Gears and Multi-cone arrangements for 2WD and 4WD for **Low** and **High** Drive.  
Low Ratio Range: 2.5 - 3.5.



PERSPECTIVE

SMARTMATIC SELECTOR SECTION



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