

SCHAEFFLER



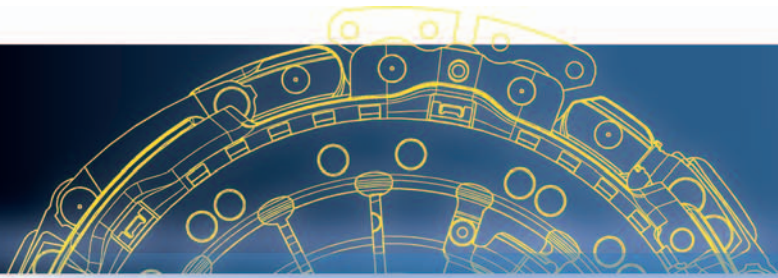
Dynamics and Efficiency – the Dry Double Clutch

Sporty and comfortable drive feel combined
with maximum environmental friendliness



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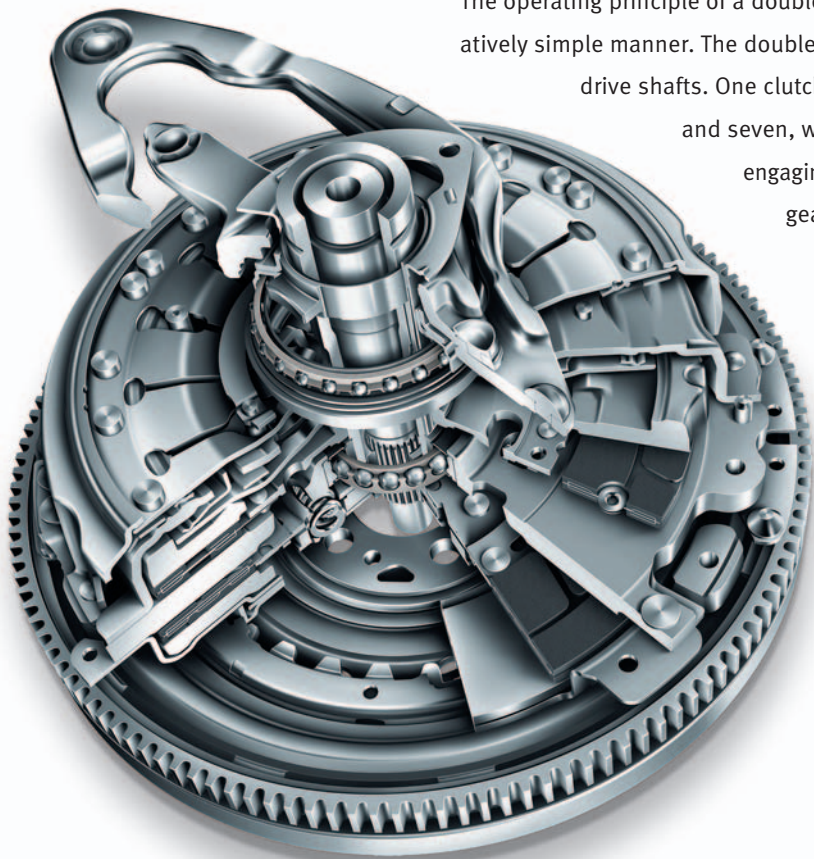
Excellent gearshift comfort...



Vehicles that provide driving enjoyment and comfort and still actively reduce fuel consumption are very attractive to end customers. The double clutch transmission with dry double clutch has been a revolution in vehicle construction in this regard since volume production commenced in January 2008. The transmission impressed the automobile industry from the beginning due to the significant advantages it offers in terms of efficiency and because it is a technical solution that reduces fuel consumption and emissions while meeting increased requirements in terms of safety, comfort and driving dynamics.

How does the double clutch work?

The operating principle of a double clutch is complex, but can be explained in a relatively simple manner. The double clutch consists of two clutches arranged on two drive shafts. One clutch is used for the “uneven” gears one, three, five, and seven, while the second controls the disengaging and engaging of the “even” gears two, four, and six and reverse gear. While one clutch is closed during travel, the transmission control system already preselects the next gear for the second clutch. Simultaneously opening one clutch and closing the second facilitates split-second gear changes. The gear change process is triggered electronically and gearshifts are performed by means of hydraulic or electromechanical actuators.



...for increased dynamics and efficiency



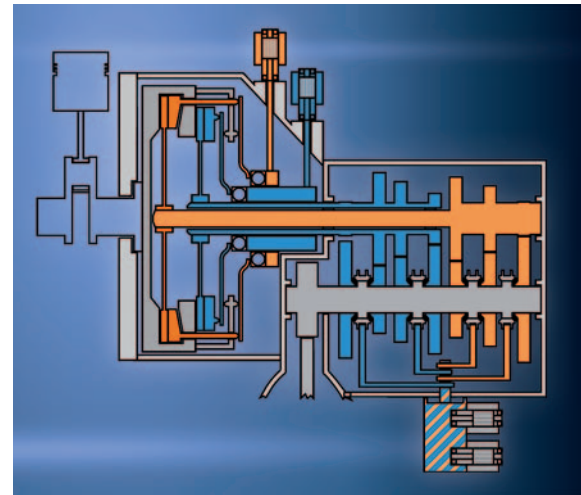
Significant benefits: Environmentally friendly and noticeable driving enjoyment

The LuK double clutch combines the comfort of a conventional automatic planetary transmission with the efficiency of a manual transmission. As well as having the same space requirements as a wet double clutch, the dry variant is predestined for use in automated and hybrid transmissions up to the medium torque range. As the central element of the double clutch transmission, it has made a considerable contribution to making the annoying “nodding” of the passengers during gearshift operations a phenomenon of the past and also to increasing the efficiency of the vehicle by 5% to 15%. The driver experiences rapid and sporty gearshift operations without any interruptions in tractive force.

A reduction in fuel consumption is another benefit provided by the double clutch. The high efficiency and the elimination of the oil cooling system and the hydraulic system it requires facilitate significant cuts in fuel consumption of up to 6% compared to manual transmissions and up to 10% compared with wet double clutches. The potential reduction in CO₂ emissions compared with conventional automatic transmissions is over 10%.

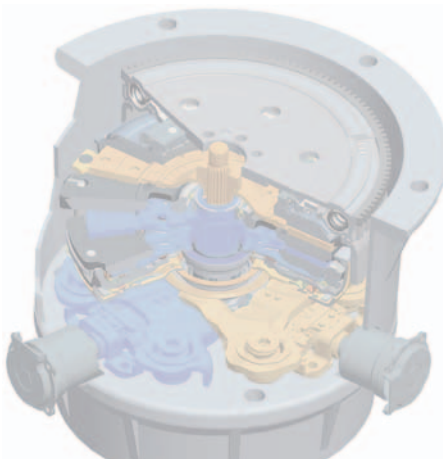
And during the next few years?

It's hardly surprising that customer orders continue to rise and increasing numbers of automobile manufacturers choose the dry double clutch when you consider its complexity and the innovations behind it. This success story is manufactured at LuK's headquarters in Bühl (Germany) as well as Schaeffler



The principle of the double clutch

plants in Szombathely (Hungary), Taicang (China) and Puebla (Mexico). LuK celebrated a very special manufacturing milestone at the end of December 2010 when the millionth dry double clutch came off the production line. Over 100,000 are now manufactured every month and this figure is set to rise.



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