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# ALL ABOUT OPTIDRIVER GEARBOXES

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PRODUCT  
TECHNICAL AND COMMERCIAL KNOWLEDGE

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Renault Trucks SAS with a capital of 50 000 000 € - 954 506 077 RCS Lyon - Crédit photos : © Renault Trucks - 04/2017 - C&Bproject



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# FACT

**The gearbox uses gears and gear trains to provide speed and torque conversions from the engine to the wheels. The aim is to control the engine so that it remains within the most efficient engine rpm range in terms of output and torque. The gearbox needs to be able to carry very large torque from the engine to the wheels. This puts great demands on the quality of the materials and bearings.**

Optidriver is an automated manual gearbox, designed for automatic gear changing, with the possibility of manual shifting. It is an electronically controlled 12-speed gearbox with splitter and range, developed to ensure high driveability: to be easy on the driver, while securing excellent fuel efficiency and low weight to improve payload. For aftermarket purposes the following main product offers are available:

- New and eXchange Optidriver: complete assembly.
- eXchange Optidriver partial assembly excluding Gearbox Control Unit (GCU), Control Valve Unit (CVU) and Concentric Clutch Actuator (CCA): basic gearbox.

FEATURES	BENEFITS
Parts are always updated to the latest version of technical specifications.	<ul style="list-style-type: none"><li>■ Ensures driveability.</li><li>■ Keeps fuel economy.</li><li>■ Low operating cost.</li><li>■ Ensures uptime.</li></ul>
Perfectly shaped and dimensioned synchronizing rings and sleeves.	<ul style="list-style-type: none"><li>■ Ensures driveability.</li><li>■ Keeps fuel economy.</li><li>■ Smooth gear engagement.</li><li>■ Minimized risk of gear jump-out.</li></ul>
Helical gears made of special steel with precise shape and tolerances in both the base unit and range-change section.	<ul style="list-style-type: none"><li>■ Optimised strength.</li><li>■ Ensures maximum surfaces in mesh.</li></ul>
Bearing solution with a spring pin between the bearing ring and the housing.	<ul style="list-style-type: none"><li>■ Prevents the outer bearing ring from rotating.</li><li>■ Long service life of main or clutch housing.</li></ul>
Correct tightening torques for screws, nuts and bolts applied at assembly.	<ul style="list-style-type: none"><li>■ Leakproof.</li><li>■ Long material lifetime.</li></ul>
Clean assembly operations.	<ul style="list-style-type: none"><li>■ Long lifetime of bearings.</li><li>■ Leakproof.</li><li>■ Clean oil between oil changes.</li></ul>
Replacement of all needed wear parts and all seals and gaskets in remanufacturing process.	<ul style="list-style-type: none"><li>■ Low operating cost.</li><li>■ Ensures uptime.</li></ul>

## THE PROMISE OF A GENUINE RENAULT TRUCKS PART

### THE MAIN DIFFERENCES CAN BE FOUND IN THE QUALITY OF PARTS AND ASSEMBLY

#### 1 | Shafts and gears

Our gears are made of special steel that has been casehardened to provide required strength. Helical gears with precise shapes and tolerances, in both the base unit and range-change section, mean that more surfaces are in mesh, promoting quiet operation and high reliability.

#### 2 | Synchronizer

Synchronizing rings and sleeves are replaced together to secure the optimal lifetime of the joint. They also are perfectly shaped and dimensioned to ensure smooth gear engagement and avoid gear jump-out.

#### 3 | Bearings

Due to different thermal expansion coefficients for aluminum and steel, Renault Trucks has a spring pin between the bearing ring and the housing to prevent the outer bearing ring from rotating, which otherwise could lead to the main and clutch housings needing to be replaced.

Press fitted gear/bearings on shafts to prevent it from moving on the shafts. Too loose grip can lead to micro movements and fretting corrosion, which results in the gears/bearings losing their grip, and gear disengagement.

#### 4 | Conical bearings

Our conical bearings have a crowned bearing race (convex surface) to withstand the load capacity requirements.

### RENAULT TRUCKS OPTIDRIVER REMANUFACTURING PROCESS

#### 1 | Replaced with Genuine Renault Trucks parts

Wear parts like seals and gaskets are always replaced regardless of condition. Tolerances of all components are assessed and verified against the latest design specifications.

#### 2 | Clean assembly

Our assembly operations and the parts we use are clean, stopping particles from entering the gearbox, which can shorten bearing life, cause gear disengagement and oil leaks or clog oil flow.

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#### 3 | Industrial process and assembling

Our assembly operations have access to all specifications, tools, and measuring equipment. They can apply the necessary expertise required to achieve the correct tightening torques and pre-setting tolerances of axles to avoid oil leakages and material breakages due to material stress.

#### 4 | Upgraded to latest specification

The product is constantly under development. Renault Trucks Optidriver Exchange is therefore always upgraded to the most recent specification.

#### 5 | Dynamometer test

All remanufactured gearboxes must pass the dynamometer test rig where adequate torque is applied, verifying the product's full performance.

## OPTIDRIVER GEARBOXES - HOW IT WORKS

Optidriver is designed to be used in a large variety of applications, with a torque range of 2,400–3,500 Nm. The functions of the gearbox are optimised by specially adapted software packages, which make it even more practical and economical by adapting the gearshift strategies to the current transport conditions. Optidriver's software packages and parameters can be easily installed and changed by using the Renault Trucks Tech Tool. The main, clutch, range and control housings are cast from aluminium to reduce weight, thereby increasing the payload. All shafts, bearings and gears are dimensioned for high operating reliability and a long service life. All gears are made of special steel that has been case-hardened to provide the required strength. The gears are helical with very precisely defined shapes and tolerances, which give better surface and contact area as well as reducing the noise level.

## EXTENSIVE LOAD TEST

Optidriver gearboxes are extensively tested at Renault Trucks in different driving cycles and vehicle environments. During the development stage the gearboxes are subjected to harsh and demanding tests to ensure their durability and quality. The process includes endurance tests, performance tests, corrosion tests, and a large number of field tests. In addition to this critical field-testing, Renault Trucks conduct accelerated endurance tests, climate tests and component rig tests.

## EXCHANGE



We offer the following eXchange solutions for Optidriver:

- eXchange Optidriver complete assembly.
- eXchange Optidriver partial assembly (excluding GCU, CVU and CCA).
- Gearbox Control Unit (GCU).
- Concentric Clutch Actuator (CCA).

## PRACTICAL ADVICE

### MAXIMISE THE SALE

- Check the condition of clutch components – a gearbox replacement is quite an extensive process.
- Check the Pilot bearing in flywheel.
- Replace nuts and bolts in the gearbox flange/propeller shaft flange joint.

### RENAULT FITTED-PART

- One year warranty.
- Fitted by Renault Trucks trained technicians.

### RENAULT TRUCKS 24/7

- Professional roadside assistance 24 hrs a day, 7 days a week, 365 days a year.
- Dedicated to getting customers' trucks back on the road with minimum delay.