

Order no.: 5871 956 002

# **ZF – POWERSHUTTLE TRACTOR TRANSMISSION T-7100 KT**



**ZF Passau GmbH**  
Donaustr. 25 - 71  
D- 94030 Passau

# **REPAIR MANUAL** **for the ZF-Powershuttle** **Tractor Transmission** **T-7100 KT**

## **IMPORTANT INFORMATION:**

The great variety of ZF units compels a restriction of the Disassembly and Reassembly Manuals to a standard ZF production unit. Continuous technical improvement of the ZF units as well as extensions concerning design possibilities might require differing work steps, which can be carried out by qualified specialists without any greater difficulties using the perspective illustrations included in the corresponding Spare Parts Lists.

This disassembly and reassembly manual is based on the design level of a ZF production unit at the time of preparation of the Repair Manual.

ZF Passau GmbH reserves the right to replace the Disassembly and Reassembly manual by a subsequent edition at any time without prior notice. Upon request, ZF Passau GmbH shall advise, which edition is currently valid.

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## **ATTENTION:**

For instructions regarding operation, maintenance and description –  
refer to ZF-Operation Manual order no.: 5872 984 002  
Please find disassembly and reassembly of the rear axle in the repair manual  
„Rear Axle T-7100“ order no.: 5871 955 102  
Observe the vehicle manufacturer's instructions and specifications for unit  
installation and commissioning!

## **ZF Passau GmbH**

Donaustr. 25 - 71  
D - 94030 Passau

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## PREFACE

This documentation has been developed for specialized staff trained by ZF Passau for repair and maintenance work to be made on ZF-units.

**This documentation describes a ZF series product with a design level valid at the date of edition**

Due to a continuous technical improvement of the product, however, the repair of the unit at your disposal might require both deviating work steps and differing setting and testing data.

We would therefore recommend you to entrust masters and servicemen with the work on your ZF product, whose practical and theoretical training is constantly updated in our training school.

The Service Stations established by ZF Friedrichshafen all over the world offer you:

1. Permanently trained staff
2. Prescribed equipment, e.g. special tools
3. Genuine-ZF-spare parts at current state of the art

All work is done there with utmost care and reliability.

**In addition, repair work carried out by ZF-Service Stations is covered by the ZF warranty within the terms of the currently applicable contractual conditions.**

Any damage resulting from work which is done in an improper and unworkmanlike manner by third parties and consequential costs incurred are excluded from this contractual liability.  
This shall also be applicable if other than genuine ZF spare parts are used.

ZF Passau GmbH

Service Department

## GENERAL

The Service Manual covers all work required for disassembly and the pertaining reassembly.

When repairing the transmission, ensure utmost cleanliness and that the work is done in a workmanlike manner.

Dismantle the transmission only if any damaged parts must be replaced. After removing screws or nuts, loosen lids and housing parts, which were installed with seals, by slight hammer blows with a plastic hammer. Use suitable pulling devices for removing parts being tightly installed on the shafts, such as bearings, bearing rings and similar.

Carry out disassembly and reassembly work on a clean working place. Use special tools which have been developed for this purpose. Prior to reinstallation of the parts, clean contact faces of housings and lids from residues of seals. Remove burrs, if any, or similar irregularities with an oil stone. Clean housings and locking lids, in particular corners and angles, with a suitable detergent. Damaged or heavily worn parts must be replaced, with an expert assessing whether parts subject to a normal wear during operation, such as bearings, thrust washers etc. will be reinstalled.

Parts such as sealing rings, lock plates, split pins etc must generally be replaced. Radial sealing rings with worn or broken sealing lip must also be replaced. In particular, ensure that no chips or other foreign bodies remain in the housing. Check the lube oil bores and grooves regarding unhindered passage.

Apply oil to all bearings prior to their installation:

**NOTE:** Only a heating furnace (oil bath) or an electric drier is permitted to be used for heating up parts such as bearings, housings, etc.!  
Parts fitted in heated state must be readjusted after cooling down to ensure a perfect contact.

### **CAUTION**

When assembling the unit, exactly observe the tightening torques and setting data indicated in the manual. Tighten screws and nuts according to the enclosed standard table, unless otherwise specified. The use of fluid seals or Molykote is not permitted for the control part in the transmissions – due to a possible malfunction.

Never wash clutch plates having organic friction linings (e.g. paper linings) (adverse effect on lining adhesion).  
Only dry-cleaning is permitted (leather cloth).

When assembling snap rings and retaining rings, pay attention to an exact contact in the grooves!



### **DANGER**

**When using detergents, observe the manufacturer's instructions regarding their handling.**



## Structure of the Service Manual

The structure of this repair manual reflects the sequence of the work steps for completely disassembling the dismantled unit.

Please find special tools required for carrying out the repair work in the current text as well as in chapters “W” (List of special tools) and “WB” (illustrated tables).

## Important information on industrial safety

As a principle, the persons repairing ZF-units are responsible on their own for industrial safety.


**Observing all valid safety regulations and legal requirements is a precondition for avoiding personal injury and damage to the product during maintenance and repair work.**


**Persons performing repair work must make themselves familiar with these regulations before starting their work.**

A suitably trained and skilled staff is required for a proper repair of these ZF-products.

The repairer is obliged to perform the training.

**The manual uses the following safety notes:**

 <b>CAUTION</b>	You will find this symbol in this repair manual where a <b>reference note</b> is made to special working procedures, methods, information, applications of auxiliaries, etc.
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 <b>DANGER</b>	This symbol refers to situations, where lacking care might lead to <b>personal injury or damage to the product.</b>
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<b>NOTE:</b>	Before starting the tests and repair work, thoroughly study this manual.
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<b>NOTE:</b>	Illustrations, drawings and parts do not always represent the original; the working procedure is shown.  The illustrations, drawings, and parts are not drawn to scale; Do not draw conclusions on size and weight (not even within one and the same illustration). Carry out the work according to the description in the legend.
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<b>NOTE:</b>	After repair work and the tests, the expert staff must verify that the product is perfectly functioning again.
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# Repair Manual

Corporate Division  
Off-Road Driveline Technology  
and Axle Systems



**VERGLEICHSTABELLE FÜR MASSEINHEITEN**  
**CONVERSION TABLE**  
**TABLEAU DE CONVERSION**

25.40 mm	=	1 in ( inch)
1 kg ( Kilogramm )	=	2.205 lb ( pounds )
9.81 Nm ( 1 kpm )	=	7.233 lbf x ft ( pound force foot)
1.356 Nm ( 0.138 kpm )	=	1 lbf x ft ( pound force foot )
1 kg / cm	=	5.560 lb / in ( pound per inch )
1 bar ( 1.02 kp/cm <sup>2</sup> )	=	14.5 psi (pound force per squar inch lbf/in <sup>2</sup> )
0.070 bar ( 0.071 kp/cm <sup>2</sup> )	=	1 psi ( lbf/in <sup>2</sup> )
1 Liter	=	0,264 Gallon ( Imp. )
4.456 Liter	=	1 Gallon ( Imp. )
1 Liter	=	0.220 Gallon ( US )
3.785 Liter	=	1 Gallon ( US )
1609.344 m	=	1 Mile ( Landmeile )
0° C ( Celsius )	=	+ 32° F ( Fahrenheit )
0 ° C ( Celsius )	=	273.15 Kelvin