



Warranty Directive

Scope ZF-Group

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Confidential!

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Warranty Processing within the ZF Group

This guideline serves the purpose of providing basic conditions for warranty handling. Based on it, the following issues are addressed with the aim to improve and optimize procedures.

All procedures are subject to the following ZF principles:

- In cases of warranty claims, the ZF plants and their service centres are under the obligation to remedy defects. Deviating measures will be regulated in binding agreements.
- Repairs at any ZF service centre must be made with original ZF parts only. Deviations from this will void ZF's warranty obligation.
- Warranty repairs must be made promptly and claims submitted as quickly as possible (keywords: "quality assurance and early detection of faults").
- The claimant undertakes to submit the necessary data (vehicle-, unit- and failure data) completely and in good quality.
- ZF is under no general obligation to replace wear parts, i.e. customers do not have any claim to replacement in cases of unscheduled repairs. In the event of a replacement-permitting overhaul, the risks must be jointly defined during a visit (EGS), with the aim to "reduce costs".
- The goal is to carry out warranty repairs as cheaply as possible, but also as good as necessary.
- The service centre is responsible for carrying out repairs.
- Warranty work is to be carried out within the framework of these guidelines, i.e. no profit margins may be realized.
- In cases of warranty claims, the official spare parts paths must always be considered, warranty claims always follow the spare parts paths.

1. Warranty support (e.g. EGS)

Warranty support involves providing assistance to service centres during the warranty process. Essentially, this entails exchanging all kinds of experiences, detecting new failure patterns, raising failure coding knowledge, counselling on system topics, and consolidating total warranty process know-how. Previous experience shows that there is improvement potential in the way warranty claims are processed, and further work should be conducted in this area. Those efforts should aim to improve product quality and to keep costs at a low level for ZF.



2. Repair time schedules / Labour expenses

The repair times for complete units were determined according to expert assessment (ZF Service Centre and plants), not being taken into consideration an industrial remanufacturing, but rather the situation in the workflow of a service centre, when all components are dismantled. The ZF plant refers to the current repair guidelines in the ServiceLine, these values also include test run times. The specified maximum repair values must never be exceeded. However, the principle of "billing according to expenditure" applies and in general a 20% reduction in repair times is to be aimed at and is possible. Additional exceptional expenses must be listed separately and explained on the warranty claim and such a case will be decided on its merits.

3. Repair limit

In cases of extensive damage, the economy of a repair must always be checked. A repair is economical if the warranty-based repair value is lower (including logistics costs) than the net purchase price of a unit (division's net list price, including logistics costs). If the purchase price is exceeded, the respective divisional warranty department must be consulted.

4. Administration of replacement units / components

4.1 Freight & handling costs for replacement units/components with a net purchase price > 1 500 euros

In case of an accepted warranty claim, the ZF plants compensate the maximum freight and handling costs, one way, if a unit is ordered from a plant in a warranty case as follows:

- Units ex works plus
 - * Freight and customs duties based on checked voucher plus
 - * Handling = 3 x the warranty hourly rate

Such cases should remain exceptions to the rule (repairs are normally made on site) and only applicable within the warranty period.

Attention! Primary failure coding thus occurs at the plant.

This cost settlement regulation does not apply to returned units without detectable defects.

4.2 Freight & handling costs for replacement units/components with a net purchase price < 1500 euros

The usual material handling costs do not apply to components < 1 500 euros; settlement is instead to be handled as follows:

The material costs claimed in the warranty claim to be submitted to the respective division must be net costs, and separate lump-sum compensation applies to freight and handling costs as follow:



Units ex works plus

- a) Max. € 100 for freight and handling (fixed amount starting on January 1, 2010)
- b) Customs duties based on voucher

4.3 Check lists for the replacement of electronic components / parts

Replacement of such components must be arranged in advance with the plant's technical service department, and checklists must be added (if specified).

For the settling of costs for such components like ECUs, GS3's a.s.o., see 4.1 / 4.2

5. Oil costs

Units delivered with standard "ex works" oil fills according to the parts list may have to be filled with oil in case of a warranty repair, depending on the customer's request. In such a case, the oil costs apply as spare part costs and can be submitted with the warranty claim. For instructions on settlement see note of the ZF plants.

Since the ZF warranty obligation does not cover service intervals, reuse of the unit oil is to be aimed at in cases of unscheduled repairs in order to minimize costs if the reason for the failure in the unit did not result in contamination of the lubricant.

6. Test bench oil

Test bench oil costs are expendable material costs and thus part of the workshop overhead cost. These costs are compensated as a lump sum via the hourly rate. For products with torque converter and intarder, where major quantities of oil remain in the units after a test run, a lump sum of € 50 may be invoiced.

7. Administration regarding Warranty/Goodwill/Special Actions

- It is absolutely necessary that the correct submission procedure is observed, that is
 - a) within the warranty period = invoice or claim
 - b) not within the warranty period = goodwill claim only (means cost absorption without obligation)

(Invoices are not permitted; i.e. automatic rejection)
- Special actions must be clearly identified with the specified ZF complaint code (ZF failure coding system) and the complaint text. Submission in the usual manner.
- In case of inspections with subsequent removal and repair, separate applications can be filed with the respective costs (inspection = 1 application, repair = 1 application) to avoid automatic rejections. Attention! This requires particular attention to be paid to correct failure coding. It is also possible, however, to file a single application in which the inspection costs are listed separately and a correct failure coding is done.



- The use of information applications (info claims) is required if, for example, a reprogramming or inspection takes place in a fleet (multiple claims). For precise instructions, please see the note in the ServiceLine.
- Definition for 0-kilometer/hour complaints: Quality complaints from ex-works delivery of units and no longer than until registration / putting into operation of the vehicle, or official handover to the operator. In exceptional cases and after consultation with the division's departments for zero mile complaints, such complaints can be submitted in the usual manner (analogous to warranty claims). Attention! The standard handling of zero mile cases do not apply via the usual warranty way.
- Other work, such as work ordered by the division testing department (e.g. prototypes, etc.) must be submitted to the remitter directly via paper application.
- Other costs (e.g. third-party or other costs) must always be explained in the info text. Costs exceeding € 200 must be documented by a voucher.
- WebGUI-based warranty application provides an additional data-recording. However, the principle goal is to generally transmit data via file transfer by telecommunication (remote data transmission).
- Attention! Individual claims below one (1) warranty hourly rate may not be submitted since the processing expenditure is out of proportion to the administrative costs. Possible solution is collecting such cases and transferring by multiple-claim handling.
- When warranty repair work is carried out always oil and coolant samples must be taken and stored together with the damaged parts. In most cases, a small sample of just 100 ml will be sufficient for an accurate analysis (although 250 ml is better). The ZF Service Station can obtain suitable sampling containers under order number 0666.710.600, and the sampling kit under 0667.419.500 via ZF Friedrichshafen or the kit 5870.286.078 via ZF Passau.

8. Administrative instructions

Data quality can still be improved. This needs to be stated as a general fact. Please support this data optimization process and point out improvement potentials. For the support, please observe the instructions on error-free administration in the ServiceLine.

9. Warranty handling in the ServiceLine

The opportunity to make use of the ServiceLine warranty page is explicitly pointed out to the ZF Service Station. It contains updated information concerning time schedules, returnable components, damage pattern catalogs, service materials, failure encoding, administration, etc., which serve as a working basis for warranty handling. These data are constantly updated. It is therefore advisable to fetch updates on a regular basis.



In addition, all service information is stored in the ServiceLine and can be recalled there. Please make regular use of this, for then the warranty decisions will be stored expertly. This source should also be called up regularly and checked for new documents.

10. Processing flow times / flow time limits (= calendar days)

Processing flow times must always be kept short. The time elapsing between the complaint of a customer/rectification of the unit failure and submission of the warranty claim must not exceed 30 days. This period must also be arranged with subagents or OE-dealerships. If a time limit of 30 days is observed by the subagents or OE-dealerships, it will be possible to adhere to a total processing time of 50 days (with the exemption of 80 days for OE-dealerships, if demanded). The warranty processor is required to respond accordingly and to reject cases with excessively long processing times.

Leaving the failed unit lying somewhere waiting for a potential need from the market is not acceptable in case of a warranty claim, i.e. the failure must be reported immediately (split warranty claim for inspection and repair) since otherwise the error statistics cannot be kept up to date. In addition, returnable parts must be shipped immediately or as quickly as possible to the relevant plant.

As well the divisions strive to keep the processing flow times for warranty claims as short as possible. The goal is 30 days if there are no further inquiries.

The storage period for damaged parts is generally specified as 90 days to permit their return to the plant if necessary. Returnable parts (see ServiceLine) must be returned to the plant immediately and without request.

11. Annual financial statements

This issue always results in considerable expenditure. Therefore, please consider the following:

- Attention must be focused on making sure that no claims are left unprocessed and that a smooth year-end closing is possible. Invoices and claims submitted and accumulating shortly before the end of the year can only be processed with significant additional effort and will be returned in certain circumstances. The ZF Service Station is urgently asked to process warranty claims in a continuous manner.
- December 15 (in certain circumstances even earlier) is the set date for the submission of warranty claims. Please understand that the ZF plant will not be able to accept any invoices posted to the system after this deadline.
- In return, the ZF warranty processing staff has been ordered to send the ZF Service Station credit notes or debit notes after December 15 by email or fax. December 23 has been set as the final deadline for these transactions.



12. Dual-view in goodwill handling

Attention must be paid to making sure that a goodwill settlement always contains at least two views, that of the customer and that of the warranty. If necessary, it is advisable to obtain prior approval via the relevant division.

a) Customer view (ZF service centre to customer):

With respect to the customer, the ZF Service Station naturally always calculates using market- or customer-specific prices.

<u>Example 1:</u>	Repair expense customer's view	€ 3 800
	Communicated customer share	€ 3 000

	(Current warranty basis = € 2 700)	

The ZF Service Station communicate to the customer the total of € 3 800.

- o As variation option, the ZF Service Station can then reduce this to € 3 000 or even € 2 700 without requiring support from the ZF plant.

<u>Example 2:</u>	Repair expense customer's view	€ 5 300
	Communicated customer share	€ 3 500

	(Current warranty basis = € 4,100)	

The ZF Service Station communicate to the customer the total of € 5 300.

- o As variation option, the ZF Service Station can then reduce this to € 4 100 without requiring support from the ZF plant.
- o The second variation option is that the ZF Service Station has to take a reduced value and claims then the difference of € 600 from the ZF plant, if applicable.
- o Another variation option is that the ZF service centre makes its own strategic cost contribution and reduces the customer share again (so-called "strategic goodwill").

b) View ZF service centre to ZF parent plant:

With respect to ZF, the ZF Service Station indicate the total expense on a warranty basis, the ZF plant deduct the customer share and in accepted cases the ZF Service Station receive a credit for the difference. Please consider in the argumentation that goodwill repairs are voluntary services of the ZF plants and that there is no claim to similar cases.



13. Failure coding

Please observe the instructions in the ServiceLine as well as in the relevant service information and naturally in the coding catalog of the respective business units (reduced version from the common database).

The coding catalog is structured alphanumerically and numerically and available in 6 languages: German, English, French, Spanish, Italian and Russian.

Correct failure coding of repairs

On account of increased quality standards (reliability, early detection of errors) concerning the ZF products, the ZF plant encourages the ZF Service Station to give high priority to the correct failure coding for repairs.

Please pay particular attention to the coding requirements in current service information and the recommendations on the warranty page of the ServiceLine. Attention! The ZF Service Station will find product-related coding requirements, some of which will supersede previous service information. Product-related coding requirements are constantly being updated and should provide effective support for the workshop and warranty staff.

Special instructions:

- a) Repair kits ('kits') must not be encoded (material number xxxx.198.xxx, xxxx.298.xxx or xxxx.191.xxx). If a single part contained in a repair kit caused the failure, only this part - the respective removed defective part, see Item b) - must be coded. The code can be entered into the field "Failed part no."
- b) In cases of replacement (new generation parts), the new part is removed from stock and submitted with costs. Attention must be paid here to the fact that the number of the new part is often not identical with that of the removed part that caused the failure, i.e. it is always the number engraved in the removed part causing the failure that is used for coding (in the field "Failed part no.").

Information on Navision coding

Fade in the additional columns for coding and the "Failed part no." to fulfill above-mentioned requirements a)/b). Owing to insufficient knowledge, it happens repeatedly that these columns are not shown in Navision and the ZF plant consequently loses important information.

As a result, two material positions are generated in SAP, one for the requested costs and one for the failure-relevant component. This ensures compensation for the part as well as correct failure coding.

With this information, the ZF Service Station are making an important contribution to early failure detection as well as reliability analysis and thus to enhancing the quality of the ZF products!



14. Warranty manual

The warranty manual is on the warranty page in the ServiceLine.

15. Repair warranty

The ZF plants often receive inquiries about repair warranty. Therefore, here a few guiding principles:

a) Execution of repairs

- The executing service centre assumes full responsibility for repair work carried out.

b) Warranty terms

- The terms agreed with the vehicle manufacturer apply throughout the warranty period, i.e. repeated repairs can be invoiced to ZF provided that the cause of the failure has nothing to do with the execution of the prior repair.
- Apart from that, all repair centers base their repairs on their general conditions for repairs, which may differ on account of local laws. Each country may have defined different warranty periods for repairs. In cases in which a customer paid for a prior repair, the repair shop carrying out repair work is obligated to provide repair warranty.
- In cases of repeated repairs resulting from the supply of a faulty part (not covered by the vehicle manufacturer's warranty), claims will be handled according to ZF's general delivery and purchase conditions.
- A warranty for spare parts is not realizable because spare parts are not serialized; it is therefore not possible to determine when a part was produced or sold (unless it has a batch number or a date of manufacture engraved on it or if there is proof of delivery in case of exotic individual parts). Therefore, ZF's obligation to replace faulty parts delivered to ZF service centers can always only be regarded within the context of the prior repair. Proof that the primary failed part caused the failure and that the customer paid for the repair made previously must be presented in any case.
- With respect to third parties, the individual delivery conditions of the ZF service centre apply.
- ZF plants recommend a warranty period of 12 months / 100,000 km or 1,500 hours of operation for replacement units and a warranty period of 6 months / 50,000 km or 750 hours of operation for repairs. Different conditions apply in the marine business unit. Any obligation beyond this in the respective countries must be covered by the ZF service centre.

Explanatory notes on repeated failures:

a) Repeated failure - **prior free repair carried out by ZF service centre within the warranty period:**

Customer/operator has no claim to extension of the warranty by ZF, i.e. the vehicle's original warranty period must be considered. With a defined warranty period of 24 months, for exam-



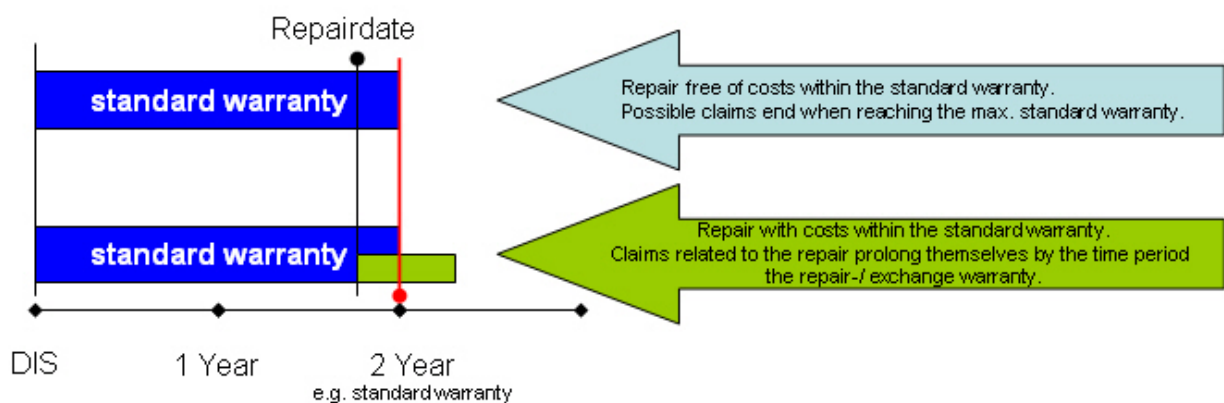
ple, this can mean 23 more or just 2 more months that are applicable. In case of free-of-charge rework, there is no individually-provided repair warranty.

b) Repeated failure - **prior billed repair made within the warranty period:**

The customer is entitled to repair warranty. The ZF plant recommends the periods stated above. If **no** repair failure is involved, i.e. a faulty spare part is involved, the ZF plant will, **as a gesture of goodwill**, assume the material and actual labor costs for the repair to be made (even if the ZF plant was only required to receive the faulty spare part delivered). The repair documents for the billed prior repair must be submitted on request. In addition, the ZF plant assumes a prorated share of the removal and installation costs on the basis of fixed values arranged beforehand.



Example within the standard warranty

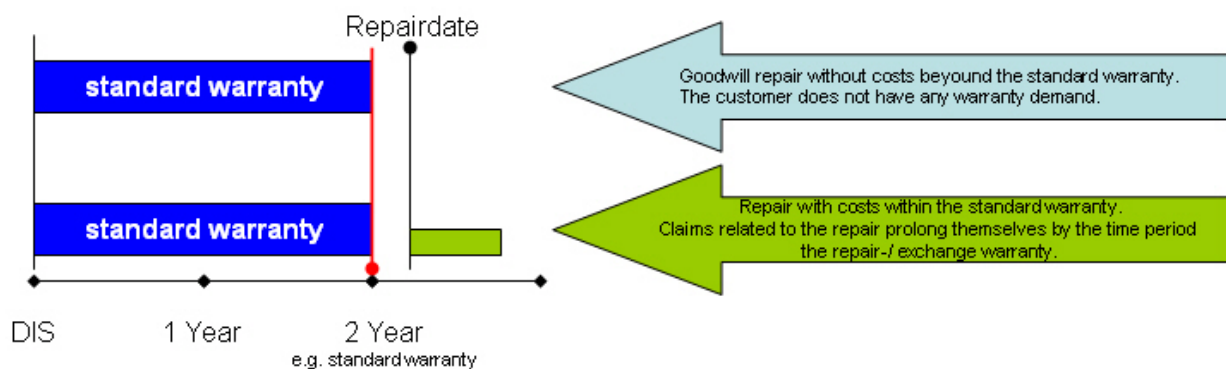


c) Repeated failure - **billed prior repair not made within the warranty period:**

Customer is entitled to repair warranty - rules as under b).



beyond the standard warranty





16. Warranty factors

The factors for the compensation of warranty work are checked and redefined annually. For this purpose, a survey is performed in order to take into account any market changes.

a) Warranty hourly rate:

This covers the wage expenses for direct and indirect employees as well as the overhead of a ZF service centre. For a detailed description, please consult the warranty manual or the ZF Service-Line.

In the case of specifications for a ZF subagent, the ZF country representative must specify the warranty hourly rate so that the hourly rate specified by the ZF Group covers the costs of the sub-agent rates (can also be a mixed calculation).

Only service material numbers may be used for wage expenditures - see business unit-specific pages in the ServiceLine (e.g. area N = 1999 098 002 - important for statistical purposes).

The warranty hourly rate also applies to travel times, but attention must be paid to deviating service material numbers.

In case of overtime outside of the ZF service centre (inspection or repair on the customer's premises), half the country-specific surcharge will be paid as a maximum.

Examples:

50% extra pay on mechanic's wage = 25% of the warranty hourly rate in addition

100% extra pay on mechanic's wage = 50% of the warranty hourly rate in addition

The legally prescribed percentage of extra pay on the mechanic's wage must be defined in the text of the warranty claim in such a case.

b) Material factor:

This includes a defined handling of 15% for warranty handling, packaging, and freight as a percentage addition to the ZF net price, as well as customs duties where applicable. Existing deviating agreements remain unchanged as long as this rule is not terminated by one side in due time.

In case of a warranty claim, the freight costs for parts and complete units (from and to the customer/dealer) are calculated in the material factor and thus covered. In the arrangement between the ZF service centre and the customer, the freight costs are divided, i.e. each party (OEM dealer / customer and ZF service centre) bears one way regardless of the warranty decision.

c) Travel expenses:

If a vehicle is used to rectify the warranty defect, the ZF plant pays € 0.30 per kilometer driven for gas and maintenance. Amortization/depreciation of the vehicle must be included in the hourly rate (see a).



d) Other costs must be explained explicitly in the warranty claim and discussed/agreed upon in advance.

17. Field actions

Field actions cannot be regarded as part of normal warranty handling. Such actions must be arranged in advance with the vehicle manufacturer, i.e. standard rates as under the aforementioned item "Warranty factors" will not apply. Arrangements that are more cost-effective must be found.

18. Removal and installation costs for complete units

Acceptance of the removal and installation costs depends on agreements made with the vehicle manufacturer. Basically, however, such costs are excluded/not covered, because a supplier such as ZF has no influence on vehicle construction and thus cannot calculate such costs into the price of the series product. Unit removal and installation costs must always be submitted via the vehicle manufacturer.

19. Handling and freight for returnable parts

The administration expenses for returnable parts are taken into account in the warranty hourly rate via the overhead shares.

Returnable parts must be delivered exclusively "Franco domicile" (free to the door) to the requesting party. The freight costs can be listed in the warranty claim either as a lump sum or as direct costs - a separate invoice / warranty claim for this will not be accepted.

Should the supplier or the manufacturing plant not acknowledge/accept the customer complaint because the fault is the customer's responsibility or vehicle-related, the warranty claim with all associated costs will be charged back to the party which submitted it to forward it to the OEM dealer or to the corresponding customer.

20. Coding of primary defective part

Never use service material numbers to code the primary defect. In addition, the ZF Service Station should also never use a repair- or seal-set for coding since no statement about the technical facts can be made in case of assessment. It is mandatory to define the individual part that caused the failure as the primary defective part.

In case of a field inspection (or other cases in which no part is used as a replacement), please code the material number 1999.098.040.

21. Reproduction/pirate parts and third-party repairs

ZF always fulfills warranty obligations according to the general delivery and repair conditions. Whether such an obligation actually exists must always be verified.



Example 1:

Reproduction or pirate parts were used for a prior repair. If such a reproduction or pirate part caused the failure which is under consideration now, a warranty claim must be declined.

Example 2:

Reproduction or pirate parts were used for a prior repair. However, in the repeated failure which is under consideration now, the failure was caused by a "ZF original part". The warranty claim must be examined within the framework of the applicable warranty agreements.

Example 3:

With respect to a repair warranty, the general rule applies that if the customer has a third party do the repair work, he must contact the third party should he demand repair warranty. It is always between these direct contractual partners that an obligation exists initially.

22. Service network / expectations

The ZF plants assume sufficient penetration of the market by the ZF service centers. If this is not the case, the following conditions apply:

a) Travel expenses

Maximum cost coverage for service call distances: Refunding in accordance with agreed blanket amount per km.

Automotive on/off-road	= 400 km in Europe, = 600 km outside of Europe
Marine	= 800 km outside of Europe

Greater distances must be discussed beforehand with the ZF plant. Flight costs must also be arranged in advance with the ZF plant. There may be a reduction in the amount of costs absorbed if no arrangements were made.

b) Service network

If there is no sufficient service network in the respective market, a corresponding concept must be arranged with the vehicle manufacturer, with involvement of the ZF plant if necessary.

23. Diagnosis

On account of the complexity of modern units and vehicle systems, failure diagnosis is a demanding task for the staff and equipment of a ZF Service Centre. When a customer complaint is received, the cause of the problem is often not immediately apparent. Especially when it comes to complaints, customers expect a great deal from ZF Service in terms of solutions for their problems, initially irrespective of any commercial decision. Depending on the outcome of diagnosis, a decision is then taken as to whether the expenditure incurred should be paid for by the customer / OEM, charged to the plant or settled even by the ZF Service organization.



Notes on the claiming of diagnosis activities:

a) Inspections/diagnosis – Remedy Yes

Whether remote diagnosis is possible must always be checked first. If this is not the case, the ZF plant will pay the costs of on-site diagnosis for maximally 1.5 hours. If this is not enough, a detailed explanation must be provided on the warranty claim form. With regard to travel expenses, permitted maximum distances must be observed.

Diagnosis encoding:

- o Complaint code VD (inspections/ diagnostics Remedy: Yes).
- o Primary coding: Material number of the component or the program,
Primary identifier 1,
Damage location 000,
Type of failure, e.g. 216 (incorrect),
Cause of failure, e.g. 290 (program error).

b) Inspections/diagnosis Remedy No, repair to be done

Whether remote diagnosis is possible must always be checked first. The specific coding of the warranty case is important in this context because of the correlation between the actual primary failure cause and failure correction.

Diagnosis encoding:

- o Complaint code UR (Inspections/Diagnosis remedial action: No, repair).
- o Primary coding: Material number of transmission,
Primary identifier 1,
Damage location 000,
Type of failure 532 (inspected),
Cause of failure 060 (not for statistics)

Repair encoding:

- o Complaint code, material number of primary failed part and corresponding primary failure code.

This ensures that the failure is not dealt twice in the statistics.

c) Diagnosis - failure found, no ZF responsibility

The full costs of diagnosis are to be billed to the vehicle dealer or the customer.

d) Diagnosis - no failure found or complaint not reproducible

Expenditures are viewed as service support provided by a ZF Service Centre, i.e. neither the customer nor the ZF plants are willing to accept these costs. This also applies if no official order to perform diagnosis was issued by the customer.



24. Complaint not acknowledged

The ZF plants will never accept complaints and resulting costs in cases in which the complaint is not acknowledged. The ZF plants consider this kind of service as a service contribution by a ZF Service Centre. Cost contribution may be possible upon request if applicable.

These warranty guidelines are unlimited valid beginning on January 01, 2010.

Scope: All ZF service centers with the warranty departments of the ZF Group plants!

The ZF plants ask the ZF Service Station to start applying these guidelines already now and regard the period from November and December as a transitional period during which processes are expected to stabilize.

Name	Department	Date	Signed by	Signature	
Robert Feldmeier	ZF Passau	22.9.2009	R. Feldmeier	See German	Version
Wolfgang Götz	ZF Marine	22.9.2009	W. Goetz / M. Rossow	See German	Version
Dr. Gratz	ZF Saarbrücken	22.9.2009	V. Bohley	See German	Version
Volker Gurrulat	ZF Schw. Gmünd	22.9.2009	V. Gurrulat	See German	Version
Frank Rothhaas	N-ST	22.9.2009	F. Rothhaas	See German	Version
Werner Ritter	N-SV	22.9.2009	W. Ritter	See German	Version
Michael Markert	ZF Sachs	22.9.2009	M. Markert	See German	Version
Detlef Vöge	ZF Lemförde	22.9.2009	D. Vöge	See German	Version
Martin Wagner/ Thomas Stemmer	ZF Services / AMS	22.9.2009	T. Bothe/ T. Stemmer	See German	Version
Richard Kathan	N-SB/SL	22.9.2009	M. Hahn / R.Kathan	See German	Version