

MVG 754 Series Service Manual

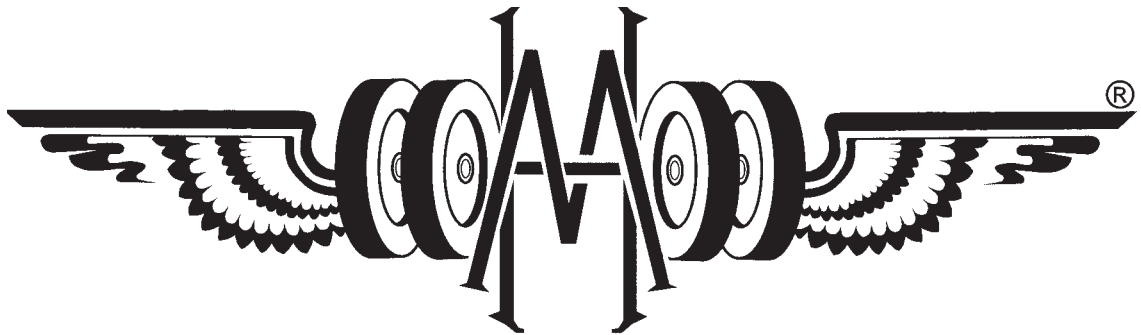
Pro Gear's Harmon-Herrington MVG 754 Series Service Manual to assist in identifying the parts for your Harmon-Herrington transfer case unit.

If you need any assistance identifying the correct transfer case unit for your truck and equipment, contact your Harmon-Herrington replacement part specialists at Pro Gear and Transmission.

Pro Gear Transmission has same day shipping and 1000's of products in stock and ready to ship internationally for your next project.

For parts or service contact the Harmon-Herrington specialists at Pro Gear & Transmission, Inc.

1 (877) 776-4600
(407) 872-1901
parts@eprogear.com



Marmon-Herrington

REPAIR MANUAL

MVG-754

TRANSFER CASE

MARMON-HERRINGTON ALL-WHEEL DRIVE

13001 Magisterial Drive • Louisville, KY 40223

(502) 253-0277 • (800) 227-0727 • Fax (502) 253-0317

E-mail: info@marmon-herrington.com

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PREFACE

This service manual covers all phases of disassembly and repair of the MVG-754.

The MVG-754 is a sophisticated gearbox demanding exacting tolerances of its precision assemblies. Repairs should be conducted in a clean environment by experienced technicians.

All clearances and measurements should be considered critical and strictly adhered to.

When heating is required for disassembly, torches and open flame type heat sources are prohibited.

Use only temperature-controlled equipment.

All seals should be replaced during reassembly and bearings coated with prescribed lubricant.

Observe all torque specifications and adjustment data.

The MVG754 Parts Manual (TCPM007) is a valuable reference during service or repair, as it contains exploded component diagrams and part numbers. A hard copy may be purchased from our parts department, or a free copy may be downloaded from our website.

FOREWORD

This manual has been prepared for operators and service personnel working with the Marmon-Herrington series of transfer cases and front drive axles. For further technical assistance, please contact Marmon-Herrington Customer Service.

Please observe and follow all procedural and maintenance guidelines to ensure reliable operation and optimum service life. The Marmon-Herrington basic service schedule will integrate seamlessly with most preventative maintenance programs.

Marmon-Herrington shall not be liable for component failures or damages caused by operational abuse or neglect. Please review the Warranty Statement for a detailed explanation of coverage and claim reporting procedures.

We thank you for your investment in Marmon-Herrington equipment, and look forward to serving your needs in the tradition of engineering excellence.

MISCELLANEOUS ISSUES

TIRES AND GEAR RATIOS

When vehicles are still in the specification stage prior to construction, a great deal of thought and calculation goes into determining what tires and gear ratios will be best suited to the engine and transmission combination being used. This is especially true of AWD (all-wheel-drive) type vehicles because front and rear drive axles are interconnected through the transfer case, and therefore vulnerable to the adverse effects of differential tire speed. The most prominent of these adverse conditions is called “wind-up” which is caused by “ratio mis-match”.

Effectively, this means that by virtue of different tire sizes or gear ratios from front to rear, one set of tires is trying to turn faster than the other. This generates excessive amounts of torque (wind-up) which is transmitted through the drive train. These extreme torsional loads can cause damage to differential gears, transfer cases, even engines and transmissions.

With the preceding in mind, it behooves the owner or operator to seek expert advice when considering alternative gear ratios or tires.



OPERATIONS

1) USE OF AWD MODE

Your Marmon-Herrington transfer case or axle may find itself paired with a front drive axle in an AWD application as previously described. If so, there are a few points of operational practice that will ensure a long, trouble free service life. In the tire and ratio discussion we demonstrated one source of drive train wind-up, and some of the undesirable effects. The same consequences may be experienced through yet a different mode of abuse.

As close as engineers try to match gear ratios and tires for a given application, the reality is that there will always be some degree of mis-match between front and rear axles. When a vehicle is operated on a hard, dry surface with the front axle engaged (AWD, 4X4, 6X6, etc.), the tires are not able to slip and relieve the torsional forces being generated.

As such, Marmon-Herrington equipped vehicles are designed for “as needed” AWD operation, only in “off-road” conditions. They are not intended to be driven in AWD mode on hard, dry surfaces.

2) SHIFTING OF AXLE OR TRANSFER CASE

Marmon-Herrington Axles and Transfer Cases use no clutching devices, and therefore should only be shifted when the vehicle is at a full stop. This applies to front axle engagement, high and low ranges, and locking differentials. The only exceptions are those vehicles equipped with Marmon-Herrington’s Safety-Shift system, which are calibrated to shift up to 4 mph.

SAFETY-SHIFT

Marmon-Herrington Transfer Cases do not employ any clutching device, and therefore are not of a class that may be shifted “on the fly”, or when the vehicle is in motion. This applies to shifting between HIGH and LOW ranges as well as engaging the front axle. Shifting on the fly results in two different types of internal and external damage. The first is degradation of the engagement teeth due to relative rotation of drive gears and shift collars. This type of damage can prevent the case from shifting normally, as the teeth become burred and cannot mesh.

The second condition imparts excessive shock loading throughout the entire drive train. This occurs when a shift is attempted at the precise moment of tooth alignment (gears meshing), and the shift is actually completed at excessive speed. This results in high torque loading that is transmitted through the transfer case, drive shafts, and axles. The extent of the damage possible increases proportionately with the vehicle speed.

Over the years we have tried to protect end users from this mode of failure with operational placards, audible warnings, and light signals. Despite these efforts, we have yet to fully discourage this destructive practice.

In December 2003 Marmon-Herrington developed an electronic management system called **Safe-T-Shift** to help prevent shift on the fly events. It consists of a microprocessor that receives speed information from a remote sensor in the transfer case. The system is calibrated to activate the shift solenoids at the first detection of motion, and then cancel control functions at 4 mph.

The actual completion of a shift still relies on tooth alignment of the gear sets, and the vehicle may need to roll a few feet before the transfer case can shift. Because the system becomes active at first motion and maintains air pressure thereafter, it is possible to accelerate rapidly to a speed greater than 4 mph before tooth alignment occurs, thus completing the shift. In this case, the shift may occur at a speed great enough to cause shock damage. For this reason, it is essential that the operator let the vehicle “walk” or idle forward until the shift is complete before accelerating normally.



Shift Procedure


1. With the vehicle at a complete stop, select the desired range or front axle position.
2. Place the main transmission in gear.
3. Allow the vehicle to idle forward (or backwards) at walking speed until shift is completed.
4. Accelerate normally.


In the case of a manual transmission, ease the clutch out in low gear, allowing the vehicle to “walk” until shift is completed.

Some possible exclusions to the Safe-T-Shift program are those vehicles fitted with a transfer case mounted PTO, Freightliner factory conversions, and any with Rockwell transfer cases.



The following safety references are used in the present Repair Manual:

	This symbol is found in these repair instructions where special references are given regarding special working procedures, methods, information, use of auxiliaries etc.
--	---

 DANGER	This symbol points out situations, where lacking care can lead to the injury of persons or damage to the product .
---	---

REFERENCE: Prior to starting the checks and repair works, thoroughly study the present instructions.

<u>REFE- RENCE:</u>	<p>Illustrations, drawings and parts do not always represent the original; the working procedure is shown.</p> <p>The numbering of illustrations (e.g. HA754_01) is no consecutive numbering, it is only used for archiving purposes. No order can be derived out of it.</p> <p>The illustrations, drawings and parts are not true to scale; conclusions regarding size and weight must not be drawn (not even within one representation).</p> <p>The works must be performed according to the description.</p>
--------------------------------	--

REFERENCE: After the repair works and the checks, the expert staff must convince itself that the product is properly functioning again.



TORQUE LIMITS FOR SCREWS (in Nm) according to ZF-STANDARD 148

Coefficient of friction: μ total = 0.12 for screws and nuts without after treatment as well as phosphated nuts.

Tightened by hand!

Torque limits can be taken from the following list, unless otherwise specified in the repair instructions:

Metric ISO Standard Thread DIN 13, sheet 13

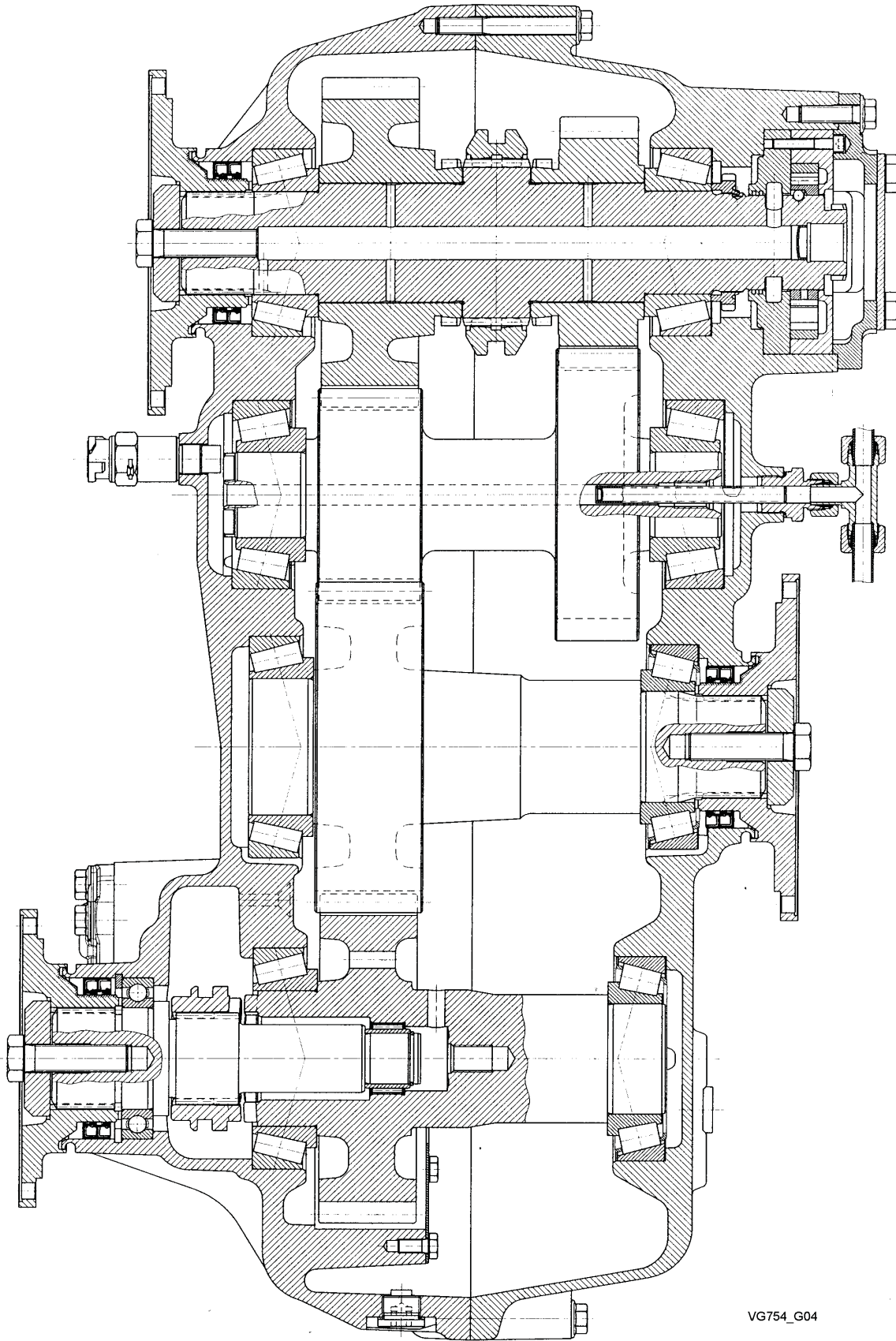
Size	8.8		10.9		12.9
M4	2.8		4.1		4.8
M5	5.5		8.1		9.5
M6	9.5		14		16.5
M7	15		23		28
M8	23		34		40
M10	46		68		79
M12	79		115		135
M14	125		185		215
M16	195		280		330
M18	280		390		460
M20	390		560		650
M22	530		750		880
M24	670		960		1100
M27	1000		1400		1650
M30	1350		1900		2250
M33	1850		2600		3000
M36	2350		3300		3900
M39	3000		4300		5100

Metric ISO-Fine Thread DIN 13, sheet 13

Abmessung	8.8		10.9		12.9
M 8 x 1	24		36		43
M 9 x 1	36		53		62
M 10 x 1	52		76		89
M 10 x 1.25	49		72		84
M 12 x 1.25	87		125		150
M 12 x 1.5	83		120		145
M 14 x 1.5	135		200		235
M 16 x 1.5	205		300		360
M 18 x 1.5	310		440		520
M 18 x 2	290		420		490
M 20 x 1.5	430		620		720
M 22 x 1.5	580		820		960
M 24 x 1.5	760		1100		1250
M 24 x 2	730		1050		1200
M 27 x 1.5	1100		1600		1850
M 27 x 2	1050		1500		1800
M 30 x 1.5	1550		2200		2550
M 30 x 2	1500		2100		2500
M33 x 1.5	2050		2900		3400
M 33 x 2	2000		2800		3300
M 36 x 1.5	2700		3800		4450
M 36 x 3	2500		3500		4100
M 39 x 1.5	3450		4900		5700
M 39 x 3	3200		4600		5300



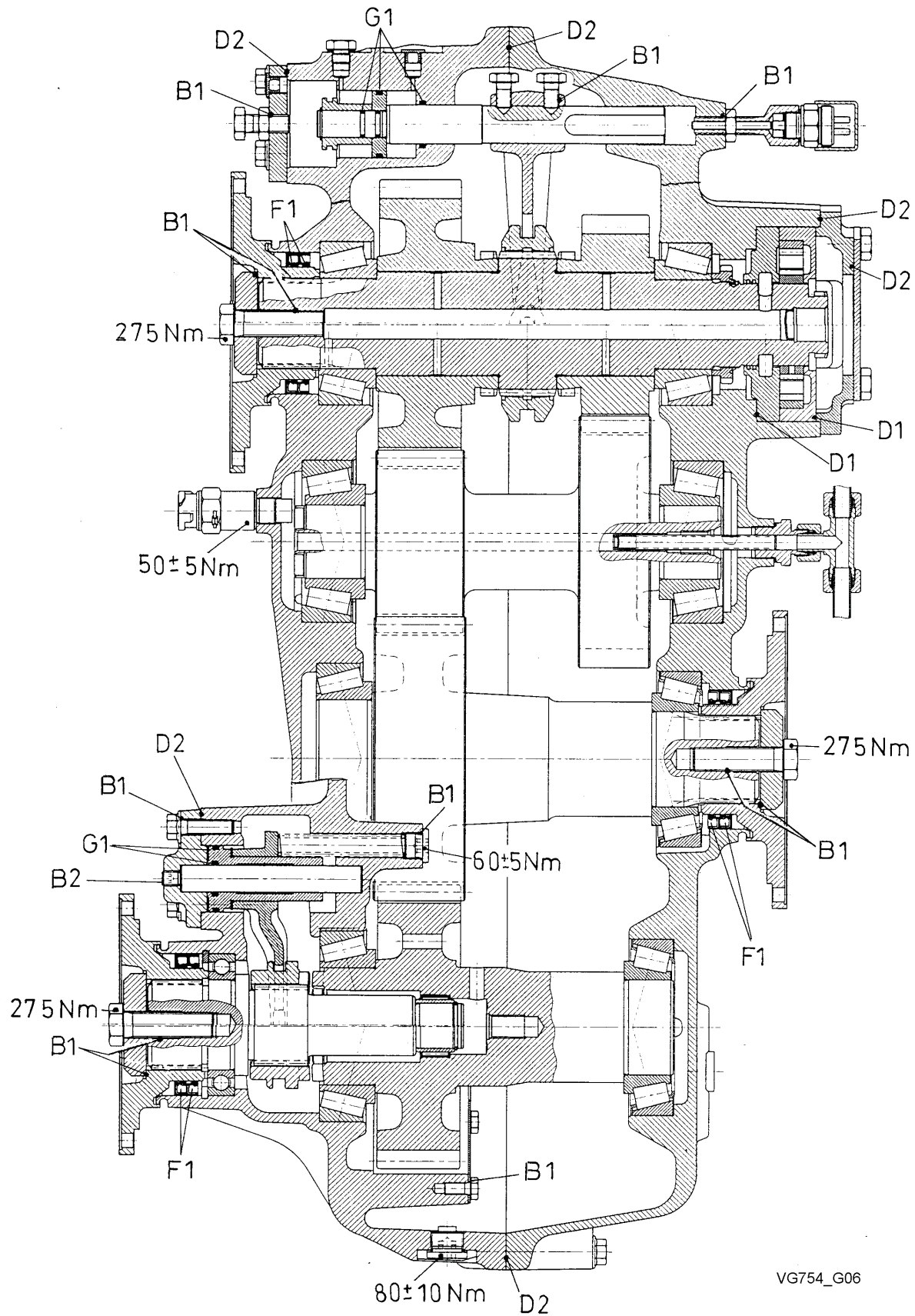
CROSS SECTION VIEW – Transfer gearbox VG 754



VG754_G04



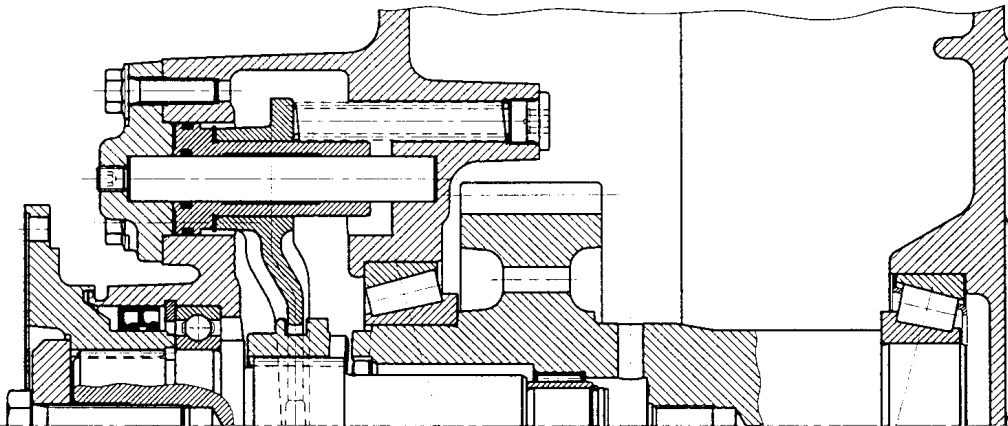
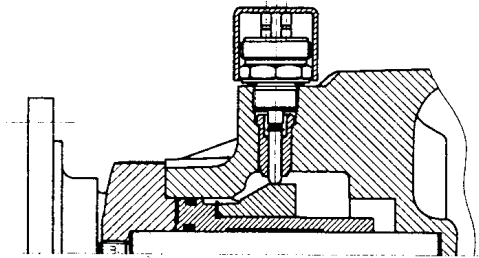
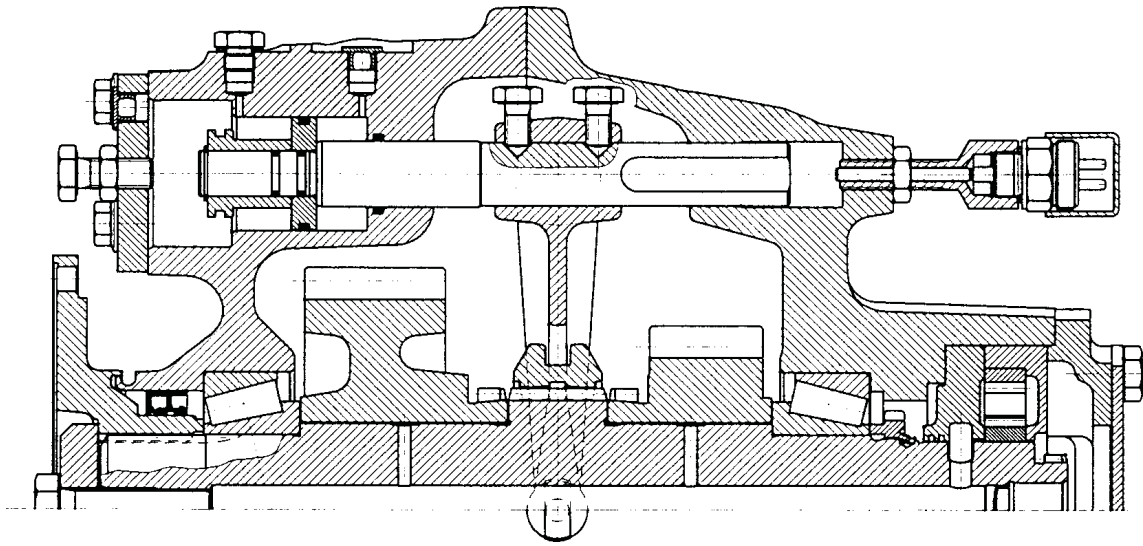
CONSUMABLES



VG754_G06



CROSS SECTION VIEW- Shifting VG 754



VG754_G05



CONSUMABLES

Consumables for repair of the transfer case are lubricants, slip additives, sealants, locking adhesives, preservatives and cleaning agents.

Table of consumables for unit repair.

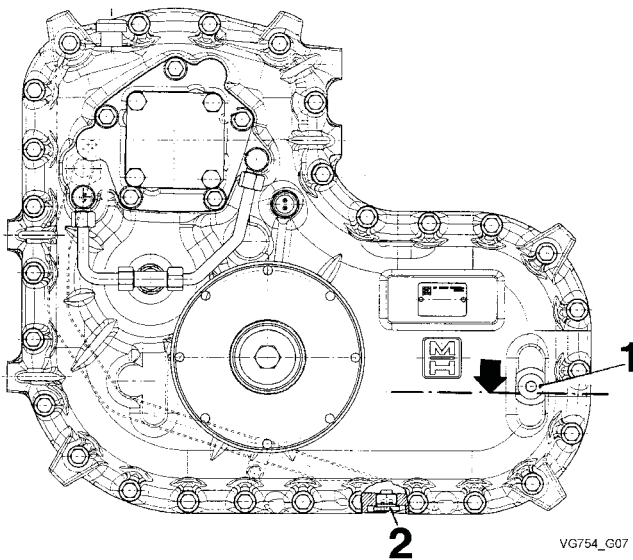
Symbol	Designation of compound	Product name
F1	Standard grease	STABUTHERM-GH 461 SUPEROL EP 2
G1	Antiseize compound	Molykote
D1 D2	Sealing compound	DIRKO / RHODORSEAL „5661“ Loctite 518 (red)
B1 B2	Adhesive	Loctite 243 (blue) Loctite 638 (green)
OIL	Antiseize compound	SAE 90 API GL4 or GL5

In the following diagram the greases, anti-seize agents, sealing compounds and adhesives are indicated with their symbol and point to the components to be treated.

OIL CHANGE

Oil change – in warm condition.

Carefully clean all oil drain, filling and level plugs before opening.



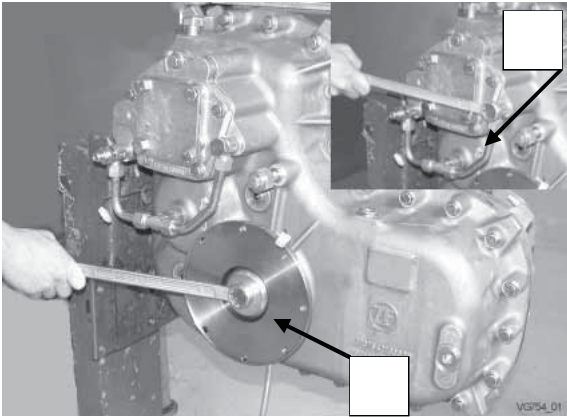
- Drain gear oil at drain plug (2).
- Replace drain plug (2) with new seal.
- Fill with new gear oil at filling bore/level bore (1) until it flows over.
- After correct oil filling, replace level plug (1) with new seal.

Tightening torque $M_A = 80 \pm 10 \text{ Nm}$

Oil filling quantity: app 8.5 litres

Oil quality: SAE 90 MIL-L-2105-API-GL4

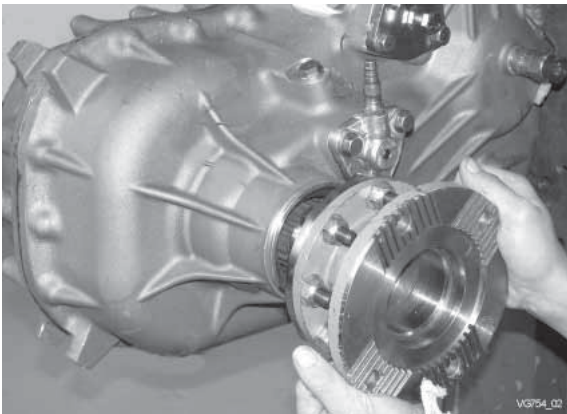




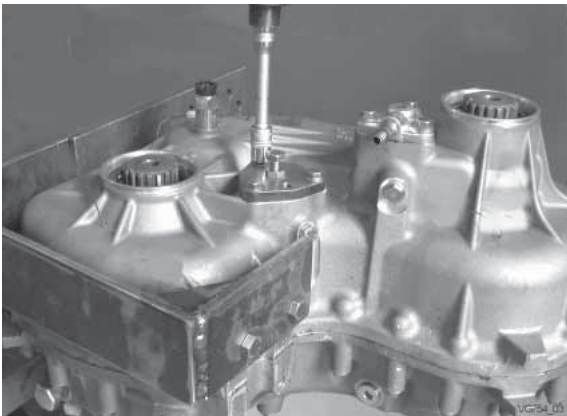
1 DISASSEMBLING - VG 754

Remove flange (1).

Remove pipe (2).

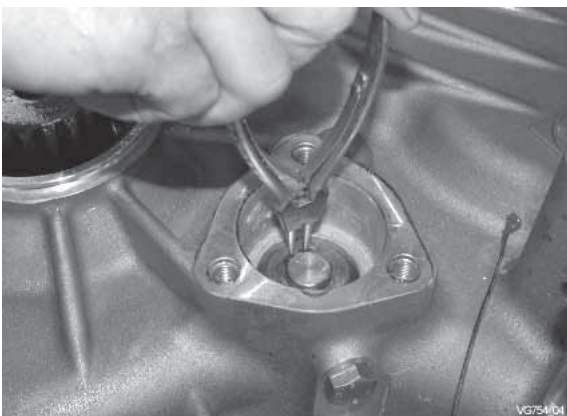


Remove flanges.

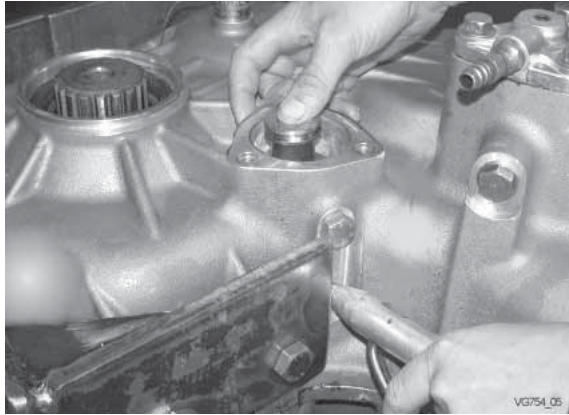


1.1 Disassemble shifting road/off-road:

Remove cover.



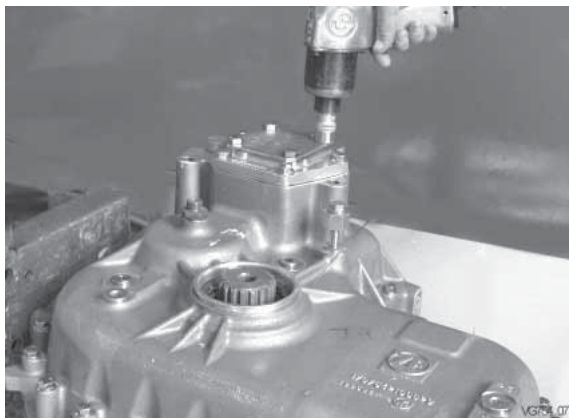
Rebound circlip.



Remove shift cylinder.

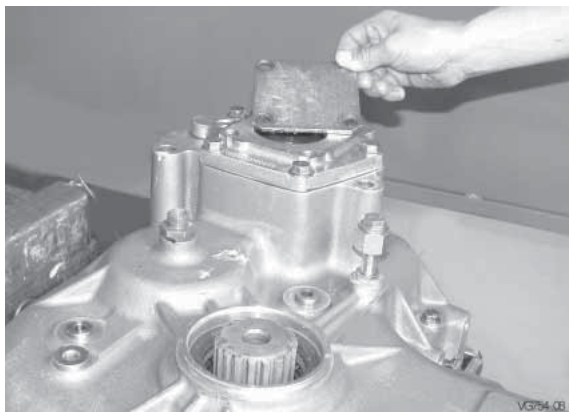


Pull off piston with sealing.



1.2 Remove oil pump:

Loosen bolts.

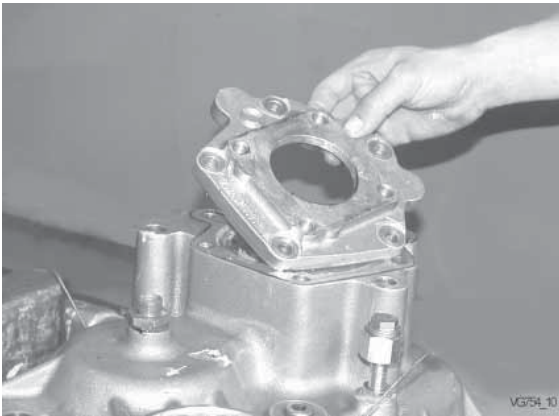


Lift off cover.

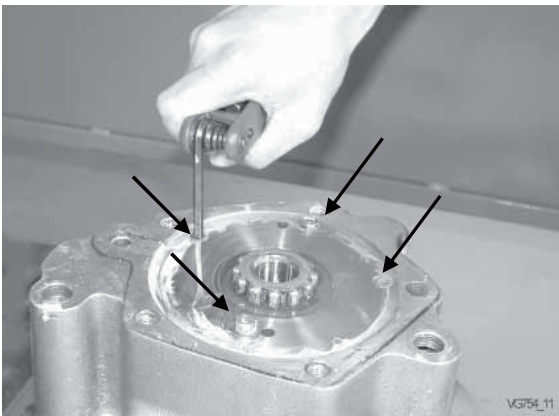




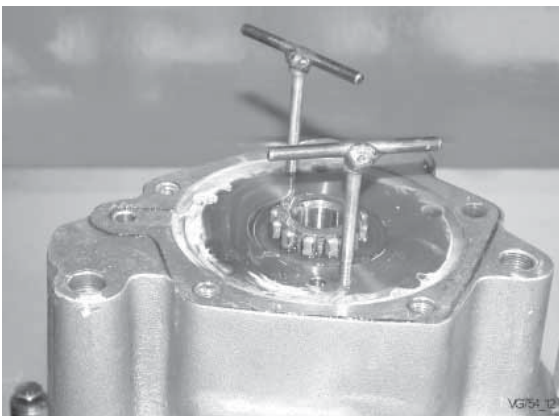
Loosen bolts.



Lift off housing cover.



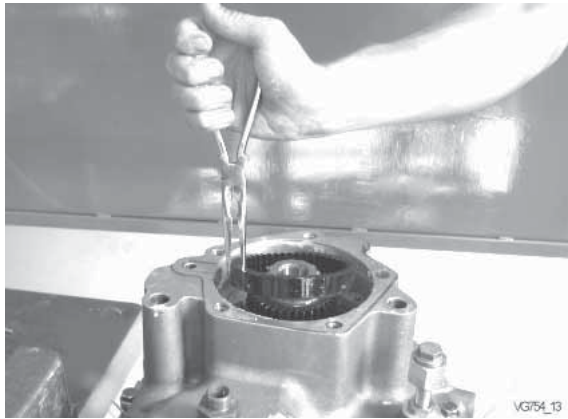
Loosen Allen screws.



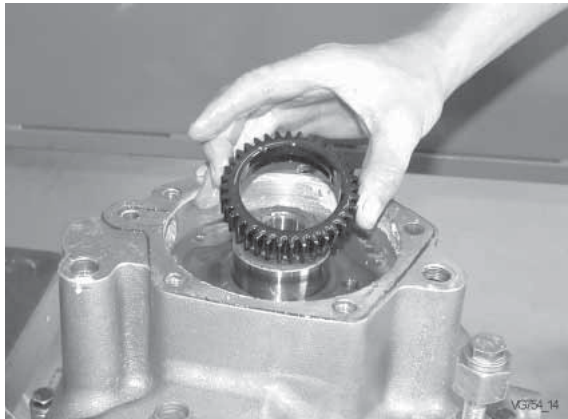
Lift off oil pump housing.



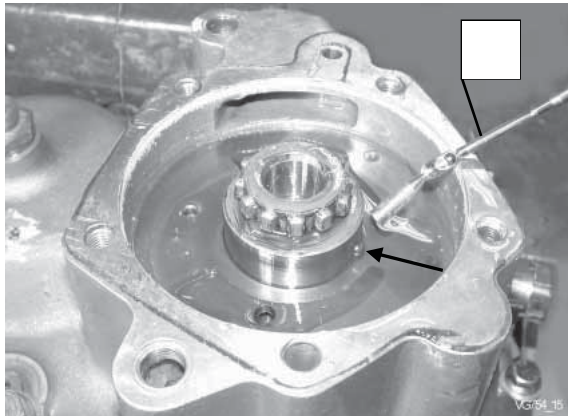
Use pull screws.



Remove outer oil pump gear.

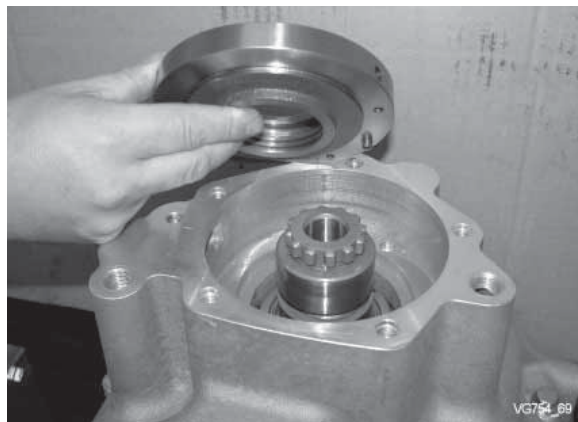


Remove oil pump gear.

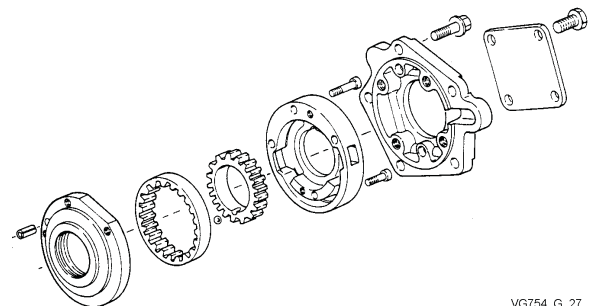


Take out drive ball.

☞ By aid of magnet (1).

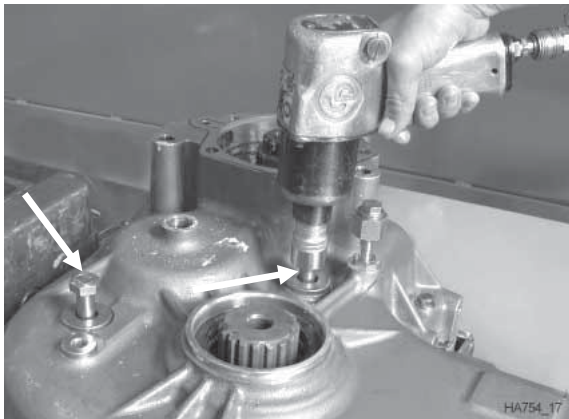


Disassemble oil pump cover.



VG754_G_27

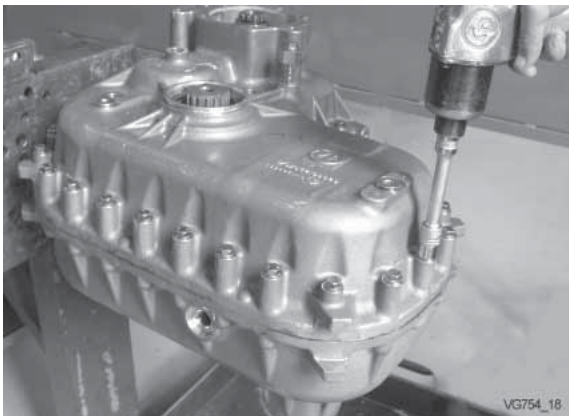




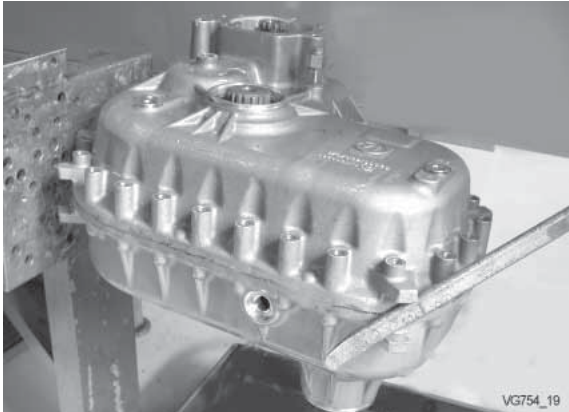
Disassemble anchor screws.



Disassemble oil tube.

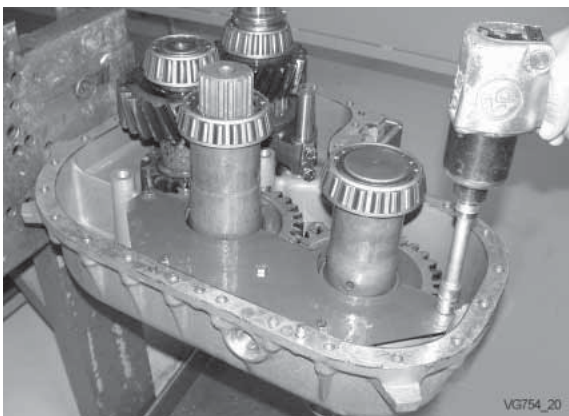


Loosen all housing fastening bolts.



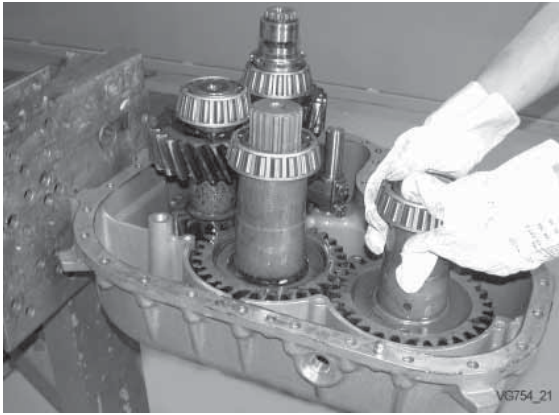
Lift off rear housing.

 Use Pry bars.



Remove oil guide.





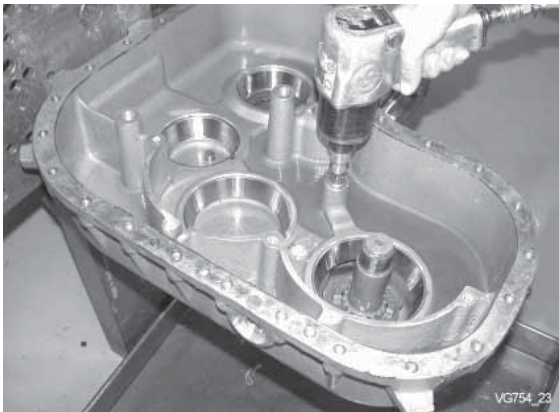
Lift out intermediate shafts and output shaft.



Lift out input shaft together with shifting.



Attention: be aware of sliders in the ends of shift fork.



Remove plug.

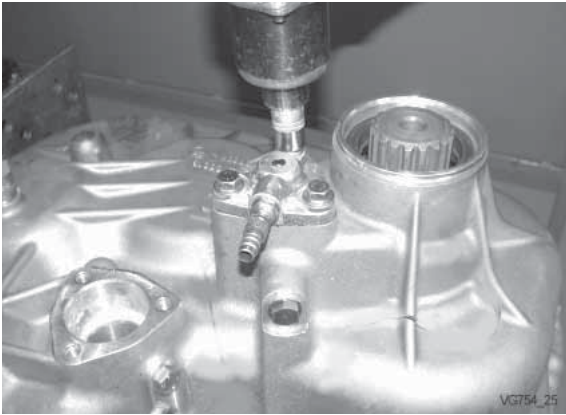


Remove plug and shift spring.



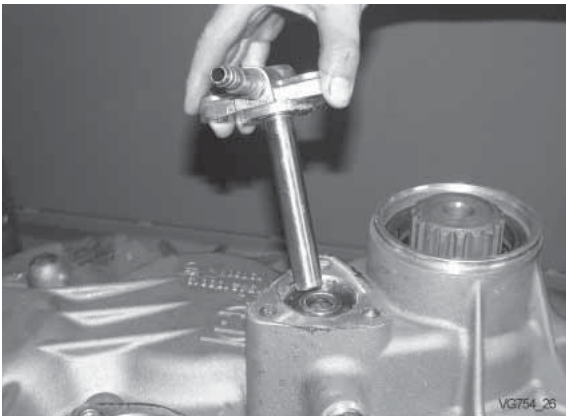
Turn the housing for further disassembly.



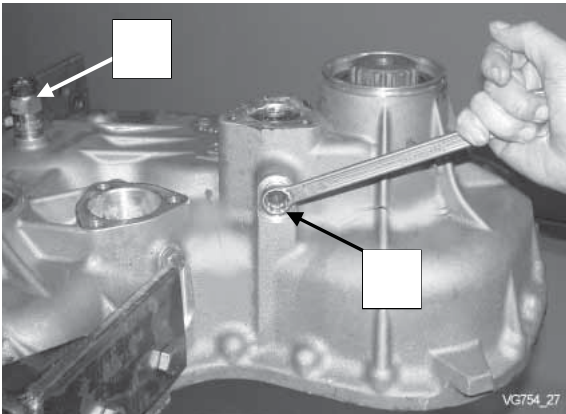


1.3 Remove front axle shifting:

Remove rear housing.

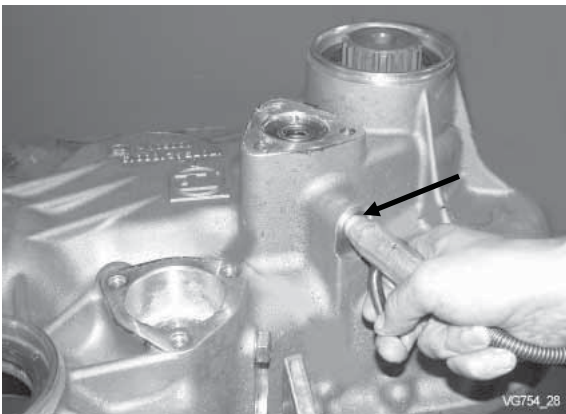
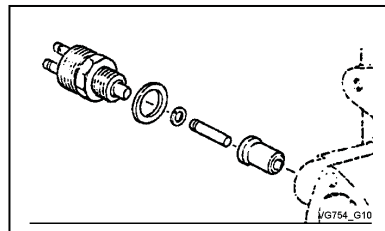


Remove cover and shifting shaft together.



Remove speedometer sending unit (1).

Remove front axle lock control plug (2) with sliding sleeve and plug.

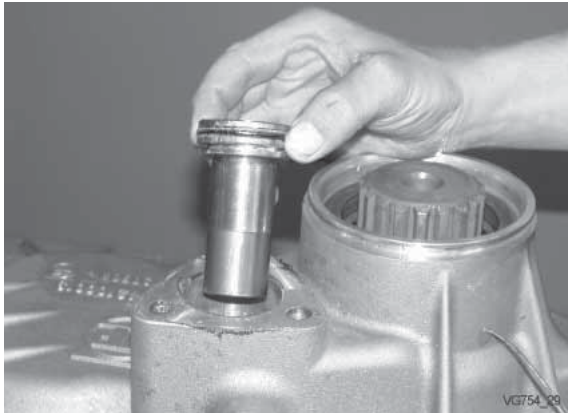


Remove shifting piston.



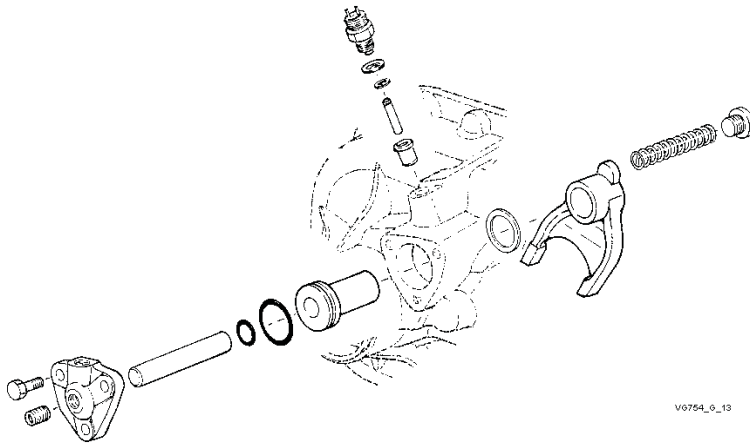
Discharge with compressed air (**arrow**).





Remove shifting piston with seal.

Dismantle the gear shift system—front axle drive



V0754_0_13



1.4 Removal of input shaft:

Remove shaft seals.

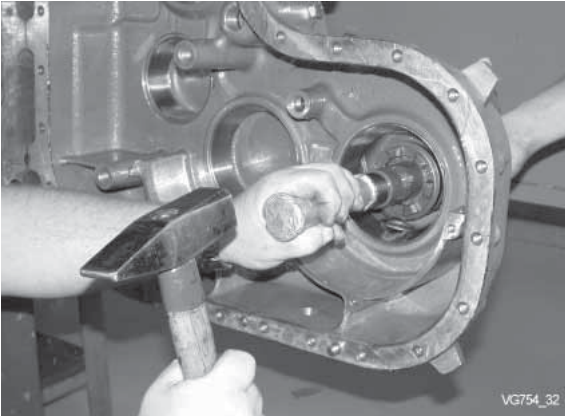


When shaft seals are being removed, they **must** be replaced by new units.



Remove circlip.

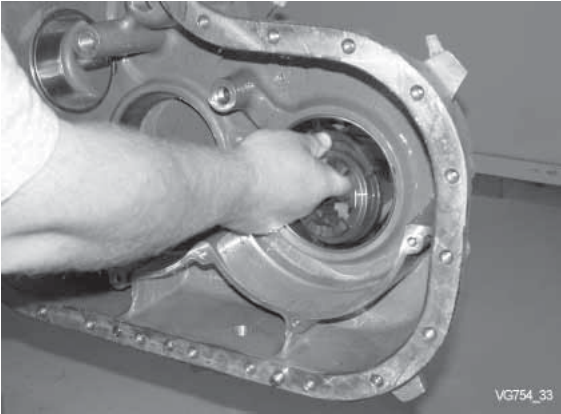




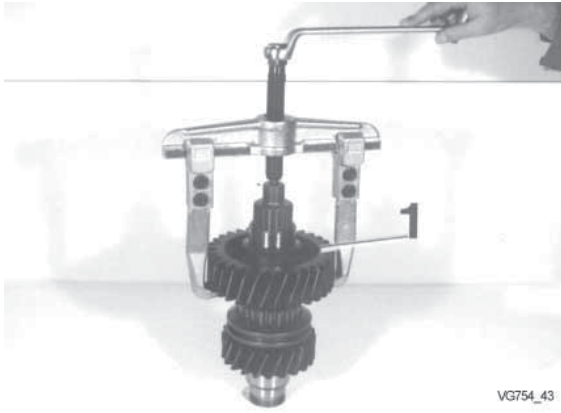
Drive out front output shaft.



Use aluminium punch.



Remove shifting fork and shifting dog sleeve.



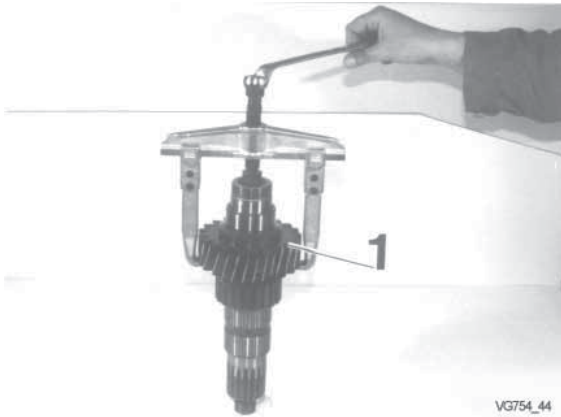
1.5 Dismantle input shaft

Pull off gear (pos. 1).



Use **KUKKO 20-3** extractor 5870 970 026.

Remove bearing inner ring and shifting sleeve.



Pull off gear (pos. 1).



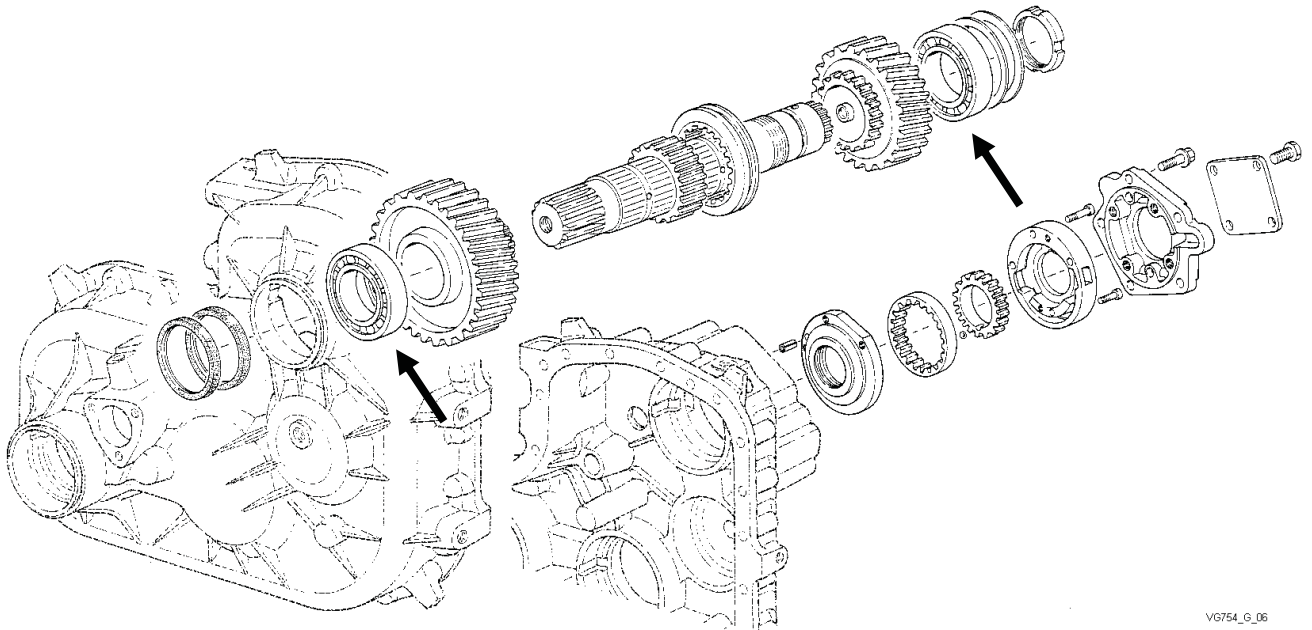
Use **KUKKO 20-3** extractor 5870 970 026.

Remove bearing inner ring.

Dismantle the input shaft assy. incl. oil pump
(For disassembly of the oil pump also refer to page 11)

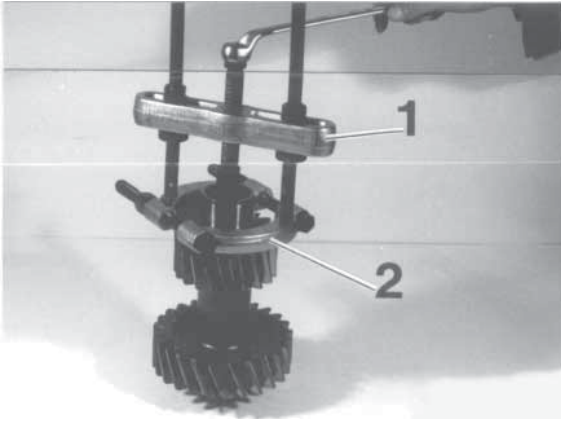


Remove bearing outer rings from the housing (arrow).



VG754_G_06





1.6 Dismantle double gear

Pull off bearing inner rings of the double gear.



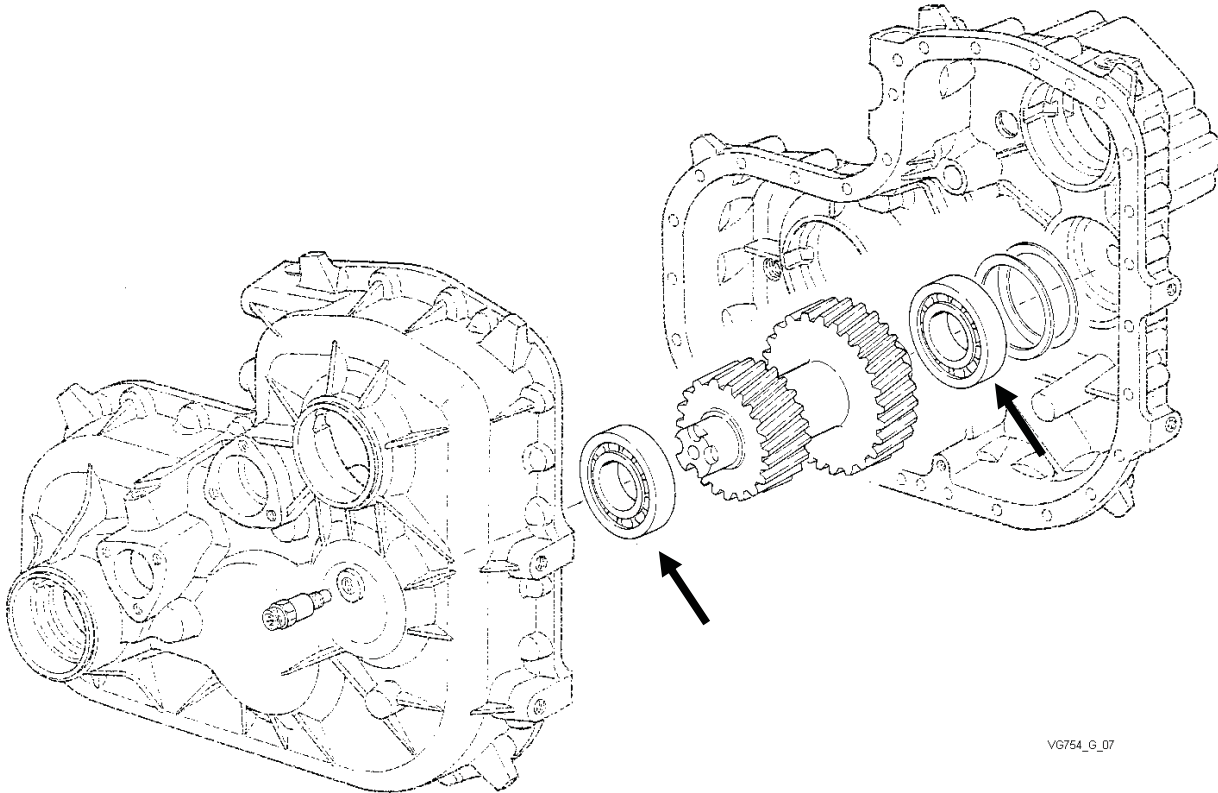
Use **KUKKO 18-2** extractor (pos. 1) 5870 300 033

and **KUKKO 17-2** separating device (pos. 2).
5870 300 038

Dismantle the double gear:

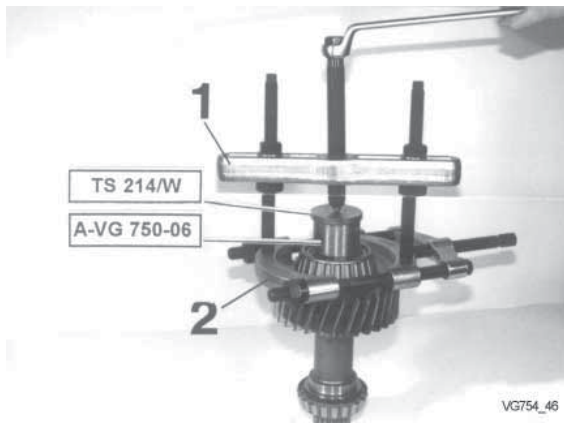


Remove the bearing outer rings from the housing (arrows).



VG754_G_07



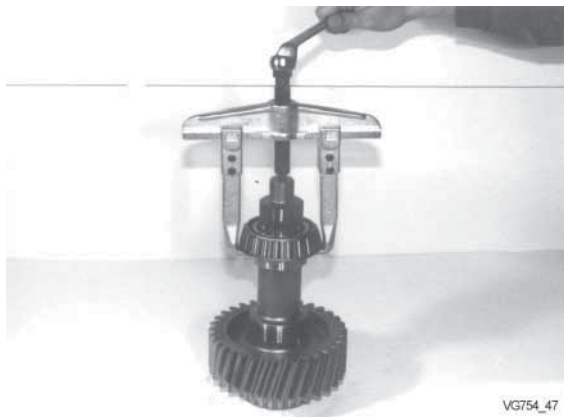


1.7 Dismantle rear axle output shaft:

Pull off the front tapered roller bearing.

Use **KUKKO 18-2** extractor (pos. 1) 5870 300 033 and **KUKKO 17-2** (separating device) pos. 2. 5870 300 038

Support with special tools **A-VG 750-06** and **TS 214/W**.

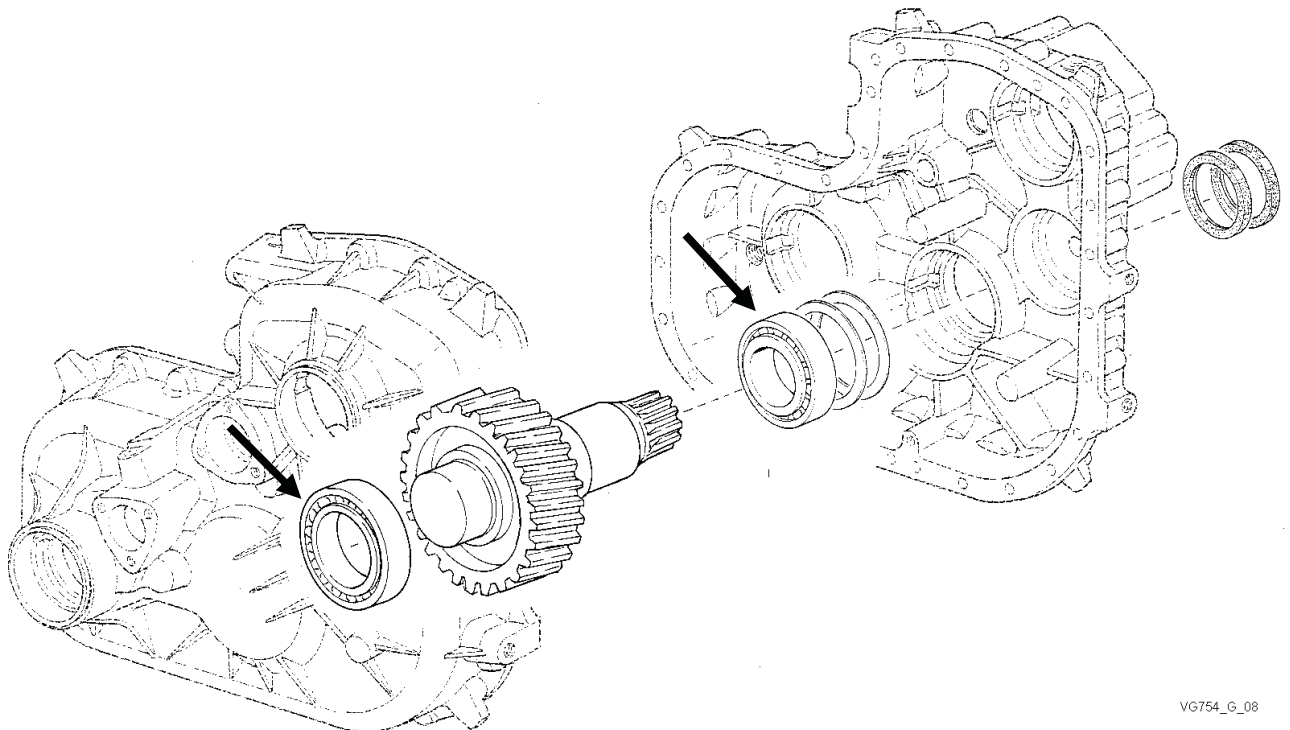


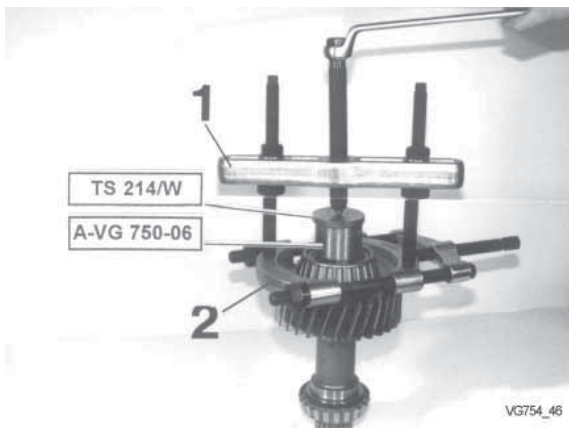
Pull off the rear tapered roller bearing.

Use two-armed puller **KUKKO 20-2**.

Dismantle rear axle output shaft:

Remove bearing outer rings from the housing (arrows).



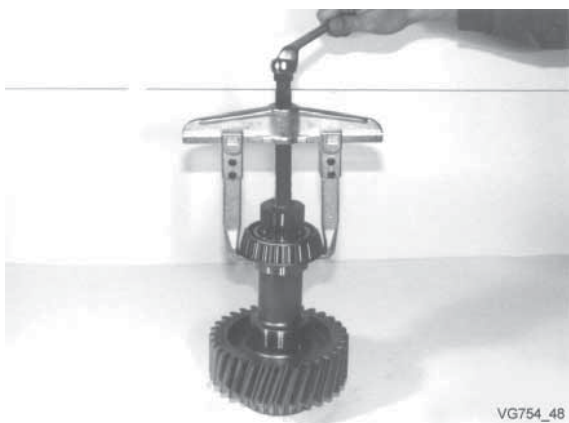


1.8 Dismantle front axle output shaft

Pull off the front tapered roller bearing.

☞ Use **KUKKO 18-2** extractor (pos. 1) 5870 300 033
and **KUKKO 17-2** separating device (pos. 2)
5870 300 038

☞ Support with special tools **A-VG 750-06** and **TS 214/W**.

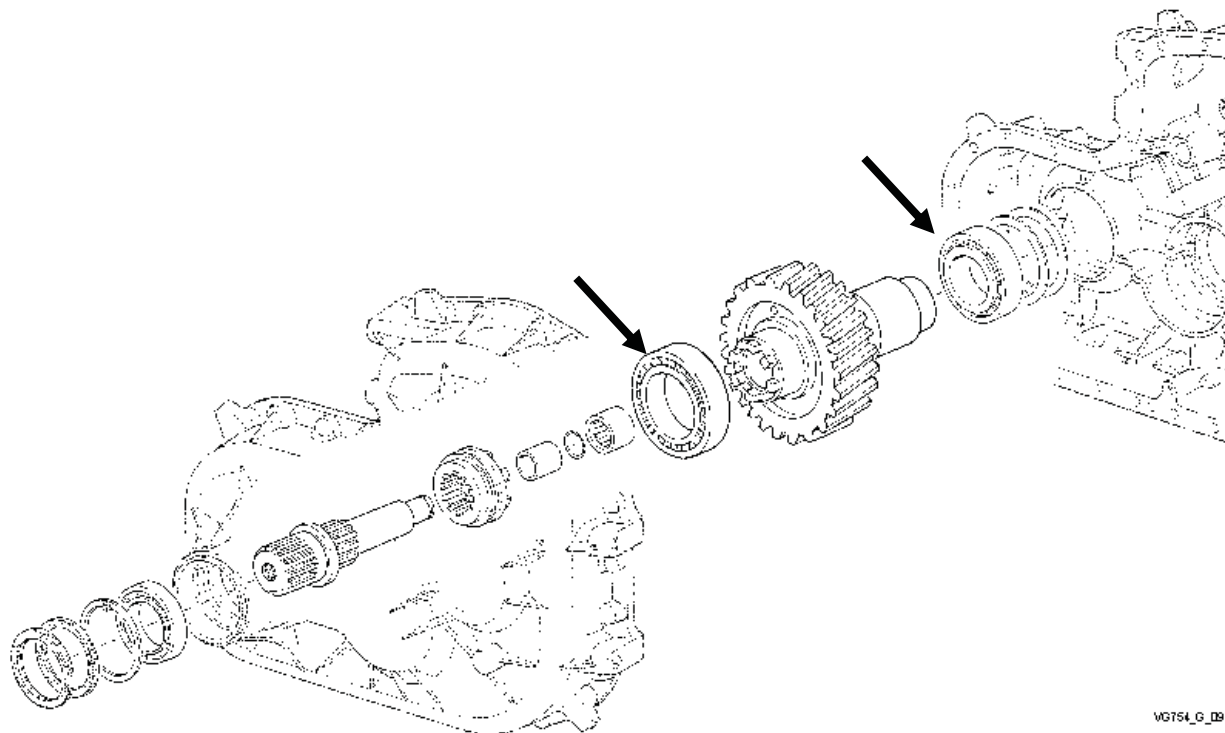


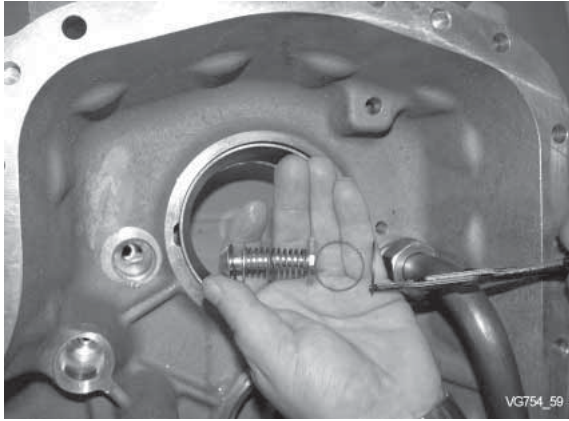
Pull off the rear tapered roller bearing.

☞ Use two-armed puller **KUKKO 20-2**.

Dismantle the front axle output shaft:

☞ Remove bearing outer rings from housing (arrows).

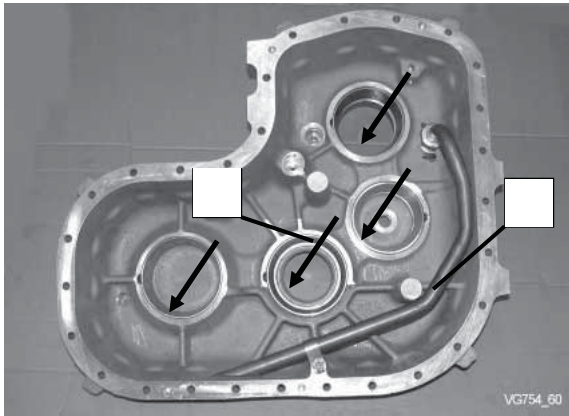




1.9 Dismantle housing cover

Unsnap retaining ring.

Remove bypass valve.



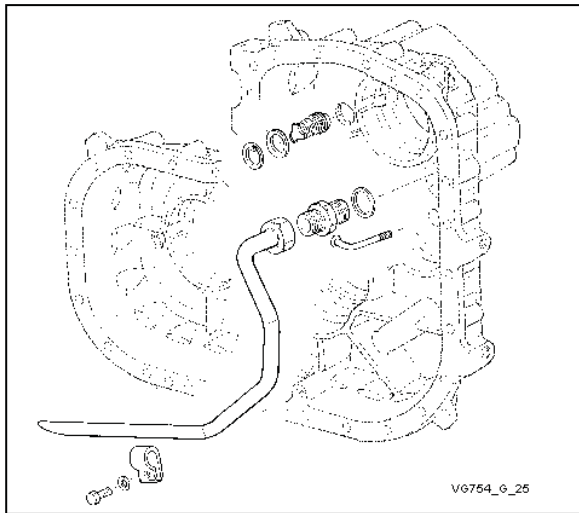
Remove suction line with fitting and spray tube from housing cover (pos. 1).

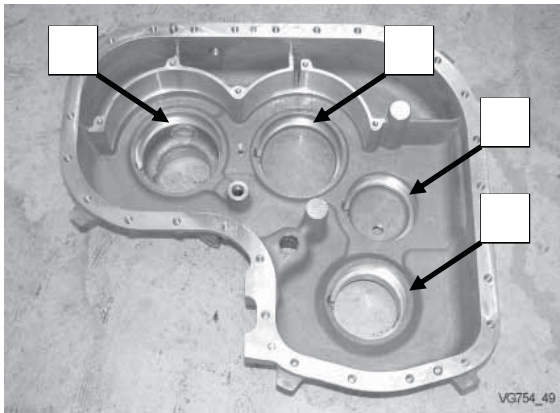
Remove shaft seal (pos. 2).

Remove all bearing outer rings from the housing cover.



Use two-armed puller **KUKKO 20-2**.





2 ASSEMBLY - MVG 754

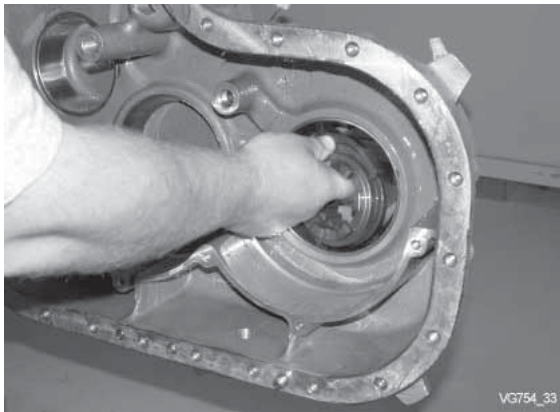
Mount bearing outer rings into housing.



Mount super-cooled bearing outer rings or heat bearing area on the housing.

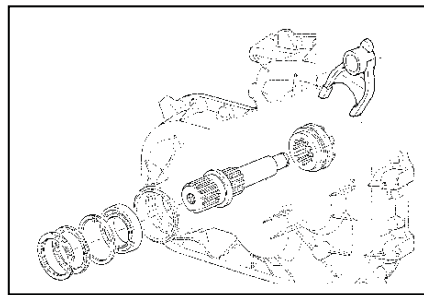


- 1 use bearing 33 116 / driver 5870 058 089
- 2 use bearing 33 116 / driver 5870 058 089
- 3 use bearing 32 310 / driver 1 SKO 102 979
- 4 use bearing 33 212 / driver 1 SKO 102 979



2.1 Assembly input shaft:

Install shift fork and dog sleeve in housing.



Install input shaft.



Install input shaft in frozen condition (stored at - 25° C in a reffridgerator).



Drive in input shaft and bearing with aluminium punch.



Install circlip.



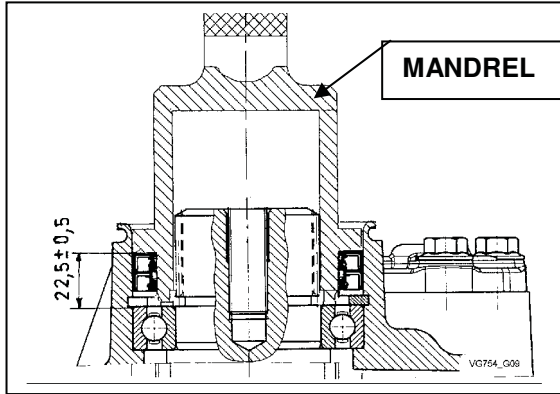
Install shaft seals.



New shaft seals must be used.

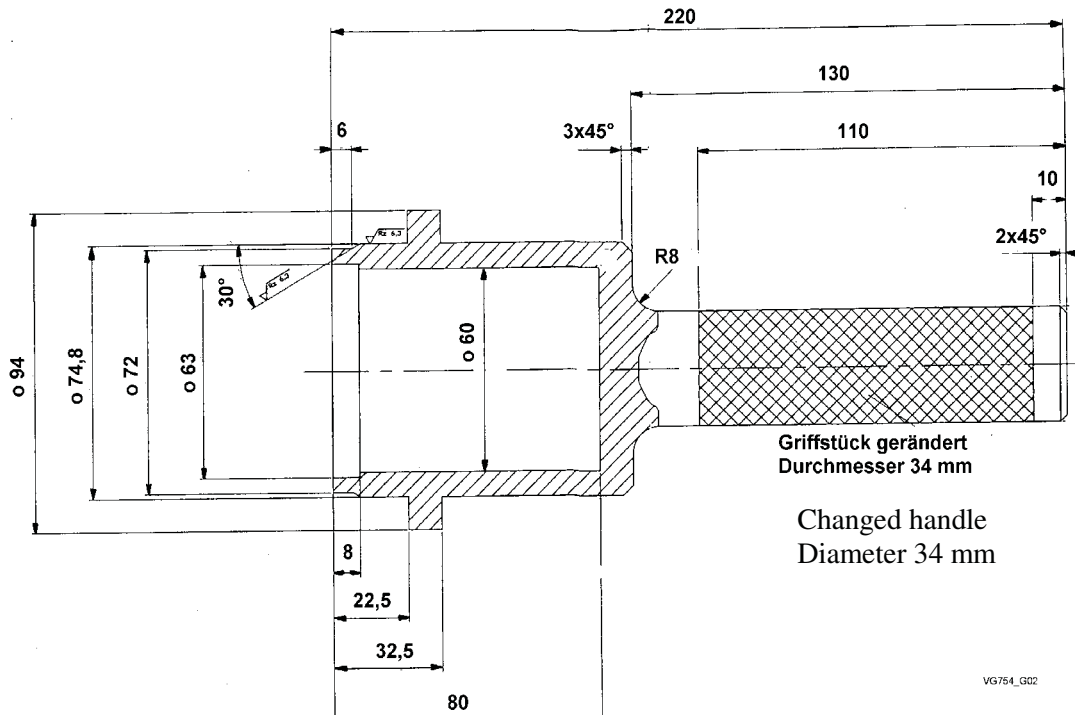


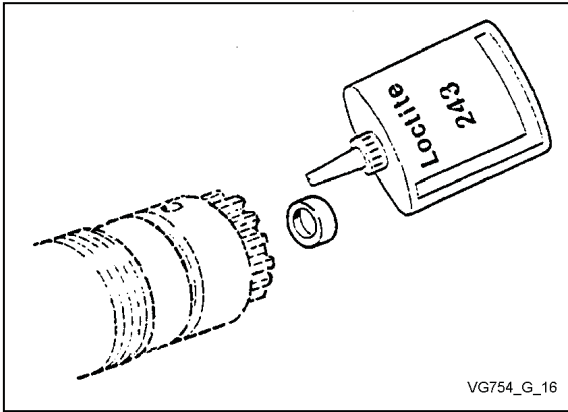
Assure correct position of shaft seals
(see cross sectional view page 6).



Use Mandrel 1-SKO-102947.

Sketch for Mandrel 1-SKO-102947.





2.2 Assemble shifting – front output shaft:

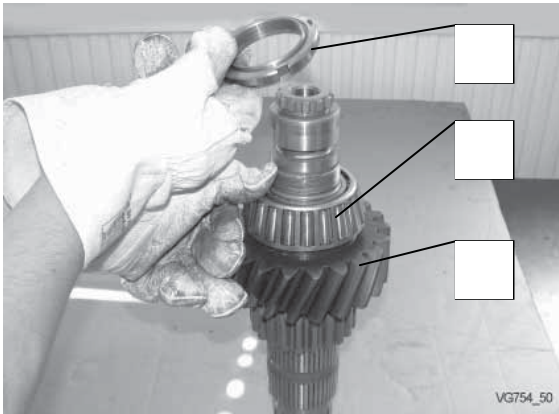
Mount oil dam into the hole of the input shaft.



Fix oil dam with **LOCTITE 243**.

Note:

Mount the oil dam only in case of damage or when replacing the shaft and when cleaning the hole.



Mount gear (pos. 1) on shaft.



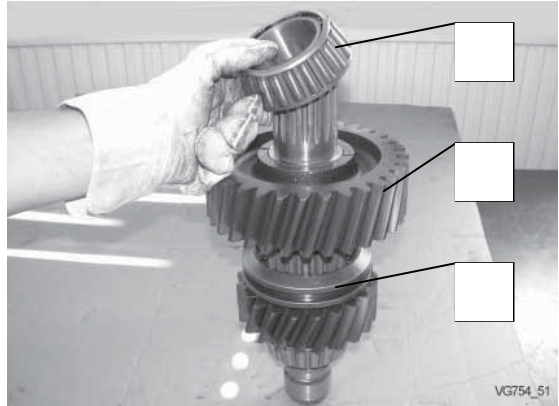
Oil bearing hole.

Heat bearing (pos. 2) to **80° C** and mount.

Mount slotted nut (pos. 3).



Use special tool **A-VG 750-09**.
Tightening torque **300 Nm**
Secure slotted nut (stake 2 x)



Mount shifting sleeve (pos. 4).



Oil teeth.

Mount gear (pos. 5).

Heat bearing to **80° C** (pos. 6) and mount.



Mount input shaft together with shift fork and shift rod.



Make sure that gear shift fork sliding pads are mounted correctly.



Oil shift rod on the sliding surface with transmission oil.



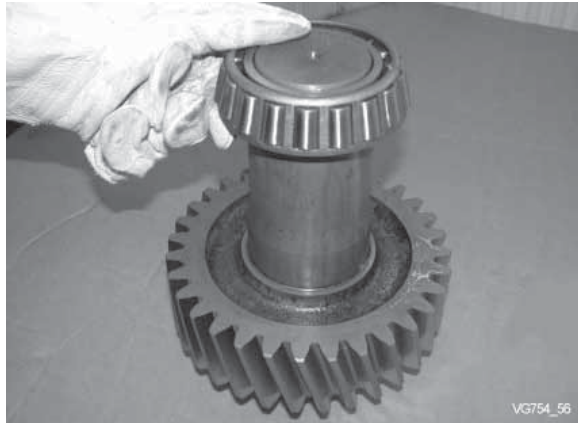
Preassemble double gear

Heat bearing on both sides to **80°C** and mount.



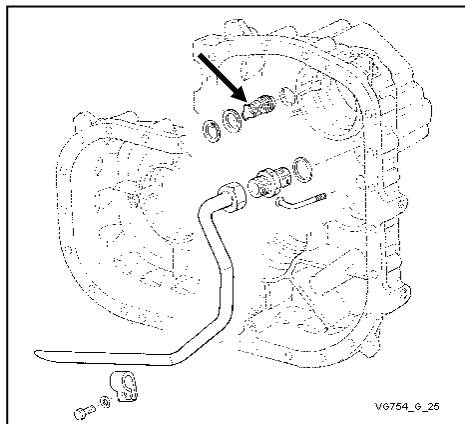
Preassemble rear axle output shaft

Heat bearing on both sides to **80°C** and mount.



Preassemble front axle output shaft

Heat bearing on both sides to **80°C** and mount.



Mount suction line with fitting and spray tube.

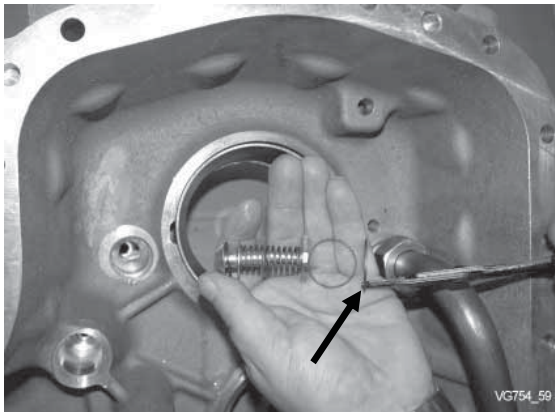
Mount bypass valve (arrow).

Secure with retaining ring.

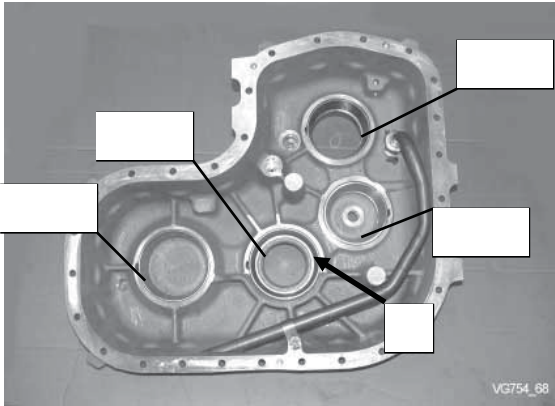




Make sure that the installation position of the bypass valve is correct.



Secure bypass valve with retaining ring.

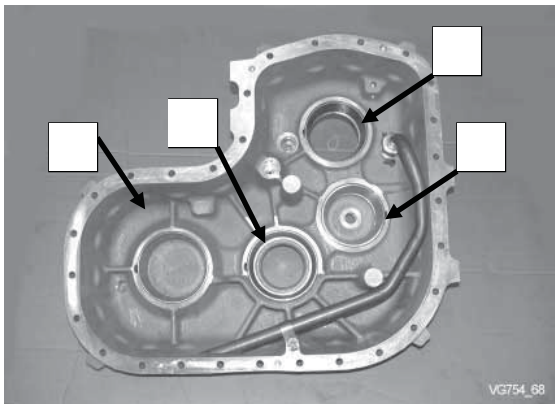


☞ Mount shaft seals (pos. 1) into housing cover.
Grease shaft seals with **STABUTHERM**.

☞ Use driver **1 SKO 102977**.

Mount adjusting shims before installing the bearing outer rings.

☞ Use **basic disks** as specified.

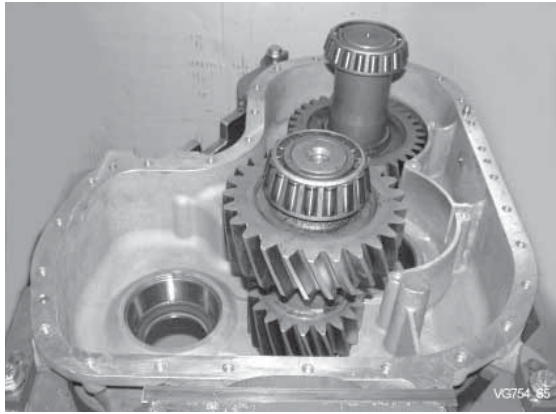


Mount bearing outer rings into the housing cover.

☞ **Mount super-cooled bearing outer rings or heat bearing areas on the housing.**

- ☞ **1** use bearing **32 213** / driver **1 SKO 102978**
- 2** use bearing **32 213** / driver **1 SKO 102978**
- 3** use bearing **32 212** / driver **1 SKO 102 979**
- 4** use bearing **33 310** / driver **1 SKO 102 979**





Setting of bearings

Setting double gear and front axle output shaft:

Mount preassembled double gear and front axle output shaft into housing.

Mount housing cover for bearing setting.



Do not seal mounting face.



Check rolling torque of the double gear.

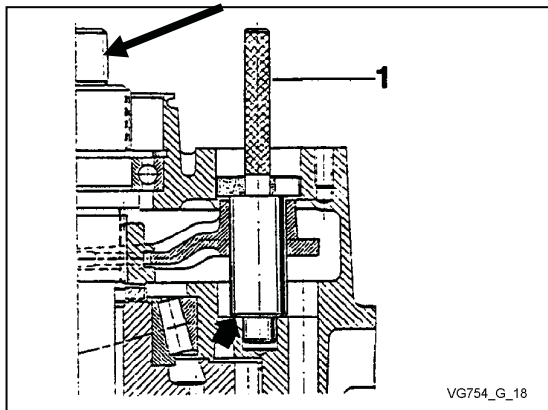
Nominal rolling torque **20 – 35 Nm**



Use torque meter.



Correct any deviations from the nominal rolling torque by means of adjusting shims (disassemble cover and bearing – change adjusting shims)



Turn transfer box.

Insert assembly mandrel **A- VG-750-07** (pos. 1) and reseal until contact is obtained.

Check the rolling torque of the front axle output shaft (arrow).

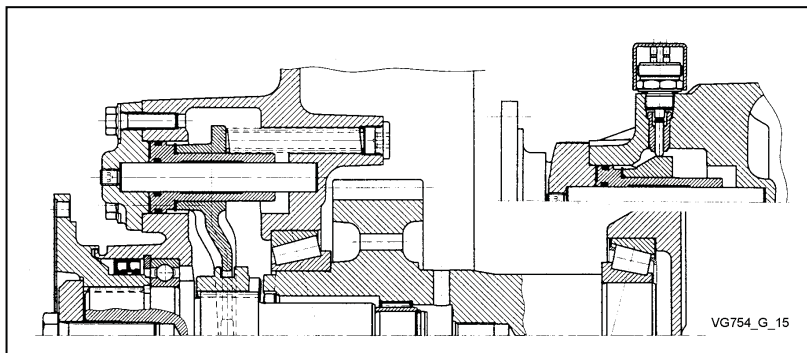


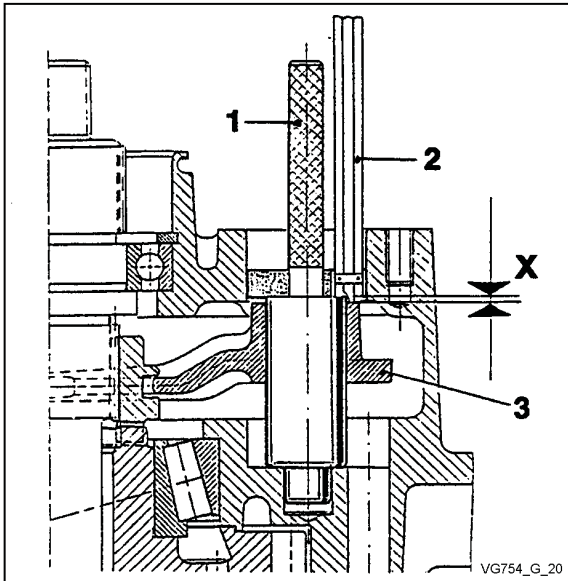
Nominal rolling torque **20 – 30 Nm**
Use torque meter.



Engage FA- gear shift system (apply compressed air)

Setting and installation of gear shift system front axle output:



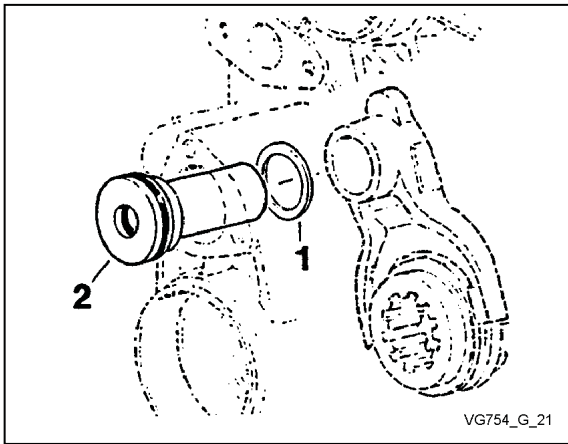


Measure distance **X** between assembly tube (pos. 1) and shift fork (pos. 3).



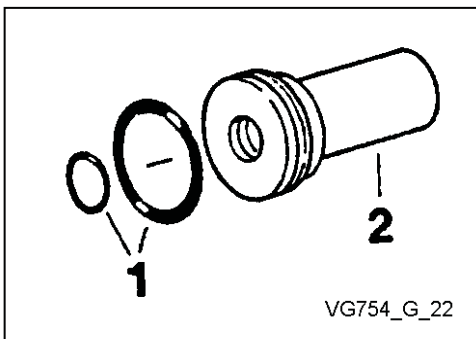
Use depth gauge of the slide gauge (pos. 2).

Reseat assembly mandrel **A- VG-750-07** (pos. 1) until contact is obtained.

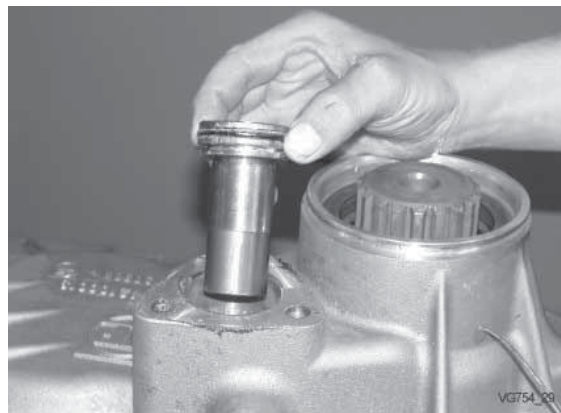


Balance difference **X** with shim ring (pos. 1).

Shim rings: 30x 42x 0.1
 30x 42x 0.2
 30x 42x 0.5
 30x 42x 1.0



Install O-rings (pos. 1) on piston (pos. 2).

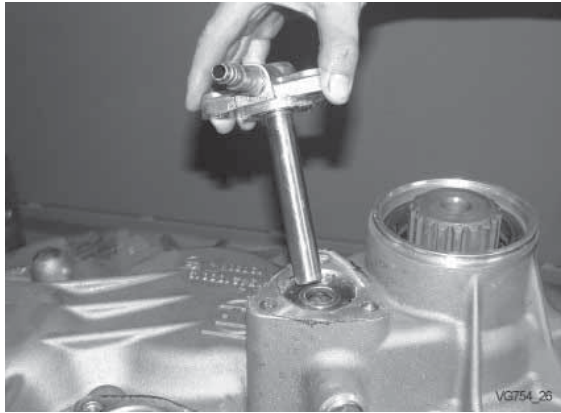


Install shifting piston with seal.

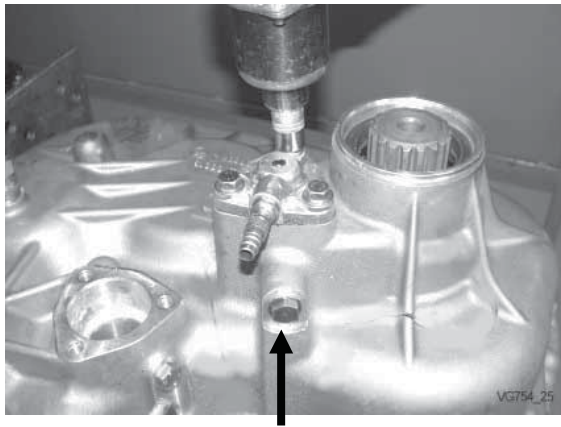
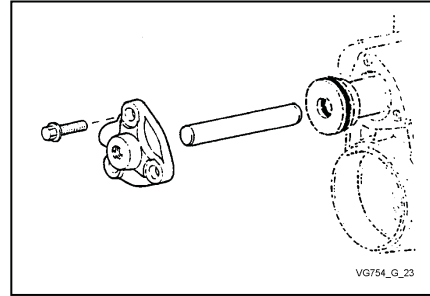


Grease sliding surface and O-rings.





Pre-assemble cover and mount together with selector shaft into shift cylinder.

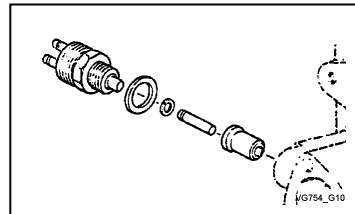


Mount cover.

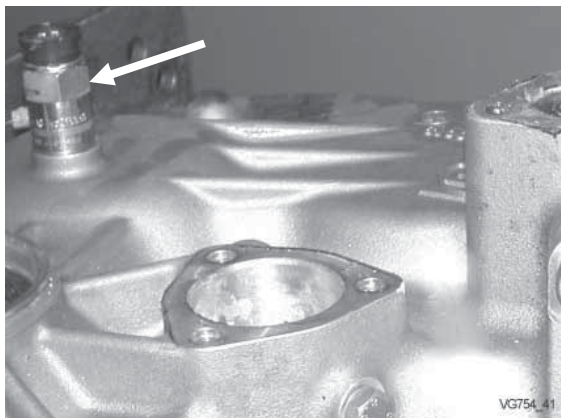


Secure screws with **LOCTITE 243**.

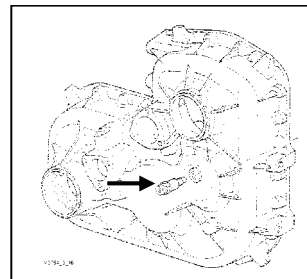
Tightening torque (M10/ 8.8) **MA = 46 Nm**



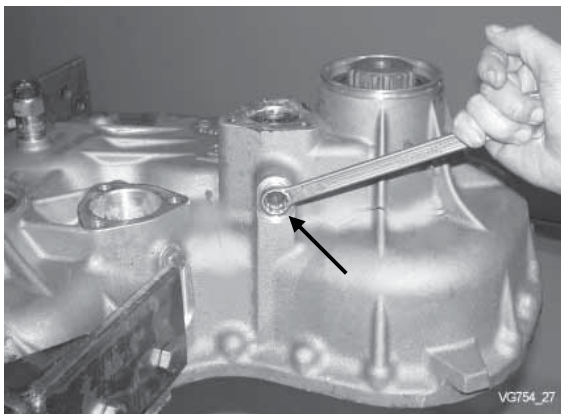
Mount sliding bush, pin and monitor switch



Install speedometer sending unit.



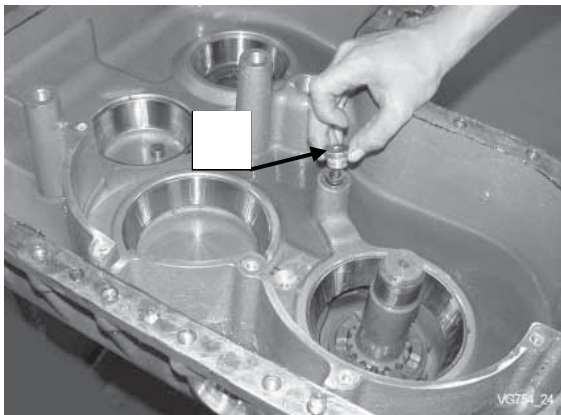
For further assembly turn the transmission. Disassemble housing cover.



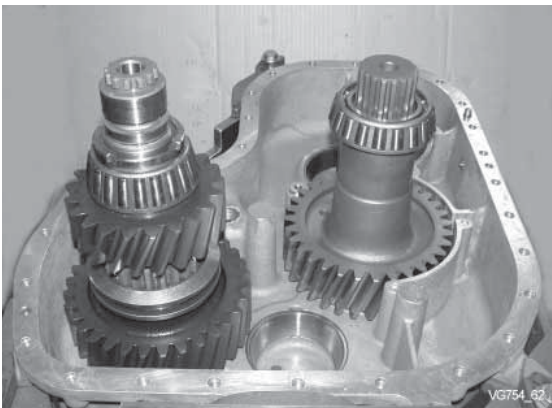
Install sliding sleeve, plug and control switch.

Turn housing for further assembly.





Slide in shaft spring (1) and plug.



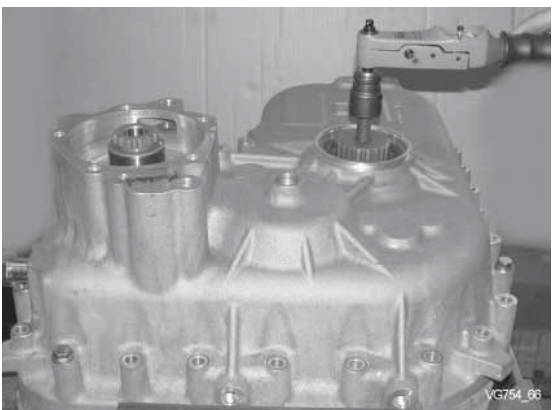
Setting of rear axle output shaft and input shaft:

Mount preassembled rear axle output shaft and input shaft into housing.

Mount housing cover for setting of bearing.



Do not seal mounting face.



Check the rolling torque of the rear axle output shaft.

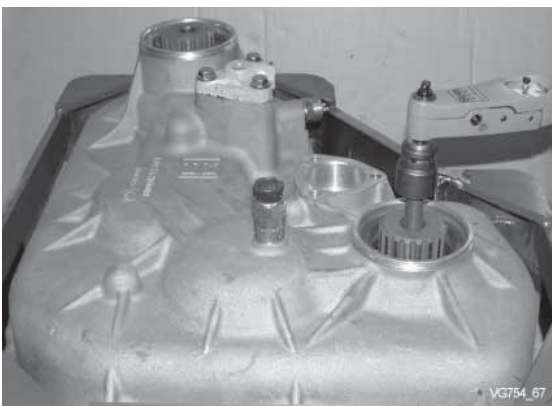
Nominal rolling torque **20 – 35 Nm**



Use torque meter.



Correct any deviations from the nominal rolling torque by means of adjusting shims (disassemble cover and bearing – change adjusting shims)



Turn transfer box.

Check the rolling torque of the input shaft.

Nominal rolling torque **15 - 25 Nm**



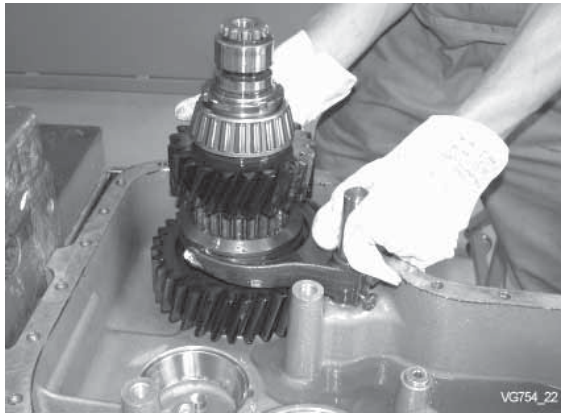
Use torque meter.



Correct any deviations from the nominal rolling torque by means of adjusting shims (disassemble cover and bearing – change adjusting shims)

Disassemble housing cover again.

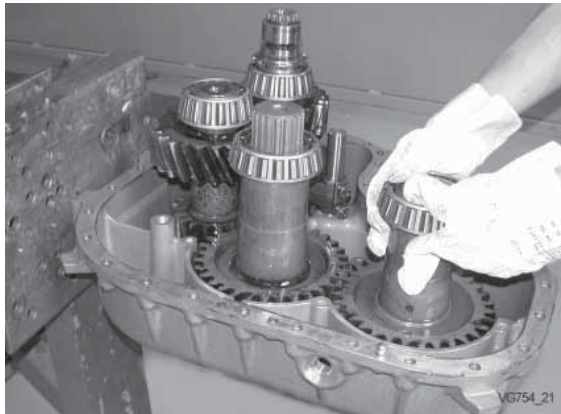




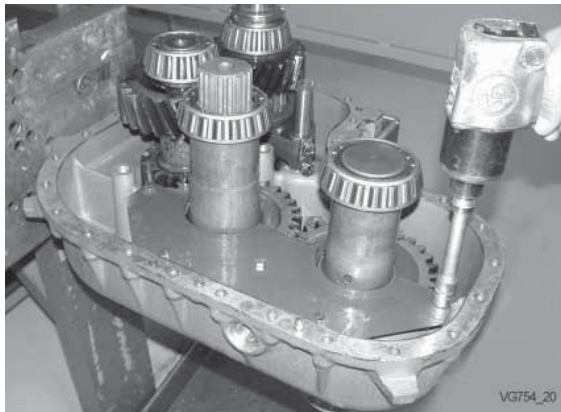
Install input shaft together with shifting fork and shift rod.

☞ Take care of correct positioning of sliders.

☞ Lube shifting rod at sliding surface with gear oil.

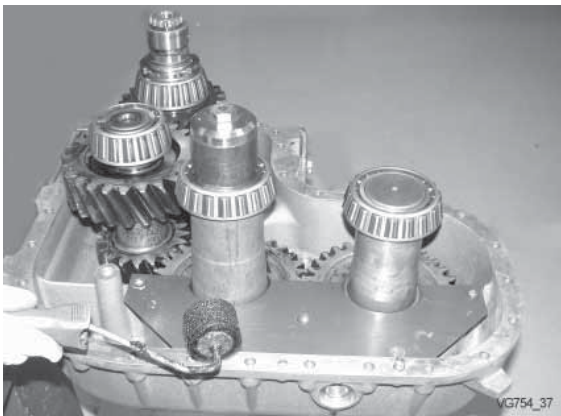


Install intermediate shafts and output shaft.



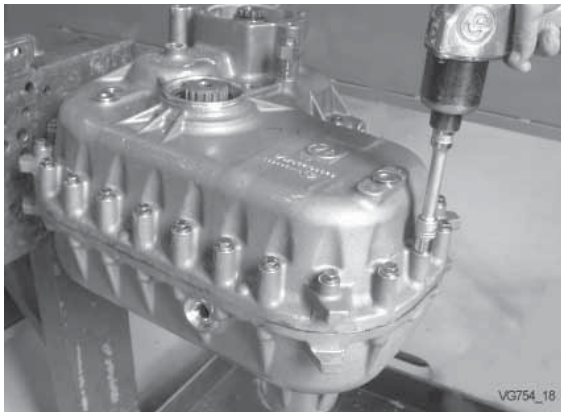
Install oil guide.

Torque (M8/ 8.8) **MA = 23 Nm**



Apply **LOCTITE 518** on front housing.



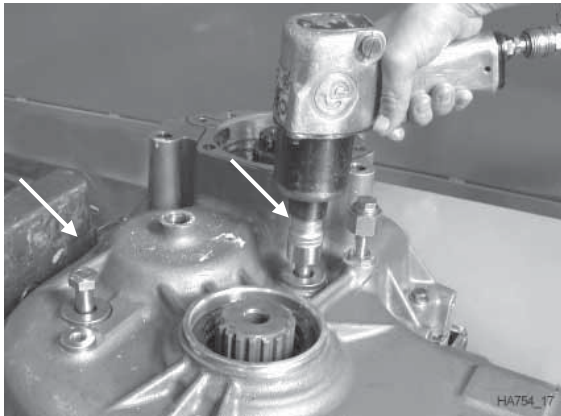


Install rear housing.

Torques for tightening of housing bolts:

M10 $M_A = 46 \pm 5 \text{ Nm}$

M12 $M_A = 80 \pm 8 \text{ Nm}$

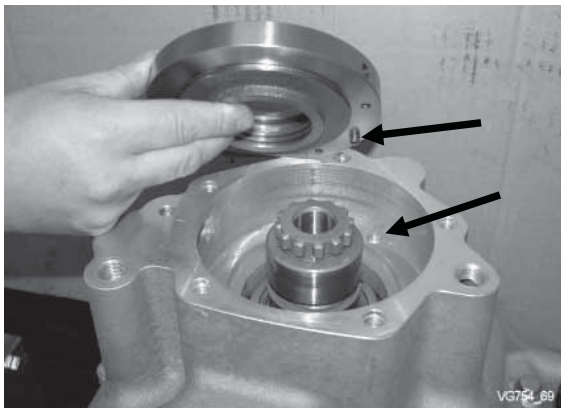


Install bolts.

Torque (M14/ 8.8) $M_A = 125 \text{ Nm}$



Install oil guide.

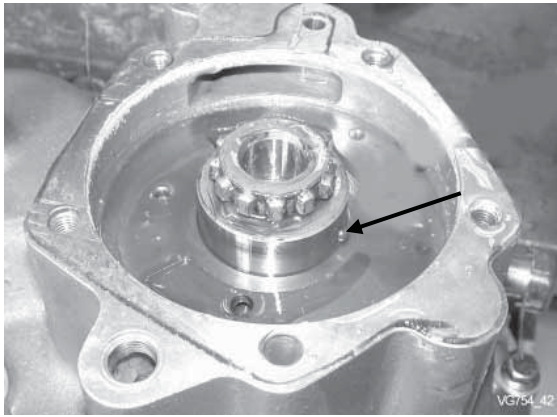


2.3 Assemble oil pump:

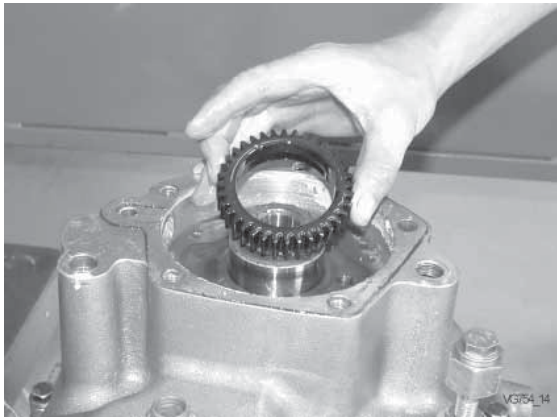
Mount oil pumpcover.

Pay attention to torsional stop (slotted pin).






Position drive ball into input shaft with grease.

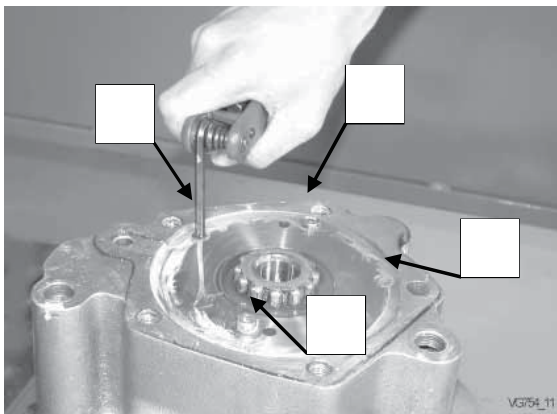


Install oil pump gear on input shaft.

 **Position of ball and groove must align.**



Slide outer pump gear on oil pump gear.



Install oil pump housing and tighten with Allen screws.

M 6x30 (1)

M 6x35 (2)

Torque (M6/ 8.8) **MA = 9.5 Nm**

 **To avoid limiting pump axial clearance, use silicone sealant.**

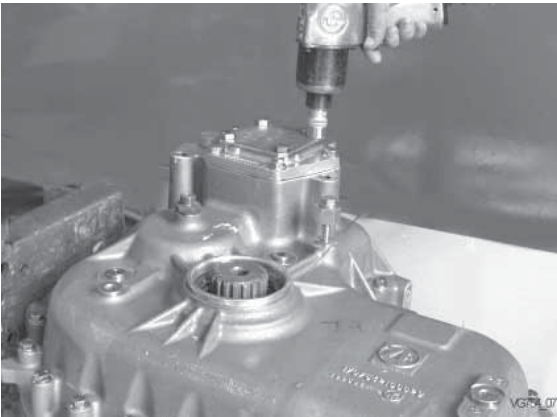




Install bearing cover.

☞ Seal flange surface with **LOCTITE 518**.

Torque **MA = 60 +/-5 Nm**



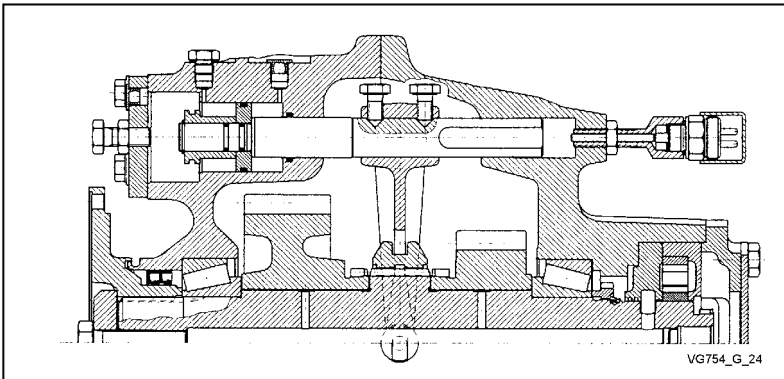
Install cover.

☞ Seal flange surface with **LOCTITE 518**.

☞ Tighten bolts with **LOCTITE 243**.

Torque **MA = 60 +/-5 Nm**

Setting and Installation of gear shift system on-road gear/off-road gear:

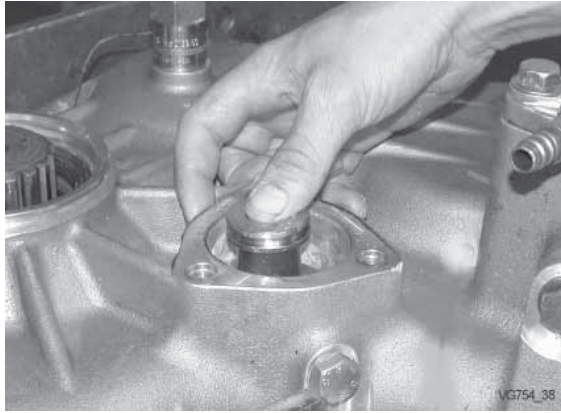


2.4 Adjust high/low gear:

Install piston with seal on shift rod.

☞ Grease piston.





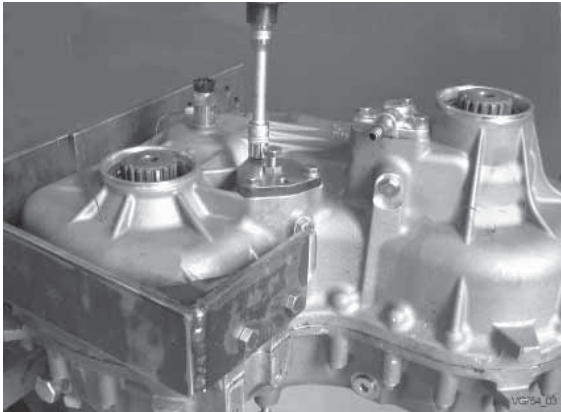
Slide cylinder and seal on shift rod.



Grease cylinder.



Rebound circlip.

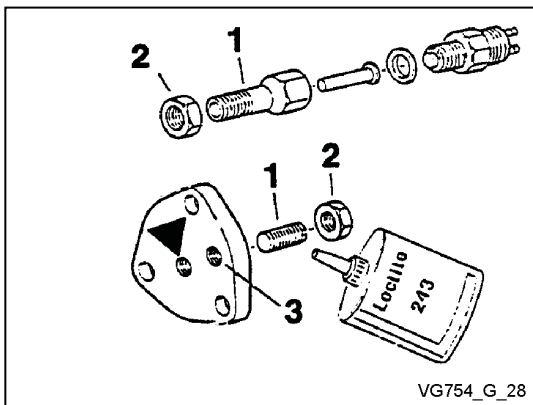


Install cover.



Seal flange surface with **LOCTITE 518**.

Torque $M_A = 46 \pm 5 \text{ Nm}$

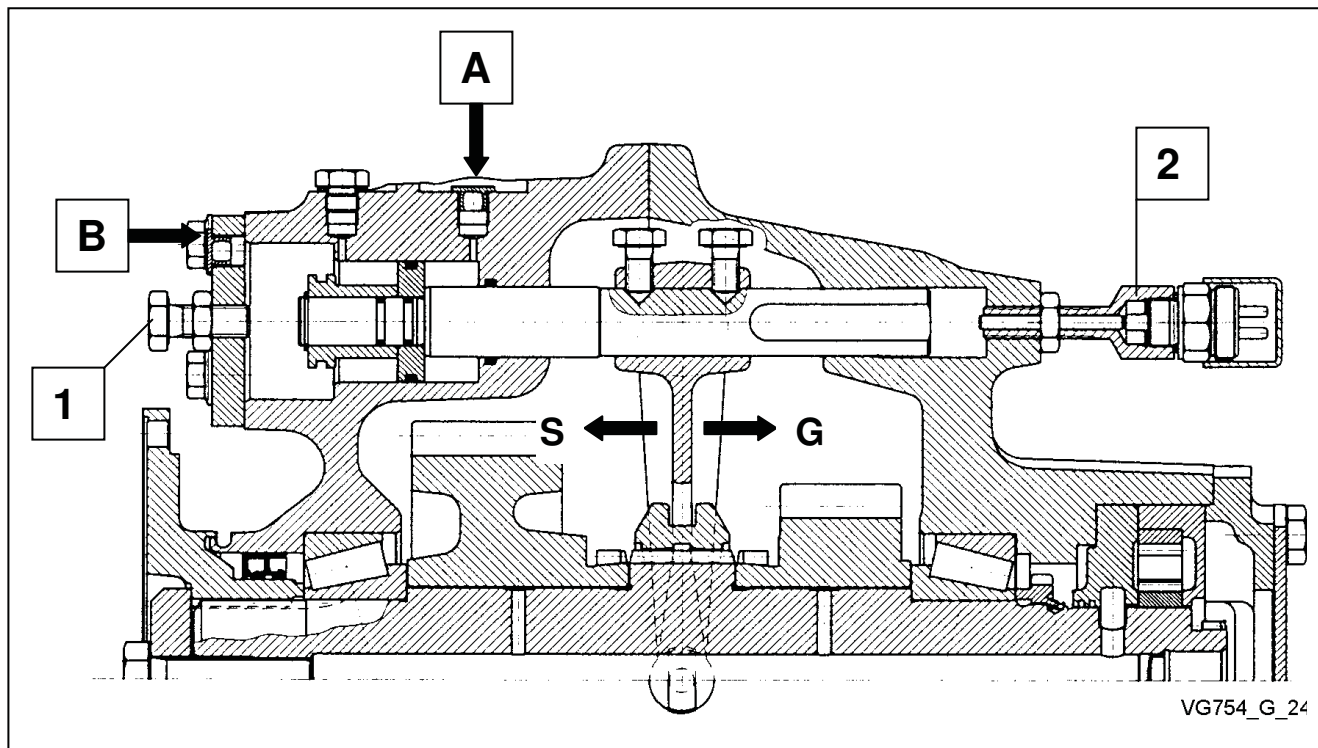


Setting of gear shift system:

Remove sealing agent residuals from the threaded holes.

Apply LOCTITE 243 onto the threads of the setting screws (1) and the lock nuts (2) and mount to flange (3).



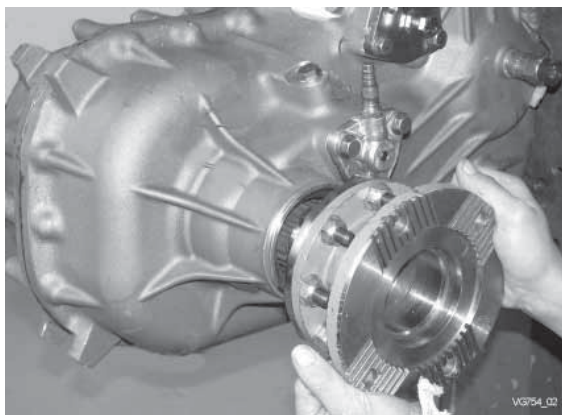


Setting on-road gear:

On-road gear is actuated by supplying compressed air (**P= 6.5 bar**) at connection (A). Bolt setting screw (1) into the shift cylinder, until contact position with the shift rod is obtained. Continue to turn the setting screw 1/3 to 1/2 revolution and secure with lock nut.

Setting off-road gear:

Off-road gear is actuated by supplying compressed air (**P=6.5 bar**) at connection (B). Bolt setting screw (2) into the flange, until contact position with the shift rod is obtained. Continue to turn the setting screw 1/3 to 1/2 revolution and secure with lock nut.



Install flanges and washer.



Apply **LOCTITE 243** on flange surface of washer.

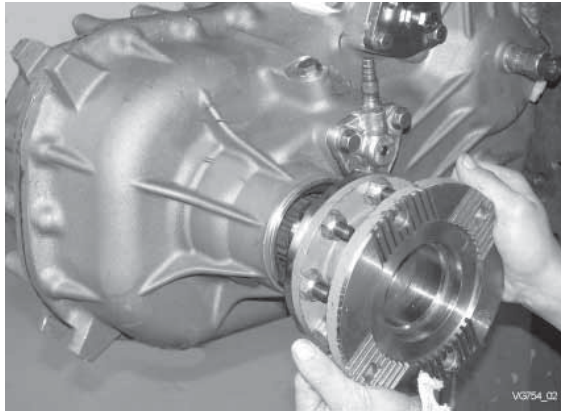
Mount screw..



Apply **LOCTITE 243** on thread and friction surface of screws.

Torque **M_A = 275 Nm**





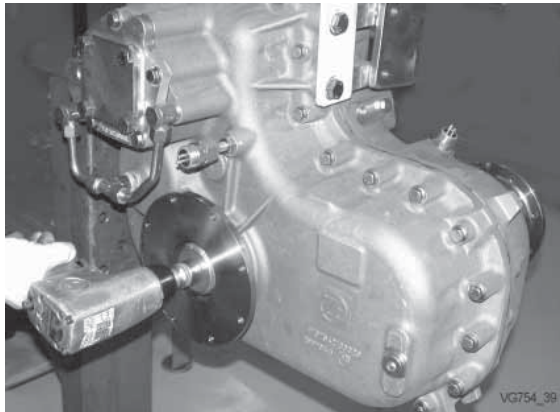
Install flanges and washer.

☞ Apply **LOCTITE 243** on flange surface of washer.

Mount screw..

☞ Apply **LOCTITE 243** on thread and friction surface of screws.

Torque **MA = 275 Nm**



Install flange and washer.

☞ Apply **LOCTITE 243** on flange surface of washer.

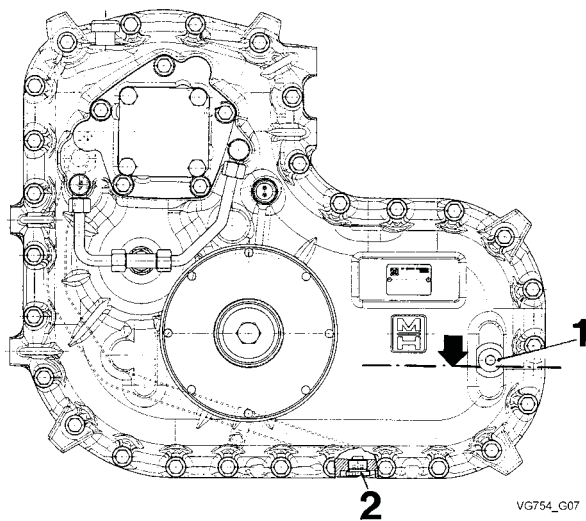
Mount screw.

☞ Apply **LOCTITE 243** on screws.

Torque **MA = 275 Nm**



Before operating the transfer gearbox, gear oil has to be filled according to the oil change instructions – (see page 9).



- Mount drain plug (2) with new seal.
- Fill new oil at filling bore/level bore (1) until it flows over.
- After correct oil filling, mount level plug (1) with new seal.

Torque **MA= 80 +/- 10 Nm**

Oil filling quantity: app 8.5 litres

Oil quality: SAE 90 MIL-L-2105-API-GL4





WARRANTY CLAIM PROCEDURE

Before proceeding with repairs or ordering parts that you feel may be covered under warranty, you must first contact Marmon-Herrington Customer Service Department to obtain a Repair Authorization Number.

800.227.0727x282 8am-5pm EST

502.693.1129 5pm-8pm EST

Please be prepared to supply the following information:

Factory Order Number or “S-Number”

This is located on an ID plate fixed to either the driver’s door panel or the component (axle or transfer case) itself. This plate will also show the component’s model and serialnumber. Example: S-7777-05

Component Model and Serial Number

Vehicle Year, Make and Model

Vehicle Identification Number

Mileage

In Service Date

Please refer to our website (marmon-herrington.com) for the latest versions of our parts and service manuals, as well as new products and contact information.



WARRANTY REPAIR AND CLAIM PROCEDURE

Initial Failure Reporting

1. Operator must call Marmon-Herrington Customer Service prior to performing any repairs and receive a Work Authorization Number to be eligible for reimbursement. The work authorization number does not guarantee payment but is an acknowledgement that the vehicle is within the warranty period in terms of date and mileage, and that a claim has been activated. **It will be the responsibility of the operator to ensure that their repair facility is aware of and complies with the guidelines of this policy.**
2. To expedite the authorization process, you will need the Sales Order Number or “S” number found on the front of this certificate. You will also need the Vehicle Identification Number or the last six digits of the “VIN”, the date the vehicle was placed in service, and the current mileage. Please note the following:
 - This Warranty Registration should have been submitted at the time of delivery. If our records do not include a warranty registration, you must complete one before any authorization for repair can be issued. We will make them available by mail or fax upon request.
3. Marmon-Herrington will pre-approve .5 hours diagnosis/inspection time prior to your call for repair authorization. If the diagnosis/inspection complaint does not reveal a warrantable failure, or result in a warrantable repair, the customer will be responsible for all charges including diagnosis/inspection time.
4. The Operators Manual contains information covering proper equipment use and maintenance schedules. Operators must adhere to these guidelines to be eligible for reimbursement, and service records must be provided upon request.

Pre-Repair Requirements

5. Authorization for repairs will require a written estimate/repair order of costs after determination that a warrantable condition is found to exist.
6. Estimates must contain the following information:
 - A list of all parts necessary for specific job and if applicable, all parts that will be invoiced back to Marmon-Herrington.
 - The cost of disassembly, inspection and diagnosis of any portion of the vehicle to determine extent of repairs needed.
 - Current labor costs, reflecting both hourly rate and number of hours to effect repairs must be listed.
 - Miscellaneous charges such as “shop supplies” must be defined. Actual dollar amounts must be listed, as percentages will not be accepted.
 - Sublet repairs must also be defined and included in the estimate at their actual dollar amount.
 - NOTE: If it becomes necessary to exceed the original estimate in terms of parts or labor, the repair facility must call Marmon-Herrington Customer Service for additional authorization.
3. Only the use of Marmon-Herrington supplied parts will constitute reimbursement unless prior approval has been obtained.

Parts Ordering

1. While Marmon-Herrington operates a full service Parts Department, replacement parts needed to effect Warranty repairs must be acquired through Customer Service to be eligible for reimbursement.



Post Repair Requirements.

1. The final invoice or work order must include the following:
 - Customer's name, address, and phone number.
 - The Vehicle Identification number.
 - The Sales Order Number or "S" number, which the customer can provide or can be located on the ID tag, fixed to the transfer case or axle.
 - The Axle or Transfer Case Model and Serial Number, also located on the ID tag.
 - Mileage IN / Mileage Out.
 - The Cause and Correction of the repair including detailed description of repairs and parts replaced.
 - The date the repair order was open and the date the repairs were completed.
 - The Work Authorization Number obtained from Customer Service.

Notes to Repair Facilities

1. Miscellaneous charges such as "shop supplies" must be listed as separate line items and shown on the final invoice as stated in "Pre-Repair Requirements". Invoices for sublet repairs must be made available upon request.
2. All repairs must comply with any or all state and DOT requirements.
3. Downtime of vehicle and incurred costs associated due to the delay of parts shipments or any other condition beyond our control is not reimbursable and should not be listed on the invoice.
4. All failed parts that are required to be returned to Marmon-Herrington must be received before payment will be made. The Return Authorization will be sent with the replacement parts when shipped from Marmon-Herrington.
5. All Claims must be submitted within 60 days of completion of repairs to be eligible for reimbursement.

For Work Authorization call: 800.227.0727 ext. 282
To Submit Claims by Fax: 502.253.0317
Submit Claims by Mail to: Marmon-Herrington Company
Customer Service Department
13001 Magisterial Drive
Louisville, KY 40223



MARMON-HERRINGTON WARRANTY

This is to certify that we, Marmon-Herrington Company, Louisville, Kentucky, warrant each new chassis remanufactured, or assembly or part furnished for the remanufacture of a truck chassis against defects in material and workmanship under normal use and service. Marmon-Herrington's obligation under this warranty is limited to replacement of, at our factory, any part or parts thereof which shall, within one (1) year after delivery of such vehicle to the final user after installation of the all-wheel drive conversion kit, be returned to us with transportation charges prepaid, and which our examination shall disclose to our satisfaction to have been thus defective.

Marmon-Herrington will warrant covered components against defects in material and workmanship under normal use and service for the specified period. This warranty includes all internal components with the following exceptions: Exceptions include, but are not limited to wear items such as brake linings and drums, oil seals and bearings, which will be covered for a period of 12 months or 12,000 miles, whichever ever occurs first.

Failure to follow designated maintenance procedures and schedules, maintain required lubrication levels, or any form of operational abuse or misuse will void all warranty coverage expressed or implied.

Failure reporting and claims submission procedures are to be followed as outlined in the standard warranty guidelines

Service parts are manufactured to the same standards as production installed parts. However, since the installation thereof, as well as the age and condition of the receiving vehicle are beyond the control of Marmon-Herrington, Service Parts are warranted for a period of ninety (90) days or five thousand (5,000) miles whichever first occurs. All other regular warranty conditions apply.

On vehicles operating OVERSEAS, the determination of defects will be made at Marmon-Herrington Company, Louisville, Kentucky, from complete information supplied in writing by overseas distributors or recognized acting distributors. Complete information is defined to mean: vehicle serial number, user's name, date of delivery, mileage at time of breakage, date of breakage, type of service, nature of break or fault, distributor's recommendation (for our guidance only), and any other pertinent information. After determination of our obligation, any parts to be replaced will be shipped to distributor or acting distributor in accordance with his instructions.

This warranty is in lieu of all other warranties expressed or implied and of all other obligations or liabilities incurred by Marmon-Herrington. Marmon-Herrington neither assumes nor authorizes any other person to assume any other liability in connection with this sale, including but not limited to indirect or consequential damages.

This warranty shall not apply to any vehicle which shall have been repaired or altered in any way so as in our judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence, or accident, nor which shall have been operated at a speed exceeding the factory rated speed or loaded beyond the factory rated load capacity or operated in violation of Marmon-Herrington's instructions.

Marmon-Herrington makes no warranty whatever on components of the original manufacturer's chassis not related to the modification work. Also, no warranty is made on tires, rims, ignitions, or other parts usually warranted separately by their respective manufacturers.

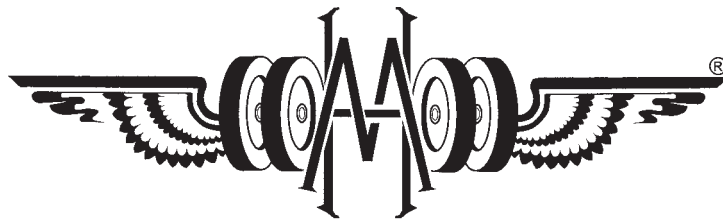
The manufacturers reserve the right to make changes in design, and changes or improvements upon their product, without notice, and without incurring any obligation to install such changes or improvements upon their products theretofore manufactured.

This warranty shall become effective only when the Warranty Certificate has been returned to Marmon-Herrington and validated by the same.

In the case of vehicles operating in extreme conditions such as corrosive material mines, deep- water zones or areas of hostile aggression, the following warranty limitations apply:

Marmon-Herrington shall not be responsible for damage caused by chemical corrosion, internal water damage due to total immersion, or explosive impact. These conditions constitute severe duty and are not covered by Marmon-Herrington standard warranty.





Marmon-Herrington

13001 Magisterial Drive • Louisville, KY 40223
(502) 253-0277 • (800) 227-0727 • Fax (502) 253-0317
E-mail: info@marmon-herrington.com

Marmon-Herrington *Literature Order Form*

Credit Card Orders Or Current Customers' Purchase Orders May Be Faxed — **502/253-0317**

Sales Literature – No Charge	Part	Quantity	Parts Manuals:	Part	Price	Quantity	Extended Cost:
MVG 750 Transfer Case	TCSL001		MVG 750 Transfer Case	TCPM001	6.00		
MVG 1200 Transfer Case	TCSL002		MVG 1200 Transfer Case	TCPM002	6.00		
MVG 2000 Transfer Case	TCSL003		MVG 1600SD Transfer Case	TCPM004	6.00		
MT 8 Axle	AXSL001		MVG 1600LD Transfer Case	TCPM005	6.00		
MT 10 Axle	AXSL002		MVG 2000 Transfer Case	TCPM003	6.00		
MT 11 Axle	AXSL003		MT 8 Axle	AXPM001	6.00		
MT 14 Axle	AXSL004		MT 10 Axle	AXPM002	6.00		
MT 17 Axle	AXSL005		MT 11 Axle	AXPM003	6.00		
MT 22 Axle	AXSL006		MT 14 Axle	AXPM004	6.00		
MT 23 Axle	AXSL007		MT 17 Axle	AXPM005	6.00		
Driver Controlled Locking Differential	AXSL008		MT 22 Axle	AXPM006	6.00		
4 Page Brochure	PRBR001		MT 23 Axle	AXPM007	6.00		
Total Sales Literature			R/RF 22 Axle	AXPM008	6.00		
			CT-8 Axle	AXPM009	6.00		
			Repair Manuals:				
			MVG 750 Transfer Case	TCRM001	10.00		
			MVG 1200 Transfer Case	TCRM002	10.00		
			MVG 1600 Transfer Case	TCRM004	10.00		
			MDB 1610 Drop Box	DBM002	10.00		
			MVG 2000 Transfer Case	TCRM003	10.00		
			MT10/MT11 Axles	ARM001	10.00		
			MT14/MT17 Axles	ARM002	10.00		
			MT22/MT23 Axles	ARM003	10.00		
			R/RF 22 Axle	ARM004	10.00		
			CT-8 Axle	ARM005	10.00		
			Operators Manuals:				
			Transfer Cases	OMTC-1	10.00		
			General	OMG-2	10.00		

Method of Payment

- Check Enclosed
- Purchase Order/P.O. # _____
(only w/current M-H Account)
- Mastercard/VISA – Card # _____
Exp. Date _____

Authorized Card User's Signature: _____

Sub Total: _____

Total Quantity Sales Literature: _____ *No Charge*

KY Sales Tax: _____

Standard Shipping: _____ *No Charge*

TOTAL Due: _____

Ship Order to the following address

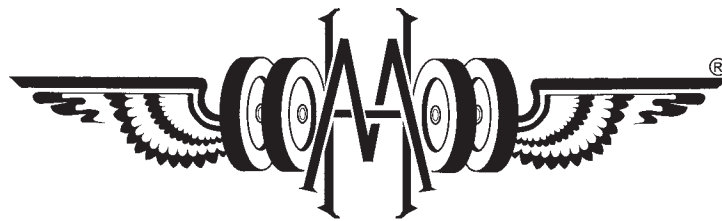
Company: _____ Telephone Number: _____

Name: _____ Fax Number: _____

Address: _____ Zip Code: _____

City/State: _____ Postal Code: _____

Country: _____



Marmon-Herrington

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