



LXHT20 HYDROSTATIC TRANSMISSION

WORKSHOP MANUAL

Rel. 0.0



PRODUCTION YEAR 2023 -->

The manufacturer reserves the right to make all the necessary technical or commercial improvements to its products, so there may be some differences between the series of Transmission and the contents of this manual. However the basic specifications and different operating procedures will remain the same.

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IMPORTANT NOTICE : The information contained herein is intended for Service Operations and professionals only, able to competently perform the operations described herein, using the appropriate equipment in order to safeguard se-curity and performance of the machine. The manufacturer is not liable for damages or injuries arising from operations performed by individuals or inadequate facilities.



CONTENTS

INTRODUCTION..... 5

1. RULES AND PROCEDURES FOR SERVICE CENTRES 6

 1.1. Guarantee validity6

 1.2. Fault notification6

 1.3. Spare parts request.....6

2. GENERAL AND SAFETY REGULATIONS..... 7

 2.1. Qualification of operators7

 2.2. Safety measures7

 2.3. Precautions during servicing.....7

 2.4. Necessary equipment7

 2.5. Symbols and terms used for safety purposes.....7

3. TECHNICAL DATA AND SPECIFICATIONS..... 8

 3.1. Introduction.....8

 3.2. General Description.....8

 3.3. Hydraulic diagram8

 3.4. Identification.....9

 3.5. Technical data9

 3.6. Tightening torques.....10

 3.7. Table of Tightening torques11

 3.8. Identification of transmission units.....12

4. GENERAL MAINTENANCE INSTRUCTIONS 13

 4.1. Preliminary operations.....13

 4.2. Removing the transmission.....13

 4.3. Operations prior to disassembly / external maintenance.....13

 4.4. Operations following assembly13

5. GENERAL MAINTENANCE PROCEDURES 14

 5.1. Transmission Oil14

 5.2. Neutral setting16

 5.3. Brake maintenance17

 5.4. Fluid change procedure.....18

 5.5. Fan and pulley disassembly19

 5.6. Fan and pulley assembly20

 5.7. Removal of the expansion tank.....21

 5.8. Expansion tank installation.....22

 5.9. Control arm disassembly.....23

 5.10. Control arm assembly24

 5.11. Brake unit disassembly.....25

 5.12. Brake unit assembly.....27

 5.13. Transmission opening.....29

 5.14. Transmission closing.....30

 5.15. Axle shafts disassembly.....31

CONTENTS

5.16. Axle shafts assembly	32
5.17. Differential gear disassembly.....	33
5.18. Differential gear assembly	34
5.19. Input shaft disassembly	35
5.20. Input shaft assembly	36
5.21. Oscillating plate disassembly	37
5.22. Oscillating plate assembly	38
5.23. Bypass arm disassembly	39
5.24. Bypass arm assembly	40
5.25. Crankshaft and engine block disassembly.....	41
5.26. Crankshaft and engine block assembly	43
5.27. Filter unit disassembly	44
5.28. Filter unit assembly.....	44
5.29. Expansion tank hose disassembly.....	45
5.30. Expansion tank hose assembly	45
5.31. Operations to be performed after opening the transmission	46
5.32. Tightening sequence of half-shell screws.....	47
6. TROUBLESHOOTING	48
6.1. Oil contamination with water.....	50

INTRODUCTION

The purpose of this manual is to provide Service Centres with the necessary information for a correct maintenance, disassembly and repair procedure for the **LXHT20 Hydrostatic Transmission**.









Operations on the transmissions must be carried out in compliance with the provisions shown in the following pages and in compliance with the safety regulations in force in the Country where you are operating, only by personnel authorised and trained for the purpose.

In every manual page the following informations are described:



- A: Type of transmission for which the page is valid;
- B: Reference to the chapter and the argument with the relative numbering;
- C: Presence of previous or following chapters from the present chapter;
- D: Issue date or possible audit;
- E: Audit number;
- F: Page progressive numbering.

Certain symbols are used in the manual, highlighting particularly important information, risks, warnings and prescriptions:

-  **Warns of operations that should be carried out with utmost care to avoid impairing the functionality and safety of the lawnmower.**
-  **Warns of operations that should be carried out with utmost care to avoid impairing the functionality and safety of the lawnmower.**
-  **NOTE: Refers to specific advice by the Manufacturer.**
-  **Reference to another procedure or part of the manual.**
-  **Recommends checking and replacing the gaskets, O-rings and sealing rings if required.**
-  **Refers to use of special tools.**
-  **Shows all the operations requiring different intervention methods depending on the transmission version.**
-  **NOTE: In the description of the procedures, all "right", "left", "front", "rear", "upper" and "lower" indications refer to the transmission mounted on the machine, as seen from the user's working position.**

It is recommended to read what is provided herein in order to acquire a good basic knowledge of the transmission, crucial to be able to operate rationally, whilst avoiding errors and any wasted time.

1. RULES AND PROCEDURES FOR SERVICE CENTRES**1.1. Guarantee validity**


The warranty is supplied under the terms, procedures and limits stated in the contract.

1.2. Fault notification

The Manufacturer should be informed of all faults that recur frequently; this allows it to carefully examine the problem and make corrections on the production line.

Similarly, the Manufacturer shall report any anomalies detected in the manufactured transmissions, indicating the most suitable procedures to resolve them.

1.3. Spare parts request

When asking for spare parts, you must quote their code by referring to the exploded views corresponding to the year of manufacture reported on the nameplate [ 3.4].

2. GENERAL AND SAFETY REGULATIONS



IMPORTANT: Before commencing with any intervention, carefully read the information provided in the present manual, in particular the following safety regulations.

2.1. Qualification of operators

All maintenance, disassembly and repairs must be carried out by expert mechanics who are familiar with all the accident prevention and safety regulations after reading through the procedures in this manual.

2.2. Safety measures

All transmissions are manufactured in compliance with current European safety regulations. To maintain initial safety levels in the long term, the Service Centre should take proactive measures by making checks whenever possible. Specifically, each time an operation on the transmission (and on the machine in which it is mounted) is required, it must:

- check that the casings and protection covers have not been removed.
- **Also:**
 - restore to proper working order any safety devices which have been manipulated or removed;
 - not support any operation or modification on the transmission that entails changes in performance and that leads to a misuse or in any case one that differs from that for which it was designed and approved;
 - warn the Customer that the failure to comply with the above points automatically voids the Warranty and the responsibility of the Manufacturer

2.3. Precautions during servicing

As well as following the usual accident prevention regulations that apply to most repair shops, we recommend you:

- protect hands with suitable work gloves;
- ensure the operation in progress does not cause oil spills or leaks, even accidental;
- do not inhale oil;

- immediately clean any oil spills;
- not disperse oil and other high environmental impact waste into the environment. Dispose of all waste in accordance with the laws in force.

- Fire hazards caused by oil

Prevent by following the precautions below:

- Do not smoke or use flames near the oil;
- Use suitably ventilated areas to handle or store the oil.

- Accumulation of flammable material


Prevent by following the precautions below:

- Remove dry leaves, splinters, paper, dust, or other flammable materials accumulated or that are stuck to the transmission.

- **Transmission identification plate** (see  3.4).

2.4. Necessary equipment

All operations can be carried out via the tools normally available in a good Mechanical Workshop.

The  symbol used for certain interventions indicates that special tools or equipment are recommended.

2.5. Symbols and terms used for safety purposes

Some paragraphs in this manual are preceded by symbols which indicate the following:



This operation must be performed with particular care so as not to compromise the functionality and safety of the transmission and/or of the machine on which it is mounted.



Operations that should be carried out with utmost care to avoid injury to operators.

“WARNING” stresses the risk of injury to oneself and others if instructions and regulations are not observed.

3. TECHNICAL DATA AND SPECIFICATIONS

3.1. Introduction

The Transmission normally requires no maintenance during the life of the vehicle it is installed in.

If maintenance work is required, the outside of the Transmission must be thoroughly cleaned before starting most procedures.

Do not wash the Transmission while it is hot and do not use a pressure washer to clean the unit.

3.2. General Description

This model is a propulsion system that uses pressurised fluid to transmit energy. It provides continuous speed variation from zero to maximum in both operating modes, i.e. forward and reverse. This transaxle uses a variable displacement pump with a maximum displacement of 8 cc/rev and a fixed displacement engine of 10.2 cc/rev.

The variable displacement pump has an oscillating plate mounted on a pivot for proportional control. Reversing the tilt of the oscillating plate reverses the flow of oil from the pump and thus reverses the direction of rotation of the motor output.

The pump and motor are of the inclined-plate axial piston type and use ball-head pistons that are pressed against the distributor plate by compression springs.

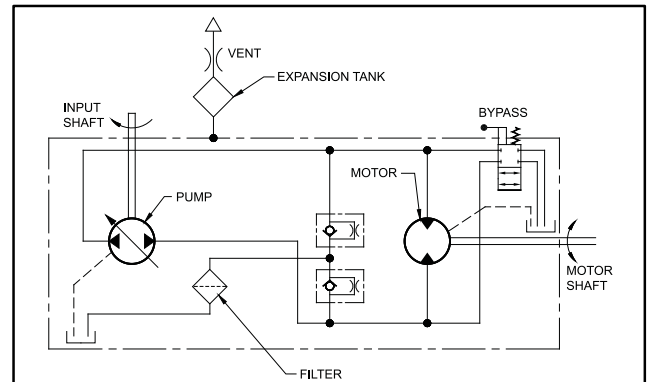
This model is equipped with an autonomous fluid supply and an internal filter. The fluid passes through the filter with the help of the negative pressure created in the pump pistons during operation and is diverted into the expansion tank.

Check valves housed in the central block are used to control the flow of fluid to the low-pressure side of the circuit, in order to replenish the inevitable leaks.

The unit is equipped with a bypass to allow the vehicle to move for a short distance at a maximum of 3.2 km/h without starting the engine. This model is equipped with a disc parking brake controlled by a lever and cam control.

3.3. Hydraulic diagram

The figure shows a diagram of the hydraulic oil circuit. The same oil is used both to feed the circuit and to lubricate the mechanical components of the Transmission.



The input shaft and the cylinder block of the pump rotate at the same speed when coupled by a spline. Pump delivery is controlled in direction and flow rate by the extent that the oscillating plate is tilted. When the pump pistons compress due to the inclination, they force the oil to flow through one of the two ports (delivery or return) of the distributor plate to the cylinder block of the engine and thus to the crankshaft. Since the motor has a fixed displacement, it rotates at a speed dependent on the pump flow rate.

As the angle of the pump oscillating plate increases, the amount of oil pumped will increase and cause the motor to run faster. Reversing the oscillating plate angle will reverse the direction of oil flow.

During operation, fluid seeps through the canals between the bodies in relative motion for lubrication purposes (around pistons, under rotating cylinder blocks, etc.). This lost fluid returns to the transaxle body, and will then be sucked into one of the check valves depending on the direction of vehicle operation. All this oil must pass through the internal filter.

The engine's cylinder block is mounted on a splined crankshaft that drives the gear cascade. The bypass function in this model has a mechanical lever that lifts the motor block off the sliding surface of the central body. This allows the flow of oil to be diverted away from the cylinder blocks.

3. TECHNICAL DATA AND SPECIFICATIONS

3.4. Identification

The Transmission has a label placed on the back of the unit and to the right of the differential. This makes it easily visible without the need to remove any obstacles to see it.



The serial number must be reported on every operating sheet in the warranty application and is fundamental for identifying and ordering spare parts.

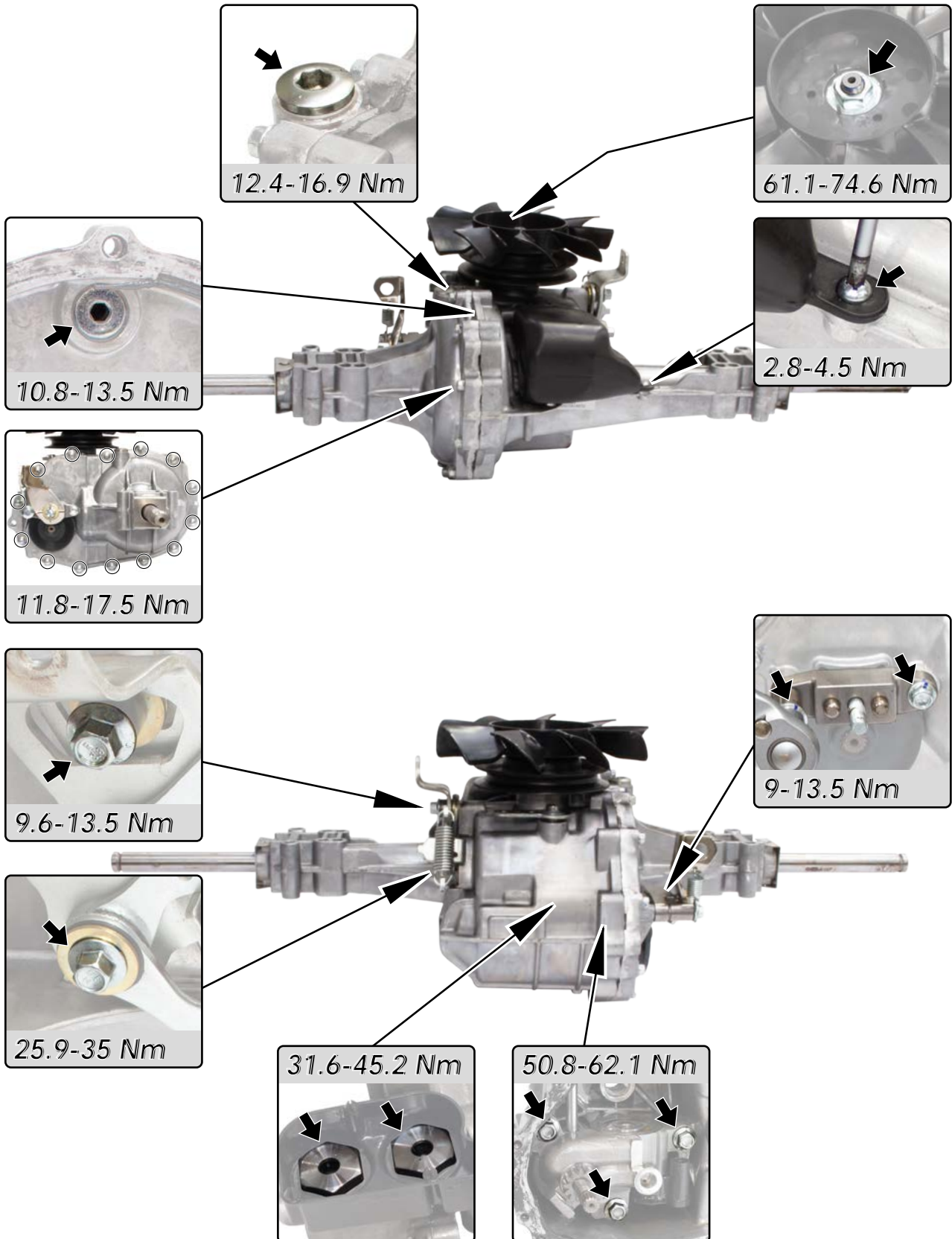
Type of parking brake		External disc
Bypass arm		Yes
Output axes	Diameter	Ø 19.05 mm
	Type	With key

3.5. Technical data

	LXHT20 Hydrostatic Transmission
Hydrostatic module configuration	Integral pump and motor
Differential type	Open
Continuous output torque	156 Nm
Mechanical transmission ratio	17.79
Hydraulic transmission ratio	1.275
Total transmission ratio	22.68
Maximum input speed	3000 r.p.m.
Mounting- 5 point	Axle mounts on both sides of transmission
Transmission fixing holes	5 x Ø 9 mm
Lubrication oil type	20W-50
Quantity of oil	2000 ml
Expansion tank position	On the unit
Input type	Pulley and belt
Dry weight	tbc
Working temperature	- 20°C / + 40°C
Return to neutral system	Yes

3. TECHNICAL DATA AND SPECIFICATIONS

3.6. Tightening torques



3. TECHNICAL DATA AND SPECIFICATIONS

3.7. Table of Tightening torques

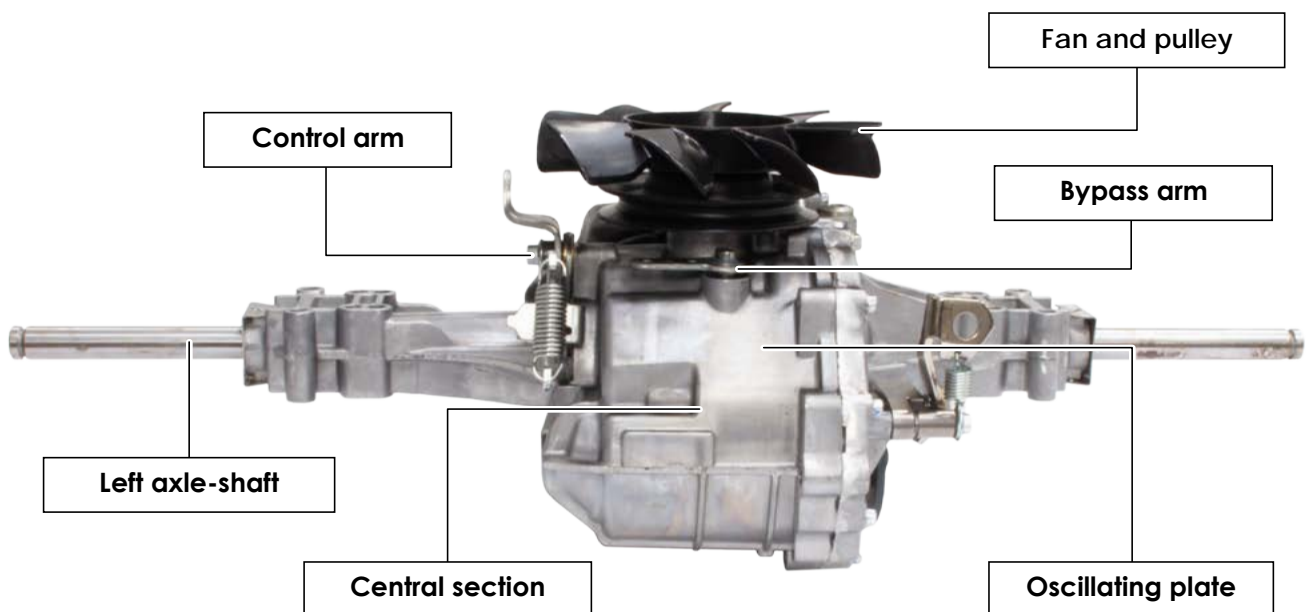
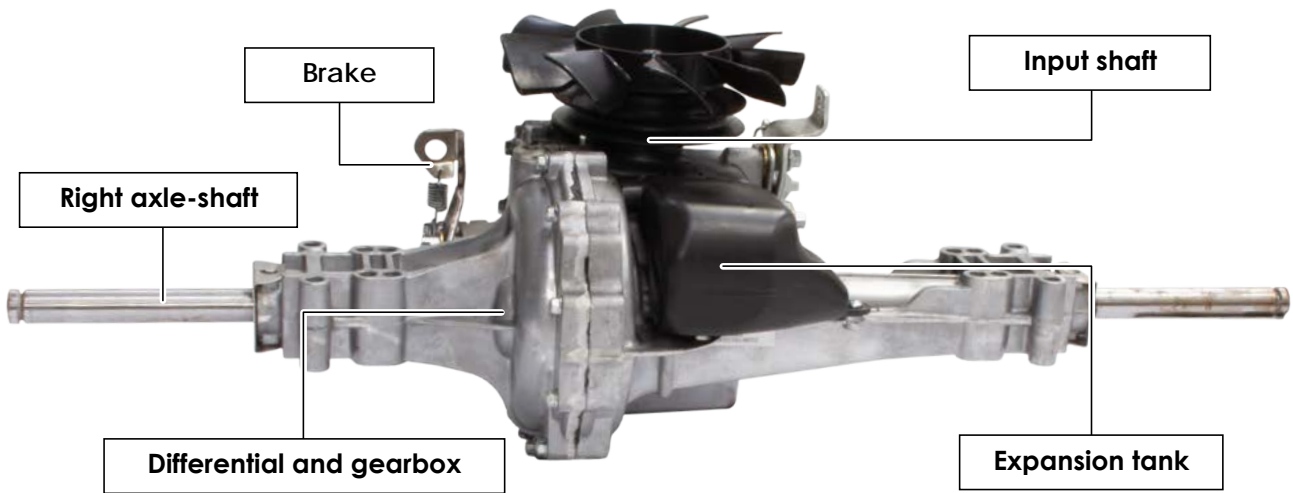
Chapter Ref.	Fixing screws description	Tightening torques
5.5 - 5.6	Fan fastening nut	61.1 - 74.6 Nm
5.7 - 5.8	Expansion tank fixing screw	2.8 - 4.5 Nm
5.9 - 5.10	Scissor arm fixing screw	25.9 - 35 Nm
5.9 - 5.10	Neutral arm fixing screw	9.6 - 13.5 Nm
5.11 - 5.12	Long brake bracket fixing screw	9 - 13.5 Nm
5.11 - 5.12	Brake support fixing screw	9 - 13.5 Nm
5.4 - 5.13 - 5.14	Oil filler cap	12.4 - 16.9 Nm
5.14	Half-shell screws	11.8 - 17.5 Nm
5.25 - 5.26	Centre section unit screws	50.8 - 62.1 Nm
5.27 - 5.28	Check valves	31.6 - 45.2 Nm
5.29 - 5.30	Expansion tank connection	10.8 - 13.5 Nm

P.S. For the tightening torques of all other standard screws, refer to the unified table.

3. TECHNICAL DATA AND SPECIFICATIONS

3.8. Identification of transmission units

In order to make consulting the manual easier, the maintenance operations have been divided into groups, each of which refers to a part making up the transmission, highlighted in the figures below.



4. GENERAL MAINTENANCE INSTRUCTIONS

4.1. Preliminary operations

Before removing the transmission from the machine and checking its operation, check the following:

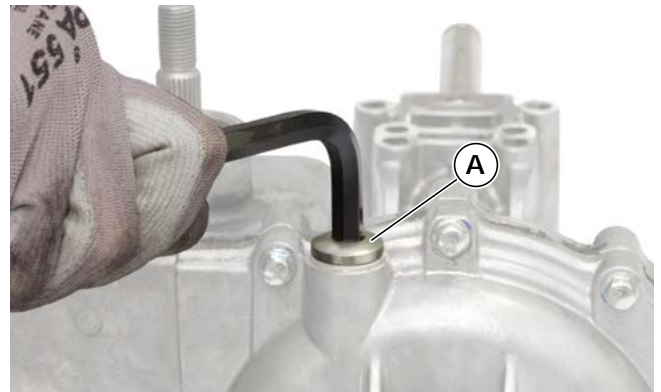
- Correct belt tensioning.
- Oil leaks from the output axles and/or from the input shaft.
- Correct adjustment of the parking brake.
- Visually inspect the transmission for any other faults (cracks on the gearbox, bent output axles, etc.).

4.2. Removing the transmission

- Lift the rear axle and make sure the machine is stable and cannot move.
- Place a lifting jack underneath the transmission.
- Remove all external components such as wheels, washers, belt, brake control rods and gear selection from the transmission.
- Unscrew the five screws connecting to the frame.
- Once everything has been removed, carefully lower the transmission and transport it to a safe surface.

4.3. Operations prior to disassembly / external maintenance

- Check for oil leaks once more.
- Clean the transmission of all traces of dirt, oil, dust. Do not use water for cleaning, whether at low or high pressure.
- Check for any deformations and burrs of the keyways on the output axles and eliminate any imperfections.
- Remove any rust on the output axles.
- Visually inspect the transmission for any other faults (cracks on the gearbox, bent output axles, etc.).
- Drain the oil into a suitable container via the plug (A) on the top. Note whether metallic impurities are present inside, use a magnet to identify their presence if required.



- Inspect the cooling fan for broken or distorted blades and remove any obstructions (cut grass, leaves, dirt, etc.).
- Inspect the vehicle's control linkage to the control arm on the Transmission. In addition, ensure that the control arm is securely attached to the Transmission pivot shaft.
- Inspect the bypass arm on the Transmission and linkage of the vehicle to ensure that it engages and disengages fully.

4.4. Operations following assembly

- Make sure no oil leaks from the seals are present. Any leaks may be caused by incorrect installation or by tears on them caused by burrs during the insertion stage.
- Make sure no oil leaks from the half-casing joint are present. Any leaks may be caused by a missing/incorrect sealing to the interface.
- With Transmission in neutral, check for jamming by rotating the output axes in both directions. The brake and input shaft must not move. Some effort will be required of the operator.
- With Transmission in neutral, check that the input shaft is rotating correctly. Make sure there is no vertical play.

5. GENERAL MAINTENANCE PROCEDURES



IMPORTANT: Carefully read the information below before commencing any intervention.

General information


The disassembly and subsequent reassembly procedures of the assemblies making up the **LXHT20 Hydrostatic Transmission** in order to correctly carry out the maintenance and replacement operations required are described below.

Correctly carrying out what is described in the following paragraphs will make maintenance operations easier, as well as ensure the Transmission and its excellent performance are preserved over time.

See the relevant section [ 6] for advice on resolving problems due to the malfunctioning of the petrol supply system.



WARNING! All maintenance operations must be performed in safe conditions for the person carrying out the operation, therefore:

- do not smoke;
- work in a ventilated environment away from naked flames or unprotected sources of heat;
- before opening the Transmission, drain the oil as per paragraph [ 4.3].



NOTE: ALL OF THE FOLLOWING PROCEDURES AND CHECKS CAN BE CARRIED OUT WITH THE UNIT MOUNTED ON THE MACHINE.



NOTE: SOME IMPORTANT INFORMATION ON FLUIDS.


5.1. Transmission Oil

The fluids used in STIGA products have been carefully selected and should only be replaced with equivalent or better products.

In general, an engine oil with a minimum rating of 0.9 cSt at 110° C and an API classification of SL is recommended.

The 20W-50 engine oil was selected for use at the factory and is recommended for normal operating temperatures.

OIL QUANTITY AND LEVEL

Some service or maintenance procedures may require the addition or even replacement of fluid, one of which can be traced back to water contamination (see paragraph [ 6.1]).

For oil draining refer to paragraph [ 4.3].

Refer to paragraph [ 5.4] for oil change.

When adding or replacing, top up to the beginning of the hole thread. Check the oil level again once the Transmission has been used for about one minute. Bleeding may be necessary.

Quantity of oil: 1915 ml.

EXPANSION TANK FUNCTIONS

The expansion tank allows this model to expel air from the housing and provides maximum lubrication to the mechanical and hydraulic components of the Transmission.

5. GENERAL MAINTENANCE PROCEDURES

When the Transmission is actuated, the oil in the housing heats up, causing the oil to expand. Excess oil is channelled through a tube to the bottom of the expansion tank. The tank is equipped with an atmospheric pressure vent. As the oil cools, the volume of oil in the housing reduces, causing the oil level in the housing to drop. This creates a vacuum in the housing and forces the suction of oil. This keeps the oil at the appropriate level at the specified operating temperatures.

BLEEDING PROCEDURES

Due to the effects air has on performance in hydrostatic applications, it is essential that it be removed from the system. These bleeding procedures should be implemented whenever a hydrostatic system has been opened for maintenance or for any top-up of oil.

Air creates inefficiency because its compressibility index is higher than that of oil approved for use in hydrostatic drive systems.

The resulting symptoms in hydrostatic systems can be:

- Noisy operation;
- Lack of power or traction after brief operation;
- High operating temperature and excessive oil expansion.



WARNING: Before starting the bleeding operation, make sure that the transmission oil is at the correct level (see "OIL QUANTITY AND LEVEL" on the previous page).



WARNING: The operations must be carried out with the driving wheels of the machine raised off the ground and repeated under normal operating conditions.

The operations to be performed are as follows:

1. With the bypass valve open and the engine running at 3/4 of maximum speed, slowly move the directional control lever in both directions, forwards and backwards (5 to 6 times). As air is expelled from the unit, the oil level will decrease.
2. With the bypass valve closed and the engine running, slowly move the directional control lever in both directions, forwards and backwards (5 to 6 times).
Check the oil level and add oil as required after stopping the engine.
3. It may be necessary to repeat procedures 1 and 2 until all air is completely purged from the system. When the transmission moves back and forth at normal speed, bleeding is complete.



WARNING: These bleeding procedures should be performed whenever a hydrostatic system has been opened to facilitate maintenance or after any addition of oil to the system.

5. GENERAL MAINTENANCE PROCEDURES

5.2. Neutral setting



WARNING! Some procedures require the machine to be in motion and the vehicle to be raised off the ground. To avoid possible injury to the service technician and/or assistants, ensure that the vehicle is secured.

The automatic neutral gear return mechanism is designed to set the directional control lever in the neutral position when the operator removes their foot from the pedal.

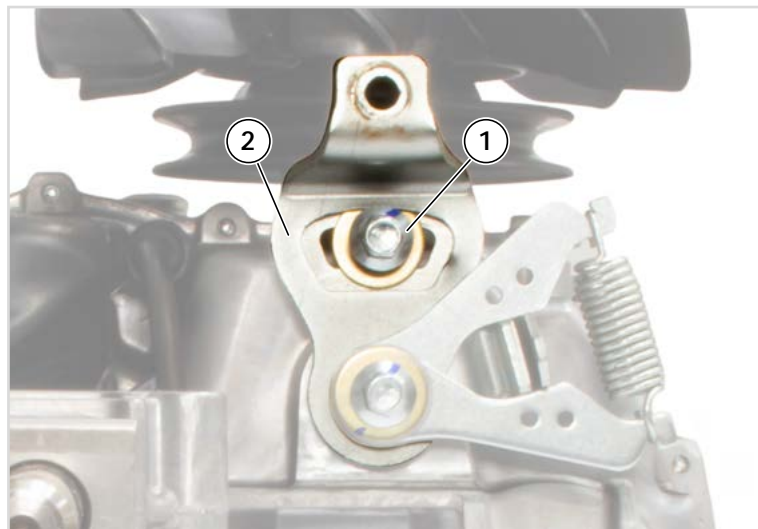
Follow the procedures below to correctly adjust the mechanism:

1. Check that the Transmission is in operational mode (bypass off). Raise the drive wheels off the ground to allow free rotation.



NOTE: It may be necessary to remove the tyre from the axle hub to access the linkage control and Transmission return arm.

2. Remove the control rods from the control lever.
3. Start the engine and bring it up to maximum speed.
4. Check the rotation of the axes.
If the axes do not rotate, go to step 5.
If the axes rotate, go to step 6.
5. Stop the vehicle engine. Reconnect and adjust the control rods according to the OEM manual. Check again according to steps 3 and 4. Stop the vehicle engine.
6. Take note of the directional movement of the axis. Stop the vehicle engine. Loosen the locking screw (1) until the control lever (2) can be turned. Turn the lever in the same direction as the wheel rotation in small increments. Tighten the locking screw. Check again according to steps 3 and 4.



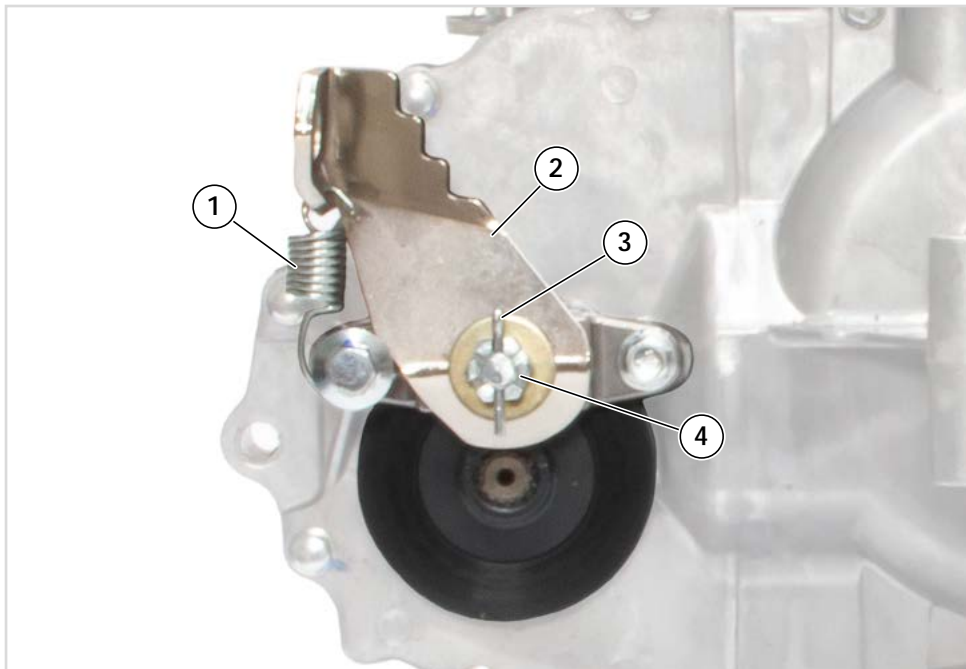
5. GENERAL MAINTENANCE PROCEDURES

5.3. Brake maintenance

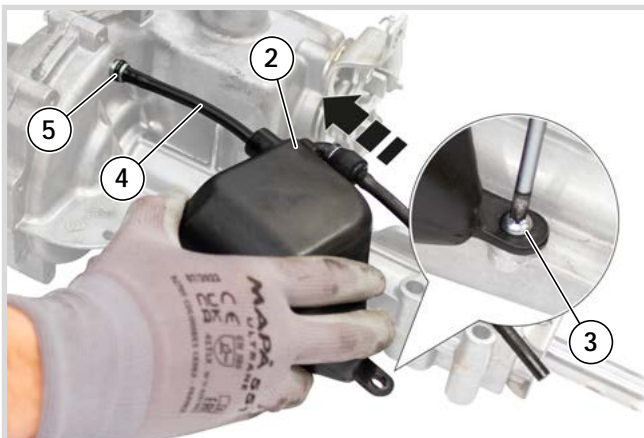
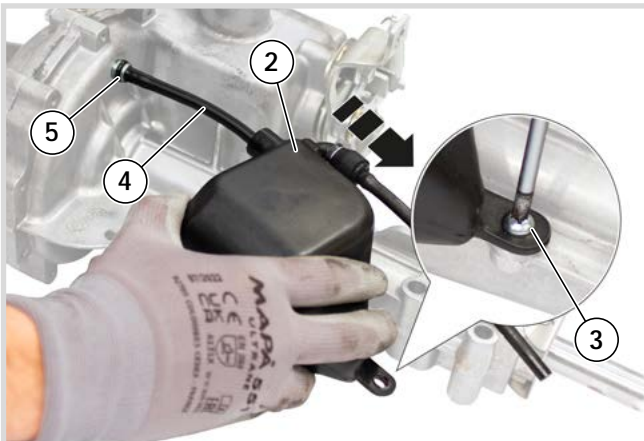
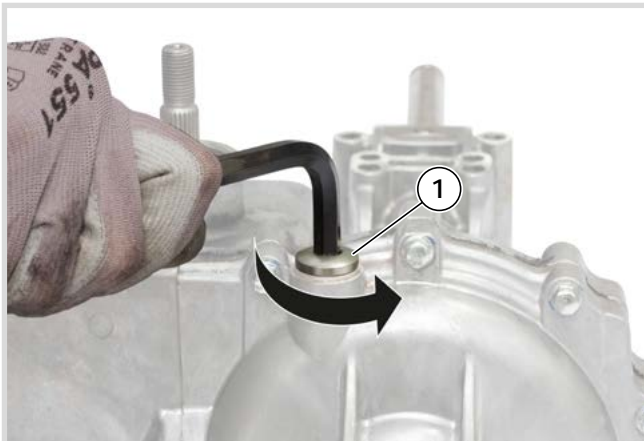
1. Remove the spring (1) of the brake lever (2) and then the cotter pin (3) which secures the brake nut (4).
2. Insert a 0.5 mm shim between the disc and the brake lining, then adjust the brake by tightening or loosening the nut (4).
3. Install a new cotter pin to secure the nut (4), then replace the spring (1), taking care to insert it into the pin groove.



NOTE: Carry out this adjustment with the Transmission mounted on the machine.



5. GENERAL MAINTENANCE PROCEDURES



5.4. Fluid change procedure



NOTE: CARRY OUT THE OIL CHANGE WITH THE UNIT REMOVED FROM THE MACHINE.



NOTE: This Transmission comes already filled with oil, sealed and requires no oil maintenance. However, in the event of oil contamination or degradation, adding or changing oil can alleviate some performance problems.

1 - Clean the expansion tank and oil filling port areas of any debris.

2 - Remove the oil filler cap (1).

3 - Position the Transmission so that the oil flows completely out of the housing.

4 - After all the oil has been drained from the Transmission, remove the expansion tank (2) by removing the screw (3). Drain the oil from the tank.

DO NOT remove the vent plug from the tank. DO NOT remove the tank tube (4) or the O-ring (5) unless replacement is necessary.

5 - Install the expansion tank (2) by first inserting the tube (4) into the opening in the expansion tank. Push the tank opening over the O-ring (5) to ensure a proper seal.

6 - Secure the tank with the screw (3) to the lower value of the torque specification listed in the table below.

7 - Fill the Transmission with oil up to the indicated level (see paragraph [\[\[👉 5.1\]\]](#)).

6 - Install the oil filler cap (1).

Tightening torques

1	Oil filler cap	12.4 - 16.9 Nm
3	Expansion tank fixing screw	2.8 - 4.5 Nm

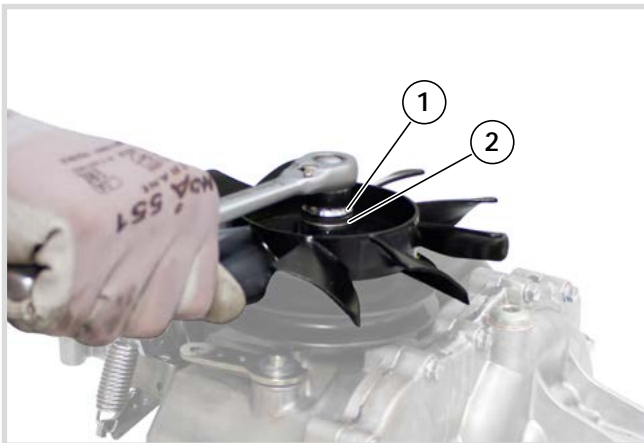
5. GENERAL MAINTENANCE PROCEDURES



NOTE: The procedures are listed in the order that they must be carried out at to dismantle the Transmission. **DO NOT DISASSEMBLE THE UNIT MORE THAN NECESSARY.** Each disassembly procedure is followed by an assembly procedure.



NOTE: THE FOLLOWING PROCEDURES AND CHECKS MUST BE CARRIED OUT WITH THE UNIT REMOVED FROM THE MACHINE.



5.5. Fan and pulley disassembly



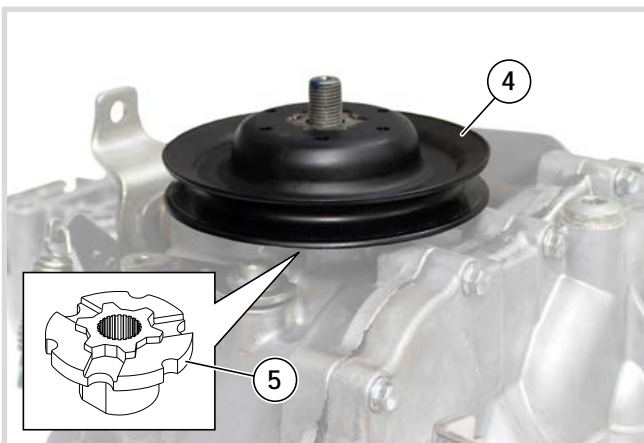
NOTE: In some configurations the pulley will be mounted above the fan.

1 - Remove locking nut (1) and washer (2).

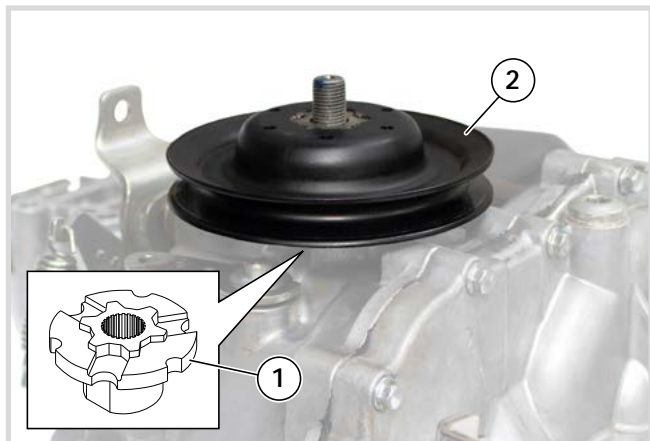
2 - Remove the fan (3) from its seat.



3 - Remove the pulley (4) and the hub (5) underneath.



5. GENERAL MAINTENANCE PROCEDURES



5.6. Fan and pulley assembly

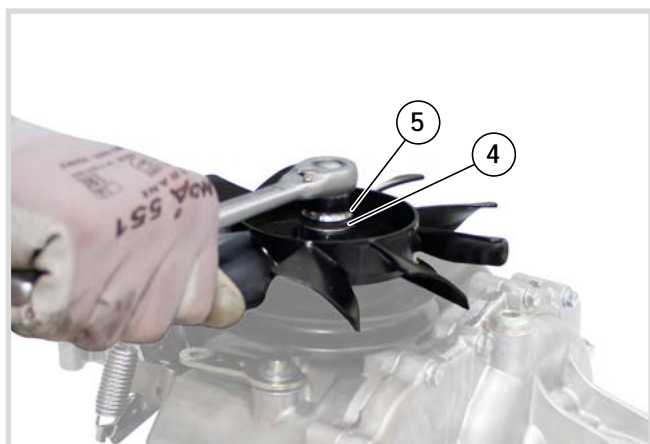


NOTE: In some configurations the pulley will be mounted above the fan.

1 - Insert the hub (1) and pulley (2) into the shaft.



2 - Position the fan (3).



3 - Insert washer (4) and secure with locking nut (5).

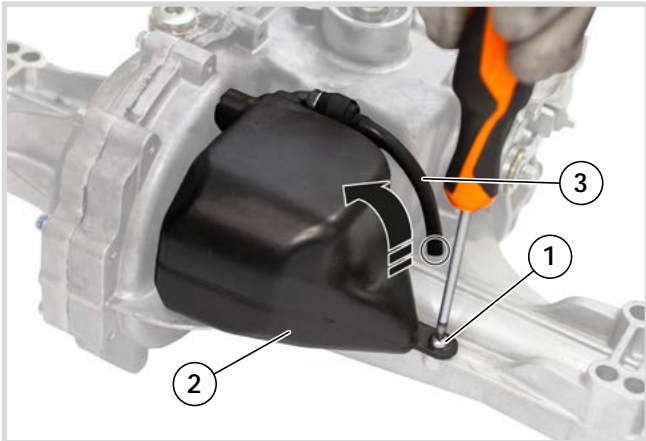


NOTE: Use the lower limit of the tightening specification on the fasteners during assembly.

Tightening torques

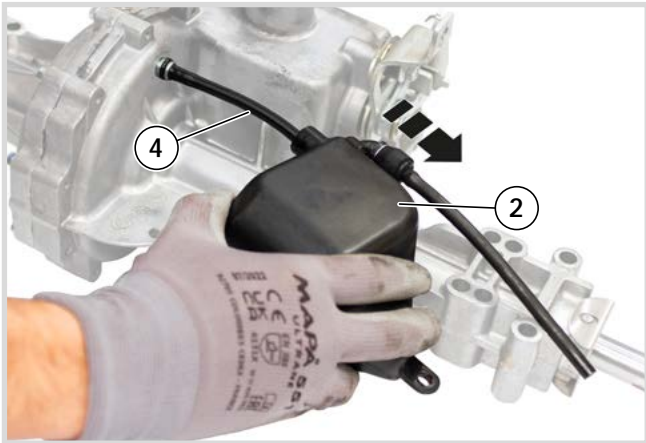
5	Fan fastening nut	61.1 - 74.6 Nm
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5. GENERAL MAINTENANCE PROCEDURES



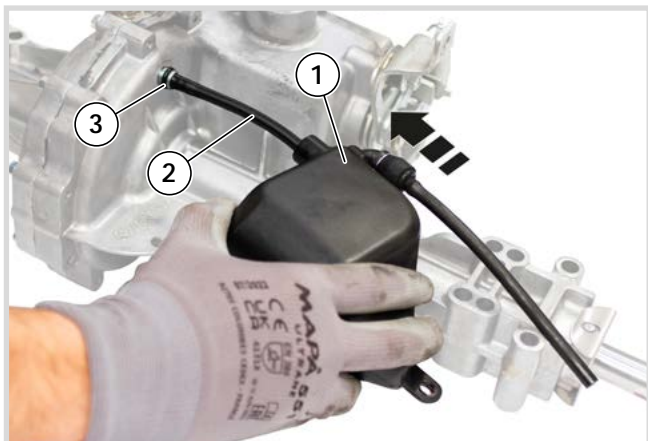
5.7. Removal of the expansion tank

1 - Remove the screw (1) securing the expansion tank (2) to the half-shell and slide the tube (3) out of the housing as shown in the figure.



2 - Slide out and remove the expansion tank (2) without removing the tube (4).

5. GENERAL MAINTENANCE PROCEDURES



5.8. Expansion tank installation

1 - Install the expansion tank (1) by inserting the tube (2) into the hole and push it over the O-ring (3) to ensure a proper seal.

2 - Secure the expansion tank (1) with the screw (4) and insert the tube (5) into the seat of the half-shell.



NOTE: Use the lower limit of the tightening specification on the fasteners during assembly.

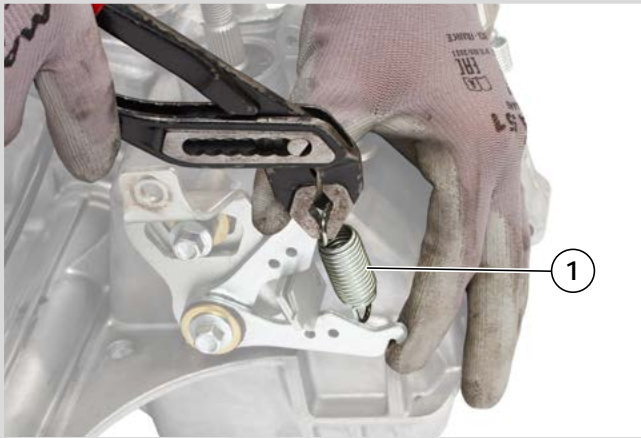
Tightening torques

4	Expansion tank fixing screw	2.8 - 4.5 Nm
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5. GENERAL MAINTENANCE PROCEDURES

5.9. Control arm disassembly

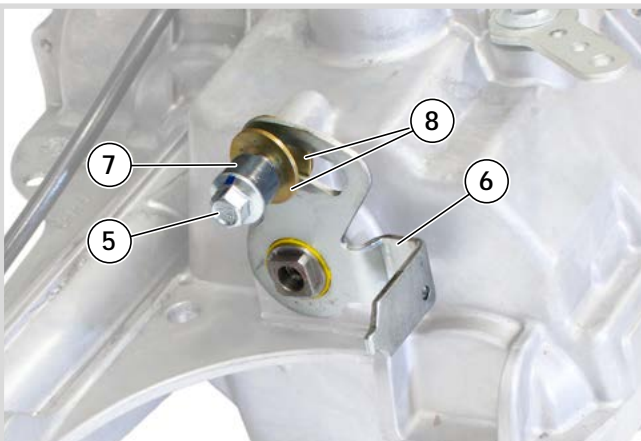
1 - Using pliers, unhook the spring (1) and remove it.




2 - Remove screw (2), scissor arm (3) and RTN control arm (4).



3 - Remove the screw (5) and remove the neutral arm (6).



⚠ WARNING: pay attention to the recovery of the bushing (7) and the two washers (8).


-  The oil seal (9) should always be checked and replaced if damaged or worn. **It must always be replaced if removed.**

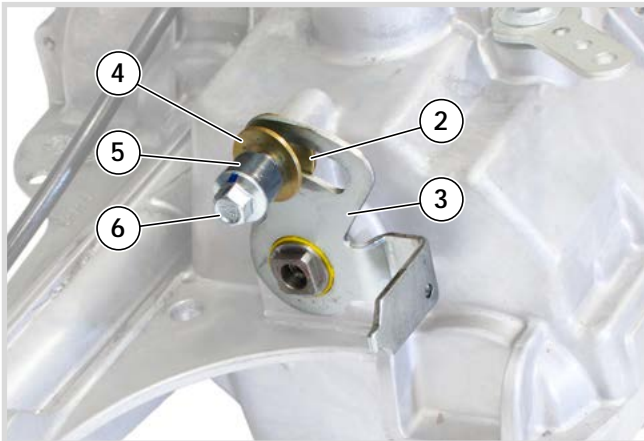


5. GENERAL MAINTENANCE PROCEDURES



5.10. Control arm assembly

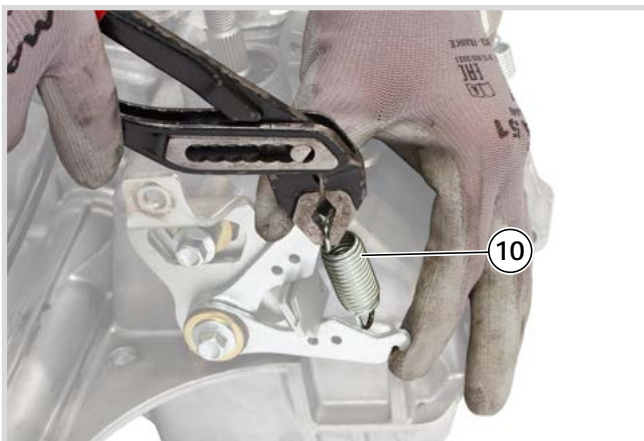
-  The oil seal (1) should always be checked and replaced if damaged or worn. **It must always be replaced if removed.**




- 1 - Position the first washer (2), the neutral arm (3), the second washer (4) and the bushing (5). Secure with screw (6).



- 2 - Insert the RTN control arm (7), scissor arm (8) and secure with the screw (9).



- 3 - Using pliers, engage the spring (10).

-  **NOTE:** Use the lower limit of the tightening specification on the fasteners during assembly

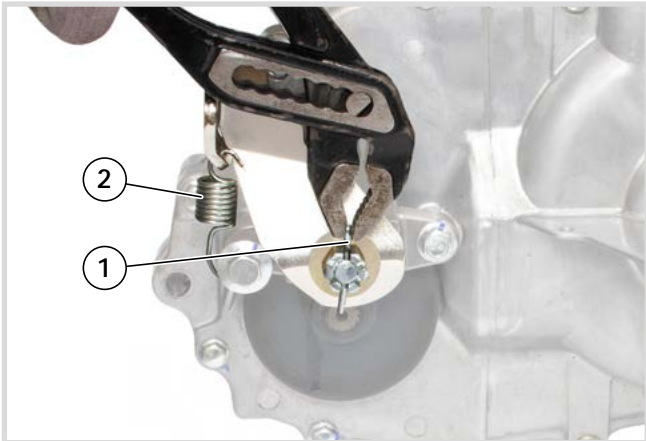
Tightening torques

6	Neutral arm fixing screw	9.6 - 13.5 Nm
9	Scissor arm fixing screw	25.9 - 35 Nm

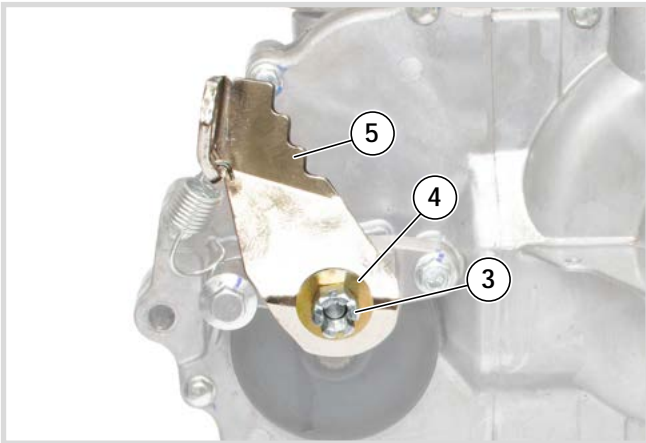
5. GENERAL MAINTENANCE PROCEDURES

5.11. Brake unit disassembly

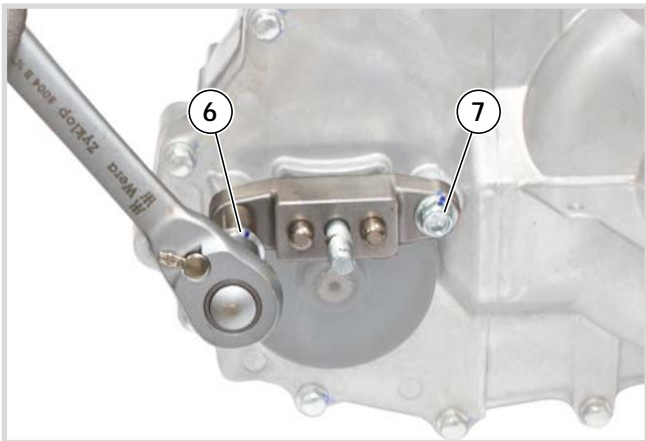
1 - Using pliers, remove the cotter pin (1) and spring (2).



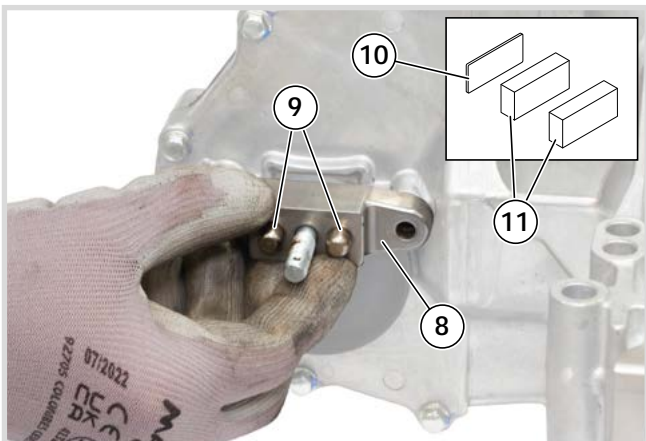
2 - Remove the nut (3) the washer (4) and the brake arm (5).



3 - Remove the long screw (6) and the screw (7).



4 - Slide the brake support (8) out of the housing and remove the two pins (9).




! **WARNING:** pay attention to the recovery of the disc plate (10) and the brake discs (11).

5. GENERAL MAINTENANCE PROCEDURES



5 - Remove the brake rotor (12).




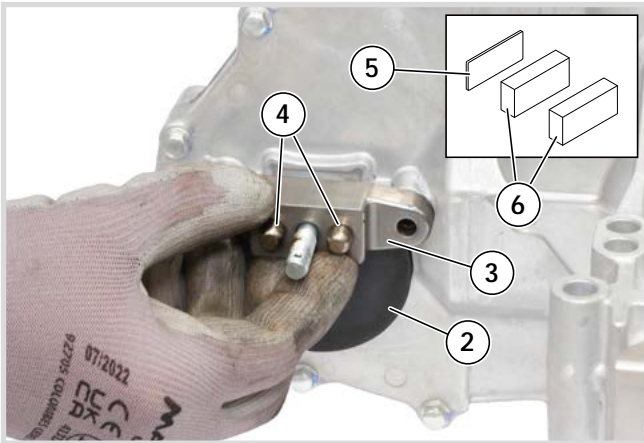
-  The oil seal (13) should always be checked and replaced if damaged or worn.
It must always be replaced if removed.

5. GENERAL MAINTENANCE PROCEDURES


5.12. Brake unit assembly

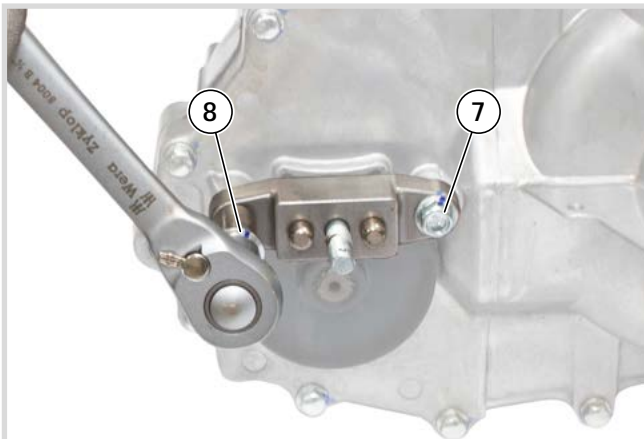


-  The oil seal (1) should always be checked and replaced if damaged or worn.
It must always be replaced if removed.

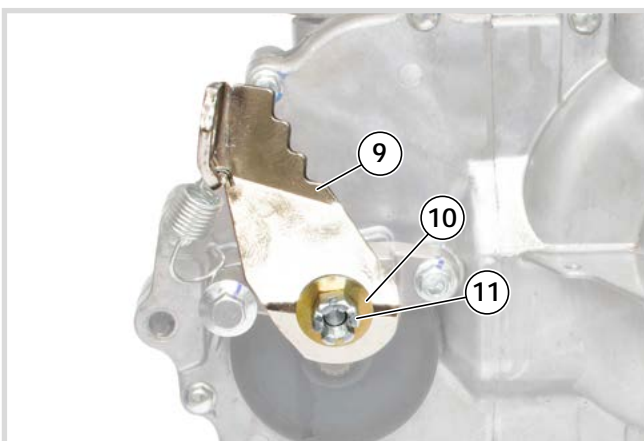


- 2 - Position the brake rotor (2) and the brake support (3) with the two pins (4) inserted in the appropriate slots..

-  **WARNING:** pay attention to the insertion of the disc plate (5) and brake discs (6) between the rotor and the brake support.

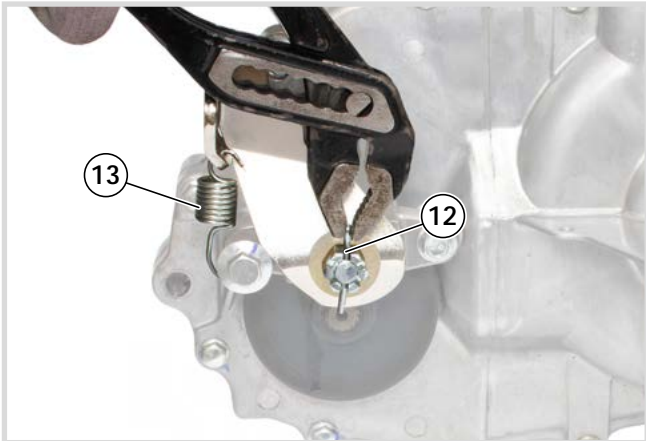


- 3 - Tighten the screw (7) and the long screw (8).



- 4 - Insert brake arm (9), washer (10) and secure with nut (11).

5. GENERAL MAINTENANCE PROCEDURES



5 - Using pliers, engage the cotter pin (12) and insert it (13).



NOTE: Use the lower limit of the tightening specification on the fasteners during assembly.

Tightening torques

7	Brake support fixing screw	9 - 13.5 Nm
8	Long brake bracket fixing screw	9 - 13.5 Nm

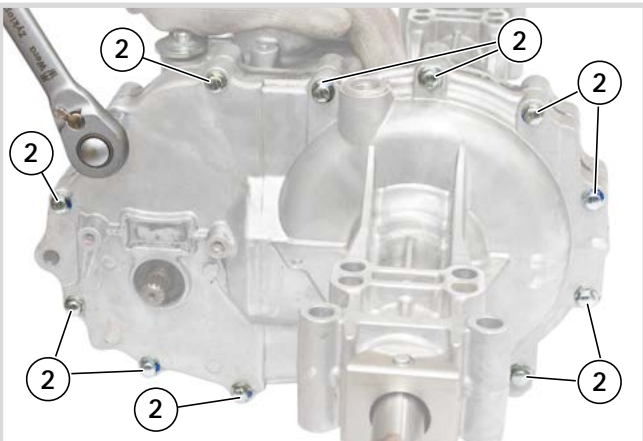
5. GENERAL MAINTENANCE PROCEDURES


5.13. Transmission opening

1 - Remove the oil filler cap (1).



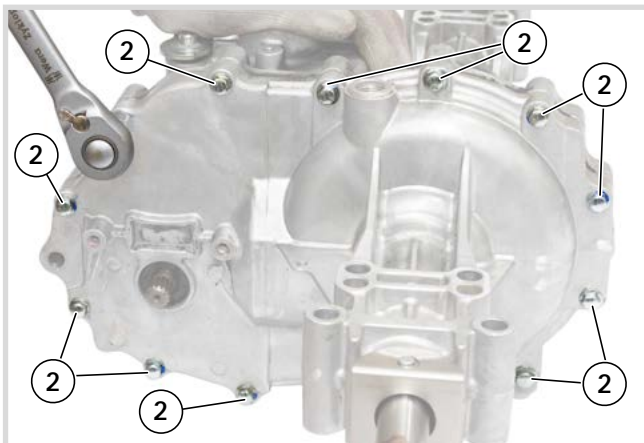
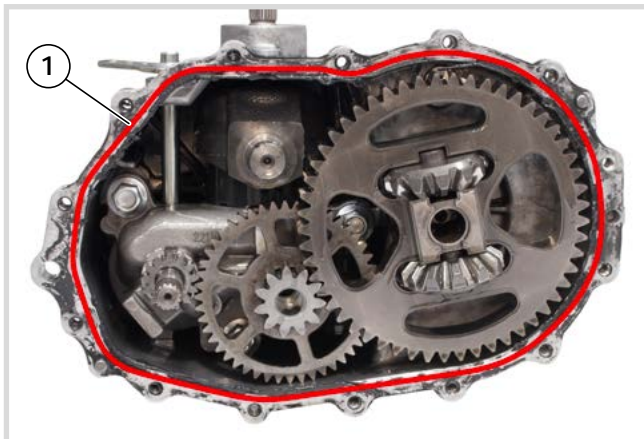
2 - Remove the 14 screws (2) that join the two half-shells of the gearbox.



 **WARNING:** Due to the sealant, it is only necessary to pry at the side points indicated in the figure.



5. GENERAL MAINTENANCE PROCEDURES




5.14. Transmission closing

1 - Remove all traces of the old sealant from both half-casings.

2 - Evenly distribute a new drop of Loctite 598 Silicone RTV (1) along the entire perimeter of the half-casings and at the internal screws.

- Be sure to apply sealant in every possible hole in order to prevent any oil leaks.
- Make sure to avoid blocking any oil channels inside the transmission which may increase its wear.
- Check that all bushings and sealing rings are correctly positioned before bringing the two half-shells together.

3 - Proceed to fasten with the 14 screws (2) in the order indicated in paragraph [ 5.32].

4 - Insert the oil filler cap (3).



NOTE: Use the lower limit of the tightening specification on the fasteners during assembly.

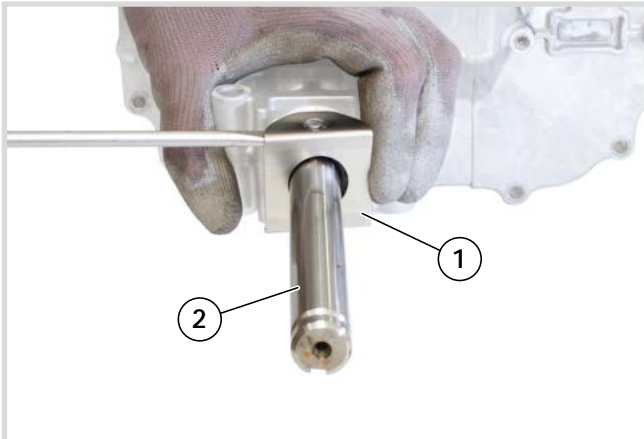
Tightening torques

2	Half-shell screws	11.8 - 17.5 Nm
3	Oil filler cap	12.4 - 16.9 Nm

5. GENERAL MAINTENANCE PROCEDURES

5.15. Axle shafts disassembly

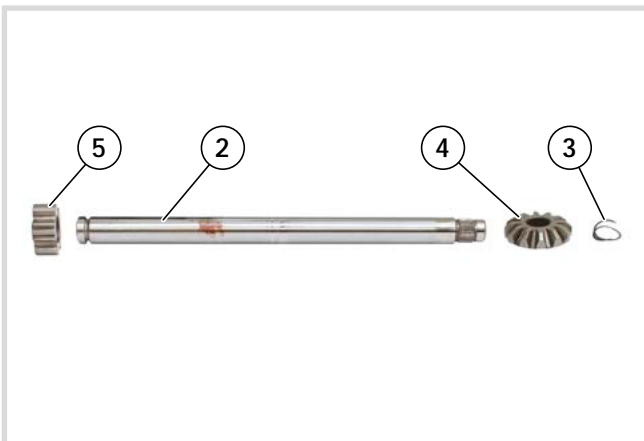
1 - Remove the protective flap (1) positioned in front of the axle shaft (2).



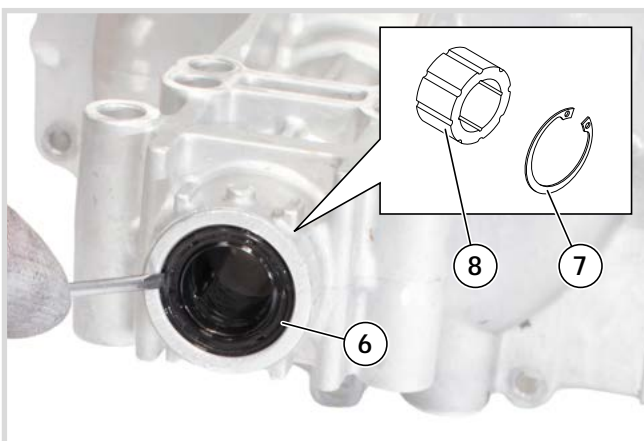
2 - Slide the axle shaft (2) from the half-shell.



3 - Using pliers, remove the seeger ring (3) the pinion (4) and the bushing (5) from the axle shaft (2).



4 - Remove the oil seal ring (6) the retaining ring (7) and the bushing (8).



The oil seal ring (6) must always be replaced once removed.



NOTE: Carry out the same disassembly operations for the opposite axle shaft.

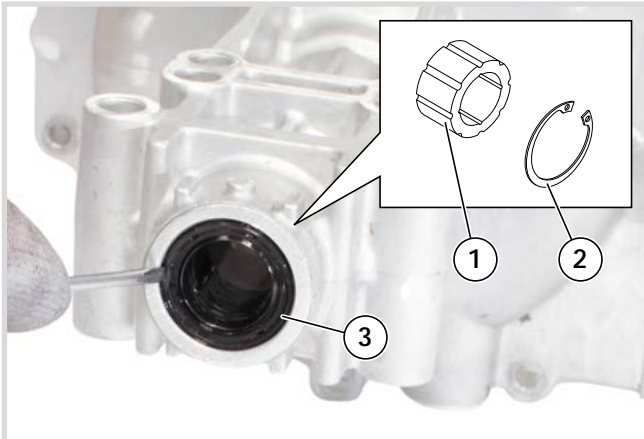
5. GENERAL MAINTENANCE PROCEDURES

5.16. Axle shafts assembly

1 - Insert the bushing (1), the retaining ring (2) and the oil seal ring (3).

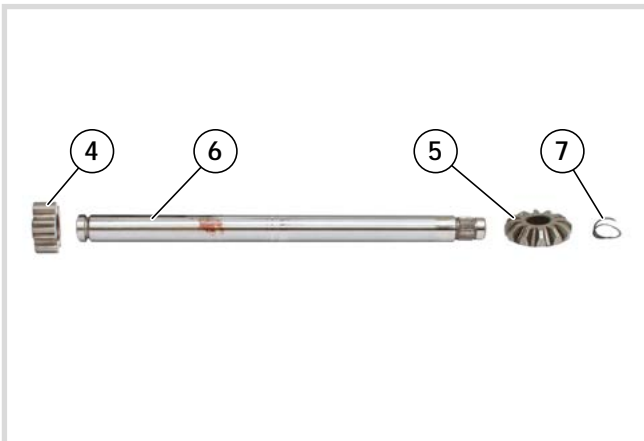


The oil seal ring (3) must always be replaced once removed.



2 - Mount the bushing (4) and pinion (5) on the axle shaft (6).

Secure the pinion (5) with a new seeger ring (7).



3 - Insert the axle shaft (6) into the half-shell hole as shown.



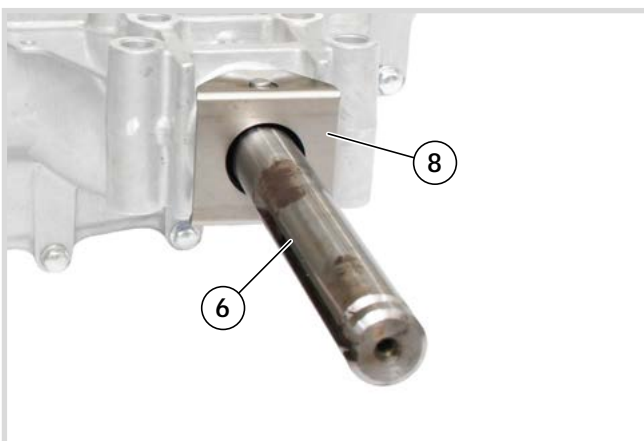
WARNING: Perform this operation with particular care so as not to damage the oil seal ring.



4 - Install the protective flap (8) positioned in front of the axle shaft (6).



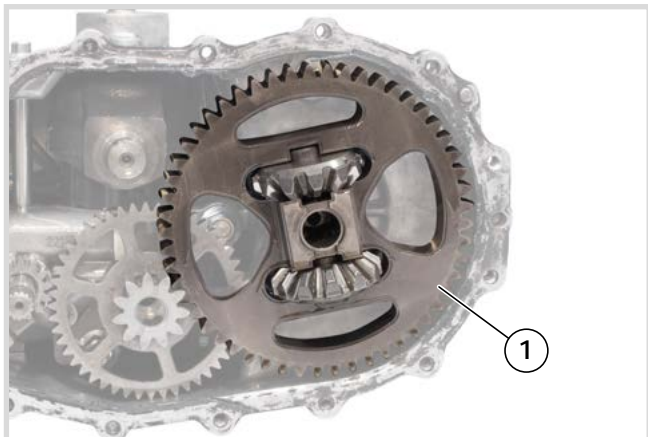
NOTE: Carry out the same assembly operations for the opposite axle shaft.



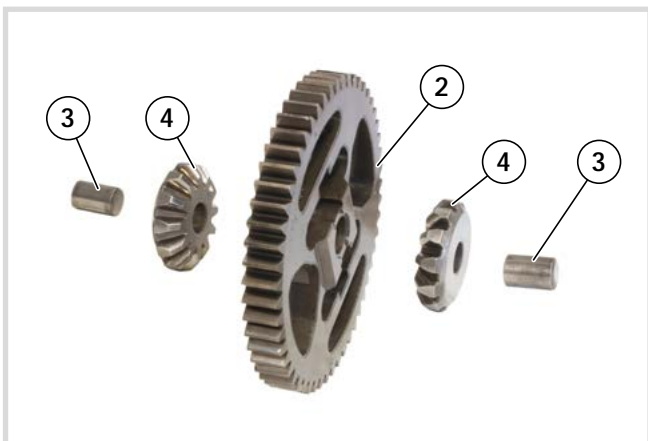
5. GENERAL MAINTENANCE PROCEDURES

5.17. Differential gear disassembly

1 - Remove the differential gear (1) and hold it firmly to prevent losing components.



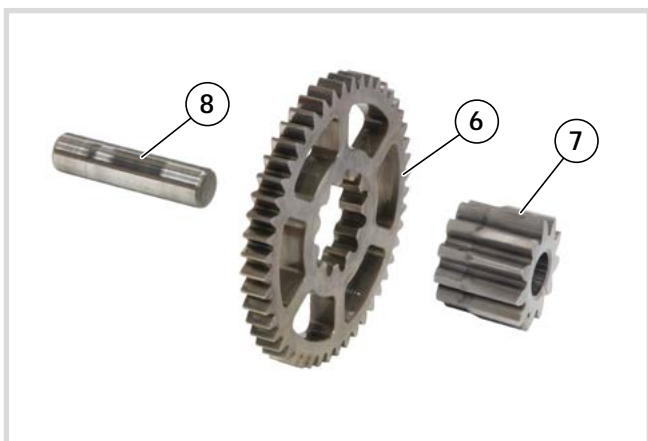
2 - Remove the two pins (3) and the two satellites (4) from the crown (2).



3 - Remove the gearbox gear (5) and grasp it firmly to prevent losing components.



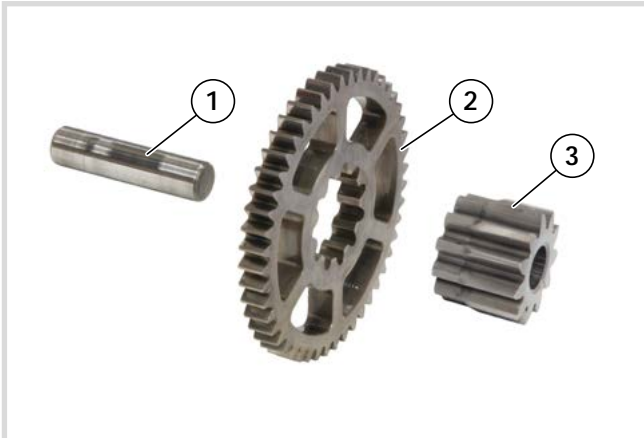
4 - Remove the larger gear (6) from the return gear (7) and the pin (8).



5. GENERAL MAINTENANCE PROCEDURES

5.18. Differential gear assembly

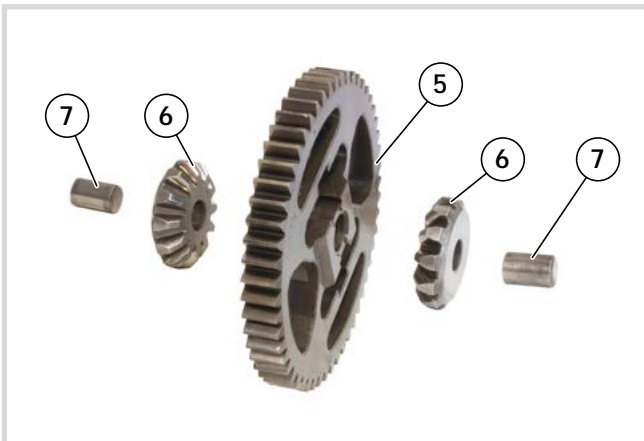
1 - Insert the larger gear (2) and the return gear (3) on the pin (1).



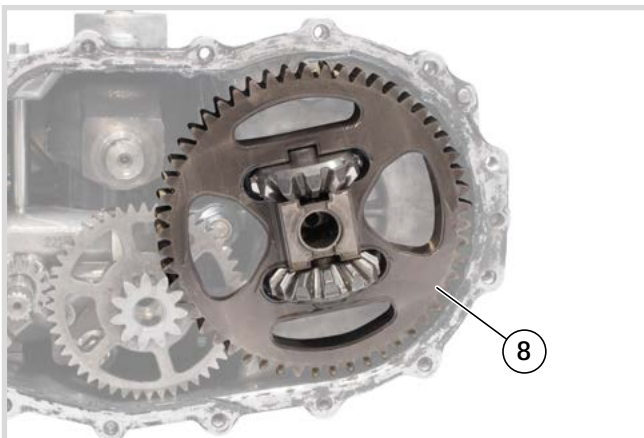
2 - Place the gearbox gear (4) in the appropriate seat inside the half-shell.



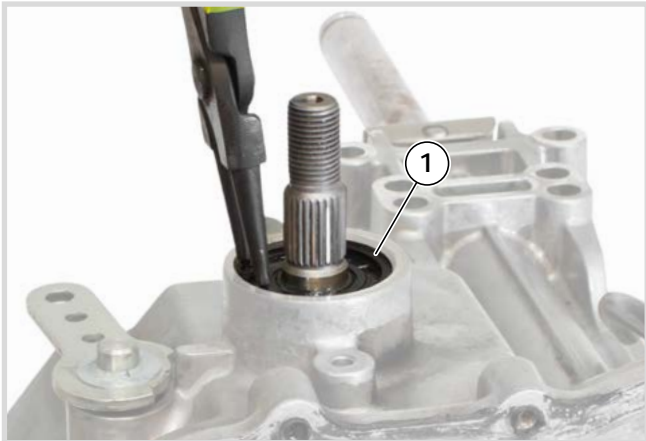
3 - The differential unit consists of the crown (5), satellites (6) and the two pins (7), and must be pre-assembled before being installed inside the Transmission.



4 - Place the differential gear (8) in the appropriate seat inside the half-shell, in front of the axle shaft.

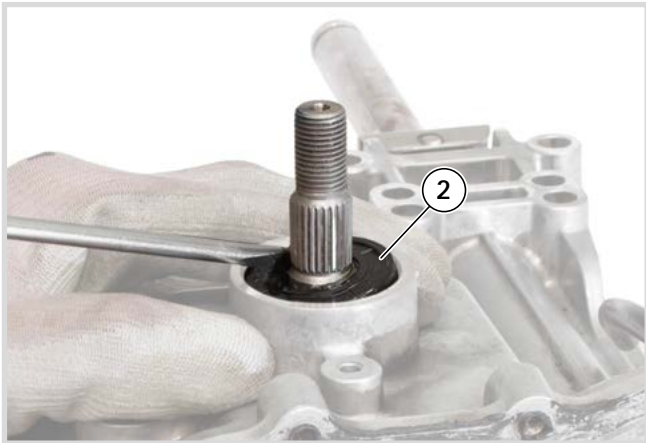


5. GENERAL MAINTENANCE PROCEDURES




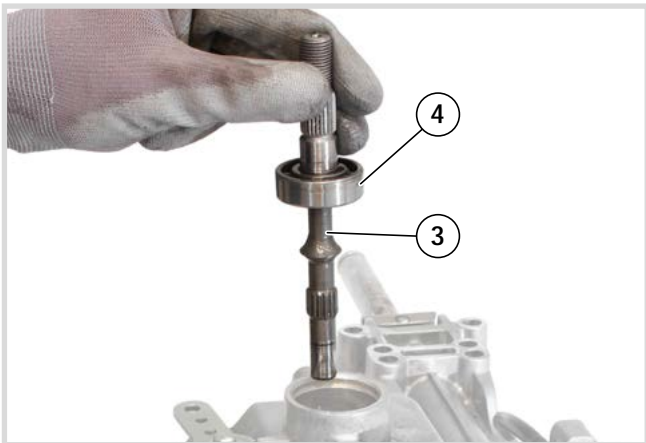
5.19. Input shaft disassembly

1 - Using pliers, remove the seeger ring (1).




2 - Remove the oil seal ring (2).

 **The oil seal ring (2) must always be replaced once removed.**



3 - Pull the input shaft (3) with the bearing (4) out of its housing.

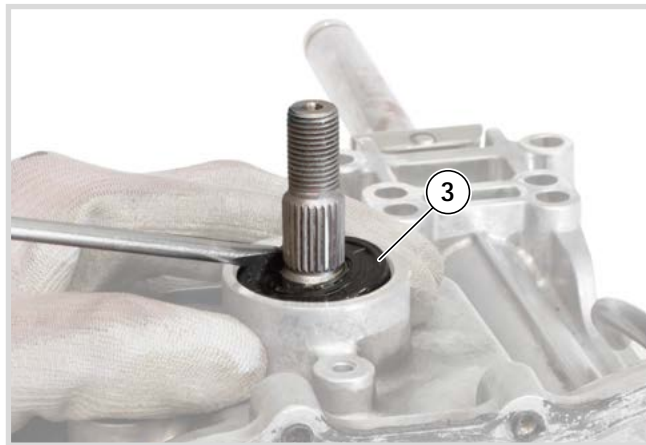
 **WARNING: Only remove the bearing (4) from the pump shaft if it is worn or damaged.**

5. GENERAL MAINTENANCE PROCEDURES




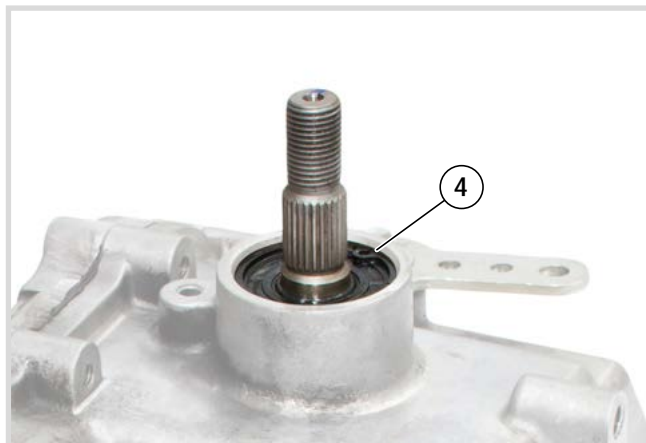
5.20. Input shaft assembly

1 - If previously removed, slide the bearing (1) onto the input shaft (2) and insert it into the seat of the half-shell.



2 - Insert the oil seal ring (3).

 *The oil seal ring (3) must always be replaced once removed.*



3 - Secure with the seeger ring (4).

5. GENERAL MAINTENANCE PROCEDURES

5.21. Oscillating plate disassembly



WARNING: To remove the oscillating plate with the pump cylinder block unit (1) from its housing, it is necessary to tap it outwards with a rubber mallet as shown in the figure.



2 - Pull out the oscillating plate with the pump cylinder block unit (1) and place it on the work surface.



3 - Separate the oscillating plate (2) from the pump cylinder block unit (3) and remove the ring (4) and thrust bearing (5).



4 - Inspect each component of the pump cylinder block: block (6), springs (7), pistons (8). Replace components only if necessary.



WARNING: When separating the oscillating plate (2) from the pump cylinder block (3), take care not to damage the surfaces of the pistons (8) and block (6).

5. GENERAL MAINTENANCE PROCEDURES

5.22. Oscillating plate assembly



NOTE: Apply a thin layer of oil to all components of the cylinder block unit (1) before assembly.



1 - The oscillating plate unit with the pump cylinder block unit consisting of oscillating plate (2), ring (3), thrust bearing (4) and pump cylinder block (1) must be pre-assembled before being installed in the Transmission.



2 - Place the oscillating plate unit with the pump cylinder block unit (5) in place inside the half shell.

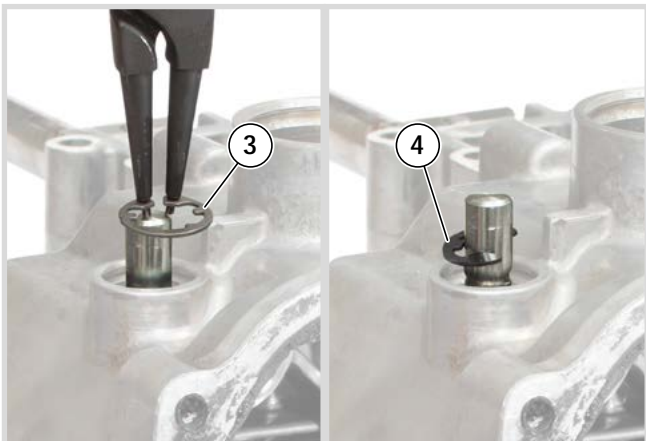
5. GENERAL MAINTENANCE PROCEDURES

5.23. Bypass arm disassembly

1 - Remove retaining ring (1) and bypass arm (2).



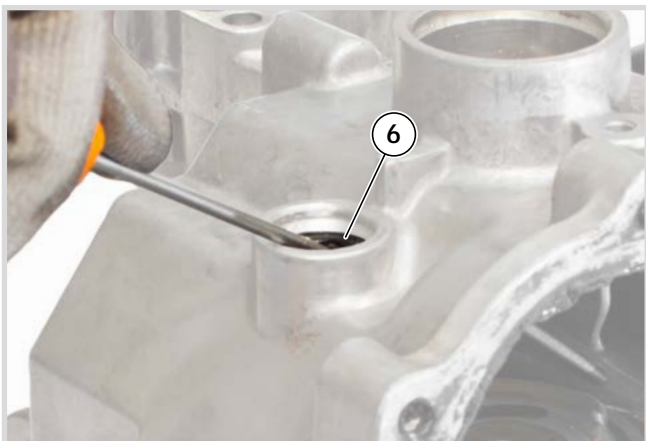
2 - Using pliers, remove the seeger ring (3) and the benzing ring (4).




3 - Remove the bypass rod (5).

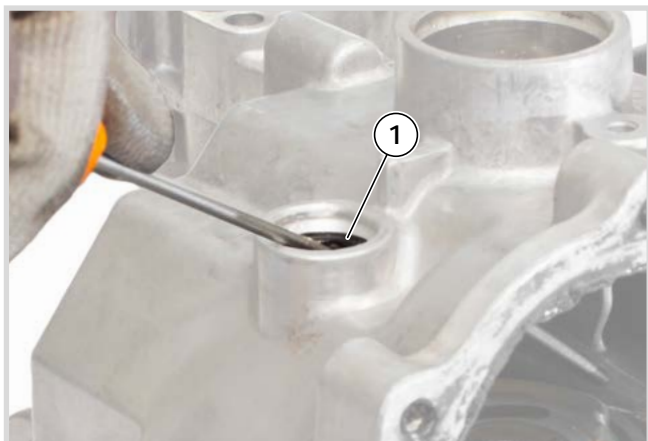


4 - Remove the oil seal ring (6).




 *The oil seal ring (6) must always be replaced once removed.*

5. GENERAL MAINTENANCE PROCEDURES



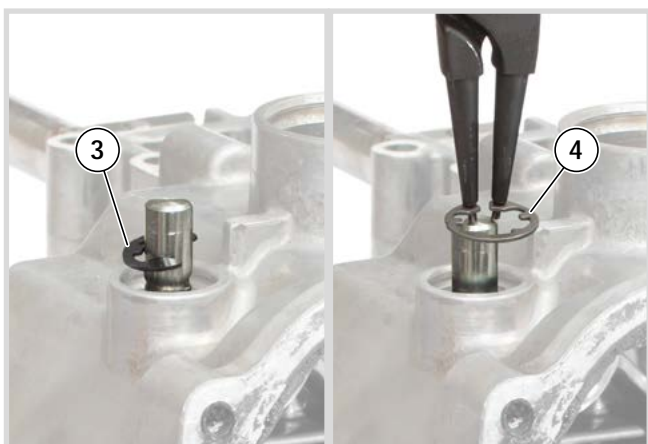
5.24. Bypass arm assembly

1 - Insert the oil seal ring (1).

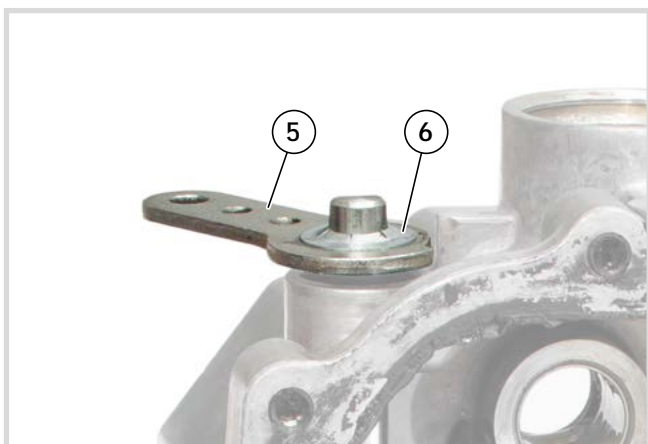
 *The oil seal ring (1) must always be replaced once removed.*



2 - Slide the bypass rod (2) into the seat of the half shell.



3 - Insert the benzing ring (3) and the seeger ring (4).

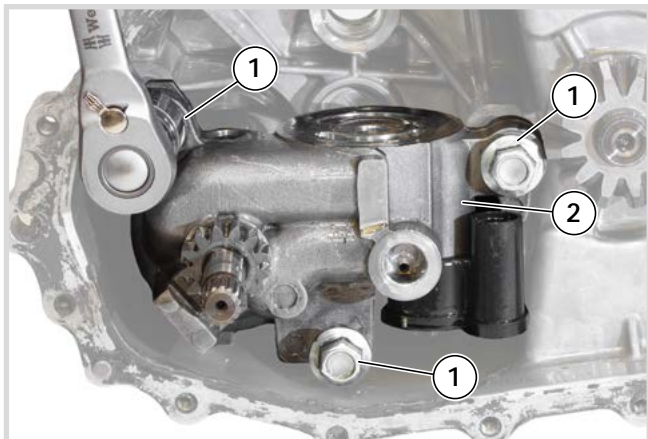


4 - Position the bypass arm (5) and insert the fixing ring (6).

5. GENERAL MAINTENANCE PROCEDURES

5.25. Crankshaft and engine block disassembly

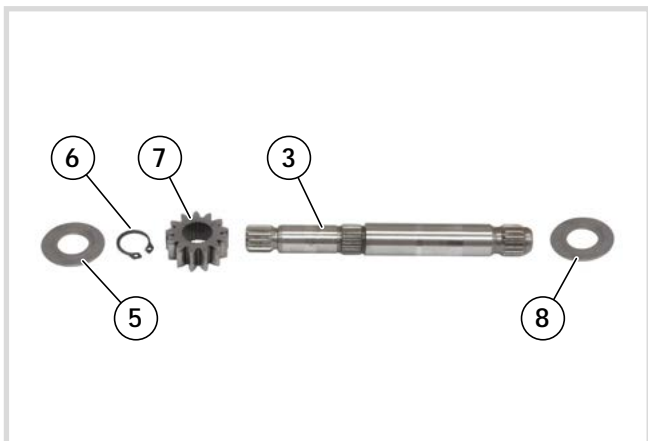
1 - Unscrew the three screws (1) that secure the centre section unit (2) and remove it.



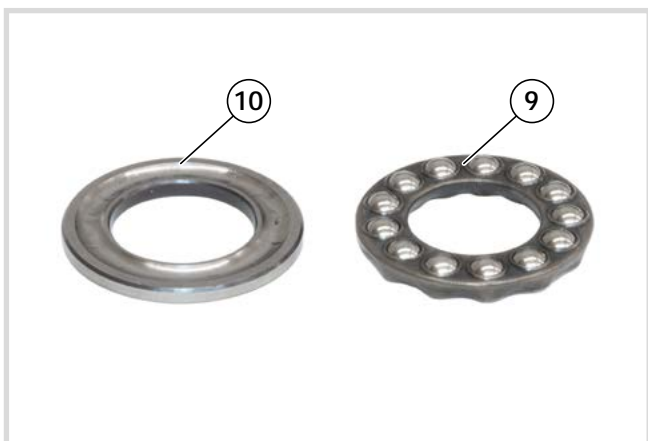
2 - Slide out the crankshaft unit (3) and remove the engine cylinder block unit (4) from the centre section (2).



3 - Remove the washer (5), seeger ring (6), gear (7) and washer (8) from the motor shaft (3).



4 - Remove the thrust bearing (9) and ring (10).



5. GENERAL MAINTENANCE PROCEDURES



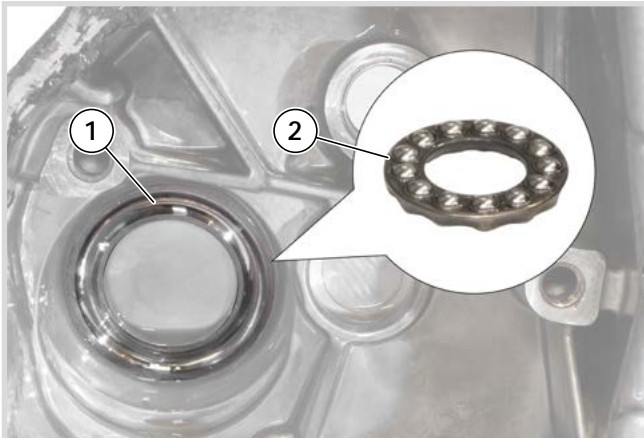
5 - Inspect each component of the pump cylinder block: block (11), springs (12), pistons (13). Replace components only if necessary.



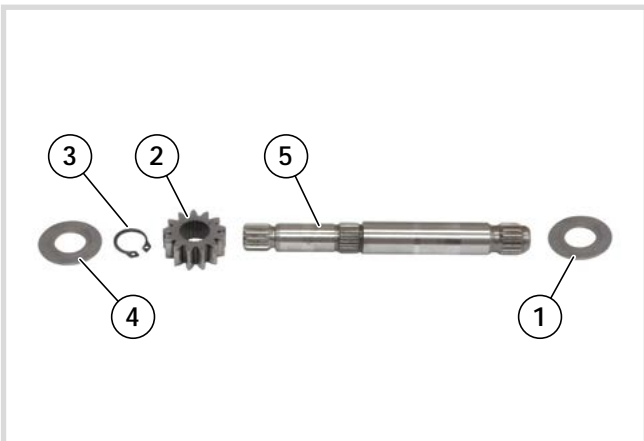
WARNING: When removing the engine cylinder block unit (4), take care not to damage the surfaces of the pistons (13) and block (11).

5. GENERAL MAINTENANCE PROCEDURES

5.26. Crankshaft and engine block assembly



1 - First insert the ring (1) and then the thrust bearing (2) into the seat of the half shell.



2 - Install the washer (1), gear (2), seeger ring (3) and washer (4) in the motor shaft (5).



3 - Insert the crankshaft unit (5) with engine cylinder block unit (6) into the centre section (7).



NOTE: Apply a thin layer of oil to all components unit before assembly.



4 - Place the centre section unit (7) in the appropriate seat inside the half shell and secure with the three screws (8).



NOTE: Use the lower limit of the tightening specification on the fasteners during assembly.

Tightening torques

8	Centre section unit screws	50.8 - 62.1 Nm
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5. GENERAL MAINTENANCE PROCEDURES

5.27. Filter unit disassembly

1 - Remove the magnet (1) and filter (2).



2 - Check the filter base (3) and the two check valves (4) and (5).

The filter base and the two check valves should only be removed and replaced if necessary.



NOTE: Mark the two valves before proceeding with disassembly.



5.28. Filter unit assembly

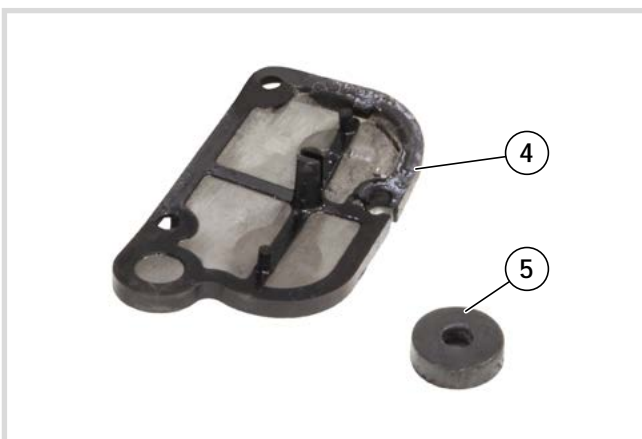
1 - Install the filter base (1) and the two check valves (2) and (3) if removed.



2 - Mount the filter (4) and magnet (5) on top.



NOTE: Use the lower limit of the tightening specification on the fasteners during assembly.



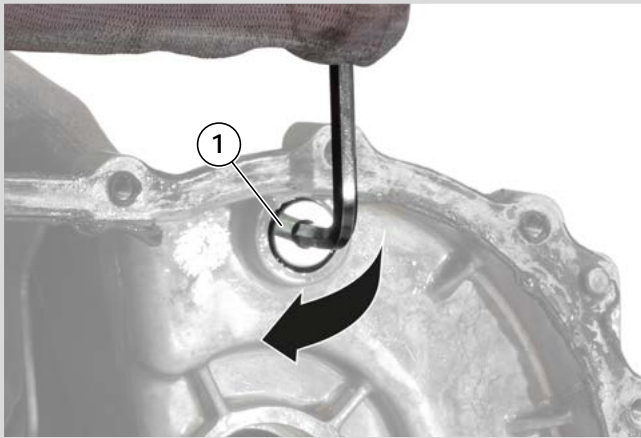
Tightening torques

2-3	Check valves	31.6 - 45.2 Nm
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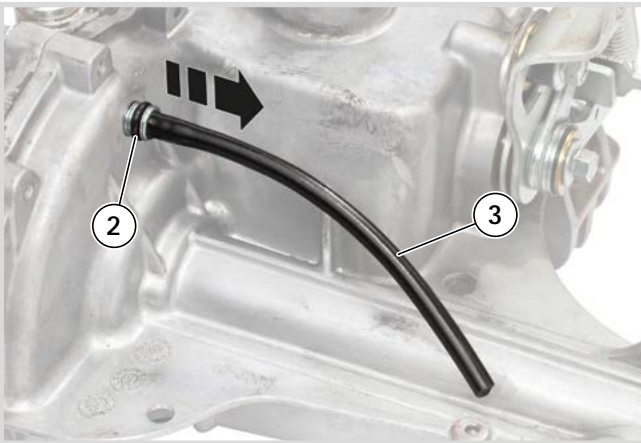
5. GENERAL MAINTENANCE PROCEDURES

5.29. Expansion tank hose disassembly

1 - Unscrew the fitting (1) located on the inside of the half-shell.



2 - From the outside of the half-shell, remove the O-ring (2) and then the hose (3).

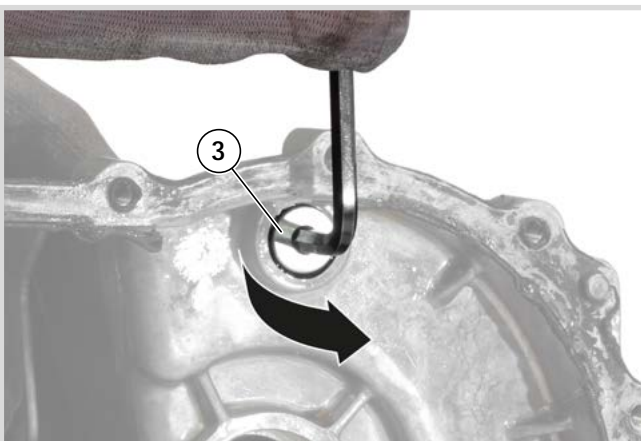


5.30. Expansion tank hose assembly

1 - On the outside of the half-shell, fit the hose (1) and insert the O-ring (2).



2 - Start up the fitting (3) located on the inside of the half-shell.



Tightening torques

3 Expansion tank connection 10.8 - 13.5 Nm


5. GENERAL MAINTENANCE PROCEDURES**5.31. Operations to be performed after opening the transmission**

Perform a thorough cleaning following disassembly: remove all traces of oil and impurities from the two half-casings and from the gears.

Particular attention should be paid to cleaning the rotating bodies: check the internal surface of each one for any signs of wear.

Use abrasive paper to remove all traces of sealant from each of the two half-casings, especially near the seal housings if required.

Carry out a full inspection. Check for excessive wear of tooth profiles, tab seats and gear grooves.

 ***All worn or damaged parts must always be replaced.***

5. GENERAL MAINTENANCE PROCEDURES

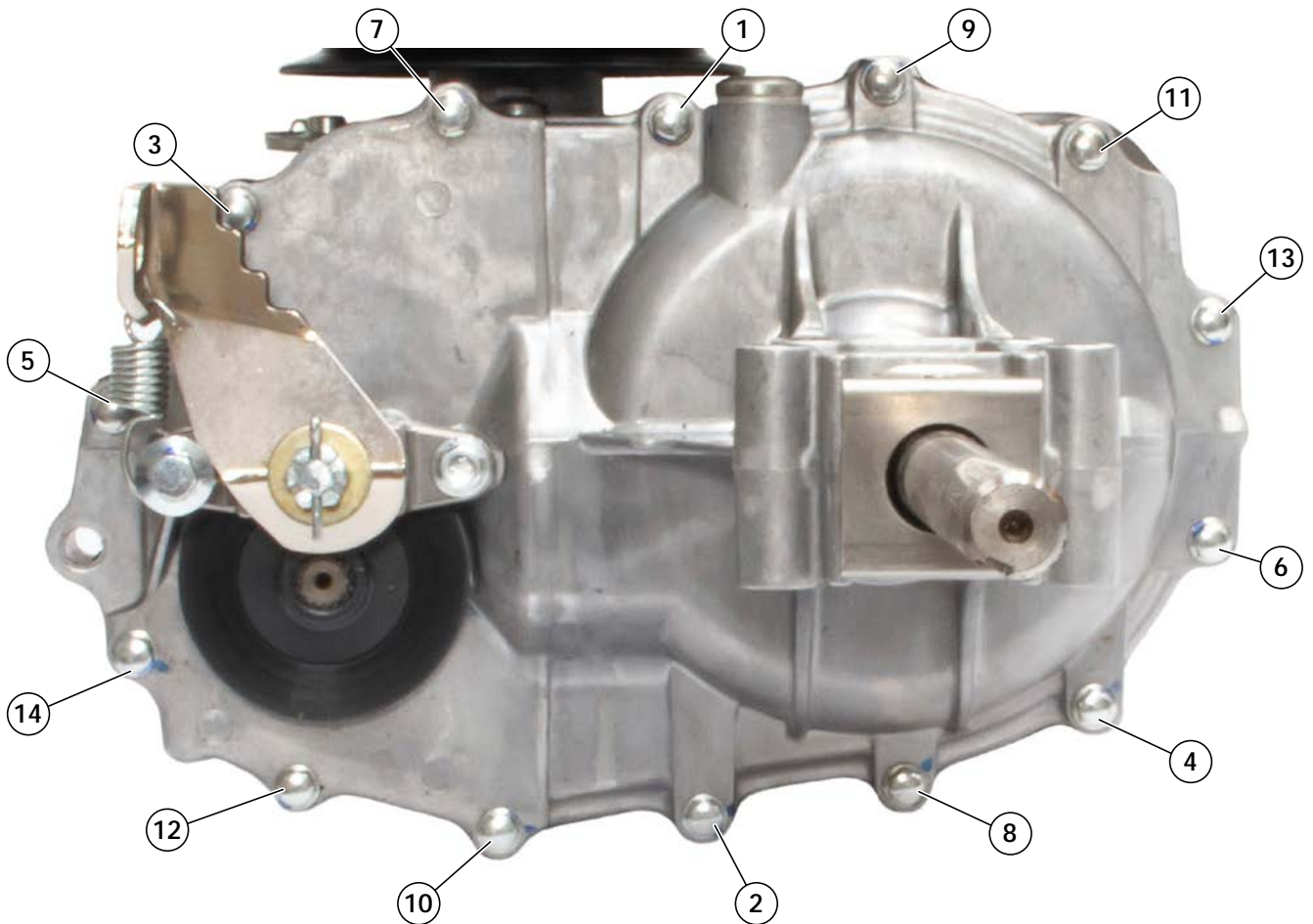
5.32. Tightening sequence of half-shell screws

In the two half-shell assembly and then Transmission closing procedures, the 14 screws must be tightened in the order shown in the figure below.

Tightening torque: 11.8 - 17.5 Nm



NOTE: Use the lower limit of the tightening specification on the fasteners during assembly.



6. TROUBLESHOOTING

The first rule in solving any issues related to the Transmission is to isolate the issue to the Transmission itself. Check the correct adjustment of belts, brake, clutch, gearbox and levers.

PROBLEM	REASON	SOLUTION	UNITS/PARTS
The transmission only works in one direction	Control arm damaged or out of adjustment	Repair or replace the connection	Control arm (5.9)
	Drive belt slippage or damaged pulley	Repair or replace drive belt or pulley	Fan and pulley (5.5)
The vehicle goes straight ahead	Improperly inflated vehicle tyres	Refer to the vehicle manufacturer's recommended pressure	
	Control arm bent, damaged or out of adjustment	Repair or replace the connection	Control arm (5.9)
	Blocked bypass arm unit	Repair or replace the bypass arm	Bypass arm (5.23)
	Brake partially engaged	Disengage brake, replace broken or missing brake return spring	Brake unit (5.11)
Excessive noise	Low oil level	Top up to the correct level	Transmission oil (5.1)
	Contaminated oil (water)	Change oil	Oil contamination with water (6.1)
	Excessive load	Reduce the vehicle load	Transmission
	Inadequately secured components	Repair or replace components	Transmission
	Excessive bearing wear	Replace worn components	All bearings
	Blocked bypass arm unit	Repair or replace the bypass arm	Bypass arm (5.23)
	Air trapped in the hydraulic system	Hydraulic bleeding system	Bleeding procedures (5.1)
	Brake partially engaged	Disengage brake, replace broken or missing brake return spring	Brake unit (5.11)

6. TROUBLESHOOTING

PROBLEM	REASON	SOLUTION	UNITS/PARTS
Transmission has low / no power	Low engine speed	Adjust correct setting	
	Control arm damaged or out of adjustment	Repair or replace the connection	Control arm (5.9)
	Drive belt slippage or damaged pulley	Repair or replace drive belt or pulley	Fan and pulley (5.5)
	Low oil level	Top up to the correct level	Transmission oil (5.1)
	Contaminated oil (water)	Change oil	Oil contamination with water (6.1)
	Excessive load	Reduce the vehicle load	Transmission
	Blocked bypass arm unit	Repair or replace the bypass arm	Bypass arm (5.23)
	Air trapped in the hydraulic system	Hydraulic bleeding system	Bleeding procedures (5.1)
	Brake partially engaged	Disengage brake, replace broken or missing brake return spring	Brake unit (5.11)
Transmission overheats	Accumulation of debris around the Transmission	Clean it	Transmission
	Damaged cooling fan	Replace the fan	Fan and pulley (5.5)
	Low oil level	Top up to the correct level	Transmission oil (5.1)
	Contaminated oil (water)	Change oil	Oil contamination with water (6.1)
	Excessive load	Reduce the vehicle load	Transmission
	Air trapped in the hydraulic system	Hydraulic bleeding system	Bleeding procedures (5.1)
	Brake partially engaged	Disengage brake, replace broken or missing brake return spring	Brake unit (5.11)

6. IDENTIFICAZIONE DEGLI INCONVENIENTI

PROBLEM	REASON	SOLUTION	UNITS/PARTS
Oil leakage	Damaged housings or seals	Replace damaged components	Transmission
	Air trapped in the hydraulic system	Hydraulic bleeding system	Procedure di spurgo (5.1)

6.1. Oil contamination with water

Even a small amount of water (10-15 ml) is enough to adversely affect the performance of the **LXHT20 Hydrostatic Transmission**.

The presence of water mixed with oil can be recognisable by the typical 'milk coffee' (light green and brown) colour of the fluid. The picture clearly shows the colour of the water-contaminated oil.

See paragraph [👉 5.4] for oil change procedures.



IMPORTANT: Fill the Transmission with 20W-50 engine oil. Do not use hydraulic oil!



