

VDL Weweler Liability Manual

Your claim can only be processed by VDL when form “VDL Weweler Liability Form” is filled out completely and photos of the damaged part(s) are included.

If VDL informs you that no further examination is required and the part may be scrapped, please do so as environmentally friendly as possible.

Required date code suspension system related parts:

The position of the **Date Code** varies between products.

Product	Position Date Code	Example(s)	
Air Spring/ Air bellow	Code on the rubber Products		
Trailing Arm	Code on the trailing arm eye or Code on trailing arm tail-end		
Shock Absorber	Code on cylinder		

Axle assembly	Middle of the axle beam	
Axle Tube number	On the back of one of the axle seats	

- Claimed parts must always be returned to VDL Weweler so that a diagnosis can be made.
- Claimed parts must be delivered clean and in adequately protective packaging
- The claimed parts must be submitted to VDL Weweler no longer than 5 days after discovery of a defect.
- Parts for which a warranty claim is approved will be credited according to the rates used by VDL Weweler
- Charges will be incurred for the testing of parts when a claim for warranty coverage is denied due to incorrect use, installation, removal/disassembly or diagnosis.
 - € 35,00 basis fee
 - € 75,00 for diagnosis/testing on steering system related parts
 - € 50,00 Administration cost per rejected claim
- VDL Weweler stores rejected parts for six weeks. After this period, the parts are scrapped. If the customer wants the parts to be returned (at their own cost), this must be requested within the six-week period.

Information ETS steering system related parts

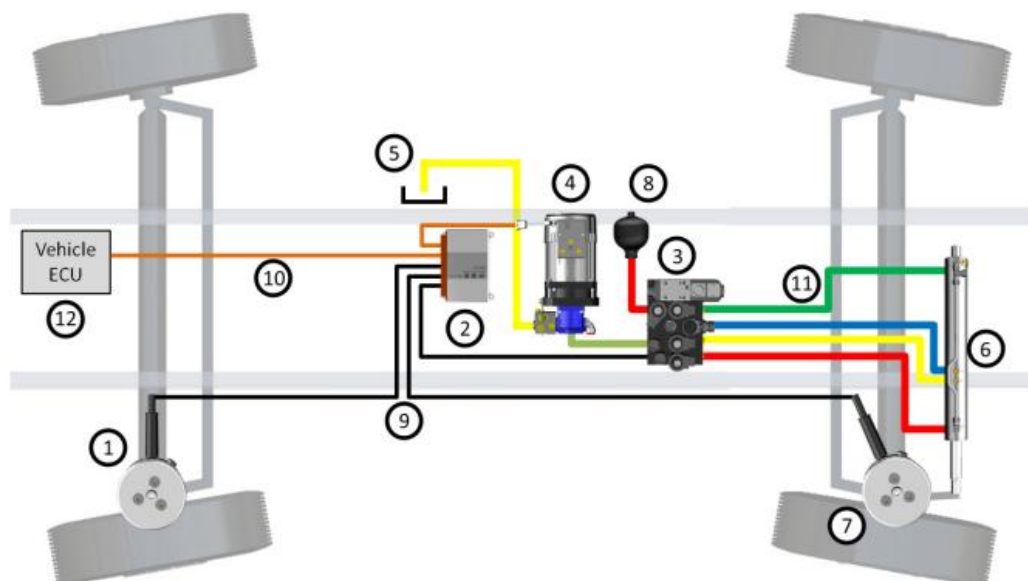
Introduction:

Complaints or failure of the steering system are sometimes obvious but sometimes less so.

It is therefore important to describe a clear complaint, description with symptoms and provide clear pictures, fault codes ETS/EBS. In this section, we try to indicate for each part of the ETS steering system what to look out for when submitting a complaint.

As the parts from the steering system are more sensitive and vulnerable than the parts previously treated, it is important that the instructions below are followed as those differ from the standard procedure

System overview:



- | | | | |
|---|--------------------------|----|-----------------------------|
| 1 | Front axle sensor | 7 | Auxiliary axle angle sensor |
| 2 | ECU | 8 | Accumulator |
| 3 | Steering manifold | 9 | Electrical wiring* |
| 4 | Hydraulic power supply** | 10 | CAN bus topology* |
| 5 | Hydraulic reservoir | 11 | Hydraulic lines * |
| 6 | Steering cylinder | 12 | Vehicle ECU* |

* Not in VDL Weweler's scope of supply

** The hydraulic power supply can be:

- 1 an electro-hydraulic powerpack,
- 2 by the engine driven hydraulic power supply of the vehicle*,
- 3 the vehicle steering gear pump with flow divider to ETS*

1. Front Axle angle sensor



VDL Weweler can't be hold responsible for damage to the wiring due to for example impact. Also make sure that the connector is tightened correctly.

When there is an issue with the front axle angle sensor make sure there is no dirt on the front axle angle sensor and place in a plastic bag and seal. Please note a proper error description on the job card attached to the plastic bag.

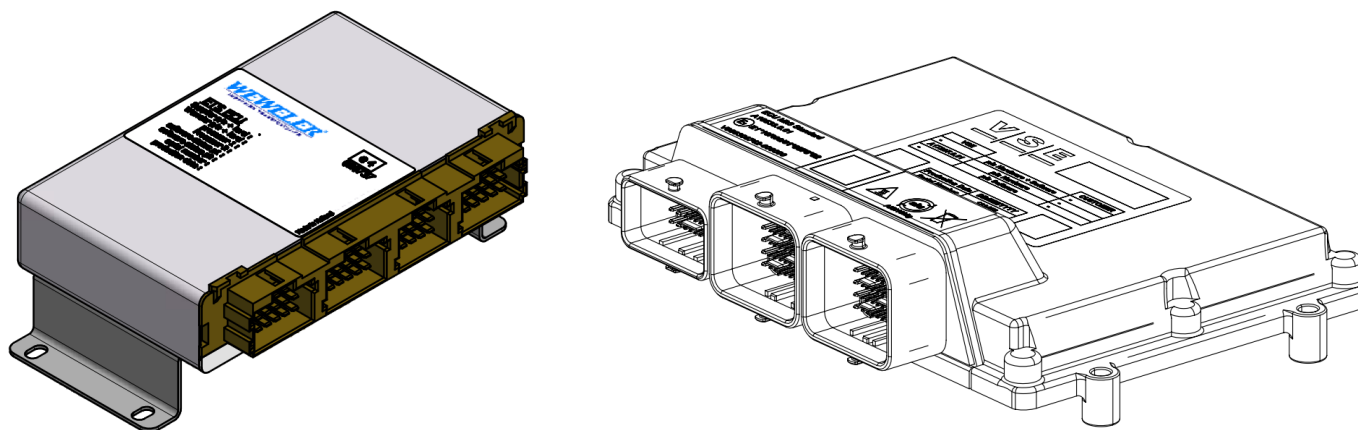
If the Sensor is send back to VDL Weweler please take care of the following:

- Partnumber on the front axle angle sensor
- Packaging should be good, make sure connectors cannot be damaged during transport.
- Attached to the claim, a picture with clear readable production number.

2. ECU

Problems with a ECU are difficult to discover, normally there is already been contact with VDL Weweler about the topic. The ECU can be checked on distance with a special dongle, with a software specialist. If the ECU is send back to VDL Weweler please take care of the following:

- Partnumber on ECU
- Packaging should be good, make sure connectors cannot be damaged during transport.
- Attached to the claim, a picture with clear readable production number.

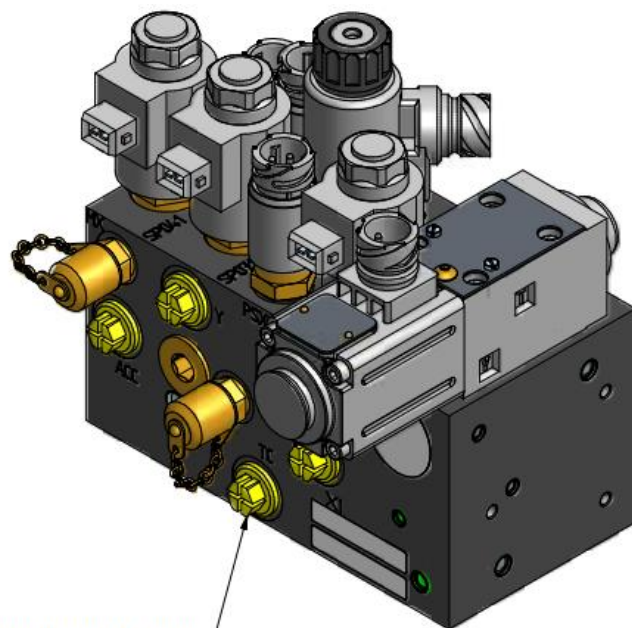


3. Steering Manifold + Hydraulic Valves:

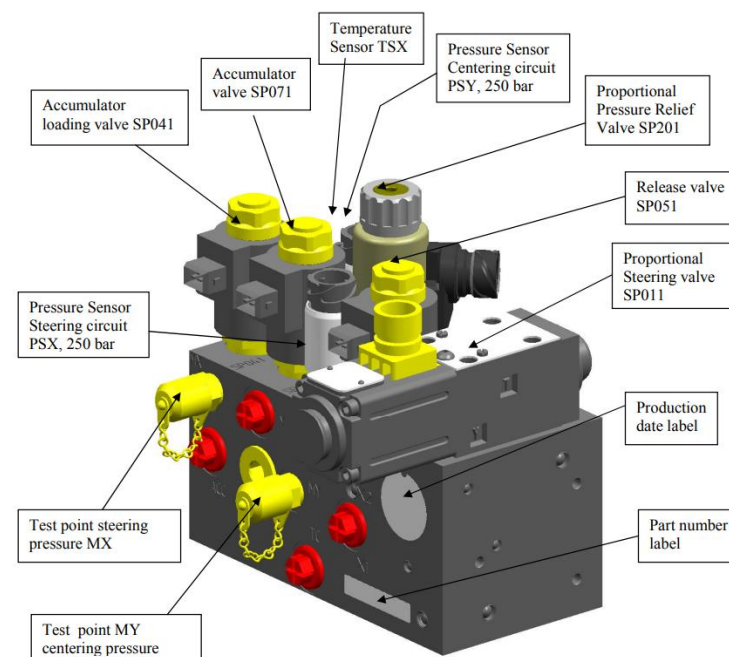
The same as mentioned for the ECU, problems with the hydraulic manifold can be difficult to discover. Before replacing parts, it is important to be sure that the part is the cause of the specific complaint. A not functioning valve can also be caused by a not functioning coil or vice versa. If in doubt, always contact the service line first. Replacing the complete valve block is normally not the best solution, an easier and best solution is to replace the defect component.

Before working with the hydraulic valves make sure the manifold and valves are clean. Should it be decided to change valves, make sure to work in a clean environment and clean parts. Always ensure that no dirt can get into the gates. The cleanliness of the total system is the most important issue in a hydraulic circuit. When dirt enters or is present in the system, the correct operation of the different valves can be seriously compromised. To obtain the required lifetime of the components within the system a minimum cleanliness level of 16/13 according to ISO 4406 or NAS 1638 class 7 is necessary.

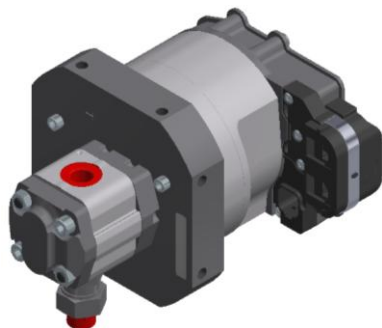
When there is an issue with a hydraulic valve, make sure there is no dirt on the valve and place in a plastic bag and seal. Please note a proper error description on job card attached to the plastic bag. Attached to the claim, a picture with clear readable production number.



Plastic plugs are for protection during transportation and storage.



4. Hydraulic power supply, E-pump



Before replacing the E-pump make sure the power supply is correct. Failures to the wiring system are not in the VDL Weweler scope.

Always ensure that no dirt can get into the gates. The cleanliness of the total system is the most important issue in a hydraulic circuit. When dirt enters or is present in the system, the correct operation of the different valves can be seriously compromised. To obtain the required lifetime of the components within the system a minimum cleanliness level of 16/13 according to ISO 4406 or NAS 1638 class 7 is necessary.

When there is an issue with the hydraulic e-pump, make sure the P and T port are capped, like in the figure above. So, no dirt can enter the system. If the E-pump is sent back, please use a proper packaging (mini pallet or wooden rack) so the part will not damage during transport. Please note a proper error description on job card attached. Attached to the claim, a picture with clear readable production number.

5. Hydraulic Reservoir;



Electronic failures related to the electronic dipstick, may be caused by an electronic failure in the power supply. So first check the power supply/electronic connectors before replacing the (hydraulic reservoir) electronic dipstick. When there are issues with the dipstick, the reservoir doesn't need to be replaced.

When the reservoir/electronic dipstick with wiring +are send back to VDL Weweler, please make sure the hydraulic connectors are capped so no dust can enter the reservoir and the part is in a sealed plastic bag. Please note a proper error description on job card attached. Attached to the claim, a picture with clear readable production number.

The connection of the reservoir to the chassis is not in VDL Weweler's scope. So any failure caused by a insufficient connection will be rejected by VDL Weweler.

6. Steering cilinder

Before working on the hydraulic system make sure the steering cylinder is clean. To determine if there is a problem and where it is located at the steering cylinder it is good to have clean surface to have a clear view of the problem.

For the steering cylinder the following procedure is advised:

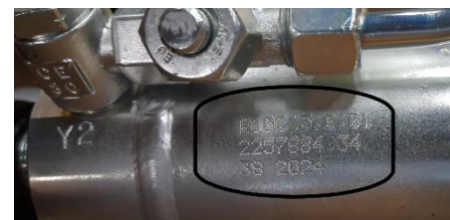
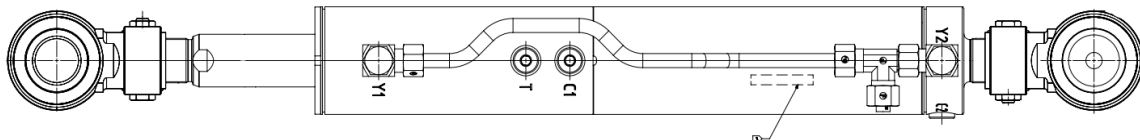
Take a picture of the leak area from close and afar (the afar is so you can identify the area on the cylinder as a whole).

Take a video showing the leak, you may need an assistant to operate the steering while taking the video.

If you don't witness a leak and it's a damp patch, clean the cylinder off and carry out a manoeuvring road test at low-speed steering from full left to right lock, inspect again to see if you can see any evidence of a leak. If you have a new damp patch, take a picture of the leak area.

If you change the cylinder, clean it thoroughly, take a picture of the serial number, clearly mark where the leak is with a marker pen. Before sending the cylinder back make sure the stroke of the piston is complete inside of the cylinder housing, the hydraulic fittings points should be capped.

If there is an presumption of an internal leak, mark the cylinder with internal leak. Please note a proper error description on the job card attached. Attached to the claim, a picture with clear readable production number.



See figures above for the article nr. information

If you have problems with the ball joints of the steering cylinder, please check the chapter about the ball joints.

External damage on the steering cylinder like bended / damaged threads, damaged piston rods, damaged / leaking connectors etc. are never covered under warranty.

7. Axle angle sensor



VDL Weweler can't be hold responsible for damage to the wiring due to for example impact. Also make sure that the connector is tightened correctly.

When there is an issue with the axle angle sensor make sure there is no dirt on the sensor and place in a plastic bag and seal. Please note a proper error description on job card attached to the plastic bag.

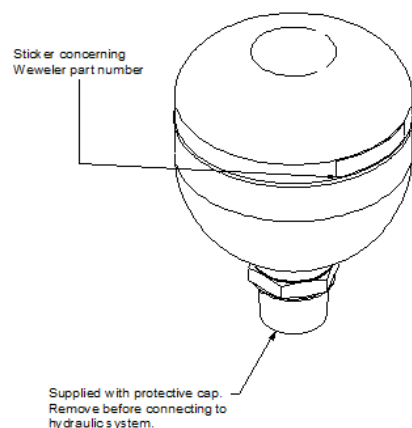
If the Sensor is send back to VDL Weweler please take care of the following:

- Partnumber on the axle angle sensor
- Packaging should be good, make sure connectors cannot be damaged during transport.
 - Attached to the claim, a picture with clear readable production number.



See picture above, for the productionnumber required information :

8. Accumulator

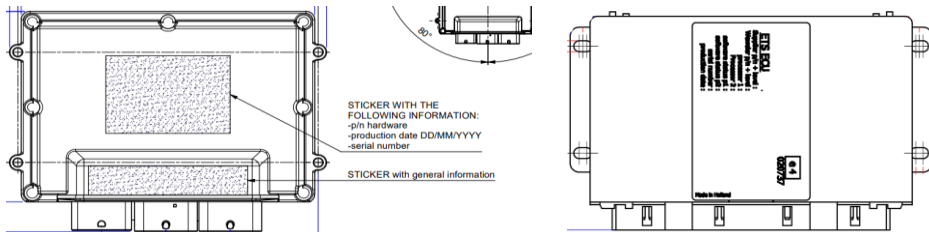
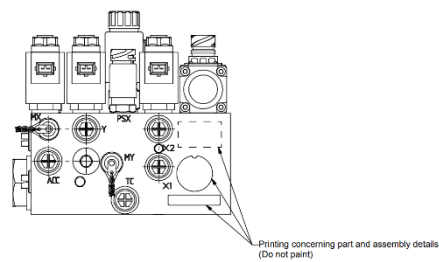
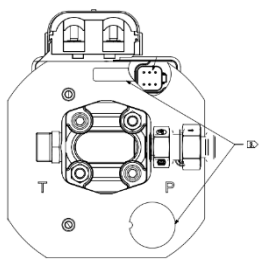


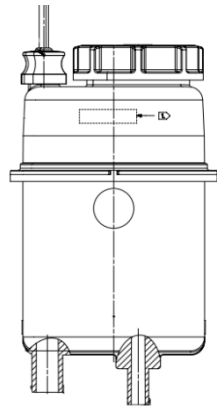
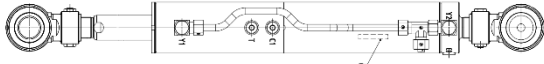
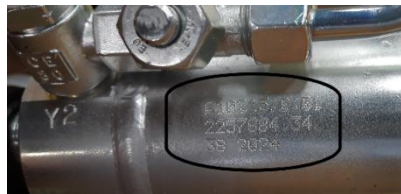
The accumulator is pre-charged with a nitrogen and has a pressure off 20 bar, **so under no circumstances open the accumulator!**

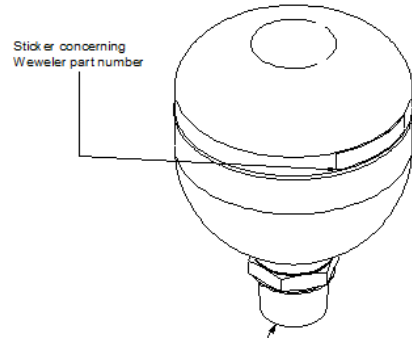
When there is an issue with the accumulator make sure there is no dirt in the connector and cap the fitting as well. Place the accumulator in a plastic bag and seal. Please note a proper error description on the job card attached to the plastic bag.

If the accumulator is send back to VDL Weweler please take care of the following:

- Partnumber on the accumulator
- Packaging should be good, make sure fitting is capped before and during transport.
- Attached to the claim, a picture with clear readable production number.

Product	Position Date Code	Example(s)
Front Axle angle sensor	Code on sticker on top of the sensor	
ECU	Code on sticker on top of the housing	
Steering manifold	Code on side of the manifold	
Hydraulic E-pump	Code on flange where hydraulic pump is mounted	

Hydraulic reservoir	In the middle below the fill cap of the reservoir	
Steering cylinder	On the side of the cylinder were also, the connections are positioned.	 
Axle angle sensor	On top of the sensor	

Accumulator	On the side of the accumulator	 Sticker concerning Weweler part number
--------------------	--------------------------------	---

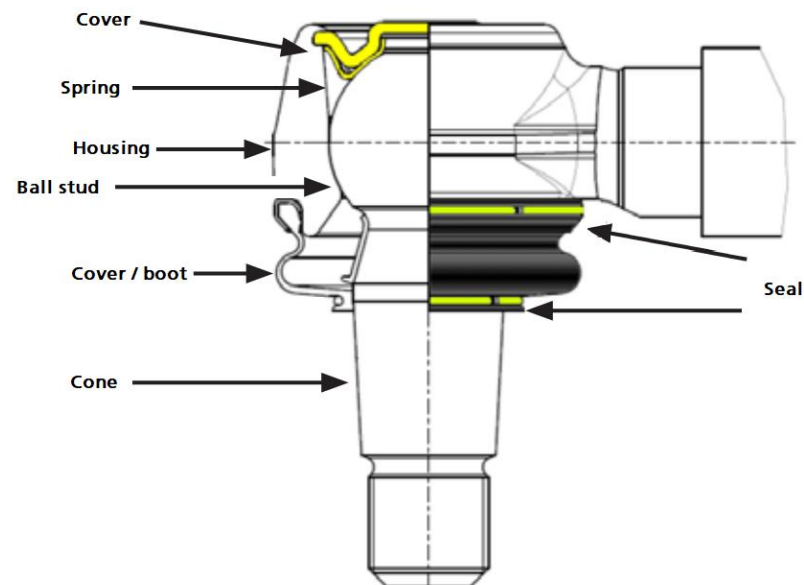
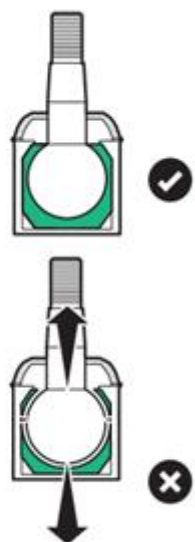
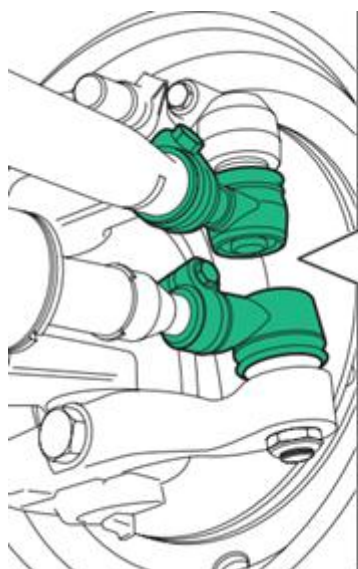
Ball Joints:

When a ball joint is being replaced, we need to know the position of the ball joint. Is it on the steering cylinder or on the track rod?

We need to understand why a ball joint is replaced; Is this done because of a damaged or cracked rubber boot or is excessive play in the joint the reason? Mark clearly on the T&B warranty form the reason why you are changing it.

All ball joints that are being replaced because the rubber is cracked / damaged are **NOT** covered by warranty.

When there is excessive play take a video and if possible, measure the movement and record this on the "VDL Weweler Liability Form".



Recommendation for technical inspection of balljoint and track rods

When an inspection is done on the ball joints, VDL Weweler recommends doing this according to the following instructions:

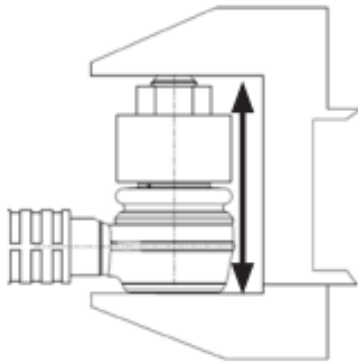
Clean the joint including the sealing rubber/boot and connection parts, use a cleaning cloth or cotton wool. Do not damage the rubber/boot!

Rubber/ boot inspection squeeze the bellows by hand and make sure no grease is expelled from the bellow. There must be no holes, tears or chafe marks. Damaged bellows may cause the joint to fail very quickly due to the possibility of water penetrating the joint. Replace the joint or steering/track rod if the result is not OK.

Inspection for wear on the ball joint:

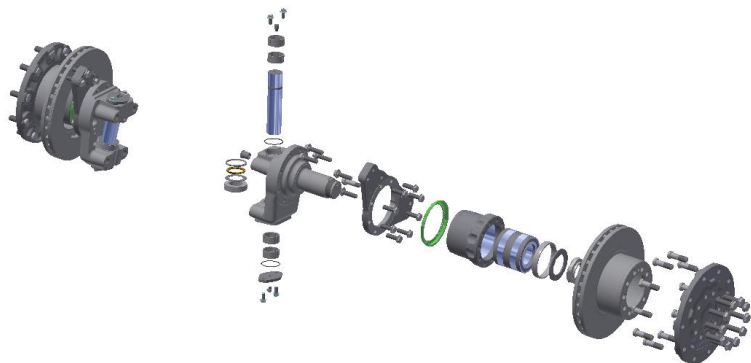
Turn the steering wheel with the axle loaded (the axle being tested must not be relieved!) alternately to the left and right so that the wheels move.

The ball stud must not deflect **axially any more than 0.5 mm** into the housing. Check the distance with a suitable measuring instrument (e.g. callipers). See figure below



Required information wheel-end set related parts:

System overview:

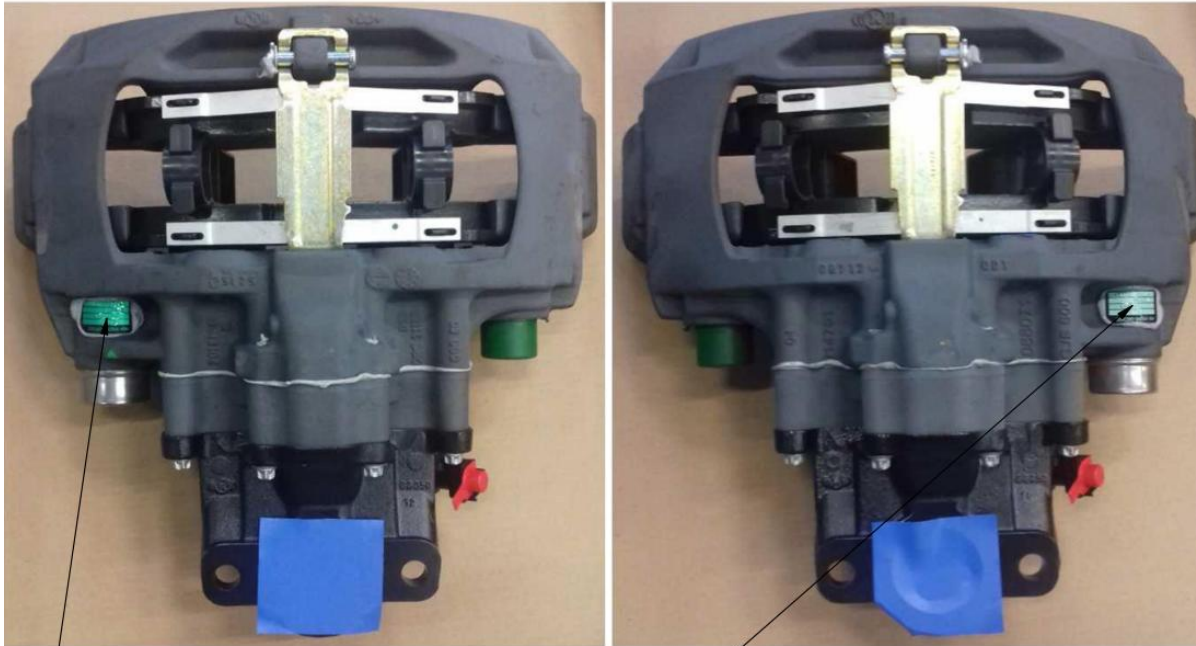


To be able to provide the correct information about the wheel end set or a specific part out of the wheel end set we need the following information:

- Axle number, this is findable on the type plate/shield on the axle.
- Wheel end set number, this is located on the side of the casting. See picture below.



Brake calipers:

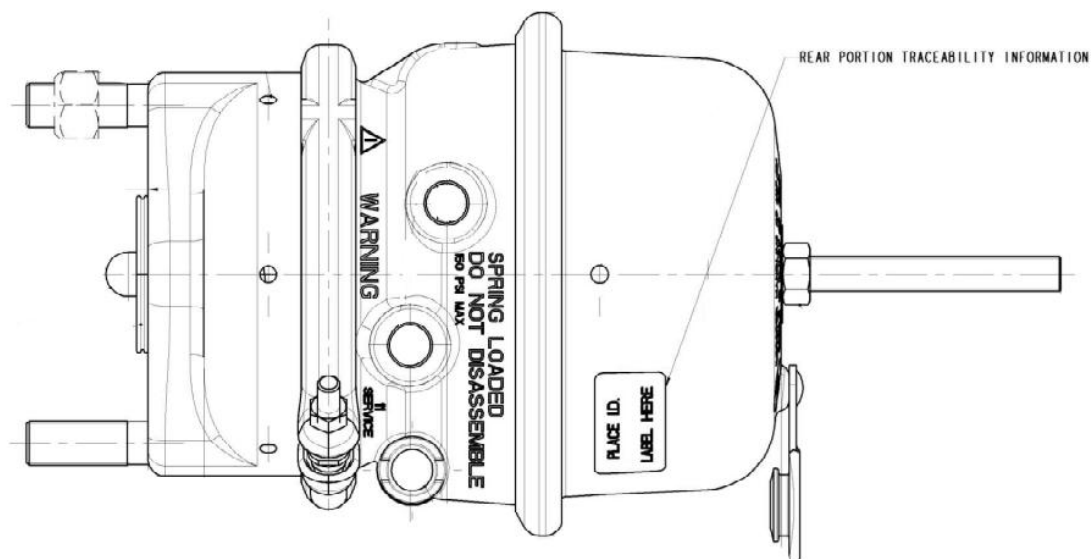


Identification plate

Identification plate

- For the brake calipers we would like to know what the numbers on the identification plate are. Normal wear and tear to the brake pads can not be claimed under warranty.

Brake boosters:



WARNING: Never try to open a brake booster, the brake booster has a internal spring! When there is a warranty claim about the brake boosters please mentioned the ID number placed on the boosters.

What is not standard covered by VDL Weweler?

- Moving/shipping, transportation costs to and from a workshop, costs of replacement transport during downtime, standstill costs, consequential damages and costs of lost income.
- Repairs carried out by third parties without the permission of VDL Weweler.
- Standard / normal wear of parts such as bearings, ball joints and brake parts.
- Standard / normal wear of rubber parts such as hoses, sleeves, silent blocks (spring and shock absorber).
- Failure or malfunction of steering/suspension as a result of contaminated oil and/or use of oil with incorrect specifications.
- Plug connection failures.
- Defects or shortcomings of batteries.
- Defects resulting from:
 - Failure to follow installation instructions
 - Failure to comply with instructions for use
 - Improper use (overload, negligence, poor maintenance, etc.)
 - Collisions or other types of damage caused by external factors
 - Under no circumstances can a warranty incident give rise to a damage claim of any nature whatsoever