2024

Guidelines for inspection and servicing

VBG MFC coupling

VBG

General information

General

The components used to connect a vehicle and trailer are exposed, even during normal use, to very high tensions. Regular service and maintenance is a prerequisite if the coupling is to function well during its entire service-life. Clean and lubricate the coupling every week.

The length of the service intervals depend on the type of trailers, the loads, roads and climatic conditions etc. The service should ideally be carried out in conjunction with other inspection of the vehicle, e.g. every 60,000 or 90,000 km.

If daily inspection or safety checks show that any of the wear limits have been exceeded, or that the function of the product has been impaired, servicing must be carried out immediately. If any of the product's wear limits have been exceeded, this is an indication that other parts also require servicing.

Check that all type plates and warning/information labels are legible and have not been painted over, washed off or otherwise damaged. Illegible labels must be replaced and can be ordered from VBG Truck Equipment.

If the coupling is damaged as a result of jackknifing, off-road driving or reversing, the vehicle must be stopped and the coupling replaced.

Always follow VBGs instructions and the vehicle manufacturer's bodybuilding instructions.

Guidelines for inspection and servicing VBG MFC coupling 2024

Version e, 01/06/2024

Explanation of symbols

Warning!
During work on the coupling, the main power must first be disconnected in the vehicle to prevent crushing injuries caused by the hydraulic coupling.

Degree of severity
3 = STOP to ensure future use.
2 = Rectify as soon as possible, within four weeks.
1 = Rectify when able or during next service. Within no more than one year.

Warning!
The air and power must be disconnected/switched off and the hydraulic pressure eliminated during all work on the coupling due to the risk of injury.

Warning!
Never touch the connector's terminals on the coupling part if the current has not been disconnected since this may cause short-circuiting.

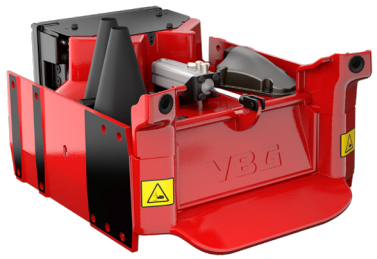
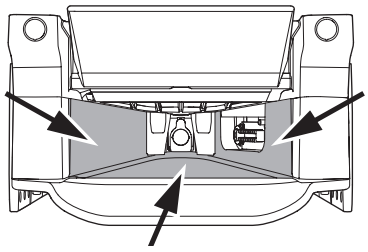
Warning!
Washing the inside of the coupling with high-pressure jets is prohibited. Never direct high-pressure jets to the power plug and air ducts on the drawbar wedge.

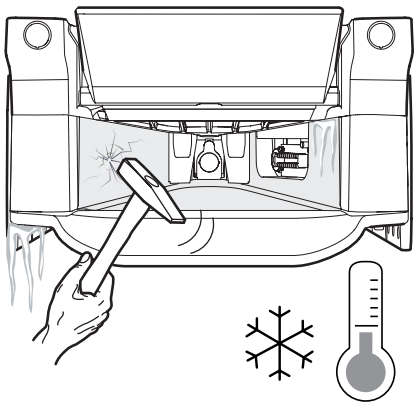
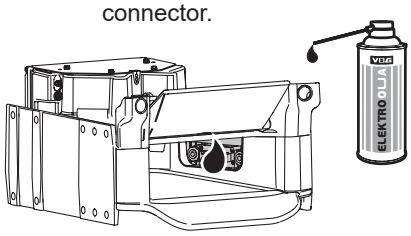
Warning!
If work is to be carried out on the vehicle's or the coupling's hydraulic system, the pressure in the accumulator must first be evacuated. The pressure is drained using the MFC Tool.

Contents

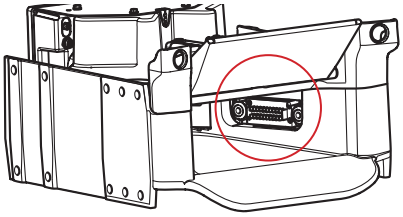
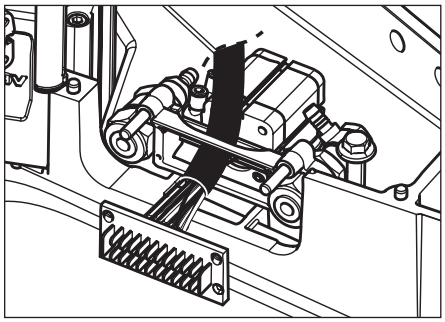
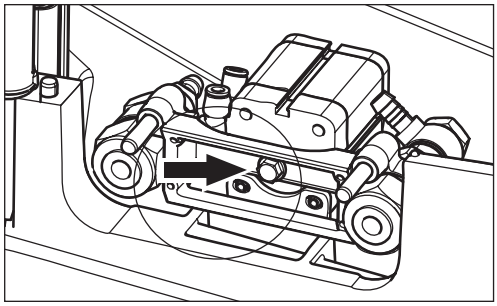
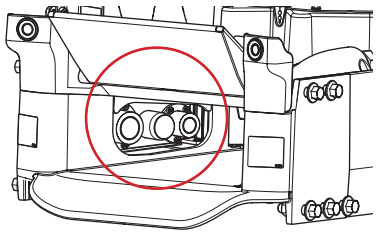
Checkpoint	Symptom	Fault
General MFC, coded faults Display in the cab.	Depending on fault code. Fault code without direct traffic-safety impact together with green signal and intermittent buzzer means that it is possible to continue driving; certain connection or disconnection problems may arise when the green signal is lit. Fault code together with red signal and continuous buzzer is serious and driving with a trailer/dolly must be stopped and a workshop contacted.	Fault codes are indicated in the display. 
General MFC, non-coded faults		

Inspection method	Requirements, wear limits, etc.	 Instructions for rectification
The causes of fault code(s) are checked using the instructions in the Driver's Manual and the connected MFC Tool software. **Red signal:** Stop driving and contact an authorised service workshop.If possible, disconnect the vehicles and contact a workshop. **Green signal:**Follow the Driver's Manual instructions and contact your service workshop if the fault cannot be rectified.	The display should never show any fault codes without these codes being rectified.	**Red signal =** ③ Follow the action procedures specified in the MFC Tool and MFC Fault Code Analysis. **Green signal =** ① Please see the spare parts list for MFC on the home page under www.vbg.eu. Locate the damaged part in the exploded-view drawings and replace it. Connect the MFC Tool and check all functions after repair.
Visual check of attachment to the truck frame, damage, leakage and wear. Listen for air leaks.		

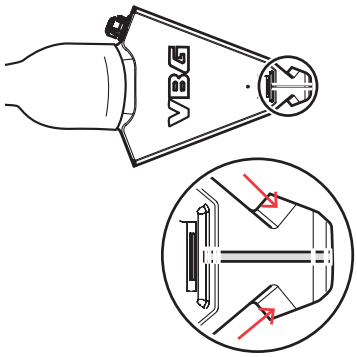
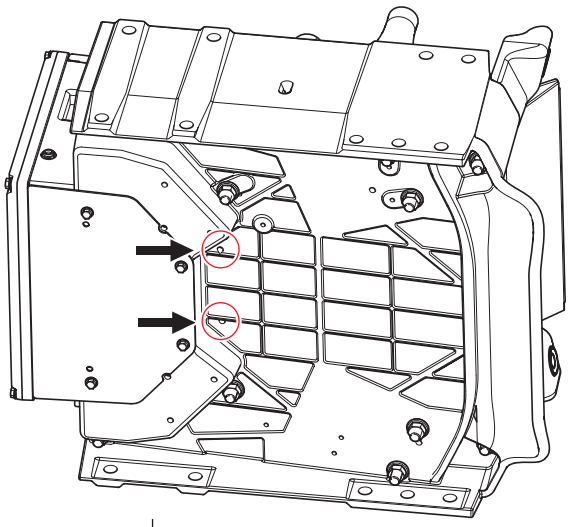
Checkpoint	Symptom	Fault
Cover, locking wedges, electrical/ pneumatic/hydraulic connections and their hoses. 	Depending on the fault type, there may be various symptoms.	Cracks, wear, leakage, chipped cable harnesses, kinked hoses.
Ultrasound sensors.	Depending on the fault type, there may be various symptoms.	Incorrect ultrasound signals.
Control and support surfaces 	Difficult to connect.	Dirt, ice and snow on the guide surfaces
Electrical connector.	Disturbances in power transfer, pin green oxidised and partly affected by verdigris.	Verdigris, moisture.
Electrical connector.	Not possible to connect.	Deformed pins.

Inspection method	Requirements, wear limits, etc.	①②③ Instructions for rectification
Visually check, listen to and test any connections and disconnections, follow the Driver's Manual's instructions for Connection and Disconnection. Also carefully read the vehicle specification on the pneumatics and connection of extra equipment, type MFC.	Hoses and connections must be free from cracks and leaks.	③ Please see the spare parts list for MFC on the home page under www.vbg.eu. Locate the damaged part in the exploded-view drawing and replace it. Connect the MFC Tool and check all functions after repair.
Visually check.	Clean surfaces.	① Clean all contact surfaces against the ultrasounds sensors as required.
Open the coupling cover and visually inspect, paying particular attention to the side surfaces. 	Clean surfaces.	① Clean all contact surfaces against the drawbar head as required.
Check the pin's stability and oxidation.	No variation in stability between pins 2–11 and 1 and 12.	② Replace the electrical connector.
Check that the pin is not bent.	The pin should be 90° to the connector holder.	① Clean and straighten any bent pins. Or replace electrical connector. 

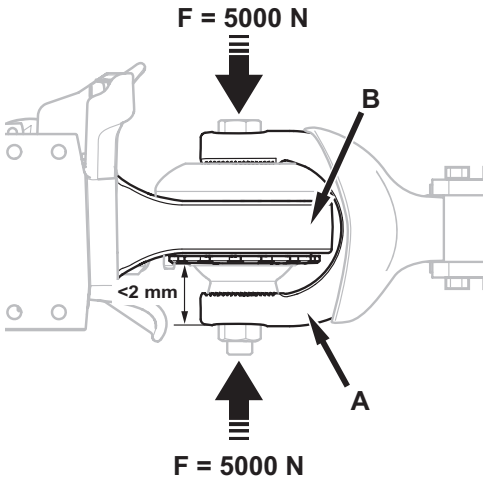
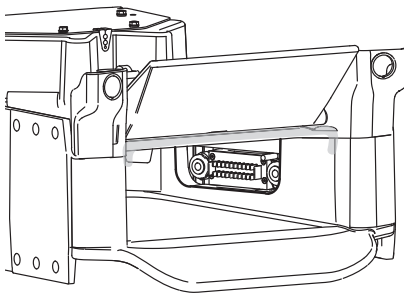
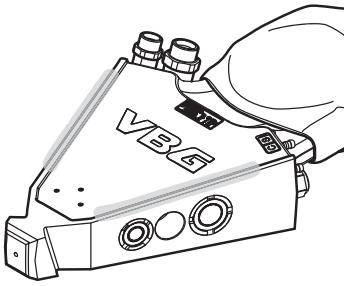
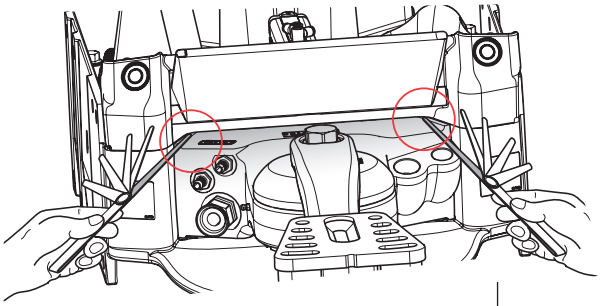
Checkpoint	Symptom	Fault
Electrical connector.	Not possible to connect.	Electrical connector attachment unstable
Electrical connector.	Disturbances in power transfer.	Connection to traction vehicle.
Hydraulics.	Oil spillage from the coupling.	Leakage.
Hydraulics.	Oil spillage from the coupling.	Valve SV4/SV5 does not close.

Inspection method	Requirements, wear limits, etc.	①②③ Instructions for rectification
Check the electrical connector attachment to the piston rod. 	The electrical connector holder should be fixed next to the piston rod.	① Loosen the four bolts and pull out the electrical connector. Fold away the cable and tighten the piston bolt. Tightening torque 10 Nm.   Refit the electrical connector using the four bolts. Tightening torque 3.3 Nm.
Check the electrical cable's connection points to the traction vehicle.	Dry and properly connected; see the manufacturer's instructions.	② Follow the coupling diagram.
Check o-rings in the hydraulic coupling and that the valve seats are free of dirt. 	O-rings must be intact.	① Replace the o-rings according to mounting instructions 38–219800 in the spare parts list.
Connected trailer, MFC tool in manual mode. Run the trailer function and move valve SV4/SV5 manually.	When valve SV4/SV5 is closed, no function for the trailer can be activated.	① Ensure that the system is depressurised. Clean the system, including the valve. Replace the valve.

Checkpoint	Symptom	Fault
Hydraulics.	Loss of trailer function.	Valve SV4/SV5 does not open.
Locking wedges.	The trailer does not always disconnect.	Locking wedges jam.
Locking wedges.	The trailer cannot be disconnected.	Locking wedges jam.

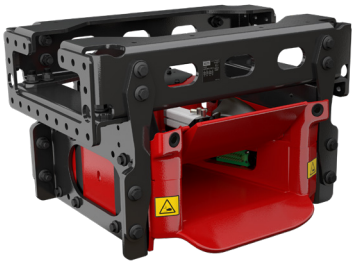
Inspection method	Requirements, wear limits, etc.	①②③ Instructions for rectification
Connected trailer, MFC tool in manual mode. Run the trailer function and move valve SV4/SV5 manually.	When valve SV4/SV5 is open, it must be possible for the trailer function to be activated and to hear the coil switching on and off.	① Ensure that the coil is supplied with voltage; in the event of continued loss of function, replace the coil.
Visually check the drawbar head's lock surfaces in the disconnected position.	The drawbar wedge's lock surface must be free of dirt, snow, ice, burrs and corrosion. 	① Use an emery cloth to make sure that the lock surface is free of burrs and corrosion In the event of continued function problems, replace the locking wedges.
Repeated disconnection attempts.	It must always be possible to disconnect.	① Options 1. Reverse the traction vehicle towards the trailer; trailer brakes should be applied. 2. Apply the traction vehicle's parking brake; create vibrations in the coupling using a sledgehammer. Preferably by tapping on the coupling's lower guide surface. 3. Apply the traction vehicle's parking brake. Use a mandrel and tap the locking wedges through the holes in the underside of the coupling. 

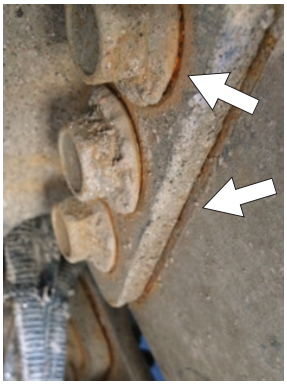
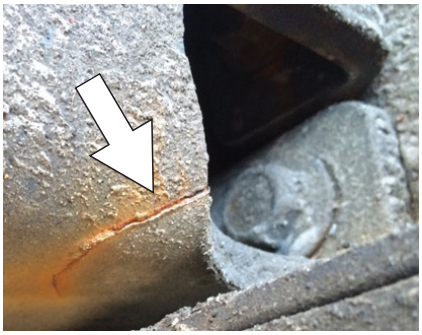
Checkpoint	Symptom	Fault
Drawbar wedge, electrical/air/hydraulic connections, sensor, ball joint, drawbar fork, seal and bolts. 	Depending on the fault type, there may be various symptoms.	Cracks, wear to sliding surfaces, play in ball joints, leakage, chipped cable harnesses, kinked hoses, incorrect signal from sensor incl. electronics.
Control and support surfaces	Difficult to connect.	Dirt, ice and snow on the guide surfaces.
Ball joint.	Jolting between traction vehicle and trailer.	Play between tow fork and ball joint.
Drawbar wedge/coupling part.	Visible wear.	Vertical play drawbar wedge/coupling.

Inspection method	Requirements, wear limits, etc.	① ② ③	Instructions for rectification
Visually check, listen and test any connections and disconnections. Apply the trailer brakes and pull to and fro with the vehicle to check for any play or movements in joints and bolted joints and between the drawbar head and coupling part. Play in ball joints, see the MFC Tool and Driver's manual.	Hoses and connections must be free from cracks and leaks. Play between ball and drawbar head 2 mm. Play between the drawbar head and coupling part 0 mm longitudinally and max. 2 mm sideways or vertically, but not both.	③	Please see the spare parts list for MFC at vbg.eu. Locate the damaged part in the exploded-view drawing and replace it. Connect the MFC Tool and check all functions after repair.
Visually check all surfaces, especially the locking wedges' contact surfaces.	Clean, undamaged surfaces.	①	Clean as required all contact surfaces on the drawbar wedge.
Check the play in accordance with driver's manual 38-216000. Visually check that the seal is fitted correctly and intact.	Measure vertical play between A (tow fork) and B (drawbar wedge) with a pressure of F = 5,000 N. Max. wear play 2 mm. The seal must be intact. 	②	If there is any play, the wear rings must be replaced or the entire ball joint replaced. If the seal is damaged, it must be replaced.
Visually inspect the wear on the coupling's and the drawbar wedge's edges.  	Max. permitted play between the coupling and drawbar wedge is 2 mm. 	②	Replace drawbar wedge, flange attachment and hydraulics, see VBG spare parts list.

Checkpoint	Symptom	Fault
Electrical connector.	Disturbances in power transfer.	Verdigris, moisture.
Electrical connector.	Disturbances in power transfer.	Mechanical fault: the pin from the coupling part is not achieving the correct position.
Electrical connector.	Disturbances in power transfer.	Electrical flash-over between electrical connector and drawbar wedge.
Electrical connector.	Disturbances in power transfer.	Cable loose.
Hydraulics.	Oil losses outside the drawbar wedge.	Leakage.
Hydraulics.	Oil losses outside the drawbar wedge.	
Battery.	Positioning not shown in the display.	Battery dead/defective.

Inspection method	Requirements, wear limits, etc.	①②③	Instructions for rectification
Visually inspect and measure the voltage/resistance.	Visually inspect and measure the voltage/ resistance.	②	Visually inspect and measure the voltage/ resistance.
Visually check for external damage.	Visually check for external damage.	②	Visually check for external damage.
Remove the electrical connector and check visually.	Remove the electrical connector and check visually.	②	Remove the electrical connector and check visually.
Remove the electrical connector and check visually.	Remove the electrical connector and check visually.	②	Remove the electrical connector and check visually.
Check the o-rings in the hydraulic coupling, that the valve seats are free of dirt and that the sliding cover can be moved.	Check the o-rings in the hydraulic coupling, that the valve seats are free of dirt and that the sliding cover can be moved.	①	Check the o-rings in the hydraulic coupling, that the valve seats are free of dirt and that the sliding cover can be moved.
Remove the wedge's plastic cap and check visually.	Remove the wedge's plastic cap and check visually.	①	Remove the wedge's plastic cap and check visually.
Connect traction vehicle and trailer for approx. one hour.	Connect traction vehicle and trailer for approx. one hour.	①	Connect traction vehicle and trailer for approx. one hour.

Checkpoint	Symptom	Fault
Connection surface against frame members and coupling parts. 	Be aware of banging/clicking sounds while driving. Be aware of rust around bolt heads as well as holes where there have previously been bolts.	Loose or missing bolts.
The system's beams and endplates etc.	Cracked paint. Rust residue from cracks. Bolts break for no reason. Narrow area free of sand and dirt 	Cracks in the radius transition, around bolt heads, nuts, etc.

Inspection method	Requirements, wear limits, etc.	①②③ Instructions for rectification
Check to see if there has been any movement in the bolted joints. Check if any rotation occurs when test tightened to the prescribed torque.  	No movement is allowed and there should be no rotation when test tightened to the prescribed torque.	③ In the event of movement in the bolted joint, stop driving and immediately visit a workshop, dismantle/ check constituent parts and replace any damaged components. ② In the event of an insufficient tightening torque, visit a workshop, dismantle/ check the constituent parts and replace damaged components. When the components have been dismantled, they must be re-tightened after driving 2,500 km. ③ Examples of damage - Deformed holes - Damaged threads - Cut marks on bolts - Fretting damage
Visually check. – Cracks, greatest risk of cracking is close to bend radii, welds and hole edges. 	No cracks are permitted No warping or welding is permitted.	③ If deformations, cracks, warping or repair welds are detected, driving must be stopped and damaged parts replaced.

The strong connection

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