SAMPA OTOMOTİV SANAYİ VE TİCARET A.Ş.

SP C7 D FIFTH WHEEL Installation and operating instructions

04.10.2017

SAMPA OTOMOTİV SANAYİ VE TİCARET A.Ş.

Kerimbey Mahallesi 1705.Cadde
No:11/2 Tekkeköy - SAMSUN - TÜRKİYE

T 00 90 362 266 77 92
F 00 90 362 266 93 58
E info@sampa.com

www.sampa.com

SAMPA PERFORMQUALITY

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The safety information is compiled in one section at page 13. Where the user of the fifth wheel coupling is in danger, the safety information is repeated in the various sections and marked with the danger symbol shown here to the side.

1. Identity

1.1 Fifth Wheel

SAMPA fifth wheel couplings are mechanical connecting devices and establish a connection between the tractor and the semi-trailer. They are designed for mounting on a tractor unit.

Fifth wheel couplings, mounting plates and kingpins are vehicle-connecting parts that must comply with very high safety requirements and must also undergo design approval tests. Modifications of any kind will render both the warranty and the design approval void and therefore also cancel the vehicle's operating licence.

SAMPA fifth wheel couplings are specified to comply with Regulation ECE R55 -01 in class 50 and are to be used only in conjunction with kingpins of class H50 and class J mounting plates or comparable licensed equipment.

SAMPA fifth wheel couplings are suitable for use in power steering systems.

Technical modifications reserved.

1.2 Calculation and Type Plate

The design comply with Regulation ECE R55-01 Appendix 7.

In addition to the fifth wheel load the D value is a criterion for the load capacity of fifth wheel couplings and mounting plates.

It is calculated using the following formula:

D = Drawing bar value [kN]
R = Permissible total weight of the semi-trailer [t]
T = Permissible total weight of the towing vehicle, including U [t]
U = Permissible fifth wheel load [t]
g = 9.81 m/s^2

$$D = g \times \frac{0.6 \times T \times R}{T+R-U} \text{ [kN]}$$

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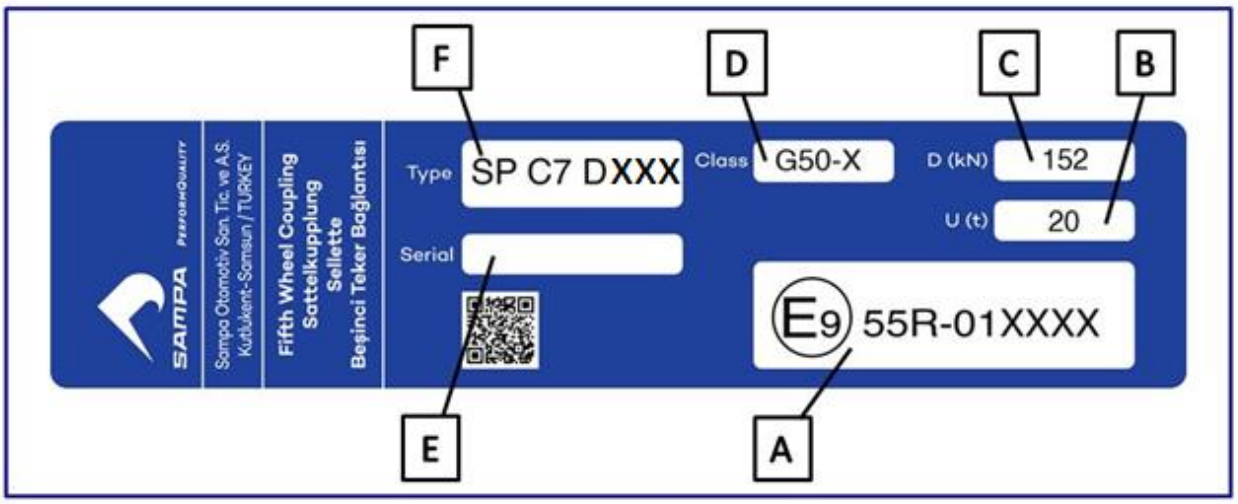
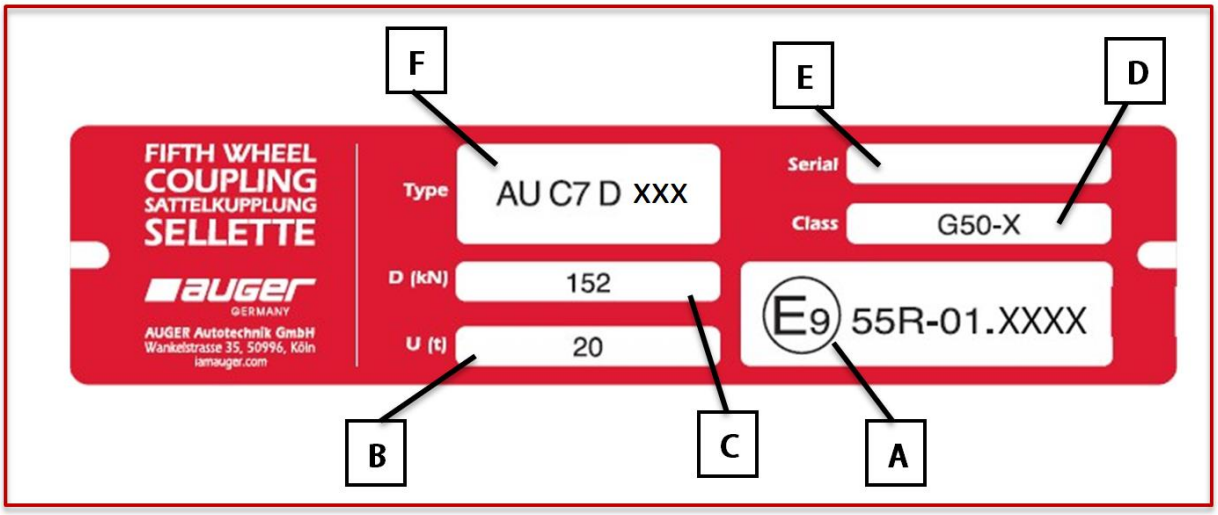




A ECE approval number
B Maximum imposed load U in t
C Maximum D value in kN
D Class.
E Serial no.
F Type

Each fifth wheel coupling has a serial number, which is embossed on the type plate and also underneath the type plate on the plate edge. This is designed to give the coupling a unique identity.

2. INSTALLATION

2.1 General

To secure the SAMPA fifth wheel coupling (pursuant to regulation ECE R55-01) on the mounting plate or on the flitch, **at least** eight M16 bolts, ideally M16 x 1.5 of strength class 8.8, must be used.

These must be positioned in a symmetrical pattern to the longitudinal and lateral axes of the fifth wheel coupling.

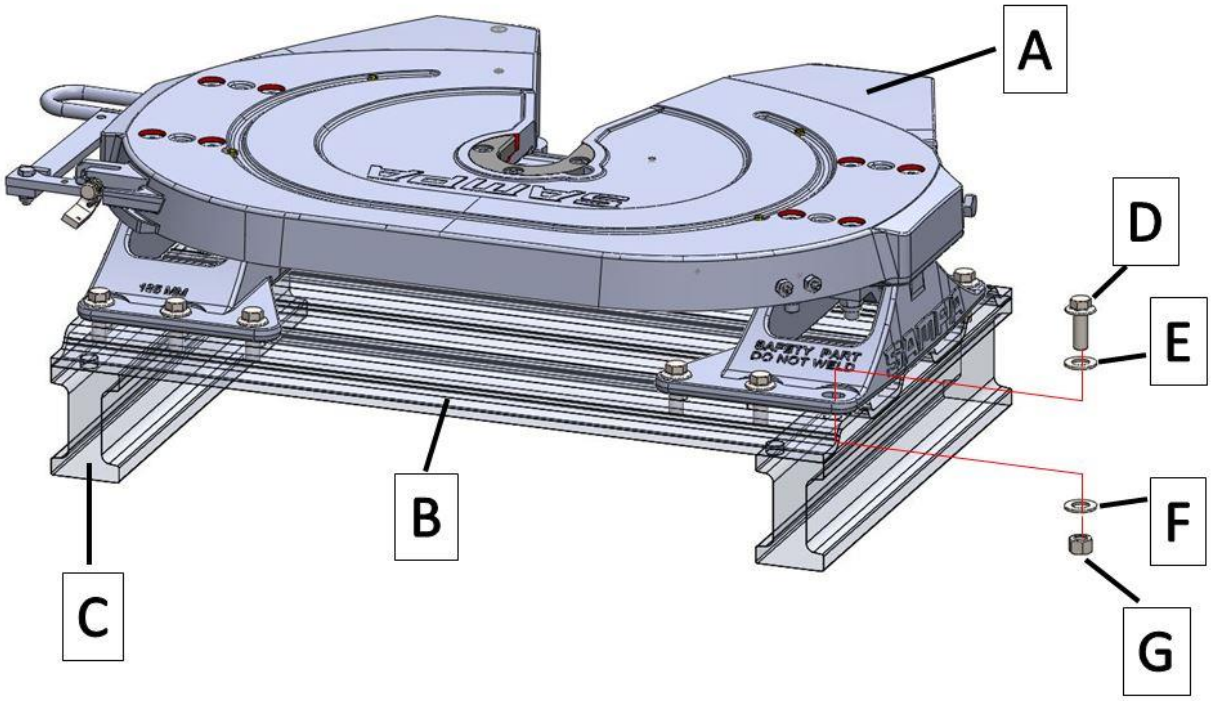
If the coupling is used in harsh conditions (for example on construction sites), with trailers with forced steering or with trailers that use the full D value and/or imposed load, we recommend that you use all 12 bolts. Fifth wheel couplings with a design height of over 250 mm and a D value of over 133 kN must be secured with 12 bolts of strength class 10.9. Also fifth wheel couplings with a D value of more than 152 kN or an imposed load of more than 20 t.

The pedestals should make contact with the mounting plate over as wide an area as possible. With undulating mounting plates, it is necessary to have a support in the middle area as well as the contact in the screw connection area. We recommend securing the pedestals in the longitudinal and lateral directions, and the mounting plates in the longitudinal direction, by pre-welded thrust plates without play. Use the welding methods set out by the manufacturers of the vehicle and mounting plate for this purpose.

There is no need to use thrust plates, however, if it can be ensured that the correct tightening torque for the bolts and therefore the perfect friction contact can be generated and maintained at all times. The bolt connections are therefore to be designed so that the prescribed tightening torque values or prestressing forces can be applied permanently. The general rule is that the coating thickness of the paintwork around the securing area of the bolts must be no more than 120 µm per component. The screw connections must be secured using state of the art methods to prevent them coming loose.
Appropriate reinforcement must be made in accordance with the application.

The fifth wheel coupling must be able to move freely and must not be in contact with either the mounting plate or parts of the chassis or flitch when the vehicle is being driven.
If you use a different installation method (for example chassis-installed), follow the instructions supplied by the vehicle manufacturer.

2.2 Installation of the fifth wheel on the mounting plate



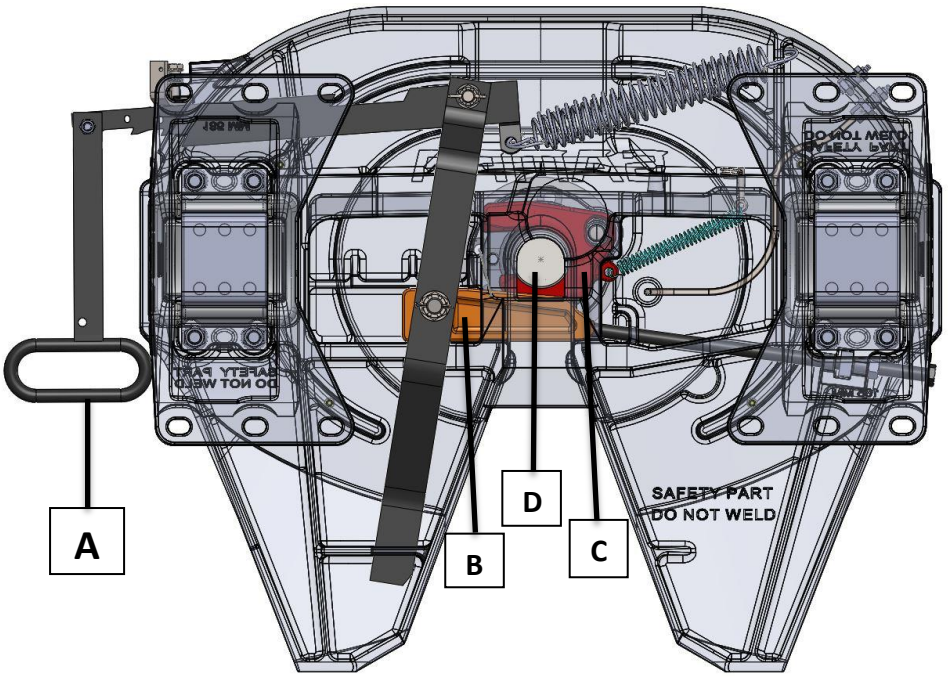
A Fifth wheel coupling
B Mounting plate
C Vehicle chassis
D Hexagonal bolt DIN EN28765/28676 (DIN960/961) M16 x 1.5-8.8
E Washer 17 DIN 7349 6 thick (min. HV295)
F Optional washer (min. HV295) or disc spring
G Hexagonal nut DIN980 M16 x 1.5-8.8 or M20 x 1.5-8.8

2.3 Fastening materials and tightening torques

Fastening material		**Strength class 8.8**	**Strength class 10.9**
Hexagonal bolt DIN EN24014/24017 (DIN 931/933) standard thread	M16 M20	210Nm 410Nm	260Nm 500Nm
Hexagonal bolt DIN EN28765/28676 (DIN 960/961) fine thread	M16x1.5 M16x1.5	225Nm 460Nm	280Nm 500Nm
Countersunk bolt DIN 7991	M16 or M16x1.5 M20 or M20x1.5	170Nm 330Nm	250Nm 400Nm

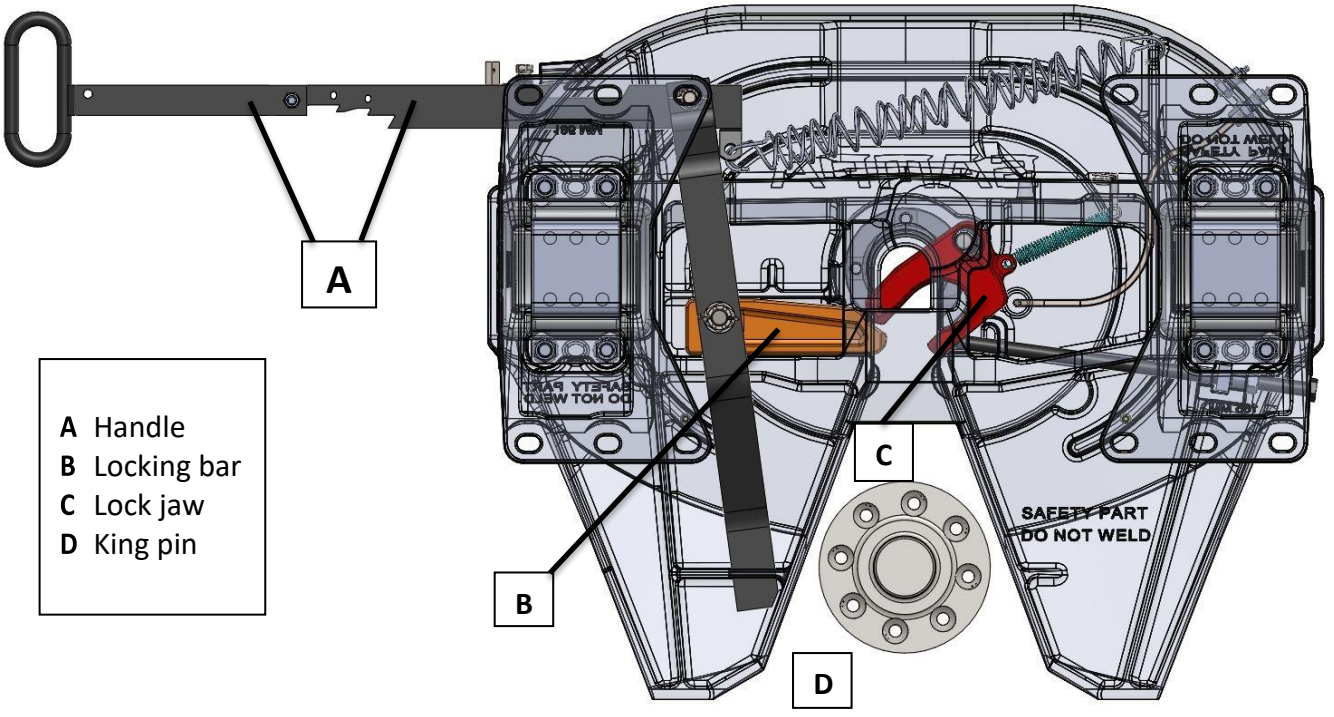
3. Operation

3.1 Closed and locked



A Handle
B Locking bar
C Lock jaw
D King pin

3.2 Ready for engagement



A Handle
B Locking bar
C Lock jaw
D King pin

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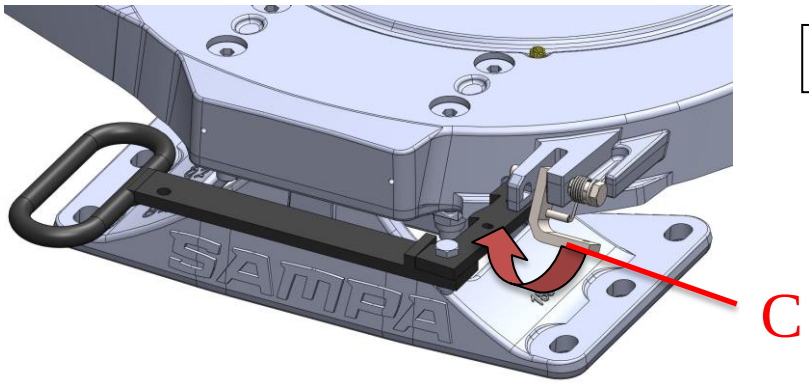
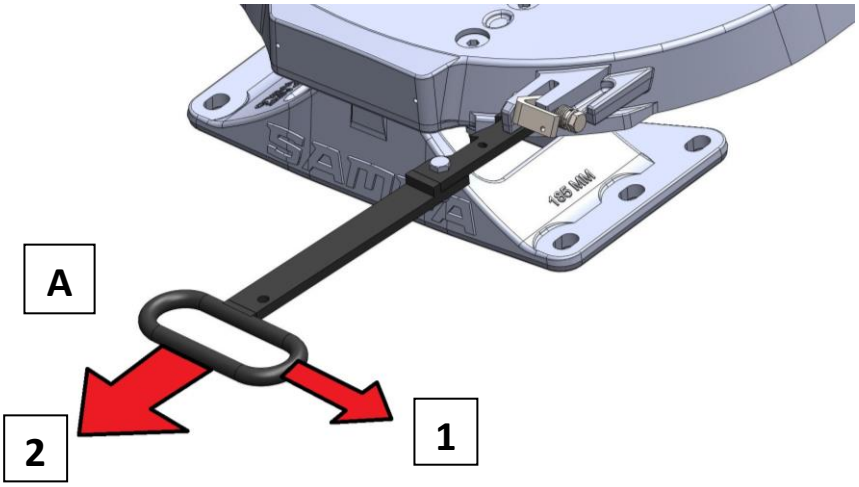
3.3 Opening

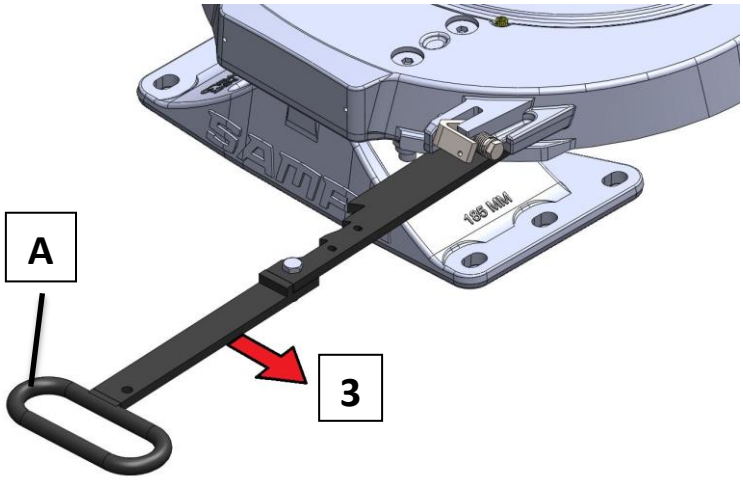


Lift the catch (C).

Swing the handle (A) towards the front into position **1** to release the lock.

Pull out the handle (A) as far as possible into position **2**.





With the handle (A) pulled out, swing it forwards into position **3** and engage it on the edge of the plate.

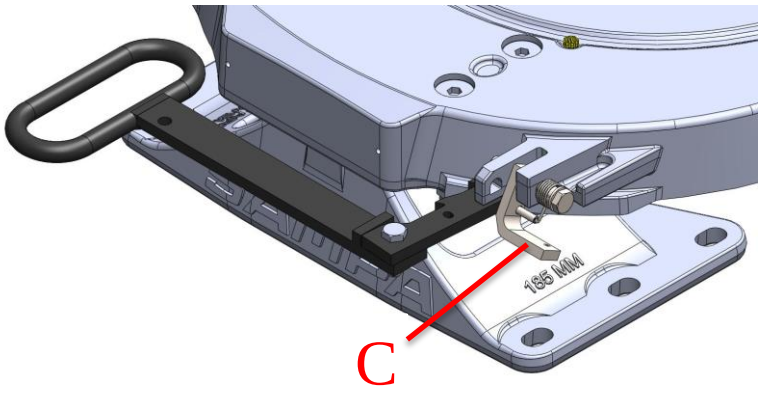
3.4 Coupling

- Secure the semi-trailer to prevent it from rolling away.
- The fifth wheel coupling must be ready to engage (see section 3.2). Otherwise open the fifth wheel coupling (see section 3.3).
- Check the height of the semi-trailer. The skid plate must ideally be at the same height as or no more than 50 mm lower than the coupling plate on the fifth wheel coupling.
- Drive the tractor unit under the semi-trailer.
- The locking mechanism will close automatically.
- Perform a moving-off test in a low gear.
- Check the locking mechanism (see section 3.6).
- Connect the supply lines.
- Retract the landing gear as described in the operating manual.
- Release the parking brake and remove the chocks.

3.5 Uncoupling

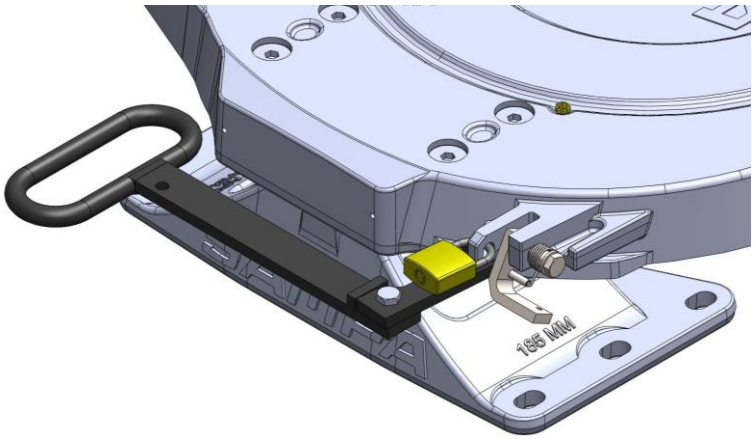
- Park the vehicle on flat, firm ground.
- Secure the semi-trailer to prevent it from rolling away.
- Extend the landing gear as described in the operating manual until the fifth wheel coupling has almost no strain on it.
- Disconnect the supply lines.
- Open the fifth wheel coupling (see section 3.3).
- Drive the tractor unit out from under the semi-trailer.
- The fifth wheel coupling is automatically ready for engagement again.

3.6 Checking the locking mechanism



The catch (C) must be down as shown.

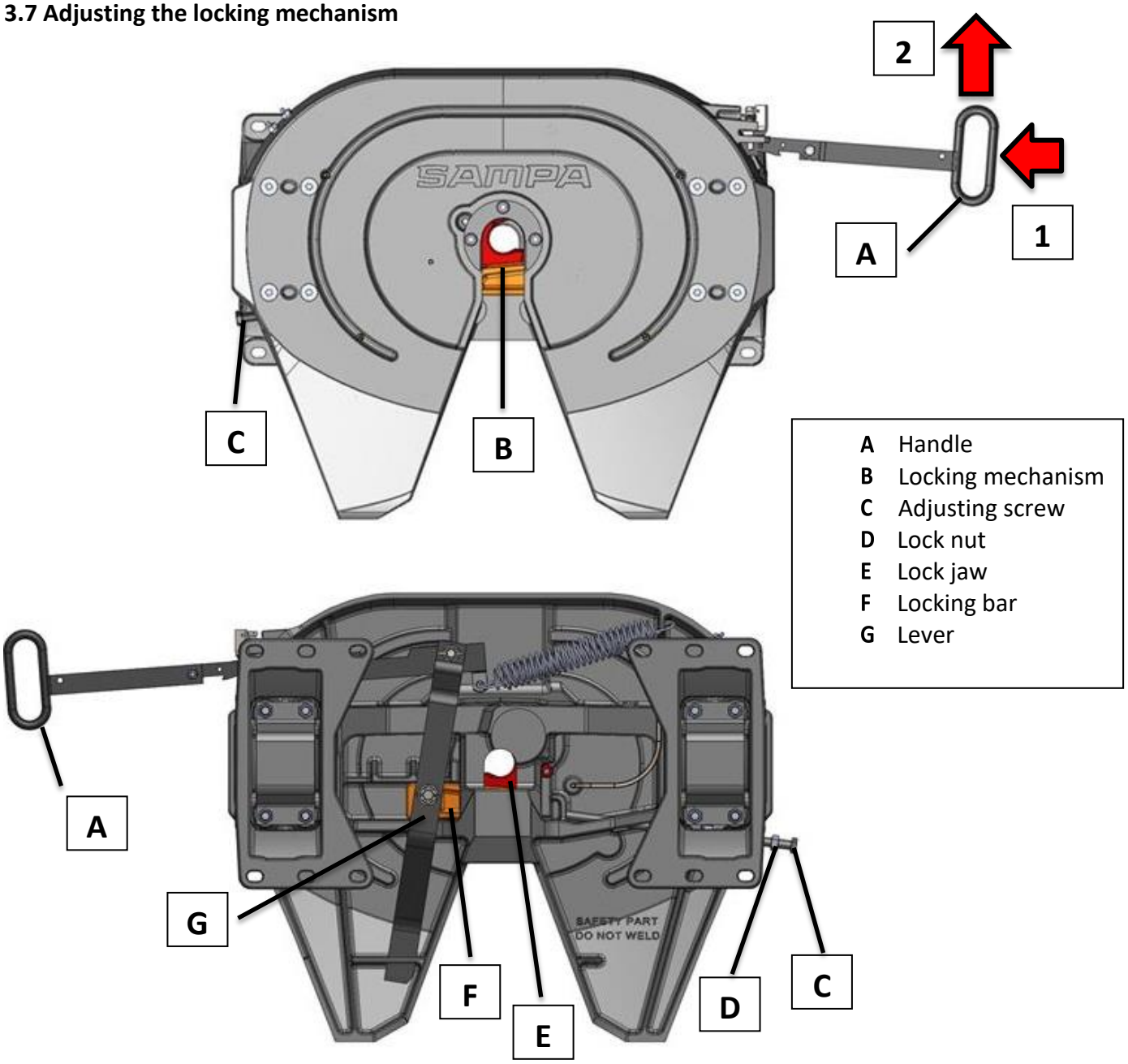
The skid plate must rest on the fifth wheel coupling without a gap.



Note

To prevent the fifth wheel coupling being opened without authorisation, a security device (for example a pad-lock) can be inserted into the hole in the latch holder as shown.

3.7 Adjusting the locking mechanism



The locking mechanism must be adjusted as follows using a semi-trailer without forced steering with a new king pin:

- Uncouple the tractor unit on a flat, firm piece of ground
- Undo the lock nut (D)
- Unscrew the adjusting screw (C) by approximately 15 turns
- Couple the semi-trailer up, if necessary lightly tapping the handle (A) in the closing direction **1** to bring the locking bar into its limit position
- Unlock the handle (A),swing it into position 2 and hold it there (get a helper to hold it)

- Tighten the adjusting screw (C) again until the handle (A) starts to move (have an assistant check this)
- To set the recommended basic play of 0.3 mm, tighten the adjusting screw (C) by a further 1.5 turns and secure it with the lock nut (D)
- Apply the semi-trailer brake
- Move off with the tractor and check the maximum play in the locking mechanism

Note: If there is still excessive play, the wearing ring and the lock jaw must be replaced.

4 Servicing and testing

4.1 Servicing

The skid plate on the semi-trailer that engages with the fifth wheel coupling must meet the following conditions to provide a long service life and trouble-free function:

- Max. 2 mm unevenness
- Adequate reinforcement must be assured
- Smooth and groove-free surface if possible, without weld bumps (smooth existing groove burr)
- Rounded or chamfered front and side edges
- Complete coverage of the fifth wheel coupling support area.

Effective lubrication of the top of the fifth wheel plate, the locking mechanism, the pivot bearing and the king pin (before using for the first time and after cleaning) is essential to ensure their long service life. We recommend applying a thin coat of grease to the skid plate.

Depending on the conditions in which it is used, the grease specification and metering used, at the latest every 50,000 km or every six months:

- Uncouple the semi-trailer
- Clean the fifth wheel coupling and the skid plate.
- Check the function of the central lubrication system as described in the manufacturer's instructions.
- Lubricate the fifth wheel coupling plate, wear parts and king pin with high- pressure grease (EP).

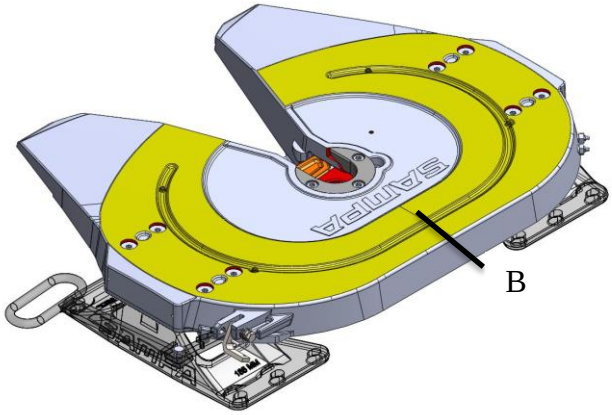
In addition, every 10,000 km grease the locking mechanism **– with a trailer attached –** using the grease nipple on the edge of the fifth wheel coupling plate.

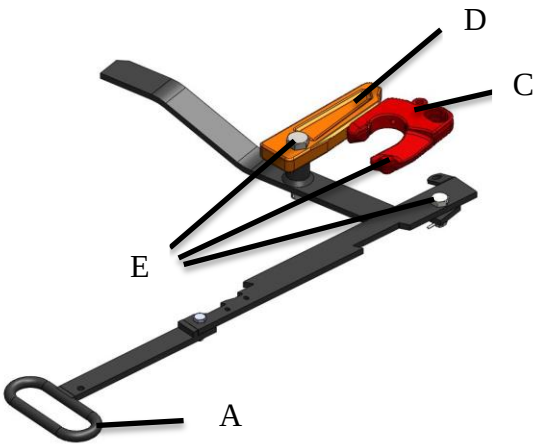
You can also install automatic lubricant dispensers. To prevent corrosion on the skid plate, we recommend that the skid plate is greased lightly during the above service intervals.

4.1.1 Grease specification

We recommend high-pressure grease (EP).

4.1.2 Lubrication





A Handle
B Coupling plate
C Lock jaw
D Locking bar
E Articulated connections and lever guide

Lubricate the areas marked in yellow.

- Handle (A) on the side and the articulated connections and lever guides (E).
- Generously lubricate the top side (B)
- Lubricate the lock jaw (C) and locking bar (D) with the fifth wheel coupling closed.

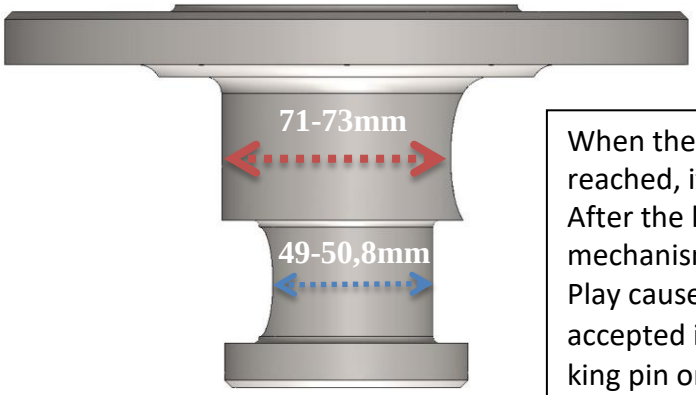
4.2 Testing

Depending on the conditions in which it is used, but at the latest every 50,000 km or every six months, the fifth wheel coupling, the mounting plate or slider, the king pin and their securing elements are to be checked to ensure that they are in good working condition, not suffering from wear, corrosion, damage or cracks and to be repaired if necessary. The securing elements are to be checked to ensure that they are tightened to the correct torque.

4.2.1 Wear check

Fifth wheel couplings and king pins are subject to more or less wear depending on the conditions in which they are used, and this wear is noticeable by play towards the front of the vehicle. Excessive play causes shocks and may lead to instability on the road and damage to the fifth wheel coupling, mounting plate, sliders and vehicle chassis.

The wear on the king pin must not be compensated by the adjustment facility.



When the wear limit on the king pin has been reached, it must be replaced.
After the king pin has been replaced, the locking mechanism **must be adjusted again**.
Play caused by wear on the king pin should either be accepted if within the permitted wear limit for the king pin or should be rectified by fitting a new king pin.

5. Safety

The relevant safety regulations in your country (for example Health & Safety at Work) apply for working with fifth wheel couplings, tractor units and semi-trailers. The appropriate safety information in the owner's handbook for the tractor unit and the semi-trailer are valid and must be followed. The following safety information applies to the operating, servicing and installation work. Safety information directly linked to the activity is listed again individually.

5.1 Safety information for operation

- The fifth wheel coupling may only be used by authorised persons.
- Only use the fifth wheel coupling and skid plate on the semi-trailer if they are in perfect technical condition.
- The skid plate must be larger than the support area of the fifth wheel coupling.

- The front of the skid plate must not be sharp, otherwise it may damage the fifth wheel coupling or the liner.
- Comply with the relevant safety regulations when connecting a semi-trailer, for example the Health and Safety at Work Regulations. Only connect a semi-trailer on firm, flat ground.
- The skid plate must be at the same height or preferably lower– no more than 50 mm lower – than the coupling plate on the fifth wheel coupling. Pressure losses in the air suspension may change the height of the semi-trailer.
- Check the locking mechanism before starting your journey to ensure that it is properly locked.
  Only drive the vehicle with the locking mechanism locked and secured, even when driving without a semi-trailer (solo driving).

5.2 Safety information for servicing

- Only use the specified lubricants for servicing work.
- The servicing work should only be completed by trained personnel.

5.3 Safety information for installation

- Do not change the installation area defined by the tractor unit's manufacturer.
- The installation work may only be completed by authorised specialists.
- Refer to the instructions issued by the vehicle manufacturer, for example the type of fastening, fifth wheel position, fifth wheel height, axle load, cavity, mounting plate, slider, etc.
- Follow the installation instructions supplied by the mounting plate and slider manufacturers.
- On vehicles that are used to transport hazardous goods, a ground connection must be put in place between the fifth wheel coupling and the vehicle chassis.

It is a basic principle that screw connections must be tightened to the specified tightening torque as the setting for the torque wrench acc. to DIN ISO 6789 in classes A or B.

The fifth wheel coupling must be installed on the vehicle in accordance with the requirements of Appendix 7 of Directive ECE R55-01.