
CA11 to CA200 Upgrade Instruction

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1 Introduction

The high voltage connection system CA200 has been specifically developed for pulsed power applications for magnetron modulators. The oil-filled construction gives a favourable voltage field distribution with low partial discharge and long service life.

1.1 Scope

This document contains instructions for how to upgrade the magnetron high voltage receptacle, from a CA11/CA11 brass to a CA200 high voltage connection system receptacle. The illustrations show CA11, but the same procedure is valid for CA11 brass. For instructions on how to connect the CA200 HV cable to the receptacle, refer to *DOC-020150, CA200 Installation and Oil Filling Instructions*.

2 Safety



WARNING



Electrical hazard. Make sure that the modulator is turned off and that the single-phase and three-phase incoming current are switched off before performing this procedure. Touching a live electrical wire or component can result in electric shock.

3 Required tools

The following tools are required for the upgrade (Table 1):

TOOL	SIZE
Torx screwdriver	T20, T25
Allen key	1.5 mm
Open end torque wrench (15 Nm)/fixed or adjustable wrench	36 mm
Fixed or adjustable wrench	21 mm
Cloth	-

Table 1 Required tools

4 Required material

The following material is required for the upgrade (Table 2):

ART NO	DESCRIPTION	COMMENT
027511	Conversion kit	Only for CA11
028045	Conversion kit	Only for CA11 brass
027512	Conversion tool kit	
-	Oil	

Table 2 Required material

4.1 Conversion kit components

The conversion kit consists of the following parts (Figure 1 and Table 3):

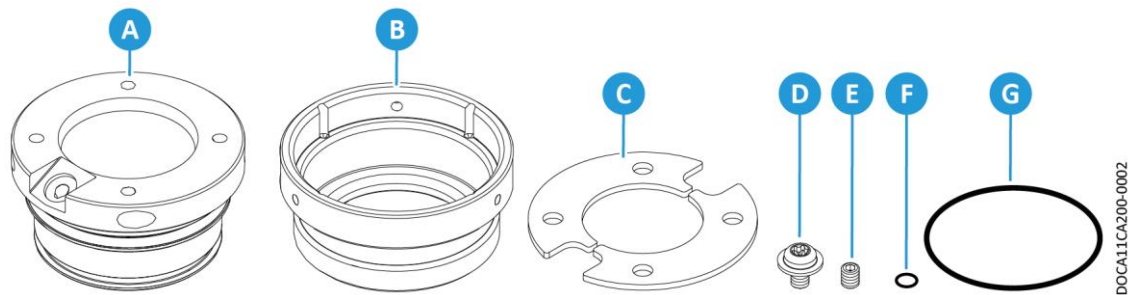


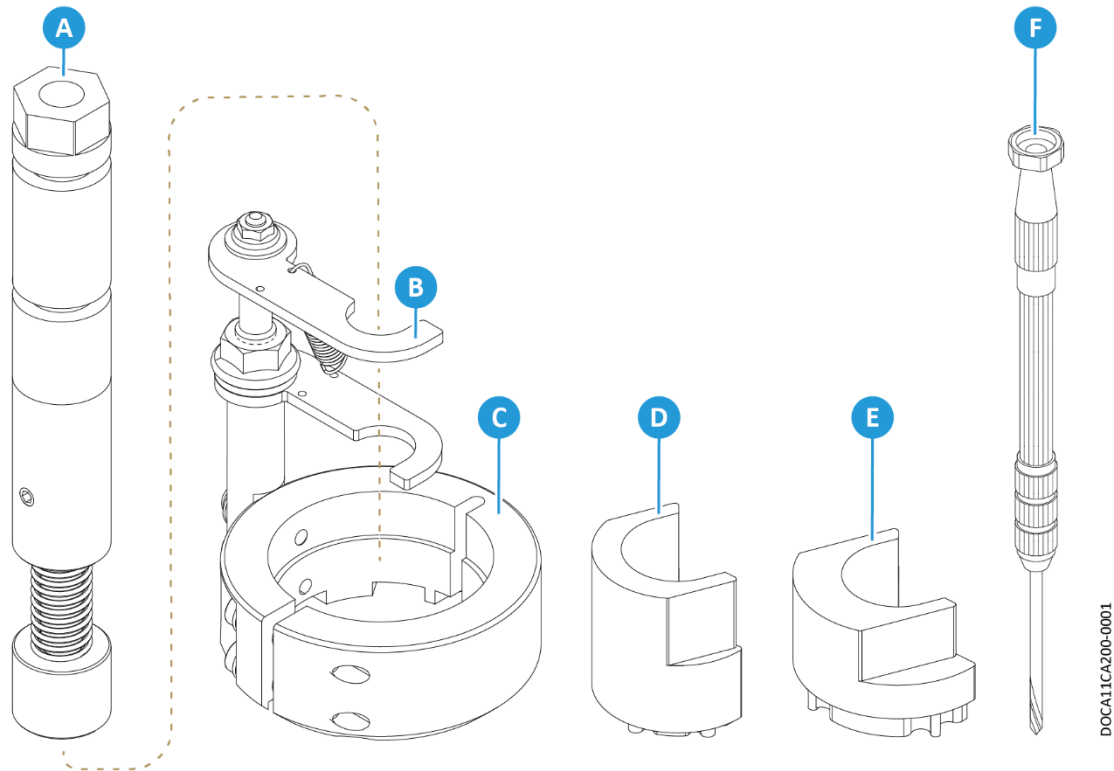
Figure 1 Conversion kit components

POS	NAME	QTY	COMMENT
A	Top flange CA200	1	
B	Clamp ring CA200	1	
C	Lock plate	2	
D	Screw	5	
E	Grub screw	3	
F	O-ring	1	For screw in vent opening
G	O-ring	2	For top flange CA200 and clamp ring CA200
-	Disposable gloves	1 pair	

Table 3 Conversion kit components

4.2 Conversion tool kit components

The conversion tool kit contains the following components (Figure 2 and Table 4):



DOCA11CA200-0001

Figure 2 Conversion tool kit components

POS	NAME	QTY
A	Pressure cylinder	1
B	Lock plate	2
C	Clamp ring	1
D	Socket tool, CA11	1
E	Socket tool, CA200	1
F	Reamer (2.16 mm)	1

Table 4 Conversion tool kit components

5 Prerequisites

The following preparations must be made before the upgrade is performed:

- The modulator must be turned off.
- The single-phase and three-phase incoming current must be switched off.
- The existing CA11 magnetron HV cable must be disconnected from the modulator.

6 Instruction

CAUTION



Risk of equipment damage. Make sure that the tank unit is placed upright, with the HV receptacle facing upwards, during the entire upgrade. If the tank unit is placed in any other direction there is a risk of air leaking into the system, or oil leaking out of it.

CAUTION



Risk of equipment damage. In this instruction, a reamer is used for removing corrosion from the receptacle sockets. The reamer can come loose from the handle and get stuck in a socket. To avoid this, make sure to use the reamer with a twisting motion – do not push it into the sockets with force.

CAUTION



Risk of equipment damage. In this instruction, a converter tool with a pressure cylinder is used to ensure constant pressure. If the pressure cylinder is tilted, there is a risk of air leaking into the system, or oil leaking out of it. Do not tilt the pressure cylinder in any direction - it must be kept vertical until removed.

NOTE

In this instruction, the **magnetron** HV receptacle is upgraded. The placement of the magnetron HV receptacle differs depending on if the modulator is equipped with an E-gun output or not. Pay attention to the markings on the modulator, as the magnetron and E-gun HV receptacles look similar.

6.1 Remove the CA11 clamp ring

1. Place the tank unit with the HV receptacle facing upwards.

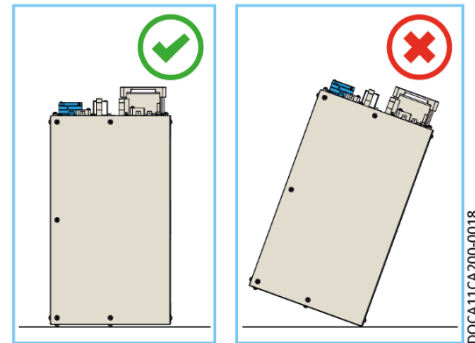


Figure 3

2. If the tank unit is equipped with an E-gun HV output, the oil pump can be in the way during the upgrade. If preferred, remove the oil pump to ease access:
 - a. Disconnect the oil pump connector.
 - b. Remove the two screws and the bracket holding the oil pump using a T20 screwdriver.
 - c. Remove the oil pump.

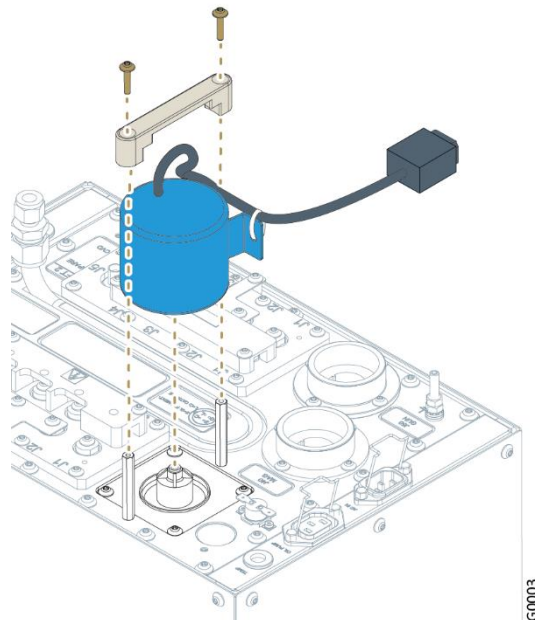


Figure 4

3. In the magnetron HV receptacle (marked **MAGNETRON** or **MAG**), inspect the receptacle sockets for corrosion. Carefully remove any existing corrosion using the reamer.

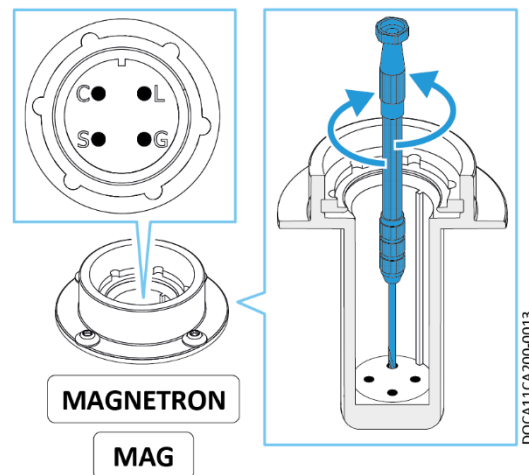


Figure 5

4. Remove any metal shavings and dust from the receptacle using compressed air or a cloth.
5. Place the clamp ring of the converter tool on the magnetron HV receptacle (marked **MAGNETRON** or **MAG**).

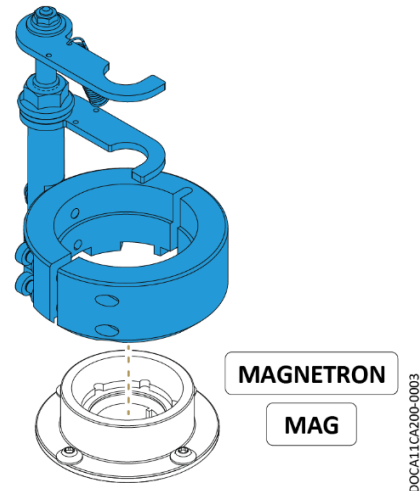


Figure 6

6. Tighten the two screws at the side of the clamp ring using a T25 screwdriver.

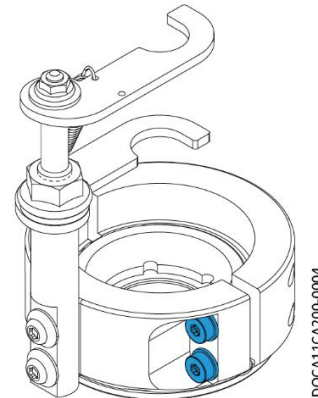


Figure 7

7. Mount the pressure cylinder:
 - a. Insert the pressure cylinder into the clamp ring and align it with the key in the socket.
 - b. Push the pressure cylinder down until it reaches the bottom of the socket, and the marking on the cylinder is aligned with the top surface of the clamp ring.
 - c. Secure the pressure cylinder with the lock plates.

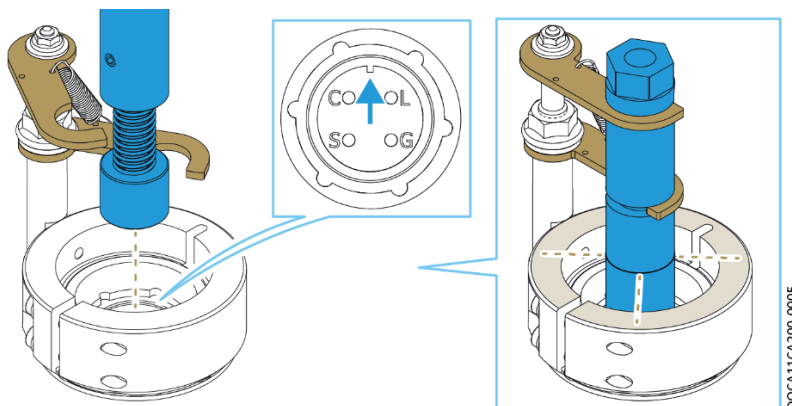


Figure 8

8. Loosen the CA11 clamp ring from the receptacle using the CA11 socket tool and a 36 mm wrench. Make sure that the pressure cylinder does not rotate with the clamp ring - if necessary, hold the pressure cylinder in place with a 21 mm wrench.

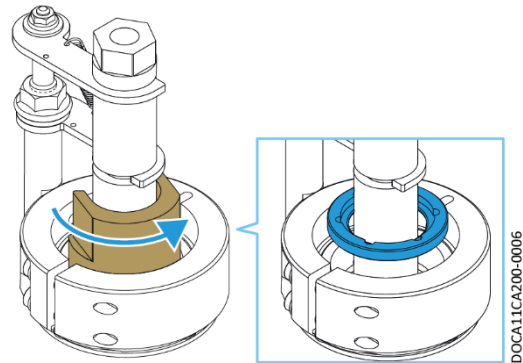


Figure 9

9. Remove the CA11 clamp ring from the pressure cylinder by passing it through one lock plate at a time. Do not open both lock plates at the same time - the closed lock plate ensures constant pressure.

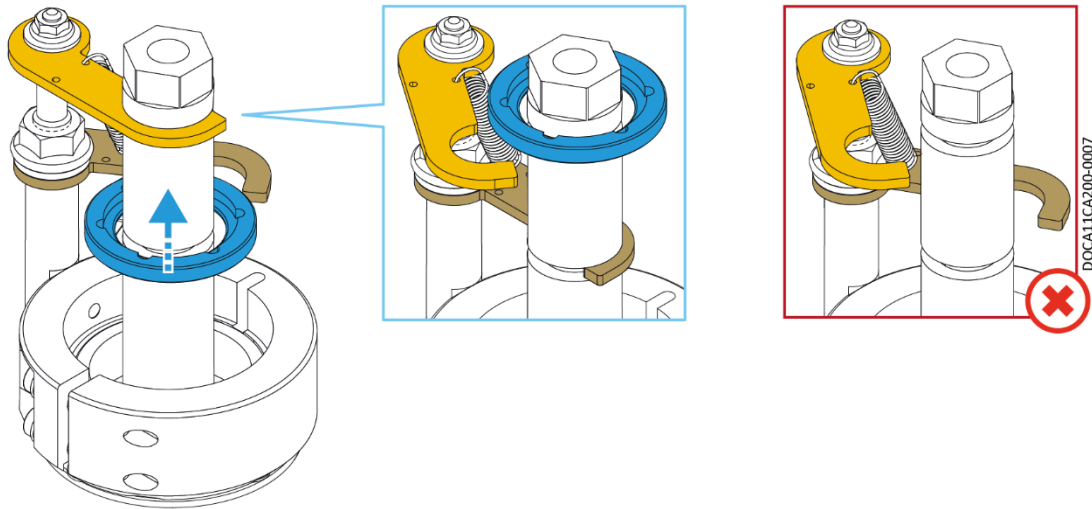


Figure 10

6.2 Mount the CA200 clamp ring and top flange

1. Oil an O-ring and place it in the dedicated groove at the bottom of the CA200 clamp ring.

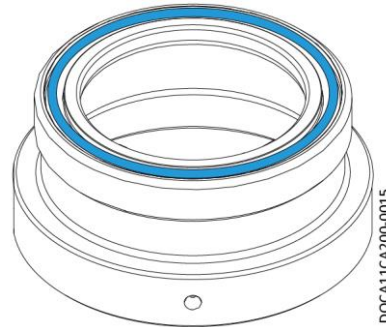


Figure 11

2. Bring the CA200 clamp ring down over the pressure cylinder with the O-ring facing downwards, through one lock plate at a time.

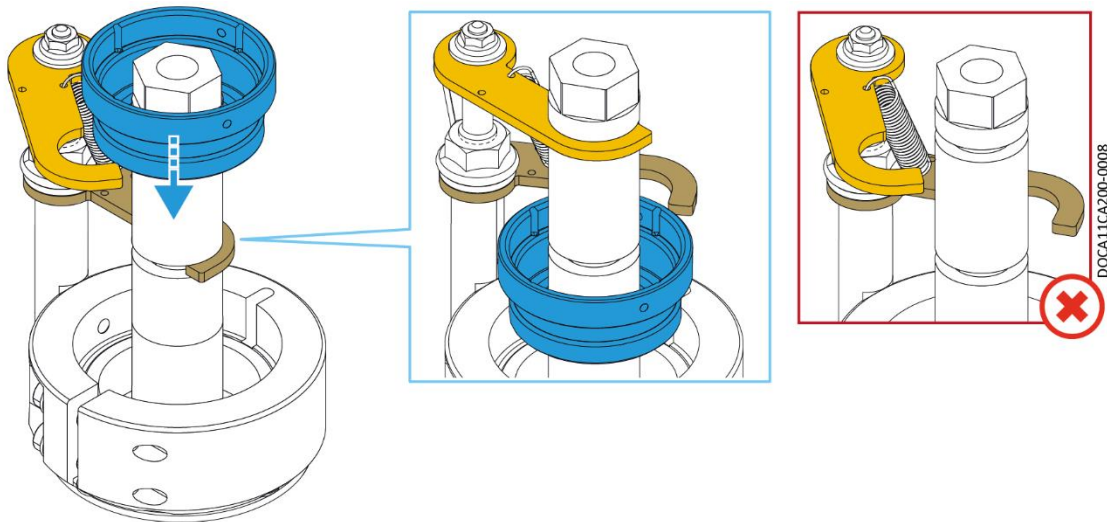


Figure 12

3. Mount the CA200 clamp ring on the receptacle using the CA200 socket tool and a 36 mm open end torque wrench. Tighten the clamp ring to 15 Nm. Make sure that the O-ring stays in the groove and that the pressure cylinder does not rotate with the clamp ring - if necessary, hold the pressure cylinder in place with a 21 mm wrench.

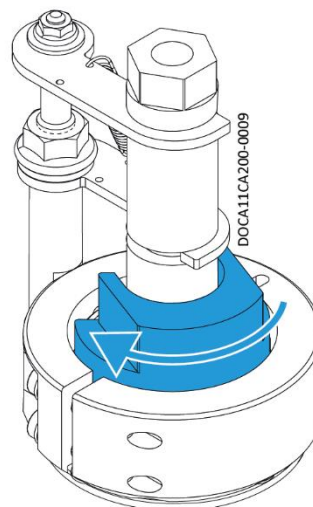


Figure 13

4. Remove the pressure cylinder, socket tool and clamp ring (loosen the screws first) from the receptacle.

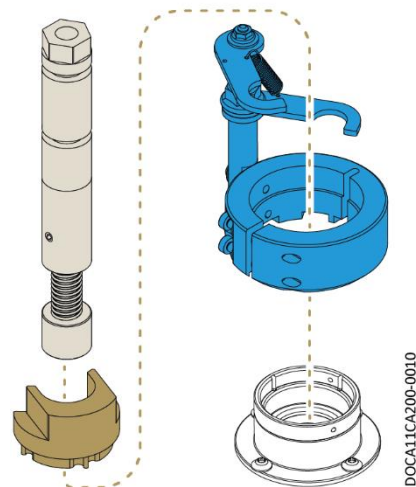


Figure 14

5. Mount an O-ring in the dedicated groove at the bottom of the top flange.

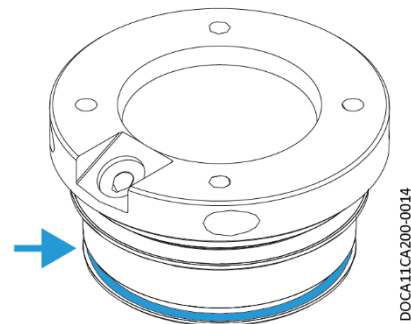


Figure 15

6. Place the top flange on top of the clamp ring and press it down.

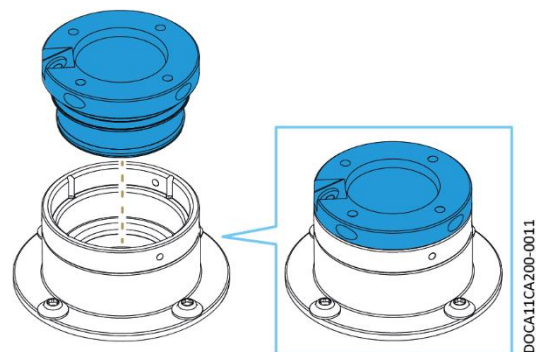


Figure 16

7. Mount the three grub screws using an 1.5 mm Allen key, but do not tighten them fully.

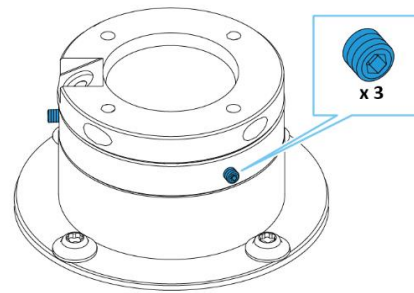


Figure 17

8. Optional: Mount the small O-ring on one of the screws, and insert the screw into the vent opening. Tighten the screw a few turns.

✓ NOTE
If the CA200 HV cable shall be installed immediately, it is not necessary to mount the screw, O-ring or lock plates yet. They shall all be temporarily removed before installation of the cable.

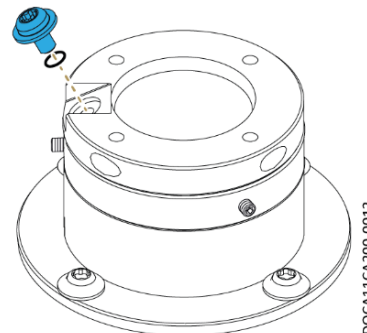


Figure 18

9. Optional: Mount the lock plates on the top flange with the remaining screws.

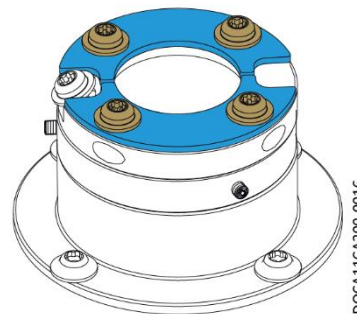


Figure 19

10. If applicable, mount the oil pump:
- Put the oil pump in place.
 - Mount the bracket with the two screws.
 - Connect the oil pump connector and secure it.

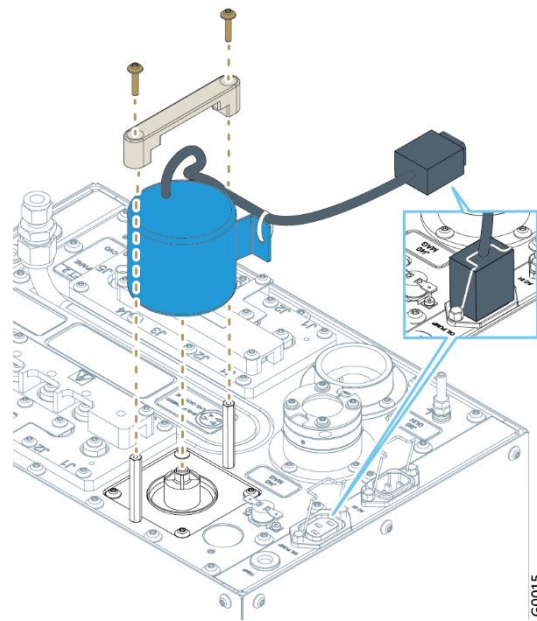


Figure 20