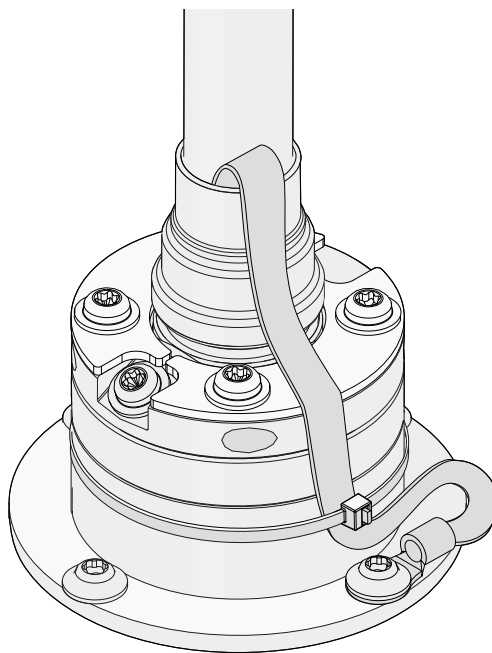




CA200

Installation And Oil Filling Instructions



Copyright © 2025 ScandiNova Systems, Nodica Group AB

The information contained in this document is of a proprietary and confidential nature and is intended only for the acquiring organization to which it is directly transmitted by ScandiNova Systems, Nodica Group AB. Any reproduction of this document, in whole or part, or the divulgence of any of its contents without the prior written consent of ScandiNova Systems, Nodica Group AB is prohibited. This document is subject to change without notice.

Table of Contents

1. Introduction	1
1.1. About This Manual	1
1.2. Manufacturer	1
2. Safety Information	2
2.1. Introduction	2
2.2. Definitions of Alert Levels	2
2.3. Explanation of Safety Symbols Used In the Manual	2
2.4. Safety Instructions	3
3. Prerequisites	4
3.1. Tools	4
3.2. Parts And Material	4
4. Instruction	6
4.1. Adjust the Receptacle Vent Opening	6
4.2. Mount the Connector and Fill the Receptacle With Oil	8
4.3. Remove Air From the Receptacle	11
4.4. Finish the HV Pulse Cable Installation	12

List of Tables

1. Safety Symbols in This Manual	2
2. Tools	4
3. Parts And Material	4
4. CA200 HV Receptacle and Cable Components	4
5. Oil Filling Kit Components	5

1. Introduction

1.1. About This Manual

This document contains instructions for how to connect the CA200 connector to the HV receptacle on a ScandiNova M100-i or M100D-i Modulator, and fill the HV receptacle with oil. The instruction shall be carried out every time the connector is connected. For instructions on connecting the CA200 connector to an M060, M110 or M110-RT Modulator, refer to *M060 Instructions for Use (DOC-030846)* or *M110 / M110-RT Installation And Maintenance Manual (DOC-022677)* respectively.

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.

The reader is expected to be familiar with, and comply to, local regulations about electrical work.

Before performing this procedure, make sure to read and understand this manual.

Cables and connectors that are not relevant for this replacement procedure may be omitted from the illustrations for clarity.

In some illustrations, symbols with the following meanings are used:

 = Correct, do this  = Wrong, do not do this

If you have any suggestions about how this manual can be improved, please let us know. Send an email to techdoc@scandinovasystems.com, clearly stating the following information:

- The name, document number and edition of the manual.
- The proposed change including information about affected page/chapter/figure.

Keep the manual for future reference.

1.2. Manufacturer

ScandiNova Systems, Nodica Group AB	Telephone: +46 (0)18 480 59 00
Tysnittsgatan 15	E-mail: quality@scandinovasystems.com
754 54 Uppsala	www.scandinovasystems.com
Sweden	

2. Safety Information

2.1. Introduction

This section contains important information for your safety and prevention of injury. Make sure to read and understand this information and to comply with it when handling the Modulator. The information in this manual shall however in no way take precedence over individual responsibilities or local regulations. During operation and other work with a machine it is always the responsibility of the individual to consider:

- The safety of all persons concerned.
- The safety of the machine and other property.
- The protection of the environment.

2.2. Definitions Of Alert Levels

The following alert levels are used in ScandiNova's manuals:



Warning

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. When applicable, the nature of the hazard is specified using one of the symbols described in [Section 2.3: Explanation of Safety Symbols Used In the Manual](#).



Caution

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or equipment damage. When applicable, the nature of the hazard is specified using one of the symbols described in [Section 2.3: Explanation of Safety Symbols Used In the Manual](#).



Note

Additional information or tips on how to perform a procedure.

2.3. Explanation Of Safety Symbols Used In The Manual

The following safety symbols may occur in ScandiNova's manuals:

Table 1. Safety Symbols in This Manual

Symbol	Description	Symbol	Description
	General warning, refer to the text for information		Risk of X-ray radiation
	Electrical hazard		Toxic material
	Risk of RF radiation		

2.4. Safety Instructions



Warning - Electrical Hazard

Before performing this replacement, switch off the single-phase and three-phase power and wait for 5 minutes (minimum) to allow all voltages to decay to safe levels. Touching a live electrical wire or component can result in electric shock.

3. Prerequisites

3.1. Tools

Table 2. Tools

TOOL	SIZE
Torx screwdriver	T20
Allen key	1.5 mm

3.2. Parts And Material

Table 3. Parts And Material

Item	Qty	Specification
CA200 HV Cable	1	-
Oil Filling kit	1	Art. no 027510
Cable Tie	1	-
Paper wipes	-	-

3.2.1. Components

3.2.1.1. Receptacle and Cable

The CA200 HV receptacle and HV pulse cable consist of the following components:

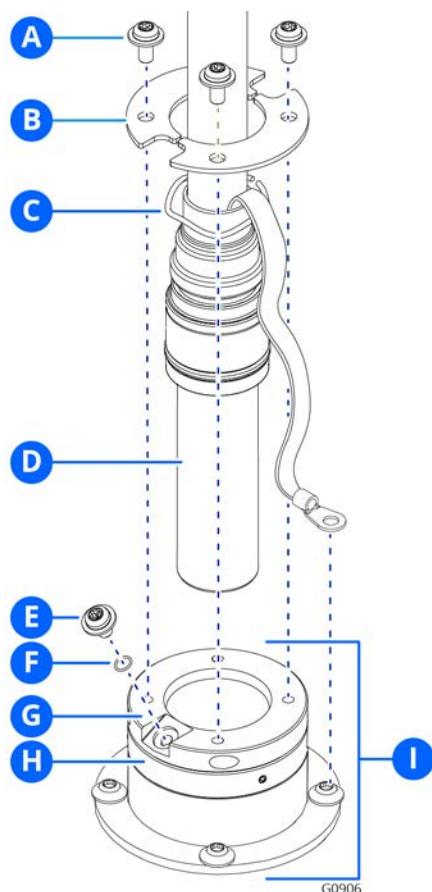


Table 4. CA200 HV Receptacle and Cable Components

Pos	Name	Qty	Comment
A	Screw	4	
B	Lock plate	2	
C	Wavy spring	1	
D	Connector	1	
E	Vent screw	1	
F	O-ring (on vent screw)	1	
G	Top flange	1	
H	Clamp ring	1	
I	Receptacle	1	

Figure 1. CA200 HV receptacle and cable components

3.2.1.2. Oil Filling Kit

The oil filling kit contains the following components:

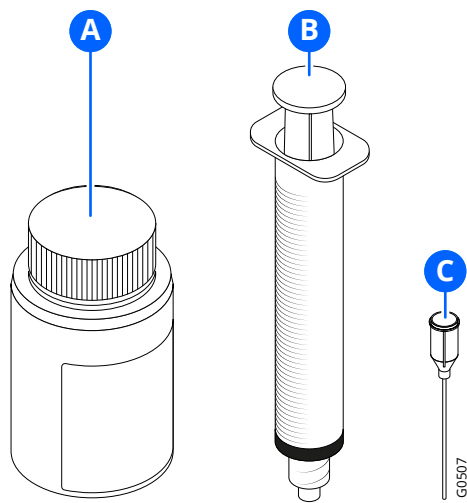


Figure 2. Oil filling kit components

Table 5. Oil Filling Kit Components

Pos	Name	Qty
A	Silicone oil	30 ml
B	Syringe	1
C	Syringe needle	1
-	Disposable gloves	1 pair

4. Instruction



Caution - Risk Of Equipment Damage

If the Modulator is equipped with an optional E-gun output, connecting the magnetron or E-gun to the wrong output can cause serious damage to the connected equipment.



Note

Visit scandinovasystems.com/service-support to see an instruction video of this task.

4.1. Adjust The Receptacle Vent Opening

1. Place the Tank Unit so that the tank lid surface is vertical or inclined (in any direction). The angle between one side of the Tank Unit and the underlying surface shall be 0-80°.



Note

Placing the Tank Unit upright so that the tank lid surface is horizontal may hinder air removal in later steps.

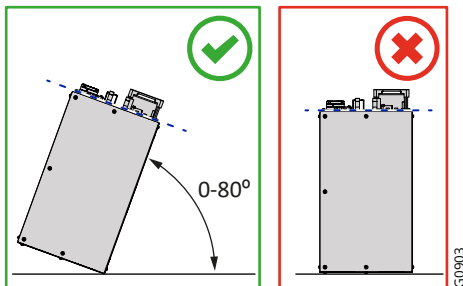


Figure 3.

2. Remove the lock plates from the top flange of the connector marked **MAGNETRON** using a TX20 screwdriver. Keep the lock plates and screws for later.

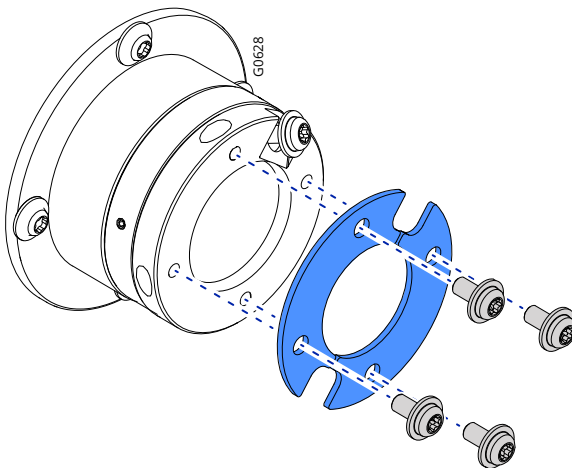


Figure 4.

3. Remove the vent screw including o-ring from the top flange using a TX20 screwdriver. Keep the screw and o-ring for later.

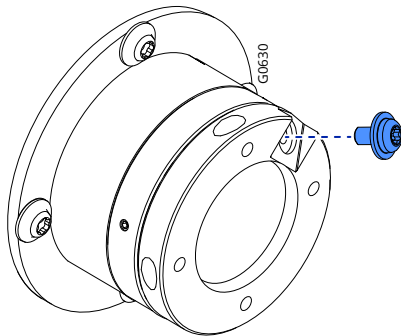


Figure 5.

4. Release the three grub screws on the clamp ring at least two turns using a 1.5 mm Allen key.

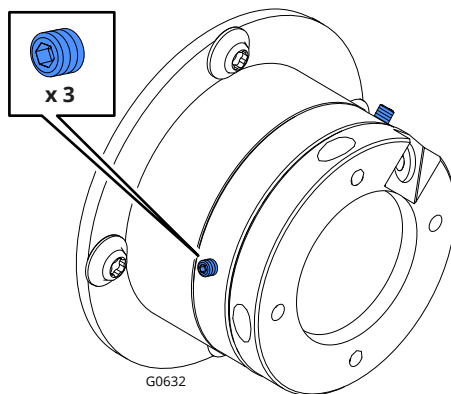


Figure 6.

5. Turn the top flange until the vent opening is at the highest point of the receptacle (correct position depends on how the Tank Unit is inclined). Place a TX20 screwdriver in the designated holes to assist rotation.

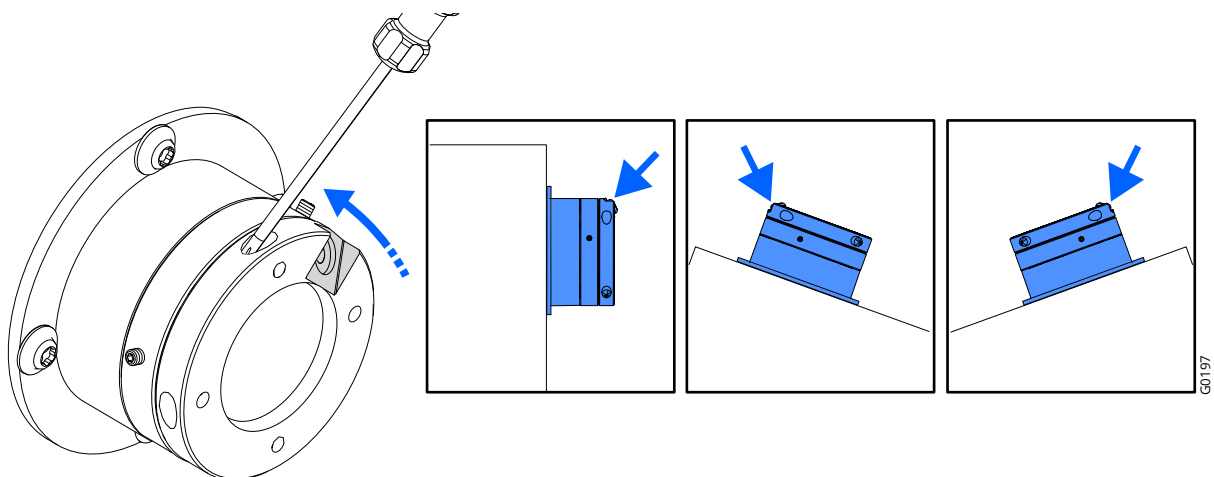


Figure 7.

6. Tighten the three grub screws on the clamp ring.

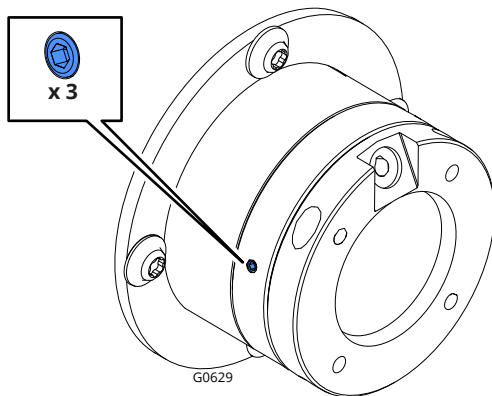


Figure 8.

4.2. Mount The Connector And Fill The Receptacle With Oil



Caution - Risk Of Equipment Damage

No other oil than the silicone oil provided in the oil filling kit may be used for this procedure.



Caution - Risk Of Personal Injury

There is a risk of oil splashing when the receptacle is filled with oil. Use appropriate personal protective equipment.



Caution - Risk Of Equipment Damage

The silicone oil is hygroscopic. To prevent contamination, make sure to keep the oil container closed when not in use. Using contaminated oil can cause equipment damage.

1. Mount the needle on the syringe and fill the syringe with 10 ml of silicone oil from the oil filling kit.

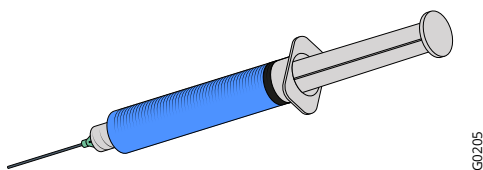


Figure 9.

2. Lubricate the connector x-ring with a drop of the silicone oil. Spread the oil over the entire x-ring.

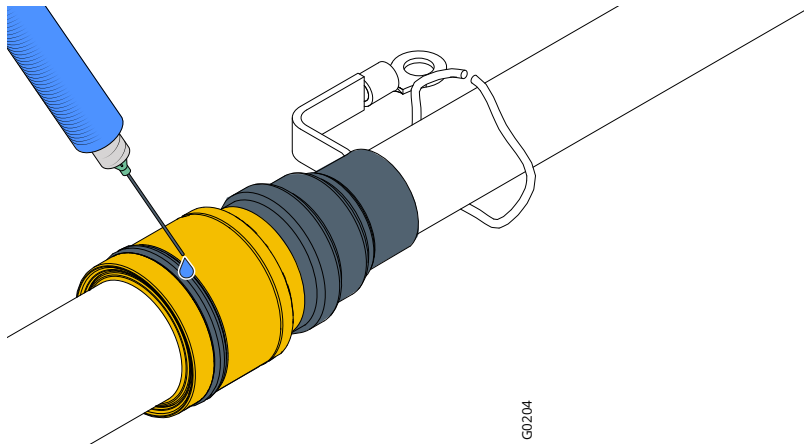


Figure 10.

3. Insert the connector into the receptacle, making sure that the keying on the connector and receptacle matches. Push and rotate the connector until it is fully inserted, then pull it outwards until the first marking ring of the connector is aligned with the surface of the top flange.

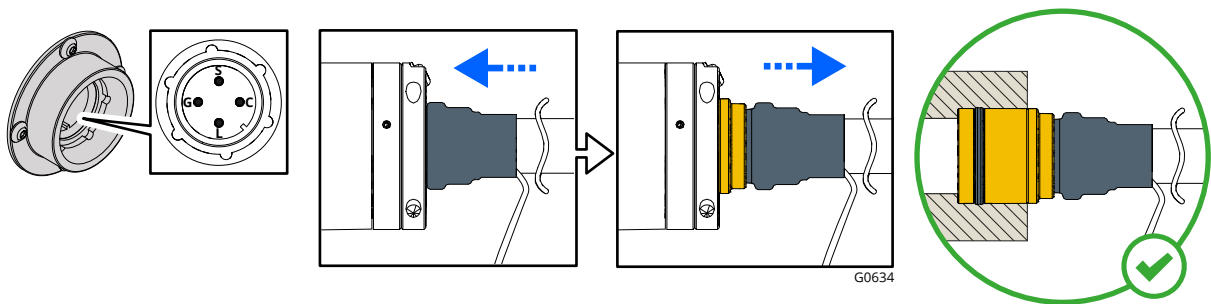


Figure 11.

4. Insert the syringe needle into the vent opening and slowly inject about 10 ml of the oil, until the receptacle is full and oil seeps out of the vent opening – it should take approximately 30 seconds. If silicone oil seeps out early in the process, the oil is injected too fast.

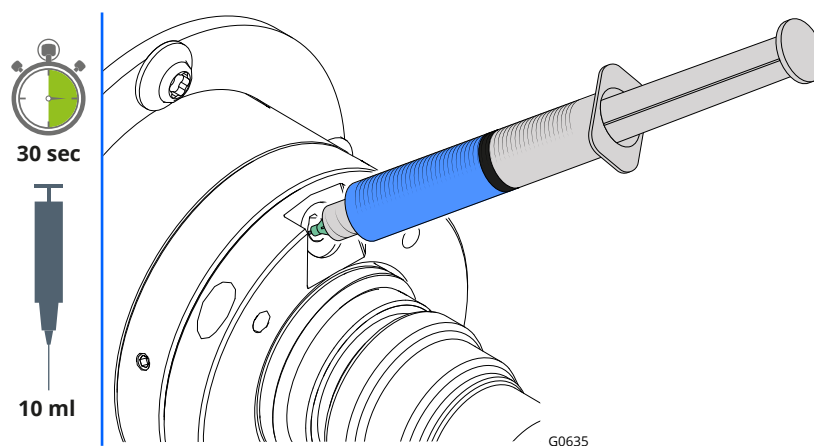


Figure 12.

5. Insert the vent screw including o-ring into the vent opening and tighten it a few turns (leave it 1-2 mm open).

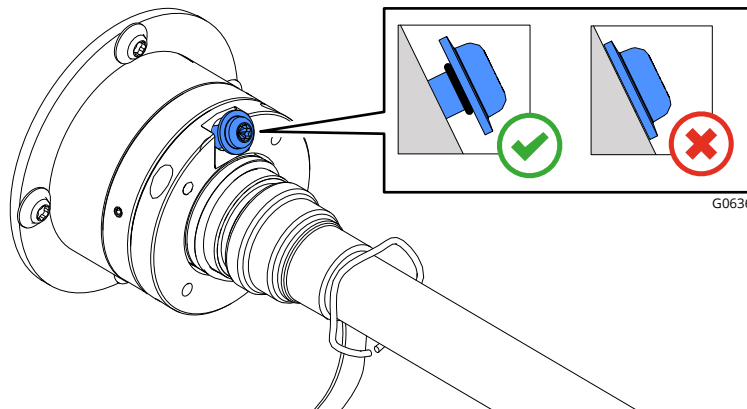


Figure 13.

6. Slowly push the connector further into the receptacle, until oil seeps out around the vent screw and the first marking ring is placed slightly below the surface of the top flange (max ~0.5 mm). Wipe off the excessive silicone oil with paper wipes.

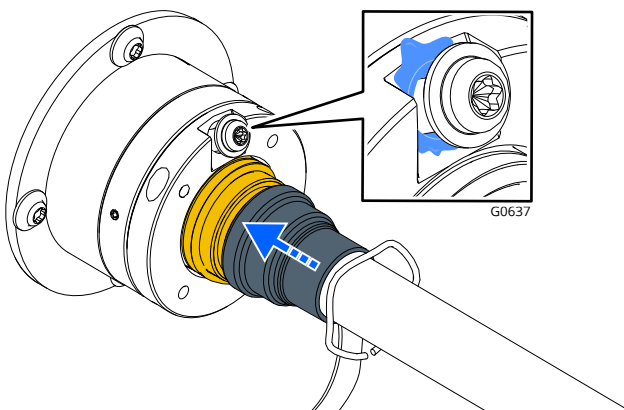


Figure 14.

7. Mount one of the lock plates with one screw (leave the wavy spring on the cable for now) using a TX20 screwdriver. Wait for 30 seconds to allow the oil to settle before proceeding.

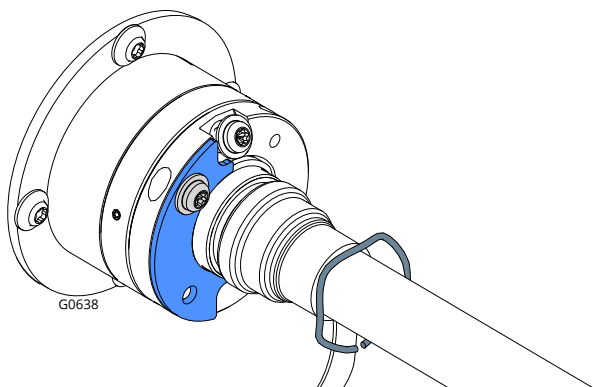


Figure 15.

4.3. Remove Air From The Receptacle

1. With the vent screw open, push the connector approximately 1 mm further into the receptacle, until oil seeps out around the vent screw. Wipe off the excessive silicone oil with paper wipes.

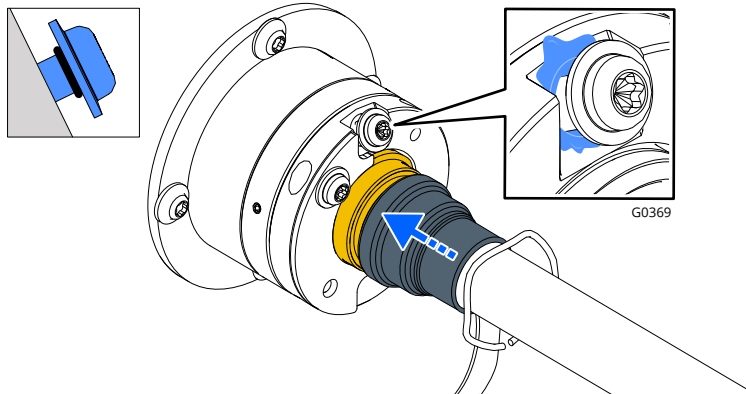


Figure 16.

2. Tighten the vent screw, then gently pull the connector outwards until it comes to a stop against the lock plate. Hold the connector still for a few seconds, then release the cable (without pushing the connector back in).

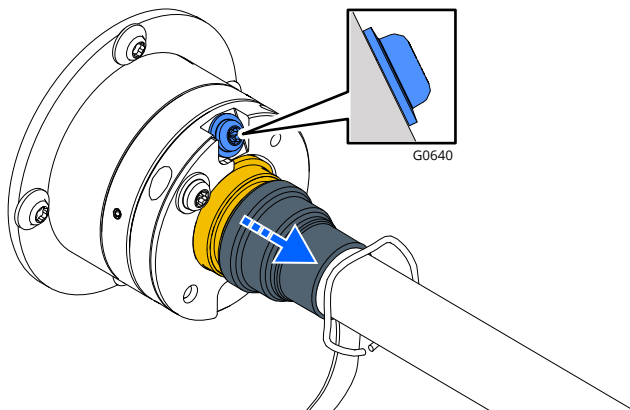


Figure 17.

3. Repeat steps 1-2 two to four times, each time pushing the connector a bit further into the receptacle, until it reaches the bottom. When the connector returns into the receptacle by itself when released in step 2, proceed to the next section.

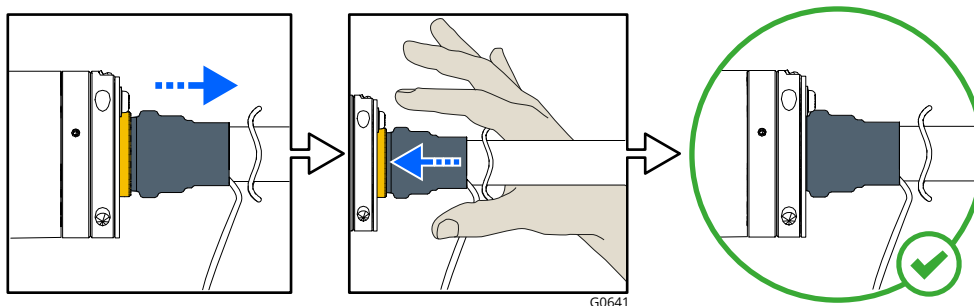


Figure 18.

4.4. Finish The HV Pulse Cable Installation

1. Remove the lock plate.

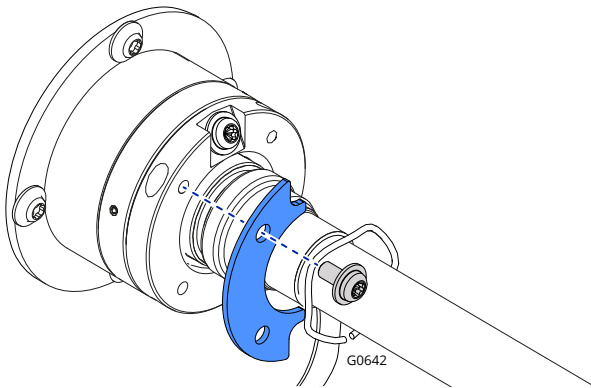


Figure 19.

2. Put the wavy spring in place inside the receptacle.

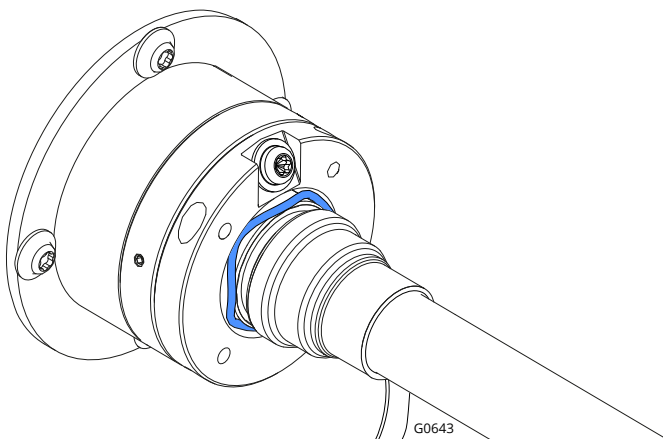


Figure 20.

3. Mount the two lock plates over the wavy spring with the four screws, using a TX20 screwdriver.

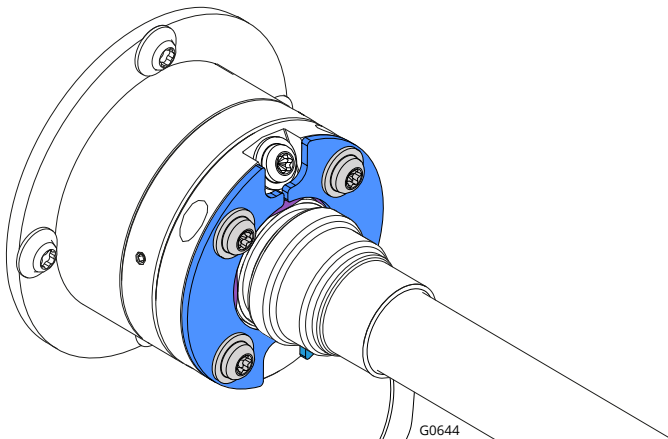


Figure 21.

4. Attach the ground braid to the base of the receptacle using one of the existing screws.

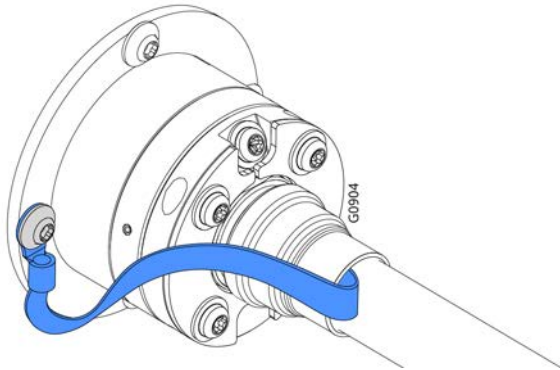


Figure 22.

5. Secure the ground braid to the receptacle using a cable tie (not included in the kit).

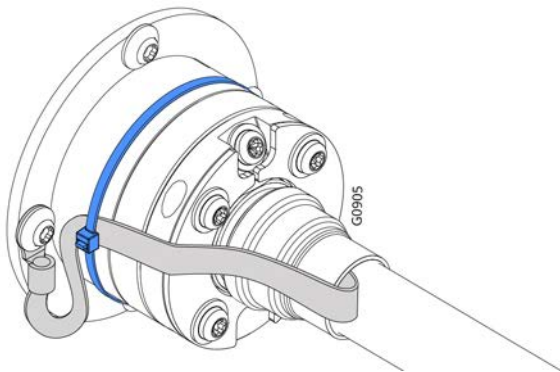


Figure 23.