

# GFA-COT

Geared Front Attachment

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Valid from Serial No. -

## Product Instructions

Closed-end and Offset  
Geared Front Attachments



### WARNING

#### **Read all safety warnings and instructions**

Failure to follow the safety warnings and instructions may result in electric shock, fire and/or serious injury.

**Save all warnings and instructions for future reference**

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## Product Information

### General Information

#### **WARNING Risk of Property Damage or Severe Injury**

Ensure that you read, understand and follow all instructions before operating the tool. Failure to follow all the instructions may result in electric shock, fire, property damage and/or severe bodily injury.

- ▶ Read all Safety Information delivered together with the different parts of the system.
- ▶ Read all Product Instructions for installation, operation and maintenance of the different parts of the system.
- ▶ Read all locally legislated safety regulations regarding the system and parts thereof.
- ▶ Save all Safety Information and instructions for future reference.

### Safety Signal Words

The safety signal words **Danger**, **Warning**, **Caution**, and **Notice** have the following meanings:

DANGER	DANGER indicates a hazardous situation which, if not avoided, <b>will</b> result in death or serious injury.
WARNING	WARNING indicates a hazardous situation which, if not avoided, <b>could</b> result in death or serious injury.
CAUTION	CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	NOTICE is used to address practices not related to personal injury.

### Country of Origin

For the Country of Origin, please refer to the information on the product label.

### Overview

#### System Description

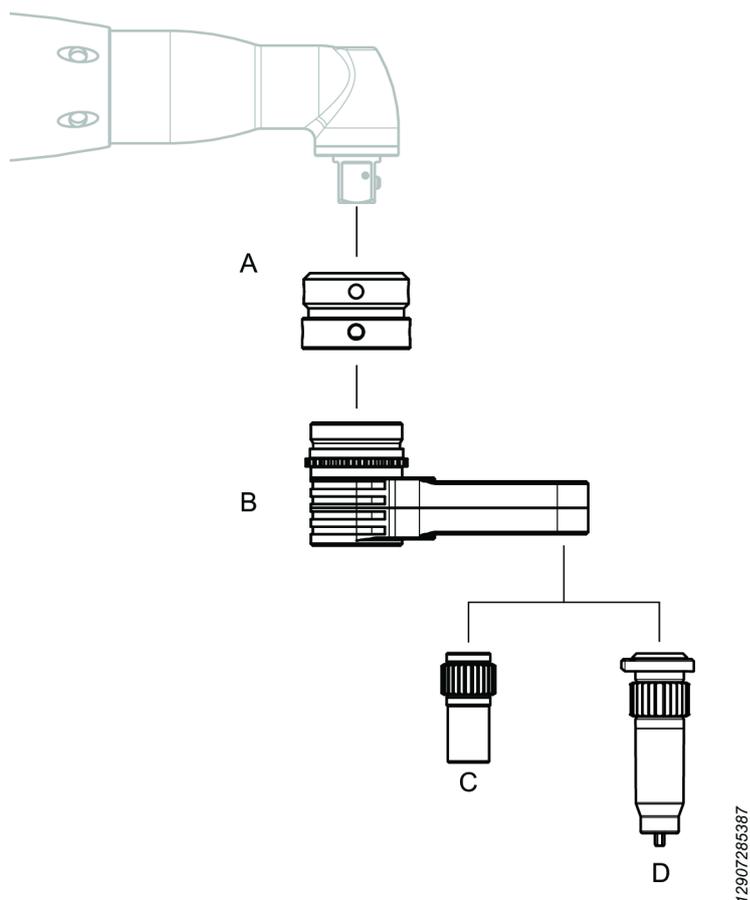
The Gear Front Attachment (GFA) system is used for tightening and loosening of screws and nuts. The system can be used for screw connections in locations that are difficult to access.

The tightening operation is controlled by a separate drive unit to which the system is fitted. The drive unit can be of either pneumatic or electric type.

The modular structure of the system allows for a wide range of configurations available for different screw connections and tightening processes.

#### System Components

The modular GFA system is made up of the following main components:



Position	Component	Function
<b>A</b>	Adapter	<p>With an adapter the GFA system can be fitted to different interfaces. The interface varies depending on the drive unit model. The adapter can be of either fixed index or quick index type.</p> <p>With a fixed index adapter the angle of the GFA system is specified from the factory. With a quick index adapter the operator can easily change the angle depending on the application.</p>
<b>B</b>	Gear Front Attachment (GFA) module	<p>The GFA module comprises a housing which contains a number of gears, that is, the gear stage. The gear stage depends on the length of the GFA module. The output gear, or output socket, can be of type open-end or closed-end.</p> <p>The open-end type can be used for pipe and hose connections. The closed-end type is used for regular screw connections.</p>
<b>C</b>	Standard Socket	With different sockets the GFA system can be used for various screw profiles.
<b>D</b>	Hold and Drive Socket	With a hold and drive socket the screw is kept fixed while the nut is being tightened.

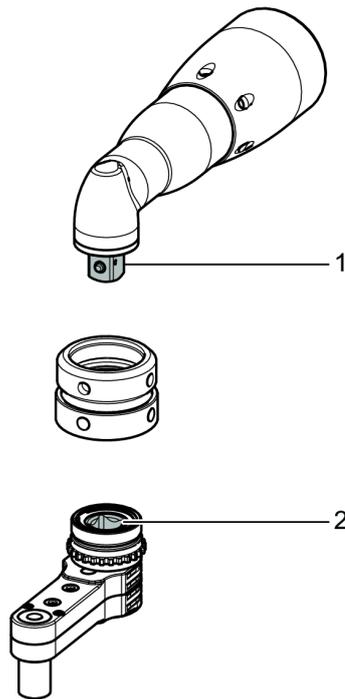
#### GFA System Components

# Installation

## Installation Instructions

### Assembly Instructions

The assembly procedure varies depending on the configuration. Make sure that the square drive of the drive unit (1) matches the input gear profile (square hole) of the GFA module (2).

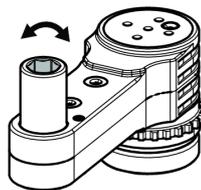


### Functional Test

Perform a functional test before the first tightening operation, and after any performed maintenance activities.

#### To perform a functional test:

1. Turn the output gear wheel by hand. It should be turned easily.



2. If it is hard to turn, open the housing and check that all components are in the correct position.

3. Grease the system.

## Operation

### ***Ergonomic Guidelines***

Consider your workstation as you read through this list of general ergonomic guidelines to identify areas for improvement in posture, component placement, or work environment.

- Take frequent breaks and change work positions frequently.
- Adapt the workstation area to your needs and the work task.
  - Adjust for a convenient reach range by determining where parts and tools need to be located to avoid static load.
  - Use workstation equipment such as tables and chairs appropriate for the work task.
- Avoid work positions above shoulder level or with static holding during assembly operations.
  - When working above shoulder level, reduce the load on the static muscles by lowering the weight of the tool, using for example torque arms, hose reels or weight balancers. You can also reduce the load on the static muscles by holding the tool close to the body.
  - Take frequent breaks.
  - Avoid extreme arm or wrist postures, particularly during operations requiring a degree of force.
- Adjust for a convenient field of vision that requires minimal eye and head movements.
- Use appropriate lighting for the work task.
- Select the appropriate tool for the work task.
- In noisy environments, use ear protection equipment.
- Use high-quality inserted tools and consumables to minimize exposure to excessive levels of vibration.
- Minimize exposure to reaction forces.
  - When cutting:

A cut-off wheel can get stuck if the cut-off wheel is bent or not guided properly. Use the correct flange for the cut-off wheel and avoid bending the cut-off wheel during operation.
  - When drilling:

The drill might stall when the drill bit breaks through. Use support handles if the stall torque is high. The safety standard ISO11148 part 3 recommends using a device to absorb a reaction torque above 10 Nm for pistol grip tools and 4 Nm for straight tools.
  - When using direct-driven screwdrivers or nutrunners:

Reaction forces depend on the tool settings and joint characteristics. Strength and posture determine the amount of reaction force that an operator can tolerate. Adapt the torque setting to the operator's strength and posture and use a torque arm or reaction bar if the torque is too high.
- In dusty environments, use a dust extraction system or wear a mouth protection mask.

### ***Operating Instructions***

#### **Operating the GFA System**

##### **⚠ WARNING Risk of Injury**

If the system moves around unexpectedly, or if reactive forces are absorbed incorrectly, it can lead to severe injuries and property damage.

- ▶ Always check that the system is placed correctly on the head of the nut.

### ⚠ **WARNING Crushing Hazard**

The Dual trigger forces the user to use both hands to operate the tool. If not used, the operator can accidentally start the tool while adjusting the crowfoot, thus resulting in a serious hand injury.

- ▶ Make sure the tool cannot be started once the Dual trigger has been released.
- ▶ Always test the tool by first releasing the trigger of the Dual trigger, then push the trigger of the tool. If the tool starts; stop working.

### ⚠ **WARNING Risk of Injury**

Make sure that the correct parameter file is being used. Wrong Parameter File might cause too high torque with bodily injury as a result.

- ▶ Compare the maximum torque which is shown in the controller, with the maximum torque stated in the stated technical data for the tool, they should be the same.

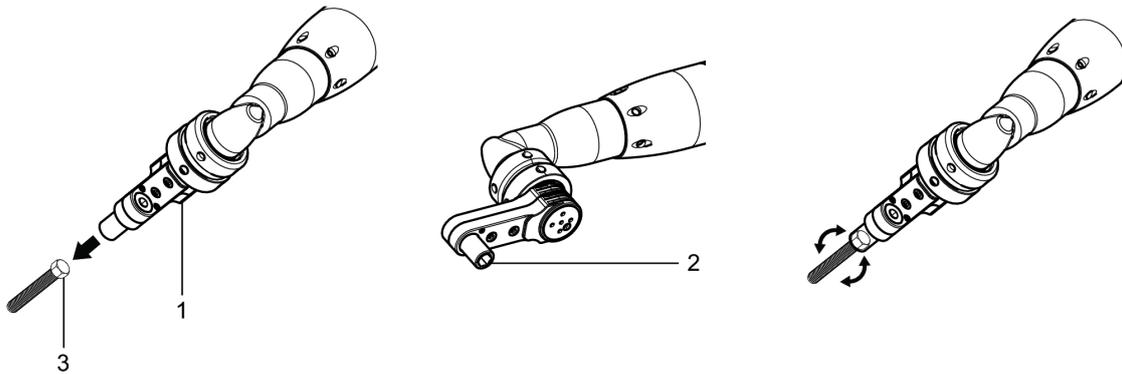
#### **NOTICE** Insufficient Lubrication

If the system is not sufficiently lubricated, it may be damaged.

- ▶ Lubricate the system as soon as there is no longer visible grease.
- ▶ Apply the grease gun to every grease nipple. Fill with lubricant until it emerges on the output socket.

#### **Tightening procedure:**

1. Place the GFA system (1) with the socket (2) onto the screw connection (3).



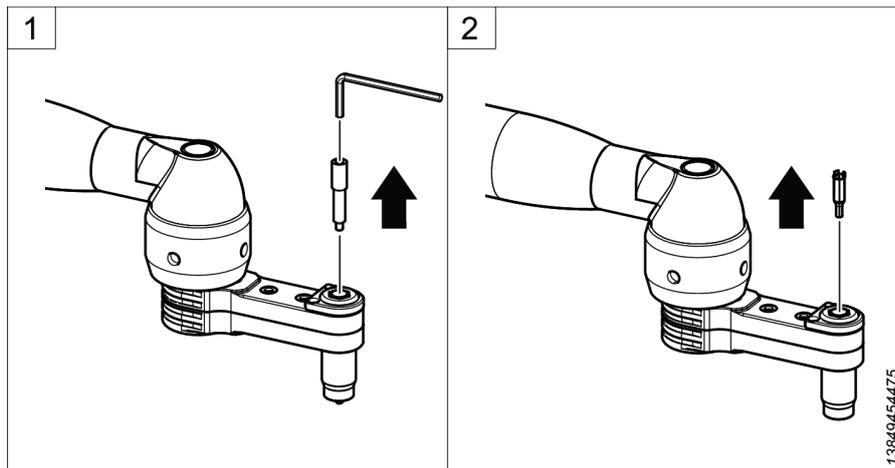
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2. Check that the system is placed correctly on the head of the nut.
3. Start tightening by using the drive unit.
4. Remove the system from the screw connection. The system can now be positioned on the next connection.

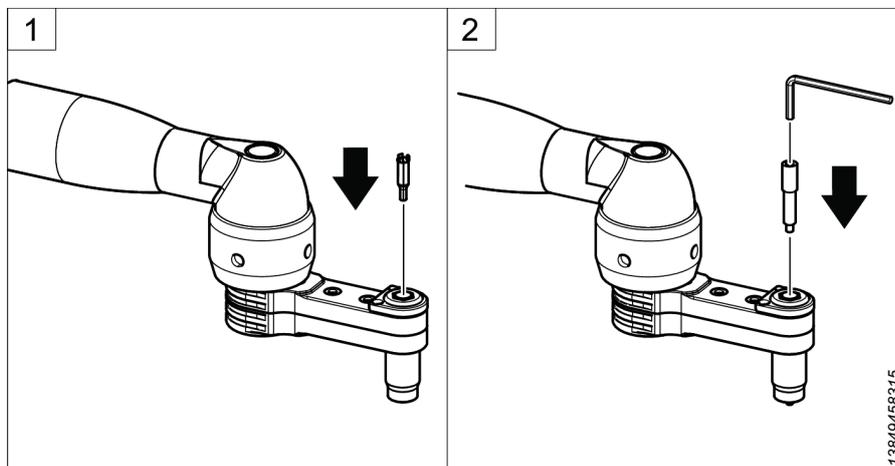
## **Changing a HAD Socket Bit**

#### **To Remove a Bit:**

1. Loosen and remove the set screw from the socket.
2. Remove the bit.

**To Insert a Bit:**

1. Insert the bit into the socket.
2. Insert the set screw into the socket and tighten.



## Service

### Service Overview

As the gear wheels of the GFA module are exposed to hard wear it is important to regularly check their condition. If any of the gear wheels are worn or damaged, all the gear wheels must be replaced. Needle bearings are to be replaced if needed.

At regular intervals between the service, additional grease is to be supplied through the grease nipples.

### Maintenance Instructions

#### Service Intervals and Activities

Interval	Action
Daily	<ul style="list-style-type: none"> <li>■ Clean the GFA system</li> <li>■ Inspect the system for any damage</li> <li>■ Check all fastenings of the system</li> <li>■ Run functional tests and listen for any abnormal noise</li> </ul>
At least after every 50,000 tightenings	<ul style="list-style-type: none"> <li>■ Lubricate the system</li> </ul>
At least after every 500,000 tightenings	<ul style="list-style-type: none"> <li>■ Service interval for overhaul and preventive maintenance</li> </ul>
In case of wear-out parts or in case of faulty tightening result	<ul style="list-style-type: none"> <li>■ Change the output socket gear</li> <li>■ Change the wear-out parts</li> </ul>

### Preventive Maintenance

#### Cleaning the System

To clean the system, wipe carefully with a clean, smooth cloth.

### Lubrication Instructions

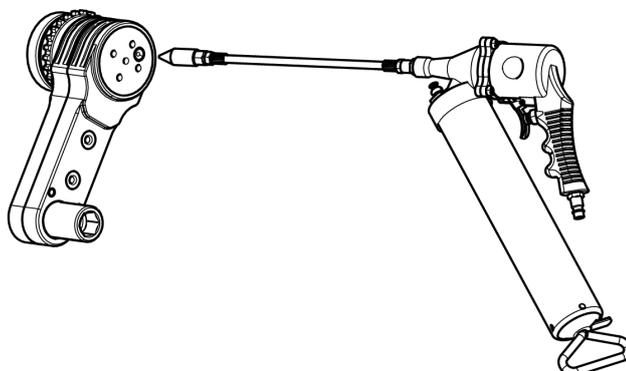
#### Lubrication Instructions

Component	Recommended Lubricant	Quantity
GFA module	Molykote Longterm 2 Plus	Until excess grease emerges on the output socket

**To lubricate the GFA module:**

1. Use a grease gun to apply lubrication to every grease nipple of the GFA module.

**i** The number of grease nipples varies with the design of the GFA module.



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2. Operate the system a few times.
3. Remove any excess grease with a clean, smooth cloth.

## ***Dismantling/Assembling Instructions***

### **Dismantling the GFA Module**

**i** The instruction below shows an example of a GFA module. The module comprises a housing which contains a number of gears depending on model of the GFA system.

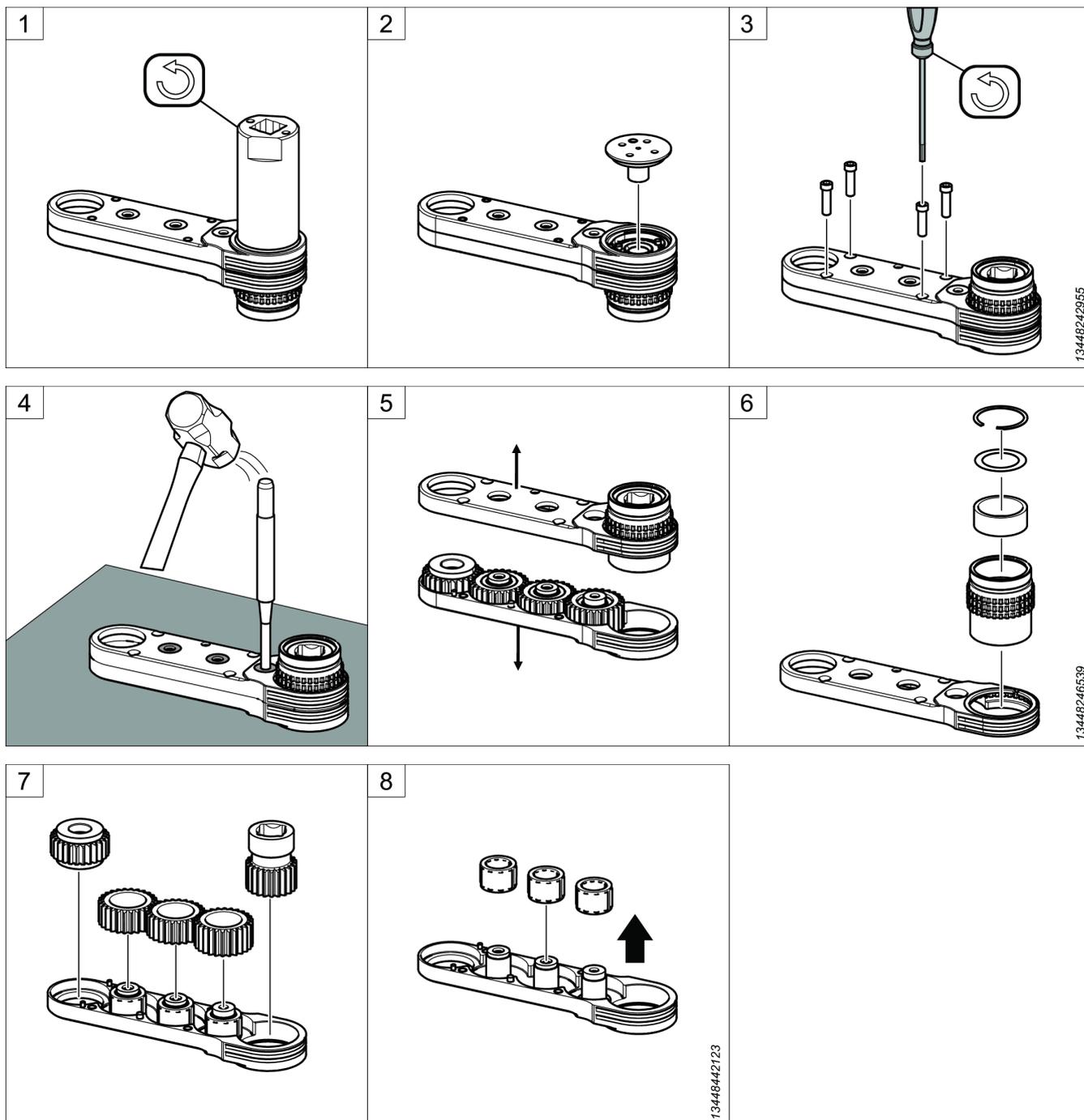
**To dismantle the GFA module:**

1. Loosen the shaft lid.
2. Remove the shaft lid.
3. Loosen and remove the screws. The number and type of screws depend on the GFA model.
4. Place the GFA module on a rubber mat. Hit the shafts to loosen the upper and lower part of the housing.
5. Open the housing.
6. Remove the bearing housing and the snap ring, shim ring and needle carrier if needed.
7. Remove the output gear, middle gears and input gears. The amount of gears depend on the GFA model.

**i** Note the direction of the output gear (hexagonal shape up or down). It should be placed in the same way when assembling the GFA module.

8. Remove the needle rollers.

**i** Depending on the GFA model the needle rollers can be loose or assembled in bearing rings.

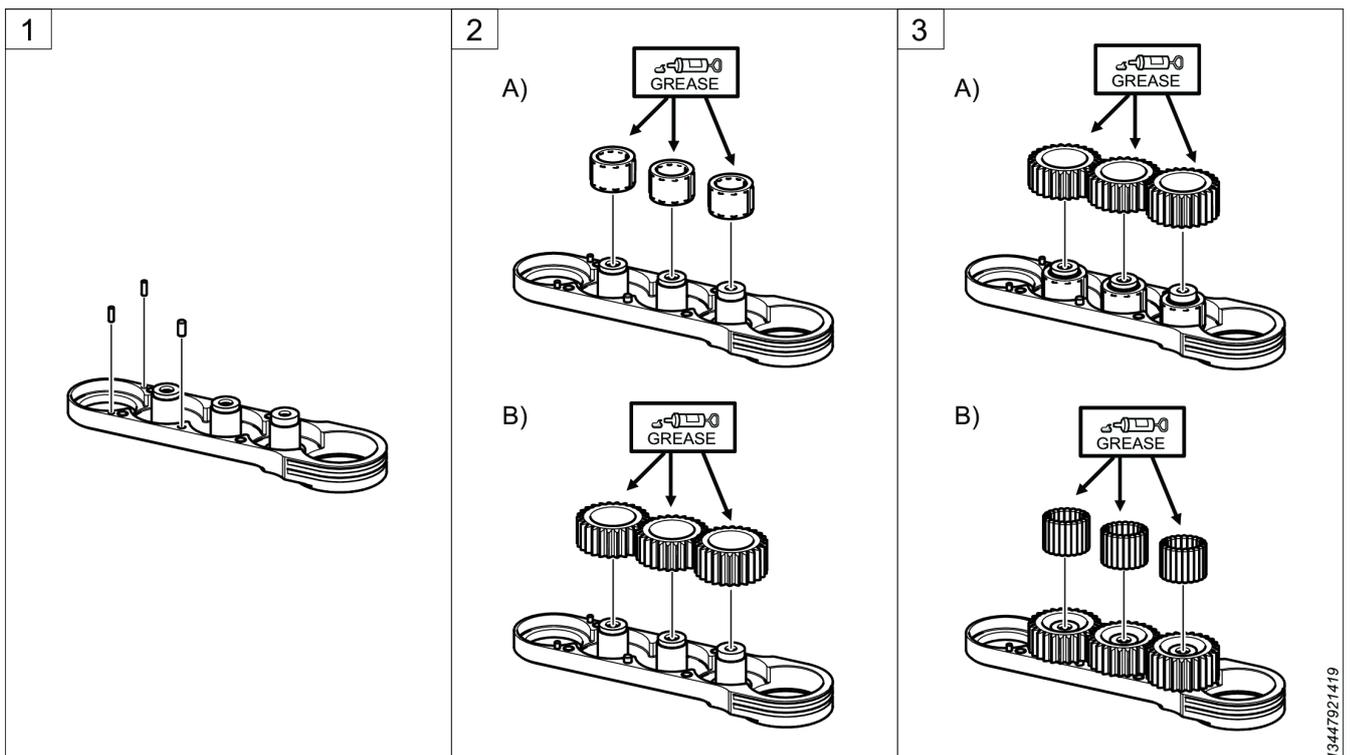


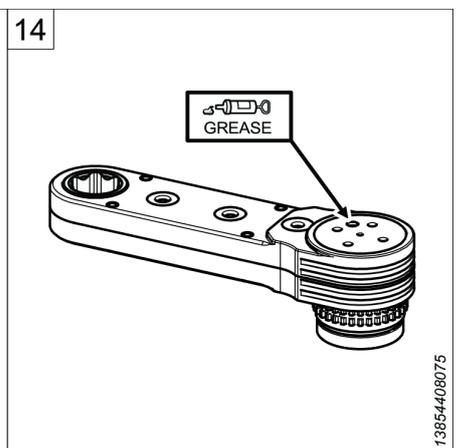
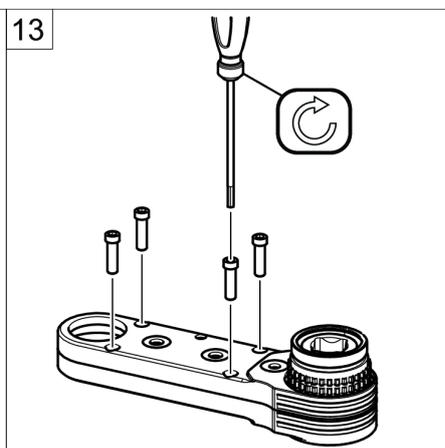
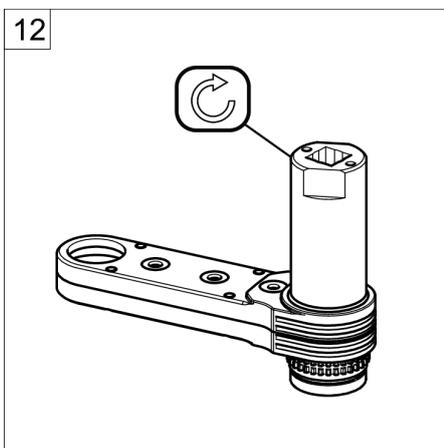
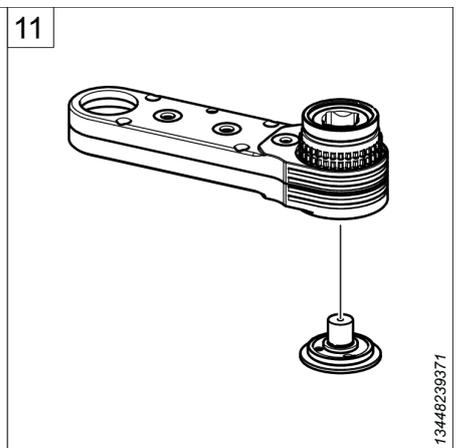
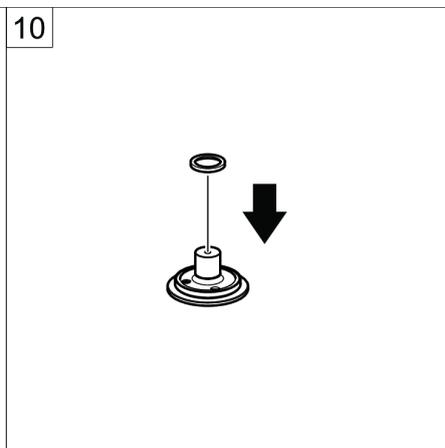
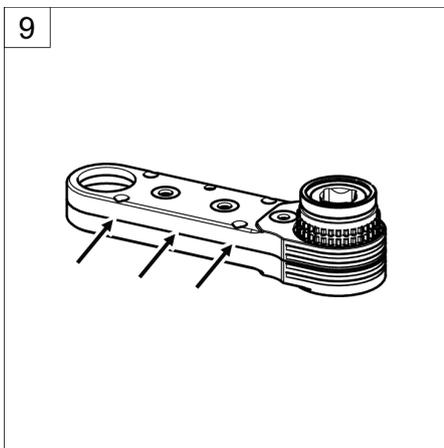
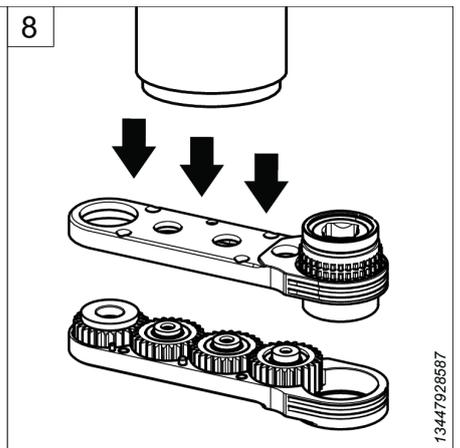
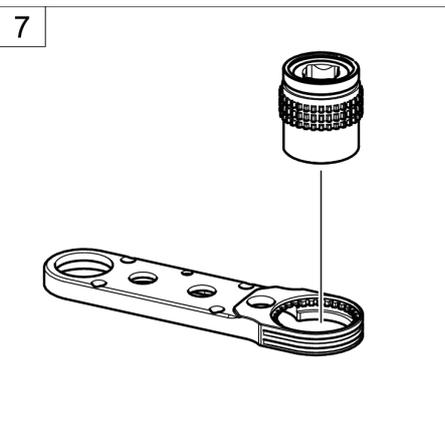
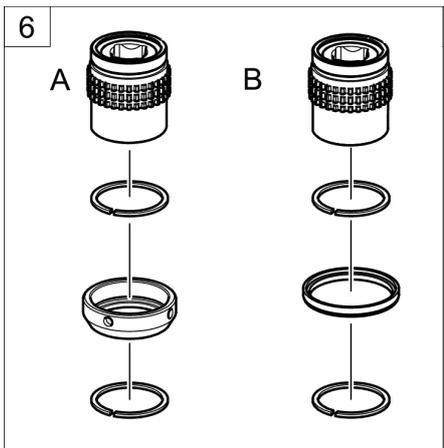
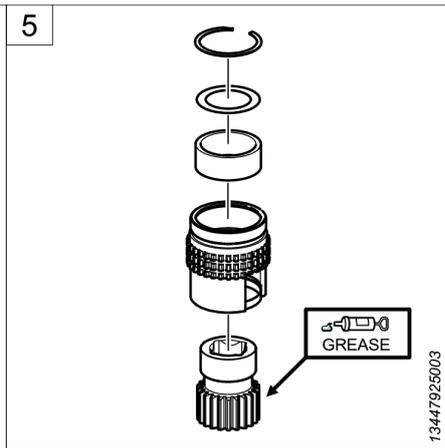
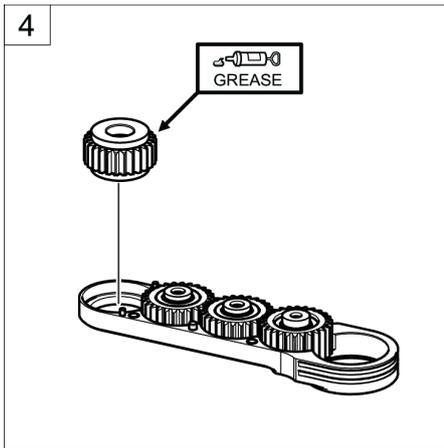
## Assembling the GFA Module

### To assemble the GFA module:

1. Make sure the parallel pins are inserted. The amount and positions of the parallel pins depend on the GFA model.
2. Depending on the type of needle carriers, assembled in **bearing rings (A)** or **loose (B)**, do the following:
  - **A)** Put the needle carrier bearing rings over the shafts.
  - **B)** Put the middle gears over the shafts.

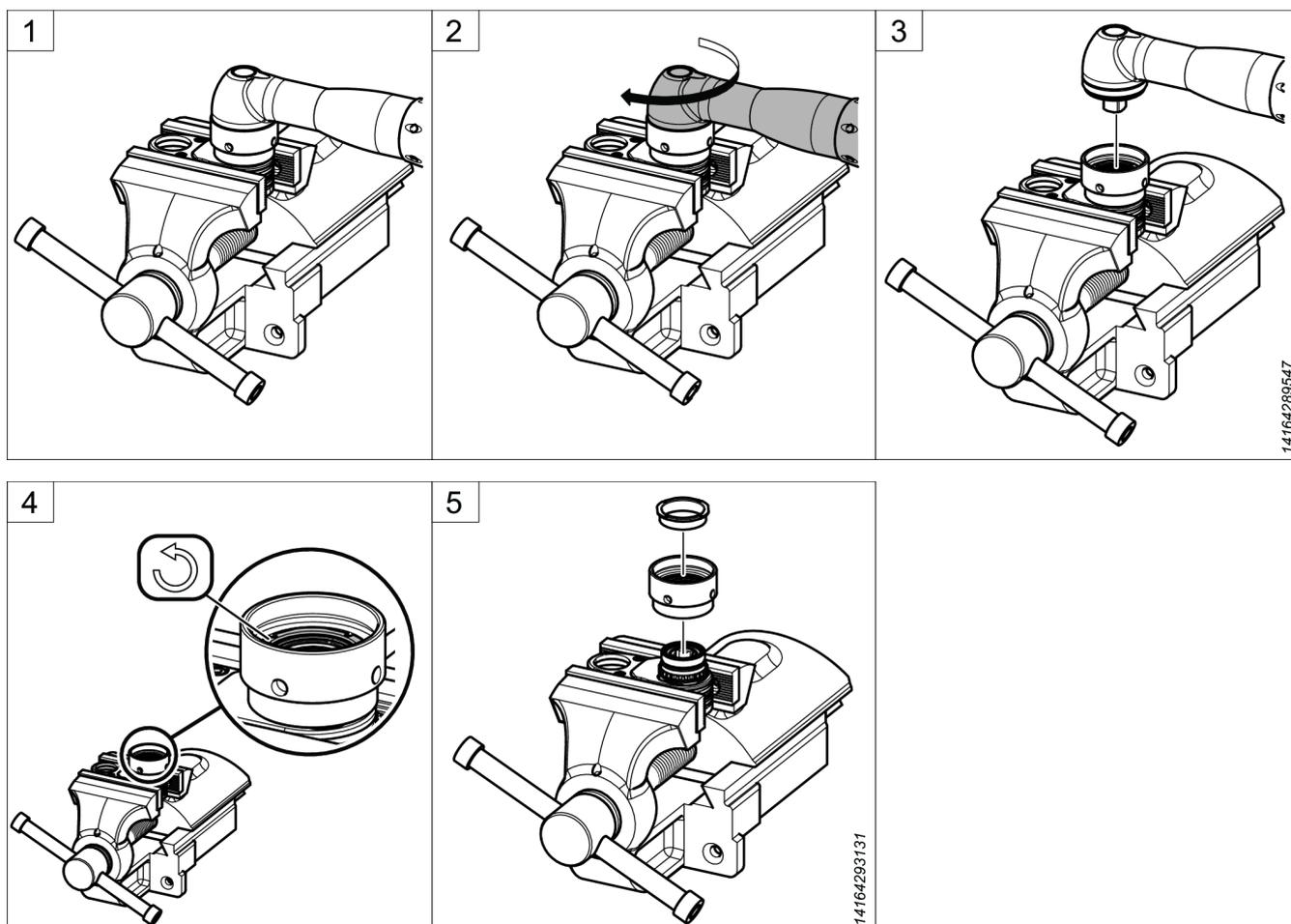
3. Depending on the type of needle carriers, assembled in **bearing rings (A)** or **loose (B)**, do the following:
  - **A)** Put the middle gears over the needle carriers.
  - **B)** Insert the loose needles between the shafts and the middle gears. Make sure all the needles go in - there should be no gaps.
4. Place the output gear in the housing. Position the gear with the same orientation (hexagonal shape pointing up or down), as when dismantling.
5. Insert the input gear into the bearing housing and put back the snap ring, shim ring and needle carrier (if they were removed).
6. Depending on the adapter type the bearing house can be prepared in one of the following ways, before inserted into the GFA housing:
  - **A)** GFA system with **fixed index** adapter:  
Insert the bearing housing into the upper locking ring, nut, and lower locking ring.
  - **B)** GFA system with **quick index** adapter:  
Insert the bearing housing into the upper locking ring, guide ring, and lower locking ring.
- i** Locking rings are not used in all GFA models, refer to the spare parts list of the GFA model in question.
7. Insert the bearing housing, prepared as in the step above, into the GFA module housing.
  - i** The bearing housing can be inserted from the top or from below, depending on the GFA model.
8. Use a press tool to press the upper and lower parts of the housing together.
  - i** It is important to **press evenly** over the housing.
9. Make sure there is no gap between the upper and lower part of the housing.
10. If applicable, put the bearing support washer over the shaft lid. The bearing support is not available of all GFA models.
11. Insert the shaft lid into the housing.
12. Tighten the shaft lid.
13. Tighten the screws. The number and type of screws depend on the GFA model.
14. Use a grease gun to apply lubrication to every grease nipple of the GFA module. Remove any excess grease with a clean, smooth cloth.





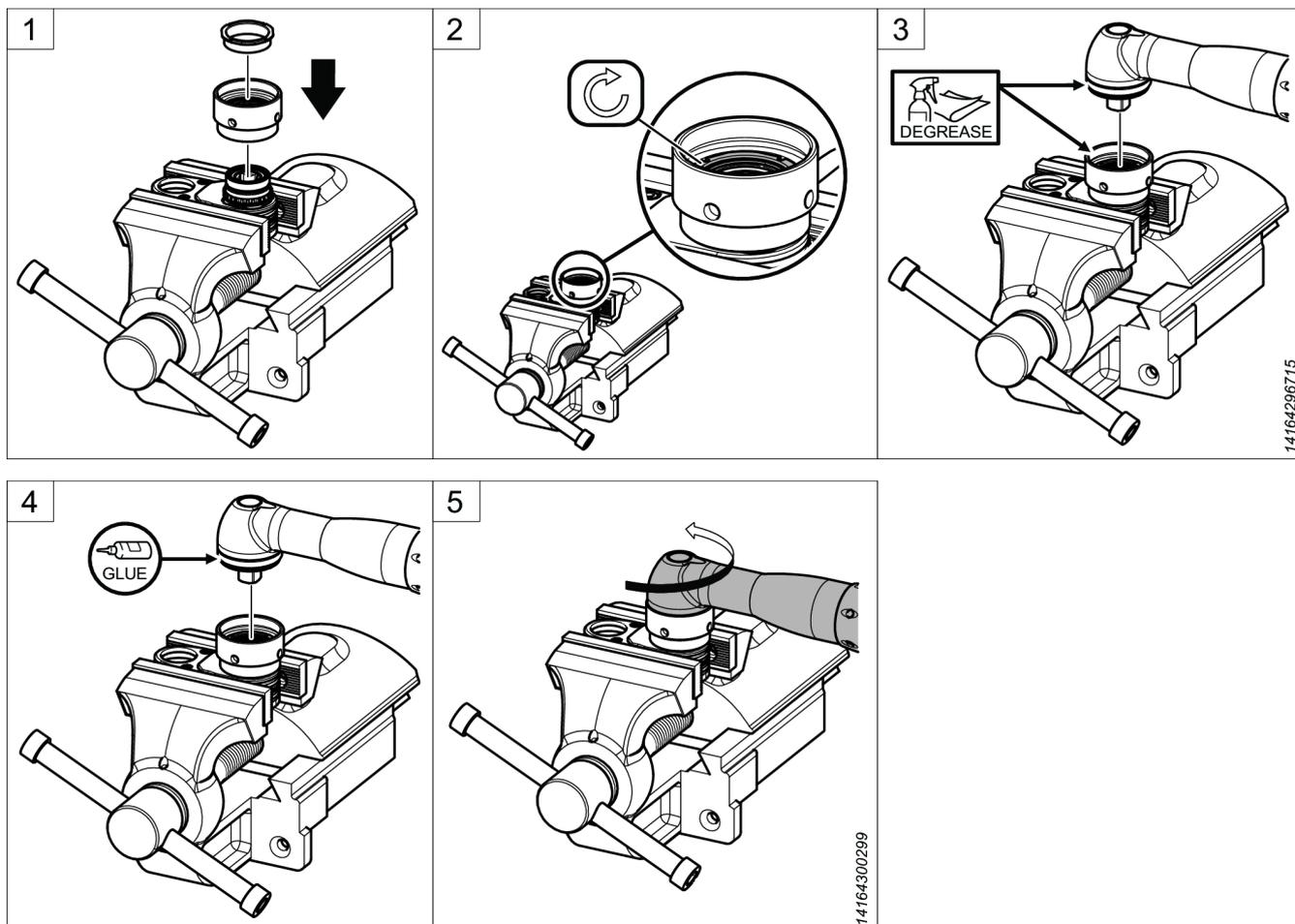
## Removing a Quick Index Adapter

1. Fasten the GFA system, together with the drive unit, in a vice.
2. Loosen the drive unit from the adapter.
  - i** The adapter is left-hand threaded. Turn the drive unit clockwise for loosening.
  - i** The adapter is fixed to the drive unit with Loctite. Loosening the tool from the adapter requires strong force. It is recommended to use a heat gun to facilitate the loosening.
3. Remove the drive unit from the adapter.
4. Loosen the ring inside the adapter. For service tool information, see the spare parts list of the specific GFA model.
5. Remove the ring and the adapter from the GFA unit.



## Attaching a Quick Index Adapter

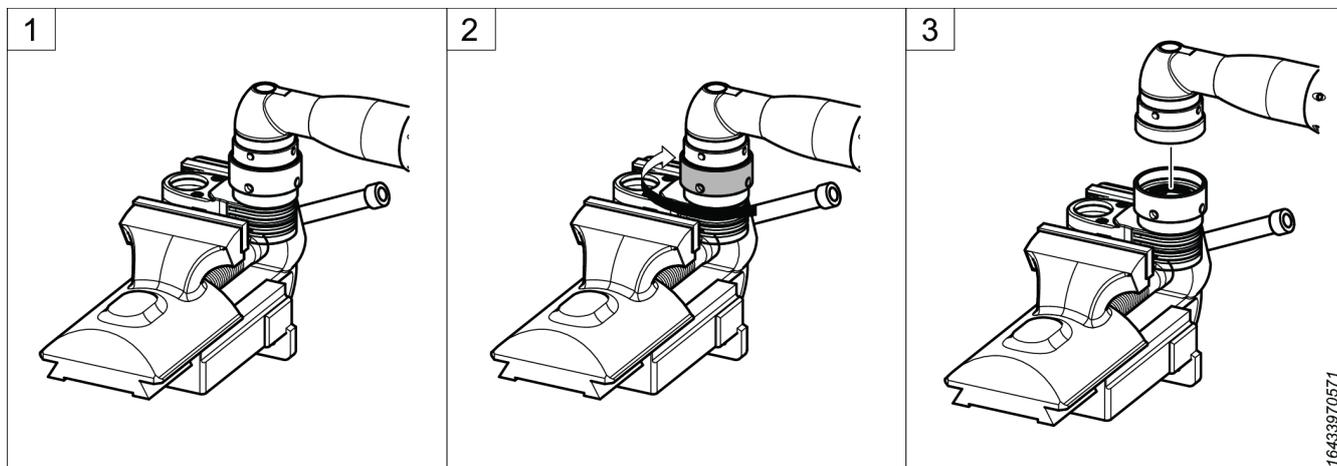
1. Attach the adapter and ring to the GFA unit.
  - i** Make sure the spring is inserted in the adapter before attaching the ring.
2. Tighten the ring inside the adapter. For service tool and tightening torque information, see the spare parts list of the specific GFA model.
3. Clean the threads of the drive unit and the adapter.
4. Apply Loctite 2701, or similar, to the threads of the drive unit.
5. Attach the drive unit to the adapter and tighten.

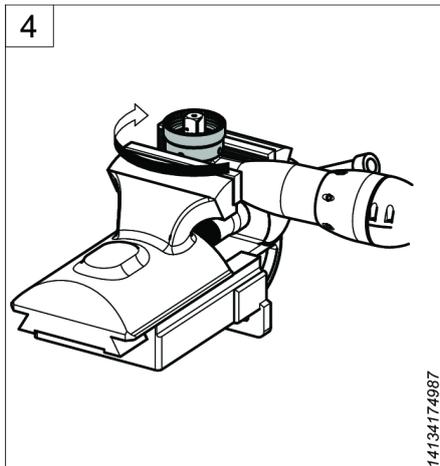


## Removing a Fixed Index Adapter

1. Fasten the GFA system, together with the drive unit, in a vice.
2. Loosen the nut from the adapter. For service tool information, see the spare parts list of the specific GFA model.
3. Remove the adapter, together with the drive unit, from the GFA unit.
4. Fasten the drive unit in a vice. Loosen the adapter clockwise to remove it from the drive unit.

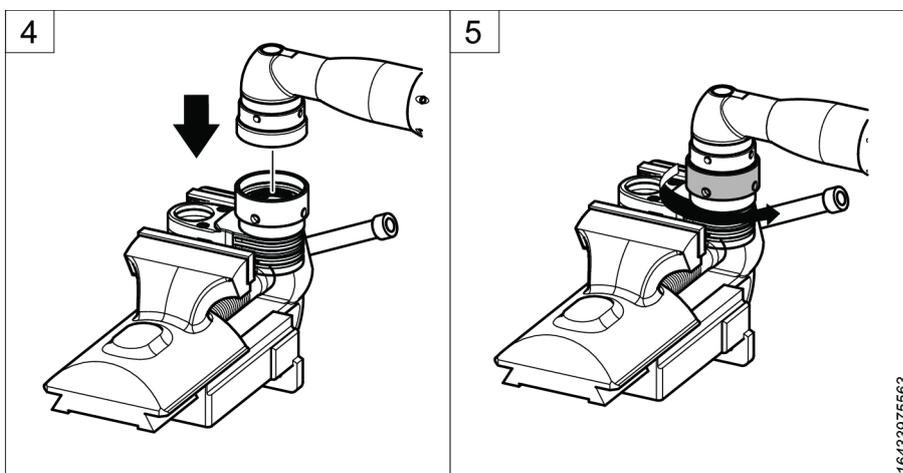
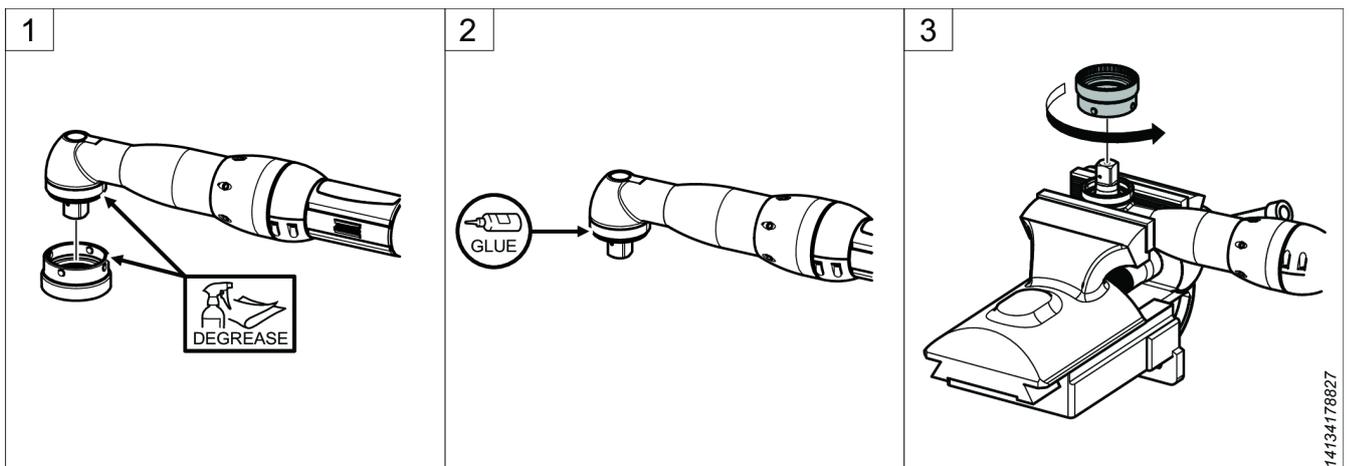
**i** The adapter is fixed to the drive unit with Loctite. Loosening the tool from the adapter requires strong force. It is recommended to use a heat gun to facilitate the loosening.





## Attaching a Fixed Index Adapter

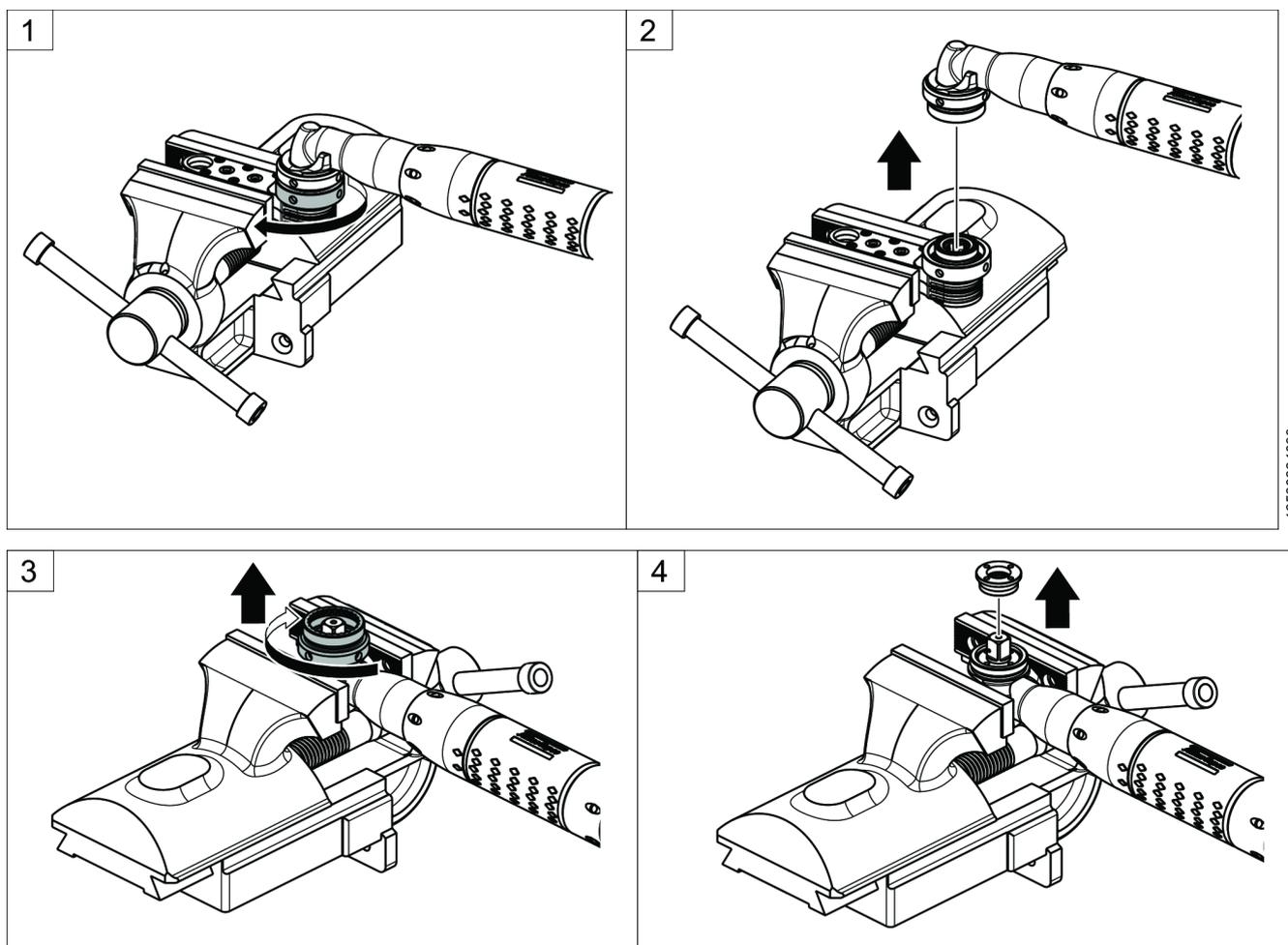
1. Clean the threads of the drive unit and the adapter.
2. Apply Loctite 2701, or similar, to the threads of the drive unit.
3. Fasten the drive unit in a vice and tighten the adapter.
4. Fasten the GFA in a vice and attach the adapter to the nut.
5. Tighten the nut. For service tool and tightening torque information, see the spare parts list of the specific GFA model.

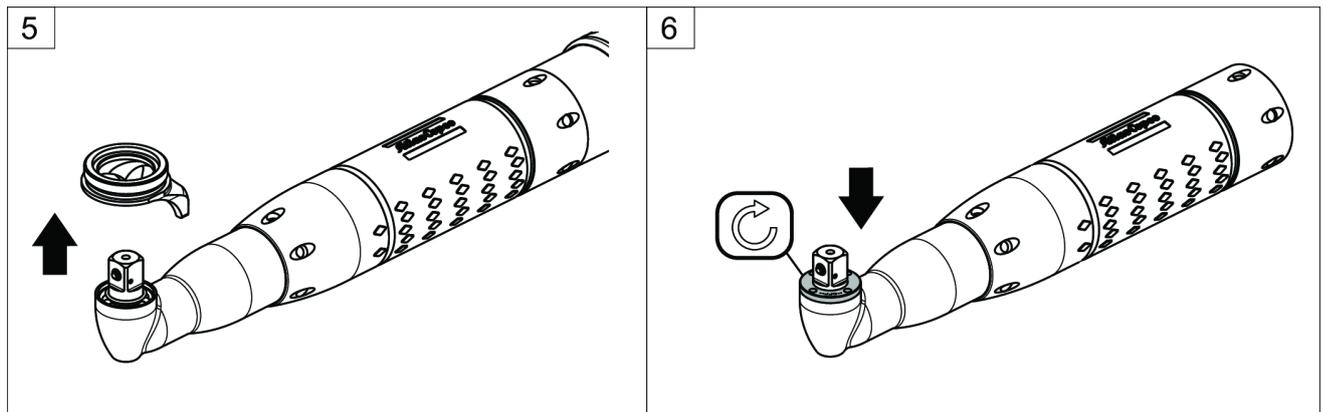


## Removing a Fork Adapter

1. Fasten the GFA module in a vice and loosen the nut.
2. Remove the tool, together with the adapter, from the to nut.
3. Fasten the tool in a vice. Loosen and remove the adapter from the fork adapter.
  - i** The adapter is fixed with Loctite. Loosening the adapter requires strong force. It is recommended to use a heat gun to facilitate the loosening.
4. Loosen and remove the bearing shell adapter from the fork adapter.
  - i** The bearing shell is fixed with Loctite. Loosening the bearing shell requires strong force. It is recommended to use a heat gun to facilitate the loosening.
5. Remove the fork adapter from the angle head.
6. If applicable, fasten the tool's bearing shell to the angle head. Note: this is not the same bearing shell as the one for the adapter, in Step 4.

For service tool, see Spare Parts of the tool in question.

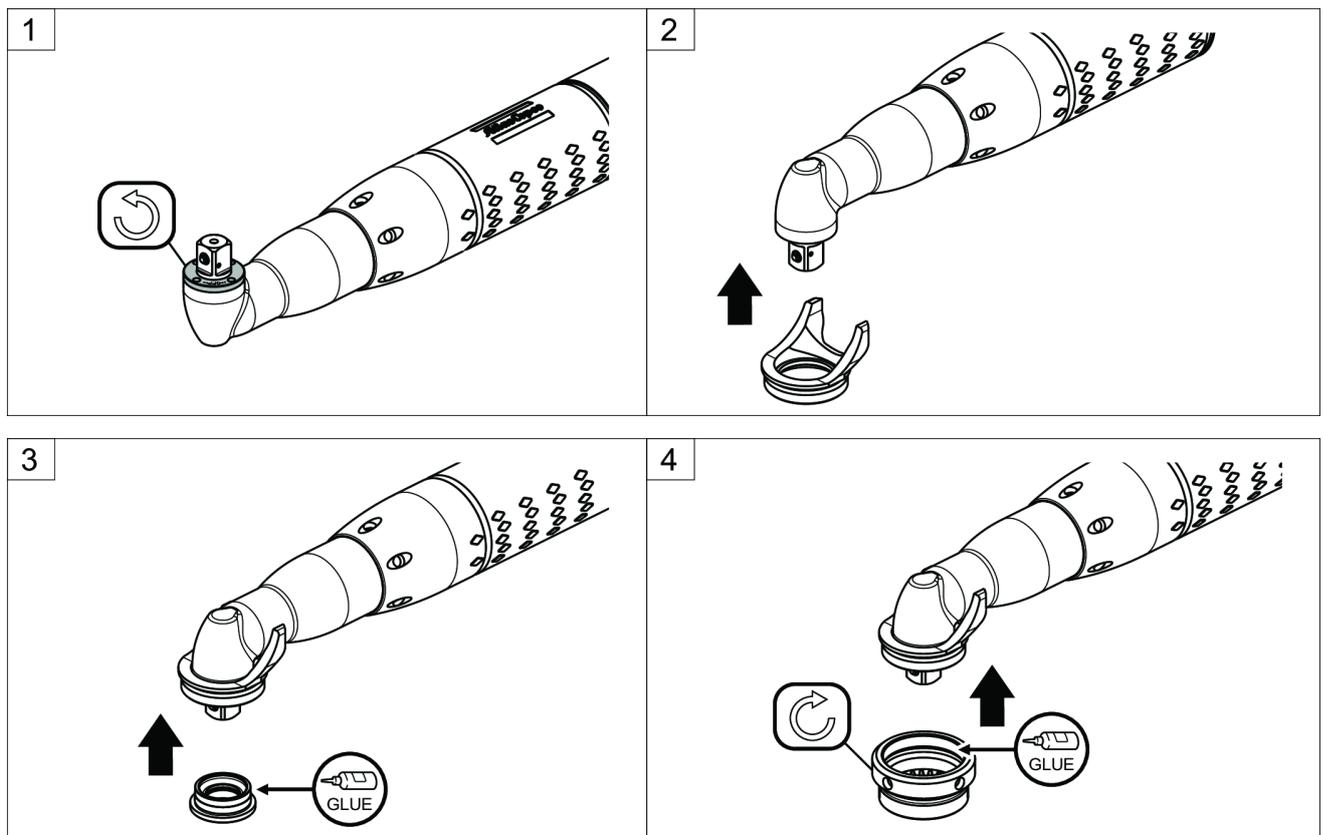




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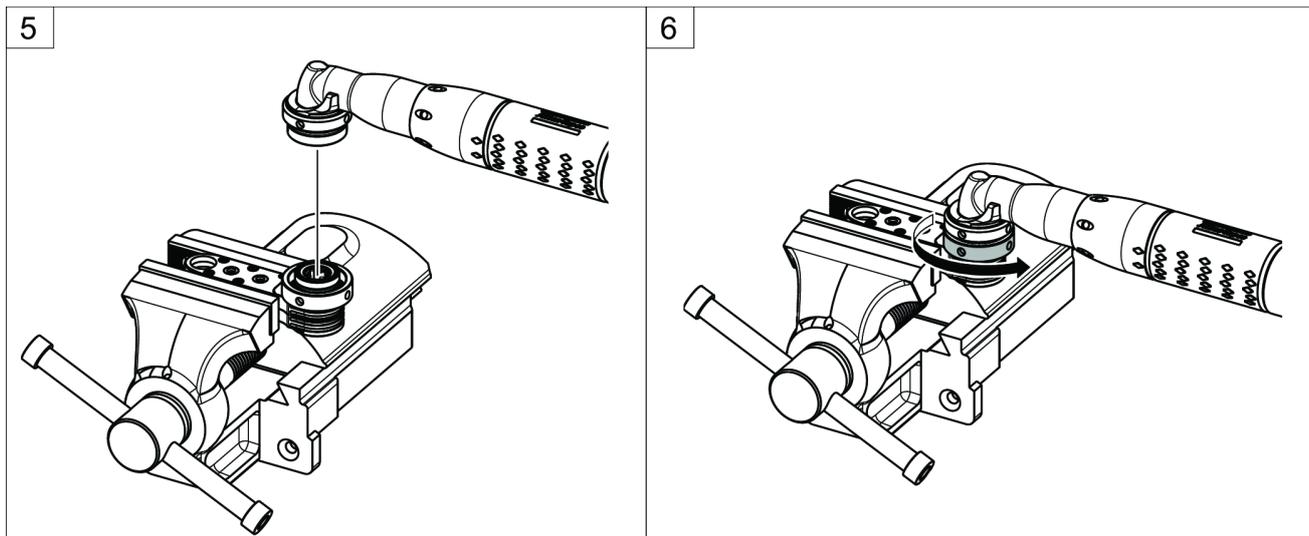
## Attaching a Fork Adapter

1. Remove the bearing shell from the angle head of the tool. For service tool, see Spare Parts of the tool in question.
2. Attach the fork adapter to the angle head.
3. Clean the threads. Apply Loctite 2701, or similar, to the bearing shell adapter, and push it into the fork adapter. Note: this is not the same bearing shell as the one for the angle head, in Step 1.
4. Clean the threads. Apply Loctite 2701, or similar, to the threads of the adapter, and screw it onto the fork adapter.
5. Fasten the GFA module in a vice. Attach the adapter of the tool to the nut of the GFA module.
6. Tighten the nut.



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## Recycling

### ***Environmental Regulations***

When a product has served its purpose it has to be recycled properly. Dismantle the product and recycle the components in accordance with local legislation.

Batteries shall be taken care of by your national battery recovery organization.





Original instructions

**SALTUS**

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