

Magnet Lowering Device

STD0023EN00

APPLIES TO: Steridose products Sterimixer®-Low-Shear drive units with Magnet Lowering Device.

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1. IMPORTANT SAFETY INFORMATION

1.1. Introduction

1.1.1. Purpose of this manual


Read this manual carefully before installing and using the product. Improper use of the product can cause personal injury and damage to property, and may void the warranty.


 **NOTICE:** Save this manual for future reference


1.2. Safety terminology and symbols


1.2.1. Hazard levels and indications

The following symbols are used to indicate hazard levels.

 **DANGER:** Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING:** Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION:** Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury, or, a situation that might lead to serious damage to the product or components.

 **NOTICE:** Indicates: A potential situation which, if not avoided, could result in undesirable conditions or contains tips to enhance the performance or facilitate the installation of the product.

1.2.2. Hazard categories

Hazard categories can either fall under hazard levels or let specific symbols replace the ordinary hazard level symbols.

 **ELECTRICAL HAZARD:**



STRONG MAGNETIC FIELDS HAZARD:



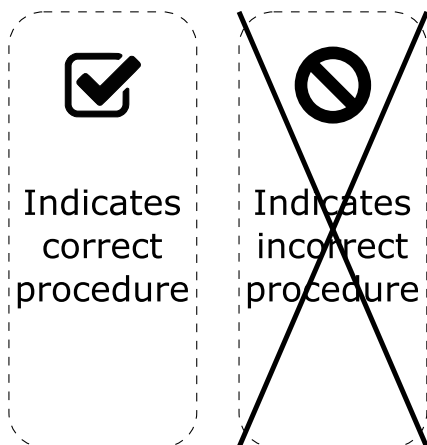
CORROSIVE AGENTS HAZARD:



HAZARD FOR WEARERS OF CARDIAC PACE-MAKER:

1.2.3. Other symbols used

In situations where confusion could arise, the icons below are used to distinguish between the right and the wrong procedure.



1.3. General safety

1.3.1. General statement

Undertaking any work covered by this manual may either directly or indirectly create risks to the safety and health of the person undertaking the work or the Sterimixer/Sanimixer and/or its components while the work is being undertaken.

It is the responsibility of the user to ensure that appropriate controls and precautions are identified and applied in relation to the work covered by this document in accordance with relevant statutory, legal and industry requirements to protect the health and safety of the persons undertaking the work.

Neither this document, nor its use, in any way absolves the user from their responsibility to ensure that the controls and precautions referred to in this chapter are implemented.

If, by undertaking any work covered by this document, you become aware of any Steridose product design related feature which could create risk to a person undertaking work or to the Sterimixer/Sanimixer and/or its components please contact Steridose immediately.



CAUTION: You must observe the instructions contained in this manual. Failure to do so could result in physical injury, damage or delays.

1.4. User safety



WARNING: This manual cannot replace specific knowledge and adequately trained personnel needed for installing and handling equipment for professional use, such as this product.

1.4.1. General safety rules

These safety rules apply:

- Always keep the work area clean
- Pay attention to the risks presented by gas and vapors in the work area
- Avoid all electrical dangers. Pay attention to the risks of electric shock or arc flash hazards
- Always bear in mind the risk of pinching fingers, electrical accidents and burn injuries.

1.4.2. Safety equipment

Use safety equipment according to the company and local regulations.

1.4.3. Electrical connections

Electrical connections must be made by certified electricians in compliance with all international, national, state and local regulations. For more information about requirements see the relevant sections dealing specifically with electrical connections (if applicable).

1.4.4. Hazardous liquids

The product is designed for use in liquids that can be hazardous to your health.



WARNING: Make sure that all personnel who work with hazardous liquids use suitable protective equipment.

1.4.5. Specific operational hazards

Specific operational hazards are listed under its respective section.

1.4.6. Specific hazards while performing maintenance

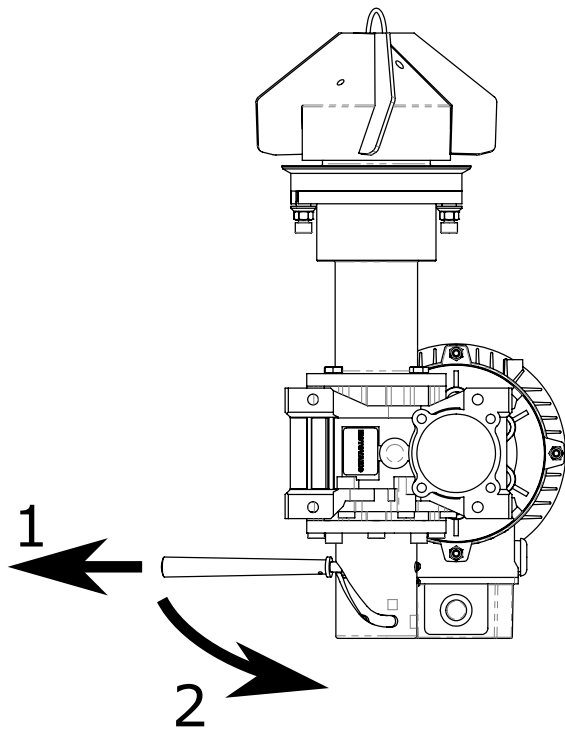
Specific hazards while performing maintenance on the product are listed under its respective section.

2. ABOUT THE MAGNET LOWERING DEVICE

The magnetic coupling between impeller and magnet rotor is strong enough to pose a risk for damage to the bearings during removing/installing the impeller. Therefore, in conventional installations, the drive unit should be completely removed from the tank before removing/installing the impeller, not vice-versa. The Steridose Magnet Lowering Device (LD) allows the user to break the magnetic coupling without removing the drive unit from the vessel. This is a significant ergonomic enhancement that reduces service time and is particularly useful when working with heavy drive units that can weight as much as 45 kg (100 lbs). Existing drive units can be retrofitted with this feature in the field, or the drive unit can be ordered with the Magnet Lowering Device installed from the factory.

3. OPERATION

When installed on the drive unit the Magnet Lowering Device can be operated as follows (see also figure 1):



■ **Figure 1** Operation of the Magnet Lowering Device: 1. pull outwards, 2. slide along slot, 3. lock into position.

WARNING: Make sure the drive unit is not running and in automated installations make sure that lock-out procedures have been followed.

1. Pull the handle outwards to unlock it from its locked position.
2. Slide the handle through the S-shaped slot to move the shaft and magnet rotor down/up.
3. Make sure that when in its final position the handle locks back into the locked position.

CAUTION: Make sure that while operating the Magnet Lowering Device there is enough room for the handle and the operator's hand to move freely without interfering with pipes, tank legs or other objects.

CAUTION: Keep fingers away from the S-shaped slot when operating the Magnet Lowering Device, the magnetic forces present and the spring-loaded locking handle might cause involuntary movements with risk for pinching fingers.

See figure 2 for an example of a warning sign that can be used to avoid incorrect installation/removal of the impeller.

4. MAGNET LOWERING DEVICE PRODUCT RANGE

The Magnet Lowering Device is available for non-ATEX Sterimixer from size 85 and up. In order to accommodate

Mixer size Delivered before 2018	Magnet Lowering Device DU LD UPGRADE KIT ^a
85	113062
120/150	112393
120/190	112830
120H	112832
210	112834
Mixer size Delivered in/after 2018	Magnet Lowering Device DU LD KIT ^b
85	113121
120/150	112835
120/190	112836
120H	112837
210	112838

^a includes extended drive unit flange, extended shaft and lowering device
^b includes lowering device, assumes re-using shaft and flange

■ **Table 1** Part numbers for upgrade kits. Refer to section 7 for details.

for the magnet rotor when in the lowered position, the use of the Magnet Lowering Device requires the drive unit to be equipped with the cooling jacket extension.

Retrofit kits are available that facilitate upgrading existing installations with this feature. Two different kits are available depending on the original drive unit's age, see table 1. Fitting the upgrade kit is described in section 7.

5. SENSOR OPTION FOR AUTOMATION

The lowering device can be equipped with an optional sensor that verifies that the Magnet Lowering Device is in the raised position and that the mixer can be started. This sensor included a LED which facilitates quick visual feedback (rotor up/down) during walk-around inspections of the plant.

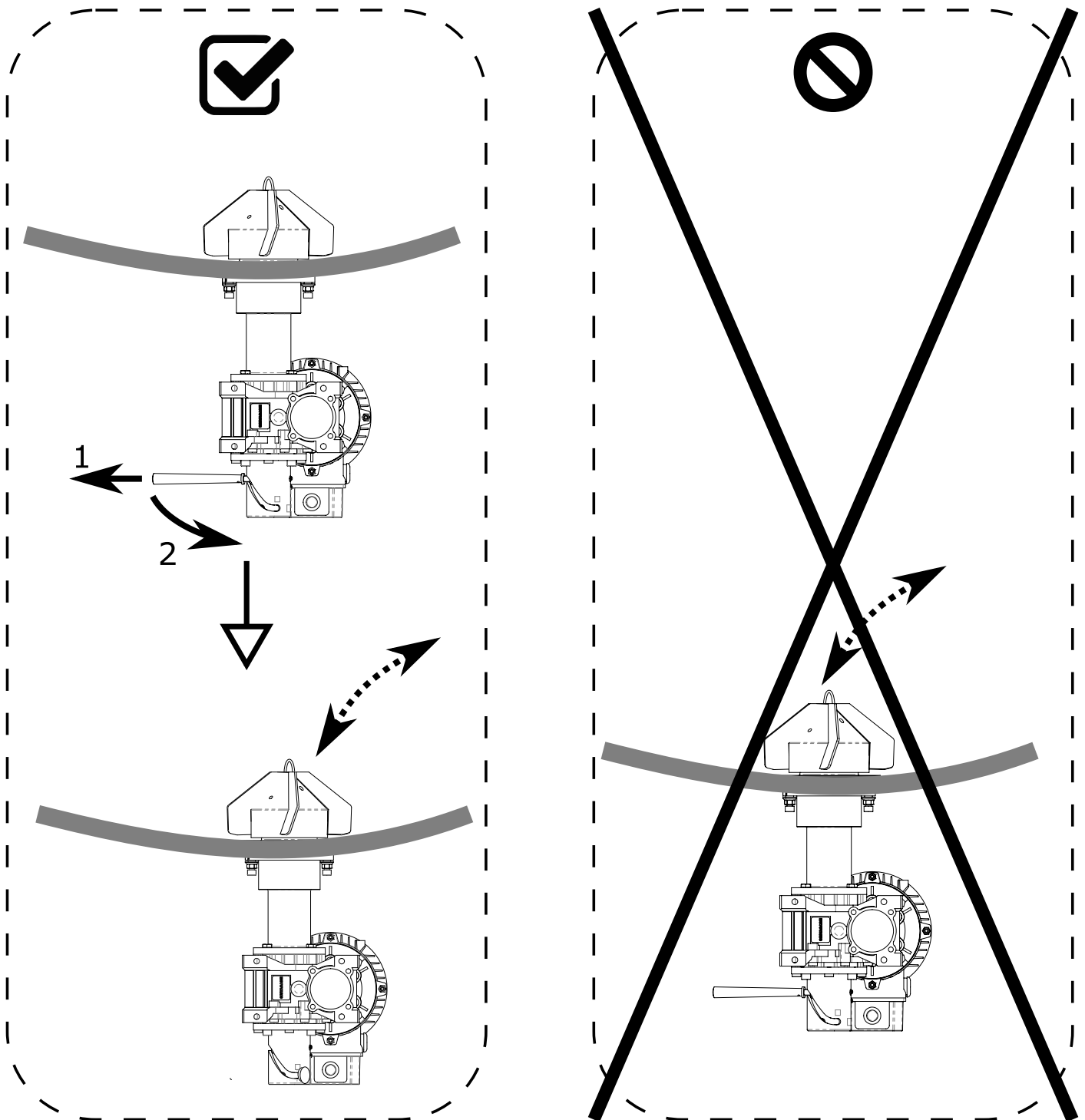
6. MAINTENANCE

The Magnet Lowering Device does not require special maintenance.

7. FITTING THE UPGRADE KIT TO EXISTING DRIVE UNITS

The upgrade kits (see table 1 for part numbers) come in two versions:

DU LD UPGRADE KIT: This kit must be used when upgrading drive units that were delivered before 2018 (and after 2008, consult the factory for details). This kit can also be used to upgrade drive units that do not have the cooling jacket extension (adding the lowering device will change the space requirement of the drive unit!). The kit includes extended drive unit flange, an extended shaft, the mounting tool and the lowering device (items 1, 2, 3, 4 in figure 3).



■ **Figure 2** Example of a sign for the correct use of the Magnet Lowering Device.



■ **Figure 3** Upgrade kit contents: 1. extended drive unit flange, 2. extended shaft, 3. mounting tool, 4. the lowering device.

DU LD KIT: This kit is intended to be used when upgrading drive units delivered in or after 2018. Since the standard drive unit with cooling extension delivered in or after 2018 are already equipped with the modified drive unit flange and shafts with bottom thread (please consult factory), this kit only contains the mounting tool and the lowering device (items 3 and 4 in figure 3).

👉 **NOTICE:** Due to international shipping regulations grease required for successful retrofit of the lowering device is NOT included in the kits.

7.1. Steps for assembling the Magnet Lowering Device.

1. Clean the drive unit and especially the gearbox thoroughly.
2. Remove the drive unit flange from the gearbox by loosening the screws that fix it to the gearbox.
3. Remove the shaft from the gearbox's hollow-shaft.
4. Remove the magnet rotor from the shaft.

⚠️ **STRONG MAGNETIC FIELDS HAZARD:** The Sterimixer impeller and magnetic rotor include strong magnets with the associated risk of pinching fingers and permanently damaging magnetic cards (e.g. credit cards) if being close to these components.

🚫 **HAZARD FOR WEARERS OF CARDIAC PACEMAKER:** The Sterimixer impeller and magnetic rotor include strong magnets thus personnel equipped with pacemaker shall not handle these components.

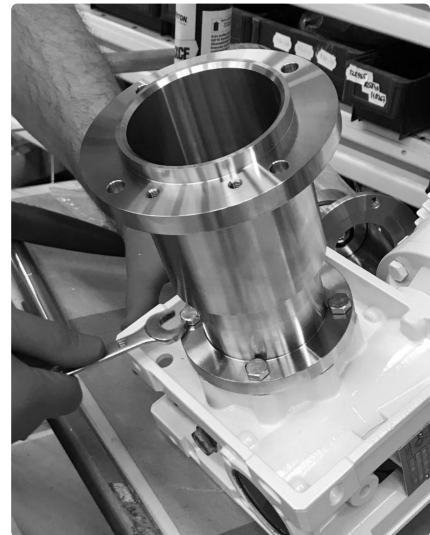
5. Check the gearbox mounting frame for damage and remove any paint, leaving the surface of interface between flange and gearbox clean, even and smooth.



6. Apply a suitable grease (e.g. Chesterton 630 SXCF) to the gearbox's hollow-shaft and the frame interface. This will facilitate movement of the shaft and protect against corrosion.



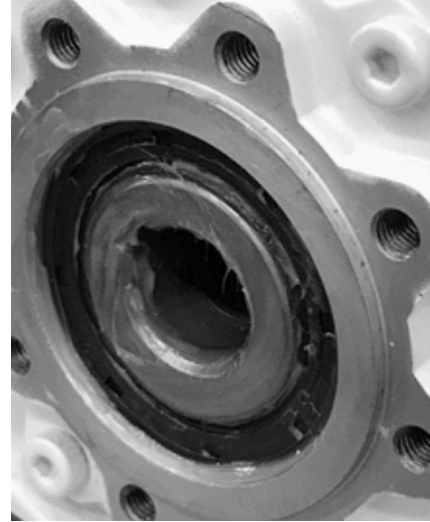
7. Fit the extended drive unit flange to the gearbox and tighten the screws.



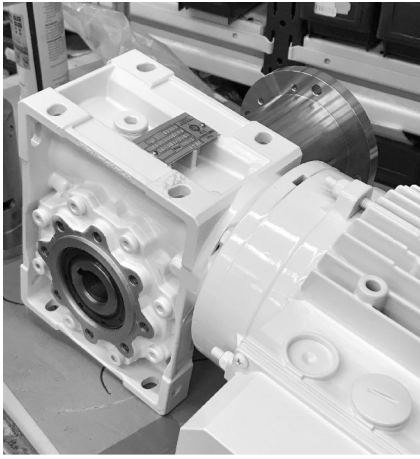
8. Fit the bottom circlip on the shaft (use protective eye-wear when fitting circlips).



9. Fit the keys in the keyways on the extended shaft and apply grease (e.g. Chesterton 630 SXCF).



10. Put the drive unit on a flat surface. Verify that the gearbox's hollow shaft is completely free of deformations or burrs. A common file can be used for this purpose.



13. Apply a suitable thread-sealant/locking liquid (e.g. Loctite 243, Loctite 2400) to the Magnet Lowering Device screw.

11. Verify that the shaft can move smoothly up and down the gearbox, all the way to the stop provided by the bottom circlip. If necessary use a file to de-burr and straighten the hollow-shaft keyway and/or the bottom shaft key.

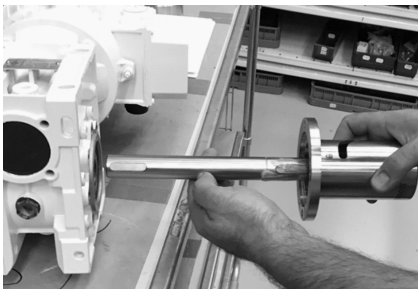


12. Once the shaft runs smoothly up and down the gearbox, apply additional grease to the gearbox's hollow shaft.

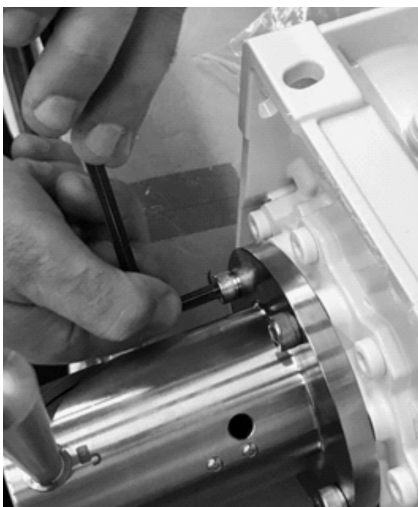
14. Screw the Magnet Lowering Device mounting screw into the bottom end of the shaft and tighten to 17 Nm (150 in-lb) with assistance of the mounting tool.



15. Insert the shaft and Magnet Lowering Device in the gearbox hollow-shaft.



16. Screw the Magnet Lowering Device into the gearbox frame.



17. Put the drive unit upright (use care and appropriate lifting devices where required) and raise the shaft by operating the Magnet Lowering Device.



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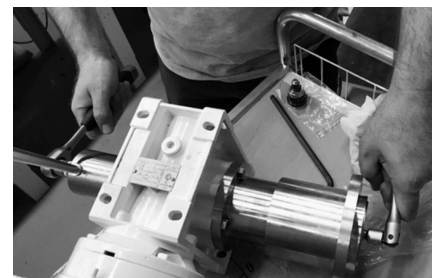


HAZARD FOR WEARERS OF CARDIAC PACE-MAKER: The Sterimixer impeller and magnetic rotor include strong magnets thus personnel equipped with pacemaker shall not handle these components.

Fix the magnet rotor on the shaft with the magnet rotor screw.



18. For final tightening of the magnet rotor and Magnet Lowering Device mounting screw, put the drive unit on its side (use care and appropriate lifting devices where required) and tighten as shown in the picture below.

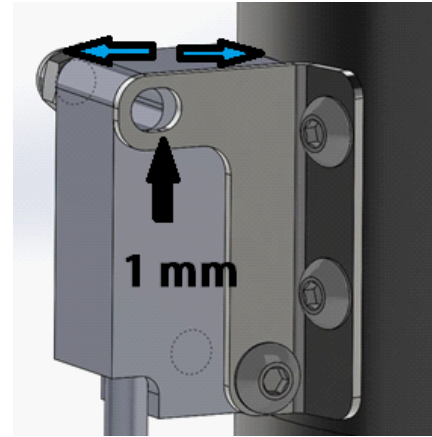


8. FITTING THE OPTIONAL SENSOR KIT TO THE MAGNET LOWERING DEVICE

1. Remove the M3x3 screws from the Magnet Lowering Device housing.



2. Re-use the M3x3 screws to fix the sensor bracket to the housing.



Sensor technical data can be obtained from the sensor supplier's product information.



3. Mount the sensor on the sensor bracket using the 2 provided M3x14 screws and nuts.



4. Verify that the sensor works as intended. Since the magnetic sensing range might pick up interference from other moving parts in the Magnet Lowering Device the sensor bracket has a slotted hole to allow for adjustment of the sensor position to eliminate interference.

About us

Steridose is a global brand manufactured at the IDEX Material Processing Technologies plant in Canada. We are highly specialized in the design, development and manufacturing of magnetic coupled mixers and radial diaphragm valves.

Steridose is part of IDEX Corporation, with regional offices in key locations around the world.

Steridose is represented in important certifying and standards organizations, most notably and relevant to the pharmaceutical industry, ASME BioProcessing Equipment standards committee (BPE). We help develop the standards and Good Manufacturing Practices that minimize risk for process interference.

Steridose partners with the best distributors and representatives in the industry all over the world. Together we become the perfect mix; a premium product with global references combined with local presence for product and application support.



Manufacturing site & regional office:

IDEX Material Processing Technologies
613 Colby Drive
Waterloo, Ontario
N2V 1A1 Canada
+1 (519) 884 9660
info@steridose.com

Center of excellence:

Steridose
Ostmästargränd 8A
12040, Stockholm
Sweden
+46 8 449 9900
info@steridose.com

www.steridose.com

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