

User manual

# Norsap 1800 | 4000



Norsap 1800 S



Norsap 1800 M / 4000 M

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## Norsap models

8830 Norsap 1800 Active S  
8800 Norsap 1800 Active M

8940 Norsap 4000 Impulse M  
8950 Norsap 4000 Impulse L

Flat oval column heights:  
63-73 / 67-80 / 72-92 cm

XL column heights:  
70 cm / 73-97 cm  
70 cm / 73-97 cm

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## INTRODUCTION

Norsap is the recognized leader in the design and production of helmsman and operator seats for the maritime market.

This manual will help you make the most out of your NorSap chair.

If you have any questions regarding your NorSap chair, please contact our head office for further assistance.

## SAFETY

Be sure to keep hands and fingers out of moving parts areas when operating the chair.

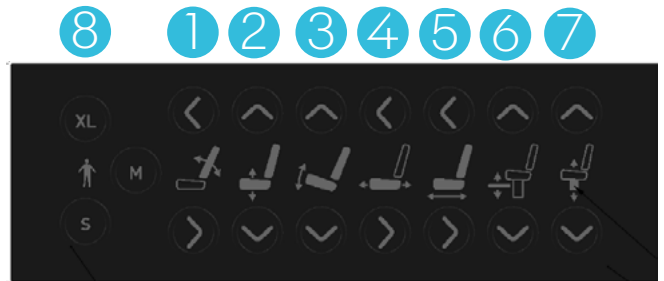
## TABLE OF CONTENTS

- Introduction.....
- Safety.....
- Functions.....
- Mounting holes measurements .....
- Care and maintenance of leather .....
- Care and maintenance of fabric.....
- Maintenance of moving parts.....
- Accessing the interior.....
- Changing cushions.....
- Install or adjust gas springs .....
- Removing the Column.....
- Resetting the Control unit.....
- Control unit diagram.....
- Control unit (ELDEL-115).....

## BUTTON FUNCTIONS

- 1 Backrest angle adjustment
- 2 Seat height adjustment
- 3 Seat front tilt adjustment
- 4 Seat depth adjustment
- 5 Seat slide adjustment
- 6 Footrest up/down
- 7 Chair height
- 8 Quick size *option / only available on NS4000*
- 9 Personal memory *option / only available on NS4000*

*On the 1800 Active, the adjustments depends on the person's weight, and tilting your body mass to adjust the chair to the preferred position.*



SOME SYMBOLS MAY NOT BE AVAILABLE DUE TO THE CHAIR SETUP OR MODEL

### PERSONAL MEMORY

Hold center button (store) and your numbered button to store. Press and hold on your numbered button to get back to your seating position.

*only available as option for NS4000*



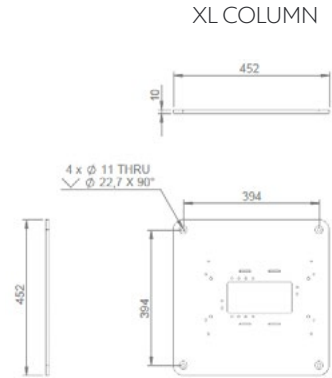
## MOUNTING HOLES MEASUREMENTS

A strong and level foundation is required to secure the installation of the base.

It may occur during storage or transport the non-electrical telescope column fastens in the lower position.

Adjust this easily by fastening the lockable arm for swing, lift up the release handle and pull up the chair.

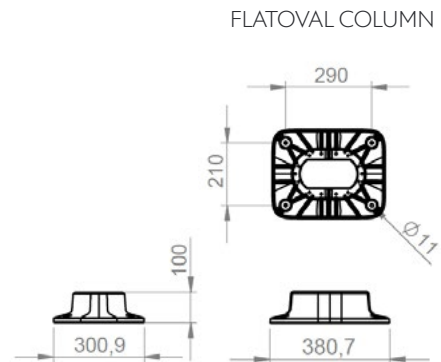
*XL column bottom plate, may vary on chair setup and model.*



## MOUNTING ON A DECK RAIL

First, make sure to have mounted the deck rail according to its user manual. The bolts for mounting the chair to the deck rail is already in place in the carrier wagon.

If you have an electrical deck rail and the cabling of the switch is done by quick-connections already implemented in the chairs column.



## CARE AND MAINTENANCE OF LEATHER

As a natural product, leather is very durable and hardwearing, but all leather products require cleaning and protection. By following these instructions, you will ensure a long and lasting leather quality. Never place leather furniture closer than 20-30 cm to a radiator or in direct sunlight.

### LEATHER CLEANING

Cleaning removes everyday dirt and stains from your leather. Without proper cleaning the leather will over a period of time leave grease spots or discoloration's. To avoid this, clean with Soft Cleaner on a regular basis. We advise once a month.

### LEATHER PROTECTION

Protect your leather to guarantee that the original quality of the leather will be maintained. Use Leather Protection Cream, we advise 2-4 times a year. This will protect against spots and preserve the leathers softness.

## CARE AND MAINTENANCE OF FABRIC

Regular light vacuuming. Occasional cleaning should be done with a reputable brand of upholstery shampoo following the manufacturer's instructions

## MAINTENANCE OF MOVING PARTS

Glide parts of the chair can be lubricated with a silicone-based lubricant. If the chair is on a deck rail, it is important that the deck rails railway is NOT lubricated.

# ACCESSING THE INTERIOR

## INTERIOR

- (1) To gain access to the interior of the seat, use the seat depth adjustment to set the seat cushion in max. Remove the pin and bolt, and slide the seat cushion away from the chair.
- (2) To gain access to the interior of the armrest, all countersunk screws marked needs to be undone.
- (3) To gain access to the interior of the column, four screws needs to be undone.  
(The column may come with different looks and features)



# CHANGING CUSHIONS

## SEAT CUSHION - A1471

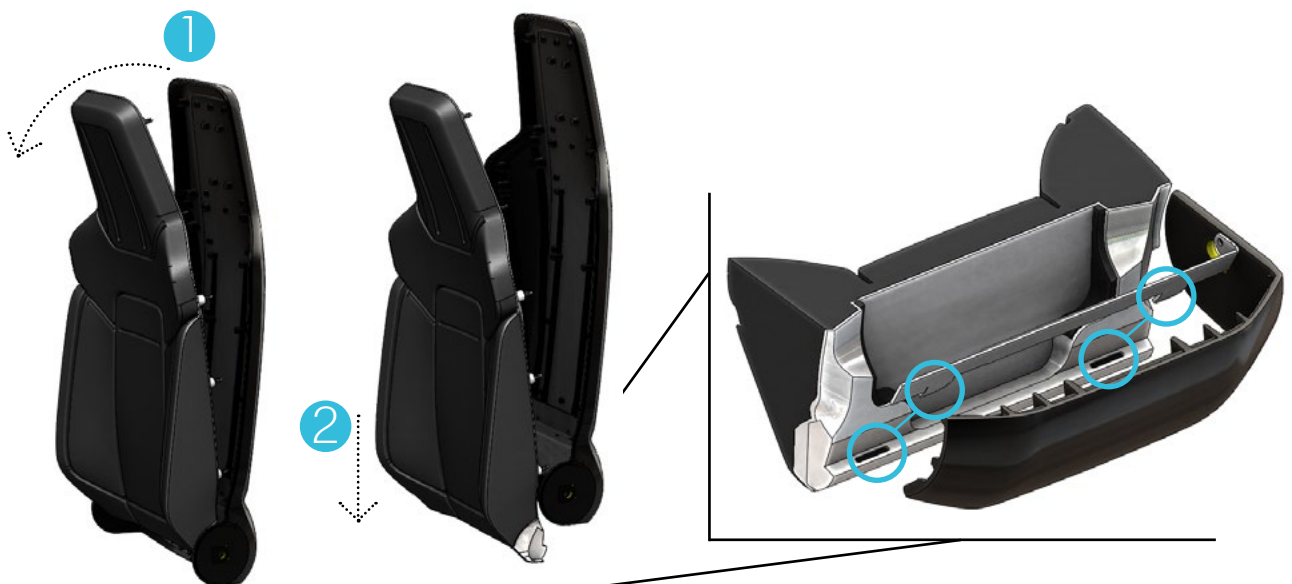
To change the seat cushion see accessing the interior.

When ordering new seat cushions, specify which chair model the cushion is for.

(example: A1471-1800 or A1471-4000)

## BACKREST CUSHION - A2088

- (1) Pull out the top of the backrest cushion from the molded backrest shield.
- (2) Continue the pull until all the plugs are out, guide the backrest cushion down and out of the hooks.



### Cushions - Seat

To remove the seat cushion, adjust the seat in a forward position. This will make you able to see the bracket for the gas spring.

Remove and secure the pin, then remove and secure the bolt holding the gas spring in place. Pull out the cushion from the gliders.



To install the seat cushion, slide the cushion on the gliders. Position the cushion so that the bolt can enter through the bracket and gas spring again.



### Cushions - Standard Armrest

To remove the standard armrest cushion, begin by unscrew 3 x *Screw Ø4,5 x19 A4 DIN 7983*, then pull the cushion straight out from the mold.



To install a new standard armrest cushion. Center plugs to the corresponding holes in the mold, and push them in. Then take the 3 x *Screw Ø4,5 x19 A4 DIN 7983*, and secure the cushion.



*Number of adjustment buttons may vary on chair setup and model*

# INSTALL OR ADJUST GAS SPRINGS

NORSAP 1800

To remove a Gas springs for the seat movement, follow the instruction on how to remove Seat cushion and Standard armrest cushion.

The Gas spring(s) are located under the seat cushion.

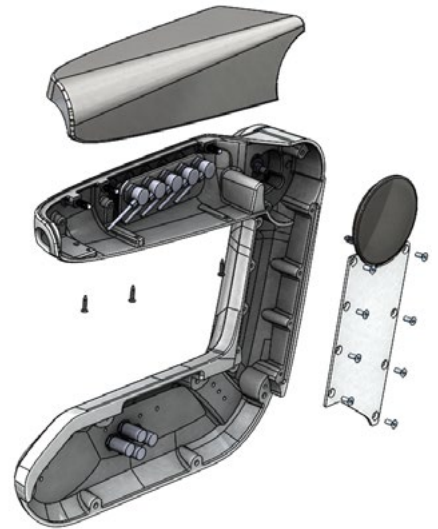
Secure all screws and parts on a clean and soft surface.

After removing the Seat and Standard armrest cushion, the operation may require to remove the Standard armrest, Circular armrest lidd and cover if replacing the Hydraulic release buttons.

**NOTE:** Do not use pliers without any soft protection when holding the piston for the release button. Any marks on the piston may cause loss of preasure and the dedicated Gas spring will not be lock or release.

Locate which Gas spring that needs to be replaced. Follow the hydraulic tube to or from the armrest, and remove the bracket located in the armrest.

Remove the Gas spring with the release cap. Note which order washers and nuts are mounted in, before unscrewing the the Gas spring and release cap.



NS 1800 Standard

- 1 Backrest - GAS-088  
w/ GASDEL-024
- 2 Back crib - GAS-091  
Front crib - GAS-091  
w/ GASDEL-023
- 3 Seatpan - GAS-092  
w/ GASDEL-024
- 4 Seat -GAS-092  
w/ GASDEL-023



Description Gas springs  
 GAS-088 - 085-273 / 500N  
 GAS-091 - 085-273 / 300N  
 GAS-092 - 090-296 / 50N

Description Release caps  
 GASDEL-023 - 1000 mm  
 GASDEL-024 - 1200 mm

To install the new Gas spring.

When mounting on the Gas spring to the release cap, screw the Gas spring on CC the release cap until you feel resistance.

*The resistance will vary on the preload force the Gas spring has.*

Use the flat surfaces on the mounting end of the Gas spring as reference to the release cap, screw the Gas spring CCW 30 minutes / 180 degrees.

Without rotating the release cap any further, tighten the nut against the release cap by hand. Locking the position of the release cap on the Gas spring.

Tighten the nut with suitable tools.

*The release cap and piston can now be rotated together for aligning the mounting holes for the installation.*

**NOTE :** Do not use force when manipulating the hydraulic cable. If the cable loses its tubular shape it may not engage or disengage the Gas spring correctly.

At any point, do not try to loosen, adjust or change angle on the ends on the plastic tubing.

Mount the Gas spring first, then guide the hydraulic cable through the seat base and up into the upper part of the armrest. Attach the Circular armrest lid and cover.

Mount the Hydraulic button to the bracket and attach the Standard armrest cushion back on.

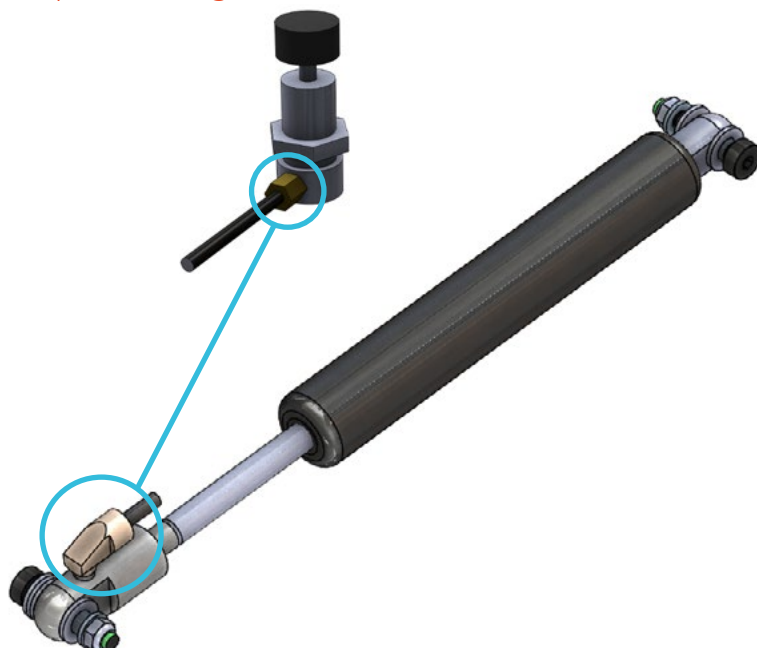
Mount on the armrest while checking for unwanted strain or pressure on the hydraulic cables.

Check the seat functions while operating the buttons from the chair.

If all functions are working, mount on the Seat cushion.

### SAFETY FIRST:

When changing Gas spring or Actuators, be careful between moving parts and support the movement before removing the Gas spring or Actuators.



# OVERVIEW OF ACTUATORS AND GAS SPRINGS

NORSAP 4000

To gain access to the actuators and gas springs, begin with seat depth adjustment set to maximum length.

Or set the seat sliding / underarm length to minimum length. This adjustment will make the next step easier.

Pull out the hairpin cotter pin, and remove the clevis pin holding the actuator in place. Slide the seat cushion off the chair, and secure the parts on a clean and soft surface.

Please contact our head office for troubleshooting or removal of actuators and gas springs.

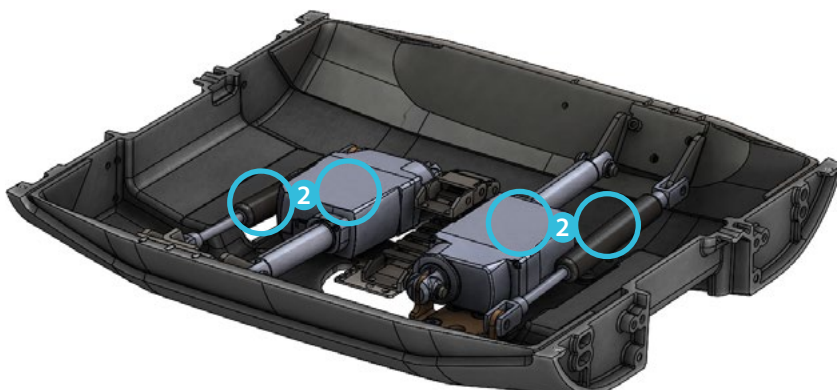


## SAFETY FIRST:

When changing Actuators, be sure that the chair is not connected to a power source and be careful between moving parts and support the movement before removing the Gas spring or Actuators.

### NS 4000 Standard

- 1 Backrest
  - AKT-036 150 / 1500N
  - GAS-093 155-302 / 700N
- 2 Back crib
  - AKT-033 85 / 1200N
  - GAS-086 090-292 / 700N
- 2 Front crib
  - AKT-033 85 / 1200N
  - GAS-086 090-292 / 700N
- 3 Seatpan
  - AKT-035 100 / 1500N
- 4 Seat
  - AKT-034 120 / 1800N
- Footrest
  - AKT-037 190 / 900N





# ADJUSTMENT MODULES

NORSAP 1800 S / 1800 M / 4000

Electrical and Gas spring adjustment modules

Replacing an electrical membrane keyboard or a hydraulic Gas spring release circuit.

Follow the Changing the cushions and Install or adjust Gas springs to get access on the NS 1800 S.

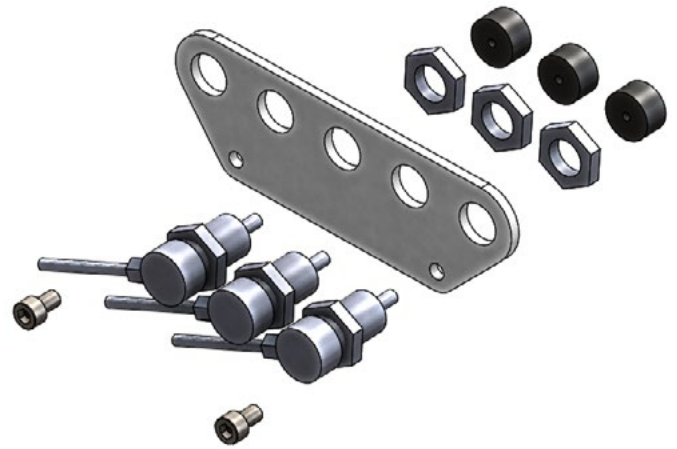
Follow the instruction Accessing the interior, Changing the cushions and Install or adjust Gas springs to get access on the NS 1800 M or NS 4000.

Hydraulic Gas spring release circuit is not included in the modules.

**NOTE:** Stickers, signs and electrical membrane keyboards is not reusable.

Norsap descripton / art.nr.:

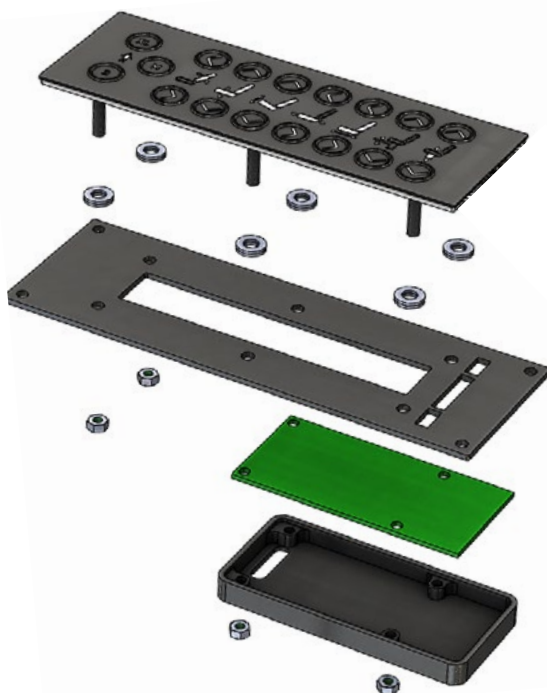
Norsap 1800 S Gas spring module	A1883-2
Norsap 1800 S Gas spring module	A1883-3
Norsap 1800 M Gas spring module	A2873
Norsap 4000 Electrical module	A1875
Norsap 4000 Blind plate	A2869
Norsap 4000 Memory module (option)	A2832



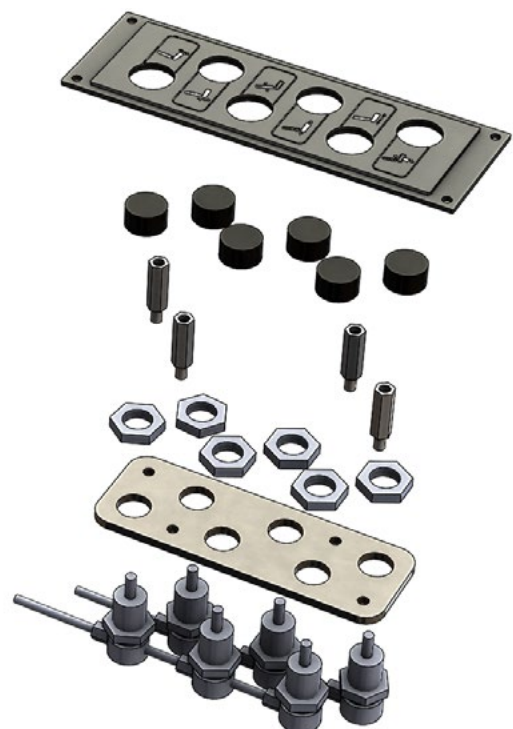
NorSap 1800 S - LHS Gas spring module

Norsap sparepart description / art.nr.:

Plastic button for 1800 S	GASDEL-029
Round stickers (6pcs) for 1800 S	P18719
Sign for 1800 M (RHS) w/high symbol	P17244
Sign for 1800 M (RHS) wo/high symbol	P19012
Electrical membrane keyboard (RHS) for 4000	ELDEL-135
Lumbar membrane keyboard (LHS) for 4000	ELDEL-161
Rotation membrane keyboard for 4000	ELDEL-162
Deck rail membrane keyboard for 4000	ELDEL-163



NorSap 4000 - RHS Electrical module



NorSap 1800 M - RHS Gas spring module

# REMOVING THE COLUMN

NORSAP 1800

Start the process with adjusting the chair to the lowest position, and pulling the chair top and inner profile up. Secure the chair top and inner profile by tightening the 2 x M8 set screws.

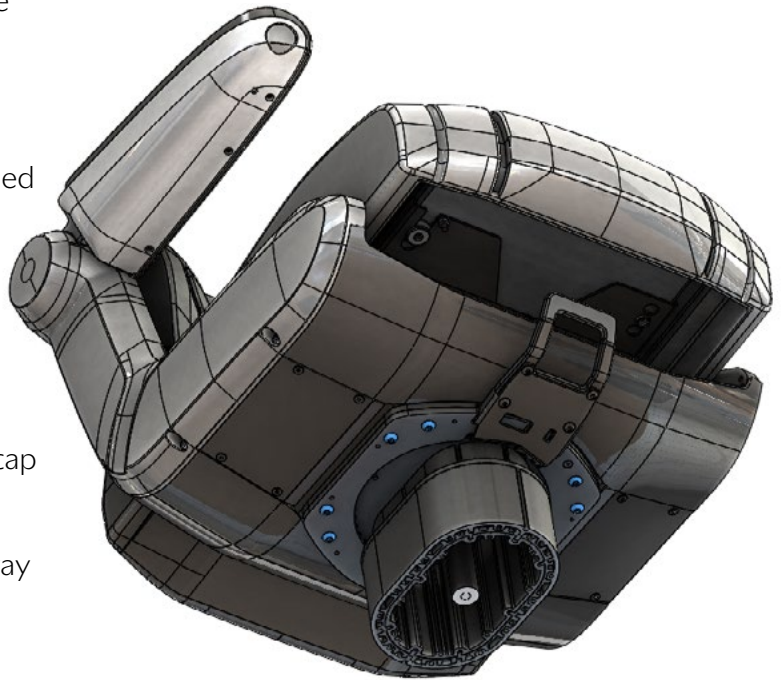
In some situations, the chair will have preinstalled components and bigger armrests. In these cases the 2 x M8 set screws will not be able to hold the weight alone, and the chair needs additional support beams.

Use planks or other suitable objects from the floor and up under the rotation unit, before removing the 8 x M8x30 Button head socket cap screw.

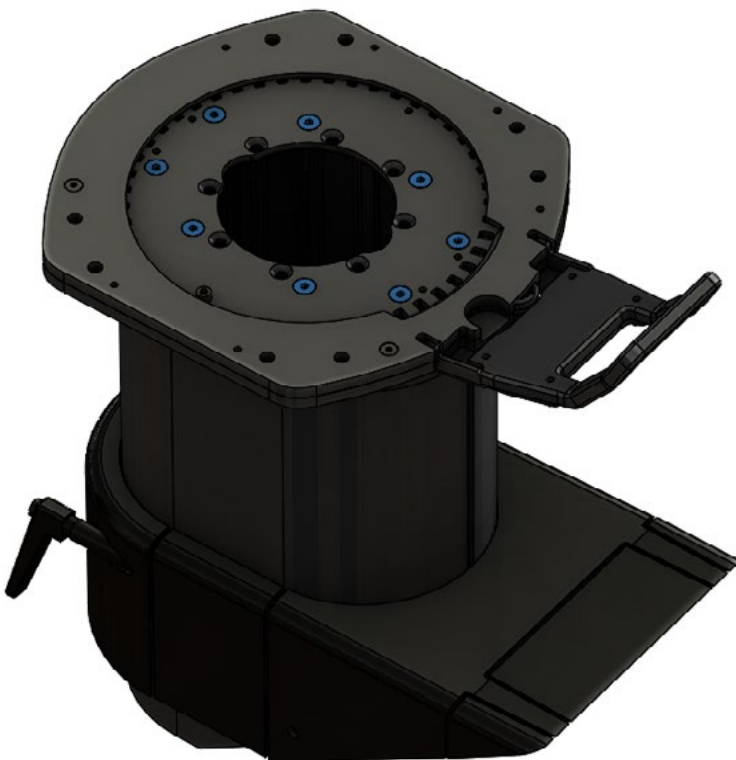
Lift the chair top with the gas spring up and away from the column.

Move the support beams from the old column to the new column, and position the beams from the floor and up under the rotation unit.

Position the chair top onto the new column and secure the chair top to the rotation unit, with the 8 x M8x30 Button head socket cap screw.



Remember to check and set the rotation limit on the new rotation unit before installing the chair top.



Separating the column from the rotation unit

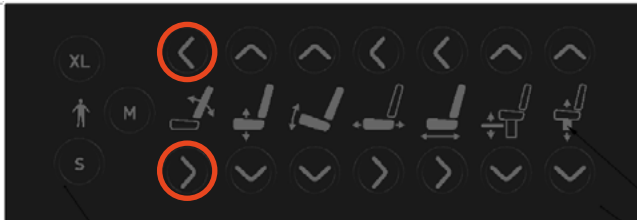
*Remove the 8 x M6x30 and mount it back on the new column.*

The rotation unit is standard on all standard chairs with hydraulic adjustments, and can be replaced with a suitable adapter plate.

Chairs without rotation may have different fixture for the gas spring located in the column.

# RESETTING THE ACTUATOR

NORSAP 4000



## RESETTING THE CONTROL UNIT

Press and hold hold together for 10 seconds. Afterwards, control unit will beep.

The chair must be initialized after a reset.



## INITIALIZATION THE CONTROL UNIT

The initialization will run all actuators, to define their position. Press and hold the three buttons throughout the initialization, until all movement has stopped. There will be a total of six movements, that ends with the backrest being set in a upright position.

## CONTROL UNIT DIAGRAM

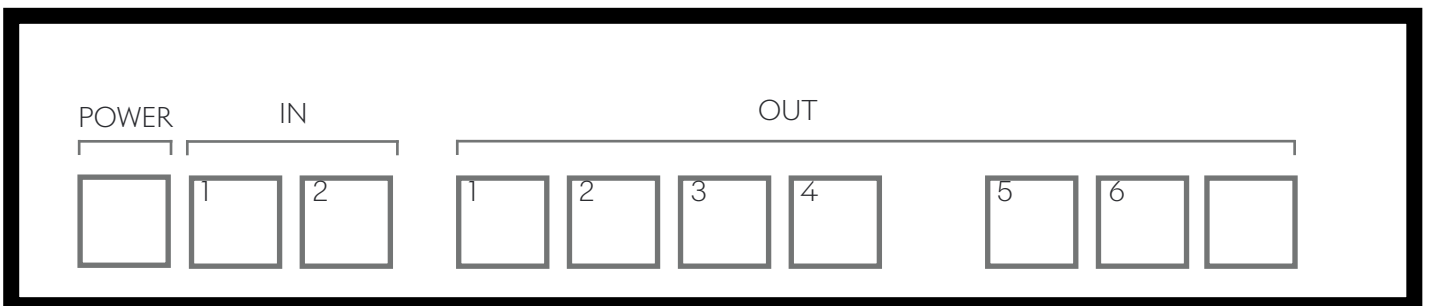
### CONNECTION DIAGRAM

There are one power input, two signal input and seven signal output/channels.

Power	Power in
IN1	Chair adjustment membrane panel
IN2	Chair memory membrane panel

### Output/channel:

CH1	Seat height front
CH2	Seat height rear
CH3	Footrest
CH4	Backrest
CH5	Seat slide
CH6	Seat depth



## WARNING:

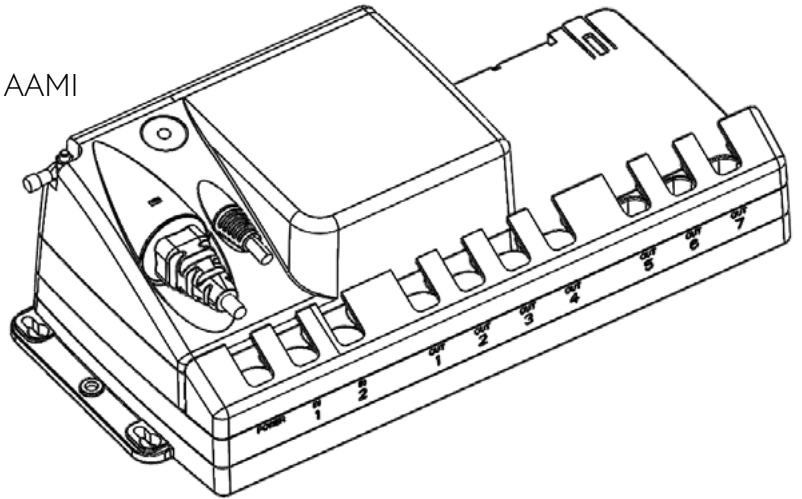
If power cable (24V) from Control power unit is inserted in other than Power, the Control unit will shorting.

# CONTROL UNIT (ELDEL-115)

## CONTROL UNIT MODULES

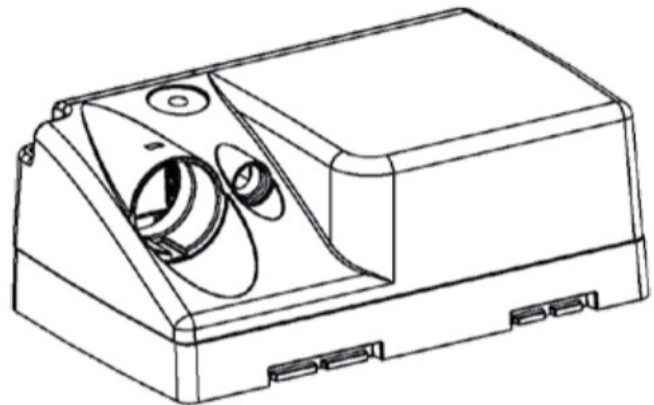
The control unit consist of two modules.

- Duty cycle: 10% ~ max. 2 min. continuous use followed by 18 min. not in use.
- Ambient temperature +5° to + 40°C
- Approvals: IEC60601-1:2005 3rd ed., ANSI / AAMI ES60601-1:2005, 3rd edition, CAN/CSA-22.2 No 60601-1:2008 approved



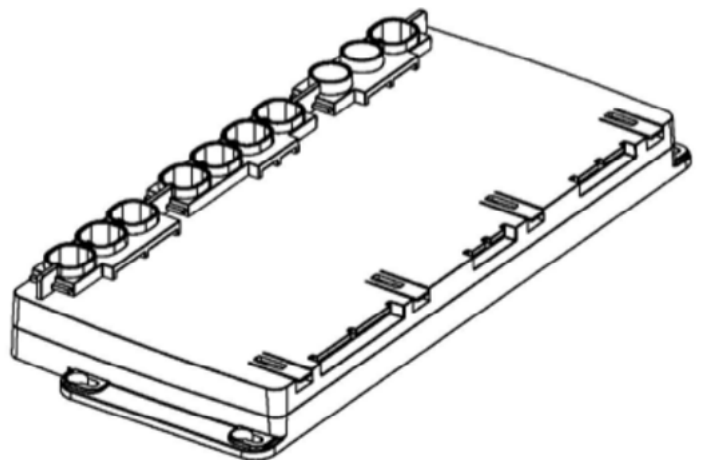
## CONTROL POWER MODULE

- 230V or 110V for U.S
- IPX6 (cannot be used for Washable systems)
- 200W transformer (24V output)
- Class I (with earth)



## SYSTEM CONTROL UNIT MODULE

- 6 channels
- IPX6 (cannot be used for Washable systems)
- With EEPROM and 128kb FLASH
- 24V input





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