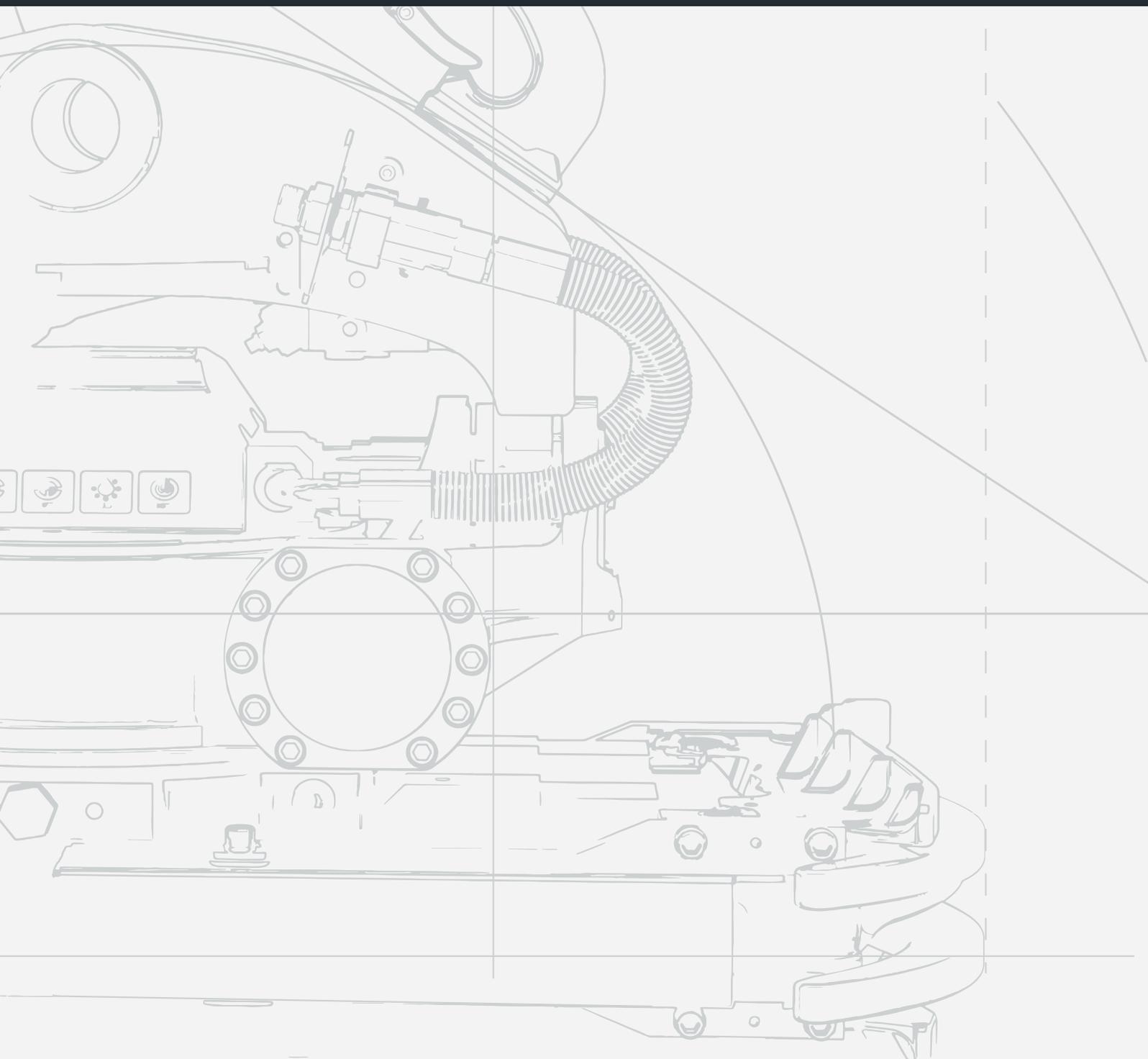




# Rototilt® - Tiltrotator

Models: R1, R2, R3, R4, R5, R6, R8 & R9



**Translation of****EU Declaration of Conformity**

In accordance with Machinery Directive 2006/42/EC. Appendix II A

**Manufacturer****Rototilt Group AB**

Box 56  
SE-922 21 Vindeln  
SWEDEN

declare under our sole responsibility that the following product:

**Model:****Serial Number:**

a) is produced in compliance with, and meets all applicable regulations in, the European Parliament and European Council Machinery Directive 2006/42/EC of 17 May, 2006. Directive 2006/42/EC is transferred to Swedish legislation through Regulation AFS 2008:3 of the Swedish Work Environment Authority statutes.

b) is manufactured in accordance with other applicable directives such as: Directive 2014/30/EU of The European Parliament and Of The Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility

c) is manufactured in accordance with the following harmonized standards: SS-EN ISO 12100:2010, SS-EN ISO 13849-1:2016, as well as applicable parts of SS-EN 474-1:2006+A5:2018 and SS-EN 474-5:2006+A3:2013.

Qualified to compile the technical documentation in accordance with annex 7A:

Niklas Bjuhr

VP Engineering, Rototilt Group AB

Place and date: Vindeln, Sweden

Name and signature of authorized person:



Anders Jonsson  
CEO, Rototilt Group AB

# Introduction

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This document has been produced to give the user the best possible conditions for working with the product. Carefully read the entire document. Make sure that you understand the content before starting work. Incorrect handling of the product could result in serious injury to the user or negative impact on the environment and product. Following all the instructions in the document will safeguard the performance, operating economy and service life of the product.



## Document information

The document is related to a specific product.

The document publication information is provided at the bottom of each page. The details facilitate contact with support and spare parts dealers.

Different icons and marking concepts are used in the document to draw the reader's attention to information of a special nature.

Introduction - basic information.

Overview - information about the specific product.

Installation\* - information about the assembly, installation and connection of specific products.

Functional testing\* - standardised tests which ensure that the product works safely and correctly.

Operation\*\* - information about how specific products are to be used.

Service\*\* - information about fundamental maintenance and basic service measures.

Trouble shooting - fundamental information about the product's fault messages and reduced functionality.

Schematics - technical information about the product its component parts, in the form of drawings and diagrams.

\* *Applies only to installation instructions*

\*\* *Applies only to Instructions for Use*

	<b>TIP</b> – Indicates content that can facilitate routine tasks and/or various situations.
	<b>INFO</b> – Indicates that the content is extremely important in order to maintain the product's value.
	<b>IMPORTANT</b> – indicates that the content must be followed to avoid risk of damage to the product and/or personal injury.
	<b>WARNING!</b> Indicates that the content must be followed to avoid risk of damage to the product, personal injury, and/or impact on the environment.

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	<b>TIP</b> – Note the publication details in an appropriate manner so the document can be easily replaced in the event of loss or damage.
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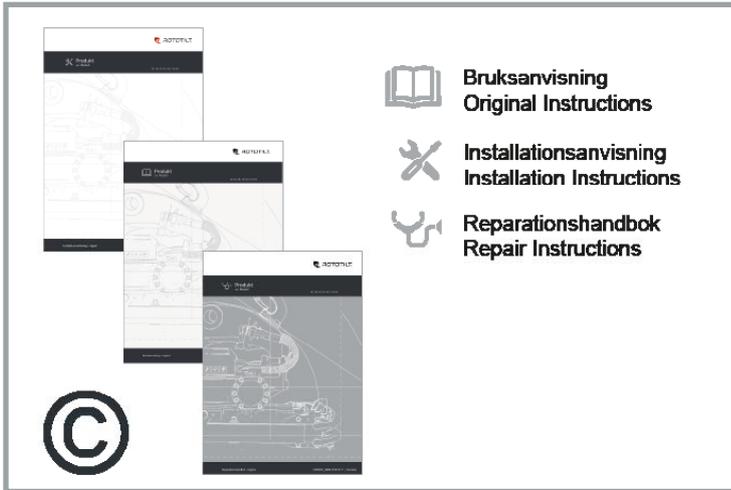
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	<b>INFO</b> - Standardisation of technical terms mainly occurs in English. In order to ensure that the detailed technical information is correct, English is used exclusively in the "Schematics" section.
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	<b>INFO</b> - Where text appears in figures, only English is used.
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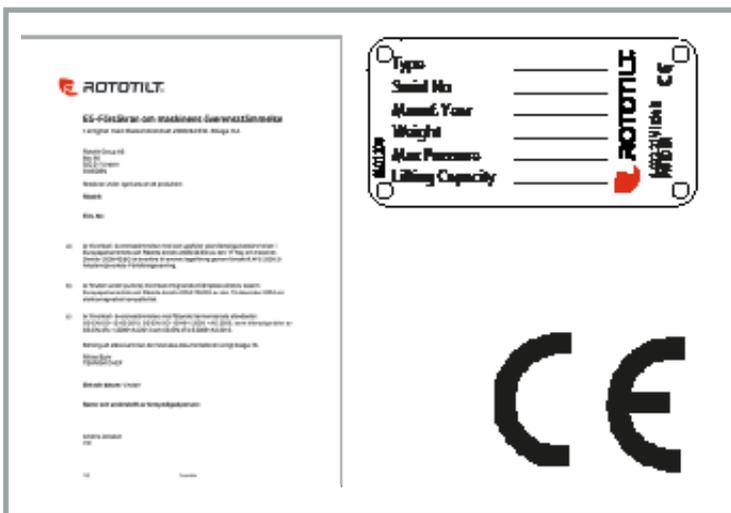
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## Reservations

The content applies specifically at the date of issue. All precautions are taken to ensure the content is as correct and complete as possible. Nevertheless, no responsibility is accepted for omissions and incorrect information.

The manufacturer reserves the right, without changing the fundamental function of the product and within the framework of product development, to introduce improvements. The aforementioned work is performed continuously, but does not necessarily result in updates to this document. Rototilt Group AB owns the document and its copyright. This means that all reproduction, storage and/or transmission of the document in all other forms is prohibited. The prohibition applies to the whole or parts of the content, irrespective of whether it is used in another publication or not. Exceptions from the prohibition can only be given after written applications to Rototilt Group AB.



## Technical conditions

### CE

The product rating plate and/or documentation indicates whether it is CE marked.

CE marking entails that the product is designed, manufactured and described in accordance with EU directives.

If the product is modified, supplemented with other products or used within an unapproved application area for the product, this marking ceases to apply. See the EU's machinery directive.



### INFO -

Details about the warranty and claims are provided by the dealer.

## Original parts

Use only original spare parts. Rototilt Group AB takes no responsibility for the product if other spare parts are used.



**WARNING!**  
Maximum storage temperature 40°C.



**IMPORTANT -**  
The tool under Rototilt® must be detached during transport and movement of the base machine/excavator over long distances.



**IMPORTANT -**  
Never allow untrained, unauthorised persons to install, maintain or use the product.



**WARNING!**  
All comprehensive maintenance work and all product repairs must be performed by trained and authorized service partners.



**IMPORTANT -**  
No protective or safety devices, no matter how well designed, are better than the user's caution and attentiveness.

## Storage

If the product is stored for long periods without being used, it should be stored indoors and protected against moisture. The product contains several hydraulic components with entrapped hydraulic oil that can expand in elevated temperatures and cause pressure build-up.

## Transport

When lifting a non-attached product, the lifting equipment must be safely secured, preferably to the attachment frame. Make sure that the lifting equipment cannot become detached, slide or in any other way can cause the product to fall or tip.

## Base machine/excavator requirements

The product range from Rototilt Group AB provides solutions for different base machine/excavators. Contact your dealer for information about compatibility between various products and base machines/excavators.

## User requirements

Each user of the product should have basic knowledge of mechanics, hydraulics and electronics.

Each installer, support provider and service technician must have extensive knowledge of mechanics, hydraulics and electronics in general and tiltrotators in particular.

Each installer, support provider and service technician must act on behalf of Rototilt Group AB or its authorized service partners.

## Preventing injuries

Accidents at work can be avoided through preventive safety measures. Unfortunately, too many work-related incidents occur due to recklessness or negligence. Poorly implemented and incorrect handling of the product could result in serious injury to the user or negative impact on the environment and product.

- Carefully read the entire document. Make sure that you understand the content before starting work.
- The user manual must always be available in the base machine/excavator.
- Warning stickers must be applied fully visible and kept fully legible. The stickers are explained in the special section of the user manual.
- Read and understand the base machine/excavator's safety instructions and user manual.
- Make sure that nobody is within the base machine/excavator's risk zone before commencing use.

# Overview

The Rototilt® tiltrotator, the product described, is a hydraulically powered tool. Its primary functions are to rotate and tilt the tools coupled to the base machine\*. Other products described in this document are original tools for the tiltrotator. Contact your dealer to complement your tiltrotator with original equipment\*\*. The overviews show standard equipment and options. Refer to the figures and lists below.

\* Base machine refers to an excavator or backhoe loader.

\*\* Accessories for other brands can be mounted on the tiltrotator provided that Rototilt Group AB has either supplied or approved the product.

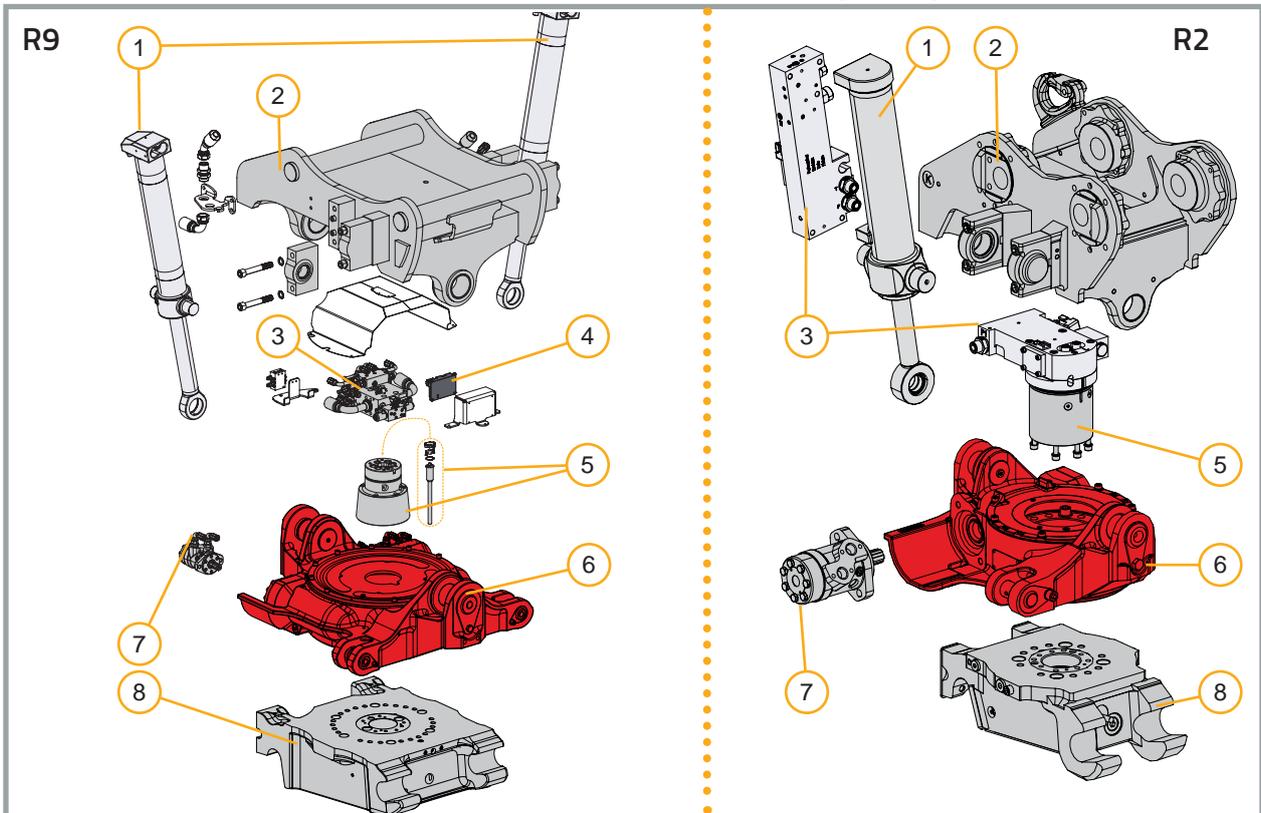


## Mounted Rototilt® tiltrotator

1. Grapple module, RG800
2. Tiltrotator, R4
3. Quick coupler, S60
4. Tool, universal bucket

## Base machine

5. Stick
6. Harness, boom
7. Boom
8. Operator position



## Rototilt® tiltrotator, components

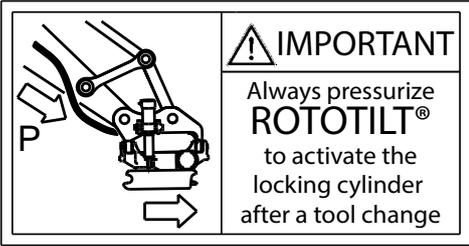
- |                     |                    |
|---------------------|--------------------|
| 1. Tilt cylinder    | 5. Swivel unit     |
| 2. Attachment frame | 6. Rotor unit      |
| 3. Valve block      | 7. Hydraulic motor |
| 4. Control unit     | 8. Quick coupler   |

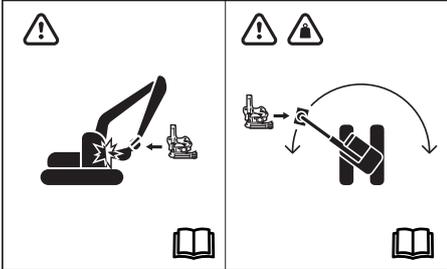
The figure shows two tiltrotators configured differently in terms of attachment frames, control systems, options and quick couplers.

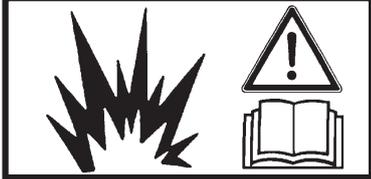
# Operation

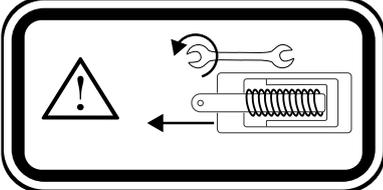
Type		
Serial No		
Manuf. Year		
Weight		
Max Pressure		
Patent <a href="http://rototilt.com/patent">rototilt.com/patent</a>		

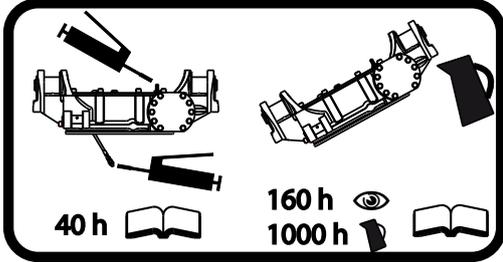
  

A


B


C


D


E


F


**SecureLock™**



**ILS**



**HFS**



**LHV**

## Rating plate

Type - Tiltrotator model designation

Serial No - Tiltrotator serial number

Manuf. Year - Tiltrotator year of manufacture

Weight - Tiltrotator weight in kilos (kg)

Max Pressure - Maximum permitted hydraulic fluid pressure

The rating plate is affixed to the tiltrotator rotor housing.

## Warning stickers

- a. Warning sticker, tool replacement - affixed in cab.
- b. Warning sticker, risk of collision, weight factors - affixed in cab.
- c. Warning sticker, locking cylinder function, risk for pressure increase - affixed to locking cylinder.\*
- d. Warning sticker, spring-loaded locking cylinder - affixed to locking cylinder.\*

\* c & d vary between different types of quick couplers

## Information stickers

- e. Information, lubrication and oil change for rotor - affixed to rotor housing, refers to service information in the instructions for use.
- f. Information, configuration of options, affixed to rotor housing.

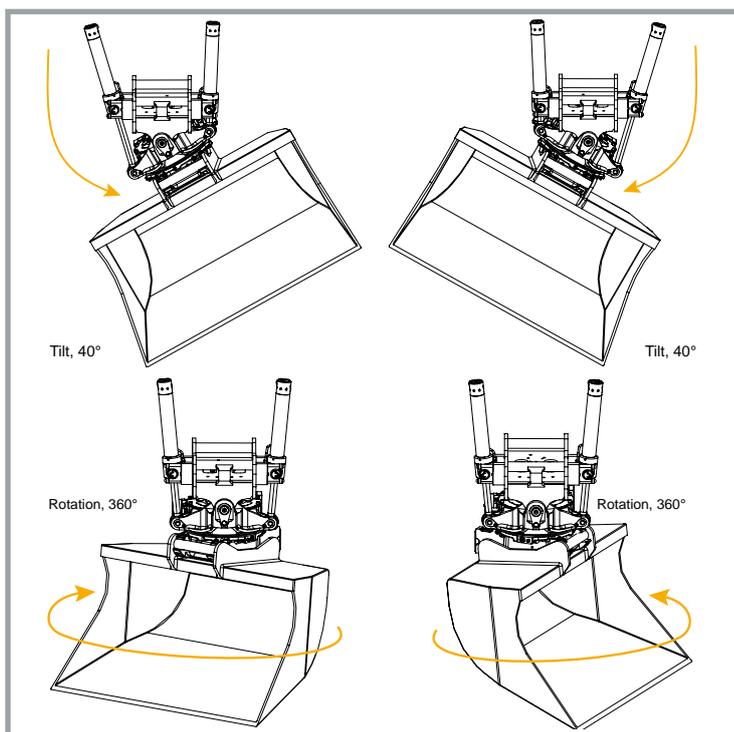
 **IMPORTANT** - the stickers are extremely important for safe operation of the product. Keep the warning decals fully legible.

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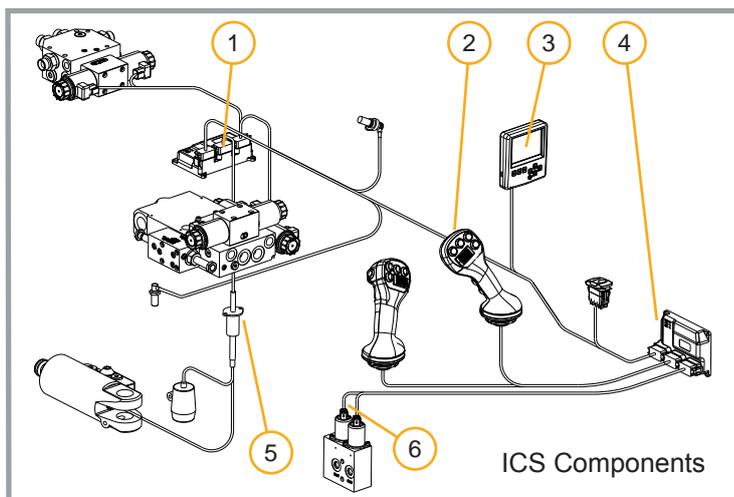
English



## Rototilt®, functions

**Tilt**, a lateral movement either to the right or left.

**Rotation**, unlimited rotation in both directions .

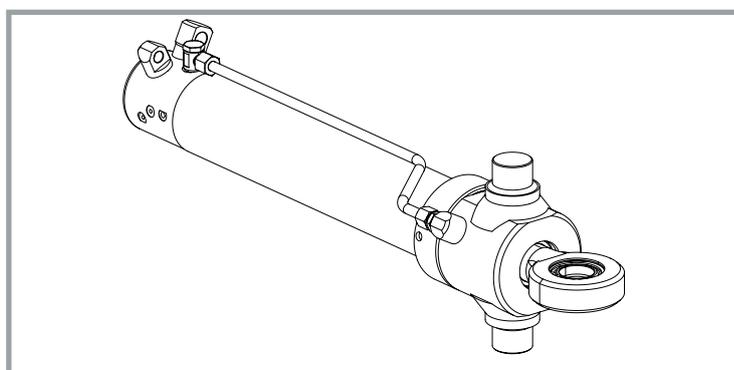


## Control system

The control unit on the tiltrotator is controlled via a special wiring harness with a control unit and handle kit in the base machine's cab.

The Rototilt's various control systems are available in several configurations: standardised, with multiple extra functions and machine adapted.

1. The Rototilt® control unit, TCU
2. Handle
3. Display.
4. Cab control unit, CCU
5. Electric swivel
6. Feeder



## Tilt cylinder

Tilt cylinders are available in two configurations:

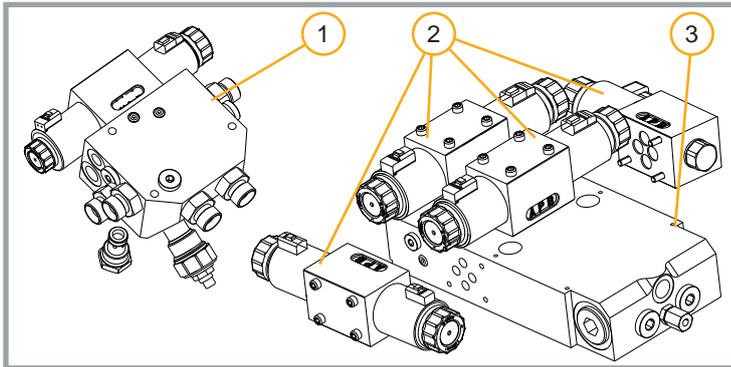
Single-action cylinder with load-holding valve

Dual-action cylinder with load-holding valve

The load-holding valve is a safety device.

The larger the Rototilt® models are equipped with two tilt cylinders, with both single-action and dual-action versions as options.

The smallest Rototilt® models are equipped with a dual-action tilt cylinder.

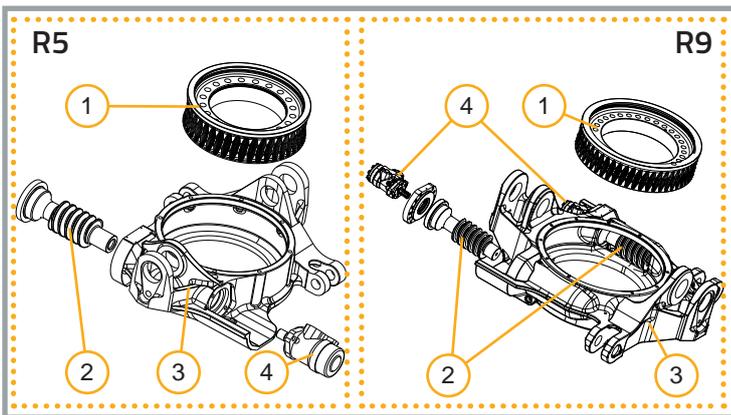


## Hydraulic components

Hydraulic fluid is distributed through the valve block to the functions for tilt and rotation, and other hydraulically controlled functions.

The hydraulic components are especially designed for the Rototilt's various control systems as well as for various accessories and tools.

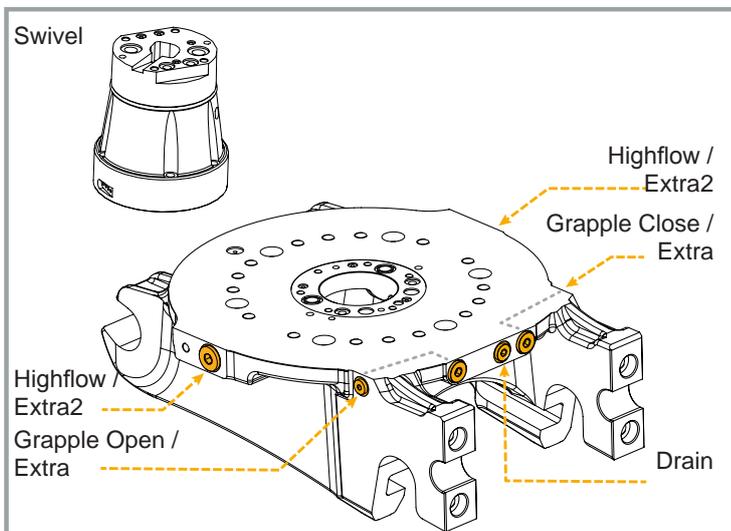
1. Valve block, tilt
2. Valve with electric coil
3. Valve block, swivel



## Rotor unit

The rotor unit consists of a worm gear with unlimited rotation in both directions. The worm gear is auto-inhibiting and serves as a brake during excavation. The gear operates in an oil bath and is powered by a low-speed hydraulic motor.

1. Worm wheel
2. Worm screw
3. Rotor housing
4. Hydraulic motor

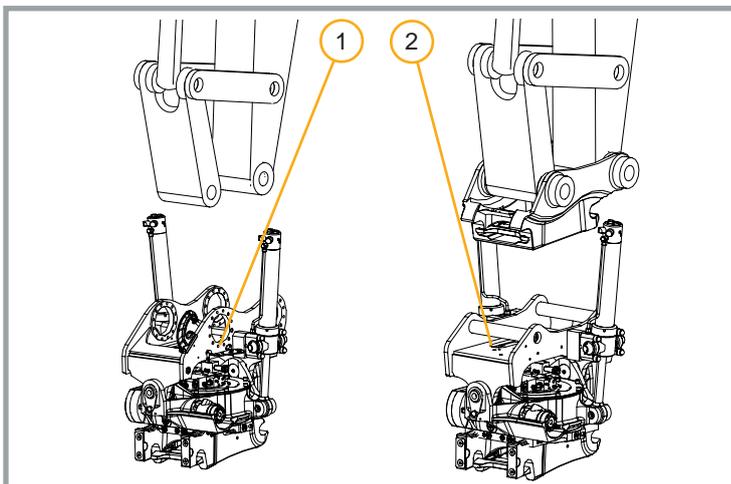


## Swivel

The swivel is a rotating coupling between the valve block and the quick coupler.

## Quick coupler

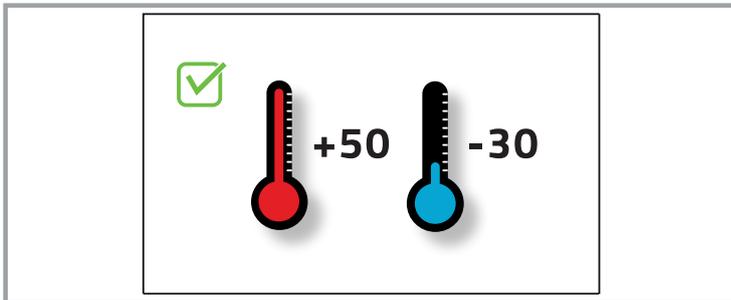
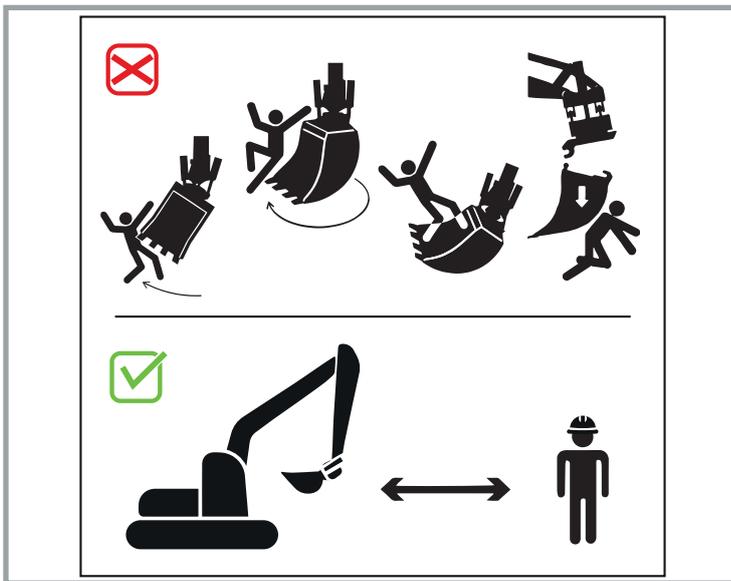
The quick coupler has a hydraulic locking function that enables quick tool replacement from the operator position.



## Attachment frame

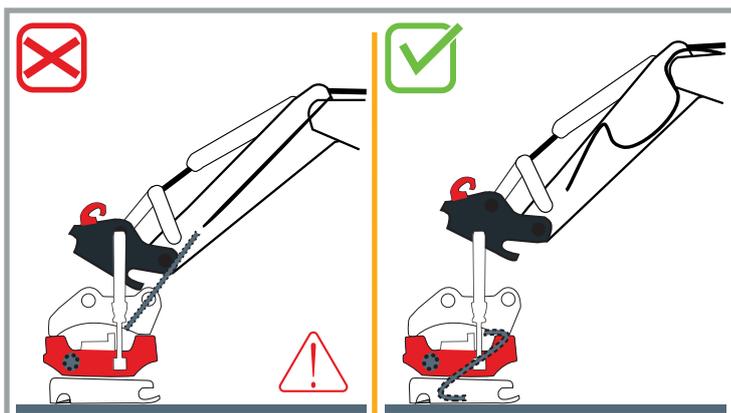
The Rototilt® can be adapted directly to the base machine's stick or to the machine coupler.

1. Attachment frame for stick
2. Attachment frame for machine coupler  
*For more information, see the machine coupler instructions for use*



**WARNING!**

Do not use the Rototilt® if it is not working properly! Contact your dealer/authorised service partner immediately if you discover any faults.



**Using the product**

Make sure that no one is within the base machine's risk zone before starting work. Danger to individuals and property is not eliminated, even when the Rototilt® is correctly operated.

**Limitations**

The mounted tiltrotator alters the base machine's geometry and weight factors. Values specified in the base machine's lifting table must be reduced with the weight of the Rototilt®.

Take consideration to the risk of collision between the base machine and tools and/or its loads.

Check that no parts of the Rototilt® collide with any part of the base machine when performing excavation manoeuvres at the end-positions.

Because of the risk of the load or parts thereof falling, no one is permitted to go beneath elevated objects.

Do not modify the tiltrotator's properties with non-approved devices. If it is necessary to lift with a chain or straps, use the base machine's lifting hook.

The tiltrotator and the mounted tools shall be used when lifting. Under no circumstances may it be used for lifting persons.

The Rototilt® is approved for use in outdoor temperatures from -30°C to +50°C.

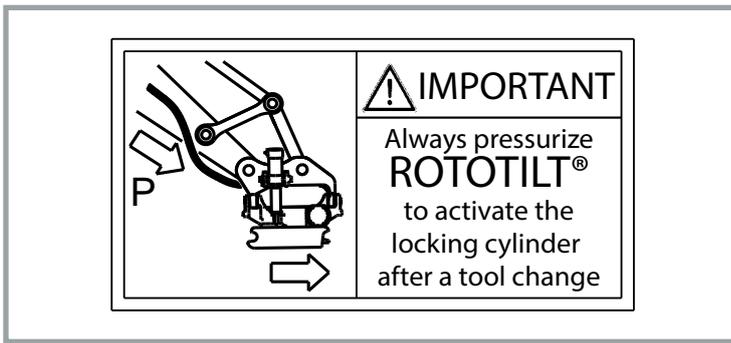
**If an accident occurs**

Always place the tiltrotator on a stable and level surface, without tools. Make sure that the Rototilt® cannot overturn.

Minimise environmental impact; avoid hydraulic oil leakage. Use a collection vessel.

Disconnect the hydraulic hoses and harness between the Rototilt® and the base machine. The tiltrotator is now detached from the base machine.

Contact an authorised service provider.



**WARNING!**

Always pressurise the Rototilt® to activate the locking cylinder.



**WARNING!**

Extra care must be taken when handling long objects with grapples due to inertia considerations and the expanded risk zone.



**IMPORTANT** - All tools and equipment must be adapted to the base machine's capacity.



**WARNING!**

The base machine's overload warning system must be used when working with grapples.



**WARNING!**

When rotating the load in the grapple, there is a risk of collision with the base machine.

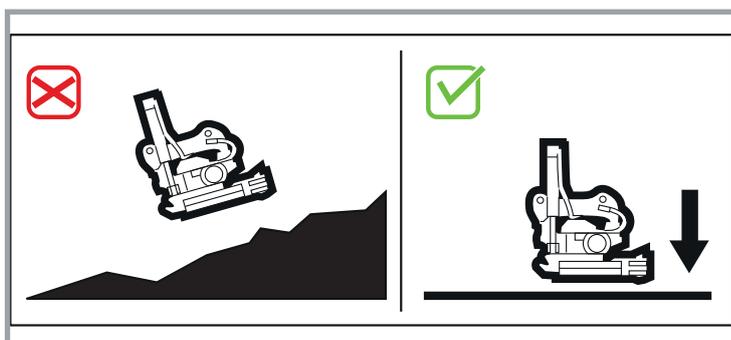


**IMPORTANT** - The base machine's centre of gravity will shift when rotating a load suspended in the grapple.



**WARNING!**

When using a grapple, load-holding valves are required.



### During start

Perform daily checks; see *Service*.

Warm up the Rototilt® before starting work.

Operate the rotor slowly in one direction for about one minute.

Operate the tilt function slowly back and forth for about one minute.

Test run the tiltrotator and check that it is fully functional.

### During use

Operate the base machine and tool with soft movements. This ensures greater precision and less wear.

Always keep an eye out for signs of reduced function.

Use the tiltrotator within the specified limits for load, working pressure and scope. See *the rating plate and technical data*.

Always pressurise the Rototilt® to activate the locking cylinder in the quick coupler. Refer to *the instructions for use for both the quick coupler and the control system*.

### When finished

Detach and place the tool on a firm and level surface, ensuring that it cannot overturn.

Perform daily checks; see *Service*.

Always place the tiltrotator on a stable and level surface, without tools.

Ensure that it cannot overturn.

The tool coupled below the Rototilt® must be of a type normally used when working with the base machine. All attachments must be designed for the size of the base machine to be used.

Examples of recommended tools are listed below. For inquiries, contact an authorised dealer.



## Recommended tools

1. Universal buckets
2. Sorting buckets
3. Excavation buckets
4. Trenching buckets
5. Multi-grapples
6. Stone grapples
7. Sorting grapples
8. Grapple modules
9. Railgrapple
10. Ripper
11. Hydraulic hammers
12. Asphalt cutters
13. Grading beam
14. Compactors

The Rototilt® has one or more extra functions that enable the use of hydraulically operated tools.

Tools such as grapples, compactors and hammers must be CE-marked.

## Not recommended

Rototilt Group AB advises against the use of accessories or tools other than those listed above. If any other accessory or tool is used, it is at the sole responsibility of the user.

Rototilt Group AB advises against the use of fork attachments in combination with tiltrotators. If these are used nonetheless, it is at the sole responsibility of the user.

**!** **IMPORTANT** - All tools and equipment must be appropriate for the base machine's capacity.

**!** **WARNING!**  
 When using fork attachments, load-holding valves are required for the tilt cylinders.  
 The base machine's overload warning system must be used when working with a fork attachment.  
 Fork attachments may not be used when unloading goods at heights.  
 The base machine's centre of gravity will shift when handling goods with a fork attachment.  
 When rotating a load with a fork attachment, there is a risk of collision with the base machine.



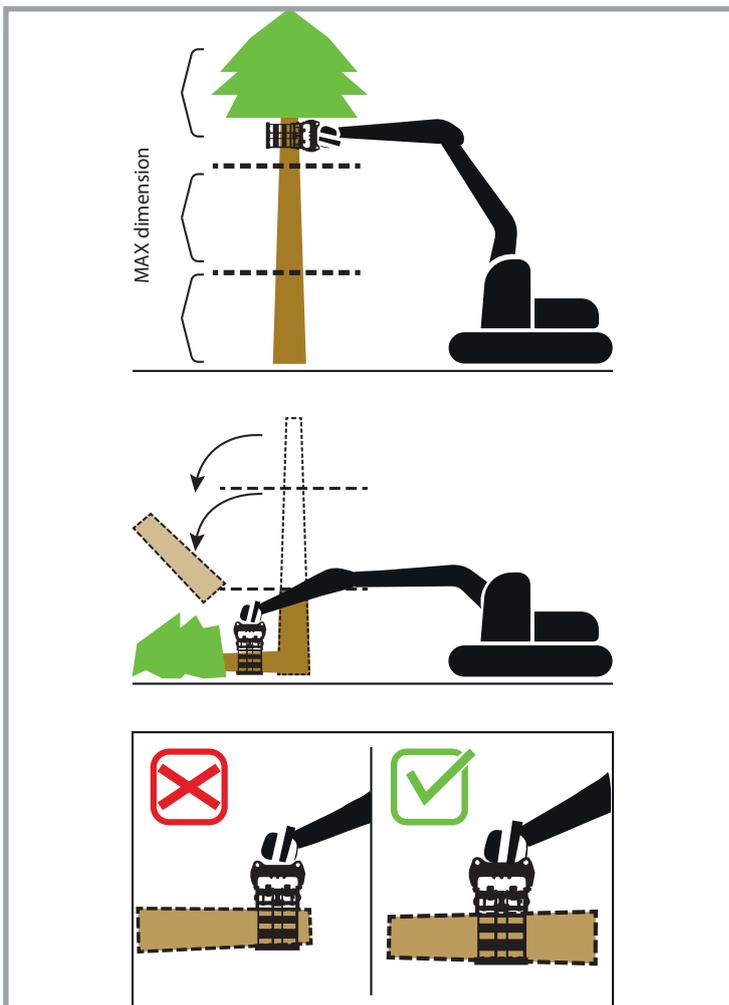
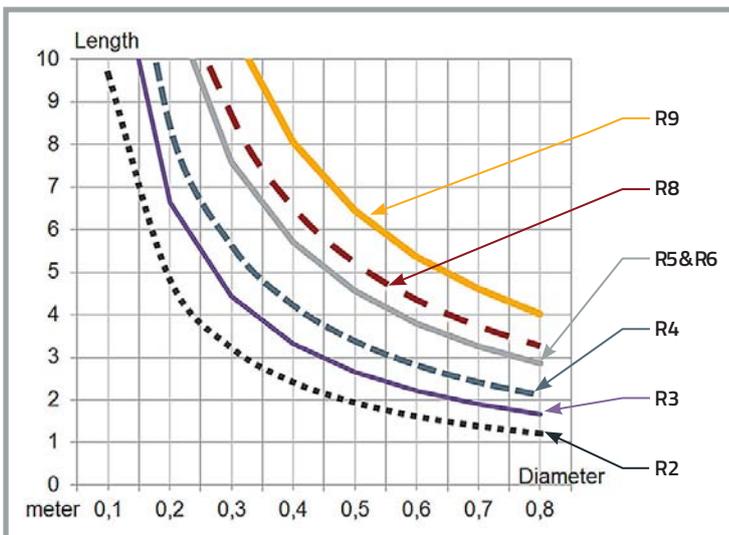
### WARNING!

The base machine's overload warning system must be used when working with grapples.



### WARNING!

When rotating a load in a grapple, there is a risk of collision with the base machine.



## Grapple

The base machine's overload warning system must be used when working with a grapple.

When using a grapple, the requirements regarding load-holding valves apply, so that the grapple arms do not open in the event of any leakage or hose rupture.

The base machine's centre of gravity will shift when rotating a load suspended in a grapple.

When rotating the load in a grapple, there is a risk of colliding with the base machine.

Exercise care when handling long objects in a grapple, due to forces of inertia and a wider risk zone.

## Restrictions - felling trees

In addition to the aforementioned, further restrictions apply with regard to tree felling.

It is assumed that tree felling is performed within the given limits using a tool designed for the task.

Tree felling must be performed in segments.

Each segment must either correspond to or be smaller than the specified dimensions.

See *diagram and figure*

Tree felling must be performed with the help of the base machine's normal excavation movement.

Fell trees straight ahead and away from the base machine.

Avoid using the tiltrotator's rotary function during tree felling.

Always lift long objects at the centre of gravity.

# Service

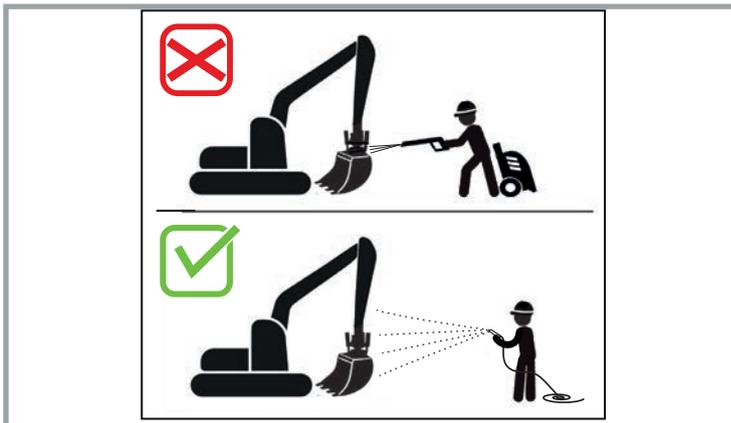
**WARNING!**  
When performing service, maintenance or other work on the Rototilt®, disconnect electrical connectors and all hydraulic hoses connected to the base machine. Risk of personal injury, exercise care!

**WARNING!**  
During servicing, the base machine's engine must be switched off.

**WARNING!**  
Do not manually actuate the hydraulic valves. Risk of injury.

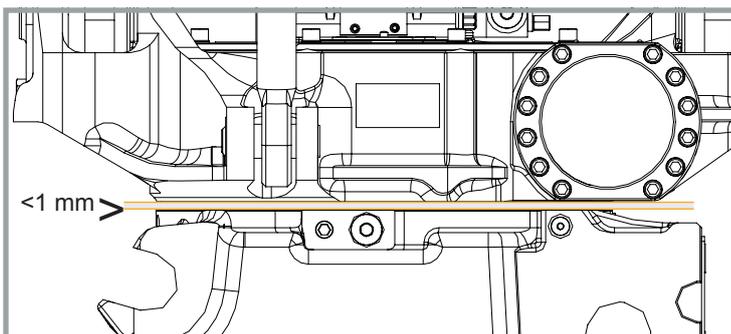
**IMPORTANT** - Take consideration to the environment. Use collection vessels to avoid negative impact on the environment.

**IMPORTANT** - More comprehensive adjustments and repairs must be carried out by an accredited service shop. Contact your dealer for information about authorised service partners.



**IMPORTANT** - Inspect the quick coupler and check that the locking function completely locks the tool in the attachment. Check for any cracks, play, etc. Also check the attachment frame and check for any leakage.

**IMPORTANT** - If there is play of  $\geq 1$  mm, the tiltrotator must be removed from service and repaired. Play can lead to costly damage.



Perform preventative maintenance to ensure the product's performance, operating economy and service life.

## Spare parts

Order spare parts from your dealer. Always state the type and serial number of the tiltrotator, as set out on its rating plate.

Only use spare parts from Rototilt Group AB. Rototilt Group AB takes no responsibility for the product if other spare parts are used.

## Consumables

Use recommended products with regard to lubricants and hydraulic fluid. For more detailed information, contact your dealer or authorised service partner.

## Cleaning

Exercise care when cleaning. Do not use a high pressure washer. A high pressure washer can force dirt into mechanisms and cause serious damage. Use a collection vessel when changing the oil. Waste such as oil and hoses must be deposited for recycling or destruction.

## Welding

Remove the Rototilt® from the base machine to avoid damage to electronic components. Always contact your authorised service shop before welding on the Rototilt®.

## Daily checks

*Checks and measures before and after use.*

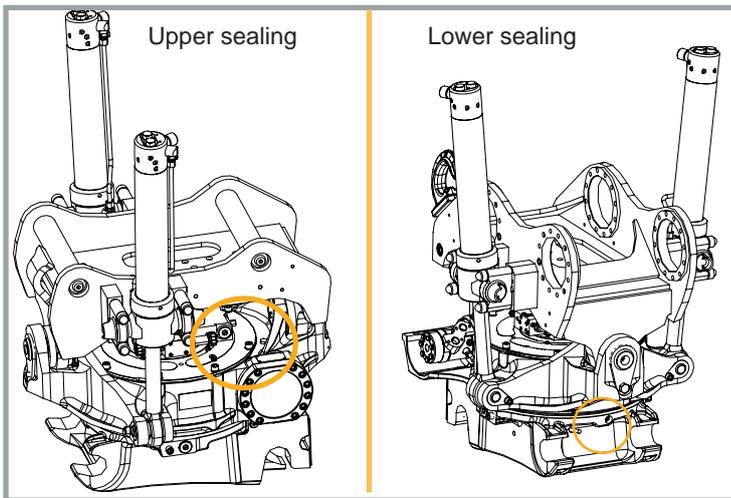
Make sure the warning stickers are always fully legible.

Clean gravel, dirt and foreign objects from the tiltrotator; in the winter remove all ice and snow.

Check for oil leakage.

Check that there is no play between the rotor and quick coupler.

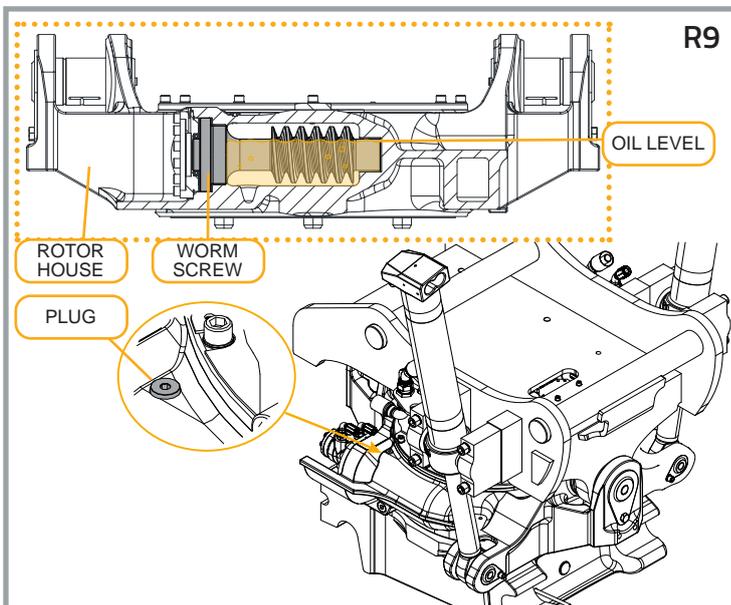
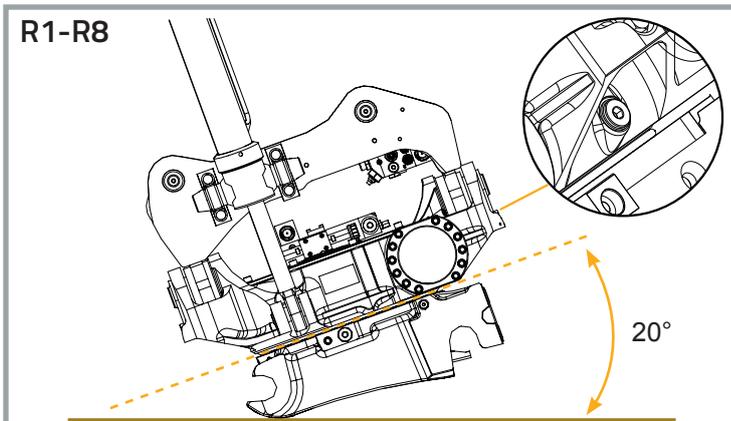
Carry out function checks.



**!** IMPORTANT - The upper and lower rotor seals must be lubricated every 40 hours.

**i** INFO - Option: ILS, the progressive lubrication system, does not include lubrication of rotor seals.

**!** IMPORTANT - Take care when opening the level plug. The rotor housing may be under pressure.



## Lubrication - Rotor seals

Rotor seals are lubricated manually every 40 hours. The lubricating point for the upper rotor seal is located at the top of the rotor housing.

The lubricating point for the lower rotor seal is located on the side of the quick coupler below the rotor housing. The grease must be appropriate for construction machinery.

Lubricate the upper and lower rotor seals at each lubricating point as follows:

- 3 pump strokes
- Rotate ½ revolution
- 3 pump strokes.

## Lubrication -Tilt cylinder & Tilt shaft

Lubrication of the tilt cylinder and tilt shaft must be checked on a daily basis even if ILS is installed and connected to the central lubrication system on the base machine.

See the ILS instruction for use.

Relieve trapped hydraulic pressure in the tilt cylinders by activating the tilt function both left and right.

Lubricate thoroughly. If the lubrication channel is blocked: Change the adapter and clean the grease channel.

Check the pin locking mechanism on all pins.

## Checking oil level in the rotor housing

Due to viscosity of the oil, the oil in the rotor housing must be warm before checking. When refilling, a high viscosity oil must be used.

**R1 - R8:** Position the tiltrotator so that the rotor housing is tilted about 20°. At the correct level, the oil is even with the filling hole.

**R9:** Position the tiltrotator so that the rotor housing is level. Remove the plug at one worm screw and visually check the oil level. The oil should cover the worm screw shaft. *The figure shows a cross section of the rotor housing.*

For more detailed information, contact your dealer or authorised service shop. Rototilt Group AB recommends Agrol Rotogear 680, art.no. 1017 656.

## Maintenance

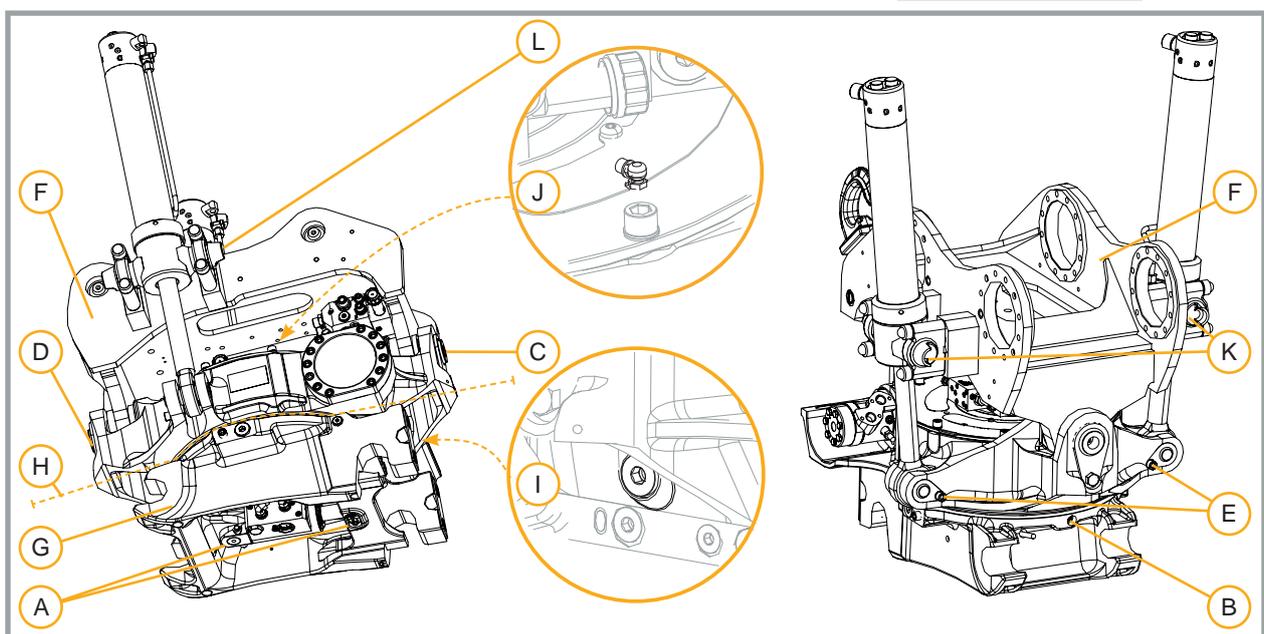
Interval	Daily	8 hrs*	40 hrs* ≥ Weekly	160 hrs*	First time at 500 hrs* Thereafter every 1000 hrs* ≥ once yearly
Inspection & measures					
Warning stickers	x				
Rating plate	x				
Light indication, switches	x				
Oil leakage	x				
Pin locks, quick coupler A		x			
Pin locks, tilt shafts C & D		x			
Pin locks, tilt cylinder E		x			
Cracks, hydraulic hoses			x		
Cracks, attachment frame F			x		
Cracks, quick coupler G			x		
Damage, harness			x		
Play, rotor - quick coupler H	x				
Oil level, rotor housing I				x	
Oil change, rotor I					x
Lubrication, rotor seal B & J**			x		
Lubrication, tilt shafts C & D	x				
Lubrication, tilt cylinder pins E	x				
Lubrication, tilt cylinder bearings K & L	x				
Dirt, foreign objects	x				

\* Time in hrs: Refers to operating hours for base machine with attached tiltrotator.

\*\* Not applicable for R2.



INFO - More illustrations on the tiltrotators' different service checkpoints are available on our web-page. Follow the link [www.rototilt.com/icssupport](http://www.rototilt.com/icssupport) or scan the QR code with an appropriate device. The QR leads to an official website containing support information



# Technical Data, Rototilt®

	R1	R2	R3	R4	R5	R6	R8	R9
Maskinvikt i ton Machine weight in tonnes	1,5 - 3,5	3 - 6,5	6 - 12	10 - 16	14 - 19	15 - 24	23 - 32	30 - 40
Max skopbredd Max bucket width	1000 mm	1200 mm	1500 mm	1600 mm	1700 mm	1800 mm	2000 mm	2400 mm
Max brytkraft Max breakout force'	35 kN	50 kN	81 kN	125 kN	140 kN	170 kN	200 kN	280 kN
Max brytmoment Max. breakout torque	25 kNm	43 kNm	85 kNm	163 kNm	200 kNm	255 kNm	330 kNm	500 kNm
Vikt (från) Weight (from)	75 kg	159 kg	290 kg	315 kg	410 kg	460 kg	730 kg	1400 kg
Rotationshastighet (1 varv på) Rotation speed (1 turn in)	7s at 15 l/min	7s at 30 l/min	7s at 50 l/min	7s at 60 l/min	7s at 65 l/min	7s at 65 l/min	8s at 70 l/min	7s at 125 l/min
Flöde tiltfunktion, enkelverkande cylindrar* Tiltfunction flow Single Acting Cylinders*	N/A	N/A	15 l/min	19 l/min	22 l/min	33 l/min	37 l/min	80 l/min
Flöde tiltfunktion, dubbelverkande cylindrar* Tiltfunction flow Double Acting Cylinders *	6 l/min	12 l/min	23 l/min	33 l/min	39 l/min	49 l/min	55 l/min	N/A
Arbetstryck Working pressure	21 MPa	25 MPa	25 MPa	25 MPa	25 MPa	25 MPa	25 MPa	25 / 35** MPa
Rekommenderat hydraulflöde*** Recommended flow***	21 l/min	42 l/min	73 l/min	95 l/min	104 l/min	114 l / min	125 l / min	200 l/min
Max returledningstryck, vid 50°C*** Max return pressure, at 50°C***	2 MPa at 25 l/min	2 MPa at 40 l/min	2 MPa at 70 l/min	2 MPa at 95 l/min	2 MPa at 100 l/min	2 MPa at 110 l/min	2 MPa at 120 l/min	
Vridmoment Turn torque	1700 Nm at 21 MPa	3900 Nm at 25 MPa	6600 Nm at 25 MPa	8200 Nm at 25 MPa	8600 Nm at 25 MPa	8600 Nm at 25 MPa	10700 Nm at 25 MPa	16000 Nm at 25 Mpa
Tiltmoment enkelverkande cyl. Tilt torque single-acting cyl.	N/A	N/A	21500 Nm	26500 Nm	30900 Nm	44500 Nm	50900 Nm	N/A
Tiltmoment dubbelverkande cyl. Tilt torque double acting cyl.	5800 Nm	14400 Nm	26500 Nm	38600 Nm	45100 Nm	56600 Nm	64700 Nm	90000 Nm
Antal smörjställen Number of lubrication points	Tiltaxlar Tilt shafts	2	2	2	2	2	2	2
	Tiltcyl. tappar Tilt cyl. pins	1	1	2	2	2	2	2
Number of lubrication points	Tiltcyl. lager Tilt cyl. bearings	2	0	0	4	0	4	0
	Övre rotortätning Upper rotorsealing	1	0	1	1	1	1	1
	Nedre rotortätning Lower rotorsealing	1	0	1	1	1	1	1
Volym olja i liter Quantity, oil in liters	0,2	0,45	1	1,5	2	2	3	5

\* Från sida till sida på 4s vid: / Side to side in 4s at:

\*\* 35 Mpa (Strypt invändigt till 25 MPa för funktionerna tilt, rotation, lås & extra / Reduced internally to 25 MPa for tilt, rotation, lock and extra function)

\*\*\* Gäller med installerat styrsystem av typen: ICS / \* Apply to installed Control System of the type: ICS.