

Summary : English version

<u>1</u>	<u>INTRODUCTION</u>	<u>2</u>
1.1	WARNINGS	2
1.2	RACK IDENTIFICATION	2
1.3	LONG TERM STORAGE	2
<u>2</u>	<u>LUBRICATION</u>	<u>3</u>
2.1	RECOMMENDED LUBRICANTS	3
2.1	LUBRICANTS FLOW	3
<u>3</u>	<u>INSTALLATION ON THE MACHINE</u>	<u>4</u>
3.1	RACK PREPARATION	4
3.2	PREPARATION OF THE MACHINE FRAME	5
3.3	SETTING UP ON THE MACHIEEN FRAME	8
3.4	CONTROL OF TOLERANCES	11
<u>4</u>	<u>TOULING</u>	<u>12</u>
4.1	DESCRIPTION	12
4.1.1	CLAMPS	12
4.1.2	TORQUE WRENCH	12
4.1.3	CONTROL SHIMS	12
4.1.4	COMPANION PART FOR RACK MOUNTING	12
4.1.5	CONTROL PINS	13
<u>5</u>	<u>ANNEX</u>	<u>14</u>

1 INTRODUCTION

This installation manual describes the different aspects to take into account in order to obtain the best service of the rack, the assembly and maintenance recommendations contained in this manual must be strictly observed.

1.1 WARNINGS

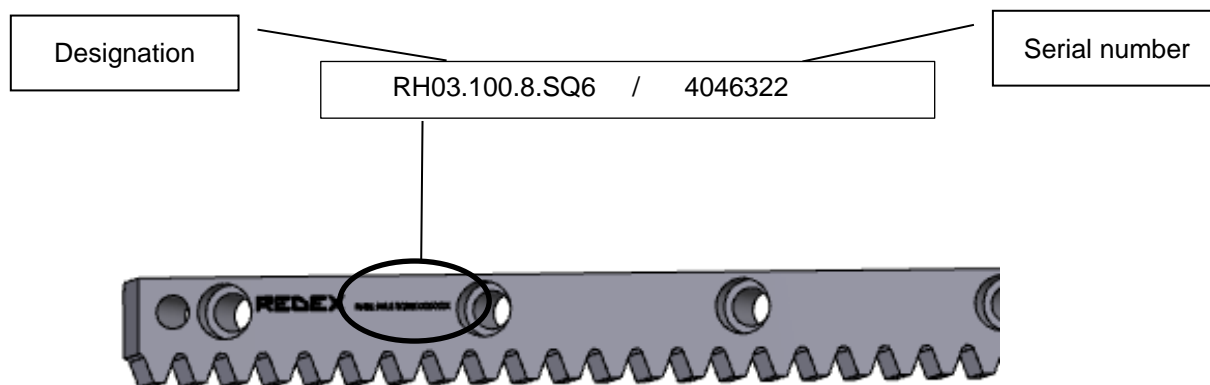
**WARNING!**

Improper handling of the packaging can cause transport damage!

- Do not tilt the transport packaging
- Respect the symbols on the packaging
- Ensure that lifting devices do not damage the racks

1.2 RACK IDENTIFICATION

Each rack is identified by a manufacturer's plate and a serial number. The serial number must be provided for all correspondence regarding a rack.



1.3 LONG TERM STORAGE

Each rack drive is delivered protected with corrosion-resistant oil and packed in a VCI plastic film. If the rack is not installed quickly after reception, we recommend storing it in a dry and ventilated place with a temperature between -10°C and 40°C. Be sure to protect the product from dust and dirt with a tarpaulin.

2 LUBRICATION



WARNING!

Any damage due to improper lubrication will lead to cancellation of the warranty.

2.1 RECOMMENDED LUBRICANTS

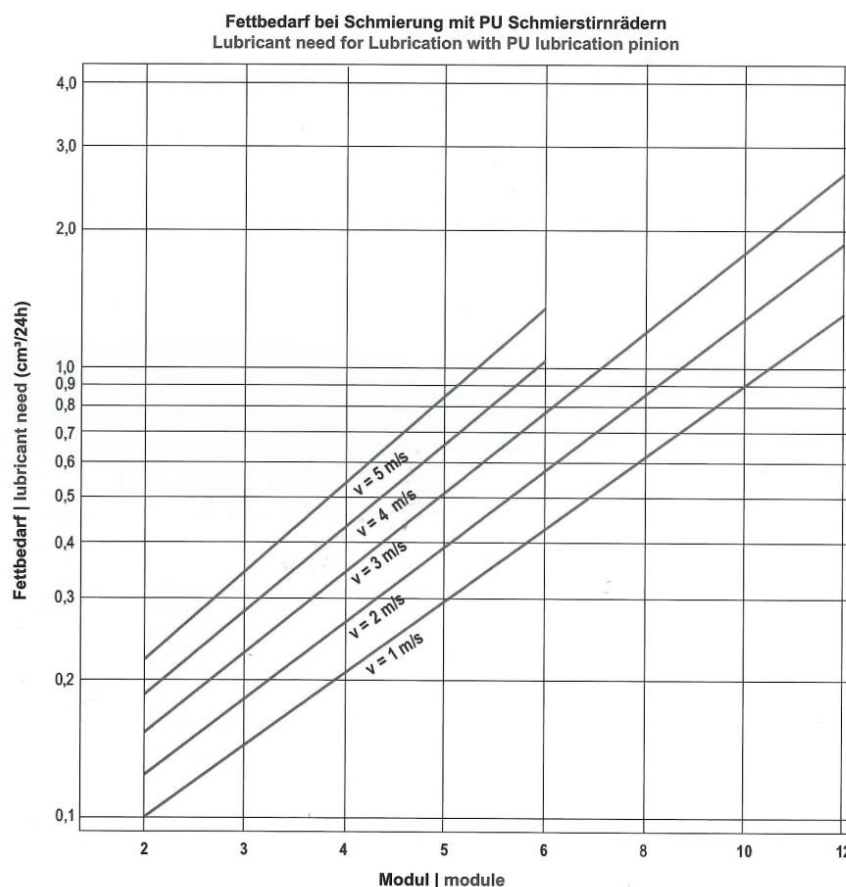
The rack lubrication system is supposed to be used with greases rather than oils.
We recommend the following greases to lubricate the rack

Brand	Reference
DLS Schmiersysteme	F01
DLS Schmiersysteme	F05
LUBCON	GRIZZLYGREASE N°1
LUBCON	TURMOGREASE BN5002MF
KLUEBER	KLUBERPLEX AG 11-461
KLUEBER	KLUBERPLEX AG 11-462

For other lubricants, consult us.

2.1 LUBRICANTS FLOW

We recommend continuous lubrication via a lubrication pinion.
Determination of the minimum lubricant flow rate according to the graph (valid for Schmiersysteme DLS lubricants F01, F05).



3 INSTALLATION ON THE MACHINE






WARNING!

To ensure the highest possible coefficient of friction and optimum fastening, all assembly surfaces Rack and machine frame must be degreased.

3.1 Rack preparation

The following steps must be strictly followed:



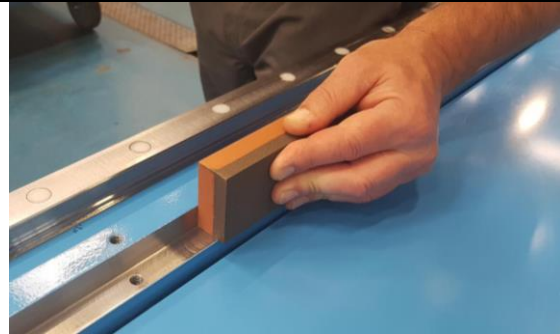
1. The rack and the frame of the machine must be at the same temperature and without visible defects.	
2. Stone assembly surfaces of the rack	
3. Clean and degrease the assembly surfaces of the rack with a solvent.	
	

3.2 PREPARATION OF THE MACHINE FRAME

The following steps must be strictly followed:



1. Stone assembly surfaces of the rack



2. Clean and degrease the assembly surfaces of the Machine frame with a solvent





WARNING!

It is important to ensure that the internal angle of the machine frame matches the chamfer of the rack.

The standard racks have a functional chamfer f :

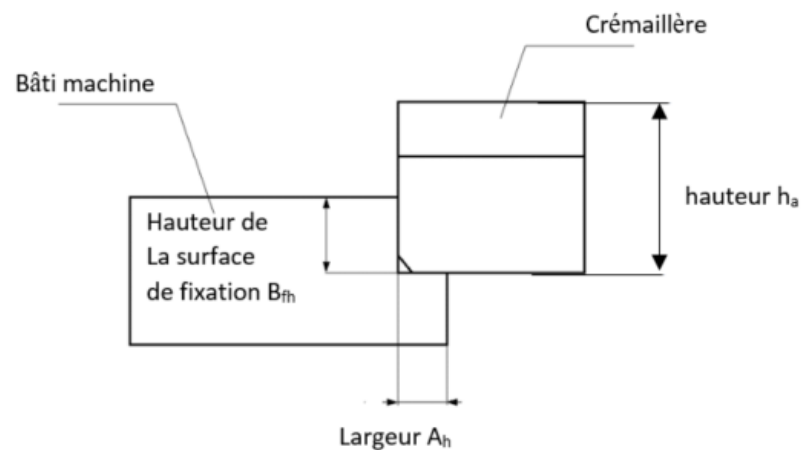


Module	Dimension f of the chamfer
3	2mm x 45°
4-10	3mm x 45°

It is important to ensure that the internal angle of the machine frame meets the following criteria:



1. Height of mounting surface B_{fh} :

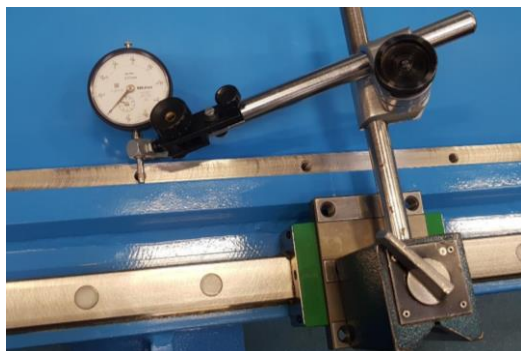


The minimum fixing surface height B_{fh} depends on the rack height h_a and the selected module m .

$$B_{fh} \geq h_a - 2.25 \cdot m$$

Module	B_{fh} mini [mm]
3	22.25
4	30
5	27.75
6	35.5
8	61
10	76.5

2. For a rack of grade 6, mounting surfaces should have a straightness of 0.003 / m. For higher quality, please consult us.



3. The width of the fixing surface A_h :
This dimension should be at least be 1mm larger than the chamfer of the rack.

$$A_h \geq f + 1 \text{ mm}$$

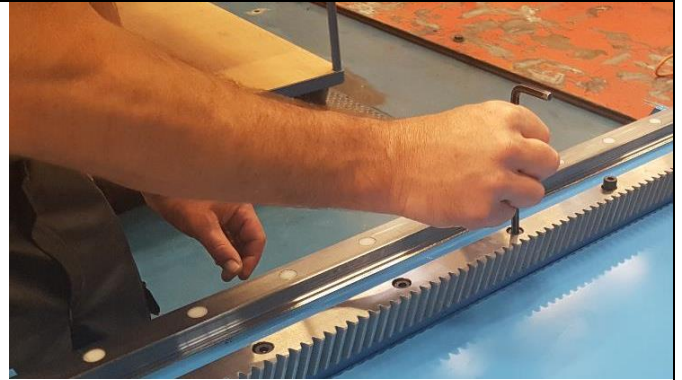
Module	A_h mini [mm]
3	3
4-10	4

3.3 SETTING UP ON THE MACHIN FRAME

The following steps must be strictly followed:



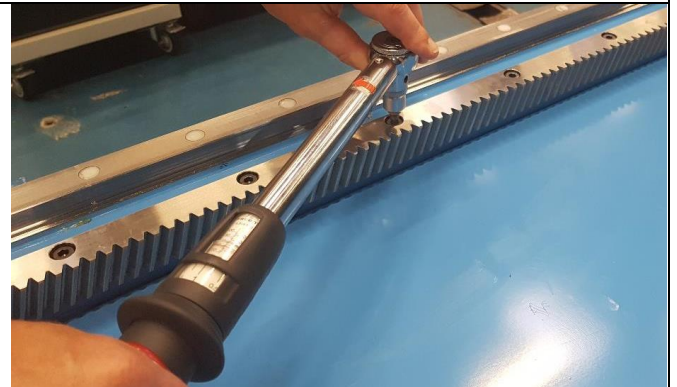
1. Place the rack on the machine frame and tighten the screws.
Beyond 3 racks start in the middle of the frame






2. Press the rack against the frame with a clamping tool

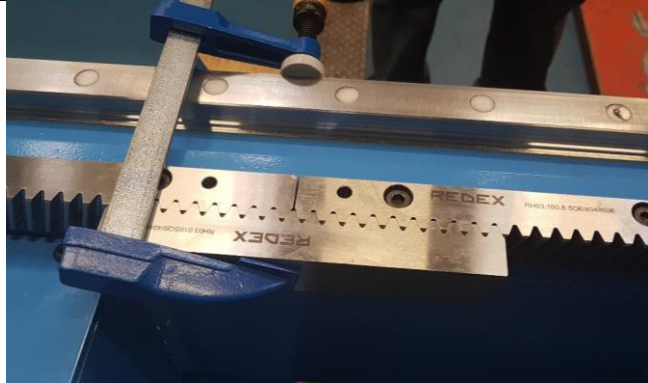
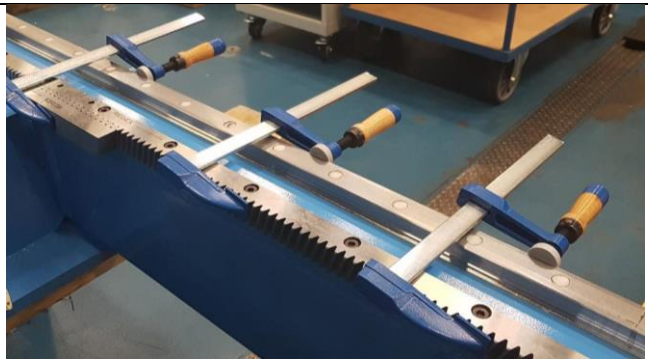


3. Tighten the screws to the tightening torque shown below





Rack Module	Vis C12.9 ISO 4762 / DIN 912	Couple de serrage [Nm]
3	M8x35	41
4	M8x45	41
5	M12x55	145
6	M16x70	355
8	M20x90	690
10	M30x120	2400

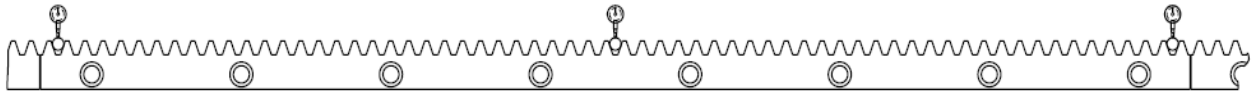
<p>4. Check that the rack is pressed against the frame with a 0.02mm shim</p>	
<p>5. Place the second section of rack and approach the screws without tightening them</p>	
<p>6. At the junction of the two racks, place the rack companion</p>	

<p>7. Press the companion part for rack mounting against the racks and frame with the clamp.</p> <p>Also, plate the 2nd section of racks against the frame</p>																								
																								
<p>8. Tighten screws to the tightening torque shown in the table</p>	<table><tr><th>Rack Module</th><th>Vis C12.9 ISO 4762 / DIN 912</th><th>Couple de serrage [Nm]</th></tr><tr><td>3</td><td>M8x35</td><td>41</td></tr><tr><td>4</td><td>M8x45</td><td>41</td></tr><tr><td>5</td><td>M12x55</td><td>145</td></tr><tr><td>6</td><td>M16x70</td><td>355</td></tr><tr><td>8</td><td>M20x90</td><td>690</td></tr><tr><td>10</td><td>M30x120</td><td>2400</td></tr></table>			Rack Module	Vis C12.9 ISO 4762 / DIN 912	Couple de serrage [Nm]	3	M8x35	41	4	M8x45	41	5	M12x55	145	6	M16x70	355	8	M20x90	690	10	M30x120	2400
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<p>9. At the end check that the rack is well in position using shims</p>																								
<p>10. Repeat these operations, as many times as there are sections of racks</p>																								

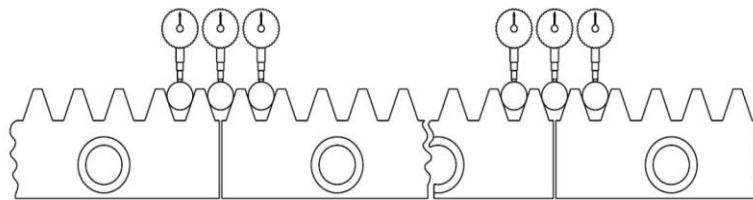
3.4 CONTROL OF TOLERANCES

After rack mounting, it is essential to check the parallelism as well as the pitch error between two racks. Measured values must be reported on the attached rack topography file.

<p>1. Measure using a suitable measuring dial, the geometry of the rack.</p>	
<p>2. take a measurement every 50cm on the rack and report the value on the attached document in annex</p>	



3. To control the pitch error, we also recommend making 3 measurements at each rack segment junction, as shown in the sketch below.



The gap between the 3 comparative shall not exceed for each junction:

- **0.015mm for a rack module 3**
- **0.020mm for a rack module > 3**

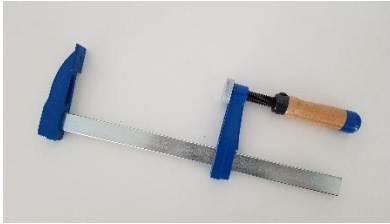
4. Pin the racks. The dimensions of the pins are in the table below:

Module	Pin DIN 7979
3	8x35
4	8x55
5	12x80
6	16x100
8	20x120
10	20x140

4 TOULING

4.1 Description

4.1.1 Clamps



Tool to press the rack against the frame of the machine.

4.1.2 Torque wrench



A torque or digital torque wrench is mandatory for precise tightening.

4.1.3 Control shims



Calibrated shims used to control the installation of the rack on to the frame.

4.1.4 Companion part for rack mounting

Helical teeth :

Module	Designation
3	RH03.MN
4	RH04.MN
5	RH05.MN
6	RH06.MN
8	RH08.MN
10	RH10.MN

Straight teeth :

Module	Designation
3	RS03.MN
4	RS04.MN
5	RS05.MN
6	RS06.MN
8	RS08.MN
10	RS10.MN

4.1.5 Control pins

The measuring pins are chosen so that the contact with the tooth flank is as close as possible to the reference line of the racks.

The tolerances below must be respected:

Module	Maximum parallelism error between rack and linear guideway		
	Pin diameter	For a rack section	For complet lenght
3	6 mm	0.02 mm / m	0.05 mm
4	8 mm	0.02 mm / m	0.05 mm
5	10 mm	0.02 mm / m	0.05 mm
6	12 mm	0.04 mm / m	0.07 mm
8	16 mm	0.06 mm / m	0.08 mm

5 ANNEX
