

**ASSEMBLY MANUAL
OF THE PARTLY COMPLETED
MACHINERY**

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SPECIFIC SYSTEM REFERENCES

System code	7180626
Weight system expressed in [kg]	1050 kg
Overall dimensions of the assembled system expressed in [mm] Length x Width x Height	4500 x 2800 x 2200

Project / designer notes



IMPORTANT!

For the maintenance of the single module, please see the specific of the assembly manual

WARNINGS AND LEGAL NOTES



This annex is to be considered a specific completion of the assembly manual. Therefore, before incorporating the partly completed machinery, we recommend consulting this annex carefully, in addition to the assembly manual for the individual modules that compose the specific system subject to this annex. The information contained in the following manual and in the manuals for the individual modules, is provided by highly qualified and certified personnel, possessing adequate competence in incorporating the partly completed machinery.



Precaution in installation and handling operations. Significantly heavy equipment.



When handling the portal, always make sure that the support or anchoring surfaces do not leave room for bending.



In order to stabilize the axis or system of axes, before handling it is mandatory to securely block the mobile parts. When moving axes with vertical translation (Z AXES) or combination systems (horizontal X and/or more than one vertical Z), it is mandatory to use the vertical movement to put all of the axes at the corresponding lower limit switch. Consult the image below and the pertinent chapter.

When handling the portal, always make sure that the support or anchoring surfaces do not leave room for bending.



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Do not overload. Do not subject to torsion stress.



Do not leave exposed to atmospheric agents.



Before mounting the motor on the gearbox, it is advisable to perform a pre-test of the motor itself, without connection to the gear unit.

The testing of this component was not carried out by the manufacturer of the machine. It will therefore be the responsibility of the customer of Rollon to perform the testing of the same, in order to verify its correct operation.



The system was designed following agreements and the instructions provided by the client. The manufacturer cannot be considered responsible for any consequences derived from improper use or any use other than the purpose the system was designed for, or derived from failure to comply, during incorporation phases, with the rules of Good Technique and with what is indicated in this manual.



Avoid damage. Do not operate with inadequate tools



Warning: moving parts. Do not leave objects on the axis



Special installations: check the depth of the threads on moving elements

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Make sure that the system has been installed on a level floor surface.



In use, accurately comply with the specific performance values declared in the catalog or, in particular cases, the load and dynamic performance characteristics requested in the phase prior to design.



For modules or parts of modular systems with vertical movement (Z axis), it is mandatory to mount self-braking motors to neutralize the risk of the axis dropping.



The images in this manual are to be considered merely an indication and not binding; therefore, the supply received could be different from the images contained in this manual, and Rollon S.p.A has deemed it useful to insert only one example.



Systems supplied by Rollon S.p.A. were not designed/envisaged to operate in ATEX environments.

RESIDUAL RISKS

If present the Modline linear module has the following residual risks:

- Mechanical risks due to the presence of moving elements (X, Y axes).
- Risk of fire resulting from the flammability of the belts used on the axes, for temperatures in excess of 250 °C in contact with the flame.
- The risk of the Z axis dropping during handling and installation operations on the partly completed machinery, before commissioning.
- Risk of the Z axis dropping during maintenance operations in the case of a drop in the electrical power supply voltage.
- Crushing hazard near moving parts with divergent and convergent motion.
- Shearing hazard near moving parts with divergent and convergent motion.
- Cutting and abrasion hazards.

BASIC COMPONENTS

The Partly Completed Machinery shown in this manual is to be considered a mere supply of simple Cartesian axes and their accessories agreed when the contract is stipulated with the client.

The following are therefore to be considered excluded from the contract:

1. Assembly on the client's premises (direct or final)
2. Commissioning on the client's premises (direct or final)
3. Testing on the client's premises (direct or final)



It is therefore understood that the aforementioned operations in points

1., 2., and 3. are not chargeable to Rollon.

Rollon is the supplier of Partly Completed Machinery, the (direct or final) client is responsible for testing and safely checking all equipment which, by definition, cannot be theoretically tested or checked at our facilities where the only movement possible is manual movement (for example: motors or reduction gears, cartesian axes movements that are not manually operated, safety brakes, stopper cylinders, mechanical or induction sensors, decelerators, mechanical limit switches, pneumatic cylinders, etc.). The partly completed machine must not be commissioned until the final machine, in which it is to be incorporated, has been declared compliant, if necessary, with the instructions in Machinery Directive 2006/42/CE.

TIGHTENING TORQUE AND TRACTION VECTOR VALUES

Thread	Friction coefficient	Tightening torque [Nm]			Traction vector [N]		
		Resistance grade 8.8	Resistance grade 10.9	Resistance grade 12.9	Resistance grade 8.8	Resistance grade 10.8	Resistance grade 12.8
M3	0.15	1.21	1.21	2.09	2075	3048	3567
M4		2.78	4.09	4.79	3594	5279	6178
M5		5.5	8.1	9.5	5886	8645	10116
M6		9.5	14.0	16.4	8302	12194	14269
M8		23	34	40	15242	22388	226198
M10		46	67	79	24275	35655	41724
M12		79	116	136	35401	51995	60845
M14		127	187	219	48618	71408	83563
M16		198	291	341	66955	98340	115079
M18		283	402	471	8346	119454	139787
M20		402	570	667	107941	153657	179811
M22		552	783	917	134806	192157	224865
M24		691	981	1148	155489	221266	258928
M27		1022	1452	1700	204577	291534	341157
M30		1387	1969	2305	248811	354209	414500

All the screws belong to the UNI-3740.

Locking assemblies are provided with class 12.9 fastening screws.

IMPORTANT!



All screws used for installing ROLLON modules have self-locking washers or semi-permanent threadlock fluid (blue, such as Loctite 243). We recommend that the user also employ these devices, both while setting up the partially assembled machine in this manual, and during the assembly or maintenance phases: If this is not done, the manufacturer of the partially assembled machine declines all responsibility for any accidents, breakage, damage and the consequences of said events on people, animals and property, due to the failure of fixing elements.

INSTRUCTIONS OF AN ENVIRONMENTAL NATURE

ROLLON operates with respect for the environment, in order to limit environmental impact.

The following is a list of some instructions of an environmental nature for correct management of our supplies.

Our products are mainly composed of:

Material	Details of the supply
Alluminum alloys	Profiles, pleates, various details
Steel with various composition	Screws, racks and pinions, and rails
Plastic	PA6 – Chains PVC – Covers and sliding block scrapers
Rubber of various types	Plugs, seals
Lubrification of various types	Used for the lubrication of sliding rails and bearings
Rust proof protectione	Rust proof protection oil
Wood, polyethylene, cardboard	Transport packaging

At the end of the product's life cycle, it is therefore possible to recover the various elements, in compliance with current regulations on waste issues.

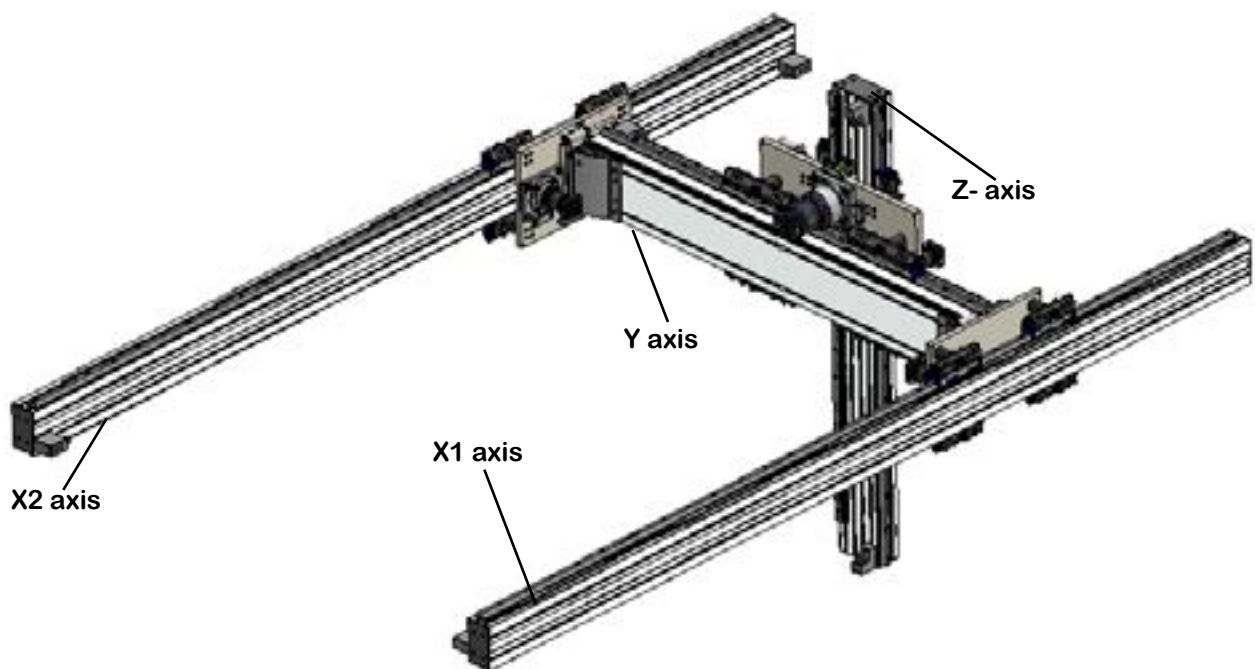


IMPORTANT!

The machine guides are protected with a layer of rust-proofing oil or specific grease. Use suitable gloves when handling them.

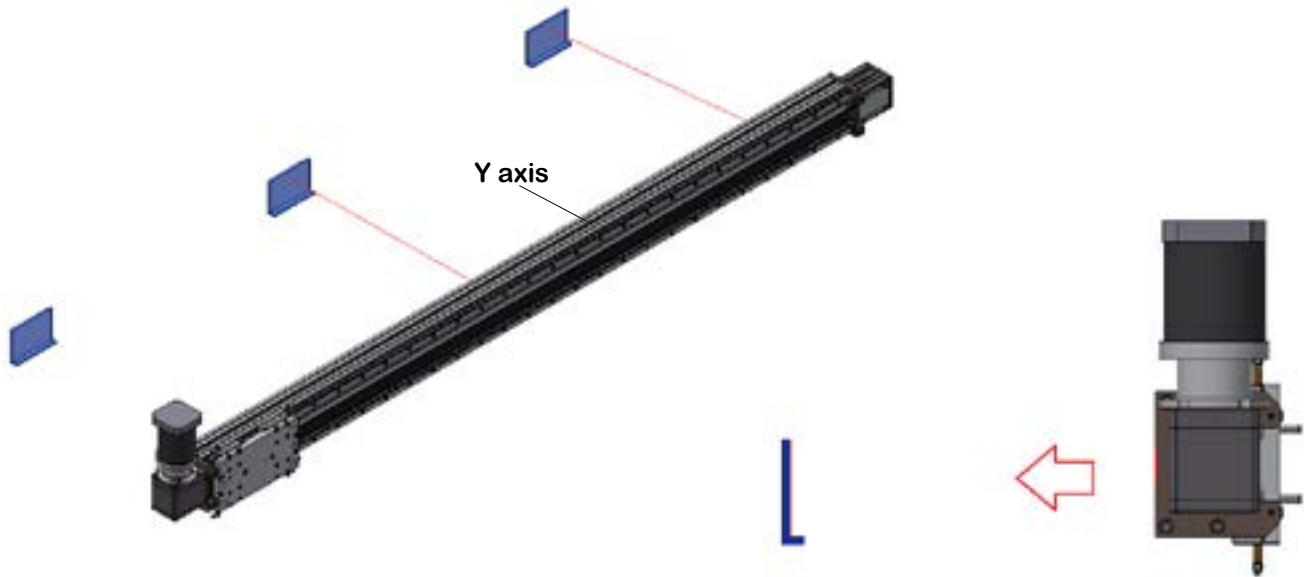
ASSEMBLY INSTRUCTIONS

RACK 7



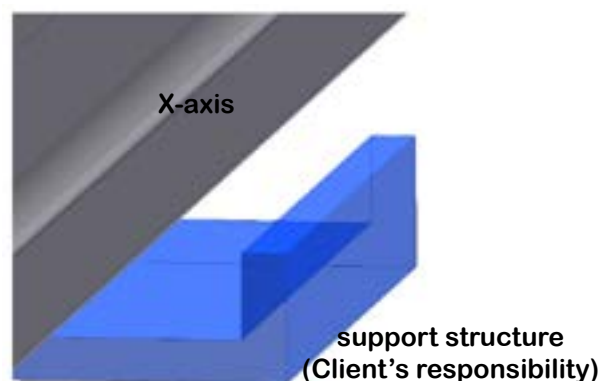
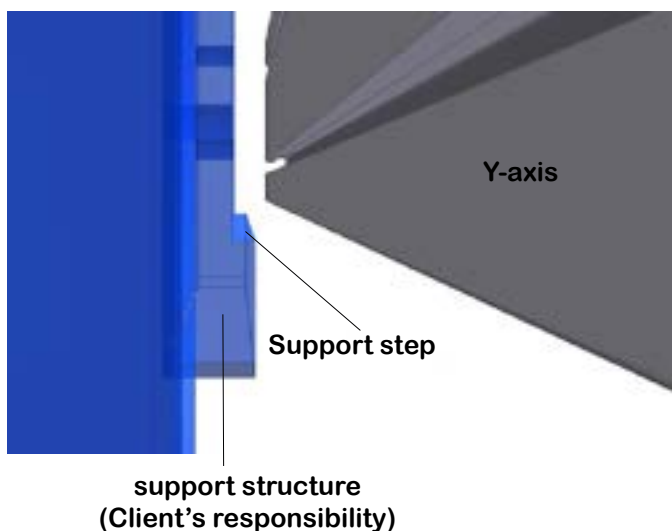
The Rack 7 type system comprises two X axes, a Y axis and a Z axis. In the configuration described above all the axes are motorized. If these systems are small, they are usually shipped on stands and/or crates with the Y and Z axes already mounted and in a working position on the X axes. If due to space issues or other reasons, the system arrives disassembled, then proceed as follows for assembly and incorporation of the partly assembled machine into the metalwork.

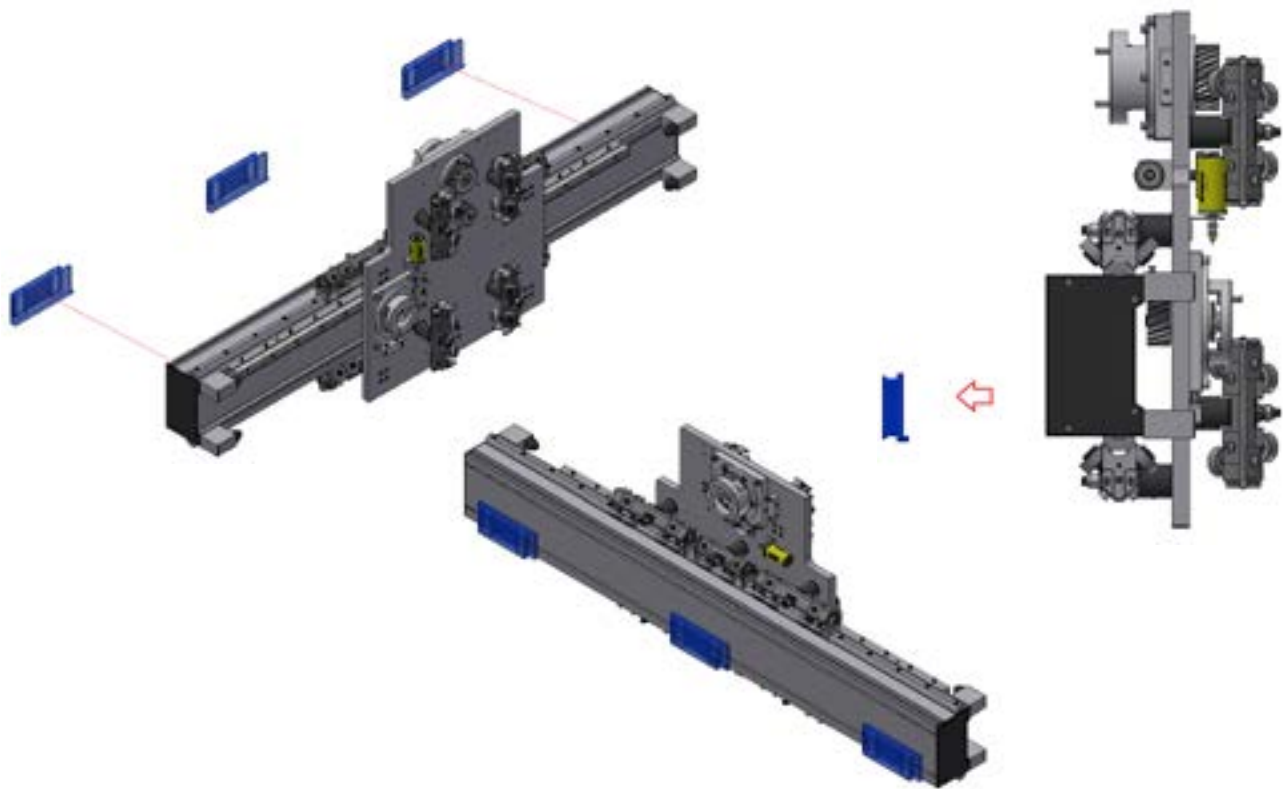
ALIGNING THE SYSTEM TO THE CARPENTRY



When positioning the system - to be more precise, the Y axis in relation to the support structure - make sure to set the axis on the support steps or similar surfaces, in the quantity and dimensions specifically studied and dimensioned for the system that it will be supporting, which also depends on the grooves on the system. The client is responsible for dimensioning the support steps.

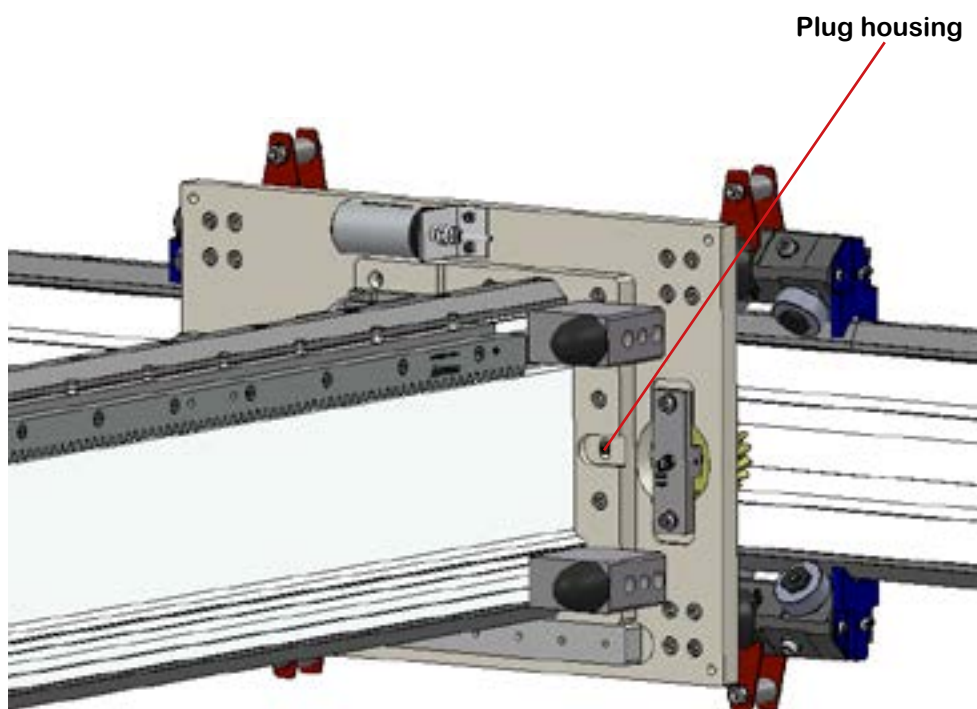
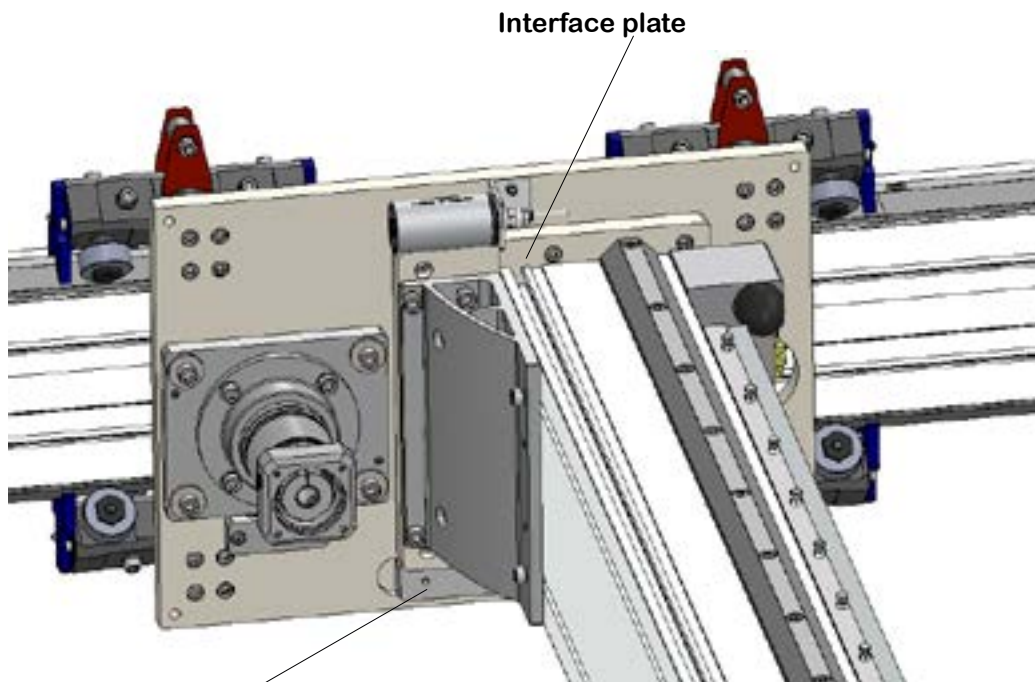
(IMPORTANT: The following image is merely an illustration to provide an example).





Y-AXIS INSTALLATION

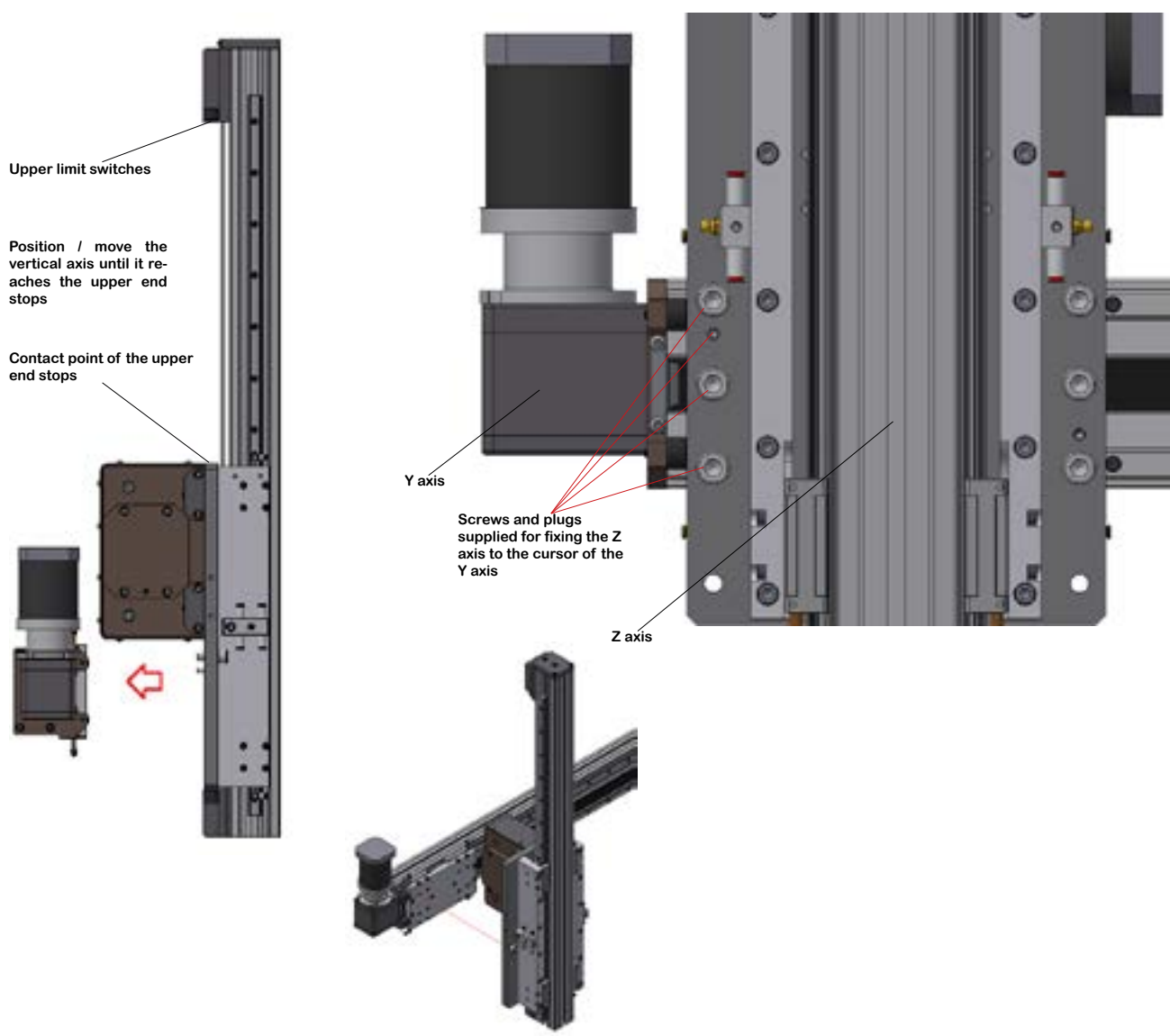
All the Y axis are equipped with an interface plate, to be able to generate the coupling between Y axis and wagons already present on the X axis. Make sure to correctly orientate the Y axis before installing it in the working position. The correct orientation, and the final working position can be identified by plugs present on the system. Where it has been prepared, for positioning the Y axis on the X axes, make sure to place the interface plate with the support step (see the following image as a reference).



Z-AXIS INSTALLATION

Now, bring the Z axis to the Y axis and pay careful attention to not impact one module with the other. Proceed to align the axis respecting the correct orientation. Make sure you align the holes present on the Z axis plate with the holes present on the Y axis plate. After verifying the correct alignment, it is possible to tighten the fixing screws with full torque (in compliance with standards and values contained in the table "Tightening torque and Traction Vector Values" on the following pages).

WARNING: to avoid dangerous tipping when moving the load make sure, if possible, to position the vertical axis at the upper limit switch.



IMPORTANT!

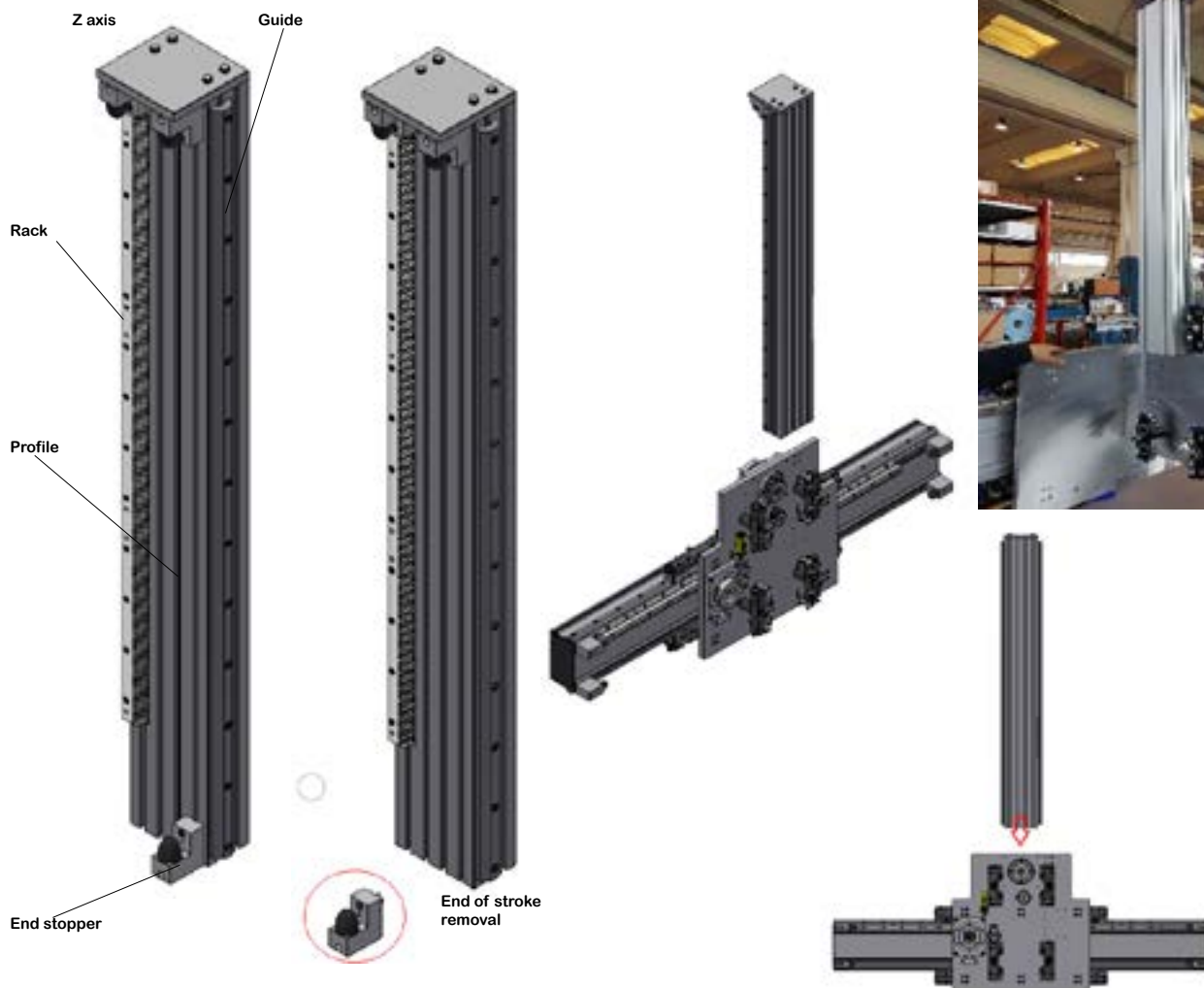
When tightening all the screws, comply with the torque value provided in the table contained in this manual

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Now, bring the Z axis to the Y axis and pay careful attention to not to hit one module against the other. The Z axis of rack driven modules, in its simplest form, is generally made up of a profile, rails (prismatic or for recirculating ball bearing blocks), a rack and limit switch stops.

First, remove the limit switch stop(s) from one side of the Z axis. Tie up the profile with straps and lift it. Bring the profile to a vertical position over the sliding location and with the rack turned towards the carriage. Before inserting the Z axis in the sliding location, make sure that you verify the correct orientation of the rack. Then insert the Z axis into the carriages on the slider on the Y axis, making sure to engage the motor pinion and the lubricator pinion on the rack.

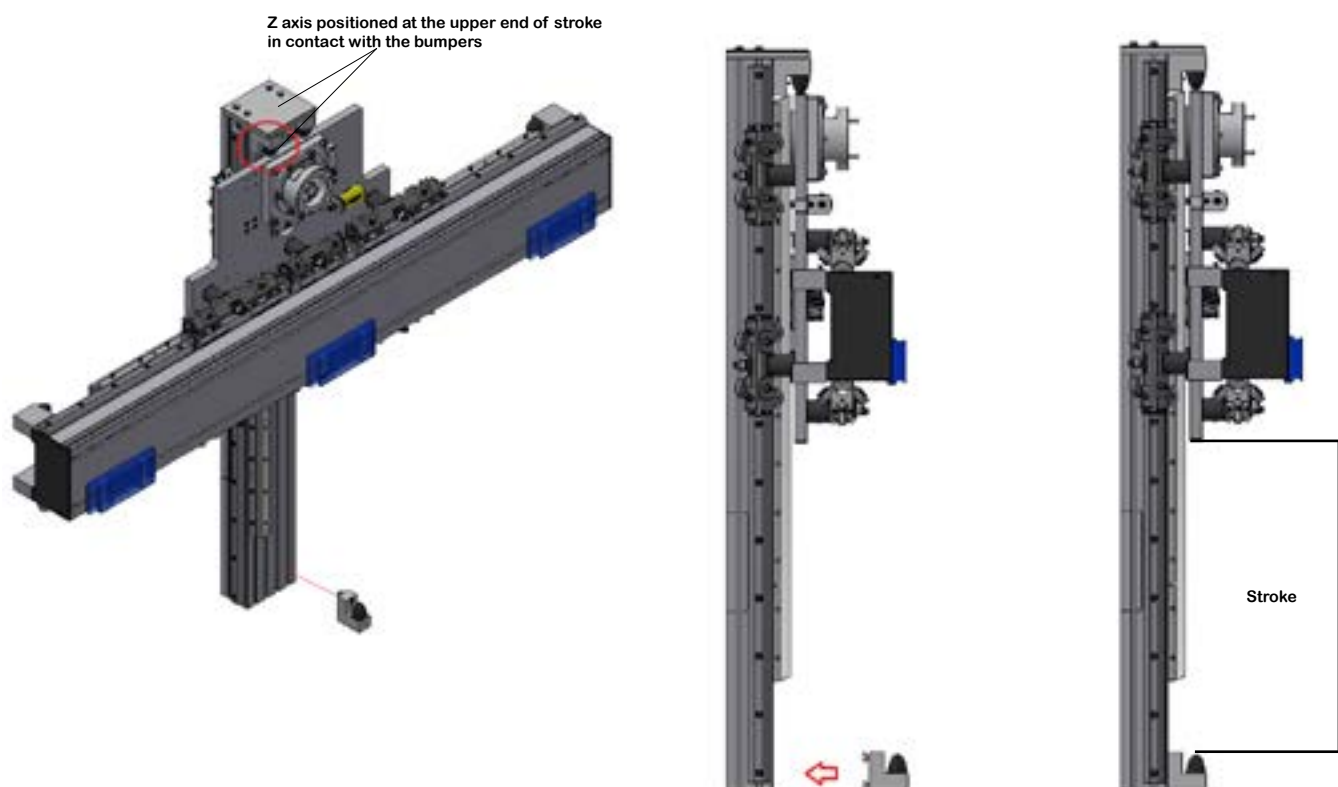


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Slide the profile until the bumpers reach the end of travel contact. Reposition the lower end stops on the profile slots and tighten the supplied screws according to the standards and values contained in the table “ Tightening torque and Traction vector values “ in the previous pages.

ATTENTION: the repositioning of the safety stops on the profile must be able to guarantee the desired stroke



WARNING: in case of sliding of the Z system on rollers, make sure that the blocks on the eccentric side, and therefore the rollers on the blocks on the eccentric side, are correctly set on the raceways, which means that the adjustments made by our assembly technicians have not been lost. If the adjustments have been lost, consult the standard assembly manual. The correct distance between the motor pinion and the rack and the lubricator pinion and the rack is defined during the assembly phase by our assembly technicians.



IMPORTANT!

The mass of the individual pieces totals over 10 kg and therefore, to avoid damage or accidents to the operator(s), it is recommended to use lifting machines suited to the specific use and maneuvered by qualified technicians.

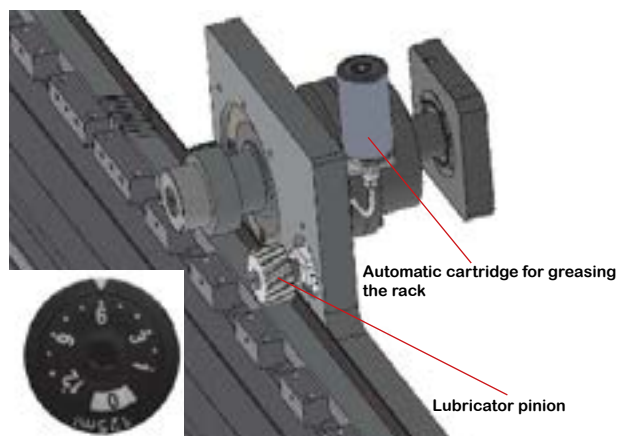
LUBRIFICATION RACK

The system described in this manual is supplied with an automatic lubrication kit for greasing the rack. The kit comprises a polyurethane pinion and a 125ml tank containing the following grease:

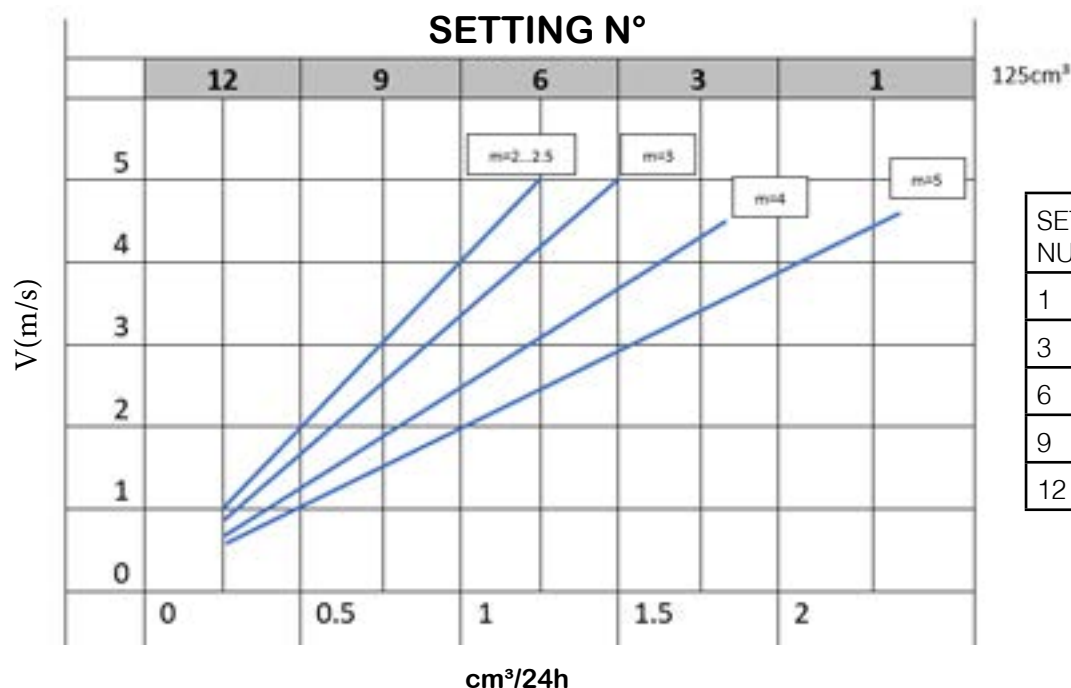
Shell Gadus S2 V220 2

Shell Gadus S2 V220 is a multifunctional grease for extreme pressures made of high viscosity mineral oil, lithium soap, a specific additive for extreme pressures and a careful selection of other additives to improve performance over a broad field of applications. Shell Gadus S2 V220 was developed for general lubrication of ball bearings and thrust bearings, hinges and sliding surfaces typical of industrial applications and the transport sector.

The optimal setting for the specific automatic cartridge for this system is 12, which equals the duration of a tank of about 360 days at a working temperature of 20° with a carriage speed of 1 m/s. For carriages that move faster than 1 m/s, it is advisable to set the cartridge between 6 and 12 to shorten its duration. When the cartridge is empty, it must be replaced with one of the same type.



Grease dosage with felt pinion lubrications



SETTING NUMBER	DURATION
1	1 MONTH
3	3 MONTHS
6	6 MONTHS
9	9 MONTHS
12	12 MONTHS

NOTE: when the system is stopped, the cartridge will continue to release lubricant. This will cause a build-up of lubricant in one point.

RAILS WITH RECIRCULATING BALL BEARINGS

Maintain lubrication of sliding blocks and ball recirculation rails every 1 year/2000 Km of operation, using the grease type:

Shell Gadus S4 V45AC 00/000

Shell Gadus S4 V45AC is a fluid grease used in centralized lubrication systems. This grease is based on highly refined mineral as well as selected synthetic base oils, extreme-pressure and other carefully selected additives to provide excellent protection in all conditions.

Four different lubrication models can be installed:

- Direct manual
- Manual with distributor
- Automatic with 15ml tank on each individual slider
- Automatic with automatic pump and lubrication system

Direct lubrication involves directly greasing the slider with the grease nipple.

Manual lubrication with a distributor involves greasing the slider with the grease nipple mounted on the distributor. Each greasing point on the distributor is independent, one per slider.

Automatic lubrication with tanks involves greasing each individual slider with 15ml tanks containing the type of grease listed above.

The tanks are mounted on distributors for which all greasing points are independent, one per slider.

Lubrication with the system uses an automatic battery operated lubricator with a capacity of 250ml and a special distributor to feed the sliders.

If one channel is interrupted, the lubricator signals the presence of a problem inside the system.

The lubricator can be programmed from its display panel. Please consult the manual for the automatic lubricator to set the programs.



Direct manual



Manual with distributor



Automatic with tank

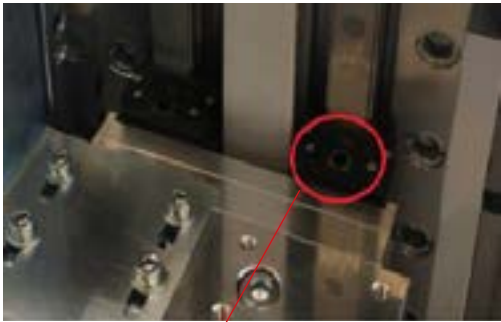


Automatic with automatic pump and distribution system

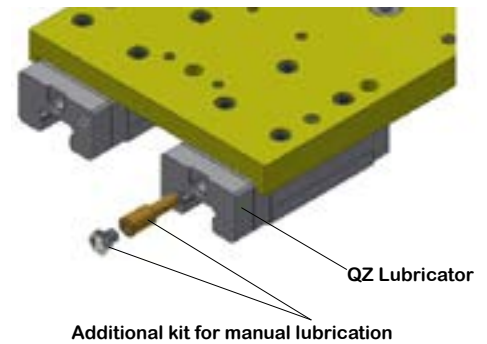
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Only in particular cases is it possible to use QZ sliders with the tanks, which allow automatic lubrication of the rails and recirculating ball bearing sliders. This makes it possible to operate the system for about 2 years / 5000 km without having to intervene manually. A manual lubrication kit can be purchased separately. The lubrication kit is installed directly on the QZ system by removing the grub screw.



System without manual lubrication kit



SCREWS WITH RECIRCULATING BALL BEARINGS

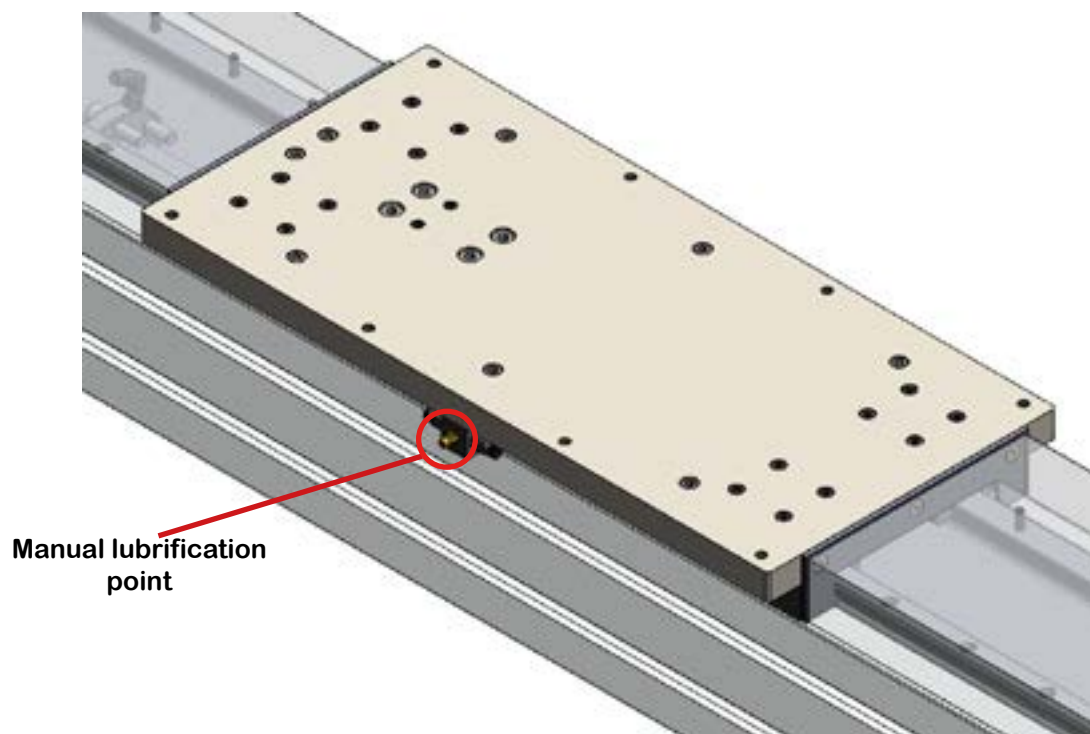
Maintain lubrication of recirculating ball screws every 100 Km of operation, using the grease type:

Shell Gadus S4 V45AC 00/000

Shell Gadus S4 V45AC is a fluid grease used in centralized lubrication systems. This grease is based on highly refined mineral as well as selected synthetic base oils, extreme-pressure and other carefully selected additives to provide excellent protection in all conditions.

Recommended amount of lubricant to re-lubricate screw nuts

Type	Quantity [cm³] for greaser
32-05	1.8
32-10	2.0
32-20	2.0
32-32	3.0



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Grease compatibility

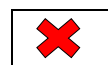
	LITHIUM	CALCIUM	LITHIUM CALCIUM	LITHIUM COMPLEX	CALCIUM COMPLEX	CALCIUM COMPLEX SULFONATE	ALUMINIUM COMPLEX	POLYUREA	BENTONE	SODIUM
LITHIUM	+	+	+	+	—	+	×	×	×	×
CALCIUM	+	+	+	+	—	+	×	×	×	×
LITHIUM CALCIUM	+	+	+	+	—	+	×	×	×	×
LITHIUM COMPLEX	+	+	+	+	+	+	×	—	×	×
CALCIUM COMPLEX	—	—	—	+	+	—	×	+	×	×
CALCIUM COMPLEX SULFONATE	+	+	+	+	—	+	×	—	×	×
ALUMINIUM COMPLEX	×	×	×	×	×	×	+	×	×	×
POLYUREA	×	×	×	—	×	—	×	+	×	×
BENTONE	×	×	×	×	×	×	×	×	+	×
SODIUM	×	×	×	×	×	×	×	×	×	+



COMPATIBLE



COMPATIBLE IN
CERTAIN
PROPORTIONS



NOT COMPATIBLE



IMPORTANT!

The machine rails are protected with a layer of rust-proof oil or specific grease. Use suitable gloves when handling.

PRISMATIC RAILS

Maintain lubrication of the prismatic rails using VACTRA-2 type oil for surfaces every 1 year/2000 Km of operation, approximately.

Use the image as a reference for lubrication: insert the oil where indicated; when the oil enters the tank, it will moisten the felt part that lubricates the rails.

