



Automatic Greasing System - User Guide



Automatic Greasing System – User Guide



Use this supplemental documentation
In conjunction with the AXYZ CNC Router Manual.

Version 1

June 2016

Original Instructions in ENGLISH



5330 South Service Road, Burlington, ON, Canada L7L 5L1

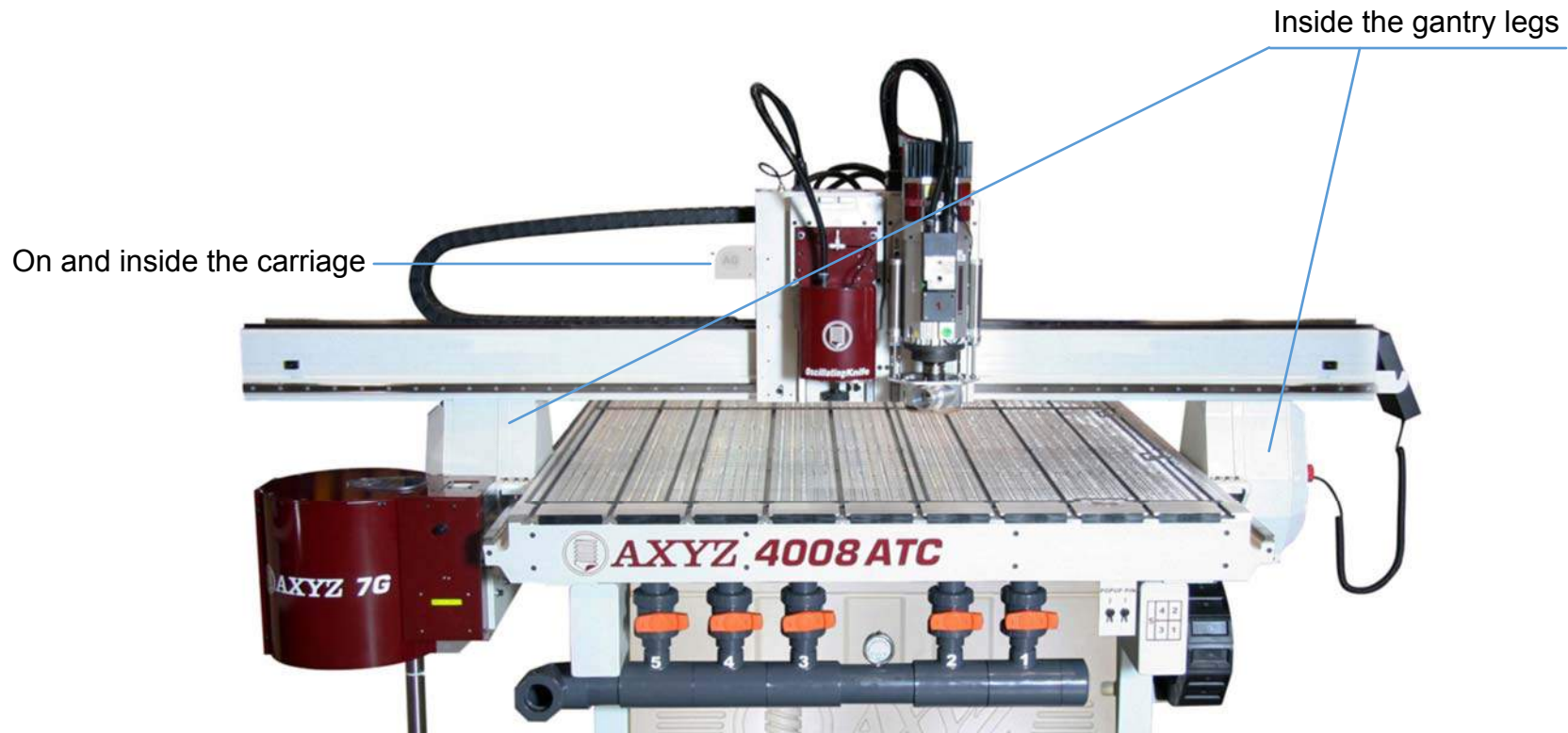
Call: USA 1-513-771-7444 CA 1-905-634-4940

www.axyz.com

Overview and Location

The automatic greasing system cannot be retrofitted onto a table. This option only comes installed upon the purchase of a brand new AXYZ router table. It incorporates consumable components, including three pumps and pinions, that **periodically require inspection and replacement**. By following the steps provided in later sections, the user will know when, where and how to replace them.

The system consists of multiple sets of assemblies (a greasing pump and a transmission) installed into three different parts of the table, in order to accommodate for various orientations of the racks. The set for the Y-axis is installed on and inside the carriage. The other two sets, for the X-axis, are installed in each gantry leg.



Consumable Part Detail

Name: Grease Pump – Auto Greasing

WXYZ Part Number: 027848

Quantity:

1 unit for Y-Axis (part of # 027951 – Y Axis Pump Case)

2 units for X-Axis (part of # 027952 – X Axis Pump Case)

Frequency of Inspection / Replacement:

Refer to “Grease Pump – Lubrication Time Setup” ([pg. 3](#)).

Replacement by User: Yes, instruction included.



Name: Nylon – Auto Grease Pinion (Part # 027798)

WXYZ Part Number: 027798

Quantity:

1 unit for Y-Axis (part of # 027979 – Y Axis Transmission – Auto Grease)

2 units for X-Axis (part of # 027980 – X Axis Transmission – Auto Grease)

Frequency of Inspection / Replacement:

Refer to “Grease Pinion – Checking the Status” ([pg. 9](#)).

Replacement by User: No, contact XYZ customer service (contact info on [pg. 19](#)).



Grease Pump

Refer to the table for lubrication time setups.

Lubrication Time Setup

NOTE

The recommended/default setting for AXYZ router tables is 12 months.

Setting time in months	1	2	3	6	12	18
DIP switch	1	2	3	4	5	6
Pressure buildup time in days	1	2	3	6	10	14

Setting time in months:

Number of months the pump will last for.

DIP switch*:

The switches shown on the right are DIP switches. #7 is the ON/OFF switch.

Flick the switch “up” to achieve the setting time in the same column.

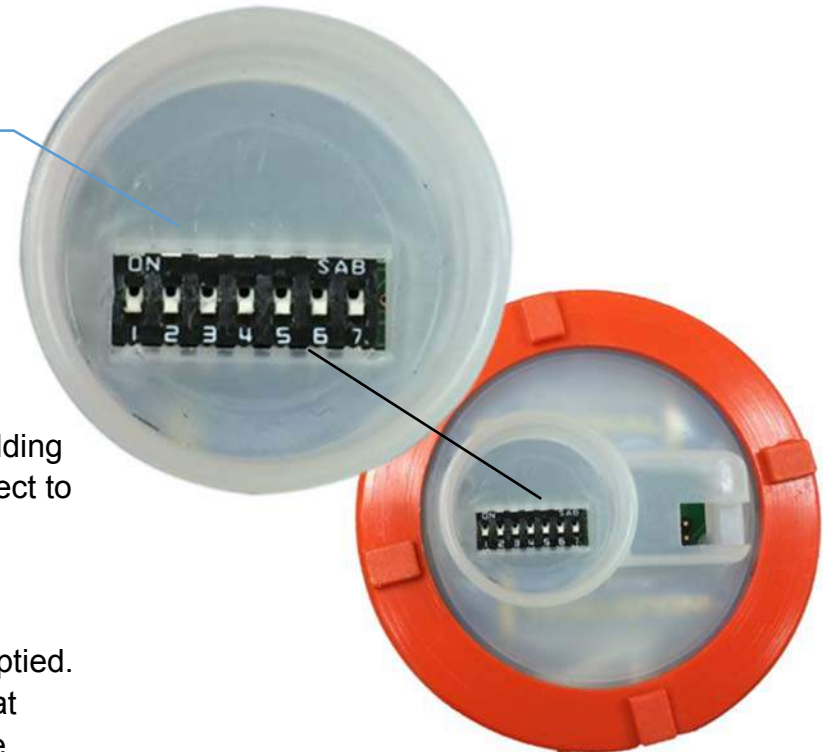
(ex. #5 switch is 12 months of lubrication time)

Pressure build-up time in days:

This is the number of days the pump takes to get ready to be used (building up pressure) after setting the DIP switches. The duration varies in respect to the DIP switch setting (in the same column).

The Period after which a replacement is required:

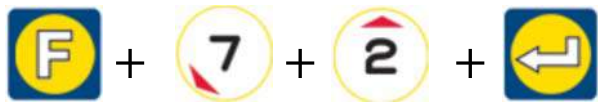
The grease pumps must be replaced immediately after the pump is emptied. Therefore, you may expect to replace them after the lubrication time that you have chosen (the default is 12 months, if you have not changed the setting). Refer to the next section for information on checking the emptiness of the pump.



* Refer to the OEM document (in the Appendix section) for more combinations of setups.

Enabling Auto Lubrication

For the greasing system to run automatically, the functionality must be enabled on the A2MC controller. To enable this feature, enter **Function 72** on the smart console then press enter.



Upon entering this function, you will see the following prompt:



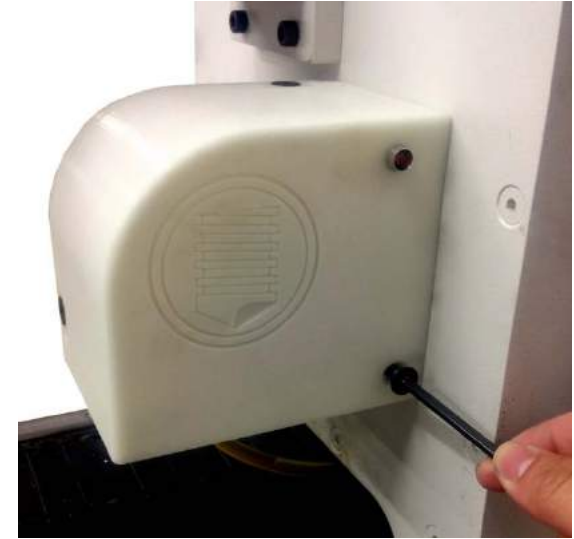
Press to enable the automatic greasing system.

Checking the Status

It is recommended to perform this check-up at least once every month.

Check the Grease Level:

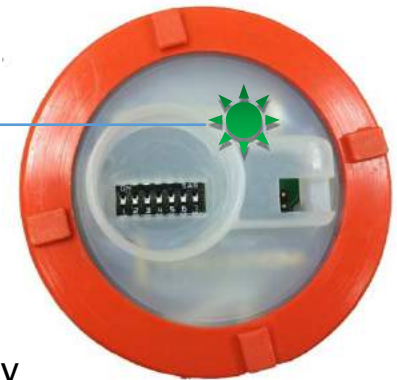
1. Remove the cover and check the pump.
2. Move the carriage to the front left side of the table.
3. Turn the machine OFF.
4. Remove the screw and cover.
5. Check the pump's grease level.



Grease Level Indicator:

The light inside the pump signifies the grease level.

- Green** = not empty
- Red** = replace immediately
- None** = change batteries



Refer to the OEM document for more detailed information about the pump.

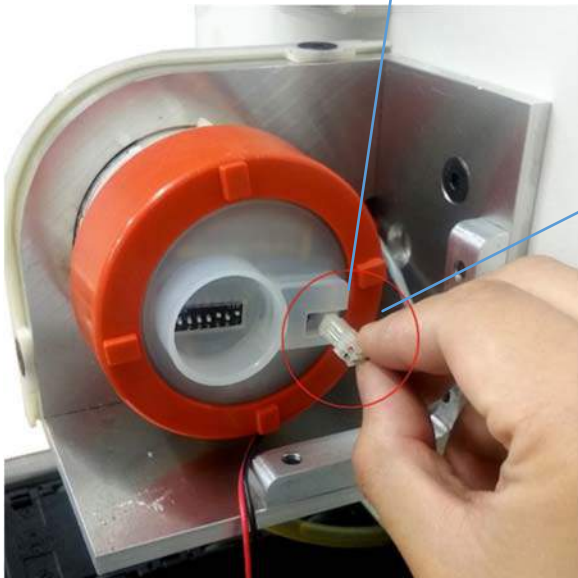
If this pump requires replacement, you'll also need to replace the other two pumps in the gantry legs.

Removal Procedure

There is one pump beside the carriage for Y-axis and two pumps in the gantry legs. Once the respective cover is removed, all three pumps are removed in the same way.

Cover: Y-Axis Pump

1. Ensure that the machine is OFF.
2. Remove the cover of the pump case, according to the steps in “Check the Grease Level” section ([page. 5](#)).
3. Unplug the wire connector on the pump. **DO NOT** pull on the wires.



Cover: X-Axis Pump

For X-axis, there is one pump in each gantry leg. Follow this procedure for both sides.

1. Ensure that the machine is OFF.
2. Remove the six cover screws.
3. Open the gantry leg cover.*
4. Unplug the wire connector on the pump, as done on the Y-axis pump.



**If your table has the Tool Changer, call our Technical Specialist for assistance.*

CAUTION

Only qualified persons should perform service work.
Failure to comply could result in equipment damage or injury.

Pump: Both Axis

1. Turn the pump counter-clockwise, to completely unthread it from the base.
2. Remove the pump.

**The cases/fixtures that hold the pump do NOT need to be removed for this procedure.*



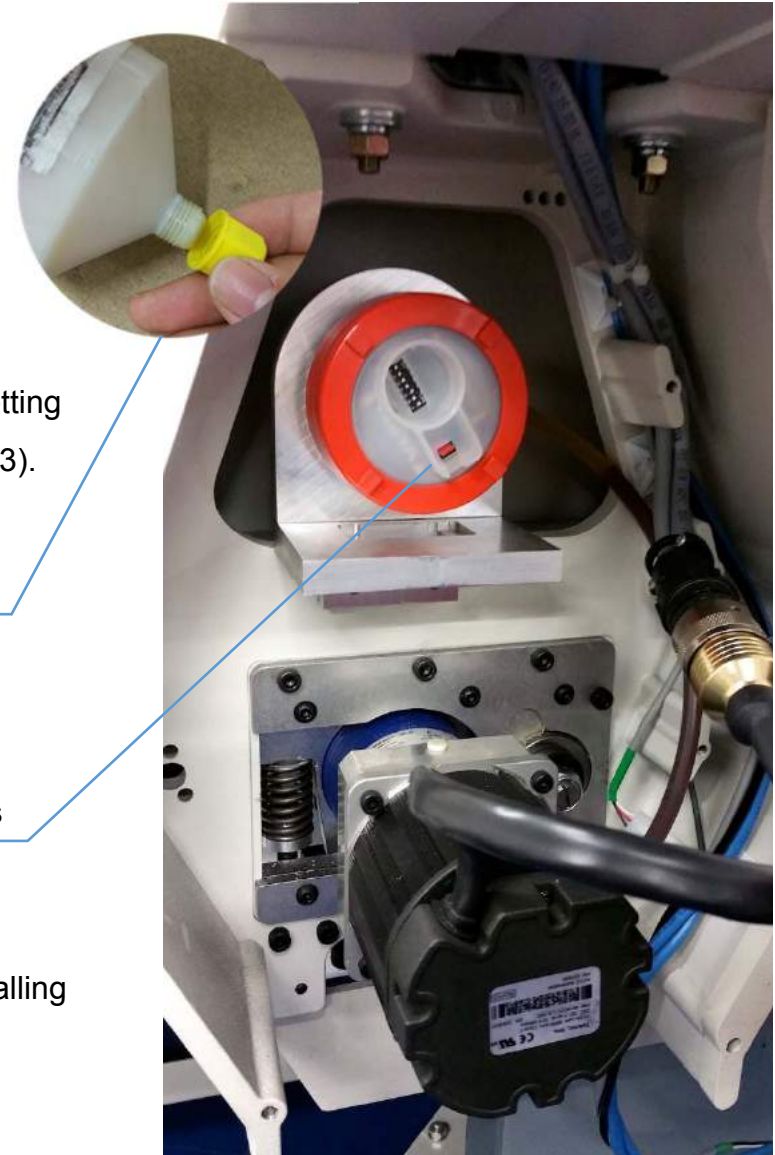
NOTE

Recycle the pump according to your regional requirements.

Installation Procedure

Configure and install the pumps and then replace the covers.

1. Ensure that the machine is OFF.
2. Unless you have a different setup in mind, configure the DIP switch setting to match the recommended lubrication time setting as mentioned (pg. 3).
3. Remove the grease pump cap and place the pump into the base.
4. Turn the pump clockwise to screw it into the fitting and hand-tighten it.
5. Remove the terminal cap and plug the wire connector onto the pump's terminals. ENSURE a proper connection.
6. Route all other wires properly, so that you do not pinch any, while installing the covers.
7. Replace the covers and screws.



If one pump is in need of replacement, you will need to replace all three simultaneously.

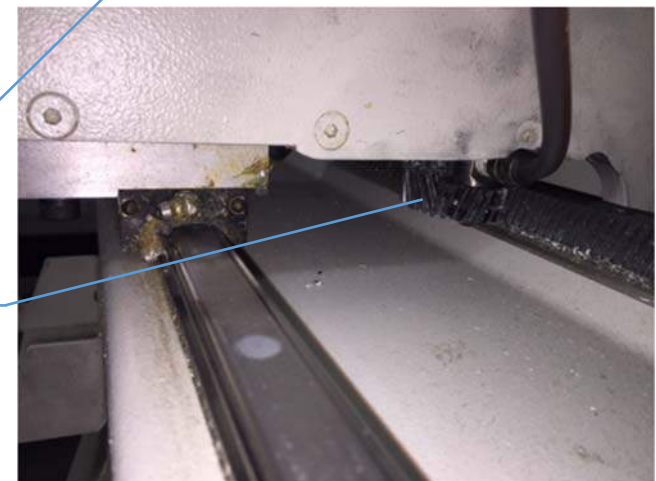
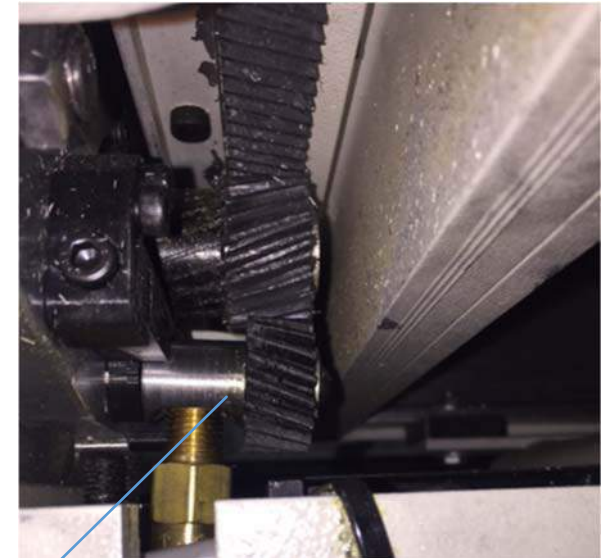
NOTE

To ensure accurate monitoring, use the same setting on all three pumps.

Grease Pinion

Checking the Status

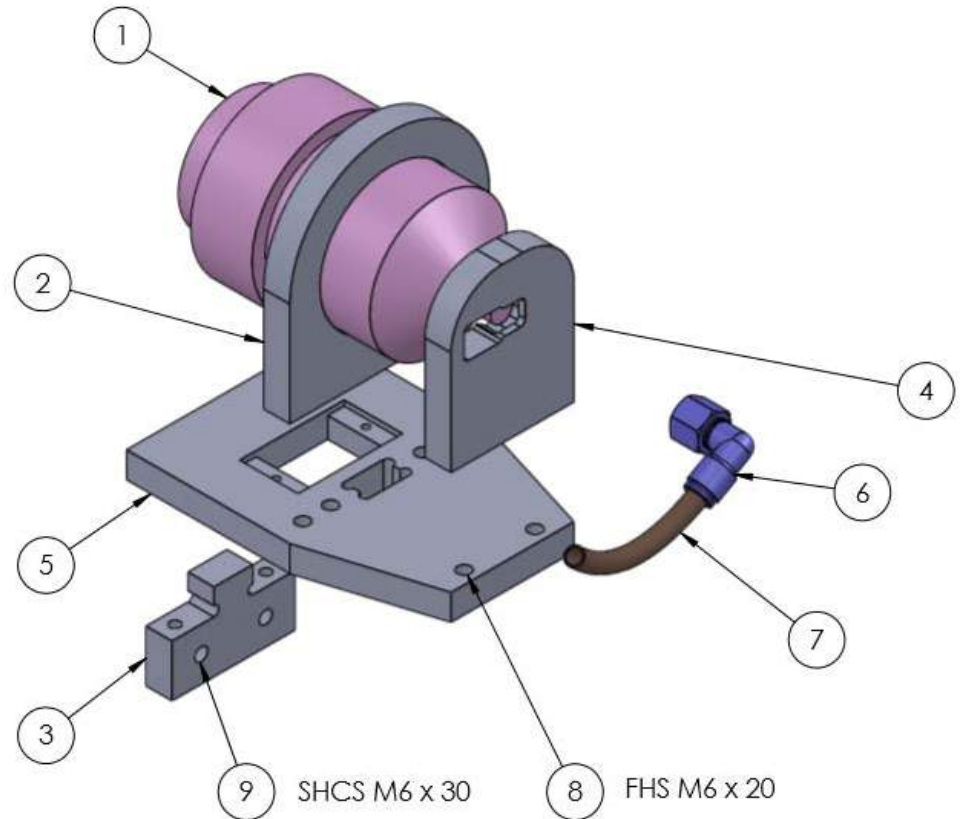
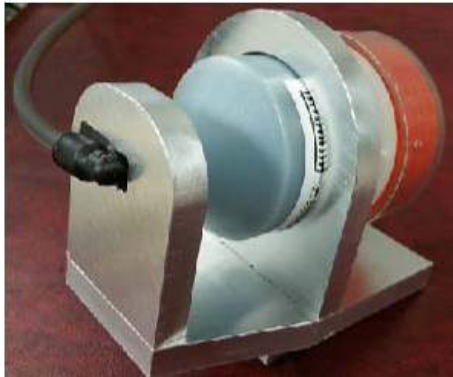
- A regular check-up on the pinions & their mounting brackets may be performed:
 1. Every **three months** after start of use
 2. If the greasing pinion makes a strange noise when the machine is running
 3. There is an excessive leakage of lubricant (e.g. grease spills on gantry tube/floor)
- If any of the above is satisfied, check the status on the grease pump to make sure if it needs to be replaced. Then, locate where the greasing pinions are installed and look for any visible damages. Be sure to check for any cracks in the 3D printed components, such as the mounting brackets on the transmission plate or the greasing pinion itself, as they are the most fragile.
- To locate the greasing pinions and their mounting brackets:
 - (X-AXIS)** Behind the gantry leg, under the X-axis racks.
 - (Y-AXIS)** Under the carriage box, beside the X-axis racks.
- If replacement of any parts is necessary, contact XYZ Customer Service. The contact information is on the last page of this manual.



Appendix

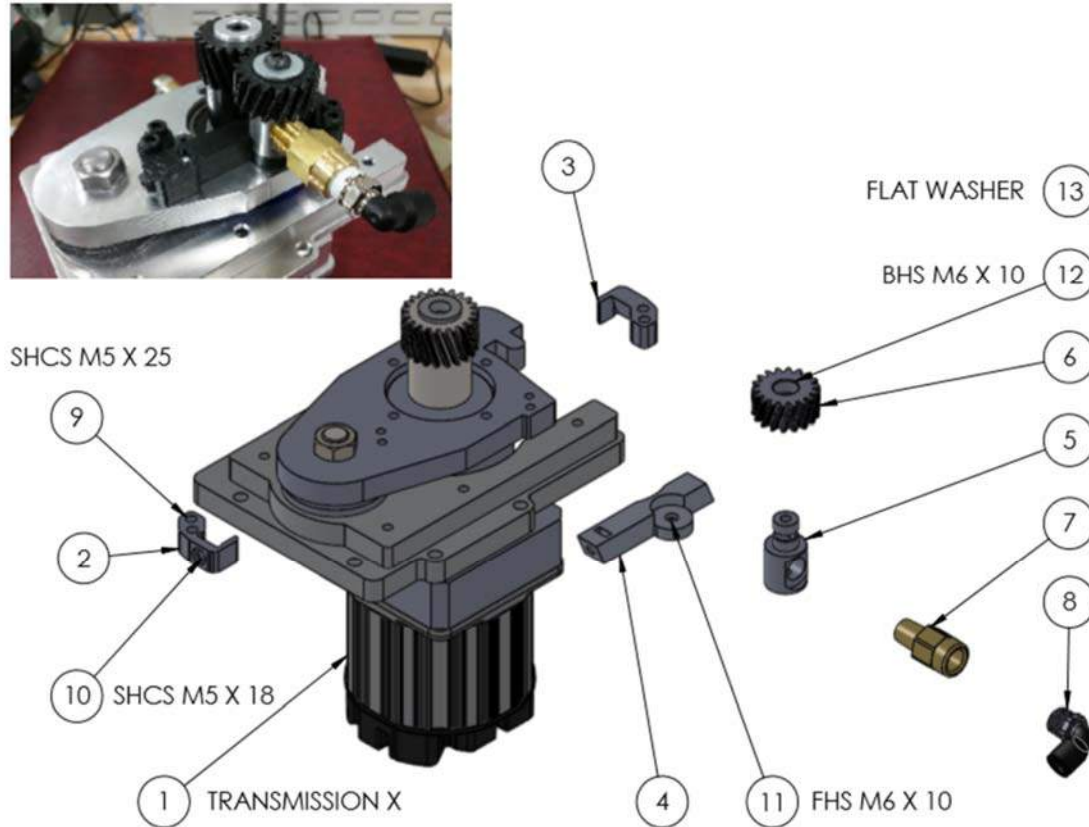
Assembly Drawings

X-Axis Pump Case - Part No. 027952



Ref. No.	Qty.	Descriptions	Part No.
1	2	GREASE PUMP - AUTO GREASING	027848
2	2	MIDDLE SUPPORT PLATE - X TRANS - AUTO GREASE	027856
3	2	CONNECTOR PLATE - X TRANS - AUTO GREASE	027857
4	2	END SUPPORT PLATE - X TRANS - AUTO GREASE	027855
5	2	BOTTOM SUPPORT PLATE - X TRANS - AUTO GREASE	027854
6	2	ELBOW ADAPTER 1/4" SWIVEL 90 DEG	027861
7	1	GREASE HOSE - AUTO GREASING	027973
8	12	FLAT HEAD SCREWS, M6 X 20	
9	4	SOCKET HEAD SCREWS, M6 X 30	

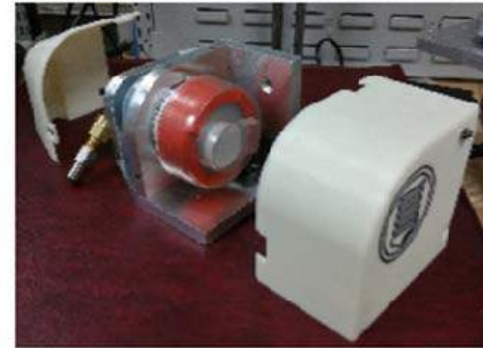
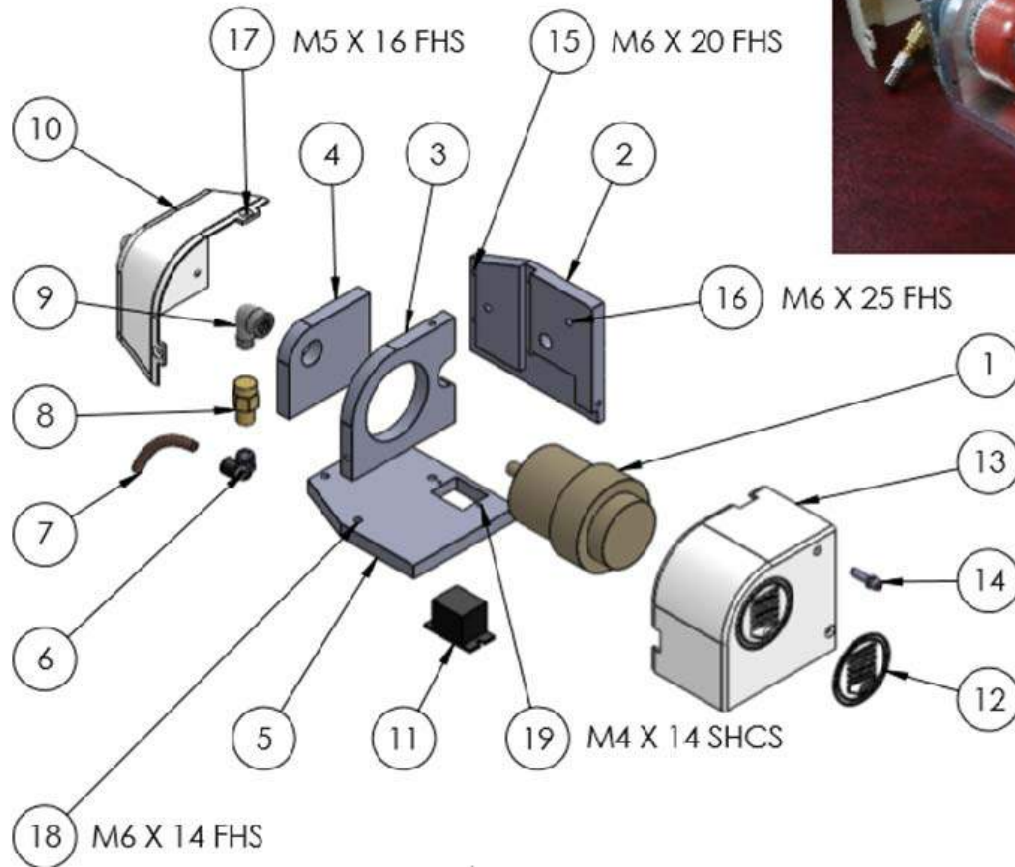
X-Axis Transmission - Part No. 027980



Parts listed on next page.

X-Axis Transmission - Part No. 027980			
Ref. No.	Qty.	Descriptions	Part No.
1	2	TRANSMISSION X - GH SERVO - HR	026547
2	2	NYL - AUTO GREASE X TRANS BRACKET	027800
3	2	NYL - AUTO GREASE X TRANS BRACKET - SPRING	027799
4	2	NYL - MOUNTING BRACKET X TRANS - AUTO GREASE	027801
5	2	PINION MOUNTING BLOCK 1/4" NPT THREAD	027791
6	2	NYLON - AUTO GREASE PINION	027798
7	2	PSI CHECK VALVE 1/4" NPT	027786
8	2	ELBOW ADAPTER 8MM TUBE TO 1/4" NPT SWIVEL	027790
9	8	SOCKET HEAD CAP SCEW M5X25	XXXXX
10	2	SOCKET HEAD CAP SCREW M5X18	XXXXX
11	2	FLAT HEAD SCREWS, M6X10	XXXXX
12	2	BUTTON HEAD SCREWS, M6X10	XXXXX
13	2	FLAT WASHER, 0.25IN USS	XXXXX

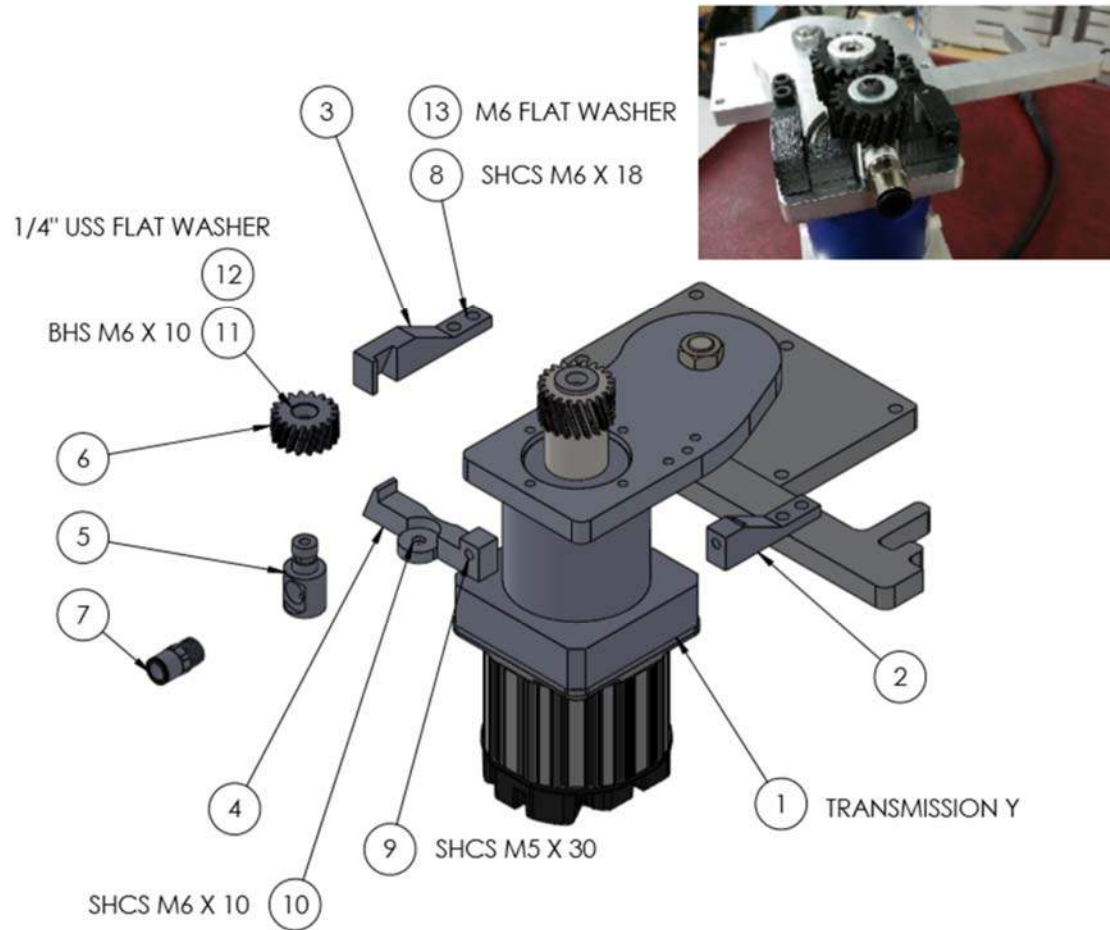
Y-Axis Pump Case - Part No. 027951



Parts listed on next page.

Y-Axis Pump Case - Part No. 027951			
Ref. No.	Qty.	Descriptions	Part No.
1	1	GREASE PUMP - AUTO GREASE	027848
2	1	BACK SUPPORTING PLATE - Y TRANS - AUTO GREASE	027849
3	1	MIDDLE SUPPORT PLATE - Y TRANS - AUTOGREASE	027852
4	1	LEFT SUPPORT PLATE - Y TRANS - AUTO GREASE	027851
5	1	BOTTOM SUPPORT PLATE - Y TRANS - AUTOGREASE	027850
6	1	STRAIGHT ADAPTER 1/4" NPT TO 8MM TUBE	027787
7	1	GREASE HOSE - AUTO GREASING	027973
8	1	PSI CHECK VALVE 1/4" NPT	027786
9	1	ELBOW ADAPTER FEMALE - MALE 1/4" NPT	027788
10	1	ABS - AUTO GREASE PUMP COVER - LEFT	027797
11	1	PANEL - MOUNTED 12V RELAY	023746
12	1	GREASE PUMP COVER INLAY	027853
13	1	ABS - AUTO GREASE PUMP COVER - RIGHT	027796
14	1	LED 7MM 12V (RED)	027785
15	4	FLAT HEAD SCREWS, M6X20	XXXXX
16	2	FLAT HEAD SCREWS, M6X25	XXXXX
17	4	FLAT HEAD SCREWS, M5X16	XXXXX
18	4	FLAT HEAD SCREWS, M6X14	XXXXX
19	2	SOCKET HEAD SCREWS, M4X14	XXXXX


Y-Axis Transmission - Part No. 027979




Parts listed on next page.

Y-Axis Transmission - Part No. 027979			
Ref. No.	Qty.	Descriptions	Part No.
1	1	TRANSMISSION Y - GH SERVO - HR	026558
2	1	NYL - AUTO GREASE Y TRANS BRACKET - RIGHT	027802
3	1	NYL - AUTO GREASE Y TRANS BRACKET - LEFT	027803
4	1	NYL - MOUNTING BRACKET Y TRANS - AUTO GREASE	027971
5	1	PINION MOUNTING BLOCK 1/4" NPT THREAD	027791
6	1	NYLON - AUTO GREASE PINION	027798
7	1	STRAIGHT ADAPTER 8MM TUBE TO 1/4" NPT	027792
8	4	SOCKET HEAD CAP SCREW M6X18	XXXXX
9	1	SOCKET HEAD CAP SCREW M6X10	XXXXX
10	1	FLAT HEAD SCREWS, M6X10	XXXXX
11	1	BUTTON HEAD SCREWS, M6X10	XXXXX
12	1	FLAT WASHER, 0.25" USS	XXXXX
13	4	FLAT WASHER, M6	XXXXX


Grease Pump OEM Document

	<h2 style="margin: 0;">ATLANTA</h2> <h3 style="margin: 0;">Operating Instructions</h3>	<h2 style="margin: 0;">BKI 102 e</h2> <h3 style="margin: 0;">4100-001-04/93</h3>															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Department</td> <td>TB</td> </tr> <tr> <td>Rev. Index</td> <td>B</td> </tr> <tr> <td>Date</td> <td>15.08.06</td> </tr> </table>	Department	TB	Rev. Index	B	Date	15.08.06	<p>Electronically controlled lubricators 125 cm³ – battery-operated applicable to 65 91 000; 65 91 004; 65 91 009</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Page</td> <td style="width: 30%;">1</td> <td style="width: 30%;">1</td> </tr> <tr> <td>Name</td> <td>Schell</td> <td>14.10.03</td> </tr> <tr> <td>released</td> <td>TB/Lorch</td> <td>14.10.03</td> </tr> </table>	Page	1	1	Name	Schell	14.10.03	released	TB/Lorch	14.10.03
Department	TB																
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Page	1	1															
Name	Schell	14.10.03															
released	TB/Lorch	14.10.03															




Features:
 Precise dosing of lubricant.
 Activation, deactivation, and setting of grease supply via micro-switch.
 Automatic pressure control from 0.2 to 3 bar.
 Non-explosive – Ex protection PTB;
 BVS and CE tested.
 To be mounted in any position.
 Can be used again and again for many years.
 Refillable

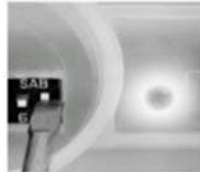
Start-up:



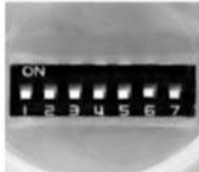
Remove protective lid and switch on lube dispenser



Any dosage required can be set via DIP switch combinations

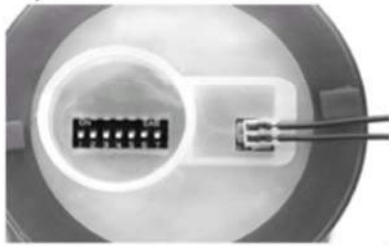


DIP switch 7 active, indicator light blinks approx. every 20sec

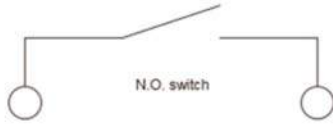


To switch off: turn all switches down

Synchronisation with machine operating time



Setting same as so far. Extend contact cable and connect to limit switch or contactor with floating contact. No external power supply required.



Advantages:

Change of lubricating time or combinations of switching times possible (see also page 2 setting combinations).

Battery-operated:
 Battery capacity approx. = 2600 mA
 Consumption in 1 year:
 25 microamperes x 8640 h = 216 mA

Signal light:
 8 microamperes x 8640 h = 69 mA
 Yearly consumption = 285 mA

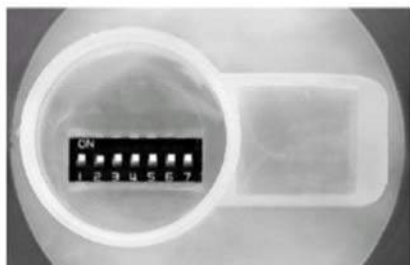
Tip:
 Before using the lube dispenser for the first time fill the hose with grease and soak the felt gearwheel with grease.
 Visual control of the grease filling at the transparent housing of the lube dispenser.
 Signal light blinks also when the lube dispenser is empty.
 Optionally available are also lube dispensers with emptying monitor.

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		BKI 102 e Operating Instructions 4100-001-04/93	
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applicable to 65 91 000; 65 91 004; 65 91 009		Name	Scheil 14.10.03
		released	TB/Lorch 14.10.03

Pressure build-up times:

The batteries need a certain time to build up the pressure. They induce an electro-pneumatic reaction in the built-in nitrogen chamber and transmit the pressure to the piston via a bellows. This chamber has to be replaced at the end of the lubricating time.



Simply set the desired operating time and mount it. The resulting pressure build-up times are then as follows:

Setting time in months	1	2	3	6	12	18
DIP switch	1	2	3	4	5	6
Pressure build-up time in days	1	2	3	6	10	14

Lubrication starts after the appropriate pressure build-up. The pressure remains built-up even if the lubricator is switched off for some time. Therefore lubrication begins immediately after switching on the lubricator again because the pressure remains built-up.

Immediate lubrication and safety check

Set all switches to the "on" position. Pressure build-up time approx. 6 – 8 hours. Then reset all switches and set the desired operating time. The signal light blinks.

Visual control of the pressure build-up by marking the filling state at the transparent housing. Depending upon the dosage chosen the piston in the lube dispenser should move downward from the marking for more or less time during the pressure build-up.

Important information!

Ambient temperature max. -20°C to max. +50°C. Avoid electrostatic charging of the lube dispenser (e.g. due to friction with cloth or strong air currents).

Setting combinations for lube dispenser

DIP switch position	Daily amount of lubricant	Lubricating time of lubricator
7 = switch for „ON“ - signal light blinks at short intervals		
6 = 18 M	0.175 cm ³	18 months
5 = 12 M	0.35 cm ³	12 months
4 = 6 M	0.70 cm ³	6 months
3 = 3 M	1.30 cm ³	3 months
2 = 2 M	2.10 cm ³	2 months
1 = 1 M	4.00 cm ³	1 month
All switches activated	9.00 cm ³	14 days
Combinations:		
5 + 4	1.05 cm ³	121 days
5 + 3	1.74 cm ³	71 days
4 + 3	2.08 cm ³	57 days
5 + 4 + 3	2.35 cm ³	52 days
5 + 2	2.45 cm ³	51 days
4 + 2	2.60 cm ³	45 days
3 + 2	3.48 cm ³	35 days
5 + 3 + 2	3.83 cm ³	30 days
4 + 3 + 2	4.16 cm ³	28 days
5 + 4 + 3 + 2	4.53 cm ³	27 days
4 + 1	4.80 cm ³	24 days
3 + 1	5.56 cm ³	23,5 days
2 + 1	6.26 cm ³	20 days
5 + 2 + 1	6.61 cm ³	19 days
3 + 2 + 1	7.65 cm ³	17 days
5 + 3 + 2 + 1	8.00 cm ³	16 days
4 + 3 + 2 + 1	8.33 cm ³	15 days
5+4+3+2+1	8.70 cm ³	14,5 days

Technical tips:

Extension with hose or tube is possible up to approx. 1.5 m for grease lubrication and 5 m with oil lubrication. In this case the lubrication charts do not apply because the viscosity of the lubricant and the length of the hose influence the flow behaviour of the lubricant. Mind the correction factors on page 3. There is less resistance in case of oil filling; therefore we recommend to use a check valve with 0.2 bars. The lube dispenser lubricates constantly, i.e. no impulse lubrication.

Technical data:

Supply voltage (2 x 1.5V) 3V
 BSV 03 ATEX E 223
 Standard type: Varta Electric Power 8008 for Groups I and IIC T 3
 Special type: Varta Industrial Mignon / AA for Groups I and IIC T 4
 II 2G EEx ib IIC T4/T3
 I M2 EEx ib I



No Ex protection is provided for lube dispensers with synchronisation.

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Correction factors for lubricant dosage:

Tube/hose length mm	Synchronous operation with machine f _{SY}	Tube/hose connecting set f _{SR}
<200	1,25	1
>200	1,25	1,16

If not synchronised with the machine operating time (in the case of continuous lubrication), only the factor f_{SR} will be considered.

Temperature factor f_T:

Temperature range	Microlube GB O	Structovis AHD
-20 ... +15°C	2	1,5
+15 ... +35°C	1	1
+35 ... +50°C	0,5	0,7

Note:

The correction factors are based upon experience values determined by experiments. If required and/or for specific applications they should be verified and adapted as necessary.

Example:

A toothed-rack gear unit m=2 with a travelling speed of v=1,5m/s shall be lubricated with an electronically controlled lube dispenser via a felt gearwheel with Klüber Structovis AHD. The following parameters are to be considered:
 - The grease supply from the lube dispenser to the felt gearwheel runs through a hose which is 600 mm long.
 - The lube dispenser shall be synchronised with the machine.
 - Ambient temperature 10°C.

According to the grease dosage diagram for felt-wheel lubrication (catalogue Servo-drive Systems) the dosage for this type of drive is approx. 0,35 cm³ of grease.

The actually needed amount of lubricant, if the described parameters are considered, can be calculated as follows:

$$0,35 \times 1,16 \times 1,25 \times 1,5 = 0,76 \text{ cm}^3$$

In the chart „setting combinations for lube dispensers“ the lubricant quantity of 0,7 cm³, corresponds to the DIP-switch position 4.

SUPPORT

Contact AXYZ Customer Service:

Cincinnati

2844 East Kemper Road

Cincinnati, OH, 45241

Phone: 513 771 7444

Toll Free: 1 800 527 9670

Burlington

5330 South Service Road

Burlington, ON, L7L 5L1

Phone: 905 634 4940

Toll Free: 1 800 361 3408

Telford

Telford 54 Business Park

Nedge Hill

Telford, England, TF3 3AL

Phone: 44 1952 291600

Online: [Send service request](#) | www.cncroutershop.com

TABLE OF CONTENTS

This Table of Contents is included for the printed version of the manual.

It is recommended that it be inserted at the front of the hardcopy manual (after the cover) or used as a separate document for quick reference.

For online viewing, open the “Bookmarks” pane in the PDF viewer.
For more information, refer to your PDF viewer’s help files.

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