

# FLEXXPUMP AUTOMATIC LUBRICATION SYSTEMS



# DLS

## SCHMIERSYSTEME

DIRECT LUBRICATION SYSTEMS

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A new high performance system to automatically lubricate racks and pinions, open gearing, linear guideways, ballscrews, and chain drives is available from Andantex, USA. A compact automatic relubrication unit, Flexxpump, is available in two sizes 400/500 and 1500/2000. These pumps deliver grease or oil to the item being lubricated through a piston pump with programmable frequency and delivery rate. They are combined with tubing and open cellular polyurethane (P.U.) foam applicators for chain and open gearing drives.

Lubricate THESE COMPONENTS with the new FLEXPUMP system from DLS



## Complete system consists of:

Flexxpump – Automatic relubrication unit with piston pump (pressure up to 70 Bars) and programmable frequency and delivery rate settings!

- Includes up to 10 outlets for multi-point lubrication
- Power by internal battery or 24V DC supply
- Remote operation monitoring and setup available through 4 pin M12 connector

Optimized Grease or Oil – New lubricants specifically developed for components to be lubricated Flexxpump

400/500 offers 400cc grease cartridge or 500cc oil and Flexxpump 1500/2000 offers 1500cc grease bellows or 2000cc oil













Polyurethane (P.U.) Foam Applicators - New gear tooth or chain sprocket applicators insure correct film thickness.

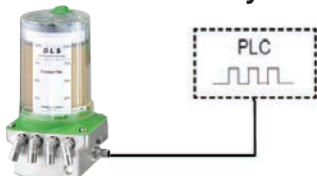
Low density PU foam absorbs lubricant up to 90% of its volume allowing high viscosity lubricants to be applied and absorbed to insure film thickness and avoid hardening.

Tubing, Fittings and Tools – All interconnecting components available to provide complete Automatic Lube system

## FLEXPUMP 400/500 CONFIGURATIONS

### LUBRICANT

GREASE				OIL			
							
<b>FlexxPump 4xx</b> 400 cc Grease Cartridge				<b>FlexxPump 5xx</b> 500 cc Oil Reservoir			
Number of Outlets							
 401	 402	 403	 404	 501	 502	 503	 504
 422				 522			

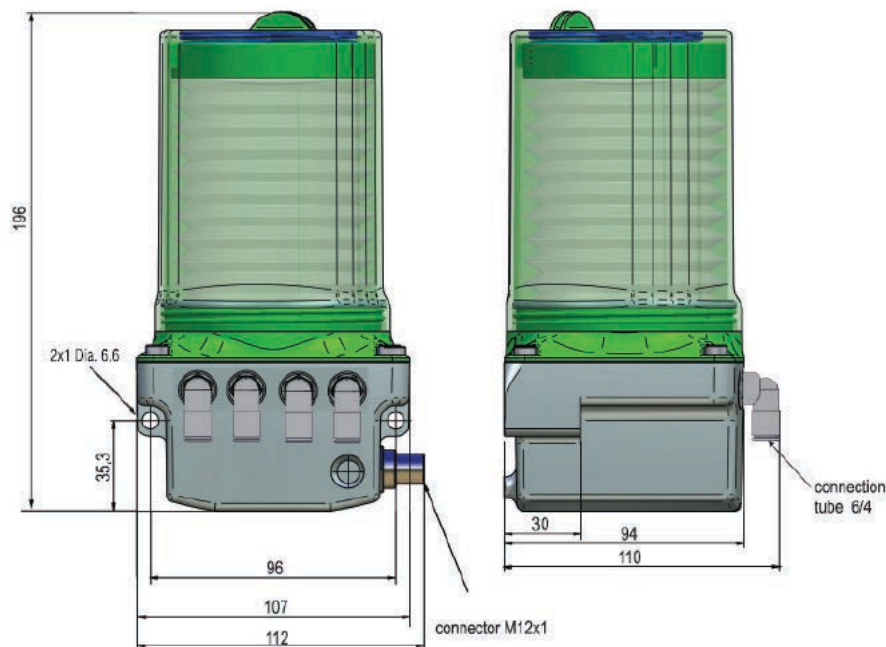
Operating Power	24V DC		BATTERY
Control Method	<b>DLS</b> Pulse Controlled by PLC 		Time Controlled by on-Board Programming  <b>ON-BOARD PROGRAMMING</b>

**TYPE**

FlexxPump <b>4</b>	<b>0 2</b>	<b>DLS</b>
4 = 400 CC Grease 5 = 500 CC Oil  0 = 1 Pump Body/2 Outlets 2 = 2 Pump Bodies/2 Outlets	     <b>Number of Outlets</b>	DLS = Pulse Control PLC B = Battery Power/Time Control = 24V DC/Time Control

## FLEXPUMP 400/500 DLS RELUBRICATION UNIT DIRECT LUBRICATION SYSTEM

### DIMENSIONS FlexxPump 400/500 DLS



### TECHNICAL DATA FlexxPump 400/500 DLS

Dimensions, Max:	width x height x depth: 112mm x 196mm x 94mm
Weight, without lubricant:	1120g
Storage/volume:	400cm <sup>3</sup> grease in a cartridge (types: 400); 500ml oil (types: 500)*
Lubricant:	oil or grease up to NLGI. 3 (also containing solid lubricants)
Function/principle:	piston pump
Delivery rate per pulse/stroke:	0.15cm <sup>3</sup>
Number of strokes/cartridge:	2700
Number of outlets:	up to 4; right-angled and pivotable
Operating voltage:	24V DC
Operating current:	I <sub>max</sub> : 350mA; typical: 200mA
Fuse:	500mA (characteristic: delay)
Lube-connection:	high pressure tube 6x4 (flexible tube with diameter 6mm outside; 4mm inside)
Operating pressure:	max. 70bar (1000 psi)
Operating temperature:	-25°C... +70°C (-13F ... +160F)
Combination:	possible with progressive systems
Pressure monitoring:	integrated, electronic (monitoring back pressure)
Level monitoring:	integrated, reed-contact
Electrical connection:	M12x1; 4-pin
Protection class:	IP 65 (= suitable for underwater operation up to 1m)
Installation Position:	grease - any; oil - upright
Error Signal:	PLC OPTICAL cartridge empty/back pressure/internal error optional LED connector 90° (134-002-014/-015)
Housing Material:	Zinc, Polyamide

\*Relubrication unit delivered without grease cartridge.  
Cartridges are available as accessories.

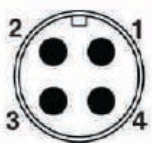
## FLEXPUMP 400/500 DLS RELUBRICATION UNIT DIRECT LUBRICATION SYSTEM

Part Number	Outlets	Pump Bodies	Grease (g) Oil (o)	Type
135-140-210	1	1	g	FlexxPump 401 DLS
135-240-210	2	1	g	FlexxPump 402 DLS
135-340-210	3	2	g	FlexxPump 403 DLS
135-440-210	4	2	g	FlexxPump 404 DLS
135-240-212	2	2	g	FlexxPump 422 DLS
135-150-210	1	1	o	FlexxPump 501 DLS
135-250-210	2	1	o	FlexxPump 502 DLS
135-350-210	3	2	o	FlexxPump 503 DLS
135-450-210	4	2	o	FlexxPump 504 DLS
135-250-212	2	2	o	FlexxPump 522 DLS

### Connector PIN assignment M12x1



The FlexxPump uses a four-pin socket to connect a M12x1 plug allowing communication with the machine controller. An external 24VDC power supply is used to switch ON and OFF (voltage of +20 ...up to +30 VDC, supplied to PIN1). When voltage is supplied the lubrication pump is in operating condition. If there are no errors (Pump OK) the input voltage will be transferred to the output signal (PIN 4) indicating all is OK. Once the voltage supply to PIN 1 is stopped (switched OFF), the pump rests and saves the current operating conditions in memory. When the pump is turned back on the saved operating conditions will be continued PIN 4 relays the operating condition.



### Connector PIN assignment M 12x1

PIN 1: Input voltage +20...30 VDC, color brown

PIN 2: Activation of the individual pump outlets (page 7), color white

PIN 3: Ground (GND), color blue

PIN 4: Output Signal, color black

Output signal (Pin 4) - high (+20...30VDC) = OK

- low (0 V) = Error (over current/over pressure/electronic error)

- 0.5 Hz. pulse (0V low/20..30V high) = empty signal

- Pump operation: 7-12 sec low signal while pump is operating

## FLEXPUMP 400/500 DLS RELUBRICATION UNIT DIRECT LUBRICATION SYSTEM

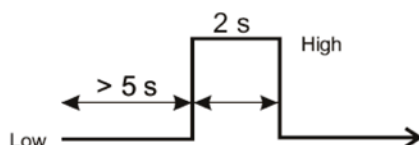
### Identification of the pump outlets



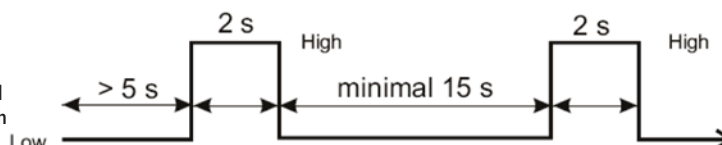
Deliver Rate per pulse signal = 0.15 cc/outlet

Pulse signal to activate the outlets (Indication in seconds, accuracy +/- 10%)  
Time between two pulse signals: minimum 15 s

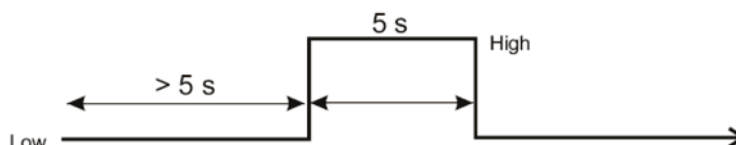
- activate 1.1



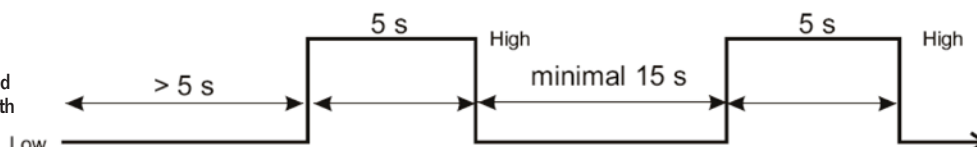
- activate 1.1 + 1.2  
(outlets will be served alternately and dispensed equal quantities from both outlets)



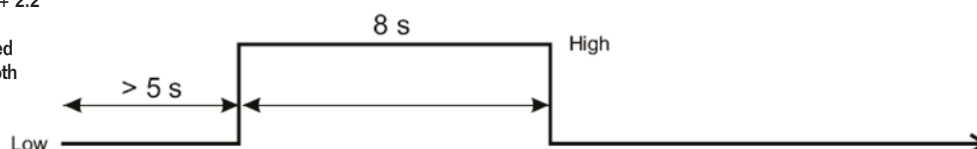
- activate 2.1



- activate 2.1 + 2.2  
(outlets will be served alternately and dispensed equal quantities from both outlets)

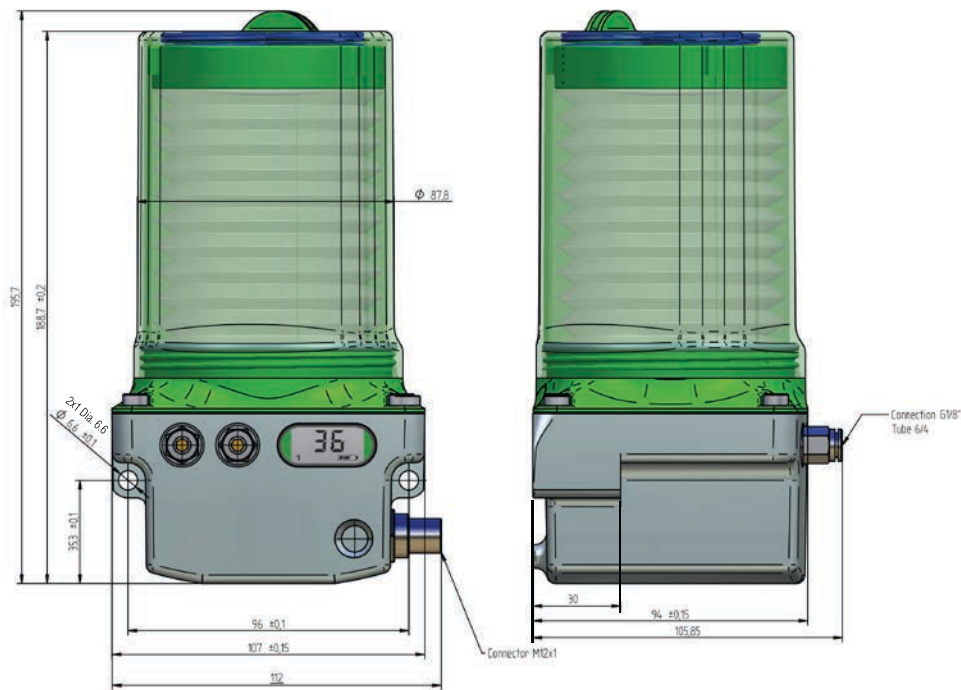


- activate 1.1 + 1.2 + 2.1 + 2.2  
(outlets will be served alternately and dispensed equal quantities from both outlets)



## FLEXPUMP 400/500 B RELUBRICATION UNIT

### DIMENSIONS FlexxPump 400/500 B



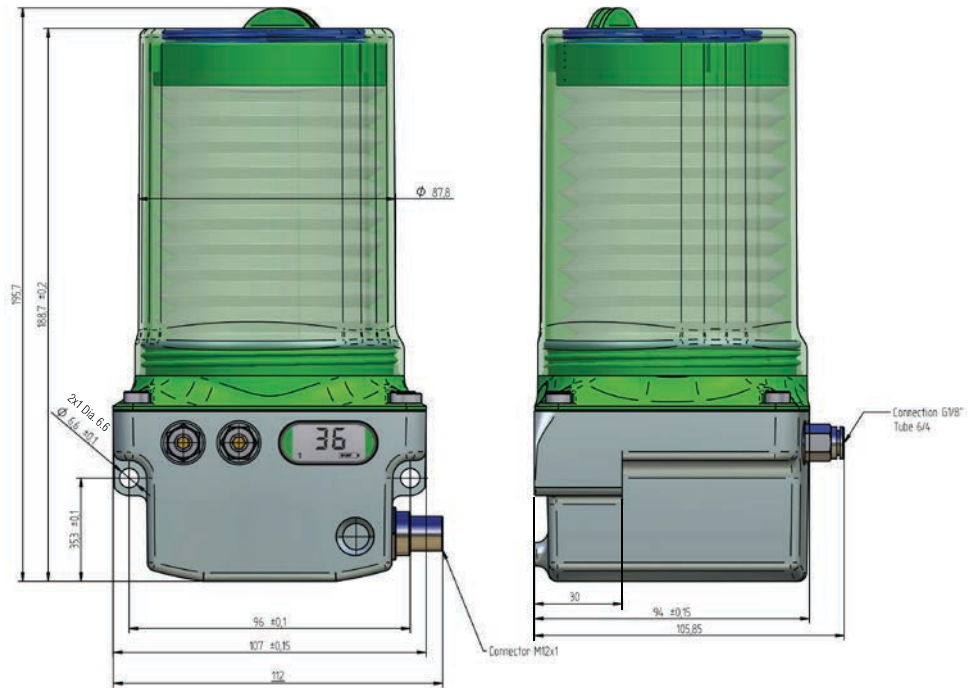
### TECHNICAL DATA FlexxPump 400/500 B (Battery)

Dimensions, Max:	width x height x depth: 112mm x 196mm x 94mm
Weight, without lubricant:	1120g (2.5 lbs.)
Storage/volume:	400cm <sup>3</sup> grease in cartridge* (types: 4xx); 500ml oil (types: 5xx)
Lubricant:	oil or grease up to NLGI 3 (also containing solid lubricants)
Function/principle:	piston pump
Number of outlets:	1 or 2
Delivery rate/stroke:	1 outlet 0.30 cc, 2 outlet 0.15 cc
Operating voltage:	3.6 V. Battery Pack
On-Board Programming:	Via LCD display
Lube-connection:	high pressure tube 6x4
Operating pressure:	max. 70bar (1000 psi)
Operating temperature:	-25°C... +70°C (-13°F ... +160°F)
Pressure monitoring:	integrated, electronic (monitoring back pressure)
Level monitoring:	integrated, reed-contact
Optional PLC connection:	M12x1; 4-pin - for monitoring and on-off only
Protection class:	IP 65
Installation position:	grease any; oil upright
Error Signal:	OPTICAL Cartridge Empty/over pressure/low battery LED Flashing
Housing Material:	Zinc Polyamide

\*Relubrication unit delivered without grease cartridge. Cartridges are available as accessories.

Part Number	Outlets	Pump Bodies	Grease (g) Oil (o)	Type
135-140-000	1	1	g	FlexxPump 401B
135-240-000	2	1	g	FlexxPump 402B
135-150-000	1	1	o	FlexxPump 501B
135-250-000	2	1	o	FlexxPump 502B

## FLEXPUMP 400/500 RELUBRICATION UNIT DIMENSIONS FlexxPump 400/500



### TECHNICAL DATA FlexxPump 400/500

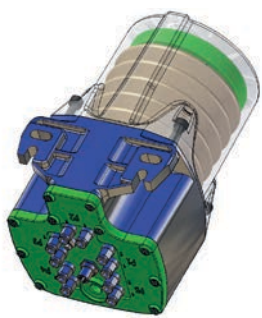
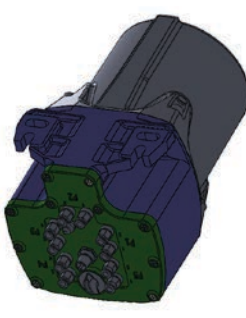
Dimensions, Max:	width x height x depth: 112mm x 196mm x 94mm
Weight, without lubricant:	1120g (2.5 lbs.)
Storage/volume:	400cm <sup>3</sup> grease in cartridge* (types: 4xx); 500ml oil (types: 5xx)
Lubricant:	oil or grease up to NLGI 3 (also containing solid lubricants)
Function/principle:	piston pump
Number of outlets:	1 or 2
Delivery rate/stroke:	1 outlet 0.30 cc, 2 outlet 0.15 cc
Operating voltage:	24 V DC
On-Board Programming:	Via LCD display
Lube-connection:	high pressure tube 6x4
Operating pressure:	max. 70bar (1000 psi)
Operating temperature:	-25°C... +70°C (-13°F ... +160°F)
Pressure monitoring:	integrated, electronic (monitoring back pressure)
Level monitoring:	integrated, reed-contact
Optional PLC connection:	M12x1; 4-pin - for monitoring and on-off only
Protection class:	IP 65 (= suitable for underwater operation up to 1m)
Installation position:	grease any; oil upright
Error Signal:	OPTICAL Cartridge Empty/over pressure/low battery LED Flashing
Housing Material:	Zinc Polyamide

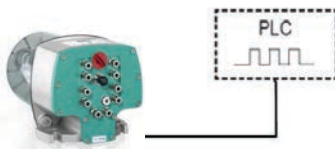

\*Relubrication unit delivered without grease cartridge. Cartridges are available as accessories.

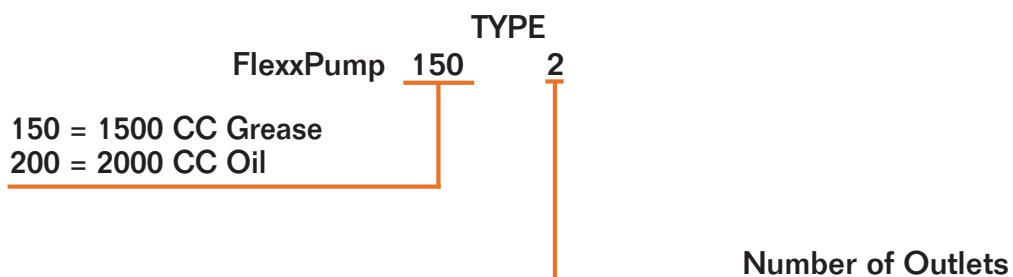
Part Number	Outlets	Pump Bodies	Grease (g) Oil (o)	Type
135-140-100	1	1	g	FlexxPump 401
135-240-100	2	1	g	FlexxPump 402
135-150-100	1	1	o	FlexxPump 501
135-250-100	2	1	o	FlexxPump 502

## FLEXPUMP 1500/2000 CONFIGURATIONS

### LUBRICANT

GREASE					OIL				
									
<b>FlexxPump 150x</b> 1500 cc Grease Bellows					<b>FlexxPump 200x</b> 2000 cc Oil Reservoir				
Number of Outlets									
1502	1504	1506	1508	1510	2002	2004	2006	2008	2010

Operating Power	24V DC	
Control Method	<p><b>DLS</b> Pulse Controlled by PLC</p> 	<p>Time Controlled by on-Board Programming</p> 



## FLEXPUMP 1500/2000 RELUBRICATION UNIT

Time-controlled or pulse-driven relubrication unit

Direct controlled by PLC (incl. error-monitoring)

Piston-pump (1-5 pumpbodies)

Oils and greases up to NLGI 2 including solid particles

2-10 outlets

Different times and/or quantities of lubricant

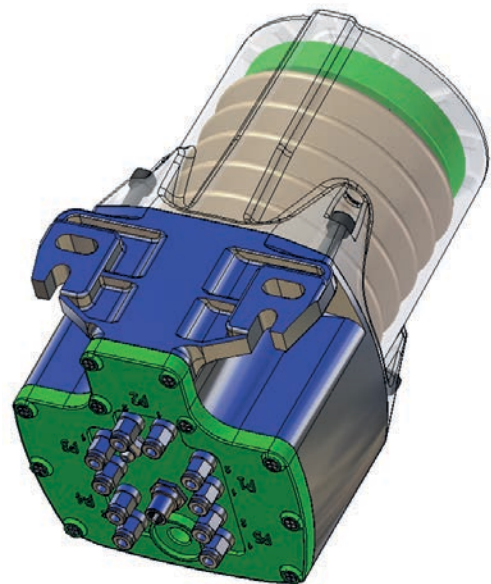
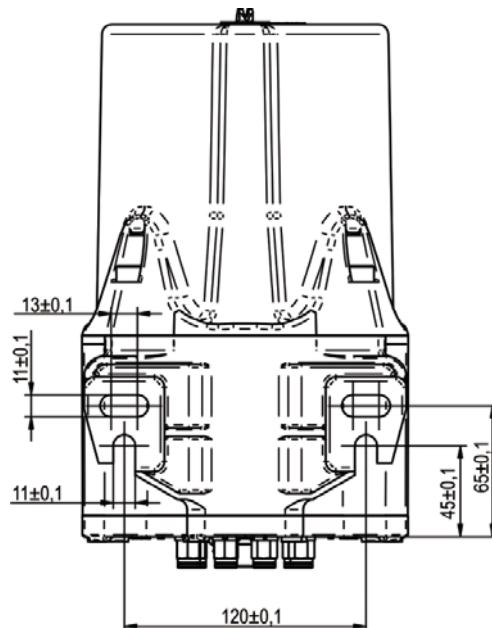
Pressure: max. 70 bar (1000 PSI)

1500 cc grease/2000 cc oil

Low weight and minimum current consumption

Suitable for combined relubrication of:

- chains
- ball-bearings
- linear bearing blocks
- ball screw nuts



## FLEXPUMP 1500/2000 RELUBRICATION UNIT

### TECHNICAL DATA FlexxPump 1500/2000

Dimensions, Max:	width x height x depth: 162mm x 255mm x 165mm
Weight, without lubricant:	4000 g
Storage/volume:	grease: 1500cc in bellows, oil: 2000 ml
Lubricant:	oil or grease; up to NLGI 2, with solid parts possible
Function/principle:	piston pump
Number of outlets:	Max. 10 straight
Delivered volume per stroke/pulse:	2 outlets: 2 x 0.15 cm <sup>3</sup> - types: 1502/2002 4 outlets: 4 x 0.15 cm <sup>3</sup> - types: 1504/2004 6 outlets: 6 x 0.15 cm <sup>3</sup> - types: 1506/2006 8 outlets: 8 x 0.15 cm <sup>3</sup> - types: 1508/2008 10 outlets: 10 x 0.15 cm <sup>3</sup> - types: 1510/2010
Operating voltage:	24 V DC (via cable)
Lube-connection:	PA-tube, t=6x4
Operating pressure:	max. 70bar
Operating temperature:	-20°C... +70°C (-4°F... +160°F)
Pressure monitoring:	integrated, electronic
Fill Level monitoring:	integrated, reed-contact
Installation position:	grease any; oil upright;
Error Signal:	PLC: sophisticated: bellow empty / back pressure / internal error OPTICAL: LCD-display
Number of Pump Strokes / 2000 cc:	~13300
Number of Lubricant Points:	Max. 40 **
Connection Plug:	M12 x 1, 4-pin
Current Consumption at 24 V DC:	I <sub>max</sub> ≤ 350 mA
Control:	Integrated: Microelectronic Internal/External: Internal: time-controlled, External: PLC
IP Class	IP 54
Material Housing	Aluminum, polyamide

Part Number	Grease (g) Oil (o)	Type	Outlets	Pump Bodies	Lubrication Points	Quantities Lubricant
540-202-100	g	FlexxPump 1502	2	1	max. 8	1
540-404-200	g	FlexxPump 1504	4	2	max. 16	2
540-606-300	g	FlexxPump 1506	6	3	max. 24	3
540-808-400	g	FlexxPump 1508	8	4	max. 32	4
541-010-510	g	FlexxPump 1510	10	5	max. 40	5
550-202-100	o	FlexxPump 2002	2	1	max. 8	1
550-404-200	o	FlexxPump 2004	4	2	max. 16	2
550-606-300	o	FlexxPump 2006	6	3	max. 24	3
550-808-400	o	FlexxPump 2008	8	4	max. 32	4
501-010-500	o	FlexxPump 2010	10	5	max. 40	5

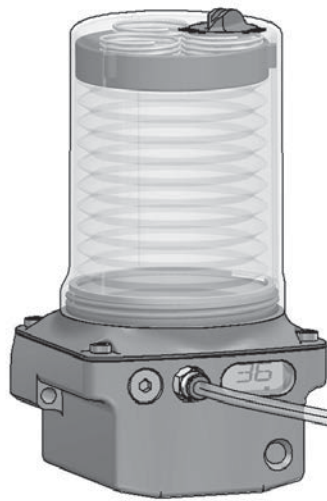
Monitoring and controlled by PLC.

\*By using Splitters

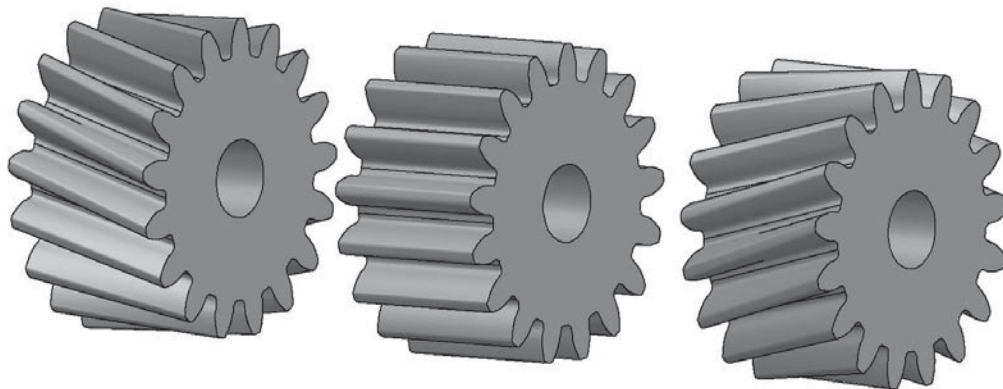
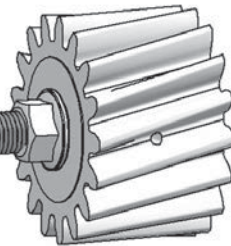
\*\*More lubrication points possible by using progressive distributors

## LUBRICATION OF PINIONS AND RACKS

FlexxPump

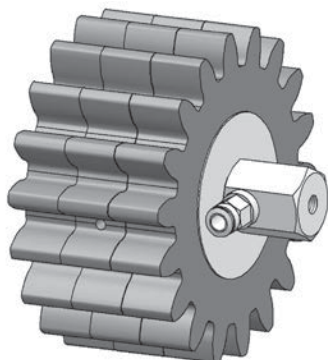


polyurethane pinion

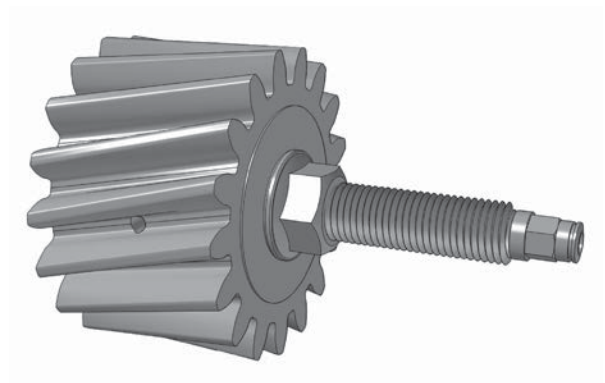


straight and helical teeth module 2 ... 10

mounting axis - right-angled



mounting axis - straight



## LUBRICATION OF PINIONS AND RACKS

### Lubrication of open spur gear drives and racks

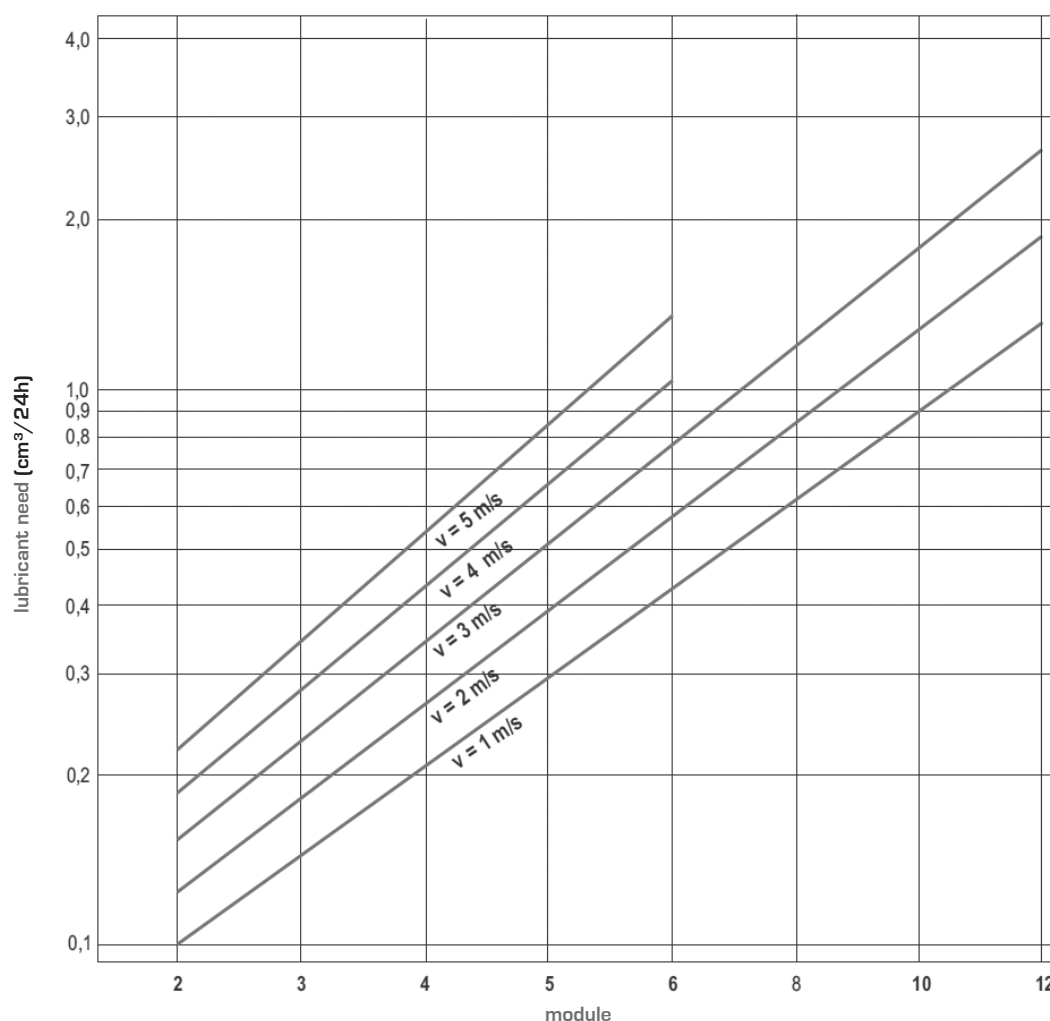
For tooth systems in open drives, an automatic lubrication supply is preferred. Exceptions are possible, in the case of very small modules, slow speed  $<1\text{ m/s}$  and light duty cycles manual lubrication is adequate. Therefore, we offer an adhering grease - F01 - as well as the lubricant F02 (for an application in the food industry (with H1-approval)), and F03 for bearings, racks and pinions.

### Automatic relubrication with polyurethane foam pinions

A far better technical solution to relubricate the tooth system is an automatic and continuous spreading of the lubricant with polyurethane foam pinion which are brought into contact with the drive gear or rack. The lubrication pinion does not transmit a torque - it only carries the grease to that part of the tooth system it touches.

The necessary relubrication amounts for different tooth systems with different running conditions is shown in the diagram below. Conditions for the validity of the values shown in the table below are the use of a suitable DLS polyurethane foam pinion and a proper lubricant like DLS F01, F02 or F03.

Lubricant quantities for lubrication with PU Foam Pinions



## LUBRICATION PINION

### Technical specification lubrication pinion

The DLS lubrication pinions are made of an open cellular polyurethane foam (temperature range  $-30^{\circ}\text{C} \dots +150^{\circ}\text{C}$ ). Pinions with module 3 and bigger are put together in segments. To choose the correct lubrication pinion it has to be decided by design, if the lubrication pinion should be mounted on the rack or drive pinion.

Using lubrication pinions of an open-cellular polyurethane foam material ensures an optimal supply of the tooth system over long distances. The material stores the lubricant and delivers it in smallest quantities. This lubrication avoids over-lubrication as well as wear (as a consequence of insufficient lubrication).



### LUBRICATION PINION - STRAIGHT TEETH

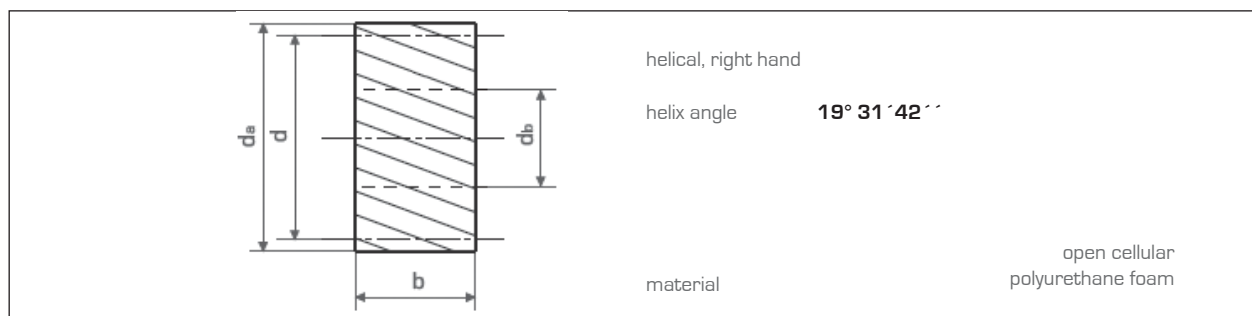


Part Number	Module	$z^*$	$d_a$	$d$	$d_b$	$b$
130-015-024	1.5	24	39.0	36.0	15.0	15.0
130-020-017	2.0	17	38.0	34.0	12.0	20.0
130-030-017	3.0	17	57.0	51.0	12.0	30.0
130-040-017	4.0	17	76.0	68.0	12.0	40.0
130-050-017	5.0	17	95.0	85.0	20.0	50.0
130-060-017	6.0	17	114.0	102.0	20.0	60.0
130-080-017	8.0	17	152.0	136.0	20.0	80.0
130-100-017	10.0	17	190.0	170.0	20.0	100.0

\*number of teeth

Special design (all parameter disposable): on demand!  
Dimensions are in mm and are subject to change - consult factory.

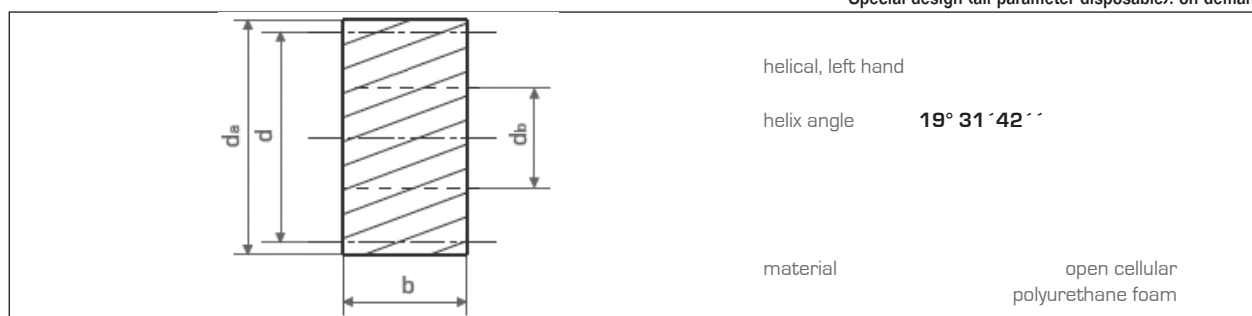
## LUBRICATION OF PINIONS AND RACKS



Arrangement with drive pinion

Part Number	Module	$z^*$	$d_a$	$d$	$d_b$	$b$
131-015-024	1.5	24	41.2	38.2	15.0	15.0
131-020-017	2.0	17	40.1	36.1	12.0	20.0
131-030-017	3.0	17	60.1	54.1	12.0	30.0
131-040-017	4.0	17	80.2	72.2	12.0	40.0
131-050-017	5.0	17	100.2	90.2	20.0	50.0
131-060-017	6.0	17	120.2	108.2	20.0	60.0
131-080-017	8.0	17	160.3	144.2	20.0	80.0
131-100-017	10.0	17	200.4	180.4	20.0	100.0

Special design (all parameter disposable): on demand!



Arrangement with rack

Part Number	Module	$z^*$	$d_a$	$d$	$d_b$	$b$
132-015-024	1.5	24	41.2	38.2	15.0	15.0
132-020-017	2.0	17	40.1	36.1	12.0	20.0
132-030-017	3.0	17	60.1	54.1	12.0	30.0
132-040-017	4.0	17	80.2	72.2	12.0	40.0
132-050-017	5.0	17	100.2	90.2	20.0	50.0
132-060-017	6.0	17	120.2	108.2	20.0	60.0
132-080-017	8.0	17	160.3	144.3	20.0	80.0
132-100-017	10.0	17	200.4	180.4	20.0	100.0

Special design (all parameter disposable): on demand!

\*number of teeth Dimensions are in mm and are subject to change - consult factory.

## MOUNTING AXES



Part Number	Module	L	l <sub>1</sub>	l <sub>2</sub>	d <sub>1</sub>	connection	b	kg
133-015-001	1.5	46.4	30.0	10.0	M 8	G 1/8"	15.0	0.13
133-020-001	2.0	51.0	30.0	10.0	M 8	G 1/8"	20.0	0.14
133-030-001	3.0	61.0	30.0	10.0	M 8	G 1/8"	30.0	0.17
133-040-001	4.0	71.0	30.0	10.0	M 8	G 1/8"	40.0	0.20
133-050-001	5.0	81.0	30.0	10.0	M 8	G 1/8"	50.0	0.25
133-060-001	6.0	91.0	30.0	10.0	M 8	G 1/8"	60.0	0.45
133-080-001	8.0	111.0	30.0	10.0	M 8	G 1/8"	80.0	0.64
133-100-001	10.0	131.0	30.0	10.0	M 8	G 1/8"	100.0	0.90

Special design (all parameter disposable): on demand!



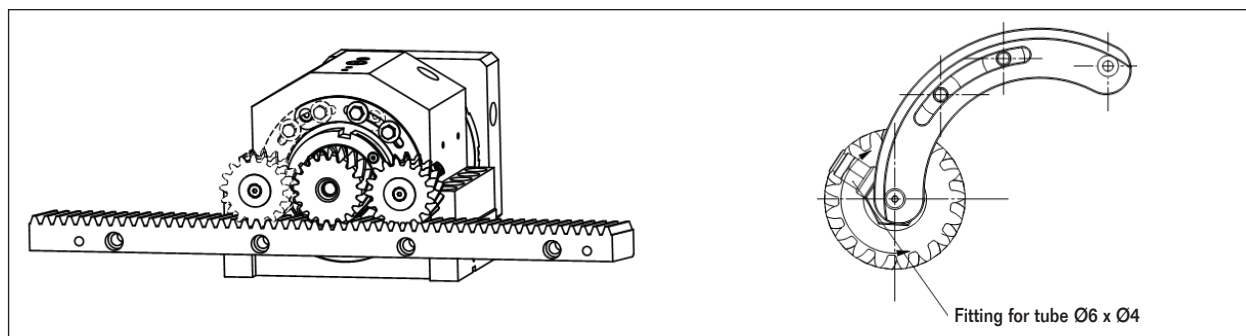
Part Number	Module	L	l <sub>1</sub>	d <sub>1</sub>	SW	connection d <sub>2</sub>	b	kg*
133-015-002	1.5	60.2	34.0	M 10	17	M 6	15.0	0.07
133-020-002	2.0	61.0	30.0	M 10	17	M 6	20.0	0.08
133-030-002	3.0	71.0	30.0	M 10	17	M 6	30.0	0.11
133-040-002	4.0	81.0	30.0	M 10	17	M 6	40.0	0.14
133-050-002	5.0	116.0	30.0	M 16	24	G 1/8"	50.0	0.45
133-060-002	6.0	126.0	30.0	M 16	24	G 1/8"	60.0	0.53
133-080-002	8.0	146.0	30.0	M 16	24	G 1/8"	80.0	0.61
133-100-002	10.0	166.0	30.0	M 16	24	G 1/8"	100.0	0.87

Special design (all parameter disposable): on demand!

Dimensions are in mm and are subject to change - consult factory.

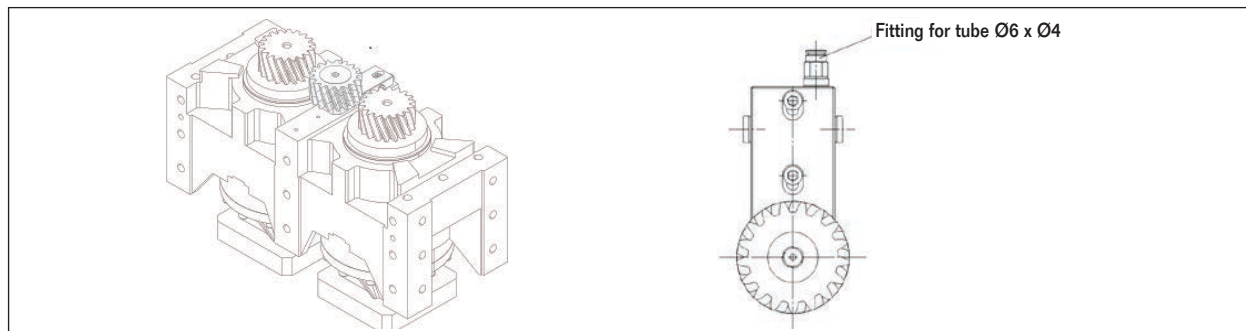
## MOUNTING AXES

### SFRPX - Lubrication Pinion Support for KRPX



Part Number	Gearbox	Pinion Support
20050011-000	KRPX1	SFRPX1.3
20050012-000	KRPX2	SFRPX2.4
20050013-000	KRPX3	SFRPX3.5
20050014-000	KRPX4	SFRPX4.6
20050015-000	KRPX5	SFRPX5.8

### SFRP - Lubrication Pinion Support for DRP



Part Number	Gearbox	Pinion Support
20050016-000	DRP1	SFRP1.3
20050017-000	DRP2	SFRP2.4
20050018-000	DRP3	SFRP3.5
20050019-000	DRP4	SFRP4.6
20050020-000	DRP5	SFRP5.8

Pre-assembled

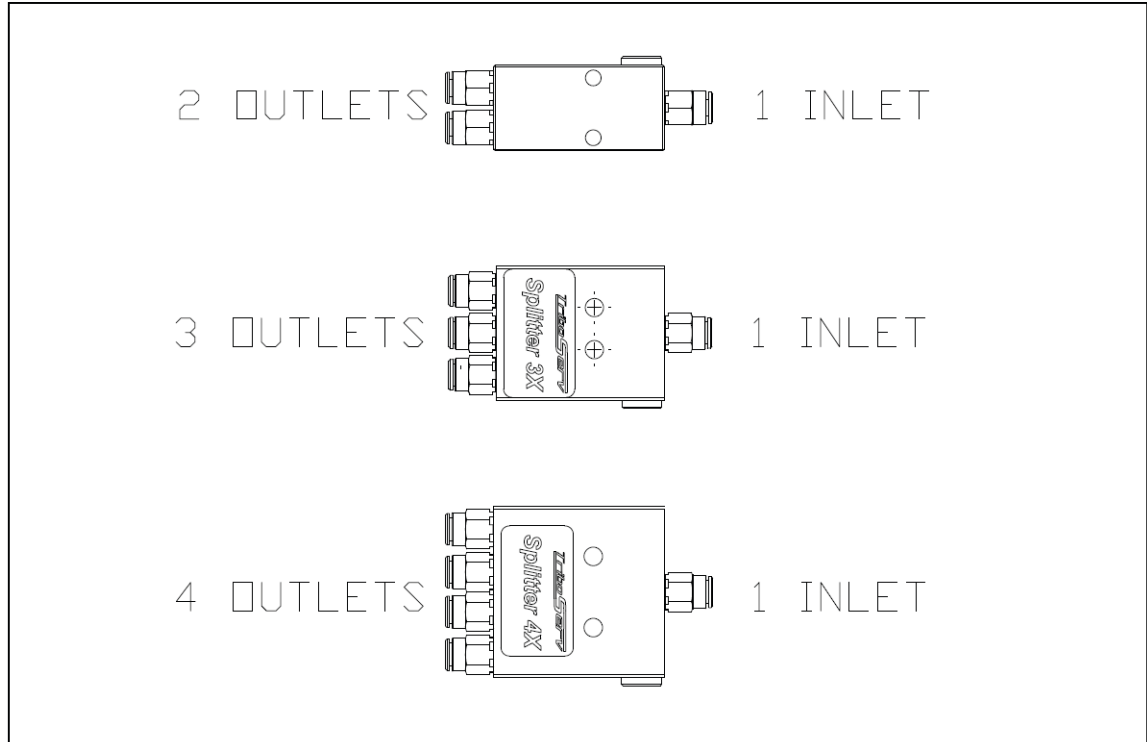
Including: fitting, screws for mounting on gearbox and washers

PU-Lubrication Pinions not included

3D STEP files available



## SPLITTERS FOR RELUBRICATION UNIT FlexxPump



Part Number	Inlets	Outlets	Grease (g) Oil (o)	Quantity of Lubricant per piston stroke	Type
134-005-002	1	2	g	~.08 cc	Splitter 1 inlet, 2 outlets, grease
134-005-003	1	3	g	~.05 cc	Splitter 1 inlet, 3 outlets, grease
134-005-004	1	4	g	~.04 cc	Splitter 1 inlet, 4 outlets, grease
134-005-006	1	2	o	~.08 cc	Splitter 1 inlet, 2 outlets, oil
134-005-007	1	3	o	~.05 cc	Splitter 1 inlet, 3 outlets, oil
134-005-008	1	4	o	~.04 cc	Splitter 1 inlet, 4 outlets, oil

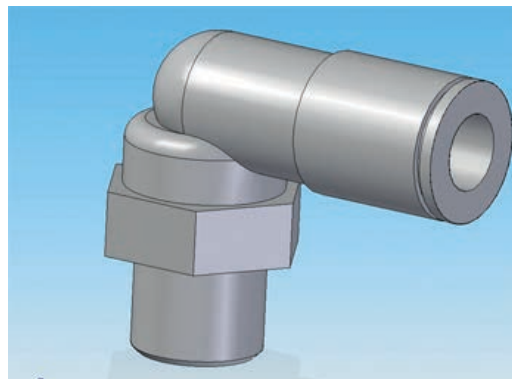
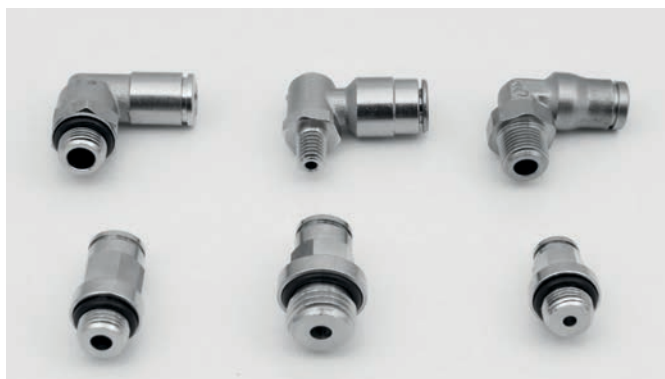
Each outlet of the FlexxPump can be combined with only one splitter. The combination of 2 or more splitters at one pump outlet is not possible. Therefore, the maximum lubrication points that can be serviced by one FlexxPump 404DLS and 4 splitters is 16.

### INSTALLATION RECOMMENDATIONS:

The splitters are designed to connect to 6 mm outside diameter tubes. The splitters should be located as close as possible to the FlexxPump outlets.

The length of the tubes between the outlet side of the splitter and the lubrication points should be as close as possible to equal. Pressure differences between the outlets should not exceed 3 bars (43.5 PSI). The amount of lubricant supplied to lubrication points can vary slightly depending on the pressure differences at the outlets.

## TUBE CONNECTORS



Part Number	Description	Version	Thread	tube ØT
for tube Ø 6				
134-000-001	tube connector	straight	M 6 x 1	6
134-000-002	tube connector	straight	G 1/8	6
134-000-004	tube connector	straight	G 1/4	6
134-000-005	tube connector	straight	M 8 x 1	6
134-000-010	tube connector	straight	M 6 x 0.75	6
(*) 134-000-011	tube connector	straight	M 10 x 1	6
(*) 134-000-014	tube connector	straight	M 6 x 1	6
(*) 134-000-015	tube connector	straight	M 5 x 0.8	6
for tube Ø 8				
134-000-008	tube connector	straight	G 1/8	8
for tube Ø 4				
134-000-006	tube connector	straight	M 6 x 1	4
(*) 134-000-007	tube connector	straight	M 3 x 1	4
134-000-009	tube connector	straight	M 6 x 0.75	4
134-000-012	tube connector	straight	G 1/8	4

\*changed version

### Application:

connection between lubrication points and plastic tubes from FlexxPump.

### Technical data:

- working pressure max. 80 bar
- working temperature -30° C...+100° C
- fluid oil, grease
- material nickel-plated brass 58, NBR, stainless steel

### Features:

- full flow for the fluid
- very simple seal function through integrated O-rings with own seat
- can be inserted and extracted
- all straight connectors with integrated hexagon socket
- all rotary elbow male adaptors can be rotated under pressure

## TUBE CONNECTORS

### tube-connectors - right-angled

Part Number	Description	Version	Thread	tube ØT
for tube Ø 6				
134-001-001	tube connector	right-angled	M 6 x 1	6
134-001-002	tube connector	right-angled	G 1/8	6
134-001-006	tube connector	right-angled	M10 x 1	6
134-001-009	tube connector	right-angled	G 1/4	6
134-001-010	tube connector	right-angled	M8 x 1	6
134-001-012	tube connector	right-angled	M6 x 0.75	6
134-001-013	tube connector	right-angled	M 5 x 0.8	6
134-001-014	tube connector	right-angled	M 6 x 1	6
134-001-015	tube connector	right-angled	PT 1/8	6
134-001-016	tube connector	right-angled	R 1/8	6
(*) 134-001-017	tube connector	right-angled	M 10x1	6

### for tube Ø 4

134-001-007	tube connector	right-angled	M 6 x 1	4
(*) 134-001-008	tube connector	right-angled	M 3 x 1	4
134-001-011	tube connector	right-angled	M 6 x 0.75	4
134-001-020	tube connector	right-angled	M 5 x 0.8	4



### tube to tube connectors

Part Number	Description	Version	tube ØT1	tube ØT2
134-000-104	tube connector	straight	6	6
134-001-104	tube connector	right-angled	6	6
134-000-105	tube connector	straight	6	8
134-000-106	tube connector	straight	6	4
134-000-108	Extension	straight	6	8
134-000-109	Extension	straight	4	6
134-002-000	Y-tube connector	straight	6	6 (2x)

\* changed version

## TUBES



Part Number	Description
134-003-001	tube 6x4 - pre-filled with grease F01
134-003-002	tube 6x4 - pre-filled with grease F02
134-003-003	tube 6x4 - pre-filled with grease F03
(*) 134-003-004	tube 6x4 - pre-filled with grease F04
(*) 134-003-005	tube 6x4 - pre-filled with grease F05
134-004-001	tube 6x4 - empty
134-004-002	tube 6x4 - empty - transparent

\* maximum length: 5m

The tubes are sold by meter; maximum length: 10 m.

## ACCESSORIES



tube scissor 134-002-002



Replacement battery 134-002-004

Part Number	Description
134-002-002	tube scissor (metal, exchangeable blades)
134-002-003	cable M12x1; 5m long, PUR suitable for dragchain for mounting on PLC
134-002-004	battery for relubrication unit FlexxPump (high performance lithium battery)
134-002-005	syringe - to fill the oil into the tube

Trademarked attributes of third parties are marked with ® and are property of the respective owner of that trademark.



### grease F01

Standard grease for open gears

- based on lithium/calcium complex with extreme pressure additives, which are combined with the soap structure so that an optimum adhesiveness to the metal surface is possible.
- heat-resistant, good corrosion protection attributes, contains no solid particles.

#### Operative Ranges:

- developed as special grease for highly loaded open gears.
- due to the high temperature properties usable for a wide range of applications, where high temperatures and high loads exist.

temperature range -30°C to +150°C

Part Number	Description
000-101-105	cartridge for FlexxPump, pre-filled with 400 cc of grease F01
000-105-115	grease-bellow for FlexxPump 1500; pre-filled with 1500cc of grease F01
000-101-210	grease F01, 1 kg tin
000-101-220	grease F01 400 cc, cartridge for grease gun

## LUBRICANTS - GREASE

### grease F02

With H1-approval

- synthetic special grease for high temperatures based on synthetic hydrocarbons with a partial special thickener of high metal affinity.
- NSF/H1-registration for incidental food contact.

#### Quality Attributes:

- water (cold, hot) and steam resistant; high thermal and oxidation stability; for high load; very good wear-protection; high service life and wide temperature range; optimum lubricating effect at low friction values

temperature range -40°C to +140°C

Part Number	Description
000-102-105	cartridge for FlexxPump, pre-filled with 400 cc of grease F02
000-102-115	grease-bellow for FlexxPump 1500; pre-filled with 1500cc of grease F02
000-102-210	grease F02, 1 kg tin
000-102-220	grease F02 400 cc, cartridge for grease gun

### grease F03

Special grease for bearings, linear guideways & ball screws

- short-fibred and homogeneous lithium-saponified universal grease with one mineral oil. It can be used for roller and slide bearing lubrication and is appropriate for medium and high load applications.
- very adhesive; appropriate for short-stroke applications.
- water resistant and protective against corrosion.

#### Operative Ranges:

- lubrication of linear bearings (recirculating ball bearing guides, roller guides and ballscrews)
- in combination with a lubrication pinion and continuous re-lubrication suitable for open gear lubrication
- very well conveyable in relubrication units

temperature range -20°C to +120°C

Part Number	Description
000-103-105	cartridge for FlexxPump, pre-filled with 400 cc of grease F03
000-103-115	grease-bellow for FlexxPump 1500; pre-filled with 1500cc of grease F03
000-103-210	grease F03, 1 kg tin
000-103-220	grease F03 400 cm <sup>3</sup> , cartridge for grease gun

## LUBRICANTS-GREASE

### grease F04

Special grease for bearings

- multipurpose grease based on lithiums-calcium-soap with EP additives
- suitable for bearings with medium loads

#### Operative Ranges:

- lubrication of bearings and ballscrews
- in combination with a lubrication pinion and continuous re-lubrication suitable for open gear lubrication
- well conveyable in relubrication units and distributors

temperature range -30°C to +130°C

Part Number	Description
000-104-105	cartridge for FlexxPump, pre-filled with 400 cc of grease F04
000-104-115	grease-bellow for FlexxPump 1500; pre-filled with 1500cc of grease F04
000-104-210	grease F04, 1 kg tin
000-104-220	grease F04 400 cm <sup>3</sup> , cartridge for grease gun

### grease F05

Special grease for rack and bearings

- aluminium complex soap and graphite
- based on a high quality mineral oil
- optimum adhesiveness and good corrosion protection

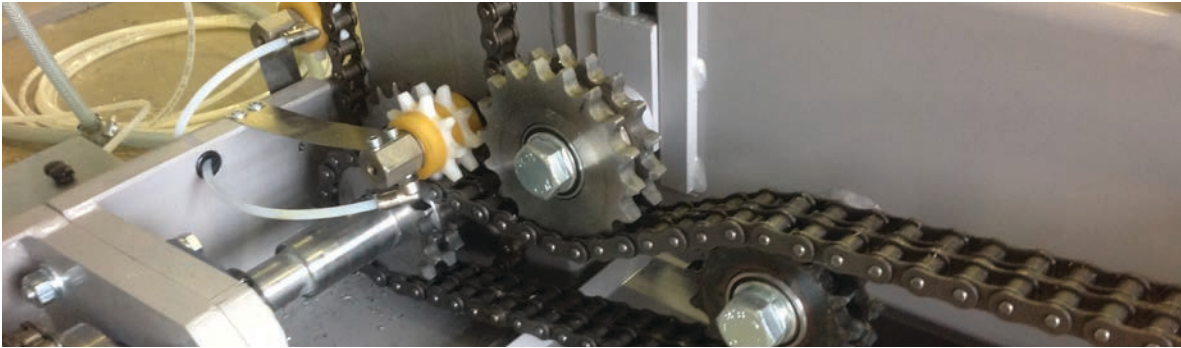
#### Operative Ranges:

- lubrication of highly loaded racks and pinions
- up to 0°C very good conveyable

temperature range -20°C to +150°C

Part Number	Description
000-105-105	cartridge for FlexxPump, pre-filled with 400 cc of grease F05
000-105-115	grease-bellow for FlexxPump 1500; pre-filled with 1500cc of grease F05
000-105-210	grease F05, 1 kg tin
000-105-220	grease F05 400 cm <sup>3</sup> , cartridge for grease gun

## LUBRICATION OF CHAINS



Suitable for use with FlexxPump 500/2000

Controlled minimum lubrication of oil

Lube sprocket made of open-cell PU-foam

Perfect Lube Points

Nonwearing and long-lasting

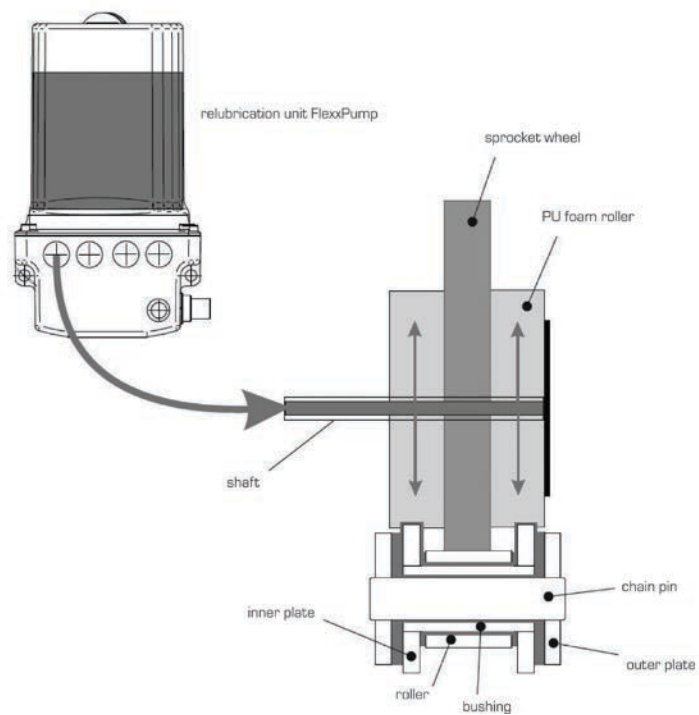
Integrated sleeve bearing

High cleanliness

Lightweight

Special designs possible

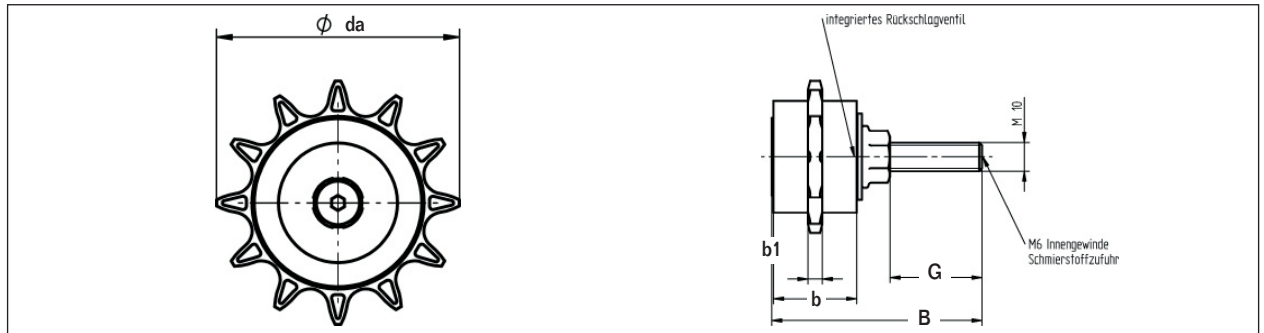
Chain oil transfer to the chain link plate



## PU-LUBRICATION SPROCKETS

### PU-Lubrication Sprockets Simplex - Straight Axes

Standard Version; connection for lubricant: M6

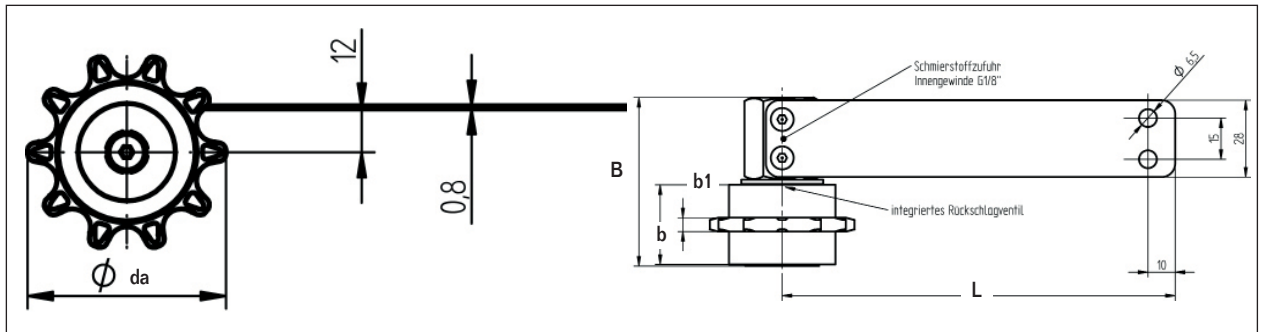


Part Number	ISO	Description	Axis	$z^*$	G	B	b	b1	da
136-201-012	08B-1	PU-lubrication sprocket	M10	12	32.2	73.4	28.0	6	55
136-301-010	10B-1	PU-lubrication sprocket	M10	10	32.2	73.4	28.0	6	55
136-401-009	12B-1	PU-lubrication sprocket	M10	9	32.2	73.4	27.5	6	64
136-501-008	16B-1	PU-lubrication sprocket	M10	8	32.2	83.4	38.0	10	75

\* $z$  = number of teeth

### PU-Lubrication Sprockets Simplex - Right-Angled Axes

Standard Version Axis; mounted on spring steel sheet; connection for Lubricant: M10 x 1



Part Number	ISO	Description	Axis	$z^*$	L	B	b	b1	da
136-201-112	08B-1	PU-lubrication sprocket	90°	12	144	61.4	28.0	6	55
136-301-110	10B-1	PU-lubrication sprocket	90°	10	144	61.4	28.0	6	55
136-401-109	12B-1	PU-lubrication sprocket	90°	9	144	61.4	27.5	6	64
136-501-108	16B-1	PU-lubrication sprocket	90°	8	144	71.4	38.0	10	75

\* $z$  = number of teeth

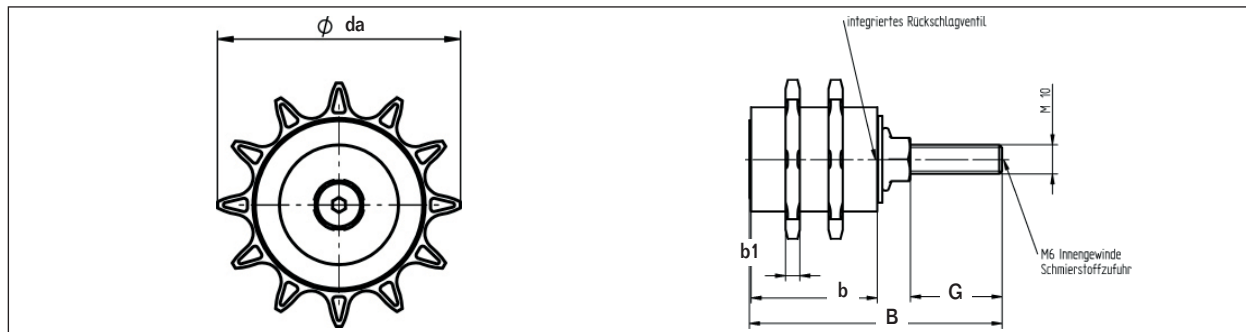
### PU-Lubrication Sprockets

Triplex and/or other pitches: on demand

## PU-LUBRICATION SPROCKETS

### PU-Lubrication Sprockets Duplex - Straight Axes

Standard Version; connection for lubricant: M6

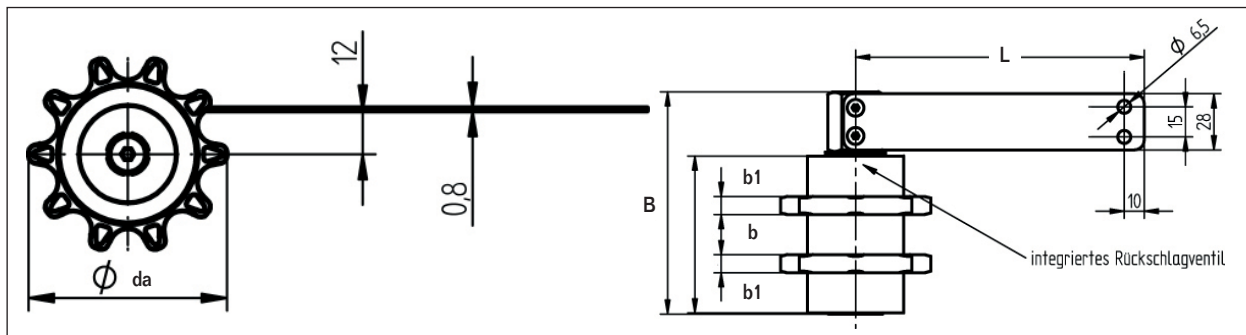


Part Number	ISO	Description	Axis	$z^*$	G	B	b	b1	da
136-202-012	08B-2	PU-lubrication sprocket	M10	12	32.2	83.4	38.0	6	55
136-302-010	10B-2	PU-lubrication sprocket	M10	10	32.2	83.4	38.0	6	55
136-402-009	12B-2	PU-lubrication sprocket	M10	9	32.2	88.4	43.0	6	64
136-502-008	16B-2	PU-lubrication sprocket	M10	8	32.2	121.4	76.0	10	75

\* $z$  = number of teeth

### PU-Lubrication Sprockets Duplex - Right-Angled Axes

Standard Version Axis; mounted on spring steel sheet; connection for Lubricant: M10 x 1



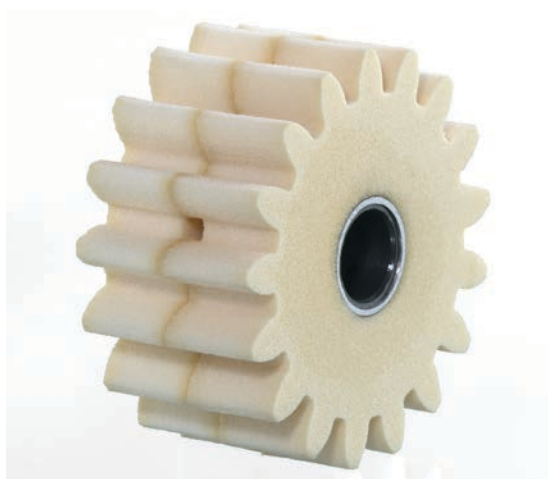
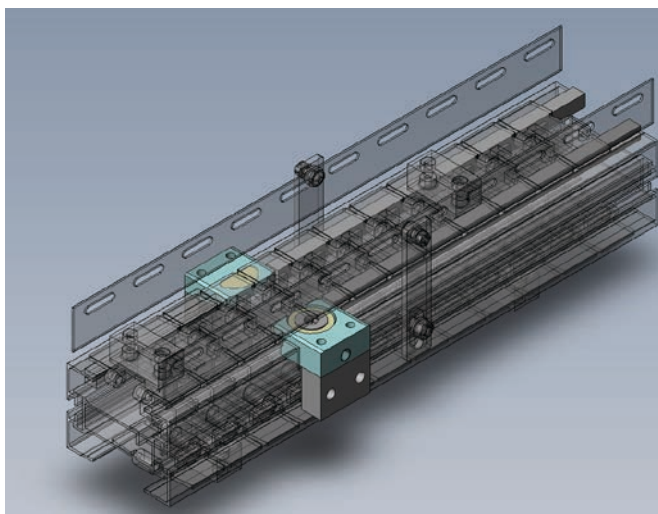
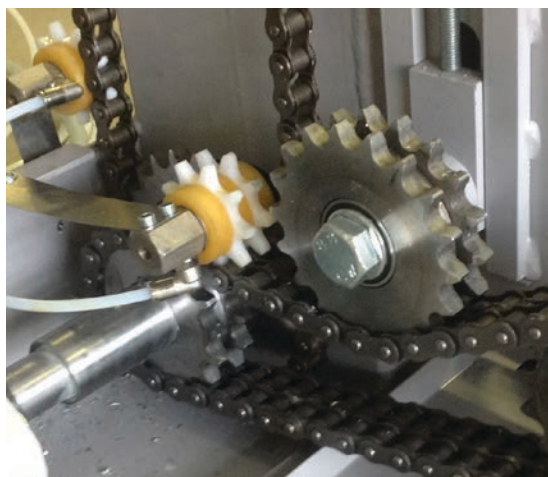
Part Number	ISO	Description	Axis	$z^*$	L	B	b	b1	da
136-202-112	08B-2	PU-lubrication sprocket	90°	12	144	71.4	38.0	6	55
136-302-110	10B-2	PU-lubrication sprocket	90°	10	144	71.4	38.0	6	55
136-402-109	12B-2	PU-lubrication sprocket	90°	9	144	76.4	43.0	6	64
136-502-108	16B-2	PU-lubrication sprocket	90°	8	144	109.4	76.0	10	75

\* $z$  = number of teeth

### PU-Lubrication Sprockets

Triplex and/or other pitches: on demand

## PU LUBRICATION APPLICATORS





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