Rack & Pinion Lubrication System *Additional* M

System Configuration

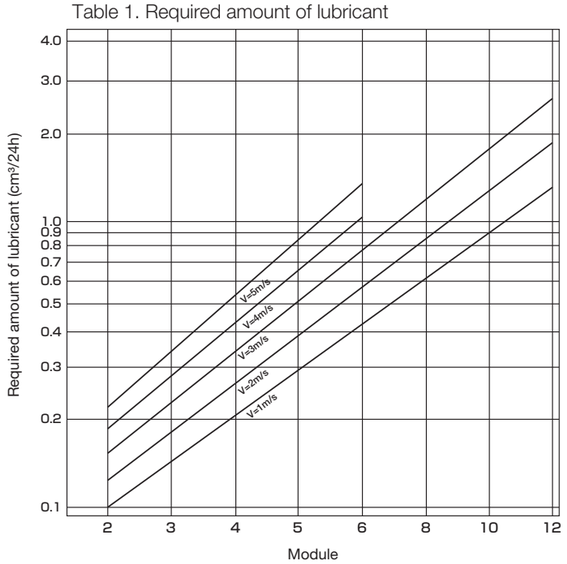
NO.	Product Name
1	Flex pump
2	Grease cartridge
3	Tube connector
4	Tube
5	Mounting shaft
6	Lubricating gear

Features

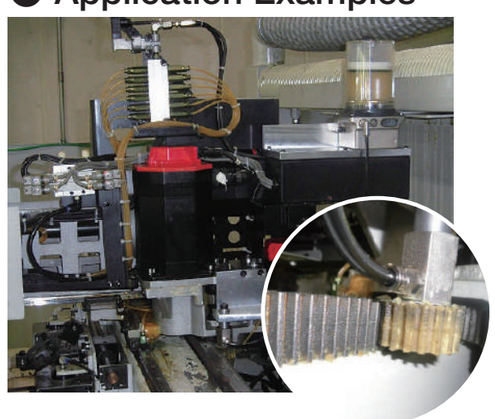
- Ideal lubrication system for racks & pinions used in open environments.
- A small amount of grease extruded from the pump is automatically supplied through the lubricating gear.
- The amount of lubricant* can be adjusted according to the application.
- If pump errors are detected, an error signal is emitted.
- Grease is applied by a polyurethane lubricating gear to form a uniform lubricating film.
- Grease up to consistency No. 2 can be used regardless of the manufacturer.
- Special grease GC-F01 does not drip or pollute the machine.
- Optimized lubricant improves the durability of racks & pinions and reduces the maintenance costs.

* Please use the required amount of lubricant in Table 1 as a guide depending on the module of the product used and the peripheral speed (m/s).

Table 1. Required amount of lubricant



Application Examples



Flex pump FP401

CE Mark compatible product.

24 VDC automatic time controlled lubrication pump (1-port type)

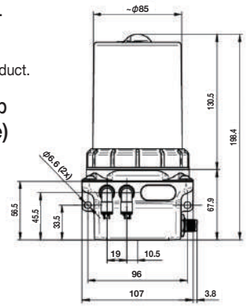
* A tube connector (right angle type) and power cable (5m) are included.
* Secondary operations cannot be performed. Do not disassemble or modify the product.

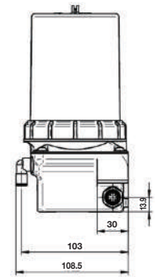
Flex pump FP402

CE Mark compatible product.

24 VDC automatic time controlled lubrication pump (2-port type)

* A tube connector (right angle type) and power cable (5m) are included.
* Secondary operations cannot be performed. Do not disassemble or modify the product.





Flex pump FP400B (Made to Order) M

CE Mark compatible product.

6 V battery automatic time controlled lubrication pump (1-port type)

* A tube connector (right angle type) and power cable (5m) are included.
* Secondary operations cannot be performed. Do not disassemble or modify the product.

Specifications	
Dimensions (W x H x D)	Max: 111 x 200 x 108mm
Weight (no lubricant)	1130g
Operation method	Piston pump type
Lubricating oil amount	400cm³
Minimum lubricant supply amount	0.15cm³
Operating pressure	Up to 70 bar
Lubricant	Grease of consistency up to NLGI No. 2
Operating temperature	-15 to 60°C
Operating voltage	24 VDC (±5%) (battery type is 6V)
Consumption voltage (24 VDC)	I_{max}≤300mA
Mounting direction	Omni-directional mounting available * Vertical direction is recommended
Control device	Built-in, electronic type
Pressure monitor	Built-in, electronic type
Lubricant level monitor	Built-in, lead contact type
Error detection	Grease shortage / back pressure increase / battery level decrease
Dustproof/waterproof class	IEC Standard IP54

Grease cartridge GC-F01

Special grease that contains additives considering the optimum adhesion to metal surfaces.
Ideal for racks & pinions used in high-temperature and high-load environments.

(Empty cartridge GC-0)

Specifications	
Consistency number	No. 1
Dropping point	220°C
Operating temperature range	-30 to 150°C
Withstand pressure load	4800N
Internal capacity	400cm³

Tube T-6×4-5 T-6×4-10

This tube has excellent pressure resistance, elasticity, restoring force and bending strength.
GC-F01 grease is provided before shipment.

Specifications		
Product Name	Material	Outer diameter x Inner diameter x Length
T-6×4-5	Polyamide 6	6mm×4mm×5m
T-6×4-10		6mm×4mm×10m

Tube connector TCS/TCR

A tube connector with hex socket has high fluidity.

■ **Straight Type**

- TCS−M6
- TCS−M10
- TCS−G1/8

■ **Right Angle Type**

- TCR−M6
- TCR−M10
- TCR−G1/8

Specifications	
Material	CW614N (brass)
Surface treatment	Nickel plated
Operating pressure	Up to 80 bar
Operating temperature	-30 to 100°C

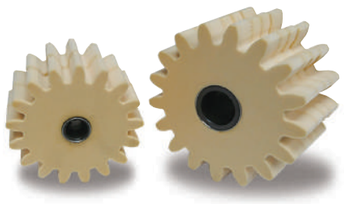
Note: Catalog codes M6, M10 and G1/8 are the screw sizes. Please select according to the mounting shaft.

For information on misprints in the catalog, please visit our website.

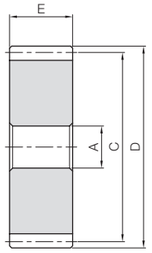
PUS/PUSCP lubricated spur gear

Module 1.5~10 Circular pitch 5, 10

M *Lubrication Spur Gears*



Specifications	
Gear teeth	Standard full depth
Pressure angle	20°
Material	Polyurethane foam



S5

Catalog Number	Module	No. of teeth	Shape	Bore A	Pitch dia. C	Outside dia. D	Face width E	Mounting shaft to be set
PUS1.5-24	***m*1.5**	24	S5	12	36	39	15	MAS1.5 or MAR1.5
PUS2-17	***m*2**	17			34	38	20	MAS2 or MAR2
PUS2.5-17	***m*2.5**				42.5	47.5	24	MAS2.5 or MAR2.5
PUS3-17	***m*3**				51	57	30	MAS3 or MAR3
PUS4-17	***m*4**				68	76	40	MAS4 or MAR4
PUS5-17	***m*5**			20	85	95	50	MAS5 or MAR5
PUS6-17	***m*6**				102	114	60	MAS6 or MAR6
PUS8-17 (made to order)	***m*8**	17	S5	20	136	152	80	MAS8 or MAR8
PUS10-17 (made to order)	***m*10**				170	190	100	MAS10 or MAR10

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Bore A	Pitch dia. C	Outside dia. D	Face width E	Mounting shaft to be set
PUSCP5-24	**CP5** (1.5915)	24	S5	12	38.2	41.4	15	MAS1.5 or MAR1.5
PUSCP10-15	**CP10** (3.1831)	15			47.7	54.1	30	MAS3 or MAR3

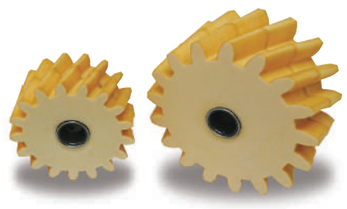
[Application Hints] ① Can be used in temperatures from -30 to 150 °C.
② Setting is possible to either a rack or a pinion, but we recommend a pinion.
③ Avoid operations with high load until grease is applied to the gear teeth of the rack gears and pinion gears.

[Precautions for Made to Order Products] ① Prices and lead times for Made to Order products require separate estimates. Contact your dealer.

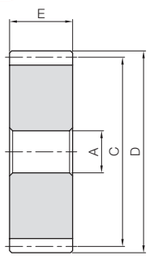
PUH Lubricated Helical Gears

Module 1.5~10

M *Lubrication Helical Gears*



Specifications	
Reference section of gear	Normal plane
Gear teeth	Standard full depth
Pressure angle	20°
Helix angle	19°31'41"
Material	Polyurethane foam



S5

Catalog Number	Module	No. of teeth	Direction of spiral	Shape	Bore A	Pitch dia. C	Outside dia. D	Face width E	Mounting shaft to be set
PUH1.5-24R **PUH1.5-24L**	***m*1.5**	24	R L	S5	12	38.2	41.2	15	MAS1.5 or MAR1.5
PUH2-17R **PUH2-17L**	***m*2**	17	R L			36.1	40.1	20	MAS2 or MAR2
PUH3-17R **PUH3-17L**	***m*3**		R L			54.1	60.1	30	MAS3 or MAR3
PUH4-17R **PUH4-17L**	***m*4**		R L			72.2	80.2	40	MAS4 or MAR4
PUH5-17R **PUH5-17L**	***m*5**		R L		20	90.2	100.2	50	MAS5 or MAR5
PUH6-17R **PUH6-17L**	***m*6**		R L			108.2	120.2	60	MAS6 or MAR6
PUH8-17R **PUH8-17L** (made to order)	***m*8**	17	R L	S5	20	144.3	160.3	80	MAS8 or MAR8
PUH10-17R **PUH10-17L** (made to order)	***m*10**		R L			180.4	200.4	100	MAS10 or MAR10

[Application Hints] ① Can be used in temperatures from -30 to 150 °C.
② Setting is possible to either a rack or a pinion, but we recommend a pinion.
③ Avoid operations with high load until grease is applied to the gear teeth of the rack gears and pinion gears.

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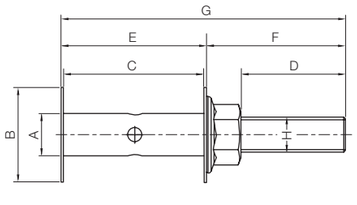
DLS Schmiersysteme

Mounting Shaft for Lubricated Gears

M *Mounting Axes*

● Straight Type



Set Example

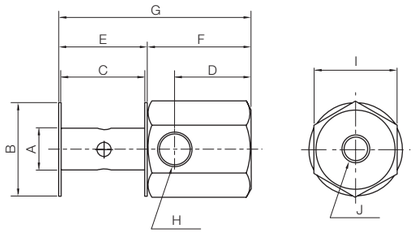
Surface treatment: Nickel plated

Catalog Number	A	B	C	D	E	F	G	H Connected screw	I	J Connected screw
MAS1.5	12	27	15.2	34.2	16.4	44	60.4	M10	15	M6
MAS2			20.2	29.8	21.4	39.8	61.2			
MAS2.5			24.2		25.4		65.2			
MAS3			30.2		31.4		71.2			
MAS4			40.2		41.4		81.2			
MAS5	20	60	50.2	49.1	51.4	64.9	116.3	M16	24	M10 (Fine)
MAS6			60.2		61.4		126.3			
MAS8 (made to order)	20	60	80.2	49.1	81.4	64.9	146.3	M16	24	M10 (Fine)
MAS10 (made to order)		100	100.2		101.4		166.3			

[Application Hints] ① Tube connector is not included.
② Due to specification changes, the connecting screw G1/8" has been changed to M10 (fine).

[Precautions for Made to Order Products] ① Prices and lead times for Made to Order products require separate estimates. Contact your dealer.

● Right Angle Type



Set Example

Surface treatment: Nickel plated

Catalog Number	A	B	C	D	E	F	G	H Connected screw	I	J
MAR1.5	12	27	15.2	22	16.4	30	46.4	M10 (Fine)	24	M8×10
MAR2			20.2		21.4		51.4			
MAR2.5			24.2		25.4		55.4			
MAR3			30.2		31.4		61.4			
MAR4			40.2		41.4		71.4			
MAR5	20	60	50.2		51.4		81.4			
MAR6			60.2		61.4		91.4			
MAR8 (made to order)	20	60	80.2	22	81.4	30	111.4	M10 (Fine)	24	M8×10
MAR10 (made to order)		100	100.2		101.4		131.4			

[Application Hints] ① Tube connector is not included.
② Due to specification changes, the connecting screw G1/8" has been changed to M10 (fine).

[Precautions for Made to Order Products] ① Prices and lead times for Made to Order products require separate estimates. Contact your dealer.