

TH3 metering unit

SKF DosaLub

TH3 metering unit for oil or grease up to NLGI grade 2, from 20 to 600 cm³ per stroke



The metering units TH3 have been designed to meet the requirements of the industrial mounting and assembly lines for lubricant deposit, injection and filling.

They can feed metered volume of lubricant, from 20 to 600 cm³ per metering cycle to the lubrication point in order to improve the mechanical properties of diverse parts like:

- Car components (cardan shaft),
- Motors, shock absorber, transmissions,
- Gear motors,
- Ball bearings, etc.

Advantages

- Very precise metered quantities
- Volumetric metering independent of any change in temperature or lubricant viscosity
- Very good repeatability over the time
- Easily adjustable
- Possibility to electrically monitor the metering cycle with magneto-inductive proximity switches
- Long service life thanks to the component sturdiness
- The unit can be fed in lubricant from varied sources (drum pump, distribution network...)

Design

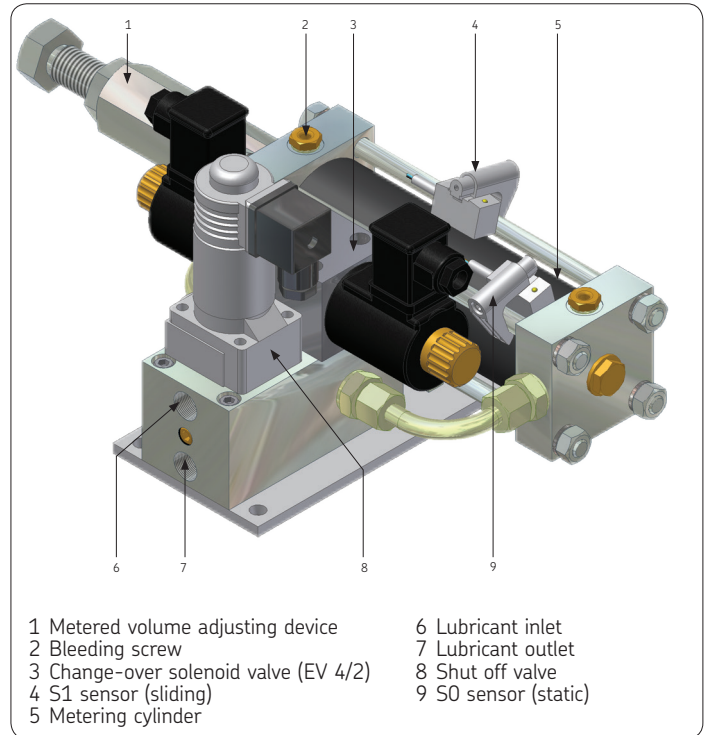
A TH3 metering unit consists of a metering element (cylinder) and control valves which are mounted on a support plate.

There is a piston inside the metering cylinder and the stroke of this piston determines the metered volume - between 20 and 600 cm³. The piston stroke can be adjusted with an interchangeable adjusting device, delivered with the metering unit.

Two magneto-inductive proximity switches are located on the metering cylinder in order to monitor the piston stroke. These proximity switches are sending signals to an external control unit, which is controlling the 4/2-way change-over valve. The operation is fully automatic.

The control unit is controlling the shut off valve too, which is mounted upstream the change-over valve. This 2/2-way valve is ensuring the perfect tightness of the TH3 metering unit.

Lubricant is supplied under pressure to the metering unit from an external source such as a drum pump or a lubricant distribution network.



Function principle

During the metering cycle the TH3 metering unit is switched on and the upstream located shut-off valve is open. Lubricant is continuously fed to the metering unit. A complete metering cycle consists of two half-cycles (to-and-fro displacement of the piston).

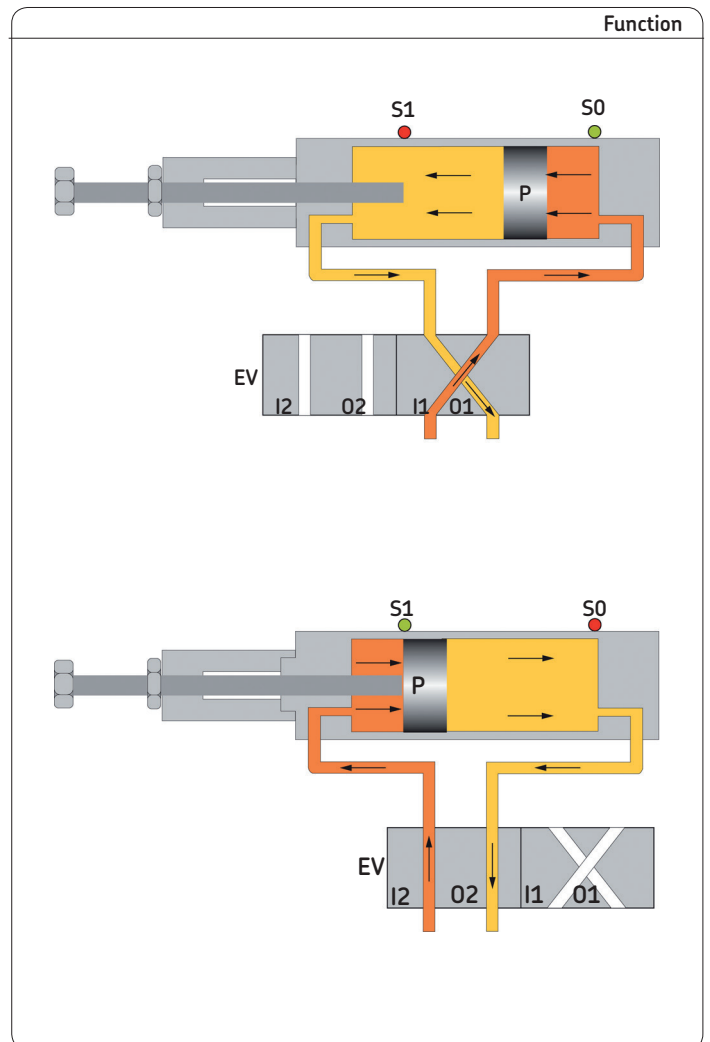
1st half-cycle

The initial position of the piston is on the right end position. The proximity switch S0 is activated. The I1 and O1 ways of the EV 4/2-way solenoid valve are open. The lubricant is fed to the metering unit via the I1 way and arrives on the right side of the P metering piston. Under the effect of the lubricant pressure, the P metering piston moves until its adjustable left end position. Simultaneously a metered volume of lubricant, which is on the left side of the piston, is fed out the unit via the O1 way. Once the piston reaches its left end position, a half-cycle has been achieved. The proximity switch S1 is activated.

2nd half-cycle

The proximity switch S1 sends a signal to the control unit, which is triggering the EV 4/2-way valve reversal. Ways I2 and E2 are open and ways I1 and O1 closed. Now the lubricant is fed up via the I2 way and arrives on the left side of the P piston. Under the effect of the lubricant pressure, the P metering piston moves until its right end position. Simultaneously a metered volume of lubricant, which is on the right side of the piston, is fed out the unit via the O2 way. Once the piston reaches its right end position, a second half-cycle has been achieved.

At this point a complete metering cycle has been done. The TH3 metering unit is in pause phase (shut-off valve closed) until the control unit trigger a new metering cycle.



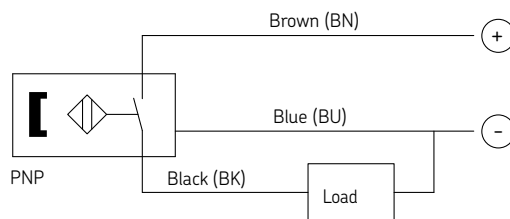
TH3 metering unit

Technical data

Lubricant inlet pressure	20 to 200 bars
Max. Working frequency	please, consult us
<i>The working frequency depends on lubricant viscosity, pump delivery rate and inlet pressure.</i>	
<i>Working frequency example:</i>	
Lubricant	oil, 22 mm ² /s
Pump delivery rate	22 l/min
Inlet pressure	30 bar
Frequency	ca. 1 cycle/4 seconds
Service temperature	15 to 40 °C
Flow rate per outlet	20 to 600 cm ³ (according to the model)
Incoming flow max.	12 l/min
Lubricant	oil and grease up to NLGI grade 2 (homogeneous and air free grease)
Mounting position	vertical or horizontal
Material	
body	aluminum
set unit	steel
cylinder	composite
seals	nitrile
4/2-way solenoid valve	
Port configuration	CETOP 3
Voltage / power	24 V DC / 28 W (+ 924) 115 V AC / 64 VA (+ 429) 230 V AC / 64 VA (+ 428)
Reinforced coils	
Connectors with rectifier, PG 11 cable glands	
Valve 2/2	
Port configuration	CETOP 3
Voltage / power	24 V DC / 20 W (+ 924) 115 V AC / 11 VA (+ 429) 230 V AC / 11 VA (+ 428)
Type	NC
Connector with PG9 cable gland	
Magneto-inductive proximity switch	
S0 switch	initial position of the piston static switch
S1 switch	piston stroke end sliding switch
Voltage	10 to 30 V DC
Type	NO
Output	PNP
Detection display	LED yellow
Connection	2 m cable

See important product usage information on the back cover.

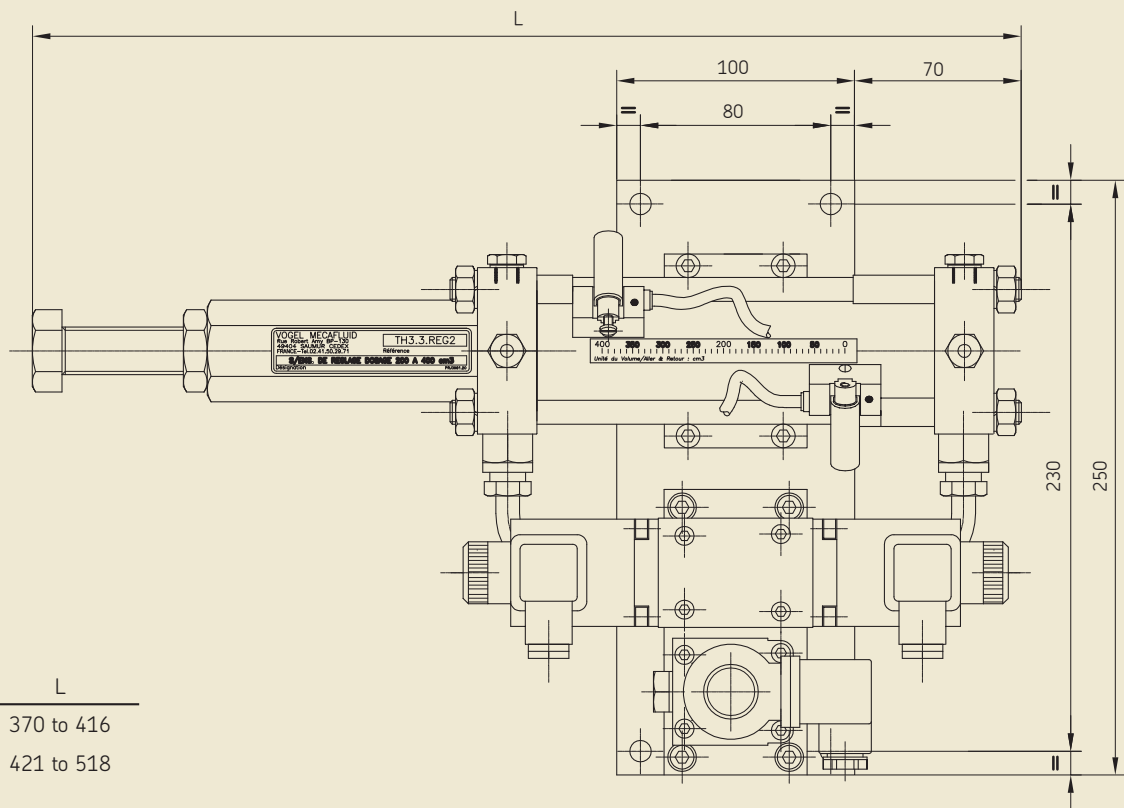
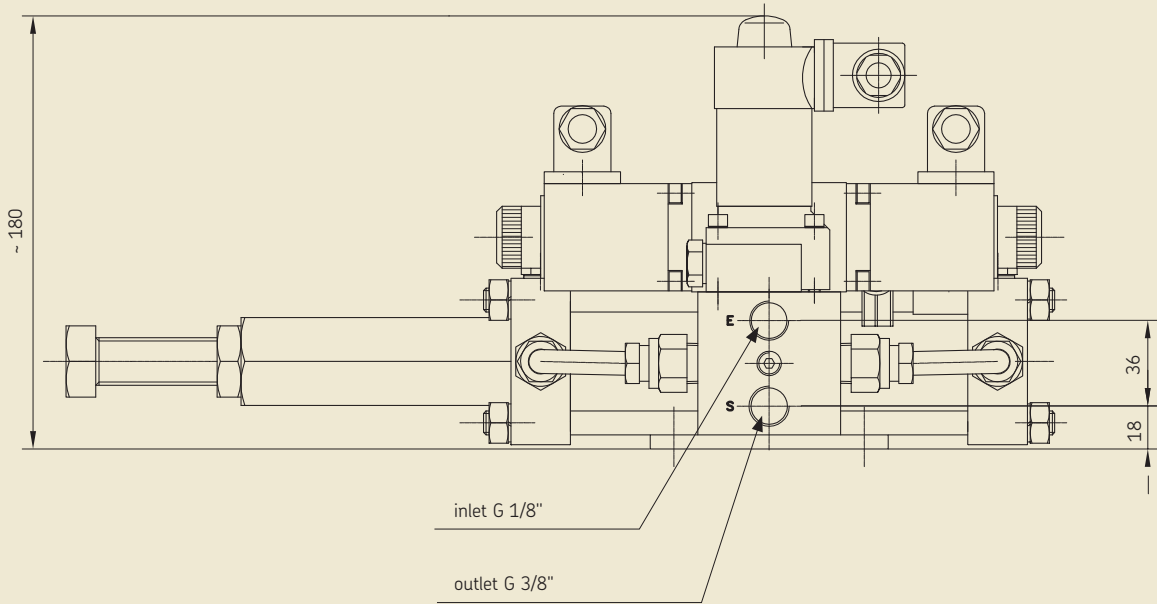
Wiring diagram of the magneto-inductive proximity switches



Order information

TH3 metering unit

Order No.	Nber of metering element	Flow rate [cm ³ /cycle]		Voltage [V]	Frequency [Hz]
		min.	max.		
TH3.3+429	1	20	400	115	50/60
TH3.3+428	1	20	400	230	50/60
TH3.3+924	1	20	400	24	-
TH3.3.1+429	1	20	600	115	50/60
TH3.3.1+428	1	20	600	230	50/60
TH3.3.1+924	1	20	600	24	-



Unit	L
TH3.3	370 to 416
TH3.3.1	421 to 518

How to adjust the metered volume

When delivered, a TH3 metering unit is always set at its minimal rate of 20 cm³ (factory setting).

Before any intervention, the metering unit has to be bled. It is also important to connect the magneto-inductive proximity switches (S0 and S1), as well as the 4/2-way solenoid valve and the shut-off valve, to the control unit.

- Make sure the metering piston is at its initial position (LED of the S0 sensor is on)
- Loosen the clamping nut (E)
- Adjust the metered volume with the adjusting screw (V) (clockwise to reduce the volume and counterclockwise to increase it). A complete turn of the screw corresponds to a volume of 10 cm³.

Example: 10 turns of the screw are corresponding to a theoretical metered volume of 100 cm³, thus an effective metered volume of 120 cm³.

- When the expected metered volume has been adjusted, tighten the clamping nut (E) to make sure there will be no accidental change of the volume.

If the metered volume has to be regularly changed, it is then suggested to preset several adjusting devices. It is very easy to remove (screw off) this device from the metering unit.

Two adjusting devices are delivered with the TH3 metering unit. It is possible to order later additional adjusting devices.

Positioning the proximity switch

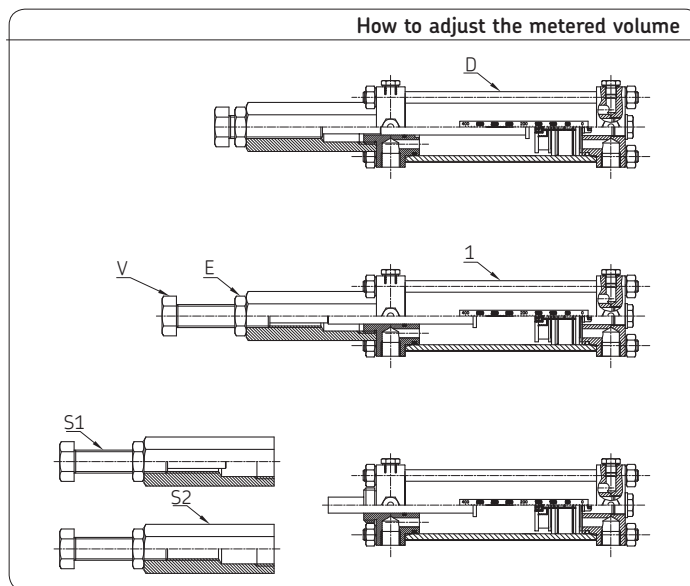
The proximity switches monitor the position of the metering piston and so the metering quantities.

It is very important to correctly position the magneto-inductive proximity switch (S1) after setting or changing the adjusting device.

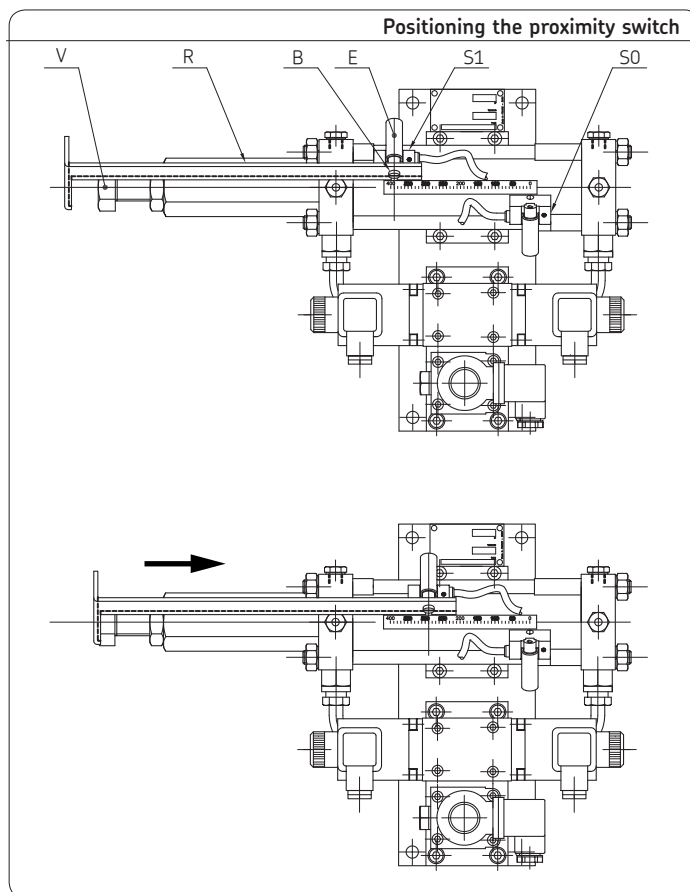
To correctly position the switch, you need a position ruler* which corresponds to the selected metered volume.

- Loosen the bracket (E) from the proximity switch S1 with the wrench included in the delivery. It is now possible to move the proximity switch.
- Take the ruler (R) and position the hole of the ruler on the pin (B) of the proximity switch.
- Displace the proximity switch and the ruler such as the end piece of the ruler is resting on the adjusting screw head.
- Tighten the bracket (E) of the proximity switch S1,
- Remove the ruler.

*) Two positioning ruler are delivered with the metering unit TH3:
TH3.5016 for metered quantities between 0 to 200 cm³
TH3.5017 for metered quantities between 200 to 400 cm³
 The ruler TH3.5016 can also be used for metered quantities between 400 to 600 cm³.



Order information	
Adjusting devices	
20 to 200 cm ³	Order No. TH3.3.REG1
200 to 400 cm ³	Order No. TH3.3.REG2
400 to 600 cm ³	Order No. TH3.3.REG3



TH3 metering unit, with manual actuation

The TH3.3.M metering unit has the same operation principle as the other one, but needs no electric supply.

The 4/2-way change-over valve is manually operated. The to-and-fro movement of the control lever corresponds to a full metering cycle. There is no magneto-inductive proximity switch.

The lubricant is fed to the lubrication points of the different mechanical parts by means of a feeding handle. The handle is also used to shut off the TH3.3.M metering unit, which is entirely tight.

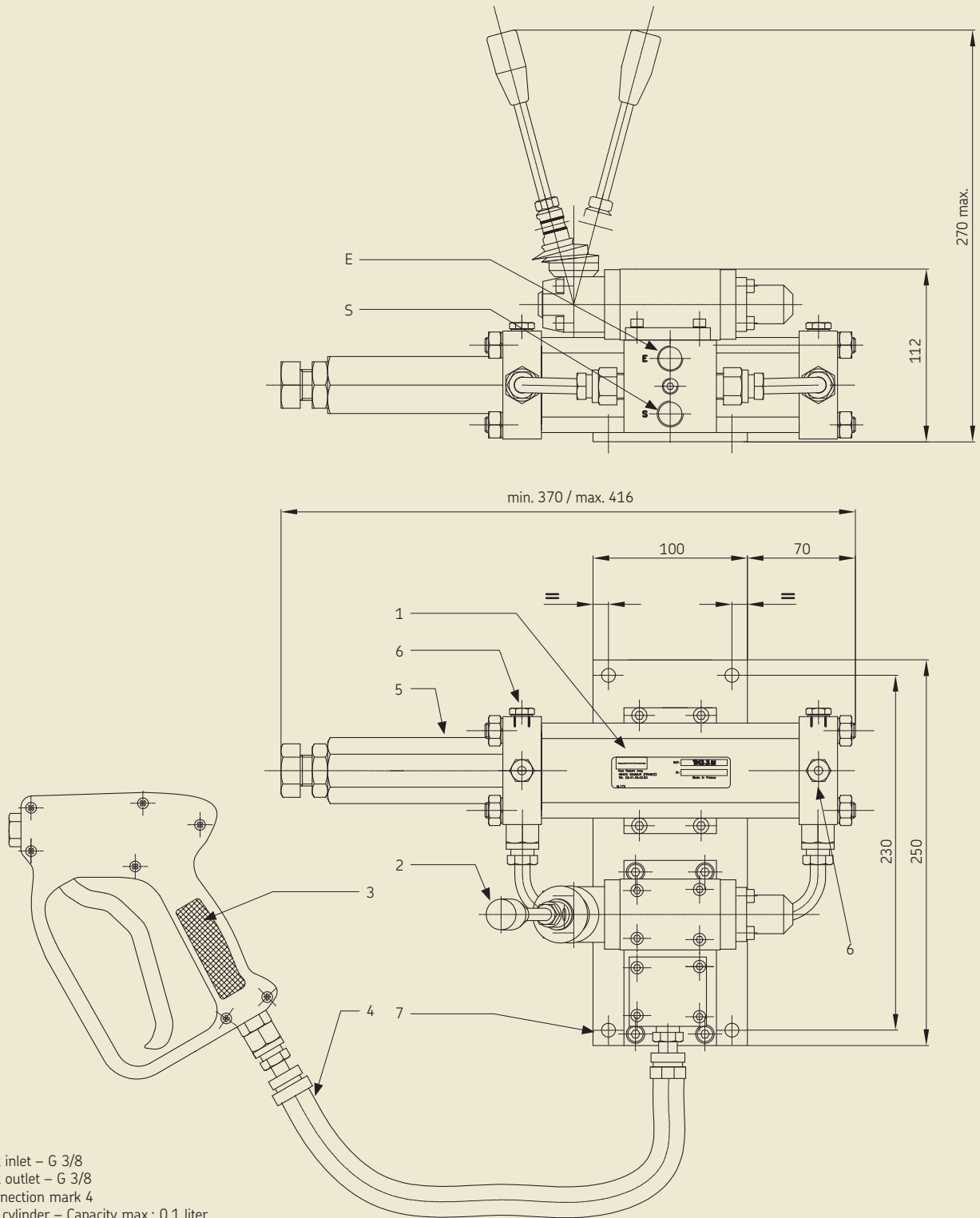
Order information

TH.3 metering device, with manual actuation

Order No. TH3.3.M

Technical data

Lubricant inlet pressure	20 to 200 bars
Max. Working frequency	please, consult us
<i>Working frequency example:</i>	
Lubricant	oil, 22 mm ² /s
Pump delivery rate	22 l/min
Inlet pressure	30 bar
Frequency	ca. 1 cycle/4 seconds
Service temperature	15 to 40 °C
Flow rate per outlet	20 to 400 cm ³
Incoming flow max.	12 l/min
Lubricant	oil and grease up to NLGI grade 2 (grease is homogeneous and free of air)
Mounting position	vertical or horizontal
Material	
body	aluminum
set unit	steel
cylinder	composite
seals	nitrile
Valve 4/2	
Port configuration	CETOP 3
Actuation	lever
Feeding handle	
Valve casing	brass
Weight	545 g
Banjo connector	G 3/8
Output	drilling G 1/4



- E Lubricant inlet – G 3/8
- S Lubricant outlet – G 3/8
- Hose connection mark 4
- 1 Metering cylinder – Capacity max.: 0,1 liter
- 2 4/2-way valve, manually actuated –
Port configuration: CETOP3 / ISO4401
Pressure max.: 350 bars – Delivery rate max.: 35 liters/min.
- 3 Feeding handle
- 4 High pressure hose
- 5 Metered volume adjusting device – Order No. TH3.REG1 – removable
- 6 Bleeding screw (2 for every end piece)
- 7 4 fixing holes Ø9

Order No.: 1-4204-EN

Subject to change without notice! (04/2009)

Important product usage information

All products from SKF may be used only for their intended purpose as described in this brochure and in any instructions. If operating instructions are supplied with the products, they must be read and followed.

Not all lubricants are suitable for use in centralized lubrication systems.

SKF does offer an inspection service to test customer supplied lubricant to determine if it can be used in a centralized system. SKF lubrication systems or their components are not approved for use with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1013 mbars) by more than 0,5 bar at their maximum permissible temperature.

Hazardous materials of any kind, especially the materials classified as hazardous by European Community Directive EC 67/548/EEC, Article 2, Par. 2, may only be used to fill SKF centralized lubrication systems and components and delivered and/or distributed with the same after consulting with and receiving written approval from SKF.

Further brochures

1-9201-EN Transport of Lubricants in Centralized Lubrication Systems

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