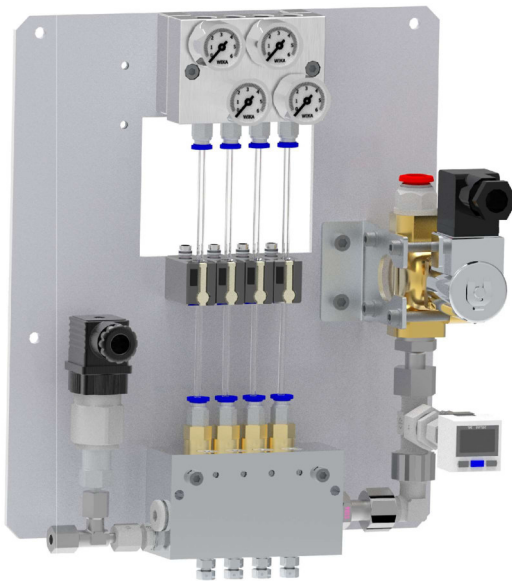


Volumetric doser WITH  
air flow regulation



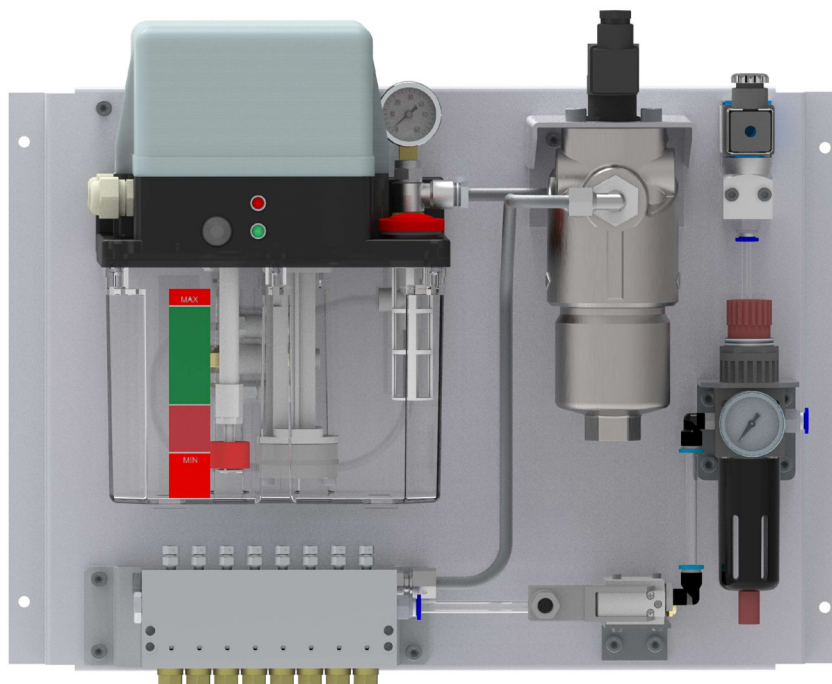
Volumetric doser WITHOUT  
air flow regulation



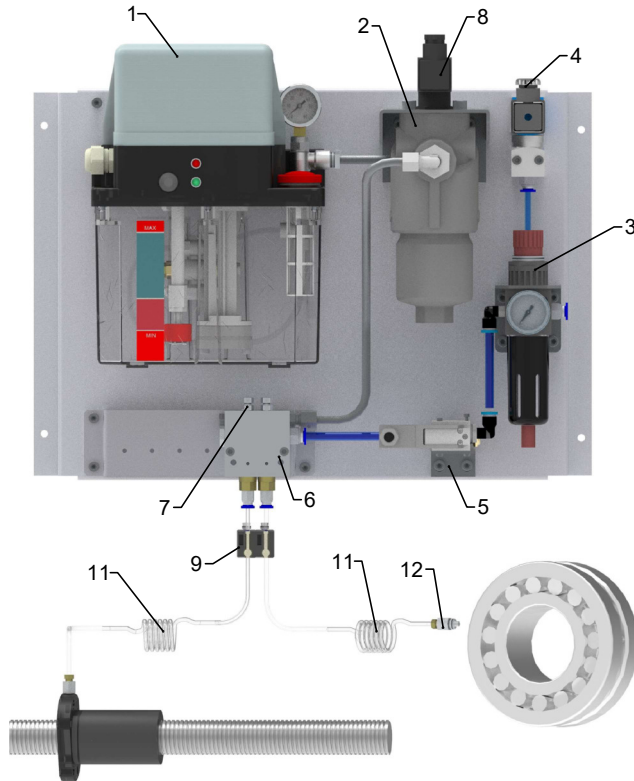
Panel without pump

# Air-Oil lubrication systems

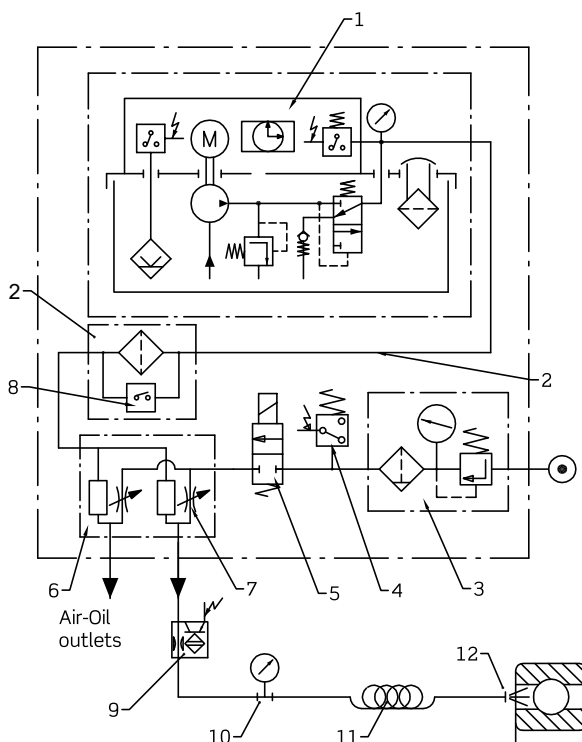
Lubrication of:  
High speed spindles  
(electrospindles...)  
Ball screws  
Linear roller bearings  
etc...



Panel with pump



1. Lubrication unit
2. Oil filter with monitoring
3. Air pressure regulator with pressure gauge and filter
4. Air pressure switch
5. Air inlet solenoid valve
6. Air-Oil distributor
7. Individual air flow regulator per outlet
8. Oil filter contamination indicator
9. Monitoring by optical sensor
10. Monitoring block by pressure gauge
11. Helicoidal pipe
12. Nozzle



## Air-Oil lubrication

### Single Line System

#### Application

High speed roller lubrication (electric spindles), gear mechanisms.  
Spraying over metal sheet and assembly parts

#### Air-Oil lubrication principles

By placing a drop of liquid on a plate and blowing over it we can observe how it widens up following the air passage direction: the liquid is carried over by the airflow and the wet surface increases, in other words, we have stretched the drop.

Same principle is applied in air-oil lubrication: the dosing meter leads the oil to a tube with air flow (fig.1).

The drops are carried over and stretched along the tube walls and towards the lubrication point that is reached in the form of a fine and continuous flow (fig.2).

Fig.1: at dosing meter outlet

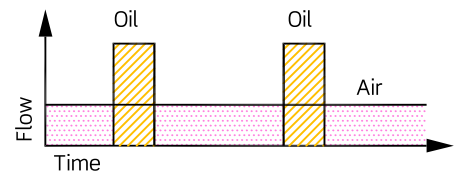
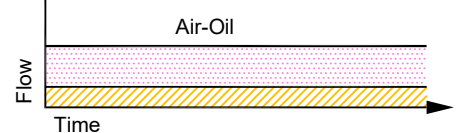


Fig.2: at 1 m from dosing meter

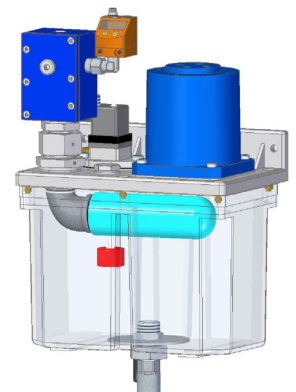


This process can be observed very clearly through a transparent pipe: at the pipe inlet the drops are thick, as they pass through the pipe they are transformed into fine and uniform drops and at approximately 40cm no variation in flow will be observed.

At the end of the pipeline very fine oil drops are sprinkled continuously on the lubrication point. It does not create any mist. Oil is supplied intermittently whereas the supply of air is continuous while the machine is working. Additionally compressed air is projected continuously on the lubrication point acts as a barrier against particles of dirt.

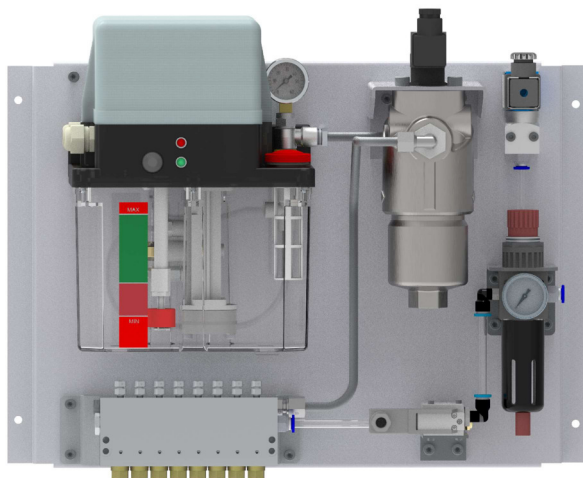
#### Other related products

Group to suck accumulated and excess oil from installation mechanisms with minimum lubrication (heads...).



### GOE71

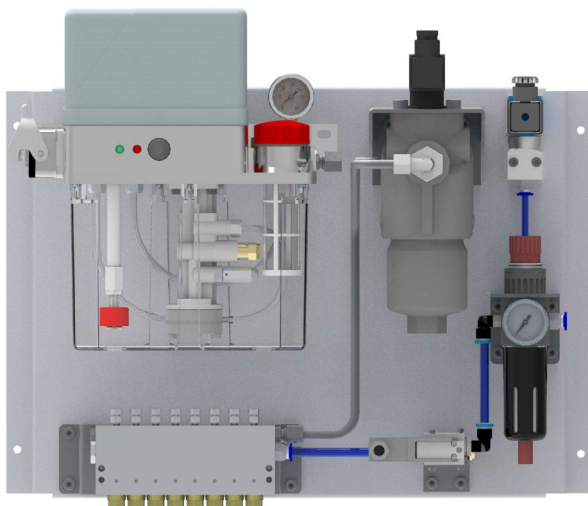
Electric motor voltages: 24Vdc - 115Vac - 230Vac



### GOE301

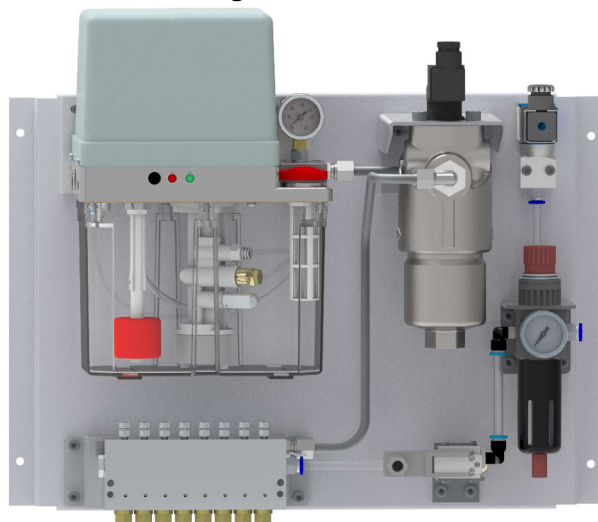
Optional Harting connector

Electric motor voltages: 24Vdc - 115Vac - 230Vac



### GOE01

Electric motor voltage: 230/400V



## Air-Oil lubrication panels Single Line System

GOE71  
402.025.000

GOE301  
402.020.000

GOE01  
402.010.000

- 3 litres tank
- 1...8 outlets
- Various voltages available

#### Technical data

Pump flow..... 0,2 l/min  
Lubricant..... Mineral and synthetic oils  
Viscosity..... 30 ÷ 1500 mm<sup>2</sup>/s  
Working pressure..... 30 bar  
Working temperature..... +10°C ÷ +40°C  
Dosing volumes..... see table

#### Electric motor

Voltage.....	115V	230V	230/400V	24VDC
Frequenz .....	50/60Hz	50/60Hz	50/60Hz	
Power (50Hz)	115W	115W	115W	55W
Consump.(50Hz)	0,8A	0,5A	0,5A	2,5A
rpm (50Hz).....	2800	2800	2800	2800

Service mode..... S3 20%  
Maximum working time..... 5 min  
Maximum cycles/hour..... 20

#### Level switch

Contact type ..... Reed  
Voltage..... 10 ÷ 230V  
Connection..... max. 0,5A  
Power breakdown ..... max. 20W  
Function ..... NC

#### Oil filter

Filtration degree..... optional 3 microns / 10 microns

#### Oil pressure switch

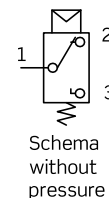
Without pressure ..... Open  
Maximum switching voltage ..... 48 V  
Maximum switching current ..... 0,5 A

#### Air inlet solenoid valve

Function / Voltage ..... 2/2 NC 24Vdc (+10%)  
Consumption / Service mode..... 2W / 100% ED

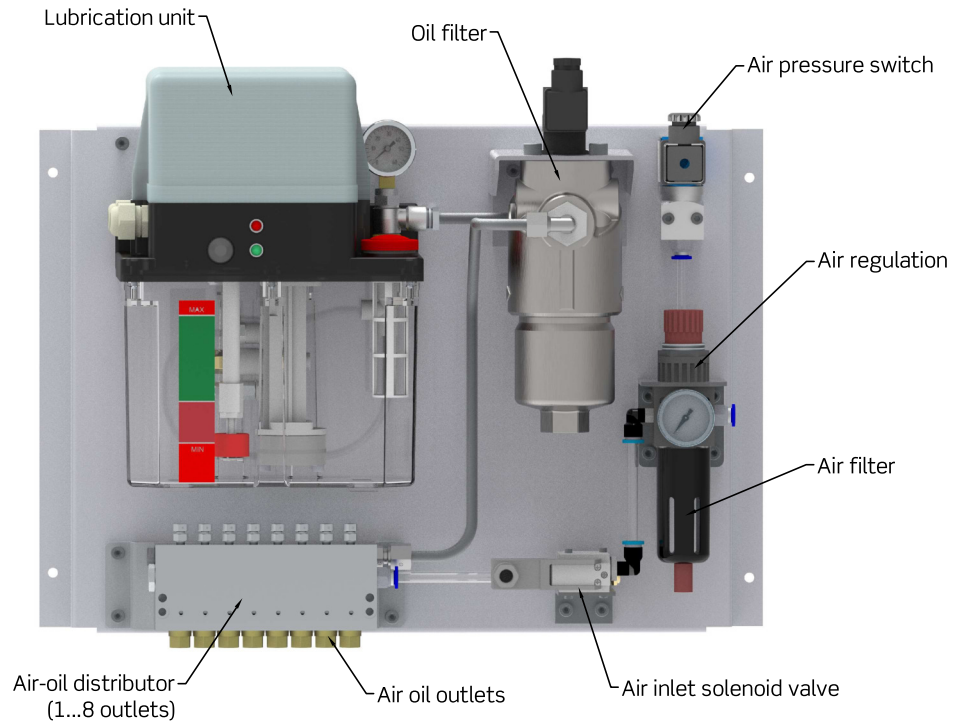
#### Air pressure switch

Max. switched voltage..... 250Vac  
Max. switched current..... 5(1)A  
Mechanical  
working life..... 10<sup>5</sup> operation  
Setting range..... 0,5-5 bar  
3 bar adjusted



#### Air regulator with filter and pressure gauge




Connection..... G1/4  
Pressure regulation..... 0 ÷ 8 bar  
Filtration..... 20 microns  
Flow at 6 bar Δp 1 bar..... 850 NL/min  
Condensing capacity..... 28 cm<sup>3</sup>  
Condensing outlet..... manual / semiautomatic



Reference for orders

Outlets: 1 2 3 4 5 6 7 8

X / B - X / X / X X X X X / X - X X X X X X X X

Lubr. unit type	Connector	X	Control / Voltage	X
 <b>GOE71</b>	2 cable glands	2	Without control	24Vdc 1
			115V 2	
			230V 3	
	With control	24Vdc 5		
		115V 6		
		230V 7		
 <b>GOE301</b>	2 cable glands	2	Without control	24Vdc 1
			115V 2	
			230V 3	
	Harting	3	Without control	24Vdc 5
			115V 6	
			230V 7	
 <b>GOE01</b>	1 cable gland	1	Without control 230/400V 50/60Hz	4
	2 cable glands	2		

Flow per outlet/stroke	
1 0,01 cm <sup>3</sup>	4 0,06 cm <sup>3</sup>
2 0,02 cm <sup>3</sup>	5 0,10 cm <sup>3</sup>
3 0,03 cm <sup>3</sup>	6 0,16 cm <sup>3</sup>

Number of outlets of the distributor							
1	2	3	4	5	6	7	8

Outlet pipe fitting	
X	0 G1/8
	4 Ø4 Fitting with sleeve
	6 Ø6 Quick fitting
	7 Ø4 Quick fitting
	8 Ø6 Quick fitting

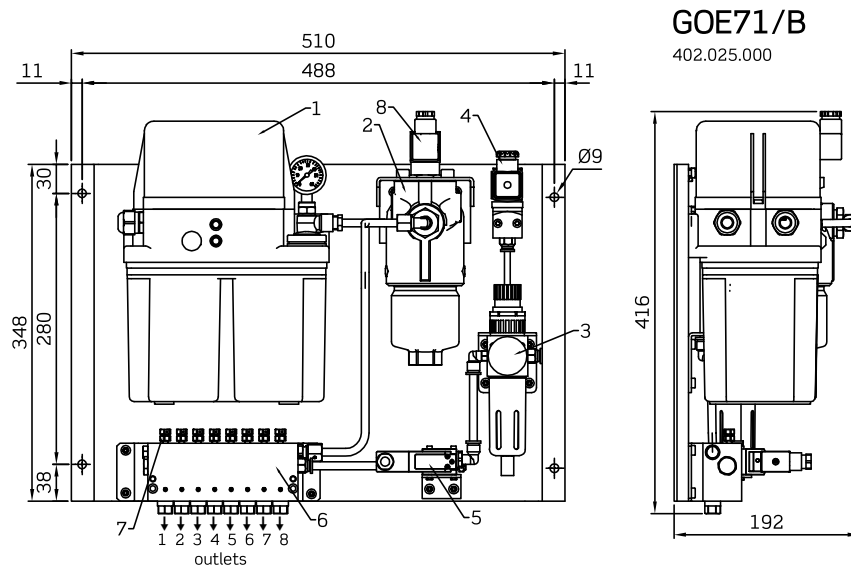
Air pressure switch	
X	0 Without
	5 With

Air inlet solenoid valve	
X	0 Without
	1 With (24Vdc)

Oil filter	
X	0 Without
	3 3 microns
	5 10 microns

Air regulator	
X	0 Without
	1 With regulator
	2 With regulator and 5 microns filter

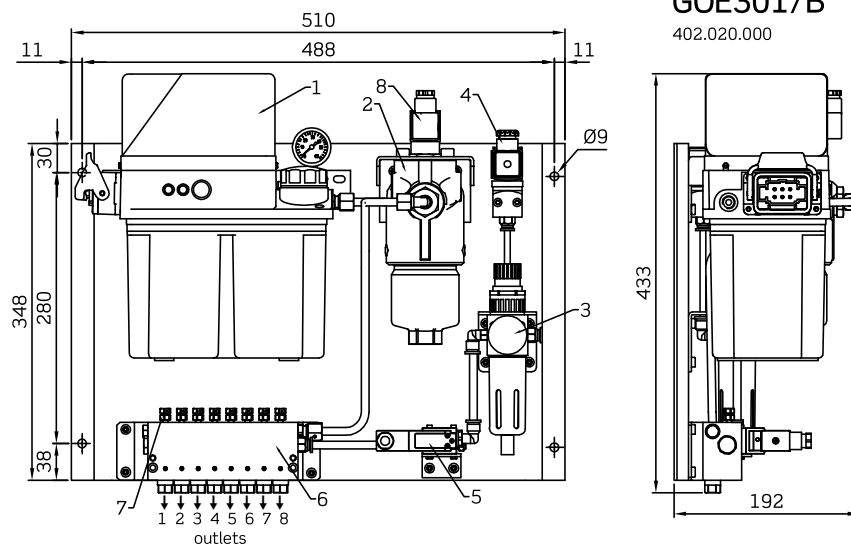
Dimensions (mm)



**GOE71/B**

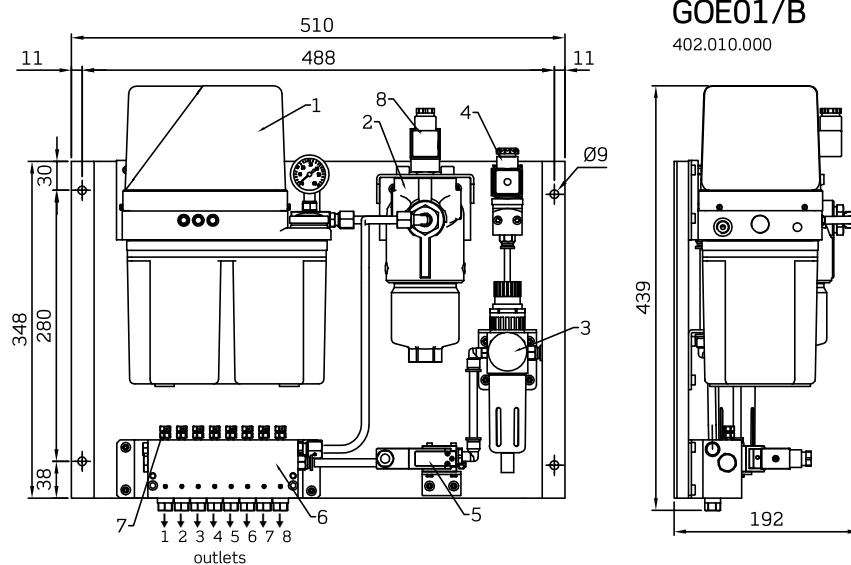
402.025.000

1. Lubrication unit
2. Oil filter with electric monitoring
3. Air pressure regulator with filter and pressure gauge
4. Air pressure switch
5. Air inlet solenoid valve
6. Air-oil distributor
7. Individual outlet air flow regulator
8. Filter saturation detector



**GOE301/B**

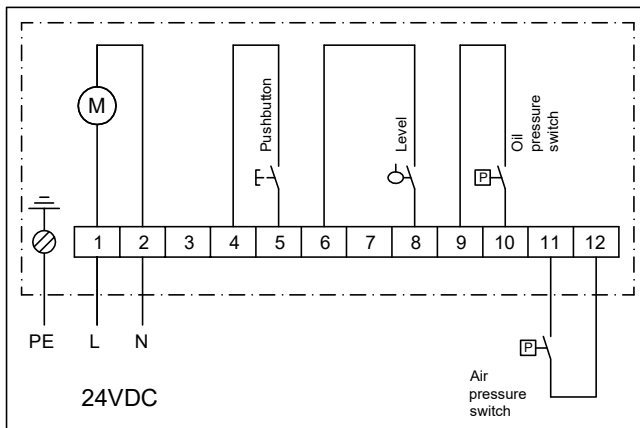
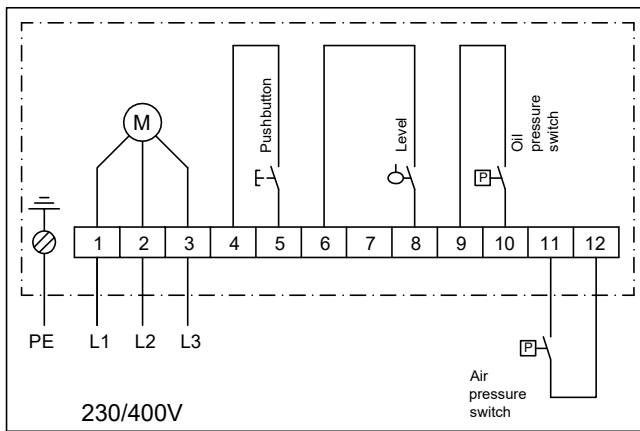
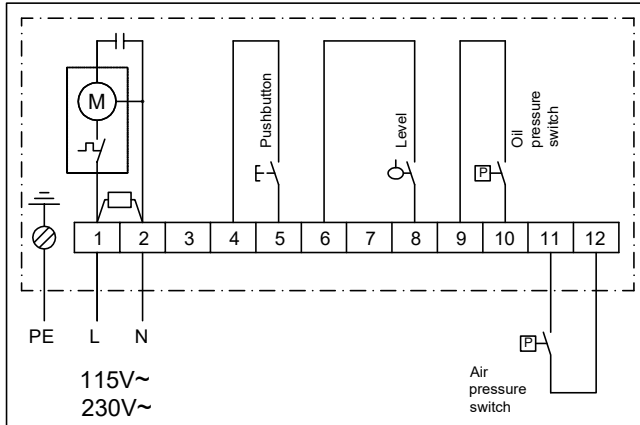
402.020.000



**GOE01/B**

402.010.000

Electrical connection diagrams

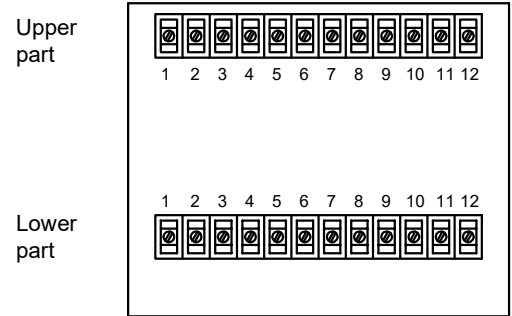


Connection plate for units without control

REF. EF01/0-2

451060000

To connect the units' internal signals on the lower part with the control sources on the upper part.



All the contacts in this diagram are shown in resting position.

At the electrical level (tank without oil) the minimum level is activated by a floating system.

Electrical level ⇒ Tank without oil

Pressure switch ⇒ Circuit without pressure

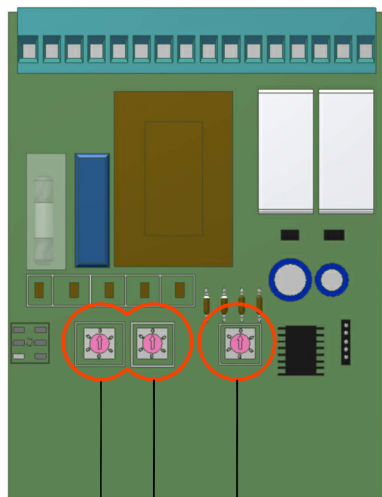
Manual pushbutton ⇒ Not pressed

A heat protector has been fitted to 115V and 230V motors.

If the current is cut as a result of abnormal overheating this device is resettable (it is automatically reactivated when the temperature returns back to normal) therefore it is not necessary to carry out any work to the motor.

**CAUTION!!!**

Safety measures must be taken:  
 Disconnect the main switch before carrying out connection coupling.



### Control and Monitoring Device

#### -Time or pulses-

To be applied to AIR-OIL installations

E003/C-1-0 ⇒ 24VDC

E003/C-1-1 ⇒ 115V~

E003/C-1-2 ⇒ 230V~

450.570.000

#### - PAUSE time

Programmable by time or pulses through selector

#### - OPERATION time

Pressure switch signal +10 seconds.

It depends on the flow and number of points within the installation.

A maximum time length of 3 minutes has been set after which the alarm will be activated.

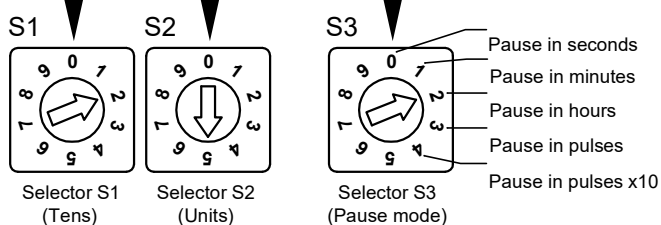
#### -ALARM

See Monitoring system

#### Device configuration

- Select the desired pause mode through selector s3: Time / Pulses.

- The value of this pause through selectors s1 and s2 (Tens and Units)



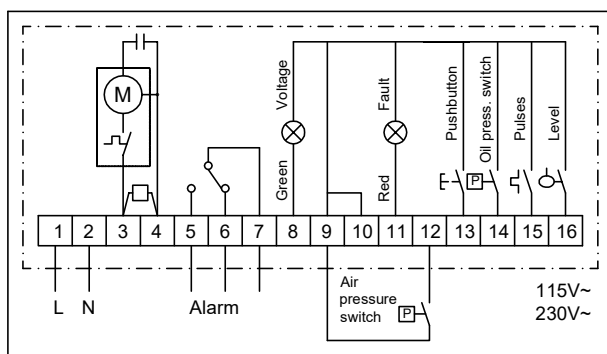
#### Application examples:

S1	S2	S3	One lubrication cycle every:
9	0	0	90 seconds
3	5	1	35 minutes
0	1	2	1 hour
8	0	3	80 pulses
7	5	4	75 pulses(x10)=750 pulses

### MONITORING System

If the alarm is activated during the operation of the device, the red led will blink indicating the fault that has happened:

Alarm type	It indicates	To cancel the fault
Fixed red led	1- Minimum level of oil in the tank 2- Level switch fault	- Fill the tank and press the manual pushbutton -Check the level switch
2 flashes of red led	Oil pressure fault (Not enough pressure after mmotor being in operation for 3 minutes)	- Check there are no leaks within the circuit - Check pressure switch status
3 flashes of red led	Device configuration fault	Check that: - The pause mode selector is not out of range. - Selectors s1 and s2 are not at "0" at the same time.
4 flashes of red led	Air pressure fault	- Check the supply of air and press the manual pushbutton.



### Electrical diagrams

All the contacts within these diagrams are shown at resting position.

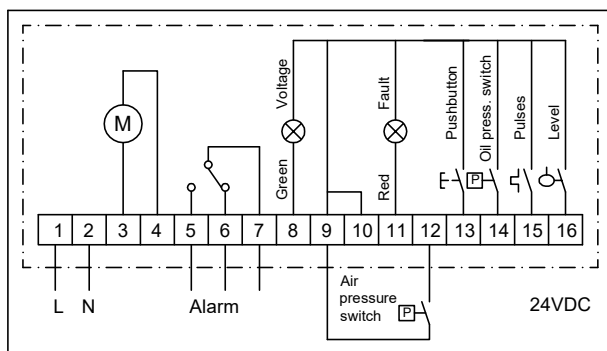
At the electrical level (tank without oil) the minimum level is activated by a float system.

Electrical level ⇒ Tank without oil

Oil pressure switch ⇒ Circuit without pressure

Air pressure switch ⇒ Circuit without pressure

Manual pushbutton ⇒ Not pressed

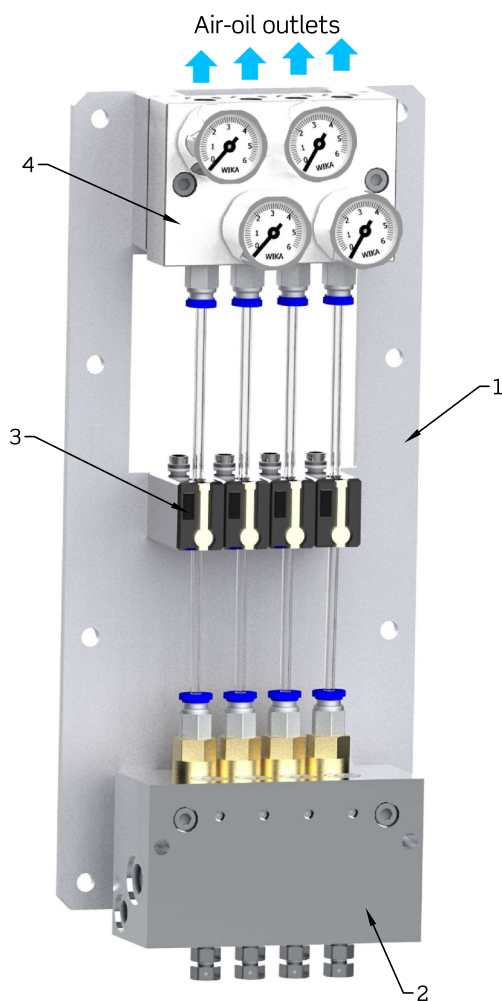


Heat protector fitted to 115V and 230V motors.

If the current is cut as a result of abnormal overheating this device is resettable (it is automatically reactivated when the temperature returns back to normal) therefore it is not necessary to carry out any work to the motor.

#### CAUTION!!!

Safety measures must be taken:  
Disconnect the main switch before carrying out connection coupling.



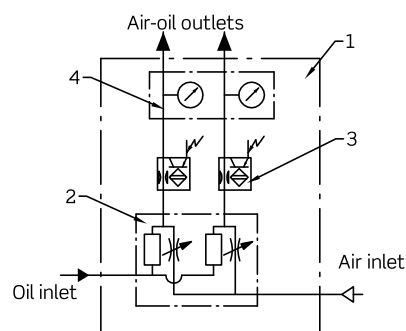
## Panel with volumetric doser for air-oil system

**VOE51**  
210.210.000

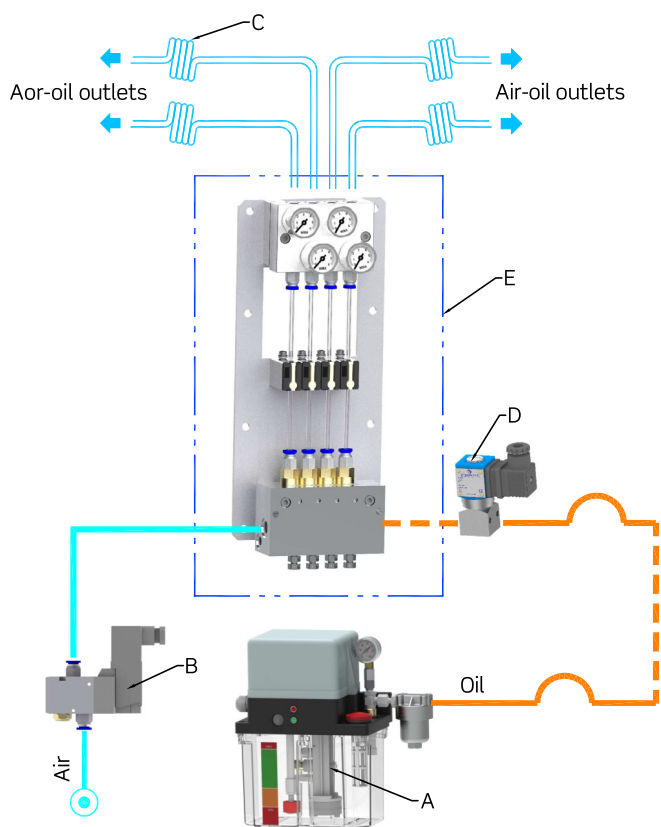
- From 1 to 6 outlets
- Visual monitoring and by optic-electronic sensor
- Fixed oil flow
- Adjustable air flow per outlet

Its main application is the lubrication of high speed devices (electrospindle), gear mechanisms...

Suitable for its mounting separately from pumping unit and near of the lubrication points



- A. Lubrication unit  
B. Air inlet solenoid valve  
C. Helical pipes  
D. Oil pressure switch  
E. Panel: 1. Panel  
2. Air-oil distributor  
3. Optic-electronic sensor  
4. Control block



### Volumetric distributors

Flow.....see tables  
Lubricant..... mineral and synthetic oils  
Viscosity..... ISO VG22 ÷ 320  
Lubricant inlet pressure..... 20÷40 bar  
Air inlet pressure..... 4÷10 bar  
Working temperature..... +5°C ÷ +80°C  
Seals material ..... FPM

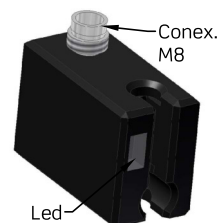
### Optic-electronic monitoring sensor

The sensor detects the movement of oil inside the tube that transports the air-oil.

Flow variations are indicated by an LED:

- the flow of oil turns on the green led
- In case of stop or reduction of lubricant, the red LED lights up.

See more technical characteristics on page 12



### AF02/A-1 control block

For pressure control of secondary lines. This pressure depends on the air flow rate adjusted by the regulator.

Control is carried out by means of elements mounted on the block which, optionally, can be pressure gauges or pressure taps.

See more technical characteristics on page 13



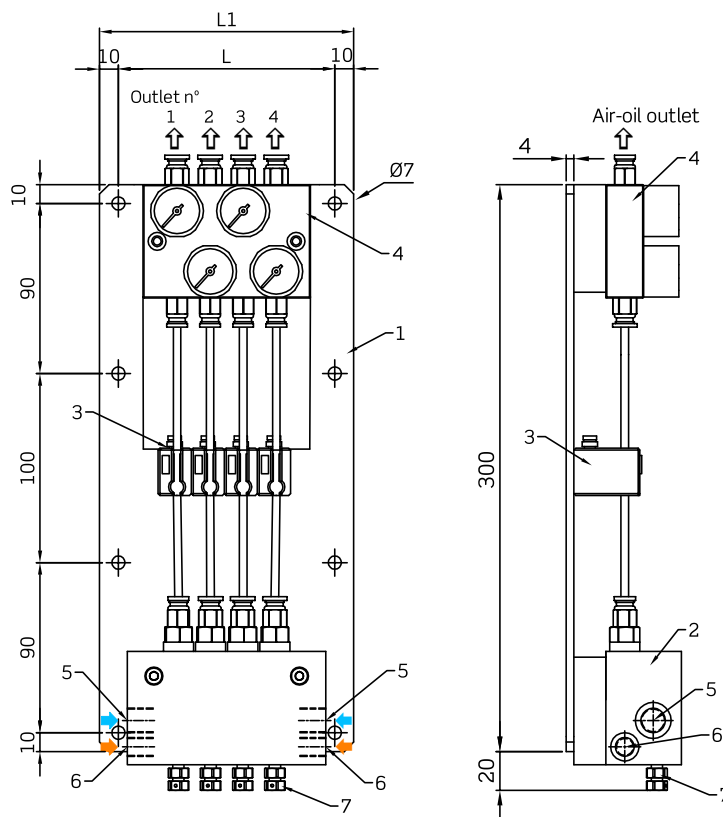


Standard panel without accesories

Dimensions (mm)

VOE51/B

403.500.000



- 1. Panel
- 2. Air-oil distributor
- 3. Optic-electronic sensor
- 4. Control block
- 5. Air inlet G1/4
- 6. Oil inlet G1/8
- 7. Air flow regulator

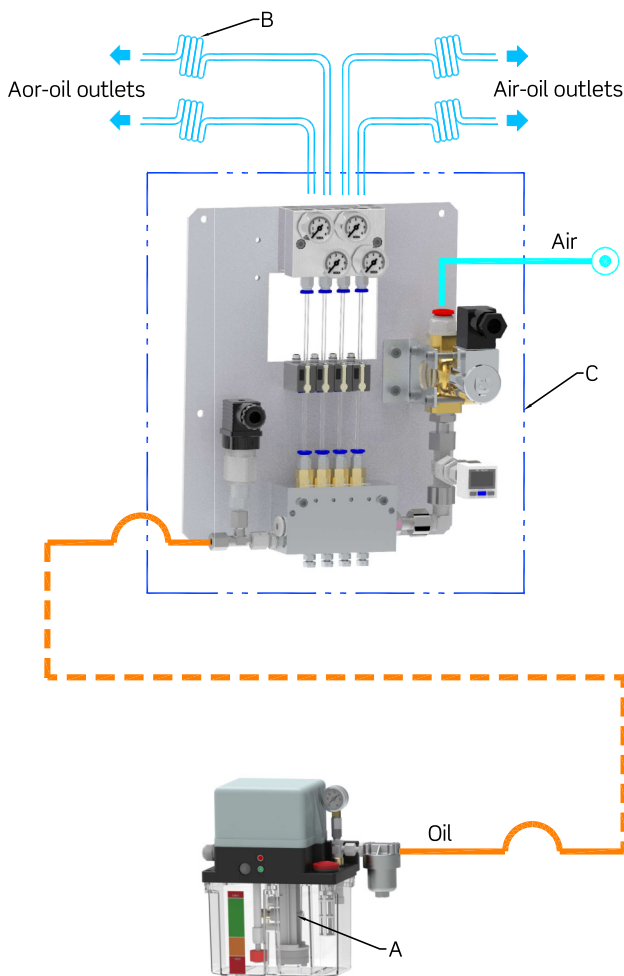
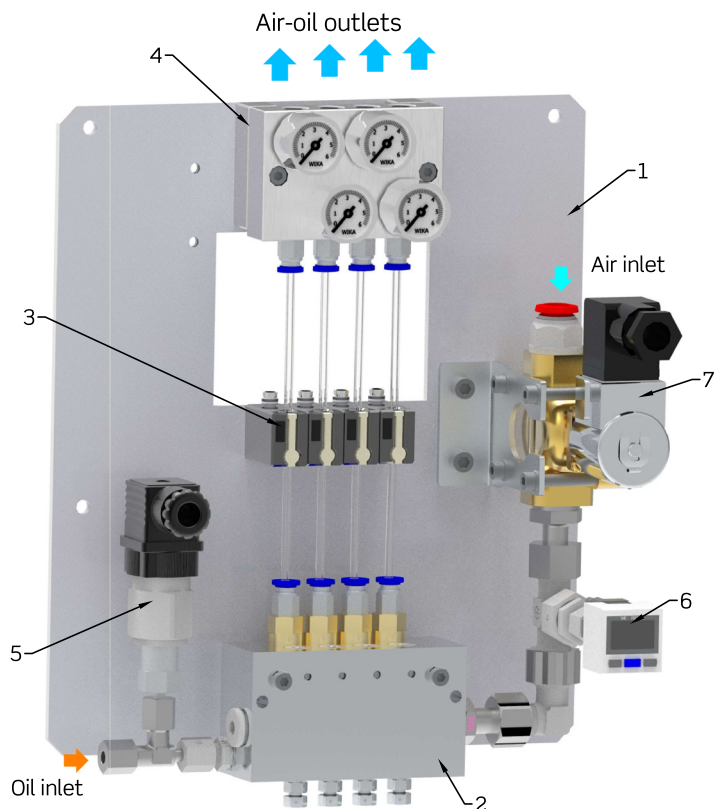
	N° of outlets					
	1	2	3	4	5	6
L	62,5	80	97	114,5	132	149,5
L1	82,5	100	117	134,5	152	169,5

References

VOE51 / B - 1 / X / X X X 1 / X X X X X X

Outlet number: 1 2 3 4 5 6

N° of outlets	Optic sensors	X	Control block	X	Outlet pipe fitting	X	Flow mm3/str.	X	
1	Without	0	Without	0	G1/8	0	0 Plugged outlet	0	
2	With	5	With pressure gauges	1	Fitting with sleeve	Ø4	4	10	1
3					Ø6	6	20	2	
4					Quick fitting	Ø4	7	30	3
5						Ø6	8	60	4
6								100	5
								160	6



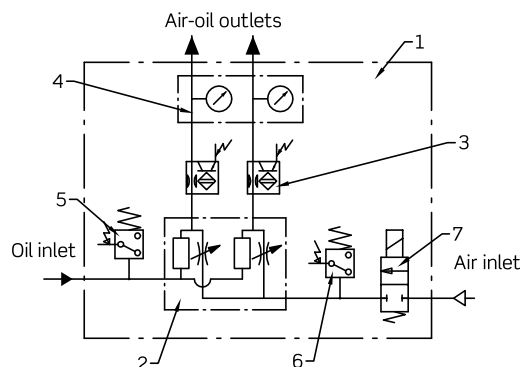
## Panel with volumetric doser for air-oil system

VOE50  
210.210.000

- From 1 to 6 outlets
- Visual monitoring and by optic-electronic sensor
- Fixed oil flow
- Adjustable air flow per outlet

Its main application is the lubrication of high speed devices (electrospindle), gear mechanisms...

Suitable for its mounting separately from pumping unit and near of the lubrication points



- A. Lubrication unit  
B. Helical pipes  
C. Panel:
1. Panel
  2. Air-oil distributor
  3. Optic-electronic sensor
  4. Control block
  5. Oil pressure switch
  6. Air pressure switch
  7. Air inlet solenoid valve

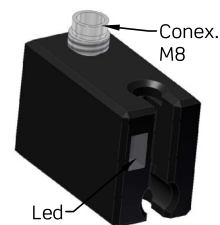
### Volumetric distributors

Flow.....see tables  
Lubricant..... mineral and synthetic oils  
Viscosity..... ISO VG22 ÷ 320  
Lubricant inlet pressure..... 20÷40 bar  
Air inlet pressure..... 4÷10 bar  
Working temperature..... +5°C ÷ +80°C  
Seals material ..... FPM

### Optic-electronic monitoring sensor

The sensor detects the movement of oil inside the tube that transports the air-oil.

Flow variations are indicated by an LED:  
-the flow of oil turns on the green led  
-In case of stop or reduction of lubricant, the red LED lights up.  
See more technical characteristics on page 12



### AF02/A-1 control block

For pressure control of secondary lines.  
This pressure depends on the air flow rate adjusted by the regulator.

Control is carried out by means of elements mounted on the block which, optionally, can be pressure gauges or pressure taps.  
See more technical characteristics on page 13

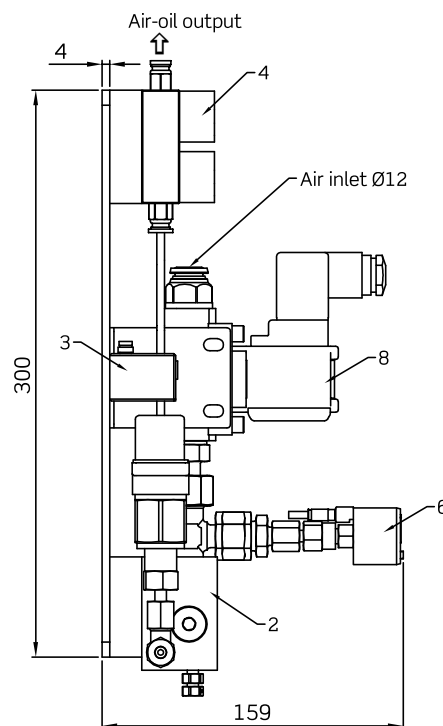
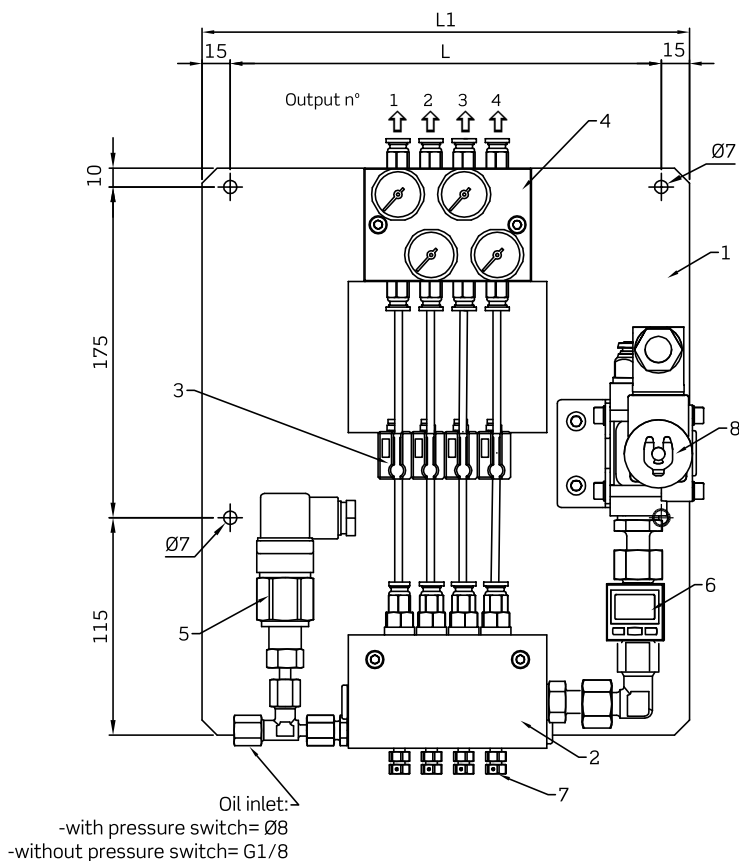


Panel with accessories: air solenoid valve, air pressure switch, oil pressure switch

VOE50/B

Dimensions (mm)

403.500.000



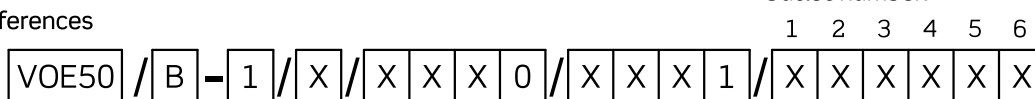
Oil inlet:  
-with pressure switch= Ø8  
-without pressure switch= G1/8

1. Panel
2. Air-oil distributor
3. Optic-electronic sensor
4. Control block
5. Oil pressure switch
6. Air pressure switch
7. Air flow regulator
8. Air inlet solenoid valve

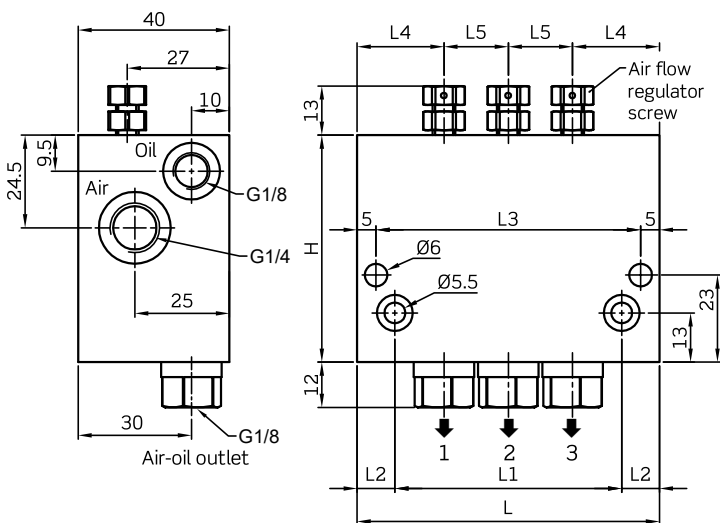
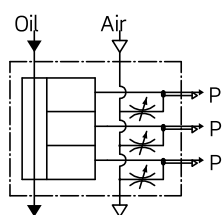
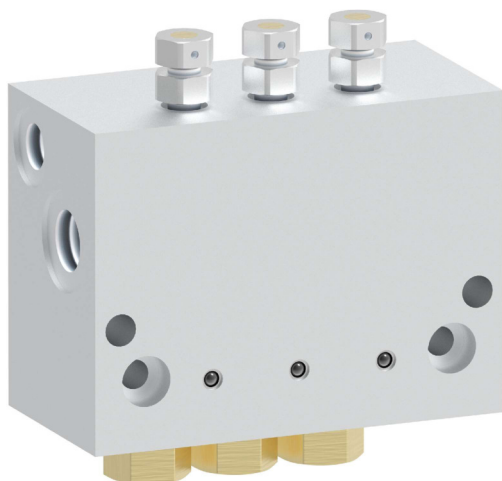
	N° of outputs					
	1	2	3	4	5	6
L	172	188	207,5	228,5	249,5	262,5
L1	202	218	237,5	258,5	279,5	292,5

References

Outlet number:



N° of outlets	Air solenoid valve	Air pressure switch		Oil pressure switch		Optic sensors	Control block	Outlet pipe fitting		Flow mm3/str.		
		X	X	X	X			X	X			
1	Without	0	Without	0	Without	0	Without	0	G1/8	0	0 Plugged outlet	
2	24Vdc	1	With	5	20 bar	5	With pressure gauges	1	Ø4	4	10	1
3	115V	2							Ø6	6	20	2
4									Quick fitting	Ø4	7	30
5	Ø6	8								60	4	
6	100	5										
											160	6



Dimensions		Number of outlets							
		1	2	3	4	5	6	7	8
Model B	L	40	55	80	105	130	130	155	155
	L1	20	43	60	77	94	111	128	145
	L2	10	6	10	14	18	9,5	13,5	5
	L3	30	45	70	95	120	120	145	145
	L4	20	19	23	27	31	22,5	26,5	18
	L5	17	17	17	17	17	17	17	17
Model C	L	45	62,5	80	97,5	115	132,5	150	167,5
	L1	35	52	69	86	103	120	137	154
	L2	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5
	L3	35	52,5	70	87,5	105	122,5	140	157,5
	L4	22,5	22,5	22,5	22,5	22,5	22,5	22,5	22,5
	L5	17,5	17,5	17,5	17,5	17,5	17,5	17,5	17,5
	H	70	70	70	70	70	70	70	70

## AIR-OIL Single line volumetric distributor

With outlet air flow control

VOE20/B-2 (0,01...0,16 cm3)	440.200.000
VOE20/C-2 (0,2...0,4 cm3)	440.300.000

### Application

As oil volumetric dosing meter in central lubrication with air-oil system for lubrication points that need a continuously small quantities of oil:

- High speed bearings
- Gears without tank
- Small chains...

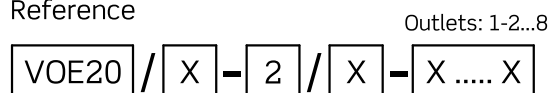
### Operation

The dosing meter injects intermittently minimum quantities of lubricant (MQL) into a continuous air flow and it delivers them to the lubrication points.

### Technical data

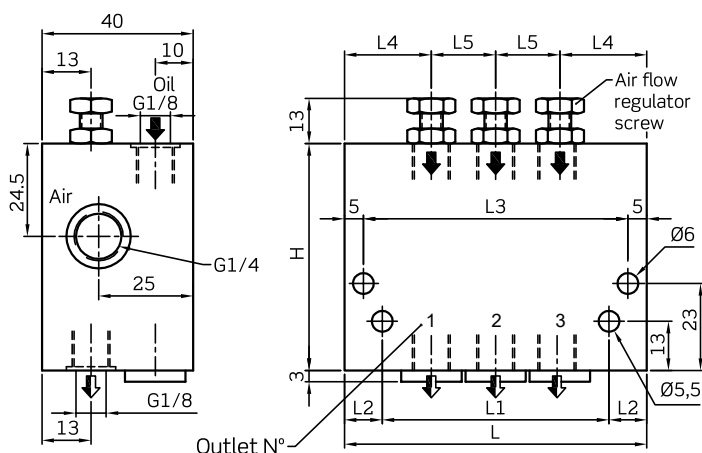
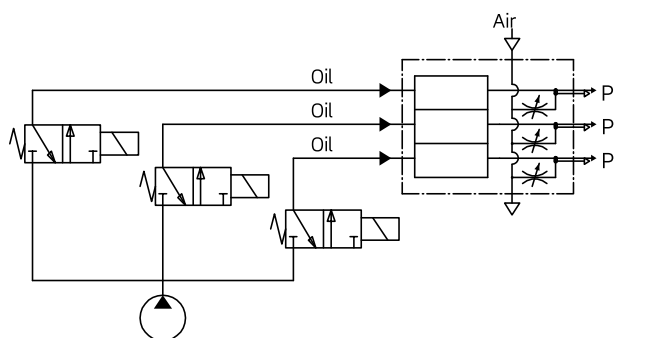
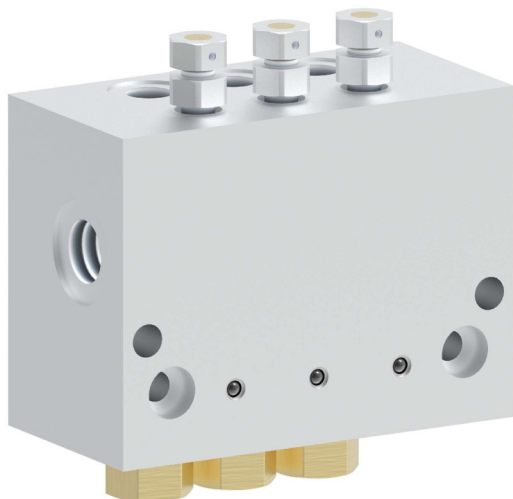
Number of outlets.....	1 to 8
Flow rates:	
VOE20/B.....	0,01 ÷ 0,16 cm3/Imp
VOE20/C.....	0,2 ÷ 0,4 cm3/Imp
Lubricant.....	Mineral and synthetic oils
Viscosity.....	ISO VG22 ÷ 320
Lubricant inlet pressure.....	20÷40 bar
Control air pressure.....	4÷10 bar
Working temperatura.....	+5°C ÷ +80°C
Assembly position.....	Any
Seals material.....	FPM

### Reference



Model	X	Number of outlets	Flow cm3/str.	X
0,01 ÷ 0,16 cm3/stroke	B	1	0,01	1
		2	0,02	2
		3	0,03	3
		4	0,06	4
		5	0,10	5
		6	0,16	6
0,2 ÷ 0,4 cm3/stroke	C	7	0,20	7
		8	0,30	8
			0,40	9

Flow 0.01cm3 (rate 1) does not admit further modification.  
Other flows are modifiable and interchangeable.



Dimensions		Number of outlets							
		1	2	3	4	5	6	7	8
Model B	L	40	55	80	105	130	130	155	155
	L1	20	43	60	77	94	111	128	145
	L2	10	6	10	14	18	9,5	13,5	5
	L3	30	45	70	95	120	120	145	145
	L4	20	19	23	27	31	22,5	26,5	18
	L5	17	17	17	17	17	17	17	17
H	60	60	60	60	60	60	60	60	
Model C	L	45	62,5	80	97,5	115	132,5	150	167,5
	L1	35	52	69	86	103	120	137	154
	L2	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5
	L3	35	52,5	70	87,5	105	122,5	140	157,5
	L4	22,5	22,5	22,5	22,5	22,5	22,5	22,5	22,5
	L5	17,5	17,5	17,5	17,5	17,5	17,5	17,5	17,5
H	70	70	70	70	70	70	70	70	

## AIR-OIL Single line volumetric distributor with independent inlet per each outlet

With outlet air flow control

VOE20/B-3 (0,01...0,16 cm<sup>3</sup>) 440.200.000

VOE20/C-3 (0,2...0,4 cm<sup>3</sup>) 440.300.000

### Application

As oil volumetric dosing meter in central lubrication with air-oil system for lubrication points that need a continuously small quantities of oil:

- High speed bearings
- Gears without tank
- Small chains...

### Operation

By having an independent inlet for each outlet the lubrication cycle units can be piloted individually according to the needs at each point. This can be achieved by assembling control valves between the distributor and the pumping equipment.

### Technical data

Number of outlets..... 1 to 8  
Flow rates:

VOE20/B..... 0,01 ÷ 0,16 cm<sup>3</sup>/Imp

VOE20/C..... 0,2 ÷ 0,4 cm<sup>3</sup>/Imp

Lubricant..... Mineral and synthetic oils

Viscosity..... ISO VG22 ÷ 320

Lubricant inlet pressure..... 20÷40 bar

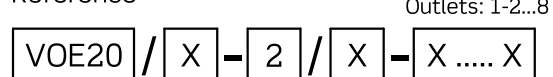
Control air pressure..... 4÷10 bar

Working temperatura..... +5°C ÷ +80°C

Assembly position..... Any

Seals material..... FPM

### Reference



Model	X	Number of outlets	Flow cm <sup>3</sup> /str.	X
0,01 ÷ 0,16 cm <sup>3</sup> /stroke	B	1	0,01	1
		2	0,02	2
		3	0,03	3
		4	0,06	4
		5	0,10	5
		6	0,16	6
0,2 ÷ 0,4 cm <sup>3</sup> /stroke	C	7	0,20	7
		8	0,30	8
			0,40	9

Flow 0.01cm<sup>3</sup> (rate 1) does not admit further modification.  
Other flows are modifiable and interchangeable.



**VOE10/B**  
0,01 - 0,03 - 0,06 - 0,10 - 0,16 cm<sup>3</sup>/stroke  
G1/8 air inlet  
M10x1 oil inlet  
M8x1 air-oil outlets



**VOE10/C**  
0,1 - 0,2 - 0,4 - 0,6 cm<sup>3</sup>/stroke  
G1/4 air inlet  
M12x1 oil inlet  
M8x1 air-oil outlets



**VOE10/D**  
0,2 - 0,4 - 0,6 - 1 - 1,5 cm<sup>3</sup>/stroke  
G1/4 air inlet  
M12x1 oil inlet  
M8x1 air-oil outlets

## AIR-OIL Single line volumetric distributor

Without outlet air flow regulation

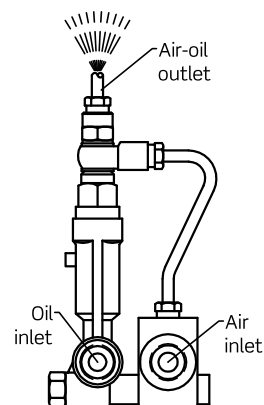
### Application

As oil volumetric dosing meter in central lubrication units with air-oil system for lubrication points that need continuously small quantities of oil.

### Operation

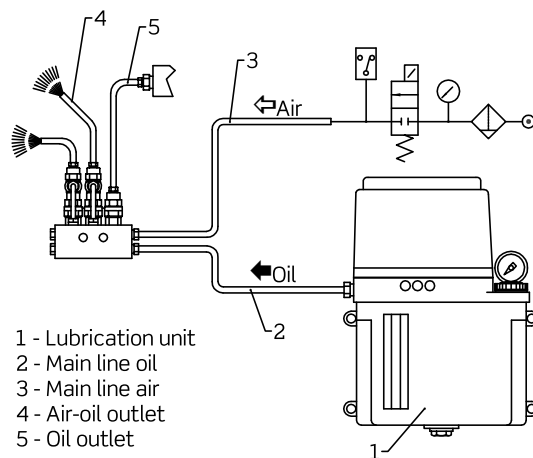
The units are assembled based on direct acting volumetric dosing meters with an individual air combination which enable the design of systems where normal lubrication points and oil-air projection points can be supplied from the same central lubrication pump.

Air blowing is continuous during and after oil input. Oil flow is intermittent.



This system does not build up mist.

The projection angle depends on oil viscosity, air pressure and the distance between the projector tube and the surface to be sprayed.



- 1 - Lubrication unit
- 2 - Main line oil
- 3 - Main line air
- 4 - Air-oil outlet
- 5 - Oil outlet

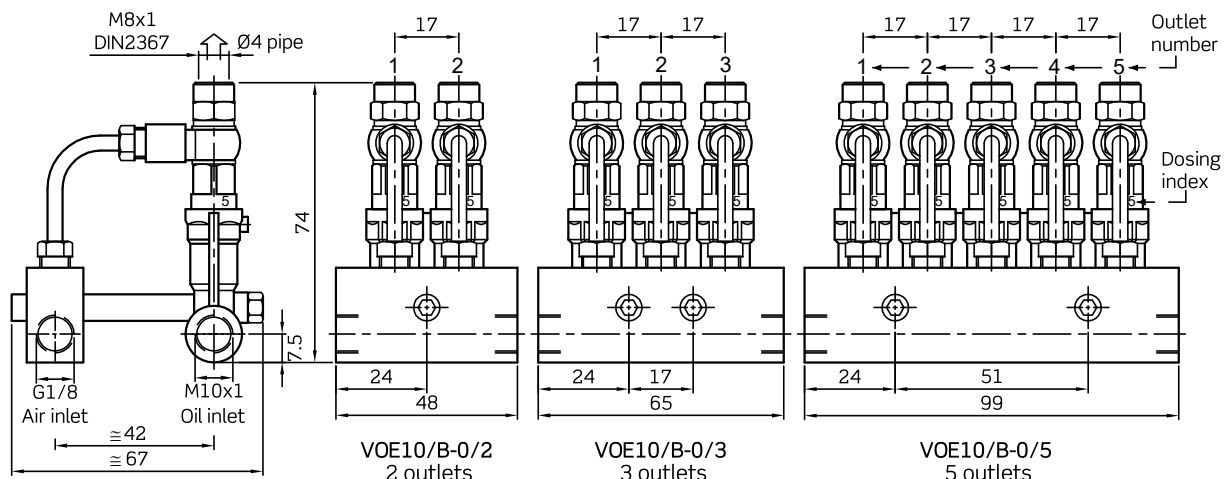
The different intervals (lubrication rate) at oil and oil-air can be regulated by using different automatism: timer card, PLC...

### Technical data

	VOE10/B	VOE10/C	VOE10/D
Number outlets.....	2-3-5	2-3-5	2-3
Flow rate (cm <sup>3</sup> /pulse)....	0,01 ÷ 0,16	0,1 ÷ 0,6	0,2 ÷ 1,5
Lubricant.....	mineral and synthetic oils		
Viscosity.....	ISO VG22 ÷ 320		
Lubricant pressure.....	20 ÷ 40 bar		
Decompression.....	< 1,5 bar		
Control air pressure.....	4 ÷ 10 bar		
Operation temperature.....	+5°C ÷ +80°C		
Assembly position.....	any		
Seals material.....	FPM		

0,01 a 0,16 cm<sup>3</sup>/stroke

VOE10/B



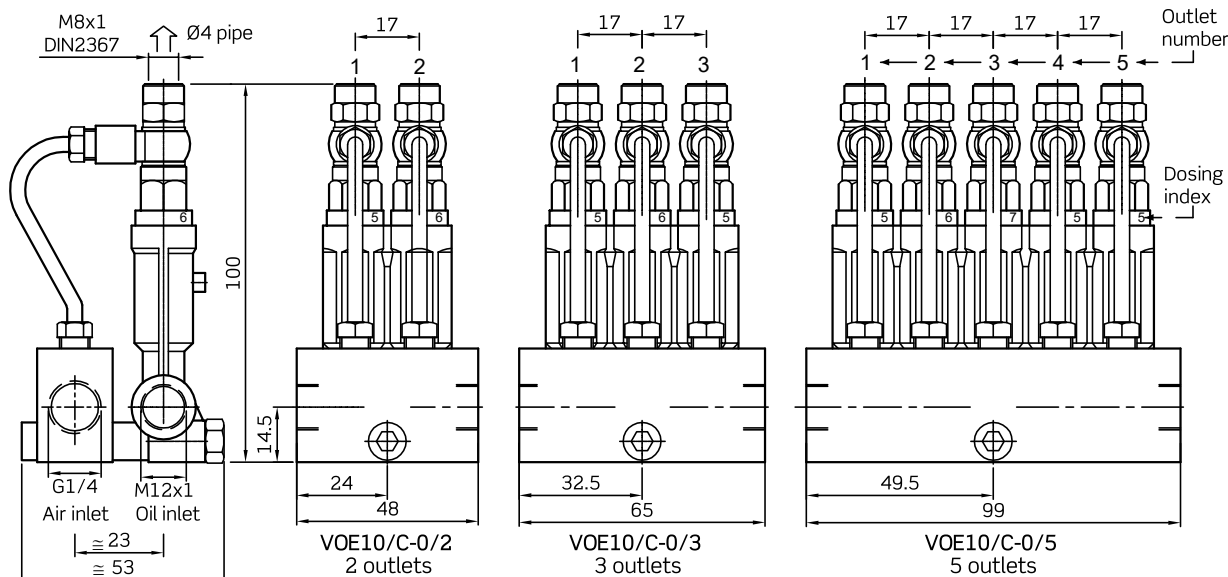
VOE10 / B - 0 / X - X X / X X / X X / X X / X X

N° of outlets	Outlet n° 1		Outlet n° 2		Outlet n° 3		Outlet n° 4		Outlet n° 5	
	X1	X2	X1	X2	X1	X2	X1	X2	X1	X2
2	X	X	X	X						
3	X	X	X	X	X	X				
5	X	X	X	X	X	X	X	X	X	X

X1	Type of outlet	X2	Flow cm <sup>3</sup> /str.
1	Only oil	0	0
		1	0,01
2	Air-oil	2	0,03
		3	0,06
		4	0,10
5	Plugged	5	0,16

0,1 a 0,6 cm<sup>3</sup>/stroke

VOE10/C



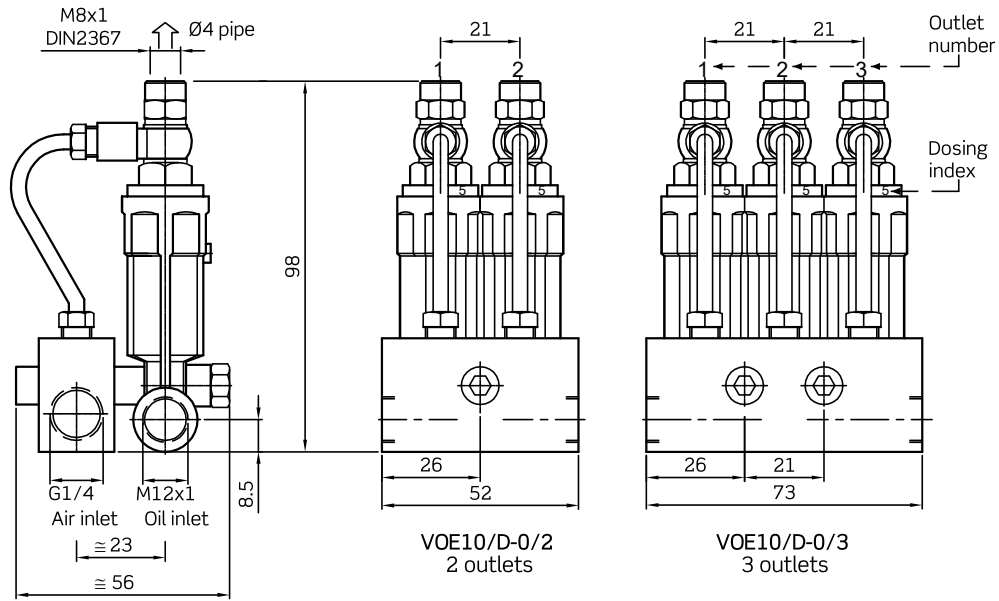
VOE10 / C - 0 / X - X X / X X / X X / X X / X X

N° of outlets	Outlet n° 1		Outlet n° 2		Outlet n° 3		Outlet n° 4		Outlet n° 5	
	X1	X2	X1	X2	X1	X2	X1	X2	X1	X2
2	X	X	X	X						
3	X	X	X	X	X	X				
5	X	X	X	X	X	X	X	X	X	X

X1	Type of outlet	X2	Flowl cm <sup>3</sup> /str.
1	Only oil	0	0
		4	0,1
2	Air-oil	5	0,2
		6	0,4
		7	0,6
5	Plugged		

0,2 a 1,5 cm<sup>3</sup>/stroke

VOE10/D

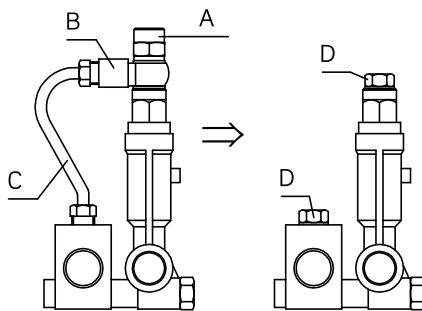


VOE10 / D - 0 / X - X X / X X / X X

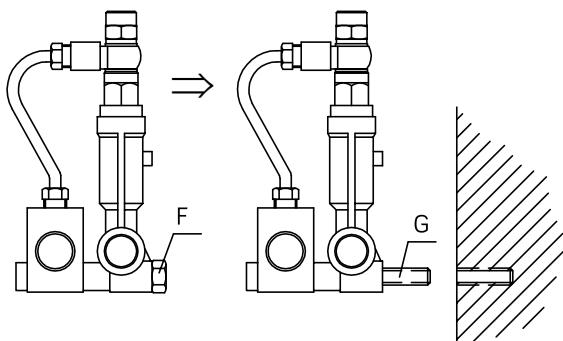
N° of outlets	Outlet n° 1		Outlet n° 2		Outlet n° 3	
	X1	X2	X1	X2	X1	X2
2	X	X	X	X		
3	X	X	X	X	X	X

X1	Type of outlet	X2	Flow cm <sup>3</sup> /str.
1	Only oil	0	0
		5	0,2
		6	0,4
2	Air-oil	7	0,6
		8	1,0
5	Plugged	9	1,5

Instructions:

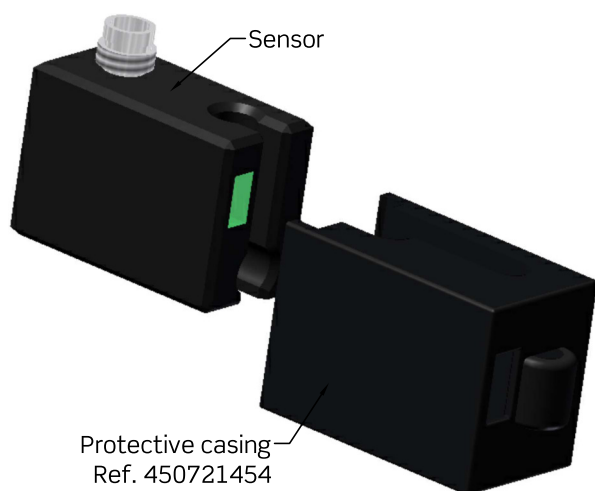


- To remove outlets:
- Disassemble outlet fitting A
  - Disassemble air inlet fitting B
  - Disassemble tube C and its connection fittings
  - Plug both holes D



- To assemble the dosing meter to the machine:
- Release transport nut A
  - Tie M4 Allen screw B to its positioning in the machine





## Optic electronic monitoring sensor for air-oil lubrication systems

KOF01/A  
450.755.000

### Operation

The sensor detects the passing through of oil volume within the tube that carries the air-oil.  
The flow variations are shown by means of a led:  
-Oil passing lights green led.  
-In the event of a system shutdown or decrease of lubricant drop the red led is lit.  
These signals can be transmitted through a PNP outlet connection with NC contact.

### Monitoring of the lubrication cycle

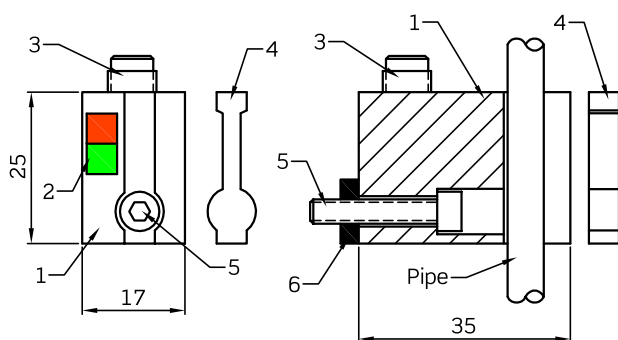
Monitoring is programmed in the control so that after each pumping cycle the sensor detects an oil passage and turn on the green LED.  
This green LED remains on for a certain time depending on the air speed and cycle frequency, after which the red LED can be activated, but with the next pumping pulse the green LED must be activated again.

### Installation of transparent pipes

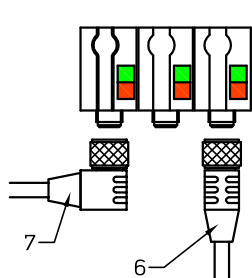
The sensors are manufactured in two versions depending on the  $\varnothing$  of the application tube:  $\varnothing 4$  and  $\varnothing 6$ .  
The diameter is shown on the sensor body:  
-IFX-C04: sensor to be applied with tube  $\varnothing 4$   
-IFX-C06: sensor to be applied with tube  $\varnothing 6$

Insert the tube into its housing when the sensor is activated: check that green led is on and red led is off. Fit the cover to avoid the interference of external variations in light with the functioning of photodiodes.

In those installations where there is a risk of removal of the closing cover (due to machine vibrations, force exerted outwards by the curved tube assembly, etc.), the use of protective casings is highly recommended.

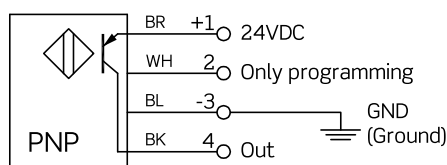


- 1 - Optic electronic sensor
- 2 - Leds for visual inspection
- 3 - Connection M8x1 4 poles
- 4 - Cover N860061
- 5 - Fixation screw M4x25
- 6 - Stop washer (required for mounting and removing the protective casing)



- Accessories:
- 6 - Straight connector M8x1 4P  
cable 3m.....913806105/3m  
cable 5m.....913806105/5m
  - 7 - 90° connector M8x1 4P  
cable 2m.....913806107/3m  
cable 5m.....913806107/5m

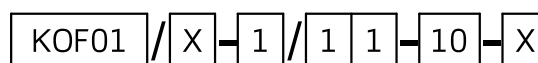
### Electric connection



### Technical data

Type.....Image sensor with triple photodiode  
Pipe  $\varnothing$  to be controlled.....  $\varnothing 4$  -  $\varnothing 6$   
Connection..... M8x1 - 4 poles  
Supply..... 12-24VDC  
Maximum consumption..... 25mA  
Connection ..... PNP  
Standard contact..... NC (Normally Closed)  
Protection type..... IP67

### References



Pipe $\varnothing$	X
$\varnothing 4$	A
$\varnothing 6$	B

Protective casing	X
Without	0
With	5



Fig.1

**Control block panel**

AF02/A-1 505.300.000  
AF02/A-2 505.250.000

- From 1 to 8 control points
- optional with pressure gauges (fig.1)
- optional with pressure test connections (fig.2)

**Application**

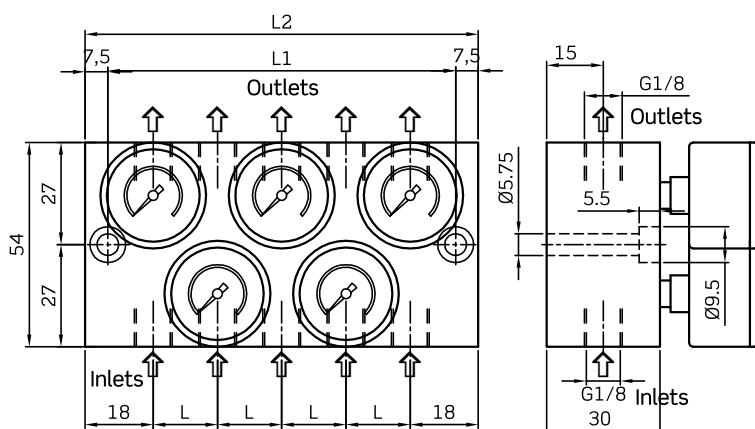
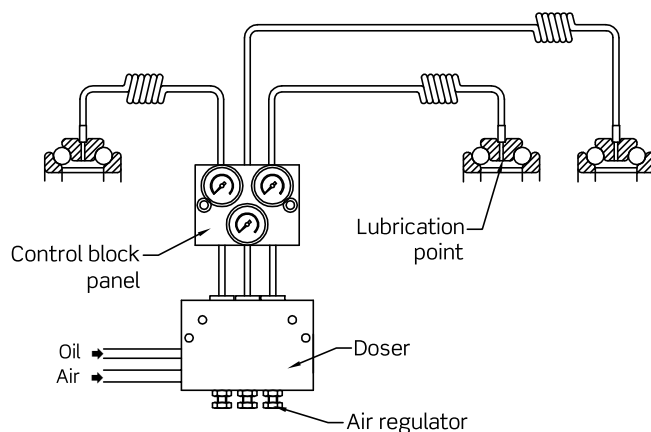
In air-oil installations, to control the air pressure in each regulated outlet

**Assembly**

Between the doser and the lubrication points



Fig.2



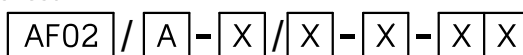
Dimensions

N° of outlets	AF02/A-1		
	L	L1	L2
1	-	21	36
2	21	38,5	53,5
3	21	56	71
4	21	73,5	88,5
5	21	91	106
6	21	108,5	123,5
7	21	126	141
8	21	143,5	158,5

Dimensions

N° of outlets	AF02/A-2		
	L	L1	L2
1	-	21	36
2	17,5	42	57
3	17,5	63	78
4	17,5	84	99
5	17,5	105	120
6	17,5	126	141
7	17,5	147	162
8	17,5	168	183

**References**

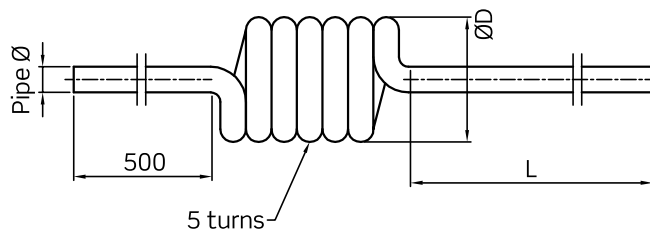
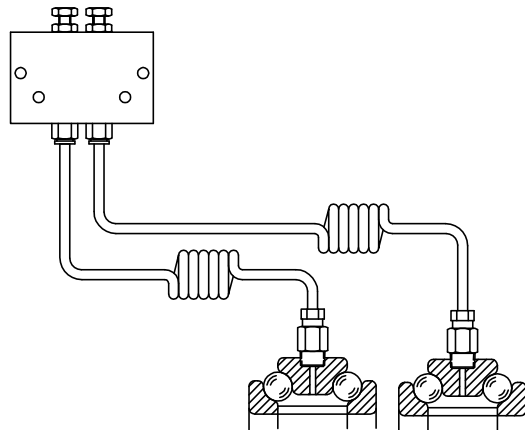


Model (depending on distance between outlets)	X	Number of outlets	X	Control element	X	Inlets connections	X	Outlets connections	X			
 21	1	1	Without	0	G1/8	0	G1/8	0				
		2							Pressure gauge	4	Ø4 Quick fitting	4
		3										
		4										
 17,5	2	5	Pressure test connection	2	Ø6 Quick fitting	6	Ø6 Quick fitting	6				
		6										
		7										
		8										

### Helical pipe

To connect the distributor and the lubrication points.

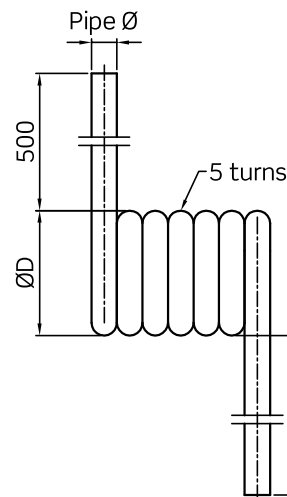
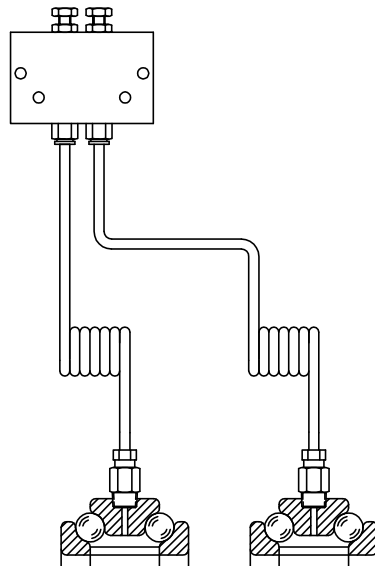
It is placed as close as possible to the lubrication point to be able to build up oil at stops between the cycles and the lubrication point can be fed immediately at the next start up.



#### Pipe with horizontal inlet / outlet

9 1 0 0 0 1 0 0 X / X

Pipe Ø	ØD	X	L
Ø4 x Ø2,7	30	3	2000 mm 4500 mm
Ø6 x Ø4	34	2	



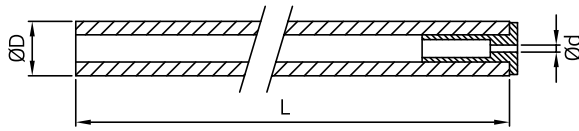
#### Pipe with vertical inlet / outlet

9 1 0 0 0 1 0 2 X / X

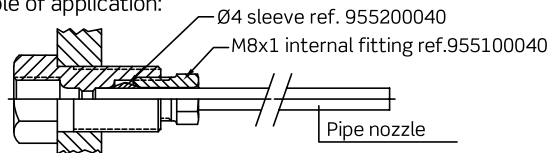
Pipe Ø	ØD	X	L
Ø4 x Ø2,7	30	3	2000 mm 4500 mm
Ø6 x Ø4	34	2	

## Nozzles

### Pipe nozzle



Example of application:

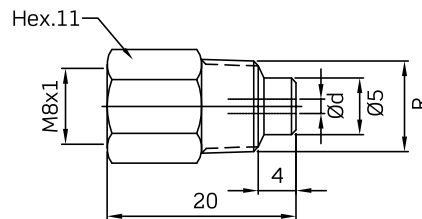
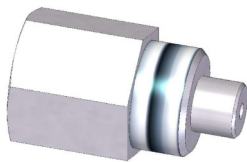


SA02 / A-1 / X X / L (mm)

Ød mm	X	X	ØD mm
Ø 0,5	5	4	Ø 4
Ø 1	1	6	Ø 6
Ø 1,5	2		

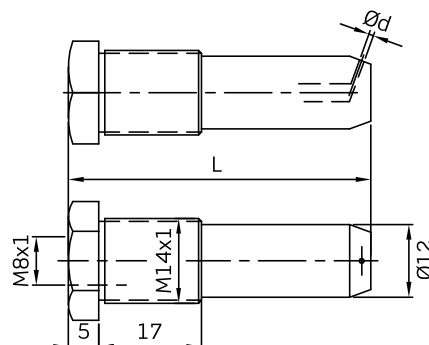
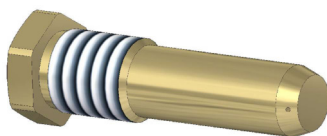
-Consult for other dimensions-

### Fitting nozzle



R	Ød mm	Reference
M6x1	Ø1,5	SB03/B-2-1
M8x1	Ø1,5	SB03/B-2-2
M10x1	Ø1,5	SB03/B-2-3
G1/8	Ø1,5	SB03/B-2-4

### Fitting nozzle



L mm	Ød mm	Reference
45	Ø0,8	SB03/B-1-1
50	Ø0,8	SB03/B-1-2
55	Ø0,8	SB03/B-1-3