



Oil-air lubrication unit

Series ZGX

MQL System (Minimal Quantity Lubrication)

- Preassembled *MQL* unit ready for use.
- Delivery flux monitoring by optical sensor. (*Patent pending*).
- Air flow rate adjustable for each line.
- Minimum lubricant level electric control.
- Filtration: air 5 µm, oil 3 µm.
- Equipped with PLC unit for cycle programming and lubrication control.
- Metallic box suitable for IP64 protection.
- Specially designed for GMN Spindles

Application:

Minimal quantity lubrication for high speed bearings, on GMN high frequency spindles.

Technical data:

Working temperature:	+10 ÷ +50°C
Reservoir capacity:	3,5 l
Oil viscosity at 40 °C:	32 ÷ 1000 cS
Filtering:	
oil filter element	5 micron
air filter element	5 micron
Electric power supply /connector X1	
Voltage:	230 single-phase VAC 50/60 Hz 110 single-phase VAC 50/60 Hz 24 VDC
Max current:	
with single-phase motor	2A
with motor at 24 VDC	6A
Level switch:	
Prewarning residual capacity	abt.0,9 liter
Warning residual capacity	abt. 0,7 liter
Connector X2 (Spindle enabling):	
Switching voltage	250 VAC
Switching current	1,5 A
External dimensions: (WxHxD)	
Width (with attachments)	abt. 512 mm
Height	abt. 380 mm
Depth	abt. 210 mm
Protection:	IP 64
Weight (with box):	abt. 20 Kg.
Acoustic Emission Leq(A):	< 70 dB

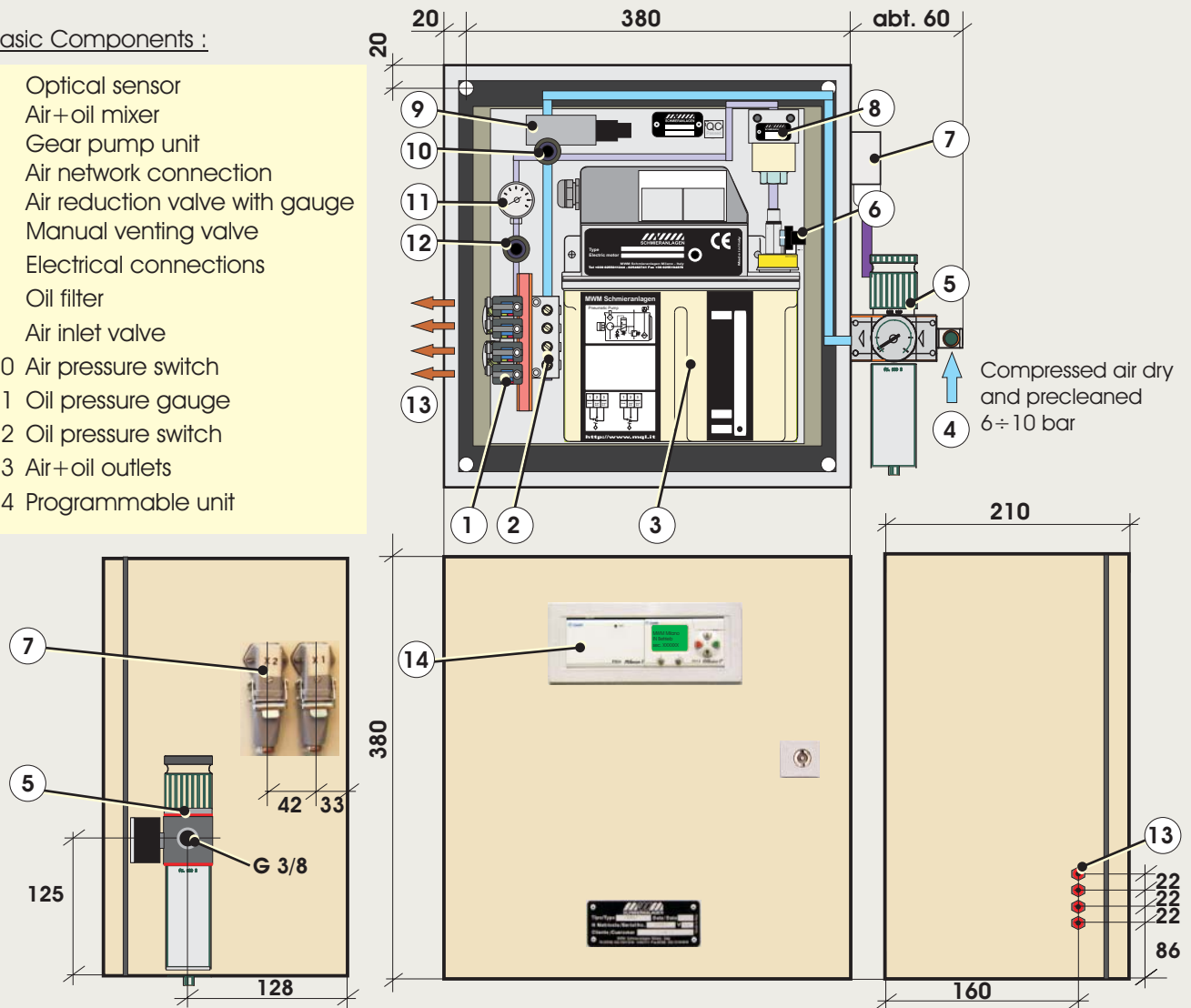


- Subject to changes without notice -

ZGX Oil+Air Unit Components

Basic Components :

- 1 Optical sensor
- 2 Air+oil mixer
- 3 Gear pump unit
- 4 Air network connection
- 5 Air reduction valve with gauge
- 6 Manual venting valve
- 7 Electrical connections
- 8 Oil filter
- 9 Air inlet valve
- 10 Air pressure switch
- 11 Oil pressure gauge
- 12 Oil pressure switch
- 13 Air+oil outlets
- 14 Programmable unit



Supply conditions:

All the components are installed on an assembly plate and are supplied as a complete system. Each unit is provided with instruction manual.

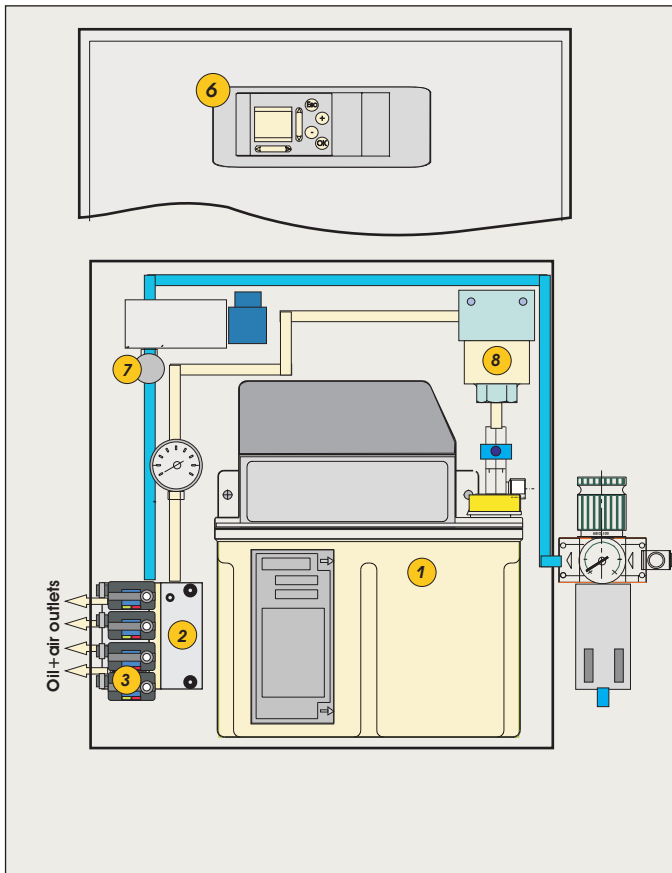
The above figure shows the unit as standard version. Further optional components may be integrated. These components are not covered by this leaflet, please read the corresponding technical leaflets.

The lubrication unit can be assembled in different executions (see order coding at page 4).

Each unit is provided with CQ label which certifies the quality test.

The lubrication unit should be used as component, so it is not provided with energy isolation devices. A solenoid valve, placed on the air feeding line, and an electric general switch are available by request.

For further information concerning components have a look at the specific technical leaflets, ask for full catalogue or check on the web site: www.mql.it.



Working description:

The ZGX units produce the oil+air mixture dosing small and precise amount of oil per each cycle in a continuous air flow.

ZGX lubrication unit has (in this example) 4 outlets and a dedicated PLC control unit (6) for programming, on the front panel.

The pumping system has a 3 liters capacity reservoir and a single-phase motor.

The unit is connected to the compressed air network and to the electric power. The oil volumes fed to the lubrication points depend on the dosing elements and on cycle frequency.

Oil in pressure passes through the filter (8) to reach the oil mixer (2). The right amount of oil is distributed by dosing elements and mixed with air, the flow rate can be adjusted by a screw placed on each outlet.

The oil+air mixture is controlled by an optical sensor (3), which verifies also the minimum flow rate level.

The PLC checks also the pump (1) level switch signal as well as the oil pressure switches (7).

The pump driving is managed by PLC so that the amount of oil is related to the pump working time.

Oil+air mixture control - Optical sensor IFX

The monitoring device IFX optical sensor (*Image Flux Sensor*) directly installed on a transparent pipe allows the immediate detection of delivery volume in the oil+air mixture.

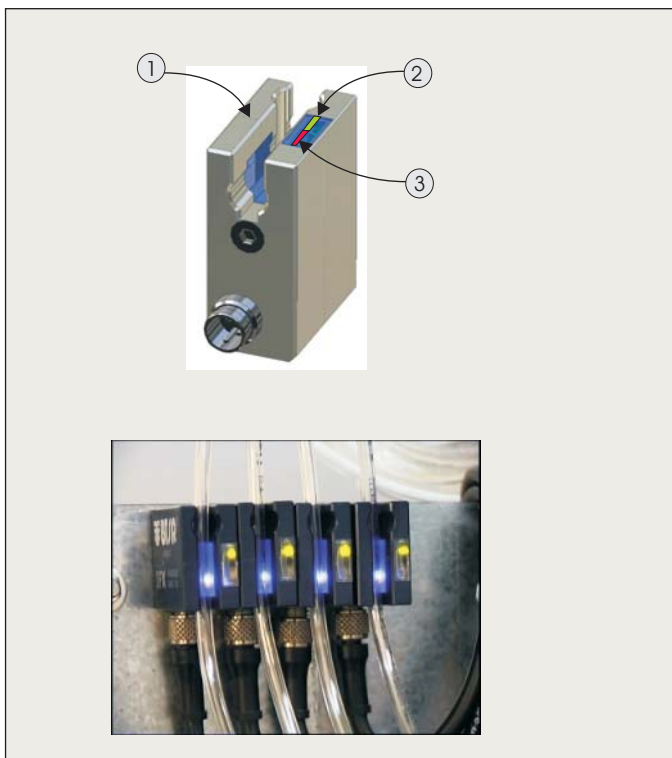
The sensor is equipped with a light emitting diode (1) which projects a beam on an electronic receiver. Any image variation in the moving oil+air mixture under control is detected and processed according to a patented and advanced control technology.

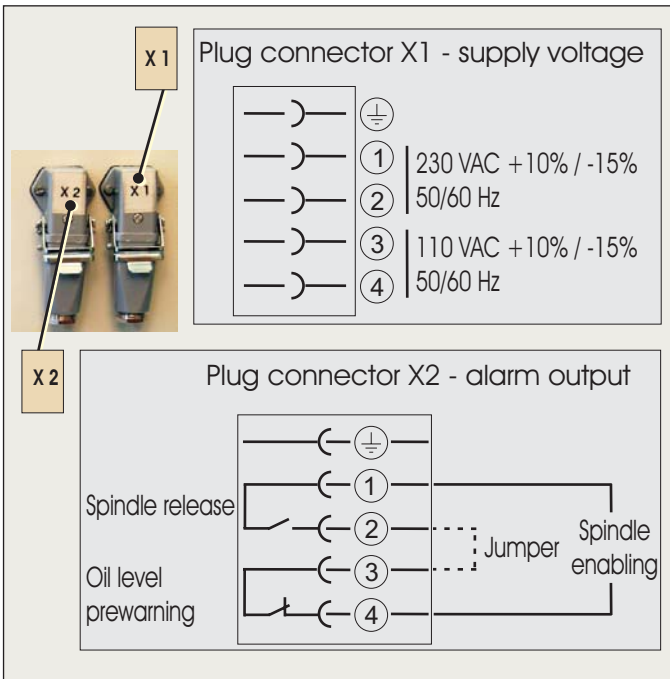
The pre-set value which refers to a standard-normal run causes the green LED (2) to flash. In case of a system stop or a lack of lubricant, an alarm output is provided and the corresponding red LED (3) goes out.

The check value is selected before delivery and remain fixed, adjustments of the set value are possible by means of a computer.

A programmable monitoring unit SMART/IFX for parameters changes and checking is available as accessory.

For further information please refer to the technical leaflet IFX.





Electrical connections.

All electrical connections are gathered in two plug connectors X1, X2.

Connect supply voltage (230 VAC) to clamps "1" and "2", or (110 VAC) to clamps "3" and "4" on plug connector X1.

On plug connector X2 to clamps "1" and "2" is arranged a spindle release contact, opening in case of fault and normally closing during correct functioning.

The user can act on this contact to stop the spindle or the whole system in which the lubrication unit is incorporated.

To clamps "3" and "4" is arranged a oil level contact normally closing when the oil level is satisfactory.

Electrical signals and alarms are managed by the programmable unit, which can visualize each function and failure on display.

Order coding:

Oil-air minimal lubrication unit: ZGX (X) (X) (X) (X) - (X)/(X) ... / (X)

Outlets No.	Supply voltage	Mixer type	Ø tube for oil-air outlets	Metering element [mm ³]
①	① 24 VDC	MVX-A B6	① Ø 4 [mm]	① without
⋮	① 220/240 VAC 50/60 Hz	MVL-B B7		② without
⑥	② 110/115 VAC 50/60 Hz	VOE-B B06	② Ø 6 [mm]	② 22
				③ 34
				④ 57
				⑤ 110
				⑥ 170
				⑦ 230

Check functions in ZGX Oil-Air Unit:

- IFX Optical Sensor for each outlets
- Level switch oil tank
- Main air press. switch
- Main oil press. switch