

LS, dry lubrication system

1-4104-US

'Dry lubrication' systems for filling and packaging line with slat or belt conveyors in the food industry.



Applications

The 'dry lubrication' systems, using special lubricants, have been developed to lubricate belt conveyor surfaces, as well as the conveyor guides, for the transport of products in bottling and packaging unit.

A metered volume of lubricant is sprayed on the belt surface by means of a regulated carrier air ; at the same time lubricant is directly injected into the conveyor guide with the same lubrication unit. The metered volume of lubricant is independent of any possible lubricant viscosity variation, the line length or the lube point number.

Considering the large diversity of conditioning unit, several system types have been designed in order to suit every kind of application.

'Dry lubrication' systems are used in filling line using beverage cartons, plastic bottles, and so on, in the following fields of the food industry:

- Milk plant,
- Fruit juice, sauce and soup production,
- Source, mineral, sparkling water production,
- Beverages (soda, beer, etc.)

and in many other fields such as:

- Cleaning products ...
- Cosmetics ...

Advantages

- Better sliding of the products,
- Chain wear reducing,
- Healthy environment and cleanliness of the work station,
- Dry environment, no water,
- Less metal corrosion,
- No deterioration of the conveyed products in the holding area thanks to better sliding,
- No friction noise or "stick-slip" effect,
- No bacterial growth,
- In accordance with the environmental standards,
- The product use is in accordance with food standards.



ISO 9001
1995/3256

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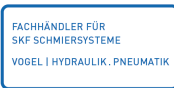
HYDRAULIK · PNEUMATIK

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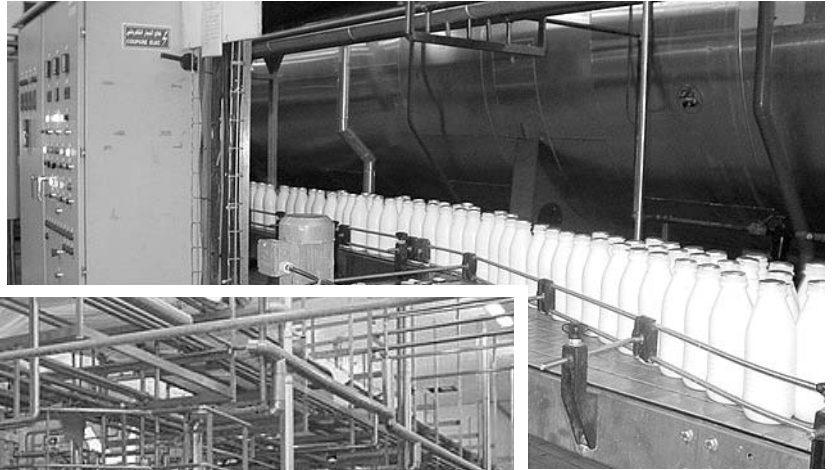
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Notice!

All products from VOGEL may be used only for their intended purpose. If operating instructions are supplied together with the products, the provisions and information therein of specific relevance to the equipment must be observed as well.

In particular, we call your attention to the fact that hazardous materials of any kind, especially the materials classified as hazardous by EC Directive 67/548/EEC, Article 2, Par. 2, may only be filled into VOGEL central lubrication systems and components and delivered and/or distributed with the same after consultation

with and written approval from VOGEL.

All products manufactured by VOGEL group are not approved for use in conjunction 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.

Problems on conditioning line conveyor

Due to the speed difference between the filling machine and the packaging machine, or the failure of one of them, products are slowing down on the belt conveyor, which is running at a constant speed. And at the end products are sliding on the belt.

At the same time guides are supporting the conveyor belt and there is there a continuous friction.

If the friction between the belt and the product is too high (without lubrication) package bottom can be damaged, especially cartons. The belt then needs more power for moving, involving belt damages.

- **Too much friction** (insufficient sliding):

- possible deterioration of the products (especially cartons),
- more power consumption for the belt motion (engine over-current, extreme tension of the belt),
- possible falling of the products when changing direction,
- more wear on the belt surface and guides.

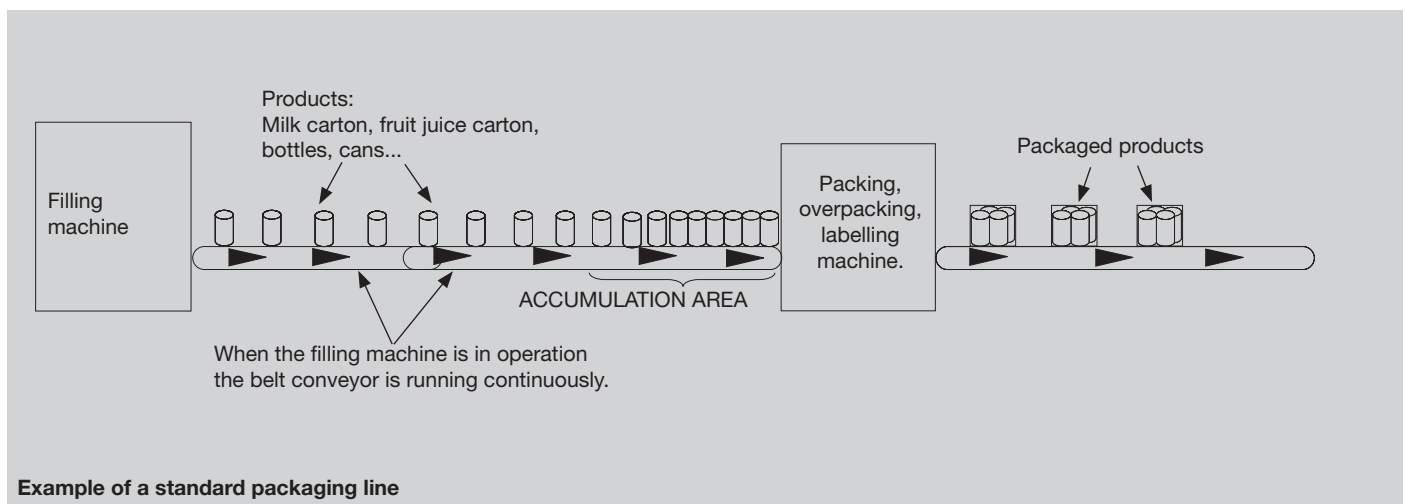
- When **not enough friction** products are sliding too much. It is harder to carry them properly (slow down or no more movement above all in the high part).

A lubrication system helps to keep a constant and sufficient friction coefficient. It can be adapted to any production line (conveyor belt type, carried products).

Disadvantages of the 'water + soap' solution

Currently, some lubrication systems are based on a spraying network of water + soap mix. With these systems, it is not possible to precisely meter the quantity of lubricant sprayed on the belt (often higher than the real need) and the use of water causes many problems:

- Bacteriological and organic growth,
- High costs due to important water consumption and effluent treatment,
- Foaming,
- Corrosion,
- Slippery floors,
- Damaged packages.



Example of a standard packaging line

Dry lubrication

The dry lubrication systems have been especially designed for the lubrication of conveyor surfaces and guides with special lubricant.

These systems enable to replace the classic wet lubrication systems thanks to the high performance of the lubricant: a PTFE based oil, suitable for the food industry, when it's correctly metered, leave a dry sliding coat on the surface belt and/or its guides.

The aim of the dry lubrication system is to deliver automatically and precisely the right quantity at the right friction point (belt surface or guides) from a central unit, which can feed up to 200 lubrication points in accordance with the production process.

Dry lubrication systems are based on the 'oil+air' principle: a minimal quantity metering system approved for years in the field of mechanical engineering.

Principle

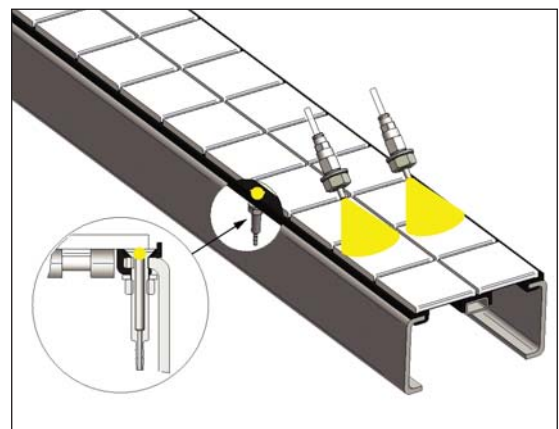
• Lubrication of the conveyor belt surface:

Very small metered quantity of oil are delivered intermittently by a piston metering system into a low pressure carrier air tube to a projection nozzle.

The nozzle delivers a constant microdroplet and air flow on the belt, as long as the unit is actuated.

• Lubrication of the guides:

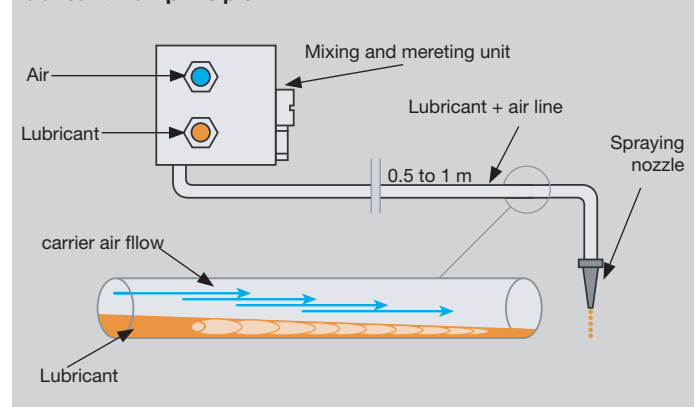
The same metering system, connected to the same central unit, is used to directly inject a metered quantity of lubricant through a tube and connector fitted on the guides.



Advantages of 'lubricant + air' lubrication

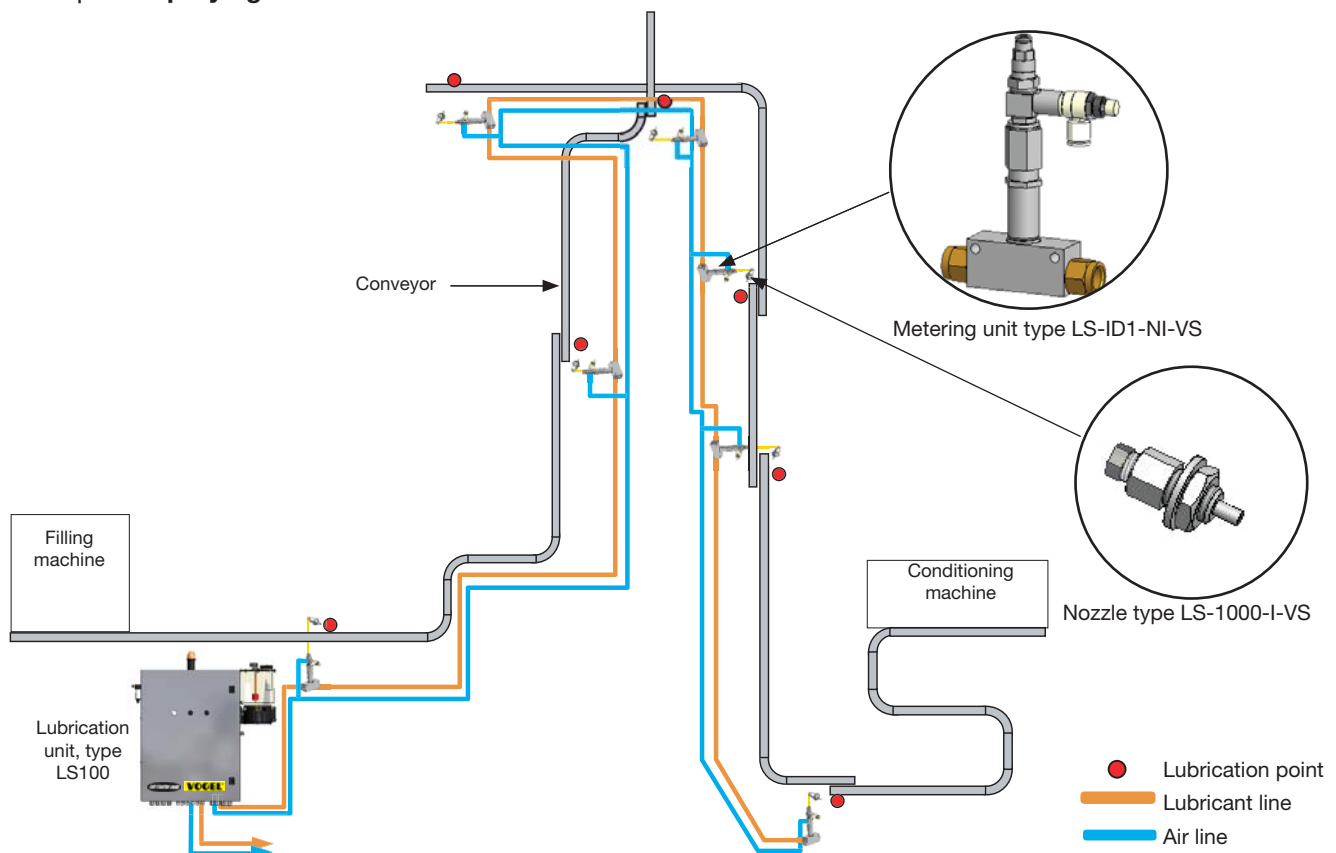
- Lubricant is metered with adjustable piston metering systems, the output rate is independent from length, back pressure, lubricant viscosity (temperature).
- It enables to avoid brushes or connectors in contact with the belt (no lubricant accumulation on the lubrication point, no wear of parts)
- The lubricant injection can last several minutes in order to coat regularly all the surface of the belt or guides even with very small quantity of lubricant (often less than one cubic centimetre).

Lubricant + air principle

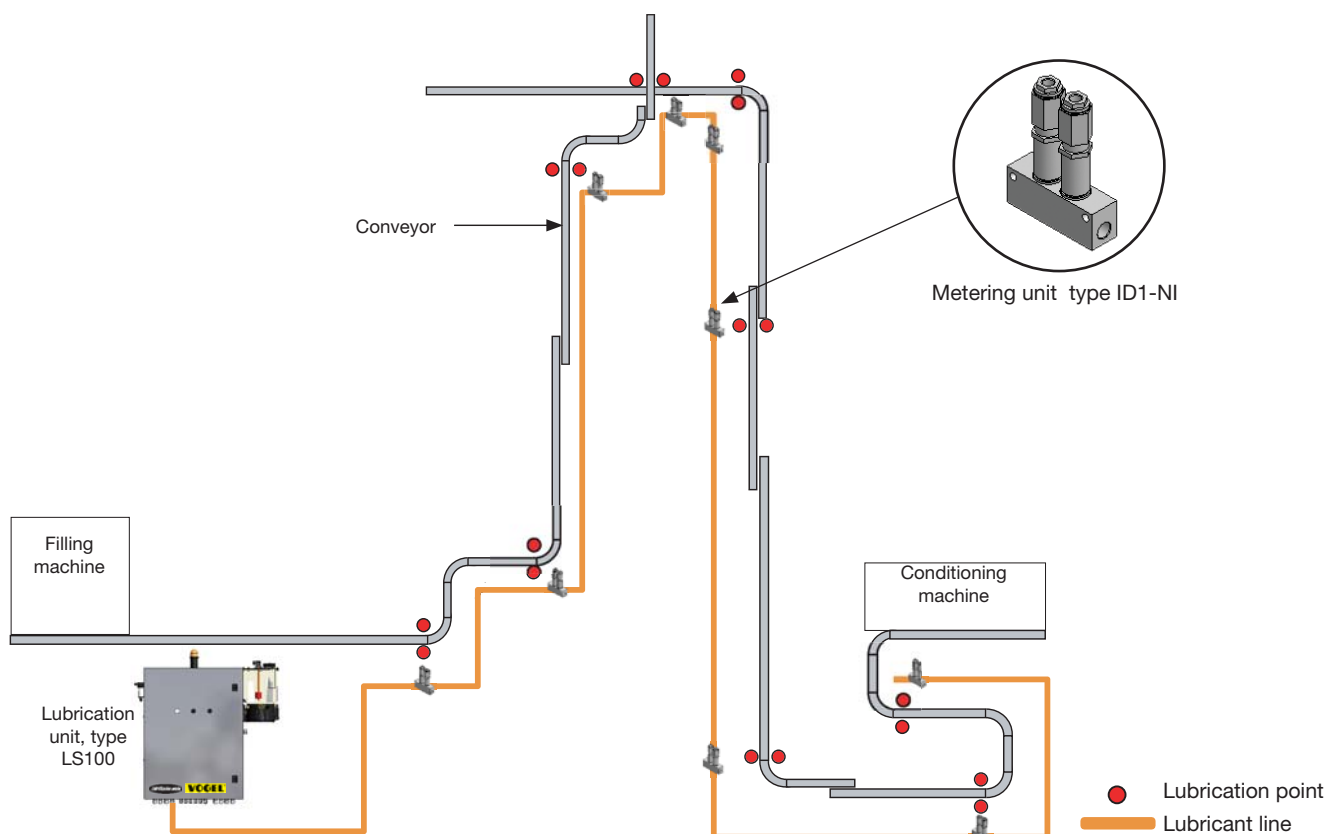


Examples of a conditioning conveyor unit with a 'dry lubrication' system

Example 1: **Spraying line** for the belt surface



Example 2: **Injection line** for the chain guides



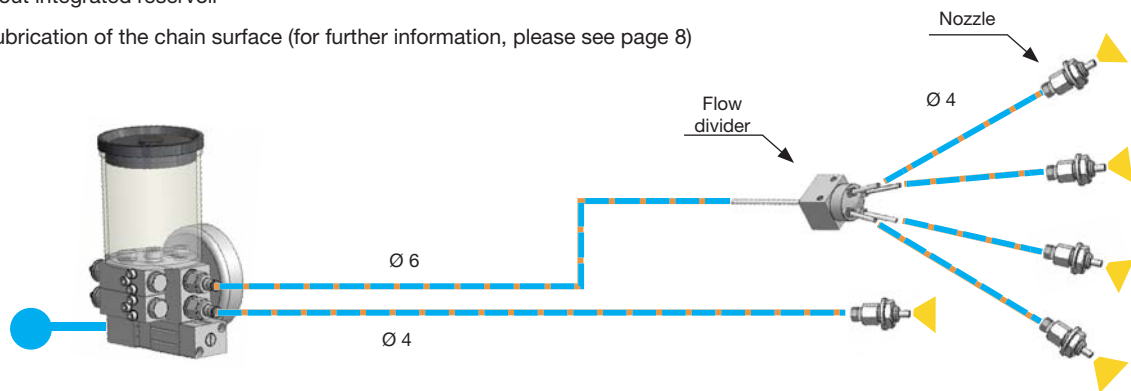
Dry lubrication product range

• Dry lubrication units for small size conveyor installations

LS.VE1

- 1 or 2 outlets
- 1 to 12 lubrication points (when using flow dividers)
- distance between the unit and the nozzles: max. 4 meters
- with or without integrated reservoir

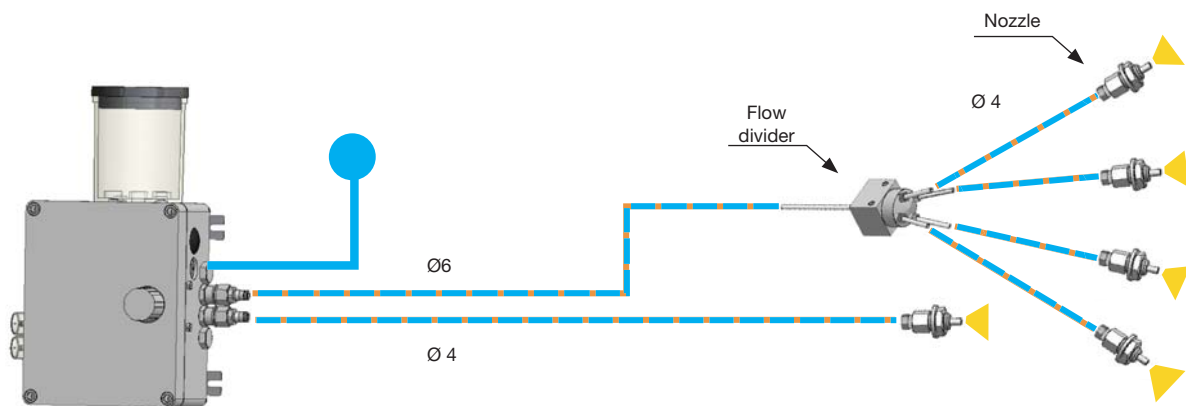
Only for the lubrication of the chain surface (for further information, please see page 8)



LS.VE2

- Plastic housing
- 1, 2, 3 or 4 outlets
- 1 to 24 lubrication points (when using flow dividers)
- distance between the unit and the nozzles: max. 4 meters
- with or without integrated reservoir

Only for the lubrication of the chain surface (for further information, please see page 8)

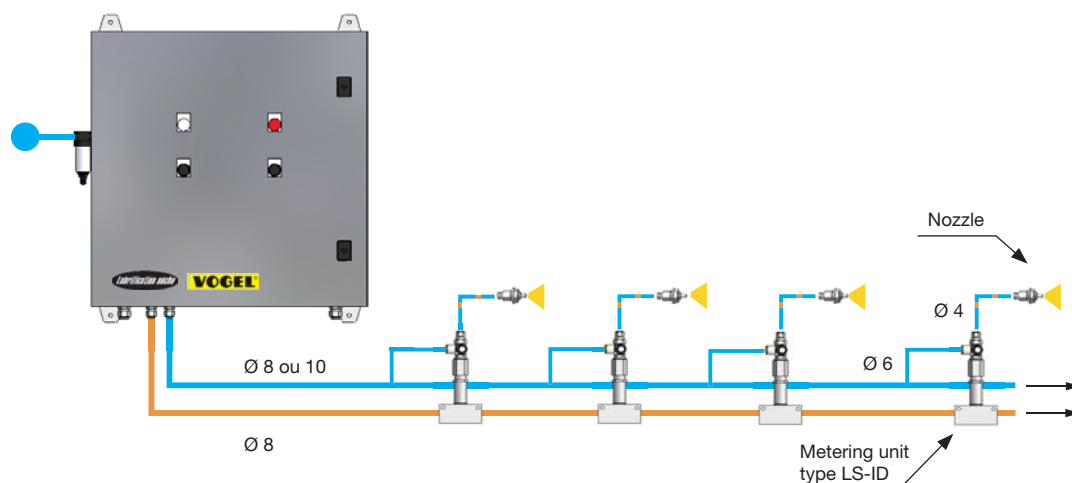


• Single line dry lubrication unit for medium size conveyor installations

LS50

- Single line lubrication unit with integrated programmable control unit
- Stainless steel housing
- 1 to 50 lubrication points with volumetric metering unit
- Distance between the unit and the nozzles: max. 50 meters

For the lubrication of the chain surface and guides (for further information, please see page 10)

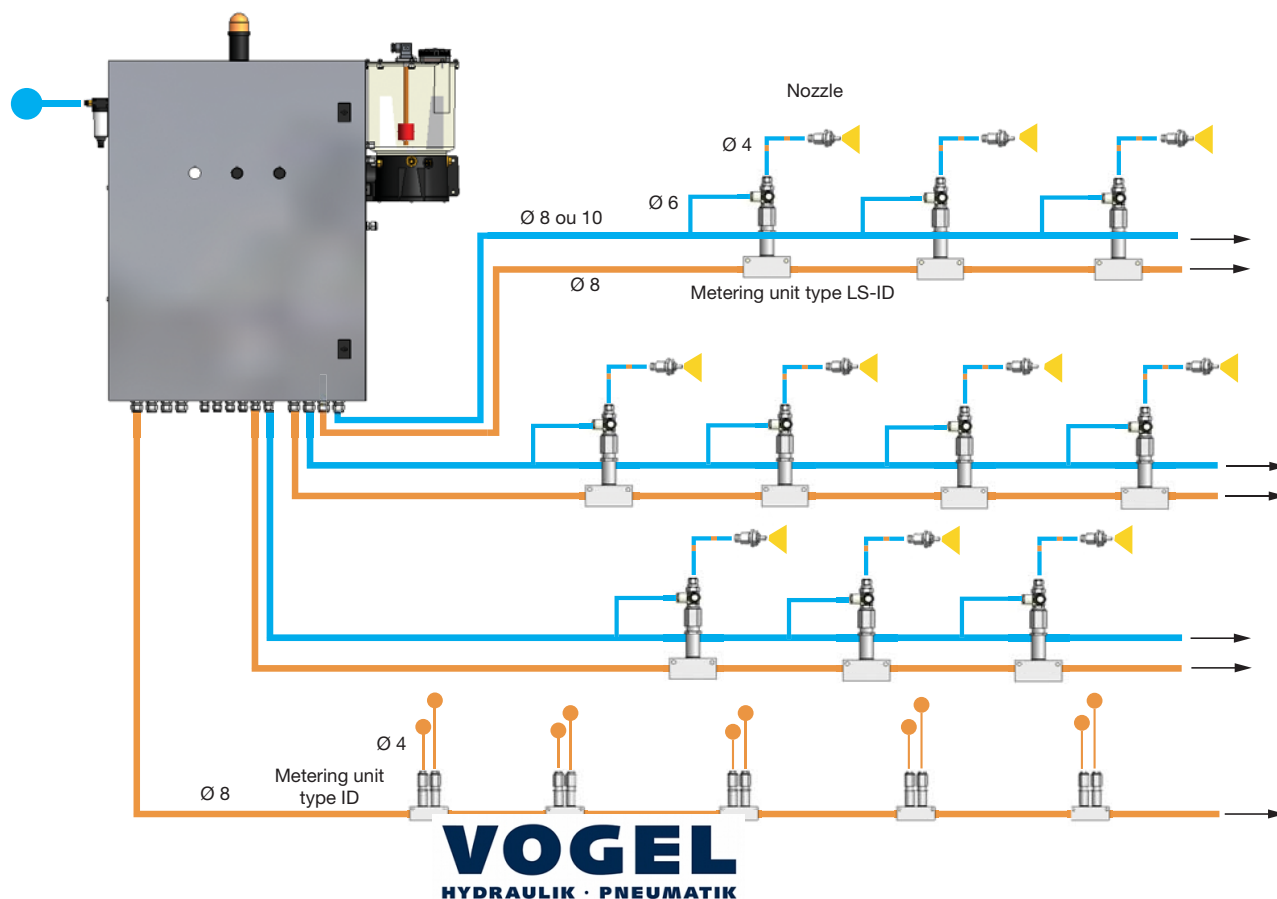


• Multiline dry lubrication units for large size conveyor installations

LS100

- Multiline lubrication unit with integrated control unit, every line independently adjustable
- Up to 8 independent lines
- Stainless steel housing
- 1 to 50 lubrication points with volumetric metering unit for every line,
- Distance between the unit and the nozzles: max. 50 meters

For the lubrication of the chain surface and guides (for further information, please see page 12)



Dry lubrication units for small size conveyor installations



LS-VE1



LS-VE2

These dry lubrication units are dedicated to small size conveyor installations. A single unit can lubricate from 1 to 24 lubrication points located up to max. 4 meters from the central unit.

Function

Pneumatically actuated piston pumps are delivering small metered volume of lubricant. The lubricant is transported through a plastic tube to a nozzle by means of low pressure carrier air. The air is also delivered and regulated by the unit itself. The lubricant is sprayed directly and precisely on the lubrication point.

There are two different types of dry lubrication system for small conveyor installations:

- LS-VE1: compact model, with integrated 0.3 liter reservoir, 1 or 2 outlets,
- LS-VE2: compact model with plastic housing, with integrated 0.3 liter reservoir, from 1 to 4 outlets,

Every outlet of the unit can be connected to a 'lubricant + air' flow divider, thus increasing the number of outlets (up to 6). For further information, please see page 13.

Technical data

Number of outlets	
LS-VE1	1 or 2
LS-VE2	1 to 4
Flow rate per outlet	0 - 30 mm ³ /pulse
	setting per metering ring or thumb wheel
Working frequency max.	3 Hz
Reservoir	integrated 0,3 l
	or external reservoir ¹⁾
Material	plastic, aluminium, brass, Viton seals
Air supply	dry and filtered air, 4-7 bars
Voltage ²⁾	please see voltage key
	(IP 65, CE marking)
Operating temperature	-10 to +60 °C
Max. air consumption for a 4 outlet unit	300 NI/min / 6 bar

1) Reservoir to be ordered separately,

2) According to the solenoid valve, to be ordered separately, please see 15

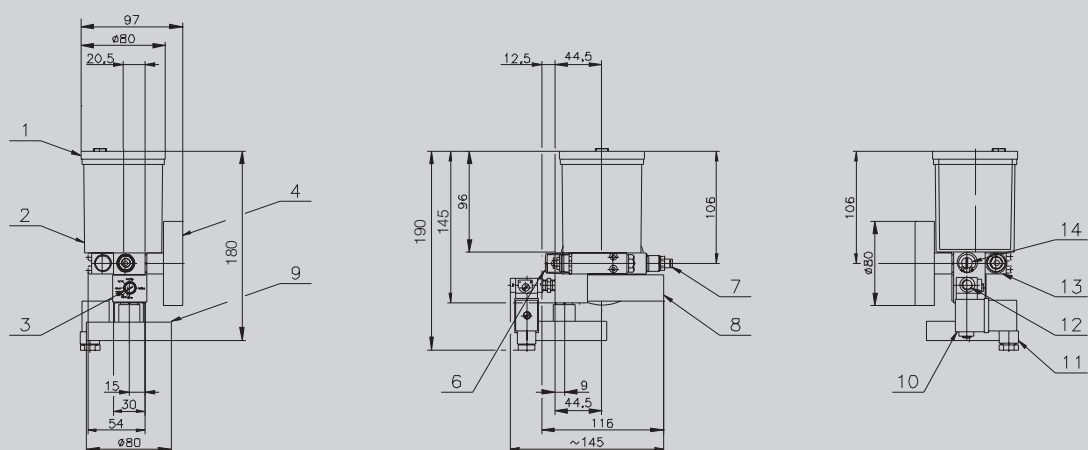
Order information

Components and accessories for the lube circuit to be ordered separately, please see page 14

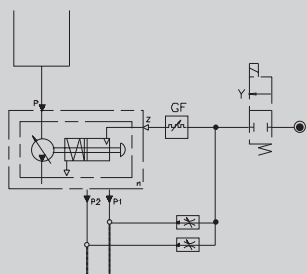
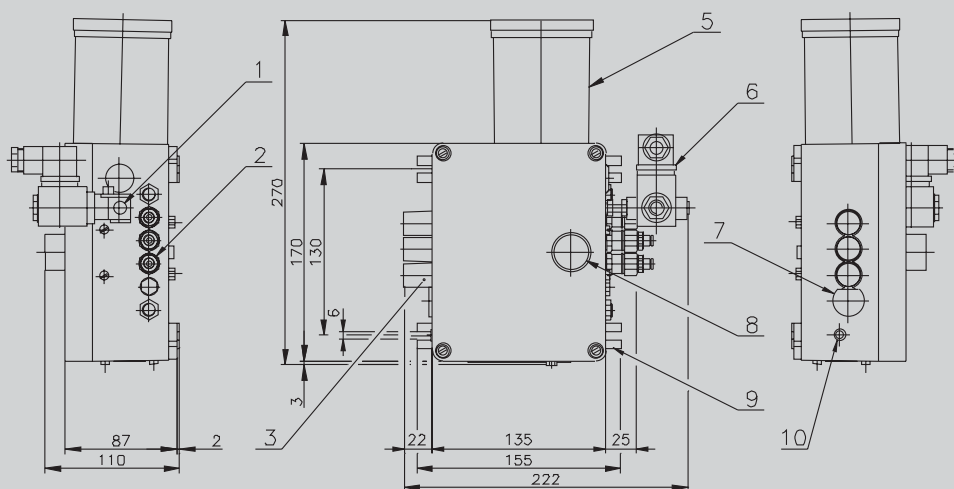
Order No.	metering ring	thumb wheel	number of outlets				integrated reservoir 0,3 l	external reservoir
			1	2	3	4		
LS-VE1-PA1-00	•		•					•
LS-VE1-PA2-00	•			•				•
LS-VE1-PB1-00		•	•					•
LS-VE1-PB2-00		•		•				•
LS-VE1-PA1-10	•		•				•	
LS-VE1-PA2-10	•			•			•	
LS-VE1-PB1-10		•	•				•	
LS-VE1-PB2-10		•		•			•	
LS-VE2-PA1-00	•		•					•
LS-VE2-PA2-00	•			•				•
LS-VE2-PA3-00	•				•			•
LS-VE2-PA4-00	•					•		•
LS-VE2-PB1-00		•	•					•
LS-VE2-PB2-00		•		•				•
LS-VE2-PB3-00		•			•			•
LS-VE2-PB4-00		•				•		•
LS-VE2-PA1-10	•		•				•	
LS-VE2-PA2-10	•			•			•	
LS-VE2-PA3-10	•				•		•	
LS-VE2-PA4-10	•					•	•	
LS-VE2-PB1-10		•	•				•	
LS-VE2-PB2-10		•		•			•	
LS-VE2-PB3-10		•			•		•	
LS-VE2-PB4-10		•				•	•	

Order example:
Dry lubrication unit type LS-VE1
with 2 outlets, setting with
metering ring, integrated
reservoir,

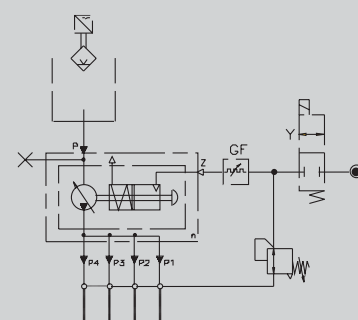
Order No.: **LS-VE1-PA2-10**

**LS-VE1**

- | | |
|---|------------------------------|
| 1 Reservoir plug | 11 Solenoid valve connector |
| 2 Reservoir, 0.3 l | 12 Air inlet |
| 3 Setting screw for pneumatic pulse generator | 13 Pneumatic micropump |
| 4 Fixing (back) | 14 Carrier air setting screw |
| 5 Solenoid valve (to order separately) | |
| 6 Protecting cap for micropumps metering ring | |
| 7 Outlet (1 or 2) | |
| 8 Pneumatic pulse generator | |
| 9 Fixing (below) | |

**LS-VE1****LS-VE2**

- | |
|--|
| 1 Air inlet |
| 2 Outlet (1 to 4) |
| 3 Protecting cap for micropumps metering ring or thumb wheel |
| 5 Reservoir, 0.3 l |
| 6 Solenoid valve (to order separately) |
| 7 Plug |
| 8 Pressure regulating valve |
| 9 Fixing brackets |
| 10 Access port for pulse generator adjustment |

**LS-VE2**

Single line dry lubrication unit for medium size conveyor installations



LS50KW6A02+428

Single line dry lubrication unit for medium size conveyor installations

This type of unit has been designed to lubricate medium size conveyor installation. It can lubricate at the same time the belt surface and the guide. This unit can lubricate up to 50 points at a maximal distance of 50 m.

Function

When the control unit is triggering a new lubrication cycle, a gear pump is delivering lubricant under pressure to the volumetric feeders located close to the lubrication points. The quantity of lubricant delivered to the lube point is then precisely metered.

Guide lubrication: The lubricant is directly injected into the guide via a special connector.

Belt surface spray lubrication: Lubricant is transported to the nozzle thanks to a low pressure carrier air coming from a separate circuit and regulated by means of an air flow regulating valve mounted on the outlet of the metering system. The nozzles are spraying microdroplets of lubricant on the surface of the belt.

The metering quantity can be adjusted from 0.025 cm³ to 0.5 cm³ separately for every outlet.

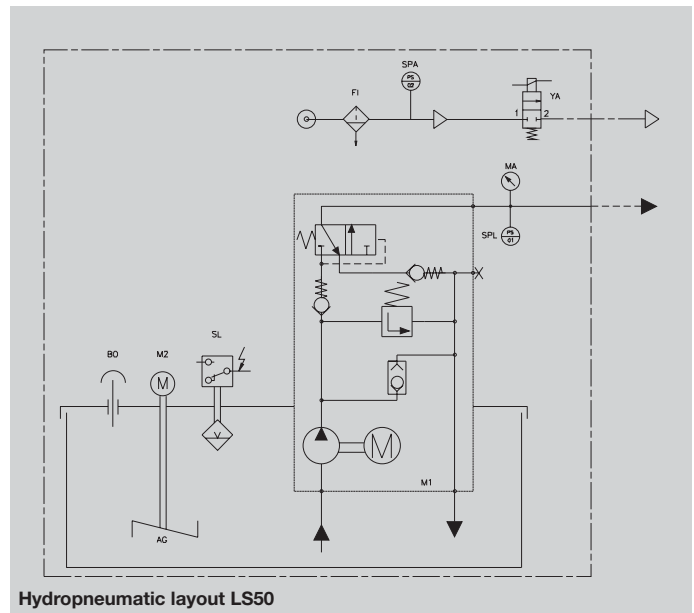
Order information

Components and accessories for the lube circuit to be ordered separately, please see page 14

- Dry lubrication unit for medium size conveyor installations, with integrated control unit and mounted into a stainless steel box.

Order No.

LS50KW6A02+428

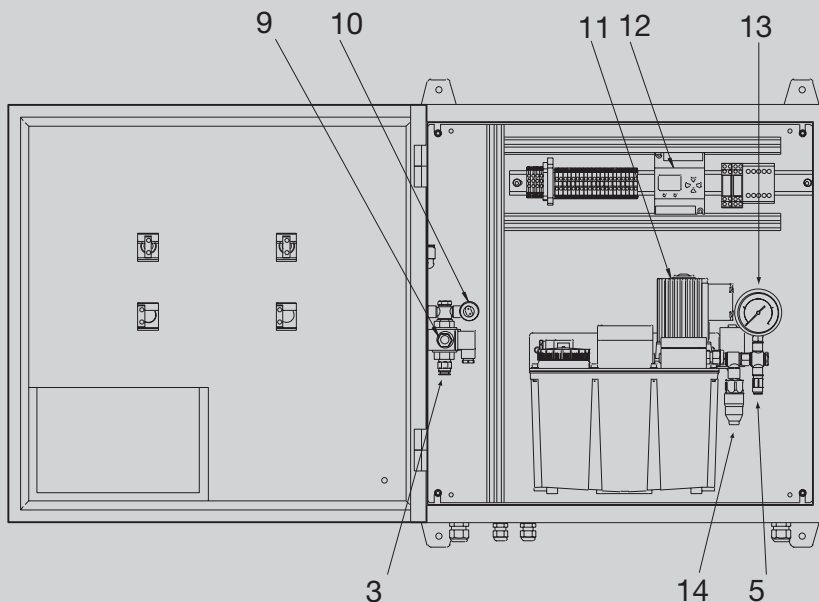
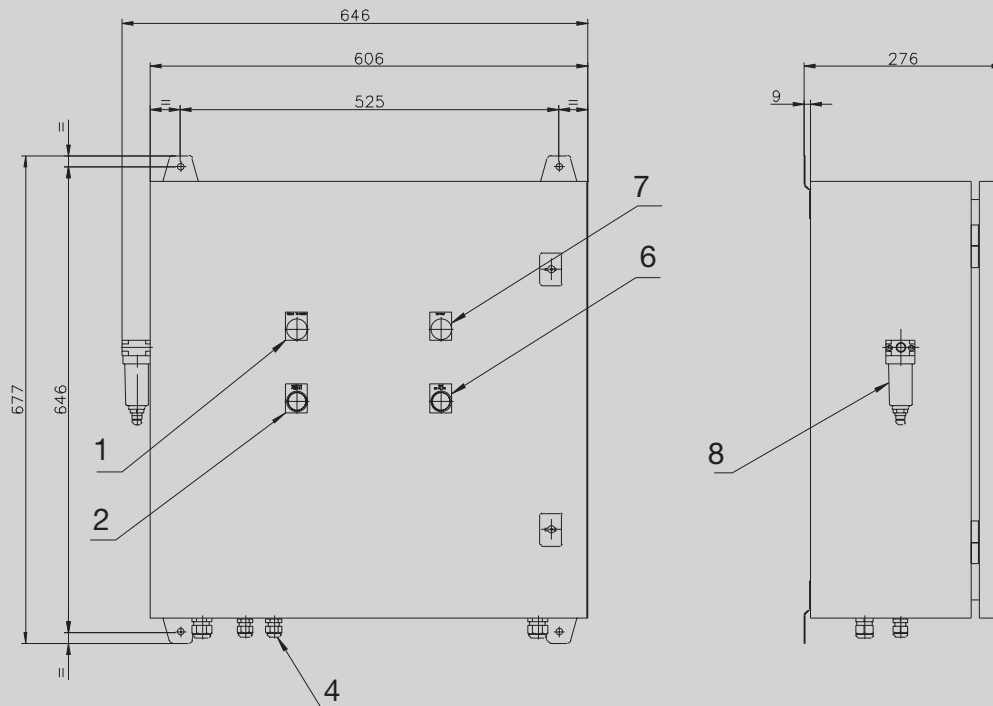


Hydropneumatic layout LS50

Main technical data

All the following components are mounted into a stainless steel box:

- a gear pump unit with integrated 6 liter reservoir, minimal level switch, electric agitator, 0,2 l/min -16 bars - single phase motor 230 V - 60 Hz,
- a programmable control unit to control and monitor the line, with the following functions:
 - interval time management between the lubrication cycles,
 - monitoring of lubricant pressure build-up and relief during the lubrication cycle,
 - air pressure monitoring,
 - lubricant minimal level monitoring,
- a control solenoid valve for the carrier air,
- an air filter,
- an air pressure switch,
- a lubricant pressure switch,
- a manometer to check the lubricant pressure,
- signal lights and push-buttons on the front of the box.

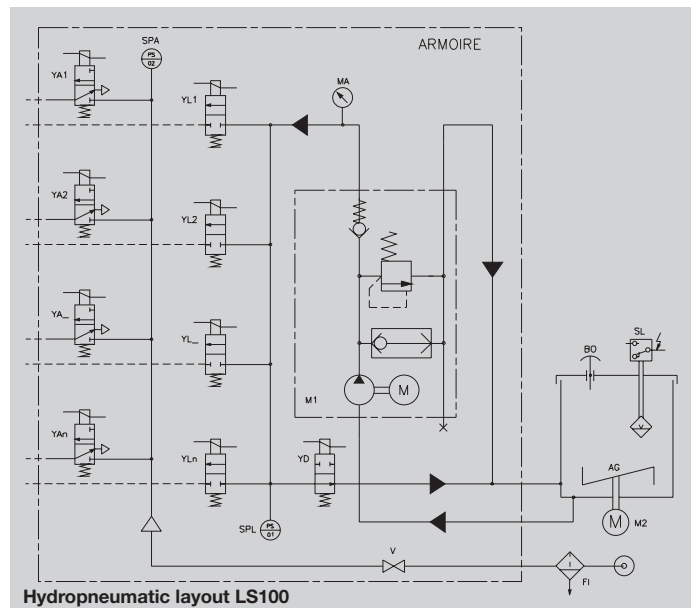


- 1 Signal light "LIVE"
- 2 Push-button "Forced operation"
- 3 Air outlet
- 4 Cable gland, electrical connection
- 5 Lubricant outlet
- 6 Push-button "RESET"
- 7 Signal light "FAILURE"
- 8 Air inlet filter
- 9 Solenoid valve
- 10 Air pressure switch
- 11 Pump with reservoir
- 12 Control unit
- 13 Manometer
- 14 Lubricant pressure switch

Multiline dry lubrication units for large size conveyor installations



Dry lubrication unit type LS100



Hydropneumatic layout LS100

Multiline dry lubrication unit for large size conveyor installations

This type of unit is designed to lubricate independently different conveyor lines. It can lubricate at the same time the belt surface and the guide. According to the model, a unit can lubricate up to 8 separate lines.

This unit can lubricate up to 200 points at a maximal distance of 50 m.

Function

When the control unit is triggering a new lubrication cycle, a gear pump is delivering lubricant under pressure to the volumetric feeders located close to the lubrication points. The quantity of lubricant delivered to the lube point is then precisely metered.

Guide lubrication: The lubricant is injected directly into the guide via a special connector.

Belt surface spray lubrication: Lubricant is transported to the nozzle thanks to a low pressure carrier air coming from a separate circuit and regulated by means of an air flow regulating valve mounted on the outlet of the metering system. The nozzles are spraying microdroplets of lubricant on the surface of the belt.

The metering quantity can be adjusted from 0.025 cm³ to 0.5 cm³ separately for every outlet.

Main technical data

All the following components are mounted into a stainless steel box:

- a gear pump unit - 0,2l/min - 16 bars - single phase motor 230 V - 60 Hz,
- a programmable control unit to control and monitor every line, with the following functions:
 - interval time management between the lubrication cycles,
 - monitoring of lubricant pressure build-up and relief during the lubrication cycle,
 - air pressure monitoring,
 - lubricant minimal level monitoring,
- control solenoid valve for the air and lubricant inlets of every line,
- an air inlet filter,
- a manometer for lubricant.

Outside the stainless steel box:

- a 6 liter reservoir with minimal level switch - transparent and cylindrical shape, motorized agitator, easy sight control of the lubricant.

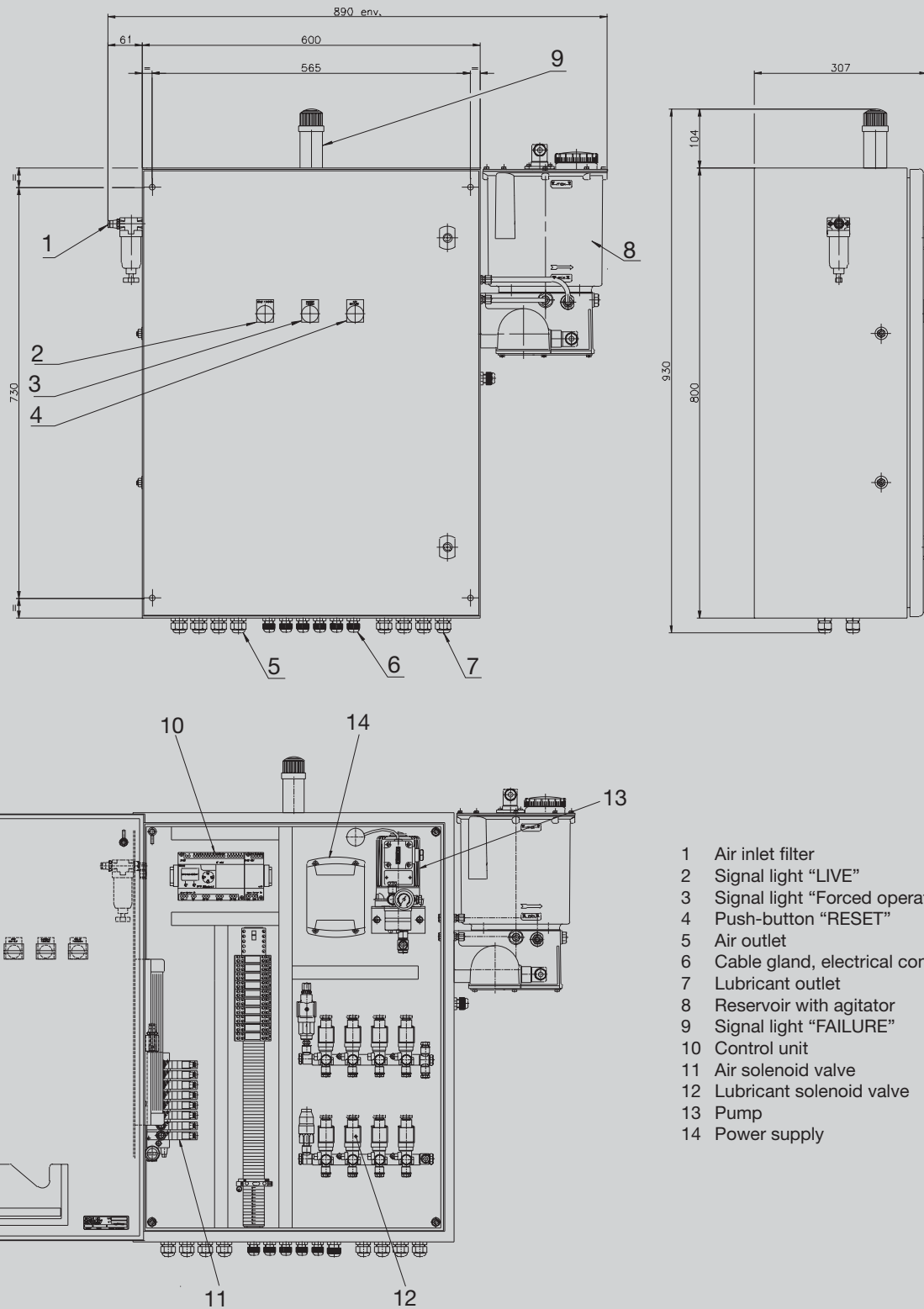
Order information

Components and accessories for the lube circuit to be ordered separately, please see page 14

Order No.	number of outlets
LS102KW6A02+__*	2
LS104KW6A02+__*	4
LS106KW6A02+__*	6
LS108KW6A02+__*	8

*) Write the voltage key when ordering

(428 : 115 V AC, 50/60 Hz ; 429 : 230 V AC , 50/60 Hz ; 924 : 24 V CC)



- 1 Air inlet filter
- 2 Signal light "LIVE"
- 3 Signal light "Forced operation"
- 4 Push-button "RESET"
- 5 Air outlet
- 6 Cable gland, electrical connection
- 7 Lubricant outlet
- 8 Reservoir with agitator
- 9 Signal light "FAILURE"
- 10 Control unit
- 11 Air solenoid valve
- 12 Lubricant solenoid valve
- 13 Pump
- 14 Power supply

Accessories

Metering unit

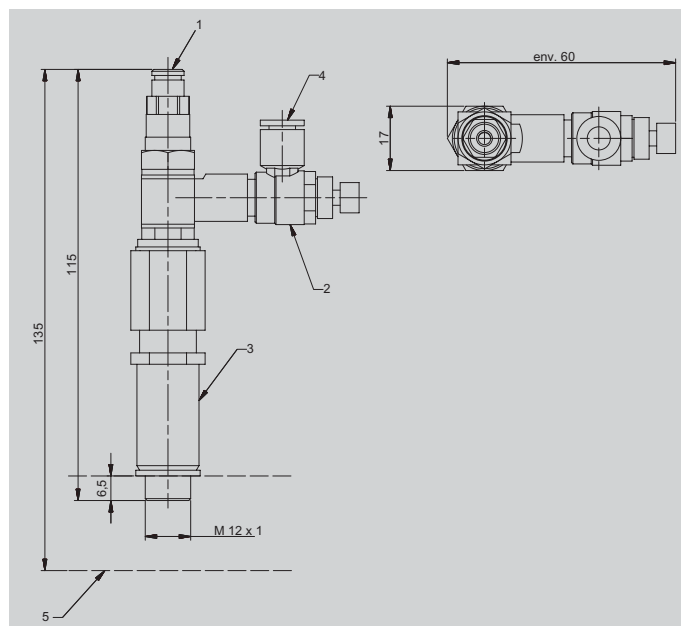
- 1 Air + lubricant outlet, OD 4 - quick-release coupling
- 2 Air flow regulating valve
Flow rate : 230 l/min
Pressure max. 10 bars
min. 1 bar
- 3 Volumetric feeder, 1 outlet
Adjustable flow rate: 0.025 to 0.5 cm³/stroke
- 4 Air inlet , OD 6
- 5 Mounting manifold for metering unit

Metering unit

with quick-release coupling Ø 4

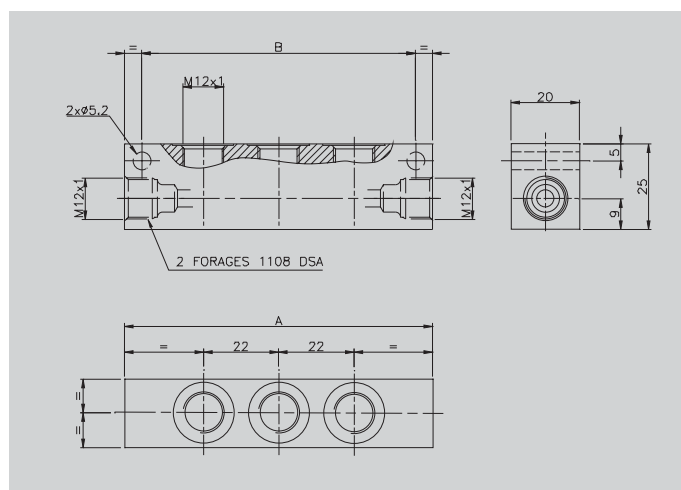
Order No.

LS-ID1-NI-VS



Manifold

Nber of outlets	Size A	Size B	Order No.
1	55	45	LS-1
2	68	58	LS-2
3	90	80	LS-3



Nozzle

- 1 Quick-release coupling for tube OD 4,

Nozzle

Brass

Stainless steel

To be connected with flow divider

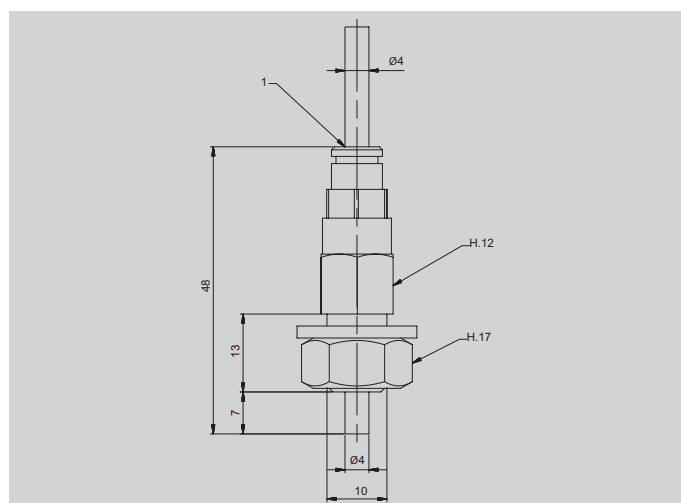
Brass

Order No.

LS-1000-VS

LS-1000.I-VS

LS-1000-1-VS

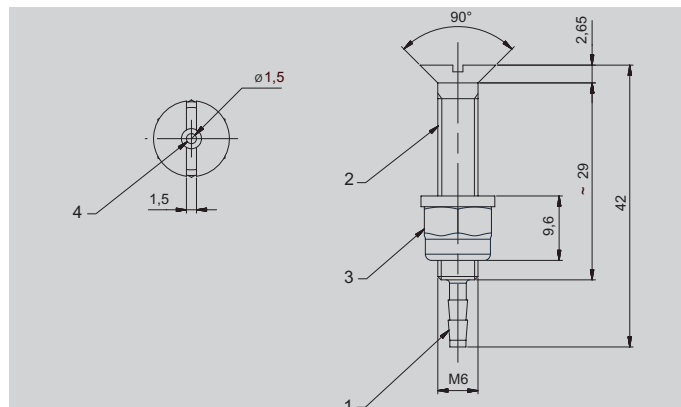


Lubricating screw for chain guide

- 1 Lubricant inlet
Splined end for tube ID 2.5
- 2 F S screw, M6
Material: brass
- 3 Clamping nut and washer
Material: stainless steel
- 4 Outlet
Inner drilling Ø 1,5

Order No.

LS-10

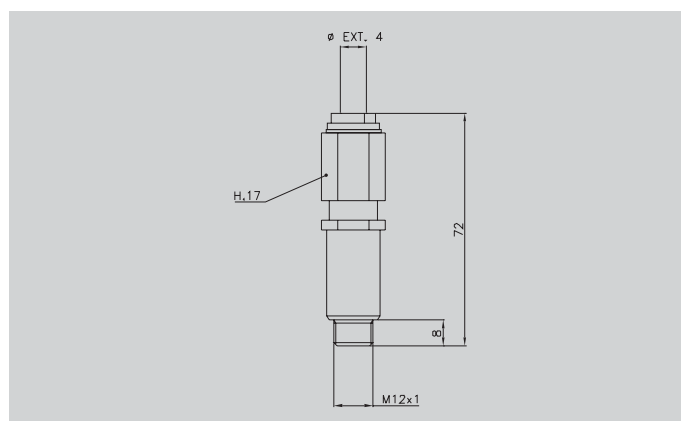


Metering unit for lubricant injection into the guide

Volumetric feeder, 1 outlet
Adjustable flow rate: from 0.025 to 0.5 cm³/stroke

Order No.

ID.1.NI



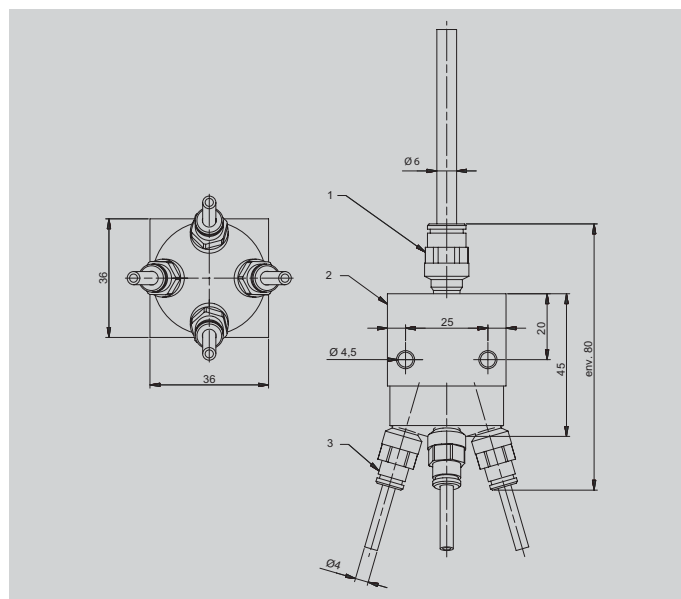
Flow divider

- 1 Inlet
Quick-release connector for tube OD 6
- 2 FFlow divider
Number of outlets: 2, 3, 4, 5 or 6
- 3 Outlet
Quick-release connector for tube OD 6

Flow divider

Order No.

2 outlets	LS-169-000-182
3 outlets	LS-169-000-183
4 outlets	LS-169-000-184
5 outlets	LS-169-000-185
6 outlets	LS-169-000-186



Air control solenoid valve

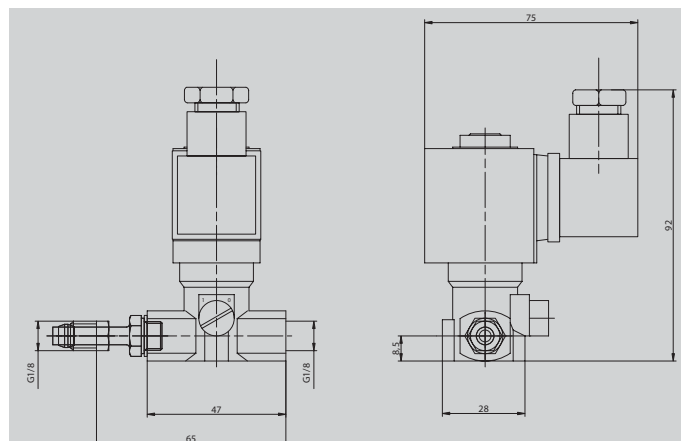
Control solenoid valve for the air supply of the dry lubrication unit type LS-VE

Flow rate max. 260 NI / min
Pressure < 10 bar
Power 14 VA
Protection IP 65
Electric connection PG11
Operating position indifferent

Order No. AC-4226 + _ _ _ *

*) When ordering, add the voltage key to the Order No.

(428 : 115 V AC, 50/60 Hz ; 429 : 230 V AC , 50/60 Hz ; 924 : 24 V CC)

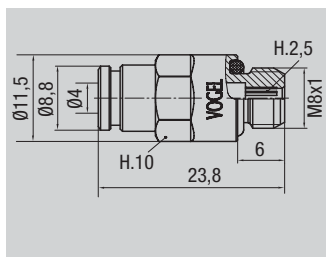


Accessories for lubricant line

Quick-release coupling

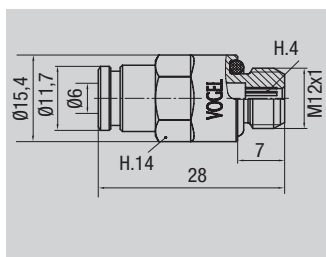
Quick-release coupling

M8x1, Ø 4

Order No. **404-003-VS**

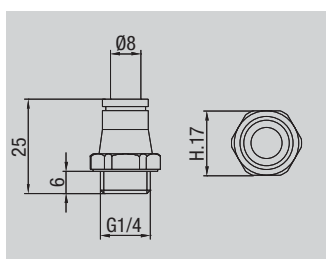
Quick-release coupling,

M12x1, Ø 8

Order No. **408-162-VS**

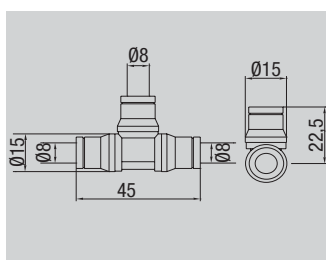
Quick-release coupling,

M G 1/4, Ø 8

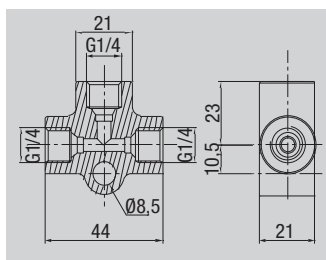
Order No. **RI.820**

Tee-connector

Tee-connector, TU8-TU8-TU8

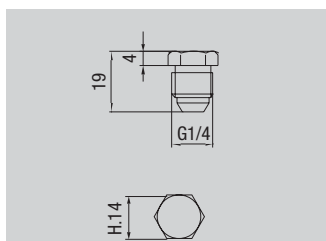
Order No. **OT.815**

Tee-connector, 3 x G 1/4, D 8

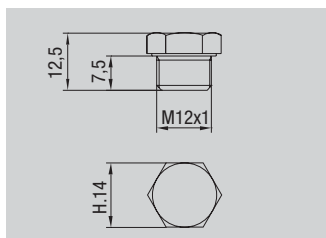
Order No. **NU308**

Plug

Plug, G 1/4, D 8

Order No. **BO002**

Plug, M 12x1

Order No. **BO800**

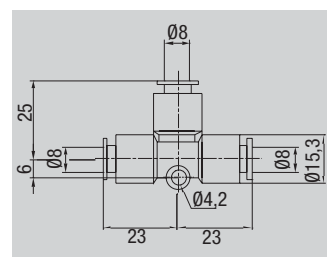
Seal

Order No. **JO.801**

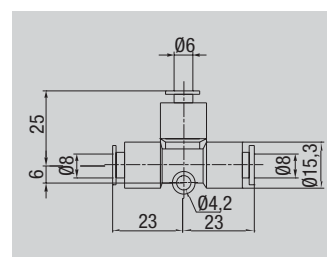
Accessories for air line

Tee-connector

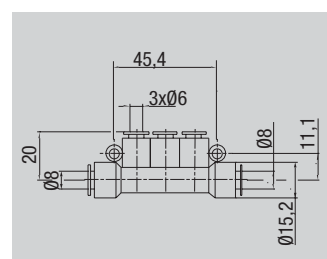
Tee-connector, TU8-TU8-TU8

Order No. **AC-4528**

Tee-connector, TU8-TU6-TU8

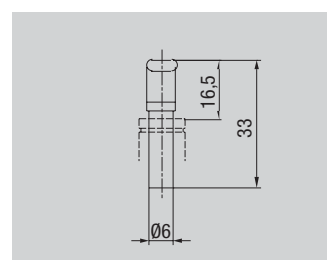
Order No. **AC-4503**

Tee-connector, TU8-3TU6-TU8

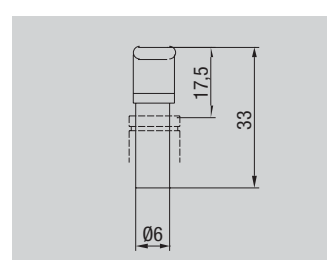
Order No. **AC-4504**

Plug

Plug, air line, TU6

Order No. **BO.606**

Plug, air line, TU8

Order No. **AC-3409**

Reservoir

Reservoir 6 l, with agitator

Order No. **LS-TK602**

Tubes

Material	Color	Diameter	Order No.
Polyamide	natural	4x0.75 mm	TU.2.5x4.RL
"	natural	6x1 mm	TU.4x6.RL
"	green	8x0.85 mm	TU.5,5x8.BESV.
"	black	8x0.85mm	TU.5,5x8.BESN.
"	natural	8x1mm	TU.6x8.RL
"	blue	8x1mm	TU.6x8.RLB
"	black	8x1mm	TU.6x8.RLN
"	yellow	8x1mm	TU.6x8.RLJ
"	red	8x1mm	TU.6x8.RLR
"	white	8x1mm	TU.6x8.RLBL

Tube strap

Flat strop 70 x 2,5 x 1 (100 pieces)

Order No. **AC.1559**

Strap 4,7 x 186 (100 pieces)

Order No. **AC.3897**

Setting screw-driver

for the metering unit type LS-ID

Order No. **LS-2043**

Please consult the following leaflets to find individual components for VOGEL chain lubrication systems:

1-4101-US GVP, chain lubrication
1-4105-US BR, brushing device (for chain)
1-0103-US Fittings and accessories
1-0103-1-US Connection System — plug-in connectors

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