

# SPRAY LUBRICATION SYSTEM OF OPEN GEARS

## APPLICATION

The spray lubrication systems for lubricating open gears are used for permanent, regular lubrication of lubricant-air mixtures for wheel gearings of various machines, engineering technologies and equipment. The system doses the lubricant regularly and evenly onto surfaces of geared teeth using spray nozzles, in which the lubricant is mixed with the pressure air flow.

## DESCRIPTION

The basic part of the spray lubrication system for relatively less wide gears are spray lubrication stations (e.g. lubrication pump PMP, UCF,Z1, BEG-R, BPG), automatic control device and open gear lubrication box.

The open gear lubrication box is made of steel sheet with surface protection from a polyester powder paint. It consists of spray nozzles TSA, progressive distributor BVA, electric solenoid valve, pressure switch and distribution pipeline. The lubricant and air supply is through a hydraulic pipe union with the pipe diameter of 10 mm.

The lubricant flows into the progressive distributor BVA, which contains an electric indication of operation to check the lubricant dosing. The distributor distributes the lubricant optimally and exactly into the individual spray nozzles TSA. The nozzles can be adjusted according to application, their rake angle can be changed in the range of  $\pm 20^\circ$  and the distance from the lubricated point can be changed in the range from 0 to 40 mm. The air supply is controlled on the electrically operated solenoid valve. The air flows from this valve directly into the spray nozzles. There is a pressure switch placed on the distribution air line for the loop check of the air flow.

The lubricant and pressure air are mixed in the spray nozzles by breaking the lubricant particles away by the pressure air flow. The spray nozzles do not allow to control the air and lubricant quantity. The lubricant and air flow rate are given by the used elements in the particular used lubrication system. The lubricant and air flow rate are not allowed to be exceeded. These values are given in the table.

The open gear lubrication boxes are designed as required by the customer and the general design and technical parameters of the system must be adapted to particular conditions and needs of the defined technological equipment.

## SERVICE AND MAINTENANCE

The box is to be fixed using 3 screws M12 on the pre-prepared backplate. During installation, it is necessary to observe cleanness of the pipeline, i.e. remove burrs and other junks from the pipes. All the electrical wiring must be made according to the wiring diagram and in accordance with the valid standard. Use lubricants intended for air applications for applying on open surfaces. The lubrication pump does not require any special maintenance. Repairs on the lubrication pump must be carried out only when the pressure air supply is disconnected. The operator or a responsible person designated by the user must carry out a visual inspection of the outside of the lubrication pump every time the device is put into operation, primarily inspection of connections of the hydraulic circuit for leakage and of the wiring for integrity.

During continuous operation, it is recommended to check the lubrication circuit for leakage and the lubricant and air filter for clogging. For easy visual inspection of the spray nozzles, you can loosen the four-tip nut and fold back the box.

## TECHNICAL DATA

|   |  |  |
|---|--|--|
| Maximum pressure                              | 200 bar  |  |
| Working pressure                              | 120 bar  |  |
| Open gear width                               | max. 300 mm                                    |  |
| Nominal dose quantity                         | 0.2 to 20 cm <sup>3</sup> /min./nozzle         |  |
| Air consumption                               | 200 dm <sup>3</sup> /min. (free flow)          |  |
| Air pressure range                            | 3 to 6 bar                                     |  |
| Installation distance from lubricated surface | 150 to 200 mm                                  |  |
| Spray application area for 1 nozzle           | ellipsis, major axis 150 mm, minor axis 100 mm |  |
| Air connection                                | for tube Ø 10 mm                               |  |
| Lubricant connection                          | for tube Ø 10 mm                               |  |
| Lubricant flow indication                     | 24V DC, 200mA                                  |  |
| Pressure switch indication                    | max. 42V DC, 500mA                             |  |
| Solenoid valve supply                         | 24V DC, 11.2W                                  |  |
| Lubricant                                     | grease   | max. NLGI-1 (for NLGI-2 and higher contact the manufacturer) |
|   | oil  | min. 50 mm <sup>2</sup> /sec.                                |
| Weight  | 12 kg  |  |

**Spray nozzle TSA id. no. 9 53 4851**

