

10,000 hours life endurance test-passed – Metering pumps with planetary gears made by IMS Gear



Fig. 1: Model of the metering pump

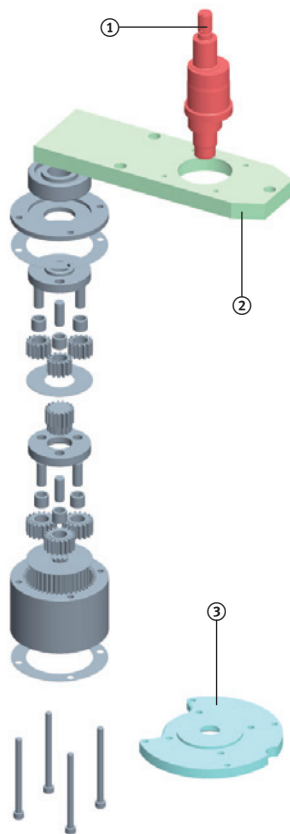


Fig 2: Structure PLG by IMS Gear



Fig 3: Complete gear unit

Diaphragm metering pumps are the first choice for metering fluids in systems where ultimate precision and long-term operational safety have absolute priority. For instance in applications involving water conditioning, purification and processing plants and in the textile industry. To guarantee absolute exact low-pulse metering, the present application relies on an ultramodern micro-processor control in connection with an eccentric pump. Planetary gears made by IMS Gear ensure the correct drive.

One major advantage of planetary gears over other gear types is the fact that the high reduction rate and the compact design of planetary gears having a high power density, accomplished by distributing the torque on several planetary wheels supported inside the ring gear.

The principle of the metering pump demonstrates how the combination of gears from IMS Gear's modular system, fitted with a number of adapted parts, is also capable of meeting highly specific customer requirements at reasonable costs. Here the eccentric bearing at the output side and the life expectancy of over 10,000 hours were solved as follows:

Performance data

The smaller pump uses a 2-stage PM 52 planetary gear with an output torque of 12 Nm and a gear reduction of $i=25:1$.

The next size pump uses a 2-stage PM 81 planetary gear with 60 Nm and a gear reduction of $i=25:1$.

Both the first and second stage are fitted with metal planetary wheels, while the ring gear is made of steel.

Standard parts used

- Motor pinion
- Ball bearing
- Ring gear

- Planet carrier
- Planetary wheels (In addition, the PM 81 features needle sleeves in both stages which ensure higher efficiency in the bearing and a longer service life.)

Adapted parts

• Motor flange (Fig. 2, No. 3)

Due to the restricted space inside the pump, the aluminum motor flange has a recess section on one side which create additional space for routing the cables for the micro-processor-controlled motor.

• Output bearing flange (Fig. 2, No. 2)

To absorb the high, variable radial forces generated by the eccentric pump, a second two-part output bearing flange with a special guide device had to be designed. After mounting the eccentric pump, the second section of the output bearing is bolted in place by the customer (Fig. 3).

• Output shaft (Fig. 2, No. 1)

The special eccentric output shaft serves the exact positioning of the pump stroke unit.

As you can see: standardization and customization are not necessarily opposites. Contact us if you are also interested in an "individual standard planetary gear" from our modular system.