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1. Application description

The peristaltic pumps are a kind of volumetric pump used for a variety of fluid pumping. The fluid is contained in a flexible tube mounted into the body of the pump. The principle of pumping, called *peristalsis*, is based on the alternation of compression and relaxation of the tube; this alternation of state generates a constant but not consistent fluid flow. This process makes the peristaltic pump functional for accurate dosages.

This kind of pump provides an equal quantity of fluid every time, because it is completely contained into a reinforced flexible hose and never comes in contact with moving parts. A roller (the eccentric part of the rotor) passes over the entire length of the tube creating a total seal between the suction and discharge sides of the pump. As the pump's rotor turns, this sealing pressure moves along the tube or hose forcing the product to move away from the pump and into the discharge line. When the pressure has been released the hose or tube recovers creating a vacuum, which draws the product into the suction side of the pump, this is called *priming mechanism*.

Combining these suction and discharge actions it results in a self priming positive displacement pump, also called peristaltic pump.

Features of the drive

The rotor, which drives the pump and moves the fluid inside the tube, is motorized by a motor which can vary power and type, depending on the flow that is wanted to obtain as output and the density of the fluid itself. The drive is usually formed by a 4-pole motor, which can be of different sizes depending on the size of the pump; depending on the application, an inverter can also be used to supply the motor. To complete the drive there is the gear reducer which provides the necessary torque to the rotor drive which guarantees the movement of the fluid, and that is selected depending on the choice of the solution applied by the pump manufacturer. The market offers solutions with gear reducer either helical (the majority) and helical bevel gear reducer, or worm gear reducer, depending on the design that the manufacturer chooses to follow, but it is also open to solutions that can bring benefits under the technical and commercial aspects. Normally, the pump operates at a speed between 10 and 140 rpm.

2. Motovario Solution

For this application, **Motovario offers the solution of the worm gear reducer NMRV and NMRV-P**. According to the pump size and based on the request of the application in term of power and speed, the size of the gearbox can be selected in the range from NMRV030 up to NMRV-P090, while the motor power selection is done based on the output speed of the fluid and on the type of the fluid, and can vary from 0,25 kW up to 2,2 kW.



Contrary to the most gearboxes installed for this kind of application, the worm gear reducer offers the following advantages:

- **Lower price compared to the gear reducer normally installed;**
- Exclusive design that allows **an increase in terms of performance and a decrease of the axial length;**
- **A pump maintenance greatly facilitated** thanks to the reduction of the replacement time of the geared motor which guarantee a decrease of the maintenance costs;
- **A lower noise level** which provides benefit both to the health and the respect of the environment/safety regulations.

Gearbox	NMRV – NMRV-P
Size	030 ÷ 090
Special features	Reinforced Seals (specific design)
	Fixing with torque arm (specific design)
	Output shaft fixed to the rotor pump

For solutions which require medium/high power, Motovario offers its **bevel helical gear reducer B series**.