VCM
INTELLIGENT CONTROL VALVE

Metroval

PRODUCTS

INTELLIGENT CONTROL VALVE

Main applications

Currently, the biggest problem of chemical injection facilities existing on exploration and production platforms is to measure and control the injection of these products, since the systems installed until then, in addition to not being able to measure consumption, do not allow convenient dosing due to operational problems of the injection system components.

Metroval has the Progressive Dosing Multipoint System (SMDP) for chemical injection, designed and manufactured to accurately measure the consumption of chemical products, avoiding the waste of these extremely expensive products and allowing dosing through injection lines installed in SKIDS. Each injection line contains, among other components, a valve that cyclically reproduces the amount of product to be injected.

In order to further improve the SMDP, Metroval developed the project of an electronic actuator for micro-flow control valves, in order to control process variables that handle extremely low flows, a typical application of chemical products injection in oil lines.

The control valves on the market have limitations for these types of application depending on the size of the actuator, classification of the enclosure for installation in classified areas and, mainly, the need for compressed air to supply the actuators.

The Metroval motorized actuator is compact and was designed to be coupled to micro-flow valves of small diameters (small Cv values), allowing accurate dosages with great sensitivity.

This extremely compact motorized valve, in these chemical dosing systems, as in any other application, drastically reduces the space required for installation since, in addition to the reduced dimensions of the set, it does not require pneumatic installations. The electronic actuator allows connection of 4~20mA signal transmission or network with the PLC.

In the application of chemical injection, the flow of the product to be injected is measured by a Coriolis Mass or Positive Displacement flow meter that sends a signal to a PLC. In this equipment, the PID control action is processed to command the motorized control valve.

Working principle

The valve is of the needle type that allows micrometric regulation of the flow, for high pressure, body in 316 stainless steel (other materials on request) and standard hydraulic connections.

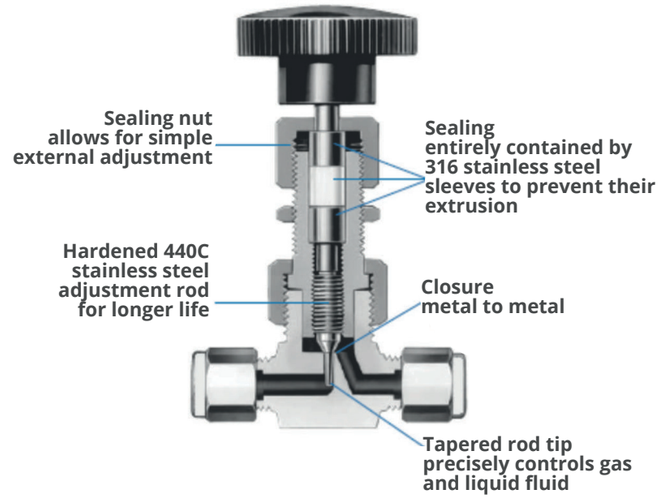
The actuator is composed of a stepper motor, encoder and electronic circuit (CPU), which allow a high-resolution gradual control (200 steps for each turn), with high repeatability and excellent torque. The actuator assembly is mounted in an explosion-proof housing, with IP-66/67 degree of protection, allowing its installation in explosive and contaminating atmospheres.

The electronic controller of the motorized actuator has an RS 485 serial communication interface, MODBUS-RTU protocol, making it possible to interconnect up to 25 actuators on the same network. The VCM-01 valve has additional diagnostic functions, which can provide the user with information about its performance.

In the event of a power failure, the return mode can be set for three options: keep the original position at the time of the power failure (position memory), go to the fully open position or to the fully closed position.

Through the self-calibration function, the entire possible opening stroke is adjusted from 0 to 100% automatically. This function is initiated via serial command and executed by action of the motor, encoder and CPU system.

The Metroval VCM Intelligent Control Valve is composed of two sets consisting of Valve and Actuator.



Flow coefficient x Number of turns

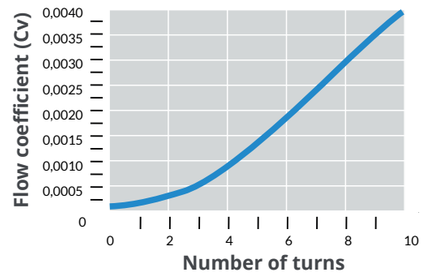
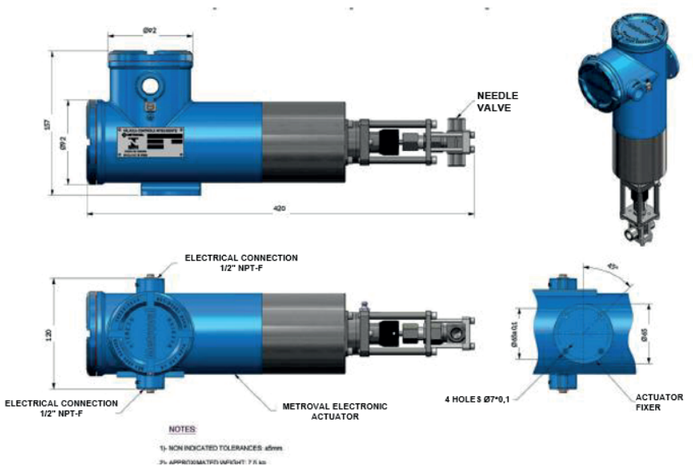


Figure 1



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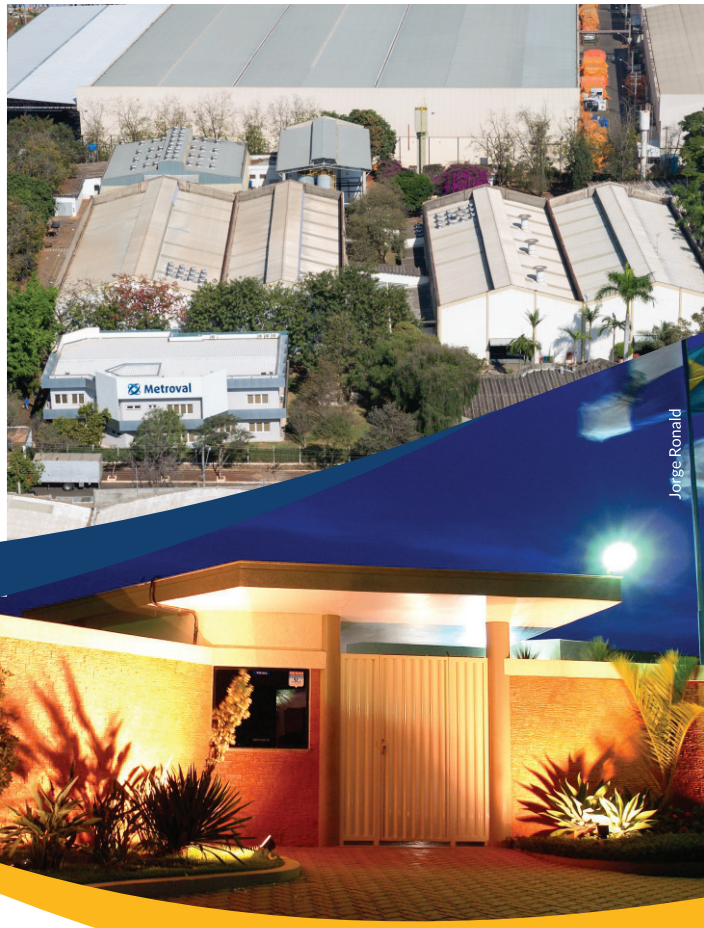

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