



Maintenance of a solenoid valve using the **Inrush mode**

Industrial process control involves maintaining a **physical or chemical quantity** at a predefined target level. This is usually done by means of an automatic gate valve driven by a servomotor. Controlled electronically, this solenoid valve can be used to authorize or interrupt the circulation of a fluid or gas in a circuit by mechanical means.

This type of system is often used in sectors such as metallurgy, chemicals, petrochemicals, steelworks, glassworks, heat treatment and the agri-food industry.

The solenoid valve

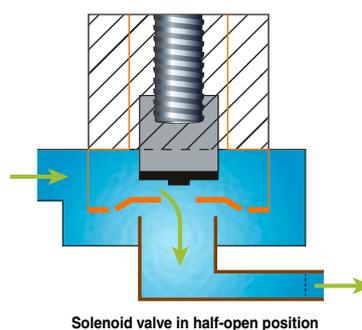
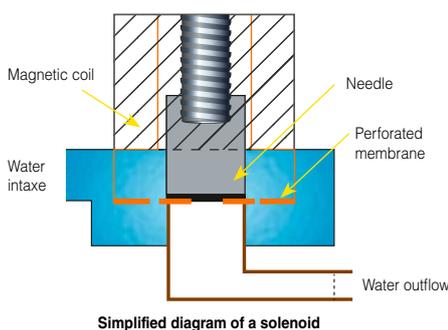
There are 2 types of solenoid valves: "on-off" valves and "automatic" valves. "On-off" valves are either open or closed. With "automatic" valves, the size of the opening can be adjusted according to the requirements. They usually comprise a servomotor and a "converter/positioner" enabling an electrical control signal to be transformed into a pneumatic signal. It is then possible to adjust the flow rate from 0 to 100 %.

Depending on the amplitude of the electrical signal, and therefore of the pneumatic signal, the adjusting screw will position the needle according to the flow rate required. The opening thus created will allow the fluid to circulate throughout the system.

Industry

Factory

Maintenance



Maintenance of a solenoid valve using the Inrush mode

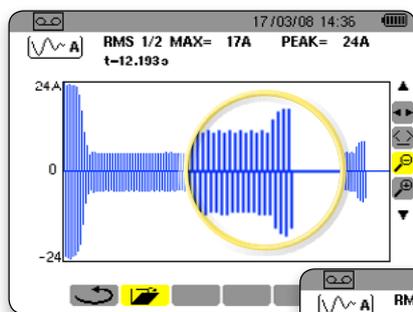
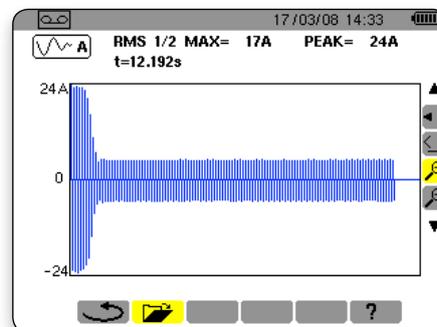
Maintenance

One of the tests required for solenoid valve maintenance involves checking that there is no leakage in the closed position. This case study focuses more specifically on electrical maintenance.

In this way, it is possible to verify that the system is working properly by simply studying the Inrush signal, also called the starting current, when the solenoid valve starts up.

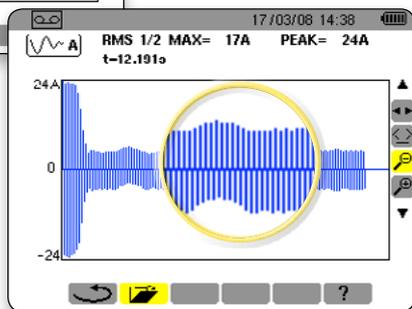
Using an instrument capable of measuring this signal, the user can display the curve corresponding to the current consumed during start-up.

The curve opposite shows a **normal start-up**: a strong current surge at the beginning which then stabilizes before stopping.



In the 2nd example, the curve of the Inrush signal indicates an overshoot when the motor shuts down. This means that there is an increase in the torque and abnormally high current consumption, leading the user to conclude that the valve closing system is incorrectly positioned due to misalignment.

The needle "forces" itself into position for correct closure.



The 3rd example shows an irregular curve. This means that there is irregular current consumption throughout the closing operation. Explanation: the rotation of the solenoid valve's drive shaft is out of line.

The maintenance carried out in this example concerns a single-phase system. **The Qualistar+ models can also be used for maintenance on three-phase installations**, while still taking all the parameters into account.

Chauvin Arnoux instruments with Inrush mode



C.A 8336



C.A 8230



C.A 8435

FRANCE
Chauvin Arnoux
190, rue Championnet
75876 PARIS Cedex 18
Tel: +33 1 44 85 44 38
Fax: +33 1 46 27 95 59
export@chauvin-arnoux.fr
www.chauvin-arnoux.fr

UNITED KINGDOM
Chauvin Arnoux Ltd
Unit 1 Nelson Ct, Flagship Sq, Shaw Cross Business Pk
Dewsbury, West Yorkshire - WF12 7TH
Tel: +44 1924 460 494
Fax: +44 1924 455 328
info@chauvin-arnoux.co.uk
www.chauvin-arnoux.com

MIDDLE EAST
Chauvin Arnoux Middle East
P.O. BOX 60-154
1241 2020 JAL EL DIB - LEBANON
Tel: +961 1 890 425
Fax: +961 1 890 424
camie@chauvin-arnoux.com
www.chauvin-arnoux.com