Electronic Control of a Variable as a Function of Another Variable

This control method is suitable for those applications where dynamic control of a dependent variable, as a programmable function of a given variable (as required). The system includes a Model 718-03 Electronic-Control Valve, a dedicated electronic controller (optional BERMD BE), and two transducers (one for each variable). The controller receives continuous inputs from both transducers and corrects the valve opening in response to a comparison of the set value according to a programmed function. This system can be used for a wide range of applications, including:

- Pressure control - pressure control as a function of flow (see below)
- Reservoir applications - inlet or outlet flow control as a function of reserve level
- Heating and cooling systems - flow control as a function of temperature or pressure

Leakage Control

Optimum network design requires active adjustment of the system set pressure to the minimum possible level.

Leakage Control Installation

The valve control-loop consist of two solenoids (optional) according to the set values programmed into the controller. For very low pressure applications, refer to the full-powered opening & closing - 718-03-B

Bermad Controller

The shaded area represents the hours and levels when average network pressure dramatically decreases, the valve control-loop will open, but due to lower pressure, the valve remains open for a very short period and then it will close again. For more flow charts, refer to Engineering section

Combining PRVs are set to keep the downstream pressure constant ensuring sufficient pressure at the system critical point during "peak" demand when the friction head-loss is highest.

The shaded area represents the hours and levels when pressure is higher than required.

Leakage Control

The controllers receive continuous inputs from both transducers and corrects the valve opening in response to a comparison of the set value according to system demand. The flow and pressure transducers continuously transmit to the controller which reacts by adjusting the Model 718-03 according to the pre-established function.

Electronic-Control Valve

- Pressure control
- Flow control
- Leakage control
- Level control
- Temperature control
- Mixture control at mixing junction

The Model 718-03 Electronic-Control Valve combines the advantages of an excellent modulating, low-power driven, hydraulic control valve with the advantages of electronic control. This valve responds to signals from hydraulic control (718-03 (optional) according to the set values programmed into the controller). For very low pressure applications, refer to the full-powered opening & closing - 718-03-B

Electronic-Control Valve

- Flow control as a function of temperature or pressure
- Electronic-Control Valve
- Bermad Controller

Electronic-Control Valve

- Pressure control
- Flow control
- Leakage control
- Level control
- Temperature control
- Mixture control at mixing junction

This control method is suitable for those applications where dynamic control of a dependent variable, as a programmable function of a given variable (as required). The system includes a Model 718-03 Electronic-Control Valve, a dedicated electronic controller (optional BERMD BE), and two transducers (one for each variable). The controller receives continuous inputs from both transducers and corrects the valve opening in response to a comparison of the set value according to a programmed function. This system can be used for a wide range of applications, including:

- Pressure control - pressure control as a function of flow (see below)
- Reservoir applications - inlet or outlet flow control as a function of reserve level
- Heating and cooling systems - flow control as a function of temperature or pressure

Leakage Control

Optimum network design requires active adjustment of the system set pressure to the minimum possible level.

Leakage Control Installation

The valve control-loop consist of two solenoids (optional) according to the set values programmed into the controller. For very low pressure applications, refer to the full-powered opening & closing - 718-03-B

Bermad Controller

The shaded area represents the hours and levels when average network pressure dramatically decreases, the valve control-loop will open, but due to lower pressure, the valve remains open for a very short period and then it will close again. For more flow charts, refer to Engineering section

Combining PRVs are set to keep the downstream pressure constant ensuring sufficient pressure at the system critical point during "peak" demand when the friction head-loss is highest.

The shaded area represents the hours and levels when pressure is higher than required.

Leakage Control

The controllers receive continuous inputs from both transducers and corrects the valve opening in response to a comparison of the set value according to system demand. The flow and pressure transducers continuously transmit to the controller which reacts by adjusting the Model 718-03 according to the pre-established function.
Valve differential pressure to power the diaphragm-actuator to a more closed position. The downstream solenoid control-chamber pressure resulting in a more open main valve. Needle valves design. 

The body shall have a replaceable, raised, non-threaded, stainless steel seat ring. The valve shall have an unobstructed flow-path, with no stem guides, bearings or supporting ribs. The body and cover shall be ductile iron. All external bolts, nuts, and a filter. All fittings shall be forged brass or stainless steel. The assembled valve shall be hydraulically tested to customer requirements.

Quality Assurance: The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The valve shall be certified as a complete drinking water valve according to the standards of NSF, WRAS and others.

Electronic Control of a Single Variable

This method is suited for those applications where dynamic control of a variable is required. The system includes a Model 718-03 Electronic-Control Valve, a dedicated electronic controller (optional BERMAD BE), and an analog transducer.

The controller receives continuous inputs from the analog transducer and compares the valve opening to response in comparison with the programmable set value. The set value can be changed either manually on the controller keyboard or remotely through PC, SMS or other communication methods.

This system can be used for a wide range of applications including:

- Pressure control (see below)
- Flow control
- Level control

**Pressure Reducing**

Installing the pressure transducer upstream from the valve provides a pressure-sustaining feature:

- Sustaining pump discharge pressure
- Sustaining reservoir or canal level
- Sustaining pump suction pressure
- Sustaining circulated discharge pressure

**Pressure-Sustaining**

Installing the pressure transducer downstream from the valve provides a pressure-reducing feature:

- Sustaining pump suction pressure
- Sustaining circulated discharge pressure

**Level control**

Either of two methods can be applied:

- Local pressure control as transmitted by critical point pressure transducer
- Remote pressure control as transmitted by critical point pressure transducer

**Flow control**

Pressure-Sustaining Flow-rate must be limited to the maximum flow rate as specified in the manufacturer’s literature. The controller shall be capable of accepting a V-Port Throttling Plug by bolting.

**Pressure-Sustaining**

The controller shall be centrally guided by a bearing in the separating partition. The replaceable radial seal disk shall include a resilient seal and shall be certified as a complete drinking water valve according to the standards of NSF, WRAS and others.

Electronic Control of Mixing Junctions

This method suited for dynamic control of two parallel valves controlling the two separate sources of a mixing junction. These systems include two Model 718-03 Electronic-Control Valves, a dedicated electronic controller (optional BERMAD BE), and an analog transducer.

Two types of systems are used:

**Type A - Sampling the Mixture**

- The controller receives continuous inputs from the analog transducer (conductivity, salinity, temperature etc.), and compares, in real-time, the opening of each valve in comparison with the programmed value.

**Type B - Sampling the Sources**

- The controller receives continuous inputs from both flow transducers and compares, in real-time, the opening of each valve, thus maintaining constant flow-ratio between the two sources to achieve the desired result.

Combination of both Types A and B is available also.
The shaded area represents the hours and levels when energy and chemical costs are lowest.

The controller receives continuous inputs from both transducers and corrects the valve opening in response to a comparison of the reference signal from the electronic controller BERMAD BE (optional) according to the set values programmed into the controller.

Electronic-Control Valve

- Pressure control
- Flow rate control
- Leakage control
- Level control
- Temperature control
- Mixture control at mixing junction

Features and Benefits
- Line-pressure driven – independent operation
- Solenoid-controlled
- Low power consumption
- Wide ranges of pressures and voltages
- Normally Open, Normally Closed or Last Position
- Electronic controller compatible
- Local & remote modulating of set values
- Suitable for conventional PLC methods
- Data logging
- In-line serviceable – easy maintenance
- Double chamber
- Full-powered opening (option "F") & closing
- Non-clamp closing characteristic
- Protected diaphragm
- Semi-straight flow – smooth flow characteristics
- St. Steel raised seat – cavitation damage resistant
- 3/4" Throttle Plug – low-flow stability
- Flexible design – easy addition of features

Major Additional Features
- Full-powered opening & closing – 718-O-B
- Excessive over-pressure guard – 718-O-48
- Relief overloads – 718-O-30
- Check feature – 718-O-20
- Flow-over-test (fail-safe close) – 718-O-10

See relevant BERMAD publications.
Valve Closing

Valve Opening

Electronic Control of a Single Variable

This method is suited for those applications where dynamic control of a variable is required. The system includes a Model 718-03 Electronic-Control Valve, a dedicated electronic controller (optional BERMAD BE) and an analog transducer.

The controller receives continuous inputs from the analog transducer and corrects the valve opening in response to a comparison with the programmable set value. The set value can be changed either manually on the controller keyboard or remotely through PC, SMS or other communication methods.

This system can be used for a wide range of applications including:
- Pressure control
- Flow control
- Level control
- Temperature control
- Salinity control
- Conductivity control
- Others

Electronic Control of Mixing Junctions

This method suited for dynamic control of two parallel valves controlling the two separate sources of a mixing junction. These systems include two Model 718-03 Electronic-Control Valves, a dedicated electronic controller (optional BERMAD BE). Two types of systems are used.

Type A - Sampling the Mixture

The controller receives continuous inputs from the analog transducer (conductivity, salinity, temperature etc.) and corrects, in real-time, the opening of each valve in comparison with the programmed valve.

Type B - Sampling the Sources

The controller receives continuous inputs from both flow transducers and corrects, in real-time, the opening of each valve, thus maintaining constant flow-ratio between the two sources to achieve the desired result.

Quality Assurance:

The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The valve shall be certified as a complete drinking water valve according to the standards of NSF, WRAS and others.

The assembled valve shall be hydraulically tested to customer requirements.

The valve manufacturer shall be centrally guided by a bearing in the separating partition. The replaceable radial seal disk shall include a resilient seal harnessing the pipeline.

The actuator assembly shall be double-chambered with an inherent separating partition between the lower surface of the diaphragm and the main valve. The actuator assembly shall not consist of any closing spring or spring-like. The entire actuator assembly (seal disk to top cover) shall be removable from the valve as an integral unit. The stainless steel valve shaft shall be centrally guided by a bearing in the separating partition. The replaceable radial seal disk shall include a resilient seal harnessing the pipeline.

The controller receives continuous inputs from the analog transducer and corrects the valve opening in response to a comparison with the programmable set value. The set value can be changed either manually on the controller keyboard or remotely through PC, SMS or other communication methods.

This system can be used for a wide range of applications including:
- Pressure control
- Flow control
- Level control
- Temperature control
- Salinity control
- Conductivity control
- Others

Electronic Control of Mixing Junctions

This method suited for dynamic control of two parallel valves controlling the two separate sources of a mixing junction. These systems include two Model 718-03 Electronic-Control Valves, a dedicated electronic controller (optional BERMAD BE). Two types of systems are used.

Type A - Sampling the Mixture

The controller receives continuous inputs from the analog transducer (conductivity, salinity, temperature etc.) and corrects, in real-time, the opening of each valve in comparison with the programmed value.

Type B - Sampling the Sources

The controller receives continuous inputs from both flow transducers and corrects, in real-time, the opening of each valve, thus maintaining constant flow-ratio between the two sources to achieve the desired result.

Quality Assurance:

The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The valve shall be certified as a complete drinking water valve according to the standards of NSF, WRAS and others.

The assembled valve shall be hydraulically tested to customer requirements.
Main Valve: The main valve shall have a center-guided, diaphragm-actuated globe valve of either oblique (Y) or angle pattern design. The body shall have a replaceable, raised, non-threaded, stainless steel seat ring. The valve shall have an unobstructed flow-path, with no stem guides, bearings or supporting ribs. The body and cover shall be ductile iron. All external bolts, nuts, and hardware shall be stainless steel. All external bolts, nuts, and hardware shall be stainless steel.

Actuator: The actuator assembly shall be double-chambered with an inherent separating partition between the lower surface of the diaphragm and the main valve. The actuator assembly shall not consist of any closing spring nor spring-like. The entire actuator assembly (seal disk to top cover) shall be removable from the valve as an integral unit. The stainless steel valve-shaft actuator assembly (seal disk to top cover) shall be centrally guided by a bearing in the separating partition. The replaceable radial seal disk shall include a resilient seal.

Control System: The control system shall consist of two 2-way solenoid pilots, a replaceable, raised, non-threaded, stainless steel seat ring. The valve shall have an unobstructed flow-path, with no stem guides, bearings or supporting ribs. The body and cover shall be ductile iron. All external bolts, nuts, and hardware shall be stainless steel.

Quality Assurance: The assembled valve shall be hydraulically tested to customer requirements.

Electronic Control Valve: The Electronic-Control Valve shall respond to electric commands by changing its opening position to control a measurable flow-rate, pressure, level, or other parameter.

Model 718-03 is an electronic-controlling valve equipped with two 2-way solenoid pilots. The upstream solenoid applies pressure to the upper control-chamber, harnessing differential pressure to power the diaphragm-actuator to a more closed position. The downstream solenoid applies pressure to the lower control-chamber, thus maintaining constant flow-ratio between the two sources to achieve the desired result.

Electronic Control of a Single Variable

This method is suited for those applications where dynamic control of a variable is required. The system includes a Model 718-03 Electronic-Control Valve, a dedicated electronic controller (optional BERMAD BE), and an analog transducer.

Inputs
- Remote pressure control as transmitted by critical point pressure transducer
- Local pressure control as transmitted by pressure transducer
- Level control
- Flow control

Performance
- The controller receives continuous inputs from the analog transducer and corrects the valve opening in response to a comparison with the programmable set value. The set value can be changed either manually on the controller keyboard or remotely through PC, SMS or other communication methods.
- This system can be used for a wide range of applications including:
  - Pressure control (see below)
  - Flow control
  - Level control

Example: Pressure Reducing

Installing the pressure transducer upstream from the valve provides a pressure-sustaining feature. Either of two methods can be applied:
- Local pressure control as transmitted by pressure transducer
- Remote pressure control as transmitted by critical point pressure transducer

Example: Pressure Sustaining

Installing the pressure transducer downstream from the valve provides a pressure-sustaining feature. Either of two methods can be applied:
- Local pressure control as transmitted by pressure transducer
- Remote pressure control as transmitted by critical point pressure transducer

Electronic Control of Mixing Junctions

This method is suited for dynamic control of two parallel valves controlling the two separate sources of a mixing junction. The system includes a Model 718-02 Electronic-Control Valves, a dedicated electronic controller (optional BERMAD BE). Two types of systems are used.

Type A - Sampling the Mixture

The controller receives continuous inputs from the analog transducer (conductivity, salinity, temperature etc.) and corrects, in real-time, the opening of each valve in comparison with the programmed value.

Type B - Sampling the Sources

The controller receives continuous inputs from both flow transducers and corrects, in real-time, the opening of each valve, thus maintaining constant flow-ratio between the two sources to achieve the desired result.

Combination of both Types A and B is available also.
### Electronic Control Valve

The Model 718-03 Electronic-Control Valve combines the advantages of an excellent modulating, line-pressure driven, hydraulic control valve with the advantages of electronic control. The valve responds to signals from the electronic controller (BERMAD BE), (optional) according to the set values programmed into the controller.

For very low pressure applications, refer to the full-powered opening & closing – 718-03-B

#### Features and Benefits
- Line-pressure driven – independent operation
- Solenoid-controlled
  - Low power consumption
  - Wide ranges of pressures and voltages
  - Normally Open, Normally Closed or Last Position
- Electronic Controller compatible
  - Local & remote modification of set values
  - Suitable for conventional PLC methods
- Data logging
  - In-line servicable – easy maintenance
- Double chamber
  - Full-powered opening (option “F”) & closing
  - Non-clam closing characteristic
  - Protected diaphragm
- Semi-straight flow – smooth flow characteristics
- St. Steel raised seat – cavitation damage resistant
- 3/4" Throttling Plug – flow stability
- Flexible design – easy addition of features

#### Structure

**Control System:**
- Electronically controlled
- Stainless steel (SS304, SS316, SS316L)
- Pressure and flow variable
- Single or double acting
- Flow over the seat
- Fail-safe closing

**Accessories:**
- Power Supply: 24 VAC/DC, 24VDC – N.O. 4DO
- Valve Positioner: Standard
- Electronic Limit-Switch
- Large Control Filter
- V-Port Throttling Plug
- Solenoid & Check Valve 20
- Check Valve 25
- Hydraulic Remotely-Controlled 50
- Electric Override 59

**Dimensions and Weights**

<table>
<thead>
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<th>Feature</th>
<th>1/2&quot;</th>
<th>3/4&quot;</th>
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**Pressure Loss - bar**

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</table>

**Main Valve Position**

- Normally Open (N.O.)
- Normally Closed (N.C.)
- Full-powered opening & closing

**Flow Control**

- Mixture control at mixing junction
- Leakage control
- Flow control

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#### Leakage Control - Installation

- Optimum network design requires active adjustment of the system set pressure to the minimum possible level.
- Electronic controller (optional BERMAD BE), and two transducers (one for each variable).
- The shaded area represents the hours and levels when reducing system leakage flow, burst, maintenance, average network pressure dramatically decreases.

#### Leakage Control

- Pressure control as a function of flow (see below)
- Electronic controller (optional BERMAD BE), and two transducers (one for each variable).
- The shaded area represents the hours and levels when reducing system leakage flow, burst, maintenance, average network pressure dramatically decreases.

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#### Technical Data

**Pressure Loss - bar**

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<th>Flow Rate - gpm</th>
<th>1/2&quot;</th>
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<td>10.0</td>
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</table>

**Features and Benefits**

- Full-powered opening & closing – 718-03-B
- Commercial over-pressure guard – 718-03-A6
- Relief over-vent – 718-03-DQ
- Check feature – 718-03-D2
- Flow over-the-seat (fail-safe close) – 718-03-B

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#### Ordering Guide

- Please specify the requested valve in the following sequence:
- Coating:
  - Polyester Green PG
  - Polyester Powder, RAL 6017 (Green)
- Threaded:
  - NPT
  - ISO 25
- Flanged:
  - ANSI 300 A3
  - ANSI 150 A5
- Valve Positioner:
  - Standard
  - Large Control Filter
  - V-Port Throttling Plug
- Solenoid & Check Valve
  - 20
  - 25
- Hydraulic Remotely-Controlled
  - 50
- Electric Override
  - 59
- Please refer to Ordering Guide for more options.