



TEST REPORT

Report No. 112188 2769

Client

Bermad Australia Pty Ltd
7 Inglewood Drive
Thomastown Vic 3074

Product Tested

Manufacturer: Bermad
Brand:
Model Nos: AS 21
Model Name: 4"-705
Description: PN21 100 mm control valve
QTL Sample No: 2769
Sample: Selected by SAI Global
SAI Specimen No: TO 8405

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Test results relate to item tested

Attachments

- Appendix 1: Photo of test sample
- Appendix 2: Technical drawings

Tested by: David Hewitt

Prepared by: Davon Isackson

Reviewed by: Simon Clarke

Reference AS5081:2008 Hydraulically operated control valves



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Body Test

Applicable Standard AS5081 Clause 5.2.2

Tested in accordance with AS/NZS 2280:2004 Amdt 1 Clause 4.2.3 Appendix F4

Includes reference to AS/NZS 1462.6:2008

COMPLIES

Requirement	Sample and Test Conditions	Observations
<p>With the diaphragm or piston either in place or removed from the valve, apply a hydrostatic pressure equal to 2.0 times the allowable operating pressure (refer to Table 1.1) to the cover chamber and body of the valve for a minimum of 15 min. There shall be no leakage through or plastic deformation or distortion of the valve body or other components.</p> <p>NOTE: Leakage at the seal or pressure-restraining joints should not be a cause for failure of the test.</p>	<p><u>Conditioning</u> Conditioned in still air at 20 °C for greater than 24 Hours.</p> <p><u>Test Environment</u> Air Test medium = Water Test temperature = 20°C ± 2°C. Duration (minutes) = 15 Pressure (kPa) = PN x 2</p>	<p>Applied Pressure (kPa) = 4,200 Duration (minute) = 16m Temperature (°C) =20.8</p> <p><u>Before conditioning</u> OD of fitting (mm) = 321.00</p> <p><u>After conditioning</u> OD of fitting (mm) = 321.00</p> <p>Plastic deformation % = 0.0</p> <p>There was no leakage through the fitting</p>
<p><u>Acceptance Criteria</u> Typical accuracy for dimensions and strains measured with mechanical vernier callipers, micrometers, or strain gauges allowing for mechanical repeatability as appropriate, is of the order of ± 0.01%. Ductile iron is taken to have a yield strain of approximately 0.2% and this would seem to be a reasonable limit to demonstrate the onset of plastic deformation.</p> <p>Maximum deformation % = 0.2</p> <p>Statement Provided By: Chairman of Committee WS-016</p>		

Seat Test – pre endurance

Applicable Standard AS5081 Clause 5.2.3

Tested in accordance with AS5081 Clause 5.2.3

COMPLIES

Requirement	Sample and Test Conditions	Observations
<p>With the diaphragm or piston in place and the disc in the closed position, apply a hydrostatic pressure equal to 1.1 times the allowable operating pressure (refer to Table 1.1) to the valve inlet and the cover chamber for a minimum of 10 min, with the valve outlet being at atmospheric pressure. There shall be no visible sign of leakage past the valve seat.</p>	<p><u>Conditioning</u> Conditioned in still air at 20 °C for greater than 24 Hours.</p> <p><u>Test Environment</u> Air Test medium = Water Test temperature = 20°C ± 2°C. Duration (minutes) = 15 Pressure (kPa) = PN x 1.1</p>	<p>Applied Pressure (kPa) = 2310 Duration (minute) = 20 Temperature (°C) =21.8</p> <p>There was no visible sign of leakage past the valve seat.</p>

Opening test

Applicable Standard AS5081 Clause 5.2.4

Tested in accordance with AS5081 Clause 5.2.4

COMPLIES

Requirement	Sample and Test Conditions	Observations
<p>Close all control lines to the valve cover and leave one fitting at the highest point of the cover open to atmosphere.</p> <p>Open the valve by applying a hydraulic pressure of 50 kPa to the valve inlet. The valve shall move to the fully open position, and there shall be no continuous flow of water out of the cover.</p>	<p><u>Test Environment</u> Air Test medium = Water Test temperature = 20°C ± 2°C. Pressure (kPa) = 50</p>	<p>Applied Pressure (kPa) = 50 Temperature (°C) = 21.6</p> <p>The valve moved to the fully open position, and there was no continuous flow of water out of the cover.</p>

Closing test

Applicable Standard AS5081 Clause 5.2.5

Tested in accordance with AS5081 Clause 5.2.5

COMPLIES

Requirement	Sample and Test Conditions	Observations
<p>At the end of the opening test, apply inlet pressure of 50 kPa to the cover chamber. The valve shall move to the fully closed position.</p>	<p><u>Test Environment</u> Air Test medium = Water Test temperature = 20°C ± 2°C. Pressure (kPa) = 50</p>	<p>Applied Pressure (kPa) = 50 Temperature (°C) = 21.6</p> <p>The valve moved to the fully closed position.</p>

Endurance test

Applicable Standard AS5081 Clause 5.2.6

Tested in accordance with AS5081 Clause 5.2.6

COMPLIES

Requirement	Sample and Test Conditions	Observations
<p>Open the valve with a hydraulic pressure equal to the allowable operating pressure at the valve inlet, and leave it open for a minimum duration of 10 s. Then close the valve fully with the same pressure and leave it closed for a minimum duration of 10 s.</p> <p>Repeat the procedure for 2000 cycles.</p> <p>Repeat the seat test at the end of the endurance test. There shall be no leakage past the valve seat or signs of excessive wear or failure of components.</p>	<p><u>Test Environment</u> Air Test medium = Water Test temperature = 20°C ± 2°C. Pressure (kPa) = PN21 Number of cycles = 2,000</p>	<p>Applied Pressure (kPa) = 2100 Temperature (°C) = 21.8 Number of cycles = 2000</p> <p>There was no leakage past the valve seat or signs of excessive wear or failure of components.</p>

Seat Test – post endurance

Applicable Standard AS5081 Clause 5.2.3

Tested in accordance with AS5081 Clause 5.2.3

COMPLIES

Requirement	Sample and Test Conditions	Observations
With the diaphragm or piston in place and the disc in the closed position, apply a hydrostatic pressure equal to 1.1 times the allowable operating pressure (refer to Table 1.1) to the valve inlet and the cover chamber for a minimum of 10 min, with the valve outlet being at atmospheric pressure. There shall be no visible sign of leakage past the valve seat.	<u>Conditioning</u> Conditioned in still air at 20 °C for greater than 24 Hours. <u>Test Environment</u> Air Test medium = Water Test temperature = 20°C ± 2°C. Duration (minutes) = 10 Pressure (kPa) = PN x 1.1	Applied Pressure (kPa) = 2310 Duration (minute) = 11 Temperature (°C) = 20.4 There was no visible sign of leakage past the valve seat.

End of Report

Simon Clarke
Approved Signatory

Test Report Number 112188

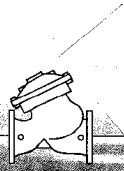
Figure 1. Test sample




Figure 1: Technical drawing

BERMAD Waterworks

Hydraulic Control Valves



700 Series



700 Basic Valve

The Model 700/705 Basic Hydraulic Valve is a diaphragm-actuated, hydraulically-operated, globe valve in either the oblique (Y) or angle pattern design. The valve comprises two major components: the body-seat assembly and the actuator assembly.


The actuator assembly is unitized and is removable from the body as a single item. The actuator assembly includes both a lower and an upper control-chamber. By removing or inserting the lower chamber separating partition orifice plugs, the basic valve can be configured either as a single-chamber control valve (Model 705), or a double-chamber control valve (Model 700), respectively. The diaphragm sub-assembly, in both single and double-chambered versions are center-guided, providing a seat area without obstructions.

The Model 700 Basic Valve operation is independent of valve differential pressure. The double-chambered diaphragm actuator is always subjected to full differential pressure to develop maximum power and to respond immediately. The upper control-chamber is pressurized to close and vented to open the valve. The lower control-chamber usually is vented to the atmosphere, but can be pressurized to power the valve open.

The Model 705 Basic Valve uses differential pressure to power the diaphragm actuator open or closed. The lower control-chamber is exposed to the downstream pressure, that serves to cushion the closing of the valve, through a fixed orifice connected to the downstream side of the valve. The pressure in the upper control-chamber varies, usually resulting from the combined action of a regulating pilot and a fixed orifice. This varying pressure modulates the valve to open or close.

The Model 700/705 Basic Hydraulic Valve is available in a wide range of materials, sizes, pressure ratings, and end connections. Single or double-chambered versions are used as the main valve in all 700 Series applications.

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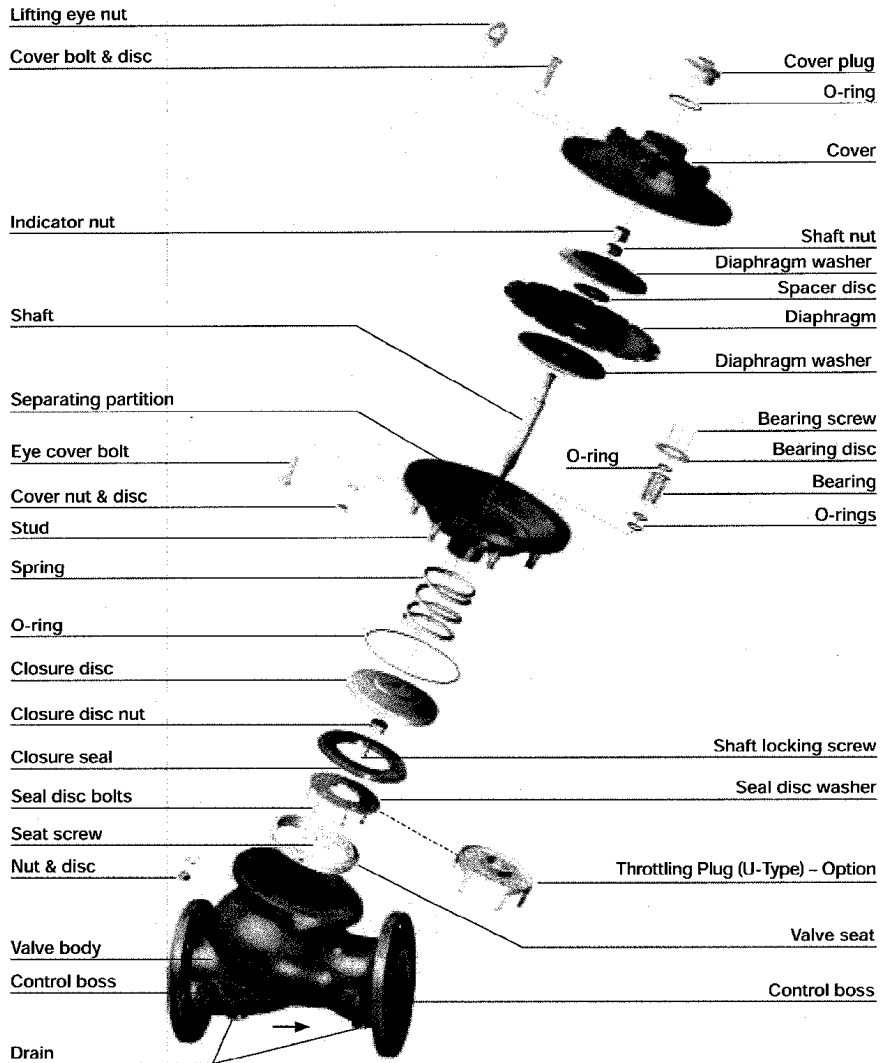
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Engineering Data



Valve - Exploded View

700 Series



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For spare parts ordering, please use BERMAD "Spare Parts Ordering Guide"

