



Air Pilot Valves for Inside-Containment Nuclear Service



NEW INSIDE CONTAINMENT AIR PILOT VALVES FROM VALCOR

A complete line of IEEE qualified reliable, long-life instrument air pilot valves is now available from Valcor Engineering Corporation for the control of large pneumatically operated valves and air cylinders.

Designed and tested to address the operation and maintenance problems cited by NUREG-1275 Vol. 6, these new valves will provide CANDU, BWR and PWR plant operators with significant long-term savings. Thanks to such design features as cool-running coils, low-maintenance seals and rugged components, maintenance costs and exposure of personnel to hazardous environments are significantly reduced.

The new line covers a full range of 2-way, 3-way and 4-way air pilot valve functions, including fast actuation, low, medium and high flow solenoid valves. Small size in-line check valves are also available to complement the solenoid valves.

RUGGED DESIGNS FOR YEARS OF MAINTENANCE-FREE OPERATION

Robust Seal Design

With their rugged Vespel™ main seals and absence of diaphragm seals, Valcor's new air pilot valves were designed with long life and low maintenance in mind. O-ring seals are mostly used for static seals.

Cool Operation for Long Life

Drawing only 10 watts, the new air pilot valve coils run cool, with a temperature rise of only about 29° F (16° C) for low O-ring degradation and an expected coil life of 40 years — without maintenance.

Compact Size & Low Weight

These air pilot valves can be easily installed into existing equipment. Universal design of the 3-way solenoid valves allows for flexible installation in normally open or closed, diverter or selector mode configurations.

Fast Response/Wide Flow Range

Typical actuation times are 30-100 milliseconds; faster valves are available. Flows of Cv 0.036 to 40 for line sizes 1/4" to 2" are available over the product line.

Extensively Tested and Qualified

This new product line has been rigorously tested for long life, maintainability and operability in harsh environments. Qualifications include seismic and LOCA per IEEE Std 323, 344 and 382, for operating ambient temperatures of up to 66° C (150° F).

Complete Documentation

Includes assembly drawings, acceptance and qualification test reports, operation/maintenance manuals, design registration with MCCR, CSA certification and history file data report. Customer source inspection is welcome.

STANDARD AND CUSTOM CONFIGURATIONS AVAILABLE

The standard product line has been developed to provide a wide range of air pilot functions and capabilities. For maximum economy, select from the chart on the next page. Should your application entail special needs, consult with Valcor's engineering department. Custom solutions are a Valcor specialty. For example, specially designed mounting brackets are available for replacement of the existing competitor's valve.

TYPICAL PARAMETERS

	Parameters / Results
Valve Types	Solenoid-Operated: 2- and 3-Way; Universal, Normally Open and Normally Closed Pilot-Assisted /Pressure-Actuated: 3-Way
Flow	Cv = 0.2 to 40 (Solenoid-Operated 3-Way) Cv = 0.036 (Solenoid Operated 4-Way)
Electrical	10-watt coils @ 48 VDC 110-120 VAC operation available.
Response	30-100 milliseconds
Fluid Interfaces	National Pipe Thread (NPT)
Life (150° F / 66° C ambient)	Coil: 40 years O-Rings: 10 years
Coil Heat Rise	29° F / 66° C (150° F / 66° C ambient)

QUALIFICATION TEST SUMMARY

Description	Typical Parameters / Results
Test Samples (2 units)	1/4" NPT, Cv=0.2, Universal
Qualified Life Objective	Valve: 30 years @ 150° F (66° C) O-rings: 10 years
Heat Rise Test	29° F (16° C) above 150° F (66° C) ambient
Combined Normal & Accident Radiation Aging	1.1x10 ⁷ Rads
Cycle Aging	10,000 cycles
Normal Thermal Aging	527 hours @ 253° F
Seismic Test	45 G peak, 4.5 G ZPA, 1-33 Hz
MSLB/LOCA Accident Test	7 days, 302° F (150° C), 58 psig peak
Post-Test Function	Full function demonstrated following cycle aging, seismic, MSLB/LOCA tests.
Post-Test Disassembly	No unexpected wear; 40-year solenoid life extrapolated.



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