

The 1196 Air Cycling Valve is intended for use in pulse-fired burner systems, such as StepFire™, or any other type of application where it is desired to cycle between a low and a high flow rate with an overall cycle time of approximately 4 seconds. As such, the valve is not designed for tight shutoff, although the beveled disc design enables leak rates that are quite low.

High and low fire adjustments are a standard feature of the 1196. The high fire adjustment is a coaxial, threaded knob beneath the diaphragm case that makes fine tuning simple and dispenses with need for a butterfly valve upstream. The low fire adjustment is via a set screw that acts directly on the valve disc for maximum repeatability. Both adjustments are provided with locking nuts to secure them into position.

The 1196 Air Cycling Valve has the added safety feature of failing closed in case of air blower failure. This minimizes the risk of back fluing high temperature combustion products. The valve also fails closed on loss of electric power or if the actuator diaphragm ruptures.

The 1196 Air Cycling Valve uses an elliptical disc. This makes the valve more responsive especially near the closed position. It is also intrinsically more forgiving in dirty combustion air environments. This is because the disc swing near the inside wall of the body is minimized and is not at a right angle to the wall, thus minimizing the possibility of the valve disc getting wedged within any residue that accumulates on the inside wall. The elliptical disc further has the advantage of a shorter stroke (45° max.) which reduces the wear on the shaft.



The high flow and linkage adjustments are all enclosed in a housing that protects them from tampering or accidental change, and also acts as a background for an accurate and easy to read position indicator.

The valve sizes, dimensions, and weights are shown on back. Valve sizes 1¼" through 2½" are offered in cast iron hex bodies with threaded ports for easy installation. The 3" and 4" sizes are offered in cast iron round bodies with threaded ports. The discs are made of steel. Shafts are made of stainless steel.

## SPECIFICATIONS/CONSTRUCTION

|   |                                       |
|---|---------------------------------------|
| Maximum Inlet Pressure                      | 2 psig (shock pressures up to 4 psig) |
| Maximum Ambient Temperature                 | 131 F                                 |
| Minimum Ambient Temperature                 | -20 F                                 |
| Maximum Fluid Temperature                   | 194 F*                                |
| Voltage                                     | 110-120 VAC, 50-60 Hz                 |
| Power                                       | 10.1 W, 25 VA holding, 50 VA inrush   |
| Opening Time                                | 1-2 sec.                              |
| Closing Time                                | 1-2 sec.                              |
| Minimum Pressure for Nominal Response Times | 10 osi                                |
| Materials:                                  |                                       |
| Body  | Cast iron - 1¼" through 4"            |
| Disc  | Steel                                 |
| Shaft                                       | Stainless steel                       |
| Elastomers                                  | Viton                                 |

\* For fluid temperatures higher than 194 F contact the Cleveland office.

The normally open 3-way 1/4" solenoid valve used on the 1196 valve is rated at 110 VAC. The power consumption of this solenoid is at least 50% lower than that of direct actuating solenoids, reducing installation cost by allowing the use of lighter gauge wire. 24 VAC solenoids and normally closed solenoids are available as options at additional cost. However, please note that we do not stock special solenoids and that the delivery time will be affected accordingly.

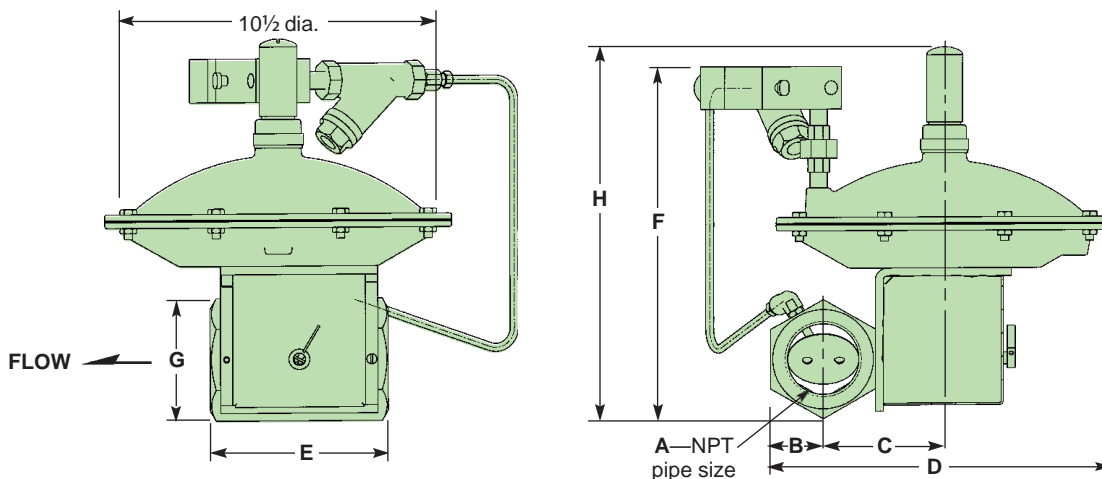
The "A" solenoid valve port is connected to the 1196 actuator diaphragm housing and the "P" port is connected to the air impulse tap on the upstream side of the valve body. Port "R" is vented to

atmosphere and a short piece of tube or pipe must be installed in the port, pointing down, to avoid plugging with dust and dirt. In addition, if there is no inlet filter on the combustion air blower, an air filter or strainer must be installed in the air impulse line between the valve body and the "P" solenoid valve port. Two filter options are available. The -S1 option offers a Y-strainer with a 152 micron mesh, while the -S2 option offers one with a 40 micron mesh.

This valve may be installed with the actuator spring housing in any position from vertically up to horizontal, but never down.

## DIMENSIONS

(All dimensions are in inches unless otherwise noted)



| Valve designation | A     | B     | C       | D        | E        | F        | G      | H        | Wt, lb |
|-------------------|-------|-------|---------|----------|----------|----------|--------|----------|--------|
| 1196-2            | 1 1/4 | 1 1/4 | 3 7/16  | 10 1/2   | 4 3/4    | 12 13/32 | 2 7/8  | 11 31/32 | 16     |
| 1196-3            | 1 1/2 | 1 3/8 | 3 9/16  | 10 1/2   | 4 7/8    | 12 17/32 | 3 3/16 | 12 1/8   | 17     |
| 1196-4            | 2     | 1 5/8 | 3 13/16 | 10 11/16 | 5 3/8    | 12 27/32 | 3 3/4  | 12 13/32 | 19     |
| 1196-5            | 2 1/2 | 1 3/4 | 3 15/16 | 10 15/16 | 7        | 12 31/32 | 4 1/16 | 12 9/16  | 20     |
| 1196-6            | 3     | 2 1/8 | 4 5/16  | 11 11/16 | 7        | 13 11/32 | 4 1/4  | 13       | 24     |
| 1196-7            | 4     | 2 5/8 | 4 13/16 | 9 7/8    | 12 11/16 | 13 19/32 | 5 1/4  | 13 5/32  | 29     |

**Flow Rates (scfh)** for 70 F Air with 1"wc pressure drop, with valve wide open and no appreciable backpressure.

|        |       |
|--------|-------|
| 1196-2 | 2190  |
| 1196-3 | 3130  |
| 1196-4 | 6020  |
| 1196-5 | 8380  |
| 1196-6 | 17920 |
| 1196-7 | 29400 |

**Leak Rate (scfh)** in fully closed position for 70 F air with 1 psig inlet pressure.

|        |     |
|--------|-----|
| 1196-2 | 170 |
| 1196-3 | 178 |
| 1196-4 | 282 |
| 1196-5 | 420 |
| 1196-6 | 495 |
| 1196-7 | 625 |

For information on sizes not listed in this bulletin, contact the Cleveland office.

### Ordering Instructions and Codes:

Order must specify: 1) Valve Designation 2) Valve Size 3) Options

*Example:* 1196-7-AS 4" air cycling valve, with 220/240 VAC 50/60 Hz power supply, and a 40 micron strainer

### Options:

-A 220/240 VAC 50/60 Hz  
-S with 40 micron strainer

DIMENSIONS SHOWN ARE SUBJECT TO CHANGE. PLEASE OBTAIN CERTIFIED PRINTS FROM FIVES NORTH AMERICAN COMBUSTION, INC. IF SPACE LIMITATIONS OR OTHER CONSIDERATIONS MAKE EXACT DIMENSION(S) CRITICAL.

**WARNING:** Situations dangerous to personnel and property may exist with the operation and maintenance of any combustion equipment. The presence of fuels, oxidants, hot and cold combustion products, hot surfaces, electrical power in control and ignition circuits, etc., are inherent with any combustion application. Parts of this product may exceed 160F in operation and present a contact hazard. Fives North American Combustion, Inc. urges compliance with National Safety Standards and Insurance Underwriters recommendations, and care in operation.

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