

- **Direct coupled / packaged assembly – no linkage to adjust.**
- **Easy setup.**
- **Accurate, consistent response.**
- **Wide selection of valve types and pipe sizes.**
- **High resolution modulating accuracy.**



## Application

The Fives North American Combustion, Inc. **1199 Motorized Direct Acting Valve** is designed for highly accurate modulating control of industrial process heating applications. These prepackaged, motorized valves are engineered for precision and are ideal for combustion systems that require dependable, automated control. They are particularly well suited to applications requiring a high degree of modulating accuracy and repeatability and can cost effectively meet your unique flow control requirements. The versatility, performance, accuracy, and superior design of the 1199 motorized valve assemblies can significantly enhance quality and performance.

## Description

The 1199 assemblies consist of a high resolution, precision actuator direct-coupled to a characterizable adjustable port or butterfly valve. The direct-coupled feature eliminates the use of valve to actuator linkage, allowing short setup time and eliminating flow changes due to mechanical variations associated with valve linkage. This direct-acting feature also helps improve performance by consistently positioning valves relative to the control signal. The compact, easy to install assembly reduces setup time and greatly simplifies replacement of existing control valves.

## Features

Valves are precision built and designed for control of natural gas, oil, or combustion air. Externally visible position indication is standard on all valves and motors. Different valve styles are available in a variety of body and pipe sizes to accommodate system flow requirements and control needs.

The 1615 actuators accommodate control input signals of 4-20 mA, 0-135  $\Omega$ , 0-10 V dc, 0-20 mA, position proportional and floating control. The available output signals include 4-20 mA, 0-135  $\Omega$ , 0-10 V dc, 0-20 mA, and 0-1000  $\Omega$ . 1615 actuators have easily accessible and adjustable auxiliary switches.

## Additional Features

- Modulating accuracy of 250 repositions through 90°
- Two limit switches, one auxiliary "closed position" switch and three additional auxiliary switches
- Drive shaft and cam drum disengagement clutches
- Auto/manual switch, manual control forward/reverse toggle switch
- UL, CSA, CE approved 24 and 100 V ac versions, CE approved 220 V ac versions
- Field reversible clockwise (CW) or counterclockwise (CCW) operation, factory set CW
- Various torque ratings and running times available
- Mounting brackets to replace competitive actuators
- Low hysteresis actuator and potentiometer gearing
- Externally visible position indication
- Selection of input and output signals
- Zero and span adjustment
- Field replaceable circuit boards
- Electronic damper linearization function
- Split range and selectable parallel or master/slave operation
- Adjustable input signal override function
- NEMA 1, 2, 3, 3R, 3S, 4, 5, 12, 13

## 1199-04 Series

The 1199-04 adjustable port valve assemblies are designed for control of combustion air up to 3 psi and temperatures up to 300 F. They are not for tight shutoff and cannot be used for fuel gases. The 1199-04 series have an adjustable port feature. These low torque, rotary plug valves have a manually adjustable curtain design that can change the valve port area while still utilizing 100% of valve stroke. Turning the curtain adjusting knob changes port opening so valve can constitute optimum resistance in the system for preferred control characteristics without compromising resolution because control valve travel has not been reduced. This feature allows custom sizing of valve port relative to downstream resistances to match specific system requirements. For additional specifications and sizing information see 1004 literature\*.

### Selection:

Determine valve designation (see 1004 literature\* for sizing information) and actuator model designation (see "Actuator Selection" section [see 1615 literature† for additional information]). After determining valve and actuator that is desired, use the following 1199-04 Selection Chart to designate the 1199-04 series motorized valve assembly.

### 1199-04 Selection Chart

1199	1615-A	1615-B	1615-D	1615-E	1615-F	1615-H	1615-J	1615-K	1615-L	1615-N
1004-3-BQ	1199-3-BA-04	1199-3-BB-04	1199-3-BD-04	1199-3-BE-04	1199-3-BF-04	1199-3-BH-04	1199-3-BJ-04	1199-3-BK-04	1199-3-BL-04	1199-3-BN-04
1004-4-BQ	1199-4-BA-04	1199-4-BB-04	1199-4-BD-04	1199-4-BE-04	1199-4-BF-04	1199-4-BH-04	1199-4-BJ-04	1199-4-BK-04	1199-4-BL-04	1199-4-BN-04
1004-4-CQ	1199-4-CA-04	1199-4-CB-04	1199-4-CD-04	1199-4-CE-04	1199-4-CF-04	1199-4-CH-04	1199-4-CJ-04	1199-4-CK-04	1199-4-CL-04	1199-4-CN-04
1004-5-CQ	1199-5-CA-04	1199-5-CB-04	1199-5-CD-04	1199-5-CE-04	1199-5-CF-04	1199-5-CH-04	1199-5-CJ-04	1199-5-CK-04	1199-5-CL-04	1199-5-CN-04
1004-6-CQ	1199-6-CA-04	1199-6-CB-04	1199-6-CD-04	1199-6-CE-04	1199-6-CF-04	1199-6-CH-04	1199-6-CJ-04	1199-6-CK-04	1199-6-CL-04	1199-6-CN-04
1004-6-DQ	1199-6-DA-04	1199-6-DB-04	1199-6-DD-04	1199-6-DE-04	1199-6-DF-04	1199-6-DH-04	1199-6-DJ-04	1199-6-DK-04	1199-6-DL-04	1199-6-DN-04
1004-7-DQ	1199-7-DA-04	1199-7-DB-04	1199-7-DD-04	1199-7-DE-04	1199-7-DF-04	1199-7-DH-04	1199-7-DJ-04	1199-7-DK-04	1199-7-DL-04	1199-7-DN-04
1004-8-DQ	1199-8-DA-04	1199-8-DB-04	1199-8-DD-04	1199-8-DE-04	1199-8-DF-04	1199-8-DH-04	1199-8-DJ-04	1199-8-DK-04	1199-8-DL-04	1199-8-DN-04

### 1199-04 Selection Example:

For a packaged assembly consisting of the 1004-5-CQ‡ valve size with a 1615-H actuator select, 1199-5-CH-04.

\* **Specifications 1004-14:** *Adjustable port air valves—capacities*; **Bulletin 1008A:** *Adjustable port valves*;  
**Instructions & Parts List 1004/14:** *Instructions and parts list.*

† **Bulletin 1615:** *Actuator/Control Motor selection*; **Instruction Manual 1615:** *Installation and Operation Manual and specification.*

‡ The 1004 designation suffix "Q" not found in the standard 1004 literature indicates the special direct-coupled model required with the 1199 assembly.

## 1199-08 Series

The 1199-08 adjustable port valve assemblies are designed for control of natural gas and oil for pressures up to 125 psi and temperatures up to 350 F. They are not for tight shutoff. The 1199-08 series have an adjustable port feature. These low torque, rotary plug valves have a manually adjustable curtain design that can change the valve port area while still utilizing 100% of valve stroke. Turning the curtain adjusting knob changes port opening so valve can constitute optimum resistance in the system for preferred control characteristics without compromising resolution because control valve travel has not been reduced. This feature allows custom sizing of valve port relative to downstream resistances to match specific system requirements. For additional specifications and sizing information see 1008A literature §.

### Selection:

Determine valve designation (see 1008A literature § for sizing information) and actuator model designation (see "Actuator Selection" section [see 1615 literature † for additional information]). After determining valve and actuator that is desired, use the following 1199-08 Selection Chart to designate the 1199-08 series motorized valve assembly.

### 1199-08 Selection Chart

1199	1615-A	1615-B	1615-D	1615-E	1615-F	1615-H	1615-J	1615-K	1615-L	1615-N
1008A-02Q	1199-02A-08	1199-02B-08	1199-02D-08	1199-02E-08	1199-02F-08	1199-02H-08	1199-02J-08	1199-02K-08	1199-02L-08	1199-02N-08
1008A-01Q	1199-01A-08	1199-01B-08	1199-01D-08	1199-01E-08	1199-01F-08	1199-01H-08	1199-01J-08	1199-01K-08	1199-01L-08	1199-01N-08
1008A-0Q	1199-0A-08	1199-0B-08	1199-0D-08	1199-0E-08	1199-0F-08	1199-0H-08	1199-0J-08	1199-0K-08	1199-0L-08	1199-0N-08
1008A-1Q	1199-1A-08	1199-1B-08	1199-1D-08	1199-1E-08	1199-1F-08	1199-1H-08	1199-1J-08	1199-1K-08	1199-1L-08	1199-1N-08
1008A-2Q	1199-2A-08	1199-2B-08	1199-2D-08	1199-2E-08	1199-2F-08	1199-2H-08	1199-2J-08	1199-2K-08	1199-2L-08	1199-2N-08
1008A-3Q	1199-3A-08	1199-3B-08	1199-3D-08	1199-3E-08	1199-3F-08	1199-3H-08	1199-3J-08	1199-3K-08	1199-3L-08	1199-3N-08
1008A-4Q	1199-4A-08	1199-4B-08	1199-4D-08	1199-4E-08	1199-4F-08	1199-4H-08	1199-4J-08	1199-4K-08	1199-4L-08	1199-4N-08
1008A-5Q	1199-5A-08	1199-5B-08	1199-5D-08	1199-5E-08	1199-5F-08	1199-5H-08	1199-5J-08	1199-5K-08	1199-5L-08	1199-5N-08
1008A-6Q	1199-6A-08	1199-6B-08	1199-6D-08	1199-6E-08	1199-6F-08	1199-6H-08	1199-6J-08	1199-6K-08	1199-6L-08	1199-6N-08
1008A-7Q	1199-7A-08	1199-7B-08	1199-7D-08	1199-7E-08	1199-7F-08	1199-7H-08	1199-7J-08	1199-7K-08	1199-7L-08	1199-7N-08
1008A-8Q	1199-8A-08	1199-8B-08	1199-8D-08	1199-8E-08	1199-8F-08	1199-8H-08	1199-8J-08	1199-8K-08	1199-8L-08	1199-8N-08

### 1199-08 Selection Example:

For a packaged assembly consisting of the 1008A-5Q $\Delta$  valve size with a 1615-H actuator, select 1199-5H-08.

† Bulletin 1615: Actuator/Control Motor selection; Instruction Manual 1615: Installation and Operation Manual and specification.

$\Delta$  The 1008A designation suffix "Q" not found in the standard 1008A literature indicates the special direct-coupled model required with the 1199 ass'y.

§ Bulletin 1008A: Adjustable Port Valves; Capacities 1008A: Adjustable Port Valve capacities; Sheet 1008A-1: High Pressure capacities; Instructions and Parts List 1008A-4-14: Instructions and Parts List; Specifications 1008A: Specifications; Sheet 1008A-3: Lubrication.

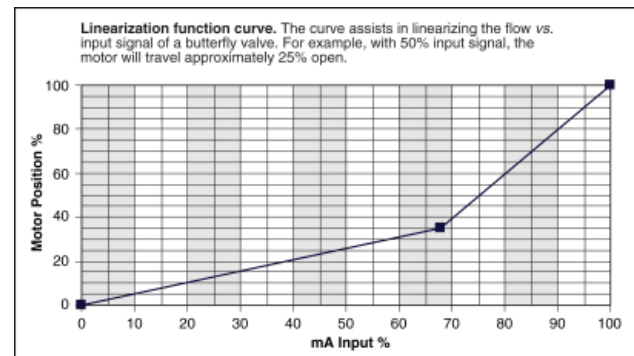
## 1199-26 Series

The 1199-26 butterfly valve assemblies are designed for control of natural gas as well as air for pressures up to 25 psi (depending on size) and temperatures up to 400 F. They are not for tight shutoff. Butterfly valves have no appreciable pressure drop when wide open in full size pipe allowing efficient handling of flows and velocities of normal combustion systems. For additional specifications and sizing information see 1126 literature □.

Electronic Linearization Function (available on the 1615-H and 1615-K models only). The circuit board electronically converts the input signal to match the flow characteristics of a typical butterfly valve. Consequently, the actuator will make smaller rotational movements when subjected to lower input signals and larger rotational movements when subjected to higher input signals. For example (based on a 90° modulating range), a change in input signal from 4 to 8 mA (25% increase) will cause a rotational movement of 11.25°. An equal signal change from 16 to 20 mA will cause a rotational movement of 45°. The linearization function can easily be enabled or disabled by re-positioning a jumper on the circuit board.

### Selection:

Determine valve designation (see 1126 literature □ for sizing information) and actuator model designation (see "Actuator Selection" section [see 1615 literature† for additional information]). After determining valve and actuator that is desired, use the following 1199-26 Selection Chart to designate the 1199-26 series motorized valve assembly.



### 1199-26 Selection Chart

1199	1615-A	1615-B	1615-D	1615-E	1615-F	1615-H	1615-J	1615-K	1615-L	1615-N
1126-0Q	1199-0A-26	1199-0B-26	1199-0D-26	1199-0E-26	1199-0F-26	1199-0H-26	1199-0J-26	1199-0K-26	1199-0L-26	1199-0N-26
1126-1Q	1199-1A-26	1199-1B-26	1199-1D-26	1199-1E-26	1199-1F-26	1199-1H-26	1199-1J-26	1199-1K-26	1199-1L-26	1199-1N-26
1126-2Q	1199-2A-26	1199-2B-26	1199-2D-26	1199-2E-26	1199-2F-26	1199-2H-26	1199-2J-26	1199-2K-26	1199-2L-26	1199-2N-26
1126-3Q	1199-3A-26	1199-3B-26	1199-3D-26	1199-3E-26	1199-3F-26	1199-3H-26	1199-3J-26	1199-3K-26	1199-3L-26	1199-3N-26
1126-4Q	1199-4A-26	1199-4B-26	1199-4D-26	1199-4E-26	1199-4F-26	1199-4H-26	1199-4J-26	1199-4K-26	1199-4L-26	1199-4N-26
1126-5Q	1199-5A-26	1199-5B-26	1199-5D-26	1199-5E-26	1199-5F-26	1199-5H-26	1199-5J-26	1199-5K-26	1199-5L-26	1199-5N-26
1126-6Q	1199-6A-26	1199-6B-26	1199-6D-26	1199-6E-26	1199-6F-26	1199-6H-26	1199-6J-26	1199-6K-26	1199-6L-26	1199-6N-26
1126-7Q	1199-7A-26	1199-7B-26	1199-7D-26	1199-7E-26	1199-7F-26	1199-7H-26	1199-7J-26	1199-7K-26	1199-7L-26	1199-7N-26
1126-7-FQ	1199-7A-26F	1199-7B-26F	1199-7D-26F	1199-7E-26F	1199-7F-26F	1199-7H-26F	1199-7J-26F	1199-7K-26F	1199-7L-26F	1199-7N-26F
1126-8Q	1199-8A-26	1199-8B-26	1199-8D-26	1199-8E-26	1199-8F-26	1199-8H-26	1199-8J-26	1199-8K-26	1199-8L-26	1199-8N-26
1126-8-FQ	1199-8A-26F	1199-8B-26F	1199-8D-26F	1199-8E-26F	1199-8F-26F	1199-8H-26F	1199-8J-26F	1199-8K-26F	1199-8L-26F	1199-8N-26F
1126-9Q	1199-9A-26	1199-9B-26	1199-9D-26	1199-9E-26	1199-9F-26	1199-9H-26	1199-9J-26	1199-9K-26	1199-9L-26	1199-9N-26
1126-10Q	1199-10A-26	1199-10B-26	1199-10D-26	1199-10E-26	1199-10F-26	1199-10H-26	1199-10J-26	1199-10K-26	1199-10L-26	1199-10N-26
1126-12Q	1199-12A-26	1199-12B-26	1199-12D-26	1199-12E-26	1199-12F-26	1199-12H-26	1199-12J-26	1199-12K-26	1199-12L-26	1199-12N-26
1126-14Q	1199-14A-26	1199-14B-26	1199-14D-26	1199-14E-26	1199-14F-26	1199-14H-26	1199-14J-26	1199-14K-26	1199-14L-26	1199-14N-26
1126-16Q	1199-16A-26	1199-16B-26	1199-16D-26	1199-16E-26	1199-16F-26	1199-16H-26	1199-16J-26	1199-16K-26	1199-16L-26	1199-16N-26

### 1199-26 Selection Example:

For a packaged assembly consisting of the 1126-5Q<sup>○</sup> valve size with a 1615-H actuator, select 1199-5H-26.

† **Bulletin 1615:** Actuator/Control Motor selection; **Sheet 1615-1:** Instruction Manual **1615:** Installation and Operation Manual and specification.

○ The 1126 designation suffix "Q" not found in the standard 1126 literature indicates the special direct-coupled model required with the 1199 assembly.

□ **Bulletin 1123/24/26:** Butterfly Valves.

## Actuator Selection

Select desired running time, operating voltage, control/feedback options, to specify actuator designation. Use Table A (below) to specify actuator designation (see 1615 literature † for additional information and specifications).

**Table A.**

Part Number	Torque (lb-in)	Running Time (1) 90° at 60 Hz (sec.)	Input Voltage (V ac)	Input Control	Feedback Signal	Degrees of Travel (8)	Zero and Span Adjustment
1615-A	140	12	110-120	4-20 mA	None	135°	Yes
1615-B	140	25	110-120	4-20 mA	None	90°	Yes
1615-C	140	25	24	(2)	135Ω	135°	No
1615-D	200	25	110-120	4-20 mA	None	90°	Yes
1615-E	200	25	110-120	4-20 mA	1000Ω	90°	Yes
1615-F	310	37	110-120	4-20 mA	None	135°	Yes
1615-G	310	37	110-120	(2)	135Ω	135°	No
1615-H	310	37	110-120	(3)	(4)	135°	Yes
1615-I	310	37	110-120	Floating	None	160°	No
1615-J	310	37	220-240	4-20 mA	None	135°	Yes
1615-K	400	50	220-240	(3)	(4)	90°	Yes
1615-L	400	50	110-120	4-20 mA	None	135°	Yes
1615-N	140	25	220-240	4-20 mA	None	90°	Yes
1615-P	200	25	110-120	(3)	(4)	90°	Yes
1615-Q	200	25	110-120	4-20 mA	None	135°	Yes
1615-R	200	25	110-120	4-20 mA	1000Ω	135°	Yes

**NOTES:**

- (1) Multiply running time by 1.2 for 50 Hz.
- (2) Position proportional control (i.e. AC voltage control)
- (3) All inputs/outputs, linearization, split ranging, and pre-set positioning
- (4) Actuators with the multi-functional circuit board have the following output signals: 4-20 mA, 0-10 V dc, and 0-20 mA
- (5) Actuator shafts are 3/8" square for 1615-A - L and 1615-N - R
- (6) All actuators will contain 2 limit switches and 4 auxiliary SPDT switches
- (7) All actuators will use the red scale indication with the double switch cam indicators.
- (8) All 135° actuators will be factory spanned for 90° travel when used as an 1199 assembly.

### Actuator Selection Example:

Select a 1615-H for a 120 V, 37 second, high resolution actuator with all input/output and multi function options.

† **Bulletin 1615:** Actuator/Control Motor selection; **Instruction Manual 1615:** Installation and Operation Manual and specification.

**WARNING:** Situations dangerous to personnel and property may exist with the operation and maintenance of an 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.