# North American Manual Reset and Motorized Valves


1518 Manual Reset


1519 Motorized

## 1518/1519 Automatic Shutoff Valves

- Agency approvals:  UL, FM, CSA
- Proof-of-closure switch
- High Capacity - High Pressure
- Durable construction
- Robust switches and terminal blocks

## TYPICAL APPLICATIONS

North American Automatic Shutoff Valves are used in fuel supply lines on industrial furnaces, ovens, kilns, boilers, and other heating equipment. They shut off fuel automatically and instantly upon any break in electric power or the safety circuit.They cannot be opened until an interlocking safety or control circuit is complete, restoring power to the valve.

They can be suitable for pipe lines carrying a variety of gases and liquids used in processes other than combustion.

**Use Manual Reset Valves** where "manned" operation is required or preferred.

**Specify Motorized Valves** where remote or "unmanned" operation is needed. Not recommended for oil applications where on/off cycling is more than 6 cycles per hour.

1518 and 1519 Valves are for emergency automatic shutdown only--following any shutdown, close manual shutoff valves promptly.

## STANDARDS

All North American 1518 and 1519 Automatic Shutoff Valves have the following standard characteristics:

— Enclosure meets NEMA 1, 3, 3S, 4, 12, and CSA 2, 3, and 4.
— SPDT "Proof-of-Closure" switch.
— DPDT "Valve Open" switch.
— Prewired terminal block.
— Pipe sizes ¾" through 6".
— Cast iron body.
— 115 V ac/60 Hz operation (other characteristics available).
— Top assembly position is field rotatable in 90° increments.
— 6 seconds opening time for most motorized valves on 60 Hz.
— Meets Class VI valve seat leakage.

## AGENCY APPROVALS

— FM 7400
— UL 429
— CSA 6.5 C/I

## OPTIONS

— Steel body.
— Expanded capacity ports.†
— Companion flanges (order separately).†

†Not available for all sizes.

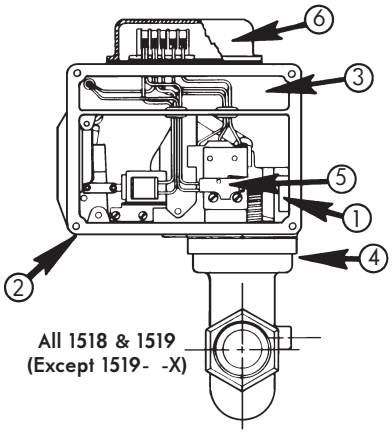
Valves carry FM, UL, and CSA labels for natural gas and propane gas. All are IRI approvable. Maximum pressure differentials vary from 30 to 125 psi (depending on size). Sizes -7 and -8-XF are not suitable for #2 oil.

All valves (except 1519-8-XF, and -8-XFS. 125°F [52°C]) are suitable for ambient and fluid temperatures from –20°F to 140°F (–28°C to 60°C) on AC electrical power.

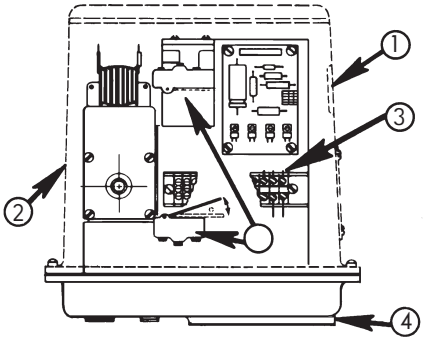
Valve action closes aggressively within one second of power loss. A two-stage latch/return motion by the operator can open a Manual Reset Valve after it is re-powered. Motorized Valves allow flow to begin within one second of powering: They are fully open in six seconds for most sizes.

PERFORM FREQUENT FIELD INSPECTIONS, LEAK TESTS, AND PROPER MAINTENANCE TO ASSURE CONTINUED SATISFACTORY VALVE PERFORMANCE. REFER TO INSTALLATION/MAINTENANCE BULLETINS.

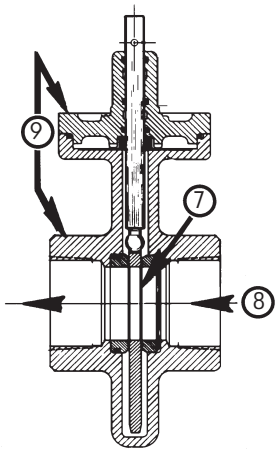
DO NOT OPERATE MOTORIZED VALVES MORE THAN ONE CYCLE PER MINUTE FOR PERIODS OVER 15 MINUTES TO AVOID OVERHEATING MOTOR.




All 1518 & 1519
(Except 1519- -X)




1519- -X Only




## DESIGN DETAILS

### Top Assembly

Large, two-color OPEN/SHUT indicator ① provides easy identification of valve position. Built-in wiring compartment ③ and terminal block ⑥ eliminates need for external junction box.

Terminal block ⑥ includes 12 number-coded positions.

Auxiliary switches ⑤ provide DPDT proof-of-open and SPDT "proof-of-closure" to meet insurance and approval requirements.

Good practice dictates that auxiliary switches used in main automatic shutoff valves normally be used for signal duty only.

In a block-and-vent system, blocking valve and normally open vent valve may be powered through the "proof-of-closure" switch of the main automatic shutoff valve; but all three valves must be powered through the appropriate normally open flame relay contact.

Enclosure ② meets NEMA 1, 3, 3S, 4 and 12, and CSA 2, 3 and 4 standards (when suitable electrical connections are made).

Lubrication-free design means minimal maintenance requirements. Field-rotatable top assembly ④ provides four positions for complete piping convenience.

Valves feature solenoid-actuated internal latching mechanism, except 1519- -X which have rack-and-pinion/solid state/magnetic clutch design.

When a motorized valve is energized, drive motor opens valve in 6 to 12 seconds, dependent on valve size.

### Valve Body

Metal-to-metal seating dœsn't wear out; it "wears in." Disc wipes valve seat clean during each operation ⑦.

Rising stem design with straight-through flow ⑧ reduces pressure drop. Cast iron or cast steel body ⑨ to meet application requirement.

Built-in over-travel at closed position for positive shut-off.

Test connections provided both upstream and downstream of valve disc.

### Accessories

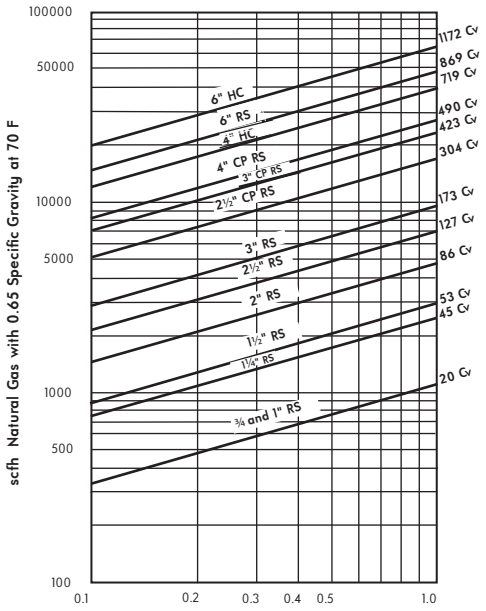
**Companion Flange Sets** (flat-faced) facilitate installation of flanged valves. Order separately.

**Wheel and Chain** assemblies allow operation of manual valves in otherwise inaccessible overhead locations. To order, specify valve with remote reset wheel and chain (2-8628-1 through -5).

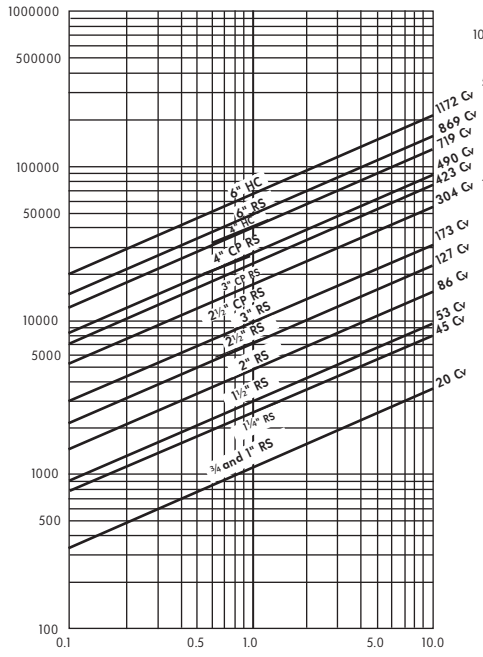
**Every valve is operationally tested and meets requirements of ANSI B16.104 Class VI seat leakage when it leaves our plant.**

**WARNING:** Valve leak test should be performed on a quarterly basis to assure continued safe and reliable operation. Each valve should be checked with available line pressure. Absolute zero leakage may not be obtained in the field. Any valve that exceeds the allowable leakage, as set forth by your local codes or insurance requirements (15 bubbles per minute), should be removed from service and your North American representative should be contacted.

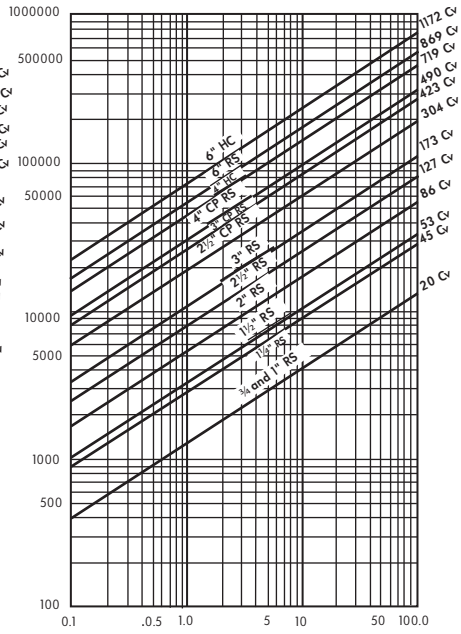
# CAPACITIES and VALVE SELECTION CHARTS




ΔP (inches wc)
Based on 5"wc inlet




ΔP (inches wc)
Based on 1 psi inlet




ΔP (inches wc)
Based on 5 psi inlet

To calculate gas flow at other pressures:

$$Q = 1360\ Cv\left[\frac{(P_1^2 - P_2^2)}{2\ GT}\right]^{1/2}$$

Q = scfh
G = specific gravity
$P_1$ = inlet psia
$P_2$ = outlet psia
T = temp. (460 + F)

**APPROXIMATE OIL CAPACITY**

Based on #2 Fuel Oil (60 F, 30°API) at ΔP = 1 psig

| Valve | gph |
|---|---|
| 1518/19-0 | 1200 |
| 1518/19-1 | 1300 |
| 1518/19-2 | 2900 |

| Valve Size | Cv | scfh Nat'l Gas at 1 osig ΔP w/2 psig inlet | UL/FM/CGA SANCTIONED Manual Reset | Motorized | Max. psi at Inlet‡ | Motor Timing on 60 Hz (sec.) |
|---|---|---|---|---|---|---|
| -0 (¾") | 20 | 1 460 | 1518-0 | 1519-0 | 125 | 6 |
| -1 (1") | 20 | 1 540 | 1518-1<br>1518-1-S | 1519-1<br>1519-1-S | 125 | 6 |
| -2 (1¼") | 45 | 3 390 | 1518-2 | 1519-2 | 100 | 6 |
| -3 (1½") | 53 | 4 080 | 1518-3<br>1518-3-S | 1519-3<br>1519-3-S | 70 | 6 |
| -4 (2") | 86 | 6 600 | 1518-4<br>1518-4-S | 1519-4<br>1519-4-S | 70 | 6 |
| -5 (2½") | 127 | 9 800 | 1518-5(F) | 1519-5(F) | 40 | 6 |
| | 304 | 23 400 | 1518-5-E(F)<br>1518-5-EFS | 1519-5-E(F)<br>1519-5-EFS | 50 | 6 |
| -6 (3") | 173 | 13 300 | 1518-6 | 1519-6 | 30 | 6 |
| | 423 | 33 300 | 1518-6-E(F)<br>1518-6-EFS | 1519-6-E(F)<br>1519-6-EFS | 40 | 6 |
| -7 (4") | 490 | 38 600 | 1518-7-EF<br>1518-7-EFS | 1519-7-EF<br>1519-7-EFS | 40 | 6 |
| | 719 | 56 600 | — | 1519-7-XF<br>1519-7-XFS | 60 | 12 |
| -8 (6") | 869 | 68 400 | 1518-8-F<br>1518-8-FS | — | 20 | 12 |
| | 1172 | 92 300 | — | 1519-8-XF<br>1519-8-XFS | 50 | 12 |

‡ Maximum operating pressure differential must not exceed the maximum inlet pressure.

(F) = Optional Flanged
F = Standard Flanged
S = Steel Body
U = Non-sanctioned
E = Extra Capacity
X = Rack and Pinion Operator

## ELECTRICAL DATA

### General

All standard shutoff valves are designed for operation on 115 V 60 Hz power supply. Optional voltages, Hz, direct current, or special switches, involve extra cost and extended delivery. Specify power characteristics when ordering.

A solenoid or circuit board is energized whenever valve is powered. Holding current volt-amperes are continuous once energized. Motor on any 1519 Valve is powered only during the opening stroke. The normally closed contact of a limit switch breaks motor circuit when full-open position is reached.

Flow begins within 1 second of powering. Full closure is complete within 1 second after de-energizing.

### Series 1519- -X only

Standard 120 V power input is converted by a circuit board (no solenoid) to 90 V dc output to a magnetic clutch that is energized whenever valve is powered.

Circuit board components also act as a time delay, allowing 1/10 second response lag after main power interruption (this helps avoid nuisance shutdowns).

### Volt-ampere (VA) ratings

All solenoid, circuit board, and motor ratings are shown in Table I. Total connected load on any valve should not exceed 2000 VA. This limitation includes the maximum consumption shown in Table I plus the VA consumption of external equipment powered by the auxiliary switches at any one time.

TABLE I

| Type | Valve Size (inches) | Series | VA Ratings (ac operation) Opening | Holding |
|---|---|---|---|---|
| Manual Reset | ¾-3 | 1518 | 22 | 22 |
| | 6 | 1518 | 34 | 34 |
| | 2½-4 | 1518- -E | 34 | 34 |
| Motorized | ¾-3 | 1519 | 220 | 22 |
| | 2½-4 | 1519- -E | 232 | 34 |
| | 4-6 | 1519- -X | 376 | 8 |

### Wiring Diagrams

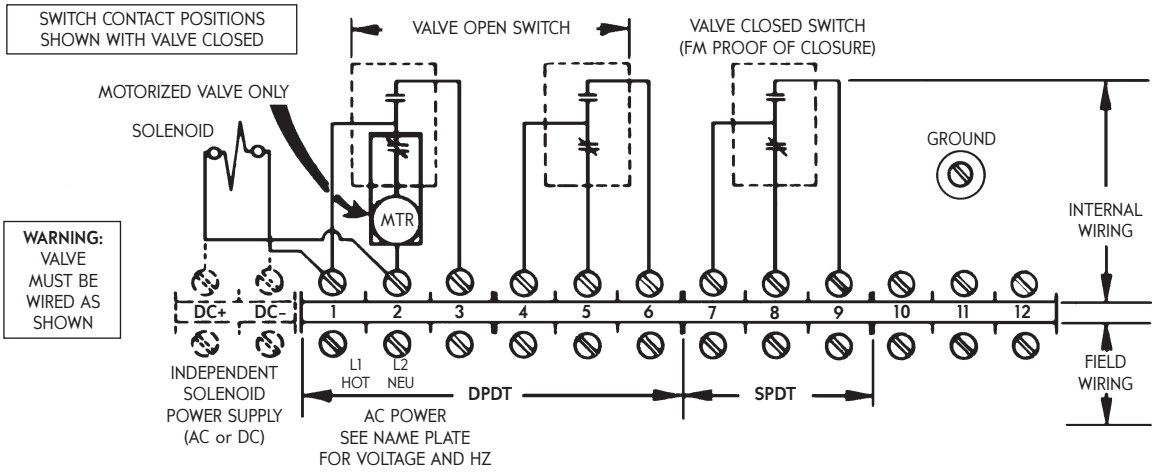
Each automatic shutoff valve includes one of the wiring diagrams shown below and on Page 4. Switch contacts are shown with the valve shut, unpowered.

Wiring shown above the terminal strip is internal. Wiring below terminal strip is external (field), as required.

All wires are number-coded as shown to match terminals. Terminals "2" and "DC" are neutral; all others are hot.

**WARNING:** Do not attempt field repair of valve body, top assembly, or motor drive unit. Any alterations could be dangerous, and will void all warranties.

### TYPICAL WIRING FOR ALL VALVES EXCEPT 1519- -X



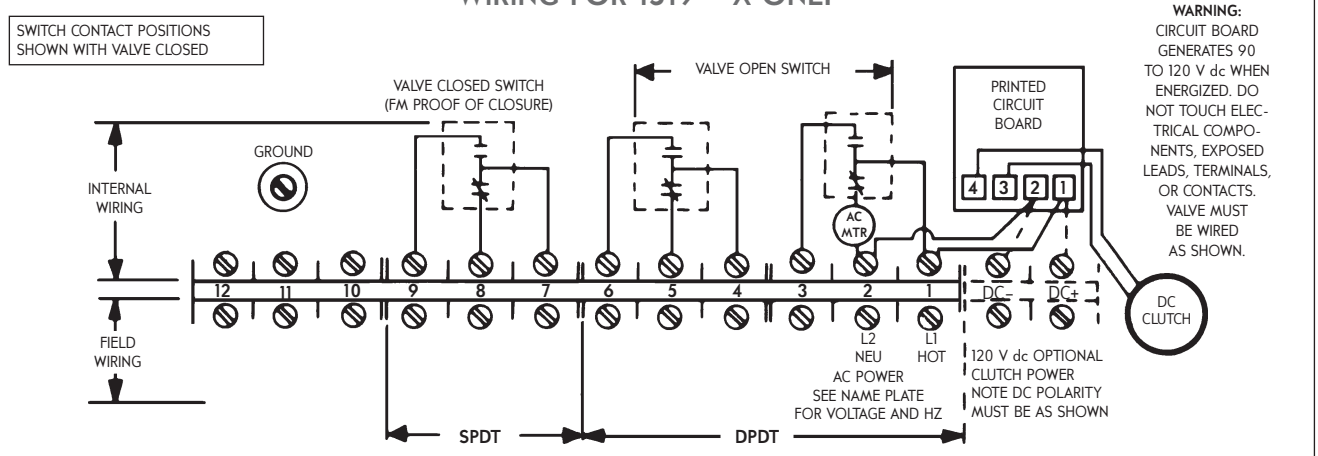

**SWITCH RATINGS**
Total connected load not to exceed 1700 VA including values from Table I

| SPDT | | DPDT | |
|---|---|---|---|
| 125 V ac- | 15 amp | 125 V ac- | 10 amp |
| 250 V ac- | 15 amp | 250 V ac- | 10 amp |
| 125 V dc- | 0.5 amp | 125 V dc- | 0.3 amp |
| 250 V dc- | 0.25 amp | 250 V dc- | 0.15 amp |

**TYPICAL SWITCH ACTION**
(O = Open contacts; X = Closed contacts between indicated terminals.)

| | Valve Open Switch | | | Valve Closed Switch | |
|---|---|---|---|---|---|
| Valve Position | 1-3 | 4-5 | 4-6 | 7-8 | 7-9 |
| Fully Closed | O | X | O | X | O |
| Intermediate | O | X | O | O | X |
| Fully Open | X | O | X | O | X |

## WIRING FOR 1519- -X ONLY




**SWITCH RATINGS**
Total connected load not to exceed 1600 VA including values from Table I

| SPDT | | DPDT | |
|---|---|---|---|
| 125 V ac- | 20 amp | 125 V ac- | 10 amp |
| 250 V ac- | 20 amp | 250 V ac- | 10 amp |
| 125 V dc- | 0.5 amp | 125 V dc- | 0.3 amp |
| 250 V dc- | 0.25 amp | 250 V dc- | 0.15 amp |

**TYPICAL SWITCH ACTION**
(O = Open contacts; X = Closed contacts between indicated terminals.)

| | Valve Open Switch | | | Valve Closed Switch | |
|---|---|---|---|---|---|
| Valve Position | 1-3 | 4-5 | 4-6 | 7-8 | 7-9 |
| Fully Closed | O | X | O | X | O |
| Intermediate | O | X | O | O | X |
| Fully Open | X | O | X | O | X |

## VALVE BODY AND TRIM

Standard 1518 Manual Reset and 1519 Motorized Valves have cast iron bodies with internal materials listed in table below under "Standard Trim." Cast steel bodies are available. They are specified by adding an "S" after the code number for pipe size. *Example:* 1518-4-S.

| Body and Bonnet Specifications | | Standard Body and Bonnet | "S" Body and Bonnet |
|---|---|---|---|
| A | Material | CI, G3000, CL30 | Cast Steel |
| B | ASTM Spec | A159 | A216-WCB |

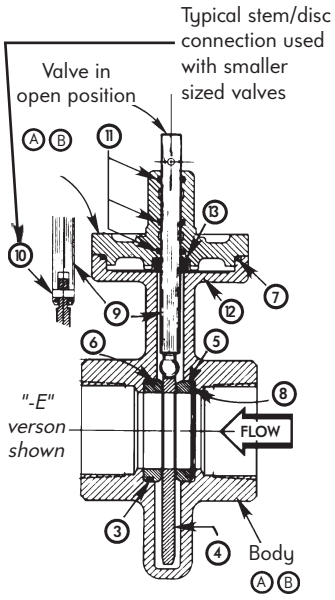
Other trim packages are available per request. Please contact engineering. i.e. different body, seat, disc. spring pin, and body seal and bumper materials are available.
* Body seal bumper.

Note: For "U" valves, please submit fuel anaylisis to North American office to determine suitability of valves.

Valve Internals

| Item No. | Description | Standard Trim ¾ - 2" | 2 ½ - 3" | 4 - 6" | 2 ½ - 4" |
|---|---|---|---|---|---|
| A | Body | Cast Iron | | | |
| B | Bonnet | ASTM A126, Class B | | | |
| 3 | Seat | 400 SS | | | |
| 4 | Disc | Hardened Ductile Iron | | | |
| 5 | Follower Ring | PEEK | | | |
| 6 | Seat O-Ring* | Buna N | | | |
| 7 | Body O-Ring* | Buna N | | | |
| 8 | Wavy Spring | 300 SS | | | |
| 9 | Stem | 17-4 PH SS | | | |
| 10 | Spring pin (when required) | Carbon Steel | | | |
| 11 | Stem O-Ring* | Buna N | | | |
| 12 | Striker Plate | 17-7 PH SS | | | |
| 13 | Bumper* | Buna N | | | |
| — | Clevis | — | — | — | Ductile Iron |

① Compression Ring
② For 6" 808, and 4" & 6 " 7000 valves only: not shown in illustration



1518
MANUAL
RESET

**Fig. 1**

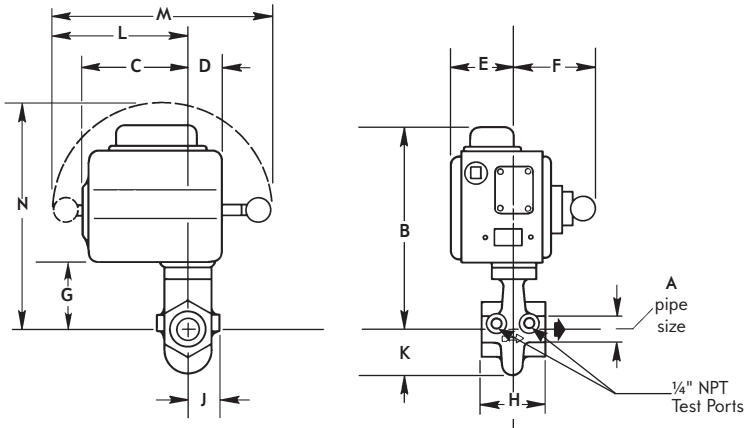
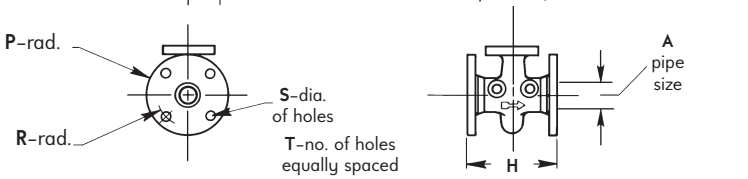



**Fig. 1A**




All valve positions are as shown when shipped as a separate item.

Orientation may be different when part of packaged fuel train.

| Valve designation | Fig. no. | dimensions in inches A | B | C | D | E | F | G | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1518-0** | 1 | ¾ | 11 3/16 | 5 7/16 | 1 7/8 | 3 1/2 | 4 1/2 | 3 1/8 | 3 13/16 | 13/16 | 2 | 7 1/8 | 11 1/2 | 11 19/32 |
| **1518-1-(S)** | 1 | 1 | 11 3/16 | 5 7/16 | 1 7/8 | 3 1/2 | 4 1/2 | 3 1/8 | 3 13/16 | 13/16 | 2 | 7 1/8 | 11 1/2 | 11 19/32 |
| **1518-2** | 1 | 1 1/4 | 11 3/4 | 5 7/16 | 1 7/8 | 3 1/2 | 4 1/2 | 3 11/16 | 4 | 1 9/16 | 2 7/16 | 7 1/8 | 11 1/2 | 12 1/8 |
| **1518-3-(S)** | 1 | 1 1/2 | 12 7/32 | 5 7/16 | 1 7/8 | 3 1/2 | 4 1/2 | 4 1/8 | 4 | 1 13/16 | 2 11/16 | 7 1/8 | 11 1/2 | 12 19/32 |
| **1518-4-(S)** | 1 | 2 | 13 11/16 | 7 19/32 | 2 3/8 | 3 1/2 | 5 5/8 | 4 11/16 | 4 3/8 | 1 7/8 | 3 1/4 | 8 9/16 | 13 1/8 | 14 3/8 |
| **1518-5** | 1 | 2 1/2 | 13 9/16 | 7 19/32 | 2 3/8 | 3 1/2 | 5 1/2 | 4 5/8 | 5 | 2 1/4 | 3 1/2 | 8 9/16 | 13 1/8 | 14 1/4 |
| **1518-5-F** | 1A | 2 1/2 | 13 9/16 | 7 19/32 | 2 3/8 | 3 1/2 | 5 1/2 | 4 5/8 | 7 1/2 | 2 | 3 1/2 | 8 9/16 | 13 1/8 | 14 1/4 |
| **1518-5-E** | 1 | 2 1/2 | 14 9/16 | 10 5/8 | 2 27/32 | 4 3/16 | 5 3/4 | 5 13/16 | 5 | 2 1/4 | 4 5/16 | 10 15/16 | 15 1/8 | 14 9/16 |
| **1518-5-EF(S)** | 1A | 2 1/2 | 14 9/16 | 10 5/8 | 2 27/32 | 4 3/16 | 5 3/4 | 6 9/16 | 7 1/2 | 2 1/4 | 4 1/2 | 10 15/16 | 15 1/8 | 14 9/16 |
| **1518-6** | 1 | 3 | 13 13/16 | 7 19/32 | 2 3/8 | 3 1/2 | 5 5/8 | 4 13/16 | 5 3/16 | 2 9/16 | 2 15/16 | 8 9/16 | 13 1/8 | 14 1/2 |
| **1518-6-E** | 1 | 3 | 15 9/32 | 10 5/8 | 2 3/8 | 4 3/16 | 5 3/4 | 6 9/16 | 5 1/2 | 2 9/16 | 5 1/8 | 10 15/16 | 15 1/8 | 17 31/32 |
| **1518-6-EF(S)** | 1A | 3 | 15 9/32 | 10 5/8 | 2 27/32 | 4 3/16 | 5 3/4 | 6 9/16 | 8 | 2 9/16 | 5 7/32 | 10 15/16 | 15 1/8 | 17 31/32 |
| **1518-7-EF(S)** | 1A | 4 | 15 9/32 | 10 5/8 | 2 27/32 | 4 3/16 | 5 3/4 | 6 9/16 | 9 | 2 9/16 | 5 9/16 | 10 15/16 | 15 1/8 | 17 31/32 |
| **1518-8-F(S)** | 1A | 6 | 20 3/4 | 10 5/8 | 2 27/32 | 4 3/16 | 5 3/4 | 10 7/8 | 10 1/2 | 3 1/4 | 7 1/2 | 10 15/16 | 15 1/8 | 23 7/16 |

| Valve designation | Fig. no. | dimensions in inches P | R | S | T | wt, lb |
|---|---|---|---|---|---|---|
| **1518-0** | 1 | — | — | — | — | 17 |
| **1518-1-(S)** | 1 | — | — | — | — | 17 |
| **1518-2** | 1 | — | — | — | — | 19 |
| **1518-3-(S)** | 1 | — | — | — | — | 20 |
| **1518-4-(S)** | 1 | — | — | — | — | 31 |
| **1518-5** | 1 | — | — | — | — | 45 |
| **1518-5-F** | 1A | 3 1/2 | 2 3/4 | 3/4 | (4) | 70 |
| **1518-5-E** | 1 | — | — | — | — | 46 |
| **1518-5-EF(S)** | 1A | 3 1/2 | 2 3/4 | 3/4 | (4) | 89 |
| **1518-6** | 1 | — | — | — | — | 45 |
| **1518-6-E** | 1 | — | — | — | — | 53 |
| **1518-6-EF(S)** | 1A | 3 3/4 | 3 | 3/4 | (4) | 95 |
| **1518-7-EF(S)** | 1A | 4 1/2 | 3 3/4 | 3/4 | (8) | 123 |
| **1518-8-F(S)** | 1A | 5 1/2 | 4 3/4 | 7/8 | (8) | 140 |

F = Standard Flanged
(S) = Optional Steel Body
S = Standard Steel Body

E = Extra Capacity
X = Rack & Pinion Operator

**WARNING:** Valve leak test should be performed on a quarterly basis to assure continued safe and reliable operation. Each valve should be checked with available line pressure. Absolute zero leakage may not be obtained in the field. Any valve that exceeds the allowable leakage, as set forth by your local codes or insurance requirements (15 bubbles per minute), should be removed from service and your North American representative should be contacted.

1519
MOTORIZED

**Fig. 2**

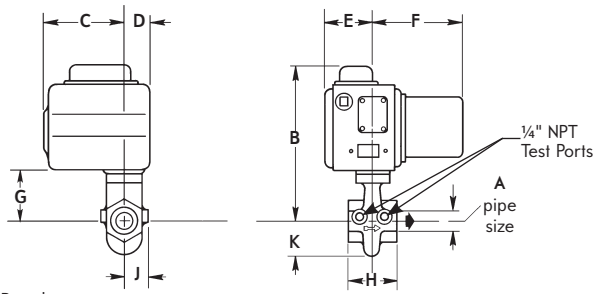
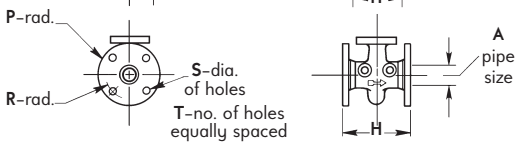


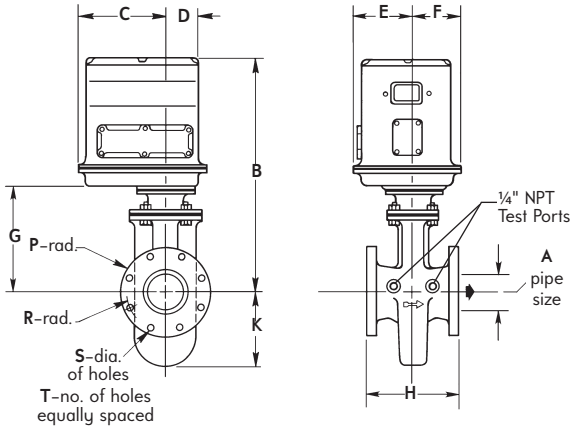

**Fig. 2A**




All valve positions are as shown when shipped as a separate item.

Orientation may be different when part of packaged fuel train.

**Fig. 3**




| Valve designation | Fig. no. | dimensions in inches A | B | C | D | E | F | G | H | J | K | P | R | S | T | wt, lb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1519-0 | 2 | ¾ | 11 3/16 | 5½ | 1 7/8 | 3½ | 7 11/32 | 3⅛ | 3 13/16 | 19/32 | 2 | — | — | — | — | 23 |
| 1519-1-(S) | 2 | 1 | 11 3/16 | 5½ | 1 7/8 | 3½ | 7 11/32 | 3⅛ | 3 13/16 | 19/32 | 2 | — | — | — | — | 23 |
| 1519-2 | 2 | 1¼ | 11¾ | 5½ | 1 7/8 | 3½ | 7 11/32 | 3 11/16 | 4 | 1 9/16 | 2 7/16 | — | — | — | — | 24 |
| 1519-3-(S) | 2 | 1½ | 12 7/32 | 5½ | 1 7/8 | 3½ | 7 11/32 | 4⅛ | 4 | 1 9/16 | 2 11/16 | — | — | — | — | 25 |
| 1519-4-(S) | 2 | 2 | 13 11/16 | 7 19/32 | 2⅜ | 3½ | 7½ | 4 11/16 | 4⅜ | 1 11/16 | 3¼ | — | — | — | — | 34 |
| 1519-5 | 2 | 2½ | 13 9/16 | 7 19/32 | 2⅜ | 3½ | 7½ | 4⅝ | 5 | 2¼ | 3½ | — | — | — | — | 37 |
| 1519-5-F | 2A | 2½ | 13 9/16 | 7 19/32 | 2⅜ | 3½ | 7½ | 4⅝ | 7½ | 2 | 3½ | 3½ | 2¾ | ¾ | (4) | 75 |
| 1519-5-E | 2 | 2½ | 14 9/16 | 10⅝ | 2 27/32 | 4 7/32 | 7½ | 5 13/16 | 5 | 2¼ | 4 5/16 | — | — | — | — | 50 |
| 1519-5-EF(S) | 2A | 2½ | 14 9/16 | 10⅝ | 2 27/32 | 4 7/32 | 7½ | 6 9/16 | 7½ | 2¼ | 4½ | 3½ | 2¾ | ¾ | (4) | 93 |
| 1519-6 | 2 | 3 | 13 13/16 | 7 19/32 | 2 27/32 | 3½ | 7½ | 4 13/16 | 5 3/16 | 2 9/16 | 2 15/16 | — | — | — | — | 42 |
| 1519-6-E | 2 | 3 | 15 9/32 | 10⅝ | 2⅜ | 4 7/32 | 7½ | 6 9/16 | 5½ | 2 9/16 | 5⅛ | — | — | — | — | 53 |
| 1519-6-EF(S) | 2A | 3 | 15 9/32 | 10⅝ | 2 27/32 | 4 7/32 | 7½ | 6 9/16 | 8 | 2 9/16 | 5 7/32 | 3¾ | 3 | ¾ | (4) | 95 |
| 1519-7-EF(S) | 2A | 4 | 15 9/32 | 10⅝ | 2 27/32 | 4 7/32 | 7½ | 6 9/16 | 9 | 2 9/16 | 5 9/16 | 4½ | 3¾ | ¾ | (8) | 133 |
| 1519-7-XF(S) | 3 | 4 | 23⅞ | 8⅝ | 3⅞ | 4 7/32 | 4 9/16 | 10⅞ | 9 | — | 7 5/16 | 4½ | 3¾ | ¾ | (8) | 195 |
| 1519-8-XF(S) | 3 | 6 | 25 | 8⅝ | 3⅞ | 5 13/16 | 4 9/16 | 12 1/16 | 10½ | — | 8⅜ | 5½ | 4¾ | ⅞ | (8) | 215 |

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. Components in combustion systems may exceed 160°F (71°C) surface temperatures and present hot surface contact hazard. Fives North American Combustion, Inc. suggests the use of combustion systems that are in compliance with all Safety Codes, Standards, Regulations and Directives; and care in operation.

fives ultimate machines ultimate factory

**CONTACT US:**
**Fives North American Combustion, Inc.**
4455 East 71st Street - Cleveland, OH 44105 - USA
Tel: +1 216 271 6000 - Fax: +1 216 373 4237
Email: fna.sales@fivesgroup.com

www.fivesgroup.com