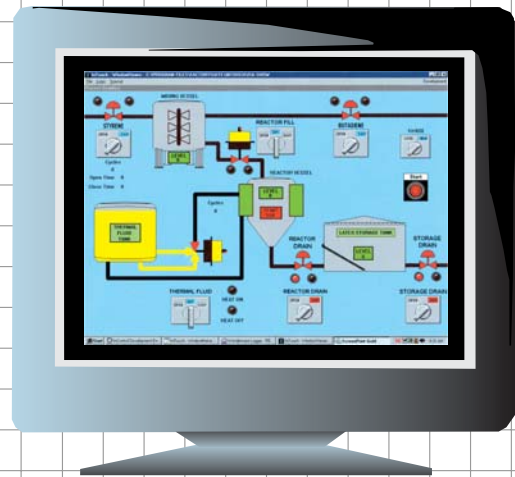




An ISO 9001 Registered Company



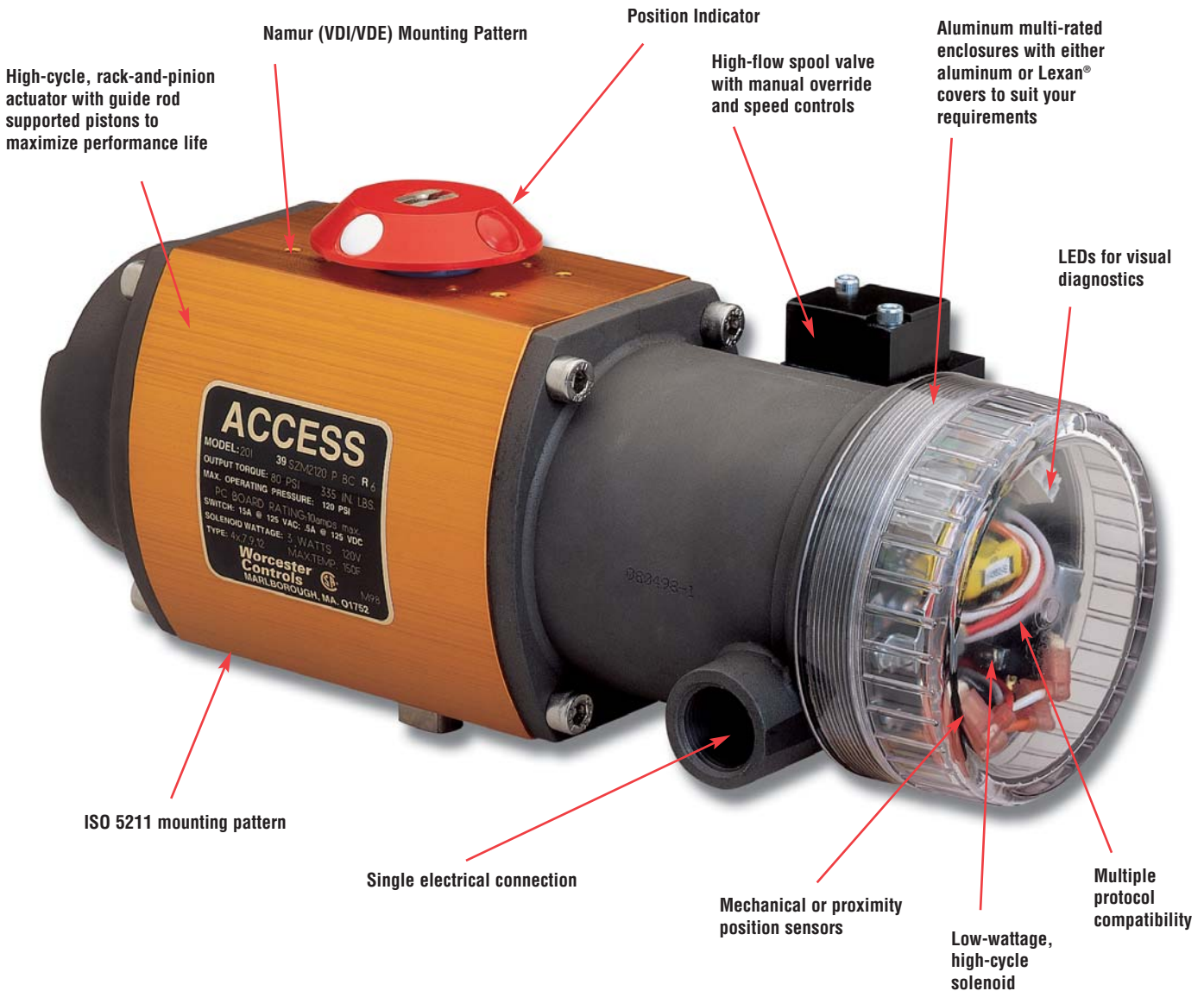
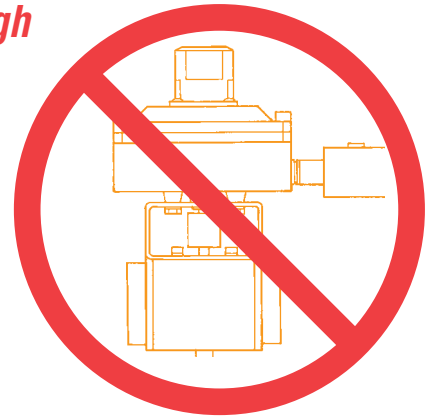
ACCESS™ Actuator

*Pneumatic automation
with total process interface*

**Worcester Controls Introduces an Innovative Breakthrough
To Users of Pneumatically Automated Valves**

ACCESS™

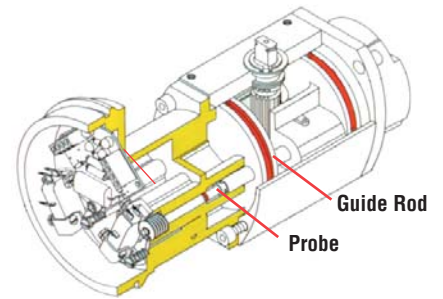
The ACCESS package combines the field-proven 39 Series pneumatic actuator with integral limit switches, proximity sensors, solenoid and optional digital protocol communications. This package eliminates the need for additional enclosures, couplings, tubing, mounting brackets and associated multiple vendor involvement.



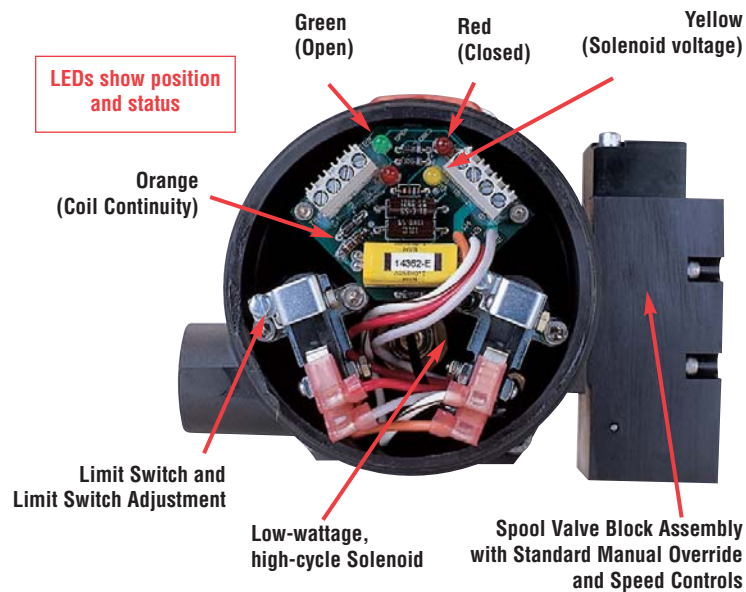
Operating Principle

Guide rods are the supporting framework for the pistons of the Series 39 actuator. They prevent the pistons from misaligning and coming in contact with the actuator cylinder, creating piston seal wear. Guide rods also prevent piston seals from uneven compression and additional wear. Each time the actuator cycles, the pistons and guide rods move. This guide rod movement is simply extended through the actuator end cap via probes and ACCESS utilizes their movement to accurately detect actuator position.

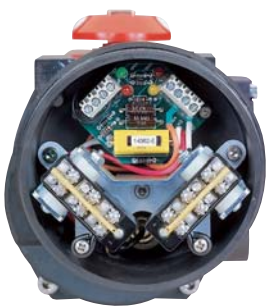
The optional solenoid/spool valve combination routes your compressed air through internally cast passageways to provide rapid and precise actuator cycling. The result is a compact, high-performance actuated package with an array of integrated accessories.



Modular design permits multiple limit switch, proximity sensor, solenoid and diagnostic LED combinations



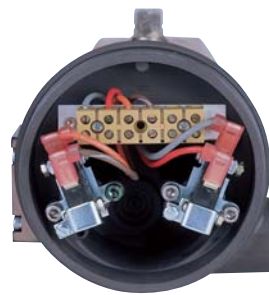
SPDT Mechanical Limit Switches, Solenoid, Spool Valve and Diagnostic LEDs



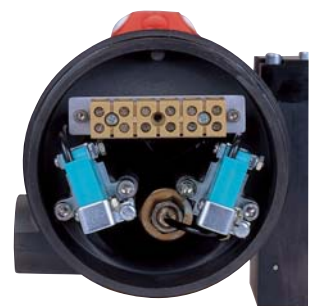
DPDT mechanical limit switches, solenoid, spool valve and diagnostic LEDs



Intrinsically safe* package with SPDT gold-plated mechanical limit switches, solenoid and spool valve



Basic switch package, no solenoid



Proximity sensors, solenoid and spool valve

Options

ACCESS I Integral Unit



Actuator Sizes 10, 15, 20

ACCESS M Mounted Unit



Actuator Sizes 10 - 45

Lexan Weatherproof (W) Cover



TYPE 4, 4x

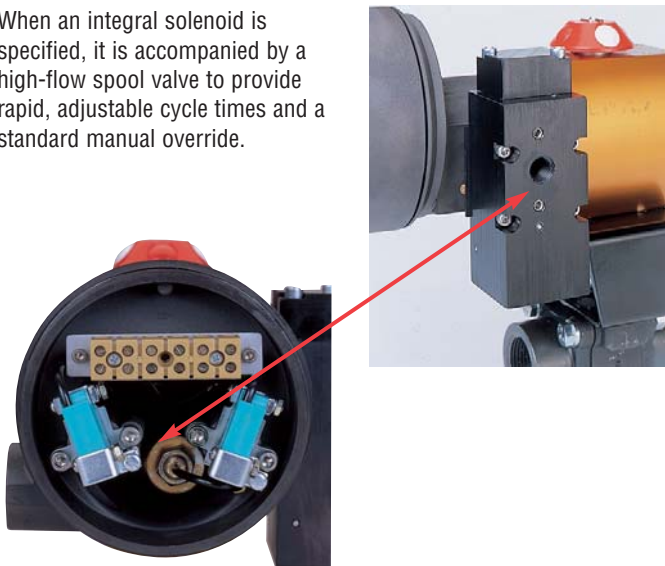
Aluminum Hazardous Environment (Z) Cover



TYPE 4, 4x, 7, 9, 12 (Class 1, Division 1, Groups B, C and D)

Solenoid/Spool Valve

When an integral solenoid is specified, it is accompanied by a high-flow spool valve to provide rapid, adjustable cycle times and a standard manual override.



No Solenoid



If no solenoid is specified, a connection block permits direct nipple mounting of an external solenoid or a tubing connection from a remote solenoid.

Options

Actuator Sizes 10, 15, 20, 25, 30, 33, 35, 40, 42, 45 Refer to Brochure PB 302 for torque values and specifications.

Actuator Action Double-Acting or Spring-Return

ACCESS Type ACCESS I, Integral (Sizes 10, 15, 20) ACCESS M, Mounted (Sizes 10-45)

Enclosure (W) Weatherproof Clear Lexan® Cover - CSA Approved: Type 4, 4x, CSA Approved to U.L. Standards. NRTL/C Approved (Z) Anodized Aluminum Cover - CSA Approved: Type 4, 4x, 7 (Class 1, Division 1, Groups B, C and D), 9 and 12. Hazardous Environment. CSA Approved to U.L. Standards NRTL/C Approved

Either enclosure can be specified for Intrinsically Safe environments. Intrinsically Safe intervals are required. See "How to Order" on back page. Intrinsically Safe ratings: CSA Approved: Type 4, 4x, 7 (Class 1, Division 1, Groups A, B, C and D), 9 and 12. CSA Approved to UL Standards NRTL/C Approved

Limit Switches (See specifications below) MS - Two SPDT Mechanical Switches. D2 - Two DPDT Mechanical Switches.

IS* - Two SPDT Gold-Plated Mechanical Switches for Intrinsically Safe Operation. PS* - Two two-wire AC/DC Inductive Proximity Sensors

Solenoid Standard - 3 Watts Voltage, 12 VDC, 24 VDC, 24 VAC, 120 VAC, 240 VAC Cv with Spool Valve = 1.0 Intrinsically Safe - .67 watts voltage, 15.5 VDC nominal (Intrinsically Safe barrier required) Cv with spool valve = 1.0

Spool Valve Always included with solenoid. Features manual override and two independently adjustable speed controls on double-acting units and adjustable spring stroke speed on spring-return units.

Dual Voltage for Switch if different from Solenoid If DC limit switches are specified with a 120 VAC or 240 VAC solenoid and circuit board/LEDs are required, the digit "2" must be added to the voltage. See "Solenoid Voltage" on back page.

Air Supply 40 psi - 120 psi, 80 psi standard

Temperature Range 0°F to 160°F

Circuit Board/LED Indication (Not available on Intrinsically Safe packages or combinations which include Proximity Sensors).

Orange LED - Coil Continuity. Green LED - Valve Open. Red LED - Valve Closed. Yellow LED - Solenoid Voltage

Circuit Board/LED Rating 10 amps maximum (may derate limit switch maximum rating)

Circuit Board Terminal Strip 8 points, 12 AWG

Conduit 3/4" NPT Female

Digital Protocol Options (See pages 6 and 7 for details) AS-interface®, DeviceNet™, Modbus®. Call Flowserve for additional options.

SPDT Mechanical Switches



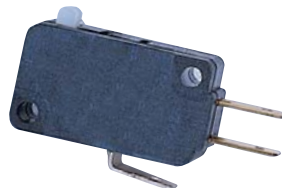
MS
15 AMPS, 24, 120, 240 VAC
1/2 AMP, 24 VDC
UL LISTED
CSA CERTIFIED

DPDT Mechanical Switches (available in ACCESS-M only)



D2
10 AMPS, 24, 120, 240 VAC
0.3 AMP, 24 VDC
UL LISTED
CSA CERTIFIED

SPDT Two-Wire Gold-Plated Intrinsically Safe Switches



IS
GOLD CONTACTS:
1 AMP, 120 VAC
1 AMP, RES (0.5A IND) VDC
UL LISTED
CSA CERTIFIED

Two-Wire AC/DC Inductive Proximity Sensors

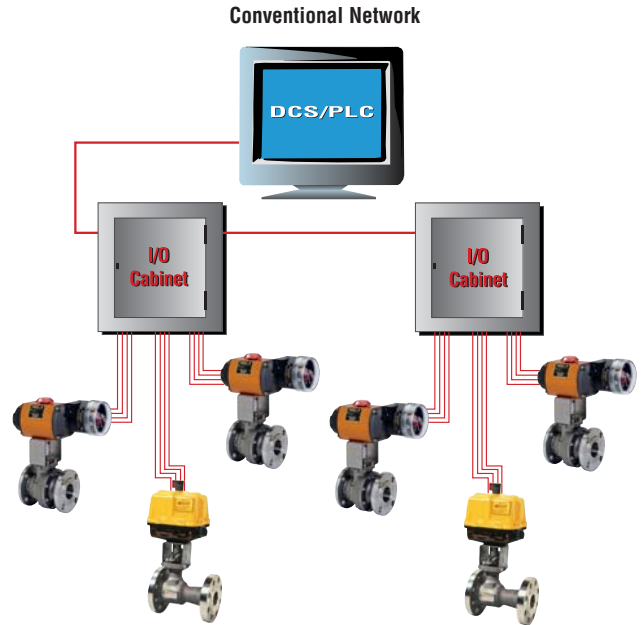


PS
PROXIMITY SENSOR:
5-200 mA
20-140 VAC
10-140 VDC
Switching Frequency - 25 Hz
Sensing Range - 2 mm
NON POLARITY SENSITIVE
INTEGRAL LED
UL LISTED
CSA CERTIFIED

Digital Fieldbus Network Options

The remarkable advances in electrical components, migration from analog to digital data transfer and decreasing costs of electronic components have revolutionized almost all major industries and have simplified many aspects of our lives. Digital technology is quickly becoming the standard in all facets of the process control industry.

Conventional wiring of discrete field devices, such as a pneumatic actuator with integral solenoid and limit switches, requires numerous dedicated wires from the I/O cabinet to each and every device. The associated expense of labor, engineering time, wiring, conduit, cable trays, junctions and fittings with this method are very expensive and are often the root cause of startup delays.

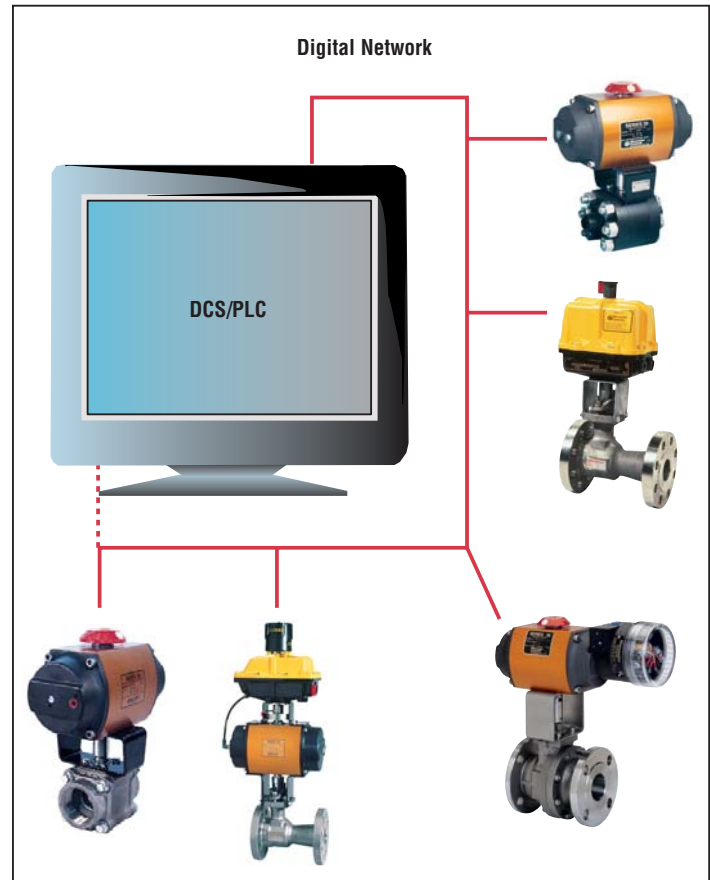


There is now a greatly improved method of installing and communicating with field devices ...

The Digital Network

Digital networking of field devices by a simple “daisy chain” method substantially reduces the expense of conduit and wiring and provides the following benefits:

- Elimination of I/O cabinets
- Expansive diagnostic capabilities
- Simplified field device installation
- Reduced engineering time
- Power and communication share the same cable
- Rapid information cycle
- High levels of temperature and noise immunity
- Field devices can be added or removed without disturbing the remaining network



The ACCESS package was engineered with your present and future requirements in mind. Actuator Sensor interface (AS-i), DeviceNet and Modbus compatible products are now available and other protocols will be offered as technology evolves. Your present investment in an analog or digital ACCESS unit will be protected and will be upgradeable to any of the protocols offered as our design utilizes the same “footprint” for all electronic circuit boards. As new technology becomes available, a simple modular circuit board change affords you all the latest benefits!

AS-interface

The AS-interface protocol is a simple, economical and robust bit-level digital method of networking discrete devices. AS-interface networks can connect directly to a PC, PLC, or a standalone gateway, and can easily connect to and expand the capabilities of higher-level protocols.

AS-interface was designed to inexpensively complement higher level digital protocols such as DeviceNet, Modbus, Profibus, Foundation Fieldbus and others by simply using a “gateway.” The “gateway” becomes a node or slave on the supervisory protocol and simple “gateway” changes make the entire AS-interface network compatible with different protocols. Once again, future technologies can easily be incorporated.

ACCESS/AS-interface benefits include:

- Simple two-wire connection reduces wiring and installation costs
- Power and communication share the same cable
- Diagnostic LEDs indicate open or closed position, AS-i power to the solenoid and solenoid coil continuity
- Sole source package responsibility

Network Specifications

Topology	Linear, star, ring or tree
Cabling	Unshielded twisted pair (16 AWG)
Bus Power	8 amps maximum
Number of Devices	31 per network
Number of I/O	248 per network (124 input/124 output)
Maximum Distance	100 meters, 300 meters with repeaters
Transmission Speed	167 kbps
Cycle Time	<5 ms with 31 devices
Communication Method	Master/slave with cyclic polling
Diagnostics	LEDs for open/closed position, AS-i power and solenoid coil continuity

DeviceNet

The DeviceNet protocol is based on the proven Controller Area Network (CAN) technology, which evolved from the automotive industry and easily interfaces with the most common PLCs. This is a byte-level protocol which may be used with both discrete and analog devices. Up to 63 devices communicate on a single network via a five-wire trunk line (two for power, two for data and one shield) with extensive information capabilities and rapid scan times.

An Electronic Data Sheet (EDS) which defines the devices’ configurable parameters is provided with each ACCESS/DeviceNet package. This EDS provides all the relevant information required to easily install the product and detail the locations of digital information.

ACCESS/DeviceNet benefits include:

- Simple single-trunk line provides both power and communication to the network
- Diagnostic LEDs indicate open or closed position, power to the device, solenoid coil continuity and complete network status
- Cumulative and resettable cycle counters
- Open and Closed cycle timers
- User “fields” for storing user specific information
- Supports explicit, polled, cyclic and change of state I/O messaging

Network Specifications

Topology	Trunk line with branching drop lines
Cabling	Five conductor cables. Terminators required
Number of Devices	63 per network
Maximum Distance	500 meters
Transmission Speed	125 kbps, 250 kbps, 500 kbps depending on distance
Communication Method	Master/slave, multimaster, peer to peer
Diagnostics	LEDs for open/closed position, solenoid power, solenoid coil continuity and standard DeviceNet network indicators

- Hardware and software selectable address and baud rate
- Sole source package responsibility

The numerous benefits of digital networking are obvious. Why not specify the digital ACCESS package on your next upgrade or expansion? You will be glad you did.

Product Specifications

- Pneumatic Actuators are to be of a dual-piston design with stainless steel guide rods and integral limit switch and solenoid package.
- Integral switch solenoid package shall be operated by actuator guide rods for precise stroke indication.
- Integral package to contain all components, i.e., solenoid, limit switches, diagnostic LEDs and terminal strip, with a Type 4, 4x, 7, 9, 12 combined locations enclosure.
- Actuator housings shall be protected both internally and externally with a nickel acetate-filled coating for corrosion resistance. The switch/solenoid enclosure shall be anodized for corrosion resistance.
- Pneumatic actuator shall be operated by a pilot-operated solenoid with high-flow spool valve for fast operation.
- Actuator unit to be equipped with manual override and two independently adjustable speed controls.
- Actuator unit shall have an optional circuit board with LEDs showing valve position and operational status.
- Actuator unit to incorporate optional Digital Protocol technology.
- Actuator unit to be equipped with SPDT, DPDT switches or proximity sensors.
- The actuator/switch package to be completely enclosed without external brackets or couplings.
- Actuator unit to be equipped with clear Lexan plastic or aluminum covers.
- Pneumatic actuator with integral limit switches, solenoid and diagnostic LEDs from a single manufacturer.

Mounting Configurations

Namur — inches (mm)

Actuator Size	Mounting Pattern	Shaft Height
1039	3.15 x 1.18 x M5 (80.0 x 30.0)	.79 (20.0)
1539	3.15 x 1.18 x M5 (80.0 x 30.0)	.79 (20.0)
2039	3.15 x 1.18 x M5 (80.0 x 30.0)	.79 (20.0)
2539	3.15 x 1.18 x M5 (80.0 x 30.0)	1.18 (30.0)
3039	3.15 x 1.18 x M5 (80.0 x 30.0)	1.18 (30.0)
3339	3.15 x 1.18 x M5 (80.0 x 30.0)	1.18 (30.0)
3539	3.15 x 1.18 x M5 (80.0 x 30.0)	1.18 (30.0)
4039	5.12 x 1.18 x M5 (130.0 x 30.0)	1.97 (50.0)

ISO — inches (mm)

Actuator Size	Mounting Pattern	Shaft Height
1039	F04	1.17 sq. (29.7)
1539	F05	1.39 sq. (35.3)
2039	F07	1.95 sq. (49.5)
2539	F07	1.95 sq. (49.5)
3039	F10	2.84 (72.1)
3339	F12	3.48 (88.4)
3539	F12	3.48 (88.4)
4039	F14	3.90 (99.1)

Top Mount Namur VDI/VDE 3845 Mounting Configuration

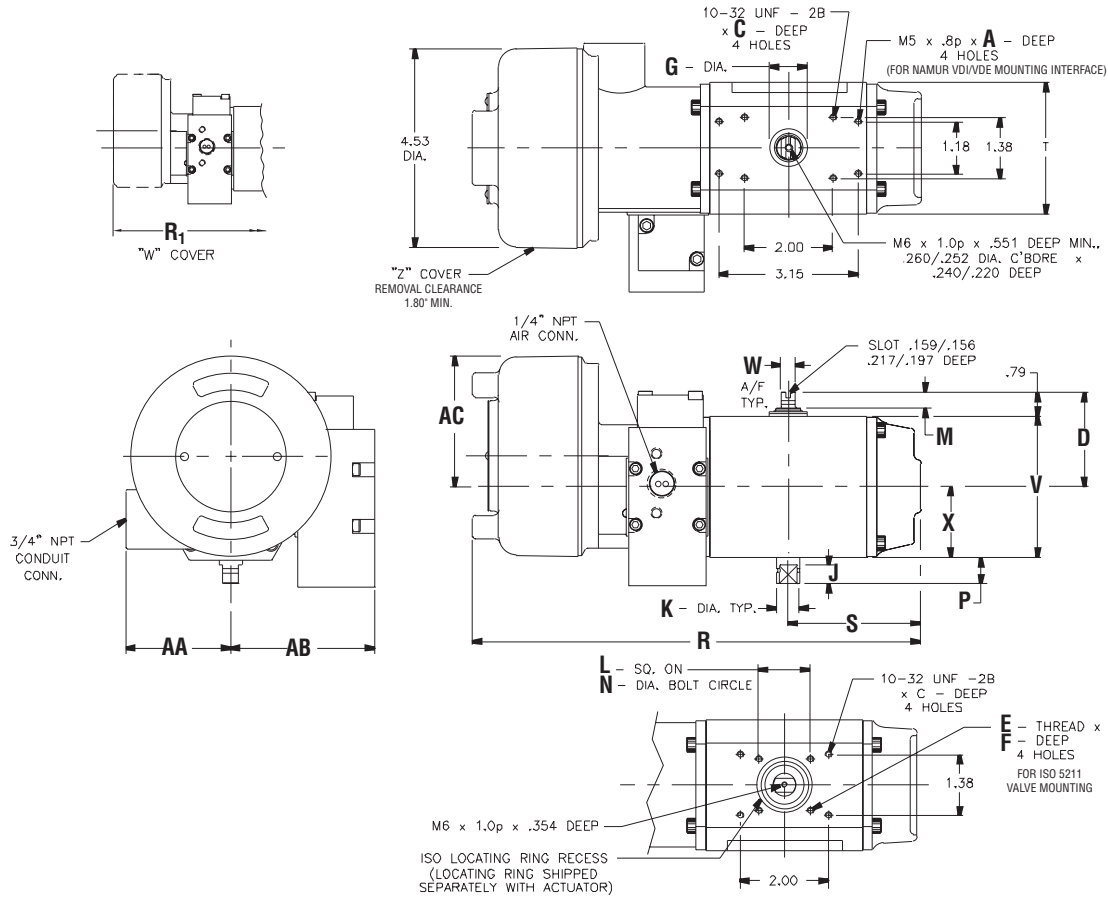


ISO Mounting Configuration



Dimensions

ACCESS I, 10, 15, 20, Spring-Return or Double-Acting



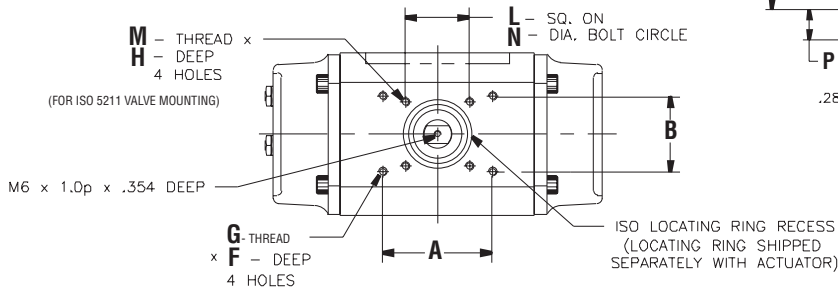
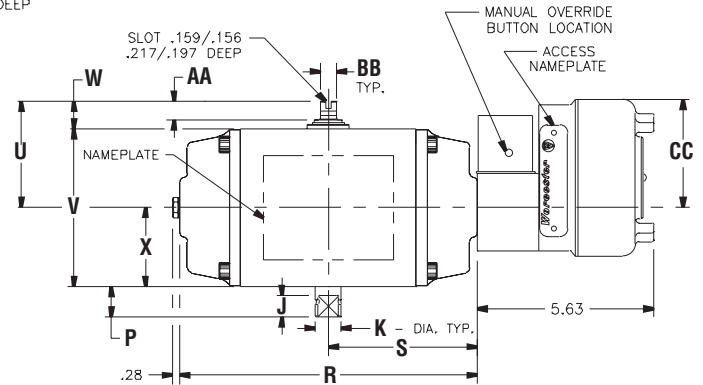
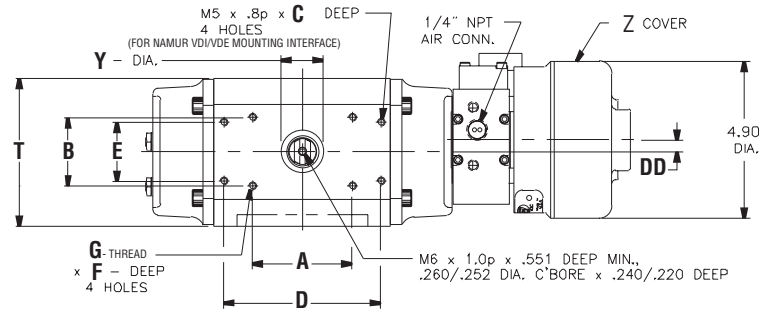
inches (mm)

Actuator Size	A	C	D	E	F	G	J	K	L	M	N
1039	.25 (6.35)	.30 (7.62)	2.48 (63.0)	M5	.25 (6.35)	.88 (22.4)	.59 (15.0)	.59 (15.0)	1.17 (29.7)	.63 (16.0)	1.64 (41.7)
1539	.28 (7.11)	.31 (7.87)	2.84 (72.1)	M6	.28 (7.11)	1.02 (26.0)	.65 (16.5)	.63 (16.0)	1.39 (35.3)	.53 (13.5)	1.97 (50.0)
2039	.32 (8.13)	.32 (8.13)	3.25 (82.6)	M8	.35 (8.89)	1.31 (33.3)	.65 (16.5)	.80 (20.3)	1.95 (49.5)	.53 (13.5)	2.76 (70.1)

Actuator Size	P	R	R1	S	T	V	W	X	AA	AB	AC
1039	.72 (18.3)	10.25 (260)	9.75 (248)	3.05 (77.5)	3.02 (76.7)	3.37 (85.6)	.360/.355 (9.14/9.02)	1.69 (42.9)	2.37 (60.2)	3.26 (82.8)	2.97 (75.4)
1539	.87 (22.1)	12.24 (311)	11.74 (298)	3.83 (97.3)	3.70 (94.0)	4.09 (104)	.500/.495 (12.7/12.6)	2.05 (52.1)	2.40 (70.0)	3.61 (91.7)	2.73 (69.3)
2039	.85 (21.6)	14.00 (356)	13.50 (343)	4.62 (117)	4.57 (116)	4.92 (125)	.500/.495 (12.7/12.6)	2.46 (62.5)	2.77 (70.4)	4.04 (103)	2.34 (59.4)

Dimensions

ACCESS M, 10-40, Spring-Return or Double-Acting

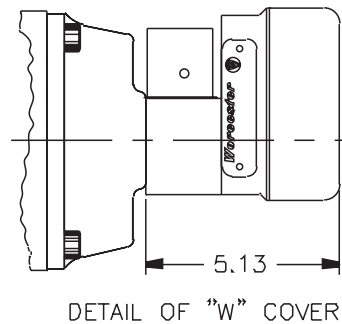
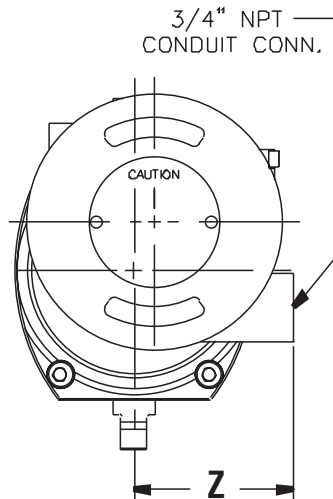


inches (mm)

Actuator Size	A	B	C	D	E	F	G	H	J	K	L	M	N
1039	2.00 (50.8)	1.38 (35.0)	.25 (6.35)	3.15 (80.0)	1.18 (30.0)	.30 (7.62)	10-32UNF-2B	.25 (6.35)	.59 (15.0)	.59 (15.0)	1.17 (29.7)	M5	1.64
1539	2.00 (50.8)	1.38 (35.0)	.28 (7.11)	3.15 (80.0)	1.18 (30.0)	.31 (7.87)	10-32UNF-2B	.28 (7.11)	.65 (16.5)	.63 (16.0)	1.39 (35.3)	M6	1.97 (41.7)
2039	2.00 (50.8)	1.38 (35.0)	.32 (8.13)	3.15 (80.0)	1.18 (30.0)	.32 (8.13)	10-32UNF-2B	.35 (8.89)	.65 (16.5)	.80 (20.3)	1.95 (49.5)	M8	2.76 (70.1)
2539	4.22 (107)	1.94 (49.3)	.32 (8.13)	3.15 (80.0)	1.18 (30.0)	.42 (10.7)	1/4-28UNF-2B	.35 (8.89)	.85 (21.6)	.99 (25.2)	1.95 (49.5)	M8	2.76 (70.1)
3039	6.34 (161)	2.87 (72.9)	.34 (8.64)	3.15 (80.0)	1.18 (30.0)	.64 (16.3)	1/4-28UNF-2B	.50 (12.7)	.92 (23.4)	1.13 (28.7)	2.84 (72.1)	M10	4.02 (102)
3339	6.34 (161)	3.39 (86.1)	.39 (9.91)	3.15 (80.0)	1.18 (30.0)	.72 (25.4)	1/4-28UNF-2B	.56 (14.2)	1.25 (31.8)	1.44 (36.6)	3.48 (88.4)	M12	4.92 (125)
3539	8.38 (213)	4.00 (102)	.29 (7.37)	3.15 (80.0)	1.18 (30.0)	.77 (19.6)	1/4-28UNF-2B	.46 (11.7)	1.21 (30.7)	1.44 (36.6)	3.48 (88.4)	M12	4.92 (125)
4039	9.59 (246)	4.63 (118)	.48 (12.2)	5.12 (130)	1.18 (30.0)	.91 (23.1)	1/16-20UNF-2B	1.44 (36.6)	1.93 (49.0)	1.80 (45.7)	3.90 (99.1)	M16	5.51 (140)

Dimensions

ACCESS M, 10-40, Spring-Return or Double-Acting



inches (mm)

Actuator Size	P	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD
1039	.72 (18.3)	6.10 (155)	3.05 (77.5)	3.02 (76.7)	2.48 (63.0)	3.37 (85.6)	.79 (20.1)	1.69 (42.9)	.88 (22.4)	2.16 (54.9)	.63 (16.9)	.360 (9.14)	3.39 (86.1)	—
1539	.87 (22.1)	7.66 (195)	3.83 (97.3)	3.70 (94.0)	2.84 (72.1)	4.09 (103.9)	.79 (20.1)	2.05 (52.1)	1.02 (25.9)	2.70 (68.6)	.53 (13.5)	.500 (12.7)	3.39 (86.1)	.537 (13.6)
2039	.85 (21.6)	9.24 (235)	4.62 (117)	4.57 (116)	3.25 (82.6)	4.92 (125.0)	.79 (20.1)	2.46 (62.5)	1.31 (33.3)	2.54 (64.5)	.53 (13.5)	.500 (12.7)	3.39 (86.1)	.375 (9.53)
2539	1.14 (29.0)	10.62 (270)	5.31 (135)	5.34 (136)	4.07 (103)	5.78 (146.8)	1.18 (30.0)	2.89 (73.4)	1.63 (41.4)	2.74 (69.6)	.88 (22.4)	.750 (19.1)	3.61 (91.7)	.581 (14.8)
3039	1.19 (30.2)	12.77 (324)	6.39 (162)	6.10 (155)	4.48 (114)	6.60 (167.6)	1.18 (30.0)	3.30 (83.8)	1.90 (48.3)	2.96 (75.2)	.87 (22.1)	.875 (22.2)	3.67 (93.2)	.797 (20.2)
3339	1.60 (40.6)	15.64 (397)	7.82 (199)	8.11 (206)	5.40 (137)	8.44 (214.4)	1.18 (30.0)	4.22 (107)	2.06 (52.3)	3.33 (84.6)	.84 (21.3)	1.125 (28.6)	3.61 (91.7)	1.17 (29.7)
3539	1.52 (38.6)	16.62 (422)	8.31 (211)	8.34 (212)	5.45 (138)	8.54 (216.9)	1.18 (30.0)	4.27 (108)	2.29 (58.2)	3.33 (84.6)	.83 (21.1)	1.125 (28.6)	3.39 (86.1)	1.17 (29.7)
4039	1.96 (49.8)	20.02 (509)	10.01 (254)	9.64 (245)	6.97 (177)	10.87 (276.1)	1.97 (50.0)	5.87 (149)	2.62 (66.6)	3.53 (89.7)	1.46 (37.1)	1.375 (34.9)	3.39 (86.1)	1.37 (34.8)

Note: For dimensions of ACCESS units mounted on size 42, 45 and 50 actuators, consult factory.

How to Order

ACCESS combined pneumatic actuator, limit switches, solenoid, circuit board/LEDs and digital protocol package.

This code will order: A 2039 spring-return, fail-closed ACCESS I with two single-pole, double-throw mechanical switches, 120 (AC) power to both solenoid and switches, solenoid/spool valve, springs to accommodate the 70 psi available air pressure, and a circuit board with LEDs. If a different voltage is required for the switches, DC for example, it must be included in the ordering code (2) under "Solenoid Voltage."

	20	I	39	S	W	MS	120	P	7	B	C			
	General Description	Actuator Size	Protocol Option	Integral I or Mounted M	Fail Position	Product Series	Standard Options	Enclosure Cover Options	Limit Switches	Solenoid Voltage	‡Solenoid Option	Available Air Supply	Circuit Board/LED Option	‡Spool Valve
ACCESS I	Standard ACCESS I	10 15 20	Blank	I	Blank-Standard, Fail Closed 9- Fail Open	39	Blank-Double Acting S- Spring Return	W- Lexan Weatherproof Type 4,4x Z- Aluminum Hazardous Environment Type 4,4x, 7, 9, 12	MS- Two SPDT Mechanical Switches PS** -Two 2-wire AC/DC Proximity Sensors	Blank- No Solenoid and/or no PC Board 24D, 24A, 120 (AC) 240* (AC) 1202 120 AC solenoid/DC limit switches 2402 240 AC solenoid/DC limit switches	Blank- No solenoid P- Pilot solenoid	Blank-Standard 80 psi 7- 70 psi 6- 60 psi 5- 50 psi 4- 40 psi	Blank- No PC Board/LED's B- PC Board with LED's (Note: Not available if "PS" or "IS" limit switch option is specified)	Blank- No Spool Valve C- Spool Valve
	Intrinsically Safe ACCESS I		Blank						Blank- No Switches IS** -Two SPDT Gold Plated Mech. Switches	Blank- No Solenoid 24D	Blank- No Solenoid I- Intrinsically Safe Solenoid		Blank** - No PC Board/LED's	Blank- No Spool Valve C- Spool Valve
	ACCESS I w/Digital Protocol		A - AS-i D - DeviceNet							Blank- No Switches MS- Two SPDT Mechanical Switches PS** -Proximity Sensors optionally available. Consult factory.	24D	P- Pilot solenoid		B- PC Board C- Spool Valve
ACCESS M	Standard ACCESS M	10 15 20 25 30 33 35 40 42 45	Blank	M	Blank-Standard, Fail Closed 9- Fail Open	39	Blank-Double Acting S- Spring Return	W- Lexan Weatherproof Type 4,4x Z- Aluminum Hazardous Environment Type 4,4x, 7, 9, 12	MS- Two SPDT Mechanical Switches PS- Two 2-wire AC/DC Proximity Sensors D2-Two SPDT Mechanical Switches	Blank- No Solenoid and/or no PC Board 24D, 24A, 120 (AC) 240* (AC) 1202 120 AC solenoid/DC limit switches 2402 240 AC solenoid/DC limit switches	Blank- No solenoid P- Pilot solenoid	Blank-Standard 80 psi 7- 70 psi 6- 60 psi 5- 50 psi 4- 40 psi	Blank- No PC Board/LED's B- PC Board with LED's (Not available with "PS" or "IS" option)	Blank- No Spool Valve C- Spool Valve
	Intrinsically Safe ACCESS M		Blank						Blank- No Switches IS** -Two SPDT Gold Plated Mech. Switches	Blank- No Solenoid 24D	Blank- No Solenoid I** Intrinsically Safe Solenoid		Blank** - No PC Board/LED's	Blank- No Spool Valve C- Spool Valve
	ACCESS M w/Digital Protocol		A - AS-i D - DeviceNet							Blank- No Switches MS- Two SPDT Mechanical Switches PS** -Proximity Sensors optionally available. Consult factory.	24D	P- Pilot solenoid		B- PC Board with LEDs (Not available with PS or IS option)

* Circuit board with LEDs not available with 240 VAC voltages.

† The spool valve is an integral part of the solenoid. They must be ordered together as a unit.

NOTE: Stainless steel springs are available as a "V" number option. Designate V54 at the end of the ACCESS model number.

**Circuit board/LEDs not available in this configuration.

V65 Option also available for CE marking of ACCESS Declaration of Conformity for European Orders.

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