

# MAX-AIR LIMIT SWITCHES & POSITION INDICATION



LIMIT SWITCH & POSITION INDICATION



# TECHNOPOLYMER LIMIT SWITCH

## DESCRIPTION

The MAX-AIR Technology MS41-2 Limit Switch Box represents a new dimension in position indication for rotary actuators. Manufactured completely in technopolymer with stainless steel fasteners and NEMA 4/4x rating, these products are corrosion resistant and suitable for the most corrosive environments.

## FEATURES

### QUICK SET CAMS

The operating position of the switches can be easily changed by manually adjusting the high-resolution spline cams. The cams are spring backed and will not be affected by normal vibration.

### EASY WIRING

Despite its compact design, MAX-AIR switch boxes are easy to wire up with plenty of room to bring wires into the enclosure. As standard, each unit has two 1/2" NPT conduit entries, and a terminal strip which is angled to allow for ease in attaching external wires.



Direct Mount

## Technopolymer: Excellence in Anti-Corrosion



Standard Mount

### COMPACT DESIGN

MAX-AIR switch box has a compact construction, minimizing valve package envelope size.

### HIGH VISIBILITY INDICATOR

Our high-visibility indicator offers clear location of the current valve position.

### VERSIONS

Offered with two mechanical micro switches or different types of proximity sensors.

### INCLUSIVE MOUNTING BRACKET

A technopolymer mounting bracket is supplied as standard and fits NAMUR top-mounting hole spacing 80mm x 30mm. The bracket allows the use of standard NAMUR stem height of 30mm, and 20mm with a coupling included in the standard kit.

Please call for further details.



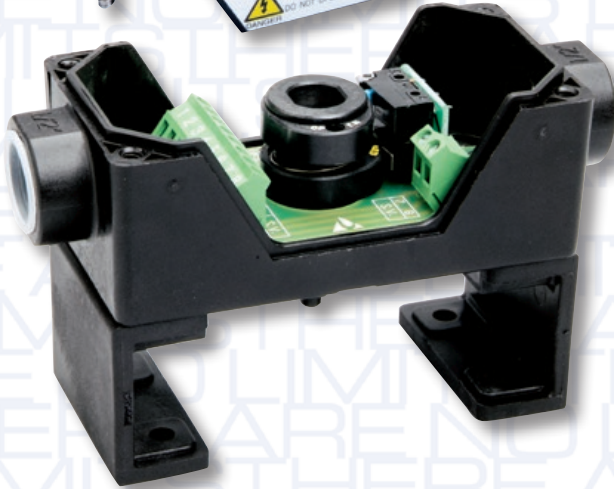
CSA approved to Classes 3211 06 and 3211 86 for Industrial Controls Equipment. Testing conducted according to the applicable sections of CAN/CSA C22/2. ANSI/UL 508 and ANSI/UL 50.

# TECHNOPOLYMER LIMIT SWITCH OPTIONS

## TECHNICAL DATA



Operating Force	0.60 N (61 Gram Max)
Release Force	0.06 N (6 Gram Max)
Differential Travel	.189 in
Over-travel	.032 in



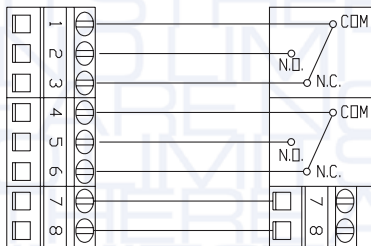
## ELECTRICAL RATING

Contact Arrangement: SPDT (Form C)

Rated Voltage	Resistive Load	Inductive Load
125 VAC	5 Amp	3 Amp
250 VAC	3 Amp	2 Amp
8 VDC	5 Amp	5 Amp
14 VDC	5 Amp	4 Amp
30 VDC	4 Amp	3 Amp
125 VDC	0.4 Amp	0.4 Amp
250 VDC	0.2 Amp	0.2 Amp

**SPDT MECHANICAL SWITCHES** with 8-Point Terminal Strip on a printed circuit board.

## WIRING DIAGRAM



Switch #1  
Up-Open

Switch #2  
Under-Closed

Solenoid Valve  
Pass Thru

## MATERIAL

Item	Material
Box	Technopolymer
Brackets	Technopolymer
Position Indicator	Technopolymer
Fasteners	Stainless Steel
Seals	BUNA-N
Operating Shafts	Technopolymer
Cams	Technopolymer
Microswitches	Technopolymer
Electrical Board w/Clamps	Polyamide

## INDUCTIVE PROXIMITY SENSORS

Normal voltage [v]	8
Current consumption	N/A
Sensing face covered [mA]	1
Sensing face free [mA]	3
Switching frequency [Hz]	1000
Self inductance [mH]	50
Self capacitance [nF]	35
Protection	IP65/ NEMA 4/4x
Operating Temp. [°F]	-13° to 212°



# ALUMINUM/STAINLESS STEEL LIMIT SWITCH

## DESCRIPTION

The Max-Air Technology aluminum and stainless steel limit switch box is setting a new standard for compact limit switches. The aluminum and stainless steel limit switch is available with mechanical, proximity, and inductive switches. These options allow for a low cost switch based on the needs and wants of the particular application.

## FEATURES

### QUICK SET CAMS

The operating position of the switches can be easily changed by adjusting the high-resolution spline cams manually and independently without the need for additional tools. The cams are spring-backed and will not be affected by normal vibration.

### COMPACT DESIGN

MAX-AIR switch box has a compact construction, minimizing valve package envelope size.

### EASY WIRING

MS45 & PS45 Series are equipped as standard with two conduit entries 1/2" NPT and one 8-point angled terminal strip to allow for easy wiring.

### HIGH VISIBILITY INDICATOR

The MS45 & PS45 Series comes standard with a high-visibility beacon, offering clear location of the current valve position.

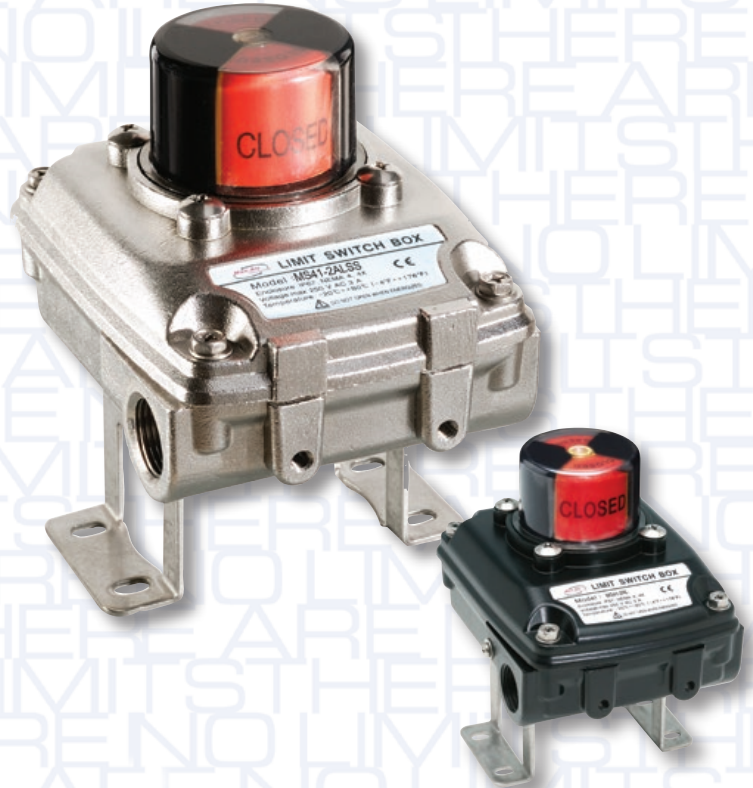
### CAPTIVE COVER BOLTS

The switch box also comes standard with stainless steel captive cover bolts.

### INCLUSIVE MOUNTING BRACKET

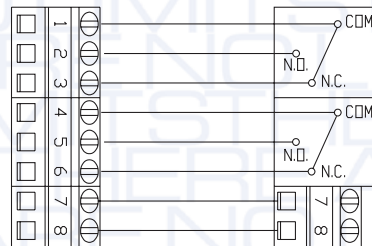
NAMUR 80mm x 30mm H30 stainless steel bracket supplied as standard with stainless steel fastening hardware for ease in mounting the switch box onto the actuator. MS45 & PS45 Series can be mounted on NAMUR H20 actuators through a technopolymer coupling.

Please call for further details.



Available in  
Stainless Steel

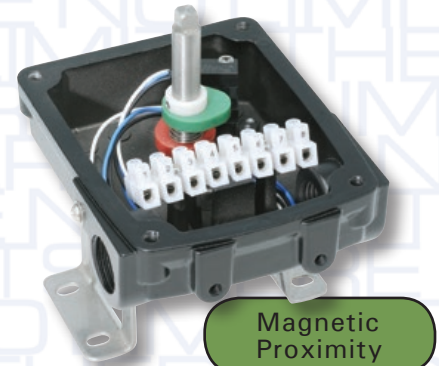
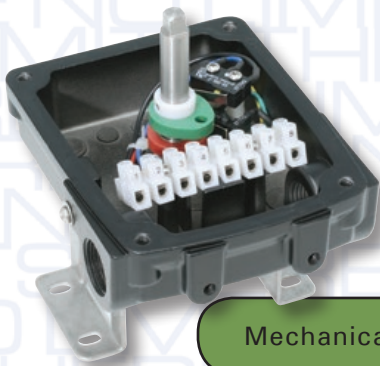
## WIRING DIAGRAM



Switch #1  
Up-Open

Switch #2  
Under-Closed

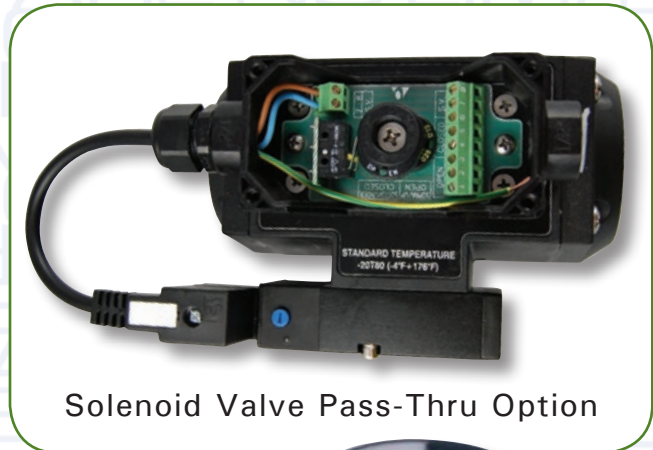
Solenoid Valve  
Pass Thru



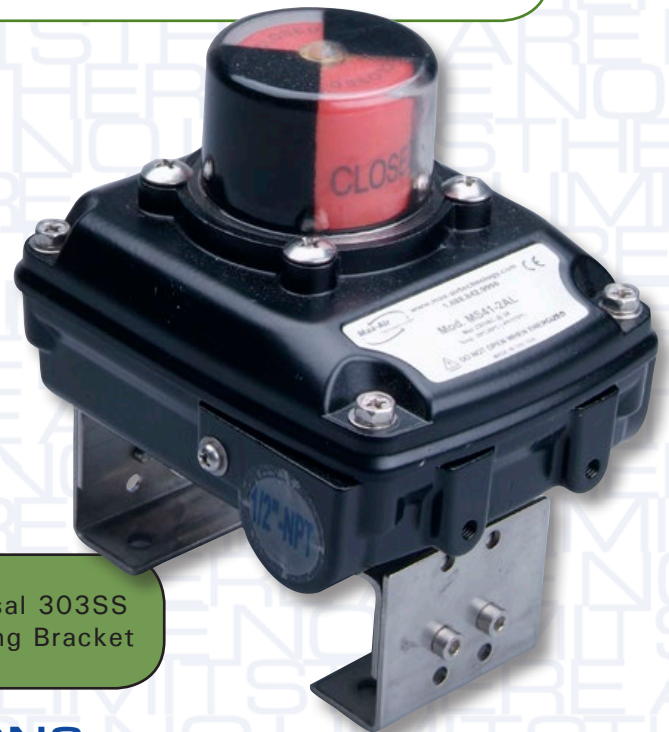
# ALUMINUM/SS LIMIT SWITCH OPTIONS

## MATERIAL

Item	Material
Housing	Die Cast Aluminium AISI 316 Stainless Steel
Shaft	AISI 304 Stainless Steel (for All LSB) AISI 316 Stainless Steel (for SS LSB)
External Indicator	Polycarbonate
Indicator OPEN/CLOSED	ABS
Cams	ABS
Spring	Stainless Steel
O Ring	BUNA-N
Bracket	AISI 300 Series Stainless Steel



Solenoid Valve Pass-Thru Option



Universal 303SS Mounting Bracket

## ELECTRICAL RATING

Mechanical Switches	3A @ 250 VAC
Proximity Sensors	See ordering information
Magnetic Switches	See ordering information

## TECHNICAL SPECIFICATIONS

Specification	Standard	Option
Enclosure Protection	IP67/NEMA 4/4x	Intrinsically Safe EEx ia iIC T6
Temperature Range	-4°F + 176°F (-20°C ~ +80°C)	-40°F + 185°F (-40°C + 85°C)
Conduit Entries	2x 1/2" NPT	2x M20x1,5
Switches	2x Mechanical Switches SPDT 2x Proximity Sensors 2x Magnetic Switches	Gold plated contacts
Terminal	8-Points	9-Points
External Coating	Black Epoxy Coating or ElectroPolished SS	Call for options
Weight	Aluminum: 1.76 lbs	Stainless Steel: 3.80 lbs

## 3-POSITION CONTROL LIMIT SWITCH

The MS44HU control unit is now available with 3-position control options with configurations for double-acting and spring-return actuators (for both 90°, 180°, and other rotational requirements). It features an integral 3-position, dual-coil solenoid valve for actuator control combined with feedback sensors for CW, mid-point or dribble-position, and CCW position indication in a single compact enclosure.

### FEATURES

#### MULTIPLE CAPABILITIES

Integral 3-position dual-coil blocked-center or specially configured 3-position dual-coil exhaust-center solenoid valves suitable for both double-acting and spring-return applications.

#### MID-POINT STOP

Ideal for all 180° spring-return 3-position control applications where a mid-point stop is required including the need for a critical failure position (i.e. 180° dribble control application with failure back to the 0° starting position).

#### COMPACT DESIGN

Reduction of components and significant installation, calibration, and testing time.

#### DRIBBLE

The mid-point (or dribble) position can be reached from either direction.

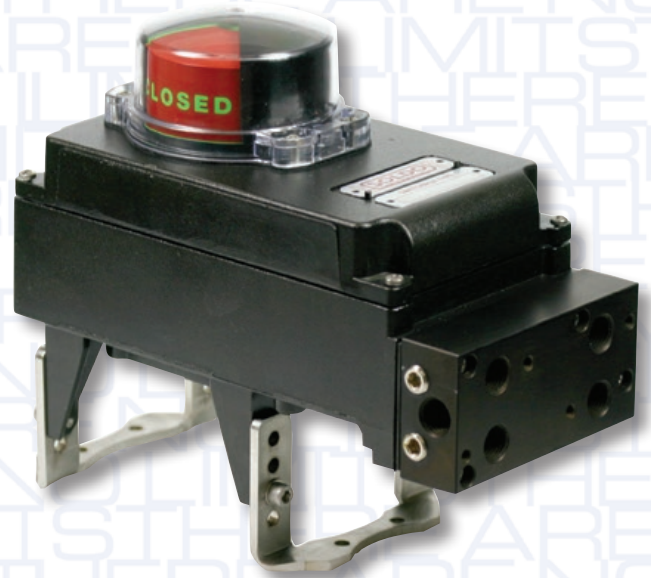
#### SIMPLIFIED CONTROL

Solenoid valves and feedback sensors are pre-wired and jumpered to a printed circuit board assembly for simplified control and monitoring of valve position.

#### NO BRACKET

No bracket is required for actuators conforming to the ISO NAMUR standard.

Please call for further details.



## Advanced Valve Control

### SWITCH RATINGS

Ambient Temperature Range	General Purpose: 23 °F to 122 °F Intrinsically Safe: -4 °F to 140 °F
Fluid	Filtered, lubricated, or non-lubricated compressed air (dried DP -4 °F)
Operating Pressure	Min. 37 psi, Max. 116 psi
Electrical	according to switch option

### MATERIALS

Body & Cover	Epoxy Coated Aluminum
Indicator Dome	UV Resistant and VO Polycarbonate
Pneumatic Connection Plate	Anodized Aluminum
Seals	ABS
Shaft	Stainless Steel
Fastners	Stainless Steel

## LIMIT SWITCH BEACONS

Max-Air Technology limit switch boxes offer many types of visual indicators. These various types make it easy for visual indication for the current position of the valve assembly.

Each limit switch comes standard with an open/closed indicator which is easily read for visual indication.

Also offered is an arrow indicator. This accurately shows whether the valve assembly is open, closed, or in current throttled position.

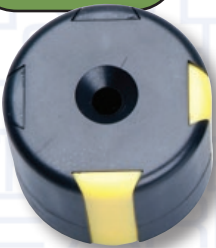


For multiport applications, Max-Air offers a highly visible yellow and black indicator. This option distinctly shows the correct flow path in multiport applications.



T-Port

L-Port



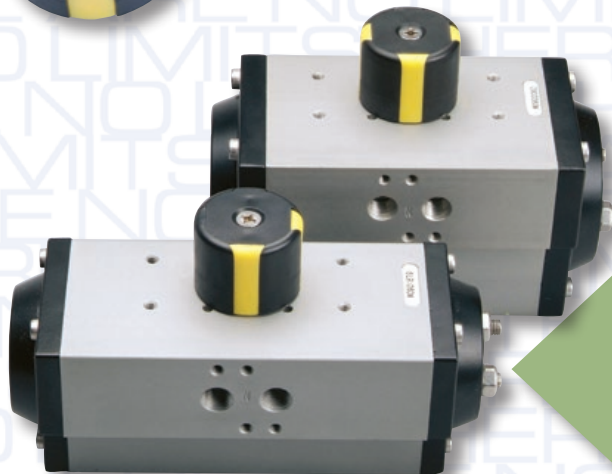
*Note: Yellow and black inserts are interchangeable.*

## ACTUATOR BEACONS

Max-Air Technology rack and pinion pneumatic actuators offer many types of visual indicators. These various types of indicators make it easy for visual indication for the current position of the actuator.

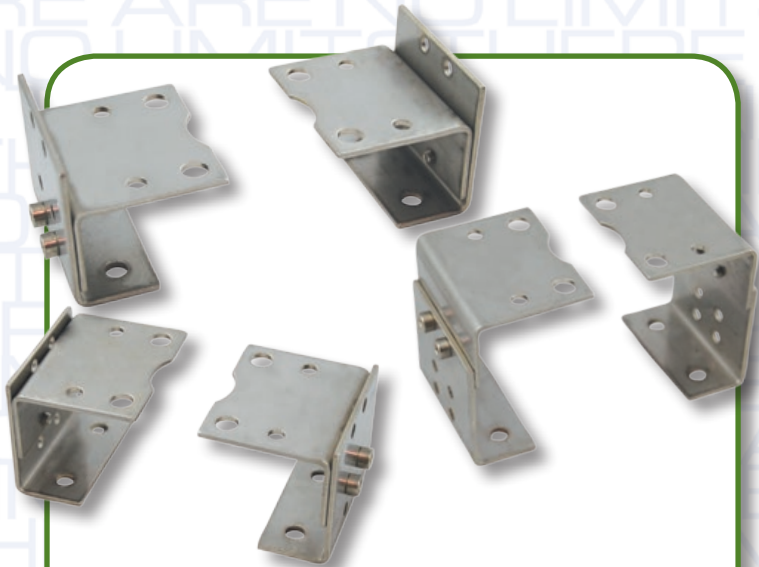
The standard high visibility indicator is an open/closed configuration for easy visual indication of the actuator.

Also offered is a red and green indicator which shows position with easy to see colors.



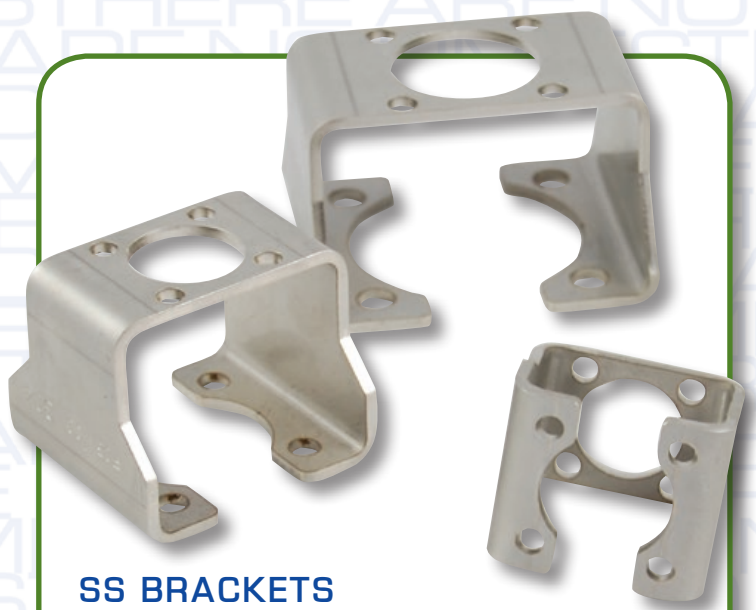
For multiport applications Max-Air offers a highly visible yellow and black indicator. This option distinctly shows the correct flow path in a multiport application.

## ■ ■ ■ OPTIONS & ACCESSORIES



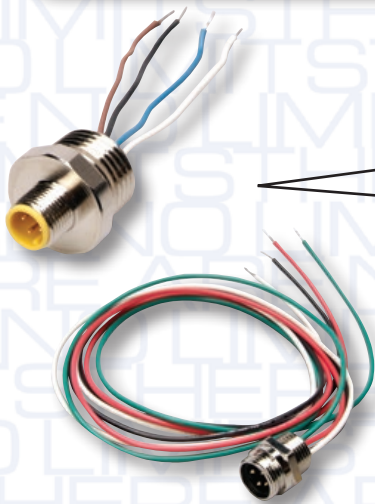
### UNIVERSAL BRACKET

Stainless Steel (303) adjustable NAMUR bracket makes assembly onto any NAMUR actuator easy. This allows for ease of installation considering the four different NAMUR options.



### SS BRACKETS

Max-Air Technology 304 stainless steel ISO brackets come in many combinations. These brackets are made of 304 stainless steel and are very compact, sturdy, and cost-effective.



## Plug Options





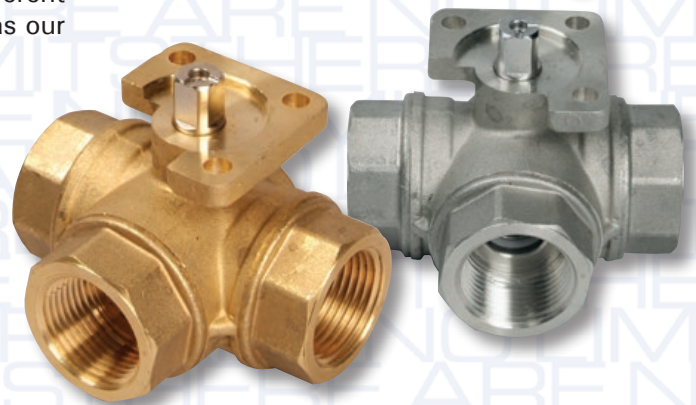
# MULTIPORT VALVE CONTROL OPTIONS

## THE LEADER IN MULTIPORT VALVE SOLUTIONS

Max-Air Technology is the clear leader in providing solid solutions for precise position control of all possible combinations of multiport valves. Our success is based upon the advanced engineering solutions offered in the multiple configurations of our 180 degree actuators. Max-Air Technology is the only company manufacturing 180 degree rotation actuators in three different mechanical configurations, having the same output torque as our 90° actuators:

- ➔ 180° Double Acting (air to open, air to close)
- ➔ 180° Spring Return (air to open, spring to close)
- ➔ 180° Center Return (air to open either -90° or +90° with spring return to 0° center)

In addition to these mechanical solutions, Max-Air is also the leader in supplying the correct solenoid valves and limit switches which ensure a reliable, dependable, and easy to install control package. The following two pages list various options for multiport valve control; however, this list is not all-inclusive. Please call your nearest Max-Air distributor for assistance in helping to design the most cost effective multiport control solution for your specific application.



**For All Valve Types  
and Applications**

Fig. 1-1



Fig. 1-2

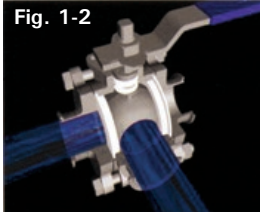
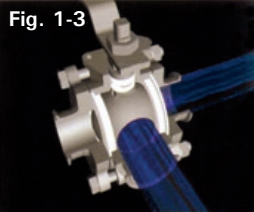


Fig. 1-3



### Diverter Port Example

Typical Diverter Ports provide flow control from left to center (fig. 1-1 and 1-2) and right to center (fig. 1-3). Other options can be accommodated.

### Multiport Example

Typical multiports provide flow control straight through (fig. 2-1 and 2-2) with a diverting option (fig. 2-3) or flow all three paths with multiple diverting options.

Fig. 2-1

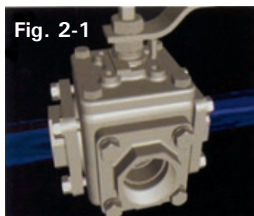


Fig. 2-2

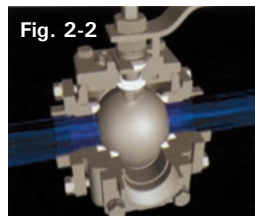
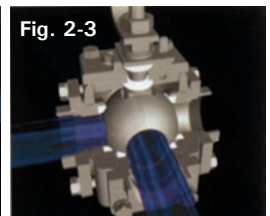
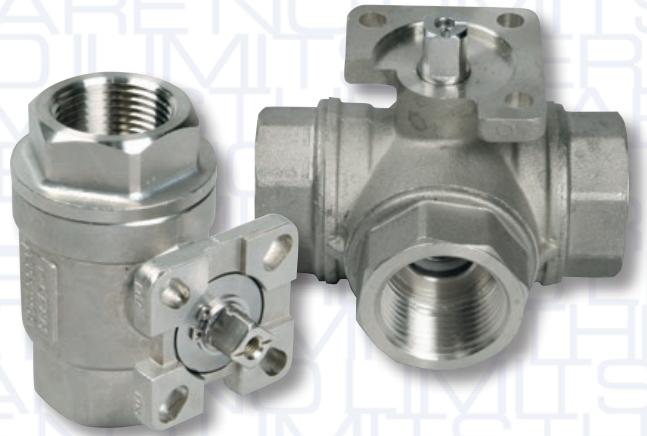


Fig. 2-3

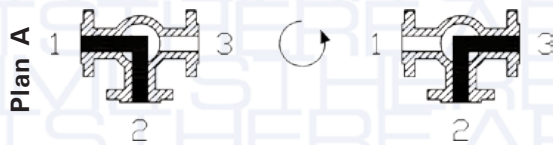


# 3-WAY VALVE FLOW PATTERNS

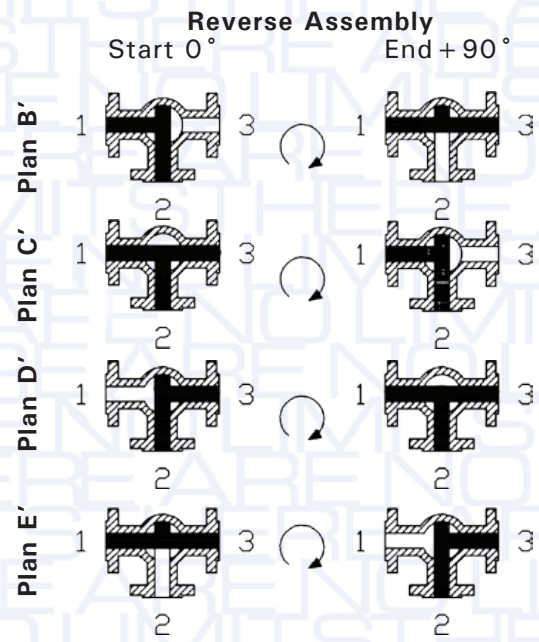
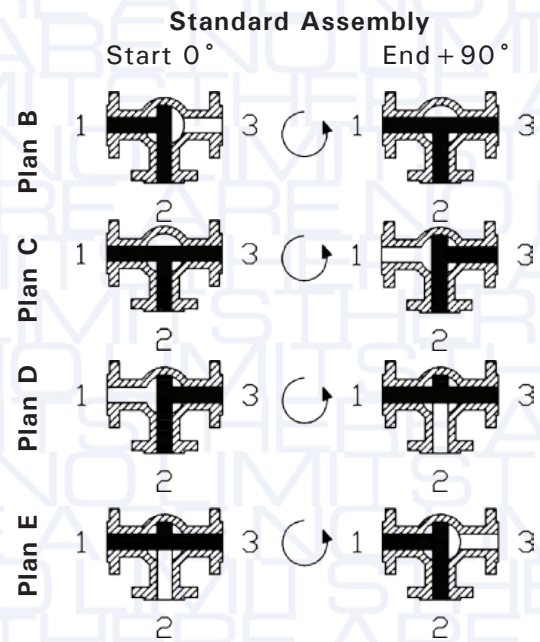
*Remember, the key to proper actuator selection is to know your required fail position!*



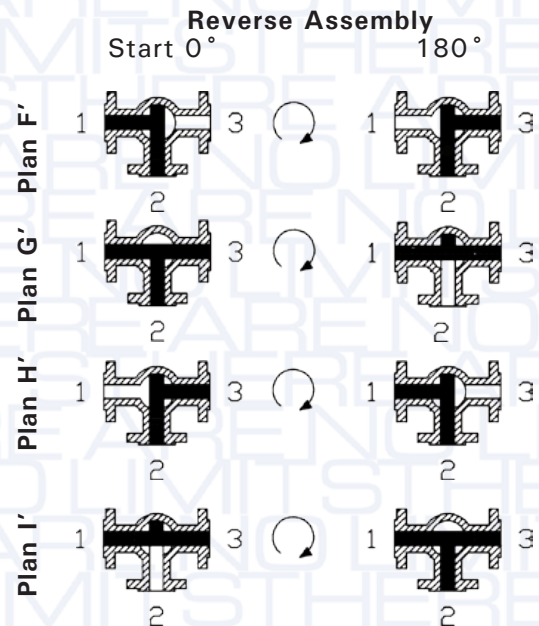
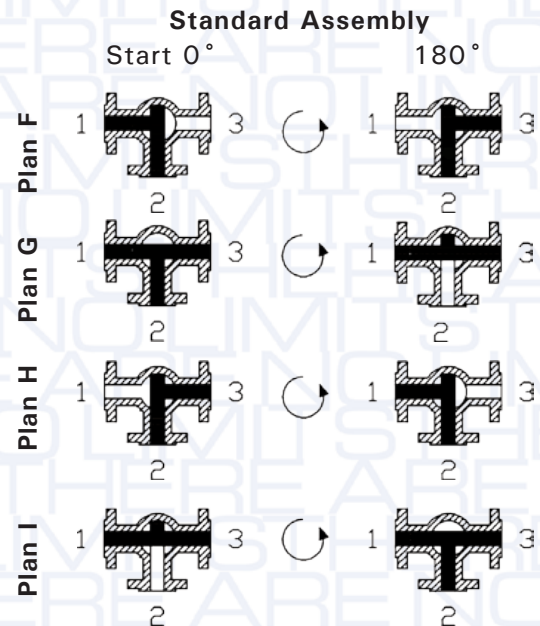
## L-PORT: 90°



## T-PORT: 90°

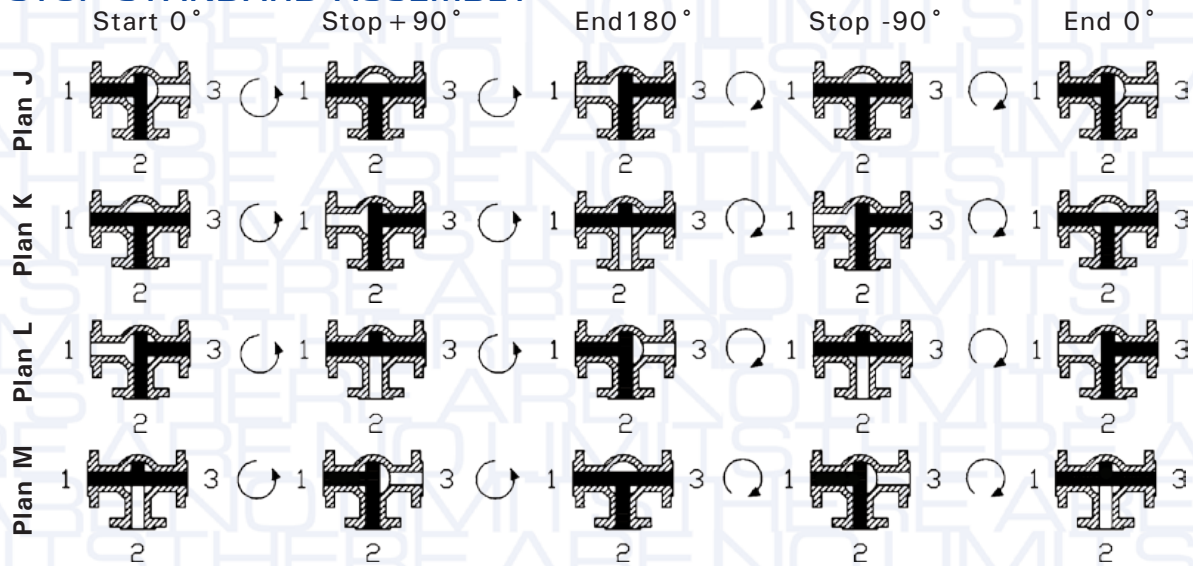


## 180° DOUBLE ACTING OR SPRING-RETURN

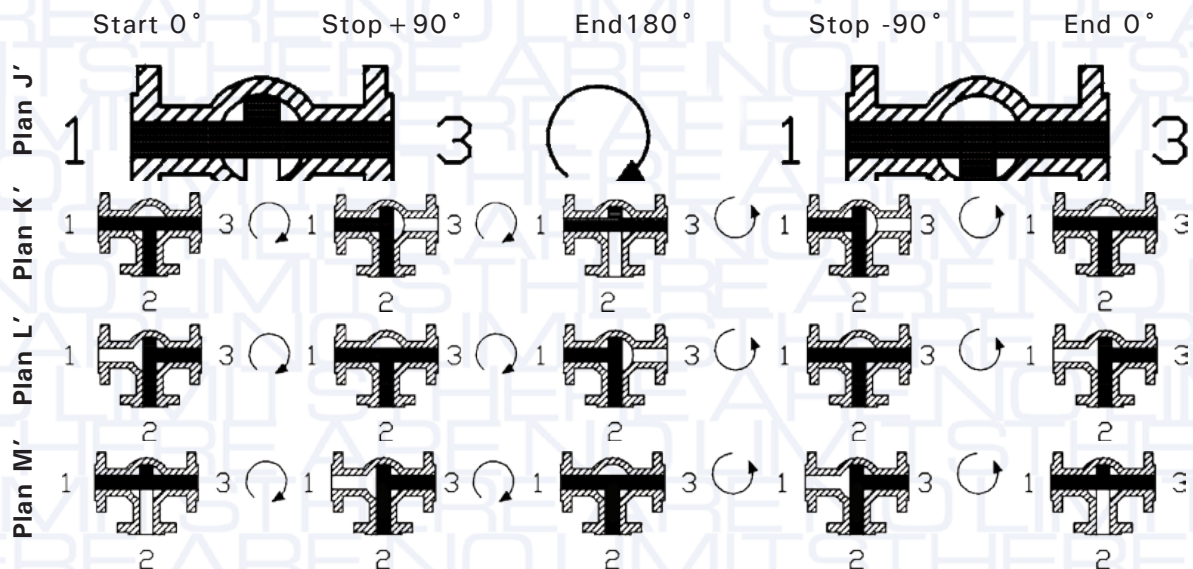


# 3-WAY VALVE FLOW PATTERNS

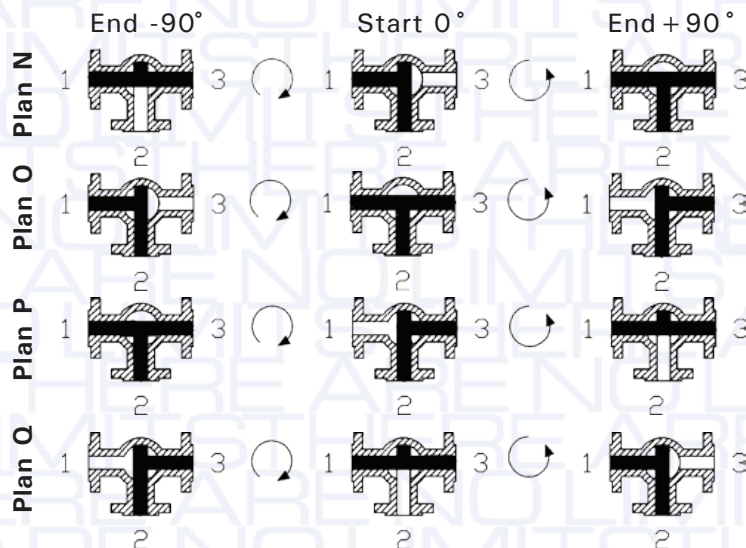
## 180° DOUBLE-ACTING OR SPRING-RETURN WITH INTERMEDIATE STOP STANDARD ASSEMBLY



## 180° DOUBLE-ACTING OR SPRING-RETURN WITH INTERMEDIATE STOP REVERSE ASSEMBLY



## 180° 3 POSITION ACTUATOR WITH CENTER RETURN (-90°/0°/+90°)





# Max-Air TECHNOLOGY

## The Best Way to Automate Your Process

Did you know that we provide the following services?

- 2D and 3D CAD Assembly Drawings
- Trained Technical Support Services
- On-site Commissioning Services
- Engineering System Design Services

Your nearest Max-Air dealer can be found at:

