

# ARO<sup>®</sup>

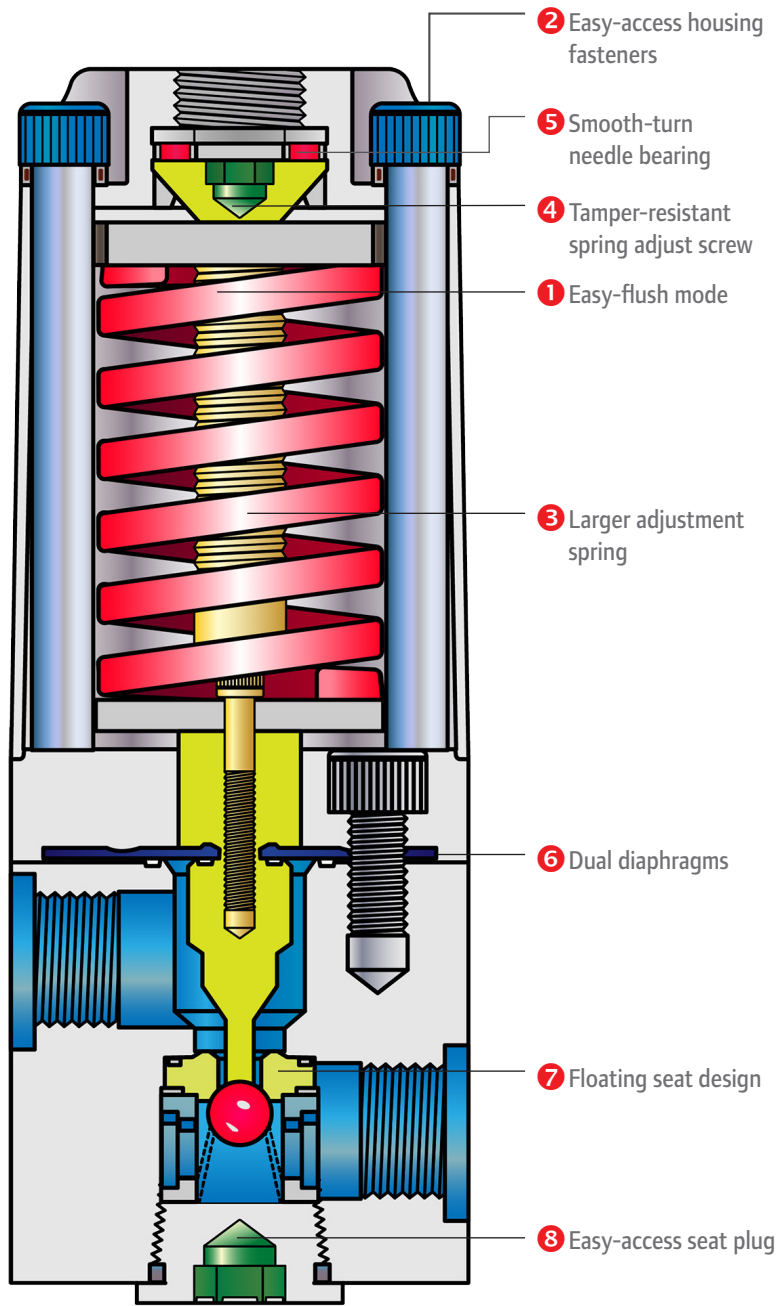
## FLUID PRESSURE REGULATORS

PRODUCT OVERVIEW



# A reputation of reliability

With an over 85-year legacy of premier product performance and service excellence, ARO® is known throughout the world as a quality manufacturer of fluid management products. ARO Fluid Regulators are one of the product lines from which this reputation is based. Providing a combination of high-flow performance, easy maintenance, and precise adjustment, ARO Fluid Regulators are recognized to be the premier regulators in the industry. Their reliable performance and innovative design features make them the preferred choice among fluid handling operators and material dispensing specialists. The design features shown on the following pages not only ensure the integrity of the fluid being transferred, but they also provide peace of mind for the end user by helping to ensure increased productivity in their process and reducing potential down-time.



## 1 "EASY-FLUSH" MODE

ARO's industrial downstream regulator models have a unique flush-out mode, where by simply turning a key (provided) clockwise, the entire center spindle moves downward, forcing the ball off the seat and purging the entire regulator of particle build-up.



## BASE HOUSING MATERIAL CHOICES

Low-pressure regulator bases are available in 300 series stainless steel or zinc/aluminum. High-pressure bases are available in 300 series stainless steel or Electroless Nickel-plated carbon steel for wide material compatibility. All regulator seals are constructed of PTFE for maximum chemical compatibility.

## 2 EASY-ACCESS HOUSING FASTENERS

Our industrial regulators can be opened for maintenance or inspection by removing four, easy to reach hex-head screws. There's no need to remove the regulator from the line while doing this, either. The upper housing is constructed of corrosion-resistant zinc aluminum for a sleek, clean appearance and a long, rust-free life.



### 3 LARGER ADJUSTMENT SPRING

A large diameter counter-spring is used to ensure a consistent pressure output and wide pressure range capabilities. Models are configurable with different spring range options to provide enhanced performance and improved regulator life-span.



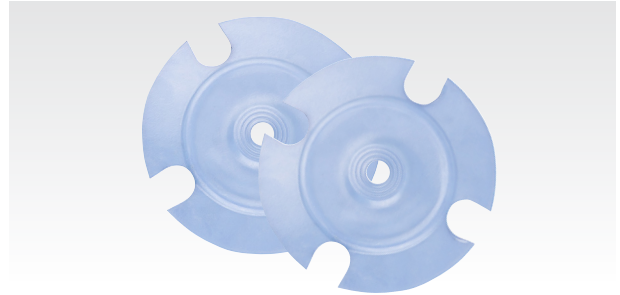
### 4 TAMPER-RESISTANT SPRING ADJUST

ARO's industrial downstream regulator models have a recessed hex-head fitting allowing pressure adjustment using the same 3/8" wrench (included) that removes the housing. This screw is recessed, which helps avoid any accidental or unauthorized adjustment changes.



### 5 SMOOTH-TURN" NEEDLE BEARING

A needle bearing has been incorporated to permit a smoother, easier adjustment – rather than relying on just spring adjustment – and can even be done while the regulator is on-line and operating.



### 6 DUAL DIAPHRAGM

ARO industrial fluid regulators utilize a diaphragm-to-ball check design. This dual diaphragm arrangement stands up to abrasive materials, prevents "caking" and allows for easier flushing. The diaphragm-to-seat ratio allows for consistent regulator performance, where pump "trip-over" and multiple application demands exist.



### 7 "FLOATING" SEAT AND BALL ARRANGEMENT

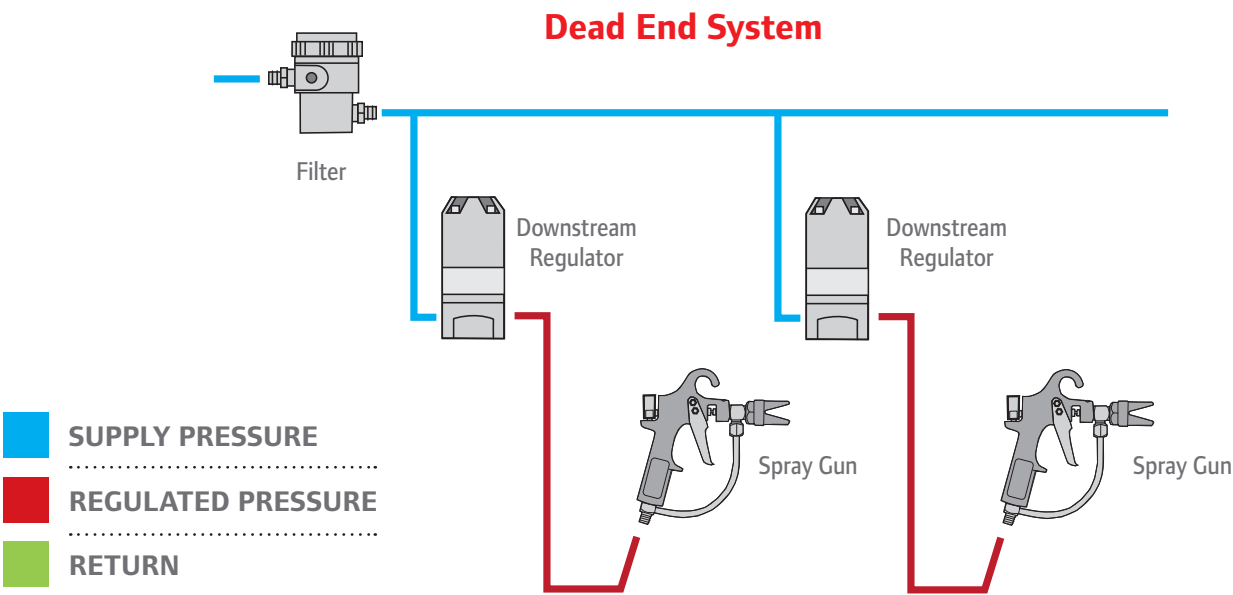
Our "floating" ball seat design conforms perfectly to the ball and stays conformed – even during significant fluctuations in line pressure. This ability to float ensures no "pressure creep," or the leakage that can be commonly seen with stationary ball seat designs. Three distinct ball sizes permit a wide flow capability. Multiple seat and ball size options help configure the best regulator model for a given application.



### 8 EASY-ACCESS SEAT PLUG

Removable seat plug allows for quick access to the ball and seat of the fluid regulator for immediate seat access. The feature reduces downtime for cleaning or replacing the seat, if needed. It also allows users to switch to different ball and seat sizes to achieve different flow rates.

# Typical Applications



## Selecting the Right Regulator

Position		1	2		3	4	5
Model Number Example	6517	X	X	-	X	X	X

### POSITION 1

#### HIGH OR LOW PRESSURE

ARO industrial fluid regulators can be divided into two types – Low Pressure and High Pressure. Low Pressure models are capable of regulated pressures of 800 psi or less. High Pressure models can regulate pressure in excess of 800 psi.

### POSITION 2

#### DOWNSTREAM OR BACK-PRESSURE

ARO industrial fluid regulators are divided into Low Pressure and High Pressure types – then sub-divided into Downstream and Back-pressure models.

Downstream regulators are used to maintain pressure downstream of the regulator, or upstream of the dispensing device, i.e. spray gun, applicator, etc. Downstream regulators are used in both “Dead End” and “recirculating” systems.

Back-pressure regulators are used to maintain the fluid pressure upstream of the regulator, or downstream of the dispensing device. Back-pressure models are typically used in recirculating systems.

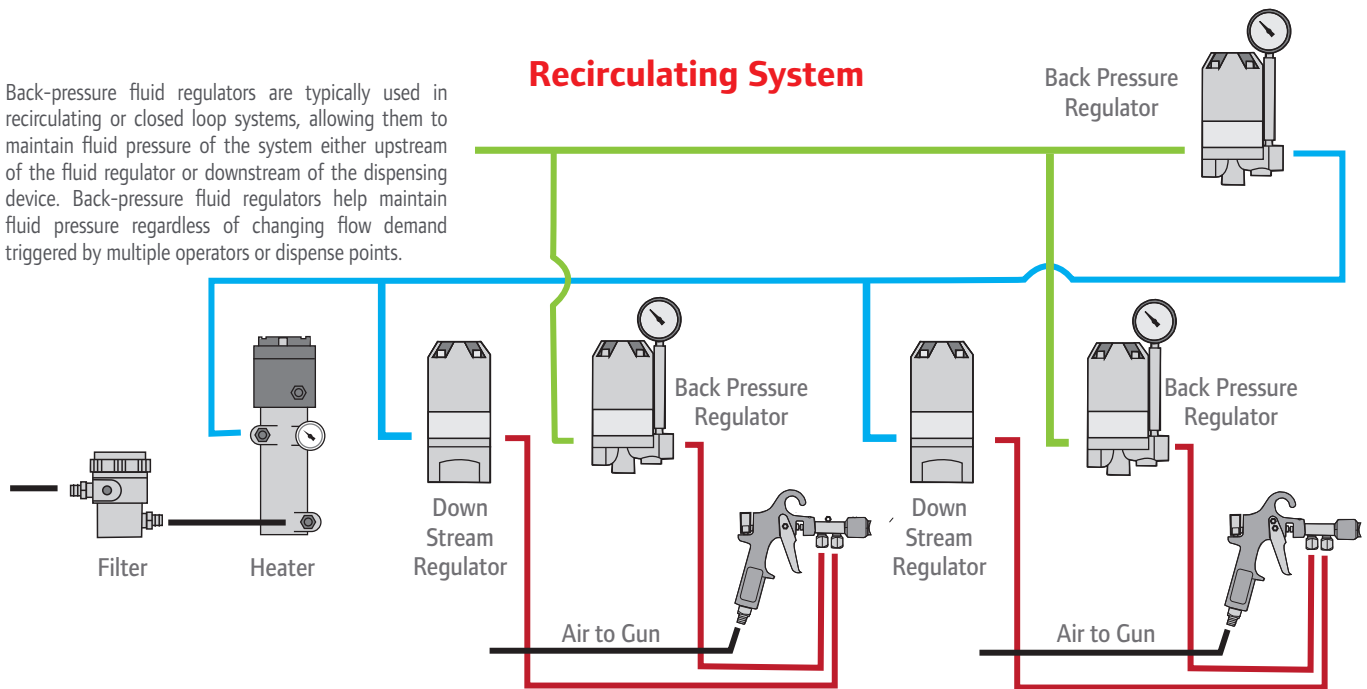
### POSITION 3

#### FLOW (PORT & BALL SIZE)

Different applications require different flow rates. Regulating 2 gpm of paint, for instance, is not the same as regulating 2 gpm of caulking. Be sure to consider the volume and viscosity of your material when choosing your fluid regulator flow rate.

FLOW GUIDE	
<b>S</b>	- Standard Flow Capacity Flow rates to 3 gpm (11.4l)
<b>H</b>	- High Flow Capacity Flow rates to 6 gpm (22.7l)
<b>M</b>	- Mastic Flow Capacity Flow rates to 20 gpm (75.7l)
<b>SY</b>	- System Flow Capacity Flow rates to 18.5 gpm (70.1l)

Back-pressure fluid regulators are typically used in recirculating or closed loop systems, allowing them to maintain fluid pressure of the system either upstream of the fluid regulator or downstream of the dispensing device. Back-pressure fluid regulators help maintain fluid pressure regardless of changing flow demand triggered by multiple operators or dispense points.



#### POSITION 4

### MATERIALS OF CONSTRUCTION

ARO industrial fluid regulators are available in a wide variety of material options to meet specific application requirements. All models use PTFE seals for optimum chemical compatibility.

#### WETTED PARTS

**Carbon Steel (Nickel-Plated)** – Carbon steel is recommended for use with lubricants, sealers, and adhesives. NOT recommended for highly corrosive or water-based materials.

**Stainless Steel** – Stainless steel provides maximum corrosion resistance. All parts are electro-polished or passivated to prevent material contamination.

#### SEATS

**Tungsten Carbide** – A general purpose seat option that offers maximum abrasion resistance. NOT recommended for peroxides.

**Stainless Steel (400 Series)** – 400 Series stainless steel is used when tungsten carbide seats cannot be used due to chemical compatibility. This material is a hardened grade of stainless steel that will provide good abrasion resistance.

**Stainless Steel (300 Series)** – 300 Series stainless steel offers the best chemical resistance, but has moderate abrasion resistance.

#### POSITION 5

### PRESSURE RANGE / SPRING TYPE

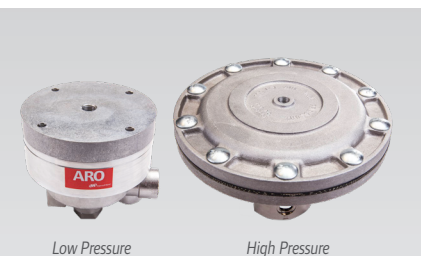
A wide selection of regulated pressure options are available for the industrial fluid regulators.

The user should choose the pressure rating closest to the maximum rated value of the regulated pressure range for the best possible performance characteristics.

For example, if your application requires 50 psi regulated pressure, then you should choose a regulator with a 20-60 psi range, as opposed to overcompensating with a regulator rated at 50-200 psi.

### MANUAL OR REMOTE OPERATED

ARO Industrial fluid regulators are available in manual or remote operated configurations. Remote operated models allow for pressure range adjustment through an air-pilot signal, rather than traditional spring adjustment. A perfect solution for when operational or safety requirements necessitate that adjustments be made from a location separate from the actual location of the fluid handling equipment. Remote operated models contain the same design, performance, and material availability as the standard, spring-operated models.



# Low Pressure

- Stainless steel base
- Dual outlet ports
- Standard flow capacity
- Corrosion-resistant housing



## 1/4" Port Downstream Models

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)*	Maximum Inlet Pressure psi (bar)
		Base Housing	Seat		
27520-000	1/4"	Stainless Steel	Tungsten Carbide	5 - 125 (0.3 - 8.5)	750 (51.7)
27520-100	1/4"	Stainless Steel	Tungsten Carbide	0 - 50 (0 - 3.4)	750 (51.7)
27520-200	1/4"	Stainless Steel	Tungsten Carbide	10 - 250 (0.6 - 17.1)	750 (51.7)
27520-400	1/4"	Stainless Steel	Tungsten Carbide	0 - 30 (0 - 2.0)	750 (51.7)

- Dual Outlet Ports
- Remote Models
- Corrosion-resistant housing
- "Easy-flush" mode
- Pressure gauge and riser tube included
- Floating seat design



## 3/8" Port Downstream Models

Standard Flow Capacity - Flow Rates\*\* to 3 gpm (11.4 l)

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)	Max. Inlet Pressure psi (bar)	Working Pressure w/ Gauge psi (bar)	Gauge Model No. (included)	Gauge Pressure Range psi
		Base Housing	Seat					
651790-A1B-B	3/8"	Zinc/Aluminum	Tungsten Carbide	0 - 30 (0 - 2)	800 (55)	120 (8.1)	93656-1	0 - 60
651790-A1C-B	3/8"	Zinc/Aluminum	Tungsten Carbide	20 - 60 (1.3 - 4.1)	800 (55)	120 (8.1)	93656-1	0 - 60
651790-A1D-B	3/8"	Zinc/Aluminum	Tungsten Carbide	50 - 200 (3.4 - 14)	800 (55)	600 (40)	93887	0 - 300
651790-A3B-B	3/8"	Stainless Steel	Tungsten Carbide	0 - 30 (0 - 2)	800 (55)	120 (8.1)	93657-1	0 - 60
651790-A3C-B	3/8"	Stainless Steel	Tungsten Carbide	20 - 60 (1.3 - 4.1)	800 (55)	120 (8.1)	93657-1	0 - 60
651790-A3D-B	3/8"	Stainless Steel	Tungsten Carbide	50 - 200 (3.4 - 14)	800 (55)	600 (40)	93888	0 - 300
651790-A4B-B	3/8"	Stainless Steel	300 Stainless Steel	0 - 30 (0 - 2)	800 (55)	120 (8.1)	93657-1	0 - 60
651790-A4C-B	3/8"	Stainless Steel	300 Stainless Steel	20 - 60 (1.3 - 4.1)	800 (55)	120 (8.1)	93657-1	0 - 60
651790-A4D-B	3/8"	Stainless Steel	300 Stainless Steel	50 - 200 (3.4 - 14)	800 (55)	600 (40)	93888	0 - 300

\* Without Gauge

\*\* Flow rates tested in 30 wt. oil

# Low Pressure



## 3/8" Port Models

High Flow Capacity - Flow Rates\*\* to 6 gpm (22.7 l)

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)	Max. Inlet Pressure psi (bar)	Working Pressure w/ Gauge psi (bar)	Gauge Model No. (included)	Gauge Pressure Range psi
		Base Housing	Seat					
651790-B1D-B	3/8"	Zinc/Aluminum	Tungsten Carbide	30 - 200 (2 - 14)	1250 (86)	600 (40)	93887	0 - 300
651790-B1E-B	3/8"	Zinc/Aluminum	Tungsten Carbide	100 - 800 (7 - 55)	1250 (86)	1250 (86)	93503-1	0 - 1000
651790-B2E-B	3/8"	Stainless Steel	400 Stainless Steel	100 - 800 (7 - 55)	1250 (86)	1250 (86)	93504-1	0 - 1000
651790-B3D-B	3/8"	Stainless Steel	Tungsten Carbide	30 - 200 (2 - 14)	1250 (86)	600 (40)	93888	0 - 300
651790-B3E-B	3/8"	Stainless Steel	Tungsten Carbide	100 - 800 (7 - 55)	1250 (86)	1250 (86)	93504-1	0 - 1000
651790-B4D-B	3/8"	Stainless Steel	300 Stainless Steel	30 - 200 (2 - 14)	1250 (86)	600 (40)	93888	0 - 300
651783	3/8"	Stainless Steel	400 Stainless Steel	100 - 500 (7 - 35)	1250 (86)	N/A	N/A	N/A

\* Without Gauge



## 3/8" Port Remote Models

Standard Flow Capacity - Flow Rates\*\* to 3 gpm (11.4 l)

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)	Max. Inlet Pressure psi (bar)	Working Pressure w/ Gauge psi (bar)	Gauge Model No. (included)	Gauge Pressure Range psi
		Base Housing	Seat					
651790-A1R-B	3/8"	Zinc/Aluminum	Tungsten Carbide	30 - 200 (2 - 14)	500 (34)	N/A	N/A	N/A
651790-A3R-B	3/8"	Stainless Steel	Tungsten Carbide	30 - 200 (2 - 14)	500 (34)	N/A	N/A	N/A
651790-A4R-B	3/8"	Stainless Steel	300 Stainless Steel	30 - 200 (2 - 14)	500 (34)	N/A	N/A	N/A

\* Without Gauge



High Flow Capacity - Flow Rates\*\* to 6 gpm (22.7 l)

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)	Max. Inlet Pressure psi (bar)	Working Pressure w/ Gauge psi (bar)	Gauge Model No. (included)	Gauge Pressure Range psi
		Base Housing	Seat					
651790-B4R-B	3/8"	Stainless Steel	300 Stainless Steel	30 - 200 (2 - 14)	500 (34)	N/A	N/A	N/A
651782	3/8"	Stainless Steel	Tungsten Carbide	100 - 800 (7 - 55)	1250 (86)	N/A	N/A	N/A

\* Without Gauge

\*\* Flow rates tested in 55 CPS material.

# Low Pressure



## **H** 3/8" Back-pressure Models

High Flow Capacity - Flow Rates\*\* to 6 gpm (22.7 l)

Model Number	Port Size	Materials of Construction		Regulated Pressure Range psi (bar)	Max. Inlet Pressure psi (bar)	Gauge Model No. (included)	Gauge Pressure Range psi
		Base Housing	Seat				
651791-B1D-B	3/8"	Zinc/Aluminum	Tungsten Carbide	0 - 200 (0 - 14)	200 (14)	93887	0 - 300
651791-B1E-B	3/8"	Zinc/Aluminum	Tungsten Carbide	0 - 800 (0 - 55)	800 (55)	93503-1	0 - 1000
651791-B3D-B	3/8"	Stainless Steel	Tungsten Carbide	0 - 200 (0 - 14)	200 (14)	93888	0 - 300
651791-B3E-B	3/8"	Stainless Steel	Tungsten Carbide	0 - 800 (0 - 55)	800 (55)	93504-1	0 - 1000
651791-B4D-B	3/8"	Stainless Steel	300 Stainless Steel	0 - 200 (0 - 14)	200 (14)	93888	0 - 300

# Back-Pressure

- Single-wrench adjustment
- Corrosion-resistant housing
- Floating seat design
- Pressure gauge and riser tube included



## **SY** 1-1/4" Back-pressure Models

System Flow Capacity - Flow Rates\*\* to 18.5 gpm (70.1 l)

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)	Max. Inlet Pressure psi (bar)	Gauge Model No. (included)	Gauge Pressure Range psi
		Base Housing	Seat				
651791-C3D-B	1-1/4"	Stainless Steel	Tungsten Carbide	0 - 200 (0 - 14)	200 (14)	93888	0 - 300
651791-C4D-B	1-1/4"	Stainless Steel	300 Stainless Steel	0 - 200 (0 - 14)	200 (14)	93888	0 - 300

\*\* Flow rates tested in 55 CPS material.

# High Pressure

- Multiple materials of construction
- Standard / High capacity options
- Floating seat design
- Remote models
- Pressure gauge and riser tube included
- "Easy-flush" mode



## **S** 3/8" Port Models

Standard Flow Capacity - Flow Rates\*\* to 3 gpm (11.4 l)

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)*	Maximum Inlet Pressure psi (bar)
		Base Housing	Seat		
651780-A1A-B	3/8"	Carbon Steel	Tungsten Carbide	400 - 1250 (7 - 86)	3000 (207)
651780-A1B-B	3/8"	Carbon Steel	Tungsten Carbide	1000 - 3000 (69 - 207)	6000 (414)
651780-A3A-B	3/8"	Stainless Steel	Tungsten Carbide	400 - 1250 (7 - 86)	3000 (207)
651780-A3B-B	3/8"	Stainless Steel	Tungsten Carbide	1000 - 3000 (69 - 207)	6000 (414)

## **H** 3/8" Port Models

High Flow Capacity - Flow Rates\*\* to 6 gpm (22.7 l)

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)*	Maximum Inlet Pressure psi (bar)
		Base Housing	Seat		
651780-B1A-B	3/8"	Carbon Steel	Tungsten Carbide	400 - 1250 (28 - 86)	3000 (207)
651780-B1B-B	3/8"	Carbon Steel	Tungsten Carbide	1000 - 3000 (69 - 207)	6000 (414)
651780-B3A-B	3/8"	Stainless Steel	Tungsten Carbide	400 - 1250 (28 - 86)	3000 (207)
651780-B3B-B	3/8"	Stainless Steel	Tungsten Carbide	1000 - 3000 (69 - 207)	6000 (414)
651784	3/8"	Carbon Steel	Tungsten Carbide	400 - 1125 (28 - 78)	3000 (207)
651785	3/8"	Stainless Steel	Tungsten Carbide	75 - 450 (5 - 31)	3000 (207)
651786	3/8"	Stainless Steel	Tungsten Carbide	150 - 1200 (10 - 83)	6000 (414)

## **H** 3/8" Port Back-pressure Models

High Flow Capacity - Flow Rates\*\* to 6 gpm (22.7 l)

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)*	Maximum Inlet Pressure psi (bar)
		Base Housing	Seat		
651781-B1B-B	3/8"	Carbon Steel	Tungsten Carbide	100 - 3000 (7 - 207)	3000 (207)
651781-B3B-B	3/8"	Stainless Steel	Tungsten Carbide	100 - 3000 (7 - 207)	3000 (207)

\*\* Flow rates tested in 55 CPS material.

# High Pressure

## **H** 3/8" Remote Models

High Flow Capacity - Flow Rates\*\* to 6 gpm (22.7 l)

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)	Max. Inlet Pressure psi (bar)
		Base Housing	Seat		
651780-B1R-B	3/8"	Carbon Steel	Tungsten Carbide	400 - 5000 (28 - 345)	6000 (414)
651780-B3R-B	3/8"	Stainless Steel	Tungsten Carbide	400 - 5000 (28 - 345)	6000 (414)

- ▣ Floating seat design
- ▣ Corrosion-resistant materials
- ▣ "Easy-flush" mode
- ▣ Easy serviceability
- ▣ Remote models



## **M** 3/4" Downstream Models

Mastic Flow Capacity - Flow Rates\*\* to 20 gpm (75.7 l)

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)	Max. Inlet Pressure psi (bar)
		Base Housing	Seat		
651780-C1B-B	3/4"	Carbon Steel	Tungsten Carbide	750 - 2500 (52 - 172)	6000 (414)
651780-C1C-B	3/4"	Carbon Steel	Tungsten Carbide	2000 - 5000 (138 - 345)	6000 (414)
651780-C1R-B	3/4"	Carbon Steel	Tungsten Carbide	750 - 5000 (52 - 345)	6000 (414)
651780-C3B-B	3/4"	Stainless Steel	Tungsten Carbide	750 - 2500 (52 - 172)	6000 (414)



## **M** 3/4" Back-pressure Models

Mastic Flow Capacity - Flow Rates\*\* to 20 gpm (75.7 l)

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)	Max. Inlet Pressure psi (bar)
		Base Housing	Seat		
651781-C1B-B	3/4"	Carbon Steel	Tungsten Carbide	100 - 3000 (7 - 207)	3000 (207)
651781-C3B-B	3/4"	Stainless Steel	Tungsten Carbide	100 - 3000 (7 - 207)	3000 (207)



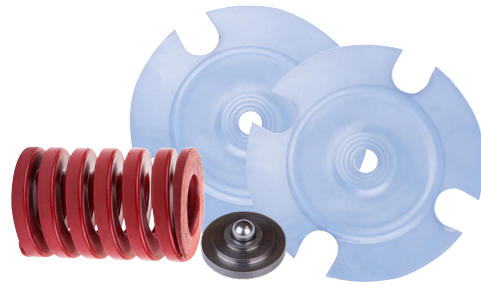
## **M** 3/4" Remote Models

Mastic Flow Capacity - Flow Rates\*\* to 20 gpm (75.7 l)

Model Number	Port Size (NPTF)	Materials of Construction		Regulated Pressure Range psi (bar)	Max. Inlet Pressure psi (bar)
		Base Housing	Seat		
651781-C1R-B	3/4"	Carbon Steel	Tungsten Carbide	750 - 2500 (52 - 172)	3000 (207)
651781-C3R-B	3/4"	Stainless Steel	Tungsten Carbide	750 - 2500 (52 - 172)	3000 (207)

\*\* Flow rates tested in 55 CPS material.

# Repair Kits



Regulator Model	Repair Kit
651790-A1B-B	637219-2A1-B
651790-A1C-B	637219-2A1-B
651790-A1D-B	637219-2A1-B
651790-A3B-B	637219-2A1-B
651790-A3C-B	637219-2A1-B
651790-A3D-B	637219-2A1-B
651790-A4B-B	637219-2A4-B
651790-A4C-B	637219-2A4-B
651790-A4D-B	637219-2A4-B
651790-B1D-B	637219-2B1-B
651790-B1E-B	637219-2B1-B
651790-B2E-B	637219-2B2-B
651790-B3D-B	637219-2B1-B
651790-B3E-B	637219-2B1-B
651790-B4D-B	637219-2B4-B
651783	637219-2B1-B
651790-A1R-B	637219-2A1-B
651790-A3R-B	637219-2A1-B
651790-A4R-B	637219-2A4-B
651790-B4R-B	637219-2A4-B
651782	61962-1
651791-B1D-B	637219-3B1-B
651791-B1E-B	637219-3B1-B
651791-B3D-B	637219-3B1-B
651791-B3E-B	637219-3B1-B

Regulator Model	Repair Kit
651791-B4D-B	637219-3B4-B
651791-C3D-B	637219-3C1-B
651791-C4D-B	637219-3C4-B
651780-A1A-B	637219-0A1-B
651780-A1B-B	637219-0A1-B
651780-A3A-B	637219-0A1-B
651780-A3B-B	637219-0A1-B
651780-B1A-B	637219-0B1-B
651780-B1B-B	637219-0B1-B
651780-B3A-B	637219-0B1-B
651780-B3B-B	637219-0B1-B
651784	637219-01B-B
651785	61962-1
651786	61962-1
651781-B1B-B	637219-1B1-B
651781-B3B-B	637219-1B1-B
651780-B1R-B	637219-0B1-B
651780-B3R-B	637219-0B1-B
651780-C1B-B	637219-0C1-B
651780-C1C-B	637219-0C1-B
651780-C3B-B	637219-0C1-B
651781-C1B-B	637219-1C1-B
651781-C3B-B	637219-1C1-B
651780-C1R-B	637219-0C1-B
651780-C3R-B	637219-1C1-B

## High Pressure Gauges and Adapters

Where accurate high-pressure monitoring or routine material flushing is required, depend on these durable, precision-built gauges and adapters. **You must use an adapter with a high-pressure gauge.**

### ADAPTERS

**3/8" Adapter** – Dual outlet ports. Order No.92968

### Gauges

**0-3,000 PSI Gauge** – Rear mount, non-stainless steel construction. Order No.93505-1

**0-3,000 PSI Gauge** – Rear mount, stainless steel construction. Order No.93506-1

