CASH VALVE A SERIES PRESSURE REGULATORS

Single seated and self-actuating compact diaphragm-type regulators covering a wide range of designs and operating pressures

FEATURES

- Reduce high inlet pressures to lower outlet pressures within close limits.
- All brass or bronze bodies with inbuilt strainer.
- Easily renewable disc-piston assembly.
- Screwed-in cylinder body seat provides for easy removal.
- Self contained strainer protects working parts.
- A-360 and A-361 incorporate an aspirating action to give exceptional regulation at high flow rates.
- Fillister or hex head adjusting screws standard; wing lock nut, T-bar handle, handwheel or tamper-proof seal caps available.
- Balanced piston design either standard or optional depending on model.

GENERAL APPLICATION

A series regulators are suitable for a variety of applications with water, air, oil, gases or other non-corrosive fluids as may be recommended for a specific design. They are not suitable for steam service.

TECHNICAL DATA

Materials:	Brass, bronze
Sizes:	⅛" to ½" (3.5 to 15 mm)
Connections:	Threaded NPTF
Body styles:	2, 3 or 4-way
Inlet pressure range:	250 to 1100 psi (17.2 to 76 bar)
Reduced pressure range:	0 to 250 psi (0 to 17.2 bar)
Max. temperature:	180°F (82°C)

MODELS OVERVIEW

A-16
- Sizes: ¼" or ⅜" (7 or 10.5 mm)
- Body styles:
- Two-way valve with one female inlet and opposite female outlet.
- Three-way valve with one female inlet and opposite female outlet plus a left-hand side ¼" (7 mm) NPTF gauge connection[1].

A-31 and A-31S
- Sizes: ⅛", ¼" and ⅜" (3.5, 7 and 10.5 mm)
- Body styles:
- Type A-31: two-way valve with one female inlet and opposite female outlet.
- Type A-31S: three-way valve with one female inlet and opposite female outlet plus either a left or right-hand side ¼" (7 mm) NPTF gauge connection[1].

A-360 through A-365
- Sizes: ¼", ⅜" and ½" (7, 10.5 and 15 mm)
- Body styles:
- Type A-360 and A-365 - two-way valve with one female inlet and opposite female outlet.
- Type A-361 - adaptable for three-way or four-way use.

NOTE

1. Gauge connection designation is in relation to main valve inlet with valve in upright position.

TYPE A-31

TYPE A-360, 365

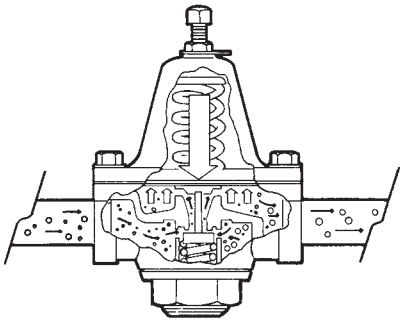
TYPE A-361

Operation

All A series pressure regulators are supplied with the requested delivery pressure pre-adjusted at the factory. Pressure adjustment is accomplished by turning the adjusting screw either clockwise to increase delivery pressure or counter-clockwise to reduce delivery pressure. For example, turning the adjusting screw clockwise forces the adjusting spring to act against the diaphragm assembly and move the internal valve seat to the open position.

When high inlet pressure is applied, it flows into the regulator, through the open seat, up under the diaphragm and on through the outlet. As the outlet pressure builds up under the diaphragm to the adjusted psi setting, the downward adjusting spring pressure is overcome and the regulating valve seat closes to maintain the required delivery pressure.

TYPE A-16 (two-way).



A-16 MODERATE REGULATION LOW TO MEDIUM CAPACITY

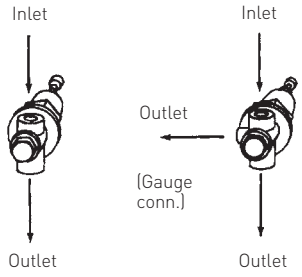
Application

Type A-16 regulators are suitable for air, water, oil, fluids, and gas applications and are intended for use on equipment requiring moderate regulation, low to medium capacity and installations where space limitations and flexibility of hook-up are important factors. They are designed for initial pressures up to 250 psi (17.2 bar) and delivery pressures ranging from 2 to 180 psi (0.14 to 12.4 bar) depending on the spring used. The maximum operation temperature is 180°F (82°C).

The A-16 type regulator is suitable for use in drinking fountains, bubblers, water coolers, humidifiers, beverage dispensers, spray paint rigs, air tools, etc.

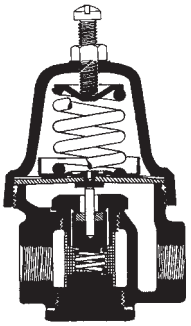
SPECIFICATIONS

	Description						
	Size		Body style		Maximum inlet pressure	Adjustable range	Maximum operating temperature
Type	¼"	⅜"	Two-way	Three-way	psi	psi	°F
A-16	X	X	X	X	250	2-180	180



Style 1 (two-way) Style 2 (three-way)

BODY STYLES

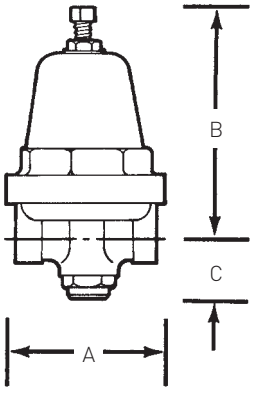


TYPE A-16 (TWO-WAY) INTERIOR

A-16 Moderate regulation low to medium capacity

MATERIALS OF CONSTRUCTION

Part description	Materials
Body	Brass
Spring chamber	Aluminum
Spring button	Brass
Adjusting spring	Steel
Diaphragm gasket	Brass
Diaphragm	NBR
Pressure plate	Brass
Pusher post button	Brass
Cylinder	Brass
Piston	Brass
Seat disc	NBR
Piston spring	302 stainless steel
Strainer screen	Brass



TYPE A-16 (TWO-WAY)

SPECIFICATIONS

Dimensions			Description		
A	B	C	Size	Style	Ship. wt. (lbs)
2¼"	3½"	1 3/16"	¼" or ⅜"	2-way, 3-way	1¾
Spring range of adjustment (in psi)					
2-30	10-50	25-90	80-120	100-180	

CAPACITY INFORMATION

		Water (GPM)			Air (SCFM)		
Inlet - psig	**Outlet - psig**	**A-31/A-16**	**¼" A-360**	**½" A-360**	**A-31/A-16**	**¼" A-360**	**½" A-360**
25	15	1.2	1.5	2.0	8	13	17
50	40	1.2	1.5	2.0	8	13	17
	25	1.4	2.2	2.5	11	21	25
75	50	2.7	3.0	5.5	20	25	45
	25	3.0	3.5	3.5	14	27	32
100	75	2.8	3.0	5.7	28	25	48
	50	3.0	3.6	9.0	25	30	60
	25	3.0	3.6	3.5	25	35	41
125	100	2.8	3.0	5.7	28	25	45
	75	3.7	4.0	7.0	34	35	62
	50	3.2	4.0	5.2	34	40	78
150	100	3.7	4.0	7.0	34	35	62
	75	3.7	4.5	8.5	34	40	78
	50	3.2	4.8	10.5	27	45	95
	25	1.8	4.8	10.5	27	45	95
200	150	4.4	4.4	7.5	47	45	85
	100	4.2	4.5	10.0	38	45	95
	75	4.2	5.0	13.5	38	45	95
	50	4.2	5.0	13.5	38	45	95
300	150	4.7	5.0	13.5	54	45	110
	100	4.7	5.0	13.5	54	45	95
	50	4.7	5.0	13.5	54	45	95

NOTES

1. The capacity information in this table is for general application use representing average conditions. Where capacities and sizing are critical, consult your sales representative.
2. Types A-31 and A-16 provide the same capacity.
3. Capacity for ¼" and ⅜" A-360 same for A-361 and A-365.
4. Capacity for ½" A-360 same as A-361.
5. Capacities are based upon a 20% falloff.

TYPES A-31, A-31S: COMPACT AND ECONOMICAL REGULATORS

Application
Types A-31 and A-31S pressure regulating valves are designed for installations in systems with initial pressures up to 300 psi (20.7 bar) and where space and cost limitations are important. The standard adjustment range is from 2 to 180 psi (0.14 to 12.4 bar) and the maximum operating temperature is 180°F (82°C). For higher temperature installations consult your sales representative.

These regulators are for use on water and air, suitable for drinking fountains, bubblers, water coolers, humidifiers, beer pumps, beverage dispensers, spray paint outfits, air tools, etc. They are also suitable for other liquids and gases if recommended by the factory; for specific advice, please write giving full details of your requirements.

Sizes
Types A-31 and A-31S are available in ⅛", ¼" and ⅜" (3.5, 7 and 10.5 mm) sizes and in various optional body styles.

Body styles
Type A-31: Two-way valve with one female inlet and opposite female outlet.
Type A-31S: Three-way valve with one female inlet and opposite female outlet plus either a left or right-hand side ¼" (7 mm) NPTF gauge connection. Specify gauge connection required when ordering.

NOTE
Gauge connection designations are in relation to main valve inlet with valve in the upright position.

Optional balanced piston
The Type A-31 regulator can be furnished with a balanced piston construction for a small extra charge. This design is particularly effective in keeping the delivery pressure near constant when there are wide fluctuations in the inlet pressure.

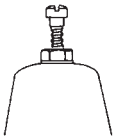
Pressure adjusting screws
Type A-31 and A-31S pressure regulators are fitted with a Fillister head adjusting screw and hex lock nut as standard. They can also be supplied with either a T-handle or black plastic handwheel with wing lock nut arrangement at a small extra charge. The handwheels are particularly suited for panel mounted installations both for improved appearance as well as ease of making pressure adjustments.

Mounting accessories
These regulators can be equipped with a special bushing and nut for panel mounting.

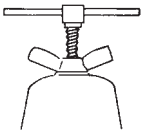
Special designs
Various modifications of the Type A-31 pressure regulating valve are available to meet specific applications.

TYPE A-31

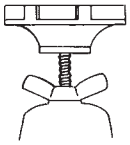
PRESSURE ADJUSTING SCREWS



Standard adjusting screw

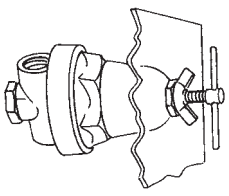


T-Handle



Handwheel

MOUNTING ACCESSORIES



Type A-31 (with bushing for panel mounting, T-handle, or with handwheel)

A-31, A-31S Compact and economical regulators

MATERIALS OF CONSTRUCTION

Part description	Materials
Body	Brass
Spring chamber	Brass or aluminum
Spring button	Brass
Adjusting spring	Steel or stainless steel
Diaphragm gasket	Brass
Diaphragm	NBR
Pressure plate	Brass
Piston	Brass
Seat disc	NBR
Piston spring	302 stainless steel

SPECIFICATIONS

	Description								
	Size			Body style					
Type	⅛"	¼"	⅜"	Two-way	Three-way	Maximum inlet pressure (psi)	Adjustable range (psi)	Balanced piston design	Maximum operating temperature (°F)
A-31	X	X	X	X		300	2-180	❖	180
A-31S	X	X	X		X	300	2-180	❖	180

NOTE

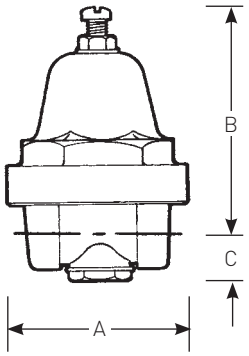
❖ Optional

SPECIFICATIONS

Dimensions			Type		
A	B	C	⅛", ¼" ⅜"	Ship. wt. (lbs)	
2¼"	3 3/16"	¼"	A31, A31S	1¼	
2¼"	3 3/16"	⅝"	A31 balanced piston	1⅜	
Spring range of adjustment (in psi)					
2-15	2-30	10-50	30-90	80-120	100-180

NOTE

Additional spring ranges are available, see page 7.



TYPE A-31

A16, A31, A31S, A31VR, A32, A32S SELECTION GUIDE

Example:	A16	A	W	S	A	S	B	B	F	02	-	D	0005

Model

A16	A16
A31	A31
A31S	A31S
A31V	A31VR
A32Z	A32 w/bronze body
A32E	A32 w/stainless steel body
A32S	A32S

Size

Y	⅛" (A31, A31S)
A	¼" (A16, A31, A31S, A31VR, A32, A32S)
B	⅜" (A16, A31, A31S, A32)

Service

W	Water/air
C	Cryogenic (A32Z, A32E)
F	Final line gas (A31)
V	Vacuum service (A32VR)

Body/connection style

S	Side inlet/side outlet - straight thru (A16, A31, A32)
R	Side inlet/side outlet - straight thru w/right side gauge port (A31S)
L	Side inlet/side outlet - straight thru w/left side gauge port (A16, A31S)
B	Side inlet/bottom outlet w/straight thru gauge connection (A31VR)

Spring chamber material

A	Aluminum spring chamber (A16, A31, A31S, A32, A32S)
Z	Brass spring chamber (A31, A32, A31VR only)
C	Brass chrome plate spring chamber (A32 only)

Spring chamber style

S	Standard	**P**	Panel mount
N	Non-vented		

Diaphragm material

B	NBR (A16, A31, A31S, A32S)	**T**	Neoprene w/PTFE liner (A31, A31S)
L	NBR w/ PTFE liner (A31, A31S)	**Z**	Bronze (A32 only)
G	316 SST (A32)	**R**	EPR (A31VR, A32S)
N	Neoprene (A31, A31S)	**F**	EPR w/ PTFE liner (A31VR)

Seat material

B	NBR (A16, A31, A31S, A32S)	**S**	Silicone (A31VR)
T	PTFE (A31, A32, A32S)	**K**	Kalrez (A31VR)
V	FKM (A31, A31S)		

Pressure screw style

F	Fillister (A16, A31, A31S, A32, A32S)	**K**	Knurled (A31VR)
T	T-handle (A31, A31S)	**W**	Handwheel plastic (A31)
H	Hex (A31, A31S, A32)		

Variation

01	Standard	**11**	Standard variation w/inlet screen (A31, A32)
02	Balanced piston (A31, A31S)	**12**	Balanced piston w/inlet screen (A31)

Design revision

(-)	Original design

Spring material

D	Carbon steel (Industrial or final line gas service only)
E	Stainless steel

Set pressure

0005	5 psig	**0100**	100 psig
0015	15 psig		

Standard spring ranges - must specify during order process									
A16 (*)	2-30	10-50	25-90	80-120	100-180				
A31, A31S, A32 (*)	2-30	10-50	30-90	80-120	100-180				
A31, A32 (**)	2-15	2-25	15-65	40-100	50-150	75-175	100-250	200-400 (A32)	300-600 (A32)
A31S (**)	2-15								
A31VR (*) in/hg	0-15	10-30							

NOTES

* Steel

** Stainless steel

TYPES A-360, A-361 AND A-365: ACCURATE REGULATION MEDIUM AND HIGH CAPACITY

Application

Types A-360, A-361 and A-365 pressure reducing regulating valves incorporate an aspirating action to give accurate regulation at high flow rates. Extreme fluctuations in the upstream or inlet pressure have little or no effect on the delivery or outlet pressure due to the balanced design. They are recommended for air, oils, water, gases and all non-corrosive fluids and are not for steam service. The maximum system operating temperature must not exceed 180°F (82°C).

Types A-360, A-361 and A-365 regulators are recommended for any installation requiring more flow and finer regulator control than the small ordinary regulator can provide. They may be operated in any position, horizontal or vertical.

TYPE A-360, 365

TYPE A-361

Sizes

Types A-360 and A-361 are designed for systems with a maximum inlet pressure of 400 psi (27.6 bar) and allow delivery pressures to be adjusted from 0 to 250 psi (0 to 17.2 bar) depending on the spring used. They are available in ¼", ⅜", and ½" (7, 10.5 and 15 mm) sizes.

Type A-365 is designed for a maximum inlet pressure of 1100 psi (76 bar), while allowing for delivery pressures to be adjusted from 0 to 250 psi (0 to 17.2 bar). It is available in ¼" and ⅜" (7 and 10.5 mm) sizes only.

SPECIFICATIONS

	Description							
	Size			Body style		Maximum inlet pressure (psi)	Adjustable range (psi)	Maximum operating temperature (°F)
Type	¼"	⅜"	½"	Two-way	Three-way* or four-way			
A-360	X	X	X	X		400	0-250	180
A-361	X	X	X		X	400	0-250	180
A-365	X	X		X		1100	0-250	180

NOTE

* ¼" NPTF pipe plug fitted for three-way applications

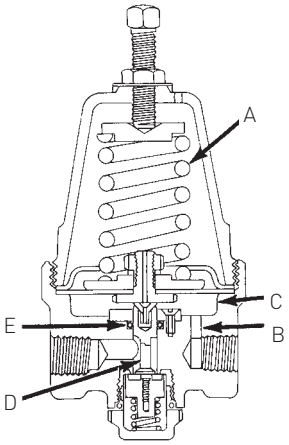
TYPES A-360, A-361 AND A-365

Operation

Types A-360, A-361 and A-365 regulators produce maximum sensitivity to changes in demand or rate of flow, by the combination of long, responsive springs (see A) and a body port (B) past which fluid flowing at a higher velocity creates a suction or aspirating action. This materially reduces pressure in the chamber below the diaphragm (C), permitting wider valve opening resulting in higher capacity and closer regulation.

Type A-360 series valves have a balanced internal piston design (D) to ensure stability of outlet pressure control despite widely varying inlet pressure conditions. An upper piston O-ring seal (E) is used to isolate the inlet pressure from the control chamber below the diaphragm and may be renewed easily from the top side by removing the O-ring retainer (two screws). All other operating parts below the diaphragm are accessible easily and removable readily through the bottom cap, which also employs an O-ring seal to preclude any leakage.

The renewable valve seat disc is of a high quality composition to provide tight closure as long as the seat is clean and free from damage. Closure against the inlet pressure ensures smooth, quiet performance.



TYPE A-360, A-361 INTERIOR

Accurate regulation

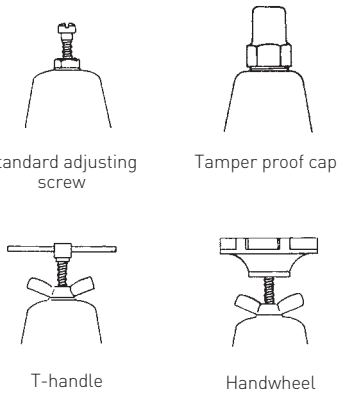
The balanced piston design maintains a near constant delivery pressure when there are wide fluctuations in the inlet pressure.

Body styles

Type A-360 and A-365 - Two-way valve with one female inlet and opposite female outlet.
Type A-361 - Adaptable for three-way or four-way use. The design incorporates one female inlet and opposite female outlet plus one left and one right-hand side ¼" (7 mm) NPTF gauge connection. One ¼" (7 mm) NPTF plug is furnished to convert from four-way to three-way use. The four-way design permits installation with either one inlet and three outlets or two inlets and two outlets, to provide for all combinations of gauging upstream or downstream pressures.

Pressure adjusting screws

The valves are fitted with a square head screw and lock nut as standard.
They may also be fitted with an optional tamper proof cap, a T-handle or a black plastic handwheel with lock nut at a small extra cost.



Standard adjusting screw | Tamper proof cap

T-handle | Handwheel

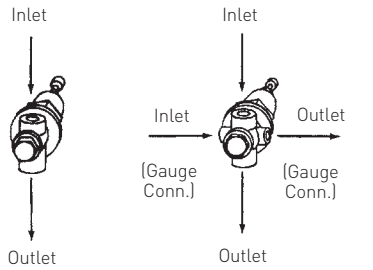
OPTIONS

Panel mounting

All versions may be equipped with a special bushing and nut to mount the valve securely to a control panel.

Replaceable seat disc, O-rings, diaphragm and piston

Simplicity of design means minimal, easy and low-cost maintenance with few integral parts required.

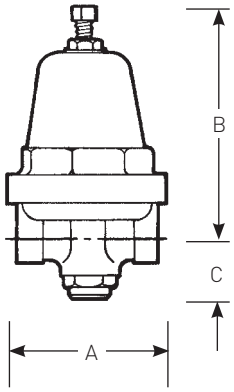


Right hand outlet and left hand outlet gauge connections

Style 1 (two-way) Style 2 (four-way)

BODY STYLES

TYPES A-360, A-361 AND A-365



TYPE A-360, A-365

MATERIALS OF CONSTRUCTION

Part description	Materials
Body	Brass or bronze
Spring housing	Bronze
Adjusting spring	302 stainless steel
Diaphragm stop	Brass
Pressure plate	Brass
Diaphragm	Neoprene
Pusher post button	Brass
Retainer plate*	Brass
Cylinder**	302 stainless steel
Pusher post	302 stainless steel
Seat disc	NBR
Piston	Brass
Piston spring	302 stainless steel
O-rings	NBR

NOTE

* Except A-365

** A-365 only

SPECIFICATIONS

	Description				Dimensions			
	Size		Body style					
Type	½"	¼", ⅜"	Two-way	Three- or four way	A	B	C	Shipping weight (lbs)
A-360		X	X		2½	4½	1⅛	2
A-360	X		X		2⅞	4½	1⅝	2½
A-361		X		X	2½	4½	1⅛	2⅛
A-361	X			X	2⅞	4½	1⅝	2⅝
A-365		X	X		2½	4½	1⅛	2

SPECIFICATIONS

Type	Size	Spring range of adjustment (in psi)					
A-360, A-361,	¼, ⅜	0-5	2-35	20-70	60-125	75-200	100-250
A-365	½	0-5	2-25	20-60	40-80	75-125	100-250

NOTE

Additional spring ranges are available, see page 11.

A360, A361, A365 SELECTION GUIDE

Example:	A360	A	W	S	Z	S	B	B	S	01	-	D	0005

Model
- **A360** A360
- **A361** A361
- **A365** A365

Size
- **A** ¼"
- **B** ⅜"
- **C** ½" (A360, A361)

Service
- **W** Water/air

Body/connection style
- **S** Side inlet / side outlet - straight thru (A360, A365)
- **X** Side inlet / side outlet - straight thru w/ two ¼" gauge ports (A361)

Spring chamber material
- **Z** Bronze spring chamber

Spring chamber style
- **S** Standard
- **P** Panel mount (A360, A361)
- **D** Differential connection and adjusting screw cap (A365)
- **C** Adjusting screw cap (A365)

Diaphragm material
- **B** NBR
- **L** NBR w/ PTFE liner
- **N** Neoprene
- **T** Neoprene w/ PTFE liner
- **Z** Bronze
- **R** EPR
- **F** EPR w/ PTFE liner

Seat material
- **B** NBR
- **T** PTFE (A360, A361)
- **V** FKM
- **N** Neoprene (A365)
- **E** EPR (A365)

Pressure screw style
- **S** Standard
- **T** T-handle
- **H** Hex

Variation
- **01** Standard

Design revision
- **(-)** Original design

Spring material
- **D** Carbon steel
- **E** Stainless steel

Set pressure
- **0005** 5 psig
- **0015** 15 psig
- **0100** 100 psig

NOTE

NPTF, also referred to as 'Dryseal' thread, is designed to provide a more leak-free seal without the use of PTFE tape or other sealant compound. NPTF threads are interchangeable with NPT threads and are standard on all Cash Valve products.

Standard spring ranges - must specify during order process										
A360, A361 (**)	0-5	2-25	2-35	20-60	20-70	40-80	60-125	75-125	75-200	100-250
A365 (**)	0-40	40-80	25-150	100-200	200-250	200-400				

NOTES

** Stainless steel

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