

# SHOCK ABSORBERS

## ABSORBOTRON® Sizes & Fixture-Unit Ratings

The proper size of ABSORBOTRON® units can be determined for one or more fixtures on the basis of the Fixture-Unit values as shown in the tables below.

The JOSAM Fixture-Unit Sizing Method established in accordance with Plumbing and Drainage Institute "Standard P.D.I.-WH201" provides a simple and accurate method of determining the size of ABSORBOTRON® required for each plumbing fixture supply branch, and automatically takes into consideration all of the factors which must be considered or otherwise calculated.

To determine the size of ABSORBOTRON® required by this easy method, simply refer to the Fixture-Unit Rating of each fixture on the cold or hot water lines. Add the total number of cold or hot water fixture-units on each line and use this total to select the proper ABSORBOTRON®, as shown in the Selector Chart.

This method provides less chance of error since all facts required for selection are known. It is the method preferred by engineers.

FIXTURE-UNIT RATING TABLE					
Fixture	Type of Supply Control	CAPACITY IN FIXTURE-UNITS			
		Public		Private	
		C. W.	H. W.	C. W.	H. W.
Water Closet	Flush Valve	10	-	6	-
Water Closet	Flush Tank	5	-	3	-
Pedestal Urinal	Flush Valve	10	-	-	-
Stall or Wall Urinal	Flush Valve	5	-	-	-
Stall or Wall Urinal	Flush Tank	3	-	-	-
Lavatory	Faucet	1-1/2	1-1/2	1	1
Bathtub	Faucet	2	3	1-1/2	1-1/2
Shower Head	Mixing Valve	2	3	1	2
Bathroom Group	Flush Valve Closet	-	-	8	3
Bathroom Group	Flush Tank Closet	-	-	6	3
Separate Shower	Mixing Valve	-	-	1	2
Service Sink	Faucet	3	3	-	-
Laundry Tubs (1-3)	Faucet	-	-	3	3
Combination Fixture	Faucet	-	-	3	3

### SELECTOR CHART

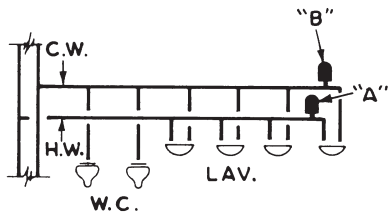
TABLE IV

ABSORBOTRON® TYPE NO.	75000-S	† 75001A † 75001-S	† 75002B † 75002-S	† 75003C † 75003-S	† 75004D † 75004-S	† 75005E † 75005-S	† 75006F † 75006-S
P.D.I. SYMBOLS †	AA	A	B	C	D	E	F
Fixture-Unit Rating	1	1-11	12-32	33-60	61-113	114-154	155-330

† Meet P.D.I. Standard WH-201 and A.S.S.E. Standard 1010. Certificate of Compliance available on request.

### EXAMPLE

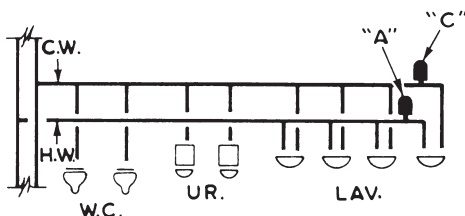
For purpose of example, the following applications are offered. Branch line control valves are not shown. ▲



#### EXAMPLE 1

COLD WATER BRANCH = 26 F. U. =  
JOSAM Type No. 75002B ABSORBOTRON®

HOT WATER BRANCH = 6 F. U. =  
JOSAM Type No. 75001A ABSORBOTRON®



#### EXAMPLE 2

COLD WATER BRANCH = 36 F. U. =  
JOSAM Type No. 75003C ABSORBOTRON®

HOT WATER BRANCH = 6 F. U. =  
JOSAM Type No. 75001A ABSORBOTRON®

### SPECIAL APPLICATIONS

The JOSAM Engineering Department will assist you with respect to any special water hammer problems. When submitting your request, please include the following information, if possible.

1. Type of equipment or fixtures to be served
2. Schematic sketch of piping system
3. Size of pipe used
4. Water pressure
5. Velocity of water flow through piping (if known)

▲ Pressure Reducing Valves should be installed on branch lines serving fixtures and equipment, when the pressure in the line exceeds 60 p.s.i. Most fixtures and equipment are designed to function at pressures ranging between 20 p.s.i. and 50 p.s.i. For quiet flow of water in the piping, it is recommended that a velocity between 5-8 feet per second be maintained.

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## Selection for Long Piping Runs

The majority of sizing and selection applications will involve single and multiple fixture branch lines. These are easily handled with Table IV. The remainder of applications involves individual runs of piping to a remote item of equipment. The properly sized water hammer arresters for such applications can be determined by Table V and Table V-A.

**TABLE V**  
FOR WATER PRESSURES UP TO 65 P.S.I.G.

P.D.I. Water Hammer Arrester Sizes						
Length of Pipe	Nominal Pipe Diameter					
	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
25	A	A	B	C	D	E
50	A	B	C	D	E	F
75	B	C	D	AE	F	EF
100	C	D	E	F	CF	FF
125	C	D	F	AF	EF	EFF
150	D	E	F	DF	FF	FFF

Ideally the flow pressure in branch lines serving fixtures should never exceed 60 P.S.I.G. Pressure reducing valves should be installed to maintain proper pressure. However, when flow pressures of 65 to 85 P.S.I.G. are used, the next larger size water hammer arrester should be selected. Refer to Table V-A.

All sizing data in this section are based on flow velocities of 10 F.P.S. or less. The certification testing was conducted with a velocity of 10 F.P.S. to offer assurance that P.D.I. approved units were capable of handling shocks of maximum intensity that may be encountered.

**TABLE V-A**  
FOR WATER PRESSURES OVER 65 P.S.I.G. AND UP TO 85 P.S.I.G.

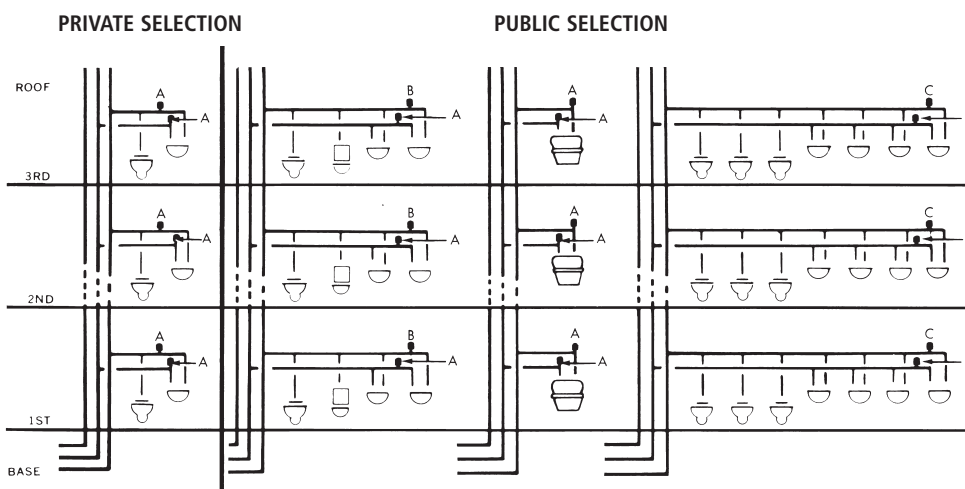
P.D.I. Water Hammer Arrester Sizes						
Length of Pipe	Nominal Pipe Diameter					
	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
25	B	B	C	D	E	F
50	B	C	D	E	F	CF
75	C	D	E	F	CF	FF
100	D	E	F	CF	EF	EFF
125	D	E	CF	DF	FF	BFFF
150	E	F	CF	FF	DFF	FFFF

When long runs of piping are employed to serve a remote item of equipment, the water hammer arrester should be located as close as possible to the point of quick closure. At this location, the water hammer arrester will control the developed energy and prevent the shock wave from surging through the piping system.

NOTE: For best performance results, the ABSORBOTRON® II should always be installed in an upright position and located as close as possible to the fixture or equipment closure valve.

## Typical Application in Multi-Story Buildings

The Riser Diagram illustrated below, shows a typical placement of Shock Absorbers on the branch lines in the pipe space behind the fixtures. The branch line control valves are not shown in this instance.



### EXAMPLE

It is relatively easy to select the proper sized Shock Absorber for a multiple fixture branch. The above represents a typical riser diagram that an engineer may include with his set of drawings

When sizing the cold and hot water branch lines, it is usual practice to obtain the total number of fixture units on each branch line. This information is then applied to water pipe sizing charts to determine the required size of the branch lines.

The proper size of Shock Absorber can also be selected once the total of fixture-units for a cold or hot water branch line is known. It is only necessary to apply the fixture-units to The Selector Chart, Table IV and select the appropriate Shock Absorber.

It is suggested that the engineer employ P.D.I. symbols for his riser diagrams, as shown in the illustration above. This practice will enable manufacturers to furnish the correct units.

**75000 SERIES STAINLESS STEEL**

**APPLICATION**

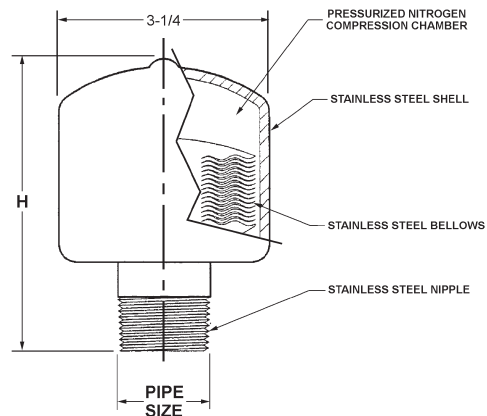
For use where hydrostatic shock may be present such as near flush valves, faucets, laundry machines, dishwashers or any type of pneumatic, electric or spring-loaded quick closing valve.

**SPECIFICATION**

JOSAM 75000 Series ABSORBOTRON II® Shock Absorber with stainless steel shell, hydro-pneumatic cushion of nitrogen, stainless steel bellows and stainless steel male threaded pipe nipple.

Type numbers 75001A through 75006F meet P.D.I. Standard WH-201 and A.S.S.E. Standard 1010.

Certificate of Compliance available on request.



TYPE NO.	P.D.I. SIZE	FIXTURE UNITS	PIPE SIZE	H	LBS.
75001A	A	1-11	3/4	3-1/8	1.0
75002B	B	12-32	1	4	1.3
75003C	C	33-60	1	4-5/8	3.0
75004D	D	61-113	1	5-1/2	4.0
75005E	E	114-154	1	7-1/16	4.5
75006F	F	155-330	1	7-1/16	5.0

**75000-S SERIES COPPER**

**APPLICATION**

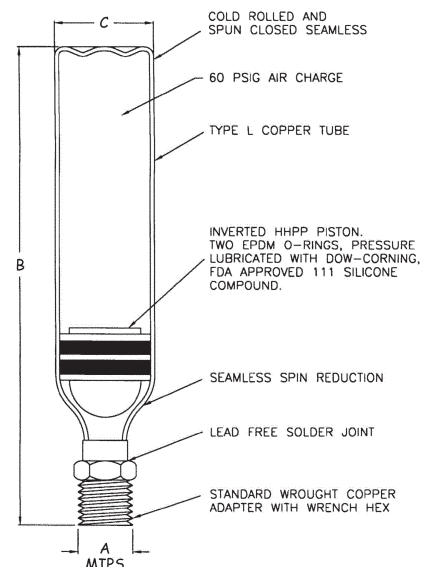
For use where hydrostatic shock may be present such as near flush valves, faucets, laundry machines, dishwashers or any type of pneumatic, electric or spring-loaded quick closing valve.

**SPECIFICATION**

JOSAM 75000-S Series ABSORBOTRON II® Shock Absorber with wrought copper shell, hydro-pneumatic air cushion, HHPP piston, wrought copper adapter and male threaded connection.

Type numbers 75001-S through 75006-S meet A.S.S.E. Standard WH-2010.

Certificate of Compliance available on request.



TYPE NO.	P.D.I. SIZE	FIXTURE UNITS	A	B	C	LBS.
75000-S	AA	1	1/2	4-1/2	7/8	1
75001-S	A	1-11	1/2	6-1/2	1-3/8	1
75002-S	B	12-32	3/4	8-3/4	1-3/8	1
75003-S	C	33-60	1	11	1-3/8	1
75004-S	D	61-113	1	10-1/8	2-1/8	2
75005-S	E	114-154	1	12-5/8	2-1/8	3
75006-S	F	155-330	1	15-1/8	2-1/8	4

BWV, HYDRANTS & SHOCKS

