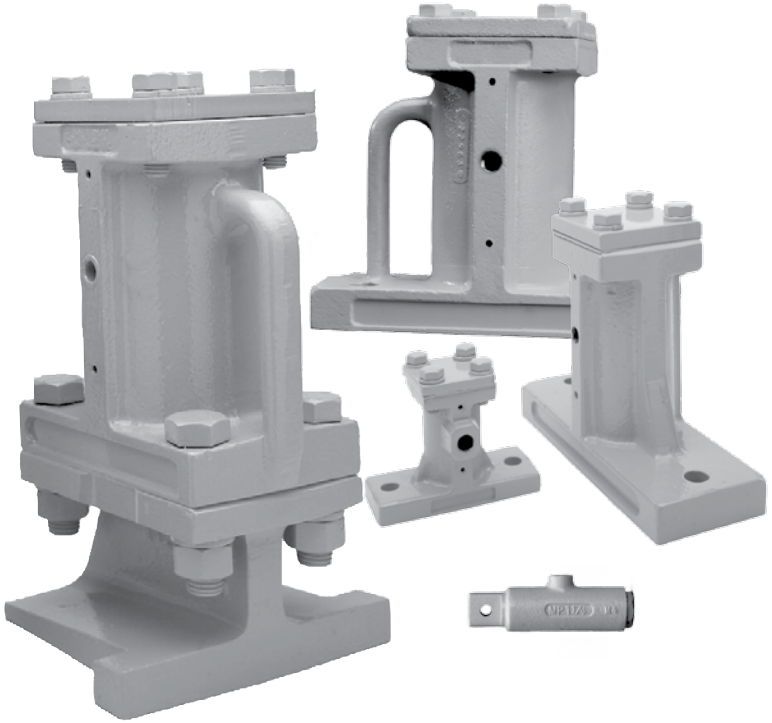
Pneumatic Piston Vibrators

Operating Instructions

P-Series Piston Vibrators



VIBRATORS AIR BLASTERS
GlobalManufacturing.com

Global Manufacturing, Inc®
1801 East 22nd St
Little Rock, AR 72206
501.374.7416 TEL
501.376.7147 FAX
800.551.3569 FREE USA & CANADA

⚠ SAFETY PRECAUTIONS

- Follow installation procedures.
- Use a safety cable whenever possible to prevent personal injury should vibrator come unfastened.
- Do not operate vibrator when structure is empty.
- Use ear protection for decibel levels at 90+ dBA.
- Disconnect air line before maintenance or repair.
- Do not operate vibrator without clean and well lubricated air. Use an air regulator.
- Do not operate vibrator above 60 PSI to extend life of vibrator.

I. Installation Procedures

Make sure the selected vibrator is correct for the thickness of the bin wall. Use a channel iron as a mounting apparatus. The channel iron should be at least equal to the base of the vibrator. Stitch weld the channel to the structure.

IMPORTANT

Use Grade 8 coarse thread bolts, nuts and lock washers. Allow vibrator to operate for at least five minutes and inspect installation. Re-tighten all mounting fasteners and air line connections.

II. Operation

The piston vibrators may be used continuously at speeds up to the rated operating conditions shown in the performance data. If the vibrator will be mounted in the horizontal position, a starting spring may be necessary - contact the factory. Provide filtered, lubricated, and regulated air.

If piston vibrators are mounted directly to the hopper wall, flexing will occur and could damage the hopper. Global is not responsible for damages incurred using a piston vibrator. Contact Global Customer Service for assistance.

Air line filtration: Use at least a 50 Micron filter in the air line. The air filter should be drained regularly and the element examined for signs of clogging.

Air line lubrication: Use a SAE 10 non-detergent oil. Adjust the lubricator to approximately 10 to 12 drops of oil per minute.

IMPORTANT

Lubrication required!

Run at 60 psi maximum!

Periodically refill the oil reservoir to assure lubrication for the vibrator.

Air line regulator: Adjust the air regulator for the lowest pressure that will give the desired material flow. For most applications, 60 psi should be the maximum operating pressure for the piston vibrator. Operating the vibrator above 60 psi will shorten the life of the vibrator.

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III. Railcar Application

The PRR-1300 piston vibrators (with wedge base) can be used on the hoppers of railcars. The PRR-1300 vibrators are supplied with a standard wedge shaped male mounting base. The wedge base is compatible with most female brackets found on railcar hoppers.

The vibrator is mounted by inserting the male wedge into the female recipient bracket. Refer to the operation instructions for proper filter, regulator, and lubricator recommendations.

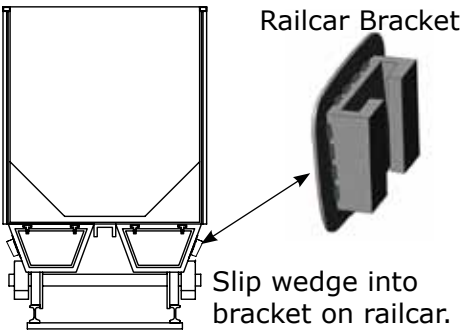
PRR-1300 - Railcar Piston Vibrator. The wedge fits in all railcar pockets.

IV. Matchplate Application

Matchplate piston vibrators should be bolted securely to the foundry matchplate. Periodically check bolts for tightness. Follow standard operation procedures.

Matchplate piston vibrators are also available with portable Pin-Mounts and threaded Stud-Mounts. Contact Global Customer Service for assistance. 1-501-374-7416.

MP 1¼" IM
Matchplate
Piston Vibrator



V. MOUNTING

Short channel irons are best for piston vibrators. The longer channel irons used with rotary vibrators are designed to prevent flexing of the bin wall, but the shorter length recommended for piston vibrators allows for rapid and repeated flexing of the bin wall (often called oil canning). Please note that mounting Piston Vibrators directly to the bin wall may cause damage.

See chart on next page for recommendations on length and size of channel iron. The channel iron should be at least equal to the base of the vibrator. Do not install more than one vibrator on the same channel iron or use a channel iron shorter than the recommended length. If bin wall thickness is less than that specified for vibrator size, then bin reinforcement may be required.

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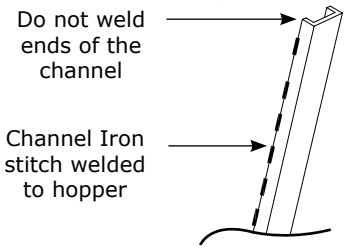
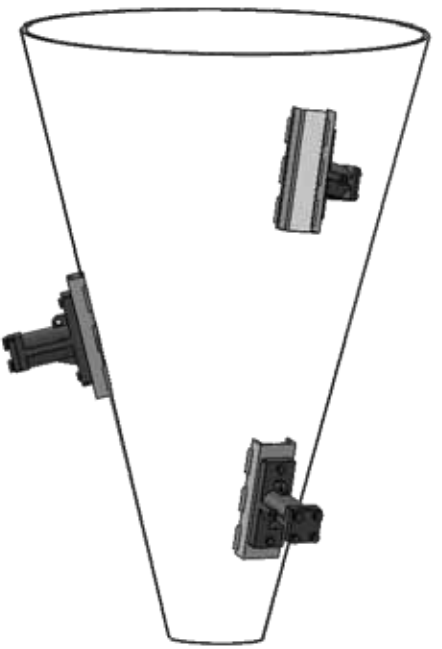
Stitch weld channel irons to the bin wall or the structure to be vibrated. Do not weld the ends of the channel iron to the structure.



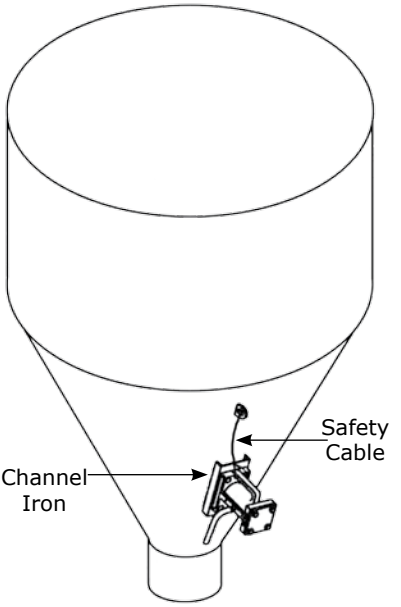


If multiple units are used, vibrators should not be mounted at same elevation if positioned directly opposite one another.

If hopper slope angle (measured from horizontal) is more than 70°, a piston return spring is recommended to ensure positive starting.Locate vibrator approximately ¼ of the length of the sloped wall measuring upwards from the discharge.

Use Grade 5 or better coarse thread bolts, nuts and lock washers. Allow vibrator to operate for at least five minutes and inspect installation. Re-tighten all mounting fasteners and air line connections.

Weld safety cable attachment ring to a surface, which is not vibrated, above the vibrator. Loop cable through the hole in the vibrator cap and secure with the cable clamp. Leave some slack in the cable. Screw in the nylon hose barb until it seals in the inlet port. Use a hose clamp to attach airline to nylon barb.



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P-Series Piston Vibrator Mount Recommendations			
Vibrator Model	**Bin Wall Thickness**	**Channel Iron**	**Minimum Length**
P-1 AC or IM	1/16" - 1/8"	C2" x 1 x 3/16"	8"
	1.6 - 3.2 mm	C50 x 25 x 4.76 mm	200 mm
P-1 ¼ AC or IM	1/16" - 1/8"	C3" x 4.1 lb/ft	10"
	1.6 - 3.2 mm	C75 x 6 kg/m	250 mm
P-1 ⅝ AC or IM	3/16" - ¼"	C3" x 5 lb/ft	12"
	4.7 - 6.3 mm	C75 x 7 kg/m	300 mm
P2 AC or IM	3/16" - ¼"	C3" x 5 lb/ft	16"
	4.7 - 6.3 mm	C75 x 7 kg/m	400 mm
P-3 AC or IM	¼" - ⅜"	C7" x 12.25 lb/ft	24"
	63 - 9.5 mm	C180 x 18 kg/m	600 mm
P4 AC or IM	⅜" and >	C9" x 15 lb/ft	48"
	9.5 and > mm	C230 x 32 kg/m	1219 mm

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P-Series Piston Vibrator Dimensions

Vibrator Model	Weight	A	B	C	D	E	F
		Height	Length	Width	Inlet	Bolt Hole	Bolt Centers
	lb	in	in	in	in	in	in
	kg	mm	mm	mm	NPT	mm	mm
P1 AC or IM	3.1	3.88	4.50	2.00	¼	½	3.50
	1.41	99	114	51		13	89
P1¼ AC or IM	8.1	5.63	6.00	2.50	¼	½	4.50
	3.67	143	152	64		13	114
P1- ⅝ AC or IM	19.00	7.50	9.50	3.25	¼	⅝	7.50
	8.62	191	241	83		16	191
P2 AC or IM	19.00	7.50	9.50	3.25	¼	⅝	7.50
	8.62	191	241	83		16	191
P3 AC or IM	50.00	9.63	10.50	5.00	⅜	⅞	7.75 X 3.25
	22.68	244	267	127		22	197 X 83
P4 AC or IM	94.0	12.25	14.50	6.50	½	1	12 X 4
	42.64	311	368	165		25	305 X 102
PRR-1300	70.6	14.38	8.00	7.38	⅜	Wedge Base	6.875 X 6.125
	32.02	365	203	187			175 X 156
MP ¾ IM	1.40	5.38	1.25	1.00	¼	⅜	N/A
	.64	137	32	25		10	
MP 1 IM	2.8	5.88	1.50	1.25	¼	½	N/A
	1.27	149	38	32		13	
MP 1-¼ IM	5.00	7.00	2.00	1.75	¼	½	N/A
	2.27	178	51	44		13	
MP 2 IM	15.2	10.63	3.38	2.88	¼	¾	N/A
	6.89	270	86	73		19	

Impacting or Air Cushioned Piston Vibrators

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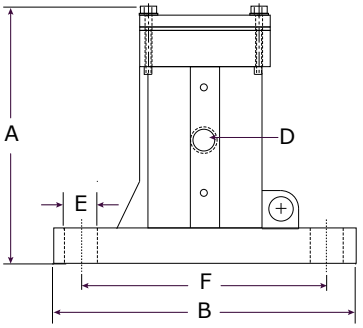
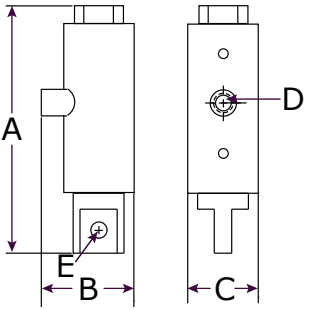
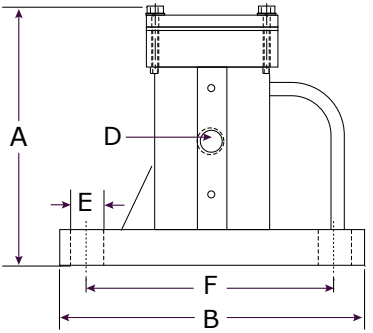
V. Dimensional Drawings



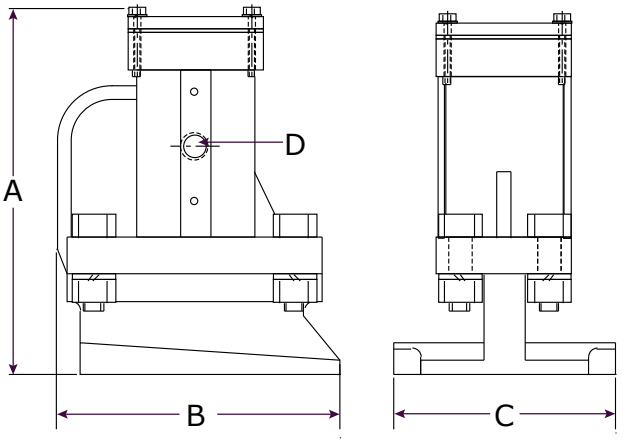
P1, P1¼, P1⅝, & P2 Pistons



MP - Matchplate Pistons



P3 and P4 Pistons



PRR-1300 Railcar Piston

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Performance Data for P-Series Piston Vibrators

VIBRATOR MODEL	Air Pressure									
	START UP	20 PSI (1.4 BAR)			40 PSI (2.8 BAR)			60 PSI (4.1 BAR)		
		Speed	Flow	Force	Speed	Flow	Force	Speed	Flow	Force
	psi	cpm	cfm	lb	cpm	cfm	lb	cpm	cfm	lb
	bar		Lpm	kN		Lpm	kN		Lpm	kN
Impact										
P1 IM	15-20	4000	1.5	250	6100	2.0	900	8100	3.0	1240
	1.0-1.4		42	1.1		57	4.0		85	5.5
P1¼ IM	15-20	3400	2.0	375	4600	3.5	1440	5750	5.5	2250
	1.0-1.4		57	1.7		99	6.4		156	10.0
P1- ⅝ IM	15-20	3520	2.2	1450	4500	5.0	1770	5600	8.0	2270
	1.0-1.4		62	6.4		142	7.9		227	10.1
P2 IM	15-20	2750	2.2	1890	4000	5.5	2370	5350	9.0	2870
	1.0-1.4		62	8.4		156	10.5		255	12.8
P3 IM	15-20	2250	7.5	4000	3000	16.5	4600	3750	25.5	5600
	1.0-1.4		212	17.8		467	20.5		722	24.9
P4 IM	15-20	1625	10.0	6200	2350	20.5	7600	3100	30.5	9700
	1.0-1.4		283	27.6		580	33.8		864	43.1
Air-Cushioned										
P1 AC	15-20	2600	1.5	16	3250	2.0	32	3950	2.2	48
	1.0-1.4		42	0.1		57	0.1		62	0.2
P1¼ AC	15-20	2350	2.0	24	2900	3.5	48	3400	6.0	72
	1.0-1.4		57	0.1		99	0.2		170	0.3
P1- ⅝ AC	15-20	1650	2.0	41	2000	5.0	82	2400	7.5	123
	1.0-1.4		57	0.2		142	0.4		212	0.5
P2 AC	15-20	1600	2.2	63	1950	5.0	126	2250	8.5	189
	1.0-1.4		62	0.3		142	0.6		241	0.8
P3 AC	15-20	1400	6.5	141	1700	13.5	282	1950	20.5	423
	1.0-1.4		184	0.6		382	1.3		580	1.9
P4 AC	15-20	1100	9.5	251	1300	20.0	502	1500	30.0	753
	1.0-1.4		269	1.1		566	2.2		850	3.3
Railcar										
PRR-1300	15-20	1400	6.5	141	1700	13.5	282	1950	20.5	423
	1.0-1.4		3.1	627		6.4	1254		9.7	1882

All force data exceeding 4800 force pounds (21.4 kN) is estimated.

Performance Data for P-Series Matchpate Piston Vibrators		
Matchplate		**Air Consumption at 60 psi (4.14 bar)**
MP ¾ IM	12,400 VPM @ 70 psi (4.83 bar	3.0 cfm - 85 Lpm
MP1 IM	10300 VPM @ 70 psi (4.83 bar)	3.5 cfm - 99 Lpm
MP1¼ IM	8,150 VPM @ 70 psi (4.83 bar)	3.8 cfm - 108 Lpm
MP2 IM	5,000 VPM @ 70 psi (4.83 bar	8.3 cfm - 235 Lpm

VI. Trouble Shooting

Problem	Probable Cause	Solution
Vibrator will not start	Inadequate air supply	Check air line for leaks and bad connections. Make sure air line size is equal to inlet port.
	Restriction in air line	Remove restrictions in air line.
	Inadequate lubrication	Use lubrication in air line.
	Broken return spring	Replace spring.
Vibrator operates slowly	Inadequate lubrication	Install lubricator. Set for 10-12 drops per minute.
	Inadequate air supply	Check air line for leaks and bad connections. Make sure air line is equal to inlet port.
	Contaminants in vibrator	Disassemble and clean vibrator. Check filter.

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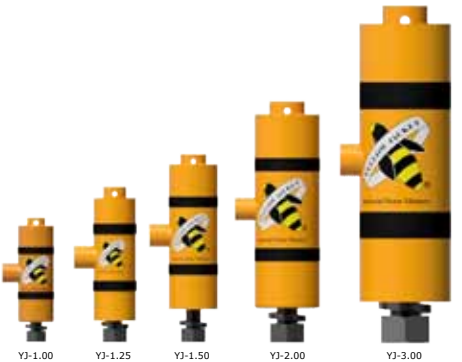
Check out our Yellow Jacket Piston Vibrator line.

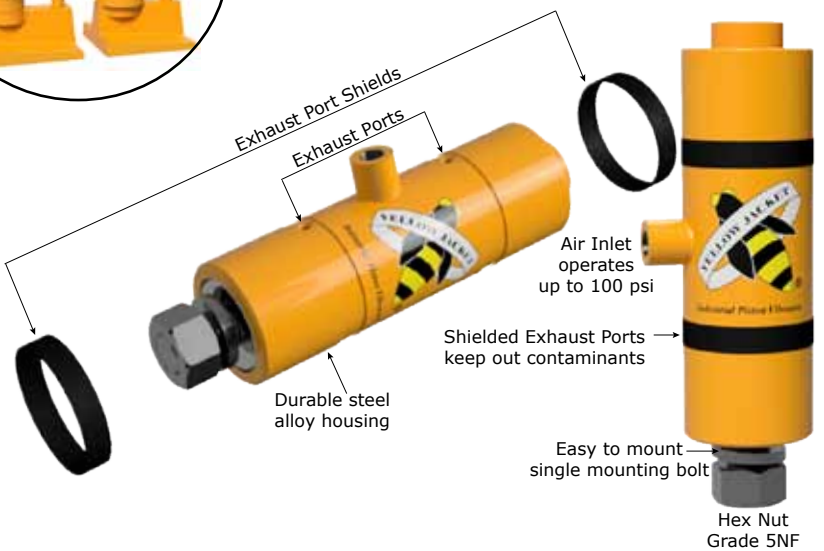
Railcar Vibrators

Lightweight - 50-70% lighter than competitively sized piston vibrators. Come in two sizes.

YJR-3.00-AC
comes with Tuff Bands
and
special wear resistant
coated pistons



Standard Models



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Advantages of Yellow Jacket Piston Vibrators

Durable - Specially designed all steel alloy housing is tougher than cast iron.

Operates at air pressures up to 100 psi (7 bar). Most competitive piston vibrators cannot exceed 60-80 psi (1.4 - 5.5 bar).

Wear Resistant Piston - Specially designed to withstand harsh conditions and prevent seizing of piston when limited lubrication is used. Wear resistant coating is standard on all 3" YJ's and all Railcar models.

Lightweight - 50-70% lighter than competitively sized piston vibrators.

Easy to Mount - Single mounting bolt. Mount kits available. Easy to interchange with other brands. Safety cable ready.

Shielded Exhaust Ports - Built-in protection. Exhaust Port Shields keep contaminants from entering the piston chamber. When a vibrator lies on the ground when not in use, dirt enters through unprotected exhaust ports and can ruin the vibrator. If debris enters the housing it scratches and scars the piston and housing bore, shortening the life of the vibrator. Our shields are rated for continuous outdoor exposure. They are inexpensive and easy to replace. No other piston vibrators on the market have this type of exhaust port protection:

Exhaust Port Shields (EPS) - Port protection is an exclusive feature of Yellow Jacket® Piston Vibrators. These special protective shields keep contaminants from entering the piston chamber and shortening vibrator life. Made of MIL Spec neoprene for long life. Replacements are inexpensive and easy to install.

Tuff Band Exhaust Port Shields (TB) - These more rugged exhaust port shields keep contaminants out of the housing extending vibrator life. They can tolerate harsh environments and rough handling. Engineered to cool the unit, extending vibrator life on continuous use applications. Tuff Bands are standard on all Railcar models (YJR).

Trouble-free Operation - No required maintenance if using filtered, lubricated air.

Spring ensures reliable start-ups in all mount orientations. Engineered to protect spring from impact, giving longer life.

More Force - Longer piston stroke provides more energy to move material than competitively sized vibrators. Impact (IM) models produce 100-200% more force per CFM of air than the competition. Air-Cushioned (AC) models produce 7-60% more force per CFM

Energy Efficient - Most efficient piston vibrators available today. Require less than 10 CFM (283 LPM) even for largest models.