

**PULSATION DAMPENERS
OPERATION & MAINTENANCE MANUAL**



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CAUTIONS — READ FIRST!

READ THESE WARNINGS AND SAFETY PRECAUTIONS PRIOR TO INSTALLATION OR OPERATION. FAILURE TO COMPLY WITH THESE INSTRUCTIONS COULD RESULT IN PERSONAL INJURY AND OR PROPERTY DAMAGE. RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE.

⚠ WARNING Pump, valves and all containers must be properly grounded prior to handling flammable fluids and/or whenever static electricity is a hazard.

⚠ WARNING Prior to servicing the pump, ensure that the air and fluid lines are closed and disconnected. While wearing personal protective equipment, flush, drain and process liquid from the pump in a safe manner.

⚠ CAUTION Do not connect a compressed air source to the exhaust port of the pump.

⚠ CAUTION Ensure that the muffler is properly installed prior to pump operation.

⚠ CAUTION Do not lubricate air supply.

⚠ CAUTION When selecting pump materials, be aware of the following temperature limitations:

Buna-N (Nitrile):	10°F to 180°F [-12C to 82C]
Geolast®:	10°F to 180°F [-12C to 82C]
EPDM:	-40°F to 280°F [-40C to 138C]
Santoprene®:	-40°F to 225°F [-40C to 107C]
Viton® (FKM):	-40°F to 350°F [-40C to 177C]
PTFE:	40°F to 220°F [4C to 104C]
Polyethylene:	32°F to 158°F [0C to 70C]
Polypropylene:	32°F to 180°F [0C to 82C]
PVDF:	0°F to 250°F [-18C to 181C]
Nylon:	0°F to 200°F [-18C to 93C]

Temperature limits are solely based upon mechanical stress and certain chemicals will reduce the maximum operating temperature. Consult a chemical resistance guide for chemical compatibility and a more precise safe temperature limit.

⚠ CAUTION Before starting to disassemble the pump, take care that pump and dampener have been emptied and rinsed. Further, both have to be cut off from any energy on the air and product side. If pump and dampener is being deported from the plant, a reference about the delivered liquid has to be attached.

⚠ WARNING = Hazards or unsafe practices which could result in severe personal injury, death or substantial property damage

⚠ CAUTION = Hazards or unsafe practices which could result in minor personal injury, product or property damage.

⚠ CAUTION Please respect the relevant additional security advices, if the pump and the dampener have been used for aggressive, dangerous, or toxic liquids.

⚠ CAUTION Before putting the pump and dampener into operation, the tightness of both has to be checked. The housing bolts have to be tightened carefully, as the elements of construction tend to "settle." Fixing the bolts is necessary as well after longer periods of stoppage, at extreme temperature, transport, and dismantling.

⚠ CAUTION Do not exceed 120 psig (8.3 bar) air-inlet pressure.

⚠ CAUTION Ensure all wetted components are chemically compatible with the process fluid and the cleaning fluid.

⚠ CAUTION Ensure pump is thoroughly cleaned and flushed prior to installation into a process line.

⚠ CAUTION Always wear Personal Protective Equipment (PPE) when operating pump.

⚠ CAUTION Close and disconnect all compressed air and bleed all air from the pump prior to service. Remove all process fluid in a safe manner prior to service.

⚠ CAUTION Blow out all compressed air lines in order to remove any debris, prior to pump installation.

⚠ CAUTION Ensure air exhaust is piped to atmosphere prior to a submerged installation.

⚠ CAUTION Ensure all hardware is set to correct torque values prior to operation.

⚠ CAUTION Pressure tests of the plant, the pump and dampener are included and may only be carried out with the aggregate (pump and dampener) disconnected from the pressure on both ports or by using the pressure the aggregate develops while operating.

Active Pulsation Dampeners for Plastic Pumps

1.1 Main specification

The All-Flo pulsation dampeners represent the latest generation of active pulsation dampeners, designed to be used along with air operated double diaphragm pumps.

Before putting a pulsation dampener into operation, make sure, that the materials of construction are resistant to the chemical to be pumped.

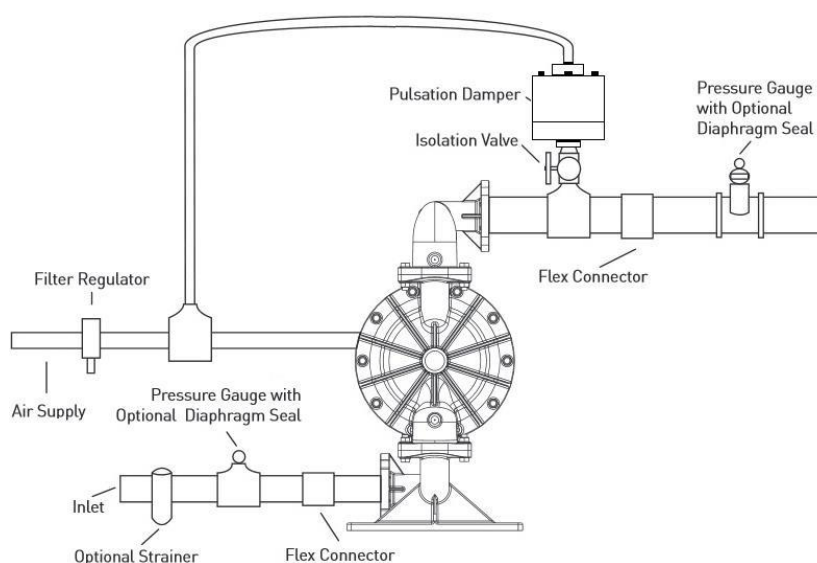
Dampener Specifications

		PD-038-XXXX	PD-050-XXXX	PD-100-XXXX	PD-150-XXXX	PD-200-XXXX	PD-300-XXXX
Dimension							
Air Inlet		1/8"	1/8"	1/8"	1/4"	1/4"	1/2"
Performance							
Max Pressure		120 PSI (8.3 bar)					
Temperature Limits	PE	158°F (70°C)	158°F (70°C)	158°F (70°C)	158°F (70°C)	158°F (70°C)	158°F (70°C)
	PTFE	212°F (100°C)	248°F (120°C)	248°F (120°C)	248°F (120°C)	248°F (120°C)	248°F (120°C)
	PE conductive	176°F (80°C)	176°F (80°C)	176°F (80°C)	176°F (80°C)	176°F (80°C)	176°F (80°C)

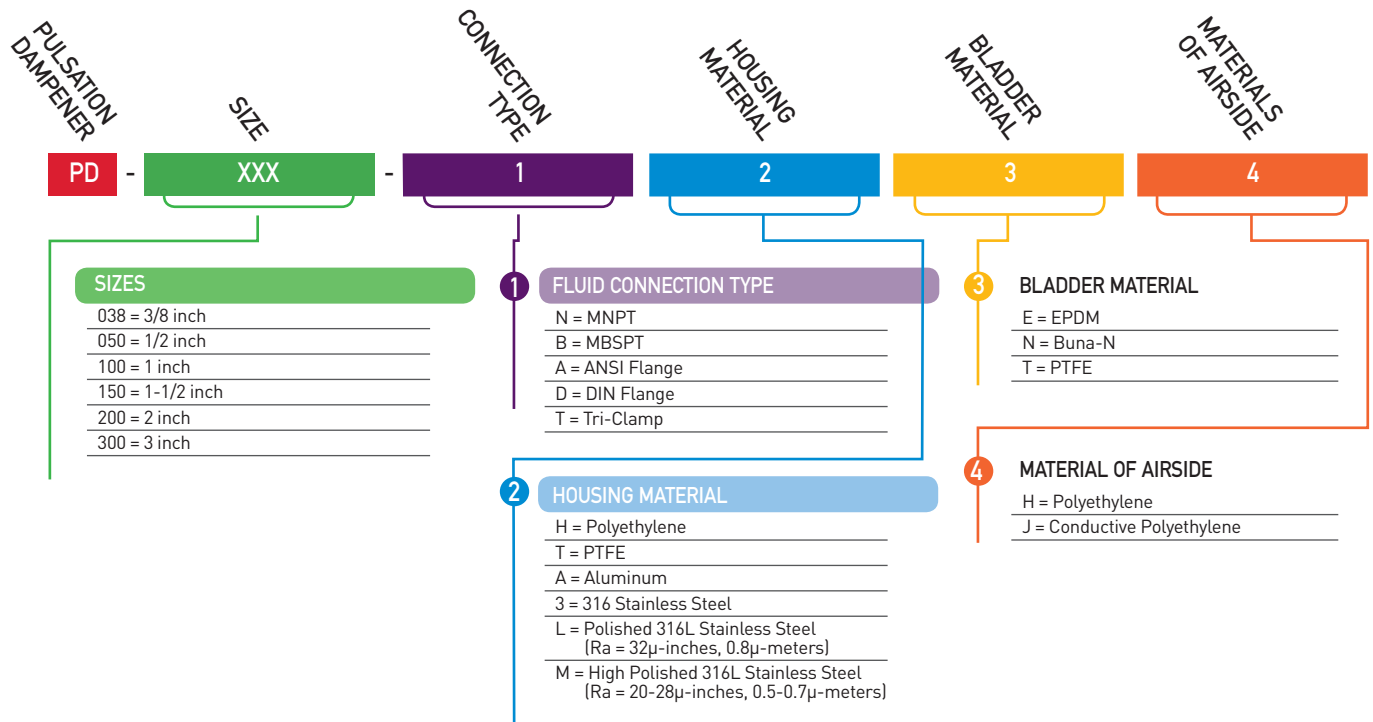
It is not necessary to ground the dampener separately, as the dampener is connected conductively to the pump, which is conductive and has to be grounded itself.

The distance between the pump's discharge outlet and the pulsation dampener should be as close as possible, but should not exceed ten times the inner diameter of the piping.

Before connecting the pump, take the yellow blind plugs out of air inlet which is located on the top of the dampener head [6]. For correct operation, the dampener absolutely needs an air-supply of its own, which has to be taken from the air-supply of the pump. Pump and pulsation dampener have to be connected to the same air pressure. No stop or regulating valve may be placed between pump and dampener. Ensure that the air is oil-free, dry and clean. Together with the pump an empty dampener should be operated slowly. The dampeners are self-regulating for fluctuating operating conditions.



1.2 Model Designation Matrix



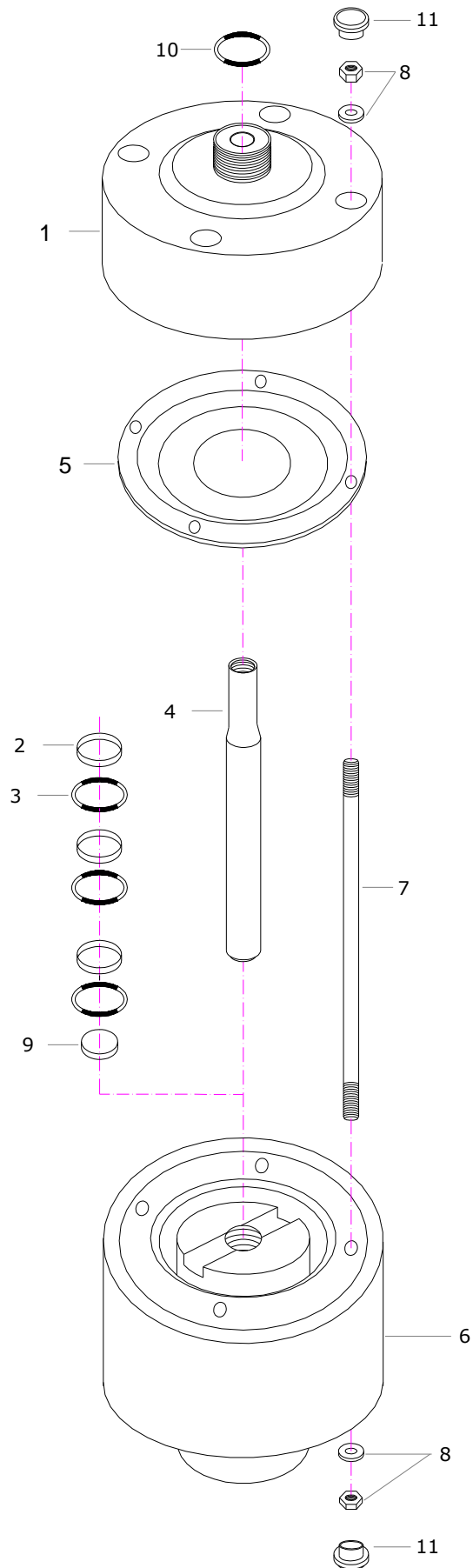
1.3 Disassembly instructions

Unscrew housing bolts [7] carefully. After that, all parts can be removed. Screw the diaphragm [5] off the actuator shaft [4]. A re-assembly of used piston rings [2] is impossible; they have to be replaced including the O-rings underneath. To assemble new piston rings [2] carefully shape them like kidneys with locking ring pliers and insert the rings into the grooves; completely press the rings into the grooves smoothly using some round tool.

Spare part list, pulsation dampener series

Damper size:				PD-038-XXXX	PD-050-XXXX	PD-100-XXXX	PD-150-XXXX	PD-200-XXXX	PD-300-XXXX
Pos.	Quantity	Description	Material	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1	1	Dampener housing	PE	HP-8 08 001 20	HP-8 15 001 20	HP-8 25 001 20	HP-8 40 001 20	HP-8 50 001 20	HP-8 80 001 20
			PTFE	HP-8 08 001 23	HP-8 15 001 23	HP-8 25 001 23	HP-8 40 001 23	HP-8 50 001 23	-
			PE conductive	HP-8 08 001 21	HP-8 15 001 21	HP-8 25 001 21	HP-8 40 001 21	HP-8 50 001 21	HP-8 80 001 21
			PTFE conductive	HP-8 08 001 24	HP-8 15 001 24	HP-8 25 001 24	HP-8 40 001 24	HP-8 50 001 24	-
2	3	Piston ring	PE	HP-1 08 90 22	HP-1 08 90 22	HP-1 15 85 22	HP-1 25 85 22	HP-1 40 85 22	HP-1 80 85 22
3	3	O-ring	BUNA-N(NITRILE)	HP-1 08 82 10	HP-1 08 82 10	HP-1 15 85 10	HP-1 25 85 10	HP-1 40 85 10	HP-1 80 85 10
4	1	Actuator shaft	PET / AISI 304*	HP-8 08 40 30	HP-8 15 40 30	HP-8 25 40 30	HP-8 40 40 50*	HP-8 50 40 50*	HP-8 80 40 50*
5	1	Diaphragm	EPDM	-	HP-1 10 50 08	HP-1 15 50 08	HP-1 25 50 08	HP-1 40 50 08	HP-1 50 50 08
			TFM / PTFE	HP-1 08 50 05	HP-1 10 50 05	HP-1 15 50 05	HP-1 25 50 05	HP-1 40 50 05	HP-1 50 50 05
			BUNA-N(NITRILE)	-	HP-1 10 50 10	HP-1 15 50 10	HP-1 25 50 10	HP-1 40 50 10	HP-1 50 50 10
			EPDM/TFM/PFA	-	HP-1 10 50 00	HP-1 15 50 00	-	-	-
6	1	Damper head	PE	HP-8 08 203 20	HP-8 15 203 20	HP-8 25 203 20	HP-8 40 203 20	HP-8 50 203 20	HP-8 80 203 20
			PE conductive	HP-8 08 203 21	HP-8 15 203 21	HP-8 25 203 21	HP-8 40 203 21	HP-8 50 203 21	HP-8 80 203 21
7	4/ 6** / 8***	Housing bolt	AISI 304	HP-8 08 542 50	HP-8 15 542 50	HP-8 25 542 50**	HP-8 40 542 50**	HP-8 50 542 50***	HP-8 80 542 50***
8	8/ 12** / 16***	Nut with washer (covered)	AISI 304	HP-1 08 145 50	HP-1 15 145 50	HP-1 25 145 50**	HP-1 40 145 50**	HP-1 50 145 50***	HP-1 80 145 50***
9	1	Muffler	PE	HP-8 08 99 20	HP-8 15 99 20	HP-8 25 99 20	HP-8 40 99 20	HP-8 50 99 20	HP-8 80 99 20
10	1	Damper housing o-ring	FEP/FPM	HP-8 08 79 04	HP-2 15 70 04	HP-3 25 70 04	HP-8 40 79 04	HP-2 40 78 04	HP-2 80 78 04
			EPDM	HP-8 08 79 08	HP-2 15 70 08	HP-3 25 70 08	HP-8 40 79 08	HP-2 40 78 08	HP-2 80 78 08
11	8/ 12** / 16***	Housing bolt plug	PE	HP-8 08 058 20	HP-8 15 058 20	HP-8 25 058 20**	HP-8 40 058 20**	HP-8 50 058 20***	HP-8 80 058 20***

1.5 PULSATION DAMPENER – exploded view



1.5 Torque Values

PULSATION DAMPENER TYPE	PULSATION DAMPENER SIZE	TORQUE VALUE [in-lb]	
PLASTIC SERIES	1/4 in.	35 in-lb (4 Nm)	
	3/8 in.	53 in-lb (6 Nm)	
	1/2 in.	53 in-lb (6 Nm)	
	1 in.	71 in-lb (8 Nm)	
	1 1/2 in.	115 in-lb (13 Nm)	
	2 in.	150 in-lb (17 Nm)	
	3 in.	195 in-lb (22 Nm)	
METAL SERIES	1/2 in.	62 in-lb (7 Nm)	
	3/4 in.	62 in-lb (7 Nm)	
	1 in.	71 in-lb (8 Nm)	
	1 1/2 in.	115 in-lb (13 Nm)	
	2 in.	150 in-lb (17 Nm)	
	3 in.	195 in-lb (22 Nm)	
INDUSTRIAL AND HYGIENIC SERIES (AISI 316L)		Hygienic (AISI 316L)	Industrial (AISI 316L)
	1/2 in.	62 in-lb (7 Nm)	
	3/4 in.		62 in-lb (7 Nm)
	1 in.	71 in-lb (8 Nm)	71 in-lb (8 Nm)
	1 1/2 in.	71 in-lb (8 Nm)	115 in-lb (13 Nm)
	2 in.	115 in-lb (13 Nm)	150 in-lb (17 Nm)
	3 in.	195 in-lb (22 Nm)	195 in-lb (22 Nm)

Warranty

WARRANTY. All All-Flo products shall be covered by the standard All-Flo Limited Warranty in effect at the time of shipment. This warranty (which may be modified by All-Flo at any time) provides:

MATERIALS SOLD ARE WARRANTED TO THE ORIGINAL USER AGAINST DEFECTS IN WORKMANSHIP OR MATERIALS UNDER NORMAL USE (RENTAL USE EXCLUDED) FOR FIVE YEARS AFTER PURCHASE DATE. ANY PUMP WHICH IS DETERMINED TO BE DEFECTIVE IN MATERIAL AND WORKMANSHIP AND RETURNED TO ALL-FLO, SHIPPING COSTS PREPAID, WILL BE REPAIRED OR REPLACED AT ALL-FLO'S OPTION. CUSTOMER SHALL NOTIFY ALL-FLO IN WRITING WITHIN 30 DAYS OF ANY CLAIMED DEFECTS. NO MATERIALS CAN BE RETURNED WITHOUT THE PRIOR CONSENT OF ALL-FLO, AND IF APPROVED SHALL BE RETURNED TO ALL-FLO FREIGHT PREPAID. ALL-FLO'S LIABILITY FOR ANY BREACH OF THIS WARRANTY SHALL BE LIMITED TO EITHER REPLACEMENT OF THE MATERIALS OR, AT ALL-FLO'S SOLE OPTION, THE REFUND OF THE PURCHASE PRICE. ALL-FLO SHALL NOT BE HELD LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES CAUSED BY BREACH OF THIS WARRANTY. THIS EXCLUSION APPLIES WHETHER SUCH DAMAGES WERE SOUGHT BASED ON BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT LIABILITY IN TORT, OR ANY OTHER LEGAL THEORY. FURTHER, ALL-FLO SHALL NOT BE LIABLE FOR LOSSES, DELAYS, LABOR COSTS, OR ANY OTHER COST OR EXPENSE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF MATERIALS. ALL-FLO'S LIABILITY IS EXPRESSLY LIMITED TO THE REPLACEMENT OR REPAIR OF DEFECTIVE GOODS, OR THE TOTAL VALUE OF SUCH GOODS. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED, OR ORAL INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM A COURSE OF DEALING OR TRADE. All-Flo will not, in ANY event, be liable for any loss of profit, interruption of business or any other special, consequential or incidental damages suffered or sustained by Customer. All-Flo's total maximum liability to the customer in respect of sale of materials or services rendered by All-Flo is limited to the total monies received by All-Flo from the customer for the particular. Materials described in Customer's order.

All-Flo does not warrant any part or component that it does not manufacture, but will assign to the original end-user purchaser of any warranty received by it from the manufacturer, to extent such pass through is permitted by the manufacturer.

REGISTRATION FORM

Pump Model _____ Pump Serial Number _____

Company Name _____

Name _____ Email _____

Phone # _____ City _____ State _____ Zip _____

Qty of Pumps _____ Fluid Pumping _____

How did you hear about us? Existing All-Flo user,
Web, Distributor, Magazine...

MAIL TO: All-Flo Pump Co. | Attn: Product Registration
PO BOX 1870 | Mentor, OH 44061



Scan QR code and
complete form
on mobile phone
or visit

www.all-flo.com/registration-form.html

All-Flo Pump Co.

7750 Tyler Blvd.

Mentor, Ohio 44060

USA

Phone +440.354.1700

Fax: +440.354.9466

sales@all-flo.com

www.all-flo.com

