

A-101

Pulse Vac



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Part# V-1104

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INTRODUCTION

FORWARD

WARNING READ THIS MANUAL CAREFULLY PRIOR TO OPERATING THE EQUIPMENT IN ORDER TO UNDERSTAND HOW TO OPERATE AND SERVICE THE EQUIPMENT CORRECTLY. FAILURE TO PROPERLY REVIEW THIS MANUAL COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

This manual should be considered a permanent part of the equipment and should remain with the equipment at all times. Please note the following:

Measurements in this manual are given in metric and standard U.S. measurement equivalents.

Use only correct replacement parts and fasteners. Fasteners may require specific tools.

Right and left hand sides are determined by facing forward while sitting in the seat behind the steering wheel.

THIRD-PARTY MANUFACTURER INFORMATION

This equipment contains an engine manufactured by a third-party manufacturer. This engine may be covered by the manufacturer's standard factory warranty and the manufacturer may require that all repairs and/or service be completed pursuant to its warranty terms and conditions. Please refer to the product manual and Warranty Breakdown for additional information on this warranty and any registration requirements.

TERMS AND CONDITIONS OF SALE

1. **Parties.** "Seller" means **BW Manufacturing, Inc.** "Buyer" means any entity or individual purchasing goods from Seller.
2. **Terms and Conditions of Sale.** These Terms and Conditions of Sale define the relationship of Buyer and Seller and apply to all sales of equipment (including, but not limited to Shotblasters, Scarifiers, Diamond Grinders/Polishers, Concrete Dust Collection Systems, and Trailers), components incorporated into equipment, parts, supplies, materials or other personal property (individually and collectively, "Equipment") by Seller to Buyer. Buyer acknowledges and agrees that these Terms and Conditions of Sale are incorporated in, and are a part of, any contract of sale and each quotation, purchase order, invoice, and any other document relating to the sale of Equipment by Seller to Buyer (these documents are collectively referred to as the "Agreement").
3. **Quotation Expiration.** Written quotations signed by Seller are valid for a period of 30 days unless otherwise noted by Seller.
4. **Pricing.** Prices for Equipment and other related information shown in any Seller product publication, including but not limited to catalogs, brochures, and websites, are subject to change without notice. Prices do not include related freight charges, use tax, sales tax, excise tax, value-added tax, or similar taxes, or charges of any nature whatsoever imposed by any governmental authority unless otherwise expressly noted by Seller.
5. **Taxes.** Prices quoted do not include (and Buyer shall pay) all taxes and fees of any kind that may be levied or imposed on either party by federal, state, municipal, or other governmental authorities in connection with the sale or delivery of the Equipment by Seller.
6. **Terms of Payment.** Unless Buyer has obtained credit approval from Seller, payment is due and payable to Seller in cash on completion of Seller's delivery obligation (COD). For Buyers with credit approval, any amounts due by Buyer to Seller that are unpaid on or after 30 days of Seller's invoice will bear interest at the simple interest rate of 2 percent (2%) per month or the maximum rate permitted by law, whichever is less. The accrual or payment of any interest as provided above will not constitute a waiver by Seller of any rights and remedies in connection with a default by Buyer. Buyer will pay all court costs, attorney fees, and other costs incurred by Seller in collecting past-due amounts, including interest. If shipment or delivery of Equipment is delayed by or at the request of Buyer, payment will remain due in full on the original delivery date for Buyers without credit approval or 30 days from the date of Seller's invoice for Buyers with credit approval. In either such event, Seller may impose, and Buyer shall pay, storage charges and other incidental expenses incurred by Seller as a result of the delay in addition to any interest on late payments as described above.
7. **Security Interest.** As security for payment of all amounts due to Seller, Buyer grants to Seller a security interest in all Equipment sold by Seller to Buyer, and Seller will have all rights of a secured party under the Uniform Commercial Code with respect to the Equipment. Buyer appoints Seller as its attorney-in-fact with authority, at Seller's option, to take actions as Seller deems reasonable in the circumstance to perfect the above security interest in any one or more jurisdictions, and Buyer shall pay all applicable filing fees.
8. **Limited Express Warranty.** For a period of ninety (90) days from the completion of Seller's delivery obligation under this Agreement, Seller warrants that a limited selection of components manufactured by Seller and incorporated into the Equipment will be free of defects in material and workmanship. A complete list of components covered under this warranty ("Warranty Breakdown") and is incorporated in its entirety into this Agreement. In the event Buyer has a claim related to the components covered under this warranty, Buyer shall be bound by the then-current Warranty Breakdown. Buyer's sole remedy for breach of this warranty is limited to repair and replacement, within the warranty period, of defective components manufactured by Seller and covered under this warranty pursuant to the Warranty Breakdown. Buyer is responsible for all shipping costs arising out of any warranty service provided by Seller. SELLER EXPRESSLY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WITH REGARDS TO THE EQUIPMENT AND/OR COMPONENTS MANUFACTURED BY SELLER AND INCORPORATED INTO THE EQUIPMENT, WHICH ARE NOT INCLUDED IN THE ABOVE REFERENCED WARRANTY, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. BUYER ASSUMES FULL RESPONSIBILITY THAT THE EQUIPMENT PURCHASED UNDER THE AGREEMENT MEETS THE SPECIFICATIONS AND/OR INTENDED USE OF BUYER, AND SELLER MAKES NO REPRESENTATION WITH RESPECT THERETO.
9. **Disclaimer of Third-Party Component Warranties.** THE SOLE REMEDY AVAILABLE TO BUYER WITH RESPECT TO DEFECTS IN THE COMPONENTS MANUFACTURED BY THIRD PARTIES WILL BE AGAINST THE THIRD PARTY MANUFACTURER UNDER ANY APPLICABLE MANUFACTURER'S WARRANTY TO THE EXTENT AVAILABLE TO BUYER. WITH REGARDS TO COMPONENTS MANUFACTURED BY THIRD PARTIES AND INCORPORATED INTO THE EQUIPMENT, SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, RELATING TO THE COMPONENTS, WHETHER BASED ON BREACH OF WARRANTY OR CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

TERMS AND CONDITIONS OF SALE CONTINUED

10. **No Consequential Damages.** IN NO EVENT WILL SELLER BE LIABLE OR RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, EXEMPLARY, OR PUNITIVE DAMAGES, OR FOR EXPENSE OCCASIONED BY THE USE OF DEFECTIVE EQUIPMENT.

11. **Delivery.** Any delivery dates or other schedule of performance by Seller are approximations, and the sole obligation of Seller with respect to the schedule of delivery or performance will be to use commercially reasonable efforts to deliver the Equipment, or otherwise to perform, consistent with the reasonable demands of its business. In any event, Seller will have no liability to Buyer or any other person for delays in performance due to strikes or labor disputes of any type; accidents, fire, floods, acts of God, or actions by governmental authorities; acts, omissions, or delays of Buyer or any other third party; shortages of labor; or without limitation of the above, for any causes reasonably beyond the control of Seller.

12. **Title and Risk of Loss.** Title to and risk of loss to the Equipment will pass to Buyer on delivery by Seller F.O.B. Seller's place of business, located at 3706 Mill Creek Dr. NE, Comstock Park, Michigan, 49321.

13. **Inspection and Acceptance.** Buyer will have two (2) days from the date of delivery to inspect the Equipment for defects and nonconformance and to notify Seller, in writing, of any defects, nonconformance, or rejection of the Equipment. After this period, Buyer will be deemed to have irrevocably accepted the Equipment. After acceptance, Buyer will have no right to reject the Equipment for any reason or to revoke acceptance. Seller is not responsible for damage to the Equipment arising out of the shipment of the Equipment to Buyer. Claims for damage due to shipping must be made by Buyer to the freight carrier.

14. **Return of Equipment.** All returns will be pursuant to Seller's instructions. Buyer must contact Seller for a Return Material Authorization (RMA) before returning any Equipment. All returns must reference the RMA number along with the original invoice number and the reason for return.

15. **Cancellation or Termination.** In the event of cancellation of the Agreement by Buyer, or in the event of default under the Agreement by Buyer that is not cured within 30 days after notice by Seller, Buyer will pay to Seller on demand all direct and indirect costs (including, without limitation, all applicable restocking or cancellation charges, including reimbursement for direct costs assessed by the manufacturer) incurred directly or indirectly by Seller in connection with the Agreement, all as reasonably determined by Seller, plus any lost profit. In no event, however, will any amount payable by Buyer under the Agreement exceed the total price payable by Buyer for the Equipment.

16. **Modifications and Waiver—Entire Agreement.** The Agreement contains the entire agreement between Seller and Buyer and can be modified or rescinded only by a writing signed by both parties. If any term of the Agreement is held invalid or unenforceable, all other terms of the Agreement shall remain in effect. Any document submitted by Buyer to Seller confirming its intention to purchase Equipment described in the Agreement will be deemed to constitute a confirmation and acceptance of the Agreement, even if the document states terms in addition to or different from those in the Agreement. All agreements between Seller and Buyer will be solely under the terms and conditions of the Agreement and Seller objects to any and all additional or different terms contained in any document submitted to Seller by Buyer. Any execution by Seller of any other document submitted by Buyer in connection with the purchase of Equipment does not constitute acceptance of or agreement to any terms and conditions in addition to or different from those contained in the Agreement, but will constitute only acknowledgment of receipt of the document. In addition, Buyer's acceptance of these terms shall be conclusively presumed by Buyer's (i) acceptance of delivery of or (ii) payment for Equipment covered under the Agreement.

17. **Compliance with Laws.** Buyer will be responsible for compliance with any and all federal, state, or local laws or regulations respecting safety or respecting use of the Equipment and shall indemnify and hold Seller harmless from and against any and all claims of violations of laws or regulations or other claims of personal injury or property damage directly or indirectly related to the installation, maintenance, or operation of the Equipment.

18. **Export Control.** Equipment supplied by Seller may be subject to various export laws and regulations. It is the responsibility of the exporter and Buyer to comply with all laws and regulations. If any required export authorization is denied, Seller will be relieved of any further obligation related to the sale and delivery of the Equipment.

19. **Governing Law and Venue.** This Agreement will be governed by and construed in accordance with the laws of the State of Michigan. Buyer submits to personal jurisdiction in Michigan. Seller and Buyer agree that any action arising out of the sale of goods or services in accordance with this document will be brought, heard, and decided in a court located in Kent County, Michigan and that this venue is convenient. .

20. **Authority.** Each signatory represents that it has all requisite authority to execute the Agreement on behalf of its principal and that the Agreement is fully enforceable against the principal in accordance with its terms.

B W MANUFACTURING, INC.

GENERAL SAFETY & HAZARDOUS MATERIALS WARNING

WARNING SURFACE PREPARATION EQUIPMENT CAN BE DANGEROUS IF NOT OPERATED PROPERLY. THE OPERATOR IS RESPONSIBLE FOR THE SAFE OPERATION OF THIS EQUIPMENT. The operator must carefully read and follow any warnings or safety instructions provided with the equipment prior to operating the equipment. Do not remove any safety devices or warnings on the equipment.

WARNING FLOOR AND/OR DECK SURFACES MAY BE COATED WITH OR CONTAMINATED BY HAZARDOUS MATERIALS. Typical examples of hazardous materials include (i) tile mastic (likely to contain *asbestos*); (ii) stained areas near electrical equipment (potentially containing *PCBS*); (iii) paint (potentially containing *lead*); (iv) stained floor areas in chemical or other industrial facilities (potentially containing toxic *pesticides*, *cleaning fluids*, *solvents*, or other *harmful chemicals*).

WARNING Preparation equipment is used to remove surface material from a variety of surfaces. The surface preparation process often generates large amounts of dust and other small particles, which are released into the air. WHEN A SURFACE CONTAINS HAZARDOUS MATERIALS, EXPOSURE TO THE DUST GENERATED BY THE PREPARATION EQUIPMENT MAY POSE A HEALTH RISK. INSPECT ALL SURFACES FOR POSSIBLE CONTAMINATES PRIOR TO USING PREPARATION EQUIPMENT AND CONSULT HAZARDOUS MATERIAL EXPERTS AND GOVERNMENT AUTHORITIES BEFORE OPERATING PREPARATION EQUIPMENT ON SURFACES SUSPECTED OF CONTAINING HAZARDOUS MATERIALS.

WARNING BW MANUFACTURING, INC. IN NO WAY REPRESENTS THAT ITS PREPARATION EQUIPMENT IS SUITABLE OR APPROVED FOR REMOVING HAZARDOUS MATERIALS FROM CONTAMINATED SURFACES. DO NOT ATTEMPT TO USE ANY PREPARATION EQUIPMENT MANUFACTURED BY BW MANUFACTURING, INC. ON ANY CONTAMINATED SURFACE. It is the responsibility of the preparation equipment operator and/or the contractor using the preparation equipment to inspect the proposed worksite for contaminants and obtain approval from contamination experts and/or government authorities before using BW Manufacturing, Inc. preparation equipment. It is also the responsibility of any contractor using preparation equipment to inform its employees or subcontractors of all potential health risks associated with operating preparation equipment and to ensure its employees or subcontractors are protected from exposure to harmful materials.

BW MANUFACTURING, INC. IS NOT RESPONSIBLE FOR ANY INJURY, ILLNESS, DEATH, OR PROPERTY DAMAGE THAT MAY RESULT FROM IMPROPER USE OF ITS PREPARATION EQUIPMENT OR OTHER PRODUCTS



Filter Media Specifications

New filters may “puff” a minuscule amount dust for the first 10 to 15 minutes of use or until the filter is adequately coated with material. The stock filter (10129-H) cleans to 99.7% efficiency at 0.3 micron directly out of the box, and the filter will therefore allow a minimal amount of dust through the filter on every pulsation cycle.

Further tests have shown that humidity and concrete dampness will affect the efficiency of the pulsation system to clean the filter.

#10129-H Spun Bond W/PTFE Coating (Standard Filter in all BW Manufacturing equipment):

- SpunBond P.T.F.E., 70 pleats, 31 Sq. Ft media.
- Efficiency of 99.7% @ 0.3 Microns (Minimum Efficiency Rating Value (MERV) 16 Rating - Out of the box)

#10129-B Cellulose Paper/Polyester Blend Filter (Optional Replacement Filter) :

- 80/20 Blend, 120 pleats, 53 Sq. Ft media.
- Efficiency of 99.9% @ 1.0 Micron with a seasoned (caked) filter.

Technical Notes:

- **OSHA Standard#: 1926.1153 for Respirable crystalline silica requires a filter with 99.0% or greater efficiency.**
- All values are averages
- Specifications are subject to change without notice
- To qualify as HEPA by US government standards, an air filter must remove (from the air that passes through) 99.97% of particles that have a size of 0.3 μm *. HEPA was commercialized in the 1950s, and the original term became a registered trademark and later a generic term for highly efficient filters. Products that claim to be "HEPA-type", "HEPA-like", "HEPA-style" or "99% HEPA" do not satisfy these requirements and may not have been tested in independent laboratories. Some of these sub-par quality filters may come reasonably close to HEPA filtration, while others will fall significantly short, making them truly inferior.

* The symbol μm or micrometer/micron is one thousand of a millimeter, 0.001mm or about 0.000039 inch



Test Results in accordance to OSHA 1926.1153 Respirable Silica Dust Exposure

On October 27, 2017, an Industrial Hygienist with the Consultation Education and Training (CET) Division of the Michigan Occupational Safety and Health Administration (MIOSHA) conducted air monitoring at our facility in response to our request for assistance with evaluating employee exposures to silica while using BW Manufacturing's grinders and vacuum.

The air monitoring included breathing zone samples on an employee using the DG-71-ME Hand Grinder connected to an A-101 Pulse Vac and a DG-16-2 Diamond Grinder/Polisher connected to an A-101 Pulse Vac. These were screening samples that were run long enough to ensure that the sample result's limit of detection was below the established action level limit of 0.025 mg/m³.

Air Monitoring

The air sampling that was performed at our facility was only considered to be screening samples and do not represent a full shift monitoring period. If these operations were consistently performed for the full shift, then the Sample Results, found on the enclosed Air Contaminant Data Sheets, would be a relatively accurate employee exposure representation for a full shift.

The test results revealed that the operator using both the DG-71-ME Hand Grinder and the DG-16-2 Diamond Grinder/Polisher was not exposed to concentrations of respirable quartz (silica), respirable cristobalite and respirable nuisance dust in excess of the established limits (i.e., PEL). The results indicated that silica was not detected on the filters.

These air sample results can be passed on as objective data to employers to utilize when developing their safety and health programs and determining employee exposure levels. Contractors must be reminded that the working conditions must be similar to the test conditions if this is going to be used as objective data. The testing was performed outdoors on concrete that contained 50% silica as determined through a bulk sample submitted to the lab. This objective data would not be applicable to work conditions that contain more than 50% silica or is performed indoors. Further testing (air monitoring) for indoor environments would be required for use as objective data indoors.

Sheet A #1

AIR CONTAMINANT DATA SHEET

I# BWM2017
Date: 10/26/17

Employer: BW Manufacturing, Inc.
3706 Mill Creek Dr., NE
Location: Comstock Park, MI 49321

Michigan Department of Licensing & Regulatory
Affairs
MIOSHA
Consultation, Education & Training Division
IH: David A. Hunenick

Contaminant	TWA	STEL	C	AL	Equipment
Respirable Quartz	0.050 mg/m ³	NA	NA	0.025 mg/m ³	LAPVC filter w/ cyclone & personal air sampling pump.
Respirable Cristobalite	0.050 mg/m ³	NA	NA	0.025 mg/m ³	LAPVC filter w/ cyclone & personal air sampling pump.
Dust - Respirable nuisance dust	5 mg/m ³	NA	NA	NA	LAPVC filter w/ cyclone & personal air sampling pump.

Identification/Description	Time	Contaminant	Results	Type	Exposure	Note
BW#000: Bulk sample of silica from vacuum.	am	% Silica % Cristobalite	50% ND	Bulk Bulk	50% ND	
BW#1: Area sample located on A-101 Pulse Vac above the air discharge.	10:10 am To 12:40 pm	Respirable quartz Respirable cristobalite Respirable nuisance dust	<0.017 mg/m ³ <0.017 mg/m ³ <0.10 mg/m ³	TWA TWA TWA	ND ND ND	1 1 1
BW#2: Breathing zone sample of John Larsen, angle grinding concrete outdoors. 7", 4.5 hp, Metabo angle grinder connected to a A-101 Pulse Vac utilizing the BW flexible shroud. 24 segment cup grinding wheel w/ 30-40 grit. Grinding ~170 sq. ft., 15 ft. of 2" hose (standard). Environmental conditions: 39-44 degree F, slight breeze 6 mph w/ gust to 7 mph (calm). Humidity 86%, dew point 36 degree F, wet bulb 38 degree F. No respiratory protection worn.	10:14 am To 11:39 am	Respirable quartz Respirable cristobalite Respirable nuisance dust	<0.024 mg/m ³ <0.024 mg/m ³ <0.20 mg/m ³	TWA TWA TWA	ND ND ND	1 1 1
BW#3: Breathing zone of John Larsen, operating the DG-16-2 grinder (walk behind) w/ pulse vac, outdoors. 80 grit medium cut pressure. Grinding ~300 sq. ft., 15 ft of 2" hose (standard). Environmental conditions: 48-51 degree F, slight breeze 6 mph w/ gust to 8 mph. Humidity 64%, dew point 36 degree F, wet bulb 42 degree F. No respiratory protection worn.	12:20 pm To 1:49 pm	Respirable quartz Respirable cristobalite Respirable nuisance dust	<0.022 mg/m ³ <0.022 mg/m ³ <0.20 mg/m ³	TWA TWA TWA	ND ND ND	1 1 1



Test Results in accordance to OSHA 1926.1153 Respirable Silica Dust Exposure

Sheet A #2

AIR CONTAMINANT DATA SHEET

Michigan Department of Licensing & Regulatory
Affairs
MIOSHA
Consultation, Education & Training Division
IH: David A. Humenick

I# BWM2017
Date: 10/26/17

Employer: BW Manufacturing, Inc.
3706 Mill Creek Dr., NE
Location: Comstock Park, MI 49321

Identification/Description	Time	Contaminant	Results	Type	Exposure	Note
Note 1: Employee exposure does not exceed the limit. Note 2: Employee exposure exceeds the limit. Note 3: Screening samples only.						

TWA (Time-Weighted Average) = exposure limit averaged over an 8-hour period
 STEL (Short-Term Exposure Limit) = averaged over a 15-minute period
 C (Ceiling) = exposure limit not to be exceeded during any part of the workday
 AL (Action Level) = exposure limit averaged over an 8-hour period
 Results = average exposure concentration during the sample period
 Exposure = employee's exposure; compare it to the limit

E_m = exposure for mixture: see R325.51104
 E_m shall not exceed 1
 > = greater than
 < = less than
 NA = not applicable
 ND = none detected

ppm = parts per million
 ppb = parts per billion
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter
 mg/m^3 = milligrams per cubic meter
 f/cc = fibers per cubic centimeter

Air/Material Sampling Report

Michigan Department of Licensing and Regulatory Affairs

Michigan OSHA/Occupational Health Laboratory

1. Reporting ID		2. Inspection/Visit/Intervention Number BWM2017		3. Sampling Number	
4. Establishment Name BW Manufacturing				5. Public/Private (For Consultation use only) <input type="checkbox"/> Self-Help <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	
6. Person Performing Sampling (Signature) <i>David A. Hansen</i>		7. CSHO ID Y4658		8. Sampling Date 10/26/17	
9. Shipping Date 10/27/17		10. Employee Name: John Larsen			
11. Job Title: 7 inch angle grinder w/ pulse vac				12. Exposure Information	
a. Number: 1		b. Frequency: as needed		13. Photo(s) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Exposure Summary					
14. Line No.	15. Substance Code	16. Rqstd.	17. Smpl. Type	18. Exp. Type	19. Exposure Level
20. Units	21. PEL	22. Adj.	23. Severity	24. Citation/Hazard Information	
No Cit.	FTA	Over Exp.	Eng.	PPE	Trng.
Med.	Other	No Haz.			
1.					
2.					
3.					
4.					
5.					
25. Additives (Enter Line Numbers for those agents contributing to additive effect)					
26. Total Number of Lines (14):			27. Date Results Received from Laboratory:		
28. Pump Model: SKC		Pump #: 06447		Sampling Data	
29. Sample Submission Number		BW#2			
30. Sample Type/Media		p/L			
31. Filter/Tube Number		32892			
32. Time On		10:14 am			
Time Off		11:39 am			
33. Total Time (in minutes)		85 min			
34. Flow Rate <input checked="" type="checkbox"/> l/min <input type="checkbox"/> ml/min		2.5			
35. Volume (in liters)		212.5			
36. Lab Sample Number		180233			
37. Analyze For:		38. RL*		Results	
1.	Resp Quartz 9010	5mg	ND < 0.024		
2.	Resp Cristobalite 9015	5mg	ND < 0.024		
3.	9130	40mg	ND < 0.20		
4.					
5.					
39. Results expressed in mg/m^3 unless otherwise noted.		40. Test Method: OHL20045015 v011			
41. Interferences and IH Comments to Lab		42. Supporting Samples		43. Chain of Custody	
Bulk sent separately if results provided by Bureau Veritas 12-11-17		a. Blanks: BW#00 (L32891)		a. Seals Intact? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
				b. Rec'd in Lab 11-3-17	
				c. Rec'd by Anal. 11/14/17	
44. Analyst's Comments F2018 0032 F2018 0090		b. Bulks: BW#000		d. Anal. Completed 11/15/17	
				e. Calc. Checked 12-11-17	
				f. Supr. OK'd 12-11-17	
* Reporting Limit		Samples NOT blank corrected unless otherwise indicated. Results relate only to the items tested.			

Pre-Sampling Calibration Records

P r e	45. Pump Mfg. & No. SKC 06447	46. Flow Rate Calculations LAPVC w/ cyclone = 2.5 lpm (SKC)		
	47. Location Home Office			
	48. Flow Rate 2.5 LPM	49. Pump Calibrator Tag # 00743	50. Initials DAH	51. Date 10/25/17

Post-Sampling Calibration Records

P o s t	52. Location Home Office	53. Flow Rate Calculations		
	54. Flow Rate 2.5 LPM	Pump Calibrator Tag # 00743	55. Initials DAH	56. Date 10/26/17

57. PPE - Respiratory Protection (Type and Effectiveness)

None

58. Job Description, Operation, Work Location(s), Ventilation, Controls, Field Notes and Calculations

Angle grinder done outdoors, 7" w/ 4.5 hp metabo grinder connected to a A-101 Pulse Vac utilizing the BW flexible shroud. 24 segment cup wheel w/ 30-40 grit. Grinding approximately 170 sq ft. 15 ft of 2" hose (standard). 39-44 degree F, slight breeze 6 mph w/gust to 7 mph. Humidity 86%, Dew point 36 degree F, wet bulb 38 degree F.

Questions regarding the analyses should be directed to Ann Whitaker, Laboratory Director
Phone: (517) 322-2132 E-mail: whitakera@michigan.gov Fax: (517) 322-3219

Mail to: Michigan Department of Licensing and Regulatory Affairs
MIOSHA / Occupational Health Laboratory
P.O. Box 30677
Lansing, MI 48909-8177

Ship to: Michigan Department of Licensing and Regulatory Affairs
MIOSHA / Occupational Health Laboratory
7707 Rickle Street
Lansing, MI 48917

Air/Material Sampling Report

Michigan Department of Licensing and Regulatory Affairs
Michigan OSHA/Occupational Health Laboratory

1. Reporting ID		2. Inspection/Visit/Intervention Number BWM2017		3. Sampling Number	
4. Establishment Name BW Manufacturing				5. Public/Private (For Consultation use only) <input type="checkbox"/> Self-Help <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	
6. Person Performing Sampling (Signature) <i>David A. Herman</i>		7. CSHO ID Y4658		8. Sampling Date 10/26/17	9. Shipping Date 10/27/17
10. Employee Name: John Larsen			11. Job Title: DG -16-2 grinder w/ pulse vac		
12. Exposure Information		a. Number: 1		b. Frequency: as needed	
13. Photo(s) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
Exposure Summary					
14. Line No.	15. Substance Code	16. Rqstd.	17. Smpl. Type	18. Exp. Type	19. Exposure Level
20. Units	21. PEL	22. Adj.	23. Severity	24. Citation/Hazard Information	
	No Cit.	FTA	Over Exp.	Eng.	PPE
	Trng.	Med.	Other	No Haz.	
1.					
2.					
3.					
4.					
5.					
25. Additives (Enter Line Numbers for those agents contributing to additive effect)					
26. Total Number of Lines (14):			27. Date Results Received from Laboratory:		
28. Pump Model: SKC		Pump #: 06447		Sampling Data <i>aa 11-3-17</i>	
29. Sample Submission Number		BW#3		<i>BW #3</i>	
30. Sample Type/Media		p/L			
31. Filter/Tube Number		32918		<i>B</i>	
32. Time On		12:20 pm		<i>L</i>	
Time Off		1:49 pm		<i>A</i>	
33. Total Time (in minutes)		89 min		<i>N</i>	
34. Flow Rate <input checked="" type="checkbox"/> l/min <input type="checkbox"/> ml/min		2.5		<i>K</i>	
35. Volume (in liters)		222.5			
36. Lab Sample Number		<i>180234</i>		<i>180235</i>	
37. Analyze For:		38. RL*		Results	
1.	Resp Quartz 9010	<i>5mg</i>	<i>ND < 0.022</i>	<i>NP</i>	
2.	Resp Cristobalite 9015	<i>5mg</i>	<i>ND < 0.022</i>	<i>NP</i>	
3.	<i>9130</i>	<i>40mg</i>	<i>ND < 0.20</i>	<i>ND</i>	<i>AN 11-20-17</i>
4.					
5.					
39. Results expressed in mg/m^3 unless otherwise noted.			40. Test Method: <i>OHL20045015v011</i>		
41. Interferences and IH Comments to Lab		42. Supporting Samples		43. Chain of Custody	
<i>Bulk sent separately if results provided by Bureau for Maryam. 12-11-17</i> 44. Analyst's Comments <i>F2018 0032 F2018 0090</i>		a. Blanks: BW#00 (L32891) b. Bulks: BW#000		a. Seals Intact?	<i>Y</i> N <i>CO</i>
				b. Rec'd in Lab	<i>11-3-17</i> <i>GA</i>
				c. Rec'd by Anal.	<i>11/14/17</i> <i>GA</i>
				d. Anal. Completed	<i>11/15/17</i> <i>GA</i>
				e. Calc. Checked	<i>12-11-17</i> <i>BM/91</i>
				f. Supr. OK'd	<i>12-11-17</i> <i>BM/11</i>
* Reporting Limit		Samples NOT blank corrected unless otherwise indicated. Results relate only to the items tested.			

Air/Material Sampling Report

Michigan Department of Licensing and Regulatory Affairs

Michigan OSHA/Occupational Health Laboratory

1. Reporting ID		2. Inspection/Visit/Intervention Number BWM2017		3. Sampling Number	
4. Establishment Name BW Manufacturing				5. Public/Private (For Consultation use only) <input type="checkbox"/> Self-Help <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	
6. Person Performing Sampling (Signature) <i>David A. H. E.</i>		7. CSHO ID Y4658		8. Sampling Date 10/26/17	
9. Shipping Date 10/27/17					
10. Employee Name:			11. Job Title:		
12. Exposure Information		a. Number:		b. Frequency:	
13. Photo(s)		<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No	
Exposure Summary					
14. Line No.	15. Substance Code	16. Rqstd.	17. Smpl. Type	18. Exp. Type	19. Exposure Level
20. Units	21. PEL	22. Adj.	23. Severity	24. Citation/Hazard Information	
No Cit.	FTA	Over Exp.	Eng.	PPE	Trng. Med. Other No Haz.
1.					
2.					
3.					
4.					
5.					
25. Additives (Enter Line Numbers for those agents contributing to additive effect)					
26. Total Number of Lines (14):			27. Date Results Received from Laboratory:		
28. Pump Model: SKC		Pump #: 06447		Sampling Data	
29. Sample Submission Number		BW#000			
30. Sample Type/Media		Bulk			
31. Filter/Tube Number					
32. Time On					
Time Off					
33. Total Time (in minutes)					
34. Flow Rate <input type="checkbox"/> l/min <input type="checkbox"/> ml/min					
35. Volume (in liters)					
36. Lab Sample Number		180236			
37. Analyze For:		38. RL*		Results	
1.	Resp Quartz 9010 0.25%	0.50%	50		
2.	Resp Cristobalite 9015 0.50%	0.25%	ND		
3.	9120	40mg	8/16/17		
4.					
5.					
39. Results expressed in mg/m^3 unless otherwise noted.		40. Test Method: OHL 20045015 v.011			
41. Interferences and IH Comments to Lab		42. Supporting Samples		43. Chain of Custody	
Please determine % silica Silica results provided by Bryan Ventar, Maxxam. At 12-11-17		a. Blanks:		Date Initials	
		b. Bulks: BW#000		a. Seals Intact? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <i>CC</i>	
				b. Rec'd in Lab 11-3-17 <i>CC</i>	
				c. Rec'd by Anal. 11/14/17 <i>g 998</i>	
44. Analyst's Comments F2018 0032 8/16/17 F2018 0090				d. Anal. Completed 11-15-17 <i>g 998</i>	
				e. Calc. Checked 12-11-17 <i>g 991</i>	
				f. Supr. OK'd 12-11-17 <i>g 991</i>	
* Reporting Limit		Samples NOT blank corrected unless otherwise indicated. Results relate only to the items tested.			

WARRANTY BREAKDOWN

Item	NONE	90 DAYS	1YEAR / 500 HR	2 YEARS / 2000HR	WARRANTED BY:
Chassis		O			B W Mfg., Inc.
Dust Filters	O				B W Mfg., Inc.

WARRANTY CONTACT INFORMATION

B W Mfg., Inc.	B W Manufacturing, Inc.
	Voice: 616-447-9076
	Fax: 616-447-9078
	E-mail: info@bwmanufacturing.com
	<i>Warranty does not include travel time</i>

A-101 PULSE VAC OPERATING & MAINTENANCE INSTRUCTIONS

Serial Number Location

The serial number for your A-101 Pulse Vac is located inside the body next to the vacuum motor.



Filter Maintenance:

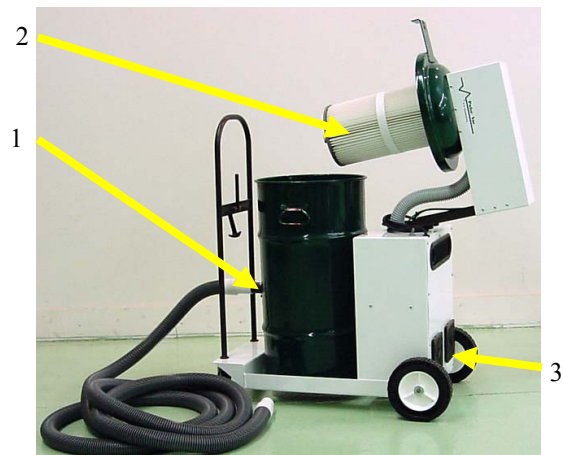
Never fill container above hose inlet (1). This can cause debris to pack tight in the filter.

For every 8 hours of running time, it is recommended to remove the filter (2) and clean automatically.

To Clean Filter Automatically:

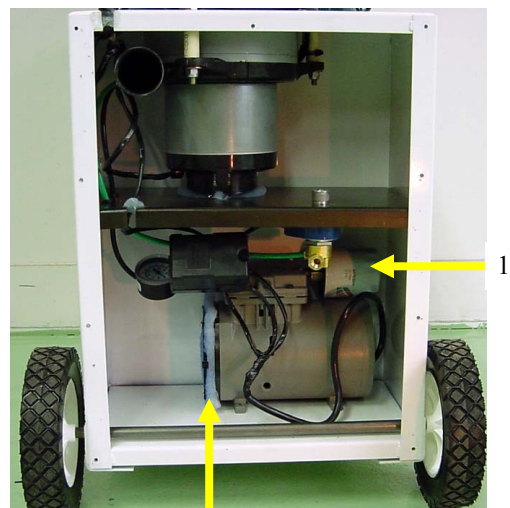
Allow machine to run and pulsate, unattached to any equipment for approx. 10 – 15 min. This will allow the filter to clean its self of built up material. We suggest that you do NOT remove the filter until it need to be replaced.

Periodically clean rear cooling filters (3).



Compressor Filter Maintenance:

Every 300 hours or six months (which ever comes first), remove rear cover and replace compressor air filter (1) and cooling filter (2).



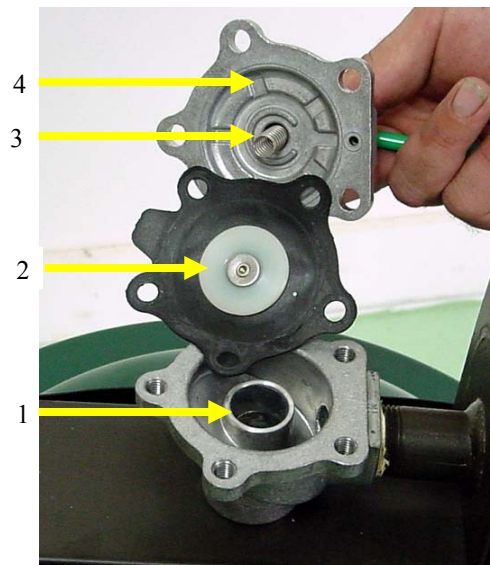
A-101 PULSE VAC OPERATING & MAINTENANCE INSTRUCTIONS

TO CLEAN POPPET VALVE:

Remove top cover of vacuum. Then remove the 5 bolts on the poppet valve to expose diaphragm. Wipe off ring on the valve (1) with a clean cloth. Wipe off the nylon washer on diaphragm (2).

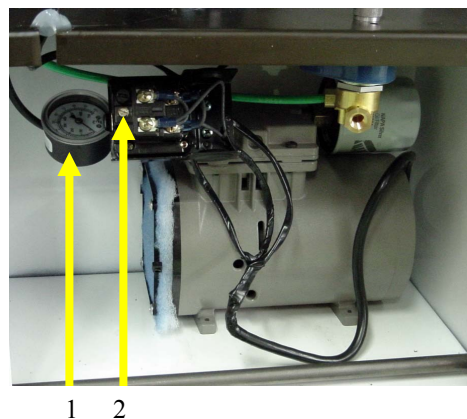
(DO NOT USE ANYTHING ABRASIVE ON THE WASHER)

Install diaphragm with the nylon washer down. Then install spring (3), followed by top of valve (4).



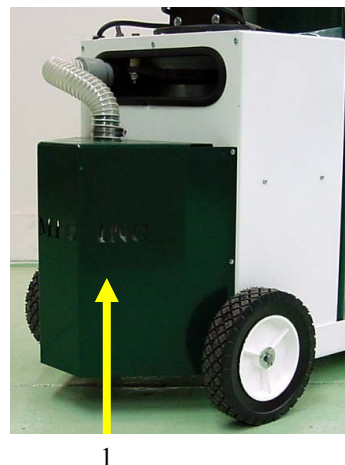
TO ADJUST PRESSURE SWITCH:

While checking pressure on gauge (1), adjust screw (2) clockwise to raise pressure and counter clockwise to lower pressure. Only adjust screw in 1/2 turn increments and let the vacuum cycle. If pressure does not raise, check for air leaks or a worn out compressor. Pressure should reach between 80 and 90 pounds before cycling.



Secondary Filter & Housing:

When total filtration is required for hazardous material or high tech facilities, the secondary filter housing (1) & filter is used with two different filter options depending on your requirements.



A-101 PULSE VAC MAINTENANCE INSTRUCTIONS

Dust Filter Cleaning & Replacement.

To clean filter manually, rotate the filter and gently tap the filter sides on the ground. Adverse conditions on the filters such as heavy grease, oil, glues, and moisture may require more frequent manual cleaning or replacement.

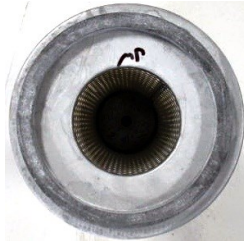
To determine if you have a bad dust filter.

Watch the indicator lights on the timer board and blower exhaust while the machine is in operation. If a puff of dust follows an indicator light, that filter is bad and should be replaced. Or when inspecting filters you find a layer of dust on the top of the filter inside the rubber seal ring, this is an indication that the filter is bad and needs to be replaced.



*(Using filters that are **not designed** for collector systems will cause a decrease in vacuum and will reduce paddle and liner life).*

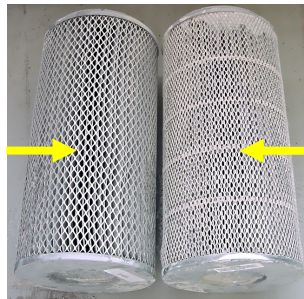
Good Filter



Bad Filter



This is the 10129-B Filter that is the stock filter in all BW Manufacturing, Inc. equipment.



This is a competitors filter.

Both filters were installed in the same machine and you can see that the filter on the right has more pleats along with dust packed near the top rim.

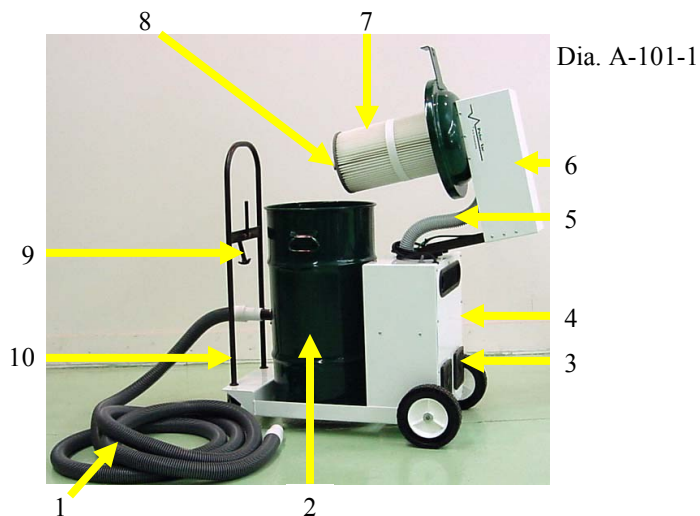


The 10129-B Filter on the left weighs over 2 lbs. less then the competitors filter due to better air flow during the pulsation process.

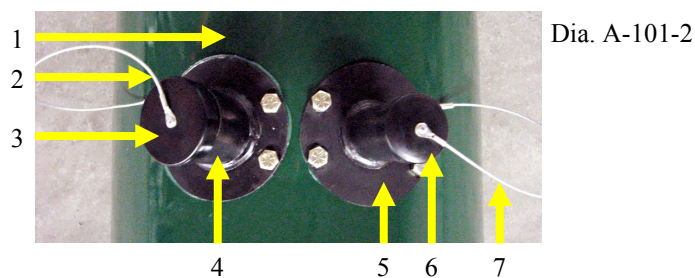


A-101 PULSE VAC PARTS

1. V-1016 VAC HOSE 1.5"
- V-1084 VAC HOSE 2"
2. V-129-AS2 DRUM
3. V-1041 REAR FILTER ASSEMBLY
4. V-103-AS REAR COVER
5. V-1017-A HOSE
6. V-108-AS COVER ASSEMBLY
7. 10129-B FILTER (BLEND) (*standard equipment*)
- 10129-H FILTER (HEPA) (*optional - special order*)
8. V-122-AS FILTER NUT
9. V-1037 DRAW LATCH
10. V-115-A FRONT HANDLE



1. V-129-AS2 DRUM
2. I-163 LANYARD
3. W-0016 CAP (2")
4. V-124-2AS INTAKE TUBE (2")
5. V-124-AS INTAKE TUBE (1-1/2")
6. V-1103 CAP (1-1/2")
7. I-163 LANYARD

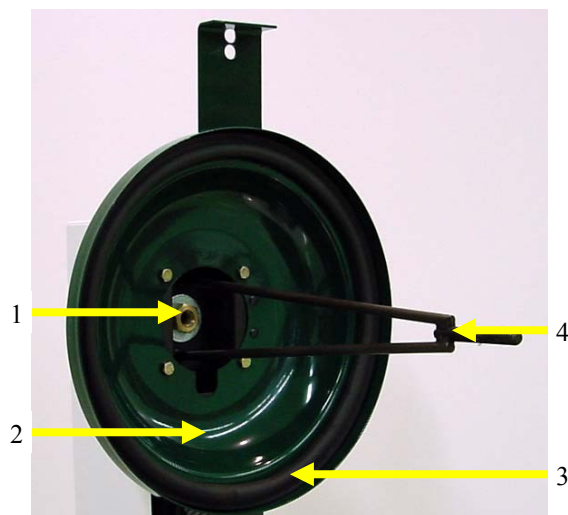


1. V-121-A DUST DEFLECTOR



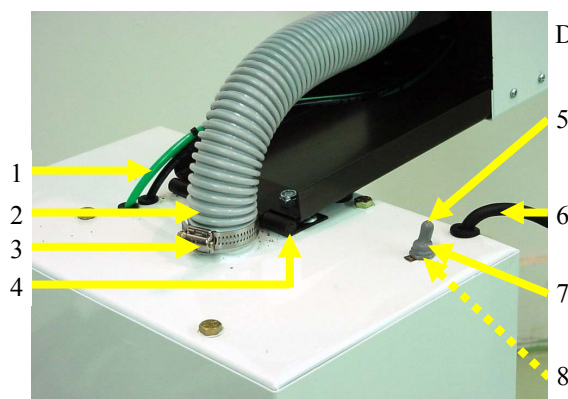
A-101 PULSE VAC PARTS

1. V-1019 POPET ORIFICE
2. V-119-AS LID
3. V-148 VAC LID SEAL
4. V-116-AS FILTER SUPPORT



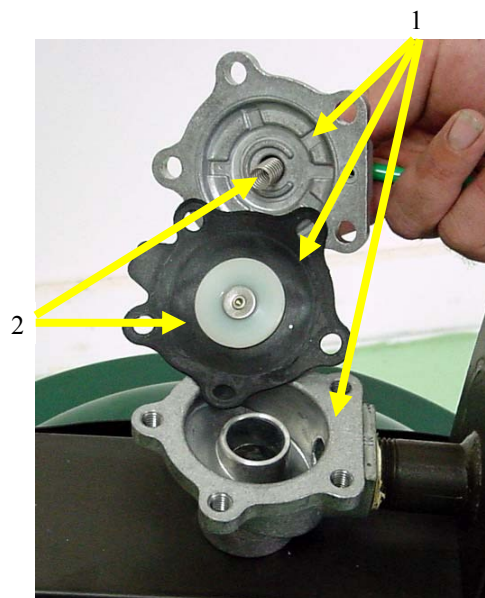
Dia. A-101-4

1. V-1028-G AIR LINE
2. V-1017-A VAC LID HOSE
3. V-1043 HOSE CLAMP
4. V-118 HINGE
5. V-1021 SWITCH
6. V-1011 POWER CORD
7. V-1059 SWITCH BOOT



Dia. A-101-5

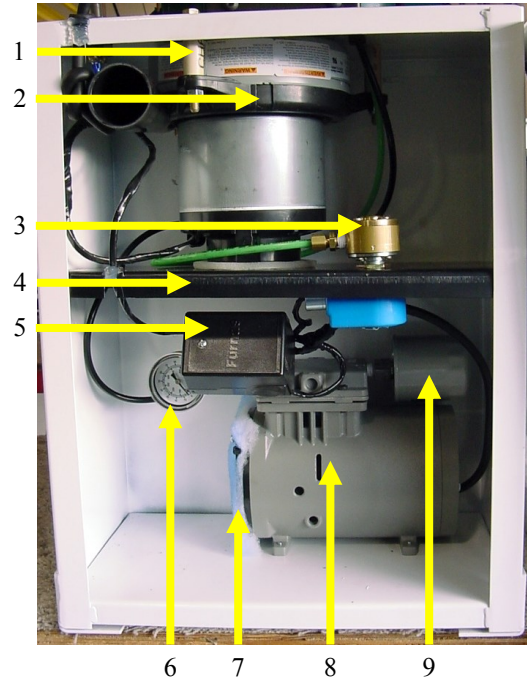
1. V-1013 POPET VALVE
2. V-1068 POPET VALVE REPAIR KIT



Dia. A-101-6

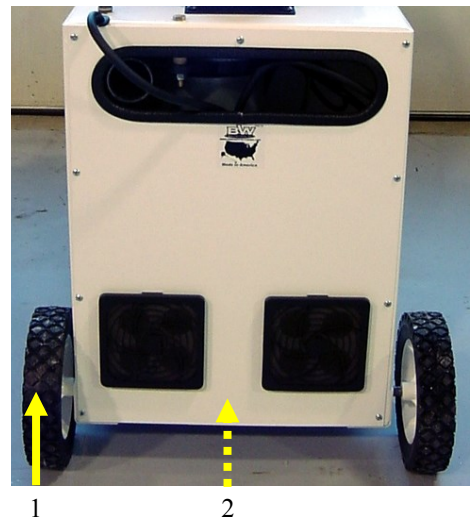
A-101 PULSE VAC PARTS

1. V-131 SPACER
2. V-1020 VAC MOTOR
3. V-1024 SOLENOID VALVE
4. V-123-AS SEPARATOR PLATE
5. V-1025 PRESSURE SWITCH
6. V-1022 PRESSURE GAUGE
7. V-1036-A COMPRESSOR FILTER
8. V-1029 AIR COMPRESSOR
9. V-1034 FILTER



Dia. A-101-7

- V-1026 WHEEL
- V-120 AXLE (*not shown*)



Dia. A-101-8

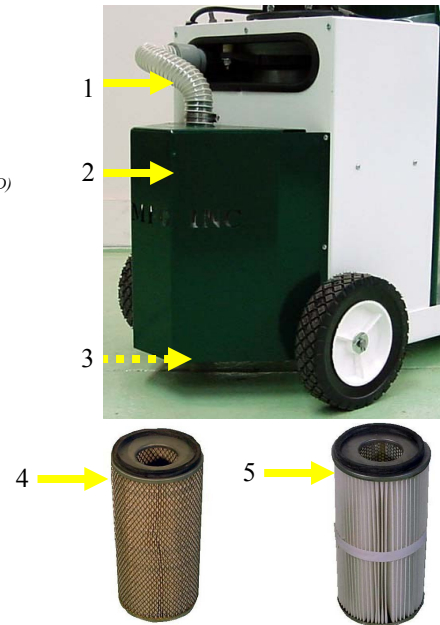
1. V-1027 Caster



Dia. A-101-9

A-101 PULSE VAC PARTS

1. V-1073-AS SECONDARY FILTER HOUSING HOSE
2. V-134-A SECONDARY FILTER HOUSING *(FILTER NOT INCLUDED)*
3. V-1080 FILTER NUT *(not shown)*
4. V-1079-B FILTER (BLEND)
5. V-1078-H FILTER (Spun Bond)



Dia. A-101-10

1. V-129-AS2 DRUM ASSEMBLY WITH A 1-1/2" INLET & 2" INLET



Dia. A-101-11

B W MANUFACTURING INC.

**A-101 PULSE VAC
TROUBLESHOOTING**

<u>Symptom</u>	<u>Problem</u>	<u>Solution</u>
Vacuum blows dust	Bad filter	Replace filter
	Bad filter seal	Check seal between filter and lid
	New filter Installation	This is common for the first 10 to 15 minutes until filter gets seated.
	Newly cleaned filter	This is common for the first 10 to 15 minutes until filter gets seated.
<u>Symptom</u>	<u>Problem</u>	<u>Solution</u>
Vacuum will not suck	Dirty filter	Clean or replace
	Clogged drum inlet	Remove Vac hose and clean drum inlet
	Leak in drum to lid hose	Replace hose
<u>Symptom</u>	<u>Problem</u>	<u>Solution</u>
Low vacuum Motor makes a scraping noise	Motor fins or bearings bad	Replace motor
<u>Symptom</u>	<u>Problem</u>	<u>Solution</u>
Vacuum will not pulsate	Air leak	Check air lines for leaks
	Dirt in popet valve	Clean popet valve
	Solenoid valve leaking (should only discharge air when vacuum pulsates)	Replace solenoid valve
	Pulsates only when vacuum is turned off (pressure gauge will not build up to 90 PSI)	Replace compressor or (remove compressor air filter and spray WD-40 into compressor intake to lubricate seals)