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# Operating Instructions for the BBO-1 and BBO-2 Basket Blasters



 **EMPIRE**  
ABRASIVE EQUIPMENT  
2101 West Cabot Boulevard  
Langhorne, PA 19047-1893  
[www.empire-airblast.com](http://www.empire-airblast.com)





**Model Number:** \_\_\_\_\_ **Serial Number:** \_\_\_\_\_

**Date of Purchase:** \_\_\_\_\_ **Date of Installation:** \_\_\_\_\_

**Distributor Purchased From:**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

\* \* \* \* \*

Manufactured by: EMPIRE ABRASIVE EQUIPMENT COMPANY  
2101 West Cabot Boulevard  
Langhorne, PA 19047-1893  
Phone: 215-752-8800, Fax: 215-752-9373

Empire equipment should be properly maintained per the operating instructions. For peak performance of your equipment, use only genuine Empire replacement parts; accept no substitutes! **The use of non-Empire parts will void the warranty.**

**PARTS AND SERVICE**  
**1-800-497-4543**

To order Empire replacement parts, contact your local authorized Empire distributor. For the name of your local distributor, call Empire Customer Service, 1-800-497-4543, or fax us at 215-752-9373, or e-mail us on our website [www.empire-airblast.com](http://www.empire-airblast.com) and we will call you back.

***CAUTION***  
***Never use silica-based abrasives***  
***in Empire blast systems.***

***Operating Instructions  
for the  
BBO-1 and BBO-2  
Basket Blasters  
Empire Abrasive Equipment Company***

***9/20/05***

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## **1.0 Introduction**

Congratulations on your selection of a BBO-1 or BBO-2 Basket Blaster from Empire Abrasive Equipment Company. This manual is provided to assist you with the unpacking, assembly, use, and maintenance of your unit.

Please read this manual carefully and keep it in the handy plastic pouch attached to your system for future reference. If you have any questions about the operation or maintenance of your equipment, contact your Empire distributor.

### **Empire: The leader in air-blast technology.**

Empire specializes in the design and manufacture of air-blast equipment, and has continued as an industry leader of more than 50 years. Today, Empire produces the most extensive line of air-blast products in the world. In addition to BBO-1 and BBO-2 Basket Blasters, our product line includes ProFormer™ Cabinets, Pro-Finish® Cabinets, Econo-Finish® Cabinets, Modified Systems, Automated Blast Systems, Blast Rooms, and SuperBlast™ Portable Blasters.

Empire Abrasive Equipment Company's reputation as a leader in air-blast technology is the result of meeting our customer's demand for quality equipment and systems that deliver increased productivity. We support our equipment with training, service, and testing programs. When you need advice, assistance, or equipment on short notice, our national network of distributors assures that help is nearby.

## 2.0 Installation

### 2.1 BBO-1 Installation

Refer to Figure 1, Figure 2, and the assembly drawings on the following pages.

**Step 1:** Make sure the cabinet is level and grounded.

**Step 2:** Assemble the air gauge (Cabinet Assembly Item 2) to the side of the filter regulator (Cabinet Assembly Item 1).

**Step 3:** Place the cap in the 1 ¼" diameter hole in the right side of the cabinet as shown in Figure 2.

**Step 4:** Install the dust bag (Dust Bag Assembly Item 2) on the flanged outlet (Cabinet Assembly Item 20) as shown in Figure 1 on the left side of the cabinet using the adjustable clamp (Dust Bag Assembly Item 1). Make sure all four holes in the flanged outlet are completely covered or the dust bag will not operate properly. Place the clamp (Dust Bag Assembly Item 3) on the bottom of the dust bag.

**Step 5:** Connect a ¼" air line to the filter regulator (Cabinet Assembly Item 1) and plug the line cord (Cabinet Assembly Item 19) into a 120V, 60Hz, 1-Phase grounded receptacle.

### 2.2 BBO-2 Installation

Refer to Figure 1, Figure 2, and the assembly drawings on the following pages.

**Step 1:** Make sure the cabinet and DC-16 dust collector are level and grounded.

**Step 2:** Assemble the air gauge (Cabinet Assembly Item 2) to the side of the filter regulator (Cabinet Assembly Item 1).

#### NOTE

**The DC-16 dust collector is only intended for use with your BBO-2 cabinet. Empire is not responsible if this dust collector is used for any purpose other than evacuation of dust from a BBO-2 cabinet.**

**The DC-16 dust collector is designed for indoor use only and must not be exposed to rain or moisture.**

**Step 3:** Remove the dust collector lid assembly (Dust Collector Assembly Item 7) and remove any parts which were stored inside the drum for shipping. Replace the lid and apply pressure to each latch until it snaps tightly into place. Slip one end of the dust hose (Dust Collector Assembly Item 14) into the dust collector port on the top and slip the other end of the dust hose into the flanged outlet (Cabinet Assembly Item 20) as shown in Figure 1 on the left side of the cabinet.

Wrap the supplied ¼" x 1-1/2" foam rubber (Dust Collector Assembly Item 13) once around the outside of the 2-1/2" diameter outlet flange on the left side of the cabinet. Trim any excess. Note that the foam rubber has an adhesive backing so it will adhere

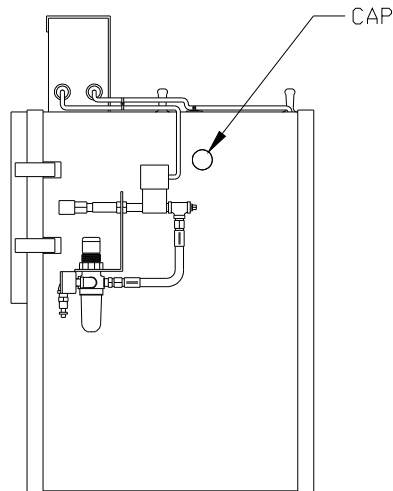
tightly to the flange. Secure the 3" dust hose to the flange with the 3" hose clamp supplied (Dust Collector Assembly Item 15).

**Step 4:** Plug the dust collector power cord into the power receptacle on the side of the BBO electrical box located at the top of the cabinet as shown in Figure 1. The dust collector and cabinet will now be controlled by the timer on the control panel.

**Step 5:** Connect a 1/4" air line to the filter regulator (Cabinet Assembly Item 1) and plug the line cord (Cabinet Assembly Item 19) into a 120V, 60Hz, 1-Phase grounded receptacle.



**Figure 1 - Left Side of BBO Cabinet**



**Figure 2 - Right Side of BBO Cabinet**

## 3.0 Media Loading

Your basket blaster is designed to operate effectively and efficiently with the majority of media types.

### CAUTION

**Never use silica-based media in Empire blast systems.**

**Step 1:** Open the door by sliding the ring on the air line disconnect coupling (Cabinet Assembly Item 22) toward the front of the machine. Remove the basket (Cabinet Assembly Item 4) from the cabinet.

**Step 2:** Pour dry media into the cabinet under the basket shaft (Cabinet Assembly Item 9). Fill the cabinet up to but no higher than the bend in the sloping wall.

**Step 3:** Install the basket on the shaft locked with the shaft pin. Close the door.

## 4.0 Sequence of Operation

**Step 1:** Place a maximum of 15 pounds of parts to be blasted into the basket. The parts must be free from oil, grease, and moisture. Close the door firmly.

**Step 2:** Turn on the plant compressed air and plug in the line cord.

**Step 3:** Set the regulator (Cabinet Assembly Item 1) to the 40 to 60 PSI range if using glass beads, or the 60 to 80 PSI range if using aluminum oxide.

**Step 4:** Set the timer (Cabinet Assembly Item 38) to the desired cycle duration. The blast will start.

**Step 5:** The pilot light (Cabinet Assembly Item 39) on the control panel will illuminate while the cycle enabled.

**Step 6:** Remove the parts by pulling the basket from the shaft and dumping them into another container.

## 5.0 Maintenance

### 5.1 All Machines

**Step 1:** Check the media level in the cabinet. Check for contaminated or worn media (dust). If required, clean out the system and reload it with new media.

During normal operation, the media should be changed after every 8 hours of operation.

Media may be dumped from the hopper by removing the two plugs (Cabinet Assembly Item 18) on the lower front of the cabinet.

**Step 2:** Check the operating air pressure on the gauge. Adjust the pressure using the regulator (Cabinet Assembly Item 1) to the recommended pressure as outlined in section 4.0, step 3.

**Step 3:** Open the drain cock on the air filter bowl to drain any water which has accumulated.

**Step 4:** Check the air jet for wear. When the outside of the air jet body has less than 50% of the original thickness, replace the air jet. DO NOT allow media to wear through to the air jet. Rotate the air jet 90 degrees weekly to extend life.

**Step 5:** Check the nozzle for wear. A drill bit may be used to measure the nozzle inside diameter. If the inside diameter is enlarged, replace the nozzle. For example, when a new 1/4" nozzle increases to 3/8", it should be replaced immediately. Rotate the nozzle 90 degrees weekly to extend life.

**NOTE**

**To remove the mixing head assembly for changing and checking the air jets, loosen the set screw on the side of the mixing head body. The air jet may then be pulled out of the mixing head.**

**IMPORTANT**

**If an air jet is allowed to wear completely through, it will cause premature wear of the gun body and nozzle.**

**Step 6:** Never operate the cabinet or dust collector if any electrical cord appears frayed or has damaged insulation. Be sure to connect the cabinet electrical cord to a grounding-type receptacle.

**Step 7:** Add ten (10) drops of SAE 20 oil to the shaft bearing of the basket through the oil cup once a year.

## **5.2 BBO-1 Only**

Clean the dust bag before each blast cycle. If dust is allowed to build up in the bag, back pressure will force the dust to seep from the cabinet.

Dust and waste may be emptied by removing the clamp at the bottom of the dust bag.

The dust bag may be washed.

## **5.3 BBO-2 Only**

The DC-16 dust collector is supplied with a cartridge filter. If properly used and periodically cleaned, the filter will have a long life.

Disconnect the electrical cord from the control box, disconnect the dust hose from the lid, and remove the lid from the drum. Do not remove the filter from the lid. Gently shake the lid assembly to remove excess dust from the filter. Do not brush or use compressed air to clean the filter or damage could occur.

If dust is escaping from the dust collector in the exhaust air, check to make sure the filter is properly installed. The filter gasket must be in full contact with the underside of the lid. The wing nut, washer and gasket must be tightened for an air tight seal.

Replace the filter if necessary.

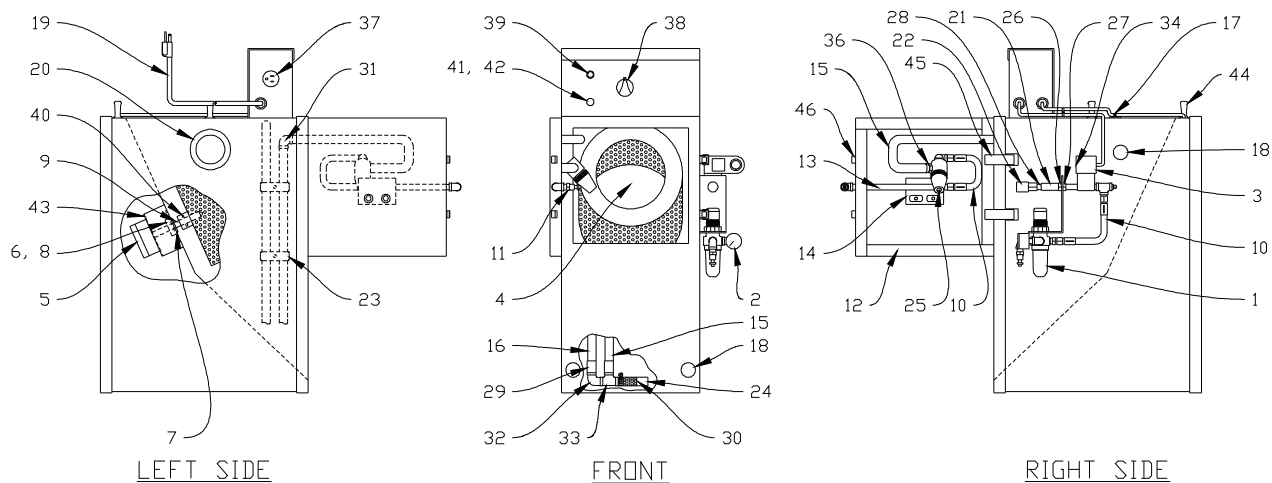
## 6.0 Troubleshooting

### 6.1 Troubleshooting Chart

<i><b>Problem</b></i>	<i><b>Probable Cause</b></i>	<i><b>Remedy</b></i>
Good media is being carried to the dust collector.	New filters.	Continue use until filter “cake” forms (approximately eight hours of operation).
	Insufficient media in cabinet allows secondary air to enter.	Add media to recommended media level.
	Media too fine.	Use a coarser media.
No air or media flow from the nozzle.	Compressed air line shut off.	Open all air valves from compressor.
	Cabinet door not tightly closed.	Close cabinet door.
	Regulator adjusted to zero.	Adjust regulator.
	Nozzle clogged.	Disassemble and clean nozzle.
Poor production rate.	Low blast air pressure.	Increase pressure within the specified range.
	Nozzle too small (the smaller the nozzle, the smaller the blast pattern).	Install a larger nozzle and air jet on to accommodate your production needs.
	Low media level.	Add media to maintain recommended level.
	Parts to be blasted are oily or wet.	Parts to be processed must be absolutely dry and free of oil, grease, etc.
	Media has high dust content (blast media breaks down and must be replaced on a regular basis).	Remove old media from system and replace with new. Adjust reclaimer tuning band. See section 5.0.
There is blast air flow, but intermittent or no media flow.	Blast air pressure too low.	Adjust and maintain pressure within recommended range.
	Clogged nozzle.	Disassemble and clean nozzle.
	Damp media (If media stays formed in a ball after squeezed in the palm of the hand, it is too damp to flow properly).	Remove damp media from system and replace with new, dry media. Check compressed air supply filters. Do not blast wet or oily parts.

# 7.0 BBO Parts

## 7.1 Cabinet Assembly



Item	Part Number	Description
1	505282	Air Filter/Regulator, 1/4" NPT
†	508141	Repair Kit for 505282 (Diaphragm, O-Ring, Element)
2	550262	Air Gauge
3†	517921	Solenoid Valve
4*	511551	Basket Assembly, Uncoated, 1/16" Holes
	511541	Basket Assembly, PVC Coated, 3/8" (maximum) Holes
5†	549581	Motor, 1/100 HP, 115V/60Hz/1-Phase
6†	570161	Shaft Bearing, Pillow Block
7†	524431	Shaft Grommet
8	516091	Shaft Washer, Felt
9	768191	Shaft
10†	521135	Hose Assembly, 1/4" x 8", (2) required
11†	544182	Plug, Quick Disconnect
12†	526271	Door Gasket Kit, Set of 4, 1" x 1", 1 with hole
13	768171	Gun Holder
14	768161	Nut Plate
15*	523081	Media Hose, 1/2" x 33"
16†	523091	Air Hose, 1/2" x 18"
17	528521	Wire Tie, (2) required
18†	544381	Plug, 1-1/4" Diameter, (3) required
19	529601	Line Cord, 120V, with Plug
20	768221	Adapter Ring
21	544792	Coupling
22†	510021	Socket, Quick Disconnect
23	523101	Double Tube Clip
24†	140476	Screen Assembly (Screen, Clamp, Cap)
25*	140721	MH-4 Suction Gun and Parts (see assembly)
26	544692	Bulkhead Fitting
27	553292	Lock Nut
28	545912	Nipple, 1/4", Close
29	546501	Nipple, 1/4" x 4", TOE, (2) required
30*	761921	Orifice Tip
31*	543712	Elbow, 90 degree
32	543512	Elbow, Street, 90 degree
33*	545502	Tee, 1/4"

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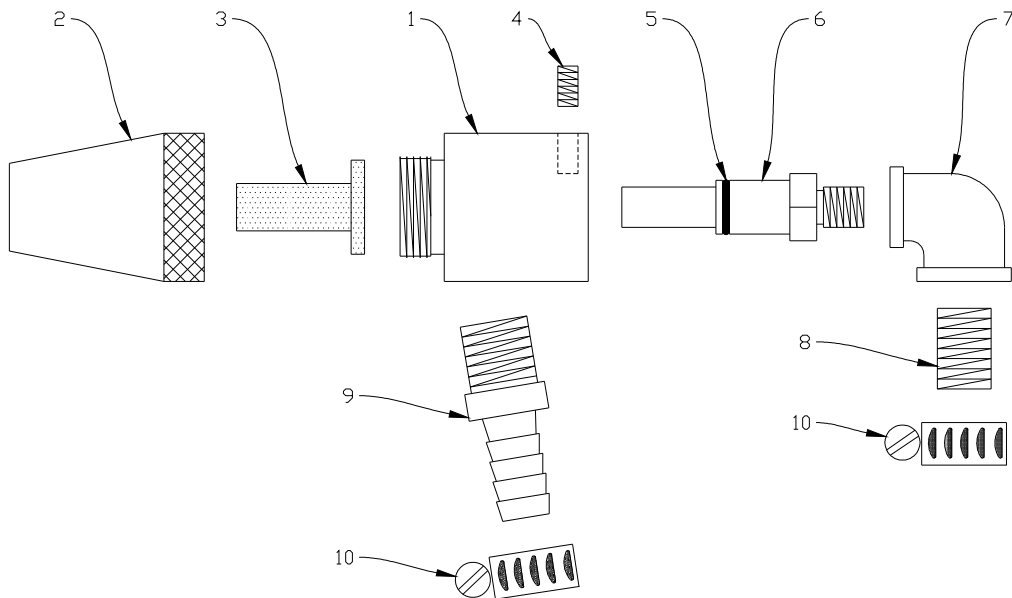
34	544031	Plug, Valve Body
35		
36*	520372	Hose Barb, 1/2" Hose x 3/8" NPT
37	534101	Receptacle, 120 Volt
38†	531041	Timer
39	532511	Indicator Light
40†	553282	Roll Pin, 1/8" x 1"
41	532143	Fuse Holder
42†	532281	Fuse, 10 Amp
43	768131	Motor Bracket
44	564171	Handle, (2) required
45	509581	Latch, (2) required
46	509591	Keeper, (2) required

\* Recommended spare part – consumable wear item.

† Essential component - to prevent downtime.

\*\* Specify length (per foot).

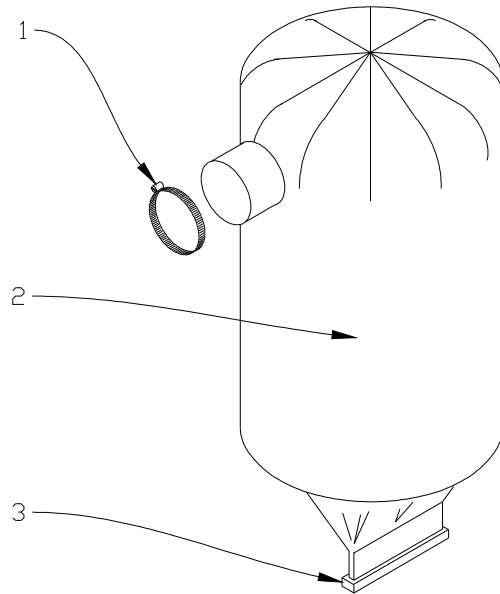
## 7.2 MH-4 Suction Blast Gun



Item	Part Number	Description
††	140721	MH-4 Gun, 1/4" Ceramic Nozzle, 3/32" Air Jet
	140722	MH-4 Gun, 5/16" Ceramic Nozzle, 1/8" Air Jet
	140723	MH-4 Gun, 1/4" Di-Carb Nozzle, 3/32" Air Jet
	120724	MH-4 Gun, 5/16" Di-Carb Nozzle, 1/8" Air Jet
1	505331	Suction Head
2	504901	Nozzle Adapter, Ceramic and Di-Carb Nozzles
	504921	Nozzle Adapter, Boron Carbide Nozzle Only
3*††	502661	Nozzle, Ceramic, 1/4", each
	502401	Nozzle, Ceramic, 1/4", pack of 10
	502701	Nozzle, Ceramic, 5/16", each
3*	502411	Nozzle, Ceramic, 5/16", pack of 10
	501311	Nozzle, Di-Carb, 1/4", each
	501321	Nozzle, Di-Carb, 5/16", each
	502101	Nozzle, Boron Carbide, 1/4", each, Requires 504921 Nozzle Adapter, Longest Life Nozzle
4	551052	Set Screw, 1/4"-20 x 3/8"
5	523891	O-Ring
6*††	504821	Air Jet, with O-Ring, 3/32", Yellow
6*	504811	Air Jet, with O-Ring, 1/8", Orange
7	543912	Elbow, 1/4" x 1/8"
8	545912	Nipple, 1/4"
9	520372	Hose Barb, 1/2" Hose x 3/8" NPT
10	521091	Hose Clamp, Not Included with Gun, (2) required

- \* Recommended spare part – consumable wear item.
- † Essential component - to prevent downtime.
- †† Supplied with standard machine.

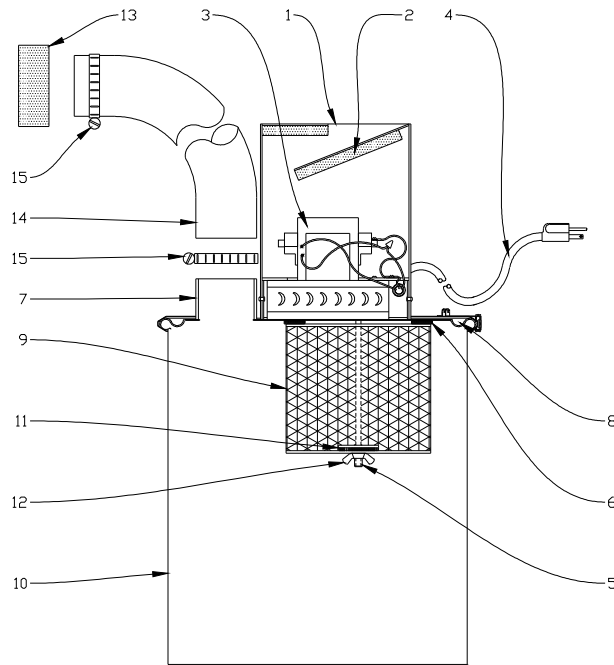
## 7.3 Dust Bag (BBO-1)



Item	Part Number	Description
1	520521	Clamp, 3", Adjustable
2†	510001	Dust Bag
3	520461	Clamp, Dust Bag Closure

† Essential component - to prevent downtime.

## 7.4 DC-16 Dust Collector (BBO-2)



Item	Part Number	Description
	117216	Dust Collector, DC-16
1	770963	Silencer Cover
2	580061	Hush Cloth, 1/2" x 6 1/2" x 7", 5 pieces
3	515761	Blower, 120V/60Hz/1-Phase, 133 CFM
4	529601	Line Cord, 120V, with Plug
5	770067	Threaded Rod, 3/8"-16
6	524821	Gasket, Fan Motor, DC-16 and DC-30
7	770685	Lid Weldment, DC-16 and DC-30
8	504020	Locking Ring
9	504771	Filter Cartridge, DC-16
10	504016	Drum, 16 Gallon
11	552892	Flat Washer, 3/8"
12	553992	Wing Nut, 3/8"-16
13**	525181	Gasket, 1/4" x 1-1/2", order 1 foot
14†	515941	Hose, 3" ID x 6', for DC-16
15	520521	Clamp, 3", Adjustable, (2) required

† Essential component - to prevent downtime.

\*\* Specify length (per foot).

## 8.0 Warranty

Empire Abrasive Equipment Company (“Empire”) warrants all parts and equipment against defect in material and workmanship to the original purchaser for a period of **three (3) years** after shipment. Upon prompt notification by the buyer, to Empire, components that are determined by Empire to be defective will be repaired or replaced at not additional charge.

### LIMITATIONS:

1. This warranty does not apply to normal wear items such as nozzles, blast hose, and reclaimers or to other components that are exposed to direct contact with blast media.
2. The buyer must follow all recommended maintenance schedules; see Operating Instruction on prior pages.
3. Does not apply to misapplication of product.
4. Unauthorized service, repair, improper installation, improper operation, improper maintenance, alternations, misuse, neglect, accident or excessive ambient conditions will void the warranty.
5. **If genuine Empire replacement parts are not used the warranty is void.**
6. Returned Material Authorization (RMA) form must be completed and accompany all returned goods. Returns are not recognized without prior authorization and RMA number.
7. Associated installation costs are excluded.
8. Freight costs for goods returned to Empire are to be assumed by the buyer unless the parts are determined defective by Empire.
9. Parts that are not supplied by Empire are not covered. Commercial components are warranted under term of the original manufacturer.

