

# OPERATING INSTRUCTIONS

FOR

ECONO-FINISH® BLAST CABINETS

## **EMPIRE**

ABRASIVE EQUIPMENT COMPANY

2101 WEST CABOT BLVD., LANGHORNE, PA. 19047-1893 USA

• (215) 752-8800

• FAX (215) 752-9373

• TELEX 831-378

• EASY LINK 62954372

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**INTRODUCTION**

Welcome to Empire's family of suction cabinet users.

This booklet contains helpful information and acquaints you with the operation and maintenance of your equipment. Please read it carefully and follow our recommendations to assure safe and trouble free operation.

If you have any questions, please contact your local Empire distributor or the factory. You will always find us available and willing to provide prompt and complete service.

**WARRANTY**

Empire Abrasive Equipment Company ("Empire") warrants all parts and equipment against defects in material and workmanship to the original purchaser for fourteen (14) months after shipment or twelve (12) months after installation, whichever comes first. Upon prompt notification by buyer, components that are determined by Empire to be defective within this period will be supplied for replacement, modified or repaired at Empire, or additional parts will be supplied at NO CHARGE.

**LIMITATIONS:**

1. Not applicable to normal wear items; such as: Nozzles, Blast hose, or other components exposed to direct contact with blast media.
2. Recommended maintenance schedules must be performed by the buyer.
3. Unauthorized service, repair, improper installation, improper operation, improper maintenance, alteration, misuse, neglect, accident or excessive operating ambient conditions will void warranty.
4. Does not apply to misapplication of products.
5. Additional liability is not assumed with the sale of the product. Empire will not be obligated to allow claims for consequential damages or for any labor or other expenses incurred. Others are not authorized to assume additional liability.
6. Associated installation costs are excluded.
7. Freight costs for goods returned to Empire are to be assumed by buyer unless parts are determined defective by Empire.
8. Returned Goods Authorization ("RGA") form must be completed and accompany all returned goods. Returns are not recognized without prior authorization and RGA number.
9. Parts not supplied by Empire are not warranted. Fraudulent claims will be backcharged for time and material.
10. Commercial components are warranted under terms of the original manufacturer.

This warranty is in lieu of all other warranties whether expressed, implied, or statutory including implied warranties of merchantability or fitness.

(Warranty is subject to change without notice.)

**1.0 INSTALLATION**

- a) See drawing and assembly instructions on page 7.
- b) Anchor blast cabinet to floor using existing anchor pads.
- c) Connect the electric cable to the power source. An eight foot section with a three prong male plug is provided. Standard cabinet voltage is 115 volts, 50-60 cycle, 1 phase.
- d) Connect the electrical cable from the dust collector motor to the receptacle provided at the cabinet control box. A cable with a three prong plug is provided.
- e) Connect the 3" dust hose from the cabinet outlet to the dust collector inlet. Fasten tight at each end with hose clamps. (See section 7.1)
- f) Connect plant compressed air line to cabinet air inlet connection. A 1/2" I.D. or larger air hose is recommended.
- g) Utility requirements for your Econo-Finish system are as follows:  
 Electrical: 110-120 volt, single phase 50-60 hertz.  
 Full load amperage =9A.  
 Compressed air: see chart on page 12.

**2.0 MEDIA LOADING**

Your Econo-Finish suction cabinet is designed to operate efficiently and effectively with most types of media that are designed to be recirculated. For efficient operation media size should be within the range specified below. Media such as sand or slag are never recommended because they break down rapidly creating excessive dust.

Model	Aluminum Oxide (60 to 200 Mesh Sizes)	Glass Beads (30 to 200 Mesh Sizes)
EF-2430	25 lbs.	20 lbs.
EF-2436	30 lbs.	25 lbs.
EF-2448	50 lbs.	45 lbs.

**⚠ WARNING**

- The dust associated with sand has been linked to serious health problems.
- When loading or dumping any type of media, operator must wear a respirator to reduce dust inhalation.

- a) Open the cabinet loading door.
- b) Pour the media into the cabinet. The media will fall and collect over the media regulator located on the front of the cabinet cone.

**IMPORTANT**

Do not charge your system with more media than recommended. Overfilling will also cause "media turbulence" inside the blast chamber when the nozzle is pointed downward during blasting, reducing operator visibility.

## 4 / Operating Instructions

## ECONO-FINISH® BLAST CABINETS

### 3.0 SEQUENCE OF OPERATION

- Turn on plant compressed air. (Clean dry air is required)
- Turn on the light/dust collector electric switch.
- Through the loading door, place a quantity of parts to be blasted. Parts must be free of oil, grease and moisture. Close the door(s).
- Check the operating air pressure. The following pressures are recommended:

Media	Pressure Range
Glass Beads	30 to 60 PSI
Aluminum Oxide	30 to 100 PSI

#### WARNING

Never exceed maximum air pressure at Inlet of 125 PSI.

- Extend your arms/hands into the two glove openings. The blast gun assembly should be held firmly. Step on pedal to activate blast.
- As the compressed air stream passes through the air jet and out the nozzle, it creates a low pressure or vacuum inside the blast gun. The vacuum "pulls" the media from the media regulator (located at the bottom of the cabinet cone), through the media hose to the gun assembly.
- After the media strikes the part being treated, the fine dust particles are carried to the dust collector. The heavy, reusable media falls downward and collects over the media regulator for recycling back to the nozzle.

### 4.0 SHUTDOWN

- Turn off the lights/dust collector electric switch.
- Turn off plant compressed air.

### 5.0 MAINTENANCE

#### 5.1 DAILY MAINTENANCE

Your Econo-Finish® cabinet is designed for maximum performance from an economical, compact package. Here are some helpful tips to keep your system running efficiently and trouble free.

##### Cabinet

- Check the media level in the cabinet. Also, check for contaminated or worn media and dust. If required, clean out system and reload with new material. During normal operations, the media should be changed once a week. (See MEDIA LOADING 2.0).
- With a dry cloth, remove any dust which may have accumulated on the inside of the operator's viewing window.
- Check operating air pressure, increase or decrease to recommended pressure if required. (See 3.0, d).

##### Air Compressor

Open the drain cock on the air compressor receiver tank to drain any water which may have accumulated.

##### Dust Collector

The dust collector blower maintains a vacuum on the

cabinet interior preventing dusty air from escaping the cabinet. A filter within the housing removes dust from the air which is then discharged from the blower. To maintain dust collector efficiency, the dust collector and filter must be cleaned every 4 to 8 hours under normal conditions (more often if media or parts being cleaned are particularly dusty). See below.

- Empty the dust collector when the dust level reaches the bottom of the filter. Access the filter by removing the clamp at the top of the drum, and lifting off the top assembly. Always disconnect the plug before removing the top assembly.
- Check the motor brushes after the first 500 hours of use. Replace when worn. (Replacement brushes tend to wear more quickly, so check replacement sets more often.) A lower ball bearing is also available for replacement. See your Empire distributor.

##### Dust Collector Filter

Your dust collector is equipped with a cartridge filter. Be sure that the wing nut holding the cartridge to the lid is tightly secured and gasket is in place. If used properly and cleaned periodically, the filter will give long life. Clean the filter as described below:

- Always disconnect the plug before removing the top assembly. Place the housing lid upside down and remove the filter by removing the wing nut.
- Gently tap the filter inside the dust collector housing. Remove loose dust particles by using a soft bristle brush.
- Replace the filter and tighten the wing nut securely. Make sure that the gasket against the open side of the filter is in good condition as well as the gasket under the wing nut. The integrity of these gaskets is critical to assure long fan life. If gaskets are damaged, replace immediately.
- Re-assemble the dust collector and plug the cord into the cabinet control box.
- Turn the collector on by turning on the cabinet control switch.

Clean filters more often when visibility through cabinet window is markedly reduced. When using fine/angular media, if dust "cakes" easily, in very high humidity, or if static electricity is evident.

#### WARNING

Do not attempt to disassemble or clean the dust collector with the fan running. Wear a respirator to reduce the chance of dust inhalation.

**5.2 WEEKLY MAINTENANCE**

Note: Check your suggested spare parts inventory.

**Cabinet**

- a) First, perform those duties outlined in the daily maintenance list. (5.1)
- b) Check for worn operator's gloves.
- c) Check the air jet (located behind the nozzle inside the blast gun) for wear. Rotate weekly to prevent wear.
- d) If the nozzle inside diameter has worn, replace at once. A drill bit can be used to measure the inside diameter of the nozzle. When a new 1/4" nozzle increases to 3/8", replace it. When a new 5/16" nozzle increases to 7/16", replace it.

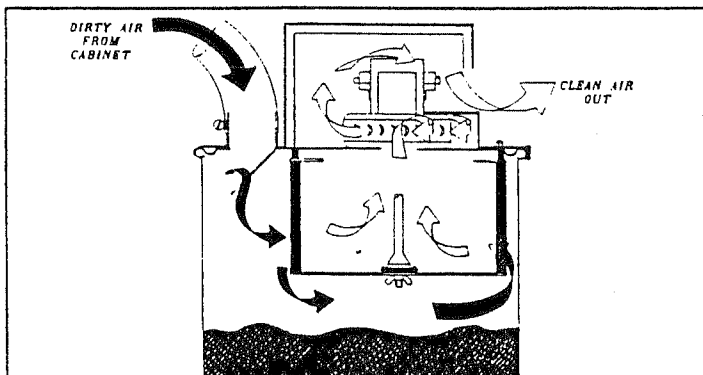
**CAUTION – Failure to change a worn air jet or nozzle will lead to premature wear of the mixing head body (blast gun) and nozzle adapter.**

- e) Check the nozzle adapter and blast gun assembly for signs of wear. Replace if necessary.
- f) The media hose extends from the bottom of the cabinet to the blast gun in the cabinet blast chamber. Check this hose for signs of wear. Replace if any soft spots are located.
- g) Check rubber door and window gaskets are in good condition.
- h) Check operator's viewing window is in good condition.

**Dust Collector**

Refer to the drawing below for reference. Be sure:

- a) Gasket at the base of the filter stud is in place.
- b) Gasket at top of filter contacts the lid all the way around and is compressed.
- c) Filter does not have any punctures or small tears.
- d) Filter is centered so that it seats squarely and firmly.
- e) Lid is not dented (or else the gaskets will not contact fully).
- f) You feel a strong breeze from the outlet of the dust collector's motor cover when it's running. Keep the opening clear; air flow cools the motor.
- g) There is no dust or grit on the outside of the dust collector. This indicates a leak.



**Diagram - Air Flow Through Dust Collector**

**Important note:**

The blower will fail if any unfiltered air passes through it. Be sure the filter and gaskets are in good condition – they keep dirty, contaminated air away from the blower. A worn blower may exceed noise limits (80 dbA).

**6.0 TROUBLESHOOTING CABINET**

**6.1 PROBLEM:  
POOR INTERIOR CABINET VISIBILITY  
DURING BLASTING OPERATIONS.**

- a) Dirty dust collector filter. When the filter is not cleaned as recommended, it will become clogged. This affects the operator's visibility by:
  - (1) Reducing the flow of ventilating air through the cabinet; thereby increasing dust levels.
  - (2) When the air flow is decreased, the dust is not carried to the collector, but instead, recycled back to the cabinet. Blasting with media having a high dust count affect both the operator's visibility and blasting efficiency. For information on cleaning the collector filter. See 5.1 and 5.2.
- b) Operating air pressure too high. Maintain air pressure within the recommended range. (See 3.0, d).
- c) Blasting with media having a high dust count. Media breaks down into useless dust and must be changed on a regular basis. How often you have to remove and recharge your system with new media depends on the operating air pressure. Media change intervals at least once a week are to be expected. Never use sand in cabinets. (See media loading, 2.0). To change media, place a container under the clean-out door located at the bottom of the cabinet, and open the spring loaded clean-out door.
- d) Blasting with too fine a media. Operating with too fine a media reduces the operator's visibility and decreases production. Remove the fine media and replace with a larger size. (See Media Loading, 2.0).
- e) Dirty window. Clean with a dry cloth.
- f) Light bulb needs replacing.

**6.2 PROBLEM:  
NO FLOW OF AIR OR MEDIA**

- a) Clogged nozzle. Remove the nozzle from the blast gun assembly and inspect for any foreign material that may be lodged in the orifice.
- b) Air jet plugged. Remove and inspect air jet orifice for debris.
- c) Compressed air valve closed. Check all valves in the air line from your compressor are in the full open position.

**6.3 PROBLEM:**

**FLOW OF COMPRESSED AIR THROUGH NOZZLE. BUT INTERMITTENT OR NO FLOW OF MEDIA**

- a) Low media level. Never operate the cabinet if the media level in the bottom of the cabinet is below the recommended amount. (See 2.0, b)
- b) Damp Media. This can be caused by:
  - (1) Humidity in the atmosphere.
  - (2) An excessive amount of moisture being discharged by the air compressor.

*HINT—An easy way to test for damp media in your system is to place a small amount in the palm of your hand. Close your hand and squeeze firmly making a fist—now open your hand. If the media stays together forming a ball in the palm of your hand, the media will not flow to the nozzle properly.*

- c) Improper air jet nozzle combination. In all suction type blasters the nozzle size must be at least twice the size of the air jet orifice size.

Examples: 3/32" or 1/8" air jet must be used with a 1/4" nozzle  
5/32" air jet must be used with a 5/16" nozzle

One indication of an improper air jet/nozzle combination is agitation of media in the cabinet hopper during blasting. This can be checked by removing the floor grating and looking through the cabinet window while blasting.

**WARNING**

**Do not open the cabinet door while blasting. This will create an unsafe condition.**

- d) Operating with low air pressure. Maintain the air pressure within the recommended range. (See 3.0, d)
- e) Clogged media hose. The easiest way to clean any packed media in the blast hose is to:
  - (1) Place your glove-protected hand firmly over the end of the nozzle so the compressed air cannot escape.
  - (2) Depress the foot treadle for approximately five seconds.
 Since the air cannot discharge through the nozzle, it will take the only other way – through the media hose. This "back flushing" will dislodge any packed media or foreign object.
- f) Clogged nozzle. A clogged nozzle will prevent the flow of media. Remove nozzle to clear obstruction.
- g) Media flow adjustment. The flow of media to the suction blast gun is controlled by the amount of air which enters through the inlet port in the media regulator. The amount of air entering is controlled by how far the blast hose is inserted within the regulator. For normal operation, all but 1/4" of the inlet port is blocked by the blast hose. With fine media the 1/4" dimension may be varied slightly to give uniform flow. (Note that it can easily be determined if media is flowing properly by observing through the media regulator air inlet while the gun is operating.)

**6.4 PROBLEM:**

**POOR PRODUCTION**

- a) Low air pressure. Check if the operating air pressure is within the proper range for the type of media you are using and the type work you are performing. (See 3.0, d)
- b) The air jet-nozzle orifice sizes are too small. The smaller these orifices, the smaller the blasting pattern and area covered. (See 6.3, c)
- c) Blasting a part which is oily or wet. The parts to be processed must be absolutely dry, free of any oil, grease water, etc.
- d) Low media level. Check if the media level is below the recommended level. (See 2.0, b)
- e) Nozzle end too close to the surface being treated. The closer the nozzle is to the work piece, the smaller the blasting pattern and area covered. As a general rule, the operator should hold the nozzle end approximately 4" from the surface being blast treated.
- f) Media size too small. If your cabinet is being used for cleaning-type operations, a general rule to remember: The thicker the material being removed, the coarser or larger the media particle size should be. If you are not sure you are using the proper media size, check with your distributor or contact Empire directly.
- g) Blasting with media having a high dust count. Media breaks down into useless dust and must be changed on a regular basis. Blasting with media having a high dust count affects the overall operating efficiency. Remove old media and replace with new materials. (See Media Loading, 2.0)

**7.0 ECONO FINISH DUST COLLECTORS**

- a) Install and operate your blast cabinet as described in the operating instructions for your Econo-Finish cabinet.
- b) Econo-Finish dust collectors are intended for use only with your Econo-Finish cabinet. Empire is not responsible if the dust collector is used for purposes other than for evacuation of dust from an Econo-Finish cabinet.
- c) The collector is designed for indoor use only and should not be exposed to rain or moisture.
- d) Never operate the cabinet or dust collector if any electrical cords appear frayed or has damaged insulation.
- e) To protect the operator from electrical shock, the dust collector and cabinet are both equipped with an approved three conductor cord and grounding type plug. The dust collector cord plugs into the cabinet receptacle as described in section 1.0, c. Be sure to plug the cabinet cord only into the proper grounding type receptacle.

**7.1 MAINTENANCE OF THE DUST COLLECTOR AND CARTRIDGE FILTER**

See Section 5.1 and 5.2

## 8.0 TROUBLESHOOTING - DUST COLLECTORS

### **PROBLEM:**

VACUUM WEAKENS OR COLLECTOR  
RUNS HOT

- a) Clogged Filter. Brush dirt from filter. If condition continues, replace filter.
- b) Air Leak. Check all fittings for tight fit (Collector lid, hose, etc.).
- c) Obstruction in Hose or Collector's Outlet. Check hose and opening in cover lid for obstructions and remove if present.  
Note: air must move freely to cool the blower for long life.



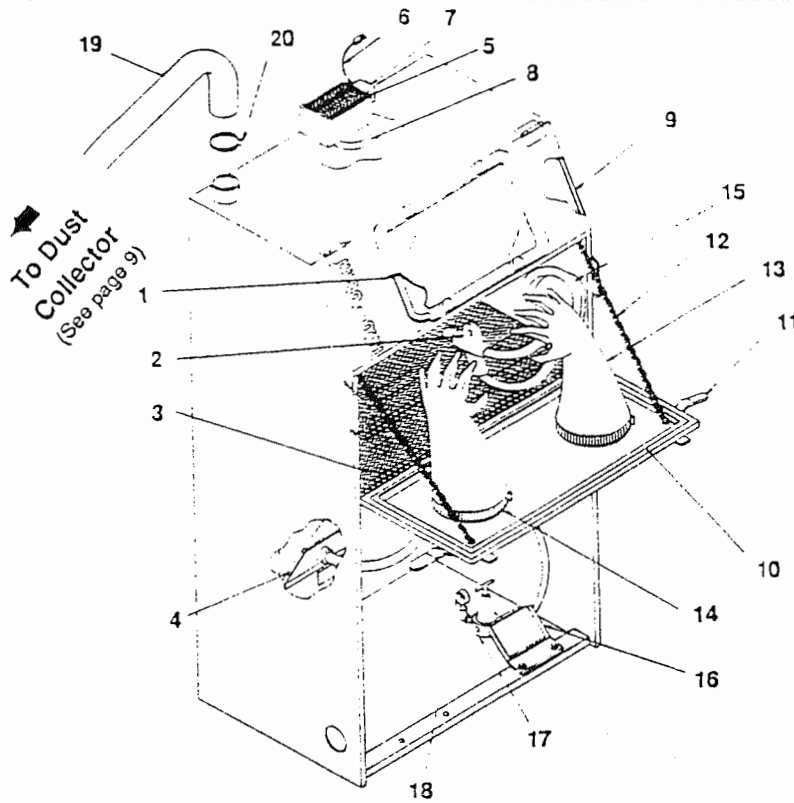
### **WARNING**

If any of the motor housing parts should become detached or broken, exposing the motor or any other electrical components, operation should be discontinued immediately to avoid personal injury or further damage to the dust collector. Unplug and make repairs before reusing.

- d) Blower is Excessively Noisy. (Note: sound levels should not exceed 80 dBa 5 feet from the collector.)
  - 1) Media may be getting past the filter and wearing out the blower components. **STOP** using immediately and check the filter cartridge and gaskets for leaks as described in 5.1 and 5.2.
  - 2) Motor brushes or bearing in blower are worn out. Unplug, disassemble blower and replace worn parts. See 9.0 for parts.
  - 3) Check for missing hushcloth in blower cover.
- e) Dust Surrounds Area. Immediately check filter and gaskets for leaks. Replace parts before resuming operation. See 9.0 for parts.

9.0 ECONO FINISH PARTS —

CABINET



- ASSEMBLY STEPS**
- Note items below marked "††" are shipped loose for customer assembly. See INSTALLATION 1.0 for additional instructions.
- Fasten right and left glove to front door using 8 inch clamps.
  - Bolt foot treadle to cabinet using existing holes. Note: treadle can be installed for right or left foot use.
  - Install gauge on foot treadle regulator if provided (Series "A" cabinet).
  - Install 2 grommets in holes on right front side of cabinet.
  - Insert hoses from blast gun down through grommets.
  - Connect air hose from back of gun to the outlet of the foot treadle assembly.
  - Connect blast hose from bottom of gun to the pipe on the cabinet's clean-out door. Adjust per section 6.3, g.
  - Install light bulb.
  - See INSTALLATION section 1.0.

ITEM	PART NUMBER	QUANTITY			DESCRIPTION	ITEM	PART NUMBER	QUANTITY			DESCRIPTION
		2430	2436	2448				2430	2436	2448	
1	140544	1	1	1	Window Assembly (1A-1E below)		521091	2	2	2	Clamp 1/2" Air Hose
1A*	510401	1	1	1	Window Safety Glass $\Delta$	††	523921	2	2	2	Grommet for above hoses
1B†	524451	1	1	1	Window Gasket, 6 ft. Section	††16	140717	1	1	1	Foot treadle assembly w/o regulator for Series "B" cabinet
1C	760291	1	1	1	Window Frame	††	140718	0	1	1	Foot treadle assembly w/ regulator for Series "A" cabinet
1D	510461	4	4	4	Window Knob	†	517031	1	1	1	Valve, foot treadle
1E	525931	4	4	4	Window Spacer	17	517301	0	1	1	Regulator, Series "A" cabinet
†† 2"	-	1	1	1	Blast Gun - see page 10	†	508201	0	1	1	Repair Kit for 517301
3	771721	1	0	0	Floor 2430	††18	550242	0	1	1	Gauge, Series "A" cabinet
	771731	0	1	0	Floor 2436	††19	515941	1	1	1	Hose 3" I.D. x 6 ft.
	771741	0	0	1	Floor 2448	††20	520521	2	2	2	Clamp, 3" Dust Hose
4	580081	1	1	1	Gasket, Clean out door	PARTS NOT SHOWN ON DRAWING:					
5	510491	1	1	1	Filter, inlet		510961	1	1	1	Spring, Clean Out Door
	510481	1	1	1	Retaining Screen		567361	1	1	1	Decal - Instructions/Warning For Door
6	529601	1	1	1	Line cord with plug		567391	1	1	1	Decal - Instructions/Warning For Cabinet
7†	534571	1	1	1	Switch, 15 A.		140377	-	-	-	Optional door interlock - see page 11
†† 8†	532701	1	1	1	Spotlight, 150 W.						
	580191	1	1	1	Gasket for Spotlight						
	532711	1	1	1	Light fixture w/gasket						
	140468	1	1	1	Light box assembly (includes items 6, 7, 8)						
9*	524441	0	6'	7'	Gasket, upper door 3/4" x 3/4" (per ft.)**						
10*	524441	8'	6'	7'	Gasket, lower door 3/4" x 3/4" (per ft.)** sides & bottom						
*	523622	0	3'	4'	Gasket, lower door 1/4" x 1" (per ft.)** top lip						
11	771641	2	2	2	Door Handle (specify right or left side)						
	509571	2	2	2	Handle Cover (specify right or left)						
12†	770691	2	2	2	Chain, 21"						
††13*	509891	1	1	1	Rubber Gloves, pair						
*	510821	-	-	-	Rubber Glove, left hand						
††14	520561	2	2	2	Clamps for glove, 8"						
15*	520861	7	7	7	Blast Hose 1/2" I.D. (per ft.)**						
†	520861	7	7	7	Air Hose 1/2" I.D. (per ft.)**						

\* Recommended Spare Part—Consumable wear item  
 † Essential component—to prevent downtime  
 \*\* Specify length  
 †† Part is shipped loose for customer assembly.  
 Econo-Finish Cabinet Options: see page 11  
 EF Systems built before 1/91 with side door: call factory  
**⚠ WARNING: REPLACE WINDOW ONLY WITH APPROVED SAFETY GLASS! OTHERWISE, SERIOUS INJURY COULD RESULT.**

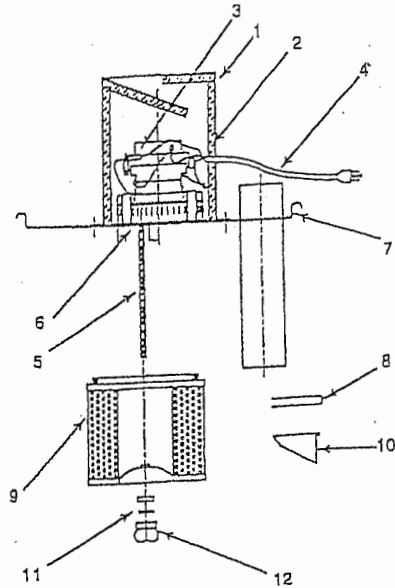


# Dust Collectors Econo-Finish® Blast Cabinets



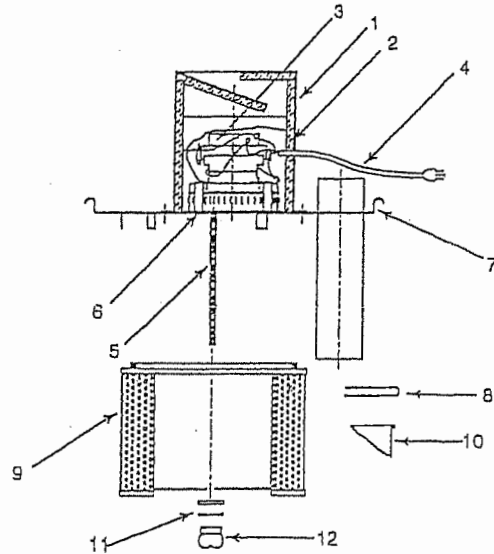
## DC-16 DUST COLLECTOR

Item	Part Number	Description
1	770963	Silencer Cover
2	580071	Hushcloth, 1/2" x 7" x 8-1/4" (5 pieces)
3	515761	Blower, 120 Volt, 60 Hz, Single Phase, 133 CFM
4	529601	Line Cord, 120V
5	770067	Threaded Rod
6	524821	Gasket, Fan Motor, DC-16, DC-30
7	770685	Lid Weldment, DC-16 & DC-30
8	504020	Ring, Locking
9	504775	Filter Cartridge, DC-16
10	504016	Drum, 16 Gallon
11	552892	Washer, Flat, 3/8"
12	553992	Nut, Wing, 3/8-16



## DC-30 DUST COLLECTOR

Item	Part Number	Description
1	770963	Silencer Cover
2	580071	Hushcloth, 1/2" x 7" x 8-1/4" (5 pieces)
3	515761	Blower, 120 Volt, 60 Hz, Single Phase, 133 CFM
4	529601	Line Cord, 120V
5	770067	Threaded Rod
6	524821	Gasket, Fan Motor, DC-16, DC-30
7	770685	Lid Weldment, DC-16 & DC-30
8	504020	Ring, Locking
9	504751	Filter, Cartridge, DC-30
10	504014	Drum, 30 Gallon
11	552842	Washer, Fender
12	553992	Nut, Wing, 3/8-16



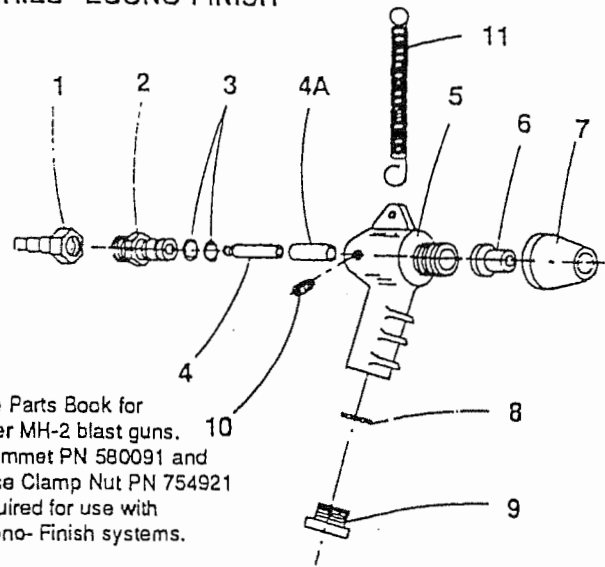
- NOTES:
- In general cleaning, the dust collector filter is not necessary. (A coating of dust on the filter helps protect it from abrasion).
  - If the visibility in the cabinet degrades due to reduced air flow, the operator should shut off the system and disconnect the power, then remove the lid assembly from the drum.
  - **DO NOT REMOVE THE FILTER**, gently shake the lid to remove the excess dust from the filter.
  - Dust Hose and Clamp shown on page 37.

## 9.0 ECONO-FINISH PARTS —

## BLAST GUNS

### MH-2A SUCTION BLAST GUN for "A SERIES" ECONO-FINISH®

Item	Part Number	Description
*††	140701	MH-2A Gun, 1/4" Di-Carb™ nozzle, 1/8" air jet
1	520402	Barbed Fitting
2	505621	Connector
3	523912	"O" Ring
4*	507391	Air Jet, 3/32" w/sleeve and O-ring (orange)
††	505661	Air Jet, 1/8" w/sleeve and O-ring (yellow)
	505671	Air Jet, 5/32" w/sleeve and O-ring (green)
	505691	Air Jet, 7/32" w/sleeve and O-ring (white)
4A	526171	Rubber Sleeve only
5	753551	Gun Body (Long handle)
6*	-	Nozzles (see below)
7††	505641	Plastic Nozzle Adapter (standard)
	504931	Steel Nozzle Adapter
8	580091	Grommet for MH-2A
	580101	Grommet for MH-2A (pkg. of 10)
9	754921	Hose Clamp Nut for MH-2A
10	551702	Set Screw, 1/4" - 20 x 3/8"
11	511251	Spring, Gun Holding (not included with gun)



See Parts Book for other MH-2 blast guns. Grommet PN 580091 and Hose Clamp Nut PN 754921 required for use with Econo-Finish systems.

#### STANDARD NOZZLES — MH-2 & MH-2A

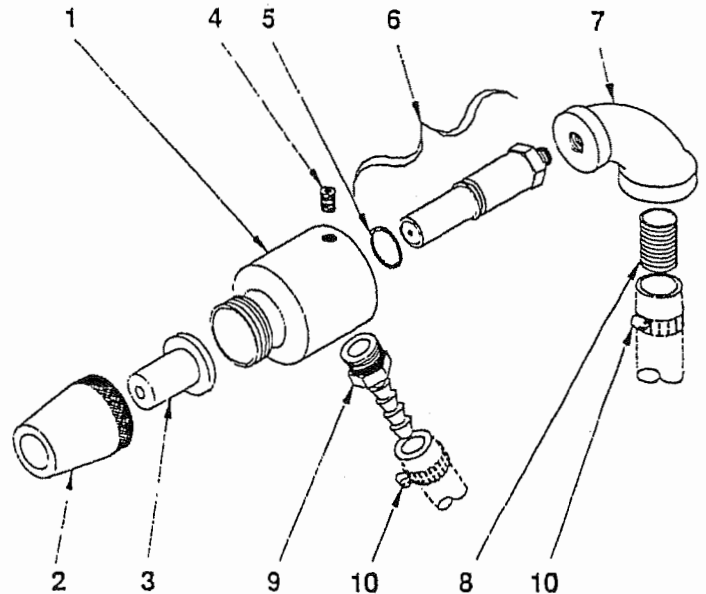
Part Number	Description
502421	Ceramic Nozzle, 1/4"
502431	Ceramic Nozzle, 5/16"
502441	Ceramic Nozzle, 7/16"
503341	Ceramic Nozzle, 1/4" (Qty. of 10)
503351	Ceramic Nozzle, 5/16" (Qty. of 10)
503361	Ceramic Nozzle, 7/16" (Qty. of 10)

#### EXTENDED WEAR NOZZLES — MH-2 & MH-2A

Part Number	Description
†† 501331	Di-Carb Nozzle, 1/4"
501341	Di-Carb Nozzle, 5/16"
501351	Di-Carb Nozzle, 7/16"
502071	Boron Nozzle, 1/4"
502081	Boron Nozzle, 5/16"
502091	Boron Nozzle, 7/16"

### MH-4 SUCTION BLAST GUN - for "B-SERIES" ECONO-FINISH®

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
•	140724	MH-4 Gun, 5/16" Di-Carb nozzle, 1/8" air jet
1	505331	Suction head
2	504901	Nozzle adapter (Ceramic & 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)
	502411	Nozzle, Ceramic, 5/16" (pack of 10)
	501311	Nozzle, Di-Carb, 1/4"
	501321	Nozzle, Di-Carb, 5/16"
	502101	Nozzle, Boron carbide, 1/4" (longest life nozzle; requires PN 504921 nozzle adapter)
4	551052	Set screw, 1/4"-20 x 3/8"
5	523891	O-Ring
6*	504811	Air jet with O-ring, 1/8" (orange)
*††	504821	Air jet with O-ring, 3/32" (yellow)
7	543912	Elbow, 1/4" x 1/8"
8	545912	Nipple, 1/4"
9	520372	Hose Barb, 1/2" hose x 3/8" MPT
10	521091	Hose clamp (not included with gun)



\* Recommended spare part - consumable wear item

† Essential component -- to prevent downtime

†† Supplied with a standard machine

#### TIPS:

- Use Di-carb nozzle for glass bead & steel medias.
- Use Boron nozzle for Aluminum Oxide, Silicon Carbide & Garnet medias.

- Nozzle is worn out when it wears to the next size nozzle diameter.
- For accuracy, measure nozzle and air jet I.D. with a drill bit.
- Rotate nozzle and air jet 90 degrees every week for extended life.
- 3/32" air jet requires apx. 2 HP compressor at 50 PSI; 3.5 HP at 100 PSI.
- 1/8" air jet requires apx. 4 HP compressor at 50 PSI; 7 HP at 100 PSI.

**10.0 ECONO-FINISH OPTIONS**

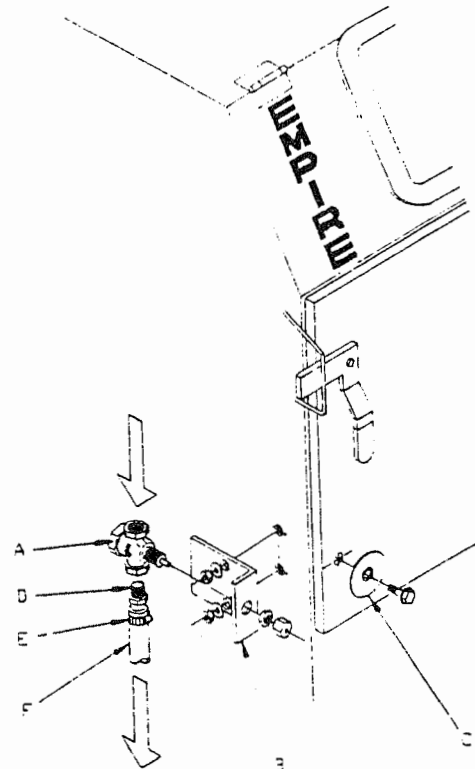
See *Econo-Finish Flyer* for complete description and specifications.

OPTION DESCRIPTION	PART NUMBER	
	B - SERIES	A - SERIES
<b>ELECTRICAL (Factory Installed)</b>		
208-240V/50-60Hz/1Ph (2 or 3 wire) (Transformer)	140341	140341
C.S.A. Canadian Certification	140433	140433
<b>OPTIONS FOR ECONO-FINISH (ONLY) - By Series, Customer Installed</b>		
Door Interlock Safety Switch (lower door)	140377	140377
Pressure Regulator, 3/8" NPT (requires PN 545972 nipple)	517301	STANDARD
Gauge for Pressure Regulator, 1/4" NPT	550242	STANDARD
Di-Carb Nozzle, 1/4" (Glass or steel media)	501311	STANDARD
Boron Carbide Nozzle, 1/4" (Harsh media)	502101*	502071**
Window Plastic	509191	509191
Window Screen	509201	509201
Safety Mat (2' Wide, Specify length)†	509002	509002
Static Strap	510411	510411
Gun Holder (Customer Installed)	N/A	140400

- \* Requires PN 504921 Nozzle Adapter (NA-1A)
- \*\* Deduct standard Di-Carb Nozzle, PN 501331.

† Use inside cabinet to protect floor & workpiece; use outside cabinet as operator mat to prevent falls.

- OPTIONAL INTERLOCK**
- 140377 Blast Interlock Assembly, EF (Customer Installed)
  - A 517031 Valve
  - B 770741 Bracket, Interlock
  - C 517812 Piston Plate
  - D 520372 Fitting, 1/2" Hose x 3/8" MPT
  - E 520502 Hose Clamp
  - F 520861 1/2" Air Hose\*\* (5 ft. required)



\*\* Specify length

**11.0 SPECIFICATIONS BY MODEL**

<b>Cabinet Model</b>	2430B	2436A	2436B	2448A	2448B
<b>Part Number</b>	114013	115011	115013	116011	116013
<b>Number of doors (Front)</b>	one	two			
<b>Opening Dimensions (w x h)</b>	29" x 14"	35" x 23"		47" x 23"	
<b>Inside Dimensions (d x w x h)</b>	24" x 30" x 23"	24" x 36" x 23"		24" x 48" x 23"	
<b>Overall Dimensions (Cabinet only, d x w x h)</b>	24" x 30" x 65"	24" x 36" x 65"		24" x 48" x 65"	
<b>Ship Weight (lb.)</b>	215	285	235	325	275

**CABINET:**

<b>Construction</b>	14 gauge steel
<b>Capacity - floor</b>	200 lbs.
<b>Window</b>	Large 14" x 22" safety glass. quick change/no tools
<b>Lighting</b>	(1) 150 watt adjustable angle spotlight
<b>Gloves</b>	(2) 8" diameter cloth lined rubber
<b>Electrical</b>	115 Volt/50-60 Hz/1 Phase
<b>Kleensweep</b>	Standard - automatically cleans window
<b>Self adjusting latches</b>	Standard - for retention of media
<b>Quick dump door</b>	Standard - for fast, easy media change

**BLAST SYSTEM:**

<b>Type</b>	Suction Blast				
<b>Control</b>	Foot Treadle (two mounting positions)				
<b>Piping</b>	3/8" NPT inlet				
<b>Media Regulator</b>	SAR-3, adjustable				
<b>Nozzle</b>	1/4" Ceramic	1/4" Di-Carb	1/4" Ceramic	1/4" Di-Carb	1/4" Ceramic
<b>Gun/Air Jet</b>	MH-4 / 3/32"	MH-2A / 1/8"	MH-4 / 3/32"	MH-2A / 1/8"	MH-4 / 3/32"
<b>Pressure Regulator/Gauge</b>	option	standard	option	standard	option

**DUST COLLECTOR:**

<b>Model</b>	DCM-10C	DC-A	DCM-10C	DC-A	DCM-10C
<b>Type</b>	Cartridge				
<b>Size</b>	10 gallon	28 gallon	10 gallon	28 gallon	10 gallon
<b>Ventilation CFM</b>	133 CFM (0.98 HP)				
<b>Electrical</b>	115 Volt/50-60 Hz/1 Phase				
<b>Silencer</b>	Standard				

**AIR REQUIREMENTS (SCFM)**

Gun	Operating Pressure	40 psi	60 psi	80 psi	100 psi
MH-4	1/4" ceramic nozzle, 3/32" air jet	7	10	12	15
MH-2A	1/4" di-carb nozzle, 1/8" air jet	12	17	21	26
—	5/16" nozzle, 5/32" air jet	19	27	34	42

To determine the amount of SCFM your compressor can produce, use the following guideline: 1 horsepower = approximately 4 SCFM of air.

Different nozzles and air-jet sizes are available for the blast guns to broaden blast patterns, increase finishing rates, or to conserve compressed air. Use of Di-carb and Boron nozzles will extend the nozzle life. Consult your distributor and the air-requirement chart for appropriate nozzle and compressor sizes.



## WARNINGS

### 12.0

**IMPORTANT:** Your system was equipped with safety warning labels at the factory. Call your distributor or Empire for replacements if the original decals are missing or illegible.

For proper operation or maintenance, read operating instructions before using. Failure to follow safety procedures constitutes product misuse.

- a) Anchor blast cabinet to floor, or cabinet may overturn onto operator (use existing anchor pads.)
- b) Do not use front door as a loading shelf, or workpiece may fall on operator. (max wt.: 20 lbs.)
- c) Do not blast with open doors, or particles may injure personnel.
- d) Do not defeat or by-pass any safety device. Do not use with doors open.
- e) Use only Empire supplied replacement parts, including safety glass window, hoses, couplings, coupling screws, etc. Use appropriate grade (standard or heavy duty) for replacement parts.
- f) Do not disassemble or modify any part of the machine without first reading the Operating Instructions; observe warnings and use common sense. Remove electrical and pneumatic power before servicing. Electrical work should be performed by a licensed electrician. Consult your local distributor or Empire's Technical Services group if you have questions.

- g) Wear dust mask when emptying collector and when changing filters.
- h) Air discharged from properly maintained Empire dust collector and filters will meet OSHA emission levels for "nuisance dust". Dust containing toxins will require secondary filtration.
- i) Consult factory if dust to be filtered is classified per OSHA as other than "nuisance dust", as listed in "Title 213 code of federal regulations part 1910.1000," or may otherwise present an operator hazard. Note: dust is generated from blasting media, removed coatings and substrates. Do not use silica sand. Silica sand can cause silicosis, a fatal lung disease.
- j) An extreme concentration of organic dust particles may be combustible in the presence of a spark. Clean and empty the dust collector and clean the blast cabinet often. Do not use organic media that has very high dust content after use.
- k) **BE AWARE OF HAZARDS AND TAKE NECESSARY PRECAUTIONS. FAILURE TO FOLLOW INSTRUCTIONS AND WARNINGS CAN BE HAZARDOUS TO THE SAFETY AND HEALTH OF YOU AND OTHERS.**
- l) Failure to follow these warnings may also damage the system and void your warranty.

For more information, parts, and service, contact your local Empire distributor, or call Empire.

## SAFETY TIPS

Most accidents around blast cabinets result from improper handling of the work piece or poor housekeeping and maintenance. The blast cabinet operator must always be certain the workpiece is free of obstruction or hazards that can hinder work safety.

- Make sure the floor around the blast cabinet is free of loose abrasives. Some types of abrasive, especially spherical glass beads and steel shot, can cause falls and are very slippery no matter what footwear is worn. Safety floor mats, offered by Empire, can reduce this hazard significantly. By promoting good housekeeping and using safety floor mats, the potential fall hazard can be greatly reduced.
- Check the viewing window in the blast cabinet frequently for excess pitting and cracks. If the window needs replacement, insist on using approved Empire safety glass. Inferior glass tends to pit quickly and may shatter causing body or facial injuries. A new or properly inspected window will improve the blast cabinet operator's work efficiency and safety.
- Check and replace gloves on a scheduled basis. Before using the cabinet, the operator should check for worn spots in the gloves. Gloves should be replaced before actual holes develop.
- Watch for loose or worn media hose and fittings. Replace as needed. Watch for soft spots in the hose at sharp bends. For longer hose life, avoid sharp bends in media hose.
- All cabinet components are specifically designed to operate up to 125 PSI. Never exceed this limit. In addition, higher pressures can damage the metal and result in premature wear of the blast gun, fittings, valves and components. For operation safety and economy, pressure shouldn't exceed 100 PSI.

- The area around the cabinet should be well lit. In addition, the light bulb in the cabinet should be functioning properly. Remember, you can work more efficiently and safely with proper lighting.

Operators of blast cabinets can sometimes experience disconcerting static electricity shocks when blasting. This is especially true in dry winter months. The solution is to be sure there is a constant path to ground. Follow these tips to protect your operator:

- 1) The blast cabinet should be connected to an earth ground. Connect the blast cabinet's sheet metal to a nearby metal water pipe using a minimum #10 AWG wire.
- 2) Be sure you are using genuine Empire blast hose and gloves. (Look for the imprinted name "Empire".) The compound used in Empire hose and gloves is static dissipating. Empire gloves are also felt lined to absorb the perspiration that aggravates a static problem.
- 3) Empire's two foot wide safety floor mat (PN 509002, sold per linear foot) is compounded with carbon black to safely dissipate static electricity over a broad area under foot. The static strap (PN 510411) is a velcro® cuff with a wire attached. It connects the operator's wrist to the sheet metal of the machine to steadily dissipate charges at the point where electrical arcing causes operator discomfort.
- 4) Your cabinet must be wired into your electrical source per up-to-date operating instructions by a licensed electrician using proper materials, methods and local codes. Do not confuse the earth ground (discussed above) with the ground wire used to protect the machine's electrical circuit. If you suspect that your problem is not mere static electricity, stop using the machine until it is thoroughly checked by an electrician.

If you have questions, please contact your local Empire distributor for service, or call Empire's Technical Services Department.

## Condensed OPERATING INSTRUCTIONS\*

### Empire Blast Cabinets

## BEFORE-USE CHECKLIST

1. Make any repairs and replace worn parts (nozzle, hoses, etc.). See Operating Instructions Manual for precautions and maintenance schedule.
2. Check media level and condition. Don't overfill.
3. Clean dust filter(s) ( four hour intervals or more frequently). Blower must be "off".
4. Empty dust collector. Clean out cabinet.
5. Turn cabinet switch "on".
6. Make sure air compressor is "on".
7. Check blasting pressure.
8. Check media regulator adjustments.

## SHUTDOWN

1. Turn cabinet switch "off".
2. Turn compressed air "off". Drain receiver tank.†
3. Follow steps 1 through 4 above.  
† If applicable

## DO NOT

- Blast wet, oily or greasy parts.
- Add media until level is checked.
- Blast at the glass to check media flow.

NOTE: Use clean, dry compressed air only!

# EMPIRE

ABRASIVE EQUIPMENT COMPANY  
2101 WEST CABOT BLVD., LANGHORNE, PA. 19047-1893 USA  
• (215) 752-8800 • FAX (215) 752-9373  
• TELEX 831-378 • EASY LINK 62954372

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