

Model AR ArrestAll

Self-Contained Dust Collector

Installation, Operation, and Maintenance Instructions



A. GENERAL

The AR Arrestall self-contained dust collector is a compact and efficient unit designed to control intermittent low to medium volume dry dust sources. It is cleaned off-line. The unit includes an air mover and can be relocated as regulred.

It is available as a bin vent, flat bottom, hopper bottom, funnel bottom, or downdraft bench arrangement on selected sizes ranging in volume from 150 to 11,500 CFM. Fabric cleaning is accomplished by means of a shaker mechanism. Each collector is furnished with fan, motor, housing, filter cartridge(s), and shaker mechanism, either manual or automatic. A variety of optional items is available.

Read this entire brochure and check each carton and crate against the shipping sheet (AAF Form 1281) before beginning assembly work. **DO NOT** store the AR Arrestall dust collector outdoors.

SHIPMENT

The AR Arrestall collector is packaged for domestic transit and shipped FOB factory. Notify your carrier immediately if there is any damage or discrepancy in the shipping papers.

Sizes AR-10 thru 35 are shipped fully assembled. Sizes 40 and larger flat, funnel and hopper bottom units are shipped in two major assemblies — see "Installation" for proper field assembly. Options such as inlet transitions, weather hoods and the filters for the final filter housing for sizes AR-30 thru AR-55 are shipped separate for field installation.

FOUNDATIONS

The foundation must be level and adequate to support the collector's operating weight including dust load, discharge devices, wind load if applicable, plus any auxiliary equipment if applicable.

SPACE REQUIREMENTS

Unit location will be determined by system design, space available and access requirements. Access to the front of the unit for sizes AR-10 thru AR-55 is necessary for dust removal and cartridge replacement. On sizes AR-60 thru AR-75, access doors are provided on both sides. However, access to both sides is not required since dust removal and cartridge replacement can be performed from either side. Note: If access is required from one side only, the cartridge latching levers (which are shipped loose for field installation) must be installed on that side. Top access is re-

quired for motor and fan service and side access is required for shaker component service.

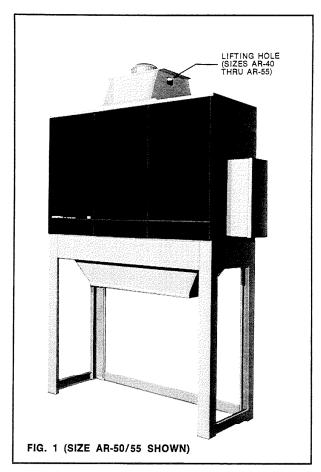
Explosion vents, if furnished, are located on the side opposite the access door(s) for sizes AR-20 thru AR-55 and above the access doors on both sides for sizes AR-60 thru AR-75. It is recommended that the vents be ducted outside and away from any area containing personnel or equipment. Duct flange(s) can be match drilled to the collector housing wall.

HANDLING

The AR-30 and 35, which are shipped on their side, should be manually lifted into the upright position when uncrating.

For sizes AR-40 thru AR-55, which ship in two factory pre-assembled components (except for the bin vent unit), lifting holes are provided for the top section on the fan motor mounting bracket (Fig. 1). Spreader bars should be used. Fork truck handling should be sufficient for the bottom section.

For sizes AR-60 thru AR-75, the top section is provided with 4 lifting lugs (1 at each corner). Again, spreader bars should be used and fork truck handling of the bottom section should be sufficient. Shipping weights are listed in the table in Section H.



B. INSTALLATION

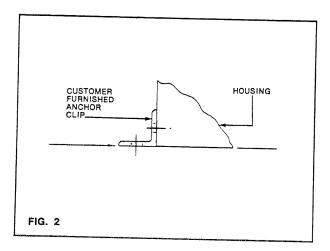
The AR Arrestall dust collector is not designed to support inlet and/or outlet ductwork. The duct(s) should be connected to the collector with flexible connections to eliminate vibration transmission.

Close coupling a duct elbow to the collector inlet may result in an uneven velocity profile. This condition could cause previously collected material to be re-entrained. Three to four duct diameters length of straight run will give an even air flow distribution at the inlet.

ANCHORING

The AR Arrestall collector is designed for installation on a flat surface. UNITS MUST BE SUITABLY ANCHORED. Anchor holes are provided in the base of the size AR-30 and AR-35 funnel bottom models. For sizes AR-40 and larger, funnel and hopper bottom units, anchor holes are provided at the base of the support legs.

Holes drilled in the flat bottom base should be gasketed or caulked to prevent air bypass. Usually, setting the AR-10 and AR-20 on four rubber pads is sufficient. One recommended method of anchoring for flat bottom units is as shown in Fig. 2.

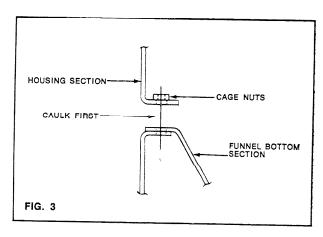


INLET BLANK-OFF INSTALLATION

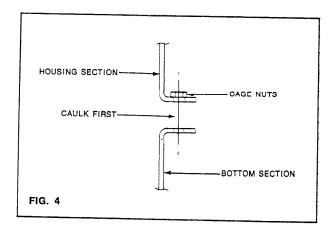
Inlet transitions and blank-off panels are shipped loose. Attachment hardware is furnished. Caulking is required.

FIELD ASSEMBLY OF MAJOR COMPONENTS — AR-40 AND LARGER

Funnel Bottom Units — Cage nuts are furnished on the inside of the flange on the housing section (Fig. 3). Assemblies can be bolted-up from the outside of the unit — interior access is not required. Hardware and caulk are furnished.

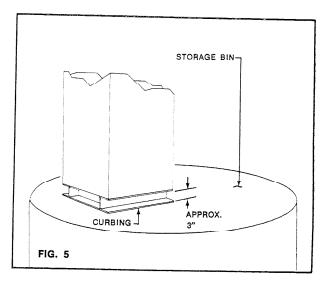


Flat and Hopper Bottom Units — Cage nuts are furnished on the inside of the flange on the housing section (Fig. 4). Access thru the inlets and cartridge access doors is required for bolt-up. Hardware and caulk are furnished.

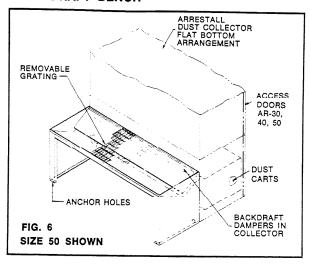


BIN VENT UNITS

To insure from possible damage to the unit from water ponding, it is recommended that curbing be used on any bin vent installation (Fig. 5).

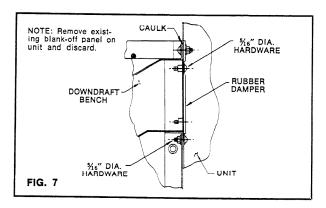


DOWNDRAFT BENCH



The bench portion of the AR Arrestall Downdraft bench ships separately for field assembly. The unit is designed for installation on a flat surface and suitable anchoring is required. Anchor holes are provided for the bench portion at the base of the support panels. For proper anchoring of the dust collector portion, refer to page 3 of this manual.

Standard accessories such as the transition for the size 20, connecting elbows and adaptor panels for sizes 30 thru 50, and backdraft dampers for all sizes are shipped loose for field installation with the caulk and attachment hardware provided. Figure 7 shows the typical installation of the bench and backdraft damper on the Size 40 Downdraft Bench.



Optional side, back and partition screens are shipped loose for field assembly. These screens incorporate an interlocking channel framing system which makes them suitable for the addition of an acoustical or pressboard panel.

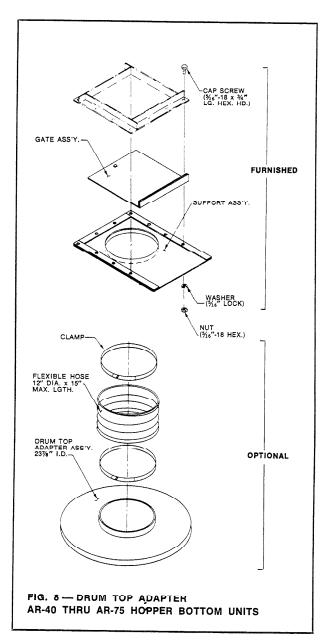
For further downdraft bench installation instructions, refer to drawing numbers U68P-1419084 and U68P-1419407 which are contained in the instruction package received with the unit.

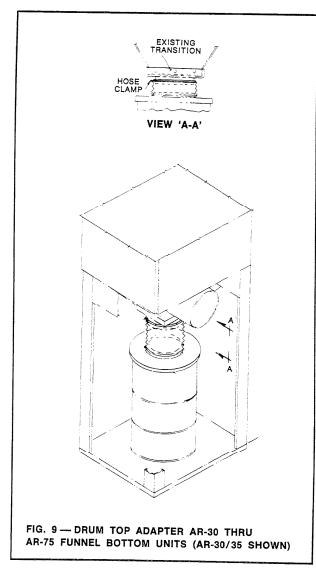
SLIDE GATES AND DRUM TOP ADAPTERS

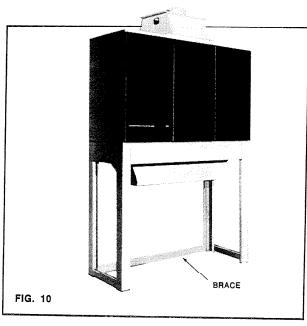
Slide gates are standard equipment and shipped installed on the AR-40 to AR-75 hopper bottom units. Drum top adapters are optional equipment and are attached to the slide gate mating flange by a clamp (Fig. 8).

Slide gates used alone should be closed while the collector is operating. When used in conjunction with a drum top adapter, the slide gate may be open as long as a drum is in place.

Drum top adapters for the AR-30 and larger funnel bottom units are standard equipment, shipped loose, and are attached to the mating collar on the funnel outlet by a clamp (Fig. 9).







RELOCATION OF SUPPORT LEG BRACE

The bolted-on support leg brace located at the base of the AR-40 thru AR-55 funnel bottom and hopper bottom units can be relocated as needed to the opposite side for convenience in drum handling (Fig. 10).

Likewise, the intermediate brace located at the base of the AR-60 thru AR-75 funnel and hopper bottom units can be relocated to the front or rear as needed.

C. ELECTRICAL INSTALLATION

Refer to the wiring diagram furnished with the equipment. The major electrical components are the fan motor and automatic shaker motor and control. Automatic shakers are standard on sizes AR-30 and larger and optional on sizes AR-10 and AR-20. Field wiring is standard and factory wiring is an option.

The fan motor should be connected to the power source through a fused disconnect, or combination motor starter with a rating sufficient to protect the motor. Note: The starter must contain an extra set of normally closed contacts to actuate the shaker control cycle. Refer to the fan motor junction box for proper wiring connections. Check the fan rotation against the rotation arrow for correct motor connections. Fan rotation should always be clockwise when locking down from the top of the motor.

If incorrect, change the motor leads as indicated on the motor wiring instructions. Provide adequate grounding of unit.

If the collector is furnished with an automatic shaker, it will have a fan motor, shaker motor, and a control panel containing a solid state timer. The control board furnished on automatic shaker units requires 115 volt, 60 hertz, single phase power.

D. ACCESSORIES

INLET TRANSITIONS -- AR-10 THRU AR-35

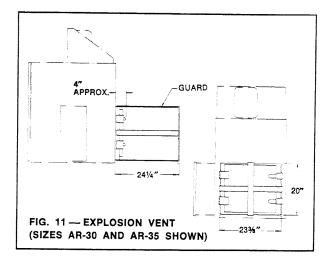
Inlet transitions are furnished with the AR-10 thru AR-35 flat bottom units. These rectangular to round duct sections are shipped loose and must be well caulked and attached using the hardware provided. Duct diameters are 4", 7" and 10" on the size AR-10, AR-20 and AR-30/35 respectively.

Inlet transitions for sizes AR-40 and larger hopper and flat bottom units are provided as standard equipment. They are shipped separately and must be field installed.

All funnel bottom units are furnished with factory installed round inlet pipes.

EXPLOSION VENT

The optional explosion vent(s) available for sizes AR-20 and larger is factory installed. A guard to contain and prevent damage from a rapidly opening vent is also provided as a separate item for field installation (Fig. 11). Explosion vents should be installed in accordance with local, national and all other applicable codes.



CASTER BASE

Set unit in caster base (available for AR-10 flat bottom only).

DRUMS

55 gallon drums, when ordered, are shipped separately.

Note: 55 gallon drum removal is only possible from the sides on sizes AR-30 and AR-35 funnel bottom units.

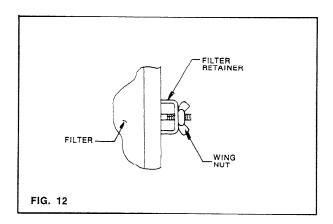
FINAL FILTERS

The final or secondary filter option consists of an outlet enclosure, final filter cartridge and sealing mechanism.

On sizes AR-10 and AR-20, the filter enclosure and filter cartridge are shipped installed.

For sizes AR-30 thru AR-55, the filter enclosures are shipped installed while the filter cartridges are shipped in separate cartons to ensure their protection. The filter(s) are installed in the outlet opening of the enclosure against its gasket surface and secured with a cross bar and fastener assembly (Fig. 12). The filter(s) **MUST** be installed with the corrugated separators vertical.

The final filters for sizes AR-60 thru AR-75 are supplied in side access enclosures and should be installed in the return air ductwork.



WEATHER PROTECTION

Weather protection is available for sizes AR-20 and larger. A separate rain hood for the size AR-20 is furnished for the outlet which is shipped loose for field installation with caulking and attachment hardware.

An additional top enclosure is available for sizes AR-30 thru AR-50 which is mounted to the top of the unit. For sizes AR-55 thru AR-75 the top enclosure is included as standard equipment. An optional hood is available when return air ducting is not used.

When the units are located outside and the air is to be recirculated back to the building, the return air ductwork is merely brought to the outlet on the top enclosure of the unit. Check all mechanical and electrical connections and caulk as required.

E. OPERATION

The primary function of the Model AR Arrestall Dust Collector is to move air and thus, create suction and remove the dust from that air. As a dust cake develops on the fabric surface of the collector, pressure drop will rise and airflow will be reduced. Normally, the unit is shaken with sufficient frequency to preclude significant loss of suction. The fan must always be turned off before shaking.

Frequency of dust removal from bins or barrels should be determined from experience and an appropriate maintenance cycle established. Because of the intensity of shaking, it is imperative that all doors be properly latched and that the drum covers be securely affixed to prevent leakage.

If the hand-off-auto switch has been furnished, the frequency of shaking can be controlled. It is recommended that shaking be minimized to extend the life of the filter cartridge and mechanical components. This is especially pertinent to installations where the unit might be turned on and off

numerous times during the day such as in a school woodworking shop. In the "auto" position, the unit shakes every time the unit is turned off. In the "off" position, shaking can be actuated anytime the switch is pushed toward the "hand" position.

The duration of the shaking process is adjustable from 6 to 60 seconds (factory set at approximately 15-20 seconds) with an initial fan coast delay which is adjustable from 10 to 20 seconds (factory set at 20 seconds) — see Figure 19.

For cold weather applications, it is especially important to allow the collector to operate for an extended period of time before shaking.

SHAKER CONTROL BOARD

The A-6209 printed circuit board uses complimentary metal-oxide semi-conductor (CMOS) technology in a dual timer application.

The unit must have 115VAC connected to terminals L1 and L2, and earth ground connected to terminal G. A load requiring 115VAC @ 8 amps or less is connected between terminals T1 and T2. When the control contact closes between terminals 3 and 4 the unit begins its cycle. The cycle begins With an adjustable 10-20 second delay to allow for fan coast time. At the end of the first delay, the output relay will energize supplying 115VAC @ 8 amps to terminals T1 and T2. The output will remain energized for a second adjustable delay of 6-60 seconds for shake time. At the end of the second delay the relay de-energizes droppingout the load completed between T1 and T2. Another cycle will not begin until the control contact between terminals 3 and 4 closes again.

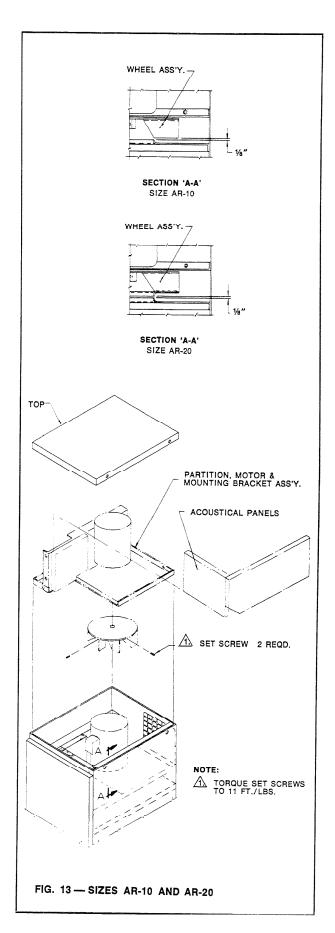
MANUAL SHAKER - SIZES AR-10/20

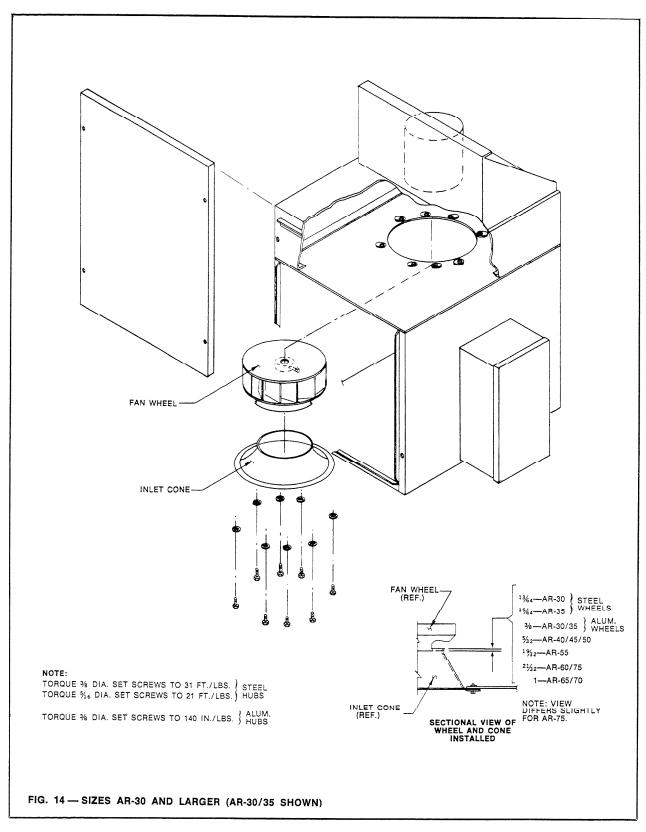
The hand crank for the shaker mechanism on the sizes AR-10 and AR-20 rotates in the clockwise direction.

F. MAINTENANCE

FAN AND MOTOR REPLACEMENT

AR-10 and AR-20 — Fan and/or motor replacement requires removal of the top plate (Fig. 13). Lock out electrical power to the motor. Remove the mounting bolts and lift the top plate away. By removing the appropriate bolts, the complete partition, fan, motor and mounting bracket assembly can be removed from the unit. A wheel puller may be required for replacement of the fan wheel.





AR-30 and larger — Fan and/or motor replacement requires access from inside the unit (Fig. 14). Lock out electrical power to the motor. Remove the filter cartridge(s) through the front access door(s). Re-

move the fan inlet cone. The fan wheel is now accessible for replacement. The fan motor is removed from the top of the unit.

SHAKER MOTOR REPLACEMENT (AR-30 THRU AR-75)

WARNING: DISCONNECT POWER BEFORE STARTING

STEPS:

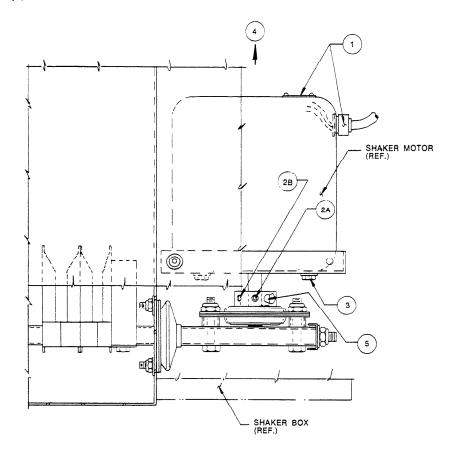
- Remove motor terminal cover and disconnect wires. Remove cable connector and wires from motor.
- (2) Loosen bearing locking collar as follows:
 - A. Loosen set screw.
 - B. Rotate bearing so that hole without set screw faces you. Place a punch in hole and sharply tap punch in a CCW direction. If collar doesn't loosen, sharply tap in a CW direction to loosen. (Repeat if necessary.)

- (3) Loosen and remove motor mounting bolts.
- 4. Lift and remove motor. Eccentric (on motor shaft) should disengage from bore of bearing. Bearing will remain in flanges.
- S Remove eccentric from shaft by loosening two (2) set screws.

To reinstall, reverse above procedure.

NOTE: Install motor with electrical terminals accessible.

After reinstalling all parts, rotate bearing several turns by hand to insure equally free movement throughout rotation.



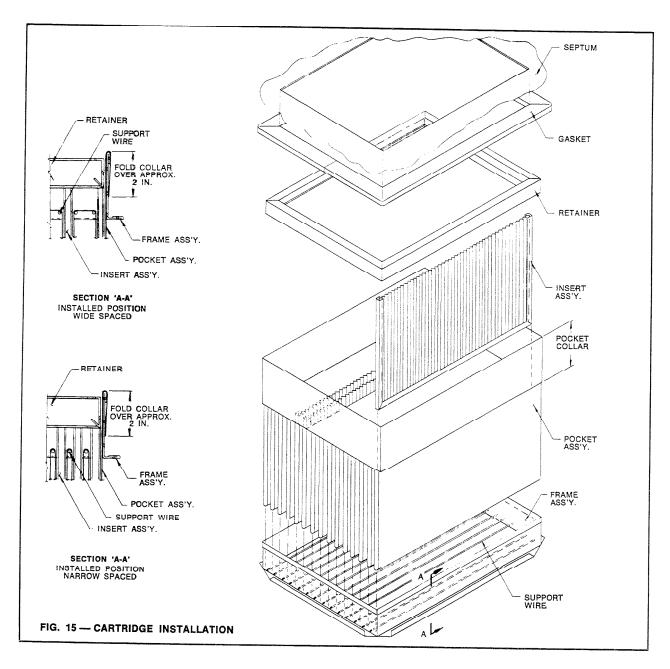
LUBRICATION

Follow the motor manufacturer's recommendations for lubrication procedures for the fan and, for automatic shaker units, the shaker motor.

Belted drive units with final filters are supplied with external fan grease fittings located at the front

top center of the unit. Otherwise, all lubrication fittings are accessible.

Bearings on belted units should be lubricated with #2 grease every two months.



CARTRIDGE

All units are shipped with cartridges factory installed. The shaker has been designed to tightly hold each filter pocket in order to distribute maximum shaking force. Therefore, cartridge removal may require individual handling of pockets until they are free from the shaker assembly.

Refer to Fig. 15 for insertion of the pocket assembly into the frame assembly. The corrugated inserts must be retained for use with new cartridges. Do not throw them away.

When re-installing new cartridges, align the individual pockets with the appropriate shaker bar openings and uniformly push the entire assembly until seated. Each cartridge is locked and sealed in place by two lever actuated assemblies.

CARTRIDGE GASKET

Cartridge Gasket should be replaced when worn or damaged. It is recommended that the gasket be replaced whenever new cartridges are installed. Glue the gasket to the underside of the septum around the edges of the opening (splice located in front).

EXPLOSION VENTS

Latches must have the explosion-venting feature tested periodically to insure that corrosion and/or build-up of foreign materials has not affected the mechanism. Under normal operating conditions, lubricate the bearing pin within the laminated cam with a light (SAE 10-30) oil every 6 months.

Refer to Bulletin CAD-3-410B2 for additional maintenance instructions.

INSTALLATION AND ADJUSTMENT PROCEDURE FOR BELT DRIVE

STEP 1

After placing the set of matched belts in the sheave grooves, take up the slack in the belts by turning the adjustment bolt in the motor mounting

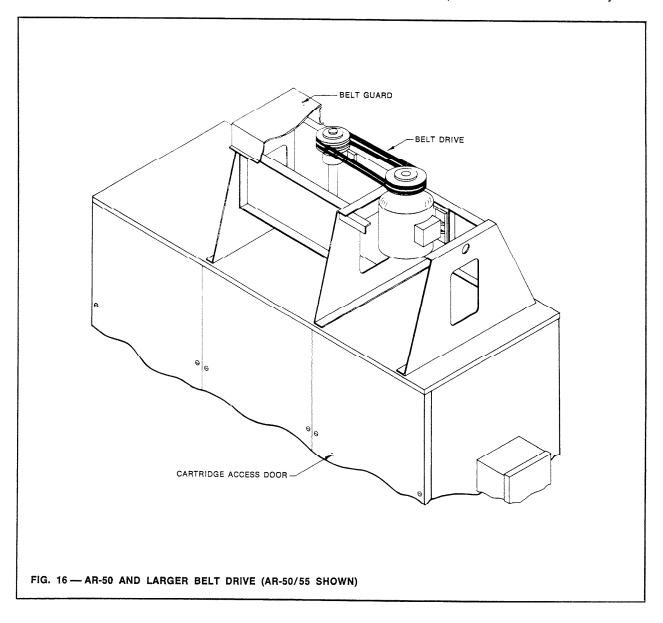
base. Then start the drive. Tension the drive until the belts have only a slight bow in the slack side of the drive while it is operating under load.

STEP 2:

Stop the drive and measure the belt span (see Fig. 17). Using a spring scale, apply a force to any of the belts in the center span .The force should be perpendicular to the span and toward the center of the drive. Measure the force required to deflect any one of the belts $\frac{1}{64}$ " for every inch of span length. For example, the deflection for a 32" span would be $\frac{1}{64}$ " multiplied by 32, or $\frac{1}{2}$ ".

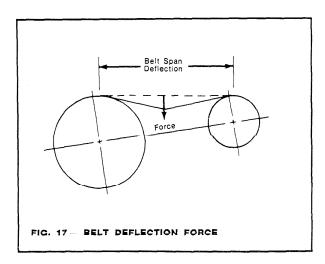
STEP 3:

The amount of force required to deflect the belt should be $4-5\frac{1}{2}$ pounds. There will normally be a



drop in tension during the first 24 to 48 hours of operation. During the "run-in" period, the belts seat themselves in the sheave grooves and the initial stretch is removed. After a day or two, the drive should be stopped again and another check made for the correct amount of belt tension.

Note: Tension new drives at the maximum deflection force recommended. Check the tension at least two times during the first day's operation as there normally will be a rapid decrease in belt tension until belts have run in. Check the tension periodically after the first day's operation and keep tension in recommended area. The correct operating tension for a V-belt drive is the lowest tension at which the belts will not slip under the peak load conditions.



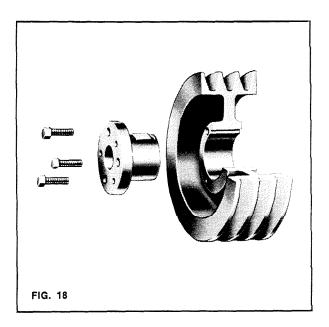
SPLIT TAPER BUSHING REMOVAL AND INSTALLATION (FIG. 18) (BELT DRIVE UNITS)

REMOVAL

- 1. Remove capscrews.
- 2. Put two capscrews in push-off holes in flange. Tighten until sheave has loosened.
- 3. Remove sheave from shaft.

INSTALLATION

- Put bushing loosely in sheave and start capscrews.
- Place sheave on shaft and line up drive along edge of both sheaves.
- 3. Tighten capscrews per instructions furnished with bushings.



FAN BEARING REPLACEMENT PROCEDURE — AR-50 AND LARGER BELT DRIVE

- Turn adjusting screw in motor base to loosen belts.
- 2. Remove sheave from fan shaft.
- 3. Remove set collar.
- 4. Note exact position of bearings before removing.
- 5. Remove bearings by loosening mounting bolts and Skwezloc rings and slide up off shaft.
- Install new bearings with Skwezloc ring on top and pillow blocks against stops.
- 7. Replace set collar, sheave and belts.
- 8. Adjust belt tension.

G. TROUBLE SHOOTING

1. VISIBLE DISCHARGE

Improperly installed cartridge

Insure that the cartridge(s) is properly locked and sealed in position. Check for worn or torn pockets and replace cartridge if required. Check for possible damage to the cartridge sealing gasket(s).

2. INSUFFICIENT SUCTION OR EXHAUST

High pressure drop

See cartridge problems.

Fan direction of rotation

The incorrect fan rotation will not provide sufficient static pressure or volume and could cause motor everload.

Fan belt slippage (belt drive units only)

Tighten the belt if necessary.

Leaks

Infiltration of air from leaking ductwork, access doors, explosion vents, dust discharge devices, or housing will cause insufficient suction. Seal any leaks.

Closed air passages

Clogged ducts or closed dampers or gates will shut off or reduce the air flow.

Undersize ducts

Duct size should be per the design specification. Undersize ducts produce high static pressure, restricting the air flow.

Improper shaker cycle

If furnished with automatic shaker, check electrical components for correct operation. Adjust shake time if required (normally 15-20 seconds). If equipped with manual shaker, shake cartridge more often and/or more completely as required. Check for mechanical restrictions which could hinder the performance of the shaker.

3. CARTRIDGE PROBLEMS (BLINDING, POOR LIFE, FAILURE, ETC.)

Checks and Remedies

- Check actual operating temperature of system against design temperature.
- 2. Check for high operating humidity, free moisture, etc. Check for low relative humidity and static electricity.
- 3. Check for shrinkage or stretching.
- Review physical and chemical characteristics of collected dust, gas stream and fabric.
- Check for material bridging in hopper. Material build up into cartridge area can overstress elements.
- Incorrect cartridge installation can cause wear by alllowing friction between adjacent elements or between outside elements. Adjust as required.
- Check for system design changes in air volume, dust loadings, etc. Adjust as required.

4. ELECTRICAL

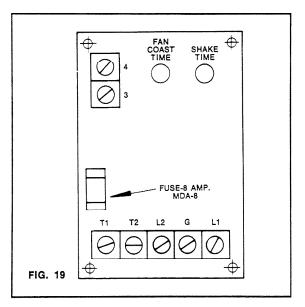
Field Service Test Procedure for the Shaker Control Board: (Fig. 19)

 Remove power and any contact closure on 3 and 4.

- 2. Disconnect load from terminals T1 and T2.
- 3. Apply power leaving 3 and 4 open.
- Using a VOM or a DVMM measure voltage between L1 and L2.

If this voltage is between 100VAC and 130VAC then go to step #5; otherwise check the following:

- a. check wires connecting to L1 and L2.
- b. check any fuses in line L1 and L2 (external to P.C.B.)
- c. check all devices which supply voltage to the P.C.B. at terminals L1 and L2.
- 5. Remove power and reconnect load.
- 6. Apply power to L1 and L2.
- Measure voltage between T1 and T2. If there is a voltage reading, contact your local AAF representative, otherwise continue.
- 8. Close the contact between 3 and 4.
- After the first delay of 36 seconds maximum (typically 20 seconds) make sure the load is on and a voltage of 100VAC to 130VAC can be measured between terminal T1 and T2. If this doesn't happen then check the following:
 - a. Connection to the load.
 - b. The fuse on the P.C.B.
 - c. Make sure the load doesn't exceed 8 amps.
- After the second delay of 90 seconds maximum (typically 17 seconds) the load should turn off.



H. SHIPPING INFORMATION

	SHIPPIN	G WEI	GHTS	IN PO	UNDS	— мс	DEL .	AR AF	REST	ALL					
		DIRECT DRIVE							BELTED						
DESCRIPTION		AR-10	AR-20	AR-30	AR-35	AR-40	AR-45	AR-50	AR-55	AR-50	AR-55	AR-60	AR-65	AR-70	AR-75
Bin Vent Unit		T -	_	460	475	960	995	1310	1405	1480	1565	2435	2645	3100	3360
Flat Bottom Unit	Upper Section	175	370	500≄	515*	910	940	1260	1460	1430	1565	2250	2380	2900	2980
	Lower Section					485	490	665	660	660	665	950	950	1280	1280
Funnel Bottom Unit	Upper Section	-	_	570	580	910	940	1260	1460	1430	1565	2250	2380	2880	2980
	Lower Section					235	240	320	315	315	315	650	650	870	870
	Upper Section	_	-	_	-	910	940	1260	1460	1430	1565	2250	2380	2880	2980
Hopper Bottom Unit	Lower Section					420	425	530	535	530	535	880	880	1120	1120
Downdraft Bench		† Τ=	205	180	_	300		420	575			_		_	_
5 Section		-	-	-	-	-	-		730	-		-	_	-	_
Side, Rear Shields			36	36	_	48	_	60	72	_		_	_		_
Dropout Chamber Hopper Type Funnel Type		_	_	_	_	580 395	580 395	765 555	765 555	765 555	765 555	_	_	_	_
Explosion Vents Afterfilter		40	45 40	45 85	45 85	90 245	90 245	135 330	135 330	135 330	135 330	180	180	270	270
Weatherproofing Rain Hood		_	5	35 10	35 10	45 15	45 15	60 25	10 25	50 25	 25	30	30	40	40
Electrical Options: NEMA 4 w/o Starter NEMA 9 w/o Starter				4 0 70	4 0 70	30 60	30 60	30 60	30 60	30 60	30 60	40 70	40 70	40 70	40 70
NEMA 1 w/Starter NEMA 3R w/Starter		5 —	5	15 15	15 15	75 80	75 80	75 80	75 80	75 80	75 80	90 100	90 100	90 100	90 100
NEMA 4 w/Starter NEMA 9 w/Starter		5 25	5 25	50 80	50 80	80 100	80 100	80 100	80 100	80 100	80 100	100 125	100 125	100 125	100 125
Top Back Inlet Box Inlet Transition Caster Base		15 5 25	5	5	5	_		_ _ _	_	_	_	_	_	_ 	_
Slide Gate w/Drum Top Adapter		_	-	_	_	70	70	70	70	70	70	140	140	140	140
Shipping Point			Elizabethton, TN								Louisville, KY				

NOTES:

- * Weights listed are for units with dust trays. For units with dust carts, add 180 lbs.
- 1. Weights listed include crating and/or packaging.
- 2. Afterfilter weight includes filters.
- 3. 55-Gallon drums weigh 45 lbs. each.
- 4. All sizes ship with cartridges installed.
- 5. Explosion vents, weatherproofing and afterfilter housings ship installed. Afterfilters ship separately in cardboard cartons. Rain hoods, inlet transitions and drum top adapters ship separately.

I. REPLACEMENT PARTS

The following is a list of recommended replacement parts for an AR Arrestall. For multiple collector systems, the quantities of each spare part should be adjusted accordingly.

AR Arrestall Size	Cartridge	Control* Timer	Timer° Fuses	Shaker* Motor	Impeller	Fan Motor	Pocket	Inserts	Cartridge Retainer	Shaft	Bearing
							Wide Spacing	Narrow Spacing	& Frame Assy.		
10/20	1	1	2	1	1	1	10	15	1	_	
30/35	1	1	2	1	1	1	16	24	1		
40/45	2	1	2	1	1	1	32	48	2	_	
50/55 (DD)	3	1	2	1	1	1	48	72	3	_	_
50/55 (BD)	3	1	2	1	1	1	48	72	3	1	2
60/65	4	1	2	2	1	1	64	96	4	1	2
70/75	6	1	2	2	1	1	96	144	6	1	2

^{*} If equipped with automatic shaker.





