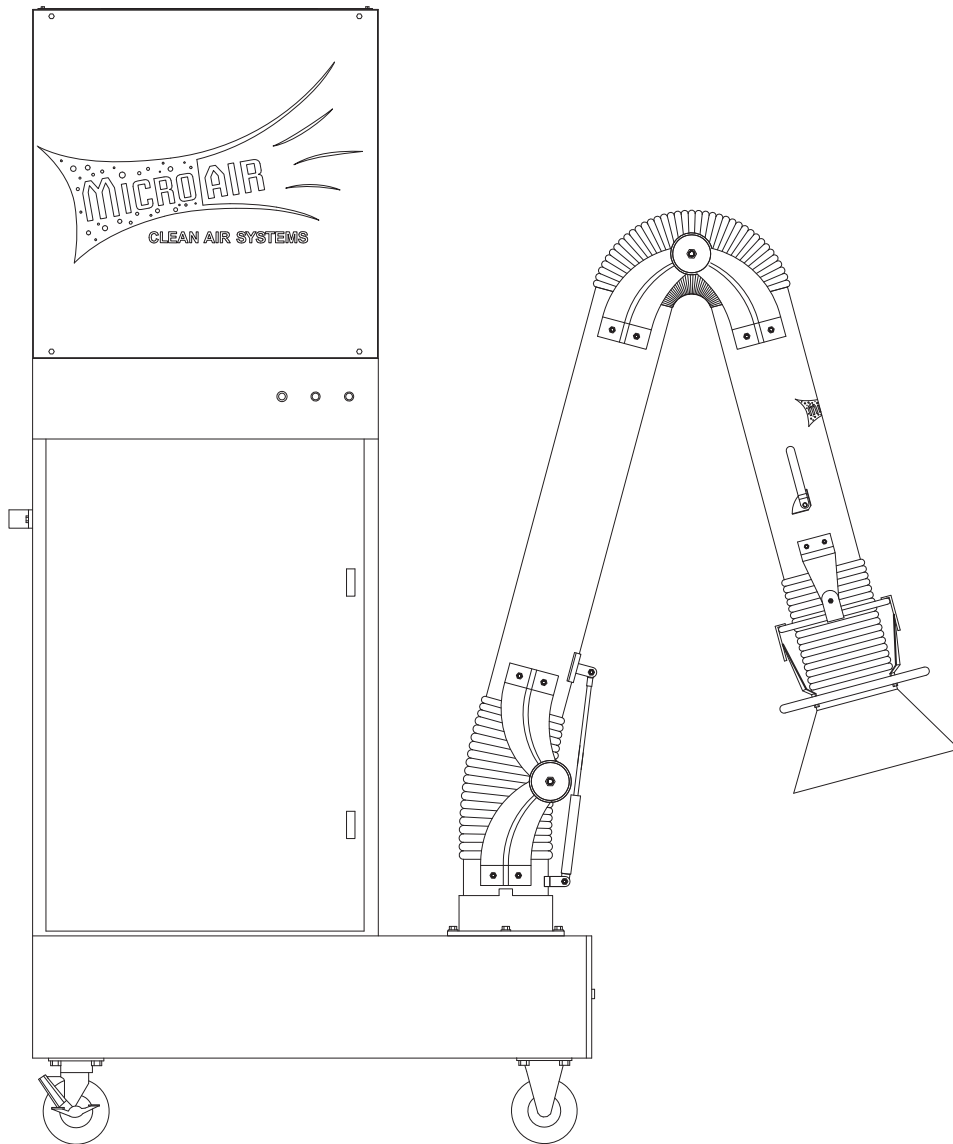




MODEL MA4210

Installation and Operation Manual



Important:

This manual contains specific cautionary statements relative to worker safety. Read this manual thoroughly and follow as directed. It is impossible to list all the hazards of dust control equipment. All persons involved with the equipment or systems should be instructed how to operate in a safe manner.

MODEL MA4210 SPECIFICATIONS

INPUT VOLTAGE:

120V 60Hz 1 Phase
208-230V / 460V 60Hz 3 Phase

MAX. CURRENT:

20 Amps (at 120V, 1 1/2HP, Single Phase)
5.2 Amps (at 208-230V, 1 1/2HP, Three Phase)
2.6 Amps (at 460V, 1 1/2HP, Three Phase)
6.8 Amps (at 208-230V, 2HP, Three Phase)
3.4 Amps (at 460V, 2HP, Three Phase)
9.6 Amps (at 208-230V, 3HP, Three Phase)
4.8 Amps (at 460V, 3HP, Three Phase)
3.9 Amps (at 575V, 3HP, Three Phase)

MOTOR:

TEFC 1 1/2 HP, 1 Phase
TEFC 1 1/2 HP, 3 Phase
TEFC 2 HP, 3 Phase
TEFC 3 HP, 3 Phase

DIMENSIONS: 86" h. X 26" w. X 36" l.

SHIPPING WEIGHT: 444 lbs.

ACTUAL WEIGHT: 402 lbs.*

* Add 35 lbs. per charcoal module as option

PACKAGE CONTENTS:

1 Ea. MA4210	16 Ea. 5/16" Bolt
1 Ea. Owner's Manual	16 Ea. 5/16" Hex Nut
2 Ea. Swivel Caster	16 Ea. Flat Washer
2 Ea. Fixed Caster	16 Ea. 5/16" Lock Washer
1 Ea. Filter Hanger Bar	1 Ea. Handle

Caution:

⚠ All electrical work must be done by a qualified electrician according to local, state and national codes.

PRE-OPERATING INSTRUCTIONS:

1. Remove the shipping crate and remove the cardboard carton and plastic wrapping from the unit.
2. Open the filter door and remove the bag filter, pre-filter, hood, handle, filter hanger bar, and handle.
3. Lay the unit down on its back (the side opposite the hose). Unbolt the wooden pallet from the unit.
4. With the unit still in the horizontal position, secure the casters to the bottom of the unit using bolts, nuts and washers provided.

5. Slide the pre-filter into the channels provided at the bottom of the unit making sure that the air flow directional arrows are pointed upward.
6. Making sure that the loops on the filter are towards the door, carefully slide the bag filter back into the cabinet. Do not snag or rip the delicate media material that is used to make this filter. When properly inserted, the bag filter will not protrude past the filter slide and will allow the door to close securely.
7. Insert the filter hanger bar through the loops in the filter pockets and place the bar in the hooks located just inside the cabinet near the top of the filter door.
8. Close and latch the filter door.

ELECTRICAL CONNECTIONS:

NOTE: It is recommended that a properly sized motor starter/ overload protector be used in the supply circuit for any three phase motors. The 120V units have thermally protected motors with on/off switches.

1. Make electrical connections as shown in the wiring diagram to the wires protruding from the conduit on the side of the unit.
2. Check blower for proper rotation direction. Blower should rotate clockwise when viewed from the pulley end. If the blower rotates backwards, interchange two of the motor supply connections.
3. Check current draw of motor, do not exceed Amps specified.

PRE-OPERATION CHECKLIST:

- Check blower drive belt for proper tension. Belt should deflect approximately 3/4" when firm pressure is applied midway between the pulleys.
- Check that motor, blower, and drive pulleys are mounted securely.
- Make sure that both corners of every pocket in the filter bag is supported by the filter support rods and that filter support rods are fully engaged in their support brackets.
- Air flow direction arrows on the pre-filters must point toward the blower.
- Make sure that all access panels removed during installation are replaced and the filter access door is closed.

OPERATING INSTRUCTIONS:

1. Choose a suitable, level place near the workstation and position the unit so that the arm assembly will be placed near the source of pollution being generated.
2. Grasp the hood by the handle ring and position within 18" of the source of pollution.
3. Connect power (stated above in ELECTRICAL CONNECTIONS).
4. Adjust the hood to capture the maximum amount of contaminants. Periodically adjust the position of the hood to keep it in maximum capture range.

PRESSURE SWITCH ADJUSTMENT:

1. The pressure switch which turns the light on with a differential pressure increase, should be wired to poles L1 (red) and L2 (blue) at the time of installation with 208/230/460 volt source (See Wiring Diagram).
2. The pressure switch is preset at the factory to indicate (light on) dirty filters, but may need readjustment due to a desire for earlier or later filter changes, a different combination of filters, or because the set point shifted during shipping. The pressure switch is also orientation sensitive. To readjust the switch, remove the hole plug in the side of the unit for access to the adjustment screw. Make sure filters and pre-filters are installed in unit. Turn the unit on and place a piece of cardboard over the intake covering about 80% to 85% of the intake area. With a standard screwdriver, turn the adjustment screw clockwise until the light goes off, or counterclockwise until the light comes on.
3. For more time between filter changes (less air flow), cover slightly more of the opening, and for less time between filter changes (more air flow), cover less of the opening.

GENERAL MAINTENANCE:

1. Occasionally check the condition of the drive belt for tightness and wear.
2. Check the bower bearings for unusual wear and the blower wheel for debris and dirt. Clean when necessary.
3. Check the wiring for loose connections or for cracked insulation.
4. No lubrication is required for the motor because it is a permanent pre-lube design. Excessive dirt/oil should be periodically removed.
5. Once per month grease the suction arm base assembly with a bearing grease listed to not react with aluminum.

CHANGING FILTERS:

⚠ Always make sure that the unit is turned off before changing filters or servicing the unit.

1. The MA4210 is equipped with a filter change light or optional Magnahelic Gauge. If the differential pressure has been set properly the light or gauge signals the need for examination for the filters.
2. When the light comes on, or gauge reads high differential pressure, turn the unit off and remove the pre-filter only. Replace with a new pre-filter, making sure that the air flow directional arrow is pointed toward the outlet end. Turn the unit back on. If the filter change light is off, or the gauge reads low differential pressure, then the unit is operating properly.
3. If the filter change light fails to go out, or the gauge continues to read high differential pressure after replacing the pre-filter, then the media filter also needs to be replaced.
4. To install a new bag filter, turn the unit off. Remove the filter from the channel and insert a new filter.
5. Start the unit. The filter change light should be off or gauge reads low differential pressure and the unit should be operating properly.

AIR FLOW ADJUSTMENT:

The MA4210 is equipped with a variable diameter pulley on the motor to allow the air flow to be adjusted to the installation requirements. The pulley is set for maximum air flow at the factory. The air flow rate can be reduced as follows:

1. Remove motor compartment access cover. Be careful to avoid tearing gasket material between door and cabinet.
2. Remove belt.
3. Loosen pulley adjustment set screw on motor pulley and screw adjustable shive out away from fixed shive. Tighten set screw onto flat of fixed screw (FIG. 1).
4. Adjusting the motor pulley may require a size larger or smaller belt, depending on the application.
5. Replace belt and check belt tension. Proper tension should be between 1/2" and 3/4" deflection when belt is squeezed with normal pressure between fingers.
6. Replace motor compartment access cover.
7. Recheck for correct draw of motor amprage.

Note: All filters and panels must be on unit and door closed for current measurements of motor.

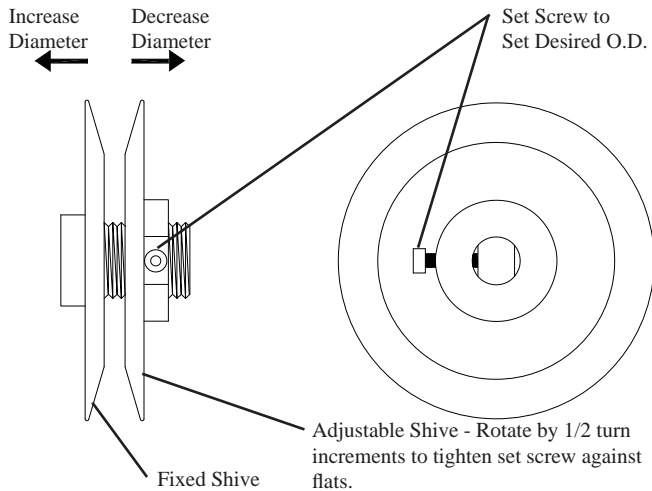


Fig. 1

INSTRUCTIONS FOR SIDE DISCHARGE BLOWER EXHAUST:

Caution:

⚠ Read instructions completely before making changes.

⚠ Due to relocation of internal components, some wiring may be loose. Be sure to retain wires so they will not become loose in air stream of blower inlet.

1. The MA4210 motor/blower module can be rotated so that exhaust air exits from the side of the unit. Before rotating the motor/blower module be sure that all input power is disconnected and the unit is turned off.
2. Remove the motor access door and exhaust grille.
3. Remove 5/16" hex bolts and washers that secure the motor/blower module to the filter module.
4. Rotate the motor/blower module 90 deg. (Fig. 2).
5. Using 5/16" hex bolts and washers re-secure the motor/blower module with filter module.
6. Reinstall motor access door and exhaust grille.
7. Reconnect input power and turn unit on. Check for proper air flow and blower rotation.

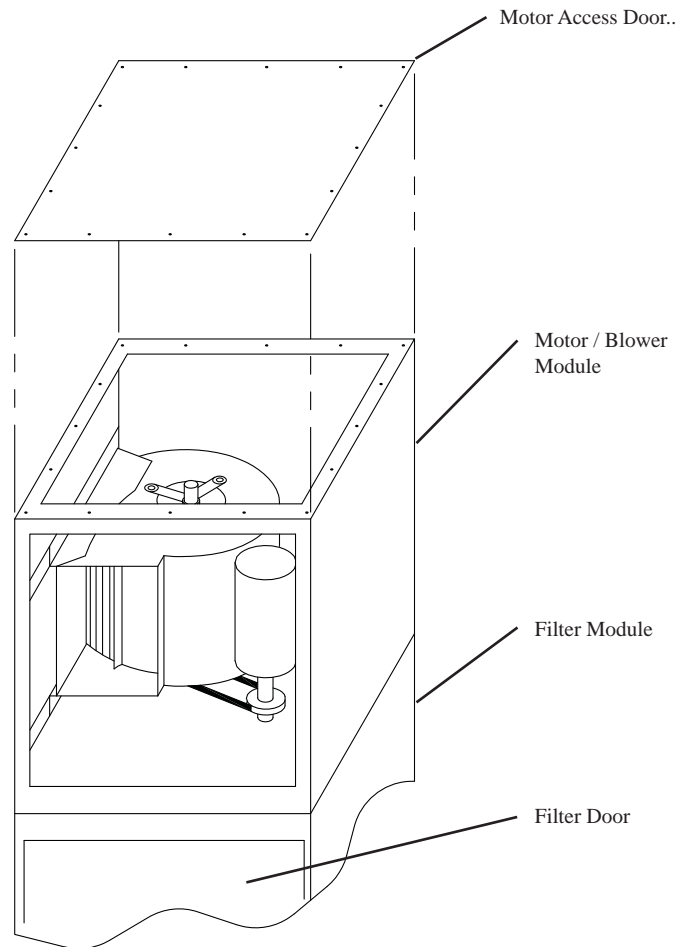


Fig. 2

UNITS WITH HEPA OR CHARCOAL AS A SECOND MAIN FILTER:

On units with optional HEPA or charcoal filters, an adjustable filter track kit is used to complete the seal of the filters to the filter stop (Fig. 3 & Fig. 4). If the unit was ordered with either a HEPA or charcoal filter this adjustable filter track kit was included with the unit. If a HEPA or charcoal filter is ordered as an after-market item the adjustable filter track kit should be ordered as well. Order part number 38036-01.

Each filter track kit is supplied with:

1. 1 Ea. Filter Track
2. 2 Ea. Supports
3. 1 Ea. Handle
4. 4 Ea. Retaining Brackets
5. 1 Ea. Door Stop Bracket
6. 3 Ea. Horizontal Support
7. 16 Ea. #8-32 Self Tapping Hex Screws

INSTALLATION:

1. Place supports in cabinet at a dimension of 13-1/4" and secure with self tapping screws.
2. Place track in cabinet so it rests upon supports and 1/2" diameter pin is located behind brackets on supports.
3. Place handle on supports so that it rests in notches.
4. Lock 1/2" diameter rods on handle and track in place with brackets and self tapping screws.
5. Place handle stop bracket at a dimension of 15-1/2" and secure with self tapping screws. This is to keep handle from rotating past 90 degrees and allowing filter to loosen.
6. Horizontal support is not used in this application.

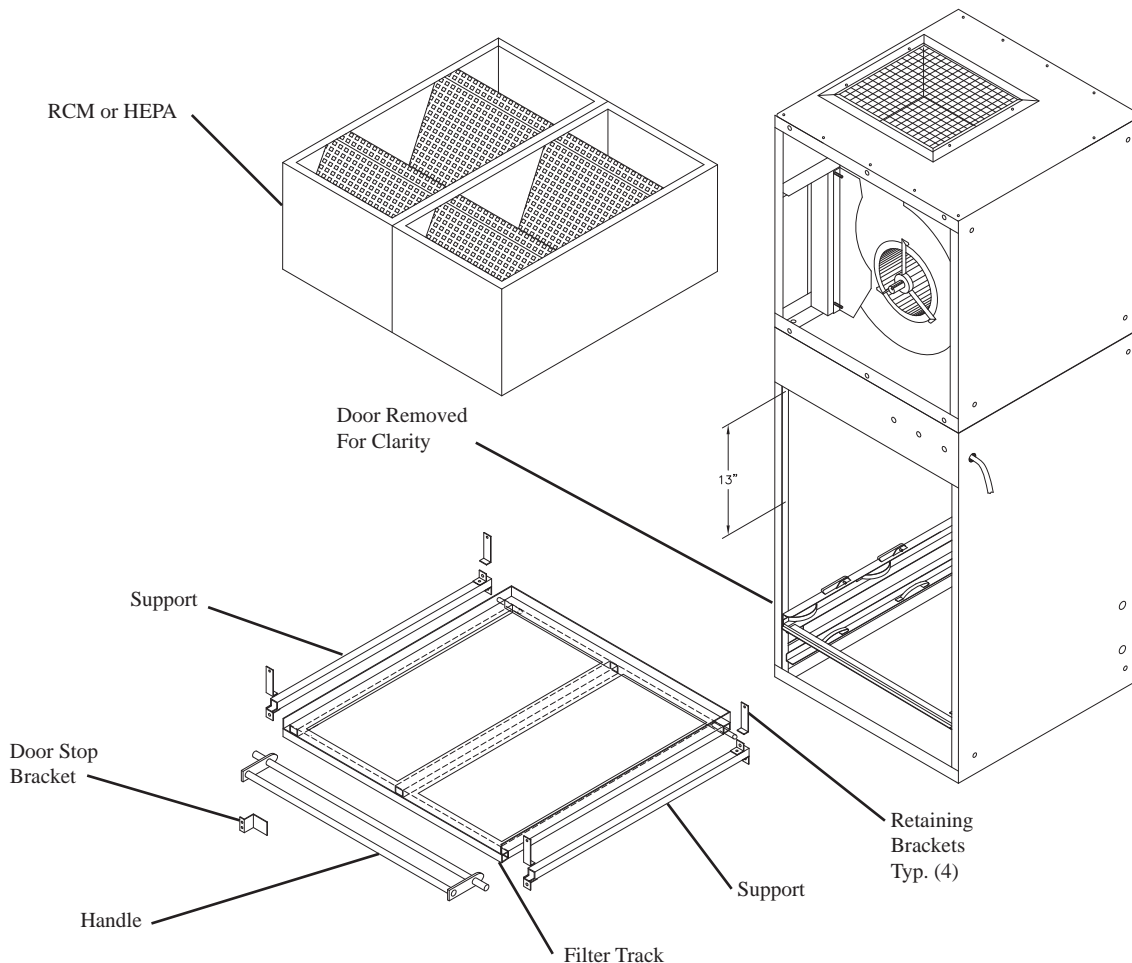


Fig. 3

UNITS WITH HEPA OR CHARCOAL AS A FIRST AND SECOND MAIN FILTER:

On units with optional HEPA or charcoal filters, an adjustable filter track kit is used to complete the seal of the filters to the filter stop (Fig. 3 & Fig. 4). If the unit was ordered with either a HEPA or charcoal filter this adjustable filter track kit was included with the unit. If a HEPA or charcoal filter is ordered as an after-market item the adjustable filter track kit should be ordered as well. Order part number 38036-01.

Each filter track kit is supplied with:

1. 1 Ea. Filter Track
2. 2 Ea. Supports
3. 1 Ea. Handle
4. 4 Ea. Retaining Brackets
5. 1 Ea. Door Stop Bracket
6. 3 Ea. Horizontal Support
7. 16 Ea. #8-32 Self Tapping Hex Screws

INSTALLATION:

1. Place supports in cabinet at a dimension of 24 5/8" and secure with self tapping screws.
2. Place track in cabinet so it rests upon supports and 1/2" diameter pin is located behind brackets on supports.
3. Place handle on supports so that it rests in notches.
4. Lock 1/2" diameter rods on handle and track in place with brackets and self tapping screws.
5. Place handle stop bracket at a dimension of 27" and secure with self tapping screws. This is to keep handle from rotating past 90 degrees and allowing filter to loosen.
6. Place horizontal supports (Typ. for two) on sides of cabinet at a dimension of 10" and the other horizontal support on rear of cabinet at 5" and secure with self tapping screws.

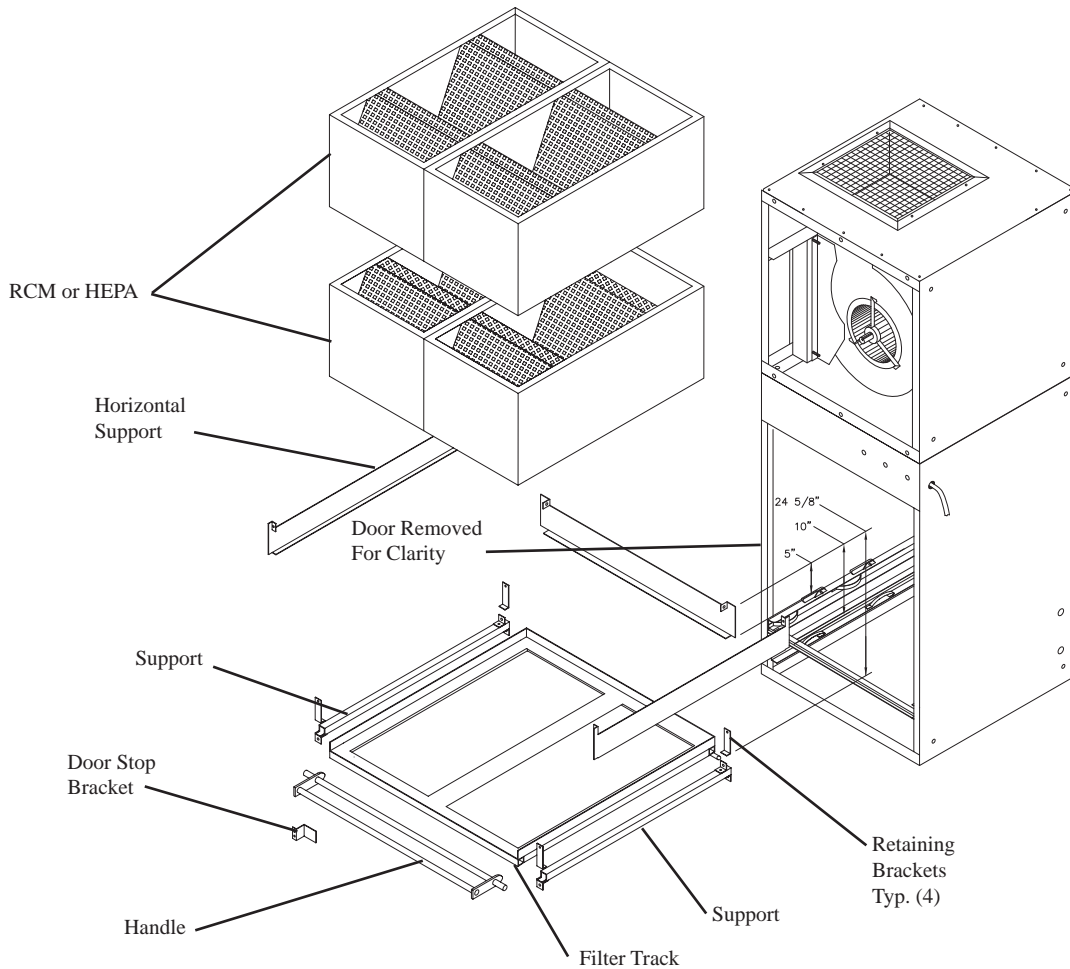


Fig. 4

FILLING OF RCM MODULES

1. Remove bulk charcoal or purasorb from the shipping container.
2. Set module on a level surface. Remove fill cover by removing six #10-32 Phillip head screws, that secure cover. Set cover aside (Fig. 5).
3. Open the lid of the charcoal or purasorb bucket. Pour the material from the plastic bag into the module through the slots. It may be necessary to slightly shake the module to assure an even fill. Excess material may be saved by resealing the bucket. Note that slow pouring will minimize dust that will be present during filling.
4. After filling the module, discard the bucket and reinstall the fill cover removed in step 2.
5. With filter track in place and handle pulled out away from cabinet load RCM modules into track.
6. With filters in place rotate handle 90 deg. and lock filter modules in place.

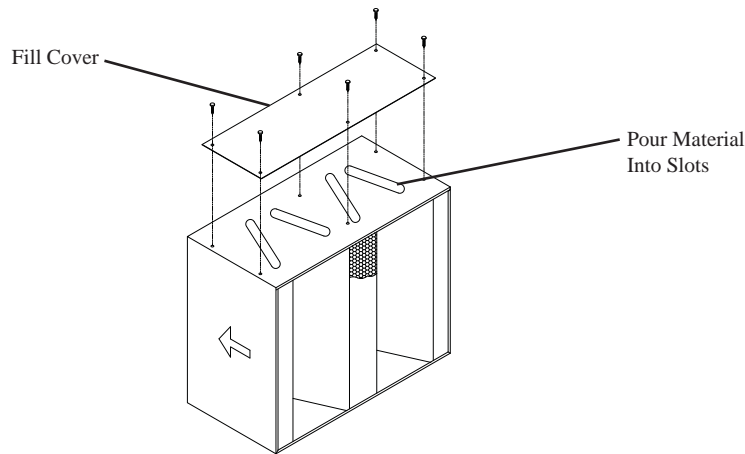


Fig. 5

OPTIONAL SILENCER INSTALLATION

1. Remove exhaust grille from unit as shown in Fig. 6.
2. Slide silencer over blower assembly.
3. Align holes from silencer with those located on side of the blower assembly.
4. Attach silencer to blower assembly using 3/8" bolt, lock washer and flat washer.
5. Center exhaust grille over hole in silencer and attach using #8-32 self tapping machine screws.

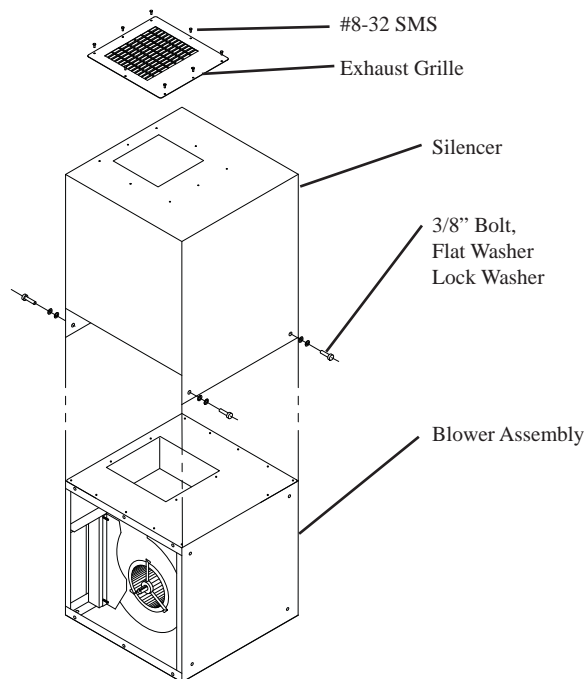
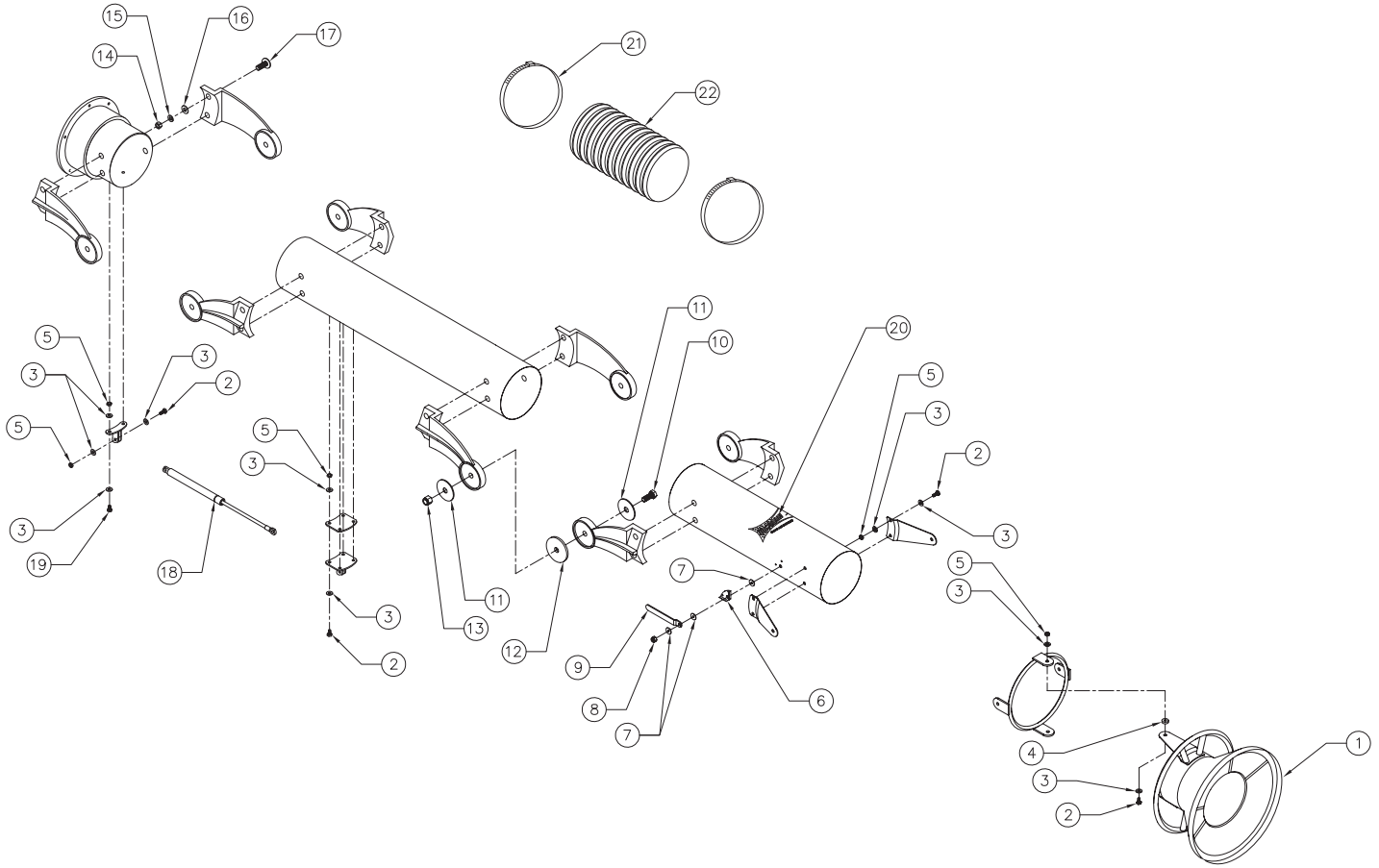


Fig. 6

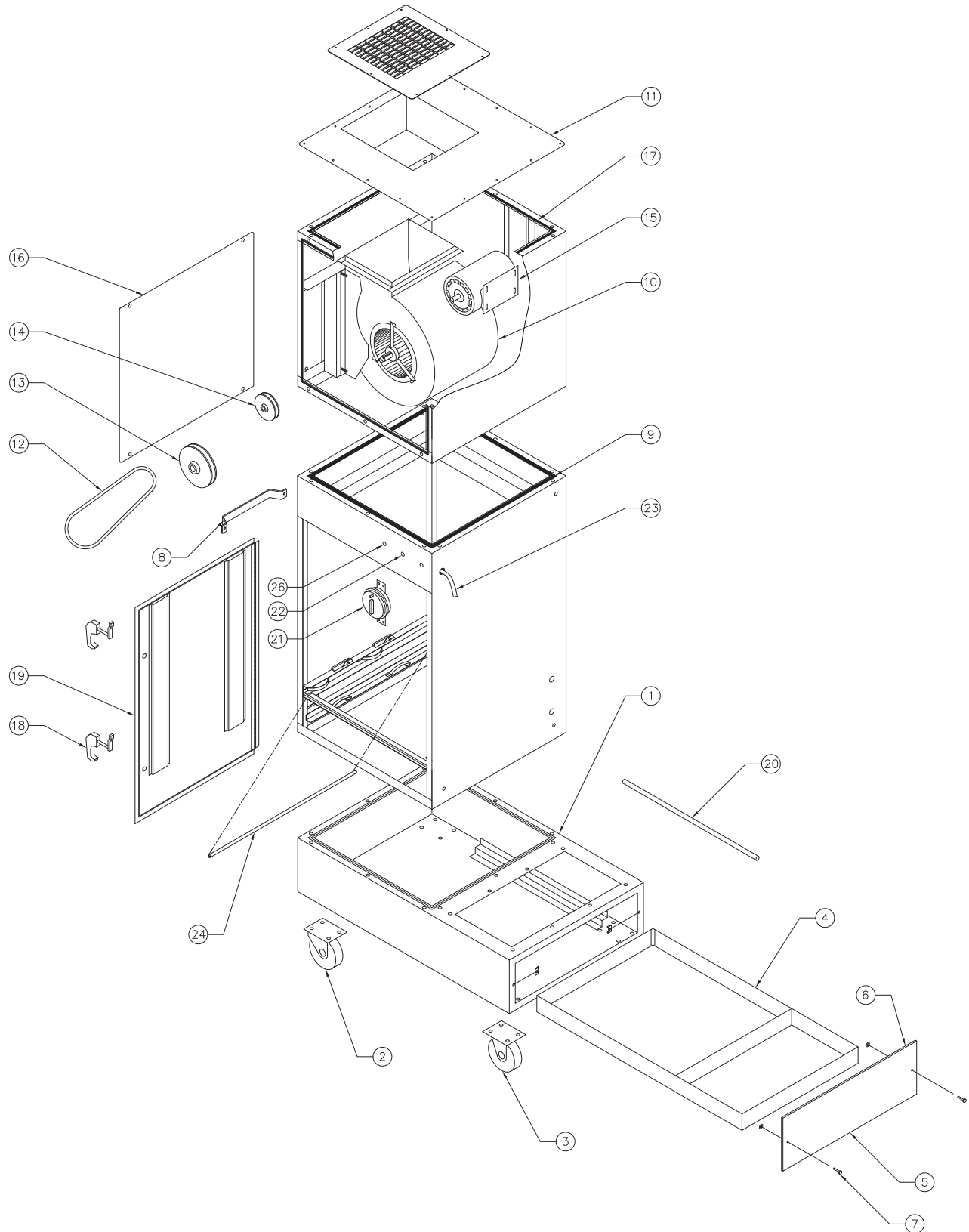
ARM ASSEMBLY PARTS LIST



ITEM	PART NO.	DESCRIPTION
1.	P2466	6" Hood Assembly
	P2469	8" Hood Assembly
2.	P164	1/4-20 x 3/4" Hex Head Bolt
3.	P246	1/4 Flat Washer
4.	P2482	Hood Disc Pad
5.	P2485	1/4-20 Nylock Hex Nut
6.	37104-01	Damper Handle Stop Plate
7.	P2206	5/16" Flat Washer
8.	P2484	5/16" Nylock Hex Nut
9.	37103-01	Damper Handle
10.	P2478	1/2-13 x 2.25" Hex Head Bolt
11.	P2468	Cup Washer
12.	P2467	Friction Pad

ITEM	PART NO.	DESCRIPTION
13.	P2479	1/2-13 Nylock Hex Nut
14.	P141	3/8-16 Hex Nut
15.	P142	3/8" Lock Washer
16.	P2206	Flat Washer
17.	P2481	3/8-16 x 1.25" Carriage Bolt
18.	P2461	6" Gas Shock
	P2462	8" Gas Shock
19.	P2483	1/4-20 x 1" Hex Head Bolt
20.	P2312	Micro Air Decal
21.	P2232	Hose Clamp
22.	P2616	6" Dia. Flex Hose
	P2617	8" Dia. Flex Hose

MA4210 ASSEMBLY PARTS LIST



MA4210 ASSEMBLY PARTS LIST

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1.	38027-01	Base Assembly	14.	P2105	1-1/2HP, 5/8" Shaft, Motor Pulley
2.	P3283	Swivel Caster		P3578	2HP, 5/8" Shaft, Motor Pulley
	P2724	Big Wheel		P3579	2HP, 7/8" Shaft, Motor Pulley
3.	P3284	Rigid Caster		P2140	3HP, 7/8" Shaft, Motor Pulley
4.	38033-01	Spark Tray	15.	P3545	1-1/2HP, 120V, 1 Phase Motor
5.	33299-03	Spark Tray Door		P1966	2HP, 208-230/460V, 3 Phase Motor
*6.	P1809	Foam Gasket		P3495	3HP, 208-230/460V, 3 Phase Motor
7.	P1856	Spark Tray Door Latches		P2813	3HP, 575V, 3 Phase Motor
	P1857			P3546	1-1/2HP, 208-230/460V, 3 Phase Motor
	P1858				
8.	30473-01	Handle	16.	38011-02	Motor Access Door
9.	38070-01	Cabinet Assembly	*17.	P1032	Access Door Gasket
10.	P3498	Blower	18.	P1372	Latch
11.	38010-01	Blower Access Panel	19.	38022-01	Filter Access Door
12.	P3207	43" Belt	20.	33346-02	Filter Rod
	P3198	45" Belt	21.	P3505	Pressure Switch
	P3213	46" Belt	22.	P3206	On/Off Switch (120V only)
	P3195	47" Belt	23.	P1363	Cord Set (120V only)
	P3548	48" Belt	24.	P3214	Seal Gasket
	P3550	49" Belt	26.	P1429	Light (120V)
	P3549	50" Belt		P1481	Light (208-230, 460, 575V)
13.	P1710	4.95" Blower Pulley	N.S.	P3547	Wiring Diagram
	P1974	6.25" Blower Pulley	N.S.	P2250	Magnahelic Gauge
	P1711	7.25" Blower Pulley	N.S.	38050-01	Silencer
	P3218	7.95" Blower Pulley	N.S.	38036-01	Filter Track
	P3183	9.95" Blower Pulley			

* Specify Length

REPLACEMENT FILTER LIST

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
P1411	24" X 24" X 4" Pleated Pre-Filter	P1439	24" X 24" X 32" 55% Bag Filter
P1586	24" X 24" X 2" 96% Washable Pre-Filter	P1442	24" X 24" X 32" 95% Bag Filter
P1585	24" X 24" X 2" 70% Washable Pre-Filter	P2179	24" X 24" X 32" 95% Oil Mist Bag Filter
P1799	24" X 24" X 2" Baffle Oil Impinger	P2104	24" X 24" X 32" Duo Cube Bag Filter
P1475	24" X 24" X 2" Mesh Oil Impinger	P1455	24" X 24" X 12" 95% DOP HEPA
P1461	24" X 24" X 2" Pleated Pre-Filter	P2101	24" X 24" X 12" 99.97% DOP HEPA
33740-00	Refillable Charcoal Module	P1456	24" X 24" X 12" Disposable Charcoal Filter
33740-00	Refillable Purasorb Module	P1460	24" X 24" X 15" 95% Short Bag Filter
38086-01	Wrap Around Pre-Filter Module		

MA4210 WIRING DIAGRAM

120 & 208-230 VAC

460 & 575 VAC

TOGGLE SWITCH (120V OPTION ONLY)

SECTION A-A

DETAIL "A" RESISTOR ASSY.

115/208-230V V.A.C. 1PH. 60 HZ.

208-230/460 V.A.C. 3PH. 60 HZ.

MICRO AIR

MODEL # _____

INPUT VOLTAGE

208-230 VAC

190-220 VAC

460 VAC

380-440 VAC

OTHER: _____ VAC

PHASE

1 PHASE

3 PHASE

FREQUENCY

50 HZ.

60 HZ.

MAXIMUM CURRENT

_____ AMPS

CAUTION: DISCONNECT POWER TO UNIT BEFORE SERVICING.

_____ H.P.

NOTE: FOR 3 PHASE UNITS A PROPERLY SIZED MOTOR STARTER / PROTECTOR MUST BE USED IN THE SUPPLY CIRCUIT.

P3547-3

1. NO CONNECTION TO SUPPLY VOLTAGE.

2. P1429 LAMP NEEDED FOR 115 V.A.C. UNIT.
P1481 LAMP NEEDED FOR 230/460/575 V.A.C. UNIT.

IMPORTANT: UPON COMPLETION OF INSTALLATION, CHECK BLOWER FOR PROPER FAN ROTATION. IF ROTATION IS BACKWARDS EXCHANGE SUPPLY CONNECTIONS L1 & L2.

CAUTION: IMPROPER ROTATION OF BLOWER CAN RESULT IN DAMAGE TO BLOWER BEARINGS.

FAN ROTATION

IF REPLACEMENT IS REQUIRED, CHECK ALL WIRING CONNECTIONS AGAINST WIRING DIAGRAM FURNISHED WITH UNIT TO INSURE PROPER OPERATION, APPROPRIATE FOR DESIRED INPUT VOLTAGE.

METAL FAB, INC.

WICHITA, KANSAS USA

TROUBLE SHOOTING CHART

CAUTION: BEFORE DISASSEMBLING THE UNIT OR DOING ANY INSPECTING OF THE PARTS, MAKE CERTAIN THAT THE POWER HAS BEEN CUT OFF AND THE BLOWER HAS COME TO A COMPLETE STOP. NEVER RUN THE UNIT WITH THE ACCESS DOOR OPEN OR REMOVED.

PROBLEM	POSSIBLE CAUSE	REMEDY
Blower fails to start	No incoming power Blown breaker or fuse Primary voltage to motor contactor is below 10% tolerance Burned out motor	Check line voltage Replace fuse or throw breaker Take steps to increase voltage to primary Replace motor
Unit runs slowly or inadequate capture velocity	Wired for wrong voltage or improper rotation Dirty filters Internal obstruction Pulleys set for improper static	Check input voltage Check wiring diagram Switch L1 & L2 (3-phase only) Service / Replace filters Check if damper is open Check inlet for blockage Check hoses for proper connection Check hoses for holes Adjust or change pulleys
Vibration	Loose motor mount bolts Foreign objects in blower Dirty disposable filters	Tighten bolts Remove debris from blower Service or replace filters
Mist coming from exhaust	Dirty disposable filters or torn filters Air bypass around filters	Replace filters Check for proper seal against picture frame and seals on door and back wall
Stronger resistance during rotation of the arm	Lack of grease in the rotating socket	Grease the rotating socket
Arm will not stay where it is placed	The joints are loose	Tighten the joints

Serial Number:

Supply Voltage:

Date Installed:

Installed By:

Notes: